

SUPPORTING CALCULATIONS
FLAT CREEK
ADDITION
STORMWATER DRAIN
PROJECT
FOR
CITY OF WICHITA, SEDGWICK COUNTY,
KANSAS



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Prepared By

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September 18, 2001

Flat Creek Addition Drainage Assessment

This report has been prepared in response to the Dept. of Public Works for Sedgwick County's concerns regarding the 3' X 3' Reinforced concrete box culvert crossing 119th Street West, approximately 200 feet North of the Northwest corner of the southwest quarter of Sec. 31, Township 27-South, Range 1-West.

The reinforced box culvert (RCBC) of concern originally collected runoff from approximately 40 acres of agricultural lands. During the mid and late 1990's, residential developments were introduced into this drainage basin. This development was located between the railroad and the north line of the southwest quarter of Sec. 31, TWP-27-S, R-1-W.

Drainage concerns were addressed at the RCBC during this development. As with any development that increases the impervious areas, an increase of the peak runoff rates will occur. For this reason the City of Wichita requires that all new developments provide an area for detention in order to reduce the peak flowrates to that which would occur in the pre-developed conditions. The Lark development was not exception to the requirement. A detention pond was constructed just upstream of the RCBC, and site grading re-directed 8 acres to another detention facility, and prior to development, a hydrologic analysis was performed. Calculation of the effect of the Lark development show that the peak discharges at the RCBC has been reduced beyond that of the pre-development conditions. The amount of reduction varies from 11% during a 100-yr. event to 19% during the 5-yr. event.

The Flat Creek development is the last area of this basin that will be developed. This development encompasses the remaining 22 acres of the original 40-acre drainage basin. In addition to the 22 acres naturally draining to the RCBC, 41 acres have been introduced by the proposed pond system that creates a cross-basin transfer. The additional 41 acres had a general tendency to flow towards the southeast and into the Pawnee right-of-way. However, this avenue as a drainage corridor is not of sufficient capacity to withstand the developed conditions. Therefore our office felt that the cross-basin transfer is justified. The Flat Creek Addition was designed to allow for the over-compensation and storage of the rainfall runoff. In addition to the increase in storage capacity, a low level outlet structure was designed that would allow for detention during smaller rainfall events, as well as the 100-yr. rainfall.

The calculated peak discharge from this development, including runoff associated with the increase of drainage area, significantly reduces the peak runoff. The calculated reduction in the peak flow rates exceeds the requirement of the City of Wichita, and in a broader scope that of Sedgwick County.

The ponds in the Flat Creek development incorporate approximately 9 acres of surface water, with the available capacity to store 36 acre-ft of runoff. This volume is to with hold the 100-yr. rainfall event, for the subdivision conditions. The designed low-level outlet mentioned previously is a 24-inch concrete pipe, which extends from the northern pond north to just upstream of the RCBC. Based on our calculations, the peak discharge from the Flat Creek development will be significantly lower than the pre-development conditions, ranging from 56% reduction during the 2-yr. rainfall event to 62% reduction during the 100-yr. rainfall event.

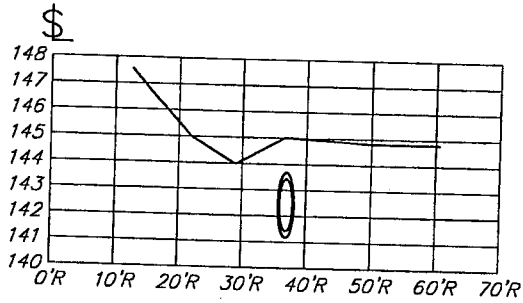
Summary of Peak Discharges:

Return Period Yr.	Pre Development cfs	Post Development of Lark cfs	Post Development of Flat Creek cfs
2	25	21	11
5	42	34	15
10	53	44	20
100	94	84	36

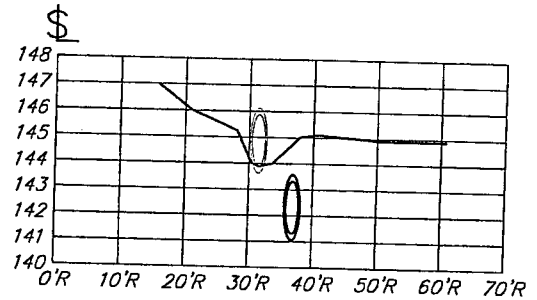
119TH ST. W. R.O.W. CROSS-SECTIONS

BASELINE = SECTION LINE
 STA 0+00 AT NW CORNER OF

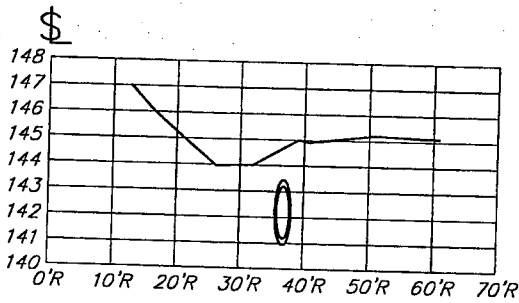
SW 1/4, SEC 31, TWP-27-S, R-1-W.



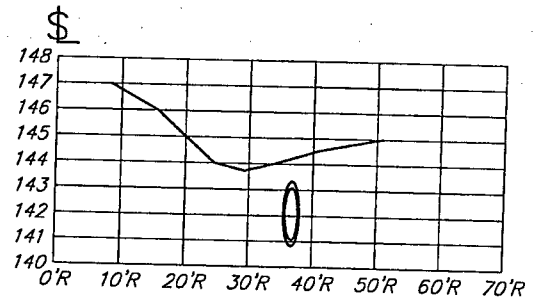
STA 0+25



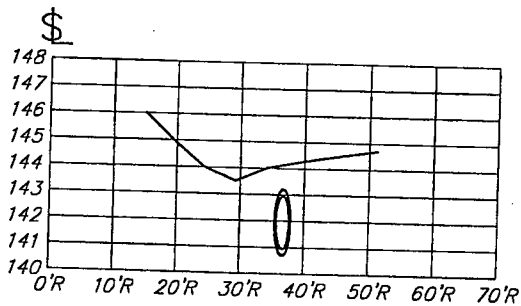
STA 0+75



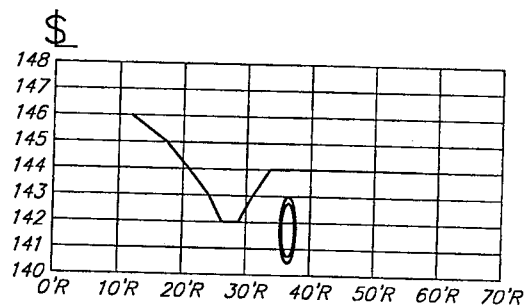
STA 1+25



STA 1+75



STA 2+25



STA 2+75

Protective Fill shown on construction plans shall be adjusted as necessary to provide

Pre-Developed Conditions

Primary Soil cover per Soil Survey of Sedgwick Co., KS,
is hydrologic type "D".

Based on City of Derby's Stormwater Management Criteria,
CN for open space = 76

Time of Concentration = 41 min (see attached worksheet)

HEC-1 file = Exist.IH1

Peak Flow rates

R.P.	Q
2	25
5	42
10	53
100	94

Past Lark Conditions

HEC-1 File = Lark.IH1

R.P.	Q
2	21
5	34
10	44
100	84

Past Developed Conditions

HEC-1 File = Flaterk1.IH1

R.P.	Q
2	11
5	15
10	20
100	36

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project Flat Creek Addition By BLG Date _____

Location _____ Checked _____ Date _____

Circle one: ~~Present~~ ~~Developed~~ Pre-Project

Circle one: T_c T_t through subarea

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

<u>Sheet flow</u> (Applicable to T_c only)	Segment ID		
1. Surface description (table 3-1)		cultivated Soil	
2. Manning's roughness coeff., n (table 3-1) ..		0.06	
3. Flow length, L (total L \leq 300 ft)	ft	300	
4. Two-yr 24-hr rainfall, P_2	in	3.5	
5. Land slope, s	ft/ft	0.0053	
6. $T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$ Compute T_t	hr	0.31	+ [] = 0.31

<u>Shallow concentrated flow</u>	Segment ID		
7. Surface description (paved or unpaved)		unpaved	
8. Flow length, L	ft	1660	
9. Watercourse slope, s	ft/ft	0.0053	
10. Average velocity, V (Figure 3-4)	ft/s	1.2	
11. $T_t = \frac{L}{3600 V}$ Compute T_t	hr	0.38	+ [] = 0.38

<u>Channel flow</u>	Segment ID		
12. Cross sectional flow area, a	ft ²		
13. Wetted perimeter, p_w	ft		
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft		
15. Channel slope, s	ft/ft		
16. Manning's roughness coeff., n			
17. $V = \frac{1.49 r^{2/3} s^{1/2}}{n}$ Compute V	ft/s		
18. Flow length, L	ft		
19. $T_t = \frac{L}{3600 V}$ Compute T_t	hr		+ [] = []
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr		0.69

= 41 min

```

*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* MAY 1991 *
* VERSION 4.0.1E *
* Lahey F77L-EM/32 version 5.01 *
* Dodson & Associates, Inc. *
* RUN DATE 09/18/01 TIME 10:11:03 *
*****

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* HYDROLOGIC ENGINEERING CENTER *
* 609 SECOND STREET *
* DAVIS, CALIFORNIA 95616 *
* (916) 551-1748 *
*****

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X X XXXXXXX XXXXX X
X X X X X XX
X X X X X X
XXXXXXXX XXXX X XXXXX X
X X X X X X
X X X X X X
X X XXXXXXX XXXXX XXXX

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

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

HEC-1 INPUT

```

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
1 ID . FLAT CREEK ADDITION
  * ADDITIONAL ROUTING
  *
2 IT 5 17SEP01 0000 300 2001
3 IO 3 0
4 JR PREC 1.0000 1.3143 1.5143 1.7714 2.0000 2.2286
  *DIAGRAM
  *
  * PRE-DEVELOPED CONDITIONS
5 KK BASIN
6 BA .0625
7 PB 3.5
8 IN 60
9 PC 0 0.011 0.022 0.035 0.048 0.063 0.080 0.098 0.120 0.147
10 PC 0.181 0.235 0.663 0.772 0.820 0.854 0.880 0.902 0.921 0.937
11 PC 0.952 0.965 0.978 0.989 1.000
12 UD 0.41
13 LS 0 76
  *
  *
14 ZZ

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SCHEMATIC DIAGRAM OF STREAM NETWORK

```

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

```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```

*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* MAY 1991 *
* VERSION 4.0.1E *
* Lahey F77L-EM/32 version 5.01 *
* Dodson & Associates, Inc. *
* RUN DATE 09/18/01 TIME 10:11:03 *

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(INCHES)	1.785	2.209	2.209	2.209
(AC-FT)	6.	7.	7.	7.
CUMULATIVE AREA =	0.06 SQ MI			

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

HYDROGRAPH AT STATION BASIN
FOR PLAN 1, RATIO = 1.51

TOTAL RAINFALL =	5.30,	TOTAL LOSS =	2.52,	TOTAL EXCESS =	2.78
PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)	(CFS)			
+ 53.	12.17	15.	5.	5.	5.
		(INCHES)	2.246	2.783	2.783
		(AC-FT)	7.	9.	9.
		CUMULATIVE AREA =	0.06 SQ MI		

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

HYDROGRAPH AT STATION BASIN
FOR PLAN 1, RATIO = 1.77

TOTAL RAINFALL =	6.20,	TOTAL LOSS =	2.65,	TOTAL EXCESS =	3.55
PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)	(CFS)			
+ 67.	12.17	19.	6.	6.	6.
		(INCHES)	2.857	3.552	3.552
		(AC-FT)	10.	12.	12.
		CUMULATIVE AREA =	0.06 SQ MI		

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

HYDROGRAPH AT STATION BASIN
FOR PLAN 1, RATIO = 2.00

TOTAL RAINFALL =	7.00,	TOTAL LOSS =	2.74,	TOTAL EXCESS =	4.26
PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)	(CFS)			
+ 80.	12.17	23.	7.	7.	7.
		(INCHES)	3.412	4.255	4.255
		(AC-FT)	11.	14.	14.
		CUMULATIVE AREA =	0.06 SQ MI		

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

HYDROGRAPH AT STATION BASIN
FOR PLAN 1, RATIO = 2.23

TOTAL RAINFALL =	7.80,	TOTAL LOSS =	2.82,	TOTAL EXCESS =	4.98
PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)	(CFS)			
+ 94.	12.17	27.	8.	8.	8.
		(INCHES)	3.975	4.974	4.974
		(AC-FT)	13.	17.	17.
		CUMULATIVE AREA =	0.06 SQ MI		

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

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO PRECIPITATION						
				RATIO 1	RATIO 2	RATIO 3	RATIO 4	RATIO 5	RATIO 6	
				1.00	1.31	1.51	1.77	2.00	2.23	
HYDROGRAPH AT										
+	BASIN	0.06	1	FLOW	25.	42.	53.	67.	80.	94.
				TIME	12.17	12.17	12.17	12.17	12.17	12.17

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

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*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* MAY 1991 *
* VERSION 4.0.1E *
* Lahey F77L-EM/32 version 5.01 *
* Dodson & Associates, Inc. *
* RUN DATE 09/18/01 TIME 10:10:25 *
*****

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* DAVIS, CALIFORNIA 95616 *
* (916) 551-1748 *
*****

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

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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW. THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE. THE DEFINITION OF -AMSK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY, DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

HEC-1 INPUT

```

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
1 ID FLAT CREEK ADDITION
  * ADDITIONAL ROUTING
  *
2 IT 5 17SEP01 0000 300 2001
3 IO 3 0
4 JR PREC 1.0000 1.3143 1.5143 1.7714 2.0000 2.2286
  *DIAGRAM
  *
  * LARK 4TH ADDITION
5 KK LARK
6 BA .0281
7 PB 3.5 35min 24hr
8 IN 60 1.42 3.5
9 PC 0 0.011 0.022 0.035 0.048 0.063 4.375 60
10 PC 0.181 0.235 0.663 0.772 0.820 0.854 0.080 0.098 0.120 0.147
11 PC 0.952 0.965 0.978 0.989 1.000 0.880 0.902 0.921 0.937
12 UD 0 0.15
13 LS 0 82 0
  *
  * LARK 4TH POND
14 KK POND1
15 RS 1 ELEV 140 0
16 SV 0 0.46522 1.44858 2.51786 3.64275
17 SE 140 141 142 143 144
18 SQ 0 10 20 30 40
19 SQ 100 50 60 70 80 90
20 SE 140.16 141.93 142.73 143.34 143.47 143.83 144.28 144.93 145.68 146.3
21 SE 146.47
  *
  * UNDEVELOPED FLAT CREEK ADDITION
22 KK PLAT
23 BA .034
24 UD .41
25 LS 0 76 0
  *
26 KK COMBO

```

27 HC 2
28 ZZ

SCHEMATIC DIAGRAM OF STREAM NETWORK

1
INPUT LINE (V) ROUTING (---->) DIVERSION OR PUMP FLOW
NO. (.) CONNECTOR (<----) RETURN OF DIVERTED OR PUMPED FLOW
5 LARK
V
V
14 POND1
.
22 . PLAT
.
26 COMBO.....

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* MAY 1991 *
* VERSION 4.0.1E *
* Lahey F77L-EM/32 version 5.01 *
* Dodson & Associates, Inc. *
* RUN DATE 09/18/01 TIME 10:10:25 *

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

FLAT CREEK ADDITION

3 IO OUTPUT CONTROL VARIABLES
IPRNT 3 PRINT CONTROL
IPLOT 0 PLOT CONTROL
QSCAL 0. HYDROGRAPH PLOT SCALE
IT HYDROGRAPH TIME DATA
NMIN 5 MINUTES IN COMPUTATION INTERVAL
IDATE 17SEP 1 STARTING DATE
ITIME 0000 STARTING TIME
NQ 300 NUMBER OF HYDROGRAPH ORDINATES
NDDATE 18SEP 1 ENDING DATE
NDTIME 0055 ENDING TIME
ICENT 20 CENTURY MARK
COMPUTATION INTERVAL 0.08 HOURS
TOTAL TIME BASE 24.92 HOURS

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

JP MULTI-PLAN OPTION
NPLAN 1 NUMBER OF PLANS

JR MULTI-RATIO OPTION
RATIOS OF PRECIPITATION
1.00 1.31 1.51 1.77 2.00 2.23

* LARK *
5 KK

FOR PLAN 1, RATIO = 1.00

TOTAL RAINFALL = 3.50, TOTAL LOSS = 1.72, TOTAL EXCESS = 1.78

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	(CFS)	6-HR	24-HR	72-HR	24.92-HR
+ 19.	12.00	4.	1.	1.	1.	1.
		(INCHES) 1.446	1.783	1.783	1.783	1.783
		(AC-FT) 2.	3.	3.	3.	3.

CUMULATIVE AREA = 0.03 SQ MI

*** **

HYDROGRAPH AT STATION LARK
FOR PLAN 1, RATIO = 1.31

TOTAL RAINFALL = 4.60, TOTAL LOSS = 1.88, TOTAL EXCESS = 2.72

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	(CFS)	6-HR	24-HR	72-HR	24.92-HR
+ 28.	12.00	7.	2.	2.	2.	2.
		(INCHES) 2.189	2.724	2.724	2.724	2.724
		(AC-FT) 3.	4.	4.	4.	4.

CUMULATIVE AREA = 0.03 SQ MI

*** **

HYDROGRAPH AT STATION LARK
FOR PLAN 1, RATIO = 1.51

TOTAL RAINFALL = 5.30, TOTAL LOSS = 1.95, TOTAL EXCESS = 3.35

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	(CFS)	6-HR	24-HR	72-HR	24.92-HR
+ 34.	12.00	8.	3.	2.	2.	2.
		(INCHES) 2.681	3.349	3.349	3.349	3.349
		(AC-FT) 4.	5.	5.	5.	5.

CUMULATIVE AREA = 0.03 SQ MI

*** **

HYDROGRAPH AT STATION LARK
FOR PLAN 1, RATIO = 1.77

TOTAL RAINFALL = 6.20, TOTAL LOSS = 2.03, TOTAL EXCESS = 4.17

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	(CFS)	6-HR	24-HR	72-HR	24.92-HR
+ 41.	12.00	10.	3.	3.	3.	3.
		(INCHES) 3.326	4.171	4.171	4.171	4.171
		(AC-FT) 5.	6.	6.	6.	6.

CUMULATIVE AREA = 0.03 SQ MI

*** **

HYDROGRAPH AT STATION LARK
FOR PLAN 1, RATIO = 2.00

TOTAL RAINFALL = 7.00, TOTAL LOSS = 2.08, TOTAL EXCESS = 4.92

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

+ (CFS) (HR)
 + 47. 12.00 (CFS)
 (INCHES) 12. 4. 4. 4.
 (AC-FT) 3.906 4.916 4.916 4.916
 6. 7. 7. 7.

CUMULATIVE AREA = 0.03 SQ MI

*** **

HYDROGRAPH AT STATION LARK
 FOR PLAN 1, RATIO = 2.23

TOTAL RAINFALL = 7.80, TOTAL LOSS = 2.13, TOTAL EXCESS = 5.67

PEAK FLOW TIME
 + (CFS) (HR) 6-HR MAXIMUM AVERAGE FLOW
 (CFS) (HR) 24-HR 72-HR 24.92-HR
 + 54. 12.00 (CFS)
 (INCHES) 14. 4. 4. 4.
 (AC-FT) 4.488 5.670 5.670 5.670
 7. 8. 8. 8.
 CUMULATIVE AREA = 0.03 SQ MI

*** **

 * *
 14 KK * POND1 *
 * *

HYDROGRAPH ROUTING DATA

15 RS	STORAGE ROUTING	1	NUMBER OF SUBREACHES	ELEV	TYPE OF INITIAL CONDITION	INITIAL CONDITION	WORKING R AND D COEFFICIENT						
16 SV	STORAGE	0.0	0.5	1.4	2.5	3.6							
17 SE	ELEVATION	140.00	141.00	142.00	143.00	144.00							
18 SQ	DISCHARGE	0.	10.	20.	30.	40.	50.	60.	70.	80.	90.		
20 SE	ELEVATION	140.16 146.47	141.93	142.73	143.34	143.47	143.83	144.28	144.93	145.68	146.30		

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	0.07	0.47	1.38	1.45	2.23	2.52	2.90	3.05	3.45
OUTFLOW	0.00	0.00	4.75	10.00	10.88	20.00	24.43	30.00	40.00	50.00
ELEVATION	140.00	140.16	141.00	141.93	142.00	142.73	143.00	143.34	143.47	143.83
STORAGE	3.64	3.96	4.69	5.53	6.23	6.42				
OUTFLOW	53.78	60.00	70.00	80.00	90.00	100.00				
ELEVATION	144.00	144.28	144.93	145.68	146.30	146.47				

*** **

HYDROGRAPH AT STATION POND1
 FOR PLAN 1, RATIO = 1.00

PEAK FLOW TIME
 + (CFS) (HR) 6-HR MAXIMUM AVERAGE FLOW
 (CFS) (HR) 24-HR 72-HR 24.92-HR
 + 7. 12.08 (CFS)
 4. 1. 1. 1.

	(INCHES)	1.380	1.719	1.719	1.719
	(AC-FT)	2.	3.	3.	3.
PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE		
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
1.	12.08	0.	0.	0.	0.
PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE		
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
141.47	12.08	140.90	140.33	140.32	140.32
CUMULATIVE AREA =		0.03 SQ MI			

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

HYDROGRAPH AT STATION POND1
FOR PLAN 1, RATIO = 1.31

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
			24-HR	72-HR	24.92-HR
+ (CFS)	(HR)				
11.	12.08	(CFS)	6.	2.	2.
		(INCHES)	2.121	2.655	2.655
		(AC-FT)	3.	4.	4.
PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE		
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
1.	12.08	1.	0.	0.	0.
PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE		
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
142.04	12.08	141.29	140.46	140.44	140.44
CUMULATIVE AREA =		0.03 SQ MI			

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

HYDROGRAPH AT STATION POND1
FOR PLAN 1, RATIO = 1.51

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
			24-HR	72-HR	24.92-HR
+ (CFS)	(HR)				
15.	12.08	(CFS)	8.	2.	2.
		(INCHES)	2.597	3.276	3.276
		(AC-FT)	4.	5.	5.
PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE		
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
2.	12.08	1.	0.	0.	0.
PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE		
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
142.36	12.08	141.48	140.53	140.51	140.51
CUMULATIVE AREA =		0.03 SQ MI			

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

HYDROGRAPH AT STATION POND1
FOR PLAN 1, RATIO = 1.77

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
			24-HR	72-HR	24.92-HR
+ (CFS)	(HR)				
21.	12.08	(CFS)	10.	3.	3.

(INCHES) 3.212 4.094 4.094 4.094
 (AC-FT) 5. 6. 6. 6.

PEAK STORAGE TIME
 + (AC-FT) (HR)
 2. 12.08

6-HR MAXIMUM AVERAGE STORAGE
 24-HR 72-HR 24.92-HR
 1. 0. 0. 0.

PEAK STAGE TIME
 + (FEET) (HR)
 142.76 12.08

6-HR MAXIMUM AVERAGE STAGE
 24-HR 72-HR 24.92-HR
 141.69 140.62 140.59 140.59

CUMULATIVE AREA = 0.03 SQ MI

*** **

HYDROGRAPH AT STATION POND1
 FOR PLAN 1, RATIO = 2.00

PEAK FLOW TIME
 + (CFS) (HR)

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

+ 26. 12.08 (CFS)
 (INCHES) 11. 4. 4. 4.
 (AC-FT) 3.756 4.835 4.835 4.835
 6. 7. 7. 7.

PEAK STORAGE TIME
 + (AC-FT) (HR)
 3. 12.08

6-HR MAXIMUM AVERAGE STORAGE
 24-HR 72-HR 24.92-HR
 1. 0. 0. 0.

PEAK STAGE TIME
 + (FEET) (HR)
 143.09 12.08

6-HR MAXIMUM AVERAGE STAGE
 24-HR 72-HR 24.92-HR
 141.86 140.69 140.66 140.66

CUMULATIVE AREA = 0.03 SQ MI

*** **

HYDROGRAPH AT STATION POND1
 FOR PLAN 1, RATIO = 2.23

PEAK FLOW TIME
 + (CFS) (HR)

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

+ 34. 12.08 (CFS)
 (INCHES) 13. 4. 4. 4.
 (AC-FT) 4.298 5.585 5.585 5.585
 6. 8. 8. 8.

PEAK STORAGE TIME
 + (AC-FT) (HR)
 3. 12.08

6-HR MAXIMUM AVERAGE STORAGE
 24-HR 72-HR 24.92-HR
 1. 0. 0. 0.

PEAK STAGE TIME
 + (FEET) (HR)
 143.39 12.08

6-HR MAXIMUM AVERAGE STAGE
 24-HR 72-HR 24.92-HR
 142.00 140.76 140.73 140.73

CUMULATIVE AREA = 0.03 SQ MI

 * *
 * PLAT *
 * *

+ (CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
+ 14.	12.17	(CFS)	4.	1.	1.	1.
		(INCHES)	1.098	1.365	1.365	1.365
		(AC-FT)	2.	2.	2.	2.

CUMULATIVE AREA = 0.03 SQ MI

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

HYDROGRAPH AT STATION PLAT
FOR PLAN 1, RATIO = 1.31

TOTAL RAINFALL = 4.60, TOTAL LOSS = 2.39, TOTAL EXCESS = 2.21

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW		
(CFS)	(HR)			24-HR	72-HR	24.92-HR
+ 23.	12.17	(CFS)	7.	2.	2.	2.
		(INCHES)	1.785	2.209	2.209	2.209
		(AC-FT)	3.	4.	4.	4.

CUMULATIVE AREA = 0.03 SQ MI

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

HYDROGRAPH AT STATION PLAT
FOR PLAN 1, RATIO = 1.51

TOTAL RAINFALL = 5.30, TOTAL LOSS = 2.52, TOTAL EXCESS = 2.78

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW		
(CFS)	(HR)			24-HR	72-HR	24.92-HR
+ 29.	12.17	(CFS)	8.	3.	2.	2.
		(INCHES)	2.246	2.783	2.783	2.783
		(AC-FT)	4.	5.	5.	5.

CUMULATIVE AREA = 0.03 SQ MI

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

HYDROGRAPH AT STATION PLAT
FOR PLAN 1, RATIO = 1.77

TOTAL RAINFALL = 6.20, TOTAL LOSS = 2.65, TOTAL EXCESS = 3.55

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW		
(CFS)	(HR)			24-HR	72-HR	24.92-HR
+ 37.	12.17	(CFS)	10.	3.	3.	3.
		(INCHES)	2.857	3.552	3.552	3.552
		(AC-FT)	5.	6.	6.	6.

CUMULATIVE AREA = 0.03 SQ MI

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

HYDROGRAPH AT STATION PLAT
FOR PLAN 1, RATIO = 2.00

TOTAL RAINFALL = 7.00, TOTAL LOSS = 2.74, TOTAL EXCESS = 4.26

PEAK FLOW	TIME		6-HR	MAXIMUM AVERAGE FLOW		
(CFS)	(HR)			24-HR	72-HR	24.92-HR
+ 44.	12.17	(CFS)	12.	4.	4.	4.
		(INCHES)	3.412	4.255	4.255	4.255
		(AC-FT)	6.	8.	8.	8.

CUMULATIVE AREA = 0.03 SQ MI

*** **

HYDROGRAPH AT STATION PLAT
FOR PLAN 1, RATIO = 2.23

TOTAL RAINFALL = 7.80, TOTAL LOSS = 2.82, TOTAL EXCESS = 4.98

PEAK FLOW + (CFS)	TIME (HR)	(CFS)	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ 51.	12.17	15.	5.	4.	4.	
		(INCHES)	3.975	4.974	4.974	4.974
		(AC-FT)	7.	9.	9.	9.

CUMULATIVE AREA = 0.03 SQ MI

* *
26 KK * COMBO *
* *

27 HC HYDROGRAPH COMBINATION
ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

*** **

HYDROGRAPH AT STATION COMBO
FOR PLAN 1, RATIO = 1.00

PEAK FLOW + (CFS)	TIME (HR)	(CFS)	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ 21.	12.17	8.	3.	2.	2.	
		(INCHES)	1.225	1.525	1.525	1.525
		(AC-FT)	4.	5.	5.	5.

CUMULATIVE AREA = 0.06 SQ MI

*** **

HYDROGRAPH AT STATION COMBO
FOR PLAN 1, RATIO = 1.31

PEAK FLOW + (CFS)	TIME (HR)	(CFS)	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ 34.	12.17	13.	4.	4.	4.	
		(INCHES)	1.937	2.411	2.411	2.411
		(AC-FT)	6.	8.	8.	8.

CUMULATIVE AREA = 0.06 SQ MI

*** **

HYDROGRAPH AT STATION COMBO
FOR PLAN 1, RATIO = 1.51

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

+	44.	12.17	(CFS)	16.	5.	5.	5.
			(INCHES)	2.405	3.006	3.006	3.006
			(AC-FT)	8.	10.	10.	10.

CUMULATIVE AREA = 0.06 SQ MI

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

HYDROGRAPH AT STATION COMBO
FOR PLAN 1, RATIO = 1.77

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
+	57.	12.08	(CFS)	20.	6.	6.
			(INCHES)	3.018	3.797	3.797
			(AC-FT)	10.	13.	13.

CUMULATIVE AREA = 0.06 SQ MI

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

HYDROGRAPH AT STATION COMBO
FOR PLAN 1, RATIO = 2.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
+	69.	12.08	(CFS)	24.	8.	7.
			(INCHES)	3.567	4.518	4.518
			(AC-FT)	12.	15.	15.

CUMULATIVE AREA = 0.06 SQ MI

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

HYDROGRAPH AT STATION COMBO
FOR PLAN 1, RATIO = 2.23

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
+	84.	12.08	(CFS)	28.	9.	8.
			(INCHES)	4.119	5.251	5.251
			(AC-FT)	14.	17.	17.

CUMULATIVE AREA = 0.06 SQ MI

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

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION					
					RATIO 1 1.00	RATIO 2 1.31	RATIO 3 1.51	RATIO 4 1.77	RATIO 5 2.00	RATIO 6 2.23
HYDROGRAPH AT +	LARK	0.03	1	FLOW TIME	19. 12.00	28. 12.00	34. 12.00	41. 12.00	47. 12.00	54. 12.00
ROUTED TO +	POND1	0.03	1	FLOW TIME	7. 12.08	11. 12.08	15. 12.08	21. 12.08	26. 12.08	34. 12.08
				** PEAK STAGES IN FEET **						
			1	STAGE TIME	141.47 12.08	142.04 12.08	142.36 12.08	142.76 12.08	143.09 12.08	143.39 12.08
HYDROGRAPH AT +	PLAT	0.03	1	FLOW TIME	14. 12.17	23. 12.17	29. 12.17	37. 12.17	44. 12.17	51. 12.17
2 COMBINED AT +	COMBO	0.06	1	FLOW TIME	21. 12.17	34. 12.17	44. 12.17	57. 12.08	69. 12.08	84. 12.08

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

```

*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
*   MAY 1991 *
*   VERSION 4.0.1E *
*   Lahey F77L-EM/32 version 5.01 *
*   Dodson & Associates, Inc. *
* RUN DATE 09/18/01 TIME 10:09:40 *
*****

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

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

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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW. THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE. THE DEFINITION OF -AMSK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION. NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE, SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY, DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

HEC-1 INPUT

```

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
1 ID FLAT CREEK ADDITION
  * ADDITIONAL ROUTING
  *
2 IT 5 17SEP01 0000 300 2001
3 IO 3 0
4 JR PREC 1.0000 1.3143 1.5143 1.7714 2.0000 2.2286
  *DIAGRAM
  *
  * LARK 4TH ADDITION
5 KK LARK
6 BA .0281
7 PB 3.5 35min 24hr
8 IN 60 1.42 3.5
9 PC 0 0.011 0.022 0.035 0.048 0.063 4.375 60
10 PC 0.181 0.235 0.663 0.772 0.820 0.854 0.080 0.098 0.120 0.147
11 PC 0.952 0.965 0.978 0.989 1.000 0.880 0.902 0.921 0.937
12 UD 0.15
13 LS 0 82 0
  *
  * LARK 4TH POND
14 KK POND1
15 RS 1 ELEV 140 0
16 SV 0 0.46522 1.44858 2.51786 3.64275
17 SE 140 141 142 143 144
18 SQ 0 10 20 30 40
19 SQ 100 50 60 70 80 90
20 SE 140.16 141.93 142.73 143.34 143.47 143.83 144.28 144.93 145.68 146.3
21 SE 146.47
  *
  * FLATCREEK ADDITION
22 KK PLAT
23 BA .098
24 UD 0.15
25 LS 0 83 0
  *
26 KK POND

```

27	RS	1	ELEV	141.7					
28	SA	9.1	10.1	11					
29	SE	141.7	144.0	146.0					
30	SQ	0	2	4	6	8	10		
31	SE	141.7	142.0	142.3	143.3	144.7	146.4		

*
* ROW DITCH

32	KK	ROW							
33	RS	250	FLOW	0					
34	RC	.03	.03	.03	500	.0076			
35	RX	0	5	7	9.9	22	24	67	97
36	RY	146	145	144	143	143	144	145	145

* COMBINATION OF LARK AND FLAT CREEK
HEC-1 INPUT

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

37	KK	COMBO
38	HC	2
	*	
39	ZZ	

1
SCHEMATIC DIAGRAM OF STREAM NETWORK

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

5	LARK	
	V	
	V	
14	POND1	
	.	
22	PLAT	
	V	
	V	
26	POND	
	V	
	V	
32	ROW	
	.	
	.	
37	COMBO.....	

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* MAY 1991 *
* VERSION 4.0.1E *
* Lahey F77L-EM/32 version 5.01 *
* Dodson & Associates, Inc. *
* RUN DATE 09/18/01 TIME 10:09:40 *

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

FLAT CREEK ADDITION

3 IO OUTPUT CONTROL VARIABLES
IPRNT 3 PRINT CONTROL
IPLOT 0 PLOT CONTROL
QSCAL 0. HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA
NMIN 5 MINUTES IN COMPUTATION INTERVAL
IDATE 17SEP 1 STARTING DATE
ITIME 0000 STARTING TIME
NQ 300 NUMBER OF HYDROGRAPH ORDINATES
NDDATE 18SEP 1 ENDING DATE
NDTIME 0055 ENDING TIME
ICENT 20 CENTURY MARK

CRVNBR 82.00 CURVE NUMBER
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

12 UD SCS DIMENSIONLESS UNITGRAPH
 TLAG 0.15 LAG

UNIT HYDROGRAPH
 11 END-OF-PERIOD ORDINATES

26. 69. 61. 31. 15. 8. 4. 2. 1. 0.
 0.

TOTAL RAINFALL = 3.50, TOTAL LOSS = 1.72, TOTAL EXCESS = 1.78

PEAK FLOW + (CFS)	TIME (HR)	(CFS)	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
18.	12.00	4.	1.	1.	1.	
		(INCHES) 1.444	1.783	1.783	1.783	
		(AC-FT) 2.	3.	3.	3.	

CUMULATIVE AREA = 0.03 SQ MI

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

HYDROGRAPH AT STATION LARK
 FOR PLAN 1, RATIO = 1.00

TOTAL RAINFALL = 3.50, TOTAL LOSS = 1.72, TOTAL EXCESS = 1.78

PEAK FLOW + (CFS)	TIME (HR)	(CFS)	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
18.	12.00	4.	1.	1.	1.	
		(INCHES) 1.444	1.783	1.783	1.783	
		(AC-FT) 2.	3.	3.	3.	

CUMULATIVE AREA = 0.03 SQ MI

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

HYDROGRAPH AT STATION LARK
 FOR PLAN 1, RATIO = 1.31

TOTAL RAINFALL = 4.60, TOTAL LOSS = 1.88, TOTAL EXCESS = 2.72

PEAK FLOW + (CFS)	TIME (HR)	(CFS)	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
27.	12.00	7.	2.	2.	2.	
		(INCHES) 2.188	2.724	2.724	2.724	
		(AC-FT) 3.	4.	4.	4.	

CUMULATIVE AREA = 0.03 SQ MI

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

HYDROGRAPH AT STATION LARK
 FOR PLAN 1, RATIO = 1.51

TOTAL RAINFALL = 5.30, TOTAL LOSS = 1.95, TOTAL EXCESS = 3.35

PEAK FLOW + (CFS)	TIME (HR)	(CFS)	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
32.	12.00	8.	3.	2.	2.	
		(INCHES) 2.680	3.349	3.349	3.349	
		(AC-FT) 4.	5.	5.	5.	

CUMULATIVE AREA = 0.03 SQ MI

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

HYDROGRAPH AT STATION LARK
FOR PLAN 1, RATIO = 1.77

TOTAL RAINFALL = 6.20, TOTAL LOSS = 2.03, TOTAL EXCESS = 4.17

PEAK FLOW (CFS)	TIME (HR)	(CFS)	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
40.	12.00	10.	3.	3.	3.	
		(INCHES) 3.324	4.171	4.171	4.171	
		(AC-FT) 5.	6.	6.	6.	

CUMULATIVE AREA = 0.03 SQ MI

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

HYDROGRAPH AT STATION LARK
FOR PLAN 1, RATIO = 2.00

TOTAL RAINFALL = 7.00, TOTAL LOSS = 2.08, TOTAL EXCESS = 4.92

PEAK FLOW (CFS)	TIME (HR)	(CFS)	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
46.	12.00	12.	4.	4.	4.	
		(INCHES) 3.903	4.916	4.916	4.916	
		(AC-FT) 6.	7.	7.	7.	

CUMULATIVE AREA = 0.03 SQ MI

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

HYDROGRAPH AT STATION LARK
FOR PLAN 1, RATIO = 2.23

TOTAL RAINFALL = 7.80, TOTAL LOSS = 2.13, TOTAL EXCESS = 5.67

PEAK FLOW (CFS)	TIME (HR)	(CFS)	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
53.	12.00	14.	4.	4.	4.	
		(INCHES) 4.485	5.670	5.670	5.670	
		(AC-FT) 7.	8.	8.	8.	

CUMULATIVE AREA = 0.03 SQ MI

14 KK

* *
* *
* *
* *

HYDROGRAPH ROUTING DATA

15 RS

STORAGE ROUTING
NSTPS 1 NUMBER OF SUBREACHES
ITYP ELEV TYPE OF INITIAL CONDITION
RSVRIC 140.00 INITIAL CONDITION
X 0.00 WORKING R AND D COEFFICIENT

16 SV

STORAGE 0.0 0.5 1.4 2.5 3.6

17 SE

ELEVATION 140.00 141.00 142.00 143.00 144.00

18 SQ	DISCHARGE	0. 100.	10.	20.	30.	40.	50.	60.	70.	80.	90.
20 SE	ELEVATION	140.16 146.47	141.93	142.73	143.34	143.47	143.83	144.28	144.93	145.68	146.30

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	0.07	0.47	1.38	1.45	2.23	2.52	2.90	3.05	3.45
OUTFLOW	0.00	0.00	4.75	10.00	10.88	20.00	24.43	30.00	40.00	50.00
ELEVATION	140.00	140.16	141.00	141.93	142.00	142.73	143.00	143.34	143.47	143.83
STORAGE	3.64	3.96	4.69	5.53	6.23	6.42				
OUTFLOW	53.78	60.00	70.00	80.00	90.00	100.00				
ELEVATION	144.00	144.28	144.93	145.68	146.30	146.47				

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

HYDROGRAPH AT STATION POND1
FOR PLAN 1, RATIO = 1.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)	(CFS)				
+ 7.	12.33	4.	1.	1.	1.	
		(INCHES)	1.378	1.717	1.717	1.717
		(AC-FT)	2.	3.	3.	3.
PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)					
+ 1.	12.33	0.	0.	0.	0.	
PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
			6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)					
+ 141.44	12.33	140.90	140.33	140.31	140.31	

CUMULATIVE AREA = 0.03 SQ MI

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

HYDROGRAPH AT STATION POND1
FOR PLAN 1, RATIO = 1.31

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)	(CFS)				
+ 11.	12.33	6.	2.	2.	2.	
		(INCHES)	2.118	2.652	2.652	2.652
		(AC-FT)	3.	4.	4.	4.
PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)					
+ 1.	12.33	1.	0.	0.	0.	
PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
			6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)					
+ 142.01	12.33	141.29	140.46	140.44	140.44	

CUMULATIVE AREA = 0.03 SQ MI

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

HYDROGRAPH AT STATION POND1
FOR PLAN 1, RATIO = 1.51

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

UNIT HYDROGRAPH
11 END-OF-PERIOD ORDINATES

91. 242. 213. 108. 54. 26. 13. 6. 3. 2.

TOTAL RAINFALL = 3.50, TOTAL LOSS = 1.64, TOTAL EXCESS = 1.86

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
+ 65.	12.00	(CFS)	16.	5.	5.	5.
		(INCHES)	1.503	1.859	1.859	1.859
		(AC-FT)	8.	10.	10.	10.

CUMULATIVE AREA = 0.10 SQ MI

*** **

HYDROGRAPH AT STATION PLAT
FOR PLAN 1, RATIO = 1.00

TOTAL RAINFALL = 3.50, TOTAL LOSS = 1.64, TOTAL EXCESS = 1.86

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
+ 65.	12.00	(CFS)	16.	5.	5.	5.
		(INCHES)	1.503	1.859	1.859	1.859
		(AC-FT)	8.	10.	10.	10.

CUMULATIVE AREA = 0.10 SQ MI

*** **

HYDROGRAPH AT STATION PLAT
FOR PLAN 1, RATIO = 1.31

TOTAL RAINFALL = 4.60, TOTAL LOSS = 1.79, TOTAL EXCESS = 2.81

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
+ 96.	12.00	(CFS)	24.	7.	7.	7.
		(INCHES)	2.257	2.815	2.815	2.815
		(AC-FT)	12.	15.	15.	15.

CUMULATIVE AREA = 0.10 SQ MI

*** **

HYDROGRAPH AT STATION PLAT
FOR PLAN 1, RATIO = 1.51

TOTAL RAINFALL = 5.30, TOTAL LOSS = 1.85, TOTAL EXCESS = 3.45

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
+ 116.	12.00	(CFS)	29.	9.	9.	9.
		(INCHES)	2.753	3.447	3.447	3.447
		(AC-FT)	14.	18.	18.	18.

CUMULATIVE AREA = 0.10 SQ MI

*** **

HYDROGRAPH AT STATION PLAT
FOR PLAN 1, RATIO = 1.77

TOTAL RAINFALL = 6.20, TOTAL LOSS = 1.92, TOTAL EXCESS = 4.28

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)	(CFS)				
+ 141.	12.00	36.	11.	11.	11.	11.
		(INCHES)	3.401	4.277	4.277	4.277
		(AC-FT)	18.	22.	22.	22.

CUMULATIVE AREA = 0.10 SQ MI

*** **

HYDROGRAPH AT STATION PLAT
FOR PLAN 1, RATIO = 2.00

TOTAL RAINFALL = 7.00, TOTAL LOSS = 1.97, TOTAL EXCESS = 5.03

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)	(CFS)				
+ 164.	12.00	42.	13.	13.	13.	13.
		(INCHES)	3.982	5.028	5.028	5.028
		(AC-FT)	21.	26.	26.	26.

CUMULATIVE AREA = 0.10 SQ MI

*** **

HYDROGRAPH AT STATION PLAT
FOR PLAN 1, RATIO = 2.23

TOTAL RAINFALL = 7.80, TOTAL LOSS = 2.01, TOTAL EXCESS = 5.79

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)	(CFS)				
+ 187.	12.00	48.	15.	15.	15.	15.
		(INCHES)	4.565	5.787	5.787	5.787
		(AC-FT)	24.	30.	30.	30.

CUMULATIVE AREA = 0.10 SQ MI

*** **

* *
26 KK * POND *
* *

HYDROGRAPH ROUTING DATA

27 RS	STORAGE ROUTING						
	NSTPS	1	NUMBER OF SUBREACHES				
	ITYP	ELEV	TYPE OF INITIAL CONDITION				
	RSVRIC	141.70	INITIAL CONDITION				
	X	0.00	WORKING R AND D COEFFICIENT				
28 SA	AREA	9.1	10.1	11.0			
29 SE	ELEVATION	141.70	144.00	146.00			
30 SQ	DISCHARGE	0.	2.	4.	6.	8.	10.
31 SE	ELEVATION	141.70	142.00	142.30	143.30	144.70	146.40

COMPUTED STORAGE-ELEVATION DATA

STORAGE	0.00	22.07	43.16
ELEVATION	141.70	144.00	146.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	2.75	5.54	15.11	22.07	29.25	43.16	47.60
OUTFLOW	0.00	2.00	4.00	6.00	7.00	8.00	9.53	10.00
ELEVATION	141.70	142.00	142.30	143.30	144.00	144.70	146.00	146.40

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

HYDROGRAPH AT STATION POND
FOR PLAN 1, RATIO = 1.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
+ (CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
+ 4.	16.17	(CFS)				
		(INCHES)	4.	2.	2.	2.
		(AC-FT)	0.395	0.849	0.849	0.849
			2.	4.	4.	4.
PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
+ (AC-FT)	(HR)		6-HR	24-HR	72-HR	24.92-HR
+ 6.	16.17					
			6.	3.	3.	3.
PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
+ (FEET)	(HR)		6-HR	24-HR	72-HR	24.92-HR
+ 142.39	16.25					
			142.38	142.06	142.04	142.04

CUMULATIVE AREA = 0.10 SQ MI

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

HYDROGRAPH AT STATION POND
FOR PLAN 1, RATIO = 1.31

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
+ (CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
+ 5.	17.17	(CFS)				
		(INCHES)	5.	3.	3.	3.
		(AC-FT)	0.473	1.040	1.040	1.040
			2.	5.	5.	5.
PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
+ (AC-FT)	(HR)		6-HR	24-HR	72-HR	24.92-HR
+ 10.	17.25					
			10.	5.	5.	5.
PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
+ (FEET)	(HR)		6-HR	24-HR	72-HR	24.92-HR
+ 142.80	17.25					
			142.79	142.28	142.26	142.26

CUMULATIVE AREA = 0.10 SQ MI

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

HYDROGRAPH AT STATION POND
FOR PLAN 1, RATIO = 1.51

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
+ (CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
+ 6.	18.00	(CFS)				
		(INCHES)	6.	3.	3.	3.
		(AC-FT)	0.525	1.164	1.164	1.164
			3.	6.	6.	6.
PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			

		6-HR	24-HR	72-HR	24.92-HR
+	(AC-FT) (HR)				
	13. 18.00	13.	7.	7.	7.
	PEAK STAGE TIME				
		6-HR	24-HR	72-HR	24.92-HR
+	(FEET) (HR)				
	143.08 18.08	143.07	142.43	142.40	142.40
		CUMULATIVE AREA = 0.10 SQ MI			

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

HYDROGRAPH AT STATION POND
FOR PLAN 1, RATIO = 1.77

		6-HR	24-HR	72-HR	24.92-HR
PEAK FLOW	TIME				
+	(CFS) (HR)				
	6. 18.08	6.	3.	3.	3.
	(INCHES)	0.587	1.316	1.316	1.316
	(AC-FT)	3.	7.	7.	7.
PEAK STORAGE	TIME				
+	(AC-FT) (HR)				
	17. 18.17	16.	9.	8.	8.
	PEAK STAGE TIME				
		6-HR	24-HR	72-HR	24.92-HR
+	(FEET) (HR)				
	143.44 18.25	143.43	142.63	142.60	142.60
		CUMULATIVE AREA = 0.10 SQ MI			

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

HYDROGRAPH AT STATION POND
FOR PLAN 1, RATIO = 2.00

		6-HR	24-HR	72-HR	24.92-HR
PEAK FLOW	TIME				
+	(CFS) (HR)				
	7. 18.25	7.	4.	4.	4.
	(INCHES)	0.632	1.429	1.429	1.429
	(AC-FT)	3.	7.	7.	7.
PEAK STORAGE	TIME				
+	(AC-FT) (HR)				
	20. 18.33	20.	11.	10.	10.
	PEAK STAGE TIME				
		6-HR	24-HR	72-HR	24.92-HR
+	(FEET) (HR)				
	143.77 18.50	143.76	142.81	142.77	142.77
		CUMULATIVE AREA = 0.10 SQ MI			

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

HYDROGRAPH AT STATION POND
FOR PLAN 1, RATIO = 2.23

		6-HR	24-HR	72-HR	24.92-HR
PEAK FLOW	TIME				
+	(CFS) (HR)				
	7. 18.92	7.	4.	4.	4.
	(INCHES)	0.677	1.541	1.541	1.541
	(AC-FT)	4.	8.	8.	8.
PEAK STORAGE	TIME				
		MAXIMUM AVERAGE STORAGE			

+ (AC-FT)	(HR)	6-HR	24-HR	72-HR	24.92-HR
23.	19.17	23.	12.	12.	12.
PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
+ (FEET)	(HR)	6-HR	24-HR	72-HR	24.92-HR
144.10	19.25	144.09	142.99	142.94	142.94
CUMULATIVE AREA =		0.10 SQ MI			

*** **

 * *
 32 KK * ROW *
 * *

HYDROGRAPH ROUTING DATA

33 RS STORAGE ROUTING
 NSTPS 250 NUMBER OF SUBREACHES
 ITYP FLOW TYPE OF INITIAL CONDITION
 RSVRIC 0.00 INITIAL CONDITION
 X 0.00 WORKING R AND D COEFFICIENT

34 RC NORMAL DEPTH CHANNEL
 ANL 0.030 LEFT OVERBANK N-VALUE
 ANCH 0.030 MAIN CHANNEL N-VALUE
 ANR 0.030 RIGHT OVERBANK N-VALUE
 RLNTH 500. REACH LENGTH
 SEL 0.0076 ENERGY SLOPE
 ELMAX 0.0 MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

CROSS-SECTION DATA

	---	LEFT OVERBANK	---	+	-----	MAIN CHANNEL	-----	+	---	RIGHT OVERBANK	---
36 RY	ELEVATION	146.00	145.00	144.00	143.00	143.00	144.00	145.00	145.00	145.00	
35 RX	DISTANCE	0.00	5.00	7.00	9.90	22.00	24.00	67.00	97.00		

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	0.02	0.05	0.07	0.10	0.13	0.16	0.19	0.24	0.29
OUTFLOW	0.00	2.44	7.80	15.49	25.29	37.11	50.89	67.99	89.15	115.01
ELEVATION	143.00	143.16	143.32	143.47	143.63	143.79	143.95	144.11	144.26	144.42
STORAGE	0.37	0.45	0.55	0.68	0.84	1.01	1.18	1.36	1.53	1.71
OUTFLOW	146.52	184.51	229.75	269.81	348.15	439.68	543.43	658.75	785.15	922.24
ELEVATION	144.58	144.74	144.89	145.05	145.21	145.37	145.53	145.68	145.84	146.00

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 0. TO 922.
 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

*** **

HYDROGRAPH AT STATION ROW
 FOR PLAN 1, RATIO = 1.00

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
+ (CFS)	(HR)	6-HR	24-HR	72-HR	24.92-HR
+ 4.	16.17	4.	2.	2.	2.
	(CFS)				
	(INCHES)	0.395	0.844	0.844	0.844
	(AC-FT)	2.	4.	4.	4.
PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
+ (AC-FT)	(HR)	6-HR	24-HR	72-HR	24.92-HR
0.	0.08	0.	0.	0.	0.

PEAK STAGE + (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
143.21	16.33	143.21	143.11	143.11	143.11

CUMULATIVE AREA = 0.10 SQ MI

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

HYDROGRAPH AT STATION ROW
FOR PLAN 1, RATIO = 1.31

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
5.	17.00	(CFS)	5.	3.	3.	3.
		(INCHES)	0.473	1.033	1.033	1.033
		(AC-FT)	2.	5.	5.	5.

PEAK STORAGE + (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
0.	0.08	0.	0.	0.	0.

PEAK STAGE + (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
143.23	17.17	143.23	143.13	143.12	143.12

CUMULATIVE AREA = 0.10 SQ MI

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

HYDROGRAPH AT STATION ROW
FOR PLAN 1, RATIO = 1.51

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
6.	18.00	(CFS)	6.	3.	3.	3.
		(INCHES)	0.525	1.157	1.157	1.157
		(AC-FT)	3.	6.	6.	6.

PEAK STORAGE + (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
0.	0.08	0.	0.	0.	0.

PEAK STAGE + (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
143.25	18.17	143.25	143.14	143.13	143.13

CUMULATIVE AREA = 0.10 SQ MI

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

HYDROGRAPH AT STATION ROW
FOR PLAN 1, RATIO = 1.77

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
6.	18.00	(CFS)	6.	3.	3.	3.
		(INCHES)	0.587	1.308	1.308	1.308
		(AC-FT)	3.	7.	7.	7.

PEAK STORAGE + (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
0.	0.08	0.	0.	0.	0.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
143.27	18.17	143.27	143.15	143.15	143.15

CUMULATIVE AREA = 0.10 SQ MI

*** **

HYDROGRAPH AT STATION ROW
FOR PLAN 1, RATIO = 2.00

PEAK FLOW (CFS)	TIME (HR)	(CFS)	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
7.	18.50	7.	4.	4.	4.	
		(INCHES)	0.632	1.421	1.421	1.421
		(AC-FT)	3.	7.	7.	7.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
0.	0.08	0.	0.	0.	0.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
143.28	18.67	143.28	143.16	143.16	143.16

CUMULATIVE AREA = 0.10 SQ MI

*** **

HYDROGRAPH AT STATION ROW
FOR PLAN 1, RATIO = 2.23

PEAK FLOW (CFS)	TIME (HR)	(CFS)	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
7.	19.08	7.	4.	4.	4.	
		(INCHES)	0.677	1.533	1.533	1.533
		(AC-FT)	4.	8.	8.	8.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
0.	0.08	0.	0.	0.	0.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
143.30	19.08	143.30	143.17	143.17	143.17

CUMULATIVE AREA = 0.10 SQ MI

*** **

* *
* COMBO *
* *

37 KK

38 HC

HYDROGRAPH COMBINATION
ICOMB 2 NUMBER OF HYDROGRAPHS TO COMBINE

*** **

HYDROGRAPH AT STATION COMBO
FOR PLAN 1, RATIO = 1.00

PEAK FLOW + (CFS)	TIME (HR)	(CFS)	MAXIMUM AVERAGE FLOW			24.92-HR
			6-HR	24-HR	72-HR	
+ 11.	12.75	8.	4.	3.	3.	
		(INCHES) 0.588	1.038	1.038	1.038	
		(AC-FT) 4.	7.	7.	7.	
		CUMULATIVE AREA = 0.13 SQ MI				

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

HYDROGRAPH AT STATION COMBO
FOR PLAN 1, RATIO = 1.31

PEAK FLOW + (CFS)	TIME (HR)	(CFS)	MAXIMUM AVERAGE FLOW			24.92-HR
			6-HR	24-HR	72-HR	
+ 15.	12.33	11.	5.	5.	5.	
		(INCHES) 0.810	1.394	1.394	1.394	
		(AC-FT) 5.	9.	9.	9.	
		CUMULATIVE AREA = 0.13 SQ MI				

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

HYDROGRAPH AT STATION COMBO
FOR PLAN 1, RATIO = 1.51

PEAK FLOW + (CFS)	TIME (HR)	(CFS)	MAXIMUM AVERAGE FLOW			24.92-HR
			6-HR	24-HR	72-HR	
+ 20.	12.33	13.	6.	5.	5.	
		(INCHES) 0.954	1.628	1.628	1.628	
		(AC-FT) 6.	11.	11.	11.	
		CUMULATIVE AREA = 0.13 SQ MI				

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

HYDROGRAPH AT STATION COMBO
FOR PLAN 1, RATIO = 1.77

PEAK FLOW + (CFS)	TIME (HR)	(CFS)	MAXIMUM AVERAGE FLOW			24.92-HR
			6-HR	24-HR	72-HR	
+ 25.	12.25	15.	7.	6.	6.	
		(INCHES) 1.136	1.928	1.928	1.928	
		(AC-FT) 8.	13.	13.	13.	
		CUMULATIVE AREA = 0.13 SQ MI				

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

HYDROGRAPH AT STATION COMBO
FOR PLAN 1, RATIO = 2.00

PEAK FLOW + (CFS)	TIME (HR)	(CFS)	MAXIMUM AVERAGE FLOW			24.92-HR
			6-HR	24-HR	72-HR	
+ 30.	12.25	17.	7.	7.	7.	
		(INCHES) 1.290	2.180	2.180	2.180	
		(AC-FT) 9.	15.	15.	15.	
		CUMULATIVE AREA = 0.13 SQ MI				

HYDROGRAPH AT STATION COMBO
FOR PLAN 1, RATIO = 2.23

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
36.	12.25	20.	8.	8.	8.
		(INCHES) 1.442	2.435	2.435	2.435
		(AC-FT) 10.	16.	16.	16.

CUMULATIVE AREA = 0.13 SQ MI

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

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO PRECIPITATION						
				RATIO 1	RATIO 2	RATIO 3	RATIO 4	RATIO 5	RATIO 6	
				1.00	1.31	1.51	1.77	2.00	2.23	
HYDROGRAPH AT +	LARK	0.03	1	FLOW TIME	18. 12.00	27. 12.00	32. 12.00	40. 12.00	46. 12.00	53. 12.00
ROUTED TO +	POND1	0.03	1	FLOW TIME	7. 12.33	11. 12.33	15. 12.25	20. 12.25	25. 12.25	30. 12.25
				** PEAK STAGES IN FEET **						
			1	STAGE TIME	141.44 12.33	142.01 12.33	142.31 12.25	142.70 12.25	143.02 12.25	143.31 12.25
HYDROGRAPH AT +	PLAT	0.10	1	FLOW TIME	65. 12.00	96. 12.00	116. 12.00	141. 12.00	164. 12.00	187. 12.00
ROUTED TO +	POND	0.10	1	FLOW TIME	4. 16.17	5. 17.17	6. 18.00	6. 18.08	7. 18.25	7. 18.92
				** PEAK STAGES IN FEET **						
			1	STAGE TIME	142.39 16.25	142.80 17.25	143.08 18.08	143.44 18.25	143.77 18.50	144.10 19.25
ROUTED TO +	ROW	0.10	1	FLOW TIME	4. 16.17	5. 17.00	6. 18.00	6. 18.00	7. 18.50	7. 19.08
				** PEAK STAGES IN FEET **						
			1	STAGE TIME	143.21 16.33	143.23 17.17	143.25 18.17	143.27 18.17	143.28 18.67	143.30 19.08
2 COMBINED AT +	COMBO	0.13	1	FLOW TIME	11. 12.75	15. 12.33	20. 12.33	25. 12.25	30. 12.25	36. 12.25

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