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: **PC0165**

DATE VERIFIED: **May 23, 2012**

QUALITY ASSURANCE TECHNICIAN: **Leah Hardenbergh**

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA

Stormwater Division

MEMORANDUM

DATE: February 24, 2010

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

FROM: Jo Anna Ripley, Stormwater

PO: 270712

RE: Files Approved for Scanning

BMP ID or General File ID PC165

PIN: 3640300001A

Subdivision, Tract, Business or Owner Name (if known): Greensprings General: Greenpsrings Apartments & Condos; Greensprings Plantation; Greensprings West; Legacy Golf Links; Williamsburg National Golf Course; Greensprings Office Park Recreation Lot Parcel 1 Greensprings Plantation

Property Description: Single Family

Site Address: 3790 Philip Ludwell

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

Agreements: (in file as of scan date) **Y** **Book or Doc#:** 725 **Page:** 102-104

Comments:

BOOK 0725 PAGE 0102

COPY

DECLARATION OF COVENANTS

001788

INSPECTION/MAINTENANCE OF RUNOFF CONTROL FACILITY

THIS DECLARATION, made this 12th day of January, 19 95, 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, 19 95.

COVENANTOR(S)

LEGACY (GREENSPRINGS) Limited Partnership

By: _____

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

ATTEST:

_____

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.

_____
Notary Public

My Commission expires: November 6, 1999

Approved as to form:

_____

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 Covenants was presented with certificate annexed and admitted to record at 12:35 o'clock
Teste: Helene S. Ward, Clerk
by _____
Deputy Clerk

0261U.Wpf
Revised 9/92

PLAT RECORDED IN
DB 725 PAGE 104

GPIN 3640300001B
GREENSPRINGS COMM ASSOCIATION
4029 Ironbound Rd
WMBG VA 23188
O.S./GREENBELT PA1

James City County, Virginia
Environmental Division

Stormwater Management/BMP Facilities
Record Drawing/Construction Certification
Review Tracking Form

County Plan No.: SP-91-94 (SP46-95)
Project Name: Greensprings-Wmbg National Golf Course Clubhouse
Stormwater Management Facility: Dry Pond w/ SM
Phase: ☐ I / ☒ II ☐ III

☒ Information Received. Date: 11/23/99 WEG
☐ Administrative Check.
- ☒ Record Drawing Date: 11/23/99 WEG
- ☐ Construction Certification Date:
- ☐ RD/CC Standard Forms NO (Required after Feb 1st 2001Only)
- ☒ Insp/Maint Agreement Info: DB 0723 PAGE 812
- ☐ BMP Maintenance Plan Location: NONE
- ☐ Other:

☒ Standard E&SC Note on Approved Plan Requiring RD/CC or County comment in plan review file.
☒ Yes ☐ No Location: NOTE #18 E&SC Notes, Cover Sheet
☒ Assign County BMP ID Code Code: PC 165
☒ Log into Division's "As-Built" Tracking Log
☒ Add Location to GIS Database Map. Obtain GIS site information (GPIN, Owner, Site Area, Address, etc.)
☐ Preliminary Log into BMP Database (BMP ID #, Site Plan #, GPIN, Project Name)
☒ Active Project File Review (correspondence, H&H, etc.).
☒ Initial As-Built File setup (label, copy hydraulics, BMP information, etc.).
☒ Inspector Check of RD/CC.
☒ Pre-Inspection Drawing Review - Approved Plan (Quick look prior to field inspection).
☒ Final Inspection (FI) Performed Date: 1-30-02
☒ Record Drawing (RD) Review Date: 3-8-02
☐ Construction Certification (CC) Review Date:
☒ Actions:
- ☐ No comments.
- ☒ Comments. Letter Forwarded. Date: 3-8-02
  - ☒ Record Drawing (RD)
  - ☒ Construction Certification (CC)
  - ☒ Construction-Related (CR)
  - ☐ Site Issues (SI)
  - ☐ Other :

☐ Second Submission:
☐ Third Submission:
☐ Acceptable for stormwater managment facility purposes (RD/CC/CR/Other). Proceed with bond release.
☐ Notify Darryl/Joan/Pat of acceptability using email (preferred), form or verbal.
☒ Check/Clean active file of any remaining material and finish "As-Built" file.
☒ Add to County BMP Inventory/Inspection schedule (Phase I, II or III).
☒ Copy Final Inspection Report into County BMP Inspection Program file.
☐ Digital Photographs obtained.
☐ Add to JCC Hydrology & Hydraulic database (optional).

BMP Certification Information Acceptable

Plan Reviewer: _____ Date: _____

(36-03)(1-21)

James City County, Virginia
Environmental Division

Stormwater Management/BMP Facilities
Record Drawing/Construction Certification
Review Tracking Form

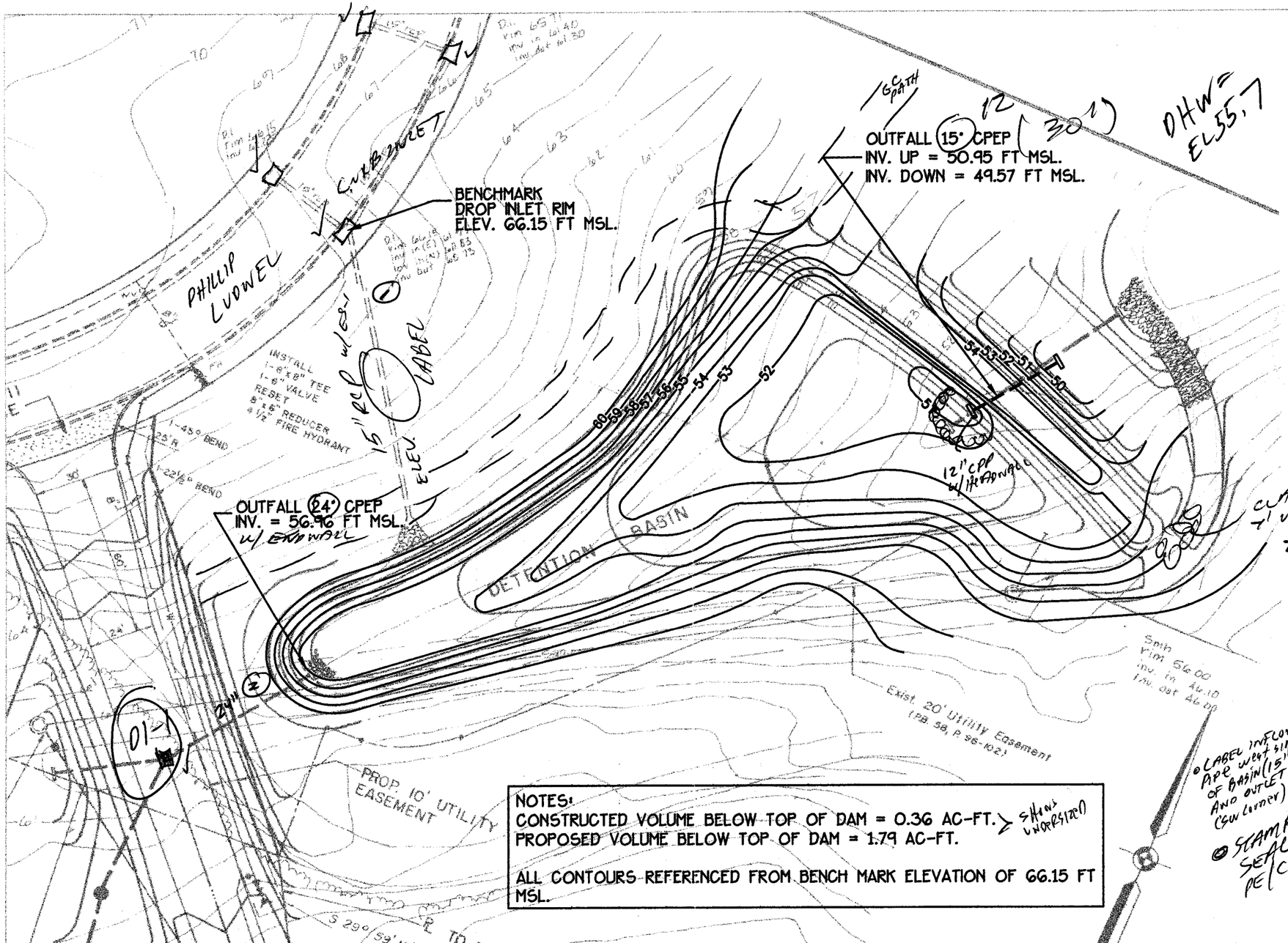
County Plan No.: SP-132-94 (AMEND SP-115-97)
Project Name: Greensprings Williamsburg National Golf Course Maint Fac.
Stormwater Management Facility: Dry Pond w/ Shallow Marsh
Phase: ☐ I ☒ II ☐ III

- ☒ Information Received. Date: 11/23/99
- ☐ Administrative Check.
  - ☒ Record Drawing Date: 11/23/99 WEG
  - ☒ Construction Certification Date: NOT RQD.
  - ☐ RD/CC Standard Forms NO (Required after Feb 1st 2001Only) NOT RQD
  - ☒ Insp/Maint Agreement Info: Yes, File says SEE #8b on Mast List. ✓
  - ☐ BMP Maintenance Plan Location: NO
  - ☐ Other: _____
- ☒ Standard E&SC Note on Approved Plan Requiring RD/CC or County comment in plan review file.
  ☒ Yes ☐ No Location: AB ONLY; NOTE 21 Sheet 5.
- ☒ Assign County BMP ID Code Code: JR053
- ☒ Log into Division's "As-Built" Tracking Log
- ☒ Add Location to GIS Database Map. Obtain GIS site information (GPIN, Owner, Site Area, Address, etc.)
- ☒ Preliminary Log into BMP Database (BMP ID #, Site Plan #, GPIN, Project Name)
- ☒ Active Project File Review (correspondence, H&H, etc.).
- ☒ Initial As-Built File setup (label, copy hydraulics, BMP information, etc.).
- ☒ Inspector Check of RD/CC.
- ☒ Pre-Inspection Drawing Review - Approved Plan (Quick look prior to field inspection).
- ☒ Final Inspection (FI) Performed Date: 1-30-02
- ☒ Record Drawing (RD) Review Date: 3-08-02
- ☒ Construction Certification (CC) Review Date: 3-08-02 NOT RQD.
- ☐ Actions:
  - ☐ No comments.
  - ☒ Comments. Letter Forwarded. Date: 3-08-02 SENT 3/13/02
    - ☒ Record Drawing (RD)
    - ☐ Construction Certification (CC)
    - ☒ Construction-Related (CR)
    - ☐ Site Issues (SI)
    - ☐ Other : _____
- ☐ Second Submission: _____
- ☐ Third Submission: _____
- ☐ Acceptable for stormwater managment facility purposes (RD/CC/CR/Other). Proceed with bond release.
- ☐ Notify Darryl/Joan/Pat of acceptability using email (preferred), form or verbal.
- ☒ Check/Clean active file of any remaining material and finish "As-Built" file.
- ☒ Add to County BMP Inventory/Inspection schedule (Phase I, II or III).
- ☒ Copy Final Inspection Report into County BMP Inspection Program file.
- ☐ Digital Photographs obtained.
- ☐ Add to JCC Hydrology & Hydraulic database (optional).

BMP Certification Information Acceptable

Plan Reviewer: _____ Date: _____

FI- 1/30/02 SAT



needs to show
① detail of emer. spillway
needs cert. letter (on plan)

A dam is 3' low
TOD PROP = Agree.
○ CC ? IS IT NEEDED.
○ SHOW SPOTS T.O.D.
○ DAM APPEARS 3' LOW PROP 57.0; AB 54
○ SHOW ELEV ES (PROP 55.0)
○ LABEL PHILLIP LUDWELL
○ SHOW GOLF CART PATH AROUND WEST SIDE.
○ SHOW CORRECT OUTFALL PIPE SIZE. 12" NOT 15"
LABEL HEADWALL
○ SHOW CRESCENT SHAPED CI WALL AROUND CULVERT INLET (label)
○ LABEL ES 1 w RIPRAP
○ LABEL INFLOW PIPE WEST SIDE OF BASIN (15" PROP) AND OUTLET INV. (SEW COVER) #1
○ STAMP & SEAL PE/CLS

SUT REVIEW SET

PC165; SP-91-94

DATE: NOVEMBER 23, 1999

JOB NUMBER: 158

SCALE: 1" = 40'

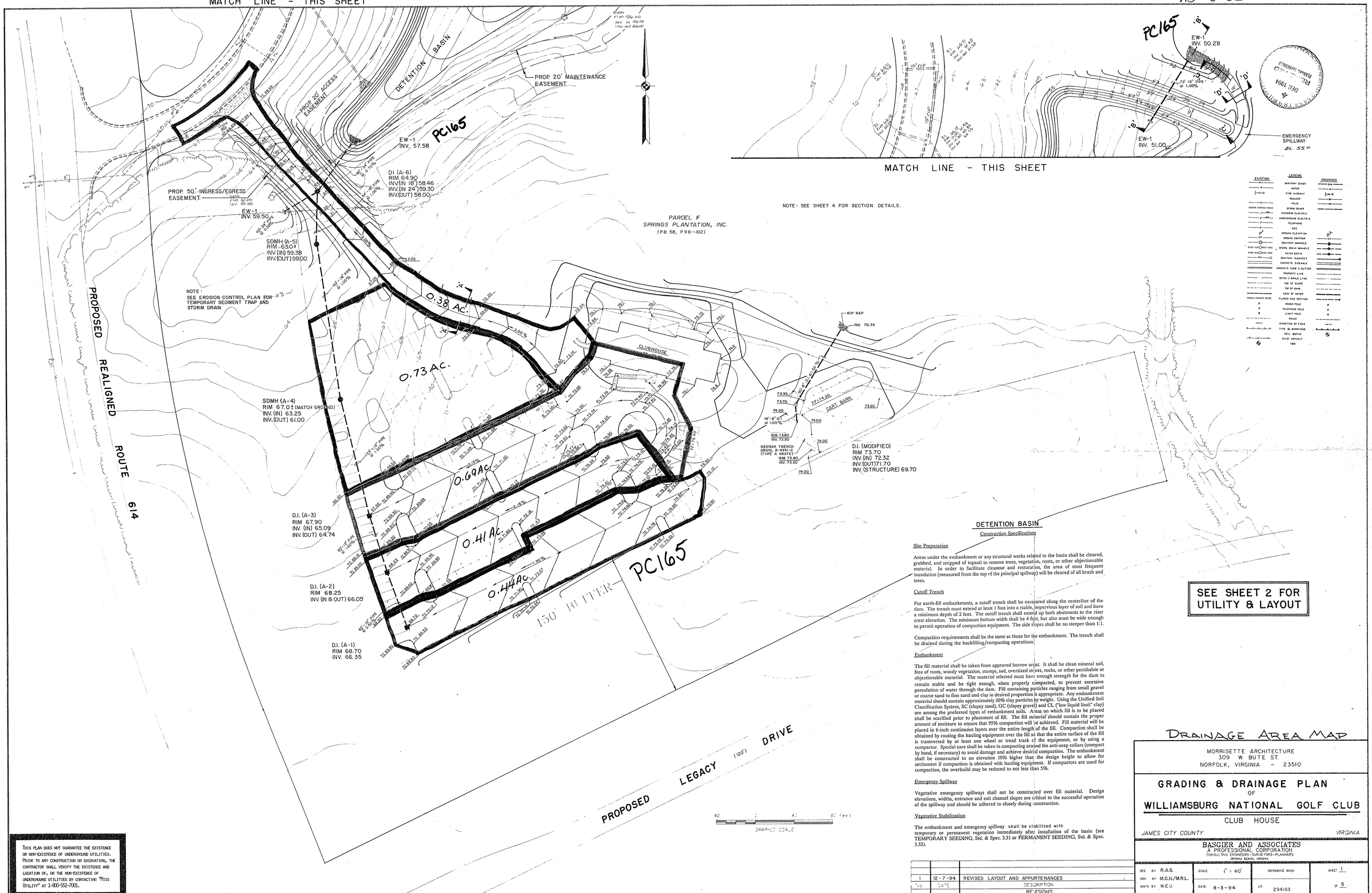
SOURCE: BASE MAP PROVIDED BY WEG, INC.
LEGACY GOLF LINKS, SEE PLAN

AS-BUILT PLAN FOR BMP @ CLUBHOUSE
WILLIAMSBURG NATIONAL GOLF COURSE
JAMES CITY COUNTY, VIRGINIA

WILLIAMSBURG ENVIRONMENTAL GROUP, INC.
Environmental Consultants
3000 Easter Circle, Williamsburg, Virginia 23188 (757) 220-0669

SP-16-94

MATCH LINE - THIS SHEET



MATCH LINE - THIS SHEET

NOTE: SEE SHEET 4 FOR SECTION DETAILS.

EXISTING	LEGEND	PROPOSED
	SANITARY SEWER	
	WATER	
	FIRE HYDRANT	
	REDUCER	
	VALVE	
	STORM SEWER	
	OVERHEAD ELECTRIC	
	UNDERGROUND ELECTRIC	
	TELEPHONE	
	GAS	
	GROUND ELEVATION	
	GROUND CONTOUR	
	SANITARY MANHOLE	
	STORM DRAIN MANHOLE	
	CATCH BASIN	
	SANITARY CLEANOUT	
	CONCRETE SIDEWALK	
	CONCRETE CURB & GUTTER	
	PROPERTY LINE	
	DITCH / SWALE LINE	
	TOE OF SLOPE	
	TOP OF BANK	
	EDGE OF WATER	
	FLARED END SECTION	
	POWER POLE	
	TELEPHONE POLE	
	LIGHT POLE	
	FENCE	
	DIRECTION OF FLOW	
	TYPE III BARRICADE	
	SOIL BORING	
	EXIST ASPHALT	
	TBM	

SEE SHEET 2 FOR UTILITY & LAYOUT

DETENTION BASIN

Construction Specifications

Site Preparation

Areas under the embankment or any structural works related to the basin shall be cleared, grubbed, and stripped of topsoil to remove trees, vegetation, roots, or other objectionable material. In order to facilitate cleanout and restoration, the area of most frequent inundation (measured from the top of the principal spillway) will be cleared of all brush and trees.

Cutoff Trench

For earth-fill embankments, a cutoff trench shall be excavated along the centerline of the dam. The trench must extend at least 1 foot into a stable, impervious layer of soil and have a minimum depth of 2 feet. The cutoff trench shall extend up both abutments to the riser crest elevation. The minimum bottom width shall be 4 feet, but also must be wide enough to permit operation of compaction equipment. The side slopes shall be no steeper than 1:1.

Compaction requirements shall be the same as those for the embankment. The trench shall be drained during the backfilling/compacting operations.

Embankment

The fill material shall be taken from approved borrow areas. It shall be clean mineral soil, free of roots, woody vegetation, stumps, sod, oversized stones, rocks, or other perishable or objectionable material. The material selected must have enough strength for the dam to remain stable and be tight enough, when properly compacted, to prevent excessive percolation of water through the dam. Fill containing particles ranging from small gravel or course sand to fine sand and clay in desired proportion is appropriate. Any embankment material should contain approximately 20% clay particles by weight. Using the Unified Soil Classification System, SC (clayey sand), GC (clayey gravel) and CL ("low liquid limit" clay) are among the preferred types of embankment soils. Areas on which fill is to be placed shall be scarified prior to placement of fill. The fill material should contain the proper amount of moisture to ensure that 95% compaction will be achieved. Fill material will be placed in 6-inch continuous layers over the entire length of the fill. Compaction shall be obtained by routing the hauling equipment over the fill so that the entire surface of the fill is transversed by at least one wheel or tread track of the equipment, or by using a compactor. Special care shall be taken in compacting around the anti-seep collars (compact by hand, if necessary) to avoid damage and achieve desired compaction. The embankment shall be constructed to an elevation 10% higher than the design height to allow for settlement if compaction is obtained with hauling equipment. If compactors are used for compaction, the overbuild may be reduced to not less than 5%.

Emergency Spillway

Vegetative emergency spillways shall not be constructed over fill material. Design elevations, widths, entrance and exit channel slopes are critical to the successful operation of the spillway and should be adhered to closely during construction.

Vegetative Stabilization

The embankment and emergency spillway shall be stabilized with temporary or permanent vegetation immediately after installation of the basin (see TEMPORARY SEEDING, Std. & Spec. 3.31 or PERMANENT SEEDING, Std. & Spec. 3.32).

NO.	DATE	DESCRIPTION
1	12-7-94	REVISED LAYOUT AND APPURTENANCES

REVISIONS

THIS PLAN DOES NOT GUARANTEE THE EXISTENCE OR NON-EXISTENCE OF UNDERGROUND UTILITIES. PRIOR TO ANY CONSTRUCTION OR EXCAVATION, THE CONTRACTOR SHALL VERIFY THE EXISTENCE AND LOCATION OF, OR THE NON-EXISTENCE OF UNDERGROUND UTILITIES BY CONTACTING "MISS UTILITY" AT 1-800-552-7001.

DRAINAGE AREA MAP

MORRISETTE ARCHITECTURE
309 W. BUTE ST.
NORFOLK, VIRGINIA - 23510

GRADING & DRAINAGE PLAN
OF
WILLIAMSBURG NATIONAL GOLF CLUB

CLUB HOUSE

JAMES CITY COUNTY — VIRGINIA

BASGIER AND ASSOCIATES
A PROFESSIONAL CORPORATION
CONSULTING ENGINEERS-SURVEYORS-PLANNERS
VIRGINIA BEACH, VIRGINIA

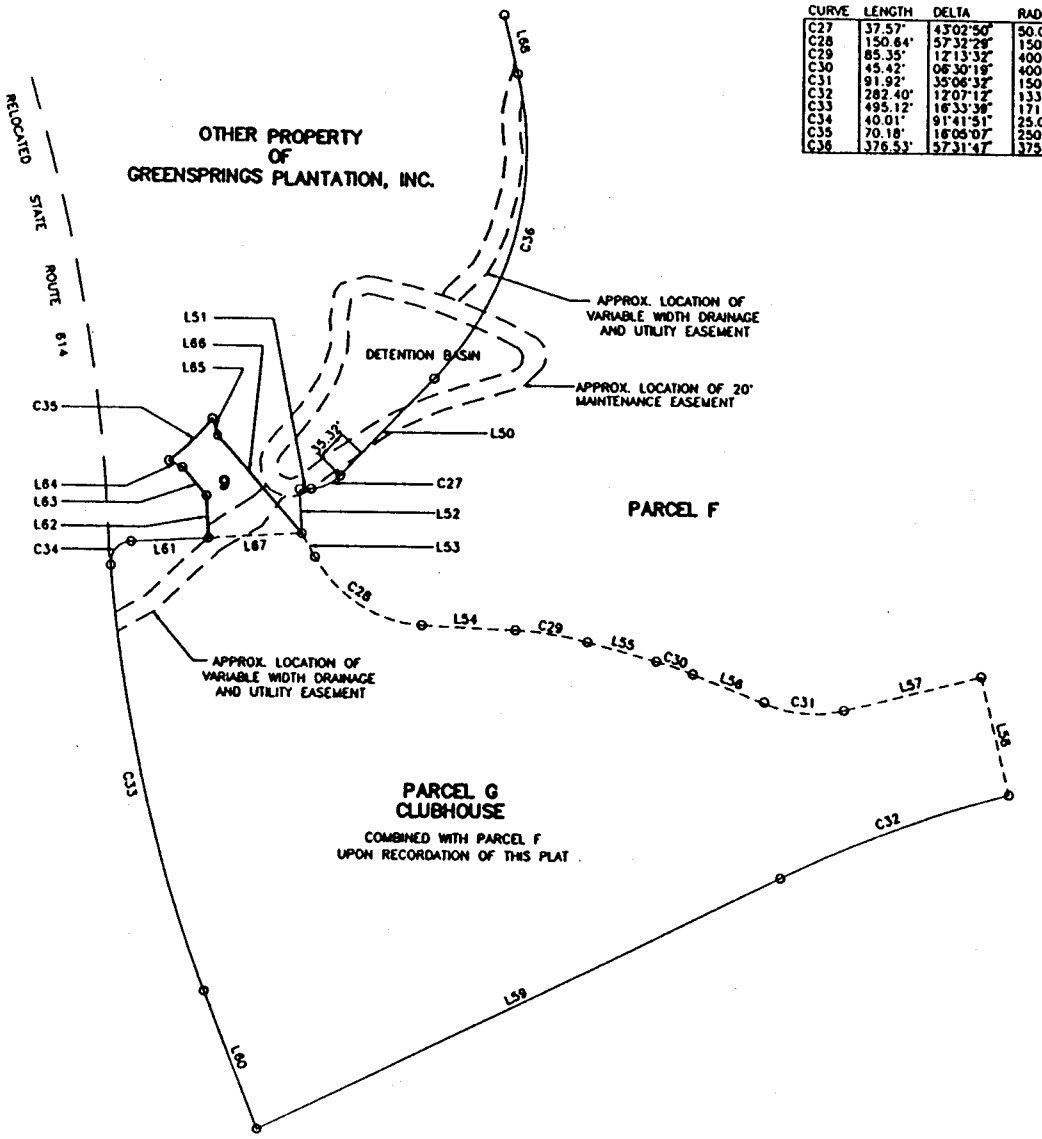
DES. BY: R.A.G.	SCALE: 1" = 40'	REFERENCE BOOK	SHEET 1
DRN. BY: M.C.H./M.R.L.			
CHKD. BY: W.E.U.	DATE: 8-3-94	J.O. 294153	OF 5

PC165_GREENSPRINGS_WILLIAMSBURG_NATIONAL_GOLF_COURSE_CLUBHOUSE - 008

BOOK 0 725 PAGE 0 1 0 4

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'	S58°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°33'39"	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'	205.86'	N14°56'38"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°30'06"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 = 0.2257 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 = 149.6995 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:

PB 38, PGS.96-102, DATED MARCH 14,1994

GRAPHIC SCALE IN FEET
0 50 100 200 300

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

COMMONWEALTH OF VIRGINIA
STEPHEN A. ROMEO
No. 1442-B
LAND SURVEYOR

Langley and McDonald
A PROFESSIONAL CORPORATION
ENGINEERS • PLANNERS • SURVEYORS
VIRGINIA BEACH - WILLIAMSBURG, VIRGINIA

DES.	MRG
DWN.	GSW
CHK.	SAR
DATE	AUG. 3, 1993

GREENSPRINGS ASSOCIATES
GREENSPRINGS
PHASE ONE, SINGLE FAMILY
JAMES CITY COUNTY, VIRGINIA
PLAN & PROFILE SHEETS - ROADS

PROJ. NO.	91053-29
SCALE:	
SHEET	9A OF 26
DWG.	4963W-HA

PC165_GREENSPRINGS_WILLIAMSBURG_NATIONAL_GOLF_COURSE_CLUBHOUSE - 010

EXISTING LOCATION OF 20' MAINTENANCE EASEMENT

STING LOCATION OF
ABLE WIDTH DRAINAGE
D UTILITY EASEMENT

N/F LEGACY GOLF LINKS

C102

EXISTING LOCATION OF 20' SANITARY SEWER UTILITY EASEMENT

S45°42'51"W
155.81'

DETENTION BASIN

PC 165

STORM SEWER CENTERLINE IS CENTERLINE OF 20' DRAINAGE EASEMENT (TYP.)

C103

L47

S03°14'39"E
50.00'

EXISTING LOCATION OF VARIABLE WIDTH DRAINAGE AND J.C.S.A. UTILITY EASEMENT

S41°50'02"E
148.79'

L=234.12'

C15

L49

VARIABLE WIDTH GREENBELT FOR ROUTE 614 OPEN SPACE 0.1924 AC.

S03°14'39"E
48.24'

L=341.00'

C135

C16

L=70.18'

S41°50'02"E
42.78'

L48

S85°45'21"W
89.76'

L=63.01'

OTH GREENBELT
MINIMUM WIDTH = 115')
SPACE

C14

C13

C104

L=50.75'

L=495.12'

C109

L=105.90'

L=13.94'

L=296.25'

C110

L=60.58'

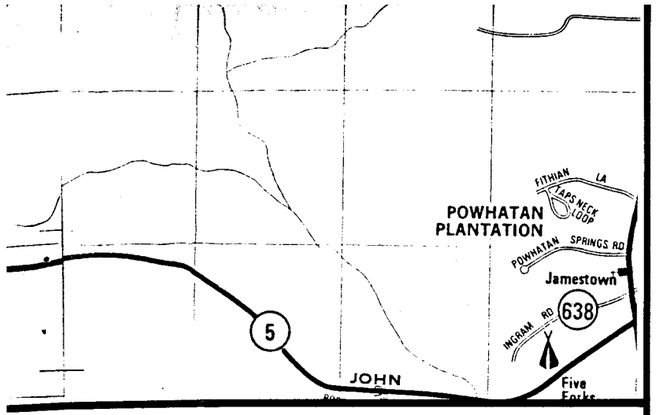
614

℄ OF 120' RIGHT-OF-WAY

GREENSPRINGS PLANTATION
PHASE ONE
BEING A SUBDIVISION OF PROPERTY OF
GREENSPRINGS PLANTATION INC.
BERKELEY DISTRICT
JAMES CITY COUNTY, VIRGINIA
SCALE: 1"=50' 7/14/95

Langley and McDonald, P.C.
Engineers – Surveyors – Planners

PC165_GREENSPRINGS_WILLIAMSBURG_NATIONAL_GOLF_COURSE_CLUBHOUSE - 011



ION MAP

1" = 2000'

with Specification 3.35, Mulching and Manufacturer's Instructions.

14. Inlet protection in accordance with Specification 3.07 shall be provided for all storm drain inlets as soon as practical following construction of same.

15. Temporary liners, such as polyethylene sheets, shall be provided for all paved ditches until the permanent concrete liner is installed.

16. Paved ditches shall be required wherever erosion is evident. Particular attention shall be paid to those areas where grades exceed 3 percent.

17. Temporary erosion control measures are not to be removed until all disturbed areas are stabilized. After stabilization is complete, all measures shall be removed within 30 days. Trapped sediment shall be spread and seeded.

18. As-built drawings must be provided for all detention/BMP facilities. Also upon completion, the construction of all detention/BMP facilities shall be certified by a professional engineer who inspected the structure during construction. The certification shall state that to the best of his/her judgment, knowledge, and belief, the structure was constructed in accordance with the approval plans and specifications.

COMMONWEALTH OF VIRGINIA
Robert A. Gourley, Jr.
No. 11822
1-30-95
PROFESSIONAL ENGINEER

COUNTY OF JAMES CITY
FINAL SITE PLAN

	APPROVED	DATE
	AGO/MAF	1/11/95
	VSI/MAF	8/19/94
	RCO/MAF	12/28/94
	ABM	1/20/95
	DEC/MAF	1/18/95
	B3	1/26/95
	KD/MAF	1/19/95
	WBL/MAF	9/6/94
Other		

R and ASSOCIATES

OFESSIONAL CORPORATION
ERS-SURVEORS-PLANNERS
WARWICK BOULEVARD
EWPORT NEWS, VA. 23602

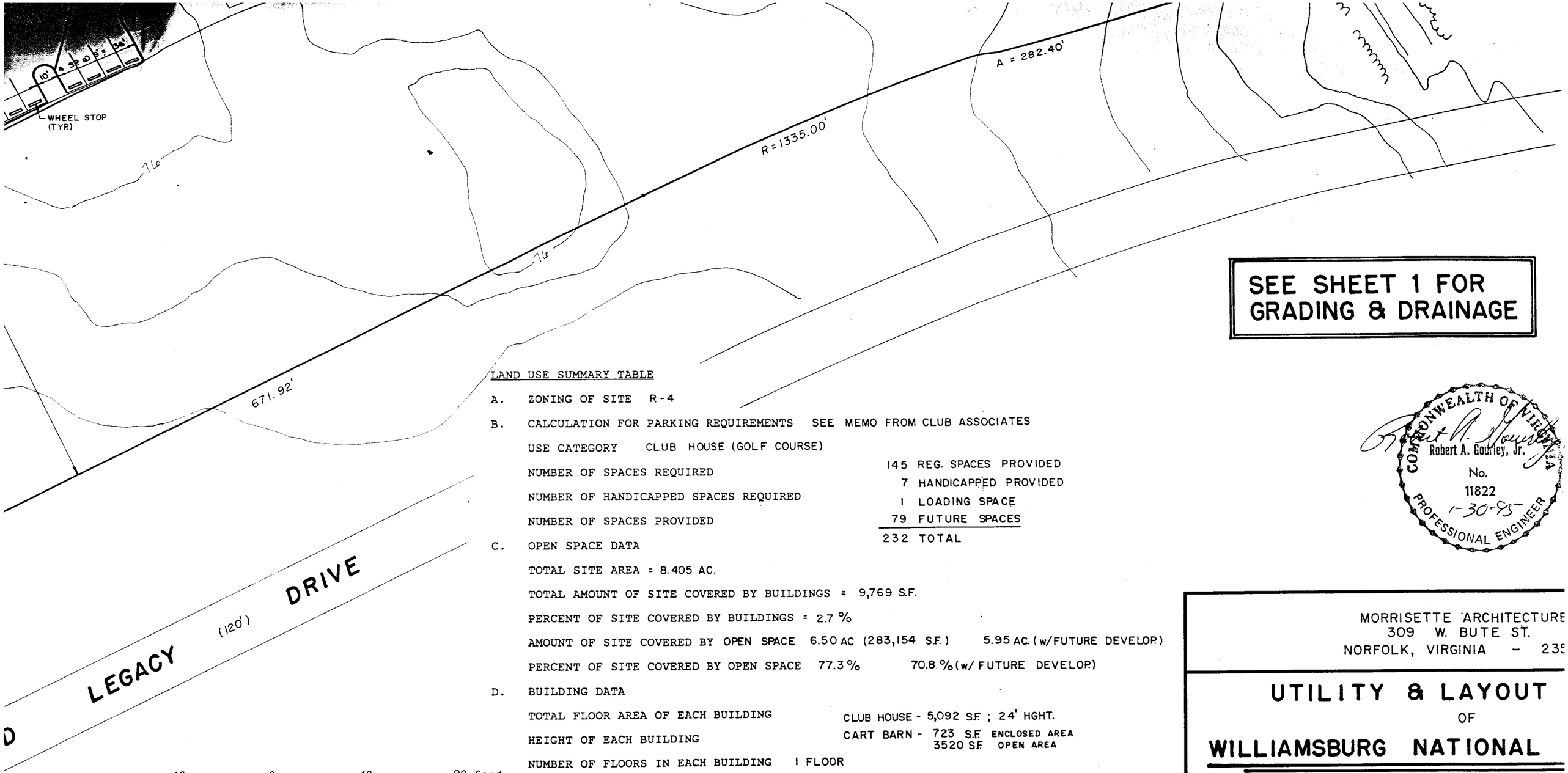
OWNER:

CLUB DEVELOPMENT ASSOCIATES, INC.
P.O. BOX 3230
PINEHURST, NORTH CAROLINA - 28374

REV. 12-7-94 : ADDED AND CHANGED NOTES

Note packet 2-c

SP-91-94



SEE SHEET 1 FOR GRADING & DRAINAGE

LAND USE SUMMARY TABLE

A. ZONING OF SITE R-4

B. CALCULATION FOR PARKING REQUIREMENTS SEE MEMO FROM CLUB ASSOCIATES

USE CATEGORY CLUB HOUSE (GOLF COURSE)

NUMBER OF SPACES REQUIRED	145 REG. SPACES PROVIDED
NUMBER OF HANDICAPPED SPACES REQUIRED	7 HANDICAPPED PROVIDED
	1 LOADING SPACE
NUMBER OF SPACES PROVIDED	79 FUTURE SPACES
	232 TOTAL

C. OPEN SPACE DATA

TOTAL SITE AREA = 8.405 AC.

TOTAL AMOUNT OF SITE COVERED BY BUILDINGS = 9,769 S.F.

PERCENT OF SITE COVERED BY BUILDINGS = 2.7 %

AMOUNT OF SITE COVERED BY OPEN SPACE 6.50 AC (283,154 S.F.) 5.95 AC. (w/FUTURE DEVELOP.)

PERCENT OF SITE COVERED BY OPEN SPACE 77.3 % 70.8 % (w/ FUTURE DEVELOP.)

D. BUILDING DATA

TOTAL FLOOR AREA OF EACH BUILDING CLUB HOUSE - 5,092 S.F. ; 24' HGHT.

HEIGHT OF EACH BUILDING CART BARN - 723 S.F. ENCLOSED AREA
3520 S.F. OPEN AREA

NUMBER OF FLOORS IN EACH BUILDING 1 FLOOR

TYPE 5B CONSTRUCTION
USE GROUP A3

E. IMPERVIOUS AREA 1.90 AC (82,968 S.F.) = 22.7 %
2.45 AC (107,028 S.F.) = 29.2 % w/FUTURE DEVELOPMENT

COMMONWEALTH OF VIRGINIA
Robert A. Gourley, Jr.
No. 11822
1-30-95
PROFESSIONAL ENGINEER

MORRISETTE ARCHITECTURE
309 W. BUTE ST.
NORFOLK, VIRGINIA - 235

UTILITY & LAYOUT
OF
WILLIAMSBURG NATIONAL
CLUB HOUSE

JAMES CITY COUNTY

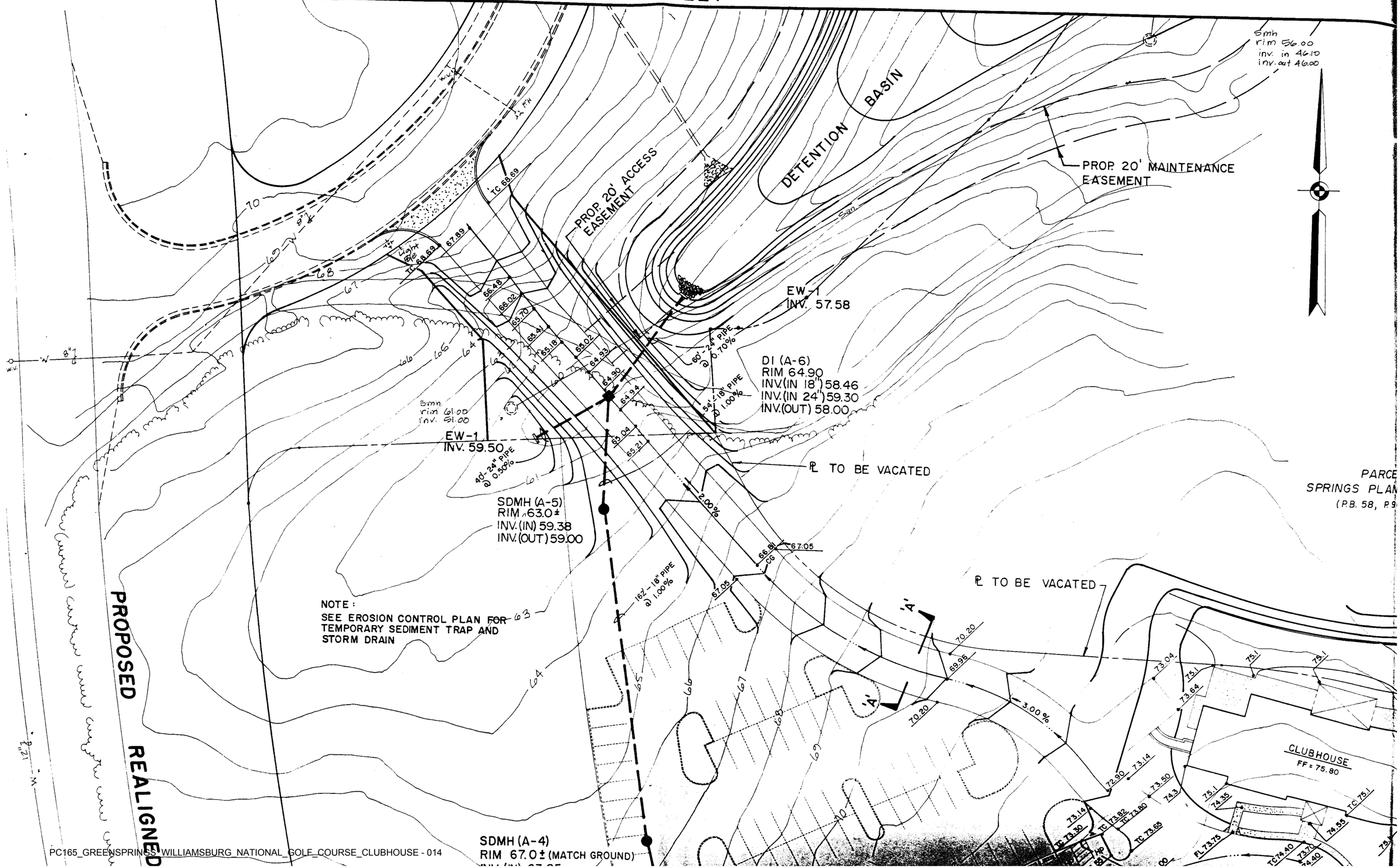
BASGIER AND ASSOCIATI
A PROFESSIONAL CORPORATION
CONSULTING ENGINEERS–SURVEYORS–PLANNERS
VIRGINIA BEACH, VIRGINIA

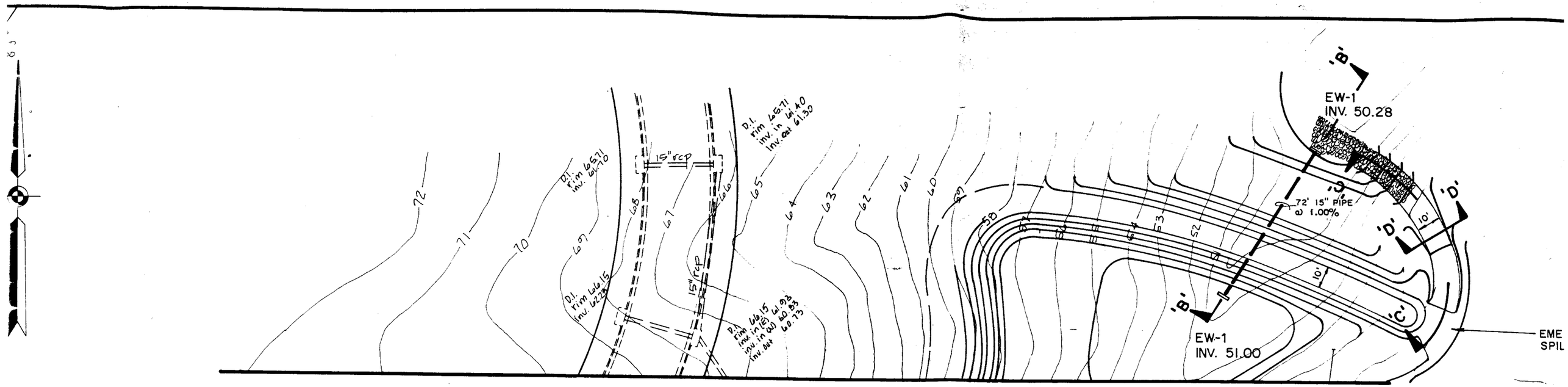
No.	DATE	DESCRIPTION
3	01-25-95	COUNTY COMMENTS
2	01-10-95	COUNTY COMMENTS
1	12-7-94	REVISED LAYOUT AND APPURTENANCES

REVISIONS

DES. BY: R.A.G.	SCALE: 1" = 40'	REFERENCE BOOK
DRN. BY: M.C.H/M.R.L.		
CHK'D. BY: W.E.U.	DATE: 8-3-94	J.O. 294153

MATCH LINE - THIS SHEET

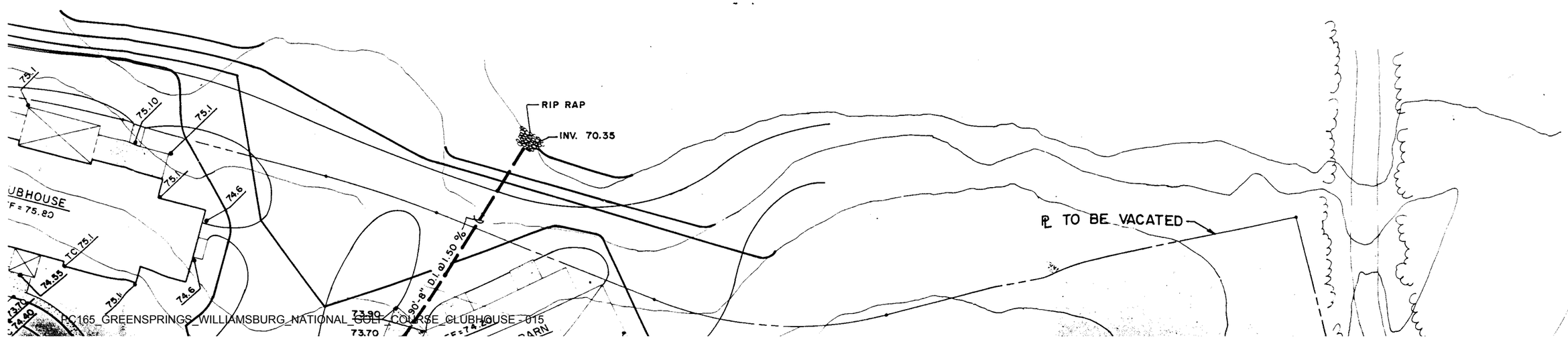


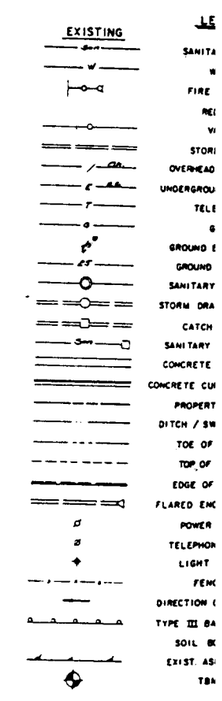


MATCH LINE - THIS SHEET

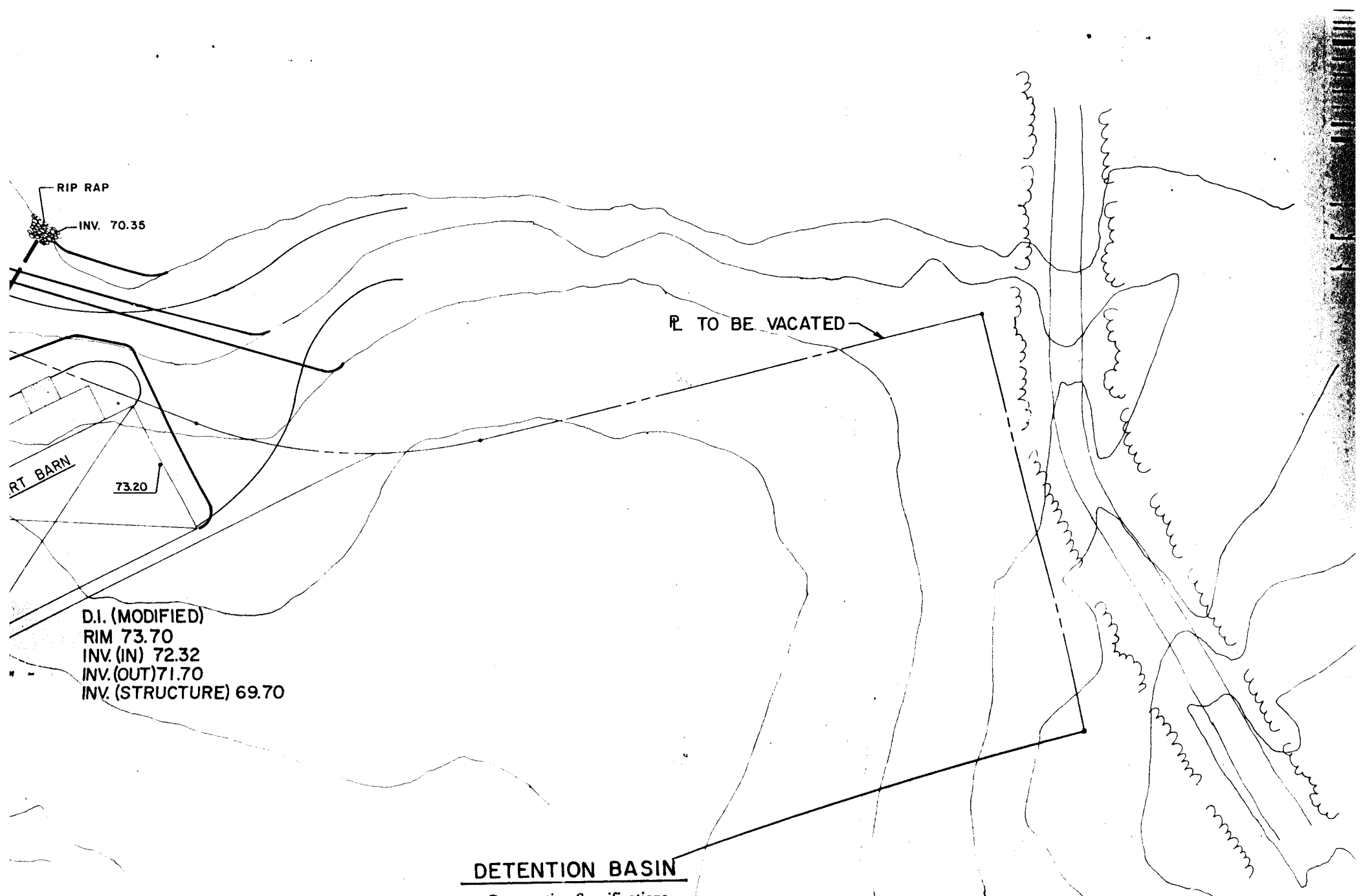
NOTE: SEE SHEET 4 FOR SECTION DETAILS.

PARCEL F
SPRINGS PLANTATION, INC.
(P.B. 58, P. 96-102)





FC165_GREENSPRINGS_WILLIAMSBURG_NATIONAL_GOLF_COURSE_CLUBHOUSE - 015



DETENTION BASIN

Construction Specifications

Site Preparation

Areas under the embankment or any structural works related to the basin shall be cleared, grubbed, and stripped of topsoil to remove trees, vegetation, roots, or other objectionable material. In order to facilitate cleanout and restoration, the area of most frequent inundation (measured from the top of the principal spillway) will be cleared of all brush and trees.

Cutoff Trench

For earth-fill embankments, a cutoff trench shall be excavated along the centerline of the dam. The trench must extend at least 1 foot into a stable, impervious layer of soil and have a minimum depth of 2 feet. The cutoff trench shall extend up both abutments to the riser crest elevation. The minimum bottom width shall be 4 feet, but also must be wide enough to permit operation of compaction equipment. The side slopes shall be no steeper than 1:1.

Compaction requirements shall be the same as those for the embankment. The trench shall be drained during the backfilling/compacting operations.

Embankment

The fill material shall be taken from approved borrow areas. It shall be clean mineral soil, free of roots, woody vegetation, stumps, sod, oversized stones, rocks, or other perishable or objectionable material. The material selected must have enough strength for the dam to remain stable and be tight enough, when properly compacted, to prevent excessive percolation of water through the dam. Fill containing particles ranging from small gravel or coarse sand to fine sand and clay in desired proportion is appropriate. Any embankment material should contain approximately 20% clay particles by weight. Using the Unified Soil Classification System, SC (clayey sand), GC (clayey gravel) and CL ("low liquid limit" clay) are among the preferred types of embankment soils. Areas on which fill is to be placed shall be scarified prior to placement of fill. The fill material should contain the proper amount of moisture to ensure that 95% compaction will be achieved. Fill material will be placed in 6-inch continuous layers over the entire length of the fill. Compaction shall be obtained by routing the hauling equipment over the fill so that the entire surface of the fill is transversed by at least one wheel or tread track of the equipment, or by using a compactor. Special care shall be taken in compacting around the anti-seep collars (compact by hand, if necessary) to avoid damage and achieve desired compaction. The embankment shall be constructed to an elevation 10% higher than the design height to allow for settlement if compaction is obtained with hauling equipment. If compactors are used for compaction, the overbuild may be reduced to not less than 5%.

Emergency Spillway

Vegetative emergency spillways shall not be constructed over fill material. Design elevations, widths, entrance and exit channel slopes are critical to the successful operation of the spillway and should be adhered to closely during construction.

Vegetative Stabilization

The embankment and emergency spillway shall be stabilized with temporary or permanent vegetation immediately after installation of the basin (see TEMPORARY SEEDING, Std. & Spec. 3.31 or PERMANENT SEEDING, Std. & Spec. 3.32).

SEE SHEE
UTILITY &

COMMONWEA
Robert
PROFESSIO

MORRISETTE
309 W. B
NORFOLK, VIRGI

GRADING & DRA
O
WILLIAMSBURG NAT
CLUB

JAMES CITY COUNTY

BASGIER AND
A PROFESSIONAL
CONSULTING ENGINEERS-
VIRGINIA BEAC

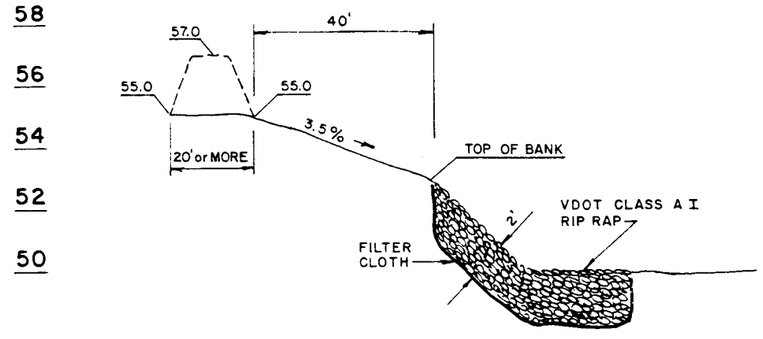
NO.	DATE	DESCRIPTION
3	01-25-95	COUNTY COMMENTS
2	01-10-95	COUNTY COMMENTS
1	12-7-94	REVISED LAYOUT AND APPURTENANCES

REVISIONS

DES. BY: R.A.G.
DRN. BY: M.C.H./M.R.L.
CHK'D. BY: W.E.U.

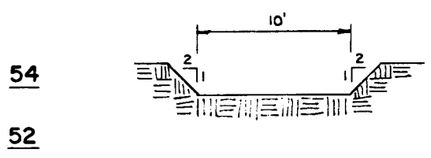
SCALE: 1" = 40'
DATE: 8-3-94

SEWER CLEANOUT DETAIL



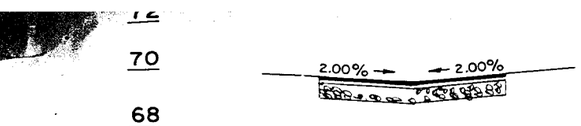
SECTION 'C'-'C'

SCALE : 1" = 40' (HORZ.)
1" = 5' (VERT.)



SECTION 'D'-'D'

SCALE : 1" = 10' (HORZ.)
1" = 5' (VERT.)

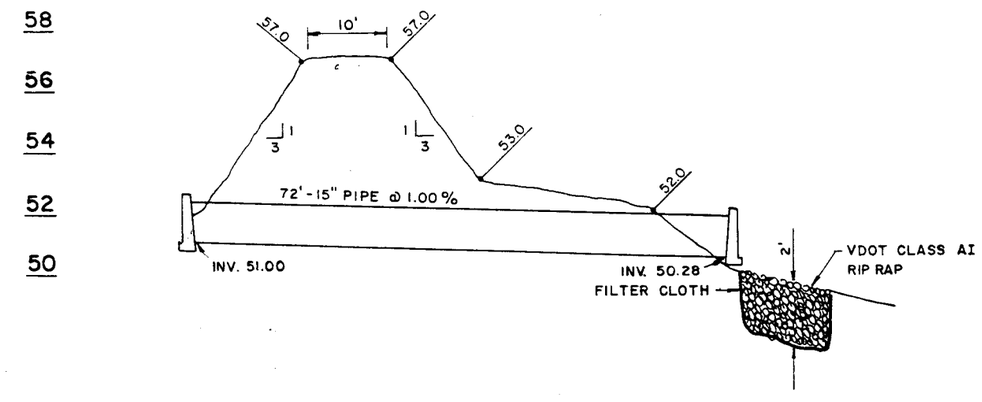


SECTION 'A'-'A'

SCALE: 1" = 20' (HORZ.)
1" = 5' (VERT.)

DRIVE & DRIVE AISLES	PARKING
1" SM-1 over	2" S
2" IM-1A over	6" A
6" AGGREGATE BASE	

PAVEMENT SECTION



SECTION 'B'-'B'

SCALE : 1" = 20' (HORZ.)
1" = 5' (VERT.)

No.	DATE	
3	01-25-95	COUNTY COMM
2	01-10-95	COUNTY COMM
1	12-7-94	REVISED AND

Revised 11/28/94

Problem: Design a detention basin such that post development peak 2 yr. Q does not exceed pre development peak 2 yr. Q

Existing Conditions (information provided by Langley & McDonald)

17.05 Ac C = 0.20

T_c = 200' overland flow = 21.5 min
460' shallow concentrated = 8.0 min.
400' channel @ 2 ft/sec = 3.3 min
Total T_c = 32.8 min.

For T_c = 32.8 min I_2 = 2.53 (Richmond intensity curves

Existing peak Q_2 = (17.05)(0.20)(2.53) = 8.66 cfs.

Developed Conditions (information provided by Langley & McDonald)

Description	Area (acres)	C	CA
Subdivision (w. side 614)	7.62	0.4	3.048
150' buffer	3.40	0.20	0.680
Club house parking lot	2.95	0.82	2.419
Club house (ravine side)	0.73	0.50	0.365
Neighborhood Recreation Area	1.18	0.50	0.590
Road "B" (Buffer side)	0.96	0.29	0.283
Road "B" (Fill Section)	0.21	0.77	0.161
	17.05		7.542

T_c = typical lot - 150' = 14.5 min
time in pipe to 614 = 5.1 min.
400' channel @ 2 ft/sec = 3.5 min
22.9 min.

WEIGHTED C = 0.44
≈ IMPERV = 30%

Revised 11/28/94

For $T_c = 22.9$ min.

$I_2 = 3.15$ Richmond storm

$I_{25} = 4.8$ } Norfolk storm - 1991
$I_{100} = 5.9$ } using $T_c = 20$ min as per original calcs before revision

Post development Q's

$Q_2 = 3.15\ (7.542) = 23.7$ cfs

$Q_{25} = 4.8\ (7.542) = 36.2$ cfs

$Q_{100} = 5.9\ (7.542) = 44.5$ cfs

Determine Detention Basin Volumes

Elev (ft)	Area (in²)	Area (ft²)	Avg. Area (ft²)	Rise (ft)	Incremental Volume (ft³)	Cumulative Volume (ft³)
51	0	0				0
			2,096	1	2,096	
52	2.62	4,192				2,096
			7,080	1	7,080	
53	6.23	9,968				9,176
			11,824	1	11,824	
54	8.55	13,680				21,000
			15,768	1	15,768	
55	11.16	17,856				36,768
			19,408	1	19,408	
56	13.10	20,960				56,176
			22,400	1	22,400	
57	14.90	23,840				78,576
			25,800	1	25,800	
58	17.35	27,760				104,376

PROJECT: Williamsburg

DESIGNER: _____

DATE: _____

HYDROLOGIC AND CHANNEL INFORMATION

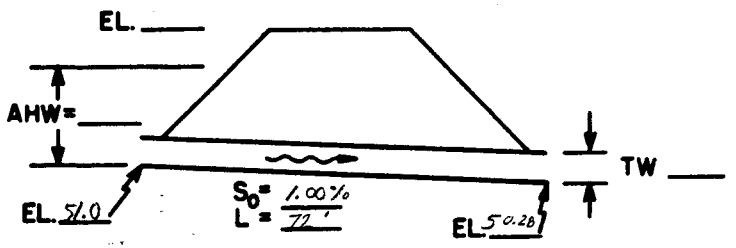
Q_1 = _____ TW_1 = _____

Q_2 = _____ TW_2 = _____

(Q_1 = DESIGN DISCHARGE, SAY Q_{25}
Q_2 = CHECK DISCHARGE, SAY Q_{50} OR Q_{100})

SKETCH

STATION : _____



MEAN STREAM VELOCITY = _____

MAX. STREAM VELOCITY = _____

CULVERT DESCRIPTION (ENTRANCE TYPE)	Q	SIZE	HEADWATER COMPUTATION										CONTROLLING HW	OUTLET VELOCITY	COST	COMMENTS
			INLET CONT.		OUTLET CONTROL $HW=H+h_o-LS_o$											
			$\frac{HW}{D}$	HW	K_e	H	d_c	$\frac{d_c+D}{2}$	TW	h_o	LS_o	HW				
	2.9	15	0.8	1.0	0.5				-				1.0	5.5		
	7.0	15	1.6	2.0	0.5	1.5	1	1.13	-	1.13	0.72	1.91	2.0	5.5		
	9.0	15	2.4	3.0	0.5	2.4	1.2	1.23	-	1.23	0.72	2.91	3.0	7.0		
	11.0	15	3.2	4.0	0.5	3.8	1.25	1.25	-	1.25	0.72	4.33	4.33	8.5		
	13.0	15	4.0	5.0	0.5	5.0	1.25	1.25	-	1.25	0.72	5.53	5.53	10.0		
	14.5	15	4.8	6.0	0.5	6.7	1.25	1.25	-	1.25	0.72	7.23	7.23	10.5		
	15.5	15	5.6	7.0	0.5	7.2	1.25	1.25	-	1.25	0.72	7.73	7.73	11		

SUMMARY & RECOMMENDATIONS:

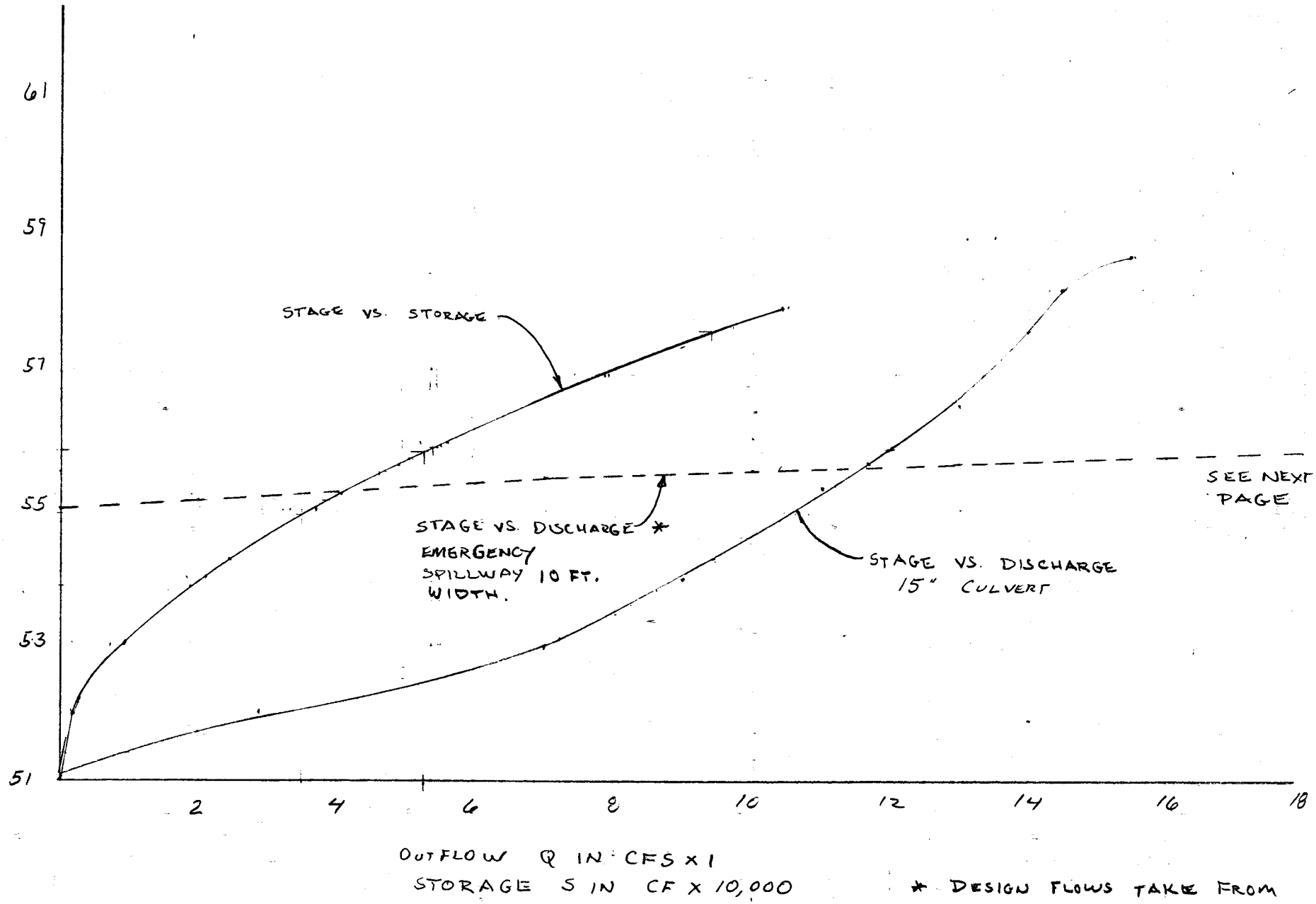
STAGE VS. DISCHARGE

Figure 7

4/20

11/11/94

Revised 12-7-94
Weir Graphed

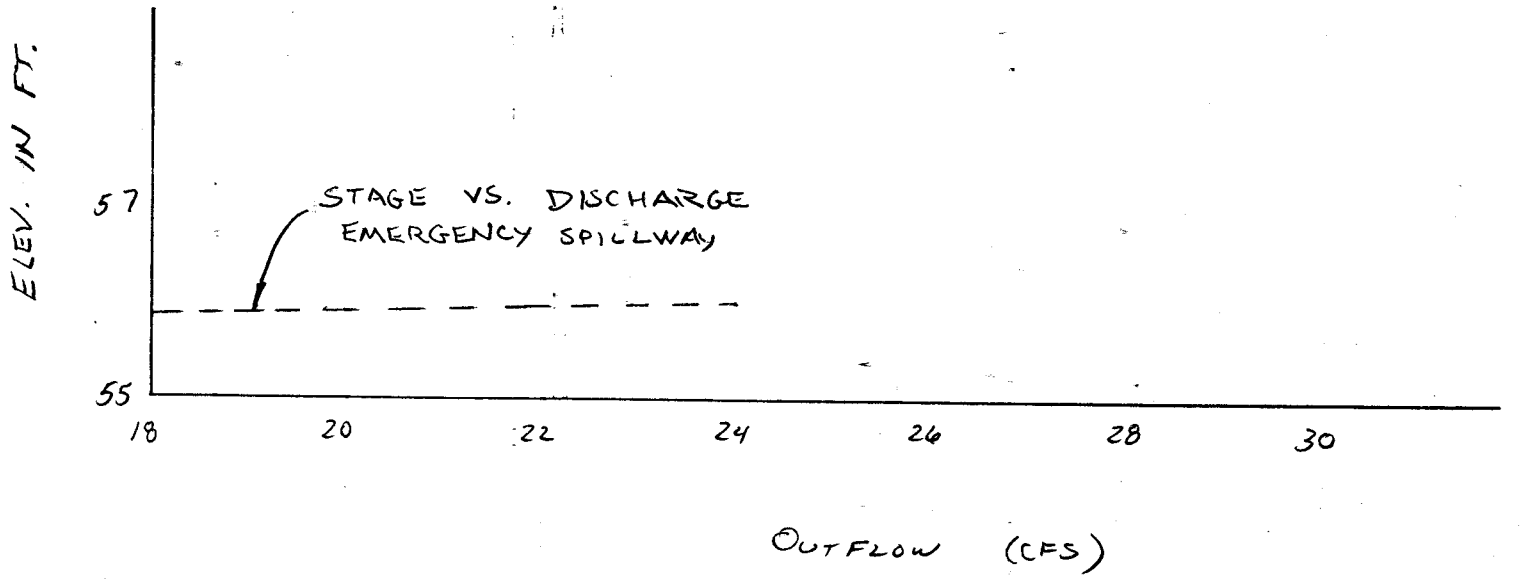


* DESIGN FLOWS TAKE FROM TABLE 3.14-C, VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK, THIRD EDITION.

AMPAD 22-141 50 SHEETS 22-142 100 SHEETS 22-144 200 SHEETS

5/20

12-7-94



AMPAD 22-141 50 SHEETS 22-142 100 SHEETS 22-144 200 SHEETS

Revised 11/28/94

Determine Inflow Hydrographs

Per Pagan Method $T_p = T_c$ $T_b = 2.67\ T_p$

From Langley & McDonald $T_c = 22.9$ min Developed

$\therefore T_p = 22.9$ min.
$T_b = 61$ min.

For $T_c = 22.9$ min $I = 3.15$

Developed $CA = 7.54$ as per Langley & McDonald

Developed $Q_2 = 7.54 \times 3.15 = 23.7$ cfs peak inflow

1981 Norfolk Intensity Curves for $T_c = 20$ min.

Developed $I_{25} = 4.8$ Developed $Q_{25} = (7.54)4.8 = 36.2$ cfs

Developed $I_{100} = 5.9$ Developed $Q_{100} = (7.54)5.9 = 44.5$ cfs

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD

Revised 12-7-94
Emergency Spillway Added

Calculate 2 S/t + "O" based on $\Delta t = 5$ min = 300 sec. for 15" culvert

Outflow "O" (cfs)	Storage "S" cf	2 S/t	2S/t + "O"
1	1000	6.7	8
2	1500	10.0	12.
4	2500	16.7	21
6	6000	40.0	46.
8	15,000	100.0	108.
10	30,000	200.0	210.
12	53,500	356.7	368.7
14	94,000	626.7	640.7

Calculate 2 S/t + "O" based on $\Delta t = 5$ min = 300 sec. for emergency spillway

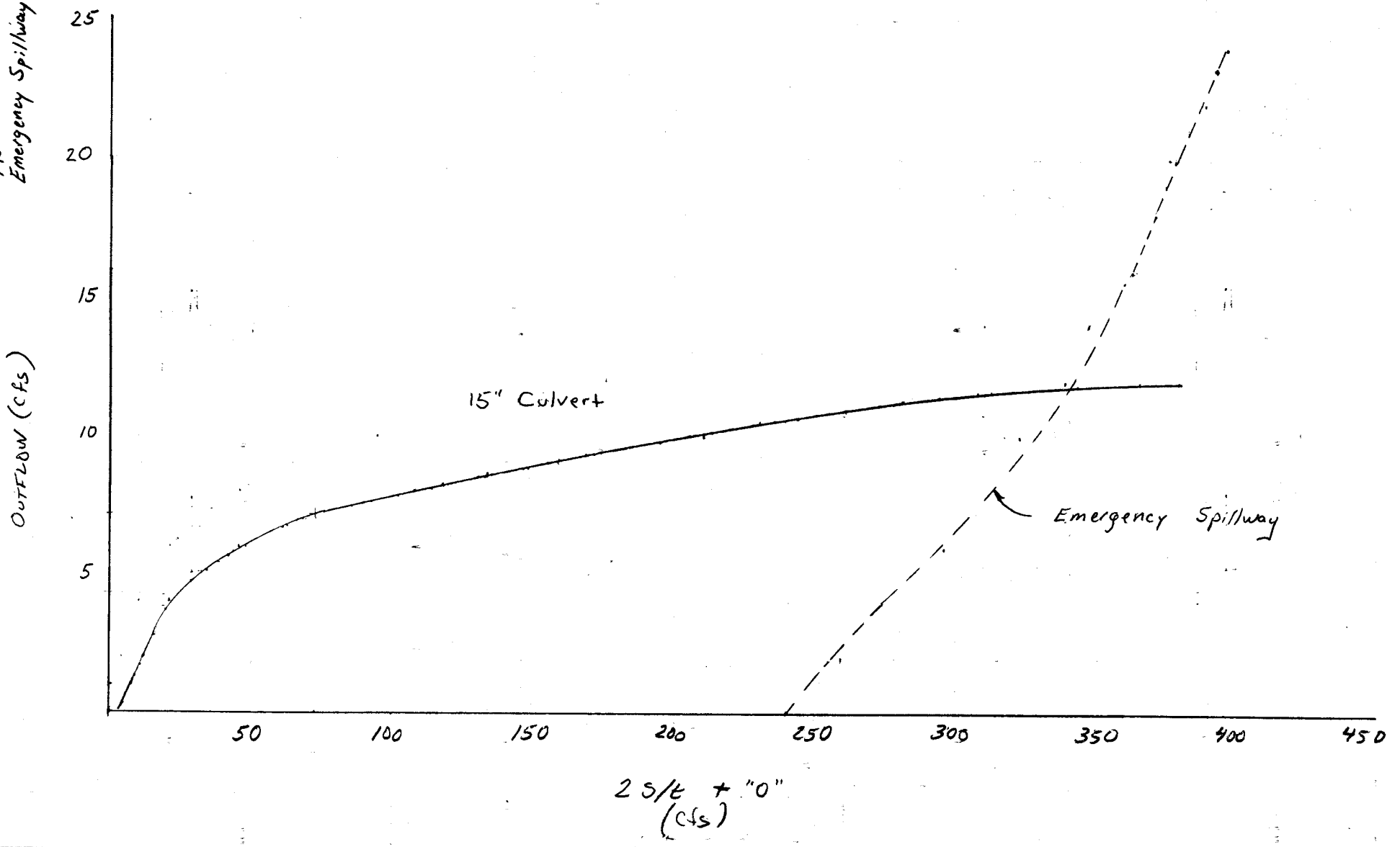
Outflow "O" (cfs)	Storage "S" cf	2 S/t	2S/t + "O"
0	36,000	240	240
2	38,500	257	259
4	40,500	270	274
6	43,500	290	296
8	46,000	307	315
10	47,000	313	323
12	49,000	327	339
14	50,000	333	347
16	52,000	347	363
18	53,000	353	371
20	53,500	357	377
22	55,000	367	389
24	56,000	373	397

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD

8/20

11/11/94

Revised 12-7-94
Emergency Spillway Added



AMPAD
22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD

2 yr Routing

Time (min)	Inflow 'I' (cfs)	2s/t - "O" (cfs)	2s/t + "O" (cfs)	Outflow "O" (cfs)
0	0	0	0	0
5	5.1	4.5	5.1	0.3
10	10.2	12.4	19.8	3.7
15	15.3	27.1	37.9	5.4
20	20.6	49.4	63.0	6.8
25	22.4	77.0	92.4	7.7
30	19.4	102.4	118.8	8.2
35	16.2	120.6	138.0	8.7
40	13.1	132.1	149.9	8.9
45	10.0	137.2	155.2	9.0 ← PEAK
50	6.8	136	154.0	9.0
55	3.8		146.6	8.8

Peak 2s/t = 155.2 - 9.0 = 146.2

2s = 146.2 × 300 = 43,860

∴ s = 21,930 ft³

Elev = 54.1

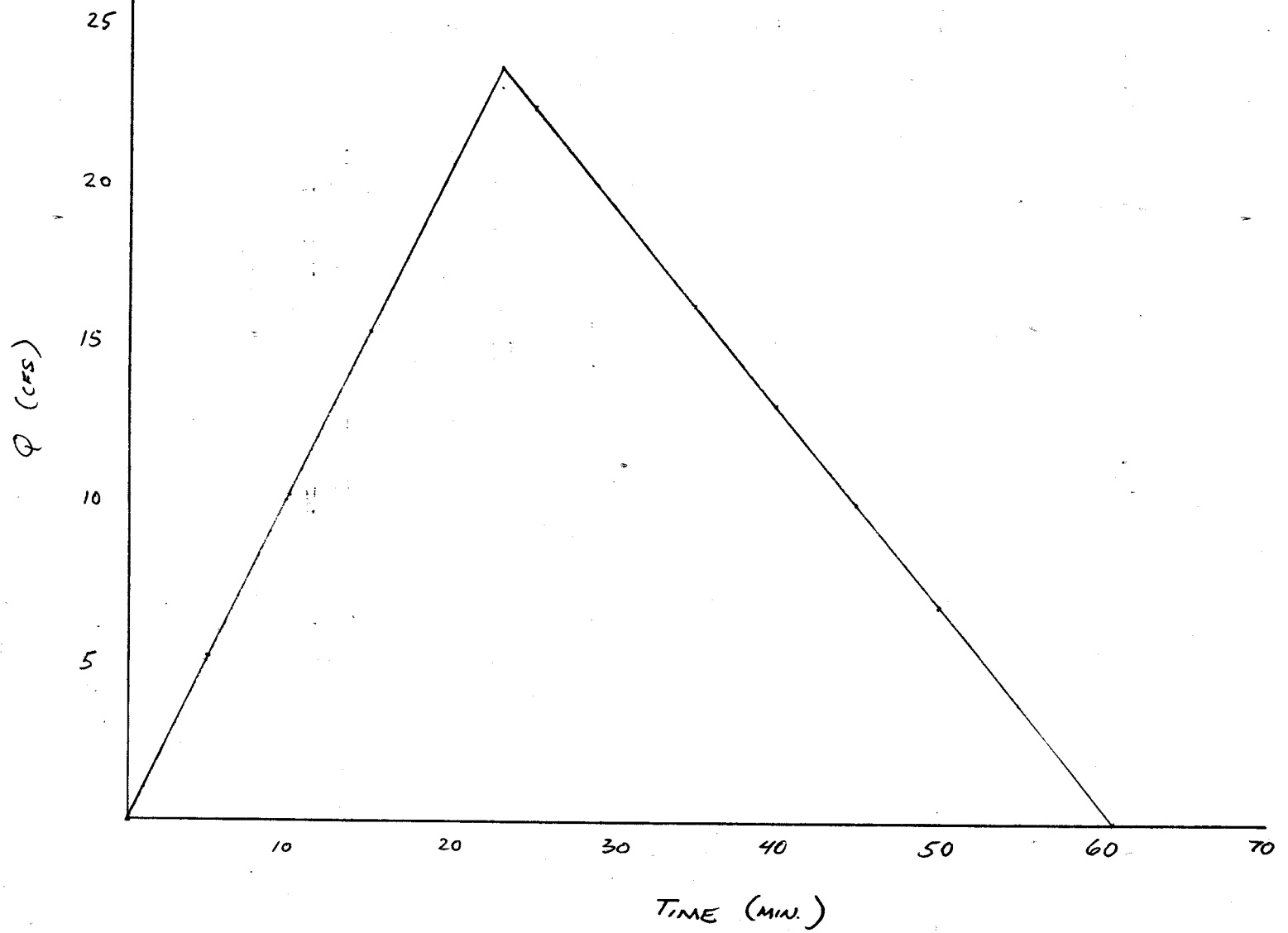
Predevelopment Q = 8.7 cfs

8.7 cfs (x) = 9.0

x = 1.034

∴ Post development Q is within 3.4% of predevelopment Q.

AMPAD 22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS



2 YR HYDROGRAPH

11/28/94

Critical 2 yr storm

$$T_c = \sqrt{\frac{2CA_a(b - t_c/4)}{q_o}} - b$$

$$T_c = \sqrt{\frac{2(7.542)(130.3)(18.5 - 22.9/4)}{8.7}} - 18.5$$

$T_c = 35.2$

$I = 2.43$

Peak 2yr. Critical Storm $Q = 2.43 \times 7.542 = 18.3$ cfs

Time (min)	Inflow "I" (cfs)	2S/t - "O" (cfs)	2S/t + "O" (cfs)	Outflow "O" (cfs)
0	0	0	0	0
5	4	3.6	4	0.2
10	8	10.0	15.6	2.8
15	11.9	20.3	29.9	4.8
20	15.9	36.1	48.1	6.0
25	18.3	56.1	70.3	7.1
30	18.3	77.3	92.7	7.7
35	18.3	97.7	113.9	8.1
40	16.8	115.8	132.8	8.5
45	15.3	130.3	147.9	8.8
50	13.7	141.1	159.3	9.1
55	12.2	148.4	167.0	9.3
60	10.6	152.4	171.2	9.4
65	9.0	153.2	172	9.4 ← PEAK
70	7.5		169.7	9.3

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD

2 yr. Critical Storm cont.

Peak $2s/t = 172 - 9.4 = 162.6$

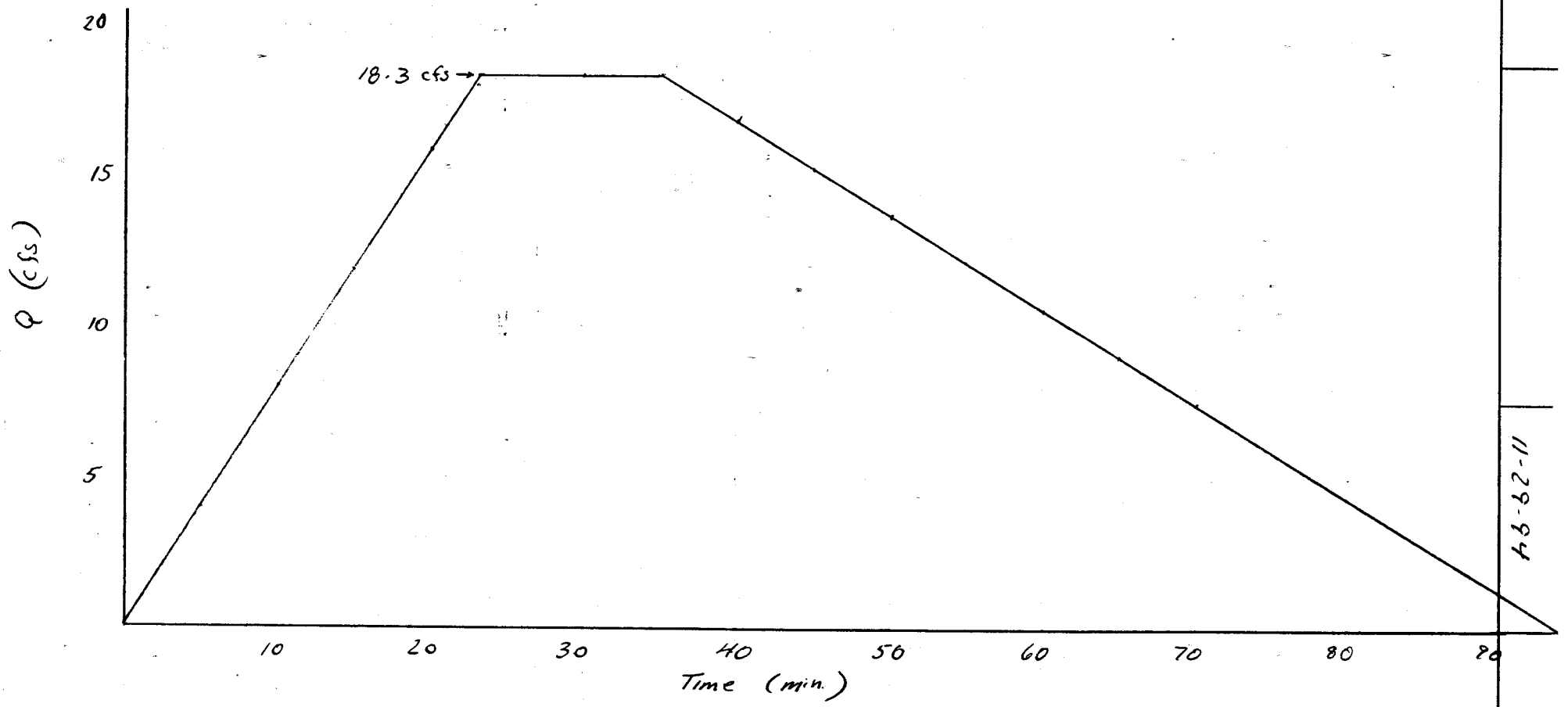
$2s = 162.6(300) = 48,780$

$s = 24,390 \text{ ft}^3$

Elev = 54.3

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD

AMPAD 22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS



2 yr. Critical Storm

43-82-11

25 yr. Routing

Time (Min.)	Inflow "I" (cfs)	2S/t - "O" (cfs)	2S/t + "O" (cfs)	Outflow "Q" (cfs)
0	0	0	0	0
5	9	6.4	9	1.3
10	18	23.2	33.4	5.1
15	27.3	54.5	68.5	7.0
20	36.2	101.6	118.0	8.2
25	30.5	149.7	168.3	9.3
30	25.3	185.5	205.5	10
35	19.7	209.5	230.5	10.5
40	14.3	222.1	243.5	10.7
45	8.6	223.4	245.0	10.8 ← PEAK
50	3.2		235.2	10.6

Peak 2s/t = 245 - 10.8 = 234.2

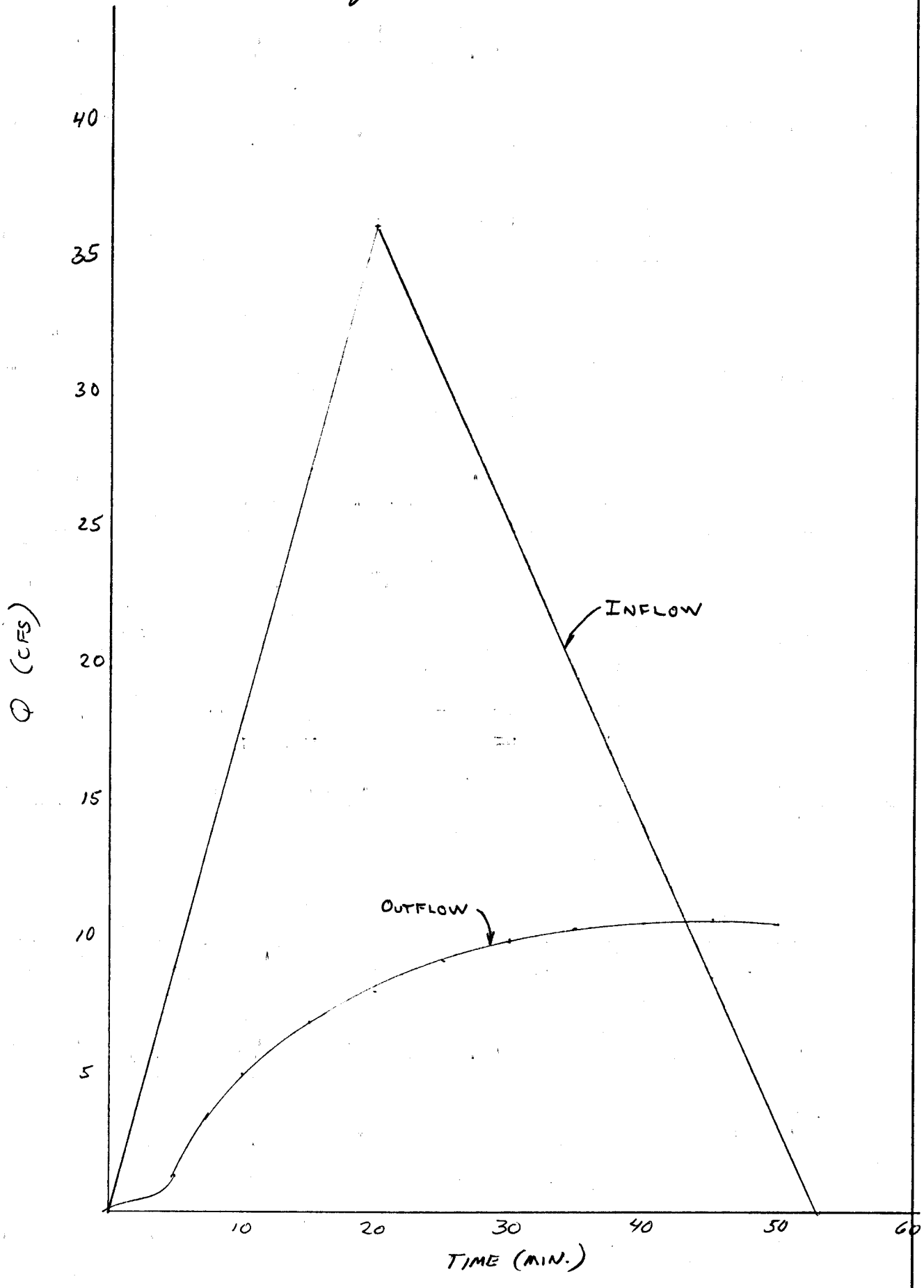
2s = 234.2 x 300 = 70,260

∴ S = 35,130

Elev = 54.9

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD



25 YR.

100 Yr. Routing

Time (min.)	Inflow "I" (cfs)	2S/t - "O" (cfs)	2S/t + "O" (cfs)	Outflow "Q" (cfs)
0	0	0	0	0
5	11.4	8.0	11.4	1.7
10	22.3	30.3	41.7	5.7
15	33.3	70.9	85.9	7.5
20	44.5	130.9	148.7	8.9
25	37.5	192.5	212.9	10.2
30	31.0	239.2	261.0	10.9
35	24.0	271.4	294.2	11.4
40	17.3	289.5	312.7	11.6
45	10.5	293.90	317.3	11.7 ⇐ Peak
50	4.0		308.4	11.6

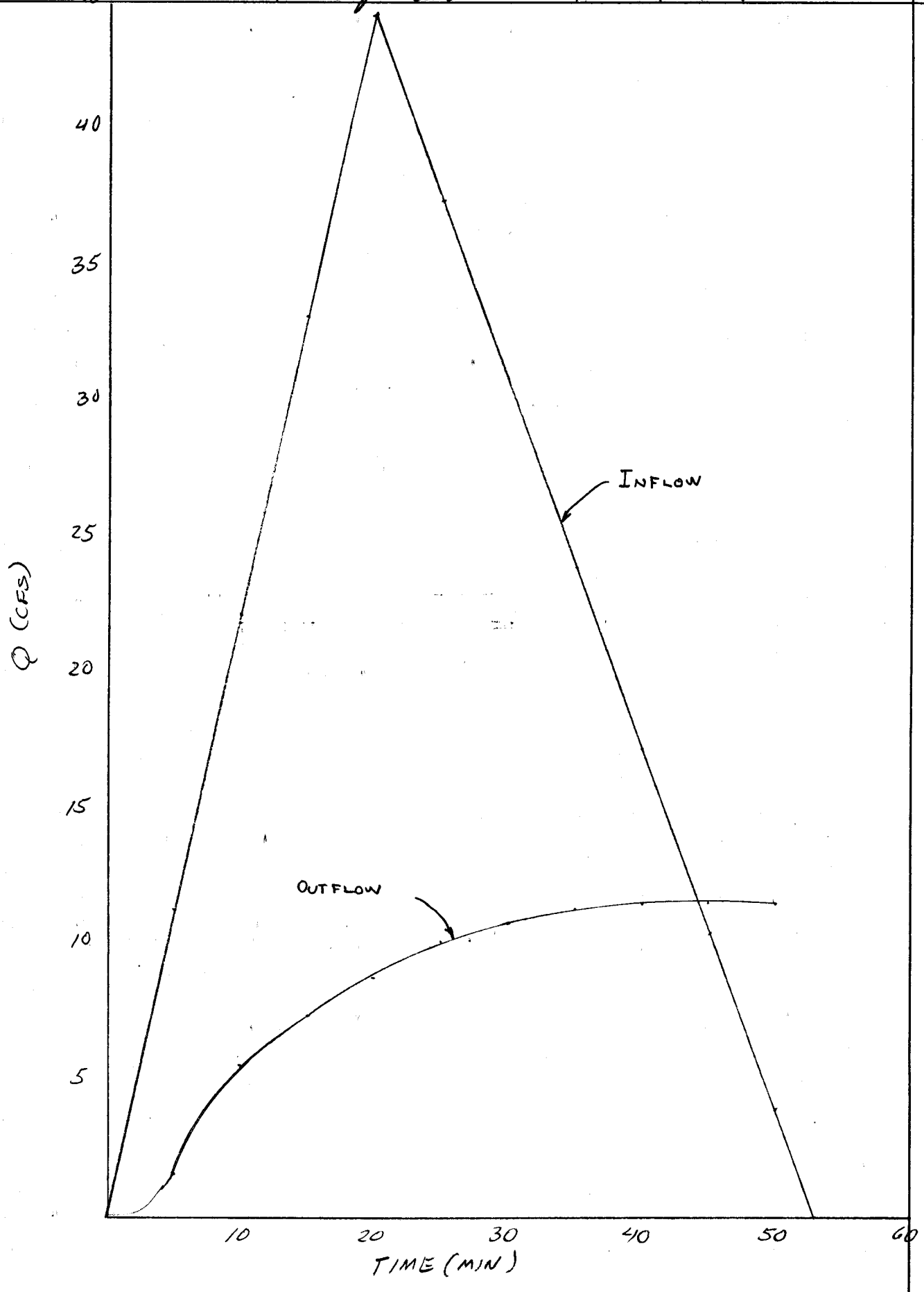
Peak 2S/t = 317.3 - 11.7 = 305.6

2S = 305.6 x 300 = 91,680

∴ S = 45,840

Elev = 55.7 DHW

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD



100 YR

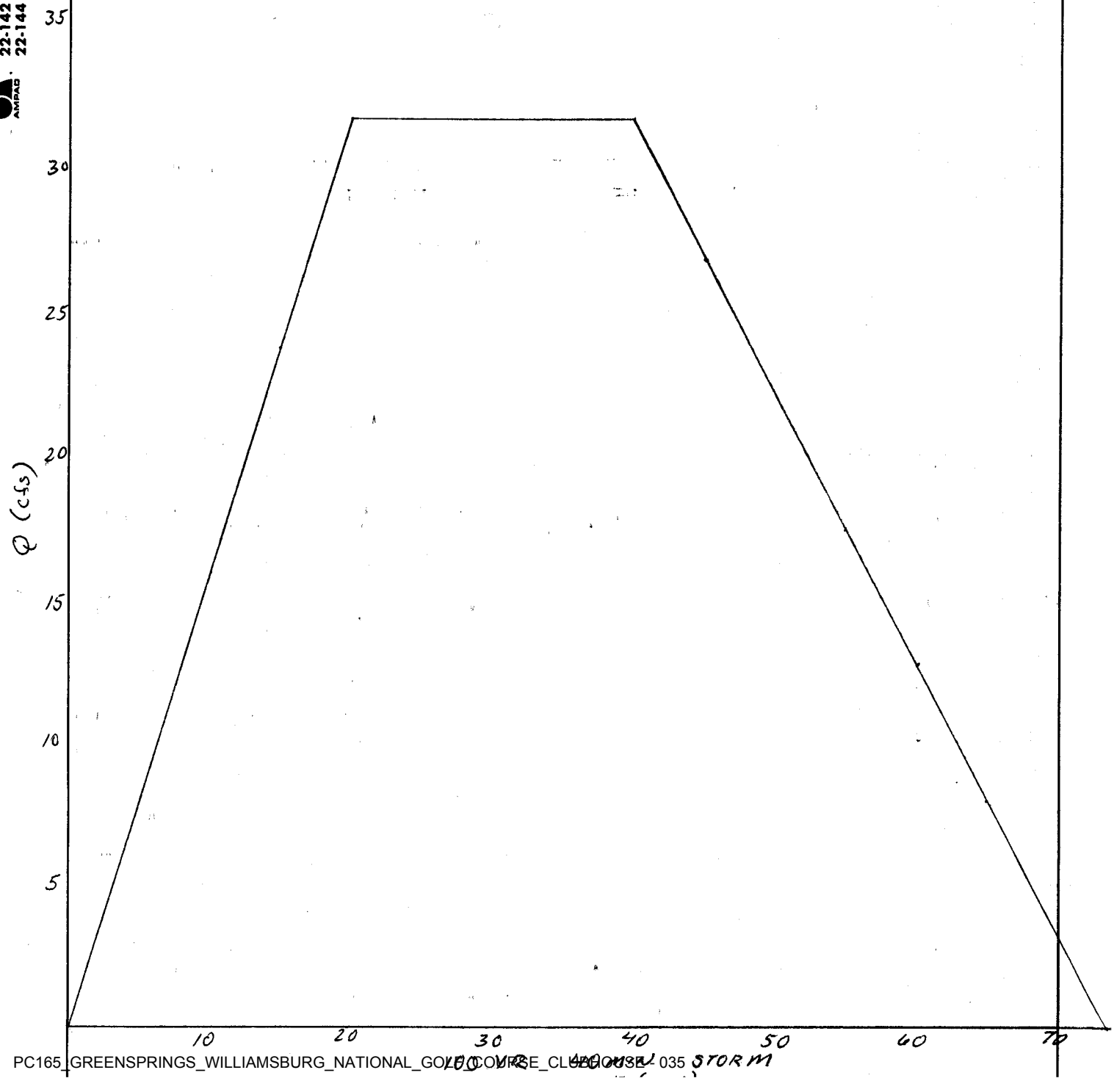
22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD

Check adequacy of Detention Basin for longer duration storm of 40 min. 100 yr. event.

For 40 min storm $I_{100} = 4.2$

$Q = (7.54)4.2 = 31.7$ cfs

$T_b = 40\,min + 1.67\,T_p = 40\,min + 1.67(20) = 73.4$ min.



22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD

100 yr. Routing of 40 min. storm
Using Only 15" Culvert

Time (min)	Inflow "I" (cfs)	2S/t - "O" (cfs)	2S/t + "O" (cfs)	Outflow "Q" (cfs)
0	0	0	0	0
5	8	6	8	1.0
10	15.9	20.5	29.9	4.7
15	23.7	46.7	60.1	6.7
20	31.7	86.3	102.1	7.9
25	31.7	131.9	149.7	8.9
30	31.7	175.7	195.3	9.8
35	31.7	217.90	239.1	10.6
40	31.7	258.9	281.3	11.2
45	26.8	294.2	317.40	11.6
50	22.0	319.4	343.0	11.8
55	17.4	335.0	358.8	11.9
60	12.6	341.0	365.0	12.0 ⇐ PEAK
65	7.9	337.7	361.5	11.9
70	3.2		348.8	11.9

Peak 2S/t = 365 - 12 = 353

2S = 353 x 300 = 105,900 CF
∴ S = 52,950 CF
Elev = 55.9

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD

100 yr Routing of 40 min storm

Using only emergency spillway

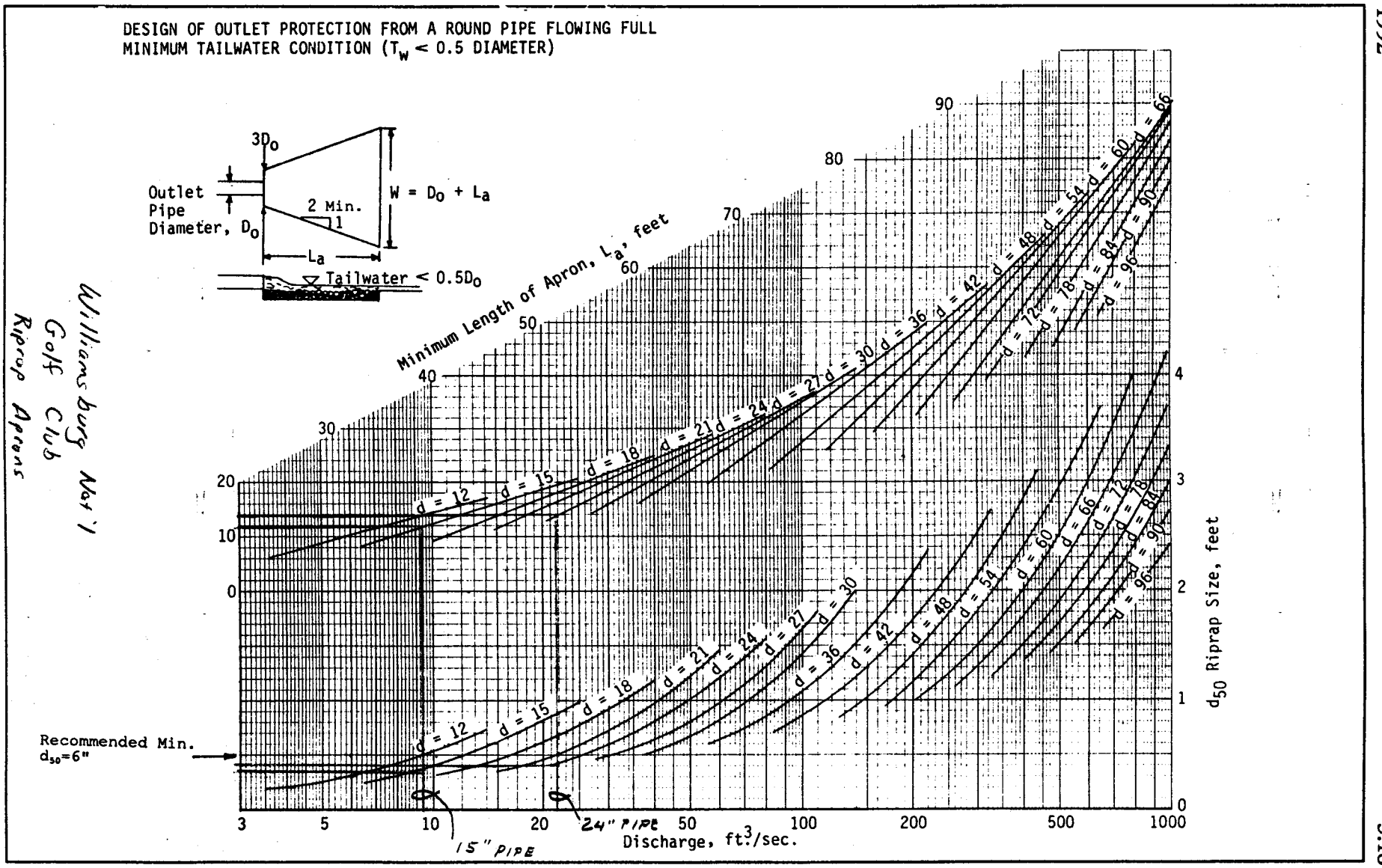
Time (min)	Inflow "I" (cfs)	2s/t - "O" (cfs)	2s/t + "O" (cfs)	Outflow "Q" (cfs)
0	0	0	0	0
5	8	8	8	0
10	15.9	31.9	31.9	0
15	23.7	71.5	71.5	0
20	31.7	126.9	126.9	0
25	31.7	190.3	190.3	0
30	31.7	249.9	253.7	1.9
35	31.7	297.3	313.3	8
40	31.7	329.5	360.7	15.6
45	26.8	344	388.0	22
50	22.0	347	393	23 ⇐ PEAK
55	17.4	342	386	22
60	12.6	336	372	18
65	7.9			

Peak 2s/t = 393 - 23 = 370

2s = 370 x 300 = 111,000

∴ s = 55,500

Elev. = 55.9 < 57 Top of Dam by more than 1 ft



Source: USDA-SCS

Plate 3.18-3

FORMULA Q=CIA
YR. STORM 10
DES. BY R. Gourley
CHK'D BY

STORM DRAINAGE COMPUTATIONS

BASGIER AND ASSOCIATES
A PROFESSIONAL CORPORATION
CONSULTING ENGINEERS • SURVEYORS • PLANNERS
VIRGINIA BEACH, VIRGINIA

SHEET ___ OF ___
JOB NO. 294153 DATE 11-21-94
JOB NAME Williamsburg Nat'l Golf Club
OWNER

FROM	TO	AREA 'A' ACRES	RUN-OFF COEF. 'C'	C.A. INCR.	C.A. ACCU.	INLET TIME MINUTES INCR.	INLET TIME MINUTES SYS.	RAIN-FALL IN. IN	RAIN-FALL IN. SY	RUNOFF 'Q' C.F.S. INCR.	RUNOFF 'Q' C.F.S. ACCU	PIPE CAPA-CITY C.F.S.	PIPE DIA. IN.	PIPE SLOPE REQD.	PIPE SLOPE ACT.	PIPE LGH. FT.	VEL. IN PIPE F.P.S.	FLOW TIME MIN.	DIFF. IN ELEV. FT.	INVERT ELEV. UPR.	INVERT ELEV. LWR.	STRUCT.	REMARKS
A-1	A-2	0.44	0.85	0.37		5		7.0		2.6		3.2	12	0.34	0.50	60	3.9	0.3					SMOOTH INTERIOR HD POLYETHYLENE PIPE
A-2	A-3	0.41	0.85	0.35	0.72	5	5.3	7.0	6.9	2.5	5.0	5.7	12	1.10	1.60	60	7.0	0.1					
A-3	A-4	0.69	0.85	0.59	1.31	10	10	5.5	5.5	3.2	7.2	9.0	15	0.80	1.20	124'	7.0	0.3					
A-4	A-5	0.73	0.85	0.62	1.93	5	10.3	7.0	5.4	4.3	10.4	13.0	18	0.60	1.00	162	7.2	0.4					FUTURE PARKING
A-5	A-6	SDMH			1.93						10.4	13.0	18	0.60	1.00	54	7.2	0.1					
OFFSITE	A-6				4.01	20		4.0			16.04	20.0	24	0.32	0.50	40	6.2	0.1					
A-6	OUT	0.38	0.85	0.32	5.94	5	20.1	7.0	3.6	2.2	21.4	24.0	24	0.57	0.70								

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 Points		
BMP/DA	Total Area (ac)	% of site	Open Space (ac)	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

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

BMPs Coincide With Those Shown on SWMP for Greenspring Plantation

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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%	**412**	0.0	8.1	8.1
TOTAL	**1402**	**100%**	**535**	**6.1**	**3.8**	**10.0**

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

Options to achieve 10-pts:
Add additional 31 acres to 6 point BMP out of 117+ available developable acres.
Add additional 21 acres to 9 point BMP
Add additional 19 acres of open space either within or outside of golf corridor.
Note: Over 13 acres preliminarily identified in corridor for course A.

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

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

BMPs Coincide With Those Shown on SWMP for Greenspring Plantation

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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
Additional BMP	**21**	**1%**	**-**	**9**	**-**	**9.0**
Subtotal	913	65%	123	9.6	1.3	11.0
Default*	489	35%	412	0.0	8.4	8.4
TOTAL	**1402**	**100%**	**535**	**6.3**	**3.8**	**10.1**

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

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Add additional 31 acres to 6 point BMP out of 117+ available developable acres.
Add additional 21 acres to 9 point BMP
Add additional 19 acres of open space either within or outside of golf corridor.
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Greensprings Plantation- Summary Table for 10-Point BMP Plan
4/26/93

BMPs Coincide With Those Shown on SWMP for Greenspring Plantation

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Drypond 5	16	1%	2	6	1.3	7.3
Drypond 6	32	2%	6	9	1.9	10.9
Additional BMP	**31**	**2%**	**-**	**6**	**-**	**6.0**
Subtotal	923	66%	123	9.5	1.3	10.9
Default*	479	34%	412	0.0	8.6	8.6
TOTAL	**1402**	**100%**	**535**	**6.3**	**3.8**	**10.1**

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

Options to achieve 10-pts:
Add additional 31 acres to 6 point BMP out of 117+ available developable acres.
Add additional 21 acres to 9 point BMP
Add additional 19 acres of open space either within or outside of golf corridor.
Note: Over 13 acres preliminarily identified in corridor for course A.

BASGIER AND ASSOCIATES

A PROFESSIONAL CORPORATION
ENGINEERS-SURVEYORS-PLANNERS

November 14, 1994

11-14-94

Darryl Cook
Department of Code Compliance
James City County
P.O. Box 8784
Williamsburg, VA. 23187-8784

Re: Williamsburg National Golf Club
Case No. SP-91-94

Dear Mr. Cook:

We are submitting for your review and comment our proposed design for the detention basin to serve this site and the surrounding area. This detention basin has been designed to maintain the peak post development runoff for the two year storm to approximately the two year predevelopment runoff peak. Our calculations indicate that the post development peak flow is approximately five percent greater than the predevelopment peak. We believe that this is within the tolerances that should be expected for these calculations.

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

Sincerely,

Robert A. Gourley, Jr.

Robert A. Gourley, Jr., P.E.

RAG
Attachments

pc: Morrisette Architecture
Club Development Associates

Corporate Office: *3143 Magic Hollow Boulevard, Virginia Beach, Va. 23456* *(804) 427-1332* *FAX: (804) 430-1119*
Branch Office: *13752 Warwick Boulevard, Newport News, Va. 23602* *(804) 874-9219* *FAX: Call* 874-9322

File - Greensprings MP.

Jamestown·1607
JAMES CITY COUNTY

DEPARTMENT OF DEVELOPMENT MANAGEMENT
P. O. Box 8784
Williamsburg, Virginia 23187-8784

County Government Center, 101-E Mounts Bay Road

Development Manager
(804) 253-6671

Code Compliance
253-6626

County Engineer
253-6678

Planning
253-6685

Integrated Pest Management
253-2620

July 13, 1993

Mr. Ron Boyd, P. E.
Williamsburg Environmental Group
P. O. Box 3584
Williamsburg, VA 23187

RECEIVED
JUL 14 1993
Wmsbg Environmental Grp

Dear Mr. Boyd,

Through various submittals as part of the Legacy Golf Course and other plans you have provided us with a stormwater management plan for the Greensprings Planned Residential Community. This plan is a demonstration that it would be possible to meet the County's design guidelines for Best Management Practices under the Chesapeake Bay Preservation Regulations. Your proposal has located possible sites for structural BMPs and calculated the amount of overall natural open space needed to meet the guidelines, given the location and proposed design of various BMPs. We accept and approve this stormwater management plan <u>in concept</u> as evidence that future development can meet our requirements. This approval is intended to allow you to proceed with your plans for the Legacy Golf Course, with the thought that implementation of various portions of the plan will be concurrent with the part of the site developed.

Our review and approval of this conceptual plan recognizes that there are limitations for any plan prepared at this scale. For example, natural open space has been shown at various locations on the plan, without relation to the possible buffering effect the space should serve. Ideally, open space would best be utilized as a buffer between developed and sensitive areas. For highly developed impervious surfaces structural BMPs would almost always be a requirement, especially when adjacent to sensitive areas. We note that your stormwater plan would allow runoff from about 3 sites designated for multifamily or commercial (with relatively high amounts of impervious surface) to flow uncontrolled. We understand the uncertainty that exists regarding stormwater flows at the present design stage, but will expect that BMPs will be incorporated when definite plans are prepared. We would strongly resist, and likely not approve, any proposed plan to develop a highly impervious area without any stormwater quality control. We would expect a reasonable relationship between any development proposed and the natural open space claimed as the functional stormwater

Fax: (804) 253-6663

quality feature for compliance with our Ches Bay Regulations.

I hope this confirms your understanding and will become the basis of our review of future Greensprings final plans. We expect to update the master stormwater plan as development occurs, and insure that the installation of BMPs or natural open space is consistent with the amount of development (we don't expect the BMP installation to be either ahead of or lag behind the development being served). Please contact me if you have any questions.

Sincerely,

Bernard M. Farmer, Jr.
Director of Code Compliance

cc: Norman Mason, Langley and McDonald

AB FILE

DEVELOPMENT MANAGEMENT

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

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

ENVIRONMENTAL DIVISION
(757) 253-6670
environ@james-city.va.us

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

COUNTY ENGINEER
(757) 253-6678

INTEGRATED PEST MANAGEMENT
(757) 253-2620

March 8, 2002

Robert M. Oliver, P.E.
Jamestown Management Company LLC
213 Ingram Road
Williamsburg, Va. 23188

Re: Greensprings-Williamsburg National Golf Course Clubhouse Facility
County Plan SP-91-94, Amended SP-46-95
Stormwater Management Facility
County BMP ID Code: PC 165

Dear Mr. Oliver:

In response to our recent telephone conversation, I am forwarding information relative to certification of the above referenced stormwater management facility and closing out the project. The dry pond facility for the project is situated along the east side Phillip Ludwell roadway near the clubhouse and tennis court area at Greensprings. Based on the active project file, the land-disturbing permit for the project was assigned to the following:

Legacy (Greensprings) Limited Partnership
3700 Centerville Road
Williamsburg, Va. 23188

Based on our review of a record drawing as previously submitted by Williamsburg Environmental Group dated November 1999 and a field observation as performed on January 30th 2002, the following items must be addressed prior to release of the developer's surety instrument for the stormwater management/BMP facility:

Construction Certification:

1. In accordance with the Note # 18 on the cover sheet of the approved plan, construction certification for the stormwater management/BMP facility was required. None was provided. This is especially important since the facility has an engineered and compacted earthen embankment. The certification can be in letter format or by use of the certification statements in Section 4 of the *JCC Environmental Division, Stormwater Management/BMP Facilities, Record Drawing and Construction Certification, Standard Forms & Instructions.*

Record Drawing:

2. Constructed data as presented on the record drawing for the dam embankment does not reasonably match requirements of the approved stormwater management plan. It appears

constructed top of dam is approximately 3 ft. lower than design top of dam (El. 57) . Additional hydraulic computations are required to support the plan change or the facility must be constructed in accordance with the approved plan. *(Note: The boxed notes on the record drawing clearly reflect constructed volume well below proposed volume. In addition, design computations for the facility show the 100-year design high water at El. 55.7. Based on the as-built drawing, top of dam is at El. 54; thus the facility would overtop and thus adequate freeboard is not provided.)*

3. It appears the outfall barrel through the dam is 12-inch corrugated polyethylene pipe, not 15-inch as shown on the record drawing. Confirm and revise the record drawing as necessary.

4. Show the following additional information on the record drawing: spot elevations along top of dam at sufficient intervals; show crest elevation and dimensions of the emergency spillway; and label pipe size and invert out elevation for the storm drain inflow pipe into the BMP from Phillip Ludwell (southwest corner of the BMP).

5. A professional seal and signature is required on the record drawing.

6. If possible, add the following information to the plan: label the roadway to the west as "Phillip Ludwell"; show the approximate location of the golf cart path along the west and north sides of the facility; and add the following County identifiers to the lower right hand corner of the record drawing - County Plan Number SP-91-94 and BMP ID Code No. PC 165.

Construction-Related Items:

7. Construct top of dam to the configuration and elevations as proposed per the approved plan; or alternatively, provide a check hydraulic routing from an engineer (based on as-built data) to confirm proper stormwater function and general conformance of the facility with original design parameters including allowable discharge, design high water, freeboard, etc.

8. Clear and remove trees (pine trees, 5 ft. high) situated on the downstream embankment of the pond. Usually trees, shrubs and woody vegetation are not permitted to grow on any part of pond embankments constructed using engineered (compacted) fills. For older facilities, we recommend trees be cut flush to or below ground level and be maintained in that fashion as to not disturb root systems that may already be extensive. Efforts should then be made to achieve a low-maintenance grass covering on the embankment.

9. Clean and remove leaves, debris, sediment deposits and vegetation from the inlet side of the single 12-inch barrel through the dam (at the headwall/forebay area). Clear and remove leaves and debris from the outfall end of the same pipe. Flow out of the pond must not be obstructed by debris, sediment and vegetation.

10. Clear and remove trees within 5 feet of the outfall end of the 12-inch pipe through the dam and from within the outfall (low) side of the emergency spillway.

11. Clean and remove leaves and debris (1 ft. deep) from the outfall end of the storm drain inflow pipe which enters the facility from the west side (Phillip Ludwell side).

12. Seed and mulch a disturbed soil area present along the west side of the basin between the sidewalk/cart path and the interior side slope of the basin. The disturbed area is a strip approximately 60' long by 6' wide.

Please revise the record drawing, submit the construction certification and contact our office, as appropriate, once construction-related work items are satisfactorily completed. We can then proceed with final release of the surety on the project. One reproducible and one blue/black line set of the record drawings will be required once the above items are adequately addressed.

Please contact me at 757-253-6639 or the assigned Environmental Division inspector, Beth Davis, at 757-253-6702 if you have any further comments or questions.

Sincerely,

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

G:\SWMProg\AsBuilts\SP9194.pc165

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

SP-91-94

County BMP ID Code (if known): PC165

Name of Facility: Greensprings Williamsburg National Golf Course Clubhouse BMP No.: 1 of 1 Date: 1-30-02 2:15pm

Location: EAST INTX. Phillip Cronwell + Access RD TO Clubhouse (NEAR TENNIS COURTS)

Name of Owner: Williamsburg National Golf Course

Name of Inspector: SJ Thomas

Type of Facility: Dry Pond (Single Culvert Control)

Weather Conditions: Sunny, Hot, 70's Type: ☒ Final Inspection ☐ County BMP Inspection Program ☐ Owner Inspection

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

O.K. - The item checked is in adequate condition and the maintenance program is currently satisfactory. No action required.
Routine - The item checked requires attention, but does not present an immediate threat to the function/integrity of the BMP.
Urgent - The item checked requires immediate attention to keep the BMP operational and to prevent damage to the facility.

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

Facility Item	O.K.	Routine	Urgent	Comments
Embankments and Side Slopes: SMALL EARTH EMBANK; 2H:1V SS; 20' TW				
Grass Height	✓			
Vegetation Condition	✓			Grass, Weeds, Briars, Small Pines
Tree Growth			✓	(5' HIGH, 8±)
Erosion	✓			None
Trash & Debris	✓			"
Seepage	✓			"
Fencing or Benches				
Interior Landscaping/Planted Areas: ☐ None ☐ Constructed Wetland/Shallow Marsh ☒ Naturally Established Vegetation				
Vegetated Conditions	✓			Cattails 75%, PREDOMINANT
Trash & Debris	✓			IN North Central Portion
Floating Material	✓			Reeds, Pines, Grasses
Erosion	✓			Wide Mixture
Sediment	✓			
Dead Plant	✓			
Aesthetics	✓			
Other	✓			
Notes: SEVERAL ROADS, ADJ DRIVING RANGE + CLUBHOUSE.				

Facility Item	O.K.	Routine	Urgent	Comments
Water Pools: ☐ Permanent Pool (Retention Basin) ☐ Shallow Marsh (Detention Basin) ☒ None. Dry (Detention Basin)				
Shoreline Erosion	X			
Algae	X			
Trash & Debris	X			
Sediment	X			
Aesthetics	X			
Other	X			Pool Area 3' Deep. ±
Inflows (Describe Types/Locations): Pipe Inflows BACK OF BASIN 1) 15" RCP w/ES-1 2) 24" CPP w/ENDWALL				
Condition of Structure	✓			
Erosion	✓			
Trash and Debris		✓	✓	Pipe 1 Leaves & Debris 1" deep in Pipe & Ol. Same for Pipe 2.
Sediment		✓	✓	
Outlet Protection		✓	✓	
Other				
Principal Flow Control Structure - Riser, Intake, etc. (Describe Type): 12" CORRUG PE Pipe w/ HEADWALL				
Condition of Structure	✓			
Corrosion	✓			
Trash and Debris		✓	✓	Clear veg + sed from Inlet
Sediment		✓	✓	Forebay.
Vegetation				
Other				CLASS I Riprap Check around Pipe.
Principal Outlet Structure - Barrel, Conduit, etc. : 12" CORR. PE Pipe.				
Condition of Structure	✓			
Settlement	✓			
Trash & Debris		✓	✓	Clear veg from outfall
Erosion/Sediment		✓	✓	end of pipe.
Outlet Protection		✓	✓	
Other				ie. single culvert control
Emergency Spillway (Overflow): Rock RIPRAP CL I+II, 7' WIDE; RELT FULL Depth				
Vegetation	✓			Some
Lining	✓			
Erosion	✓			
Trash & Debris				
Other		✓	✓	Clear Veg @ END
Notes:				

Facility Item	O.K.	Routine	Urgent	Comments
Nuisance Type Conditions:				
Mosquito Breeding	✓			
Animal Burrows	✓			
Graffiti	✓			
Other	✓			
Surrounding Perimeter Conditions:	North Woods; East Driving Range; South CH Road, West			
Land Uses	✓			IS SIDEWALK/ PARKING/ PHILLIP LUDWELL
Vegetation	✓			
Trash & Debris	✓			
Aesthetics	✓			Well Maintained Area
Access /Maintenance Roads or Paths	✓			PHILLIP LUDWELL TO GOLF COURSE PARKING AREA
Other	✓			POND NATURAL VEG Buffer EAST SIDE 25' 20-

Remarks:

- Remove Trees from D/S EMB, 8± SMALL PINES (3-5' 5' HIGH)
- CLEAN VEG FROM 12" PIPE INLET BETWEEN ROCK CHECK AND PIPE OPENING/HEADWALL (U/S END). VEG IS THICK AND BLOCKS LF ORIF.
- CLEAN + REMOVE VEG + TREES 5' from Barrel outfall (D/S) AND FROM END OF EMERG SPILLWAY. MUST NOT OBSTRUCT FLOW.
- STABILIZE 60+ 6'W BARE SOIL Area on interior SS along west side of basin (between sidewalk cart path and basin, grassed area)
- CLEAN LEAVES AND Debris 1' deep in Pipe 1 end section and CLEAR + Remove veg, sed + Debris in OP ROCK (CLASS I). Pipe 1 from Phillip Ludwell along west side of basin
- CLEAR + Remove veg, Leaves And Debris Within 10' of Pipe 2 into Pond. Pipe 2 in back (south end) of basin). Pipe 2 from Clubhouse Area.

Overall Environmental Division Internal Rating: 3

* See AB REVIEW DWG. TOD is 3' Low. Construct Properly or provide AB H+H MODEL.

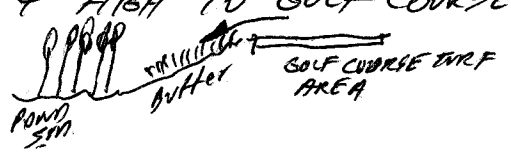
Signature: [signature] P.E.

Date: 1-30-02 2:45pm

Title: Civil Engineer ENV DIV

SWMProg\BMP\CoInspProg\DetRet.wpd

Note: Good Example of natural pond setback/buffer along EAST SIDE OF BASIN. POND MARSH TO MEADOW GRASSES 4" HIGH TO GOLF COURSE TURF.



Greensprings Community Assoc.

James City County Stormwater Division Stormwater Management Facility (SWMF)Inspection Report

Score Definitions: 0-N/A, 1-Adequate, 2-Routine Maintenance, 3-Non-routine repair, 4-Urgent repair(s), item has failed or is failing.

BMP ID # PC165 PIN 3640300001B Responsible Party: GREENSPRINGS PLANTATION

Site Address: 3790 PHILIP LUDWELL District: 3

Location (other): NE OF CLUBHOUSE ENT @ PHILLIP LUDWELL

Date: 11/19/2009 Inspector: TC

Structure Type: **Detention**

(3 or 4 requires attention):

Total Score **2**

Criteria	Score	Comments: (Listed below are the items/tasks that should be rectified/ completed prior to re-inspection)
1. Forebay Score:	0	
2. Inlet(s):	2	**Remove sediment, debris, and woody vegetation at the outfall of inlet**
*3. Outlet:	2	**Remove sediment and vegetation at outfall of pipe**
*4. Principal Spillway:	1	
5. Emergency Spillway:	1	
6. Basin Bottom and Side Slopes:	2	
7. Safety Devices:	0	
*8. Embankments:	1	
*9. Structural Components:	1	
*10. Media:	0	

James City County Stormwater Division Stormwater Management Facility (SWMF)Inspection Report

Score Definitions: 0-N/A, 1-Adequate, 2-Routine Maintenance, 3-Non-routine repair, 4-Urgent repair(s), item has failed or is failing.

Criteria	Score	Comments: (Listed below are the items/tasks that should be rectified/ completed prior to re-inspection)
11. Routine Maintenance:	2	**Embankment and access right of ways or forebay needs mowing to a minimum grass heigh**
12. Condition of Aquatic Environment:	0	
13. Vegetation:	2	**Overall vegetation, unwanted and invasive weeds**
*14. Storage Volume:	1	
15. Debris/Sediment Accumulation:	1	
16. Standing Water:	1	
17. Safety and Aquatic Bench:	0	
18. Side Slope Vegetation:	1	
19. Other:	0	

Checked below identify corrective work required on your stormwater management facility.

- ☑ Remove all trees and other woody vegetation from the embankment (earthen dam) and also within 10' of the toe of the embankment slope.
- ☑ Remove all trees and other woody vegetation from within 10' of the principal spillway, any principal inlet devices, and the principal outfall.
- ☑ Remove all trees and other woody vegetation from within 10' of any inlet structures, such as: pipes, end sections, concrete channels, flumes, rip rap channels, etc.
- ☑ Remove all trees and other woody vegetation from within the emergency spillway and also from within 10' of the spillway.
- ☐ Investigate the cause of any settlement, sink holes, subsidence, or erosion, noted on the report and develop and implement an appropriate plan to correct the deficiencies noted permanently.
- ☐ Remove all accumulated sediment, leaves and debris from within any pipes, end sections, concrete channels, emergency spillways, flumes, rip rap channels, etc. and dispose of the material in an appropriate method and location.
- ☑ Stabilize any disturbed, unstable, denuded or bare soil areas, by installing top soil and planting a permanent grass seed to establish an effective grass ground cover over these areas.
- ☑ All grassed areas of the BMP such as: access roads, emergency spillways, embankments (earthen dam), or other non-treed areas, shall be maintained at a minimum grass height of 8", and should not be subjected to low mowing.
- ☑ Trees and woody vegetation should be cut flush with the ground, and smaller trees and limbs (less than 4" dia) may be processed with a wood chipper and dispersed in natural areas.

WATERSHED	PC	MAINTENANCE PLAN	No	CTRL STRUC DESC	CPP Pipe
BMP ID NO	165	SITE AREA acre	8.405	CTRL STRUC SIZE inches	12
PLAN NO	SP-91-94	LAND USE	Resid Planned Co	OTLT BARRL DESC	CPP Pipe
TAX PARCEL	(36-04)(03-1B)	old BMP TYP	Dry Pond w/SM	OTLT BARRL SIZE inch	12
PIN NO	3640300001B	JCC BMP CODE			
CONSTRUCTION DATE		POINT VALUE	6	EMERG SPILLWAY	Yes
PROJECT NAME	Wmsbg National Golf Club Clubhouse			DESIGN HW ELEV	55.7
FACILITY LOCATION	NE of Clubhouse Ent @ Phillip Ludwell			PERM POOL ELE	na
CITY-STATE	Williamburg, Va. 23188	SVC DRAIN AREA acres	17.05	2-YR OUTFLOW cfs	9.00
CURRENT OWNER	Legacy (Greensprings) Limited Partnership			10-YR OUTFLOW cfs	
OWNER ADDRESS	3700 Centerville Road			REC DRAWING	Yes
OWNER ADDRESS 2		SERVICE AREA DESCRI	Subdivision, Clubhouse & Road		
CITY-STATE-ZIP CODE	Williamsburg, Va. 23188	IMPERV AREA acres	4.35	CONSTR CERTI	No
OWNER PHONE		RECV STREAM	UT of Powhatan Creek		
MAINT AGREEMENT	Yes	EXT DET-WQ-CTRL	No	LAST INSP DATE	1/30/2002
EMERG ACTION PLAN	No	WTR QUAL VOL acre-ft	0	INTERNAL RATING	3
		CHAN PROT CTRL	No	MISC/COMMENTS	
		CHAN PROT VOL acre-ft	0	Single Barrel 12" corr PE pipe principal spillway.	
		SW/FLOOD CONTROL	Yes		
		GEOTECH REPORT	No		

Get Last BMP No

Return to Menu

CODE COMPLIANCE REVIEW COMMENTS
WILLIAMSBURG NATIONAL GOLF CLUBHOUSE
PLAN NO. SP-91-94
August 31, 1994 DEL

1. A Land Disturbing Permit and Siltation Agreement, with surety, are required for this project.

2. In accordance with the overall Stormwater Management Plan for the Greensprings project, a BMP facility is required for this project. The intent of the SWM Plan is to utilize larger regional BMPs to control the major drainage flows from the project but utilize smaller BMP facilities below internal highly impervious areas such as this site. The BMP must store 0.5 inches of runoff from impervious areas and release it over a 24 hour period, and reduce post-development 2-year storm flows to pre-development levels. I recommend that the temporary sediment trap be redesigned to serve as this BMP facility.

3. An Inspection/Maintenance Agreement shall be executed with the county for the BMP facility for this project.

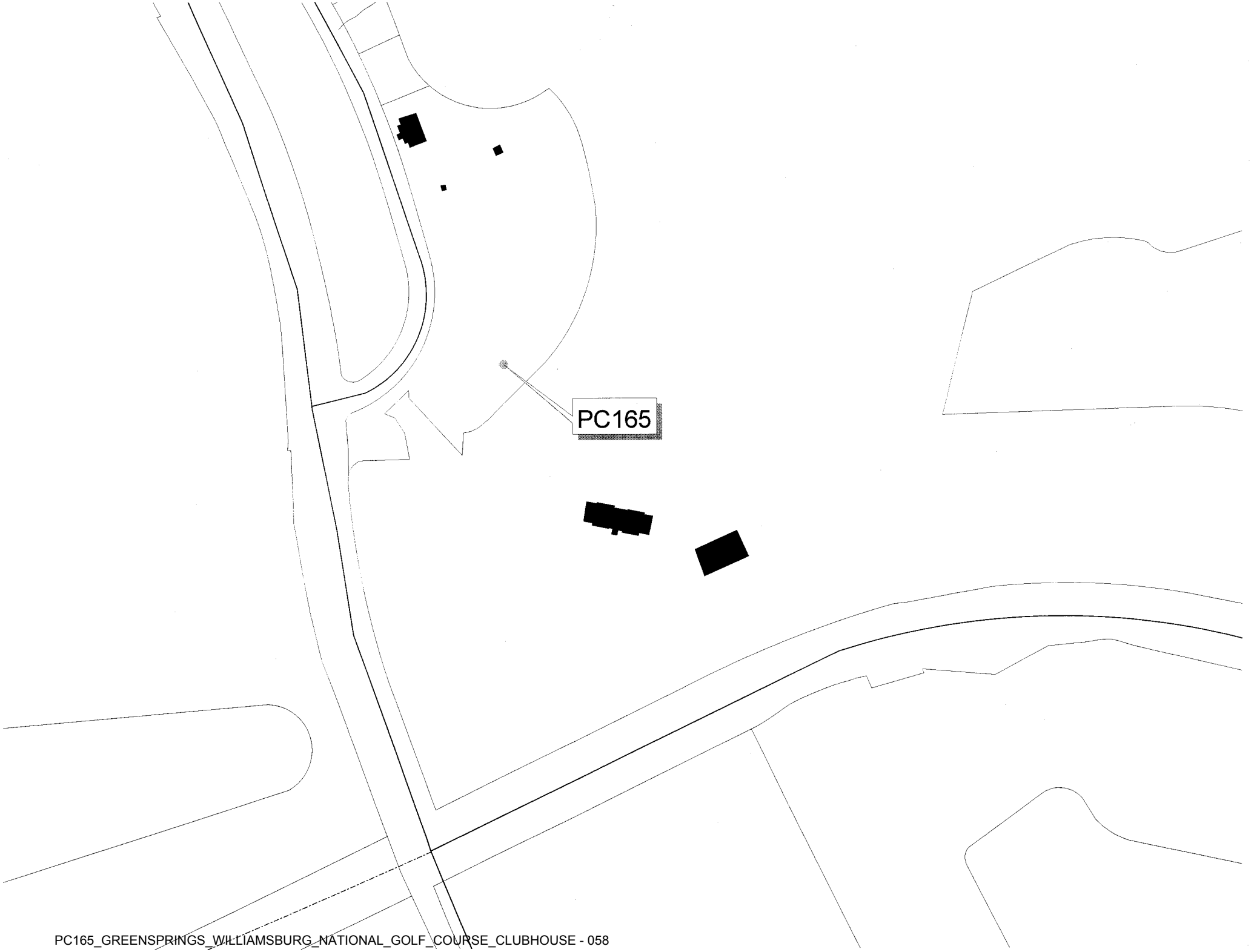
4. As-built drawings must be provided for the detention basin on completion.

5. Provide a drainage easement for the storm drain system from the Cart Barn site where it crosses the property line.

6. Provide more information on the sediment trap detail to allow for its construction. Specify the depth of the wet storage area, the top of the stone, etc.

7. Specify the amount of stone to be used at the end of the storm drain system in accordance with Spec 3.19 of the third edition of the Virginia Erosion Control Handbook (VESCH).

8. Provide a temporary construction easement on the Parcel F property that is shown being graded for this project.



PC165_GREENSPRINGS_WILLIAMSBURG_NATIONAL_GOLF_COURSE_CLUBHOUSE - 058

ERIC ALLEN WANTS
HYDROLOGY

WMBG. NAT. GOLF COURSE
AS-BUILTS
LAKE C, LAKE G & BMP 1
needs revision

STORMWATER MANAGEMENT

I. STORMWATER TREATMENT SYSTEM

✓ Drainage Area Map at a maximum scale of 1"=200' showing drainage area boundaries for pre- and post-development conditions and pre- and post-development time of concentration flow paths. For multiphased projects, the map must include all future phases for the project.

____ Soil Map with site and drainage area outlined.

Needed Receiving Channel and Pipe System Adequacy Determinations. All stormwater must be discharged to an adequate, well-defined receiving system.

NA Worksheet for BMP Point System to determine need for and type of structural BMPs required as well as Natural Open Space BMP points.

Needed Stormwater Detention Basin Design Checklist completed for each structure.

NA Conservation Easements required for all Natural Open Space Points claimed in BMP Worksheet.

NA Infiltration Device Design, Detail and Specification. Must include results of a soil test to verify, a minimum infiltration rate of 0.27 inches per hour at the trench location to a depth of 5 feet below the bottom of the trench.

Needed Stormwater Management Facility Easements including a 20-foot wide access easement and a 15-foot wide maintenance easement from the 100-year storm elevation and include the dam and outlet structure.

II. STORMWATER CONVEYANCE SYSTEMS

✓ Drainage Calculations to support the design of all conveyance systems; culverts, roadside ditches, storm drain systems, etc.

NA Culvert Calculations, inlet and outlet control, existing and proposed based on 10-year storm.

____ Storm Sewer Calculations to include hydraulic grade line, inlet, and spread calculations for 10-year storm.

____ Open Ditch Calculations, lining determined based on 2-year peak velocity and capacity based on 10-year peak discharge, existing, and proposed.

Provide easement for outfall pipe

_____ Slope Requirements, minimum longitundinal street slope requirement is 0.75% for grass-lined ditch, 0.5% for paved ditch, and 0.3% for closed (curb and gutter) section.

_____ Outlet Protection required for all outfalls in accordance with Chapter 3, VESCH.

strmwtr.lis