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: **CC008**

DATE VERIFIED: **May 16, 2012**

QUALITY ASSURANCE TECHNICIAN: **Leah Hardenbergh**

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA

Stormwater Division

MEMORANDUM

DATE: March 10, 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: CC008

PIN: 4810100063

Subdivision, Tract, Business or Owner Name (if known): Williamsburg Landing

Property Description: Senior Care/Retirment Facility

Site Address: 5550 Williamsburg Landing Drive

(For internal use only) **Box** 10 **Drawer:** 6

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

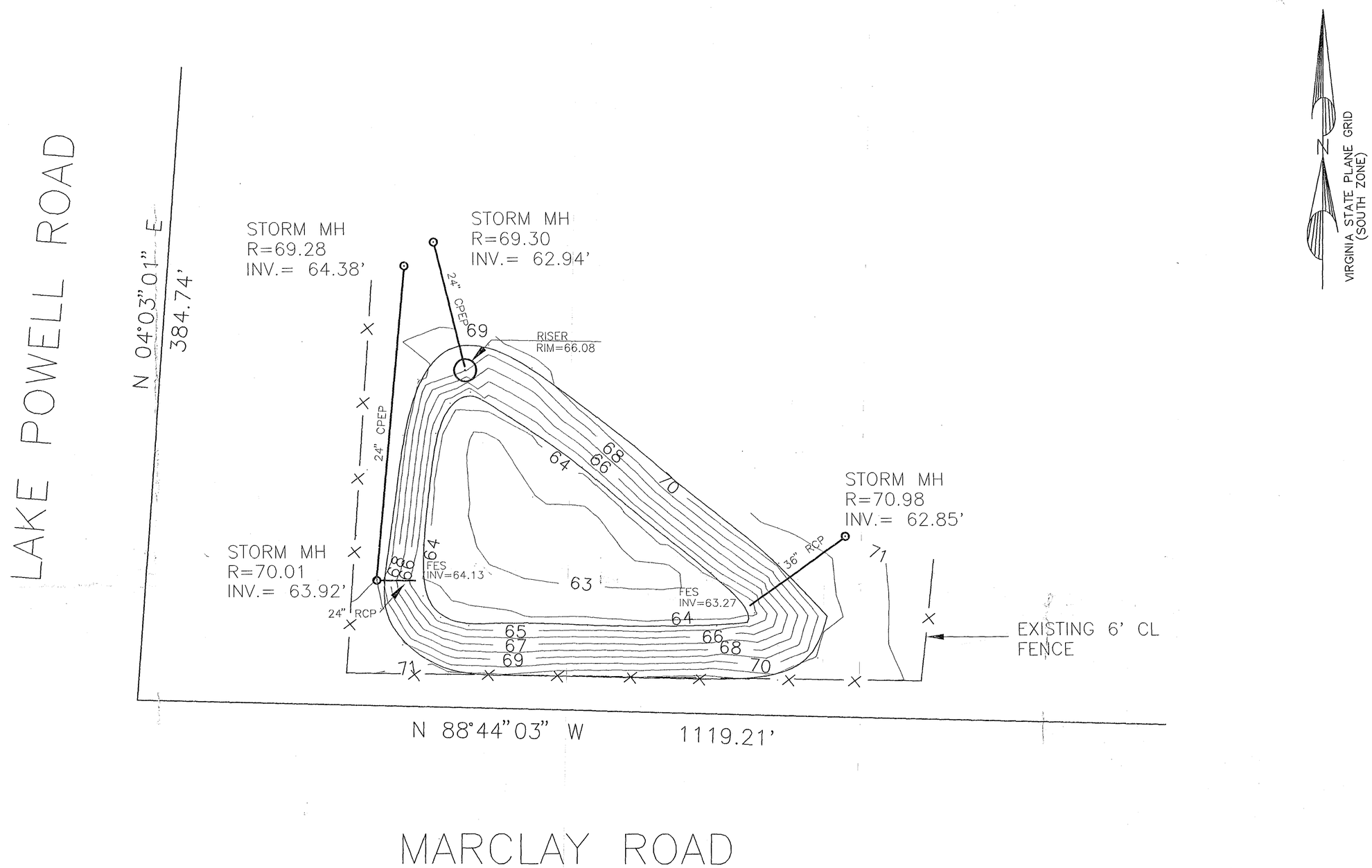
Comments

CC 008

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



RECORD DRAWING
OF
BMP - CC008
AT
WILLIAMSBURG LANDING
THE COTTAGES
JAMES CITY COUNTY, VIRGINIA 1/11/96

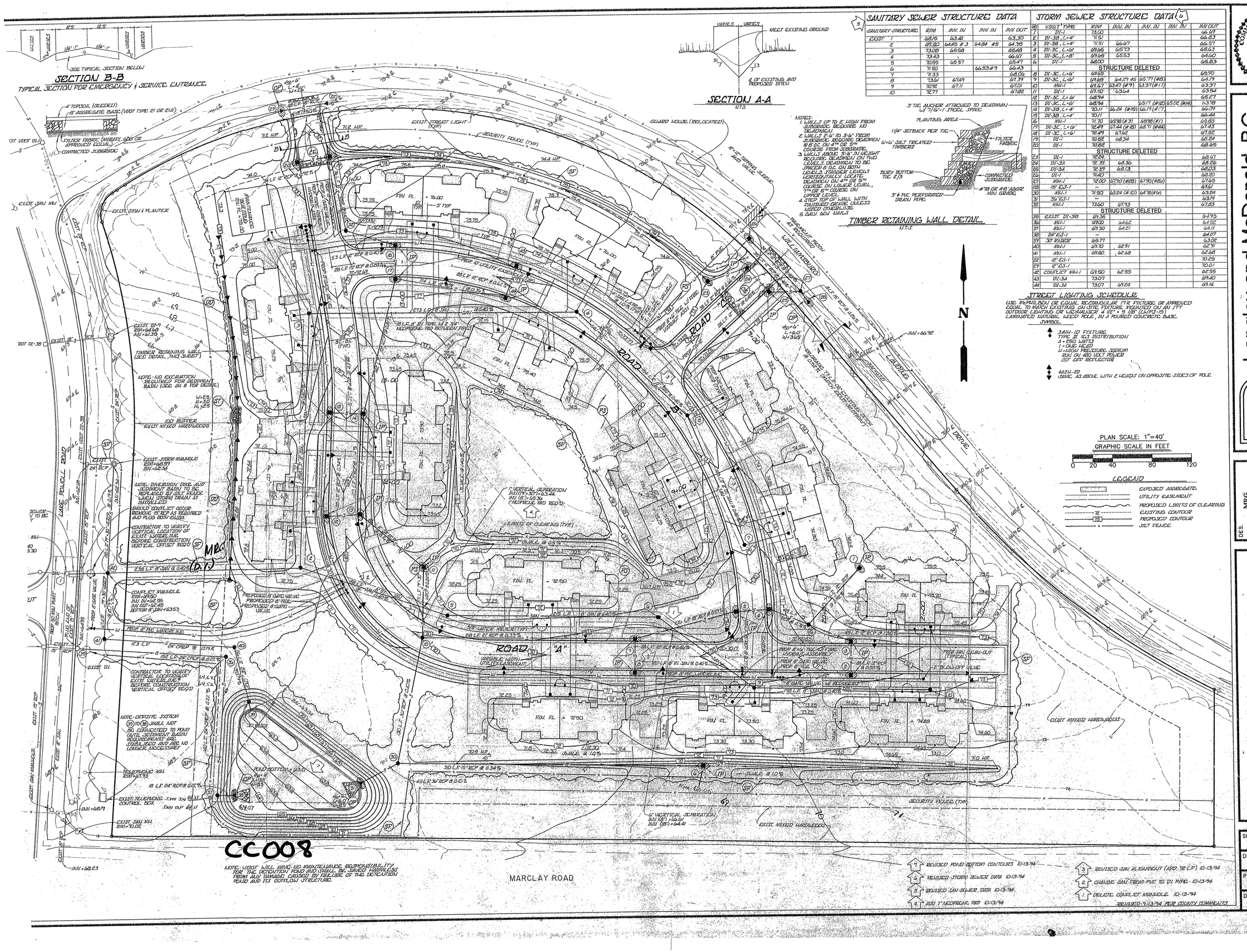
PLAN SCALE: 1"=30'
GRAPHIC SCALE IN FEET
0 15 30 60 90

COMMONWEALTH OF VIRGINIA
1-12-96
STEPHEN A. ROMEO
No.
1448-B
LAND SURVEYOR

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

5949 W

CC008_WILLIAMSBURG_LANDING_COTTAGES - 004



SANITARY SEWER STRUCTURE DATA

SANITARY STRUCTURE	RIM	INV. IN	INV. IN	INV. OUT
EXIST. 1	68.15	63.40		63.30
2	69.80	64.45 #3	64.64 #5	64.35
3	73.08	65.58		65.48
4	73.43			66.07
5	72.55	65.57		65.47
6	71.50		66.53 #9	66.43
7	71.33			68.06
8	73.61	67.69		67.39
9	72.92	67.11		67.01
10	72.77			67.82

STORM SEWER STRUCTURE DATA

	VDOT TYPE	RIM	INV. IN	INV. IN	INV. IN	INV. OUT
1	DI-1	73.00				66.69
2	DI-3D, L=4'	71.51				66.83
3	DI-3B, L=4'	71.51	66.67			66.57
4	DI-3C, L=6'	69.66	68.73			68.63
5	DI-3C, L=8'	69.66	68.53			68.60
6	DI-1	68.00				65.83
	STRUCTURE DELETED					
8	DI-3C, L=6'	69.65				68.70
9	DI-3C, L=6'	69.88	66.29 #5	66.77 (#6)		66.79
10	MH-1	69.67	63.47 (#9)	63.37 (#11)		63.37
11	DI-1	69.50	63.64			63.54
12	DI-3C, L=6'	68.94				66.27
13	DI-3C, L=6'	68.94		66.17 (#12)	65.02 (#14)	63.78
14	DI-3B, L=4'	70.11	66.24 (#15)	66.17 (#17)		66.07
15	DI-3B, L=4'	70.11				66.44
16	MH-1	71.70	65.98 (#3)	65.98 (#1)		65.83
17	DI-3C, L=6'	72.49	67.44 (#18)	68.71 (#44)		67.43
18	DI-3C, L=6'	72.49	67.06			67.02
19	DI-1	70.82	68.54			68.24
20	DI-1	70.82				68.65
	STRUCTURE DELETED					
23	DI-1	72.64				68.97
24	DI-3A	72.39	68.36			68.26
25	DI-3A	72.39	68.13			68.03
26	DI-1	71.40				68.20
27	MH-1	72.00	67.90 (#28)	67.90 (#26)		67.65
28	18" ES-1	--				67.61
30	MH-1	71.90	68.24 (#10)	64.78 (#6)		63.84
31	36" ES-1	--				63.79
32	MH-1	73.00	67.93			67.83
	STRUCTURE DELETED					
35	EXIST. DI-3B	69.36				64.95
36	MH-1	69.00	64.62			64.52
37	MH-1	69.30	64.21			64.11
38	24" ES-1	--				64.07
39	30" RCP/ES	68.77				63.02
40	MH-1	69.70	62.91			62.91
41	MH-1	69.80	62.68			62.68
42	12" ES-1					70.29
43	12" ES-1					70.01
44	CONFLICT MH-1	69.60	62.55			62.55
45	DI-3A	73.07				69.40
46	DI-3A	73.07	69.24			69.14

NOTES:
1. WALLS UP TO 2' HIGH FROM SUBGRADE REQUIRE NO DEADMAN.
2. WALLS 2'-6' TO 3'-6' FROM SUBGRADE REQUIRE DEADMAN @ 8' O.C. ON 4TH OR 5TH COURSE FROM SUBGRADE.
3. WALLS ABOVE 3'-6" IN HEIGHT REQUIRE DEADMAN ON TWO LEVELS. DEADMAN TO BE SPACED 8' O.C. ON BOTH LEVELS, STAGGER LEVELS HORIZONTALLY. LOCATE DEADMAN ON 4TH OR 5TH COURSE ON LOWER LEVEL, 7TH OR 8TH COURSE ON UPPER LEVEL.
4. STEP TOP OF WALL WITH FINISHED GRADE UNLESS NOTED OTHERWISE.
5. GALV. GRD NAILS

STREET LIGHTING SCHEDULE

USE McPHILBIN OR EQUAL ROTATAVULAR 17'R FIXTURE, OR APPROVED EQUAL, TO MATCH EXISTING ON SITE FIXTURE, MOUNTED ON AN 11'T OUTDOOR LIGHTING OR MCHALLADE 4 1/2" x 9 1/8" (LW7-12) LAMINATED NATURAL WOOD POLE, IN A POURED CONCRETE BASE.

SYMBOL

3A11-1D FIXTURE
TYPE III VLS DISTRIBUTION
A = 250 WATTS
1 = ONE HEAD
U = HIGH PRESSURE SODIUM
120V OR 480 VOLT POWER
CUT OFF REFLECTOR

4A21-2D
SAME AS ABOVE WITH 2 HEADS ON OPPOSITE SIDES OF POLE

PLAN SCALE: 1"=40'
GRAPHIC SCALE IN FEET
0 20 40 80 120

LEGEND

- EXPOSED AGGREGATE
- UTILITY EASEMENT
- PROPOSED LIMITS OF CLEARING
- 72 EXISTING CONTOUR
- 73 PROPOSED CONTOUR
- SILT FENCE

CC008

NOTE: VDOT WILL HAVE NO MAINTENANCE RESPONSIBILITY FOR THE DETENTION POND AND SHALL BE SAVED HARMLESS FROM ANY DAMAGE CAUSED BY FAILURE OF THE DETENTION POND AND ITS OUTFLOW STRUCTURE.

7 REVISED POND BOTTOM CONTOURS 10-13-94
4 REVISED STORM SEWER DATA 10-13-94
5 REVISED SAN SEWER DATA 10-13-94
4 ADD 1" NEOPRENE PAD 10-13-94
3 REVISED SAN ALIGNMENT (ADD 72 L.F.) 10-13-94
2 CHANGE SAN FROM PVC TO DI PIPE 10-13-94
1 DELETE CONFLICT MANHOLE 10-13-94
REVISED 9-13-94 PER COUNTY COMMENTS

COMMONWEALTH OF VIRGINIA
STEPHEN A. ROMEO
No. 14918
LAND SURVEYOR

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

DES.	MRG
DWN.	GSW
CHK.	SAR
DATE	August 3, 1994

WILLIAMSBURG LANDING
A RETIREMENT COMMUNITY
THE COTTAGES
JAMES CITY COUNTY, VIRGINIA
SITE PLAN

SHEET 2 OF 13
DISK
PROJ. NO. 90034-24
DWG. 5310BW

STORMWATER GENERAL PERMIT NOTES

The contractor shall ensure compliance with the requirements of VR 680-14-19 - Virginia Pollutant Discharge Elimination System (VPDES) General Permit For Storm Water Discharges From Construction Sites, including but not limited to the following items:

Implementation, Documentation, and Inspections Necessary for Compliance with Storm Water General Permit

1. Implementation of the storm water pollution prevention plan as developed for the site and in accordance with the general permit requirements with regard to erosion and sediment control, post-construction storm water management, and other controls regarding solid materials, sediments and dust, and the demonstrated compliance with applicable State and/or local waste disposal, sanitary sewer or septic system regulations.
2. Retention of the storm water pollution prevention plan at the construction site. The plan and other related documents shall be made available upon request to authorized local, state, or federal representatives.
3. Amendment of the storm water pollution prevention plan whenever there is a change in design, construction, operation, or maintenance, which has a significant effect on the potential for the discharge of pollutants to the surface waters of the State, or if the storm water pollution prevention plan proves to be ineffective in eliminating or significantly minimizing pollutants from the construction activity.
4. Documentation of the dates when major grading activities occur, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are implemented.
5. Inspections of disturbed areas of the construction site and areas used for storage of materials that are exposed to precipitation that have not been finally stabilized, structural control measures, and locations where vehicles enter or exit the site shall be conducted at least once every seven calendar days and within 24 hours of the end of a storm event that produces surface runoff as required by the general permit regulations. Reports summarizing the inspections shall be made in accordance to the regulations and retained as part of the storm water pollution prevention plan.
6. All contractors and subcontractors shall sign a copy of the certification statement as described in the general permit before conducting any professional services at the site identified in the pollution prevention plan. All certifications shall be included in the storm water pollution prevention plan.
7. All documents, records, reports, and other information relevant to the general permit regulations shall be given to the owner following final stabilization of the site.
8. Where the site has been finally stabilized and all storm water discharges from construction activities that are authorized by the general permit are eliminated, a Notice of Termination shall be prepared for the owner to sign and submit to the Virginia Department of Environmental Quality, Water Division.
9. The structural stability of the permitted facilities shall be ensured.

Prohibition and Reporting of Releases of Substances Other Than Storm Water

10. Execution of reporting requirements in the event of noncompliance of the general permit or if any unpermitted, unusual or extraordinary discharge enters or could be expected to enter surface waters of the State.
11. Prohibition of non-stormwater discharges except as provided for in the general permit. Appropriate pollution prevention measures for non-storm water components of discharge shall be implemented.
12. Execution of reporting requirements of 40 CFR Part 117 (1992) and 40 CFR Part 302 (1992). In addition, the discharge of hazardous substances or oil in the storm water discharge from the construction site shall be prevented or minimized in accordance with the storm water pollution prevention plan.
13. Prohibition of discharge of hazardous substances, oil, or pollutants resulting from on-site spills or releases.

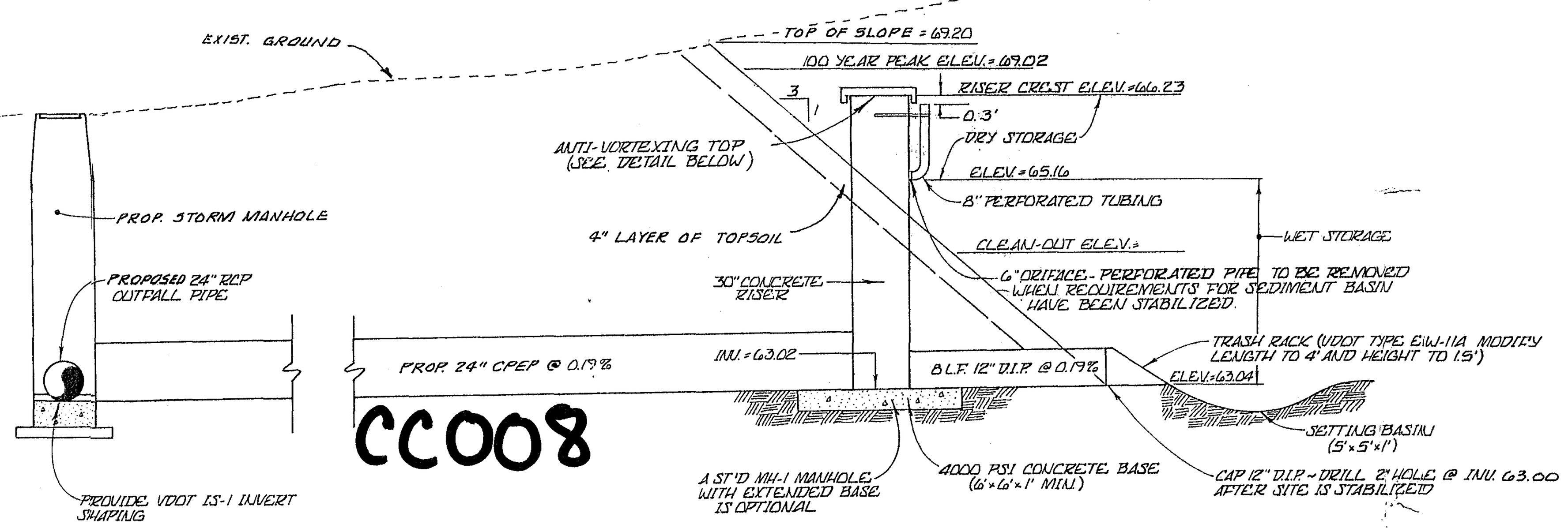
Management Measures and Response to Unintentional Releases

14. All waste collection, control, treatment, management of pollutant activities and disposal facilities shall be operated in a manner consistent with the general permit regulations.
15. All feasible steps to minimize any adverse impacts to State waters resulting from non-compliance with conditions specified in the general permit shall be taken.
16. All reasonable steps to minimize, correct or prevent any discharge in violation of the general permit which has a reasonable likelihood of adversely affecting human health or the environment shall be taken.

GENERAL NOTES - DAM CONSTRUCTION

1. EMBANKMENT SUBGRADES TO BE STRIPPED OF ALL TOPSOIL, ORGANIC MATTER, AND SOFT AND LOOSE SOILS PRIOR TO PLACEMENT OF FILL MATERIALS.
2. SUBGRADE TO BE PROOF ROLLED WITH A LOADED TANDEM DUMP TRUCK OR SIMILAR EQUIPMENT UNDER THE OBSERVATION OF THE ENGINEER.
3. AREAS THAT EXHIBIT EXCESSIVE PUMPING OR WEAVING WILL REQUIRE UNDERCUTTING.
4. COMPACTED EMBANKMENT FILL TO BE FREE OF ORGANIC MATTER AND CLASSIFY SM, SC, ML, MH OR CL IN ACCORDANCE WITH UNIFIED SOIL CLASSIFICATION SYSTEM ASTM D-2487.
5. EMBANKMENT FILL TO BE PLACED IN LOOSE LIFTS NOT EXCEEDING 8 INCHES IN THICKNESS AND SHOULD BE COMPACTED TO AT LEAST 95% OF MAXIMUM DRY DENSITY ACCORDING TO ASTM D-698, STANDARD PROCTOR. FILL SHOULD COMPACTED AT MOISTURE CONTENTS WITHIN 3% ABOVE AND 1% BELOW THE OPTIMUM MOISTURE CONTENT FOR THE MATERIAL USED.
6. THE SURFACE OF EACH COMPLETED LIFT OF COMPACTED EMBANKMENT FILL SHOULD BE SCARIFIED TO A DEPTH OF 2 TO 3 INCHES PRIOR TO PLACING ADDITIONAL FILL TO LIMIT THE DEVELOPMENT OF HORIZONTAL SEEPAGE PLAINS WITHIN THE EMBANKMENT.
7. COMPACTED EMBANKMENT FILL TO BE PLACE IN HORIZONTAL LIFTS.
8. SURFACES STEEPER THAN 4:1 TO BE BENCHED TO RECEIVE FILL. BENCH HEIGHTS NOT TO EXCEED 2 FEET.
9. BACKFILL ALONG THE PRINCIPAL SPILLWAY CONDUIT SHOULD BE PLACED EQUALLY ON BOTH SIDES OF THE PIPE DURING FILLING.
10. THE PRINCIPAL SPILLWAY PIPE TO BE SUPPORTED ON COMPACTED EMBANKMENT FILL OR AS SHOWN ON THE PLANS.
11. A DRAINAGE FILTER TO BE INSTALLED AROUND THE PRINCIPAL SPILLWAY PIPE FROM THE DOWNSTREAM TOE INTO THE EMBANKMENT AS SHOWN ON THE PLANS.
12. SUFFICIENT CLEARANCE SHOULD BE PROVIDED FOR STANDARD COMPACTION EQUIPMENT TO ACCESS DURING BACKFILLING ALONG THE PRINCIPAL SPILLWAY CONDUIT. THE BACKFILL SHOULD BE RAMMED UP AGAINST THE CONDUIT ON A MAXIMUM SLOPE OF 6:1. WHERE ACCESS IS LIMITED, THINNER LIFT THICKNESS, HAND COMPACTION AND TIGHT CONTROL ON MATERIAL QUALITY WILL BE NECESSARY.
13. WHERE TRENCH EXCAVATION FOR THE INSTALLATION OF THE PRINCIPAL SPILLWAY CONDUIT IS NECESSARY, SLOPE TO BE CUT NO STEEPER THAN 2:1.
14. SITE DRAINAGE TO BE PROVIDED TO MAINTAIN SUBGRADES FREE OF WATER AND TO AVOID SATURATION AND DISTURBANCE OF THE SUBGRADE SOILS PRIOR TO CONSTRUCTING FOUNDATIONS AND PLACING FILL. ANY SOILS THAT HAVE BEEN WEAKENED DUE TO SATURATION AND DISTURBANCE TO BE REMOVED AS RECOMMENDED BY THE ENGINEER.
15. DEWATERING OF THE DAM FOUNDATION AREAS (WELL POINTING OR PUMPING FROM SUMPS), AND THE DIVERSION OF SURFACE WATER AWAY FROM THE WORK AREA MAY BE NECESSARY TO ALLOW PROPER EXECUTION OF THE CONSTRUCTION WORK. DEWATERING SHOULD BEGIN PRIOR TO EARTHWORK SO THAT THE SPILLWAY CONDUIT CAN BE INSTALLED AND SURFACE WATER WOULD THEN BE DIVERTED THROUGH THE PRINCIPAL SPILLWAY.
16. THE EMBANKMENT FOUNDATION TO BE FREE OF PONDED WATER, EXCESSIVELY MUDDY CONDITIONS AND IN DRAINABLE CONDITION AS NEEDED FOR PROPER EXECUTION OF THE CONSTRUCTION WORK.
17. COMPACTION OF BACKFILL AROUND THE SPILLWAY STRUCTURE IS CRITICAL WITH REGARD TO SEEPAGE, DURING CONSTRUCTION OF THE DRAINAGE FILTER AROUND THE PRINCIPAL SPILLWAY CONDUIT, CARE SHOULD BE EXERCISED WITH RESPECT TO THE INSTALLATION OF THE FINE AND COARSE MATERIALS IN ORDER TO PREVENT CONTAMINATION BY FOREIGN MATTER.

STORM	PEAK IN-FLOW	PEAK OUT-FLOW	PEAK ELEVATION
2 YEAR	10.86 CFS	8.99 CFS	67.02
10 YEAR	14.62 CFS	11.72 CFS	67.63
100 YEAR	18.64 CFS	16.25 CFS	69.02



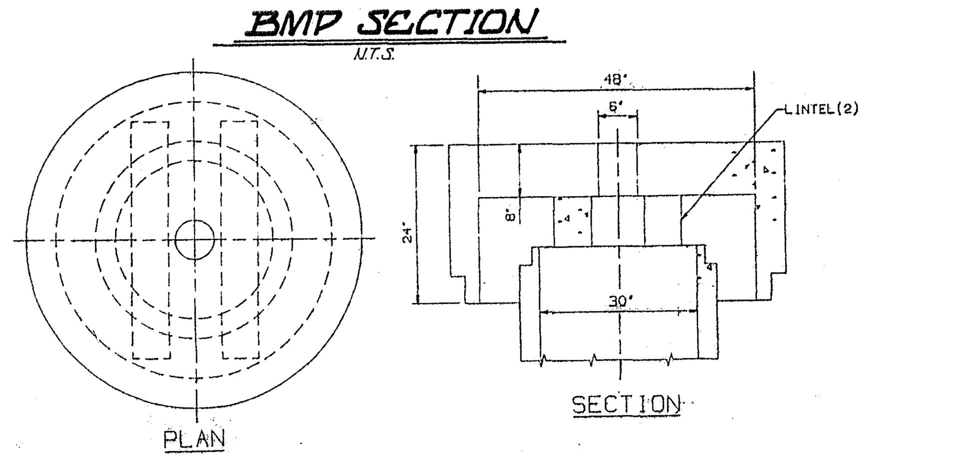
CC008

NOTES: 1. THIS IS AN EXTENDED DURATION DRY DETENTION BASIN.
2. THIS INITIALLY FUNCTIONS AS A SEDIMENT BASIN.

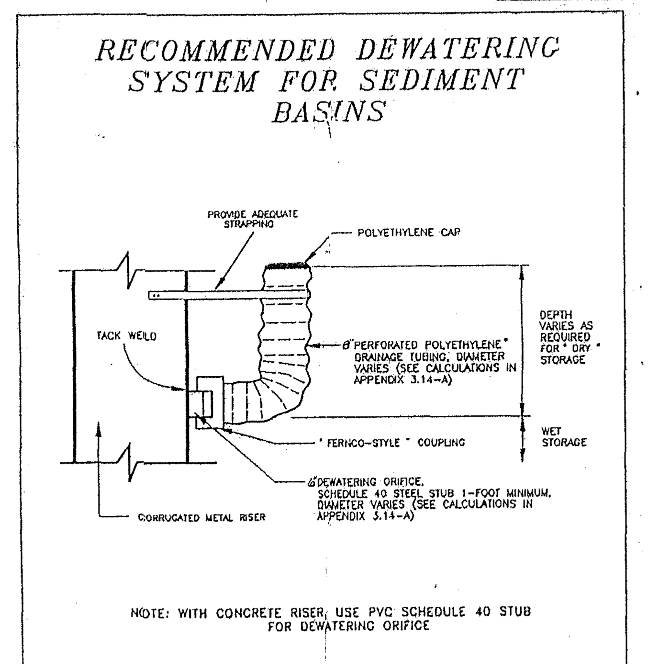
BMP SECTION

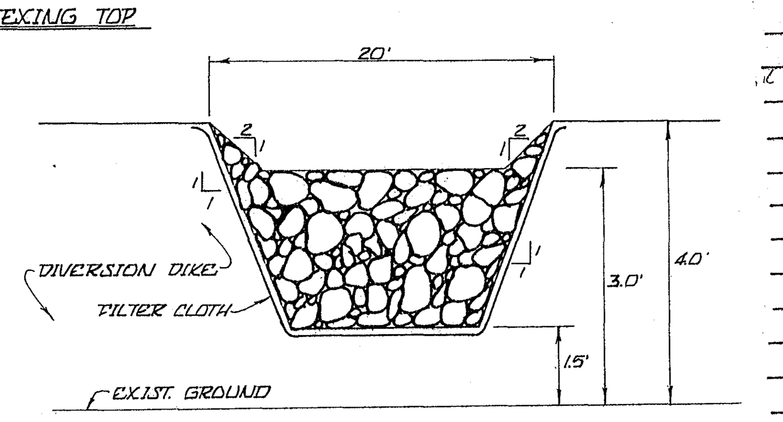
N.T.S.

STAND-PIPE ID	CAP ID	CAP WEIGHT	LINTELS $5\frac{5}{8}\times7\frac{5}{8}$	LINTELS $7\frac{5}{8}\times7\frac{5}{8}$
24"	42"	1.115T	2'-8"	-
27"	48"	1.510T	3'-0"	-
30"	48"	1.510T	3'-4"	-
36"	60"	2.487T	4'-0"	-
42"	66"	2.965T	4'-4"	-
48"	78"	4.044T	4'-8"	-
54"	90"	4.844T	-	5'-4"
60"	96"	5.689T	-	5'-8"
66"	108"	7.150T	-	6'-0"
72"	114"	7.497T	-	6'-4"

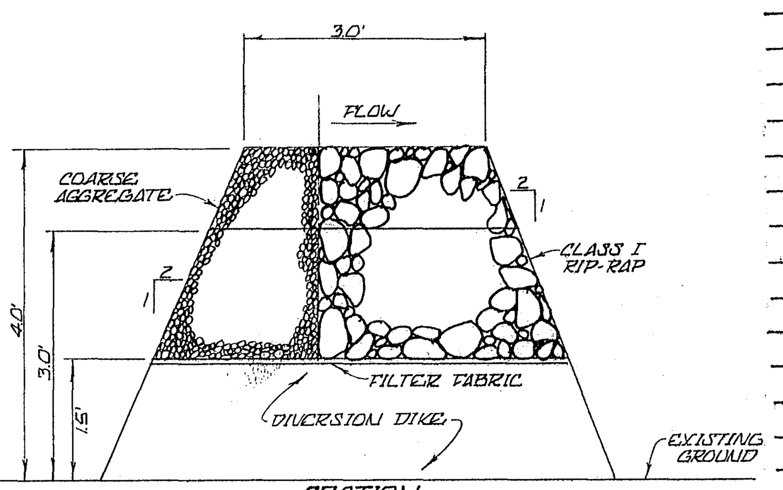


ANTI-VORTEXING TOP





ELEVATION

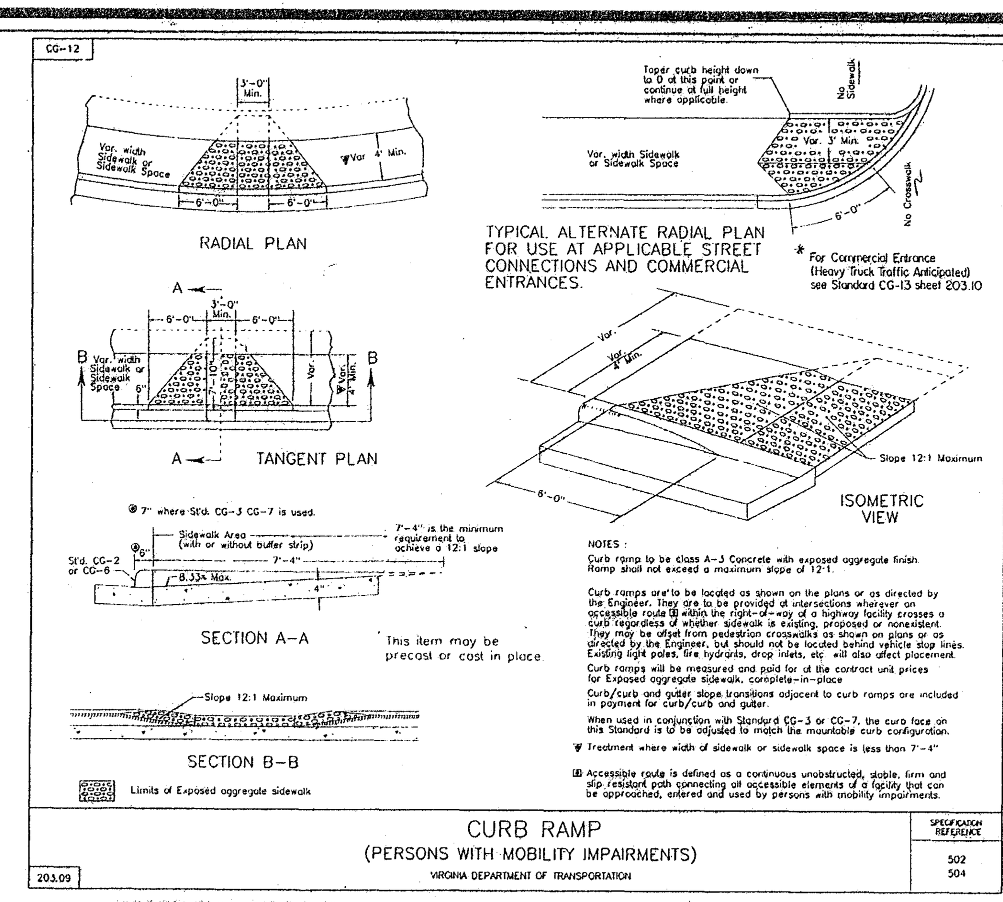


SECTION

NOTES: 1. COARSE AGGREGATE SHALL BE VDOT #3, #357, OR #5
2. NO EXCAVATION REQUIRED

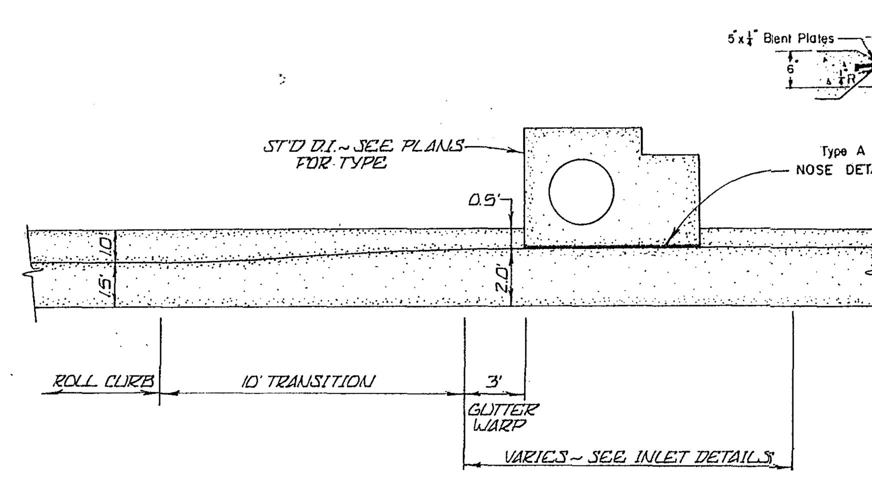
SEDIMENT TRAP DETAIL

N.T.S.



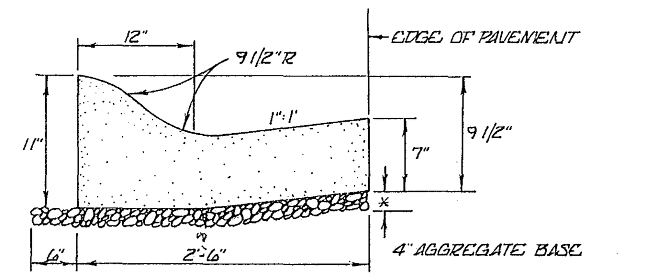
STORM - SEWER DESIGN COMPUTATIONS

FROM POINT	TO POINT	AREA DRAIN. "A" ACRES	RUN-OFF COEF. C	CA INCREMENT	CA ACCUMULATED	INLET TIME MINUTES	RAIN FALL IN./HR.	RUNOFF Q C.F.S.	INVERT ELEVATIONS UPPER END	INVERT ELEVATIONS LOWER END	LENGTH FT.	SLOPE FT./FT.	DIA. IN.	CAPACITY C.F.S.	VEL. F.P.S.	FLOW TIME SEC.	REMARKS
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
1	3	0.21	0.36	—	0.07	10.0	6.0	0.45	67.09	66.29	20	0.0400	12	7.15	5.07	3.94	
2	3	0.27	0.59	—	0.16	10.0	6.0	1.96	66.43	66.29	28	0.0051	12	2.53	3.00	9.33	
3	7	0.20	0.41	0.08	0.24	10.15	5.9	1.42	66.04	65.16	138	0.0064	15	5.17	3.79	38.44	
4	5	[illegible]	0.60	—	0.31	10.0	6.0	1.87	65.73	65.63	28	0.0036	12	2.14	3.07	9.12	
5	7	0.41	0.64	0.26	0.57	10.15	5.9	3.36	65.38	65.16	39	0.0056	15	4.83	4.26	9.15	
6	7	0.81	0.40	—	0.32	10.0	6.0	1.96	65.83	65.41	[illegible]	0.0034	12	2.08	3.01	41.53	
7	9	MH-1	—	—	1.13	10.79	5.79	6.55	64.91	64.60	80	0.0039	18	6.55	3.71	21.56	
8	9	.60	0.65	—	0.39	10.0	6.0	2.34	65.22	65.10	28	0.0043	12	2.34	3.39	8.25	
9	10	.41	0.61	0.25	1.77	11.15	5.73	10.14	64.10	63.77	165	0.0020	24	10.14	3.23	51.08	
10	11	MH-1	—	—	1.77	12.00	5.60	9.91	63.?7	63.48	94	0.0020	24	10.14	3.68	25.54	
11	13	1.07	0.38	0.41	2.18	12.43	5.53	12.06	63.38	63.09	102	0.0028	24	12.06	3.84	26.56	
12	13	0.70	0.63	—	0.45	10.0	6.0	2.?8	65.27	65.11	28	0.0057	12	2.68	3.41	8.21	
13	14	0.43	0.54	0.23	2.86	12.87	5.47	15.63	62.84	62.58	102	0.0025	27	15.63	3.93	25.95	
14	15	0.21	0.59	0.12	2.98	13.30	5.40	16.09	62.48	62.40	28	0.0027	27	16.09	4.05	6.91	
15	16	0.27	0.61	0.17	3.15	13.42	5.38	16.97	62.30	61.98	105	0.0030	27	16.97	4.27	24.59	
16	16A	0.50	0.41	0.20	3.35	13.83	5.33	17.85	61.88	61.76	35	0.0033	27	17.85	4.49	7.80	
						13.96	(INTO POND)										
17	18	0.52	0.57	—	0.30	10.0	6.00	1.80	68.82	68.72	28	0.0036	12	2.14	3.05	9.18	
18	20	0.59	0.63	0.37	[illegible]	10.15	5.90	3.95	68.47	[illegible]	110	0.0037	15	3.95	3.22	34.16	
19	20	0.39	0.39	—	0.15	10.0	6.00	0.90	68.61	68.31	55	0.0054	12	2.66	[illegible]	18.21	
20	21	0.16	0.48	0.08	0.90	10.72	5.80	5.22	67.96	67.21	115	0.0065	15	5.22	[illegible]	27.06	
						11.17											
23	24	0.34	0.54	—	0.12	10.0	6.00	0.72	68.70	68.44	42	0.0063	12	2.82	3.00	14.0	
24	25	0.09	0.90	0.08	0.20	10.23	5.89	1.18	68.19	68.07	28	0.0044	12	2.36	3.00	9.33	
25	27	0.16	0.59	0.09	0.29	10.38	5.86	1.70	67.97	67.93	34	0.0040	12	2.25	3.15		
26	27	0.53	0.45	—	0.24	15.0	5.17	1.24	68.14	67.83	74	0.0042	12	2.32	3.00	24.67	
27	28	MH-1	—	—	0.53	15.4	5.11	2.71	67.58	67.56	8	0.0026	15	3.29	3.00	2.67	
28	29	0.40	0.32	0.13	0.66	15.44	5.11	3.37	67.56	67.21	61	0.0057			1.91	31.94	DITCH
29	30				0.66	15.97	5.11	3.37	67.21	66.92	48	0.0060	18	8.14	4.39		EXIST PIP.



TRANSITION DETAIL

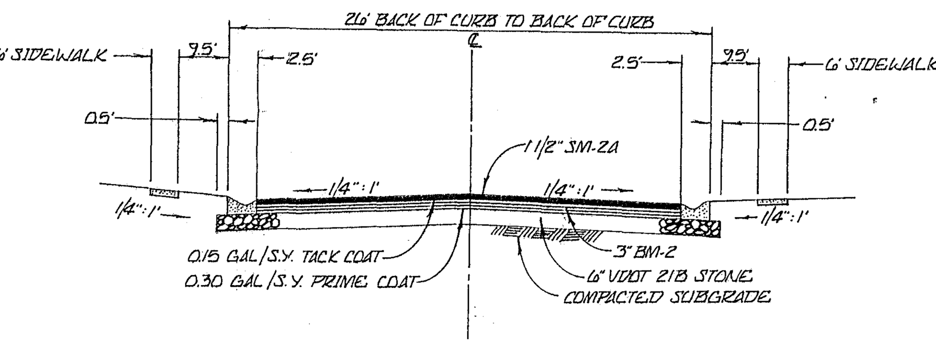
N.T.S.



* THE BOTTOM OF THE CURB AND GUTTER MAY BE CONSTRUCTED PARALLEL TO THE SLOPE OF SUBSURFACE COURSES PROVIDED A MINIMUM DEPTH OF 7" IS MAINTAINED.
- CURB HAVING A RADIUS OF 300 OR LESS (ALONG FACE OF CURB) SHALL BE CONSIDERED RADIAL CURB.
- WHERE THE NO. 2 CURB AND GUTTER SECTION IS USED THE DROP INLETS MUST BE SPACED SUCH THAT THE 10-YEAR FREQUENCY GUTTER FLOW DEPTH DOES NOT EXCEED 4 INCHES.

ROLL CURB AND GUTTER DETAIL

N.T.S.

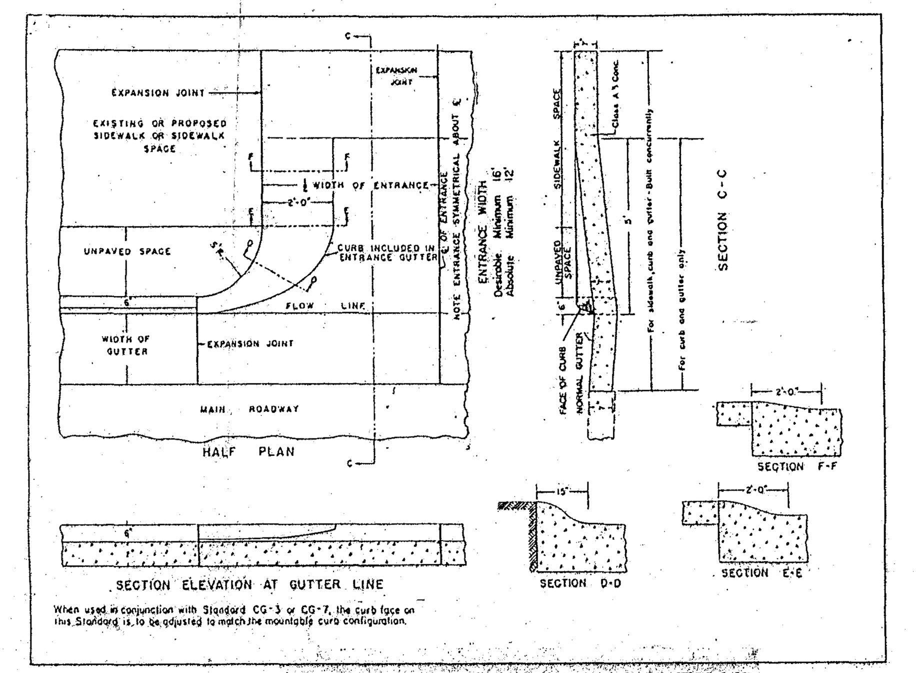


TYPICAL ROAD SECTION

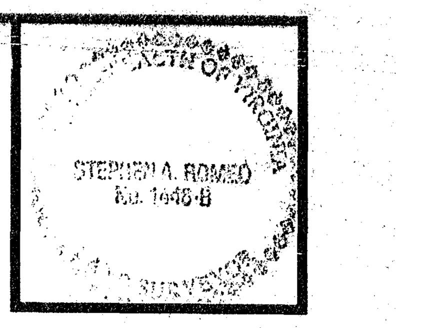
N.T.S.

GENERAL NOTES

1. ALL WORK TO BE IN ACCORDANCE WITH THE VIRGINIA DEPARTMENT OF TRANSPORTATION, "ROAD AND BRIDGE SPECIFICATIONS", DATED 1991, AND THE VIRGINIA DEPARTMENT OF TRANSPORTATION, "ROAD AND BRIDGE STANDARDS", 1993 UNLESS OTHERWISE NOTED.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITTING AND POSTING EROSION AND SEDIMENT CONTROL BOND.
3. SELECT CLEARING AND GRUBBING TO CONSIST OF REMOVAL OF ALL TREES, ROOTS, STUMPS AND SNAGS EXCEPT THOSE TREES DESIGNATED BY OWNER TO REMAIN. ALL TREES SO DESIGNATED TO BE PROTECTED FROM DAMAGE TO THE TRUNK AND ROOT SYSTEM.
4. NO BURNING SHALL BE PERMITTED ON-SITE.
5. ALL DRAINAGE STRUCTURES TO CONFORM TO VIRGINIA DEPARTMENT OF TRANSPORTATION, "ROAD AND BRIDGE STANDARDS", 1993. UNLESS OTHERWISE INDICATED. ALL INLET STRUCTURES TO INCORPORATE INLET SHAPING.
6. ALL PIPE LENGTHS INCLUDE STANDARD ES-1 FLARED END SECTIONS WHERE NOTED.
7. ALL LOCATIONS OF UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE. PRIOR TO COMMENCEMENT OF CONSTRUCTION, CONTRACTOR TO NOTIFY OWNERS OF ALL UTILITIES (VIRGINIA POWER, BELL ATLANTIC, ETC.) OF PROPOSED CONSTRUCTION SO THAT THEY MAY LOCATE AND SAFEGUARD THEIR FACILITIES. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
8. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING EXCAVATION. VERIFICATION SHALL CONSIST OF EXPOSING THE UTILITY BY EXCAVATION AND ESTABLISHING THE EXACT HORIZONTAL AND VERTICAL LOCATION.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING SURE THAT TRUCKS LEAVING SITE ARE CLEANED SUFFICIENTLY SO AS NOT TO CREATE A ROADWAY NUISANCE OR HAZARD.
10. ALL CONCRETE SHALL HAVE AN EXPOSED AGGREGATE FINISH AND SHALL BE VDOT CLASS A3-AE (AIR ENTRAINED 3000 PSI), UNLESS OTHERWISE NOTED.
11. BACKFILLING: BACKFILLING SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
    A. THE CONTRACTOR SHALL REFILL ALL EXCAVATIONS AS RAPIDLY AS PRACTICABLE AFTER INSPECTION OF THE PIPE. BACKFILL SHALL BE CAREFULLY PLACED AROUND AND OVER THE PIPE AND STRUCTURES AND SHALL NOT BE PERMITTED TO FALL DIRECTLY ON THE PIPE OR STRUCTURES FROM A HEIGHT WHICH WOULD CAUSE DAMAGE OR DISTURB THE PIPE OR STRUCTURES.
    B. BACKFILL MATERIAL SHALL BE PLACED IN LAYERS OF NOT MORE THAN SIX (6) INCHES AND SIMULTANEOUSLY COMPACTED ON BOTH SIDES OF THE PIPE TO A POINT TWO (2) FEET ABOVE THE PIPE. EACH LAYER SHALL BE COMPACTED AT 95% MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D-698. PRIOR TO THE PLACEMENT OF THE NEXT SUCCESSIVE LAYER, SPECIAL CARE SHALL BE TAKEN TO THOROUGHLY COMPACT THE MATERIAL UNDER THE HAUNCHES OF THE PIPE HAVING A TAMPING FACE OF NOT MORE THAN 25 SQUARE INCHES. THE BACKFILL SHALL BE CONTINUED IN SIX (6") INCH LIFTS AND MACHINE COMPACTED WITH ROLLERS OR TAMPERS WITHIN A TOLERANCE OF PLUS OR MINUS 2.0% OF OPTIMUM TO A MINIMUM DENSITY OF NOT LESS THAN 95% AS COMPARED TO THE THEORETICAL MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH ASTM D-698. BACKFILL SHALL BE WITHIN PLUS OR MINUS 3.0% OF OPTIMUM MOISTURE PRIOR TO PLACEMENT.
    C. NO ASHES, PUTRESCIBLE REFUSE, LARGE STONES, OR OTHER MATERIAL OF ANY UNSATISFACTORY CHARACTER SHALL BE USED AS EMBANKMENT OR BACKFILL. THE CONTRACTOR SHALL NOT PERMIT EXCAVATIONS TO BE USED AS A DUMPING GROUND FOR REFUSE.
    D. AFTER COMPLETION OF BACKFILLING, ALL MATERIAL NOT USED THEREIN, INCLUDING SUCH EARTH AS THE ENGINEER SHALL DECIDE CANNOT BE PROPERLY USED TO REFILL THE EXCAVATION, SHALL BE REMOVED AND DISPOSED OF IN SUCH A MANNER AND AT SUCH POINT OR POINTS AS APPROVED OR DIRECTED. ALL ROADS, SIDEWALKS, AND OTHER PLACES ON THE LINE OF THE WORK SHALL BE LEFT FREE, CLEAN AND IN GOOD ORDER, SAID CLEANING UP SHALL BE DONE BY THE CONTRACTOR.
12. THE CONTRACTOR SHALL FURNISH THE ENGINEER. CBR TESTS ON SUBGRADE AT INTERVALS NOT TO EXCEED 500 FEET.
13. THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER COMPACTION REPORTS ON ALL BACKFILL OF UTILITIES AND STRUCTURES. FILL EMBANKMENTS, AND SUBGRADE BASE BY A CERTIFIED MATERIALS TESTING COMPANY AS FOLLOWS:
    A. ON ALL UTILITY AND STORM DRAIN TRENCHES WITHIN THE RIGHT-OF-WAY, COMPACTION SHALL BE TESTED EVERY FOUR (4") FEET VERTICALLY AND AT HORIZONTAL INTERVALS NOT TO EXCEED 100 FEET.
    B. ON ALL FILL EMBANKMENTS COMPACTION SHALL BE TESTED EVERY FOUR (4') FEET VERTICALLY AND AT HORIZONTAL INTERVALS NOT TO EXCEED 50 FEET.
    C. ON SUBGRADE AND AGGREGATE BASE, COMPACTION SHALL BE TESTED EVERY 500 FEET. TESTS TO BE AT CENTER OF LANES ON ALTERNATING BASIS.
14. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH COMPLETION OF REQUIRED EARTHWORK. IF ADDITIONAL FILL MATERIAL IS REQUIRED, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SUCH AT NO ADDITIONAL EXPENSE TO THE OWNER. ALL FILL MATERIAL MUST BE APPROVED BY THE OWNER.
15. SHOULD UNSUITABLE MATERIAL BE ENCOUNTERED DURING CONSTRUCTION OF THE STORM DRAINAGE SYSTEM, UTILITIES, ROADWAYS, OR SIDEWALKS, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REMOVE THE UNSUITABLE MATERIAL AND REPLACE IT WITH SUITABLE MATERIAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING SELECT MATERIAL IF ON-SITE SUITABLE MATERIAL IS NOT AVAILABLE. THE CONTRACTOR WILL BE PERMITTED AND IS ENCOURAGED TO VISIT THE SITE IN ADVANCE OF THE BID DATE TO SAMPLE AND EVALUATE INSITU MATERIAL AS NECESSARY TO PREPARE HIS/HER BID AND AT HIS/HER EXPENSE.
16. THE CONTRACTOR SHALL PROVIDE THE ENGINEER ONE SET OF DEVELOPMENT PLANS WITH THE AS-BUILT LOCATIONS OF THE STORM SEWER SYSTEM, SANITARY SYSTEM, AND WATER DISTRIBUTION SYSTEM. IN ADDITION, ALL LOCATIONS WHERE UNSUITABLE MATERIAL WAS ENCOUNTERED AND THE LIMITS OF UNDERCUT NECESSARY TO CONSTRUCT THIS PROJECT SHALL BE SHOWN ON THE AS-BUILT DRAWINGS.



STD. DRIVEWAY APRON DETAIL



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

DES.	MRG
DWN.	GSW
CHK.	SAR
DATE	August 3, 1994

WILLIAMSBURG LANDING
A RETIREMENT COMMUNITY
THE COTTAGES
JAMES CITY COUNTY, VIRGINIA
NOTES AND DETAILS

SHEET	8 OF 13
DISK	
PROJ. NO.	90034-24
DWG.	5310IW

REVISED 9-13-94 PER COUNTY COMMENTS

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

Subject WILLIAMSBURG LDG
COTTAGES
Computed By MRG Checked By

Project No. 90034-24
Client
Date 3/31/95 Sheet No.

Revisions Reqd by use of 24" Corr. Plastic Pipe (CPEP)

CAPACITY OF CPEP @ $n = 0.024$

$$Q = \frac{1.486}{n}(A)(R^{2/3})(S^{1/2})$$

$A = 3.142$ sq. ft
$R = 0.500$
$S = 0.0019$ ft/ft
$n = 0.024$
10 yr. peak elev = 67.99
INV. 24" CPEP = 63.04

$$Q = 226.2\,(0.0019)^{1/2}$$

$Q = 9.86$ cfs (gravity w/o head)

Head in pond (10 yr. peak) is 4.95 ft. Additional head over HW/D shown on Chart 5 is sufficient to overcome increased roughness. See Culvert calculations.

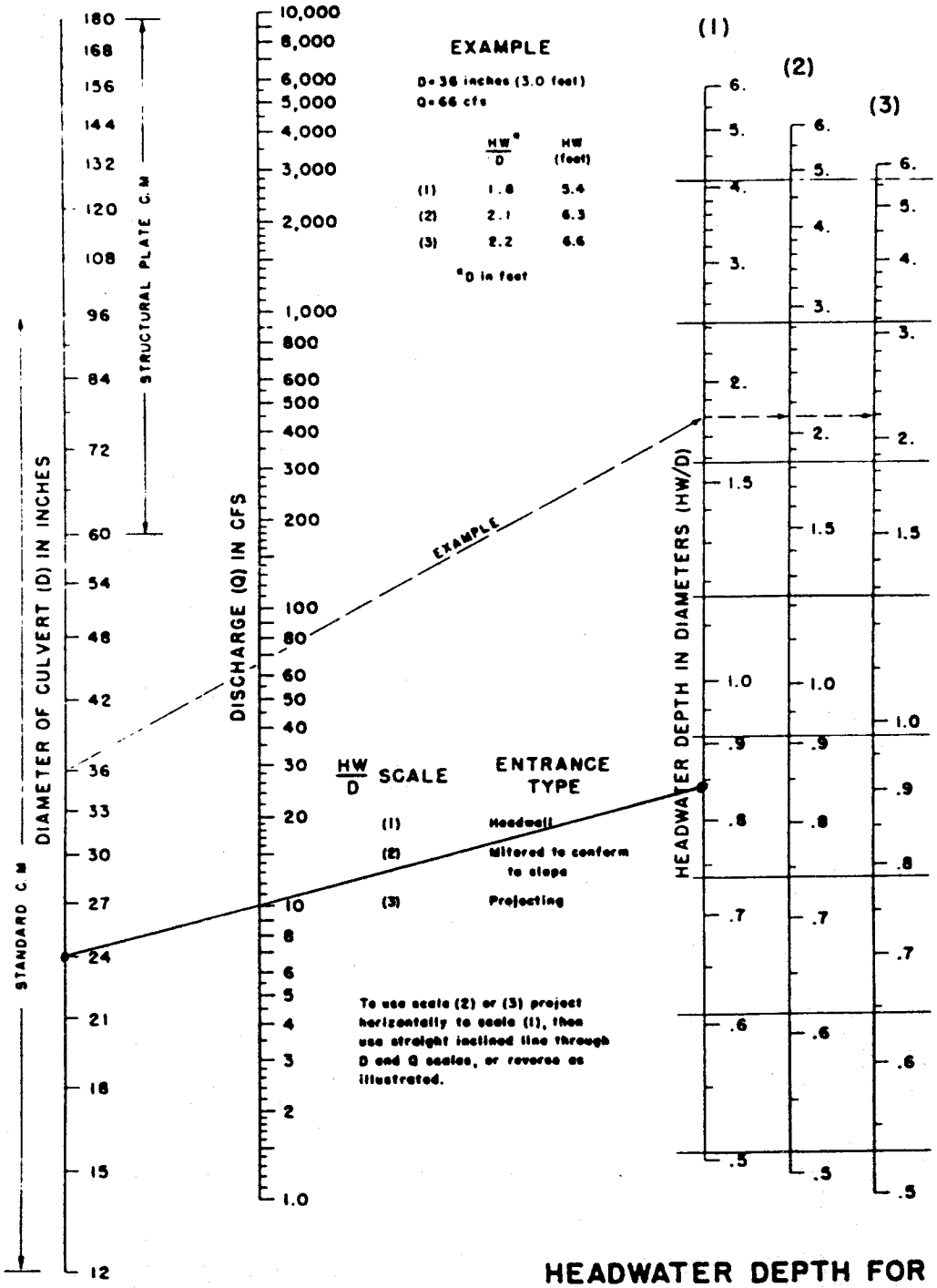
Due to restriction downstream of 24" CPEP (existing 15" RCP), Pond Routing has been revised to account for a tailwater. The included HGL and Routing calculations have been balanced to simulate effect of tailwater condition.

Additional berming is required on one side of pond to contain the 100 yr. storm peak created by tailwater condition. See plan for this change.

from E+S handbook - Table 3.14-A
$H = 67.99 - (63.04 - .36 + 1) = 4.3'$

$Q_{24} = 22.1 \times 0.75 = 16.6$ cfs

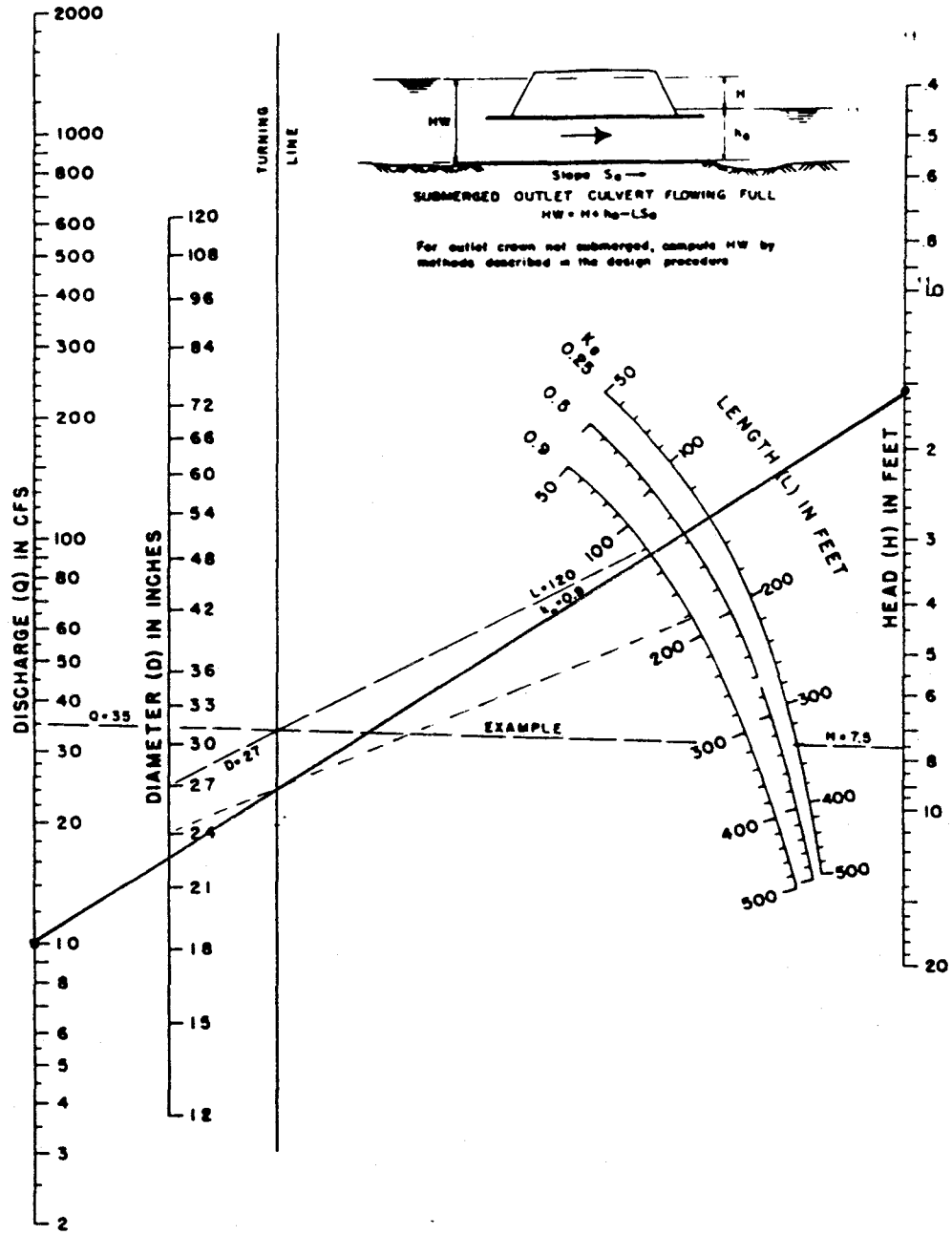
CHART 5



HEADWATER DEPTH FOR C. M. PIPE CULVERTS WITH INLET CONTROL

BUREAU OF PUBLIC ROADS JAN. 1963

CHART 11



HEAD FOR
STANDARD
C. M. PIPE CULVERTS
FLOWING FULL
n = 0.024

BUREAU OF PUBLIC ROADS JAN. 1963

22(5-34)

LD-269

PROJECT: WILLIAMSBURG LANDING-COTTAGES

DESIGNER: M. GORDON
DATE: 3/31/95

HYDROLOGIC DATA: DA = _____ AC.

Q __ = CIA C = _____ ; CA = _____ ; CAc/b = _____ ; ΣCA = _____

Q __ = _____ CFS tc = _____ MIN. _____ OVERLAND FLOW

+ _____ MIN. _____ CHANNEL FLOW

Σtc = _____ MIN.; I_{10} = _____ ; I_{25} = _____ ; I_{50} = _____

Q ___ = RF x LF x FF x Q_c

Q ___ = ____ x ____ x ____ x ____

Q ___ = _____ CFS

Q_{10} = 10.01 CFS

Q_{25} = _____ CFS

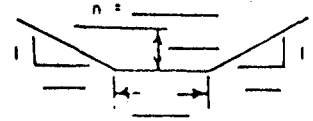
Q_{50} = _____ CFS

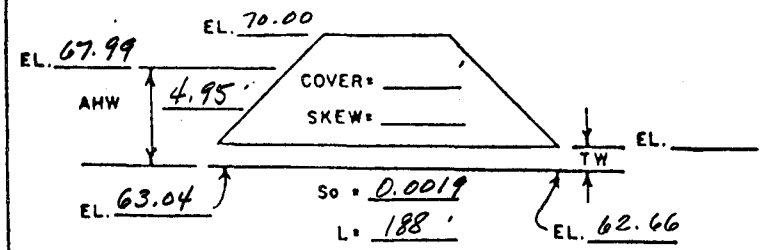
_____ CHANNEL

So = _____ FT/FT.

n = _____

STATION: POND OUTFALL





CULVERT TYPE	Q	SIZE	Q/B	HEADWATER COMPUTATIONS: INLET CONT. HW/D	INLET CONT. HW	OUTLET CONTROL Ke	dc	$\frac{dc+D}{2}$	ho	H	LSo	HW	CONT. HW	OUT. VEL.	COST	COMMENTS
CPEP	10.01	24"		0.85	1.70	0.5	1.1	1.55	1.55	1.55	0.36	2.74	2.74			2.74 < 4.95

SUMMARY & RECOMMENDATIONS:

FILE: COTTAGE3.MRG
31-Mar-95

LANGLEY and McDONALD, P.C.
201 Packets Court
Williamsburg, Virginia 23185

Project: WILLIAMSBURG LANDING - COTTAGES
Location: James City County, Virginia

HYDRAULIC GRADE LINE CALCULATIONS

1. Enter Tailwater Elevation 62.35

2. Enter "N" value for pipe? 0.013 (RCP)
0.024 (CPEP)

3. Enter the following data: [E]

FROM PT.	TO PT.	Q OUT (cfs)	PIPE DIA.	L OUT (ft.)	FRICTION SLOPE	DNSTREAM INVERT	V OUT (FPS)	M.H.	INLET SHAPE	Q IN (cfs)	PIPE DIA.	ANGLE "K"	V IN (fps)	F.L.E.	H.G.E.
[E]	[E]	[E]	[E]	[E]		[E]		[E]	[E]			[E]		[E]	
39	40	10.01	24	56	0.0067	62.89	3.19	Y	Y	0.00	0	0.66	0.00	69.20	67.99
40	41	10.01	24	132	0.0067	62.66	3.19	Y	Y	10.01	24	0.70	3.19	69.70	67.59
41	42	10.01	24	67	0.0020	62.53	3.19	Y	Y	10.01	24	0.00	3.19	69.80	66.61
42	43	10.01	24	110	0.0020	62.32	3.19	Y	Y	10.01	24	0.00	3.19	69.50	66.43
43	44	10.73	15	127	0.0278	61.35	8.74	N	Y	10.01	24	0.00	3.19	68.59	66.16

90 deg K=0.70 40 deg K=0.38
80 deg K=0.66 30 deg K=0.28
70 deg K=0.61 25 deg K=0.22
60 deg K=0.55 20 deg K=0.16
50 deg K=0.47 15 deg K=0.10

HF	HO	HI	HD	HT	.3HT	.5HT	H
0.38	0.04	0.00	0.00	0.04	0.00	0.02	0.02
0.88	0.04	0.06	0.11	0.20	0.00	0.10	0.10
0.13	0.04	0.06	0.00	0.09	0.00	0.05	0.05
0.22	0.04	0.06	0.00	0.09	0.00	0.05	0.05
3.53	0.30	0.06	0.00	0.35	0.11	0.18	0.28

POND-2 Version: 5.17
S/N:

WILLIAMSBURG LANDING COTTAGES
James City County, Virginia
BMP and Sediment Control Basin

CALCULATED 03-31-1995 13:36:42
DISK FILE: C:\PONDPACK\COTTAGES\COTT2 .VOL

Planimeter scale: 1 inch = 40 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (sq.ft)	A1+A2+sqr(A1*A2) (sq.ft)	* Volume (cubic-ft)	Volume Sum (cubic-ft)
63.04	5.19	8,304	0	0	0
64.00	5.90	9,440	26,598	8,511	8,511
65.00	6.89	11,024	30,665	10,222	18,733
66.00	7.86	12,576	35,374	11,791	30,525
67.00	8.91	14,256	40,222	13,407	43,932
68.00	10.00	16,000	45,359	15,120	59,051
69.00	11.08	17,728	50,570	16,857	75,908

Elevations With Areas Interpolated From
The Closest Two Planimeter Readings

64.65	-----	10,456	29,830	6,463	14,975
65.77	-----	12,210	34,836	8,941	27,674

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

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: COTT2 .STR

POND-2 Version: 5.17 S/N:
Date Executed: Time Executed:

****
WILLIAMSBURG LANDING COTTAGES
James City County, Virginia

****

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

Elevation (ft)	Q (cfs)	Contributing Structures
63.04	0.0	
63.26	0.0	1
63.48	0.1	1
63.70	0.1	1
63.92	0.1	1
64.14	0.1	1
64.36	0.1	1
64.58	0.1	1
64.80	0.1	1
65.02	0.2	1
65.24	0.2	2 +1
65.46	0.4	2 +1
65.68	0.7	1 +3
65.90	0.8	1 +3
66.12	1.0	1 +3
66.34	1.7	1 +3 +4
66.56	4.2	1 +3 +4
66.78	6.0	1 +3 +5
67.00	6.9	1 +3 +5
67.22	7.7	1 +3 +5
67.44	8.4	1 +3 +5
67.66	9.1	1 +3 +5
67.88	9.7	1 +3 +5
68.10	10.3	1 +3 +5
68.32	10.8	1 +3 +5
68.54	11.3	1 +3 +5
68.76	11.8	1 +3 +5
68.98	12.3	1 +3 +5
69.20	12.7	1 +3 +5
69.42	13.2	1 +3 +5
69.64	13.6	1 +3 +5
69.86	14.1	1 +3 +5
70.00	18.8	1 +3 +4

Outlet Structure File: COTT2 .STR

POND-2 Version: 5.17 S/N:
Date Executed: Time Executed:

```
*******************************
WILLIAMSBURG LANDING COTTAGES
James City County, Virginia

*******************************
```

Outlet Structure File: C:\PONDPACK\COTTAGES\COTT2 .STR
Planimeter Input File: C:\PONDPACK\COTTAGES\COTT .VOL
Rating Table Output File: C:\PONDPACK\COTTAGES\COTT2 .PND

Min. Elev.(ft) = 63.04 Max. Elev.(ft) = 70 Incr.(ft) = .22

Additional elevations (ft) to be included in table:
* *

```
**************************************************
                SYSTEM CONNECTIVITY
**************************************************
```

Structure	No.	Q Table		Q Table
ORIFICE-VC	1		->	1
TABLE	2		->	2
ORIFICE-VC	3	+ 1	->	B
STAND PIPE	4		->	4
CULVERT-CR	5	? 4	->	D

Outflow rating table summary was stored in file:
C:\PONDPACK\COTTAGES\COTT2 .PND

Outlet Structure File: COTT2 .STR

POND-2 Version: 5.17 S/N:
Date Executed: Time Executed:

```
******************************
WILLIAMSBURG LANDING COTTAGES
James City County, Virginia


******************************


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

ORIFICE-VC
Orifice - Vertical Circular


E1 elev.(ft)?           63.04001
E2 elev.(ft)?           70.001
Orifice coeff.?        .6
Invert elev.(ft)?      63.04001
Datum  elev.(ft)?      63.12
Diameter (ft)?         .17
```

Outlet Structure File: COTT2 .STR

POND-2 Version: 5.17 S/N:
Date Executed: Time Executed:

****
WILLIAMSBURG LANDING COTTAGES
James City County, Virginia

****

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

TABLE
Input your own rating table.
E1 (ft) =65.16 E2 (ft) =65.66

Constant (ft) added to each elevation was:

Elev. (ft)	Q (cfs)
65.16	0
65.26000000000001	.05
65.36	.13
65.45999999999999	.25
65.56	.38
65.66	.47

Outlet Structure File: COTT2 .STR

POND-2 Version: 5.17 S/N:
Date Executed: Time Executed:

****
WILLIAMSBURG LANDING COTTAGES
James City County, Virginia

****

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

ORIFICE-VC
Orifice - Vertical Circular

E1 elev.(ft)?	65.66
E2 elev.(ft)?	70.001
Orifice coeff.?	.6
Invert elev.(ft)?	65.16
Datum elev.(ft)?	65.41
Diameter (ft)?	.50

Outlet Structure File: COTT2 .STR

POND-2 Version: 5.17 S/N:
Date Executed: Time Executed:

```
*****************************
WILLIAMSBURG LANDING COTTAGES
James City County, Virginia


*****************************


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

STAND PIPE
Stand Pipe with weir or orifice flow


E1 elev.(ft)?           66.23
E2 elev.(ft)?           70.001
Crest elev.(ft)?       66.23
Diameter (ft)?         1.5
Weir coefficient?      3.3
Orifice coefficient?   .6
Start transition elev.(ft) @ ?
Transition height (ft)?
```

Outlet Structure File: COTT2 .STR

POND-2 Version: 5.17 S/N:
Date Executed: Time Executed:

****
WILLIAMSBURG LANDING COTTAGES
James City County, Virginia

****

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

CULVERT-CR
Circular Culvert (With Inlet Control)

E1 elev.(ft)?	66.23
E2 elev.(ft)?	70
Diam. (ft)?	1.25
Inv. el.(ft)?	65.37
Slope (ft/ft)?	.0068
T1 ratio?	
T2 ratio?	
K Coeff.?	.0098
M Coeff.?	2
c Coeff.?	.0398
Y Coeff.?	.67
Form 1 or 2?	1
Slope factor?	-0.5

Outlet Structure File: COTT2 .STR

POND-2 Version: 5.17 S/N:
Date Executed: Time Executed:

****
WILLIAMSBURG LANDING COTTAGES
James City County, Virginia

****

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

Elevation (ft)	Q (cfs)	Computation Messages
63.04	0.0	E < E1= 63.04001
63.26	0.0	H =.14
63.48	0.1	H =.36
63.70	0.1	H =.58
63.92	0.1	H =.8
64.14	0.1	H =1.02
64.36	0.1	H =1.24
64.58	0.1	H =1.46
64.80	0.1	H =1.68
65.02	0.2	H =1.9
65.24	0.2	H =2.12
65.46	0.2	H =2.34
65.68	0.2	H =2.56
65.90	0.2	H =2.78
66.12	0.2	H =3.0
66.34	0.2	H =3.22
66.56	0.2	H =3.44
66.78	0.2	H =3.66
67.00	0.2	H =3.88
67.22	0.2	H =4.1
67.44	0.2	H =4.32
67.66	0.2	H =4.54
67.88	0.2	H =4.76
68.10	0.2	H =4.98
68.32	0.2	H =5.2
68.54	0.3	H =5.42
68.76	0.3	H =5.64
68.98	0.3	H =5.86
69.20	0.3	H =6.08
69.42	0.3	H =6.3
69.64	0.3	H =6.52
69.86	0.3	H =6.74
70.00	0.3	H =6.88

C = .6 A = 2.269801E-02 sq.ft.
H (ft) = Table elev. - Datum elev. (63.12 ft)
Q (cfs) = C * A * sqr(2g * H)

Outlet Structure File: COTT2 .STR

POND-2 Version: 5.17 S/N:
Date Executed: Time Executed:

****
WILLIAMSBURG LANDING COTTAGES
James City County, Virginia

****

Outflow Rating Table for Structure #2
TABLE Input your own rating table.

Elevation (ft)	Q (cfs)	Computation Messages
63.04	0.0	E < E1=65.16
63.26	0.0	E < E1=65.16
63.48	0.0	E < E1=65.16
63.70	0.0	E < E1=65.16
63.92	0.0	E < E1=65.16
64.14	0.0	E < E1=65.16
64.36	0.0	E < E1=65.16
64.58	0.0	E < E1=65.16
64.80	0.0	E < E1=65.16
65.02	0.0	E < E1=65.16
65.24	0.0	Interpolated from input table
65.46	0.3	
65.68	0.0	E = or > E2=65.66
65.90	0.0	E = or > E2=65.66
66.12	0.0	E = or > E2=65.66
66.34	0.0	E = or > E2=65.66
66.56	0.0	E = or > E2=65.66
66.78	0.0	E = or > E2=65.66
67.00	0.0	E = or > E2=65.66
67.22	0.0	E = or > E2=65.66
67.44	0.0	E = or > E2=65.66
67.66	0.0	E = or > E2=65.66
67.88	0.0	E = or > E2=65.66
68.10	0.0	E = or > E2=65.66
68.32	0.0	E = or > E2=65.66
68.54	0.0	E = or > E2=65.66
68.76	0.0	E = or > E2=65.66
68.98	0.0	E = or > E2=65.66
69.20	0.0	E = or > E2=65.66
69.42	0.0	E = or > E2=65.66
69.64	0.0	E = or > E2=65.66
69.86	0.0	E = or > E2=65.66
70.00	0.0	E = or > E2=65.66

Outlet Structure File: COTT2 .STR

POND-2 Version: 5.17 S/N:
Date Executed: Time Executed:

****
WILLIAMSBURG LANDING COTTAGES
James City County, Virginia

****

Outflow Rating Table for Structure #3
ORIFICE-VC Orifice - Vertical Circular

Elevation (ft)	Q (cfs)	Computation Messages
63.04	0.0	E < E1=65.66
63.26	0.0	E < E1=65.66
63.48	0.0	E < E1=65.66
63.70	0.0	E < E1=65.66
63.92	0.0	E < E1=65.66
64.14	0.0	E < E1=65.66
64.36	0.0	E < E1=65.66
64.58	0.0	E < E1=65.66
64.80	0.0	E < E1=65.66
65.02	0.0	E < E1=65.66
65.24	0.0	E < E1=65.66
65.46	0.0	E < E1=65.66
65.68	0.5	H =.27
65.90	0.7	H =.49
66.12	0.8	H =.71
66.34	0.9	H =.930
66.56	1.0	H =1.15
66.78	1.1	H =1.37
67.00	1.2	H =1.59
67.22	1.3	H =1.81
67.44	1.3	H =2.03
67.66	1.4	H =2.25
67.88	1.5	H =2.47
68.10	1.6	H =2.69
68.32	1.6	H =2.91
68.54	1.7	H =3.13
68.76	1.7	H =3.35
68.98	1.8	H =3.57
69.20	1.8	H =3.79
69.42	1.9	H =4.01
69.64	1.9	H =4.23
69.86	2.0	H =4.45
70.00	2.0	H =4.59

C = .6 A = .1963496 sq.ft.
H (ft) = Table elev. - Datum elev. (65.41 ft)
Q (cfs) = C * A * sqr(2g * H)

Outlet Structure File: COTT2 .STR

POND-2 Version: 5.17 S/N:
Date Executed: Time Executed:

****
WILLIAMSBURG LANDING COTTAGES
James City County, Virginia

****

Outflow Rating Table for Structure #4
STAND PIPE Stand Pipe with weir or orifice flow

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

Elevation (ft)	Q (cfs)	Computation Messages
63.04	0.0	E < Inv.El.= 66.23
63.26	0.0	E < El= 66.23
63.48	0.0	E < El= 66.23
63.70	0.0	E < El= 66.23
63.92	0.0	E < El= 66.23
64.14	0.0	E < El= 66.23
64.36	0.0	E < El= 66.23
64.58	0.0	E < El= 66.23
64.80	0.0	E < El= 66.23
65.02	0.0	E < El= 66.23
65.24	0.0	E < El= 66.23
65.46	0.0	E < El= 66.23
65.68	0.0	E < El= 66.23
65.90	0.0	E < El= 66.23
66.12	0.0	E < El= 66.23
66.34	0.6	Weir: H =.11
66.56	2.9	Weir: H =.33
66.78	6.3	Orifice: H =.55
67.00	7.5	Orifice: H =.77
67.22	8.5	Orifice: H =.990
67.44	9.4	Orifice: H =1.21
67.66	10.2	Orifice: H =1.43
67.88	10.9	Orifice: H =1.65
68.10	11.6	Orifice: H =1.87
68.32	12.3	Orifice: H =2.09
68.54	12.9	Orifice: H =2.31
68.76	13.5	Orifice: H =2.53
68.98	14.1	Orifice: H =2.75
69.20	14.7	Orifice: H =2.97
69.42	15.2	Orifice: H =3.19
69.64	15.7	Orifice: H =3.41
69.86	16.2	Orifice: H =3.63
70.00	16.5	Orifice: H =3.77

Weir Cw = 3.3 Weir length = 4.712389 ft
Orifice Co = .6 Orifice area = 1.767146 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 = 66.77716 ft

Outlet Structure File: COTT2 .STR

POND-2 Version: 5.17 S/N:
Date Executed: Time Executed:

****
WILLIAMSBURG LANDING COTTAGES
James City County, Virginia

****

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

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

Elevation (ft)	Q (cfs)	Computation Messages
63.04	0.0	E < Inv.El.= 65.37
63.26	0.0	E < Inv.El.= 65.37
63.48	0.0	E < Inv.El.= 65.37
63.70	0.0	E < Inv.El.= 65.37
63.92	0.0	E < Inv.El.= 65.37
64.14	0.0	E < Inv.El.= 65.37
64.36	0.0	E < Inv.El.= 65.37
64.58	0.0	E < Inv.El.= 65.37
64.80	0.0	E < Inv.El.= 65.37
65.02	0.0	E < Inv.El.= 65.37
65.24	0.0	E < Inv.El.= 65.37
65.46	0.0	E < El=66.23
65.68	0.0	E < El=66.23
65.90	0.0	E < El=66.23
66.12	0.0	E < El=66.23
66.34	2.8	Equ.1: HW =.97 dc=.667 Ac=.666
66.56	3.7	Equ.1: HW =1.19 dc=.78 Ac=.805
66.78	4.7	Equ.1: HW =1.41 dc=.877 Ac=.92
67.00	5.5	Submerged: HW =1.63
67.22	6.2	Submerged: HW =1.85
67.44	6.9	Submerged: HW =2.07
67.66	7.4	Submerged: HW =2.29
67.88	8.0	Submerged: HW =2.51
68.10	8.5	Submerged: HW =2.73
68.32	9.0	Submerged: HW =2.95
68.54	9.4	Submerged: HW =3.17
68.76	9.8	Submerged: HW =3.39
68.98	10.3	Submerged: HW =3.61
69.20	10.6	Submerged: HW =3.83
69.42	11.0	Submerged: HW =4.05
69.64	11.4	Submerged: HW =4.27

Outlet Structure File: COTT2 .STR

POND-2 Version: 5.17 S/N:
Date Executed: Time Executed:

>>>>> CONTINUED from previous page <<<<<

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

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

Elevation (ft)	Q (cfs)	Computation Messages
69.86	11.8	Submerged: HW =4.49
70.00	0.0	E = or > E2=70

Used Unsubmerged Equ. Form (1) for elev. less than 66.81 ft
Used Submerged Equation for elevations greater than 67.0 ft
HW=Headwater (ft) dc=Critical depth (ft) Ac=Area (sq.ft) at dc

Transition flows interpolated from the following values:
E1=66.81 ft; Q1=4.8 cfs; Dc=.89 ft; E2=67.0 ft; Q2=5.49 cfs

Outlet Structure File: COTT2 .STR

POND-2 Version: 5.17 S/N:
Date Executed: Time Executed:

****
WILLIAMSBURG LANDING COTTAGES
James City County, Virginia

****

Outflow Rating Table 8
Table 8 = 1 + 3

Elevation (ft)	Q (cfs)	Contributing Structures
63.04	0.0	-
63.26	0.0	1
63.48	0.1	1
63.70	0.1	1
63.92	0.1	1
64.14	0.1	1
64.36	0.1	1
64.58	0.1	1
64.80	0.1	1
65.02	0.2	1
65.24	0.2	1
65.46	0.2	1
65.68	0.7	1 +3
65.90	0.8	1 +3
66.12	1.0	1 +3
66.34	1.1	1 +3
66.56	1.2	1 +3
66.78	1.3	1 +3
67.00	1.4	1 +3
67.22	1.5	1 +3
67.44	1.6	1 +3
67.66	1.7	1 +3
67.88	1.7	1 +3
68.10	1.8	1 +3
68.32	1.9	1 +3
68.54	1.9	1 +3
68.76	2.0	1 +3
68.98	2.1	1 +3
69.20	2.1	1 +3
69.42	2.2	1 +3
69.64	2.2	1 +3
69.86	2.3	1 +3
70.00	2.3	1 +3

Outlet Structure File: COTT2 .STR

POND-2 Version: 5.17 S/N:
Date Executed: Time Executed:

****
WILLIAMSBURG LANDING COTTAGES
James City County, Virginia

****

Outflow Rating Table D
Table D = 4 ? 5

Elevation (ft)	Q (cfs)	Contributing Structures
63.04	0.0	-
63.26	0.0	-
63.48	0.0	-
63.70	0.0	-
63.92	0.0	-
64.14	0.0	-
64.36	0.0	-
64.58	0.0	-
64.80	0.0	-
65.02	0.0	-
65.24	0.0	-
65.46	0.0	-
65.68	0.0	-
65.90	0.0	-
66.12	0.0	-
66.34	0.6	4
66.56	2.9	4
66.78	4.7	5
67.00	5.5	5
67.22	6.2	5
67.44	6.9	5
67.66	7.4	5
67.88	8.0	5
68.10	8.5	5
68.32	9.0	5
68.54	9.4	5
68.76	9.8	5
68.98	10.3	5
69.20	10.6	5
69.42	11.0	5
69.64	11.4	5
69.86	11.8	5
70.00	16.5	4

```
*********************************
*                               *
*  WILLIAMSBURG LANDING COTTAGES *
*  James City County, Virginia  *
*                               *
*                               *
*                               *
*********************************
```

Inflow Hydrograph: C:\PONDPACK\COTTAGES\2IN .HYD
Rating Table file: C:\PONDPACK\COTTAGES\COTT2 .PND

----INITIAL CONDITIONS----
Elevation = 63.04 ft
Outflow = 0.00 cfs
Storage = 1 cu-ft

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + O (cfs)
63.04	0.0	1	0.0	0.0
63.26	0.0	181	1.2	1.2
63.48	0.1	927	6.2	6.3
63.70	0.1	2,273	15.2	15.3
63.92	0.1	4,095	27.3	27.4
64.14	0.1	6,196	41.3	41.4
64.36	0.1	8,375	55.8	55.9
64.58	0.1	10,619	70.8	70.9
64.80	0.1	12,927	86.2	86.3
65.02	0.2	15,300	102.0	102.2
65.24	0.2	17,736	118.2	118.4
65.46	0.4	20,233	134.9	135.3
65.68	0.7	22,790	151.9	152.6
65.90	0.8	25,409	169.4	170.2
66.12	1.0	28,092	187.3	188.3
66.34	1.7	30,844	205.6	207.3
66.56	4.2	33,668	224.5	228.7
66.78	6.0	36,564	243.8	249.8
67.00	6.9	39,533	263.6	270.5
67.22	7.7	42,571	283.8	291.5
67.44	8.4	45,672	304.5	312.9
67.66	9.1	48,837	325.6	334.7
67.88	9.7	52,066	347.1	356.8
68.10	10.3	55,363	369.1	379.4
68.32	10.8	58,734	391.6	402.4
68.54	11.3	62,183	414.6	425.9
68.76	11.8	65,711	438.1	449.9
68.98	12.3	69,317	462.1	474.4
69.20	12.7	72,994	486.6	499.3
69.42	13.2	76,727	511.5	524.7
69.64	13.6	80,518	536.8	550.4

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + O (cfs)
69.86	14.1	84,367	562.4	576.5
70.00	18.8	86,846	579.0	597.8

Time increment (t) = 5.0 min.

EXECUTED: 03-31-1995 13:54:24 Return Freq: 2 years

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\2IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\2OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
10.0	4.60	-----	0.0	0.0	0.00	63.04
15.0	6.90	11.5	11.3	11.5	0.10	63.61
20.0	9.20	16.1	27.2	27.4	0.10	63.92
25.0	10.86	20.1	47.1	47.3	0.10	64.23
30.0	10.86	21.7	68.6	68.8	0.10	64.55
35.0	10.86	21.7	90.1	90.3	0.13	64.86
40.0	10.86	21.7	111.4	111.8	0.20	65.15
45.0	10.86	21.7	132.3	133.1	0.37	65.43
50.0	10.86	21.7	152.7	154.1	0.71	65.70
55.0	10.86	21.7	172.7	174.4	0.85	65.95
60.0	10.86	21.7	191.9	194.4	1.22	66.19
65.0	10.86	21.7	208.8	213.7	2.44	66.41
70.0	10.86	21.7	221.8	230.5	4.36	66.58
75.0	10.86	21.7	232.6	243.5	5.47	66.71
80.0	10.86	21.7	241.9	254.3	6.20	66.83
85.0	10.86	21.7	250.4	263.6	6.60	66.93
90.0	10.86	21.7	258.2	272.1	6.96	67.02
95.0	10.86	21.7	265.4	279.9	7.26	67.10
100.0	10.41	21.3	271.6	286.7	7.52	67.17
105.0	8.11	18.5	274.9	290.2	7.65	67.21
110.0	5.81	13.9	273.6	288.8	7.60	67.19
115.0	3.51	9.3	268.2	282.9	7.37	67.13
120.0	1.21	4.7	258.9	272.9	6.99	67.03
125.0	0.00	1.2	247.2	260.1	6.45	66.89
130.0	0.00	0.0	235.6	247.2	5.78	66.75
135.0	0.00	0.0	226.1	235.6	4.80	66.63
140.0	0.00	0.0	218.3	226.1	3.90	66.53
145.0	0.00	0.0	212.3	218.3	2.98	66.45
150.0	0.00	0.0	207.7	212.3	2.28	66.39
155.0	0.00	0.0	204.2	207.7	1.75	66.34
160.0	0.00	0.0	201.1	204.2	1.59	66.30
165.0	0.00	0.0	198.1	201.1	1.47	66.27
170.0	0.00	0.0	195.4	198.1	1.36	66.23
175.0	0.00	0.0	192.9	195.4	1.26	66.20
180.0	0.00	0.0	190.5	192.9	1.17	66.17
185.0	0.00	0.0	188.4	190.5	1.08	66.15
190.0	0.00	0.0	186.4	188.4	1.00	66.12
195.0	0.00	0.0	184.4	186.4	0.98	66.10
200.0	0.00	0.0	182.5	184.4	0.96	66.07
205.0	0.00	0.0	180.6	182.5	0.94	66.05
210.0	0.00	0.0	178.8	180.6	0.92	66.03
215.0	0.00	0.0	177.0	178.8	0.90	66.00
220.0	0.00	0.0	175.3	177.0	0.88	65.98
225.0	0.00	0.0	173.5	175.3	0.86	65.96
230.0	0.00	0.0	171.9	173.5	0.84	65.94

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\2IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\2OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
235.0	0.00	0.0	170.2	171.9	0.82	65.92
240.0	0.00	0.0	168.6	170.2	0.80	65.90
245.0	0.00	0.0	167.0	168.6	0.79	65.88
250.0	0.00	0.0	165.5	167.0	0.78	65.86
255.0	0.00	0.0	163.9	165.5	0.77	65.84
260.0	0.00	0.0	162.4	163.9	0.76	65.82
265.0	0.00	0.0	160.9	162.4	0.76	65.80
270.0	0.00	0.0	159.4	160.9	0.75	65.78
275.0	0.00	0.0	157.9	159.4	0.74	65.76
280.0	0.00	0.0	156.5	157.9	0.73	65.75
285.0	0.00	0.0	155.0	156.5	0.72	65.73
290.0	0.00	0.0	153.6	155.0	0.71	65.71
295.0	0.00	0.0	152.2	153.6	0.71	65.69
300.0	0.00	0.0	150.8	152.2	0.69	65.67
305.0	0.00	0.0	149.5	150.8	0.67	65.66
310.0	0.00	0.0	148.2	149.5	0.65	65.64
315.0	0.00	0.0	146.9	148.2	0.62	65.62
320.0	0.00	0.0	145.7	146.9	0.60	65.61
325.0	0.00	0.0	144.6	145.7	0.58	65.59
330.0	0.00	0.0	143.4	144.6	0.56	65.58
335.0	0.00	0.0	142.4	143.4	0.54	65.56
340.0	0.00	0.0	141.3	142.4	0.52	65.55
345.0	0.00	0.0	140.3	141.3	0.50	65.54
350.0	0.00	0.0	139.3	140.3	0.49	65.52
355.0	0.00	0.0	138.4	139.3	0.47	65.51
360.0	0.00	0.0	137.5	138.4	0.45	65.50
365.0	0.00	0.0	136.6	137.5	0.44	65.49
370.0	0.00	0.0	135.8	136.6	0.42	65.48
375.0	0.00	0.0	134.9	135.8	0.41	65.47
380.0	0.00	0.0	134.2	134.9	0.40	65.46
385.0	0.00	0.0	133.4	134.2	0.39	65.45
390.0	0.00	0.0	132.6	133.4	0.38	65.44
395.0	0.00	0.0	131.9	132.6	0.37	65.43
400.0	0.00	0.0	131.2	131.9	0.36	65.42
405.0	0.00	0.0	130.5	131.2	0.35	65.41
410.0	0.00	0.0	129.8	130.5	0.34	65.40
415.0	0.00	0.0	129.1	129.8	0.33	65.39
420.0	0.00	0.0	128.5	129.1	0.33	65.38
425.0	0.00	0.0	127.8	128.5	0.32	65.37
430.0	0.00	0.0	127.2	127.8	0.31	65.36
435.0	0.00	0.0	126.6	127.2	0.30	65.35
440.0	0.00	0.0	126.0	126.6	0.30	65.35
445.0	0.00	0.0	125.4	126.0	0.29	65.34
450.0	0.00	0.0	124.9	125.4	0.28	65.33
455.0	0.00	0.0	124.3	124.9	0.28	65.32
460.0	0.00	0.0	123.8	124.3	0.27	65.32

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\2IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\2OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
465.0	0.00	0.0	123.2	123.8	0.26	65.31
470.0	0.00	0.0	122.7	123.2	0.26	65.30
475.0	0.00	0.0	122.2	122.7	0.25	65.30
480.0	0.00	0.0	121.7	122.2	0.24	65.29
485.0	0.00	0.0	121.3	121.7	0.24	65.28
490.0	0.00	0.0	120.8	121.3	0.23	65.28
495.0	0.00	0.0	120.3	120.8	0.23	65.27
500.0	0.00	0.0	119.9	120.3	0.22	65.26
505.0	0.00	0.0	119.4	119.9	0.22	65.26
510.0	0.00	0.0	119.0	119.4	0.21	65.25
515.0	0.00	0.0	118.6	119.0	0.21	65.25
520.0	0.00	0.0	118.2	118.6	0.20	65.24
525.0	0.00	0.0	117.8	118.2	0.20	65.24
530.0	0.00	0.0	117.4	117.8	0.20	65.23
535.0	0.00	0.0	117.0	117.4	0.20	65.23
540.0	0.00	0.0	116.6	117.0	0.20	65.22
545.0	0.00	0.0	116.2	116.6	0.20	65.22
550.0	0.00	0.0	115.8	116.2	0.20	65.21
555.0	0.00	0.0	115.4	115.8	0.20	65.20
560.0	0.00	0.0	115.0	115.4	0.20	65.20
565.0	0.00	0.0	114.6	115.0	0.20	65.19
570.0	0.00	0.0	114.2	114.6	0.20	65.19
575.0	0.00	0.0	113.8	114.2	0.20	65.18
580.0	0.00	0.0	113.4	113.8	0.20	65.18
585.0	0.00	0.0	113.0	113.4	0.20	65.17
590.0	0.00	0.0	112.6	113.0	0.20	65.17
595.0	0.00	0.0	112.2	112.6	0.20	65.16
600.0	0.00	0.0	111.8	112.2	0.20	65.16
605.0	0.00	0.0	111.4	111.8	0.20	65.15
610.0	0.00	0.0	111.0	111.4	0.20	65.14
615.0	0.00	0.0	110.6	111.0	0.20	65.14
620.0	0.00	0.0	110.2	110.6	0.20	65.13
625.0	0.00	0.0	109.8	110.2	0.20	65.13
630.0	0.00	0.0	109.4	109.8	0.20	65.12
635.0	0.00	0.0	109.0	109.4	0.20	65.12
640.0	0.00	0.0	108.6	109.0	0.20	65.11
645.0	0.00	0.0	108.2	108.6	0.20	65.11
650.0	0.00	0.0	107.8	108.2	0.20	65.10
655.0	0.00	0.0	107.4	107.8	0.20	65.10
660.0	0.00	0.0	107.0	107.4	0.20	65.09
665.0	0.00	0.0	106.6	107.0	0.20	65.09
670.0	0.00	0.0	106.2	106.6	0.20	65.08
675.0	0.00	0.0	105.8	106.2	0.20	65.07
680.0	0.00	0.0	105.4	105.8	0.20	65.07
685.0	0.00	0.0	105.0	105.4	0.20	65.06
690.0	0.00	0.0	104.6	105.0	0.20	65.06

EXECUTED: 03-31-1995 13:54:24 Return Freq: 2 years

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\2IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\2OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
695.0	0.00	0.0	104.2	104.6	0.20	65.05
700.0	0.00	0.0	103.8	104.2	0.20	65.05
705.0	0.00	0.0	103.4	103.8	0.20	65.04
710.0	0.00	0.0	103.0	103.4	0.20	65.04
715.0	0.00	0.0	102.6	103.0	0.20	65.03
720.0	0.00	0.0	102.2	102.6	0.20	65.03
725.0	0.00	0.0	101.8	102.2	0.20	65.02
730.0	0.00	0.0	101.4	101.8	0.20	65.01
735.0	0.00	0.0	101.0	101.4	0.20	65.01
740.0	0.00	0.0	100.6	101.0	0.19	65.00
745.0	0.00	0.0	100.3	100.6	0.19	65.00
750.0	0.00	0.0	99.9	100.3	0.19	64.99
755.0	0.00	0.0	99.5	99.9	0.19	64.99
760.0	0.00	0.0	99.1	99.5	0.18	64.98
765.0	0.00	0.0	98.8	99.1	0.18	64.98
770.0	0.00	0.0	98.4	98.8	0.18	64.97
775.0	0.00	0.0	98.1	98.4	0.18	64.97
780.0	0.00	0.0	97.7	98.1	0.17	64.96
785.0	0.00	0.0	97.4	97.7	0.17	64.96
790.0	0.00	0.0	97.0	97.4	0.17	64.95
795.0	0.00	0.0	96.7	97.0	0.17	64.95
800.0	0.00	0.0	96.4	96.7	0.17	64.94
805.0	0.00	0.0	96.0	96.4	0.16	64.94
810.0	0.00	0.0	95.7	96.0	0.16	64.93
815.0	0.00	0.0	95.4	95.7	0.16	64.93
820.0	0.00	0.0	95.1	95.4	0.16	64.93
825.0	0.00	0.0	94.8	95.1	0.16	64.92
830.0	0.00	0.0	94.5	94.8	0.15	64.92
835.0	0.00	0.0	94.2	94.5	0.15	64.91
840.0	0.00	0.0	93.9	94.2	0.15	64.91
845.0	0.00	0.0	93.6	93.9	0.15	64.90
850.0	0.00	0.0	93.3	93.6	0.15	64.90
855.0	0.00	0.0	93.0	93.3	0.14	64.90
860.0	0.00	0.0	92.7	93.0	0.14	64.89
865.0	0.00	0.0	92.4	92.7	0.14	64.89
870.0	0.00	0.0	92.2	92.4	0.14	64.89
875.0	0.00	0.0	91.9	92.2	0.14	64.88
880.0	0.00	0.0	91.6	91.9	0.14	64.88
885.0	0.00	0.0	91.3	91.6	0.13	64.87
890.0	0.00	0.0	91.1	91.3	0.13	64.87
895.0	0.00	0.0	90.8	91.1	0.13	64.87
900.0	0.00	0.0	90.6	90.8	0.13	64.86
905.0	0.00	0.0	90.3	90.6	0.13	64.86
910.0	0.00	0.0	90.1	90.3	0.13	64.86
915.0	0.00	0.0	89.8	90.1	0.12	64.85
920.0	0.00	0.0	89.6	89.8	0.12	64.85

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\2IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\2OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
925.0	0.00	0.0	89.3	89.6	0.12	64.85
930.0	0.00	0.0	89.1	89.3	0.12	64.84
935.0	0.00	0.0	88.9	89.1	0.12	64.84
940.0	0.00	0.0	88.6	88.9	0.12	64.84
945.0	0.00	0.0	88.4	88.6	0.11	64.83
950.0	0.00	0.0	88.2	88.4	0.11	64.83
955.0	0.00	0.0	87.9	88.2	0.11	64.83
960.0	0.00	0.0	87.7	87.9	0.11	64.82
965.0	0.00	0.0	87.5	87.7	0.11	64.82
970.0	0.00	0.0	87.3	87.5	0.11	64.82
975.0	0.00	0.0	87.1	87.3	0.11	64.81
980.0	0.00	0.0	86.9	87.1	0.10	64.81
985.0	0.00	0.0	86.7	86.9	0.10	64.81
990.0	0.00	0.0	86.5	86.7	0.10	64.81
995.0	0.00	0.0	86.2	86.5	0.10	64.80
1000.0	0.00	0.0	86.0	86.2	0.10	64.80
1005.0	0.00	0.0	85.8	86.0	0.10	64.80
1010.0	0.00	0.0	85.6	85.8	0.10	64.79
1015.0	0.00	0.0	85.4	85.6	0.10	64.79
1020.0	0.00	0.0	85.2	85.4	0.10	64.79
1025.0	0.00	0.0	85.0	85.2	0.10	64.79
1030.0	0.00	0.0	84.8	85.0	0.10	64.78
1035.0	0.00	0.0	84.6	84.8	0.10	64.78
1040.0	0.00	0.0	84.4	84.6	0.10	64.78
1045.0	0.00	0.0	84.2	84.4	0.10	64.77
1050.0	0.00	0.0	84.0	84.2	0.10	64.77
1055.0	0.00	0.0	83.8	84.0	0.10	64.77
1060.0	0.00	0.0	83.6	83.8	0.10	64.77
1065.0	0.00	0.0	83.4	83.6	0.10	64.76
1070.0	0.00	0.0	83.2	83.4	0.10	64.76
1075.0	0.00	0.0	83.0	83.2	0.10	64.76
1080.0	0.00	0.0	82.8	83.0	0.10	64.75
1085.0	0.00	0.0	82.6	82.8	0.10	64.75
1090.0	0.00	0.0	82.4	82.6	0.10	64.75
1095.0	0.00	0.0	82.2	82.4	0.10	64.75
1100.0	0.00	0.0	82.0	82.2	0.10	64.74
1105.0	0.00	0.0	81.8	82.0	0.10	64.74
1110.0	0.00	0.0	81.6	81.8	0.10	64.74
1115.0	0.00	0.0	81.4	81.6	0.10	64.73
1120.0	0.00	0.0	81.2	81.4	0.10	64.73
1125.0	0.00	0.0	81.0	81.2	0.10	64.73
1130.0	0.00	0.0	80.8	81.0	0.10	64.73
1135.0	0.00	0.0	80.6	80.8	0.10	64.72
1140.0	0.00	0.0	80.4	80.6	0.10	64.72
1145.0	0.00	0.0	80.2	80.4	0.10	64.72
1150.0	0.00	0.0	80.0	80.2	0.10	64.71

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\2IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\2OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1155.0	0.00	0.0	79.8	80.0	0.10	64.71
1160.0	0.00	0.0	79.6	79.8	0.10	64.71
1165.0	0.00	0.0	79.4	79.6	0.10	64.71
1170.0	0.00	0.0	79.2	79.4	0.10	64.70
1175.0	0.00	0.0	79.0	79.2	0.10	64.70
1180.0	0.00	0.0	78.8	79.0	0.10	64.70
1185.0	0.00	0.0	78.6	78.8	0.10	64.69
1190.0	0.00	0.0	78.4	78.6	0.10	64.69
1195.0	0.00	0.0	78.2	78.4	0.10	64.69
1200.0	0.00	0.0	78.0	78.2	0.10	64.69
1205.0	0.00	0.0	77.8	78.0	0.10	64.68
1210.0	0.00	0.0	77.6	77.8	0.10	64.68
1215.0	0.00	0.0	77.4	77.6	0.10	64.68
1220.0	0.00	0.0	77.2	77.4	0.10	64.67
1225.0	0.00	0.0	77.0	77.2	0.10	64.67
1230.0	0.00	0.0	76.8	77.0	0.10	64.67
1235.0	0.00	0.0	76.6	76.8	0.10	64.67
1240.0	0.00	0.0	76.4	76.6	0.10	64.66
1245.0	0.00	0.0	76.2	76.4	0.10	64.66
1250.0	0.00	0.0	76.0	76.2	0.10	64.66
1255.0	0.00	0.0	75.8	76.0	0.10	64.65
1260.0	0.00	0.0	75.6	75.8	0.10	64.65
1265.0	0.00	0.0	75.4	75.6	0.10	64.65
1270.0	0.00	0.0	75.2	75.4	0.10	64.65
1275.0	0.00	0.0	75.0	75.2	0.10	64.64
1280.0	0.00	0.0	74.8	75.0	0.10	64.64
1285.0	0.00	0.0	74.6	74.8	0.10	64.64
1290.0	0.00	0.0	74.4	74.6	0.10	64.63
1295.0	0.00	0.0	74.2	74.4	0.10	64.63
1300.0	0.00	0.0	74.0	74.2	0.10	64.63
1305.0	0.00	0.0	73.8	74.0	0.10	64.63
1310.0	0.00	0.0	73.6	73.8	0.10	64.62
1315.0	0.00	0.0	73.4	73.6	0.10	64.62
1320.0	0.00	0.0	73.2	73.4	0.10	64.62
1325.0	0.00	0.0	73.0	73.2	0.10	64.61
1330.0	0.00	0.0	72.8	73.0	0.10	64.61
1335.0	0.00	0.0	72.6	72.8	0.10	64.61
1340.0	0.00	0.0	72.4	72.6	0.10	64.61
1345.0	0.00	0.0	72.2	72.4	0.10	64.60
1350.0	0.00	0.0	72.0	72.2	0.10	64.60
1355.0	0.00	0.0	71.8	72.0	0.10	64.60
1360.0	0.00	0.0	71.6	71.8	0.10	64.59
1365.0	0.00	0.0	71.4	71.6	0.10	64.59
1370.0	0.00	0.0	71.2	71.4	0.10	64.59
1375.0	0.00	0.0	71.0	71.2	0.10	64.59
1380.0	0.00	0.0	70.8	71.0	0.10	64.58

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\2IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\2OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1385.0	0.00	0.0	70.6	70.8	0.10	64.58
1390.0	0.00	0.0	70.4	70.6	0.10	64.58
1395.0	0.00	0.0	70.2	70.4	0.10	64.57
1400.0	0.00	0.0	70.0	70.2	0.10	64.57
1405.0	0.00	0.0	69.8	70.0	0.10	64.57
1410.0	0.00	0.0	69.6	69.8	0.10	64.56
1415.0	0.00	0.0	69.4	69.6	0.10	64.56
1420.0	0.00	0.0	69.2	69.4	0.10	64.56
1425.0	0.00	0.0	69.0	69.2	0.10	64.56
1430.0	0.00	0.0	68.8	69.0	0.10	64.55
1435.0	0.00	0.0	68.6	68.8	0.10	64.55
1440.0	0.00	0.0	68.4	68.6	0.10	64.55

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

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\2IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\2OUT .HYD

Starting Pond W.S. Elevation = 63.04 ft

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

Peak Inflow = 10.86 cfs
Peak Outflow = 7.65 cfs
Peak Elevation = 67.21 ft

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

Initial Storage = 1 cu-ft
Peak Storage From Storm = 42,376 cu-ft

Total Storage in Pond = 42,377 cu-ft

Warning: Inflow hydrograph truncated on left side.

```
*********************************
*                               *
*  WILLIAMSBURG LANDING COTTAGES *
*  James City County, Virginia  *
*                               *
*                               *
*                               *
*********************************
```

Inflow Hydrograph: C:\PONDPACK\COTTAGES\10IN .HYD
Rating Table file: C:\PONDPACK\COTTAGES\COTT2 .PND

----INITIAL CONDITIONS----
Elevation = 63.04 ft
Outflow = 0.00 cfs
Storage = 1 cu-ft

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + O (cfs)
63.04	0.0	1	0.0	0.0
63.26	0.0	181	1.2	1.2
63.48	0.1	927	6.2	6.3
63.70	0.1	2,273	15.2	15.3
63.92	0.1	4,095	27.3	27.4
64.14	0.1	6,196	41.3	41.4
64.36	0.1	8,375	55.8	55.9
64.58	0.1	10,619	70.8	70.9
64.80	0.1	12,927	86.2	86.3
65.02	0.2	15,300	102.0	102.2
65.24	0.2	17,736	118.2	118.4
65.46	0.4	20,233	134.9	135.3
65.68	0.7	22,790	151.9	152.6
65.90	0.8	25,409	169.4	170.2
66.12	1.0	28,092	187.3	188.3
66.34	1.7	30,844	205.6	207.3
66.56	4.2	33,668	224.5	228.7
66.78	6.0	36,564	243.8	249.8
67.00	6.9	39,533	263.6	270.5
67.22	7.7	42,571	283.8	291.5
67.44	8.4	45,672	304.5	312.9
67.66	9.1	48,837	325.6	334.7
67.88	9.7	52,066	347.1	356.8
68.10	10.3	55,363	369.1	379.4
68.32	10.8	58,734	391.6	402.4
68.54	11.3	62,183	414.6	425.9
68.76	11.8	65,711	438.1	449.9
68.98	12.3	69,317	462.1	474.4
69.20	12.7	72,994	486.6	499.3
69.42	13.2	76,727	511.5	524.7
69.64	13.6	80,518	536.8	550.4

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + O (cfs)
69.86	14.1	84,367	562.4	576.5
70.00	18.8	86,846	579.0	597.8

Time increment (t) = 5.0 min.

EXECUTED: 03-31-1995 13:55:22 Return freq: 10 years

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\10IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\10OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
10.0	6.20	-----	0.0	0.0	0.00	63.04
15.0	9.29	15.5	15.3	15.5	0.10	63.70
20.0	12.39	21.7	36.8	37.0	0.10	64.07
25.0	14.62	27.0	63.6	63.8	0.10	64.48
30.0	14.62	29.2	92.5	92.8	0.14	64.89
35.0	14.62	29.2	121.3	121.8	0.24	65.28
40.0	14.62	29.2	149.2	150.5	0.66	65.65
45.0	14.62	29.2	176.7	178.5	0.89	66.00
50.0	14.62	29.2	202.6	205.9	1.65	66.32
55.0	14.62	29.2	222.9	231.9	4.47	66.59
60.0	14.62	29.2	239.9	252.2	6.10	66.81
65.0	14.62	29.2	255.5	269.2	6.84	66.99
70.0	14.62	29.2	269.8	284.7	7.44	67.15
75.0	14.62	29.2	283.2	299.1	7.95	67.30
80.0	14.62	29.2	295.7	312.4	8.39	67.44
85.0	14.62	29.2	307.3	324.9	8.79	67.56
90.0	14.62	29.2	318.3	336.6	9.15	67.68
95.0	14.62	29.2	328.6	347.5	9.45	67.79
100.0	14.62	29.2	338.4	357.9	9.73	67.89
105.0	12.77	27.4	345.9	365.8	9.94	67.97
110.0	9.68	22.5	348.3	368.4	10.01	67.99
115.0	6.58	16.3	344.8	364.6	9.91	67.96
120.0	3.49	10.1	335.6	354.9	9.65	67.86
125.0	0.39	3.9	321.0	339.4	9.23	67.71
130.0	0.00	0.4	304.0	321.4	8.67	67.53
135.0	0.00	0.0	287.8	304.0	8.11	67.35
140.0	0.00	0.0	272.7	287.8	7.56	67.18
145.0	0.00	0.0	258.7	272.7	6.99	67.02
150.0	0.00	0.0	245.9	258.7	6.39	66.88
155.0	0.00	0.0	234.6	245.9	5.67	66.74
160.0	0.00	0.0	225.2	234.6	4.71	66.62
165.0	0.00	0.0	217.6	225.2	3.79	66.52
170.0	0.00	0.0	211.8	217.6	2.90	66.45
175.0	0.00	0.0	207.3	211.8	2.22	66.39
180.0	0.00	0.0	203.9	207.3	1.70	66.34
185.0	0.00	0.0	200.8	203.9	1.58	66.30
190.0	0.00	0.0	197.9	200.8	1.46	66.26
195.0	0.00	0.0	195.2	197.9	1.35	66.23
200.0	0.00	0.0	192.7	195.2	1.25	66.20
205.0	0.00	0.0	190.3	192.7	1.16	66.17
210.0	0.00	0.0	188.2	190.3	1.08	66.14
215.0	0.00	0.0	186.2	188.2	1.00	66.12
220.0	0.00	0.0	184.2	186.2	0.98	66.09
225.0	0.00	0.0	182.3	184.2	0.96	66.07
230.0	0.00	0.0	180.5	182.3	0.93	66.05

EXECUTED: 03-31-1995 13:55:22 Return Freq: 10 years

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\10IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\10OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
235.0	0.00	0.0	178.6	180.5	0.91	66.02
240.0	0.00	0.0	176.8	178.6	0.89	66.00
245.0	0.00	0.0	175.1	176.8	0.87	65.98
250.0	0.00	0.0	173.4	175.1	0.85	65.96
255.0	0.00	0.0	171.7	173.4	0.84	65.94
260.0	0.00	0.0	170.1	171.7	0.82	65.92
265.0	0.00	0.0	168.5	170.1	0.80	65.90
270.0	0.00	0.0	166.9	168.5	0.79	65.88
275.0	0.00	0.0	165.3	166.9	0.78	65.86
280.0	0.00	0.0	163.8	165.3	0.77	65.84
285.0	0.00	0.0	162.3	163.8	0.76	65.82
290.0	0.00	0.0	160.8	162.3	0.75	65.80
295.0	0.00	0.0	159.3	160.8	0.75	65.78
300.0	0.00	0.0	157.8	159.3	0.74	65.76
305.0	0.00	0.0	156.3	157.8	0.73	65.74
310.0	0.00	0.0	154.9	156.3	0.72	65.73
315.0	0.00	0.0	153.5	154.9	0.71	65.71
320.0	0.00	0.0	152.1	153.5	0.70	65.69
325.0	0.00	0.0	150.7	152.1	0.69	65.67
330.0	0.00	0.0	149.3	150.7	0.67	65.66
335.0	0.00	0.0	148.1	149.3	0.64	65.64
340.0	0.00	0.0	146.8	148.1	0.62	65.62
345.0	0.00	0.0	145.6	146.8	0.60	65.61
350.0	0.00	0.0	144.5	145.6	0.58	65.59
355.0	0.00	0.0	143.3	144.5	0.56	65.58
360.0	0.00	0.0	142.3	143.3	0.54	65.56
365.0	0.00	0.0	141.2	142.3	0.52	65.55
370.0	0.00	0.0	140.2	141.2	0.50	65.54
375.0	0.00	0.0	139.2	140.2	0.49	65.52
380.0	0.00	0.0	138.3	139.2	0.47	65.51
385.0	0.00	0.0	137.4	138.3	0.45	65.50
390.0	0.00	0.0	136.5	137.4	0.44	65.49
395.0	0.00	0.0	135.7	136.5	0.42	65.48
400.0	0.00	0.0	134.9	135.7	0.41	65.47
405.0	0.00	0.0	134.1	134.9	0.40	65.45
410.0	0.00	0.0	133.3	134.1	0.39	65.44
415.0	0.00	0.0	132.6	133.3	0.38	65.43
420.0	0.00	0.0	131.8	132.6	0.37	65.42
425.0	0.00	0.0	131.1	131.8	0.36	65.41
430.0	0.00	0.0	130.4	131.1	0.35	65.41
435.0	0.00	0.0	129.7	130.4	0.34	65.40
440.0	0.00	0.0	129.1	129.7	0.33	65.39
445.0	0.00	0.0	128.4	129.1	0.33	65.38
450.0	0.00	0.0	127.8	128.4	0.32	65.37
455.0	0.00	0.0	127.1	127.8	0.31	65.36
460.0	0.00	0.0	126.5	127.1	0.30	65.35

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\10IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\10OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
465.0	0.00	0.0	125.9	126.5	0.30	65.35
470.0	0.00	0.0	125.4	125.9	0.29	65.34
475.0	0.00	0.0	124.8	125.4	0.28	65.33
480.0	0.00	0.0	124.2	124.8	0.28	65.32
485.0	0.00	0.0	123.7	124.2	0.27	65.32
490.0	0.00	0.0	123.2	123.7	0.26	65.31
495.0	0.00	0.0	122.7	123.2	0.26	65.30
500.0	0.00	0.0	122.2	122.7	0.25	65.30
505.0	0.00	0.0	121.7	122.2	0.24	65.29
510.0	0.00	0.0	121.2	121.7	0.24	65.28
515.0	0.00	0.0	120.7	121.2	0.23	65.28
520.0	0.00	0.0	120.3	120.7	0.23	65.27
525.0	0.00	0.0	119.8	120.3	0.22	65.26
530.0	0.00	0.0	119.4	119.8	0.22	65.26
535.0	0.00	0.0	119.0	119.4	0.21	65.25
540.0	0.00	0.0	118.6	119.0	0.21	65.25
545.0	0.00	0.0	118.2	118.6	0.20	65.24
550.0	0.00	0.0	117.8	118.2	0.20	65.24
555.0	0.00	0.0	117.4	117.8	0.20	65.23
560.0	0.00	0.0	117.0	117.4	0.20	65.23
565.0	0.00	0.0	116.6	117.0	0.20	65.22
570.0	0.00	0.0	116.2	116.6	0.20	65.21
575.0	0.00	0.0	115.8	116.2	0.20	65.21
580.0	0.00	0.0	115.4	115.8	0.20	65.20
585.0	0.00	0.0	115.0	115.4	0.20	65.20
590.0	0.00	0.0	114.6	115.0	0.20	65.19
595.0	0.00	0.0	114.2	114.6	0.20	65.19
600.0	0.00	0.0	113.8	114.2	0.20	65.18
605.0	0.00	0.0	113.4	113.8	0.20	65.18
610.0	0.00	0.0	113.0	113.4	0.20	65.17
615.0	0.00	0.0	112.6	113.0	0.20	65.17
620.0	0.00	0.0	112.2	112.6	0.20	65.16
625.0	0.00	0.0	111.8	112.2	0.20	65.16
630.0	0.00	0.0	111.4	111.8	0.20	65.15
635.0	0.00	0.0	111.0	111.4	0.20	65.14
640.0	0.00	0.0	110.6	111.0	0.20	65.14
645.0	0.00	0.0	110.2	110.6	0.20	65.13
650.0	0.00	0.0	109.8	110.2	0.20	65.13
655.0	0.00	0.0	109.4	109.8	0.20	65.12
660.0	0.00	0.0	109.0	109.4	0.20	65.12
665.0	0.00	0.0	108.6	109.0	0.20	65.11
670.0	0.00	0.0	108.2	108.6	0.20	65.11
675.0	0.00	0.0	107.8	108.2	0.20	65.10
680.0	0.00	0.0	107.4	107.8	0.20	65.10
685.0	0.00	0.0	107.0	107.4	0.20	65.09
690.0	0.00	0.0	106.6	107.0	0.20	65.08

Pond file: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\10IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\10OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
695.0	0.00	0.0	106.2	106.6	0.20	65.08
700.0	0.00	0.0	105.8	106.2	0.20	65.07
705.0	0.00	0.0	105.4	105.8	0.20	65.07
710.0	0.00	0.0	105.0	105.4	0.20	65.06
715.0	0.00	0.0	104.6	105.0	0.20	65.06
720.0	0.00	0.0	104.2	104.6	0.20	65.05
725.0	0.00	0.0	103.8	104.2	0.20	65.05
730.0	0.00	0.0	103.4	103.8	0.20	65.04
735.0	0.00	0.0	103.0	103.4	0.20	65.04
740.0	0.00	0.0	102.6	103.0	0.20	65.03
745.0	0.00	0.0	102.2	102.6	0.20	65.02
750.0	0.00	0.0	101.8	102.2	0.20	65.02
755.0	0.00	0.0	101.4	101.8	0.20	65.01
760.0	0.00	0.0	101.0	101.4	0.19	65.01
765.0	0.00	0.0	100.6	101.0	0.19	65.00
770.0	0.00	0.0	100.2	100.6	0.19	65.00
775.0	0.00	0.0	99.8	100.2	0.19	64.99
780.0	0.00	0.0	99.5	99.8	0.19	64.99
785.0	0.00	0.0	99.1	99.5	0.18	64.98
790.0	0.00	0.0	98.8	99.1	0.18	64.98
795.0	0.00	0.0	98.4	98.8	0.18	64.97
800.0	0.00	0.0	98.0	98.4	0.18	64.97
805.0	0.00	0.0	97.7	98.0	0.17	64.96
810.0	0.00	0.0	97.4	97.7	0.17	64.96
815.0	0.00	0.0	97.0	97.4	0.17	64.95
820.0	0.00	0.0	96.7	97.0	0.17	64.95
825.0	0.00	0.0	96.3	96.7	0.17	64.94
830.0	0.00	0.0	96.0	96.3	0.16	64.94
835.0	0.00	0.0	95.7	96.0	0.16	64.93
840.0	0.00	0.0	95.4	95.7	0.16	64.93
845.0	0.00	0.0	95.1	95.4	0.16	64.93
850.0	0.00	0.0	94.8	95.1	0.16	64.92
855.0	0.00	0.0	94.4	94.8	0.15	64.92
860.0	0.00	0.0	94.1	94.4	0.15	64.91
865.0	0.00	0.0	93.8	94.1	0.15	64.91
870.0	0.00	0.0	93.6	93.8	0.15	64.90
875.0	0.00	0.0	93.3	93.6	0.15	64.90
880.0	0.00	0.0	93.0	93.3	0.14	64.90
885.0	0.00	0.0	92.7	93.0	0.14	64.89
890.0	0.00	0.0	92.4	92.7	0.14	64.89
895.0	0.00	0.0	92.1	92.4	0.14	64.88
900.0	0.00	0.0	91.9	92.1	0.14	64.88
905.0	0.00	0.0	91.6	91.9	0.14	64.88
910.0	0.00	0.0	91.3	91.6	0.13	64.87
915.0	0.00	0.0	91.1	91.3	0.13	64.87
920.0	0.00	0.0	90.8	91.1	0.13	64.87

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\10IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\10OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
925.0	0.00	0.0	90.5	90.8	0.13	64.86
930.0	0.00	0.0	90.3	90.5	0.13	64.86
935.0	0.00	0.0	90.0	90.3	0.13	64.86
940.0	0.00	0.0	89.8	90.0	0.12	64.85
945.0	0.00	0.0	89.5	89.8	0.12	64.85
950.0	0.00	0.0	89.3	89.5	0.12	64.85
955.0	0.00	0.0	89.1	89.3	0.12	64.84
960.0	0.00	0.0	88.8	89.1	0.12	64.84
965.0	0.00	0.0	88.6	88.8	0.12	64.84
970.0	0.00	0.0	88.4	88.6	0.11	64.83
975.0	0.00	0.0	88.1	88.4	0.11	64.83
980.0	0.00	0.0	87.9	88.1	0.11	64.83
985.0	0.00	0.0	87.7	87.9	0.11	64.82
990.0	0.00	0.0	87.5	87.7	0.11	64.82
995.0	0.00	0.0	87.3	87.5	0.11	64.82
1000.0	0.00	0.0	87.1	87.3	0.11	64.81
1005.0	0.00	0.0	86.8	87.1	0.10	64.81
1010.0	0.00	0.0	86.6	86.8	0.10	64.81
1015.0	0.00	0.0	86.4	86.6	0.10	64.80
1020.0	0.00	0.0	86.2	86.4	0.10	64.80
1025.0	0.00	0.0	86.0	86.2	0.10	64.80
1030.0	0.00	0.0	85.8	86.0	0.10	64.80
1035.0	0.00	0.0	85.6	85.8	0.10	64.79
1040.0	0.00	0.0	85.4	85.6	0.10	64.79
1045.0	0.00	0.0	85.2	85.4	0.10	64.79
1050.0	0.00	0.0	85.0	85.2	0.10	64.79
1055.0	0.00	0.0	84.8	85.0	0.10	64.78
1060.0	0.00	0.0	84.6	84.8	0.10	64.78
1065.0	0.00	0.0	84.4	84.6	0.10	64.78
1070.0	0.00	0.0	84.2	84.4	0.10	64.77
1075.0	0.00	0.0	84.0	84.2	0.10	64.77
1080.0	0.00	0.0	83.8	84.0	0.10	64.77
1085.0	0.00	0.0	83.6	83.8	0.10	64.77
1090.0	0.00	0.0	83.4	83.6	0.10	64.76
1095.0	0.00	0.0	83.2	83.4	0.10	64.76
1100.0	0.00	0.0	83.0	83.2	0.10	64.76
1105.0	0.00	0.0	82.8	83.0	0.10	64.75
1110.0	0.00	0.0	82.6	82.8	0.10	64.75
1115.0	0.00	0.0	82.4	82.6	0.10	64.75
1120.0	0.00	0.0	82.2	82.4	0.10	64.74
1125.0	0.00	0.0	82.0	82.2	0.10	64.74
1130.0	0.00	0.0	81.8	82.0	0.10	64.74
1135.0	0.00	0.0	81.6	81.8	0.10	64.74
1140.0	0.00	0.0	81.4	81.6	0.10	64.73
1145.0	0.00	0.0	81.2	81.4	0.10	64.73
1150.0	0.00	0.0	81.0	81.2	0.10	64.73

EXECUTED: 03-31-1995 13:55:22 Return freq: 10 years

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\10IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\10OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1155.0	0.00	0.0	80.8	81.0	0.10	64.72
1160.0	0.00	0.0	80.6	80.8	0.10	64.72
1165.0	0.00	0.0	80.4	80.6	0.10	64.72
1170.0	0.00	0.0	80.2	80.4	0.10	64.72
1175.0	0.00	0.0	80.0	80.2	0.10	64.71
1180.0	0.00	0.0	79.8	80.0	0.10	64.71
1185.0	0.00	0.0	79.6	79.8	0.10	64.71
1190.0	0.00	0.0	79.4	79.6	0.10	64.70
1195.0	0.00	0.0	79.2	79.4	0.10	64.70
1200.0	0.00	0.0	79.0	79.2	0.10	64.70
1205.0	0.00	0.0	78.8	79.0	0.10	64.70
1210.0	0.00	0.0	78.6	78.8	0.10	64.69
1215.0	0.00	0.0	78.4	78.6	0.10	64.69
1220.0	0.00	0.0	78.2	78.4	0.10	64.69
1225.0	0.00	0.0	78.0	78.2	0.10	64.68
1230.0	0.00	0.0	77.8	78.0	0.10	64.68
1235.0	0.00	0.0	77.6	77.8	0.10	64.68
1240.0	0.00	0.0	77.4	77.6	0.10	64.68
1245.0	0.00	0.0	77.2	77.4	0.10	64.67
1250.0	0.00	0.0	77.0	77.2	0.10	64.67
1255.0	0.00	0.0	76.8	77.0	0.10	64.67
1260.0	0.00	0.0	76.6	76.8	0.10	64.66
1265.0	0.00	0.0	76.4	76.6	0.10	64.66
1270.0	0.00	0.0	76.2	76.4	0.10	64.66
1275.0	0.00	0.0	76.0	76.2	0.10	64.66
1280.0	0.00	0.0	75.8	76.0	0.10	64.65
1285.0	0.00	0.0	75.6	75.8	0.10	64.65
1290.0	0.00	0.0	75.4	75.6	0.10	64.65
1295.0	0.00	0.0	75.2	75.4	0.10	64.64
1300.0	0.00	0.0	75.0	75.2	0.10	64.64
1305.0	0.00	0.0	74.8	75.0	0.10	64.64
1310.0	0.00	0.0	74.6	74.8	0.10	64.64
1315.0	0.00	0.0	74.4	74.6	0.10	64.63
1320.0	0.00	0.0	74.2	74.4	0.10	64.63
1325.0	0.00	0.0	74.0	74.2	0.10	64.63
1330.0	0.00	0.0	73.8	74.0	0.10	64.62
1335.0	0.00	0.0	73.6	73.8	0.10	64.62
1340.0	0.00	0.0	73.4	73.6	0.10	64.62
1345.0	0.00	0.0	73.2	73.4	0.10	64.62
1350.0	0.00	0.0	73.0	73.2	0.10	64.61
1355.0	0.00	0.0	72.8	73.0	0.10	64.61
1360.0	0.00	0.0	72.6	72.8	0.10	64.61
1365.0	0.00	0.0	72.4	72.6	0.10	64.60
1370.0	0.00	0.0	72.2	72.4	0.10	64.60
1375.0	0.00	0.0	72.0	72.2	0.10	64.60
1380.0	0.00	0.0	71.8	72.0	0.10	64.60

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\10IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\10OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1385.0	0.00	0.0	71.6	71.8	0.10	64.59
1390.0	0.00	0.0	71.4	71.6	0.10	64.59
1395.0	0.00	0.0	71.2	71.4	0.10	64.59
1400.0	0.00	0.0	71.0	71.2	0.10	64.58
1405.0	0.00	0.0	70.8	71.0	0.10	64.58
1410.0	0.00	0.0	70.6	70.8	0.10	64.58
1415.0	0.00	0.0	70.4	70.6	0.10	64.58
1420.0	0.00	0.0	70.2	70.4	0.10	64.57
1425.0	0.00	0.0	70.0	70.2	0.10	64.57
1430.0	0.00	0.0	69.8	70.0	0.10	64.57
1435.0	0.00	0.0	69.6	69.8	0.10	64.56
1440.0	0.00	0.0	69.4	69.6	0.10	64.56

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

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\10IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\10OUT .HYD

Starting Pond W.S. Elevation = 63.04 ft

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

Peak Inflow = 14.62 cfs
Peak Outflow = 10.01 cfs
Peak Elevation = 67.99 ft

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

Initial Storage	=	1 cu-ft
Peak Storage From Storm	=	53,752 cu-ft
Total Storage in Pond	=	53,753 cu-ft

Warning: Inflow hydrograph truncated on left side.

```
*********************************
*                               *
*  WILLIAMSBURG LANDING COTTAGES *
*  James City County, Virginia  *
*                               *
*                               *
*                               *
*********************************
```

Inflow Hydrograph: C:\PONDPACK\COTTAGES\100IN .HYD
Rating Table file: C:\PONDPACK\COTTAGES\COTT2 .PND

----INITIAL CONDITIONS----
Elevation = 63.04 ft
Outflow = 0.00 cfs
Storage = 1 cu-ft

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + O (cfs)
63.04	0.0	1	0.0	0.0
63.26	0.0	181	1.2	1.2
63.48	0.1	927	6.2	6.3
63.70	0.1	2,273	15.2	15.3
63.92	0.1	4,095	27.3	27.4
64.14	0.1	6,196	41.3	41.4
64.36	0.1	8,375	55.8	55.9
64.58	0.1	10,619	70.8	70.9
64.80	0.1	12,927	86.2	86.3
65.02	0.2	15,300	102.0	102.2
65.24	0.2	17,736	118.2	118.4
65.46	0.4	20,233	134.9	135.3
65.68	0.7	22,790	151.9	152.6
65.90	0.8	25,409	169.4	170.2
66.12	1.0	28,092	187.3	188.3
66.34	1.7	30,844	205.6	207.3
66.56	4.2	33,668	224.5	228.7
66.78	6.0	36,564	243.8	249.8
67.00	6.9	39,533	263.6	270.5
67.22	7.7	42,571	283.8	291.5
67.44	8.4	45,672	304.5	312.9
67.66	9.1	48,837	325.6	334.7
67.88	9.7	52,066	347.1	356.8
68.10	10.3	55,363	369.1	379.4
68.32	10.8	58,734	391.6	402.4
68.54	11.3	62,183	414.6	425.9
68.76	11.8	65,711	438.1	449.9
68.98	12.3	69,317	462.1	474.4
69.20	12.7	72,994	486.6	499.3
69.42	13.2	76,727	511.5	524.7
69.64	13.6	80,518	536.8	550.4

GIVEN POND DATA			INTERMEDIATE ROUTING COMPUTATIONS	
ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)	2S/t (cfs)	2S/t + O (cfs)
69.86	14.1	84,367	562.4	576.5
70.00	18.8	86,846	579.0	597.8

Time increment (t) = 5.0 min.

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\100IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\100OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
10.0	7.89	-----	0.0	0.0	0.00	63.04
15.0	11.84	19.7	19.5	19.7	0.10	63.78
20.0	15.79	27.6	47.0	47.2	0.10	64.23
25.0	18.64	34.4	81.2	81.4	0.10	64.73
30.0	18.64	37.3	118.1	118.5	0.20	65.24
35.0	18.64	37.3	153.9	155.4	0.72	65.71
40.0	18.64	37.3	189.0	191.2	1.11	66.15
45.0	18.64	37.3	218.4	226.3	3.92	66.54
50.0	18.64	37.3	243.2	255.7	6.26	66.84
55.0	18.64	37.3	265.9	280.5	7.28	67.10
60.0	18.64	37.3	287.0	303.2	8.08	67.34
65.0	18.64	37.3	306.8	324.3	8.77	67.56
70.0	18.64	37.3	325.3	344.0	9.35	67.75
75.0	18.64	37.3	342.9	362.6	9.85	67.94
80.0	18.64	37.3	359.6	380.2	10.32	68.11
85.0	18.64	37.3	375.5	396.8	10.68	68.27
90.0	18.64	37.3	390.7	412.8	11.02	68.42
95.0	18.64	37.3	405.3	428.0	11.34	68.56
100.0	18.64	37.3	419.3	442.6	11.65	68.69
105.0	18.64	37.3	432.7	456.6	11.94	68.82
110.0	18.64	37.3	445.6	470.0	12.21	68.94
115.0	18.64	37.3	458.0	482.8	12.44	69.05
120.0	18.64	37.3	470.0	495.2	12.63	69.16
125.0	18.64	37.3	481.5	507.3	12.86	69.27
130.0	18.64	37.3	492.7	518.8	13.08	69.37
135.0	18.64	37.3	503.4	529.9	13.28	69.46
140.0	18.64	37.3	513.8	540.7	13.45	69.56
145.0	18.64	37.3	523.8	551.0	13.61	69.65
150.0	18.64	37.3	533.5	561.1	13.80	69.73
155.0	18.64	37.3	542.8	570.8	13.99	69.81
160.0	17.88	36.5	549.9	579.3	14.71	69.88
165.0	13.93	31.8	551.2	581.7	15.24	69.89
170.0	9.98	23.9	547.0	575.1	14.07	69.85
175.0	6.03	16.0	535.3	563.0	13.84	69.75
180.0	2.08	8.1	516.4	543.4	13.49	69.58
185.0	0.00	2.1	492.4	518.5	13.08	69.37
190.0	0.00	0.0	467.2	492.4	12.59	69.14
195.0	0.00	0.0	442.9	467.2	12.15	68.92
200.0	0.00	0.0	419.6	442.9	11.65	68.70
205.0	0.00	0.0	397.2	419.6	11.17	68.48
210.0	0.00	0.0	375.9	397.2	10.69	68.27
215.0	0.00	0.0	355.4	375.9	10.21	68.07
220.0	0.00	0.0	336.1	355.4	9.66	67.87
225.0	0.00	0.0	317.8	336.1	9.14	67.67
230.0	0.00	0.0	300.7	317.8	8.56	67.49

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\100IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\100OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
235.0	0.00	0.0	284.7	300.7	8.00	67.31
240.0	0.00	0.0	269.8	284.7	7.44	67.15
245.0	0.00	0.0	256.1	269.8	6.87	66.99
250.0	0.00	0.0	243.5	256.1	6.28	66.85
255.0	0.00	0.0	232.6	243.5	5.47	66.72
260.0	0.00	0.0	223.5	232.6	4.54	66.60
265.0	0.00	0.0	216.3	223.5	3.60	66.51
270.0	0.00	0.0	210.8	216.3	2.76	66.43
275.0	0.00	0.0	206.6	210.8	2.11	66.38
280.0	0.00	0.0	203.3	206.6	1.67	66.33
285.0	0.00	0.0	200.2	203.3	1.55	66.29
290.0	0.00	0.0	197.3	200.2	1.44	66.26
295.0	0.00	0.0	194.6	197.3	1.33	66.22
300.0	0.00	0.0	192.2	194.6	1.23	66.19
305.0	0.00	0.0	189.9	192.2	1.14	66.16
310.0	0.00	0.0	187.7	189.9	1.06	66.14
315.0	0.00	0.0	185.8	187.7	0.99	66.11
320.0	0.00	0.0	183.8	185.8	0.97	66.09
325.0	0.00	0.0	181.9	183.8	0.95	66.07
330.0	0.00	0.0	180.1	181.9	0.93	66.04
335.0	0.00	0.0	178.2	180.1	0.91	66.02
340.0	0.00	0.0	176.5	178.2	0.89	66.00
345.0	0.00	0.0	174.7	176.5	0.87	65.98
350.0	0.00	0.0	173.0	174.7	0.85	65.96
355.0	0.00	0.0	171.4	173.0	0.83	65.93
360.0	0.00	0.0	169.7	171.4	0.81	65.91
365.0	0.00	0.0	168.1	169.7	0.80	65.89
370.0	0.00	0.0	166.6	168.1	0.79	65.87
375.0	0.00	0.0	165.0	166.6	0.78	65.85
380.0	0.00	0.0	163.5	165.0	0.77	65.83
385.0	0.00	0.0	161.9	163.5	0.76	65.82
390.0	0.00	0.0	160.4	161.9	0.75	65.80
395.0	0.00	0.0	158.9	160.4	0.74	65.78
400.0	0.00	0.0	157.5	158.9	0.74	65.76
405.0	0.00	0.0	156.0	157.5	0.73	65.74
410.0	0.00	0.0	154.6	156.0	0.72	65.72
415.0	0.00	0.0	153.2	154.6	0.71	65.70
420.0	0.00	0.0	151.8	153.2	0.70	65.69
425.0	0.00	0.0	150.4	151.8	0.68	65.67
430.0	0.00	0.0	149.1	150.4	0.66	65.65
435.0	0.00	0.0	147.8	149.1	0.64	65.63
440.0	0.00	0.0	146.6	147.8	0.62	65.62
445.0	0.00	0.0	145.4	146.6	0.59	65.60
450.0	0.00	0.0	144.2	145.4	0.57	65.59
455.0	0.00	0.0	143.1	144.2	0.55	65.57
460.0	0.00	0.0	142.0	143.1	0.54	65.56

Pond file: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\100IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\100OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
465.0	0.00	0.0	141.0	142.0	0.52	65.55
470.0	0.00	0.0	140.0	141.0	0.50	65.53
475.0	0.00	0.0	139.0	140.0	0.48	65.52
480.0	0.00	0.0	138.1	139.0	0.46	65.51
485.0	0.00	0.0	137.2	138.1	0.45	65.50
490.0	0.00	0.0	136.3	137.2	0.43	65.48
495.0	0.00	0.0	135.5	136.3	0.42	65.47
500.0	0.00	0.0	134.7	135.5	0.40	65.46
505.0	0.00	0.0	133.9	134.7	0.39	65.45
510.0	0.00	0.0	133.1	133.9	0.38	65.44
515.0	0.00	0.0	132.4	133.1	0.37	65.43
520.0	0.00	0.0	131.7	132.4	0.37	65.42
525.0	0.00	0.0	131.0	131.7	0.36	65.41
530.0	0.00	0.0	130.3	131.0	0.35	65.40
535.0	0.00	0.0	129.6	130.3	0.34	65.39
540.0	0.00	0.0	128.9	129.6	0.33	65.39
545.0	0.00	0.0	128.3	128.9	0.32	65.38
550.0	0.00	0.0	127.6	128.3	0.32	65.37
555.0	0.00	0.0	127.0	127.6	0.31	65.36
560.0	0.00	0.0	126.4	127.0	0.30	65.35
565.0	0.00	0.0	125.8	126.4	0.29	65.34
570.0	0.00	0.0	125.2	125.8	0.29	65.34
575.0	0.00	0.0	124.7	125.2	0.28	65.33
580.0	0.00	0.0	124.1	124.7	0.27	65.32
585.0	0.00	0.0	123.6	124.1	0.27	65.31
590.0	0.00	0.0	123.1	123.6	0.26	65.31
595.0	0.00	0.0	122.6	123.1	0.26	65.30
600.0	0.00	0.0	122.1	122.6	0.25	65.29
605.0	0.00	0.0	121.6	122.1	0.24	65.29
610.0	0.00	0.0	121.1	121.6	0.24	65.28
615.0	0.00	0.0	120.6	121.1	0.23	65.27
620.0	0.00	0.0	120.2	120.6	0.23	65.27
625.0	0.00	0.0	119.7	120.2	0.22	65.26
630.0	0.00	0.0	119.3	119.7	0.22	65.26
635.0	0.00	0.0	118.9	119.3	0.21	65.25
640.0	0.00	0.0	118.5	118.9	0.21	65.25
645.0	0.00	0.0	118.1	118.5	0.20	65.24
650.0	0.00	0.0	117.7	118.1	0.20	65.24
655.0	0.00	0.0	117.3	117.7	0.20	65.23
660.0	0.00	0.0	116.9	117.3	0.20	65.22
665.0	0.00	0.0	116.5	116.9	0.20	65.22
670.0	0.00	0.0	116.1	116.5	0.20	65.21
675.0	0.00	0.0	115.7	116.1	0.20	65.21
680.0	0.00	0.0	115.3	115.7	0.20	65.20
685.0	0.00	0.0	114.9	115.3	0.20	65.20
690.0	0.00	0.0	114.5	114.9	0.20	65.19

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\100IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\100OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
695.0	0.00	0.0	114.1	114.5	0.20	65.19
700.0	0.00	0.0	113.7	114.1	0.20	65.18
705.0	0.00	0.0	113.3	113.7	0.20	65.18
710.0	0.00	0.0	112.9	113.3	0.20	65.17
715.0	0.00	0.0	112.5	112.9	0.20	65.16
720.0	0.00	0.0	112.1	112.5	0.20	65.16
725.0	0.00	0.0	111.7	112.1	0.20	65.15
730.0	0.00	0.0	111.3	111.7	0.20	65.15
735.0	0.00	0.0	110.9	111.3	0.20	65.14
740.0	0.00	0.0	110.5	110.9	0.20	65.14
745.0	0.00	0.0	110.1	110.5	0.20	65.13
750.0	0.00	0.0	109.7	110.1	0.20	65.13
755.0	0.00	0.0	109.3	109.7	0.20	65.12
760.0	0.00	0.0	108.9	109.3	0.20	65.12
765.0	0.00	0.0	108.5	108.9	0.20	65.11
770.0	0.00	0.0	108.1	108.5	0.20	65.11
775.0	0.00	0.0	107.7	108.1	0.20	65.10
780.0	0.00	0.0	107.3	107.7	0.20	65.09
785.0	0.00	0.0	106.9	107.3	0.20	65.09
790.0	0.00	0.0	106.5	106.9	0.20	65.08
795.0	0.00	0.0	106.1	106.5	0.20	65.08
800.0	0.00	0.0	105.7	106.1	0.20	65.07
805.0	0.00	0.0	105.3	105.7	0.20	65.07
810.0	0.00	0.0	104.9	105.3	0.20	65.06
815.0	0.00	0.0	104.5	104.9	0.20	65.06
820.0	0.00	0.0	104.1	104.5	0.20	65.05
825.0	0.00	0.0	103.7	104.1	0.20	65.05
830.0	0.00	0.0	103.3	103.7	0.20	65.04
835.0	0.00	0.0	102.9	103.3	0.20	65.03
840.0	0.00	0.0	102.5	102.9	0.20	65.03
845.0	0.00	0.0	102.1	102.5	0.20	65.02
850.0	0.00	0.0	101.7	102.1	0.20	65.02
855.0	0.00	0.0	101.3	101.7	0.20	65.01
860.0	0.00	0.0	100.9	101.3	0.19	65.01
865.0	0.00	0.0	100.5	100.9	0.19	65.00
870.0	0.00	0.0	100.1	100.5	0.19	65.00
875.0	0.00	0.0	99.8	100.1	0.19	64.99
880.0	0.00	0.0	99.4	99.8	0.18	64.99
885.0	0.00	0.0	99.0	99.4	0.18	64.98
890.0	0.00	0.0	98.7	99.0	0.18	64.98
895.0	0.00	0.0	98.3	98.7	0.18	64.97
900.0	0.00	0.0	98.0	98.3	0.18	64.97
905.0	0.00	0.0	97.6	98.0	0.17	64.96
910.0	0.00	0.0	97.3	97.6	0.17	64.96
915.0	0.00	0.0	96.9	97.3	0.17	64.95
920.0	0.00	0.0	96.6	96.9	0.17	64.95

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\100IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\100OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
925.0	0.00	0.0	96.3	96.6	0.16	64.94
930.0	0.00	0.0	96.0	96.3	0.16	64.94
935.0	0.00	0.0	95.6	96.0	0.16	64.93
940.0	0.00	0.0	95.3	95.6	0.16	64.93
945.0	0.00	0.0	95.0	95.3	0.16	64.92
950.0	0.00	0.0	94.7	95.0	0.15	64.92
955.0	0.00	0.0	94.4	94.7	0.15	64.92
960.0	0.00	0.0	94.1	94.4	0.15	64.91
965.0	0.00	0.0	93.8	94.1	0.15	64.91
970.0	0.00	0.0	93.5	93.8	0.15	64.90
975.0	0.00	0.0	93.2	93.5	0.15	64.90
980.0	0.00	0.0	92.9	93.2	0.14	64.90
985.0	0.00	0.0	92.6	92.9	0.14	64.89
990.0	0.00	0.0	92.3	92.6	0.14	64.89
995.0	0.00	0.0	92.1	92.3	0.14	64.88
1000.0	0.00	0.0	91.8	92.1	0.14	64.88
1005.0	0.00	0.0	91.5	91.8	0.13	64.88
1010.0	0.00	0.0	91.3	91.5	0.13	64.87
1015.0	0.00	0.0	91.0	91.3	0.13	64.87
1020.0	0.00	0.0	90.7	91.0	0.13	64.87
1025.0	0.00	0.0	90.5	90.7	0.13	64.86
1030.0	0.00	0.0	90.2	90.5	0.13	64.86
1035.0	0.00	0.0	90.0	90.2	0.12	64.85
1040.0	0.00	0.0	89.7	90.0	0.12	64.85
1045.0	0.00	0.0	89.5	89.7	0.12	64.85
1050.0	0.00	0.0	89.3	89.5	0.12	64.84
1055.0	0.00	0.0	89.0	89.3	0.12	64.84
1060.0	0.00	0.0	88.8	89.0	0.12	64.84
1065.0	0.00	0.0	88.6	88.8	0.12	64.83
1070.0	0.00	0.0	88.3	88.6	0.11	64.83
1075.0	0.00	0.0	88.1	88.3	0.11	64.83
1080.0	0.00	0.0	87.9	88.1	0.11	64.83
1085.0	0.00	0.0	87.7	87.9	0.11	64.82
1090.0	0.00	0.0	87.4	87.7	0.11	64.82
1095.0	0.00	0.0	87.2	87.4	0.11	64.82
1100.0	0.00	0.0	87.0	87.2	0.11	64.81
1105.0	0.00	0.0	86.8	87.0	0.10	64.81
1110.0	0.00	0.0	86.6	86.8	0.10	64.81
1115.0	0.00	0.0	86.4	86.6	0.10	64.80
1120.0	0.00	0.0	86.2	86.4	0.10	64.80
1125.0	0.00	0.0	86.0	86.2	0.10	64.80
1130.0	0.00	0.0	85.8	86.0	0.10	64.80
1135.0	0.00	0.0	85.6	85.8	0.10	64.79
1140.0	0.00	0.0	85.4	85.6	0.10	64.79
1145.0	0.00	0.0	85.2	85.4	0.10	64.79
1150.0	0.00	0.0	85.0	85.2	0.10	64.78

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\100IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\100OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1155.0	0.00	0.0	84.8	85.0	0.10	64.78
1160.0	0.00	0.0	84.6	84.8	0.10	64.78
1165.0	0.00	0.0	84.4	84.6	0.10	64.78
1170.0	0.00	0.0	84.2	84.4	0.10	64.77
1175.0	0.00	0.0	84.0	84.2	0.10	64.77
1180.0	0.00	0.0	83.8	84.0	0.10	64.77
1185.0	0.00	0.0	83.6	83.8	0.10	64.76
1190.0	0.00	0.0	83.4	83.6	0.10	64.76
1195.0	0.00	0.0	83.2	83.4	0.10	64.76
1200.0	0.00	0.0	83.0	83.2	0.10	64.76
1205.0	0.00	0.0	82.8	83.0	0.10	64.75
1210.0	0.00	0.0	82.6	82.8	0.10	64.75
1215.0	0.00	0.0	82.4	82.6	0.10	64.75
1220.0	0.00	0.0	82.2	82.4	0.10	64.74
1225.0	0.00	0.0	82.0	82.2	0.10	64.74
1230.0	0.00	0.0	81.8	82.0	0.10	64.74
1235.0	0.00	0.0	81.6	81.8	0.10	64.74
1240.0	0.00	0.0	81.4	81.6	0.10	64.73
1245.0	0.00	0.0	81.2	81.4	0.10	64.73
1250.0	0.00	0.0	81.0	81.2	0.10	64.73
1255.0	0.00	0.0	80.8	81.0	0.10	64.72
1260.0	0.00	0.0	80.6	80.8	0.10	64.72
1265.0	0.00	0.0	80.4	80.6	0.10	64.72
1270.0	0.00	0.0	80.2	80.4	0.10	64.72
1275.0	0.00	0.0	80.0	80.2	0.10	64.71
1280.0	0.00	0.0	79.8	80.0	0.10	64.71
1285.0	0.00	0.0	79.6	79.8	0.10	64.71
1290.0	0.00	0.0	79.4	79.6	0.10	64.70
1295.0	0.00	0.0	79.2	79.4	0.10	64.70
1300.0	0.00	0.0	79.0	79.2	0.10	64.70
1305.0	0.00	0.0	78.8	79.0	0.10	64.70
1310.0	0.00	0.0	78.6	78.8	0.10	64.69
1315.0	0.00	0.0	78.4	78.6	0.10	64.69
1320.0	0.00	0.0	78.2	78.4	0.10	64.69
1325.0	0.00	0.0	78.0	78.2	0.10	64.68
1330.0	0.00	0.0	77.8	78.0	0.10	64.68
1335.0	0.00	0.0	77.6	77.8	0.10	64.68
1340.0	0.00	0.0	77.4	77.6	0.10	64.68
1345.0	0.00	0.0	77.2	77.4	0.10	64.67
1350.0	0.00	0.0	77.0	77.2	0.10	64.67
1355.0	0.00	0.0	76.8	77.0	0.10	64.67
1360.0	0.00	0.0	76.6	76.8	0.10	64.66
1365.0	0.00	0.0	76.4	76.6	0.10	64.66
1370.0	0.00	0.0	76.2	76.4	0.10	64.66
1375.0	0.00	0.0	76.0	76.2	0.10	64.66
1380.0	0.00	0.0	75.8	76.0	0.10	64.65

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\100IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\100OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
1385.0	0.00	0.0	75.6	75.8	0.10	64.65
1390.0	0.00	0.0	75.4	75.6	0.10	64.65
1395.0	0.00	0.0	75.2	75.4	0.10	64.64
1400.0	0.00	0.0	75.0	75.2	0.10	64.64
1405.0	0.00	0.0	74.8	75.0	0.10	64.64
1410.0	0.00	0.0	74.6	74.8	0.10	64.64
1415.0	0.00	0.0	74.4	74.6	0.10	64.63
1420.0	0.00	0.0	74.2	74.4	0.10	64.63
1425.0	0.00	0.0	74.0	74.2	0.10	64.63
1430.0	0.00	0.0	73.8	74.0	0.10	64.62
1435.0	0.00	0.0	73.6	73.8	0.10	64.62
1440.0	0.00	0.0	73.4	73.6	0.10	64.62

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

Pond File: C:\PONDPACK\COTTAGES\COTT2 .PND
Inflow Hydrograph: C:\PONDPACK\COTTAGES\100IN .HYD
Outflow Hydrograph: C:\PONDPACK\COTTAGES\100OUT .HYD

Starting Pond W.S. Elevation = 63.04 ft

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

Peak Inflow = 18.64 cfs
Peak Outflow = 15.24 cfs
Peak Elevation = 69.89 ft

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

Initial Storage = 1 cu-ft
Peak Storage From Storm = 84,967 cu-ft

Total Storage in Pond = 84,968 cu-ft

Warning: Inflow hydrograph truncated on left side.

Date Record Created:

Created By:

WS_BMPNO: CC008

Print Record

PRINTED ON
Wednesday, March 10, 201
2:38:14 PM

WATERSHED	CC
BMP ID NO	008
PLAN NO	
TAX PARCEL	(48-1)(1-63)
PIN NO	48101000063
CONSTRUCTION DATE	1/1/1995
PROJECT NAME	Williamsburg Landing The Cottages
FACILITY LOCATION	5550 Williamsburg Landing Drive
CITY-STATE	Williamsburg, VA
CURRENT OWNER	Williamsburg Landing Inc.
OWNER ADDRESS	5700 Wmburg Landing Dr.
OWNER ADDRESS 2	
CITY-STATE-ZIP CODE	Williamsburg, VA 23185
OWNER PHONE	
MAINT AGREEMENT	No
EMERG ACTION PLAN	No

Get Last BMP No | Return to Menu

MAINTENANCE PLAN	No
SITE AREA acre	14
LAND USE	INSTIT
old BMP TYP	Dry Pond
JCC BMP CODE	F2 Dry ED with forebay
POINT VALUE	
SVC DRAIN AREA acres	14
SERVICE AREA DESCRI	NONE
IMPERV AREA acres	
RECV STREAM	COLLEGE CK TRIB
EXT DET-WQ-CTRL	No
WTR QUAL VOL acre-ft	0
CHAN PROT CTRL	No
CHAN PROT VOL acre-ft	1
SW/FLOOD CONTROL	No
GEOTECH REPORT	No

CTRL STRUC DESC	Riser
CTRL STRUC SIZE inches	30
OTLT BARRL DESC	CPEP
OTLT BARRL SIZE inch	24
EMERG SPILLWAY	No
DESIGN HW ELEV	70
PERM POOL ELEV	
2-YR OUTFLOW cfs	
10-YR OUTFLOW cfs	10.01
REC DRAWING	No
CONSTR CERTIF	No
LAST INSP DATE	2/1/2001
Inspected by:	
INTERNAL RATING	4
MISC/COMMENTS	

Additional Comments: