

DRAINAGE PLAN
GRAY'S 5TH
ADDITION

TO
WICHITA, SEDGWICK COUNTY, KANSAS



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WICHITA, SEDGWICK COUNTY, KANSAS

Prepared By

 **BAUGHMAN COMPANY, P.A.**
ENGINEERING, SURVEYING & PLANNING
316/262-7271 FAX 316/262-0149 WICHITA, KANSAS 67211

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INTRODUCTION

This report provides information and supporting documentation to support the "Drainage Plan" for the property located in the Southwest Quarter of Section 14, T-28-S, R-1-W in Sedgwick County, Kansas.

The "Drainage Plan" being submitted herein is intended to serve as a guide for the design of detention facilities and storm water sewer improvements to the proposed developments. Modifications to structures, pipes, etc. may be made as necessary during the final design in order to obtain the most economical design and construction possible. This "Drainage Plan" shall replace all previously submitted materials regarding drainage.

Return Period Yr	at 47th St. South		North Pond Flowrate cfs	Elev msl	South Pond Flowrate cfs	Elev msl
	Existing Flowrate cfs	Developed Flowrate cfs				
2	55	71	33	1289.1	58	1287.6
5	93	111	51	1289.5	92	1288.2
10	119	132	63	1289.7	116	1288.5
25	154	163	78	1290	146	1289
50	186	188	92	1290.2	173	1289.3
100	218	198	105	1290.4	201	1298.7

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24

25

(See Page 29)

31st ST SO

BOLIN DR

11

OATVILLE

YORK

WACO

WICKHAM

OAK

ROBINSON

14

13

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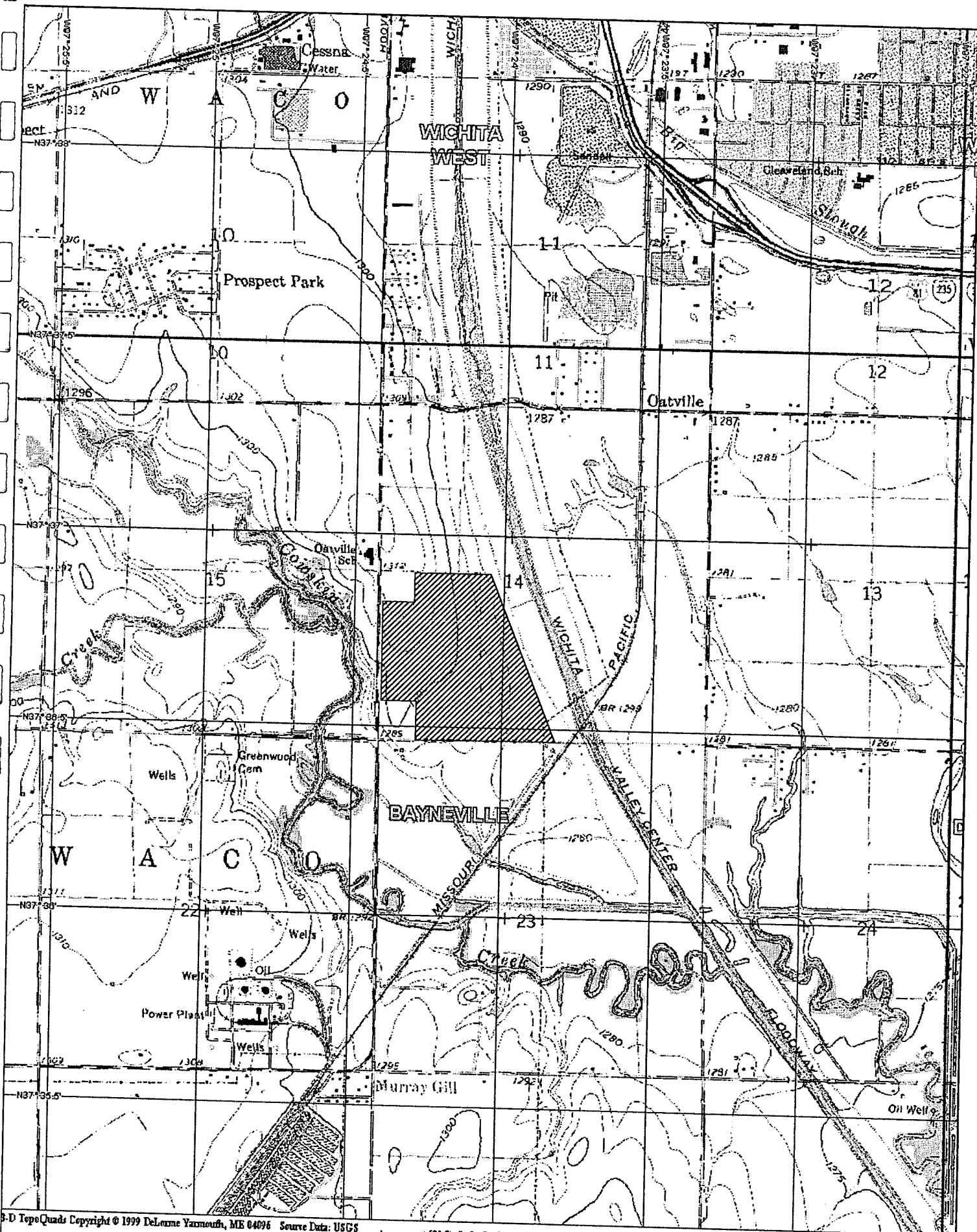
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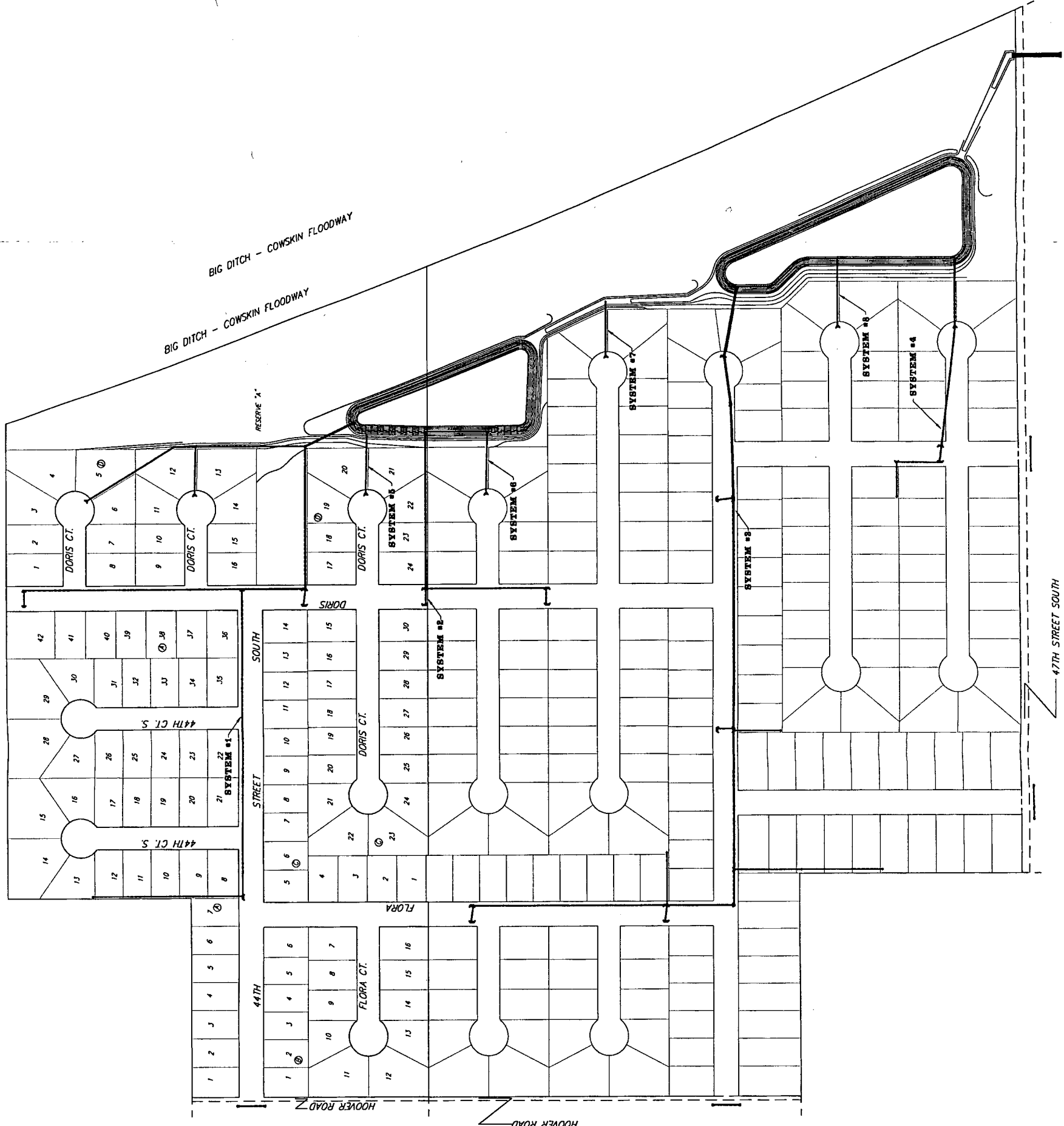
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SWS KEY SHEET



APPENDIX A

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*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* MAY 1991 *
* VERSION 4.0.1E *
* Lahey F77L-EM/32 version 5.01 *
* Dodson & Associates, Inc. *
* RUN DATE 12/04/01 TIME 09:28:45 *
*****

```

```

*****
*
* U.S. ARMY CORPS OF ENGINEERS *
* HYDROLOGIC ENGINEERING CENTER *
* 609 SECOND STREET *
* DAVIS, CALIFORNIA 95616 *
* (916) 551-1748 *
*****

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X X XXXXXXX XXXXX X
X X X X X XX
X X X X X
XXXXXXX XXXX X XXXXX X
X X X X X
X X X X X
X X XXXXXXX XXXXX XXX

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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE. THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
 NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
 DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
 KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

HEC-1 INPUT

PAGE 1

```

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
1 ID GRAY'S 5TH ADDITION
*
2 IT 5 15NOV01 0000 300 2000
3 IO 3 0
4 JR PREC 1.0000 1.3143 1.5143 1.7714 2.0000 2.2286
*DIAGRAM
*
* EXISTING
5 KK EXIST
6 BA 0.3703 35min 24hr
7 PB 3.5 1.42 3.5
8 IN 60 4.375 60
9 PC 0 0.011 0.022 0.035 0.048 0.063 0.080 0.098 0.120 0.147
10 PC 0.181 0.235 0.663 0.772 0.820 0.854 0.880 0.902 0.921 0.937
11 PC 0.952 0.965 0.978 0.989 1.000
12 UD 2.4
13 LS 0 75
*
14 KK OFFDEV
15 BA .1875
16 UD 1.32
17 LS 0 75
*
18 KK TRAV
19 RS 1 FLOW 0
20 RC .20 .20 3000 .0009
21 RX 0 30 44 51 53 61 350 575
22 RY 1290 1287 1286 1285.5 1285.5 1286 1288 1290
*
23 KK SITEN
24 BA .0625
25 UD .2
26 LS 0 88
*
27 KK NPOND

```

28	RS	1	ELEV	1288					
29	SA	1.8	1.9	2.0	2.2				
30	SE	1288	1289	1290	1291				
31	SS	1288	10	2.86	1.5				
	*								
32	KK	CHAN							
33	RS	1	FLOW	0					
34	RC	.05	.05	.05	500	.0038			
35	RX	0	4	8	16	26	34	38	42
36	RY	1291	1290	1289	1287	1287	1289	1290	1291
	*								

HEC-1 INPUT

PAGE 2

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

37	KK	SITES							
38	BA	0.0859							
39	UD	.2							
40	LS	0	88						
	*								
41	KK	COMBO							
42	HC	2							
	*								
43	KK	SPOND							
44	RS	1	ELEV	1286					
45	SA	2.6	2.9	3.0	3.2	3.4			
46	SE	1286	1287	1288	1289	1290			
47	SS	1286	10	2.86	1.5				
	*								
48	KK	RESV							
49	BA	.0469							
50	UD	0.9							
51	LS	0	75						
	*								
52	KK	COMBAL							
53	HC	3	0						
	*								
54	KK	47TH							
55	RS	1	ELEV	1284					
56	SA	0	.2	.4	7.5	18	25	40	60
57	SE	1284	1285	1286	1287	1288	1289	1290	1291
58	SL	1285.5	28.3	0.67	0.5				
59	SS	1290	200	2.86	1.5				
	*								
60	ZZ								

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT LINE (V) ROUTING (--->) DIVERSION OR PUMP FLOW
 NO. (.) CONNECTOR (<---) RETURN OF DIVERTED OR PUMPED FLOW

5	EXIST								
	.								
14	.	OFFDEV							
	.	V							
18	.	V							
	.	TRAV							
	.	.							
23	.	.	SITEN						
	.	.	V						
	.	.	V						
27	.	.	NPOND						
	.	.	V						
	.	.	V						
32	.	.	CHAN						
	.	.	.						
	.	.	.						
37	.	.	.	SITES					

PEAK FLOW (CFS)	TIME (HR)	6-HR (CFS)	MAXIMUM AVERAGE FLOW 24-HR	72-HR	24.92-HR
--------------------	--------------	---------------	-------------------------------	-------	----------

+	55.	14.50	37.	12.	12.	12.
	(INCHES)	0.920	1.237	1.237	1.237	1.237
	(AC-FT)	18.	24.	24.	24.	24.

CUMULATIVE AREA = 0.37 SQ MI

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

HYDROGRAPH AT STATION EXIST
FOR PLAN 1, RATIO = 1.00

TOTAL RAINFALL = 3.50, TOTAL LOSS = 2.20, TOTAL EXCESS = 1.30

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
		6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(CFS)			
+	55.	14.50	37.	12.	12.
	(INCHES)	0.920	1.237	1.237	1.237
	(AC-FT)	18.	24.	24.	24.

CUMULATIVE AREA = 0.37 SQ MI

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

HYDROGRAPH AT STATION EXIST
FOR PLAN 1, RATIO = 1.31

TOTAL RAINFALL = 4.60, TOTAL LOSS = 2.47, TOTAL EXCESS = 2.13

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
		6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(CFS)			
+	93.	14.42	61.	20.	20.
	(INCHES)	1.535	2.034	2.034	2.034
	(AC-FT)	30.	40.	40.	40.

CUMULATIVE AREA = 0.37 SQ MI

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

HYDROGRAPH AT STATION EXIST
FOR PLAN 1, RATIO = 1.51

TOTAL RAINFALL = 5.30, TOTAL LOSS = 2.61, TOTAL EXCESS = 2.69

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
		6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(CFS)			
+	119.	14.42	78.	26.	25.
	(INCHES)	1.956	2.580	2.580	2.580
	(AC-FT)	39.	51.	51.	51.

CUMULATIVE AREA = 0.37 SQ MI

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

HYDROGRAPH AT STATION EXIST
FOR PLAN 1, RATIO = 1.77

TOTAL RAINFALL = 6.20, TOTAL LOSS = 2.75, TOTAL EXCESS = 3.45

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
		6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(CFS)			
+	154.	14.33	100.	33.	32.
	(INCHES)	2.518	3.314	3.314	3.314
	(AC-FT)	50.	65.	65.	65.

CUMULATIVE AREA = 0.37 SQ MI

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

17 LS SCS LOSS RATE
 STRTL 0.67 INITIAL ABSTRACTION
 CRVNBR 75.00 CURVE NUMBER
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

16 UD SCS DIMENSIONLESS UNITGRAPH
 TLAG 1.32 LAG

UNIT HYDROGRAPH
 81 END-OF-PERIOD ORDINATES

1.	3.	6.	9.	13.	18.	24.	30.	38.	45.
52.	57.	62.	64.	66.	66.	66.	66.	63.	61.
58.	55.	51.	47.	43.	38.	34.	30.	27.	25.
22.	20.	18.	17.	15.	14.	12.	11.	10.	9.
8.	8.	7.	6.	6.	5.	5.	4.	4.	3.
3.	3.	3.	2.	2.	2.	2.	2.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.									

TOTAL RAINFALL = 3.50, TOTAL LOSS = 2.20, TOTAL EXCESS = 1.30

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	24.92-HR
+		(CFS)			
+	40.	13.25	20.	6.	6.
			(INCHES)	1.002	1.279
			(AC-FT)	10.	13.
				13.	13.

CUMULATIVE AREA = 0.19 SQ MI

HYDROGRAPH AT STATION OFFDEV
 FOR PLAN 1, RATIO = 1.00

TOTAL RAINFALL = 3.50, TOTAL LOSS = 2.20, TOTAL EXCESS = 1.30

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	24.92-HR
+		(CFS)			
+	40.	13.25	20.	6.	6.
			(INCHES)	1.002	1.279
			(AC-FT)	10.	13.
				13.	13.

CUMULATIVE AREA = 0.19 SQ MI

HYDROGRAPH AT STATION OFFDEV
 FOR PLAN 1, RATIO = 1.31

TOTAL RAINFALL = 4.60, TOTAL LOSS = 2.47, TOTAL EXCESS = 2.13

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	24.92-HR
+		(CFS)			
+	69.	13.17	34.	11.	10.
			(INCHES)	1.664	2.095
			(AC-FT)	17.	21.
				21.	21.

CUMULATIVE AREA = 0.19 SQ MI

HYDROGRAPH AT STATION OFFDEV
FOR PLAN 1, RATIO = 1.51

TOTAL RAINFALL = 5.30, TOTAL LOSS = 2.61, TOTAL EXCESS = 2.69

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW	
(CFS)	(HR)		6-HR	24-HR 72-HR 24.92-HR
+	88.	13.08	(CFS)	
+			43.	13. 13. 13.
		(INCHES)	2.114	2.654 2.654 2.654
		(AC-FT)	21.	27. 27. 27.

CUMULATIVE AREA = 0.19 SQ MI

HYDROGRAPH AT STATION OFFDEV
FOR PLAN 1, RATIO = 1.77

TOTAL RAINFALL = 6.20, TOTAL LOSS = 2.75, TOTAL EXCESS = 3.45

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW	
(CFS)	(HR)		6-HR	24-HR 72-HR 24.92-HR
+	115.	13.08	(CFS)	
+			55.	17. 17. 17.
		(INCHES)	2.714	3.403 3.403 3.403
		(AC-FT)	27.	34. 34. 34.

CUMULATIVE AREA = 0.19 SQ MI

HYDROGRAPH AT STATION OFFDEV
FOR PLAN 1, RATIO = 2.00

TOTAL RAINFALL = 7.00, TOTAL LOSS = 2.85, TOTAL EXCESS = 4.15

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW	
(CFS)	(HR)		6-HR	24-HR 72-HR 24.92-HR
+	138.	13.08	(CFS)	
+			66.	21. 20. 20.
		(INCHES)	3.261	4.091 4.091 4.091
		(AC-FT)	33.	41. 41. 41.

CUMULATIVE AREA = 0.19 SQ MI

HYDROGRAPH AT STATION OFFDEV
FOR PLAN 1, RATIO = 2.23

TOTAL RAINFALL = 7.80, TOTAL LOSS = 2.94, TOTAL EXCESS = 4.86

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW	
(CFS)	(HR)		6-HR	24-HR 72-HR 24.92-HR
+	163.	13.08	(CFS)	
+			77.	24. 23. 23.
		(INCHES)	3.817	4.796 4.796 4.796
		(AC-FT)	38.	48. 48. 48.

CUMULATIVE AREA = 0.19 SQ MI

*** **

 * *
 18 KK * TRAV *
 * *

HYDROGRAPH ROUTING DATA

19 RS STORAGE ROUTING
 NSTPS 1 NUMBER OF SUBREACHES
 ITYP FLOW TYPE OF INITIAL CONDITION
 RSVRIC 0.00 INITIAL CONDITION
 X 0.00 WORKING R AND D COEFFICIENT

20 RC NORMAL DEPTH CHANNEL
 ANL 0.200 LEFT OVERBANK N-VALUE
 ANCH 0.200 MAIN CHANNEL N-VALUE
 ANR 0.200 RIGHT OVERBANK N-VALUE
 RLNTH 3000. REACH LENGTH
 SEL 0.0009 ENERGY SLOPE
 ELMAX 0.0 MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

CROSS-SECTION DATA

		--- LEFT OVERBANK ---	+	----- MAIN CHANNEL -----	+	--- RIGHT OVERBANK ---
22 RY	ELEVATION	1290.00		1287.00 1286.00 1285.50 1285.50 1286.00 1288.00		1290.00
21 RX	DISTANCE	0.00		30.00 44.00 51.00 53.00 61.00 350.00		575.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	0.09	0.30	0.82	1.94	3.68	6.03	8.99	12.55	16.71
OUTFLOW	0.00	0.08	0.40	1.33	3.53	7.62	14.10	23.46	36.08	52.33
ELEVATION	1285.50	1285.74	1285.97	1286.21	1286.45	1286.68	1286.92	1287.16	1287.39	1287.63
STORAGE	21.46	26.80	32.62	38.93	45.70	52.95	60.67	68.86	77.53	86.67
OUTFLOW	72.56	97.62	127.76	162.56	202.22	246.95	296.96	352.46	413.65	480.74
ELEVATION	1287.87	1288.10	1288.34	1288.58	1288.82	1289.05	1289.29	1289.53	1289.76	1290.00

HYDROGRAPH AT STATION TRAV FOR PLAN 1, RATIO = 1.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW
(CFS)	(HR)		6-HR 24-HR 72-HR 24.92-HR
14.	15.67	(CFS)	12. 5. 5. 5.
		(INCHES)	0.602 0.984 0.984 0.984
		(AC-FT)	6. 10. 10. 10.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE
(AC-FT)	(HR)		6-HR 24-HR 72-HR 24.92-HR
6.	15.67		5. 2. 2. 2.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE
(FEET)	(HR)		6-HR 24-HR 72-HR 24.92-HR
1286.91	15.58		1286.85 1286.16 1286.14 1286.14

CUMULATIVE AREA = 0.19 SQ MI

HYDROGRAPH AT STATION TRAV FOR PLAN 1, RATIO = 1.31

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW
(CFS)	(HR)		6-HR 24-HR 72-HR 24.92-HR
25.	15.25	(CFS)	22. 9. 8. 8.

(INCHES)	1.068	1.689	1.689	1.689
(AC-FT)	11.	17.	17.	17.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE	
+ (AC-FT)	(HR)	6-HR	24-HR	72-HR
10.	15.25			24.92-HR
		8.	3.	3.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE	
+ (FEET)	(HR)	6-HR	24-HR	72-HR
1287.19	15.25			24.92-HR
		1287.11	1286.29	1286.26
			1286.26	1286.26

CUMULATIVE AREA = 0.19 SQ MI

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

HYDROGRAPH AT STATION TRAV
FOR PLAN 1, RATIO = 1.51

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW	
+ (CFS)	(HR)	6-HR	24-HR	72-HR
34.	15.08			24.92-HR
		(CFS)		
		28.	11.	11.
		(INCHES)	2.183	2.183
		(AC-FT)	22.	22.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE	
+ (AC-FT)	(HR)	6-HR	24-HR	72-HR
12.	15.08			24.92-HR
		10.	4.	4.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE	
+ (FEET)	(HR)	6-HR	24-HR	72-HR
1287.35	15.08			24.92-HR
		1287.25	1286.36	1286.33
			1286.33	1286.33

CUMULATIVE AREA = 0.19 SQ MI

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

HYDROGRAPH AT STATION TRAV
FOR PLAN 1, RATIO = 1.77

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW	
+ (CFS)	(HR)	6-HR	24-HR	72-HR
46.	15.00			24.92-HR
		(CFS)		
		38.	14.	14.
		(INCHES)	2.855	2.855
		(AC-FT)	29.	29.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE	
+ (AC-FT)	(HR)	6-HR	24-HR	72-HR
15.	15.00			24.92-HR
		13.	5.	5.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE	
+ (FEET)	(HR)	6-HR	24-HR	72-HR
1287.54	15.00			24.92-HR
		1287.41	1286.45	1286.42
			1286.42	1286.42

CUMULATIVE AREA = 0.19 SQ MI

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

HYDROGRAPH AT STATION TRAV
FOR PLAN 1, RATIO = 2.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW	
+ (CFS)	(HR)	6-HR	24-HR	72-HR
58.	14.92			24.92-HR
		(CFS)		
		46.	18.	17.
			17.	17.

PEAK STORAGE	TIME	6-HR	MAXIMUM AVERAGE 24-HR	STORAGE 72-HR	24.92-HR
+ (AC-FT)	(HR)				
18.	14.83	15.	6.	6.	6.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
1287.69	14.83	1287.54	1286.52	1286.49	1286.49

CUMULATIVE AREA = 0.19 SQ MI

HYDROGRAPH AT STATION TRAV
FOR PLAN 1, RATIO = 2.23

PEAK FLOW	TIME		MAXIMUM	AVERAGE FLOW	
			6-HR	24-HR	72-HR
+	(CFS)	(HR)			24.92-HR
+	70.	14.83	55.	21.	20.
		(INCHES)	2.752	4.124	4.124
		(AC-FT)	28.	41.	41.

PEAK STORAGE	TIME	6-HR	MAXIMUM AVERAGE 24-HR	STORAGE 72-HR	24.92-HR
+ (AC-FT)	(HR)				
21.	14.83	17.	7.	7.	7.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
1287.83	14.83	1287.66	1286.59	1286.55	1286.55

CUMULATIVE AREA = 0.19 SQ MI

[illegible]

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*          *
23 KK    *   SITEN  *
*          *
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SUBBASIN RUNOFF DATA

24 BA SUBBASIN CHARACTERISTICS
TAREA 0.06 SUBBASIN AREA

PRECIPITATION DATA

7 PB STORM 3.50 BASIN TOTAL PRECIPITATION

9 PI INCREMENTAL PRECIPITATION PATTERN

[illegible]

CUMULATIVE AREA = 0.06 SQ MI

HYDROGRAPH AT STATION SITEN
FOR PLAN 1, RATIO = 1.51

TOTAL RAINFALL = 5.30, TOTAL LOSS = 1.35, TOTAL EXCESS = 3.95

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW		
(CFS)	(HR)			24-HR	72-HR	24.92-HR
80.	12.00	(CFS)	21.	7.	6.	6.
		(INCHES)	3.116	3.955	3.955	3.955
		(AC-FT)	10.	13.	13.	13.

CUMULATIVE AREA = 0.06 SQ MI

HYDROGRAPH AT STATION SITEN
FOR PLAN 1, RATIO = 1.77

TOTAL RAINFALL = 6.20, TOTAL LOSS = 1.38, TOTAL EXCESS = 4.82

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW	24-HR	72-HR	24.92-HR
(CFS)	(HR)	(CFS)					
97.	12.00		25.	8.	8.	8.	8.
		(INCHES)	3.773	4.819	4.819	4.819	4.819
		(AC-FT)	13.	16.	16.	16.	16.

CUMULATIVE AREA = 0.06 SQ MI

HYDROGRAPH AT STATION S1TEN
FOR PLAN 1, RATIO = 2.00

TOTAL RAINFALL = 7.00, TOTAL LOSS = 1.41, TOTAL EXCESS = 5.59

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW	24-HR	72-HR	24.92-HR
(CFS)	(HR)						
111.	12.00	(CFS)	29.	9.	9.	9.	9.
		(INCHES)	4.357	5.593	5.593	5.593	5.593
		(AC-FT)	15.	19.	19.	19.	19.

CUMULATIVE AREA = 0.06 SQ MI

HYDROGRAPH AT STATION SITEN
FOR PLAN 1, RATIO = 2.23

TOTAL RAINFALL = 7.80, TOTAL LOSS = 1.43, TOTAL EXCESS = 6.37

PEAK FLOW	TIME		MAXIMUM	AVERAGE FLOW	
(CFS)	(HR)		6-HR	24-HR	72-HR
125.	12.00	(CFS)	33.	11.	10.
		(INCHES)	4.940	6.373	6.373
		(AC-FT)	16.	21.	21.
					24.92-HR
					10.
					6.373
					21.

CUMULATIVE AREA = 0.06 SQ MI

27 KK

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 * NPOND *
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HYDROGRAPH ROUTING DATA

28 RS STORAGE ROUTING
 NSTPS 1 NUMBER OF SUBREACHES
 ITYP ELEV TYPE OF INITIAL CONDITION
 RSVRIC 1288.00 INITIAL CONDITION
 X 0.00 WORKING R AND D COEFFICIENT

29 SA AREA 1.8 1.9 2.0 2.2

30 SE ELEVATION 1288.00 1289.00 1290.00 1291.00

31 SS SPILLWAY
 CREL 1288.00 SPILLWAY CREST ELEVATION
 SPWID 10.00 SPILLWAY WIDTH
 COQW 2.86 WEIR COEFFICIENT
 EXPW 1.50 EXPONENT OF HEAD

COMPUTED STORAGE-ELEVATION DATA

STORAGE	0.00	1.85	3.80	5.90
ELEVATION	1288.00	1289.00	1290.00	1291.00

COMPUTED OUTFLOW-ELEVATION DATA

OUTFLOW	0.00	0.00	0.03	0.20	0.69	1.63	3.19	5.50	8.74	13.05
ELEVATION	1288.00	1288.00	1288.01	1288.04	1288.08	1288.15	1288.23	1288.33	1288.45	1288.59

OUTFLOW	18.58	25.48	33.92	44.03	55.98	69.92	86.00	104.37	125.19	148.61
ELEVATION	1288.75	1288.93	1289.12	1289.33	1289.56	1289.81	1290.08	1290.37	1290.68	1291.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	0.07	0.15	0.27	0.42	0.61	0.83	1.08	1.38	1.71
OUTFLOW	0.00	0.20	0.69	1.63	3.18	5.51	8.74	13.05	18.58	25.48
ELEVATION	1288.00	1288.04	1288.08	1288.15	1288.23	1288.33	1288.45	1288.59	1288.75	1288.93

STORAGE	1.85	2.08	2.49	2.94	3.43	3.80	3.97	4.55	5.20	5.90
OUTFLOW	28.60	33.92	44.03	55.98	69.92	80.89	86.00	104.37	125.19	148.61
ELEVATION	1289.00	1289.12	1289.33	1289.56	1289.81	1290.00	1290.08	1290.37	1290.68	1291.00

HYDROGRAPH AT STATION NPOND
 FOR PLAN 1, RATIO = 1.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW	
(CFS)	(HR)		6-HR	24-HR 72-HR 24.92-HR
+	33.	12.25	12.	4. 4. 4.
			(INCHES)	1.767 2.213 2.213 2.213
			(AC-FT)	6. 7. 7. 7.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE	
(AC-FT)	(HR)		6-HR	24-HR 72-HR 24.92-HR
+	2.	12.25	1.	0. 0. 0.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE	
(FEET)	(HR)		6-HR	24-HR 72-HR 24.92-HR
+	1289.11	12.25	1288.52	1288.20 1288.19 1288.19

CUMULATIVE AREA = 0.06 SQ MI

HYDROGRAPH AT STATION NPOND
FOR PLAN 1, RATIO = 1.31

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW 24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
+ 51.	12.17	(CFS)	17.	5.	5.	5.
		(INCHES)	2.562	3.224	3.224	3.224
		(AC-FT)	9.	11.	11.	11.
PEAK STORAGE	TIME		6-HR	MAXIMUM AVERAGE STORAGE 24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)					
+ 3.	12.17		1.	0.	0.	0.
PEAK STAGE	TIME		6-HR	MAXIMUM AVERAGE STAGE 24-HR	72-HR	24.92-HR
+ (FEET)	(HR)					
+ 1289.48	12.17		1288.66	1288.25	1288.24	1288.24
CUMULATIVE AREA =			0.06 SQ MI			

HYDROGRAPH AT STATION NPOND
FOR PLAN 1, RATIO = 1.51

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW 24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
+ 63.	12.17	(CFS)	21.	7.	6.	6.
		(INCHES)	3.070	3.882	3.882	3.882
		(AC-FT)	10.	13.	13.	13.
PEAK STORAGE	TIME		6-HR	MAXIMUM AVERAGE STORAGE 24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)					
+ 3.	12.17		1.	1.	1.	1.
PEAK STAGE	TIME		6-HR	MAXIMUM AVERAGE STAGE 24-HR	72-HR	24.92-HR
+ (FEET)	(HR)					
+ 1289.69	12.17		1288.75	1288.29	1288.28	1288.28
CUMULATIVE AREA =			0.06 SQ MI			

HYDROGRAPH AT STATION NPOND
FOR PLAN 1, RATIO = 1.77

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW 24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
+ 78.	12.17	(CFS)	25.	8.	8.	8.
		(INCHES)	3.727	4.739	4.739	4.739
		(AC-FT)	12.	16.	16.	16.
PEAK STORAGE	TIME		6-HR	MAXIMUM AVERAGE STORAGE 24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)					
+ 4.	12.17		2.	1.	1.	1.
PEAK STAGE	TIME		6-HR	MAXIMUM AVERAGE STAGE 24-HR	72-HR	24.92-HR
+ (FEET)	(HR)					
+ 1289.95	12.17		1288.85	1288.33	1288.32	1288.32
CUMULATIVE AREA =			0.06 SQ MI			

HYDROGRAPH AT STATION NPOND
FOR PLAN 1, RATIO = 2.00

PEAK FLOW	TIME		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
+ 92.	12.17	(CFS)	29.	9.	9.	9.
		(INCHES)	4.311	5.508	5.508	5.508
		(AC-FT)	14.	18.	18.	18.

PEAK STORAGE	TIME		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)					
+ 4.	12.17		2.	1.	1.	1.

PEAK STAGE	TIME		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)					
+ 1290.17	12.17		1288.93	1288.37	1288.35	1288.35

CUMULATIVE AREA = 0.06 SQ MI

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HYDROGRAPH AT STATION NPOND
FOR PLAN 1, RATIO = 2.23

PEAK FLOW	TIME		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
+ 105.	12.17	(CFS)	33.	11.	10.	10.
		(INCHES)	4.895	6.282	6.282	6.282
		(AC-FT)	16.	21.	21.	21.

PEAK STORAGE	TIME		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)					
+ 5.	12.17		2.	1.	1.	1.

PEAK STAGE	TIME		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)					
+ 1290.38	12.17		1289.02	1288.40	1288.39	1288.39

CUMULATIVE AREA = 0.06 SQ MI

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32 KK * CHAN *
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HYDROGRAPH ROUTING DATA

33 RS STORAGE ROUTING
NSTPS 1 NUMBER OF SUBREACHES
ITYP FLOW TYPE OF INITIAL CONDITION
RSVRIC 0.00 INITIAL CONDITION
X 0.00 WORKING R AND D COEFFICIENT

34 RC NORMAL DEPTH CHANNEL
ANL 0.050 LEFT OVERBANK N-VALUE
ANCH 0.050 MAIN CHANNEL N-VALUE
ANR 0.050 RIGHT OVERBANK N-VALUE
RLNTH 500. REACH LENGTH
SEL 0.0038 ENERGY SLOPE
ELMAX 0.0 MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

CROSS-SECTION DATA

		--- LEFT OVERBANK ---	+	----- MAIN CHANNEL -----	+	--- RIGHT OVERBANK ---
36 RY	ELEVATION	1291.00		1287.00		1291.00
35 RX	DISTANCE	0.00		16.00		42.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	0.03	0.06	0.09	0.13	0.17	0.22	0.27	0.32	0.38
OUTFLOW	0.00	1.41	4.62	9.40	15.75	23.70	33.32	44.68	57.85	72.91
ELEVATION	1287.00	1287.21	1287.42	1287.63	1287.84	1288.05	1288.26	1288.47	1288.68	1288.90
STORAGE	0.45	0.51	0.58	0.66	0.74	0.82	0.91	1.00	1.09	1.19
OUTFLOW	91.73	114.53	139.69	167.30	197.45	230.22	265.67	303.89	344.93	388.88
ELEVATION	1289.11	1289.32	1289.53	1289.74	1289.95	1290.16	1290.37	1290.58	1290.79	1291.00

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 73. TO 389.
 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

HYDROGRAPH AT STATION CHAN
 FOR PLAN 1, RATIO = 1.00

PEAK FLOW	TIME		6-HR	24-HR	72-HR	24.92-HR
(CFS)	(HR)					
33.	12.25	(CFS)	12.	4.	4.	4.
		(INCHES)	1.765	2.206	2.206	2.206
		(AC-FT)	6.	7.	7.	7.

PEAK STORAGE	TIME		6-HR	24-HR	72-HR	24.92-HR
(AC-FT)	(HR)					
0.	12.25		0.	0.	0.	0.

PEAK STAGE	TIME		6-HR	24-HR	72-HR	24.92-HR
(FEET)	(HR)					
1288.26	12.25		1287.66	1287.26	1287.25	1287.25

CUMULATIVE AREA = 0.06 SQ MI

HYDROGRAPH AT STATION CHAN
 FOR PLAN 1, RATIO = 1.31

PEAK FLOW	TIME		6-HR	24-HR	72-HR	24.92-HR
(CFS)	(HR)					
51.	12.25	(CFS)	17.	5.	5.	5.
		(INCHES)	2.561	3.216	3.216	3.216
		(AC-FT)	9.	11.	11.	11.

PEAK STORAGE	TIME		6-HR	24-HR	72-HR	24.92-HR
(AC-FT)	(HR)					
0.	12.25		0.	0.	0.	0.

PEAK STAGE	TIME		6-HR	24-HR	72-HR	24.92-HR
(FEET)	(HR)					
1288.58	12.25		1287.81	1287.33	1287.31	1287.31

CUMULATIVE AREA = 0.06 SQ MI

HYDROGRAPH AT STATION CHAN
 FOR PLAN 1, RATIO = 1.51

PEAK FLOW	TIME		6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(HR)				
		(CFS)				
+	63.	12.25	21.	7.	6.	6.
		(INCHES)	3.070	3.874	3.874	3.874
		(AC-FT)	10.	13.	13.	13.

PEAK STORAGE	TIME		6-HR	24-HR	72-HR	24.92-HR
+	(AC-FT)	(HR)				
+	0.	12.25	0.	0.	0.	0.

PEAK STAGE	TIME		6-HR	24-HR	72-HR	24.92-HR
+	(FEET)	(HR)				
+	1288.75	12.25	1287.89	1287.37	1287.35	1287.35

CUMULATIVE AREA = 0.06 SQ MI

HYDROGRAPH AT STATION CHAN
FOR PLAN 1, RATIO = 1.77

PEAK FLOW	TIME		6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(HR)				
		(CFS)				
+	77.	12.17	25.	8.	8.	8.
		(INCHES)	3.726	4.730	4.730	4.730
		(AC-FT)	12.	16.	16.	16.

PEAK STORAGE	TIME		6-HR	24-HR	72-HR	24.92-HR
+	(AC-FT)	(HR)				
+	0.	12.17	0.	0.	0.	0.

PEAK STAGE	TIME		6-HR	24-HR	72-HR	24.92-HR
+	(FEET)	(HR)				
+	1288.95	12.17	1287.98	1287.41	1287.40	1287.40

CUMULATIVE AREA = 0.06 SQ MI

HYDROGRAPH AT STATION CHAN
FOR PLAN 1, RATIO = 2.00

PEAK FLOW	TIME		6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(HR)				
		(CFS)				
+	91.	12.17	29.	9.	9.	9.
		(INCHES)	4.310	5.498	5.498	5.498
		(AC-FT)	14.	18.	18.	18.

PEAK STORAGE	TIME		6-HR	24-HR	72-HR	24.92-HR
+	(AC-FT)	(HR)				
+	0.	12.17	0.	0.	0.	0.

PEAK STAGE	TIME		6-HR	24-HR	72-HR	24.92-HR
+	(FEET)	(HR)				
+	1289.10	12.17	1288.06	1287.45	1287.44	1287.44

CUMULATIVE AREA = 0.06 SQ MI

HYDROGRAPH AT STATION CHAN
FOR PLAN 1, RATIO = 2.23

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UNIT HYDROGRAPH
14 END-OF-PERIOD ORDINATES

42.	138.	171.	137.	76.	44.	25.	14.	8.	5.
3.	2.	1.	0.						

TOTAL RAINFALL = 3.50, TOTAL LOSS = 1.23, TOTAL EXCESS = 2.27

PEAK FLOW	TIME		6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(HR)				
+	65.	12.00	(CFS)			
			17.	5.	5.	5.
		(INCHES)	1.812	2.269	2.269	2.269
		(AC-FT)	8.	10.	10.	10.

CUMULATIVE AREA = 0.09 SQ MI

HYDROGRAPH AT STATION SITES
FOR PLAN 1, RATIO = 1.00

TOTAL RAINFALL = 3.50, TOTAL LOSS = 1.23, TOTAL EXCESS = 2.27

PEAK FLOW	TIME		6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(HR)				
+	65.	12.00	(CFS)			
			17.	5.	5.	5.
		(INCHES)	1.812	2.269	2.269	2.269
		(AC-FT)	8.	10.	10.	10.

CUMULATIVE AREA = 0.09 SQ MI

HYDROGRAPH AT STATION SITES
FOR PLAN 1, RATIO = 1.31

TOTAL RAINFALL = 4.60, TOTAL LOSS = 1.31, TOTAL EXCESS = 3.29

PEAK FLOW	TIME		6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(HR)				
+	93.	12.00	(CFS)			
			24.	8.	7.	7.
		(INCHES)	2.606	3.290	3.290	3.290
		(AC-FT)	12.	15.	15.	15.

CUMULATIVE AREA = 0.09 SQ MI

HYDROGRAPH AT STATION SITES
FOR PLAN 1, RATIO = 1.51

TOTAL RAINFALL = 5.30, TOTAL LOSS = 1.35, TOTAL EXCESS = 3.95

PEAK FLOW	TIME		6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(HR)				
+	110.	12.00	(CFS)			
			29.	9.	9.	9.
		(INCHES)	3.116	3.955	3.955	3.955
		(AC-FT)	14.	18.	18.	18.

CUMULATIVE AREA = 0.09 SQ MI

HYDROGRAPH AT STATION SITES
FOR PLAN 1, RATIO = 1.77

TOTAL RAINFALL = 6.20, TOTAL LOSS = 1.38, TOTAL EXCESS = 4.82

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(HR)	(CFS)			
+	133.	12.00	35.	11.	11.	11.
			(INCHES)	3.773	4.819	4.819
			(AC-FT)	17.	22.	22.

CUMULATIVE AREA = 0.09 SQ MI

HYDROGRAPH AT STATION SITES
FOR PLAN 1, RATIO = 2.00

TOTAL RAINFALL = 7.00, TOTAL LOSS = 1.41, TOTAL EXCESS = 5.59

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(HR)	(CFS)			
+	153.	12.00	40.	13.	12.	12.
			(INCHES)	4.357	5.593	5.593
			(AC-FT)	20.	26.	26.

CUMULATIVE AREA = 0.09 SQ MI

HYDROGRAPH AT STATION SITES
FOR PLAN 1, RATIO = 2.23

TOTAL RAINFALL = 7.80, TOTAL LOSS = 1.43, TOTAL EXCESS = 6.37

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(HR)	(CFS)			
+	172.	12.00	46.	15.	14.	14.
			(INCHES)	4.940	6.373	6.373
			(AC-FT)	23.	29.	29.

CUMULATIVE AREA = 0.09 SQ MI

41 KK

* COMBO *

42 HC HYDROGRAPH COMBINATION
ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

HYDROGRAPH AT STATION COMBO
FOR PLAN 1, RATIO = 1.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(HR)	(CFS)			

+	93.	12.08	28.	9.	9.	9.
	(INCHES)		1.785	2.242	2.242	2.242
	(AC-FT)		14.	18.	18.	18.

CUMULATIVE AREA = 0.15 SQ MI

HYDROGRAPH AT STATION COMBO
FOR PLAN 1, RATIO = 1.31

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW	
+	(CFS)	(HR)		24-HR	72-HR
+	137.	12.08	(CFS)		24.92-HR
			41.	13.	13.
		(INCHES)	2.574	3.259	3.259
		(AC-FT)	20.	26.	26.

CUMULATIVE AREA = 0.15 SQ MI

HYDROGRAPH AT STATION COMBO
FOR PLAN 1, RATIO = 1.51

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW	
+	(CFS)	(HR)		24-HR	72-HR
+	166.	12.08	(CFS)		24.92-HR
			49.	16.	15.
		(INCHES)	3.083	3.921	3.921
		(AC-FT)	24.	31.	31.

CUMULATIVE AREA = 0.15 SQ MI

HYDROGRAPH AT STATION COMBO
FOR PLAN 1, RATIO = 1.77

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW	
+	(CFS)	(HR)		24-HR	72-HR
+	202.	12.00	(CFS)		24.92-HR
			60.	19.	18.
		(INCHES)	3.741	4.781	4.781
		(AC-FT)	30.	38.	38.

CUMULATIVE AREA = 0.15 SQ MI

HYDROGRAPH AT STATION COMBO
FOR PLAN 1, RATIO = 2.00

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW	
+	(CFS)	(HR)		24-HR	72-HR
+	235.	12.00	(CFS)		24.92-HR
			69.	22.	21.
		(INCHES)	4.326	5.553	5.553
		(AC-FT)	34.	44.	44.

CUMULATIVE AREA = 0.15 SQ MI

HYDROGRAPH AT STATION COMBO
FOR PLAN 1, RATIO = 2.23

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW	
				24-HR	72-HR
					24.92-HR

+	(CFS)	(HR)				
+	268.	12.00	(CFS)			
			78.	25.	24.	24.
		(INCHES)	4.911	6.330	6.330	6.330
		(AC-FT)	39.	50.	50.	50.

CUMULATIVE AREA = 0.15 SQ MI

*** **

43 KK *****
 * *
 * SPOND *
 * *

HYDROGRAPH ROUTING DATA

44 RS	STORAGE ROUTING				
	NSTPS	1	NUMBER OF SUBREACHES		
	ITYP	ELEV	TYPE OF INITIAL CONDITION		
	RSVRIC	1286.00	INITIAL CONDITION		
	X	0.00	WORKING R AND D COEFFICIENT		
45 SA	AREA	2.6	2.9	3.0	3.2
46 SE	ELEVATION	1286.00	1287.00	1288.00	1289.00
47 SS	SPILLWAY				
	CREL	1286.00	SPILLWAY CREST ELEVATION		
	SPWID	10.00	SPILLWAY WIDTH		
	COQW	2.86	WEIR COEFFICIENT		
	EXPW	1.50	EXPONENT OF HEAD		

COMPUTED STORAGE-ELEVATION DATA

STORAGE	0.00	2.75	5.70	8.80	12.10
ELEVATION	1286.00	1287.00	1288.00	1289.00	1290.00

COMPUTED OUTFLOW-ELEVATION DATA

OUTFLOW	0.00	0.00	0.04	0.31	1.06	2.51	4.90	8.47	13.46	20.09
ELEVATION	1286.00	1286.00	1286.01	1286.05	1286.11	1286.20	1286.31	1286.44	1286.60	1286.79
OUTFLOW	28.60	39.23	52.22	67.79	86.19	107.65	132.41	160.69	192.75	228.80
ELEVATION	1287.00	1287.23	1287.49	1287.78	1288.09	1288.42	1288.78	1289.16	1289.57	1290.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	0.03	0.13	0.29	0.52	0.82	1.18	1.63	2.15	2.75
OUTFLOW	0.00	0.04	0.31	1.06	2.51	4.90	8.47	13.46	20.09	28.60
ELEVATION	1286.00	1286.01	1286.05	1286.11	1286.20	1286.31	1286.44	1286.60	1286.79	1287.00
STORAGE	3.43	4.19	5.03	5.70	5.96	6.98	8.09	8.80	9.31	10.65
OUTFLOW	39.23	52.21	67.80	80.89	86.19	107.66	132.41	148.61	160.70	192.74
ELEVATION	1287.23	1287.49	1287.78	1288.00	1288.09	1288.42	1288.78	1289.00	1289.16	1289.57
STORAGE	12.10									
OUTFLOW	228.80									
ELEVATION	1290.00									

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HYDROGRAPH AT STATION SPOND FOR PLAN 1, RATIO = 1.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW	
		6-HR	24-HR	72-HR
+	(CFS)			
+	58.	12.42	27.	9.
			8.	8.

	(INCHES)	1.707	2.170	2.170	2.170
	(AC-FT)	14.	17.	17.	17.
PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE		
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
4.	12.42	3.	1.	1.	1.
PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE		
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
1287.59	12.42	1286.93	1286.35	1286.34	1286.34
CUMULATIVE AREA =		0.15 SQ MI			

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HYDROGRAPH AT STATION SPOND
FOR PLAN 1, RATIO = 1.31

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)				
92.	12.33	(CFS)	40.	13.	12.
		(INCHES)	2.505	3.173	3.173
		(AC-FT)	20.	25.	25.
PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE		
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
6.	12.33	3.	1.	1.	1.
PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE		
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
1288.18	12.33	1287.19	1286.45	1286.44	1286.44
CUMULATIVE AREA =		0.15 SQ MI			

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HYDROGRAPH AT STATION SPOND
FOR PLAN 1, RATIO = 1.51

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)				
116.	12.33	(CFS)	48.	15.	15.
		(INCHES)	3.017	3.826	3.826
		(AC-FT)	24.	30.	30.
PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE		
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
7.	12.33	4.	1.	1.	1.
PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE		
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
1288.53	12.33	1287.35	1286.51	1286.49	1286.49
CUMULATIVE AREA =		0.15 SQ MI			

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HYDROGRAPH AT STATION SPOND
FOR PLAN 1, RATIO = 1.77

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)				
146.	12.33	(CFS)	59.	19.	18.

(INCHES) 3.675 4.677 4.677 4.677
(AC-FT) 29. 37. 37. 37.

PEAK STORAGE TIME
+ (AC-FT) (HR) 6-HR MAXIMUM AVERAGE STORAGE 24.92-HR
9. 12.33 4. 2. 2. 2.

PEAK STAGE TIME
+ (FEET) (HR) 6-HR MAXIMUM AVERAGE STAGE 24.92-HR
1288.96 12.33 1287.53 1286.59 1286.57 1286.57

CUMULATIVE AREA = 0.15 SQ MI

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HYDROGRAPH AT STATION SPOND
FOR PLAN 1, RATIO = 2.00

PEAK FLOW TIME
+ (CFS) (HR) 6-HR MAXIMUM AVERAGE FLOW 24.92-HR
173. 12.25 (CFS) 68. 22. 21. 21.
(INCHES) 4.259 5.441 5.441 5.441
(AC-FT) 34. 43. 43. 43.

PEAK STORAGE TIME
+ (AC-FT) (HR) 6-HR MAXIMUM AVERAGE STORAGE 24.92-HR
10. 12.25 5. 2. 2. 2.

PEAK STAGE TIME
+ (FEET) (HR) 6-HR MAXIMUM AVERAGE STAGE 24.92-HR
1289.32 12.25 1287.68 1286.66 1286.63 1286.63

CUMULATIVE AREA = 0.15 SQ MI

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HYDROGRAPH AT STATION SPOND
FOR PLAN 1, RATIO = 2.23

PEAK FLOW TIME
+ (CFS) (HR) 6-HR MAXIMUM AVERAGE FLOW 24.92-HR
201. 12.25 (CFS) 77. 25. 24. 24.
(INCHES) 4.843 6.210 6.210 6.210
(AC-FT) 38. 49. 49. 49.

PEAK STORAGE TIME
+ (AC-FT) (HR) 6-HR MAXIMUM AVERAGE STORAGE 24.92-HR
11. 12.25 5. 2. 2. 2.

PEAK STAGE TIME
+ (FEET) (HR) 6-HR MAXIMUM AVERAGE STAGE 24.92-HR
1289.66 12.25 1287.83 1286.72 1286.69 1286.69

CUMULATIVE AREA = 0.15 SQ MI

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48 KK

* *
* RESV *
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49 BA SUBBASIN CHARACTERISTICS
TAREA 0.05 SUBBASIN AREA

7 PB STORM 3.50 BASIN TOTAL PRECIPITATION

[illegible]

51 LS	SCS LOSS RATE		
	STRTL	0.67	INITIAL ABSTRACTION
	CRVNBR	75.00	CURVE NUMBER
	RTIMP	0.00	PERCENT IMPERVIOUS AREA

50 UD SCS DIMENSIONLESS UNITGRAPH
 TLAG 0.90 LAG

UNIT HYDROGRAPH
56 END-OF-PERIOD ORDINATES[illegible]

TOTAL RAINFALL = 3.50, TOTAL LOSS = 2.20, TOTAL EXCESS = 1.30

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
			6-HR	24-HR	72-HR
+ (CFS)	(HR)				24.92-HR
		(CFS)			
+ 13.	12.67	5.	2.	2.	2.
		(INCHES)	1.024	1.292	1.292
		(AC-FT)	3.	3.	3.

CUMULATIVE AREA = 0.05 SQ MI

HYDROGRAPH AT STATION RESV
FOR PLAN 1, RATIO = 1.00

TOTAL RAINFALL = 3.50, TOTAL LOSS = 2.20, TOTAL EXCESS = 1.30

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW 24-HR	72-HR	24.92-HR
(CFS)	(HR)	(CFS)				
+	13.	12.67	5.	2.	2.	2.
		(INCHES)	1.024	1.292	1.292	1.292
		(AC-FT)	3.	3.	3.	3.

CUMULATIVE AREA = 0.05 SQ MI

HYDROGRAPH AT STATION RESV
FOR PLAN 1, RATIO = 1.31

TOTAL RAINFALL = 4.60, TOTAL LOSS = 2.47, TOTAL EXCESS = 2.13

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW 24-HR	72-HR	24.92-HR
(CFS)	(HR)	(CFS)				
+	21.	12.67	9.	3.	3.	3.
		(INCHES)	1.695	2.114	2.114	2.114
		(AC-FT)	4.	5.	5.	5.

CUMULATIVE AREA = 0.05 SQ MI

HYDROGRAPH AT STATION RESV
FOR PLAN 1, RATIO = 1.51

TOTAL RAINFALL = 5.30, TOTAL LOSS = 2.61, TOTAL EXCESS = 2.69

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW 24-HR	72-HR	24.92-HR
(CFS)	(HR)	(CFS)				
+	27.	12.58	11.	3.	3.	3.
		(INCHES)	2.150	2.677	2.677	2.677
		(AC-FT)	5.	7.	7.	7.

CUMULATIVE AREA = 0.05 SQ MI

HYDROGRAPH AT STATION RESV
FOR PLAN 1, RATIO = 1.77

TOTAL RAINFALL = 6.20, TOTAL LOSS = 2.75, TOTAL EXCESS = 3.45

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW 24-HR	72-HR	24.92-HR
(CFS)	(HR)	(CFS)				
+	36.	12.58	14.	4.	4.	4.
		(INCHES)	2.755	3.431	3.431	3.431
		(AC-FT)	7.	9.	9.	9.

CUMULATIVE AREA = 0.05 SQ MI

HYDROGRAPH AT STATION RESV
FOR PLAN 1, RATIO = 2.00

TOTAL RAINFALL = 7.00, TOTAL LOSS = 2.85, TOTAL EXCESS = 4.15

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW 24-HR	72-HR	24.92-HR
(CFS)	(HR)	(CFS)				

+	43.	12.58	17.	5.	5.	5.
		(INCHES)	3.306	4.124	4.124	4.124
		(AC-FT)	8.	10.	10.	10.

CUMULATIVE AREA = 0.05 SQ MI

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HYDROGRAPH AT STATION RESV
FOR PLAN 1, RATIO = 2.23

TOTAL RAINFALL = 7.80, TOTAL LOSS = 2.94, TOTAL EXCESS = 4.86

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(HR)				
+	51.	12.58	(CFS)			
			20.	6.	6.	6.
		(INCHES)	3.866	4.833	4.833	4.833
		(AC-FT)	10.	12.	12.	12.

CUMULATIVE AREA = 0.05 SQ MI

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52 KK * COMBAL *
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53 HC HYDROGRAPH COMBINATION
 ICOMP 3 NUMBER OF HYDROGRAPHS TO COMBINE

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

HYDROGRAPH AT STATION COMBAL
FOR PLAN 1, RATIO = 1.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(HR)				
+	71.	12.50	(CFS)			
			42.	15.	15.	15.
		(INCHES)	1.012	1.482	1.482	1.482
		(AC-FT)	21.	30.	30.	30.

CUMULATIVE AREA = 0.38 SQ MI

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HYDROGRAPH AT STATION COMBAL
FOR PLAN 1, RATIO = 1.31

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(HR)				
+	115.	12.42	(CFS)			
			66.	24.	23.	23.
		(INCHES)	1.592	2.316	2.316	2.316
		(AC-FT)	33.	47.	47.	47.

CUMULATIVE AREA = 0.38 SQ MI

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HYDROGRAPH AT STATION COMBAL
FOR PLAN 1, RATIO = 1.51

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
+ 145.	12.42	(CFS)	82.	30.	29.	29.
		(INCHES)	1.985	2.880	2.880	2.880
		(AC-FT)	41.	59.	59.	59.
CUMULATIVE AREA =			0.38 SQ MI			

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HYDROGRAPH AT STATION COMBAL
FOR PLAN 1, RATIO = 1.77

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
+ 184.	12.42	(CFS)	103.	37.	36.	36.
		(INCHES)	2.510	3.632	3.632	3.632
		(AC-FT)	51.	74.	74.	74.
CUMULATIVE AREA =			0.38 SQ MI			

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HYDROGRAPH AT STATION COMBAL
FOR PLAN 1, RATIO = 2.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
+ 220.	12.33	(CFS)	123.	44.	43.	43.
		(INCHES)	2.991	4.319	4.319	4.319
		(AC-FT)	61.	88.	88.	88.
CUMULATIVE AREA =			0.38 SQ MI			

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HYDROGRAPH AT STATION COMBAL
FOR PLAN 1, RATIO = 2.23

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
+ 257.	12.33	(CFS)	143.	52.	50.	50.
		(INCHES)	3.481	5.019	5.019	5.019
		(AC-FT)	71.	102.	102.	102.
CUMULATIVE AREA =			0.38 SQ MI			

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54 KK 47TH *
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HYDROGRAPH ROUTING DATA

55 RS STORAGE ROUTING
NSTPS 1 NUMBER OF SUBREACHES
ITYP ELEV TYPE OF INITIAL CONDITION
RSVRIC 1284.00 INITIAL CONDITION
X 0.00 WORKING R AND D COEFFICIENT

56 SA	AREA	0.0	0.2	0.4	7.5	18.0	25.0	40.0	60.0
57 SE	ELEVATION	1284.00	1285.00	1286.00	1287.00	1288.00	1289.00	1290.00	1291.00
58 SL	LOW-LEVEL OUTLET								
	ELEV	1285.50	ELEVATION AT CENTER OF OUTLET						
	CAREA	28.30	CROSS-SECTIONAL AREA						
	COQL	0.67	COEFFICIENT						
	EXPL	0.50	EXPONENT OF HEAD						
59 SS	SPILLWAY								
	CREL	1290.00	SPILLWAY CREST ELEVATION						
	SPWID	200.00	SPILLWAY WIDTH						
	COQW	2.86	WEIR COEFFICIENT						
	EXPW	1.50	EXPONENT OF HEAD						

COMPUTED STORAGE-ELEVATION DATA

STORAGE	0.00	0.07	0.36	3.57	15.94	37.35	69.56	119.22
ELEVATION	1284.00	1285.00	1286.00	1287.00	1288.00	1289.00	1290.00	1291.00

COMPUTED OUTFLOW-ELEVATION DATA

OUTFLOW	0.00	0.00	250.02	258.32	267.19	276.70	286.90	297.88	309.74	322.58
ELEVATION	1284.00	1285.50	1288.20	1288.39	1288.59	1288.81	1289.06	1289.34	1289.65	1290.00
OUTFLOW	324.75	331.80	346.86	372.93	413.01	470.11	547.22	647.35	773.48	928.63
ELEVATION	1290.02	1290.05	1290.11	1290.18	1290.27	1290.38	1290.51	1290.65	1290.82	1291.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	0.07	0.19	0.36	3.57	15.94	19.74	23.38	27.66	32.75
OUTFLOW	0.00	0.00	0.00	107.53	186.24	240.44	250.02	258.32	267.19	276.70
ELEVATION	1284.00	1285.00	1285.50	1286.00	1287.00	1288.00	1288.20	1288.39	1288.59	1288.81
STORAGE	37.35	38.86	46.56	56.52	69.56	70.32	71.76	74.00	77.08	81.09
OUTFLOW	284.49	286.90	297.88	309.74	322.58	324.75	331.80	346.86	372.92	413.02
ELEVATION	1289.00	1289.06	1289.34	1289.65	1290.00	1290.02	1290.05	1290.11	1290.18	1290.27
STORAGE	86.11	92.27	99.72	108.63	119.22					
OUTFLOW	470.13	547.21	647.35	773.46	928.63					
ELEVATION	1290.38	1290.51	1290.65	1290.82	1291.00					

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 0. TO 108.
 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

HYDROGRAPH AT STATION 47TH FOR PLAN 1, RATIO = 1.00

PEAK FLOW	TIME		MAXIMUM	AVERAGE FLOW	
+	(CFS)	(HR)	6-HR	24-HR	72-HR
					24.92-HR
+	71.	12.58	(CFS)		
			42.	15.	15.
			(INCHES)	1.472	1.472
			(AC-FT)	21.	30.
				30.	30.
PEAK STORAGE	TIME		MAXIMUM	AVERAGE STORAGE	
+	(AC-FT)	(HR)	6-HR	24-HR	72-HR
					24.92-HR
+	0.	12.50	0.	0.	0.
					0.
PEAK STAGE	TIME		MAXIMUM	AVERAGE STAGE	
+	(FEET)	(HR)	6-HR	24-HR	72-HR
					24.92-HR
+	1285.83	12.58	1285.69	1285.03	1284.99
					1284.99

CUMULATIVE AREA = 0.38 SQ MI

HYDROGRAPH AT STATION 47TH
FOR PLAN 1, RATIO = 1.31

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW 24-HR	72-HR	24.92-HR
(CFS)	(HR)	(CFS)				
+ 111.	12.67	66.	24.	23.	23.	
		(INCHES) 1.592	2.306	2.306	2.306	
		(AC-FT) 32.	47.	47.	47.	
PEAK STORAGE	TIME		6-HR	MAXIMUM AVERAGE STORAGE 24-HR	72-HR	24.92-HR
(AC-FT)	(HR)					
+ 1.	12.67	0.	0.	0.	0.	
PEAK STAGE	TIME		6-HR	MAXIMUM AVERAGE STAGE 24-HR	72-HR	24.92-HR
(FEET)	(HR)					
+ 1286.04	12.67	1285.81	1285.15	1285.11	1285.11	

CUMULATIVE AREA = 0.38 SQ MI

HYDROGRAPH AT STATION 47TH
FOR PLAN 1, RATIO = 1.51

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW 24-HR	72-HR	24.92-HR
(CFS)	(HR)	(CFS)				
+ 132.	12.83	82.	30.	28.	28.	
		(INCHES) 1.986	2.870	2.870	2.870	
		(AC-FT) 41.	59.	59.	59.	
PEAK STORAGE	TIME		6-HR	MAXIMUM AVERAGE STORAGE 24-HR	72-HR	24.92-HR
(AC-FT)	(HR)					
+ 1.	12.83	1.	0.	0.	0.	
PEAK STAGE	TIME		6-HR	MAXIMUM AVERAGE STAGE 24-HR	72-HR	24.92-HR
(FEET)	(HR)					
+ 1286.31	12.83	1285.92	1285.23	1285.18	1285.18	

CUMULATIVE AREA = 0.38 SQ MI

HYDROGRAPH AT STATION 47TH
FOR PLAN 1, RATIO = 1.77

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW 24-HR	72-HR	24.92-HR
(CFS)	(HR)	(CFS)				
+ 163.	12.92	103.	37.	36.	36.	
		(INCHES) 2.510	3.621	3.621	3.621	
		(AC-FT) 51.	74.	74.	74.	
PEAK STORAGE	TIME		6-HR	MAXIMUM AVERAGE STORAGE 24-HR	72-HR	24.92-HR
(AC-FT)	(HR)					
+ 3.	12.83	1.	0.	0.	0.	
PEAK STAGE	TIME		6-HR	MAXIMUM AVERAGE STAGE 24-HR	72-HR	24.92-HR
(FEET)	(HR)					
+ 1286.71	12.92	1286.10	1285.33	1285.28	1285.28	

CUMULATIVE AREA = 0.38 SQ MI

HYDROGRAPH AT STATION 47TH
FOR PLAN 1, RATIO = 2.00

PEAK FLOW		TIME	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(HR)				
+	188.	13.00	(CFS)			
			123.	44.	43.	43.
			(INCHES)	2.990	4.308	4.308
			(AC-FT)	61.	88.	88.
PEAK STORAGE		TIME	MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	24.92-HR
+	(AC-FT)	(HR)				
	4.	13.00	1.	0.	0.	0.
PEAK STAGE		TIME	MAXIMUM AVERAGE STAGE			
			6-HR	24-HR	72-HR	24.92-HR
+	(FEET)	(HR)				
	1287.03	13.00	1286.29	1285.42	1285.37	1285.37
CUMULATIVE AREA =			0.38 SQ MI			

HYDROGRAPH AT STATION 47TH
FOR PLAN 1, RATIO = 2.23

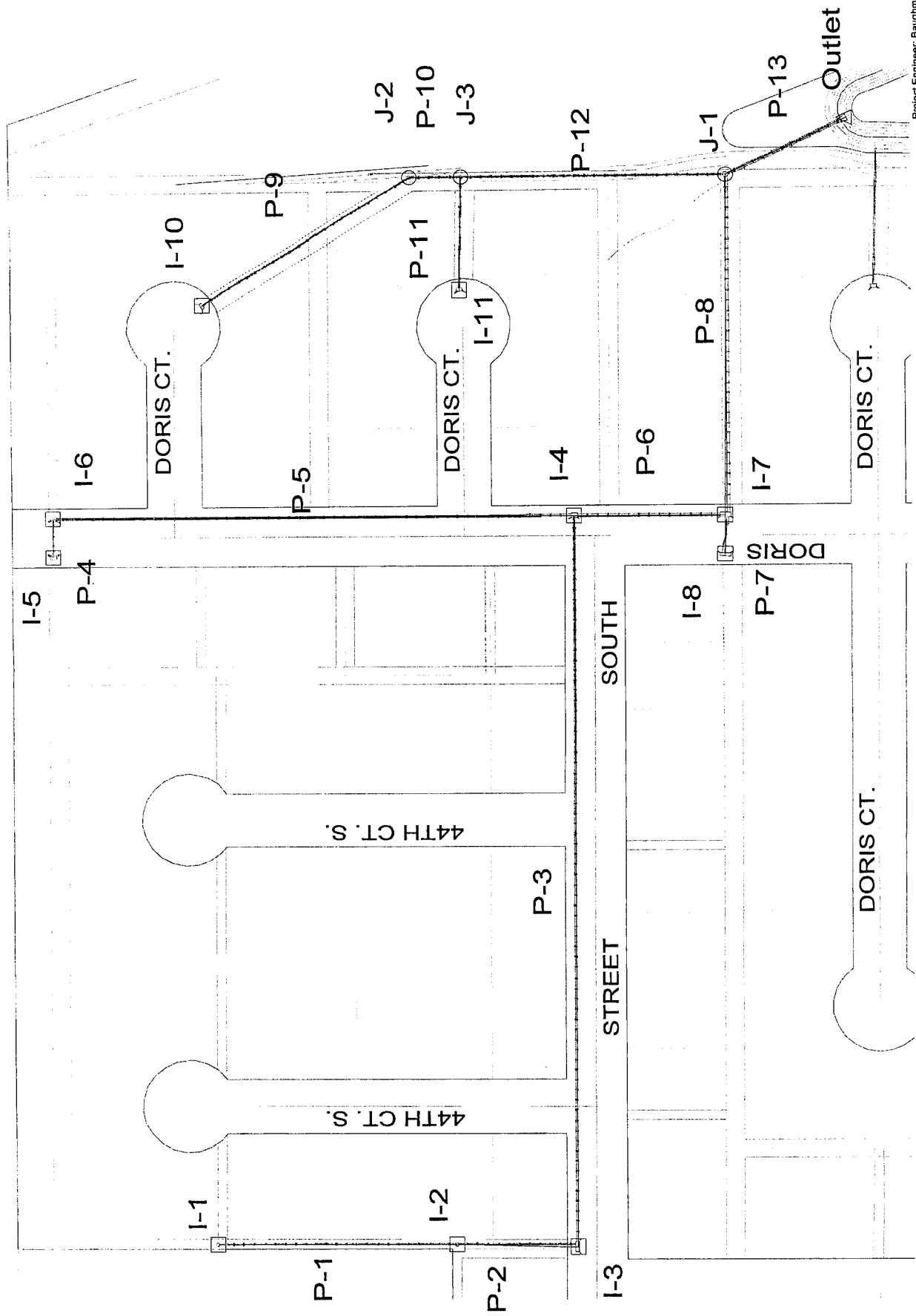
PEAK FLOW		TIME	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+	(CFS)	(HR)				
+	198.	13.25	(CFS)			
			143.	52.	50.	50.
			(INCHES)	3.481	5.008	5.008
			(AC-FT)	71.	102.	102.
PEAK STORAGE		TIME	MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	24.92-HR
+	(AC-FT)	(HR)				
	6.	13.25	3.	1.	1.	1.
PEAK STAGE		TIME	MAXIMUM AVERAGE STAGE			
			6-HR	24-HR	72-HR	24.92-HR
+	(FEET)	(HR)				
	1287.22	13.25	1286.52	1285.51	1285.46	1285.46
CUMULATIVE AREA =			0.38 SQ MI			

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK, HOURS

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO PRECIPITATION						
				RATIO 1 1.00	RATIO 2 1.31	RATIO 3 1.51	RATIO 4 1.77	RATIO 5 2.00	RATIO 6 2.23	
HYDROGRAPH AT +	EXIST	0.37	1	FLOW TIME	55. 14.50	93. 14.42	119. 14.42	154. 14.33	186. 14.33	218. 14.33
HYDROGRAPH AT +	OFFDEV	0.19	1	FLOW TIME	40. 13.25	69. 13.17	88. 13.08	115. 13.08	138. 13.08	163. 13.08
ROUTED TO +	TRAV	0.19	1	FLOW TIME	14. 15.67	25. 15.25	34. 15.08	46. 15.00	58. 14.92	70. 14.83
			** PEAK STAGES IN FEET **							
			1	STAGE TIME	1286.91 15.58	1287.19 15.25	1287.35 15.08	1287.54 15.00	1287.69 14.83	1287.83 14.83
HYDROGRAPH AT +	SITEN	0.06	1	FLOW TIME	48. 12.00	68. 12.00	80. 12.00	97. 12.00	111. 12.00	125. 12.00
ROUTED TO +	NPOND	0.06	1	FLOW TIME	33. 12.25	51. 12.17	63. 12.17	78. 12.17	92. 12.17	105. 12.17
			** PEAK STAGES IN FEET **							
			1	STAGE TIME	1289.11 12.25	1289.48 12.17	1289.69 12.17	1289.95 12.17	1290.17 12.17	1290.38 12.17
ROUTED TO +	CHAN	0.06	1	FLOW TIME	33. 12.25	51. 12.25	63. 12.25	77. 12.17	91. 12.17	104. 12.17
			** PEAK STAGES IN FEET **							
			1	STAGE TIME	1288.26 12.25	1288.58 12.25	1288.75 12.25	1288.95 12.17	1289.10 12.17	1289.22 12.17
HYDROGRAPH AT +	SITES	0.09	1	FLOW TIME	65. 12.00	93. 12.00	110. 12.00	133. 12.00	153. 12.00	172. 12.00
2 COMBINED AT +	COMBO	0.15	1	FLOW TIME	93. 12.08	137. 12.08	166. 12.08	202. 12.00	235. 12.00	268. 12.00
ROUTED TO +	SPOND	0.15	1	FLOW TIME	58. 12.42	92. 12.33	116. 12.33	146. 12.33	173. 12.25	201. 12.25
			** PEAK STAGES IN FEET **							
			1	STAGE TIME	1287.59 12.42	1288.18 12.33	1288.53 12.33	1288.96 12.33	1289.32 12.25	1289.66 12.25
HYDROGRAPH AT +	RESV	0.05	1	FLOW TIME	13. 12.67	21. 12.67	27. 12.58	36. 12.58	43. 12.58	51. 12.58
3 COMBINED AT +	COMBAL	0.38	1	FLOW TIME	71. 12.50	115. 12.42	145. 12.42	184. 12.42	220. 12.33	257. 12.33
ROUTED TO +	47TH	0.38	1	FLOW TIME	71. 12.58	111. 12.67	132. 12.83	163. 12.92	188. 13.00	198. 13.25
			** PEAK STAGES IN FEET **							
			1	STAGE TIME	1285.83 12.58	1286.04 12.67	1286.31 12.83	1286.71 12.92	1287.03 13.00	1287.22 13.25

*** NORMAL END OF HEC-1 ***

APPENDIX B

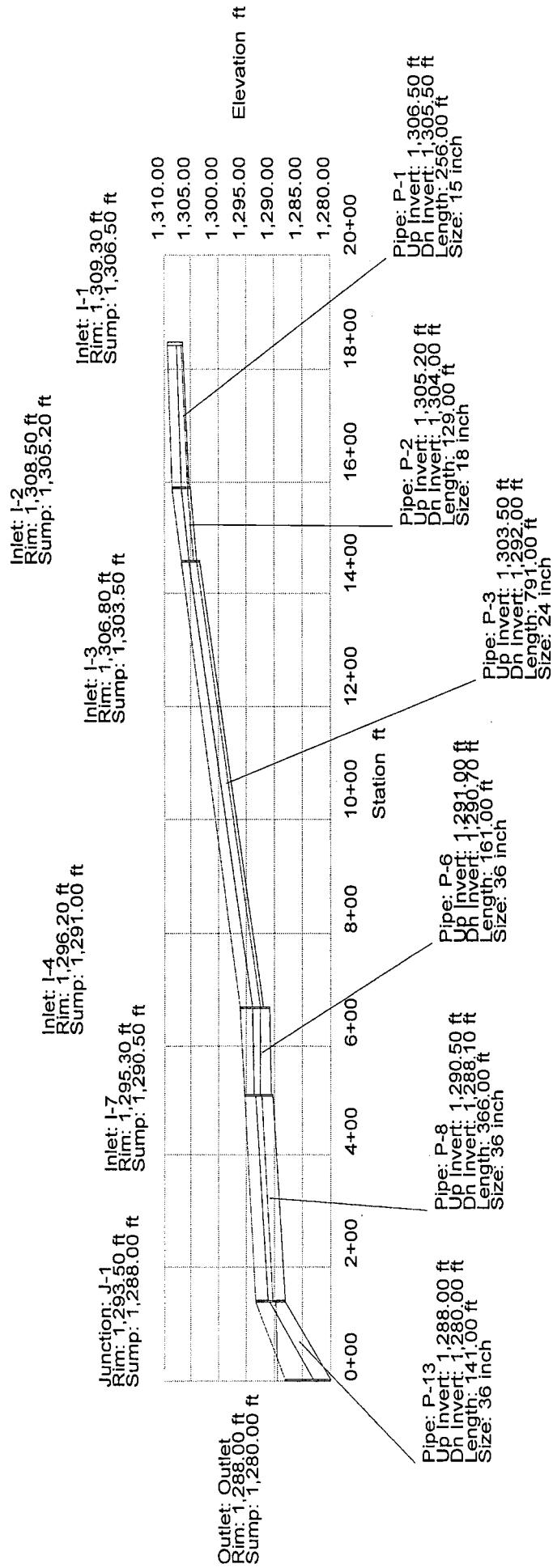


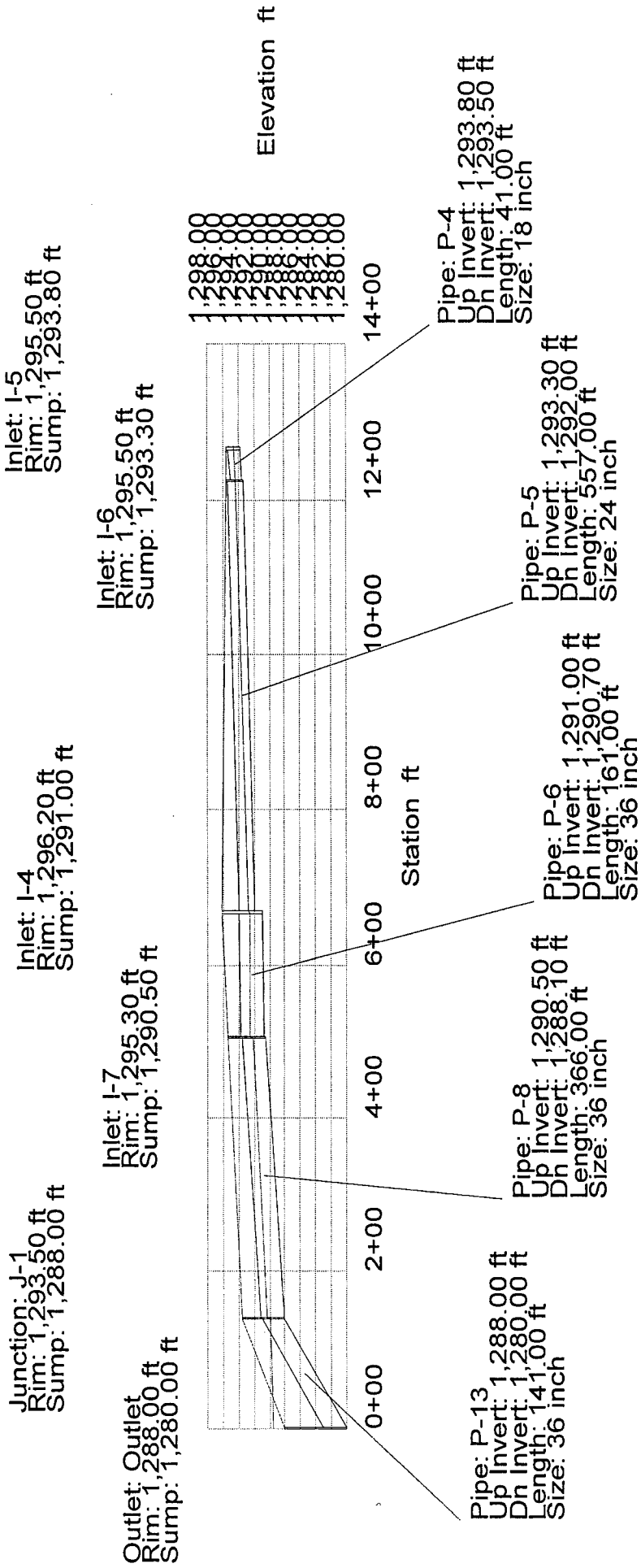
Node Report

Node	Inlet Area (acres)	Weighted Roughness Coefficient	Total CA (acres)	Inlet TC (min)	System Flow Time (min)	System Intensity (in/hr)	Total Watershed (CIA) (cfs)	Additional Flow (cfs)	Known Flow (cfs)	Discharge (cfs)	Ground Elevation (ft)	HGL In (ft)	HGL Out (ft)	Inlet Intensity (in/hr)
I-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.90	0.00	1.90	1,295.40	1,292.15	1,292.05	0.00
I-10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.90	0.00	1.90	1,294.50	1,292.69	1,292.61	0.00
J-2	N/A	N/A	0.00	N/A	1.27	0.00	0.00	N/A	N/A	1.90	1,293.00	1,291.32	1,291.32	N/A
J-3	N/A	N/A	0.00	N/A	1.65	0.00	0.00	N/A	N/A	3.80	1,292.50	1,291.27	1,291.27	N/A
I-8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	10.00	1,295.30	1,294.75	1,294.23	0.00
I-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.50	0.00	3.50	1,295.50	1,294.65	1,294.51	0.00
I-6	0.00	0.00	0.00	0.00	0.18	0.00	0.00	1.90	0.00	5.40	1,295.50	1,294.39	1,294.29	0.00
I-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.50	1,309.30	1,306.84	1,306.80	0.00
I-2	0.00	0.00	0.00	0.00	1.98	0.00	0.00	1.40	0.00	1.90	1,308.50	1,305.81	1,305.72	0.00
I-3	0.00	0.00	0.00	0.00	2.53	0.00	0.00	1.30	0.00	3.20	1,306.80	1,304.24	1,304.13	0.00
I-4	0.00	0.00	0.00	0.00	6.18	0.00	0.00	0.20	0.00	8.80	1,296.20	1,292.68	1,292.64	0.00
I-7	0.00	0.00	0.00	0.00	7.49	0.00	0.00	10.00	0.00	28.80	1,295.30	1,292.60	1,292.24	0.00
J-1	N/A	N/A	0.00	N/A	8.49	0.00	0.00	N/A	N/A	32.60	1,293.50	1,290.25	1,289.85	N/A
Outlet	N/A	N/A	0.00	N/A	8.89	0.00	0.00	N/A	N/A	N/A	1,288.00	1,289.50	1,289.50	N/A

Pipe Report

Pipe	Up Node	Dn Node	Shape	Size	S (ft/ft)	Length (ft)	Up Invert (ft)	Dn Invert (ft)	Up Gr Elev (ft)	Dn Gr Elev (ft)	Up Cover (ft)	Dn Cover (ft)	Q (cfs)	Inlet CA (acres)	Tot CA (acres)	I (in/hr)	Cap (cfs)	Up HGL (ft)	Dn HGL (ft)
P-11	I-11	J-3	Circular	15 inch	0.005738	122.00	1,291.50	1,290.80	1,295.40	1,292.50	2.65	0.45	1.90	0.00	0.00	0.00	4.89	1,292.05	1,291.34
P-9	I-10	J-2	Circular	15 inch	0.003817	262.00	1,292.00	1,291.00	1,294.50	1,293.00	1.25	0.75	1.90	0.00	0.00	0.00	3.99	1,292.61	1,291.55
P-10	J-2	J-3	Circular	18 inch	0.003636	55.00	1,290.70	1,290.50	1,293.00	1,292.50	0.80	0.50	1.90	N/A	0.00	0.00	6.33	1,291.32	1,291.27
P-12	J-3	J-1	Circular	18 inch	0.003191	282.00	1,290.40	1,289.50	1,292.50	1,293.50	0.60	2.50	3.80	N/A	0.00	0.00	5.93	1,291.27	1,290.25
P-7	I-8	I-7	Circular	15 inch	0.011905	42.00	1,292.50	1,292.00	1,295.30	1,295.30	1.55	2.05	10.00	0.00	0.00	0.00	7.05	1,294.23	1,293.18
P-4	I-5	I-6	Circular	18 inch	0.007317	41.00	1,293.80	1,293.50	1,295.50	1,295.50	0.20	0.50	3.50	0.00	0.00	0.00	8.98	1,294.51	1,294.39
P-5	I-6	I-4	Circular	24 inch	0.002334	557.00	1,293.30	1,292.00	1,295.50	1,296.20	0.20	2.20	5.40	0.00	0.00	0.00	10.93	1,294.29	1,292.82
P-1	I-1	I-2	Circular	15 inch	0.003906	256.00	1,306.50	1,305.50	1,309.30	1,308.50	1.55	1.75	0.50	0.00	0.00	0.00	4.04	1,306.80	1,305.81
P-2	I-2	I-3	Circular	18 inch	0.009302	129.00	1,305.20	1,304.00	1,308.50	1,306.80	1.80	1.30	1.90	0.00	0.00	0.00	10.13	1,305.72	1,304.44
P-3	I-3	I-4	Circular	24 inch	0.014539	791.00	1,303.50	1,292.00	1,306.80	1,296.20	1.30	2.20	3.20	0.00	0.00	0.00	27.28	1,304.13	1,292.68
P-6	I-4	I-7	Circular	36 inch	0.001863	161.00	1,291.00	1,290.70	1,296.20	1,295.30	2.20	1.60	8.80	0.00	0.00	0.00	28.79	1,292.64	1,292.60
P-8	I-7	J-1	Circular	36 inch	0.006557	366.00	1,290.50	1,288.10	1,295.30	1,293.50	1.80	2.40	28.80	0.00	0.00	0.00	54.01	1,292.24	1,290.25
P-13	J-1	Outlet	Circular	36 inch	0.056738	141.00	1,288.00	1,280.00	1,293.50	1,288.00	2.50	5.00	32.60	N/A	0.00	0.00	158.86	1,289.85	1,289.50



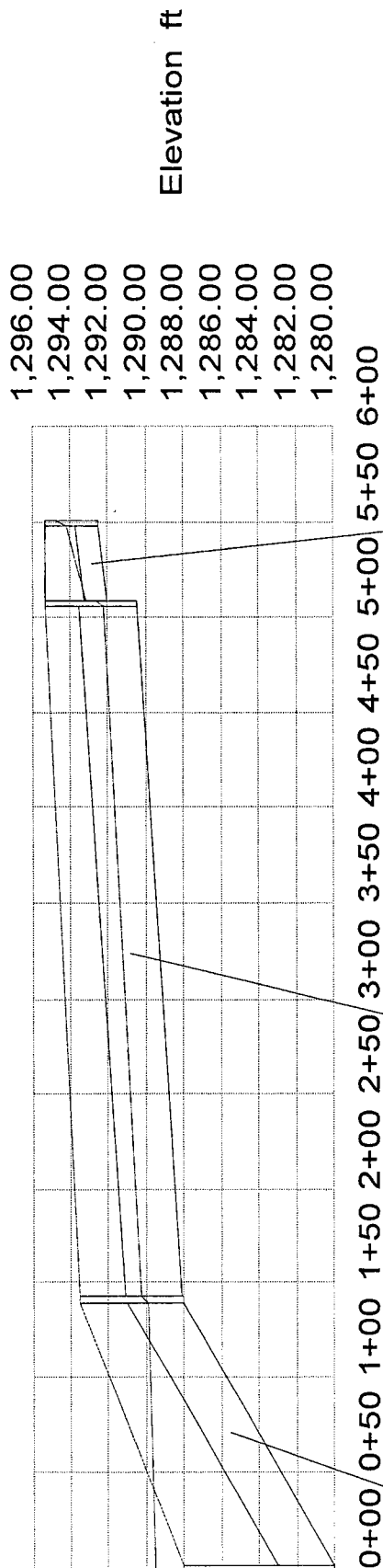


Inlet: I-8
 Rim: 1,295.30 ft
 Sump: 1,292.50 ft

Inlet: I-7
 Rim: 1,295.30 ft
 Sump: 1,290.50 ft

Junction: J-1
 Rim: 1,293.50 ft
 Sump: 1,288.00 ft

Outlet: Outlet
 Rim: 1,288.00 ft
 Sump: 1,280.00 ft



Pipe: P-7
 Up Invert: 1,292.50 ft
 Dn Invert: 1,292.00 ft
 Length: 42.00 ft
 Size: 15 inch

Pipe: P-8
 Up Invert: 1,290.50 ft
 Dn Invert: 1,288.10 ft
 Length: 366.00 ft
 Size: 36 inch

Pipe: P-13
 Up Invert: 1,288.00 ft
 Dn Invert: 1,280.00 ft
 Length: 141.00 ft
 Size: 36 inch

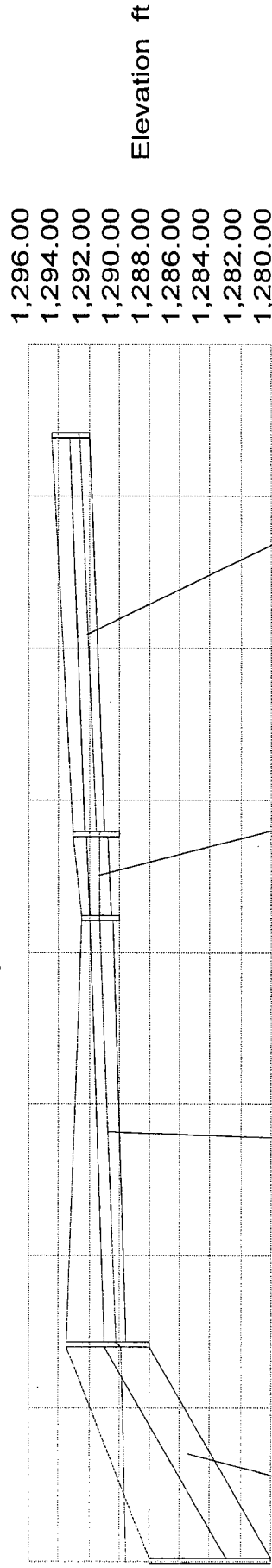
Junction: J-1
Rim: 1,293.50 ft
Sump: 1,288.00 ft

Junction: J-2
Rim: 1,293.00 ft
Sump: 1,290.00 ft

Inlet: I-10
Rim: 1,294.50 ft
Sump: 1,292.00 ft

Outlet: Outlet
Rim: 1,288.00 ft
Sump: 1,280.00 ft

Junction: J-3
Rim: 1,292.50 ft
Sump: 1,290.00 ft



Pipe: P-13
Up Invert: 1,288.00 ft
Dn Invert: 1,280.00 ft
Length: 141.00 ft
Size: 36 inch

Pipe: P-12
Up Invert: 1,290.40 ft
Dn Invert: 1,289.50 ft
Length: 282.00 ft
Size: 18 inch

Pipe: P-10
Up Invert: 1,290.70 ft
Dn Invert: 1,290.50 ft
Length: 55.00 ft
Size: 18 inch

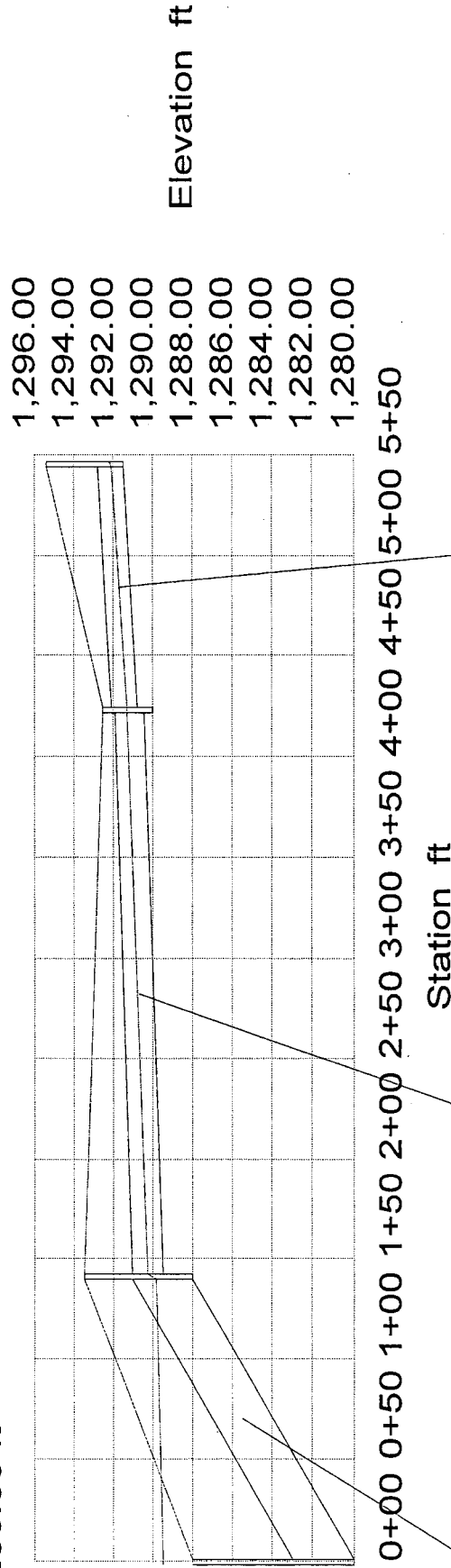
Pipe: P-9
Up Invert: 1,292.00 ft
Dn Invert: 1,291.00 ft
Length: 262.00 ft
Size: 15 inch

Inlet: I-11
 Rim: 1,295.40 ft
 Sump: 1,291.50 ft

Junction: J-3
 Rim: 1,292.50 ft
 Sump: 1,290.00 ft

Junction: J-1
 Rim: 1,293.50 ft
 Sump: 1,288.00 ft

Outlet: Outlet
 Rim: 1,288.00 ft
 Sump: 1,280.00 ft



Pipe: P-11
 Up Invert: 1,291.50 ft
 Dn Invert: 1,290.80 ft
 Length: 122.00 ft
 Size: 15 inch

Pipe: P-12
 Up Invert: 1,290.40 ft
 Dn Invert: 1,289.50 ft
 Length: 282.00 ft
 Size: 18 inch

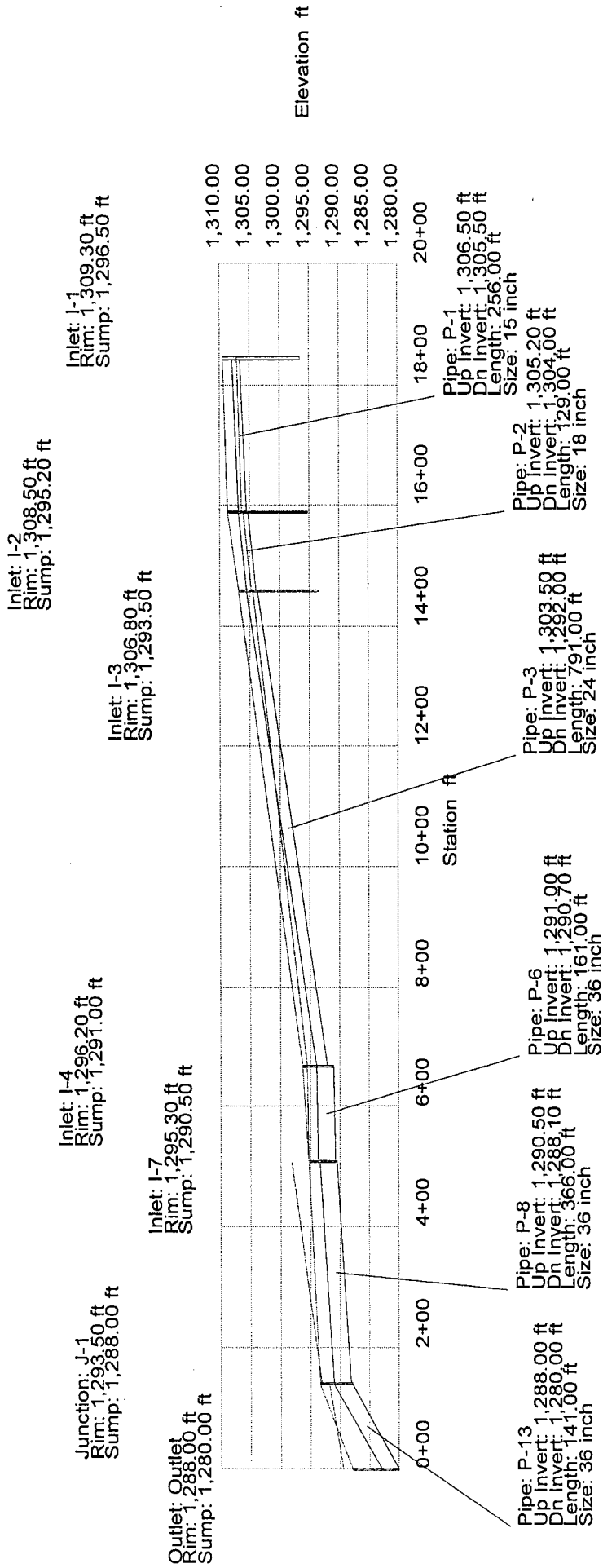
Pipe: P-13
 Up Invert: 1,288.00 ft
 Dn Invert: 1,280.00 ft
 Length: 141.00 ft
 Size: 36 inch

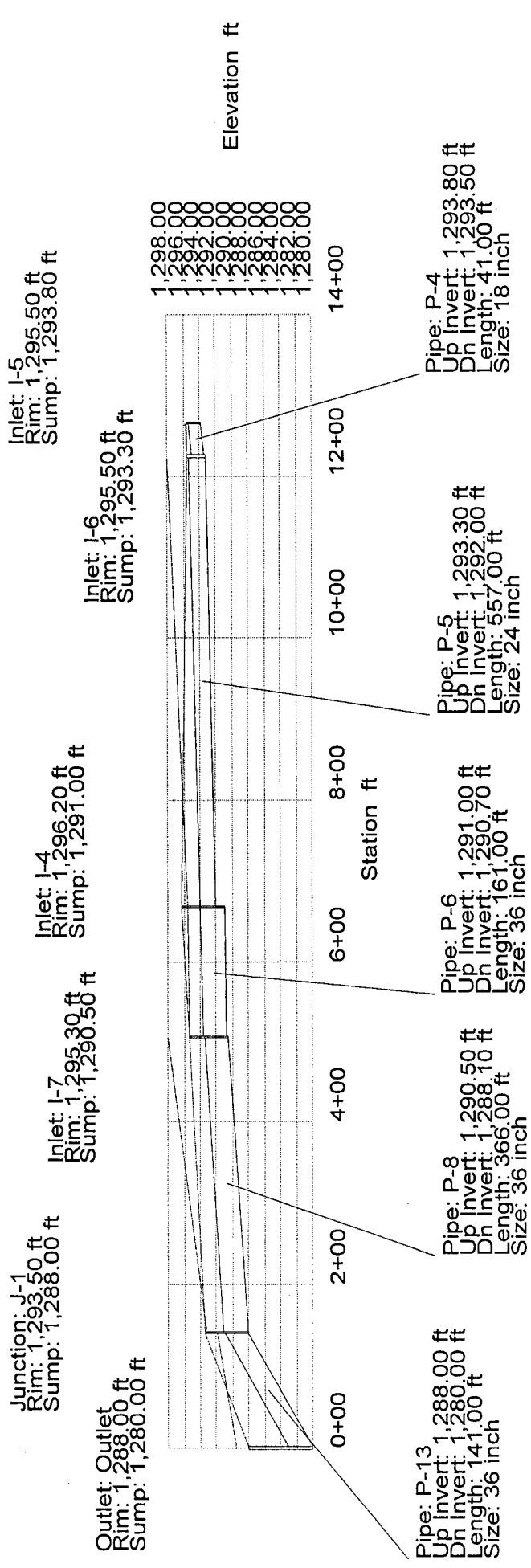
Node Report

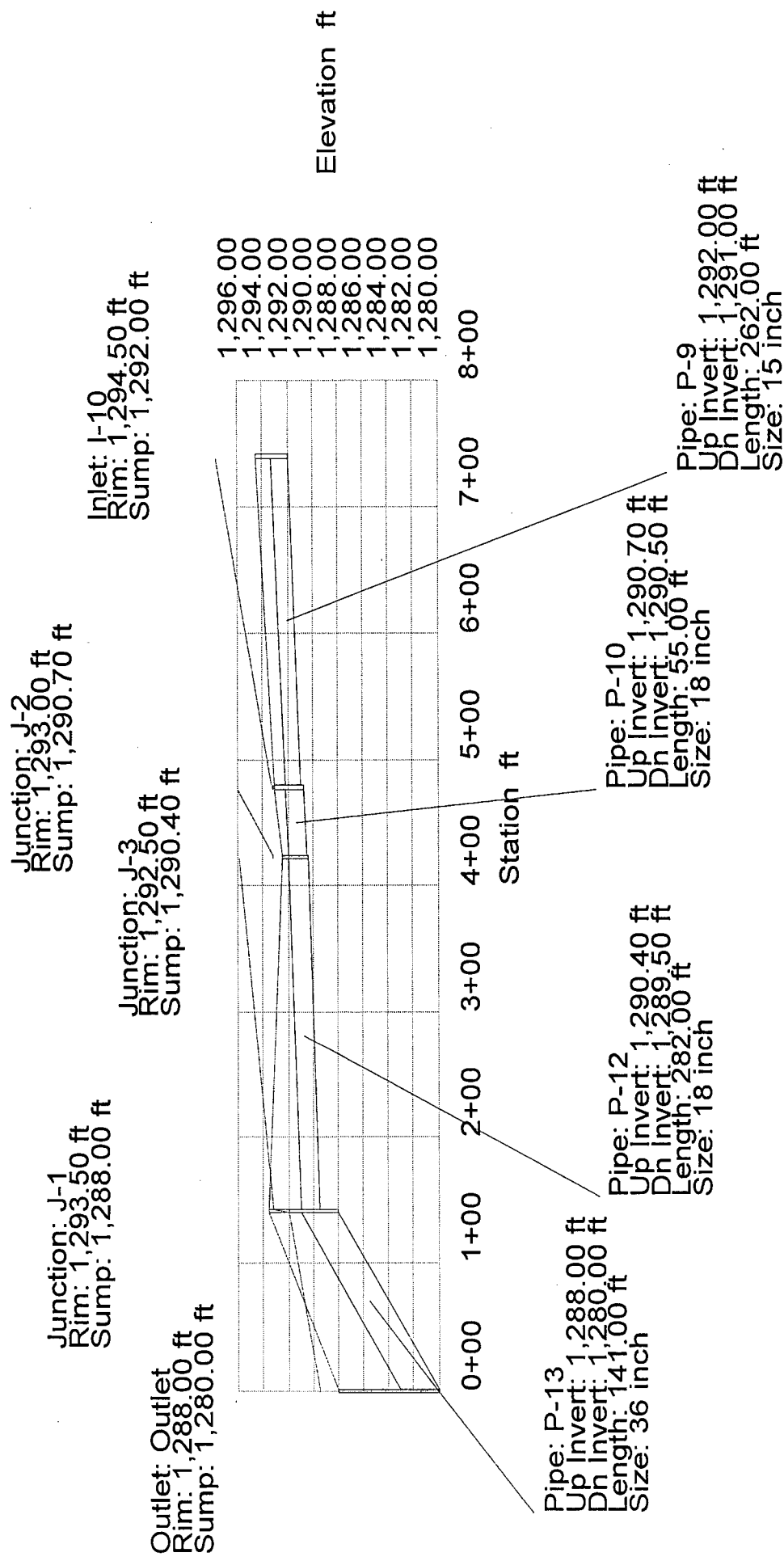
Node	Inlet Area (acres)	Weighted Roughness Coefficient	Total CA (acres)	Inlet TC (min)	System Flow Time (min)	System Intensity (in/hr)	Total Watershed (CIA) (cfs)	Additional Flow (cfs)	Known Flow (cfs)	Discharge (cfs)	Ground Elevation (ft)	HGL In (ft)	HGL Out (ft)	Inlet Intensity (in/hr)
I-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.20	0.00	5.20	1,295.40	1,295.40	1,295.40	0.00
I-10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.20	0.00	5.20	1,294.50	1,294.50	1,294.50	0.00
J-2	N/A	N/A	0.00	N/A	1.03	0.00	0.00	N/A	N/A	5.20	1,293.00	1,293.14	1,293.14	N/A
J-3	N/A	N/A	0.00	N/A	1.34	0.00	0.00	N/A	N/A	10.40	1,292.50	1,293.14	1,293.14	N/A
I-8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.00	0.00	27.00	1,295.30	1,295.30	1,295.30	0.00
I-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.50	0.00	7.50	1,295.50	1,295.58	1,295.58	0.00
I-6	0.00	0.00	0.00	0.00	0.16	0.00	0.00	7.50	0.00	15.00	1,295.50	1,295.58	1,295.58	0.00
I-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.30	0.00	1.30	1,309.30	1,307.05	1,306.99	0.00
I-2	0.00	0.00	0.00	0.00	1.86	0.00	0.00	3.90	0.00	5.20	1,308.50	1,306.26	1,306.08	0.00
I-3	0.00	0.00	0.00	0.00	2.26	0.00	0.00	2.80	0.00	8.00	1,306.80	1,304.70	1,304.51	0.00
I-4	0.00	0.00	0.00	0.00	5.73	0.00	0.00	0.40	0.00	23.40	1,296.20	1,295.58	1,295.50	0.00
I-7	0.00	0.00	0.00	0.00	6.54	0.00	0.00	27.00	0.00	77.40	1,295.30	1,295.30	1,295.30	0.00
J-1	N/A	N/A	0.00	N/A	7.10	0.00	0.00	N/A	N/A	87.80	1,293.50	1,293.14	1,291.94	N/A
Outlet	N/A	N/A	0.00	N/A	7.29	0.00	0.00	N/A	N/A	N/A	1,288.00	1,289.50	1,289.50	N/A

Pipe Report

Upstream Node	Downstream Node	Inlet Area (acres)	Weighted Roughness Coefficient	Discharge (cfs)	Constructed Slope (ft/ft)	Section Size	Roughness	Section Material	Length (ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Upstream Ground Elevation (ft)	Downstream Ground Elevation (ft)	Upstream HGL (ft)	Downstream HGL (ft)
I-11	J-3	0.00	0.00	5.20	0.005738	15 inch	0.013	Concrete	122.00	1,291.50	1,290.80	1,295.40	1,292.50	1,296.70	1,293.14
I-10	J-2	0.00	0.00	5.20	0.003817	15 inch	0.013	Concrete	262.00	1,292.00	1,291.00	1,294.50	1,293.00	1,297.74	1,293.25
J-2	J-3	N/A	N/A	5.20	0.003636	18 inch	0.013	Concrete	55.00	1,290.70	1,290.50	1,293.00	1,292.50	1,296.04	1,293.14
J-3	J-1	N/A	N/A	10.40	0.003191	18 inch	0.013	Concrete	282.00	1,290.40	1,289.50	1,292.50	1,293.50	1,295.91	1,293.14
I-8	I-7	0.00	0.00	27.00	0.011905	15 inch	0.013	Concrete	42.00	1,292.50	1,292.00	1,295.30	1,295.30	1,302.64	1,295.30
I-5	I-6	0.00	0.00	7.50	0.007317	18 inch	0.013	Concrete	41.00	1,293.80	1,293.50	1,295.50	1,295.50	1,295.79	1,295.58
I-6	I-4	0.00	0.00	15.00	0.002334	24 inch	0.013	Concrete	557.00	1,293.30	1,292.00	1,295.50	1,296.20	1,298.03	1,295.58
I-1	I-2	0.00	0.00	1.30	0.003906	15 inch	0.013	Concrete	256.00	1,306.50	1,305.50	1,309.30	1,308.50	1,306.99	1,306.26
I-2	I-3	0.00	0.00	5.20	0.003302	18 inch	0.013	Concrete	129.00	1,305.20	1,304.00	1,308.50	1,306.80	1,306.08	1,304.76
I-3	I-4	0.00	0.00	8.00	0.014539	24 inch	0.013	Concrete	791.00	1,303.50	1,292.00	1,306.80	1,296.20	1,304.51	1,295.58
I-4	I-7	0.00	0.00	23.40	0.001863	36 inch	0.013	Concrete	161.00	1,291.00	1,290.70	1,296.20	1,295.30	1,295.50	1,295.30
I-7	J-1	0.00	0.00	77.40	0.006557	36 inch	0.013	Concrete	366.00	1,290.50	1,288.10	1,295.30	1,293.50	1,298.07	1,293.14
J-1	Outlet	N/A	N/A	87.80	0.056738	36 inch	0.013	Concrete	141.00	1,288.00	1,280.00	1,293.50	1,288.00	1,291.94	1,289.50







Outlet: Outlet
Rim: 1,288.00 ft
Sump: 1,280.00 ft

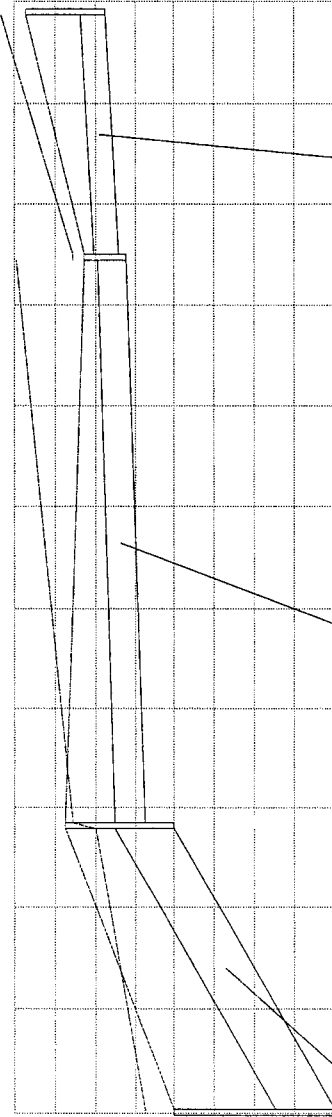
Junction: J-3
Rim: 1,292.50 ft
Sump: 1,290.40 ft

Junction: J-1
Rim: 1,293.50 ft
Sump: 1,288.00 ft

Inlet: I-11
Rim: 1,295.40 ft
Sump: 1,291.50 ft

1,296.00
1,294.00
1,292.00
1,290.00
1,288.00
1,286.00
1,284.00
1,282.00
1,280.00

Elevation ft



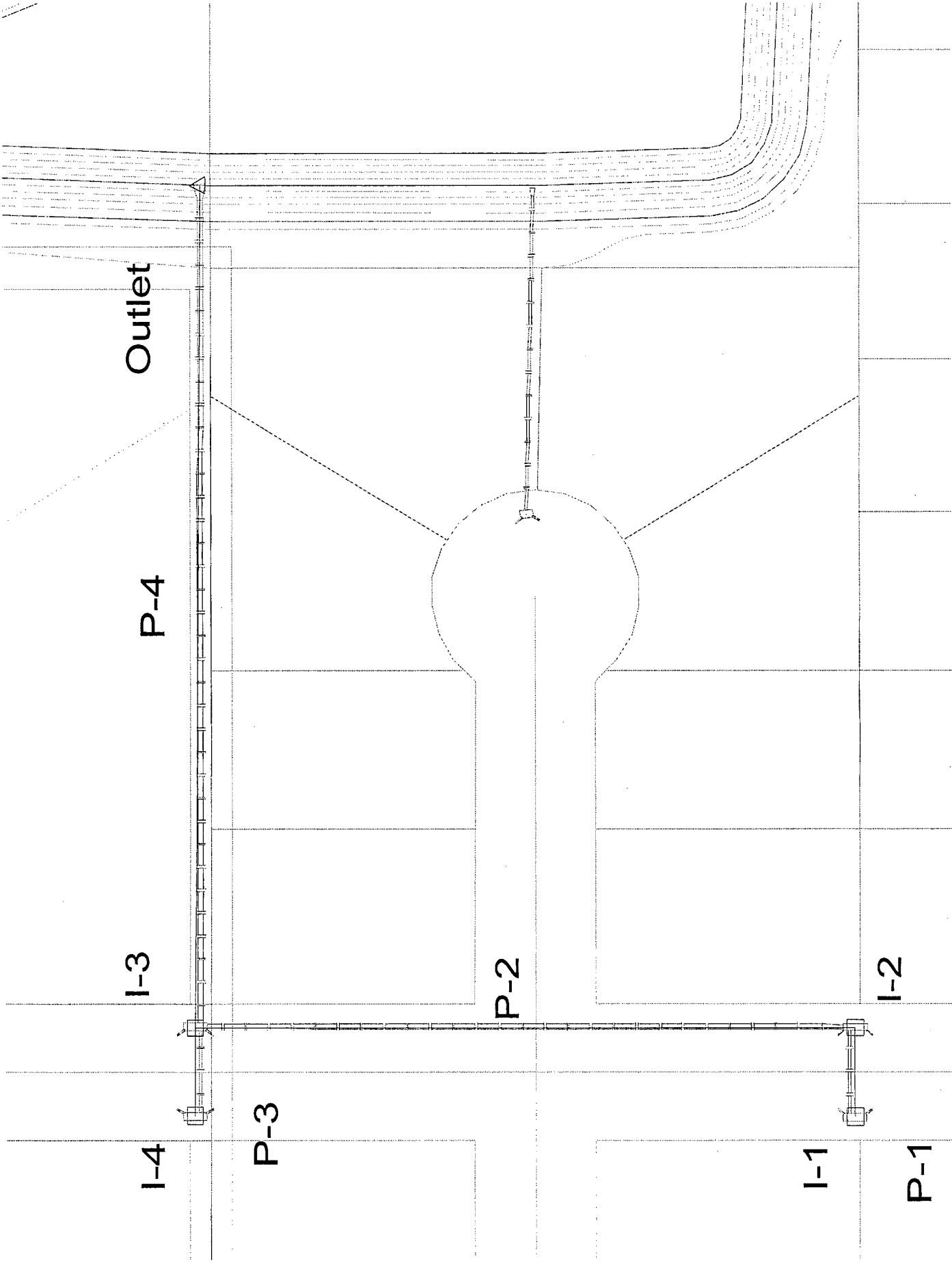
0+00+50 50+00+100 100+00+150 150+00+200 200+00+250 250+00+300 300+00+350 350+00+400 400+00+450 450+00+500 500+00+550 550+00+600 600+00+650 650+00+700 700+00+750 750+00+800 800+00+850 850+00+900 900+00+950 950+00+1000 1000+00+1050 1050+00+1100 1100+00+1150 1150+00+1200 1200+00+1250 1250+00+1300 1300+00+1350 1350+00+1400 1400+00+1450 1450+00+1500 1500+00+1550 1550+00+1600 1600+00+1650 1650+00+1700 1700+00+1750 1750+00+1800 1800+00+1850 1850+00+1900 1900+00+1950 1950+00+2000 2000+00+2050 2050+00+2100 2100+00+2150 2150+00+2200 2200+00+2250 2250+00+2300 2300+00+2350 2350+00+2400 2400+00+2450 2450+00+2500 2500+00+2550 2550+00+2600 2600+00+2650 2650+00+2700 2700+00+2750 2750+00+2800 2800+00+2850 2850+00+2900 2900+00+2950 2950+00+3000 3000+00+3050 3050+00+3100 3100+00+3150 3150+00+3200 3200+00+3250 3250+00+3300 3300+00+3350 3350+00+3400 3400+00+3450 3450+00+3500 3500+00+3550 3550+00+3600 3600+00+3650 3650+00+3700 3700+00+3750 3750+00+3800 3800+00+3850 3850+00+3900 3900+00+3950 3950+00+4000 4000+00+4050 4050+00+4100 4100+00+4150 4150+00+4200 4200+00+4250 4250+00+4300 4300+00+4350 4350+00+4400 4400+00+4450 4450+00+4500 4500+00+4550 4550+00+4600 4600+00+4650 4650+00+4700 4700+00+4750 4750+00+4800 4800+00+4850 4850+00+4900 4900+00+4950 4950+00+5000 5000+00+5050 5050+00+5100 5100+00+5150 5150+00+5200 5200+00+5250 5250+00+5300 5300+00+5350 5350+00+5400 5400+00+5450 5450+00+5500 5500+00+5550 5550+00+5600 5600+00+5650 5650+00+5700 5700+00+5750 5750+00+5800 5800+00+5850 5850+00+5900 5900+00+5950 5950+00+6000 6000+00+6050 6050+00+6100 6100+00+6150 6150+00+6200 6200+00+6250 6250+00+6300 6300+00+6350 6350+00+6400 6400+00+6450 6450+00+6500 6500+00+6550 6550+00+6600 6600+00+6650 6650+00+6700 6700+00+6750 6750+00+6800 6800+00+6850 6850+00+6900 6900+00+6950 6950+00+7000 7000+00+7050 7050+00+7100 7100+00+7150 7150+00+7200 7200+00+7250 7250+00+7300 7300+00+7350 7350+00+7400 7400+00+7450 7450+00+7500 7500+00+7550 7550+00+7600 7600+00+7650 7650+00+7700 7700+00+7750 7750+00+7800 7800+00+7850 7850+00+7900 7900+00+7950 7950+00+8000 8000+00+8050 8050+00+8100 8100+00+8150 8150+00+8200 8200+00+8250 8250+00+8300 8300+00+8350 8350+00+8400 8400+00+8450 8450+00+8500 8500+00+8550 8550+00+8600 8600+00+8650 8650+00+8700 8700+00+8750 8750+00+8800 8800+00+8850 8850+00+8900 8900+00+8950 8950+00+9000 9000+00+9050 9050+00+9100 9100+00+9150 9150+00+9200 9200+00+9250 9250+00+9300 9300+00+9350 9350+00+9400 9400+00+9450 9450+00+9500 9500+00+9550 9550+00+9600 9600+00+9650 9650+00+9700 9700+00+9750 9750+00+9800 9800+00+9850 9850+00+9900 9900+00+9950 9950+00+10000

Station ft

Pipe: P-13
Up Invert: 1,288.00 ft
Dn Invert: 1,280.00 ft
Length: 141.00 ft
Size: 36 inch

Pipe: P-12
Up Invert: 1,290.40 ft
Dn Invert: 1,289.50 ft
Length: 282.00 ft
Size: 18 inch

Pipe: P-11
Up Invert: 1,291.50 ft
Dn Invert: 1,290.80 ft
Length: 122.00 ft
Size: 15 inch



Node Report

Node	Inlet Area (acres)	Weighted Roughness Coefficient	Total CA (acres)	Inlet TC (min)	System Flow Time (min)	System Intensity (in/hr)	Total Watershed (CIA) (cfs)	Additional Flow (cfs)	Known Flow (cfs)	Discharge (cfs)	Ground Elevation (ft)	HGL In (ft)	HGL Out (ft)	Inlet Intensity (in/hr)
I-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.80	0.00	6.80	1,296.80	1,294.23	1,294.01	0.00
I-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.30	0.00	6.30	1,296.90	1,294.23	1,294.06	0.00
I-2	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.60	0.00	6.90	1,296.90	1,293.18	1,293.05	0.00
I-3	0.00	0.00	0.00	0.00	1.58	0.00	0.00	0.50	0.00	14.20	1,296.80	1,292.32	1,292.07	0.00
Outlet	N/A	N/A	0.00	N/A	3.14	0.00	0.00	N/A	N/A	N/A	1,288.00	1,289.50	1,289.50	N/A

Pipe Report

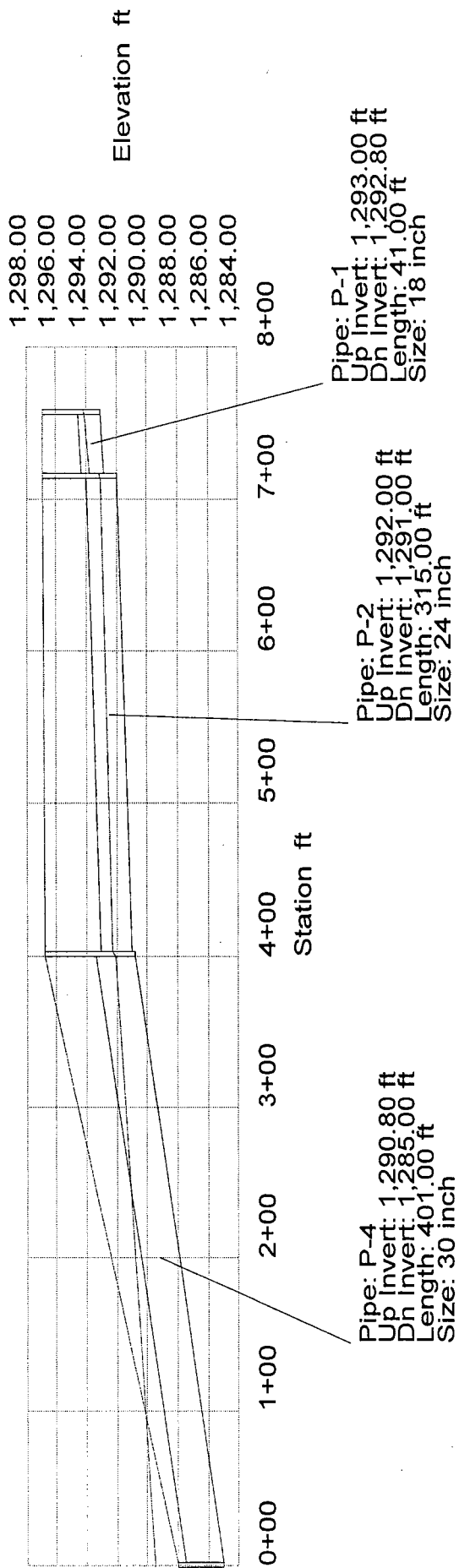
Upstream Node	Downstream Node	Inlet Area (acres)	Weighted Roughness Coefficient	Discharge (cfs)	Constructed Slope (ft/ft)	Section Size	Roughness	Section Material	Length (ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Upstream Ground Elevation (ft)	Downstream Ground Elevation (ft)	Upstream HGL (ft)	Downstream HGL (ft)
I-4	I-3	0.00	0.00	6.80	0.029268	18 inch	0.013	Concrete	41.00	1,293.00	1,291.80	1,296.80	1,296.80	1,294.01	1,292.47
I-1	I-2	0.00	0.00	6.30	0.004878	18 inch	0.013	Concrete	41.00	1,293.00	1,292.80	1,296.90	1,296.90	1,294.06	1,293.77
I-2	I-3	0.00	0.00	6.90	0.003175	24 inch	0.013	Concrete	315.00	1,292.00	1,291.00	1,296.90	1,296.80	1,293.05	1,292.32
I-3	Outlet	0.00	0.00	14.20	0.014464	30 inch	0.013	Concrete	401.00	1,290.80	1,285.00	1,296.80	1,288.00	1,292.07	1,289.50

Inlet: I-1
 Rim: 1,296.90 ft
 Sump: 1,293.00 ft

Outlet: Outlet
 Rim: 1,288.00 ft
 Sump: 1,285.00 ft

Inlet: I-2
 Rim: 1,296.90 ft
 Sump: 1,292.00 ft

Inlet: I-3
 Rim: 1,296.80 ft
 Sump: 1,290.80 ft

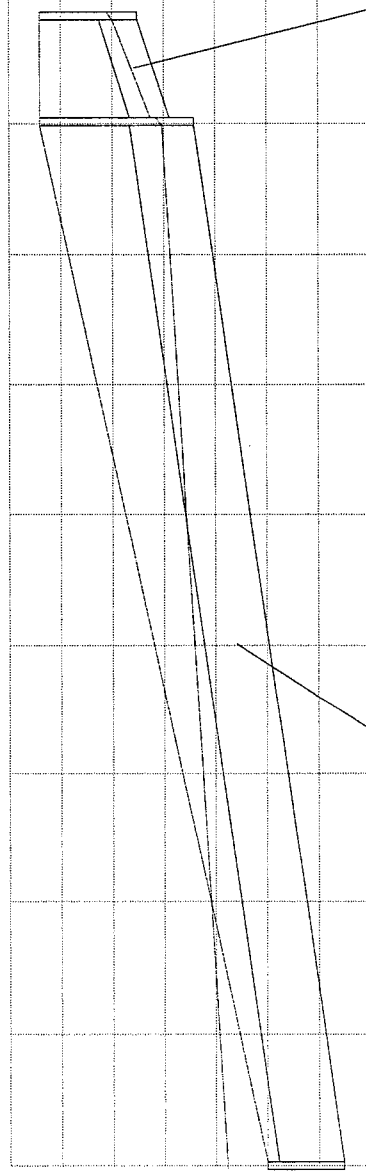


Inlet: I-4
 Rim: 1,296.80 ft
 Sump: 1,293.00 ft

Inlet: I-3
 Rim: 1,296.80 ft
 Sump: 1,290.80 ft

Outlet: Outlet
 Rim: 1,288.00 ft
 Sump: 1,285.00 ft

	Elevation ft
1,298.00	
1,296.00	
1,294.00	
1,292.00	
1,290.00	
1,288.00	
1,286.00	
1,284.00	



0+00 0+50 1+00 1+50 2+00 2+50 3+00 3+50 4+00 4+50
 Station ft

Pipe: P-3
 Up Invert: 1,293.00 ft
 Dn Invert: 1,291.80 ft
 Length: 41.00 ft
 Size: 18 inch

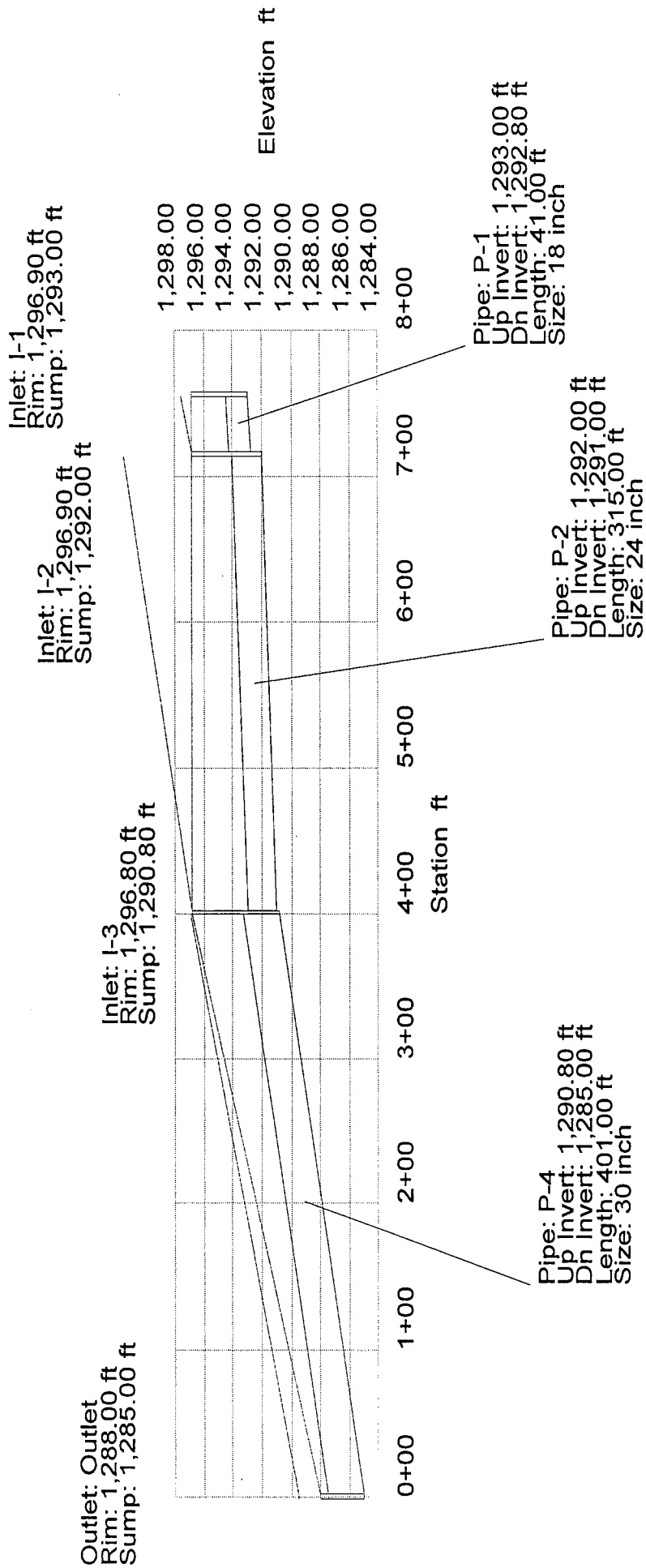
Pipe: P-4
 Up Invert: 1,290.80 ft
 Dn Invert: 1,285.00 ft
 Length: 401.00 ft
 Size: 30 inch

Node Report

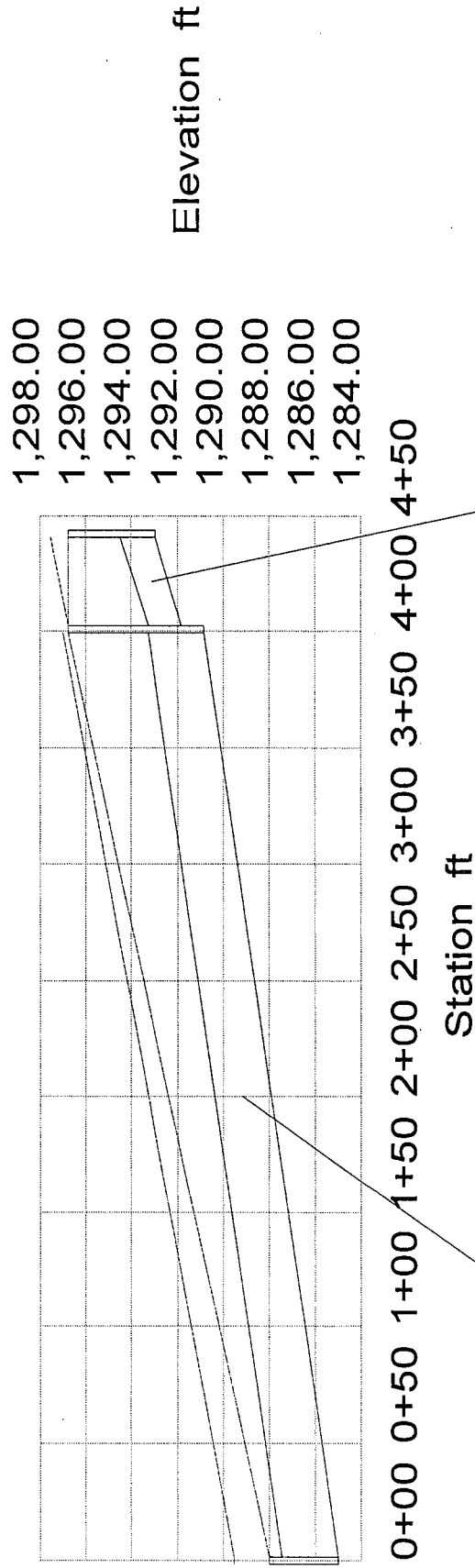
Node	Inlet Area (acres)	Weighted Roughness Coefficient	Total CA (acres)	Inlet TC (min)	System Flow Time (min)	System Intensity (in/hr)	Total Watershed (CIA) (cfs)	Additional Flow (cfs)	Known Flow (cfs)	Discharge (cfs)	Ground Elevation (ft)	HGL In (ft)	HGL Out (ft)	Inlet Intensity (in/hr)
I-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.00	0.00	14.00	1,296.80	1,296.80	1,296.80	0.00
I-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.00	0.00	14.00	1,296.90	1,296.90	1,296.90	0.00
I-2	0.00	0.00	0.00	0.00	0.09	0.00	0.00	14.00	0.00	28.00	1,296.90	1,296.90	1,296.90	0.00
I-3	0.00	0.00	0.00	0.00	0.68	0.00	0.00	14.00	0.00	56.00	1,296.80	1,296.80	1,296.80	0.00
Outlet	N/A	N/A	0.00	N/A	1.26	0.00	0.00	N/A	N/A	N/A	1,288.00	1,289.50	1,289.50	N/A

Pipe Report

Upstream Node	Downstream Node	Inlet Area (acres)	Weighted Roughness Coefficient	Discharge (cfs)	Constructed Slope (ft/ft)	Section Size	Roughness	Section Material	Length (ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Upstream Ground Elevation (ft)	Downstream Ground Elevation (ft)	Upstream HGL (ft)	Downstream HGL (ft)
I-4	I-3	0.00	0.00	14.00	0.029268	18 inch	0.013	Concrete	41.00	1,293.00	1,291.80	1,296.80	1,296.80	1,297.53	1,296.80
I-1	I-2	0.00	0.00	14.00	0.004878	18 inch	0.013	Concrete	41.00	1,293.00	1,292.80	1,296.90	1,296.90	1,297.63	1,296.90
I-2	I-3	0.00	0.00	28.00	0.003175	24 inch	0.013	Concrete	315.00	1,292.00	1,291.00	1,296.90	1,296.80	1,301.63	1,296.80
I-3	Outlet	0.00	0.00	56.00	0.014464	30 inch	0.013	Concrete	401.00	1,290.80	1,285.00	1,296.80	1,288.00	1,296.98	1,289.50

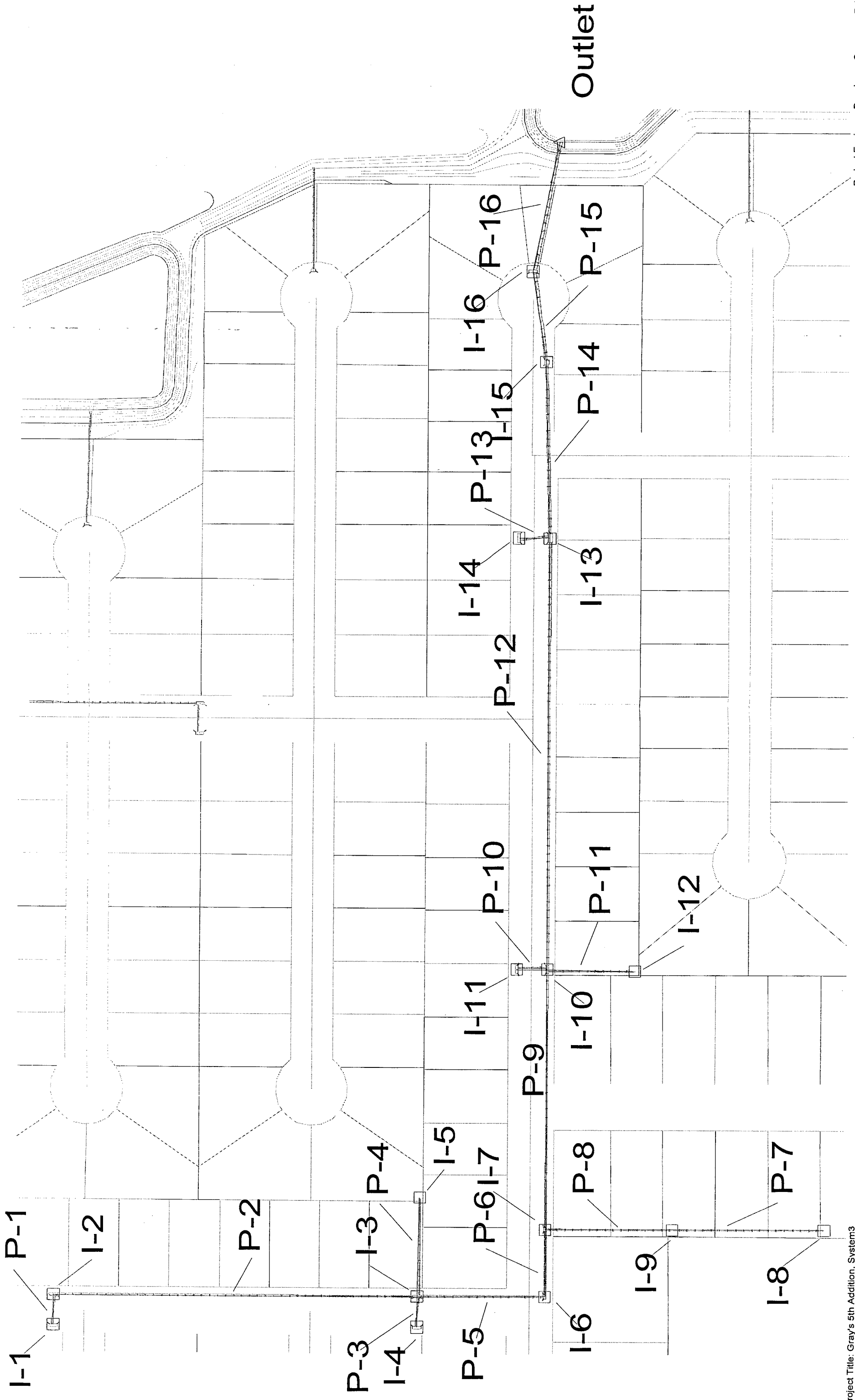


Outlet: Outlet
Rim: 1,288.00 ft
Sump: 1,285.00 ft



Pipe: P-4
 Up Invert: 1,290.80 ft
 Dn Invert: 1,285.00 ft
 Length: 401.00 ft
 Size: 30 inch

Pipe: P-3
Up Invert: 1,293.00 ft
Dn Invert: 1,291.80 ft
Length: 41.00 ft
Size: 18 inch



Project Title: Gray's 5th Addition, System 3
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12/05/01 08:34 AM

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Project Engineer: Baughman Company, P.A.
StormCAD v1.0
Page 1 of 1

Drainage area, acres	0
Li = Inlet Length	5
So = street grade, ft/ft	0.00524
Sx = 'cross slope, ft/ft	0.03125
Manning's n	0.022
Z in Izzard's Eq. = 1/Sx	32

	2-yr	5-yr	100-yr
Rainfall Intensity, in/hr	3.83	4.56	7.37
Rational "C"	0.45	0.48	0.67
Flowrate, cfs	0.0	0.0	0.0
Additional Flow, cfs	1.3	1.6	3.5
Total Flowrate, cfs	1.3	1.6	3.5
depth of flow, ft	0.24	0.26	0.35
Flow width, ft	7.65	8.27	11.10
Froude Number	0.67921	0.68808	0.72258
Length 1, ft	4.58	5.01	7.06
Length 2, ft	3.01	3.29	4.64
Length 3, ft	8.58	9.39	13.23
case 1, Li < L2 intercepted flow bypassed flow	NO GOOD 1.4 0.0	NO GOOD 1.6 0.0	NO GOOD 2.5 1.0
case 2, Li > L2 intercepted flow bypassed flow	VALID 1.0 0.3	VALID 1.2 0.4	VALID 2.4 1.1

Drainage area, acres	0
Li = Inlet Length	10
So = street grade, ft/ft	0.00791
Sx = 'cross slope, ft/ft	0.03125
Manning's n	0.022
Z in Izzard's Eq. = 1/Sx	32

	2-yr	5-yr	100-yr
Rainfall Intensity, in/hr	3.83	4.56	7.37
Rational "C"	0.45	0.48	0.67
Flowrate, cfs	0.0	0.0	0.0
Additional Flow, cfs	1.3	1.6	3.5
Total Flowrate, cfs	1.3	1.6	3.5
depth of flow, ft	0.22	0.24	0.32
Flow width, ft	7.09	7.66	10.27
Froude Number	0.82383	0.83459	0.87644
Length 1, ft	5.14	5.63	7.93
Length 2, ft	3.37	3.70	5.20
Length 3, ft	9.63	10.55	14.86
case 1, Li < L2 intercepted flow bypassed flow	NO GOOD 2.5 0.0	NO GOOD 2.8 0.0	NO GOOD 4.4 0.0
case 2, Li > L2 intercepted flow bypassed flow	VALID 1.3 0.0	VALID 1.6 0.0	VALID 3.0 0.5

Drainage area, acres	0
Li = Inlet Length	10
So = street grade, ft/ft	0.00791
Sx = 'cross slope, ft/ft	0.03125
Manning's n	0.022
Z in Izzard's Eq. = 1/Sx	32

	2-yr	5-yr	100-yr
Rainfall Intensity, in/hr	3.83	4.56	7.37
Rational "C"	0.45	0.48	0.67
Flowrate, cfs	0.0	0.0	0.0
Additional Flow, cfs	0.5	0.6	1.3
Total Flowrate, cfs	0.5	0.6	1.3
depth of flow, ft	0.15	0.17	0.22
Flow width, ft	4.95	5.30	7.09
Froude Number	0.77607	0.78497	0.82383
Length 1, ft	3.38	3.66	5.14
Length 2, ft	2.22	2.41	3.37
Length 3, ft	6.34	6.87	9.63
case 1, Li < L2 intercepted flow bypassed flow	NO GOOD 1.5 0.0	NO GOOD 1.6 0.0	NO GOOD 2.5 0.0
case 2, Li > L2 intercepted flow bypassed flow	VALID 0.6 0.0	VALID 0.7 0.0	VALID 1.3 0.0

Drainage area, acres	0
Li = Inlet Length	10
So = street grade, ft/ft	0.00695
Sx = 'cross slope, ft/ft	0.03125
Manning's n	0.022
Z in Izzard's Eq. = 1/Sx	32

	2-yr	5-yr	100-yr
Rainfall Intensity, in/hr	3.83	4.56	7.37
Rational "C"	0.45	0.48	0.67
Flowrate, cfs	0.0	0.0	0.0
Additional Flow, cfs	1.8	2.2	5.3
Total Flowrate, cfs	1.8	2.2	5.3
depth of flow, ft	0.26	0.28	0.38
Flow width, ft	8.20	8.84	12.30
Froude Number	0.79128	0.80127	0.84653
Length 1, ft	5.71	6.24	9.16
Length 2, ft	3.75	4.10	6.02
Length 3, ft	10.71	11.69	17.18
case 1, Li < L2 intercepted flow bypassed flow	NO GOOD 3.2 0.0	NO GOOD 3.5 0.0	NO GOOD 5.8 0.0
case 2, Li > L2 intercepted flow bypassed flow	VALID 1.8 0.0	VALID 2.1 0.1	VALID 4.3 1.0

Drainage area, acres	0
Li = Inlet Length	10
So = street grade, ft/ft	0.00695
Sx = 'cross slope, ft/ft	0.03125
Manning's n	0.022
Z in Izzard's Eq. = 1/Sx	32

	2-yr	5-yr	100-yr
Rainfall Intensity, in/hr	3.83	4.56	7.37
Rational "C"	0.45	0.48	0.67
Flowrate, cfs	0.0	0.0	0.0
Additional Flow, cfs	4.3	5.4	11.7
Total Flowrate, cfs	4.3	5.4	11.7
depth of flow, ft	0.36	0.39	0.52
Flow width, ft	11.37	12.38	16.55
Froude Number	0.83554	0.84752	0.88948
Length 1, ft	8.36	9.24	12.96
Length 2, ft	5.49	6.07	8.51
Length 3, ft	15.67	17.32	24.29
case 1, Li < L2 intercepted flow bypassed flow	NO GOOD 5.1 0.0	NO GOOD 5.8 0.0	NO GOOD 9.0 2.7
case 2, Li > L2 intercepted flow bypassed flow	VALID 3.6 0.7	VALID 4.3 1.1	VALID 8.2 3.5

Drainage area, acres	0
Li = Inlet Length	10
So = street grade, ft/ft	0.00545
Sx = 'cross slope, ft/ft	0.03125
Manning's n	0.022
Z in Izzard's Eq. = 1/Sx	32

	2-yr	5-yr	100-yr
Rainfall Intensity, in/hr	3.83	4.56	7.37
Rational "C"	0.45	0.48	0.67
Flowrate, cfs	0.0	0.0	0.0
Additional Flow, cfs	4.8	6.0	13.0
Total Flowrate, cfs	4.8	6.0	13.0
depth of flow, ft	0.39	0.42	0.56
Flow width, ft	12.40	13.48	18.02
Froude Number	0.75069	0.76123	0.79892
Length 1, ft	8.20	9.04	12.67
Length 2, ft	5.38	5.93	8.32
Length 3, ft	15.36	16.94	23.75
case 1, Li < L2 intercepted flow bypassed flow	NO GOOD 5.9 0.0	NO GOOD 6.6 0.0	NO GOOD 10.3 2.7
case 2, Li > L2 intercepted flow bypassed flow	VALID 4.0 0.8	VALID 4.9 1.1	VALID 9.2 3.8

Drainage area, acres	0
Li = Inlet Length	5
So = street grade, ft/ft	0.00545
Sx = 'cross slope, ft/ft	0.03125
Manning's n	0.022
Z in Izzard's Eq. = 1/Sx	32

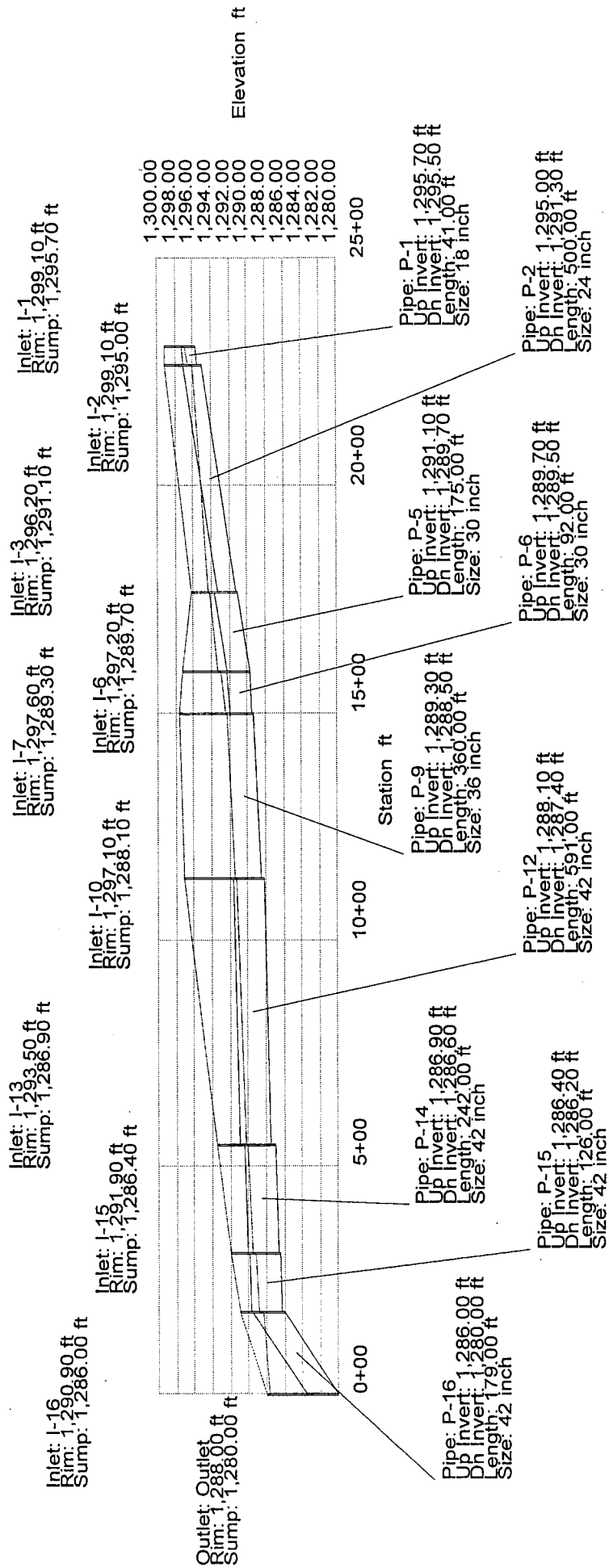
	2-yr	5-yr	100-yr
Rainfall Intensity, in/hr	3.83	4.56	7.37
Rational "C"	0.45	0.48	0.67
Flowrate, cfs	0.0	0.0	0.0
Additional Flow, cfs	4.8	6.0	13.0
Total Flowrate, cfs	4.8	6.0	13.0
depth of flow, ft	0.39	0.42	0.56
Flow width, ft	12.40	13.48	18.02
Froude Number	0.75069	0.76123	0.79892
Length 1, ft	8.20	9.04	12.67
Length 2, ft	5.38	5.93	8.32
Length 3, ft	15.36	16.94	23.75
case 1, Li < L2 intercepted flow bypassed flow	VALID 2.9 1.9	VALID 3.3 2.7	VALID 5.1 7.9
case 2, Li > L2 intercepted flow bypassed flow	NO GOOD 3.1 1.7	NO GOOD 3.7 2.3	NO GOOD 7.0 6.0

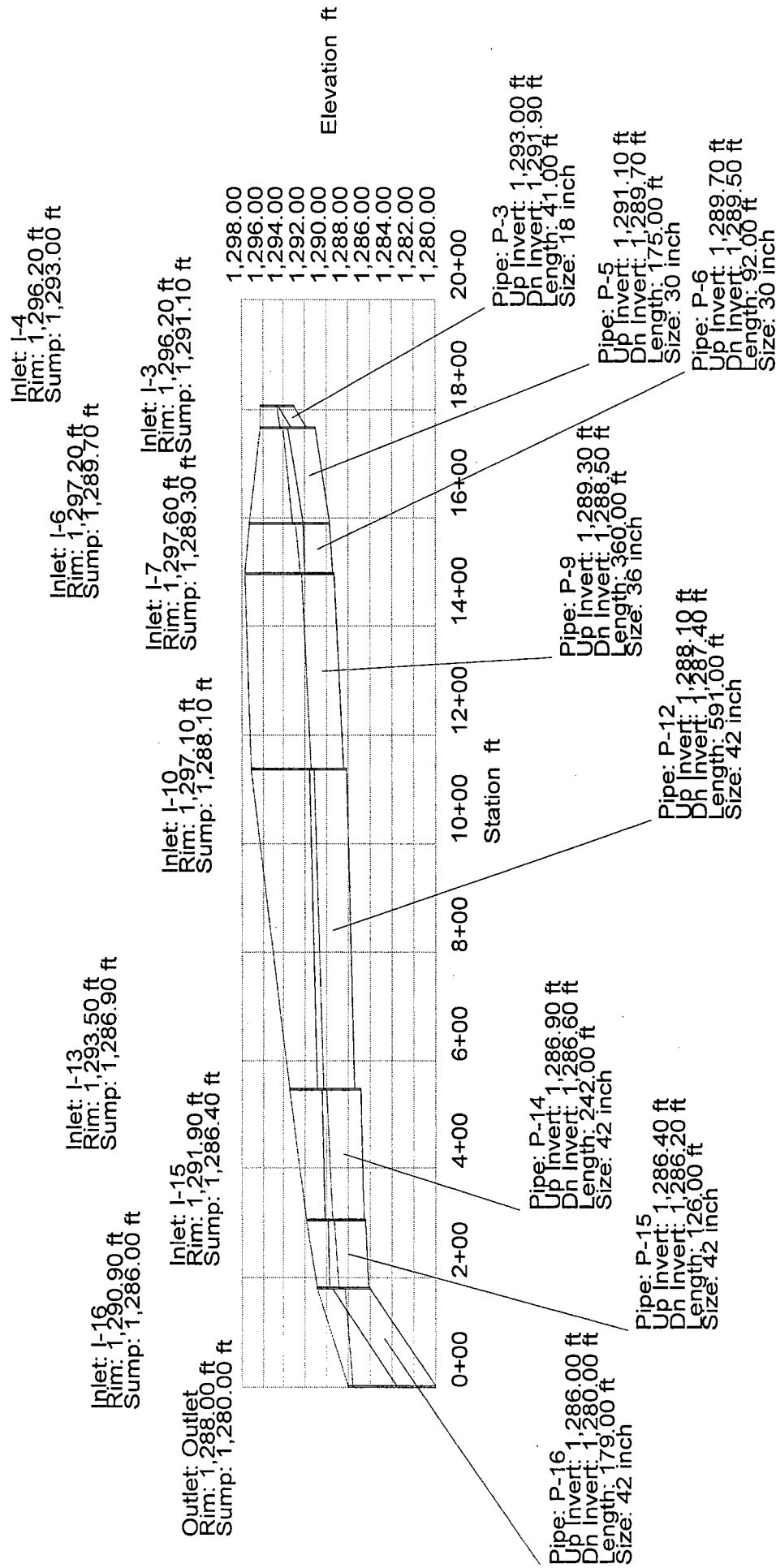
Node Report

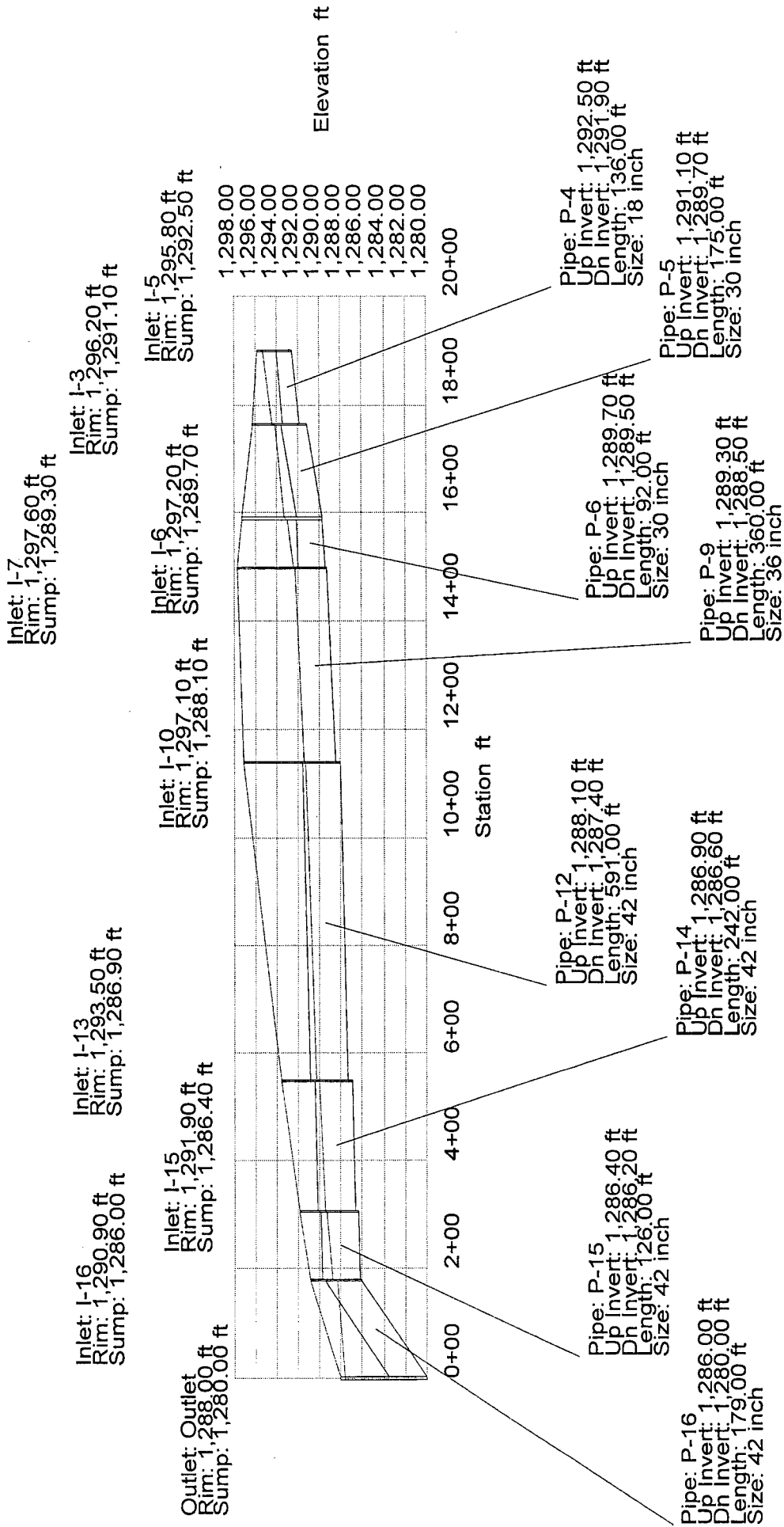
Node	Inlet Area (acres)	Weighted Roughness Coefficient	Total CA (acres)	Inlet TC (min)	System Flow Time (min)	System Intensity (in/hr)	Total Watershed (CIA) (cfs)	Additional Flow (cfs)	Known Flow (cfs)	Discharge (cfs)	Ground Elevation (ft)	HGL In (ft)	HGL Out (ft)	Inlet Intensity (in/hr)
I-14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.60	0.00	3.60	1,293.50	1,290.37	1,290.22	0.00
I-12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.80	0.00	4.80	1,293.60	1,292.19	1,292.07	0.00
I-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.00	0.60	1,297.10	1,293.54	1,293.49	0.00
I-8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.40	0.00	2.40	1,295.20	1,292.98	1,292.93	0.00
I-9	0.00	0.00	0.00	0.00	1.57	0.00	0.00	1.10	0.00	3.50	1,293.60	1,292.68	1,292.65	0.00
I-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.50	0.00	8.50	1,295.80	1,295.45	1,295.27	0.00
I-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	8.00	1,296.20	1,294.77	1,294.61	0.00
I-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.20	0.00	8.20	1,299.10	1,297.19	1,296.99	0.00
I-2	0.00	0.00	0.00	0.00	0.13	0.00	0.00	1.80	0.00	10.00	1,299.10	1,296.36	1,296.13	0.00
I-3	0.00	0.00	0.00	0.00	2.05	0.00	0.00	2.30	0.00	28.80	1,296.20	1,294.38	1,294.11	0.00
I-6	0.00	0.00	0.00	0.00	2.55	0.00	0.00	1.30	0.00	30.10	1,297.20	1,293.25	1,292.95	0.00
I-7	0.00	0.00	0.00	0.00	3.03	0.00	0.00	1.00	0.00	34.60	1,297.60	1,292.46	1,292.27	0.00
I-10	0.00	0.00	0.00	0.00	4.25	0.00	0.00	1.30	0.00	41.30	1,297.10	1,291.40	1,291.24	0.00
I-13	0.00	0.00	0.00	0.00	6.34	0.00	0.00	1.80	0.00	46.70	1,293.50	1,290.26	1,290.05	0.00
I-15	0.00	0.00	0.00	0.00	7.10	0.00	0.00	2.90	0.00	49.60	1,291.90	1,289.52	1,289.25	0.00
I-16	0.00	0.00	0.00	0.00	7.44	0.00	0.00	4.40	0.00	54.00	1,290.90	1,288.80	1,288.30	0.00
Outlet	N/A	N/A	0.00	N/A	7.88	0.00	0.00	N/A	N/A	N/A	1,288.00	1,287.60	1,287.60	N/A

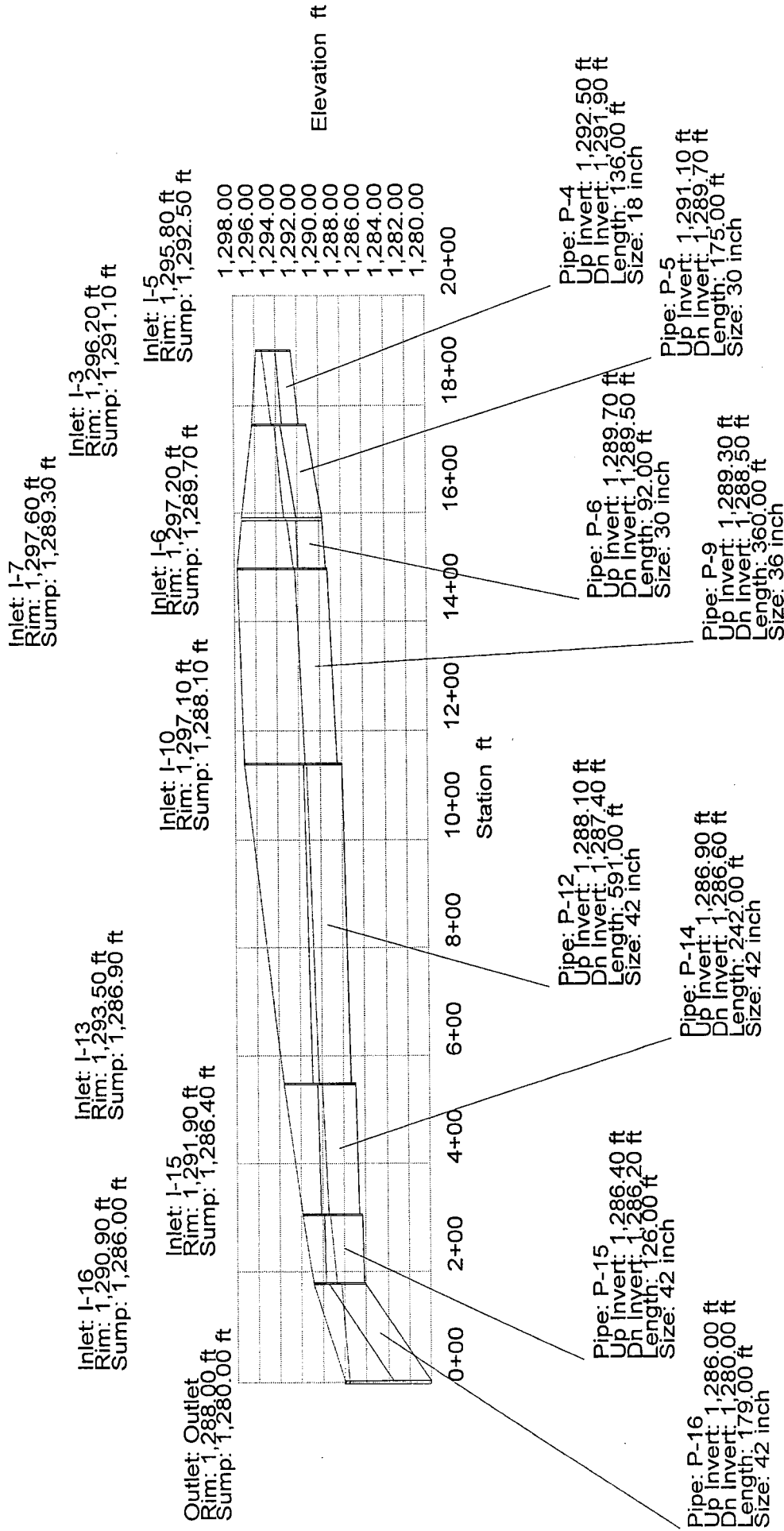
Pipe Report

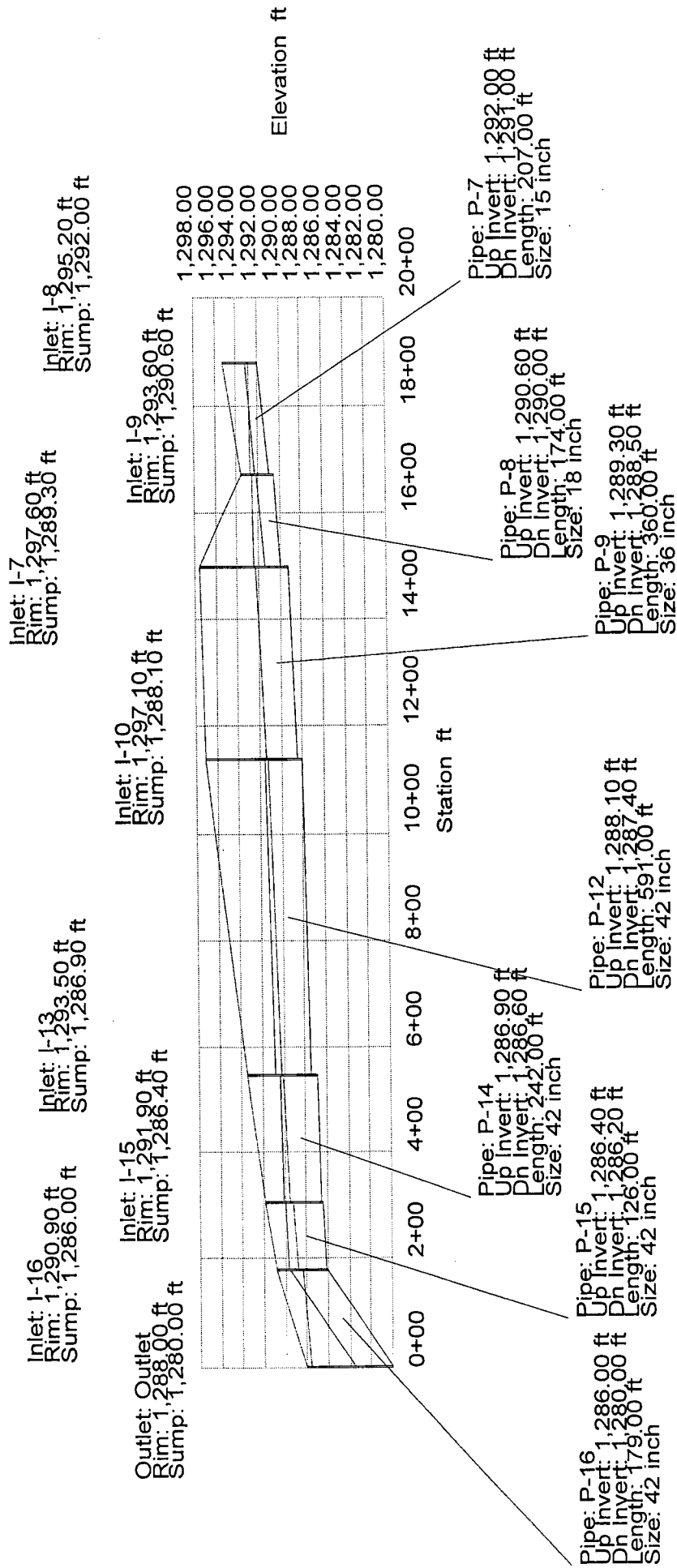
Upstream Node	Downstream Node	Discharge (cfs)	Constructed Slope (ft/ft)	Section Size	Roughness	Section Material	Length (ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Upstream Ground Elevation (ft)	Downstream Ground Elevation (ft)	Upstream HGL (ft)	Downstream HGL (ft)	Upstream Cover (ft)	Downstream Cover (ft)
I-14	I-13	3.60	0.014286	18 inch	0.013	Concrete	42.00	1,289.50	1,288.90	1,293.50	1,293.50	1,290.22	1,290.26	2.50	3.10
I-12	I-10	4.80	0.004132	15 inch	0.013	Concrete	121.00	1,290.40	1,289.90	1,293.60	1,297.10	1,292.07	1,291.40	1.95	5.95
I-11	I-10	0.60	0.076190	18 inch	0.013	Concrete	42.00	1,293.20	1,290.00	1,297.10	1,297.10	1,293.49	1,291.40	2.40	5.60
I-8	I-9	2.40	0.004831	15 inch	0.013	Concrete	207.00	1,292.00	1,291.00	1,295.20	1,293.60	1,292.93	1,292.68	1.95	1.35
I-9	I-7	3.50	0.003448	18 inch	0.013	Concrete	174.00	1,290.60	1,290.00	1,293.60	1,297.60	1,292.65	1,292.46	1.50	6.10
I-5	I-3	8.50	0.004412	18 inch	0.013	Concrete	136.00	1,292.50	1,291.90	1,295.80	1,296.20	1,295.27	1,294.38	1.80	2.80
I-4	I-3	8.00	0.026829	18 inch	0.013	Concrete	41.00	1,293.00	1,291.90	1,296.20	1,296.20	1,294.61	1,294.38	1.70	2.80
I-1	I-2	8.20	0.004878	18 inch	0.013	Concrete	41.00	1,295.70	1,295.50	1,299.10	1,299.10	1,296.99	1,296.61	1.90	2.10
I-2	I-3	10.00	0.007400	24 inch	0.013	Concrete	500.00	1,295.00	1,291.30	1,299.10	1,296.20	1,296.13	1,294.38	2.10	2.90
I-3	I-6	28.80	0.008000	30 inch	0.013	Concrete	175.00	1,291.10	1,289.70	1,296.20	1,297.20	1,294.11	1,293.25	2.60	5.00
I-6	I-7	30.10	0.002174	30 inch	0.013	Concrete	92.00	1,289.70	1,289.50	1,297.20	1,297.60	1,292.95	1,292.46	5.00	5.60
I-7	I-10	34.60	0.002222	36 inch	0.013	Concrete	360.00	1,289.30	1,288.50	1,297.60	1,297.10	1,292.27	1,291.40	5.30	5.60
I-10	I-13	41.30	0.001184	42 inch	0.013	Concrete	591.00	1,288.10	1,287.40	1,297.10	1,293.50	1,291.24	1,290.26	5.50	2.60
I-13	I-15	46.70	0.001240	42 inch	0.013	Concrete	242.00	1,286.90	1,286.60	1,293.50	1,291.90	1,290.05	1,289.52	3.10	1.80
I-15	I-16	49.60	0.001587	42 inch	0.013	Concrete	126.00	1,286.40	1,286.20	1,291.90	1,290.90	1,289.25	1,288.80	2.00	1.20
I-16	Outlet	54.00	0.033520	42 inch	0.013	Concrete	179.00	1,286.00	1,280.00	1,290.90	1,288.00	1,288.30	1,287.60	1.40	4.50

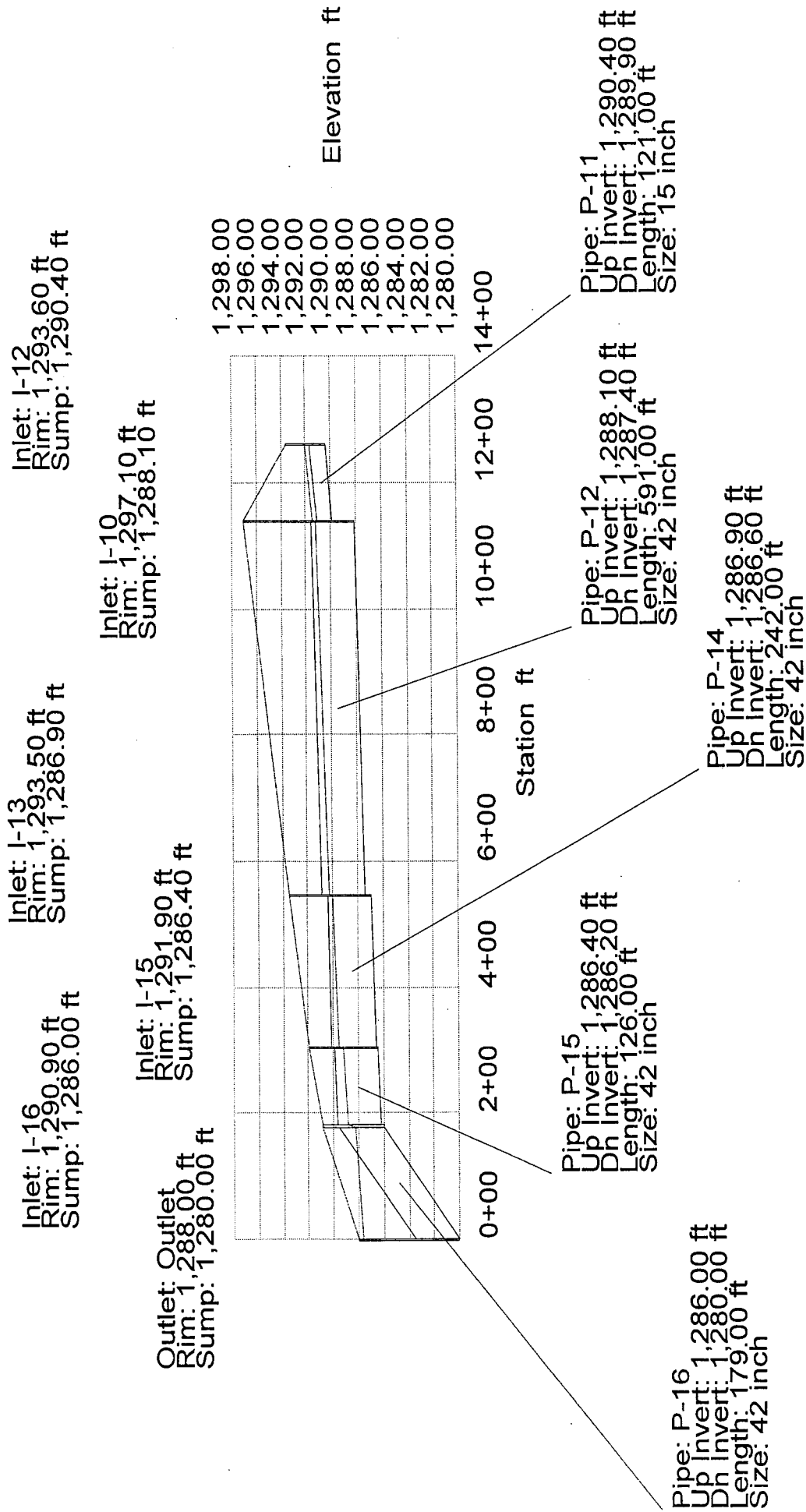












Inlet: I-11
Rim: 1,297.10 ft
Sump: 1,293.20 ft

Inlet: I-13
Rim: 1,293.50 ft
Sump: 1,286.90 ft

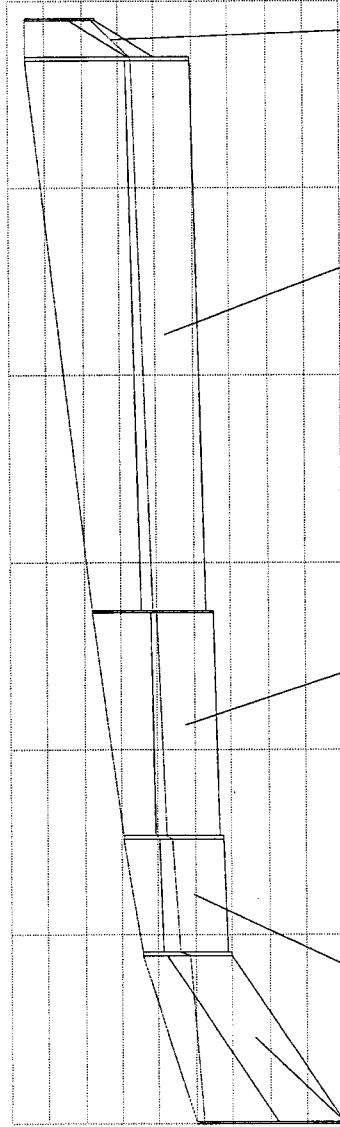
Inlet: I-16
Rim: 1,290.90 ft
Sump: 1,286.00 ft

Inlet: I-10
Rim: 1,297.10 ft
Sump: 1,288.10 ft

Inlet: I-15
Rim: 1,291.90 ft
Sump: 1,286.40 ft

Outlet: Outlet
Rim: 1,288.00 ft
Sump: 1,280.00 ft

1,298.00
1,296.00
1,294.00
1,292.00
1,290.00
1,288.00
1,286.00
1,284.00
1,282.00
1,280.00



Station ft

Pipe: P-10
Up Invert: 1,293.20 ft
Dn Invert: 1,290.00 ft
Length: 42.00 ft
Size: 18 inch

Pipe: P-16
Up Invert: 1,286.00 ft
Dn Invert: 1,280.00 ft
Length: 179.00 ft
Size: 42 inch

Pipe: P-14
Up Invert: 1,286.90 ft
Dn Invert: 1,286.60 ft
Length: 242.00 ft
Size: 42 inch

Pipe: P-12
Up Invert: 1,288.10 ft
Dn Invert: 1,287.40 ft
Length: 591.00 ft
Size: 42 inch

Inlet: I-15
 Rim: 1,291.90 ft
 Sump: 1,286.40 ft

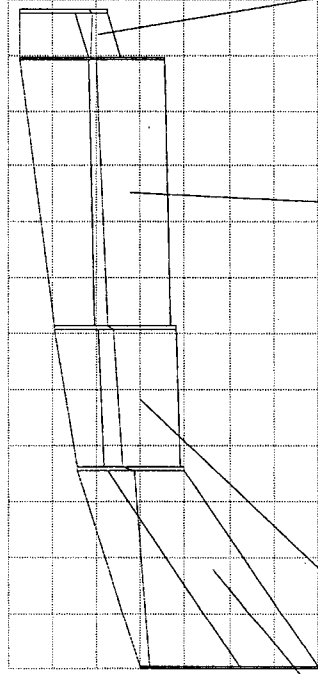
Inlet: I-13
 Rim: 1,293.50 ft
 Sump: 1,286.90 ft

Inlet: I-16
 Rim: 1,290.90 ft
 Sump: 1,286.00 ft

Inlet: I-14
 Rim: 1,293.50 ft
 Sump: 1,289.50 ft

Outlet: Outlet
 Rim: 1,288.00 ft
 Sump: 1,280.00 ft

1,294.00
 1,292.00
 1,290.00
 1,288.00
 1,286.00
 1,284.00
 1,282.00
 1,280.00



0+00500030203000500050005000

Station ft

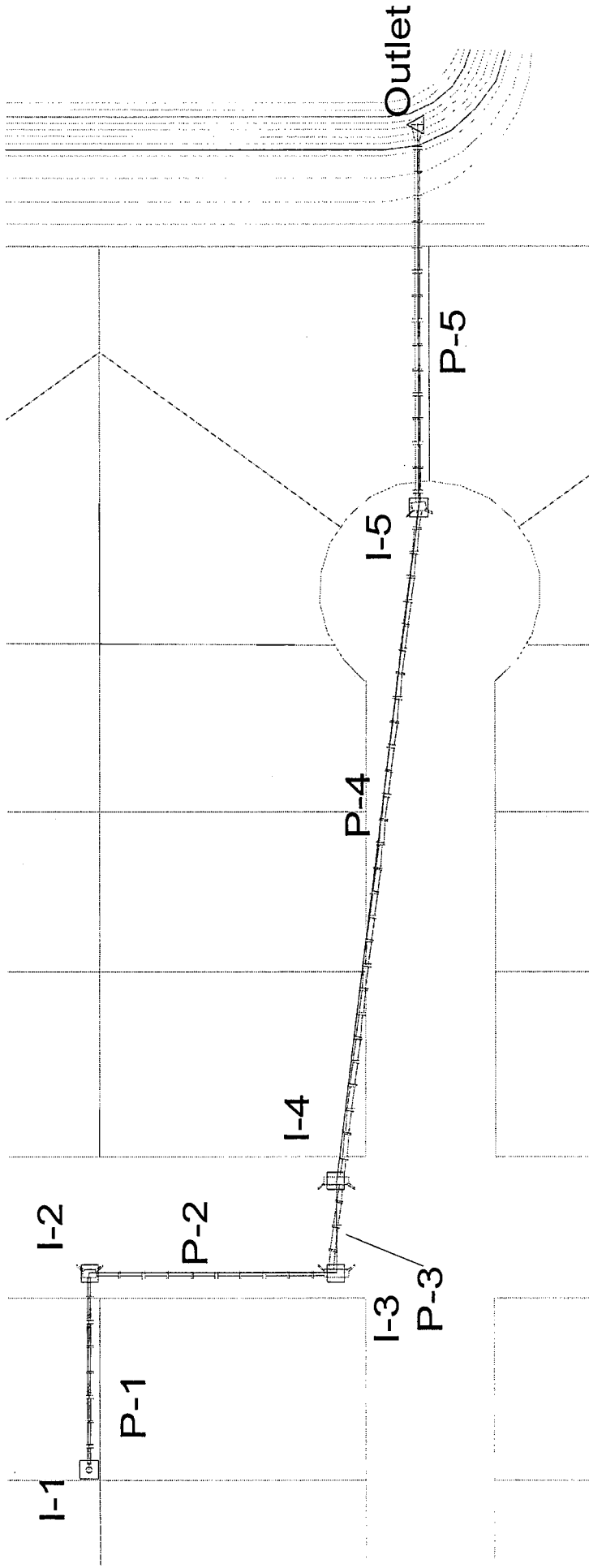
Elevation ft

Pipe: P-15
 Up Invert: 1,286.40 ft
 Dh Invert: 1,286.20 ft
 Length: 126.00 ft
 Size: 42 inch

Pipe: P-13
 Up Invert: 1,289.50 ft
 Dh Invert: 1,288.90 ft
 Length: 42.00 ft
 Size: 18 inch

Pipe: P-16
 Up Invert: 1,286.00 ft
 Dh Invert: 1,280.00 ft
 Length: 179.00 ft
 Size: 42 inch

Pipe: P-14
 Up Invert: 1,286.90 ft
 Dh Invert: 1,286.60 ft
 Length: 242.00 ft
 Size: 42 inch

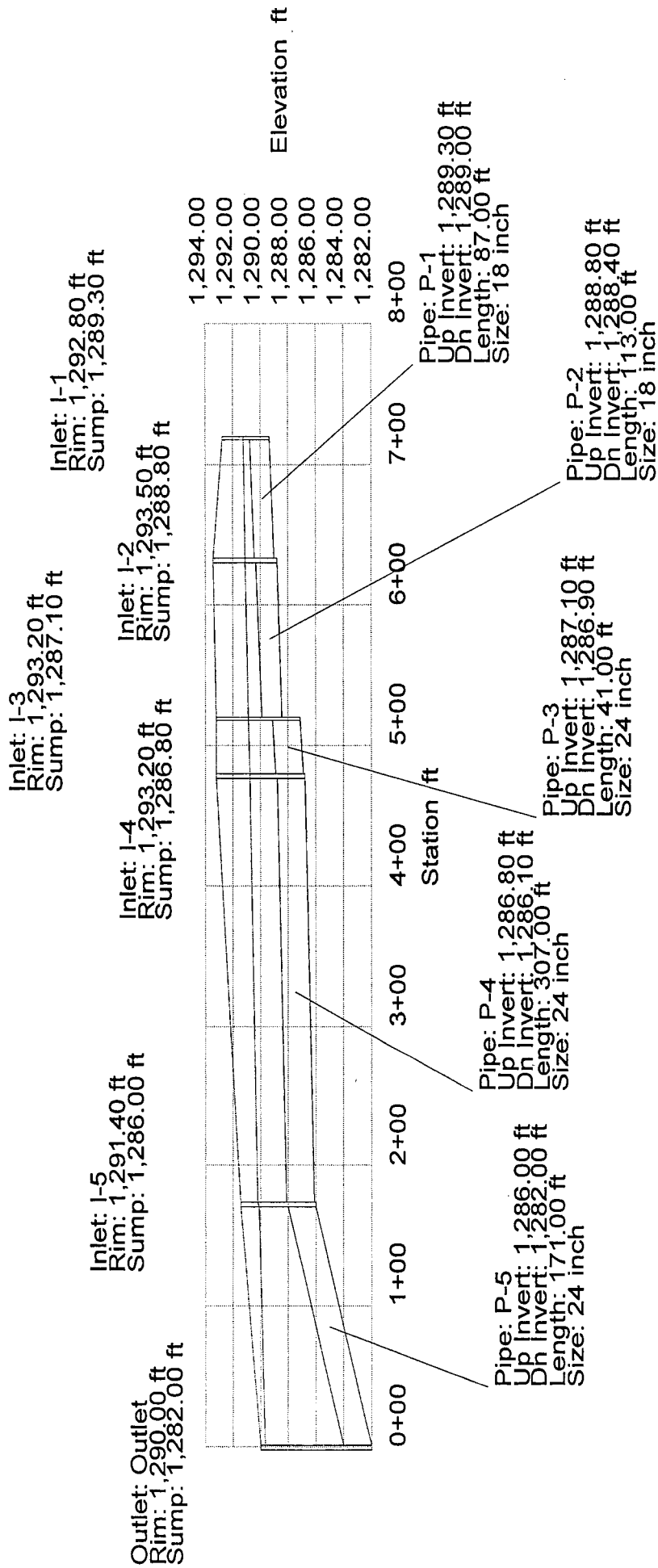


Node Report

Node	Inlet Area (acres)	Weighted Roughness Coefficient	Total CA (acres)	Inlet TC (min)	System Flow Time (min)	System Intensity (in/hr)	Total Watershed (CIA) (cfs)	Additional Flow (cfs)	Known Flow (cfs)	Discharge (cfs)	Ground Elevation (ft)	HGL In (ft)	HGL Out (ft)	Inlet Intensity (in/hr)
I-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.70	0.00	2.70	1,292.80	1,291.24	1,291.23	0.00
I-2	0.00	0.00	0.00	0.00	0.95	0.00	0.00	1.50	0.00	4.20	1,293.50	1,291.17	1,291.12	0.00
I-3	0.00	0.00	0.00	0.00	1.74	0.00	0.00	4.50	0.00	8.70	1,293.20	1,290.94	1,290.88	0.00
I-4	0.00	0.00	0.00	0.00	1.99	0.00	0.00	0.60	0.00	9.30	1,293.20	1,290.82	1,290.76	0.00
I-5	0.00	0.00	0.00	0.00	3.72	0.00	0.00	2.10	0.00	11.40	1,291.40	1,290.24	1,290.13	0.00
Outlet	N/A	N/A	0.00	N/A	4.50	0.00	0.00	N/A	N/A	N/A	1,290.00	1,289.70	1,289.70	N/A

Pipe Report

Upstream Node	Downstream Node	Discharge (cfs)	Constructed Slope (ft/ft)	Section Size	Roughness	Section Material	Length (ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Upstream Ground Elevation (ft)	Downstream Ground Elevation (ft)	Upstream HGL (ft)	Downstream HGL (ft)	Upstream Cover (ft)	Downstream Cover (ft)
I-1	I-2	2.70	0.003448	18 inch	0.013	Concrete	87.00	1,289.30	1,289.00	1,292.80	1,293.50	1,291.23	1,291.17	2.00	3.00
I-2	I-3	4.20	0.003540	18 inch	0.013	Concrete	113.00	1,288.80	1,288.40	1,293.50	1,293.20	1,291.12	1,290.94	3.20	3.30
I-3	I-4	8.70	0.004878	24 inch	0.013	Concrete	41.00	1,287.10	1,286.90	1,293.20	1,293.20	1,290.88	1,290.82	4.10	4.30
I-4	I-5	9.30	0.002280	24 inch	0.013	Concrete	307.00	1,286.80	1,286.10	1,293.20	1,291.40	1,290.76	1,290.24	4.40	3.30
I-5	Outlet	11.40	0.023392	24 inch	0.013	Concrete	171.00	1,286.00	1,282.00	1,291.40	1,290.00	1,290.13	1,289.70	3.40	6.00

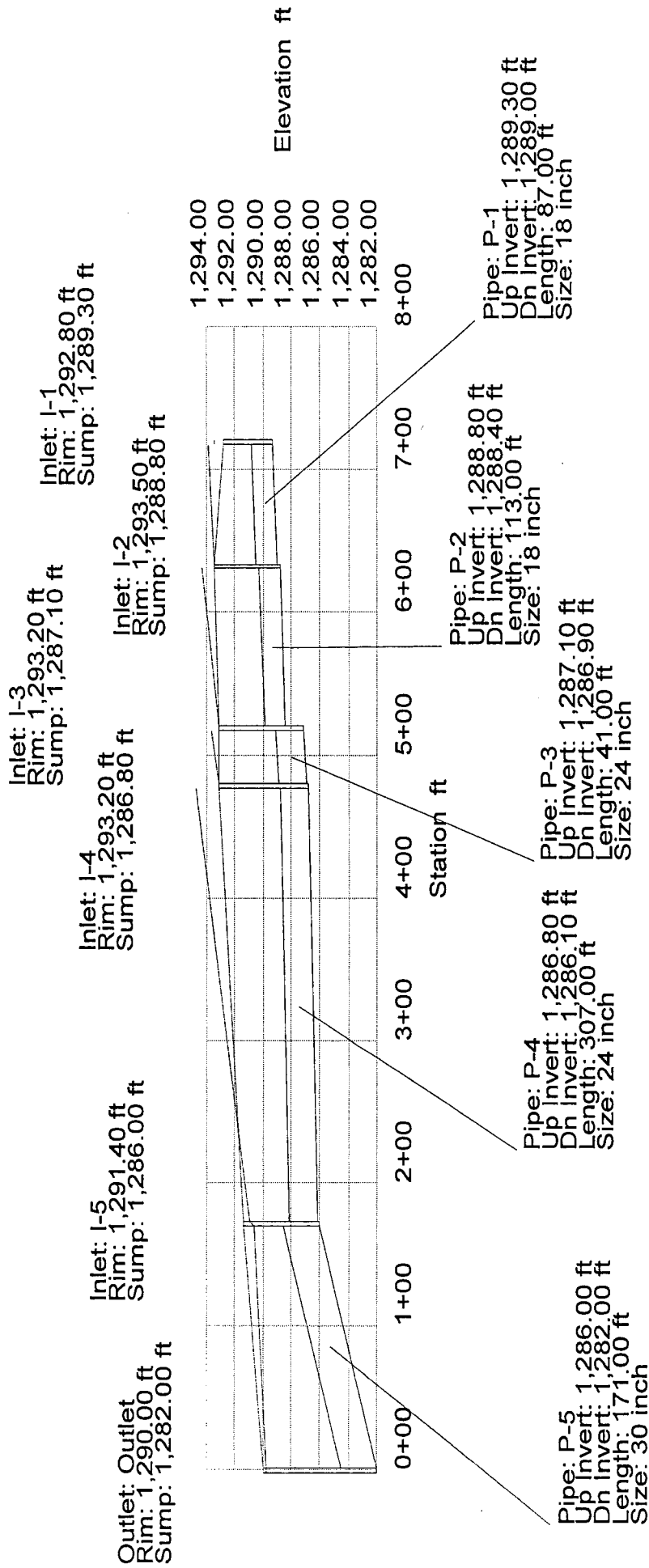


Node Report

Node	Inlet Area (acres)	Weighted Roughness Coefficient	Total CA (acres)	Inlet TC (min)	System Flow Time (min)	System Intensity (in/hr)	Total Watershed (CIA) (cfs)	Additional Flow (cfs)	Known Flow (cfs)	Discharge (cfs)	Ground Elevation (ft)	HGL In (ft)	HGL Out (ft)	Inlet Intensity (in/hr)
I-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.40	0.00	7.40	1,292.80	1,293.50	1,293.50	0.00
I-2	0.00	0.00	0.00	0.00	0.35	0.00	0.00	3.20	0.00	10.60	1,293.50	1,293.50	1,293.50	0.00
I-3	0.00	0.00	0.00	0.00	0.66	0.00	0.00	13.00	0.00	23.60	1,293.20	1,293.20	1,293.20	0.00
I-4	0.00	0.00	0.00	0.00	0.75	0.00	0.00	1.70	0.00	25.30	1,293.20	1,293.20	1,293.20	0.00
I-5	0.00	0.00	0.00	0.00	1.39	0.00	0.00	5.70	0.00	31.00	1,291.40	1,290.99	1,290.68	0.00
Outlet	N/A	N/A	0.00	N/A	1.84	0.00	0.00	N/A	N/A	N/A	1,290.00	1,289.70	1,289.70	N/A

Pipe Report

Upstream Node	Downstream Node	Discharge (cfs)	Constructed Slope (ft/ft)	Section Size	Roughness	Section Material	Length (ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Upstream Ground Elevation (ft)	Downstream Ground Elevation (ft)	Upstream HGL (ft)	Downstream HGL (ft)	Upstream Cover (ft)	Downstream Cover (ft)
I-1	I-2	7.40	0.003448	18 inch	0.013	Concrete	87.00	1,289.30	1,289.00	1,292.80	1,293.50	1,293.93	1,293.50	2.00	3.00
I-2	I-3	10.60	0.003540	18 inch	0.013	Concrete	113.00	1,288.80	1,288.40	1,293.50	1,293.20	1,294.35	1,293.20	3.20	3.30
I-3	I-4	23.60	0.004878	24 inch	0.013	Concrete	41.00	1,287.10	1,286.90	1,293.20	1,293.20	1,293.65	1,293.20	4.10	4.30
I-4	I-5	25.30	0.002280	24 inch	0.013	Concrete	307.00	1,286.80	1,286.10	1,293.20	1,291.40	1,294.83	1,290.99	4.40	3.30
I-5	Outlet	31.00	0.023392	30 inch	0.013	Concrete	171.00	1,286.00	1,282.00	1,291.40	1,290.00	1,290.68	1,289.70	2.90	5.50



APPENDIX C

SWS systems 5, 6, 7, & 8

These four storm sewers are single pipe systems with only one inlet. The SWS systems are designed using the "worst case" from each of the systems

The largest Drainage Area is that contributing to SWS # 7, and thus produces the largest runoff.

$$D.A. = 2.2 \text{ acres} \quad Q_2 = 3.5 \text{ cfs} \quad Q_{100} = 10 \text{ cfs}$$

The longest pipe is that of System #8 with a length approx 175 ft.

The highest water surface elev. occurs with the North Pond where 100-yr WS = 1290.4

The lowest Top of Culb occurs at the inlet serving SWS # 8 w/ T.C. = 1291.3

Due to high Tailwater cond. the systems will be pressurized

$$\frac{P_1}{\gamma} + \frac{V_1^2}{2g} + WS_1 = \frac{P_2}{\gamma} + \frac{V_2^2}{2g} + WS_2 + h_e + h_x + h_f$$

$$WS_1 = 1290.4 + 0.5 \frac{\bar{V}^2}{2g} + 1.0 \frac{\bar{V}^2}{2g} + S_f L$$

$$\bar{V} = \frac{10 \text{ cfs}}{A_p}$$

$$\text{Try } 15" \text{ RCP} \quad A_p = 1.23$$

$$\bar{V} = 8.1 \text{ ft/s}$$

$$P_u = 3.93$$

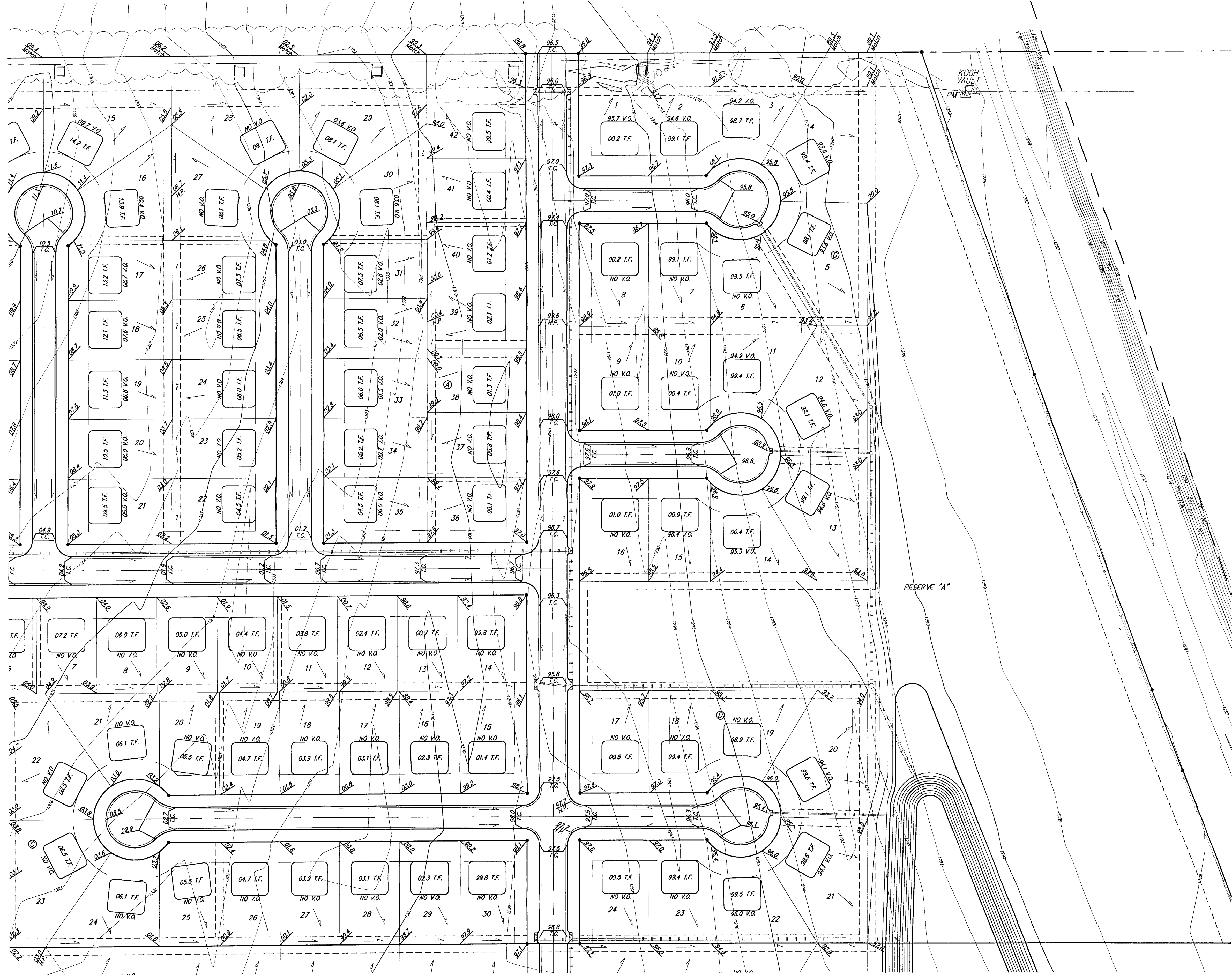
$$R = \frac{A_p}{P_u} = 0.3125$$

$$S_f = \left[\frac{(8.1)(0.013)}{1.49 (0.3125)^{2/3}} \right]^2 \quad S_f = 0.0024$$

$$WS_1 = 1.5 \frac{(8.1)^2}{2g} + 0.0024 (175) + 1290.4$$

$$WS_1 = 1292.3$$

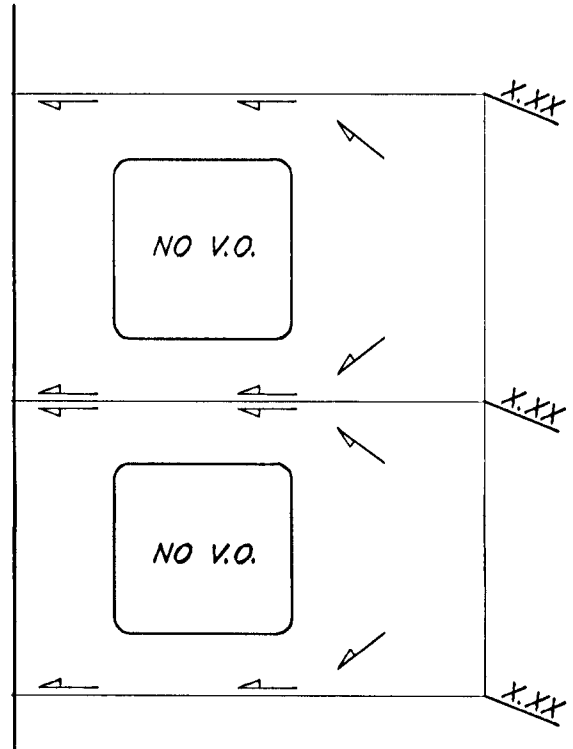
WS, < lowest T.C. OK
use 15" RCP for all



BENCHMARK:

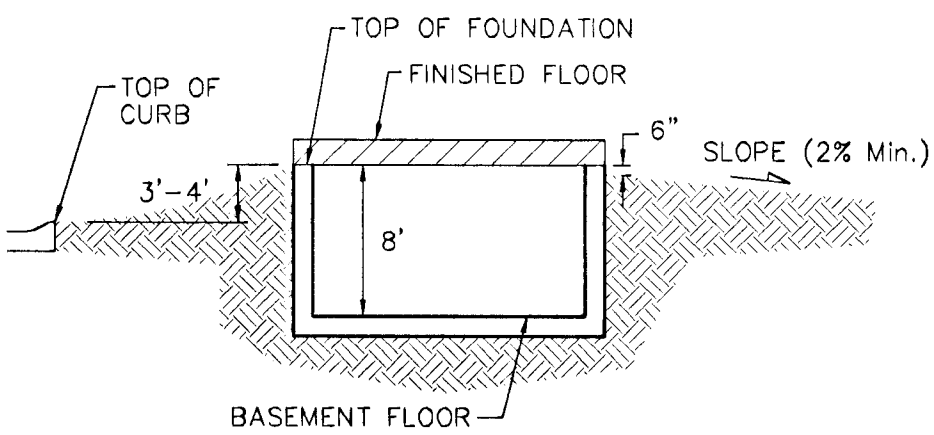
City Disc - 41.60' North and 69.00' East of
Intersection of Q. Hoover and Q. MacArthur.
Elev. = 1308.62 NGVD29
(= 121.22 City Datum)

SCALE: 1" = 60'
• = Iron



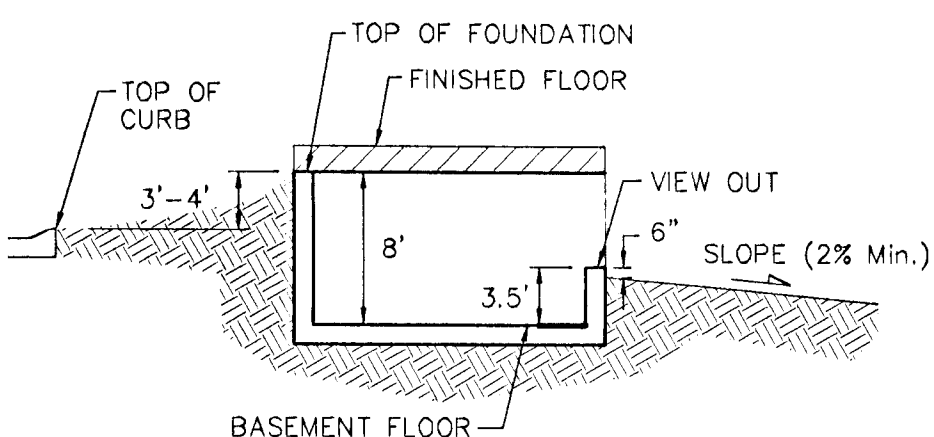
**TYPICAL LOT DRAINAGE FOR LOTS
REQUIRING FLOW TO FRONT OF LOT**

NO SCALE



TYPICAL NON-VIEW OUT DETAIL

NO SCALE



TYPICAL VIEW OUT DETAIL

NO SCALE

NOTES:
Proposed Top of Foundation Elevations Are Shown On
Plans. Contractor to Set Finished Floor Elevations.
All Street Elevations Shown on Plans are for Top of
Curb (Full-Height).
This Grading Plan is Designed with View-Outs.
Elevations Shown at Rear of House (X-X V.O.)
Lot dimensions have been omitted on this plan,
refer to the recorded plat for this information.

GRAY'S 5TH ADDITION

MASTER GRADING PLAN

CITY OF WICHITA

BAUGHMAN COMPANY P.A.

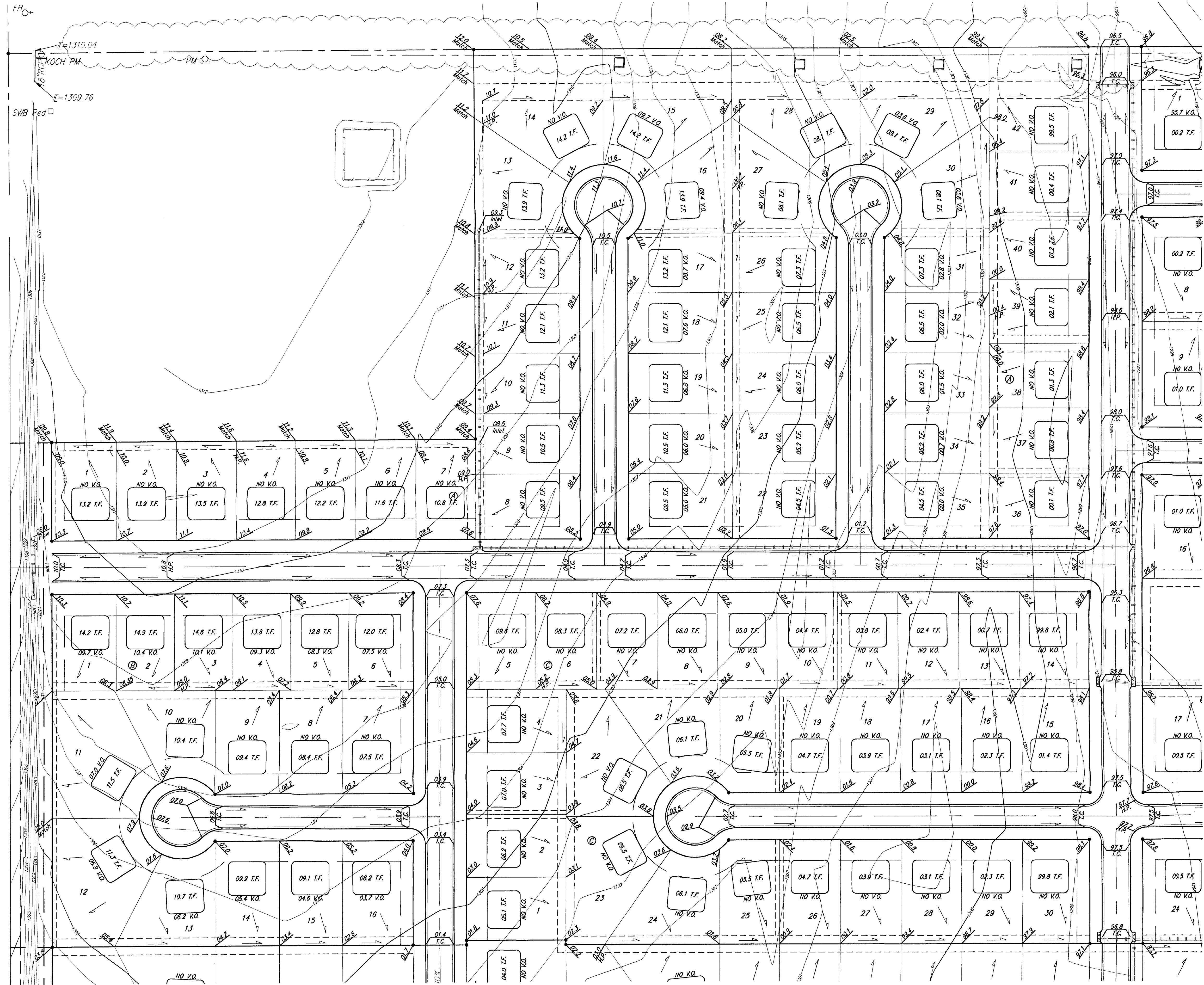
ENGINEERING, SURVEYING, & PLANNING

316-282-7271 • 315 ELLIS • WICHITA, KANSAS 67211

PROJECT NUMBER		SHEET	
DESIGN	DRAWN	APPROVED	DATE
NGW/BLG	BLG		07DEC2007
SCALE		NOTED	

OF 22

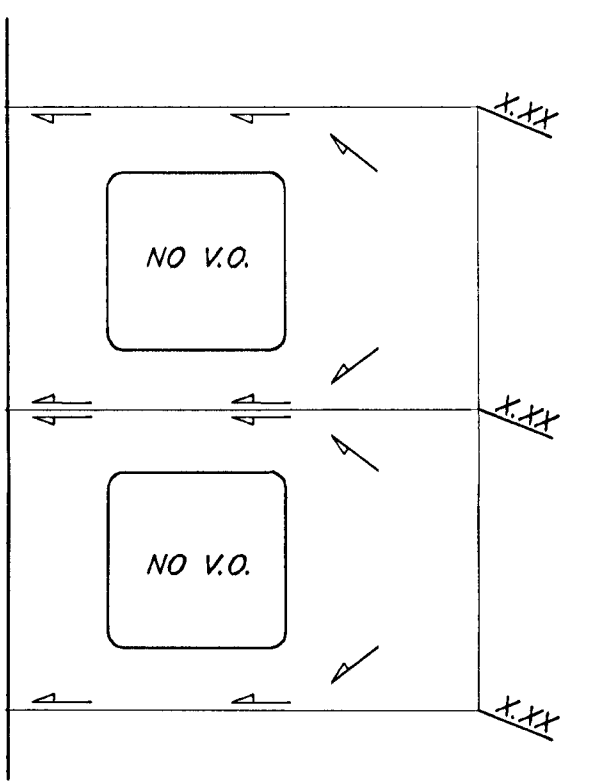
1: GRADEALL.DWG



SCALE: 1" = 60'
● = Iron

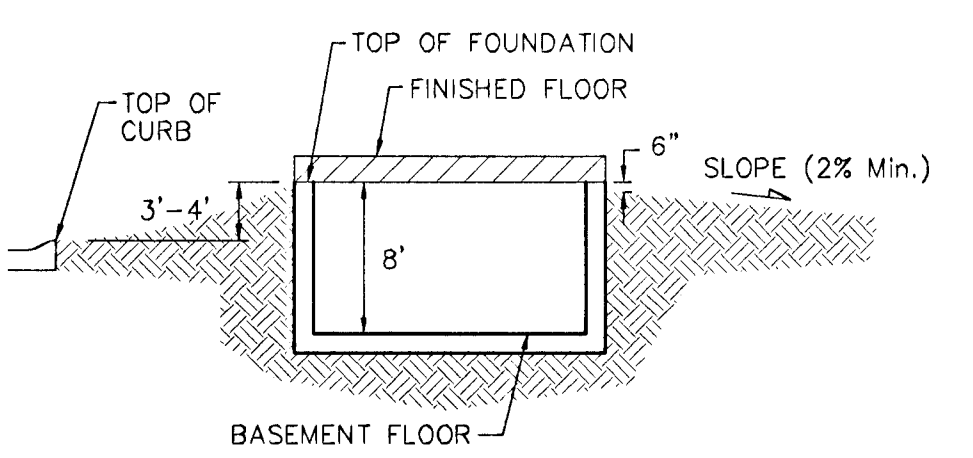
BENCHMARK:

City Disc - 41.60' North and 69.00' East of
Intersection of Hoover and MacArthur.
Elev. = 1308.62 NGVD29
(= 121.22 City Datum)



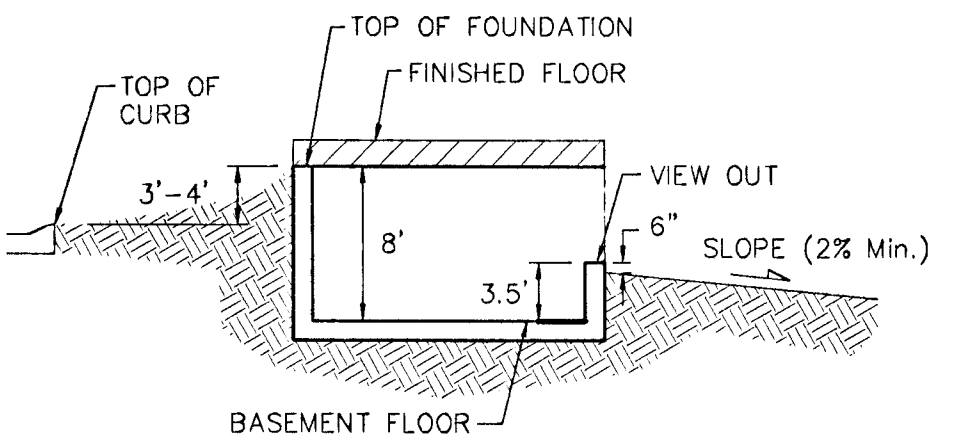
**TYPICAL LOT DRAINAGE FOR LOTS
REQUIRING FLOW TO FRONT OF LOT**

NO SCALE



TYPICAL NON-VIEW OUT DETAIL

NO SCALE



TYPICAL VIEW OUT DETAIL

NO SCALE

NOTES:

Proposed Top of Foundation Elevations Are Shown On
Plans. Contractor to Set Finished Floor Elevations.

All Street Elevations Shown on Plans Are for Top of
Curb (Full-Height).

This Grading Plan is Designed with View-Outs.
Elevations Shown at Rear of House (XX.X V.O.)

Lot dimensions have been omitted on this plan,
refer to the recorded plat for this information.

GRAY'S 5TH ADDITION
MASTER GRADING PLAN
CITY OF WICHITA

BAUGHMAN COMPANY P.A.
ENGINEERING, SURVEYING, & PLANNING
316-262-7271 • 315 ELLIS • WICHITA, KANSAS 67211

PROJECT NUMBER				SHEET 1 OF 2	
DESIGN NBW/BLG	DRAWN BLG	APPROVED	DATE 07DEC2001	SCALE NOTED	

1 - GRADE/BLD.DWG

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