



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.

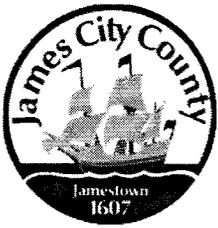
BMP NUMBER: PC103

DATE VERIFIED: May 25, 2012

QUALITY ASSURANCE TECHNICIAN: 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: PC103

PIN: 3230100003

Subdivision, Tract, Business or Owner

Name (if known):

Wells, Thomas M., Trustee; Treasurer of Christian Life Center

Property Description:

Christian Life Center

Site Address:

4451 Longhill Road

(For internal use only)

Box 1

Drawer: 1

Agreements: (in file as of scan date)

Y

Book or Doc#:

814

Page:

911

Comments

COPY PC103

DECLARATION OF COVENANTS

INSPECTION/MAINTENANCE OF DRAINAGE SYSTEM

Christian Life Center,

THIS DECLARATION, made this 27th day of October, 1998, between Thomas M. Wells, and all successors in interest, hereinafter referred to as the "COVENANTOR(S)," owner(s) of the following property: 4451 Longhill Road Williamsburg, VA (known as Parcel 3 on James City County County Tax Map Page 32-3), Deed Book 814, Page No. 911 or Instrument No. _____, 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 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, 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 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.

Instrument #: 980019627
Recorded: Oct. 14, 1998
Page #: 0200

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of this 8th day of October, 1998.

PC103

COVENANTOR(S)

Thomas M. Wells
Thomas M. Wells, Sr. Pastor

ATTEST:

Small Hall

COVENANTOR(S)

ATTEST:

COMMONWEALTH OF VIRGINIA
CITY/COUNTY OF James City

I hereby certify that on this 8th day of October, 1998, before the subscribed, a Notary Public of the State of Virginia, and for the County of James City, aforesaid personally appeared Thomas M. Wells 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 October, 1998.

Small Hall
Notary Public

My Commission expires: June 30, 2003

Approved as to form:

Lee P. ...
Deputy County Attorney

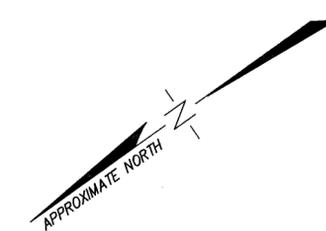
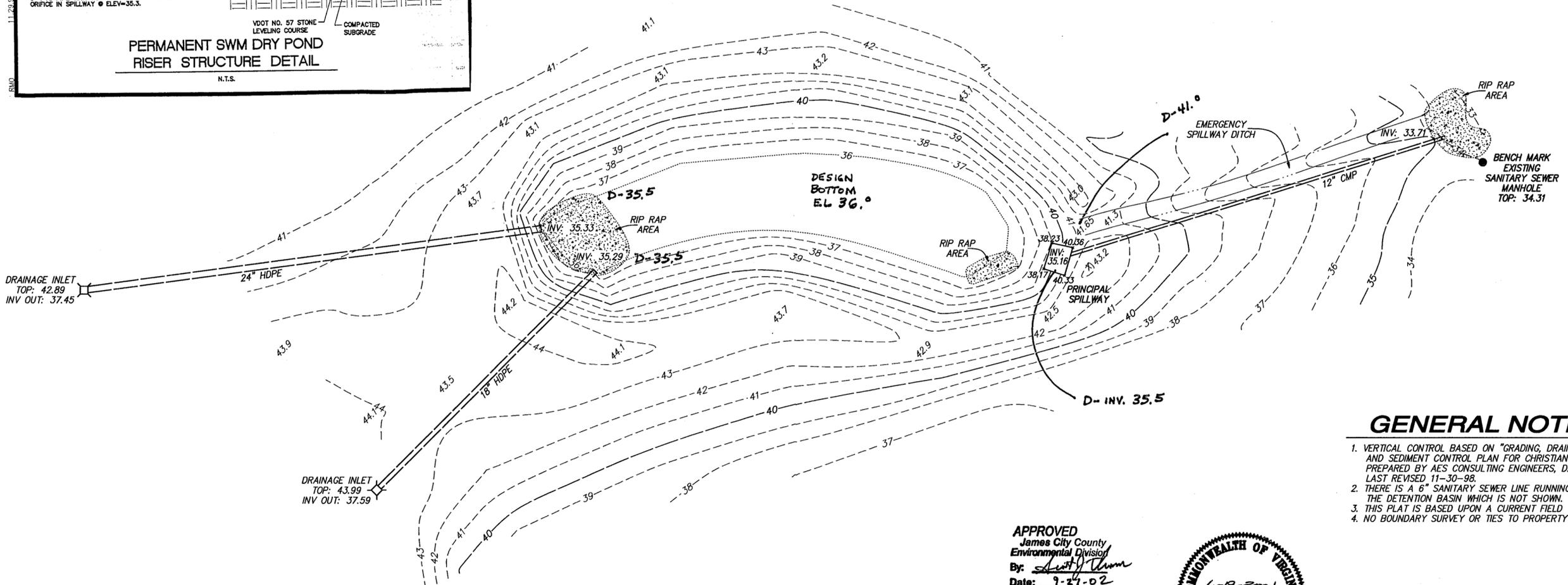
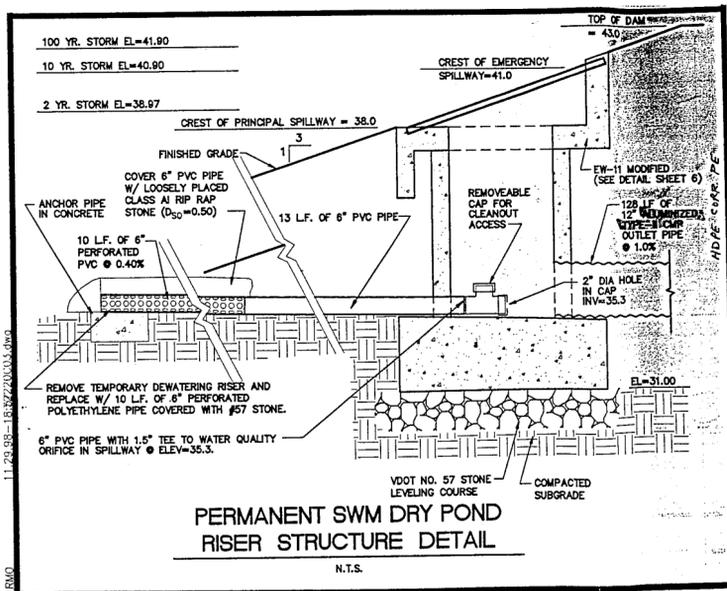
This Declaration of Covenants prepared by:

Thomas M. Wells
(Print Name)

Senior Pastor
(Title)

P.O. Box 3646
(Address)

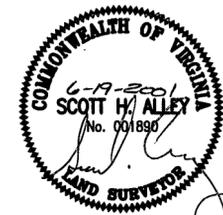
Williamsburg VA 23187
(City) (State) (Zip)



GENERAL NOTES

1. VERTICAL CONTROL BASED ON "GRADING, DRAINAGE AND EROSION AND SEDIMENT CONTROL PLAN FOR CHRISTIAN LIFE CENTER", PREPARED BY AES CONSULTING ENGINEERS, DATED 3/23/98, LAST REVISED 11-30-98.
2. THERE IS A 6" SANITARY SEWER LINE RUNNING EAST OF THE DETENTION BASIN WHICH IS NOT SHOWN.
3. THIS PLAT IS BASED UPON A CURRENT FIELD TOPOGRAPHIC SURVEY.
4. NO BOUNDARY SURVEY OR TIES TO PROPERTY LINES PERFORMED.

APPROVED
James City County
Environmental Division
By: *[Signature]*
Date: 9-27-02



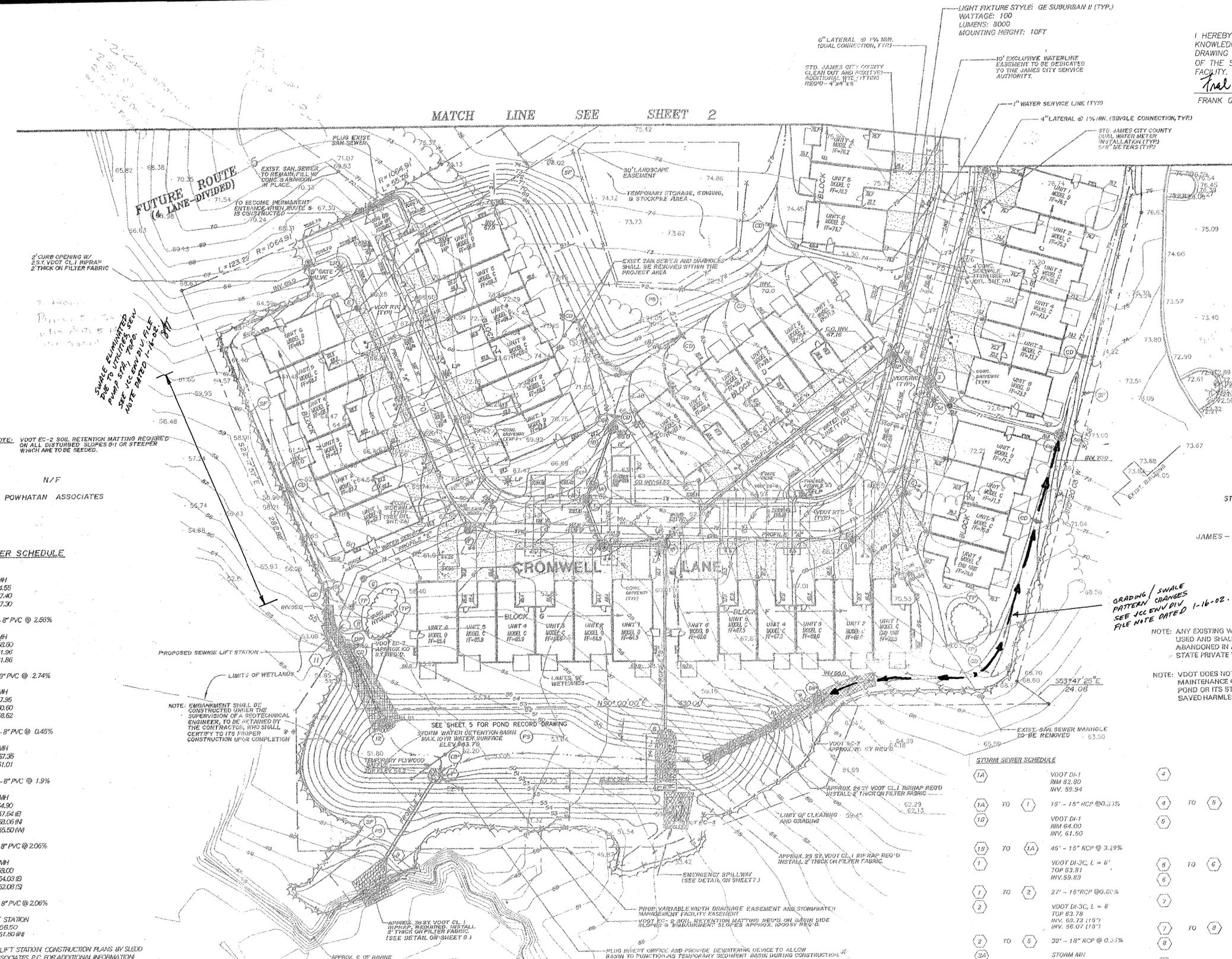
DESIGN WSEL
2-YR. EL. 38.97
10-YR. EL. 40.90
100-YR. EL. 41.91

TOP DAM	DESIGN	BUILT
	43.0	42.5 (FB=0.6')

PROJ. NO. JC-106
DATE: 6-19-2001
SCALE: 1"=25'
DRAWN BY: S.H.A.
CHECKED BY: J.J.S.
SHEET
1 OF 1

ALLEY, SADLER & ALLEY, INC.
SURVEYING MAPPING
8176 LADIESTOWN ROAD MECHANICSVILLE, VA 23111
PHONE: (804) 730-7185

AS BUILT SURVEY
STORMWATER DETENTION BASIN
AND ASSOCIATED STRUCTURES
CHRISTIAN LIFE CENTER
POWHATAN DISTRICT
JAMES CITY COUNTY, VIRGINIA



I HEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THIS RECORD DRAWING REPRESENTS THE ACTUAL CONDITION OF THE STORMWATER MANAGEMENT / BMP FACILITY.

Frank G. Mundy, L.S.
FRANK G. MUNDY, L.S.

NOTE: VDOT EC-3 SOIL RETENTION MATTING REQUIRED ON ALL DISTURBED SLOPES 3:1 OR STEEPER WHICH ARE TO BE SEEDING.

N/F
POWHATAN ASSOCIATES

SANITARY SEWER SCHEDULE

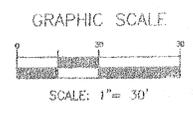
B	SANMH RM 74.55 INV. 67.40 INV. 67.30
B TO C	208' - 8" PVC @ 2.50%
C	SANMH RM 69.00 INV. 61.95 INV. 61.86
C TO D	45' - 8" PVC @ 2.74%
D	SANMH RM 67.95 INV. 60.60 INV. 60.62
D TO F	240' - 8" PVC @ 0.45%
E	SANMH RM 67.35 INV. 61.01
E TO F	165' - 8" PVC @ 1.9%
F	SANMH RM 64.90 INV. 57.84 (E) INV. 58.06 (M) INV. 55.50 (N)
F TO G	71' - 8" PVC @ 2.06%
G	SANMH RM 63.00 INV. 54.03 (E) INV. 52.08 (S)
G TO H	28' - 8" PVC @ 2.06%
H	LIFT STATION TOP 52.50 INV. 51.50 (M)

(SEE LIFT STATION CONSTRUCTION PLANS BY SLEED & ASSOCIATES, P.C. FOR ADDITIONAL INFORMATION)

- EMBANKMENT NOTES**
- ALL DAM CONSTRUCTION SHALL BE UNDER THE SUPERVISION OF A GEOTECHNICAL ENGINEER TO BE RETAINED BY THE OWNER.
 - IMPERVIOUS CUT-OFF TRENCH ALONG EMBANKMENT CENTERLINE TO EXTEND A MINIMUM OF 3.5 FT. BELOW EXISTING GROUND. ACTUAL DEPTH OF CUT-OFF TO BE DETERMINED IN THE FIELD BY THE GEOTECHNICAL ENGINEER. BACKFILL WITH SC CONTAINING NO LESS THAN 34% OF FINES OR CL MATERIAL PLACED IN LOOSE LIFTS OF 6 TO 8 INCHES IN DEPTH AND COMPACTED TO 100% OF MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D998.
 - REMOVE ALL ORGANIC AND UNSUITABLE MATERIAL FROM BENEATH EMBANKMENT TO A MINIMUM DEPTH OF 18 INCHES OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER AND REPLACE WITH SC-CL MATERIAL CONTAINING MORE THAN 34% FINES BY WEIGHT COMPACTED IN 6 TO 8 INCH LIFTS TO 100% OF MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D998.
 - DAM EMBANKMENT TO BE CONSTRUCTED OF SC-CL MATERIAL CONTAINING MORE THAN 34% FINES BY WEIGHT AND COMPACTED AS ABOVE.
 - VDOT EC-3 SOIL RETENTION MATTING IS REQUIRED ON THE DOWNSTREAM FACE OF THE EMBANKMENT AND THROUGH THE EMERGENCY SPILLWAY. EC-2 MATTING IS TO BE INSTALLED ON THE UPSTREAM FACE AND POND BANKS.

RESTRAINED JOINT REQUIREMENTS FOR WATER LINE

PIPE SIZE	BEND	MIN. LENGTH TO BE RESTRAINED ON EACH SIDE OF FITTING
8"	90	18.0 FT
	45	10.5 FT
	22-1/2	8.0 FT
	11-1/4	3.25 FT
	BLOW-OFF	65.0 FT
4"	45	8.0 FT



NOTE: DURING PROJECT CONSTRUCTION, THE 8" ORIFICE AT THE INVERT OF THE OUTLET STRUCTURE SHALL BE PLUGGED TEMPORARILY SO THAT THE DETENTION BASIN WILL FUNCTION AS A TEMPORARY SEDIMENT BASIN. THE CONTRACTOR SHALL PROVIDE A TEMPORARY 8 INCH DIAMETER DEWATERING ORIFICE WITH A 10 INCH DIAMETER PERFORATED RISER IN ACCORDANCE WITH SECTION 3.14 OF THE "VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, 1992 EDITION," AT INVERT ELEVATION 51.5. AFTER THE COMPLETION OF LAND DISTURBING ACTIVITIES THE DEWATERING DEVICE SHALL BE REMOVED AND THE TEMPORARY OPENING BLOCKED. ACCUMULATED SEDIMENT SHALL BE REMOVED AND THE ORIFICE AT THE INVERT OF THE OUTLET STRUCTURE SHALL BE UNPLUGGED AND THE BASIN CONVERTED TO A STORMWATER MANAGEMENT FACILITY.

STORM SEWER SCHEDULE

1A	VDOT DI-1 RM 62.90 INV. 59.94	4	VDOT DI-3B, L = 6' TOP 71.14 INV. 65.35
1A TO 1	18' - 15" RCP @ 0.31%	4	TO 5 184' - 15" RCP @ 6.21%
1B	VDOT DI-1 RM 64.00 INV. 61.90	6	VDOT DI-3B, L = 6' TOP 64.34 INV. 57.94 (18" W) INV. 55.76 (18" S) INV. 55.69
1B TO 1A	46' - 15" RCP @ 3.49%	6	TO 6 120' - 18" RCP @ 2.65% (LENGTH INCLUDES ES-1)
1	VDOT DI-3C, L = 6' TOP 63.81 INV. 59.89	6	VDOT ES-1 INV. 52.42 INV. 52.51
1 TO 2	27' - 18" RCP @ 0.60%	7	BASIN OUTLET STRUCTURE RM 52.50 RIM 53.88 INV. 52.50 (SEE DETAIL ON SHEET 7) INV. 48.89
2	VDOT DI-3C, L = 6' TOP 63.78 INV. 59.72 (18" S) INV. 59.07 (18" S)	7	TO 8 83' - 24" RCP @ 1.32% (LENGTH INCLUDES ES-1)
2 TO 5	38' - 18" RCP @ 0.33%	8	VDOT ES-1 RIM 53.88 INV. 52.42 INV. 52.51
2A	STORM MH RM 70.80 INV. 66.90	9	VDOT DI-1 RIM 70.00 INV. 66.78
2A TO 3	16' - 12" RCP @ 0.20%	9	TO 10 88' - 15" RCP @ 2.61%
3	VDOT DI-1 RIM 70.00 INV. 66.78	10	VDOT ES-1 RIM 54.03 INV. 52.42 INV. 52.51
3 TO 3A	70' - 12" RCP @ 0.40%	11	VDOT DI-1 RIM 54.03 INV. 52.42 INV. 52.51
3 TO 4	27' - 15" RCP @ 0.31%	12	VDOT ES-1 RIM 54.03 INV. 52.42 INV. 52.51

GRADING / SWALE PATTERN CHANGES SEE JCC PLAN DIV FILE NOTE DATED 1-16-02. AT

NOTE: VDOT DOES NOT ASSUME RESPONSIBILITY FOR MAINTENANCE OF THE DETENTION/RETENTION POND OR ITS STRUCTURES, AND SHALL BE SAVED HARMLESS FROM ANY DAMAGE.

NO.	DATE	REVISIONS	BY
1	10/25/97	REV. PER COUNTY & VDOT REVIEW	
2	1/8/98	COMMENTS RECEIVED 9/26/97	
3	1/21/98	REV. PER JCC COMMENTS DTD. 12/23/97	
4	8/20/01	REV. PER JCC COMMENTS DTD. 1/17/97	
		BMP RECORD DRAWING	

Vanasse Hangen Brustlin, Inc.
Transportation Land Development Environmental Services
11832 Rock Landing Drive, Suite 205
Falls Church, VA 22043
(703) 875-3886 - FAX (703) 875-0757

VHB

COMMONWEALTH OF VIRGINIA
FRANK G. MUNDY, L.S.
NO. 2302-11-1002-01
LAND SURVEYOR

CROMWELL RIDGE AT POWATAN SECONDARY
JAMES CITY COUNTY, VIRGINIA
RECORD DRAWINGS

SCALE: 1" = 30'

DATE: 09/27/01 / 7/10/97

DESIGNED: _____

DRAWN: MDC

CHECKED: FGM

PROJECT NO. 30807/97-003

SHEET NO. 2 OF 5

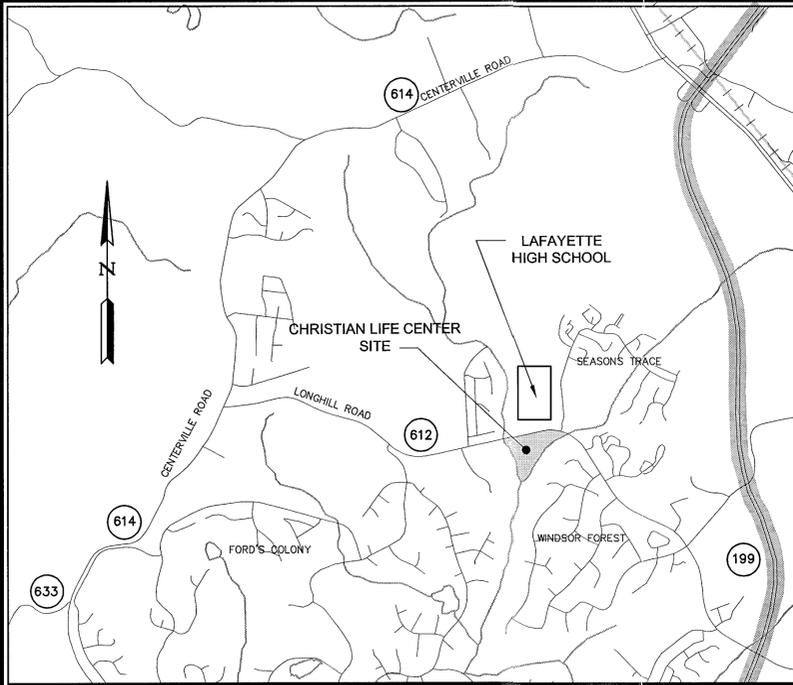
NO.	DATE	REVISION / COMMENT / NOTE	BY

- GENERAL NOTES**
1. PROPOSED SITE IMPROVEMENTS LIE WITHIN STATE RIGHT-OF-WAY OR ORIGINAL PROPERTY BOUNDARIES.
 2. NO BUILDINGS ARE LOCATED IMMEDIATELY ADJACENT TO THIS SITE.
 3. SITE IS ZONED R-8; SURROUNDING PROPERTIES ARE ZONED R-2 AND R-8.
 4. A VDOT LAND USE PERMIT WOULD BE REQUIRED FOR THIS PROJECT.
 5. OWNER INFORMATION:
CHRISTIAN LIFE CENTER
P.O. BOX 3646
WILLIAMSBURG, VIRGINIA 23187
CONTACT: PASTOR TOM WELLS, TRUSTEE
 6. PARKING STATISTICS
CURRENT

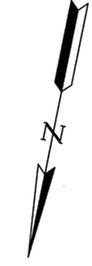
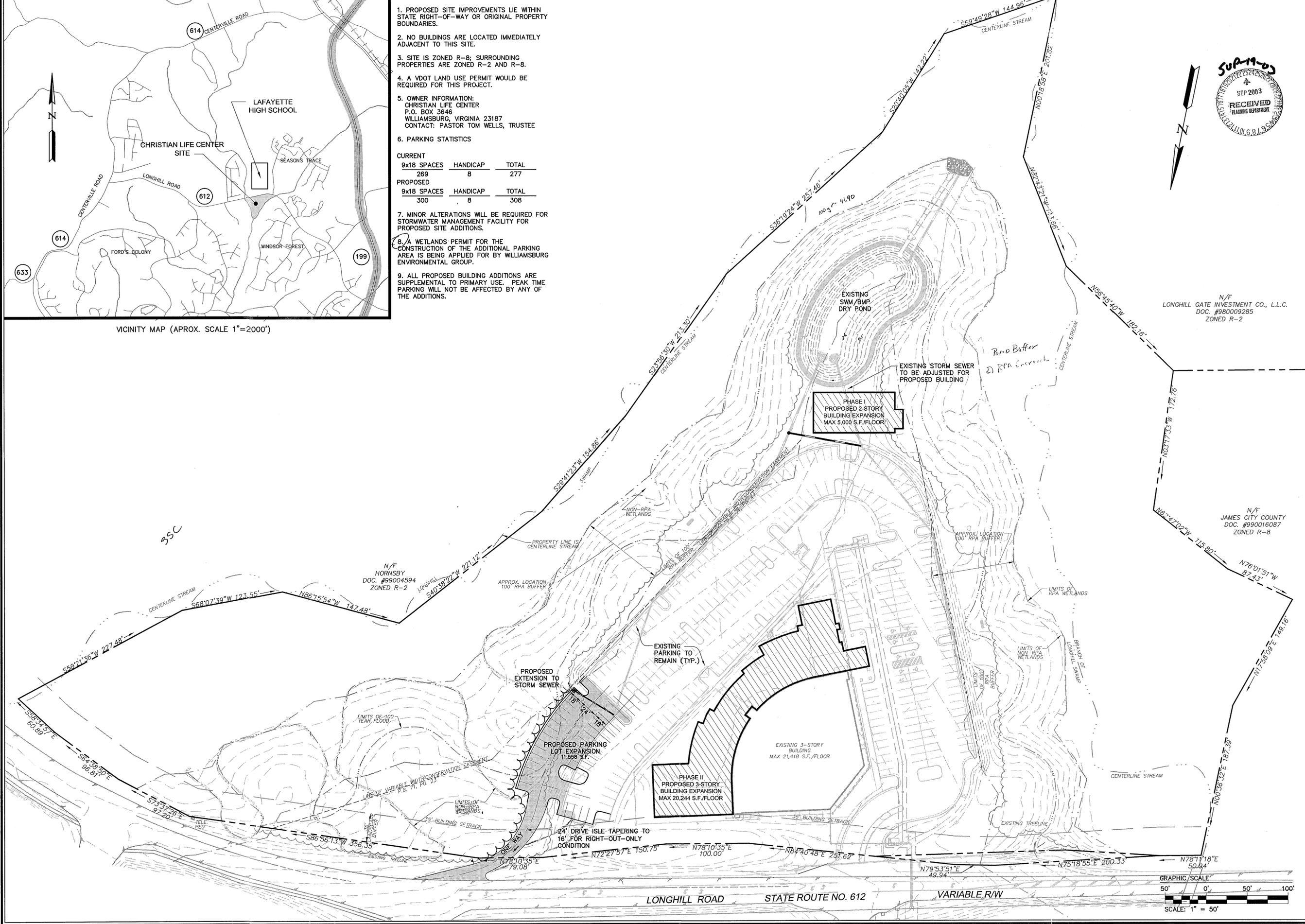
9x18 SPACES	HANDICAP	TOTAL
269	8	277

 PROPOSED

9x18 SPACES	HANDICAP	TOTAL
300	8	308
 7. MINOR ALTERATIONS WILL BE REQUIRED FOR STORMWATER MANAGEMENT FACILITY FOR PROPOSED SITE ADDITIONS.
 8. A WETLANDS PERMIT FOR THE CONSTRUCTION OF THE ADDITIONAL PARKING AREA IS BEING APPLIED FOR BY WILLIAMSBURG ENVIRONMENTAL GROUP.
 9. ALL PROPOSED BUILDING ADDITIONS ARE SUPPLEMENTAL TO PRIMARY USE. PEAK TIME PARKING WILL NOT BE AFFECTED BY ANY OF THE ADDITIONS.

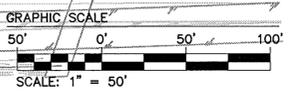


VICINITY MAP (APROX. SCALE 1"=2000')

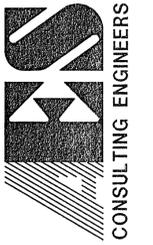


N/F LONGHILL GATE INVESTMENT CO., L.L.C.
DOC. #980009285
ZONED R-2

N/F JAMES CITY COUNTY
DOC. #990016087
ZONED R-8



5248 Old Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax: (757) 220-8994



CONSULTING ENGINEERS

Schematic Plan for Parking & Building Expansion

CHRISTIAN LIFE CENTER

OWNER/DEVELOPER: CHRISTIAN LIFE CENTER

Designed	Drawn
VMB/VAB	VAB
Scale	Date
1"=50'	9/17/03
Project No.	Drawing No.
7222-01	1

MENT PLAN

FE CENTER

CHRISTIAN LIFE CENTER

UNTY, VIRGINIA

COUNTY OF JAMES CITY
FINAL SITE PLAN

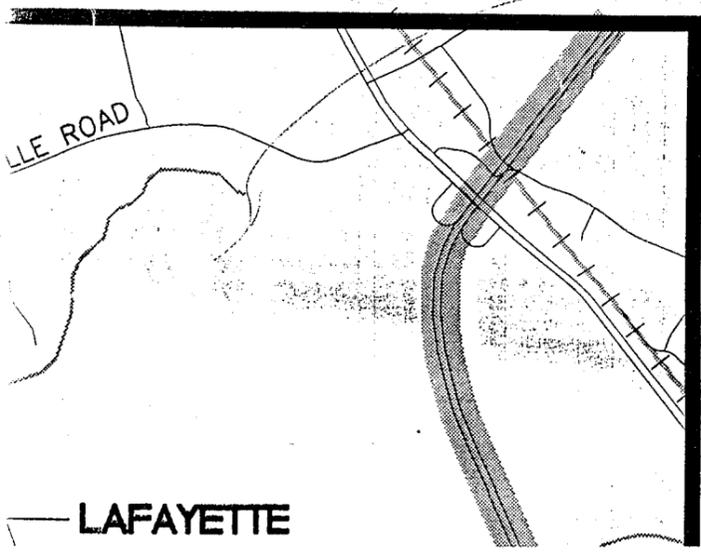
APPROVALS	DATE
Fire Dept <i>JD/MWN</i>	<i>12/18/98</i>
Health Dept <i>W/DANN</i>	<i>12/11/98</i>
VDOT <i>BSS/MWN</i>	<i>12/14/98</i>
Planning <i>Am</i>	<i>3/17/99</i>
Environ <i>DEC/MWN</i>	<i>1/5/99</i>
Zoning Adm. <i>Am</i>	<i>3/17/99</i>
JCSA <i>DWP/MWN</i>	<i>12/17/98</i>
County Eng <i>WB/MWN</i>	<i>12/18/98</i>
REA	
Other	

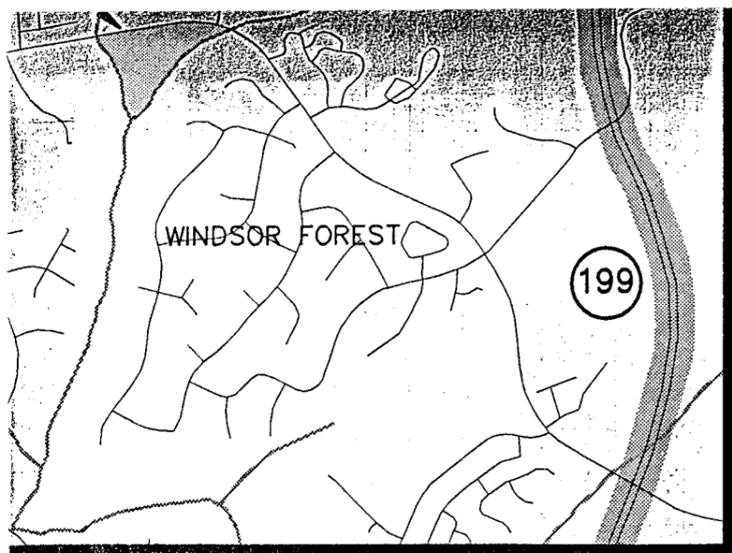
SR 140-98



INDEX OF SHEETS

<u>SHEET NUMBER</u>	<u>DESCRIPTION</u>
COVER	COVER SHEET
1	SITE AND UTILITY PLAN
2	GRADING, DRAINAGE, AND EROSION AND SEDIMENT CONTROL PLAN
3	GRADING, DRAINAGE, AND EROSION AND SEDIMENT CONTROL PLAN
4	LANDSCAPE AND LIGHTING PLAN
5	OVERALL DRAINAGE AND ENVIRONMENTAL INVENTORY PLAN
6	NOTES AND DETAILS
7	NOTES AND DETAILS





SCALE 1"=2000'

998

7222



Towne Road, Suite 1
 Long Hill, Virginia 23188
 (757) 253-0040
 (757) 220-8994

PC103

ITEM	S.F.	AC.	% OF SITE
BUILDING COVERAGE	22,672	0.52	2.96
PARKING / PAVEMENT	105,044	2.40	13.69
SIDEWALKS	10,424	0.24	1.36
DEVELOPED OPEN SPACE	143,083	3.28	18.65
CONSERVATION EASEMENT	485,869	11.17	63.34
TOTAL SITE	767,092	17.61	100.00
TOTAL IMPERVIOUS AREA	137,497	3.16	17.92
TOTAL AREA DISTURBED	235,224	5.40	30.66

PROPERTY ZONING

CHRISTIAN LIFE CENTER RURAL RESIDENTIAL R-8

PARKING CALCULATIONS

PROPOSED USE: CHURCH ASSEMBLY

PROPOSED BUILDING:	REQUIRED PARKING SPACES*
612 1ST FLOOR REGULAR SEATING	122
118 1ST FLOOR OVERFLOW SEATING	24
330 BALCONY SEATING	66
TOTAL	212

TYPE:	REQUIRED	PROVIDED
HANDICAP	7	8
REGULAR 9'x18'	205	269
TOTAL PARKING PROVIDED	212	277

* AT 1 SPACE/5 SEATS (BASED ON BENCH SEATING ALLOWING FOR 24"/SEAT)

CHRISTIAN LIFE CENTER
 LONG HILL, VIRGINIA

PC 103

7222-SHEET NO

BORE AND JACK PIT
RARE EASEMENT

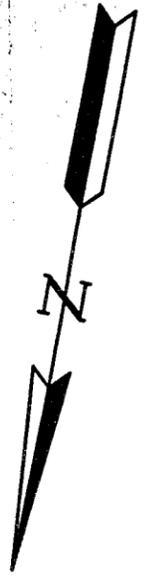
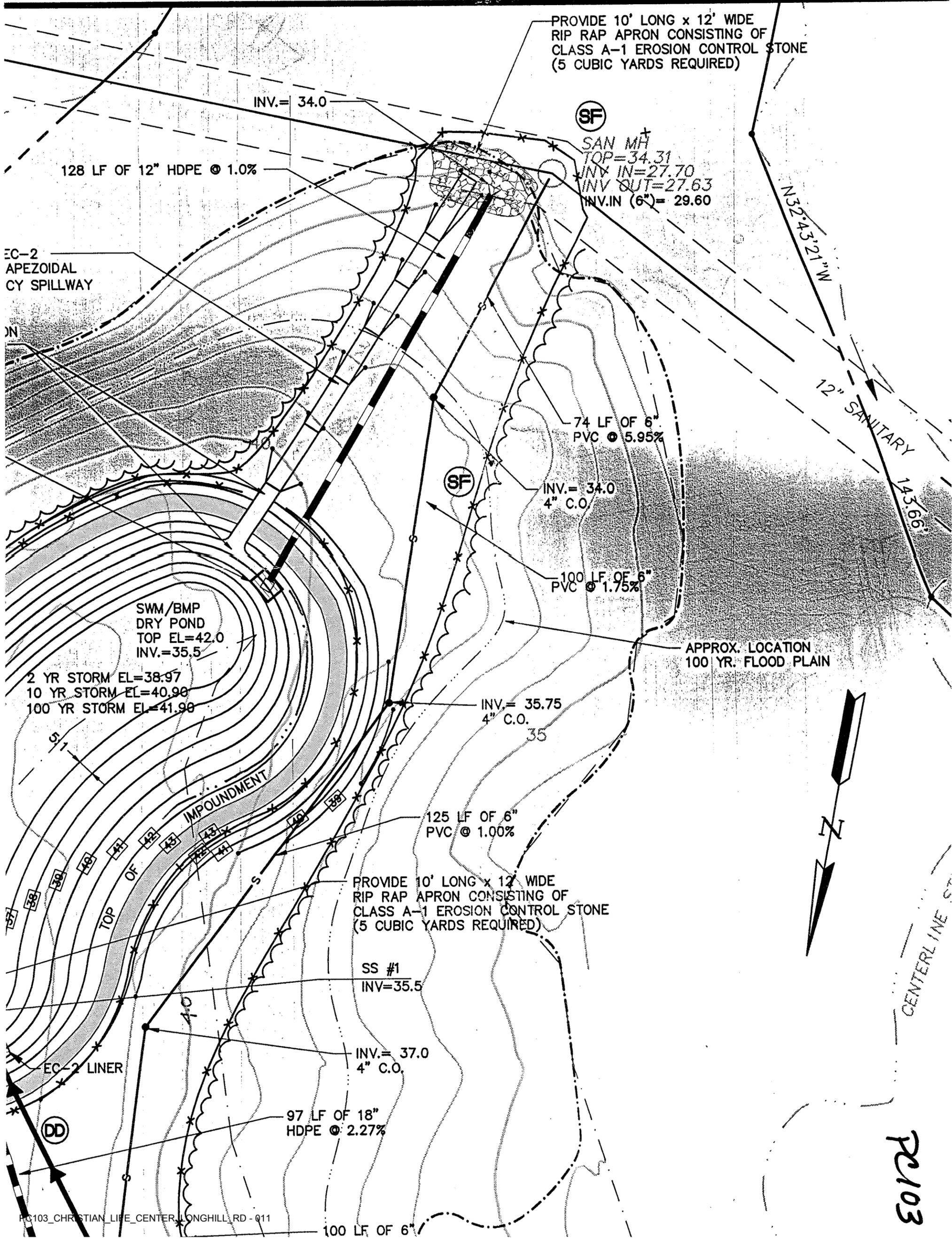
CONTRACTOR TO BE CERTIFIED FOR WORKING
WITH ASBESTOS/CONCRETE PIPING. CONTRACTOR
TO ADHERE TO ALL REGULATIONS & SAFETY
STANDARDS REGARDING THE HANDLING AND
TAPPING OF ASBESTOS CONCRETE PIPING.

GRAPHIC SCALE

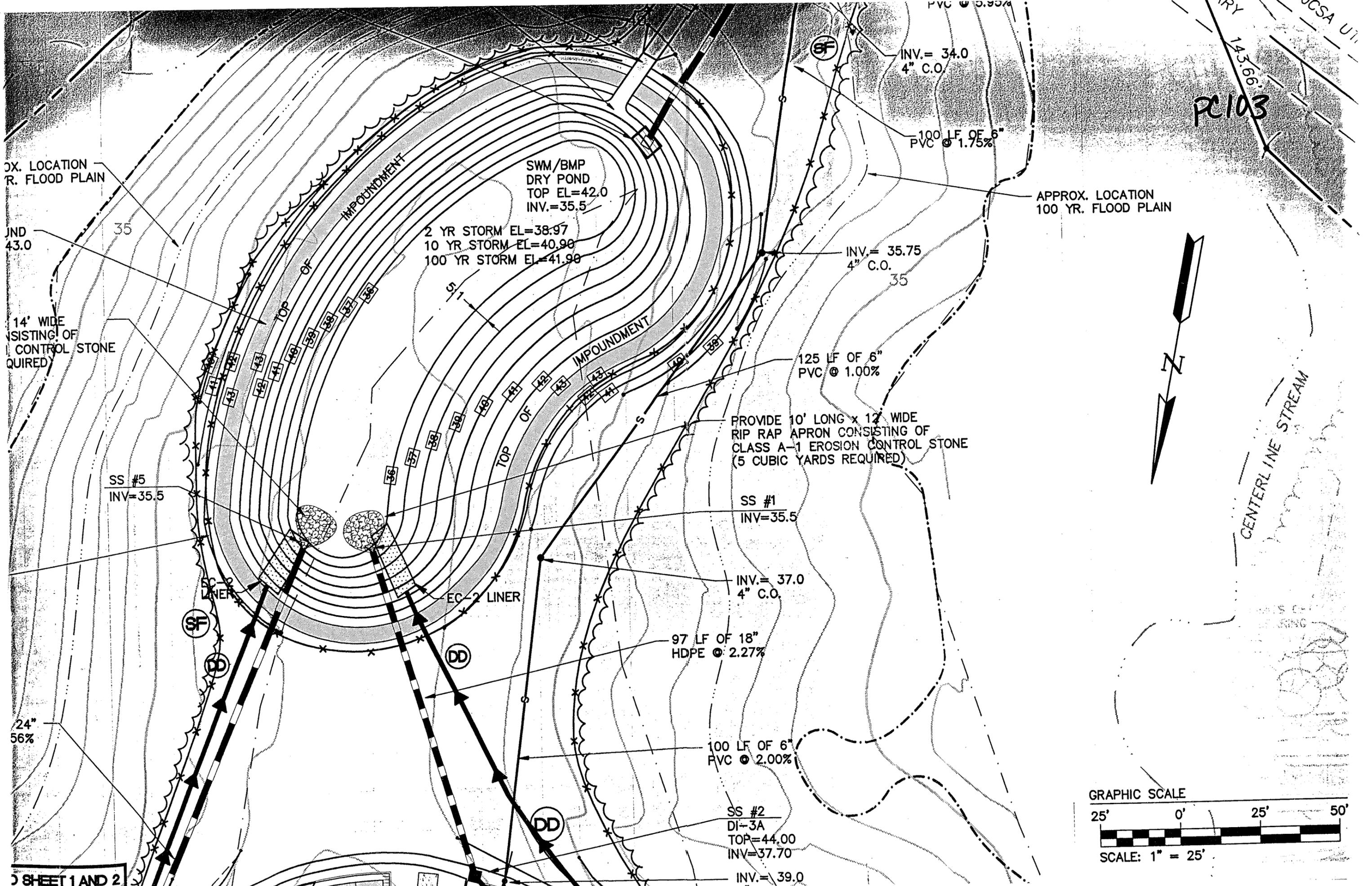


SCALE: 1" = 40'

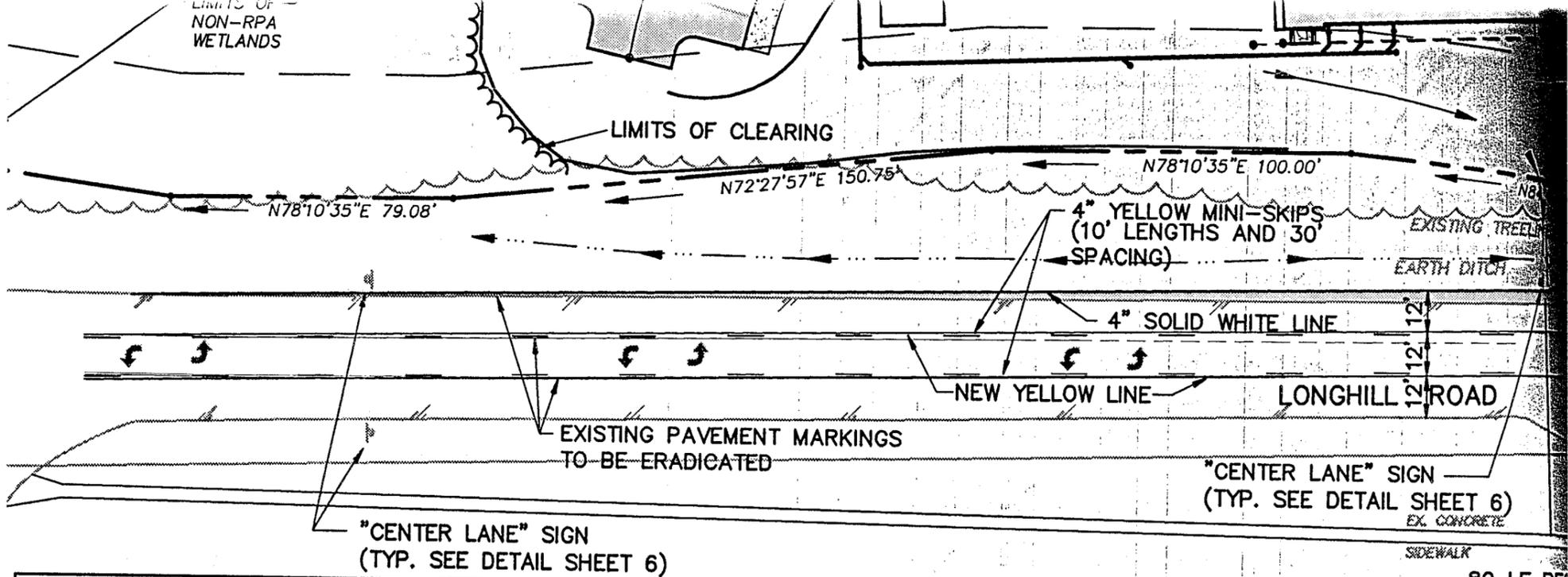
ION



PC103



SHEET 1 AND 2



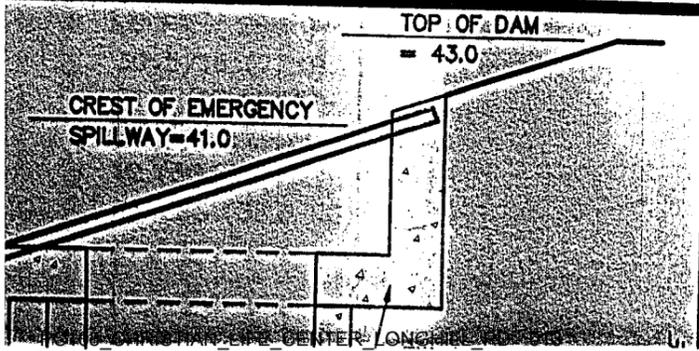
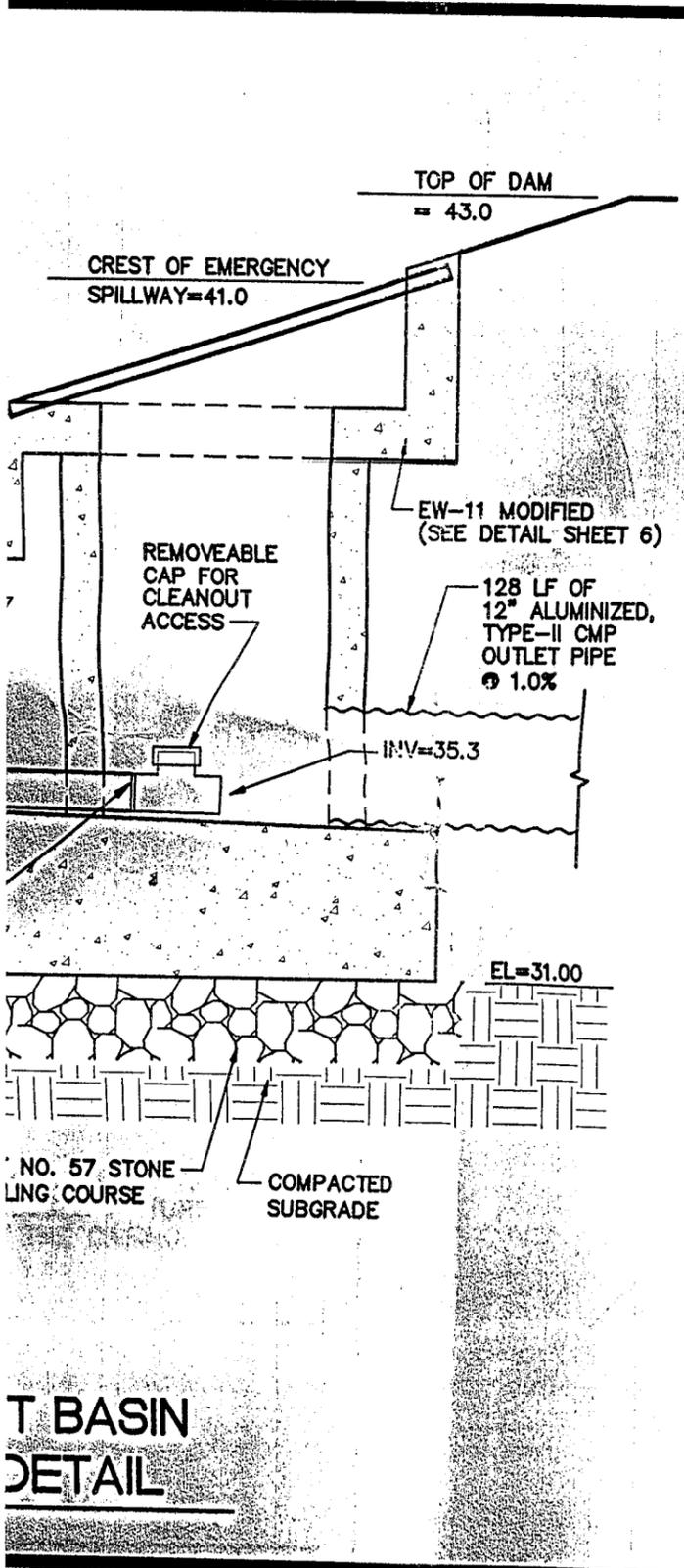
NOTE:

1. WHERE NEW PAVEMENT MARKING DESIGNS ARE REQUIRED, ALL EXISTING MARKINGS SHALL BE ERADICATED.
2. PLEASE CALL MR. BURT CHITTUM 72 HOURS PRIOR TO ALL PAVEMENT MARKINGS, AT (757) 925-2666.
3. AN APPROVED PLAN SHEET SHALL BE SUBMITTED 2 WEEKS BEFORE THE WORK IS TO BE PERFORMED.

80 LF RE
JOINT DI

15'x30' BORE PI
55 LF OF 16" S
TO BE INSTALLE
& JACK

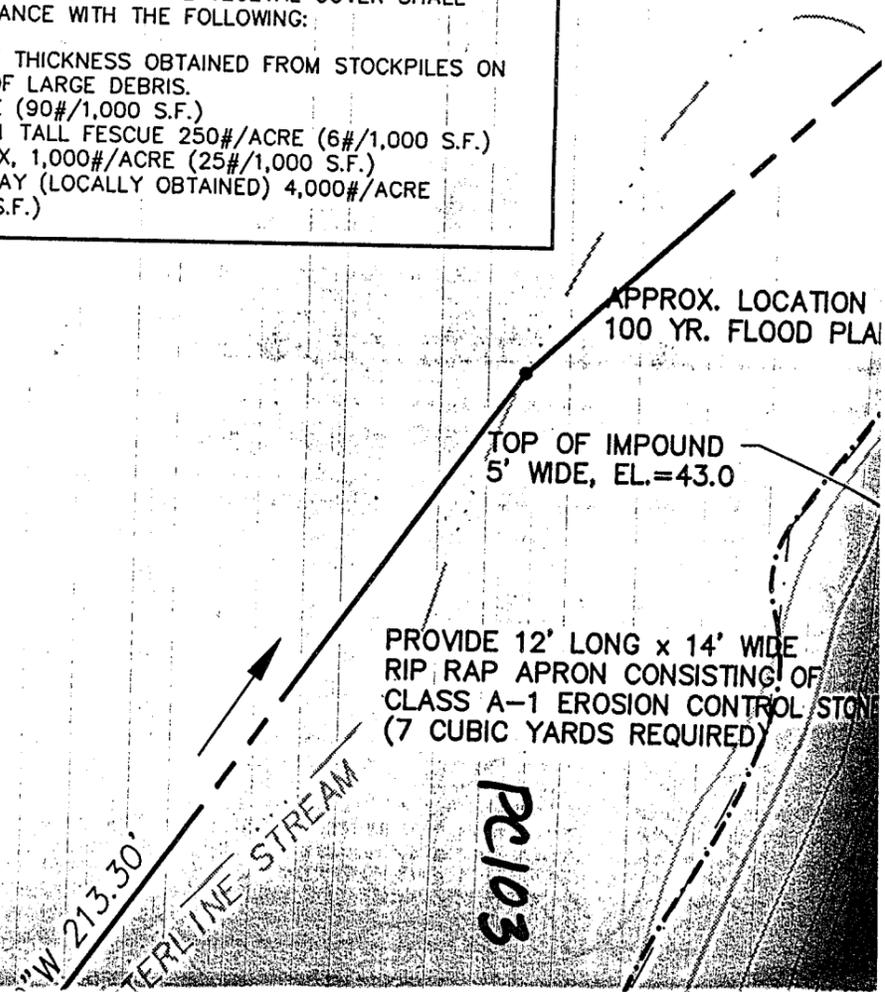
TURNLANE, ENTRANCE



DAM CONSTRUCTION NOTES

1. **SITE PREPARATION:** THE CONTRACTOR SHALL STRIP ALL AREAS OF THE PERMANENT CONSTRUCTION TO REMOVE ALL UNSUITABLE MATERIALS. THE UNSUITABLE MATERIALS TO BE REMOVED BY STRIPPING SHALL INCLUDE ALL TOPSOIL, DEBRIS AND VEGETABLE MATTER, INCLUDING STUMPS AND ROOTS, AND ALL OTHER MATERIALS WHICH MAY BE UNSUITABLE FOR USE IN THE PERMANENT CONSTRUCTION.
2. **PRINCIPAL SPILLWAY:** THE BOTTOM OF THE SPILLWAY RISER FOUNDATION BASE EXCAVATION SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER TO ENSURE THAT ALL UNSUITABLE AND LOOSE MATERIALS ARE REMOVED AND THAT ACCEPTABLE BEARING CONDITIONS EXIST IN THE EXCAVATION'S BASE. ALL JOINTS IN THE PRINCIPAL SPILLWAY RISER STRUCTURE AND BARREL SHALL BE OF WATERTIGHT CONSTRUCTION. THE RISER OF THE PRINCIPAL SPILLWAY SHALL BE SECURELY ATTACHED TO THE BARREL BY A WATERTIGHT CONNECTION. THE BARREL AND RISER SHALL BE PLACED ON A FIRM COMPACTED SOIL FOUNDATION, THE BASE OF THE RISER SHALL BE FIRMLY ANCHORED ACCORDING TO THE DESIGN CRITERIA TO PREVENT ITS FLOATING. PERVIOUS MATERIALS SUCH AS SAND, GRAVEL OR CRUSHED STONE SHALL NOT BE USED AS BACK FILL AROUND THE BARREL. FILL MATERIAL SHALL BE PLACED AROUND THE PIPE IN 4-INCH LAYERS AND COMPACTED BY HAND AT LEAST TO THE SAME DENSITY AS THE EMBANKMENT. A MINIMUM OF TWO FEET OF FILL SHALL BE HAND-COMPACTED OVER THE BARREL BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT.
3. **VEGETATIVE STABILIZATION:** FINAL VEGETATIVE COVER (STABILIZATION) SHALL CONSIST OF TOP SOILING, LIMING, FERTILIZING, SEEDING, AND MULCHING TO ASSURE A FIRM STAND OF GRASS AS SOON AS PRACTICAL. SEDIMENT BASINS AND OTHER TEMPORARY EROSION CONTROL MEASURES ARE TO BE REMOVED ONLY WHEN STABILIZATION IS COMPLETE. FINAL VEGETAL COVER SHALL BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING:
 - TOPSOIL: AT LEAST 2" THICKNESS OBTAINED FROM STOCKPILES ON SITE, FREE OF LARGE DEBRIS.
 - LIME: 4,000#/ACRE (90#/1,000 S.F.)
 - SEED: KENTUCKY 31 TALL FESCUE 250#/ACRE (6#/1,000 S.F.)
 - FERTILIZER: 10/20/10 MIX, 1,000#/ACRE (25#/1,000 S.F.)
 - MULCH: STRAW OR HAY (LOCALLY OBTAINED) 4,000#/ACRE (90#/1,000 S.F.)

PRINCIPAL SPILLWAY
36" WIDE MODIFIED
STRUCTURE @ 3:1
BARS TO BE HORIZ
OF BAR GRATE TO
WEIR STRUCTURE A
PRINCIPAL SPILLWAY
(SEE DETAIL THIS S



6" PVC PIPE WITH 6"x6" TEE.

VDOT NO. 57 STONE
LEVELING COURSE

COMPACTED
SUBGRADE

TEMPORARY SEDIMENT BASIN RISER STRUCTURE DETAIL

N.T.S.

TOPSOIL: AT LEAST 2" THICKNESS OBTAINED FROM STOCKPILES ON SITE, FREE OF LARGE DEBRIS
 LIME: 4,000//ACRE (90//1,000 S.F.)
 SEED: KENTUCKY 31 TALL FESCUE 250//ACRE (6//1,000 S.F.)
 FERTILIZER: 10/20/10 MIX 1,000//ACRE (25//1,000 S.F.)
 MULCH: STRAW OR HAY (LOCALLY OBTAINED) 4,000//ACRE (90//1,000 S.F.)

APPROX. LOCATION -
100 YR. FLOOD PLAIN

TOP OF IMPOUND
5' WIDE, EL.=43.0

PROVIDE 12' LONG x 14' WIDE
RIP RAP APRON CONSISTING OF
CLASS A-1 EROSION CONTROL STO
(7 CUBIC YARDS REQUIRED)

S23°56'30"W 213.30'
CENTERLINE STREAM

TEMPORARY ORANGE SAFETY FENCE
TO BE REMOVED AFTER CONVERSION
TO THE PERMANENT CONFIGURATION.

144 LF OF 24"
HDPE @ 1.56%

RPA LINE

MATCH TO SHEET 1 AND

100 YR. STORM EL=41.90

10 YR. STORM EL=40.90

2 YR. STORM EL=38.97

CREST OF PRINCIPAL SPILLWAY = 38.0

TOP OF DAM
= 43.0

CREST OF EMERGENCY
SPILLWAY=41.0

FINISHED GRADE

COVER 6" PVC PIPE
W/ LOOSELY PLACED
CLASS A1 RIP RAP
STONE (D₅₀=0.50)

ANCHOR PIPE
IN CONCRETE

10 LF. OF 6"
PERFORATED
PVC @ 0.40%

13 LF. OF 6" PVC PIPE

REMOVEABLE
CAP FOR
CLEANOUT
ACCESS

EW-11 MODIFIED
(SEE DETAIL SHEET 6)

128 LF OF
12" ALUMINIZED
TYPE II CMP
OUTLET PIPE
@ 1.0%

2" DIA HOLE
IN CAP
INV=35.3

REMOVE TEMPORARY DEWATERING RISER AND
REPLACE W/ 10 LF. OF 6" PERFORATED
POLYETHYLENE PIPE COVERED WITH #57 STONE.

6" PVC PIPE WITH 1.5" TEE TO WATER QUALITY
ORIFICE IN SPILLWAY @ ELEV=35.3.

EL=31.00

VDOT NO. 57 STONE
LEVELING COURSE

COMPACTED
SUBGRADE

PERMANENT SWM DRY POND RISER STRUCTURE DETAIL

N.T.S.

11.29.98-18:57220C03.dwg

RMO

CERTIFICATION OF SOURCE OF TITLE

THE PROPERTY SHOWN HEREON WAS CONVEYED TO THOMAS M. WELLS, ANDREW CRONAN AND DONALD AGETT, TRUSTEES OF THE CHRISTIAN LIFE CENTER FROM O. JEAN RENICK, ET ALS BY DEED DATED AUGUST 7, 1996 AND RECORDED IN DEED BOOK 814, PAGE 911 IN THE OFFICE OF THE CLERK OF THE CIRCUIT COURT OF THE COUNTY OF JAMES CITY, VIRGINIA.

OWNER'S CONSENT AND DEDICATION

THIS PLAT IS WITH THE FREE CONSENT AND IN ACCORDANCE WITH THE DESIRE OF THE UNDERSIGNED OWNERS, PROPRIETORS, AND/OR TRUSTEES.

FOR CHRISTIAN LIFE CENTER _____ DATE _____

CERTIFICATE OF NOTARIZATION

STATE OF VIRGINIA, CITY/COUNTY OF _____, TO WIT:

I, _____ A NOTARY PUBLIC IN AND FOR THE CITY/COUNTY AND STATE AFORESAID, DO HEREBY CERTIFY THAT THE ABOVE PERSON WHOSE NAME IS SIGNED TO THE FOREGOING WRITING HAS ACKNOWLEDGED THE SAME BEFORE ME IN MY CITY/COUNTY AND STATE AFORESAID.

GIVEN UNTO MY HAND THIS _____ DAY OF _____, 1998,

MY COMMISSION EXPIRES _____

NOTARY PUBLIC

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS PLAT COMPLIES WITH ALL OF THE REQUIREMENTS OF THE BOARD OF SUPERVISORS AND ORDINANCES OF THE COUNTY OF JAMES CITY, VIRGINIA, REGARDING THE PLATTING OF SUBDIVISIONS WITHIN THE COUNTY.

Ronald W. Eads 7-22-98
RONALD W. EADS, L.S., #1948 DATE

CERTIFICATE OF APPROVAL

THIS SUBDIVISION IS APPROVED BY THE UNDERSIGNED IN ACCORDANCE WITH EXISTING SUBDIVISION REGULATIONS AND MAY BE ADMITTED TO RECORD.

VIRGINIA DEPARTMENT OF TRANSPORTATION _____ DATE _____

SUBDIVISION AGENT OF THE COUNTY OF JAMES CITY _____ DATE _____

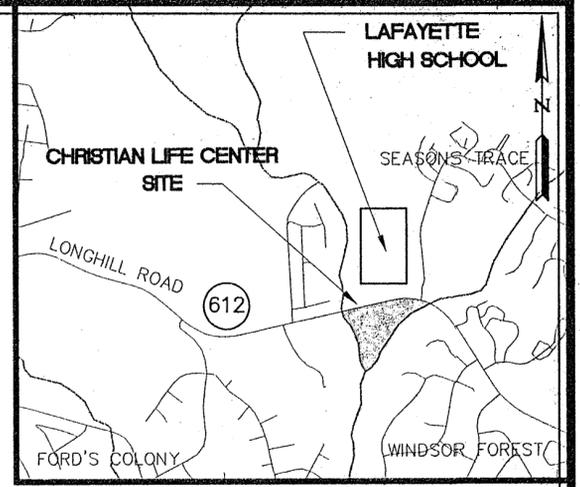
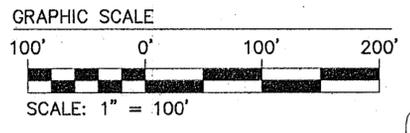
LEGEND:

VDOT R/W DEDICATION

REFERENCES:

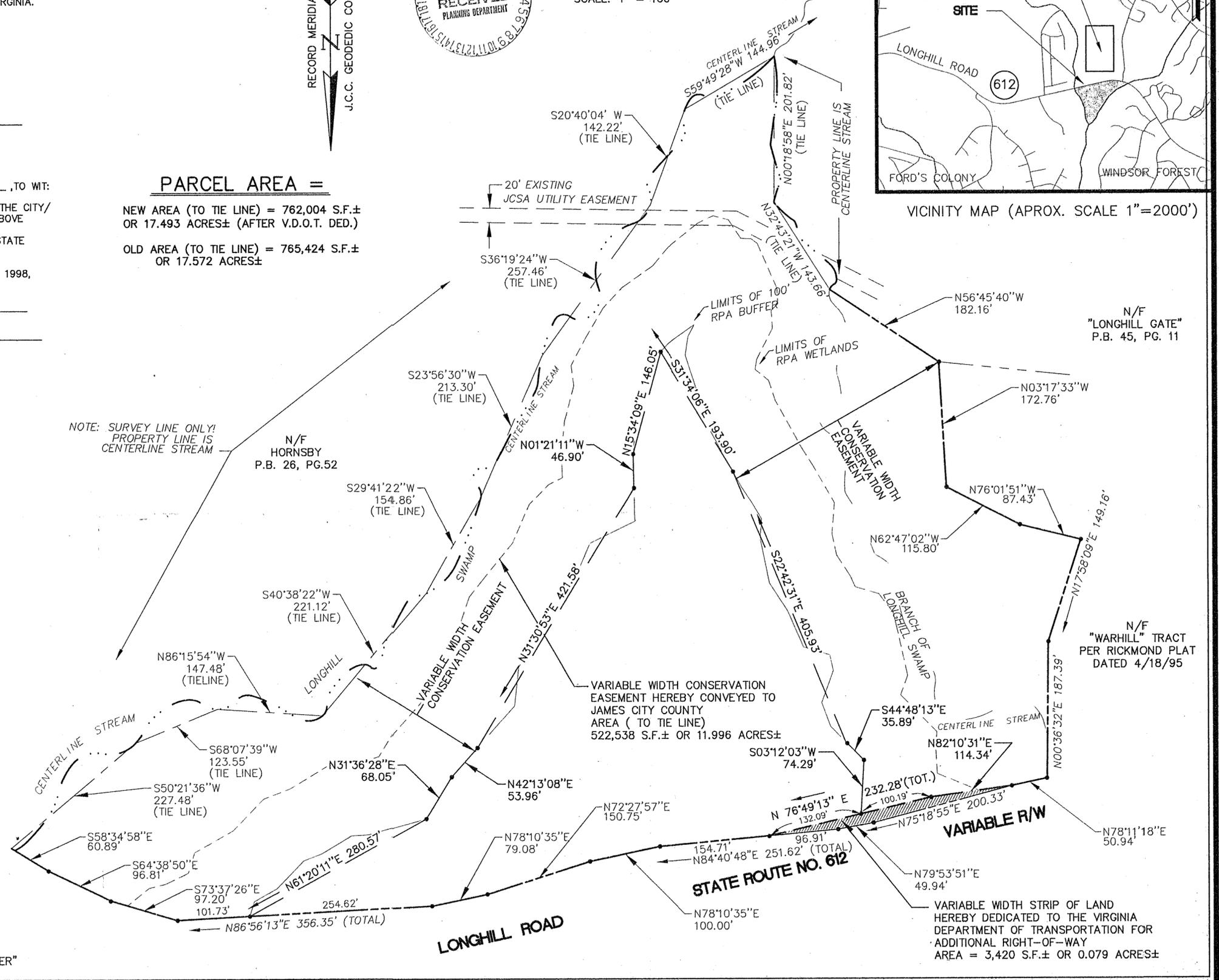
- * D.B. 307, PG. 81
- * D.B. 131, PG. 480-483
- * P.B. 22, PG. 59
- * PLAT BY AES CONSULTING ENGINEERS DATED 9/30/96, ENTITLED "PLAT OF SURVEY A PARCEL CONTAINING 17.8 AC.± FOR CONVEYANCE TO CHRISTIAN LIFE CENTER"

SP-33-98

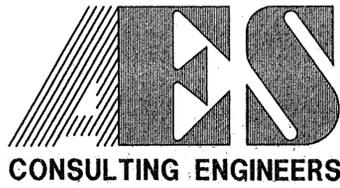


PARCEL AREA =

NEW AREA (TO TIE LINE) = 762,004 S.F.± OR 17.493 ACRES± (AFTER V.D.O.T. DED.)
OLD AREA (TO TIE LINE) = 765,424 S.F.± OR 17.572 ACRES±

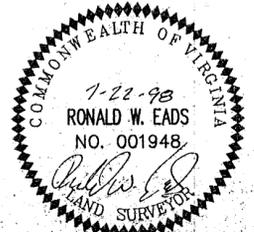


23.07.98-09:36 72220P01.DWG CWG



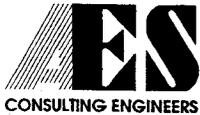
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994

PLAT SHOWING
CONSERVATION EASEMENT TO JAMES CITY COUNTY
AND
RIGHT-OF-WAY DEDICATION TO
VIRGINIA DEPARTMENT OF TRANSPORTATION
BEING THE PROPERTY OWNED BY
CHRISTIAN LIFE CENTER
POWHATAN DISTRICT JAMES CITY COUNTY VIRGINIA



No.	DATE	REVISION / COMMENT / NOTE	BY

Designed AES	Drawn CWG
Scale 1"=100'	Date 7/22/98
Project No. 7222-1	
Drawing No. 1 OF 1	



5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax: (757) 220-8994

PROJECT CHRISTIAN LIFE CENTER PC103

PROJECT NO. 7222

SUBJECT TEMP DRAINAGE CRIFICE

SHEET NO. 1 OF 2

CALCULATED BY RMO DATE 6/98

TEMPORARY SEDIMENT BASIN
DRAINAGE CRIFICE

$$\text{TOTAL DISTURBED AREA DRAINING TO BASIN} = 4.6 \text{ AC} \\ \times 134 \times 27 = 16,643 \text{ cu ft.}$$

$$V_1 = 16,643 \text{ cu ft} \quad t_{\text{HOURS}} = 21,600 \text{ SEC}$$

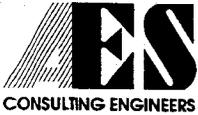
$$Q = \frac{V_1}{\text{SEC}} = \frac{16,643}{21,600} = 0.77 \text{ CFS}$$

$$h = h_2 - h_1 = 36.7 - 37.35 = 1.35 \text{ FT}$$

$$A_0 = \frac{Q}{(64.37 * h/2)^{1/2} * 0.6} = \frac{0.77}{3.95} = 0.195 \text{ FT}^2$$

$$d = 2 \left(\frac{A_0}{3.14} \right)^{1/2} = 2 \left(\frac{0.195}{3.14} \right)^{1/2} = 0.49 \text{ FT} = 5.97 \text{ INCH}$$

6 INCH



5248 Olde Towne Road, Suite 1
 Williamsburg, Virginia 23188
 (757) 253-0040
 Fax: (757) 220-8994

PC103

PROJECT CHRISTIAN LIFE CENTER
 PROJECT NO. 7122
 SUBJECT PERM. DRAINAGE CRIFICE
 SHEET NO. 2 OF 2
 CALCULATED BY RMO DATE 6/98

104 Ponds

PERMANENT DRAINAGE CRIFICE SIZING

MIN WATER QUANTITY VOLUME = 12,531 CU. FT. (SEE ATTACHED)

$S_1 = 12,531$ 24 HRS = 86,400 SEC.

$Q = \frac{S_1}{SEC} = \frac{12,531}{86,400} = 0.145$ CFS.

USE ORIFICE FLOW EQ: $Q = K \cdot A_o \sqrt{2gh}$

$K = 0.97$

$h = h_2 - h_1 = 38.0 - 35.3$ RISE ACREST TO POND INLET

SOLVE FOR AREA! $\Delta h = 2.7$

$AREA = \frac{Q}{K \cdot \sqrt{2gh}} = \frac{0.145}{0.97 \sqrt{64.4 \cdot 2.7}} = 0.011$ SQ FT

$A = \frac{\pi D^2}{4} \Rightarrow 0.011 = \frac{\pi D^2}{4}$ $D^2 = 0.0144$
 $D = 0.120$ FT = 1.44 INCH

USE 1.5 INCH

Hydrograph Summary Report

PC103

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Return period (yrs)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	6.2	2	724	18,249	2	—	—	—	2 yr Pre-Dev
2	SCS Runoff	15.5	2	722	43,460	10	—	—	—	10 Yr Pre-Dev
3	SCS Runoff	19.8	2	722	55,466	25	—	—	—	25 Yr Pre-Dev
4	SCS Runoff	27.7	2	722	77,859	100	—	—	—	100 Yr Pre-Dev
6	SCS Runoff	18.5	2	718	44,028	2	—	—	—	2 Yr Post-Dev
7	SCS Runoff	31.6	2	718	78,090	10	—	—	—	10 Yr Post-Dev
8	SCS Runoff	37.2	2	718	92,868	25	—	—	—	25 Yr Post-Dev
9	SCS Runoff	47.1	2	718	119,265	100	—	— <i>38.97?</i>	—	100 Yr Post-Dev
11	Reservoir	4.0	2	730	36,416	2	6	39.18	22,915	2 Yr Post - Routed
12	Reservoir	5.3	2	732	70,433	10	7	40.91 ✓	40,532	10 Yr Post Routed
13	Reservoir	5.7	2	732	92,861	25	8	41.45	46,997	25 Yr. E&S Routed
14	Reservoir	19.1	2	726	111,576	100	9	41.91 ✓ <i>D.H.W</i>	52,828	100 Yr. Route SWM

Proj. file: 72220e04.gpw

IDF file: jccyork.IDF

Run date: 09-28-1998

Reservoir Report

Reservoir No. 2 - Dry Pond

Pond Data

Pond storage is based on known contour areas

Stage / Storage Table

Stage ft	Elevation ft	Contour area sqft	Incr. Storage cuft	Total storage cuft
0.00	35.50	3,064	0	0
0.50	36.00	4,422	1,872	1,872
1.50	37.00	5,755	5,089	6,961
2.50	38.00	7,142	6,449	13,410
3.50	39.00	8,585	7,864	21,274
4.50	40.00	10,080	9,333	30,607
5.50	41.00	11,634	10,857	41,464
6.50	42.00	13,225	12,430	53,894

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise in	= 12.0	2.0	0.0	0.0
Span in	= 12.0	2.0	0.0	0.0
No. Barrels	= 1	1	0	0
Invert El. ft	= 35.30	35.50	0.00	0.00
Length ft	= 128.0	0.1	0.0	0.0
Slope %	= 1.00	0.00	0.00	0.00
N-Value	= .013	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= ----	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len ft	= 3.0	5.0	0.0	0.0
Crest El. ft	= 38.00	41.00	0.00	0.00
Weir Coeff.	= 3.00	3.00	0.00	0.00
Eqn. Exp.	= 1.50	1.50	0.00	0.00
Multi-Stage	= Yes	Yes	No	No

Tailwater Elevation = 37.00 ft

Note: All outflows have been analyzed under inlet and outlet control.

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Discharge cfs
0.00	0	35.50	0.00	0.00	---	---	0.00	0.00	---	---	0.00
0.50	1,872	36.00	0.00	0.00	---	---	0.00	0.00	---	---	0.00
1.50	6,961	37.00	0.00	0.00	---	---	0.00	0.00	---	---	0.00
2.50	13,410	38.00	2.70	0.10	---	---	0.00	0.00	---	---	0.10
3.50	21,274	39.00	3.81	0.15	---	---	9.00	0.00	---	---	3.81
4.50	30,607	40.00	4.67	0.18	---	---	25.46	0.00	---	---	4.67
5.50	41,464	41.00	5.39	0.21	---	---	46.77	0.00	---	---	5.39
6.50	53,894	42.00	6.03	0.23	---	---	72.00	15.00	---	---	6.03

Hydrograph Report

PC103

Hyd. No. 11

2 Yr Post - Routed SWM

Hydrograph type = Reservoir
 Storm frequency = 2 yrs
 Inflow hyd. No. = 6
 Max. Elevation = 39.18 ft

Peak discharge = 3.98 cfs
 Time interval = 2 min
 Reservoir name = Dry Pond
 Max. Storage = 22,915 cuft

Storage Indication method used.

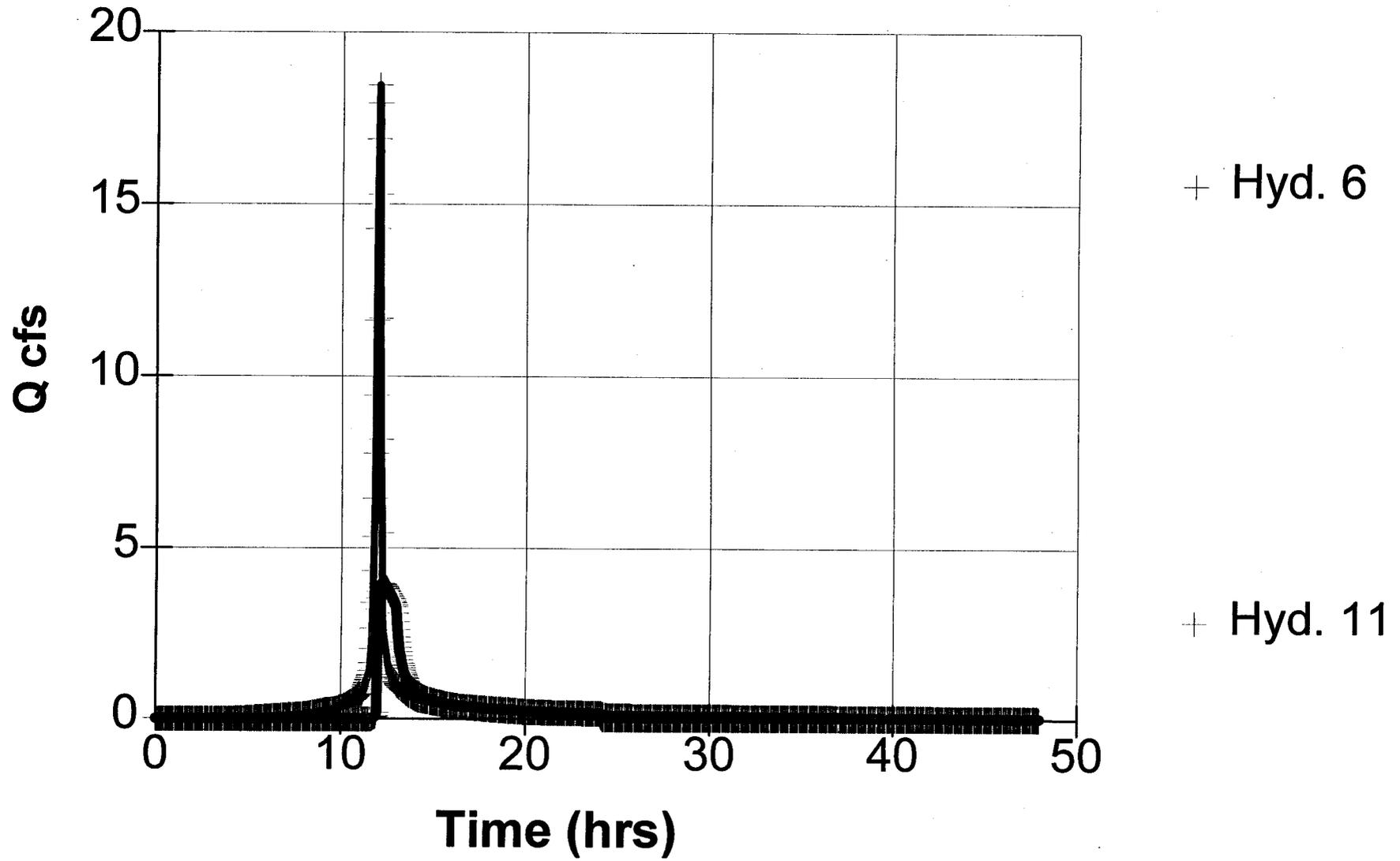
Total Volume = 36,416 cuft

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Outflow cfs
11.93	16.90	38.26	3.02	0.11	---	---	1.19	---	---	---	1.30
11.97	18.46 <<	38.49	3.29	0.09	---	---	3.11	---	---	---	3.20
12.00	17.93	38.72	3.53	0.14	---	---	5.49	---	---	---	3.53
12.03	15.30	38.92	3.73	0.15	---	---	7.91	---	---	---	3.73
12.07	11.66	39.05	3.86	0.15	---	---	9.75	---	---	---	3.86
12.10	8.15	39.13	3.94	0.15	---	---	10.84	---	---	---	3.94
12.13	5.44	39.17	3.97	0.15	---	---	11.37	---	---	---	3.97
12.17	3.70	39.18 <<	3.98	0.15	---	---	11.48	---	---	---	3.98 <<
12.20	2.86	39.17	3.97	0.15	---	---	11.35	---	---	---	3.97
12.23	2.57	39.15	3.95	0.15	---	---	11.12	---	---	---	3.95
12.27	2.46	39.13	3.94	0.15	---	---	10.86	---	---	---	3.94
12.30	2.35	39.11	3.92	0.15	---	---	10.57	---	---	---	3.92
12.33	2.24	39.09	3.90	0.15	---	---	10.28	---	---	---	3.90
12.37	2.12	39.07	3.88	0.15	---	---	9.97	---	---	---	3.88
12.40	2.01	39.05	3.86	0.15	---	---	9.65	---	---	---	3.86
12.43	1.90	39.02	3.83	0.15	---	---	9.31	---	---	---	3.83
12.47	1.79	39.00	3.81	0.15	---	---	8.96	---	---	---	3.81
12.50	1.67	38.97	3.78	0.15	---	---	8.54	---	---	---	3.78
12.53	1.56	38.93	3.75	0.15	---	---	8.11	---	---	---	3.75
12.57	1.46	38.90	3.72	0.14	---	---	7.67	---	---	---	3.72
12.60	1.38	38.86	3.68	0.14	---	---	7.24	---	---	---	3.68
12.63	1.32	38.83	3.65	0.14	---	---	6.80	---	---	---	3.65
12.67	1.28	38.79	3.61	0.14	---	---	6.36	---	---	---	3.61
12.70	1.24	38.76	3.57	0.14	---	---	5.94	---	---	---	3.57
12.73	1.21	38.72	3.54	0.14	---	---	5.53	---	---	---	3.54
12.77	1.19	38.69	3.50	0.12	---	---	5.13	---	---	---	3.50
12.80	1.16	38.65	3.46	0.09	---	---	4.74	---	---	---	3.46
12.83	1.14	38.62	3.43	0.05	---	---	4.36	---	---	---	3.43
12.87	1.11	38.58	3.39	0.05	---	---	4.00	---	---	---	3.38
12.90	1.09	38.55	3.35	0.06	---	---	3.65	---	---	---	3.34
12.93	1.06	38.51	3.32	0.08	---	---	3.31	---	---	---	3.29
12.97	1.03	38.48	3.28	0.09	---	---	3.00	---	---	---	3.09
13.00	1.01	38.45	3.25	0.10	---	---	2.73	---	---	---	2.83
13.03	0.98	38.42	3.22	0.10	---	---	2.50	---	---	---	2.60
13.07	0.96	38.40	3.19	0.11	---	---	2.29	---	---	---	2.39
13.10	0.94	38.38	3.17	0.11	---	---	2.12	---	---	---	2.23

Continues on next page...

11 - Reservoir - 2 Yr - $Q_p = 3.98$ cfs



PC103

Hydrograph Report

PC103

Hyd. No. 12

10 Yr Post Routed SWM

Hydrograph type = Reservoir
 Storm frequency = 10 yrs
 Inflow hyd. No. = 7
 Max. Elevation = 40.91 ft

Peak discharge = 5.33 cfs
 Time interval = 2 min
 Reservoir name = Dry Pond
 Max. Storage = 40,532 cuft

Storage Indication method used.

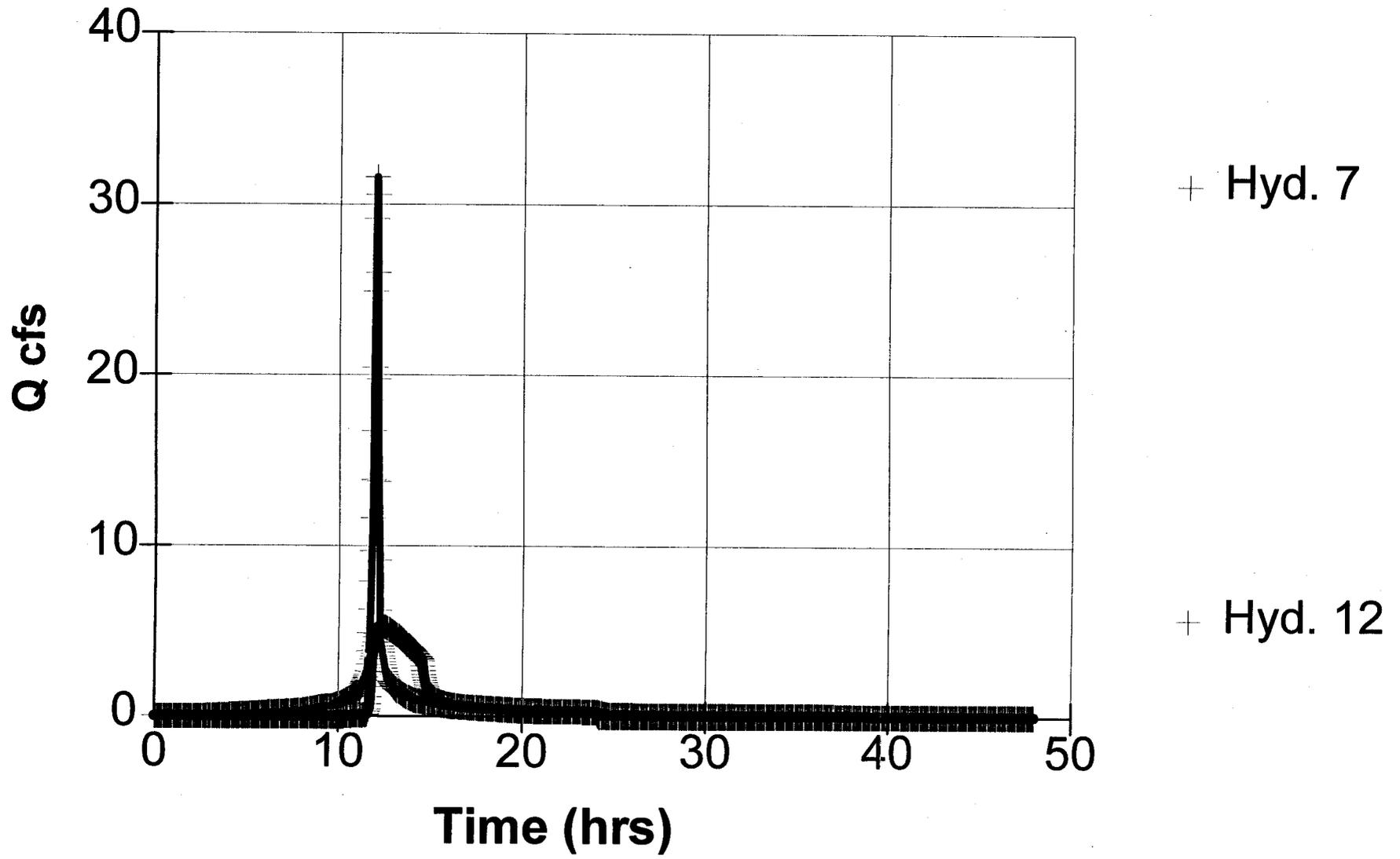
Total Volume = 70,433 cuft

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Outflow cfs
11.60	3.81	38.10	2.83	0.11	---	---	0.30	---	---	---	0.41
11.63	4.89	38.16	2.90	0.11	---	---	0.60	---	---	---	0.71
11.67	6.28	38.23	2.99	0.11	---	---	1.02	---	---	---	1.13
11.70	7.91	38.32	3.10	0.11	---	---	1.62	---	---	---	1.74
11.73	9.71	38.42	3.21	0.10	---	---	2.46	---	---	---	2.56
11.77	11.61	38.54	3.34	0.07	---	---	3.56	---	---	---	3.32
11.80	13.85	38.68	3.49	0.12	---	---	5.05	---	---	---	3.49
11.83	16.71	38.86	3.68	0.14	---	---	7.17	---	---	---	3.68
11.87	20.41	39.07	3.88	0.15	---	---	9.98	---	---	---	3.88
11.90	24.87	39.31	4.10	0.16	---	---	13.51	---	---	---	4.10
11.93	29.17	39.60	4.35	0.17	---	---	18.28	---	---	---	4.35
11.97	31.63 <<	39.94	4.62	0.18	---	---	24.26	---	---	---	4.62
12.00	30.57	40.24	4.85	0.19	---	---	30.12	---	---	---	4.85
12.03	25.97	40.49	5.04	0.20	---	---	35.47	---	---	---	5.04
12.07	19.73	40.69	5.18	0.20	---	---	39.73	---	---	---	5.18
12.10	13.75	40.82	5.27	0.21	---	---	42.58	---	---	---	5.27
12.13	9.15	40.89	5.32	0.21	---	---	44.13	---	---	---	5.32
12.17	6.21	40.91	5.33	0.21	---	---	44.73	---	---	---	5.33
12.20	4.80	40.91 <<	5.33	0.21	---	---	44.77	---	---	---	5.33 <<
12.23	4.30	40.91	5.33	0.21	---	---	44.57	---	---	---	5.33
12.27	4.11	40.89	5.32	0.21	---	---	44.29	---	---	---	5.32
12.30	3.92	40.88	5.31	0.21	---	---	43.96	---	---	---	5.31
12.33	3.73	40.86	5.30	0.21	---	---	43.59	---	---	---	5.30
12.37	3.55	40.84	5.29	0.21	---	---	43.18	---	---	---	5.29
12.40	3.36	40.82	5.27	0.21	---	---	42.72	---	---	---	5.27
12.43	3.17	40.80	5.26	0.20	---	---	42.21	---	---	---	5.26
12.47	2.98	40.78	5.24	0.20	---	---	41.67	---	---	---	5.24
12.50	2.79	40.75	5.22	0.20	---	---	41.09	---	---	---	5.22
12.53	2.60	40.72	5.20	0.20	---	---	40.47	---	---	---	5.20
12.57	2.44	40.69	5.18	0.20	---	---	39.81	---	---	---	5.18
12.60	2.30	40.66	5.16	0.20	---	---	39.13	---	---	---	5.16
12.63	2.20	40.63	5.14	0.20	---	---	38.43	---	---	---	5.14
12.67	2.13	40.60	5.12	0.20	---	---	37.71	---	---	---	5.12
12.70	2.07	40.57	5.09	0.20	---	---	36.99	---	---	---	5.09
12.73	2.02	40.53	5.07	0.20	---	---	36.27	---	---	---	5.07
12.77	1.98	40.50	5.04	0.20	---	---	35.54	---	---	---	5.04

Continues on next page...

12 - Reservoir - 10 Yr - $Q_p = 5.33$ cfs



PC103

Reservoir Report

Reservoir No. 1 - E&S Basin

English

Pond Data

Pond storage is based on known contour areas

Stage / Storage Table

Stage ft	Elevation ft	Contour area sqft	Incr. Storage cuft	Total storage cuft
0.00	35.50	3,064	0	0
0.50	36.00	4,422	1,872	1,872
1.50	37.00	5,755	5,089	6,961
2.50	38.00	7,142	6,449	13,410
3.50	39.00	8,585	7,864	21,274
4.50	40.00	10,080	9,333	30,607
5.50	41.00	11,634	10,857	41,464
6.50	42.00	13,225	12,430	53,894

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise in	= 12.0	8.0	0.0	0.0
Span in	= 12.0	8.0	0.0	0.0
No. Barrels	= 1	1	0	0
Invert El. ft	= 35.50	37.60	0.00	0.00
Length ft	= 128.0	0.0	0.0	0.0
Slope %	= 1.00	0.00	0.00	0.00
N-Value	= .013	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= ---	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len ft	= 3.0	5.0	0.0	0.0
Crest El. ft	= 38.00	41.00	0.00	0.00
Weir Coeff.	= 3.00	3.00	0.00	0.00
Eqn. Exp.	= 1.50	1.50	0.00	0.00
Multi-Stage	= Yes	Yes	No	No

Tailwater Elevation = 37.00 ft

Stage / Storage / Discharge Table

Note: All outflows have been analyzed under inlet and outlet control.

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Discharge cfs
0.00	0	35.50	0.00	0.00	---	---	0.00	0.00	---	---	0.00
0.50	1,872	36.00	0.00	0.00	---	---	0.00	0.00	---	---	0.00
1.50	6,961	37.00	0.00	0.00	---	---	0.00	0.00	---	---	0.00
2.50	13,410	38.00	2.70	0.49	---	---	0.00	0.00	---	---	0.49
3.50	21,274	39.00	3.81	2.38	---	---	9.00	0.00	---	---	3.81
4.50	30,607	40.00	4.67	2.91	---	---	25.46	0.00	---	---	4.67
5.50	41,464	41.00	5.39	3.36	---	---	46.77	0.00	---	---	5.39
6.50	53,894	42.00	6.03	3.76	---	---	72.00	15.00	---	---	6.03

Hydrograph Report

PC103

Hyd. No. 13

25 Yr. E&S Routed

Hydrograph type = Reservoir
 Storm frequency = 25 yrs
 Inflow hyd. No. = 8
 Max. Elevation = 41.45 ft

Peak discharge = 5.68 cfs
 Time interval = 2 min
 Reservoir name = E&S Basin
 Max. Storage = 46,997 cuft

Storage Indication method used.

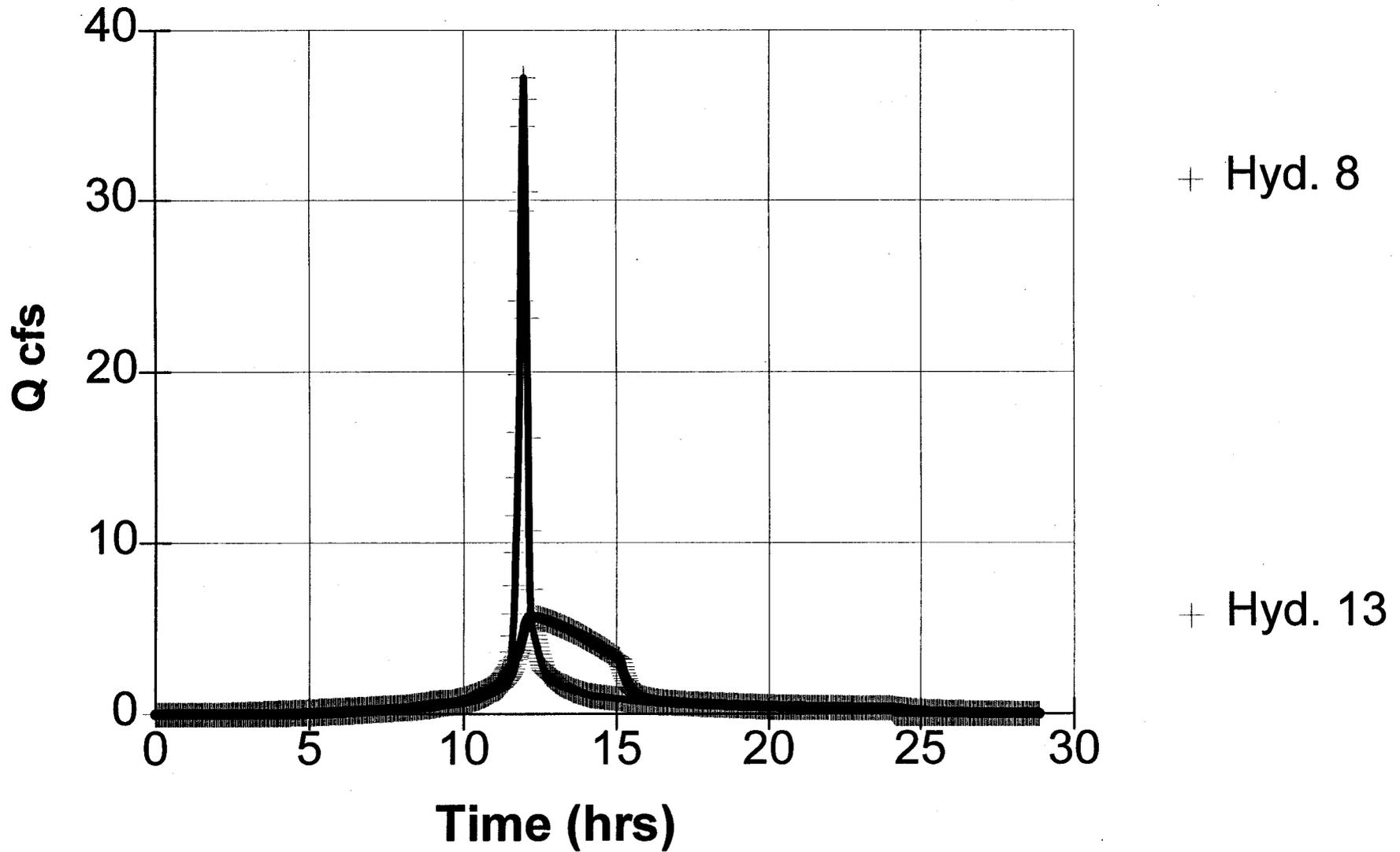
Total Volume = 92,861 cuft

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Outflow cfs
7.67	0.40	37.89	2.55	0.28	----	----	----	----	----	----	0.28
7.70	0.40	37.90	2.55	0.29	----	----	----	----	----	----	0.29
7.73	0.40	37.90	2.56	0.29	----	----	----	----	----	----	0.29
7.77	0.40	37.90	2.56	0.29	----	----	----	----	----	----	0.29
7.80	0.41	37.90	2.56	0.30	----	----	----	----	----	----	0.30
7.83	0.41	37.90	2.56	0.30	----	----	----	----	----	----	0.30
7.87	0.41	37.91	2.57	0.31	----	----	----	----	----	----	0.31
7.90	0.42	37.91	2.57	0.31	----	----	----	----	----	----	0.31
7.93	0.42	37.91	2.57	0.31	----	----	----	----	----	----	0.31
7.97	0.42	37.91	2.58	0.32	----	----	----	----	----	----	0.32
8.00	0.42	37.91	2.58	0.32	----	----	----	----	----	----	0.32
8.03	0.43	37.92	2.58	0.33	----	----	----	----	----	----	0.33
8.07	0.43	37.92	2.58	0.33	----	----	----	----	----	----	0.33
8.10	0.44	37.92	2.59	0.33	----	----	----	----	----	----	0.33
8.13	0.44	37.92	2.59	0.34	----	----	----	----	----	----	0.34
8.17	0.45	37.92	2.59	0.34	----	----	----	----	----	----	0.34
8.20	0.46	37.93	2.59	0.34	----	----	----	----	----	----	0.34
8.23	0.46	37.93	2.60	0.35	----	----	----	----	----	----	0.35
8.27	0.47	37.93	2.60	0.35	----	----	----	----	----	----	0.35
8.30	0.48	37.93	2.60	0.36	----	----	----	----	----	----	0.36
8.33	0.49	37.94	2.61	0.36	----	----	----	----	----	----	0.36
8.37	0.50	37.94	2.61	0.37	----	----	----	----	----	----	0.37
8.40	0.51	37.94	2.61	0.37	----	----	----	----	----	----	0.37
8.43	0.51	37.94	2.62	0.38	----	----	----	----	----	----	0.38
8.47	0.52	37.95	2.62	0.38	----	----	----	----	----	----	0.38
8.50	0.53	37.95	2.62	0.39	----	----	----	----	----	----	0.39
8.53	0.54	37.95	2.63	0.39	----	----	----	----	----	----	0.39
8.57	0.55	37.95	2.63	0.40	----	----	----	----	----	----	0.40
8.60	0.56	37.96	2.64	0.40	----	----	----	----	----	----	0.40
8.63	0.57	37.96	2.64	0.41	----	----	----	----	----	----	0.41
8.67	0.58	37.96	2.64	0.41	----	----	----	----	----	----	0.41
8.70	0.58	37.97	2.65	0.42	----	----	----	----	----	----	0.42
8.73	0.59	37.97	2.65	0.43	----	----	----	----	----	----	0.43
8.77	0.60	37.97	2.66	0.43	----	----	----	----	----	----	0.43
8.80	0.61	37.97	2.66	0.44	----	----	----	----	----	----	0.44
8.83	0.62	37.98	2.67	0.44	----	----	----	----	----	----	0.44

Continues on next page...

13 - Reservoir - 25 Yr - $Q_p = 5.68$ cfs



PC103

Hydrograph Report

PC103

Hyd. No. 14

100 Yr. Route SWM

Hydrograph type = Reservoir
 Storm frequency = 100 yrs
 Inflow hyd. No. = 9
 Max. Elevation = 41.91 ft

Peak discharge = 19.10 cfs
 Time interval = 2 min
 Reservoir name = Dry Pond
 Max. Storage = 52,828 cuft

Storage Indication method used.

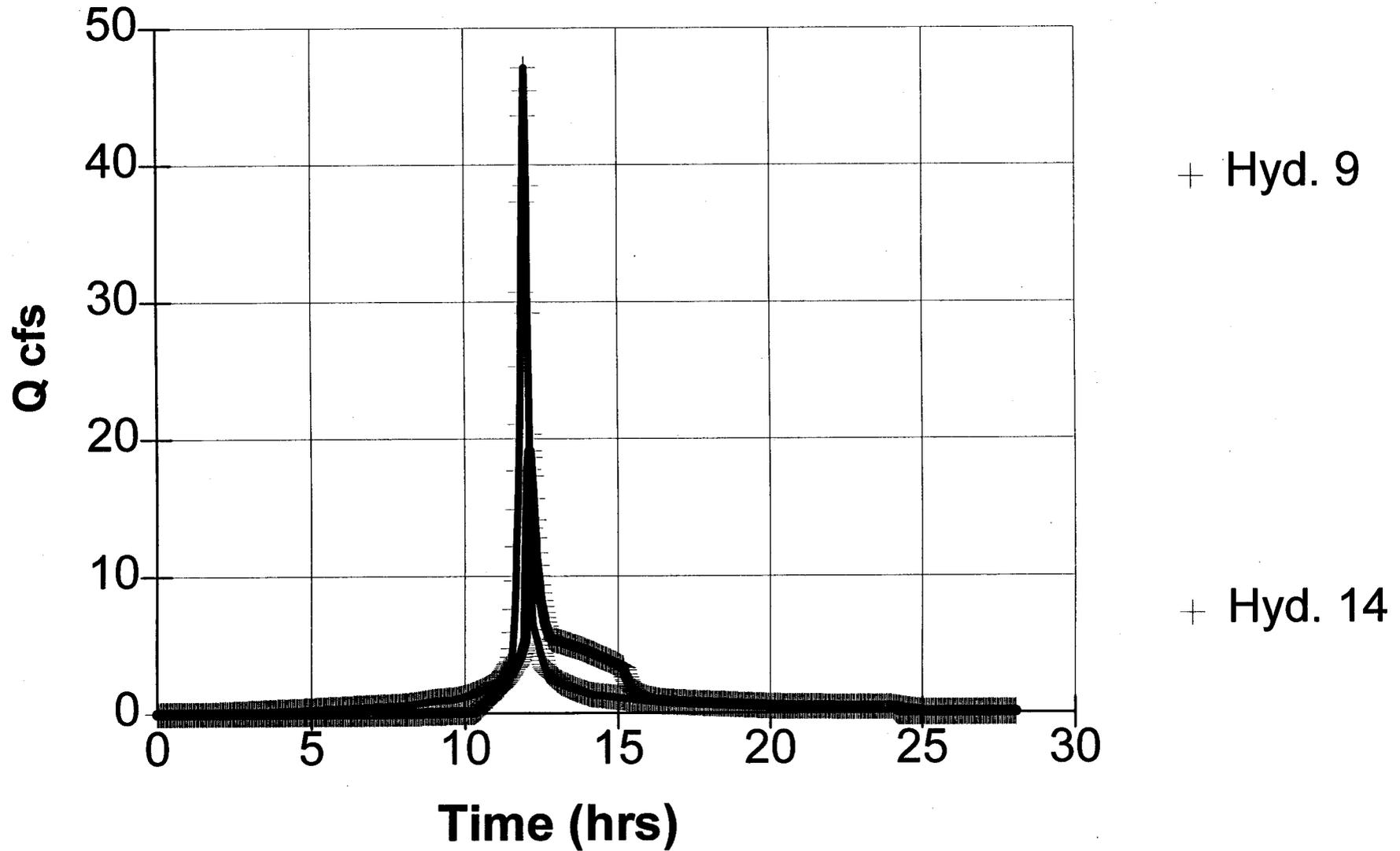
Total Volume = 111,576 cuft

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Outflow cfs
10.73	1.87	38.22	2.97	0.11	---	---	0.91	---	---	---	1.02
10.77	1.91	38.23	2.99	0.11	---	---	0.99	---	---	---	1.11
10.80	1.96	38.24	3.00	0.11	---	---	1.07	---	---	---	1.19
10.83	2.01	38.25	3.02	0.11	---	---	1.15	---	---	---	1.27
10.87	2.06	38.26	3.03	0.11	---	---	1.23	---	---	---	1.34
10.90	2.10	38.27	3.04	0.11	---	---	1.30	---	---	---	1.41
10.93	2.15	38.28	3.05	0.11	---	---	1.37	---	---	---	1.48
10.97	2.20	38.29	3.07	0.11	---	---	1.44	---	---	---	1.55
11.00	2.25	38.30	3.08	0.11	---	---	1.51	---	---	---	1.62
11.03	2.22	38.31	3.09	0.11	---	---	1.58	---	---	---	1.69
11.07	2.19	38.32	3.10	0.11	---	---	1.64	---	---	---	1.75
11.10	2.18	38.33	3.10	0.11	---	---	1.69	---	---	---	1.80
11.13	2.32	38.33	3.11	0.11	---	---	1.74	---	---	---	1.85
11.17	2.46	38.34	3.12	0.11	---	---	1.80	---	---	---	1.91
11.20	2.62	38.35	3.13	0.11	---	---	1.87	---	---	---	1.98
11.23	2.78	38.36	3.14	0.11	---	---	1.95	---	---	---	2.06
11.27	2.94	38.37	3.16	0.11	---	---	2.05	---	---	---	2.16
11.30	3.06	38.38	3.17	0.11	---	---	2.14	---	---	---	2.25
11.33	3.17	38.40	3.19	0.11	---	---	2.24	---	---	---	2.35
11.37	3.29	38.41	3.20	0.11	---	---	2.35	---	---	---	2.46
11.40	3.40	38.42	3.21	0.10	---	---	2.47	---	---	---	2.57
11.43	3.52	38.43	3.23	0.10	---	---	2.58	---	---	---	2.68
11.47	3.64	38.45	3.24	0.10	---	---	2.70	---	---	---	2.80
11.50	3.75	38.46	3.26	0.10	---	---	2.81	---	---	---	2.91
11.53	4.06	38.47	3.27	0.09	---	---	2.94	---	---	---	3.04
11.57	4.70	38.49	3.29	0.09	---	---	3.12	---	---	---	3.21
11.60	5.89	38.52	3.33	0.08	---	---	3.42	---	---	---	3.30
11.63	7.54	38.58	3.38	0.05	---	---	3.94	---	---	---	3.38
11.67	9.67	38.65	3.47	0.09	---	---	4.78	---	---	---	3.47
11.70	12.15	38.77	3.58	0.14	---	---	6.06	---	---	---	3.58
11.73	14.85	38.92	3.73	0.15	---	---	7.91	---	---	---	3.73
11.77	17.70	39.09	3.90	0.15	---	---	10.25	---	---	---	3.90
11.80	21.04	39.29	4.08	0.16	---	---	13.16	---	---	---	4.08
11.83	25.27	39.53	4.29	0.17	---	---	17.08	---	---	---	4.29
11.87	30.74	39.84	4.54	0.18	---	---	22.39	---	---	---	4.54
11.90	37.28	40.18	4.81	0.19	---	---	29.03	---	---	---	4.81

Continues on next page...

14 - Reservoir - 100 Yr - $Q_p = 19.10$ cfs



PC103

CHRISTIAN LIFE CENTER
 CURVE NUMBER WORKSHEET
 AES PROJ # 7222

Date: 3/8/98
 Revised: 8/25/98

PRE-DEVELOPMENT CONDITION (ALL CATEGORY 'C' SOILS)

TOTAL SITE AREA 17.61

TOTAL DRAINAGE AREA WOODED CN= 72 4.6 AC.
 (For CN Calculation)
 COMPOSITE CN 72.0

POST-DEVELOPMENT

POST DEV. DRAINAGE AREA 4.6 AC.

BUILDINGS (Incl. Future) CN= 98 0.94 AC.
 PAVEMENT AND SIDEWALKS CN= 98 2.54 AC.
 DEVELOPED OPEN SPACE CN= 74 1.12 AC.

COMPOSITE CN 92.16

USE COMPOSITE CN= 92.00 (POST DEVELOPMENT)

FOR 2-YEAR STORM EVENT (Inches)
 RAINFALL, P (in.) (24-HOUR) 3.50
 RUNOFF, Q (from SCS table 2-1) 1.36

**CHRISTIAN LIFE CENTER
BMP DESIGN CALCULATIONS**

Date: 3/6/98
Revised: 8/25/98

TOTAL SITE AREA	17.61 AC.
TOTAL AREA SERVED BY BMP	4.60 AC.
TOTAL SITE IMPERVIOUS AREA	3.58 AC.
DEVELOPED OPEN SPACE AREA	1.12 AC.

PROPOSE BMP DRY POND DESIGN #3 (6 PTS)

IMPERVIOUS AREAS	BUILDINGS @ 90%	0.94 AC.	0.85 AC.
	PAVEMENT @ 90%	2.33 AC.	2.10 AC.
	SIDEWALKS @ 90%	0.21 AC.	0.19 AC.
	OPEN SPACE @ 40%	1.12 AC.	<u>0.448 AC.</u>

TOTAL IMPERVIOUS AREA FOR BMP CALCULATION	3.58 AC.
PERCENT OF TOTAL SITE AREA	20.33%
PERCENT IMPERVIOUS OF DEVELOPABLE AREA	77.83%

CN ≈ 91

BMP WATER QUALITY VOLUME REQUIREMENTS (Detain 1-inch impervious runoff for 24 hours)

DRAINAGE AREA FOR BMP CALCULATION:	4.60 AC.
$R_v = 0.05 + (0.009) * (\% \text{ of impervious post development area})$	0.750

DESIGN #3 1.0 $V_r = 4.0 * (1.0"/AC) * (1/12) * (DA) * (43,560) * (R_v)$
 (Dry Pond)
 = 12,531 C.F. MINIMUM WATER QUALITY VOLUME

MINIMUM POOL ELEVATION FOR BMP QUALITY OCCURS AT EL = 38.0

BMP POINT CALCULATION

BMP DESIGN POINTS 6

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

BMP Design	BMP Points	Fraction of Site Served by BMP	Weighted BMP Points
Design 3	6	0.81 [4.60/(17.6-11.9)]	4.84

TOTAL WEIGHTED STRUCTURAL BMP POINTS 4.84

B. NATURAL OPEN SPACE CREDIT 11.91 AC

Fraction of Site (%)	Natural Open Space Credit (0.1 per 1%)	Points for Natural Open Space
67.63	0.1	6.76

C. TOTAL WEIGHTED POINTS

Structural BMP Points	+	Natural Open Space Points	=	TOTAL
4.84	+	6.76	=	11.61

EXTENDED DETENTION POND SIZING CALCULATION						
CHRISTIAN LIFE CENTER DESIGN 3 - 6 PT DRY POND						
						Date: February 25, 1998
						Revised: August 25, 1998
Total Site Drainage Area		17.61 Ac.				
Total Area Served by Pond for E&S, BMP & SWM		4.60 Ac.				
Total Disturbed Area		5.40 Ac.				
EROSION AND SEDIMENT CONTROL:						
Total drainage area to basin		4.60 Ac.				
Total Storage Volume Required (CY) = (134 CY / AC) * DA		616 CY occurs @ EL=38.73 16,643 C.F. Minimum Volume Required				
Invert Elev. = 35.5	Proposed riser elevation =	38.73				
	Dewatering Orifice elevation =	37.50			1.23	
Wet storage required =	308 C.Y.	8,321 C.F.				
Dry storage required =	308 C.Y.	8,321 C.F.				
Wet storage volume of		8,321 CF is achieved at Elev. = 37.35				
Dry storage volume of		16,643 CF is achieved at Elev. = 38.73				
Sediment cleanout required when wet storage is reduced to		4,161 CF at Elev. = 38.50				
Separation b/w wet storage and orifice (ft)					1.00 OK	
Elevation	Depth	Area (sq. ft.)	Volume (cu. ft.)	Volume (cu. yd.)	Cum Volume (cu. ft.)	Cum Volume (cu. yd.)
35.5	0.0	3700				
36.0	0.5	4422	2031	75	2,031	75
37.0	1.0	5755	5089	188	7,119	264
38.0	1.0	7142	6449	239	13,568	503
39.0	1.0	8585	7864	291	21,431	794
40.0	1.0	10080	9333	346	30,764	1,139
41.0	1.0	11634	10857	402	41,621	1,542
42.0	1.0	13225	12430	460	54,050	2,002
	0.0		0	0	0	0
	0.0		0	0	0	0
	0.0		0	0	0	0
	0.0		0	0	0	0

Worksheet 2: Runoff curve number and runoff

Project CLC By AMO Date 2/4/96
 Location JCC Checked _____ Date _____
 Circle one: Present Developed _____

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN ^{1/}			Area <input checked="" type="checkbox"/> acres <input type="checkbox"/> mi ² <input type="checkbox"/> %	Product of CN x area
		Table 2-2	Fig. 2-3	Fig. 2-4		
SLAGLE -C 29A	Wooded - Good	70			2.97	207.9
EMPORIA -C 15B	Wooded Good	70			4.67	326.9
CRAVEN -C 11C	Wooded Good	70			3.24	226.4
KEMPS -B 18B	Wooded Good	55			0.91	39.05
JOHNSTON -D 17		77			6.02	463.5
Totals =					17.61	1264.2

^{1/} Use only one CN source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{1264.2}{17.61} = 71.79$

Use CN = 72

2. Runoff

Frequency yr
 Rainfall, P (24-hour) in
 Runoff, Q in
 (Use P and CN with table 2-1, fig. 2-1, or eqs. 2-3 and 2-4.)

Storm #1	Storm #2	Storm #3
2	10	100
3.5	5.6	8.1
1.4	2.6	4.6

25
6.5

Worksheet 2: Runoff curve number and runoff

Project CHRISTIAN LIFE CENTER By RMG Date 2/9/94
 Location LONGHILL RD Checked _____ Date _____
 Circle one: Present Developed

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN			Area <input type="checkbox"/> acres <input type="checkbox"/> mi ² <input type="checkbox"/> %	Product of CN x area
		Table 2-2	Fig. 2-3	Fig. 2-4		
SLAGLE-C 29A	PARKING/ROOFS	98			1.31	126.38
CRAVEN-C 11C	PARKING/ROOFS	98			1.52	148.96
EMPORIA-C 15B	PARKING	98			.21	20.54
KEMPS-B 18B	ROOF	98			.14	17.72
SLAGLE-C 29A	OPEN	72			.42	30.24
CRAVEN-C 11C	OPEN	72			.24	17.28
KEMPS-B 18B	OPEN/WOODS	60			.42	25.2
Totals =					4.26	354

1/ Use only one CN source per line.
 OPEN

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{1312}{17.57} = 74.7$

Totals = 72
 Use CN = $\frac{13.31}{17.57} = 75$

2. Runoff $\frac{1312}{17.57} = 74.7 \Rightarrow 75$

Frequency yr
 Rainfall, P (24-hour) in
 Runoff, Q in
 (Use P and CN with table 2-1, fig. 2-1, or eqs. 2-3 and 2-4.)

Storm #1	Storm #2	Storm #3
2	25	100
3.5	4.5	8.1
1.4	3.7	5.0

3/11/98

NEWATERING ORIFICE CALCULATIONS

PC103

$$A = \frac{Q^2}{(64.32 + \frac{h}{2})^{.5} (0.6)}$$

WHERE: $Q = 5/21,600$

$$S = 19,537$$

$$h = 2$$

$$Q = 19,537 / 21,600 = 0.90$$

$$\therefore A = \frac{.90}{(64.32 + 1)^{.5} (0.6)}$$

$$A = 0.187 \text{ ft}^2$$

DIAMETER:

$$d = 2 \left(\frac{A}{\pi} \right)^{1/2} = 2 \left(\frac{.187}{\pi} \right)^{1/2}$$

$$d = 0.49 \text{ ft}$$

$$= 5.87 \text{ INCHES}$$

USE 6" ORIFICE

CHRISTIAN LIFE CENTER

ENTRANCE CULVERT DESIGN

$$\Delta A = 0.20 \text{ ac}$$

$$L = 140 \text{ L.F.}$$

$$C = 0.34 \text{ (GRASS)}$$

$$\text{AVG Slope} = 2' / 140' = 1.43\%$$

$$T_c = 10 \text{ MIN}$$

$$I_2 = 4.5$$

$$I_{10} = 6.0$$

$$Q = CIA$$

$$Q_2 = (34)(4.5)(0.2) \quad Q_2 = 0.31$$

$$Q_{10} = (34)(6.0)(0.2) \quad Q_{10} = 0.41$$

22(5-18)

Project CHRISTIAN LIFE CENTER

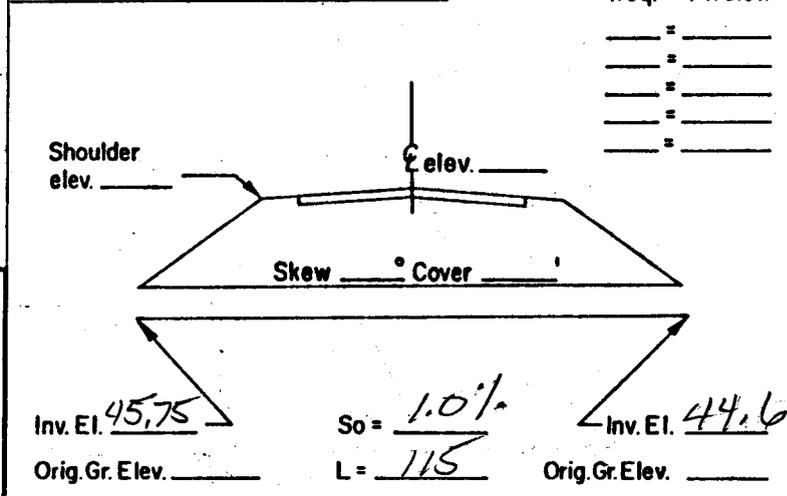
Plan Sheet No. _____ Designer _____ Sheet _____ of _____
 Rev. Date _____ Date _____

HYDROLOGICAL DATA:

D.A. = 0.20 AC.

$T_c = 10$ min
 $t_{10} = 6$ inches
 $C = 0.34$
 $Q_{10} = 0.41$ cfs

AHW Controls STATION: _____
 100yr. Flood plain _____ elev. _____
 Design AHW depth _____ elev. _____
 Structures _____ elev. _____



DISCHARGES USED

Q 10 = 0.41 CFS
 Q _____ = _____ CFS

RISK ASSESSMENT ADT _____
 Detours Available _____, Length _____
 Overtopping Stage _____
 Flood Plain Management _____
 Criteria and Significant Impact _____

CULVERT TYPE & SIZE	Q	Q/B	HEADWATER COMPUTATIONS									CONT. HW. ELEV.	OUTLET VELOCITY		End Treat.	COMMENTS
			INLET CONT.		OUTLET CONTROL								C.M.	Smooth		
			HW/D	HW	K_e	d_c	$\frac{d_c \cdot D}{2}$	h_o	H	LSo	HW					
15" RCP	.41	.41	0.15	.175	.5	.65	.95	.95	.018	1.15	.018	0.175				Inlet Controls

SUMMARY RECOMMENDATIONS:

Design Flood Exceed. Prob. _____ Elev. _____
 Over top Flood Exceed. Prob. _____ Elev. _____
 Base Flood 1% Exceed. Prob. _____ Elev. _____

PC103

(Rev. 1/85)

Fig. 1.5.1.7

PC103

NORFOLK, VA.

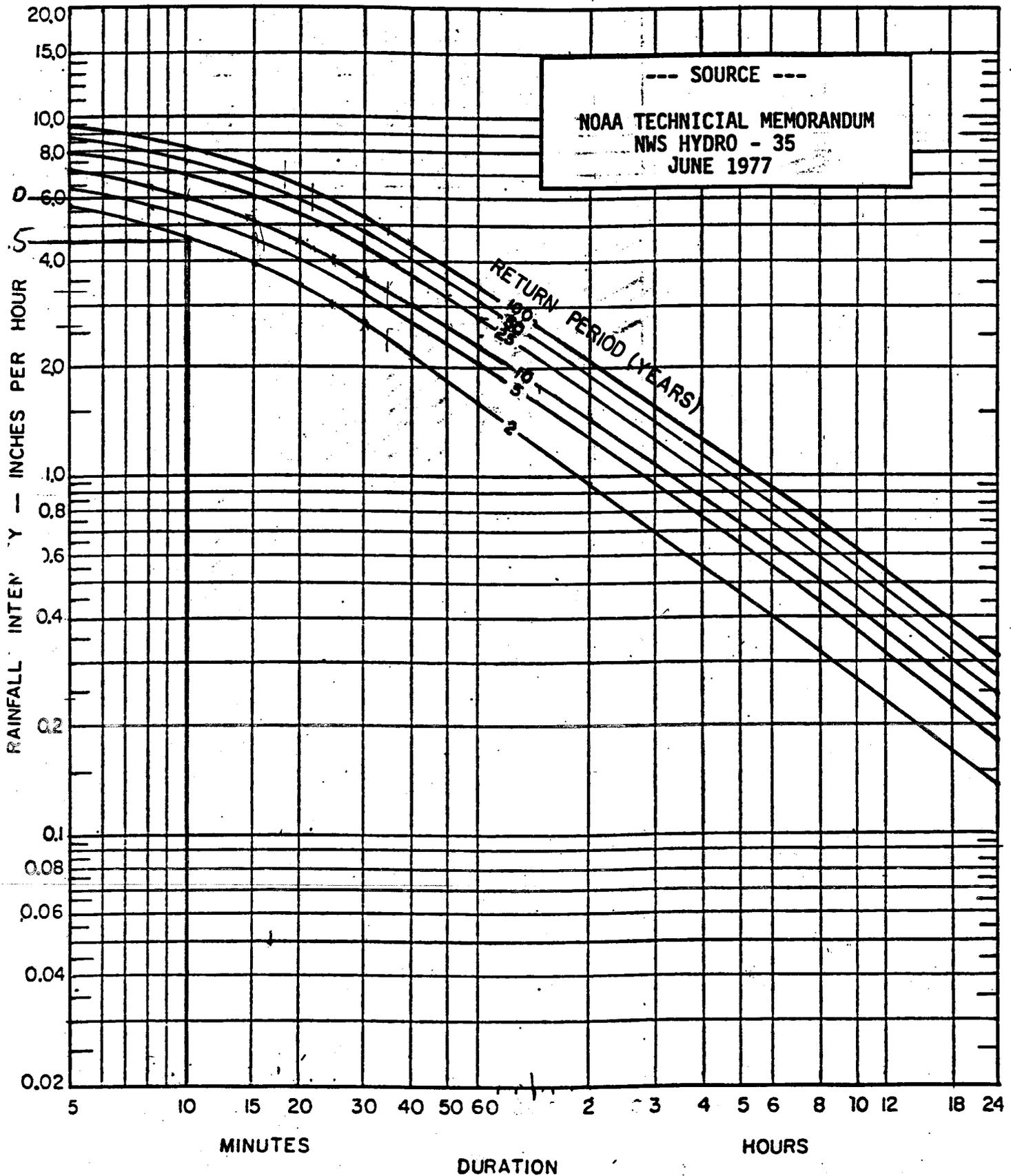
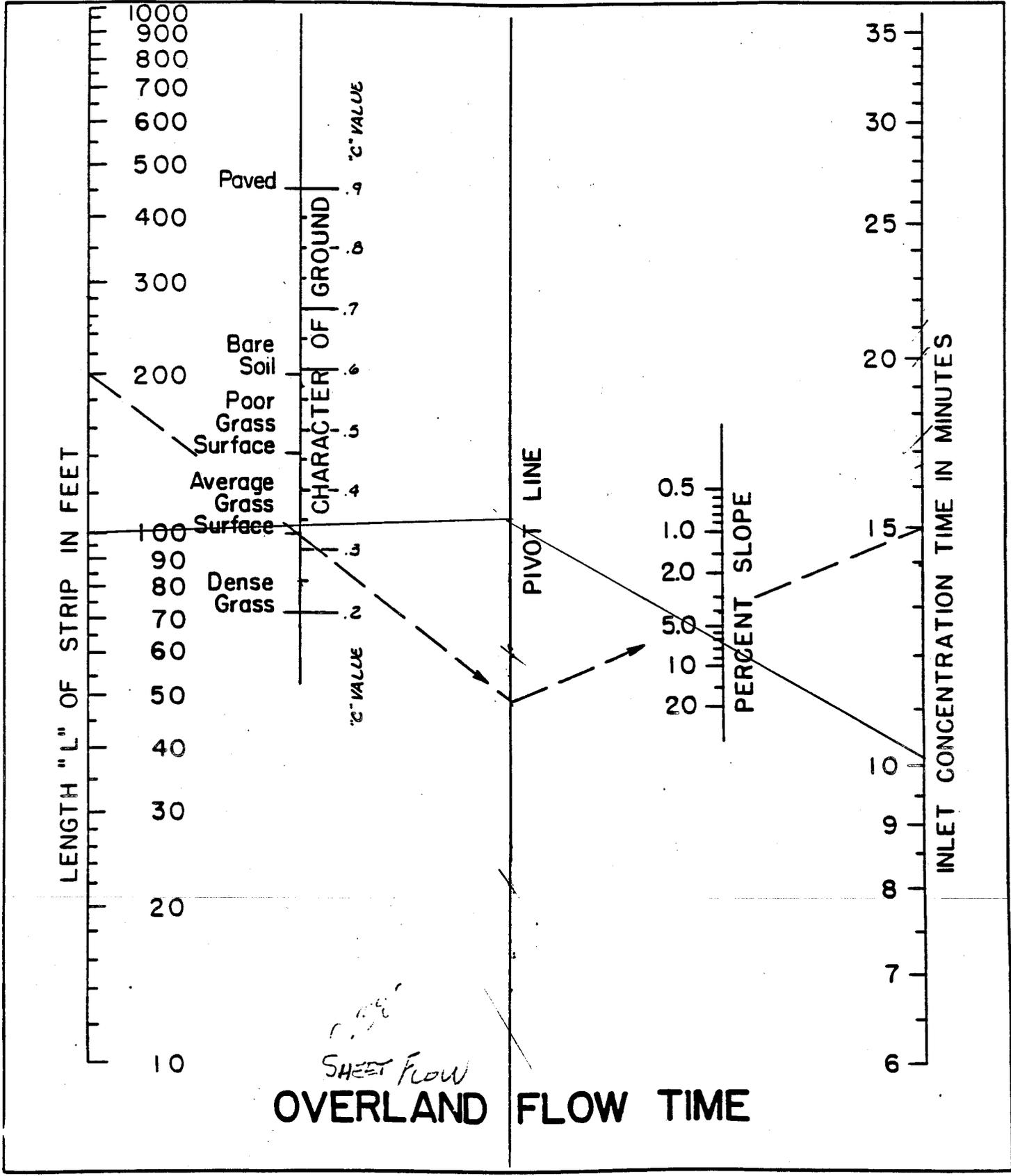
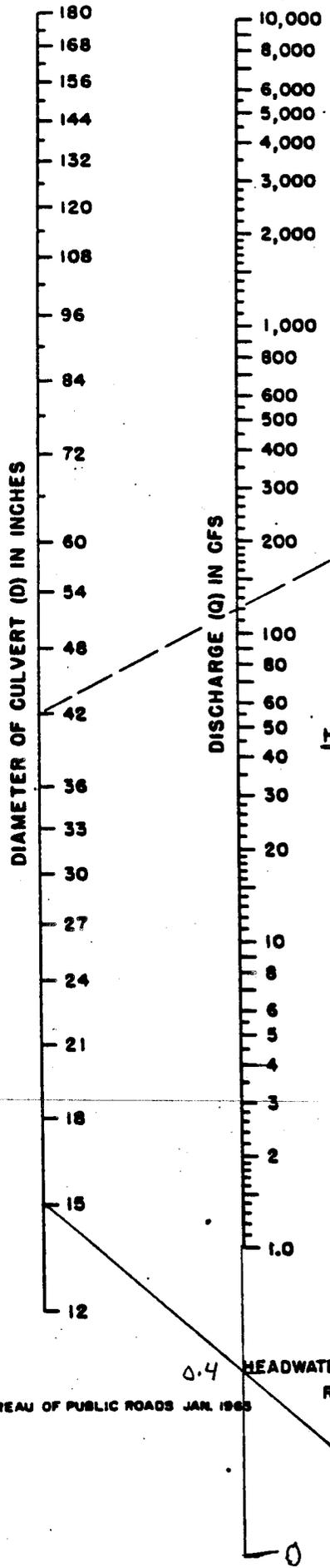


FIG. 1.5.1.1



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2ND EDITION (1951) BY E. E. SEELYE

CHART 1 



EXAMPLE

D=42 inches (3.5 feet)
Q=120 cfs

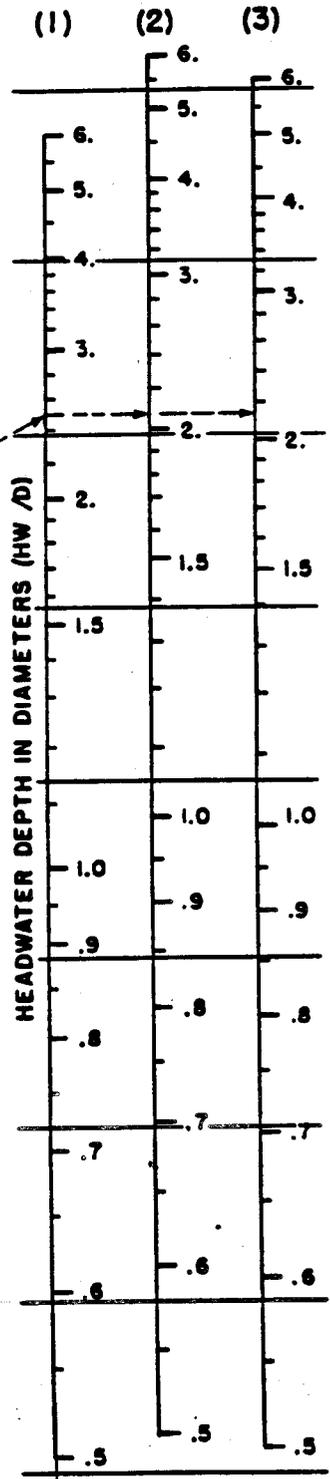
	$\frac{HW}{D}$	HW feet
(1)	2.5	8.8
(2)	2.1	7.4
(3)	2.2	7.7

*D is feet

$\frac{HW}{D}$ SCALE

$\frac{HW}{D}$ SCALE	ENTRANCE TYPE
(1)	Square edge with headwall
(2)	Groove end with headwall
(3)	Groove end projecting

To use scale (2) or (3) project horizontally to scale (1), then use straight inclined line through D and Q scales, or reverse as illustrated.



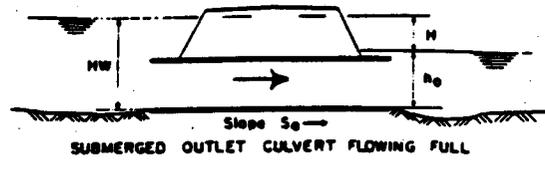
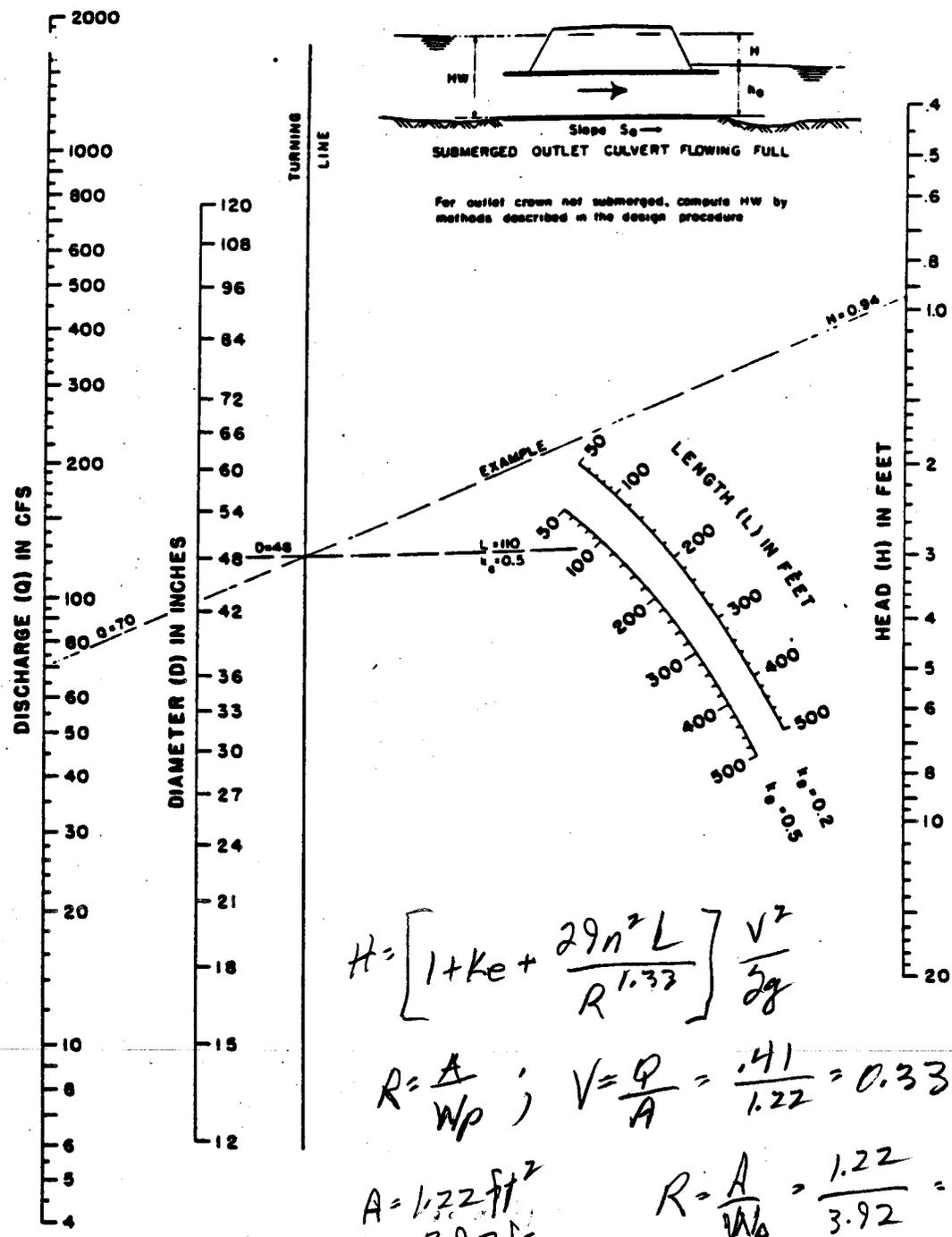
HEADWATER DEPTH FOR CONCRETE PIPE CULVERTS WITH INLET CONTROL

HEADWATER SCALES 283
REVISED MAY 1964
BUREAU OF PUBLIC ROADS JAN. 1965

$\frac{HW}{D} = 0.15$



CHART 5



For outlet crown not submerged, compute HW by methods described in the design procedure

$$H = \left[1 + k_e + \frac{29n^2 L}{R^{1.33}} \right] \frac{V^2}{2g}$$

$$R = \frac{A}{W_p} ; V = \frac{Q}{A} = \frac{.41}{1.22} = 0.33 \text{ fps}$$

$$A = 1.22 \text{ ft}^2$$

$$P = 3.92 \text{ ft}$$

$$R = \frac{A}{W_p} = \frac{1.22}{3.92} = 0.31$$

HEAD FOR
CONCRETE PIPE CULVERTS
FLOWING FULL
n = 0.012

$$H = \left[1 + .5 + \frac{29(0.012)^2(115)}{.31^{1.33}} \right] \frac{.31}{2(32.2)} = 0.018 \text{ ft}$$

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

(with or without an emergency spillway)

Project CHRISTIAN LIFE CENTER

Basin # 1 Location SO. TIP OF PROPERTY

Total area draining to basin: 4.6 acres.

Basin Volume Design

Wet Storage:

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

$$67 \text{ cu. yds.} \times \underline{4.6} \text{ acres} = \underline{308} \text{ cu. yds.}$$

2. Available basin volume = 308 cu. yds. at elevation 37.4. (From storage - elevation curve)

3. Excavate 308 cu. yds. to obtain required volume*.

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

4. Available volume before cleanout required.

$$33 \text{ cu. yds.} \times \underline{4.6} \text{ acres} = \underline{152} \text{ cu. yds.}$$

5. Elevation corresponding to cleanout level = 36.5.

(From Storage - Elevation Curve)

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

Dry Storage:

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

$$67 \text{ cu. yds.} \times \underline{4.6} \text{ acres} = \underline{308} \text{ cu. yds.}$$

1992

8. Total available basin volume at crest of riser* = 616 cu. yds. at elevation 38.7. (From Storage - Elevation Curve)

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

9. Diameter of dewatering orifice = 6 in.

10. Diameter of flexible tubing = 8 in. (diameter of dewatering orifice plus 2 inches).

Preliminary Design Elevations

11. Crest of Riser = 38.0

Top of Dam = 42.5

Design High Water = 41.45

Upstream Toe of Dam = 35.5

Basin Shape

12. $\frac{\text{Length of Flow}}{\text{Effective Width}} = \frac{L}{W_e} = \frac{195}{46.5} = 4.2$

$L = 195 @ EL = 37$
 $A = 9078$
 $W_e = 46.5$

If > 2 , baffles are not required 4.2 > 2 OK

If < 2 , baffles are required _____

Runoff

13. $Q_2 = \underline{11.22}$ cfs (From Chapter 5)

14. $Q_{25} = \underline{56.0}$ cfs (From Chapter 5)

Principal Spillway Design

15. With emergency spillway, required spillway capacity $Q_p = Q_2 = \underline{11.22}$ cfs. (riser and barrel)

Without emergency spillway, required spillway capacity $Q_p = Q_{25} = \underline{56.0}$ cfs. (riser and barrel)

16. With emergency spillway:

$$\text{Assumed available head (h)} = \underline{1.5} \text{ ft. (Using } Q_2)$$

$$h = \text{Crest of Emergency Spillway Elevation} - \text{Crest of Riser Elevation}$$

Without emergency spillway:

$$\text{Assumed available head (h)} = \underline{\quad} \text{ ft. (Using } Q_{25})$$

$$h = \text{Design High Water Elevation} - \text{Crest of Riser Elevation}$$

17. Riser diameter (D_r) = 36 in. Actual head (h) = 5.5 ft.

(From Plate 3.14-8.)

Note: Avoid orifice flow conditions.

18. Barrel length (l) = 128 ft.

$$\text{Head (H) on barrel through embankment} = \underline{6.0} \text{ ft.}$$

(From Plate 3.14-7).

19. Barrel diameter = 12 in.

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

20. Trash rack and anti-vortex device

$$\text{Diameter} = \underline{15} \text{ inches.}$$

$$\text{Height} = \underline{17} \text{ inches.}$$

(From Table 3.14-D).

Emergency Spillway Design

21. Required spillway capacity $Q_e = Q_{25} - Q_p = \underline{44.8}$ cfs.

22. Bottom width (b) = 5 ft.; the slope of the exit channel (s) = 0.66 ft./foot; and the minimum length of the exit channel (x) = 124 ft.

(From Table 3.14-C).

1992

Anti-Seep Collar Design

23. Depth of water at principal spillway crest (Y) = 3.2 ft.
 Slope of upstream face of embankment (Z) = 3:1.
 Slope of principal spillway barrel (S_b) = 1.0 %
 Length of barrel in saturated zone (L_s) = 12 ft.
24. Number of collars required = 1 dimensions = INSTALLED IN CUT
 (from Plate 3.14-12).

Final Design Elevations

25. Top of Dam = 42.5
 Design High Water = 41.45
 Emergency Spillway Crest = 40.0
 Principal Spillway Crest = 38.0
 Dewatering Orifice Invert = 37.6
 Cleanout Elevation = 36.5
 Elevation of Upstream Toe of Dam
 or Excavated Bottom of "Wet Storage
 Area" (if excavation was performed) = 35.5

PC103

1
0
HYDRAULIC REPORT FOR

CHRISTIAN LIFE CENTER
BUILDING DRAINAGE ANALYSIS

AES PROJECT 7222

SYSTEM #1 OF 1

prepared by:

AES CONSULTING ENGINEERS
5248 OLDE TOWNE RD, STE 1
WILLIAMSBURG, VA 23188

DATE: JUNE 30, 1998

Note:

Line five (5) of these calculations represents a 102-foot in-line extension line 4. This line represents the future building runoff from the roof drains. All runoff from the building is directed to the front of the building.

PC103

Return Period = 100 Yrs
Rainfall file: JCC

Run Date: 07-02-1998
File: 72220G01.ST3

LINE 1 / Q = 7.33 / HT = 15 / WID = 15 / N = .013 / L = 140 / JLC = .9

G#1 to SS#3 / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	42.40	10.79	41.50	7.76	43.33	13.48	N/A	0.95
UPSTRM	44.90	10.79	44.00	7.76	45.83	13.48	4.5	0.95

Drainage area (ac) =	0.00	Slope of invert (%) =	1.7857
Runoff coefficient =	0.00	Slope energy grade line (%) =	1.7857
Time of conc (min) =	5.84	Critical depth (in) =	13.28
Inlet time (min) =	0.00	Natural ground elev. (ft) =	49.75
Intensity (in/hr) =	9.06	Upstream surcharge (ft) =	0.00
Cumulative C*A =	0.81	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	7.33	Line capacity (cfs) =	8.63

Q catchment (cfs) =	0.00	Inlet length (ft) =	0.00
Q carryover (cfs) =	8.11	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	8.11	Ponding width (ft) =	N/A

Note: Normal depth assumed

LINE 2 / Q = 4.55 / HT = 12 / WID = 12 / N = .013 / L = 216 / JLC = .9

G#1 to G#2 / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	45.74	12.00	44.00	5.80	46.26	0.00	4.75	0.79
UPSTRM	49.27	12.00	46.70	5.80	49.79	0.00	3	0.79

Drainage area (ac) =	0.24	Slope of invert (%) =	1.2500
Runoff coefficient =	0.85	Slope energy grade line (%) =	1.6345
Time of conc (min) =	5.22	Critical depth (in) =	10.81
Inlet time (min) =	3.00	Natural ground elev. (ft) =	50.70
Intensity (in/hr) =	9.23	Upstream surcharge (ft) =	1.57
Cumulative C*A =	0.49	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	4.55	Line capacity (cfs) =	3.98

Q catchment (cfs) =	2.02	Inlet length (ft) =	0.00
Q carryover (cfs) =	2.90	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	4.92	Ponding width (ft) =	N/A

PC103

LINE 3 / Q = 2.70 / HT = 12 / WID = 12 / N = .013 / L = 75 / JLC = .9

G#2 to G#3 / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	49.74	12.00	46.70	3.44	49.92	0.00	3	0.79
UPSTRM	50.17	12.00	47.30	3.44	50.36	0.00	2.9	0.79

Drainage area (ac) =	0.05	Slope of invert (%) =	0.8000
Runoff coefficient =	0.85	Slope energy grade line (%) =	0.5743
Time of conc (min) =	4.86	Critical depth (in) =	8.36
Inlet time (min) =	2.00	Natural ground elev. (ft) =	51.20
Intensity (in/hr) =	9.34	Upstream surcharge (ft) =	1.87
Cumulative C*A =	0.29	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	2.70	Line capacity (cfs) =	3.19

Q catchment (cfs) =	0.44	Inlet length (ft) =	0.00
Q carryover (cfs) =	2.46	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	2.90	Ponding width (ft) =	N/A

LINE 4 / Q = 2.35 / HT = 12 / WID = 12 / N = .013 / L = 120 / JLC = .9

G#3 to G#4 / DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	50.34	12.00	47.30	2.99	50.48	0.00	2.9	0.79
UPSTRM	50.86	12.00	48.20	2.99	51.00	0.00	1.79	0.79

Drainage area (ac) =	0.22	Slope of invert (%) =	0.7500
Runoff coefficient =	0.85	Slope energy grade line (%) =	0.4356
Time of conc (min) =	4.19	Critical depth (in) =	7.80
Inlet time (min) =	3.00	Natural ground elev. (ft) =	51.00
Intensity (in/hr) =	9.53	Upstream surcharge (ft) =	1.66
Cumulative C*A =	0.25	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	2.35	Line capacity (cfs) =	3.08

Q catchment (cfs) =	1.85	Inlet length (ft) =	0.00
Q carryover (cfs) =	0.61	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	2.46	Ponding width (ft) =	N/A

LINE 5 / Q = 0.61 / HT = 12 / WID = 12 / N = .013 / L = 102 / JLC = .9

G#4 to G#5 / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	50.98	12.00	48.20	0.78	50.99	0.00	1.79	0.79
UPSTRM	51.02	12.00	48.90	0.78	51.03	0.00	.59	0.79

Drainage area (ac)	=	0.07	Slope of invert (%)	=	0.6863
Runoff coefficient	=	0.85	Slope energy grade line (%)	=	0.0375
Time of conc (min)	=	2.00	Critical depth (in)	=	3.97
Inlet time (min)	=	2.00	Natural ground elev. (ft)	=	50.50
Intensity (in/hr)	=	10.24	Upstream surcharge (ft)	=	1.12
Cumulative C*A	=	0.06	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	0.61	Line capacity (cfs)	=	2.95
Q catchment (cfs)	=	0.61	Inlet length (ft)	=	0.00
Q carryover (cfs)	=	0.00	Gutter slope (ft/ft)	=	0.0000
Q captured (cfs)	=	0.00	Cross slope (ft/ft)	=	0.0000
Q bypassed (cfs)	=	0.61	Ponding width (ft)	=	N/A

LINE 6 / Q = 3.01 / HT = 12 / WID = 12 / N = .013 / L = 51 / JLC = .9

G#1 to G#6 / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	45.74	12.00	44.00	3.84	45.97	0.00	4.75	0.79
UPSTRM	46.11	12.00	44.40	3.84	46.34	0.00	3.59	0.79

Drainage area (ac)	=	0.08	Slope of invert (%)	=	0.7843
Runoff coefficient	=	0.85	Slope energy grade line (%)	=	0.7166
Time of conc (min)	=	4.20	Critical depth (in)	=	8.83
Inlet time (min)	=	2.00	Natural ground elev. (ft)	=	49.00
Intensity (in/hr)	=	9.53	Upstream surcharge (ft)	=	0.71
Cumulative C*A	=	0.32	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	3.01	Line capacity (cfs)	=	3.15
Q catchment (cfs)	=	0.70	Inlet length (ft)	=	0.00
Q carryover (cfs)	=	2.50	Gutter slope (ft/ft)	=	0.0000
Q captured (cfs)	=	0.00	Cross slope (ft/ft)	=	0.0000
Q bypassed (cfs)	=	3.19	Ponding width (ft)	=	N/A

LINE 7 / Q = 2.37 / HT = 10 / WID = 10 / N = .013 / L = 30 / JLC = .9

G#6 to G#7 / DNLN = 6

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	46.31	10.00	44.40	4.35	46.61	0.00	3.76	0.55
UPSTRM	46.67	10.00	44.70	4.35	46.96	0.00	4.96	0.55

Drainage area (ac) =	0.00	Slope of invert (%) =	1.0000
Runoff coefficient =	0.00	Slope energy grade line (%) =	1.1760
Time of conc (min) =	4.08	Critical depth (in) =	8.22
Inlet time (min) =	0.00	Natural ground elev. (ft) =	50.50
Intensity (in/hr) =	9.57	Upstream surcharge (ft) =	1.13
Cumulative C*A =	0.25	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	2.37	Line capacity (cfs) =	2.19
Q catchment (cfs) =	0.00	Inlet length (ft) =	0.00
Q carryover (cfs) =	2.50	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	2.50	Ponding width (ft) =	N/A

LINE 8 / Q = 2.39 / HT = 10 / WID = 10 / N = .013 / L = 60 / JLC = .9

G#7 to G#8 / DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	46.93	10.00	44.70	4.39	47.23	0.00	4.96	0.55
UPSTRM	47.65	10.00	45.20	4.39	47.94	0.00	2.46	0.55

Drainage area (ac) =	0.07	Slope of invert (%) =	0.8333
Runoff coefficient =	0.85	Slope energy grade line (%) =	1.1931
Time of conc (min) =	3.85	Critical depth (in) =	8.25
Inlet time (min) =	2.00	Natural ground elev. (ft) =	48.50
Intensity (in/hr) =	9.64	Upstream surcharge (ft) =	1.61
Cumulative C*A =	0.25	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	2.39	Line capacity (cfs) =	2.00
Q catchment (cfs) =	0.61	Inlet length (ft) =	0.00
Q carryover (cfs) =	1.89	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	2.50	Ponding width (ft) =	N/A

PC103

LINE 9 / Q = 1.82 / HT = 10 / WID = 10 / N = .013 / L = 11 / JLC = .9

G#8 to G#9 / DNLN = 8

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	47.91	10.00	45.20	3.34	48.09	0.00	2.46	0.55
UPSTRM	47.99	10.00	45.30	3.34	48.16	0.00	2.86	0.55

Drainage area (ac) =	0.00	Slope of invert (%) =	0.9091
Runoff coefficient =	0.00	Slope energy grade line (%) =	0.6920
Time of conc (min) =	3.80	Critical depth (in) =	7.20
Inlet time (min) =	0.00	Natural ground elev. (ft) =	49.00
Intensity (in/hr) =	9.65	Upstream surcharge (ft) =	1.86
Cumulative C*A =	0.19	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	1.82	Line capacity (cfs) =	2.09

Q catchment (cfs) =	0.00	Inlet length (ft) =	0.00
Q carryover (cfs) =	1.89	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	1.89	Ponding width (ft) =	N/A

LINE 10 / Q = 1.87 / HT = 10 / WID = 10 / N = .013 / L = 164 / JLC = .9

G#9 to G#10 / DNLN = 9

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	48.15	10.00	45.30	3.43	48.33	0.00	2.86	0.55
UPSTRM	49.34	10.00	46.70	3.43	49.52	0.00	1.66	0.55

Drainage area (ac) =	0.19	Slope of invert (%) =	0.8537
Runoff coefficient =	0.85	Slope energy grade line (%) =	0.7284
Time of conc (min) =	3.00	Critical depth (in) =	7.29
Inlet time (min) =	3.00	Natural ground elev. (ft) =	49.20
Intensity (in/hr) =	9.90	Upstream surcharge (ft) =	1.81
Cumulative C*A =	0.19	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	1.87	Line capacity (cfs) =	2.02

Q catchment (cfs) =	1.60	Inlet length (ft) =	0.00
Q carryover (cfs) =	0.29	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	1.89	Ponding width (ft) =	N/A

PC103

LINE 11 / Q = 0.29 / HT = 8 / WID = 8 / N = .013 / L = 45 / JLC = .9

G#10 to G#11 / DNLN = 10

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	49.51	8.00	46.70	0.83	49.52	0.00	1.83	0.35
UPSTRM	49.54	8.00	47.00	0.83	49.55	0.00	1.53	0.35

Drainage area (ac) =	0.03	Slope of invert (%) =	0.6667
Runoff coefficient =	0.85	Slope energy grade line (%) =	0.0569
Time of conc (min) =	1.00	Critical depth (in) =	3.03
Inlet time (min) =	1.00	Natural ground elev. (ft) =	49.20
Intensity (in/hr) =	10.59	Upstream surcharge (ft) =	1.87
Cumulative C*A =	0.03	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	0.29	Line capacity (cfs) =	0.99

Q catchment (cfs) =	0.29	Inlet length (ft) =	0.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	0.29	Ponding width (ft) =	N/A

PC103

1
HYDRAULIC REPORT FOR
0

CHRISTIAN LIFE CENTER
STORM DRAINAGE ANALYSIS

AES PROJECT 7222

SYSTEM #1

prepared by:

AES CONSULTING ENGINEERS
5248 OLDE TOWNE RD., STE 1
WILLIAMSBURG, VA 23188
REVISED: NOVEMBER 30, 1998

Return Period = 10 Yrs
 Rainfall file: JCC

Run Date: 11-30-1998
 File: 72220E03.ST3

LINE 1 / Q = 11.03 / HT = 18 / WID = 18 / N = .011 / L = 97 / JLC = .9

 SS#1 TO SS#2 / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	40.86	18.00	35.50	6.24	41.46	0.00	N/A	1.77
UPSTRM	41.63	18.00	37.70	6.24	42.23	0.00	4.79	1.77

Drainage area (ac) =	0.27	Slope of invert (%) =	2.2680
Runoff coefficient =	0.85	Slope energy grade line (%) =	0.7898
Time of conc (min) =	5.07	Critical depth (in) =	15.21
Inlet time (min) =	5.00	Natural ground elev. (ft) =	44.00
Intensity (in/hr) =	6.98	Upstream surcharge (ft) =	2.43
Cumulative C*A =	1.58	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	11.03	Line capacity (cfs) =	18.69

Q catchment (cfs) =	1.61	Inlet length (ft) =	0.00
Q carryover (cfs) =	9.88	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	11.48	Ponding width (ft) =	N/A

 LINE 2 / Q = 9.55 / HT = 15 / WID = 15 / N = .011 / L = 140 / JLC = .9

 SS#2 TO SS#3 / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	42.17	15.00	37.70	7.78	43.11	0.00	5.04	1.23
UPSTRM	44.36	15.00	41.50	7.78	45.30	0.00	2.5	1.23

Drainage area (ac) =	1.01	Slope of invert (%) =	2.7143
Runoff coefficient =	0.85	Slope energy grade line (%) =	1.5657
Time of conc (min) =	4.77	Critical depth (in) =	14.28
Inlet time (min) =	4.00	Natural ground elev. (ft) =	45.25
Intensity (in/hr) =	7.06	Upstream surcharge (ft) =	1.61
Cumulative C*A =	1.35	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	9.55	Line capacity (cfs) =	12.57

Q catchment (cfs) =	6.27	Inlet length (ft) =	0.00
Q carryover (cfs) =	3.60	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	9.88	Ponding width (ft) =	N/A

LINE 3 / Q = 3.60 / HT = 15 / WID = 15 / N = .011 / L = 136.5 / JLC = .9

 SS#3 TO SS#4 / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	45.21	15.00	41.50	2.94	45.34	0.00	2.5	1.23
UPSTRM	45.63	15.00	43.20	2.94	45.77	0.00	2.39	1.23

Drainage area (ac)	=	0.58	Slope of invert (%)	=	1.2454
Runoff coefficient	=	0.85	Slope energy grade line (%)	=	0.2229
Time of conc (min)	=	4.00	Critical depth (in)	=	9.11
Inlet time (min)	=	4.00	Natural ground elev. (ft)	=	46.85
Intensity (in/hr)	=	7.31	Upstream surcharge (ft)	=	1.18
Cumulative C*A	=	0.49	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	3.60	Line capacity (cfs)	=	8.52

Q catchment (cfs)	=	3.60	Inlet length (ft)	=	0.00
Q carryover (cfs)	=	0.00	Gutter slope (ft/ft)	=	0.0000
Q captured (cfs)	=	0.00	Cross slope (ft/ft)	=	0.0000
Q bypassed (cfs)	=	3.60	Ponding width (ft)	=	N/A

PC103

HYDRAULIC REPORT FOR

CHRISTIAN LIFE CENTER
STORM DRAINAGE ANALYSIS

AES PROJECT 7222

SYSTEM #2

prepared by:

AES CONSULTING ENGINEERS
5248 OLDE TOWNE RD STE 1
WILLIAMSBURG, VA 23188

REVISED: NOVEMBER 30, 1998

Return Period = 10 Yrs
 Rainfall file: JCC

Run Date: 11-30-1998
 File: 72220E04.ST3

LINE 1 / Q = 12.43 / HT = 24 / WID = 24 / N = .013 / L = 144 / JLC = .9

 SS#5 TO SS#6 / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	40.86	24.00	35.50	3.96	41.10	0.00	N/A	3.14
UPSTRM	41.29	24.00	37.75	3.96	41.54	0.00	3.25	3.14

Drainage area (ac) =	0.99	Slope of invert (%) =	1.5625
Runoff coefficient =	0.90	Slope energy grade line (%) =	0.3020
Time of conc (min) =	4.72	Critical depth (in) =	14.98
Inlet time (min) =	3.00	Natural ground elev. (ft) =	43.00
Intensity (in/hr) =	7.08	Upstream surcharge (ft) =	1.54
Cumulative C*A =	1.75	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	12.43	Line capacity (cfs) =	28.27

Q catchment (cfs) =	6.82	Inlet length (ft) =	0.00
Q carryover (cfs) =	6.61	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	13.43	Ponding width (ft) =	N/A

LINE 2 / Q = 6.39 / HT = 18 / WID = 18 / N = .013 / L = 212 / JLC = .9

 SS#6 TO SS#7 / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	41.51	18.00	37.75	3.62	41.72	0.00	3.75	1.77
UPSTRM	42.30	18.00	40.60	3.61	42.50	0.00	2.4	1.77

Drainage area (ac) =	0.54	Slope of invert (%) =	1.3443
Runoff coefficient =	0.90	Slope energy grade line (%) =	0.3701
Time of conc (min) =	3.74	Critical depth (in) =	11.57
Inlet time (min) =	3.00	Natural ground elev. (ft) =	44.50
Intensity (in/hr) =	7.39	Upstream surcharge (ft) =	0.20
Cumulative C*A =	0.86	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	6.39	Line capacity (cfs) =	12.18

Q catchment (cfs) =	3.72	Inlet length (ft) =	0.00
Q carryover (cfs) =	2.89	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	6.61	Ponding width (ft) =	N/A

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LINE 3 / Q = 2.89 / HT = 15 / WID = 15 / N = .013 / L = 147 / JLC = .9

SS#7 TO SS#8 / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	42.48	15.00	40.60	2.36	42.57	0.00	2.65	1.23
UPSTRM	43.18	8.17	42.25	4.24	43.46	14.94	4.04	0.68

Drainage area (ac)	=	0.42	Slope of invert (%)	=	1.1224
Runoff coefficient	=	0.90	Slope energy grade line (%)	=	0.4367
Time of conc (min)	=	3.00	Critical depth (in)	=	8.17
Inlet time (min)	=	3.00	Natural ground elev. (ft)	=	47.55
Intensity (in/hr)	=	7.65	Upstream surcharge (ft)	=	0.00
Cumulative C*A	=	0.38	Additional Q (cfs)	=	0.00
Q = CA * I (cfs)	=	2.89	Line capacity (cfs)	=	6.84

Q catchment (cfs)	=	2.89	Inlet length (ft)	=	0.00
Q carryover (cfs)	=	0.00	Gutter slope (ft/ft)	=	0.0000
Q captured (cfs)	=	0.00	Cross slope (ft/ft)	=	0.0000
Q bypassed (cfs)	=	2.89	Ponding width (ft)	=	N/A

CHRISTIAN LIFE CENTER
 AES PROJECT No. 7222
 MARCH 1993
 WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

<u>BMP</u>	<u>BMP Points</u>		<u>Fraction of Site Served by BMP</u>		<u>Weighted BMP Points</u>
DESIGN TYPE 7 WET POND	9	x	$\frac{4.49}{17.81 - 12.18}$	=	7.2
		x		=	
		x		=	
		x		=	
TOTAL WEIGHTED STRUCTURAL BMP POINTS:					

B. NATURAL OPEN SPACE CREDIT

<u>Fraction of Site</u>		<u>Natural Open Space Credit</u>		<u>Points for Natural Open Space</u>
$\frac{12.18}{17.81} \times 100$	x	0.1 (0.1 per 1%)	=	6.8

C. TOTAL WEIGHTED POINTS

<u>7.2</u>	+	<u>6.8</u>	=	<u>14.0</u>
Structural BMP Points		Natural Open Space Points		TOTAL

Actual area created = 11.17ac (per site plan)

NOS Pts = $\frac{11.17}{17.81} \times 100 = 6.3$

$\frac{7.2}{6.3}$
13.5 pts.

RIP RAP REGION

Pg 3 of 3

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POND OUTFALL: NO CHANNEL - Assume Minimum Tailwater

$$Q_2 = 11.77 \text{ cfs}$$

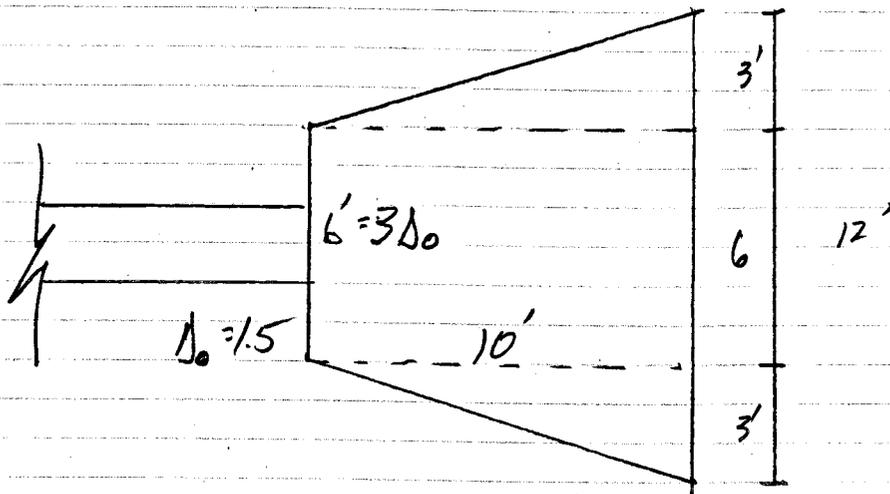
$$D_0 = 18 \text{ inch}$$

$$L_u = 10'$$

$$3 D_0 = 3 \times 2 = 6'$$

$$W = D_0 + L_u = 1.5 + 10 = 11.5 \text{ say } 12'$$

$$D_{50} = 6'' \text{ Min}$$



$$\text{AREA} = (6 \times 10) + (3 \times 10) = 90 \text{ SF}$$

$$\begin{aligned} \text{VOLUME} &= 90 \times 1.5 = 135 \text{ CF} \\ &= \underline{\underline{5 \text{ cy}}} \end{aligned}$$

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

(with or without an emergency spillway)

Project CHRISTIAN LIFE CENTER

Basin # 1 Location Southern Tip of Property

Total area draining to basin: 4.6 acres.

Basin Volume Design

Wet Storage:

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

$$67 \text{ cu. yds.} \times \underline{4.6} \text{ acres} = \underline{308} \text{ cu. yds.}$$

2. Available basin volume = 308 cu. yds. at elevation 37.4. (From storage - elevation curve)

3. Excavate 308 cu. yds. to obtain required volume*.

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

4. Available volume before cleanout required.

$$33 \text{ cu. yds.} \times \underline{4.6} \text{ acres} = \underline{152} \text{ cu. yds.}$$

5. Elevation corresponding to cleanout level = 36.5.

(From Storage - Elevation Curve)

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

Dry Storage:

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

$$67 \text{ cu. yds.} \times \underline{4.6} \text{ acres} = \underline{308} \text{ cu. yds.}$$

1992

3.14

8. Total available basin volume at crest of riser* = 616 cu. yds. at elevation 38.7. (From Storage - Elevation Curve)

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

9. Diameter of dewatering orifice = 6 in.
10. Diameter of flexible tubing = 8 in. (diameter of dewatering orifice plus 2 inches).

Preliminary Design Elevations

11. Crest of Riser = 38.7
- Top of Dam = 42.0
- Design High Water = 40.66
- Upstream Toe of Dam = 35.5

Basin Shape

12. $\frac{\text{Length of Flow}}{\text{Effective Width}} = \frac{L}{W_e} = \frac{195}{46.5} = 4.2$

$$L = 195 @ EL = 37$$

$$A = 9078$$

$$W_e = 46.5$$

If > 2 , baffles are not required 4.2 > 2 OK

If < 2 , baffles are required _____

Runoff

13. $Q_2 = \underline{11.22}$ cfs (From Chapter 5)
14. $Q_{25} = \underline{56.0}$ cfs (From Chapter 5)

Principal Spillway Design

15. With emergency spillway, required spillway capacity $Q_p = Q_2 = \underline{11.22}$ cfs. (riser and barrel)

Without emergency spillway, required spillway capacity $Q_p = Q_{25} = \underline{56.0}$ cfs. (riser and barrel)

16. With emergency spillway:

$$\text{Assumed available head (h)} = \underline{1.5} \text{ ft. (Using } Q_2\text{)}$$

$$h = \text{Crest of Emergency Spillway Elevation} - \text{Crest of Riser Elevation}$$

Without emergency spillway:

$$\text{Assumed available head (h)} = \underline{\quad} \text{ ft. (Using } Q_{25}\text{)}$$

$$h = \text{Design High Water Elevation} - \text{Crest of Riser Elevation}$$

17. Riser diameter (D_r) = 36 in. Actual head (h) = 0.55 ft.

(From Plate 3.14-8.)

Note: Avoid orifice flow conditions.

18. Barrel length (l) = 138 ft.

$$\text{Head (H) on barrel through embankment} = \underline{6.2} \text{ ft.}$$

(From Plate 3.14-7).

19. Barrel diameter = 18 in.

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

20. Trash rack and anti-vortex device

$$\text{Diameter} = \underline{54} \text{ inches.}$$

$$\text{Height} = \underline{17} \text{ inches.}$$

(From Table 3.14-D).

Emergency Spillway Design

21. Required spillway capacity $Q_e = Q_{25} - Q_p = \underline{44.8}$ cfs.

22. Bottom width (b) = 5 ft.; the slope of the exit channel (s) = $\frac{\underline{.066}}{\underline{124}}$ ft./foot; and the minimum length of the exit channel (x) =

(From Table 3.14-C).

1992

Anti-Seep Collar Design

23. Depth of water at principal spillway crest (Y) = 3.2 ft.
 Slope of upstream face of embankment (Z) = 3 :1.
 Slope of principal spillway barrel (S_b) = 1.0 %
 Length of barrel in saturated zone (L_s) = 12 ft.
24. Number of collars required = 0 dimensions = INSTALLED IN CUT EMBANKMENT
 (from Plate 3.14-12).

Final Design Elevations

25. Top of Dam = 42.0
 Design High Water = 40.66
 Emergency Spillway Crest = 40.2
 Principal Spillway Crest = 38.7
 Dewatering Orifice Invert = 37.5
 Cleanout Elevation = 36.5
 Elevation of Upstream Toe of Dam
 or Excavated Bottom of "Wet Storage
 Area" (if excavation was performed) = 35.5

EROSION AND SEDIMENT CONTROL
NARRATIVE

for

CHRISTIAN LIFE CENTER

4451 Longhill Road
Williamsburg, Virginia 23185

James City County Case No. SP-33-98
AES Project #7222
Revised: July 2, 1998

SP-140-98
PC 103

PROJECT DESCRIPTION

The purpose of this project is the construction of a 27,878 square foot two story church building. The subject site is an undeveloped, predominantly wooded parcel of irregular shape consisting of approximately 17.61 acres. The site fronts approximately 1500 feet on the south side of Route 612 (Longhill Road). The subject site is located in the central eastern region of James City County approximately 1.5 miles northwest of the intersection of Longhill Road and the limits of the City of Williamsburg, situated directly across Route 612 (Longhill Road) from Lafayette High School. The developed site will consist of one two-story building, parking and green areas. A total of approximately 5.40 acres will be disturbed during construction.

EXISTING SITE CONDITIONS

The proposed site is moderately sloping and drains towards the southern boundary through two natural streams that are part of the Longhill Swamp. The site falls within the RPA boundary and there are wetlands existing on the site. Approximately 80% of the site is covered with tree growth. The site is comprised of two distinct drainage areas that serve as the lower end of an approximate 2,970 acre total drainage area.

ADJACENT PROPERTY

Surrounding property to the north, east, and west is undeveloped woodlands. The entire length of the northern property boundary fronts the Route 612 right-of-way.

ON-SITE AREAS

Topsoil must be stripped from graded areas and stockpiled for use in final grading and permanent stabilization. The stockpiles will be kept on site to the east side of the northern boundary of the property. The stockpiles will be stabilized with temporary vegetation to prevent soil loss and sediment transport from the stockpile itself until needed.

SOILS

1. Craven-Uchee complex (11C; 6 to 10 percent slopes). This complex consists of moderately well drained Craven soils and well drained Uchee soils. Areas of this complex are on side slopes and narrow ridge tops. Slopes are uneven and complex and are 100 to 500 feet long. Areas of this complex are long and winding and range from about 4 to 20 acres.

In the Craven soils, permeability is slow; and in the Uchee soils, it is moderate in the upper part of the subsoil and moderately slow in the lower part. The available water capacity is moderate for the Craven soils and low or moderate for the Uchee soils. Surface runoff is rapid. The erosion hazard is severe. The surface layer of both soils is friable and easily tilled. The subsoil of both soils has moderate shrink-swell potential.

2. Emporia complex (15D; 10 to 15 percent slopes). This complex consists of areas of deep, moderately steep, well drained Emporia soils and areas of similar soils that formed over layers of fossil shells. This complex is on side slopes along rivers, creeks, and drainageways. Slopes are convex and irregularly shaped and range from 50 to 200 feet long. Areas of this complex are long and winding and range from about 2 to 20 acres.

In these Emporia soils, permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. The available water capacity is moderate. Surface runoff is rapid. The erosion hazard is severe. The subsoil has moderate shrink-swell potential.

3. Johnston complex (17; 0 to 2 percent slopes). This complex consists of areas of nearly level, very poorly drained Johnston soils and areas of similar soils that formed over layers of fossil shells. This complex is on floodplains and along major drainageways. Areas of this complex are elongated or irregularly oval and range from about 2 to 450 acres.

In these Johnston soils, permeability is moderate and the available water capacity is high. The subsoil has low shrink-swell potential.

4. Kempsville fine sandy loam (18B; 2 to 6 percent slopes). The soil is deep, gently sloping, and well drained. It is on broad wetlands and side slopes. Areas of this soil are elongated, irregularly rectangular, or oval. They range from about 3 to 60 acres.

In this Kempsville soil, permeability is moderate, and the available water capacity is moderate. Surface runoff is medium. The erosion hazard is moderate. The surface layer is friable and easily tilled. The subsoil has low shrink-swell potential.

5. Slagle fine sandy loam (29A; 0 to 2 percent slopes). The soil is deep, nearly level, and moderately well drained. It is on upland terraces and broad flat uplands and in slight depressions. Areas of this soil commonly are elongated, but some smaller areas are irregularly oval or rectangular. They range from about 2 to 80 acres.

In this Slagle soil, permeability is moderate in the upper part of the subsoil and moderately slow or slow in the lower part. The available water capacity is moderate. Surface runoff is slow. The

erosion hazard is slight. The surface layer is friable and easily tilled. The subsoil has moderate shrink-swell potential.

CRITICAL EROSION AREAS

A critical area has been identified on-site which consists of highly erodible Johnston and Emporia soils. This area is located on the northern property boundary and extends along the VDOT drainage ditch the branch of the Longhill Swamp along the western border of the site. This is a steep sloped area located in the VDOT right-of-way along the south side of Route 612 that consists of slopes greater than 25%. The disturbance of this area will be kept to a minimum and the appropriate erosion and sediment control measures will be employed to minimize sediment runoff to the swamp.

EROSION AND SEDIMENT CONTROL MEASURES

Unless otherwise indicated, all vegetative and structural erosion and sediment control practices shall be constructed and maintained according to minimum standards and specifications of the handbook. The minimum standards of the VESCR shall be adhered to unless otherwise waived or approved by a variance.

STRUCTURAL PRACTICES

The following sequence of events and erosion control measures shall be incorporated into the construction schedule for this project and shall apply to all construction activities within project limits:

1.
 - a. Temporary construction entrance(s) shall be provided at the location(s) shown on the plans. This entrance(s) shall be constructed in accordance with Virginia Erosion and Sediment Control Handbook (Std. & Spec. 3.02). Washracks are to be provided where water is available.
 - b. Where construction vehicle access routes intersect paved public roads, provisions shall be made to minimize the transport of sediment onto the paved surface. Where sediment is transported onto a public road surface, the road shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to all land disturbing activities.
 - c. Construction traffic shall be limited to access roads. All traffic is prohibited from crossing drainage swales and streams except where absolutely necessary (Std. & Spec. 3.24 VE&SC Handbook).
2. Temporary sediment traps, sediment barriers, construction entrance, and erosion control stone are to be placed prior to clearing and grubbing prior or the first phase of construction.

3. All permanent storm water management facilities including erosion control are to be installed and made operational at the start of clearing operations, including approved sediment basins.
4. The contractor shall complete drainage facilities within thirty (30) days following completion of rough grading at any point within the project.
5. Construction will be sequenced so that grading operations can begin and end as quickly as possible.
6. Areas which are not to be disturbed will be clearly marked by fencing, flags, signs, etc.
7.
 - a. Permanent or temporary soil stabilization shall be applied to denuded areas within seven (7) days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven (7) days to denuded areas that may not be at final grade but will remain dormant (undisturbed) for longer than thirty (30) days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one (1) year.
 - b. During construction of the project, soil stockpiles shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles or site as well as soil intentionally transported from the project site.
 - c. A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that, in the opinion of the local program administrator or his designated agent, is uniform, mature enough to survive and will inhibit erosion. Vegetal cover shall be established as follows:

Seed	per Volume III of the PFM
Topsoil	4" thick, per VDOT Spec. 602 (Class B)
Lime	4000#/ac.
Fertilizer	1000#/ac. of 10-10-10
Mulch	2000#/ac.

Slopes will be seeded to protect from rill and gully erosion and allowed to germinate properly. Mulch (straw or fiber) will be used on relatively flat areas and will be applied as a second step in the seeding operation. (Hydroseeding may be used in place of mulching on areas other than ditch banks.) Stabilization measures shall be applied to earthen structures such as dams, diversions, and ditch or watercourse beds and banks immediately after installation (Std. & Spec. 3.36 VE&SC Handbook.)



October 4, 2002



Mr. Scott J. Thomas, P.E.
 Development Management – Environmental Division
 James City County
 PO Box 8784
 Williamsburg, VA 23187-8784

Reference: Christian Life Center
 4451 Longhill Road
 County Plan No. SP-140-98
 Count BMP ID Code: PC 103
 WMJ Job No. 98-35

Dear Mr. Scott:

In response to your letter of September 27, 2002, concerning the referenced project, thank you for your favorable response to our request for the waiver. The additional information provided will be distributed to other project managers so that, hopefully, we can avoid this situation in the future.

We have completed the remedial work noted in your letter and request that your office schedule the final inspection and advise if additional work is required or if the bond can be released.

If you have any questions or comments, please contact me at 896-5125 or 449-9331.

Yours truly,

W. M. JORDAN COMPANY, INC.

Bruce L. Shephard

BLS/Idc

VIA MAIL AND FAX - 253-6850 (1 page)

cc: Ms. Donna Sutton – W. T. Chapin, Inc. (VIA FAX - FAX 595-7640)



PC103

Bruce Shephard

From: Bruce Shephard
Sent: Friday, October 04, 2002 11:52 AM
To: 'scott@james-city.va.us'
Subject: 98-35 Christian Life Center, SP-140-98, BMP Code PC 103

Scott,

We have completed the work outlined in you letter of September 27 concerning the reference project. Please schedule a final inspection and advise if additional work is required or if the bond can be released. I have left a voice mail message for Beth Davis

I can be reached by return email, at my office at 896-5125 or by mobile phone 449-9331 if you have any questions or comments.

Thank you for your efforts in resolving this item.

Bruce L. Shephard
Project Manager
W. M. Jordan Co., Inc.

FAXED
10/4/02

To: Scott J. Thomas, PE
Environmental Division
FAX 253-6850



DEVELOPMENT MANAGEMENT

PC103

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

September 27, 2002

Mr. Bruce L. Shephard
 W.M. Jordan Company
 11010 Jefferson Avenue
 Newport News, Va. 23601

Re: Christian Life Center (4451 Longhill Road)
 County Plan No. SP-140-98
 County BMP ID Code: PC 103

Dear Mr. Shephard:

The Environmental Division has received your letter dated August 29th 2002 requesting variance from construction certification requirements associated with the above stormwater management facility. For this specific project, Note # 18 on Sheet 7 of the approved plan set indicated the following:

"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 judgement, knowledge and belief, the structure was constructed in accordance with the approval plans and specifications".

As this note was present on the approved plans and specifications, it was responsibility of the Owner or Contractor to ensure a professional engineer was present during the construction process to observe construction and to provide proper construction certification once the structure was completed.

Although recently, we have strengthened and provided better definition to the record drawing (as-built) and construction certification process for stormwater management facilities, the requirement for construction certification by a registered professional engineer has not changed since review and approval of this plan.

In full consideration of your letter, there was an apparent failure by the Owner or Contractor to properly retain the services of a professional engineer, document inspections or testing that were performed at the BMP and/or to provide subsequent construction certification. The basis of the variance request is that you were not aware of construction certification requirements and BMP construction was of a minor nature.

Although we agree that the earthen berm around the west side of the facility is of relatively small height, proper construction of the fill embankment for the basin is critical to the long-term structural integrity of the stormwater management best management practice. At a minimum, this portion of facility construction warranted proper observation and certification by an engineer.

However, based on field inspection of BMP and a full review of the approved design plan, land uses and post-construction certification information as submitted including the record drawing and the contents of your letter, it has been determined that for *this specific review case only*, the construction certification requirement will be waived for this project. Conditions that apply to the waiver are outlined below. The primary reasons for granting a waiver for this case are as follows:

- The earthen fill embankment, which would require proper certification, is of relatively small height and design high water for the facility (El. 41.91) is generally below the majority of the fill. Most of the embankment is less than 3 feet high, except for the west portion of the dam which is about 5 feet high.
- Observations of construction, as performed by our assigned inspector(s), generally support that notion that the facility was constructed in accordance with standard accepted engineering practice. *(Please note that inspections by the Environmental Division are for compliance, not construction inspection, purposes only.)*
- The dam embankment shows no signs of seepage and exhibits no apparent signs of stress, malfunction or failure since it's completion over three years ago. The basin appears to fill and draw down per the intended design.
- Overall, there are no obvious signs indicating threatening conditions to the stormwater function or structural integrity of the stormwater management facility.
- The facility appears to have been moderately maintained by the Owner since completion.

Conditions which apply to granting of the waiver request are construction (field) related items which need to be performed as follows:

- Mow the dam on the south (spillway) and west sides of the embankment to 4-inch height. Brush and weeds approximately 3 to 4 ft. high are present which will hinder future access, inspection and maintenance.
- Mow the entire length of the emergency spillway. The emergency spillway is a small channel approximately 125 ft. long at the south end of the dam. Flow out of the BMP shall not be obstructed by vegetation.
- Clear and remove brush and vegetation from within 15 ft. of the principal spillway and rock low flow orifice for the BMP. The principal spillway (riser) is a EW-11 inlet structure at the south end of the dam. The low flow orifice is a rock filter situated approximately 25 ft. north of the riser. Flow out of the BMP shall not be obstructed by vegetation.

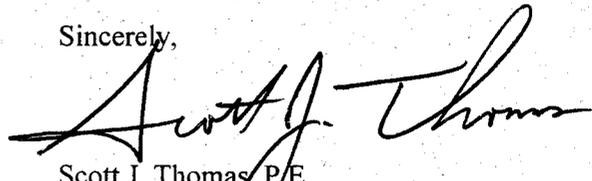
PC 103

Once these construction related items (conditions) are completed, contact our office for inspection. If completed properly, our division will then proceed with the release of the posted surety and closing out the project in accordance with our usual administrative process. However, I stress to you that granting variances of this nature is seldom performed by our division. Lack of knowledge about the process or overlooking items that are clearly delineated on approved plans are not normally justification to grant a variance. For this specific case, many factors and the overall history and general function of the facility were weighed into the decision.

I highly recommend that you and other individuals within your organization who routinely construct stormwater management and drainage facilities in James City County review and familiarize yourselves with our current requirements. This includes Note # 20 of the James City County Environmental Division, Erosion and Sediment Control notes dated July 6th 2001 and our current record drawing/construction certification packet entitled *James City County Environmental Division, Stormwater Management /BMP Facilities, Record Drawing and Construction Certification, Standard Forms & Instructions*. These items are attached for your future use.

If you have any additional questions or comments, you can contact me at 253-6673 or the assigned Environmental Division inspector for the project, Ms. Beth Davis at 757-253-6702. Thank you for your consideration on this matter.

Sincerely,



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

Attachments
SJT/sjt

cc: Beth Davis, Environmental Division Inspector

SWMProg\Asbuilts\Variances\SP14098.pc103

W.M.
Jordan
COMPANY

August 29, 2002



Mr. Scott Thomas
Environmental Division
James City County
101-E Mounts Bay Road
PO Box 8784
Williamsburg, VA 23187-8784

Reference: Christian Life Center
Job No. 98-35
Soil Erosion Sediment Control Bond LPM8126823

Dear Mr. Thomas:

To follow up on our discussion requesting the release of the referenced Soil Erosion Sediment Control Bond, we request that the requirement for construction certification for the BMP be waived. All deficiencies listed in the October 17, 2000, letter, including submittal of as-builts, have been completed with the exception of the construction certification. Unfortunately, according to Mr. Mark Bennett with AES, the engineer of record, they do not have any written documentation of progress inspections nor were we aware of the requirement for construction certification. In addition to correcting all discrepancies observed by James City County Inspectors, items noted by Architect and Owner have been addressed. Furthermore, although relatively small with a maximum impound depth of only 4'-0", the BMP has been in operation for over three years, performing as designed during several significant storm events, including Hurricane Floyd.

Thank you for your consideration in this issue. We look forward to your response. If you have any questions or comments, please do not hesitate to contact me at 596-6341.

Yours truly,

W. M. JORDAN COMPANY, INC.

Bruce L. Shepherd

BLS/ldc

VIA MAIL AND FAX – 253-6850 (1 page)

cc: Ms. Paula Hammett-Berry



Mike - Put w rest of
Christian Life info

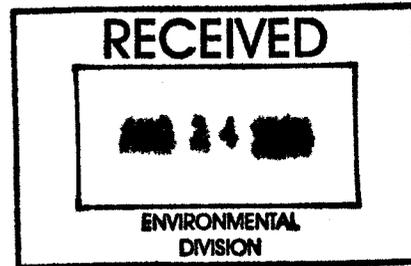
PC103



DEPARTMENT OF THE ARMY
NORFOLK DISTRICT, CORPS OF ENGINEERS
FORT NORFOLK, 803 FRONT STREET
NORFOLK, VIRGINIA 23510-1096

REPLY TO
ATTENTION OF:

August 13, 2004



04-R2098 (Longhill Swamp / York River)

Christian Life Center / Attn: Mike Giroux
P.O. Box 3646
Williamsburg, Virginia 23219

Dear Mr. Giroux:

Scharlene Floyd of my staff met with Doug DeBerry and Shearin Winslow, representatives of the Williamsburg Environmental Group on August 12, 2004 to examine a wetland/waters delineation on a 2-acre vacant located south off State Route 612 James City County, Virginia. The delineation is flagged and shown on site map titled "Delineation Map"/ Christian Life Center, Virginia, dated June 15, 2004. We recommend that the flagged wetlands/waters on your property be surveyed. The verification for wetlands/waters of the United States is valid for a period of five years from the date of this letter. Our basis for this determination is the application of the Corps' 1987 Wetland Delineation Manual and the positive indicators of wetland hydrology, hydric soils, and hydrophytic vegetation. The wetland is a water of the United States and is part of a tributary system to interstate waters (33 CFR 328.3(a)).

It is your responsibility to comply with local requirements pursuant to the Chesapeake Bay Preservation Act (CBPA). This letter does not authorize the placement of dredged or fill material or mechanized land clearing in wetlands or waters of the United States. The term discharge of dredged material is defined as "any addition, including any redeposit, of dredged material, including excavated material, into waters of the United States which is incidental to any activity including mechanized landclearing, ditching, channelization, or other excavation (33 CFR Part 232.2(1)(iii)).

An appeals form is enclosed. If you should have any questions contact Scharlene Floyd of my staff at (757) 441-7367 or email her at scharlene.a.floyd@nao02.usace.army.mil

Sincerely,

Robert A. Schwinn
for Michael A. Schwinn
Chief, Western Virginia Regulatory Branch

Copies Furnished:

Williamsburg Environmental Group / Doug DeBerry / Shearin Winslow
Department of Environmental Quality / Tidewater / Kristen Shacochis
James City County / Planning and Zoning Department

May 6, 2002

Mr. Marc Bennett
AES Consulting Engineers
5248 Olde Towne Road, Suite 1
Williamsburg, VA 23185

Re: JCC Case No. C-58-02. Christian Life Center Parking Lot Expansion

Dear Marc:

Staff has reviewed the above referenced conceptual plan and the following comments are offered:

1. The Christian Life Center is a non-conforming use as it does not have a special use permit and the site is zoned R-8, Rural Residential where houses of worship are a specially permitted use. Therefore, a Special Use Permit would be required for any expansion of the Church or the parking lot.
2. Prior to reviewing a special use permit application, staff would need to review a professional traffic study and a professional parking lot study that presents compelling reasons to support the proposed expansion and addresses the following staff concerns:
 - a. Why the church requires the additional thirty parking spaces.
 - b. Why there is not an acceptable alternative location for the parking spaces.
 - c. Why shared parking at Lafayette High School is not feasible.
 - d. Why a second exit is necessary.
 - e. How the second exit would not alter the level of service on Longhill Road.
 - f. Why the second exit could not be realigned to the west, extending from the existing parking spaces and avoid the need to clear any additional trees.
3. Staff has serious environmental concerns about this site and questions if the proposed parking lot expansion is environmentally feasible. The James City County Environmental Division has reviewed the conceptual plan and has the following initial comments:
 - a. A US Army Corps of Engineers wetland permit will be required for this project. No land disturbing can take place without it. Prior to issuance of a land-disturbing permit for the project, evidence will be required that such permit has been obtained or that no Corp permit is required.
 - b. Wetland enhancement immediately downstream of the impacted area should be considered. This enhancement should be in the form of shrubs and groundcovers.
 - c. Provide evidence that the 100-year floodplain will not be impacted by this development.

PC103

Mr. Marc Bennett
May 6, 2002
Page 2

- d. Provide evidence that the storm drainage system and BMP can handle the increased loading from this project.
- e. The new one-way exit should be relocated to the west existing parking area or else eliminated to preserve what remaining trees are present along Longhill Road.

Please note that staff may have additional comments and concerns if a Special Use Permit application is submitted. If you have any additional question, please do not hesitate to call.

Sincerely,

Karen Drake
Planner

PC103

TRANSMITTAL



DATE: September 26, 2003

TO: Environmental
Fire
VDOT*
JCSA
Lee Schnappinger
Wayland Bass
Police
Marvin Sowers*

FROM: Ellen Cook, Planner

SUBJECT: SUP-19-03 Christian Life Center

ITEMS ATTACHED: Plan
Traffic Analysis booklet*

INSTRUCTIONS: Please review and comment.
Christian Life Center currently does not have an SUP. The applicant proposes a 20,244 S.F. building expansion, additional parking and a new access to the site, necessitating this SUP application.

RETURN REQUESTED BY: October 15, 2003

AGENCY COMMENTS:

Is this development served by Newport News Water Works? _____ (JCSA please check if yes)

If checked, PLANNER please fax copy of preliminary approval letter with Fire Department comments, and the JCSA completed water data sheet to Newport News Water Works - Chief Engineer as soon as all three are available (Fax # 247-2334)

PC 103

October 10, 2003

Mr. Marc Bennett
AES Engineers
5248 Olde Towne Road, Suite 1
Williamsburg, VA 23187

RE: Exception Request for the Christian Life Center

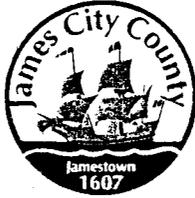
Dear Mr. Bennett:

Pursuant to your letter request of March 24, 1998, an exception from the Chesapeake Bay Preservation Ordinance to allow encroachments into the Resource Protection Area (RPA) for construction of the Christian Life Center is granted with conditions. The encroachments are for installation of a gravity sewer to connect to the existing sewer line located in the RPA, and for the installation of storm drainage and erosion control measures. The conditions presented in your letter regarding restabilization of the disturbed areas as shown on the approved site plan and the provision of an increased RPA buffer (conservation easement) must be provided.

Please contact me at 253-6673 if you have any questions.

Sincerely,

Darryl E. Cook, P.E.
Environmental Director



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

October 17, 2000

W. M. Jordan Company, Inc.
11010 Jefferson Avenue
Post Office Box 1337
Newport News, Virginia 23601-0337
Attention: Donna M. Sutton

Dear Ms. Sutton:

In response to your letter dated September 1, 2000 requesting the bond release of the Christian Life Center, the following deficiencies are noted and shall be corrected prior to release of the bond.

BMP

RD
ALLEY
SADLER

- ✓ 1. In accordance with Note # 18 on Sheet 7 of the approved plan, record drawings (as-builts) and construction certification are required for the BMP. Neither has been provided. **CC VARIANCE REQUEST**
- 2. In addition to information required for the stormwater management/BMP record drawing, provide record (as-built) information for storm drain inlet structure SS-#6. This is a DI-3A curb inlet structure located along the east side of the parking area.
- ✓ 3. Mow thick vegetation on the southwest corner portion of the fill embankment. This is the portion of the fill embankment located near the riser and emergency spillway.
- ✓ 4. Stabilize all pond interior shoreline erosion areas within seed and mulch.
- 5. Remove sediment and reestablish design grades, reestablish riprap outlet protections, and remove construction debris at the two (2) inflow pipe located at the north end of the pond.
- 6. The temporary sediment basin dewatering structure (8 inch perforated pipe) needs removed and the low flow orifice converted to its approved permanent water quality control device per details on Sheet 3. The permanent low flow

AES?

- orifice is to consist of a 6-inch diameter perforated PVC pipe enclosed with a # 57 coarse aggregate stone envelope.
8. ✓ Clean the concrete riser box (modified EW-11) of all woody debris and trash.
 9. ✓ Trim and mow all thick vegetation within the emergency spillway overflow channel. Reestablish EC-2 lining and seed and mulch the lower (south) portion of the emergency spillway channel where bare soil areas were observed.
 10. ✓ Remove trash and debris from the riprap outlet protection at the end of the pond outlet barrel.

Erosion and Sediment Control

1. Remove silt fence from perimeter of project site.
2. Stabilize area with seed and straw or sod.

You are welcome to schedule an appointment with an Engineering Inspector to discuss this matter further. Please contact our office if you have any questions or comments at (757) 253-6670.

Sincerely,



Darryl Cook
Environmental Division Director

Cc: Christian Life Center



August 20, 2001



Development Management
James City County
101-E Mounts Bay Road
PO Box 8784
Williamsburg, VA 23187-8784

Attention: Mr. Darryl Cook

Reference: Christian Life Center
4451 Longhill Road
Williamsburg, VA 23188-1534
Job No. 98-35

Gentlemen:

Enclosed is a copy of the as-built survey for the storm water retention basin for your use and file with reference to Erosion/Sediment Control Bond #LPM8126823 for the referenced project. Please advise if additional information is required to facilitate the release of the above referenced bond. If additional information is required, please contact the undersigned at (757) 596-6341.

If you have any questions or comments, please advise.

Yours truly,

W. M. JORDAN COMPANY, INC.

Bruce L. Shephard

BLS/ldc

Enclosure





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

PC103

County BMP ID Code (if known): PC103
 Name of Facility: Christian Life Center BMP No.: 1 of 1 Date: 9/26/02
 Location: 4551 Longhill Road
 Name of Owner: Christian Life Center
 Name of Inspector: SJ Thomas
 Type of Facility: Dry Pond w/ rock filter
 Weather Conditions: Sunny, Hot 70's Type: Final Inspection County BMP Inspection Program Owner Inspection
 (For Const. Cert. Waiver Purposes)

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

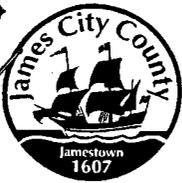
- O.K. - The item checked is in adequate condition and the maintenance program is currently satisfactory. No action required.
- Routine - The item checked requires attention, but does not present an immediate threat to the function/integrity of the BMP.
- Urgent - The item checked requires immediate 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: <u>SMALL FILL</u> <u>AND SOUTH</u>				
Grass Height		✓	✓	• <u>MOW FILL ON WEST PART OF DAM. BRUSH 3-4' High</u>
Vegetation Condition		✓	✓	
Tree Growth	✓			• <u>Clear veg within 15' OR Riser Grate AND Low Flow (ROCK) ORIFICE</u>
Erosion	✓			
Trash & Debris	✓			• <u>MOW ES FULL LENGTH.</u>
Seepage	✓			
Fencing or Benches	N/A			
Interior Landscaping/Planted Areas: <input type="checkbox"/> None <input type="checkbox"/> Constructed Wetland/Shallow Marsh <input type="checkbox"/> Naturally Established Vegetation				
Vegetated Conditions	✓			
Trash & Debris	✓			
Floating Material	✓			
Erosion	✓			
Sediment	✓			
Dead Plant	✓			
Aesthetics	✓			
Other				
Notes:				

Refer to 9/20/00 I.R.
ALL OTHER IS SAME.
RATING 3/5.

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



Database Inventory No. (if known): PC103 SP-140-98
 Name of Facility: CHRISTIAN LIFE CENTER BMP No.: 1 of 1 Date: 9/20/00
 Location: Longhill Road across from Lafayette H.S.; BMP south side of Tract
 Name of Owner: Christian Life Center P.O. Box 3646 Williamsburg VA. 23187
 Inspector: St Thomas, MP Woodson, Beth Davis
 Type of Facility: Dry Detention Pond 4457 Longhill Road
 Weather Conditions: Clear, Sunny, high 70's

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

Trib. To Pinhook Creek.
17.61 AC SITE

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

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

Facility Item	O.K.	Routine	Urgent	Comments
Embankments and Side Slopes: <u>4' Fill Southwest Side.</u>				
Grass Height	X			<u>Heavy Fern Cover. 1-2ft. high.</u>
Vegetated Condition		X		<u>Ferns 1-2' Good Cover. Mow</u>
Weed Growth	X			
Erosion	X			<u>Slight in SW Corner Top 1/3 of DAM.</u>
Trash & Debris	X			
Seepage		X		<u>Top 1/3 of DAM EMBANK (FILL) APPEARS WET.</u> <u>Southwest Corner.</u>
Fencing or Benches	X			<u>None.</u>
Constructed Wetlands (Interior Landscaped & Planted) Areas: <u>Dry Pond with Pool 0-1' deep</u>				
Vegetated Conditions	X			<u>Very Little Interior Veg.</u>
Trash & Debris	X			<u>None.</u>
Floatables	X			<u>None</u>
Erosion	X			<u>6' e Riser.</u>
Sediment	X			<u>6' e Riser</u>
Dead Plant	X			<u>None.</u>
Aesthetics	X			
Other				

A.06

Facility Item	O.K.	Routine	Urgent	Comments
Water Pools <input type="checkbox"/> Permanent Pool (Retention Basin) <input checked="" type="checkbox"/> Shallow Marsh (Detention Basin)				
Shoreline Erosion		X		1-2' along entire interior perim.
Algae	X			
Trash & Debris	X			
Sediment		X		6" deep along N.P.
Aesthetics	X			
Other			X	DRY POND DESIGN. WET POOL 1-2' deep.
Inflow Structures (Describe Locations): 2 inflow pipes north corner pond				
Condition of Structure	X			
Erosion		X		Reprop OP's need restab
Trash and Debris	X			
Sediment	X	X		Routine clean @ pipe outfalls
Aesthetics	X	X		Remove Const debris
Other	X			
Principal Flow Control Structure - Intake, Riser, etc. (Describe Location): 48" conc. with Large Bar Rack 8" sp.				
Condition of Structure	X			1s-1 inlet shaping
Corrosion	X			
Trash and Debris		X		Wanky debris
Sediment	X			None.
Aesthetics	X			Bar spacing seem wide.
Other		X	X	Temp. PVC Perforated Riser for Ext. EC still in place. Needs removed w/ 6" dewatering orifice.
Principal Outlet Structure - Barrel, Conduit, etc.: 12" HDPE				
Condition of Structure	X			OK U/S. OK/D/S
Settlement	X			None
Trash & Debris		X		Bottle Paper
Sediment	X			OK.
Erosion	X			OK
Other	X			PLAN CMP → HDPE, Remove Vess @ pipe outfall
Emergency Spillway (Overflow): EC-2 lined, 8' wide, Trap Shape.				
Vegetation	X			Heavy Fern Growth; Needs removed
Lining	X			Bottom 1/2 respced.
Erosion		X		Bottom 1/2 needs respced.
Trash & Debris	X			
Other				ES. Needs to be unobstructed

Facility Item	O.K.	Routine	Urgent	Comments
Nuisance Type Conditions:				
Mosquito Breeding	X			None observed. Pond should be dry.
Animal Burrows	X			
Graffiti	X			
Other	X			
Surrounding Perimeter Conditions: <i>Wooded totally</i>				
Land Uses	X			well Groomed
Vegetation	X			PVC along SW side of pond. Cultural.
Trash & Debris	X			
Aesthetics	X			
Access /Maintenance Roads or Paths	X			Able to access easily. Flat slopes.
Other		X	X	Check AB Elev. SS#6.

Remarks:

- ▷ Mow 1'-2' FEET VEG on Full Embank.
- ▷ Stabilize Shoreline erosion.
- ▷ OPIs @ 2 inflow pipes need reestablish
- ▷ Remove Const debris from pond (at inflow pipes)
- ▷ TSB Denaturing Structure still in place & needs removed.
- ▷ CMP coated pipe → HOPE CPP AS-BUILT outlet pipe.
- ▷ clean riser of woody debris & trash.
- ▷ EIS. Ferns need mowed, & OS/EMB. Fill.
- ▷ Trash & Debris @ OP need removed. Also Remove trees (willows) in vicinity.
- ▷ Need As-Built Elev. SS#6 & Storm Drain seg to Pond, Incl top of dam elev @ 50' intervals.
- ▷ No Const. Cert or Record Drawing.

Overall Environmental Division Internal Rating: 3

Signature: *Scotty Thomas, P.E.* Date: 10/02/00
 Title: Civil Engineer Environmental Division

PC103

WATERSHED	PC	MAINTENANCE PLAN	No	CTRL STRUC DESC	Mod EW-11
BMP ID NO	103	SITE AREA acre	17.61	CTRL STRUC SIZE inches	36
PLAN NO	SP-140-98	LAND USE	R8 Church	OTLT BARRL DESC	CPP
TAX PARCEL	(32-03)(01-03)	old BMP TYP	Dry Pond	OTLT BARRL SIZE inch	12
PIN NO	3230100003	JCC BMP CODE			
CONSTRUCTION DATE	6/1/2000	POINT VALUE	6	EMERG SPILLWAY	Yes
PROJECT NAME	Christian Life Center			DESIGN HW ELEV	41.91
FACILITY LOCATION	4451 Longhill Road			PERM POOL ELEV	na
CITY-STATE	Williamsburg, Va. 23187	SVC DRAIN AREA acres	4.6	2-YR OUTFLOW cfs	4.00
CURRENT OWNER	Christian Life Center(Thomas M Wells)			10-YR OUTFLOW cfs	5.30
OWNER ADDRESS	P.O. Box 3646			REC DRAWING	Yes
OWNER ADDRESS 2	4451 Longhill Road	SERVICE AREA DESCRI	Building & Parking Areas		
CITY-STATE-ZIP CODE	Williamsburg, Va. 23187	IMPERV AREA acres	3.58	CONSTR CERTIF	No
OWNER PHONE	(757) 220-2100	RECV STREAM	Powhatan Creek		
MAINT AGREEMENT	Yes	EXT DET-WQ-CTRL	Yes	LAST INSP DATE	9/27/2002
EMERG ACTION PLAN	No	WTR QUAL VOL acre-ft	0.28	INTERNAL RATING	3
		CHAN PROT CTRL	No	MISC/COMMENTS	South corner of site.
		CHAN PROT VOL acre-ft	0		
		SW/FLOOD CONTROL	Yes		
		GEOTECH REPORT	No		

Get Last BMP No

Return to Menu

IMPORTANT MESSAGE

FOR Beth **PC103**
DATE 4/30 TIME _____ A.M.
P.M.

WHILE YOU WERE OUT

M Bruce Shepherd
OF WM Jordan
PHONE NO. 596-6341

TELEPHONED	<input checked="" type="checkbox"/>	PLEASE CALL	<input checked="" type="checkbox"/>
CALLED TO SEE YOU	<input type="checkbox"/>	WILL CALL AGAIN	<input type="checkbox"/>
WANTS TO SEE YOU	<input type="checkbox"/>	RUSH	<input type="checkbox"/>

RETURNED YOUR CALL

MESSAGE Wants to know status
of project - wants to close
out if possible
- Christian Life Ctr.

SIGNED Darryl **CALLER**
5-01-03

HighMark P3-A2334

PRINTED IN U.S.A.

Scott Thomas

From: Scott Thomas
Sent: Monday, October 02, 2000 3:33 PM
To: Mike Woolson; Beth Davis
Subject: Christian Life Center

SP-140-98

Mike/Beth

Enclosed are my comments for this project.

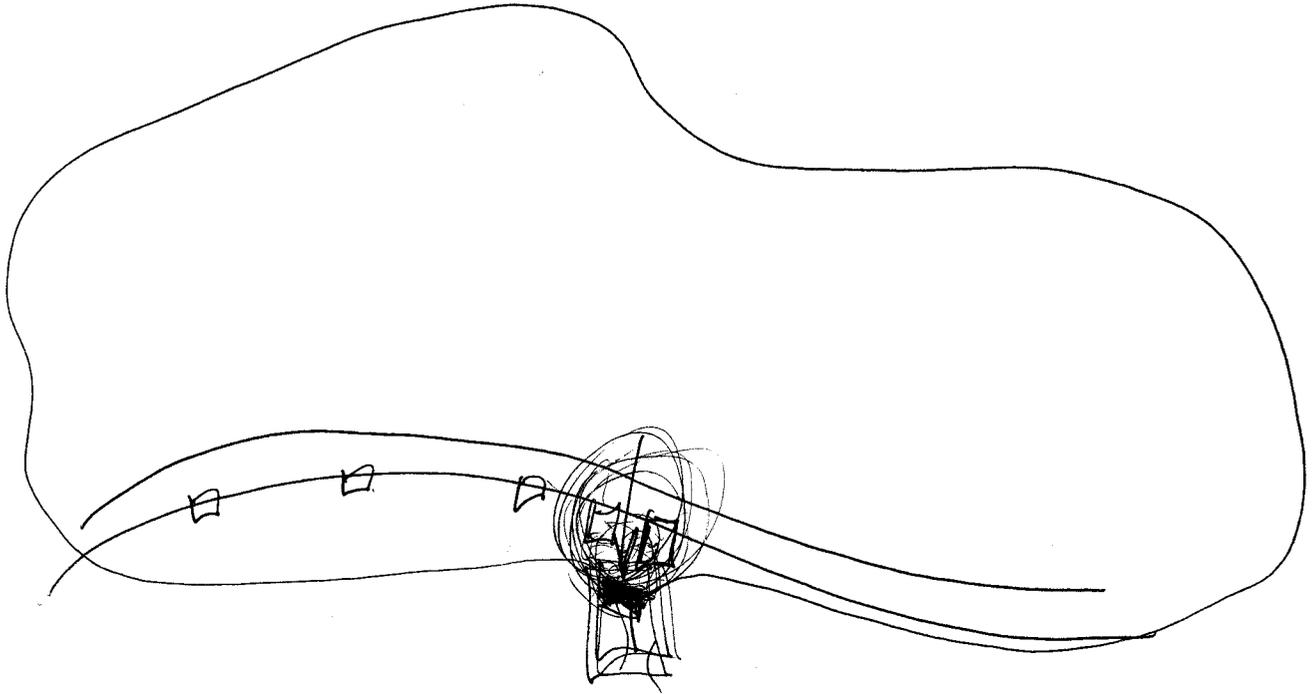
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6. The temporary sediment basin dewatering structure (8 inch perforated pipe) needs removed and the low flow orifice converted to its approved permanent water quality control device per details on Sheet 3. The permanent low flow orifice is to consist of a 6 inch diameter perforated PVC pipe enclosed within a # 57 coarse aggregate stone envelope.
7. Clean the concrete riser box (modified EW-11) of all woody debris and trash.
8. Trim and mow all thick vegetation within the emergency spillway overflow channel. Reestablish EC-2 lining and seed and mulch the lower (south) portion of the emergency spillway channel where bare soil areas were observed.
9. Remove trash and debris from the riprap outlet protection at the end of the pond outlet barrel.

If you need anything else let me know. They can address the punch list items and we can do final inspection once we receive the record drawing.

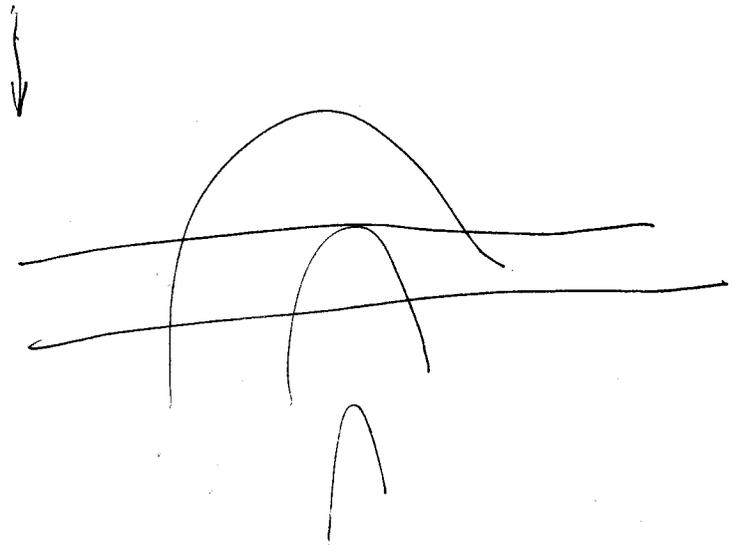
Scott

W. M. Jordan
Company
BRUCE Shepherd
596-6341
CA BARRIS
CONTRACTOR

80109



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**JAMES CITY COUNTY
WETLANDS BOARD MEETING DATES**

Meeting	Deadline	APO'S	To Virginia Gazette	Ad Date Displayed	Site Visit
January 10, 2000	11/29/00	12/18/00	12/20/00	12/27/00 and 01/03/01	12/15/00
February 14, 2000	01/03/01	01/22/01	01/24/01	01/31/01 and 02/07/01	01/19/01
March 14, 2000	01/31/01	02/19/01	02/21/01	02/28/01 and 03/07/01	02/16/01
April 11, 2000	02/28/01	03/19/01	03/21/01	03/28/01 and 04/04/01	03/16/01
May 9, 2000	03/28/01	04/16/01	04/18/01	04/25/01 and 05/02/01	04/20/01
June 13, 2000	05/02/01	05/21/01	05/23/01	05/30/01 and 06/06/01	05/18/01
July 11, 2000	05/30/01	06/18/01	06/20/01	06/27/01 and 07/04/01	06/15/01
August 8, 2000	06/27/01	07/16/01	07/18/01	07/25/01 and 08/01/01	07/20/01
September 12, 2000	08/01/01	08/20/01	08/22/01	08/29/01 and 09/05/01	08/17/01
October 10, 2000	08/29/01	09/17/01	09/19/01	09/26/01 and 10/03/01	09/21/01
November 14, 2000	10/03/01	10/22/01	10/24/01	10/31/01 and 11/07/01	10/19/01
December 12, 2000	10/31/01	11/19/01	11/21/01	11/28/01 and 12/05/01	11/16/01

Wetlands Meeting = 2nd Wednesday of each month
 APO Letters Out = 23 Days prior to meeting
 Site Visit Done = 3rd Friday of each month

Deadline Date = 6 Weeks prior to meeting
 Public Notice Out = 3 Weeks prior to meeting

60103

ENVIRONMENTAL DIVISION REVIEW COMMENTS

Christian Life Center

Plan No. SUP-19-03

October 10, 2003 *max lacc*

PC103

1. The proposed 2-story building near the BMP is situated too close to the RPA to avoid impacts to the RPA during construction. A condition needs to be added to the permit that the west side of the building needs to be located at least 10 feet from the RPA.
2. A condition needs to be added that the existing BMP needs to be modified by adding a forebay in the upper end of the basin. This will improve the performance of the BMP and reduce its maintenance costs.
3. Powhatan Creek. For information purposes. This project is situated in the Powhatan Creek watershed. Please note the James City County Board of Supervisors, by resolution dated February 26th 2002, adopted *in concept* eight (8) goals and 21 priorities associated with the Powhatan Creek Watershed Management Plan. This project is subject to the contents of that plan. The owner, applicant, developer and plan preparer should be advised of and completely review the goals, priorities (tools) and entire contents of this study, including subwatershed maps, as layout and design of the proposed project could be affected by and should remain consistent with these items. Refer to the draft watershed management plan and its associated subwatershed maps for environmental sensitive areas, features and/or recommendations that may apply to the subwatershed in which the project area is situated. Specific items that may apply include: *{RPA sign area; special stormwater criteria; better site design criteria.}*
4. For information purposes. If a wetlands permit is obtained to fill for the parking lot expansion, wetland enhancement immediately downstream of the impacted area should be considered. This enhancement should be in the form of shrubs and groundcovers.
5. The new one-way exit should be relocated to the existing parking area immediately to the west of the expansion area or else be eliminated to preserve what remaining trees are present along Longhill Road. This connection point to Longhill Road could still be in the same location thereby meeting VDOT requirements.

PC 103

PC103