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

LETTER OF TRANSMITTAL

DATE: 11/11/96
JOB NO.
ATTENTION:
RE:

TO: Ms. Vicky Huang,
City of Wichita
Engineering Office - 7th Floor
455 N. Main
Wichita, KS 67202

WE ARE SENDING YOU ☒ *Attached* ☐ *Under separate cover via the following items:*

☐ *Plans* ☐ *Prints* ☐ *Shop drawings* ☐ *Samples* ☐ *Copy of letter*

☐ *Specifications* ☐ *Change order* ☐ *Computer disk* ☒ *Other Report*

COPIES	DATE	DESCRIPTION
1	11/8/96	Regency Lakes Addition Drainage Plan

THESE ARE TRANSMITTED as checked below:

☐ *For approval* ☐ *Approved as submitted* ☐ *For review and comment*

☒ *For your use & information* ☐ *Approved as noted* ☐ *FOR BIDS DUE*

☐ *As requested* ☐ *Return for corrections* ☐

REMARKS:

COPY TO: *file*

SIGNED: John D. Schmit

John D. Schmit, E.I.

DRAINAGE PLAN FOR

REGENCY LAKES ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS

Baughman Company, P.A.

DRAINAGE PLAN FOR

REGENCY LAKES ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS

Prepared By

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

November 8, 1996

TABLE OF CONTENTS

INTRODUCTION

This report provides information and supporting documentation to support the "Drainage Plan" for the property located in the Northeast and Northwest Quarters of Section 31, T27-S, R1-W in Sedgwick County, Kansas.

The "Drainage Plan" being submitted herein is intended to serve as a guide for the design of streets and storm water sewer improvements to the proposed residential development and assisted living facility. 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.

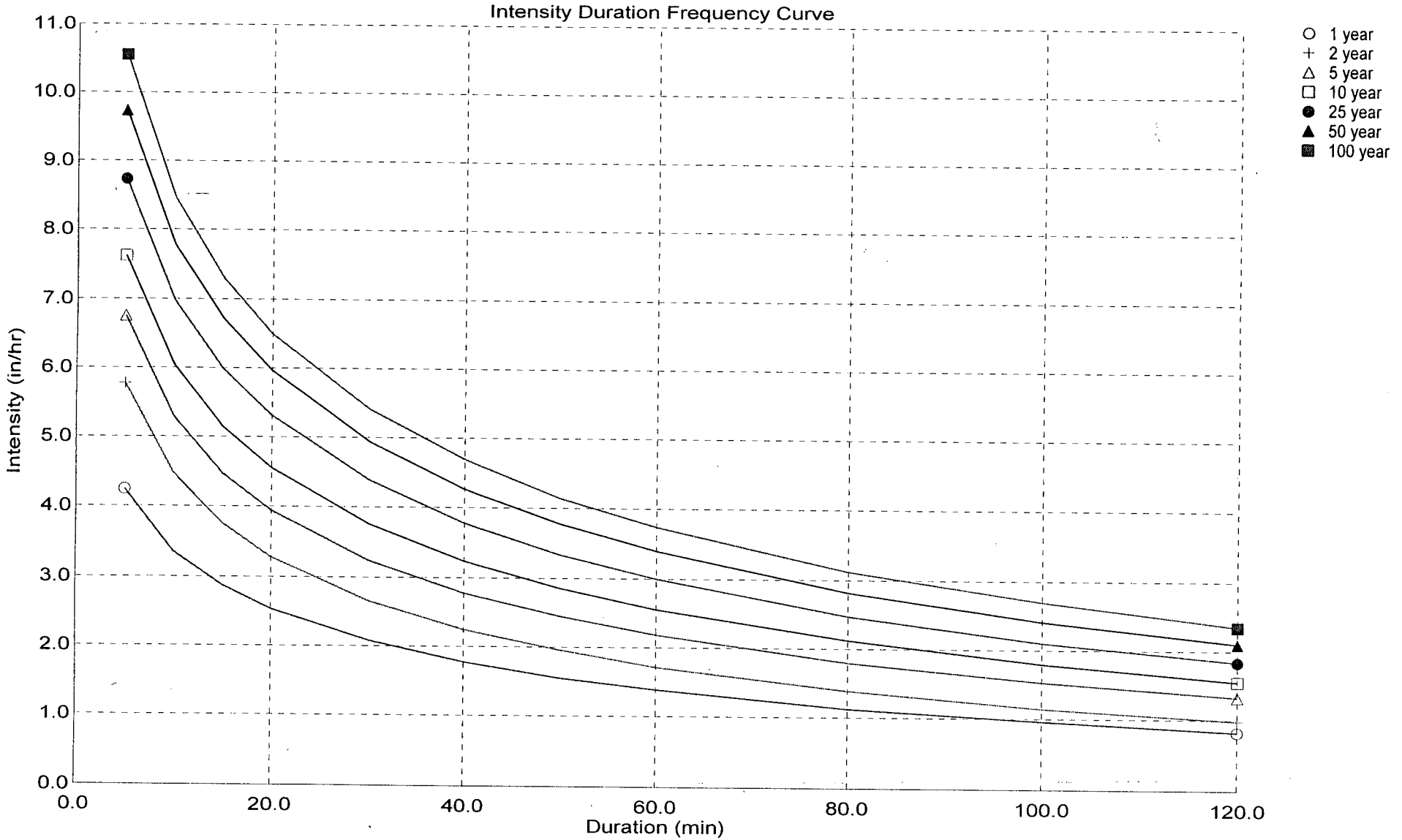
All drainage structures and designs shall adhere to the standards set forth by the Interim Drainage and Storm Sewer Policy for Design Criteria and Documentation, adopted April 15, 1986 and revised July 1, 1987, published by the City of Wichita, Kansas.

SITE CHARACTERISTICS

The property platted as Regency Lakes Addition and Regency Lakes 2nd Addition drain overland to the east onto the property which is now called Greenwich Business Park, then south through the box culvert under 21st Street North.

The proposed plan will drain the platted properties via storm sewer systems to a retention facility in Reserve "C" of Regency Lakes Addition. The outflow from the retention facility will be routed through a triangular weir with 4:1 sideslopes to the Greenwich Business Park. The developed peak flow routed through the retention pond equals the pre-developed peak flow of 107 cfs. This peak is reached at a time of 45 minutes from the beginning of the storm and continues for 15 minutes.

The off-site flows from the north and the northwest entering the retention facility will peak at 2 hr. 15 min. and 2 hr. 30 min. respectively. The combined hydrograph for all flows into the retention facility will peak at 2 hr. 30 min. and the outflow from the pond will peak at 2 hr. 45 min. with a peak outflow of 454 cfs.



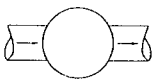
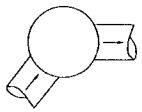
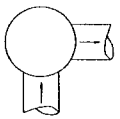
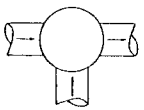
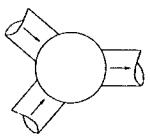
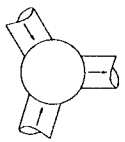
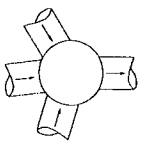
Project Title: Regency Lakes Addition
f:\hydro\stormcad\regency\regency4.stm
02/01/96 09:21:30 AM

Baughman Company, P.A.
 37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

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

Headloss Coefficients for Manholes and Junctions

These are typical headloss coefficients used in the standard method for estimating headloss through manholes and junctions.

Type of Manhole	Diagram	Headloss Coefficient
Trunkline only with no bend at the junction		0.5
Trunkline only with 45 degree bend at junction		0.6
Trunkline only with 90 degree bend at junction		0.8
Trunkline with one lateral		Small 0.6 Large 0.7
Two roughly equivalent entrance lines with angle of < 90 degrees between lines		0.8
Two roughly equivalent entrance lines with angle of > 90 degrees between lines		0.9
Three or more entrance lines		1.0

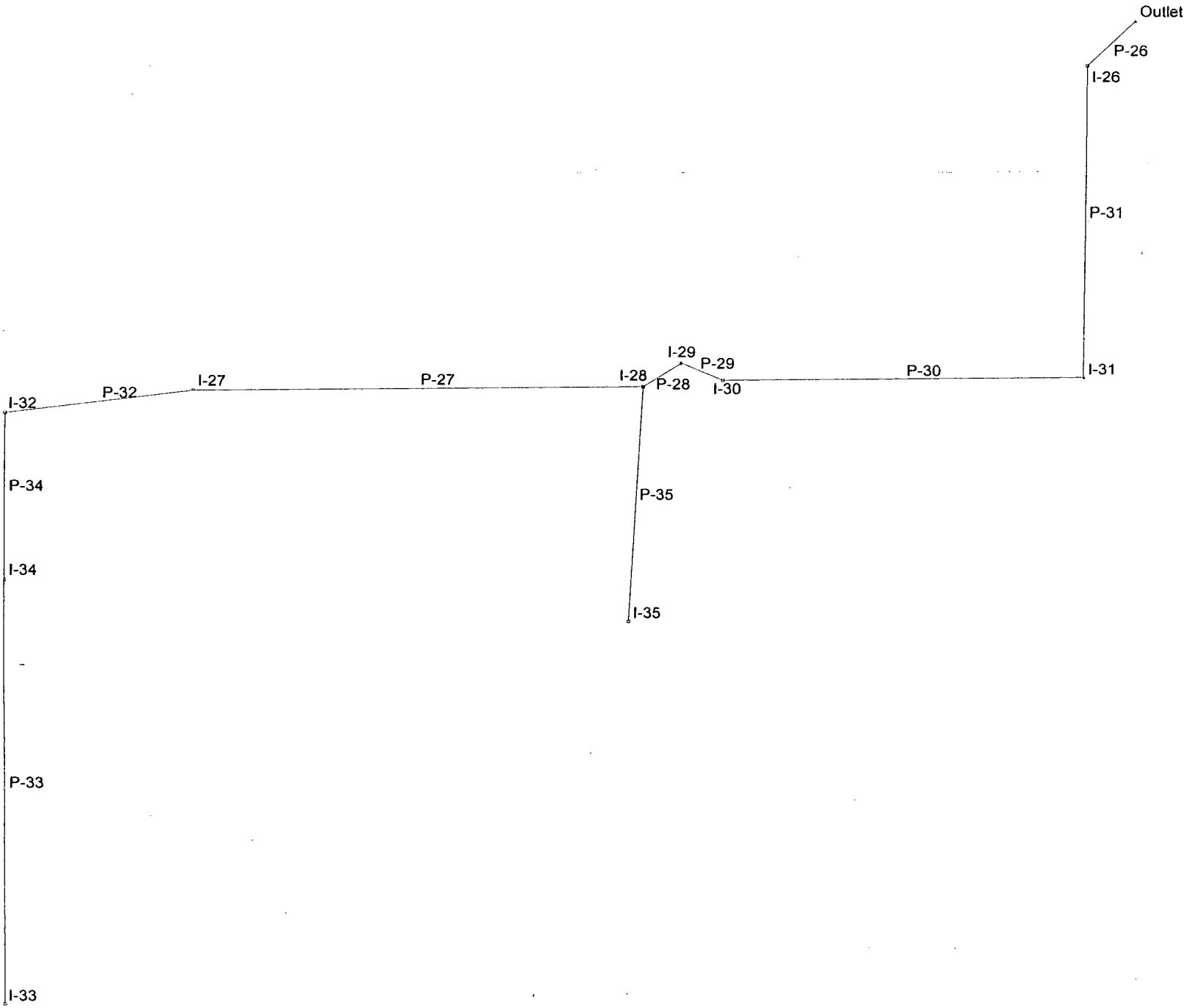
Regency Lakes SWS – Line 1

By JDS Date Page Of

BAUGHMAN COMPANY, P.A.

C = 0.54 Residential C = 0.85 Exception

Inlet	Type	Area	Q_{IN_2}	Q_{BYPASS_2}	$Q_{IN_{100}}$	$Q_{BYPASS_{100}}$
31	4'x4' Drop	1.8	—	—	See Stormcad Data	—
30	10' Curb Inlet (Sump)	2.9	—	—	"	—
29	10' Curb Inlet (Sump)	2.1	—	—	"	—
28	2'x4' Drop	0.7	—	—	"	—
27	2'x4' Drop	0.2	—	—	"	—
32	2'x4' Drop	0.1	—	—	"	—
33	2'x4' Drop	2.9	—	—	"	—
34	2'x4' Drop	2.2	—	—	"	—
35	2'x4' Drop		—	—	"	—



Project Title: Line 1, Regency Lakes Addition
f:\hydro\stormcad\regency\l1-100yr.stm
11/06/96 08:25:19 AM

Baughman Company, P.A.
 37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

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

Pipe Report

Up Node	Dn Node	Inlet A (acres)	C	Inlet CA (acres)	Tot CA (acres)	I (in/hr)	Q (cfs)	Length (ft)	S (ft/ft)	Size	Roughness	Cap (cfs)	Up Invert (ft)	Dn Invert (ft)	Sump (ft)	Up Gr Elev (ft)	Dn Gr Elev (ft)	Up HGL (ft)	Dn HGL (ft)
I-35	I-28	0.00	0.00	0.00	0.00	7.29	13.83	197.00	0.001523	30 inch	0.013	16.01	67.10	66.80	67.10	72.40	73.40	70.64	70.41
I-33	I-34	2.90	0.70	2.03	2.03	7.29	14.93	354.00	0.002006	24 inch	0.013	10.13	78.36	77.65	78.36	82.00	82.00	81.10	79.56
I-34	I-32	2.20	0.70	1.54	3.57	7.07	25.45	139.00	0.001482	30 inch	0.013	15.79	77.15	76.94	77.15	82.00	84.00	79.52	78.72
I-32	I-27	0.10	0.54	0.05	3.62	7.01	25.59	156.00	0.016282	30 inch	0.013	52.34	76.84	74.30	76.84	84.00	78.80	78.56	76.10
I-27	I-28	0.20	0.54	0.11	3.73	6.94	26.12	376.00	0.018564	30 inch	0.013	55.88	74.20	67.22	74.20	78.80	73.40	75.94	70.41
I-28	I-29	0.70	0.54	0.38	4.11	6.78	55.76	38.00	0.001316	36 inch	0.013	24.19	66.72	66.67	66.72	73.40	73.80	70.12	69.86
I-29	I-30	5.75	0.75	4.33	8.44	6.77	85.26	38.00	0.001000	42 inch	0.013	31.81	66.17	66.13	66.17	73.80	73.80	69.61	69.15
I-30	I-31	1.50	0.54	0.81	9.25	6.76	90.69	299.00	0.012809	42 inch	0.013	113.86	66.03	62.20	66.03	73.80	66.70	68.98	66.70
I-31	I-26	1.80	0.54	0.97	10.22	6.68	96.54	262.00	0.001000	60 inch	0.013	82.35	60.70	60.44	60.70	66.70	67.50	66.92	66.56
I-26	Outlet	1.40	0.54	0.76	10.98	6.56	166.78	54.00	0.009259	60 inch	0.013	250.60	60.34	59.84	60.34	67.50	67.00	66.22	66.00
N/A	N/A	N/A	N/A	N/A	10.98	6.54	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	59.84	N/A	N/A	N/A	N/A

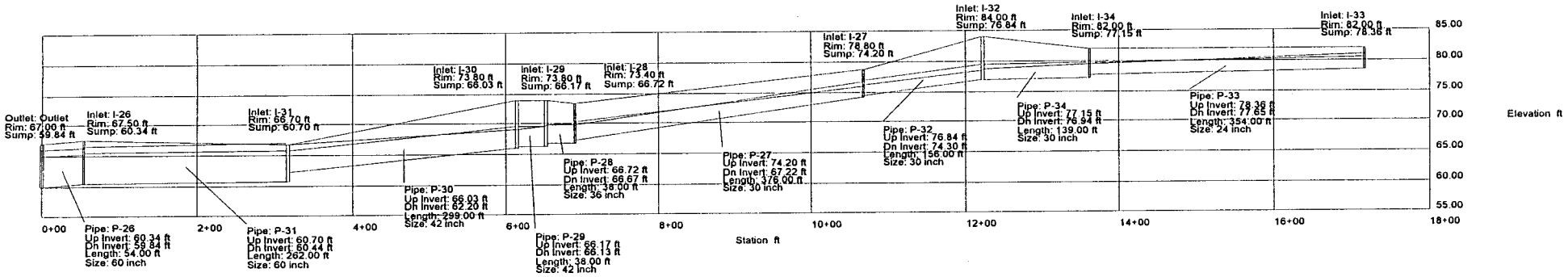
Baughman Company, P.A.
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

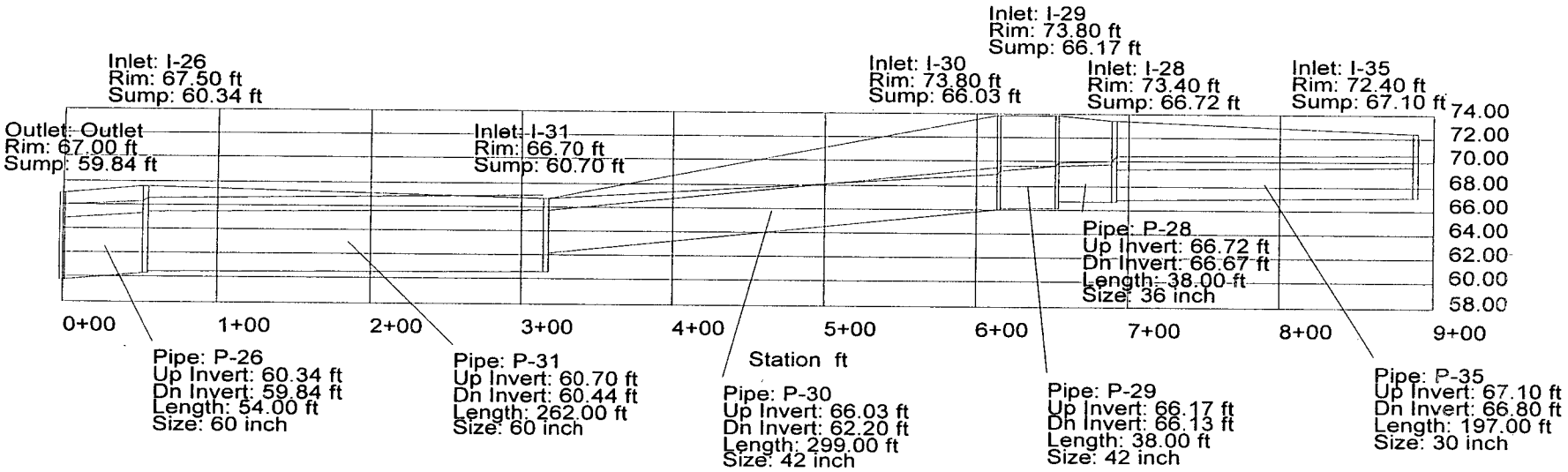
Node Report

Node	Known Flow (cfs)	Q (cfs)	Gr Elev (ft)	Rim (ft)	HGL In (ft)	HGL Out (ft)	Description
I-35	13.83	13.83	72.40	72.40	70.66	70.64	Drop inlet in open space north of north entrance to assis
I-33	0.00	14.93	82.00	82.00	81.10	81.10	Drop inlet at south end of open space in patio home are
I-34	0.00	25.45	82.00	82.00	79.56	79.52	Drop inlet at north end of open space in patio home are
I-32	0.00	25.59	84.00	84.00	78.72	78.56	Drop inlet in emergency access easement to Brandon C
I-27	0.00	26.12	78.80	78.80	76.10	75.94	Drop inlet at SW corner of Lot 4, Block 4 on Regency La
I-28	13.83	55.76	73.40	73.40	70.41	70.12	Drop inlet at SE corner of Lot 1, Block 4 on Regency La
I-29	13.83	85.26	73.80	73.80	69.86	69.61	Curb inlet at SE corner of Lot 1, Block 4 on Regency La
I-30	13.83	90.69	73.80	73.80	69.15	68.98	Curb inlet at NW corner of Lot 11, Block 1 on Regency
I-31	13.83	96.54	66.70	66.70	66.70	66.70	4'x4' Drop inlet at NE corner of Lot 9, Block 1 in Reserv
I-26	13.83	166.78	67.50	67.50	66.56	66.22	Drop inlet at SE corner of Lot 15, Block 1 in Reserve "C"
Outlet	N/A	N/A	67.00	67.00	66.00	66.00	Headwall in proposed pond in Reserve "C"

DOT Report

Pipe	-Node- Upstream Downstream	Inlet Area (acres)	Inlet CA (acres)	Total CA (acres)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (ft/ft)	-Section- Discharge Capacity (cfs)	-Section- Shape Size	Length (ft)	Average Velocity (ft/s)	Description
P-35	I-35	0.00	0.00	0.00	72.40	70.64	0.001137	13.83	Circular	197.00	2.82	
	I-28				73.40	70.41	0.001523	16.01	30 inch			
P-33	I-33	2.90	2.03	2.03	82.00	81.10	0.004306	14.93	Circular	354.00	4.79	
	I-34				82.00	79.56	0.002006	10.13	24 inch			
P-34	I-34	2.20	1.54	3.57	82.00	79.52	0.003686	25.45	Circular	139.00	6.05	
	I-32				84.00	78.72	0.001482	15.79	30 inch			
P-32	I-32	0.10	0.05	3.62	84.00	78.56	0.016242	25.59	Circular	156.00	6.92	
	I-27				78.80	76.10	0.016282	52.34	30 inch			
P-27	I-27	0.20	0.11	3.73	78.80	75.94	0.015654	26.12	Circular	376.00	6.24	
	I-28				73.40	70.41	0.018564	55.88	30 inch			
P-28	I-28	0.70	0.38	4.11	73.40	70.12	0.006990	55.76	Circular	38.00	7.89	
	I-29				73.80	69.86	0.001316	24.19	36 inch			
P-29	I-29	5.75	4.33	8.44	73.80	69.61	0.006314	85.26	Circular	38.00	9.27	
	I-30				73.80	69.15	0.001000	31.81	42 inch			
P-30	I-30	1.50	0.81	9.25	73.80	68.98	0.008716	90.69	Circular	299.00	9.95	
	I-31				66.70	66.70	0.012809	113.86	42 inch			
P-31	I-31	1.80	0.97	10.22	66.70	66.92	0.001374	96.54	Circular	262.00	4.92	
	I-26				67.50	66.56	0.001000	82.35	60 inch			
P-26	I-26	1.40	0.76	10.98	67.50	66.22	0.004101	166.78	Circular	54.00	8.49	
	Outlet				67.00	66.00	0.009259	250.60	60 inch			





Detailed Report for Outlet

Flows

Description		Description	
Total Discharge	166.62 cfs	Known Flow	13.83 cfs
Upstream Additional + Carryover	80.40 cfs	Total Watershed (CIA)	72.39 cfs

Watershed Data

Description		Description	
System Intensity	6.54 in/hr	Upstream CA	10.98 acres

Flow Times

Description		Description	
System Flow Time	19.64 min	Upstream Flow Time	19.64 min

Elevations

Description		Description	
HGL In	66.00 ft	HGL Out	66.00 ft
Ground Elevation	67.00 ft	Rim Elevation	67.00 ft

Other Properties

Description		Description	
X	430.08 ft	Y	-346.32 ft
Velocity	0.00 ft/s	Headloss	0.00 ft
Headloss Coefficient	0.00	Station	0+00 ft
External Flow	0.00 cfs		

Description:
Headwall in proposed pond in Reserve "C"

Status/Error Messages:
Information: Known flow propagated from upstream junctions.

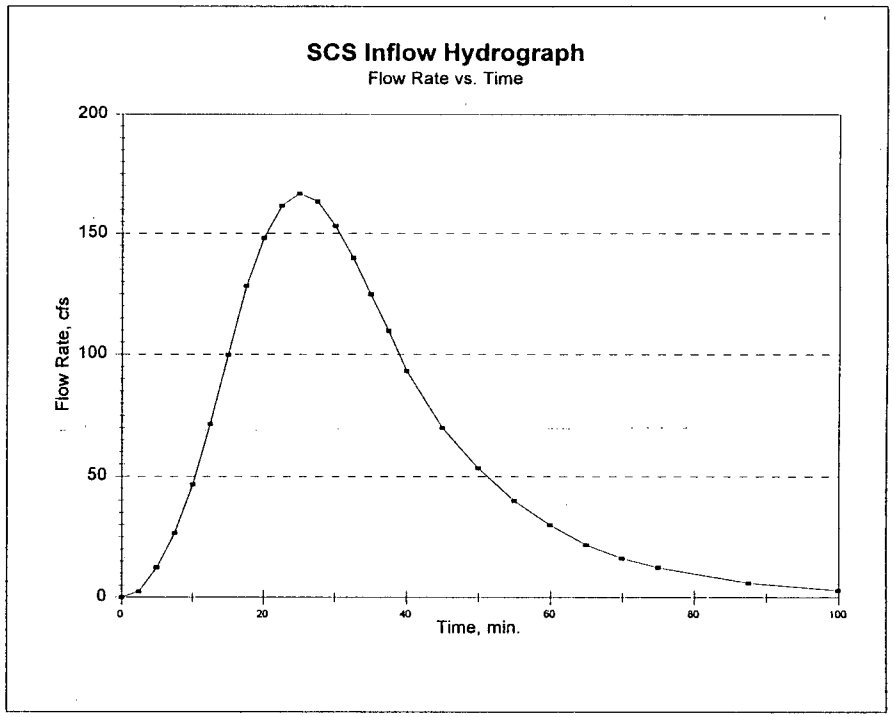
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

Line 1 - Regency Lakes Addition

Time of Concentration, min	25
Lag Time. min	15
Storm Duration, min	35
Peak Flow, cfs	166.62

Delta t min
2.5

SCS Hydrograph Method			
Time min	t/tp	Q/Qp	Q cfs
0	0	0	0
2.5	0.1	0.015	2.4993
5	0.2	0.075	12.4965
7.5	0.3	0.16	26.6592
10	0.4	0.28	46.6536
12.5	0.5	0.43	71.6466
15	0.6	0.6	99.972
17.5	0.7	0.77	128.2974
20	0.8	0.89	148.2918
22.5	0.9	0.97	161.6214
25	1	1	166.62
27.5	1.1	0.98	163.2876
30	1.2	0.92	153.2904
32.5	1.3	0.84	139.9608
35	1.4	0.75	124.965
37.5	1.5	0.66	109.9692
40	1.6	0.56	93.3072
45	1.8	0.42	69.9804
50	2	0.32	53.3184
55	2.2	0.24	39.9888
60	2.4	0.18	29.9916
65	2.6	0.13	21.6606
70	2.8	0.098	16.32876
75	3	0.075	12.4965
87.5	3.5	0.036	5.99832
100	4	0.018	2.99916
112.5	4.5	0.009	1.49958
125	5	0.004	0.66648



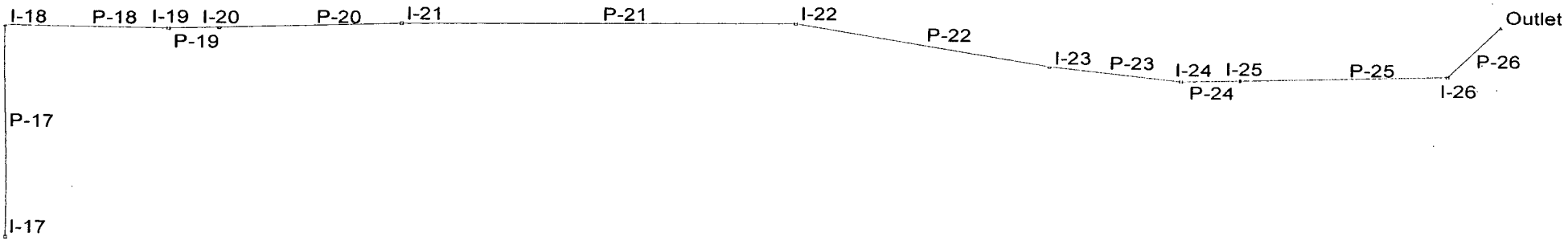
Regency Lakes SWS – Line 2

By JDS Date Page Of

BAUGHMAN COMPANY, P.A.

C=0.54

Inlet	Type	Area	$Q_{IN,2}$	$Q_{BYPASS,2}$	$Q_{IN,100}$	$Q_{BYPASS,100}$
17	2'x4' Drop	1.7	—	—	6.75	—
18	2'x4' Drop	1.7	—	—	6.75	—
19	Curb Inlet (Sump)	2.2	—	—	8.73	—
20	Curb Inlet (Sump)	1.2	—	—	4.76	—
21	2'x4' Drop	1.7	—	—	6.75	—
22	2'x4' Drop	0.9	—	—	3.57	—
23	2'x4' Drop	0.8	—	—	3.18	—
24	Curb Inlet (Sump)	2.8	—	—	20.12	—
25	Curb Inlet (Sump)	1.5	—	—	5.96	—
26	4'x4' Drop	1.4	—	—	5.56	—



Project Title: Line 2, Regency Lakes Addition
f:\hydro\stormcad\regency\l2-2yr.stm
11/01/96 04:32:24 PM

Baughman Company, P.A.
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

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

Pipe Report

Up Node	Dn Node	Inlet A (acres)	C	Inlet CA (acres)	Tot CA (acres)	I (in/hr)	Q (cfs)	Length (ft)	S (ft/ft)	Size	Roughness	Cap (cfs)	Up Invert (ft)	Dn Invert (ft)	Sump (ft)	Up Gr Elev (ft)	Dn Gr Elev (ft)	Up HGL (ft)	Dn HGL (ft)
I-17	I-18	1.70	0.54	0.92	0.92	7.29	6.75	153.00	0.003922	18 inch	0.013	6.58	82.13	81.53	81.75	85.00	85.00	83.55	83.00
I-18	I-19	1.70	0.54	0.92	1.84	7.17	13.27	118.00	0.029407	18 inch	0.013	18.01	81.45	77.98	81.17	85.00	80.95	82.81	79.69
I-19	I-20	2.20	0.54	1.19	3.02	7.13	21.72	35.00	0.001714	24 inch	0.013	9.37	77.48	77.42	77.48	80.95	80.95	79.62	79.24
I-20	I-21	1.20	0.54	0.65	3.67	7.11	26.33	131.00	0.036794	24 inch	0.013	43.39	77.32	72.50	77.32	80.95	76.00	79.11	73.64
I-21	I-22	1.70	0.54	0.92	4.59	7.08	32.75	285.00	0.009825	30 inch	0.013	40.65	72.00	69.20	72.00	76.00	73.20	73.95	71.57
I-22	I-23	0.90	0.54	0.49	5.08	6.97	35.66	186.00	0.006452	30 inch	0.013	32.94	69.20	68.00	69.20	73.20	71.90	71.48	70.11
I-23	I-24	0.80	0.54	0.43	5.51	6.90	38.34	95.00	0.015263	30 inch	0.013	50.67	67.90	66.45	67.90	71.90	70.45	69.99	69.17
I-24	I-25	2.80	0.54	1.51	7.02	6.87	57.64	42.00	0.001429	36 inch	0.013	25.21	65.95	65.89	65.95	70.45	70.45	68.96	68.50
I-25	I-26	1.50	0.54	0.81	7.83	6.86	63.15	147.00	0.018299	36 inch	0.013	90.22	65.79	63.10	65.79	70.45	67.50	68.35	66.54
I-26	Outlet	1.40	0.54	0.76	8.59	6.82	164.56	54.00	0.009259	60 inch	0.013	250.60	60.34	59.84	60.34	67.50	67.00	66.22	66.00
N/A	N/A	N/A	N/A	N/A	8.59	6.80	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	59.84	N/A	N/A	N/A	N/A

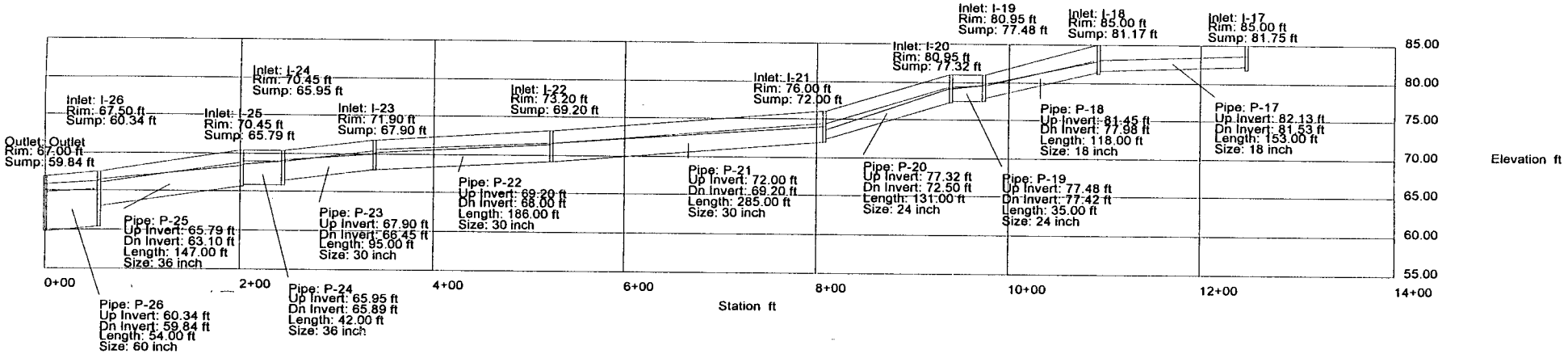
 Baughman Company, P.A.
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

Node Report

Node	Known Flow (cfs)	Q (cfs)	Gr Elev (ft)	Rim (ft)	HGL In (ft)	HGL Out (ft)	Description
I-17	0.00	6.75	85.00	85.00	83.55	83.55	Drop inlet at SW corner of Lot 64, Block 1 on Brandon
I-18	0.00	13.27	85.00	85.00	83.00	82.81	Drop inlet at SW corner of Lot 62, Block 1 on Brandon
I-19	0.00	21.72	80.95	80.95	79.69	79.62	Curb inlet at SE corner of Lot 62, Block 1 on Brandon Ct
I-20	0.00	26.33	80.95	80.95	79.24	79.11	Curb inlet at SW corner of Lot 29, Block 3 on Brandon
I-21	0.00	32.75	76.00	76.00	74.05	73.95	Drop inlet at SE corner of Lot 29, Block 3 on Brandon Ct
I-22	0.00	35.66	73.20	73.20	71.57	71.48	Drop inlet at NW corner of Lot 8, Block 3 on Regency L
I-23	0.00	38.34	71.90	71.90	70.11	69.99	Drop inlet at NW corner of Lot 10, Block 3 on Regency
I-24	0.00	57.64	70.45	70.45	69.17	68.96	Curb inlet at SE corner of Lot 11, Block 3 on Regency L
I-25	0.00	63.15	70.45	70.45	68.50	68.35	Curb inlet at SW corner of Lot 15, Block 1 on Regency L
I-26	0.00	164.56	67.50	67.50	66.54	66.22	Drop inlet at SE corner of Lot 15, Block 1 in Reserve "C"
Outlet	N/A	N/A	67.00	67.00	66.00	66.00	Headwall in proposed pond in Reserve "C"

DOT Report

Pipe	-Node- Upstream Downstream	Inlet Area (acres)	Inlet CA (acres)	Total CA (acres)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (ft/ft)	-Section- Discharge Capacity (cfs)	-Section- Shape Size	Length (ft)	Average Velocity (ft/s)	Description
P-17	I-17	1.70	0.92	0.92	85.00	83.55	0.003640	6.75	Circular	153.00	3.87	
	I-18				85.00	83.00	0.003922	6.58	18 inch			
P-18	I-18	1.70	0.92	1.84	85.00	82.81	0.027195	13.27	Circular	118.00	7.70	
	I-19				80.95	79.69	0.029407	18.01	18 inch			
P-19	I-19	2.20	1.19	3.02	80.95	79.62	0.008744	21.72	Circular	35.00	7.08	
	I-20				80.95	79.24	0.001714	9.37	24 inch			
P-20	I-20	1.20	0.65	3.67	80.95	79.11	0.027106	26.33	Circular	131.00	11.54	
	I-21				76.00	73.64	0.036794	43.39	24 inch			
P-21	I-21	1.70	0.92	4.59	76.00	73.95	0.009285	32.75	Circular	285.00	7.39	
	I-22				73.20	71.57	0.009825	40.65	30 inch			
P-22	I-22	0.90	0.49	5.08	73.20	71.48	0.006750	35.66	Circular	186.00	7.83	
	I-23				71.90	70.11	0.006452	32.94	30 inch			
P-23	I-23	0.80	0.43	5.51	71.90	69.99	0.011211	38.34	Circular	95.00	8.27	
	I-24				70.45	69.17	0.015263	50.67	30 inch			
P-24	I-24	2.80	1.51	7.02	70.45	68.96	0.006715	57.64	Circular	42.00	8.50	
	I-25				70.45	68.50	0.001429	25.21	36 inch			
P-25	I-25	1.50	0.81	7.83	70.45	68.35	0.014067	63.15	Circular	147.00	9.39	
	I-26				67.50	66.54	0.018299	90.22	36 inch			
P-26	I-26	1.40	0.76	8.59	67.50	66.22	0.003993	164.56	Circular	54.00	8.38	
	Outlet				67.00	66.00	0.009259	250.60	60 inch			



Project Title: Line 2, Regency Lakes Addition
f:\hydro\stormcad\regency\l2-100yr.stm
11/08/96 03:06:25 PM

Baughman Company, P.A.
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

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

Regency Lakes SWS - Line 3

By JDS | Date | Page | Of

BAUGHMAN COMPANY, P.A.

C=0.54

Inlet	Type	Area	Q_{IN_2}	Q_{BYPASS_2}	$Q_{IN_{100}}$	$Q_{BYPASS_{100}}$
10	2'x4' Drop (12.25 cfs)	1.0	2.05	—	3.97 (0.26' Depth)	—
11	10' Curb Inlet (Bypass) 0.93%	3.8	3.98	3.80	6.09	9.00
12	10' Curb Inlet (Bypass) 1.00%	1.3	1.91	0.75	3.00	2.16
13	10' Curb Inlet (Sump)	3.2	—	—	15.07	—
14	10' Curb Inlet (Sump)	1.1	—	—	9.18	—
15	2'x4' Drop	1.4	2.86	—	5.56 (0.33' Depth)	—
16	2'x4' Drop	1.4	2.86	—	5.56 (0.33' Depth)	—

2-Year

****
INLET CALCULATION RESULTS (11)
****

APPROACH Q = 7.78 CFS

PAVEMENT SLOPE = .0093 FT/FT

CALCULATED Q = 7.740105 CFS

LENGTH OF INLET = 10 FEET

LENGTH FOR 100% INTERCEPT = 33.27906 FT.

EFFICIENCY OF THE INLET = .5143689 PERCENT

Q INTERCEPTED = 3.981269 CFS

Q BYPASSED = 3.798731 CFS

WOULD YOU LIKE TO DO ANOTHER INLET? (Y/N)?

****
INLET CALCULATION RESULTS (12)
****

APPROACH Q = 2.66 CFS

PAVEMENT SLOPE = .01 FT/FT

CALCULATED Q = 2.651303 CFS

LENGTH OF INLET = 10 FEET

LENGTH FOR 100% INTERCEPT = 21.6873 FT.

EFFICIENCY OF THE INLET = .7202356 PERCENT

Q INTERCEPTED = 1.909563 CFS

Q BYPASSED = .750437 CFS

WOULD YOU LIKE TO DO ANOTHER INLET? (Y/N)?

100-Year

****
INLET CALCULATION RESULTS (11)
****

APPROACH Q = 15.09 CFS

PAVEMENT SLOPE = .0093 FT/FT

CALCULATED Q = 15.06956 CFS

LENGTH FOR 100% INTERCEPT = 44.02502 FT.

EFFICIENCY OF THE INLET = .4039835 PERCENT

Q INTERCEPTED = 6.087853 CFS

Q BYPASSED = 9.002148 CFS

WOULD YOU LIKE TO DO ANOTHER INLET? (Y/N)?

****
INLET CALCULATION RESULTS (12)
****

APPROACH Q = 5.16 CFS

PAVEMENT SLOPE = .01 FT/FT

CALCULATED Q = 5.158926 CFS

LENGTH OF INLET = 10 FEET

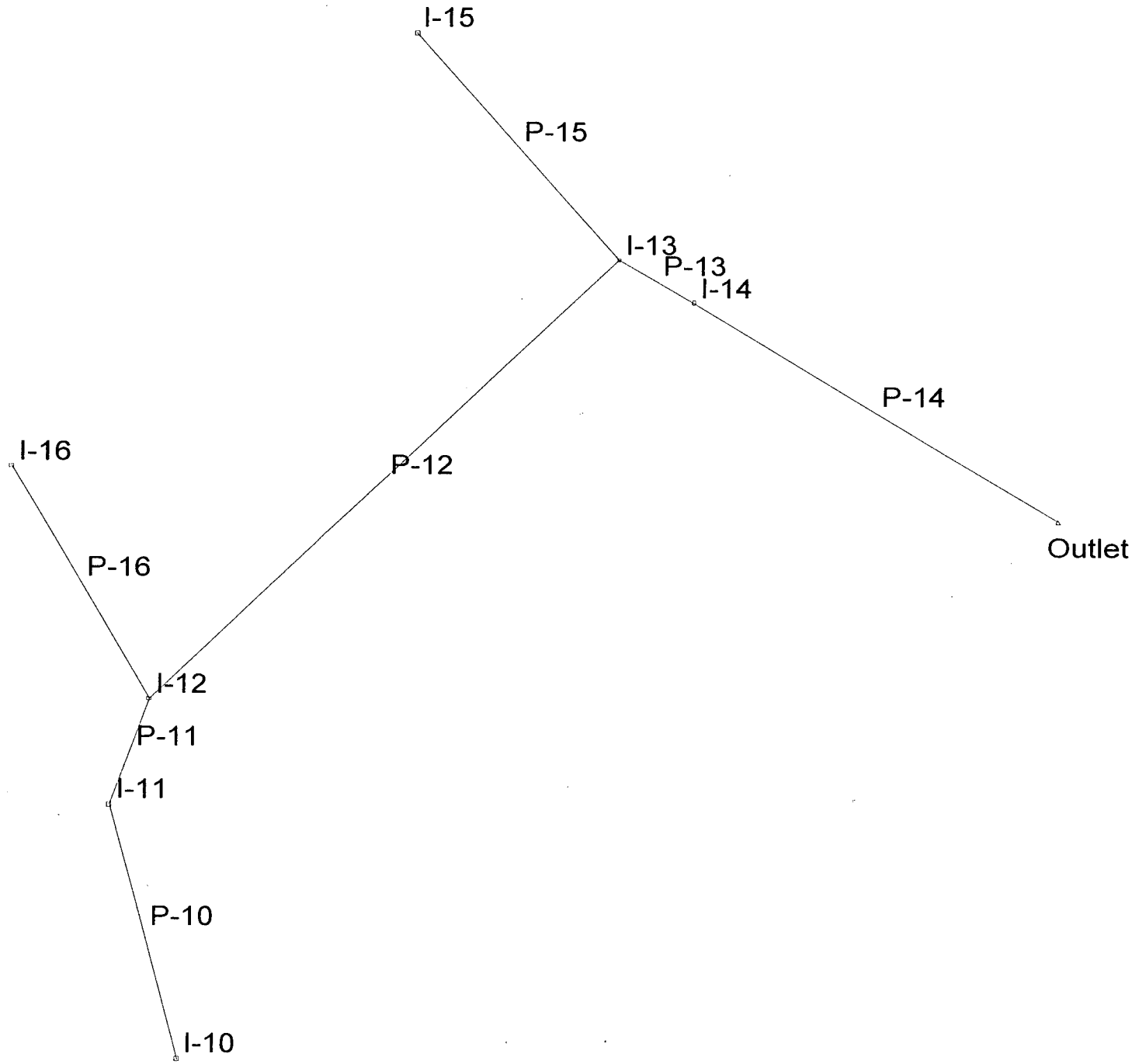
LENGTH FOR 100% INTERCEPT = 28.68319 FT.

EFFICIENCY OF THE INLET = .5813225 PERCENT

Q INTERCEPTED = 2.999 CFS

Q BYPASSED = 2.161 CFS

WOULD YOU LIKE TO DO ANOTHER INLET? (Y/N)?


I-15
P-15
I-13
P-13
I-14
P-14
Outlet
I-16
P-12
P-16
I-12
P-11
I-11
P-10
I-10

Pipe Report

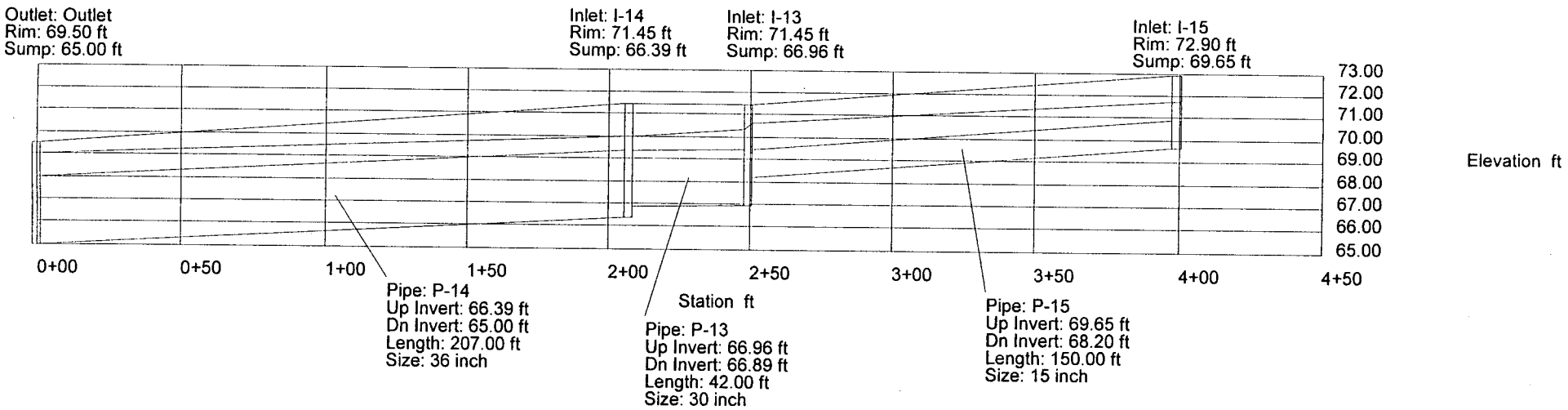
Up Node	Dn Node	Inlet A (acres)	C	Inlet CA (acres)	Tot CA (acres)	I (in/hr)	Q (cfs)	Length (ft)	S (ft/ft)	Size	Roughness	Cap (cfs)	Up Invert (ft)	Dn Invert (ft)	Sump (ft)	Up Gr Elev (ft)	Dn Gr Elev (ft)	Up HGL (ft)	Dn HGL (ft)
I-15	I-13	0.00	0.00	0.00	0.00	7.29	5.56	150.00	0.009667	15 inch	0.013	6.35	69.65	68.20	69.65	72.90	71.45	71.70	70.59
I-16	I-12	0.00	0.00	0.00	0.00	7.29	5.56	132.00	0.020833	15 inch	0.013	9.32	71.60	68.85	71.60	76.60	74.50	73.15	72.17
I-10	I-11	0.00	0.00	0.00	0.00	7.29	3.97	129.00	0.003876	15 inch	0.013	4.02	70.15	69.65	70.15	73.40	74.90	73.03	72.55
I-11	I-12	0.00	0.00	0.00	0.00	7.17	7.95	55.00	0.012727	18 inch	0.013	11.85	69.30	68.60	69.30	74.90	74.50	72.48	72.17
I-12	I-13	0.00	0.00	0.00	0.00	7.14	15.42	315.00	0.002032	24 inch	0.013	10.20	68.10	67.46	68.10	74.50	71.45	72.06	70.59
I-13	I-14	0.00	0.00	0.00	0.00	6.95	36.05	42.00	0.001667	30 inch	0.013	16.74	66.96	66.89	66.96	71.45	71.45	70.34	70.02
I-14	Outlet	0.00	0.00	0.00	0.00	6.94	45.23	207.00	0.006715	36 inch	0.013	54.65	66.39	65.00	66.39	71.45	69.50	69.95	69.00
N/A	N/A	N/A	N/A	N/A	0.00	6.85	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	65.00	N/A	N/A	N/A	N/A

Node Report

Node	Known Flow (cfs)	Q (cfs)	Gr Elev (ft)	Rim (ft)	HGL In (ft)	HGL Out (ft)	Description
I-15	5.56	5.56	72.90	72.90	71.70	71.70	Drop inlet at NW corner of Lot 2, Block 2 on Regency L
I-16	5.56	5.56	76.60	76.60	73.15	73.15	Drop inlet at NE corner of Lot 14, Block 2 on Brandon D
I-10	3.97	3.97	73.40	73.40	73.03	73.03	Drop inlet at NW corner of Lot 14, Block 3 on Regency
I-11	7.95	7.95	74.90	74.90	72.55	72.48	Curb inlet at NE corner of Lot 19, Block 3 on Brandon D
I-12	15.42	15.42	74.50	74.50	72.17	72.06	Curb inlet at SE corner of Lot 14, Block 2 on Brandon D
I-13	36.05	36.05	71.45	71.45	70.59	70.34	Curb inlet at NE corner of Lot 1, Block 2 on Brandon Dr.
I-14	45.23	45.23	71.45	71.45	70.02	69.95	Curb inlet at NW corner of Lot 21, Block 1 on Brandon
Outlet	N/A	N/A	69.50	69.50	69.00	69.00	Headwall in proposed pond in Reserve "C"

DOT Report

Pipe	-Node- Upstream Downstream	Inlet Area (acres)	Inlet CA (acres)	Total CA (acres)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (ft/ft)	-Section- Discharge Capacity (cfs)	-Section- Shape Size	Length (ft)	Average Velocity (ft/s)	Description
P-15	I-15	0.00	0.00	0.00	72.90	71.70	0.007409	5.56	Circular	150.00	4.53	
	I-13				71.45	70.59	0.009667	6.35	15 inch			
P-16	I-16	0.00	0.00	0.00	76.60	73.15	0.007409	5.56	Circular	132.00	4.53	
	I-12				74.50	72.17	0.020833	9.32	15 inch			
P-10	I-10	0.00	0.00	0.00	73.40	73.03	0.003777	3.97	Circular	129.00	3.24	
	I-11				74.90	72.55	0.003876	4.02	15 inch			
P-11	I-11	0.00	0.00	0.00	74.90	72.48	0.005729	7.95	Circular	55.00	4.50	
	I-12				74.50	72.17	0.012727	11.85	18 inch			
P-12	I-12	0.00	0.00	0.00	74.50	72.06	0.004647	15.42	Circular	315.00	4.91	
	I-13				71.45	70.59	0.002032	10.20	24 inch			
P-13	I-13	0.00	0.00	0.00	71.45	70.34	0.007726	36.05	Circular	42.00	7.34	
	I-14				71.45	70.02	0.001667	16.74	30 inch			
P-14	I-14	0.00	0.00	0.00	71.45	69.95	0.004599	45.23	Circular	207.00	6.40	
	Outlet				69.50	69.00	0.006715	54.65	36 inch			


Outlet: Outlet
Rim: 69.50 ft
Sump: 65.00 ft
Inlet: I-14
Rim: 71.45 ft
Sump: 66.39 ft
Inlet: I-13
Rim: 71.45 ft
Sump: 66.96 ft
Inlet: I-15
Rim: 72.90 ft
Sump: 69.65 ft
73.00
72.00
71.00
70.00
69.00
68.00
67.00
66.00
65.00
Elevation ft
0+00
0+50
1+00
1+50
2+00
2+50
3+00
3+50
4+00
4+50
Station ft
Pipe: P-14
Up Invert: 66.39 ft
Dn Invert: 65.00 ft
Length: 207.00 ft
Size: 36 inch
Pipe: P-13
Up Invert: 66.96 ft
Dn Invert: 66.89 ft
Length: 42.00 ft
Size: 30 inch
Pipe: P-15
Up Invert: 69.65 ft
Dn Invert: 68.20 ft
Length: 150.00 ft
Size: 15 inch

Detailed Report for Outlet

Flows

Description		Description	
Total Discharge	45.23 cfs	Known Flow	45.23 cfs
Upstream Additional + Carryover	0.00 cfs	Total Watershed (CIA)	0.00 cfs

Watershed Data

Description		Description	
System Intensity	6.85 in/hr	Upstream CA	0.00 acres

Flow Times

Description		Description	
System Flow Time	17.57 min	Upstream Flow Time	17.57 min

Elevations

Description		Description	
HGL In	69.00 ft	HGL Out	69.00 ft
Ground Elevation	69.50 ft	Rim Elevation	69.50 ft

Other Properties

Description		Description	
X	390.02 ft	Y	136.57 ft
Velocity	0.00 ft/s	Headloss	0.00 ft
Headloss Coefficient	0.00	Station	0+00 ft
External Flow	0.00 cfs		

Description:
Headwall in proposed pond in Reserve "C"

Status/Error Messages:
Information: Known flow propagated from upstream junctions.

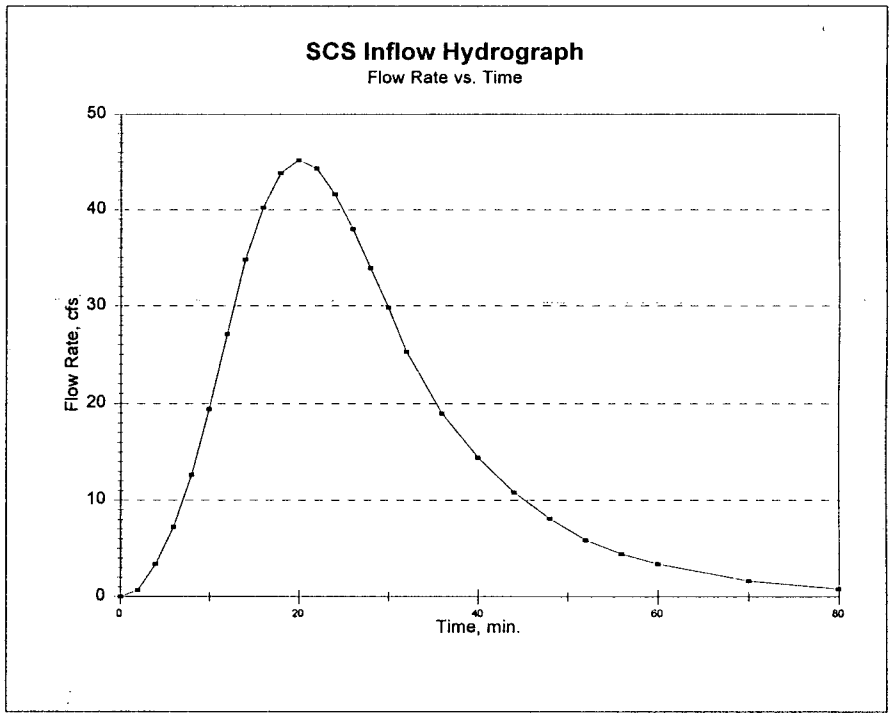
Baughman Company, P.A.
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

Line 3 - Regency Lakes Addition

Time of Concentration, min	20
Lag Time. min	12
Storm Duration, min	28
Peak Flow, cfs	45.23

Delta t min
2

SCS Hydrograph Method			
Time min	t/tp	Q/Qp	Q cfs
0	0	0	0
2	0.1	0.015	0.67845
4	0.2	0.075	3.39225
6	0.3	0.16	7.2368
8	0.4	0.28	12.6644
10	0.5	0.43	19.4489
12	0.6	0.6	27.138
14	0.7	0.77	34.8271
16	0.8	0.89	40.2547
18	0.9	0.97	43.8731
20	1	1	45.23
22	1.1	0.98	44.3254
24	1.2	0.92	41.6116
26	1.3	0.84	37.9932
28	1.4	0.75	33.9225
30	1.5	0.66	29.8518
32	1.6	0.56	25.3288
36	1.8	0.42	18.9966
40	2	0.32	14.4736
44	2.2	0.24	10.8552
48	2.4	0.18	8.1414
52	2.6	0.13	5.8799
56	2.8	0.098	4.43254
60	3	0.075	3.39225
70	3.5	0.036	1.62828
80	4	0.018	0.81414
90	4.5	0.009	0.40707
100	5	0.004	0.18092



Regency Lakes SWS - Line 4

By JDS | Date | Page | Of

BAUGHMAN COMPANY, P.A.

C=0.54

Inlet	Type	Area	$Q_{IN\,2}$	$Q_{BYPASS\,2}$	$Q_{IN\,100}$	$Q_{BYPASS\,100}$
1	2'x4' Drop (10.5 cfs)	1.1	2.25	Ø	4.37 (0.28' Depth)	Ø
2	2'x4' Drop	0.3	0.61	Ø	1.19 (0.1' Depth)	Ø
9	10' Curb Inlet (Bypass) 1.7%	3.5	3.23	3.93	4.91	8.99
3	10' Curb Inlet (Bypass) 1.7%	1.1	1.51	0.74	2.36	2.01
4	10' Curb Inlet (Bypass) 2.4%	0.2	0.87	0.28	1.61	1.19
8	10' Curb Inlet (Bypass) 0.9%	1.4	3.7	3.1	6.00	8.55
5	10' Curb Inlet (Bypass) 0.9%	0.3	0.85	0.04	1.80	0.58
7	10' Curb Inlet (Bypass) 0.58%	0.4	2.82	1.10	5.33	4.81
6	10' Curb Inlet (Bypass) 0.58%	0.3	0.65	Ø	1.57	0.20

2-Year

****
INLET CALCULATION RESULTS (9)
****

APPROACH Q = 7.16 CFS

PAVEMENT SLOPE = .017 FT/FT

CALCULATED Q = 7.105018 CFS

LENGTH OF INLET = 10 FEET

LENGTH FOR 100% INTERCEPT = 38.47199 FT.

EFFICIENCY OF THE INLET = .4545666 PERCENT

Q INTERCEPTED = 3.229704 CFS

Q BYPASSED = 3.930297 CFS

WOULD YOU LIKE TO DO ANOTHER INLET? (Y/N)?

****
INLET CALCULATION RESULTS (3)
****

APPROACH Q = 2.25 CFS

PAVEMENT SLOPE = .017 FT/FT

CALCULATED Q = 2.237414 CFS

LENGTH OF INLET = 10 FEET

LENGTH FOR 100% INTERCEPT = 23.67994 FT.

EFFICIENCY OF THE INLET = .675118 PERCENT

Q INTERCEPTED = 1.510518 CFS

Q BYPASSED = .739482 CFS

WOULD YOU LIKE TO DO ANOTHER INLET? (Y/N)?

****
INLET CALCULATION RESULTS (4)
****

APPROACH Q = 1.15 CFS

PAVEMENT SLOPE = .024 FT/FT

CALCULATED Q = 1.137274 CFS

LENGTH FOR 100% INTERCEPT = 19.7642 FT.

EFFICIENCY OF THE INLET = .768634 PERCENT

Q INTERCEPTED = .8741477 CFS

Q BYPASSED = .2758523 CFS

WOULD YOU LIKE TO DO ANOTHER INLET? (Y/N)?

****
INLET CALCULATION RESULTS
****

(5)

APPROACH Q = .89 CFS

PAVEMENT SLOPE = 8.999999E-03 FT/FT

CALCULATED Q = .881629 CFS

LENGTH OF INLET = 10 FEET

LENGTH FOR 100% INTERCEPT = 13.23261 FT.

EFFICIENCY OF THE INLET = .959365 PERCENT

Q INTERCEPTED = .845804 CFS

Q BYPASSED = 4.419601E-02 CFS

WOULD YOU LIKE TO DO ANOTHER INLET? (Y/N)?

****
INLET CALCULATION RESULTS
****

(8)

APPROACH Q = 6.79 CFS

PAVEMENT SLOPE = 8.999999E-03 FT/FT

CALCULATED Q = 6.750001 CFS

LENGTH OF INLET = 10 FEET

LENGTH FOR 100% INTERCEPT = 31.11235 FT.

EFFICIENCY OF THE INLET = .5440115 PERCENT

Q INTERCEPTED = 3.672078 CFS

Q BYPASSED = 3.117922 CFS

WOULD YOU LIKE TO DO ANOTHER INLET? (Y/N)?

****
INLET CALCULATION RESULTS
****

(6)

APPROACH Q = .65 CFS

PAVEMENT SLOPE = .0058 FT/FT

CALCULATED Q = .64346 CFS

LENGTH OF INLET = 5 FEET

LENGTH FOR 100% INTERCEPT = 10.16155 FT.

EFFICIENCY OF THE INLET = .7994923 PERCENT

Q INTERCEPTED = .5144412 CFS

Q BYPASSED = .1355588 CFS

WOULD YOU LIKE TO DO ANOTHER INLET? (Y/N)?

****
INLET CALCULATION RESULTS
****

(7)

APPROACH Q = 3.92 CFS

PAVEMENT SLOPE = .0058 FT/FT

CALCULATED Q = 3.919149 CFS

LENGTH OF INLET = 10 FEET

LENGTH FOR 100% INTERCEPT = 21.70308 FT.

EFFICIENCY OF THE INLET = .7198585 PERCENT

Q INTERCEPTED = 2.821233 CFS

Q BYPASSED = 1.098767 CFS

WOULD YOU LIKE TO DO ANOTHER INLET? (Y/N)?

100-Year

****
INLET CALCULATION RESULTS
****

(9)

APPROACH Q = 13.9 CFS

PAVEMENT SLOPE = .017 FT/FT

CALCULATED Q = 13.85203 CFS

LENGTH OF INLET = 10 FEET

LENGTH FOR 100% INTERCEPT = 50.92403 FT.

EFFICIENCY OF THE INLET = .3547012 PERCENT

Q INTERCEPTED = 4.91333 CFS

Q BYPASSED = 8.986669 CFS

WOULD YOU LIKE TO DO ANOTHER INLET? (Y/N)?

****
INLET CALCULATION RESULTS
****

(3)

APPROACH Q = 4.37 CFS

PAVEMENT SLOPE = .017 FT/FT

CALCULATED Q = 4.360656 CFS

LENGTH OF INLET = 10 FEET

LENGTH FOR 100% INTERCEPT = 31.34 FT.

EFFICIENCY OF THE INLET = .5407456 PERCENT

Q INTERCEPTED = 2.358005 CFS

Q BYPASSED = 2.011995 CFS

WOULD YOU LIKE TO DO ANOTHER INLET? (Y/N)?

****
INLET CALCULATION RESULTS
****

(4)

APPROACH Q = 2.8 CFS

PAVEMENT SLOPE = .024 FT/FT

CALCULATED Q = 2.78507 CFS

LENGTH FOR 100% INTERCEPT = 28.79036 FT.

EFFICIENCY OF THE INLET = .5795759 PERCENT

Q INTERCEPTED = 1.61416 CFS

Q BYPASSED = 1.18584 CFS

WOULD YOU LIKE TO DO ANOTHER INLET? (Y/N)?

****
INLET CALCULATION RESULTS
****

(8)

APPROACH Q = 14.55 CFS

PAVEMENT SLOPE = 8.999999E-03 FT/FT

CALCULATED Q = 14.52877 CFS

LENGTH OF INLET = 10 FEET

LENGTH FOR 100% INTERCEPT = 42.93006 FT.

EFFICIENCY OF THE INLET = .4130666 PERCENT

Q INTERCEPTED = 6.00135 CFS

Q BYPASSED = 8.548651 CFS

WOULD YOU LIKE TO DO ANOTHER INLET? (Y/N)?

****
INLET CALCULATION RESULTS
****

(5)

APPROACH Q = 2.38 CFS

PAVEMENT SLOPE = 8.999999E-03 FT/FT

CALCULATED Q = 2.371512 CFS

LENGTH OF INLET = 10 FEET

LENGTH FOR 100% INTERCEPT = 20.051 FT.

EFFICIENCY OF THE INLET = .7611041 PERCENT

Q INTERCEPTED = 1.804968 CFS

Q BYPASSED = .5750326 CFS

WOULD YOU LIKE TO DO ANOTHER INLET? (Y/N)?

****
INLET CALCULATION RESULTS
****

(7)

APPROACH Q = 10.14 CFS

PAVEMENT SLOPE = .0058 FT/FT

CALCULATED Q = 10.1176 CFS

LENGTH OF INLET = 10 FEET

LENGTH FOR 100% INTERCEPT = 32.32313 FT.

EFFICIENCY OF THE INLET = .5270584 PERCENT

Q INTERCEPTED = 5.332567 CFS

Q BYPASSED = 4.807434 CFS

WOULD YOU LIKE TO DO ANOTHER INLET? (Y/N)?

****
INLET CALCULATION RESULTS
****

(6)

APPROACH Q = 1.77 CFS

PAVEMENT SLOPE = .0058 FT/FT

CALCULATED Q = 1.762984 CFS

LENGTH OF INLET = 10 FEET

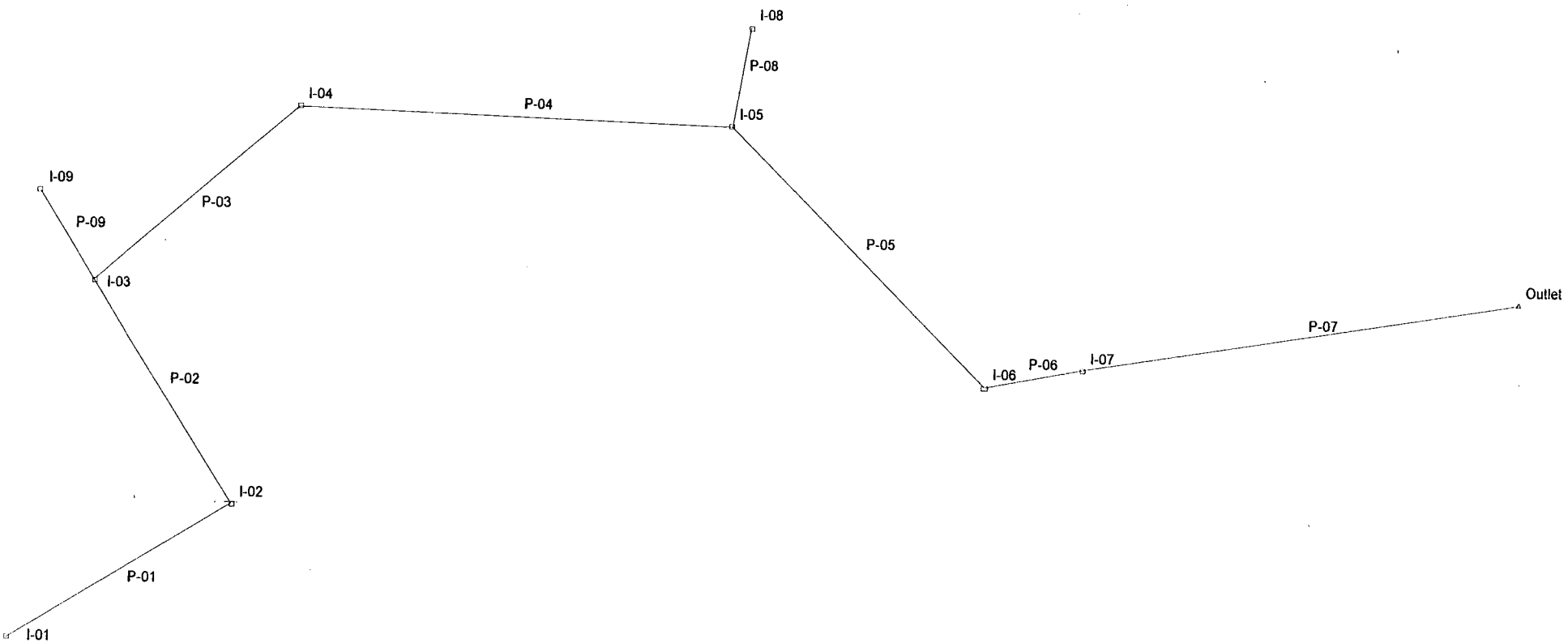
LENGTH FOR 100% INTERCEPT = 15.51691 FT.

EFFICIENCY OF THE INLET = .8915412 PERCENT

Q INTERCEPTED = 1.571773 CFS

Q BYPASSED = .1982272 CFS

WOULD YOU LIKE TO DO ANOTHER INLET? (Y/N)?



Project Title: Regency Lakes Addition
f:\hydro\stormcad\regency\l4-2yr.stm
10/31/96 11:38:56 AM

Baughman Company, P.A.
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

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

Pipe Report

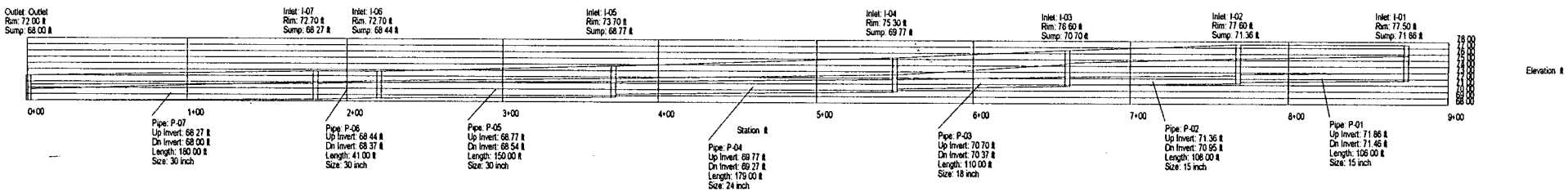
Up Node	Dn Node	Inlet A (acres)	C	Inlet CA (acres)	Tot CA (acres)	I (in/hr)	Q (cfs)	Length (ft)	S (ft/ft)	Size	Roughness	Cap (cfs)	Up Invert (ft)	Dn Invert (ft)	Sump (ft)	Up Gr Elev (ft)	Dn Gr Elev (ft)	Up HGL (ft)	Dn HGL (ft)
I-08	I-05	0.00	0.00	0.00	0.00	7.29	6.00	42.00	0.003810	15 inch	0.013	3.99	70.14	69.98	70.14	73.70	73.70	72.16	71.79
I-09	I-03	0.00	0.00	0.00	0.00	7.29	4.91	43.00	0.003023	18 inch	0.013	5.78	70.93	70.80	70.93	76.60	76.60	74.57	74.48
I-01	I-02	0.00	0.00	0.00	0.00	7.29	4.37	106.00	0.003774	15 inch	0.013	3.97	71.86	71.46	71.86	77.50	77.60	75.83	75.34
I-02	I-03	0.00	0.00	0.00	0.00	7.20	5.56	108.00	0.003796	15 inch	0.013	3.98	71.36	70.95	71.36	77.60	76.60	75.28	74.48
I-03	I-04	0.00	0.00	0.00	0.00	7.13	12.83	110.00	0.003000	18 inch	0.013	5.75	70.70	70.37	70.70	76.60	75.30	74.23	72.59
I-04	I-05	0.00	0.00	0.00	0.00	7.09	14.44	179.00	0.002793	24 inch	0.013	11.96	69.77	69.27	69.77	75.30	73.70	72.52	71.79
I-05	I-06	0.00	0.00	0.00	0.00	6.98	22.24	150.00	0.001533	30 inch	0.013	16.06	68.77	68.54	68.77	73.70	72.70	71.70	71.26
I-06	I-07	0.00	0.00	0.00	0.00	6.89	23.81	41.00	0.001707	30 inch	0.013	16.95	68.44	68.37	68.44	72.70	72.70	71.18	71.05
I-07	Outlet	0.00	0.00	0.00	0.00	6.86	29.14	180.00	0.001500	30 inch	0.013	15.89	68.27	68.00	68.27	72.70	72.00	71.05	69.84
N/A	N/A	N/A	N/A	N/A	0.00	6.79	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	68.00	N/A	N/A	N/A	N/A

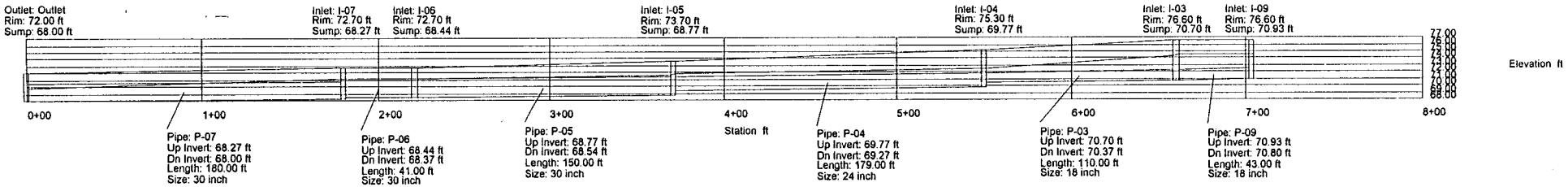
Node Report

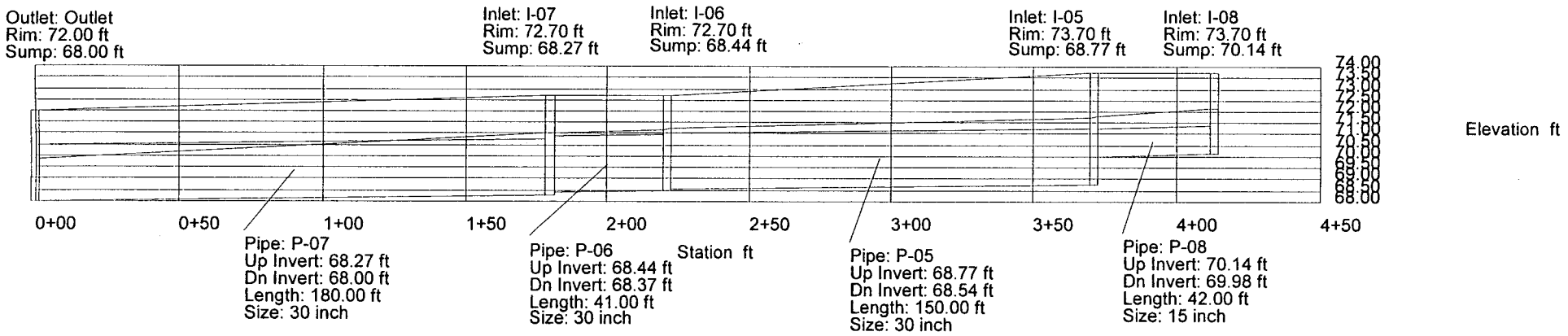
Node	Known Flow (cfs)	Q (cfs)	Gr Elev (ft)	Rim (ft)	HGL In (ft)	HGL Out (ft)	Description
I-08	6.00	6.00	73.70	73.70	72.16	72.16	Curb inlet at Lot 30, Block 1 on Brandon Dr.
I-09	4.91	4.91	76.60	76.60	74.57	74.57	Curb inlet at Lot 37, Block 3 on Brandon Dr.
I-01	4.37	4.37	77.50	77.50	75.83	75.83	Drop inlet at SW corner of Lot 25, Block 2
I-02	5.56	5.56	77.60	77.60	75.34	75.28	Drop inlet at SW corner of Lot 26, Block 2
I-03	12.83	12.83	76.60	76.60	74.48	74.23	Curb inlet at NW corner of Lot 26, Block 2 on Brandon
I-04	14.44	14.44	75.30	75.30	72.59	72.52	Curb inlet at Lot 27, Block 2 on Brandon Dr.
I-05	22.24	22.24	73.70	73.70	71.79	71.70	Curb inlet at NW corner of Lot 29, Block 2 on Brandon
I-06	23.81	23.81	72.70	72.70	71.26	71.18	Curb inlet at SE corner of Lot 29, Block 2 on Brandon D
I-07	29.14	29.14	72.70	72.70	71.05	71.05	Curb inlet at SW corner of Lot 27, Block 1 on Brandon
Outlet	N/A	N/A	72.00	72.00	69.00	69.00	Headwall in proposed pond in Reserve "C"

DOT Report

Pipe	-Node- Upstream Downstream	Inlet Area (acres)	Inlet CA (acres)	Total CA (acres)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (ft/ft)	-Section- Discharge Capacity (cfs)	-Section- Shape Size	Length (ft)	Average Velocity (ft/s)	Description
P-08	I-08	0.00	0.00	0.00	73.70	72.16	0.008628	6.00	Circular	42.00	4.89	
	I-05				73.70	71.79	0.003810	3.99	15 inch			
P-09	I-09	0.00	0.00	0.00	76.60	74.57	0.002185	4.91	Circular	43.00	2.78	
	I-03				76.60	74.48	0.003023	5.78	18 inch			
P-01	I-01	0.00	0.00	0.00	77.50	75.83	0.004577	4.37	Circular	106.00	3.56	
	I-02				77.60	75.34	0.003774	3.97	15 inch			
P-02	I-02	0.00	0.00	0.00	77.60	75.28	0.007409	5.56	Circular	108.00	4.53	
	I-03				76.60	74.48	0.003796	3.98	15 inch			
P-03	I-03	0.00	0.00	0.00	76.60	74.23	0.014920	12.83	Circular	110.00	7.26	
	I-04				75.30	72.59	0.003000	5.75	18 inch			
P-04	I-04	0.00	0.00	0.00	75.30	72.52	0.004075	14.44	Circular	179.00	4.60	
	I-05				73.70	71.79	0.002793	11.96	24 inch			
P-05	I-05	0.00	0.00	0.00	73.70	71.70	0.002940	22.24	Circular	150.00	4.53	
	I-06				72.70	71.26	0.001533	16.06	30 inch			
P-06	I-06	0.00	0.00	0.00	72.70	71.18	0.003370	23.81	Circular	41.00	4.85	
	I-07				72.70	71.05	0.001707	16.95	30 inch			
P-07	I-07	0.00	0.00	0.00	72.70	71.05	0.004854	29.14	Circular	180.00	6.73	
	Outlet				72.00	69.84	0.001500	15.89	30 inch			







Detailed Report for Outlet

Flows

Description		Description	
Total Discharge	29.14 cfs	Known Flow	29.14 cfs
Upstream Additional + Carryover	0.00 cfs	Total Watershed (CIA)	0.00 cfs

Watershed Data

Description		Description	
System Intensity	6.79 in/hr	Upstream CA	0.00 acres

Flow Times

Description		Description	
System Flow Time	17.93 min	Upstream Flow Time	17.93 min

Elevations

Description		Description	
HGL In	69.00 ft	HGL Out	69.00 ft
Ground Elevation	72.00 ft	Rim Elevation	72.00 ft

Other Properties

Description		Description	
X	406.22 ft	Y	634.31 ft
Velocity	0.00 ft/s	Headloss	0.00 ft
Headloss Coefficient	0.00	Station	0+00 ft
External Flow	0.00 cfs		

Description:
Headwall in proposed pond in Reserve "C"

Status/Error Messages:
Information: Known flow propagated from upstream junctions.

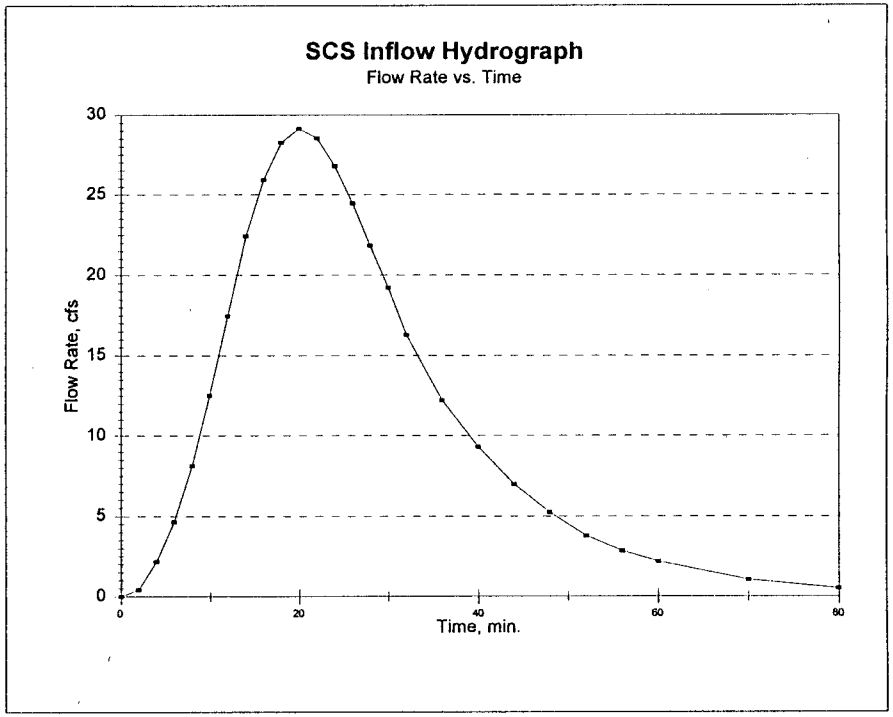
 Baughman Company, P.A.
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

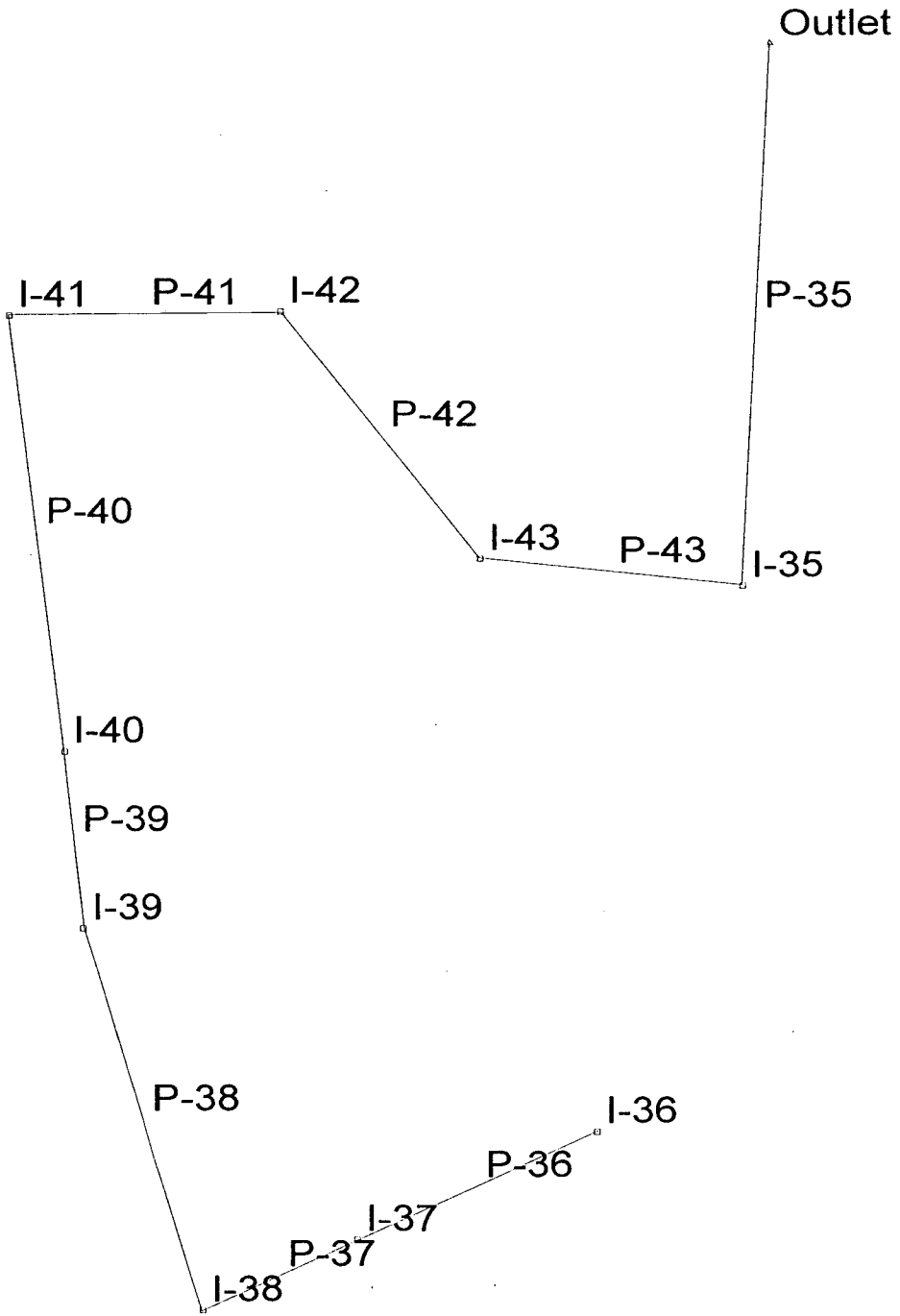
Line 4 - Regency Lakes Addition

Time of Concentration, min	20
Lag Time. min	12
Storm Duration, min	28
Peak Flow, cfs	29.14

Delta t min
2

SCS Hydrograph Method			
Time min	t/tp	Q/Qp	Q cfs
0	0	0	0
2	0.1	0.015	0.4371
4	0.2	0.075	2.1855
6	0.3	0.16	4.6624
8	0.4	0.28	8.1592
10	0.5	0.43	12.5302
12	0.6	0.6	17.484
14	0.7	0.77	22.4378
16	0.8	0.89	25.9346
18	0.9	0.97	28.2658
20	1	1	29.14
22	1.1	0.98	28.5572
24	1.2	0.92	26.8088
26	1.3	0.84	24.4776
28	1.4	0.75	21.855
30	1.5	0.66	19.2324
32	1.6	0.56	16.3184
36	1.8	0.42	12.2388
40	2	0.32	9.3248
44	2.2	0.24	6.9936
48	2.4	0.18	5.2452
52	2.6	0.13	3.7882
56	2.8	0.098	2.85572
60	3	0.075	2.1855
70	3.5	0.036	1.04904
80	4	0.018	0.52452
90	4.5	0.009	0.26226
100	5	0.004	0.11656




Outlet
I-41
P-41
I-42
P-35
P-42
P-40
I-43
P-43
I-35
I-40
P-39
I-39
P-38
I-36
P-36
I-37
P-37
I-38

Pipe Report

Up Node	Dn Node	Inlet A (acres)	C	Inlet CA (acres)	Tot CA (acres)	I (in/hr)	Q (cfs)	Length (ft)	S (ft/ft)	Size	Roughness	Cap (cfs)	Up Invert (ft)	Dn Invert (ft)	Sump (ft)	Up Gr Elev (ft)	Dn Gr Elev (ft)	Up HGL (ft)	Dn HGL (ft)
I-36	I-37	0.30	0.85	0.26	0.26	7.29	1.87	95.00	0.002105	12 inch	0.009	2.36	71.20	71.00	71.20	73.90	73.90	73.36	73.23
I-37	I-38	0.20	0.85	0.17	0.43	7.17	3.07	61.00	0.004098	15 inch	0.013	4.14	70.75	70.50	70.75	73.90	73.90	73.22	73.08
I-38	I-39	0.20	0.85	0.17	0.60	7.10	4.26	144.00	0.003056	18 inch	0.013	5.81	70.25	69.81	70.25	73.90	74.80	73.07	72.83
I-39	I-40	0.50	0.85	0.43	1.02	6.93	7.13	65.00	0.003077	18 inch	0.013	5.83	69.71	69.51	69.71	74.80	75.10	72.80	72.51
I-40	I-41	0.20	0.85	0.17	1.19	6.89	8.26	160.00	0.003000	18 inch	0.013	5.75	69.41	68.93	69.41	75.10	75.40	72.47	71.48
I-41	I-42	0.30	0.85	0.26	1.44	6.80	9.90	98.00	0.002041	24 inch	0.013	10.22	68.43	68.23	68.43	75.40	74.50	71.43	71.25
I-42	I-43	0.30	0.85	0.26	1.70	6.72	11.51	115.00	0.002000	24 inch	0.013	10.12	68.13	67.90	68.13	74.50	74.10	71.18	70.89
I-43	I-35	0.35	0.85	0.30	2.00	6.64	13.37	95.00	0.002105	24 inch	0.013	10.38	67.80	67.60	67.80	74.10	72.40	70.83	70.50
I-35	Outlet	0.10	0.85	0.09	2.08	6.59	13.83	197.00	0.001523	30 inch	0.013	16.01	67.10	66.80	67.10	72.40	73.40	70.47	70.25
N/A	N/A	N/A	N/A	N/A	2.08	6.43	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	66.70	N/A	N/A	N/A	N/A

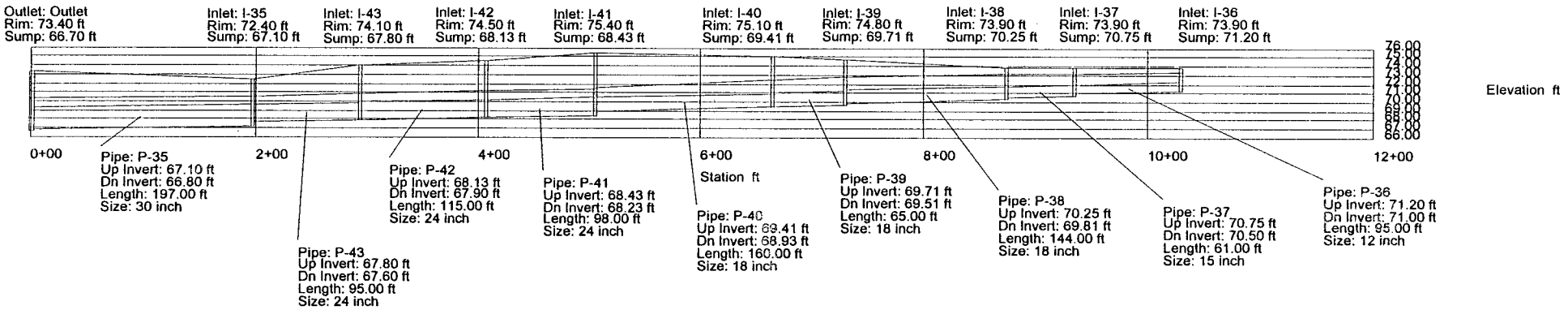
Node Report

Node	Known Flow (cfs)	Q (cfs)	Gr Elev (ft)	Rim (ft)	HGL In (ft)	HGL Out (ft)	Description
I-36	0.00	1.87	73.90	73.90	73.36	73.36	Drop inlet in SE courtyard of assisted living facility
I-37	0.00	3.07	73.90	73.90	73.23	73.22	Drop inlet on east side of SW courtyard in assisted livin
I-38	0.00	4.26	73.90	73.90	73.08	73.07	Drop inlet on west side of SW courtyard in assisted livin
I-39	0.00	7.13	74.80	74.80	72.83	72.80	Drop inlet in NW courtyard in assisted living facility
I-40	0.00	8.26	75.10	75.10	72.51	72.47	Drop inlet at SE corner of NW parking lot of assisted livi
I-41	0.00	9.90	75.40	75.40	71.48	71.43	Drop inlet in NW corner of NW parking lot at assisted liv
I-42	0.00	11.51	74.50	74.50	71.25	71.18	Curb inlet in NW corner of central portion of north parkin
I-43	0.00	13.37	74.10	74.10	70.89	70.83	Drop inlet on east curb of drive from SE parking to NE p
I-35	0.00	13.83	72.40	72.40	70.50	70.47	Drop inlet in open space north of north entrance to assis
Outlet	N/A	N/A	73.40	73.40	70.25	70.25	Inlet at SE corner of Lot 1, Block 4 on Regency Lakes C

37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

DOT Report

Pipe	-Node- Upstream Downstream	Inlet Area (acres)	Inlet CA (acres)	Total CA (acres)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (ft/ft)	-Section- Discharge Capacity (cfs)	-Section- Shape Size	Length (ft)	Average Velocity (ft/s)	Description
P-36	I-36	0.30	0.26	0.26	73.90	73.36	0.001327	1.87	Circular	95.00	2.39	
	I-37				73.90	73.23	0.002105	2.36	12 inch			
P-37	I-37	0.20	0.17	0.43	73.90	73.22	0.002262	3.07	Circular	61.00	2.50	
	I-38				73.90	73.08	0.004098	4.14	15 inch			
P-38	I-38	0.20	0.17	0.60	73.90	73.07	0.001643	4.26	Circular	144.00	2.41	
	I-39				74.80	72.83	0.003056	5.81	18 inch			
P-39	I-39	0.50	0.43	1.02	74.80	72.80	0.004603	7.13	Circular	65.00	4.03	
	I-40				75.10	72.51	0.003077	5.83	18 inch			
P-40	I-40	0.20	0.17	1.19	75.10	72.47	0.006186	8.26	Circular	160.00	4.68	
	I-41				75.40	71.48	0.003000	5.75	18 inch			
P-41	I-41	0.30	0.26	1.44	75.40	71.43	0.001916	9.90	Circular	98.00	3.15	
	I-42				74.50	71.25	0.002041	10.22	24 inch			
P-42	I-42	0.30	0.26	1.70	74.50	71.18	0.002590	11.51	Circular	115.00	3.66	
	I-43				74.10	70.89	0.002000	10.12	24 inch			
P-43	I-43	0.35	0.30	2.00	74.10	70.83	0.003494	13.37	Circular	95.00	4.26	
	I-35				72.40	70.50	0.002105	10.38	24 inch			
P-35	I-35	0.10	0.09	2.08	72.40	70.47	0.001137	13.83	Circular	197.00	2.82	
	Outlet				73.40	70.25	0.001523	16.01	30 inch			



Detailed Report for Outlet

Flows

Description		Description	
Total Discharge	13.49 cfs	Known Flow	0.00 cfs
Upstream Additional + Carryover	0.00 cfs	Total Watershed (CIA)	13.49 cfs

Watershed Data

Description		Description	
System Intensity	6.43 in/hr	Upstream CA	2.08 acres

Flow Times

Description		Description	
System Flow Time	20.48 min	Upstream Flow Time	20.48 min

Elevations

Description		Description	
HGL In	70.25 ft	HGL Out	70.25 ft
Ground Elevation	73.40 ft	Rim Elevation	73.40 ft

Other Properties

Description		Description	
X	24.77 ft	Y	-655.83 ft
Velocity	0.00 ft/s	Headloss	0.00 ft
Headloss Coefficient	0.00	Station	0+00 ft
External Flow	0.00 cfs		

Description:
Inlet at SE corner of Lot 1, Block 4 on Regency Lakes Ct.

```
*******************************************
*                                         *
*  FLOOD HYDROGRAPH PACKAGE (HEC-1)       *
*            FEBRUARY 1981                *
*          REVISED 02 AUG 88              *
*                                         *
* RUN DATE 05/26/1993 TIME 13:57:18       *
*                                         *
*******************************************
```


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


```
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    X XXXXXXX  XXXXX        XXX
```

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

Final Pond Design

HEC-1 INPUT PAGE 1

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

            1       ID    KANSAS SURGERY & RECOVERY CTR ADD DRAINAGE PLAN
            2       ID    PEC PROJECT NO 36-92223-1-3097
            3       ID    STAGE STORAGE ANALYSIS --- 100 YR
            4       ID    PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
            5       ID    COMPUTED BY M.W.BERRY, P.E.  05/26/93
            6       ID    FILENAME="A:\MISCHEC1\KSSURG.HEC"  DISKNAME="MWB01"
*** LIST ***
                    *DIAGRAM
            7       IT      15 26MAY93    1000       0 26MAY93    1630
            8       IO       0       2       0

            9       KK   INFLO  INFLOW HYDROGRAPH FOR DEVELOPED CONDITIONS
           10       BA  0.207
           11       IN      15 26MAY93    1045
           12       QI      20      30      35      50      90     425     975     280     150     105
           13       QI      80      70      60      55      50      47      44      41      39      38
           14       QI      37      36      35      34

           15       KK   POND1
           16       RS       1    ELEV   192.0       0
           17       SA    3.77    5.22    6.19    7.13
           18       SE   192.0   194.0   196.0   198.0
           19       SQ       0      36     102     187     288     402
           20       SE   192.0   193.0   194.0   195.0   196.0   197.0
           21       ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT LINE NO.

(V) ROUTING (—>) DIVERSION OR PUMP FLOW

(.) CONNECTOR (<—) RETURN OF DIVERTED OR PUMPED FLOW

```
    9      INFLO
             V
             V
   15      POND1
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****************************************                  ****************************************
*                                       *                  *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                  *   U.S. ARMY CORPS OF ENGINEERS       *
*            FEBRUARY 1981              *                  * THE HYDROLOGIC ENGINEERING CENTER    *
*          REVISED 02 AUG 88            *                  *        609 SECOND STREET             *
*                                       *                  *     DAVIS, CALIFORNIA 95616          *
* RUN DATE  05/26/1993  TIME  13:57:18  *                  *         (916) 551-1748               *
*                                       *                  *                                      *
*****************************************                  ****************************************


                          KANSAS SURGERY & RECOVERY CTR ADD DRAINAGE PLAN
                          PEC PROJECT NO 36-92223-1-3097
                          STAGE STORAGE ANALYSIS --- 100 YR
                          PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
                          COMPUTED BY M.W.BERRY, P.E.  05/26/93
                          FILENAME="A:\MISCHEC1\KSSURG.HEC"  DISKNAME="MWB01"

  8 IO         OUTPUT CONTROL VARIABLES
                     IPRNT          0  PRINT CONTROL
                     IPLOT          2  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE

    IT         HYDROGRAPH TIME DATA
                      NMIN         15  MINUTES IN COMPUTATION INTERVAL
                     IDATE    26MAY93  STARTING DATE
                     ITIME       1000  STARTING TIME
                        NQ         27  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE    26MAY93  ENDING DATE
                    NDTIME       1630  ENDING TIME
                    ICENT          19  CENTURY MARK

                COMPUTATION INTERVAL    .25 HOURS
                     TOTAL TIME BASE   6.50 HOURS

         ENGLISH UNITS
             DRAINAGE AREA          SQUARE MILES
             PRECIPITATION DEPTH    INCHES
             LENGTH, ELEVATION      FEET
             FLOW                   CUBIC FEET PER SECOND
             STORAGE VOLUME         ACRE-FEET
             SURFACE AREA           ACRES
             TEMPERATURE            DEGREES FAHRENHEIT


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

            **************
            *            *
  9 KK      *    INFLO   *      INFLOW HYDROGRAPH FOR DEVELOPED CONDITIONS
            *            *
            **************

 11 IN         TIME DATA FOR INPUT TIME SERIES
                     JXMIN         15  TIME INTERVAL IN MINUTES
                    JXDATE    26MAY93  STARTING DATE
                    JXTIME       1045  STARTING TIME

             SUBBASIN RUNOFF DATA

 10 BA         SUBBASIN CHARACTERISTICS
                     TAREA        .21  SUBBASIN AREA

                                              ***

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

                                                HYDROGRAPH AT STATION     INFLO

**************************************************************************************************************************************
                                    *                                  *                                   *
 DA MON HRMN  ORD        FLOW       *  DA MON HRMN  ORD        FLOW    *  DA MON HRMN  ORD        FLOW     *  DA MON HRMN  ORD        FLOW
                                    *                                  *                                   *
 26 MAY 1000    1         20.       *  26 MAY 1145    8         90.    *  26 MAY 1330   15         70.     *  26 MAY 1515   22         39.
 26 MAY 1015    2         20.       *  26 MAY 1200    9        425.    *  26 MAY 1345   16         60.     *  26 MAY 1530   23         38.
```

INFLO PEAK 2hr 15min

26 MAY 1030	3	20.	*	26 MAY 1215	10	975.	*	26 MAY 1400	17	55.	*	26 MAY 1545	24	37.
26 MAY 1045	4	20.	*	26 MAY 1230	11	280.	*	26 MAY 1415	18	50.	*	26 MAY 1600	25	36.
26 MAY 1100	5	30.	*	26 MAY 1245	12	150.	*	26 MAY 1430	19	47.	*	26 MAY 1615	26	35.
26 MAY 1115	6	35.	*	26 MAY 1300	13	105.	*	26 MAY 1445	20	44.	*	26 MAY 1630	27	34.
26 MAY 1130	7	50.	*	26 MAY 1315	14	80.	*	26 MAY 1500	21	41.	*			

****

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	6.50-HR
+ (CFS)	(HR)	(CFS)			
+ 975.	2.25	117.	110.	110.	110.
		(INCHES) 5.276	5.351	5.351	5.351
		(AC-FT) 58.	59.	59.	59.

CUMULATIVE AREA = .21 SQ MI

STATION INFLO

(O) OUTFLOW

	0.	100.	200.	300.	400.	500.	600.	700.	800.	900.	1000.	0.	0.
DAHRMN	PER												
261000	1.	O											
261015	2.	O											
261030	3.	O											
261045	4.	O											
261100	5.	O											
261115	6.	O											
261130	7.	O											
261145	8.	O											
261200	9.					O							
261215	10.										O		
261230	11.			O									
261245	12.		O										
261300	13.	O											
261315	14.	O											
261330	15.	O											
261345	16.	O											
261400	17.	O											
261415	18.	O											
261430	19.	O											
261445	20.	O											
261500	21.	O											
261515	22.	O											
261530	23.	O											
261545	24.	O											
261600	25.	O											
261615	26.	O											
261630	27.	O											

*** ***

```
          **************
          *            *
 15 KK    *    POND1   *
          *            *
          **************

            HYDROGRAPH ROUTING DATA

 16 RS        STORAGE ROUTING
                   NSTPS          1  NUMBER OF SUBREACHES
                    ITYP       ELEV  TYPE OF INITIAL CONDITION
                   RSVRIC     192.00  INITIAL CONDITION
                       X        .00 WORKING R AND D COEFFICIENT

 17 SA            AREA        3.8      5.2      6.2      7.1

 18 SE        ELEVATION     192.00   194.00   196.00   198.00

 19 SQ        DISCHARGE       0.       36.      102.     187.     288.     402.

 20 SE        ELEVATION     192.00   193.00   194.00   195.00   196.00   197.00
                                                          ***

                                  COMPUTED STORAGE-ELEVATION DATA

          STORAGE       .00     8.95    20.35    33.66
        ELEVATION    192.00   194.00   196.00   198.00

                              COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE       .00     4.11     8.95    14.41    20.35    26.77    33.66
          OUTFLOW       .00    36.00   102.00   187.00   288.00   402.00   516.00
        ELEVATION    192.00   193.00   194.00   195.00   196.00   197.00   198.00
```

****

HYDROGRAPH AT STATION POND1

****

DA MON HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA MON HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA MON HRMN	ORD	OUTFLOW	STORAGE	STAGE
26 MAY 1000	1	0.	.0	192.0	26 MAY 1215	10	254.	18.4	195.7	26 MAY 1430	19	88.	7.9	193.8
26 MAY 1015	2	3.	.4	192.1	26 MAY 1230	11	369.	24.9	196.7	26 MAY 1445	20	77.	7.1	193.6
26 MAY 1030	3	6.	.7	192.2	26 MAY 1245	12	321.	22.2	196.3	26 MAY 1500	21	69.	6.5	193.5
26 MAY 1045	4	8.	1.0	192.2	26 MAY 1300	13	262.	18.8	195.7	26 MAY 1515	22	62.	6.0	193.4
26 MAY 1100	5	11.	1.3	192.3	26 MAY 1315	14	211.	15.8	195.2	26 MAY 1530	23	56.	5.6	193.3
26 MAY 1115	6	15.	1.7	192.4	26 MAY 1330	15	172.	13.4	194.8	26 MAY 1545	24	51.	5.2	193.2
26 MAY 1130	7	19.	2.2	192.5	26 MAY 1345	16	142.	11.5	194.5	26 MAY 1600	25	48.	5.0	193.2
26 MAY 1145	8	28.	3.2	192.8	26 MAY 1400	17	119.	10.0	194.2	26 MAY 1615	26	45.	4.7	193.1
26 MAY 1200	9	80.	7.4	193.7	26 MAY 1415	18	101.	8.8	194.0	26 MAY 1630	27	42.	4.6	193.1

****

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	6.50-HR
+ (CFS)	(HR)					
		(CFS)				
+ 369.	2.50		110.	101.	101.	101.
		(INCHES)	4.925	4.937	4.937	4.937
		(AC-FT)	54.	55.	55.	55.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	6.50-HR
+ (AC-FT)	(HR)				
25.	2.50	9.	8.	8.	8.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	6.50-HR
+ (FEET)	(HR)				
196.71	2.50	193.87	193.73	193.73	193.73

OUTFLO PEAK 2hr-30min

P.E.C.

CUMULATIVE AREA = .21 SQ MI

STATION POND1

(I) INFLOW, (O) OUTFLOW

	0.	200.	400.	600.	800.	1000.	0.	0.	0.	0.	0.	0.	0.
								(S) STORAGE					
	0.	0.	0.	0.	0.	0.	0.	10.	20.	30.	0.	0.	0.
DAHRMN	PER												
261000	1						S						
261015	2						S						
261030	3						.S						
261045	4						.S						
261100	5.						.S						
261115	6.						. S						
261130	7.						. S						
261145	8.						. S						
261200	9.						. S						
261215	10.					I.	.		S				
261230	11.						.			S			
261245	12.						.		S				
261300	13.						.		S.				
261315	14.						.		S				
261330	15.						.		S				
261345	16.						.		S				
261400	17.						.		S				
261415	18.						.		S.				
261430	19.						.		S				
261445	20.						.		S				
261500	21.						.		S.				
261515	22.						.		S				
261530	23.						.		S				
261545	24.						.		S				
261600	25.						.		S				
261615	26.						.		S				
261630	27.						.		S				

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	INFLO	975.	2.25	117.	110.	110.	.21		
+	ROUTED TO	POND1	369.	2.50	110.	101.	101.	.21	196.71	2.50
+										

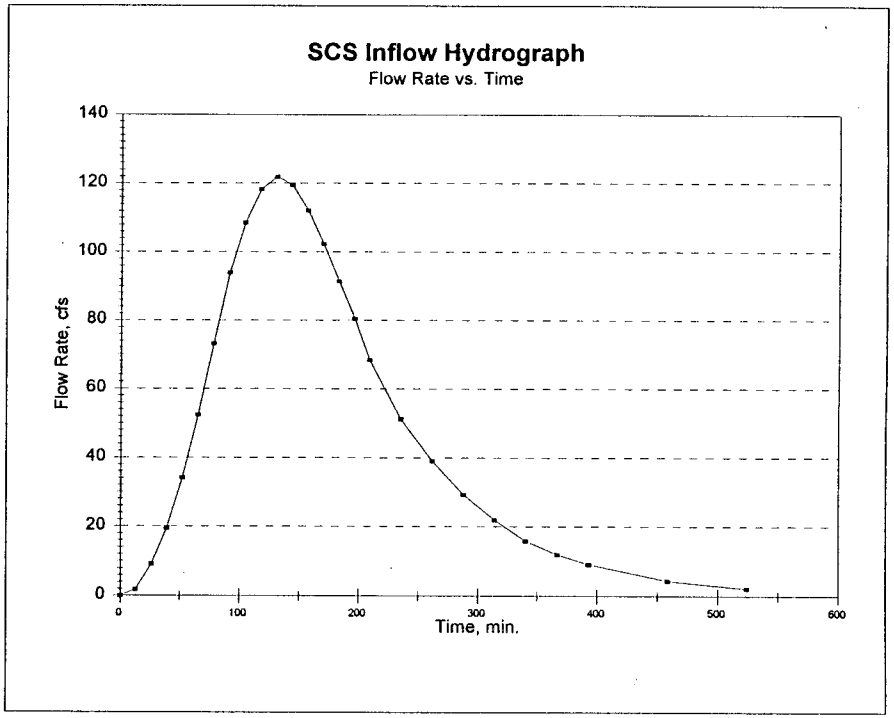
*** NORMAL END OF HEC-1 ***

Property North of K-96

Time of Concentration, min	131
Lag Time. min	78.6
Storm Duration, min	183.4
Peak Flow, cfs	122

Delta t min
13.1

SCS Hydrograph Method			
Time min	t/tp	Q/Qp	Q cfs
0	0	0	0
13.1	0.1	0.015	1.83
26.2	0.2	0.075	9.15
39.3	0.3	0.16	19.52
52.4	0.4	0.28	34.16
65.5	0.5	0.43	52.46
78.6	0.6	0.6	73.2
91.7	0.7	0.77	93.94
104.8	0.8	0.89	108.58
117.9	0.9	0.97	118.34
131	1	1	122
144.1	1.1	0.98	119.56
157.2	1.2	0.92	112.24
170.3	1.3	0.84	102.48
183.4	1.4	0.75	91.5
196.5	1.5	0.66	80.52
209.6	1.6	0.56	68.32
235.8	1.8	0.42	51.24
262	2	0.32	39.04
288.2	2.2	0.24	29.28
314.4	2.4	0.18	21.96
340.6	2.6	0.13	15.86
366.8	2.8	0.098	11.956
393	3	0.075	9.15
458.5	3.5	0.036	4.392
524	4	0.018	2.196
589.5	4.5	0.009	1.098
655	5	0.004	0.488



Triangular Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name:

Description:

Solve For Discharge

Given Constant Data;

Z-Left.....	4.00
Z-Right.....	4.00
Mannings 'n'.....	0.013
Channel Slope.....	0.0010

Variable Input Data	Minimum	Maximum	Increment By
Channel Depth	0.00	5.00	1.00

Z-Left (H:V)	Z-Right (H:V)	Mannings 'n'	Channel Slope ft/ft	VARIABLE COMPUTED Channel Depth ft	COMPUTED Channel Discharge cfs	Velocity (fps)
Unable to compute this instance.						
4.00	4.00	0.013	0.0010	1.00	8.93	2.23
4.00	4.00	0.013	0.0010	2.00	56.68	3.54
4.00	4.00	0.013	0.0010	3.00	167.11	4.64
4.00	4.00	0.013	0.0010	4.00	359.89	5.62
4.00	4.00	0.013	0.0010	5.00	652.52	6.53

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              MAY   1991              *
*           VERSION 4.0.1E             *
*     Lahey F77L-EM/32 version 5.01    *
*       Dodson & Associates, Inc.      *
*  RUN DATE  11/11/96  TIME  13:43:28  *
****************************************
```

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

```
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     X  XXXXXXX   XXXXX          XXX
```

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

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

  1       ID        REGENCY LAKES ADDITION RETENTION POND
  2       ID        PROJECT NO 96-07-E406
  3       ID        STAGE STORAGE ANALYSIS --- 100 YR
  4       ID        BAUGHMAN COMPANY, P.A.
  5       ID        COMPUTED BY J.D. SCHMIT, E.I.  11/7/96
  6       ID        FILENAME="F:\HYDRO\HEC1\REGENCY.HC1"
  7       IT     15                    30
  8       IO      0       2       0

  9       KK    LINE3
 10       BA       .1
 11       QI        0    30.5    29.9    10.5     3.4     1.2      .4

 12       KK    LINE4
 13       BA       .1
 14       QI        0    24.2    19.2     6.8     2.2      .8      .3

 15       KK    LINE1
 16       BA       .1
 17       QI        0   100.0   153.3    70.0    30.0    12.5     5.9     2.2

 18       KK    KSRC
 19       BA       .1
 20       QI        0       3       6       8      11      15      19      28      80     254
 21       QI      369     321     262     211     172     142     119     101      88      77
 22       QI       69      62      56      51      48      45      42

 23       KK    NORTH
 24       BA   .25156
 25       QI        0       3      13      26      45      67      90     108     117     121
 26       QI      117     107      96      82      68      58      49      43      36      31
 27       QI       26      22      18      15      13      11       9       8       7       6

 28       KK    COMB1
 29       HC        5

 30       KK    POND
 31       RS        1   ELEV    1364       0
 32       SA     2.50    2.75    3.00    3.25    3.50    3.75
 33       SE     1364    1365    1366    1367    1368    1369
 34       SQ        0    8.93   56.68  167.11  359.89  652.52
 35       SE     1364    1365    1366    1367    1368    1369
 36       ZZ
```

```
              **************
              *            *
   9 KK       *    LINE3   *
              *            *
              **************

                 SUBBASIN RUNOFF DATA

  10 BA            SUBBASIN CHARACTERISTICS
                        TAREA         0.10   SUBBASIN AREA

                                                                  ***
```

****

HYDROGRAPH AT STATION LINE3

****

DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	*	1		0200	9	0.	*	1		0400	17	0.	*	1		0600	25	0.
1		0015	2	31.	*	1		0215	10	0.	*	1		0415	18	0.	*	1		0615	26	0.
1		0030	3	30.	*	1		0230	11	0.	*	1		0430	19	0.	*	1		0630	27	0.
1		0045	4	11.	*	1		0245	12	0.	*	1		0445	20	0.	*	1		0645	28	0.
1		0100	5	3.	*	1		0300	13	0.	*	1		0500	21	0.	*	1		0700	29	0.
1		0115	6	1.	*	1		0315	14	0.	*	1		0515	22	0.	*	1		0715	30	0.
1		0130	7	0.	*	1		0330	15	0.	*	1		0530	23	0.	*					
1		0145	8	0.	*	1		0345	16	0.	*	1		0545	24	0.	*					

****

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	7.25-HR
+ (CFS)	(HR)					
		(CFS)				
31.	0.25		3.	3.	3.	3.
		(INCHES)	0.321	0.329	0.329	0.329
		(AC-FT)	2.	2.	2.	2.

CUMULATIVE AREA = 0.10 SQ MI

STATION LINE3

(O) OUTFLOW

DAHRMN	PER	0.	4.	8.	12.	16.	20.	24.	28.	32.	0.	0.	0.	0.
10000	10													
10015	2.									O				
10030	3.									O				
10045	4.			O										
10100	5.		O.											
10115	6.	O												
10130	7.0													
10145	8.0													
10200	9.0													
10215	10.0													
10230	11.0													
10245	12.0													
10300	13.0													
10315	14.0													
10330	15.0													
10345	16.0													
10400	17.0													
10415	18.0													
10430	19.0													
10445	20.0													
10500	21.0													
10515	22.0													
10530	23.0													
10545	24.0													
10600	25.0													
10615	26.0													
10630	27.0													
10645	28.0													
10700	29.0													
10715	30.0													

*** ***

```
          **************
          *            *
12 KK     *     LINE4  *
          *            *
          **************

             SUBBASIN RUNOFF DATA

13 BA          SUBBASIN CHARACTERISTICS
                    TAREA        0.10  SUBBASIN AREA

                                                                ***
```

****

HYDROGRAPH AT STATION LINE4

****

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0200	9	0.	1		0400	17	0.	1		0600	25	0.
1		0015	2	24.	1		0215	10	0.	1		0415	18	0.	1		0615	26	0.
1		0030	3	19.	1		0230	11	0.	1		0430	19	0.	1		0630	27	0.
1		0045	4	7.	1		0245	12	0.	1		0445	20	0.	1		0645	28	0.
1		0100	5	2.	1		0300	13	0.	1		0500	21	0.	1		0700	29	0.
1		0115	6	1.	1		0315	14	0.	1		0515	22	0.	1		0715	30	0.
1		0130	7	0.	1		0330	15	0.	1		0530	23	0.					
1		0145	8	0.	1		0345	16	0.	1		0545	24	0.					

****

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	7.25-HR
(CFS)	(HR)	(CFS)				
+ 24.	0.25		2.	2.	2.	2.
		(INCHES)	0.228	0.233	0.233	0.233
		(AC-FT)	1.	1.	1.	1.

CUMULATIVE AREA = 0.10 SQ MI

STATION LINE4

(O) OUTFLOW

DAHRMN	PER	0.	4.	8.	12.	16.	20.	24.	28.	0.	0.	0.	0.	0.
10000	1.													
10015	2.							.O						
10030	3.						O							
10045	4.			O										
10100	5.	O												
10115	6. O													
10130	7.0													
10145	8.0													
10200	9.0													
10215	10.0													
10230	11.0													
10245	12.0													
10300	13.0													
10315	14.0													
10330	15.0													
10345	16.0													
10400	17.0													
10415	18.0													
10430	19.0													
10445	20.0													
10500	21.0													
10515	22.0													
10530	23.0													
10545	24.0													
10600	25.0													
10615	26.0													
10630	27.0													
10645	28.0													
10700	29.0													
10715	30.0													

*** ***

```
              **************
              *            *
15 KK         *    LINE1   *
              *            *
              **************
```

SUBBASIN RUNOFF DATA

16 BA SUBBASIN CHARACTERISTICS

TAREA 0.10 SUBBASIN AREA

***

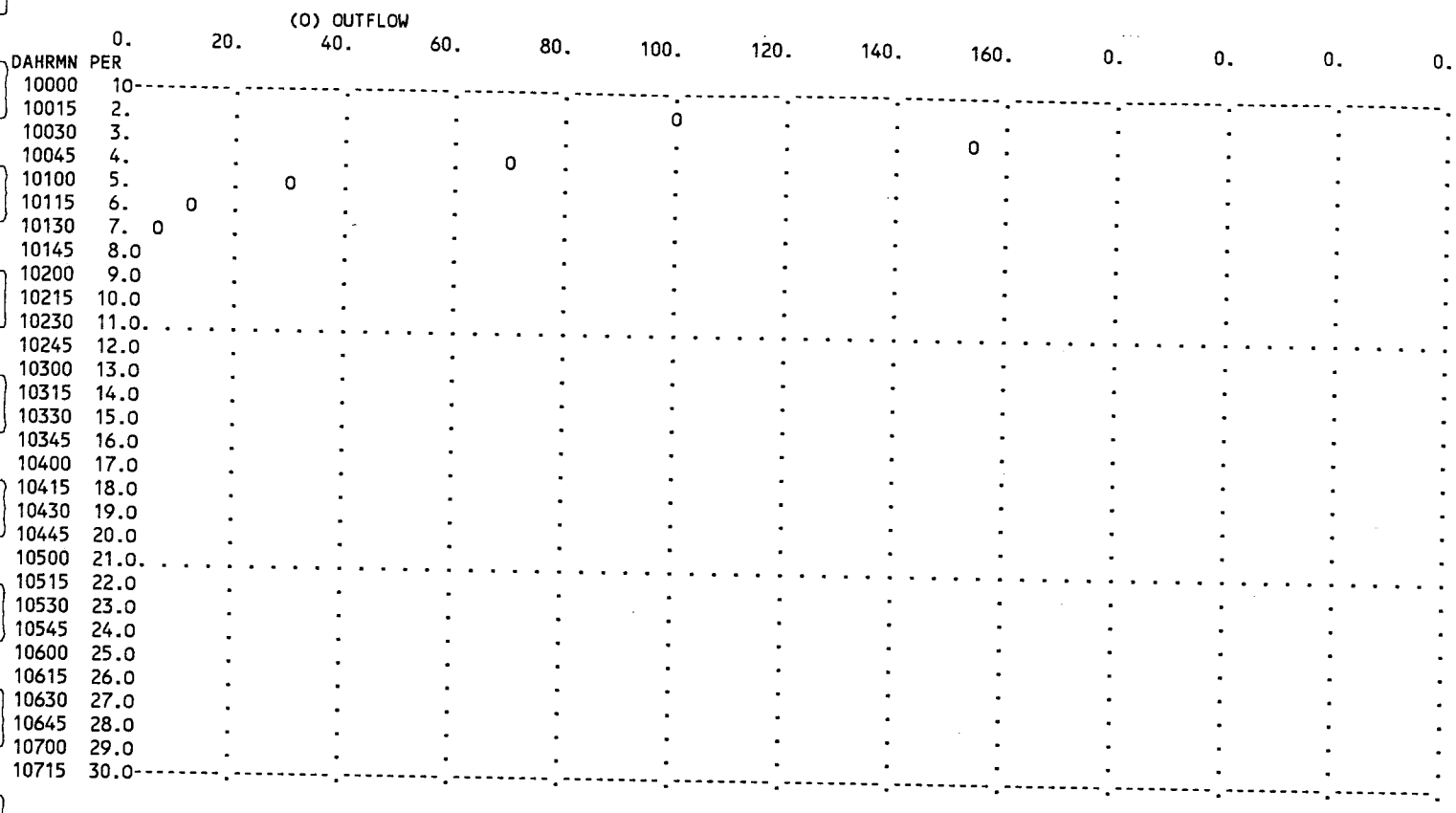
HYDROGRAPH AT STATION LINE1

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0200	9	2.	1		0400	17	2.	1		0600	25	2.
1		0015	2	100.	1		0215	10	2.	1		0415	18	2.	1		0615	26	2.
1		0030	3	153.	1		0230	11	2.	1		0430	19	2.	1		0630	27	2.
1		0045	4	70.	1		0245	12	2.	1		0445	20	2.	1		0645	28	2.
1		0100	5	30.	1		0300	13	2.	1		0500	21	2.	1		0700	29	2.
1		0115	6	13.	1		0315	14	2.	1		0515	22	2.	1		0715	30	2.
1		0130	7	6.	1		0330	15	2.	1		0530	23	2.					
1		0145	8	2.	1		0345	16	2.	1		0545	24	2.					

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	7.25-HR
		(CFS)				
+ 153.	0.50		17.	15.	15.	15.
		(INCHES)	1.589	1.632	1.632	1.632
		(AC-FT)	8.	9.	9.	9.

CUMULATIVE AREA = 0.10 SQ MI

STATION LINE1



*** ***

```
              **************
              *            *
 18 KK        *     KSRC   *
              *            *
              **************
```

SUBBASIN RUNOFF DATA

19 BA SUBBASIN CHARACTERISTICS

TAREA 0.10 SUBBASIN AREA

***

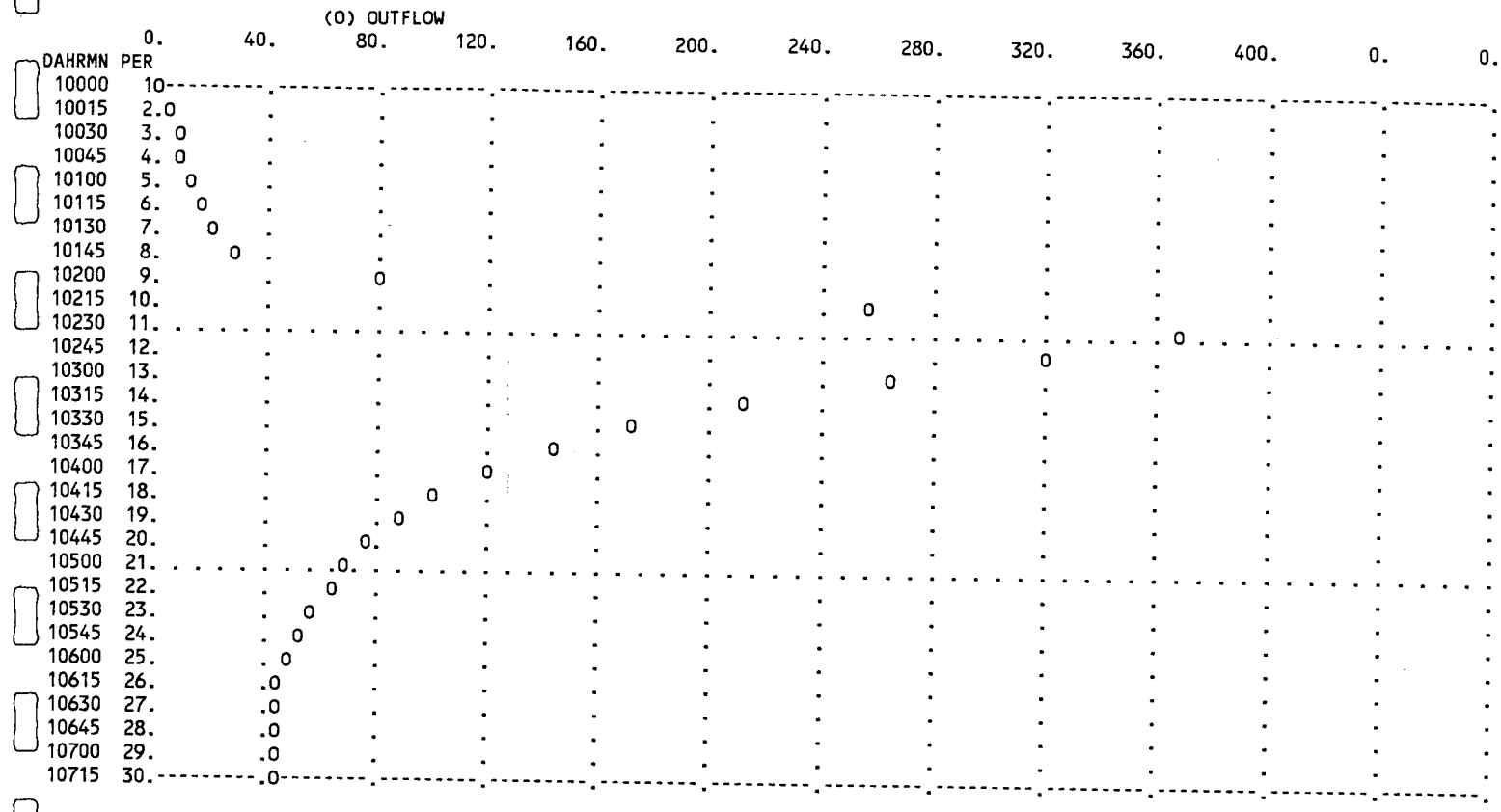
HYDROGRAPH AT STATION KSRC

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0200	9	80.	1		0400	17	119.	1		0600	25	48.
1		0015	2	3.	1		0215	10	254.	1		0415	18	101.	1		0615	26	45.
1		0030	3	6.	1		0230	11	369.	1		0430	19	88.	1		0630	27	42.
1		0045	4	8.	1		0245	12	321.	1		0445	20	77.	1		0645	28	42.
1		0100	5	11.	1		0300	13	262.	1		0500	21	69.	1		0700	29	42.
1		0115	6	15.	1		0315	14	211.	1		0515	22	62.	1		0715	30	42.
1		0130	7	19.	1		0330	15	172.	1		0530	23	56.					
1		0145	8	28.	1		0345	16	142.	1		0545	24	51.					

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	7.25-HR
+ 369.	2.50	(CFS)	114.	95.	95.	95.
		(INCHES)	10.570	10.708	10.708	10.708
		(AC-FT)	56.	57.	57.	57.

CUMULATIVE AREA = 0.10 SQ MI

STATION KSRC



*** ***

```
              **************
              *            *
 23 KK        *    NORTH   *
              *            *
              **************
```

SUBBASIN RUNOFF DATA

24 BA SUBBASIN CHARACTERISTICS

TAREA 0.25 SUBBASIN AREA

***

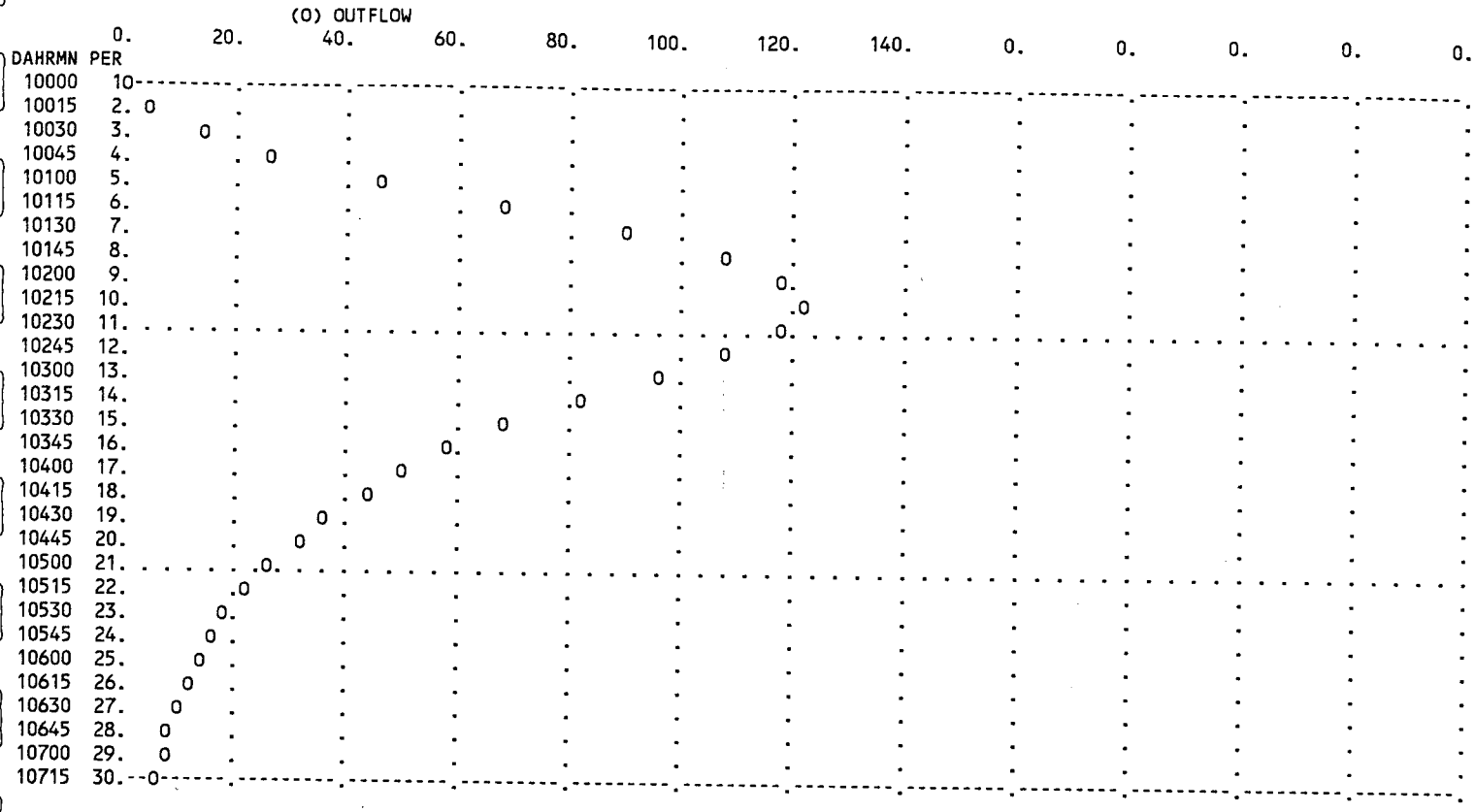
HYDROGRAPH AT STATION NORTH

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0200	9	117.	1		0400	17	49.	1		0600	25	13.
1		0015	2	3.	1		0215	10	121.	1		0415	18	43.	1		0615	26	11.
1		0030	3	13.	1		0230	11	117.	1		0430	19	36.	1		0630	27	9.
1		0045	4	26.	1		0245	12	107.	1		0445	20	31.	1		0645	28	8.
1		0100	5	45.	1		0300	13	96.	1		0500	21	26.	1		0700	29	7.
1		0115	6	67.	1		0315	14	82.	1		0515	22	22.	1		0715	30	6.
1		0130	7	90.	1		0330	15	68.	1		0530	23	18.					
1		0145	8	108.	1		0345	16	58.	1		0545	24	15.					

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	7.25-HR
+ 121.	2.25	(CFS)	57.	49.	49.	49.
		(INCHES)	2.121	2.170	2.170	2.170
		(AC-FT)	28.	29.	29.	29.

CUMULATIVE AREA = 0.25 SQ MI

STATION NORTH



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


          **************
          *            *
 28 KK    *     COMB1  *
          *            *
          **************

 29 HC          HYDROGRAPH COMBINATION
                     ICOMP          5  NUMBER OF HYDROGRAPHS TO COMBINE

                                                    ***
```

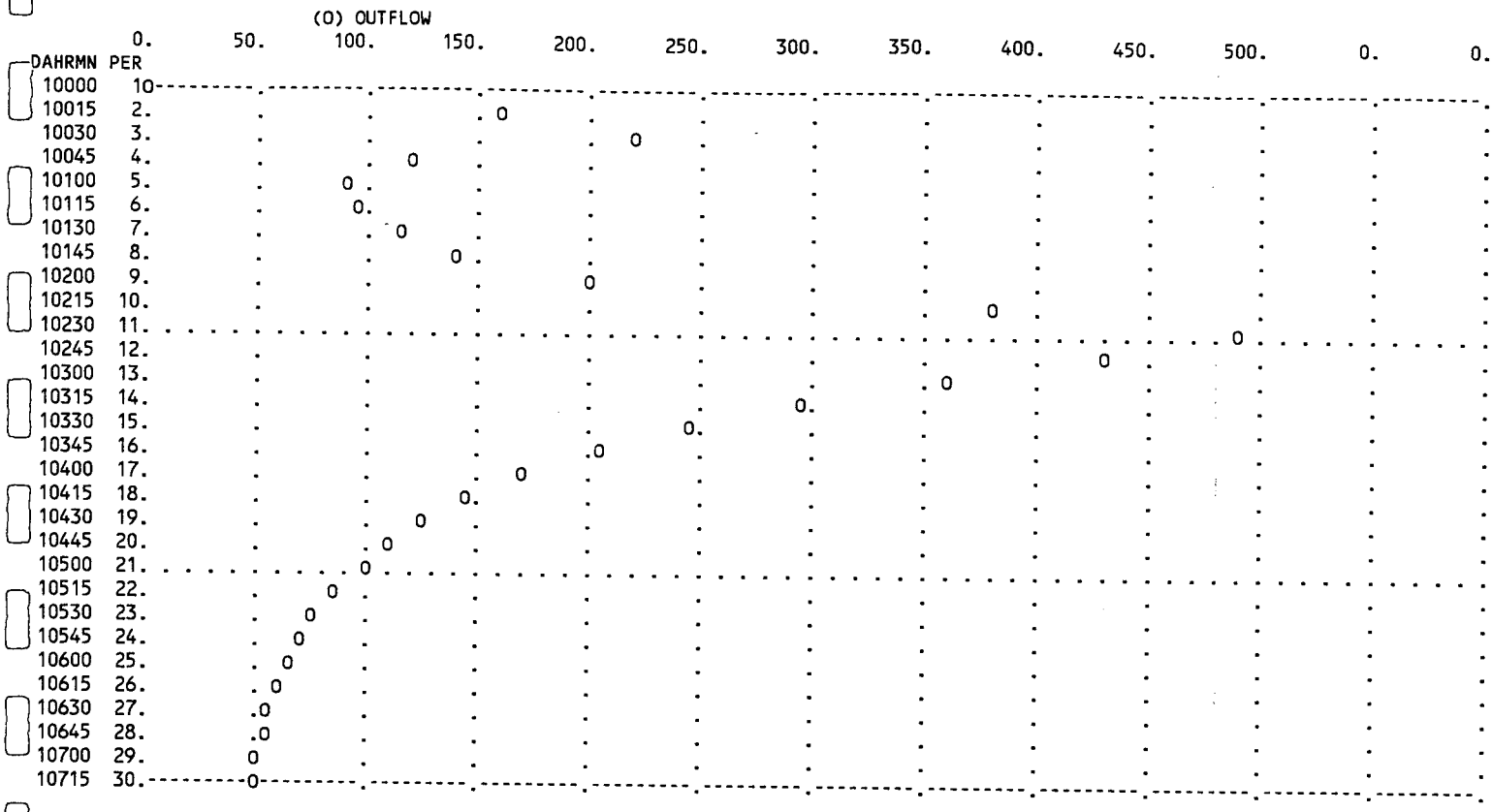
HYDROGRAPH AT STATION COMB1
SUM OF 5 HYDROGRAPHS

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0200	9	200.	1		0400	17	171.	1		0600	25	64.
1		0015	2	161.	1		0215	10	378.	1		0415	18	147.	1		0615	26	59.
1		0030	3	221.	1		0230	11	489.	1		0430	19	127.	1		0630	27	54.
1		0045	4	121.	1		0245	12	431.	1		0445	20	111.	1		0645	28	53.
1		0100	5	92.	1		0300	13	361.	1		0500	21	98.	1		0700	29	52.
1		0115	6	97.	1		0315	14	296.	1		0515	22	87.	1		0715	30	51.
1		0130	7	116.	1		0330	15	243.	1		0530	23	77.					
1		0145	8	139.	1		0345	16	203.	1		0545	24	69.					

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	7.25-HR
(CFS)	(HR)					
		(CFS)				
489.	2.50		186.	163.	163.	163.
		(INCHES)	2.654	2.818	2.818	2.818
		(AC-FT)	92.	98.	98.	98.

CUMULATIVE AREA = 0.65 SQ MI

STATION COMB1



1

*** ***

```
              **************
              *            *
30 KK         *     POND   *
              *            *
              **************
```

HYDROGRAPH ROUTING DATA

31 RS STORAGE ROUTING

NSTPS	1	NUMBER OF SUBREACHES
ITYP	ELEV	TYPE OF INITIAL CONDITION
RSVRIC	1364.00	INITIAL CONDITION
X	0.00	WORKING R AND D COEFFICIENT

32 SA	AREA	2.5	2.8	3.0	3.3	3.5	3.8
33 SE	ELEVATION	1364.00	1365.00	1366.00	1367.00	1368.00	1369.00
34 SQ	DISCHARGE	0.	9.	57.	167.	360.	653.
35 SE	ELEVATION	1364.00	1365.00	1366.00	1367.00	1368.00	1369.00

***

COMPUTED STORAGE-ELEVATION DATA

STORAGE	0.00	2.62	5.50	8.62	12.00	15.62
ELEVATION	1364.00	1365.00	1366.00	1367.00	1368.00	1369.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	2.62	5.50	8.62	12.00	15.62
OUTFLOW	0.00	8.93	56.68	167.11	359.89	652.52
ELEVATION	1364.00	1365.00	1366.00	1367.00	1368.00	1369.00

****

Developed Peak Outflow Regency Lakes

HYDROGRAPH AT STATION POND

****

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	0.0	1364.0	1		0230	11	390.	12.4	1368.1	1		0500	21	118.	7.2	1366.6
1		0015	2	5.	1.6	1364.6	1		0245	12	454.	13.2	1368.3	1		0515	22	104.	6.8	1366.4
1		0030	3	48.	5.0	1365.8	1		0300	13	401.	12.5	1368.1	1		0530	23	92.	6.5	1366.3
1		0045	4	107.	6.9	1366.5	1		0315	14	340.	11.6	1367.9	1		0545	24	82.	6.2	1366.2
1		0100	5	107.	6.9	1366.5	1		0330	15	287.	10.7	1367.6	1		0600	25	74.	6.0	1366.2
1		0115	6	100.	6.7	1366.4	1		0345	16	240.	9.9	1367.4	1		0615	26	67.	5.8	1366.1
1		0130	7	103.	6.8	1366.4	1		0400	17	200.	9.2	1367.2	1		0630	27	61.	5.6	1366.0
1		0145	8	116.	7.2	1366.5	1		0415	18	170.	8.7	1367.0	1		0645	28	57.	5.5	1366.0
1		0200	9	145.	8.0	1366.8	1		0430	19	151.	8.2	1366.9	1		0700	29	56.	5.4	1366.0
1		0215	10	243.	10.0	1367.4	1		0445	20	134.	7.7	1366.7	1		0715	30	54.	5.4	1366.0

****

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	7.25-HR
+ (CFS)	(HR)					
		(CFS)				
454.	2.75		178.	154.	154.	154.
		(INCHES)	2.545	2.664	2.664	2.664
		(AC-FT)	88.	93.	93.	93.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	7.25-HR
(AC-FT)	(HR)				
13.	2.75	8.	8.	8.	8.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	7.25-HR
+ (FEET)	(HR)				
1368.32	2.75	1366.89	1366.65	1366.65	1366.65

Pre-Developed Flow

$C = 0.35$

$T_c = 30$ min.

D.A. = 56.6 Ac.

$I_{100} = 5.40$ in/hr.

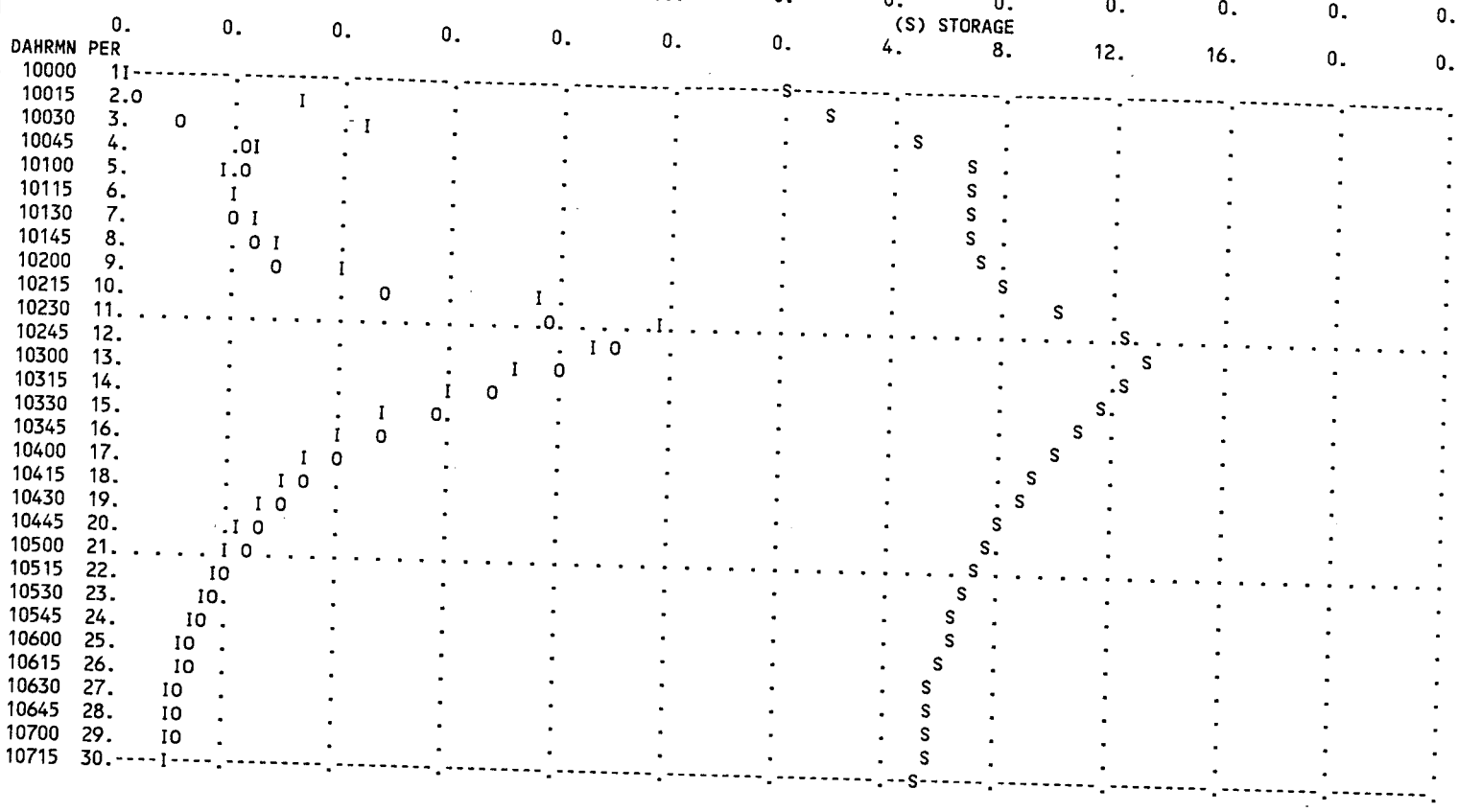
$Q = CIA = 0.35(5.40)(56.6)$

$= \underline{107.0 \text{ cfs}}$

CUMULATIVE AREA = 0.65 SQ MI

STATION POND

(I) INFLOW, (O) OUTFLOW (S) STORAGE



RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
HYDROGRAPH AT	LINE3	31.	0.25	3.	3.	3.	0.10		
HYDROGRAPH AT	LINE4	24.	0.25	2.	2.	2.	0.10		
HYDROGRAPH AT	LINE1	153.	0.50	17.	15.	15.	0.10		
HYDROGRAPH AT	KSRC	369.	2.50	114.	95.	95.	0.10		
HYDROGRAPH AT	NORTH	121.	2.25	57.	49.	49.	0.25		
5 COMBINED AT	COMB1	489.	2.50	186.	163.	163.	0.65		
ROUTED TO	POND	454.	2.75	178.	154.	154.	0.65	1368.32	2.75

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