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: **SC005**

DATE VERIFIED: **April 12, 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: SC005

PIN: 5920100018

Subdivision, Tract, Business or Owner Name (if known): Ball Metal Container

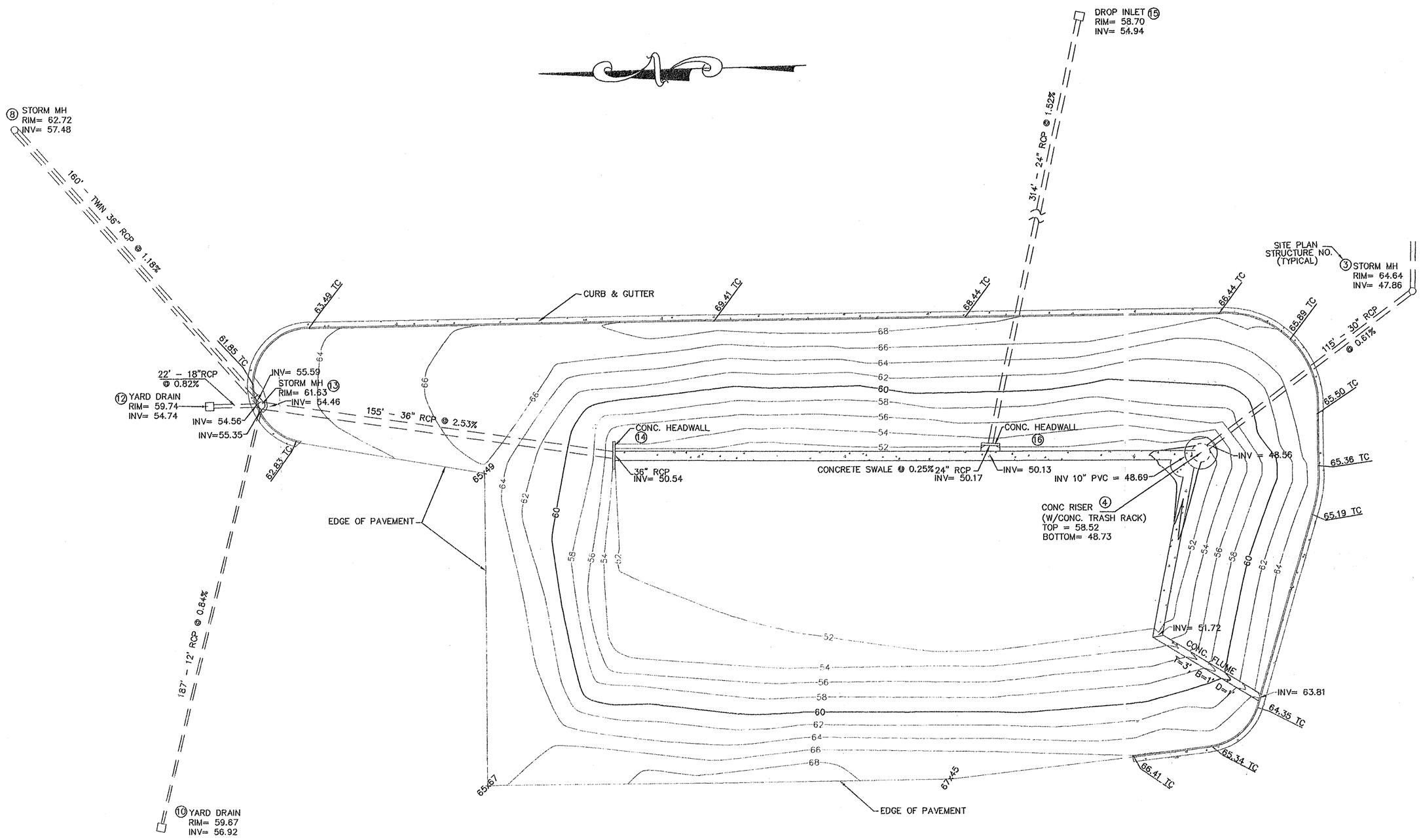
Property Description: Part Locust Grove

Site Address: 8935 Pocahontas Trail

(For internal use only) **Box** 8 **Drawer:** 5

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

Comments



TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS FACILITY WAS CONSTRUCTED IN GENERAL CONFORMANCE WITH THE APPROVED SITE PLAN.

Stephen A. Romeo 10/29/99

STEPHEN A. ROMEO, LS DATE

COMMONWEALTH OF VIRGINIA
STEPHEN A. ROMEO
NO. 1448-B
LAND SURVEYOR

NOTE:
THIS RECORD DRAWING IS BASED ON AN ACTUAL FIELD SURVEY PERFORMED BY LANGLEY & MCDONALD ON OCT. 28, 1999

RECORD DRAWING

STORMWATER DETENTION POND

BALL METAL - CONTAINER DIVISION

ROBERTS DISTRICT

JAMES CITY COUNTY, VIRGINIA

1" = 25' **10/29/99**

J.C.C. CASE NO. SP--82-97

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

DRAWN BY : PF	PROJ. NO. : 1950094-000.15
CHKD. BY : DFW	DWG. NO. : 10901W

1950094-000.15 BALL METAL BMP RECORD DRAWING FOR WM JORDAN\BALLBMP.DWG

SC 005, SP-82-97

W.M. Jordan COMPANY

LETTER OF TRANSMITTAL

NOV 1999 RECEIVED ENVIRONMENTAL DIVISION

TO: James City County Codes Compliance
101-E Mounts Bay Road
Williamsburg, VA 23187

Date: November 22, 1999

Project: **Ball Metal**

Job No:

Attn.: Darryl Cook

Data Furnished By:

We are sending:

		___	For Approval	___	No Exceptions Taken
X	Herewith	___	Samples	___	Make Corrections Shown
___	Separately	___	Shop Drawings	___	Rejected
X	Via UPS Ground	___	Literature	___	Revise and Resubmit
___	Next Day	___	Reproducible	___	See Comments
		X	As Built Drawings	X	For Your Use
		___	O&M Manuals	___	
		___	Plans & Specifications		

Submittal No.	Quantity	Description
	5 Copies	Record Drawings for Stormwater Detention Pond

REMARKS:

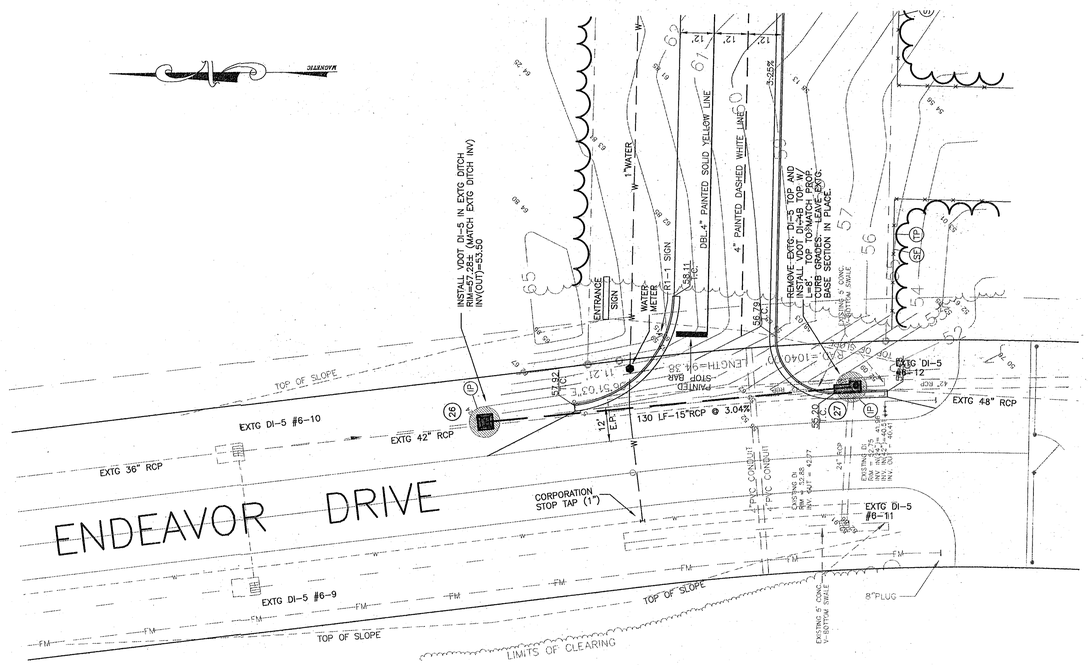
1 Copy to File

Follow UP _____

Signed: Charles L. McCarthy

Copies: ☐ Submittal File ☐ Field ☐ File ☐ Other ☐ Architect ☐ Owner

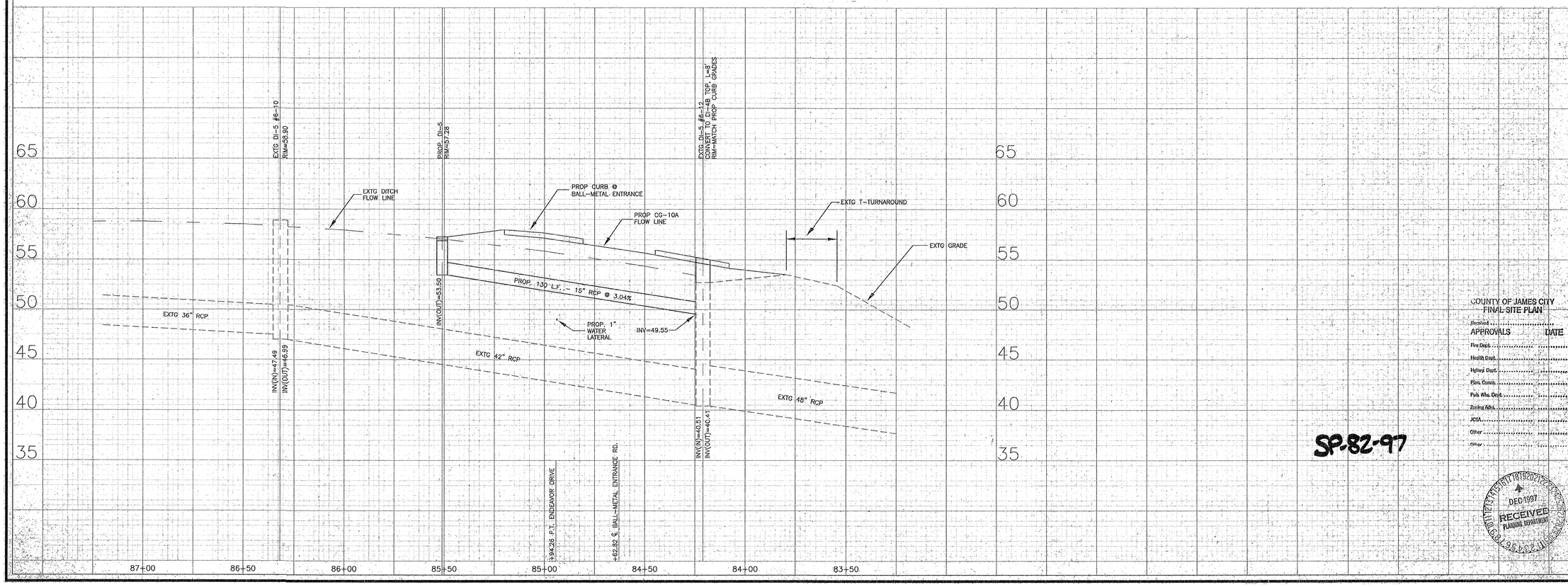
11010 Jefferson Avenue • Post Office Box 1337 • Newport News, Virginia 23601-0337 • Telephone (757) 596-6341 • Fax (757) 596-7425



* PLAN *

SCALE: 1"=25'

PLAN SCALE: 1"=25'
GRAPHIC SCALE IN FEET
0 10 25 50 75



COUNTY OF JAMES CITY
FINAL SITE PLAN
Received .....
APPROVALS DATE
Fire Dept. .....
Health Dept. .....
Highway Dept. .....
Plan. Comm. .....
Pub. Wks. Dept. .....
Zoning Adm. .....
JCSA .....
Other .....
Other .....

SP-82-97

RECEIVED
DEC 1997
PLANNING DEPARTMENT

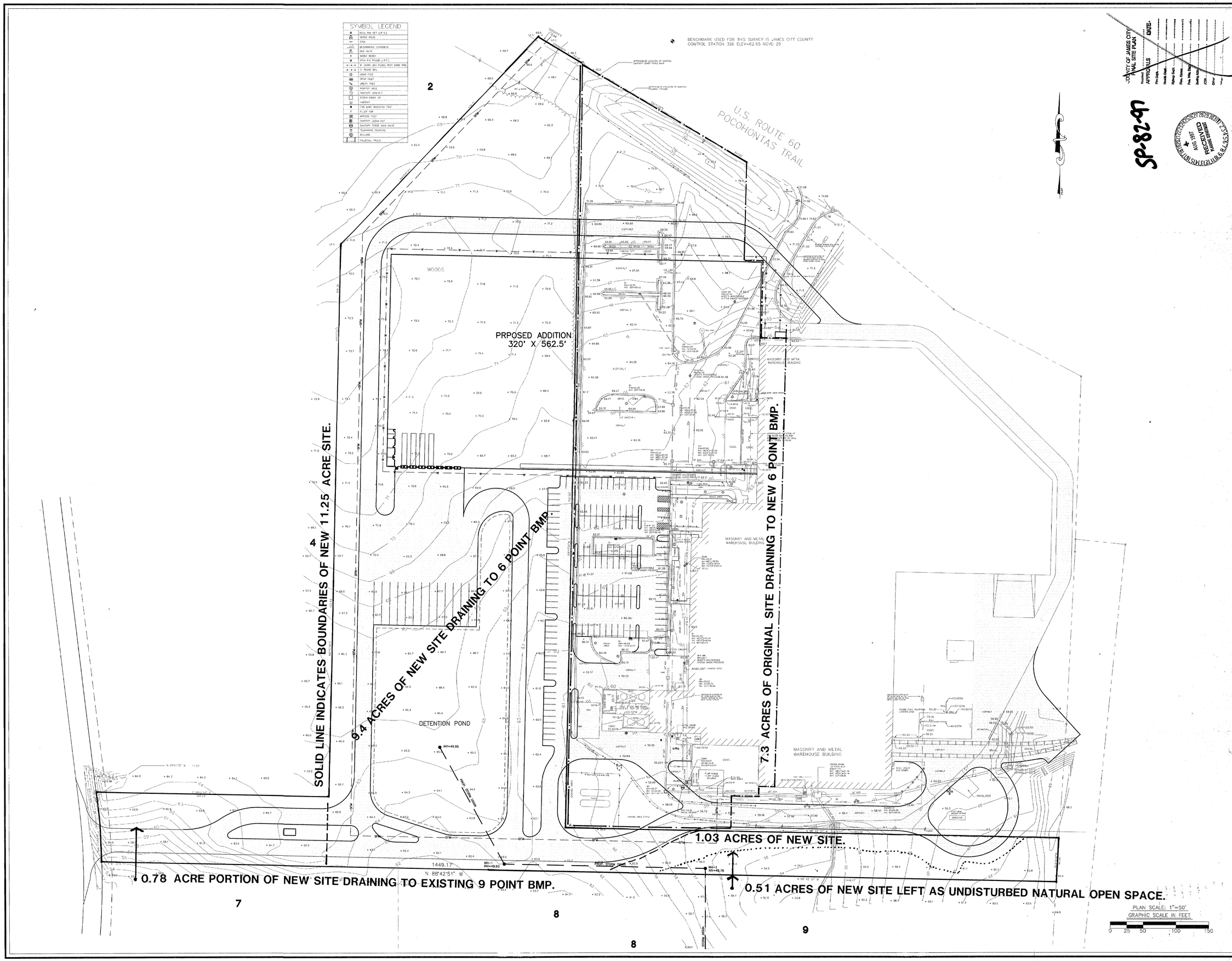
COMMONWEALTH OF VIRGINIA
12-17-97
STEPHEN A. ROMEO
No. 14489
LAND SURVEYOR

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

DES.	MRG
DWN.	MRG
CHK.	WEG
DATE	09-DEC-97

STORM DRAIN PLAN AT ENTRANCE
BALL METAL - CONTAINER DIVISION
FOR
BALL CORPORATION
SITUATED IN ROBERTS DISTRICT
JAMES CITY COUNTY, VIRGINIA

SHEET	C29 OF
DISK	ENTRANCE.DWG
PROJ. NO.	95094-03
DWG.	6624 W



COUNTY OF JAMES CITY
FINAL SITE PLAN
Reviewed APPROVALS DATE
Fire Dept.
Health Dept.
Highway Dept.
Elec. Comm.
Pub. Wks. Dept.
Building Authority
JCSA
Other
Other

SP-82-97

AUG 1997
RECEIVED
JAMES CITY COUNTY
PLANNING DIVISION

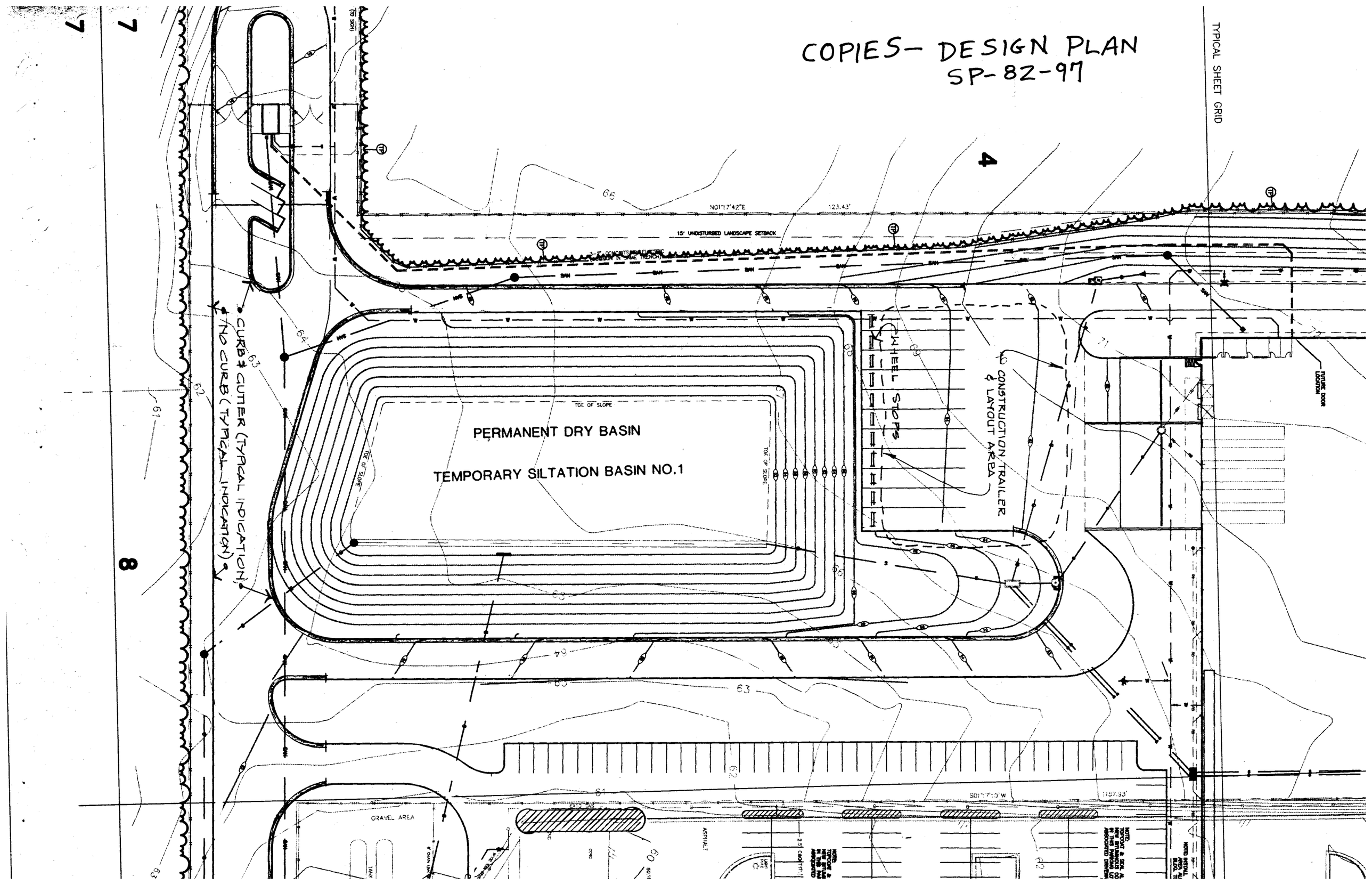
Langley and McDonald, P.C.
Engineers · Surveyors · Planners
Landscape Architects · Environmental Consultants
WILLIAMSBURG
VIRGINIA BEACH

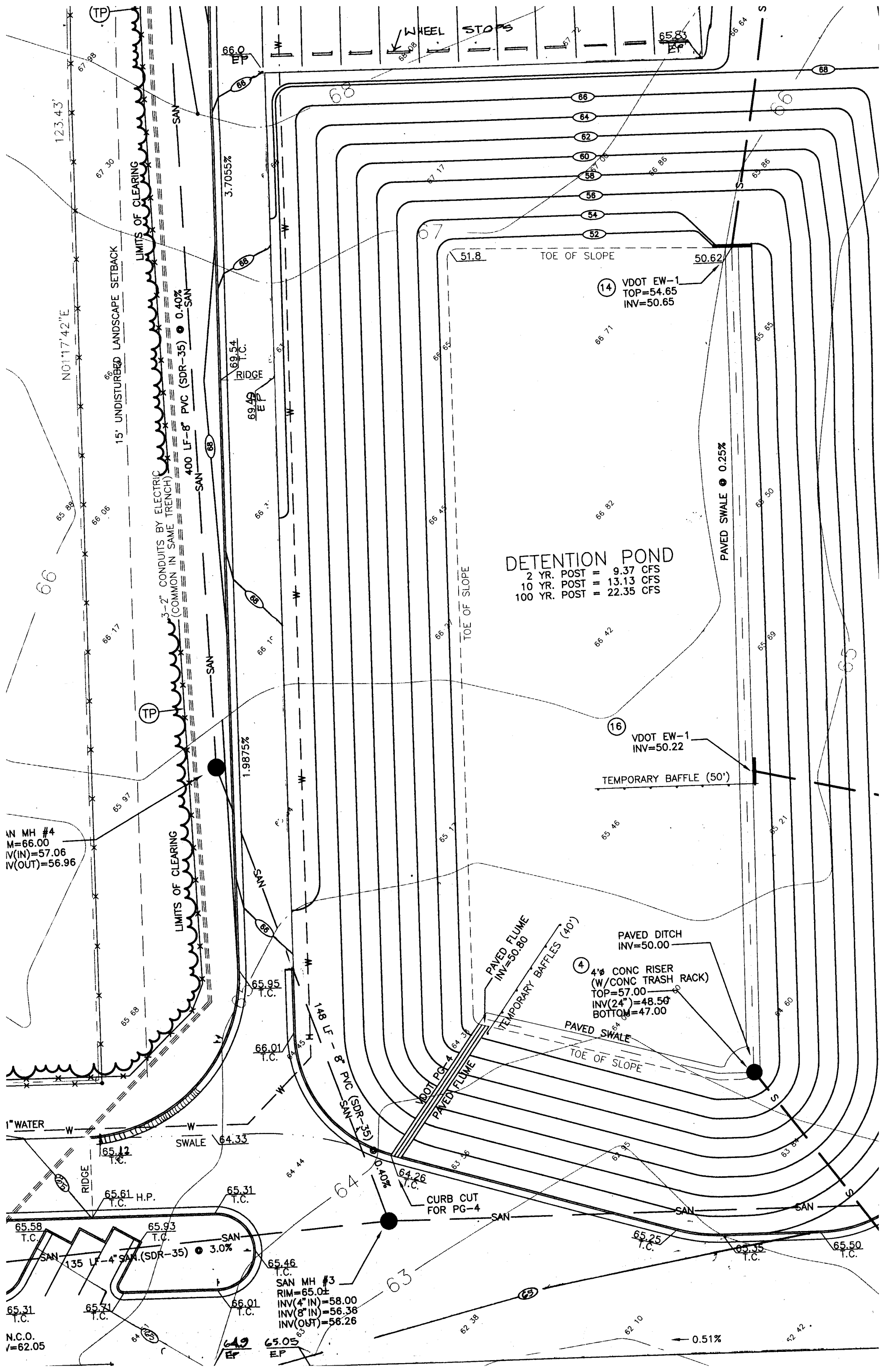
DES. NHM
DWN. MEO/MRG
CHK. SAR
DATE 24 APR 97

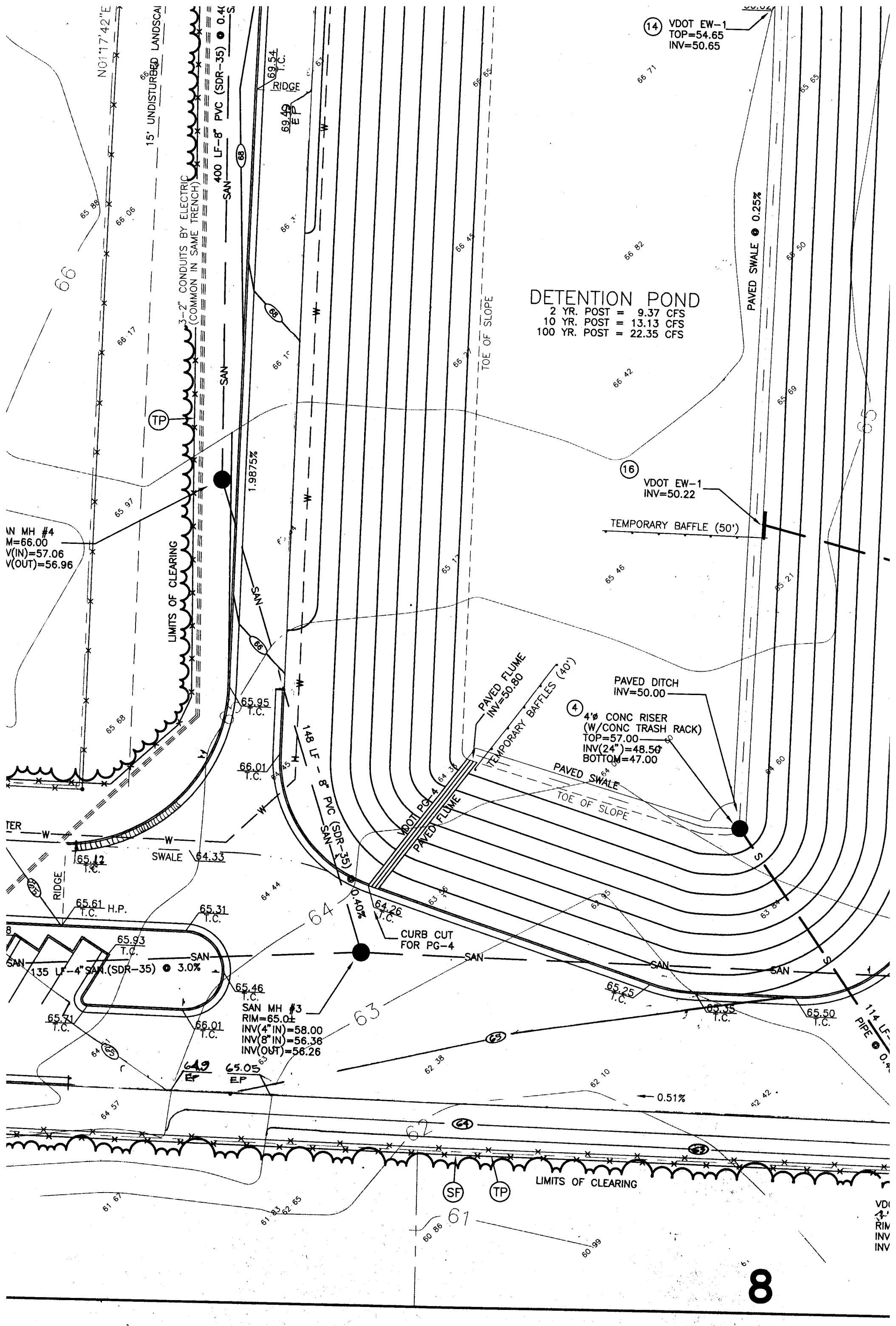
PRELIMINARY SITE PLAN
BALL METAL - CONTAINER DIVISION
FOR
BALL CORPORATION
SITUATED IN ROBERTS DISTRICT
JAMES CITY COUNTY, VIRGINIA

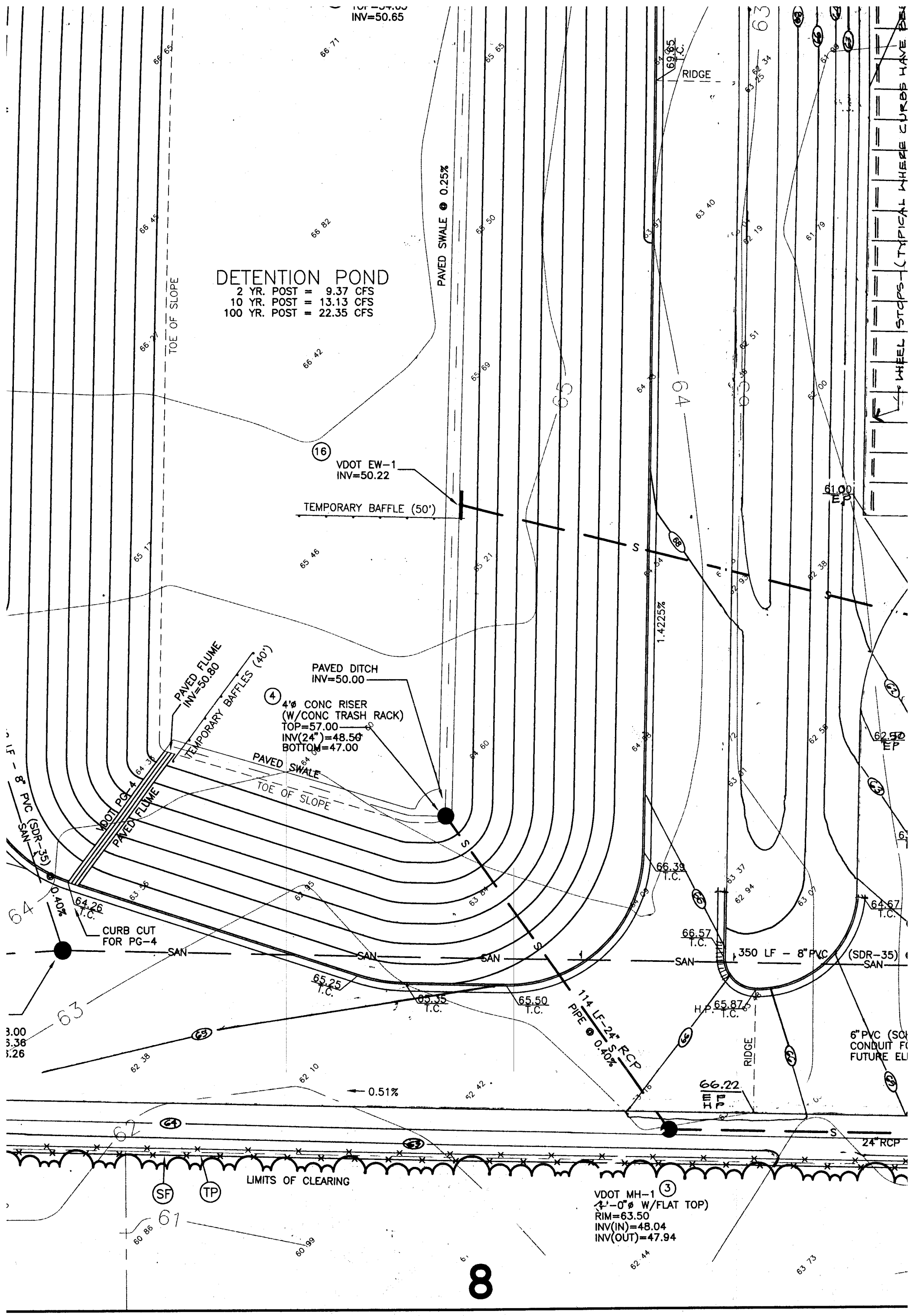
SHEET 3 OF 4
DISK MASTER.DWG
PROJ. NO. 95094-03
DWG. 6255A W

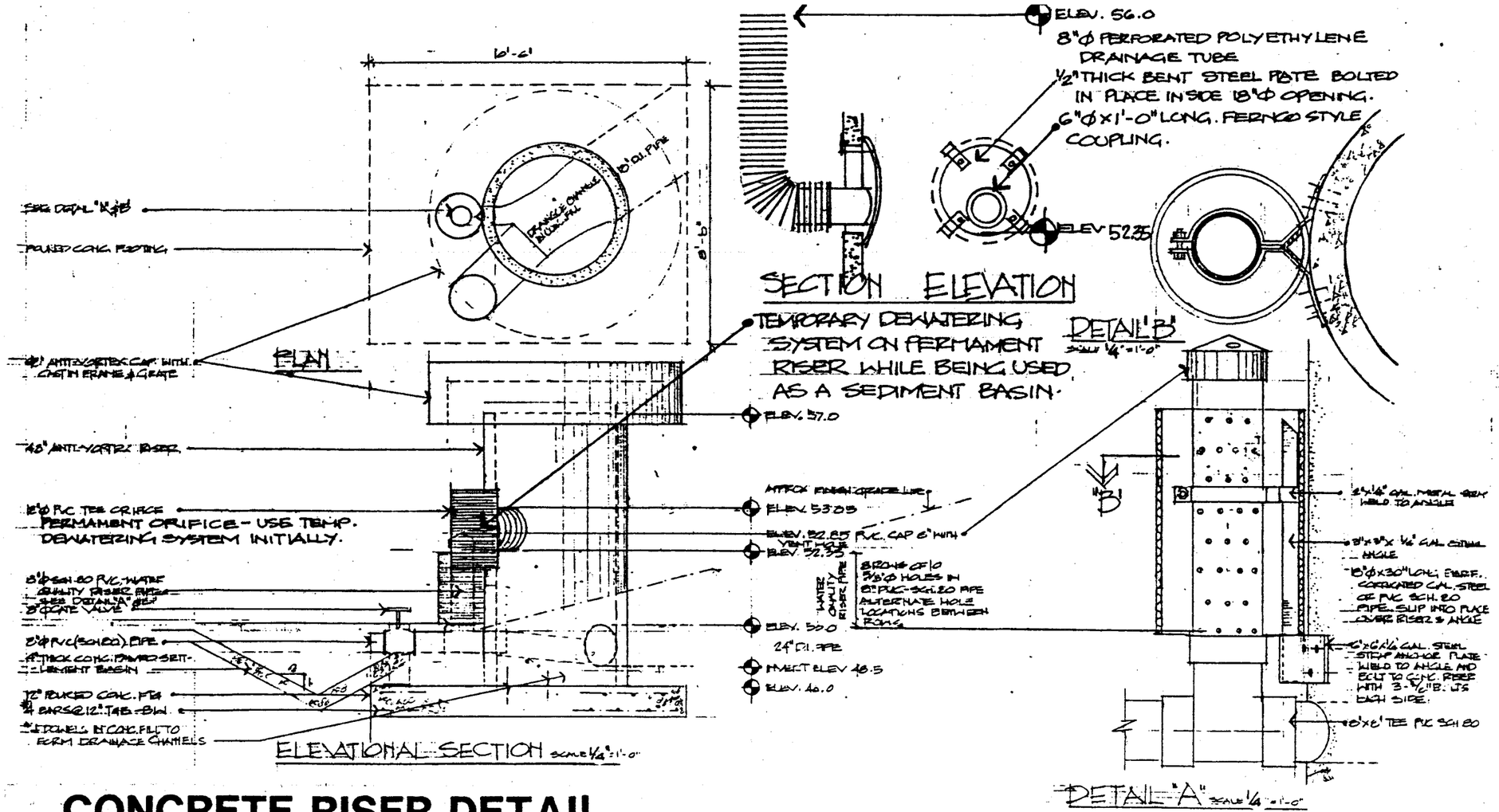
COPIES- DESIGN PLAN
SP-82-97




WHEEL STOPS
DETENTION POND
2 YR. POST = 9.37 CFS
10 YR. POST = 13.13 CFS
100 YR. POST = 22.35 CFS
TOE OF SLOPE
PAVED SWALE @ 0.25%
VDOT EW-1
TOP=54.65
INV=50.65
VDOT EW-1
INV=50.22
TEMPORARY BAFFLE (50')
PAVED DITCH
INV=50.00
4'ø CONC RISER
(W/CONC TRASH RACK)
TOP=57.00
INV(24")=48.50
BOTTOM=47.00
PAVED FLUME
INV=50.80
TEMPORARY BAFFLES (40')
PAVED SWALE
VDOT PG-4
PAVED FLUME
148 LF - 8" PVC (SDR-35) @ 0.40%
CURB CUT
FOR PG-4
SAN MH #3
RIM=65.01
INV(4" IN)=58.00
INV(8" IN)=56.36
INV(OUT)=56.26
135 LF-4" SAN.(SDR-35) @ 3.0%
SAN MH #4
RIM=66.00
INV(IN)=57.06
INV(OUT)=56.96
400 LF-8" PVC (SDR-35) @ 0.40%
3-2" CONDUITS BY ELECTRIC
(COMMON IN SAME TRENCH)
15' UNDISTURBED LANDSCAPE SETBACK
LIMITS OF CLEARING
N01°17'42"E
123.43'
3.7055%
1.9875%
0.51%
SWALE
RIDGE
TEMPORARY BAFFLES (40')


N01°17'42"E
15' UNDISTURBED LANDSCAPE
3-2" CONDUITS BY ELECTRIC (COMMON IN SAME TRENCH)
400 LF-8" PVC (SDR-35) @ 0.40%
SAN
69.54 T.C.
RIDGE
69.49 EP
1.9875%
TP
LIMITS OF CLEARING
SAN MH #4
RIM=66.00
INV(IN)=57.06
INV(OUT)=56.96
14 VDOT EW-1
TOP=54.65
INV=50.65
DETENTION POND
2 YR. POST = 9.37 CFS
10 YR. POST = 13.13 CFS
100 YR. POST = 22.35 CFS
TOE OF SLOPE
PAVED SWALE @ 0.25%
16 VDOT EW-1
INV=50.22
TEMPORARY BAFFLE (50')
65.95 T.C.
66.01 T.C.
148 LF - 8" PVC (SDR-35)
PAVED FLUME INV=50.80
TEMPORARY BAFFLES (40')
PAVED DITCH
INV=50.00
4 4'ø CONC RISER
(W/CONC TRASH RACK)
TOP=57.00
INV(24")=48.50
BOTTOM=47.00
PAVED SWALE
VDOT PG-4
PAVED FLUME
SWALE 64.33
65.12 T.C.
65.61 T.C. H.P.
65.31 T.C.
0.40%
64.26 T.C.
CURB CUT FOR PG-4
65.93 T.C.
135 LF-4" SAN.(SDR-35) @ 3.0%
65.46 T.C.
SAN MH #3
RIM=65.01±
INV(4" IN)=58.00
INV(8" IN)=56.36
INV(OUT)=56.26
65.71 T.C.
66.01 T.C.
65.05 EP
65.25 T.C.
65.35 T.C.
65.50 T.C.
0.51%
SF
TP
LIMITS OF CLEARING
114 LF-
PIPE @ 0.


INV=50.65
DETENTION POND
2 YR. POST = 9.37 CFS
10 YR. POST = 13.13 CFS
100 YR. POST = 22.35 CFS
TOE OF SLOPE
PAVED SWALE @ 0.25%
RIDGE
VDOT EW-1
INV=50.22
TEMPORARY BAFFLE (50')
PAVED FLUME
INV=50.80
TEMPORARY BAFFLES (40')
PAVED DITCH
INV=50.00
4'ø CONC RISER
(W/CONC TRASH RACK)
TOP=57.00
INV(24")=48.50
BOTTOM=47.00
PAVED SWALE
TOE OF SLOPE
VDOT PG-4
PAVED FLUME
LF - 8" PVC (SDR-35)
SAN
0.40%
64.26
T.C.
CURB CUT
FOR PG-4
SAN
SAN
SAN
SAN
65.25
T.C.
65.35
T.C.
65.50
T.C.
114 LF-24" RCP
PIPE @ 0.40%
66.39
T.C.
66.57
T.C.
350 LF - 8" PVC (SDR-35)
SAN
H.P.
65.87
T.C.
RIDGE
66.22
EP
HP
1.4225%
61.00
EP
62.50
EP
64.67
T.C.
6" PVC (SCH
CONDUIT FO
FUTURE ELI
0.51%
24" RCP
LIMITS OF CLEARING
SF
TP
VDOT MH-1
4'-0"ø W/FLAT TOP)
RIM=63.50
INV(IN)=48.04
INV(OUT)=47.94
WHEEL STOPS (TYPICAL WHERE CURBS HAVE BEEN
8



CONCRETE RISER DETAIL

CONCRETE RISER DETAIL
FUNCTIONAL SEQUENCE

1. AS TEMPORARY SILTATION BASIN #1.

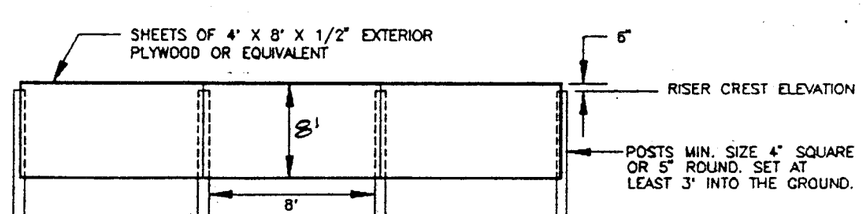
   A. PLUG 8" PVC DRAIN AT BOTTOM.

   B. INSTALL STEEL PLATE OVER 18" DIAMETER ORIFICE COMPLETE WITH 6" DIAMETER FERNCO FITTING AND 8" DIAMETER PERFORATED POLYETHELENE DRAIN TUBE: THIS OPERATES TO DRAIN THE DRY STORAGE COMPONENT OF THE TEMPORARY SILTATION BASIN.

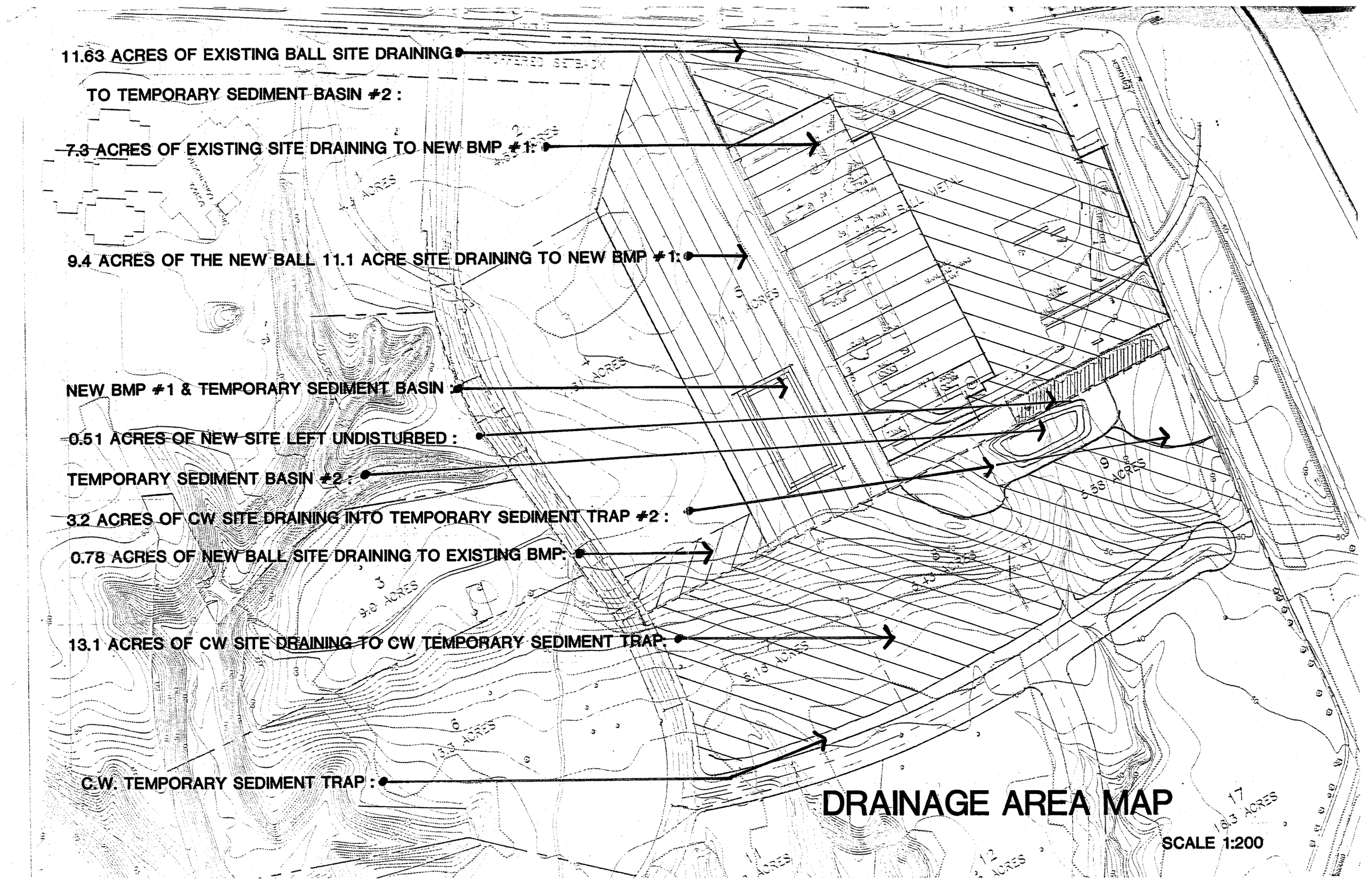
2. AS PERMANENT DRY DETENTION BASIN.

   A. REMOVE PLUG FROM 8" PVC DRAIN.

   B. REMOVE STEEL PLATE AND ACCESSORIES (NOTED AT "1B" ABOVE) AND INSTALL 18"0 PVC TEE ORIFICE PROTECTION.



TEMPORARY BAFFLE DETAIL


11.63 ACRES OF EXISTING BALL SITE DRAINING
TO TEMPORARY SEDIMENT BASIN #2 :
7.3 ACRES OF EXISTING SITE DRAINING TO NEW BMP #1:
9.4 ACRES OF THE NEW BALL 11.1 ACRE SITE DRAINING TO NEW BMP #1:
NEW BMP #1 & TEMPORARY SEDIMENT BASIN :
0.51 ACRES OF NEW SITE LEFT UNDISTURBED :
TEMPORARY SEDIMENT BASIN #2 :
3.2 ACRES OF CW SITE DRAINING INTO TEMPORARY SEDIMENT TRAP #2 :
0.78 ACRES OF NEW BALL SITE DRAINING TO EXISTING BMP:
13.1 ACRES OF CW SITE DRAINING TO CW TEMPORARY SEDIMENT TRAP:
C.W. TEMPORARY SEDIMENT TRAP :
DRAINAGE AREA MAP
SCALE 1:200

Langley and McDonald, P.C.
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS • ENVIRONMENTAL CONSULTANTS
VIRGINIA BEACH • WILLIAMSBURG, VIRGINIA

Subject: BALL METAL DRAINAGE

Computed By _____ Checked By _____

Project No. _____
Client _____
Date 5/29/97 Sheet No. 1

NEW AREA = 11.2 Ac.
NEW AREA TO NEW BMP = 9.4 Ac
NEW AREA TO EXIST. JRCC BMP = 0.78
NEW AREA NOT FLOWING TO EITHER BMP = 1.03 Ac.
OF THE 1.03 Ac, 0.51 Ac. IS UNOS

ACREAGE CHECK = 9.4 + 0.78 + 1.03 = 11.2 Ac

DETERMINE AREA OF EXISTING SITE THAT MUST GO TO BMP FOR OFF SITE CREDIT TO GET 10 POINTS

CURRENT POINT COUNT ASSUMING NEW 6 PT. B.M.P.

TO EXIST. JRCC 9PT. BMP

$$\frac{0.78 \text{ Ac}}{11.2 \text{ Ac} - 0.51 \text{ Ac. (UNOS NOT FLOWING TO BMP)}} \times 9 = 0.65 \text{ PTS.}$$

NEW AREA TO NEW 6 PT. BMP

$$\frac{9.4 \text{ Ac.}}{11.2 \text{ Ac} - 0.51 \text{ Ac}} \times 6 = 5.28 \text{ PTS.}$$

OPEN SPACE POINTS

$$\frac{0.51 \text{ Ac}}{11.2 \text{ Ac}} \times 10 = 0.45 \text{ PTS}$$

$$\Sigma = 6.38$$

TOTAL NEEDED FROM OFFSITE CREDIT
10 − 6.38 = 3.62 POINTS

Langley and McDonald, P.C.
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS • ENVIRONMENTAL CONSULTANTS
VIRGINIA BEACH • WILLIAMSBURG, VIRGINIA

Subject _____

Computed By _____ Checked By _____

Project No. _____
Client _____
Date 5/29/97 Sheet No. 2

$$\frac{x}{11.2\,Ac} \times 6\ \text{PTS.} = 3.62\ \text{POINTS}$$

$$\frac{6x}{11.2} = 3.62$$

$$6x = 40.5$$

$$x = 6.8\ \text{Ac. OF EXIST SITE}$$

Langley and McDonald, P.C.
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS • ENVIRONMENTAL CONSULTANTS
VIRGINIA BEACH • WILLIAMSBURG, VIRGINIA

Subject _____

Computed By _____ Checked By _____

Project No. _____
Client _____
Date 5/29/07 Sheet No. 3

$$VOL = \frac{(R_m)(R_v)}{12} A$$

$R_m = 1''$

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

TOTAL AREA TO BMP = 16.71 Ac.

IMPERV. AREA = 9.96 Ac. (PVMT/ROOF) + 1.68 Ac. (POND SURF) = 11.64 Ac.

% IMPERV. = 11.64 ÷ 16.71 = 69% (59.6%)

what about 60% coverage limit over entire site?

$R_v = 0.05 + 0.009(69)$

$R_v = 0.67$

$A = 16.71$ Ac.

$$VOL = \frac{(1'')(0.67)}{12}(16.71) = 0.93 \text{ Ac.-Ft} = 40{,}640 \text{ C.F.}$$

51.40

6 SQ. IN. — use one opening w/ proper trash protection

8" φ RISER w/ 10-7/8" φ HOLES / ROW @ 0.6 SQ IN / HOLE

FROM ELEV. 51.40 TO 50.00

Langley and McDonald, P.C.
ENGINEERS • SURVEYORS • PLANNERS
LANDSCAPE ARCHITECTS • ENVIRONMENTAL CONSULTANTS
VIRGINIA BEACH • WILLIAMSBURG, VIRGINIA

Subject BALL METAL

Computed By NHM Checked By

Project No. 95-94
Client WM. JORDAN
Date 5/30/97 Sheet No.

	PEAK CFS FLOW			PEAK POND ELEV.		
	2	10	100	2	10	100
PRE. DEV.	23	41	63			
POST DEV. w/o DET. POND	53	93	145			
POST DEV. w/ DET. POND	9.44	13.88	17.76	53.38	54.81	56.53
PLAN	9.37	13.13	22.35			

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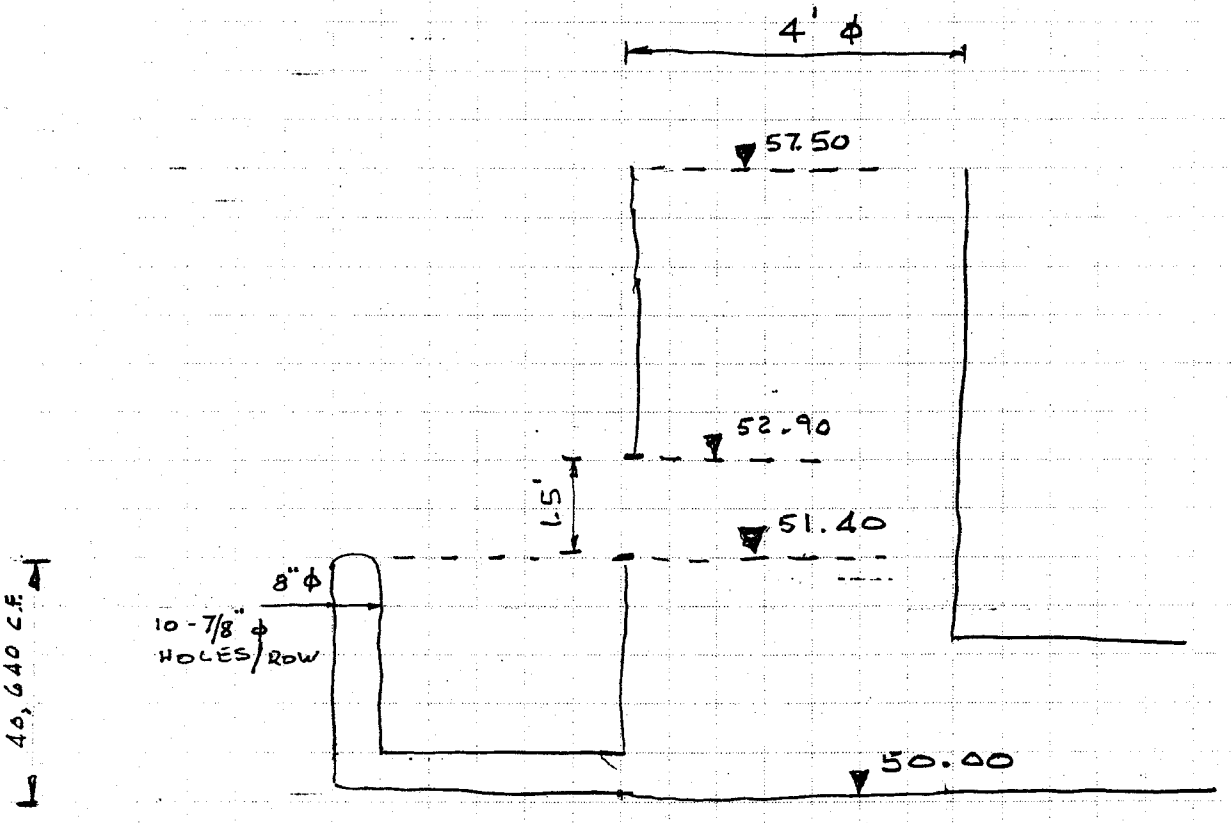
LANDSCAPE ARCHITECTS • ENVIRONMENTAL CONSULTANTS
VIRGINIA BEACH • WILLIAMSBURG, VIRGINIA

Subject _____

Computed By _____ Checked By _____

Project No. _____
Client _____
Date 5/30/97 Sheet No. _____



Quick TR-55 Ver.5.46 S/N:
Executed: 08:40:24 06-02-1997

Ball pre dev CN for subarea 1- 7.3ac. of existing site flowing to new BMP

grass area at Rt. 60-hydrologic group C

RUNOFF CURVE NUMBER SUMMARY

::

Subarea Description	Area (acres)	CN (weighted)	
	7.30	91	- after devel

Quick TR-55 Ver.5.46 S/N:
Executed: 08:40:24 06-02-1997

Ball pre dev CN for subarea 1- 7.3ac. of
existing site flowing to new BMP

grass area at Rt. 60-hydrologic group C

RUNOFF CURVE NUMBER DATA

::

Composite Area:

SURFACE DESCRIPTION	AREA (acres)	CN	
grass area at rt. 60	2.07	74	
existing roof and parking	5.23	98	
COMPOSITE AREA --->	7.30	91.2	(91)

::

Quick TR-55 Ver.5.46 S/N:
Executed: 08:40:49 06-02-1997

post dev CN Subarea 1
Ball Metal 9.4ac of new area flowing to
new BMP plus 7.3 ac. of existing site for
a total of 16.7 ac to new BMP

RUNOFF CURVE NUMBER SUMMARY

::

Subarea Description	Area (acres)	CN (weighted)
Subarea 2	16.71	91

Quick TR-55 Ver.5.46 S/N:
Executed: 08:40:49 06-02-1997

post dev CN Subarea 1
Ball Metal 9.4ac of new area flowing to
new BMP plus 7.3 ac. of existing site for
a total of 16.7 ac to new BMP

RUNOFF CURVE NUMBER DATA

::

Composite Area: Subarea 2

SURFACE DESCRIPTION	AREA (acres)	CN	
grass	5.07	74	
pavement or roof	9.96	98	
detention pond surface	1.68	98	
COMPOSITE AREA --->	16.71	90.7	(91)

::

```
Quick TR-55 Ver.5.46   S/N:
Executed: 08:41:15   06-02-1997    a:PRE1.TCT

         pre Tc for subarea 1-7.3 ac. Ball Metal existing site


                    Tc COMPUTATIONS FOR: subarea 1-6.2ac

 SHEET FLOW (Applicable to Tc only)
     Segment ID                                       A
     Surface description                         grass
     Manning's roughness coeff., n                  0.1500
     Flow length, L (total < or = 300)       ft      40.0
     Two-yr 24-hr rainfall, P2               in     3.500
     Land slope, s                          ft/ft   0.0125
                          0.8
          .007 * (n*L)
     T =  --------------                     hrs      0.09              =  0.09
             0.5    0.4
           P2    *  s

 SHALLOW CONCENTRATED FLOW
     Segment ID                                       B
     Surface (paved or unpaved)?                      Unpaved
     Flow length, L                          ft     250.0
     Watercourse slope, s                   ft/ft   0.0240

                            0.5
     Avg.V =  Csf *   (s)                   ft/s    2.4995
     where:   Unpaved Csf = 16.1345
              Paved   Csf = 20.3282

     T = L / (3600*V)                        hrs      0.03              =  0.03


 CHANNEL FLOW
     Segment ID                                       C
     Cross Sectional Flow Area, a          sq.ft     3.14
     Wetted perimeter, Pw                    ft      6.30
     Hydraulic radius, r = a/Pw              ft     0.498
     Channel slope, s                       ft/ft   0.0035
     Manning's roughness coeff., n                  0.0150

                        2/3    1/2
          1.49   *  r    *  s
     V =  --------------------              ft/s    3.6942
                       n

     Flow length, L                          ft       940

     T = L / (3600*V)                        hrs      0.07              =  0.07

    ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::
                                                  TOTAL TIME (hrs)      0.19
```

Quick TR-55 Ver.5.46 S/N:
Executed: 08:41:15 06-02-1997 a:PRE1.TCT

SUMMARY SHEET FOR Tc or Tt COMPUTATIONS
(Solved for Time using TR-55 Methods)

pre Tc for subarea 1-7.3 ac. Ball Metal existing site

Subarea descr.	Tc or Tt	Time (hrs)
subarea 1-6.2ac	Tc	0.19

```
Quick TR-55 Ver.5.46   S/N:
Executed: 08:41:36   06-02-1997    a:POST1.TCT

       post dev flow from all areas to new BMP   Total area= 16.7ac.


                        Tc COMPUTATIONS FOR: 1

 SHEET FLOW (Applicable to Tc only)
     Segment ID                                        A
     Surface description                          grass
     Manning's roughness coeff., n                   0.1500
     Flow length, L (total < or = 300)      ft     110.0
     Two-yr 24-hr rainfall, P2               in     3.500
     Land slope, s                        ft/ft    0.1364
                           0.8
          .007 * (n*L)
     T =  --------------                   hrs      0.08                   =  0.08
             0.5    0.4
           P2    *   s

 SHALLOW CONCENTRATED FLOW
     Segment ID                                        B
     Surface (paved or unpaved)?                     Unpaved
     Flow length, L                          ft     350.0
     Watercourse slope, s                 ft/ft    0.0200

                             0.5
     Avg.V =  Csf *   (s)                   ft/s    2.2818
     where:   Unpaved Csf = 16.1345
              Paved   Csf = 20.3282

     T = L / (3600*V)                       hrs      0.04                   =  0.04


 CHANNEL FLOW
     Segment ID                                        C
     Cross Sectional Flow Area, a         sq.ft      2.00
     Wetted perimeter, Pw                    ft      2.50
     Hydraulic radius, r = a/Pw              ft     0.800
     Channel slope, s                     ft/ft    0.0030
     Manning's roughness coeff., n                 0.0150

                       2/3    1/2
          1.49   *   r    *   s
     V =  --------------------             ft/s    4.6887
                     n

     Flow length, L                          ft       600

     T = L / (3600*V)                       hrs      0.04                   =  0.04

    :::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::
                                                  TOTAL TIME (hrs)        0.16
```

Quick TR-55 Ver.5.46 S/N:
Executed: 08:41:36 06-02-1997 a:POST1.TCT

SUMMARY SHEET FOR Tc or Tt COMPUTATIONS
(Solved for Time using TR-55 Methods)

post dev flow from all areas to new BMP Total area= 16.7ac.

Subarea descr.	Tc or Tt	Time (hrs)
1	Tc	0.16

Return Frequency: 2 years

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

Executed: 06-02-1997 08:42:12
Watershed file: --> A:PRE1 .MOP
Hydrograph file: --> A:PRE2.HYD

Ball pre dev 7.3 AC.

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

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used
	7.30	91.0	0.20	0.00	3.50	2.54	.06 .10

* Travel time from subarea outfall to composite watershed outfall point.
Total area = 7.30 acres or 0.01141 sq.mi
Peak discharge = 23 cfs

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

Subarea Description	Input Values Tc (hr)	* Tt (hr)	Rounded Values Tc (hr)	* Tt (hr)	Ia/p Interpolated (Yes/No)	Ia/p Messages
	0.19	0.00	0.20	0.00	No	Computed Ia/p < .1

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

Return Frequency: 2 years

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

Executed: 06-02-1997 08:42:12
Watershed file: --> A:PRE1 .MOP
Hydrograph file: --> A:PRE2.HYD

Ball pre dev 7.3 AC.

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

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
	23	12.2
Composite Watershed	23	12.2

Return Frequency: 2 years

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

Executed: 06-02-1997 08:42:12
Watershed file: --> A:PRE1 .MOP
Hydrograph file: --> A:PRE2.HYD

Ball pre dev 7.3 AC.

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	1	6	12	21	23	14	7
Total (cfs)	1	1	1	6	12	21	23	14	7

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
	5	4	3	2	2	2	2	1	1
Total (cfs)	5	4	3	2	2	2	2	1	1

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	1	1	1	1	1	1	1	1
Total (cfs)	1	1	1	1	1	1	1	1	1

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

Return Frequency: 2 years

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

Executed: 06-02-1997 08:42:12
Watershed file: --> A:PRE1 .MOP
Hydrograph file: --> A:PRE2.HYD

Ball pre dev 7.3 AC.

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	1	14.8	1
11.1	1	14.9	1
11.2	1	15.0	1
11.3	1	15.1	1
11.4	1	15.2	1
11.5	1	15.3	1
11.6	1	15.4	1
11.7	3	15.5	1
11.8	4	15.6	1
11.9	6	15.7	1
12.0	12	15.8	1
12.1	21	15.9	1
12.2	23	16.0	1
12.3	14	16.1	1
12.4	7	16.2	1
12.5	5	16.3	1
12.6	4	16.4	1
12.7	3	16.5	1
12.8	2	16.6	1
12.9	2	16.7	1
13.0	2	16.8	1
13.1	2	16.9	1
13.2	2	17.0	1
13.3	2	17.1	1
13.4	2	17.2	1
13.5	2	17.3	1
13.6	1	17.4	1
13.7	1	17.5	1
13.8	1	17.6	1
13.9	1	17.7	1
14.0	1	17.8	1
14.1	1	17.9	1
14.2	1	18.0	1
14.3	1	18.1	1
14.4	1	18.2	1
14.5	1	18.3	1

14.6	1	18.4	1
14.7	1	18.5	0

Return Frequency: 2 years

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

Executed: 06-02-1997 08:42:12
Watershed file: --> A:PRE1 .MOP
Hydrograph file: --> A:PRE2.HYD

Ball pre dev 7.3 AC.

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

Return Frequency: 10 years

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

Executed: 06-02-1997 08:42:12
Watershed file: --> A:PRE1 .MOP
Hydrograph file: --> A:PRE10.HYD

Ball pre dev 7.3 AC.

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

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used
	7.30	91.0	0.20	0.00	5.50	4.47	.04 .10

* Travel time from subarea outfall to composite watershed outfall point.
Total area = 7.30 acres or 0.01141 sq.mi
Peak discharge = 41 cfs

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

Subarea Description	Input Values Tc (hr)	Input Values * Tt (hr)	Rounded Values Tc (hr)	Rounded Values * Tt (hr)	Ia/p Interpolated (Yes/No)	Ia/p Messages
	0.19	0.00	0.20	0.00	No	Computed Ia/p < .1

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

Return Frequency: 10 years

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

Executed: 06-02-1997 08:42:12
Watershed file: --> A:PRE1 .MOP
Hydrograph file: --> A:PRE10.HYD

Ball pre dev 7.3 AC.

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

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
	41	12.2
Composite Watershed	41	12.2

Return Frequency: 10 years

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

Executed: 06-02-1997 08:42:12
Watershed file: --> A:PRE1 .MOP
Hydrograph file: --> A:PRE10.HYD

Ball pre dev 7.3 AC.

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	11	21	38	41	25	13
Total (cfs)	1	2	2	11	21	38	41	25	13

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
	8	7	5	4	4	3	3	2	2
Total (cfs)	8	7	5	4	4	3	3	2	2

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
	2	2	2	2	1	1	1	1	1
Total (cfs)	2	2	2	2	1	1	1	1	1

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

Return Frequency: 10 years

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

Executed: 06-02-1997 08:42:12
Watershed file: --> A:PRE1 .MOP
Hydrograph file: --> A:PRE10.HYD

Ball pre dev 7.3 AC.

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	1	14.8	2
11.1	1	14.9	2
11.2	2	15.0	2
11.3	2	15.1	2
11.4	2	15.2	2
11.5	2	15.3	1
11.6	2	15.4	1
11.7	5	15.5	1
11.8	8	15.6	1
11.9	11	15.7	1
12.0	21	15.8	1
12.1	38	15.9	1
12.2	41	16.0	1
12.3	25	16.1	1
12.4	13	16.2	1
12.5	8	16.3	1
12.6	7	16.4	1
12.7	5	16.5	1
12.8	4	16.6	1
12.9	4	16.7	1
13.0	4	16.8	1
13.1	4	16.9	1
13.2	3	17.0	1
13.3	3	17.1	1
13.4	3	17.2	1
13.5	3	17.3	1
13.6	2	17.4	1
13.7	2	17.5	1
13.8	2	17.6	1
13.9	2	17.7	1
14.0	2	17.8	1
14.1	2	17.9	1
14.2	2	18.0	1
14.3	2	18.1	1
14.4	2	18.2	1
14.5	2	18.3	1

14.6	2	18.4	1
14.7	2	18.5	1

Return Frequency: 10 years

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

Executed: 06-02-1997 08:42:12
Watershed file: --> A:PRE1 .MOP
Hydrograph file: --> A:PRE10.HYD

Ball pre dev 7.3 AC.

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	0
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		

Return Frequency: 100 years

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

Executed: 06-02-1997 08:42:12
Watershed file: --> A:PRE1 .MOP
Hydrograph file: --> A:PRE100.HYD

Ball pre dev 7.3 AC.

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

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used
	7.30	91.0	0.20	0.00	8.00	6.92	.02 .10

* Travel time from subarea outfall to composite watershed outfall point.
Total area = 7.30 acres or 0.01141 sq.mi
Peak discharge = 63 cfs

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

Subarea Description	Input Values Tc (hr)	Input Values * Tt (hr)	Rounded Values Tc (hr)	Rounded Values * Tt (hr)	Ia/p Interpolated (Yes/No)	Ia/p Messages
	0.19	0.00	0.20	0.00	No	Computed Ia/p < .1

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

Return Frequency: 100 years

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

Executed: 06-02-1997 08:42:12
Watershed file: --> A:PRE1 .MOP
Hydrograph file: --> A:PRE100.HYD

Ball pre dev 7.3 AC.

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

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
	63	12.2
Composite Watershed	63	12.2

Return Frequency: 100 years

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

Executed: 06-02-1997 08:42:12
Watershed file: --> A:PRE1 .MOP
Hydrograph file: --> A:PRE100.HYD

Ball pre dev 7.3 AC.

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
	2	2	4	16	32	58	63	38	20
Total (cfs)	2	2	4	16	32	58	63	38	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
	13	10	8	7	6	5	4	4	3
Total (cfs)	13	10	8	7	6	5	4	4	3

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
	3	3	3	2	2	2	2	2	1
Total (cfs)	3	3	3	2	2	2	2	2	1

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

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

Executed: 06-02-1997 08:42:12
Watershed file: --> A:PRE1 .MOP
Hydrograph file: --> A:PRE100.HYD

Ball pre dev 7.3 AC.

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	2	14.8	2
11.1	2	14.9	2
11.2	2	15.0	2
11.3	2	15.1	2
11.4	3	15.2	2
11.5	3	15.3	2
11.6	4	15.4	2
11.7	8	15.5	2
11.8	12	15.6	2
11.9	16	15.7	2
12.0	32	15.8	2
12.1	58	15.9	2
12.2	63	16.0	2
12.3	38	16.1	2
12.4	20	16.2	2
12.5	13	16.3	2
12.6	10	16.4	2
12.7	8	16.5	2
12.8	7	16.6	2
12.9	6	16.7	2
13.0	6	16.8	2
13.1	6	16.9	2
13.2	5	17.0	2
13.3	4	17.1	2
13.4	4	17.2	2
13.5	4	17.3	1
13.6	4	17.4	1
13.7	4	17.5	1
13.8	3	17.6	1
13.9	3	17.7	1
14.0	3	17.8	1
14.1	3	17.9	1
14.2	3	18.0	1
14.3	3	18.1	1
14.4	3	18.2	1
14.5	3	18.3	1

14.6	3	18.4	1
14.7	3	18.5	1

Return Frequency: 100 years

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

Executed: 06-02-1997 08:42:12
Watershed file: --> A:PRE1 .MOP
Hydrograph file: --> A:PRE100.HYD

Ball pre dev 7.3 AC.

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	0
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		

Return Frequency: 2 years

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

Executed: 06-02-1997 08:42:46
Watershed file: --> A:POST1 .MOP
Hydrograph file: --> A:POST2.HYD

post dev for old and new area TOTAL AREA= 16.7 AC.

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

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input	Ia/p used
Subarea 2	16.71	91.0	0.20	0.00	3.50	2.54	.06	.10

* Travel time from subarea outfall to composite watershed outfall point.
Total area = 16.71 acres or 0.02611 sq.mi
Peak discharge = 53 cfs

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

Subarea Description	Input Values Tc (hr)	Input Values * Tt (hr)	Rounded Values Tc (hr)	Rounded Values * Tt (hr)	Ia/p Interpolated (Yes/No)	Ia/p Messages
Subarea 2	0.16	0.00	0.20	0.00	No	Computed Ia/p < .1

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

Return Frequency: 2 years

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

Executed: 06-02-1997 08:42:46
Watershed file: --> A:POST1 .MOP
Hydrograph file: --> A:POST2.HYD

post dev for old and new area TOTAL AREA= 16.7 AC.

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

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
Subarea 2	53	12.2
Composite Watershed	53	12.2

Return Frequency: 2 years

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

Executed: 06-02-1997 08:42:46
Watershed file: --> A:POST1 .MOP
Hydrograph file: --> A:POST2.HYD

post dev for old and new area TOTAL AREA= 16.7 AC.

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
Subarea 2	2	2	3	14	27	49	53	32	17
Total (cfs)	2	2	3	14	27	49	53	32	17

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
Subarea 2	11	8	7	6	5	4	4	3	3
Total (cfs)	11	8	7	6	5	4	4	3	3

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
Subarea 2	3	2	2	2	2	2	1	1	1
Total (cfs)	3	2	2	2	2	2	1	1	1

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

Return Frequency: 2 years

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

Executed: 06-02-1997 08:42:46
Watershed file: --> A:POST1 .MOP
Hydrograph file: --> A:POST2.HYD

post dev for old and new area TOTAL AREA= 16.7 AC.

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	2	14.8	2
11.1	2	14.9	2
11.2	2	15.0	2
11.3	2	15.1	2
11.4	2	15.2	2
11.5	3	15.3	2
11.6	3	15.4	2
11.7	7	15.5	2
11.8	10	15.6	2
11.9	14	15.7	2
12.0	27	15.8	2
12.1	49	15.9	2
12.2	53	16.0	2
12.3	32	16.1	2
12.4	17	16.2	2
12.5	11	16.3	1
12.6	8	16.4	1
12.7	7	16.5	1
12.8	6	16.6	1
12.9	6	16.7	1
13.0	5	16.8	1
13.1	4	16.9	1
13.2	4	17.0	1
13.3	4	17.1	1
13.4	4	17.2	1
13.5	4	17.3	1
13.6	3	17.4	1
13.7	3	17.5	1
13.8	3	17.6	1
13.9	3	17.7	1
14.0	3	17.8	1
14.1	3	17.9	1
14.2	2	18.0	1
14.3	2	18.1	1
14.4	2	18.2	1
14.5	2	18.3	1

14.6	2	18.4	1
14.7	2	18.5	1

Return Frequency: 2 years

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

Executed: 06-02-1997 08:42:46
Watershed file: --> A:POST1 .MOP
Hydrograph file: --> A:POST2.HYD

post dev for old and new area TOTAL AREA= 16.7 AC.

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	0
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		

Return Frequency: 10 years

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

Executed: 06-02-1997 08:42:46
Watershed file: --> A:POST1 .MOP
Hydrograph file: --> A:POST10.HYD

post dev for old and new area TOTAL AREA= 16.7 AC.

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

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used	
Subarea 2	16.71	91.0	0.20	0.00	5.50	4.47	.04	.10

* Travel time from subarea outfall to composite watershed outfall point.
Total area = 16.71 acres or 0.02611 sq.mi
Peak discharge = 93 cfs

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

Subarea Description	Input Values Tc (hr)	* Tt (hr)	Rounded Values Tc (hr)	* Tt (hr)	Ia/p Interpolated (Yes/No)	Ia/p Messages
Subarea 2	0.16	0.00	0.20	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: 06-02-1997 08:42:46
Watershed file: --> A:POST1 .MOP
Hydrograph file: --> A:POST10.HYD

post dev for old and new area TOTAL AREA= 16.7 AC.

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

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
Subarea 2	93	12.2
Composite Watershed	93	12.2

Return Frequency: 10 years

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

Executed: 06-02-1997 08:42:46
Watershed file: --> A:POST1 .MOP
Hydrograph file: --> A:POST10.HYD

post dev for old and new area TOTAL AREA= 16.7 AC.

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
Subarea 2	3	4	5	24	47	86	93	56	29
Total (cfs)	3	4	5	24	47	86	93	56	29

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
Subarea 2	19	15	12	10	8	7	6	6	5
Total (cfs)	19	15	12	10	8	7	6	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
Subarea 2	5	4	4	4	3	3	2	2	2
Total (cfs)	5	4	4	4	3	3	2	2	2

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

Return Frequency: 10 years

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

Executed: 06-02-1997 08:42:46
Watershed file: --> A:POST1 .MOP
Hydrograph file: --> A:POST10.HYD

post dev for old and new area TOTAL AREA= 16.7 AC.

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	3	14.8	4
11.1	3	14.9	4
11.2	4	15.0	4
11.3	4	15.1	4
11.4	4	15.2	4
11.5	5	15.3	3
11.6	5	15.4	3
11.7	11	15.5	3
11.8	18	15.6	3
11.9	24	15.7	3
12.0	47	15.8	3
12.1	86	15.9	3
12.2	93	16.0	3
12.3	56	16.1	3
12.4	29	16.2	3
12.5	19	16.3	2
12.6	15	16.4	2
12.7	12	16.5	2
12.8	10	16.6	2
12.9	9	16.7	2
13.0	8	16.8	2
13.1	8	16.9	2
13.2	7	17.0	2
13.3	6	17.1	2
13.4	6	17.2	2
13.5	6	17.3	2
13.6	6	17.4	2
13.7	6	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

Return Frequency: 10 years

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

Executed: 06-02-1997 08:42:46
Watershed file: --> A:POST1 .MOP
Hydrograph file: --> A:POST10.HYD

post dev for old and new area TOTAL AREA= 16.7 AC.

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
18.6	2	22.4	1
18.7	2	22.5	1
18.8	2	22.6	1
18.9	2	22.7	1
19.0	2	22.8	1
19.1	2	22.9	1
19.2	2	23.0	1
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	0
20.3	2	24.1	0
20.4	2	24.2	0
20.5	2	24.3	0
20.6	2	24.4	0
20.7	2	24.5	0
20.8	2	24.6	0
20.9	2	24.7	0
21.0	2	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		

Return Frequency: 100 years

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

Executed: 06-02-1997 08:42:46
Watershed file: --> A:POST1 .MOP
Hydrograph file: --> A:POST100.HYD

post dev for old and new area TOTAL AREA= 16.7 AC.

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

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used	
Subarea 2	16.71	91.0	0.20	0.00	8.00	6.92	.02	.10

* Travel time from subarea outfall to composite watershed outfall point.
Total area = 16.71 acres or 0.02611 sq.mi
Peak discharge = 145 cfs

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

Subarea Description	Input Values Tc (hr)	* Tt (hr)	Rounded Values Tc (hr)	* Tt (hr)	Ia/p Interpolated (Yes/No)	Ia/p Messages
Subarea 2	0.16	0.00	0.20	0.00	No	Computed Ia/p < .1

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

Return Frequency: 100 years

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

Executed: 06-02-1997 08:42:46
Watershed file: --> A:POST1 .MOP
Hydrograph file: --> A:POST100.HYD

post dev for old and new area TOTAL AREA= 16.7 AC.

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

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
Subarea 2	145	12.2
Composite Watershed	145	12.2

Return Frequency: 100 years

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

Executed: 06-02-1997 08:42:46
Watershed file: --> A:POST1 .MOP
Hydrograph file: --> A:POST100.HYD

post dev for old and new area TOTAL AREA= 16.7 AC.

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
Subarea 2	4	6	8	38	73	134	145	87	45
Total (cfs)	4	6	8	38	73	134	145	87	45

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
Subarea 2	30	23	18	16	13	11	10	9	8
Total (cfs)	30	23	18	16	13	11	10	9	8

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
Subarea 2	7	6	6	5	5	4	4	4	3
Total (cfs)	7	6	6	5	5	4	4	4	3

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
Subarea 2	3	3	2	2	0
Total (cfs)	3	3	2	2	0

Return Frequency: 100 years

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

Executed: 06-02-1997 08:42:46
Watershed file: --> A:POST1 .MOP
Hydrograph file: --> A:POST100.HYD

post dev for old and new area TOTAL AREA= 16.7 AC.

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	4	14.8	6
11.1	5	14.9	5
11.2	5	15.0	5
11.3	6	15.1	5
11.4	7	15.2	5
11.5	7	15.3	5
11.6	8	15.4	5
11.7	18	15.5	5
11.8	28	15.6	5
11.9	38	15.7	5
12.0	73	15.8	4
12.1	134	15.9	4
12.2	145	16.0	4
12.3	87	16.1	4
12.4	45	16.2	4
12.5	30	16.3	4
12.6	23	16.4	4
12.7	18	16.5	4
12.8	16	16.6	4
12.9	14	16.7	4
13.0	13	16.8	4
13.1	12	16.9	4
13.2	11	17.0	4
13.3	10	17.1	4
13.4	10	17.2	4
13.5	10	17.3	3
13.6	9	17.4	3
13.7	8	17.5	3
13.8	8	17.6	3
13.9	8	17.7	3
14.0	7	17.8	3
14.1	7	17.9	3
14.2	6	18.0	3
14.3	6	18.1	3
14.4	6	18.2	3
14.5	6	18.3	3

14.6	6	18.4	3
14.7	6	18.5	3

Return Frequency: 100 years

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

Executed: 06-02-1997 08:42:46
Watershed file: --> A:POST1 .MOP
Hydrograph file: --> A:POST100.HYD

post dev for old and new area TOTAL AREA= 16.7 AC.

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	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	0
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		

POND-2 Version: 5.17
S/N:

BALL METAL - CONTAINER DIVISION
DETENTION POND
James City County, Virginia

CALCULATED 07-18-1997 09:16:59
DISK FILE: c:\pondpack\ball\WBMP2 .VOL

Planimeter scale: 1 inch = 25 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (sq.ft)	A1+A2+sqr(A1*A2) (sq.ft)	* Volume (cubic-ft)	Volume Sum (cubic-ft)
50.00	0.00	0	0	0	0
51.00	36.38	22,738	22,738	7,579	7,579
52.00	39.62	24,763	71,228	23,743	31,322
52.35	46.55	29,094	80,697	9,415	40,737
56.00	53.87	33,669	94,060	114,440	155,177
58.00	61.60	38,500	108,172	72,115	227,291
60.00	69.74	43,588	123,052	82,035	309,326
62.00	78.27	48,919	138,683	92,455	401,781
64.00	87.22	54,513	155,071	103,381	505,162

Elevations With Areas Interpolated From
The Closest Two Planimeter Readings

51.40	-----	23,537	69,409	9,255	16,834
53.85	-----	30,933	90,027	45,013	85,750
58.40	-----	39,492	116,985	15,598	242,890

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

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

File: BALL3.MRG
Project: BALL METAL - CONTAINER DIVISION
Location: James City County, Va.
Design: M.Gordon
Date: July 17, 1997
Rev.:

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

ORFICE SIZE	=	4 in.
STAGE INCREMENT	=	0.05 ft.
INVERT ELEV.	=	50.00
UPPER RANGE	=	52.35
COEFFICIENT	=	0.6
CONSTANT	=	0.04375
TOTAL VOLUME	=	40,640 cf

ELEV.	HEAD	FLOW
50.00	0.00	0.00
50.05	0.05	0.09
50.09	0.09	0.13
50.14	0.14	0.16
50.19	0.19	0.18
50.23	0.23	0.20
50.28	0.28	0.22
50.33	0.33	0.24
50.38	0.38	0.26
50.42	0.42	0.27
50.47	0.47	0.29
50.52	0.52	0.30
50.56	0.56	0.32
50.61	0.61	0.33
50.66	0.66	0.34
50.70	0.70	0.35
50.75	0.75	0.36
50.80	0.80	0.38
50.85	0.85	0.39
50.89	0.89	0.40
50.94	0.94	0.41

		5.61 cfs

AVG. FLOW RATE = 0.28 cfs

DETENTION TIME = 40.21 hrs.

File: BALL4.MRG
Project: BALL METAL - CONTAINER DIV.
Location: James City Co., Va.
Design: M.Gordon
Date: July 17, 1997
Rev.:

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

ORFICE SIZE	=	18	in.
STAGE INCREMENT	=	0.08	ft.
INVERT ELEV.	=	52.35	
UPPER RANGE	=	53.85	
COEFFICIENT	=	0.6	
CONSTANT	=	0.04375	
TOTAL VOLUME	=	45,013	cf

ELEV.	HEAD	FLOW
52.35	0.00	0.00
52.43	0.08	2.33
52.50	0.15	3.29
52.58	0.23	4.03
52.65	0.30	4.66
52.73	0.38	5.21
52.80	0.45	5.71
52.88	0.53	6.16
52.95	0.60	6.59
53.03	0.68	6.99
53.10	0.75	7.37
53.18	0.83	7.73
53.25	0.90	8.07
53.33	0.98	8.40
53.40	1.05	8.72
53.48	1.13	9.02
53.55	1.20	9.32
53.63	1.28	9.60
53.70	1.35	9.88
53.78	1.43	10.15
53.85	1.50	10.42

		143.63 cfs

AVG. FLOW RATE = 7.18 cfs

DETENTION TIME = 1.74 hrs.

Outlet Structure File: WBMP3 .STR

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

Outlet Structure File: c:\pondpack\ball\WBMP3 .STR
Planimeter Input File: c:\pondpack\ball\WBMP2 .VOL
Rating Table Output File: c:\pondpack\ball\WBMP3 .PND

Min. Elev.(ft) = 50 Max. Elev.(ft) = 59 Incr.(ft) = .25

Additional elevations (ft) to be included in table:
* *
50.33 52.35 53.85

****
SYSTEM CONNECTIVITY
****

Structure	No.	Q Table		Q Table
TABLE	1		->	1
ORIFICE-VC	2		->	2
TABLE	3		->	3
ORIFICE-VC	4		->	4
STAND PIPE	5		->	5

Outflow rating table summary was stored in file:
c:\pondpack\ball\WBMP3 .PND

Outlet Structure File: WBMP3 .STR

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

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

Elevation (ft)	Q (cfs)	Contributing Structures
50.00	0.0	1
50.25	0.2	1
50.33	0.2	2
50.50	0.2	2
50.75	0.3	2
51.00	0.4	2
51.25	0.4	2
51.50	0.5	2
51.75	0.5	2
52.00	0.6	2
52.25	0.6	2
52.35	0.6	2 +3
52.50	3.9	2 +3
52.75	6.0	2 +3
53.00	7.5	2 +3
53.25	8.8	2 +3
53.50	9.9	2 +3
53.75	10.8	2 +3
53.85	8.2	2 +4
54.00	8.9	2 +4
54.25	10.0	2 +4
54.50	10.9	2 +4
54.75	11.8	2 +4
55.00	12.6	2 +4
55.25	13.4	2 +4
55.50	14.1	2 +4
55.75	14.8	2 +4
56.00	15.5	2 +4
56.25	16.1	2 +4
56.50	16.7	2 +4
56.75	17.3	2 +4
57.00	17.9	2 +4 +5
57.25	23.1	2 +4 +5
57.50	32.3	2 +4 +5
57.75	44.0	2 +4 +5
58.00	57.7	2 +4 +5
58.25	73.2	2 +4 +5
58.50	90.2	2 +4 +5
58.75	101.5	2 +4 +5
59.00	0.0	

Outlet Structure File: WBMP3 .STR

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

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

TABLE
Input your own rating table.
E1 (ft) =50 E2 (ft) =50.33

Constant (ft) added to each elevation was:

Elev. (ft)	Q (cfs)
50	0
50.05	.09
50.09	.13
50.14	.16
50.19	.18
50.23	.2
50.28	.22
50.33	.24

Outlet Structure File: WBMP3 .STR

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

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

ORIFICE-VC
Orifice - Vertical Circular

E1 elev.(ft)?	50.33
E2 elev.(ft)?	59.0
Orifice coeff.?	.6
Invert elev.(ft)?	50.00
Datum elev.(ft)?	50.17
Diameter (ft)?	0.33 4"

Outlet Structure File: WBMP3 .STR

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

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

TABLE
Input your own rating table.
E1 (ft) =52.35 E2 (ft) =53.85

Constant (ft) added to each elevation was:

Elev. (ft)	Q (cfs)
52.35	0
52.5	3.29
52.65	4.66
52.8	5.71
52.95	6.59
53.1	7.37
53.25	8.07
53.4	8.72
53.55	9.32
53.7	9.88
53.85	10.42

Outlet Structure File: WBMP3 .STR

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

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

ORIFICE-VC
Orifice - Vertical Circular

E1 elev.(ft)?	53.85
E2 elev.(ft)?	59
Orifice coeff.?	.6
Invert elev.(ft)?	52.35
Datum elev.(ft)?	53.10
Diameter (ft)?	1.5

Outlet Structure File: WBMP3 .STR

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

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

STAND PIPE
Stand Pipe with weir or orifice flow

E1 elev.(ft)?	57.00
E2 elev.(ft)?	59.00
Crest elev.(ft)?	57.00
Diameter (ft)?	4.0
Weir coefficient?	3.0
Orifice coefficient?	0.6
Start transition elev.(ft) @ ?	
Transition height (ft)?	

Outlet Structure File: WBMP3 .STR

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

Outflow Rating Table for Structure #1
TABLE Input your own rating table.

Elevation (ft)	Q (cfs)	Computation Messages
50.00	0.0	
50.25	0.2	Interpolated from input table
50.33	0.0	E = or > E2=50.33
50.50	0.0	E = or > E2=50.33
50.75	0.0	E = or > E2=50.33
51.00	0.0	E = or > E2=50.33
51.25	0.0	E = or > E2=50.33
51.50	0.0	E = or > E2=50.33
51.75	0.0	E = or > E2=50.33
52.00	0.0	E = or > E2=50.33
52.25	0.0	E = or > E2=50.33
52.35	0.0	E = or > E2=50.33
52.50	0.0	E = or > E2=50.33
52.75	0.0	E = or > E2=50.33
53.00	0.0	E = or > E2=50.33
53.25	0.0	E = or > E2=50.33
53.50	0.0	E = or > E2=50.33
53.75	0.0	E = or > E2=50.33
53.85	0.0	E = or > E2=50.33
54.00	0.0	E = or > E2=50.33
54.25	0.0	E = or > E2=50.33
54.50	0.0	E = or > E2=50.33
54.75	0.0	E = or > E2=50.33
55.00	0.0	E = or > E2=50.33
55.25	0.0	E = or > E2=50.33
55.50	0.0	E = or > E2=50.33
55.75	0.0	E = or > E2=50.33
56.00	0.0	E = or > E2=50.33
56.25	0.0	E = or > E2=50.33
56.50	0.0	E = or > E2=50.33
56.75	0.0	E = or > E2=50.33
57.00	0.0	E = or > E2=50.33
57.25	0.0	E = or > E2=50.33
57.50	0.0	E = or > E2=50.33
57.75	0.0	E = or > E2=50.33
58.00	0.0	E = or > E2=50.33
58.25	0.0	E = or > E2=50.33

Outlet Structure File: WBMP3 .STR

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

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

Outflow Rating Table for Structure #1
TABLE Input your own rating table.

Elevation (ft)	Q (cfs)	Computation Messages
58.50	0.0	E = or > E2=50.33
58.75	0.0	E = or > E2=50.33
59.00	0.0	E = or > E2=50.33

Outlet Structure File: WBMP3 .STR

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

Outflow Rating Table for Structure #2
ORIFICE-VC Orifice - Vertical Circular

Elevation (ft)	Q (cfs)	Computation Messages
50.00	0.0	E < E1=50.33
50.25	0.0	E < E1=50.33
50.33	0.2	H =.16
50.50	0.2	H =.33
50.75	0.3	H =.58
51.00	0.4	H =.83
51.25	0.4	H =1.08
51.50	0.5	H =1.33
51.75	0.5	H =1.58
52.00	0.6	H =1.83
52.25	0.6	H =2.08
52.35	0.6	H =2.18
52.50	0.6	H =2.33
52.75	0.7	H =2.58
53.00	0.7	H =2.83
53.25	0.7	H =3.08
53.50	0.8	H =3.33
53.75	0.8	H =3.58
53.85	0.8	H =3.68
54.00	0.8	H =3.83
54.25	0.8	H =4.08
54.50	0.9	H =4.33
54.75	0.9	H =4.58
55.00	0.9	H =4.83
55.25	0.9	H =5.08
55.50	1.0	H =5.33
55.75	1.0	H =5.58
56.00	1.0	H =5.83
56.25	1.0	H =6.08
56.50	1.0	H =6.33
56.75	1.1	H =6.58
57.00	1.1	H =6.83
57.25	1.1	H =7.08
57.50	1.1	H =7.33

Outlet Structure File: WBMP3 .STR

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

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

Outflow Rating Table for Structure #2
ORIFICE-VC Orifice - Vertical Circular

Elevation (ft)	Q (cfs)	Computation Messages
57.75	1.1	H =7.58
58.00	1.2	H =7.83
58.25	1.2	H =8.08
58.50	1.2	H =8.33
58.75	1.2	H =8.580
59.00	0.0	E = or > E2=59.0

C = .6 A = 8.552988E-02 sq.ft.
H (ft) = Table elev. - Datum elev. (50.17 ft)
Q (cfs) = C * A * sqr(2g * H)

Outlet Structure File: WBMP3 .STR

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

Outflow Rating Table for Structure #3
TABLE Input your own rating table.

Elevation (ft)	Q (cfs)	Computation Messages
50.00	0.0	E < E1=52.35
50.25	0.0	E < E1=52.35
50.33	0.0	E < E1=52.35
50.50	0.0	E < E1=52.35
50.75	0.0	E < E1=52.35
51.00	0.0	E < E1=52.35
51.25	0.0	E < E1=52.35
51.50	0.0	E < E1=52.35
51.75	0.0	E < E1=52.35
52.00	0.0	E < E1=52.35
52.25	0.0	E < E1=52.35
52.35	0.0	
52.50	3.3	
52.75	5.4	Interpolated from input table
53.00	6.8	Interpolated from input table
53.25	8.1	
53.50	9.1	Interpolated from input table
53.75	10.1	Interpolated from input table
53.85	0.0	E = or > E2=53.85
54.00	0.0	E = or > E2=53.85
54.25	0.0	E = or > E2=53.85
54.50	0.0	E = or > E2=53.85
54.75	0.0	E = or > E2=53.85
55.00	0.0	E = or > E2=53.85
55.25	0.0	E = or > E2=53.85
55.50	0.0	E = or > E2=53.85
55.75	0.0	E = or > E2=53.85
56.00	0.0	E = or > E2=53.85
56.25	0.0	E = or > E2=53.85
56.50	0.0	E = or > E2=53.85
56.75	0.0	E = or > E2=53.85
57.00	0.0	E = or > E2=53.85
57.25	0.0	E = or > E2=53.85
57.50	0.0	E = or > E2=53.85
57.75	0.0	E = or > E2=53.85
58.00	0.0	E = or > E2=53.85
58.25	0.0	E = or > E2=53.85

Outlet Structure File: WBMP3 .STR

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

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

Outflow Rating Table for Structure #3
TABLE Input your own rating table.

Elevation (ft)	Q (cfs)	Computation Messages
58.50	0.0	E = or > E2=53.85
58.75	0.0	E = or > E2=53.85
59.00	0.0	E = or > E2=53.85

Outlet Structure File: WBMP3 .STR

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

Outflow Rating Table for Structure #4
ORIFICE-VC Orifice - Vertical Circular

Elevation (ft)	Q (cfs)	Computation Messages
50.00	0.0	E < E1=53.85
50.25	0.0	E < E1=53.85
50.33	0.0	E < E1=53.85
50.50	0.0	E < E1=53.85
50.75	0.0	E < E1=53.85
51.00	0.0	E < E1=53.85
51.25	0.0	E < E1=53.85
51.50	0.0	E < E1=53.85
51.75	0.0	E < E1=53.85
52.00	0.0	E < E1=53.85
52.25	0.0	E < E1=53.85
52.35	0.0	E < E1=53.85
52.50	0.0	E < E1=53.85
52.75	0.0	E < E1=53.85
53.00	0.0	E < E1=53.85
53.25	0.0	E < E1=53.85
53.50	0.0	E < E1=53.85
53.75	0.0	E < E1=53.85
53.85	7.4	H =.750
54.00	8.1	H =.9
54.25	9.1	H =1.15
54.50	10.1	H =1.4
54.75	10.9	H =1.65
55.00	11.7	H =1.9
55.25	12.5	H =2.15
55.50	13.2	H =2.4
55.75	13.9	H =2.65
56.00	14.5	H =2.9
56.25	15.1	H =3.15
56.50	15.7	H =3.4
56.75	16.3	H =3.65
57.00	16.8	H =3.9
57.25	17.3	H =4.15
57.50	17.8	H =4.4

Outlet Structure File: WBMP3 .STR

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

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

Outflow Rating Table for Structure #4
ORIFICE-VC Orifice - Vertical Circular

Elevation (ft)	Q (cfs)	Computation Messages
57.75	18.3	H =4.65
58.00	18.8	H =4.9
58.25	19.3	H =5.15
58.50	19.8	H =5.4
58.75	20.2	H =5.65
59.00	0.0	E = or > E2=59

C = .6 A = 1.767146 sq.ft.
H (ft) = Table elev. - Datum elev. (53.1 ft)
Q (cfs) = C * A * sqr(2g * H)

Outlet Structure File: WBMP3 .STR

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

Outflow Rating Table for Structure #5
STAND PIPE Stand Pipe with weir or orifice flow

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

Elevation (ft)	Q (cfs)	Computation Messages
50.00	0.0	E < Inv.El.= 57
50.25	0.0	E < E1=57.00
50.33	0.0	E < E1=57.00
50.50	0.0	E < E1=57.00
50.75	0.0	E < E1=57.00
51.00	0.0	E < E1=57.00
51.25	0.0	E < E1=57.00
51.50	0.0	E < E1=57.00
51.75	0.0	E < E1=57.00
52.00	0.0	E < E1=57.00
52.25	0.0	E < E1=57.00
52.35	0.0	E < E1=57.00
52.50	0.0	E < E1=57.00
52.75	0.0	E < E1=57.00
53.00	0.0	E < E1=57.00
53.25	0.0	E < E1=57.00
53.50	0.0	E < E1=57.00
53.75	0.0	E < E1=57.00
53.85	0.0	E < E1=57.00
54.00	0.0	E < E1=57.00
54.25	0.0	E < E1=57.00
54.50	0.0	E < E1=57.00
54.75	0.0	E < E1=57.00
55.00	0.0	E < E1=57.00
55.25	0.0	E < E1=57.00
55.50	0.0	E < E1=57.00
55.75	0.0	E < E1=57.00
56.00	0.0	E < E1=57.00
56.25	0.0	E < E1=57.00
56.50	0.0	E < E1=57.00
56.75	0.0	E < E1=57.00
57.00	0.0	Weir: H =0.0

Outlet Structure File: WBMP3 .STR

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

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

Outflow Rating Table for Structure #5
STAND PIPE Stand Pipe with weir or orifice flow

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

Elevation (ft)	Q (cfs)	Computation	Messages
57.25	4.7	Weir:	H =.25
57.50	13.3	Weir:	H =.5
57.75	24.5	Weir:	H =.750
58.00	37.7	Weir:	H =1.0
58.25	52.7	Weir:	H =1.25
58.50	69.3	Weir:	H =1.5
58.75	80.0	Orifice:	H =1.75
59.00	0.0	E = or > E2=59.00	

Weir Cw = 3 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.= 58.60499 ft

```
*************************************
*                                   *
* BALL METAL - CONTAINER DIVISION   *
*       James City Co., Va.         *
*                                   *
*                                   *
*                                   *
*************************************
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Inflow Hydrograph: c:\pondpack\ball\POST2 .HYD
Rating Table file: c:\pondpack\ball\WBMP3 .PND

----INITIAL CONDITIONS----
Elevation = 50.00 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
50.00	0.0	0
50.25	0.2	118
50.33	0.2	272
50.50	0.2	947
50.75	0.3	3,197
51.00	0.4	7,579
51.25	0.4	13,326
51.50	0.5	19,197
51.75	0.5	25,196
52.00	0.6	31,322
52.25	0.6	37,891
52.35	0.6	40,736
52.50	3.9	45,114
52.75	6.0	52,471
53.00	7.5	59,904
53.25	8.8	67,413
53.50	9.9	74,999
53.75	10.8	82,663
53.85	8.2	85,750
54.00	8.9	90,404
54.25	10.0	98,223
54.50	10.9	106,121
54.75	11.8	114,098
55.00	12.6	122,153
55.25	13.4	130,289
55.50	14.1	138,504
55.75	14.8	146,800
56.00	15.5	155,177
56.25	16.1	163,667
56.50	16.7	172,305
56.75	17.3	181,091

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0.0	0.0
0.7	0.9
1.5	1.7
5.3	5.5
17.8	18.1
42.1	42.5
74.0	74.4
106.7	107.2
140.0	140.5
174.0	174.6
210.5	211.1
226.3	226.9
250.6	254.5
291.5	297.5
332.8	340.3
374.5	383.3
416.7	426.6
459.2	470.0
476.4	484.6
502.2	511.1
545.7	555.7
589.6	600.5
633.9	645.7
678.6	691.2
723.8	737.2
769.5	783.6
815.6	830.4
862.1	877.6
909.3	925.4
957.2	973.9
1006.1	1023.4

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
57.00	17.9	190,026
57.25	23.1	199,113
57.50	32.3	208,352
57.75	44.0	217,744
58.00	57.7	227,291
58.25	73.2	236,994
58.50	90.2	246,851
58.75	101.5	256,865

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
1055.7	1073.6
1106.2	1129.3
1157.5	1189.8
1209.7	1253.7
1262.7	1320.4
1316.6	1389.8
1371.4	1461.6
1427.0	1528.5

Time increment (t) = 6.0 min.

Pond File: c:\pondpack\ball\WBMP3 .PND
Inflow Hydrograph: c:\pondpack\ball\POST2 .HYD
Outflow Hydrograph: c:\pondpack\ball\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)
660.0	2.00	-----	0.0	0.0	0.00	50.00
666.0	2.00	4.0	3.6	4.0	0.20	50.43
672.0	2.00	4.0	7.2	7.6	0.22	50.54
678.0	2.00	4.0	10.7	11.2	0.25	50.61
684.0	2.00	4.0	14.1	14.7	0.27	50.68
690.0	3.00	5.0	18.5	19.1	0.30	50.76
696.0	3.00	6.0	23.9	24.5	0.33	50.82
702.0	7.00	10.0	33.1	33.9	0.36	50.91
708.0	10.00	17.0	49.3	50.1	0.40	51.06
714.0	14.00	24.0	72.5	73.3	0.40	51.24
720.0	27.00	41.0	112.5	113.5	0.50	51.55
726.0	49.00	76.0	187.3	188.5	0.60	52.10
732.0	53.00	102.0	278.1	289.3	5.60	52.70
738.0	32.00	85.0	346.8	363.1	8.19	53.13
744.0	17.00	49.0	377.5	395.8	9.12	53.32
750.0	11.00	28.0	386.8	405.5	9.36	53.38
756.0	8.00	19.0	387.1	405.8	9.37	53.38
762.0	7.00	15.0	383.5	402.1	9.28	53.36
768.0	6.00	13.0	378.2	396.5	9.14	53.33
774.0	6.00	12.0	372.3	390.2	8.98	53.29
780.0	5.00	11.0	365.7	383.3	8.80	53.25
786.0	4.00	9.0	357.6	374.7	8.54	53.20
792.0	4.00	8.0	349.1	365.6	8.26	53.15
798.0	4.00	8.0	341.1	357.1	8.01	53.10
804.0	4.00	8.0	333.5	349.1	7.76	53.05
810.0	4.00	8.0	326.5	341.5	7.54	53.01
816.0	3.00	7.0	318.9	333.5	7.26	52.96
822.0	3.00	6.0	311.0	324.9	6.96	52.91
828.0	3.00	6.0	303.6	317.0	6.68	52.86
834.0	3.00	6.0	296.8	309.6	6.43	52.82
840.0	3.00	6.0	290.4	302.8	6.19	52.78
846.0	3.00	6.0	284.5	296.4	5.95	52.74
852.0	2.00	5.0	278.3	289.5	5.61	52.70
858.0	2.00	4.0	271.8	282.3	5.26	52.66
864.0	2.00	4.0	265.9	275.8	4.94	52.62
870.0	2.00	4.0	260.6	269.9	4.65	52.59
876.0	2.00	4.0	255.8	264.6	4.39	52.56
882.0	2.00	4.0	251.5	259.8	4.16	52.53
888.0	2.00	4.0	247.6	255.5	3.95	52.51
894.0	2.00	4.0	244.5	251.6	3.55	52.48
900.0	2.00	4.0	242.2	248.5	3.18	52.47
906.0	2.00	4.0	240.4	246.2	2.90	52.45
912.0	2.00	4.0	239.0	244.4	2.68	52.44
918.0	2.00	4.0	237.9	243.0	2.52	52.44
924.0	2.00	4.0	237.2	241.9	2.40	52.43

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

Pond File: c:\pondpack\ball\WBMP3 .PND
Inflow Hydrograph: c:\pondpack\ball\POST2 .HYD
Outflow Hydrograph: c:\pondpack\ball\2OUT .HYD

Starting Pond W.S. Elevation = 50.00 ft

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

Peak Inflow = 53.00 cfs
Peak Outflow = 9.37 cfs
Peak Elevation = 53.38 ft

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

Initial Storage = 0 cu-ft
Peak Storage From Storm = 71,356 cu-ft

Total Storage in Pond = 71,356 cu-ft

Warning: Inflow hydrograph truncated on left side.

Return Freq: 2 years

Pond File: c:\pondpack\ball\WBMP3 .PND
Inflow Hydrograph: c:\pondpack\ball\POST2 .HYD
Outflow Hydrograph: c:\pondpack\ball\2OUT .HYD

EXECUTED: 07-18-1997
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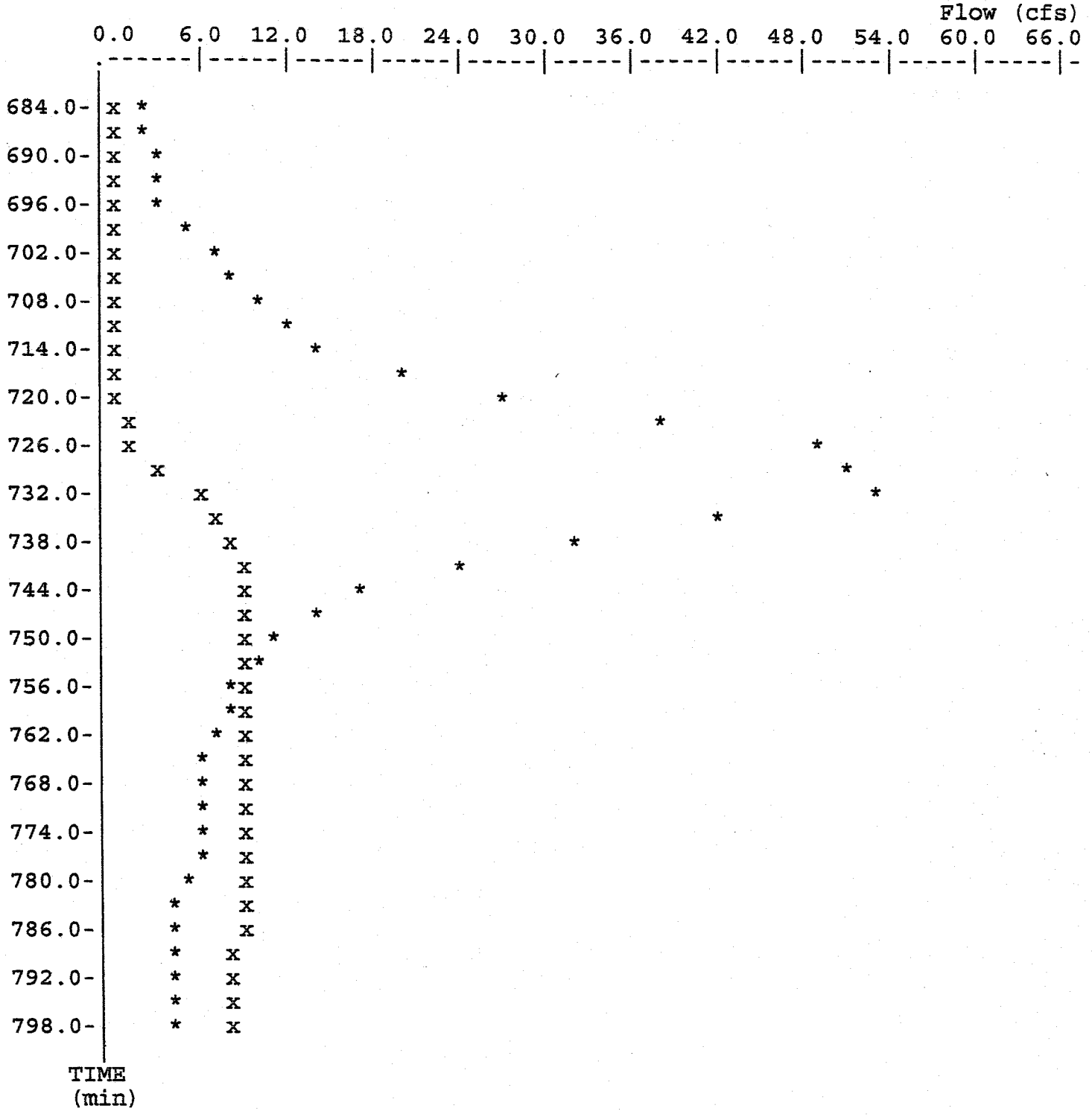
Peak Inflow = 53.00 cfs
Peak Outflow = 9.37 cfs
Peak Elevation = 53.38 ft



* File: c:\pondpack\ball\POST2 .HYD Qmax = 53.0 cfs
x File: c:\pondpack\ball\2OUT .HYD Qmax = 9.4 cfs

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*************************************
*                                   *
* BALL METAL - CONTAINER DIVISION   *
*       James City Co., Va.         *
*                                   *
*                                   *
*                                   *
*************************************
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Inflow Hydrograph: c:\pondpack\ball\POST10 .HYD
Rating Table file: c:\pondpack\ball\WBMP3 .PND

----INITIAL CONDITIONS----
Elevation = 50.00 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 + O (cfs)
50.00	0.0	0	0.0	0.0
50.25	0.2	118	0.7	0.9
50.33	0.2	272	1.5	1.7
50.50	0.2	947	5.3	5.5
50.75	0.3	3,197	17.8	18.1
51.00	0.4	7,579	42.1	42.5
51.25	0.4	13,326	74.0	74.4
51.50	0.5	19,197	106.7	107.2
51.75	0.5	25,196	140.0	140.5
52.00	0.6	31,322	174.0	174.6
52.25	0.6	37,891	210.5	211.1
52.35	0.6	40,736	226.3	226.9
52.50	3.9	45,114	250.6	254.5
52.75	6.0	52,471	291.5	297.5
53.00	7.5	59,904	332.8	340.3
53.25	8.8	67,413	374.5	383.3
53.50	9.9	74,999	416.7	426.6
53.75	10.8	82,663	459.2	470.0
53.85	8.2	85,750	476.4	484.6
54.00	8.9	90,404	502.2	511.1
54.25	10.0	98,223	545.7	555.7
54.50	10.9	106,121	589.6	600.5
54.75	11.8	114,098	633.9	645.7
55.00	12.6	122,153	678.6	691.2
55.25	13.4	130,289	723.8	737.2
55.50	14.1	138,504	769.5	783.6
55.75	14.8	146,800	815.6	830.4
56.00	15.5	155,177	862.1	877.6
56.25	16.1	163,667	909.3	925.4
56.50	16.7	172,305	957.2	973.9
56.75	17.3	181,091	1006.1	1023.4

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

Pond File: c:\pondpack\ball\WBMP3 .PND
Inflow Hydrograph: c:\pondpack\ball\POST10 .HYD
Outflow Hydrograph: c:\pondpack\ball\10OUT .HYD

Starting Pond W.S. Elevation = 50.00 ft

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

Peak Inflow = 93.00 cfs
Peak Outflow = 13.13 cfs
Peak Elevation = 55.17 ft

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

Initial Storage	=	0 cu-ft
Peak Storage From Storm	=	127,549 cu-ft
Total Storage in Pond	=	127,549 cu-ft

Warning: Inflow hydrograph truncated on left side.

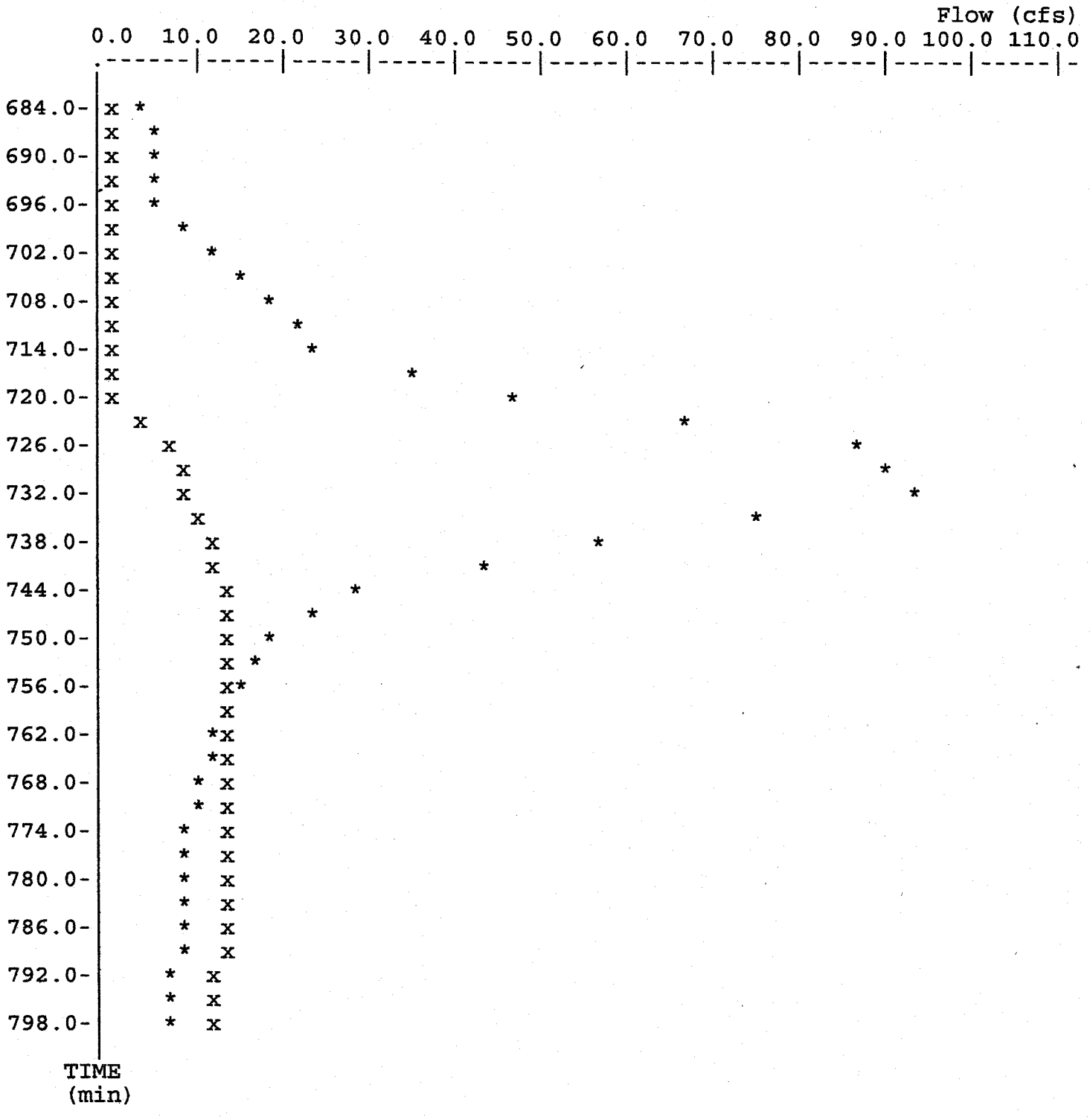
POND-2 Version: 5.17 S/N:

Return Freq: 10 years

Pond File: c:\pondpack\ball\WBMP3 .PND
Inflow Hydrograph: c:\pondpack\ball\POST10 .HYD
Outflow Hydrograph: c:\pondpack\ball\10OUT .HYD

EXECUTED: 07-18-1997
08:44:47

Peak Inflow = 93.00 cfs
Peak Outflow = 13.13 cfs
Peak Elevation = 55.17 ft



* File: c:\pondpack\ball\POST10 .HYD Qmax = 93.0 cfs
x File: c:\pondpack\ball\10OUT .HYD Qmax = 13.1 cfs

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*************************************
*                                   *
* BALL METAL - CONTAINER DIVISION   *
*       James City Co., Va.         *
*                                   *
*                                   *
*                                   *
*************************************
```

Inflow Hydrograph: c:\pondpack\ball\POST100 .HYD
Rating Table file: c:\pondpack\ball\WBMP3 .PND

----INITIAL CONDITIONS----
Elevation = 50.00 ft
Outflow = 0.00 cfs
Storage = 0 cu-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
50.00	0.0	0
50.25	0.2	118
50.33	0.2	272
50.50	0.2	947
50.75	0.3	3,197
51.00	0.4	7,579
51.25	0.4	13,326
51.50	0.5	19,197
51.75	0.5	25,196
52.00	0.6	31,322
52.25	0.6	37,891
52.35	0.6	40,736
52.50	3.9	45,114
52.75	6.0	52,471
53.00	7.5	59,904
53.25	8.8	67,413
53.50	9.9	74,999
53.75	10.8	82,663
53.85	8.2	85,750
54.00	8.9	90,404
54.25	10.0	98,223
54.50	10.9	106,121
54.75	11.8	114,098
55.00	12.6	122,153
55.25	13.4	130,289
55.50	14.1	138,504
55.75	14.8	146,800
56.00	15.5	155,177
56.25	16.1	163,667
56.50	16.7	172,305
56.75	17.3	181,091

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + 0 (cfs)
0.0	0.0
0.7	0.9
1.5	1.7
5.3	5.5
17.8	18.1
42.1	42.5
74.0	74.4
106.7	107.2
140.0	140.5
174.0	174.6
210.5	211.1
226.3	226.9
250.6	254.5
291.5	297.5
332.8	340.3
374.5	383.3
416.7	426.6
459.2	470.0
476.4	484.6
502.2	511.1
545.7	555.7
589.6	600.5
633.9	645.7
678.6	691.2
723.8	737.2
769.5	783.6
815.6	830.4
862.1	877.6
909.3	925.4
957.2	973.9
1006.1	1023.4

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (cu-ft)
57.00	17.9	190,026
57.25	23.1	199,113
57.50	32.3	208,352
57.75	44.0	217,744
58.00	57.7	227,291
58.25	73.2	236,994
58.50	90.2	246,851
58.75	101.5	256,865

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + 0 (cfs)
1055.7	1073.6
1106.2	1129.3
1157.5	1189.8
1209.7	1253.7
1262.7	1320.4
1316.6	1389.8
1371.4	1461.6
1427.0	1528.5

Time increment (t) = 6.0 min.

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

Pond File: c:\pondpack\ball\WBMP3 .PND
Inflow Hydrograph: c:\pondpack\ball\POST100 .HYD
Outflow Hydrograph: c:\pondpack\ball\100OUT .HYD

Starting Pond W.S. Elevation = 50.00 ft

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

Peak Inflow	=	145.00	cfs
Peak Outflow	=	22.35	cfs
Peak Elevation	=	57.21	ft

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

Initial Storage	=	0	cu-ft
Peak Storage From Storm	=	197,808	cu-ft
Total Storage in Pond	=	197,808	cu-ft

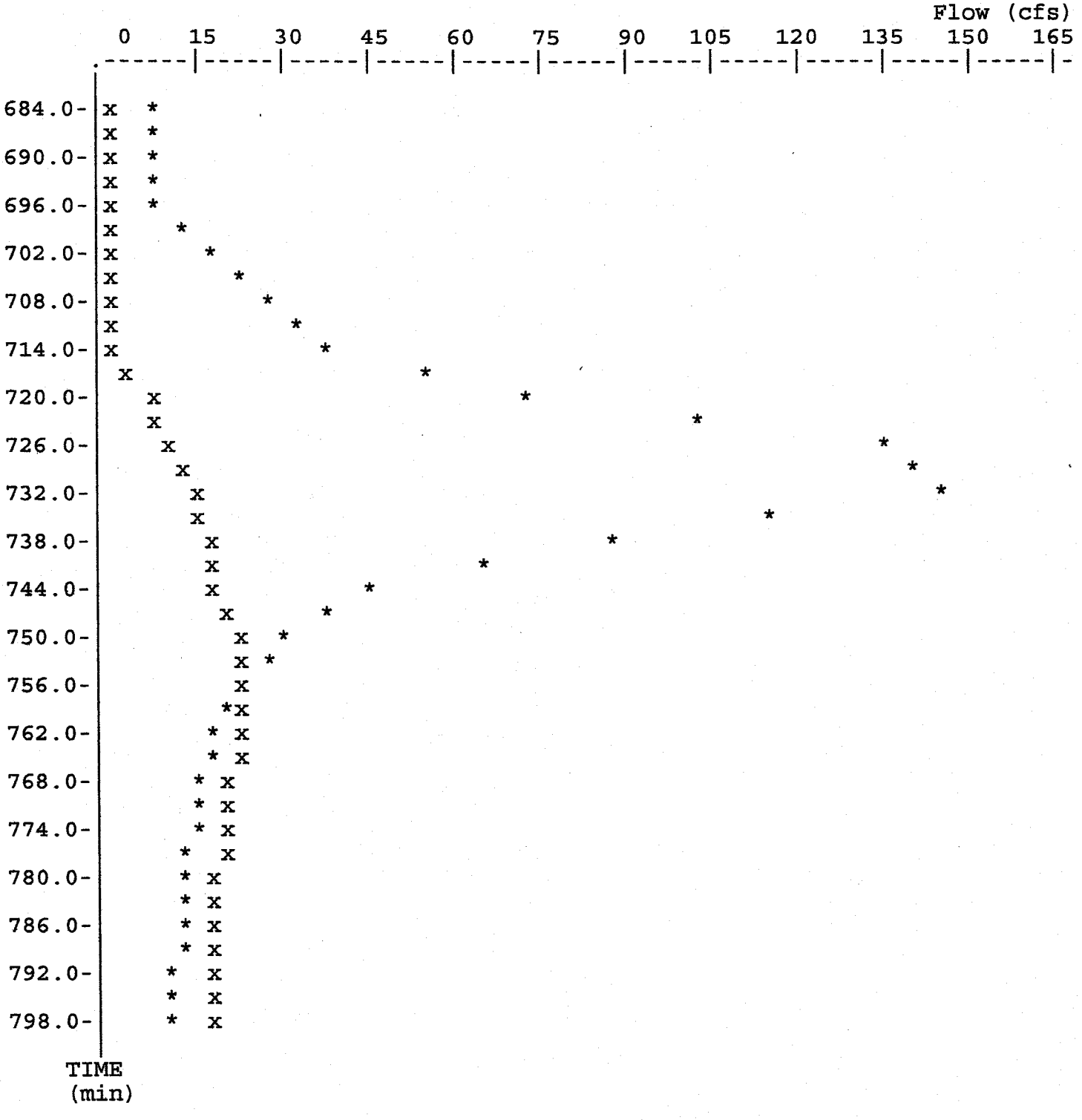
Warning: Inflow hydrograph truncated on left side.

Return Freq: 100 years

Pond File: c:\pondpack\ball\WBMP3 .PND
Inflow Hydrograph: c:\pondpack\ball\POST100 .HYD
Outflow Hydrograph: c:\pondpack\ball\100OUT .HYD

EXECUTED: 07-18-1997
08:44:47

Peak Inflow = 145.00 cfs
Peak Outflow = 22.35 cfs
Peak Elevation = 57.21 ft



* File: c:\pondpack\ball\POST100 .HYD Qmax = 145.0 cfs
x File: c:\pondpack\ball\100OUT .HYD Qmax = 22.4 cfs

FILE: BALL-STORM.XLS
Project: BALL METAL - CONTAINER DIVISION
Location: James City County, Va.
Design: M.Gordon
Date: Sept. 12, 1997
Revision:
Yr. Storm: 10 Yr.
N Value: 0.013 RCP
0.010 PVC

9/16/97

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

STORM SEWER DESIGN COMPUTATIONS

FROM PT.	TO PT.	DRAIN. AREA	RUN-OFF COEFF.	C x A INCR.	C x A ACCUM.	INLET TIME	RAIN FALL	RUNOFF "Q" INCR.	RUNOFF "Q" ACCUM.	INVERT ELEV UP	INVERT ELEV LOW	LENGTH	SLOPE	PIPE DIAM.	VELOCITY	CAPACITY	FLOW TIME	FLOW RATIO	VELOCITY RATIO	REMARKS
		acres	"C"			min.	in/hr	cfs	cfs			ft.	ft./ft.	inches	ft./sec.	cfs	min.	Qp/Qf	Vp/Vf	
		[E]	[E]			[E]				[E]		[E]		[E]						
7	8	3.87	0.67	2.59	2.59	10.00	5.93	7.69	7.69	61.00	57.74	328	0.0100	15	7.82	8.35	0.70	0.92	1.15	TWIN 15" PVC CULVERTS
8	13	1.69	0.90	1.52	4.11	10.70	5.81	4.42	11.95	57.49	55.67	134	0.0136	18	7.99	12.20	0.28	0.98	1.16	TWIN 18" PVC CULVERTS
9	10	1.83	0.35	0.64	0.64	15.00	5.17	3.31	3.31	60.00	57.23	28	0.0990	12	12.02	11.16	0.04	0.30	0.85	
10	13	0.33	0.50	0.17	0.81	15.04	5.16	0.85	4.16	57.13	55.59	190	0.0081	15	5.14	5.79	0.62	0.72	1.09	
11	12	0.56	0.90	0.50	0.50	5.00	6.96	3.51	3.51	56.00	54.89	110	0.0101	12	5.25	3.56	0.35	0.98	1.16	TRUCK RAMP DRAIN
12	13	1.01	0.90	0.91	1.41	5.35	6.87	6.25	9.71	54.79	54.58	24	0.0087	18	6.39	9.74	0.06	1.00	1.16	
13	14	MH-1	0.00	0.00	6.33	15.66	5.08	0.00	32.18	54.43	50.65	144	0.0263	36	12.93	108.00	0.19	0.30	0.85	
15	16	5.67	0.81	4.57	4.57	10.00	5.93	27.10	27.10	54.73	50.22	313	0.0144	24	8.63	27.10	0.60	1.00	1.00	
4	3	16.70	0.90	15.03	15.03	206.10	0.87	13.13	13.13	48.50	48.04	114	0.0040	24	5.23	14.30	0.36	0.92	1.15	10 YR. PEAK FROM BMP
3	2	MH-1	0.00	0.00	15.03	206.46	0.87	0.00	13.11	47.94	46.94	250	0.0040	24	5.23	14.30	0.80	0.92	1.15	
2	1	MH-1	0.00	0.00	15.03	207.26	0.87	0.00	13.07	46.84	45.88	240	0.0040	24	5.23	14.30	0.77	0.91	1.15	
24	17	0.11	0.90	0.10	0.10	5.00	6.96	0.69	0.69	56.92	56.47	90	0.0050	10	3.24	2.00	0.46	0.34	0.88	TRUCK RAMP DRAIN
22	17	1.48	0.68	1.01	1.01	12.50	5.52	5.56	5.56	57.28	56.47	18	0.0450	18	10.18	22.20	0.03	0.25	0.81	
17	18	2.35	0.85	2.00	3.00	12.53	5.52	11.02	16.57	56.37	55.75	124	0.0050	24	5.90	16.00	0.35	1.04	1.16	
18	19	1.70	0.80	1.36	4.36	12.88	5.46	7.43	23.85	55.75	55.44	62	0.0050	24	5.90	16.00	0.18	1.49	1.16	
19	20	0.12	0.30	0.04	4.40	13.05	5.44	0.20	23.93	55.44	54.35	174	0.0063	27	7.11	24.44	0.41	0.98	1.16	EXTG 27" PIPE
20	21	0.59	0.85	0.50	4.90	13.46	5.38	2.70	26.37	54.34	54.14	115	0.0017	36	4.49	27.50	0.43	0.96	1.16	EXTG 36" PIPE
21	5	1.56	0.70	1.09	5.99	13.89	5.32	5.81	31.88	54.11	53.23	65	0.0136	42	10.09	117.20	0.11	0.27	0.83	EXTG 34"X53" PIPE
5	1	0.53	0.30	0.16	6.15	14.00	5.30	0.84	32.63	50.00	45.88	60	0.0687	42	17.14	263.50	0.06	0.12	0.63	
1	23 ?	MH-1	0.90	0.00	6.15	14.05	5.30	0.00	45.71	45.78	42.00	440	0.0086	42	9.62	93.20	0.76	0.49	0.99	ADD 13.13 CFS FROM BMP

pipes below here

15.03
21.18

ATTACHMENT "C"

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

(with or without an emergency spillway)

Project BALL METAL EXPANSION

Basin # 1-PERMANENT BMP Location NEW SITE

Total area draining to basin: _____ acres.

Basin Volume Design

Wet Storage:

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

   67 cu. yds. x 16.7 acres = 1237 cu. yds.

2. Available basin volume = 505,167 cu. yds. at elevation 64. (From storage - elevation curve)

   52.35 - 40,737
   1508 CY
   225 cu-ck

3. Excavate 18,709 cu. yds. to obtain required volume*.

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

4. Available volume before cleanout required.

   33 cu. yds. x 16.7 acres = 551 cu. yds.

5. Elevation corresponding to cleanout level = 51.3.

   (From Storage - Elevation Curve)

6. Distance from invert of the dewatering orifice to cleanout level = 1.05 ft. (Min. = 1.0 ft.)

Dry Storage:

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

   67 cu. yds. x 16.7 acres = 1119 cu. yds.

8. Total available basin volume at crest of riser* = 9937 cu. yds. at elevation 57.0. (From Storage - Elevation Curve)

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

9. Diameter of dewatering orifice = 6" in.

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

Preliminary Design Elevations

11. Crest of Riser = 57

Top of Dam = 64.

Design High Water = 55.91

Upstream Toe of Dam = 50.0

Basin Shape

12. Length of Flow / Effective Width — L / We = 200 / 111.9

If > 2, baffles are not required 2.18

If < 2, baffles are required _____

Runoff

13. Q_2 = 53 cfs (From Chapter 5)

14. Q_{25} = 114 cfs (From Chapter 5)

Principal Spillway Design

15. With emergency spillway, required spillway capacity $Q_p = Q_2$ = _____ cfs. (riser and barrel)

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

~~16. With emergency spillway:~~

~~Assumed available head (h) = _____ ft. (Using Q_2)~~

~~h = Crest of Emergency Spillway Elevation - Crest of Riser Elevation~~

Without emergency spillway:

Assumed available head (h) = 0.8 ft. (Using Q_{25})

h = Design High Water Elevation (56.02) - Crest of Riser Elevation (57.8)

17. Riser diameter (D_r) = 48 in. Actual head (h) = 1 ft.

(From Plate 3.14-8.)

Note: Avoid orifice flow conditions.

18. Barrel length (l) = 354 ft.

Head (H) on barrel through embankment = 9.13 ft.

(From Plate 3.14-7).

19. Barrel diameter = 24" in.

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

20. Trash rack and anti-vortex device

Diameter = 84 inches.

Height = 24 inches.

(From Table 3.14-D).

~~Emergency Spillway Design~~

~~21. Required spillway capacity $Q_e = Q_{25} - Q_p$ = _____ cfs.~~

~~22. Bottom width (b) = _____ ft.; the slope of the exit channel (s) = _____ ft./foot; and the minimum length of the exit channel (x) = _____ ft.~~
(From Table 3.14-C).

Anti-Seep Collar Design

23. Depth of water at principal spillway crest (Y) = ____ ft.

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

Slope of principal spillway barrel (S_b) = _____%

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

24. Number of collars required = NA dimensions = NA

(from Plate 3.14-12).

Final Design Elevations

25. Top of Dam = 64.0

Design High Water = 56.02

Emergency Spillway Crest = NA

Principal Spillway Crest = NA

Dewatering Orifice Invert = 52.35

Cleanout Elevation = 50

Elevation of Upstream Toe of Dam or Excavated Bottom of "Wet Storage Area" (if excavation was performed) = 50.0

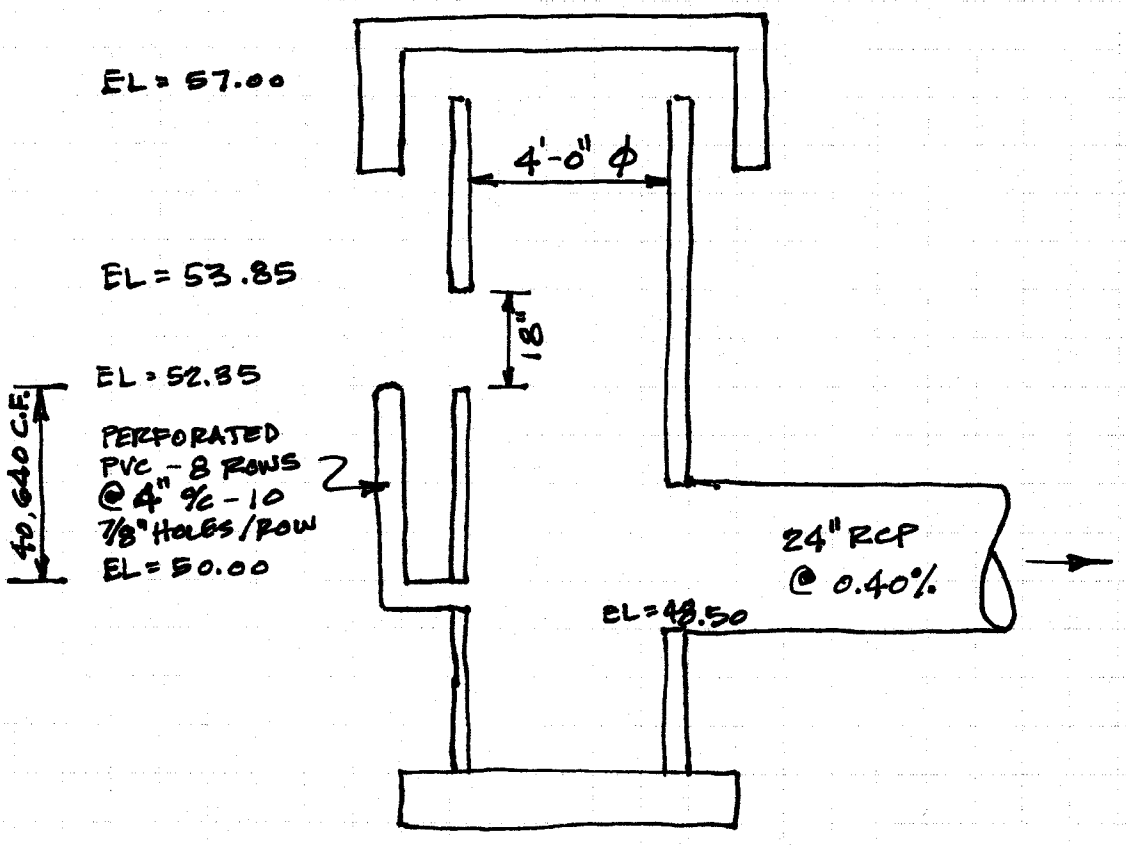
25YR Permanent BMP

Peak Inflow - 114 cfs
Peak Outflow - 15.56 cfs
Peak Elev - 56.02

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

Subject BALL METAL
BMP RISER DIAG.
Computed By MRG Checked By

Project No. 95094-03
Client BALL CORP.
Date Sheet No.



RESPONSE TO ENVIRONMENTAL DIVISION REVIEW COMMENTS
PLAN SP-82-97 - BALL METAL EXPANSION
SEPTEMBER 16, 1997

Pursuant to the review comments of August 29, 1997 and our discussion yesterday with Darryl Cook, we submit the following information in sequence with your comments:

1. Sheet C-12 is revised as requested.

   Attachment "A" - Please find our revised Ball Metal Expansion Construction Narrative Plan dated September 16, 1997, which has been put onto sheet C-12 attached.

2. The orifice at elevation 50.0 was sized to provide for water quality extended draw draw down over 24 hours for .93 acre feet and a 1.4 foot depth at outlet using Figure 6 - 3 of attached document "B". The result is a requirement six square inches per row which mean 10 - 7/8 inch diameter holes at 0.601 square inches per hole are required which establishes the requirement for an 8 inch riser and drain and valve.

3. See Attachment "A" - On-site dry detention basin #1 conversion from temporary to permanent is as follows:

   - The steel plate with 6 inch diameter fernco fitting and 8 inch perforated pipe are replaced with the 18 inch PVC tee for the permanent orifice protection.
   - The plug is removed from the 8 inch PVC drain at elevation 48.6.
   - See attached.

4. Provided for now in Attachment "A".

5. Conservation easements will be provided at time when the temporary ~~detention~~ sediment basin on Colonial Williamsburg land is inactivated and the permanent system activated.

6. Provided herewith at Attachment "C" and see Drawing C-3 Drainage Area Map.

7. Provided at Attachment "A" and see Drawing C-16.

8. Done see Drawing C-13 attached.

Provided herewith are drawings C-3, C-3 Drainage Area Map 12,13,14,15,16.

Revised to show changes, additions and notations resulting form our meeting of September 15, 1997.

BALL METAL EXPANSION CONSTRUCTION NARRATIVE PLAN
REVISED SEPTEMBER 16, 1997

This process is designed to facilitate successful erosion and sediment control and allow continuous construction operations while Ball Metal remains in continuous operation.

STEPS:

1. Install all inlet protection, silt fences, tree protection elements.

2. Install diversion ditch, temporary sediment trap and stilling basin on the Colonial Williamsburg sites.

3. Clear the Endeavor Drive access road and install construction entrance and begin clearing and grubbing on the 11 acre Colonial Williamsburg site with specific emphasis on area of temporary siltation basin #2 and the 42" RCP.

4. Continue clearing on the Endeavor Drive and south roadway to the east side of site and the area of detention basin #1. Stop clearing on the Ball Site and combine on the Colonial Williamsburg site until temporary siltation basin #1 is functional and the wet storage capacity has been provided for.

5. Strip topsoil and place at stockpiles with appropriate silt fences.

6. Begin excavation at the new Ball site permanent detention basin #1 and filling the Colonial Williamsburg site at the temporary detention basin #2. Start placing fill at a point approximately 200 feet south of the head wall of the 32" X 54" drain and in the existing drainage swale. Continue filling to elevation 60 and temporary siltation basin complete.

7. Concurrent with 6 above install the 42 inch RCP storm drain across the Colonial Williamsburg fill site from the existing storm water system to the stilling basin.

   Install 24" RCP and structures from Riser in Temporary siltation basin #1 to JB #1 in Temporary Siltation Basin #2.

   Install all associated drainage structures from the permanent detention basin #1 such that storm water is drained through the new permanent piping system. Block off the existing 27 inch diameter RCP from the existing curb inlet on the Ball site so that roof and parking lot storm water flows through the new 24 inch diameter RCP to permanent detention basin #1. Accordingly treated water from the western portion of the site will flow to the 42-inch diameter RCP and onto the stilling basin.

   A. The riser for the permanent basin functions during the initial period as a sediment basin.

   B. While serving as a sediment basin the steel plate with the 6 inch diameter orifice at elevation 52.35 with 8 inch perforated polyethylene serves as the temporary dewatering system for the dry portion.

   C. The 8 inch PVC at invert 48.6 with 8 inch gate valve is for emergency drain down of the basin and remains closed.

   D. When the temporary sediment basin is converted to the permanent dry basin the steel plate and elements in "B" above are removed and replaced with 18 inch PVC tee orifice. This tee serves as the trash protective device.

ATTACHMENT "A"

E. While functioning as a temporary sediment basin the 8 inch diameter opening of the perforated pipe noted at "C" above is temporarily stopped up. Conversion from temporary to permanent will occur when the construction work is completed and all grass and permanent finishes are installed and functioning. And approved by James City County.

F. Upon conversion the temporary plug noted at "E" above is removed.

G. At this time the dry detention basin will fill up from elevation 50 to elevation 52.85 and the perforations in the riser are calculated to require 24 hours for the retained water to return to elevation 50 or eventually a dry state.

H. The PVC tee on the 18 inch diameter orifice serves as its trash rack. The 18 inch diameter by 30 inch perforated sleeve over the 8 inch diameter PVC low drain pipe serves as its trash rack and protection.

8. Install the temporary riser and anti vortex device on the junction box #1 which is the uphill end of the 42 inch diameter RCP storm drain across the Colonial Williamsburg property. Temporarily block the 42 inch diameter uphill opening in junction box #1, which is the opening for the future connection to the existing 42 inch diameter outfall from junction box #5 at the existing Ball site. Extend 2 - 8'-0" sections of the 34x52 RCP so that the new road can be built. Provide temporary erosion protection at the end of the 32x54 pipe in the existing swale. Accordingly the storm water from the eastern portion of the existing Ball site will flow into the temporary detention basin and then be discharged out the 8" diameter opening of the 10" perforated HDPE pipe into the temporary riser and junction box #1 and the 42 inch diameter RCP leading to the stilling basin.

9. When both temporary siltation basins #1 and #2 are functioning adn approved by James City County, clearing, grubbing and excavation of the remaining portions at the Ball Site.

10. Complete new road from Endeavor Drive and along the south boundary of the site to include the southeast loading dock and access ramps in order to allow plant operations to use this access while construction proceeds and eliminates the direct road access from Route 60 which then becomes the construction entry.

    A. After the roads are paved and the Endeavor Drive access activated and all permanent grass, paving, landscape, etc. on east of site is functional to county approval , contractor will build junction box #5 as shown relocated on these drawings and then install the 60 L.F. of 42 inch diameter RCP between junction box #5 and junction box #1 and remove the temporary riser and install the final manhole extension and grate top. Finally fill in the temporary detention basin and bring the grades up to the finish grades shown.

    B. To accomplish the later, contractor may stock pile the necessary material on the Colonial Williamsburg site.

10. Excavation and filling along Route 60 at the north side of the existing site will be done entirely on the Ball site which drains through the temporary detention basin #1.

11. When all grading work and construction is complete and grass has taken hold, contractor will remove all temporary sediment control elements, fill all ruts and any scoured areas and leave the site finished graded and landscaped.

ATTACHMENT "A"

BOARD OF DIRECTORS

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ROGER PLATT
NATIONAL REALTY COMMITTEE

HEADQUARTERS

8737 COLESVILLE ROAD
SUITE L-105
SILVER SPRING, MD 20910
(301) 589-1390
(301) 589-3745 FAX

THOMAS R. SCHUELER
EXECUTIVE DIRECTOR

RICHARD A. CLAYTOR, JR., P.E.
PRINCIPAL ENGINEER

WHITNEY E. BROWN
SR. ENVIRONMENTAL ANALYST

April 7, 1997

Norman Mason
Langley and McDonald, P.C.
201 Packets Court
Williamsburg, VA 23185

Dear Mr. Mason:

Enclosed are the pages from the Denver Urban Drainage Manual. Unfortunately, the charts enclosed only apply to a 12-hour detention time for a standard perforated riser and a 40-hour detention time for a gravel-encased perforated riser. I have included the name and number of a contact at the Denver Urban Drainage and Flood Control District who may have some information about sizing for different drainage times.

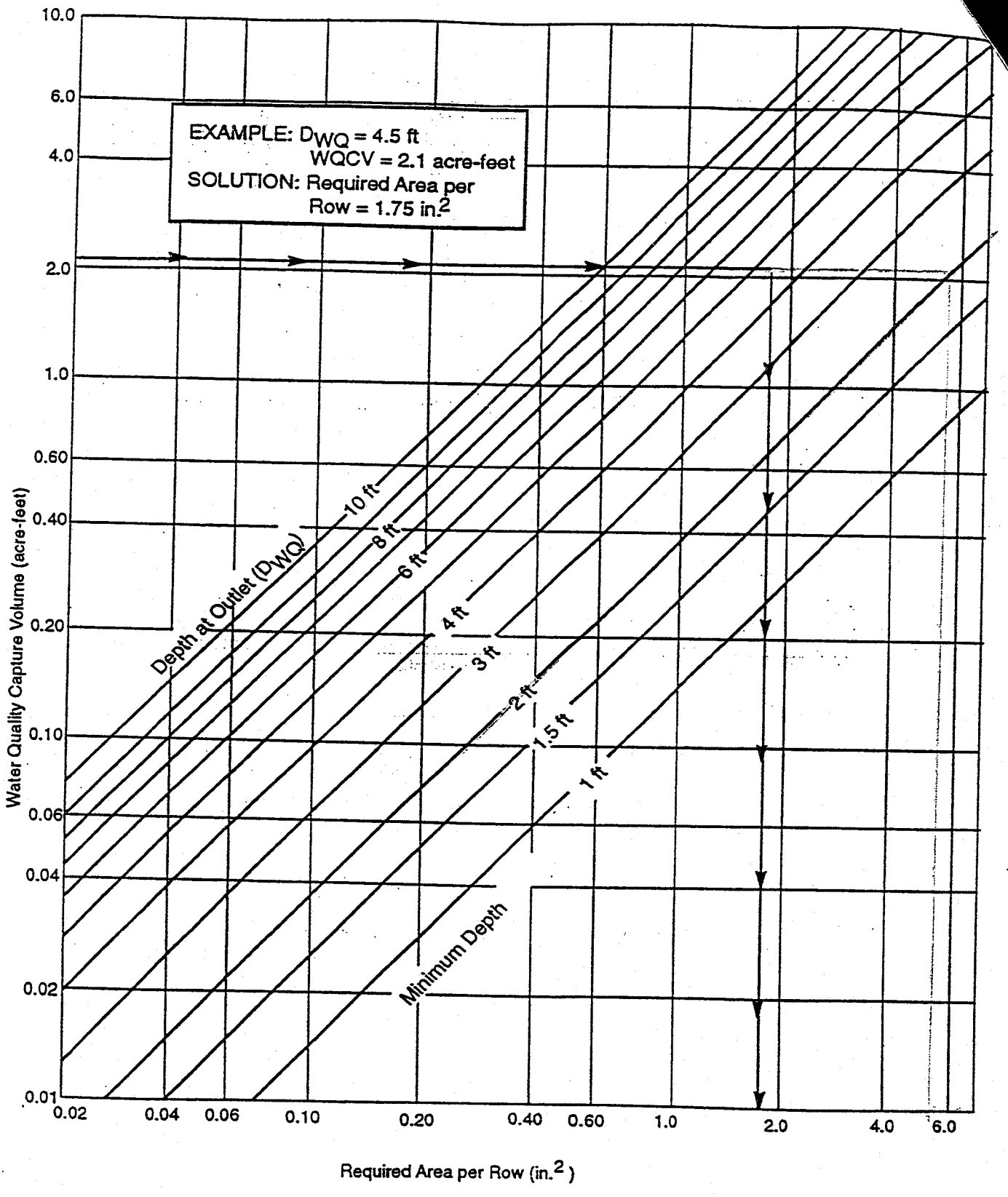
One point to take into account with these charts is that the Water Quality Capture Volume referred to in the Denver manual is different than the Water Quality Volume discussed in the Center's workshop. The Water Quality Capture Volume only includes the Extended Detention Volume in a wet pond, not the permanent pool volume.

If you have any questions, please give me a call at the above number. I hope this information is useful.

Sincerely yours,

Deb Caraco
Center for Watershed Protection

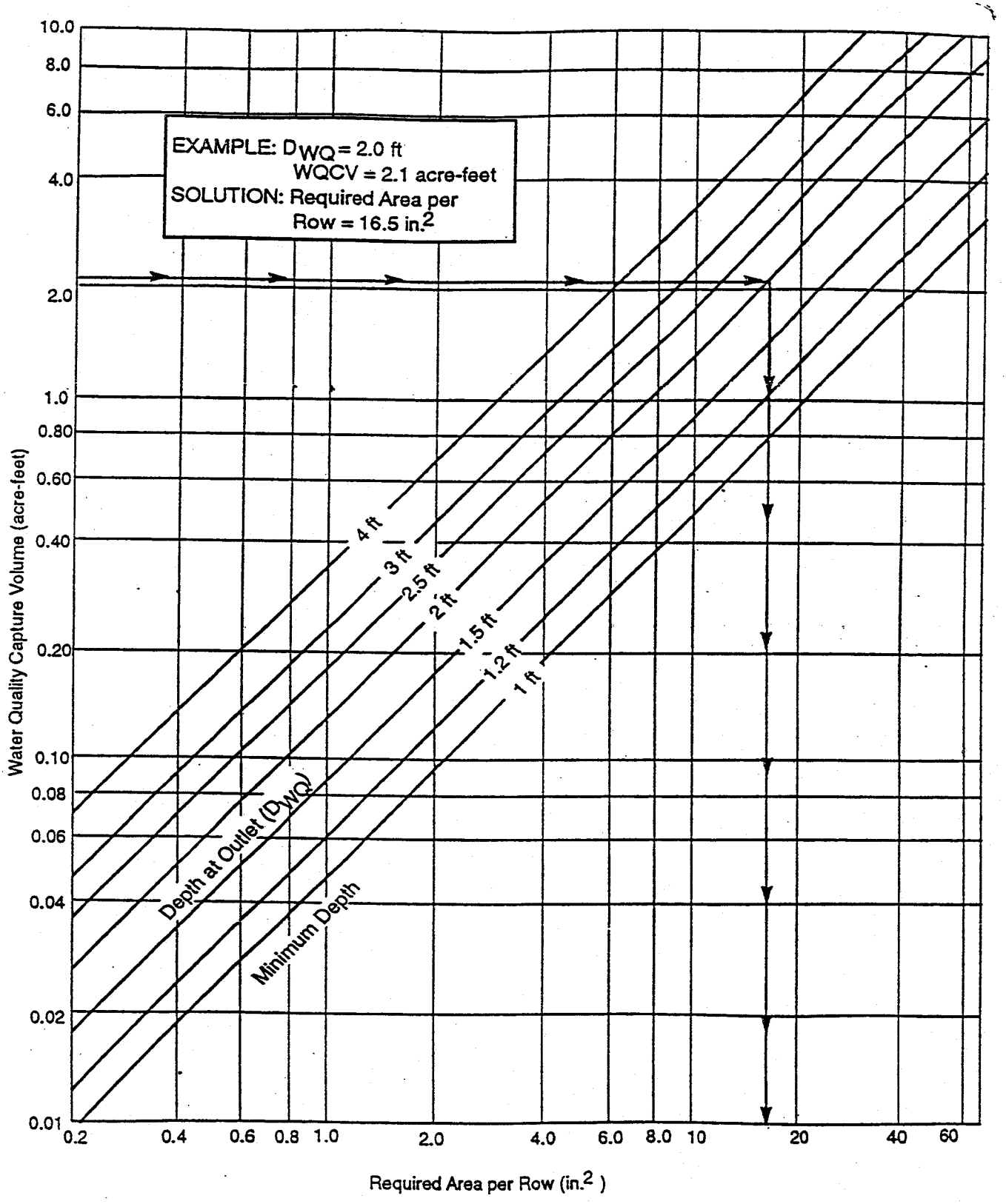
ATTACHMENT "B"



Source: *Douglas County Storm Drainage and Technical Criteria*, 1986.

FIGURE 5-3. WATER QUALITY OUTLET SIZING: DRY EXTENDED DETENTION BASIN WITH A 40-HOUR DRAIN TIME OF THE CAPTURE VOLUME

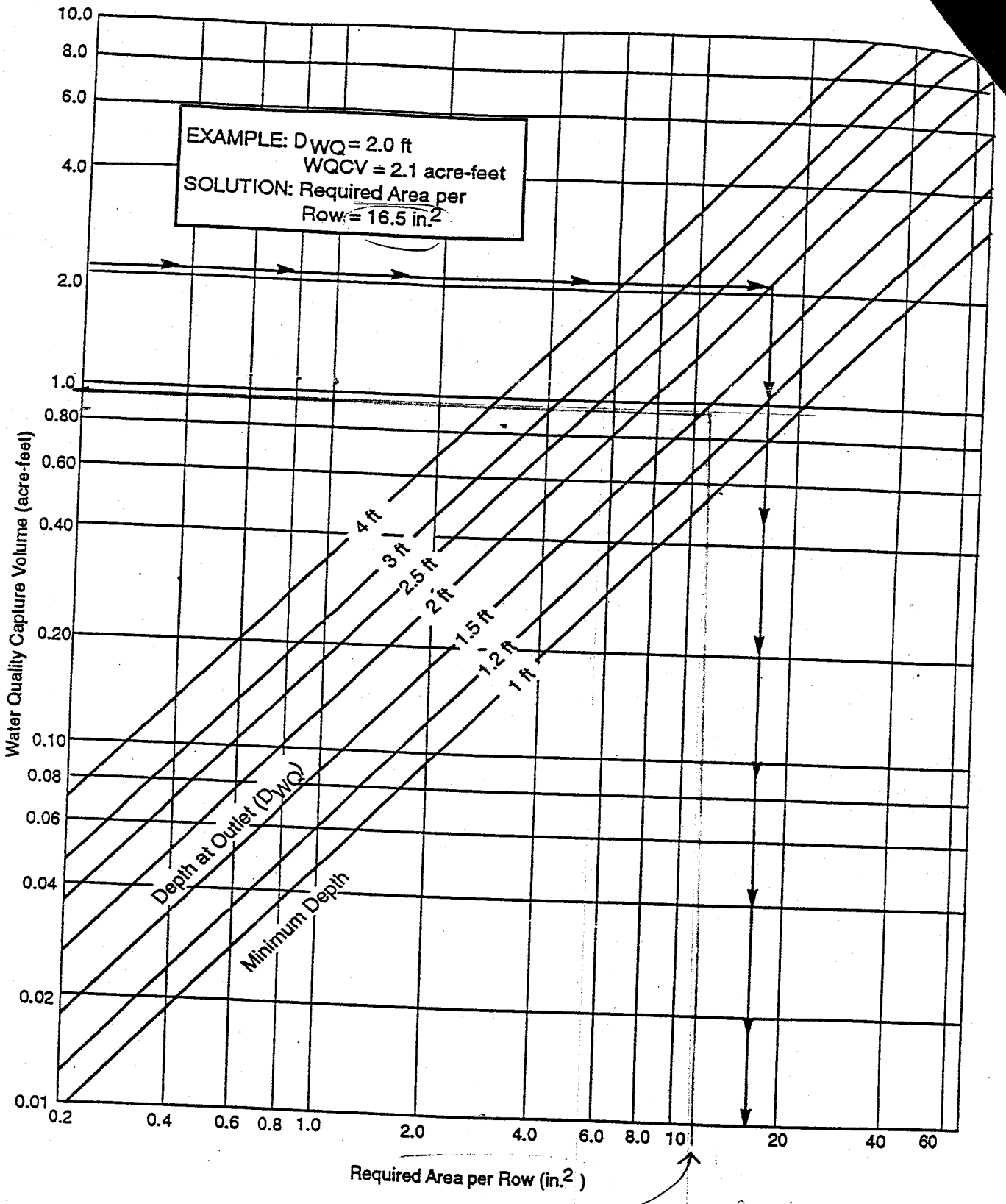
ATTACHMENT "B"



Source: *Douglas County Storm Drainage and Technical Criteria*, 1986.

FIGURE 6-3. WATER QUALITY OUTLET SIZING: WET EXTENDED DETENTION BASIN RETENTION POND WITH A 12-HOUR DRAIN TIME OF THE CAPTURE VOLUME

ATTACHMENT "B"



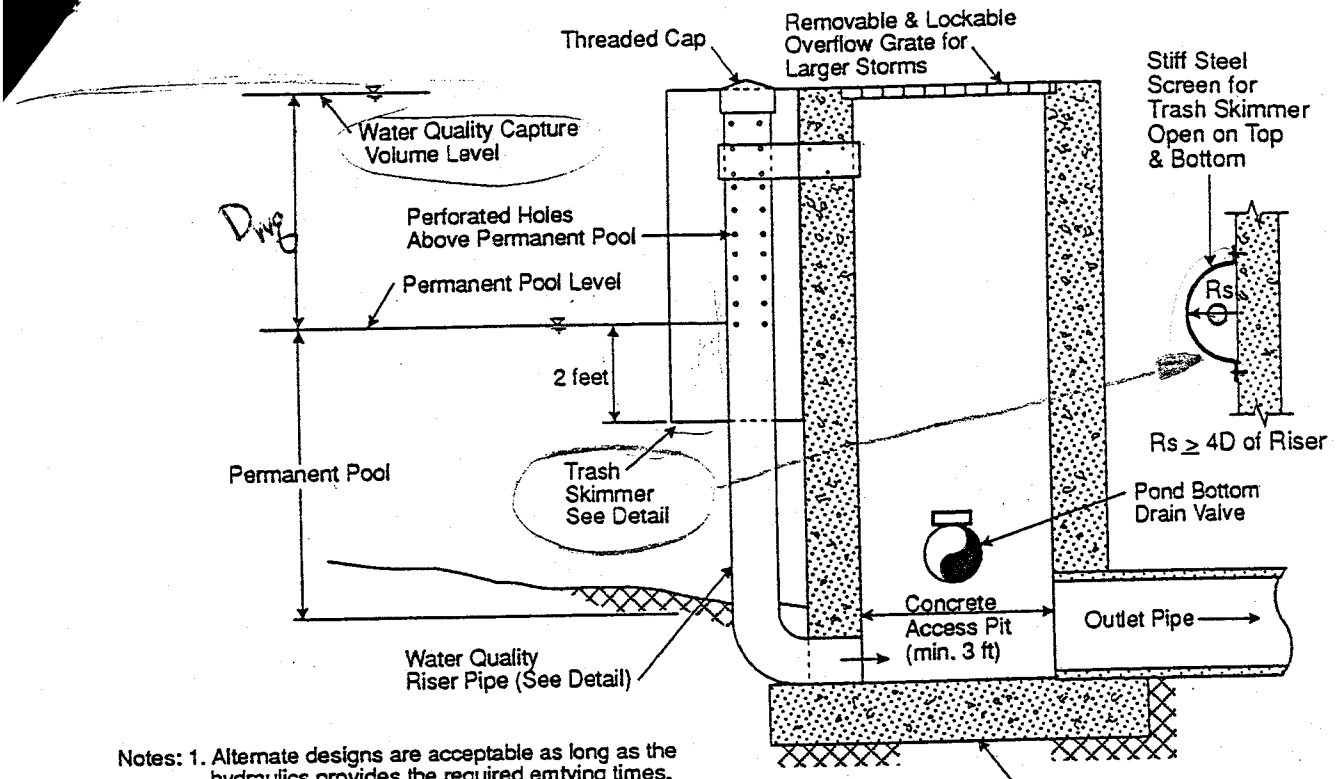
Source: *Douglas County Storm Drainage and Technical Criteria*, 1986.

12÷2=to get 24hr drain down
= 6 SQ IN/ROW.

Rev. 3-1-1994
UDFCD

FIGURE 6-3. WATER QUALITY OUTLET SIZING: WET EXTENDED DETENTION BASIN RETENTION POND WITH A 12-HOUR DRAIN TIME OF THE CAPTURE VOLUME

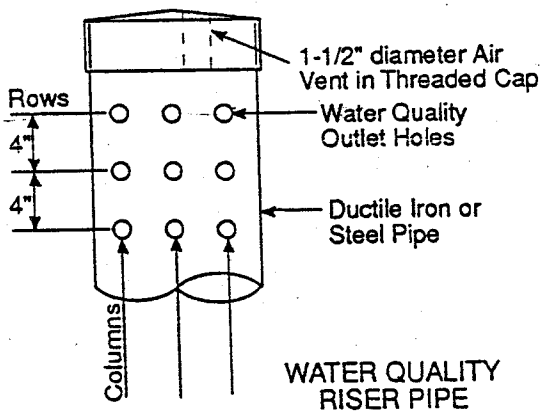
ATTACHMENT "B"



Notes: 1. Alternate designs are acceptable as long as the hydraulics provides the required emtying times.
2. Use trash skimmer screens of stiff green steel material to protect perforated riser. Must extend from the top of the riser to 2 ft. below the permanent pool level.

OUTLET WORKS
NOT TO SCALE

Notes: 1. Minimum number of holes = 8
2. Minimum hole diameter = 1/8" Dia.



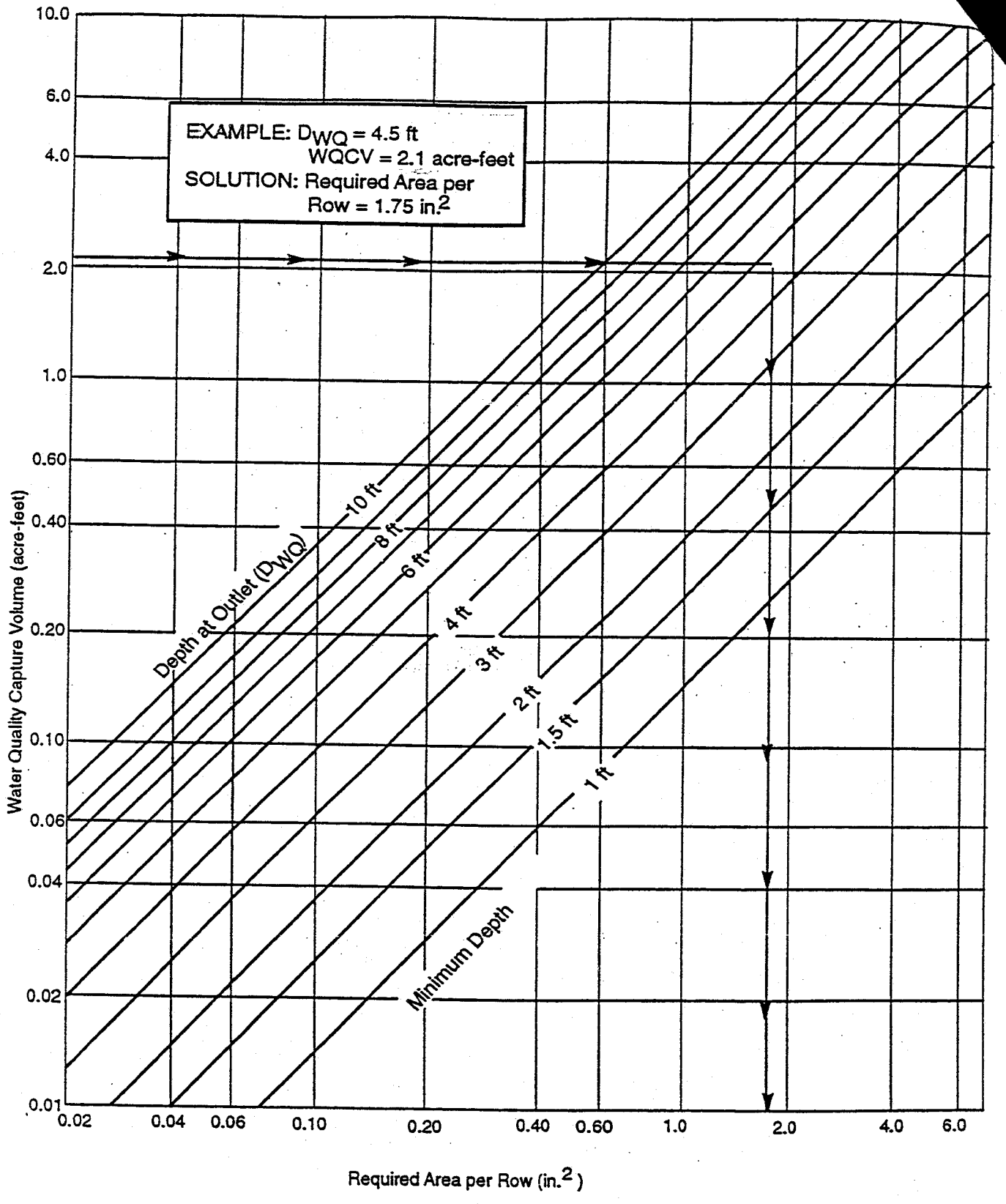
WATER QUALITY RISER PIPE
NOT TO SCALE

Maximum Number of Perforated Columns				
Riser Diameter (in.)	Hole Diameter, inches			
	1/4"	1/2"	3/4"	1"
4	8	8	--	--
6	12	12	9	--
8	16	16	12	8
10	20	20	14	10
12	24	24	18	12

Hole Diameter (in.)	Area (in. 2)
1/8	0.013
1/4	0.049
3/8	0.110
1/2	0.196
5/8	0.307
3/4	0.442
7/8	0.601
1	0.785

FIGURE 6-2. WATER QUALITY OUTLET FOR A WET EXTENDED DETENTION BASIN

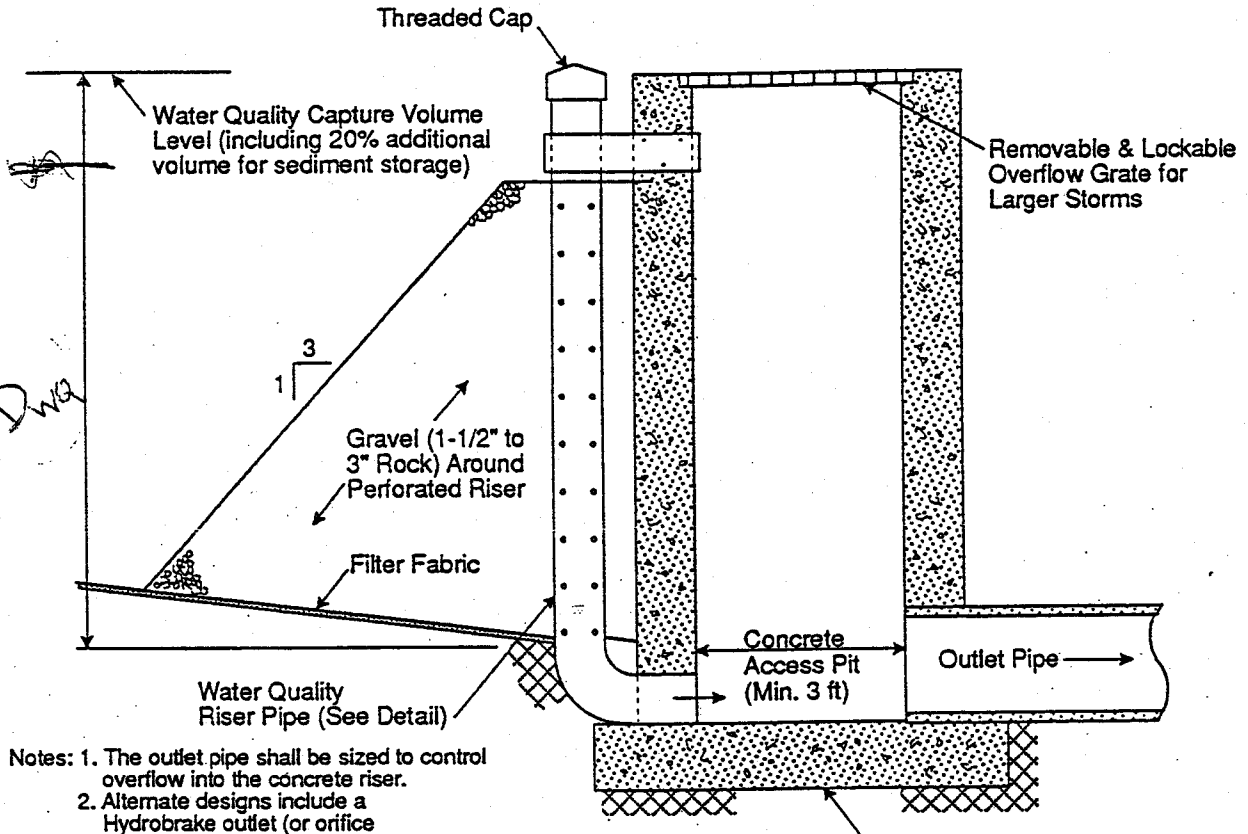
ATTACHMENT "B"



Source: *Douglas County Storm Drainage and Technical Criteria*, 1986.

FIGURE 5-3. WATER QUALITY OUTLET SIZING: DRY EXTENDED DETENTION BASIN WITH A 40-HOUR DRAIN TIME OF THE CAPTURE VOLUME

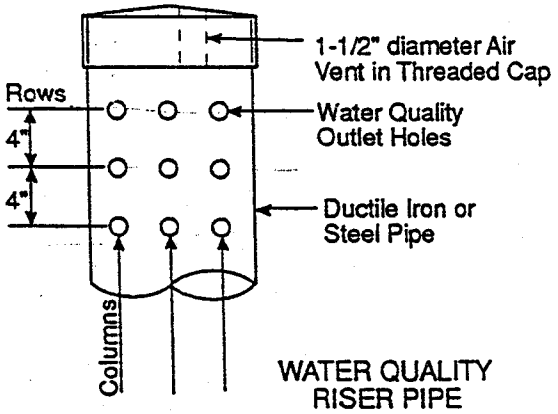
ATTACHMENT "B"



Notes: 1. The outlet pipe shall be sized to control overflow into the concrete riser.
2. Alternate designs include a Hydrobrake outlet (or orifice designs) as long as the hydraulic performance matches this configuration.

OUTLET WORKS
NOT TO SCALE

Notes: 1. Minimum number of holes = 8
2. Minimum hole diameter = 1/8" dia.



WATER QUALITY RISER PIPE
NOT TO SCALE

Maximum Number of Perforated Columns				
Riser Diameter (in.)	Hole Diameter, in.			
	1/4"	1/2"	3/4"	1"
4	8	8	--	--
6	12	12	9	--
8	16	16	12	8
10	20	20	14	10
12	24	24	18	12

Hole Diameter (in.)	Area of Hole (in.^{2})
1/8	0.013
1/4	0.049
3/8	0.110
1/2	0.196
5/8	0.307
3/4	0.442
7/8	0.601
1	0.785

FIGURE 5-2. WATER QUALITY OUTLET FOR A DRY EXTENDED DETENTION BASIN

ATTACHMENT "B"

Contact: Ben Urbanus: (303) 455-7880

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

PHASE 2
SP-82-97

Database Inventory No. (if known): SC 005

Name of Facility: BALL METAL CONTAINER DIV BMP No.: ____ of ____ Date: 04/04/01

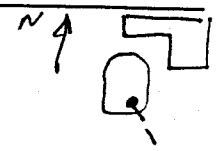
Location: SW Corner of site near security gate

Name of Owner: BALL METAL CONTAINER

Inspector: SJ Thomas, MD Woolson

Type of Facility: Dry Detention

Weather Conditions: Cloudy, Cool, 50's



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

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

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

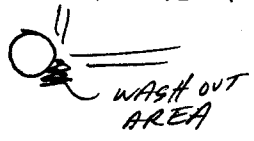
Facility Item	O.K.	Routine	Urgent	Comments
Embankments and Side Slopes:	EXCAVATED POND, RECT SHAPE			
Grass Height	X			
Vegetation Condition	X			
Tree Growth	X			Some D/S ALONG FENCE.
Erosion	X			Some @ Riser
Trash & Debris	X			None
Seepage				
Fencing or Benches				
Interior Landscaping/Planted Areas:	☒ None ☐ Constructed Wetland/Shallow Marsh ☐ Naturally Established Vegetation			
Vegetated Conditions	X			Grassed Interior, Low Cut
Trash & Debris	X			Concrete Trickle Channels
Floating Material	X			(2)
Erosion	X			~~Some @ Riser~~
Sediment	X			Some @ Riser.
Dead Plant	N/A			
Aesthetics				
Other				
Adjacent Building, Parking + Roadways				

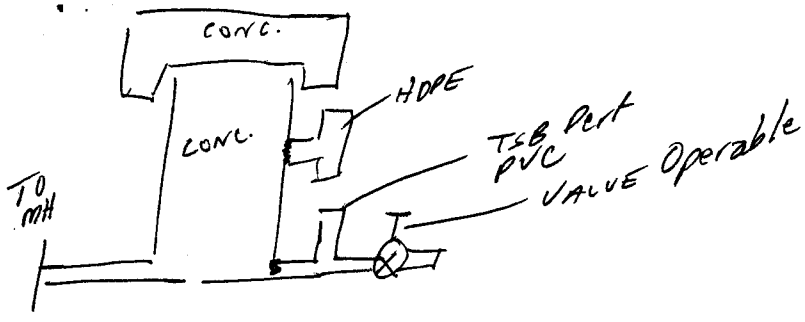
Facility Item	O.K.	Routine	Urgent	Comments
Water Pools ☐ Permanent Pool (Retention Basin) ☐ Shallow Marsh (Detention Basin) ☒ None (Detention Basin)				
Shoreline Erosion	X			None
Algae	X			
Trash & Debris	X			
Sediment	X			
Aesthetics	X			Well-Maintained.
Other				
Inflow Stuctures (Describe Locations): 2 Inflows Pipes (EAST); 1 INFLOW PAVED CHANNEL (South)				
Condition of Structure	X			
Erosion	X			
Trash and Debris	X			
Sediment		X		Minor @ South Channel.
Aesthetics	X			
Other				
Principal Flow Control Structure - Intake, Riser, etc. (Describe Location): SE Corner RCP Riser w/ Con. CAP				
Condition of Structure	X			(TSB Dewater Device Still
Corrosion	X			Present but Clogged, Part PVC)
Trash and Debris	X			No Need to Remove)
Sediment	X			SEDIMENT 2" Deep @ Riser Base
Aesthetics	X			Good Condition.
Other	X			HDPE Low Flow Control
Principal Outlet Structure - Barrel, Conduit, etc. : 30" RCP to MH				
Condition of Structure	X			
Settlement	X			
Trash & Debris	X			MH deep, clean IS-1 shapings
Sediment	X			
Erosion	X			
Other	X			DI GATE VALVE; opened + Closed OK
Emergency Spillway (Overflow): None; Riser Controls high flow				
Vegetation				
Lining				
Erosion				
Trash & Debris				
Other				
BARREL TO MH-1 @ ROAD				

Facility Item	O.K.	Routine	Urgent	Comments
Nuisance Type Conditions:				
Mosquito Breeding	X			None.
Animal Burrows	X			None.
Graffiti	X			Secured Facility.
Other	X			
Surrounding Perimeter Conditions:				
Land Uses	X			Building, Road & Parking.
Vegetation	X			Well-Maint. Adj. Areas
Trash & Debris	X			
Aesthetics	X			Looks Good & clean
Access /Maintenance Roads or Paths	X			Access Paved. Thru James River Comm. Park @ Security Gate.
Other				

Remarks:

- other than TSB Dewatering Orif Left in place (it is clogging & removal not necess), Looks Great
- Minor erosion @ Riser due to flows at end of paved 'trickle' channel. Continue to watch around riser





Overall Environmental Division Internal Rating: 4/5

Signature: Scott J. Thomas P.E. **Date:** 08/08/01

Title: Civil Engineer, Environmental Div.

SWMProg\BMP\CoInspProg\DetRet.wpd

WATERSHED	SC	MAINTENANCE PLAN	No	CTRL STRUC DESC	RCP Riser
BMP ID NO	005	SITE AREA acre	31.22	CTRL STRUC SIZE inches	48
PLAN NO	SP-82-97	LAND USE	Gen Industrial	OTLT BARRL DESC	RCP Barrel
TAX PARCEL	(59-02)(01-18)	old BMP TYP	Dry Pond	OTLT BARRL SIZE inch	30
PIN NO	5920100018	JCC BMP CODE			
CONSTRUCTION DATE	12/1/1997	POINT VALUE	6	EMERG SPILLWAY	No
PROJECT NAME	Ball Metal Container Expansion			DESIGN HW ELEV	56.53
FACILITY LOCATION	8935 Pocahontas Trail (SW of Building)			PERM POOL ELEV	na
CITY-STATE	Williamsburg, Va. 23185	SVC DRAIN AREA acres	16.7	2-YR OUTFLOW cfs	9.44
CURRENT OWNER	Ball Metal Container			10-YR OUTFLOW cfs	13.88
OWNER ADDRESS	P.O. Box 5000			REC DRAWING	Yes
OWNER ADDRESS 2		SERVICE AREA DESCRI	Industrial Plant area & Parking		
CITY-STATE-ZIP CODE	Broomfield, CO 80038	IMPERV AREA acres	11.64	CONSTR CERTI	No
OWNER PHONE		RECV STREAM	UT of Wood Creek		
MAINT AGREEMENT	No	EXT DET-WQ-CTRL	Yes	LAST INSP DATE	4/4/2001
EMERG ACTION PLAN	No	WTR QUAL VOL acre-ft	0.93	INTERNAL RATING	5
		CHAN PROT CTRL	No	MISC/COMMENTS	
		CHAN PROT VOL acre-ft	0	Located SW corner of site west of building. Prev park area near secrity gate.	
		SW/FLOOD CONTROL	Yes		
		GEOTECH REPORT	No		

Get Last BMP No

Return to Menu

Ball Corporation
8935 Pocahontas Trail
Williamsburg, VA 23185

Dennis L. Lutz
Administrative Manager
Metal Beverage Container Operations

Plant (757) 887-2061
Office (757) 888-1642
Fax (757) 888-1669

Metal Beverage
Container
Operations
Williamsburg

9/29/99
DATE

JAMES CITY COUNTY
ENVIRONMENTAL DIVISION
VISITOR'S NAME

GERALD LEWIS
JAMES CITY COUNTY
COMPANY

Welcome to our plant!

For safety and security reasons, we ask that you please abide by the following rules:

1) All visitors entering our facility must sign the visitor log at the security guard station or at the receptionist's desk.

2) Upon leaving the plant, all visitors should sign out on the visitor's log and return safety glasses.

3) Eye and hearing protection can be obtained from the receptionist or security guard, and is required in all production areas throughout the plant.

4) Be watchful of lift trucks. Please give them the right of way. Slippery floor surfaces are common so watch your footing.

5) Smoking is prohibited.

6) You must be accompanied by a Ball employee at all times while in our plant unless otherwise authorized.

7) Continuous blast of horn or signaling of fire alarm horns and strobe lights means evacuate building.

Ball Metal Beverage Container Operations
8935 Pocahontas Trail • Williamsburg, VA 23185

(EMERGENCY EXIT MAP ON BACK SIDE)

42010 (4/99) 904070-2/1

SC 005

BALL METAL CONTAINER (EXPANSION)
SP-82-97

BMP #1 DRY DET POND

GPIN 5920100018

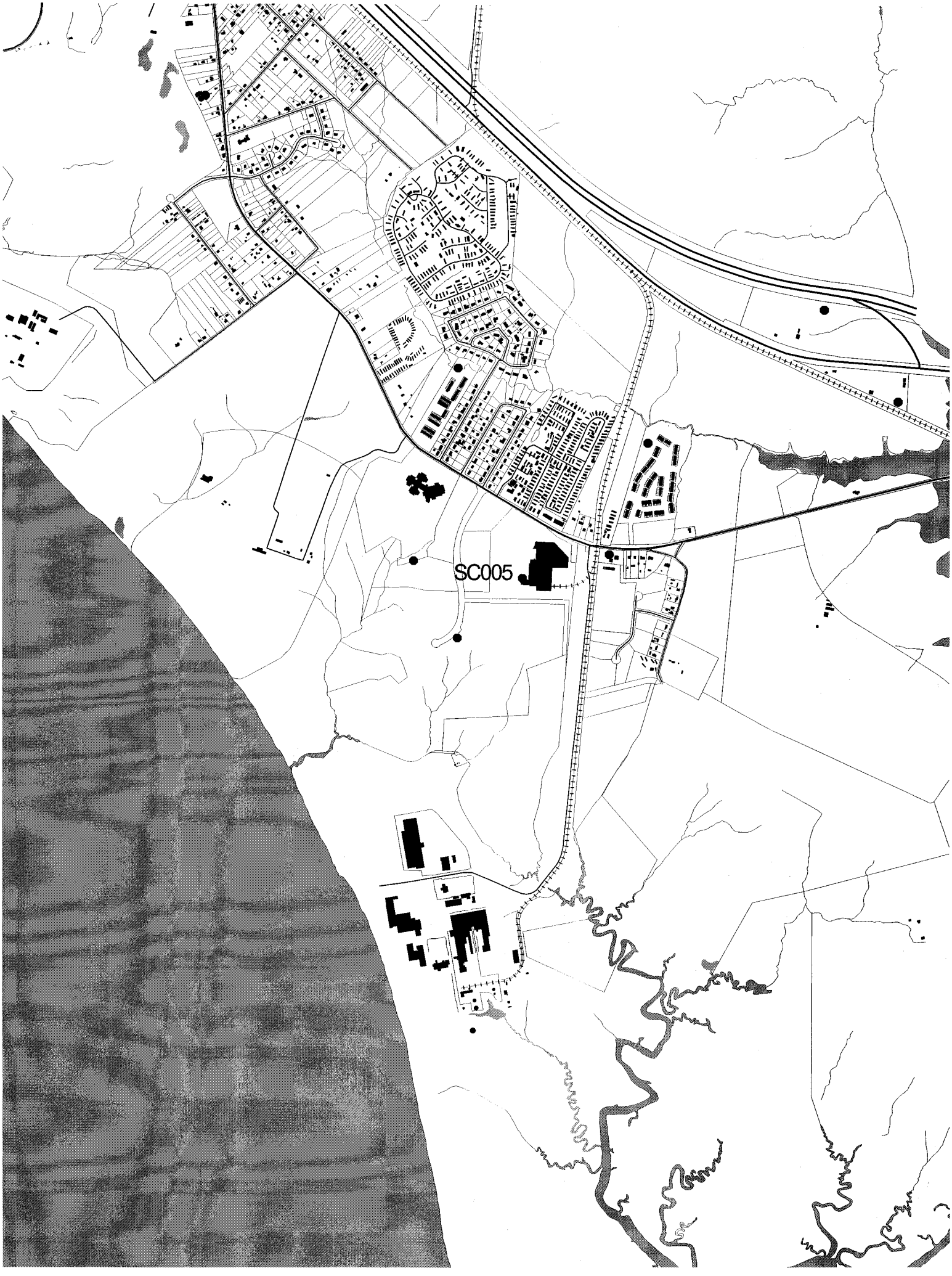
LOC: 8935 POCHAHANTAS TRAIL
(SW CORNER OF SITE, WEST OF BUILDING)
Former Parking Area

Ball Metal Container
PO Box 5000
Broomfield, Co 80038

31.224 AC.
M2

233,000
REDUCE TO $30,000

CONST: 12/01/97


SC005