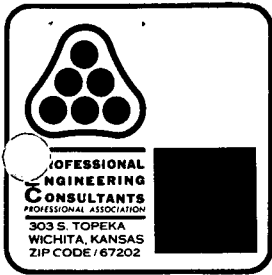


WESLEY WEST ADDITION

The following is the proposed drainage plan and supporting calculations for an approximately 40 acre site to be developed as a medical office complex. The primary drainage improvement for the site is construction of a detention pond that will limit the 100-year developed conditions runoff rate to the pre-development peak rate of runoff for the 100-year storm. Detention pond analysis was done using the Army Corps of Engineers' HEC-1 computer program and the Federal Highway Administration's Culvert program. The outfall for the proposed pond will be a 30" RCP that ties into a 48" RCP City of Wichita storm sewer draining to the East in 13th Street. A 110' overflow at elevation 1343.7 at the South end of the pond will allow the 100-year storm to enter the 13th Street right-of-way.

Hydrologic calculations to determine site runoff were done using three drainage basins. The same basins were also used in the HEC-1 model. These basins were based on a preliminary site development plan, but because the plan is only preliminary, the basins are not shown on the enclosed drainage plan.



Date _____ Page _____ of _____

Project Wesley West

Item Existing Cond. & Devel. Cond. - Hydrology

Existing

Group B Soils

$$L = 2400'$$

Cover = Cult. Field w/o conservation treatment

$$S = (1354 - 1344) / 2400' = 0.42\%$$

$$\text{Assume } V_{el} = 0.5' / \text{sec.}$$

$$T_c = 2400 / 0.5 = 4,800 \text{ s} = 1 \text{ hr } 20 \text{ min.}$$

$$CN = 81$$

$$D.A. = 30.00 \text{ Ac.}$$

Developed

D.A. #1

$$L = 1900'$$

Cover = 85% Commercial, 15% Residential (1/6 ac. Lots, 45% Imp.)

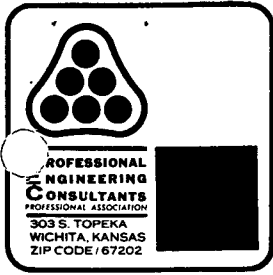
$$S = 0.4\% \text{ min.}$$

$$\text{Assume } V_{el} = 1.5' / \text{sec.}$$

$$T_c = 1900 / 1.5 = 21 \text{ min.}$$

$$CN = 92 \times 0.85 + 80 \times 0.15 = 90$$

$$D.A. = 23.62 \text{ Ac.}$$



Date _____ Page _____ of _____

Project _____

Item _____

D.A. #2

$$L = 1100'$$

Cover = Commercial

$$S = 0.4\% \text{ min}$$

Assume $V_{cl} = 1.5' / \text{sec.}$

$$T_c = 1100' / 1.5 = 12.2 \text{ min, say } 15 \text{ min.}$$

$$CN = 92$$

$$D.A. = 6.38 \text{ Ac.}$$

D.A. #3 = D.A. #4

Cover = Commercial

$$T_c = 15 \text{ min.}$$

$$CN = 92$$

$$D.A. = 14.96 \text{ Ac Total}$$

Under Developed Cond. \rightarrow Wichita Rehab hosp. drains to 18" S.W.S. to ditch to East, to 36" line.

Total Design Q for 36" according to 13th St. plans = 41.5 cfs

CURRENT DATE: 02-21-1995
CURRENT TIME: 16:16:26

FILE DATE: 02-21-1995
FILE NAME: NWVILL

FHWA CULVERT ANALYSIS
HY-8, VERSION 3.2

C	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
U	L	V		BARRELS	SPAN	RISE	MANNING	INLET
	ELEV.	ELEV.	LENGTH	SHAPE	(FT)	(FT)	n	TYPE
	(FT)	(FT)	(FT)	MATERIAL				
1	1337.20	1337.00	80.00	1 RCP	2.50	2.50	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: NWVILL DATE: 02-21-1995

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1340.00	0	0	0	0	0	0	0	0	1
1340.07	7	7	0	0	0	0	0	0	1
1340.26	14	14	0	0	0	0	0	0	1
1340.59	21	21	0	0	0	0	0	0	1
1341.04	28	28	0	0	0	0	0	0	1
1341.63	35	35	0	0	0	0	0	0	1
1342.35	41	41	0	0	0	0	0	0	1
1343.19	48	48	0	0	0	0	0	0	1
1343.42	50	50	0	0	0	0	0	0	1
1343.79	62	53	0	0	0	0	0	9	13
1343.83	69	53	0	0	0	0	0	15	5
1343.70	52	52	0	0	0	0	0	0	OVERTOPPING

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: NWVILL DATE: 02-21-1995

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1340.00	0.00	0	0	0.00
1340.07	0.00	7	0	0.00
1340.26	0.00	14	0	0.00
1340.59	0.00	21	0	0.00
1341.04	0.00	28	0	0.00
1341.63	0.00	35	0	0.00
1342.35	0.00	41	0	0.00
1343.19	0.00	48	0	0.00
1343.42	0.00	50	0	0.00
1343.79	-0.00	62	0	0.63
1343.83	-0.00	69	1	0.95

<1> TOLERANCE (FT) = 0.010

<2> TOLERANCE (%) = 1.000

```

*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
*   MAY 1991 *
*   VERSION 4.0.1E *
*   Lahey F77L-EM/32 version 5.01 *
*   Dodson & Associates, Inc. *
* RUN DATE 04/03/95 TIME 07:53:22 *
*****

```

```

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

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X X XXXXXX XXXX X
X X X X X XX
X X X X X X
XXXXXX XXXX X XXXXX X
X X X X X X
X X X X X X
X X XXXXXX XXXX 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 -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	Northwest Village Detention Study									
2	ID	5-, 10-, 25-, & 100-Year Storms									
3	ID	Professional Engineering Consultants									
4	ID	Wichita, Ks									
5	ID	DRC 2/21/95									
6	ID	File: T:\DAR\NWVILL.IH1									
7	IT	6	01FEB95	0600		0	02FEB95	1154			
8	IN	30	01FEB95	0600							
9	IO	3	0								
10	JR	PREC	0.5902	0.6875	0.8125	1.000					
	*	UNDEVELOPED BASIN									
	*										
	*										
11	KK	UNDEV									
12	BA	0.0703									
13	PB	7.8									
14	PC	0.08	.09	.10	.11	.12	.133	.147	.163	.181	.204
15	PC	.235	.283	.663	.735	.772	.799	.820	.835	.850	.865
16	PC	.880	.890	.900	.910	.916	.925	.934	.943	.952	.958
17	PC	.964	.970	.976	.982	.988	.994	1.000			
18	LS	0	81	0							
19	UD	.8									
	*	BASIN 1									
	*										
	*										
20	KK	BASIN1									
21	BA	.0369									
22	PB	7.8									
23	PC	0.08	.09	.10	.11	.12	.133	.147	.163	.181	.204
24	PC	.235	.283	.663	.735	.772	.799	.820	.835	.850	.865
25	PC	.880	.890	.900	.910	.916	.925	.934	.943	.952	.958
26	PC	.964	.970	.976	.982	.988	.994	1.000			
27	LS	0	90	0							
28	UD	.2									
	*	BASIN 2									
	*										
	*										
29	KK	BASIN2									
30	BA	.010									
31	PB	7.8									
32	PC	0.08	.09	.10	.11	.12	.133	.147	.163	.181	.204
33	PC	.235	.283	.663	.735	.772	.799	.820	.835	.850	.865
34	PC	.880	.890	.900	.910	.916	.925	.934	.943	.952	.958
35	PC	.964	.970	.976	.982	.988	.994	1.000			
36	LS	0	92	0							
37	UD	.2									
	*	BASIN 3									
	*										
	*										

HEC-1 INPUT

LINE	ID.....	1.....	2.....	3.....	4.....	5.....	6.....	7.....	8.....	9.....	10
38	KK	BASIN3									
39	BA	.0234									
40	PB	7.8									
41	PC	0.08	.09	.10	.11	.12	.133	.147	.163	.181	.204
42	PC	.235	.283	.663	.735	.772	.799	.820	.835	.850	.865
43	PC	.880	.890	.900	.910	.916	.925	.934	.943	.952	.958
44	PC	.964	.970	.976	.982	.988	.994	1.000			
45	LS	0	92	0							
46	UD	.2									
	*										
	*	COMBINE HYDROGRAPHS									
	*										
47	KK	INPOND									
48	HC	3									
	*										
	*	DETENTION AREA FOR FLOOD ROUTING									
	*										
49	KK	STORGE									
50	RS	1	ELEV	1337.2							
51	SA	1.25	2.00	2.15							
52	SE	1337.2	1343.0	1343.7							
53	SO	0	14	21	28	35	41	48	50	62	69
54	SE	1337.2	1340.26	1340.59	1341.04	1341.63	1342.35	1343.19	1343.42	1343.79	1343.83
55	ST	1343.7	110	2.7	1.5						
56	ZZ										

```

*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
*   MAY 1991
*   VERSION 4.0.1E
*   Lahey F77L-EM/32 version 5.01
*   Dodson & Associates, Inc.
* RUN DATE 04/03/95 TIME 07:53:22
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* DAVIS, CALIFORNIA 95616
* (916) 551-1748
*
*****

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Northwest Village Detention Study
5-, 10-, 25-, & 100-Year Storms
Professional Engineering Consultants
Wichita, Ks
DRC 2/21/95
File: T:\DAR\NWVILL.IH1

```

```

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

IT     HYDROGRAPH TIME DATA
      NMIN       6  MINUTES IN COMPUTATION INTERVAL
      IDATE      1FEB95  STARTING DATE
      ITIME      0600  STARTING TIME
      NQ         300  NUMBER OF HYDROGRAPH ORDINATES
      NDDATE     2FEB95  ENDING DATE
      NDTIME     1154  ENDING TIME
      ICENT      19  CENTURY MARK

      COMPUTATION INTERVAL  0.10 HOURS
      TOTAL TIME BASE      29.90 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
      0.59      0.69      0.81      1.00

```

*** **

```

*****
*
* UNDEV *
*
*****

```

```

8 IN   TIME DATA FOR INPUT TIME SERIES
      JXMIN      30  TIME INTERVAL IN MINUTES
      JKDATE     1FEB95  STARTING DATE
      JXTIME     600  STARTING TIME

```

SUBBASIN RUNOFF DATA

```

12 BA  SUBBASIN CHARACTERISTICS
      TAREA      0.07  SUBBASIN AREA

```

PRECIPITATION DATA

```

13 PB  STORM      7.80  BASIN TOTAL PRECIPITATION

14 PI  INCREMENTAL PRECIPITATION PATTERN

```


(INCHES) 2.698 3.308 3.308 3.308
 (AC-FT) 10. 12. 12. 12.

CUMULATIVE AREA = 0.07 SQ MI

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

HYDROGRAPH AT STATION UNDEV
 FOR PLAN 1, RATIO = 0.81

TOTAL RAINFALL = 6.34, TOTAL LOSS = 2.14, TOTAL EXCESS = 4.19

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)	(CFS)				
+ 83.	6.70	26.	8.	6.	6.	
		(INCHES)	3.423	4.193	4.193	4.193
		(AC-FT)	13.	16.	16.	16.

CUMULATIVE AREA = 0.07 SQ MI

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

HYDROGRAPH AT STATION UNDEV
 FOR PLAN 1, RATIO = 1.00

TOTAL RAINFALL = 7.80, TOTAL LOSS = 2.25, TOTAL EXCESS = 5.55

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)	(CFS)				
+ 111.	6.60	34.	10.	8.	8.	
		(INCHES)	4.532	5.554	5.554	5.554
		(AC-FT)	17.	21.	21.	21.

CUMULATIVE AREA = 0.07 SQ MI

 * *
 20 KK * BASIN *
 * *

8 IN TIME DATA FOR INPUT TIME SERIES
 JXMIN 30 TIME INTERVAL IN MINUTES
 JXDATE 1FEB95 STARTING DATE
 JXTIME 600 STARTING TIME

SUBBASIN RUNOFF DATA

21 BA SUBBASIN CHARACTERISTICS
 TAREA 0.04 SUBBASIN AREA

PRECIPITATION DATA

22 PB STORM 7.80 BASIN TOTAL PRECIPITATION

23 PI INCREMENTAL PRECIPITATION PATTERN

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.08	0.08	0.08	0.08
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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

27 LS SCS LOSS RATE
 STRTL 0.22 INITIAL ABSTRACTION
 CRVNR 90.00 CURVE NUMBER
 RTIME 0.00 PERCENT IMPERVIOUS AREA

28 UD SCS DIMENSIONLESS UNITGRAPH
 TLAG 0.20 LAG

UNIT HYDROGRAPH
 12 END-OF-PERIOD ORDINATES

22.	67.	67.	40.	20.	11.	6.	3.	2.	1.
0.	0.								

TOTAL RAINFALL = 7.80, TOTAL LOSS = 1.19, TOTAL EXCESS = 6.61

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	29.90-HR
+	131.	6.00			
		(CFS)			
+	131.	6.00	21.	7.	5.
		(INCHES)	5.370	6.609	6.609
		(AC-FT)	11.	13.	13.

CUMULATIVE AREA = 0.04 SQ MI

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

HYDROGRAPH AT STATION BASIN1
 FOR PLAN 1, RATIO = 0.59

TOTAL RAINFALL = 4.60, TOTAL LOSS = 1.11, TOTAL EXCESS = 3.50

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	29.90-HR
+	70.	6.00			
		(CFS)			
+	70.	6.00	11.	3.	3.
		(INCHES)	2.865	3.495	3.495
		(AC-FT)	6.	7.	7.

CUMULATIVE AREA = 0.04 SQ MI

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

HYDROGRAPH AT STATION BASIN1
 FOR PLAN 1, RATIO = 0.69

TOTAL RAINFALL = 5.36, TOTAL LOSS = 1.14, TOTAL EXCESS = 4.23

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	29.90-HR
+	84.	6.00			
		(CFS)			
+	84.	6.00	14.	4.	3.
		(INCHES)	3.457	4.227	4.227
		(AC-FT)	7.	8.	8.

CUMULATIVE AREA = 0.04 SQ MI

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

HYDROGRAPH AT STATION BASIN1
 FOR PLAN 1, RATIO = 0.81

TOTAL RAINFALL = 6.34, TOTAL LOSS = 1.16, TOTAL EXCESS = 5.18

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	29.90-HR
+					

```

+ (CFS)      (HR)
+ 103.      6.00
              (CFS)
              17.
              5.
              4.
              4.
              (INCHES) 4.222 5.175 5.175 5.175
              (AC-FT) 8.    10.    10.    10.
    
```

CUMULATIVE AREA = 0.04 SQ MI

*** **

HYDROGRAPH AT STATION BASIN1
FOR PLAN 1, RATIO = 1.00

TOTAL RAINFALL = 7.80, TOTAL LOSS = 1.19, TOTAL EXCESS = 6.61

```

PEAK FLOW    TIME
+ (CFS)      (HR)
+ 131.      6.00
              (CFS)
              21.
              7.
              5.
              5.
              (INCHES) 5.370 6.609 6.609 6.609
              (AC-FT) 11.    13.    13.    13.
    
```

CUMULATIVE AREA = 0.04 SQ MI

```

*****
*          *
29 KK    *  BASIN2 *
*          *
*****
    
```

```

8 IN      TIME DATA FOR INPUT TIME SERIES
          JXMIN      30  TIME INTERVAL IN MINUTES
          JXDATE     1FEB95  STARTING DATE
          JXTIME     600  STARTING TIME
    
```

SUBBASIN RUNOFF DATA

```

30 BA      SUBBASIN CHARACTERISTICS
          TAREA      0.01  SUBBASIN AREA
    
```

PRECIPITATION DATA

```

31 PB      STORM      7.80  BASIN TOTAL PRECIPITATION
    
```

```

32 PI      INCREMENTAL PRECIPITATION PATTERN
          0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
          0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
          0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
          0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
          0.00  0.00  0.00  0.00  0.00  0.01  0.01  0.01  0.01  0.01
          0.01  0.01  0.01  0.01  0.01  0.08  0.08  0.08  0.08  0.08
          0.01  0.01  0.01  0.01  0.01  0.01  0.01  0.01  0.01  0.01
          0.01  0.01  0.01  0.01  0.01  0.00  0.00  0.00  0.00  0.00
          0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
          0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
          0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
          0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
          0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
          0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
          0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
          0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
          0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
          0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
          0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
          0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
    
```

```

36 LS      SCS LOSS RATE
          STRTL      0.17  INITIAL ABSTRACTION
          CRVNER     92.00  CURVE NUMBER
          RTIMP      0.00  PERCENT IMPERVIOUS AREA
    
```

```

37 UD      SCS DIMENSIONLESS UNITGRAPH
          TLAG      0.20  LAG
    
```

UNIT HYDROGRAPH
12 END-OF-PERIOD ORDINATES

6. 18. 18. 11. 5. 3. 1. 1. 0. 0.

TOTAL RAINFALL = 7.80, TOTAL LOSS = 0.95, TOTAL EXCESS = 6.85

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
+ (CFS)	(HR)		6-HR	24-HR	72-HR	29.90-HR
+ 36.	6.00	(CFS)	6.	2.	1.	1.
		(INCHES)	5.532	6.846	6.846	6.846
		(AC-FT)	3.	4.	4.	4.

CUMULATIVE AREA = 0.01 SQ MI

HYDROGRAPH AT STATION BASIN2
FOR PLAN 1, RATIO = 0.59

TOTAL RAINFALL = 4.60, TOTAL LOSS = 0.90, TOTAL EXCESS = 3.70

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
+ (CFS)	(HR)		6-HR	24-HR	72-HR	29.90-HR
+ 20.	6.00	(CFS)	3.	1.	1.	1.
		(INCHES)	3.025	3.703	3.703	3.703
		(AC-FT)	2.	2.	2.	2.

CUMULATIVE AREA = 0.01 SQ MI

HYDROGRAPH AT STATION BASIN2
FOR PLAN 1, RATIO = 0.69

TOTAL RAINFALL = 5.36, TOTAL LOSS = 0.92, TOTAL EXCESS = 4.44

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
+ (CFS)	(HR)		6-HR	24-HR	72-HR	29.90-HR
+ 24.	6.00	(CFS)	4.	1.	1.	1.
		(INCHES)	3.621	4.444	4.444	4.444
		(AC-FT)	2.	2.	2.	2.

CUMULATIVE AREA = 0.01 SQ MI

HYDROGRAPH AT STATION BASIN2
FOR PLAN 1, RATIO = 0.81

TOTAL RAINFALL = 6.34, TOTAL LOSS = 0.94, TOTAL EXCESS = 5.40

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
+ (CFS)	(HR)		6-HR	24-HR	72-HR	29.90-HR
+ 29.	6.00	(CFS)	5.	1.	1.	1.
		(INCHES)	4.386	5.402	5.402	5.402
		(AC-FT)	2.	3.	3.	3.

CUMULATIVE AREA = 0.01 SQ MI

HYDROGRAPH AT STATION BASIN2
FOR PLAN 1, RATIO = 1.00

TOTAL RAINFALL = 7.80, TOTAL LOSS = 0.95, TOTAL EXCESS = 6.85

(AC-FT) 7. 9. 9. 9.
 CUMULATIVE AREA = 0.02 SQ MI

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

HYDROGRAPH AT STATION BASIN3
 FOR PLAN 1, RATIO = 0.59

TOTAL RAINFALL = 4.60, TOTAL LOSS = 0.90, TOTAL EXCESS = 3.70

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
+ (CFS)	(HR)	6-HR	24-HR	72-HR	29.90-HR
		(CFS)			
+ 47.	6.00	8.	2.	2.	2.
		(INCHES)	3.025	3.703	3.703
		(AC-FT)	4.	5.	5.

CUMULATIVE AREA = 0.02 SQ MI

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

HYDROGRAPH AT STATION BASIN3
 FOR PLAN 1, RATIO = 0.69

TOTAL RAINFALL = 5.36, TOTAL LOSS = 0.92, TOTAL EXCESS = 4.44

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
+ (CFS)	(HR)	6-HR	24-HR	72-HR	29.90-HR
		(CFS)			
+ 56.	6.00	9.	3.	2.	2.
		(INCHES)	3.621	4.444	4.444
		(AC-FT)	5.	6.	6.

CUMULATIVE AREA = 0.02 SQ MI

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

HYDROGRAPH AT STATION BASIN3
 FOR PLAN 1, RATIO = 0.81

TOTAL RAINFALL = 6.34, TOTAL LOSS = 0.94, TOTAL EXCESS = 5.40

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
+ (CFS)	(HR)	6-HR	24-HR	72-HR	29.90-HR
		(CFS)			
+ 68.	6.00	11.	3.	3.	3.
		(INCHES)	4.386	5.402	5.402
		(AC-FT)	5.	7.	7.

CUMULATIVE AREA = 0.02 SQ MI

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

HYDROGRAPH AT STATION BASIN3
 FOR PLAN 1, RATIO = 1.00

TOTAL RAINFALL = 7.80, TOTAL LOSS = 0.95, TOTAL EXCESS = 6.85

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW		
+ (CFS)	(HR)	6-HR	24-HR	72-HR	29.90-HR
		(CFS)			
+ 85.	6.00	14.	4.	3.	3.
		(INCHES)	5.532	6.846	6.846
		(AC-FT)	7.	9.	9.

CUMULATIVE AREA = 0.02 SQ MI

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 * *
 47 KK * INPOND *
 * *

48 HC HYDROGRAPH COMBINATION
 ICOMP 3 NUMBER OF HYDROGRAPHS TO COMBINE

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

HYDROGRAPH AT STATION INPOND
 FOR PLAN 1, RATIO = 0.59

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	29.90-HR
+ 137.	6.00	(CFS)			
		22.	7.	5.	5.
		(INCHES) 2.940	3.594	3.594	3.594
		(AC-FT) 11.	13.	13.	13.

CUMULATIVE AREA = 0.07 SQ MI

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

HYDROGRAPH AT STATION INPOND
 FOR PLAN 1, RATIO = 0.69

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	29.90-HR
+ 164.	6.00	(CFS)			
		27.	8.	7.	7.
		(INCHES) 3.534	4.330	4.330	4.330
		(AC-FT) 13.	16.	16.	16.

CUMULATIVE AREA = 0.07 SQ MI

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

HYDROGRAPH AT STATION INPOND
 FOR PLAN 1, RATIO = 0.81

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	29.90-HR
+ 199.	6.00	(CFS)			
		33.	10.	8.	8.
		(INCHES) 4.300	5.283	5.283	5.283
		(AC-FT) 16.	20.	20.	20.

CUMULATIVE AREA = 0.07 SQ MI

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

HYDROGRAPH AT STATION INPOND
 FOR PLAN 1, RATIO = 1.00

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	29.90-HR
+ 252.	6.00	(CFS)			
		41.	13.	10.	10.
		(INCHES) 5.447	6.721	6.721	6.721
		(AC-FT) 20.	25.	25.	25.

CUMULATIVE AREA = 0.07 SQ MI

 * *
 49 KK * STORGE *
 * *

HYDROGRAPH ROUTING DATA

50 RS STORAGE ROUTING
 NSTPS 1 NUMBER OF SUBREACHES
 ITYP ELEV TYPE OF INITIAL CONDITION
 RSVRIC 1337.20 INITIAL CONDITION
 X 0.00 WORKING R AND D COEFFICIENT

51 SA AREA 1.3 2.0 2.2

52 SE ELEVATION 1337.20 1343.00 1343.70

53 SQ DISCHARGE 0. 14. 21. 28. 35. 41. 48. 50. 62. 69.

54 SE ELEVATION 1337.20 1340.26 1340.59 1341.04 1341.63 1342.35 1343.19 1343.42 1343.79 1343.83

55 ST TOP OF DAM
 TOPEL 1343.70 ELEVATION AT TOP OF DAM
 DAMWID 110.00 DAM WIDTH
 COOD 2.70 WEIR COEFFICIENT
 EXPD 1.50 EXPONENT OF HEAD

COMPUTED STORAGE-ELEVATION DATA

STORAGE 0.00 9.34 10.79
 ELEVATION 1337.20 1343.00 1343.70

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

(INCLUDING FLOW OVER DAM)

STORAGE 0.00 4.38 4.93 5.69 6.73 8.07 9.34 9.72 10.20 10.79
 OUTFLOW 0.00 14.00 21.00 28.00 35.00 41.00 46.42 48.00 50.00 59.08
 ELEVATION 1337.20 1340.26 1340.59 1341.04 1341.63 1342.35 1343.00 1343.19 1343.42 1343.70

STORAGE 10.99 11.07
 OUTFLOW 70.03 82.92
 ELEVATION 1343.79 1343.83

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

HYDROGRAPH AT STATION STORGE
 FOR PLAN 1, RATIO = 0.59

PEAK OUTFLOW IS 33. AT TIME 6.60 HOURS

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)				
+ 33.	6.60	(CFS)			
		(INCHES)			
		(AC-FT)			
		18.	7.	5.	5.
		2.336	3.600	3.614	3.614
		9.	13.	14.	14.
PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
+ (AC-FT)	(HR)	6-HR	24-HR	72-HR	29.90-HR
6.	6.60	4.	2.	1.	1.
PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
+ (FEET)	(HR)	6-HR	24-HR	72-HR	29.90-HR
1341.44	6.60	1340.26	1338.49	1338.24	1338.24

CUMULATIVE AREA = 0.07 SQ MI

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

HYDROGRAPH AT STATION STORGE
FOR PLAN 1, RATIO = 0.69

PEAK OUTFLOW IS 39. AT TIME 6.60 HOURS

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			29.90-HR
			6-HR	24-HR	72-HR	
+ 39.	6.60	(CFS)	22.	8.	7.	7.
		(INCHES)	2.877	4.337	4.355	4.355
		(AC-FT)	11.	16.	16.	16.
PEAK STORAGE + (AC-FT)	TIME (HR)		MAXIMUM AVERAGE STORAGE			29.90-HR
			6-HR	24-HR	72-HR	
+ 8.	6.60		5.	2.	2.	2.
PEAK STAGE + (FEET)	TIME (HR)		MAXIMUM AVERAGE STAGE			29.90-HR
			6-HR	24-HR	72-HR	
+ 1342.14	6.60		1340.64	1338.66	1338.38	1338.38

CUMULATIVE AREA = 0.07 SQ MI

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

HYDROGRAPH AT STATION STORGE
FOR PLAN 1, RATIO = 0.81

PEAK OUTFLOW IS 47. AT TIME 6.60 HOURS

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			29.90-HR
			6-HR	24-HR	72-HR	
+ 47.	6.60	(CFS)	27.	10.	8.	8.
		(INCHES)	3.575	5.277	5.301	5.301
		(AC-FT)	13.	20.	20.	20.
PEAK STORAGE + (AC-FT)	TIME (HR)		MAXIMUM AVERAGE STORAGE			29.90-HR
			6-HR	24-HR	72-HR	
+ 9.	6.60		6.	2.	2.	2.
PEAK STAGE + (FEET)	TIME (HR)		MAXIMUM AVERAGE STAGE			29.90-HR
			6-HR	24-HR	72-HR	
+ 1343.03	6.60		1341.16	1338.89	1338.57	1338.57

CUMULATIVE AREA = 0.07 SQ MI

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

HYDROGRAPH AT STATION STORGE
FOR PLAN 1, RATIO = 1.00

PEAK OUTFLOW IS 106. AT TIME 6.40 HOURS

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW			29.90-HR
			6-HR	24-HR	72-HR	
+ 106.	6.40	(CFS)	35.	13.	10.	10.
		(INCHES)	4.681	6.700	6.733	6.733
		(AC-FT)	18.	25.	25.	25.
PEAK STORAGE + (AC-FT)	TIME (HR)		MAXIMUM AVERAGE STORAGE			29.90-HR
			6-HR	24-HR	72-HR	
+ 11.	6.40		7.	3.	2.	2.
PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			

	(FEET)	(HR)	6-HR	24-HR	72-HR	29.90-HR
+	1343.90	6.40	1341.70	1339.16	1338.78	1338.78

CUMULATIVE AREA = 0.07 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 0.59	RATIO 2 0.69	RATIO 3 0.81	RATIO 4 1.00	
HYDROGRAPH AT +	UNDEV	0.07	1	FLOW TIME	51. 6.70	65. 6.70	83. 6.70	111. 6.60
HYDROGRAPH AT +	BASIN1	0.04	1	FLOW TIME	70. 6.00	84. 6.00	103. 6.00	131. 6.00
HYDROGRAPH AT +	BASIN2	0.01	1	FLOW TIME	20. 6.00	24. 6.00	29. 6.00	36. 6.00
HYDROGRAPH AT +	BASIN3	0.02	1	FLOW TIME	47. 6.00	56. 6.00	68. 6.00	85. 6.00
3 COMBINED AT +	INPOND	0.07	1	FLOW TIME	137. 6.00	164. 6.00	199. 6.00	252. 6.00
ROUTED TO +	STORGE	0.07	1	FLOW TIME	33. 6.60	39. 6.60	47. 6.60	106. 6.40

** PEAK STAGES IN FEET **
 1 STAGE 1341.44 1342.14 1343.03 1343.90
 TIME 6.60 6.60 6.60 6.40

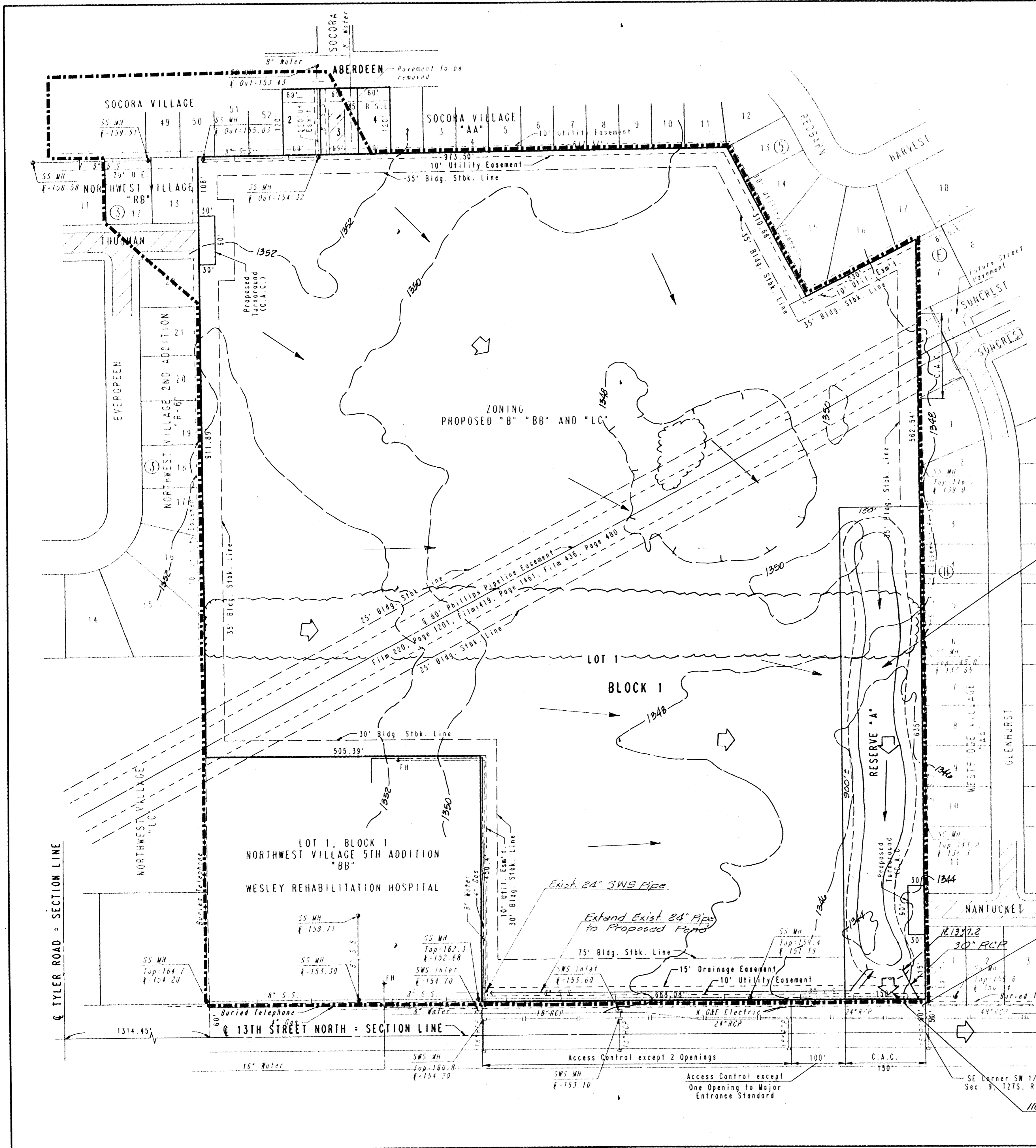
SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION STORGE
 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN 1	ELEVATION	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM			
	STORAGE	1337.20	1343.70	1343.70			
	OUTFLOW	0.	11.	11.			
		0.	59.	59.			
RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
0.59	1341.44	0.00	6.	33.	0.00	6.60	0.00
0.69	1342.14	0.00	8.	39.	0.00	6.60	0.00
0.81	1343.03	0.00	9.	47.	0.00	6.60	0.00
1.00	1343.90	0.20	11.	106.	0.50	6.40	0.00

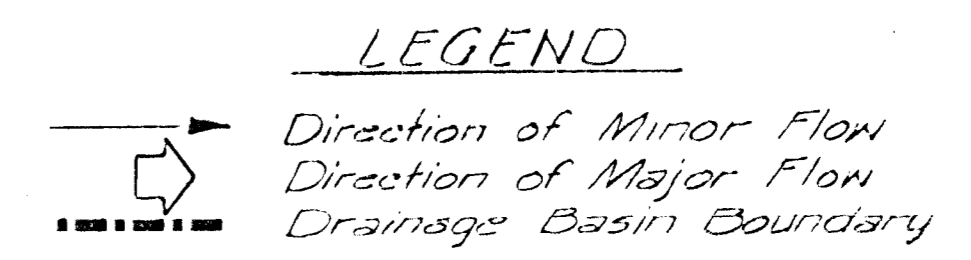
*** NORMAL END OF HEC-1 ***

DRAINAGE PLAN 4/95
WESLEY WEST ADDITION
TO WICHITA, SEDGWICK COUNTY, KANSAS
OWNER: HCA HEALTH SERVICES OF KANSAS INC.
c/o COLUMBIA/HCA
c/o THOMAS W. HULME
P.O. BOX 550
NASHVILLE, TENNESSEE 37202-0550

ENGINEER: PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
303 S. TOPEKA
WICHITA, KANSAS 67202



Prop. Detention Basin
 S/W. P. 1337.2
 DN. S/W. 1343.90
 S. A. @ 1337.2 = 1.25 ac.
 S. A. @ 1343.7 = 2.00 ac.



SCALE: 1" = 100'
 FEBRUARY, 1995

C.A.C. = COMPLETE ACCESS CONTROL
 EXISTING STREET PAVEMENT

B.M. - CITY OF WICHITA DISC 48 FEET EAST AND 48 FEET NORTH OF THE INTERSECTION OF THE CENTERLINES OF 13TH STREET NORTH AND TYLER ROAD. ELEV. 169.929 CITY DATUM

TOPOGRAPHY DATE: NOVEMBER, 1979

NOTE: CONTOUR ELEVATION DATA = M.S.L. ELEVATIONS OF SANITARY SEWER MANHOLES AND STORM SEWER INLETS = CITY DATUM.

RESERVE "A" SHALL BE UTILIZED FOR A STORM WATER RETENTION/ DETENTION SYSTEM, UTILITIES CONFINED TO EASEMENTS, LANDSCAPING AND PEDESTRIAN IMPROVEMENTS.

FOR ADDITIONAL BUILDING SETBACKS SEE CUP DP-217 ON FILE WITH THE WICHITA-SEDGWICK COUNTY METROPOLITAN AREA PLANNING DEPARTMENT.

Note: All site drainage to be carried overland or in storm sewer to proposed detention basin in Reserve 'A'.

110' Overflow @ 1343.7