



ENGINEERING

PLANNING

STORMWATER DETENTION ANALYSIS *SURVEYING*
PREPARED BY: BAX ENGINEERING CO., INC.
PHEASANT POINT CENTER -10' FALLON
BAX PROJECT NO. 96-7218
JANUARY 9, 1998 - revised March 24, 1998

INTRODUCTION

The tract of land is presently an undeveloped site located in the City of O'Fallon, Missouri. It is proposed that 36.95 acres of the 121.58 acre tract be developed. Two stormwater detention basins, labeled WEST and EAST will be constructed. The basins will provide detention for the development when considering the increased runoff for the developed site. The storage volume and outflow rates shall be proportioned to insure that the peak rate of runoff leaving the site under post-developed conditions is less than or equal to the peak rate of runoff leaving the site under pre-developed conditions for the 25 year-20 minute design storm. The basins were also analyzed for the 2, 15 and 100 year frequency - 20 minute duration design storms.

GENERAL SITE DATA AND RUNOFF CALCULATIONS

The pre-developed P.I. factors to be used for the analysis are:

25 year - 5% impervious 2.31 cfs/ac.

The post-developed P.I. factors to be used for the analysis are:

25 year -	5% impervious	2.31 cfs/ac.
	50% impervious	3.53 cfs/ac.*
	65% impervious	3.94 cfs/ac.*
	75% impervious	4.18 cfs/ac.*
	100% impervious	4.75 cfs/ac.

* interpolated



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TIME OF CONCENTRATION

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WEST

Flows will travel approximately 230 feet overland to CI105 then 450 feet via stormpipe to the detention basin. Time of concentration is estimated as follows:

Overland L = 230 feet
Elevation difference = 492 - 490 = 2 feet
T(overland) = 1.28 minutes : See figure 1

Stormpipe L = 450 feet
Estimated 7 feet/second
T(stormpipe) = 1.07 minutes

Total Time: 2.35 min. >> Use 2 minutes

EAST

Flows will travel approximately 200 feet overland to CI111 then 820 feet via stormpipe to the detention basin. Time of concentration is estimated as follows:

Overland L = 200 feet
Elevation difference = 490 - 489 = 1 feet
T(overland) = 1.40 minutes : See figure 1

Stormpipe L = 820 feet
Estimated 7 feet/second
T(stormpipe) = 1.95 minutes

Total Time: 3.35 min. >> Use 3 minutes



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BASIN PEAK INFLOWS

WEST

Flows have been estimated from the drainage area map.
25 year-20 minute storm

$$6.99 \times 4.75 = 33.20 \text{ cfs}$$

2 year-20 minute storm:	16.71 cfs
15 year-20 minute storm:	29.91 cfs
100 year-20 minute storm:	42.50 cfs

EAST

Flows have been estimated from the drainage area map.
25 year-20 minute storm

$$11.54 \times 4.75 = 58.19 \text{ cfs}$$

2 year-20 minute storm:	29.28 cfs
15 year-20 minute storm:	47.16 cfs
100 year-20 minute storm:	74.48 cfs

REQUIRED ATTENUATION

$$= \text{TRACT AREA} \times [\text{PI}(\text{post}) - \text{PI}(\text{pre})]$$

25 year-20 minute storm

(100)	28.94	$\times [4.75 - 2.31]$	=	70.61 cfs
(75)	2.03	$\times [4.18 - 2.31]$	=	3.80 cfs
(50)	0.29	$\times [3.53 - 2.31]$	=	0.35 cfs

$$\text{Total} = 74.76 \text{ cfs}$$



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STORM ROUTING CALCULATIONS AND RESULTS

A computer program was used in routing the design 20 minute storms through the basin. As found in the routing calculations, the results are as follows:

20 MIN STORM	CALCULATED RELEASE RATE	PEAK ELEVATION	ATTENUATION PROVIDED
WEST			
2 YR	8.76 cfs	484.19	
15 YR	11.36 cfs	485.02	
25 YR	11.95 cfs	485.22	21.25
100 YR	42.50 cfs	486.25	
EAST			
2 YR	0.86 cfs	482.32	
15 YR	1.00 cfs	482.91	
25 YR	1.03 cfs	483.26	57.16
100 YR	74.48 cfs	483.98	
TOTAL ATTENUATION:			78.41
REQUIRED ATTENUATION:			74.76

As shown above, the combined attenuation of the basins is greater than the required attenuation for the development.



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CHECK 100 YEAR OVERFLOW (low-flow blocked) *SURVEYING*

WEST

$$\text{WIER FLOW : } Q = C \times L \times H \text{ (3/2)}$$

where 100-YEAR FLOW $Q = 42.50$ cfs
C = 3.32
L = 19.0 ft
H = 0.252 ft
sill = 486.00 ft
100 yr h/w = 486.25 ft

EAST

$$\text{WIER FLOW : } Q = C \times L \times H \text{ (3/2)}$$

where 100-YEAR FLOW $Q = 74.48$ cfs
C = 3.32
L = 12.56 ft (48" standpipe)
H = 0.483 ft
sill = 483.50 ft
100 yr h/w = 483.98 ft

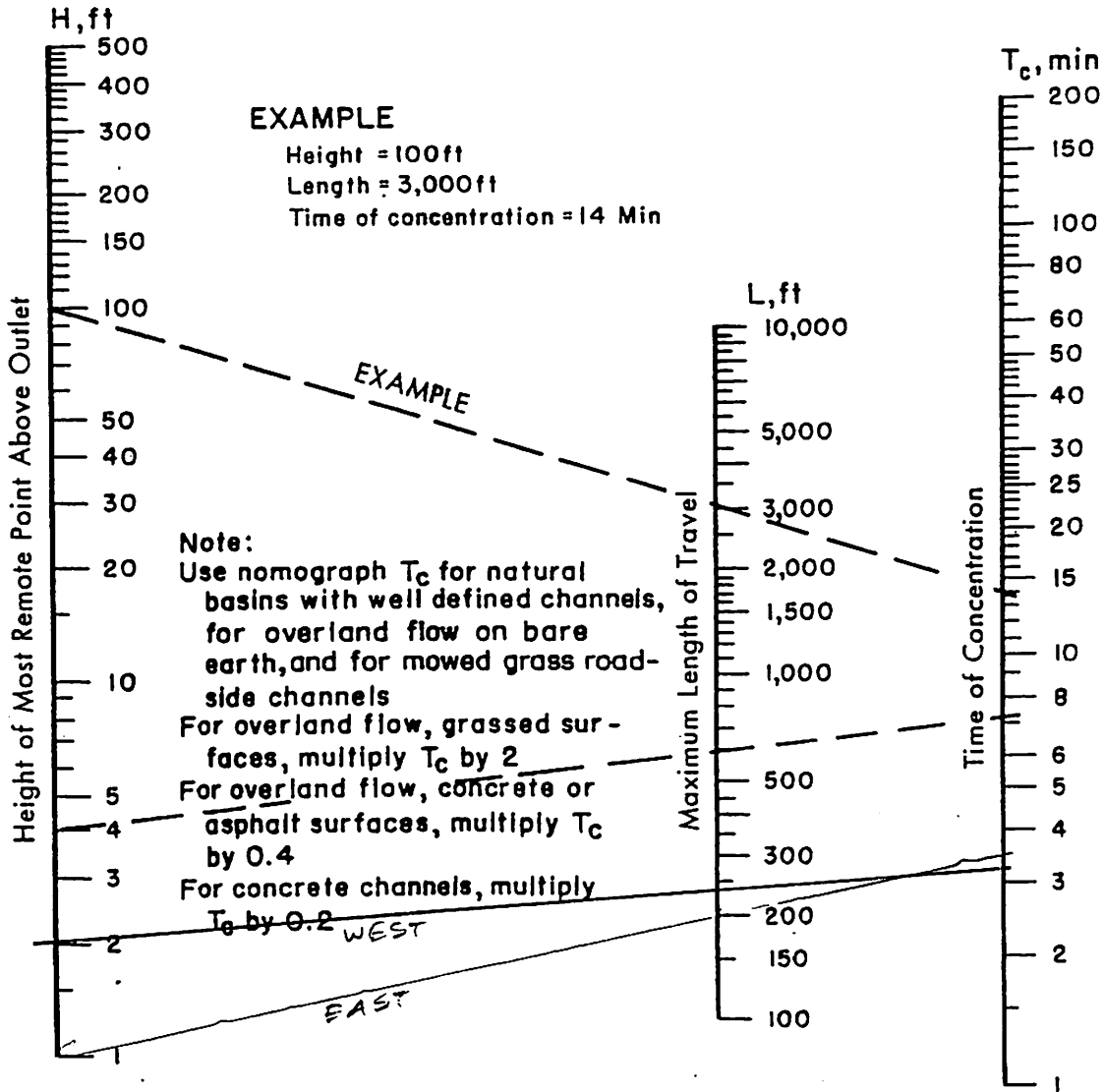
SUMMARY

WEST

25 year-20min H.W.	485.22
100 year-20min H.W.	486.25
Low Flow Slot	10" wide x 24" high
Low Flow Slot Elevation	482.00
Overflow Slot	19' wide
Overflow Slot Elevation	486.00
Top Of Berm	488.00

EAST

25 year-20min H.W.	482.32
100 year-20min H.W.	483.98
Low Flow Slot	3" wide x 6" high
Low Flow Slot Elevation	480.00
48" Overflow Standpipe Elevation	483.50
Top Of Berm	486.00



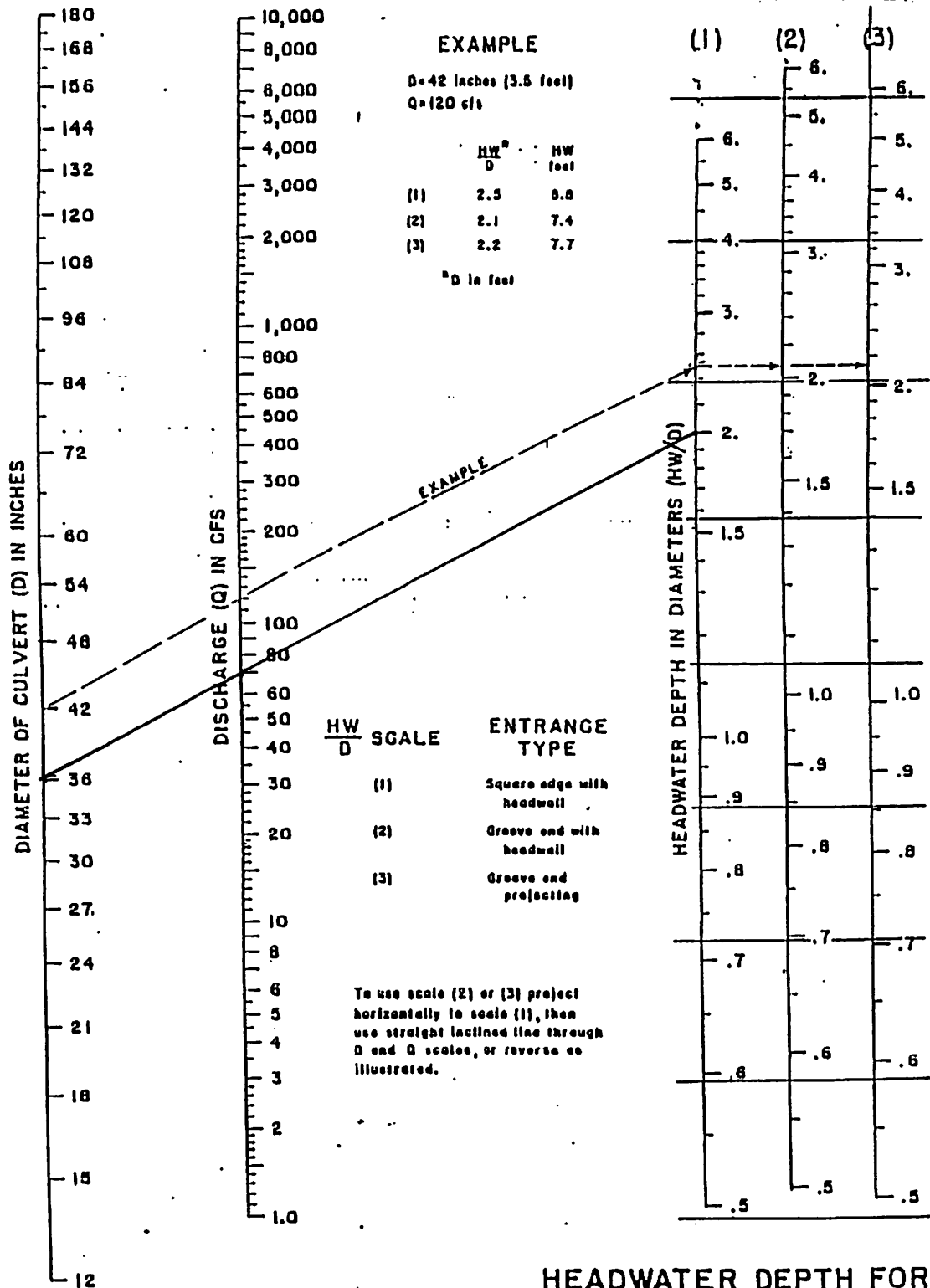
Based on study by P. Z. Kirpich,
 Civil Engineering, Vol. 10, No. 6, June 1940, p. 362

WEST $3.2 \times 0.4 = 1.28$

EAST $3.5 \times 0.4 = 1.40$



CHART 2.



HEADWATER DEPTH FOR CONCRETE PIPE CULVERTS WITH INLET CONTROL

HEADWATER SCALES 283
 REVISED MAY 1964

BUREAU OF PUBLIC ROADS JAN 1963

$36" \times 20 = 72" = 6'$
 $478 + 6 = 484 < 484.9$

PHEASANT POINT CENTER
DETENTION ANALYSIS EAST BASIN
BAX ENGINEERING CO., INC.
JANUARY 7, 1998

CALCULATED 03-24-1998 13:42:24
DISK FILE: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .VOL

Planimeter scale: 1 inch = 1 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (acres)	$A1+A2+\text{sqr}(A1*A2)$ (acres)	* Volume (acre-ft)	Volume Sum (acre-ft)
480.00	0.00	0.00	0.00	0.00	0.00
482.00	34,476.00	0.79	0.79	0.53	0.53
484.00	40,030.00	0.92	2.56	1.71	2.24
486.00	45,981.00	1.06	2.96	1.97	4.21

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

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

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

Outlet Structure File: 7218 .STR

POND-2 Version: 5.20
Date Executed:

S/N:
Time Executed:

PHEASANT POINT CENTER EAST BASIN

DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
MARCH 24, 1998

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

<u>Elevation (ft)</u>	<u>Q (cfs)</u>	<u>Contributing Structures</u>
480.00	0.0	1
480.20	0.1	1
480.40	0.2	1
480.60	0.4	2
480.80	0.4	2
481.00	0.5	2
481.20	0.6	2
481.40	0.6	2
481.60	0.7	2
481.80	0.7	2
482.00	0.8	2
482.20	0.8	2
482.40	0.9	2
482.60	0.9	2
482.80	1.0	2
483.00	1.0	2
483.20	1.0	2
483.40	1.1	2
483.60	1.1	2
483.80	1.1	2
484.00	1.2	2

Outlet Structure File: 7218 .STR

POND-2 Version: 5.20
Date Executed:

S/N:
Time Executed:

PHEASANT POINT CENTER EAST BASIN
DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
MARCH 24, 1998

Outlet Structure File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .STR
Planimeter Input File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .VOL
Rating Table Output File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND

Min. Elev.(ft) = 480 Max. Elev.(ft) = 484 Incr.(ft) = .2

Additional elevations (ft) to be included in table:

SYSTEM CONNECTIVITY

Structure	No.	Q Table	Q Table
WEIR-VR	1		-> 1
ORIFICE	2	? 1	-> A

Outflow rating table summary was stored in file:
C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND

Outlet Structure File: 7218 .STR

POND-2 Version: 5.20
Date Executed:

S/N:
Time Executed:

PHEASANT POINT CENTER EAST BASIN
DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
MARCH 24, 1998

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

WEIR-VR
Weir - Vertical Rectangular

E1 elev.(ft)?	480
E2 elev.(ft)?	484.001
Weir coefficient?	3.32
Weir elev.(ft)?	480.00
Length (ft)?	.25
Contracted/Suppressed (C/S)?	S

Outlet Structure File: 7218 .STR

POND-2 Version: 5.20
Date Executed:

S/N:
Time Executed:

PHEASANT POINT CENTER EAST BASIN
DETENTION ANALYSIS
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MARCH 24, 1998

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

ORIFICE
Orifice - Based on Area and Datum Elevation

E1 elev.(ft)?	480.50
E2 elev.(ft)?	484.001
Orifice coeff.?	0.6
Invert elev.(ft)?	480.000
Datum elev.(ft) ?	480.25
Orifice area (sq ft)?	0.125

Outlet Structure File: 7218 .STR

POND-2 Version: 5.20
Date Executed:

S/N:
Time Executed:

PHEASANT POINT CENTER EAST BASIN

DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
MARCH 24, 1998

Outflow Rating Table for Structure #1
WEIR-VR Weir - Vertical Rectangular

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

<u>Elevation (ft)</u>	<u>Q (cfs)</u>	<u>Computation Messages</u>
480.00	0.0	H =0.0
480.20	0.1	H =.2
480.40	0.2	H =.4
480.60	0.4	H =.6
480.80	0.6	H =.8
481.00	0.8	H =1.0
481.20	1.1	H =1.2
481.40	1.4	H =1.4
481.60	1.7	H =1.6
481.80	2.0	H =1.8
482.00	2.3	H =2.0
482.20	2.7	H =2.2
482.40	3.1	H =2.4
482.60	3.5	H =2.6
482.80	3.9	H =2.8
483.00	4.3	H =3.0
483.20	4.8	H =3.2
483.40	5.2	H =3.4
483.60	5.7	H =3.6
483.80	6.1	H =3.8
484.00	6.6	H =4.0

C = 3.32 L (ft) = .25

H (ft) = Table elev. - Invert elev. (480 ft)

Q (cfs) = C * L * (H**1.5) -- Suppressed Weir

PHEASANT POINT CENTER EAST BASIN
DETENTION ANALYSIS
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MARCH 24, 1998

Outflow Rating Table for Structure #2
ORIFICE Orifice - Based on Area and Datum Elevation

Elevation (ft)	Q (cfs)	Computation Messages
480.00	0.0	E < E1=480.50
480.20	0.0	E < E1=480.50
480.40	0.0	E < E1=480.50
480.60	0.4	H =.35
480.80	0.4	H =.55
481.00	0.5	H =.750
481.20	0.6	H =.95
481.40	0.6	H =1.15
481.60	0.7	H =1.35
481.80	0.7	H =1.55
482.00	0.8	H =1.75
482.20	0.8	H =1.95
482.40	0.9	H =2.15
482.60	0.9	H =2.35
482.80	1.0	H =2.55
483.00	1.0	H =2.75
483.20	1.0	H =2.95
483.40	1.1	H =3.15
483.60	1.1	H =3.35
483.80	1.1	H =3.55
484.00	1.2	H =3.75

C = .6 A = .125 sq.ft.
H (ft) = Table elev. - Datum elev. (480.25 ft)
Q (cfs) = C * A * sqr(2g * H)

Outlet Structure File: 7218 .STR

POND-2 Version: 5.20
Date Executed:

S/N:
Time Executed:

PHEASANT POINT CENTER EAST BASIN
DETENTION ANALYSIS
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MARCH 24, 1998

Outflow Rating Table A
Table A = 1 ? 2

<u>Elevation (ft)</u>	<u>Q (cfs)</u>	<u>Contributing Structures</u>
480.00	0.0	1
480.20	0.1	1
480.40	0.2	1
480.60	0.4	2
480.80	0.4	2
481.00	0.5	2
481.20	0.6	2
481.40	0.6	2
481.60	0.7	2
481.80	0.7	2
482.00	0.8	2
482.20	0.8	2
482.40	0.9	2
482.60	0.9	2
482.80	1.0	2
483.00	1.0	2
483.20	1.0	2
483.40	1.1	2
483.60	1.1	2
483.80	1.1	2
484.00	1.2	2

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*           PHEASANT POINT CENTER           *
*           DETENTION ANALYSIS              *
*   PREPARED BY: BAX ENGINEERING CO., INC. *
*           MARCH 24, 1998                  *
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Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND
 Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\7218-002.HYD
 Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\72180002.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.0	0.00	-----	0.0	0.0	0.00	480.00
1.0	9.77	9.8	9.3	9.8	0.25	480.45
2.0	19.50	29.3	37.7	38.5	0.40	480.72
3.0	29.26	48.8	85.5	86.5	0.48	480.96
4.0	29.28	58.5	143.0	144.1	0.57	481.14
5.0	29.28	58.6	200.3	201.5	0.60	481.27
6.0	29.28	58.6	257.7	258.9	0.60	481.39
7.0	29.28	58.6	314.9	316.2	0.64	481.48
8.0	29.28	58.6	372.1	373.5	0.68	481.57
9.0	29.28	58.6	429.3	430.7	0.70	481.65
10.0	29.28	58.6	486.5	487.9	0.70	481.71
11.0	29.28	58.6	543.6	545.0	0.70	481.78
12.0	29.28	58.6	600.7	602.2	0.72	481.84
13.0	29.28	58.6	657.8	659.3	0.75	481.90
14.0	29.28	58.6	714.8	716.4	0.78	481.95
15.0	29.28	58.6	771.8	773.4	0.80	482.01
16.0	29.28	58.6	828.7	830.3	0.80	482.05
17.0	29.28	58.6	885.7	887.3	0.80	482.10
18.0	29.28	58.6	942.7	944.3	0.80	482.15
19.0	29.28	58.6	999.6	1001.2	0.80	482.20
20.0	29.28	58.6	1056.5	1058.2	0.83	482.25
21.0	19.54	48.8	1103.6	1105.3	0.85	482.29
22.0	9.76	29.3	1131.2	1132.9	0.86	482.31
23.0	0.04	9.8	1139.3	1141.0	0.86	482.32
24.0	0.00	0.0	1137.6	1139.4	0.86	482.32
25.0	0.00	0.0	1135.9	1137.6	0.86	482.32
26.0	0.00	0.0	1134.2	1135.9	0.86	482.32
27.0	0.00	0.0	1132.5	1134.2	0.86	482.32
28.0	0.00	0.0	1130.8	1132.5	0.86	482.31
29.0	0.00	0.0	1129.1	1130.8	0.86	482.31
30.0	0.00	0.0	1127.3	1129.1	0.86	482.31
31.0	0.00	0.0	1125.6	1127.3	0.85	482.31
32.0	0.00	0.0	1123.9	1125.6	0.85	482.31
33.0	0.00	0.0	1122.2	1123.9	0.85	482.31
34.0	0.00	0.0	1120.5	1122.2	0.85	482.31

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND
 Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\7218-002.HYD
 Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\72180002.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
35.0	0.00	0.0	1118.8	1120.5	0.85	482.30
36.0	0.00	0.0	1117.1	1118.8	0.85	482.30
37.0	0.00	0.0	1115.4	1117.1	0.85	482.30
38.0	0.00	0.0	1113.7	1115.4	0.85	482.30
39.0	0.00	0.0	1112.0	1113.7	0.85	482.30
40.0	0.00	0.0	1110.3	1112.0	0.85	482.30
41.0	0.00	0.0	1108.6	1110.3	0.85	482.29
42.0	0.00	0.0	1106.9	1108.6	0.85	482.29
43.0	0.00	0.0	1105.2	1106.9	0.85	482.29
44.0	0.00	0.0	1103.5	1105.2	0.85	482.29
45.0	0.00	0.0	1101.9	1103.5	0.84	482.29
46.0	0.00	0.0	1100.2	1101.9	0.84	482.29
47.0	0.00	0.0	1098.5	1100.2	0.84	482.29
48.0	0.00	0.0	1096.8	1098.5	0.84	482.28
49.0	0.00	0.0	1095.1	1096.8	0.84	482.28
50.0	0.00	0.0	1093.4	1095.1	0.84	482.28
51.0	0.00	0.0	1091.7	1093.4	0.84	482.28
52.0	0.00	0.0	1090.1	1091.7	0.84	482.28
53.0	0.00	0.0	1088.4	1090.1	0.84	482.28
54.0	0.00	0.0	1086.7	1088.4	0.84	482.28
55.0	0.00	0.0	1085.0	1086.7	0.84	482.27
56.0	0.00	0.0	1083.4	1085.0	0.84	482.27
57.0	0.00	0.0	1081.7	1083.4	0.84	482.27
58.0	0.00	0.0	1080.0	1081.7	0.84	482.27
59.0	0.00	0.0	1078.4	1080.0	0.83	482.27
60.0	0.00	0.0	1076.7	1078.4	0.83	482.27

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

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\7218-002.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\72180002.HYD

Starting Pond W.S. Elevation = 480.00 ft

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

Peak Inflow = 29.28 cfs
Peak Outflow = 0.86 cfs
Peak Elevation = 482.32 ft

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

Initial Storage = 0.00 ac-ft
Peak Storage From Storm = 0.79 ac-ft

Total Storage in Pond = 0.79 ac-ft

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*
*           PHEASANT POINT CENTER           *
*           DETENTION ANALYSIS             *
*   PREPARED BY: BAX ENGINEERING CO., INC. *
*           MARCH 24, 1998                 *
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Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND
 Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\7218-015.HYD
 Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\72180015.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.0	0.00	-----	0.0	0.0	0.00	480.00
1.0	15.75	15.8	15.1	15.8	0.33	480.53
2.0	31.40	47.2	61.4	62.2	0.43	480.85
3.0	47.15	78.6	138.8	139.9	0.56	481.13
4.0	47.16	94.3	231.9	233.1	0.60	481.34
5.0	47.16	94.3	324.9	326.2	0.65	481.50
6.0	47.16	94.3	417.9	419.3	0.70	481.63
7.0	47.16	94.3	510.8	512.2	0.70	481.74
8.0	47.16	94.3	603.7	605.1	0.72	481.84
9.0	47.16	94.3	696.5	698.0	0.77	481.93
10.0	47.16	94.3	789.2	790.8	0.80	482.02
11.0	47.16	94.3	881.9	883.5	0.80	482.10
12.0	47.16	94.3	974.6	976.2	0.80	482.18
13.0	47.16	94.3	1067.3	1068.9	0.83	482.26
14.0	47.16	94.3	1159.9	1161.6	0.87	482.34
15.0	47.16	94.3	1252.4	1254.2	0.90	482.42
16.0	47.16	94.3	1344.9	1346.7	0.90	482.49
17.0	47.16	94.3	1437.4	1439.2	0.90	482.57
18.0	47.16	94.3	1529.9	1531.7	0.92	482.65
19.0	47.16	94.3	1622.3	1624.2	0.96	482.72
20.0	47.16	94.3	1714.6	1716.6	1.00	482.80
21.0	31.48	78.6	1791.2	1793.2	1.00	482.86
22.0	15.73	47.2	1836.4	1838.4	1.00	482.90
23.0	0.06	15.8	1850.2	1852.2	1.00	482.91
24.0	0.00	0.1	1848.3	1850.3	1.00	482.91
25.0	0.00	0.0	1846.3	1848.3	1.00	482.91
26.0	0.00	0.0	1844.3	1846.3	1.00	482.91
27.0	0.00	0.0	1842.3	1844.3	1.00	482.90
28.0	0.00	0.0	1840.3	1842.3	1.00	482.90
29.0	0.00	0.0	1838.3	1840.3	1.00	482.90
30.0	0.00	0.0	1836.3	1838.3	1.00	482.90
31.0	0.00	0.0	1834.3	1836.3	1.00	482.90
32.0	0.00	0.0	1832.3	1834.3	1.00	482.90
33.0	0.00	0.0	1830.3	1832.3	1.00	482.90
34.0	0.00	0.0	1828.3	1830.3	1.00	482.89

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND
 Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\7218-015.HYD
 Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\72180015.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
35.0	0.00	0.0	1826.3	1828.3	1.00	482.89
36.0	0.00	0.0	1824.3	1826.3	1.00	482.89
37.0	0.00	0.0	1822.3	1824.3	1.00	482.89
38.0	0.00	0.0	1820.3	1822.3	1.00	482.89
39.0	0.00	0.0	1818.3	1820.3	1.00	482.89
40.0	0.00	0.0	1816.3	1818.3	1.00	482.88
41.0	0.00	0.0	1814.3	1816.3	1.00	482.88
42.0	0.00	0.0	1812.3	1814.3	1.00	482.88
43.0	0.00	0.0	1810.3	1812.3	1.00	482.88
44.0	0.00	0.0	1808.3	1810.3	1.00	482.88
45.0	0.00	0.0	1806.3	1808.3	1.00	482.88
46.0	0.00	0.0	1804.3	1806.3	1.00	482.87
47.0	0.00	0.0	1802.3	1804.3	1.00	482.87
48.0	0.00	0.0	1800.3	1802.3	1.00	482.87
49.0	0.00	0.0	1798.3	1800.3	1.00	482.87
50.0	0.00	0.0	1796.3	1798.3	1.00	482.87
51.0	0.00	0.0	1794.3	1796.3	1.00	482.87
52.0	0.00	0.0	1792.3	1794.3	1.00	482.86
53.0	0.00	0.0	1790.3	1792.3	1.00	482.86
54.0	0.00	0.0	1788.3	1790.3	1.00	482.86
55.0	0.00	0.0	1786.3	1788.3	1.00	482.86
56.0	0.00	0.0	1784.3	1786.3	1.00	482.86
57.0	0.00	0.0	1782.3	1784.3	1.00	482.86
58.0	0.00	0.0	1780.3	1782.3	1.00	482.85
59.0	0.00	0.0	1778.3	1780.3	1.00	482.85
60.0	0.00	0.0	1776.3	1778.3	1.00	482.85

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

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\7218-015.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\72180015.HYD

Starting Pond W.S. Elevation = 480.00 ft

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

Peak Inflow = 47.16 cfs
Peak Outflow = 1.00 cfs
Peak Elevation = 482.91 ft

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

Initial Storage = 0.00 ac-ft
Peak Storage From Storm = 1.27 ac-ft

Total Storage in Pond = 1.27 ac-ft

>>>>> Warning, peak outflow = last ordinate point. <<<<<<

 * PHEASANT POINT CENTER *
 * DETENTION ANALYSIS *
 * PREPARED BY: BAX ENGINEERING CO., INC. *
 * MARCH 24, 1998 *
 * *****

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND
 Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\7218-025.HYD
 Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\72180025.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.0	0.00	-----	0.0	0.0	0.00	480.00
1.0	19.43	19.4	18.7	19.4	0.38	480.58
2.0	38.75	58.2	75.9	76.9	0.46	480.92
3.0	58.18	96.9	171.7	172.9	0.60	481.21
4.0	58.19	116.4	286.8	288.0	0.62	481.44
5.0	58.19	116.4	401.8	403.2	0.70	481.61
6.0	58.19	116.4	516.8	518.2	0.70	481.75
7.0	58.19	116.4	631.7	633.1	0.74	481.87
8.0	58.19	116.4	746.5	748.0	0.79	481.98
9.0	58.19	116.4	861.2	862.8	0.80	482.08
10.0	58.19	116.4	976.0	977.6	0.80	482.18
11.0	58.19	116.4	1090.7	1092.4	0.84	482.28
12.0	58.19	116.4	1205.3	1207.1	0.89	482.38
13.0	58.19	116.4	1319.9	1321.7	0.90	482.47
14.0	58.19	116.4	1434.5	1436.3	0.90	482.57
15.0	58.19	116.4	1549.0	1550.9	0.93	482.66
16.0	58.19	116.4	1663.4	1665.4	0.98	482.76
17.0	58.19	116.4	1777.8	1779.8	1.00	482.85
18.0	58.19	116.4	1892.2	1894.2	1.00	482.95
19.0	58.19	116.4	2006.6	2008.6	1.00	483.04
20.0	58.19	116.4	2120.9	2122.9	1.00	483.13
21.0	38.84	97.0	2216.0	2218.0	1.00	483.21
22.0	19.41	58.3	2272.2	2274.2	1.02	483.25
23.0	0.08	19.5	2289.6	2291.7	1.03	483.26
24.0	0.00	0.1	2287.6	2289.7	1.03	483.26
25.0	0.00	0.0	2285.6	2287.6	1.03	483.26
26.0	0.00	0.0	2283.5	2285.6	1.03	483.26
27.0	0.00	0.0	2281.4	2283.5	1.03	483.26
28.0	0.00	0.0	2279.4	2281.4	1.03	483.26
29.0	0.00	0.0	2277.3	2279.4	1.03	483.25
30.0	0.00	0.0	2275.3	2277.3	1.03	483.25
31.0	0.00	0.0	2273.2	2275.3	1.03	483.25
32.0	0.00	0.0	2271.2	2273.2	1.02	483.25
33.0	0.00	0.0	2269.1	2271.2	1.02	483.25
34.0	0.00	0.0	2267.1	2269.1	1.02	483.25

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND
 Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\7218-025.HYD
 Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\72180025.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
35.0	0.00	0.0	2265.0	2267.1	1.02	483.24
36.0	0.00	0.0	2263.0	2265.0	1.02	483.24
37.0	0.00	0.0	2261.0	2263.0	1.02	483.24
38.0	0.00	0.0	2258.9	2261.0	1.02	483.24
39.0	0.00	0.0	2256.9	2258.9	1.02	483.24
40.0	0.00	0.0	2254.8	2256.9	1.02	483.24
41.0	0.00	0.0	2252.8	2254.8	1.02	483.23
42.0	0.00	0.0	2250.8	2252.8	1.02	483.23
43.0	0.00	0.0	2248.8	2250.8	1.02	483.23
44.0	0.00	0.0	2246.7	2248.8	1.01	483.23
45.0	0.00	0.0	2244.7	2246.7	1.01	483.23
46.0	0.00	0.0	2242.7	2244.7	1.01	483.23
47.0	0.00	0.0	2240.6	2242.7	1.01	483.22
48.0	0.00	0.0	2238.6	2240.6	1.01	483.22
49.0	0.00	0.0	2236.6	2238.6	1.01	483.22
50.0	0.00	0.0	2234.6	2236.6	1.01	483.22
51.0	0.00	0.0	2232.6	2234.6	1.01	483.22
52.0	0.00	0.0	2230.5	2232.6	1.01	483.22
53.0	0.00	0.0	2228.5	2230.5	1.01	483.22
54.0	0.00	0.0	2226.5	2228.5	1.01	483.21
55.0	0.00	0.0	2224.5	2226.5	1.01	483.21
56.0	0.00	0.0	2222.5	2224.5	1.01	483.21
57.0	0.00	0.0	2220.5	2222.5	1.00	483.21
58.0	0.00	0.0	2218.5	2220.5	1.00	483.21
59.0	0.00	0.0	2216.5	2218.5	1.00	483.21
60.0	0.00	0.0	2214.5	2216.5	1.00	483.20

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

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\7218-025.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\72180025.HYD

Starting Pond W.S. Elevation = 480.00 ft

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

Peak Inflow = 58.19 cfs
Peak Outflow = 1.03 cfs
Peak Elevation = 483.26 ft

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

Initial Storage = 0.00 ac-ft
Peak Storage From Storm = 1.58 ac-ft

Total Storage in Pond = 1.58 ac-ft

POND-2 Version: 5.20

S/N:

PHEASANT POINT CENTER WEST BASIN
WEST DETENTION BASIN (10% ADDITIONAL STORAGE VOLUME)
BAX ENGINEERING CO., INC.
FEBRUARY 18, 1998

CALCULATED 03-24-1998 14:01:32
DISK FILE: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .VOL

Planimeter scale: 1 inch = 1 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (acres)	$A1+A2+\text{sq}r(A1*A2)$ (acres)	* Volume (acre-ft)	Volume Sum (acre-ft)
482.00	0.00	0.00	0.00	0.00	0.00
484.00	14,117.00	0.32	0.32	0.22	0.22
486.00	19,866.00	0.46	1.16	0.78	0.99
488.00	25,773.00	0.59	1.57	1.04	2.04

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

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

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

Outlet Structure File: 7218 .STR

POND-2 Version: 5.20
Date Executed:

S/N:
Time Executed:

PHEASANT POINT CENTER
DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
JANUARY 7, 1998

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

<u>Elevation (ft)</u>	<u>Q (cfs)</u>	<u>Contributing Structures</u>
482.00	0.0	1
482.20	0.2	1
482.40	0.7	1
482.60	1.3	1
482.80	2.0	1
483.00	2.8	1
483.20	3.6	1
483.40	4.6	1
483.60	5.6	1
483.80	6.7	1
484.00	7.8	1
484.20	8.8	2
484.40	9.5	2
484.60	10.2	2
484.80	10.8	2
485.00	11.3	2
485.20	11.9	2
485.40	12.4	2
485.60	12.9	2
485.80	13.4	2
486.00	13.9	2
486.20	14.4	2
486.40	14.8	2
486.60	15.2	2
486.80	15.6	2
487.00	16.0	2
487.20	16.4	2
487.40	16.8	2
487.60	17.2	2
487.80	17.6	2
488.00	17.9	2

Outlet Structure File: 7218 .STR

POND-2 Version: 5.20
Date Executed:

S/N:
Time Executed:

PHEASANT POINT CENTER
DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
JANUARY 7, 1998

Outlet Structure File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .STR
Planimeter Input File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .VOL
Rating Table Output File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND

Min. Elev.(ft) = 482 Max. Elev.(ft) = 488 Incr.(ft) = .2

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

SYSTEM CONNECTIVITY

Structure	No.	Q Table	Q Table
-----	---	-----	-----
WEIR-VR	1		-> 1
ORIFICE	2	? 1	-> A

Outflow rating table summary was stored in file:
C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND

Outlet Structure File: 7218 .STR

POND-2 Version: 5.20
Date Executed:

S/N:
Time Executed:

PHEASANT POINT CENTER
DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
JANUARY 7, 1998

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

WEIR-VR
Weir - Vertical Rectangular

E1 elev.(ft)?	482
E2 elev.(ft)?	488.001
Weir coefficient?	3.32
Weir elev.(ft)?	482.00
Length (ft)?	.833333
Contracted/Suppressed (C/S)?	S

Outlet Structure File: 7218 .STR

POND-2 Version: 5.20
Date Executed:

S/N:
Time Executed:

PHEASANT POINT CENTER
DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
JANUARY 7, 1998

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

ORIFICE
Orifice - Based on Area and Datum Elevation

E1 elev.(ft)?	484
E2 elev.(ft)?	488.001
Orifice coeff.?	0.6
Invert elev.(ft)?	482.000
Datum elev.(ft) ?	483.00
Orifice area (sq ft)?	1.66666

PHEASANT POINT CENTER
DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
JANUARY 7, 1998

Outflow Rating Table for Structure #1
WEIR-VR Weir - Vertical Rectangular

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

Elevation (ft)	Q (cfs)	Computation Messages
482.00	0.0	H =0.0
482.20	0.2	H =.2
482.40	0.7	H =.4
482.60	1.3	H =.6
482.80	2.0	H =.8
483.00	2.8	H =1.0
483.20	3.6	H =1.2
483.40	4.6	H =1.4
483.60	5.6	H =1.6
483.80	6.7	H =1.8
484.00	7.8	H =2.0
484.20	9.0	H =2.2
484.40	10.3	H =2.4
484.60	11.6	H =2.6
484.80	13.0	H =2.8
485.00	14.4	H =3.0
485.20	15.8	H =3.2
485.40	17.3	H =3.4
485.60	18.9	H =3.6
485.80	20.5	H =3.8
486.00	22.1	H =4.0
486.20	23.8	H =4.2
486.40	25.5	H =4.4
486.60	27.3	H =4.6
486.80	29.1	H =4.8
487.00	30.9	H =5.0
487.20	32.8	H =5.2
487.40	34.7	H =5.4
487.60	36.7	H =5.6
487.80	38.6	H =5.8
488.00	40.7	H =6.0

C = 3.32 L (ft) = .833333
H (ft) = Table elev. - Invert elev. (482 ft)
Q (cfs) = C * L * (H**1.5) -- Suppressed Weir

PHEASANT POINT CENTER
DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
JANUARY 7, 1998

Outflow Rating Table for Structure #2
ORIFICE Orifice - Based on Area and Datum Elevation

Elevation (ft)	Q (cfs)	Computation Messages
482.00	0.0	E < E1=484
482.20	0.0	E < E1=484
482.40	0.0	E < E1=484
482.60	0.0	E < E1=484
482.80	0.0	E < E1=484
483.00	0.0	E < E1=484
483.20	0.0	E < E1=484
483.40	0.0	E < E1=484
483.60	0.0	E < E1=484
483.80	0.0	E < E1=484
484.00	8.0	H =1.0
484.20	8.8	H =1.2
484.40	9.5	H =1.4
484.60	10.2	H =1.6
484.80	10.8	H =1.8
485.00	11.3	H =2.0
485.20	11.9	H =2.2
485.40	12.4	H =2.4
485.60	12.9	H =2.6
485.80	13.4	H =2.8
486.00	13.9	H =3.0
486.20	14.4	H =3.2
486.40	14.8	H =3.4
486.60	15.2	H =3.6
486.80	15.6	H =3.8
487.00	16.0	H =4.0
487.20	16.4	H =4.2
487.40	16.8	H =4.4
487.60	17.2	H =4.6
487.80	17.6	H =4.8
488.00	17.9	H =5.0

C = .6 A = 1.66666 sq.ft.
H (ft) = Table elev. - Datum elev. (483 ft)
Q (cfs) = C * A * sqr(2g * H)

Outlet Structure File: 7218 .STR

POND-2 Version: 5.20
Date Executed:

S/N:
Time Executed:

PHEASANT POINT CENTER
DETENTION ANALYSIS
PREPARED BY: BAX ENGINEERING CO., INC.
JANUARY 7, 1998

Outflow Rating Table A
Table A = 1 ? 2

<u>Elevation (ft)</u>	<u>Q (cfs)</u>	<u>Contributing Structures</u>
482.00	0.0	1
482.20	0.2	1
482.40	0.7	1
482.60	1.3	1
482.80	2.0	1
483.00	2.8	1
483.20	3.6	1
483.40	4.6	1
483.60	5.6	1
483.80	6.7	1
484.00	7.8	1
484.20	8.8	2
484.40	9.5	2
484.60	10.2	2
484.80	10.8	2
485.00	11.3	2
485.20	11.9	2
485.40	12.4	2
485.60	12.9	2
485.80	13.4	2
486.00	13.9	2
486.20	14.4	2
486.40	14.8	2
486.60	15.2	2
486.80	15.6	2
487.00	16.0	2
487.20	16.4	2
487.40	16.8	2
487.60	17.2	2
487.80	17.6	2
488.00	17.9	2

 * PHEASANT POINT CENTER WEST BAS *
 * DETENTION ANALYSIS *
 * PREPARED BY: BAX ENGINEERING CO., INC. *
 * MARCH 24, 1998 *

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND
 Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\7218-002.HYD
 Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\72180002.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.0	0.00	-----	0.0	0.0	0.00	482.00
1.0	8.37	8.4	6.0	8.4	1.17	482.56
2.0	16.71	25.1	26.4	31.1	2.36	482.89
3.0	16.71	33.4	53.2	59.8	3.28	483.12
4.0	16.71	33.4	78.7	86.7	3.97	483.27
5.0	16.71	33.4	102.9	112.1	4.60	483.40
6.0	16.71	33.4	126.3	136.3	5.05	483.49
7.0	16.71	33.4	148.7	159.7	5.48	483.58
8.0	16.71	33.4	170.4	182.1	5.85	483.65
9.0	16.71	33.4	191.5	203.8	6.20	483.71
10.0	16.71	33.4	211.8	224.9	6.53	483.77
11.0	16.71	33.4	231.6	245.2	6.83	483.82
12.0	16.71	33.4	250.8	265.0	7.08	483.87
13.0	16.71	33.4	269.6	284.3	7.32	483.91
14.0	16.71	33.4	287.9	303.0	7.56	483.96
15.0	16.71	33.4	305.7	321.3	7.80	484.00
16.0	16.71	33.4	323.2	339.1	7.98	484.04
17.0	16.71	33.4	340.3	356.6	8.16	484.07
18.0	16.71	33.4	357.0	373.7	8.34	484.11
19.0	16.71	33.4	373.4	390.4	8.51	484.14
20.0	16.71	33.4	389.5	406.8	8.68	484.18
21.0	8.37	25.1	397.0	414.6	8.76	484.19
22.0	0.05	8.4	388.1	405.5	8.67	484.17
23.0	0.00	0.1	371.2	388.2	8.49	484.14
24.0	0.00	0.0	354.6	371.2	8.31	484.10
25.0	0.00	0.0	338.3	354.6	8.14	484.07
26.0	0.00	0.0	322.3	338.3	7.97	484.03
27.0	0.00	0.0	306.7	322.3	7.81	484.00
28.0	0.00	0.0	291.5	306.7	7.61	483.97
29.0	0.00	0.0	276.7	291.5	7.42	483.93
30.0	0.00	0.0	262.2	276.7	7.23	483.90
31.0	0.00	0.0	248.1	262.2	7.04	483.86
32.0	0.00	0.0	234.4	248.1	6.86	483.83
33.0	0.00	0.0	221.0	234.4	6.68	483.80
34.0	0.00	0.0	208.1	221.0	6.47	483.76

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND
 Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\7218-002.HYD
 Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\72180002.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
35.0	0.00	0.0	195.6	208.1	6.27	483.72
36.0	0.00	0.0	183.4	195.6	6.07	483.68
37.0	0.00	0.0	171.7	183.4	5.87	483.65
38.0	0.00	0.0	160.3	171.7	5.69	483.62
39.0	0.00	0.0	149.3	160.3	5.49	483.58
40.0	0.00	0.0	138.8	149.3	5.29	483.54
41.0	0.00	0.0	128.6	138.8	5.09	483.50
42.0	0.00	0.0	118.8	128.6	4.90	483.46
43.0	0.00	0.0	109.3	118.8	4.72	483.42
44.0	0.00	0.0	100.3	109.3	4.53	483.39
45.0	0.00	0.0	91.6	100.3	4.31	483.34
46.0	0.00	0.0	83.5	91.6	4.10	483.30
47.0	0.00	0.0	75.7	83.5	3.90	483.26
48.0	0.00	0.0	68.3	75.7	3.71	483.22
49.0	0.00	0.0	61.2	68.3	3.52	483.18
50.0	0.00	0.0	54.6	61.2	3.32	483.13
51.0	0.00	0.0	48.3	54.6	3.14	483.09
52.0	0.00	0.0	42.3	48.3	2.97	483.04
53.0	0.00	0.0	36.7	42.3	2.81	483.00
54.0	0.00	0.0	31.6	36.7	2.59	482.95
55.0	0.00	0.0	26.8	31.6	2.38	482.90
56.0	0.00	0.0	22.4	26.8	2.19	482.85
57.0	0.00	0.0	18.4	22.4	2.01	482.80
58.0	0.00	0.0	14.8	18.4	1.79	482.74
59.0	0.00	0.0	11.6	14.8	1.59	482.68
60.0	0.00	0.0	8.8	11.6	1.41	482.63

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

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\7218-002.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\72180002.HYD

Starting Pond W.S. Elevation = 482.00 ft

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

Peak Inflow = 16.71 cfs
Peak Outflow = 8.76 cfs
Peak Elevation = 484.19 ft

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

Initial Storage = 0.00 ac-ft
Peak Storage From Storm = 0.28 ac-ft

Total Storage in Pond = 0.28 ac-ft

 * PHEASANT POINT CENTER WEST BAS *
 * DETENTION ANALYSIS *
 * PREPARED BY: BAX ENGINEERING CO., INC. *
 * MARCH 24, 1998 *

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND
 Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\7218-015.HYD
 Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\72180015.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.0	0.00	-----	0.0	0.0	0.00	482.00
1.0	14.99	15.0	11.8	15.0	1.60	482.68
2.0	29.90	44.9	50.3	56.7	3.20	483.10
3.0	29.91	59.8	101.0	110.1	4.55	483.39
4.0	29.91	59.8	149.8	160.8	5.50	483.58
5.0	29.91	59.8	197.1	209.6	6.29	483.73
6.0	29.91	59.8	242.9	256.9	6.97	483.85
7.0	29.91	59.8	287.6	302.7	7.56	483.96
8.0	29.91	59.8	331.3	347.4	8.07	484.05
9.0	29.91	59.8	374.1	391.1	8.52	484.14
10.0	29.91	59.8	416.1	433.9	8.91	484.23
11.0	29.91	59.8	457.5	475.9	9.20	484.31
12.0	29.91	59.8	498.4	517.3	9.49	484.40
13.0	29.91	59.8	538.6	558.2	9.77	484.48
14.0	29.91	59.8	578.4	598.5	10.04	484.55
15.0	29.91	59.8	617.6	638.2	10.29	484.63
16.0	29.91	59.8	656.4	677.4	10.51	484.70
17.0	29.91	59.8	694.8	716.2	10.72	484.77
18.0	29.91	59.8	732.8	754.6	10.91	484.84
19.0	29.91	59.8	770.4	792.6	11.08	484.91
20.0	29.91	59.8	807.8	830.3	11.25	484.98
21.0	14.99	44.9	829.9	852.7	11.36	485.02
22.0	0.07	15.1	822.4	845.0	11.32	485.01
23.0	0.00	0.1	800.0	822.4	11.22	484.97
24.0	0.00	0.0	777.8	800.0	11.12	484.93
25.0	0.00	0.0	755.7	777.8	11.02	484.89
26.0	0.00	0.0	733.9	755.7	10.92	484.85
27.0	0.00	0.0	712.2	733.9	10.82	484.81
28.0	0.00	0.0	690.8	712.2	10.70	484.77
29.0	0.00	0.0	669.7	690.8	10.58	484.73
30.0	0.00	0.0	648.7	669.7	10.46	484.69
31.0	0.00	0.0	628.1	648.7	10.35	484.65
32.0	0.00	0.0	607.6	628.1	10.23	484.61
33.0	0.00	0.0	587.4	607.6	10.10	484.57
34.0	0.00	0.0	567.5	587.4	9.96	484.53

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND
 Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\7218-015.HYD
 Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\72180015.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
35.0	0.00	0.0	547.8	567.5	9.83	484.49
36.0	0.00	0.0	528.4	547.8	9.70	484.46
37.0	0.00	0.0	509.3	528.4	9.57	484.42
38.0	0.00	0.0	490.4	509.3	9.44	484.38
39.0	0.00	0.0	471.8	490.4	9.30	484.34
40.0	0.00	0.0	453.4	471.8	9.17	484.31
41.0	0.00	0.0	435.4	453.4	9.05	484.27
42.0	0.00	0.0	417.5	435.4	8.92	484.23
43.0	0.00	0.0	399.9	417.5	8.79	484.20
44.0	0.00	0.0	382.7	399.9	8.61	484.16
45.0	0.00	0.0	365.9	382.7	8.43	484.13
46.0	0.00	0.0	349.3	365.9	8.26	484.09
47.0	0.00	0.0	333.2	349.3	8.09	484.06
48.0	0.00	0.0	317.3	333.2	7.92	484.02
49.0	0.00	0.0	301.8	317.3	7.75	483.99
50.0	0.00	0.0	286.7	301.8	7.55	483.95
51.0	0.00	0.0	272.0	286.7	7.36	483.92
52.0	0.00	0.0	257.7	272.0	7.17	483.89
53.0	0.00	0.0	243.7	257.7	6.98	483.85
54.0	0.00	0.0	230.1	243.7	6.81	483.82
55.0	0.00	0.0	216.9	230.1	6.62	483.78
56.0	0.00	0.0	204.1	216.9	6.41	483.75
57.0	0.00	0.0	191.7	204.1	6.20	483.71
58.0	0.00	0.0	179.6	191.7	6.00	483.67
59.0	0.00	0.0	168.0	179.6	5.81	483.64
60.0	0.00	0.0	156.8	168.0	5.63	483.61

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

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\7218-015.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\72180015.HYD

Starting Pond W.S. Elevation = 482.00 ft

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

Peak Inflow = 29.91 cfs
Peak Outflow = 11.36 cfs
Peak Elevation = 485.02 ft

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

Initial Storage = 0.00 ac-ft
Peak Storage From Storm = 0.58 ac-ft

Total Storage in Pond = 0.58 ac-ft

 * PHEASANT POINT CENTER WEST BAS *
 * DETENTION ANALYSIS *
 * PREPARED BY: BAX ENGINEERING CO., INC. *
 * MARCH 24, 1998 *

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND
 Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\7218-025.HYD
 Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\72180025.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.0	0.00	-----	0.0	0.0	0.00	482.00
1.0	16.63	16.6	13.2	16.6	1.69	482.71
2.0	33.19	49.8	56.3	63.1	3.37	483.14
3.0	33.20	66.4	113.1	122.7	4.79	483.44
4.0	33.20	66.4	167.9	179.5	5.81	483.64
5.0	33.20	66.4	220.9	234.3	6.68	483.80
6.0	33.20	66.4	272.6	287.3	7.36	483.92
7.0	33.20	66.4	323.0	339.0	7.98	484.04
8.0	33.20	66.4	372.4	389.4	8.50	484.14
9.0	33.20	66.4	421.0	438.8	8.94	484.24
10.0	33.20	66.4	468.8	487.4	9.28	484.34
11.0	33.20	66.4	516.0	535.2	9.61	484.43
12.0	33.20	66.4	562.5	582.4	9.93	484.52
13.0	33.20	66.4	608.4	628.9	10.24	484.61
14.0	33.20	66.4	653.8	674.8	10.49	484.70
15.0	33.20	66.4	698.8	720.2	10.75	484.78
16.0	33.20	66.4	743.2	765.2	10.96	484.86
17.0	33.20	66.4	787.3	809.6	11.16	484.94
18.0	33.20	66.4	831.0	853.7	11.37	485.02
19.0	33.20	66.4	874.2	897.4	11.60	485.10
20.0	33.20	66.4	916.9	940.6	11.82	485.17
21.0	16.63	49.8	942.9	966.8	11.95	485.22
22.0	0.07	16.7	935.8	959.6	11.92	485.21
23.0	0.00	0.1	912.2	935.8	11.80	485.17
24.0	0.00	0.0	888.9	912.2	11.67	485.12
25.0	0.00	0.0	865.8	888.9	11.55	485.08
26.0	0.00	0.0	842.9	865.8	11.43	485.04
27.0	0.00	0.0	820.3	842.9	11.31	485.00
28.0	0.00	0.0	797.9	820.3	11.21	484.96
29.0	0.00	0.0	775.7	797.9	11.11	484.92
30.0	0.00	0.0	753.7	775.7	11.01	484.88
31.0	0.00	0.0	731.8	753.7	10.91	484.84
32.0	0.00	0.0	710.2	731.8	10.81	484.80
33.0	0.00	0.0	688.8	710.2	10.69	484.76
34.0	0.00	0.0	667.7	688.8	10.57	484.72

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND
 Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\7218-025.HYD
 Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\72180025.HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (min)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - 0 (cfs)	2S/t + 0 (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
35.0	0.00	0.0	646.8	667.7	10.45	484.68
36.0	0.00	0.0	626.1	646.8	10.34	484.65
37.0	0.00	0.0	605.7	626.1	10.22	484.61
38.0	0.00	0.0	585.5	605.7	10.09	484.57
39.0	0.00	0.0	565.6	585.5	9.95	484.53
40.0	0.00	0.0	546.0	565.6	9.82	484.49
41.0	0.00	0.0	526.6	546.0	9.68	484.45
42.0	0.00	0.0	507.5	526.6	9.55	484.42
43.0	0.00	0.0	488.6	507.5	9.42	484.38
44.0	0.00	0.0	470.1	488.6	9.29	484.34
45.0	0.00	0.0	451.7	470.1	9.16	484.30
46.0	0.00	0.0	433.7	451.7	9.03	484.27
47.0	0.00	0.0	415.8	433.7	8.91	484.23
48.0	0.00	0.0	398.3	415.8	8.77	484.19
49.0	0.00	0.0	381.1	398.3	8.59	484.16
50.0	0.00	0.0	364.3	381.1	8.42	484.12
51.0	0.00	0.0	347.8	364.3	8.24	484.09
52.0	0.00	0.0	331.7	347.8	8.07	484.05
53.0	0.00	0.0	315.9	331.7	7.90	484.02
54.0	0.00	0.0	300.4	315.9	7.73	483.99
55.0	0.00	0.0	285.3	300.4	7.53	483.95
56.0	0.00	0.0	270.7	285.3	7.34	483.92
57.0	0.00	0.0	256.4	270.7	7.15	483.88
58.0	0.00	0.0	242.4	256.4	6.97	483.85
59.0	0.00	0.0	228.8	242.4	6.79	483.82
60.0	0.00	0.0	215.7	228.8	6.60	483.78

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

Pond File: C:\WINDOWS\DESKTOP\PONDPA~1\7218 .PND
Inflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\7218-025.HYD
Outflow Hydrograph: C:\WINDOWS\DESKTOP\PONDPA~1\72180025.HYD

Starting Pond W.S. Elevation = 482.00 ft

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

Peak Inflow = 33.20 cfs
Peak Outflow = 11.95 cfs
Peak Elevation = 485.22 ft

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

Initial Storage = 0.00 ac-ft
Peak Storage From Storm = 0.66 ac-ft

Total Storage in Pond = 0.66 ac-ft

PRE-DEVELOPED

Acres
to east

onsite 11.77
offsite 10.54
1.5

2 YR		
PI	Q	TQ
1.15	13.54	13.54
2.00	21.08	
2.39	3.59	24.67
		38.20

15 YR

PI	Q	TQ
1.87	22.01	22.01
3.30	34.78	
3.85	5.78	40.56
		62.57

25 YR

PI	Q	TQ
2.31	27.19	27.19
4.07	42.90	
4.75	7.13	50.02
		77.21

100 YR

PI	Q	TQ
2.95	34.72	34.72
5.21	54.91	
6.08	9.12	64.03
		98.75

Acres
to west

onsite 28.54
offsite 4.59
0.77
4.72
6.6

2 YR		
PI	Q	TQ
1.15	32.82	32.82
1.15	5.28	
1.61	1.24	
1.74	8.21	
2.00	13.20	27.93
		60.75

15 YR

PI	Q	TQ
1.87	53.37	53.37
1.70	7.80	
2.40	1.85	
2.58	12.18	
3.00	19.80	41.63
		95.00

25 YR

PI	Q	TQ
2.31	65.93	65.93
2.00	9.18	
2.81	2.16	
3.02	14.25	
3.48	22.97	48.57
		114.49

100 YR

PI	Q	TQ
2.95	84.19	84.19
2.29	10.51	
3.22	2.48	
3.47	16.38	
3.61	23.83	53.19
		137.39

TOTAL PRE-DEV → 98.95

157.57

191.71

236.14

POST-DEVELOPED

Acres
to east
onsite

2 YR			
	PI	Q	TQ
3.38	1.15	3.89	
1.42	1.15	1.63	
1.92	1.15	2.21	
0.47	1.74	0.82	
1.3	2.06	2.68	
0.73	2.06	1.50	
0.75	2.39	1.79	
1.07	2.39	2.56	
2.83	2.39	6.76	23.84
offsite			
10.54	2.00	21.08	
1.5	2.39	3.59	24.67
basin out			0.86
			49.37

15 YR			
	PI	Q	TQ
1.87	1.87	6.32	
1.87	1.87	2.66	
1.87	1.87	3.59	
2.86	2.86	1.34	
3.39	3.39	4.41	
3.39	3.39	2.47	
3.85	3.85	2.89	
3.85	3.85	4.12	
3.85	3.85	10.90	38.69
3.30	3.30	34.78	
3.85	3.85	5.78	40.56
basin out			1.00
			80.25

25 YR			
	PI	Q	TQ
2.31	2.31	7.81	
2.31	2.31	3.28	
2.31	2.31	4.44	
3.53	3.53	1.66	
4.18	4.18	5.43	
4.18	4.18	3.05	
4.75	4.75	3.56	
4.75	4.75	5.08	
4.75	4.75	13.44	47.76
4.07	4.07	42.90	
4.75	4.75	7.13	50.02
basin out			1.03
			98.81

100 YR			
	PI	Q	TQ
2.95	2.95	9.97	
2.95	2.95	4.19	
2.95	2.95	5.66	
4.52	4.52	2.12	
5.36	5.36	6.97	
5.36	5.36	3.91	
6.08	6.08	4.56	
6.08	6.08	6.51	
6.08	6.08	17.21	61.10
5.21	5.21	54.91	
6.08	6.08	9.12	64.03
basin out			74.48
			199.61

Acres
to west
onsite

2 YR			
	PI	Q	TQ
3.94	2.39	9.42	
2.27	2.39	5.43	
0.29	2.39	0.69	
0.3	2.39	0.72	16.25
offsite			
4.59	1.15	5.28	
0.77	1.61	1.24	
4.72	1.74	8.21	
6.6	2.00	13.20	27.93
basin out			8.76
			52.94

15 YR			
	PI	Q	TQ
3.85	3.85	15.17	
3.85	3.85	8.74	
3.85	3.85	1.12	
3.85	3.85	1.16	26.18
1.70	1.70	7.80	
2.40	2.40	1.85	
2.58	2.58	12.18	
3.00	3.00	19.80	41.63
basin out			11.36
			79.17

25 YR			
	PI	Q	TQ
4.75	4.75	18.72	
4.75	4.75	10.78	
4.75	4.75	1.38	
4.75	4.75	1.43	32.30
2.00	2.00	9.18	
2.81	2.81	2.16	
3.02	3.02	14.25	
3.48	3.48	22.97	48.57
basin out			11.95
			92.82

100 YR			
	PI	Q	TQ
6.08	6.08	23.96	
6.08	6.08	13.80	
6.08	6.08	1.76	
6.08	6.08	1.82	41.34
2.29	2.29	10.51	
3.22	3.22	2.48	
3.47	3.47	16.38	
3.61	3.61	23.83	53.19
basin out			42.50
			137.04

TOTAL POST-DEV → 102.31

159.42

191.62

336.65

WATERSHED TO EAST

	PRE-DEVELOPED	POST-DEVELOPED
2 YR	38.20	49.37
15 YR	62.57	80.25
25 YR	77.21	98.81
100 YR	98.75	199.61

WATERSHED TO WEST

	PRE-DEVELOPED	POST-DEVELOPED
2 YR	60.75	52.94
15 YR	95.00	79.17
25 YR	114.49	92.82
100 YR	137.39	137.04

28.54 ac

11.77 ac

