



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: CC017

DATE VERIFIED: November 09, 2017

QUALITY ASSURANCE TECHNICIAN: Jonathan Craig

LOCATION: WILLIAMSBURG, VIRGINIA



Stormwater Division

MEMORANDUM

DATE: November 09, 2017
SCANNER: Jonathan Craig, Assistant Environment Coordinator
RE: Files Approved for Scanning

Maintenance Agreements: YES
(in file as of scan date)

General File ID or BMP ID: CC017
PIN: 5010100009
Owner Name: JAMES CITY COUNTY
Legal Description: GOVT CEN PT BLACK'S CROSING
Local Address: 101 MOUNTS BAY ROAD

Easement:

Recorded Plat:

Comments: 1 record drawing scanned and added. Hard copy destroyed.



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BMP NUMBER: CC-017

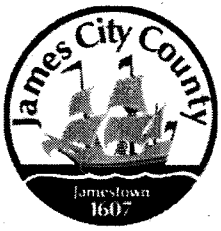
DATE VERIFIED: March 21, 2012

QUALITY ASSURANCE TECHNICIAN:

Leah Hardenbergh

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA



Stormwater Division

MEMORANDUM

DATE: March 11, 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: CC017

PIN: 5010100009

Subdivision, Tract, Business or Owner

Name (if known):

Kingsmill

Property Description:

Government Center

Site Address:

101 Mounts Bay Road

(For internal use only)

Box 12

Drawer: 7

Agreements: (in file as of scan date)

Y

Book or Doc#:

0732

Page:

0986

181

432

Comments

Owner of the parcel is James City County; The Kingsmill North Quarter BMP located on parcel behind 168 North Quarter

1. Maintenance Agreement

DECLARATION OF COVENANTS

COPY

INSPECTION/MAINTENANCE OF RUNOFF CONTROL FACILITY

THIS DECLARATION, made this 28th day of March, 19 95,
 between Busch Properties, Inc., and all successors in interest, hereinafter referred
 to as the "COVENANTOR(S)," owner(s) of the following property:
Deed Book No. 181, page 432, (North Quarter) Kingsmill Village
Tax Map # (50-1) (1-1)
 and James City County, Virginia, hereinafter referred to as the "COUNTY."

WITNESSETH:

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

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

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of this 28th day of March, 1995.

COVENANTOR(S)
BUSCH PROPERTIES, INC. DBA
Kingsmill on the James

William B. Voliva, Jr.
William B. Voliva, Jr.
Vice President
Kingsmill on the James

ATTEST:

COVENANTOR(S)

ATTEST:

COMMONWEALTH OF VIRGINIA
CITY/COUNTY OF James City

I, the undersigned Notary Public, in and for the Commonwealth at large jurisdiction aforesaid, do certify that William B. Voliva, Jr., whose name is signed as such to the foregoing writing bearing date 28th day of March, 1995, this day sworn the same before me in my jurisdiction aforesaid.

GIVEN under my hand this 28th day of March, of 1995.

Nancy A. Ehly
Notary Public
Nancy A. Ehly

My Commission expires: January 31, 1996

Approved as to form:

Leo P. Rogers

0261U.Wpf
Revised 9/92

VIRGINIA: City of Williamsburg and County of
James City, to-wit:
I, 5 of the 5 Court of the
City and County of James City II.e
April 1, 1995 This Covenant
admitted to record at 12:46 clock
Tested: Notary Nancy A. Ehly
by Nancy A. Ehly
Deputy Clerk

2. Completed Construction Certification

James City County, Virginia
Environmental Division

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

CONVT DATE
7/01/95?
50-0

County Plan No.: S-70-94 (FORM TUTTERSNECK NORTH)
Project Name: Kingsmill North Quarter
Stormwater Management Facility: Dry Det. Basin.
Phase: ☒ I ☐ II ☐ III

- ☒ Information Received. Date: Unknown. Request Tom Dunn 7/27/01.
☐ Administrative Check.
☒ Record Drawing Date: 11/19/96
☒ Construction Certification Date: 10/13/95 NICE
☐ RD/CC Standard Forms (Required after Feb 1st 2001) NOT NEEDED.
☒ Inspection/Maint Agreement Yes Info: _____
☐ Other: _____
☒ Standard E&SC Note on Approved Plan Requiring RD/CC
☒ Yes ☐ No Sheet: County comment #5 10/14/94 requires AB
☒ Assign County BMP ID Code Code: CC 017
☒ Log into Division "As-Built" Tracking Log
☒ GIS Map (obtain information GPIN, Owner, Site Area, etc.)
☒ Preliminary Log into BMP Database (BMP ID #, Site Plan #, GPIN, Project Name)
☒ Initial As-Built File setup.
☒ Forward Inspector Review Form. Feedback: _____
☒ Pre-Inspection Drawing Review (Quick look)
☒ Final Inspection (field observation) Date: 08/24/01
☒ Record Drawing Review Date: 08/24/01
☒ Construction Certification Review Date: 08/24/01
☐ Actions:
☐ No comments.
☒ Comments. Letter Forwarded. Date: Aug 24 '01
☒ Record Drawing (RD)
☒ Construction Certification (CC)
☒ Construction-Related (CR) → Reinspect 11/02/01
☐ Site Issues (SI)
☐ Other : _____
☐ Second Submission: _____
☐ Third Submission: _____
☒ Approved for stormwater management facility purposes (RD/CC/CR/Other). Proceed with bond release.
☒ Notify Darryl & Joan of acceptability email (preferred) or verbal.
☒ Clean active file of all stormwater management related material and finish/establish "As-Built" file.
☒ Add to County BMP Inventory/Inspection schedule (Phase I, II or III).
☐ Add to JCC Hydrology & Hydraulic database (optional).

BMP Certification Information Acceptable

Plan Reviewer: [Signature]

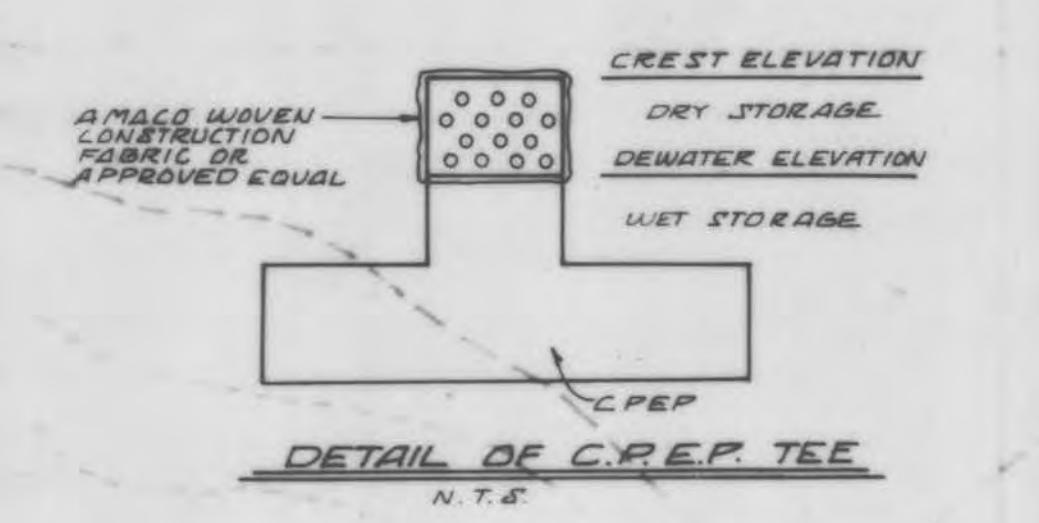
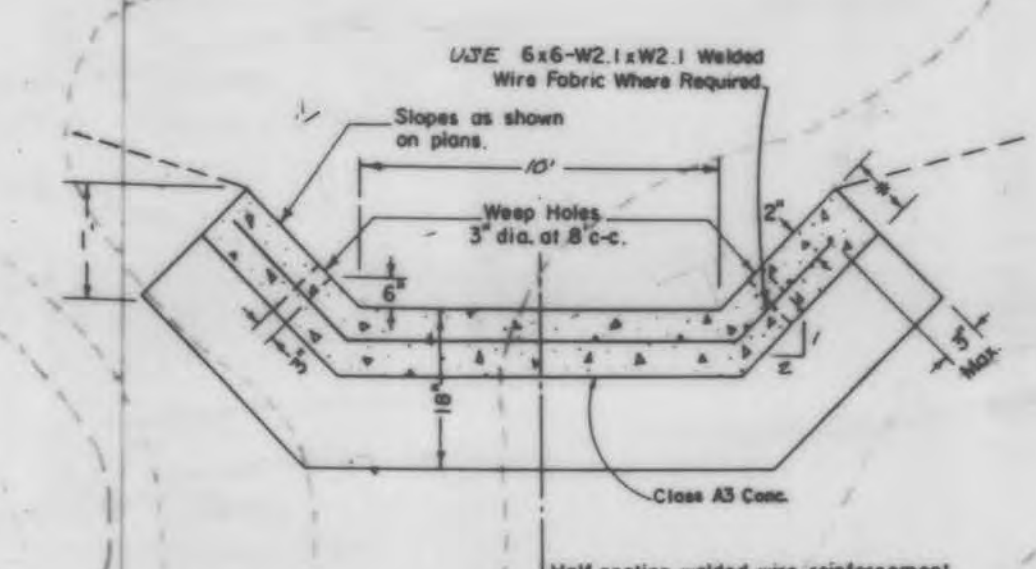
Date: 11/12/01

3. As-Built Plan

TRAP # 1
VOLUME NEEDED: 4,892 FT³ X 2 = 9,784 FT³
VOLUME PROVIDED: 11,000 FT³
WIER LENGTH = 16.2'

TRAP # 2
VOLUME NEEDED: 4,162 FT³ X 2 = 8,324 FT³
VOLUME PROVIDED: 8,370 FT³
WIER LENGTH = 13.8'

TRAP # 3
VOLUME NEEDED: 568 FT³ X 2 = 1,136 FT³
VOLUME PROVIDED: 1,475 FT³
WIER LENGTH = 1.8'



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

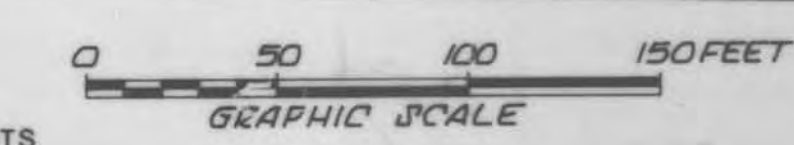


DES.	RWE	CFR	KSM	DATE
				8/31/94

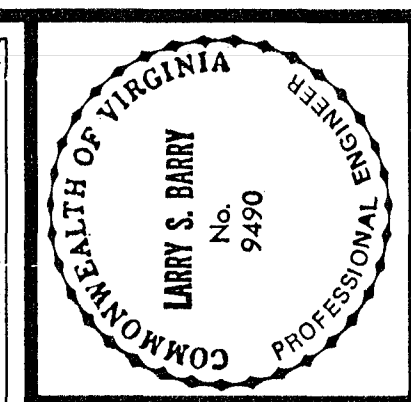
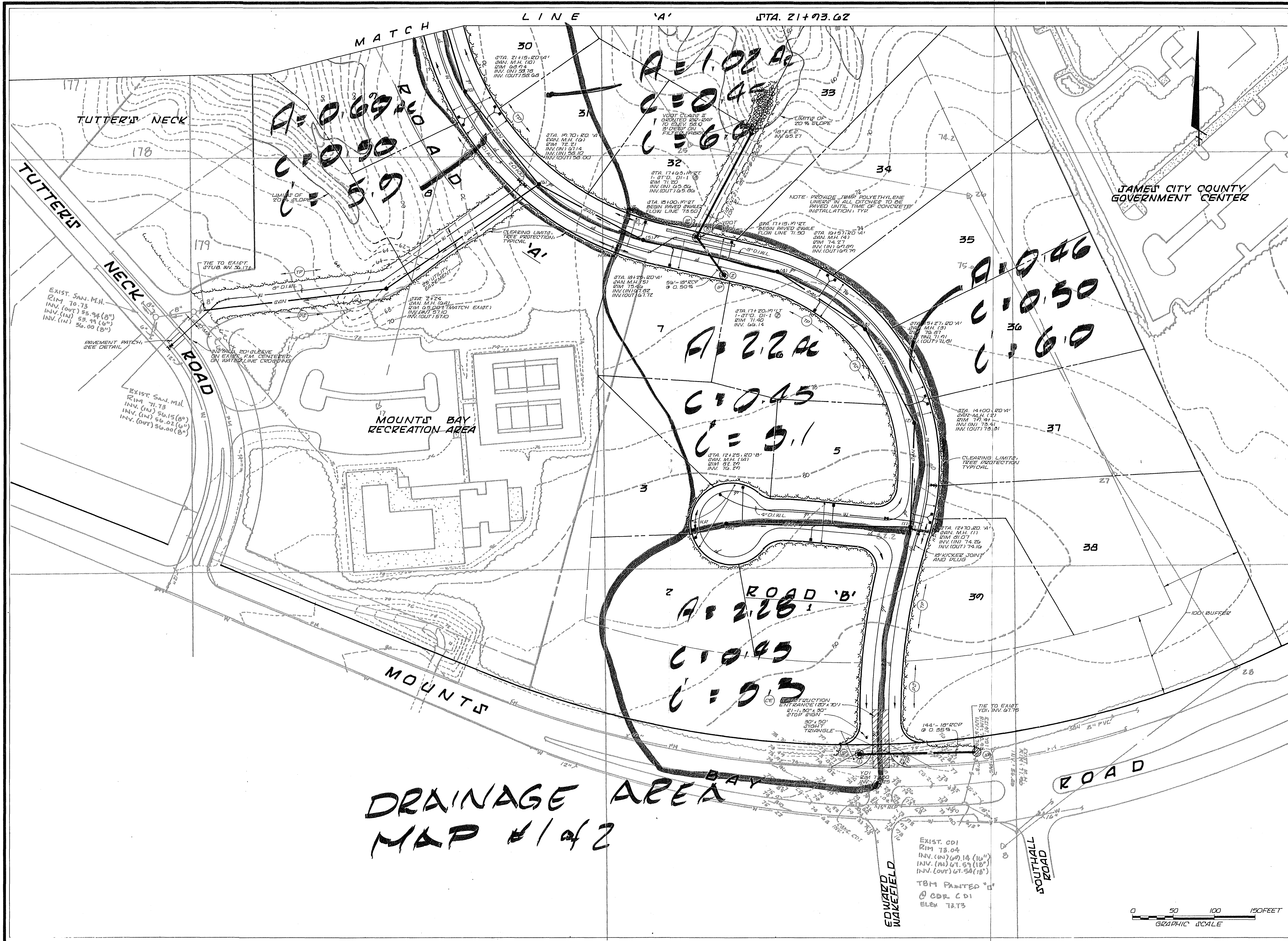
KINGSMILL
on the James
SANTARIY SEWER, DRAINAGE & WATER PLAN
NORTH QUARTER

SHEET 2 OF 15
DISK
PROJ. NO. 71069B-234
DWG. 5467W

REVISED: 12/08/94 PER COUNTY COMMENTS
REVISED: 11/30/94 PER COUNTY COMMENTS
REVISED: 11/15/94 PER COUNTY COMMENTS
REVISED: 11/10/94 OUTFALL PIPES
REVISED: 11/04/94 PER N.J. WATERWORKS COMMENTS



4. Watershed Map



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

DES.	RWE
DWN.	CFR
CHK.	KSM
DATE	8/31/94

TUTTER'S
KINGSMILL NECK NORTH
on the James
SANITARY SEWER, DRAINAGE & WATER PLAN

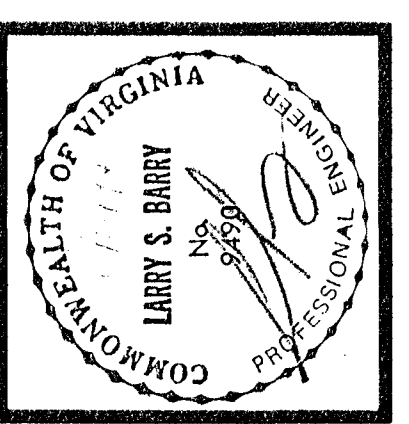
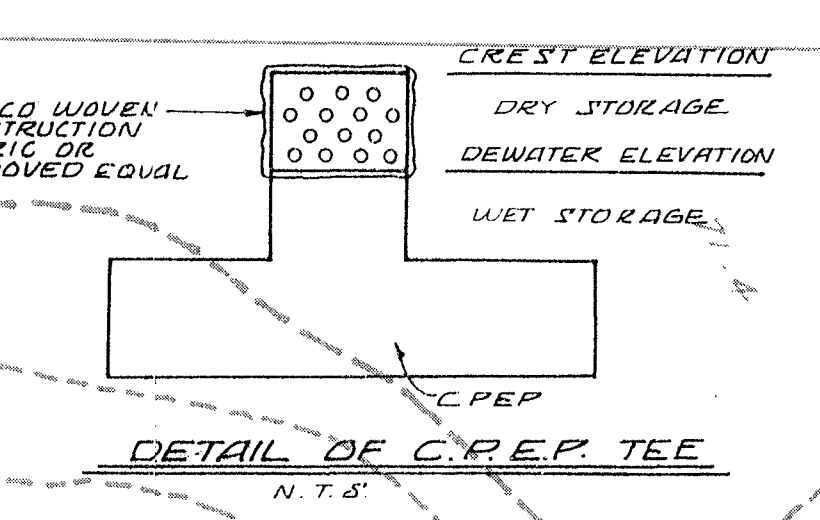
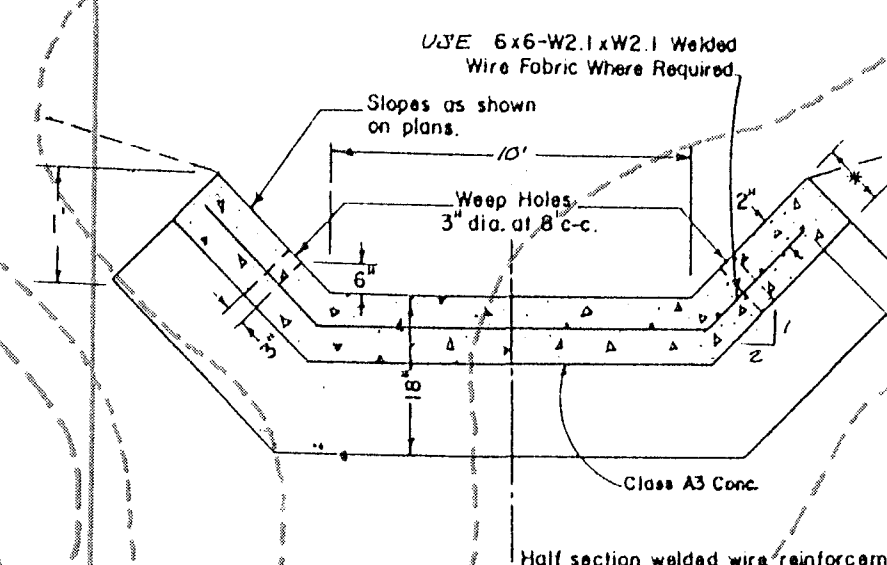
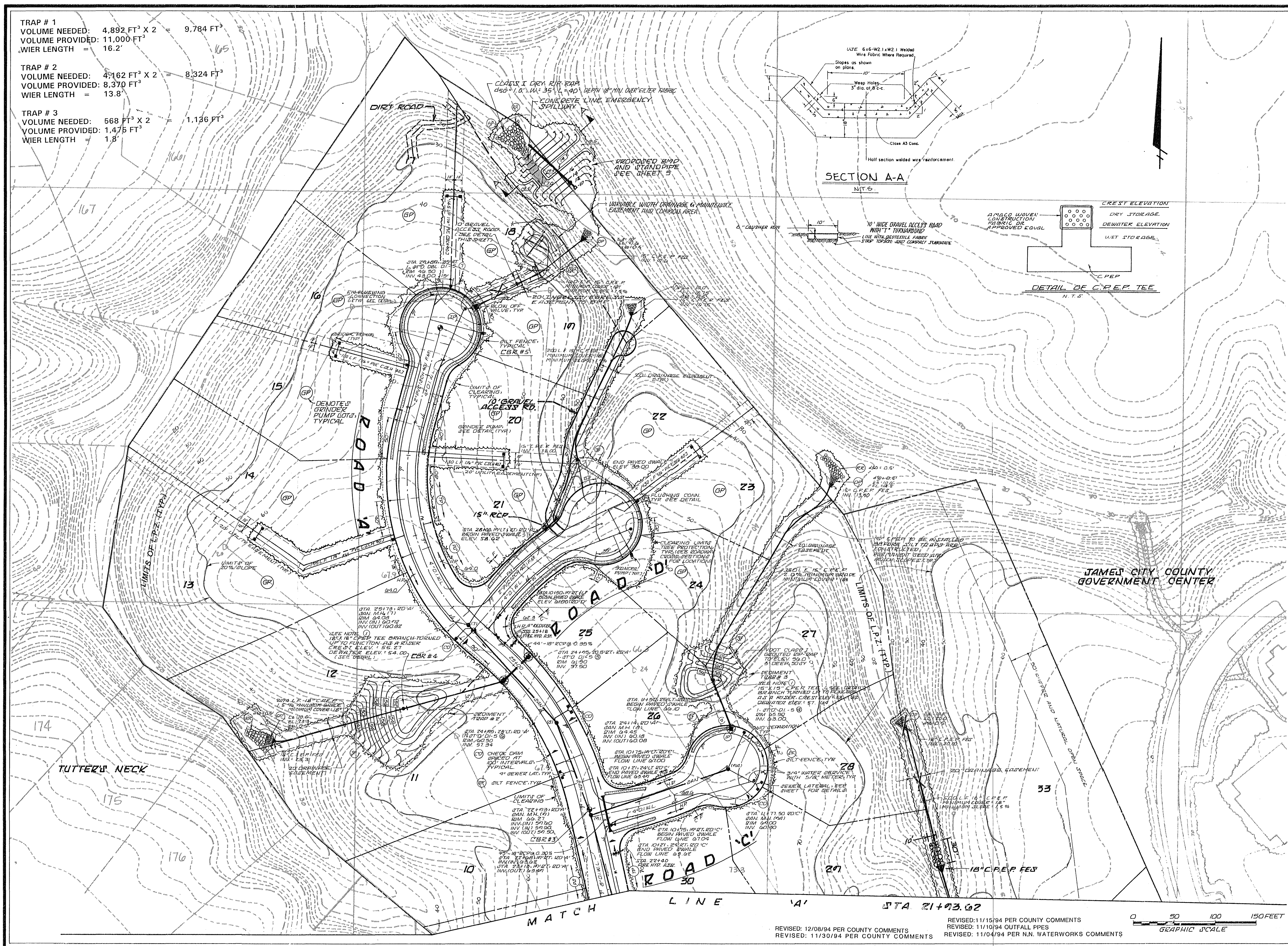
SHEET	OF
DISK	
PROJ. NO.	71069B-234
DWG.	

5. Construction Plan

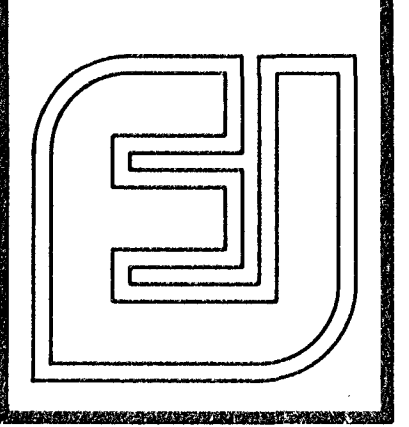
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Langley and McDonald, P.C.
Engineers • Surveyors • Planners
Landscape Architects • Environmental Consultants
VIRGINIA BEACH
WILLIAMSBURG



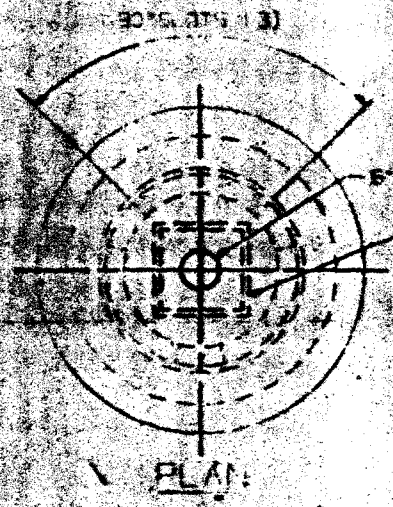
DES.	RWE
OWN.	CFR
CHK.	KSM
DATE	8/31/94

KINGSMILL VILLAGE
on the James
KINGSMILL
SANITARY SEWER, DRAINAGE & WATER PLAN

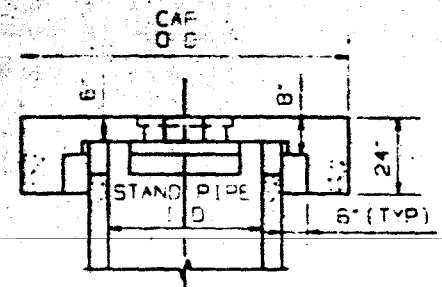
SHEET 2 OF 15
DISK
PROJ. NO. 71069B-234
DWG. 5467W

RECORD BUG

STAND-PIPE ID	CAP ID	WATER CAP NO.
51	51	2181
52	52	1.3271
53	53	1.3281
54	54	1.7531
55	75	2.0531
56	80	2.2731
57	81	2.5721
58	94	2.9101
59	101	3.2861
60	107	3.4091
61	114	3.7991
62	124	4.8091
63	133	5.5061
64	147	5.8221



5" Ø HOLE
DI. 1 FRAME AND GRATE
GRATE NOT SHOWN
AVAILABLE FOR 48"
AND LARGER
STAND PIPE IS REQUESTED



SECTION

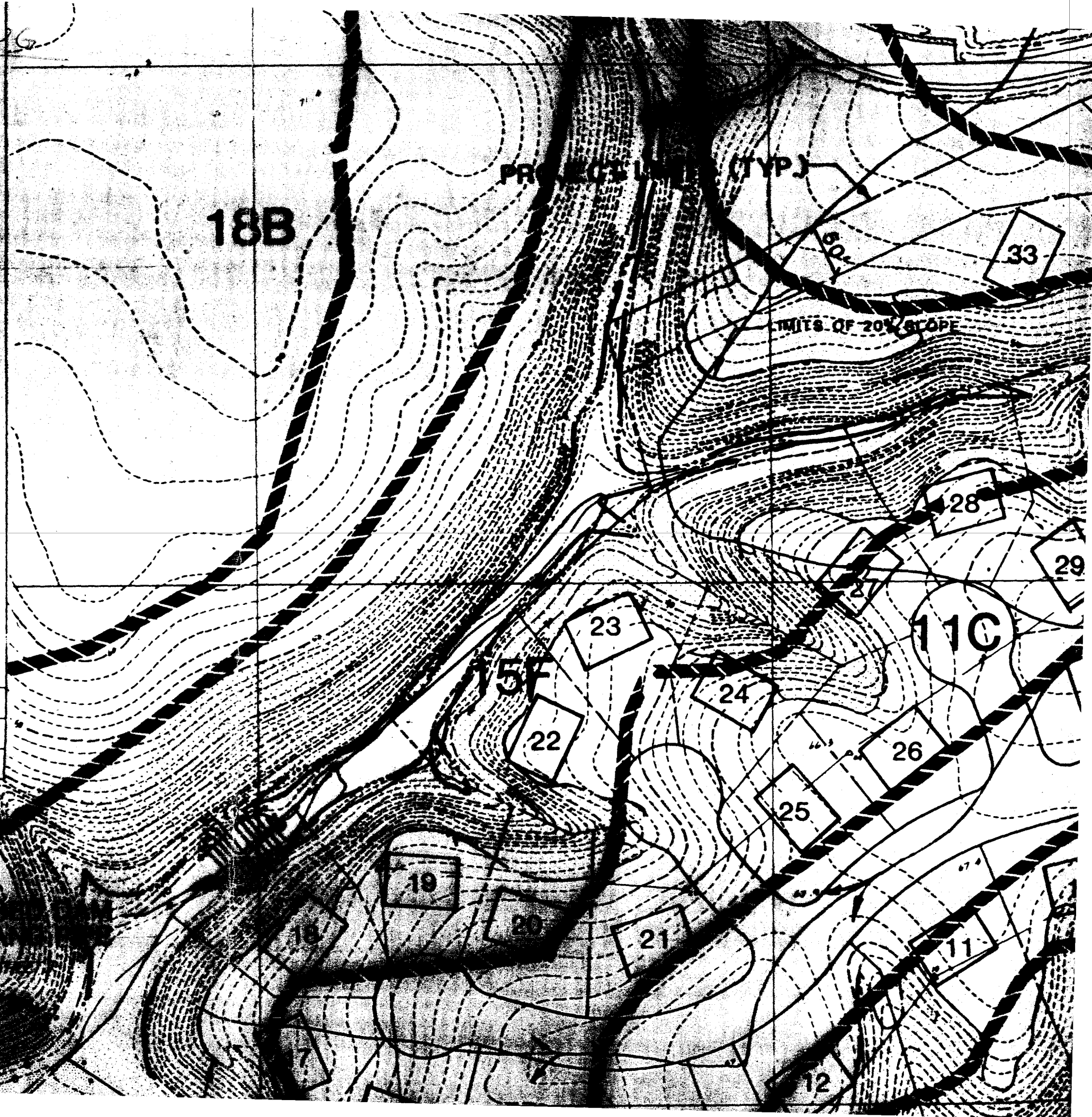
ANTI-VORTEX DEVICE

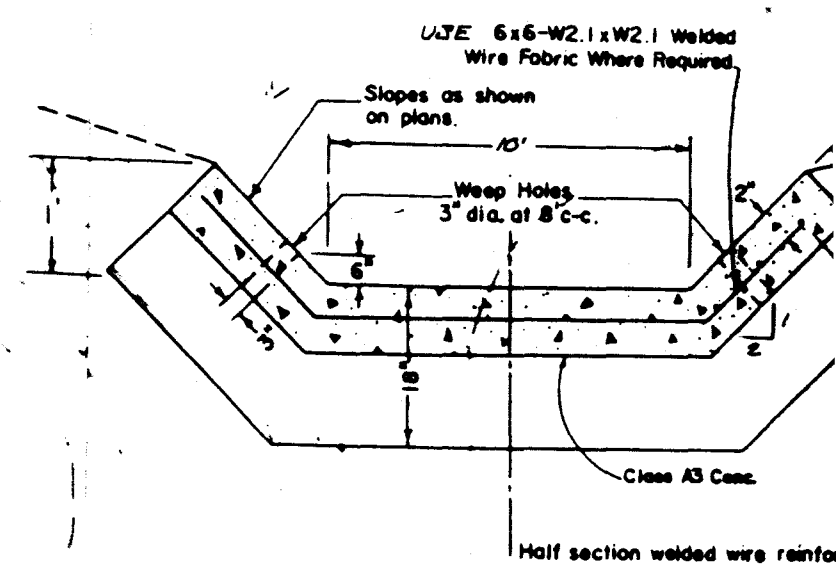
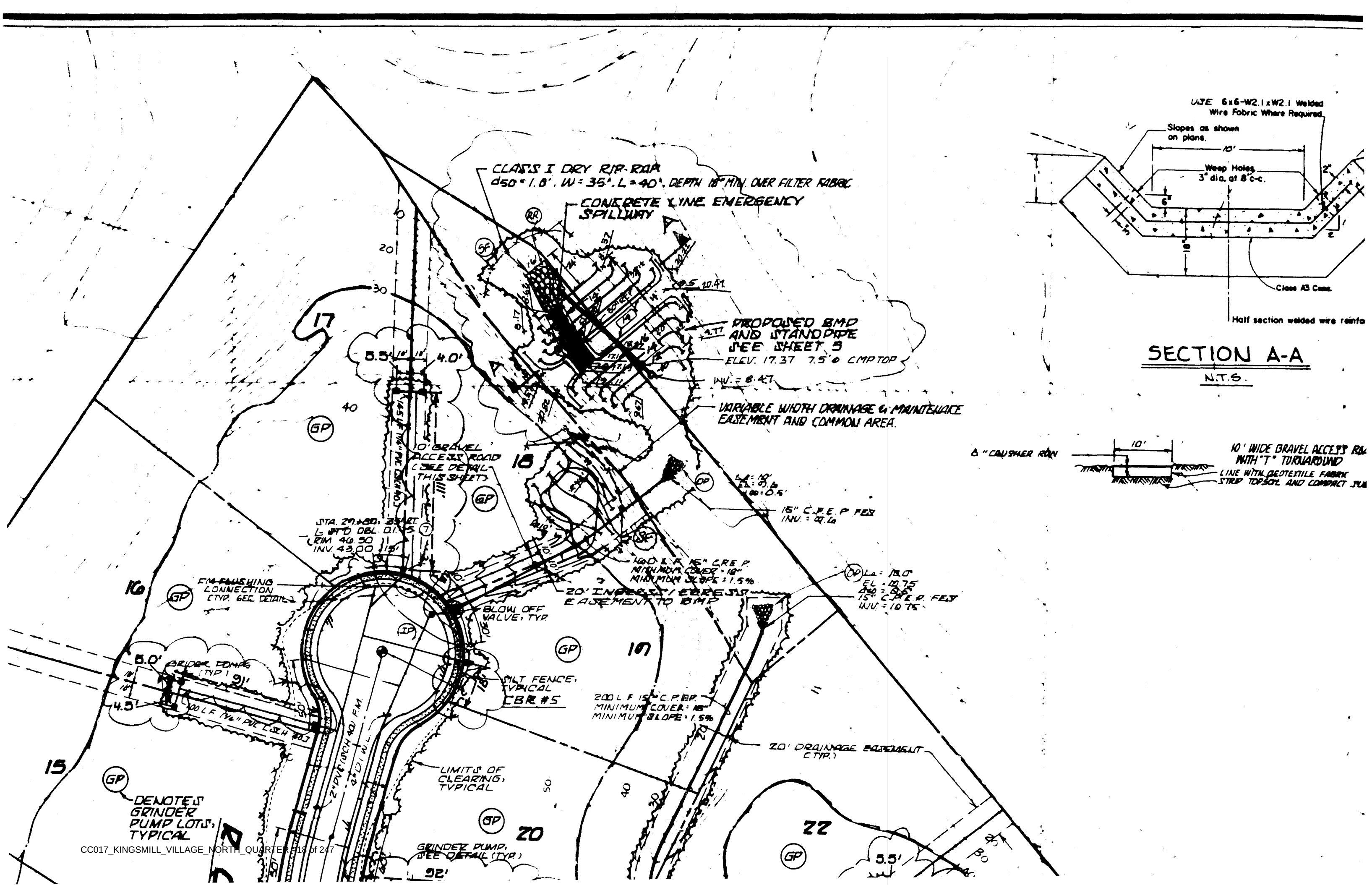


CONCRETE PIPE & PRODUCTS CO., INC.

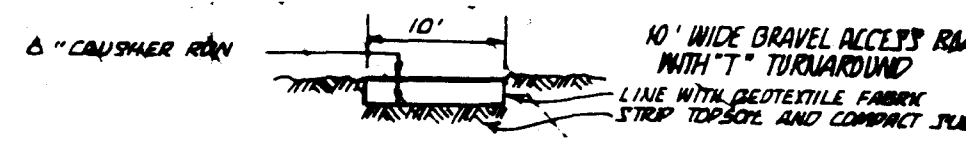
DATE 01 24-93

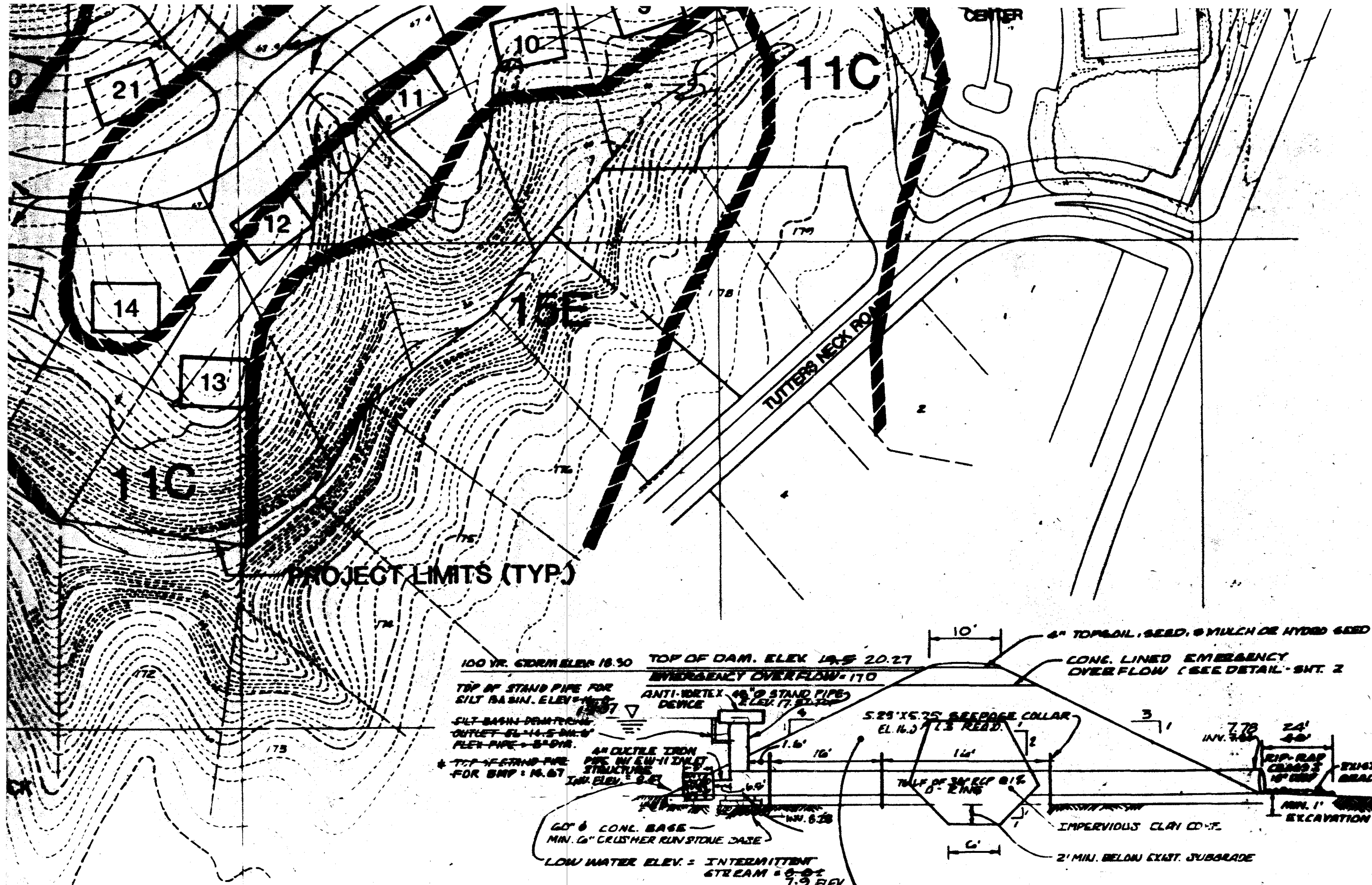
PAGE 14 1





SECTION A-A
N.T.S.





- TIDAL WETLANDS
- TIDAL SHORES
- SLOPES GREATER
- NON-TIDAL WETLA
- NON-TIDAL WETLA
- 100' BUFFER
- HYDRIC SOILS
- IMPACTED WETLANDS
- SOIL LEGEND**

SYMBOL	
11C	CRAVEN-I
14B	EMPORIA
15E	EMPORIA
15F	EMPORIA
18B	KEMPSVIL
19B	KEMPSVIL
	2-6% slope



* ONCE CONSTRUCTION OF SUBDIVISION IS COMPLETE AND ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE CONTRACTOR SHALL REMOVE A 1'-3" RISER SECTION FROM THE STAND PIPE AND REPLACE THE ANTI VORTEX DEVICE.

REMOVE ALL PEAT & ORGANIC (P.E., O.H. & O.L.) MATERIAL FROM BENEATH DAM BACKFILL WITH C.L. OR G.C. MATERIAL WITH NO LESS THAN 40% PASSING #200 SIEVE

DAM CROSS SECTION
N.T.S.

REVISED: 11/11
REVISED: 11/11
REVISED: 11/11

1/2" MIN. OVER FILTER FABRIC
IN EMERGENCY

10.41

PROPOSED BMD
AND STANDPIPE
SEE SHEET 3
ELEV. 17.37 7.5' @ CMPTOP

INV. = 8.47

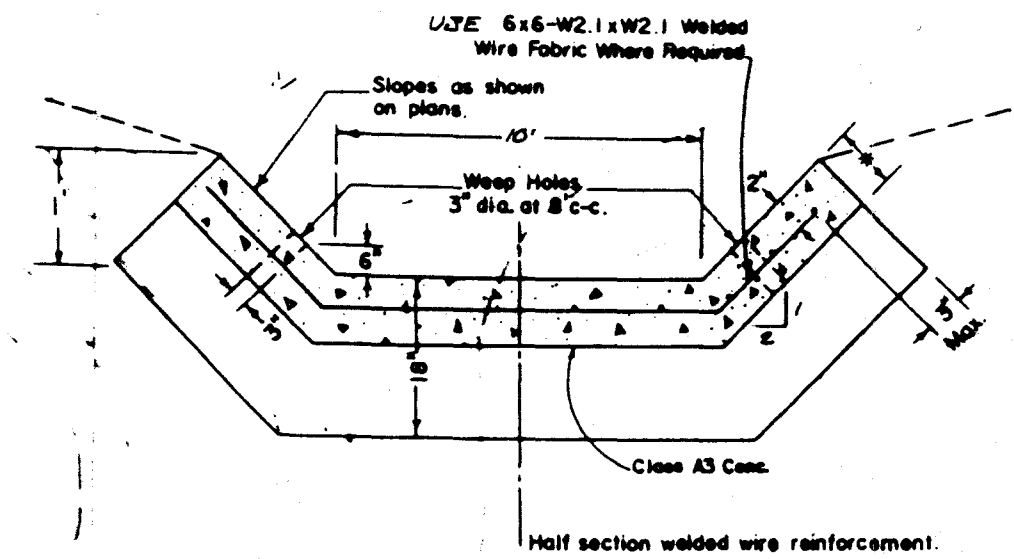
VARIABLE WIDTH DRAINAGE & MAINTENANCE
EASEMENT AND COMMON AREA.

LA = 10'
EL = 10.4
SLOPE = 0.5%

15" C.P.E.P. PIP
INV. = 07.6

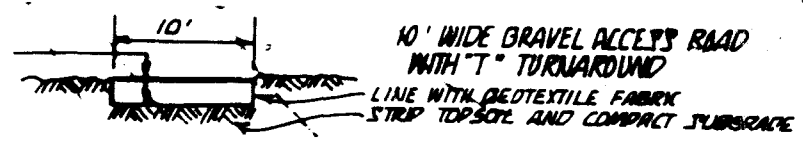
LA = 10.0'
EL = 10.75
SLOPE = 0.5%
15" C.P.E.P. PIP
INV. = 10.75

20' DRAINAGE EASEMENT
(TYP.)

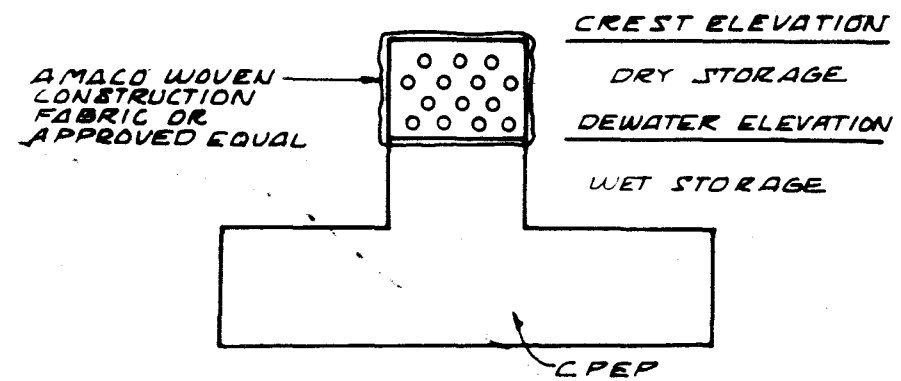


SECTION A-A
N.T.S.

6" CRUSHER RUN



10' WIDE GRAVEL ACCESS ROAD
WITH "T" TURNAROUND
LINE WITH GEOTEXTILE FABRIC
STRIP TOPSOIL AND COMPACT SUBGRADE



DETAIL OF C.P.E.P. TEE
N.T.S.

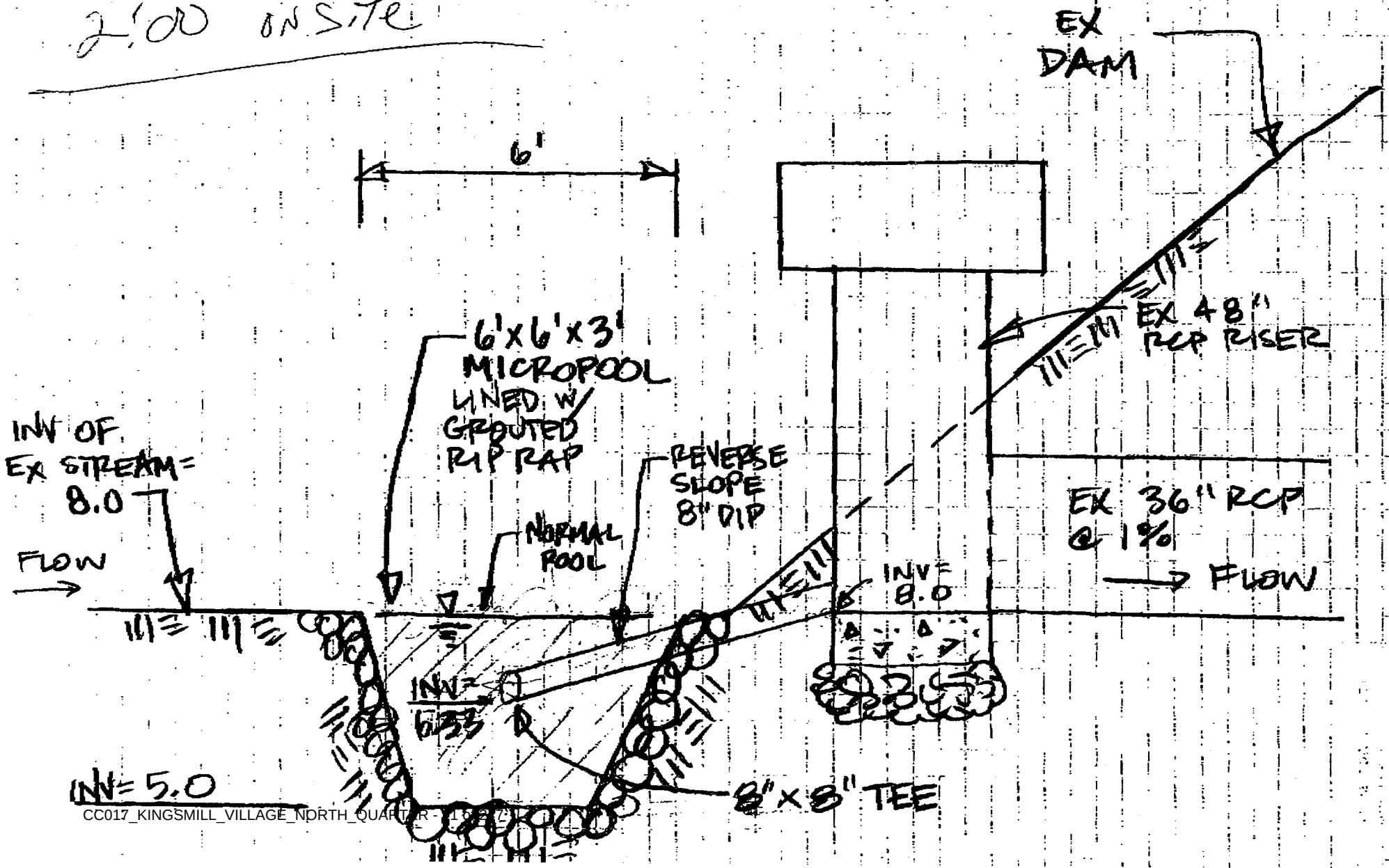
44140100

Devote FAX
220-0452

KINGSMILL VILLAGE BMP RETROFIT

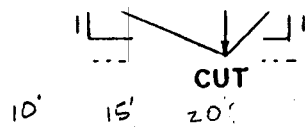
9/5/97
7753

2:00 ON SITE



6. Design Calculations

Rd 'A' LANE
RT. SIDE



PROJECT: KINGSMILL VILLAGE
BY: _____ DATE 11/14/94

STA. TO STA.		FLOW	10' 15' 20'					Tc	I ₂	Q ₂	C or F	Slope Ft-Ft	ALLOW. VEL.	Earth		Protective			Lining		I ₁₀	Q ₁₀	DEP. Ft	REMARKS		
			0.9			0.6								0.5		C A		n=.03	n=.05						n=.015	
			WS/CA	WS/CA	WS/CA	INCR.	ACC.							INCR.	ACC.	VEL	On		VEL.	DEP.					On	DEP.
10+00	11+00	↑	0.021	0.021	0.034	0.076	0.214		3.5	0.75		1.0300	3 1/4	2.4							5.1	1.09	0.37'			
11+00	12+00	↑	0.021	0.021	0.034	0.076	0.138		3.5	0.48		1.0300	3 1/4	2.2							5.1	0.70	0.31'			
12+00	12+80.25	↑	0.017	0.017	0.028	—	0.062		3.5	0.22	C	1.0300	3 1/4	1.8							5.1	0.31	0.23'			
12+80.25	14+00	↓	0.025	0.025	0.041	—	0.091		3.5	0.32		1.0200	3 1/4	1.7							5.1	0.46	0.29'			
14+00	15+00	↓	0.021	0.021	0.023	0.065	0.156		3.5	0.55		1.0200	3 1/4	1.9							5.1	0.80	0.35'			
15+00	16+00	↓	0.021	0.021	0.023	0.065	0.221		3.5	0.77		1.0200	3 1/4	2.1							5.1	1.13	0.40'			
16+00	17+00	↓	0.021	0.021	0.023	0.065	0.286		3.5	1.00		1.0200	3 1/4	2.3							5.1	1.46	0.44'			
17+00	17+63	↓	0.013	0.013	0.015	0.041	0.327		3.5	1.14		1.0047	3 1/4	1.4					0.41		5.1	1.67	0.47'	PG-2A POWER Ditch 17+20 - 17+63		
17+63		↑	STR # 3				D 1-5		Rim =		7.20															
17+63	18+00	↑	0.008	0.008	0.013	0.029	0.065		3.5	0.23		1.0540	3 1/4	2.26					0.14		5.1	0.33	0.16	PG-2A PAVED Ditch 18+00 - 17+63		
18+00	18+46.15	↑	0.010	0.010	0.016	—	0.036		3.5	0.13		1.03	3 1/4	1.58							5.1	0.16	0.16			
		↑																								
18+46.15	20+00	↓	0.032	0.032	0.076	—	0.140		3.5	0.49		1.035	3 1/4	2.33							5.1	0.71	0.30			
20+00	21+00	↓	0.021	0.021	0.077	0.119	0.259		3.5	0.91		1.015	3 1/4	1.98							5.1	1.32	0.45			
21+00	22+00	↓	0.021	0.021	0.121	0.163	0.422		3.5	1.47		1.015	3 1/4	2.23							5.1	2.15	0.54			
22+00	22+68	↓	0.014	0.014	0.057	0.085	0.507		3.5	1.75		1.015	3 1/4	2.33							5.1	2.59	0.58			
18"		↑	RCP				0.074	From Road "C" RT.																		
		↑					0.065	From Road "C" LT.																		
22+68	24+00	↓	0.027	0.027	0.030	0.084	0.73		3.5	2.46		1.015	3 1/4	2.56							5.1	3.72	0.66			
24+00	24+95	↓	0.020	0.020	0.022	0.062	0.79		3.5	2.77		1.015	3 1/4	2.80							5.1	4.03	0.68			
24+95		↑	STR # 5				D 1-5																			
25+65.14	24+95	↑	0.014	0.014	0.005	—	0.033		3.5	0.16		1.0138	3 1/4	1.14							5.1	0.17	0.21			
26+58.49	25+65.14	↑	0.019	0.019	0.019	—	0.057		3.5	0.20		1.0138	3 1/4	1.31							5.1	0.29	0.26	TO ROAD "D"		

BY _____ DATE 11/14/94

2-27

Kd H LANE

LT. SIDE



BY

KINGSMILL VILLAGE

DATE 11/14/94

STA. TO STA.		FLOW	CUT			MED.		FILL			SLOPE FT-FT	ALLOW VEL	Earth		Protective			Lining		I ₁₀	Q ₁₀	DEP.	REMARKS
			0.9 WS _{CA}	0.6 WS _{CA}	0.4 WS _{CA}	C A		T _c	I ₂	Q ₂			C or F	n=03 VEL	n=.05		n=015						
						INCR.	ACC.						Q _n	VEL.	DEP.	Q _n	DEP.						
10+00	11+00	↑	0.021	0.021	0.046	0.088	0.469		3.5	1.64	0.0300	3.0	2.97						5.1	2.39	0.49		
11+00	12+05	↑	0.037	0.033	0.092	0.162	0.381		3.5	1.33	0.0300	3.0	2.82						5.1	1.94	0.46		
FROM ROAD "B"		↑					0.219																
FROM ROAD "B"		↑					0.158																
12+05	14+00	↓	0.021	0.021	0.007	0.049	0.207		3.5	0.72	0.0200	3.0	2.08						5.1	1.06	0.39		
14+00	15+00	↓	0.021	0.021	0.037	0.079	0.286		3.5	1.00	0.0200	3.0	2.25						5.1	1.46	0.44		
15+00	16+00	↓	0.021	0.021	0.049	0.141	0.427		3.5	1.49	0.0200	3.0	2.49						5.1	2.18	0.52		
16+00	17+20	↓	0.025	0.025	0.20	0.25	0.677		3.5	2.37	0.0200	3.0	2.80						5.1	3.45	0.61		
17+20		↑	STR # 2 D1-S R ₁ n = 71.40										Low Pt.										
17+20	17+80	↑	0.012	0.012	0.17	0.19	0.36		3.5	1.26													
17+80	18+45	↑	0.018	0.018	0.13		0.17		3.5	0.60	0.030	3.0	2.78										
		↑																					
18+45	20+00	↓	0.028	0.028	0.037		0.093		3.5	0.33	0.035	3.0	2.11						5.1	0.47	0.26		
20+00	21+00	↓	0.021	0.021	0.027	0.069	0.162		3.5	0.57	0.015	3.0	1.76						5.1	0.83	0.38		
21+00	22+00	↓	0.021	0.021	0.018	0.060	0.222		3.5	0.78	0.015	3.0	1.90						5.1	1.13	0.42		
22+00	23+00	↓	0.021	0.021	0.018	0.060	0.282		3.5	0.99	0.015	3.0	2.02						5.1	1.44	0.47		
23+00	24+00	↓	0.021	0.021	0.018	0.060	0.342		3.5	1.20	0.015	3.0	2.12						5.1	1.74	0.50		
24+00	24+95	↓	0.010	0.020	0.017	0.057	0.399		3.5	1.40	0.015	3.0	2.20						5.1	2.03	0.53		
24+95		↑	STR # 6 D1-S R ₁ n = 60.50																				
24+95	26+58	↑	0.034	0.034	0.03		0.098		3.5	0.34	0.0138								5.1	0.50			
		↑																					
26+58	28+00	↓	0.029	0.029	0.026		0.084		3.5	0.29	0.0674	3.0	2.61						0.15	5.1	0.43	0.17	27+95 BEGIN PG-2A
28+00	29+00	↓	0.021	0.021	0.028	0.070	0.154		3.5	0.54	0.0674	3.0	3.05						0.19	5.1	0.79	0.22	
29+00	30+00	↓																					

Rd. B" LANE
RT. SIDE



BY _____

DATE 11/14/94

STA. TO STA.		FLOW	0.9	0.6	0.4	C A		Tc	I ₂	Q ₂	C or F	Slope Ft-Ft	ALLOW. VEL	Earth	Protective			Lining		I ₁₀	Q ₁₀	DEP.	REMARKS
			WS/CA	WS/CA	WS/CA	INCR.	ACC.							n=.03	n=.05			n=.015					
														VEL	On	VEL.	DEP.	On	DEP.				
12+17	11+00	↓	0.067	0.022	0.015		0.104		3.5	0.36		.0075	3.0%	1.21						5.1	0.53	0.36	
11+00	10+00	↓	0.026	0.021	0.007	0.054	0.158		3.5	0.55		.0075	2.9%	1.34						5.1	0.81	0.43	
		↓																					
		↓																					
		↓																					
		↓																					
Road 'C' Right																							
10+00	11+12.5	↑	0.023	0.023	.028	—	0.074		3.5	0.26		.0016	3 1/4%	2.45				0.14	5.1	0.38	0.17	PG-2A	
11+12.5	11+77.5	↓	0.070	0.025	0.10	—	0.195		3.5	0.68		.03	3 1/4%	2.38					5.1	0.99	36		
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DESIGN DATA

MANNINGS' "n" 0.013

TYPE OF PIPE : RCP

RUNOFF COEFFICIENTS.

OTHER

ROOFS

JOB NO. 71069B-234

DATE 8/31/74

DESIGNED BY *RWE* SHEET 1 OF 1

CC017_KINGSMILL VILLAGE NORTH QUARTER - 28 of 247

Subject "DRY" EXTENDED POND

Computed By _____ Checked By _____

Project No. 71069B196
 Client BPE
 Date _____ Sheet No. _____

DESIGN CRITERIA

- 1) SWAMP TYPE BOTTOM $\rightarrow$ 6"-12" perm. pool
- 2) 24-HR RELEASE OF EITHER ONE-INCH STORM OR 1ST FLUSH ($\frac{1}{2}$ " impervious acre)
- 3) UPPER STAGE TO CONTROL 2-YR STORM
 $\rightarrow$ DISCHARGE NOT TO EXCEED PRE-DEVELOPMENT LEVEL

$$\text{LOWER STAGE VOLUME} = \text{VOLB} = [R_m)(R_v)/12] (A)$$

$$R_m = 0.45 \text{ inches rainfall}$$

$$R_v = 0.05 + (0.009 \times 35\% \text{ impervious})^* \\ = 36.5\%$$

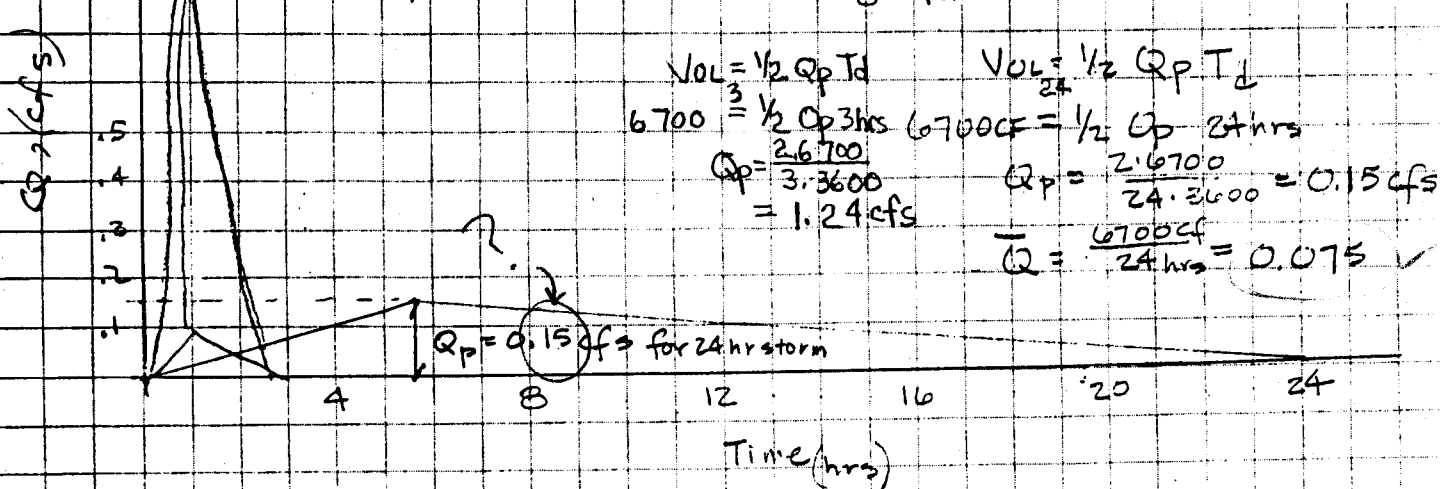
$$A = 11.24 \text{ acre drainage basin}$$

$$\text{VOLB} = [(0.45)(0.365)/12] (11.24) = 0.15 \text{ ac-ft} \\ = 6700 \text{ C.F.}$$

below elev. 18.5 $\rightarrow$ ROUTED THROUGH POND OVER 24 HRS

$Q_p = 1.24 \text{ cfs}$ for 1 hr storm

0.45" Rainfall = Mean storm Hydrographs



* 32 Units $\div$ 11.1 acre site = 2.9 du/acre $\Rightarrow$ ~35% Impervious cover

Comp. "C" VALUE

DEV. AREA = 4.86 AC. (PICKED UP BY STORM DRAIN)
OPEN SPACE = 11.24 AC. - (2.23 AC. + 4.86 AC.) = 4.15 AC.

$$\begin{array}{rcl} 4.86 \text{ AC.} \times 0.6 & = & 2.9 \\ 4.15 \text{ AC.} \times 0.3 & = & 1.2 \\ \hline 9.01 & & 4.1 \end{array} \quad \begin{array}{l} \\ \\ 9.01 \div 4.1 = 0.45 \text{ o/ALL} \end{array}$$

PRE-DEV. RUNOFF

$Q_2 = ACI$
 $Q_2 = 11.24 (0.25) (5.2''/\text{HR})$
 $Q_2 = 14.6 \text{ c.f.s. PRE-DEV.}$

$T_c = 7.5 \text{ min}$
 $= 0.125 \text{ hrs}$

POST

$Q_2 = 11.24 (0.45) (5.2) = 26.3$

FOR EMERG. SPILLWAY - 10 YR. STORM

$Q = ACI$
 $Q = 11.4 (0.45) (7''/\text{HR})$
 $Q = 36 \text{ c.f.s.}$



Langley and McDonald

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

Subject _____

Computed By _____ Checked By _____

Project No. _____

Client _____

Date _____ Sheet No. _____

10 YR STORM FLOW

$$Q_{10} = ACI_{10}$$
$$Q_{10} = (11.24)(0.45)(6.7')$$
$$Q_{10} = 34 \text{ c.f.s.}$$

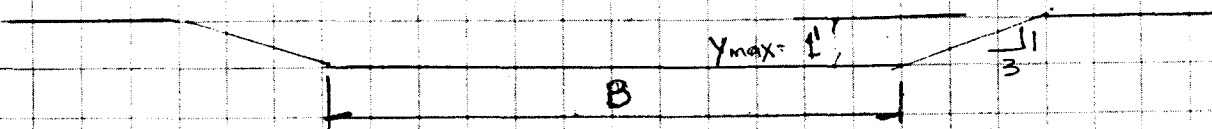
TOTAL 100YR STORM FLOW

$$Q_{100} = ACI_{100}$$
$$Q_{100} = (11.24)(0.45)(8.75)$$
$$Q_{100} = 44 \text{ c.f.s.}$$

Assume portion of 100-yr storm = to 10yr storm will be carried through standpipe and remainder will be carried by emergency spillway (Q_s)

$$Q_{100} = Q_{10} + Q_s$$

$$Q_s = Q_{100} - Q_{10} = 44 - 34 = 10 \text{ c.f.s.}$$



```

*****
*                                     *
*                                     *
*   Kingsmill Village *
*   Shallow Marsh BMP *
*   9/20/90 *
* (CHECK SHORT 1" RAINFALL) *
*****
  
```

Inflow Hydrograph: a:3HR1IN .HYD
 Rating Table file: a:RSTAND21.PND

-----INITIAL CONDITIONS-----

Elevation = 18.50 ft
 Outflow = 0.00 cfs
 Storage = 149 cu-ft

GIVEN POND DATA

INTERMEDIATE ROUTING
 COMPUTATIONS

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + 0 (cfs)
18.50	0.0	149	0.1	0.1
19.00	0.0	437	0.2	0.2
19.50	0.1	972	0.5	0.6
20.00	0.1	1,897	1.1	1.2
20.50	0.1	3,122	1.7	1.8
21.00	0.1	4,486	2.5	2.6
21.50	0.1	6,000	3.3	3.4
22.00	0.1	7,669	4.3	4.4
22.50	6.5	9,471	5.3	11.8
23.00	11.7	11,380	6.3	18.0
23.50	14.3	13,397	7.4	21.7
24.00	16.5	15,528	8.6	25.1
24.50	18.5	17,873	9.9	28.4
25.00	20.2	20,548	11.4	31.6
25.50	21.8	23,575	13.1	34.9
26.00	23.3	26,975	15.0	38.3
26.50	24.7	30,610	17.0	41.7
27.00	26.1	34,331	19.1	45.2
27.50	27.3	38,138	21.2	48.5

Time increment (t) = 60.0 min.

Pond File: a:RSTAND21.FND
 Inflow Hydrograph: a:3HR1IN .HYD
 Outflow Hydrograph: a:OUT .HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.0	0.00	---	0.1	0.1	0.00	18.50
60.0	1.20	1.2	1.1	1.3	0.10	20.09
120.0	0.60	1.8	2.7	2.9	0.10	21.17
180.0	0.00	0.6	3.1	3.3	0.10	21.41
240.0	0.00	0.0	2.9	3.1	0.10	21.29
300.0	0.00	0.0	2.7	2.9	0.10	21.17
360.0	0.00	0.0	2.5	2.7	0.10	21.05
420.0	0.00	0.0	2.3	2.5	0.10	20.93
480.0	0.00	0.0	2.1	2.3	0.10	20.80
540.0	0.00	0.0	1.9	2.1	0.10	20.66
600.0	0.00	0.0	1.7	1.9	0.10	20.53
660.0	0.00	0.0	1.5	1.7	0.10	20.39
720.0	0.00	0.0	1.3	1.5	0.10	20.24
780.0	0.00	0.0	1.1	1.3	0.10	20.09
840.0	0.00	0.0	0.9	1.1	0.10	19.93
900.0	0.00	0.0	0.7	0.9	0.10	19.74
960.0	0.00	0.0	0.5	0.7	0.10	19.54
1020.0	0.00	0.0	0.4	0.5	0.06	19.30
1080.0	0.00	0.0	0.3	0.4	0.03	19.15
1140.0	0.00	0.0	0.3	0.3	0.01	19.07
1200.0	0.00	0.0	0.3	0.3	0.01	19.04
1260.0	0.00	0.0	0.3	0.3	0.00	19.02
1320.0	0.00	0.0	0.2	0.3	0.00	19.01
1380.0	0.00	0.0	0.2	0.2	0.00	19.00
1440.0	0.00	0.0	0.2	0.2	0.00	19.00
1500.0	0.00	0.0	0.2	0.2	0.00	19.00
1560.0	0.00	0.0	0.2	0.2	0.00	19.00
1620.0	0.00	0.0	0.2	0.2	0.00	19.00
1680.0	0.00	0.0	0.2	0.2	0.00	19.00
1740.0	0.00	0.0	0.2	0.2	0.00	19.00
1800.0	0.00	0.0	0.2	0.2	0.00	19.00
1860.0	0.00	0.0	0.2	0.2	0.00	19.00
1920.0	0.00	0.0	0.2	0.2	0.00	19.00
1980.0	0.00	0.0	0.2	0.2	0.00	19.00
2040.0	0.00	0.0	0.2	0.2	0.00	19.00
2100.0	0.00	0.0	0.2	0.2	0.00	19.00
2160.0	0.00	0.0	0.2	0.2	0.00	19.00
2220.0	0.00	0.0	0.2	0.2	0.00	19.00
2280.0	0.00	0.0	0.2	0.2	0.00	19.00
2340.0	0.00	0.0	0.2	0.2	0.00	19.00
2400.0	0.00	0.0	0.2	0.2	0.00	19.00

204
OK
-dos

***** SUMMARY OF ROUTING COMPUTATIONS *****

Pond File: a:RSTAND21.PND
Inflow Hydrograph: a:3HR1IN .HYD
Outflow Hydrograph: a:OUT .HYD

Starting Pond W.S. Elevation = 18.50 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow = 1.20 cfs
Peak Outflow = 0.10 cfs
Peak Elevation = 21.41 ft

***** Summary of Approximate Peak Storage *****

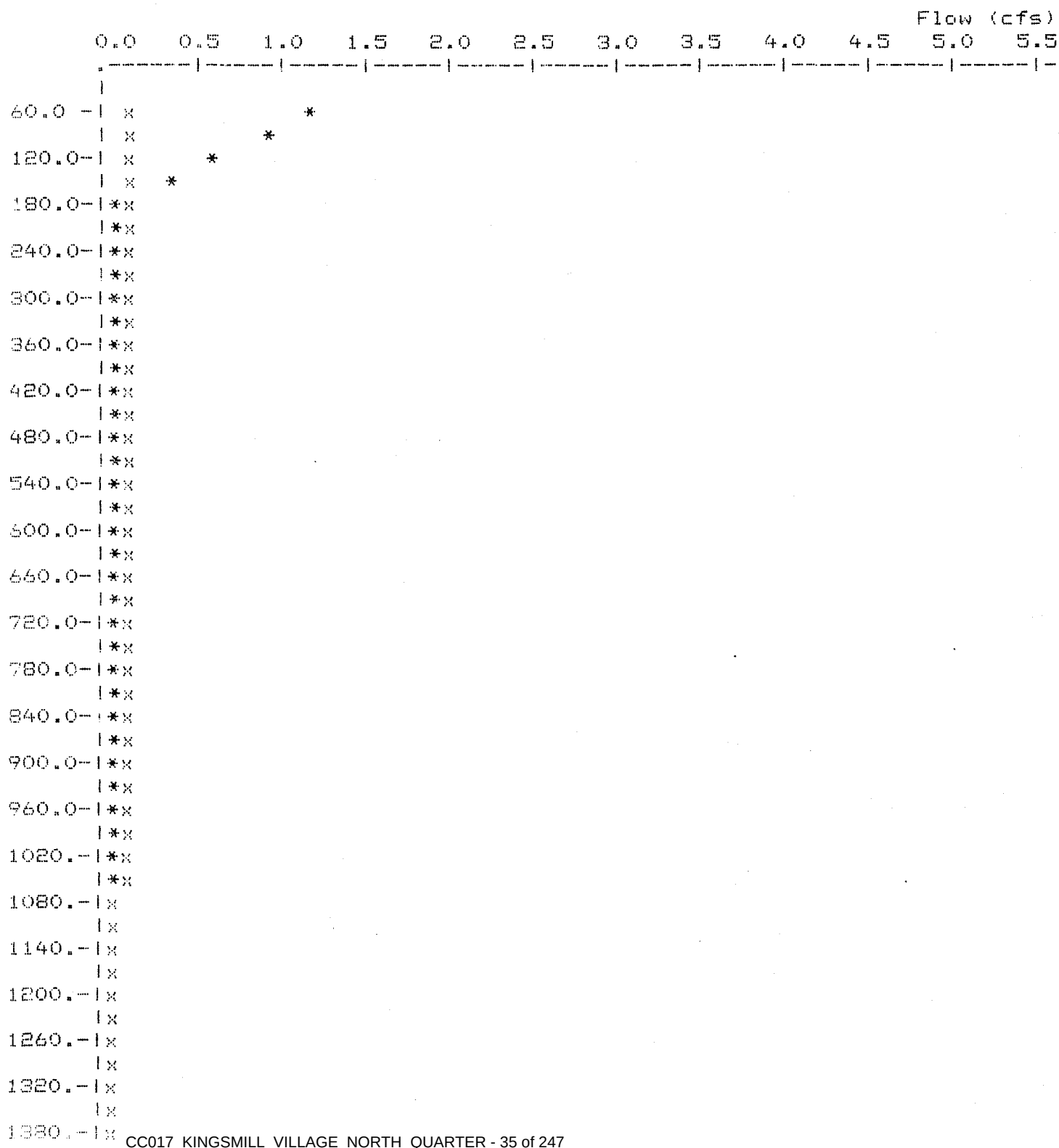
Initial Storage = 149 cu-ft
Peak Storage From Storm = 5,580 cu-ft

Total Storage in Pond = 5,729cu-ft

Pond File: a:RSTAND21.PND
 Inflow Hydrograph: a:3HR1IN .HYD
 Outflow Hydrograph: a:OUT .HYD

EXECUTED: 09-20-1990
 11:13:27

Peak Inflow = 1.20 cfs
 Peak Outflow = 0.10 cfs
 Peak Elevation = 21.41 ft



.1x
1500.-1x
.1x
1560.-1x
.1x
1620.-1x
.1x
1680.-1x
.1x
1740.-1x
.1x
1800.-1x
.1x
1860.-1x
.1x
1920.-1x
.1x
1980.-1x
.1x
2040.-1x
|
TIME
(min)

* File: a:3HR1IN .HYD Qmax = 1.2 cfs
x File: a:OUT .HYD Qmax = 0.1 cfs


```

*****
*                                     *
*                                     *
*   Kingsmill Village *
*   Shallow Marsh BMP *
*       9/20/90       *
*   2YR DESIGN STORM *
*****
  
```

Inflow Hydrograph: a:2YRPOST .HYD
 Rating Table file: a:RSTAND21.PND

-----INITIAL CONDITIONS-----

Elevation = 18.50 ft
 Outflow = 0.00 cfs
 Storage = 149 cu-ft

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + 0 (cfs)
18.50	0.0	149	0.6	0.6
19.00	0.0	437	1.9	1.9
19.50	0.1	972	4.2	4.3
20.00	0.1	1,897	8.1	8.2
20.50	0.1	3,122	13.3	13.4
21.00	0.1	4,486	19.2	19.3
21.50	0.1	6,000	25.6	25.7
22.00	0.1	7,669	32.8	32.9
22.50	6.5	9,471	40.5	47.0
23.00	11.7	11,380	48.6	60.3
23.50	14.3	13,397	57.3	71.6
24.00	16.5	15,528	66.4	82.9
24.50	18.5	17,873	76.4	94.9
25.00	20.2	20,548	87.8	108.0
25.50	21.8	23,575	100.7	122.5
26.00	23.3	26,975	115.3	138.6
26.50	24.7	30,610	130.8	155.5
27.00	26.1	34,331	146.7	172.8
27.50	27.3	38,138	163.0	190.3

Time increment (t) = 7.8 min.

POND-2 Version: 5.13 S/N: 1220515075
EXECUTED: 09-20-1990 11:19:56

Page 2

Pond File: a:RSTAND21.PND
Inflow Hydrograph: a:2YRPOST .HYD
Outflow Hydrograph: a:OUT .HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.0	0.00	-----	0.6	0.6	0.00	18.50
7.8	26.30	26.3	26.7	26.9	0.10	21.58
15.6	13.10	39.4	40.0	66.1	13.04	23.26
23.4	0.00	13.1	35.3	53.1	8.90	22.73

***** SUMMARY OF ROUTING COMPUTATIONS *****

Pond File: a:RSTAND21.FND
Inflow Hydrograph: a:2YRPOST .HYD
Outflow Hydrograph: a:OUT .HYD

Starting Pond W.S. Elevation = 18.50 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow	=	26.30 cfs
Peak Outflow	=	13.04 cfs < 14.6 cfs OK
Peak Elevation	=	23.26 ft

***** Summary of Approximate Peak Storage *****

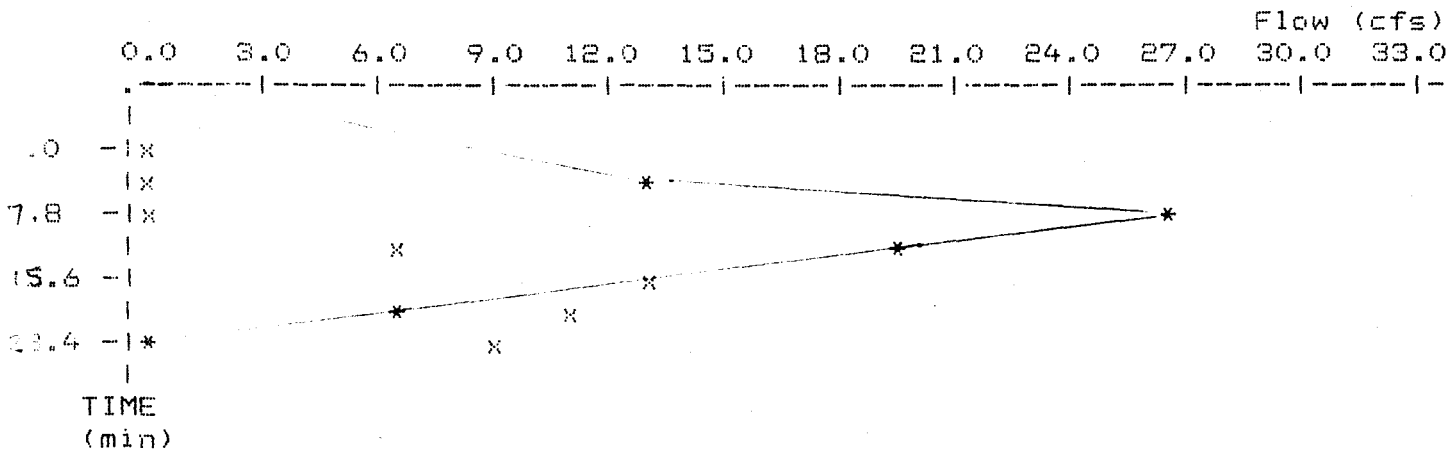
Initial Storage	=	149 cu-ft
Peak Storage From Storm	=	12,275 cu-ft
Total Storage in Pond	=	12,423cu-ft

Pond File: a:RSTAND21.PND
 Inflow Hydrograph: a:2YRFOST .HYD
 Outflow Hydrograph: a:OUT .HYD

EXECUTED: 09-20-1990

11:19:56

Peak Inflow = 26.30 cfs
 Peak Outflow = 13.04 cfs
 Peak Elevation = 23.26 ft



* File: a:2YRFOST .HYD Qmax = 26.3 cfs
 x File: a:OUT .HYD Qmax = 13.0 cfs

EXECUTED: 09-20-1990 11:31:20

```

*****
*                                     *
*                                     *
*   Kingsmill Village *
*   Shallow Marsh BMP *
*       9/20/90       *
*   CHECK 10YR STORM *
*****

```

Inflow Hydrograph: a:10YR .HYD
Rating Table file: a:RSTAND21.PND

----INITIAL CONDITIONS----

Elevation = 18.50 ft
Outflow = 0.00 cfs
Storage = 149 cu-ft

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + 0 (cfs)
18.50	0.0	149	2.8	2.8
19.00	0.0	437	8.1	8.1
19.50	0.1	972	18.0	18.1
20.00	0.1	1,897	35.1	35.2
20.50	0.1	3,122	57.8	57.9
21.00	0.1	4,486	83.1	83.2
21.50	0.1	6,000	111.1	111.2
22.00	0.1	7,669	142.0	142.1
22.50	6.5	9,471	175.4	181.9
23.00	11.7	11,380	210.7	222.4
23.50	14.3	13,397	248.1	262.4
24.00	16.5	15,528	287.6	304.1
24.50	18.5	17,873	331.0	349.5
25.00	20.2	20,548	380.5	400.7
25.50	21.8	23,575	436.6	458.4
26.00	23.3	26,975	499.5	522.8
26.50	24.7	30,610	566.9	591.6
27.00	26.1	34,331	635.8	661.9
27.50	27.3	38,138	706.3	733.6

Time increment (t) = 1.8 min.

ond File: a:RSTAND21.PND
 nflow Hydrograph: a:10YR .HYD
 utflow Hydrograph: a:OUT .HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.0	0.00	-----	2.8	2.8	0.00	18.50
1.8	7.20	7.2	9.9	10.0	0.02	19.09
3.6	14.40	21.6	31.3	31.5	0.10	19.89
5.4	21.60	36.0	67.1	67.3	0.10	20.69
7.2	28.80	50.4	117.3	117.5	0.10	21.60
9.0	36.00	64.8	169.1	182.1	6.53	22.50
10.8	32.40	68.4	212.1	237.5	12.68	23.19
12.6	28.80	61.2	243.6	273.3	14.88	23.63
14.4	25.20	54.0	265.2	297.6	16.16	23.92
16.2	21.60	46.8	278.3	312.0	16.85	24.09
18.0	18.00	39.6	283.7	317.9	17.11	24.15
19.8	14.40	32.4	282.1	316.1	17.03	24.13
21.6	10.80	25.2	274.0	307.3	16.64	24.04
23.4	7.20	18.0	260.2	292.0	15.86	23.85
25.2	3.60	10.8	241.5	271.0	14.76	23.60
27.0	0.00	3.6	218.8	245.1	13.18	23.28

***** SUMMARY OF ROUTING COMPUTATIONS *****

Pond File: a:RSTANDE1.PND
Inflow Hydrograph: a:10YR .HYD
Outflow Hydrograph: a:OUT .HYD

Starting Pond W.S. Elevation = 18.50 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow	=	36.00 cfs
Peak Outflow	=	17.11 cfs
Peak Elevation	=	24.15 ft

***** Summary of Approximate Peak Storage *****

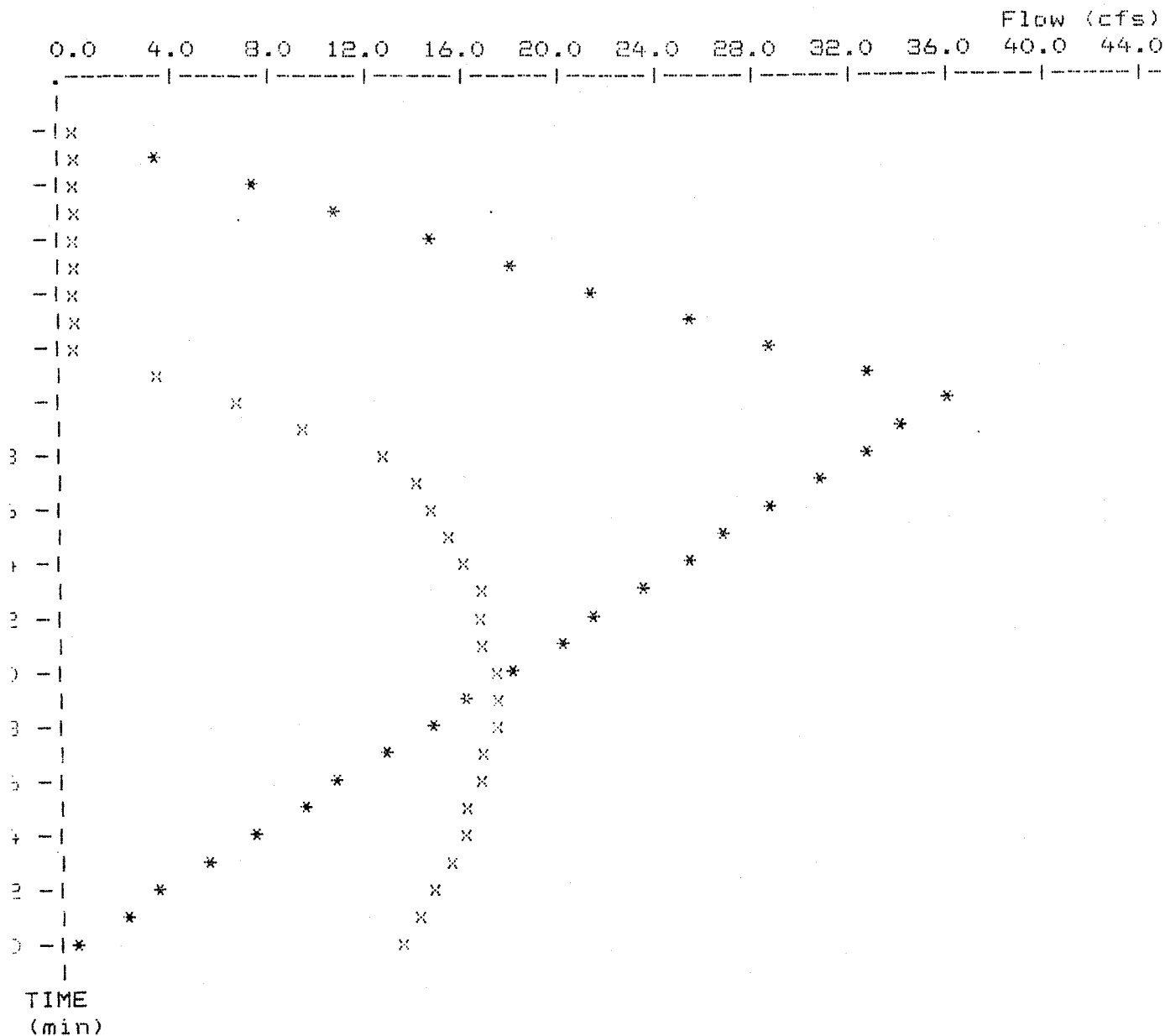
Initial Storage	=	149 cu-ft
Peak Storage From Storm	=	16,096 cu-ft

Total Storage in Pond	=	16,244cu-ft

Pond File: a:RSTAND21.PND
 Inflow Hydrograph: a:10YR .HYD
 Outflow Hydrograph: a:OUT .HYD

EXECUTED: 09-20-1990
 11:31:20

Peak Inflow = 36.00 cfs
 Peak Outflow = 17.11 cfs
 Peak Elevation = 24.15 ft



File: a:10YR .HYD Qmax = 36.0 cfs
 File: a:OUT .HYD Qmax = 17.1 cfs

Outlet Structure File: RSTAND21.STR

POND-2 Version: 5.13

S/N: 1220515075

Date Executed:

Time Executed:

Kingsmill Village
Shallow Marsh BMP

***** COMPOSITE CUTFLOW SUMMARY *****

Elevation (ft)	Q (cfs)	Contributing Structures
18.50	0.0	
19.00	0.0	1
19.50	0.1	1
20.00	0.1	1
20.50	0.1	1
21.00	0.1	1
21.50	0.1	1
22.00	0.1	1 +2
22.50	6.5	1 +2
23.00	11.7	1 +2
23.50	14.3	1 +2
24.00	16.5	1 +2
24.50	18.5	1 +2
25.00	20.2	1 +2
25.50	21.8	1 +2
26.00	23.3	1 +2
26.50	24.7	1 +2
27.00	26.1	1 +2
27.50	27.3	1 +2
28.00	0.0	

Outlet Structure File: RSTAND21.STR

PDND-2 Version: 5.13

S/N: 1220515075

Date Executed:

Time Executed:

Kingsmill Village
Shallow Marsh BMP

Outlet Structure File: a:RSTAND21.STR
Planimeter Input File: a:VOL .VOL
Rating Table Output File: a:RSTAND21.PND

Min. Elev.(ft) = 18.5 Max. Elev.(ft) = (28) Incr.(ft) = .5

Additional elevations (ft) to be included in table:

SYSTEM CONNECTIVITY

Structure	No.	Q Table	Q Table
ORIFICE-VC	1	->	1
STAND PIPE	2	->	2

Outflow rating table summary was stored in file:
a:RSTAND21.PND

Outlet Structure File: RSTAND21.STR

POND-2 Version: 5.13

S/N: 1220515075

Date Executed:

Time Executed:

Kingsmill Village
Shallow Marsh BMP

>>>>> Structure No. 2 <<<<<
(Input Data)

STAND PIPE

Stand Pipe with weir or orifice flow

E1 elev.(ft)?	22.
E2 elev.(ft)?	28
Crest elev.(ft)?	22
Diameter (ft)?	1.75
Weir coefficient?	3.3
Orifice coefficient?	.6
Start transition elev.(ft) @ ?	22.7
Transition height (ft)?	2

Outlet Structure File: RSTAND21.STR

POND-2 Version: 5.13

S/N: 1220515075

Date Executed:

Time Executed:

Kingsmill Village
Shallow Marsh BMP

>>>>> Structure No. 1 <<<<<
(Input Data)

ORIFICE-VC

Orifice - Vertical Circular

E1 elev.(ft)?	18.52
E2 elev.(ft)?	28
Orifice coeff.?	.6
Invert elev.(ft)?	18.5
Datum elev.(ft)?	18.56
Diameter (ft)?	.125

Outlet Structure File: RSTAND21.STR

POND-2 Version: 5.13

S/N: 1220515075

Date Executed:

Time Executed:

Kingsmill Village
Shallow Marsh BMP

Outflow Rating Table for Structure #1
ORIFICE-VC Orifice - Vertical Circular

Elevation (ft)	Q (cfs)	Computation Messages
18.50	0.0	E < E1=18.52
19.00	0.0	H =.44
19.50	0.1	H =.940
20.00	0.1	H =1.44
20.50	0.1	H =1.94
21.00	0.1	H =2.44
21.50	0.1	H =2.94
22.00	0.1	H =3.44
22.50	0.1	H =3.94
23.00	0.1	H =4.44
23.50	0.1	H =4.94
24.00	0.1	H =5.44
24.50	0.1	H =5.94
25.00	0.1	H =6.440
25.50	0.2	H =6.940
26.00	0.2	H =7.440
26.50	0.2	H =7.940
27.00	0.2	H =8.440
27.50	0.2	H =8.940
28.00	0.0	E = or > E2=28

C = .6 A = 1.227185E-02 sq.ft.

H (ft) = Table elev. - Datum elev. (18.56 ft)

Q (cfs) = C * A * sqr(2g * H)

Outlet Structure File: RSTAND21.STR

POND-2 Version: 5.13

S/N: 1220515075

Date Executed:

Time Executed:

Kingsmill Village
Shallow Marsh BMP

Outflow Rating Table for Structure #2

STAND PIPE Stand Pipe with weir or orifice flow

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation	Messages
18.50	0.0	E < Inv.E1.= 22	
19.00	0.0	E < E1=22.	
19.50	0.0	E < E1=22.	
20.00	0.0	E < E1=22.	
20.50	0.0	E < E1=22.	
21.00	0.0	E < E1=22.	
21.50	0.0	E < E1=22.	
22.00	0.0	Weir:	H =0.0
22.50	6.4	Weir:	H =.5
23.00	11.6	Orifice:	H =1.0
23.50	14.2	Orifice:	H =1.5
24.00	16.4	Orifice:	H =2.0
24.50	18.3	Orifice:	H =2.5
25.00	20.1	Orifice:	H =3.0
25.50	21.7	Orifice:	H =3.5
26.00	23.2	Orifice:	H =4.0
26.50	24.6	Orifice:	H =4.5
27.00	25.9	Orifice:	H =5.0
27.50	27.2	Orifice:	H =5.5
28.00	0.0	E = or > E2=28	

Weir Cw = 3.3 Weir length = 5.497787 ft

Orifice Co = .6 Orifice area = 2.405282 sq.ft.

Q (cfs) = (Cw * L * H**1.5) or (Co * A * sqr(2*g*H))

No transition used, transition zone begins above 22.63835 ft

Weir equation = Orifice equation @ elev.= 22.63835 ft

MAN-MADE CHANNELS

EMERGENT SPILLWAY

VARIABLES LIST:

Y - FLOW DEPTH
Q - FLOWRATE

B - CHANNEL BOTTOM WIDTH
M - CHANNEL SIDE SLOPE

S - CHANNEL SLOPE
N - CHANNEL ROUGHNESS

VARIABLE TO BE SOLVED (Y,Q,B,M,S OR N) ? Y

(CFS) ? 36
(FT) ? 6
(FT/FT) ? 3
(FT/FT) ? .005
(FT^{1/6}) ? .015

RESULTS

Y= 0.83 FT
A= 7.03 SF
P= 11.24 FT
V= 5.12 FPS
F= 1.13

SUPER-CRITICAL FLOW

Shift> <Prt Sc> print

<Return> repeat

<Space Bar> back to menu

FLUME

MAN-MADE CHANNELS

VARIABLES LIST:

Y - FLOW DEPTH
Q - FLOWRATE

B - CHANNEL BOTTOM WIDTH
M - CHANNEL SIDE SLOPE

S - CHANNEL SLOPE
N - CHANNEL ROUGHNESS

VARIABLE TO BE SOLVED (Y,Q,B,M,S OR N) ? Y

(CFS) ? 36
(FT) ? 1
(FT/FT) ? 3
(FT/FT) ? .1667
(FT^{1/6}) ? .015

RESULTS

Y= 0.62 FT
A= 1.76 SF
P= 4.91 FT
V= 20.43 FPS
F= 5.89

SUPER-CRITICAL FLOW

Shift> <Prt Sc> print

<Return> repeat

<Space Bar> back to menu

Replacement of 36"
pipe w/ 30" pipe
thru BMP.

POND-2 Version: 5.17 S/N: 1295130250
EXECUTED: 04-26-1995 08:12:11

24 HR SCS

Page 1
Return Freq: 2 years

* JOINT BMP *
* TUTTERS NECK NORTH *
* KINGSMILL VILLAGE *
* BMP AFTER SILT BASIN IS REMOVED *
* *****

Inflow Hydrograph: b:POSIN002.HYD
Rating Table file: b:BMP23401.PND

----INITIAL CONDITIONS----

Elevation = 8.00 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + 0 (cfs)
8.00	0.0	0	0.0	0.0
8.50	0.2	3,118	17.3	17.5
9.00	0.4	6,476	36.0	36.4
9.50	0.5	10,085	56.0	56.5
10.00	0.6	13,952	77.5	78.1
10.50	0.6	18,141	100.8	101.4
11.00	0.7	22,719	126.2	126.9
11.50	0.8	27,702	153.9	154.7
12.00	0.8	33,110	183.9	184.7
12.50	0.9	39,278	218.2	219.1
13.00	0.9	46,597	258.9	259.8
13.50	1.0	55,167	306.5	307.5
14.00	1.0	65,084	361.6	362.6
14.50	1.1	76,244	423.6	424.7
15.00	9.0	88,508	491.7	500.7
15.50	32.7	101,928	566.3	599.0
16.00	63.0	116,557	647.5	710.5
16.50	65.4	132,505	736.1	801.5
17.00	67.8	149,891	832.7	900.5
17.50	82.6	168,778	937.7	1020.3
18.00	110.3	189,226	1051.3	1161.6
18.50	148.6	211,340	1174.1	1322.7
19.00	197.3	235,231	1306.8	1504.1

Time increment (t) = 6.0 min.

FINAL COMPS CC017

EXECUTED: 04-26-1995 08:12:11

24 HR SCS

Return Freq: 2 years

Pond File: b:BMP23401.PND

Inflow Hydrograph: b:POSIN002.HYD

Outflow Hydrograph: b:1UTBM002.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	1.00	----	0.0	0.0	0.00	8.00
666.0	1.00	2.0	2.0	2.0	0.02	8.06
672.0	2.00	3.0	4.8	5.0	0.06	8.14
678.0	2.00	4.0	8.6	8.8	0.10	8.25
684.0	2.00	4.0	12.4	12.6	0.14	8.36
690.0	2.00	4.0	16.0	16.4	0.19	8.47
696.0	2.00	4.0	19.5	20.0	0.23	8.57
702.0	4.00	6.0	25.0	25.5	0.28	8.71
708.0	5.00	9.0	33.2	34.0	0.37	8.94
714.0	7.00	12.0	44.3	45.2	0.44	9.22
720.0	16.00	23.0	66.2	67.3	0.55	9.75
726.0	36.00	52.0	116.9	118.2	0.67	10.83
732.0	62.00	98.0	213.1	214.9	0.89	12.44
738.0	64.00	126.0	337.1	339.1	1.00	13.79
744.0	46.00	110.0	440.3	447.1	3.43	14.65
750.0	30.00	76.0	490.8	516.3	12.75	15.08
756.0	21.00	51.0	504.0	541.8	18.90	15.21
762.0	16.00	37.0	503.5	541.0	18.71	15.20
768.0	13.00	29.0	499.2	532.5	16.68	15.16
774.0	11.00	24.0	494.3	523.2	14.42	15.11
780.0	9.00	20.0	489.8	514.3	12.29	15.07
786.0	8.00	17.0	485.8	506.8	10.46	15.03
792.0	8.00	16.0	483.3	501.8	9.27	15.01
798.0	8.00	16.0	481.6	499.3	8.85	14.99
804.0	7.00	15.0	479.4	496.6	8.57	14.97
810.0	7.00	14.0	477.0	493.4	8.25	14.95
816.0	6.00	13.0	474.2	490.0	7.88	14.93
822.0	6.00	12.0	471.2	486.2	7.49	14.90
828.0	5.00	11.0	468.1	482.2	7.08	14.88
834.0	5.00	10.0	464.8	478.1	6.65	14.85
840.0	5.00	10.0	462.2	474.8	6.30	14.83
846.0	5.00	10.0	460.1	472.2	6.03	14.81
852.0	4.00	9.0	457.7	469.1	5.71	14.79
858.0	4.00	8.0	454.9	465.7	5.36	14.77
864.0	4.00	8.0	452.8	462.9	5.08	14.75
870.0	4.00	8.0	451.1	460.8	4.85	14.74
876.0	4.00	8.0	449.7	459.1	4.68	14.73
882.0	4.00	8.0	448.7	457.7	4.53	14.72
888.0	4.00	8.0	447.8	456.7	4.42	14.71
894.0	4.00	8.0	447.1	455.8	4.34	14.70
900.0	4.00	8.0	446.6	455.1	4.27	14.70
906.0	4.00	8.0	446.2	454.6	4.21	14.70
912.0	4.00	8.0	445.9	454.2	4.17	14.69
918.0	3.00	7.0	444.8	452.9	4.03	14.69
924.0	3.00	6.0	443.2	450.8	3.81	14.67

POND-2 Version: 5.17 S/N: 1295130250
 EXECUTED: 04-26-1995 08:12:11

24 HR SCS

Page 3
 Return Freq: 2 years

Pond File: b:BMP23401.PND
 Inflow Hydrograph: b:POSIN002.HYD
 Outflow Hydrograph: b:1UTBM002.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	3.00	6.0	441.9	449.2	3.65	14.66
936.0	3.00	6.0	440.9	447.9	3.51	14.65
942.0	3.00	6.0	440.1	446.9	3.40	14.65
948.0	3.00	6.0	439.4	446.1	3.32	14.64
954.0	3.00	6.0	438.9	445.4	3.25	14.64
960.0	3.00	6.0	438.5	444.9	3.20	14.63
966.0	3.00	6.0	438.2	444.5	3.16	14.63
972.0	3.00	6.0	437.9	444.2	3.13	14.63
978.0	3.00	6.0	437.7	443.9	3.10	14.63
984.0	3.00	6.0	437.6	443.7	3.08	14.63
990.0	3.00	6.0	437.4	443.6	3.06	14.62
996.0	3.00	6.0	437.3	443.4	3.05	14.62
1002.0	3.00	6.0	437.3	443.3	3.04	14.62
1008.0	3.00	6.0	437.2	443.3	3.03	14.62
1014.0	3.00	6.0	437.2	443.2	3.02	14.62
1020.0	3.00	6.0	437.1	443.2	3.02	14.62
1026.0	3.00	6.0	437.1	443.1	3.02	14.62
1032.0	3.00	6.0	437.1	443.1	3.01	14.62
1038.0	2.00	5.0	436.2	442.1	2.91	14.61
1044.0	2.00	4.0	434.8	440.2	2.72	14.60
1050.0	2.00	4.0	433.7	438.8	2.57	14.59
1056.0	2.00	4.0	432.8	437.7	2.45	14.59
1062.0	2.00	4.0	432.1	436.8	2.36	14.58
1068.0	2.00	4.0	431.5	436.1	2.28	14.57
1074.0	2.00	4.0	431.0	435.5	2.22	14.57
1080.0	2.00	4.0	430.7	435.0	2.18	14.57
1086.0	2.00	4.0	430.4	434.7	2.14	14.57
1092.0	2.00	4.0	430.2	434.4	2.11	14.56
1098.0	2.00	4.0	430.0	434.2	2.09	14.56
1104.0	2.00	4.0	429.9	434.0	2.07	14.56
1110.0	2.00	4.0	429.8	433.9	2.06	14.56
1116.0	2.00	4.0	429.7	433.8	2.04	14.56
1122.0	2.00	4.0	429.6	433.7	2.03	14.56
1128.0	2.00	4.0	429.6	433.6	2.03	14.56
1134.0	2.00	4.0	429.5	433.6	2.02	14.56
1140.0	2.00	4.0	429.5	433.5	2.02	14.56
1146.0	2.00	4.0	429.4	433.5	2.01	14.56
1152.0	2.00	4.0	429.4	433.4	2.01	14.56
1158.0	2.00	4.0	429.4	433.4	2.01	14.56
1164.0	2.00	4.0	429.4	433.4	2.01	14.56
1170.0	2.00	4.0	429.4	433.4	2.01	14.56
1176.0	2.00	4.0	429.4	433.4	2.00	14.56
1182.0	2.00	4.0	429.4	433.4	2.00	14.56
1188.0	2.00	4.0	429.4	433.4	2.00	14.56
1194.0	2.00	4.0	429.4	433.4	2.00	14.56
1200.0	2.00	4.0	429.4	433.4	2.00	14.56

EXECUTED: 04-26-1995 08:12:11

24 HR SCS

Return Freq: 2 years

Pond File: b:BMP23401.PND

Inflow Hydrograph: b:POSIN002.HYD

Outflow Hydrograph: b:1UTBM002.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	2.00	4.0	429.4	433.4	2.00	14.56
1212.0	2.00	4.0	429.3	433.4	2.00	14.56
1218.0	2.00	4.0	429.3	433.3	2.00	14.56
1224.0	2.00	4.0	429.3	433.3	2.00	14.56
1230.0	2.00	4.0	429.3	433.3	2.00	14.56
1236.0	2.00	4.0	429.3	433.3	2.00	14.56
1242.0	2.00	4.0	429.3	433.3	2.00	14.56
1248.0	2.00	4.0	429.3	433.3	2.00	14.56
1254.0	2.00	4.0	429.3	433.3	2.00	14.56
1260.0	2.00	4.0	429.3	433.3	2.00	14.56
1266.0	2.00	4.0	429.3	433.3	2.00	14.56
1272.0	2.00	4.0	429.3	433.3	2.00	14.56
1278.0	2.00	4.0	429.3	433.3	2.00	14.56
1284.0	2.00	4.0	429.3	433.3	2.00	14.56
1290.0	2.00	4.0	429.3	433.3	2.00	14.56
1296.0	2.00	4.0	429.3	433.3	2.00	14.56
1302.0	2.00	4.0	429.3	433.3	2.00	14.56
1308.0	2.00	4.0	429.3	433.3	2.00	14.56
1314.0	2.00	4.0	429.3	433.3	2.00	14.56
1320.0	2.00	4.0	429.3	433.3	2.00	14.56
1326.0	2.00	4.0	429.3	433.3	2.00	14.56
1332.0	2.00	4.0	429.3	433.3	2.00	14.56
1338.0	2.00	4.0	429.3	433.3	2.00	14.56
1344.0	2.00	4.0	429.3	433.3	2.00	14.56
1350.0	2.00	4.0	429.3	433.3	2.00	14.56
1356.0	2.00	4.0	429.3	433.3	2.00	14.56
1362.0	2.00	4.0	429.3	433.3	2.00	14.56
1368.0	2.00	4.0	429.3	433.3	2.00	14.56
1374.0	2.00	4.0	429.3	433.3	2.00	14.56
1380.0	2.00	4.0	429.3	433.3	2.00	14.56
1386.0	1.00	3.0	428.5	432.3	1.90	14.55
1392.0	1.00	2.0	427.1	430.5	1.71	14.54
1398.0	1.00	2.0	426.0	429.1	1.56	14.53
1404.0	1.00	2.0	425.1	428.0	1.45	14.52
1410.0	1.00	2.0	424.4	427.1	1.35	14.52
1416.0	1.00	2.0	423.8	426.4	1.28	14.51
1422.0	1.00	2.0	423.4	425.8	1.22	14.51
1428.0	1.00	2.0	423.1	425.4	1.18	14.50
1434.0	1.00	2.0	422.8	425.1	1.14	14.50
1440.0	1.00	2.0	422.6	424.8	1.11	14.50
1446.0	1.00	2.0	422.4	424.6	1.10	14.50
1452.0	1.00	2.0	422.2	424.4	1.10	14.50
1458.0	1.00	2.0	422.0	424.2	1.10	14.50
1464.0	1.00	2.0	421.8	424.0	1.10	14.49
1470.0	1.00	2.0	421.6	423.8	1.10	14.49
1476.0	1.00	2.0	421.4	423.6	1.10	14.49

POND-2 Version: 5.17 S/N: 1295130250
 EXECUTED: 04-26-1995 08:12:11

24 HR SCS

Page 5
 Return Freq: 2 years

Pond File: b:BMP23401.PND
 Inflow Hydrograph: b:POSIN002.HYD
 Outflow Hydrograph: b:1UTBM002.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	421.2	423.4	1.10	14.49
1488.0	1.00	2.0	421.0	423.2	1.10	14.49
1494.0	1.00	2.0	420.8	423.0	1.10	14.49
1500.0	0.00	1.0	419.6	421.8	1.10	14.48
1506.0	0.00	0.0	417.4	419.6	1.09	14.46
1512.0	0.00	0.0	415.2	417.4	1.09	14.44
1518.0	0.00	0.0	413.1	415.2	1.08	14.42
1524.0	0.00	0.0	410.9	413.1	1.08	14.41
1530.0	0.00	0.0	408.7	410.9	1.08	14.39
1536.0	0.00	0.0	406.6	408.7	1.07	14.37
1542.0	0.00	0.0	404.5	406.6	1.07	14.35
1548.0	0.00	0.0	402.3	404.5	1.07	14.34
1554.0	0.00	0.0	400.2	402.3	1.06	14.32

***** SUMMARY OF ROUTING COMPUTATIONS *****

Pond File: b:BMP23401.PND
 Inflow Hydrograph: b:POSIN002.HYD
 Outflow Hydrograph: b:1UTBM002.HYD

Starting Pond W.S. Elevation = 8.00 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow = 64.00 cfs
 Peak Outflow = 18.90 cfs
 Peak Elevation = 15.21 ft

***** Summary of Approximate Peak Storage *****

Initial Storage = 0 cu-ft
 Peak Storage From Storm = 94,114 cu-ft

 Total Storage in Pond = 94,114 cu-ft

Warning: Inflow hydrograph truncated on left side.

EXECUTED: 04-26-1995 08:20:00

24 HR SCS

Return Freq: 10 years

```

*****
*                                     *
*               JOINT BMP             *
*          TUTTERS NECK NORTH         *
*          KINGSMILL VILLAGE          *
* BMP AFTER SILT BASIN IS REMOVED    *
*                                     *
*****

```

Inflow Hydrograph: b:POSIN010.HYD

Rating Table file: b:BMP23401.PND

----INITIAL CONDITIONS----

Elevation = 8.00 ft
 Outflow = 0.00 cfs
 Storage = 0 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
8.00	0.0	0
8.50	0.2	3,118
9.00	0.4	6,476
9.50	0.5	10,085
10.00	0.6	13,952
10.50	0.6	18,141
11.00	0.7	22,719
11.50	0.8	27,702
12.00	0.8	33,110
12.50	0.9	39,278
13.00	0.9	46,597
13.50	1.0	55,167
14.00	1.0	65,084
14.50	1.1	76,244
15.00	9.0	88,508
15.50	32.7	101,928
16.00	63.0	116,557
16.50	65.4	132,505
17.00	67.8	149,891
17.50	82.6	168,778
18.00	110.3	189,226
18.50	148.6	211,340
19.00	197.3	235,231

INTERMEDIATE ROUTING
COMPUTATIONS

2S/t (cfs)	2S/t + 0 (cfs)
0.0	0.0
17.3	17.5
36.0	36.4
56.0	56.5
77.5	78.1
100.8	101.4
126.2	126.9
153.9	154.7
183.9	184.7
218.2	219.1
258.9	259.8
306.5	307.5
361.6	362.6
423.6	424.7
491.7	500.7
566.3	599.0
647.5	710.5
736.1	801.5
832.7	900.5
937.7	1020.3
1051.3	1161.6
1174.1	1322.7
1306.8	1504.1

Time increment (t) = 6.0 min.

EXECUTED: 04-26-1995 08:20:00

24 HR SCS

Return Freq: 10 years

Pond File: b:BMP23401.PND

Inflow Hydrograph: b:POSIN010.HYD

Outflow Hydrograph: b:1UTBM010.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	5.00	-----	0.0	0.0	0.00	8.00
666.0	5.00	10.0	9.8	10.0	0.11	8.29
672.0	6.00	11.0	20.3	20.8	0.23	8.59
678.0	6.00	12.0	31.6	32.3	0.36	8.89
684.0	7.00	13.0	43.7	44.6	0.44	9.20
690.0	8.00	15.0	57.7	58.7	0.51	9.55
696.0	9.00	17.0	73.5	74.7	0.58	9.92
702.0	15.00	24.0	96.3	97.5	0.60	10.42
708.0	21.00	36.0	130.9	132.3	0.72	11.10
714.0	27.00	48.0	177.3	178.9	0.80	11.90
720.0	55.00	82.0	257.5	259.3	0.90	12.99
726.0	106.00	161.0	416.3	418.5	1.09	14.45
732.0	162.00	268.0	572.6	684.3	55.87	15.88
738.0	163.00	325.0	762.1	897.6	67.73	16.98
744.0	111.00	274.0	864.7	1036.1	85.71	17.56
750.0	69.00	180.0	869.9	1044.7	87.39	17.59
756.0	48.00	117.0	830.0	986.9	78.48	17.36
762.0	36.00	84.0	775.0	914.0	69.46	17.06
768.0	28.00	64.0	706.4	839.0	66.31	16.69
774.0	24.00	52.0	629.9	758.4	64.26	16.26
780.0	20.00	44.0	567.8	673.9	53.05	15.84
786.0	18.00	38.0	536.7	605.8	34.55	15.53
792.0	16.00	34.0	518.9	570.7	25.88	15.36
798.0	15.00	31.0	508.2	549.9	20.87	15.25
804.0	14.00	29.0	501.6	537.2	17.80	15.19
810.0	14.00	28.0	497.7	529.6	15.97	15.15
816.0	13.00	27.0	495.1	524.7	14.78	15.12
822.0	12.00	25.0	492.8	520.1	13.68	15.10
828.0	11.00	23.0	490.5	515.8	12.63	15.08
834.0	10.00	21.0	488.3	511.5	11.60	15.05
840.0	10.00	20.0	486.6	508.3	10.83	15.04
846.0	10.00	20.0	485.8	506.6	10.43	15.03
852.0	9.00	19.0	484.8	504.8	9.98	15.02
858.0	9.00	18.0	483.8	502.8	9.51	15.01
864.0	9.00	18.0	483.3	501.8	9.26	15.01
870.0	8.00	17.0	482.4	500.3	8.95	15.00
876.0	8.00	16.0	480.9	498.4	8.76	14.98
882.0	8.00	16.0	479.7	496.9	8.60	14.97
888.0	8.00	16.0	478.7	495.7	8.47	14.97
894.0	8.00	16.0	478.0	494.7	8.38	14.96
900.0	8.00	16.0	477.4	494.0	8.30	14.96
906.0	8.00	16.0	476.9	493.4	8.24	14.95
912.0	8.00	16.0	476.5	492.9	8.19	14.95
918.0	7.00	15.0	475.4	491.5	8.04	14.94
924.0	7.00	14.0	473.8	489.4	7.83	14.93

POND-2 Version: 5.17 S/N: 1295130250
 EXECUTED: 04-26-1995 08:20:00

24 HR SCS

Page 3
 Return Freq: 10 years

Pond File: b:BMP23401.PND
 Inflow Hydrograph: b:POSIN010.HYD
 Outflow Hydrograph: b:1UTBM010.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	7.00	14.0	472.5	487.8	7.66	14.91
936.0	7.00	14.0	471.4	486.5	7.52	14.91
942.0	7.00	14.0	470.6	485.4	7.41	14.90
948.0	6.00	13.0	469.2	483.6	7.22	14.89
954.0	6.00	12.0	467.2	481.2	6.97	14.87
960.0	6.00	12.0	465.7	479.2	6.77	14.86
966.0	6.00	12.0	464.5	477.7	6.61	14.85
972.0	6.00	12.0	463.5	476.5	6.48	14.84
978.0	5.00	11.0	462.0	474.5	6.28	14.83
984.0	5.00	10.0	459.9	472.0	6.01	14.81
990.0	5.00	10.0	458.3	469.9	5.80	14.80
996.0	5.00	10.0	457.1	468.3	5.64	14.79
1002.0	5.00	10.0	456.1	467.1	5.50	14.78
1008.0	5.00	10.0	455.3	466.1	5.40	14.77
1014.0	5.00	10.0	454.6	465.3	5.32	14.77
1020.0	5.00	10.0	454.1	464.6	5.25	14.76
1026.0	5.00	10.0	453.7	464.1	5.20	14.76
1032.0	5.00	10.0	453.4	463.7	5.16	14.76
1038.0	5.00	10.0	453.2	463.4	5.12	14.75
1044.0	5.00	10.0	453.0	463.2	5.10	14.75
1050.0	5.00	10.0	452.8	463.0	5.08	14.75
1056.0	5.00	10.0	452.7	462.8	5.06	14.75
1062.0	5.00	10.0	452.6	462.7	5.05	14.75
1068.0	4.00	9.0	451.7	461.6	4.93	14.74
1074.0	4.00	8.0	450.2	459.7	4.74	14.73
1080.0	4.00	8.0	449.1	458.2	4.59	14.72
1086.0	4.00	8.0	448.1	457.1	4.46	14.71
1092.0	4.00	8.0	447.4	456.1	4.37	14.71
1098.0	4.00	8.0	446.8	455.4	4.29	14.70
1104.0	4.00	8.0	446.4	454.8	4.23	14.70
1110.0	4.00	8.0	446.0	454.4	4.18	14.70
1116.0	4.00	8.0	445.7	454.0	4.15	14.69
1122.0	4.00	8.0	445.5	453.7	4.11	14.69
1128.0	4.00	8.0	445.3	453.5	4.09	14.69
1134.0	4.00	8.0	445.1	453.3	4.07	14.69
1140.0	4.00	8.0	445.0	453.1	4.06	14.69
1146.0	4.00	8.0	444.9	453.0	4.05	14.69
1152.0	4.00	8.0	444.9	452.9	4.04	14.69
1158.0	4.00	8.0	444.8	452.9	4.03	14.69
1164.0	4.00	8.0	444.8	452.8	4.02	14.68
1170.0	4.00	8.0	444.7	452.8	4.02	14.68
1176.0	3.00	7.0	443.9	451.7	3.91	14.68
1182.0	3.00	6.0	442.5	449.9	3.72	14.67
1188.0	3.00	6.0	441.3	448.5	3.57	14.66
1194.0	3.00	6.0	440.4	447.3	3.45	14.65
1200.0	3.00	6.0	439.7	446.4	3.36	14.64

EXECUTED: 04-26-1995 08:20:00

24 HR SCS

Return Freq: 10 years

Pond File: b:BMP23401.PND

Inflow Hydrograph: b:POSIN010.HYD

Outflow Hydrograph: b:1UTBM010.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	3.00	6.0	439.1	445.7	3.28	14.64
1212.0	3.00	6.0	438.7	445.1	3.22	14.63
1218.0	3.00	6.0	438.3	444.7	3.18	14.63
1224.0	3.00	6.0	438.0	444.3	3.14	14.63
1230.0	3.00	6.0	437.8	444.0	3.11	14.63
1236.0	3.00	6.0	437.6	443.8	3.09	14.63
1242.0	3.00	6.0	437.5	443.6	3.07	14.62
1248.0	3.00	6.0	437.4	443.5	3.06	14.62
1254.0	3.00	6.0	437.3	443.4	3.04	14.62
1260.0	3.00	6.0	437.2	443.3	3.03	14.62
1266.0	3.00	6.0	437.2	443.2	3.03	14.62
1272.0	3.00	6.0	437.1	443.2	3.02	14.62
1278.0	3.00	6.0	437.1	443.1	3.02	14.62
1284.0	3.00	6.0	437.1	443.1	3.01	14.62
1290.0	3.00	6.0	437.0	443.1	3.01	14.62
1296.0	3.00	6.0	437.0	443.0	3.01	14.62
1302.0	3.00	6.0	437.0	443.0	3.01	14.62
1308.0	3.00	6.0	437.0	443.0	3.01	14.62
1314.0	3.00	6.0	437.0	443.0	3.00	14.62
1320.0	3.00	6.0	437.0	443.0	3.00	14.62
1326.0	3.00	6.0	437.0	443.0	3.00	14.62
1332.0	3.00	6.0	437.0	443.0	3.00	14.62
1338.0	3.00	6.0	437.0	443.0	3.00	14.62
1344.0	3.00	6.0	437.0	443.0	3.00	14.62
1350.0	3.00	6.0	437.0	443.0	3.00	14.62
1356.0	3.00	6.0	437.0	443.0	3.00	14.62
1362.0	2.00	5.0	436.2	442.0	2.90	14.61
1368.0	2.00	4.0	434.8	440.2	2.71	14.60
1374.0	2.00	4.0	433.6	438.8	2.56	14.59
1380.0	2.00	4.0	432.7	437.6	2.45	14.59
1386.0	2.00	4.0	432.0	436.7	2.35	14.58
1392.0	2.00	4.0	431.5	436.0	2.28	14.57
1398.0	2.00	4.0	431.0	435.5	2.22	14.57
1404.0	2.00	4.0	430.7	435.0	2.18	14.57
1410.0	2.00	4.0	430.4	434.7	2.14	14.57
1416.0	2.00	4.0	430.2	434.4	2.11	14.56
1422.0	2.00	4.0	430.0	434.2	2.09	14.56
1428.0	2.00	4.0	429.9	434.0	2.07	14.56
1434.0	2.00	4.0	429.8	433.9	2.05	14.56
1440.0	2.00	4.0	429.7	433.8	2.04	14.56
1446.0	1.00	3.0	428.8	432.7	1.93	14.55
1452.0	1.00	2.0	427.3	430.8	1.74	14.54
1458.0	1.00	2.0	426.2	429.3	1.58	14.53
1464.0	1.00	2.0	425.2	428.2	1.46	14.52
1470.0	1.00	2.0	424.5	427.2	1.37	14.52
1476.0	1.00	2.0	423.9	426.5	1.29	14.51

POND-2 Version: 5.17 S/N: 1295130250
 EXECUTED: 04-26-1995 08:20:00

24 HR SCS

Page 5
 Return Freq: 10 years

Pond File: b:BMP23401.PND
 Inflow Hydrograph: b:POSIN010.HYD
 Outflow Hydrograph: b:1UTBM010.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	423.5	425.9	1.23	14.51
1488.0	1.00	2.0	423.1	425.5	1.18	14.51
1494.0	1.00	2.0	422.8	425.1	1.14	14.50
1500.0	1.00	2.0	422.6	424.8	1.11	14.50
1506.0	1.00	2.0	422.4	424.6	1.10	14.50
1512.0	1.00	2.0	422.2	424.4	1.10	14.50
1518.0	1.00	2.0	422.0	424.2	1.10	14.50
1524.0	0.00	1.0	420.8	423.0	1.10	14.49
1530.0	0.00	0.0	418.6	420.8	1.09	14.47
1536.0	0.00	0.0	416.4	418.6	1.09	14.45
1542.0	0.00	0.0	414.3	416.4	1.09	14.43
1548.0	0.00	0.0	412.1	414.3	1.08	14.42
1554.0	0.00	0.0	409.9	412.1	1.08	14.40

***** SUMMARY OF ROUTING COMPUTATIONS *****

Pond File: b:BMP23401.PND
 Inflow Hydrograph: b:POSIN010.HYD
 Outflow Hydrograph: b:1UTBM010.HYD

Starting Pond W.S. Elevation = 8.00 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow = 163.00 cfs
 Peak Outflow = 87.39 cfs
 Peak Elevation = 17.59 ft

***** Summary of Approximate Peak Storage *****

Initial Storage = 0 cu-ft
 Peak Storage From Storm = 172,313 cu-ft

 Total Storage in Pond = 172,313 cu-ft

Warning: Inflow hydrograph truncated on left side.

```

*****
*                               *
*             JOINT BMP         *
*       TUTTERS NECK NORTH     *
*       KINGSMILL VILLAGE      *
* BMP AFTER SILT BASIN IS REMOVED *
*                               *
*****

```

Inflow Hydrograph: b:POSIN025.HYD

Rating Table file: b:BMP23401.PND

----INITIAL CONDITIONS----

Elevation = 8.00 ft

Outflow = 0.00 cfs

Storage = 0 cu-ft

GIVEN POND DATA

INTERMEDIATE ROUTING
COMPUTATIONS

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + 0 (cfs)
8.00	0.0	0	0.0	0.0
8.50	0.2	3,118	17.3	17.5
9.00	0.4	6,476	36.0	36.4
9.50	0.5	10,085	56.0	56.5
10.00	0.6	13,952	77.5	78.1
10.50	0.6	18,141	100.8	101.4
11.00	0.7	22,719	126.2	126.9
11.50	0.8	27,702	153.9	154.7
12.00	0.8	33,110	183.9	184.7
12.50	0.9	39,278	218.2	219.1
13.00	0.9	46,597	258.9	259.8
13.50	1.0	55,167	306.5	307.5
14.00	1.0	65,084	361.6	362.6
14.50	1.1	76,244	423.6	424.7
15.00	9.0	88,508	491.7	500.7
15.50	32.7	101,928	566.3	599.0
16.00	63.0	116,557	647.5	710.5
16.50	65.4	132,505	736.1	801.5
17.00	67.8	149,891	832.7	900.5
17.50	82.6	168,778	937.7	1020.3
18.00	110.3	189,226	1051.3	1161.6
18.50	148.6	211,340	1174.1	1322.7
19.00	197.3	235,231	1306.8	1504.1

Time increment (t) = 6.0 min.

POND-2 Version: 5.17 S/N: 1295130250
 EXECUTED: 04-26-1995 08:30:17

24HR SCS

Page 2
 Return Freq: 25 years

Pond File: b:BMP23401.PND
 Inflow Hydrograph: b:POSIN025.HYD
 Outflow Hydrograph: b:1UTBM025.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	5.00	----	0.0	0.0	0.00	8.00
666.0	6.00	11.0	10.7	11.0	0.13	8.31
672.0	6.00	12.0	22.2	22.7	0.26	8.64
678.0	7.00	13.0	34.5	35.2	0.39	8.97
684.0	8.00	15.0	48.5	49.5	0.46	9.32
690.0	10.00	18.0	65.4	66.5	0.55	9.73
696.0	11.00	21.0	85.2	86.4	0.60	10.18
702.0	18.00	29.0	112.9	114.2	0.65	10.75
708.0	24.00	42.0	153.3	154.9	0.80	11.50
714.0	31.00	55.0	206.6	208.3	0.87	12.34
720.0	62.00	93.0	297.6	299.6	0.98	13.42
726.0	119.00	181.0	465.2	478.6	6.71	14.85
732.0	182.00	301.0	637.3	766.2	64.47	16.31
738.0	183.00	365.0	841.5	1002.3	80.38	17.42
744.0	125.00	308.0	933.6	1149.5	107.94	17.96
750.0	78.00	203.0	925.8	1136.6	105.42	17.91
756.0	54.00	132.0	877.9	1057.8	89.96	17.63
762.0	40.00	94.0	818.6	971.9	76.62	17.30
768.0	31.00	71.0	754.6	889.6	67.54	16.95
774.0	26.00	57.0	680.3	811.6	65.64	16.55
780.0	22.00	48.0	601.3	728.3	63.47	16.10
786.0	20.00	42.0	553.8	643.3	44.75	15.70
792.0	18.00	38.0	529.9	591.8	30.98	15.46
798.0	17.00	35.0	515.9	564.9	24.48	15.33
804.0	16.00	33.0	507.7	548.9	20.63	15.25
810.0	15.00	31.0	502.4	538.7	18.15	15.19
816.0	14.00	29.0	498.6	531.4	16.39	15.16
822.0	14.00	28.0	496.1	526.6	15.24	15.13
828.0	13.00	27.0	494.3	523.1	14.40	15.11
834.0	12.00	25.0	492.3	519.3	13.48	15.09
840.0	12.00	24.0	490.8	516.3	12.77	15.08
846.0	11.00	23.0	489.5	513.8	12.16	15.07
852.0	11.00	22.0	488.3	511.5	11.60	15.05
858.0	10.00	21.0	487.2	509.3	11.07	15.04
864.0	10.00	20.0	486.0	507.2	10.55	15.03
870.0	9.00	19.0	485.0	505.0	10.05	15.02
876.0	9.00	18.0	483.9	503.0	9.54	15.01
882.0	9.00	18.0	483.3	501.9	9.28	15.01
888.0	9.00	18.0	483.0	501.3	9.14	15.00
894.0	9.00	18.0	482.9	501.0	9.07	15.00
900.0	9.00	18.0	482.8	500.9	9.04	15.00
906.0	9.00	18.0	482.8	500.8	9.02	15.00
912.0	9.00	18.0	482.7	500.8	9.01	15.00
918.0	8.00	17.0	481.9	499.7	8.90	14.99
924.0	8.00	16.0	480.5	497.9	8.71	14.98

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24HR SCS

Page 3
 Return Freq: 25 years

Pond File: b:BMP23401.PND
 Inflow Hydrograph: b:POSIN025.HYD
 Outflow Hydrograph: b:1UTBM025.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	8.00	16.0	479.4	496.5	8.56	14.97
936.0	8.00	16.0	478.5	495.4	8.45	14.96
942.0	8.00	16.0	477.8	494.5	8.35	14.96
948.0	7.00	15.0	476.4	492.8	8.18	14.95
954.0	7.00	14.0	474.6	490.4	7.93	14.93
960.0	7.00	14.0	473.1	488.6	7.74	14.92
966.0	7.00	14.0	471.9	487.1	7.58	14.91
972.0	7.00	14.0	471.0	485.9	7.46	14.90
978.0	6.00	13.0	469.5	484.0	7.26	14.89
984.0	6.00	12.0	467.5	481.5	7.00	14.87
990.0	6.00	12.0	465.9	479.5	6.79	14.86
996.0	6.00	12.0	464.6	477.9	6.63	14.85
1002.0	6.00	12.0	463.6	476.6	6.50	14.84
1008.0	6.00	12.0	462.8	475.6	6.39	14.84
1014.0	6.00	12.0	462.2	474.8	6.31	14.83
1020.0	6.00	12.0	461.7	474.2	6.25	14.83
1026.0	6.00	12.0	461.3	473.7	6.20	14.82
1032.0	6.00	12.0	461.0	473.3	6.16	14.82
1038.0	5.00	11.0	460.0	472.0	6.02	14.81
1044.0	5.00	10.0	458.4	470.0	5.81	14.80
1050.0	5.00	10.0	457.1	468.4	5.64	14.79
1056.0	5.00	10.0	456.1	467.1	5.51	14.78
1062.0	5.00	10.0	455.3	466.1	5.40	14.77
1068.0	5.00	10.0	454.6	465.3	5.32	14.77
1074.0	5.00	10.0	454.1	464.6	5.25	14.76
1080.0	5.00	10.0	453.7	464.1	5.20	14.76
1086.0	5.00	10.0	453.4	463.7	5.16	14.76
1092.0	5.00	10.0	453.2	463.4	5.13	14.75
1098.0	5.00	10.0	453.0	463.2	5.10	14.75
1104.0	5.00	10.0	452.8	463.0	5.08	14.75
1110.0	4.00	9.0	451.9	461.8	4.96	14.74
1116.0	4.00	8.0	450.4	459.9	4.76	14.73
1122.0	4.00	8.0	449.2	458.4	4.60	14.72
1128.0	4.00	8.0	448.2	457.2	4.48	14.71
1134.0	4.00	8.0	447.5	456.2	4.38	14.71
1140.0	4.00	8.0	446.9	455.5	4.30	14.70
1146.0	4.00	8.0	446.4	454.9	4.24	14.70
1152.0	4.00	8.0	446.0	454.4	4.19	14.70
1158.0	4.00	8.0	445.7	454.0	4.15	14.69
1164.0	4.00	8.0	445.5	453.7	4.12	14.69
1170.0	4.00	8.0	445.3	453.5	4.09	14.69
1176.0	4.00	8.0	445.2	453.3	4.07	14.69
1182.0	4.00	8.0	445.0	453.2	4.06	14.69
1188.0	4.00	8.0	444.9	453.0	4.05	14.69
1194.0	4.00	8.0	444.9	452.9	4.04	14.69
1200.0	4.00	8.0	444.8	452.9	4.03	14.69

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24HR SCS

Return Freq: 25 years

Pond File: b:BMP23401.PND

Inflow Hydrograph: b:POSIN025.HYD

Outflow Hydrograph: b:1UTBM025.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	4.00	8.0	444.8	452.8	4.02	14.69
1212.0	4.00	8.0	444.7	452.8	4.02	14.68
1218.0	4.00	8.0	444.7	452.7	4.01	14.68
1224.0	4.00	8.0	444.7	452.7	4.01	14.68
1230.0	4.00	8.0	444.7	452.7	4.01	14.68
1236.0	4.00	8.0	444.6	452.7	4.01	14.68
1242.0	4.00	8.0	444.6	452.6	4.01	14.68
1248.0	4.00	8.0	444.6	452.6	4.00	14.68
1254.0	4.00	8.0	444.6	452.6	4.00	14.68
1260.0	4.00	8.0	444.6	452.6	4.00	14.68
1266.0	3.00	7.0	443.8	451.6	3.90	14.68
1272.0	3.00	6.0	442.4	449.8	3.71	14.67
1278.0	3.00	6.0	441.3	448.4	3.56	14.66
1284.0	3.00	6.0	440.4	447.3	3.45	14.65
1290.0	3.00	6.0	439.7	446.4	3.35	14.64
1296.0	3.00	6.0	439.1	445.7	3.28	14.64
1302.0	3.00	6.0	438.7	445.1	3.22	14.63
1308.0	3.00	6.0	438.3	444.7	3.18	14.63
1314.0	3.00	6.0	438.0	444.3	3.14	14.63
1320.0	3.00	6.0	437.8	444.0	3.11	14.63
1326.0	3.00	6.0	437.6	443.8	3.09	14.63
1332.0	3.00	6.0	437.5	443.6	3.07	14.62
1338.0	3.00	6.0	437.4	443.5	3.05	14.62
1344.0	3.00	6.0	437.3	443.4	3.04	14.62
1350.0	3.00	6.0	437.2	443.3	3.03	14.62
1356.0	3.00	6.0	437.2	443.2	3.03	14.62
1362.0	2.00	5.0	436.3	442.2	2.92	14.62
1368.0	2.00	4.0	434.9	440.3	2.73	14.60
1374.0	2.00	4.0	433.7	438.9	2.58	14.59
1380.0	2.00	4.0	432.8	437.7	2.46	14.59
1386.0	2.00	4.0	432.1	436.8	2.36	14.58
1392.0	2.00	4.0	431.5	436.1	2.29	14.58
1398.0	2.00	4.0	431.1	435.5	2.23	14.57
1404.0	2.00	4.0	430.7	435.1	2.18	14.57
1410.0	2.00	4.0	430.4	434.7	2.14	14.57
1416.0	2.00	4.0	430.2	434.4	2.11	14.56
1422.0	2.00	4.0	430.0	434.2	2.09	14.56
1428.0	2.00	4.0	429.9	434.0	2.07	14.56
1434.0	2.00	4.0	429.8	433.9	2.06	14.56
1440.0	2.00	4.0	429.7	433.8	2.04	14.56
1446.0	1.00	3.0	428.8	432.7	1.93	14.55
1452.0	1.00	2.0	427.3	430.8	1.74	14.54
1458.0	1.00	2.0	426.2	429.3	1.58	14.53
1464.0	1.00	2.0	425.2	428.2	1.46	14.52
1470.0	1.00	2.0	424.5	427.2	1.37	14.52
1476.0	1.00	2.0	423.9	426.5	1.29	14.51

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24HR SCS

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 Return Freq: 25 years

Pond File: b:BMP23401.PND
 Inflow Hydrograph: b:POSIN025.HYD
 Outflow Hydrograph: b:1UTBM025.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	423.5	425.9	1.23	14.51
1488.0	1.00	2.0	423.1	425.5	1.18	14.51
1494.0	1.00	2.0	422.8	425.1	1.14	14.50
1500.0	1.00	2.0	422.6	424.8	1.11	14.50
1506.0	1.00	2.0	422.4	424.6	1.10	14.50
1512.0	1.00	2.0	422.2	424.4	1.10	14.50
1518.0	1.00	2.0	422.0	424.2	1.10	14.50
1524.0	0.00	1.0	420.8	423.0	1.10	14.49
1530.0	0.00	0.0	418.6	420.8	1.09	14.47
1536.0	0.00	0.0	416.4	418.6	1.09	14.45
1542.0	0.00	0.0	414.3	416.4	1.09	14.43
1548.0	0.00	0.0	412.1	414.3	1.08	14.42
1554.0	0.00	0.0	409.9	412.1	1.08	14.40

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24HR SCS

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Return Freq: 25 years

***** SUMMARY OF ROUTING COMPUTATIONS *****

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN025.HYD
Outflow Hydrograph: b:1UTBM025.HYD

Starting Pond W.S. Elevation = 8.00 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow = 183.00 cfs
Peak Outflow = 107.94 cfs
Peak Elevation = 17.96 ft

***** Summary of Approximate Peak Storage *****

Initial Storage = 0 cu-ft
Peak Storage From Storm = 187,485 cu-ft

Total Storage in Pond = 187,485 cu-ft

Warning: Inflow hydrograph truncated on left side.

```

*****
*                               *
*             JOINT BMP         *
*       TUTTERS NECK NORTH     *
*       KINGSMILL VILLAGE      *
* BMP AFTER SILT BASIN IS REMOVED *
*                               *
*****

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Inflow Hydrograph: b:POSIN100.HYD

Rating Table file: b:BMP23401.PND

----INITIAL CONDITIONS----

Elevation = 8.00 ft

Outflow = 0.00 cfs

Storage = 0 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
8.00	0.0	0
8.50	0.2	3,118
9.00	0.4	6,476
9.50	0.5	10,085
10.00	0.6	13,952
10.50	0.6	18,141
11.00	0.7	22,719
11.50	0.8	27,702
12.00	0.8	33,110
12.50	0.9	39,278
13.00	0.9	46,597
13.50	1.0	55,167
14.00	1.0	65,084
14.50	1.1	76,244
15.00	9.0	88,508
15.50	32.7	101,928
16.00	63.0	116,557
16.50	65.4	132,505
17.00	67.8	149,891
17.50	82.6	168,778
18.00	110.3	189,226
18.50	148.6	211,340
19.00	197.3	235,231

INTERMEDIATE ROUTING
COMPUTATIONS

2S/t (cfs)	2S/t + 0 (cfs)
0.0	0.0
17.3	17.5
36.0	36.4
56.0	56.5
77.5	78.1
100.8	101.4
126.2	126.9
153.9	154.7
183.9	184.7
218.2	219.1
258.9	259.8
306.5	307.5
361.6	362.6
423.6	424.7
491.7	500.7
566.3	599.0
647.5	710.5
736.1	801.5
832.7	900.5
937.7	1020.3
1051.3	1161.6
1174.1	1322.7
1306.8	1504.1

Time increment (t) = 6.0 min.

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24 HR SCS

Page 2
 Return Freq: 100 years

Pond File: b:BMP23401.PND
 Inflow Hydrograph: b:POSIN100.HYD
 Outflow Hydrograph: b:1UTBM100.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	7.00	----	0.0	0.0	0.00	8.00
666.0	8.00	15.0	14.7	15.0	0.17	8.43
672.0	9.00	17.0	31.0	31.7	0.35	8.87
678.0	10.00	19.0	49.0	50.0	0.47	9.34
684.0	12.00	22.0	69.9	71.0	0.57	9.84
690.0	13.00	25.0	93.7	94.9	0.60	10.36
696.0	15.00	28.0	120.3	121.7	0.68	10.90
702.0	25.00	40.0	158.7	160.3	0.80	11.59
708.0	34.00	59.0	215.9	217.7	0.90	12.48
714.0	44.00	78.0	292.0	293.9	0.97	13.36
720.0	87.00	131.0	420.8	423.0	1.10	14.49
726.0	166.00	253.0	567.8	673.8	53.02	15.84
732.0	251.00	417.0	828.3	984.8	78.21	17.35
738.0	251.00	502.0	1029.0	1330.3	150.64	18.52
744.0	171.00	422.0	1084.9	1451.0	183.05	18.85
750.0	105.00	276.0	1043.2	1360.9	158.86	18.61
756.0	73.00	178.0	972.3	1221.2	124.48	18.19
762.0	54.00	127.0	903.1	1099.3	98.09	17.78
768.0	42.00	96.0	839.1	999.1	79.98	17.41
774.0	36.00	78.0	777.4	917.1	69.85	17.07
780.0	30.00	66.0	710.6	843.4	66.42	16.71
786.0	28.00	58.0	639.5	768.6	64.53	16.32
792.0	25.00	53.0	576.3	692.5	58.11	15.92
798.0	23.00	48.0	545.1	624.3	39.58	15.61
804.0	21.00	44.0	528.5	589.1	30.33	15.45
810.0	20.00	41.0	518.3	569.5	25.59	15.35
816.0	19.00	39.0	512.0	557.3	22.65	15.29
822.0	18.00	37.0	507.7	549.0	20.65	15.25
828.0	17.00	35.0	504.4	542.7	19.13	15.21
834.0	16.00	33.0	501.7	537.4	17.86	15.19
840.0	16.00	32.0	499.8	533.7	16.96	15.17
846.0	15.00	31.0	498.3	530.8	16.26	15.15
852.0	15.00	30.0	497.0	528.3	15.65	15.14
858.0	14.00	29.0	495.8	526.0	15.10	15.13
864.0	13.00	27.0	494.1	522.8	14.33	15.11
870.0	13.00	26.0	492.8	520.1	13.69	15.10
876.0	12.00	25.0	491.5	517.8	13.11	15.09
882.0	12.00	24.0	490.4	515.5	12.58	15.08
888.0	12.00	24.0	489.8	514.4	12.30	15.07
894.0	12.00	24.0	489.5	513.8	12.15	15.07
900.0	12.00	24.0	489.3	513.5	12.08	15.06
906.0	12.00	24.0	489.2	513.3	12.04	15.06
912.0	11.00	23.0	488.7	512.2	11.78	15.06
918.0	11.00	22.0	487.9	510.7	11.40	15.05
924.0	10.00	21.0	486.9	508.9	10.97	15.04

EXECUTED: 04-26-1995 08:40:35

24 HR SCS

Return Freq: 100 years

Pond File: b:BMP23401.PND

Inflow Hydrograph: b:POSIN100.HYD

Outflow Hydrograph: b:1UTBM100.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	10.00	20.0	485.9	506.9	10.50	15.03
936.0	10.00	20.0	485.4	505.9	10.26	15.03
942.0	10.00	20.0	485.1	505.4	10.13	15.02
948.0	9.00	19.0	484.5	504.1	9.83	15.02
954.0	9.00	18.0	483.6	502.5	9.43	15.01
960.0	9.00	18.0	483.2	501.6	9.22	15.00
966.0	9.00	18.0	483.0	501.2	9.11	15.00
972.0	9.00	18.0	482.8	501.0	9.06	15.00
978.0	8.00	17.0	482.0	499.8	8.91	14.99
984.0	8.00	16.0	480.6	498.0	8.72	14.98
990.0	8.00	16.0	479.4	496.6	8.57	14.97
996.0	8.00	16.0	478.5	495.4	8.45	14.97
1002.0	8.00	16.0	477.8	494.5	8.36	14.96
1008.0	7.00	15.0	476.5	492.8	8.18	14.95
1014.0	7.00	14.0	474.6	490.5	7.93	14.93
1020.0	7.00	14.0	473.1	488.6	7.74	14.92
1026.0	7.00	14.0	471.9	487.1	7.59	14.91
1032.0	7.00	14.0	471.0	485.9	7.46	14.90
1038.0	7.00	14.0	470.3	485.0	7.37	14.90
1044.0	7.00	14.0	469.7	484.3	7.29	14.89
1050.0	7.00	14.0	469.2	483.7	7.23	14.89
1056.0	7.00	14.0	468.9	483.2	7.18	14.89
1062.0	7.00	14.0	468.6	482.9	7.14	14.88
1068.0	7.00	14.0	468.3	482.6	7.11	14.88
1074.0	7.00	14.0	468.2	482.3	7.09	14.88
1080.0	7.00	14.0	468.0	482.2	7.07	14.88
1086.0	7.00	14.0	467.9	482.0	7.06	14.88
1092.0	7.00	14.0	467.8	481.9	7.05	14.88
1098.0	7.00	14.0	467.7	481.8	7.04	14.88
1104.0	7.00	14.0	467.7	481.7	7.03	14.88
1110.0	6.00	13.0	466.8	480.7	6.92	14.87
1116.0	6.00	12.0	465.4	478.8	6.73	14.86
1122.0	6.00	12.0	464.2	477.4	6.58	14.85
1128.0	6.00	12.0	463.3	476.2	6.46	14.84
1134.0	6.00	12.0	462.6	475.3	6.36	14.83
1140.0	6.00	12.0	462.0	474.6	6.29	14.83
1146.0	6.00	12.0	461.6	474.0	6.23	14.82
1152.0	6.00	12.0	461.2	473.6	6.18	14.82
1158.0	6.00	12.0	460.9	473.2	6.14	14.82
1164.0	6.00	12.0	460.7	472.9	6.11	14.82
1170.0	6.00	12.0	460.5	472.7	6.09	14.82
1176.0	5.00	11.0	459.6	471.5	5.97	14.81
1182.0	5.00	10.0	458.1	469.6	5.77	14.80
1188.0	5.00	10.0	456.8	468.1	5.61	14.79
1194.0	5.00	10.0	455.9	466.8	5.48	14.78
1200.0	5.00	10.0	455.1	465.9	5.38	14.77

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Pond File: b:BMP23401.PND
 Inflow Hydrograph: b:POSIN100.HYD
 Outflow Hydrograph: b:1UTBM100.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	5.00	10.0	454.5	465.1	5.30	14.77
1212.0	5.00	10.0	454.0	464.5	5.24	14.76
1218.0	5.00	10.0	453.7	464.0	5.19	14.76
1224.0	5.00	10.0	453.4	463.7	5.15	14.76
1230.0	5.00	10.0	453.1	463.4	5.12	14.75
1236.0	5.00	10.0	452.9	463.1	5.09	14.75
1242.0	5.00	10.0	452.8	462.9	5.07	14.75
1248.0	5.00	10.0	452.7	462.8	5.06	14.75
1254.0	5.00	10.0	452.6	462.7	5.05	14.75
1260.0	4.00	9.0	451.7	461.6	4.93	14.74
1266.0	4.00	8.0	450.2	459.7	4.74	14.73
1272.0	4.00	8.0	449.1	458.2	4.59	14.72
1278.0	4.00	8.0	448.1	457.1	4.46	14.71
1284.0	4.00	8.0	447.4	456.1	4.37	14.71
1290.0	4.00	8.0	446.8	455.4	4.29	14.70
1296.0	4.00	8.0	446.3	454.8	4.23	14.70
1302.0	4.00	8.0	446.0	454.3	4.18	14.70
1308.0	4.00	8.0	445.7	454.0	4.14	14.69
1314.0	4.00	8.0	445.5	453.7	4.11	14.69
1320.0	4.00	8.0	445.3	453.5	4.09	14.69
1326.0	4.00	8.0	445.1	453.3	4.07	14.69
1332.0	4.00	8.0	445.0	453.1	4.06	14.69
1338.0	4.00	8.0	444.9	453.0	4.05	14.69
1344.0	4.00	8.0	444.9	452.9	4.04	14.69
1350.0	4.00	8.0	444.8	452.9	4.03	14.69
1356.0	3.00	7.0	444.0	451.8	3.92	14.68
1362.0	3.00	6.0	442.5	450.0	3.73	14.67
1368.0	3.00	6.0	441.4	448.5	3.58	14.66
1374.0	3.00	6.0	440.4	447.4	3.46	14.65
1380.0	3.00	6.0	439.7	446.4	3.36	14.64
1386.0	3.00	6.0	439.2	445.7	3.29	14.64
1392.0	3.00	6.0	438.7	445.2	3.23	14.63
1398.0	3.00	6.0	438.3	444.7	3.18	14.63
1404.0	3.00	6.0	438.1	444.3	3.14	14.63
1410.0	2.00	5.0	437.0	443.1	3.01	14.62
1416.0	2.00	4.0	435.4	441.0	2.80	14.61
1422.0	2.00	4.0	434.2	439.4	2.63	14.60
1428.0	2.00	4.0	433.2	438.2	2.50	14.59
1434.0	2.00	4.0	432.4	437.2	2.40	14.58
1440.0	2.00	4.0	431.7	436.4	2.31	14.58
1446.0	2.00	4.0	431.2	435.7	2.25	14.57
1452.0	2.00	4.0	430.8	435.2	2.20	14.57
1458.0	2.00	4.0	430.5	434.8	2.16	14.57
1464.0	2.00	4.0	430.3	434.5	2.12	14.56
1470.0	2.00	4.0	430.1	434.3	2.10	14.56
1476.0	1.00	3.0	429.1	433.1	1.97	14.56

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Pond File: b:BMP23401.PND
 Inflow Hydrograph: b:POSIN100.HYD
 Outflow Hydrograph: b:1UTBM100.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	427.6	431.1	1.77	14.54
1488.0	1.00	2.0	426.4	429.6	1.61	14.53
1494.0	1.00	2.0	425.4	428.4	1.48	14.52
1500.0	1.00	2.0	424.6	427.4	1.38	14.52
1506.0	1.00	2.0	424.0	426.6	1.30	14.51
1512.0	1.00	2.0	423.6	426.0	1.24	14.51
1518.0	1.00	2.0	423.2	425.6	1.19	14.51
1524.0	1.00	2.0	422.9	425.2	1.15	14.50
1530.0	0.00	1.0	421.7	423.9	1.10	14.49
1536.0	0.00	0.0	419.5	421.7	1.10	14.48
1542.0	0.00	0.0	417.3	419.5	1.09	14.46
1548.0	0.00	0.0	415.1	417.3	1.09	14.44
1554.0	0.00	0.0	413.0	415.1	1.08	14.42

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***** SUMMARY OF ROUTING COMPUTATIONS *****

Pond File: b:BMP23401.PND
Inflow Hydrograph: b:POSIN100.HYD
Outflow Hydrograph: b:1UTBM100.HYD

Starting Pond W.S. Elevation = 8.00 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow = 251.00 cfs
Peak Outflow = 183.05 cfs
Peak Elevation = 18.85 ft 18.85

***** Summary of Approximate Peak Storage *****

Initial Storage = 0 cu-ft
Peak Storage From Storm = 228,239 cu-ft

Total Storage in Pond = 228,239 cu-ft

Warning: Inflow hydrograph truncated on left side.

Outlet Structure File: BMP23401.STR

POND-2 Version: 5.17

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Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

***** COMPOSITE OUTFLOW SUMMARY *****

Elevation (ft)	Q (cfs)	Contributing Structures
8.00	0.0	
8.50	0.2	1
9.00	0.4	1
9.50	0.5	1
10.00	0.6	1
10.50	0.6	1
11.00	0.7	1
11.50	0.8	1
12.00	0.8	1
12.50	0.9	1
13.00	0.9	1
13.50	1.0	1
14.00	1.0	1
14.50	1.1	1
15.00	9.0	1 +2
15.50	32.7	1 +2
16.00	63.0	1 +5
16.50	65.4	1 +5
17.00	67.8	1 +3 +5
17.50	82.6	1 +3 +5
18.00	110.3	1 +3 +5
18.50	148.6	1 +3 +5
19.00	197.3	1 +3 +5
19.50	0.0	

Outlet Structure File: BMP23401.STR

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JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

Outlet Structure File: b:BMP23401.STR
Planimeter Input File: b:BMP234 .VOL
Rating Table Output File: b:BMP23401.PND

Min. Elev.(ft) = 8 Max. Elev.(ft) = 19.5 Incr.(ft) = .5

Additional elevations (ft) to be included in table:

* * * * *

SYSTEM CONNECTIVITY

Structure	No.	Q Table	Q Table
-----	---	-----	-----
ORIFICE	1	->	1
STAND PIPE	2	->	2
WEIR-XY	3	->	3
CULVERT-CR	5	? 2 ->	A

Outflow rating table summary was stored in file:
b:BMP23401.PND

Outlet Structure File: BMP23401.STR

POND-2 Version: 5.17

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Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

>>>>> Structure No. 1 <<<<<<
(Input Data)

ORIFICE

Orifice - Based on Area and Datum Elevation

E1 elev.(ft)?	8.001
E2 elev.(ft)?	19.5
Orifice coeff.?	.6
Invert elev.(ft)?	8.001
Datum elev.(ft) ?	8.17
Orifice area (sq ft)?	.0873

Outlet Structure File: BMP23401.STR

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JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

>>>>> Structure No. 2 <<<<<
(Input Data)

STAND PIPE

Stand Pipe with weir or orifice flow

E1 elev.(ft)?	14.671
E2 elev.(ft)?	19.5
Crest elev.(ft)?	14.671
Diameter (ft)?	4
Weir coefficient?	3.33
Orifice coefficient?	.6
Start transition elev.(ft) @ ?	
Transition height (ft)?	

Outlet Structure File: BMP23401.STR

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JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

>>>>> Structure No. 3 <<<<<<
(Input Data)

WEIR-XY

Weir - Defined by X, Y Coordinates

E1 (ft) =17.00 E2 (ft) =19.5

X dist.(ft)	Y elev.(ft)
0	19
4	17
14	17
18	19

Outlet Structure File: BMP23401.STR

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Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

>>>>> Structure No. 5 <<<<<
(Input Data)

CULVERT-CR
Circular Culvert (With Inlet Control)

E1 elev.(ft)?	14.67
E2 elev.(ft)?	19.5
Diam. (ft)?	2.5
Inv. el.(ft)?	8
Slope (ft/ft)?	.01
T1 ratio?	
T2 ratio?	
K Coeff.?	.0098
M Coeff.?	2
c Coeff.?	.0398
Y Coeff.?	.67
Form 1 or 2?	1
Slope factor?	.5

Outlet Structure File: BMP23401.STR

POND-2 Version: 5.17

S/N: 1295130250

Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

Outflow Rating Table for Structure #1
ORIFICE Orifice - Based on Area and Datum Elevation

Elevation (ft)	Q (cfs)	Computation Messages
8.00	0.0	E < E1=8.001
8.50	0.2	H =.33
9.00	0.4	H =.83
9.50	0.5	H =1.33
10.00	0.6	H =1.83
10.50	0.6	H =2.33
11.00	0.7	H =2.83
11.50	0.8	H =3.33
12.00	0.8	H =3.83
12.50	0.9	H =4.33
13.00	0.9	H =4.83
13.50	1.0	H =5.33
14.00	1.0	H =5.83
14.50	1.1	H =6.33
15.00	1.1	H =6.83
15.50	1.1	H =7.33
16.00	1.2	H =7.83
16.50	1.2	H =8.33
17.00	1.2	H =8.830
17.50	1.3	H =9.330
18.00	1.3	H =9.830
18.50	1.4	H =10.33
19.00	1.4	H =10.83
19.50	0.0	E = or > E2=19.5

C = .6 A = .0873 sq.ft.

H (ft) = Table elev. - Datum elev. (8.17 ft)

Q (cfs) = C * A * $\text{sqr}(2g * H)$

Outlet Structure File: BMP23401.STR

POND-2 Version: 5.17

S/N: 1295130250

Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

Outflow Rating Table for Structure #2
STAND PIPE Stand Pipe with weir or orifice flow

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation Messages
8.00	0.0	E < Inv.El. = 14.671
8.50	0.0	E < E1=14.671
9.00	0.0	E < E1=14.671
9.50	0.0	E < E1=14.671
10.00	0.0	E < E1=14.671
10.50	0.0	E < E1=14.671
11.00	0.0	E < E1=14.671
11.50	0.0	E < E1=14.671
12.00	0.0	E < E1=14.671
12.50	0.0	E < E1=14.671
13.00	0.0	E < E1=14.671
13.50	0.0	E < E1=14.671
14.00	0.0	E < E1=14.671
14.50	0.0	E < E1=14.671
15.00	7.9	Weir: H =.329
15.50	31.6	Weir: H =.829
16.00	64.1	Weir: H =1.329
16.50	81.8	Orifice: H =1.829
17.00	92.3	Orifice: H =2.329
17.50	101.8	Orifice: H =2.829
18.00	110.4	Orifice: H =3.329
18.50	118.4	Orifice: H =3.829
19.00	125.9	Orifice: H =4.329
19.50	0.0	E = or > E2=19.5

Weir $C_w = 3.33$ Weir length = 12.56637 ft
Orifice $C_o = .6$ Orifice area = 12.56637 sq.ft.
 $Q \text{ (cfs)} = (C_w * L * H^{1.5}) \text{ or } (C_o * A * \text{sqr}(2*g*H))$
No transition used, transition height = 0.0
Weir equation = Orifice equation @ elev. = 16.11694 ft

Outlet Structure File: BMP23401.STR

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JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

Outflow Rating Table for Structure #3
WEIR-XY Weir - Defined by X, Y Coordinates

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation	Messages
8.00	0.0	E < Y min= 17	
8.50	0.0	E < Y min= 17	
9.00	0.0	E < Y min= 17	
9.50	0.0	E < Y min= 17	
10.00	0.0	E < Y min= 17	
10.50	0.0	E < Y min= 17	
11.00	0.0	E < Y min= 17	
11.50	0.0	E < Y min= 17	
12.00	0.0	E < Y min= 17	
12.50	0.0	E < Y min= 17	
13.00	0.0	E < Y min= 17	
13.50	0.0	E < Y min= 17	
14.00	0.0	E < Y min= 17	
14.50	0.0	E < Y min= 17	
15.00	0.0	E < E1=17.00	
15.50	0.0	E < E1=17.00	
16.00	0.0	E < E1=17.00	
16.50	0.0	E < E1=17.00	
17.00	0.0	E = Y min= 17	
17.50	12.6	W(ft)=12.0	Max. D(ft)=.5
18.00	38.0	W(ft)=14.0	Max. D(ft)=1.0
18.50	74.2	W(ft)=16.0	Max. D(ft)=1.5
19.00	120.8	W(ft)=18.0	Max. D(ft)=2.0
19.50	0.0	E = or > E2=19.5	

Outlet Structure File: BMP23401.STR

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Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

Outflow Rating Table for Structure #5
CULVERT-CR Circular Culvert (With Inlet Control)

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation Messages
8.00	0.0	E < E1=14.67
8.50	0.0	E < E1=14.67
9.00	0.0	E < E1=14.67
9.50	0.0	E < E1=14.67
10.00	0.0	E < E1=14.67
10.50	0.0	E < E1=14.67
11.00	0.0	E < E1=14.67
11.50	0.0	E < E1=14.67
12.00	0.0	E < E1=14.67
12.50	0.0	E < E1=14.67
13.00	0.0	E < E1=14.67
13.50	0.0	E < E1=14.67
14.00	0.0	E < E1=14.67
14.50	0.0	E < E1=14.67
15.00	56.7	Submerged: HW =7.0
15.50	59.3	Submerged: HW =7.5
16.00	61.8	Submerged: HW =8.0
16.50	64.2	Submerged: HW =8.5
17.00	66.6	Submerged: HW =9.0
17.50	68.8	Submerged: HW =9.5
18.00	71.0	Submerged: HW =10.0
18.50	73.1	Submerged: HW =10.5
19.00	75.1	Submerged: HW =11.0
19.50	0.0	E = or > E2=19.5

Used Unsubmerged Equ. Form (1) for elev. less than 10.91 ft
Used Submerged Equation for elevations greater than 11.28 ft
HW=Headwater (ft) dc=Critical depth (ft) Ac=Area (sq.ft) at dc

Transition flows interpolated from the following values:
E1=10.91 ft; Q1=27.16 cfs; Dc=1.78 ft; E2=11.28 ft; Q2=31.05 cfs

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JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

Outflow Rating Table A
Table A = 2 ? 5

Elevation (ft)	Q (cfs)	Contributing Structures
8.00	0.0	-
8.50	0.0	-
9.00	0.0	-
9.50	0.0	-
10.00	0.0	-
10.50	0.0	-
11.00	0.0	-
11.50	0.0	-
12.00	0.0	-
12.50	0.0	-
13.00	0.0	-
13.50	0.0	-
14.00	0.0	-
14.50	0.0	-
15.00	7.9	2
15.50	31.6	2
16.00	61.8	5
16.50	64.2	5
17.00	66.6	5
17.50	68.8	5
18.00	71.0	5
18.50	73.1	5
19.00	75.1	5
19.50	0.0	-

**DRAINAGE,
STORMWATER MANAGEMENT,
AND EROSION CONTROL DESIGN CALCULATIONS**

FOR

TUTTER'S NECK NORTH

**August 31, 1994
Rev. October 21, 1994**



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**DRAINAGE,
STORMWATER MANAGEMENT,
AND EROSION CONTROL DESIGN CALCULATIONS**

FOR

TUTTER'S NECK NORTH



**August 31, 1994
Rev. October 21, 1994**

TUTTER'S NECK NORTH

DRAINAGE, STORMWATER MANAGEMENT, AND EROSION CONTROL DESIGN

The Drainage, Stormwater Management, and Erosion control facilities for Phase IV, Tutter's Neck North, have been developed in basic conformance with the "Overall Drainage and Stormwater Management Plan for Kingsmill Village." We have designed a 6 point BMP using Extended Detention design 3 from Chesapeake Bay Local Assistant's Manual. The design volume required is as follows:

Required Volume of BMP

On-site Area to BMP

$$V_r = \frac{(R_m)(R_v)}{12} \times \text{Ac.}$$

$$R_v = (0.05 + 0.009I) = [0.05 + 0.009(20.0)] = 0.230$$

(Where I = 20% from CBLAM Sheet C-10 attached, ave. lot size 0.50 Ac.)

$$R_m = 1.0" \text{ for Design 3 Extended Detention 24 hrs.}$$

$$\text{Ac.} = 29.5 \text{ Acres}$$

$$V_r = \frac{(1.0)(0.230)}{12} \times 29.5 = 0.565 \text{ ac.-ft.} = 24,630 \text{ cu. ft.}$$

Off-site Area to BMP

$$V_r = \frac{(R_m)(R_v)}{12} \times \text{Ac.}$$

$$R_v = (0.05 + 0.009I) = [0.05 + 0.009(35\%)] = 0.365$$

(Where I = 35% from Existing Development History)

$$R_m = 1.0" \text{ for Design 3 Extended Detention 24 hrs.}$$

$$\text{Ac.} = 19.9 \text{ Acres} \quad \text{TOTAL} = 49.4 \text{ ac}$$

$$V_r = \frac{(1.0)(0.365)}{12} \times 19.9 = 0.605 \text{ ac.-ft.} = 26,366 \text{ cu. ft.}$$

Total $V_r = 24,630 + 26,366 = 50,996 \text{ cu. ft.}$

The BMP pond was designed using the TR-55 Tabular Hydrograph Method and run on Haestad Methods Inc.'s Quick TR-55 and Pond-2 software. Total 24-hour rainfall data was provided by Mr. Darryl Cook, based on historical records of the Williamsburg area.

The BMP pond will be used as a sediment basin during construction. The total contributing acreage to the silt basin is 40.95 acres. Thus, the required sediment basin volume is 74,080 cu. ft. for wet storage, and 74,080 cu. ft. for dry storage. A 200' by 30' wide strip will be excavated in the bottom of the basin at a depth of 0.50' in order to facilitate a portion of the wet storage volume requirement for the sediment basin. This area will be allowed to fill sediment during the construction phase of the project. The BMP calculations are based on the volume above this 0.50' of excavation as we anticipate this area being filled with sediment.

The silt basin design will provide 78,990 cu. ft. of wet storage at elevation 14.5. The total storage provided by the silt basin for the 2 year storm is 124,270 cu. ft. or 45,280 cu. ft. for dry storage. The total storage within this basin is over 230,000 cu. ft. at the embankment crest elevation of 19. Given that the natural shape of the basin is long and narrow and that it is 7 feet deep at the wet storage elevation, the basin will act as an extremely efficient sedimentation structure. This combined with the fact that a significant portion of the area will remain undisturbed during construction, 45,280 cu. ft. of dry storage for the 2 year storm should be more than adequate to address the sedimentation concerns for the project.

TABLE 3
TUTTER'S NGK NORTH (Phase IV)
WORKSHEET FOR BMP POINT SYSTEM
Oct 18, 1992

A. STRUCTURAL BMP POINT ALLOCATION

BMP	BMP Points	Fraction of Site Served by BMP	Weighted BMP Points
BMP CATCHMENTS DETENTION 24HR)	6 ONSITE	$\frac{29.5}{34} = .867$	5.21
	6 OFFSITE	$\frac{11.45 + 8.45}{34} = .585$	3.51
		x	
		x	
TOTAL WEIGHTED STRUCTURAL BMP POINTS:			8.72

B. NATURAL OPEN SPACE CREDIT

Fraction of Site	Natural Open Space Credit	Points for Natural Open Space
$\frac{22.12}{34} = 65.1$	0.1 (0.1 per 1%)	6.51

C. TOTAL WEIGHTED POINTS

8.72	+	6.51	=	15.23 > 10	OK
Structural BMP Points		Natural Open Space Points		TOTAL	

TOTAL AREA OF SITE	34.0 AC
ONSITE AREA TO BMP	29.5 AC
OFFSITE AREA TO BMP	11.45 AC in basin + 8.45 pipes (Future)
TOTAL AREA TO BMP	49.9 AC

NATURAL OPEN SPACE

ONSITE

BUFFER	1.1 AC
LPZ	8.7 AC
	9.8 AC

OFFSITE

DEVELOPMENT (35%) 7.7 AC x .65 = 5.00 AC

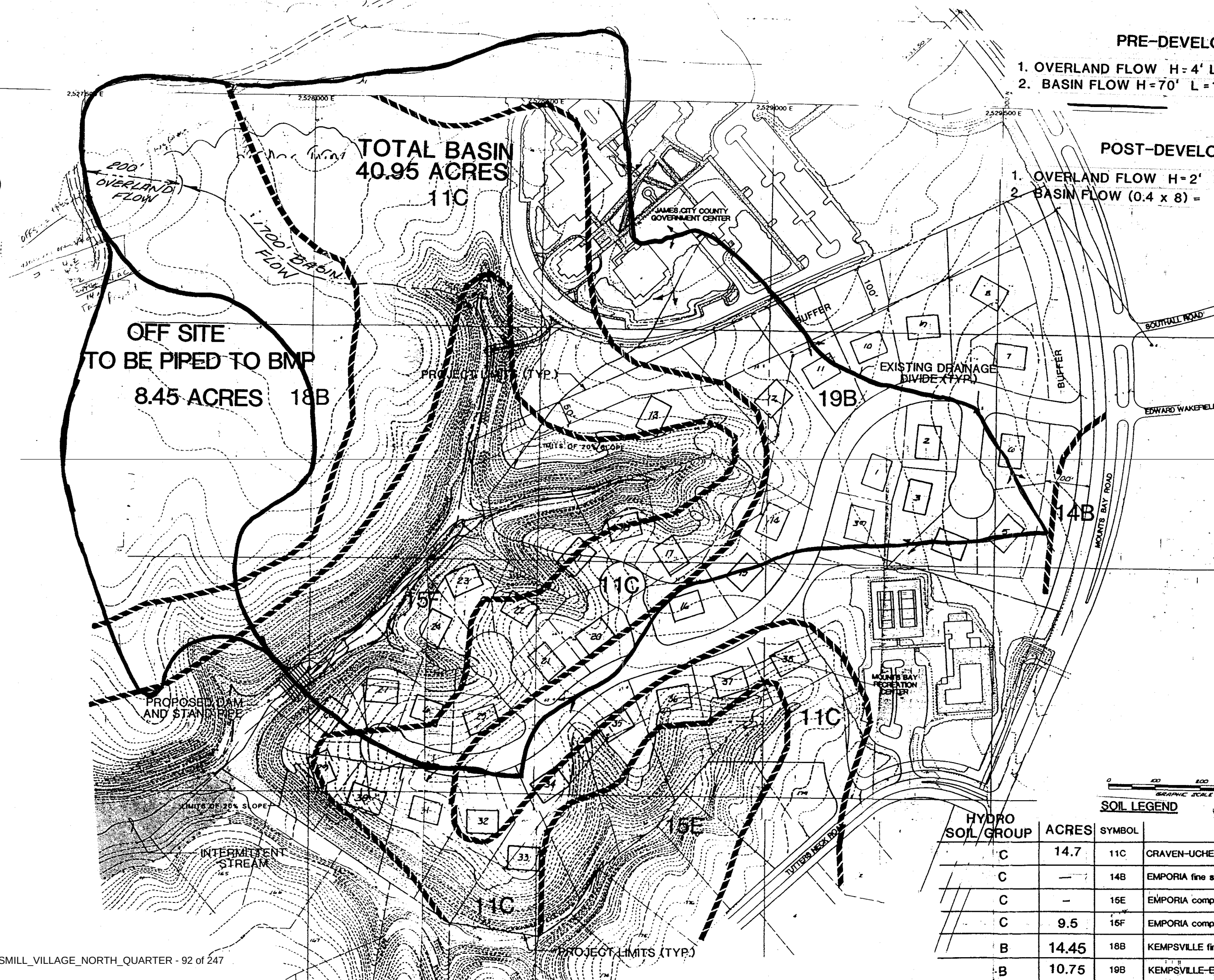
NOT DEVELOPMENT 40% 12.2 AC x 0.60 = 7.32

FUTURE

12.32

12.32

22.12



TOTAL BASIN
40.95 ACRES
11C

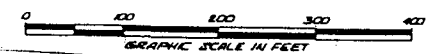
OFF SITE
TO BE PIPED TO BMP
8.45 ACRES 18B

PRE-DEVELOPMENT
1. OVERLAND FLOW H=4' L=200 tc=17
2. BASIN FLOW H=70' L=1700' tc=8

25 MINUTES
USE 30 MINUTES

POST-DEVELOPMENT
1. OVERLAND FLOW H=2' L=100' tc=13
2. BASIN FLOW (0.4 x 8) = tc=3.2

16.2 MINUTES
USE 15 MINUTES



SOIL LEGEND

HYDRO SOIL GROUP	ACRES	SYMBOL	NAME
C	14.7	11C	CRAVEN-UCHEE complex, 6-10% slopes
C	—	14B	EMPORIA fine sandy loam, 2-6% slopes
C	—	15E	EMPORIA complex 15-25% slopes
C	9.5	15F	EMPORIA complex, 25-50% slopes
B	14.45	18B	KEMPSVILLE fine sandy loam, 2-6% slopes
B	10.75	19B	KEMPSVILLE-EMPORIA fine sandy loams,

GUIDANCE CALCULATION PROCEDURE

ANNUAL STORM PHOSPHOROUS EXPORT

TABLE 1

For Existing Urban Land Uses
(in pounds/acre/year)

LAND USES	IMPERVIOUS COVER (%)	ANNUAL RAINFALL (in)					
		40	41	42	43	44	45
	0	0.11	0.11	0.11	0.11	0.12	0.12
5.0 acre residential lots	5	0.20	0.21	0.21	0.22	0.22	0.23
2.0 acre residential lots	10	0.30	0.30	0.31	0.32	0.33	0.33
1.0 acre residential lots	15	0.39	0.40	0.41	0.42	0.43	0.44
	16	0.41	0.42	0.43	0.44	0.45	0.46
	17	0.43	0.44	0.45	0.46	0.47	0.48
	18	0.45	0.46	0.47	0.48	0.49	0.51
	19	0.47	0.48	0.49	0.50	0.52	0.53
0.50 acre residential lots	20	2.03	2.08	2.13	2.18	2.23	2.28
0.33 acre residential lots	25	2.42	2.48	2.54	2.61	2.67	2.72
0.25 acre residential lots	30	2.82	2.89	2.96	3.03	3.10	3.17
Townhouses	35	3.22	3.30	3.38	3.46	3.54	3.62
	40	3.61	3.70	3.79	3.88	3.97	4.06
	45	4.01	4.11	4.21	4.31	4.41	4.51
Garden Apartments	50	4.41	4.52	4.63	4.74	4.85	4.96
	55	4.80	4.92	5.04	5.16	5.28	5.40
	60	5.20	5.33	5.46	5.59	5.72	5.85
Light Commercial/Industrial	65	5.60	5.74	5.88	6.02	6.16	6.30
	70	5.99	6.14	6.29	6.44	6.59	6.74
	75	6.39	6.55	6.71	6.87	7.03	7.19
Heavy Commercial/Industrial	80	6.79	6.96	7.13	7.29	7.46	7.63
	85	7.98	8.17	8.37	8.57	8.77	8.97
	90	7.58	7.77	7.96	8.15	8.34	8.53
Asphalt/Pavement	95	7.98	8.17	8.37	8.57	8.77	8.97
	100	8.37	8.58	8.79	9.00	9.21	9.42

For Non-Urban Land Uses
(in pounds/acre/year)

LAND USE	SILT LOAM SOILS	LOAM SOILS	SANDY LOAM SOILS
Conventional Tillage Cropland	3.71	2.42	0.83
Conservation Tillage Cropland	2.32	1.52	0.52
Pasture Land	0.91	0.59	0.20
Forest Land	0.19	0.12	0.04



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VIRGINIA BEACH - WILLIAMSBURG, VIRGINIA

Subject TWITER'S NECH NORTH

Computed By JLH Checked By _____

Project No. 71069B-234

Client _____

Date 2/31/94 Sheet No. 1

REV 10/20/94

COMPOSITE CN NUMBER FOR SCS METHOD

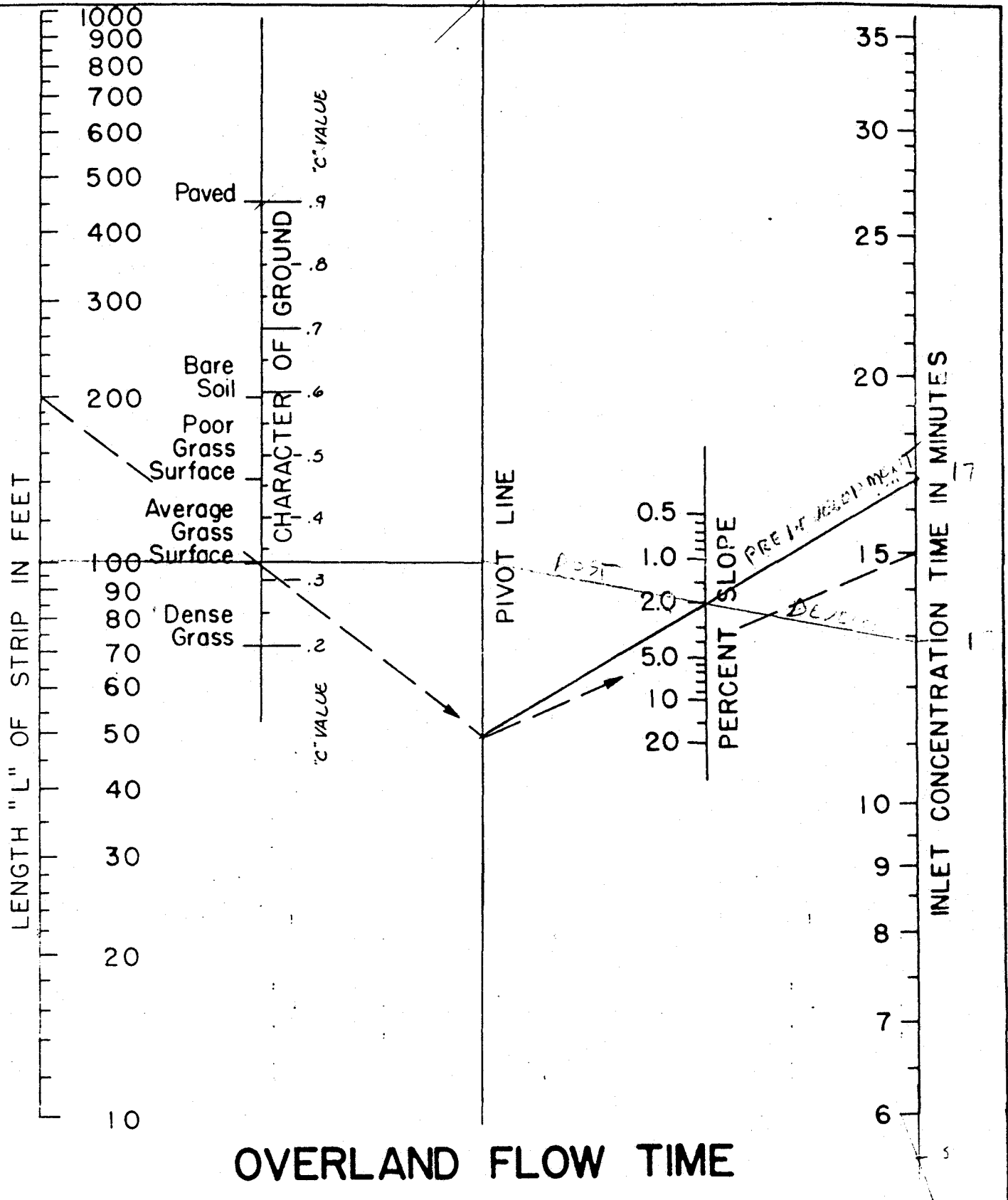
PRE DEVELOPMENT

SOIL GROUP				Area	
B	CN = 55	x	25.2	=	1386
C	CN = 70	x	24.20	=	1694
			49.40		3080
Composite CN =					<u>63</u>

Post Development

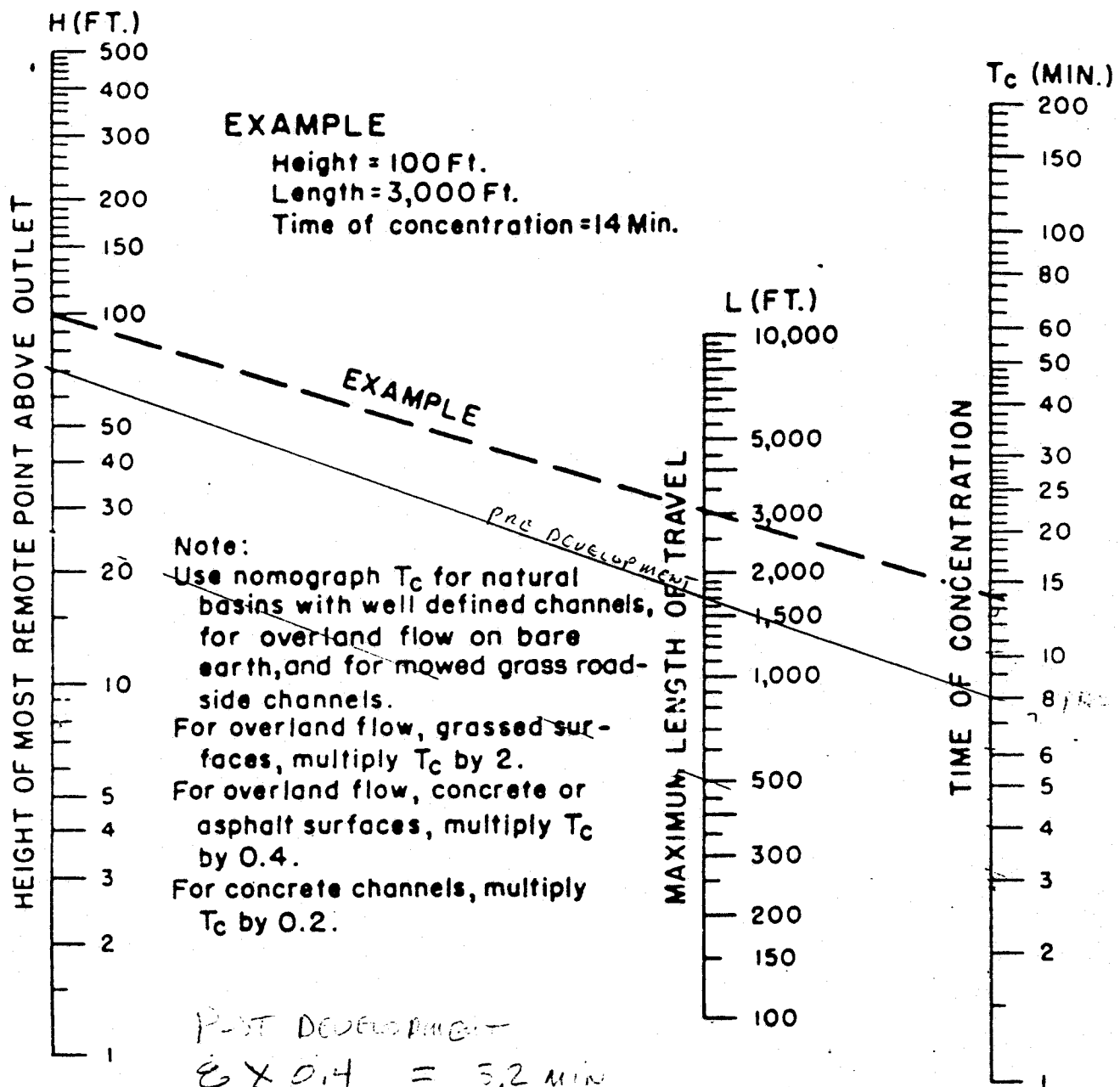
SOIL GROUP	B	CN = 70	x	25.2	=	1764
	C	CN = 80	x	24.20	=	1936
				49.40	=	3700
Composite CN =					74.9	<u>75</u>

FIG. 1.5.1.1



REPRINTED WITH PERMISSION FROM "DATA BOOK FOR CIVIL ENGINEERS" VOL. I - DESIGN
2ND EDITION (1951) BY E. E. SEELYE

Fig. 1.5.1.2



Based on study by P. Z. Kirpich,
 Civil Engineering, Vol. 10, No. 6, June 1940, p. 362

TIME OF CONCENTRATION OF SMALL DRAINAGE BASINS

TABULAR HYDROGRAPH METHOD MULTIPLE RUN OPTIONS (.MOP)

234PRE <-- This File .WSD File --> 234PRE

Note: Don't input .WSD file if CN & Tc/Tt files are entered below titles.

Title: JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMENT

<-- .RCN File

Tc File:

Tt File:

Specify TCT or TCM extension in the field after
the Tc File and in the field after the Tt File.

Return Frequency (years):	2	10	25	100
24-hr Precip. (inches):	3.5	5.80	6.25	7.70
Hydrograph Files (.HYD):	234IN002	234IN010	234IN025	234IN100

SCS Distribution Type? II

Interpolate Ia/P (y/n)? Y

OUTPUT OPTIONS

* Input Data

* Peaks

* Hydrograph Summary

* Hydrographs

<Esc> Exit

<F5> Compute

TR-55 TABULAR HYDROGRAPH METHOD

Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:13:32

Watershed file: --> B:234PRE .MOP

Hydrograph file: --> B:234IN002.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMENT

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. I (in)	Runoff (in)	Ia/p input/used
1	49.90	63.0	0.50	0.00	3.50	0.66	1.34 .34

* Travel time from subarea outfall to composite watershed outfall point.

I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 49.90 acres or 0.07797 sq.mi

Peak discharge = 20 cfs

>>>> Computer Modifications of Input Parameters <<<<

Subarea Description	Input Values		Rounded Values		Ia/p	Ia/p Messages
	Tc (hr)	* Tt (hr)	Tc (hr)	* Tt (hr)	Interpolated (Yes/No)	
1	0.47	0.00	0.50	0.00	Yes	--

* Travel time from subarea outfall to composite watershed outfall point.

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE.MOP
Hydrograph file: --> B:234IN002.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMENT

>>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
1	20	12.4
Composite Watershed	20	12.4

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN002.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMENT

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
1	0	0	0	0	0	2	7	14	20
Total (cfs)	0	0	0	0	0	2	7	14	20

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
1	20	18	14	12	8	6	5	4	4
Total (cfs)	20	18	14	12	8	6	5	4	4

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
1	3	3	3	3	2	2	2	2	2
Total (cfs)	3	3	3	3	2	2	2	2	2

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
1	2	1	1	1	0
Total (cfs)	2	1	1	1	0

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN002.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMENT

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	0	14.8	3
11.1	0	14.9	3
11.2	0	15.0	3
11.3	0	15.1	3
11.4	0	15.2	3
11.5	0	15.3	3
11.6	0	15.4	3
11.7	0	15.5	3
11.8	0	15.6	3
11.9	0	15.7	3
12.0	0	15.8	3
12.1	2	15.9	3
12.2	7	16.0	3
12.3	14	16.1	3
12.4	20	16.2	3
12.5	20	16.3	3
12.6	18	16.4	3
12.7	14	16.5	3
12.8	12	16.6	3
12.9	10	16.7	3
13.0	8	16.8	3
13.1	7	16.9	3
13.2	6	17.0	3
13.3	5	17.1	3
13.4	5	17.2	3
13.5	5	17.3	3
13.6	4	17.4	3
13.7	4	17.5	3
13.8	4	17.6	3
13.9	3	17.7	3
14.0	3	17.8	3
14.1	3	17.9	3
14.2	3	18.0	3
14.3	3	18.1	3
14.4	3	18.2	3
14.5	3	18.3	3
14.6	3	18.4	3
14.7	3	18.5	3

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:13:32

Watershed file: --> B:234PRE .MOP

Hydrograph file: --> B:234IN002.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMENT

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
18.6	1	22.4	1
18.7	1	22.5	1
18.8	1	22.6	1
18.9	1	22.7	1
19.0	1	22.8	1
19.1	1	22.9	1
19.2	1	23.0	1
19.3	1	23.1	1
19.4	1	23.2	1
19.5	1	23.3	1
19.6	1	23.4	1
19.7	1	23.5	1
19.8	1	23.6	1
19.9	1	23.7	1
20.0	1	23.8	1
20.1	1	23.9	1
20.2	1	24.0	1
20.3	1	24.1	0
20.4	1	24.2	0
20.5	1	24.3	0
20.6	1	24.4	0
20.7	1	24.5	0
20.8	1	24.6	0
20.9	1	24.7	0
21.0	1	24.8	0
21.1	1	24.9	0
21.2	1	25.0	0
21.3	1	25.1	0
21.4	1	25.2	0
21.5	1	25.3	0
21.6	1	25.4	0
21.7	1	25.5	0
21.8	1	25.6	0
21.9	1	25.7	0
22.0	1	25.8	0
22.1	1	25.9	0
22.2	1		
22.3	1		

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:13:32

Watershed file: --> B:234PRE .MOP

Hydrograph file: --> B:234IN010.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMENT

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. I (in)	Runoff (in)	Ia/p input/used
1	49.90	<u>63.0</u>	0.50	0.00	5.80	1	2.04 1.2 .20

* Travel time from subarea outfall to composite watershed outfall point.

1 -- Subarea where user specified interpolation between Ia/p tables.

Total area = 49.90 acres or 0.07797 sq.mi

Peak discharge = 77 cfs

>>>> Computer Modifications of Input Parameters <<<<

Subarea Description	Input Values		Rounded Values		Ia/p Interpolated	Ia/p Messages
	Tc (hr)	* Tt (hr)	Tc (hr)	* Tt (hr)	(Yes/No)	
1	0.47	0.00	0.50	0.00	Yes	--

* Travel time from subarea outfall to composite watershed outfall point.

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234INO10.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMENT

>>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
1	77	12.4
Composite Watershed	77	12.4

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:13:32

Watershed file: --> B:234PRE .MOP

Hydrograph file: --> B:234IN010.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMENT

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
1	1	2	3	5	8	16	37	62	77
Total (cfs)	1	2	3	5	8	16	37	62	77

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
1	75	62	47	37	24	17	13	11	10
Total (cfs)	75	62	47	37	24	17	13	11	10

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
1	9	8	7	6	6	5	5	4	4
Total (cfs)	9	8	7	6	6	5	5	4	4

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	24.0 hr
1	4	3	3	2	0
Total (cfs)	4	3	3	2	0

TR-55 TABULAR HYDROGRAPH METHOD
 Type II. Distribution
 (24 hr. Duration Storm)

Executed: 10-20-1994 18:13:32

Watershed file: --> B:234PRE .MOP

Hydrograph file: --> B:234INO10.HYD

JOINT BMP
 TUTTERS NECK NORTH
 KINGSMILL VILLAGE
 PREDEVELOPMENT

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	1	14.8	6
11.1	1	14.9	6
11.2	2	15.0	6
11.3	2	15.1	6
11.4	2	15.2	6
11.5	3	15.3	6
11.6	3	15.4	6
11.7	4	15.5	6
11.8	4	15.6	6
11.9	5	15.7	6
12.0	8	15.8	5
12.1	18	15.9	5
12.2	37	16.0	5
12.3	62	16.1	5
12.4	77	16.2	5
12.5	75	16.3	5
12.6	62	16.4	5
12.7	47	16.5	5
12.8	37	16.6	5
12.9	30	16.7	5
13.0	24	16.8	4
13.1	20	16.9	4
13.2	17	17.0	4
13.3	15	17.1	4
13.4	13	17.2	4
13.5	12	17.3	4
13.6	11	17.4	4
13.7	10	17.5	4
13.8	10	17.6	4
13.9	9	17.7	4
14.0	9	17.8	4
14.1	9	17.9	4
14.2	8	18.0	4
14.3	8	18.1	4
14.4	8	18.2	4
14.5	7	18.3	4
14.6	7	18.4	4
14.7	7	18.5	4

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN010.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMENT

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
18.6	3	22.4	2
18.7	3	22.5	2
18.8	3	22.6	2
18.9	3	22.7	2
19.0	3	22.8	2
19.1	3	22.9	2
19.2	3	23.0	2
19.3	3	23.1	1
19.4	3	23.2	1
19.5	3	23.3	1
19.6	3	23.4	1
19.7	3	23.5	1
19.8	3	23.6	1
19.9	3	23.7	1
20.0	3	23.8	1
20.1	3	23.9	1
20.2	3	24.0	1
20.3	3	24.1	1
20.4	3	24.2	1
20.5	3	24.3	1
20.6	3	24.4	1
20.7	3	24.5	1
20.8	3	24.6	1
20.9	3	24.7	1
21.0	3	24.8	1
21.1	2	24.9	1
21.2	2	25.0	1
21.3	2	25.1	0
21.4	2	25.2	0
21.5	2	25.3	0
21.6	2	25.4	0
21.7	2	25.5	0
21.8	2	25.6	0
21.9	2	25.7	0
22.0	2	25.8	0
22.1	2	25.9	0
22.2	2		
22.3	2		

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN025.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMENT

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. I (in)	Runoff (in)	Ia/p input/used
1	49.90	63.0	0.50	0.00	6.25	2.35	1.19 .19

* Travel time from subarea outfall to composite watershed outfall point.
I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 49.90 acres or 0.07777 sq.mi
Peak discharge = 89 cfs

>>>> Computer Modifications of Input Parameters <<<<

Subarea Description	Input Values		Rounded Values		Ia/p Interpolated	Ia/p Messages
	Tc (hr)	* Tt (hr)	Tc (hr)	* Tt (hr)	(Yes/No)	
1	0.47	0.00	0.50	0.00	Yes	--

* Travel time from subarea outfall to composite watershed outfall point.

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN025.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMENT

>>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
1	89	12.4
Composite Watershed	89	12.4

TR-55 TABULAR HYDROGRAPH METHOD

Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:13:32

Watershed file: --> B:234PRE.MOP

Hydrograph file: --> B:234IN025.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMENT

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
1	2	2	3	6	10	22	44	73	89
Total (cfs)	2	2	3	6	10	22	44	73	89

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
1	87	72	55	42	27	19	15	13	11
Total (cfs)	87	72	55	42	27	19	15	13	11

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
1	10	9	8	7	6	6	5	5	4
Total (cfs)	10	9	8	7	6	6	5	5	4

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
1	4	4	3	3	0
Total (cfs)	4	4	3	3	0

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:13:32

Watershed file: --> B:234PRE .MOP

Hydrograph file: --> B:234IN025.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMENT

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	2	14.8	7
11.1	2	14.9	7
11.2	2	15.0	7
11.3	2	15.1	7
11.4	2	15.2	7
11.5	3	15.3	6
11.6	3	15.4	6
11.7	4	15.5	6
11.8	5	15.6	6
11.9	6	15.7	6
12.0	10	15.8	6
12.1	22	15.9	6
12.2	44	16.0	6
12.3	73	16.1	6
12.4	89	16.2	6
12.5	87	16.3	5
12.6	72	16.4	5
12.7	55	16.5	5
12.8	42	16.6	5
12.9	34	16.7	5
13.0	27	16.8	5
13.1	23	16.9	5
13.2	19	17.0	5
13.3	17	17.1	5
13.4	15	17.2	5
13.5	14	17.3	4
13.6	13	17.4	4
13.7	12	17.5	4
13.8	11	17.6	4
13.9	10	17.7	4
14.0	10	17.8	4
14.1	10	17.9	4
14.2	9	18.0	4
14.3	9	18.1	4
14.4	9	18.2	4
14.5	8	18.3	4
14.6	8	18.4	4
14.7	8	18.5	4

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:13:32

Watershed file: --> B:234PRE .MOP

Hydrograph file: --> B:234IN025.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMENT

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
18.6	4	22.4	0
18.7	4	22.5	0
18.8	4	22.6	0
18.9	4	22.7	2
19.0	4	22.8	2
19.1	4	22.9	2
19.2	4	23.0	2
19.3	4	23.1	2
19.4	4	23.2	2
19.5	4	23.3	2
19.6	3	23.4	2
19.7	3	23.5	2
19.8	3	23.6	2
19.9	3	23.7	2
20.0	3	23.8	2
20.1	3	23.9	2
20.2	3	24.0	2
20.3	3	24.1	1
20.4	3	24.2	1
20.5	3	24.3	1
20.6	3	24.4	1
20.7	3	24.5	1
20.8	3	24.6	1
20.9	3	24.7	1
21.0	3	24.8	1
21.1	3	24.9	1
21.2	3	25.0	1
21.3	3	25.1	1
21.4	3	25.2	1
21.5	3	25.3	1
21.6	3	25.4	0
21.7	3	25.5	0
21.8	3	25.6	0
21.9	3	25.7	0
22.0	3	25.8	0
22.1	3	25.9	0
22.2	3		

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE.MOF
Hydrograph file: --> B:234IN100.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMENT

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. I (in)	Runoff (in)	Ia/p input/used
1	49.90	63.0	0.50	0.00	7.70	3.43	1.15 .15

* Travel time from subarea outfall to composite watershed outfall point.

I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 49.90 acres or 0.07797 sq.mi

Peak discharge = 135 cfs

>>>> Computer Modifications of Input Parameters <<<<

Subarea Description	Input Values		Rounded Values		Ia/p	Ia/p Messages
	Tc (hr)	* Tt (hr)	Tc (hr)	* Tt (hr)	Interpolated (Yes/No)	
1	0.47	0.00	0.50	0.00	Yes	--

* Travel time from subarea outfall to composite watershed outfall point.

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:13:32
Watershed file: --> B:234PRE .MOP
Hydrograph file: --> B:234IN100.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMENT

>>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
1	135	12.4
Composite Watershed	135	12.4

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:13:32

Watershed file: --> B:234PRE .MOP

Hydrograph file: --> B:234IN100.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMENT

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
1	3	5	6	11	19	38	72	115	135
Total (cfs)	3	5	6	11	19	38	72	115	135

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
1	131	106	80	61	39	27	21	18	15
Total (cfs)	131	106	80	61	39	27	21	18	15

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
1	14	12	11	9	9	8	7	6	6
Total (cfs)	14	12	11	9	9	8	7	6	6

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	24.0 hr
1	6	5	4	4	0
Total (cfs)	6	5	4	4	0

TR-55 TABULAR HYDROGRAPH METHOD
 Type II. Distribution
 (24 hr. Duration Storm)

Executed: 10-20-1994 18:13:32

Watershed file: --> B:234PRE.MOF

Hydrograph file: --> B:234IN100.HYD

JOINT BMP
 TUTTERS NECK NORTH
 KINGSMILL VILLAGE
 PREDEVELOPMENT

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	3	14.8	10
11.1	4	14.9	9
11.2	4	15.0	9
11.3	5	15.1	9
11.4	5	15.2	9
11.5	6	15.3	9
11.6	6	15.4	9
11.7	8	15.5	9
11.8	9	15.6	9
11.9	11	15.7	9
12.0	19	15.8	8
12.1	38	15.9	8
12.2	72	16.0	8
12.3	115	16.1	8
12.4	135	16.2	8
12.5	131	16.3	7
12.6	106	16.4	7
12.7	80	16.5	7
12.8	61	16.6	7
12.9	50	16.7	7
13.0	39	16.8	6
13.1	33	16.9	6
13.2	27	17.0	6
13.3	24	17.1	6
13.4	21	17.2	6
13.5	20	17.3	6
13.6	18	17.4	6
13.7	16	17.5	6
13.8	15	17.6	6
13.9	14	17.7	6
14.0	14	17.8	6
14.1	13	17.9	6
14.2	13	18.0	6
14.3	12	18.1	6
14.4	12	18.2	6
14.5	11	18.3	6
14.6	11	18.4	6
14.7	10	18.5	6

TR-55 TABULAR HYDROGRAPH METHOD
Type II: Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:13:32

Watershed file: --> B:234PRE .MOP

Hydrograph file: --> B:234IN100.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
PREDEVELOPMENT

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
18.6	5	22.4	4
18.7	5	22.5	4
18.8	5	22.6	3
18.9	5	22.7	3
19.0	5	22.8	3
19.1	5	22.9	3
19.2	5	23.0	3
19.3	5	23.1	3
19.4	5	23.2	3
19.5	5	23.3	3
19.6	4	23.4	3
19.7	4	23.5	3
19.8	4	23.6	2
19.9	4	23.7	2
20.0	4	23.8	2
20.1	4	23.9	2
20.2	4	24.0	2
20.3	4	24.1	2
20.4	4	24.2	2
20.5	4	24.3	2
20.6	4	24.4	2
20.7	4	24.5	2
20.8	4	24.6	1
20.9	4	24.7	1
21.0	4	24.8	1
21.1	4	24.9	1
21.2	4	25.0	1
21.3	4	25.1	1
21.4	4	25.2	1
21.5	4	25.3	1
21.6	4	25.4	1
21.7	4	25.5	1
21.8	4	25.6	0
21.9	4	25.7	0
22.0	4	25.8	0
22.1	4	25.9	0
22.2	4		
22.3	4		

TABULAR HYDROGRAPH METHOD MULTIPLE RUN OPTIONS (.MOP)

234POST <-- This File .WSD File --> 234POST

Note: Don't input .WSD file if CN & Tc/Tt files are entered below titles.

Title: JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

<--.RCN File

Tc File:

Tt File:

Specify TCT or TCM extension in the field after
the Tc File and in the field after the Tt File.

Return Frequency (years):	2	10	25	100	1
24-hr Precip. (inches):	3.5	5.80	6.25	7.70	2.5
Hydrograph Files (.HYD):	POSIN002	POSIN010	POSIN025	POSIN100	

SCS Distribution Type? II
Interpolate Ia/P (y/n)? Y

OUTPUT OPTIONS

* Input Data * Peaks * Hydrograph Summary * Hydrographs

<Esc> Exit

<F5> Compute

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST.MOP
Hydrograph file: --> B:POSIN002.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. I (in)	Runoff (in)	Ia/p input/used
1	49.90	<u>75.0</u>	0.20	0.00	3.50	1	1.30 1.19 .19

* Travel time from subarea outfall to composite watershed outfall point.

I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 49.90 acres or 0.07797 sq.mi
Peak discharge = 64 cfs

>>>> Computer Modifications of Input Parameters <<<<

Subarea Description	Input Values		Rounded Values		Ia/p	
	Tc (hr)	* Tt (hr)	Tc (hr)	* Tt (hr)	Interpolated (Yes/No)	Ia/p Messages
1	0.25	0.00	0.20	0.00	Yes	--

* Travel time from subarea outfall to composite watershed outfall point.

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:31:25

Watershed file: --> B:234POST.MOP

Hydrograph file: --> B:PDSIN002.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

>>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
1	64	12.3
Composite Watershed	64	12.3

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST.MQP
Hydrograph file: --> B:POSIN002.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
1	1	2	2	7	16	36	62	64	46
Total (cfs)	1	2	2	7	16	36	62	64	46

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
1	30	21	16	13	9	8	7	6	5
Total (cfs)	30	21	16	13	9	8	7	6	5

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
1	5	4	4	4	3	3	3	3	2
Total (cfs)	5	4	4	4	3	3	3	3	2

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
1	2	2	2	2	0
Total (cfs)	2	2	2	2	0

TR-55 TABULAR HYDROGRAPH METHOD
 Type II. Distribution
 (24 hr. Duration Storm)

Executed: 10-20-1994 18:31:25

Watershed file: --> B:234POST .MOP

Hydrograph file: --> B:POSIN002.HYD

JOINT BMP
 TUTTERS NECK NORTH
 KINGSMILL VILLAGE
 POST DEVELOPMENT INFLOW

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	1	14.8	4
11.1	1	14.9	4
11.2	2	15.0	4
11.3	2	15.1	4
11.4	2	15.2	4
11.5	2	15.3	3
11.6	2	15.4	3
11.7	4	15.5	3
11.8	5	15.6	3
11.9	7	15.7	3
12.0	16	15.8	3
12.1	36	15.9	3
12.2	62	16.0	3
12.3	64	16.1	3
12.4	46	16.2	3
12.5	30	16.3	3
12.6	21	16.4	3
12.7	16	16.5	3
12.8	13	16.6	3
12.9	11	16.7	3
13.0	9	16.8	3
13.1	8	16.9	3
13.2	8	17.0	3
13.3	7	17.1	3
13.4	7	17.2	3
13.5	7	17.3	2
13.6	6	17.4	2
13.7	5	17.5	2
13.8	5	17.6	2
13.9	5	17.7	2
14.0	5	17.8	2
14.1	5	17.9	2
14.2	4	18.0	2
14.3	4	18.1	2
14.4	4	18.2	2
14.5	4	18.3	2
14.6	4	18.4	2
14.7	4	18.5	2

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:31:25

Watershed file: --> B:234POST.MOF

Hydrograph file: --> B:POSIN002.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
18.6	2	22.4	2
18.7	2	22.5	2
18.8	2	22.6	2
18.9	2	22.7	2
19.0	2	22.8	2
19.1	2	22.9	2
19.2	2	23.0	2
19.3	2	23.1	1
19.4	2	23.2	1
19.5	2	23.3	1
19.6	2	23.4	1
19.7	2	23.5	1
19.8	2	23.6	1
19.9	2	23.7	1
20.0	2	23.8	1
20.1	2	23.9	1
20.2	2	24.0	1
20.3	2	24.1	1
20.4	2	24.2	1
20.5	2	24.3	1
20.6	2	24.4	1
20.7	2	24.5	1
20.8	2	24.6	1
20.9	2	24.7	1
21.0	2	24.8	1
21.1	2	24.9	1
21.2	2	25.0	1
21.3	2	25.1	0
21.4	2	25.2	0
21.5	2	25.3	0
21.6	2	25.4	0
21.7	2	25.5	0
21.8	2	25.6	0
21.9	2	25.7	0
22.0	2	25.8	0
22.1	2	25.9	0
22.2	2		
22.3	2		

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST.MOP
Hydrograph file: --> B:POSINO10.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. I (in)	Runoff (in)	Ia/p input/used
1	49.90	<u>75.0</u>	0.20	0.00	5.80	3.11	1.11 .11

* Travel time from subarea outfall to composite watershed outfall point.
I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 49.90 acres or 0.07797 sq.m)
Peak discharge = 163 cfs

>>>> Computer Modifications of Input Parameters <<<<

Subarea Description	Input Values		Rounded Values		Ia/p Interpolated	Ia/p Messages
	Tc (hr)	* Tt (hr)	Tc (hr)	* Tt (hr)	(Yes/No)	
1	0.25	0.00	0.30	0.00	Yes	--

* Travel time from subarea outfall to composite watershed outfall point.

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST.MOP
Hydrograph file: --> B:POSINO10.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

>>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
1	163	12.3
Composite Watershed	163	12.3

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:31:25

Watershed file: --> B:234POST.MOP

Hydrograph file: --> B:POSIN010.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
1	5	6	9	27	55	106	162	163	111
Total (cfs)	5	6	9	27	55	106	162	163	111

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
1	69	48	36	28	20	16	14	13	11
Total (cfs)	69	48	36	28	20	16	14	13	11

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
1	10	9	8	8	7	6	5	5	5
Total (cfs)	10	9	8	8	7	6	5	5	5

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
1	4	4	3	3	0
Total (cfs)	4	4	3	3	0

Return Frequency: 10 years

TR-55 TABULAR HYDROGRAPH METHOD
 Type II. Distribution
 (24 hr. Duration Storm)

Executed: 10-20-1994 18:31:25

Watershed file: --> B:234POST.MOP

Hydrograph file: --> B:POSINO10.HYD

JOINT BMP
 TUTTERS NECK NORTH
 KINGSMILL VILLAGE
 POST DEVELOPMENT INFLOW

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	5	14.8	8
11.1	5	14.9	8
11.2	6	15.0	8
11.3	6	15.1	8
11.4	7	15.2	8
11.5	8	15.3	7
11.6	9	15.4	7
11.7	15	15.5	7
11.8	21	15.6	7
11.9	27	15.7	7
12.0	55	15.8	6
12.1	106	15.9	6
12.2	162	16.0	6
12.3	163	16.1	6
12.4	111	16.2	6
12.5	69	16.3	5
12.6	48	16.4	5
12.7	36	16.5	5
12.8	28	16.6	5
12.9	24	16.7	5
13.0	20	16.8	5
13.1	18	16.9	5
13.2	16	17.0	5
13.3	15	17.1	5
13.4	14	17.2	5
13.5	14	17.3	5
13.6	13	17.4	5
13.7	12	17.5	5
13.8	11	17.6	5
13.9	10	17.7	5
14.0	10	17.8	4
14.1	10	17.9	4
14.2	9	18.0	4
14.3	9	18.1	4
14.4	9	18.2	4
14.5	8	18.3	4
14.6	8	18.4	4
14.7	8	18.5	4

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST.MDP
Hydrograph file: --> B:PDSIN010.HYDJOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
18.6	4	22.4	3
18.7	4	22.5	3
18.8	4	22.6	3
18.9	4	22.7	2
19.0	4	22.8	2
19.1	4	22.9	2
19.2	4	23.0	2
19.3	4	23.1	2
19.4	4	23.2	2
19.5	4	23.3	2
19.6	3	23.4	2
19.7	3	23.5	2
19.8	3	23.6	2
19.9	3	23.7	2
20.0	3	23.8	2
20.1	3	23.9	2
20.2	3	24.0	2
20.3	3	24.1	1
20.4	3	24.2	1
20.5	3	24.3	1
20.6	3	24.4	1
20.7	3	24.5	1
20.8	3	24.6	1
20.9	3	24.7	1
21.0	3	24.8	1
21.1	3	24.9	1
21.2	3	25.0	1
21.3	3	25.1	1
21.4	3	25.2	1
21.5	3	25.3	1
21.6	3	25.4	0
21.7	3	25.5	0
21.8	3	25.6	0
21.9	3	25.7	0
22.0	3	25.8	0
22.1	3	25.9	0
22.2	3		
22.3	3		

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST.MOP
Hydrograph file: --> B:POSIN025.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. I (in)	Runoff (in)	Ia/p input/used
1	49.90	75.0	0.30	0.00	6.25	3.50	1.11 .11

* Travel time from subarea outfall to composite watershed outfall point.
I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 49.90 acres or 0.07797 sq.mi
Peak discharge = 183 cfs

>>>> Computer Modifications of Input Parameters <<<<

Subarea Description	Input Values		Rounded Values		Ia/p Interpolated	Ia/p Messages
	Tc (hr)	* Tt (hr)	Tc (hr)	* Tt (hr)	(Yes/No)	
1	0.25	0.00	0.30	0.00	Yes	--

* Travel time from subarea outfall to composite watershed outfall point.

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST.MOP
Hydrograph file: --> B:POSIN025.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

>>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
1	183	12.3
Composite Watershed	183	12.3

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:31:25

Watershed file: --> B:234POST.MOF

Hydrograph file: --> B:POSINO25.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
1	5	7	11	31	62	119	182	193	125
Total (cfs)	5	7	11	31	62	119	182	193	125

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
1	78	54	40	31	22	18	16	14	13
Total (cfs)	78	54	40	31	22	18	16	14	13

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
1	12	10	9	9	8	7	6	6	5
Total (cfs)	12	10	9	9	8	7	6	6	5

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
1	5	4	4	3	0
Total (cfs)	5	4	4	3	0

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:31:25

Watershed file: --> B:234POST.MQP

Hydrograph file: --> B:POSIN025.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	5	14.6	9
11.1	6	14.7	9
11.2	6	15.0	9
11.3	7	15.1	9
11.4	8	15.2	9
11.5	10	15.3	8
11.6	11	15.4	8
11.7	18	15.5	8
11.8	24	15.6	8
11.9	31	15.7	8
12.0	62	15.8	7
12.1	119	15.9	7
12.2	182	16.0	7
12.3	183	16.1	7
12.4	125	16.2	7
12.5	78	16.3	6
12.6	54	16.4	6
12.7	40	16.5	6
12.8	31	16.6	6
12.9	26	16.7	6
13.0	22	16.8	6
13.1	20	16.9	6
13.2	18	17.0	6
13.3	17	17.1	6
13.4	16	17.2	6
13.5	15	17.3	5
13.6	14	17.4	5
13.7	13	17.5	5
13.8	13	17.6	5
13.9	12	17.7	5
14.0	12	17.8	5
14.1	11	17.9	5
14.2	11	18.0	5
14.3	10	18.1	5
14.4	10	18.2	5
14.5	9	18.3	5
14.6	9	18.4	5
14.7	9	18.5	5

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST.MOP
Hydrograph file: --> B:POSINO25.HYDJOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
18.6	4	22.4	3
18.7	4	22.5	3
18.8	4	22.6	3
18.9	4	22.7	2
19.0	4	22.8	2
19.1	4	22.9	2
19.2	4	23.0	2
19.3	4	23.1	2
19.4	4	23.2	2
19.5	4	23.3	2
19.6	4	23.4	2
19.7	4	23.5	2
19.8	4	23.6	2
19.9	4	23.7	2
20.0	4	23.8	2
20.1	4	23.9	2
20.2	4	24.0	2
20.3	4	24.1	1
20.4	4	24.2	1
20.5	4	24.3	1
20.6	4	24.4	1
20.7	4	24.5	1
20.8	4	24.6	1
20.9	4	24.7	1
21.0	4	24.8	1
21.1	3	24.9	1
21.2	3	25.0	1
21.3	3	25.1	1
21.4	3	25.2	1
21.5	3	25.3	1
21.6	3	25.4	0
21.7	3	25.5	0
21.8	3	25.6	0
21.9	3	25.7	0
22.0	3	25.8	0
22.1	3	25.9	0
22.2	3		
22.3	3		

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1974 18:31:25
Watershed file: --> B:234POST .MOP
Hydrograph file: --> B:POSIN100.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. I (in)	Runoff (in)	Ia/p input/used
1	49.90	75.0	0.30	0.00	7.70	4.77	1.09 .10

* Travel time from subarea outfall to composite watershed outfall point.
I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 49.90 acres or 0.07797 sq.mi
Peak discharge = 251 cfs

>>>> Computer Modifications of Input Parameters <<<<

Subarea Description	Input Values		Rounded Values		Ia/p Interpolated	Ia/p Messages
	Tc (hr)	* Tt (hr)	Tc (hr)	* Tt (hr)	(Yes/No)	
1	0.25	0.00	0.30	0.00	No	Computed Ia/p < .1

* Travel time from subarea outfall to composite watershed outfall point.

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:31:25

Watershed file: --> B:234POST.MOF

Hydrograph file: --> B:POSIN100.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

>>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
1	251	12.2
Composite Watershed	251	12.2

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)

Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST.MOF
Hydrograph file: --> B:POSIN100.HYD

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.2 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
1	7	10	15	44	87	166	251	251	171
Total (cfs)	7	10	15	44	87	166	251	251	171

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
1	105	73	54	42	30	25	21	19	17
Total (cfs)	105	73	54	42	30	25	21	19	17

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
1	16	14	12	12	10	9	8	7	7
Total (cfs)	16	14	12	12	10	9	8	7	7

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
1	7	6	5	4	0
Total (cfs)	7	6	5	4	0

TR-55 TABULAR HYDROGRAPH METHOD
 Type II. Distribution
 (24 hr. Duration Storm)

Executed: 10-20-1994 18:31:25

Watershed file: --> B:234POST.MOP

Hydrograph file: --> B:POSIN100.HYD

JOINT BMP
 TUTTERS NECK NORTH
 KINGSMILL VILLAGE
 POST DEVELOPMENT INFLOW

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	7	14.8	12
11.1	8	14.9	12
11.2	9	15.0	12
11.3	10	15.1	12
11.4	12	15.2	11
11.5	13	15.3	11
11.6	15	15.4	10
11.7	25	15.5	10
11.8	34	15.6	10
11.9	44	15.7	10
12.0	87	15.8	9
12.1	166	15.9	9
12.2	251	16.0	9
12.3	251	16.1	9
12.4	171	16.2	9
12.5	105	16.3	8
12.6	73	16.4	8
12.7	54	16.5	8
12.8	42	16.6	8
12.9	36	16.7	8
13.0	30	16.8	7
13.1	27	16.9	7
13.2	25	17.0	7
13.3	23	17.1	7
13.4	21	17.2	7
13.5	20	17.3	7
13.6	19	17.4	7
13.7	18	17.5	7
13.8	17	17.6	7
13.9	17	17.7	7
14.0	16	17.8	7
14.1	15	17.9	7
14.2	15	18.0	7
14.3	14	18.1	7
14.4	13	18.2	7
14.5	13	18.3	7
14.6	12	18.4	7
14.7	12	18.5	7

TR-55 TABULAR HYDROGRAPH METHOD
Type II. Distribution
(24 hr. Duration Storm)Executed: 10-20-1994 18:31:25
Watershed file: --> B:234POST.MOP
Hydrograph file: --> B:POSIN100.HYDJOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
POST DEVELOPMENT INFLOW

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
18.6	6	22.4	4
18.7	6	22.5	4
18.8	6	22.6	3
18.9	6	22.7	3
19.0	6	22.8	3
19.1	6	22.9	3
19.2	6	23.0	3
19.3	6	23.1	3
19.4	6	23.2	3
19.5	6	23.3	3
19.6	5	23.4	3
19.7	5	23.5	3
19.8	5	23.6	2
19.9	5	23.7	2
20.0	5	23.8	2
20.1	5	23.9	2
20.2	5	24.0	2
20.3	5	24.1	2
20.4	5	24.2	2
20.5	5	24.3	2
20.6	5	24.4	2
20.7	5	24.5	2
20.8	5	24.6	1
20.9	5	24.7	1
21.0	5	24.8	1
21.1	4	24.9	1
21.2	4	25.0	1
21.3	4	25.1	1
21.4	4	25.2	1
21.5	4	25.3	1
21.6	4	25.4	1
21.7	4	25.5	1
21.8	4	25.6	0
21.9	4	25.7	0
22.0	4	25.8	0
22.1	4	25.9	0
22.2	4		
22.3	4		

MULTIPLE STORM ROUTING FOR PONDS (.MSR)

234BMP <-- This File

Title: JOINT BMP

TUTTERS NECK NORTH

KINGSMILL VILLAGE

ROUTING THRU BMP AS A SILT BASIN

Storm Comments	Return Frequency (years)	Inflow Hydrograph (.HYD)	Pond Rating Table File (.PND)	Starting W.S.Elev. (feet)	Outflow Hydrograph (.HYD)
24 HR SCS	2	POSIN002	234BMP @ 8	8	POOUT002
24 HR SCS	10	POSIN010	234BMP @ 8	8	POOUT010
24 HR SCS	25	POSIN025	234BMP @ 8	8	POOUT025
24 HR SCS	100	POSIN100	234BMP @ 8	8	POOUT100

OUTPUT OPTIONS

* Input Data

* Routing Computations

* Routing Summary

Plots

NOTE: If you are using 'Outlet Structures(.STR)' for computing your Q vs.E rating table, you must compute a PND file for use with this MSR option. If W.S. Elev. is left blank, the first elevation in PND will be used. If Outflow HYD is left blank, an outflow HYD file will not be stored.

<Esc> Exit

<F5> Compute

 *
 * JOINT BMP *
 * TUTTERS NECK NORTH *
 * KINGSMILL VILLAGE *
 * ROUTING THRU BMP AS A SILT BASIN *
 *

Inflow Hydrograph: b:POSIN002.HYD
 Rating Table file: b:234BMP .PND

-----INITIAL CONDITIONS-----
 Elevation = 8.00 ft
 Outflow = 0.00 cfs
 Storage = 2,746 cu-ft

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + O (cfs)
7.50	0.0	0	0.0	0.0
8.00	0.0	2,746	15.3	15.3
8.50	0.2	5,864	32.6	32.8
9.00	0.4	9,222	51.2	51.6
9.50	0.5	12,831	71.3	71.8
10.00	0.6	16,698	92.8	93.4
10.50	0.6	20,827	116.0	116.6
11.00	0.7	25,465	141.5	142.2
11.50	0.8	30,449	169.2	170.0
12.00	0.8	35,856	199.2	200.0
12.50	0.9	42,024	233.5	234.4
13.00	0.9	49,343	274.1	275.0
13.50	1.0	57,913	321.7	322.7
14.00	1.0	67,831	376.8	377.8
14.50	1.1	78,990	438.8	439.9
15.00	1.6	91,254	507.0	508.6
15.50	2.0	104,674	581.5	583.5
16.00	2.2	119,303	662.8	665.0
16.50	17.3	135,251	751.4	768.7
17.00	44.5	152,637	848.0	892.5
17.50	89.6	171,524	952.9	1042.5
18.00	126.6	191,972	1066.5	1193.1
18.50	173.0	214,087	1189.4	1362.4
19.00	229.0	237,977	1322.1	1551.1

Time increment (t) = 6.0 min.

Pond File: b:234BMP .PND
 Inflow Hydrograph: b:POSIN002.HYD
 Outflow Hydrograph: b:POOUT002.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	1.00	-----	15.3	15.3	0.00	8.00
666.0	1.00	2.0	17.2	17.3	0.02	8.06
672.0	2.00	3.0	20.1	20.2	0.06	8.14
678.0	2.00	4.0	23.9	24.1	0.10	8.25
684.0	2.00	4.0	27.6	27.9	0.14	8.36
690.0	2.00	4.0	31.2	31.6	0.19	8.47
696.0	2.00	4.0	34.8	35.2	0.23	8.57
702.0	4.00	6.0	40.2	40.8	0.28	8.71
708.0	5.00	9.0	48.5	49.2	0.37	8.94
714.0	7.00	12.0	59.6	60.5	0.44	9.22
720.0	16.00	23.0	81.5	82.6	0.55	9.75
726.0	36.00	52.0	132.1	133.5	0.67	10.83
732.0	62.00	98.0	228.4	230.1	0.89	12.44
738.0	64.00	126.0	352.4	354.4	1.00	13.79
744.0	46.00	110.0	459.8	462.4	1.26	14.66
750.0	30.00	76.0	532.3	535.8	1.75	15.18
756.0	21.00	51.0	579.4	583.3	2.00	15.50
762.0	16.00	37.0	612.2	616.4	2.08	15.70
768.0	13.00	29.0	636.9	641.2	2.14	15.85
774.0	11.00	24.0	656.5	660.9	2.19	15.97
780.0	9.00	20.0	668.8	676.5	3.88	16.06
786.0	8.00	17.0	675.3	685.8	5.22	16.10
792.0	8.00	16.0	679.3	691.3	6.03	16.13
798.0	8.00	16.0	682.0	695.3	6.61	16.15
804.0	7.00	15.0	683.3	697.0	6.87	16.15
810.0	7.00	14.0	683.5	697.3	6.91	16.16
816.0	6.00	13.0	682.9	696.5	6.79	16.15
822.0	6.00	12.0	681.8	694.9	6.56	16.14
828.0	5.00	11.0	680.3	692.8	6.25	16.13
834.0	5.00	10.0	678.5	690.3	5.89	16.12
840.0	5.00	10.0	677.3	688.5	5.63	16.11
846.0	5.00	10.0	676.4	687.3	5.45	16.11
852.0	4.00	9.0	675.1	685.4	5.17	16.10
858.0	4.00	8.0	673.4	683.1	4.83	16.09
864.0	4.00	8.0	672.2	681.4	4.59	16.08
870.0	4.00	8.0	671.4	680.2	4.42	16.07
876.0	4.00	8.0	670.8	679.4	4.30	16.07
882.0	4.00	8.0	670.4	678.8	4.21	16.07
888.0	4.00	8.0	670.1	678.4	4.15	16.06
894.0	4.00	8.0	669.9	678.1	4.11	16.06
900.0	4.00	8.0	669.7	677.9	4.07	16.06
906.0	4.00	8.0	669.6	677.7	4.05	16.06
912.0	4.00	8.0	669.5	677.6	4.04	16.06
918.0	3.00	7.0	668.8	676.5	3.88	16.06
924.0	3.00	6.0	667.5	674.8	3.62	16.05

EXECUTED: 10-20-1994 17:44:23

24 HR SCS

Return Freq: 2 years

Pond File: b:234BMP .PND

Inflow Hydrograph: b:POSIN002.HYD

Outflow Hydrograph: b:POOUT002.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	3.00	6.0	666.6	673.5	3.44	16.04
936.0	3.00	6.0	666.0	672.6	3.31	16.04
942.0	3.00	6.0	665.6	672.0	3.22	16.03
948.0	3.00	6.0	665.3	671.6	3.16	16.03
954.0	3.00	6.0	665.0	671.3	3.11	16.03
960.0	3.00	6.0	664.9	671.0	3.08	16.03
966.0	3.00	6.0	664.8	670.9	3.06	16.03
972.0	3.00	6.0	664.7	670.8	3.04	16.03
978.0	3.00	6.0	664.6	670.7	3.03	16.03
984.0	3.00	6.0	664.6	670.6	3.02	16.03
990.0	3.00	6.0	664.6	670.6	3.01	16.03
996.0	3.00	6.0	664.5	670.6	3.01	16.03
1002.0	3.00	6.0	664.5	670.5	3.01	16.03
1008.0	3.00	6.0	664.5	670.5	3.01	16.03
1014.0	3.00	6.0	664.5	670.5	3.00	16.03
1020.0	3.00	6.0	664.5	670.5	3.00	16.03
1026.0	3.00	6.0	664.5	670.5	3.00	16.03
1032.0	3.00	6.0	664.5	670.5	3.00	16.03
1038.0	2.00	5.0	663.8	669.5	2.86	16.02
1044.0	2.00	4.0	662.6	667.8	2.61	16.01
1050.0	2.00	4.0	661.7	666.6	2.43	16.01
1056.0	2.00	4.0	661.1	665.7	2.30	16.00
1062.0	2.00	4.0	660.7	665.1	2.22	16.00
1068.0	2.00	4.0	660.3	664.7	2.20	16.00
1074.0	2.00	4.0	659.9	664.3	2.20	16.00
1080.0	2.00	4.0	659.5	663.9	2.20	15.99
1086.0	2.00	4.0	659.1	663.5	2.20	15.99
1092.0	2.00	4.0	658.7	663.1	2.20	15.99
1098.0	2.00	4.0	658.3	662.7	2.19	15.99
1104.0	2.00	4.0	657.9	662.3	2.19	15.98
1110.0	2.00	4.0	657.5	661.9	2.19	15.98
1116.0	2.00	4.0	657.2	661.5	2.19	15.98
1122.0	2.00	4.0	656.8	661.2	2.19	15.98
1128.0	2.00	4.0	656.4	660.8	2.19	15.97
1134.0	2.00	4.0	656.0	660.4	2.19	15.97
1140.0	2.00	4.0	655.6	660.0	2.19	15.97
1146.0	2.00	4.0	655.3	659.6	2.19	15.97
1152.0	2.00	4.0	654.9	659.3	2.19	15.96
1158.0	2.00	4.0	654.5	658.9	2.19	15.96
1164.0	2.00	4.0	654.2	658.5	2.18	15.96
1170.0	2.00	4.0	653.8	658.2	2.18	15.95
1176.0	2.00	4.0	653.4	657.8	2.18	15.96
1182.0	2.00	4.0	653.1	657.4	2.18	15.95
1188.0	2.00	4.0	652.7	657.1	2.18	15.95
1194.0	2.00	4.0	652.3	656.7	2.18	15.95
1200.0	2.00	4.0	652.0	656.3	2.18	15.95

Pond File: b:234BMP .PND
 Inflow Hydrograph: b:PODSIN002.HYD
 Outflow Hydrograph: b:POOUT002.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	2.00	4.0	651.6	656.0	2.18	15.94
1212.0	2.00	4.0	651.3	655.6	2.18	15.94
1218.0	2.00	4.0	650.9	655.3	2.18	15.94
1224.0	2.00	4.0	650.6	654.9	2.18	15.94
1230.0	2.00	4.0	650.2	654.6	2.17	15.94
1236.0	2.00	4.0	649.9	654.2	2.17	15.93
1242.0	2.00	4.0	649.5	653.9	2.17	15.93
1248.0	2.00	4.0	649.2	653.5	2.17	15.93
1254.0	2.00	4.0	648.8	653.2	2.17	15.93
1260.0	2.00	4.0	648.5	652.8	2.17	15.93
1266.0	2.00	4.0	648.2	652.5	2.17	15.92
1272.0	2.00	4.0	647.8	652.2	2.17	15.92
1278.0	2.00	4.0	647.5	651.8	2.17	15.92
1284.0	2.00	4.0	647.2	651.5	2.17	15.92
1290.0	2.00	4.0	646.8	651.2	2.17	15.92
1296.0	2.00	4.0	646.5	650.8	2.17	15.91
1302.0	2.00	4.0	646.2	650.5	2.16	15.91
1308.0	2.00	4.0	645.8	650.2	2.16	15.91
1314.0	2.00	4.0	645.5	649.8	2.16	15.91
1320.0	2.00	4.0	645.2	649.5	2.16	15.91
1326.0	2.00	4.0	644.9	649.2	2.16	15.90
1332.0	2.00	4.0	644.5	648.9	2.16	15.90
1338.0	2.00	4.0	644.2	648.5	2.16	15.90
1344.0	2.00	4.0	643.9	648.2	2.16	15.90
1350.0	2.00	4.0	643.6	647.9	2.16	15.90
1356.0	2.00	4.0	643.3	647.6	2.16	15.89
1362.0	2.00	4.0	643.0	647.3	2.16	15.89
1368.0	2.00	4.0	642.7	647.0	2.16	15.89
1374.0	2.00	4.0	642.3	646.7	2.15	15.89
1380.0	2.00	4.0	642.0	646.3	2.15	15.89
1386.0	1.00	3.0	640.7	645.0	2.15	15.88
1392.0	1.00	2.0	638.4	642.7	2.15	15.86
1398.0	1.00	2.0	636.2	640.4	2.14	15.85
1404.0	1.00	2.0	633.9	638.2	2.13	15.84
1410.0	1.00	2.0	631.6	635.9	2.13	15.82
1416.0	1.00	2.0	629.4	633.6	2.12	15.81
1422.0	1.00	2.0	627.2	631.4	2.12	15.79
1428.0	1.00	2.0	624.9	629.2	2.11	15.78
1434.0	1.00	2.0	622.7	626.9	2.11	15.77
1440.0	1.00	2.0	620.5	624.7	2.10	15.75
1446.0	1.00	2.0	618.2	622.5	2.10	15.74
1452.0	1.00	2.0	616.1	620.3	2.09	15.73
1458.0	1.00	2.0	614.0	618.1	2.09	15.71
1464.0	1.00	2.0	611.8	616.0	2.08	15.70
1470.0	1.00	2.0	609.7	613.8	2.07	15.69
1476.0	1.00	2.0	607.5	611.7	2.07	15.67

EXECUTED: 10-20-1994 17:44:23

24 HR SCS

Return Freq: 2 years

Pond File: b:\234BMP .PND

Inflow Hydrograph: b:\PDSIN002.HYD

Outflow Hydrograph: b:\PDDOUT002.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	605.4	609.5	2.06	15.66
1488.0	1.00	2.0	603.3	607.4	2.06	15.65
1494.0	1.00	2.0	601.2	605.3	2.05	15.63
1500.0	0.00	1.0	598.1	602.2	2.05	15.61
1506.0	0.00	0.0	594.0	598.1	2.04	15.59
1512.0	0.00	0.0	590.0	594.0	2.03	15.56
1518.0	0.00	0.0	585.9	590.0	2.02	15.54
1524.0	0.00	0.0	581.9	585.9	2.01	15.51
1530.0	0.00	0.0	577.9	581.9	1.99	15.49
1536.0	0.00	0.0	574.0	577.9	1.97	15.46
1542.0	0.00	0.0	570.1	574.0	1.95	15.44
1548.0	0.00	0.0	566.2	570.1	1.93	15.41
1554.0	0.00	0.0	562.4	566.2	1.91	15.38

EXECUTED: 10-20-1994 17:44:23

24 HR SCS

Return Freq: 2 years

***** SUMMARY OF ROUTING COMPUTATIONS *****

Pond File: b:234BMP .PND
Inflow Hydrograph: b:POSIN002.HYD
Outflow Hydrograph: b:POOUT002.HYD

Starting Pond W.S. Elevation = 8.00 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow = 64.00 cfs
Peak Outflow = 6.91 cfs
Peak Elevation = 16.16 ft

***** Summary of Approximate Peak Storage *****

Initial Storage = 2,746 cu-ft
Peak Storage From Storm = 121,536 cu-ft

Total Storage in Pond = 124,273 cu-ft

Warning: Inflow hydrograph truncated on left side.

EXECUTED: 10-20-1994 17:46:35

24 HR SCS

Return Freq: 10 years

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*****
*                                     *
*               JOINT BMP             *
*          TUTTERS NECK NORTH         *
*          KINGSMILL VILLAGE          *
*   ROUTING THRU BMP AS A SILT BASIN *
*                                     *
*****

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Inflow Hydrograph: b:POSIN010.HYD

Rating Table file: b:234BMP .PND

----INITIAL CONDITIONS----

Elevation = 8.00 ft
 Outflow = 0.00 cfs
 Storage = 2,746 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
7.50	0.0	0
8.00	0.0	2,746
8.50	0.2	5,864
9.00	0.4	9,222
9.50	0.5	12,831
10.00	0.6	16,695
10.50	0.6	20,897
11.00	0.7	25,445
11.50	0.8	30,449
12.00	0.8	35,856
12.50	0.9	42,024
13.00	0.9	49,343
13.50	1.0	57,913
14.00	1.0	67,831
14.50	1.1	78,990
15.00	1.6	91,254
15.50	2.0	104,674
16.00	2.2	119,303
16.50	17.3	135,251
17.00	44.5	152,637
17.50	89.6	171,524
18.00	126.6	191,972
18.50	173.0	214,087
19.00	229.0	237,977

INTERMEDIATE ROUTING
COMPUTATIONS

2S/t (cfs)	2S/t + 0 (cfs)
0.0	0.0
15.3	15.3
32.6	32.8
51.2	51.6
71.3	71.8
92.8	93.4
116.0	116.6
141.5	142.2
169.2	170.0
199.2	200.0
233.5	234.4
274.1	275.0
321.7	322.7
376.8	377.8
438.8	439.9
507.0	508.6
581.5	583.5
662.8	665.0
751.4	768.7
848.0	892.5
952.9	1042.5
1066.5	1193.1
1189.4	1362.4
1322.1	1551.1

Time increment (t) = 6.0 min.

EXECUTED: 10-20-1994 17:46:35

24 HR SCS

Return Freq: 10 years

Pond File: b:234BMP .PND

Inflow Hydrograph: b:POSINO10.HYD

Outflow Hydrograph: b:PODOUTO10.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	5.00	-----	15.3	15.3	0.00	8.00
666.0	5.00	10.0	25.0	25.3	0.11	8.29
672.0	6.00	11.0	35.6	36.0	0.23	8.59
678.0	6.00	12.0	46.8	47.6	0.36	8.89
684.0	7.00	13.0	59.0	59.8	0.44	9.20
690.0	8.00	15.0	72.9	74.0	0.51	9.55
696.0	9.00	17.0	88.8	89.9	0.58	9.92
702.0	15.00	24.0	111.6	112.8	0.60	10.42
708.0	21.00	36.0	146.1	147.6	0.72	11.10
714.0	27.00	48.0	192.5	194.1	0.80	11.90
720.0	55.00	82.0	272.7	274.5	0.90	12.99
726.0	106.00	161.0	431.6	433.7	1.09	14.45
732.0	162.00	268.0	685.1	699.6	7.23	16.17
738.0	163.00	325.0	850.4	1010.1	79.85	17.39
744.0	111.00	274.0	905.0	1124.4	109.71	17.77
750.0	69.00	180.0	884.9	1085.0	100.03	17.64
756.0	48.00	117.0	847.1	1001.9	77.39	17.36
762.0	36.00	84.0	818.9	931.1	56.11	17.13
768.0	28.00	64.0	798.1	882.9	42.39	16.96
774.0	24.00	52.0	779.7	850.1	35.19	16.83
780.0	20.00	44.0	764.9	823.7	29.39	16.72
786.0	18.00	38.0	753.3	802.9	24.83	16.64
792.0	16.00	34.0	744.5	787.3	21.39	16.58
798.0	15.00	31.0	737.9	775.5	18.80	16.53
804.0	14.00	29.0	732.8	766.9	17.04	16.49
810.0	14.00	28.0	728.5	760.8	16.16	16.46
816.0	13.00	27.0	724.8	755.5	15.38	16.44
822.0	12.00	25.0	720.7	749.8	14.54	16.41
828.0	11.00	23.0	716.4	743.7	13.66	16.38
834.0	10.00	21.0	711.9	737.4	12.74	16.35
840.0	10.00	20.0	708.0	731.9	11.94	16.32
846.0	10.00	20.0	705.3	728.0	11.38	16.30
852.0	9.00	19.0	702.6	724.3	10.83	16.29
858.0	9.00	18.0	700.0	720.6	10.30	16.27
864.0	9.00	18.0	698.2	718.0	9.92	16.26
870.0	8.00	17.0	696.2	715.2	9.51	16.24
876.0	8.00	16.0	694.0	712.2	9.07	16.23
882.0	8.00	16.0	692.5	710.0	8.76	16.22
888.0	8.00	16.0	691.4	708.5	8.54	16.21
894.0	8.00	16.0	690.7	707.4	8.38	16.20
900.0	8.00	16.0	690.1	706.7	8.27	16.20
906.0	8.00	16.0	689.8	706.1	8.19	16.20
912.0	8.00	16.0	689.5	705.8	8.14	16.20
918.0	7.00	15.0	688.6	704.5	7.95	16.19
924.0	7.00	14.0	687.2	702.6	7.67	16.18

EXECUTED: 10-20-1994 17:46:35

24 HR SCS

Return Freq: 10 years

Pond File: b:234BMP .PND

Inflow Hydrograph: b:POSINO10.HYD

Outflow Hydrograph: b:POOUTO10.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	7.00	14.0	686.3	701.2	7.48	16.17
936.0	7.00	14.0	685.6	700.3	7.34	16.17
942.0	7.00	14.0	685.1	699.6	7.24	16.17
948.0	6.00	13.0	684.1	698.1	7.02	16.16
954.0	6.00	12.0	682.6	696.1	6.73	16.15
960.0	6.00	12.0	681.6	694.6	6.51	16.14
966.0	6.00	12.0	680.9	693.6	6.36	16.14
972.0	6.00	12.0	680.3	692.9	6.26	16.13
978.0	5.00	11.0	679.3	691.3	6.04	16.13
984.0	5.00	10.0	677.8	689.3	5.74	16.12
990.0	5.00	10.0	676.8	687.8	5.52	16.11
996.0	5.00	10.0	676.0	686.8	5.37	16.10
1002.0	5.00	10.0	675.5	686.0	5.26	16.10
1008.0	5.00	10.0	675.1	685.5	5.19	16.10
1014.0	5.00	10.0	674.9	685.1	5.13	16.10
1020.0	5.00	10.0	674.7	684.9	5.09	16.10
1026.0	5.00	10.0	674.5	684.7	5.07	16.09
1032.0	5.00	10.0	674.5	684.5	5.05	16.09
1038.0	5.00	10.0	674.4	684.5	5.03	16.09
1044.0	5.00	10.0	674.2	684.4	5.02	16.09
1050.0	5.00	10.0	674.3	684.3	5.02	16.09
1056.0	5.00	10.0	674.3	684.3	5.01	16.09
1062.0	5.00	10.0	674.3	684.3	5.01	16.09
1068.0	4.00	9.0	673.5	683.3	4.86	16.09
1074.0	4.00	8.0	672.3	681.5	4.61	16.08
1080.0	4.00	8.0	671.5	680.3	4.43	16.07
1086.0	4.00	8.0	670.8	679.5	4.31	16.07
1092.0	4.00	8.0	670.4	678.2	4.22	16.07
1098.0	4.00	8.0	670.1	678.4	4.15	16.06
1104.0	4.00	8.0	669.9	678.1	4.11	16.06
1110.0	4.00	8.0	669.7	677.9	4.08	16.06
1116.0	4.00	8.0	669.6	677.7	4.05	16.06
1122.0	4.00	8.0	669.5	677.6	4.04	16.06
1128.0	4.00	8.0	669.5	677.5	4.03	16.06
1134.0	4.00	8.0	669.5	677.5	4.02	16.06
1140.0	4.00	8.0	669.4	677.5	4.01	16.06
1146.0	4.00	8.0	669.4	677.4	4.01	16.06
1152.0	4.00	8.0	669.4	677.4	4.01	16.06
1158.0	4.00	8.0	669.4	677.4	4.00	16.06
1164.0	4.00	8.0	669.4	677.4	4.00	16.06
1170.0	4.00	8.0	669.4	677.4	4.00	16.06
1176.0	3.00	7.0	668.7	676.4	3.86	16.05
1182.0	3.00	6.0	667.4	674.7	3.61	16.05
1188.0	3.00	6.0	666.6	673.4	3.43	16.04
1194.0	3.00	6.0	666.0	672.6	3.30	16.04
1200.0	3.00	6.0	665.5	672.0	3.22	16.03

EXECUTED: 10-20-1994 17:46:35

24 HR SCS

Return Freq: 10 years

Pond File: b:234BMF .FND
 Inflow Hydrograph: b:PDSIN010.HYD
 Outflow Hydrograph: b:PDOOUT010.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	3.00	6.0	665.2	671.5	3.15	16.03
1212.0	3.00	6.0	665.0	671.2	3.11	16.03
1218.0	3.00	6.0	664.9	671.0	3.08	16.03
1224.0	3.00	6.0	664.8	670.9	3.05	16.03
1230.0	3.00	6.0	664.7	670.8	3.04	16.03
1236.0	3.00	6.0	664.6	670.7	3.03	16.03
1242.0	3.00	6.0	664.6	670.6	3.02	16.03
1248.0	3.00	6.0	664.6	670.6	3.01	16.03
1254.0	3.00	6.0	664.5	670.6	3.01	16.03
1260.0	3.00	6.0	664.5	670.5	3.01	16.03
1266.0	3.00	6.0	664.5	670.5	3.00	16.03
1272.0	3.00	6.0	664.5	670.5	3.00	16.03
1278.0	3.00	6.0	664.5	670.5	3.00	16.03
1284.0	3.00	6.0	664.5	670.5	3.00	16.03
1290.0	3.00	6.0	664.5	670.5	3.00	16.03
1296.0	3.00	6.0	664.5	670.5	3.00	16.03
1302.0	3.00	6.0	664.5	670.5	3.00	16.03
1308.0	3.00	6.0	664.5	670.5	3.00	16.03
1314.0	3.00	6.0	664.5	670.5	3.00	16.03
1320.0	3.00	6.0	664.5	670.5	3.00	16.03
1326.0	3.00	6.0	664.5	670.5	3.00	16.03
1332.0	3.00	6.0	664.5	670.5	3.00	16.03
1338.0	3.00	6.0	664.5	670.5	3.00	16.03
1344.0	3.00	6.0	664.5	670.5	3.00	16.03
1350.0	3.00	6.0	664.5	670.5	3.00	16.03
1356.0	3.00	6.0	664.5	670.5	3.00	16.03
1362.0	2.00	5.0	663.8	669.5	2.85	16.02
1368.0	2.00	4.0	662.6	667.8	2.61	16.01
1374.0	2.00	4.0	661.7	666.6	2.43	16.01
1380.0	2.00	4.0	661.1	665.7	2.30	16.00
1386.0	2.00	4.0	660.7	665.1	2.22	16.00
1392.0	2.00	4.0	660.3	664.7	2.20	16.00
1398.0	2.00	4.0	659.9	664.3	2.20	16.00
1404.0	2.00	4.0	659.5	663.9	2.20	15.99
1410.0	2.00	4.0	659.1	663.5	2.20	15.99
1416.0	2.00	4.0	658.7	663.1	2.20	15.99
1422.0	2.00	4.0	658.3	662.7	2.19	15.99
1428.0	2.00	4.0	657.9	662.3	2.19	15.98
1434.0	2.00	4.0	657.5	661.9	2.19	15.98
1440.0	2.00	4.0	657.2	661.5	2.19	15.98
1446.0	1.00	3.0	655.8	660.2	2.19	15.97
1452.0	1.00	2.0	653.4	657.8	2.18	15.96
1458.0	1.00	2.0	651.1	655.4	2.18	15.94
1464.0	1.00	2.0	648.7	653.1	2.17	15.93
1470.0	1.00	2.0	646.4	650.7	2.16	15.91
1476.0	1.00	2.0	644.1	648.4	2.16	15.90

EXECUTED: 10-20-1994 17:46:35

24 HR SCS

Return Freq: 10 years

Pond File: b:2348MP .PND

Inflow Hydrograph: b:POSIN010.HYD

Outflow Hydrograph: b:PDDOUT010.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	641.8	646.1	2.15	15.88
1488.0	1.00	2.0	639.5	643.8	2.15	15.87
1494.0	1.00	2.0	637.2	641.5	2.14	15.86
1500.0	1.00	2.0	634.9	639.2	2.14	15.84
1506.0	1.00	2.0	632.6	636.9	2.13	15.83
1512.0	1.00	2.0	630.4	634.6	2.13	15.81
1518.0	1.00	2.0	628.2	632.4	2.12	15.80
1524.0	0.00	1.0	624.9	629.2	2.11	15.78
1530.0	0.00	0.0	620.7	624.9	2.10	15.75
1536.0	0.00	0.0	616.5	620.7	2.09	15.73
1542.0	0.00	0.0	612.4	616.5	2.08	15.70
1548.0	0.00	0.0	608.2	612.4	2.07	15.68
1554.0	0.00	0.0	604.1	608.2	2.06	15.65

EXECUTED: 10-20-1994 17:46:35

24 HR SCS

Return Freq: 10 years

***** SUMMARY OF ROUTING COMPUTATIONS *****

Pond File: b:234BMP .PND

Inflow Hydrograph: b:POSIN010.HYD

Outflow Hydrograph: b:POOUT010.HYD

Starting Pond W.S. Elevation = 8.00 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow = 163.00 cfs

Peak Outflow = 109.71 cfs

Peak Elevation = 17.77 ft

***** Summary of Approximate Peak Storage *****

Initial Storage = 2,746 cu-ft

Peak Storage From Storm = 179,894 cu-ft

Total Storage in Pond = 182,640 cu-ft

Warning: Inflow hydrograph truncated on left side.

EXECUTED: 10-20-1994 17:49:22

24 HR SCS

Return Freq: 25 years

```

*****
*                                     *
*               JOINT BMP             *
*          TUTTERS NECK NORTH         *
*          KINGSMILL VILLAGE          *
* ROUTING THRU BMP AS A SILT BASIN   *
*                                     *
*****

```

Inflow Hydrograph: b:POSINO25.HYD

Rating Table file: b:234BMP .PND

----INITIAL CONDITIONS----

Elevation = 8.00 ft
 Outflow = 0.00 cfs
 Storage = 2,746 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
7.50	0.0	0
8.00	0.0	2,746
8.50	0.2	5,844
9.00	0.4	9,222
9.50	0.5	12,631
10.00	0.6	16,498
10.50	0.6	20,827
11.00	0.7	25,443
11.50	0.8	30,449
12.00	0.8	35,856
12.50	0.9	42,024
13.00	0.9	49,343
13.50	1.0	57,912
14.00	1.0	67,831
14.50	1.1	78,990
15.00	1.6	91,254
15.50	2.0	104,674
16.00	2.2	119,303
16.50	17.3	135,251
17.00	44.5	152,637
17.50	89.6	171,524
18.00	126.6	191,972
18.50	173.0	214,087
19.00	229.0	237,977

INTERMEDIATE ROUTING
COMPUTATIONS

2S/t (cfs)	2S/t + 0 (cfs)
0.0	0.0
15.3	15.3
32.6	32.8
51.2	51.6
71.3	71.8
92.8	93.4
116.0	116.6
141.5	142.2
169.2	170.0
199.2	200.0
233.5	234.4
274.1	275.0
321.7	322.7
376.8	377.8
438.8	439.9
507.0	508.6
581.5	583.5
662.8	665.0
751.4	768.7
848.0	892.5
952.9	1042.5
1066.5	1193.1
1189.4	1362.4
1322.1	1551.1

Time increment (t) = 6.0 min.

EXECUTED: 10-20-1994 17:49:22

24 HR SCS

Return Freq: 25 years

Pond File: b:234BMP .PND

Inflow Hydrograph: b:POSINO25.HYD

Outflow Hydrograph: b:POOUT025.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	5.00	-----	15.3	15.3	0.00	8.00
666.0	6.00	11.0	26.0	26.3	0.13	8.31
672.0	6.00	12.0	37.5	38.0	0.26	8.64
678.0	7.00	13.0	49.7	50.5	0.39	8.97
684.0	8.00	15.0	63.8	64.7	0.46	9.32
690.0	10.00	18.0	80.7	81.8	0.55	9.73
696.0	11.00	21.0	100.5	101.7	0.60	10.18
702.0	18.00	29.0	128.2	129.5	0.65	10.75
708.0	24.00	42.0	168.6	170.2	0.80	11.50
714.0	31.00	55.0	221.9	223.6	0.87	12.34
720.0	62.00	93.0	312.9	314.9	0.98	13.42
726.0	119.00	181.0	490.9	493.9	1.49	14.89
732.0	182.00	301.0	747.1	791.9	22.40	16.59
738.0	183.00	365.0	898.7	1112.1	106.70	17.73
744.0	125.00	308.0	946.1	1206.7	130.33	18.04
750.0	78.00	203.0	917.5	1149.1	115.78	17.85
756.0	54.00	132.0	866.9	1049.5	91.32	17.52
762.0	40.00	94.0	830.8	960.9	65.06	17.23
768.0	31.00	71.0	807.2	901.8	47.29	17.03
774.0	26.00	57.0	787.6	864.2	38.28	16.89
780.0	22.00	48.0	771.6	835.6	32.00	16.77
786.0	20.00	42.0	759.3	813.6	27.17	16.68
792.0	18.00	36.0	750.1	797.3	23.58	16.62
798.0	17.00	35.0	743.3	785.1	20.91	16.57
804.0	16.00	33.0	738.4	776.3	18.97	16.53
810.0	15.00	31.0	734.5	769.4	17.45	16.50
816.0	14.00	29.0	730.4	763.5	16.54	16.47
822.0	14.00	28.0	726.8	758.4	15.80	16.45
828.0	13.00	27.0	723.5	753.8	15.13	16.43
834.0	12.00	25.0	719.8	748.5	14.36	16.40
840.0	12.00	24.0	716.5	743.8	13.68	16.38
846.0	11.00	23.0	713.4	739.5	13.04	16.36
852.0	11.00	22.0	710.5	735.4	12.45	16.34
858.0	10.00	21.0	707.7	731.5	11.88	16.32
864.0	10.00	20.0	705.0	727.7	11.33	16.30
870.0	9.00	19.0	702.5	724.0	10.80	16.28
876.0	9.00	18.0	699.9	720.5	10.28	16.27
882.0	9.00	18.0	698.1	717.9	9.90	16.26
888.0	9.00	18.0	696.8	716.1	9.64	16.25
894.0	9.00	18.0	695.9	714.8	9.45	16.24
900.0	9.00	18.0	695.3	713.9	9.32	16.24
906.0	9.00	18.0	694.8	713.3	9.23	16.23
912.0	9.00	18.0	694.5	712.8	9.16	16.23
918.0	8.00	17.0	693.5	711.5	8.97	16.22
924.0	8.00	16.0	692.2	709.5	8.69	16.21

EXECUTED: 10-20-1994 17:49:22

24 HR SCS

Return Freq: 25 years

Pond File: b:234BMP .PND

Inflow Hydrograph: b:PO5INO25.HYD

Outflow Hydrograph: b:POOUT025.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	8.00	16.0	691.2	708.2	8.49	16.21
936.0	8.00	16.0	690.5	707.2	8.35	16.20
942.0	8.00	16.0	690.0	706.5	8.24	16.20
948.0	7.00	15.0	689.0	705.0	8.03	16.19
954.0	7.00	14.0	687.5	703.0	7.73	16.18
960.0	7.00	14.0	686.5	701.5	7.52	16.18
966.0	7.00	14.0	685.7	700.5	7.37	16.17
972.0	7.00	14.0	685.2	699.7	7.26	16.17
978.0	6.00	13.0	684.1	698.2	7.04	16.16
984.0	6.00	12.0	682.7	696.1	6.74	16.15
990.0	6.00	12.0	681.6	694.7	6.52	16.14
996.0	6.00	12.0	680.9	693.6	6.37	16.14
1002.0	6.00	12.0	680.4	692.9	6.26	16.13
1008.0	6.00	12.0	680.0	692.4	6.19	16.13
1014.0	6.00	12.0	679.7	692.0	6.13	16.13
1020.0	6.00	12.0	679.5	691.7	6.09	16.13
1026.0	6.00	12.0	679.4	691.5	6.07	16.13
1032.0	6.00	12.0	679.3	691.4	6.05	16.13
1038.0	5.00	11.0	678.5	690.3	5.89	16.12
1044.0	5.00	10.0	677.3	688.5	5.63	16.11
1050.0	5.00	10.0	676.4	687.3	5.45	16.11
1056.0	5.00	10.0	675.8	686.4	5.32	16.10
1062.0	5.00	10.0	675.3	685.8	5.22	16.10
1068.0	5.00	10.0	675.0	685.3	5.16	16.10
1074.0	5.00	10.0	674.8	685.0	5.11	16.10
1080.0	5.00	10.0	674.6	684.8	5.08	16.10
1086.0	5.00	10.0	674.5	684.6	5.06	16.09
1092.0	5.00	10.0	674.4	684.5	5.04	16.09
1098.0	5.00	10.0	674.4	684.4	5.03	16.09
1104.0	5.00	10.0	674.3	684.4	5.02	16.09
1110.0	4.00	9.0	673.6	683.3	4.87	16.09
1116.0	4.00	8.0	672.4	681.6	4.62	16.08
1122.0	4.00	8.0	671.5	680.4	4.44	16.07
1128.0	4.00	8.0	670.9	679.5	4.31	16.07
1134.0	4.00	8.0	670.4	678.9	4.22	16.07
1140.0	4.00	8.0	670.1	678.4	4.16	16.06
1146.0	4.00	8.0	669.9	678.1	4.11	16.06
1152.0	4.00	8.0	669.7	677.9	4.08	16.06
1158.0	4.00	8.0	669.6	677.7	4.06	16.06
1164.0	4.00	8.0	669.5	677.6	4.04	16.06
1170.0	4.00	8.0	669.5	677.5	4.03	16.06
1176.0	4.00	8.0	669.5	677.5	4.02	16.06
1182.0	4.00	8.0	669.4	677.5	4.01	16.06
1188.0	4.00	8.0	669.4	677.4	4.01	16.06
1194.0	4.00	8.0	669.4	677.4	4.01	16.06
1200.0	4.00	8.0	669.4	677.4	4.00	16.06

EXECUTED: 10-20-1994 17:49:22

24 HR SCS

Return Freq: 25 years

Pond File: b:234BMP .PND

Inflow Hydrograph: b:PO5IN025.HYD

Outflow Hydrograph: b:POOUT025.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	4.00	8.0	669.4	677.4	4.00	16.06
1212.0	4.00	8.0	669.4	677.4	4.00	16.06
1218.0	4.00	8.0	669.4	677.4	4.00	16.06
1224.0	4.00	8.0	669.4	677.4	4.00	16.06
1230.0	4.00	8.0	669.4	677.4	4.00	16.06
1236.0	4.00	8.0	669.4	677.4	4.00	16.06
1242.0	4.00	8.0	669.4	677.4	4.00	16.06
1248.0	4.00	8.0	669.4	677.4	4.00	16.06
1254.0	4.00	8.0	669.4	677.4	4.00	16.06
1260.0	4.00	8.0	669.4	677.4	4.00	16.06
1266.0	3.00	7.0	668.6	676.4	3.85	16.05
1272.0	3.00	6.0	667.4	674.6	3.61	16.05
1278.0	3.00	6.0	666.6	673.4	3.43	16.04
1284.0	3.00	6.0	666.0	672.6	3.30	16.04
1290.0	3.00	6.0	665.5	672.0	3.22	16.03
1296.0	3.00	6.0	665.2	671.5	3.15	16.03
1302.0	3.00	6.0	665.0	671.2	3.11	16.03
1308.0	3.00	6.0	664.9	671.0	3.08	16.03
1314.0	3.00	6.0	664.8	670.9	3.05	16.03
1320.0	3.00	6.0	664.7	670.8	3.04	16.03
1326.0	3.00	6.0	664.6	670.7	3.03	16.03
1332.0	3.00	6.0	664.6	670.6	3.02	16.03
1338.0	3.00	6.0	664.6	670.6	3.01	16.03
1344.0	3.00	6.0	664.5	670.6	3.01	16.03
1350.0	3.00	6.0	664.5	670.5	3.01	16.03
1356.0	3.00	6.0	664.5	670.5	3.00	16.03
1362.0	2.00	5.0	663.8	669.5	2.86	16.02
1368.0	2.00	4.0	662.6	667.8	2.61	16.01
1374.0	2.00	4.0	661.7	666.6	2.43	16.01
1380.0	2.00	4.0	661.1	665.7	2.31	16.00
1386.0	2.00	4.0	660.7	665.1	2.22	16.00
1392.0	2.00	4.0	660.3	664.7	2.20	16.00
1398.0	2.00	4.0	659.9	664.3	2.20	16.00
1404.0	2.00	4.0	659.5	663.9	2.20	15.99
1410.0	2.00	4.0	659.1	663.5	2.20	15.99
1416.0	2.00	4.0	658.7	663.1	2.20	15.99
1422.0	2.00	4.0	658.3	662.7	2.19	15.99
1428.0	2.00	4.0	657.9	662.3	2.19	15.98
1434.0	2.00	4.0	657.5	661.9	2.19	15.98
1440.0	2.00	4.0	657.2	661.5	2.19	15.98
1446.0	1.00	3.0	655.8	660.2	2.19	15.97
1452.0	1.00	2.0	653.4	657.8	2.18	15.96
1458.0	1.00	2.0	651.1	655.4	2.18	15.94
1464.0	1.00	2.0	648.7	653.1	2.17	15.93
1470.0	1.00	2.0	646.4	650.7	2.16	15.91
1476.0	1.00	2.0	644.1	648.4	2.16	15.90

EXECUTED: 10-20-1994 17:49:22

24 HR SCS

Return Freq: 25 years

Pond File: b:234BMP .PND

Inflow Hydrograph: b:POSINO25.HYD

Outflow Hydrograph: b:PODOUT025.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	641.8	646.1	2.15	15.88
1485.0	1.00	2.0	639.5	643.8	2.15	15.87
1494.0	1.00	2.0	637.2	641.5	2.14	15.86
1500.0	1.00	2.0	634.9	639.2	2.14	15.84
1506.0	1.00	2.0	632.7	636.9	2.13	15.83
1512.0	1.00	2.0	630.4	634.7	2.13	15.81
1518.0	1.00	2.0	628.2	632.4	2.12	15.80
1524.0	0.00	1.0	624.9	629.2	2.11	15.78
1530.0	0.00	0.0	620.7	624.9	2.10	15.75
1536.0	0.00	0.0	616.6	620.7	2.09	15.73
1542.0	0.00	0.0	612.4	616.6	2.08	15.70
1548.0	0.00	0.0	608.2	612.4	2.07	15.68
1554.0	0.00	0.0	604.1	608.2	2.06	15.65

EXECUTED: 10-20-1994 17:49:22

24 HR SCS

Return Freq: 25 years

***** SUMMARY OF ROUTING COMPUTATIONS *****

Pond File: b:234BMP .PND
Inflow Hydrograph: b:POSIN025.HYD
Outflow Hydrograph: b:POOUT025.HYD

Starting Pond W.S. Elevation = 8.00 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow = 183.00 cfs
Peak Outflow = 130.33 cfs
Peak Elevation = 18.04 ft

***** Summary of Approximate Peak Storage *****

Initial Storage = 2,746 cu-ft
Peak Storage From Storm = 191,003 cu-ft

Total Storage in Pond = 193,749 cu-ft

Warning: Inflow hydrograph truncated on left side.

EXECUTED: 10-20-1994 17:52:09

24 HR SCS

Return Freq: 100 years

```

*****
*                                     *
*                               *
*                   JOINT BMP        *
*          TUTTERS NECK NORTH      *
*          KINGSMILL VILLAGE       *
* ROUTING THRU BMP AS A SILT BASIN *
*                               *
*****

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Inflow Hydrograph: b:POSIN100.HYD

Rating Table file: b:234BMP .PND

-----INITIAL CONDITIONS-----

Elevation = 8.00 ft
 Outflow = 0.00 cfs
 Storage = 2,746 cu-ft

GIVEN POND DATA

INTERMEDIATE ROUTING
COMPUTATIONS

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + 0 (cfs)
7.50	0.0	0	0.0	0.0
8.00	0.0	2,746	15.3	15.3
8.50	0.2	5,864	32.6	32.8
9.00	0.4	9,222	51.2	51.6
9.50	0.5	12,831	71.3	71.8
10.00	0.6	16,693	92.8	93.4
10.50	0.6	20,887	116.0	116.6
11.00	0.7	25,463	141.5	142.2
11.50	0.8	30,449	169.2	170.0
12.00	0.8	35,856	199.2	200.0
12.50	0.9	42,024	232.5	234.4
13.00	0.9	49,343	274.1	275.0
13.50	1.0	57,913	321.7	322.7
14.00	1.0	67,831	376.8	377.8
14.50	1.1	78,990	438.8	439.9
15.00	1.6	91,254	507.0	508.6
15.50	2.0	104,674	581.5	583.5
16.00	2.2	119,303	662.8	665.0
16.50	17.3	135,251	751.4	768.7
17.00	44.5	152,637	848.0	892.5
17.50	89.6	171,524	952.9	1042.5
18.00	126.6	191,972	1066.5	1193.1
18.50	173.0	214,087	1189.4	1362.4
19.00	229.0	237,977	1322.1	1551.1

Time increment (t) = 6.0 min.

EXECUTED: 10-20-1994 17:52:09

24 HR SCS

Return Freq: 100 years

Pond File: b:234BMP .PND

Inflow Hydrograph: b:POSIN100.HYD

Outflow Hydrograph: b:POOUT100.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	7.00	-----	15.3	15.3	0.00	8.00
666.0	8.00	15.0	29.9	30.3	0.17	8.43
672.0	9.00	17.0	46.2	46.9	0.35	8.87
678.0	10.00	19.0	64.3	65.2	0.47	9.34
684.0	12.00	22.0	85.1	86.3	0.57	9.84
690.0	13.00	25.0	108.9	110.1	0.60	10.36
696.0	15.00	28.0	135.6	136.9	0.68	10.90
702.0	25.00	40.0	174.0	175.6	0.80	11.59
708.0	24.00	59.0	231.2	233.0	0.90	12.48
714.0	44.00	78.0	307.3	309.2	0.97	13.36
720.0	87.00	131.0	436.1	438.3	1.10	14.49
726.0	166.00	253.0	677.6	689.1	5.70	16.12
732.0	251.00	417.0	889.8	1094.6	102.41	17.67
738.0	251.00	502.0	1022.3	1391.8	181.74	18.58
744.0	171.00	422.0	1052.1	1450.3	199.11	18.73
750.0	105.00	276.0	1000.9	1328.1	163.62	18.40
756.0	73.00	178.0	932.7	1178.9	123.11	17.95
762.0	54.00	127.0	872.0	1059.7	93.82	17.56
768.0	42.00	96.0	832.6	968.0	67.21	17.25
774.0	36.00	78.0	811.1	911.6	50.25	17.06
780.0	30.00	66.0	794.9	877.1	41.12	16.94
786.0	23.00	58.0	781.3	852.9	35.80	16.84
792.0	25.00	53.0	770.9	834.3	31.71	16.76
798.0	23.00	48.0	762.2	818.9	28.32	16.70
804.0	21.00	44.0	755.1	806.2	25.54	16.65
810.0	20.00	41.0	749.5	796.1	23.33	16.61
816.0	19.00	39.0	745.2	788.5	21.65	16.58
822.0	18.00	37.0	741.7	782.2	20.26	16.55
828.0	17.00	35.0	738.6	776.7	19.05	16.53
834.0	16.00	33.0	735.7	771.6	17.93	16.51
840.0	16.00	32.0	733.4	767.7	17.15	16.50
846.0	15.00	31.0	731.0	764.4	16.67	16.48
852.0	15.00	30.0	728.7	761.0	16.19	16.46
858.0	14.00	29.0	726.3	757.7	15.69	16.45
864.0	13.00	27.0	723.2	753.3	15.06	16.43
870.0	13.00	26.0	720.3	749.2	14.46	16.41
876.0	12.00	25.0	717.5	745.3	13.89	16.39
882.0	12.00	24.0	714.8	741.5	13.34	16.37
888.0	12.00	24.0	712.9	738.8	12.95	16.36
894.0	12.00	24.0	711.6	736.9	12.67	16.35
900.0	12.00	24.0	710.6	735.6	12.48	16.34
906.0	12.00	24.0	709.9	734.6	12.34	16.34
912.0	11.00	23.0	708.8	732.9	12.09	16.33
918.0	11.00	22.0	707.2	730.8	11.78	16.32
924.0	10.00	21.0	705.4	728.2	11.40	16.30

EXECUTED: 10-20-1994 17:52:09

24 HR SCS

Return Freq: 100 years

Pond File: b:234BMP .PND

Inflow Hydrograph: b:PODIN100.HYD

Outflow Hydrograph: b:PODOUT100.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	10.00	20.0	703.4	725.4	10.99	16.29
936.0	10.00	20.0	702.0	723.4	10.71	16.28
942.0	10.00	20.0	701.0	722.0	10.50	16.27
948.0	9.00	19.0	699.6	720.0	10.21	16.27
954.0	9.00	18.0	697.9	717.6	9.86	16.25
960.0	9.00	18.0	696.6	715.9	9.61	16.25
966.0	9.00	18.0	695.8	714.6	9.43	16.24
972.0	9.00	18.0	695.2	713.8	9.31	16.24
978.0	8.00	17.0	694.0	712.2	9.07	16.23
984.0	8.00	16.0	692.5	710.0	8.76	16.22
990.0	8.00	16.0	691.4	708.5	8.54	16.21
996.0	8.00	16.0	690.7	707.4	8.38	16.20
1002.0	8.00	16.0	690.1	706.7	8.27	16.20
1008.0	7.00	15.0	689.1	705.1	8.05	16.19
1014.0	7.00	14.0	687.6	703.1	7.74	16.18
1020.0	7.00	14.0	686.5	701.6	7.53	16.18
1026.0	7.00	14.0	685.8	700.5	7.37	16.17
1032.0	7.00	14.0	685.2	699.8	7.26	16.17
1038.0	7.00	14.0	684.9	699.2	7.19	16.17
1044.0	7.00	14.0	684.6	698.9	7.13	16.16
1050.0	7.00	14.0	684.4	698.6	7.09	16.16
1056.0	7.00	14.0	684.3	698.4	7.07	16.16
1062.0	7.00	14.0	684.2	698.3	7.05	16.16
1068.0	7.00	14.0	684.1	698.2	7.03	16.16
1074.0	7.00	14.0	684.1	698.1	7.02	16.16
1080.0	7.00	14.0	684.0	698.1	7.02	16.16
1086.0	7.00	14.0	684.0	698.0	7.01	16.16
1092.0	7.00	14.0	684.0	698.0	7.01	16.16
1098.0	7.00	14.0	684.0	698.0	7.01	16.16
1104.0	7.00	14.0	684.0	698.0	7.00	16.16
1110.0	6.00	13.0	683.3	697.0	6.86	16.15
1116.0	6.00	12.0	682.0	695.3	6.61	16.15
1122.0	6.00	12.0	681.2	694.0	6.43	16.14
1128.0	6.00	12.0	680.6	693.2	6.31	16.14
1134.0	6.00	12.0	680.1	692.6	6.22	16.13
1140.0	6.00	12.0	679.8	692.1	6.15	16.13
1146.0	6.00	12.0	679.6	691.8	6.11	16.13
1152.0	6.00	12.0	679.5	691.6	6.08	16.13
1158.0	6.00	12.0	679.4	691.5	6.05	16.13
1164.0	6.00	12.0	679.3	691.4	6.04	16.13
1170.0	6.00	12.0	679.2	691.3	6.03	16.13
1176.0	5.00	11.0	678.5	690.2	5.87	16.12
1182.0	5.00	10.0	677.2	689.5	5.62	16.11
1188.0	5.00	10.0	676.4	687.2	5.44	16.11
1194.0	5.00	10.0	675.7	686.4	5.31	16.10
1200.0	5.00	10.0	675.3	685.7	5.22	16.10

EXECUTED: 10-20-1994 17:52:09

24 HR SCS

Return Freq: 100 years

Pond File: b:234BMP .PND

Inflow Hydrograph: b:POSIN100.HYD

Outflow Hydrograph: b:PDDOUT100.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	5.00	10.0	675.0	685.3	5.16	16.10
1212.0	5.00	10.0	674.8	685.0	5.11	16.10
1218.0	5.00	10.0	674.6	684.8	5.08	16.10
1224.0	5.00	10.0	674.5	684.6	5.06	16.09
1230.0	5.00	10.0	674.4	684.5	5.04	16.09
1236.0	5.00	10.0	674.4	684.4	5.03	16.09
1242.0	5.00	10.0	674.3	684.4	5.02	16.09
1248.0	5.00	10.0	674.3	684.3	5.01	16.09
1254.0	5.00	10.0	674.3	684.3	5.01	16.09
1260.0	4.00	9.0	673.5	683.3	4.86	16.09
1266.0	4.00	8.0	672.3	681.5	4.61	16.08
1272.0	4.00	8.0	671.5	680.3	4.43	16.07
1278.0	4.00	8.0	670.8	679.5	4.31	16.07
1284.0	4.00	8.0	670.4	678.8	4.22	16.07
1290.0	4.00	8.0	670.1	678.4	4.15	16.06
1296.0	4.00	8.0	669.9	678.1	4.11	16.06
1302.0	4.00	8.0	669.7	677.9	4.08	16.06
1308.0	4.00	8.0	669.6	677.7	4.05	16.06
1314.0	4.00	8.0	669.5	677.6	4.04	16.06
1320.0	4.00	8.0	669.5	677.5	4.03	16.06
1326.0	4.00	8.0	669.5	677.5	4.02	16.06
1332.0	4.00	8.0	669.4	677.5	4.01	16.06
1338.0	4.00	8.0	669.4	677.4	4.01	16.06
1344.0	4.00	8.0	669.4	677.4	4.01	16.06
1350.0	4.00	8.0	669.4	677.4	4.00	16.06
1356.0	3.00	7.0	668.7	676.4	3.86	16.05
1362.0	3.00	6.0	667.4	674.7	3.61	16.05
1368.0	3.00	6.0	666.6	673.4	3.43	16.04
1374.0	3.00	6.0	666.0	672.6	3.31	16.04
1380.0	3.00	6.0	665.5	672.0	3.22	16.03
1386.0	3.00	6.0	665.2	671.5	3.15	16.03
1392.0	3.00	6.0	665.0	671.2	3.11	16.03
1398.0	3.00	6.0	664.9	671.0	3.08	16.03
1404.0	3.00	6.0	664.8	670.9	3.05	16.03
1410.0	2.00	5.0	664.0	669.8	2.89	16.02
1416.0	2.00	4.0	662.7	668.0	2.63	16.01
1422.0	2.00	4.0	661.8	666.7	2.45	16.01
1428.0	2.00	4.0	661.2	665.8	2.32	16.00
1434.0	2.00	4.0	660.7	665.2	2.23	16.00
1440.0	2.00	4.0	660.3	664.7	2.20	16.00
1446.0	2.00	4.0	659.9	664.3	2.20	16.00
1452.0	2.00	4.0	659.5	663.9	2.20	15.99
1458.0	2.00	4.0	659.1	663.5	2.20	15.99
1464.0	2.00	4.0	658.7	663.1	2.20	15.99
1470.0	2.00	4.0	658.4	662.7	2.19	15.99
1476.0	1.00	3.0	657.0	661.4	2.19	15.98

EXECUTED: 10-20-1994 17:52:09

24 HR SCS

Return Freq: 100 years

Pond File: b:234BMP .PND

Inflow Hydrograph: b:PODSIN100.HYD

Outflow Hydrograph: b:PODOUT100.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	654.6	659.0	2.15	15.96
1488.0	1.00	2.0	652.2	656.6	2.18	15.95
1494.0	1.00	2.0	649.9	654.2	2.17	15.93
1500.0	1.00	2.0	647.6	651.9	2.17	15.92
1506.0	1.00	2.0	645.2	649.6	2.16	15.91
1512.0	1.00	2.0	642.9	647.2	2.16	15.89
1518.0	1.00	2.0	640.6	644.9	2.15	15.88
1524.0	1.00	2.0	638.3	642.6	2.15	15.86
1530.0	0.00	1.0	635.1	639.3	2.14	15.84
1536.0	0.00	0.0	630.5	635.1	2.13	15.82
1542.0	0.00	0.0	625.6	630.8	2.12	15.79
1548.0	0.00	0.0	622.4	626.6	2.11	15.76
1554.0	0.00	0.0	618.2	622.4	2.10	15.74

***** SUMMARY OF ROUTING COMPUTATIONS *****

Pond File: b:234BMP .PND
Inflow Hydrograph: b:PODIN100.HYD
Outflow Hydrograph: b:PODOUT100.HYD

Starting Pond W.S. Elevation = 8.00 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow = 251.00 cfs
Peak Outflow = 199.11 cfs
Peak Elevation = 18.73 ft

***** Summary of Approximate Peak Storage *****

Initial Storage = 2,746 cu-ft
Peak Storage From Storm = 222,477 cu-ft

Total Storage in Pond = 225,223 cu-ft

Warning: Inflow hydrograph truncated on left side.

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
BMP VOLUMNS

CALCULATED 10-20-1994 18:09:40
DISK FILE: b:234BMP .VOL

Planimeter scale: 1 inch = 50 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (sq.ft)	A1+A2+sq ² r(A1*A2) (sq.ft)	* Volume (cubic-ft)	Volume Sum (cubic-ft)
7.50	2.00	5,000	0	0	0
8.00	2.40	6,000	16,477	2,746	2,746
10.00	3.20	8,000	20,928	13,952	16,698
12.00	4.50	11,250	28,737	19,158	35,856
14.00	8.50	21,250	47,962	31,974	67,831
16.00	12.20	30,500	77,208	51,472	119,303
18.00	17.00	42,500	109,003	72,669	191,972
20.00	22.90	57,250	149,077	99,384	291,356

Elevations With Areas Interpolated From
The Closest Two Planimeter Readings

11.40	-----	10,217	27,258	12,720	29,419
13.00	-----	15,856	40,462	13,487	49,343
14.50	-----	23,406	66,958	11,160	78,990
15.00	-----	25,667	70,271	23,424	91,254
17.00	-----	36,252	100,003	33,394	152,637
19.00	-----	49,601	138,014	46,005	237,977

$$IA = (\text{sq. rt}(\text{Area1}) + ((E_i - E1)/(E2 - E1)) * (\text{sq. rt}(\text{Area2}) - \text{sq. rt}(\text{Area1})))^2$$

where: E1, E2 = Closest two elevations with planimeter data
Ei = Elevation at which to interpolate area
Area1, Area2 = Areas computed for E1, E2, respectively
IA = Interpolated area for Ei

* Incremental volume computed by the Conic Method for Reservoir Volumes.

$$\text{Volume} = (1/3) * (EL2 - EL1) * (\text{Area1} + \text{Area2} + \text{sq. rt.}(\text{Area1} * \text{Area2}))$$

where: EL1, EL2 = Lower and upper elevations of the increment
Area1, Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

Outlet Structure File: 234BMP .STR

POND-2 Version: 5.17

S/N: 1295130250

Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

***** COMPOSITE OUTFLOW SUMMARY *****

Elevation (ft)	Q (cfs)	Contributing Structures
7.50	0.0	
8.00	0.0	
8.50	0.2	1
9.00	0.4	1
9.50	0.5	1
10.00	0.6	1
10.50	0.6	1
11.00	0.7	1
11.50	0.8	1
12.00	0.8	1
12.50	0.9	1
13.00	0.9	1
13.50	1.0	1
14.00	1.0	1
14.50	1.1	1
15.00	1.6	1 +2
15.50	2.0	1 +2
16.00	2.2	1 +2 +3
16.50	17.3	1 +2 +3
17.00	44.5	1 +2 +3 +4
17.50	89.6	1 +2 +3 +4
18.00	126.6	1 +2 +3 +4
18.50	173.0	1 +2 +3 +4
19.00	229.0	1 +2 +3 +4
19.50	0.0	

Outlet Structure File: 234BMP .STR

POND-2 Version: 5.17

S/N: 1295130250

Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

Outlet Structure File: b:234BMP .STR
Planimeter Input File: b:234BMP .VOL
Rating Table Output File: b:234BMP .PND

Min. Elev.(ft) = 7.5 Max. Elev.(ft) = 19.5 Incr.(ft) = .5

Additional elevations (ft) to be included in table:

SYSTEM CONNECTIVITY

Structure	No.	Q Table	Q Table
ORIFICE	1	->	1
ORIFICE	2	->	2
STAND PIPE	3	->	3
WEIR-XY	4	->	4

Outflow rating table summary was stored in file:
b:234BMP .PND

Outlet Structure File: 234BMP .STR

POND-2 Version: 5.17

S/N: 1295130250

Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

>>>>> Structure No. 1 <<<<<
(Input Data)

ORIFICE

Orifice - Based on Area and Datum Elevation

E1 elev.(ft)?	8.001
E2 elev.(ft)?	19.5
Orifice coeff.?	.6
Invert elev.(ft)?	8.001
Datum elev.(ft) ?	8.17
Orifice area (sq ft)?	.0873

✓ - 4"φ

Outlet Structure File: 234BMP .STR

POND-2 Version: 5.17

S/N: 1295130250

Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

>>>>> Structure No. 2 <<<<<
(Input Data)

ORIFICE

Orifice - Based on Area and Datum Elevation

E1 elev.(ft)?	14.501
E2 elev.(ft)?	19.5
Orifice coeff.?	.6
Invert elev.(ft)?	14.501
Datum elev.(ft) ?	14.75
Orifice area (sq ft)?	.1963

6" ϕ

Outlet Structure File: 234BMP .STR

POND-2 Version: 5.17

S/N: 1295130250

Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

>>>>> Structure No. 3 <<<<<
(Input Data)

STAND PIPE

Stand Pipe with weir or orifice flow

E1 elev.(ft)? 16.0 ✓
E2 elev.(ft)? 19.5
Crest elev.(ft)? 16.0
Diameter (ft)? 4
Weir coefficient? 3.33
Orifice coefficient? .6
Start transition elev.(ft) @ ?
Transition height (ft)?

Outlet Structure File: 234BMP .STR

POND-2 Version: 5.17

S/N: 1295130250

Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

>>>>> Structure No. 4 <<<<<<
(Input Data)

WEIR-XY

Weir - Defined by X, Y Coordinates

E1 (ft) =17.0 E2 (ft) =19.5

X dist.(ft) Y elev.(ft)

0	19
4	17
14	17
18	19

Outlet Structure File: 234BMP .STR

POND-2 Version: 5.17

S/N: 1295130250

Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

Outflow Rating Table for Structure #1
ORIFICE Orifice - Based on Area and Datum Elevation

Elevation (ft)	Q (cfs)	Computation Messages
7.50	0.0	E < E1=8.001
8.00	0.0	E < E1=8.001
8.50	0.2	H =.33
9.00	0.4	H =.83
9.50	0.5	H =1.33
10.00	0.6	H =1.83
10.50	0.6	H =2.33
11.00	0.7	H =2.83
11.50	0.8	H =3.33
12.00	0.8	H =3.83
12.50	0.9	H =4.33
13.00	0.9	H =4.83
13.50	1.0	H =5.33
14.00	1.0	H =5.83
14.50	1.1	H =6.33
15.00	1.1	H =6.83
15.50	1.1	H =7.33
16.00	1.2	H =7.83
16.50	1.2	H =8.33
17.00	1.2	H =8.830
17.50	1.3	H =9.330
18.00	1.3	H =9.830
18.50	1.4	H =10.33
19.00	1.4	H =10.83
19.50	0.0	E = or > E2=19.5

C = .6 A = .0873 sq.ft.

H (ft) = Table elev. - Datum elev. (8.17 ft)

Q (cfs) = C * A * sqr(2g * H)

Outlet Structure File: 234BMP .STR

POND-2 Version: 5.17

S/N: 1295130250

Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

Outflow Rating Table for Structure #2

ORIFICE Orifice - Based on Area and Datum Elevation

Elevation (ft)	Q (cfs)	Computation Messages
7.50	0.0	E < E1=14.501
8.00	0.0	E < E1=14.501
8.50	0.0	E < E1=14.501
9.00	0.0	E < E1=14.501
9.50	0.0	E < E1=14.501
10.00	0.0	E < E1=14.501
10.50	0.0	E < E1=14.501
11.00	0.0	E < E1=14.501
11.50	0.0	E < E1=14.501
12.00	0.0	E < E1=14.501
12.50	0.0	E < E1=14.501
13.00	0.0	E < E1=14.501
13.50	0.0	E < E1=14.501
14.00	0.0	E < E1=14.501
14.50	0.0	E < E1=14.501
15.00	0.5	H =.25
15.50	0.8	H =.750
16.00	1.1	H =1.25
16.50	1.3	H =1.75
17.00	1.4	H =2.25
17.50	1.6	H =2.75
18.00	1.7	H =3.25
18.50	1.8	H =3.75
19.00	1.9	H =4.25
19.50	0.0	E = or > E2=19.5

C = .6 A = .1963 sq.ft.

H (ft) = Table elev. - Datum elev. (14.75 ft)

Q (cfs) = C * A * sqr(2g * H)

Outlet Structure File: 234BMP .STR

POND-2 Version: 5.17

S/N: 1275130250

Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

Outflow Rating Table for Structure #3
STAND PIPE Stand Pipe with weir or orifice flow

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation	Messages
7.50	0.0	E < Inv.E1= 16	
8.00	0.0	E < E1=16.0	
8.50	0.0	E < E1=16.0	
9.00	0.0	E < E1=16.0	
9.50	0.0	E < E1=16.0	
10.00	0.0	E < E1=16.0	
10.50	0.0	E < E1=16.0	
11.00	0.0	E < E1=16.0	
11.50	0.0	E < E1=16.0	
12.00	0.0	E < E1=16.0	
12.50	0.0	E < E1=16.0	
13.00	0.0	E < E1=16.0	
13.50	0.0	E < E1=16.0	
14.00	0.0	E < E1=16.0	
14.50	0.0	E < E1=16.0	
15.00	0.0	E < E1=16.0	
15.50	0.0	E < E1=16.0	
16.00	0.0	Weir:	H =0.0
16.50	14.8	Weir:	H =.5
17.00	41.8	Weir:	H =1.0
17.50	74.1	Orifice:	H =1.5
18.00	85.6	Orifice:	H =2.0
18.50	95.7	Orifice:	H =2.5
19.00	104.8	Orifice:	H =3.0
19.50	0.0	E = or > E2=19.5	

Weir $C_w = 3.33$ Weir length = 12.56637 ft
Orifice $C_o = .6$ Orifice area = 12.56637 sq.ft.
 Q (cfs) = $(C_w * L * H^{1.5})$ or $(C_o * A * \text{sqr}(2 * g * H))$
No transition used, transition height = 0.0
Weir equation = Orifice equation @ elev.= 17.44594 ft

Outlet Structure File: 234BMP .STR

POND-2 Version: 5.17

S/N: 1295130250

Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

Outflow Rating Table for Structure #4
WEIR-XY Weir - Defined by X, Y Coordinates

***** INLET CONTROL ASSUMED *****

Elevation (ft)	D (cfs)	Computation	Messages
7.50	0.0	E < Y min= 17	
8.00	0.0	E < Y min= 17	
8.50	0.0	E < Y min= 17	
9.00	0.0	E < Y min= 17	
9.50	0.0	E < Y min= 17	
10.00	0.0	E < Y min= 17	
10.50	0.0	E < Y min= 17	
11.00	0.0	E < Y min= 17	
11.50	0.0	E < Y min= 17	
12.00	0.0	E < Y min= 17	
12.50	0.0	E < Y min= 17	
13.00	0.0	E < Y min= 17	
13.50	0.0	E < Y min= 17	
14.00	0.0	E < Y min= 17	
14.50	0.0	E < Y min= 17	
15.00	0.0	E < Y min= 17	
15.50	0.0	E < Y min= 17	
16.00	0.0	E < E1=17.0	
16.50	0.0	E < E1=17.0	
17.00	0.0	E = Y min= 17	
17.50	12.6	W(ft)=12.0	Max. D(ft)=.5
18.00	38.0	W(ft)=14.0	Max. D(ft)=1.0
18.50	74.2	W(ft)=16.0	Max. D(ft)=1.5
19.00	120.8	W(ft)=18.0	Max. D(ft)=2.0
19.50	0.0	E = or > E2=19.5	

*
* JOINT BMP *
* TUTTERS NECK NORTH *
* KINGSMILL VILLAGE *
* BMP AFTER SILT BASIN IS REMOVED *
*

Inflow Hydrograph: b:PDOSIN002.HYD

Rating Table file: b:BMP234 .PND

-----INITIAL CONDITIONS-----

Elevation = 8.00 ft

Outflow = 0.00 cfs

Storage = 0 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
8.00	0.0	0
8.50	0.2	3,118
9.00	0.4	6,476
9.50	0.5	10,025
10.00	0.6	13,952
10.50	0.6	18,141
11.00	0.7	22,719
11.50	0.8	27,702
12.00	0.8	33,110
12.50	0.9	39,278
13.00	0.9	46,597
13.50	1.0	55,167
14.00	1.0	65,084
14.50	1.1	76,244
15.00	9.0	88,508
15.50	32.7	101,928
16.00	65.2	116,557
16.50	83.0	132,505
17.00	93.6	149,891
17.50	115.7	168,778
18.00	149.7	189,226
18.50	193.9	211,340
19.00	248.1	235,231

INTERMEDIATE ROUTING
COMPUTATIONS

2S/t (cfs)	2S/t + 0 (cfs)
0.0	0.0
17.3	17.5
36.0	36.4
56.0	56.5
77.5	78.1
100.8	101.4
126.2	126.9
153.9	154.7
183.9	184.7
218.2	219.1
258.9	259.8
306.5	307.5
361.6	362.6
423.6	424.7
491.7	500.7
566.3	599.0
647.5	712.8
736.1	819.1
832.7	926.3
937.7	1053.4
1051.3	1201.0
1174.1	1368.0
1306.8	1554.9

Time increment (t) = 6.0 min.

EXECUTED: 10-20-1994 14:44:39

24 HR SCS

Return Freq: 2 years

Pond File: b:BMP234 .PND

Inflow Hydrograph: b:POSIN002.HYD

Outflow Hydrograph: b:OUTBM002.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	1.00	---	0.0	0.0	0.00	8.00
666.0	1.00	2.0	2.0	2.0	0.02	8.06
672.0	2.00	3.0	4.8	5.0	0.06	8.14
678.0	2.00	4.0	8.6	8.8	0.10	8.25
684.0	2.00	4.0	12.4	12.6	0.14	8.36
690.0	2.00	4.0	16.0	16.4	0.19	8.47
696.0	2.00	4.0	19.5	20.0	0.23	8.57
702.0	4.00	6.0	25.0	25.5	0.28	8.71
708.0	5.00	9.0	33.2	34.0	0.37	8.94
714.0	7.00	12.0	44.3	45.2	0.44	9.22
720.0	16.00	23.0	66.2	67.3	0.55	9.75
726.0	36.00	52.0	116.9	118.2	0.67	10.83
732.0	62.00	98.0	213.1	214.9	0.89	12.44
738.0	64.00	126.0	337.1	339.1	1.00	13.79
744.0	46.00	110.0	440.3	447.1	3.43	14.65
750.0	30.00	76.0	490.8	516.3	12.75	15.08
756.0	21.00	51.0	504.0	541.8	18.90	15.21
762.0	16.00	37.0	503.5	541.0	18.71	15.20
768.0	13.00	29.0	499.2	532.5	16.68	15.16
774.0	11.00	24.0	494.3	523.2	14.42	15.11
780.0	9.00	20.0	489.8	514.3	12.29	15.07
786.0	8.00	17.0	485.8	506.8	10.46	15.03
792.0	8.00	16.0	483.3	501.8	9.27	15.01
798.0	8.00	16.0	481.6	499.3	8.85	14.99
804.0	7.00	15.0	479.4	496.6	8.57	14.97
810.0	7.00	14.0	477.0	493.4	8.25	14.95
816.0	6.00	13.0	474.2	490.0	7.88	14.93
822.0	6.00	12.0	471.2	486.2	7.49	14.90
828.0	5.00	11.0	468.1	482.2	7.08	14.88
834.0	5.00	10.0	464.8	478.1	6.65	14.85
840.0	5.00	10.0	462.2	474.8	6.30	14.83
846.0	5.00	10.0	460.1	472.2	6.03	14.81
852.0	4.00	9.0	457.7	469.1	5.71	14.79
858.0	4.00	8.0	454.9	465.7	5.36	14.77
864.0	4.00	8.0	452.8	462.9	5.08	14.75
870.0	4.00	8.0	451.1	460.8	4.85	14.74
876.0	4.00	8.0	449.7	459.1	4.68	14.73
882.0	4.00	8.0	448.7	457.7	4.53	14.72
888.0	4.00	8.0	447.8	456.7	4.42	14.71
894.0	4.00	8.0	447.1	455.8	4.34	14.70
900.0	4.00	8.0	446.6	455.1	4.27	14.70
906.0	4.00	8.0	446.2	454.6	4.21	14.70
912.0	4.00	8.0	445.9	454.2	4.17	14.69
918.0	3.00	7.0	444.8	452.9	4.03	14.69
924.0	3.00	6.0	443.2	450.8	3.81	14.67

EXECUTED: 10-20-1994 14:44:39

24 HR SCS

Return Freq: 2 years

Pond File: b:BMP234 .PND

Inflow Hydrograph: b:POSIN002.HYD

Outflow Hydrograph: b:OUTBM002.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	3.00	6.0	441.9	449.2	3.65	14.66
936.0	3.00	6.0	440.9	447.9	3.51	14.65
942.0	3.00	6.0	440.1	446.9	3.40	14.65
948.0	3.00	6.0	439.4	446.1	3.32	14.64
954.0	3.00	6.0	438.9	445.4	3.25	14.64
960.0	3.00	6.0	438.5	444.9	3.20	14.63
966.0	3.00	6.0	438.2	444.5	3.16	14.63
972.0	3.00	6.0	437.9	444.2	3.13	14.63
978.0	3.00	6.0	437.7	443.9	3.10	14.63
984.0	3.00	6.0	437.6	443.7	3.08	14.63
990.0	3.00	6.0	437.4	443.6	3.06	14.62
996.0	3.00	6.0	437.3	443.4	3.05	14.62
1002.0	3.00	6.0	437.3	443.3	3.04	14.62
1008.0	3.00	6.0	437.2	443.3	3.03	14.62
1014.0	3.00	6.0	437.2	443.2	3.02	14.62
1020.0	3.00	6.0	437.1	443.2	3.02	14.62
1026.0	3.00	6.0	437.1	443.1	3.02	14.62
1032.0	3.00	6.0	437.1	443.1	3.01	14.62
1038.0	3.00	5.0	436.2	442.1	2.91	14.61
1044.0	2.00	4.0	434.8	440.2	2.72	14.60
1050.0	2.00	4.0	433.7	438.8	2.57	14.59
1056.0	2.00	4.0	432.8	437.7	2.45	14.59
1062.0	2.00	4.0	432.1	436.8	2.36	14.58
1068.0	2.00	4.0	431.5	436.1	2.28	14.57
1074.0	2.00	4.0	431.0	435.5	2.22	14.57
1080.0	2.00	4.0	430.7	435.0	2.18	14.57
1086.0	2.00	4.0	430.4	434.7	2.14	14.57
1092.0	2.00	4.0	430.2	434.4	2.11	14.56
1098.0	2.00	4.0	430.0	434.2	2.09	14.56
1104.0	2.00	4.0	429.9	434.0	2.07	14.56
1110.0	2.00	4.0	429.8	433.9	2.06	14.56
1116.0	2.00	4.0	429.7	433.8	2.04	14.56
1122.0	2.00	4.0	429.6	433.7	2.03	14.56
1128.0	2.00	4.0	429.6	433.6	2.03	14.56
1134.0	2.00	4.0	429.5	433.6	2.02	14.56
1140.0	2.00	4.0	429.5	433.5	2.02	14.56
1146.0	2.00	4.0	429.4	433.5	2.01	14.56
1152.0	2.00	4.0	429.4	433.4	2.01	14.56
1158.0	2.00	4.0	429.4	433.4	2.01	14.56
1164.0	2.00	4.0	429.4	433.4	2.01	14.56
1170.0	2.00	4.0	429.4	433.4	2.01	14.56
1176.0	2.00	4.0	429.4	433.4	2.00	14.56
1182.0	2.00	4.0	429.4	433.4	2.00	14.56
1188.0	2.00	4.0	429.4	433.4	2.00	14.56
1194.0	2.00	4.0	429.4	433.4	2.00	14.56
1200.0	2.00	4.0	429.4	433.4	2.00	14.56

EXECUTED: 10-20-1994 14:44:39

24 HR SDS

Return Freq: 2 years

Pond File: b:BMP234 .PND

Inflow Hydrograph: b:POSIN002.HYD

Outflow Hydrograph: b:OUTEM002.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	2.00	4.0	429.4	433.4	2.00	14.56
1212.0	2.00	4.0	429.3	433.4	2.00	14.56
1218.0	2.00	4.0	429.3	433.3	2.00	14.56
1224.0	2.00	4.0	429.3	433.3	2.00	14.56
1230.0	2.00	4.0	429.3	433.3	2.00	14.56
1236.0	2.00	4.0	429.3	433.3	2.00	14.56
1242.0	2.00	4.0	429.3	433.3	2.00	14.56
1248.0	2.00	4.0	429.3	433.3	2.00	14.56
1254.0	2.00	4.0	429.3	433.3	2.00	14.56
1260.0	2.00	4.0	429.3	433.3	2.00	14.56
1266.0	2.00	4.0	429.3	433.3	2.00	14.56
1272.0	2.00	4.0	429.3	433.3	2.00	14.56
1278.0	2.00	4.0	429.3	433.3	2.00	14.56
1284.0	2.00	4.0	429.3	433.3	2.00	14.56
1290.0	2.00	4.0	429.3	433.3	2.00	14.56
1296.0	2.00	4.0	429.3	433.3	2.00	14.56
1302.0	2.00	4.0	429.3	433.3	2.00	14.56
1308.0	2.00	4.0	429.3	433.3	2.00	14.56
1314.0	2.00	4.0	429.3	433.3	2.00	14.56
1320.0	2.00	4.0	429.3	433.3	2.00	14.56
1326.0	2.00	4.0	429.3	433.3	2.00	14.56
1332.0	2.00	4.0	429.3	433.3	2.00	14.56
1338.0	2.00	4.0	429.3	433.3	2.00	14.56
1344.0	2.00	4.0	429.3	433.3	2.00	14.56
1350.0	2.00	4.0	429.3	433.3	2.00	14.56
1356.0	2.00	4.0	429.3	433.3	2.00	14.56
1362.0	2.00	4.0	429.3	433.3	2.00	14.56
1368.0	2.00	4.0	429.3	433.3	2.00	14.56
1374.0	2.00	4.0	429.3	433.3	2.00	14.56
1380.0	2.00	4.0	429.3	433.3	2.00	14.56
1386.0	1.00	3.0	428.5	432.3	1.90	14.55
1392.0	1.00	2.0	427.1	430.5	1.71	14.54
1398.0	1.00	2.0	426.0	429.1	1.56	14.53
1404.0	1.00	2.0	425.1	428.0	1.45	14.52
1410.0	1.00	2.0	424.4	427.1	1.35	14.52
1416.0	1.00	2.0	423.8	426.4	1.28	14.51
1422.0	1.00	2.0	423.4	425.8	1.22	14.51
1428.0	1.00	2.0	423.1	425.4	1.18	14.50
1434.0	1.00	2.0	422.8	425.1	1.14	14.50
1440.0	1.00	2.0	422.6	424.8	1.11	14.50
1446.0	1.00	2.0	422.4	424.6	1.10	14.50
1452.0	1.00	2.0	422.2	424.4	1.10	14.50
1458.0	1.00	2.0	422.0	424.2	1.10	14.50
1464.0	1.00	2.0	421.8	424.0	1.10	14.49
1470.0	1.00	2.0	421.6	423.8	1.10	14.49
1476.0	1.00	2.0	421.4	423.6	1.10	14.49

EXECUTED: 10-20-1994 14:44:39

24 HR SCS

Return Freq: 2 years

Pond File: b:BMP234 .PND

Inflow Hydrograph: b:POSIN002.HYD

Outflow Hydrograph: b:OUTBMO02.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	421.2	423.4	1.10	14.49
1488.0	1.00	2.0	421.0	423.2	1.10	14.49
1494.0	1.00	2.0	420.8	423.0	1.10	14.49
1500.0	0.00	1.0	419.6	421.8	1.10	14.48
1506.0	0.00	0.0	417.4	419.6	1.09	14.46
1512.0	0.00	0.0	415.2	417.4	1.09	14.44
1518.0	0.00	0.0	413.1	415.2	1.08	14.42
1524.0	0.00	0.0	410.9	413.1	1.08	14.41
1530.0	0.00	0.0	408.7	410.9	1.08	14.39
1536.0	0.00	0.0	406.6	408.7	1.07	14.37
1542.0	0.00	0.0	404.5	406.6	1.07	14.35
1548.0	0.00	0.0	402.3	404.5	1.07	14.34
1554.0	0.00	0.0	400.2	402.3	1.06	14.32

***** SUMMARY OF ROUTING COMPUTATIONS *****

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN002.HYD
Outflow Hydrograph: b:OUTBM002.HYD

Starting Pond W.S. Elevation = 8.00 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow	=	64.00 cfs
Peak Outflow	=	18.90 cfs
Peak Elevation	=	15.21 ft

***** Summary of Approximate Peak Storage *****

Initial Storage	=	0 cu-ft
Peak Storage From Storm	=	94,114 cu-ft
Total Storage in Pond	=	94,114 cu-ft

Warning: Inflow hydrograph truncated on left side.

EXECUTED: 10-20-1994 14:46:50

24 HR SCS

Return Freq: 10 years

```

*****
*                               *
*          JOINT BMP            *
*    TUTTERS NECK NORTH        *
*    KINGSMILL VILLAGE         *
* BMP AFTER SILT BASIN IS REMOVED *
*                               *
*****

```

Inflow Hydrograph: b:PDSINO10.HYD

Rating Table file: b:BMP234 .PND

----INITIAL CONDITIONS----

Elevation = 8.00 ft

Outflow = 0.00 cfs

Storage = 0 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
8.00	0.0	0
8.50	0.2	3,118
9.00	0.4	6,476
9.50	0.5	10,085
10.00	0.6	13,952
10.50	0.6	18,141
11.00	0.7	22,719
11.50	0.8	27,702
12.00	0.8	33,110
12.50	0.9	39,278
13.00	0.9	46,597
13.50	1.0	55,167
14.00	1.0	65,084
14.50	1.1	76,244
15.00	9.0	88,508
15.50	32.7	101,928
16.00	65.3	116,557
16.50	83.0	132,505
17.00	93.6	149,891
17.50	115.7	168,778
18.00	149.7	189,226
18.50	193.9	211,340
19.00	248.1	235,231

INTERMEDIATE ROUTING
COMPUTATIONS

2S/t (cfs)	2S/t + 0 (cfs)
0.0	0.0
17.3	17.5
36.0	36.4
56.0	56.5
77.5	79.1
100.8	101.4
126.2	126.9
153.9	154.7
183.9	184.7
218.2	219.1
258.9	259.6
306.5	307.5
361.6	362.6
423.6	424.7
491.7	500.7
566.3	599.0
647.5	712.8
736.1	819.1
832.7	926.3
937.7	1053.4
1051.3	1201.0
1174.1	1368.0
1306.8	1554.9

Time increment (t) = 6.0 min.

EXECUTED: 10-20-1994 14:46:50

24 HR SCS

Return Freq: 10 years

Fond File: b:BMP234 .PND

Inflow Hydrograph: b:POSINO10.HYD

Outflow Hydrograph: b:OUTBMO10.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	5.00	---	0.0	0.0	0.00	8.00
666.0	5.00	10.0	9.8	10.0	0.11	8.29
672.0	6.00	11.0	20.3	20.8	0.23	8.59
678.0	6.00	12.0	31.6	32.3	0.36	8.89
684.0	7.00	13.0	43.7	44.6	0.44	9.20
690.0	8.00	15.0	57.7	58.7	0.51	9.55
696.0	9.00	17.0	73.5	74.7	0.58	9.92
702.0	15.00	24.0	96.3	97.5	0.60	10.42
708.0	21.00	36.0	130.9	132.3	0.72	11.10
714.0	27.00	48.0	177.3	178.9	0.80	11.90
720.0	35.00	82.0	257.5	259.3	0.90	12.99
726.0	105.00	161.0	416.3	418.5	1.09	14.45
732.0	162.00	268.0	570.0	684.3	57.13	15.87
738.0	163.00	325.0	714.0	895.0	90.51	16.85
744.0	111.00	274.0	779.4	988.0	104.33	17.24
750.0	69.00	180.0	760.7	959.4	99.35	17.13
756.0	48.00	117.0	700.1	877.7	88.79	16.77
762.0	36.00	84.0	629.8	784.1	77.16	16.34
768.0	28.00	64.0	574.1	693.8	59.84	15.92
774.0	24.00	52.0	545.2	626.1	40.46	15.62
780.0	20.00	44.0	528.5	589.2	30.33	15.45
786.0	18.00	38.0	516.8	566.5	24.87	15.39
792.0	16.00	34.0	508.6	550.8	21.07	15.25
798.0	15.00	31.0	502.8	539.6	18.38	15.20
804.0	14.00	29.0	498.8	531.8	16.51	15.16
810.0	14.00	28.0	496.2	526.8	15.30	15.13
816.0	13.00	27.0	494.4	523.2	14.43	15.11
822.0	12.00	25.0	492.4	519.4	13.50	15.09
828.0	11.00	23.0	490.3	515.4	12.53	15.07
834.0	10.00	21.0	488.2	511.3	11.55	15.05
840.0	10.00	20.0	486.6	508.2	10.80	15.04
846.0	10.00	20.0	485.8	506.6	10.42	15.03
852.0	9.00	19.0	484.8	504.8	9.97	15.02
858.0	9.00	18.0	483.8	502.8	9.50	15.01
864.0	9.00	18.0	483.3	501.8	9.26	15.01
870.0	8.00	17.0	482.4	500.3	8.95	15.00
876.0	8.00	16.0	480.9	498.4	8.76	14.98
882.0	8.00	16.0	479.7	496.9	8.60	14.97
888.0	8.00	16.0	478.7	495.7	8.47	14.97
894.0	8.00	16.0	478.0	494.7	8.38	14.96
900.0	8.00	16.0	477.4	494.0	8.30	14.96
906.0	8.00	16.0	476.9	493.4	8.24	14.95
912.0	8.00	16.0	476.5	492.9	8.19	14.95
918.0	7.00	15.0	475.4	491.5	8.04	14.94
924.0	7.00	14.0	473.8	489.4	7.83	14.93

EXECUTED: 10-20-1994 14:46:50

24 HR SDS

Return Freq: 10 years

Pond File: b:BMP234 .PND

Inflow Hydrograph: b:POSIN010.HYD

Outflow Hydrograph: b:OUTBM010.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	7.00	14.0	472.5	487.8	7.66	14.91
936.0	7.00	14.0	471.4	486.5	7.52	14.91
942.0	7.00	14.0	470.6	485.4	7.41	14.90
948.0	6.00	13.0	469.2	483.6	7.22	14.89
954.0	6.00	12.0	467.2	481.2	6.97	14.87
960.0	6.00	12.0	465.7	479.2	6.77	14.86
966.0	6.00	12.0	464.5	477.7	6.61	14.85
972.0	6.00	12.0	463.5	476.5	6.48	14.84
978.0	5.00	11.0	462.0	474.5	6.28	14.83
984.0	5.00	10.0	459.9	472.0	6.01	14.81
990.0	5.00	10.0	458.3	469.9	5.80	14.80
996.0	5.00	10.0	457.1	468.3	5.64	14.79
1002.0	5.00	10.0	456.1	467.1	5.50	14.78
1008.0	5.00	10.0	455.3	466.1	5.40	14.77
1014.0	5.00	10.0	454.6	465.3	5.32	14.77
1020.0	5.00	10.0	454.1	464.6	5.25	14.76
1026.0	5.00	10.0	453.7	464.1	5.20	14.76
1032.0	5.00	10.0	453.4	463.7	5.16	14.76
1038.0	5.00	10.0	453.2	463.4	5.12	14.75
1044.0	5.00	10.0	453.0	463.2	5.10	14.75
1050.0	5.00	10.0	452.8	463.0	5.08	14.75
1056.0	5.00	10.0	452.7	462.8	5.06	14.75
1062.0	5.00	10.0	452.6	462.7	5.05	14.75
1068.0	4.00	9.0	451.7	461.6	4.93	14.74
1074.0	4.00	8.0	450.2	459.7	4.74	14.73
1080.0	4.00	8.0	449.1	458.2	4.59	14.72
1086.0	4.00	8.0	448.1	457.1	4.46	14.71
1092.0	4.00	8.0	447.4	456.1	4.37	14.71
1098.0	4.00	8.0	446.8	455.4	4.29	14.70
1104.0	4.00	8.0	446.4	454.8	4.23	14.70
1110.0	4.00	8.0	446.0	454.4	4.18	14.70
1116.0	4.00	8.0	445.7	454.0	4.15	14.69
1122.0	4.00	8.0	445.5	453.7	4.11	14.69
1128.0	4.00	8.0	445.3	453.5	4.09	14.69
1134.0	4.00	8.0	445.1	453.3	4.07	14.69
1140.0	4.00	8.0	445.0	453.1	4.06	14.69
1146.0	4.00	8.0	444.9	453.0	4.05	14.69
1152.0	4.00	8.0	444.9	452.9	4.04	14.69
1158.0	4.00	8.0	444.8	452.9	4.03	14.69
1164.0	4.00	8.0	444.8	452.8	4.02	14.68
1170.0	4.00	8.0	444.7	452.8	4.02	14.68
1176.0	3.00	7.0	443.9	451.7	3.91	14.68
1182.0	3.00	6.0	442.5	449.9	3.72	14.67
1188.0	3.00	6.0	441.3	448.5	3.57	14.66
1194.0	3.00	6.0	440.4	447.3	3.45	14.65
1200.0	3.00	6.0	439.7	446.4	3.36	14.64

EXECUTED: 10-20-1994

14:46:50

24 HR SCS

Return Freq: 10 years

Pond File: b:BMP234 .PND

Inflow Hydrograph: b:POSIN010.HYD

Outflow Hydrograph: b:OUTBM010.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	3.00	6.0	439.1	445.7	3.28	14.64
1212.0	3.00	6.0	438.7	445.1	3.22	14.63
1218.0	3.00	6.0	438.3	444.7	3.18	14.63
1224.0	3.00	6.0	438.0	444.3	3.14	14.63
1230.0	3.00	6.0	437.8	444.0	3.11	14.63
1236.0	3.00	6.0	437.6	443.8	3.09	14.63
1242.0	3.00	6.0	437.5	443.6	3.07	14.62
1248.0	3.00	6.0	437.4	443.5	3.06	14.62
1254.0	3.00	6.0	437.3	443.4	3.04	14.62
1260.0	3.00	6.0	437.2	443.3	3.03	14.62
1266.0	3.00	6.0	437.2	443.2	3.03	14.62
1272.0	3.00	6.0	437.1	443.2	3.02	14.62
1278.0	3.00	6.0	437.1	443.1	3.02	14.62
1284.0	3.00	6.0	437.1	443.1	3.01	14.62
1290.0	3.00	6.0	437.0	443.1	3.01	14.62
1296.0	3.00	6.0	437.0	443.0	3.01	14.62
1302.0	3.00	6.0	437.0	443.0	3.01	14.62
1308.0	3.00	6.0	437.0	443.0	3.01	14.62
1314.0	3.00	6.0	437.0	443.0	3.00	14.62
1320.0	3.00	6.0	437.0	443.0	3.00	14.62
1326.0	3.00	6.0	437.0	443.0	3.00	14.62
1332.0	3.00	6.0	437.0	443.0	3.00	14.62
1338.0	3.00	6.0	437.0	443.0	3.00	14.62
1344.0	3.00	6.0	437.0	443.0	3.00	14.62
1350.0	3.00	6.0	437.0	443.0	3.00	14.62
1356.0	3.00	6.0	437.0	443.0	3.00	14.62
1362.0	2.00	5.0	436.2	442.0	2.90	14.61
1368.0	2.00	4.0	434.2	440.2	2.71	14.60
1374.0	2.00	4.0	433.6	438.8	2.56	14.59
1380.0	2.00	4.0	432.7	437.6	2.45	14.59
1386.0	2.00	4.0	432.0	436.7	2.35	14.58
1392.0	2.00	4.0	431.5	436.0	2.28	14.57
1398.0	2.00	4.0	431.0	435.5	2.22	14.57
1404.0	2.00	4.0	430.7	435.0	2.18	14.57
1410.0	2.00	4.0	430.4	434.7	2.14	14.57
1416.0	2.00	4.0	430.2	434.4	2.11	14.56
1422.0	2.00	4.0	430.0	434.2	2.09	14.56
1428.0	2.00	4.0	429.9	434.0	2.07	14.56
1434.0	2.00	4.0	429.8	433.9	2.05	14.56
1440.0	2.00	4.0	429.7	433.8	2.04	14.56
1446.0	1.00	3.0	428.3	432.7	1.93	14.55
1452.0	1.00	2.0	427.3	430.8	1.74	14.54
1458.0	1.00	2.0	426.2	429.3	1.58	14.53
1464.0	1.00	2.0	425.2	428.2	1.46	14.52
1470.0	1.00	2.0	424.5	427.2	1.37	14.52
1476.0	1.00	2.0	423.9	426.5	1.29	14.51

EXECUTED: 10-20-1994 14:46:50

24 HR SCS

Return Freq: 10 years

Pond File: b:BMP234 .PND

Inflow Hydrograph: b:POSIN010.HYD

Outflow Hydrograph: b:OUTBMO10.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	423.5	425.9	1.23	14.51
1488.0	1.00	2.0	423.1	425.5	1.18	14.51
1494.0	1.00	2.0	422.8	425.1	1.14	14.50
1500.0	1.00	2.0	422.6	424.8	1.11	14.50
1506.0	1.00	2.0	422.4	424.6	1.10	14.50
1512.0	1.00	2.0	422.2	424.4	1.10	14.50
1518.0	1.00	2.0	422.0	424.2	1.10	14.50
1524.0	0.00	1.0	420.8	423.0	1.10	14.49
1530.0	0.00	0.0	418.6	420.8	1.09	14.47
1536.0	0.00	0.0	416.4	418.6	1.09	14.45
1542.0	0.00	0.0	414.3	416.4	1.09	14.43
1548.0	0.00	0.0	412.1	414.2	1.08	14.42
1554.0	0.00	0.0	409.9	412.1	1.08	14.40

POND-2 Version: 5.17 S/N: 1295130250
EXECUTED: 10-20-1994 14:46:50

24 HR SCS

Page 6
Return Freq: 10 years

***** SUMMARY OF ROUTING COMPUTATIONS *****

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSINO10.HYD
Outflow Hydrograph: b:OUTBM010.HYD

Starting Pond W.S. Elevation = 8.00 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow = 165.00 cfs
Peak Outflow = 104.33 cfs
Peak Elevation = 17.24 ft

***** Summary of Approximate Peak Storage *****

Initial Storage = 0 cu-ft
Peak Storage From Storm = 159,065 cu-ft

Total Storage in Pond = 159,065 cu-ft

Warning: Inflow hydrograph truncated on left side.

EXECUTED: 10-20-1994 14:49:37

24 HR SCS

Return Freq: 25 years

```

*****
*                               *
*          JOINT BMP            *
*    TUTTERS NECK NORTH        *
*    KINGSMILL VILLAGE         *
* BMP AFTER SILT BASIN IS REMOVED *
*                               *
*****

```

Inflow Hydrograph: b:POSINO25.HYD

Rating Table file: b:BMP234 .PND

-----INITIAL CONDITIONS-----

Elevation = 8.00 ft
 Outflow = 0.00 cfs
 Storage = 0 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
8.00	0.0	0
8.50	0.2	3,118
9.00	0.4	6,476
9.50	0.5	10,085
10.00	0.6	13,952
10.50	0.6	18,141
11.00	0.7	22,719
11.50	0.8	27,702
12.00	0.8	33,110
12.50	0.9	39,278
13.00	0.9	46,597
13.50	1.0	55,167
14.00	1.0	65,084
14.50	1.1	76,244
15.00	9.0	88,508
15.50	32.7	101,928
16.00	65.3	116,557
16.50	83.0	132,505
17.00	93.6	149,891
17.50	115.7	168,778
18.00	149.7	189,226
18.50	193.9	211,340
19.00	248.1	235,231

INTERMEDIATE ROUTING
COMPUTATIONS

2S/t (cfs)	2S/t + 0 (cfs)
0.0	0.0
17.3	17.5
36.0	36.4
56.0	56.5
77.5	78.1
100.8	101.4
126.2	126.9
153.9	154.7
183.9	184.7
218.2	219.1
258.9	259.8
306.5	307.5
361.6	362.6
423.6	424.7
491.7	500.7
566.3	599.0
647.5	712.8
736.1	819.1
832.7	926.3
937.7	1053.4
1051.3	1201.0
1174.1	1368.0
1306.8	1554.9

Time increment (t) = 6.0 min.

EXECUTED: 10-20-1994 14:49:37

24 HR SCS

Return Freq: 25 years

Pond File: b:BMP234 .PND

Inflow Hydrograph: b:POSIN025.HYD

Outflow Hydrograph: b:OUTBM025.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	5.00	---	0.0	0.0	0.00	8.00
666.0	6.00	11.0	10.7	11.0	0.13	8.31
672.0	6.00	12.0	22.2	22.7	0.26	8.64
678.0	7.00	13.0	34.5	35.2	0.39	8.97
684.0	8.00	15.0	48.5	49.5	0.46	9.32
690.0	10.00	18.0	65.4	66.5	0.55	9.73
696.0	11.00	21.0	85.2	86.4	0.60	10.18
702.0	18.00	29.0	112.9	114.2	0.65	10.75
708.0	24.00	42.0	153.3	154.9	0.80	11.50
714.0	31.00	55.0	206.6	208.3	0.87	12.34
720.0	62.00	93.0	297.6	299.6	0.98	13.42
726.0	119.00	181.0	465.2	478.6	6.71	14.85
732.0	182.00	301.0	617.8	766.2	74.19	16.25
738.0	183.00	365.0	776.0	982.8	103.43	17.22
744.0	125.00	308.0	838.5	1084.0	122.75	17.60
750.0	78.00	203.0	814.2	1041.5	113.63	17.45
756.0	54.00	132.0	752.1	946.2	97.06	17.08
762.0	40.00	94.0	674.8	846.1	85.67	16.63
768.0	31.00	71.0	604.2	745.8	70.78	16.15
774.0	26.00	57.0	560.2	661.2	50.52	15.77
780.0	22.00	48.0	537.5	608.2	35.33	15.54
786.0	20.00	42.0	523.5	579.5	28.00	15.40
792.0	18.00	38.0	514.2	561.5	23.66	15.31
798.0	17.00	35.0	507.8	549.2	20.69	15.25
804.0	16.00	33.0	503.5	540.8	18.67	15.20
810.0	15.00	31.0	500.2	534.5	17.14	15.17
816.0	14.00	29.0	497.4	529.2	15.87	15.14
822.0	14.00	28.0	495.5	525.4	14.97	15.13
828.0	13.00	27.0	494.0	522.5	14.26	15.11
834.0	12.00	25.0	492.2	519.0	13.41	15.09
840.0	12.00	24.0	490.7	516.2	12.73	15.08
846.0	11.00	23.0	489.4	513.7	12.14	15.07
852.0	11.00	22.0	488.3	511.4	11.59	15.05
858.0	10.00	21.0	487.1	509.3	11.06	15.04
864.0	10.00	20.0	486.0	507.1	10.55	15.03
870.0	9.00	19.0	485.0	505.0	10.04	15.02
876.0	9.00	18.0	483.9	503.0	9.54	15.01
882.0	9.00	18.0	483.3	501.9	9.28	15.01
888.0	9.00	18.0	483.0	501.3	9.14	15.00
894.0	9.00	18.0	482.9	501.0	9.07	15.00
900.0	9.00	18.0	482.8	500.9	9.04	15.00
906.0	9.00	18.0	482.8	500.8	9.02	15.00
912.0	9.00	18.0	482.7	500.8	9.01	15.00
918.0	8.00	17.0	481.9	499.7	8.90	14.99
924.0	8.00	16.0	480.5	497.9	8.71	14.98

EXECUTED: 10-20-1994 14:49:37

24 HR SCS

Return Freq: 25 years

Fond File: b:BMF234 .PND

Inflow Hydrograph: b:POSIN025.HYD

Outflow Hydrograph: b:OUTBM025.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	8.00	16.0	479.4	496.5	8.56	14.97
936.0	8.00	16.0	478.5	495.4	8.45	14.96
942.0	8.00	16.0	477.8	494.5	8.35	14.96
948.0	7.00	15.0	476.4	492.8	8.18	14.95
954.0	7.00	14.0	474.6	490.4	7.93	14.93
960.0	7.00	14.0	473.1	488.6	7.74	14.92
966.0	7.00	14.0	471.9	487.1	7.58	14.91
972.0	7.00	14.0	471.0	485.9	7.46	14.90
978.0	6.00	13.0	469.5	484.0	7.26	14.89
984.0	6.00	12.0	467.5	481.5	7.00	14.87
990.0	6.00	12.0	465.9	479.5	6.79	14.86
996.0	6.00	12.0	464.6	477.9	6.63	14.85
1002.0	6.00	12.0	463.6	476.6	6.50	14.84
1008.0	6.00	12.0	462.8	475.6	6.39	14.84
1014.0	6.00	12.0	462.2	474.8	6.31	14.83
1020.0	6.00	12.0	461.7	474.2	6.25	14.83
1026.0	6.00	12.0	461.3	473.7	6.20	14.82
1032.0	6.00	12.0	461.0	473.3	6.16	14.82
1038.0	5.00	11.0	460.0	472.0	6.02	14.81
1044.0	5.00	10.0	458.4	470.0	5.81	14.80
1050.0	5.00	10.0	457.1	468.4	5.64	14.79
1056.0	5.00	10.0	456.1	467.1	5.51	14.78
1062.0	5.00	10.0	455.3	466.1	5.40	14.77
1068.0	5.00	10.0	454.6	465.3	5.32	14.77
1074.0	5.00	10.0	454.1	464.6	5.25	14.76
1080.0	5.00	10.0	453.7	464.1	5.20	14.76
1086.0	5.00	10.0	453.4	463.7	5.16	14.76
1092.0	5.00	10.0	453.2	463.4	5.13	14.75
1098.0	5.00	10.0	453.0	463.2	5.10	14.75
1104.0	5.00	10.0	452.8	463.0	5.08	14.75
1110.0	4.00	9.0	451.9	461.8	4.96	14.74
1116.0	4.00	8.0	450.4	459.9	4.76	14.73
1122.0	4.00	8.0	449.2	458.4	4.60	14.72
1128.0	4.00	8.0	448.2	457.2	4.48	14.71
1134.0	4.00	8.0	447.5	456.2	4.38	14.71
1140.0	4.00	8.0	446.9	455.5	4.30	14.70
1146.0	4.00	8.0	446.4	454.9	4.24	14.70
1152.0	4.00	8.0	446.0	454.4	4.19	14.70
1158.0	4.00	8.0	445.7	454.0	4.15	14.69
1164.0	4.00	8.0	445.5	453.7	4.12	14.69
1170.0	4.00	8.0	445.3	453.5	4.09	14.69
1176.0	4.00	8.0	445.2	453.3	4.07	14.69
1182.0	4.00	8.0	445.0	453.2	4.06	14.69
1188.0	4.00	8.0	444.9	453.0	4.05	14.69
1194.0	4.00	8.0	444.9	452.9	4.04	14.69
1200.0	4.00	8.0	444.8	452.9	4.03	14.69

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24 HR SCS

Return Freq: 25 years

Pond File: b:BMP234 .PND

Inflow Hydrograph: b:POSIN025.HYD

Outflow Hydrograph: b:OUTBM025.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	4.00	8.0	444.8	452.8	4.02	14.69
1212.0	4.00	8.0	444.7	452.8	4.02	14.68
1218.0	4.00	8.0	444.7	452.7	4.01	14.68
1224.0	4.00	8.0	444.7	452.7	4.01	14.68
1230.0	4.00	8.0	444.7	452.7	4.01	14.68
1236.0	4.00	8.0	444.6	452.7	4.01	14.68
1242.0	4.00	8.0	444.6	452.6	4.01	14.68
1248.0	4.00	8.0	444.6	452.6	4.00	14.68
1254.0	4.00	8.0	444.6	452.6	4.00	14.68
1260.0	4.00	8.0	444.6	452.6	4.00	14.68
1266.0	3.00	7.0	443.8	451.6	3.90	14.68
1272.0	3.00	6.0	442.4	449.8	3.71	14.67
1278.0	3.00	6.0	441.3	448.4	3.56	14.66
1284.0	3.00	6.0	440.4	447.3	3.45	14.65
1290.0	3.00	6.0	439.7	446.4	3.35	14.64
1296.0	3.00	6.0	439.1	445.7	3.28	14.64
1302.0	3.00	6.0	438.7	445.1	3.22	14.63
1308.0	3.00	6.0	438.3	444.7	3.18	14.63
1314.0	3.00	6.0	438.0	444.3	3.14	14.63
1320.0	3.00	6.0	437.8	444.0	3.11	14.63
1326.0	3.00	6.0	437.6	443.8	3.09	14.63
1332.0	3.00	6.0	437.5	443.6	3.07	14.62
1338.0	3.00	6.0	437.4	443.5	3.05	14.62
1344.0	3.00	6.0	437.3	443.4	3.04	14.62
1350.0	3.00	6.0	437.2	443.3	3.03	14.62
1356.0	3.00	6.0	437.2	443.2	3.03	14.62
1362.0	2.00	5.0	436.3	442.2	2.92	14.62
1368.0	2.00	4.0	434.9	440.3	2.73	14.60
1374.0	2.00	4.0	433.7	438.9	2.58	14.59
1380.0	2.00	4.0	432.8	437.7	2.46	14.59
1386.0	2.00	4.0	432.1	436.8	2.36	14.58
1392.0	2.00	4.0	431.5	436.1	2.29	14.58
1398.0	2.00	4.0	431.1	435.5	2.23	14.57
1404.0	2.00	4.0	430.7	435.1	2.18	14.57
1410.0	2.00	4.0	430.4	434.7	2.14	14.57
1416.0	2.00	4.0	430.2	434.4	2.11	14.56
1422.0	2.00	4.0	430.0	434.2	2.09	14.56
1428.0	2.00	4.0	429.9	434.0	2.07	14.56
1434.0	2.00	4.0	429.8	433.9	2.06	14.56
1440.0	2.00	4.0	429.7	433.8	2.04	14.56
1446.0	1.00	3.0	428.8	432.7	1.93	14.55
1452.0	1.00	2.0	427.3	430.8	1.74	14.54
1458.0	1.00	2.0	426.2	429.3	1.58	14.53
1464.0	1.00	2.0	425.2	428.2	1.46	14.52
1470.0	1.00	2.0	424.5	427.2	1.37	14.52
1476.0	1.00	2.0	423.9	426.5	1.29	14.51

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24 HR SCS

Return Freq: 25 years

Pond File: b:BMP234 .PND

Inflow Hydrograph: b:POSIN025.HYD

Outflow Hydrograph: b:OUTBM025.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	423.5	425.9	1.23	14.51
1488.0	1.00	2.0	423.1	425.5	1.18	14.51
1494.0	1.00	2.0	422.8	425.1	1.14	14.50
1500.0	1.00	2.0	422.6	424.8	1.11	14.50
1506.0	1.00	2.0	422.4	424.6	1.10	14.50
1512.0	1.00	2.0	422.2	424.4	1.10	14.50
1518.0	1.00	2.0	422.0	424.2	1.10	14.50
1524.0	0.00	1.0	420.8	423.0	1.10	14.49
1530.0	0.00	0.0	418.6	420.8	1.09	14.47
1536.0	0.00	0.0	416.4	418.6	1.07	14.45
1542.0	0.00	0.0	414.3	416.4	1.05	14.43
1548.0	0.00	0.0	412.1	414.3	1.02	14.42
1554.0	0.00	0.0	409.9	412.1	1.02	14.40

PCND-2 Version: 5.17 S/N: 1295130250
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24 HR SCS

Page 6
Return Freq: 25 years

***** SUMMARY OF ROUTING COMPUTATIONS *****

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSINO25.HYD
Outflow Hydrograph: b:OUTBMO25.HYD

Starting Pond W.S. Elevation = 8.00 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow	=	123.00 cfs
Peak Outflow	=	122.75 cfs
Peak Elevation	=	17.60 ft

***** Summary of Approximate Peak Storage *****

Initial Storage	=	0 cu-ft
Peak Storage From Storm	=	173,020 cu-ft
Total Storage in Pond	=	173,020 cu-ft

Warning: Inflow hydrograph truncated on left side.

EXECUTED: 10-20-1994 14:52:23

24 HR SCS

Return Freq: 100 years

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*****
*                                     *
*               JOINT BMP             *
*            TUTTERS NECK NORTH       *
*            KINGSMILL VILLAGE        *
*  BMP AFTER SILT BASIN IS REMOVED   *
*                                     *
*****

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Inflow Hydrograph: b:POSIN100.HYD

Rating Table file: b:BMP234 .PND

----INITIAL CONDITIONS----

Elevation = 8.00 ft
 Outflow = 0.00 cfs
 Storage = 0 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
8.00	0.0	0
8.50	0.2	3,118
9.00	0.4	6,476
9.50	0.5	10,085
10.00	0.6	13,952
10.50	0.6	18,141
11.00	0.7	22,719
11.50	0.8	27,702
12.00	0.8	33,110
12.50	0.9	39,278
13.00	0.9	46,597
13.50	1.0	55,167
14.00	1.0	65,084
14.50	1.1	76,244
15.00	9.0	88,508
15.50	32.7	101,928
16.00	65.3	116,557
16.50	83.0	132,505
17.00	93.6	149,891
17.50	115.7	168,778
18.00	149.7	189,226
18.50	193.9	211,340
19.00	248.1	235,231

INTERMEDIATE ROUTING
COMPUTATIONS

2S/t (cfs)	2S/t + 0 (cfs)
0.0	0.0
17.3	17.5
36.0	36.4
56.0	56.5
77.5	78.1
100.8	101.4
126.2	126.9
153.9	154.7
183.9	184.7
218.2	219.1
258.9	259.8
306.5	307.5
361.6	362.6
423.6	424.7
491.7	500.7
566.3	599.0
647.5	712.8
736.1	819.1
832.7	926.3
937.7	1053.4
1051.3	1201.0
1174.1	1368.0
1306.8	1554.9

Time increment (t) = 6.0 min.

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24 HR SCS

Return Freq: 100 years

Pond File: b:BMP234 .PND

Inflow Hydrograph: b:POSIN100.HYD

Outflow Hydrograph: b:OUTBM100.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
660.0	7.00	-----	0.0	0.0	0.00	8.00
666.0	8.00	15.0	14.7	15.0	0.17	8.43
672.0	9.00	17.0	31.0	31.7	0.35	8.87
678.0	10.00	19.0	49.0	50.0	0.47	9.34
684.0	12.00	22.0	69.9	71.0	0.57	9.84
690.0	13.00	25.0	93.7	94.9	0.60	10.36
696.0	15.00	28.0	120.3	121.7	0.68	10.90
702.0	25.00	40.0	158.7	160.3	0.80	11.59
708.0	34.00	59.0	215.9	217.7	0.90	12.48
714.0	44.00	78.0	292.0	293.9	0.97	13.36
720.0	87.00	131.0	420.8	423.0	1.10	14.49
726.0	166.00	253.0	565.6	673.8	54.12	15.63
732.0	251.00	417.0	775.8	982.6	103.36	17.22
738.0	251.00	502.0	937.7	1277.8	170.03	18.23
744.0	171.00	422.0	976.3	1359.7	191.71	18.48
750.0	105.00	276.0	925.7	1252.3	163.29	18.15
756.0	73.00	178.0	849.1	1103.7	127.31	17.67
762.0	54.00	127.0	771.6	976.1	102.26	17.20
768.0	42.00	96.0	692.0	867.6	87.79	16.73
774.0	36.00	78.0	620.4	770.0	74.82	16.27
780.0	30.00	66.0	570.9	686.4	57.72	15.83
786.0	28.00	58.0	546.4	628.9	41.28	15.63
792.0	25.00	53.0	533.7	599.4	32.82	15.50
798.0	23.00	48.0	524.7	581.7	28.54	15.41
804.0	21.00	44.0	517.9	568.7	25.39	15.35
810.0	20.00	41.0	512.8	558.9	23.03	15.30
816.0	19.00	39.0	509.2	551.8	21.33	15.26
822.0	18.00	37.0	506.2	546.2	19.96	15.23
828.0	17.00	35.0	503.7	541.2	18.77	15.21
834.0	16.00	33.0	501.3	536.7	17.68	15.18
840.0	16.00	32.0	499.6	533.3	16.87	15.17
846.0	15.00	31.0	498.2	530.6	16.21	15.15
852.0	15.00	30.0	496.9	528.2	15.63	15.14
858.0	14.00	29.0	495.8	525.9	15.08	15.13
864.0	13.00	27.0	494.1	522.8	14.32	15.11
870.0	13.00	26.0	492.8	520.1	13.68	15.10
876.0	12.00	25.0	491.5	517.8	13.11	15.09
882.0	12.00	24.0	490.4	515.5	12.58	15.08
888.0	12.00	24.0	489.8	514.4	12.30	15.07
894.0	12.00	24.0	489.5	513.8	12.15	15.07
900.0	12.00	24.0	489.3	513.5	12.08	15.06
906.0	12.00	24.0	489.2	513.3	12.04	15.06
912.0	11.00	23.0	488.7	512.2	11.78	15.06
918.0	11.00	22.0	487.9	510.7	11.40	15.05
924.0	10.00	21.0	486.9	508.9	10.97	15.04

EXECUTED: 10-20-1994 14:52:23

24 HR SCS

Return Freq: 100 years

Pond File: b:BMP234 .PND

Inflow Hydrograph: b:POSIN100.HYD

Outflow Hydrograph: b:OUTEM100.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
930.0	10.00	20.0	485.9	506.9	10.50	15.03
936.0	10.00	20.0	485.4	505.9	10.26	15.03
942.0	10.00	20.0	485.1	505.4	10.13	15.02
948.0	9.00	19.0	484.5	504.1	9.83	15.02
954.0	9.00	18.0	483.6	502.5	9.43	15.01
960.0	9.00	18.0	483.2	501.6	9.22	15.00
966.0	9.00	18.0	483.0	501.2	9.11	15.00
972.0	9.00	18.0	482.8	501.0	9.06	15.00
978.0	8.00	17.0	482.0	499.8	8.91	14.99
984.0	8.00	16.0	480.6	498.0	8.72	14.98
990.0	8.00	16.0	479.4	496.6	8.57	14.97
996.0	8.00	16.0	478.5	495.4	8.45	14.97
1002.0	8.00	16.0	477.8	494.5	8.36	14.96
1008.0	7.00	15.0	476.5	492.8	8.18	14.95
1014.0	7.00	14.0	474.6	490.5	7.93	14.93
1020.0	7.00	14.0	473.1	488.6	7.74	14.92
1026.0	7.00	14.0	471.9	487.1	7.59	14.91
1032.0	7.00	14.0	471.0	485.9	7.46	14.90
1038.0	7.00	14.0	470.3	485.0	7.37	14.90
1044.0	7.00	14.0	469.7	484.3	7.29	14.89
1050.0	7.00	14.0	469.2	483.7	7.23	14.89
1056.0	7.00	14.0	468.9	483.2	7.18	14.89
1062.0	7.00	14.0	468.6	482.9	7.14	14.88
1068.0	7.00	14.0	468.3	482.6	7.11	14.88
1074.0	7.00	14.0	468.2	482.3	7.09	14.88
1080.0	7.00	14.0	468.0	482.2	7.07	14.88
1086.0	7.00	14.0	467.9	482.0	7.06	14.88
1092.0	7.00	14.0	467.8	481.9	7.05	14.88
1098.0	7.00	14.0	467.7	481.8	7.04	14.88
1104.0	7.00	14.0	467.7	481.7	7.03	14.88
1110.0	6.00	13.0	466.8	480.7	6.92	14.87
1116.0	6.00	12.0	465.4	478.8	6.73	14.86
1122.0	6.00	12.0	464.2	477.4	6.58	14.85
1128.0	6.00	12.0	463.3	476.2	6.46	14.84
1134.0	6.00	12.0	462.6	475.3	6.36	14.83
1140.0	6.00	12.0	462.0	474.6	6.29	14.83
1146.0	6.00	12.0	461.6	474.0	6.23	14.82
1152.0	6.00	12.0	461.2	473.6	6.18	14.82
1158.0	6.00	12.0	460.9	473.2	6.14	14.82
1164.0	6.00	12.0	460.7	472.9	6.11	14.82
1170.0	6.00	12.0	460.5	472.7	6.09	14.82
1176.0	5.00	11.0	459.6	471.5	5.97	14.81
1182.0	5.00	10.0	458.1	469.6	5.77	14.80
1188.0	5.00	10.0	456.8	468.1	5.61	14.79
1194.0	5.00	10.0	455.9	466.8	5.48	14.78
1200.0	5.00	10.0	455.1	465.9	5.38	14.77

EXECUTED: 10-20-1994 14:52:23

24 HR SCS

Return Freq: 100 years

Pond File: b:BMP234 .PND

Inflow Hydrograph: b:POSIN100.HYD

Outflow Hydrograph: b:OUTBM100.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1206.0	5.00	10.0	454.5	465.1	5.30	14.77
1212.0	5.00	10.0	454.0	464.5	5.24	14.76
1218.0	5.00	10.0	453.7	464.0	5.19	14.76
1224.0	5.00	10.0	453.4	463.7	5.15	14.76
1230.0	5.00	10.0	453.1	463.4	5.12	14.75
1236.0	5.00	10.0	452.9	463.1	5.09	14.75
1242.0	5.00	10.0	452.8	462.9	5.07	14.75
1248.0	5.00	10.0	452.7	462.8	5.06	14.75
1254.0	5.00	10.0	452.6	462.7	5.05	14.75
1260.0	4.00	9.0	451.7	461.6	4.93	14.74
1266.0	4.00	8.0	450.2	459.7	4.74	14.73
1272.0	4.00	8.0	449.1	458.2	4.59	14.72
1278.0	4.00	8.0	448.1	457.1	4.46	14.71
1284.0	4.00	8.0	447.4	456.1	4.37	14.71
1290.0	4.00	8.0	446.8	455.4	4.29	14.70
1296.0	4.00	8.0	446.3	454.8	4.23	14.70
1302.0	4.00	8.0	446.0	454.3	4.18	14.70
1308.0	4.00	8.0	445.7	454.0	4.14	14.69
1314.0	4.00	8.0	445.5	453.7	4.11	14.69
1320.0	4.00	8.0	445.3	453.5	4.09	14.69
1326.0	4.00	8.0	445.1	453.3	4.07	14.69
1332.0	4.00	8.0	445.0	453.1	4.06	14.69
1338.0	4.00	8.0	444.9	453.0	4.05	14.69
1344.0	4.00	8.0	444.9	452.9	4.04	14.69
1350.0	4.00	8.0	444.8	452.9	4.03	14.69
1356.0	3.00	7.0	444.0	451.8	3.92	14.68
1362.0	3.00	6.0	442.5	450.0	3.73	14.67
1368.0	3.00	6.0	441.4	448.5	3.58	14.66
1374.0	3.00	6.0	440.4	447.4	3.46	14.65
1380.0	3.00	6.0	439.7	446.4	3.36	14.64
1386.0	3.00	6.0	439.2	445.7	3.29	14.64
1392.0	3.00	6.0	438.7	445.2	3.23	14.63
1398.0	3.00	6.0	438.3	444.7	3.18	14.63
1404.0	3.00	6.0	438.1	444.3	3.14	14.63
1410.0	2.00	5.0	437.0	443.1	3.01	14.62
1416.0	2.00	4.0	435.4	441.0	2.80	14.61
1422.0	2.00	4.0	434.2	439.4	2.63	14.60
1428.0	2.00	4.0	433.2	438.2	2.50	14.59
1434.0	2.00	4.0	432.4	437.2	2.40	14.58
1440.0	2.00	4.0	431.7	436.4	2.31	14.58
1446.0	2.00	4.0	431.2	435.7	2.25	14.57
1452.0	2.00	4.0	430.8	435.2	2.20	14.57
1458.0	2.00	4.0	430.5	434.8	2.16	14.57
1464.0	2.00	4.0	430.3	434.5	2.12	14.56
1470.0	2.00	4.0	430.1	434.3	2.10	14.56
1476.0	1.00	3.0	429.1	433.1	1.97	14.56

EXECUTED: 10-20-1994 14:52:23

24 HR SCS

Return Freq: 100 years

Pond File: b:BMP234 .PND

Inflow Hydrograph: b:POBIN100.HYD

Outflow Hydrograph: b:OUTBM100.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1482.0	1.00	2.0	427.6	431.1	1.77	14.54
1488.0	1.00	2.0	426.4	429.6	1.61	14.53
1494.0	1.00	2.0	425.4	428.4	1.48	14.52
1500.0	1.00	2.0	424.6	427.4	1.38	14.52
1506.0	1.00	2.0	424.0	426.6	1.30	14.51
1512.0	1.00	2.0	423.6	426.0	1.24	14.51
1518.0	1.00	2.0	423.2	425.6	1.19	14.51
1524.0	1.00	2.0	422.9	425.2	1.15	14.50
1530.0	0.00	1.0	421.7	423.9	1.10	14.49
1536.0	0.00	0.0	419.5	421.7	1.10	14.48
1542.0	0.00	0.0	417.3	419.5	1.09	14.46
1548.0	0.00	0.0	415.1	417.3	1.09	14.44
1554.0	0.00	0.0	413.0	415.1	1.02	14.42

POND-2 Version: 5.17 S/N: 1295130250
EXECUTED: 10-20-1994 14:52:23

24 HR SCS

Page 6
Return Freq: 100 years

***** SUMMARY OF ROUTING COMPUTATIONS *****

Pond File: b:BMP234 .PND
Inflow Hydrograph: b:POSIN100.HYD
Outflow Hydrograph: b:OUTBM100.HYD

Starting Pond W.S. Elevation = 8.00 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow	=	251.00 cfs
Peak Outflow	=	191.71 cfs
Peak Elevation	=	18.48 ft

***** Summary of Approximate Peak Storage *****

Initial Storage	=	0 cu-ft
Peak Storage From Storm	=	210,244 cu-ft
Total Storage in Pond	=	210,244 cu-ft

Warning: Inflow hydrograph truncated on left side.

MULTIPLE STORM ROUTING FOR PONDS (.MSR)

BMP234 <-- This File

Title: JOINT BMP

TUTTERS NECK NORTH

KINGSMILL VILLAGE

BMP AFTER SILT BASIN IS REMOVED

Storm Comments	Return Frequency (years)	Inflow Hydrograph (.HYD)	Pond Rating Table File (.PND)	Starting W.S.Elev. (feet)	Outflow Hydrograph (.HYD)
24 HR SCS	2	POSIN002	BMP234	8	OUTBM002
24 HR SCS	10	POSIN010	BMP234	8	OUTBM010
24 HR SCS	25	POSIN025	BMP234	8	OUTBM025
24 HR SCS	100	POSIN100	BMP234	8	OUTBM100

OUTPUT OPTIONS

* Input Data * Routing Computations * Routing Summary Plots

NOTE: If you are using 'Outlet Structures(.STR)' for computing your Q vs.E rating table, you must compute a PND file for use with this MSR option. If W.S. Elev. is left blank, the first elevation in PND will be used. If Outflow HYD is left blank, an outflow HYD file will not be stored.

<Esc> Exit

<FS> Compute

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
BMP VOLUMNS AFTER SILT BASIN IS REMOVED

CALCULATED 10-20-1994 18:08:34
DISK FILE: b:BMP234 .VOL

Planimeter scale: 1 inch = 50 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (sq.ft)	A1+A2+sq ² (A1*A2) (sq.ft)	* Volume (cubic-ft)	Volume Sum (cubic-ft)
8.00	2.40	6,000	0	0	0
10.00	3.20	8,000	20,928	13,952	13,952
12.00	4.50	11,250	28,737	19,158	33,110
14.00	8.50	21,250	47,962	31,974	65,084
16.00	12.20	30,500	77,208	51,472	116,557
18.00	17.00	42,500	109,003	72,669	189,226
20.00	22.90	57,250	149,077	99,384	288,610

Elevations With Areas Interpolated From
The Closest Two Planimeter Readings

13.00	-----	15,856	40,462	13,487	46,597
14.50	-----	23,406	66,958	11,160	76,244
15.00	-----	25,667	70,271	23,424	88,508
17.00	-----	36,252	100,003	33,334	149,891
19.00	-----	49,601	138,014	46,005	235,230

$$IA = (sq.rt(Area1) + ((Ei-E1)/(E2-E1))*(sq.rt(Area2)-sq.rt(Area1)))^2$$

where: E1, E2 = Closest two elevations with planimeter data
Ei = Elevation at which to interpolate area
Area1, Area2 = Areas computed for E1, E2, respectively
IA = Interpolated area for Ei

* Incremental volume computed by the Conic Method for Reservoir Volumes.

$$Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))$$

where: EL1, EL2 = Lower and upper elevations of the increment
Area1, Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

Outlet Structure File: BMP234 .STR

POND-2 Version: 5.17

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Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

***** COMPOSITE OUTFLOW SUMMARY *****

Elevation (ft)	Q (cfs)	Contributing Structures
8.00	0.0	
8.50	0.2	1
9.00	0.4	1
9.50	0.5	1
10.00	0.6	1
10.50	0.6	1
11.00	0.7	1
11.50	0.8	1
12.00	0.8	1
12.50	0.9	1
13.00	0.9	1
13.50	1.0	1
14.00	1.0	1
14.50	1.1	1
15.00	9.0	1 +2
15.50	32.7	1 +2
16.00	65.3	1 +2
16.50	83.0	1 +2
17.00	93.6	1 +2 +3
17.50	115.7	1 +2 +3
18.00	149.7	1 +2 +3
18.50	193.9	1 +2 +3
19.00	248.1	1 +2 +3
19.50	0.0	

Outlet Structure File: BMP234 .STR

POND-2 Version: 5.17

S/N: 1295130250

Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

Outlet Structure File: b:BMP234 .STR
Planimeter Input File: b:BMP234 .VOL
Rating Table Output File: b:BMP234 .PND

Min. Elev.(ft) = 8 Max. Elev.(ft) = 19.5 Incr.(ft) = .5

Additional elevations (ft) to be included in table:

* * * * *

SYSTEM CONNECTIVITY

Structure	No.	Q Table	Q Table
ORIFICE	1	->	1
STAND PIPE	2	->	2
WEIR-XY	3	->	3

Outflow rating table summary was stored in file:
b:BMP234 .PND

Outlet Structure File: BMP234 .STR

POND-2 Version: 5.17

S/N: 1295130250

Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

>>>>> Structure No. 1 <<<<<
(Input Data)

ORIFICE

Orifice - Based on Area and Datum Elevation

E1 elev.(ft)?	8.001
E2 elev.(ft)?	19.5
Orifice coeff.?	.6
Invert elev.(ft)?	8.001
Datum elev.(ft) ?	8.17
Orifice area (sq ft)?	.0873

Outlet Structure File: BMP234 .STR

POND-2 Version: 5.17

S/N: 1295130250

Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

>>>>> Structure No. 2 <<<<<
(Input Data)

STAND PIPE

Stand Pipe with weir or orifice flow

E1 elev.(ft)? 14.671
E2 elev.(ft)? 19.5
Crest elev.(ft)? 14.671
Diameter (ft)? 4
Weir coefficient? 3.33
Orifice coefficient? .6
Start transition elev.(ft) @ ?
Transition height (ft)?

Outlet Structure File: BMP234 .STR

POND-2 Version: 5.17

S/N: 1295130250

Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

>>>>> Structure No. 3 <<<<<
(Input Data)

WEIR-XY

Weir - Defined by X, Y Coordinates

E1 (ft) =17.00 E2 (ft) =19.5

X dist.(ft)	Y elev.(ft)
0	19
4	17
14	17
18	19

Outlet Structure File: BMP234 .STR

POND-2 Version: 5.17

S/N: 1295130250

Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

Outflow Rating Table for Structure #1
ORIFICE Orifice - Based on Area and Datum Elevation

Elevation (ft)	Q (cfs)	Computation Messages
8.00	0.0	E < E1=8.001
8.50	0.2	H =.33
9.00	0.4	H =.83
9.50	0.5	H =1.33
10.00	0.6	H =1.83
10.50	0.6	H =2.33
11.00	0.7	H =2.83
11.50	0.8	H =3.33
12.00	0.8	H =3.83
12.50	0.9	H =4.33
13.00	0.9	H =4.83
13.50	1.0	H =5.33
14.00	1.0	H =5.83
14.50	1.1	H =6.33
15.00	1.1	H =6.83
15.50	1.1	H =7.33
16.00	1.2	H =7.83
16.50	1.2	H =8.33
17.00	1.2	H =8.830
17.50	1.3	H =9.330
18.00	1.3	H =9.830
18.50	1.4	H =10.33
19.00	1.4	H =10.83
19.50	0.0	E = or > E2=19.5

C = .6 A = .0873 sq.ft.

H (ft) = Table elev. - Datum elev. (8.17 ft)

Q (cfs) = C * A * sqr(2g * H)

Outlet Structure File: BMP234 .STR

POND-2 Version: 5.17

S/N: 1295130250

Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

Outflow Rating Table for Structure #2
STAND PIPE Stand Pipe with weir or orifice flow

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation Messages
8.00	0.0	E < Inv.El.= 14.671
8.50	0.0	E < E1=14.671
9.00	0.0	E < E1=14.671
9.50	0.0	E < E1=14.671
10.00	0.0	E < E1=14.671
10.50	0.0	E < E1=14.671
11.00	0.0	E < E1=14.671
11.50	0.0	E < E1=14.671
12.00	0.0	E < E1=14.671
12.50	0.0	E < E1=14.671
13.00	0.0	E < E1=14.671
13.50	0.0	E < E1=14.671
14.00	0.0	E < E1=14.671
14.50	0.0	E < E1=14.671
15.00	7.9	Weir: H =.329
15.50	31.6	Weir: H =.929
16.00	64.1	Weir: H =1.329
16.50	81.8	Orifice: H =1.829
17.00	92.3	Orifice: H =2.329
17.50	101.8	Orifice: H =2.829
18.00	110.4	Orifice: H =3.329
18.50	118.4	Orifice: H =3.829
19.00	125.9	Orifice: H =4.329
19.50	0.0	E = or > E2=19.5

Weir Cw = 3.33 Weir length = 12.56637 ft
Orifice Co = .6 Orifice area = 12.56637 sq.ft.
Q (cfs) = (Cw * L * H**1.5) or (Co * A * sqr(2*g*H))
No transition used, transition height = 0.0
Weir equation = Orifice equation @ elev.= 16.11694 ft

Outlet Structure File: BMP234 .STR

POND-2 Version: 5.17

S/N: 1295130250

Date Executed:

Time Executed:

JOINT BMP
TUTTERS NECK NORTH
KINGSMILL VILLAGE
STRUCTURES

Outflow Rating Table for Structure #3
WEIR-XY Weir - Defined by X, Y Coordinates

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation	Messages
8.00	0.0	E < Y min= 17	
8.50	0.0	E < Y min= 17	
9.00	0.0	E < Y min= 17	
9.50	0.0	E < Y min= 17	
10.00	0.0	E < Y min= 17	
10.50	0.0	E < Y min= 17	
11.00	0.0	E < Y min= 17	
11.50	0.0	E < Y min= 17	
12.00	0.0	E < Y min= 17	
12.50	0.0	E < Y min= 17	
13.00	0.0	E < Y min= 17	
13.50	0.0	E < Y min= 17	
14.00	0.0	E < Y min= 17	
14.50	0.0	E < Y min= 17	
15.00	0.0	E < E1=17.00	
15.50	0.0	E < E1=17.00	
16.00	0.0	E < E1=17.00	
16.50	0.0	E < E1=17.00	
17.00	0.0	E = Y min= 17	
17.50	12.6	W(ft)=12.0	Max. D(ft)=.5
18.00	38.0	W(ft)=14.0	Max. D(ft)=1.0
18.50	74.2	W(ft)=16.0	Max. D(ft)=1.5
19.00	120.8	W(ft)=18.0	Max. D(ft)=2.0
19.50	0.0	E = or > E2=19.5	

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

(with or without an emergency spillway)

Project TUTTERS NECK NORTH - KINGSMILL VILLAGE

Basin # 1 Location SEE PLANS

Total area draining to basin: 40.95 acres.

Basin Volume Design

Wet Storage:

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

$$67 \text{ cu. yds.} \times \underline{40.95} \text{ acres} = \underline{2744} \text{ cu. yds.}$$

2. Available basin volume = 2925 cu. yds. at elevation 1450. (From storage - elevation curve)

3. Excavate 93 cu. yds. to obtain required volume*.

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

4. Available volume before cleanout required.

$$33 \text{ cu. yds.} \times \underline{40.95} \text{ acres} = \underline{1351} \text{ cu. yds.}$$

5. Elevation corresponding to cleanout level = 12.1 ±.

(From Storage - Elevation Curve)

6. Distance from invert of the dewatering orifice to cleanout level = 2.4 ft. (Min. = 1.0 ft.)

Dry Storage:

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

$$67 \text{ cu. yds.} \times \underline{40.95} \text{ acres} = \underline{2744} \text{ cu. yds.}$$

8. Total available basin volume at crest of riser* = $\frac{4419^*}{16.0}$ cu. yds. at elevation 16.0. (From Storage - Elevation Curve)

* Minimum = 134 cu. yds./acre of total drainage area.
 PROVIDED 108 cu./Acre

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 = 16.0
- Top of Dam = 19.0
- Design High Water = 16.16 (2 year)
- Upstream Toe of Dam = 8±

Basin Shape

12. $\frac{\text{Length of Flow}}{\text{Effective Width}} = \frac{L}{We} = \frac{500}{50}$

If > 2 , baffles are not required 10

If < 2 , baffles are required _____

Runoff

13. $Q_2 = \underline{64.0}$ cfs (From Chapter 5) 10 FLOW
14. $Q_{25} = \underline{183.0}$ cfs (From Chapter 5) 10 FLOW

Principal Spillway Design

15. With emergency spillway, required spillway capacity $Q_p = Q_2 = \underline{64.00}$ cfs. or (riser and barrel)

Without emergency spillway, required spillway capacity $Q_p = Q_{25} = \underline{\hspace{2cm}}$ cfs. (riser and barrel)

16. With emergency spillway:

$$\text{Assumed available head (h)} = \underline{17.00 - 14.525} \text{ ft. (Using } Q_2\text{)}$$

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

Without emergency spillway:

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

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

17. Riser diameter (D_r) = 48 in. Actual head (h) = 0.16 ft. FOR 2 YEAR STORM
(From Plate 3.14-8.)

Note: Avoid orifice flow conditions.

18. Barrel length (l) = 80' ± ft.

$$\text{Head (H) on barrel through embankment} = \frac{9.2 \text{ ft. } 24 \text{ ENR}}{11.7 \text{ ft } 100 \text{ y ENR}} \quad 16.16-7$$

(From Plate 3.14-7).

19. Barrel diameter = 36 in. $132 > 122.5$ OK

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

20. Trash rack and anti-vortex device

$$\text{Diameter} = \underline{80.5} \text{ inches.}$$

$$\text{Height} = \underline{24} \text{ inches.}$$

(From Table 3.14-D).

Emergency Spillway Design

21. Required spillway capacity $Q_e = \overset{100}{Q_{25}} - Q_p = \underline{194 - 132 = 77} \text{ cfs.}$

22. Bottom width (b) = 10 ft.; the slope of the exit channel (s) = 2 ft./foot; and the minimum length of the exit channel (x) = 40 ft.
(From Table 3.14-C). * CONCRETE CHANNEL

Anti-Seep Collar Design

23. Depth of water at principal spillway crest (Y) = 9.7 ft. $16.7 - 7 = 9.7$

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

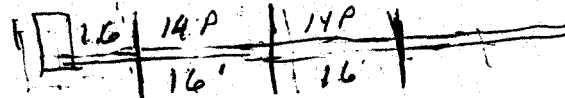
Slope of principal spillway barrel (S_b) = 1 %

Length of barrel in saturated zone (L_s) = 68 ft.

$$L_s = 9.7(7)(1 + 0.4) = 68'$$

24. Number of collars required = 3 dimensions = 5.25 x 5.25

(from Plate 3.14-12).

Final Design Elevations

25. Top of Dam = 19.0

Design High Water = 16.16 290002

Emergency Spillway Crest = 17.0

Principal Spillway Crest = 16.0

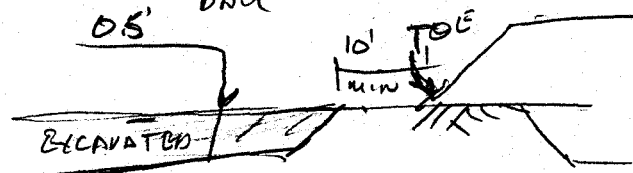
Dewatering Orifice Invert = 14.5

Cleanout Elevation = 12.2

Elevation of Upstream Toe of Dam
or Excavated Bottom of "Wet Storage
Area" (if excavation was performed) = ±

$$P = .8', \quad 2P = 1.6', \quad 14P = 11.2' \quad \text{use } 16' \text{ @ Joints}$$

BOTTOM OF EXCAVATION AREA = 6
BUT IS NOT AT TOE OF
DAM



18.73 - 17.00 = 1.73' is EMERGENCY spillway for 100 yr storm
 $Q = 3.367 b h^{1.5} = 3.367 (10)(1.73)^{1.5} = 76.6 \text{ CFS}$

100 year - 199.11 CFS TOTAL - 76.6 CFS = 122.5 CFS THRU BARREL

TABLE 3.14-B
PIPE FLOW CHART, $n = 0.013$

FOR REINFORCED CONCRETE PIPE INLET $K_e = K_b + K_d = 0.65$ AND 70 FEET OF REINFORCED CONCRETE PIPE CONDUIT (full flow assumed)
 Note correction factors for pipe lengths other than 70 feet
 diameter of pipe in inches

H, in feet	12"	15"	18"	21"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"	90"	96"	102"
1	3.22	5.44	8.29	11.8	15.9	26.0	38.6	53.8	71.4	91.5	114	139	167	197	229	264	302	342
2	4.55	7.69	11.7	16.7	22.5	36.8	54.6	76.0	101	129	161	197	236	278	324	374	427	483
3	5.57	9.42	14.4	20.4	27.5	45.0	66.9	93.1	124	159	198	241	289	341	397	458	523	592
4	6.43	10.9	16.6	23.5	31.8	52.0	77.3	108	143	183	228	278	334	394	459	529	604	683
5	7.19	12.2	18.5	26.3	35.5	58.1	86.4	120	160	205	255	311	373	440	513	591	675	764
6	7.88	13.3	20.3	28.8	38.9	63.7	94.6	132	175	224	280	341	409	482	562	647	739	837
7	8.51	14.4	21.9	31.1	42.0	68.8	102	142	189	242	302	368	441	521	607	699	798	904
8	9.10	15.4	23.5	33.3	44.9	73.5	109	152	202	259	323	394	472	557	645	748	854	966
9	9.65	16.3	24.9	35.3	47.7	78.0	116	161	214	275	342	418	500	590	688	793	905	1025
10	10.2	17.2	26.2	37.2	50.2	82.2	122	170	226	289	361	440	527	622	725	836	954	1080
11	10.7	18.0	27.5	39.0	52.7	86.2	128	178	237	304	379	462	553	653	761	877	1001	1133
12	11.1	18.9	28.7	40.8	55.0	90.1	134	186	247	317	395	482	578	682	794	916	1045	1184
13	11.6	19.6	29.9	42.4	57.3	93.7	139	194	257	330	411	502	601	710	827	953	1088	1232
14	12.0	20.4	31.0	44.1	59.4	97.3	145	201	267	342	427	521	624	736	858	989	1129	1278
15	12.5	21.1	32.1	45.6	61.5	101	150	208	277	354	442	539	646	762	888	1024	1169	1323
16	12.9	21.8	33.2	47.1	63.5	104	155	215	286	366	457	557	667	787	917	1057	1207	1367
17	13.3	22.4	34.2	48.5	65.5	107	159	222	294	377	471	574	688	812	946	1090	1244	1409
18	13.7	23.1	35.2	49.9	67.4	110	164	228	303	388	484	591	708	835	973	1121	1280	1450
19	14.0	23.7	36.1	51.3	69.2	113	168	234	311	399	497	607	727	858	1000	1152	1315	1489
20	14.4	24.3	37.1	52.6	71.0	116	173	240	319	409	510	623	746	880	1026	1182	1350	1528
21	14.7	24.9	38.0	53.9	72.8	119	177	246	327	419	523	638	764	902	1051	1211	1383	1566
22	15.1	25.5	38.9	55.2	74.5	122	181	252	335	429	535	653	782	923	1076	1240	1415	1603
23	15.4	26.1	39.8	56.5	76.2	125	186	258	342	439	547	668	800	944	1100	1268	1447	1639
24	15.8	26.7	40.6	57.7	77.8	127	189	263	350	448	559	682	817	964	1123	1295	1478	1674
25	16.1	27.2	41.5	58.9	79.4	130	193	269	357	458	571	696	834	984	1147	1322	1509	1708
26	16.4	27.7	42.3	60.0	81.0	133	197	274	364	467	582	710	850	1004	1169	1348	1539	1742
27	16.7	28.3	43.1	61.2	82.5	135	201	279	371	476	593	723	867	1023	1192	1373	1568	1775
28	17.0	28.8	43.9	62.3	84.1	138	204	285	378	484	604	737	883	1041	1214	1399	1597	1808
29	17.3	29.3	44.7	63.4	85.5	140	208	290	384	493	615	750	898	1060	1235	1423	1625	1840
30	17.6	29.8	45.4	64.5	87.0	142	212	294	391	501	625	763	913	1078	1256	1448	1653	1871
L, in feet	Correction Factors For Other Pipe Lengths																	
20	1.30	1.24	1.21	1.18	1.15	1.12	1.10	1.08	1.07	1.06	1.05	1.05	1.04	1.04	1.03	1.03	1.03	1.03
30	1.22	1.18	1.15	1.13	1.12	1.09	1.08	1.06	1.05	1.05	1.04	1.04	1.03	1.03	1.03	1.02	1.02	1.02
40	1.15	1.13	1.11	1.10	1.08	1.07	1.05	1.05	1.04	1.03	1.03	1.03	1.02	1.02	1.02	1.02	1.02	1.02
50	1.09	1.08	1.07	1.06	1.05	1.04	1.04	1.03	1.03	1.02	1.02	1.02	1.01	1.01	1.01	1.01	1.01	1.01
60	1.04	1.04	1.03	1.03	1.03	1.02	1.02	1.02	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
70	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
80	.96	.97	.97	.97	.98	.98	.98	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99
90	.93	.94	.94	.95	.95	.96	.97	.97	.98	.98	.98	.98	.98	.99	.99	.99	.99	.99
100	.90	.91	.92	.93	.93	.95	.95	.96	.97	.97	.98	.98	.98	.98	.98	.98	.98	.99
120	.84	.86	.87	.89	.90	.91	.93	.94	.94	.95	.96	.96	.96	.97	.97	.97	.97	.98
140	.80	.82	.83	.85	.86	.88	.90	.91	.92	.93	.94	.94	.95	.95	.96	.96	.96	.97
160	.76	.78	.80	.82	.83	.86	.88	.89	.90	.91	.92	.93	.94	.94	.95	.95	.95	.96

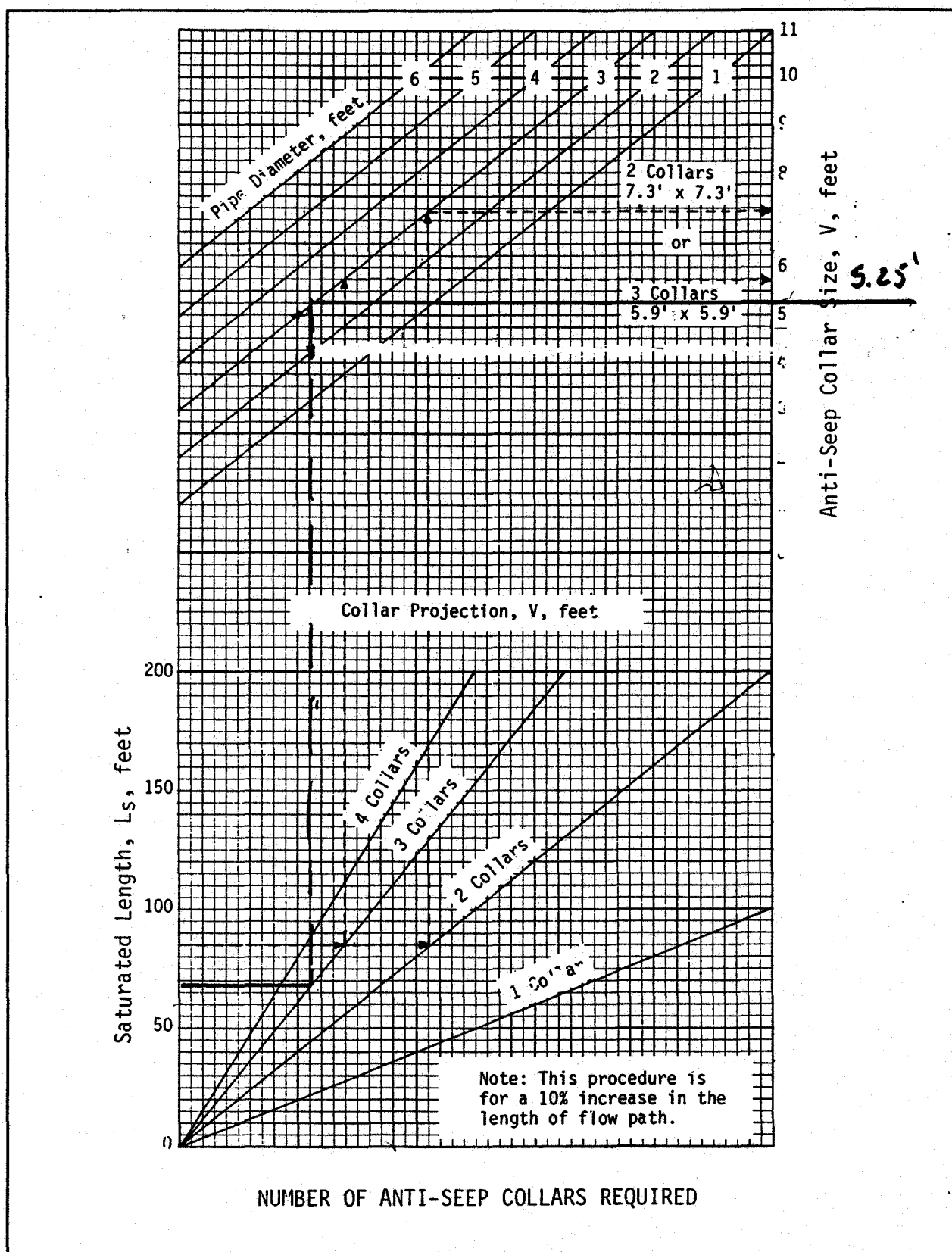
1992

Check Barrel Capacity

3.14

Source: USDA-SCS

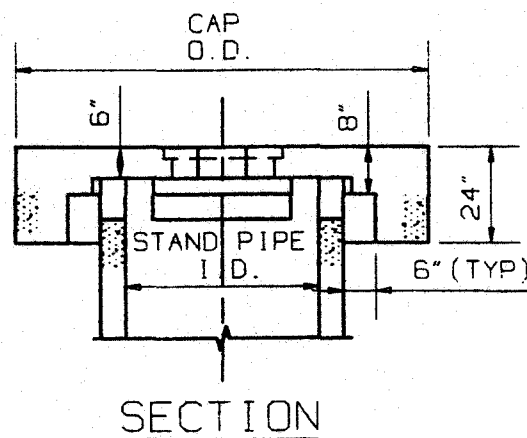
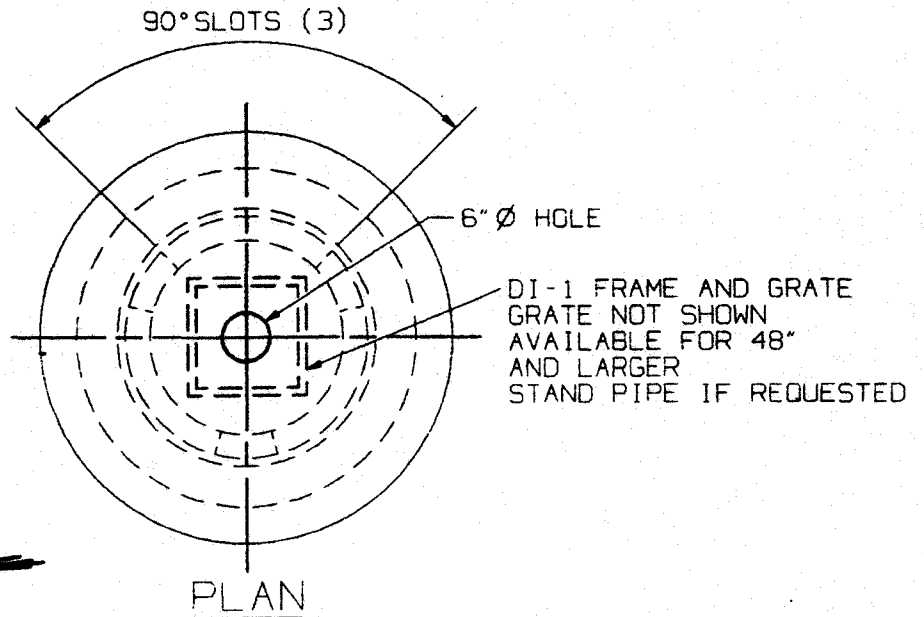
III - 99



Source: USDA-SCS

Plate 3.14-12

STAND-PIPE ID	CAP OD	APPROX. CAP WEIGHT
24"	51"	.214†
27"	58"	1.527†
30"	58"	1.329†
36"	66½"	1.753†
42"	73½"	2.053†
48"	80½"	2.373†
54"	87½"	2.572†
60"	94½"	2.919†
66"	101½"	3.286†
72"	107"	3.409†
78"	114"	3.799†
84"	124"	4.809†
96"	133"	5.506†
108"	147"	5.822†



ANTI-VORTEX DEVICE



CONCRETE PIPE & PRODUCTS CO., INC.

DATE 01-24-93

PAGE 14.1

7. Geotechnical Reports

GEO DESIGN CONSULTANTS, INC.
204-B GRAYSON RD.
VIRGINIA BEACH, VIRGINIA 23462
Phone: (804) 473-9533
Fax: (804) 473-9534

Sheet 1 Of 1

Project: NORTH QUARTER KINGSMILL VILLAGE
Client: GEORGE NICE & SONS, INC.
General Contractor: GEORGE NICE & SONS, INC.
Grading Contractor: GEORGE NICE & SONS, INC.
Technician: MARK SCHOLEFIELD

Job No.: 95.141T
Client Job No.: _____
Date: 5/25/95
Weather: SUNNY Temp.(°F): 88
Field Copy Given to Client? X Yes No

Test No.	Moisture (%)	Dry Density (PCF)	Proctor Number	% of Proctor		Pass	Fail	Elevation Below Finish Grade (FT)	Location, Grid, Coordinates, or Roadway Station
				Spec	Actual				
1	24.0	97.6	2	95	100+	X		9.5' BELOW F.G	NORTH QUARTER EARTH DAM
2	24.8	96.3	2	95	100+	X		10.5' BELOW F.G	
3	24.6	96.5	2	95	100+	X		8.5' BELOW F.G	
4	29.9	91.8	2	95	100.6	X		7.0' BELOW F.G	
5	30.2	86.8	2	95	95.1	X		6.0' BELOW F.G	
6	25.8	92.0	2	95	100.8	X		5.0' BELOW F.G	
7	30.8	90.6	2	95	99.3	X		4.0' BELOW F.G	

Compaction Equipment Used:

- (1) Test Location Established By: ESTIMATION
- (2) Depth of Elev. of Test Established By: ESTIMATION
- (3) Test Conducted On: INTERMITTENT BASIS
- (4) Proctor Type: ASTM D698 (Standard)

Remarks: _____

Field Rep _____

Proctor No.: 2
Max. Density (PCF): 91.3
Opt. Moisture (%): 28.0

GEO DESIGN CONSULTANTS, INC.
204-B GRAYSON RD.
VIRGINIA BEACH, VIRGINIA 23462
Phone: (804) 473-9533
Fax: (804) 473-9534

Sheet 1 Of 1

Project: NORTH QUARTER KINGSMILL VILLAGE
Client: GEORGE NICE & SONS, INC.
General Contractor: GEORGE NICE & SONS, INC.
Grading Contractor: GEORGE NICE & SONS, INC.
Technician: MARK SCHOLEFIELD & ROCKY MELLA

Job No.: 95.141T
Client Job No.: _____
Date: 5/30/95
Weather: PT. CLOUDY Temp.(°F): 78
Field Copy Given to Client? X Yes No

Test No.	Moisture (%)	Dry Density (PCF)	Proctor Number	% of Proctor		Pass	Fail	Elevation Below Finish Grade (FT)	Location, Grid, Coordinates, or Roadway Station
				Spec	Actual				
1	26.6	95.6	2	95	100+	X		4' BELOW F.G.	EARTH DAM @ NORTH QUARTER

Compaction Equipment Used:

- (1) Test Location Established By: ESTIMATION
- (2) Depth of Elev. of Test Established By: ESTIMATION
- (3) Test Conducted On: INTERMITTENT BASIS
- (4) Proctor Type: ASTM D698 (Standard)

Remarks: _____

Field Rep _____
Proctor No.: 2
Max. Density (PCF): 91.3
Opt. Moisture (%): 28.0

8. Correspondence With Owners

RECEIVED
(6-26-91)
RECEIVED

MEMORANDUM

TO: DARRYL COOK
FILE 7169-B196

FROM: DEBORAH LENCESKI *DL*

DATE: JUNE 24, 1991

RE: JOINT BMP POND BETWEEN KINGSMILL VILLAGE AND COUNTY
PROPERTY

Minutes of our meeting of June 14, 1991.

1. Six point, extended dry detention pond can be built for Kingsmill Village if County property is included in open space calculations.
2. Maximum amount of development of County property can occur if this pond is enlarged (i.e. increasing height of dam) and converted to eight point, extended wet pond.
3. Darryl is to research realistic development levels and green space preservation areas.
4. I am to research alternatives for dam construction.

cc: Mr. John Hagee

Assume ^{impervious} 6₁ acres to be developed on County property.

Calculation as follows:

23.5 ac total
- 5.7 ac developed now

17.8 ac left to devel.
- 4.4 ac 25% slopes

13.4 ac available
- .45 impervious -

6.0 acres

August 31, 1994

C.C.

Mr. Bernard M. Farmer
Director of Code Compliance
James City County
P.O. Box 8784
Williamsburg VA 23187-8784

Re: Tutter's Neck North,
Kingsmill on the James

Dear Mr. Farmer:

Pursuant to recent discussions, we hereby request an exception to the James City County Chesapeake Bay Ordinance. Specifically, the exception is necessary to allow construction activities in the areas of 25% or greater slopes. The accompanying drawing outlines the area needing exception

The purpose of this exception request is to allow construction of a proposed BMP on the northern limits of this project, and construction of stormwater outfalls.

We trust that this provides the information needed to act upon our request for this exception. If you have any questions or need further information, please do not hesitate to call.

Sincerely,

LANGLEY AND McDONALD

Ronnie Orsborne
Vice President

CRO/mjb
cc: John Hagee
Joseph M. Cross, Jr.



June 16, 1995

TO: **George Nice & Sons, Inc.**
143 Skimino Road
Williamsburg, Virginia 23188

Attn: Mr. Ray Nice, P.E.

RE: **Compaction Test Results**
North Quarter Kingsmill Quarter
Williamsburg, Virginia
Project No: 95.141T

Dear Mr. Nice:

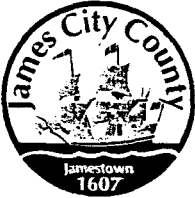
Please find attached the results of the compaction tests performed at the above referenced project site dated May 25, 1995 and May 30, 1995. It should be noted that all tests met project specifications on this date.

We appreciate the opportunity to be of service to you on this project. Should you have any questions regarding this report, please do not hesitate to call this office at (804) 473-9533.

Respectfully Submitted,
Geo Design Consultants, Inc.

Walter L. Weeks, EIT
Staff Engineer

GEOTECHNICAL, MATERIALS, & ENVIRONMENTAL ENGINEERING



DEVELOPMENT MANAGEMENT

101-E MOUNTS BAY ROAD, P.O. BOX 8784, WILLIAMSBURG, VIRGINIA 23187-8784
(757) 253-6671

E-MAIL: devtman@james-city.va.us
Fax: (757) 253-6850

CODE COMPLIANCE
(757) 253-6626

E-MAIL: codecomp@james-city.va.us

COUNTY ENGINEER
(757) 253-6678

INTEGRATED PEST MANAGEMENT
(757) 253-2620

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

December 6, 1996

Mr. Joseph M. Cross
Busch Properties Inc.
100 Kingsmill Road
Williamsburg, VA 23185

Re: North Quarter BMP

Dear Mr. Cross;

This letter is to follow up with our recent phone conversation concerning the water being impounded within the BMP at Kingsmill's North Quarter subdivision.

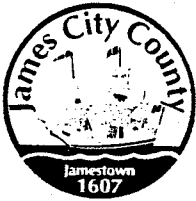
As you know this BMP was originally designed by Langley & McDonald to serve as a wet pond, which would have impounded water. Subsequent to our review, the design for this BMP was changed to a dry basin because of concerns for the preservation of the existing trees and understory vegetation.

Langley and McDonald have, as is required, furnished this office with as-built drawings for this BMP. Those as-built drawings depict discrepancies from the design elevations for the inlet and outfall pipes. We believe these variances from the design may be causing the present impoundment of water within the BMP. This condition if uncorrected, may result in the death of the trees and create a mosquito breeding area.

Please contact our office with your recommendations for correcting this matter. If I may be of help, feel free to contact me at 253-6675.

Sincerely,

Patrick T. Menichino
Engineering Inspector



DEVELOPMENT MANAGEMENT

101-E MOUNTS BAY ROAD, P.O. BOX 8784, WILLIAMSBURG, VIRGINIA 23187-8784
(757) 253-6671

E-MAIL: devtman@james-city.va.us
Fax: (757) 253-6850

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COUNTY ENGINEER
(757) 253-6678

INTEGRATED PEST MANAGEMENT
(757) 253-2620

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

May 8, 1997

Mr. Joseph Cross
Busch Properties, Inc.
100 Kingsmill Road
Williamsburg, VA 23185

RE: Busch - North Quarter

Dear Mr. Cross:

I feel the need to followup on our field meeting of May 5, 1997, regarding the North Quarter BMP. The meeting was called because the pond's low release orifice had become clogged and the dry pond was filled to the riser elevation. You were concerned that the outlet protection device was not properly designed and would require extensive maintenance to allow for it to function. We were concerned that unless the water was drained from the pool area immediately, the inundated trees would die.

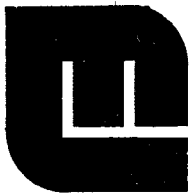
As you acknowledged, the reason the orifice became clogged was that the gabion structure that served as the trash protection device was removed. The protection was removed to determine if the reason for ponding of water about one foot deep around the outlet structure was caused by the outlet structure design or the fact that the orifice was constructed six inches too high as indicated by the as-built drawings. Based on observations made after removal of the gabion, it was determined that even though the orifice was too high, the small area of ponding created around the orifice would be acceptable as the area is already a wetland and there is little vegetation that would be negatively impacted.

It was decided at the meeting to revise the orifice release structure by extending a horizontal perforated pipe out into the bottom of the pond to increase the surface area for the trash protection device. The pipe then should be covered with VDOT #1 stone. After reflecting on the situation further, I would also recommend either increasing the size of the orifice pipe diameter or installing another four-inch orifice pipe. This will help account for reduced capacity available for drawdown due to the baseflow conditions that were not accounted for in the original design. I also want to emphasize that these recommendations need to be concurred with by your design engineers who prepared and signed the plans and were in attendance at the meeting.

I would remind you of the urgency to remove the water that has flooded the bottom as it could quickly kill all the trees. The saving of those trees was the main reason that this structure was designed as a dry rather than a wet pond. If you wish to discuss this matter further, I can be reached at 253-6673.

Sincerely,

Darryl E. Cook
Environmental Director



Langley and McDonald

Transmittal

ENGINEERS•PLANNERS•SURVEYORS

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

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

Project: NORTH QUARTER @ KINGSMILL

To: DARRYL COOK

From: BILL BROWN

Date: 7/3/97

Reply requested: ☐ Yes ☐ No

Reply to: _____

We are sending you:

☒ Attached

☐ Under separate cover via: _____

☒ Prints

☐ Copy of letter

☐ Plans

☐ Specifications

☐ Shop drawings

☐ _____

Transmitted as checked below:

☐ For your use

☐ As requested

☐ For review and comment

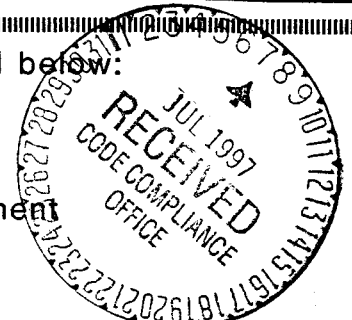
☐ For approval

☐ Return for correction

☐ Approved as noted

☐ Approved

☐ _____



Copies Date No. Description

2			REVISIONS to BMP @ NORTH QUARTER

Remarks: OK - DEC 7/17/97

Copies

1. File: 71069 & 210

2. _____

3. _____

4. _____

Enclosures

☐

☐

☐

☐

Langley and McDonald

By: Bill B

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

CC017 KINGSMILL VILLAGE NORTH QUARTER - 225 of 247

BUSCH PROPERTIES, INC.
300 McLaws Circle
WILLIAMSBURG, VA 23185

File -
Busch -
North Quarter

FAX COVERSHEET

TO: Pat Menacino

FAX NO.: 253-6850

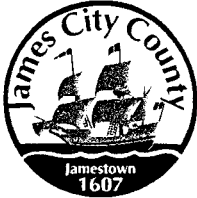
TELEPHONE NO.:

FROM: Tom Dunn

DATE: September 9, 1997

NUMBER OF PAGES (INCLUDING COVERSHEET): 2

RISER RETROFIT - 1997



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) 259-4116

August 24, 2001

Busch Properties Inc.
100 Kingsmill Road
Williamsburg, Va. 23185

Attn: Mr. Thomas E. Dunn,
Director, Construction

Re: Kingsmill North Quarter (formerly Tutters Neck North)
County Plan No. S-70-94
Stormwater Management Facility
County BMP ID Code: CC 017

*Reinspect Performed
11/2/01
JST, MDW
OK for Release
BOND Release
JST 11-2-01*

Dear Mr. Dunn:

The Environmental Division has reviewed a record drawing and other certification information as provided for the above referenced project. The record drawing provides as-built information for a dry detention basin located behind Lot 18 (168 North Quarter). Also, as a note, this facility was retrofitted with an 8-inch reverse slope water quality pipe and micropool around 1997-98.

Based on our review of record information and a concurrent field observation as performed on August 24th 2001, the following items must be addressed prior to release of the developer's surety instrument for the stormwater management/BMP facility:

Record Drawing:

1. The record drawings dated November 19th 1996 (Sheets 2 and 5 of 15) are **satisfactory** for the facility.

Construction Certification:

2. The construction certification as provided for dam construction dated October 13th 1995 is **satisfactory**.

Construction-Related Items:

3. ☒ The top of dam and downstream embankment is covered with small to medium sized trees and pines. Remove all trees and woody vegetation from along the top of the dam (crest) and the upstream and downslope embankment. Seed and mulch disturbed areas associated with any tree clearing and removal operations.

All trees cut.

4. ✓ The facility is intended to be a dry-type detention practice. Based on our field observations, standing water 2 to 4 inch in depth was present in the bottom of the facility. This is indicative of sediment or debris accumulations around the water quality control orifice and its supporting appurtenances. The water quality (or BMP) control orifice for this structure consists of a dual drain system. A lower primary 8-inch ductile iron drain is present which extends out at an angle southwest from the riser and a secondary higher 4-inch drain extends out perpendicular (south) from the riser. The natural stream through the BMP area mainly follows a path to the 8-inch drain since it is lower in elevation than the 4-inch drain. Clean and remove accumulated sediment, trash and debris from the upstream inverts of both water quality control orifices, but especially the primary 8-inch orifice which has a micropool with riprap. The micropool area has excessive accumulations of leaves, sediment and debris. *Micropool & 4" DRIF CLEAN-*

5. ✓ Remove trees and woody vegetation within 15 feet of the pond's corrugated riser structure. *OK*

6. ✓ Sweep and clean the concrete-lined emergency spillway of all leaves and woody debris. Also clear and remove the tree branch which has fallen across the emergency spillway.

7. ✓ Provide a hinged access hatch with lock on the riser's corrugated metal trash cap for future inspection and maintenance purposes. Furnish a key to Environmental Division.

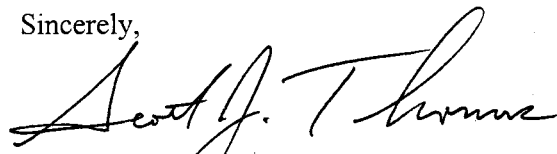
8. ✓ Remove entrench silt fence from the natural area downstream of the pond embankment.

*WALVED BY
SJT CAN SEE
10' DE W/O
PHONE CALL
FROM DRAIN.*

It is highly recommended that the activities as outlined above be performed while it is still feasible to accomplish these routine mannered tasks with limited personnel and hand equipment/tools. If delayed and access with heavier equipment is necessary, considerable disruption to the steep slopes and tree vegetation in the area may result.

Once this work is satisfactorily completed, contact our office appropriately. We can then proceed with final release of the surety on the project. Please contact me at 757-253-6639 if you have any further comments or questions.

Sincerely,



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

Scott Thomas

From: Scott Thomas
Sent: Wednesday, August 29, 2001 5:46 PM
To: Darryl Cook
Cc: Mike Woolson
Subject: RE: Kingsmill North Quarter

As you know, we just sent out the letter about field related issues pertaining to the BMP on August 24th. I am sure that caused the spark and they probably think our motivation to close the file is related to the County complex to be situated upstream.

Although I had briefly mentioned it to you in the email dated 8/24 (before I sent the letter), that fact that the future county project may occur upstream had no connection or bearing whatsoever in Mike trying to close the project out and initiating my final inspection of the facility. This has been on his list of "closeouts" for awhile, as well as about 7 other facilities in Kingsmill, and I finally got around to performing the final inspection and looking at the record drawing/construction certification documents.

My comments about the facility were pretty typical as it pertains to construction-related items for dry pond facilities at this point in the project timeline, regardless of whether any upstream development was or was not to occur.

Anyways, I have all the information about the facility in my active RD/CC review file. There would be no further action on this facility until the construction-related comments are satisfactory addressed by the developer. I created an "as-built" file with all relative information (that I know of) and would be ready to meet at any time to discuss.

Scott

-----Original Message-----

From: Darryl Cook
Sent: Wednesday, August 29, 2001 7:22 AM
To: Scott Thomas
Cc: Mike Woolson
Subject: RE: Kingsmill North Quarter

I just got a call from Arch Marston yesterday and they have been retained by Kingsmill to review the design of the BMP facility. I'm not sure what the motivation is but they are apparently concerned about the fact that the County is going to use it as the BMP for the new building construction. Let me know if we have everything together and I'll call Arch to let him know when he can come over.

-----Original Message-----

From: Scott Thomas
Sent: Friday, August 24, 2001 4:41 PM
To: Darryl Cook
Cc: Mike Woolson
Subject: Kingsmill North Quarter

Darryl

One of the files that Mike is trying to close out is Kingsmill North Quarter (formerly Tutters Neck North). I have reviewed the entire "active" file, record drawing, construction certification and performed a detailed Final Inspection of the BMP with Mike. I have no comments on the record drawing or construction certification. However, I have drafted a letter to go to Busch Properties for construction-related (work-field) items associated with the facility.

Based on my file review, it appears the facility was originally designed as a wet pond, changed to a dry pond and then due to some ponding and the threat of tree kills, it was retrofitted around 1997. The as-built drawings do not reflect the final work. I don't think this is much of a big deal as the basin is of pretty much typical dry pond design and correspondence/sketches in the file show the minor retrofits that were done. The certification is good for the dam embankment and pond riser/barrel which would be of the most concern. The Final Inspection we performed does not reveal anything different than what the 1996 as-builts and retrofit sketches/correspondence show.

Being that you were involved in history of the original design and subsequent retrofit; that this is the facility in which the new County building will tie into; and that my comments are pretty straight forward, I suggest you briefly scan

my letter to go to Tom Dunn of Busch Properties.

I put a copy of the letter and my inspection report in you box and will hold it until I get some feedback from you.

Scott

9. Inspection Records (Construction Phase)



GEORGE NICE & SONS, INC.

- Road & Utility Construction
- Site Development



October 13, 1995

George Mathews
BUSCH PROPERTIES, INC.
485 McLaws Circle, Suite 2
Williamsburg, Virginia 23185

Re: NORTH QUARTER (KINGSMILL VILLAGE)
Kingsmill on the James
James City County, Virginia

George:

We hereby certify that all work associated with the construction of the above mentioned subdivision has been performed in accordance with the approved plans and applicable Virginia Department of Transportation standards. Specific items of importance and associated documentation is as follows:

BMP

Dam construction was performed in accordance with the approved plans with the following exceptions. All modifications to the approved construction were directed by the design engineer.

- Outlet pipe size reduced from 36" to 30".
- Inlet elevation of outlet structure installed at elevation 14.67 for "BMP" operation in lieu of elevation specified for "silt basin" operation.
- Corrugated metal trash rack/anti-vortex device installed in lieu of precast concrete specified.
- VDOT standard EW-12 endwall for pipe underdrain installed in lieu of EW-11 specified.

Compaction of clay core and shell fills was performed in accordance with specification requirements, see attachment #1 for test results. It should be noted that materials utilized for core and shell construction were obtained from roadway cuts of North Quarter between stations 25+00 and 30+00. Material taken from this area is as indicated by CBR4 and CBR5 from Geo Design Consultants report (attachment #2).

143 Skimino Road • Williamsburg, Virginia 23188

CC017_KINGSMILL_VILLAGE_NORTH_QUARTER (804) 565-2885 • FAX (804) 565-1526

Page 2
Mr. George Mathews
October 13, 1995

ROADWAYS: North Quarter, George Perry, Mathew Brown, Andrews Circle

CBR samples were taken at locations indicated on the project drawings (attachment #3). It should be noted that results were reported by Schnabel Engineering Associates (attachment #4) prior to commencement of construction. All locations with the exception of 3, 4, and 5 are indicative of actual conditions. Cut depths in these areas exceeded sample depths and necessitated additional testing (attachment #2).

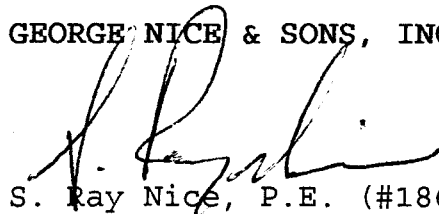
Roadway stone subbase depth for all roadways was increased from the plan specified depth of 6" to 8" at recommendation of soils engineer (attachment #2).

Depth of subbase and asphalt base courses were checked and verified, under your presence, to meet specification requirements.

If you should have any questions concerning this matter, please do not hesitate to call me at 565-2885.

Sincerely,

GEORGE NICE & SONS, INC.



S. Ray Nice, P.E. (#18664)
Vice President

m:\...\01\940143.doc

11. Miscellaneous

WATERSHED	CC	MAINTENANCE PLAN	No	CTRL STRUC DESC	CMP Riser
BMP ID NO	017	SITE AREA acre	34	CTRL STRUC SIZE inches	48
PLAN NO	S-70-94	LAND USE	Resid Plann Comm	OTLT BARRL DESC	RCP Barrel
TAX PARCEL	(50-01)(01-09)	old BMP TYP	Dry Detention	OTLT BARRL SIZE inch	30
PIN NO	5010100009	JCC BMP CODE			
CONSTRUCTION DATE	7/1/1995	POINT VALUE	6	EMERG SPILLWAY	Yes
PROJECT NAME	Kingsmill Village-North Quarter			DESIGN HW ELEV	18.85
FACILITY LOCATION	Behind 168 North Quarter (Lot 18)			PERM POOL ELEV	n/a
CITY-STATE	Williamsburg, Va. 23185	SVC DRAIN AREA acres	40.95	2-YR OUTFLOW cfs	18.90
CURRENT OWNER	Busch Properties Inc.			10-YR OUTFLOW cfs	87.39
OWNER ADDRESS	100 Kingsmill Road			REC DRAWING	Yes
OWNER ADDRESS 2		SERVICE AREA DESCRI	Woods, SF Resid & County Complex Area		
CITY-STATE-ZIP CODE	Williamsburg, Va. 23185	IMPERV AREA acres	12.86	CONSTR CERTI	Yes
OWNER PHONE		RECV STREAM	UT of Halfway Creek		
MAINT AGREEMENT	Yes	EXT DET-WQ-CTRL	No	LAST INSP DATE	8/24/2001
EMERG ACTION PLAN	No	WTR QUAL VOL acre-ft	0	INTERNAL RATING	3
		CHAN PROT CTRL	Yes	MISC/COMMENTS	
		CHAN PROT VOL acre-ft	0.153		form Tutters Neck. BMP orif retrofit
		SW/FLOOD CONTROL	Yes		1997 with 8" DIP. Dual low flow orifices.
		GEOTECH REPORT	No		

Get Last BMP No

Return to Menu

CC017

Contents for Stormwater Management Facilities As-built Files

Each file is to contain:

- ① As-built plan
- ② Completed construction certification
- ③ Construction Plan
- ④ Design Calculations
- ⑤ Watershed Map
- ⑥ Maintenance Agreement
- ⑦ Correspondence with owners
8. Inspection Records
9. Enforcement Actions

CODE COMPLIANCE REVIEW COMMENTS
BUSCH - TUTTER'S NECK NORTH
PLAN NO. S-70-94 *DEL*
September 14, 1994

1. A Land Disturbing Permit and Siltation Agreement, with surety, are required for this project.
2. A Subdivision Agreement, with surety, shall be executed with the County prior to recordation of lots.
3. Water and sewer inspection fees must be paid prior to the issuance of a Land Disturbing Permit.
4. An Inspection/Maintenance Agreement shall be executed with the county for the BMP facility for this project.
5. As-built drawings must be provided for the detention basin on completion.
6. The earlier submission for this parcel of property called Kingsmill East had a BMP facility that included control of the offsite county property in its design. The outlet structures and dam embankment were designed so that they could be easily modified by the county to include control of increased runoff from the government center. This BMP needs to be designed accordingly. The drainage area for the current submission does not match the earlier submission, 40.95 vs 54.85 acres. Also, the drainage area of the county complex controlled has dropped from 23.5 to 11.45 acres. This maybe due to the relocation of the BMP a short distance upstream from the previous design. Please locate the dam in the same place as before and incorporate the county runoff. The design assumption was that 6.0 acres of impervious area would be created on the county property.
*Bldg J- SP-68-01
2.07 ac of imp.
area added - 2/02*
7. Provide silt fence on the north side of the sewer extension from lot 8 to the existing manhole near Tutters Neck Road.
8. Extend the riprap outlet protection for all pipe systems and Road D to the bottom of the slopes. For the first outfall, structure 3, the riprap needs to extend to the 20 contour line. Specify the amount of stone to be used in accordance with Spec 3.19 of the third edition of the Virginia Erosion Control Handbook (VESCH).
9. The detention basin is proposed to be used as a sediment basin during the construction phase of the project. As the excavation of 2 feet would eliminate a wetland area and numerous trees and as sediment traps and silt fence are provided upstream of this basin location, it will not be necessary to utilize the basin for sediment control. Please revise the plans as necessary.
10. Provide conservation easements for all natural open space areas claimed for BMP points. Offsite open space areas cannot be counted as natural open space credit. However, there are sufficient credits available onsite to total 10 points so additional onsite credits are not needed. The point count will need to be revised to account for the additional drainage as discussed in item 6.
11. Replace the Erosion Control Notes on sheet 9 with the attached set of JCC standard Erosion Control Notes.
12. Provide silt fence at the following locations:
 - a. around the cul-de-sac for Road A from the lot line 19/20 continuing to the sediment trap following the edge of clearing.
 - b. on the left side of Road A from lot line 10/11 down to the corner of lot 8 and the sewer

extension.

- c. on the right side of Road A from station 13+00 to 16+00.
 - d. around the Road B cul-de-sac from lot line 2/3 to 4/5.
 - e. around the Road C cul-de-sac from lot line 28/29 to the clearing for the storm drain outfall.
13. Provide drainage calculations for all roadside ditches to verify that the appropriate liner is being used.
14. Either the slope of Road B needs to be increased to 0.75% or all the ditches need to be paved to meet the subdivision ordinance requirements.
15. Provide finished contours on the plans or show the limits of cut and fill slopes.
16. Label the limits of clearing.
17. Provide the design information for all sediment traps and provide all dimensions for the traps including the stone outlets on the plans. Also provide a means to lower the water from the storm drain system into the traps without eroding if necessary.
18. The following comments refer to the detention basin design:
- a. As stated in item 6, the design for quantity and quality of flow needs to include provision for the offsite county drainage.
 - b. Specify the configuration of the riprap outfall apron on the plan view, sheet 2. Also, specify the depth of riprap on sheet 5 as 18 inches and provide filter fabric under it.
 - c. Show the location of the emergency spillway on the basin plan view. If the spillway is not located on natural ground, then it must be concrete lined.
 - d. Provide a 20-foot wide access easement to the basin from a public right-of-way with a 10-foot wide gravel road provided within the easement for maintenance purposes. Depending on the grade of the access road, portions may need to be paved. Also, a 15-foot wide drainage and maintenance easement must be provided around the pond above the 100-year design high water elevation. Finally, the basin embankment must be located in common area and not be situated on private property on an individual lot.
 - e. Provide silt fence below the basin to protect downstream areas during construction.
 - f. Provide a core trench for the basin in accordance with the Virginia Erosion & Sediment Control Handbook (VESCH).
 - g. Revise the outlet structure. Replace the PVC pipe with ductile iron or metal and replace the gabion basket with an EW-11 structure.
 - h. Provide dimensions for the riser base.
 - i. There are two materials specified for the barrel. Please clarify. If the metal pipe is chosen, specify asphalt coated pipe on the plan, ACCMP.
 - j. Increase the dam height to provide 1 foot of freeboard above the 100-year storm.
19. An exception to disturb slopes 25% and greater must be submitted to the Director of Code Compliance.

CODE COMPLIANCE REVIEW COMMENTS
BUSCH - TUTTER'S NECK NORTH
PLAN NO. S-70-94
November 19, 1994 *DEL*

1. Provide conservation easements for all onsite natural open space areas claimed for BMP points. Offsite open space areas cannot be counted as natural open space credit. However, there are sufficient credits available onsite to total 10 points so additional onsite credits are not needed.
2. Provide temporary slope drains for all sediment traps to lower the water from the trap to the toe of slope. Suggest that the corrugated pipe outfalls be used for this purpose. If they are to be used, add a note concerning the timing of installation of the outfalls such that they are installed from the storm drain system into the trap and then used to receive the discharge from the traps.
3. The following comments refer to the detention basin design:
 - a. Raise the top of the dam from elevation 19.0 to 19.5 to provide 1 foot of freeboard for the 100-year storm.
 - b. The basin embankment must be located in common area and not be situated on private property on an individual lot.
4. Provide 20-foot wide drainage easements for all the storm drain outfall pipes to the end of the riprap protection.

ROUTE 199

ROUTE 199

COLONIAL

PIPELINE

EASEMENT

COUNTRY ROAD

COLONIAL WILLIAMSBURG SCENIC EASEMENT

JAMES CITY COUNTY
GOVERNMENT CENTER

PHASE I

FUTURE DEVELOPMENT

INITIAL POND LOCATION

FUTURE DEVELOPMENT

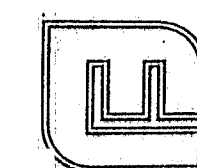
PROPOSED POND LOCATION

MOUNT'S BAY ROAD
RECREATION CENTER

POSSIBLE BMP SITES KINGSMILL VILLAGE

SCALE: 1" = 100'

MARCH, 1991



PREPARED BY
LANGLEY AND McDONALD

A PROFESSIONAL CORPORATION
ENGINEERS-PLANNERS-SURVEYORS
WILLIAMSBURG - VIRGINIA BEACH

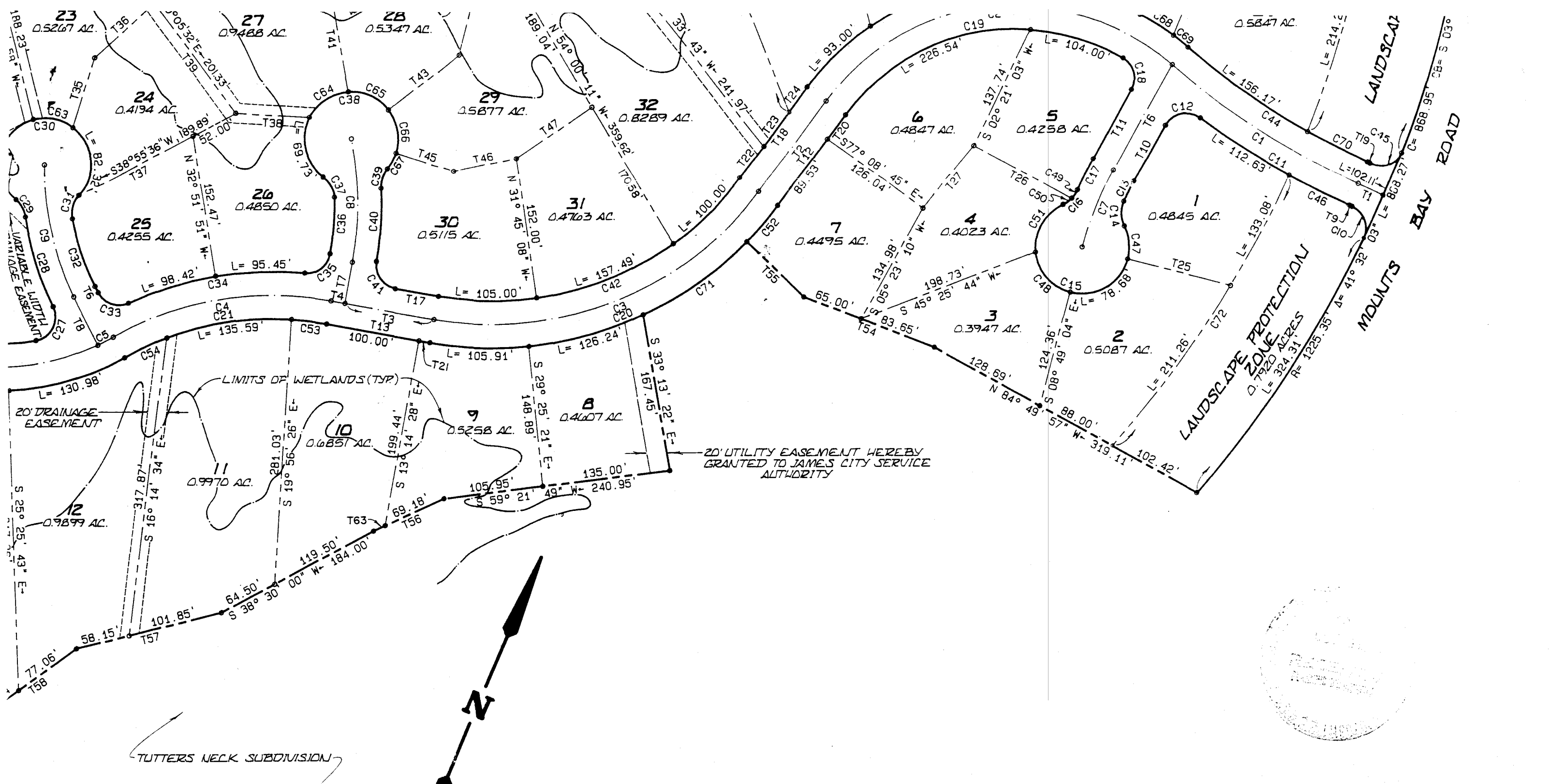
TUTTER'S NECK

bottom elev (5')
6 FT - Elev 13.4' Top of Swampy section - swamp pool (p. 516)
9 FT - Elev 20.2' - Top of section - swamp (p. 116)
Normal Open Space - 44.4 ac - areas over 25%
60% Imp. - 17.9 is down out of 23.5 total of drainage basin in already developed (6.74) - 32% imp.
13.5 down 4.122 @ 60% imp.

23.5 ac - total
- 5.7 ac - already developed
17.8 left to develop
4.4 - 25% slopes
13.4 ac

13.4 ac
2.6 ac - Cons. Easement
10.8 ac
x 6 imp - 6.5 ac imp.

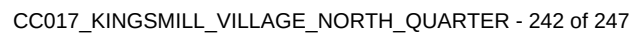
13.4 ac
x 4 imp
5.4 ac
assumed 6 ac imp - 45%

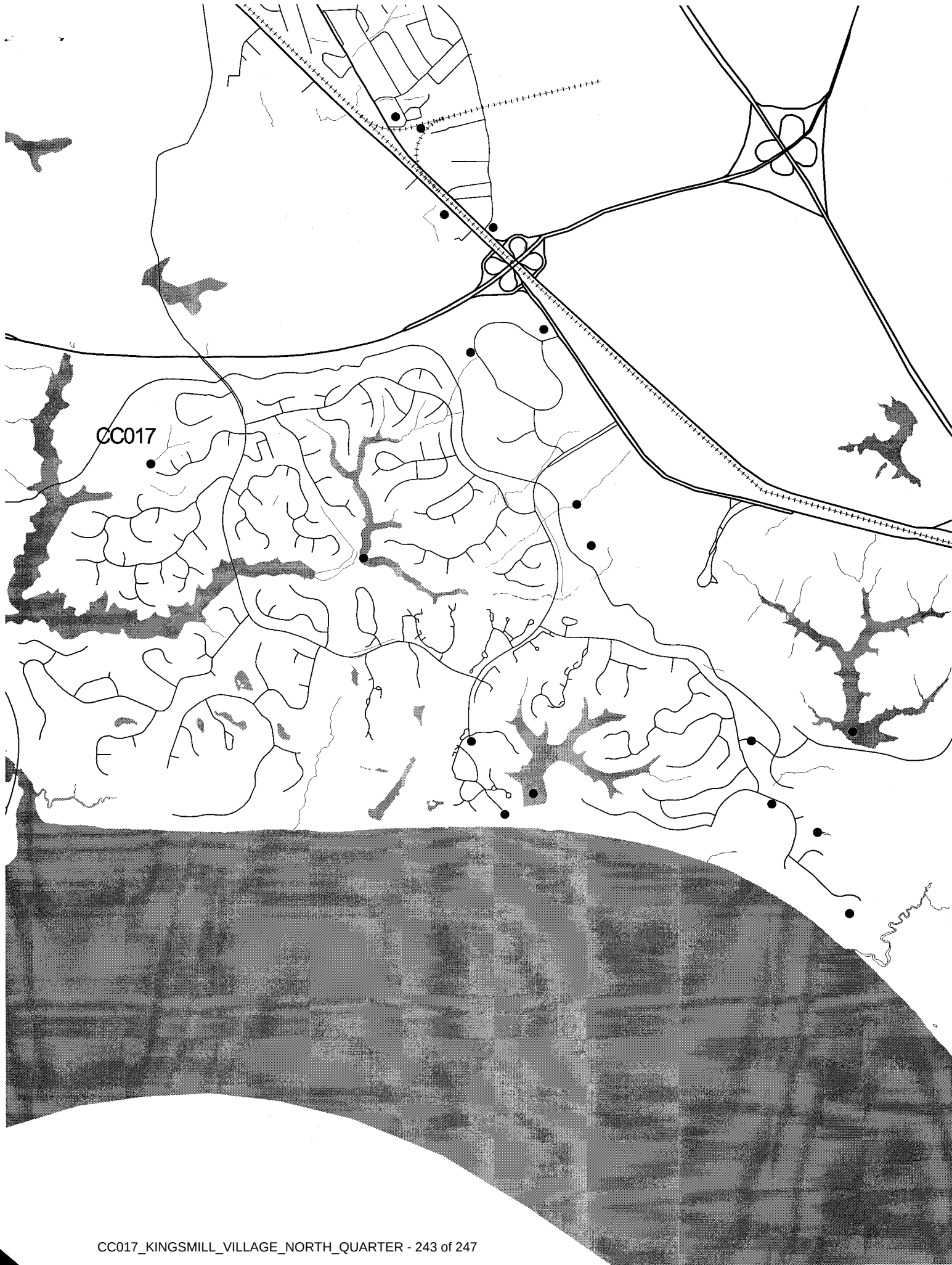


S-7094

PLAT OF
NORTH QUARTER
BEING A SUBDIVISION OF PROPERTY OF
BUSCH PROPERTIES, INC.
JAMES CITY COUNTY VIRGINIA
DATE: SEPTEMBER 20, 1995 SCALE: 1"=100'
SHEET 1 OF 2

PREPARED BY
LANGLEY & McDONALD, P.C.
ENGINEERS · PLANNERS · SURVEYORS
LANDSCAPE ARCHITECTS & ENVIRONMENTAL CONSULTANTS
VIRGINIA BEACH · WILLIAMSBURG, VIRGINIA





JLC
GOVERNMENT
CENTER

KINGSMILL VILLAGE -

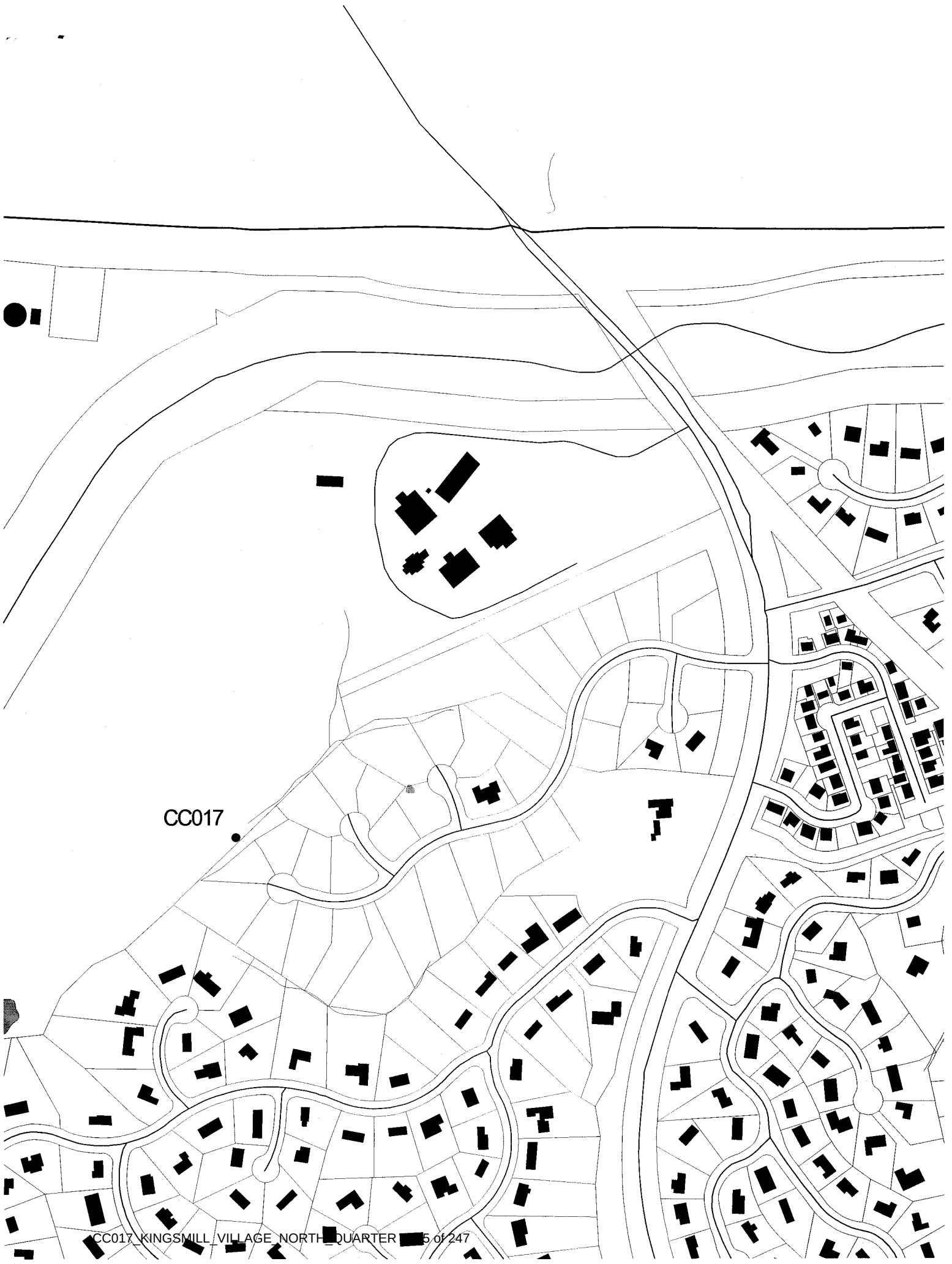
North Quarter

DRY POND

5-70-94

CC 017

CC017



CC017

North Quarter BMP Included Storage for up to 6.0 acres of new
impervious cover. SP-68-01, Building I, caused 2.07 acres
of new impervious area. DEC 2/11/02

✓ HighMark™

North Quarter
Bond
Kingsmill
\$10,000
As per K.L.