FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

AND

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CITY OF PHOENIX

UPPER EAST FORK CAVE CREEK DETENTION AREA SIZING STUDY

ENGINEERING DESIGN DESCRIPTIONS

PREPARED BY

NBS/LOWRY
ENGINEERS & PLANNERS

JUNE 1989

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EAST FORK OF CAVE CREEK
DETENTION BASIN PREDESIGN
ENGINEERING DESIGN DESCRIPTIONS

The Detention Basin Predesign Engineering Design Descriptions are a companion document to the Detention Basin Predesign plans which constitute the final product for Item II of Flood Control District contract number FCD 88-45. The purpose of the detention basin predesign is to identify area and volume requirements for six detention basin sites recommended in the Upper East Fork Cave Creek Area Drainage Master Study and develop predesign plans showing right-of-way, grading, inlet and outlet requirements for each of the six detention basins. The study area and the six detention basin locations are shown on **Figure 1**. Item I of the contract was to perform hydrologic modeling to determine optimum detention basin sizing requirements. The results of Item I are presented in "Upper East Fork Cave Creek Detention Area Sizing Study." The results of the Item I study have been refined as part of the predesign. These design descriptions include the design criteria used and the results of the revised hydrologic calculations.

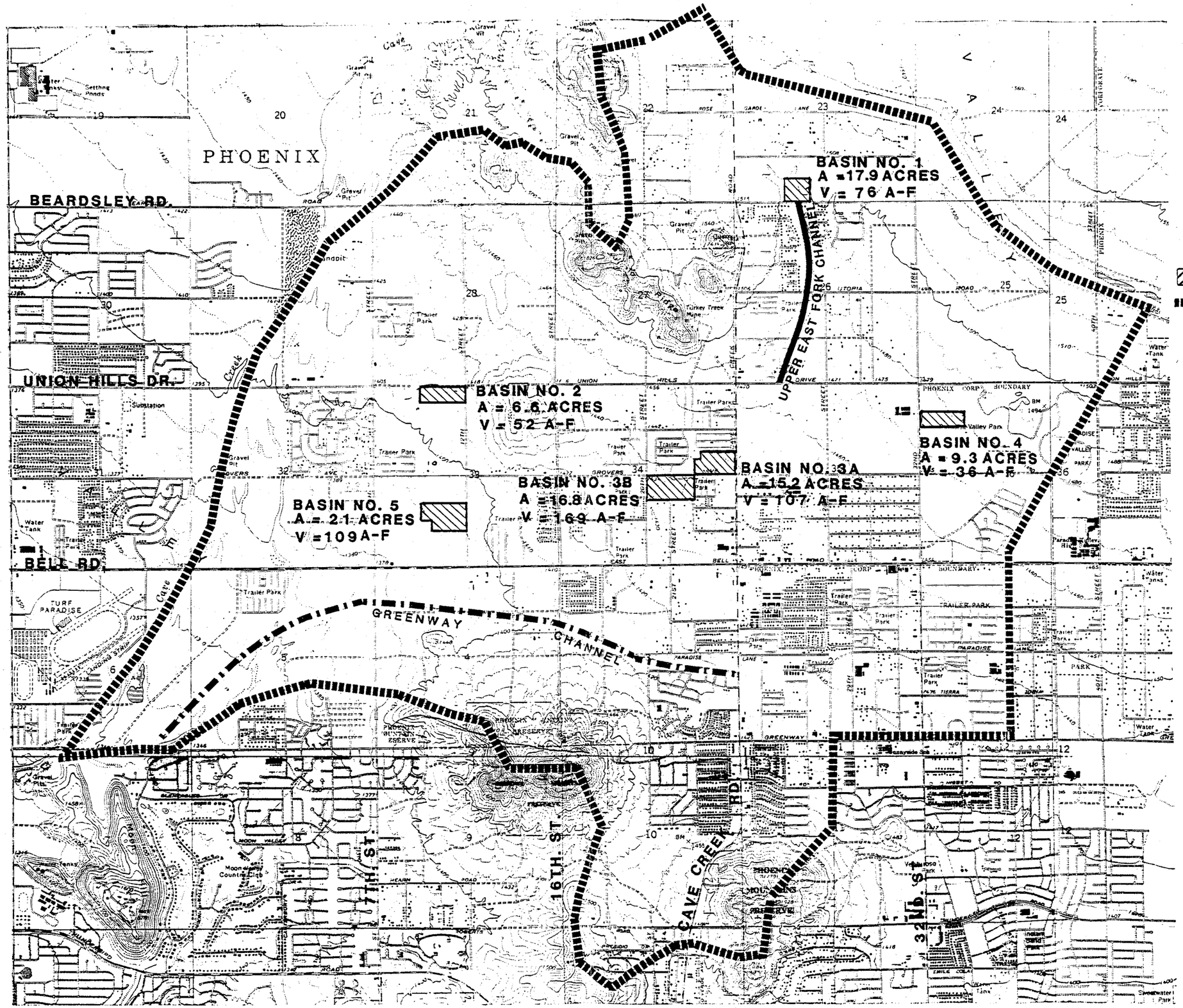
BASIN GEOMETRY

The following criteria for detention basin design were used:

Maximum Depth:	15 feet
Maximum Sideslopes:	4 feet horizontal to 1 foot vertical
Maximum Drainage Time:	36 hours from peak outflow
Minimum Freeboard:	0.5 feet

The 4 to 1 limitation on sideslopes has been chosen based on the understanding that steeper slopes cannot be maintained using City of Phoenix lawnmowing equipment.

A maximum drainage time of 36 hours is required by the County Health Department to prevent mosquito and midge breeding.



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STUDY AREA AND DETENTION BASIN LOCATIONS

FIGURE 1

Should a flood exceed the 100-year rating of a detention basin, the basin will overflow. To protect surrounding properties in the event of an overflow, the overflow discharge should be no greater than would occur were there no detention basin in place and should be directed to the natural flowpath with an overflow spillway. Embankments and other dams should therefore not be used except for freeboard and to direct flows in excess of the basin capacity to the overflow spillway. Maximum spillway elevations for each detention basin should be placed at the lowest existing natural surface elevation along the basin perimeter, to avoid any risk or liability which might be associated with building a dam or embankment.

To avoid damming, it will be necessary to haul most excavated material from detention sites. Earthwork balancing will, in general, not be possible without either creating dams or using up available runoff storage volume.

STORAGE ROUTING COMPUTATION

The basin hydrology was modeled using the SCS TR-20 computer program. Plate A shows the updated 100 year flows with the detention basins in place. The hydrograph attenuation resulting from detention basin storage is modeled by inputting the stage-storage-discharge relationship for the basin into the TR-20 model. The stage-discharge rating curves were developed using charts and procedures contained in the Federal Highway Administration HDS #5 "Hydraulic Design of Highway Culverts." The culvert computation sheets as well as the stage-discharge rating curve plots are contained in the Appendix. The stage-storage relationship is based on the final grading presented on the plans.

HYDRAULIC FUNCTION

Design Outflow Objectives

Detention basins have been designed with the objective that the maximum outflow from the detention basin during a 100-year storm not exceed

the capacity of the City of Phoenix storm drain immediately downstream. Accordingly, the maximum allowable outflows from each detention basin are listed below with the peak outflow that was achieved during predesign for each basin.

		----Peak Outflow ----	
Basin No.	Location	Allowable	Achieved
1	Upper East Fork at Beardsley Road	483 cfs	469 cfs
2	9th Street at Union Hills Drive	variable	334 cfs
3a	Upper East Fork at Cave Creek Road	variable	801 cfs
3b	Upper East Fork at 20th Street	462 cfs	522 cfs
4	Paradise Valley Park	114 cfs	139 cfs
5	9th Street at Campobello	325 cfs	290 cfs

Basins 3b and 4 did not meet the peak outflow objective. The basin sites in both cases were optimized to the greatest extent practical. It is recommended that the City of Phoenix 2 year stormdrains immediately downstream from these basins be upsized to accommodate the increased peak discharges.

Computed Outflow Hydrographs

Inflow and outflow hydrographs have been computed for each of the six detention basins. The resultant hydrographs are plotted on **Figure 2, 3, 4, 5, 6 and 7** for each basin.

BASIN INLETS AND OUTLETS

Basin inlets and outlets have been sized with the following considerations:

Low flow bypasses to allow flows from two-year storms and smaller to bypass the detention basin entirely have been included with all basins except basin 1. The bypasses minimize the number of occasions when the basin is inundated. The bypass also reduces sedimentation to that occurring during large and infrequent storms.

Inlet structures include energy dissipators and large trash racks with locked access gates to prevent unauthorized access.

Outlet structures are also screened with large trash racks to prevent debris from clogging culverts. The trash racks also reduce the risk of accidental drowning making it impossible for trespassers to be sucked into outlet culverts at high velocities during storms. Trash rack area will be at least four times the area of the outlet control orifice.

Surface water inlets are paved, riprapped, or gunited to prevent erosion.

Overflow spillways are also paved, riprapped or gunited.

BASIN NUMBER 1 - UPPER EAST FORK AT BEARDSLEY ROAD

Property Location

Basin Number 1 is located along the Upper East Fork of Cave Creek north of Beardsley Road, and west of the 28th Street Alignment. The site is rectangular in shape, being approximately 1100 feet long by 780 feet wide, and comprising approximately 20 acres.

Basin Hydrology

Peak inflow:	1315 cfs at 12.8 hours
Peak outflow:	469 cfs at 13.5 hours
Maximum water depth:	6.5 ft
Inflow/Outflow Hydrographs:	See **Figure 2**
Volume at maximum water depth:	76 acre-feet
Time to drain:	22 hours

Basin Geometry

Spillway elevation:	1497.3 ft
Top elevation:	1497.8 ft
Min. floor elevation:	1490.8 ft
Maximum depth:	6.7 (limited by need to clear 60" waterline in Beardsley)
Sideslopes:	4:1
Top Dimensions:	1060 ft x 740 ft
Top Area:	17.9 acres

Outlet Structure

Culvert:	4 - 45" concrete pipes
Inlet Invert:	1490.8 ft

Estimated Earthwork: 184,000 Yd^3
(Volume of haul off)

BASIN NUMBER 2 - 9TH STREET AT UNION HILLS DRIVE

Property Location

Basin Number 2 is fronted on the west by 9th Street, and on the east by 12th Street. It is bounded on the north side by Union Hills Drive. The site is rectangular in shape, being approximately 1250 feet long and 290 feet wide.

Basin Hydrology

Peak inflow:	1132 cfs at 12.5 hours
Peak outflow:	334 cfs at 13.0 hours
Maximum water depth:	11.9 ft
Inflow/Outflow Hydrographs:	See **Figure 3**
Volume at maximum water depth:	52 acre-feet
Time to drain:	17 hours

Basin Geometry

Spillway elevation:	1406 ft
Top elevation:	1406.5 ft
Floor elevation:	1394 ft
Maximum depth:	12 ft
Sideslopes:	4:1
Top Dimensions:	1220 ft x 280 ft
Top Area:	6.6 acres

Outlet Structure

Culvert:	1 - 60" concrete pipe
Inlet Invert:	1393 ft

Estimated Earthworks: 126,000 Yd^3
(Volume of hauloff)

BASIN NUMBER 3A - UPPER EAST FORK AT CAVE CREEK ROAD

Property Location

Basin 3A is located along the Upper East Fork of Cave Creek. It is bounded on the north by John Cabot Drive, on the south by Grovers Avenue, on the east by Cave Creek Road, and on the west by the 22nd Street Alignment. The site is rectangular in shape, being approximately 1320 feet long by 660 feet wide, and comprising approximately 20 acres.

Basin Hydrology

Peak inflow:	1753 cfs at 12.7 hours
Peak outflow:	801 cfs at 13.9 hours
Maximum water depth:	11.8 ft
Inflow/Outflow Hydrographs:	See **Figure 4**
Volume at maximum water depth:	107 acre-feet
Time to drain:	20 hours

Basin Geometry

Spillway elevation:	1440.0 ft
Top elevation:	1440.5 ft
Floor elevation:	1427.5 ft
Maximum depth:	12.5 ft
Sideslopes:	4:1
Top Dimensions:	1000 ft x 650 ft
Top Area:	15.2 acres

Outlet Structure

Culvert:	3 - 54" concrete pipe
Inlet Invert:	1427.5 ft

Estimated Earthwork (Volume of haul off)	259,000 Yd^3

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BASIN NUMBER 3B - UPPER EAST FORK AT 20TH STREET

Property Location

Basin 3B is located along the Upper East Fork of Cave Creek, and is immediately downstream from Basin 3A. It is bounded on the south by the Contention Lane Alignment, on the north by Grovers Avenue, on the west by 20th Street, and on the east by the 22nd Street Alignment. The site is rectangular in shape, being approximately 1320 feet long by 660 feet wide, and comprising approximately 20 acres.

Basin Hydrology

Peak inflow:	801 cfs at 13.9 hours
Peak outflow:	316 cfs at 17.3 hours
Maximum water depth:	15.0 ft
Inflow/Outflow Hydrographs:	See **Figure 5**
Volume at maximum water depth:	169 acre-feet

Basin Geometry

Top elevation:	1432 ft
Floor elevation:	1417 ft
Maximum depth:	15 ft
Sideslopes:	4:1
Top Dimensions:	1300 ft x 640 ft
Top Area:	16.8 acres

Outlet Structure

Culvert:	3 - 54" concrete pipe
Inlet Invert:	1417 ft

Estimated Earthwork 409,000 Yd^3
(Volume of haul off)

BASIN NUMBER 4 - PARADISE VALLEY PARK

Property Location

Basin Number 4 is located along 32nd Street at Grovers Avenue. The available property is irregular in shape, and must be shared with the proposed Maricopa County Library. Approximately 9 acres are available. Additional land can be obtained if overflow onto adjacent baseball diamonds is permitted.

Basin Hydrology

Peak inflow:	535 cfs at 12.8 hours
Peak outflow:	109 cfs at 14.0 hours
Maximum water depth:	8.1 ft
Inflow/Outflow Hydrographs:	See **Figure 6**
Volume at maximum water depth:	36 acre-feet
Time to drain:	27 hours

Basin Geometry

Spillway elevation:	1470.1 ft
Top elevation:	1470.6 ft
Floor elevation:	1462 ft
Maximum depth:	8.1 ft
Sideslopes:	4:1
Top Dimensions:	irregular
Top Area:	9.3 acres

Outlet Structure

Culvert:	1 - 42" concrete pipe
Inlet Invert:	1462 ft

Estimated Earthwork 86,000 Yd^3
(Volume of haul off)

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BASIN NUMBER 5 - 9TH STREET AT CAMPOBELLO

Property Location

Basin Number 5 is fronted on the west by 9th Street, and on the east by 12th Street. It is bounded on the south side by the Campobello Alignment. The site is irregular in shape, being approximately 1250 feet long and varying in width from 840 feet at 9th Street to 980 feet at 12th Street. The site includes approximately 26 acres.

Basin Hydrology

Peak inflow:	1534 cfs at 12.6 hours
Peak outflow:	210 cfs at 14.4 hours
Maximum water depth:	9.1 ft
Inflow/Outflow Hydrographs:	See **Figure 7**
Volume at maximum water depth:	109 acre-feet
Time to drain:	29 hours

Basin Geometry

Spillway elevation:	1386 ft
Top elevation:	1387 ft
Floor elevation:	1376 ft
Maximum depth:	10 ft
Sideslopes:	4:1
Top Dimensions:	950 ft x 910 ft
Top Area:	21 acres

Outlet Structure

Culvert:	1 - 54" concrete pipe
Inlet Invert:	1372 ft

Estimated Earthwork (Volume of haul off)	264,000 Yd^3

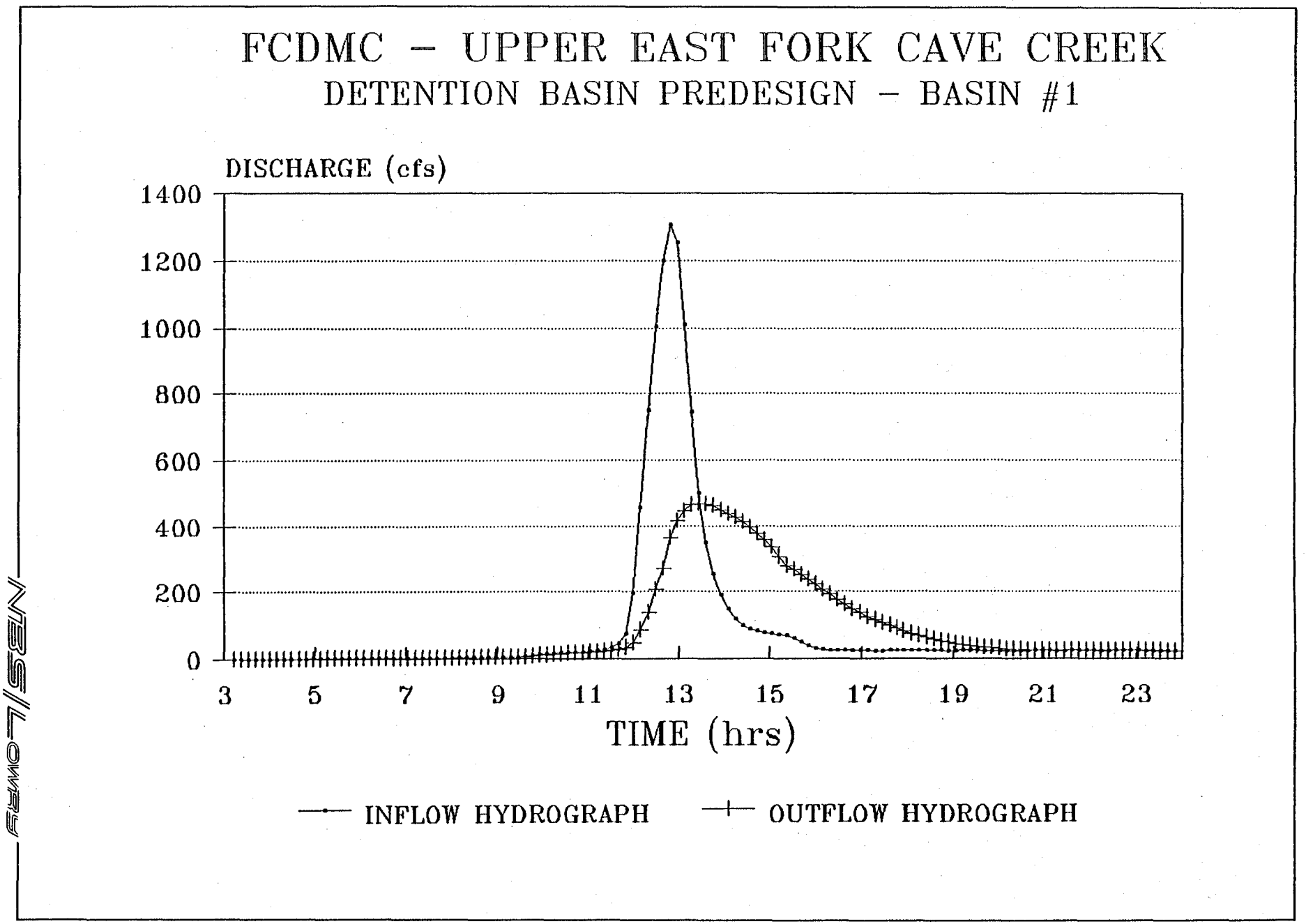

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FIGURE 2

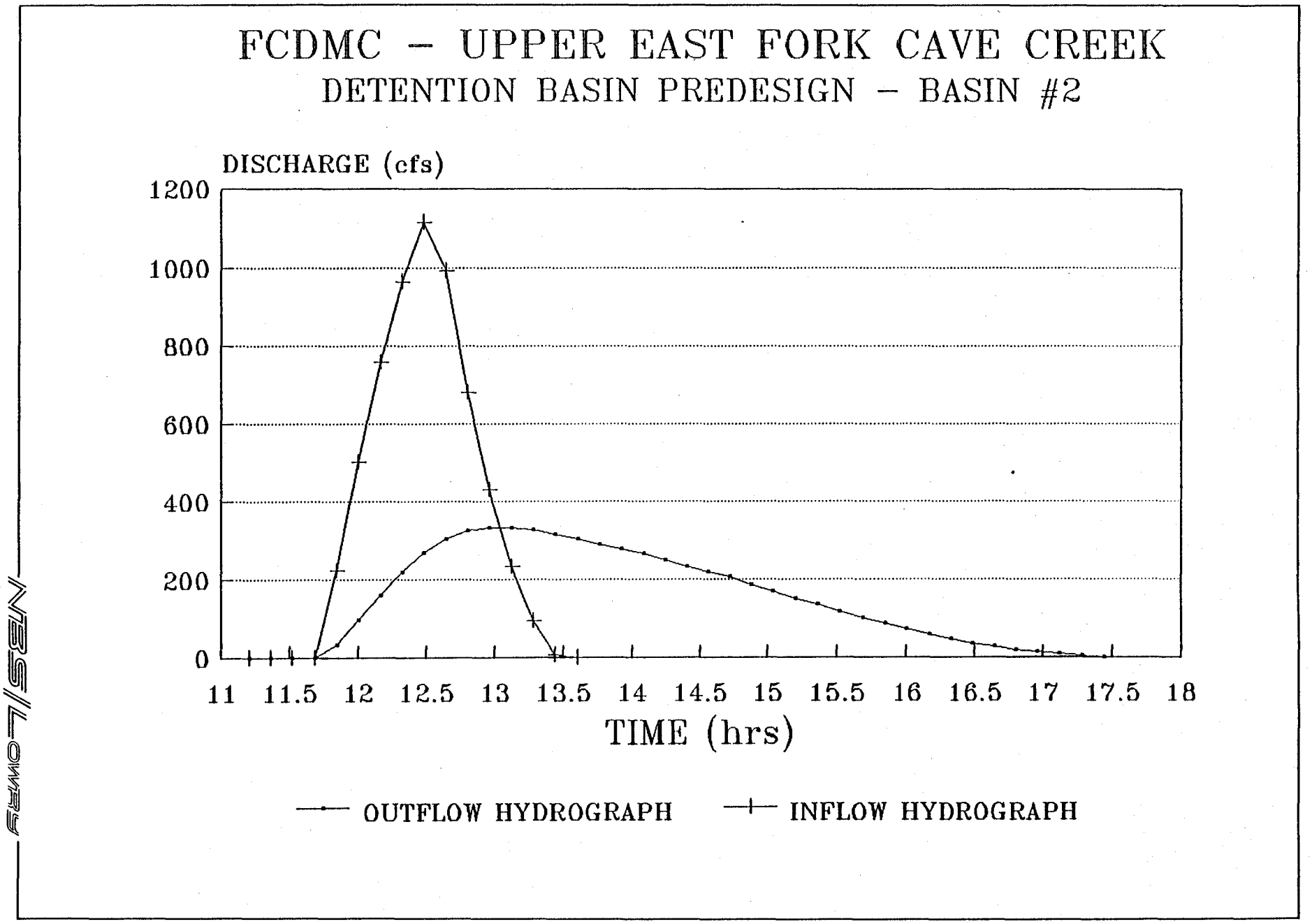

FIGURE 3

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FCDMC – UPPER EAST FORK CAVE CREEK
DETENTION BASIN PREDESIGN – BASIN #3A

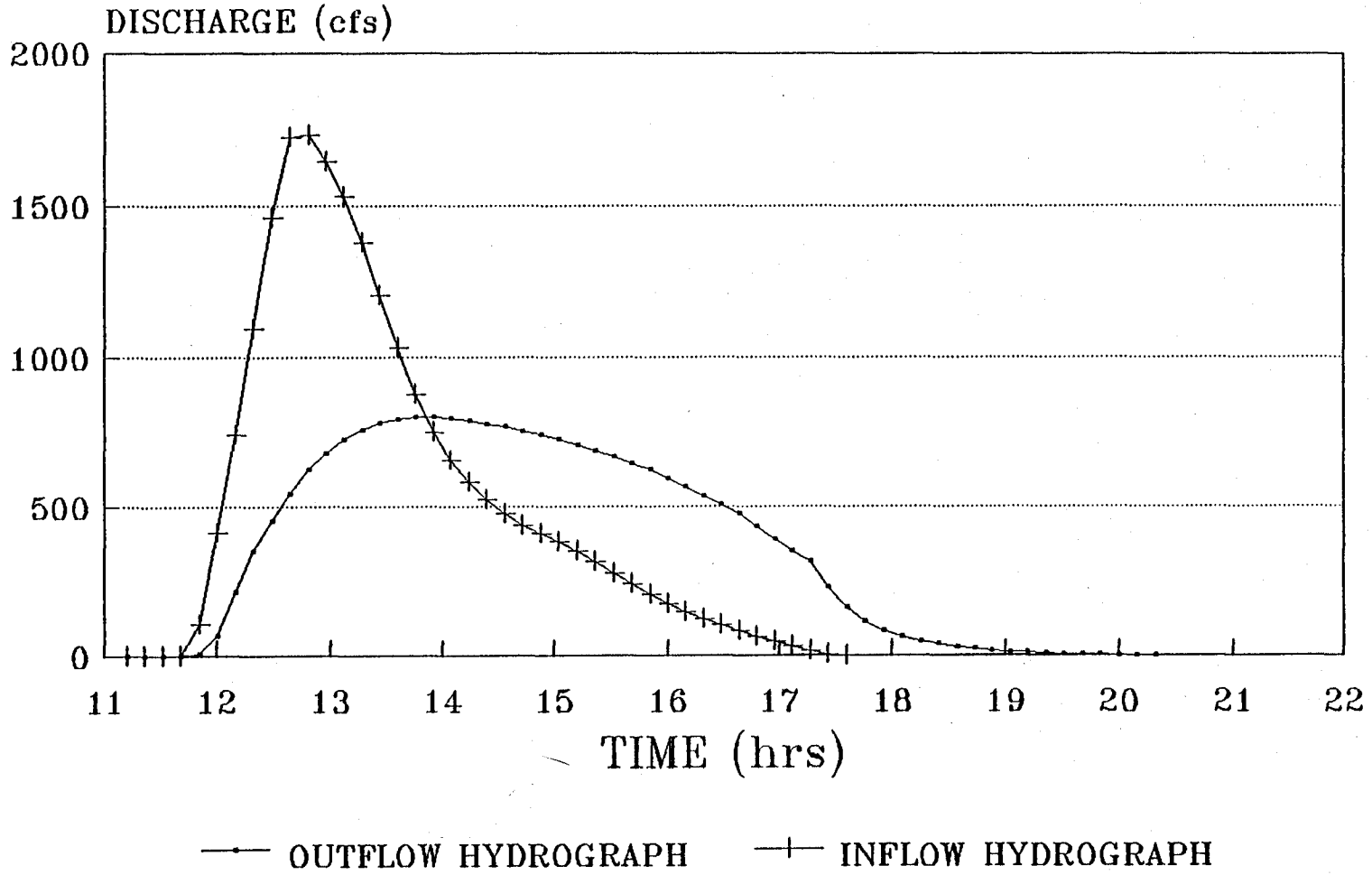

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FIGURE 4

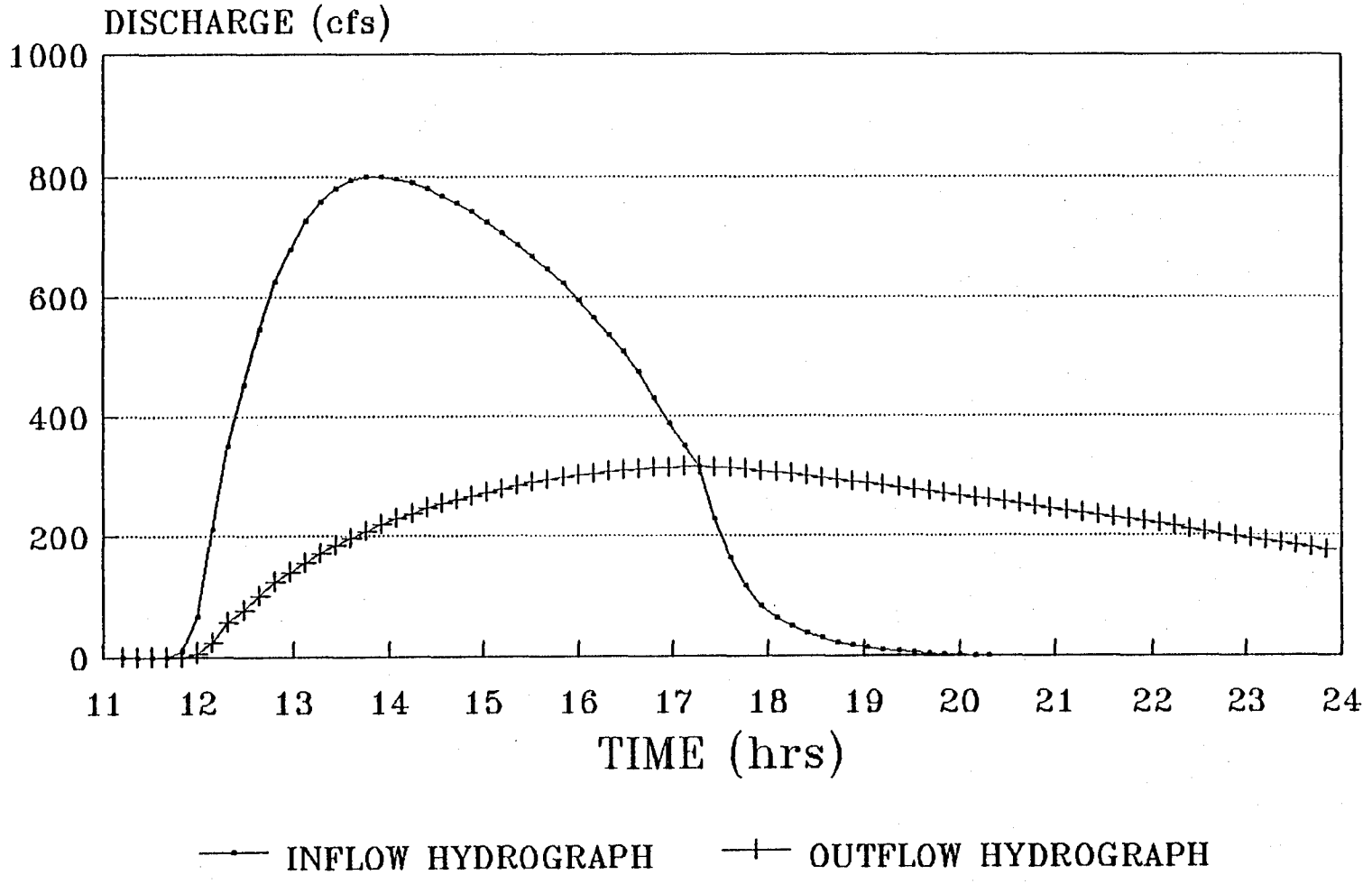

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FIGURE 5

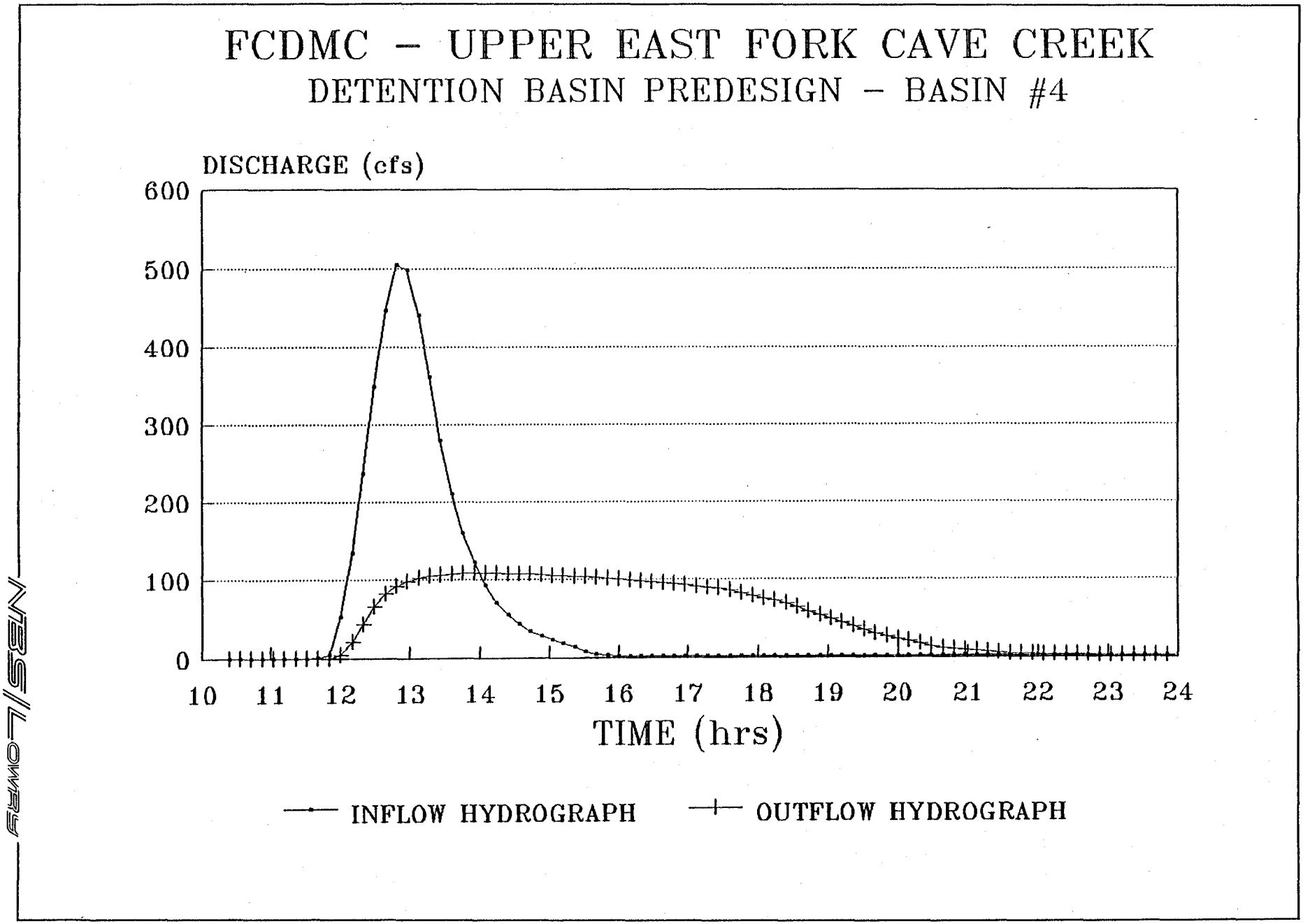

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FIGURE 6

FCDMC – UPPER EAST FORK CAVE CREEK

DETENTION BASIN PREDESIGN – BASIN #5

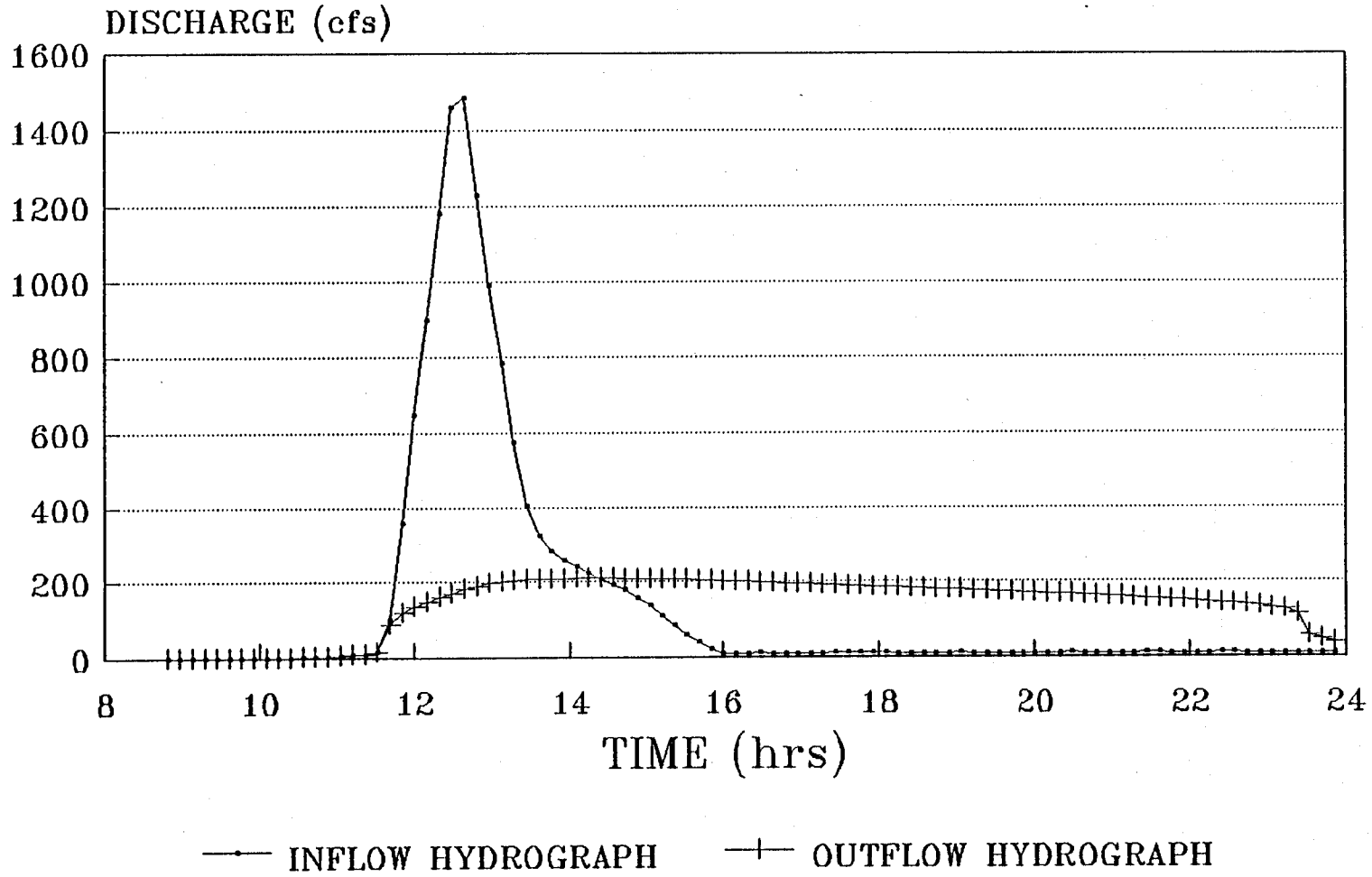

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FIGURE 7

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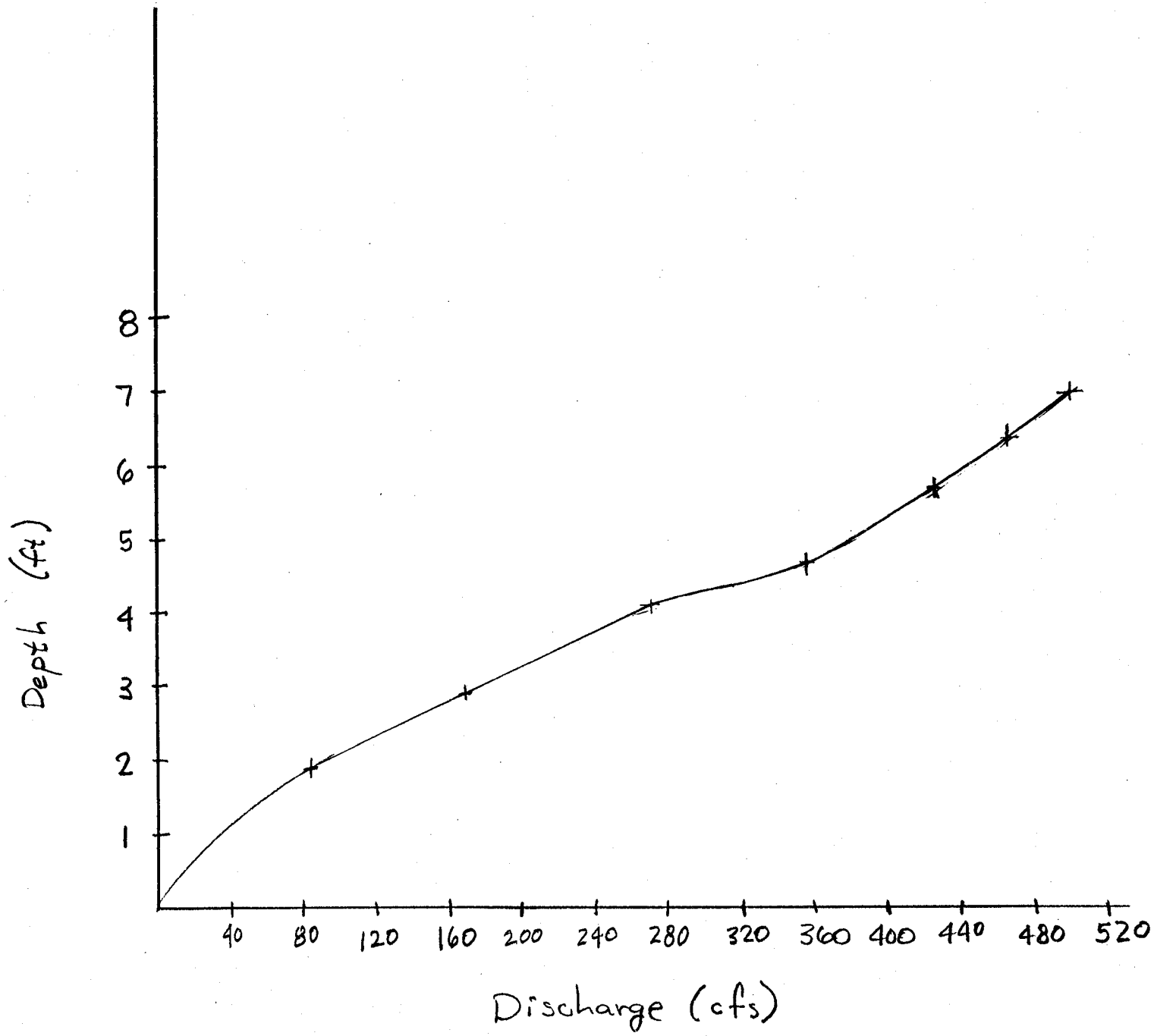
Outlet Rating Curve
Basin #1 4-45" ϕ RCP

DATE
JOB NO P81-194-014
BY BJF CHK'D
SHEET 1 OF
R.C.E.



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DATE
JOB NO P81-194-014
BY BJF CHK'D
SHEET 2 OF
R.C.E.

Outlet Stage-discharge
Basin #1 4-45" ϕ RCP

Depth	Elevation	Discharge
0	1490.8	0
0.4		12
0.7		24
1.1		40
1.4		56
1.8		80
2.1		100
2.5		128
2.8		156
3.2		195
3.5		222
3.9		256
4.2		280
4.6		340
4.9		370
5.3		400
5.6		420
6.0		440
6.3		460
6.7	1497.5	480

PROJECT: FCDMC - Det. Basin Predesign Basin #1	STATION:	CULVERT DESIGN FORM
	SHEET ___ OF ___	DESIGNER / DATE: ___ / ___
		REVIEWER / DATE: ___ / ___

HYDROLOGICAL DATA

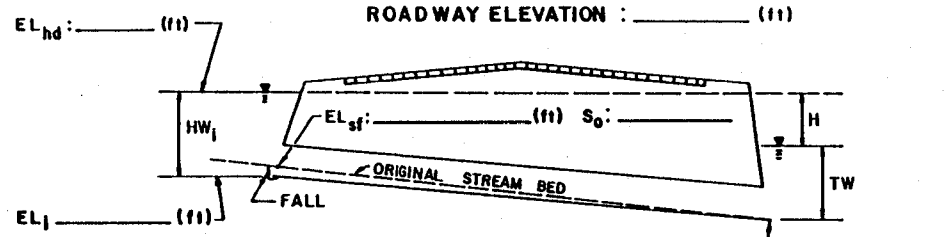
SEE ADD'L. SHTS.

- ☐ METHOD:
- ☐ DRAINAGE AREA: ☐ STREAM SLOPE:
- ☐ CHANNEL SHAPE:
- ☐ ROUTING: ☐ OTHER:

DESIGN FLOWS/TAILWATER

R.I. (YEARS)	FLOW (cfs)	TW (ft)

ROADWAY ELEVATION: ___ (ft)



$S \approx S_o - FALL / L_a$

$S = .0097$

$L_a = 124'$

$H + h_o - L S_o$

CULVERT DESCRIPTION: MATERIAL - SHAPE - SIZE - ENTRANCE	TOTAL FLOW Q (cfs)	FLOW PER BARREL Q/N (1)	HEADWATER CALCULATIONS: INLET CONTROL HW_i/D (2)	HW_i	FALL (3)	EL_hi (4)	OUTLET CONTROL TW (5)	d_c	(d_c+D)/2	h_o (6)	k_e	H (7)	EL_ho (8)	CONTROL HEADWATER ELEVATION	OUTLET VELOCITY	COMMENTS
9 - 45" ϕ RCP Groove	12	3														
end w/headwall	84	21	0.5	1.88			2.1	1.4	2.6	2.6	.20	0.1	1.46	1.9		I.C.
	168	42	.76	2.85			2.9	2.0	2.9	2.9		0.4	2.06	2.9		
	271	68	1.1	4.13			3.6	2.5	3.1	3.6		1.0	3.4	4.1		
	355	89	1.24	4.65			4.1	2.9	3.3	4.1		1.8	4.7	4.7		
	425	106	1.47	5.5			4.4	3.1	3.4	4.4		2.5	5.7	5.7		O.C.
	465	116	1.6	6.0			4.6	3.3	3.5	4.6		3.0	6.4	6.4		O.C.
	500	125	1.71	6.4			4.7	3.3	3.5	4.7		3.5	7.0	7.0		O.C.

FOR CULVERTS ON GRADE

SUBSCRIPT DEFINITIONS:

a. APPROXIMATE
f. CULVERT FACE
hd. DESIGN HEADWATER
hi. HEADWATER IN INLET CONTROL
ho. HEADWATER IN OUTLET CONTROL
i. INLET CONTROL SECTION
o. OUTLET
sf. STREAMBED AT CULVERT FACE
tw. TAILWATER

COMMENTS / DISCUSSION:

CULVERT BARREL SELECTED:

SIZE:

SHAPE:

MATERIAL: n

ENTRANCE:

CROSS SECTION NAME: OUTLET CHANNEL BASIN #1

MANNINGS N = .03
SLOPE = .0005

POINT NO.	ELEVATION [FT]	STATION [FT]
1	4.6	0
2	0	33.6
3	0	48.6
4	4.6	82.2

ELEVATION FT.	AREA SQ. FT.	PERIMETER FT.	VEL. FT./SEC	DISCHARGE CFS
0.10	1.6	16.5	0.23	0.4
0.20	3.3	17.9	0.36	1.2
0.30	5.2	19.4	0.46	2.4
0.40	7.2	20.9	0.54	3.9
0.50	9.3	22.4	0.62	5.8
0.60	11.6	23.8	0.69	8.0
0.70	14.1	25.3	0.75	10.5
0.80	16.7	26.8	0.81	13.5
0.90	19.4	28.3	0.86	16.7
1.00	22.3	29.7	0.91	20.4
1.10	25.3	31.2	0.96	24.4
1.20	28.5	32.7	1.01	28.8
1.30	31.8	34.2	1.06	33.7
1.40	35.3	35.6	1.10	38.9
1.50	38.9	37.1	1.14	44.5
1.60	42.7	38.6	1.18	50.6
1.70	46.6	40.1	1.23	57.1
1.80	50.7	41.5	1.26	64.1
1.90	54.9	43.0	1.30	71.5
2.00	59.2	44.5	1.34	79.4
2.10	63.7	46.0	1.38	87.7
2.20	68.4	47.4	1.41	96.6
2.30	73.1	48.9	1.45	105.9
2.40	78.1	50.4	1.48	115.8
2.50	83.2	51.9	1.52	126.2
2.60	88.4	53.3	1.55	137.1
2.70	93.7	54.8	1.58	148.5
2.80	99.3	56.3	1.62	160.5
2.90	104.9	57.8	1.65	173.0
3.00	110.7	59.2	1.68	186.1
3.10	116.7	60.7	1.71	199.8
3.20	122.8	62.2	1.74	214.1
3.30	129.0	63.7	1.77	228.9
3.40	135.4	65.1	1.80	244.4
3.50	142.0	66.6	1.83	260.5

3.60	148.7	68.1	1.86	277.2
3.70	155.5	69.6	1.89	294.5
3.80	162.5	71.0	1.92	312.4
3.90	169.6	72.5	1.95	331.0
4.00	176.9	74.0	1.98	350.3
4.10	184.3	75.5	2.01	370.2
4.20	191.8	76.9	2.04	390.8
4.30	199.6	78.4	2.06	412.1
4.40	207.4	79.9	2.09	434.0
4.50	215.4	81.4	2.12	456.7
4.60	223.6	82.8	2.15	480.0
4.70	231.8	82.8	2.20	509.8

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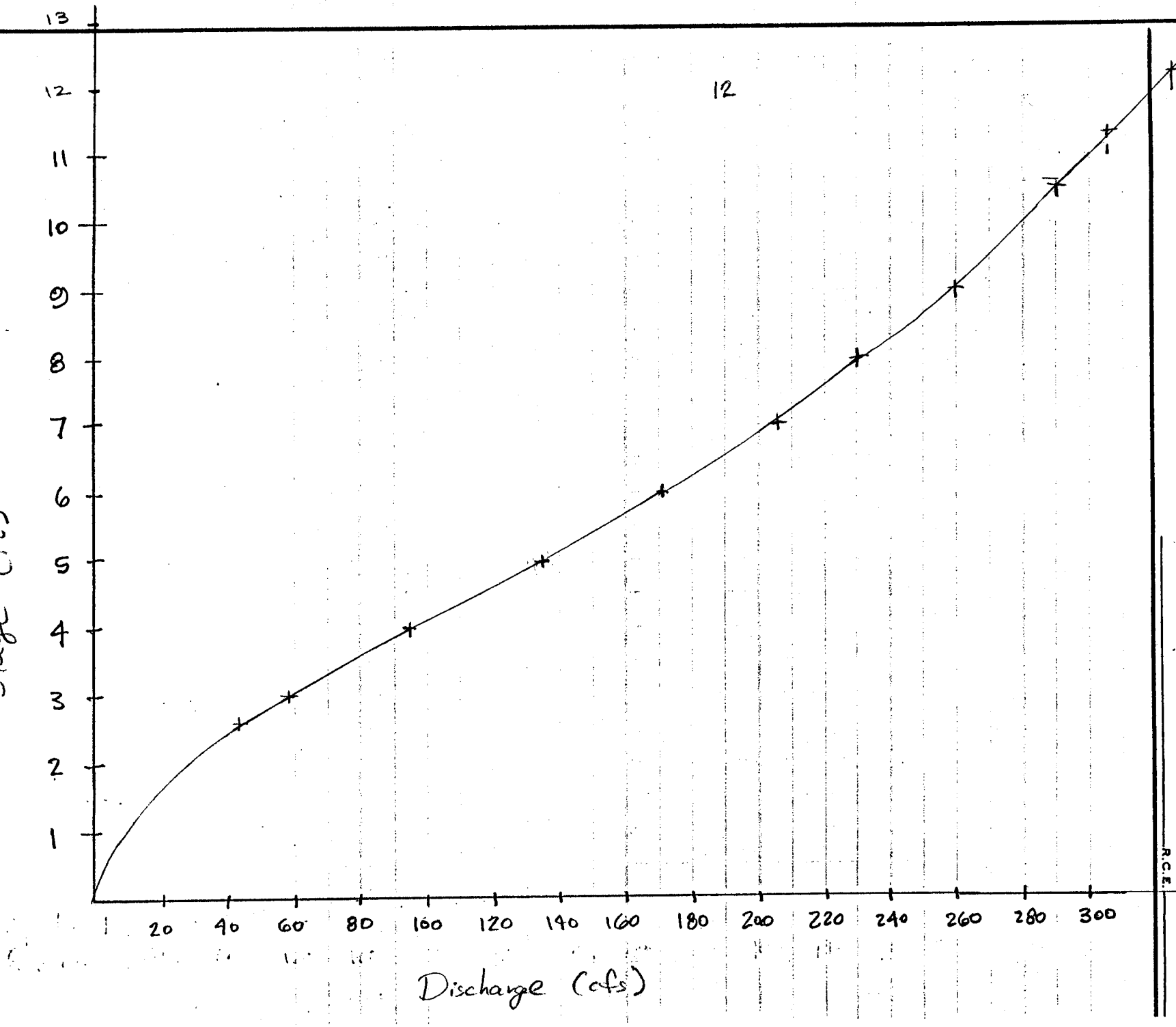
Outlet Rating Curve
Basin #2 60" RCP

DATE
JOB NO P81-194-014
BY BDF CHK'D
SHEET OF 340
R.C.E.



NBS/L 015

NBS/LOWRY
ENGINEERS & PLANNERS

DATE
JOB NO
BY BJF CHK'D
SHEET OF
R.C.E.

Basin #2 Stage - Discharge

60" RCP

Depth	Elevation	Discharge
0	93	
1	1394	8
2	1395	27
3	1396	58
4	1397	95
5	1398	135
6	1399	171
7	1400	206
8	1401	230
9	1402	260
10	1403	280
11	1404	300
12	1405	320
13	1406	336

PROJECT: FCDMC-Det. Basin Siting Stdy. Basin #2

STATION: _____

SHEET _____ OF _____

CULVERT DESIGN FORM

DESIGNER / DATE: _____ / _____

REVIEWER / DATE: _____ / _____

HYDROLOGICAL DATA

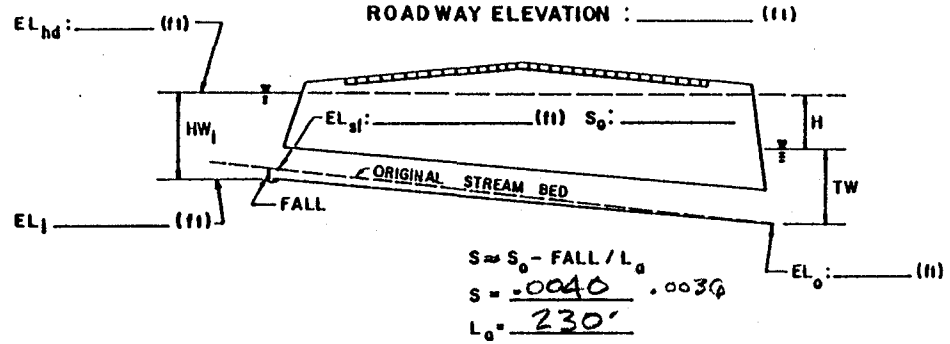
SEE ADD'L. SHTS.

- ☐ METHOD: _____
- ☐ DRAINAGE AREA: _____ ☐ STREAM SLOPE: _____
- ☐ CHANNEL SHAPE: _____
- ☐ ROUTING: _____ ☐ OTHER: _____

DESIGN FLOWS/TAILWATER

R.I. (YEARS)	FLOW (cfs)	TW (ft)

ROADWAY ELEVATION: _____ (ft)



$S = S_o - FALL / L_a$

$S = .0040$ .0030

$L_a = 230'$

CULVERT DESCRIPTION: MATERIAL - SHAPE - SIZE - ENTRANCE	TOTAL FLOW Q (cfs)	FLOW PER BARREL Q/N (1)	HEADWATER CALCULATIONS: INLET CONTROL HW i/D (2)	HW i	FALL (3)	EL hi (4)	OUTLET CONTROL TW (5)	d_c	$\frac{d_c+D}{2}$	h_o (6)	k_e	H (7)	EL ho (8)	CONTROL HEADWATER ELEVATION	OUTLET VELOCITY	COMMENTS
60" RCP Groove end		43	.5	2.5			0.7	1.8	3.4	3.4	.20	0.1	2.64	2.6		I.C.
w/headwall		58	.6	3			0.9	2.1	3.6	3.6		0.3	2.91	3		
		95	.8	4			1.5	2.8	3.9	3.9		0.7	3.67	4		
		135	1.0	5			2.1	3.3	4.2	4.2		1.4	4.65	5		
		171	1.2	6			2.5	3.7	4.4	4.4		2.3	5.71	6		
		206	1.4	7			3.0	3.7	4.4	4.4		3.3	6.73	7		
		230	1.6	8			3.3	4.3	4.6	4.6		4.1	7.80	8		
		260	1.8	9			3.8	4.5	4.7	4.7		5.2	9.04	9		
		290	2.0	10			5.0	4.6	4.8	5.0		6.5	10.58	10.6		O.C.
		305	2.2	11			5.0	4.7	4.8	5.0		7.2	11.28	11.3		O.C.
		325	2.37	11.9						5.0		8.1	12.3	12.3		
		336								5.0		8.7	12.9	12.9		
		350	2.6	13.1						5.0		9.4	13.6	13.6		

hd. DESIGN HEADWATER
hi. HEADWATER IN INLET CONTROL
ho. HEADWATER IN OUTLET CONTROL
i. INLET CONTROL SECTION
o. OUTLET
sf. STREAMBED AT CULVERT FACE
tw. TAILWATER

SHAPE: _____

MATERIAL: _____

ENTRANCE: _____

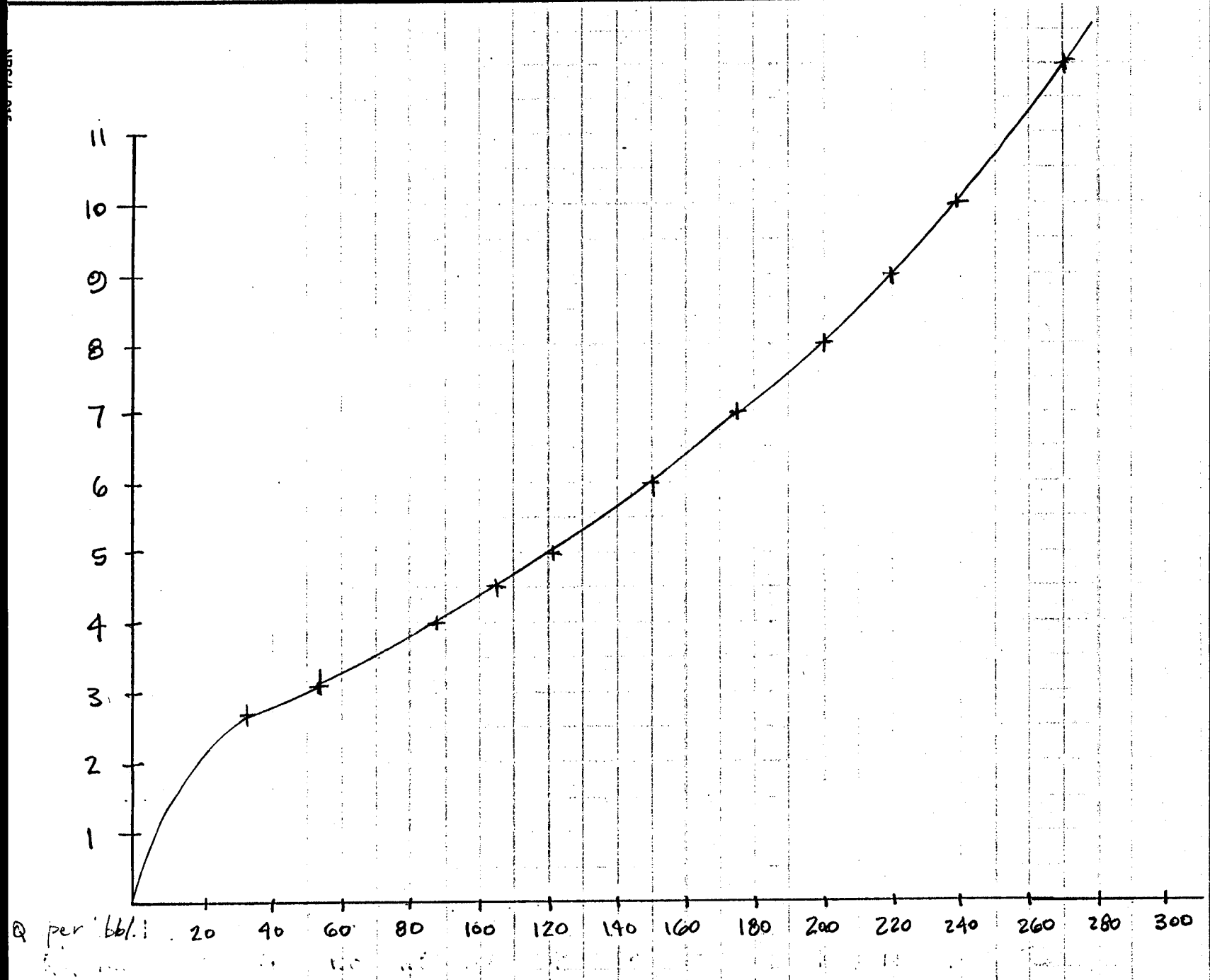
NBS/L 015

Basin #3A

3 - 54" ϕ RCP

J.N. P81-194-014

By BJF



NBS/LOWRY
ENGINEERS & PLANNERS

DATE
JOB NO
BY BJF CHK'D
SHEET OF
R.C.E.

Basin #3A 3-54" ϕ RCP

Depth	Elevation	Discharge
0.5	1428	9
2.5	30	80
4.5	32	315
6.5	34	486
8.5	36	627
10.5	38	740
12.5	40	831

PROJECT: P81-194-014
Basin # 3A

STATION: _____

SHEET _____ OF _____

CULVERT DESIGN FORM

DESIGNER / DATE: BJF / _____

REVIEWER / DATE: _____ / _____

HYDROLOGICAL DATA

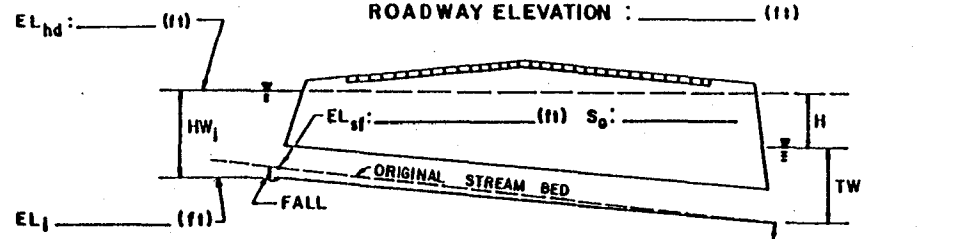
SEE ADD'L SHTS.

- ☐ METHOD: _____
- ☐ DRAINAGE AREA: _____ ☐ STREAM SLOPE: _____
- ☐ CHANNEL SHAPE: _____
- ☐ ROUTING: _____ ☐ OTHER: _____

DESIGN FLOWS/TAILWATER

R.I. (YEARS)	FLOW (cfs)	TW (ft)

ROADWAY ELEVATION: _____ (ft)



$S \approx S_o - FALL / L_o$

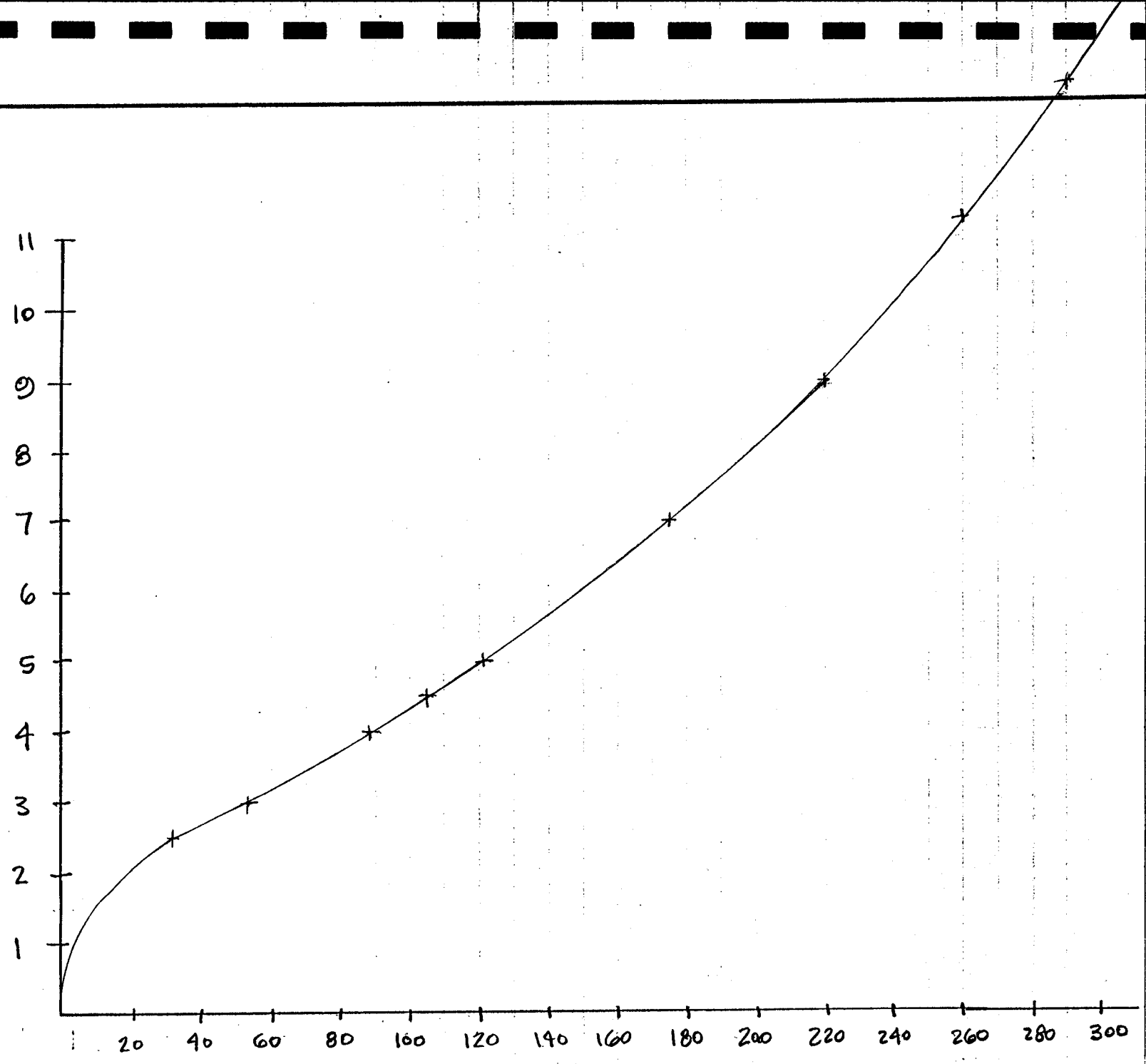
$S = .005$

$L_o = 100'$

CULVERT DESCRIPTION: MATERIAL - SHAPE - SIZE - ENTRANCE	TOTAL FLOW Q (cfs)	FLOW PER BARREL Q/N (1)	HEADWATER CALCULATIONS: INLET CONTROL HW i/D (2)	HW i	FALL (3)	EL hi (4)	OUTLET CONTROL TW (5)	d_c	$\frac{d_c+D}{2}$	h_o (6)	k_e	H (7)	EL ho (8)	CONTROL HEADWATER ELEVATION	OUTLET VELOCITY	COMMENTS
3-54" ϕ RCP Groove end	96	32	.5	2.25				1.6	3.1	3.1	.20	0.1	2.66	2.7		o.c.
w/headwall	162	54	.67	3.0				2.1	3.3	3.3		0.3	3.09	3.1		o.c.
	264	88	.89	4				2.7	3.6	3.6		0.7	3.87	4		I.C.
	315	105	1.0	4.5				3.0	3.8	3.8		1.1	4.31	4.5		
	363	121	1.11	5				3.2	3.9	3.9		1.4	4.77	5		
	450	150	1.33	6				3.6	4.0	4.0		2.2	5.70	6		
	525	175	1.56	7				3.8	4.2	4.2		2.9	6.60	7		
	600	200	1.78	8				4.0	4.3	4.3		3.8	7.59	8		
	660	220	2.0	9				4.2	4.3	4.3		4.6	8.96	9		
	717	239	2.22	10				4.2	4.4	4.4		5.5	9.33	10		
	810	270	2.67	12				4.3	4.4	4.4		7.0	10.89	12		

hd. DESIGN HEADWATER
hi. HEADWATER IN INLET CONTROL
ho. HEADWATER IN OUTLET CONTROL
i. INLET CONTROL SECTION
o. OUTLET
sf. STREAMBED AT CULVERT FACE
tw. TAILWATER

SHAPE: _____
MATERIAL: _____ n _____
ENTRANCE: _____



NBS/L 015

1 - 54" ϕ RCP Basin #3B

Outlet Rating Curve

FB1-194-014
BJF

NBS/LOWRY
ENGINEERS & PLANNERS

DATE
JOB NO
BY BJF CHK'D
SHEET OF
R.C.E.

Basin #3B 54" ϕ RCP

Depth	Elevation	Discharge
0	1417	0
1	1418	4
3	1420	54
5	1422	121
7	1424	175
9	1426	220
11	1428	256
13	1430	287
15	1432	316

PROJECT: PBI-194-014
Basin # 3B

STATION: _____

SHEET _____ OF _____

CULVERT DESIGN FORM

DESIGNER / DATE: _____ / _____

REVIEWER / DATE: _____ / _____

HYDROLOGICAL DATA

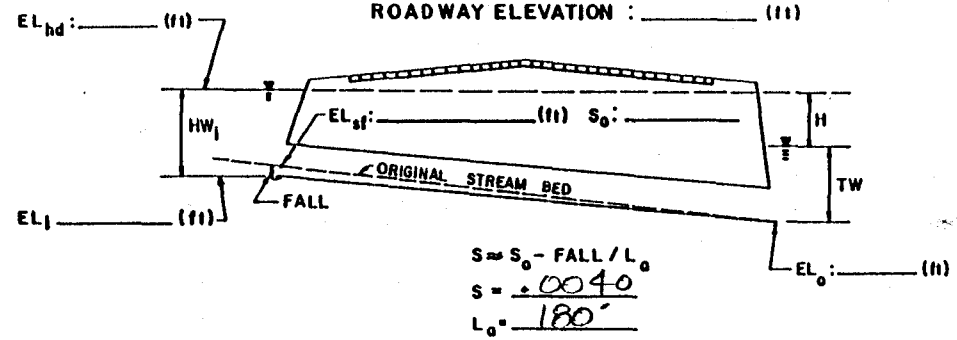
SEE ADD'L. SHTS.

- ☐ METHOD: _____
- ☐ DRAINAGE AREA: _____ ☐ STREAM SLOPE: _____
- ☐ CHANNEL SHAPE: _____
- ☐ ROUTING: _____ ☐ OTHER: _____

DESIGN FLOWS/TAILWATER

R.I. (YEARS)	FLOW (cfs)	TW (ft)

ROADWAY ELEVATION: _____ (ft)



$S \approx S_o - FALL / L_o$

$S = .0040$

$L_o = 180'$

CULVERT DESCRIPTION: MATERIAL - SHAPE - SIZE - ENTRANCE	TOTAL FLOW Q (cfs)	FLOW PER BARREL Q/N (1)	HEADWATER CALCULATIONS: INLET CONTROL HW i/D (2)	HW i	FALL (3)	EL hi (4)	OUTLET CONTROL TW (5)	d_c	$\frac{d_c+D}{2}$	h_o (6)	k_e	H (7)	EL ho (8)	CONTROL HEADWATER ELEVATION	OUTLET VELOCITY	COMMENTS
54" ϕ RCP Groove end		32	0.5	2.25				1.6	3.1	3.1	.20	0.1	2.46	2.5		O.C.
w/headwall		54	.67	3				2.1	3.3	3.3		0.3	2.92	3		I.C.
		88	.89	4				2.7	3.6	3.6		0.9	3.78	4		
		105	1	4.5				3.0	3.8	3.8		1.2	4.29	4.5		
		121	1.11	5				3.2	3.9	3.9		1.7	4.81	5		
		175	1.56	7				3.8	4.2	4.2		3.5	6.92	7		
		220	2.00	9				4.2	4.3	4.3		5.5	9.08	9.1		O.C.
		260	2.44	11				4.3	4.4	4.4		7.6	11.33	11.3		
		290	2.89	13				4.4	4.4	4.4		9.5	13.23	13.2		
		320	3.33	15				4.4	4.5	4.5		11.6	15.3	15.3		

hd. DESIGN HEADWATER
hi. HEADWATER IN INLET CONTROL
ho. HEADWATER IN OUTLET CONTROL
i. INLET CONTROL SECTION
o. OUTLET
sf. STREAMBED AT CULVERT FACE
tw. TAILWATER

SHAPE: _____

MATERIAL: _____

ENTRANCE: _____

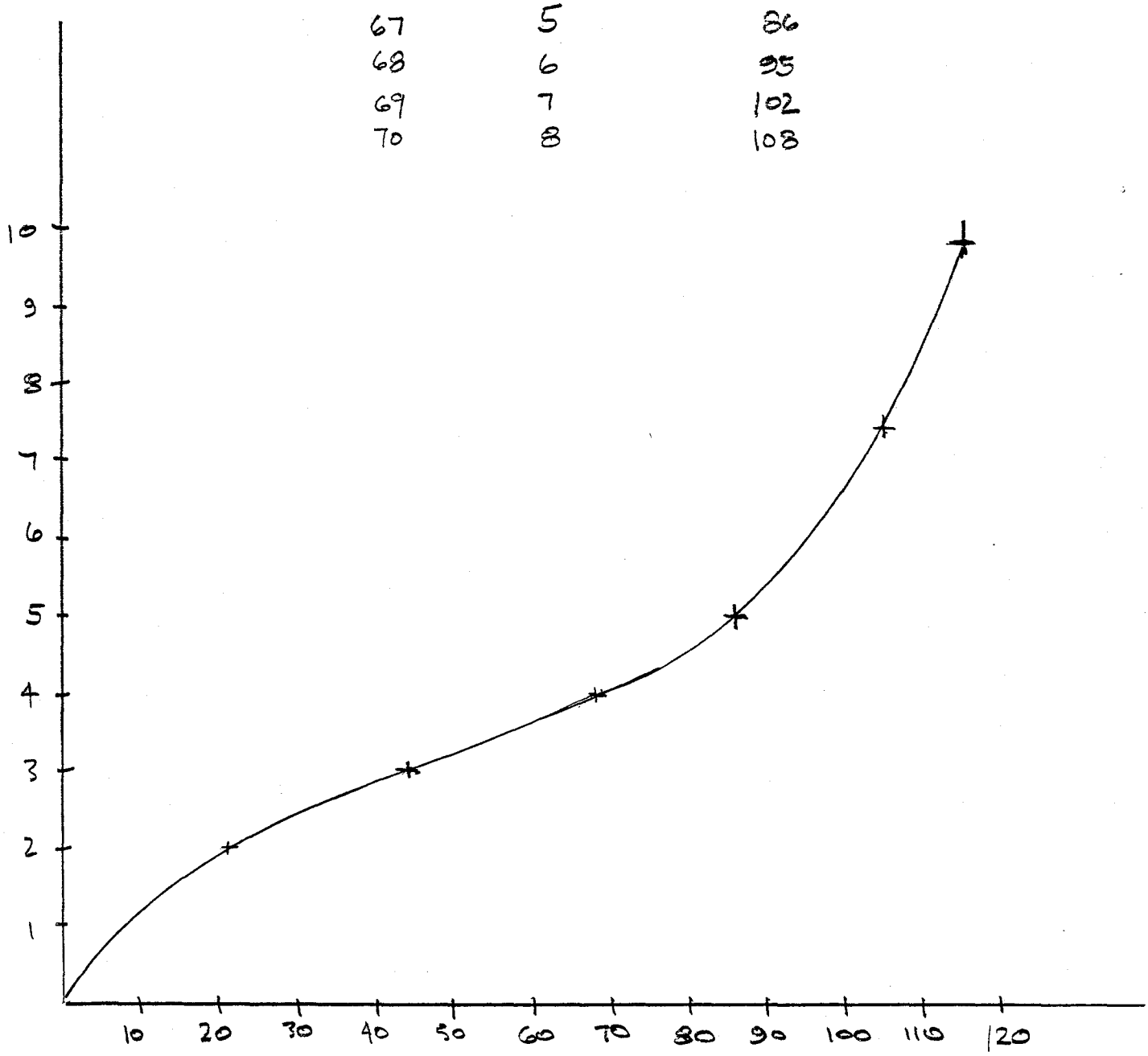
NBS/LOWRY
ENGINEERS & PLANNERS

DATE
JOB NO P81-194-014
BY BJF CHK'D
SHEET OF
R.C.E.

Basin #4 Outlet Rating Curve

42" ϕ RCP

Elev.	Depth	Discharge
62	0	
1464	2	21
65	3	44
66	4	68
67	5	86
68	6	95
69	7	102
70	8	108



NBS/L 015

PROJECT: PBI-194-014 Basin #4	STATION:	CULVERT DESIGN FORM
	SHEET ____ OF ____	DESIGNER / DATE: BJF /
		REVIEWER / DATE: /

HYDROLOGICAL DATA

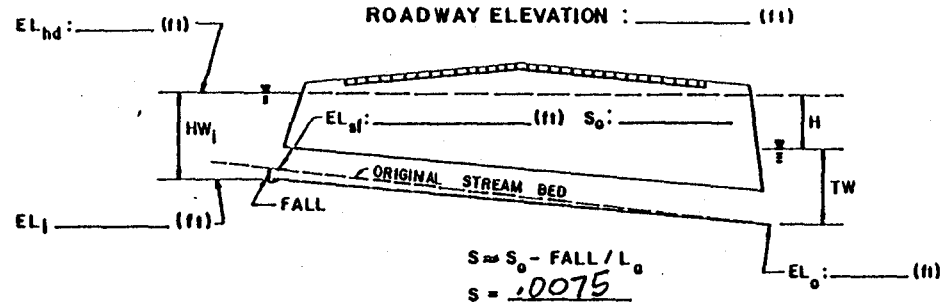
SEE ADD'L. SHTS.

- ☐ METHOD:
- ☐ DRAINAGE AREA: ☐ STREAM SLOPE:
- ☐ CHANNEL SHAPE:
- ☐ ROUTING: ☐ OTHER:

DESIGN FLOWS/TAILWATER

R.I. (YEARS)	FLOW (cfs)	TW (ft)

ROADWAY ELEVATION: ____ (ft)



$S \approx S_o - FALL / L_a$

$S = .0075$

$L_a = 1060'$

CULVERT DESCRIPTION: MATERIAL - SHAPE - SIZE - ENTRANCE	TOTAL FLOW Q (cfs)	FLOW PER BARREL Q/N (1)	HEADWATER CALCULATIONS: INLET CONTROL HW_i/D (2)	HW_i	FALL (3)	EL_hi (4)	OUTLET CONTROL TW (5)	d_c	(d_c+D)/2	h_o (6)	k_e	H (7)	EL_ho (8)	CONTROL HEADWATER ELEVATION	OUTLET VELOCITY	COMMENTS
42" RCP Groove end w/			.29	1							.20					
headwall		21	.57	2				1.4	2.5	2.5		0.5	-5	2		I.C.
		44	.86	3				2.1	2.8	2.8		2.1	-3	3		
		68	1.14	4				2.6	3.0	3.0		5.0	.13	4		
		86	1.43	5				2.9	3.2	3.2		8.0	3.3	5		
		105	1.71	6				3.1	3.3	3.3		12.0	7.4	7.4		O.C.
		115	2.00	7				3.2	3.4	3.4		14.4	7.8	9.9		O.C.

(2) $HW_i/D = HW_i/D$ OR HW_i/D FROM DESIGN CHARTS

(3) $FALL = HW_i - (EL_{hd} - EL_{sf})$; FALL IS ZERO FOR CULVERTS ON GRADE

(5) TW BASED ON DOWN STREAM CONTROL OR FLOW DEPTH IN CHANNEL.

(6) $EL_{ho} = EL_o + H + h_o$

SUBSCRIPT DEFINITIONS:

- a. APPROXIMATE
- f. CULVERT FACE
- hd. DESIGN HEADWATER
- hi. HEADWATER IN INLET CONTROL
- ho. HEADWATER IN OUTLET CONTROL
- i. INLET CONTROL SECTION
- o. OUTLET
- sf. STREAMBED AT CULVERT FACE
- tw. TAILWATER

COMMENTS / DISCUSSION:

CULVERT BARREL SELECTED:

SIZE:

SHAPE:

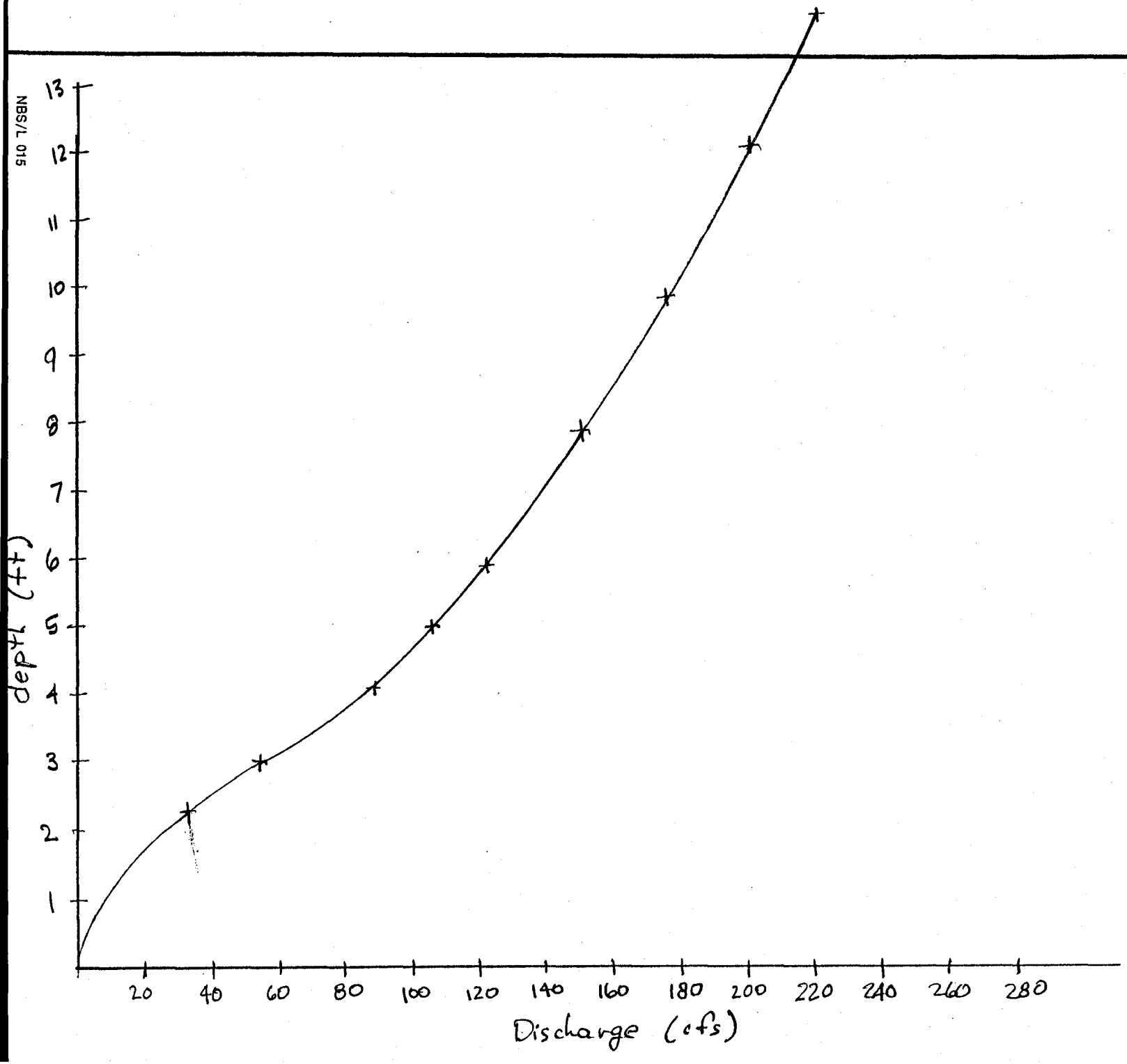
MATERIAL: n

ENTRANCE:

NBS/LOWRY
ENGINEERS & PLANNERS

Outlet Rating Curve
Basin #5 54" ϕ RCP

DATE
JOB NO 81-A4-014
BY BJF CHK'D
SHEET OF
R.C.E.



NBS/L 015

NBS/LOWRY
ENGINEERS & PLANNERS

DATE
JOB NO
BY BJF CHK'D
SHEET OF
R.C.E.

Basin #5 stage - discharge
54" Φ RCP

depth	Elevation	Discharge
0	1372	0
2	74	27
4	76	84
5	77	105
6	78	123
7	79	138
8	80	151
9	81	164
10	82	176
12	84	198
14	86	219

PROJECT: FBI-194-014
Basin #5

STATION: _____

SHEET _____ OF _____

CULVERT DESIGN FORM

DESIGNER / DATE: _____ / _____

REVIEWER / DATE: _____ / _____

HYDROLOGICAL DATA

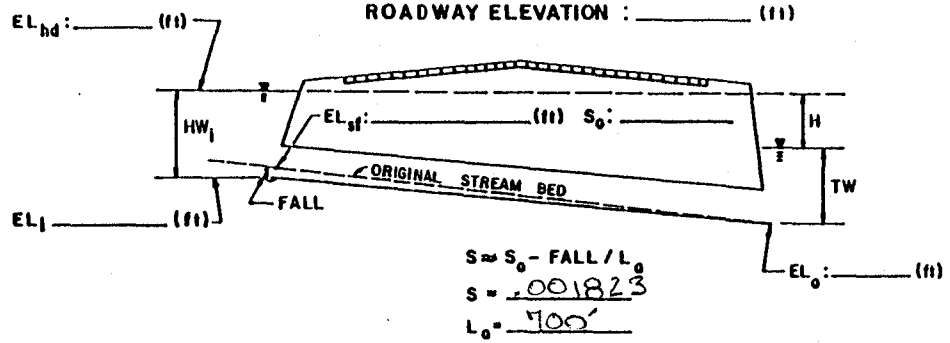
SEE ADD'L. SHTS.

- ☐ METHOD: _____
- ☐ DRAINAGE AREA: _____ ☐ STREAM SLOPE: _____
- ☐ CHANNEL SHAPE: _____
- ☐ ROUTING: _____ ☐ OTHER: _____

DESIGN FLOWS/TAILWATER

R.I. (YEARS)	FLOW (cfs)	TW (ft)

ROADWAY ELEVATION: _____ (ft)



CULVERT DESCRIPTION: MATERIAL - SHAPE - SIZE - ENTRANCE	TOTAL FLOW Q (cfs)	FLOW PER BARREL Q/N (1)	HEADWATER CALCULATIONS — INLET CONTROL: HWi/D (2)	HWi (3)	FALL (3)	EL hi (4)	OUTLET CONTROL: TW (5)	dc	(dc+D)/2	ho (6)	ke	H (7)	EL ho (8)	CONTROL HEADWATER ELEVATION	OUTLET VELOCITY	COMMENTS
54"ϕ RCP - Groove		32	.5	2.25				1.6	3.1	3.1	.20	0.2	2.02	2.3		I.C.
end w/headwall		54	.67	3				2.1	3.3	3.3		0.7	2.70	3.0		
		88	.89	4				2.7	3.6	3.6		1.8	4.11	4.1		O.C.
		105	1.0	4.5				3.0	3.8	3.8		2.5	4.99	5.0		O.C.
		121	1.11	5				3.2	3.9	3.9		3.3	5.93	5.9		
		150	1.33	6				3.6	4.0	4.0		5.1	7.88	7.9		
		175	1.56	7				3.8	4.2	4.2		7.0	9.85	9.9		
		200	1.78	8				4.0	4.3	4.3		9.1	12.08	12.1		
		220	2.00	9				4.2	4.3	4.3		11.0	14.05	14.1		
		239	2.22	10				4.2	4.4	4.4		13.0				
		270	2.67	12				4.3	4.4			16.6				
		300	3.11	14				4.4	4.4			20.4				

hd. DESIGN HEADWATER
hi. HEADWATER IN INLET CONTROL
ho. HEADWATER IN OUTLET CONTROL
i. INLET CONTROL SECTION
o. OUTLET
sf. STREAMBED AT CULVERT FACE
tw. TAILWATER

SHAPE: _____
MATERIAL: _____
ENTRANCE: _____

```
******************80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY******************

JOB TR-20                                          SUMMARY   NOPLOTS
TITLE 000 EAST FORK CAVE CREEK - DETENTION BASIN PREDESIGN STUDY
TITLE 000 JOB NUMBER:  P81-194-014   FILENAME: EFCCPRE.DAT
 5 RAINFL 1            .0208
 8         0.          .004        .008        .0130       .018
 8         .022        .026        .031        .035        .04
 8         .044        .048        .053        .057        .062
 8         .066        .071        .075        .080        .093
 8         .107        .120        .140        .170        .500
 8         .830        .860        .880        .893        .907
 8         .920        .924        .928        .933        .937
 8         .942        .947        .951        .956        .960
 8         .964        .969        .973        .978        .982
 8         .987        .991        .995        1.00        1.00
 9 ENDTBL
 2 XSECTN   006        1.0
 8                     1502.       0.0         0.0
 8                     1502.4      3.7         2.1
 8                     1502.8      13.3        5.1
 8                     1503.2      29.5        9.1
 8                     1503.6      53.4        14.1
 8                     1504.0      85.8        20.0
 8                     1504.4      100.7       30.8
 8                     1504.8      169.0       50.3
 8                     1505.2      289.0       78.5
 8                     1505.6      469.8       115.4
 8                     1506.0      470.9       161.1
 8                     1506.4      952.6       295.5
 8                     1506.8      1764.7      462.7
 8                     1507.2      2878.8      662.8
 8                     1507.6      4328.4      895.6
 8                     1508.0      6145.9      1161.3
 8                     1508.4      8331.5      1460.9
 8                     1508.8      10956.2     1795.8
 9 ENDTBL
 2 XSECTN   008        1.0
 8                     1494.0      0.0         0.0
 8                     1494.3      7.4         5.7
 8                     1494.6      23.9        12.0
 8                     1494.9      47.8        18.8
 8                     1495.2      78.9        26.3
 8                     1495.5      117.0       34.3
 8                     1495.8      162.2       42.9
 8                     1496.1      165.4       53.5
 8                     1496.4      175.4       84.2
 8                     1496.7      302.7       140.5
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8                    1497.0     527.8      222.4
8                    1497.3     868.5      329.9
8                    1497.6     1343.8     463.0
8                    1497.9     1972.3     621.8
8                    1498.2     2837.4     803.3
8                    1498.5     3901.4     998.3
8                    1498.8     5131.8     1206.2
8                    1499.1     6532.4     1426.8
8                    1499.4     8107.5     1660.4
8                    1499.7     9861.7     1906.7
9 ENDTBL
2 XSECTN   014       1.0
8                    1484.0     0.0        0.0
8                    1484.3     4.5        3.5
8                    1484.6     14.6       7.4
8                    1484.9     29.3       11.7
8                    1485.2     48.4       16.4
8                    1485.5     72.0       21.6
8                    1485.8     100.0      27.1
8                    1486.1     132.3      33.0
8                    1486.4     168.7      39.4
8                    1486.7     210.3      46.4
8                    1487.0     257.3      53.8
8                    1487.3     309.9      61.7
8                    1487.6     368.3      70.1
8                    1487.9     432.9      78.9
8                    1488.2     460.0      95.4
8                    1488.5     490.0      142.0
8                    1488.8     520.2      220.5
8                    1489.1     843.7      330.9
8                    1489.4     1318.9     473.3
8                    1489.7     1968.4     647.5
9 ENDTBL
2 XSECTN   037       1.0
8                    1452.0     0.0        0.0
8                    1452.2     8.1        6.5
8                    1452.6     50.6       19.9
8                    1453.0     119.3      34.0
8                    1453.2     162.1      41.3
8                    1453.4     210.4      48.7
8                    1453.6     263.8      56.3
8                    1453.8     322.2      64.1
8                    1454.0     385.5      72.0
8                    1454.2     420.0      86.0
8                    1454.4     456.8      100.3
8                    1454.6     566.6      114.7
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
8                    1454.8     685.9      129.2
8                    1455.0     814.4      143.9
8                    1455.2     952.0      158.8
8                    1455.4     1098.3     173.9
8                    1455.6     1183.6     189.8
8                    1455.8     1357.3     206.7
8                    1456.0     1540.3     223.7
8                    1456.2     1740.2     240.7
9 ENDTBL
2 XSECTN   087       1.0
8                    1429.8     0.0        0.0
8                    1429.9     32.7       48.5
8                    1430.      115.8      116.0
8                    1430.1     268.3      193.9
8                    1430.2     469.2      273.6
8                    1430.4     1000.2     438.7
8                    1430.6     1689.0     611.1
8                    1430.8     2526.0     791.0
8                    1431.0     3505.8     978.2
8                    1431.2     4625.3     1172.9
8                    1431.4     5882.7     1374.9
9 ENDTBL
2 XSECTN   083       1.0
8                    0.         0.         0.
8                    .275       1.40       .444
8                    .55        6.08       1.24
8                    .825       14.15      2.23
8                    1.1        25.49      3.38
8                    1.38       39.87      4.65
8                    1.65       57.0       5.99
8                    1.93       76.53      7.41
8                    2.2        98.08      8.87
8                    2.475      121.23     10.37
8                    2.75       145.52     11.88
8                    3.03       170.46     13.39
8                    3.3        195.5      14.88
8                    3.58       220.14     16.35
8                    3.85       243.67     17.76
8                    4.13       265.39     19.11
8                    4.4        284.48     20.38
8                    4.68       299.90     21.52
8                    4.95       310.19     22.52
8                    5.23       312.73     23.31
9 ENDTBL
2 XSECTN   104       1.0
8                    0.         0.         0.
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
8                    .3        1.43      .53
8                    .6        6.21      1.47
8                    .9        14.46     2.66
8                    1.2       26.04     4.03
8                    1.5       40.73     5.53
8                    1.8       58.23     7.13
8                    2.1       78.19     8.82
8                    2.4       100.20    10.56
8                    2.7       123.86    12.34
8                    3.        148.68    14.14
8                    3.3       174.15    15.93
8                    3.6       199.76    17.71
8                    3.9       224.91    19.45
8                    4.2       248.94    21.14
8                    4.5       271.14    22.75
8                    4.8       290.64    24.25
8                    5.1       306.39    25.61
8                    5.4       316.91    26.80
8                    5.7       319.50    27.75
9 ENDTBL
2 XSECTN   105       1.0
8                    1417.1    0.0       0.0
8                    1417.3    9.7       14.0
8                    1417.5    61.9      56.0
8                    1417.7    182.4     125.9
8                    1417.9    392.9     223.9
8                    1418.1    737.3     347.5
8                    1418.3    1217.8    483.0
8                    1418.5    1805.5    628.1
8                    1418.7    2500.2    782.6
8                    1418.9    3303.3    946.7
9 ENDTBL
3 STRUCT      08
8                    1490.8    0.        0.
8                    1491.2    12.       0.24
8                    1491.5    24.       0.75
8                    1491.9    40.       1.85
8                    1492.2    56.       3.09
8                    1492.6    80.       5.38
8                    1492.9    100.      7.57
8                    1493.3    128.      11.27
8                    1493.6    156.      14.67
8                    1494.0    195.      19.96
8                    1494.3    222.      24.27
8                    1494.7    256.      30.39
8                    1495.0    280.      35.24
```

```
8                    1495.4     340.       41.85
8                    1495.7     370.       46.90
8                    1496.1     400.       53.74
8                    1496.4     420.       58.90
8                    1496.8     440.       65.83
8                    1497.1     460.       71.08
8                    1497.5     480.       78.18
9 ENDTBL
3 STRUCT      33
8                    1462.      0.         0.
8                    1464.      21.        1.38
8                    1465.      44.        3.5
8                    1466.      68.        6.91
8                    1467.      86.        12.
8                    1468.      95.        18.53
8                    1469.      102.       26.3
8                    1470.      108.       35.6
9 ENDTBL
3 STRUCT      37
8                    1446.0     0.0        0.0
8                    1448.0     0.1        2.59
8                    1448.5     110.       3.52
8                    1449.0     320.       4.45
8                    1449.5     580.       5.38
8                    1450.0     900.       6.32
9 ENDTBL
3 STRUCT      39
8                    1413.      0.0        0.0
8                    1413.4     33.58      8.04
8                    1413.8     101.65     16.18
8                    1414.2     191.12     24.39
8                    1414.6     296.09     32.70
8                    1415.0     412.96     41.10
8                    1415.4     539.25     49.59
8                    1415.8     673.17     58.16
8                    1416.2     813.39     66.83
8                    1416.6     958.87     75.59
8                    1417.0     1108.82    84.43
8                    1417.4     1262.58    93.37
8                    1417.8     1419.63    102.41
8                    1418.2     1579.53    111.53
8                    1418.6     1741.94    120.75
8                    1419.0     1906.54    130.06
9 ENDTBL
3 STRUCT      43
8                    1427.5     0.         0.
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
8                    1428.0     9.         0.30
8                    1430.0     80.        3.97
8                    1432.0     315.       13.08
8                    1434.0     486.       32.70
8                    1436.0     627.       59.41
8                    1438.0     740.       87.57
8                    1440.0     831.       117.19
9 ENDTBL
3 STRUCT      44
8                    1417.      0.         0.
8                    1418.0     4.         0.27
8                    1420.0     54.        4.74
8                    1422.0     121.       19.70
8                    1424.0     175.       44.90
8                    1426.0     220.       73.96
8                    1428.0     256.       104.37
8                    1430.0     287.       136.07
8                    1432.0     316.       169.06
9 ENDTBL
3 STRUCT      59
8                    1393.      0.         0.
8                    1394.      8.         0.01
8                    1395.      27.        .8
8                    1396.      58.        2.34
8                    1397.      95.        5.0
8                    1398.      135.       8.61
8                    1399.      171.       13.0
8                    1400.      206.       17.66
8                    1401.      230.       23.0
8                    1402.      260.       28.37
8                    1403.      280.       34.4
8                    1404.      300.       40.07
8                    1405.      320.       46.6
8                    1406.      336.       52.76
9 ENDTBL
3 STRUCT      69
8                    1372.0     0.         0.
8                    1376.0     84.  72    0.02
8                    1377.0     105. 94    0.33
8                    1378.0     123. 111   2.05
8                    1379.0     138. 130   6.97
8                    1380.0     151. 147   16.68
8                    1381.0     164. 161   31.34
8                    1382.0     176. 175   49.36
8                    1384.0     198. 201   88.62
8                    1386.0     219. 227   129.66
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
9 ENDTBL
6 RUNOFF 1 001       5 .148        95.        .3
6 RUNOFF 1 002       6 .097        95.        .19
6 REACH  3 003   5   7 1000.       .04        1.66
6 REACH  3 003   6   5 1400.       .04        1.66
6 ADDHYD 4 003   5 7 6
6 RUNOFF 1 003       5 .047        77.        .36
6 ADDHYD 4 003   5 6 7
6 RUNOFF 1 006       5 .109        81.        .82
6 REACH  3 006   7   6 1600.
6 ADDHYD 4 006   5 6 7
6 REACH  3 008   7   1 1600.
6 RUNOFF 1 007       5 .117        77.        .69
6 REACH  3 008   5   2 1400.
6 RUNOFF 1 019       5 .022        95.        .167
6 RUNOFF 1 004       6 .195        95.        .22
6 REACH  3 004   5   7 1800.       .05        1.66
6 ADDHYD 4 004   6 7 5
6 RUNOFF 1 005       6 .125        77.        .56
6 REACH  3 005   5   7 1400.       .05        1.66
6 ADDHYD 4 005   6 7 5
6 REACH  3 008   5   3 2100.
6 ADDHYD 4 008   1 2 4
6 ADDHYD 4 008   3 4 1
6 RUNOFF 1 018       5 .184        78.        .72
6 REACH  3 008   5   2 1900.       .04        1.66
6 ADDHYD 4 008   1 2 3
6 RUNOFF 1 008       5 .131        78.        .75
6 ADDHYD 4 008   3 5 1                                    1 1 1 1
6 RESVOR 2     08 1   3 1491.0                             1 1 1 1
6 REACH  3 014   3   5 3000.       .17        1.47
6 RUNOFF 1 009       6 .066        79.        .93
6 REACH  3 014   6   7 2700.
6 ADDHYD 4 014   5 7 6
6 RUNOFF 1 010       4 .095        77.        .56
6 REACH  3 011   4   5 2640.       .44        1.54
6 RUNOFF 1 011       7 .234        79.        .84
6 ADDHYD 4 011   5 7 4
6 REACH  3 013   4   5 1320.       1.98       1.67
6 RUNOFF 1 013       7 .125        82.        .61
6 ADDHYD 4 013   5 7 4
6 RUNOFF 1 144       5 .132        79.        .93
6 REACH  3 014   5   7 2640.       2.1        1.4
6 ADDHYD 4 013   4 7 5
6 REACH  3 014   5   7 1320.       1.64       1.67
6 ADDHYD 4 014   6 7 5
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
6 RUNOFF 1 016       6 .119        86.        .54
6 REACH  3 015   6   7 1300.       .54        1.54
6 RUNOFF 1 015       6 .073        82.        .89
6 ADDHYD 4 015   6 7 4
6 ADDHYD 4 014   4 5 6
6 RUNOFF 1 014       5 .177        83.        .39
6 ADDHYD 4 014   5 6 4
6 REACH  3 027   4   7 3000.       .04        1.63
6 RUNOFF 1 027       5 .188        82.        1.2
6 ADDHYD 4 027   5 7 6
6 RUNOFF 1 017       5 .059        95.        .17
6 REACH  3 025   5   7 2200.       .05        1.66
6 RUNOFF 1 025       5 .089        83.        .43
6 ADDHYD 4 025   5 7 4
6 REACH  3 027   4   5 1700.       .04        1.63
6 ADDHYD 4 027   5 6 7
6 RUNOFF 1 026       6 .067        85.        .31
6 ADDHYD 4 027   6 7 5
6 REACH  3 037   5   4 3000.
6 RUNOFF 1 037       5 .125        83.        .25
6 ADDHYD 4 037   4 5 6
6 RESVOR 2    37 6   4 1446.0
6 RUNOFF 1 024       5 .198        86.        .46
6 REACH  3 037   5   6 2100.       .41        1.66
6 ADDHYD 4 037   4 6 5
6 RUNOFF 1 028       4 .156        82.        .93
6 REACH  3 036   4   6 3500.       .06        1.66
6 RUNOFF 1 036       4 .125        83.        .48
6 ADDHYD 4 036   4 6 7
6 RUNOFF 1 034       4 .125        84.        .73
6 REACH  3 035   4   6 1320.       .31        1.54
6 RUNOFF 1 035       4 .125        83.        .49
6 ADDHYD 4 035   4 6 3
6 REACH  3 036   3   4 1320.       4.48       1.25
6 ADDHYD 4 036   4 7 6
6 REACH  3 037   6   7 1320.       4.64       1.25
6 ADDHYD 4 037   5 7 4
6 RUNOFF 1 143       5 .0625       85.        .53
6 ADDHYD 4 143   5 4 7
6 DIVERT 6 144   7 4 6 206.                   143.       1 1 1 1
6 RESVOR 2    43 6   5 1427.5                            1 1 1 1
6 RESVOR 2    44 5   7 1417.0                            1 1 1 1
6 ADDHYD 4 144   7 4 6
6 REACH  3 085   6   7 1320.       5.4        1.25
6 RUNOFF 1 085       6 .063        84.        .52
6 ADDHYD 4 085   6 7 5
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
6 REACH  3 084   5   6 1320.      5.4        1.25
6 RUNOFF 1 084       5 .063       84.        .52
6 ADDHYD 4 084   5 6 1
6 RUNOFF 1 091       6 .125       86.        .47
6 REACH  3 090   6   5 1320.      .22        1.54
6 RUNOFF 1 090       6 .109       85.        .63
6 ADDHYD 4 090   5 6 4
6 REACH  3 088   4   7 1320.      .22        1.54
6 RUNOFF 1 089       4 .047       84.        .39
6 REACH  3 088   4   5 2000.      .22        1.54
6 RUNOFF 1 088       4 .094       87.        .75
6 ADDHYD 4 088   4 5 6
6 ADDHYD 4 088   6 7 5
6 DIVERT 6 088   5 7 2 159.                  101.
6 REACH  3 084   7   6 2640.      4.3        1.25
6 ADDHYD 4 084   1 6 5
6 DIVERT 6 104   5 6 1                       83.
6 REACH  3 105   6   3 1320.      5.9        1.25
6 REACH  3 101   2   5 1050.      .22        1.54
6 RUNOFF 1 101       6 .047       89.        .52
6 ADDHYD 4 101   5 6 7
6 REACH  3 102   7   6 1320.      .02        1.66
6 RUNOFF 1 102       5 .063       82.        .63
6 ADDHYD 4 102   5 6 7
6 REACH  3 105   7   6 1320.
6 RUNOFF 1 105       5 .063       78.        .63
6 ADDHYD 4 105   5 6 2
6 RUNOFF 1 086       5 .063       86.        .27
6 REACH  3 087   5   6 1320.
6 RUNOFF 1 087       5 .063       87.        .52
6 ADDHYD 4 087   5 6 7
6 REACH  3 105   7   6 2000.
6 ADDHYD 4 105   3 6 7
6 ADDHYD 4 105   7 2 5
6 REACH  3 104   5   6 1320.      5.9        1.25
6 RUNOFF 1 104       5 .069       78.        .67
6 ADDHYD 4 104   5 6 3
6 REACH  3 083   1   5 1320.      7.12       1.25
6 RUNOFF 1 083       6 .063       85.        .52
6 ADDHYD 4 083   5 6 7
6 REACH  3 106   7   6 1320.      5.9        1.25
6 RUNOFF 1 106       5 .063       79.        .56
6 ADDHYD 4 106   5 6 7
6 REACH  3 107   7   6 900.       5.9        1.25
6 RUNOFF 1 107       5 .059       82.        .42
6 ADDHYD 4 107   5 6 1
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
6 RUNOFF 1 012       5 .07        82.        .42
6 REACH  3 029   5   6 3800.      .04        1.66
6 RUNOFF 1 029       5 .25        81.        1.03
6 ADDHYD 4 029   5 6 7
6 REACH  3 033   7   6 2640.      7.53       1.25
6 RUNOFF 1 033       5 .234       80.        1.14
6 ADDHYD 4 033   5 6 7
6 DIVERT 6 033   7 4 2 30.                   033
6 RUNOFF 1 030       5 .125       79.        .83
6 REACH  3 032   5   6 3000.      6.29       1.25
6 ADDHYD 4 033   6 2 5                                1 1 1 1
6 RESVOR 2     33 5   2 1462.                         1 1 1 1
6 ADDHYD 4 033   2 4 7
6 REACH  3 093   7   6 2640.      5.24       1.25
6 RUNOFF 1 093       5 .195       84.        .45
6 ADDHYD 4 093   5 6 7
6 DIVERT 6 093   7 5 2 149.                   92.
6 REACH  3 092   2   6 1320.      .08        1.66
6 RUNOFF 1 092       4 .125       86.        .47
6 ADDHYD 4 092   4 6 7
6 REACH  3 098   7   2 2500.      .08        1.66
6 REACH  3 095   5   4 1320.      6.26       1.25
6 RUNOFF 1 032       5 .109       80.        .81
6 REACH  3 094   5   6 3200.      .09        1.66
6 RUNOFF 1 094       5 .139       84.        .34
6 ADDHYD 4 094   5 6 7
6 REACH  3 095   7   6 2400.      .09        1.66
6 RUNOFF 1 095       5 .125       86.        .98
6 ADDHYD 4 095   5 6 7
6 ADDHYD 4 095   4 7 5
6 DIVERT 6 095   5 7 4 165.                   98.
6 REACH  3 098   4   5 3000.      .08        1.66
6 ADDHYD 4 098   2 5 4
6 REACH  3 096   7   6 1320.      6.26       1.25
6 RUNOFF 1 096       5 .125       82.        .51
6 ADDHYD 4 096   5 6 7
6 DIVERT 6 096   7 5 6 185.                   97.
6 REACH  3 097   6   5 2100.      .08        1.66
6 RUNOFF 1 097       6 .188       87.        .53
6 ADDHYD 4 097   5 6 7
6 REACH  3 098   7   5 1000.      .08        1.66
6 ADDHYD 4 098   4 5 7
6 RUNOFF 1 098       5 .094       86.        .37
6 ADDHYD 4 098   5 7 6
6 REACH  3 099   6   7 1250.      .08        1.66
6 RUNOFF 1 099       6 .094       86.        .49
```

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**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
6 ADDHYD 4 099   7 6 5
6 REACH  3 139   5   6 1600.      .05        1.66
6 RUNOFF 1 100       4 .078       86.        .39
6 REACH  3 139   4   5 600.       .05        1.66
6 ADDHYD 4 139   5 6 7
6 RUNOFF 1 142       4 .25        83.        1.39
6 REACH  3 141   4   5 2100.      .08        1.66
6 RUNOFF 1 141       6 .188       87.        .53
6 ADDHYD 4 141   5 6 4
6 REACH  3 140   4   5 1320.      .08        1.66
6 RUNOFF 1 140       6 .125       86.        .44
6 ADDHYD 4 140   5 6 4
6 RUNOFF 1 137       6 .078       79.        .49
6 ADDHYD 4 140   4 6 5
6 REACH  3 139   5   6 2800.      .05        1.66
6 ADDHYD 4 139   6 7 4
6 RUNOFF 1 136       5 .066       95.        .167
6 REACH  3 138   5   6 3000.      .17        1.66
6 RUNOFF 1 138       5 .203       84.        .24
6 ADDHYD 4 138   5 6 7
6 REACH  3 139   7   6 2000.      .05        1.66
6 ADDHYD 4 139   4 6 7
6 RUNOFF 1 139       5 .188       87.        .43
6 ADDHYD 4 139   7 5 4
6 RUNOFF 1 129       5 .108       82.        .167
6 RUNOFF 1 130       6 .031       91.        .167
6 ADDHYD 4 129   5 6 7
6 REACH  3 127   7   6 2500.      .08        1.66
6 RUNOFF 1 128       5 .036       80.        .167
6 REACH  3 127   5   7 2300.      .08        1.66
6 ADDHYD 4 127   7 6 5
6 RUNOFF 1 127       7 .159       82.        .21
6 ADDHYD 4 127   5 7 6
6 RUNOFF 1 132       5 .145       88.        .27
6 REACH  3 131   5   7 2000.      .17        1.66
6 ADDHYD 4 131   6 7 5
6 RUNOFF 1 131       6 .119       86.        .27
6 ADDHYD 4 131   5 6 7
6 REACH  3 126   7   6 1500.      .11        1.66
6 RUNOFF 1 126       5 .158       95.        .28
6 ADDHYD 4 126   5 6 7
6 REACH  3 134   7   6 1500.      .13        1.66
6 RUNOFF 1 135       7 .042       95.        .167
6 REACH  3 134   7   5 3200.      .13        1.66
6 ADDHYD 4 134   5 6 7
6 RUNOFF 1 134       6 .197       85.        .31
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
6 ADDHYD 4 134   6 7 5
6 RUNOFF 1 125       7 .117        95.         .167
6 ADDHYD 4 125   7 5 6
6 REACH  3 124   6   7 2500.       .09         1.66
6 RUNOFF 1 124       6 .219        84.         .25
6 ADDHYD 4 124   6 7 5
6 REACH  3 124   4   7 900.        .96         1.51
6 ADDHYD 4 124   5 7 6
6 RUNOFF 1 103       5 .081        84.         .26
6 ADDHYD 4 124   5 6 7
6 REACH  3 104   7   6 1320.       .96         1.51
6 ADDHYD 4 104   3 6 4
6 REACH  3 107   4   5 1000.       .85         1.53
6 ADDHYD 4 107   5 1 7
6 RUNOFF 1 123       6 .213        95.         .25
6 ADDHYD 4 107   6 7 5
6 REACH  3 108   5   3 1700.       .85         1.53
6 RUNOFF 1 108       5 .025        83.         .28
6 ADDHYD 4 108   5 3 1
6 RUNOFF 1 049       5 .086        95.         .19
6 REACH  3 048   5   6 1320.       .04         1.66
6 RUNOFF 1 020       5 .064        95.         .17
6 REACH  3 048   5   7 2640.       .04         1.66
6 ADDHYD 4 048   6 7 5
6 RUNOFF 1 048       6 .125        82.         .6
6 ADDHYD 4 048   5 6 7
6 REACH  3 056   7   6 1866.       .12         1.66
6 RUNOFF 1 056       5 .063        82.         .25
6 ADDHYD 4 056   5 6 7
6 REACH  3 057   7   6 1320.       .76         1.58
6 RUNOFF 1 057       5 .063        82.         .25
6 ADDHYD 4 057   5 6 7
6 RUNOFF 1 043       5 .047        90.         .17
6 RUNOFF 1 021       6 .189        87.         .58
6 ADDHYD 4 021   5 6 4
6 REACH  3 046   4   5 2640.       3.10        1.67
6 RUNOFF 1 047       3 .125        82.         .31
6 REACH  3 046   3   4 1320.       .51         1.54
6 RUNOFF 1 046       6 .125        82.         .29
6 ADDHYD 4 046   4 6 3
6 ADDHYD 4 046   3 5 6
6 REACH  3 057   6   5 1320.       1.86        1.67
6 ADDHYD 4 057   5 7 6
6 REACH  3 059   6   4 1320.       .74         1.58
6 RUNOFF 1 045       5 .125        90.         .51
6 REACH  3 059   5   6 1400.       .11         1.66
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
6 ADDHYD 4 059   4 6 7
6 RUNOFF 1 059       5 .063        82.          .25
6 ADDHYD 4 059   5 7 4
6 DIVERT 6 060   4 7 6 222.                     65.          1 1 1 1
6 RESVOR 2    59 6   7 1393.                                  1 1 1 1
6 REACH  3 066   7   6 660.        5.1          1.25
6 RUNOFF 1 066       5 .063        84.          .46
6 ADDHYD 4 066   5 6 7
6 REACH  3 067   7   6 1320.       5.1          1.25
6 RUNOFF 1 067       5 .063        88.          .25
6 ADDHYD 4 067   5 6 7
6 RUNOFF 1 044       5 .125        87.          .3
6 REACH  3 067   5   6 1320.       .25          1.54
6 ADDHYD 4 067   6 7 4
6 REACH  3 069   4   6 1320.       5.1          1.25
6 RUNOFF 1 069       5 .063        81.          .62
6 ADDHYD 4 069   5 6 4
6 RUNOFF 1 023       6 .091        95.          .23
6 REACH  3 040   6   5 2650.       .08          1.66
6 RUNOFF 1 038       7 .125        79.          .44
6 REACH  3 040   7   6 1800.       .08          1.66
6 ADDHYD 4 040   5 6 7
6 RUNOFF 1 040       5 .094        82.          .51
6 ADDHYD 4 040   5 7 6
6 REACH  3 082   6   5 1400.       .1           1.66
6 RUNOFF 1 082       6 .063        84.          .27
6 ADDHYD 4 082   5 6 7
6 RUNOFF 1 039       5 .125        85.          .53
6 REACH  3 082   5   6 1867.       .1           1.66
6 ADDHYD 4 082   6 7 5
6 REACH  3 081   5   6 1320.       .22          1.54
6 RUNOFF 1 081       5 .063        77.          .52
6 ADDHYD 4 081   5 6 3
6 RUNOFF 1 022       5 .153        83.          .47
6 REACH  3 041   5   6 3100.       .24          1.66
6 RUNOFF 1 041       5 .172        84.          .38
6 ADDHYD 4 041   5 6 7
6 RUNOFF 1 042       5 .078        83.          .22
6 ADDHYD 4 042   5 7 6
6 REACH  3 078   6   5 2500.       1.46         1.67
6 DIVERT 6 081   3 7 6 213.                     78.
6 REACH  3 078   6   3 1320.       .09          1.66
6 ADDHYD 4 078   5 3 6
6 RUNOFF 1 078       3 .063        86.          .27
6 ADDHYD 4 078   6 3 5
6 SAVMOV 5 081   7   3
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
6 REACH  3 077   5   6 1700.       .76         1.58
6 RUNOFF 1 077       5 .063        77.         .38
6 ADDHYD 4 077   5 6 7
6 DIVERT 6 075   4 5 6 80.                     69.
6 ADDHYD 4 069   6 7 2                                     1 1 1 1
6 RESVOR 2    69 2   4 1372.0                              1 1 1 1
6 ADDHYD 4 075   4 5 6
6 REACH  3 076   6   4 1320.       4.39        1.25
6 RUNOFF 1 080       5 .063        82.         .45
6 REACH  3 079   5   6 1320.       .23         1.54
6 RUNOFF 1 079       5 .063        88.         .25
6 ADDHYD 4 079   5 6 7
6 REACH  3 076   7   6 1320.       .23         1.54
6 RUNOFF 1 076       5 .063        86.         .25
6 ADDHYD 4 076   5 6 7
6 REACH  3 075   7   6 1320.       .23         1.54
6 ADDHYD 4 075   4 6 5
6 RUNOFF 1 075       6 .063        95.         .52
6 ADDHYD 4 075   5 6 7
6 REACH  3 112   7   4 1320.       4.39        1.25
6 REACH  3 109   3   7 2640.       7.66        1.25
6 RUNOFF 1 109       5 .063        84.         .29
6 ADDHYD 4 109   5 7 6
6 ADDHYD 4 108   1 6 7
6 REACH  3 110   7   6 1320.       .85         1.53
6 RUNOFF 1 110       5 .073        78.         .56
6 ADDHYD 4 110   5 6 7
6 RUNOFF 1 122       6 .355        85.         .29
6 ADDHYD 4 110   6 7 5
6 REACH  3 111   5   6 1320.       1.07        1.53
6 RUNOFF 1 111       5 .07         77.         .56
6 ADDHYD 4 111   5 6 7
6 REACH  3 112   7   6 1320.       .04         1.63
6 RUNOFF 1 112       5 .061        77.         .46
6 ADDHYD 4 112   5 6 7
6 RUNOFF 1 121       5 .25         95.         .17
6 ADDHYD 4 112   5 7 1
6 ADDHYD 4 112   1 4 3
6 REACH  3 113   3   5 1320.       .04         1.63
6 RUNOFF 1 113       6 .053        91.         .52
6 ADDHYD 4 113   5 6 7
6 RUNOFF 1 120       5 .231        87.         .30
6 ADDHYD 4 113   5 7 1
6 RUNOFF 1 058       5 .063        84.         .25
6 REACH  3 060   5   6 1320.       .25         1.54
6 RUNOFF 1 060       5 .063        81.         .49
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**********************80-80 LIST OF INPUT DATA (CONTINUED)**********************

 6 ADDHYD 4 060   5 6 7
 6 REACH  3 065   7   6 1320.       .28         1.54
 6 RUNOFF 1 065       5 .047        82.         .49
 6 ADDHYD 4 065   5 6 7
 6 REACH  3 068   7   6 1320.       .25         1.25
 6 RUNOFF 1 068       5 .063        85.         .25
 6 ADDHYD 4 068   5 6 7
 6 REACH  3 070   7   6 1320.       .18         1.54
 6 RUNOFF 1 070       5 .063        86.         .25
 6 ADDHYD 4 070   5 6 7
 6 REACH  3 074   7   6 1320.       .09         1.66
 6 RUNOFF 1 074       5 .063        90.         .24
 6 ADDHYD 4 074   5 6 7
 6 REACH  3 113   7   6 1320.       5.93        1.25
 6 ADDHYD 4 113   1 6 3
 6 REACH  3 114   3   1 3000.       .04         1.63
 6 RUNOFF 1 064       5 .25         82.         .33
 6 REACH  3 072   5   6 2640.       .18         1.54
 6 RUNOFF 1 072       5 .125        83.         .49
 6 ADDHYD 4 072   5 6 7
 6 REACH  3 114   7   6 2000.       .05         1.66
 6 RUNOFF 1 115       5 .094        82.         .45
 6 ADDHYD 4 114   5 6 7
 6 RUNOFF 1 071       5 .125        83.         .49
 6 REACH  3 114   5   6 2200.       .05         1.66
 6 ADDHYD 4 114   6 7 5
 6 RUNOFF 1 114       6 .128        85.         1.19
 6 ADDHYD 4 114   5 6 7
 6 ADDHYD 4 114   1 7 5
 6 RUNOFF 1 119       6 .231        84.         1.05
 6 ADDHYD 4 114   5 6 7
 6 REACH  3 118   7   6 4000.       .05         1.66
 6 RUNOFF 1 118       5 .231        81.         1.59
 6 ADDHYD 4 118   5 6 7
   ENDATA
 7 INCREM 6             .08
 7 COMPUT 7 001   118               4.04        24.         1 2  01  01
   ENDCMP 1
   ENDJOB 2

*******************************END OF 80-80 LIST*******************************


EXECUTIVE CONTROL OPERATION INCREM     MAIN TIME INCREMENT =   .08 HOURS                                    RECORD ID


EXECUTIVE CONTROL OPERATION COMPUT     FROM XSECTION   1  TO XSECTION 118                                   RECORD ID
        STARTING TIME =   .00    RAIN DEPTH =  4.04    RAIN DURATION= 24.00    RAIN TABLE NO.= 1    ANT. MOIST. COND= 2
        ALTERNATE NO.= 1         STORM NO.= 1    MAIN TIME INCREMENT =   .08 HOURS

    ***  WARNING  REACH   8 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***


OPERATION ADDHYD   CROSS SECTION   8
```

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.84	1315.07	1497.58
16.85	25.02	1494.61
18.25	25.90	1494.63
19.38	24.75	1494.61
20.91	24.56	1494.61
21.89	24.80	1494.61
22.88	24.86	1494.61

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .08 HOURS DRAINAGE AREA = 1.18 SQ.MI.

3.20	DISCHG	.00	.00	.00	.00	.00	.03	.07	.13	.20	.29
3.20	ELEV	1494.00	1494.00	1494.00	1494.00	1494.00	1494.00	1494.00	1494.01	1494.01	1494.01
4.00	DISCHG	.38	.46	.54	.62	.70	.77	.87	.98	1.11	1.24
4.00	ELEV	1494.02	1494.02	1494.02	1494.03	1494.03	1494.03	1494.04	1494.04	1494.04	1494.05
4.80	DISCHG	1.37	1.50	1.61	1.69	1.75	1.80	1.84	1.88	1.93	1.97
4.80	ELEV	1494.06	1494.06	1494.07	1494.07	1494.07	1494.07	1494.07	1494.08	1494.08	1494.08
5.60	DISCHG	2.03	2.08	2.14	2.20	2.28	2.38	2.52	2.67	2.83	2.98
5.60	ELEV	1494.08	1494.08	1494.09	1494.09	1494.09	1494.10	1494.10	1494.11	1494.11	1494.12
6.40	DISCHG	3.11	3.20	3.24	3.25	3.24	3.23	3.24	3.28	3.38	3.51
6.40	ELEV	1494.13	1494.13	1494.13	1494.13	1494.13	1494.13	1494.13	1494.13	1494.14	1494.14
7.20	DISCHG	3.66	3.82	3.96	4.06	4.10	4.10	4.06	4.03	3.99	4.00
7.20	ELEV	1494.15	1494.15	1494.16	1494.16	1494.17	1494.17	1494.16	1494.16	1494.16	1494.16
8.00	DISCHG	4.06	4.18	4.33	4.49	4.64	4.77	4.83	4.83	4.78	4.72
8.00	ELEV	1494.16	1494.17	1494.18	1494.18	1494.19	1494.19	1494.20	1494.20	1494.19	1494.19
8.80	DISCHG	4.66	4.63	4.65	4.74	4.88	5.05	5.21	5.41	5.89	6.83
8.80	ELEV	1494.19	1494.19	1494.19	1494.19	1494.20	1494.20	1494.21	1494.22	1494.24	1494.28
9.60	DISCHG	8.14	9.60	11.04	12.35	13.51	14.56	15.52	16.38	17.15	17.82
9.60	ELEV	1494.31	1494.34	1494.37	1494.39	1494.41	1494.43	1494.45	1494.46	1494.48	1494.49
10.40	DISCHG	18.38	18.81	19.11	19.32	19.49	19.65	19.92	20.65	21.94	23.63
10.40	ELEV	1494.50	1494.51	1494.51	1494.52	1494.52	1494.52	1494.53	1494.54	1494.56	1494.60
11.20	DISCHG	25.47	27.27	29.05	31.25	34.35	38.67	44.98	55.09	73.36	115.11
11.20	ELEV	1494.62	1494.64	1494.66	1494.69	1494.73	1494.79	1494.86	1494.97	1495.15	1495.49
12.00	DISCHG	196.26	314.63	455.82	604.57	749.45	884.02	1005.25	1111.21	1199.91	1267.22
12.00	ELEV	1496.45	1496.72	1496.90	1497.07	1497.20	1497.31	1497.39	1497.45	1497.51	1497.55
12.80	DISCHG	1307.25	1309.04	1255.66	1148.79	1009.48	861.67	723.01	602.29	501.01	417.70

12.80	ELEV	1497.58	1497.58	1497.54	1497.48	1497.39	1497.29	1497.17	1497.07	1496.96	1496.85
13.60	DISCHG	350.12	295.99	252.90	218.63	190.89	167.84	148.47	132.31	119.05	108.40
13.60	ELEV	1496.76	1496.68	1496.58	1496.50	1496.44	1496.17	1495.71	1495.60	1495.51	1495.43
14.40	DISCHG	100.03	93.61	88.78	85.14	82.36	80.21	78.45	76.91	75.45	74.01
14.40	ELEV	1495.37	1495.32	1495.28	1495.25	1495.23	1495.21	1495.20	1495.18	1495.17	1495.15
15.20	DISCHG	72.46	70.64	68.21	64.64	59.77	54.12	48.38	43.09	38.54	34.79
15.20	ELEV	1495.14	1495.12	1495.10	1495.06	1495.02	1494.96	1494.91	1494.84	1494.78	1494.74
16.00	DISCHG	31.77	29.40	27.57	26.20	25.22	24.62	24.37	24.40	24.58	24.80
16.00	ELEV	1494.70	1494.67	1494.65	1494.63	1494.62	1494.61	1494.61	1494.61	1494.61	1494.61
16.80	DISCHG	24.97	25.01	24.84	24.49	24.04	23.60	23.24	23.02	23.03	23.26
16.80	ELEV	1494.61	1494.61	1494.61	1494.61	1494.60	1494.59	1494.59	1494.58	1494.58	1494.59
17.60	DISCHG	23.64	24.08	24.52	24.91	25.24	25.50	25.71	25.84	25.90	25.86
17.60	ELEV	1494.60	1494.60	1494.61	1494.61	1494.62	1494.62	1494.62	1494.62	1494.63	1494.62
18.40	DISCHG	25.68	25.32	24.82	24.27	23.77	23.39	23.20	23.24	23.49	23.87
18.40	ELEV	1494.62	1494.62	1494.61	1494.60	1494.60	1494.59	1494.59	1494.59	1494.59	1494.60
19.20	DISCHG	24.25	24.57	24.74	24.70	24.44	24.04	23.59	23.14	22.75	22.43
19.20	ELEV	1494.60	1494.61	1494.61	1494.61	1494.61	1494.60	1494.59	1494.59	1494.58	1494.57
20.00	DISCHG	22.17	21.97	21.84	21.79	21.84	22.03	22.41	22.92	23.47	23.98
20.00	ELEV	1494.57	1494.56	1494.56	1494.56	1494.56	1494.57	1494.57	1494.58	1494.59	1494.60
20.80	DISCHG	24.36	24.55	24.51	24.25	23.88	23.50	23.20	23.04	23.10	23.37
20.80	ELEV	1494.61	1494.61	1494.61	1494.60	1494.60	1494.59	1494.59	1494.58	1494.59	1494.59
21.60	DISCHG	23.76	24.18	24.54	24.76	24.78	24.57	24.21	23.80	23.44	23.19
21.60	ELEV	1494.60	1494.60	1494.61	1494.61	1494.61	1494.61	1494.60	1494.60	1494.59	1494.59
22.40	DISCHG	23.13	23.29	23.63	24.05	24.44	24.74	24.86	24.75	24.45	24.02
22.40	ELEV	1494.59	1494.59	1494.60	1494.60	1494.61	1494.61	1494.61	1494.61	1494.61	1494.60
23.20	DISCHG	23.57	23.14	22.77	22.47	22.23	22.05	21.94	21.92	22.01	22.27
23.20	ELEV	1494.59	1494.59	1494.58	1494.57	1494.57	1494.57	1494.56	1494.56	1494.57	1494.57

RUNOFF VOLUME ABOVE BASEFLOW = 2.50 WATERSHED INCHES, 1897.70 CFS-HRS, 156.83 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
.00	6.00	1491.00
13.47	469.23	1497.28
23.08	24.24	1491.51

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .08 HOURS DRAINAGE AREA = 1.18 SQ.MI.

.00	DISCHG	6.00	4.30	3.08	2.21	1.58	1.13	.81	.58	.42	.30
.00	ELEV	1491.00	1490.94	1490.90	1490.87	1490.85	1490.84	1490.83	1490.82	1490.81	1490.81
.80	DISCHG	.21	.15	.11	.08	.06	.04	.03	.02	.01	.01
.80	ELEV	1490.81	1490.81	1490.80	1490.80	1490.80	1490.80	1490.80	1490.80	1490.80	1490.80
1.60	DISCHG	.01	.01	.00	.00	.00	.00	.00	.00	.00	.00
1.60	ELEV	1490.80	1490.80	1490.80	1490.80	1490.80	1490.80	1490.80	1490.80	1490.80	1490.80
2.40	DISCHG	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2.40	ELEV	1490.80	1490.80	1490.80	1490.80	1490.80	1490.80	1490.80	1490.80	1490.80	1490.80
3.20	DISCHG	.00	.00	.00	.00	.00	.01	.02	.04	.08	.12
3.20	ELEV	1490.80	1490.80	1490.80	1490.80	1490.80	1490.80	1490.80	1490.80	1490.80	1490.80

4.00	DISCHG	.18	.25	.32	.40	.47	.55	.62	.71	.80	.91
4.00	ELEV	1490.81	1490.81	1490.81	1490.81	1490.82	1490.82	1490.82	1490.82	1490.83	1490.83
4.80	DISCHG	1.02	1.14	1.26	1.37	1.47	1.55	1.63	1.69	1.75	1.81
4.80	ELEV	1490.83	1490.84	1490.84	1490.85	1490.85	1490.85	1490.85	1490.86	1490.86	1490.86
5.60	DISCHG	1.86	1.92	1.97	2.03	2.09	2.16	2.24	2.34	2.46	2.58
5.60	ELEV	1490.86	1490.86	1490.87	1490.87	1490.87	1490.87	1490.87	1490.88	1490.88	1490.89
6.40	DISCHG	2.71	2.84	2.95	3.03	3.09	3.13	3.16	3.19	3.23	3.29
6.40	ELEV	1490.89	1490.89	1490.90	1490.90	1490.90	1490.90	1490.91	1490.91	1490.91	1490.91
7.20	DISCHG	3.37	3.48	3.59	3.71	3.82	3.90	3.95	3.98	3.99	3.99
7.20	ELEV	1490.91	1490.92	1490.92	1490.92	1490.93	1490.93	1490.93	1490.93	1490.93	1490.93
8.00	DISCHG	4.00	4.03	4.10	4.18	4.29	4.41	4.52	4.61	4.67	4.69
8.00	ELEV	1490.93	1490.93	1490.94	1490.94	1490.94	1490.95	1490.95	1490.95	1490.96	1490.96
8.80	DISCHG	4.69	4.68	4.67	4.67	4.71	4.78	4.88	5.00	5.19	5.52
8.80	ELEV	1490.96	1490.96	1490.96	1490.96	1490.96	1490.96	1490.96	1490.97	1490.97	1490.98
9.60	DISCHG	6.08	6.87	7.85	8.94	10.07	11.20	12.15	12.69	13.28	13.89
9.60	ELEV	1491.00	1491.03	1491.06	1491.10	1491.14	1491.17	1491.20	1491.22	1491.23	1491.25
10.40	DISCHG	14.50	15.09	15.65	16.16	16.63	17.05	17.45	17.86	18.35	18.99
10.40	ELEV	1491.26	1491.28	1491.29	1491.30	1491.32	1491.33	1491.34	1491.35	1491.36	1491.37
11.20	DISCHG	19.80	20.74	21.82	23.02	24.27	25.40	26.90	29.03	32.26	37.94
11.20	ELEV	1491.39	1491.42	1491.45	1491.48	1491.51	1491.53	1491.57	1491.63	1491.71	1491.85
12.00	DISCHG	47.80	63.19	84.17	108.58	137.05	171.33	206.19	238.68	270.06	318.14
12.00	ELEV	1492.05	1492.32	1492.66	1493.02	1493.40	1493.76	1494.12	1494.50	1494.88	1495.25
12.80	DISCHG	362.88	391.74	415.22	431.30	444.67	456.88	463.87	467.54	469.09	468.91
12.80	ELEV	1495.63	1495.99	1496.33	1496.63	1496.87	1497.05	1497.18	1497.25	1497.28	1497.28
13.60	DISCHG	467.35	464.68	461.17	455.98	449.73	443.00	436.90	431.29	425.52	419.50
13.60	ELEV	1497.25	1497.19	1497.12	1497.04	1496.95	1496.85	1496.74	1496.63	1496.51	1496.39
14.40	DISCHG	411.52	403.56	395.09	386.28	377.63	368.87	357.72	346.93	334.71	319.56
14.40	ELEV	1496.27	1496.15	1496.03	1495.92	1495.80	1495.69	1495.58	1495.47	1495.36	1495.26
15.20	DISCHG	305.21	291.59	279.25	272.40	265.64	258.92	251.78	244.35	237.01	229.78
15.20	ELEV	1495.17	1495.08	1494.99	1494.91	1494.82	1494.74	1494.65	1494.56	1494.48	1494.39
16.00	DISCHG	222.69	214.98	207.42	200.09	192.67	184.69	177.07	169.80	162.89	156.31
16.00	ELEV	1494.31	1494.22	1494.14	1494.06	1493.98	1493.89	1493.82	1493.74	1493.67	1493.60
16.80	DISCHG	149.38	142.79	136.54	130.61	125.21	120.26	115.54	111.03	106.73	102.65
16.80	ELEV	1493.53	1493.46	1493.39	1493.33	1493.26	1493.19	1493.12	1493.06	1493.00	1492.94
17.60	DISCHG	98.54	94.16	90.07	86.24	82.65	79.20	75.61	72.27	69.16	66.26
17.60	ELEV	1492.88	1492.81	1492.75	1492.69	1492.64	1492.59	1492.53	1492.47	1492.42	1492.37
18.40	DISCHG	63.55	61.00	58.60	56.32	53.74	51.28	48.99	46.88	44.95	43.21
18.40	ELEV	1492.33	1492.28	1492.24	1492.21	1492.16	1492.11	1492.07	1492.03	1491.99	1491.96
19.20	DISCHG	41.65	40.24	38.84	37.54	36.35	35.24	34.19	33.20	32.26	31.37
19.20	ELEV	1491.93	1491.90	1491.87	1491.84	1491.81	1491.78	1491.75	1491.73	1491.71	1491.68
20.00	DISCHG	30.54	29.76	29.04	28.38	27.77	27.24	26.78	26.40	26.11	25.89
20.00	ELEV	1491.66	1491.64	1491.63	1491.61	1491.59	1491.58	1491.57	1491.56	1491.55	1491.55
20.80	DISCHG	25.73	25.61	25.51	25.41	25.29	25.14	24.98	24.81	24.65	24.52
20.80	ELEV	1491.54	1491.54	1491.54	1491.54	1491.53	1491.53	1491.52	1491.52	1491.52	1491.51
21.60	DISCHG	24.43	24.39	24.38	24.41	24.44	24.46	24.46	24.42	24.34	24.25
21.60	ELEV	1491.51	1491.51	1491.51	1491.51	1491.51	1491.51	1491.51	1491.51	1491.51	1491.51
22.40	DISCHG	24.15	24.06	24.01	23.99	24.02	24.07	24.14	24.20	24.23	24.23
22.40	ELEV	1491.50	1491.50	1491.50	1491.50	1491.50	1491.50	1491.50	1491.50	1491.51	1491.51
23.20	DISCHG	24.19	24.12	24.01	23.82	23.60	23.39	23.19	23.01	22.86	22.76

23.20	ELEV	1491.50	1491.50	1491.50	1491.50	1491.49	1491.48	1491.48	1491.48	1491.47	1491.47

RUNOFF VOLUME ABOVE BASEFLOW = 2.49 WATERSHED INCHES, 1890.79 CFS-HRS, 156.25 ACRE-FEET; BASEFLOW = .00 CFS

*** WARNING REACH 13 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 14 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 14 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 15 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 37 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 36 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 37 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

OPERATION DIVERT CROSS SECTION 144

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)	
11.84	206.00*	(DIVERT)	* FIRST POINT OF FLAT PEAK
21.43	74.07	(DIVERT)	
22.58	72.46	(DIVERT)	

OUTPUT #1 HYDROGRAPH

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .08 HOURS DRAINAGE AREA = .00 SQ.MI.

1.60	DISCHG	.00	.01	.01	.01	.01	.01	.01	.01	.01	.01
2.40	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
3.20	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
4.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
4.80	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
5.60	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
6.40	DISCHG	.01	.01	.01	.01	.01	.02	.02	.02	.02	.02
7.20	DISCHG	.02	.02	.02	.02	.02	.02	.02	.03	.03	.03
8.00	DISCHG	.03	.03	.03	.03	.03	.03	.03	.04	.04	.04
8.80	DISCHG	.04	.04	.04	.04	.04	.05	.06	.09	.15	.24
9.60	DISCHG	.35	.48	.64	.80	.99	1.22	1.48	1.76	2.06	2.36
10.40	DISCHG	2.67	2.99	3.34	3.78	4.39	5.18	6.09	7.04	15.23	24.78
11.20	DISCHG	30.93	35.91	40.54	45.10	51.32	68.71	113.03	194.22	206.00	206.00
12.00	DISCHG	206.00	206.00	206.00	206.00	206.00	206.00	206.00	206.00	206.00	206.00
12.80	DISCHG	206.00	206.00	206.00	206.00	206.00	206.00	206.00	206.00	206.00	206.00
13.60	DISCHG	206.00	206.00	206.00	206.00	206.00	206.00	206.00	206.00	206.00	206.00
14.40	DISCHG	206.00	206.00	206.00	206.00	206.00	206.00	206.00	206.00	206.00	206.00
15.20	DISCHG	206.00	206.00	206.00	206.00	206.00	206.00	206.00	206.00	206.00	206.00
16.00	DISCHG	206.00	206.00	206.00	206.00	206.00	206.00	206.00	206.00	206.00	206.00
16.80	DISCHG	206.00	206.00	206.00	206.00	206.00	206.00	206.00	206.00	206.00	202.93
17.60	DISCHG	196.78	190.95	185.42	180.19	175.21	170.43	165.73	160.97	156.13	151.32
18.40	DISCHG	146.62	142.06	137.71	133.71	130.07	126.71	124.54	122.11	119.39	116.48

19.20	DISCHG	113.44	110.34	107.32	104.43	101.70	99.13	96.67	94.32	92.06	89.91
20.00	DISCHG	87.89	86.07	84.57	83.40	82.47	81.68	80.96	80.25	79.45	78.52
20.80	DISCHG	77.54	76.59	75.72	74.97	74.43	74.15	74.07	74.06	74.07	74.05
21.60	DISCHG	73.93	73.63	73.17	72.67	72.20	71.79	71.51	71.45	71.59	71.84
22.40	DISCHG	72.10	72.32	72.45	72.42	72.18	71.83	71.46	71.13	70.83	70.54
23.20	DISCHG	70.23	69.90	69.56	69.22	68.90	68.72	68.78	69.04	69.40	69.77

RUNOFF VOLUME ABOVE BASEFLOW = 2.32 WATERSHED INCHES, 1857.65 CFS-HRS, 153.52 ACRE-FEET; BASEFLOW = .00 CFS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.73	1753.24	(DIVERT)

OUTPUT #2 DIVERTED HYDROGRAPH, CROSS SECTION = 143

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .08 HOURS DRAINAGE AREA = 3.52 SQ.MI.

11.20	DISCHG	.00	.00	.00	.00	.00	.00	.00	.00	106.22	259.08
12.00	DISCHG	411.53	569.12	742.62	913.14	1093.18	1280.88	1462.44	1623.91	1725.80	1753.07
12.80	DISCHG	1733.64	1694.66	1645.66	1593.18	1532.61	1460.62	1379.24	1292.11	1203.06	1115.56
13.60	DISCHG	1031.46	951.70	877.74	811.00	751.84	699.91	654.56	614.87	579.91	548.95
14.40	DISCHG	521.47	497.07	475.32	455.72	438.07	422.72	407.55	393.40	379.75	365.21
15.20	DISCHG	348.86	331.31	313.27	295.02	276.65	258.14	239.66	221.53	204.06	187.48
16.00	DISCHG	171.89	157.38	144.07	132.05	121.89	111.49	101.57	92.10	82.90	73.81
16.80	DISCHG	64.87	56.14	47.65	39.43	31.55	24.08	16.93	10.03	3.36	.00

RUNOFF VOLUME ABOVE BASEFLOW = 1.50 WATERSHED INCHES, 3409.89 CFS-HRS, 281.79 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 43

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.86	800.90	1439.34

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .08 HOURS DRAINAGE AREA = 3.52 SQ.MI.

11.20	DISCHG	.00	.00	.00	.00	.00	.00	.00	.00	9.39	30.22
11.20	ELEV	1427.50	1427.50	1427.50	1427.50	1427.50	1427.50	1427.50	1427.50	1428.01	1428.60
12.00	DISCHG	66.89	129.41	212.14	308.91	351.71	398.50	453.01	503.19	543.38	584.41
12.00	ELEV	1429.63	1430.42	1431.12	1431.95	1432.43	1432.98	1433.61	1434.24	1434.81	1435.40
12.80	DISCHG	624.17	653.38	680.00	704.60	727.07	745.54	759.10	770.70	780.29	787.91
12.80	ELEV	1435.96	1436.47	1436.94	1437.37	1437.77	1438.12	1438.42	1438.67	1438.89	1439.05
13.60	DISCHG	793.65	797.63	799.99	800.88	800.49	798.99	796.54	793.29	789.35	784.82
13.60	ELEV	1439.18	1439.27	1439.32	1439.34	1439.33	1439.30	1439.24	1439.17	1439.08	1438.99
14.40	DISCHG	779.80	774.36	768.57	762.48	756.13	749.58	742.86	734.75	725.64	716.39
14.40	ELEV	1438.87	1438.76	1438.63	1438.49	1438.35	1438.21	1438.06	1437.91	1437.75	1437.58
15.20	DISCHG	706.98	697.37	687.55	677.51	667.26	656.79	646.11	635.23	623.29	608.62
15.20	ELEV	1437.42	1437.25	1437.07	1436.89	1436.71	1436.53	1436.34	1436.15	1435.95	1435.74
16.00	DISCHG	593.91	579.18	564.49	549.86	535.35	520.99	506.77	492.71	474.26	452.09
16.00	ELEV	1435.53	1435.32	1435.11	1434.91	1434.70	1434.50	1434.29	1434.10	1433.86	1433.60
16.80	DISCHG	430.65	409.92	389.87	370.47	351.70	333.56	316.03	270.34	228.91	193.20

16.80	ELEV	1433.35	1433.11	1432.88	1432.65	1432.43	1432.22	1432.01	1431.62	1431.27	1430.96
17.60	DISCHG	162.84	137.25	115.68	97.50	82.18	71.79	63.16	55.56	48.88	43.01
17.60	ELEV	1430.71	1430.49	1430.30	1430.15	1430.02	1429.77	1429.53	1429.31	1429.12	1428.96
18.40	DISCHG	37.84	33.29	29.29	25.77	22.67	19.94	17.55	15.44	13.58	11.95
18.40	ELEV	1428.81	1428.68	1428.57	1428.47	1428.39	1428.31	1428.24	1428.18	1428.13	1428.08
19.20	DISCHG	10.51	9.25	7.70	6.31	5.17	4.24	3.48	2.85	2.33	1.91
19.20	ELEV	1428.04	1428.01	1427.93	1427.85	1427.79	1427.74	1427.69	1427.66	1427.63	1427.61
20.00	DISCHG	1.57	1.28	1.05	.86	.71	.58	.48	.39	.32	.26
20.00	ELEV	1427.59	1427.57	1427.56	1427.55	1427.54	1427.53	1427.53	1427.52	1427.52	1427.51
20.80	DISCHG	.21	.18	.14	.12	.10	.08	.06	.05	.04	.04
20.80	ELEV	1427.51	1427.51	1427.51	1427.51	1427.51	1427.50	1427.50	1427.50	1427.50	1427.50
21.60	DISCHG	.03	.02	.02	.02	.01	.01	.01	.01	.01	.00
21.60	ELEV	1427.50	1427.50	1427.50	1427.50	1427.50	1427.50	1427.50	1427.50	1427.50	1427.50

RUNOFF VOLUME ABOVE BASEFLOW = 1.50 WATERSHED INCHES, 3410.47 CFS-HRS, 281.84 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 44

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
17.26	315.89	1431.99

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .08 HOURS DRAINAGE AREA = 3.52 SQ.MI.

11.20	DISCHG	.00	.00	.00	.00	.00	.00	.00	.00	.44	2.25
11.20	ELEV	1417.00	1417.00	1417.00	1417.00	1417.00	1417.00	1417.00	1417.00	1417.11	1417.56
12.00	DISCHG	5.96	12.54	23.82	40.70	57.01	66.29	76.78	88.49	101.18	114.68
12.00	ELEV	1418.08	1418.34	1418.79	1419.47	1420.09	1420.37	1420.68	1421.03	1421.41	1421.81
12.80	DISCHG	124.84	132.07	139.59	147.37	155.36	163.54	171.82	178.74	184.82	190.92
12.80	ELEV	1422.14	1422.41	1422.69	1422.98	1423.27	1423.58	1423.88	1424.17	1424.44	1424.71
13.60	DISCHG	197.03	203.13	209.20	215.22	220.90	225.42	229.88	234.29	238.63	242.90
13.60	ELEV	1424.98	1425.25	1425.52	1425.79	1426.05	1426.30	1426.55	1426.79	1427.03	1427.27
14.40	DISCHG	247.11	251.24	255.30	258.71	261.93	265.10	268.20	271.23	274.19	277.07
14.40	ELEV	1427.51	1427.74	1427.96	1428.17	1428.38	1428.59	1428.79	1428.98	1429.17	1429.36
15.20	DISCHG	279.87	282.59	285.23	287.71	289.94	292.10	294.18	296.19	298.12	299.96
15.20	ELEV	1429.54	1429.72	1429.89	1430.05	1430.20	1430.35	1430.50	1430.63	1430.77	1430.89
16.00	DISCHG	301.71	303.36	304.91	306.38	307.74	309.02	310.21	311.31	312.31	313.18
16.00	ELEV	1431.01	1431.13	1431.24	1431.34	1431.43	1431.52	1431.60	1431.68	1431.75	1431.81
16.80	DISCHG	313.92	314.54	315.03	315.41	315.68	315.83	315.88	315.75	315.37	314.76
16.80	ELEV	1431.86	1431.90	1431.93	1431.96	1431.98	1431.99	1431.99	1431.98	1431.96	1431.91
17.60	DISCHG	313.97	313.02	311.94	310.75	309.47	308.12	306.73	305.30	303.83	302.33
17.60	ELEV	1431.86	1431.79	1431.72	1431.64	1431.55	1431.46	1431.36	1431.26	1431.16	1431.06
18.40	DISCHG	300.82	299.28	297.73	296.16	294.58	293.00	291.41	289.82	288.22	286.58
18.40	ELEV	1430.95	1430.85	1430.74	1430.63	1430.52	1430.41	1430.30	1430.19	1430.08	1429.97
19.20	DISCHG	284.81	283.04	281.27	279.50	277.74	275.98	274.22	272.48	270.74	269.01
19.20	ELEV	1429.86	1429.74	1429.63	1429.52	1429.40	1429.29	1429.18	1429.06	1428.95	1428.84
20.00	DISCHG	267.28	265.57	263.87	262.17	260.49	258.81	257.15	255.39	253.40	251.43
20.00	ELEV	1428.73	1428.62	1428.51	1428.40	1428.29	1428.18	1428.07	1427.97	1427.86	1427.75
20.80	DISCHG	249.47	247.52	245.60	243.68	241.78	239.90	238.03	236.17	234.33	232.51
20.80	ELEV	1427.64	1427.53	1427.42	1427.32	1427.21	1427.11	1427.00	1426.90	1426.80	1426.69

21.60	DISCHG	230.69	228.90	227.11	225.34	223.58	221.84	220.11	217.90	215.68	213.49
21.60	ELEV	1426.59	1426.49	1426.40	1426.30	1426.20	1426.10	1426.01	1425.91	1425.81	1425.71
22.40	DISCHG	211.31	209.16	207.03	204.92	202.83	200.77	198.72	196.70	194.69	192.71
22.40	ELEV	1425.61	1425.52	1425.42	1425.33	1425.24	1425.15	1425.05	1424.96	1424.88	1424.79
23.20	DISCHG	190.75	188.81	186.88	184.98	183.09	181.23	179.38	177.56	175.75	173.56
23.20	ELEV	1424.70	1424.61	1424.53	1424.44	1424.36	1424.28	1424.19	1424.11	1424.03	1423.95

RUNOFF VOLUME ABOVE BASEFLOW = 1.27 WATERSHED INCHES, 2875.11 CFS-HRS, 237.60 ACRE-FEET; BASEFLOW = .00 CFS

*** WARNING REACH 85 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING - REACH 85 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 243.33 CFS, 46.63 % OF PEAK.

*** WARNING REACH 84 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING - REACH 84 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 244.68 CFS, 46.77 % OF PEAK.

*** WARNING REACH 84 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 105 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING - REACH 105 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 118.40 CFS, 38.58 % OF PEAK.

*** WARNING REACH 101 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 104 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING - REACH 104 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 124.20 CFS, 16.70 % OF PEAK.

*** WARNING REACH 83 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING - REACH 83 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 134.99 CFS, 43.31 % OF PEAK.

*** WARNING REACH 106 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING - REACH 106 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 136.36 CFS, 34.78 % OF PEAK.

*** WARNING REACH 107 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING - REACH 107 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 137.59 CFS, 30.02 % OF PEAK.

*** WARNING REACH 29 LENGTH FACTOR (K*) GREATER THAN 1.0, CONSIDER DIVIDING REACH LENGTH ***

*** WARNING REACH 33 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 32 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

OPERATION ADDHYD CROSS SECTION 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.87	510.47	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .08 HOURS DRAINAGE AREA = .68 SQ.MI.

10.40	DISCHG	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
11.20	DISCHG	.03	.06	.12	.20	.31	.54	1.12	2.47	5.11	23.15
12.00	DISCHG	52.63	89.96	134.02	183.44	236.69	292.16	347.95	400.90	447.04	482.87
12.80	DISCHG	504.91	510.19	498.80	474.07	440.38	401.49	360.26	318.71	278.98	242.64
13.60	DISCHG	210.72	183.43	160.19	140.04	122.39	106.89	93.33	81.55	71.38	62.63
14.40	DISCHG	55.11	48.70	43.26	38.65	34.73	31.36	28.42	25.82	23.48	21.27
15.20	DISCHG	19.08	16.82	14.36	11.65	8.79	5.90	4.48	4.02	3.62	3.29
16.00	DISCHG	3.03	2.83	2.67	2.56	2.48	2.44	2.42	2.43	2.44	2.45
16.80	DISCHG	2.46	2.45	2.42	2.38	2.34	2.30	2.28	2.27	2.28	2.31
17.60	DISCHG	2.35	2.39	2.43	2.46	2.50	2.52	2.54	2.55	2.55	2.53
18.40	DISCHG	2.50	2.46	2.41	2.37	2.33	2.30	2.30	2.32	2.34	2.38
19.20	DISCHG	2.41	2.43	2.43	2.42	2.39	2.35	2.31	2.27	2.23	2.20
20.00	DISCHG	2.18	2.16	2.16	2.16	2.17	2.20	2.25	2.30	2.35	2.39
20.80	DISCHG	2.41	2.42	2.40	2.37	2.34	2.31	2.29	2.29	2.31	2.34
21.60	DISCHG	2.38	2.41	2.43	2.44	2.43	2.41	2.37	2.34	2.31	2.30
22.40	DISCHG	2.31	2.33	2.37	2.40	2.43	2.45	2.45	2.43	2.40	2.36
23.20	DISCHG	2.32	2.28	2.24	2.22	2.20	2.18	2.18	2.18	2.20	2.24

RUNOFF VOLUME ABOVE BASEFLOW = 1.58 WATERSHED INCHES, 691.44 CFS-HRS, 57.14 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 33

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.99	108.55	1470.09

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .08 HOURS DRAINAGE AREA = .68 SQ.MI.

11.20	DISCHG	.00	.01	.01	.03	.05	.09	.16	.31	.65	1.94
11.20	ELEV	1462.00	1462.00	1462.00	1462.00	1462.00	1462.01	1462.02	1462.03	1462.06	1462.18
12.00	DISCHG	5.38	11.70	21.22	30.74	43.16	53.51	65.63	73.93	82.02	87.91
12.00	ELEV	1462.51	1463.11	1464.01	1464.42	1464.96	1465.40	1465.90	1466.33	1466.78	1467.21
12.80	DISCHG	91.59	95.24	97.67	99.98	102.07	103.43	104.61	105.61	106.43	107.09
12.80	ELEV	1467.62	1468.03	1468.38	1468.71	1469.01	1469.24	1469.44	1469.60	1469.74	1469.85
13.60	DISCHG	107.60	107.98	108.25	108.43	108.53	108.55	108.52	108.43	108.29	108.12
13.60	ELEV	1469.93	1470.00	1470.04	1470.07	1470.09	1470.09	1470.09	1470.07	1470.05	1470.02
14.40	DISCHG	107.91	107.67	107.41	107.12	106.82	106.51	106.18	105.85	105.50	105.15
14.40	ELEV	1469.98	1469.94	1469.90	1469.85	1469.80	1469.75	1469.70	1469.64	1469.58	1469.52
15.20	DISCHG	104.78	104.42	104.04	103.65	103.25	102.84	102.43	102.01	101.43	100.85
15.20	ELEV	1469.46	1469.40	1469.34	1469.27	1469.21	1469.14	1469.07	1469.00	1468.92	1468.84
16.00	DISCHG	100.27	99.69	99.12	98.54	97.97	97.40	96.84	96.28	95.72	95.17
16.00	ELEV	1468.75	1468.67	1468.59	1468.51	1468.42	1468.34	1468.26	1468.18	1468.10	1468.02
16.80	DISCHG	94.42	93.58	92.76	91.94	91.12	90.32	89.52	88.73	87.94	87.17
16.80	ELEV	1467.94	1467.84	1467.75	1467.66	1467.57	1467.48	1467.39	1467.30	1467.22	1467.13
17.60	DISCHG	86.40	85.07	83.16	81.29	79.47	77.69	75.96	74.26	72.60	70.98

17.60	ELEV	1467.04	1466.95	1466.84	1466.74	1466.64	1466.54	1466.44	1466.35	1466.26	1466.17
18.40	DISCHG	69.40	67.72	64.75	61.91	59.20	56.62	54.15	51.79	49.54	47.39
18.40	ELEV	1466.08	1465.99	1465.86	1465.75	1465.63	1465.53	1465.42	1465.32	1465.23	1465.14
19.20	DISCHG	45.35	43.08	40.27	37.65	35.20	32.93	30.81	28.84	27.00	25.28
19.20	ELEV	1465.06	1464.96	1464.84	1464.72	1464.62	1464.52	1464.43	1464.34	1464.26	1464.19
20.00	DISCHG	23.68	22.19	20.73	18.95	17.34	15.89	14.58	13.40	12.34	11.39
20.00	ELEV	1464.12	1464.05	1463.97	1463.80	1463.65	1463.51	1463.39	1463.28	1463.18	1463.08
20.80	DISCHG	10.52	9.75	9.04	8.41	7.83	7.30	6.82	6.39	5.99	5.64
20.80	ELEV	1463.00	1462.93	1462.86	1462.80	1462.75	1462.70	1462.65	1462.61	1462.57	1462.54
21.60	DISCHG	5.33	5.05	4.80	4.57	4.37	4.18	4.01	3.85	3.70	3.57
21.60	ELEV	1462.51	1462.48	1462.46	1462.44	1462.42	1462.40	1462.38	1462.37	1462.35	1462.34
22.40	DISCHG	3.45	3.34	3.24	3.16	3.09	3.03	2.97	2.92	2.87	2.83
22.40	ELEV	1462.33	1462.32	1462.31	1462.30	1462.29	1462.29	1462.28	1462.28	1462.27	1462.27
23.20	DISCHG	2.78	2.73	2.69	2.64	2.60	2.56	2.53	2.49	2.46	2.44
23.20	ELEV	1462.26	1462.26	1462.26	1462.25	1462.25	1462.24	1462.24	1462.24	1462.23	1462.23

RUNOFF VOLUME ABOVE BASEFLOW = 1.57 WATERSHED INCHES, 689.39 CFS-HRS, 56.97 ACRE-FEET; BASEFLOW = .00 CFS

*** WARNING REACH 93 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 95 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING - REACH 95 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 16.96 CFS, 11.38 % OF PEAK.

*** WARNING REACH 96 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING - REACH 96 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 24.30 CFS, 14.73 % OF PEAK.

*** WARNING REACH 98 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 99 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 126 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 134 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 124 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 104 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 107 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 108 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

** WARNING REACH 57 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 46 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 46 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 57 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 59 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

OPERATION DIVERT CROSS SECTION 60

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)	
11.76	222.00*	(DIVERT)	* FIRST POINT OF FLAT PEAK
16.51	24.08	(DIVERT)	
17.97	24.74	(DIVERT)	
19.03	23.72	(DIVERT)	
20.54	23.53	(DIVERT)	
21.52	23.75	(DIVERT)	
22.52	23.79	(DIVERT)	

OUTPUT #1 HYDROGRAPH

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .08 HOURS DRAINAGE AREA = .00 SQ.MI.

3.20	DISCHG	.00	.00	.00	.00	.00	.01	.02	.04	.06	.09
4.00	DISCHG	.11	.13	.16	.18	.20	.23	.26	.30	.34	.37
4.80	DISCHG	.41	.45	.48	.51	.53	.55	.57	.58	.60	.62
5.60	DISCHG	.63	.65	.67	.69	.72	.75	.80	.84	.88	.93
6.40	DISCHG	.97	1.00	1.02	1.03	1.05	1.07	1.09	1.14	1.19	1.24
7.20	DISCHG	1.30	1.36	1.42	1.46	1.49	1.51	1.53	1.55	1.57	1.60
8.00	DISCHG	1.66	1.71	1.76	1.82	1.88	1.92	1.94	1.96	1.98	2.00
8.80	DISCHG	2.02	2.05	2.11	2.23	2.49	2.75	3.03	3.37	3.89	4.53
9.60	DISCHG	5.25	5.98	6.71	7.40	8.07	8.71	9.28	9.80	10.35	10.91
10.40	DISCHG	11.47	12.02	12.75	13.87	15.07	16.38	17.84	19.50	21.49	24.36
11.20	DISCHG	27.61	30.92	34.29	37.82	47.00	98.33	195.71	222.00	222.00	222.00
12.00	DISCHG	222.00	222.00	222.00	222.00	222.00	222.00	222.00	222.00	222.00	222.00
12.80	DISCHG	222.00	222.00	222.00	222.00	222.00	222.00	222.00	222.00	222.00	200.25
13.60	DISCHG	174.78	152.78	134.90	120.77	109.46	100.34	93.35	88.19	84.29	81.27
14.40	DISCHG	78.99	77.24	75.68	74.02	72.49	71.19	70.11	69.16	67.23	61.78
15.20	DISCHG	54.99	48.92	43.75	39.20	35.24	32.00	29.38	27.28	25.64	24.37
16.00	DISCHG	23.43	23.02	23.11	23.35	23.59	23.83	24.06	24.04	23.60	23.05
16.80	DISCHG	22.56	22.12	21.73	21.52	21.78	22.24	22.68	23.06	23.42	23.74
17.60	DISCHG	24.02	24.24	24.42	24.56	24.67	24.72	24.43	23.81	23.17	22.62
18.40	DISCHG	22.14	21.72	21.61	21.94	22.40	22.83	23.20	23.55	23.71	23.41
19.20	DISCHG	22.92	22.47	22.06	21.69	21.36	21.08	20.85	20.67	20.53	20.43
20.00	DISCHG	20.38	20.70	21.33	21.97	22.52	23.00	23.42	23.51	23.16	22.71
20.80	DISCHG	22.29	21.92	21.58	21.43	21.76	22.27	22.73	23.13	23.51	23.75
21.60	DISCHG	23.54	23.07	22.60	22.20	21.82	21.52	21.63	22.08	22.57	22.99
22.40	DISCHG	23.38	23.72	23.75	23.34	22.86	22.42	22.04	21.68	21.36	21.10
23.20	DISCHG	20.89	20.72	20.59	20.50	20.53	20.99	21.65	22.27	22.79	23.26

RUNOFF VOLUME ABOVE BASEFLOW = 2.58 WATERSHED INCHES, 827.56 CFS-HRS, 68.39 ACRE-FEET; BASEFLOW = .00 CFS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.52	1131.71	(DIVERT)

OUTPUT #2 DIVERTED HYDROGRAPH, CROSS SECTION = 65

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .08 HOURS DRAINAGE AREA = 1.07 SQ.MI.

11.20	DISCHG	.00	.00	.00	.00	.00	.00	.00	93.11	222.99	361.15
12.00	DISCHG	501.91	635.30	757.56	867.27	963.52	1046.46	1114.74	1117.02	992.84	829.23
12.80	DISCHG	680.27	550.12	431.13	325.68	234.33	157.27	95.13	46.28	8.17	.00

RUNOFF VOLUME ABOVE BASEFLOW = 1.39 WATERSHED INCHES, 963.33 CFS-HRS, 79.61 ACRE-FEET; BASEFLOW = .00 CFS

*** WARNING - STRUCTURE 59 DELTA T IS TOO LARGE. O /2 > S /DELTA T OCCURED 41 TIMES STARTING WITH POINT218

OPERATION RESVOR STRUCTURE 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.04	333.55	1405.85
17.46	1.06	1393.13

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .08 HOURS DRAINAGE AREA = 1.07 SQ.MI.

11.20	DISCHG	.00	.00	.00	.00	.00	.00	.00	14.05	33.99	63.78
11.20	ELEV	1393.00	1393.00	1393.00	1393.00	1393.00	1393.00	1393.00	1394.32	1395.23	1396.16
12.00	DISCHG	95.89	129.30	160.68	193.11	219.36	245.31	269.33	288.18	305.09	317.24
12.00	ELEV	1397.02	1397.86	1398.71	1399.63	1400.56	1401.51	1402.47	1403.41	1404.25	1404.86
12.80	DISCHG	325.10	330.04	332.78	333.55	332.64	330.31	326.84	322.47	317.00	310.72
12.80	ELEV	1405.32	1405.63	1405.80	1405.85	1405.79	1405.64	1405.43	1405.15	1404.85	1404.54
13.60	DISCHG	304.49	298.15	291.27	284.56	278.12	272.09	266.18	260.41	251.24	242.13
13.60	ELEV	1404.22	1403.91	1403.56	1403.23	1402.91	1402.60	1402.31	1402.02	1401.71	1401.40
14.40	DISCHG	233.35	225.87	219.26	212.84	206.61	196.99	187.45	178.36	169.61	160.65
14.40	ELEV	1401.11	1400.83	1400.55	1400.28	1400.03	1399.74	1399.47	1399.21	1398.96	1398.71
15.20	DISCHG	152.17	144.14	136.53	127.40	118.40	110.03	102.26	95.03	86.68	79.06
15.20	ELEV	1398.48	1398.25	1398.04	1397.81	1397.58	1397.38	1397.18	1397.00	1396.78	1396.57
16.00	DISCHG	72.11	65.77	59.99	53.33	46.68	40.85	35.76	31.29	27.39	23.42
16.00	ELEV	1396.38	1396.21	1396.05	1395.85	1395.63	1395.45	1395.28	1395.14	1395.01	1394.81
16.80	DISCHG	19.97	17.03	14.52	12.38	10.56	9.00	4.83	-2.18	.98	-.44
16.80	ELEV	1394.63	1394.48	1394.34	1394.23	1394.13	1394.05	1393.60	1392.73	1393.12	1392.94
17.60	DISCHG	.20	-.09	.04	-.02	.01	.00				
17.60	ELEV	1393.03	1392.99	1393.01	1393.00	1393.00	1393.00				

RUNOFF VOLUME ABOVE BASEFLOW = 1.39 WATERSHED INCHES, 962.54 CFS-HRS, 79.54 ACRE-FEET; BASEFLOW = .00 CFS

*** WARNING REACH 66 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 67 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 69 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 81 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 78 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 77 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

OPERATION ADDHYD CROSS SECTION 69

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.57	1534.14	(NULL)
16.52	11.28	(NULL)
17.96	11.77	(NULL)
19.01	11.36	(NULL)
20.52	11.35	(NULL)
21.51	11.41	(NULL)
22.51	11.42	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .08 HOURS DRAINAGE AREA = 2.48 SQ.MI.

8.80	DISCHG	.00	.00	.00	.00	.00	.02	.05	.08	.12	.16
9.60	DISCHG	.21	.27	.35	.45	.59	.76	.93	1.10	1.28	1.47
10.40	DISCHG	1.68	1.89	2.20	2.73	3.38	4.00	4.59	5.15	5.82	6.95
11.20	DISCHG	8.39	9.81	11.14	12.43	16.78	43.49	101.55	215.57	359.54	507.50
12.00	DISCHG	647.51	777.67	894.63	1035.68	1182.74	1327.50	1460.00	1533.52	1484.62	1364.89
12.80	DISCHG	1230.28	1102.64	991.32	887.06	781.77	676.08	574.95	483.46	404.22	351.97
13.60	DISCHG	322.46	301.25	284.13	270.18	258.70	249.14	240.96	234.02	224.33	215.00
14.40	DISCHG	206.14	198.65	191.91	185.02	178.16	167.98	157.99	148.56	138.63	125.43
15.20	DISCHG	110.83	97.00	84.62	71.92	60.24	49.90	40.71	32.48	23.43	15.33
16.00	DISCHG	9.98	10.00	10.28	10.61	10.88	11.08	11.24	11.25	10.98	10.65
16.80	DISCHG	10.37	10.16	10.00	9.95	10.16	10.51	10.81	11.04	11.22	11.36
17.60	DISCHG	11.49	11.58	11.66	11.71	11.75	11.75	11.57	11.17	10.77	10.47
18.40	DISCHG	10.24	10.06	10.06	10.32	10.65	10.93	11.14	11.30	11.35	11.12
19.20	DISCHG	10.78	10.49	10.26	10.09	9.95	9.83	9.74	9.67	9.62	9.58
20.00	DISCHG	9.58	9.78	10.19	10.59	10.90	11.13	11.31	11.31	11.04	10.71
20.80	DISCHG	10.44	10.23	10.08	10.04	10.28	10.63	10.92	11.15	11.32	11.41
21.60	DISCHG	11.24	10.90	10.60	10.35	10.17	10.05	10.16	10.48	10.81	11.07
22.40	DISCHG	11.27	11.41	11.38	11.09	10.76	10.48	10.28	10.11	9.98	9.86
23.20	DISCHG	9.78	9.72	9.67	9.64	9.68	9.97	10.40	10.78	11.06	11.27

RUNOFF VOLUME ABOVE BASEFLOW = 1.32 WATERSHED INCHES, 2117.70 CFS-HRS, 175.01 ACRE-FEET; BASEFLOW = .00 CFS

*** WARNING - STRUCTURE 69 DELTA T IS TOO LARGE. O /2 > S /DELTA T OCCURED 3 TIMES STARTING WITH POINT296

OPERATION RESVOR STRUCTURE 69

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
14.37	209.53	1385.10
23.68	45.94	1374.19
23.84	37.69	1373.79

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .08 HOURS DRAINAGE AREA = 2.48 SQ.MI.

8.80	DISCHG	.00	.00	.00	.00	.00	.02	.05	.08	.12	.16
8.80	ELEV	1372.00	1372.00	1372.00	1372.00	1372.00	1372.00	1372.00	1372.00	1372.01	1372.01
9.60	DISCHG	.20	.26	.34	.45	.58	.75	.93	1.10	1.27	1.46
9.60	ELEV	1372.01	1372.01	1372.02	1372.02	1372.03	1372.04	1372.04	1372.05	1372.06	1372.07
10.40	DISCHG	1.67	1.89	2.19	2.71	3.36	3.98	4.57	5.13	5.79	6.90
10.40	ELEV	1372.08	1372.09	1372.10	1372.13	1372.16	1372.19	1372.22	1372.24	1372.28	1372.33
11.20	DISCHG	8.34	9.76	11.10	12.38	16.53	41.91	86.95	106.49	118.60	127.97
11.20	ELEV	1372.40	1372.46	1372.53	1372.59	1372.79	1374.00	1376.14	1377.08	1377.76	1378.33
12.00	DISCHG	136.94	142.61	148.72	154.26	159.84	165.69	171.08	176.76	181.69	186.29
12.00	ELEV	1378.93	1379.35	1379.82	1380.25	1380.68	1381.14	1381.59	1382.07	1382.52	1382.94
12.80	DISCHG	190.40	194.01	197.16	199.74	201.88	203.66	205.09	206.18	206.98	207.56
12.80	ELEV	1383.31	1383.64	1383.92	1384.17	1384.37	1384.54	1384.67	1384.78	1384.86	1384.91
13.60	DISCHG	208.00	208.35	208.64	208.87	209.05	209.21	209.33	209.42	209.49	209.52
13.60	ELEV	1384.95	1384.99	1385.01	1385.03	1385.05	1385.07	1385.08	1385.09	1385.09	1385.10
14.40	DISCHG	209.53	209.50	209.46	209.38	209.29	209.17	209.01	208.82	208.60	208.34
14.40	ELEV	1385.10	1385.10	1385.09	1385.08	1385.08	1385.06	1385.05	1385.03	1385.01	1384.99
15.20	DISCHG	208.04	207.69	207.29	206.86	206.38	205.87	205.33	204.76	204.16	203.54
15.20	ELEV	1384.96	1384.92	1384.89	1384.84	1384.80	1384.75	1384.70	1384.64	1384.59	1384.53
16.00	DISCHG	202.89	202.24	201.59	200.95	200.30	199.67	199.03	198.39	197.74	197.05
16.00	ELEV	1384.47	1384.40	1384.34	1384.28	1384.22	1384.16	1384.10	1384.04	1383.98	1383.91
16.80	DISCHG	196.36	195.67	194.98	194.30	193.62	192.94	192.27	191.60	190.93	190.26
16.80	ELEV	1383.85	1383.79	1383.73	1383.66	1383.60	1383.54	1383.48	1383.42	1383.36	1383.30
17.60	DISCHG	189.60	188.94	188.29	187.64	186.99	186.34	185.69	185.05	184.40	183.76
17.60	ELEV	1383.24	1383.18	1383.12	1383.06	1383.00	1382.94	1382.88	1382.82	1382.76	1382.71
18.40	DISCHG	183.12	182.48	181.84	181.21	180.58	179.95	179.32	178.70	178.08	177.47
18.40	ELEV	1382.65	1382.59	1382.53	1382.47	1382.42	1382.36	1382.30	1382.25	1382.19	1382.13
19.20	DISCHG	176.85	176.23	175.55	174.82	174.10	173.38	172.66	171.94	171.23	170.52
19.20	ELEV	1382.08	1382.02	1381.96	1381.90	1381.84	1381.78	1381.72	1381.66	1381.60	1381.54
20.00	DISCHG	169.81	169.11	168.41	167.72	167.03	166.34	165.66	164.98	164.31	163.51
20.00	ELEV	1381.48	1381.43	1381.37	1381.31	1381.25	1381.20	1381.14	1381.08	1381.03	1380.96
20.80	DISCHG	162.62	161.73	160.84	159.96	159.08	158.21	157.35	156.50	155.65	154.80
20.80	ELEV	1380.89	1380.83	1380.76	1380.69	1380.62	1380.55	1380.49	1380.42	1380.36	1380.29
21.60	DISCHG	153.97	153.13	152.30	151.47	150.46	149.23	148.00	146.79	145.59	144.40
21.60	ELEV	1380.23	1380.16	1380.10	1380.04	1379.96	1379.86	1379.77	1379.68	1379.58	1379.49
22.40	DISCHG	143.23	142.06	140.91	139.77	138.63	136.88	134.36	131.88	129.45	127.06
22.40	ELEV	1379.40	1379.31	1379.22	1379.14	1379.05	1378.93	1378.76	1378.59	1378.43	1378.27
23.20	DISCHG	124.72	121.09	113.64	106.68	56.99	-31.00	45.83	-19.92	37.61	-11.73
23.20	ELEV	1378.11	1377.89	1377.48	1377.09	1374.71	1370.52	1374.18	1371.05	1373.79	1371.44

RUNOFF VOLUME ABOVE BASEFLOW = 1.32 WATERSHED INCHES, 2113.90 CFS-HRS, 174.69 ACRE-FEET; BASEFLOW = .00 CFS

*** WARNING REACH 76 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 112 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

*** WARNING REACH 109 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

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*** WARNING  REACH 110 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH 111 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH 112 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH 113 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

*** WARNING  REACH 113 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***

EXECUTIVE CONTROL OPERATION ENDCMP     COMPUTATIONS COMPLETED FOR PASS   1                    RECORD ID


EXECUTIVE CONTROL OPERATION ENDJOB                                                              RECORD ID
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SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 1	RUNOFF	.15	1	2	.08	.0	4.04	24.00	3.46	---	12.45	248.49	1679.0
XSECTION 2	RUNOFF	.10	1	2	.08	.0	4.04	24.00	3.46	---	12.44	165.73	1708.6
XSECTION 3	REACH	.15	1	2	.08	.0	4.04	24.00	3.45	---	12.63	244.59	1652.7
XSECTION 3	REACH	.10	1	2	.08	.0	4.04	24.00	3.44	---	12.70	158.51	1634.1
XSECTION 3	ADDHYD	.25	1	2	.08	.0	4.04	24.00	3.45	---	12.65	400.78	1635.9
XSECTION 3	RUNOFF	.05	1	2	.08	.0	4.04	24.00	1.83	---	12.52	51.36	1092.7
XSECTION 3	ADDHYD	.29	1	2	.08	.0	4.04	24.00	3.19	---	12.59	446.92	1530.5
XSECTION 6	RUNOFF	.11	1	2	.08	.0	4.04	24.00	2.13	---	12.71	106.85	980.3
XSECTION 6	REACH	.29	1	2	.08	.0	4.04	24.00	3.18	1505.54	12.71	443.03	1517.2
XSECTION 6	ADDHYD	.40	1	2	.08	.0	4.04	24.00	2.90	1506.07	12.71	549.88	1371.3
XSECTION 8	REACH	.40	1	2	.08	.0	4.04	24.00	2.89	1497.00	12.86	531.54	1325.5
XSECTION 7	RUNOFF	.12	1	2	.08	.0	4.04	24.00	1.83	---	12.65	106.65	911.5
XSECTION 8	REACH	.12	1	2	.08	.0	4.04	24.00	1.82	1495.41	12.77	105.14	898.7
XSECTION 19	RUNOFF	.02	1	2	.08	.0	4.04	24.00	3.47	---	12.44	37.85	1720.5
XSECTION 4	RUNOFF	.19	1	2	.08	.0	4.04	24.00	3.46	---	12.44	330.80	1696.4
XSECTION 4	REACH	.02	1	2	.08	.0	4.04	24.00	3.43	---	12.97	31.76	1443.6
XSECTION 4	ADDHYD	.22	1	2	.08	.0	4.04	24.00	3.46	---	12.45	351.51	1619.9
XSECTION 5	RUNOFF	.13	1	2	.08	.0	4.04	24.00	1.83	---	12.59	122.65	981.2
XSECTION 5	REACH	.22	1	2	.08	.0	4.04	24.00	3.45	---	12.62	342.38	1577.8
XSECTION 5	ADDHYD	.34	1	2	.08	.0	4.04	24.00	2.85	---	12.61	464.83	1359.2
XSECTION 8	REACH	.34	1	2	.08	.0	4.04	24.00	2.84	1496.88	12.85	436.28	1275.7
XSECTION 8	ADDHYD	.52	1	2	.08	.0	4.04	24.00	2.65	1497.09	12.84	633.31	1222.6
XSECTION 8	ADDHYD	.86	1	2	.08	.0	4.04	24.00	2.73	1497.43	12.85	1069.56	1243.7
XSECTION 18	RUNOFF	.18	1	2	.08	.0	4.04	24.00	1.90	---	12.67	171.98	934.7
XSECTION 8	REACH	.18	1	2	.08	.0	4.04	24.00	1.89	1495.70	12.98	146.42	795.7
XSECTION 8	ADDHYD	1.04	1	2	.08	.0	4.04	24.00	2.58	1497.51	12.86	1208.88	1157.9
XSECTION 8	RUNOFF	.13	1	2	.08	.0	4.04	24.00	1.90	---	12.68	119.20	909.9
XSECTION 8	ADDHYD	1.18	1	2	.08	.0	4.04	24.00	2.50	1497.58	12.84	1315.07	1119.2
STRUCTURE 8	RESVOR	1.18	1	2	.08	.0	4.04	24.00	2.49	1497.28	13.47	469.23	399.3
XSECTION 14	REACH	1.18	1	2	.08	.0	4.04	24.00	2.48	1488.17	13.87	457.29	389.2
XSECTION 9	RUNOFF	.07	1	2	.08	.0	4.04	24.00	1.97	---	12.78	56.70	859.0
XSECTION 14	REACH	.07	1	2	.08	.0	4.04	24.00	1.97	1485.27	12.96	53.63	812.6

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 14	ADDHYD	1.24	1	2	.08	.0	4.04	24.00	2.46	1488.35	13.74	474.68	382.5
XSECTION 10	RUNOFF	.09	1	2	.08	.0	4.04	24.00	1.83	---	12.59	93.22	981.2
XSECTION 11	REACH	.09	1	2	.08	.0	4.04	24.00	1.82	---	12.75	86.58	911.4
XSECTION 11	RUNOFF	.23	1	2	.08	.0	4.04	24.00	1.97	---	12.72	212.10	906.4
XSECTION 11	ADDHYD	.33	1	2	.08	.0	4.04	24.00	1.93	---	12.73	298.55	907.5
XSECTION 13	REACH	.33	1	2	.08	.0	4.04	24.00	1.93	---	12.73	298.55	907.5
XSECTION 13	RUNOFF	.13	1	2	.08	.0	4.04	24.00	2.22	---	12.59	140.57	1124.5
XSECTION 13	ADDHYD	.45	1	2	.08	.0	4.04	24.00	2.01	---	12.68	431.13	949.6
XSECTION 144	RUNOFF	.13	1	2	.08	.0	4.04	24.00	1.97	---	12.78	113.39	859.0
XSECTION 14	REACH	.13	1	2	.08	.0	4.04	24.00	1.97	1485.91	12.89	111.92	847.9
XSECTION 13	ADDHYD	.59	1	2	.08	.0	4.04	24.00	2.00	---	12.71	532.09	908.0
XSECTION 14	REACH	.59	1	2	.08	.0	4.04	24.00	2.00	1488.81	12.71	532.09	908.0
XSECTION 14	ADDHYD	1.83	1	2	.08	.0	4.04	24.00	2.31	1489.06	12.86	796.39	435.9
XSECTION 16	RUNOFF	.12	1	2	.08	.0	4.04	24.00	2.56	---	12.54	155.97	1310.7
XSECTION 15	REACH	.12	1	2	.08	.0	4.04	24.00	2.56	---	12.64	155.01	1302.6
XSECTION 15	RUNOFF	.07	1	2	.08	.0	4.04	24.00	2.21	---	12.74	71.32	977.0
XSECTION 15	ADDHYD	.19	1	2	.08	.0	4.04	24.00	2.43	---	12.66	224.76	1170.6
XSECTION 14	ADDHYD	2.02	1	2	.08	.0	4.04	24.00	2.32	1489.20	12.79	1000.22	495.4
XSECTION 14	RUNOFF	.18	1	2	.08	.0	4.04	24.00	2.31	---	12.51	227.94	1287.8
XSECTION 14	ADDHYD	2.20	1	2	.08	.0	4.04	24.00	2.32	1489.30	12.67	1156.00	526.4
XSECTION 27	REACH	2.20	1	2	.08	.0	4.04	24.00	2.31	---	12.94	1040.48	473.8
XSECTION 27	RUNOFF	.19	1	2	.08	.0	4.04	24.00	2.20	---	12.91	157.15	835.9
XSECTION 27	ADDHYD	2.38	1	2	.08	.0	4.04	24.00	2.30	---	12.94	1197.32	502.2
XSECTION 17	RUNOFF	.06	1	2	.08	.0	4.04	24.00	3.47	---	12.44	101.41	1718.8
XSECTION 25	REACH	.06	1	2	.08	.0	4.04	24.00	3.43	---	12.88	89.43	1515.7
XSECTION 25	RUNOFF	.09	1	2	.08	.0	4.04	24.00	2.31	---	12.52	113.22	1272.2
XSECTION 25	ADDHYD	.15	1	2	.08	.0	4.04	24.00	2.76	---	12.56	188.52	1273.8
XSECTION 27	REACH	.15	1	2	.08	.0	4.04	24.00	2.74	---	12.87	162.18	1095.8
XSECTION 27	ADDHYD	2.53	1	2	.08	.0	4.04	24.00	2.33	---	12.93	1357.80	536.3
XSECTION 26	RUNOFF	.07	1	2	.08	.0	4.04	24.00	2.48	---	12.47	93.38	1393.7
XSECTION 27	ADDHYD	2.60	1	2	.08	.0	4.04	24.00	2.33	---	12.91	1375.47	529.2
XSECTION 37	REACH	2.60	1	2	.08	.0	4.04	24.00	2.33	1455.81	13.04	1363.00	524.4
XSECTION 37	RUNOFF	.13	1	2	.08	.0	4.04	24.00	2.31	---	12.46	169.10	1352.8
XSECTION 37	ADDHYD	2.72	1	2	.08	.0	4.04	24.00	2.33	1455.83	13.03	1380.91	506.9

STRUCTURE 37	RESVOR	2.72	1	2	.08	.0	4.04	24.00	2.31	1450.75	13.07	1378.42	506.0
XSECTION 24	RUNOFF	.20	1	2	.08	.0	4.04	24.00	2.57	---	12.52	268.81	1357.6

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 37	REACH	.20	1	2	.08	.0	4.04	24.00	2.56	1453.61	12.61	266.68	1346.9
XSECTION 37	ADDHYD	2.92	1	2	.08	.0	4.04	24.00	2.32	1455.94	12.93	1487.12	508.9
XSECTION 28	RUNOFF	.16	1	2	.08	.0	4.04	24.00	2.21	---	12.76	149.43	957.9
XSECTION 36	REACH	.16	1	2	.08	.0	4.04	24.00	2.19	---	13.27	117.40	752.6
XSECTION 36	RUNOFF	.13	1	2	.08	.0	4.04	24.00	2.30	---	12.54	155.70	1245.6
XSECTION 36	ADDHYD	.28	1	2	.08	.0	4.04	24.00	2.24	---	12.62	201.90	718.5
XSECTION 34	RUNOFF	.13	1	2	.08	.0	4.04	24.00	2.38	---	12.64	141.66	1133.3
XSECTION 35	REACH	.13	1	2	.08	.0	4.04	24.00	2.38	---	12.76	139.31	1114.5
XSECTION 35	RUNOFF	.13	1	2	.08	.0	4.04	24.00	2.30	---	12.54	154.91	1239.3
XSECTION 35	ADDHYD	.25	1	2	.08	.0	4.04	24.00	2.34	---	12.61	281.50	1126.0
XSECTION 36	REACH	.25	1	2	.08	.0	4.04	24.00	2.34	---	12.61	281.50	1126.0
XSECTION 36	ADDHYD	.53	1	2	.08	.0	4.04	24.00	2.29	---	12.61	483.34	910.2
XSECTION 37	REACH	.53	1	2	.08	.0	4.04	24.00	2.29	1454.45	12.61	483.34	910.2
XSECTION 37	ADDHYD	3.45	1	2	.08	.0	4.04	24.00	2.32	1456.35	12.75	1892.39	548.0
XSECTION 143	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.48	---	12.55	80.11	1281.8
XSECTION 143	ADDHYD	3.52	1	2	.08	.0	4.04	24.00	2.32	---	12.73	1959.24	557.3
XSECTION 144	DIVERT	.00	1	2	.08	.0	4.04	24.00	2.32	---	11.84*	206.00	**********
XSECTION 143	DIVERT	3.52	1	2	.08	.0	4.04	24.00	1.50	---	12.73	1753.24	498.7
STRUCTURE 43	RESVOR	3.52	1	2	.08	.0	4.04	24.00	1.50	1439.34	13.86	800.90	227.8
STRUCTURE 44	RESVOR	3.52	1	2	.08	.0	4.04	24.00	1.27	1431.99	17.26	315.89	89.9
XSECTION 144	ADDHYD	3.52	1	2	.08	.0	4.04	24.00	2.09	---	17.26	521.89	148.5
XSECTION 85	REACH	3.52	1	2	.08	.0	4.04	24.00	2.09	---	17.26	521.89	148.5
XSECTION 85	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.39	---	12.55	79.29	1258.6
XSECTION 85	ADDHYD	3.58	1	2	.08	.0	4.04	24.00	2.09	---	17.28	523.15	146.2
XSECTION 84	REACH	3.58	1	2	.08	.0	4.04	24.00	2.09	---	17.28	523.15	146.2
XSECTION 84	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.39	---	12.55	79.29	1258.6
XSECTION 84	ADDHYD	3.64	1	2	.08	.0	4.04	24.00	2.10	---	17.30	524.42	144.0
XSECTION 91	RUNOFF	.13	1	2	.08	.0	4.04	24.00	2.57	---	12.52	169.21	1353.7
XSECTION 90	REACH	.13	1	2	.08	.0	4.04	24.00	2.56	---	12.64	165.02	1320.2
XSECTION 90	RUNOFF	.11	1	2	.08	.0	4.04	24.00	2.47	---	12.58	132.92	1219.5
XSECTION 90	ADDHYD	.23	1	2	.08	.0	4.04	24.00	2.52	---	12.61	297.37	1270.8
XSECTION 88	REACH	.23	1	2	.08	.0	4.04	24.00	2.51	---	12.73	292.64	1250.6
XSECTION 89	RUNOFF	.05	1	2	.08	.0	4.04	24.00	2.39	---	12.50	62.16	1322.6
XSECTION 88	REACH	.05	1	2	.08	.0	4.04	24.00	2.38	---	12.75	56.34	1198.7

XSECTION	88	RUNOFF	.09	1	2	.08	.0	4.04	24.00	2.65	---	12.64	115.03	1223.7
XSECTION	88	ADDHYD	.14	1	2	.08	.0	4.04	24.00	2.56	---	12.68	169.57	1202.6

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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 88	ADDHYD	.38	1	2	.08	.0	4.04	24.00	2.53	---	12.71	461.63	1231.0
XSECTION 88	DIVERT	.00	1	2	.08	.0	4.04	24.00	2.53	---	12.08*	159.00	**********
XSECTION 101	DIVERT	.38	1	2	.08	.0	4.04	24.00	.91	---	12.71	302.63	807.0
XSECTION 84	REACH	.00	1	2	.08	.0	4.04	24.00	.91	---	12.72*	159.00	**********
XSECTION 84	ADDHYD	3.64	1	2	.08	.0	4.04	24.00	2.26	---	12.65	618.61	169.9
XSECTION 104	DIVERT	.00	1	2	.08	.0	4.04	24.00	2.26	5.12	12.65	306.92	**********
XSECTION 83	DIVERT	3.64	1	2	.08	.0	4.04	24.00	1.18	5.11	12.65	311.68	85.6
XSECTION 105	REACH	.00	1	2	.08	.0	4.04	24.00	1.18	1417.82	12.65	306.92	**********
XSECTION 101	REACH	.38	1	2	.08	.0	4.04	24.00	.91	---	12.81	298.71	796.6
XSECTION 101	RUNOFF	.05	1	2	.08	.0	4.04	24.00	2.84	---	12.53	67.37	1433.4
XSECTION 101	ADDHYD	.42	1	2	.08	.0	4.04	24.00	1.13	---	12.76	346.30	820.6
XSECTION 102	REACH	.42	1	2	.08	.0	4.04	24.00	1.13	---	13.05	305.94	725.0
XSECTION 102	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.22	---	12.60	70.08	1112.4
XSECTION 102	ADDHYD	.48	1	2	.08	.0	4.04	24.00	1.27	---	13.01	338.84	698.6
XSECTION 105	REACH	.48	1	2	.08	.0	4.04	24.00	1.27	1417.83	13.19	321.64	663.2
XSECTION 105	RUNOFF	.06	1	2	.08	.0	4.04	24.00	1.90	---	12.61	61.30	973.0
XSECTION 105	ADDHYD	.55	1	2	.08	.0	4.04	24.00	1.34	1417.85	13.15	341.38	623.0
XSECTION 86	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.57	---	12.46	90.81	1441.4
XSECTION 87	REACH	.06	1	2	.08	.0	4.04	24.00	2.56	1429.96	12.70	80.99	1285.6
XSECTION 87	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.65	---	12.54	85.98	1364.8
XSECTION 87	ADDHYD	.13	1	2	.08	.0	4.04	24.00	2.61	1430.03	12.60	162.32	1288.3
XSECTION 105	REACH	.13	1	2	.08	.0	4.04	24.00	2.59	1417.63	12.98	140.33	1113.8
XSECTION 105	ADDHYD	.13	1	2	.08	.0	4.04	24.00	33.76	1417.92	12.77	422.04	3349.5
XSECTION 105	ADDHYD	.67	1	2	.08	.0	4.04	24.00	7.40	1418.10	13.07	744.61	1104.8
XSECTION 104	REACH	.67	1	2	.08	.0	4.04	24.00	7.40	54.94	13.07	744.61	1104.8
XSECTION 104	RUNOFF	.07	1	2	.08	.0	4.04	24.00	1.90	---	12.64	65.89	954.9
XSECTION 104	ADDHYD	.74	1	2	.08	.0	4.04	24.00	6.89	59.00	13.00	779.64	1049.3
XSECTION 83	REACH	3.64	1	2	.08	.0	4.04	24.00	1.18	5.11	12.65	311.68	85.6
XSECTION 83	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.48	---	12.54	81.54	1294.3
XSECTION 83	ADDHYD	3.70	1	2	.08	.0	4.04	24.00	1.21	14.01	12.58	392.36	105.9
XSECTION 106	REACH	3.70	1	2	.08	.0	4.04	24.00	1.21	---	12.58	392.36	105.9
XSECTION 106	RUNOFF	.06	1	2	.08	.0	4.04	24.00	1.98	---	12.58	66.28	1052.0
XSECTION 106	ADDHYD	3.77	1	2	.08	.0	4.04	24.00	1.22	---	12.58	458.63	121.7
XSECTION 107	REACH	3.77	1	2	.08	.0	4.04	24.00	1.22	---	12.58	458.63	121.7

XSECTION 107	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.22	---	12.52	73.26	1241.7
XSECTION 107	ADDHYD	3.83	1	2	.08	.0	4.04	24.00	1.23	---	12.56	530.82	138.7

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 12	RUNOFF	.07	1	2	.08	.0	4.04	24.00	2.22	---	12.52	86.92	1241.7
XSECTION 29	REACH	.07	1	2	.08	.0	4.04	24.00	2.18	---	13.39	49.58	708.3
XSECTION 29	RUNOFF	.25	1	2	.08	.0	4.04	24.00	2.13	---	12.82	218.50	874.0
XSECTION 29	ADDHYD	.32	1	2	.08	.0	4.04	24.00	2.14	---	12.88	243.13	759.8
XSECTION 33	REACH	.32	1	2	.08	.0	4.04	24.00	2.14	---	12.88	243.13	759.8
XSECTION 33	RUNOFF	.23	1	2	.08	.0	4.04	24.00	2.04	---	12.89	185.73	793.7
XSECTION 33	ADDHYD	.55	1	2	.08	.0	4.04	24.00	2.10	---	12.88	428.84	774.1
XSECTION 33	DIVERT	.00	1	2	.08	.0	4.04	24.00	2.10	---	11.92*	30.00**********	
XSECTION 33	DIVERT	.55	1	2	.08	.0	4.04	24.00	1.49	---	12.88	398.84	719.9
XSECTION 30	RUNOFF	.13	1	2	.08	.0	4.04	24.00	1.97	---	12.72	113.58	908.6
XSECTION 32	REACH	.13	1	2	.08	.0	4.04	24.00	1.97	---	12.82	112.87	903.0
XSECTION 33	ADDHYD	.68	1	2	.08	.0	4.04	24.00	1.58	---	12.87	510.47	751.8
STRUCTURE 33	RESVOR	.68	1	2	.08	.0	4.04	24.00	1.57	1470.09	13.99	108.55	159.9
XSECTION 33	ADDHYD	.68	1	2	.08	.0	4.04	24.00	2.07	---	13.99	138.55	204.1
XSECTION 93	REACH	.68	1	2	.08	.0	4.04	24.00	2.07	---	14.09	138.54	204.0
XSECTION 93	RUNOFF	.19	1	2	.08	.0	4.04	24.00	2.39	---	12.52	253.10	1297.9
XSECTION 93	ADDHYD	.87	1	2	.08	.0	4.04	24.00	2.14	---	12.57	344.33	394.0
XSECTION 93	DIVERT	.00	1	2	.08	.0	4.04	24.00	2.14	---	12.00*	149.00**********	
XSECTION 92	DIVERT	.87	1	2	.08	.0	4.04	24.00	.24	---	12.57	195.33	223.5
XSECTION 92	REACH	.87	1	2	.08	.0	4.04	24.00	.24	---	12.70	181.57	207.7
XSECTION 92	RUNOFF	.13	1	2	.08	.0	4.04	24.00	2.57	---	12.52	169.21	1353.7
XSECTION 92	ADDHYD	1.00	1	2	.08	.0	4.04	24.00	.53	---	12.62	334.10	334.4
XSECTION 98	REACH	1.00	1	2	.08	.0	4.04	24.00	.53	---	12.80	300.94	301.2
XSECTION 95	REACH	.00	1	2	.08	.0	4.04	24.00	.53	---	12.00*	149.00**********	
XSECTION 32	RUNOFF	.11	1	2	.08	.0	4.04	24.00	2.05	---	12.71	103.71	951.4
XSECTION 94	REACH	.11	1	2	.08	.0	4.04	24.00	2.04	---	13.15	84.52	775.5
XSECTION 94	RUNOFF	.14	1	2	.08	.0	4.04	24.00	2.39	---	12.49	186.62	1342.6
XSECTION 94	ADDHYD	.25	1	2	.08	.0	4.04	24.00	2.24	---	12.53	221.63	893.7
XSECTION 95	REACH	.25	1	2	.08	.0	4.04	24.00	2.23	---	12.76	199.93	806.2
XSECTION 95	RUNOFF	.13	1	2	.08	.0	4.04	24.00	2.55	---	12.77	132.85	1062.8
XSECTION 95	ADDHYD	.37	1	2	.08	.0	4.04	24.00	2.34	---	12.76	332.76	892.1
XSECTION 95	ADDHYD	.37	1	2	.08	.0	4.04	24.00	6.78	---	12.76	481.76	1291.6
XSECTION 95	DIVERT	.00	1	2	.08	.0	4.04	24.00	6.78	---	11.92*	165.00**********	
XSECTION 98	DIVERT	.37	1	2	.08	.0	4.04	24.00	1.75	---	12.76	316.76	849.2

XSECTION	98	REACH	.37	1	2	.08	.0	4.04	24.00	1.75	---	13.06	283.10	759.0
XSECTION	98	ADDHYD	1.37	1	2	.08	.0	4.04	24.00	.86	---	12.89	551.15	401.7

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 96	REACH	.00	1	2	.08	.0	4.04	24.00	.86	---	11.92*	165.00	**********
XSECTION 96	RUNOFF	.13	1	2	.08	.0	4.04	24.00	2.22	---	12.55	148.27	1186.2
XSECTION 96	ADDHYD	.13	1	2	.08	.0	4.04	24.00	17.22	---	12.55	313.27	2506.2
XSECTION 96	DIVERT	.00	1	2	.08	.0	4.04	24.00	17.22	---	11.92*	185.00	**********
XSECTION 97	DIVERT	.13	1	2	.08	.0	4.04	24.00	1.28	---	12.55	128.27	1026.2
XSECTION 97	REACH	.13	1	2	.08	.0	4.04	24.00	1.28	---	12.82	112.41	899.3
XSECTION 97	RUNOFF	.19	1	2	.08	.0	4.04	24.00	2.66	---	12.54	254.23	1352.3
XSECTION 97	ADDHYD	.31	1	2	.08	.0	4.04	24.00	2.10	---	12.60	345.54	1104.0
XSECTION 98	REACH	.31	1	2	.08	.0	4.04	24.00	2.10	---	12.71	341.12	1089.8
XSECTION 98	ADDHYD	1.68	1	2	.08	.0	4.04	24.00	1.09	---	12.81	868.25	515.3
XSECTION 98	RUNOFF	.09	1	2	.08	.0	4.04	24.00	2.57	---	12.49	131.63	1400.3
XSECTION 98	ADDHYD	1.78	1	2	.08	.0	4.04	24.00	1.17	---	12.75	931.38	523.5
XSECTION 99	REACH	1.78	1	2	.08	.0	4.04	24.00	1.17	---	12.85	925.50	520.2
XSECTION 99	RUNOFF	.09	1	2	.08	.0	4.04	24.00	2.56	---	12.53	126.50	1345.7
XSECTION 99	ADDHYD	1.87	1	2	.08	.0	4.04	24.00	1.24	---	12.80	1001.05	534.5
XSECTION 139	REACH	1.87	1	2	.08	.0	4.04	24.00	1.24	---	12.94	979.97	523.2
XSECTION 100	RUNOFF	.08	1	2	.08	.0	4.04	24.00	2.57	---	12.50	108.52	1391.3
XSECTION 139	REACH	.08	1	2	.08	.0	4.04	24.00	2.56	---	12.61	107.03	1372.2
XSECTION 139	ADDHYD	1.95	1	2	.08	.0	4.04	24.00	1.29	---	12.89	1036.77	531.4
XSECTION 142	RUNOFF	.25	1	2	.08	.0	4.04	24.00	2.28	---	13.03	196.23	784.9
XSECTION 141	REACH	.25	1	2	.08	.0	4.04	24.00	2.28	---	13.26	185.81	743.2
XSECTION 141	RUNOFF	.19	1	2	.08	.0	4.04	24.00	2.66	---	12.54	254.23	1352.3
XSECTION 141	ADDHYD	.44	1	2	.08	.0	4.04	24.00	2.44	---	12.63	341.50	779.7
XSECTION 140	REACH	.44	1	2	.08	.0	4.04	24.00	2.43	---	12.76	333.45	761.3
XSECTION 140	RUNOFF	.13	1	2	.08	.0	4.04	24.00	2.57	---	12.52	170.38	1363.0
XSECTION 140	ADDHYD	.56	1	2	.08	.0	4.04	24.00	2.46	---	12.63	474.94	843.6
XSECTION 137	RUNOFF	.08	1	2	.08	.0	4.04	24.00	1.98	---	12.55	85.47	1095.7
XSECTION 140	ADDHYD	.64	1	2	.08	.0	4.04	24.00	2.40	---	12.61	558.48	871.3
XSECTION 139	REACH	.64	1	2	.08	.0	4.04	24.00	2.39	---	12.90	502.94	784.6
XSECTION 139	ADDHYD	2.59	1	2	.08	.0	4.04	24.00	1.57	---	12.89	1539.66	594.0
XSECTION 136	RUNOFF	.07	1	2	.08	.0	4.04	24.00	3.47	---	12.44	113.55	1720.5
XSECTION 138	REACH	.07	1	2	.08	.0	4.04	24.00	3.44	---	12.69	107.95	1635.6
XSECTION 138	RUNOFF	.20	1	2	.08	.0	4.04	24.00	2.40	---	12.46	283.21	1395.1
XSECTION 138	ADDHYD	.27	1	2	.08	.0	4.04	24.00	2.65	---	12.47	384.43	1429.1

XSECTION 139	REACH	.27	1	2	.08	.0	4.04	24.00	2.65	---	12.61	358.05	1331.0
XSECTION 139	ADDHYD	2.86	1	2	.08	.0	4.04	24.00	1.67	---	12.81	1795.43	627.6

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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 139	RUNOFF	.19	1	2	.08	.0	4.04	24.00	2.66	---	12.51	263.45	1401.3
XSECTION 139	ADDHYD	3.05	1	2	.08	.0	4.04	24.00	1.73	---	12.74	1958.99	642.5
XSECTION 129	RUNOFF	.11	1	2	.08	.0	4.04	24.00	2.23	---	12.45	148.26	1372.8
XSECTION 130	RUNOFF	.03	1	2	.08	.0	4.04	24.00	3.05	---	12.44	50.77	1637.7
XSECTION 129	ADDHYD	.14	1	2	.08	.0	4.04	24.00	2.41	---	12.45	199.00	1431.7
XSECTION 127	REACH	.14	1	2	.08	.0	4.04	24.00	2.40	---	12.72	178.16	1281.8
XSECTION 128	RUNOFF	.04	1	2	.08	.0	4.04	24.00	2.07	---	12.45	47.02	1306.1
XSECTION 127	REACH	.04	1	2	.08	.0	4.04	24.00	2.05	---	12.84	36.51	1014.1
XSECTION 127	ADDHYD	.17	1	2	.08	.0	4.04	24.00	2.32	---	12.73	211.94	1211.1
XSECTION 127	RUNOFF	.16	1	2	.08	.0	4.04	24.00	2.23	---	12.45	213.56	1343.1
XSECTION 127	ADDHYD	.33	1	2	.08	.0	4.04	24.00	2.28	---	12.49	390.23	1168.4
XSECTION 132	RUNOFF	.14	1	2	.08	.0	4.04	24.00	2.76	---	12.46	218.08	1504.0
XSECTION 131	REACH	.14	1	2	.08	.0	4.04	24.00	2.75	---	12.56	212.88	1468.2
XSECTION 131	ADDHYD	.48	1	2	.08	.0	4.04	24.00	2.42	---	12.50	599.46	1251.5
XSECTION 131	RUNOFF	.12	1	2	.08	.0	4.04	24.00	2.57	---	12.46	171.53	1441.4
XSECTION 131	ADDHYD	.60	1	2	.08	.0	4.04	24.00	2.45	---	12.49	769.62	1287.0
XSECTION 126	REACH	.60	1	2	.08	.0	4.04	24.00	2.45	---	12.59	760.64	1272.0
XSECTION 126	RUNOFF	.16	1	2	.08	.0	4.04	24.00	3.46	---	12.44	265.71	1681.7
XSECTION 126	ADDHYD	.76	1	2	.08	.0	4.04	24.00	2.66	---	12.53	1007.74	1333.0
XSECTION 134	REACH	.76	1	2	.08	.0	4.04	24.00	2.66	---	12.62	1002.24	1325.7
XSECTION 135	RUNOFF	.04	1	2	.08	.0	4.04	24.00	3.47	---	12.44	72.26	1720.5
XSECTION 134	REACH	.04	1	2	.08	.0	4.04	24.00	3.44	---	12.79	64.63	1538.8
XSECTION 134	ADDHYD	.80	1	2	.08	.0	4.04	24.00	2.70	---	12.62	1062.83	1331.9
XSECTION 134	RUNOFF	.20	1	2	.08	.0	4.04	24.00	2.48	---	12.47	274.55	1393.7
XSECTION 134	ADDHYD	1.00	1	2	.08	.0	4.04	24.00	2.65	---	12.56	1305.95	1312.5
XSECTION 125	RUNOFF	.12	1	2	.08	.0	4.04	24.00	3.47	---	12.44	201.30	1720.5
XSECTION 125	ADDHYD	1.11	1	2	.08	.0	4.04	24.00	2.74	---	12.51	1473.03	1324.7
XSECTION 124	REACH	1.11	1	2	.08	.0	4.04	24.00	2.73	---	12.62	1443.89	1298.5
XSECTION 124	RUNOFF	.22	1	2	.08	.0	4.04	24.00	2.40	---	12.46	303.53	1386.0
XSECTION 124	ADDHYD	1.33	1	2	.08	.0	4.04	24.00	2.68	---	12.55	1698.17	1275.9
XSECTION 124	REACH	3.05	1	2	.08	.0	4.04	24.00	1.73	---	12.74	1958.99	642.5
XSECTION 124	ADDHYD	4.38	1	2	.08	.0	4.04	24.00	2.02	---	12.63	3549.42	810.4
XSECTION 103	RUNOFF	.08	1	2	.08	.0	4.04	24.00	2.40	---	12.46	112.17	1384.9
XSECTION 124	ADDHYD	4.46	1	2	.08	.0	4.04	24.00	2.02	---	12.61	3631.02	813.9

XSECTION 104	REACH	4.46	1	2	.08	.0	4.04	24.00	2.02	389.27	12.61	3631.02	813.9
XSECTION 104	ADDHYD	5.20	1	2	.08	.0	4.04	24.00	2.72	469.05	12.64	4319.74	830.1

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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 107	REACH	5.20	1	2	.08	.0	4.04	24.00	2.72	---	12.64	4319.74	830.1
XSECTION 107	ADDHYD	9.03	1	2	.08	.0	4.04	24.00	2.09	---	12.63	4842.86	536.3
XSECTION 123	RUNOFF	.21	1	2	.08	.0	4.04	24.00	3.46	---	12.44	359.53	1687.9
XSECTION 107	ADDHYD	9.24	1	2	.08	.0	4.04	24.00	2.12	---	12.59	5115.87	553.5
XSECTION 108	REACH	9.24	1	2	.08	.0	4.04	24.00	2.12	---	12.59	5115.87	553.5
XSECTION 108	RUNOFF	.03	1	2	.08	.0	4.04	24.00	2.31	---	12.47	33.45	1338.1
XSECTION 108	ADDHYD	9.27	1	2	.08	.0	4.04	24.00	2.12	---	12.59	5145.40	555.1
XSECTION 49	RUNOFF	.09	1	2	.08	.0	4.04	24.00	3.46	---	12.44	146.94	1708.6
XSECTION 48	REACH	.09	1	2	.08	.0	4.04	24.00	3.44	---	12.70	140.68	1635.8
XSECTION 20	RUNOFF	.06	1	2	.08	.0	4.04	24.00	3.47	---	12.44	110.00	1718.8
XSECTION 48	REACH	.06	1	2	.08	.0	4.04	24.00	3.43	---	12.99	89.76	1402.5
XSECTION 48	ADDHYD	.15	1	2	.08	.0	4.04	24.00	3.44	---	12.74	218.80	1458.6
XSECTION 48	RUNOFF	.13	1	2	.08	.0	4.04	24.00	2.22	---	12.59	142.93	1143.5
XSECTION 48	ADDHYD	.28	1	2	.08	.0	4.04	24.00	2.88	---	12.66	353.80	1286.5
XSECTION 56	REACH	.28	1	2	.08	.0	4.04	24.00	2.88	---	12.79	346.68	1260.7
XSECTION 56	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.23	---	12.46	83.11	1319.1
XSECTION 56	ADDHYD	.34	1	2	.08	.0	4.04	24.00	2.76	---	12.59	386.92	1144.7
XSECTION 57	REACH	.34	1	2	.08	.0	4.04	24.00	2.76	---	12.59	386.92	1144.7
XSECTION 57	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.23	---	12.46	83.11	1319.1
XSECTION 57	ADDHYD	.40	1	2	.08	.0	4.04	24.00	2.67	---	12.55	463.22	1155.2
XSECTION 43	RUNOFF	.05	1	2	.08	.0	4.04	24.00	2.95	---	12.44	75.70	1610.6
XSECTION 21	RUNOFF	.19	1	2	.08	.0	4.04	24.00	2.65	---	12.55	249.78	1321.6
XSECTION 21	ADDHYD	.24	1	2	.08	.0	4.04	24.00	2.71	---	12.48	319.12	1352.2
XSECTION 46	REACH	.24	1	2	.08	.0	4.04	24.00	2.71	---	12.48	319.12	1352.2
XSECTION 47	RUNOFF	.13	1	2	.08	.0	4.04	24.00	2.23	---	12.48	161.49	1291.9
XSECTION 46	REACH	.13	1	2	.08	.0	4.04	24.00	2.22	---	12.58	160.03	1280.2
XSECTION 46	RUNOFF	.13	1	2	.08	.0	4.04	24.00	2.23	---	12.47	162.41	1299.3
XSECTION 46	ADDHYD	.25	1	2	.08	.0	4.04	24.00	2.22	---	12.51	317.51	1270.0
XSECTION 46	ADDHYD	.49	1	2	.08	.0	4.04	24.00	2.46	---	12.49	635.94	1308.5
XSECTION 57	REACH	.49	1	2	.08	.0	4.04	24.00	2.46	---	12.49	635.94	1308.5
XSECTION 57	ADDHYD	.89	1	2	.08	.0	4.04	24.00	2.56	---	12.52	1098.96	1239.0
XSECTION 59	REACH	.89	1	2	.08	.0	4.04	24.00	2.56	---	12.52	1098.96	1239.0
XSECTION 45	RUNOFF	.13	1	2	.08	.0	4.04	24.00	2.94	---	12.52	183.10	1464.8
XSECTION 59	REACH	.13	1	2	.08	.0	4.04	24.00	2.93	---	12.64	178.98	1431.9

XSECTION	59	ADDHYD	1.01	1	2	.08	.0	4.04	24.00	2.60	---	12.53	1271.89	1256.8
XSECTION	59	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.23	---	12.46	83.11	1319.1

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 59	ADDHYD	1.07	1	2	.08	.0	4.04	24.00	2.58	---	12.52	1353.71	1259.3
XSECTION 60	DIVERT	.00	1	2	.08	.0	4.04	24.00	2.58	---	11.76*	222.00	**********
XSECTION 65	DIVERT	1.07	1	2	.08	.0	4.04	24.00	1.39	---	12.52	1131.71	1052.8
STRUCTURE 59	RESVOR	1.07	1	2	.08	.0	4.04	24.00	1.39	1405.85	13.04	333.55	310.3
XSECTION 66	REACH	1.07	1	2	.08	.0	4.04	24.00	1.39	---	13.04	333.55	310.3
XSECTION 66	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.39	---	12.53	81.13	1287.7
XSECTION 66	ADDHYD	1.14	1	2	.08	.0	4.04	24.00	1.44	---	12.68	381.55	335.3
XSECTION 67	REACH	1.14	1	2	.08	.0	4.04	24.00	1.44	---	12.68	381.55	335.3
XSECTION 67	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.76	---	12.45	95.29	1512.5
XSECTION 67	ADDHYD	1.20	1	2	.08	.0	4.04	24.00	1.51	---	12.55	455.92	379.6
XSECTION 44	RUNOFF	.13	1	2	.08	.0	4.04	24.00	2.66	---	12.47	182.98	1463.9
XSECTION 67	REACH	.13	1	2	.08	.0	4.04	24.00	2.66	---	12.57	179.72	1437.8
XSECTION 67	ADDHYD	1.33	1	2	.08	.0	4.04	24.00	1.62	---	12.56	635.51	479.3
XSECTION 69	REACH	1.33	1	2	.08	.0	4.04	24.00	1.62	---	12.56	635.51	479.3
XSECTION 69	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.14	---	12.60	69.10	1096.8
XSECTION 69	ADDHYD	1.39	1	2	.08	.0	4.04	24.00	1.64	---	12.56	703.99	506.8
XSECTION 23	RUNOFF	.09	1	2	.08	.0	4.04	24.00	3.46	---	12.44	154.39	1696.6
XSECTION 40	REACH	.09	1	2	.08	.0	4.04	24.00	3.44	---	12.73	143.22	1573.8
XSECTION 38	RUNOFF	.13	1	2	.08	.0	4.04	24.00	1.98	---	12.54	140.54	1124.3
XSECTION 40	REACH	.13	1	2	.08	.0	4.04	24.00	1.97	---	12.69	127.74	1021.9
XSECTION 40	ADDHYD	.22	1	2	.08	.0	4.04	24.00	2.59	---	12.71	270.63	1252.9
XSECTION 40	RUNOFF	.09	1	2	.08	.0	4.04	24.00	2.22	---	12.55	111.50	1186.2
XSECTION 40	ADDHYD	.31	1	2	.08	.0	4.04	24.00	2.48	---	12.64	373.29	1204.2
XSECTION 82	REACH	.31	1	2	.08	.0	4.04	24.00	2.48	---	12.76	367.15	1184.4
XSECTION 82	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.40	---	12.46	86.69	1376.0
XSECTION 82	ADDHYD	.37	1	2	.08	.0	4.04	24.00	2.46	---	12.60	416.33	1116.2
XSECTION 39	RUNOFF	.13	1	2	.08	.0	4.04	24.00	2.48	---	12.55	160.23	1281.8
XSECTION 82	REACH	.13	1	2	.08	.0	4.04	24.00	2.47	---	12.70	151.27	1210.2
XSECTION 82	ADDHYD	.50	1	2	.08	.0	4.04	24.00	2.46	---	12.63	562.06	1128.6
XSECTION 81	REACH	.50	1	2	.08	.0	4.04	24.00	2.46	---	12.74	557.78	1120.0
XSECTION 81	RUNOFF	.06	1	2	.08	.0	4.04	24.00	1.83	---	12.57	63.49	1007.8
XSECTION 81	ADDHYD	.56	1	2	.08	.0	4.04	24.00	2.39	---	12.71	612.52	1091.8
XSECTION 22	RUNOFF	.15	1	2	.08	.0	4.04	24.00	2.30	---	12.53	190.91	1247.8
XSECTION 41	REACH	.15	1	2	.08	.0	4.04	24.00	2.30	---	12.76	180.52	1179.9

XSECTION	41	RUNOFF	.17	1	2	.08	.0	4.04	24.00	2.39	---	12.50	227.58	1323.2
XSECTION	41	ADDHYD	.32	1	2	.08	.0	4.04	24.00	2.35	---	12.55	386.12	1188.1

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 42	RUNOFF	.08	1	2	.08	.0	4.04	24.00	2.31	---	12.45	106.80	1369.2
XSECTION 42	ADDHYD	.40	1	2	.08	.0	4.04	24.00	2.34	---	12.52	484.05	1201.1
XSECTION 78	REACH	.40	1	2	.08	.0	4.04	24.00	2.34	---	12.52	484.05	1201.1
XSECTION 81	DIVERT	.00	1	2	.08	.0	4.04	24.00	2.34	---	12.16*	213.00	**********
XSECTION 78	DIVERT	.56	1	2	.08	.0	4.04	24.00	.85	---	12.71	399.52	712.2
XSECTION 78	REACH	.56	1	2	.08	.0	4.04	24.00	.85	---	12.84	389.96	695.1
XSECTION 78	ADDHYD	.96	1	2	.08	.0	4.04	24.00	1.47	---	12.60	763.82	792.3
XSECTION 78	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.57	---	12.46	90.81	1441.4
XSECTION 78	ADDHYD	1.03	1	2	.08	.0	4.04	24.00	1.54	---	12.58	843.16	821.0
XSECTION 77	REACH	1.03	1	2	.08	.0	4.04	24.00	1.54	---	12.58	843.16	821.0
XSECTION 77	RUNOFF	.06	1	2	.08	.0	4.04	24.00	1.83	---	12.53	68.62	1089.2
XSECTION 77	ADDHYD	1.09	1	2	.08	.0	4.04	24.00	1.56	---	12.57	910.30	835.1
XSECTION 75	DIVERT	.00	1	2	.08	.0	4.04	24.00	1.56	---	11.76*	80.00	**********
XSECTION 69	DIVERT	1.39	1	2	.08	.0	4.04	24.00	1.14	---	12.56	623.99	449.2
XSECTION 69	ADDHYD	2.48	1	2	.08	.0	4.04	24.00	1.32	---	12.57	1534.14	618.9
STRUCTURE 69	RESVOR	2.48	1	2	.08	.0	4.04	24.00	1.32	1385.10	14.37	209.53	84.5
XSECTION 75	ADDHYD	2.48	1	2	.08	.0	4.04	24.00	1.60	---	14.37	289.53	116.8
XSECTION 76	REACH	2.48	1	2	.08	.0	4.04	24.00	1.60	---	14.37	289.53	116.8
XSECTION 80	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.22	---	12.53	77.30	1226.9
XSECTION 79	REACH	.06	1	2	.08	.0	4.04	24.00	2.21	---	12.74	73.68	1169.6
XSECTION 79	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.76	---	12.45	95.29	1512.5
XSECTION 79	ADDHYD	.13	1	2	.08	.0	4.04	24.00	2.48	---	12.50	155.94	1237.6
XSECTION 76	REACH	.13	1	2	.08	.0	4.04	24.00	2.48	---	12.61	151.93	1205.8
XSECTION 76	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.57	---	12.46	91.40	1450.7
XSECTION 76	ADDHYD	.19	1	2	.08	.0	4.04	24.00	2.51	---	12.52	235.15	1244.2
XSECTION 75	REACH	.19	1	2	.08	.0	4.04	24.00	2.51	---	12.63	229.33	1213.4
XSECTION 75	ADDHYD	2.67	1	2	.08	.0	4.04	24.00	1.67	---	12.65	490.78	184.0
XSECTION 75	RUNOFF	.06	1	2	.08	.0	4.04	24.00	3.45	---	12.50	101.37	1609.0
XSECTION 75	ADDHYD	2.73	1	2	.08	.0	4.04	24.00	1.71	---	12.62	586.72	214.8
XSECTION 112	REACH	2.73	1	2	.08	.0	4.04	24.00	1.71	---	12.62	586.72	214.8
XSECTION 109	REACH	.00	1	2	.08	.0	4.04	24.00	1.71	---	12.16*	213.00	**********
XSECTION 109	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.39	---	12.47	86.13	1367.2
XSECTION 109	ADDHYD	.06	1	2	.08	.0	4.04	24.00	16.10	---	12.47	299.13	4748.1
XSECTION 108	ADDHYD	9.33	1	2	.08	.0	4.04	24.00	2.22	---	12.58	5436.12	582.6

XSECTION 110	REACH	9.33	1	2	.08	.0	4.04	24.00	2.22	---	12.58	5436.12	582.6
XSECTION 110	RUNOFF	.07	1	2	.08	.0	4.04	24.00	1.90	---	12.58	74.20	1016.5

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SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 110	ADDHYD	9.40	1	2	.08	.0	4.04	24.00	2.21	---	12.58	5510.33	585.9
XSECTION 122	RUNOFF	.35	1	2	.08	.0	4.04	24.00	2.48	---	12.47	497.17	1400.5
XSECTION 110	ADDHYD	9.76	1	2	.08	.0	4.04	24.00	2.22	---	12.56	5971.54	611.9
XSECTION 111	REACH	9.76	1	2	.08	.0	4.04	24.00	2.22	---	12.56	5971.54	611.9
XSECTION 111	RUNOFF	.07	1	2	.08	.0	4.04	24.00	1.83	---	12.59	68.69	981.2
XSECTION 111	ADDHYD	9.83	1	2	.08	.0	4.04	24.00	2.22	---	12.56	6040.07	614.5
XSECTION 112	REACH	9.83	1	2	.08	.0	4.04	24.00	2.21	---	12.66	5998.62	610.3
XSECTION 112	RUNOFF	.06	1	2	.08	.0	4.04	24.00	1.83	---	12.55	63.36	1038.7
XSECTION 112	ADDHYD	9.89	1	2	.08	.0	4.04	24.00	2.21	---	12.65	6057.46	612.5
XSECTION 121	RUNOFF	.25	1	2	.08	.0	4.04	24.00	3.47	---	12.44	429.70	1718.8
XSECTION 112	ADDHYD	10.14	1	2	.08	.0	4.04	24.00	2.24	---	12.62	6213.37	612.7
XSECTION 112	ADDHYD	12.87	1	2	.08	.0	4.04	24.00	2.13	---	12.62	6800.08	528.3
XSECTION 113	REACH	12.87	1	2	.08	.0	4.04	24.00	2.13	---	12.71	6775.26	526.4
XSECTION 113	RUNOFF	.05	1	2	.08	.0	4.04	24.00	3.04	---	12.52	79.44	1498.9
XSECTION 113	ADDHYD	12.92	1	2	.08	.0	4.04	24.00	2.13	---	12.71	6842.58	529.4
XSECTION 120	RUNOFF	.23	1	2	.08	.0	4.04	24.00	2.66	---	12.47	338.15	1463.9
XSECTION 113	ADDHYD	13.16	1	2	.08	.0	4.04	24.00	2.14	---	12.68	7032.68	534.6
XSECTION 58	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.40	---	12.46	87.32	1386.0
XSECTION 60	REACH	.06	1	2	.08	.0	4.04	24.00	2.39	---	12.65	84.26	1337.4
XSECTION 60	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.14	---	12.54	73.55	1167.5
XSECTION 60	ADDHYD	.13	1	2	.08	.0	4.04	24.00	2.26	---	12.59	155.41	1233.4
XSECTION 65	REACH	.13	1	2	.08	.0	4.04	24.00	2.26	---	12.70	153.07	1214.8
XSECTION 65	RUNOFF	.05	1	2	.08	.0	4.04	24.00	2.22	---	12.54	56.56	1203.4
XSECTION 65	ADDHYD	.17	1	2	.08	.0	4.04	24.00	2.25	---	12.64	204.43	1181.7
XSECTION 68	REACH	.17	1	2	.08	.0	4.04	24.00	2.24	---	12.96	173.99	1005.7
XSECTION 68	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.48	---	12.46	89.38	1418.7
XSECTION 68	ADDHYD	.24	1	2	.08	.0	4.04	24.00	2.30	---	12.56	199.92	847.1
XSECTION 70	REACH	.24	1	2	.08	.0	4.04	24.00	2.30	---	12.71	188.84	800.2
XSECTION 70	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.57	---	12.46	91.40	1450.7
XSECTION 70	ADDHYD	.30	1	2	.08	.0	4.04	24.00	2.35	---	12.56	255.00	852.9
XSECTION 74	REACH	.30	1	2	.08	.0	4.04	24.00	2.35	---	12.69	244.32	817.1
XSECTION 74	RUNOFF	.06	1	2	.08	.0	4.04	24.00	2.95	---	12.45	99.42	1578.1
XSECTION 74	ADDHYD	.36	1	2	.08	.0	4.04	24.00	2.45	---	12.56	315.52	871.6
XSECTION 113	REACH	.36	1	2	.08	.0	4.04	24.00	2.45	---	12.56	315.52	871.6

XSECTION 113	ADDHYD	13.52	1	2	.08	.0	4.04	24.00	2.15	---	12.67	7323.93	541.8
XSECTION 114	REACH	13.52	1	2	.08	.0	4.04	24.00	2.14	---	12.82	7123.37	527.0

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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 1													
XSECTION 64	RUNOFF	.25	1	2	.08	.0	4.04	24.00	2.22	---	12.48	319.51	1278.1
XSECTION 72	REACH	.25	1	2	.08	.0	4.04	24.00	2.22	---	12.63	296.29	1185.2
XSECTION 72	RUNOFF	.13	1	2	.08	.0	4.04	24.00	2.30	---	12.54	154.91	1239.3
XSECTION 72	ADDHYD	.38	1	2	.08	.0	4.04	24.00	2.25	---	12.60	447.05	1192.1
XSECTION 114	REACH	.38	1	2	.08	.0	4.04	24.00	2.24	---	12.84	413.71	1103.2
XSECTION 115	RUNOFF	.09	1	2	.08	.0	4.04	24.00	2.22	---	12.53	115.33	1226.9
XSECTION 114	ADDHYD	.47	1	2	.08	.0	4.04	24.00	2.23	---	12.74	483.72	1031.4
XSECTION 71	RUNOFF	.13	1	2	.08	.0	4.04	24.00	2.30	---	12.54	154.91	1239.3
XSECTION 114	REACH	.13	1	2	.08	.0	4.04	24.00	2.29	---	12.91	131.16	1049.3
XSECTION 114	ADDHYD	.59	1	2	.08	.0	4.04	24.00	2.25	---	12.78	606.24	1020.6
XSECTION 114	RUNOFF	.13	1	2	.08	.0	4.04	24.00	2.46	---	12.90	118.86	928.6
XSECTION 114	ADDHYD	.72	1	2	.08	.0	4.04	24.00	2.28	---	12.80	722.31	1000.4
XSECTION 114	ADDHYD	14.24	1	2	.08	.0	4.04	24.00	2.15	---	12.82	7844.84	550.9
XSECTION 119	RUNOFF	.23	1	2	.08	.0	4.04	24.00	2.38	---	12.82	221.79	960.2
XSECTION 114	ADDHYD	14.47	1	2	.08	.0	4.04	24.00	2.15	---	12.82	8066.63	557.5
XSECTION 118	REACH	14.47	1	2	.08	.0	4.04	24.00	2.14	---	12.96	7878.74	544.5
XSECTION 118	RUNOFF	.23	1	2	.08	.0	4.04	24.00	2.11	---	13.17	153.26	663.5
XSECTION 118	ADDHYD	14.70	1	2	.08	.0	4.04	24.00	2.14	---	12.97	8022.75	545.7

SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS
(A STAR(*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK
A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

		HYDROGRAPH INFORMATION							ROUTING PARAMETERS									PEAK	
		INFLOW		OUTFLOW		OUTFLOW+ INTERV.AREA		BASE-	VOLUME	MAIN	ITER-	Q AND A EQUATION			PEAK	S/Q	ATT-	TRAVEL TIME	
XSEC	REACH								ABOVE	TIME	ATION			LENGTH	RATIO	@PEAK	KIN	STOR-	KINE-
ID	LENGTH	PEAK	TIME	PEAK	TIME	PEAK	TIME	FLOW	BASE	INCR	#	COEFF	POWER	FACTOR	O/I	(K)	COEFF	AGE	MATIC
	(FT)	(CFS)	(HR)	(CFS)	(HR)	(CFS)	(HR)	(CFS)	(IN)	(HR)		(X)	(M)	(K*)	(Q*)	(SEC)	(C)	(HR)	(HR)
ALTERNATE		1	STORM	1															
3	1000	247	12.5	244	12.6	---	---	0	3.46	.08	1	.040	1.66	.049	.989	468	.47	.08	.13
3	1400	162	12.5	158	12.7	---	---	0	3.46	.08	1	.040	1.66	.112	.974	775	.31	.08	.22
6	1600	446	12.6	443	12.7	---	---	0	3.19	.08	1	1.53	1.21	.049	.992	329	.61	.16	.09
8	1600	550	12.7	531	12.9	---	---	0	2.90	.08	1	.655	1.24	.085	.967	540	.42	.16	.15
8	1400	107	12.6	105	12.8	---	---	0	1.83	.08	1	.542	1.52	.026	.982	278	.68?	.16	.08
4	1800	37	12.5	32	13.0	348	12.5	0	3.47	.08	1	.050	1.66	.362	.861	1571	.17	.08	.45
5	1400	348	12.5	342	12.6	---	---	0	3.46	.08	1	.050	1.66	.051	.983	500	.45	.08	.14
8	2100	463	12.6	434	12.9	---	---	0	2.85	.08	1	.643	1.24	.123	.938	729	.33	.16	.20
8	1900	172	12.6	146	13.0	---	---	0	1.90	.08	1	.040	1.66	.184	.852	1029	.25	.24	.29
14	3000	469	13.4	457	13.8	---	---	0	2.49	.08	1	.170	1.47	.032	.975	953	.26	.40	.27
14	2700	57	12.8	54	13.0	475	13.8	0	1.97	.08	1	.699	1.51	.065	.948	577	.40	.16	.16
11	2640	93	12.6	86	12.7	298	12.7	0	1.83	.08	1	.440	1.54	.091	.929	596	.39	.16	.17
13	1320	298	12.7	298	12.7	429	12.6	0	1.93	.08	0	1.98	1.67	.001	1.000	53	1.00?	.00	.00
14	2640	113	12.8	112	12.9	---	---	0	1.97	.08	1	2.10	1.40	.027	.988	287	.67?	.08	.08
14	1320	532	12.7	532	12.7	---	---	0	2.00	.08	0	1.64	1.67	.001	1.000	47	1.00?	.00	.00
15	1300	156	12.6	155	12.6	224	12.6	0	2.56	.08	1	.540	1.54	.018	.995	214	.80?	.08	.06
27	3000	1152	12.6	1040	13.0	1197	13.0	0	2.32	.08	1	.040	1.63	.040	.903	869	.28	.32	.25
25	2200	99	12.5	89	12.9	189	12.6	0	3.47	.08	1	.050	1.66	.264	.905	1297	.20	.08	.37
27	1700	189	12.6	162	12.9	---	---	0	2.76	.08	1	.040	1.63	.157	.860	992	.25	.24	.28
37	3000	1373	12.9	1363	13.0	1381	13.0	0	2.33	.08	1	.489	1.49	.010	.993	306	.64	.16	.09
37	2100	267	12.6	266	12.6	---	---	0	2.57	.08	1	.410	1.66	.018	.997	235	.76?	.08	.07
36	3500	149	12.8	117	13.3	201	12.6	0	2.21	.08	1	.060	1.66	.300	.789	1571	.17	.32	.46
35	1320	142	12.6	139	12.8	280	12.6	0	2.38	.08	1	.310	1.54	.030	.979	323	.62	.16	.09
36	1320	280	12.6	280	12.6	---	---	0	2.34	.08	0	4.48	1.25	.011	1.000	103	1.00?	.00	.00
37	1320	481	12.6	481	12.6	---	---	0	2.29	.08	0	4.64	1.25	.007	1.000	90	1.00?	.00	.00
85	1320	522	17.3	522	17.3	523	17.3	0	2.09*	.08	0	5.40	1.25	.001	1.000	78	1.00?	.00	.00
84	1320	523	17.3	523	17.3	524	17.3	0	2.09*	.08	0	5.40	1.25	.001	1.000	78	1.00?	.00	.00
90	1320	168	12.6	165	12.6	297	12.6	0	2.57	.08	1	.220	1.54	.044	.982	380	.55	.08	.11
88	1320	297	12.6	293	12.7	---	---	0	2.52	.08	1	.220	1.54	.031	.986	311	.63	.08	.09
88	2000	62	12.5	56	12.7	169	12.6	0	2.39	.08	1	.220	1.54	.156	.906	816	.30	.16	.23
84	2640	159	12.1	159	12.7	---	---	0	.00	.08	1	4.30	1.25	.014	1.000	239	.75?	.64	.07
105	1320	307	12.6	307	12.6	---	---	0	.00*	.08	0	5.90	1.25	.001	1.000	81	1.00?	.00	.00

SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS
(A STAR(*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK
A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

		HYDROGRAPH INFORMATION							ROUTING PARAMETERS									PEAK	
		INFLOW		OUTFLOW		OUTFLOW+ INTERV.AREA		BASE-	VOLUME ABOVE	MAIN TIME	ITER- ATION	Q AND A EQUATION		LENGTH	PEAK RATIO	S/Q @PEAK	ATT- KIN	TRAVEL TIME STOR-	TRAVEL TIME KINE-
XSEC ID	REACH LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	FLOW (CFS)	BASE (IN)	INCR (HR)	#	COEFF (X)	POWER (M)	FACTOR (K*)	O/I (Q*)	(K) (SEC)	COEFF (C)	AGE (HR)	MATIC (HR)
ALTERNATE		1	STORM	1															
101	1050	302	12.7	299	12.8	344	12.8	0	.91	.08	1	.220	1.54	.051	.987	246	.74?	.08	.07
102	1320	344	12.8	306	13.0	338	13.0	0	1.13	.08	1	.020	1.66	.242	.888	823	.30	.16	.23
105	1320	338	13.0	321	13.2	341	13.1	0	1.27	.08	1	.288	1.33	.105	.952	586	.39	.16	.16
87	1320	91	12.5	81	12.7	161	12.6	0	2.57	.08	1	.118	1.45	.212	.892	984	.26	.16	.28
105	2000	161	12.6	140	13.0	---	---	0	2.61	.08	1	.287	1.34	.201	.869	1066	.24	.16	.30
104	1320	744	13.0	744	13.0	779	13.0	0	7.40*	.08	0	5.90	1.25	.001	1.000	68	1.00?	.00	.00
83	1320	312	12.6	312	12.6	392	12.6	0	1.18*	.08	0	7.12	1.25	.001	1.000	70	1.00?	.00	.00
106	1320	392	12.6	392	12.6	458	12.6	0	1.21*	.08	0	5.90	1.25	.001	1.000	77	1.00?	.00	.00
107	900	458	12.6	458	12.6	531	12.6	0	1.22*	.08	0	5.90	1.25	.001	1.000	51	1.00?	.00	.00
29	3800	86	12.6	49	13.4	243	12.9	0	2.22	.08	1	.040	1.66	1.120	.575	2935	.09?	.24	.83
33	2640	243	12.9	243	12.9	429	12.9	0	2.14	.08	0	7.53	1.25	.011	1.000	140	1.00?	.00	.00
32	3000	114	12.7	113	12.8	---	---	0	1.97	.08	1	6.29	1.25	.025	.993	214	.80?	.08	.06
93	2640	139	14.0	139	14.1	344	12.6	0	2.07	.08	1	5.24	1.25	.004	1.000	209	.82?	.08	.06
92	1320	195	12.6	181	12.7	334	12.6	0	.24	.08	1	.080	1.66	.131	.928	447	.49	.16	.13
98	2500	334	12.6	301	12.8	---	---	0	.53	.08	1	.080	1.66	.140	.902	685	.35	.16	.19
95	1320	149	12.0	149	12.0	---	---	0	.00*	.08	0	6.26	1.25	.001	1.000	89	1.00?	.00	.00
94	3200	104	12.7	84	13.1	220	12.6	0	2.05	.08	1	.090	1.66	.246	.814	1299	.20	.24	.38
95	2400	220	12.6	199	12.8	331	12.8	0	2.24	.08	1	.090	1.66	.072	.902	722	.33	.16	.20
98	3000	315	12.8	283	13.0	---	---	0	1.75	.08	1	.080	1.66	.128	.898	840	.29	.16	.24
96	1320	165	11.9	165	11.9	313	12.6	0	.00*	.08	0	6.26	1.25	.001	1.000	88	1.00?	.00	.00
97	2100	128	12.6	112	12.8	343	12.6	0	1.28	.08	1	.080	1.66	.298	.876	841	.29	.16	.24
98	1000	343	12.6	341	12.7	---	---	0	2.10	.08	1	.080	1.66	.022	.993	271	.69?	.08	.08
99	1250	929	12.7	924	12.9	1001	12.8	0	1.17	.08	1	.080	1.66	.013	.994	228	.77?	.16	.06
139	1600	1001	12.8	979	13.0	---	---	0	1.24	.08	1	.050	1.66	.028	.978	376	.55	.16	.10
139	600	108	12.5	106	12.6	1037	12.9	0	2.57	.08	1	.050	1.66	.035	.982	341	.59	.16	.10
141	2100	196	13.0	186	13.3	341	12.6	0	2.28	.08	1	.080	1.66	.055	.947	710	.34	.24	.20
140	1320	341	12.6	332	12.7	475	12.6	0	2.44	.08	1	.080	1.66	.016	.972	358	.57	.08	.10
139	2800	557	12.6	503	12.9	---	---	0	2.40	.08	1	.050	1.66	.077	.903	830	.30	.16	.24
138	3000	111	12.5	108	12.7	384	12.5	0	3.47	.08	1	.170	1.66	.120	.973	809	.30	.08	.23
139	2000	384	12.5	356	12.6	---	---	0	2.65	.08	1	.050	1.66	.110	.927	687	.35	.16	.19
127	2500	195	12.5	178	12.7	---	---	0	2.41	.08	1	.080	1.66	.177	.913	847	.29	.08	.24
127	2300	46	12.5	36	12.9	212	12.7	0	2.07	.08	1	.080	1.66	.443	.781	1382	.19	.16	.40

SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS
(A STAR(*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK
A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

		HYDROGRAPH INFORMATION							ROUTING PARAMETERS										PEAK TRAVEL TIME	
		INFLOW		OUTFLOW		OUTFLOW+ INTERV.AREA						Q AND A EQUATION								
XSEC ID	REACH LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	BASE-FLOW (CFS)	VOLUME ABOVE BASE (IN)	MAIN TIME INCR (HR)	ITER-ATION #	COEFF (X)	POWER (M)	LENGTH FACTOR (K*)	PEAK RATIO O/I (Q*)	S/Q @PEAK (K) (SEC)	ATT-KIN COEFF (C)	STOR-AGE (HR)	KINE-MATIC (HR)
ALTERNATE		1	STORM	1															
131	2000	217	12.5	213	12.6	---	---	0	2.76	.08	1	.170	1.66	.048	.980	412	.52	.08	.12
126	1500	769	12.5	758	12.6	1003	12.6	0	2.45	.08	1	.110	1.66	.019	.986	243	.74?	.08	.07
134	1500	1003	12.6	1000	12.6	---	---	0	2.66	.08	1	.130	1.66	.012	.997	198	.84?	.08	.06
134	3200	70	12.5	65	12.8	1061	12.6	0	3.47	.08	1	.130	1.66	.236	.919	1214	.21	.08	.34
124	2500	1468	12.5	1442	12.6	1698	12.6	0	2.74	.08	1	.090	1.66	.030	.982	354	.58	.16	.10
124	900	1958	12.7	1958	12.7	---	---	0	1.73	.08	0	.960	1.51	.001	1.000	47	1.00?	.00	.00
104	1320	3622	12.6	3622	12.6	---	---	0	2.02	.08	0	.960	1.51	.002	1.000	56	1.00?	.00	.00
107	1000	4320	12.6	4320	12.6	---	---	0	2.72	.08	0	.850	1.53	.001	1.000	40	1.00?	.00	.00
108	1700	5097	12.6	5097	12.6	5129	12.6	0	2.12	.08	0	.850	1.53	.001	1.000	64	1.00?	.00	.00
48	1320	144	12.5	140	12.7	---	---	0	3.46	.08	1	.040	1.66	.110	.975	766	.32	.08	.21
48	2640	107	12.5	90	13.0	218	12.7	0	3.47	.08	1	.040	1.66	.423	.835	1724	.15	.08	.50
56	1866	354	12.6	347	12.8	386	12.6	0	2.88	.08	1	.120	1.66	.032	.980	391	.54	.16	.11
57	1320	386	12.6	386	12.6	463	12.6	0	2.76	.08	0	.760	1.58	.004	1.000	112	1.00?	.00	.00
46	2640	319	12.5	319	12.5	---	---	0	2.71	.08	0	3.10	1.67	.003	1.000	79	1.00?	.00	.00
46	1320	161	12.5	160	12.6	316	12.5	0	2.23	.08	1	.510	1.54	.023	.990	223	.78?	.08	.06
57	1320	635	12.5	635	12.5	---	---	0	2.46	.08	0	1.86	1.67	.001	1.000	41	1.00?	.00	.00
59	1320	1086	12.6	1086	12.6	---	---	0	2.56	.08	0	.740	1.58	.003	1.000	78	1.00?	.00	.00
59	1400	182	12.6	179	12.6	1262	12.6	0	2.94	.08	1	.110	1.66	.039	.983	403	.53	.08	.11
66	660	334	13.0	334	13.0	381	12.7	0	1.39	.08	0	5.10	1.25	.001	1.000	45	1.00?	.00	.00
67	1320	381	12.7	381	12.7	456	12.6	0	1.44	.08	0	5.10	1.25	.004	1.000	87	1.00?	.00	.00
67	1320	183	12.5	180	12.6	---	---	0	2.66	.08	1	.250	1.54	.040	.982	339	.60	.08	.09
69	1320	636	12.6	636	12.6	704	12.6	0	1.62	.08	0	5.10	1.25	.004	1.000	79	1.00?	.00	.00
40	2650	153	12.5	143	12.7	---	---	0	3.46	.08	1	.080	1.66	.169	.939	991	.25	.08	.28
40	1800	140	12.6	127	12.7	270	12.7	0	1.98	.08	1	.080	1.66	.122	.910	696	.34	.16	.20
82	1400	373	12.6	366	12.7	414	12.6	0	2.48	.08	1	.100	1.66	.026	.980	320	.62	.08	.09
82	1867	160	12.6	151	12.7	---	---	0	2.48	.08	1	.100	1.66	.082	.944	598	.39	.16	.17
81	1320	562	12.6	557	12.7	612	12.7	0	2.46	.08	1	.220	1.54	.019	.991	249	.73?	.08	.07
41	3100	190	12.6	180	12.7	386	12.6	0	2.30	.08	1	.240	1.66	.076	.945	548	.42	.08	.15
78	2500	481	12.5	481	12.5	---	---	0	2.34	.08	0	1.46	1.67	.004	1.000	100	1.00?	.00	.00
78	1320	399	12.7	388	12.8	---	---	0	.85	.08	1	.090	1.66	.062	.971	313	.63	.08	.09
77	1700	842	12.6	842	12.6	910	12.6	0	1.54	.08	0	.760	1.58	.006	1.000	108	1.00?	.00	.00
76	1320	290	14.4	290	14.4	---	---	0	1.60	.08	0	4.39	1.25	.001	1.000	104	1.00?	.00	.00

SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS
(A STAR(*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK
A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

		HYDROGRAPH INFORMATION							ROUTING PARAMETERS										PEAK TRAVEL TIME	
		INFLOW		OUTFLOW		OUTFLOW+ INTERV.AREA						Q AND A EQUATION								
XSEC ID	REACH LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	BASE-FLOW (CFS)	VOLUME ABOVE BASE (IN)	MAIN TIME INCR (HR)	ITER-ATION #	COEFF (X)	POWER (M)	LENGTH FACTOR (K*)	PEAK RATIO O/I (Q*)	S/Q @PEAK (K) (SEC)	ATT-KIN COEFF (C)	STOR-AGE (HR)	KINE-MATIC (HR)
ALTERNATE		1	STORM	1															
79	1320	77	12.6	74	12.7	156	12.5	0	2.22	.08	1	.230	1.54	.069	.957	486	.46	.08	.14
76	1320	156	12.5	151	12.6	233	12.6	0	2.48	.08	1	.230	1.54	.041	.972	379	.55	.16	.11
75	1320	233	12.6	229	12.6	---	---	0	2.51	.08	1	.230	1.54	.032	.985	329	.61	.08	.09
112	1320	586	12.6	586	12.6	---	---	0	1.71	.08	0	4.39	1.25	.002	1.000	90	1.00?	.00	.00
109	2640	213	12.2	213	12.2	299	12.5	0	.00	.08	0	7.66	1.25	.007	1.000	142	1.00?	.00	.00
110	1320	5424	12.6	5424	12.6	5498	12.6	0	2.22	.08	0	.850	1.53	.001	1.000	49	1.00?	.00	.00
111	1320	5971	12.6	5971	12.6	6040	12.6	0	2.22	.08	0	1.07	1.53	.001	1.000	41	1.00?	.00	.00
112	1320	6040	12.6	5992	12.6	6052	12.6	0	2.22	.08	1	.040	1.63	.005	.992	202	.83?	.08	.06
113	1320	6789	12.6	6773	12.7	6839	12.7	0	2.13	.08	1	.040	1.63	.004	.998	193	.86?	.08	.05
60	1320	87	12.5	84	12.6	155	12.6	0	2.40	.08	1	.250	1.54	.064	.968	440	.49	.08	.12
65	1320	155	12.6	153	12.7	204	12.6	0	2.26	.08	1	.280	1.54	.038	.986	334	.60	.16	.09
68	1320	204	12.6	174	13.0	200	12.6	0	2.25	.08	1	.250	1.25	.234	.851	1105	.23	.24	.31
70	1320	200	12.6	189	12.7	255	12.6	0	2.30	.08	1	.180	1.54	.029	.945	407	.52	.16	.11
74	1320	255	12.6	243	12.7	315	12.6	0	2.35	.08	1	.090	1.66	.021	.954	375	.56	.16	.11
113	1320	315	12.6	315	12.6	---	---	0	2.45	.08	0	5.93	1.25	.005	1.000	80	1.00?	.00	.00
114	3000	7304	12.6	7117	12.8	---	---	0	2.15	.08	1	.040	1.63	.015	.974	426	.51	.16	.12
72	2640	319	12.5	296	12.6	443	12.6	0	2.22	.08	1	.180	1.54	.128	.927	691	.34	.16	.19
114	2000	443	12.6	412	12.8	483	12.7	0	2.25	.08	1	.050	1.66	.096	.929	649	.36	.08	.18
114	2200	155	12.6	131	12.9	---	---	0	2.30	.08	1	.050	1.66	.234	.846	1086	.23	.16	.31
118	4000	8061	12.8	7878	13.0	8022	13.0	0	2.15	.08	1	.050	1.66	.014	.977	410	.52	.16	.11

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
STRUCTURE 69	2.48	
ALTERNATE 1		209.53
STRUCTURE 59	1.07	
ALTERNATE 1		333.55
STRUCTURE 44	3.52	
ALTERNATE 1		315.89
STRUCTURE 43	3.52	
ALTERNATE 1		800.90
STRUCTURE 37	2.72	
ALTERNATE 1		1378.42
STRUCTURE 33	.68	
ALTERNATE 1		108.55
STRUCTURE 8	1.18	
ALTERNATE 1		469.23
XSECTION 1	.15	
ALTERNATE 1		248.49
XSECTION 2	.10	
ALTERNATE 1		165.73
XSECTION 3	.29	
ALTERNATE 1		446.92
XSECTION 4	.22	
ALTERNATE 1		351.51
XSECTION 5	.34	
ALTERNATE 1		464.83
XSECTION 6	.40	
ALTERNATE 1		549.88
XSECTION 7	.12	
ALTERNATE 1		106.65

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 8	1.18	
ALTERNATE 1		1315.07
XSECTION 9	.07	
ALTERNATE 1		56.70
XSECTION 10	.09	
ALTERNATE 1		93.22
XSECTION 11	.33	
ALTERNATE 1		298.55
XSECTION 12	.07	
ALTERNATE 1		86.92
XSECTION 13	.59	
ALTERNATE 1		532.09
XSECTION 14	2.20	
ALTERNATE 1		1156.00
XSECTION 15	.19	
ALTERNATE 1		224.76
XSECTION 16	.12	
ALTERNATE 1		155.97
XSECTION 17	.06	
ALTERNATE 1		101.41
XSECTION 18	.18	
ALTERNATE 1		171.98
XSECTION 19	.02	
ALTERNATE 1		37.85
XSECTION 20	.06	
ALTERNATE 1		110.00
XSECTION 21	.24	
ALTERNATE 1		319.12

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 22	.15	
ALTERNATE 1		190.91
XSECTION 23	.09	
ALTERNATE 1		154.39
XSECTION 24	.20	
ALTERNATE 1		268.81
XSECTION 25	.15	
ALTERNATE 1		188.52
XSECTION 26	.07	
ALTERNATE 1		93.38
XSECTION 27	2.60	
ALTERNATE 1		1375.47
XSECTION 28	.16	
ALTERNATE 1		149.43
XSECTION 29	.32	
ALTERNATE 1		243.13
XSECTION 30	.13	
ALTERNATE 1		113.58
XSECTION 32	.11	
ALTERNATE 1		103.71
XSECTION 33	.68	
ALTERNATE 1		138.55
XSECTION 34	.13	
ALTERNATE 1		141.66
XSECTION 35	.25	
ALTERNATE 1		281.50
XSECTION 36	.53	
ALTERNATE 1		483.34

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 37	3.45	
ALTERNATE 1		1892.39
XSECTION 38	.13	
ALTERNATE 1		140.54
XSECTION 39	.13	
ALTERNATE 1		160.23
XSECTION 40	.31	
ALTERNATE 1		373.29
XSECTION 41	.32	
ALTERNATE 1		386.12
XSECTION 42	.40	
ALTERNATE 1		484.05
XSECTION 43	.05	
ALTERNATE 1		75.70
XSECTION 44	.13	
ALTERNATE 1		182.98
XSECTION 45	.13	
ALTERNATE 1		183.10
XSECTION 46	.49	
ALTERNATE 1		635.94
XSECTION 47	.13	
ALTERNATE 1		161.49
XSECTION 48	.28	
ALTERNATE 1		353.80
XSECTION 49	.09	
ALTERNATE 1		146.94
XSECTION 56	.34	
ALTERNATE 1		386.92

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 57	.89	
ALTERNATE 1		1098.96
XSECTION 58	.06	
ALTERNATE 1		87.32
XSECTION 59	1.07	
ALTERNATE 1		1353.71
XSECTION 60	.13	
ALTERNATE 1		155.41
XSECTION 64	.25	
ALTERNATE 1		319.51
XSECTION 65	.17	
ALTERNATE 1		204.43
XSECTION 66	1.14	
ALTERNATE 1		381.55
XSECTION 67	1.33	
ALTERNATE 1		635.51
XSECTION 68	.24	
ALTERNATE 1		199.92
XSECTION 69	2.48	
ALTERNATE 1		1534.14
XSECTION 70	.30	
ALTERNATE 1		255.00
XSECTION 71	.13	
ALTERNATE 1		154.91
XSECTION 72	.38	
ALTERNATE 1		447.05
XSECTION 74	.36	
ALTERNATE 1		315.52

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 75	2.73	
ALTERNATE 1		586.72
XSECTION 76	.19	
ALTERNATE 1		235.15
XSECTION 77	1.09	
ALTERNATE 1		910.30
XSECTION 78	1.03	
ALTERNATE 1		843.16
XSECTION 79	.13	
ALTERNATE 1		155.94
XSECTION 80	.06	
ALTERNATE 1		77.30
XSECTION 81	.00	
ALTERNATE 1		213.00
XSECTION 82	.50	
ALTERNATE 1		562.06
XSECTION 83	3.70	
ALTERNATE 1		392.36
XSECTION 84	3.64	
ALTERNATE 1		618.61
XSECTION 85	3.58	
ALTERNATE 1		523.15
XSECTION 86	.06	
ALTERNATE 1		90.81
XSECTION 87	.13	
ALTERNATE 1		162.32
XSECTION 88	.00	
ALTERNATE 1		159.00

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 89	.05	
ALTERNATE 1		62.16
XSECTION 90	.23	
ALTERNATE 1		297.37
XSECTION 91	.13	
ALTERNATE 1		169.21
XSECTION 92	1.00	
ALTERNATE 1		334.10
XSECTION 93	.00	
ALTERNATE 1		149.00
XSECTION 94	.25	
ALTERNATE 1		221.63
XSECTION 95	.00	
ALTERNATE 1		165.00
XSECTION 96	.00	
ALTERNATE 1		185.00
XSECTION 97	.31	
ALTERNATE 1		345.54
XSECTION 98	1.78	
ALTERNATE 1		931.38
XSECTION 99	1.87	
ALTERNATE 1		1001.05
XSECTION 100	.08	
ALTERNATE 1		108.52
XSECTION 101	.42	
ALTERNATE 1		346.30
XSECTION 102	.48	
ALTERNATE 1		338.84

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

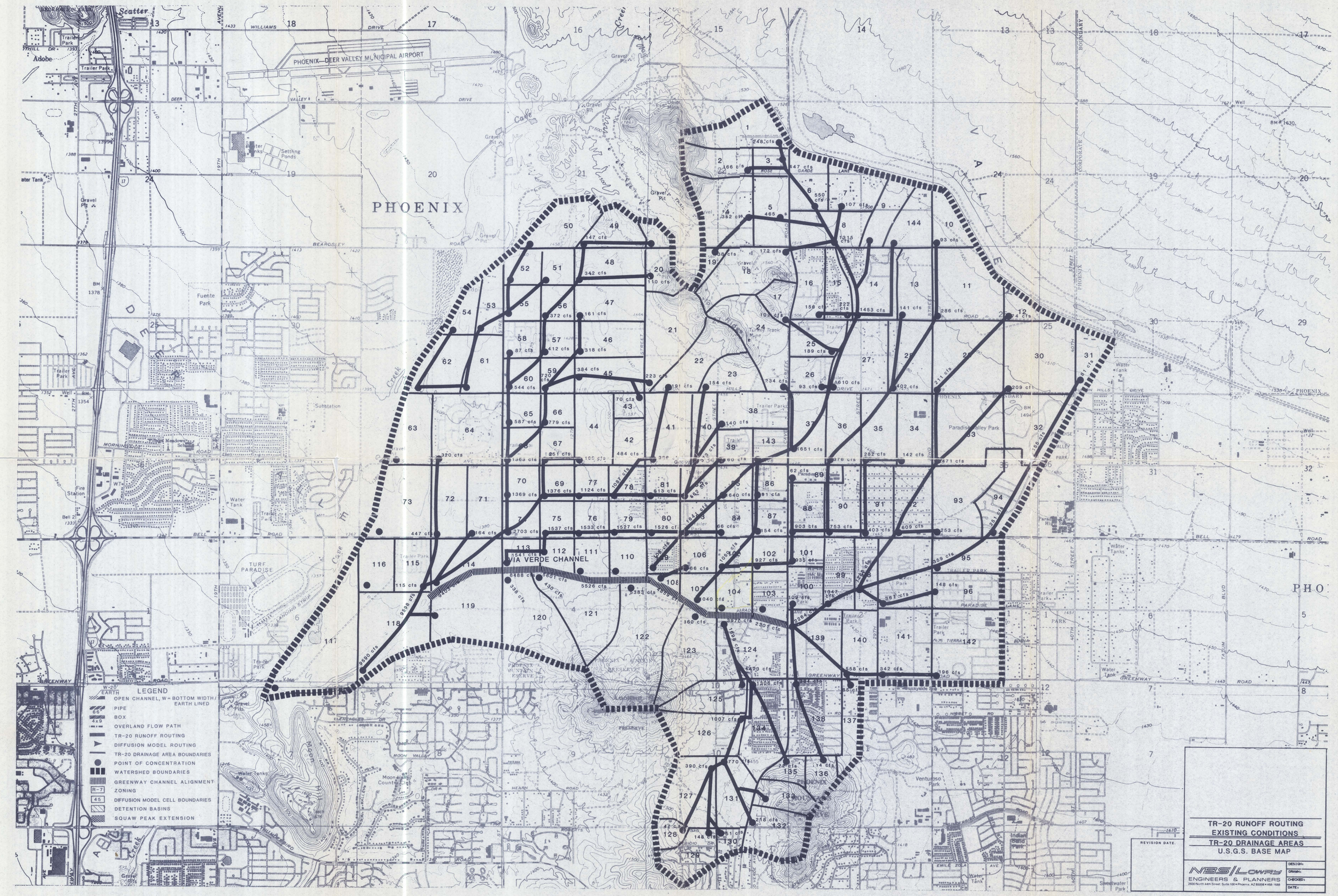
XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 103	.08	
ALTERNATE 1		112.17
XSECTION 104	5.20	
ALTERNATE 1		4319.74
XSECTION 105	.67	
ALTERNATE 1		744.61
XSECTION 106	3.77	
ALTERNATE 1		458.63
XSECTION 107	9.24	
ALTERNATE 1		5115.87
XSECTION 108	9.33	
ALTERNATE 1		5436.12
XSECTION 109	.06	
ALTERNATE 1		299.13
XSECTION 110	9.76	
ALTERNATE 1		5971.54
XSECTION 111	9.83	
ALTERNATE 1		6040.07
XSECTION 112	12.87	
ALTERNATE 1		6800.08
XSECTION 113	13.52	
ALTERNATE 1		7323.93
XSECTION 114	14.47	
ALTERNATE 1		8066.63
XSECTION 115	.09	
ALTERNATE 1		115.33
XSECTION 118	14.70	
ALTERNATE 1		8022.75

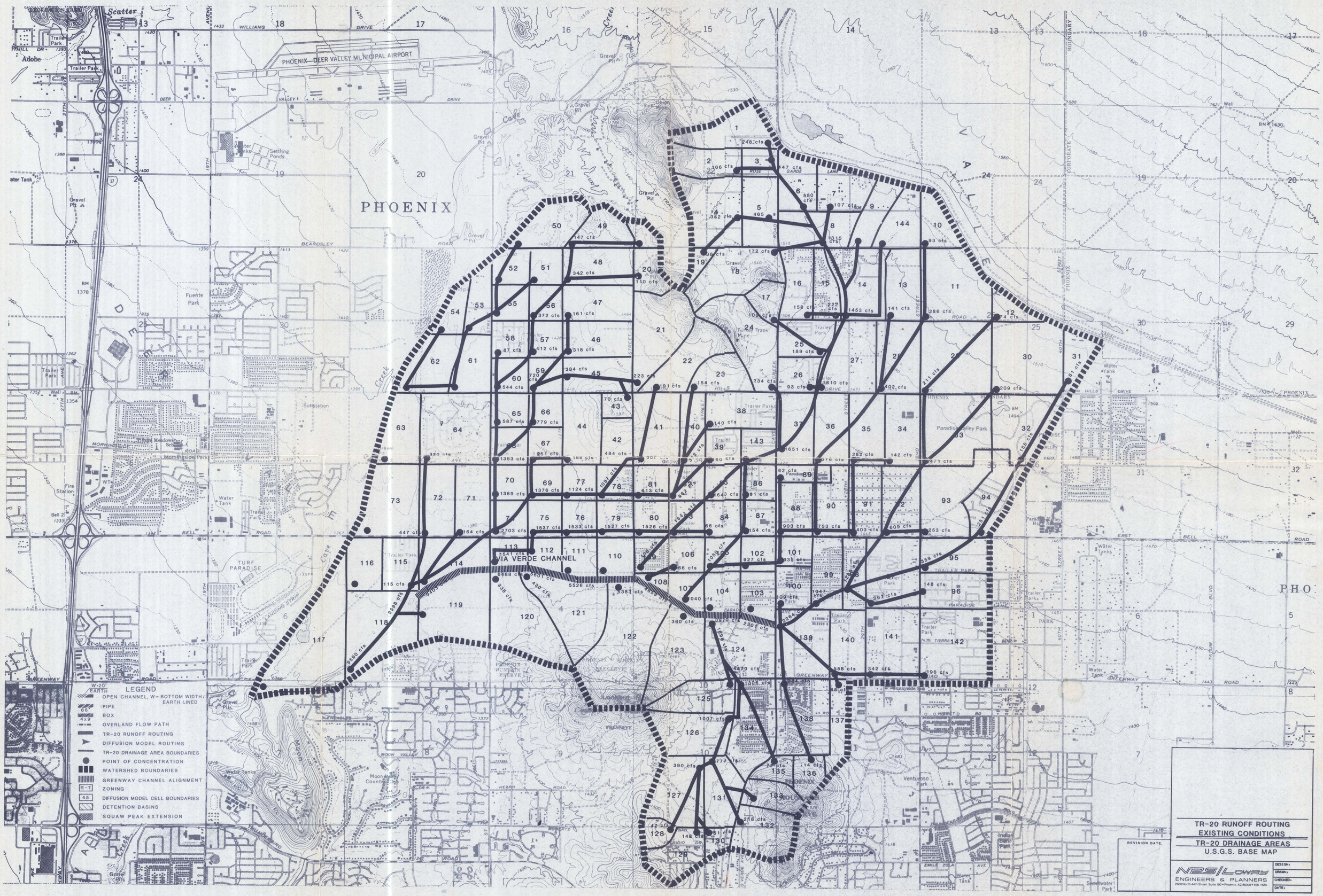
SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 119	.23	
ALTERNATE 1		221.79
XSECTION 120	.23	
ALTERNATE 1		338.15
XSECTION 121	.25	
ALTERNATE 1		429.70
XSECTION 122	.35	
ALTERNATE 1		497.17
XSECTION 123	.21	
ALTERNATE 1		359.53
XSECTION 124	4.46	
ALTERNATE 1		3631.02
XSECTION 125	1.11	
ALTERNATE 1		1473.03
XSECTION 126	.76	
ALTERNATE 1		1007.74
XSECTION 127	.33	
ALTERNATE 1		390.23
XSECTION 128	.04	
ALTERNATE 1		47.02
XSECTION 129	.14	
ALTERNATE 1		199.00
XSECTION 130	.03	
ALTERNATE 1		50.77
XSECTION 131	.60	
ALTERNATE 1		769.62
XSECTION 132	.14	
ALTERNATE 1		218.08

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
XSECTION 134	1.00	
ALTERNATE 1		1305.95
XSECTION 135	.04	
ALTERNATE 1		72.26
XSECTION 136	.07	
ALTERNATE 1		113.55
XSECTION 137	.08	
ALTERNATE 1		85.47
XSECTION 138	.27	
ALTERNATE 1		384.43
XSECTION 139	3.05	
ALTERNATE 1		1958.99
XSECTION 140	.64	
ALTERNATE 1		558.48
XSECTION 141	.44	
ALTERNATE 1		341.50
XSECTION 142	.25	
ALTERNATE 1		196.23
XSECTION 143	3.52	
ALTERNATE 1		1753.24
XSECTION 144	3.52	
ALTERNATE 1		521.89


PHOENIX
PHOENIX—DEER VALLEY MUNICIPAL AIRPORT
VIA VERDE CHANNEL
LEGEND
OPEN CHANNEL, W = BOTTOM WIDTH / EARTH LINED
PIPE
BOX
OVERLAND FLOW PATH
TR-20 RUNOFF ROUTING
DIFFUSION MODEL ROUTING
TR-20 DRAINAGE AREA BOUNDARIES
POINT OF CONCENTRATION
WATERSHED BOUNDARIES
GREENWAY CHANNEL ALIGNMENT
ZONING
DIFFUSION MODEL CELL BOUNDARIES
DETENTION BASINS
SQUAW PEAK EXTENSION
REVISION DATE
TR-20 RUNOFF ROUTING
EXISTING CONDITIONS
TR-20 DRAINAGE AREAS
U.S.G.S. BASE MAP
NBS/LOWRY
ENGINEERS & PLANNERS
DESIGN
DRAWN
CHECKED
DATE


PHOENIX
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