

DETENTION CALCULATIONS FOR  
REECE FARMS ESTATES  
ADDITION  
SEDGWICK COUNTY, KANSAS

DETENTION CALCULATIONS FOR

REECE FARMS ESTATES  
ADDITION

SEDGWICK COUNTY, KANSAS



SCHEMATIC DIAGRAM OF STREAM NETWORK

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

4 BASINB  
 V  
 V  
 9 RESB  
 .  
 . BASINA  
 .  
 19 COMBO.....  
 V  
 V  
 21 RESA

\*\*\*) 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 06/02/97 TIME 16:01:38 \*  
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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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REECE FARMS ESTATES

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 12MAY97 STARTING DATE  
 ITIME 0000 STARTING TIME  
 NQ 300 NUMBER OF HYDROGRAPH ORDINATES  
 NDDATE 13MAY97 ENDING DATE  
 NDTIME 0055 ENDING TIME  
 ICENT 19 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

\*\*\*\*\*

\*\*\*\*\*  
 \* BASIN \*  
 \*\*\*\*\*

4 KK

SUBBASIN RUNOFF DATA

5 BA

SUBBASIN CHARACTERISTICS

TAREA 0.03 SUBBASIN AREA

PRECIPITATION DATA

6 PH

DEPTHS FOR 50-PERCENT HYPOTHETICAL STORM

HYDRO-35			TP-40				TP-49				
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
0.28	0.96	1.69	1.98	2.16	2.52	3.00	3.60	0.00	0.00	0.00	0.00

STORM AREA = 0.03

8 LS

SCS LOSS RATE

STRTL 0.41 INITIAL ABSTRACTION  
 CRVNBR 83.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

7 UD

SCS DIMENSIONLESS UNITGRAPH  
 TLAG 0.15 LAG

\*\*\*

UNIT HYDROGRAPH  
 11 END-OF-PERIOD ORDINATES

26.	68.	60.	30.	15.	7.	4.	2.	1.	0.
0.									

\*\*\*

HYDROGRAPH AT STATION BASINB

TOTAL RAINFALL = 3.17, TOTAL LOSS = 1.59, TOTAL EXCESS = 1.58

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
29.	12.25	4.	1.	1.	1.
		(INCHES) 1.283	1.583	1.583	1.583
		(AC-FT) 2.	2.	2.	2.

CUMULATIVE AREA = 0.03 SQ MI

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\*\*\*\*\*  
 \*           \*  
 \*       RESB   \*  
 \*           \*  
 \*\*\*\*\*

9 KK

HYDROGRAPH ROUTING DATA

10 RS

STORAGE ROUTING  
 NSTPS           1   NUMBER OF SUBREACHES  
 ITYP           ELEV   TYPE OF INITIAL CONDITION  
 RSVRIC       1414.00   INITIAL CONDITION  
 X           0.00   WORKING R AND D COEFFICIENT

11 SA	AREA	2.1	2.2	2.3	2.4	3.3
12 SE	ELEVATION	1414.00	1415.00	1416.00	1417.00	1420.00
13 SQ	DISCHARGE	0.	13.	17.	24.	29.
14 SE	ELEVATION	1412.00	1412.50	1413.00	1414.00	1415.00

\*\*\*

COMPUTED STORAGE-ELEVATION DATA

STORAGE	0.00	2.15	4.40	6.75	15.26
ELEVATION	1414.00	1415.00	1416.00	1417.00	1420.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	0.00	0.00	0.00	2.15	4.40	6.75	15.26
OUTFLOW	0.00	12.90	16.90	23.90	29.30	34.70	40.10	56.30
ELEVATION	1412.00	1412.50	1413.00	1414.00	1415.00	1416.00	1417.00	1420.00

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HYDROGRAPH AT STATION   RESB

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	(CFS)	6-HR	24-HR	72-HR	24.92-HR
24.	12.33	4.	1.	1.	1.	
		(INCHES)	1.270	1.620	1.626	1.626
		(AC-FT)	2.	2.	2.	2.
PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
(AC-FT)	(HR)		6-HR	24-HR	72-HR	24.92-HR
0.	12.33	0.	0.	0.	0.	
PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
(FEET)	(HR)		6-HR	24-HR	72-HR	24.92-HR
1414.03	12.33	1412.42	1412.18	1412.18	1412.18	
CUMULATIVE AREA =			0.03 SQ MI			

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\*\*\*\*\*  
 \* BASINA \*  
 \*\*\*\*\*

15 KK

SUBBASIN RUNOFF DATA

16 BA

SUBBASIN CHARACTERISTICS  
 TAREA 0.03 SUBBASIN AREA

PRECIPITATION DATA

6 PH

DEPTHS FOR 50-PERCENT HYPOTHETICAL STORM

HYDRO-35			TP-40					TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
0.28	0.96	1.69	1.98	2.16	2.52	3.00	3.60	0.00	0.00	0.00	0.00

STORM AREA = 0.03

18 LS

SCS LOSS RATE  
 STRTL 0.41 INITIAL ABSTRACTION  
 CRVNBR 83.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

17 UD

SCS DIMENSIONLESS UNITGRAPH  
 TLAG 0.15 LAG

\*\*\*

UNIT HYDROGRAPH  
 11 END-OF-PERIOD ORDINATES

25.	67.	59.	30.	15.	7.	4.	2.	1.	0.
0.									

\*\*\* \*\*

HYDROGRAPH AT STATION BASINA

TOTAL RAINFALL = 3.17, TOTAL LOSS = 1.59, TOTAL EXCESS = 1.58

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
28.	12.25	4.	1.	1.	1.
		(INCHES) 1.283	1.583	1.583	1.583
		(AC-FT) 2.	2.	2.	2.

CUMULATIVE AREA = 0.03 SQ MI

\*\*\*\*\*

\*\*\*\*\*  
 \* \*  
 \* COMBO \*  
 \* \*  
 \*\*\*\*\*

19 KK

20 HC

HYDROGRAPH COMBINATION  
 ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

\*\*\*

\*\*\* \*\*

HYDROGRAPH AT STATION COMBO

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
53.	12.25	7.	2.	2.	2.
	(INCHES)	1.276	1.598	1.604	1.604
	(AC-FT)	4.	5.	5.	5.

CUMULATIVE AREA = 0.05 SQ MI

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 \*           \*  
 \*       RESA   \*  
 \*           \*  
 \*\*\*\*\*

21 KK

HYDROGRAPH ROUTING DATA

22 RS

STORAGE ROUTING  
 NSTPS           1   NUMBER OF SUBREACHES  
 ITYP           ELEV   TYPE OF INITIAL CONDITION  
 RSVRIC       1407.00   INITIAL CONDITION  
 X           0.00   WORKING R AND D COEFFICIENT

23 SA

AREA           1.8       2.5

24 SE

ELEVATION       1407.00   1415.00

26 SS

SPILLWAY  
 CREL       1409.00   SPILLWAY CREST ELEVATION  
 SPWID      100.00   SPILLWAY WIDTH  
 COQW       2.80   WEIR COEFFICIENT  
 EXPW       1.50   EXPONENT OF HEAD

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COMPUTED STORAGE-ELEVATION DATA

STORAGE       0.00   17.12  
 ELEVATION   1407.00   1415.00

COMPUTED OUTFLOW-ELEVATION DATA

OUTFLOW ELEVATION	0.00	0.00	0.71	5.64	19.05	45.16	88.20	152.41	242.03	361.27
	1407.00	1409.00	1409.02	1409.07	1409.17	1409.30	1409.46	1409.67	1409.91	1410.19
OUTFLOW ELEVATION	514.39	705.61	939.17	1219.30	1550.24	1936.21	2381.45	2890.20	3466.69	4115.15
	1410.50	1410.85	1411.24	1411.67	1412.13	1412.63	1413.17	1413.74	1414.35	1415.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	3.76	3.80	3.91	4.09	4.35	4.68	5.09	5.58	6.15
OUTFLOW	0.00	0.00	0.71	5.65	19.04	45.15	88.22	152.40	242.00	361.27
ELEVATION	1407.00	1409.00	1409.02	1409.07	1409.17	1409.30	1409.46	1409.67	1409.91	1410.19
STORAGE	6.80	7.55	8.38	9.30	10.33	11.46	12.70	14.05	15.52	17.12
OUTFLOW	514.39	705.59	939.16	1219.27	1550.24	1936.21	2381.41	2890.18	3466.64	4115.14
ELEVATION	1410.50	1410.85	1411.24	1411.67	1412.13	1412.63	1413.17	1413.74	1414.35	1415.00

\*\*\* WARNING \*\*\* MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 939. TO 4115.  
 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.)

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HYDROGRAPH AT STATION   RESA

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	24.92-HR
+	2.	17.33			
		(CFS)			
		(INCHES)	0.243	0.305	0.305
		(AC-FT)	1.	1.	1.
PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
(AC-FT)	(HR)	6-HR	24-HR	72-HR	24.92-HR
	4.	17.33			
			4.	2.	2.
PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
(FEET)	(HR)	6-HR	24-HR	72-HR	24.92-HR
	1409.03	17.33			
			1409.02	1408.05	1408.01

CUMULATIVE AREA = 0.05 SQ MI

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

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
HYDROGRAPH AT	BASINB	29.	12.25	4.	1.	1.	0.03		
ROUTED TO	RESB	24.	12.33	4.	1.	1.	0.03	1414.03	12.33
HYDROGRAPH AT	BASINA	28.	12.25	4.	1.	1.	0.03		
2 COMBINED AT	COMBO	53.	12.25	7.	2.	2.	0.05		
ROUTED TO	RESA	2.	17.33	1.	0.	0.	0.05	1409.03	17.33

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

Reserves A and B, 100-yr Storm

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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 06/02/97 TIME 16:00:30
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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      XX
X   X X      X           X
XXXXXX XXXX   X           XXXXX 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 -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION  
 NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,  
 DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION  
 KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

HEC-1 INPUT

LINE	ID	1	2	3	4	5	6	7	8	9	10
1	ID	REECE FARMS ESTATES									
2	IT	5	12MAY97	0000	300						
3	IO	3	0								
	*DIAGRAM										
	*										
4	KK	BASINB									
5	BA	.0275									
6	PH	0	0	0.86	1.8425	3.73	4.60	5.04	5.94	6.96	8.16
7	UD	.15									
8	LS	0	83								
	*										
9	KK	RESB									
10	RS	1	ELEV	1414							
11	SA	2.1	2.2	2.3	2.4	3.3					
12	SE	1414	1415	1416	1417	1420					
13	SQ	0	12.9	16.9	23.9	29.3					
14	SE	1412	1412.5	1413	1414	1415					
	*										
15	KK	BASINA									
16	BA	.027									
17	UD	.15									
18	LS	0	83								
	*										
19	KK	COMBO									
20	HC	2									
	*										
21	KK	RESA									
22	RS	1	ELEV	1407							
23	SA	1.8	2.5								
24	SE	1407	1415								
25	SS	1407	30	2.8	1.5						
26	SS	1409	100	2.8	1.5						
	*										
27	ZZ										

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

4 BASINB  
 V  
 V  
 9 RESB  
 .  
 .  
 15 . BASINA  
 .  
 .  
 19 COMBO.....  
 V  
 V  
 21 RESA

(\*\*\*) 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. \*  
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REECE FARMS ESTATES

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 12MAY97 STARTING DATE  
 ITIME 0000 STARTING TIME  
 NQ 300 NUMBER OF HYDROGRAPH ORDINATES  
 NDDATE 13MAY97 ENDING DATE  
 NDTIME 0055 ENDING TIME  
 ICENT 19 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

\*\*\*\*\*

\*\*\*\*\*  
 \* \*  
 \* BASINB \*  
 \* \*  
 \*\*\*\*\*

4 KK

SUBBASIN RUNOFF DATA

5 BA

SUBBASIN CHARACTERISTICS  
 TAREA 0.03 SUBBASIN AREA

PRECIPITATION DATA

6 PH

DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

HYDRO-35			TP-40					TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
0.86	1.84	3.73	4.60	5.04	5.94	6.96	8.16	0.00	0.00	0.00	0.00

STORM AREA = 0.03

8 LS

SCS LOSS RATE  
 STRTL 0.41 INITIAL ABSTRACTION  
 CRVNR 83.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

7 UD

SCS DIMENSIONLESS UNITGRAPH  
 TLAG 0.15 LAG

\*\*\*

UNIT HYDROGRAPH  
 11 END-OF-PERIOD ORDINATES

26.	68.	60.	30.	15.	7.	4.	2.	1.	0.
0.									

\*\*\*                      \*\*\*                      \*\*\*                      \*\*\*                      \*\*\*

HYDROGRAPH AT STATION BASINB

TOTAL RAINFALL = 8.16, TOTAL LOSS = 2.03, TOTAL EXCESS = 6.13

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
103.	12.17	(CFS)			
		15.	5.	4.	4.
		(INCHES) 4.952	6.130	6.130	6.130
		(AC-FT) 7.	9.	9.	9.

CUMULATIVE AREA = 0.03 SQ MI

\*\*\*\*\*

\*\*\*\*\*  
 \* \*  
 \* RESB \*  
 \* \*  
 \*\*\*\*\*

9 KK

HYDROGRAPH ROUTING DATA

10 RS

STORAGE ROUTING  
 NSTPS 1 NUMBER OF SUBREACHES  
 ITYP ELEV TYPE OF INITIAL CONDITION  
 RSVRIC 1414.00 INITIAL CONDITION  
 X 0.00 WORKING R AND D COEFFICIENT

11 SA	AREA	2.1	2.2	2.3	2.4	3.3
12 SE	ELEVATION	1414.00	1415.00	1416.00	1417.00	1420.00
13 SQ	DISCHARGE	0.	13.	17.	24.	29.
14 SE	ELEVATION	1412.00	1412.50	1413.00	1414.00	1415.00

\*\*\*

COMPUTED STORAGE-ELEVATION DATA

STORAGE	0.00	2.15	4.40	6.75	15.26
ELEVATION	1414.00	1415.00	1416.00	1417.00	1420.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	0.00	0.00	0.00	2.15	4.40	6.75	15.26
OUTFLOW	0.00	12.90	16.90	23.90	29.30	34.70	40.10	56.30
ELEVATION	1412.00	1412.50	1413.00	1414.00	1415.00	1416.00	1417.00	1420.00

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HYDROGRAPH AT STATION RESB

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	24.92-HR
30.	12.67	15.	5.	4.	4.
(INCHES)		4.987	6.206	6.221	6.221
(AC-FT)		7.	9.	9.	9.
PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
(AC-FT)	(HR)	6-HR	24-HR	72-HR	24.92-HR
2.	12.67	1.	0.	0.	0.
PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
(FEET)	(HR)	6-HR	24-HR	72-HR	24.92-HR
1415.10	12.67	1413.23	1412.31	1412.30	1412.30
CUMULATIVE AREA =		0.03 SQ MI			

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\*\*\*\*\*  
 \* \*  
 \* BASINA \*  
 \* \*  
 \*\*\*\*\*

15 KK

SUBBASIN RUNOFF DATA

16 BA

SUBBASIN CHARACTERISTICS  
 TAREA 0.03 SUBBASIN AREA

PRECIPITATION DATA

6 PH

DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

HYDRO-35			TP-40				TP-49				
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
0.86	1.84	3.73	4.60	5.04	5.94	6.96	8.16	0.00	0.00	0.00	0.00

STORM AREA = 0.03

18 LS

SCS LOSS RATE  
 STRTL 0.41 INITIAL ABSTRACTION  
 CRVNBR 83.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

17 UD

SCS DIMENSIONLESS UNITGRAPH  
 TLAG 0.15 LAG

\*\*\*

UNIT HYDROGRAPH

11 END-OF-PERIOD ORDINATES

25.	67.	59.	30.	15.	7.	4.	2.	1.	0.
0.									

\*\*\* \*\*

HYDROGRAPH AT STATION BASINA

TOTAL RAINFALL = 8.16, TOTAL LOSS = 2.03, TOTAL EXCESS = 6.13

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
+ 101.	12.17	14.	4.	4.	4.
		(INCHES) 4.952	6.130	6.130	6.130
		(AC-FT) 7.	9.	9.	9.

CUMULATIVE AREA = 0.03 SQ MI

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\*\*\*\*\*  
 \* \*  
 \* COMBO \*  
 \* \*  
 \*\*\*\*\*

19 KK

20 HC

HYDROGRAPH COMBINATION  
 ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

\*\*\*

\*\*\* \*\*\* \*\*\* \*\*\* \*\*\*

HYDROGRAPH AT STATION COMBO

PEAK FLOW (CFS)	TIME (HR)	(CFS)	MAXIMUM AVERAGE FLOW			24.92-HR
			6-HR	24-HR	72-HR	
128.	12.17	29.	9.	9.	9.	
		(INCHES) 4.970	6.160	6.176	6.176	
		(AC-FT) 14.	18.	18.	18.	

CUMULATIVE AREA = 0.05 SQ MI

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\*\*\*\*\*  
 \* \*  
 \* RESA \*  
 \* \*  
 \*\*\*\*\*

21 KK

HYDROGRAPH ROUTING DATA

22 RS

STORAGE ROUTING

NSTPS 1 NUMBER OF SUBREACHES  
 ITYP ELEV TYPE OF INITIAL CONDITION  
 RSVRIC 1407.00 INITIAL CONDITION  
 X 0.00 WORKING R AND D COEFFICIENT

23 SA

AREA 1.8 2.5

24 SE

ELEVATION 1407.00 1415.00

26 SS

SPILLWAY

CREL 1409.00 SPILLWAY CREST ELEVATION  
 SPWID 100.00 SPILLWAY WIDTH  
 COQW 2.80 WEIR COEFFICIENT  
 EXPW 1.50 EXPONENT OF HEAD

\*\*\*

COMPUTED STORAGE-ELEVATION DATA

STORAGE 0.00 17.12  
 ELEVATION 1407.00 1415.00

COMPUTED OUTFLOW-ELEVATION DATA

OUTFLOW ELEVATION	0.00 1407.00	0.00 1409.00	0.71 1409.02	5.64 1409.07	19.05 1409.17	45.16 1409.30	88.20 1409.46	152.41 1409.67	242.03 1409.91	361.27 1410.19
OUTFLOW ELEVATION	514.39 1410.50	705.61 1410.85	939.17 1411.24	1219.30 1411.67	1550.24 1412.13	1936.21 1412.63	2381.45 1413.17	2890.20 1413.74	3466.69 1414.35	4115.15 1415.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE OUTFLOW ELEVATION	0.00 0.00 1407.00	3.76 0.00 1409.00	3.80 0.71 1409.02	3.91 5.65 1409.07	4.09 19.04 1409.17	4.35 45.15 1409.30	4.68 88.22 1409.46	5.09 152.40 1409.67	5.58 242.00 1409.91	6.15 361.27 1410.19
STORAGE OUTFLOW ELEVATION	6.80 514.39 1410.50	7.55 705.59 1410.85	8.38 939.16 1411.24	9.30 1219.27 1411.67	10.33 1550.24 1412.13	11.46 1936.21 1412.63	12.70 2381.41 1413.17	14.05 2890.18 1413.74	15.52 3466.64 1414.35	17.12 4115.14 1415.00

\*\*\* WARNING \*\*\* MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 939. TO 4115.  
 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 RESA

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
115.	12.33	25.	7.	7.	7.
(INCHES)		4.234	4.874	4.874	4.874
(AC-FT)		12.	14.	14.	14.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
5.	12.33	4.	2.	2.	2.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
1409.55	12.33	1409.17	1408.25	1408.21	1408.21

CUMULATIVE AREA = 0.05 SQ MI

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

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
HYDROGRAPH AT	BASINB	103.	12.17	15.	5.	4.	0.03		
ROUTED TO	RESB	30.	12.67	15.	5.	4.	0.03	1415.10	12.67
HYDROGRAPH AT	BASINA	101.	12.17	14.	4.	4.	0.03		
2 COMBINED AT	COMBO	128.	12.17	29.	9.	9.	0.05		
ROUTED TO	RESA	115.	12.33	25.	7.	7.	0.05	1409.55	12.33

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



SCHEMATIC DIAGRAM OF STREAM NETWORK

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

4 BASIN  
 V  
 V  
 9 POND  
 .  
 .  
 15 . OFFSIT  
 .  
 .  
 19 COMBO.....  
 V  
 V  
 21 CHAN

(\*\*\*) 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 06/02/97 TIME 15:57:25 \*  
 \*\*\*\*\*

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

REECE FARMS SOUTH EAST POND

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 2JUN97 STARTING DATE  
 ITIME 0000 STARTING TIME  
 NQ 300 NUMBER OF HYDROGRAPH ORDINATES  
 NDDATE 3JUN97 ENDING DATE  
 NDTIME 0055 ENDING TIME  
 ICENT 19 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

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\*\*\*\*\*  
 \* \*  
 \* BASIN \*  
 \* \*  
 \*\*\*\*\*

4 KK

SUBBASIN RUNOFF DATA

5 BA

SUBBASIN CHARACTERISTICS  
 TAREA 0.02 SUBBASIN AREA

PRECIPITATION DATA

6 PH

DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM  
 ..... HYDRO-35 ..... TP-40 ..... TP-49 .....  
 5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY  
 0.86 1.84 3.73 4.60 5.04 5.94 6.96 8.16 0.00 0.00 0.00 0.00

STORM AREA = 0.02

8 LS

SCS LOSS RATE  
 STRTL 0.20 INITIAL ABSTRACTION  
 CRVNR 86.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

7 UD

SCS DIMENSIONLESS UNITGRAPH  
 TLAG 0.15 LAG

\*\*\*

UNIT HYDROGRAPH  
 11 END-OF-PERIOD ORDINATES

19. 49. 44. 22. 11. 5. 3. 1. 1. 0.  
 0.

\*\*\* \*\*\* \*\*\* \*\*\* \*\*\*

HYDROGRAPH AT STATION BASIN

TOTAL RAINFALL = 8.16, TOTAL LOSS = 1.55, TOTAL EXCESS = 6.61

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
79.	12.17	11.	4.	3.	3.
		(INCHES) 5.236	6.608	6.608	6.608
		(AC-FT) 6.	7.	7.	7.

CUMULATIVE AREA = 0.02 SQ MI

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\*\*\*\*\*  
 \* \*  
 \* POND \*  
 \* \*  
 \*\*\*\*\*

HYDROGRAPH ROUTING DATA

10 RS STORAGE ROUTING  
 NSTPS 1 NUMBER OF SUBREACHES  
 ITYP ELEV TYPE OF INITIAL CONDITION  
 RSVRIC 97.00 INITIAL CONDITION  
 X 0.00 WORKING R AND D COEFFICIENT

11 SA AREA 1.1 1.3 1.4 1.7 1.9 2.4

12 SE ELEVATION 95.00 96.00 97.00 99.00 100.00 110.00

14 SS SPILLWAY  
 CREL 99.00 SPILLWAY CREST ELEVATION  
 SPWID 100.00 SPILLWAY WIDTH  
 COQW 2.80 WEIR COEFFICIENT  
 EXPW 1.50 EXPONENT OF HEAD

\*\*\*

COMPUTED STORAGE-ELEVATION DATA

STORAGE	0.00	1.20	2.55	5.64	7.44	28.89
ELEVATION	95.00	96.00	97.00	99.00	100.00	110.00

COMPUTED OUTFLOW-ELEVATION DATA

OUTFLOW	0.00	0.00	1.75	14.01	47.29	112.10	218.95	378.34	600.79	896.81
ELEVATION	95.00	99.00	99.03	99.14	99.31	99.54	99.85	100.22	100.66	101.17
OUTFLOW	1276.90	1751.58	2331.35	3026.73	3848.22	4806.33	5911.58	7174.47	8605.51	10215.21
ELEVATION	101.75	102.40	103.11	103.89	104.74	105.65	106.64	107.69	108.81	110.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	1.20	2.55	5.64	5.70	5.88	6.17	6.60	7.16	7.44
OUTFLOW	0.00	0.00	0.00	0.00	1.75	14.01	47.29	112.10	218.95	280.00
ELEVATION	95.00	96.00	97.00	99.00	99.03	99.14	99.31	99.54	99.85	100.00
STORAGE	7.87	8.71	9.70	10.84	12.13	13.58	15.19	16.98	18.96	21.12
OUTFLOW	378.34	600.79	896.81	1276.90	1751.58	2331.35	3026.73	3848.22	4806.33	5911.58
ELEVATION	100.22	100.66	101.17	101.75	102.40	103.11	103.89	104.74	105.65	106.64
STORAGE	23.49	26.08	28.89							
OUTFLOW	7174.47	8605.50	10215.20							
ELEVATION	107.69	108.81	110.00							

\*\*\* WARNING \*\*\* MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 601. TO 10215.  
 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 POND

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
44.	12.42	(CFS)	7.	2.	2.	2.
		(INCHES)	3.071	3.701	3.701	3.701
		(AC-FT)	3.	4.	4.	4.
PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
(AC-FT)	(HR)		6-HR	24-HR	72-HR	24.92-HR
6.	12.42		6.	4.	4.	4.
PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
(FEET)	(HR)		6-HR	24-HR	72-HR	24.92-HR
99.29	12.42		99.07	98.17	98.13	98.13

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\*\*\*\*\*  
\* OFFSIT \*  
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15 KK

SUBBASIN RUNOFF DATA

16 BA

SUBBASIN CHARACTERISTICS  
TAREA 0.02 SUBBASIN AREA

PRECIPITATION DATA

6 PH

HYDRO-35		DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM						TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
0.86	1.84	3.73	4.60	5.04	5.94	6.96	8.16	0.00	0.00	0.00	0.00

STORM AREA = 0.02

18 LS

SCS LOSS RATE  
STRTL 0.20 INITIAL ABSTRACTION  
CRVNBR 86.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

17 UD

SCS DIMENSIONLESS UNITGRAPH  
TLAG 0.15 LAG

\*\*\*

UNIT HYDROGRAPH

11 END-OF-PERIOD ORDINATES										
19.	49.	44.	22.	11.	5.	3.	1.	1.	0.	
0.										

\*\*\*

HYDROGRAPH AT STATION OFFSIT

TOTAL RAINFALL = 8.16, TOTAL LOSS = 1.55, TOTAL EXCESS = 6.61

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
79.	12.17	11.	4.	3.	3.
		(INCHES) 5.236	6.608	6.608	6.608
		(AC-FT) 6.	7.	7.	7.

CUMULATIVE AREA = 0.02 SQ MI

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\*\*\*\*\*  
 \* \*  
 \* COMBO \*  
 \* \*  
 \*\*\*\*\*

19 KK

20 HC

HYDROGRAPH COMBINATION  
 ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

\*\*\*

\*\*\* \*\*

HYDROGRAPH AT STATION COMBO

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
92.	12.33	17.	6.	5.	5.
	(INCHES)	4.026	5.155	5.155	5.155
	(AC-FT)	9.	11.	11.	11.

CUMULATIVE AREA = 0.04 SQ MI

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\*\*\*\*\*  
 \* \*  
 \* CHAN \*  
 \* \*  
 \*\*\*\*\*

21 KK

HYDROGRAPH ROUTING DATA

22 RS

STORAGE ROUTING  
 NSTPS 1 NUMBER OF SUBREACHES  
 ITYP ELEV TYPE OF INITIAL CONDITION  
 RSVRIC 91.50 INITIAL CONDITION  
 X 0.00 WORKING R AND D COEFFICIENT

23 SA

AREA 0.0 1.0 5.0

24 SE

ELEVATION 91.50 92.00 95.00

25 SQ

DISCHARGE 0. 12. 88. 240.

26 SE

ELEVATION 91.50 92.00 93.00 95.00

\*\*\*

COMPUTED STORAGE-ELEVATION DATA

STORAGE 0.00 0.17 8.47  
 ELEVATION 91.50 92.00 95.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE 0.00 0.17 1.67 8.47  
 OUTFLOW 0.00 12.00 88.00 240.00  
 ELEVATION 91.50 92.00 93.00 95.00

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HYDROGRAPH AT STATION CHAN

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

74. 12.50 (CFS) 17. 6. 5. 5.  
 (INCHES) 4.024 5.152 5.152 5.152  
 (AC-FT) 9. 11. 11. 11.

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

1. 12.50 0. 0. 0. 0.

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

92.82 12.50 91.97 91.67 91.66 91.66

CUMULATIVE AREA = 0.04 SQ MI

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

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
HYDROGRAPH AT	BASIN	79.	12.17	11.	4.	3.	0.02		
ROUTED TO	POND	44.	12.42	7.	2.	2.	0.02	99.29	12.42
HYDROGRAPH AT	OFFSIT	79.	12.17	11.	4.	3.	0.02		
2 COMBINED AT	COMBO	92.	12.33	17.	6.	5.	0.04		
ROUTED TO	CHAN	74.	12.50	17.	6.	5.	0.04	92.82	12.50

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

Reserve C, 100-yr Storm

\*\*\*\*\*  
 \*  
 \* FLOOD HYDROGRAPH PACKAGE (HEC-1) \*  
 \* MAY 1991 \*  
 \* VERSION 4.0.1E \*  
 \* Lahey F77L-EM/32 version 5.01 \*  
 \* Dodson & Associates, Inc. \*  
 \* RUN DATE 06/02/97 TIME 15:57:25 \*  
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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      XX
X   X  X      X           X
XXXXXXX XXXX  X           XXXXX X
X   X  X      X           X
X   X  X      X   X      X
X   X  XXXXXXX  XXXXX      XXX
  
```

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

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

HEC-1 INPUT

LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
1	ID REECE FARMS SOUTH EAST POND
2	IT 5 02JUN97 0000 300
3	IO 3 0
	*DIAGRAM
	*
4	KK BASIN
5	BA .02
6	PH 0 0 .86 1.8425 3.73 4.60 5.04 5.94 6.96 8.16
7	UD .15
8	LS .2 86
	*
9	KK POND
10	RS 1 ELEV 97
11	SA 1.1 1.3 1.4 1.7 1.9 2.4
12	SE 95 96 97 99 100 110
	* 95.75 1.7 .67 .5
13	SS 97 10 2.8 1.5
14	SS 99 100 2.8 1.5
	*
15	KK OFFSIT
16	BA .02
17	UD .15
18	LS .2 86
	*
19	KK COMBO
20	HC 2 0
	*
21	KK CHAN
22	RS 1 ELEV 91.5
23	SA 0 1.03 5
24	SE 91.5 92 95
25	SQ 0 12 88 240
26	SE 91.5 92 93 95
	*
27	ZZ

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

4 BASIN  
 V  
 V  
 9 POND  
 .  
 .  
 15 . OFFSIT  
 .  
 .  
 19 COMBO.....  
 V  
 V  
 21 CHAN

(\*\*\*) 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 06/02/97 TIME 15:57:25 \*  
 \*\*\*\*\*

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

REECE FARMS SOUTH EAST POND

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 2JUN97 STARTING DATE  
 ITIME 0000 STARTING TIME  
 NQ 300 NUMBER OF HYDROGRAPH ORDINATES  
 NDDATE 3JUN97 ENDING DATE  
 NDTIME 0055 ENDING TIME  
 ICENT 19 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

\*\*\*\*\*

\*\*\*\*\*  
 \* BASIN \*  
 \*\*\*\*\*

4 KK

SUBBASIN RUNOFF DATA

5 BA

SUBBASIN CHARACTERISTICS  
 TAREA 0.02 SUBBASIN AREA

PRECIPITATION DATA

6 PH

DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

HYDRO-35			TP-40					TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
0.86	1.84	3.73	4.60	5.04	5.94	6.96	8.16	0.00	0.00	0.00	0.00

STORM AREA = 0.02

8 LS

SCS LOSS RATE  
 STRTL 0.20 INITIAL ABSTRACTION  
 CRVNBR 86.00 CURVE NUMBER  
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

7 UD

SCS DIMENSIONLESS UNITGRAPH  
 TLAG 0.15 LAG

\*\*\*

UNIT HYDROGRAPH  
 11 END-OF-PERIOD ORDINATES

19.	49.	44.	22.	11.	5.	3.	1.	1.	0.
0.									

\*\*\*

HYDROGRAPH AT STATION BASIN

TOTAL RAINFALL = 8.16, TOTAL LOSS = 1.55, TOTAL EXCESS = 6.61

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
79.	12.17	11.	4.	3.	3.
		(INCHES) 5.236	6.608	6.608	6.608
		(AC-FT) 6.	7.	7.	7.

CUMULATIVE AREA = 0.02 SQ MI

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\*\*\*\*\*  
 \* \*  
 \* POND \*  
 \* \*  
 \*\*\*\*\*

HYDROGRAPH ROUTING DATA

10 RS STORAGE ROUTING  
 NSTPS 1 NUMBER OF SUBREACHES  
 ITYP ELEV TYPE OF INITIAL CONDITION  
 RSVRIC 97.00 INITIAL CONDITION  
 X 0.00 WORKING R AND D COEFFICIENT

11 SA AREA 1.1 1.3 1.4 1.7 1.9 2.4

12 SE ELEVATION 95.00 96.00 97.00 99.00 100.00 110.00

14 SS SPILLWAY  
 CREL 99.00 SPILLWAY CREST ELEVATION  
 SPWID 100.00 SPILLWAY WIDTH  
 COQW 2.80 WEIR COEFFICIENT  
 EXPW 1.50 EXPONENT OF HEAD

\*\*\*

COMPUTED STORAGE-ELEVATION DATA

STORAGE	0.00	1.20	2.55	5.64	7.44	28.89
ELEVATION	95.00	96.00	97.00	99.00	100.00	110.00

COMPUTED OUTFLOW-ELEVATION DATA

OUTFLOW	0.00	0.00	1.75	14.01	47.29	112.10	218.95	378.34	600.79	896.81
ELEVATION	95.00	99.00	99.03	99.14	99.31	99.54	99.85	100.22	100.66	101.17
OUTFLOW	1276.90	1751.58	2331.35	3026.73	3848.22	4806.33	5911.58	7174.47	8605.51	10215.21
ELEVATION	101.75	102.40	103.11	103.89	104.74	105.65	106.64	107.69	108.81	110.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	1.20	2.55	5.64	5.70	5.88	6.17	6.60	7.16	7.44
OUTFLOW	0.00	0.00	0.00	0.00	1.75	14.01	47.29	112.10	218.95	280.00
ELEVATION	95.00	96.00	97.00	99.00	99.03	99.14	99.31	99.54	99.85	100.00
STORAGE	7.87	8.71	9.70	10.84	12.13	13.58	15.19	16.98	18.96	21.12
OUTFLOW	378.34	600.79	896.81	1276.90	1751.58	2331.35	3026.73	3848.22	4806.33	5911.58
ELEVATION	100.22	100.66	101.17	101.75	102.40	103.11	103.89	104.74	105.65	106.64
STORAGE	23.49	26.08	28.89							
OUTFLOW	7174.47	8605.50	10215.20							
ELEVATION	107.69	108.81	110.00							

\*\*\* WARNING \*\*\* MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 601. TO 10215.  
 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 POND

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
(CFS)	(HR)		6-HR	24-HR	72-HR	24.92-HR
44.	12.42	(CFS)	7.	2.	2.	2.
		(INCHES)	3.071	3.701	3.701	3.701
		(AC-FT)	3.	4.	4.	4.
PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
(AC-FT)	(HR)		6-HR	24-HR	72-HR	24.92-HR
6.	12.42		6.	4.	4.	4.
PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
(FEET)	(HR)		6-HR	24-HR	72-HR	24.92-HR
99.29	12.42		99.07	98.17	98.13	98.13

\*\*\*\*\*

\*\*\*\*\*  
\* OFFSIT \*  
\*\*\*\*\*

15 KK

SUBBASIN RUNOFF DATA

16 BA

SUBBASIN CHARACTERISTICS  
TAREA 0.02 SUBBASIN AREA

PRECIPITATION DATA

6 PH

DEPTHS FOR 0-PERCENT HYPOTHETICAL STORM

HYDRO-35			TP-40					TP-49			
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
0.86	1.84	3.73	4.60	5.04	5.94	6.96	8.16	0.00	0.00	0.00	0.00

STORM AREA = 0.02

18 LS

SCS LOSS RATE  
STRTL 0.20 INITIAL ABSTRACTION  
CRVNBR 86.00 CURVE NUMBER  
RTIMP 0.00 PERCENT IMPERVIOUS AREA

17 UD

SCS DIMENSIONLESS UNITGRAPH  
TLAG 0.15 LAG

\*\*\*

UNIT HYDROGRAPH  
11 END-OF-PERIOD ORDINATES

19.	49.	44.	22.	11.	5.	3.	1.	1.	0.
0.									

\*\*\*

HYDROGRAPH AT STATION OFFSIT

TOTAL RAINFALL = 8.16, TOTAL LOSS = 1.55, TOTAL EXCESS = 6.61

PEAK FLOW

TIME

MAXIMUM AVERAGE FLOW

(CFS)	(HR)	6-HR	24-HR	72-HR	24.92-HR
79.	12.17	11.	4.	3.	3.
		(INCHES) 5.236	6.608	6.608	6.608
		(AC-FT) 6.	7.	7.	7.

CUMULATIVE AREA = 0.02 SQ MI

\*\*\*\*\*

\*\*\*\*\*  
 \* \*  
 \* COMBO \*  
 \* \*  
 \*\*\*\*\*

19 KK

20 HC

HYDROGRAPH COMBINATION  
 ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

\*\*\*

\*\*\* \*\*

HYDROGRAPH AT STATION COMBO

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR (CFS)	24-HR (INCHES)	72-HR (INCHES)	24.92-HR (INCHES)
92.	12.33	17.	6.	5.	5.
		4.026 (AC-FT)	5.155 11.	5.155 11.	5.155 11.

CUMULATIVE AREA = 0.04 SQ MI

\*\*\*\*\*

\*\*\*\*\*  
 \* \*  
 \* CHAN \*  
 \* \*  
 \*\*\*\*\*

21 KK

HYDROGRAPH ROUTING DATA

22 RS

STORAGE ROUTING  
 NSTPS 1 NUMBER OF SUBREACHES  
 ITYP ELEV TYPE OF INITIAL CONDITION  
 RSVRIC 91.50 INITIAL CONDITION  
 X 0.00 WORKING R AND D COEFFICIENT

23 SA

AREA 0.0 1.0 5.0

24 SE

ELEVATION 91.50 92.00 95.00

25 SQ

DISCHARGE 0. 12. 88. 240.

26 SE

ELEVATION 91.50 92.00 93.00 95.00

\*\*\*

COMPUTED STORAGE-ELEVATION DATA

STORAGE 0.00 0.17 8.47  
 ELEVATION 91.50 92.00 95.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE 0.00 0.17 1.67 8.47  
 OUTFLOW 0.00 12.00 88.00 240.00  
 ELEVATION 91.50 92.00 93.00 95.00

\*\*\* \*\*\* \*\*\* \*\*\* \*\*\*

HYDROGRAPH AT STATION CHAN

PEAK FLOW TIME MAXIMUM AVERAGE FLOW  
 + (CFS) (HR) 6-HR 24-HR 72-HR 24.92-HR  
 74. 12.50  
 (CFS) 17. 6. 5. 5.  
 (INCHES) 4.024 5.152 5.152 5.152  
 (AC-FT) 9. 11. 11. 11.

PEAK STORAGE TIME MAXIMUM AVERAGE STORAGE  
 + (AC-FT) (HR) 6-HR 24-HR 72-HR 24.92-HR  
 1. 12.50  
 0. 0. 0. 0.

PEAK STAGE TIME MAXIMUM AVERAGE STAGE  
 + (FEET) (HR) 6-HR 24-HR 72-HR 24.92-HR  
 92.82 12.50  
 91.97 91.67 91.66 91.66

CUMULATIVE AREA = 0.04 SQ MI

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

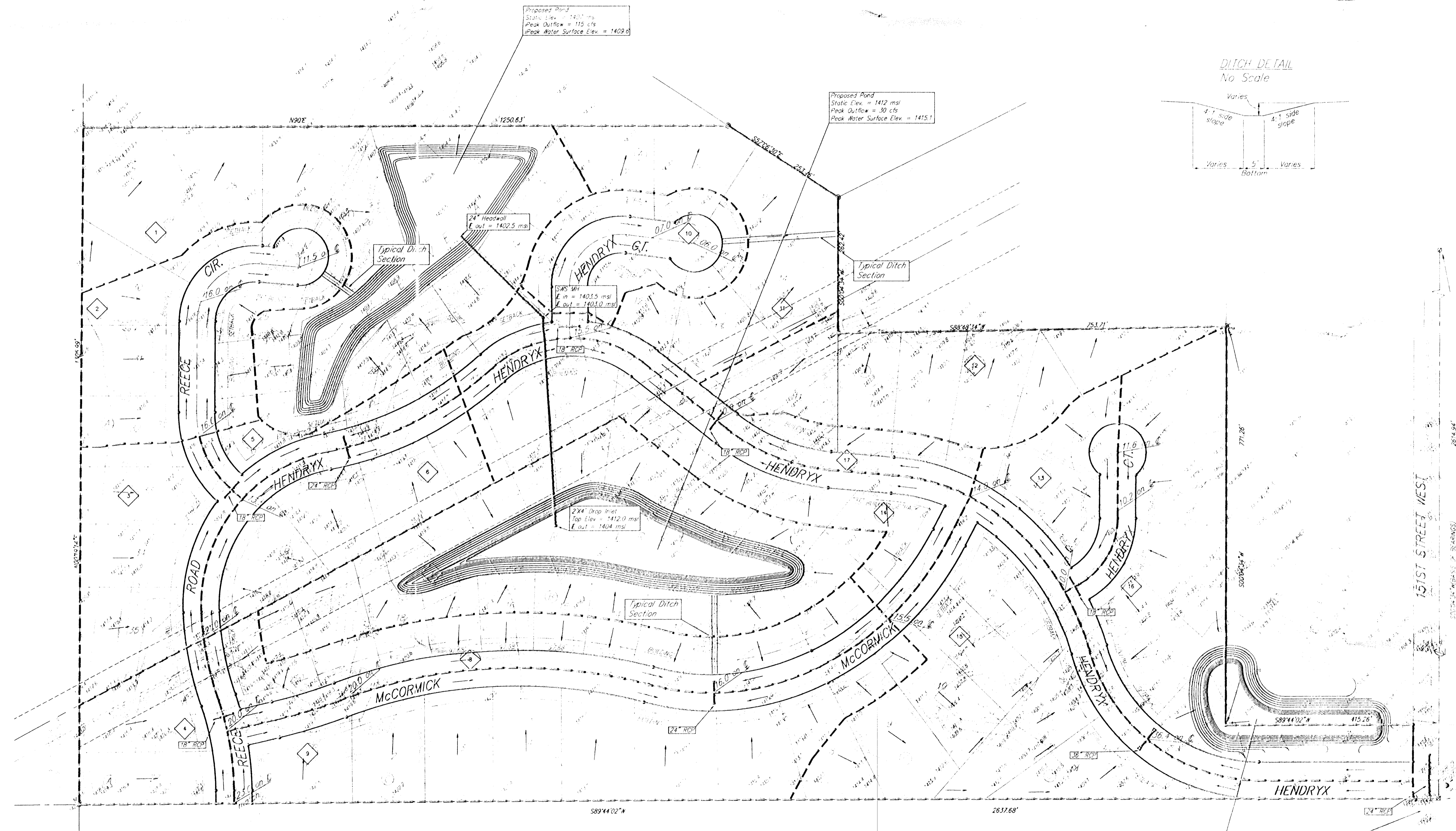
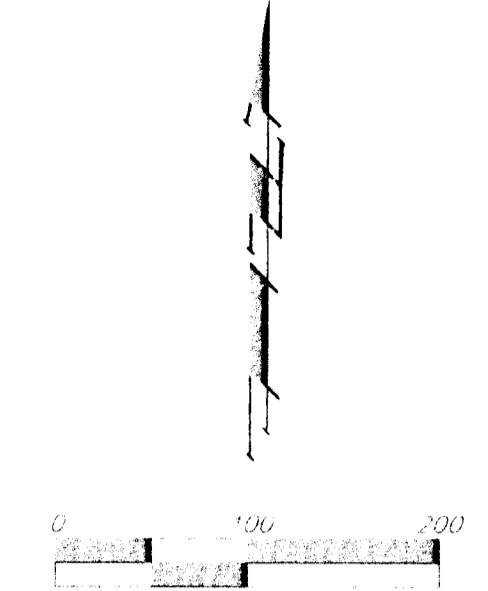
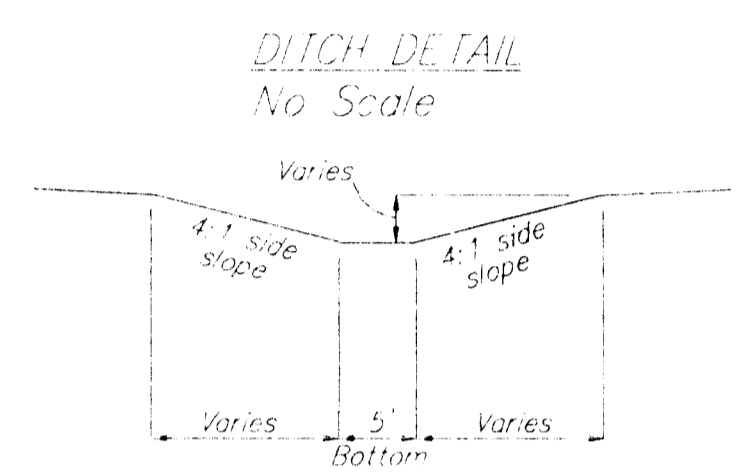
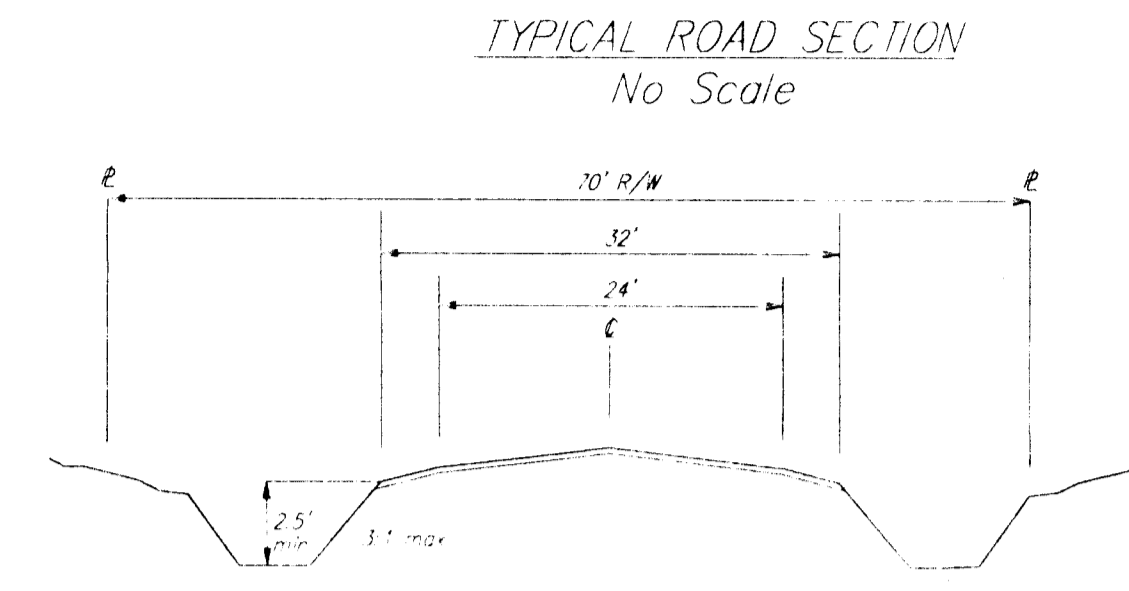
OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
HYDROGRAPH AT	BASIN	79.	12.17	11.	4.	3.	0.02		
ROUTED TO	POND	44.	12.42	7.	2.	2.	0.02	99.29	12.42
HYDROGRAPH AT	OFFSIT	79.	12.17	11.	4.	3.	0.02		
2 COMBINED AT	COMBO	92.	12.33	17.	6.	5.	0.04		
ROUTED TO	CHAN	74.	12.50	17.	6.	5.	0.04	92.82	12.50

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

# DRAINAGE PLAN

## REECE FARMS ESTATES

### AN ADDITION TO SEDGWICK COUNTY, KANSAS



MANHOLE DATA

Manhole No.	Stationing	Top of Manhole	Bottom of Manhole	Depth
1	10+00	1412.0	1405.0	7.0
2	15+00	1410.0	1403.0	7.0
3	20+00	1408.0	1401.0	7.0
4	25+00	1406.0	1399.0	7.0
5	30+00	1404.0	1397.0	7.0
6	35+00	1402.0	1395.0	7.0
7	40+00	1400.0	1393.0	7.0
8	45+00	1398.0	1391.0	7.0
9	50+00	1396.0	1389.0	7.0
10	55+00	1394.0	1387.0	7.0
11	60+00	1392.0	1385.0	7.0
12	65+00	1390.0	1383.0	7.0
13	70+00	1388.0	1381.0	7.0
14	75+00	1386.0	1379.0	7.0
15	80+00	1384.0	1377.0	7.0
16	85+00	1382.0	1375.0	7.0
17	90+00	1380.0	1373.0	7.0
18	95+00	1378.0	1371.0	7.0
19	100+00	1376.0	1369.0	7.0
20	105+00	1374.0	1367.0	7.0
21	110+00	1372.0	1365.0	7.0
22	115+00	1370.0	1363.0	7.0
23	120+00	1368.0	1361.0	7.0
24	125+00	1366.0	1359.0	7.0
25	130+00	1364.0	1357.0	7.0
26	135+00	1362.0	1355.0	7.0
27	140+00	1360.0	1353.0	7.0
28	145+00	1358.0	1351.0	7.0
29	150+00	1356.0	1349.0	7.0
30	155+00	1354.0	1347.0	7.0
31	160+00	1352.0	1345.0	7.0
32	165+00	1350.0	1343.0	7.0
33	170+00	1348.0	1341.0	7.0
34	175+00	1346.0	1339.0	7.0
35	180+00	1344.0	1337.0	7.0
36	185+00	1342.0	1335.0	7.0
37	190+00	1340.0	1333.0	7.0
38	195+00	1338.0	1331.0	7.0
39	200+00	1336.0	1329.0	7.0
40	205+00	1334.0	1327.0	7.0
41	210+00	1332.0	1325.0	7.0
42	215+00	1330.0	1323.0	7.0
43	220+00	1328.0	1321.0	7.0
44	225+00	1326.0	1319.0	7.0
45	230+00	1324.0	1317.0	7.0
46	235+00	1322.0	1315.0	7.0
47	240+00	1320.0	1313.0	7.0
48	245+00	1318.0	1311.0	7.0
49	250+00	1316.0	1309.0	7.0
50	255+00	1314.0	1307.0	7.0
51	260+00	1312.0	1305.0	7.0
52	265+00	1310.0	1303.0	7.0
53	270+00	1308.0	1301.0	7.0
54	275+00	1306.0	1299.0	7.0
55	280+00	1304.0	1297.0	7.0
56	285+00	1302.0	1295.0	7.0
57	290+00	1300.0	1293.0	7.0
58	295+00	1298.0	1291.0	7.0
59	300+00	1296.0	1289.0	7.0
60	305+00	1294.0	1287.0	7.0
61	310+00	1292.0	1285.0	7.0
62	315+00	1290.0	1283.0	7.0
63	320+00	1288.0	1281.0	7.0
64	325+00	1286.0	1279.0	7.0
65	330+00	1284.0	1277.0	7.0
66	335+00	1282.0	1275.0	7.0
67	340+00	1280.0	1273.0	7.0
68	345+00	1278.0	1271.0	7.0
69	350+00	1276.0	1269.0	7.0
70	355+00	1274.0	1267.0	7.0
71	360+00	1272.0	1265.0	7.0
72	365+00	1270.0	1263.0	7.0
73	370+00	1268.0	1261.0	7.0
74	375+00	1266.0	1259.0	7.0
75	380+00	1264.0	1257.0	7.0
76	385+00	1262.0	1255.0	7.0
77	390+00	1260.0	1253.0	7.0
78	395+00	1258.0	1251.0	7.0
79	400+00	1256.0	1249.0	7.0
80	405+00	1254.0	1247.0	7.0
81	410+00	1252.0	1245.0	7.0
82	415+00	1250.0	1243.0	7.0
83	420+00	1248.0	1241.0	7.0
84	425+00	1246.0	1239.0	7.0
85	430+00	1244.0	1237.0	7.0
86	435+00	1242.0	1235.0	7.0
87	440+00	1240.0	1233.0	7.0
88	445+00	1238.0	1231.0	7.0
89	450+00	1236.0	1229.0	7.0
90	455+00	1234.0	1227.0	7.0
91	460+00	1232.0	1225.0	7.0
92	465+00	1230.0	1223.0	7.0
93	470+00	1228.0	1221.0	7.0
94	475+00	1226.0	1219.0	7.0
95	480+00	1224.0	1217.0	7.0
96	485+00	1222.0	1215.0	7.0
97	490+00	1220.0	1213.0	7.0
98	495+00	1218.0	1211.0	7.0
99	500+00	1216.0	1209.0	7.0
100	505+00	1214.0	1207.0	7.0
101	510+00	1212.0	1205.0	7.0
102	515+00	1210.0	1203.0	7.0
103	520+00	1208.0	1201.0	7.0
104	525+00	1206.0	1199.0	7.0
105	530+00	1204.0	1197.0	7.0
106	535+00	1202.0	1195.0	7.0
107	540+00	1200.0	1193.0	7.0
108	545+00	1198.0	1191.0	7.0
109	550+00	1196.0	1189.0	7.0
110	555+00	1194.0	1187.0	7.0
111	560+00	1192.0	1185.0	7.0
112	565+00	1190.0	1183.0	7.0
113	570+00	1188.0	1181.0	7.0
114	575+00	1186.0	1179.0	7.0
115	580+00	1184.0	1177.0	7.0
116	585+00	1182.0	1175.0	7.0
117	590+00	1180.0	1173.0	7.0
118	595+00	1178.0	1171.0	7.0
119	600+00	1176.0	1169.0	7.0
120	605+00	1174.0	1167.0	7.0
121	610+00	1172.0	1165.0	7.0
122	615+00	1170.0	1163.0	7.0
123	620+00	1168.0	1161.0	7.0
124	625+00	1166.0	1159.0	7.0
125	630+00	1164.0	1157.0	7.0
126	635+00	1162.0	1155.0	7.0
127	640+00	1160.0	1153.0	7.0
128	645+00	1158.0	1151.0	7.0
129	650+00	1156.0	1149.0	7.0
130	655+00	1154.0	1147.0	7.0
131	660+00	1152.0	1145.0	7.0
132	665+00	1150.0	1143.0	7.0
133	670+00	1148.0	1141.0	7.0
134	675+00	1146.0	1139.0	7.0
135	680+00	1144.0	1137.0	7.0
136	685+00	1142.0	1135.0	7.0
137	690+00	1140.0	1133.0	7.0
138	695+00	1138.0	1131.0	7.0
139	700+00	1136.0	1129.0	7.0
140	705+00	1134.0	1127.0	7.0
141	710+00	1132.0	1125.0	7.0
142	715+00	1130.0	1123.0	7.0
143	720+00	1128.0	1121.0	7.0
144	725+00	1126.0	1119.0	7.0
145	730+00	1124.0	1117.0	7.0
146	735+00	1122.0	1115.0	7.0
147	740+00	1120.0	1113.0	7.0
148	745+00	1118.0	1111.0	7.0
149	750+00	1116.0	1109.0	7.0
150	755+00	1114.0	1107.0	7.0
151	760+00	1112.0	1105.0	7.0
152	765+00	1110.0	1103.0	7.0
153	770+00	1108.0	1101.0	7.0
154	775+00	1106.0	1099.0	7.0
155	780+00	1104.0	1097.0	7.0
156	785+00	1102.0	1095.0	7.0
157	790+00	1100.0	1093.0	7.0
158	795+00	1098.0	1091.0	7.0
159	800+00	1096.0	1089.0	7.0
160	805+00	1094.0	1087.0	7.0
161	810+00	1092.0	1085.0	7.0
162	815+00	1090.0	1083.0	7.0
163	820+00	1088.0	1081.0	7.0
164	825+00	1086.0	1079.0	7.0
165	830+00	1084.0	1077.0	7.0
166	835+00	1082.0	1075.0	7.0
167	840+00	1080.0	1073.0	7.0
168	845+00	1078.0	1071.0	7.0
169	850+00	1076.0	1069.0	7.0
170	855+00	1074.0	1067.0	7.0
171	860+00	1072.0	1065.0	7.0
172	865+00	1070.0	1063.0	7.0
173	870+00	1068.0	1061.0	7.0
174	875+00	1066.0	1059.0	7.0
175	880+00	1064.0	1057.0	7.0
176	885+00	1062.0	1055.0	7.0
177	890+00	1060.0	1053.0	7.0
178	895+00	1058.0	1051.0	7.0
179	900+00	1056.0	1049.0	7.0
180	905+00	1054.0	1047.0	7.0
181	910+00	1052.0	1045.0	7.0
182	915+00	1050.0	1043.0	7.0
183	920+00	1048.0	1041.0	7.0
184	925+00	1046.0	1039.0	7.0
185	930+00	1044.0	1037.0	7.0
186	935+00	1042.0	1035.0	7.0
187	940+00	1040.0	1033.0	7.0
188	945+00	1038.0	1031.0	7.0
189	950+00	1036.0	1029.0	7.0
190	955+00	1034.0	1027.0	7.0
191	960+00	1032.0	1025.0	7.0
192	965+00	1030.0	1023.0	7.0
193	970+00	1028.0	1021.0	7.0
194	975+00	1026.0	1019.0	7.0
195	980+00	1024.0	1017.0	7.0
196	985+00	1022.0	1015.0	7.0
197	990+00			