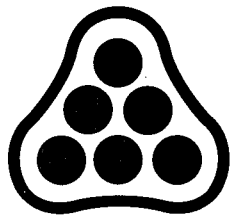

PROFESSIONAL
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SUPPLEMENTAL DRAINAGE STUDY

FOREST LAKES; REFLECTION RIDGE 6TH, 7TH AND 8TH ADDITIONS; UNPLATTED LAND IN NORTHWEST QUARTER SECTION 4 AND SOUTHWEST QUARTER SECTION 33

PREPARED BY

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
WICHITA, KANSAS

FEBRUARY 10, 1993

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PROFESSIONAL
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February 10, 1993

Mr. Michael E. Lindebak, P.E.
City Engineer
7th Floor, City Hall
455 N. Main
Wichita, KS 67202

Attention: Ms. Vicky Huang, P.E.

Reference: Forest Lakes Drainage Plan
PEC Project No. 32-92431-2273

Dear Mr. Lindebak:

In accordance with your request in our meeting of December 6, 1992, transmitted herewith are two copies of a Supplemental Drainage Report relative to Forest Lakes Addition. The purpose of the report is to address the interrelationship of developments in the area and the ultimate impact on drainage.

We would be happy to review this report with you upon your request at a mutually convenient time.

Very truly yours,

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.

Michael W. Berry

Michael W. Berry, P.E.
Manager
Land Development Division

MWB:st

Encl.

cc: Marvin Schellenberg
Harlan D. Foraker, P.E.

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FOREST LAKES
Major Channels/Structures

In the development of the Drainage Plan for this plat, consideration must be given to routing of the major flows through the development. These flows and hydrolgraphs were developed using the SCS methodology in the US Army Corps of Engineers HEC-1 hydrologic computer model. Reference is made to Figure A. This figure shows a schematic of storm routing thorough existing/proposed channels, structures, and ponds.

The Drainage Plan for Reflection Ridge 6th Addition provided a pond at the southeast corner of 29th and Ridge, and a box culvert at Wild Rose. All of these features have been constructed. The channel and culvert were sized to convey the 100-year flow from the area now platted as Reflection Ridge 7th and 8th Additions, estimated to be 568 cfs at hydrograph time 6.1 hr. This flow is depicted as B on Figure A, and the Wild Rose culvert is depicted as Structure No. 4 (existing 3 - 8' X 4' RCBB).

In the 6th Addition Drainage Plan, areas lying north of 29th St. were assumed to be collected north of the roadway and conveyed across 29th St. to Lake #3 in the 6th Addition. This lake and downstream structure were sized to accommodate these flows (Flows B and C on Figure A).

The property currently owned by Mr. Kastens lying in the NW Quarter of Section 4, has not been studied in as much detail. A preliminary plat layout dated 8/3/92, along with a preliminary drainage study dated 9/30/92, are available. (See Exhibit B in map pocket.)

The referenced drainage study proposes a series of ponds lying along the present KG&E transmission line. For purposes of this study, no detention has been assumed and the northerly 70 acres is assumed to flow to the northeast corner of the property. The reader should note that in the Preliminary Drainage Study, a portion of the same 70 acres is assumed to flow south and east through the golf course driving range. However, for this report it was felt that the exact ridge line between basins is not definite based on the design performed to date. Thus, a conservative (large) value of drainage area has been assumed.

In the development of the Forest Lakes Drainage Plan, the area north of 29th St. has been studied in greater detail. The basin is composed of two subareas: the first contaiing 195 acres flows to a poorly defined channel flowing through the plat. This drainage is intercepted near

the northwest corner of the plat and is conveyed through a series of culverts and ponds to discharge to 29th St. just east of Wild Rose (Flow C).

The west portion of the basin is defined by a ridge line along the 1340 elevation contour. This area is rolling, but has no defined channel. The natural low area discharges to 29th St. at the existing homestead in the SW corner of the SE 1/4 of Section 33 (the area being excepted from the plat). This flow is designated as A and is estimated to be 444 cfs at hydrograph time 6.9 hours.

Both flows A and C must be conveyed to the 6th Addition Pond #3 at 29th and Ridge. Open channels provide the most economical alternative, and are compatible with the developments' water amenities. Rather than providing a second open channel on the north side of 29th, conveyance of flows across 29th St. to the south side is proposed.

The proposed system has the following components:

Structure No. 6. Future box culvert beneath 29th St. to convey flows from the area west of Forest Lakes to the south road ditch. This culvert will be required when the SW 1/4 of Section 33 develops, and would be the responsibility of that developer. This structure was not sized for this report.

An Open Channel from Structure No. 6 to Structure No. 5 (Tee Time South). This channel would be sized to carry flow A and Flow D. This channel is a ten-foot trapezoidal channel on 1% grade. To carry Flow D (Q100 = 290 cfs), d = 2.1' for Retardance Class E, requiring a 3.0' deep ditch. To carry both A and D (Q100 = 486 cfs), d = 2.8' for Retardance Class E and a 4.0' deep ditch is required. The ditch will require a minimum 60' half street right-of-way.

Structure No. 5. Future box culvert beneath Tee Time (south) at 29th St. This structure would carry Flow A and D (Q100 = 486 cfs) and is sized as 3 - 7' X 4' RCB.

An Open Channel from Structure No. 5 to Wild Rose (Structure No. 4) This channel would be sized to convey Flows A, B, and D (Q100 = 608 cfs). A ten foot trapezoidal channel to be provided on 0.8% slope. For Class E Retardance, d = 3.2' and a 4.25' ditch is required, necessitating a minimum 62' half street right-of-way (75' has been provided).

Structure No. 4. The existing Wild Rose culvert has been analyzed and is shown to be at capacity for Flow B Q100 = 608 cfs, with a headwater elevation = 1326.9. The road grade (at R/W line) should be set at 1327.0; in addition, the south side of the road ditch should be protected by a berm at elevation 1327 (139.82 City).

Structure No. 3. This structure serves as the outlet for Forest Lakes Pond No. 3. It has been sized as a 2 - 8' X 4' RCB carrying Q100 = 216 cfs at a headwater elevation of 1324.90, assuming a free discharge.

Open Channel from Structure Nos. 3 and 4 to Lake No. 3 in the 6th Addition. In the course of the investigation, it was determined that the Lake No. 3 in the 6th Addition causes a high tailwater condition for the outlet from Lake No. 3 in Forest Lakes. Therefore, these two lakes have been modeled to function together as one large pond.

Structure Nos. 2 and 1 (Not shown on Figure A). These structures are the outlet control structures for Ponds Nos. 2 and 1 respectively in Forest Lakes, are in discussed in the Forest Lakes Drainage Plan (February 1, 1993).

Structure No. 7. In the HEC-1 hydrologic analysis included herein, the outlet across Ridge Road was evaluated. The existing outlet is a single 10' X 3' reinforced concrete box culvert. Under existing outlet conditions and with the ultimate development, the 100-yr. design water surface in Pond No. 3 is 1327.27. This is to be compared to the minimum pad elevation in Reflection Ridge 6th Addition of 1328.00. Thus, approximately 9" of freeboard is provided to homes in the 6th Addition without any additional culvert capacity at Ridge Road.

The ultimate proposed outlet at this location is a 3 - 10' X 3' reinforced concrete box bridge. One barrel must be added at the time of development in the NW 1/4 Sec. 4, and the other at the time of development in the SW 1/4 Sec. 33. If Ridge Road is to be improved to arterial standards, the additional barrels should be added at that time.

Ditch capacity charts and printed results of culvert analysis using the FHWA computer program HY-8 are included. Please note that the computer results do not exactly agree with the results of the HEC-1 analysis; they do agree to within $\pm$0.1 ft., which is of sufficient accuracy for hydraulic analysis.

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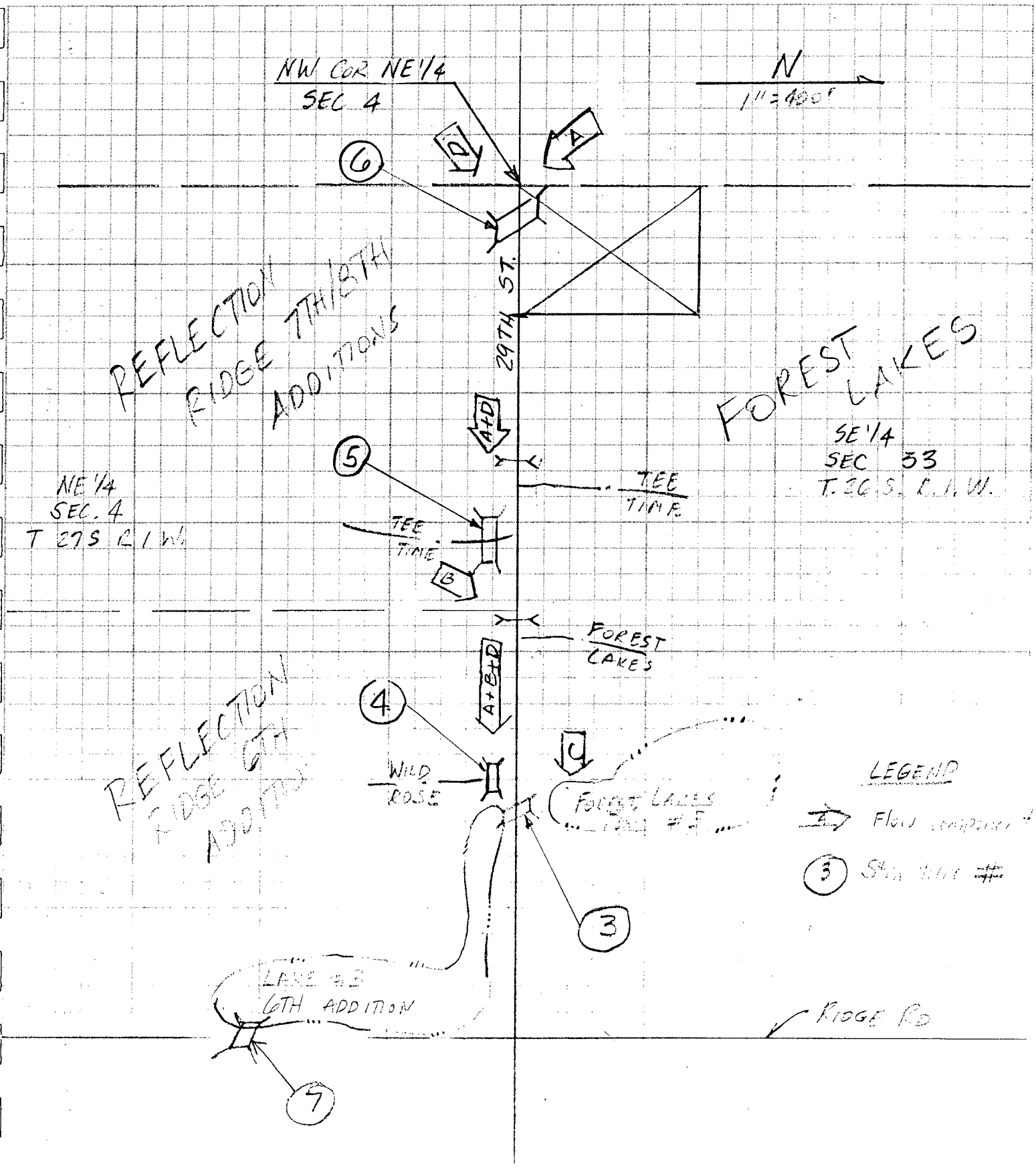
REV 2/8/93

Date 10/25/92 MNB Page _____ of _____

Project FOREST LAKES

Item MAJOR CHANNELS FIGURE A



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Date 10-29-92 MB Page ____ of ____

Project FOREST LAKES PLAT

Item OFF SITE DRAINAGE BASIN
WEST OF PLAT & N/O 29TH ST.

SCS PARAMETERS

15% D SOIL

85% B SOIL

CULTIVATED - WHEAT OR INT OR HILLY
GOOD COND., STRAIGHT ROW RES. DUC
CN = 0.15 x 83 + 0.85 x 72 = 73.65 SAY 74.

CN = 74

DETERMINE LAG

No defined channel. L = 5800 ft.

Hydraulically most remote point @ NW Cor Sec 33 Elev 1343
Outlet @ SW Cor SE 1/4 Sec 33 (Farmstead) Elev 1336
7 ft.

7/5800 = 0.12 %

ESTIMATE 1 FT/SEC OVERLAND FLOW VELOCITY

$$T_C = \frac{5800}{1} = 5800 \text{ SEC} = 97 \text{ MIN} = 1.6 \text{ HR}$$

$$\text{LAG} = 0.6\ T_C = \frac{6}{10} \times 1.6 = 0.97 \text{ HR}$$

FROM PROPOSED CONDITION HEC-1 MODEL (AREA W FOR LK)

Q_5 = 182 CFS TIME TO PEAK = 6.9 HR
Q_{10} = 239 CFS TIME TO PEAK = 6.9 HR
Q_{50} = 381 CFS TIME TO PEAK = 6.9 HR
Q_{100} = 444 CFS TIME TO PEAK = 6.9 HR

SEE HEC-1 PRINTOUT FOR PROPOSED CONDITIONS

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ZIP CODE / 67202

Date 1/30/93 MMB Page ____ of ____

Project FOREST LAKES DRAINAGE PLAN

Item EVALUATION OF TW CONDITION

CHECK STRUCTURE NO 3 TAILWATER CONDITION FROM POND NO 4. (Q_{100} ~~ONLY~~)

TIME	Q OUT POND 3	STAGE POND 3	3 BBL STAGE POND 4	4 BBL STAGE POND 4
1224	143	1324.3	1324.9	1323.9
1236	171	1324.6	1325.3	1324.0
1248	191	1324.8	1325.5	1324.0
1300	207	1324.9	1325.4	1323.9
1312	215	1324.9	1325.3	1323.8
1324	215	1324.9	1324.9	1323.3
1336	208	1324.9	1324.4	1323.0

CONCLUSION:

FOREST LAKES POND #3 REFLECTION RIDGE 6TH POND FLOW TOGETHER.

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Date 2/6/93 MAB Page ____ of ____

Project FOREST LAKES

Item COMBINED STORAGE

	REFLECTION RIDGE 6TH POND #4 STORAGE	FOREST LAKES POND #3 STORAGE	Σ
ELEV			
1319.6	0		0
1321.6	5.4		5.4
1322	6.6*	0	6.6
1322.2	7.2		
1322.9	9.3		
1323.6	11.6	8.9	20.5
1324.0		11.2	
1324.4	14.3	13.5	27.8
1324.8		15.9	
1325.2		18.3	
1325.4	18.0	19.5*	37.5
1325.6		20.7	
1325.7	19.1		
1326.0	20.3*	23.2	43.5
1326.5	22.4		
1327.0	24.8	25*	50*
1327.2	25.8		
1328	30.4	30*	60*

* Estimated

* Interpolated

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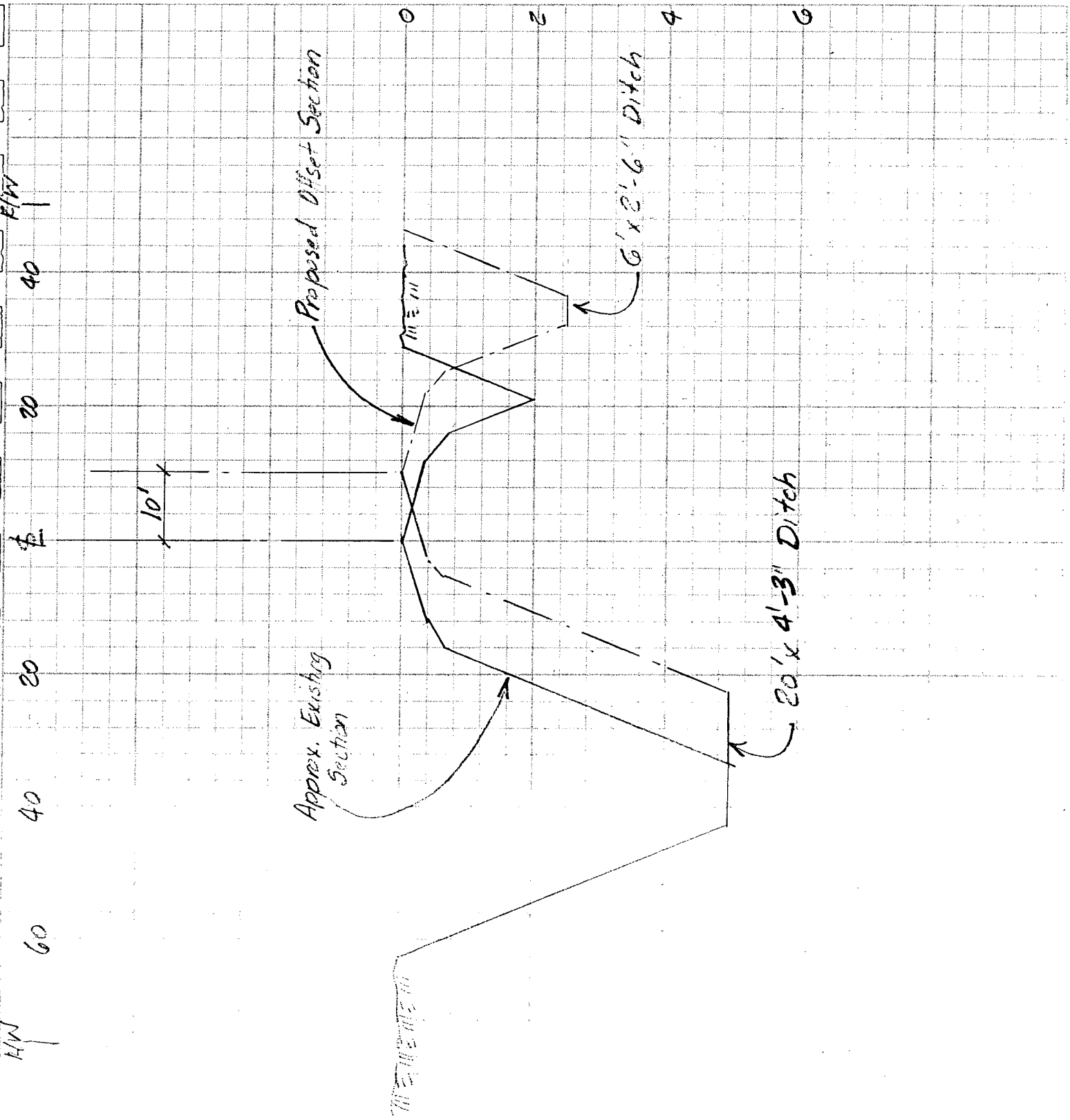
Date 10/25/92 MMB Page _____ of _____

Project FOREST LAKES

Item 29TH ST TYP SEC – POSSIBLE OFFSET SECTION



CURRENT DATE: 02-09-1993
CURRENT TIME: 09:52:34

FILE DATE: 02-06-1993
FILE NAME: TEETIMES

****
********** FHWA CULVERT ANALYSIS **********
********** HY-8, VERSION 3.2 **********
****

CULV #	SITE DATA: INLET ELEV. (FT)	SITE DATA: OUTLET ELEV. (FT)	SITE DATA: CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1324.00	1323.80	80.00	3 RCB	7.00	4.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

****

SUMMARY OF CULVERT FLOWS (CFS) FILE: TEETIMES DATE: 02-06-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1324.00	0	0	0	0	0	0	0	0	1
1325.51	100	100	0	0	0	0	0	0	1
1326.35	200	200	0	0	0	0	0	0	1
1327.03	300	300	0	0	0	0	0	0	1
1327.63	400	400	0	0	0	0	0	0	1
1328.11	486	486	0	0	0	0	0	0	1
1328.73	600	600	0	0	0	0	0	0	1
1329.31	700	686	0	0	0	0	0	52	14
1329.55	800	700	0	0	0	0	0	122	16
1329.78	900	700	0	0	0	0	0	209	8
1330.01	1000	700	0	0	0	0	0	309	7
1329.00	600	600	0	0	0	0	0	OVERTOPPING	

****

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: TEETIMES DATE: 02-06-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1324.00	0.00	0	0	0.00
1325.51	0.00	100	0	0.00
1326.35	0.00	200	0	0.00
1327.03	0.00	300	0	0.00
1327.63	0.00	400	0	0.00
1328.11	0.00	486	0	0.00
1328.73	0.00	600	0	0.00
1329.31	0.00	700	-38	-5.38
1329.55	0.00	800	-22	-2.79
1329.78	0.00	900	-9	-0.97
1330.01	0.01	1000	-9	-0.95

****

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

****

CURRENT DATE: 02-09-1993 FILE DATE: 02-06-1993
CURRENT TIME: 09:52:34 FILE NAME: TEETIMES

****
********** CULVERT # 1 **********
****

PERFORMANCE CURVE FOR 3 BARREL(S)

Q (cfs)	HWE (ft)	TWE (ft)	ICH (ft)	OCH (ft)	FLOW TYPE	CCE (ft)	FCE (ft)	TCE (ft)	VO (fps)
0	1324.00	1323.80	0.00	-0.20	0-NF	0.00	1324.00	0.00	0.00
100	1325.51	1325.22	1.33	1.51	3-M1	0.00	0.00	0.00	3.36
200	1326.35	1325.82	2.11	2.35	3-M1	0.00	0.00	0.00	4.71
300	1327.03	1326.27	2.82	3.03	3-M1	0.00	0.00	0.00	5.78
400	1327.63	1326.64	3.46	3.63	3-M1	0.00	0.00	0.00	6.71
486	1328.11	1326.92	4.01	4.11	3-M1	0.00	0.00	0.00	7.43
600	1328.73	1327.24	4.73	4.71	3-M1	0.00	0.00	0.00	8.30
686	1329.30	1327.50	5.30	5.14	3-M1	0.00	0.00	0.00	8.83
700	1329.40	1327.73	5.40	5.19	3-M2	0.00	0.00	0.00	8.48
700	1329.51	1327.95	5.40	5.51	4-FF	0.00	0.00	0.00	8.33
700	1329.71	1328.15	5.40	5.71	4-FF	0.00	0.00	0.00	8.33

El. inlet face invert 1324.00 ft El. outlet invert 1323.80 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

****

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1324.00
OUTLET STATION (FT)	80.00
OUTLET ELEVATION (FT)	1323.80
NUMBER OF BARRELS	3.00
SLOPE (V-FT/H-FT)	0.0025
CULVERT LENGTH ALONG SLOPE (FT)	80.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	7.00 FT
BARREL RISE	4.00 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	1:1 BEVEL (45 DEG. FLARE)
INLET DEPRESSION	NONE

****

CURRENT DATE: 02-09-1993 FILE DATE: 02-06-1993
CURRENT TIME: 09:52:34 FILE NAME: TEETIMES

****
********** TAILWATER **********
****

******* REGULAR CHANNEL CROSS SECTION **********

BOTTOM WIDTH (FT)	10.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.008
MANNING'S N (.01-0.1)	0.030
CHANNEL INVERT ELEVATION (FT)	1323.80
CULVERT NO.1 OUTLET INVERT ELEVATION	1323.80 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	VEL. (FPS)	SHEAR (PSF)
0.00	1323.80	0.000	0.00	0.00
100.00	1325.22	0.666	4.50	0.71
200.00	1325.82	0.677	5.47	1.01
300.00	1326.27	0.685	6.11	1.23
400.00	1326.64	0.690	6.59	1.42
486.00	1326.92	0.693	6.94	1.56
600.00	1327.24	0.697	7.34	1.72
700.00	1327.50	0.700	7.64	1.85
800.00	1327.73	0.703	7.91	1.96
900.00	1327.95	0.705	8.15	2.07
1000.00	1328.15	0.708	8.38	2.17

****
********** ROADWAY OVERTOPPING DATA **********
****

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH (FT)	50.00
CREST LENGTH (FT)	100.00
OVERTOPPING CREST ELEVATION (FT)	1329.00

****

CURRENT DATE: 02-06-1993
CURRENT TIME: 14:26:57

FILE DATE: 10-24-1992
FILE NAME: NEWLDROS

****
********** FHWA CULVERT ANALYSIS **********
********** HY-8, VERSION 3.2 **********
****

CULV #	SITE DATA: INLET ELEV. (FT)	SITE DATA: OUTLET ELEV. (FT)	SITE DATA: CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1320.60	1320.50	72.00	3 RCB	8.00	4.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

****

SUMMARY OF CULVERT FLOWS (CFS) FILE: NEWLDROS DATE: 10-24-1992

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1320.60	0	0	0	0	0	0	0	0	1
1322.97	100	100	0	0	0	0	0	0	1
1323.98	200	200	0	0	0	0	0	0	1
1324.71	300	300	0	0	0	0	0	0	1
1325.48	400	400	0	0	0	0	0	0	1
1326.18	500	500	0	0	0	0	0	0	1
1326.87	600	600	0	0	0	0	0	0	1
1326.92	608	608	0	0	0	0	0	0	1
1327.69	800	624	0	0	0	0	0	172	3
1327.97	900	611	0	0	0	0	0	288	3
1328.22	1000	592	0	0	0	0	0	408	3
1327.00	800	800	0	0	0	0	0	OVERTOPPING	

****

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: NEWLDROS DATE: 10-24-1992

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1320.60	0.00	0	0	0.00
1322.97	0.00	100	0	0.00
1323.98	0.00	200	0	0.00
1324.71	0.00	300	0	0.00
1325.48	0.00	400	0	0.00
1326.18	0.00	500	0	0.00
1326.87	0.00	600	0	0.00
1326.92	0.00	608	0	0.00
1327.69	-0.00	800	3	0.42
1327.97	-0.00	900	1	0.16
1328.22	0.00	1000	-0	-0.01

****

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

****

CURRENT DATE: 02-06-1993
CURRENT TIME: 14:26:57

FILE DATE: 10-24-1992
FILE NAME: NEWLDROS

****

CULVERT # 1

PERFORMANCE CURVE FOR 3 BARREL(S)

Q (cfs)	HWE (ft)	TWE (ft)	ICH (ft)	OCH (ft)	FLOW TYPE	CCE (ft)	FCE (ft)	TCE (ft)	VO (fps)
0	1320.60	1320.50	0.00	-0.10	0-NF	0.00	1320.60	0.00	0.00
100	1322.97	1322.90	1.22	2.37	3-M1	0.00	0.00	0.00	1.74
200	1323.98	1323.85	1.93	3.38	3-M1	0.00	0.00	0.00	2.49
300	1324.71	1324.54	2.56	4.11	3-M1	0.00	0.00	0.00	2.49
400	1325.48	1325.10	3.15	4.88	4-FF	0.00	0.00	0.00	4.17
500	1326.18	1325.59	3.70	5.58	4-FF	0.00	0.00	0.00	5.21
600	1326.87	1326.02	4.25	6.27	4-FF	0.00	0.00	0.00	6.25
608	1326.92	1326.05	4.30	6.32	4-FF	0.00	0.00	0.00	6.33
624	1327.68	1326.76	4.39	7.08	4-FF	0.00	0.00	0.00	6.50
611	1327.97	1327.08	4.31	7.37	4-FF	0.00	0.00	0.00	6.36
592	1328.22	1327.39	4.21	7.62	4-FF	0.00	0.00	0.00	6.16

El. inlet face invert 1320.60 ft El. outlet invert 1320.50 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

****

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1320.60
OUTLET STATION (FT)	72.00
OUTLET ELEVATION (FT)	1320.50
NUMBER OF BARRELS	3.00
SLOPE (V-FT/H-FT)	0.0014
CULVERT LENGTH ALONG SLOPE (FT)	72.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	8.00 FT
BARREL RISE	4.00 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	1:1 BEVEL (45 DEG. FLARE)
INLET DEPRESSION	NONE

****

CURRENT DATE: 02-06-1993
CURRENT TIME: 14:26:57

FILE DATE: 10-24-1992
FILE NAME: NEWLDROS

****
********** TAILWATER **********
****

******* REGULAR CHANNEL CROSS SECTION **********

BOTTOM WIDTH (FT)	10.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.001
MANNING'S N (.01-0.1)	0.030
CHANNEL INVERT ELEVATION (FT)	1320.50
CULVERT NO.1 OUTLET INVERT ELEVATION	1320.50 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	VEL. (FPS)	SHEAR (PSF)
0.00	1320.50	0.000	0.00	0.00
100.00	1322.90	0.242	2.12	0.15
200.00	1323.85	0.246	2.55	0.21
300.00	1324.54	0.249	2.84	0.25
400.00	1325.10	0.251	3.06	0.29
500.00	1325.59	0.253	3.24	0.32
600.00	1326.02	0.255	3.39	0.34
608.00	1326.05	0.255	3.40	0.35
800.00	1326.76	0.257	3.65	0.39
900.00	1327.08	0.258	3.76	0.41
1000.00	1327.39	0.259	3.86	0.43

****
********** ROADWAY OVERTOPPING DATA **********
****

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH (FT)	60.00
CREST LENGTH (FT)	100.00
OVERTOPPING CREST ELEVATION (FT)	1327.00

****

Existing 10'x 3' RCB in Ridge Rd

CURRENT DATE: 01-30-1993
CURRENT TIME: 15:56:38

FILE DATE: 01-30-1993
FILE NAME: RIDG1BBL

FHWA CULVERT ANALYSIS
HY-8, VERSION 3.2

CU LV	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1319.60	1319.30	106.00	1 RCB	10.00	3.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: RIDG1BBL DATE: 01-30-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1319.60	0	0	0	0	0	0	0	0	1
1322.90	150	150	0	0	0	0	0	0	1
1326.49	300	300	0	0	0	0	0	0	1
1327.12	450	319	0	0	0	0	0	129	11
1327.21	600	321	0	0	0	0	0	275	6
1327.27	750	323	0	0	0	0	0	423	5
1327.33	900	325	0	0	0	0	0	568	4
1327.37	1000	326	0	0	0	0	0	669	4
1327.44	1200	328	0	0	0	0	0	866	4
1327.48	1350	330	0	0	0	0	0	1017	4
1327.53	1500	331	0	0	0	0	0	1157	3
1327.00	315	315	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: RIDG1BBL DATE: 01-30-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1319.60	0.00	0	0	0.00
1322.90	0.00	150	0	0.00
1326.49	0.00	300	0	0.00
1327.12	-0.00	450	2	0.44
1327.21	-0.00	600	3	0.54
1327.27	-0.00	750	4	0.51
1327.33	-0.01	900	7	0.80
1327.37	-0.00	1000	4	0.45
1327.44	-0.00	1200	6	0.48
1327.48	-0.00	1350	4	0.28
1327.53	-0.01	1500	12	0.80

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

Existing 10'x 3' RCB in Ridge Rd

CURRENT DATE: 01-30-1993 FILE DATE: 01-30-1993
CURRENT TIME: 15:56:38 FILE NAME: RIDG1BBL

CULVERT # 1

PERFORMANCE CURVE FOR 1 BARREL(S)

Q (cfs)	HWE (ft)	TWE (ft)	ICH (ft)	OCH (ft)	FLOW TYPE	CCE (ft)	FCE (ft)	TCE (ft)	VO (fps)
0	1319.60	1318.50	0.00	-0.30	0-NF	0.00	1319.60	0.00	0.00
150	1322.90	1318.50	3.30	2.96	6-FF	0.00	0.00	0.00	8.04
300	1326.49	1318.50	6.89	5.91	4-FF	0.00	0.00	0.00	10.00
319	1327.12	1318.50	7.52	6.33	4-FF	0.00	0.00	0.00	10.64
321	1327.20	1318.50	7.60	6.38	4-FF	0.00	0.00	0.00	10.72
323	1327.26	1318.50	7.66	6.43	4-FF	0.00	0.00	0.00	10.78
325	1327.32	1318.50	7.72	6.47	4-FF	0.00	0.00	0.00	10.84
326	1327.36	1318.50	7.76	6.49	4-FF	0.00	0.00	0.00	10.87
328	1327.43	1318.50	7.83	6.54	4-FF	0.00	0.00	0.00	10.94
330	1327.47	1318.50	7.87	6.57	4-FF	0.00	0.00	0.00	10.99
331	1327.52	1318.50	7.92	6.60	4-FF	0.00	0.00	0.00	11.03

El. inlet face invert 1319.60 ft El. outlet invert 1319.30 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1319.60
OUTLET STATION (FT)	106.00
OUTLET ELEVATION (FT)	1319.30
NUMBER OF BARRELS	1.00
SLOPE (V-FT/H-FT)	0.0028
CULVERT LENGTH ALONG SLOPE (FT)	106.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	10.00 FT
BARREL RISE	3.00 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (0 DEG. FLARE)
INLET DEPRESSION	NONE

CURRENT DATE: 01-30-1993
CURRENT TIME: 15:56:38

FILE DATE: 01-30-1993
FILE NAME: RIDG1BBL

TAILWATER

CONSTANT WATER SURFACE ELEVATION
1318.50

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH (FT)	30.00
CREST LENGTH (FT)	1000.00
OVERTOPPING CREST ELEVATION (FT)	1327.00

CURRENT DATE: 01-30-1993
CURRENT TIME: 00:32:21

FILE DATE: 01-30-1993
FILE NAME: RIDG2BBL

FHWA CULVERT ANALYSIS
HY-8, VERSION 3.2

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1319.60	1319.30	106.00	2 RCB	10.00	3.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: RIDG2BBL DATE: 01-30-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1319.60	0	0	0	0	0	0	0	0	1
1321.61	150	150	0	0	0	0	0	0	1
1322.90	300	300	0	0	0	0	0	0	1
1324.43	450	450	0	0	0	0	0	0	1
1326.49	600	600	0	0	0	0	0	0	1
1327.11	750	638	0	0	0	0	0	109	11
1327.19	900	642	0	0	0	0	0	250	5
1327.26	1050	646	0	0	0	0	0	399	5
1327.32	1200	650	0	0	0	0	0	543	4
1327.38	1350	653	0	0	0	0	0	691	4
1327.43	1500	656	0	0	0	0	0	840	4
1327.00	631	631	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: RIDG2BBL DATE: 01-30-1993

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1319.60	0.00	0	0	0.00
1321.61	0.00	150	0	0.00
1322.90	0.00	300	0	0.00
1324.43	0.00	450	0	0.00
1326.49	0.00	600	0	0.00
1327.11	-0.00	750	3	0.45
1327.19	-0.00	900	8	0.88
1327.26	-0.00	1050	4	0.42
1327.32	-0.01	1200	7	0.62
1327.38	-0.00	1350	6	0.44
1327.43	-0.00	1500	5	0.31

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 01-30-1993
CURRENT TIME: 00:32:21

FILE DATE: 01-30-1993
FILE NAME: RIDG2BBL

CULVERT # 1

PERFORMANCE CURVE FOR 2 BARREL(S)

Q (cfs)	HWE (ft)	TWE (ft)	ICH (ft)	OCH (ft)	FLOW TYPE	CCE (ft)	FCE (ft)	TCE (ft)	VO (fps)
0	1319.60	1318.50	0.00	-0.30	0-NF	0.00	1319.60	0.00	0.00
150	1321.61	1318.50	2.01	2.00	6-FF	0.00	0.00	0.00	6.39
300	1322.90	1318.50	3.30	2.96	6-FF	0.00	0.00	0.00	8.04
450	1324.43	1318.50	4.83	4.26	6-FF	0.00	0.00	0.00	9.21
600	1326.49	1318.50	6.89	5.91	4-FF	0.00	0.00	0.00	10.00
638	1327.10	1318.50	7.50	6.32	4-FF	0.00	0.00	0.00	10.63
642	1327.18	1318.50	7.58	6.38	4-FF	0.00	0.00	0.00	10.70
646	1327.25	1318.50	7.65	6.42	4-FF	0.00	0.00	0.00	10.77
650	1327.31	1318.50	7.71	6.46	4-FF	0.00	0.00	0.00	10.83
653	1327.37	1318.50	7.77	6.50	4-FF	0.00	0.00	0.00	10.88
656	1327.42	1318.50	7.82	6.53	4-FF	0.00	0.00	0.00	10.93

El. inlet face invert 1319.60 ft El. outlet invert 1319.30 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1319.60
OUTLET STATION (FT)	106.00
OUTLET ELEVATION (FT)	1319.30
NUMBER OF BARRELS	2.00
SLOPE (V-FT/H-FT)	0.0028
CULVERT LENGTH ALONG SLOPE (FT)	106.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	10.00 FT
BARREL RISE	3.00 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (0 DEG. FLARE)
INLET DEPRESSION	NONE

CURRENT DATE: 01-30-1993
CURRENT TIME: 00:32:21

FILE DATE: 01-30-1993
FILE NAME: RIDG2BBL

TAILWATER

CONSTANT WATER SURFACE ELEVATION
1318.50

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH (FT)	30.00
CREST LENGTH (FT)	1000.00
OVERTOPPING CREST ELEVATION (FT)	1327.00

CURRENT DATE: 01-30-1993
CURRENT TIME: 00:31:43

FILE DATE: 01-30-1993
FILE NAME: RIDG3BBL

FHWA CULVERT ANALYSIS
HY-8, VERSION 3.2

CU VL	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1319.60	1319.30	106.00	3 RCB	10.00	3.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: RIDG3BBL DATE: 01-30-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1319.60	0	0	0	0	0	0	0	0	1
1321.35	150	150	0	0	0	0	0	0	1
1322.04	300	300	0	0	0	0	0	0	1
1322.90	450	450	0	0	0	0	0	0	1
1323.87	600	600	0	0	0	0	0	0	1
1325.05	750	750	0	0	0	0	0	0	1
1326.49	900	900	0	0	0	0	0	0	1
1327.10	1050	955	0	0	0	0	0	89	11
1327.18	1200	963	0	0	0	0	0	228	5
1327.25	1350	969	0	0	0	0	0	369	4
1327.31	1500	974	0	0	0	0	0	517	4
1327.00	947	947	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: RIDG3BBL DATE: 01-30-1993

HEAD ELEV (FT)	HEAD ERROR (FT)	TOTAL FLOW (CFS)	FLOW ERROR (CFS)	% FLOW ERROR
1319.60	0.00	0	0	0.00
1321.35	0.00	150	0	0.00
1322.04	0.00	300	0	0.00
1322.90	0.00	450	0	0.00
1323.87	0.00	600	0	0.00
1325.05	0.00	750	0	0.00
1326.49	0.00	900	0	0.00
1327.10	-0.01	1050	6	0.55
1327.18	-0.01	1200	9	0.73
1327.25	-0.01	1350	12	0.89
1327.31	-0.01	1500	9	0.59

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 01-30-1993
CURRENT TIME: 00:31:43

FILE DATE: 01-30-1993
FILE NAME: RIDG3BBL

CULVERT # 1

PERFORMANCE CURVE FOR 3 BARREL(S)

Q (cfs)	HWE (ft)	TWE (ft)	ICH (ft)	OCH (ft)	FLOW TYPE	CCE (ft)	FCE (ft)	TCE (ft)	VO (fps)
0	1319.60	1318.50	0.00	-0.30	0-NF	0.00	1319.60	0.00	0.00
150	1321.35	1318.50	1.55	1.75	6-FF	0.00	0.00	0.00	5.43
300	1322.04	1318.50	2.44	2.29	6-FF	0.00	0.00	0.00	7.07
450	1322.90	1318.50	3.30	2.96	6-FF	0.00	0.00	0.00	8.04
600	1323.87	1318.50	4.27	3.79	6-FF	0.00	0.00	0.00	8.91
750	1325.05	1318.50	5.45	4.77	6-FF	0.00	0.00	0.00	9.45
900	1326.49	1318.50	6.89	5.91	4-FF	0.00	0.00	0.00	10.00
955	1327.10	1318.50	7.50	6.32	4-FF	0.00	0.00	0.00	10.62
963	1327.18	1318.50	7.58	6.37	4-FF	0.00	0.00	0.00	10.70
969	1327.25	1318.50	7.65	6.42	4-FF	0.00	0.00	0.00	10.77
974	1327.31	1318.50	7.71	6.46	4-FF	0.00	0.00	0.00	10.83

El. inlet face invert 1319.60 ft El. outlet invert 1319.30 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1319.60
OUTLET STATION (FT)	106.00
OUTLET ELEVATION (FT)	1319.30
NUMBER OF BARRELS	3.00
SLOPE (V-FT/H-FT)	0.0028
CULVERT LENGTH ALONG SLOPE (FT)	106.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	10.00 FT
BARREL RISE	3.00 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (0 DEG. FLARE)
INLET DEPRESSION	NONE

CURRENT DATE: 01-30-1993
CURRENT TIME: 00:31:43

FILE DATE: 01-30-1993
FILE NAME: RIDG3BBL

TAILWATER

CONSTANT WATER SURFACE ELEVATION
1318.50

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH (FT)	30.00
CREST LENGTH (FT)	1000.00
OVERTOPPING CREST ELEVATION (FT)	1327.00

CURRENT DATE: 01-30-1993
CURRENT TIME: 00:30:39

FILE DATE: 01-30-1993
FILE NAME: RIDG4BBL

FHWA CULVERT ANALYSIS
HY-8, VERSION 3.2

C U L V	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1319.60	1319.30	106.00	4 RCB	10.00	3.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: RIDG4BBL DATE: 01-30-1993

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1319.60	0	0	0	0	0	0	0	0	1
1321.23	150	150	0	0	0	0	0	0	1
1321.61	300	300	0	0	0	0	0	0	1
1322.25	450	450	0	0	0	0	0	0	1
1322.90	600	600	0	0	0	0	0	0	1
1323.61	750	750	0	0	0	0	0	0	1
1324.43	900	900	0	0	0	0	0	0	1
1325.39	1050	1050	0	0	0	0	0	0	1
1326.49	1200	1200	0	0	0	0	0	0	1
1327.08	1350	1272	0	0	0	0	0	68	11
1327.17	1500	1283	0	0	0	0	0	207	5
1327.00	1262	1262	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: RIDG4BBL DATE: 01-30-1993

HEAD ELEV (FT)	HEAD ERROR (FT)	TOTAL FLOW (CFS)	FLOW ERROR (CFS)	% FLOW ERROR
1319.60	0.00	0	0	0.00
1321.23	0.00	150	0	0.00
1321.61	0.00	300	0	0.00
1322.25	0.00	450	0	0.00
1322.90	0.00	600	0	0.00
1323.61	0.00	750	0	0.00
1324.43	0.00	900	0	0.00
1325.39	0.00	1050	0	0.00
1326.49	0.00	1200	0	0.00
1327.08	-0.01	1350	10	0.75
1327.17	-0.01	1500	10	0.67

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 01-30-1993 FILE DATE: 01-30-1993
CURRENT TIME: 00:30:39 FILE NAME: RIDG4BBL

CULVERT # 1

PERFORMANCE CURVE FOR 4 BARREL(S)

Q (cfs)	HWE (ft)	TWE (ft)	ICH (ft)	OCH (ft)	FLOW TYPE	CCE (ft)	FCE (ft)	TCE (ft)	VO (fps)
0	1319.60	1318.50	0.00	-0.30	0-NF	0.00	1319.60	0.00	0.00
150	1321.23	1318.50	1.29	1.63	6-FF	0.00	0.00	0.00	4.93
300	1321.61	1318.50	2.01	2.00	6-FF	0.00	0.00	0.00	6.39
450	1322.25	1318.50	2.65	2.44	6-FF	0.00	0.00	0.00	7.35
600	1322.90	1318.50	3.30	2.96	6-FF	0.00	0.00	0.00	8.04
750	1323.61	1318.50	4.01	3.56	6-FF	0.00	0.00	0.00	8.72
900	1324.43	1318.50	4.83	4.26	6-FF	0.00	0.00	0.00	9.21
1050	1325.39	1318.50	5.79	5.13	2-M2	0.00	0.00	0.00	9.43
1200	1326.49	1318.50	6.89	5.91	4-FF	0.00	0.00	0.00	10.00
1272	1327.08	1318.50	7.48	6.31	4-FF	0.00	0.00	0.00	10.60
1283	1327.17	1318.50	7.57	6.37	4-FF	0.00	0.00	0.00	10.69

El. inlet face invert 1319.60 ft El. outlet invert 1319.30 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1319.60
OUTLET STATION (FT)	106.00
OUTLET ELEVATION (FT)	1319.30
NUMBER OF BARRELS	4.00
SLOPE (V-FT/H-FT)	0.0028
CULVERT LENGTH ALONG SLOPE (FT)	106.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	10.00 FT
BARREL RISE	3.00 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (0 DEG. FLARE)
INLET DEPRESSION	NONE

CURRENT DATE: 01-30-1993
CURRENT TIME: 00:30:39

FILE DATE: 01-30-1993
FILE NAME: RIDG4BBL

TAILWATER

CONSTANT WATER SURFACE ELEVATION
1318.50

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH (FT)	30.00
CREST LENGTH (FT)	1000.00
OVERTOPPING CREST ELEVATION (FT)	1327.00

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*******************************************
*                                         *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)     *
*            FEBRUARY 1981                *
*          REVISED 02 AUG 88              *
*                                         *
*  RUN DATE  02/06/1993  TIME  14:16:00   *
*                                         *
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*  THE 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
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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 PAGE 1

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

            1       ID        FOREST LAKES & REFLECTION RIDGE 6TH, 7TH & 8TH
            2       ID        PROJ NO 36-92431-2273
            3       ID        ANALYSIS OF POND AT SW COR 29TH & RIDGE
            4       ID        MODEL SOUTH FOREST LAKES POND & RR6 POND AS ONE BASIN
            5       ID        100-YR 24-HR STORMS
            6       ID        FOUR OPTIONAL OUTLETS AT RIDGE ROAD
            7       ID        PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
            8       ID        WICHITA, KANSAS
            9       ID        MWB  02/06/93
           10       ID        FILE:FORLKS\QREVPND.HEC
*** LIST ***
*** FREE ***
                    *DIAGRAM
           11       IT      6 01FEB93    0600       0 02FEB93    1154
           12       IN     30 01FEB93    0600
           13       IO      3       0
           14       JP      4
                    *     JR  PREC  0.5938  0.6875  0.9063  1.0000
                    *
                    *       NO FOR LKS DRAIN BASIN - UNDEV., CULT.
                    *

           15       KK     FL1
           16       BA   0.122
           17       PB     7.8
           18       PC    0.08    0.09    0.10    0.11    0.12   0.133   0.147   0.163   0.181   0.204
           19       PC   0.235   0.283   0.663   0.735   0.772   0.799   0.820   0.835   0.850   0.865
           20       PC   0.880   0.890   0.900   0.910   0.916   0.925   0.934   0.943   0.952   0.958
           21       PC   0.964   0.970   0.976   0.982   0.988   0.994   1.000
           22       LS       0      80       0
           23       UD    0.55
                    *
                    *       NO FOR LKS DET POND - BANK EL=1332,STATIC POOL = 1328
                    *       2-7'X4' RCB USED FOR FLOOD ROUTING
                    *

           24       KK  FLPND1
           25       RS       1    ELEV  1328.0
           26       SA    1.80    2.40
           27       SE  1328.0  1332.0
                    * 2-8X4 DATA64.0    96.0   137.6   176.0   224.0   272.0   320.0   368.0
           28       SQ       0      56      84     120     154     196     238     280     322
           29       SE  1328.0  1329.2  1329.6  1330.0  1330.4  1330.8  1331.2  1331.6  1332.0
                    *
                    *       MID FOR LKS BASIN - 1/4 AC RES,38% IMP
                    *

           30       KK     FL2
           31       BA   .0902
           32       PB     7.8
           33       PC    0.08    0.09    0.10    0.11    0.12   0.133   0.147   0.163   0.181   0.204
           34       PC   0.235   0.283   0.663   0.735   0.772   0.799   0.820   0.835   0.850   0.865
           35       PC   0.880   0.890   0.900   0.910   0.916   0.925   0.934   0.943   0.952   0.958
           36       PC   0.964   0.970   0.976   0.982   0.988   0.994   1.000
           37       LS       0      76      38
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
  38      UD    0.21
          *
          *       ADD HYDROGRAPHS FOR MID FOR LKS DET POND
          *

  39      KK    FL12
  40      HC       2       0
          *
          *       MID FOR LKS DET PND   BANK EL 1329,STATIC POOL = 1325
          *       15 FT WEIR  USED FOR FLOOD ROUTING
          *

  41      KK  FLPND2
  42      RS       1    ELEV  1325.0
  43      SA     6.8     8.7
  44      SE  1325.0  1329.0
  45      SS  1325.0    15.0     3.0     1.5
          * SQ/SE CARDS NOT USED IN THIS RUN
          * SQ   0    84.0   126.0   180.6   231.0   294.0   357.0   420.0   483.0
          * SE1325.0  1326.2  1326.6  1327.0  1327.4  1327.8  1328.2  1328.6  1329.0
          *
          *       SO FOR LKS BASIN - 1/4 AC RES 38 % IMP
          *

  46      KK     FL3
  47      BA   .0922
  48      PB     7.8
  49      PC    0.08    0.09    0.10    0.11    0.12   0.133   0.147   0.163   0.181   0.204
  50      PC   0.235   0.283   0.663   0.735   0.772   0.799   0.820   0.835   0.850   0.865
  51      PC   0.880   0.890   0.900   0.910   0.916   0.925   0.934   0.943   0.952   0.958
  52      PC   0.964   0.970   0.976   0.982   0.988   0.994   1.000
  53      LS       0      68      38
  54      UD    0.27
          *
          *       ADD HYDROGRAPHS FROM 3 FOR LKS BASINS FOR FLOOD ROUTING
          *

  55      KK   FL123
  56      HC       2       0
          *
          * ********************************************************
          *   SO FOR LKS POND NOT USED THIS RUN
          *   ITS STORAGE ADDED TO POND AT 29TH & RIDGE IN RR6
          * ********************************************************
          *       SO FOR LKS DET POND - BANK EL=1326   STATIC POOL =1322
          *       2-8'X4' RCB USED FOR FLOOD ROUTING
          * KK FLPND3
          * KP      3
          * KO      1       0
          * RS      1    ELEV  1322.0
          * SA    5.4     6.2
          * SE1322.0  1326.0
          * 3-8X4DATA   96     144   206.4   264.0   336.0   408.0   480.0   552.0
          * SQ      0      64      84     120     154     196     272     320     368
          * SE1322.0  1323.2  1323.6  1324.0  1324.4  1324.8  1325.2  1325.6  1326.0
          *
```

HEC-1 INPUT PAGE 3

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

  57      KK  WRR7$8       AREA WEST OF RR 7TH & 8TH
  58      BA  0.1094
  59      PB    7.8
  60      PC   0.08   0.09   0.10   0.11   0.12   0.133  0.147  0.163  0.181  0.204
  61      PC  0.235  0.283  0.663  0.735  0.772  0.799  0.820  0.835  0.850  0.865
  62      PC  0.880  0.890  0.900  0.910  0.916  0.925  0.934  0.943  0.952  0.958
  63      PC  0.964  0.970  0.976  0.982  0.988  0.994  1.000
  64      LS    0     72      0
  65      UD   0.15
          *
          *      AREA NO OF 29TH & WEST OF FOREST LAKES

  66      KK WFORLKS     AREA WEST OF FOREST LAKES
  67      BA   .3831
  68      PB    7.8
  69      PC   0.08   0.09   0.10   0.11   0.12   0.133  0.147  0.163  0.181  0.204
  70      PC  0.235  0.283  0.663  0.735  0.772  0.799  0.820  0.835  0.850  0.865
  71      PC  0.880  0.890  0.900  0.910  0.916  0.925  0.934  0.943  0.952  0.958
  72      PC  0.964  0.970  0.976  0.982  0.988  0.994  1.000
  73      LS    0     74      0
  74      UD   0.97

  75      KK  WTTIME   COMB FLOW IN S DT 29TH W OF TEE TIME
  76      HC     2       0

  77      KK   RR7$8      AREA OF RR 7TH & 8TH
  78      BA   0.078
  79      PB    7.8
  80      PC   0.08   0.09   0.10   0.11   0.12   0.133  0.147  0.163  0.181  0.204
  81      PC  0.235  0.283  0.663  0.735  0.772  0.799  0.820  0.835  0.850  0.865
  82      PC  0.880  0.890  0.900  0.910  0.916  0.925  0.934  0.943  0.952  0.958
  83      PC  0.964  0.970  0.976  0.982  0.988  0.994  1.000
  84      LS    0     72      0
  85      UD   0.15
          *
          *      COMB FLOW IN SOUTH DITCH OF 29TH
          *

  86      KK   DITCH
  87      HC     2       0
          *
          *

  88      KK     WW    BASIN WW -- RESERVE AROUND POND #4
  89      BA   .0094
  90      PB    7.8
  91      PC   0.08   0.09   0.10   0.11   0.12   0.133  0.147  0.163  0.181  0.204
  92      PC  0.235  0.283  0.663  0.735  0.772  0.799  0.820  0.835  0.850  0.865
  93      PC  0.880  0.890  0.900  0.910  0.916  0.925  0.934  0.943  0.952  0.958
  94      PC  0.964  0.970  0.976  0.982  0.988  0.994  1.000
  95      LS    0     98      0
  96      UD   0.10
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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  97      KK  INPND4
  98      HC       3       0

  99      KK   POND4       STAGE-STORAGE THRU POND #4 AT 29TH & RIDGE
 100      KP       1
          * PLAN 1 IS 1-10X3 RCBB AT RIDGE ROAD
 101      RS       1    ELEV  1319.6
          * SA/ SE CARDS NOT USED---DATA FOR RR6 POND #4
          * SA   2.5     3.8     6.1
          * SE 1319.6 1325.7  1328.0
          * SV/SE DATA FOR COMBINED PONDS
 102      SV       0     5.4     6.6    20.5    27.8    37.5    43.5    50.0    60.0
 103      SE  1319.6  1321.6    1322  1323.6  1324.4  1325.4  1326.0    1327    1328
 104      SQ       0     150     300     315     600     900    1000    1200    1350    1500
 105      SE  1319.6  1322.9  1326.5  1327.0  1327.2 1327.33 1327.37 1327.44 1327.48 1327.53
 106      KP       2
          * PLAN 2 IS 2-10X3 RCBB AT RIDGE ROAD
 107      RS       1    ELEV  1319.6
          * SA/ SE CARDS NOT USED---DATA FOR RR6 POND #4
          * SA   2.5     3.8     6.1
          * SE 1319.6 1325.7  1328.0
          * SV/SE DATA FOR COMBINED PONDS
 108      SV       0     5.4     6.6    20.5    27.8    37.5    43.5    50.0    60.0
 109      SE  1319.6  1321.6    1322  1323.6  1324.4  1325.4  1326.0    1327    1328
 110      SQ       0     150     300     450     600     631     750     900    1200    1400
 111      SE  1319.6  1321.6  1322.9  1324.4  1326.5  1327.0  1327.1  1327.2  1327.3  1327.4
 112      KP       3
 113      KO       1       0
          * PLAN 3 IS 3-10X3 RCBB AT RIDGE ROAD
 114      RS       1    ELEV  1319.6
          * SA/ SE CARDS NOT USED---DATA FOR RR6 POND #4
          * SA   2.5     3.8     6.1
          * SE 1319.6 1325.7  1328.0
          * SV/SE DATA FOR COMBINED PONDS
 115      SV       0     5.4     6.6    20.5    27.8    37.5    43.5    50.0    60.0
 116      SE  1319.6  1321.6    1322  1323.6  1324.4  1325.4  1326.0    1327    1328
 117      SQ       0     300     450     600     750     900     947    1050    1200    1500
 118      SE  1319.6  1322.0  1322.9  1323.9  1325.1  1326.5  1327.0  1327.1  1327.2  1327.3
 119      KP       4
          * PLAN 4 IS 4-10X3 RCBB AT RIDGE ROAD
 120      RS       1    ELEV  1319.6
          * SA/ SE CARDS NOT USED---DATA FOR RR6 POND #4
          * SA   2.5     3.8     6.1
          * SE 1319.6 1325.7  1328.0
          * SV/SE DATA FOR COMBINED PONDS
 121      SV       0     5.4     6.6    20.5    27.8    37.5    43.5    50.0    60.0
 122      SE  1319.6  1321.6    1322  1323.6  1324.4  1325.4  1326.0    1327    1328
 123      SQ       0     300     450     600     750     900    1050    1200    1262    1500
 124      SE  1319.6  1321.6  1322.2  1322.9  1323.6  1324.4  1325.4  1326.5  1327.0  1327.2
 125      ZZ
```
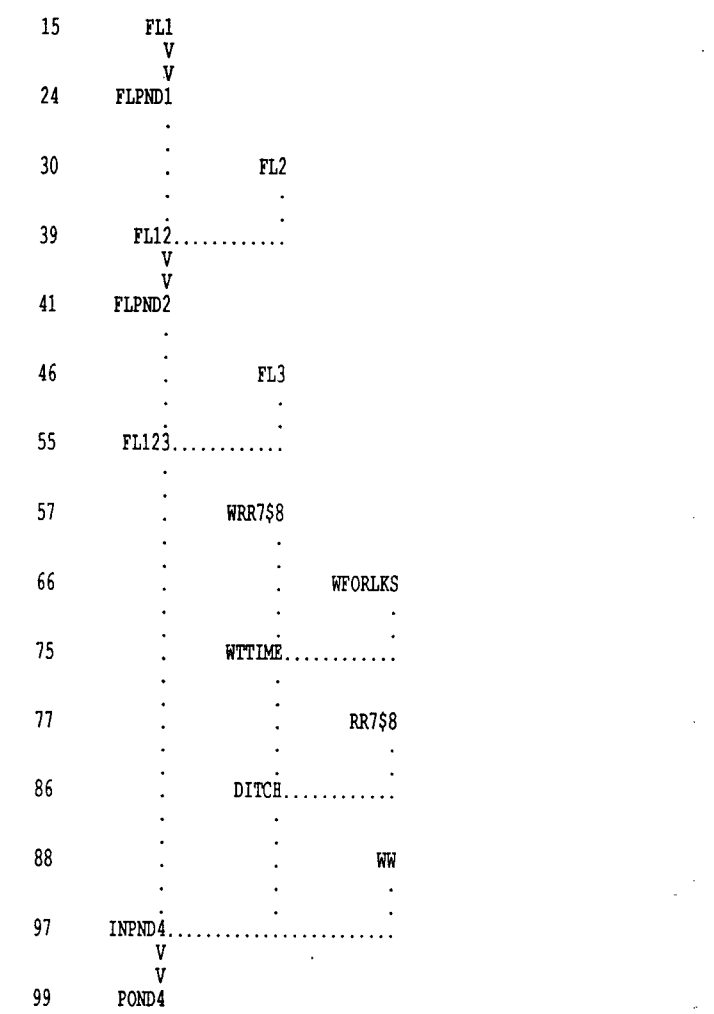

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT LINE NO.

(V) ROUTING (.) CONNECTOR (---->) DIVERSION OR PUMP FLOW (<----) RETURN OF DIVERTED OR PUMPED FLOW



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*            FEBRUARY 1981              *
*          REVISED 02 AUG 88            *
*                                       *
*  RUN DATE  02/06/1993  TIME  14:16:00 *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*         609 SECOND STREET             *
*       DAVIS, CALIFORNIA 95616         *
*         (916) 551-1748                *
*                                       *
*****************************************
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FOREST LAKES & REFLECTION RIDGE 6TH, 7TH & 8TH
PROJ NO 36-92431-2273
ANALYSIS OF POND AT SW COR 29TH & RIDGE
MODEL SOUTH FOREST LAKES POND & RR6 POND AS ONE BASIN
100-YR 24-HR STORMS
FOUR OPTIONAL OUTLETS AT RIDGE ROAD
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
WICHITA, KANSAS
MWB  02/06/93
FILE:FORLKS\QREVPND.HEC

 13 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      1FEB93  STARTING DATE
                   ITIME        0600  STARTING TIME
                      NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                  NDDATE      2FEB93  ENDING DATE
                  NDTIME        1154  ENDING TIME
                  ICENT           19  CENTURY MARK

                COMPUTATION INTERVAL      .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          4  NUMBER OF PLANS

    JR          MULTI-RATIO OPTION
                   RATIOS OF RUNOFF
                  1.00


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


           **************
           *            *
 15 KK     *      FL1   *
           *            *
           **************

 12 IN         TIME DATA FOR INPUT TIME SERIES
                    JXMIN         30  TIME INTERVAL IN MINUTES
                   JXDATE      1FEB93  STARTING DATE
                   JXTIME         600  STARTING TIME

              SUBBASIN RUNOFF DATA

 16 BA         SUBBASIN CHARACTERISTICS
                    TAREA         .12  SUBBASIN AREA

               PRECIPITATION DATA
```

17 PB STORM 7.80 BASIN TOTAL PRECIPITATION

18 PI INCREMENTAL PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.08	.08	.08	.08	.08
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

22 LS SCS LOSS RATE

STRTL	.50	INITIAL ABSTRACTION
CRVNBR	80.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

23 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	.55	LAG

***

UNIT HYDROGRAPH
30 END-OF-PERIOD ORDINATES

8.	23.	46.	75.	93.	98.	93.	82.	67.	48.
36.	28.	22.	16.	12.	10.	7.	5.	4.	3.
2.	2.	1.	1.	1.	1.	0.	0.	0.	0.

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

HYDROGRAPH AT STATION FL1
FOR PLAN 1, RATIO = .00

TOTAL RAINFALL = 7.80, TOTAL LOSS = 2.36, TOTAL EXCESS = 5.44

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)				
		(CFS)			
+ 238.	6.40	58.	18.	14.	14.
		(INCHES) 4.455	5.438	5.438	5.438
		(AC-FT) 29.	35.	35.	35.

CUMULATIVE AREA = .12 SQ MI

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

HYDROGRAPH AT STATION FL1
FOR PLAN 1, RATIO = 1.00

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)				
		(CFS)			
+ 238.	6.40	58.	18.	14.	14.
		(INCHES) 4.455	5.438	5.438	5.438
		(AC-FT) 29.	35.	35.	35.

CUMULATIVE AREA = .12 SQ MI

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

PLAN 2 INPUT DATA FOR STATION FL1 ARE SAME AS FOR PLAN 1

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

```
                PLAN  3 INPUT DATA FOR STATION      FL1 ARE SAME AS FOR PLAN  1

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

                PLAN  4 INPUT DATA FOR STATION      FL1 ARE SAME AS FOR PLAN  1


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


              **************
              *            *
   24 KK      *   FLPND1   *
              *            *
              **************

                HYDROGRAPH ROUTING DATA

   25 RS          STORAGE ROUTING
                       NSTPS          1  NUMBER OF SUBREACHES
                        ITYP       ELEV  TYPE OF INITIAL CONDITION
                      RSVRIC    1328.00  INITIAL CONDITION
                           X        .00 WORKING R AND D COEFFICIENT

   26 SA                AREA        1.8       2.4

   27 SE           ELEVATION    1328.00   1332.00

   28 SQ           DISCHARGE         0.       56.       84.      120.      154.      196.      238.      280.      322.

   29 SE           ELEVATION    1328.00   1329.20   1329.60   1330.00   1330.40   1330.80   1331.20   1331.60   1332.00

                                                         ***

                                               COMPUTED STORAGE-ELEVATION DATA

             STORAGE       .00      8.37
           ELEVATION   1328.00   1332.00

                                            COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

             STORAGE       .00      2.26      3.06      3.89      4.73      5.61      6.50      7.42      8.37
             OUTFLOW       .00     56.00     84.00    120.00    154.00    196.00    238.00    280.00    322.00
           ELEVATION   1328.00   1329.20   1329.60   1330.00   1330.40   1330.80   1331.20   1331.60   1332.00

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

                     HYDROGRAPH AT STATION   FLPND1
                       FOR PLAN 1, RATIO = 1.00

   PEAK FLOW      TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR      29.90-HR
 +   (CFS)        (HR)
                              (CFS)
 +     198.       6.60                  58.         18.         14.          14.
                           (INCHES)   4.431       5.438       5.438        5.438
                            (AC-FT)     29.         35.         35.          35.

  PEAK STORAGE    TIME                         MAXIMUM AVERAGE STORAGE
                                      6-HR       24-HR       72-HR      29.90-HR
 +   (AC-FT)      (HR)
          6.      6.60                  2.          1.          1.           1.

   PEAK STAGE     TIME                          MAXIMUM AVERAGE STAGE
                                      6-HR       24-HR       72-HR      29.90-HR
 +   (FEET)       (HR)
    1330.82       6.60               1329.03     1328.33     1328.26      1328.26

                         CUMULATIVE AREA =      .12 SQ MI


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

              PLAN  2 INPUT DATA FOR STATION    FLPND1 ARE SAME AS FOR PLAN  1
        ***            ***            ***            ***            ***
```

HYDROGRAPH AT STATION FLPND1
FOR PLAN 2, RATIO = 1.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
+ 198.	6.60		58.	18.	14.	14.
		(INCHES)	4.431	5.438	5.438	5.438
		(AC-FT)	29.	35.	35.	35.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	29.90-HR
+ (AC-FT)	(HR)					
6.	6.60		2.	1.	1.	1.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
			6-HR	24-HR	72-HR	29.90-HR
+ (FEET)	(HR)					
1330.82	6.60		1329.03	1328.33	1328.26	1328.26

CUMULATIVE AREA = .12 SQ MI

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

PLAN 3 INPUT DATA FOR STATION FLPND1 ARE SAME AS FOR PLAN 1

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

HYDROGRAPH AT STATION FLPND1
FOR PLAN 3, RATIO = 1.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
+ 198.	6.60		58.	18.	14.	14.
		(INCHES)	4.431	5.438	5.438	5.438
		(AC-FT)	29.	35.	35.	35.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	29.90-HR
+ (AC-FT)	(HR)					
6.	6.60		2.	1.	1.	1.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
			6-HR	24-HR	72-HR	29.90-HR
+ (FEET)	(HR)					
1330.82	6.60		1329.03	1328.33	1328.26	1328.26

CUMULATIVE AREA = .12 SQ MI

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

PLAN 4 INPUT DATA FOR STATION FLPND1 ARE SAME AS FOR PLAN 1

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

HYDROGRAPH AT STATION FLPND1
FOR PLAN 4, RATIO = 1.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
+ 198.	6.60		58.	18.	14.	14.
		(INCHES)	4.431	5.438	5.438	5.438
		(AC-FT)	29.	35.	35.	35.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	29.90-HR
+ (AC-FT)	(HR)					
6.	6.60		2.	1.	1.	1.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE

+ (FEET)	(HR)	6-HR	24-HR	72-HR	29.90-HR
1330.82	6.60	1329.03	1328.33	1328.26	1328.26

CUMULATIVE AREA = .12 SQ MI

*** ***

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          **************
          *            *
 30 KK    *       FL2  *
          *            *
          **************
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12 IN TIME DATA FOR INPUT TIME SERIES
JXMIN 30 TIME INTERVAL IN MINUTES
JXDATE 1FEB93 STARTING DATE
JXTIME 600 STARTING TIME

SUBBASIN RUNOFF DATA

31 BA SUBBASIN CHARACTERISTICS
TAREA .09 SUBBASIN AREA

PRECIPITATION DATA

32 PB STORM 7.80 BASIN TOTAL PRECIPITATION

33 PI INCREMENTAL PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.08	.08	.08	.08	.08
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

37 LS SCS LOSS RATE
STRTL .63 INITIAL ABSTRACTION
CRVNBR 76.00 CURVE NUMBER
RTIMP 38.00 PERCENT IMPERVIOUS AREA

38 UD SCS DIMENSIONLESS UNITGRAPH
TLAG .21 LAG

***

UNIT HYDROGRAPH
12 END-OF-PERIOD ORDINATES

49.	150.	161.	106.	53.	29.	16.	8.	4.	2.
1.	1.								

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

HYDROGRAPH AT STATION FL2
FOR PLAN 1, RATIO = 1.00

TOTAL RAINFALL = 7.80, TOTAL LOSS = 1.75, TOTAL EXCESS = 6.05

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
+ (CFS)	(HR)	6-HR	24-HR	72-HR	29.90-HR
		(CFS)			
+ 277.	6.10	46.	15.	12.	12.
		(INCHES) 4.755	6.049	6.049	6.049

```
                    (AC-FT)        23.         29.         29.         29.

                    CUMULATIVE AREA =    .09 SQ MI


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

                      HYDROGRAPH AT STATION      FL2
                       FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                      MAXIMUM AVERAGE FLOW
                                  6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                  (CFS)
+    277.       6.10                46.         15.         12.         12.
                (INCHES)        4.755       6.049       6.049       6.049
                (AC-FT)            23.         29.         29.         29.

                CUMULATIVE AREA =     .09 SQ MI


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

              PLAN  2 INPUT DATA FOR STATION      FL2 ARE SAME AS FOR PLAN  1

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

              PLAN  3 INPUT DATA FOR STATION      FL2 ARE SAME AS FOR PLAN  1

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

              PLAN  4 INPUT DATA FOR STATION      FL2 ARE SAME AS FOR PLAN  1


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


           **************
           *            *
  39 KK    *      FL12  *
           *            *
           **************

  40 HC          HYDROGRAPH COMBINATION
                      ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                ***

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

                      HYDROGRAPH AT STATION     FL12
                       FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                      MAXIMUM AVERAGE FLOW
                                  6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                  (CFS)
+    345.       6.10                103.         33.         26.         26.
                (INCHES)        4.529       5.698       5.698       5.698
                (AC-FT)            51.         64.         64.         64.

                CUMULATIVE AREA =     .21 SQ MI


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

                      HYDROGRAPH AT STATION     FL12
                       FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                      MAXIMUM AVERAGE FLOW
                                  6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                  (CFS)
+    345.       6.10                103.         33.         26.         26.
                (INCHES)        4.529       5.698       5.698       5.698
                (AC-FT)            51.         64.         64.         64.
```

CUMULATIVE AREA = .21 SQ MI

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

HYDROGRAPH AT STATION FL12
FOR PLAN 3, RATIO = 1.00

	PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	29.90-HR
+	(CFS)	(HR)	(CFS)			
+	345.	6.10	103.	33.	26.	26.
			(INCHES) 4.529	5.698	5.698	5.698
			(AC-FT) 51.	64.	64.	64.

CUMULATIVE AREA = .21 SQ MI

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

HYDROGRAPH AT STATION FL12
FOR PLAN 4, RATIO = 1.00

	PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	29.90-HR
+	(CFS)	(HR)	(CFS)			
+	345.	6.10	103.	33.	26.	26.
			(INCHES) 4.529	5.698	5.698	5.698
			(AC-FT) 51.	64.	64.	64.

CUMULATIVE AREA = .21 SQ MI

*** ***

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          **************
          *            *
 41 KK    *    FLPND2  *
          *            *
          **************
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HYDROGRAPH ROUTING DATA

```
 42 RS      STORAGE ROUTING
                 NSTPS          1  NUMBER OF SUBREACHES
                  ITYP       ELEV  TYPE OF INITIAL CONDITION
                 RSVRIC    1325.00  INITIAL CONDITION
                     X         .00 WORKING R AND D COEFFICIENT

 43 SA          AREA        6.8      8.7

 44 SE      ELEVATION    1325.00   1329.00

 45 SS      SPILLWAY
                  CREL    1325.00  SPILLWAY CREST ELEVATION
                 SPWID      15.00  SPILLWAY WIDTH
                  COQW       3.00  WEIR COEFFICIENT
                  EXPW       1.50  EXPONENT OF HEAD
```

***

COMPUTED STORAGE-ELEVATION DATA

STORAGE	.00	30.92
ELEVATION	1325.00	1329.00

COMPUTED OUTFLOW-ELEVATION DATA

OUTFLOW	.00	.00	.06	.49	1.67	3.95	7.71	13.33	21.18	31.61
ELEVATION	1325.00	1325.00	1325.01	1325.05	1325.11	1325.20	1325.31	1325.44	1325.60	1325.79
OUTFLOW	45.00	61.73	82.16	106.67	135.62	169.39	208.34	252.84	303.27	360.00
ELEVATION	1326.00	1326.23	1326.49	1326.78	1327.09	1327.42	1327.78	1328.16	1328.57	1329.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	.08	.34	.76	1.35	2.12	3.07	4.20	5.51	7.03
OUTFLOW	.00	.06	.49	1.67	3.95	7.71	13.33	21.18	31.61	45.00
ELEVATION	1325.00	1325.01	1325.05	1325.11	1325.20	1325.31	1325.44	1325.60	1325.79	1326.00
STORAGE	8.74	10.66	12.81	15.18	17.79	20.66	23.79	27.21	30.92	
OUTFLOW	61.73	82.16	106.67	135.62	169.39	208.34	252.84	303.27	360.00	
ELEVATION	1326.23	1326.49	1326.78	1327.09	1327.42	1327.78	1328.16	1328.57	1329.00	

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

HYDROGRAPH AT STATION FLPND2
FOR PLAN 1, RATIO = 1.00

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	29.90-HR
		(CFS)				
+ 192.	7.00		97.	32.	26.	26.
		(INCHES)	4.261	5.642	5.668	5.668
		(AC-FT)	48.	64.	64.	64.

PEAK STORAGE + (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	29.90-HR
19.	7.00	12.	5.	4.	4.

PEAK STAGE + (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	29.90-HR
1327.62	7.00	1326.61	1325.66	1325.54	1325.54

CUMULATIVE AREA = .21 SQ MI

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

PLAN 2 INPUT DATA FOR STATION FLPND2 ARE SAME AS FOR PLAN 1

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

HYDROGRAPH AT STATION FLPND2
FOR PLAN 2, RATIO = 1.00

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	29.90-HR
		(CFS)				
+ 192.	7.00		97.	32.	26.	26.
		(INCHES)	4.261	5.642	5.668	5.668
		(AC-FT)	48.	64.	64.	64.

PEAK STORAGE + (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	29.90-HR
19.	7.00	12.	5.	4.	4.

PEAK STAGE + (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	29.90-HR
1327.62	7.00	1326.61	1325.66	1325.54	1325.54

CUMULATIVE AREA = .21 SQ MI

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

PLAN 3 INPUT DATA FOR STATION FLPND2 ARE SAME AS FOR PLAN 1

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

HYDROGRAPH AT STATION FLPND2
FOR PLAN 3, RATIO = 1.00

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	29.90-HR

```
+   (CFS)       (HR)
                          (CFS)
+    192.       7.00                97.        32.        26.        26.
                       (INCHES)     4.261      5.642      5.668      5.668
                       (AC-FT)      48.        64.        64.        64.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR      72-HR     29.90-HR
+  (AC-FT)      (HR)
      19.       7.00                12.         5.         4.         4.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR      72-HR     29.90-HR
+   (FEET)      (HR)
   1327.62      7.00             1326.61    1325.66    1325.54    1325.54

                          CUMULATIVE AREA =     .21 SQ MI


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

               PLAN  4 INPUT DATA FOR STATION   FLPND2 ARE SAME AS FOR PLAN  1

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

                          HYDROGRAPH AT STATION   FLPND2
                            FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR      72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+    192.       7.00                97.        32.        26.        26.
                       (INCHES)     4.261      5.642      5.668      5.668
                       (AC-FT)      48.        64.        64.        64.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR      72-HR     29.90-HR
+  (AC-FT)      (HR)
      19.       7.00                12.         5.         4.         4.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR      72-HR     29.90-HR
+   (FEET)      (HR)
   1327.62      7.00             1326.61    1325.66    1325.54    1325.54

                          CUMULATIVE AREA =     .21 SQ MI


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


          **************
          *            *
  46 KK   *       FL3  *
          *            *
          **************

  12 IN         TIME DATA FOR INPUT TIME SERIES
                     JXMIN         30  TIME INTERVAL IN MINUTES
                    JXDATE      1FEB93  STARTING DATE
                    JXTIME        600  STARTING TIME

              SUBBASIN RUNOFF DATA

  47 BA         SUBBASIN CHARACTERISTICS
                     TAREA         .09  SUBBASIN AREA

                PRECIPITATION DATA

  48 PB              STORM        7.80  BASIN TOTAL PRECIPITATION

  49 PI           INCREMENTAL PRECIPITATION PATTERN
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
```

.00	.00	.00	.00	.00	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.08	.08	.08	.08	.08
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

53 LS SCS LOSS RATE

STRTL	.94	INITIAL ABSTRACTION
CRVNBR	68.00	CURVE NUMBER
RTIMP	38.00	PERCENT IMPERVIOUS AREA

54 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	.27	LAG

***

UNIT HYDROGRAPH
16 END-OF-PERIOD ORDINATES

29.	98.	139.	125.	84.	48.	29.	18.	11.	6.
4.	2.	1.	1.	0.	0.				

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

HYDROGRAPH AT STATION FL3
FOR PLAN 1, RATIO = 1.00

TOTAL RAINFALL = 7.80, TOTAL LOSS = 2.31, TOTAL EXCESS = 5.49

	PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+	(CFS)	(HR)				
			(CFS)			
+	238.	6.10	42.	14.	11.	11.
			(INCHES) 4.255	5.486	5.486	5.486
			(AC-FT) 21.	27.	27.	27.

CUMULATIVE AREA = .09 SQ MI

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

HYDROGRAPH AT STATION FL3
FOR PLAN 1, RATIO = 1.00

	PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+	(CFS)	(HR)				
			(CFS)			
+	238.	6.10	42.	14.	11.	11.
			(INCHES) 4.255	5.486	5.486	5.486
			(AC-FT) 21.	27.	27.	27.

CUMULATIVE AREA = .09 SQ MI

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

PLAN 2 INPUT DATA FOR STATION FL3 ARE SAME AS FOR PLAN 1

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

PLAN 3 INPUT DATA FOR STATION FL3 ARE SAME AS FOR PLAN 1

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

PLAN 4 INPUT DATA FOR STATION FL3 ARE SAME AS FOR PLAN 1

*** ***

```
          **************
          *            *
 55 KK    *     FL123  *
          *            *
          **************

 56 HC          HYDROGRAPH COMBINATION
                     ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                ***

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

                        HYDROGRAPH AT STATION    FL123
                          FOR PLAN 1, RATIO = 1.00

   PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     29.90-HR
 +   (CFS)       (HR)
                              (CFS)
 +     327.      6.20                138.        46.         37.         37.
                             (INCHES)    4.210       5.584       5.613       5.613
                             (AC-FT)     68.         91.         91.         91.

                        CUMULATIVE AREA =     .30 SQ MI


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

                        HYDROGRAPH AT STATION    FL123
                          FOR PLAN 2, RATIO = 1.00

   PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     29.90-HR
 +   (CFS)       (HR)
                              (CFS)
 +     327.      6.20                138.        46.         37.         37.
                             (INCHES)    4.210       5.584       5.613       5.613
                             (AC-FT)     68.         91.         91.         91.

                        CUMULATIVE AREA =     .30 SQ MI


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

                        HYDROGRAPH AT STATION    FL123
                          FOR PLAN 3, RATIO = 1.00

   PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     29.90-HR
 +   (CFS)       (HR)
                              (CFS)
 +     327.      6.20                138.        46.         37.         37.
                             (INCHES)    4.210       5.584       5.613       5.613
                             (AC-FT)     68.         91.         91.         91.

                        CUMULATIVE AREA =     .30 SQ MI


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

                        HYDROGRAPH AT STATION    FL123
                          FOR PLAN 4, RATIO = 1.00

   PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     29.90-HR
 +   (CFS)       (HR)
                              (CFS)
 +     327.      6.20                138.        46.         37.         37.
                             (INCHES)    4.210       5.584       5.613       5.613
                             (AC-FT)     68.         91.         91.         91.

                        CUMULATIVE AREA =     .30 SQ MI
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*** ***

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          **************
          *            *
 57 KK    *   WRR7$8   *          AREA WEST OF RR 7TH & 8TH
          *            *
          **************

 12 IN        TIME DATA FOR INPUT TIME SERIES
                   JXMIN         30  TIME INTERVAL IN MINUTES
                  JXDATE      1FEB93  STARTING DATE
                  JXTIME        600  STARTING TIME

            SUBBASIN RUNOFF DATA

 58 BA        SUBBASIN CHARACTERISTICS
                   TAREA         .11  SUBBASIN AREA

              PRECIPITATION DATA

 59 PB             STORM        7.80  BASIN TOTAL PRECIPITATION

 60 PI          INCREMENTAL PRECIPITATION PATTERN
                  .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                  .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                  .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                  .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                  .00   .00   .00   .00   .00   .01   .01   .01   .01   .01
                  .01   .01   .01   .01   .01   .08   .08   .08   .08   .08
                  .01   .01   .01   .01   .01   .01   .01   .01   .01   .01
                  .01   .01   .01   .01   .01   .00   .00   .00   .00   .00
                  .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                  .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                  .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                  .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                  .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                  .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                  .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                  .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                  .00   .00   .00   .00   .00   .00   .00   .00   .00   .00

 64 LS        SCS LOSS RATE
                   STRTL         .78  INITIAL ABSTRACTION
                  CRVNBR       72.00  CURVE NUMBER
                   RTIMP         .00  PERCENT IMPERVIOUS AREA

 65 UD        SCS DIMENSIONLESS UNITGRAPH
                   TLAG         .15  LAG

                                                  ***

                                                UNIT HYDROGRAPH
                                            10 END-OF-PERIOD ORDINATES
              125.     266.     181.      75.      34.      15.       7.       3.       1.       0.

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

                      HYDROGRAPH AT STATION   WRR7$8
                        FOR PLAN 1, RATIO = 1.00

    TOTAL RAINFALL =    7.80, TOTAL LOSS =    3.28, TOTAL EXCESS =    4.52

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     29.90-HR
+   (CFS)       (HR)
                          (CFS)
+    290.      6.00                    44.         13.         11.         11.
                        (INCHES)     3.719       4.519       4.519       4.519
                        (AC-FT)         22.         26.         26.         26.

                      CUMULATIVE AREA =     .11 SQ MI

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

                      HYDROGRAPH AT STATION   WRR7$8
                        FOR PLAN 1, RATIO = 1.00
```

```
  PEAK FLOW     TIME                    MAXIMUM AVERAGE FLOW
                                6-HR      24-HR      72-HR     29.90-HR
+   (CFS)       (HR)
                 (CFS)
+    290.       6.00                44.        13.        11.        11.
                (INCHES)          3.719      4.519      4.519      4.519
                (AC-FT)            22.        26.        26.        26.

                CUMULATIVE AREA =     .11 SQ MI


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

             PLAN  2 INPUT DATA FOR STATION   WRR7$8 ARE SAME AS FOR PLAN  1

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

             PLAN  3 INPUT DATA FOR STATION   WRR7$8 ARE SAME AS FOR PLAN  1

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

             PLAN  4 INPUT DATA FOR STATION   WRR7$8 ARE SAME AS FOR PLAN  1


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


          ***************
          *             *
 66 KK    *  WFORLKS    *          AREA WEST OF FOREST LAKES
          *             *
          ***************

 12 IN          TIME DATA FOR INPUT TIME SERIES
                     JXMIN         30  TIME INTERVAL IN MINUTES
                    JXDATE     1FEB93  STARTING DATE
                    JXTIME        600  STARTING TIME

               SUBBASIN RUNOFF DATA

 67 BA          SUBBASIN CHARACTERISTICS
                     TAREA         .38  SUBBASIN AREA

                PRECIPITATION DATA

 68 PB               STORM        7.80  BASIN TOTAL PRECIPITATION

 69 PI          INCREMENTAL PRECIPITATION PATTERN
                   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                   .00   .00   .00   .00   .00   .01   .01   .01   .01   .01
                   .01   .01   .01   .01   .01   .08   .08   .08   .08   .08
                   .01   .01   .01   .01   .01   .01   .01   .01   .01   .01
                   .01   .01   .01   .01   .01   .00   .00   .00   .00   .00
                   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00

 73 LS          SCS LOSS RATE
                     STRTL         .70  INITIAL ABSTRACTION
                    CRVNBR       74.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

 74 UD          SCS DIMENSIONLESS UNITGRAPH
                     TLAG         .97  LAG
```

***

UNIT HYDROGRAPH
50 END-OF-PERIOD ORDINATES

5.	18.	34.	55.	82.	116.	145.	166.	178.	181.
180.	171.	159.	146.	129.	108.	90.	75.	64.	54.
47.	40.	35.	29.	25.	21.	18.	15.	13.	11.
9.	8.	7.	6.	5.	4.	4.	3.	3.	2.
2.	2.	2.	1.	1.	1.	1.	1.	0.	0.

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

HYDROGRAPH AT STATION WFORLKS
FOR PLAN 1, RATIO = 1.00

TOTAL RAINFALL = 7.80, TOTAL LOSS = 3.05, TOTAL EXCESS = 4.75

	PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+	(CFS)	(HR)				
			(CFS)			
+	444.	6.90	159.	49.	39.	39.
			(INCHES) 3.853	4.747	4.747	4.747
			(AC-FT) 79.	97.	97.	97.

CUMULATIVE AREA = .38 SQ MI

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

HYDROGRAPH AT STATION WFORLKS
FOR PLAN 1, RATIO = 1.00

	PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+	(CFS)	(HR)				
			(CFS)			
+	444.	6.90	159.	49.	39.	39.
			(INCHES) 3.853	4.747	4.747	4.747
			(AC-FT) 79.	97.	97.	97.

CUMULATIVE AREA = .38 SQ MI

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

PLAN 2 INPUT DATA FOR STATION WFORLKS ARE SAME AS FOR PLAN 1

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

PLAN 3 INPUT DATA FOR STATION WFORLKS ARE SAME AS FOR PLAN 1

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

PLAN 4 INPUT DATA FOR STATION WFORLKS ARE SAME AS FOR PLAN 1

*** ***

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          **************
          *            *
 75 KK    *   WTTIME   *       COMB FLOW IN S DT 29TH W OF TEE TIME
          *            *
          **************

 76 HC        HYDROGRAPH COMBINATION
                   ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE
```

***

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

HYDROGRAPH AT STATION WTTIME
FOR PLAN 1, RATIO = 1.00

```
   PEAK FLOW     TIME                               MAXIMUM AVERAGE FLOW
                                          6-HR         24-HR        72-HR       29.90-HR
 +   (CFS)       (HR)
                                (CFS)
 +      486.     6.80                     202.           62.          50.           50.
                              (INCHES)   3.809         4.697        4.697         4.697
                               (AC-FT)    100.          123.         123.          123.

                              CUMULATIVE AREA =      .49 SQ MI


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

                               HYDROGRAPH AT STATION    WTTIME
                                 FOR PLAN 2, RATIO = 1.00

   PEAK FLOW     TIME                               MAXIMUM AVERAGE FLOW
                                          6-HR         24-HR        72-HR       29.90-HR
 +   (CFS)       (HR)
                                (CFS)
 +      486.     6.80                     202.           62.          50.           50.
                              (INCHES)   3.809         4.697        4.697         4.697
                               (AC-FT)    100.          123.         123.          123.

                              CUMULATIVE AREA =      .49 SQ MI


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

                               HYDROGRAPH AT STATION    WTTIME
                                 FOR PLAN 3, RATIO = 1.00

   PEAK FLOW     TIME                               MAXIMUM AVERAGE FLOW
                                          6-HR         24-HR        72-HR       29.90-HR
 +   (CFS)       (HR)
                                (CFS)
 +      486.     6.80                     202.           62.          50.           50.
                              (INCHES)   3.809         4.697        4.697         4.697
                               (AC-FT)    100.          123.         123.          123.

                              CUMULATIVE AREA =      .49 SQ MI


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

                               HYDROGRAPH AT STATION    WTTIME
                                 FOR PLAN 4, RATIO = 1.00

   PEAK FLOW     TIME                               MAXIMUM AVERAGE FLOW
                                          6-HR         24-HR        72-HR       29.90-HR
 +   (CFS)       (HR)
                                (CFS)
 +      486.     6.80                     202.           62.          50.           50.
                              (INCHES)   3.809         4.697        4.697         4.697
                               (AC-FT)    100.          123.         123.          123.

                              CUMULATIVE AREA =      .49 SQ MI



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


                **************
                *            *
    77 KK       *    RR7$8   *              AREA OF RR 7TH & 8TH
                *            *
                **************


    12 IN             TIME DATA FOR INPUT TIME SERIES
                          JXMIN          30   TIME INTERVAL IN MINUTES
                         JXDATE      1FEB93   STARTING DATE
                         JXTIME         600   STARTING TIME

                    SUBBASIN RUNOFF DATA

    78 BA             SUBBASIN CHARACTERISTICS
                          TAREA         .08   SUBBASIN AREA
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PRECIPITATION DATA

79 PB STORM 7.80 BASIN TOTAL PRECIPITATION

80 PI INCREMENTAL PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.08	.08	.08	.08	.08
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

84 LS SCS LOSS RATE

STRTL .78 INITIAL ABSTRACTION
CRVNBR 72.00 CURVE NUMBER
RTIMP .00 PERCENT IMPERVIOUS AREA

85 UD SCS DIMENSIONLESS UNITGRAPH

TLAG .15 LAG

***

UNIT HYDROGRAPH
10 END-OF-PERIOD ORDINATES

89. 190. 129. 53. 24. 10. 5. 2. 1. 0.

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

HYDROGRAPH AT STATION RR7$8
FOR PLAN 1, RATIO = 1.00

TOTAL RAINFALL = 7.80, TOTAL LOSS = 3.28, TOTAL EXCESS = 4.52

	PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+	(CFS)	(HR)				
			(CFS)			
+	207.	6.00	31.	9.	8.	8.
			(INCHES) 3.719	4.519	4.519	4.519
			(AC-FT) 15.	19.	19.	19.

CUMULATIVE AREA = .08 SQ MI

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

HYDROGRAPH AT STATION RR7$8
FOR PLAN 1, RATIO = 1.00

	PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+	(CFS)	(HR)				
			(CFS)			
+	207.	6.00	31.	9.	8.	8.
			(INCHES) 3.719	4.519	4.519	4.519
			(AC-FT) 15.	19.	19.	19.

CUMULATIVE AREA = .08 SQ MI

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

PLAN 2 INPUT DATA FOR STATION RR7$8 ARE SAME AS FOR PLAN 1

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

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                PLAN  3 INPUT DATA FOR STATION    RR7$8 ARE SAME AS FOR PLAN  1

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

                PLAN  4 INPUT DATA FOR STATION    RR7$8 ARE SAME AS FOR PLAN  1


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


            **************
            *            *
   86 KK    *    DITCH   *
            *            *
            **************

   87 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                 ***

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

                               HYDROGRAPH AT STATION    DITCH
                                 FOR PLAN 1, RATIO = 1.00

   PEAK FLOW     TIME                           MAXIMUM AVERAGE FLOW
                                       6-HR        24-HR       72-HR     29.90-HR
 +   (CFS)       (HR)
                              (CFS)
 +    608.       6.10                  233.          72.         58.          58.
                           (INCHES)   3.794        4.672       4.672        4.672
                            (AC-FT)    115.         142.        142.         142.

                            CUMULATIVE AREA =      .57 SQ MI

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

                               HYDROGRAPH AT STATION    DITCH
                                 FOR PLAN 2, RATIO = 1.00

   PEAK FLOW     TIME                           MAXIMUM AVERAGE FLOW
                                       6-HR        24-HR       72-HR     29.90-HR
 +   (CFS)       (HR)
                              (CFS)
 +    608.       6.10                  233.          72.         58.          58.
                           (INCHES)   3.794        4.672       4.672        4.672
                            (AC-FT)    115.         142.        142.         142.

                            CUMULATIVE AREA =      .57 SQ MI

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

                               HYDROGRAPH AT STATION    DITCH
                                 FOR PLAN 3, RATIO = 1.00

   PEAK FLOW     TIME                           MAXIMUM AVERAGE FLOW
                                       6-HR        24-HR       72-HR     29.90-HR
 +   (CFS)       (HR)
                              (CFS)
 +    608.       6.10                  233.          72.         58.          58.
                           (INCHES)   3.794        4.672       4.672        4.672
                            (AC-FT)    115.         142.        142.         142.

                            CUMULATIVE AREA =      .57 SQ MI

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

                               HYDROGRAPH AT STATION    DITCH
                                 FOR PLAN 4, RATIO = 1.00

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

```
+     608.      6.10                    233.         72.         58.         58.
                          (INCHES)      3.794       4.672       4.672       4.672
                          (AC-FT)         115.        142.        142.        142.

                          CUMULATIVE AREA =     .57 SQ MI


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


               **************
               *            *
  88 KK        *       WW   *        BASIN WW -- RESERVE AROUND POND #4
               *            *
               **************

  12 IN             TIME DATA FOR INPUT TIME SERIES
                         JXMIN         30  TIME INTERVAL IN MINUTES
                        JXDATE      1FEB93  STARTING DATE
                        JXTIME        600  STARTING TIME

                  SUBBASIN RUNOFF DATA

  89 BA             SUBBASIN CHARACTERISTICS
                         TAREA         .01  SUBBASIN AREA

                  PRECIPITATION DATA

  90 PB                  STORM        7.80  BASIN TOTAL PRECIPITATION

  91 PI            INCREMENTAL PRECIPITATION PATTERN
                     .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                     .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                     .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                     .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                     .00   .00   .00   .00   .00   .01   .01   .01   .01   .01
                     .01   .01   .01   .01   .01   .08   .08   .08   .08   .08
                     .01   .01   .01   .01   .01   .01   .01   .01   .01   .01
                     .01   .01   .01   .01   .01   .00   .00   .00   .00   .00
                     .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                     .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                     .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                     .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                     .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                     .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                     .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                     .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
                     .00   .00   .00   .00   .00   .00   .00   .00   .00   .00

  95 LS             SCS LOSS RATE
                         STRTL         .04  INITIAL ABSTRACTION
                        CRVNBR        98.00  CURVE NUMBER
                         RTIMP          .00  PERCENT IMPERVIOUS AREA

  96 UD             SCS DIMENSIONLESS UNITGRAPH
                         TLAG          .10  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            7 END-OF-PERIOD ORDINATES
                        23.       25.       8.        3.        1.        0.        0.

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

                          HYDROGRAPH AT STATION       WW
                            FOR PLAN 1, RATIO = 1.00

     TOTAL RAINFALL =    7.80, TOTAL LOSS =      .24, TOTAL EXCESS =    7.56

   PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                          6-HR        24-HR       72-HR     29.90-HR
+    (CFS)        (HR)
                          (CFS)
+       39.       6.00                     6.          2.          2.          2.
                          (INCHES)      5.910       7.560       7.560       7.560
                          (AC-FT)           3.          4.          4.          4.
```

CUMULATIVE AREA = .01 SQ MI

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

HYDROGRAPH AT STATION WW
FOR PLAN 1, RATIO = 1.00

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	29.90-HR
(CFS)	(HR)				
		(CFS)			
39.	6.00	6.	2.	2.	2.
		(INCHES) 5.910	7.560	7.560	7.560
		(AC-FT) 3.	4.	4.	4.

CUMULATIVE AREA = .01 SQ MI

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

PLAN 2 INPUT DATA FOR STATION WW ARE SAME AS FOR PLAN 1

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

PLAN 3 INPUT DATA FOR STATION WW ARE SAME AS FOR PLAN 1

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

PLAN 4 INPUT DATA FOR STATION WW ARE SAME AS FOR PLAN 1

*** ***

97 KK

```
***************
*             *
*    INPND4   *
*             *
***************
```

98 HC HYDROGRAPH COMBINATION
ICOMP 3 NUMBER OF HYDROGRAPHS TO COMBINE

***

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

HYDROGRAPH AT STATION INPND4
FOR PLAN 1, RATIO = 1.00

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	29.90-HR
(CFS)	(HR)				
		(CFS)			
958.	6.10	376.	119.	96.	96.
		(INCHES) 3.954	5.017	5.027	5.027
		(AC-FT) 186.	237.	237.	237.

CUMULATIVE AREA = .88 SQ MI

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

HYDROGRAPH AT STATION INPND4
FOR PLAN 2, RATIO = 1.00

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	29.90-HR
(CFS)	(HR)				
		(CFS)			
958.	6.10	376.	119.	96.	96.
		(INCHES) 3.954	5.017	5.027	5.027
		(AC-FT) 186.	237.	237.	237.

```
                         CUMULATIVE AREA =     .88 SQ MI

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

                           HYDROGRAPH AT STATION   INPND4
                             FOR PLAN 3, RATIO = 1.00

     PEAK FLOW      TIME                          MAXIMUM AVERAGE FLOW
                                         6-HR        24-HR        72-HR       29.90-HR
  +   (CFS)         (HR)
                                 (CFS)
  +      958.       6.10                  376.        119.          96.          96.
                              (INCHES)   3.954       5.017        5.027        5.027
                               (AC-FT)    186.        237.         237.         237.

                         CUMULATIVE AREA =     .88 SQ MI

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

                           HYDROGRAPH AT STATION   INPND4
                             FOR PLAN 4, RATIO = 1.00

     PEAK FLOW      TIME                          MAXIMUM AVERAGE FLOW
                                         6-HR        24-HR        72-HR       29.90-HR
  +   (CFS)         (HR)
                                 (CFS)
  +      958.       6.10                  376.        119.          96.          96.
                              (INCHES)   3.954       5.017        5.027        5.027
                               (AC-FT)    186.        237.         237.         237.

                         CUMULATIVE AREA =     .88 SQ MI


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


               **************
               *            *
   99 KK       *   POND4    *          STAGE-STORAGE THRU POND #4 AT 29TH & RIDGE
               *            *
               **************


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

  100 KP         PLAN  1 FOR STATION    POND4              STAGE-STORAGE THRU POND #4 AT 29TH & RIDGE

                 HYDROGRAPH ROUTING DATA

  101 RS           STORAGE ROUTING
                        NSTPS           1  NUMBER OF SUBREACHES
                        ITYP         ELEV  TYPE OF INITIAL CONDITION
                        RSVRIC    1319.60  INITIAL CONDITION
                        X             .00  WORKING R AND D COEFFICIENT

  102 SV             STORAGE          .0       5.4       6.6      20.5      27.8      37.5      43.5      50.0      60.0

  103 SE           ELEVATION     1319.60   1321.60   1322.00   1323.60   1324.40   1325.40   1326.00   1327.00   1328.00

  104 SQ           DISCHARGE          0.      150.      300.      315.      600.      900.     1000.     1200.     1350.     1500.

  105 SE           ELEVATION     1319.60   1322.90   1326.50   1327.00   1327.20   1327.33   1327.37   1327.44   1327.48   1327.53

                                                        ***

                                          COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

                 STORAGE       .00      5.40      6.60     14.42     20.50     27.80     37.50     43.50     46.75     50.00
                 OUTFLOW       .00     90.91    109.09    150.00    179.16    212.50    254.17    279.17    300.00    315.00
               ELEVATION   1319.60   1321.60   1322.00   1322.90   1323.60   1324.40   1325.40   1326.00   1326.50   1327.00

                 STORAGE     52.00     53.30     53.70     54.40     54.80     55.30     60.00
                 OUTFLOW    600.00    900.00   1000.00   1200.00   1350.00   1500.00   2908.54
               ELEVATION   1327.20   1327.33   1327.37   1327.44   1327.48   1327.53   1328.00
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*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 900. TO 2909.
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 POND4
FOR PLAN 1, RATIO = 1.00

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)				
		(CFS)			
+ 756.	6.90	337.	119.	96.	96.
		(INCHES) 3.540	5.015	5.026	5.026
		(AC-FT) 167.	237.	237.	237.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	29.90-HR
+ (AC-FT)	(HR)				
53.	6.90	41.	13.	10.	10.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	29.90-HR
+ (FEET)	(HR)				
1327.27	6.90	1325.89	1321.95	1321.49	1321.49

CUMULATIVE AREA = .88 SQ MI

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

106 KP PLAN 2 FOR STATION POND4 STAGE-STORAGE THRU POND #4 AT 29TH & RIDGE

HYDROGRAPH ROUTING DATA

107 RS STORAGE ROUTING
NSTPS 1 NUMBER OF SUBREACHES
ITYP ELEV TYPE OF INITIAL CONDITION
RSVRIC 1319.60 INITIAL CONDITION
X .00 WORKING R AND D COEFFICIENT

108 SV	STORAGE	.0	5.4	6.6	20.5	27.8	37.5	43.5	50.0	60.0
109 SE	ELEVATION	1319.60	1321.60	1322.00	1323.60	1324.40	1325.40	1326.00	1327.00	1328.00
110 SQ	DISCHARGE	0.	150.	300.	450.	600.	631.	750.	900.	1200. 1400.
111 SE	ELEVATION	1319.60	1321.60	1322.90	1324.40	1326.50	1327.00	1327.10	1327.20	1327.30 1327.40

***

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	5.40	6.60	14.42	20.50	27.80	37.50	43.50	46.75	50.00
OUTFLOW	.00	150.00	196.15	300.00	370.00	450.00	521.43	564.29	600.00	631.00
ELEVATION	1319.60	1321.60	1322.00	1322.90	1323.60	1324.40	1325.40	1326.00	1326.50	1327.00
STORAGE	51.00	52.00	53.00	54.00	60.00					
OUTFLOW	750.00	900.00	1200.00	1400.00	2600.24					
ELEVATION	1327.10	1327.20	1327.30	1327.40	1328.00					

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 900. TO 1200.
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 POND4
FOR PLAN 2, RATIO = 1.00

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)				
		(CFS)			
+ 584.	7.40	373.	119.	96.	96.

	(INCHES)	3.916	5.016	5.027	5.027
	(AC-FT)	185.	237.	237.	237.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	29.90-HR
+ (AC-FT)	(HR)				
45.	7.40	23.	7.	5.	5.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	29.90-HR
+ (FEET)	(HR)				
1326.28	7.40	1323.80	1321.00	1320.73	1320.73

CUMULATIVE AREA = .88 SQ MI

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

112 KP PLAN 3 FOR STATION POND4 STAGE-STORAGE THRU POND #4 AT 29TH & RIDGE

113 KO OUTPUT CONTROL VARIABLES
IPRNT 1 PRINT CONTROL
IPLOT 0 PLOT CONTROL
QSCAL 0. HYDROGRAPH PLOT SCALE

HYDROGRAPH ROUTING DATA

114 RS STORAGE ROUTING
NSTPS 1 NUMBER OF SUBREACHES
ITYP ELEV TYPE OF INITIAL CONDITION
RSVRIC 1319.60 INITIAL CONDITION
X .00 WORKING R AND D COEFFICIENT

115 SV	STORAGE	.0	5.4	6.6	20.5	27.8	37.5	43.5	50.0	60.0
116 SE	ELEVATION	1319.60	1321.60	1322.00	1323.60	1324.40	1325.40	1326.00	1327.00	1328.00
117 SQ	DISCHARGE	0.	300.	450.	600.	750.	900.	947.	1050.	1200. 1500.
118 SE	ELEVATION	1319.60	1322.00	1322.90	1323.90	1325.10	1326.50	1327.00	1327.10	1327.20 1327.30

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COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	5.40	6.60	14.42	20.50	23.24	27.80	34.59	37.50	43.50
OUTFLOW	.00	250.00	300.00	450.00	554.99	600.00	662.50	750.00	782.15	846.43
ELEVATION	1319.60	1321.60	1322.00	1322.90	1323.60	1323.90	1324.40	1325.10	1325.40	1326.00
STORAGE	46.75	50.00	51.00	52.00	53.00	60.00				
OUTFLOW	900.00	947.00	1050.00	1200.00	1500.00	3597.80				
ELEVATION	1326.50	1327.00	1327.10	1327.20	1327.30	1328.00				

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 1200. TO 3598.
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 POND4
PLAN 3, RATIO = 1.00

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DA MON HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA MON HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA MON HRMN	ORD	OUTFLOW	STORAGE	STAGE
1 FEB 0600	1	0.	.0	1319.6	1 FEB 1600	101	175.	3.8	1321.0	2 FEB 0200	201	14.	.3	1319.7
1 FEB 0606	2	0.	.0	1319.6	1 FEB 1606	102	169.	3.7	1321.0	2 FEB 0206	202	13.	.3	1319.7
1 FEB 0612	3	0.	.0	1319.6	1 FEB 1612	103	164.	3.5	1320.9	2 FEB 0212	203	12.	.3	1319.7
1 FEB 0618	4	1.	.0	1319.6	1 FEB 1618	104	158.	3.4	1320.9	2 FEB 0218	204	11.	.2	1319.7
1 FEB 0624	5	1.	.0	1319.6	1 FEB 1624	105	152.	3.3	1320.8	2 FEB 0224	205	10.	.2	1319.7
1 FEB 0630	6	2.	.0	1319.6	1 FEB 1630	106	146.	3.2	1320.8	2 FEB 0230	206	9.	.2	1319.7
1 FEB 0636	7	2.	.0	1319.6	1 FEB 1636	107	141.	3.1	1320.7	2 FEB 0236	207	9.	.2	1319.7
1 FEB 0642	8	3.	.1	1319.6	1 FEB 1642	108	137.	3.0	1320.7	2 FEB 0242	208	8.	.2	1319.7
1 FEB 0648	9	3.	.1	1319.6	1 FEB 1648	109	133.	2.9	1320.7	2 FEB 0248	209	8.	.2	1319.7
1 FEB 0654	10	4.	.1	1319.6	1 FEB 1654	110	129.	2.8	1320.6	2 FEB 0254	210	7.	.2	1319.7
1 FEB 0700	11	4.	.1	1319.6	1 FEB 1700	111	126.	2.7	1320.6	2 FEB 0300	211	7.	.2	1319.7

1 FEB 0706	12	4.	.1	1319.6 *	1 FEB 1706	112	122.	2.6	1320.6 *	2 FEB 0306	212	7.	.1	1319.7
1 FEB 0712	13	4.	.1	1319.6 *	1 FEB 1712	113	119.	2.6	1320.6 *	2 FEB 0312	213	6.	.1	1319.7
1 FEB 0718	14	5.	.1	1319.6 *	1 FEB 1718	114	117.	2.5	1320.5 *	2 FEB 0318	214	6.	.1	1319.6
1 FEB 0724	15	5.	.1	1319.6 *	1 FEB 1724	115	114.	2.5	1320.5 *	2 FEB 0324	215	6.	.1	1319.6
1 FEB 0730	16	5.	.1	1319.6 *	1 FEB 1730	116	111.	2.4	1320.5 *	2 FEB 0330	216	5.	.1	1319.6
1 FEB 0736	17	5.	.1	1319.6 *	1 FEB 1736	117	109.	2.4	1320.5 *	2 FEB 0336	217	5.	.1	1319.6
1 FEB 0742	18	5.	.1	1319.6 *	1 FEB 1742	118	106.	2.3	1320.4 *	2 FEB 0342	218	5.	.1	1319.6
1 FEB 0748	19	5.	.1	1319.6 *	1 FEB 1748	119	102.	2.2	1320.4 *	2 FEB 0348	219	5.	.1	1319.6
1 FEB 0754	20	5.	.1	1319.6 *	1 FEB 1754	120	99.	2.1	1320.4 *	2 FEB 0354	220	4.	.1	1319.6
1 FEB 0800	21	5.	.1	1319.6 *	1 FEB 1800	121	95.	2.1	1320.4 *	2 FEB 0400	221	4.	.1	1319.6
1 FEB 0806	22	5.	.1	1319.6 *	1 FEB 1806	122	92.	2.0	1320.3 *	2 FEB 0406	222	4.	.1	1319.6
1 FEB 0812	23	6.	.1	1319.6 *	1 FEB 1812	123	90.	1.9	1320.3 *	2 FEB 0412	223	4.	.1	1319.6
1 FEB 0818	24	6.	.1	1319.6 *	1 FEB 1818	124	89.	1.9	1320.3 *	2 FEB 0418	224	4.	.1	1319.6
1 FEB 0824	25	6.	.1	1319.6 *	1 FEB 1824	125	88.	1.9	1320.3 *	2 FEB 0424	225	4.	.1	1319.6
1 FEB 0830	26	6.	.1	1319.7 *	1 FEB 1830	126	87.	1.9	1320.3 *	2 FEB 0430	226	3.	.1	1319.6
1 FEB 0836	27	7.	.1	1319.7 *	1 FEB 1836	127	86.	1.9	1320.3 *	2 FEB 0436	227	3.	.1	1319.6
1 FEB 0842	28	7.	.2	1319.7 *	1 FEB 1842	128	85.	1.8	1320.3 *	2 FEB 0442	228	3.	.1	1319.6
1 FEB 0848	29	7.	.2	1319.7 *	1 FEB 1848	129	84.	1.8	1320.3 *	2 FEB 0448	229	3.	.1	1319.6
1 FEB 0854	30	7.	.2	1319.7 *	1 FEB 1854	130	83.	1.8	1320.3 *	2 FEB 0454	230	3.	.1	1319.6
1 FEB 0900	31	8.	.2	1319.7 *	1 FEB 1900	131	83.	1.8	1320.3 *	2 FEB 0500	231	3.	.1	1319.6
1 FEB 0906	32	8.	.2	1319.7 *	1 FEB 1906	132	82.	1.8	1320.3 *	2 FEB 0506	232	3.	.1	1319.6
1 FEB 0912	33	8.	.2	1319.7 *	1 FEB 1912	133	82.	1.8	1320.3 *	2 FEB 0512	233	3.	.1	1319.6
1 FEB 0918	34	8.	.2	1319.7 *	1 FEB 1918	134	81.	1.8	1320.2 *	2 FEB 0518	234	3.	.1	1319.6
1 FEB 0924	35	9.	.2	1319.7 *	1 FEB 1924	135	81.	1.7	1320.2 *	2 FEB 0524	235	3.	.1	1319.6
1 FEB 0930	36	9.	.2	1319.7 *	1 FEB 1930	136	81.	1.7	1320.2 *	2 FEB 0530	236	2.	.1	1319.6
1 FEB 0936	37	9.	.2	1319.7 *	1 FEB 1936	137	81.	1.7	1320.2 *	2 FEB 0536	237	2.	.1	1319.6
1 FEB 0942	38	10.	.2	1319.7 *	1 FEB 1942	138	80.	1.7	1320.2 *	2 FEB 0542	238	2.	.1	1319.6
1 FEB 0948	39	10.	.2	1319.7 *	1 FEB 1948	139	80.	1.7	1320.2 *	2 FEB 0548	239	2.	.0	1319.6
1 FEB 0954	40	10.	.2	1319.7 *	1 FEB 1954	140	80.	1.7	1320.2 *	2 FEB 0554	240	2.	.0	1319.6
1 FEB 1000	41	11.	.2	1319.7 *	1 FEB 2000	141	80.	1.7	1320.2 *	2 FEB 0600	241	2.	.0	1319.6
1 FEB 1006	42	11.	.2	1319.7 *	1 FEB 2006	142	80.	1.7	1320.2 *	2 FEB 0606	242	2.	.0	1319.6
1 FEB 1012	43	12.	.3	1319.7 *	1 FEB 2012	143	79.	1.7	1320.2 *	2 FEB 0612	243	2.	.0	1319.6
1 FEB 1018	44	14.	.3	1319.7 *	1 FEB 2018	144	77.	1.7	1320.2 *	2 FEB 0618	244	2.	.0	1319.6
1 FEB 1024	45	15.	.3	1319.7 *	1 FEB 2024	145	76.	1.6	1320.2 *	2 FEB 0624	245	2.	.0	1319.6
1 FEB 1030	46	17.	.4	1319.7 *	1 FEB 2030	146	74.	1.6	1320.2 *	2 FEB 0630	246	2.	.0	1319.6
1 FEB 1036	47	19.	.4	1319.7 *	1 FEB 2036	147	73.	1.6	1320.2 *	2 FEB 0636	247	2.	.0	1319.6
1 FEB 1042	48	21.	.5	1319.8 *	1 FEB 2042	148	72.	1.5	1320.2 *	2 FEB 0642	248	2.	.0	1319.6
1 FEB 1048	49	24.	.5	1319.8 *	1 FEB 2048	149	70.	1.5	1320.2 *	2 FEB 0648	249	2.	.0	1319.6
1 FEB 1054	50	28.	.6	1319.8 *	1 FEB 2054	150	69.	1.5	1320.2 *	2 FEB 0654	250	2.	.0	1319.6
1 FEB 1100	51	31.	.7	1319.9 *	1 FEB 2100	151	68.	1.5	1320.1 *	2 FEB 0700	251	2.	.0	1319.6
1 FEB 1106	52	36.	.8	1319.9 *	1 FEB 2106	152	67.	1.4	1320.1 *	2 FEB 0706	252	2.	.0	1319.6
1 FEB 1112	53	41.	.9	1319.9 *	1 FEB 2112	153	66.	1.4	1320.1 *	2 FEB 0712	253	2.	.0	1319.6
1 FEB 1118	54	49.	1.0	1320.0 *	1 FEB 2118	154	65.	1.4	1320.1 *	2 FEB 0718	254	1.	.0	1319.6
1 FEB 1124	55	57.	1.2	1320.1 *	1 FEB 2124	155	64.	1.4	1320.1 *	2 FEB 0724	255	1.	.0	1319.6
1 FEB 1130	56	65.	1.4	1320.1 *	1 FEB 2130	156	63.	1.4	1320.1 *	2 FEB 0730	256	1.	.0	1319.6
1 FEB 1136	57	86.	1.9	1320.3 *	1 FEB 2136	157	62.	1.3	1320.1 *	2 FEB 0736	257	1.	.0	1319.6
1 FEB 1142	58	145.	3.1	1320.8 *	1 FEB 2142	158	61.	1.3	1320.1 *	2 FEB 0742	258	1.	.0	1319.6
1 FEB 1148	59	250.	5.4	1321.6 *	1 FEB 2148	159	60.	1.3	1320.1 *	2 FEB 0748	259	1.	.0	1319.6
1 FEB 1154	60	336.	8.5	1322.2 *	1 FEB 2154	160	60.	1.3	1320.1 *	2 FEB 0754	260	1.	.0	1319.6
1 FEB 1200	61	410.	12.3	1322.7 *	1 FEB 2200	161	59.	1.3	1320.1 *	2 FEB 0800	261	1.	.0	1319.6
1 FEB 1206	62	484.	16.4	1323.1 *	1 FEB 2206	162	59.	1.3	1320.1 *	2 FEB 0806	262	1.	.0	1319.6
1 FEB 1212	63	540.	19.6	1323.5 *	1 FEB 2212	163	58.	1.3	1320.1 *	2 FEB 0812	263	1.	.0	1319.6
1 FEB 1218	64	575.	21.7	1323.7 *	1 FEB 2218	164	58.	1.2	1320.1 *	2 FEB 0818	264	1.	.0	1319.6
1 FEB 1224	65	598.	23.1	1323.9 *	1 FEB 2224	165	57.	1.2	1320.1 *	2 FEB 0824	265	1.	.0	1319.6
1 FEB 1230	66	616.	24.4	1324.0 *	1 FEB 2230	166	57.	1.2	1320.1 *	2 FEB 0830	266	1.	.0	1319.6
1 FEB 1236	67	633.	25.6	1324.2 *	1 FEB 2236	167	56.	1.2	1320.1 *	2 FEB 0836	267	1.	.0	1319.6
1 FEB 1242	68	648.	26.7	1324.3 *	1 FEB 2242	168	56.	1.2	1320.0 *	2 FEB 0842	268	1.	.0	1319.6
1 FEB 1248	69	661.	27.7	1324.4 *	1 FEB 2248	169	56.	1.2	1320.0 *	2 FEB 0848	269	1.	.0	1319.6
1 FEB 1254	70	671.	28.4	1324.5 *	1 FEB 2254	170	56.	1.2	1320.0 *	2 FEB 0854	270	1.	.0	1319.6
1 FEB 1300	71	678.	29.0	1324.5 *	1 FEB 2300	171	55.	1.2	1320.0 *	2 FEB 0900	271	1.	.0	1319.6
1 FEB 1306	72	682.	29.3	1324.6 *	1 FEB 2306	172	55.	1.2	1320.0 *	2 FEB 0906	272	1.	.0	1319.6
1 FEB 1312	73	683.	29.4	1324.6 *	1 FEB 2312	173	55.	1.2	1320.0 *	2 FEB 0912	273	1.	.0	1319.6
1 FEB 1318	74	680.	29.1	1324.5 *	1 FEB 2318	174	55.	1.2	1320.0 *	2 FEB 0918	274	1.	.0	1319.6
1 FEB 1324	75	672.	28.6	1324.5 *	1 FEB 2324	175	55.	1.2	1320.0 *	2 FEB 0924	275	1.	.0	1319.6
1 FEB 1330	76	662.	27.8	1324.4 *	1 FEB 2330	176	54.	1.2	1320.0 *	2 FEB 0930	276	1.	.0	1319.6
1 FEB 1336	77	648.	26.7	1324.3 *	1 FEB 2336	177	54.	1.2	1320.0 *	2 FEB 0936	277	1.	.0	1319.6
1 FEB 1342	78	631.	25.5	1324.2 *	1 FEB 2342	178	54.	1.2	1320.0 *	2 FEB 0942	278	1.	.0	1319.6
1 FEB 1348	79	613.	24.2	1324.0 *	1 FEB 2348	179	54.	1.2	1320.0 *	2 FEB 0948	279	1.	.0	1319.6
1 FEB 1354	80	592.	22.8	1323.8 *	1 FEB 2354	180	54.	1.2	1320.0 *	2 FEB 0954	280	1.	.0	1319.6
1 FEB 1400	81	568.	21.3	1323.7 *	2 FEB 0000	181	54.	1.2	1320.0 *	2 FEB 1000	281	1.	.0	1319.6
1 FEB 1406	82	544.	19.8	1323.5 *	2 FEB 0006	182	53.	1.2	1320.0 *	2 FEB 1006	282	1.	.0	1319.6
1 FEB 1412	83	518.	18.4	1323.4 *	2 FEB 0012	183	52.	1.1	1320.0 *	2 FEB 1012	283	1.	.0	1319.6
1 FEB 1418	84	493.	16.9	1323.2 *	2 FEB 0018	184	49.	1.1	1320.0 *	2 FEB 1018	284	1.	.0	1319.6
1 FEB 1424	85	469.	15.5	1323.0 *	2 FEB 0024	185	46.	1.0	1320.0 *	2 FEB 1024	285	1.	.0	1319.6
1 FEB 1430	86	444.	14.1	1322.9 *	2 FEB 0030	186	43.	.9	1319.9 *	2 FEB 1030	286	1.	.0	1319.6
1 FEB 1436	87	419.	12.8	1322.7 *	2 FEB 0036	187	40.	.9	1319.9 *	2 FEB 1036	287	1.	.0	1319.6
1 FEB 1442	88	396.	11.6	1322.6 *	2 FEB 0042	188	38.	.8	1319.9 *	2 FEB 1042	288	1.	.0	1319.6
1 FEB 1448	89	374.	10.5	1322.4 *	2 FEB 0048	189	35.	.8	1319.9 *	2 FEB 1048	289	1.	.0	1319.6
1 FEB 1454	90	354.	9.4	1322.3 *	2 FEB 0054	190	33.	.7	1319.9 *	2 FEB 1054	290	1.	.0	1319.6
1 FEB 1500	91	335.	8.4	1322.2 *	2 FEB 0100	191	31.	.7	1319.8 *	2 FEB 1100	291	1.	.0	1319.6

1	FEB	1506	92	317.	7.5	1322.1	*	2	FEB	0106	192	29.	.6	1319.8	*	2	FEB	1106	292	1.	.0	1319.6
1	FEB	1512	93	300.	6.6	1322.0	*	2	FEB	0112	193	27.	.6	1319.8	*	2	FEB	1112	293	1.	.0	1319.6
1	FEB	1518	94	271.	5.9	1321.8	*	2	FEB	0118	194	25.	.5	1319.8	*	2	FEB	1118	294	1.	.0	1319.6
1	FEB	1524	95	247.	5.3	1321.6	*	2	FEB	0124	195	23.	.5	1319.8	*	2	FEB	1124	295	1.	.0	1319.6
1	FEB	1530	96	227.	4.9	1321.4	*	2	FEB	0130	196	21.	.5	1319.8	*	2	FEB	1130	296	1.	.0	1319.6
1	FEB	1536	97	211.	4.6	1321.3	*	2	FEB	0136	197	19.	.4	1319.8	*	2	FEB	1136	297	1.	.0	1319.6
1	FEB	1542	98	199.	4.3	1321.2	*	2	FEB	0142	198	18.	.4	1319.7	*	2	FEB	1142	298	1.	.0	1319.6
1	FEB	1548	99	189.	4.1	1321.1	*	2	FEB	0148	199	16.	.3	1319.7	*	2	FEB	1148	299	1.	.0	1319.6
1	FEB	1554	100	181.	3.9	1321.1	*	2	FEB	0154	200	15.	.3	1319.7	*	2	FEB	1154	300	1.	.0	1319.6

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
+ 683.	7.20		375.	119.	96.	96.
		(INCHES)	3.938	5.017	5.027	5.027
		(AC-FT)	186.	237.	237.	237.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	29.90-HR
+ (AC-FT)	(HR)				
29.	7.20	13.	4.	3.	3.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	29.90-HR
+ (FEET)	(HR)				
1324.56	7.20	1322.39	1320.50	1320.33	1320.33

CUMULATIVE AREA = .88 SQ MI

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

119 KP PLAN 4 FOR STATION POND4 STAGE-STORAGE THRU POND #4 AT 29TH & RIDGE

HYDROGRAPH ROUTING DATA

120 RS STORAGE ROUTING
NSTPS 1 NUMBER OF SUBREACHES
ITYP ELEV TYPE OF INITIAL CONDITION
RSVRIC 1319.60 INITIAL CONDITION
X .00 WORKING R AND D COEFFICIENT

121 SV	STORAGE	.0	5.4	6.6	20.5	27.8	37.5	43.5	50.0	60.0
122 SE	ELEVATION	1319.60	1321.60	1322.00	1323.60	1324.40	1325.40	1326.00	1327.00	1328.00
123 SQ	DISCHARGE	0.	300.	450.	600.	750.	900.	1050.	1200.	1262.	1500.
124 SE	ELEVATION	1319.60	1321.60	1322.20	1322.90	1323.60	1324.40	1325.40	1326.50	1327.00	1327.20

***

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	5.40	6.60	8.34	14.42	20.50	27.80	37.50	43.50	46.75
OUTFLOW	.00	300.00	400.01	450.00	600.00	750.00	900.00	1050.00	1131.82	1200.00
ELEVATION	1319.60	1321.60	1322.00	1322.20	1322.90	1323.60	1324.40	1325.40	1326.00	1326.50

STORAGE	50.00	52.00	60.00
OUTFLOW	1262.00	1500.00	2452.29
ELEVATION	1327.00	1327.20	1328.00

HYDROGRAPH AT STATION POND4
PLAN 4, RATIO = 1.00

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1	FEB	0600	1	0.	.0	1319.6	*	1	FEB	1600	101	169.	3.0	1320.7	*	2	FEB	0200	201	13.	.2	1319.7
1	FEB	0606	2	0.	.0	1319.6	*	1	FEB	1606	102	165.	3.0	1320.7	*	2	FEB	0206	202	12.	.2	1319.7
1	FEB	0612	3	0.	.0	1319.6	*	1	FEB	1612	103	160.	2.9	1320.7	*	2	FEB	0212	203	11.	.2	1319.7

1 FEB 0618	4	1.	.0	1319.6	*	1 FEB 1618	104	154.	2.8	1320.6	*	2 FEB 0218	204	10.	.2	1319.7
1 FEB 0624	5	1.	.0	1319.6	*	1 FEB 1624	105	149.	2.7	1320.6	*	2 FEB 0224	205	10.	.2	1319.7
1 FEB 0630	6	2.	.0	1319.6	*	1 FEB 1630	106	143.	2.6	1320.6	*	2 FEB 0230	206	9.	.2	1319.7
1 FEB 0636	7	2.	.0	1319.6	*	1 FEB 1636	107	139.	2.5	1320.5	*	2 FEB 0236	207	9.	.2	1319.7
1 FEB 0642	8	3.	.1	1319.6	*	1 FEB 1642	108	135.	2.4	1320.5	*	2 FEB 0242	208	8.	.1	1319.7
1 FEB 0648	9	3.	.1	1319.6	*	1 FEB 1648	109	131.	2.4	1320.5	*	2 FEB 0248	209	8.	.1	1319.7
1 FEB 0654	10	4.	.1	1319.6	*	1 FEB 1654	110	127.	2.3	1320.4	*	2 FEB 0254	210	7.	.1	1319.6
1 FEB 0700	11	4.	.1	1319.6	*	1 FEB 1700	111	124.	2.2	1320.4	*	2 FEB 0300	211	7.	.1	1319.6
1 FEB 0706	12	4.	.1	1319.6	*	1 FEB 1706	112	121.	2.2	1320.4	*	2 FEB 0306	212	6.	.1	1319.6
1 FEB 0712	13	4.	.1	1319.6	*	1 FEB 1712	113	118.	2.1	1320.4	*	2 FEB 0312	213	6.	.1	1319.6
1 FEB 0718	14	5.	.1	1319.6	*	1 FEB 1718	114	115.	2.1	1320.4	*	2 FEB 0318	214	6.	.1	1319.6
1 FEB 0724	15	5.	.1	1319.6	*	1 FEB 1724	115	113.	2.0	1320.4	*	2 FEB 0324	215	5.	.1	1319.6
1 FEB 0730	16	5.	.1	1319.6	*	1 FEB 1730	116	110.	2.0	1320.3	*	2 FEB 0330	216	5.	.1	1319.6
1 FEB 0736	17	5.	.1	1319.6	*	1 FEB 1736	117	108.	1.9	1320.3	*	2 FEB 0336	217	5.	.1	1319.6
1 FEB 0742	18	5.	.1	1319.6	*	1 FEB 1742	118	105.	1.9	1320.3	*	2 FEB 0342	218	5.	.1	1319.6
1 FEB 0748	19	5.	.1	1319.6	*	1 FEB 1748	119	101.	1.8	1320.3	*	2 FEB 0348	219	5.	.1	1319.6
1 FEB 0754	20	5.	.1	1319.6	*	1 FEB 1754	120	97.	1.7	1320.2	*	2 FEB 0354	220	4.	.1	1319.6
1 FEB 0800	21	5.	.1	1319.6	*	1 FEB 1800	121	94.	1.7	1320.2	*	2 FEB 0400	221	4.	.1	1319.6
1 FEB 0806	22	5.	.1	1319.6	*	1 FEB 1806	122	91.	1.6	1320.2	*	2 FEB 0406	222	4.	.1	1319.6
1 FEB 0812	23	6.	.1	1319.6	*	1 FEB 1812	123	89.	1.6	1320.2	*	2 FEB 0412	223	4.	.1	1319.6
1 FEB 0818	24	6.	.1	1319.6	*	1 FEB 1818	124	88.	1.6	1320.2	*	2 FEB 0418	224	4.	.1	1319.6
1 FEB 0824	25	6.	.1	1319.6	*	1 FEB 1824	125	87.	1.6	1320.2	*	2 FEB 0424	225	4.	.1	1319.6
1 FEB 0830	26	7.	.1	1319.6	*	1 FEB 1830	126	86.	1.6	1320.2	*	2 FEB 0430	226	3.	.1	1319.6
1 FEB 0836	27	7.	.1	1319.6	*	1 FEB 1836	127	85.	1.5	1320.2	*	2 FEB 0436	227	3.	.1	1319.6
1 FEB 0842	28	7.	.1	1319.6	*	1 FEB 1842	128	85.	1.5	1320.2	*	2 FEB 0442	228	3.	.1	1319.6
1 FEB 0848	29	7.	.1	1319.6	*	1 FEB 1848	129	84.	1.5	1320.2	*	2 FEB 0448	229	3.	.1	1319.6
1 FEB 0854	30	8.	.1	1319.7	*	1 FEB 1854	130	83.	1.5	1320.2	*	2 FEB 0454	230	3.	.1	1319.6
1 FEB 0900	31	8.	.1	1319.7	*	1 FEB 1900	131	82.	1.5	1320.1	*	2 FEB 0500	231	3.	.1	1319.6
1 FEB 0906	32	8.	.1	1319.7	*	1 FEB 1906	132	82.	1.5	1320.1	*	2 FEB 0506	232	3.	.1	1319.6
1 FEB 0912	33	8.	.1	1319.7	*	1 FEB 1912	133	81.	1.5	1320.1	*	2 FEB 0512	233	3.	.0	1319.6
1 FEB 0918	34	9.	.2	1319.7	*	1 FEB 1918	134	81.	1.5	1320.1	*	2 FEB 0518	234	3.	.0	1319.6
1 FEB 0924	35	9.	.2	1319.7	*	1 FEB 1924	135	81.	1.5	1320.1	*	2 FEB 0524	235	3.	.0	1319.6
1 FEB 0930	36	9.	.2	1319.7	*	1 FEB 1930	136	81.	1.5	1320.1	*	2 FEB 0530	236	2.	.0	1319.6
1 FEB 0936	37	9.	.2	1319.7	*	1 FEB 1936	137	80.	1.4	1320.1	*	2 FEB 0536	237	2.	.0	1319.6
1 FEB 0942	38	10.	.2	1319.7	*	1 FEB 1942	138	80.	1.4	1320.1	*	2 FEB 0542	238	2.	.0	1319.6
1 FEB 0948	39	10.	.2	1319.7	*	1 FEB 1948	139	80.	1.4	1320.1	*	2 FEB 0548	239	2.	.0	1319.6
1 FEB 0954	40	11.	.2	1319.7	*	1 FEB 1954	140	80.	1.4	1320.1	*	2 FEB 0554	240	2.	.0	1319.6
1 FEB 1000	41	11.	.2	1319.7	*	1 FEB 2000	141	80.	1.4	1320.1	*	2 FEB 0600	241	2.	.0	1319.6
1 FEB 1006	42	12.	.2	1319.7	*	1 FEB 2006	142	80.	1.4	1320.1	*	2 FEB 0606	242	2.	.0	1319.6
1 FEB 1012	43	13.	.2	1319.7	*	1 FEB 2012	143	79.	1.4	1320.1	*	2 FEB 0612	243	2.	.0	1319.6
1 FEB 1018	44	14.	.3	1319.7	*	1 FEB 2018	144	77.	1.4	1320.1	*	2 FEB 0618	244	2.	.0	1319.6
1 FEB 1024	45	15.	.3	1319.7	*	1 FEB 2024	145	75.	1.4	1320.1	*	2 FEB 0624	245	2.	.0	1319.6
1 FEB 1030	46	17.	.3	1319.7	*	1 FEB 2030	146	74.	1.3	1320.1	*	2 FEB 0630	246	2.	.0	1319.6
1 FEB 1036	47	19.	.3	1319.7	*	1 FEB 2036	147	72.	1.3	1320.1	*	2 FEB 0636	247	2.	.0	1319.6
1 FEB 1042	48	22.	.4	1319.7	*	1 FEB 2042	148	71.	1.3	1320.1	*	2 FEB 0642	248	2.	.0	1319.6
1 FEB 1048	49	25.	.5	1319.8	*	1 FEB 2048	149	70.	1.3	1320.1	*	2 FEB 0648	249	2.	.0	1319.6
1 FEB 1054	50	29.	.5	1319.8	*	1 FEB 2054	150	69.	1.2	1320.1	*	2 FEB 0654	250	2.	.0	1319.6
1 FEB 1100	51	33.	.6	1319.8	*	1 FEB 2100	151	68.	1.2	1320.1	*	2 FEB 0700	251	2.	.0	1319.6
1 FEB 1106	52	37.	.7	1319.8	*	1 FEB 2106	152	66.	1.2	1320.0	*	2 FEB 0706	252	2.	.0	1319.6
1 FEB 1112	53	43.	.8	1319.9	*	1 FEB 2112	153	65.	1.2	1320.0	*	2 FEB 0712	253	1.	.0	1319.6
1 FEB 1118	54	51.	.9	1319.9	*	1 FEB 2118	154	64.	1.2	1320.0	*	2 FEB 0718	254	1.	.0	1319.6
1 FEB 1124	55	59.	1.1	1320.0	*	1 FEB 2124	155	63.	1.1	1320.0	*	2 FEB 0724	255	1.	.0	1319.6
1 FEB 1130	56	68.	1.2	1320.1	*	1 FEB 2130	156	62.	1.1	1320.0	*	2 FEB 0730	256	1.	.0	1319.6
1 FEB 1136	57	91.	1.6	1320.2	*	1 FEB 2136	157	62.	1.1	1320.0	*	2 FEB 0736	257	1.	.0	1319.6
1 FEB 1142	58	158.	2.8	1320.7	*	1 FEB 2142	158	61.	1.1	1320.0	*	2 FEB 0742	258	1.	.0	1319.6
1 FEB 1148	59	275.	4.9	1321.4	*	1 FEB 2148	159	60.	1.1	1320.0	*	2 FEB 0748	259	1.	.0	1319.6
1 FEB 1154	60	427.	7.5	1322.1	*	1 FEB 2154	160	59.	1.1	1320.0	*	2 FEB 0754	260	1.	.0	1319.6
1 FEB 1200	61	506.	10.6	1322.5	*	1 FEB 2200	161	59.	1.1	1320.0	*	2 FEB 0800	261	1.	.0	1319.6
1 FEB 1206	62	586.	13.9	1322.8	*	1 FEB 2206	162	58.	1.0	1320.0	*	2 FEB 0806	262	1.	.0	1319.6
1 FEB 1212	63	645.	16.2	1323.1	*	1 FEB 2212	163	58.	1.0	1320.0	*	2 FEB 0812	263	1.	.0	1319.6
1 FEB 1218	64	675.	17.5	1323.3	*	1 FEB 2218	164	57.	1.0	1320.0	*	2 FEB 0818	264	1.	.0	1319.6
1 FEB 1224	65	691.	18.1	1323.3	*	1 FEB 2224	165	57.	1.0	1320.0	*	2 FEB 0824	265	1.	.0	1319.6
1 FEB 1230	66	704.	18.6	1323.4	*	1 FEB 2230	166	57.	1.0	1320.0	*	2 FEB 0830	266	1.	.0	1319.6
1 FEB 1236	67	716.	19.1	1323.4	*	1 FEB 2236	167	56.	1.0	1320.0	*	2 FEB 0836	267	1.	.0	1319.6
1 FEB 1242	68	727.	19.6	1323.5	*	1 FEB 2242	168	56.	1.0	1320.0	*	2 FEB 0842	268	1.	.0	1319.6
1 FEB 1248	69	735.	19.9	1323.5	*	1 FEB 2248	169	56.	1.0	1320.0	*	2 FEB 0848	269	1.	.0	1319.6
1 FEB 1254	70	739.	20.1	1323.5	*	1 FEB 2254	170	55.	1.0	1320.0	*	2 FEB 0854	270	1.	.0	1319.6
1 FEB 1300	71	740.	20.1	1323.6	*	1 FEB 2300	171	55.	1.0	1320.0	*	2 FEB 0900	271	1.	.0	1319.6
1 FEB 1306	72	736.	19.9	1323.5	*	1 FEB 2306	172	55.	1.0	1320.0	*	2 FEB 0906	272	1.	.0	1319.6
1 FEB 1312	73	728.	19.6	1323.5	*	1 FEB 2312	173	55.	1.0	1320.0	*	2 FEB 0912	273	1.	.0	1319.6
1 FEB 1318	74	713.	19.0	1323.4	*	1 FEB 2318	174	55.	1.0	1320.0	*	2 FEB 0918	274	1.	.0	1319.6
1 FEB 1324	75	694.	18.2	1323.3	*	1 FEB 2324	175	54.	1.0	1320.0	*	2 FEB 0924	275	1.	.0	1319.6
1 FEB 1330	76	671.	17.3	1323.2	*	1 FEB 2330	176	54.	1.0	1320.0	*	2 FEB 0930	276	1.	.0	1319.6
1 FEB 1336	77	645.	16.2	1323.1	*	1 FEB 2336	177	54.	1.0	1320.0	*	2 FEB 0936	277	1.	.0	1319.6
1 FEB 1342	78	617.	15.1	1323.0	*	1 FEB 2342	178	54.	1.0	1320.0	*	2 FEB 0942	278	1.	.0	1319.6
1 FEB 1348	79	588.	13.9	1322.8	*	1 FEB 2348	179	54.	1.0	1320.0	*	2 FEB 0948	279	1.	.0	1319.6
1 FEB 1354	80	559.	12.8	1322.7	*	1 FEB 2354	180	54.	1.0	1320.0	*	2 FEB 0954	280	1.	.0	1319.6
1 FEB 1400	81	530.	11.6	1322.6	*	2 FEB 0000	181	54.	1.0	1320.0	*	2 FEB 1000	281	1.	.0	1319.6
1 FEB 1406	82	502.	10.5	1322.4	*	2 FEB 0006	182	53.	1.0	1320.0	*	2 FEB 1006	282	1.	.0	1319.6
1 FEB 1412	83	475.	9.3	1322.3	*	2 FEB 0012	183	51.	.9	1319.9	*	2 FEB 1012	283	1.	.0	1319.6

1	FEB	1418	84	448.	8.3	1322.2	*	2	FEB	0018	184	48.	.9	1319.9	*	2	FEB	1018	284	1.	.0	1319.6
1	FEB	1424	85	418.	7.2	1322.1	*	2	FEB	0024	185	45.	.8	1319.9	*	2	FEB	1024	285	1.	.0	1319.6
1	FEB	1430	86	378.	6.3	1321.9	*	2	FEB	0030	186	42.	.8	1319.9	*	2	FEB	1030	286	1.	.0	1319.6
1	FEB	1436	87	325.	5.7	1321.7	*	2	FEB	0036	187	39.	.7	1319.9	*	2	FEB	1036	287	1.	.0	1319.6
1	FEB	1442	88	294.	5.3	1321.6	*	2	FEB	0042	188	37.	.7	1319.8	*	2	FEB	1042	288	1.	.0	1319.6
1	FEB	1448	89	276.	5.0	1321.4	*	2	FEB	0048	189	34.	.6	1319.8	*	2	FEB	1048	289	1.	.0	1319.6
1	FEB	1454	90	261.	4.7	1321.3	*	2	FEB	0054	190	32.	.6	1319.8	*	2	FEB	1054	290	1.	.0	1319.6
1	FEB	1500	91	247.	4.4	1321.2	*	2	FEB	0100	191	30.	.5	1319.8	*	2	FEB	1100	291	1.	.0	1319.6
1	FEB	1506	92	235.	4.2	1321.2	*	2	FEB	0106	192	28.	.5	1319.8	*	2	FEB	1106	292	1.	.0	1319.6
1	FEB	1512	93	224.	4.0	1321.1	*	2	FEB	0112	193	26.	.5	1319.8	*	2	FEB	1112	293	1.	.0	1319.6
1	FEB	1518	94	214.	3.9	1321.0	*	2	FEB	0118	194	24.	.4	1319.8	*	2	FEB	1118	294	1.	.0	1319.6
1	FEB	1524	95	205.	3.7	1321.0	*	2	FEB	0124	195	22.	.4	1319.7	*	2	FEB	1124	295	1.	.0	1319.6
1	FEB	1530	96	197.	3.5	1320.9	*	2	FEB	0130	196	20.	.4	1319.7	*	2	FEB	1130	296	1.	.0	1319.6
1	FEB	1536	97	190.	3.4	1320.9	*	2	FEB	0136	197	18.	.3	1319.7	*	2	FEB	1136	297	1.	.0	1319.6
1	FEB	1542	98	184.	3.3	1320.8	*	2	FEB	0142	198	17.	.3	1319.7	*	2	FEB	1142	298	1.	.0	1319.6
1	FEB	1548	99	178.	3.2	1320.8	*	2	FEB	0148	199	15.	.3	1319.7	*	2	FEB	1148	299	1.	.0	1319.6
1	FEB	1554	100	173.	3.1	1320.8	*	2	FEB	0154	200	14.	.3	1319.7	*	2	FEB	1154	300	1.	.0	1319.6

****

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	29.90-HR
+ (CFS)	(HR)					
		(CFS)				
+ 740.	7.00		375.	119.	96.	96.
		(INCHES)	3.943	5.017	5.027	5.027
		(AC-FT)	186.	237.	237.	237.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	29.90-HR
+ (AC-FT)	(HR)				
20.	7.00	9.	3.	2.	2.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	29.90-HR
+ (FEET)	(HR)				
1323.55	7.00	1321.77	1320.31	1320.17	1320.17

CUMULATIVE AREA = .88 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 FLOWS RATIO 1
					1.00
HYDROGRAPH AT					
+	FL1	.12	1	FLOW	238.
				TIME	6.40
			2	FLOW	238.
				TIME	6.40
			3	FLOW	238.
				TIME	6.40
			4	FLOW	238.
				TIME	6.40
ROUTED TO					
+	FLPND1	.12	1	FLOW	198.
				TIME	6.60
			2	FLOW	198.
				TIME	6.60
			3	FLOW	198.
				TIME	6.60
			4	FLOW	198.
				TIME	6.60
			** PEAK STAGES IN FEET **		
			1	STAGE	1330.82
				TIME	6.60
			2	STAGE	1330.82
				TIME	6.60
			3	STAGE	1330.82
				TIME	6.60
			4	STAGE	1330.82
				TIME	6.60
HYDROGRAPH AT					
+	FL2	.09	1	FLOW	277.
				TIME	6.10
			2	FLOW	277.
				TIME	6.10
			3	FLOW	277.
				TIME	6.10
			4	FLOW	277.
				TIME	6.10
2 COMBINED AT					
+	FL12	.21	1	FLOW	345.
				TIME	6.10
			2	FLOW	345.
				TIME	6.10
			3	FLOW	345.
				TIME	6.10
			4	FLOW	345.
				TIME	6.10
ROUTED TO					
+	FLPND2	.21	1	FLOW	192.
				TIME	7.00
			2	FLOW	192.
				TIME	7.00
			3	FLOW	192.
				TIME	7.00
			4	FLOW	192.
				TIME	7.00
			** PEAK STAGES IN FEET **		
			1	STAGE	1327.62
				TIME	7.00
			2	STAGE	1327.62
				TIME	7.00
			3	STAGE	1327.62
				TIME	7.00
			4	STAGE	1327.62
				TIME	7.00

HYDROGRAPH AT					
+	FL3	.09	1	FLOW	238.
				TIME	6.10
			2	FLOW	238.
				TIME	6.10
			3	FLOW	238.
				TIME	6.10
			4	FLOW	238.
				TIME	6.10
2 COMBINED AT					
+	FL123	.30	1	FLOW	327.
				TIME	6.20
			2	FLOW	327.
				TIME	6.20
			3	FLOW	327.
				TIME	6.20
			4	FLOW	327.
				TIME	6.20
HYDROGRAPH AT					
+	WRR7$8	.11	1	FLOW	290.
				TIME	6.00
			2	FLOW	290.
				TIME	6.00
			3	FLOW	290.
				TIME	6.00
			4	FLOW	290.
				TIME	6.00
HYDROGRAPH AT					
+	WFORLKS	.38	1	FLOW	444.
				TIME	6.90
			2	FLOW	444.
				TIME	6.90
			3	FLOW	444.
				TIME	6.90
			4	FLOW	444.
				TIME	6.90
2 COMBINED AT					
+	WTTIME	.49	1	FLOW	486.
				TIME	6.80
			2	FLOW	486.
				TIME	6.80
			3	FLOW	486.
				TIME	6.80
			4	FLOW	486.
				TIME	6.80
HYDROGRAPH AT					
+	RR7$8	.08	1	FLOW	207.
				TIME	6.00
			2	FLOW	207.
				TIME	6.00
			3	FLOW	207.
				TIME	6.00
			4	FLOW	207.
				TIME	6.00
2 COMBINED AT					
+	DITCH	.57	1	FLOW	608.
				TIME	6.10
			2	FLOW	608.
				TIME	6.10
			3	FLOW	608.
				TIME	6.10
			4	FLOW	608.
				TIME	6.10
HYDROGRAPH AT					
+	WW	.01	1	FLOW	39.
				TIME	6.00
			2	FLOW	39.
				TIME	6.00
			3	FLOW	39.
				TIME	6.00
			4	FLOW	39.
				TIME	6.00

```
  3 COMBINED AT
+                INPND4       .88     1   FLOW         958.
                                          TIME         6.10
                                      2   FLOW         958.
                                          TIME         6.10
                                      3   FLOW         958.
                                          TIME         6.10
                                      4   FLOW         958.
                                          TIME         6.10

 ROUTED TO
+                POND4        .88     1   FLOW         756.
                                          TIME         6.90
                                      2   FLOW         584.
                                          TIME         7.40
                                      3   FLOW         683.
                                          TIME         7.20
                                      4   FLOW         740.
                                          TIME         7.00

                                     ** PEAK STAGES IN FEET **
                                      1   STAGE     1327.27
                                          TIME         6.90
                                      2   STAGE     1326.28
                                          TIME         7.40
                                      3   STAGE     1324.56
                                          TIME         7.20
                                      4   STAGE     1323.55
                                          TIME         7.00


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

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WICHITA, KANSAS
ZIP CODE / 67211

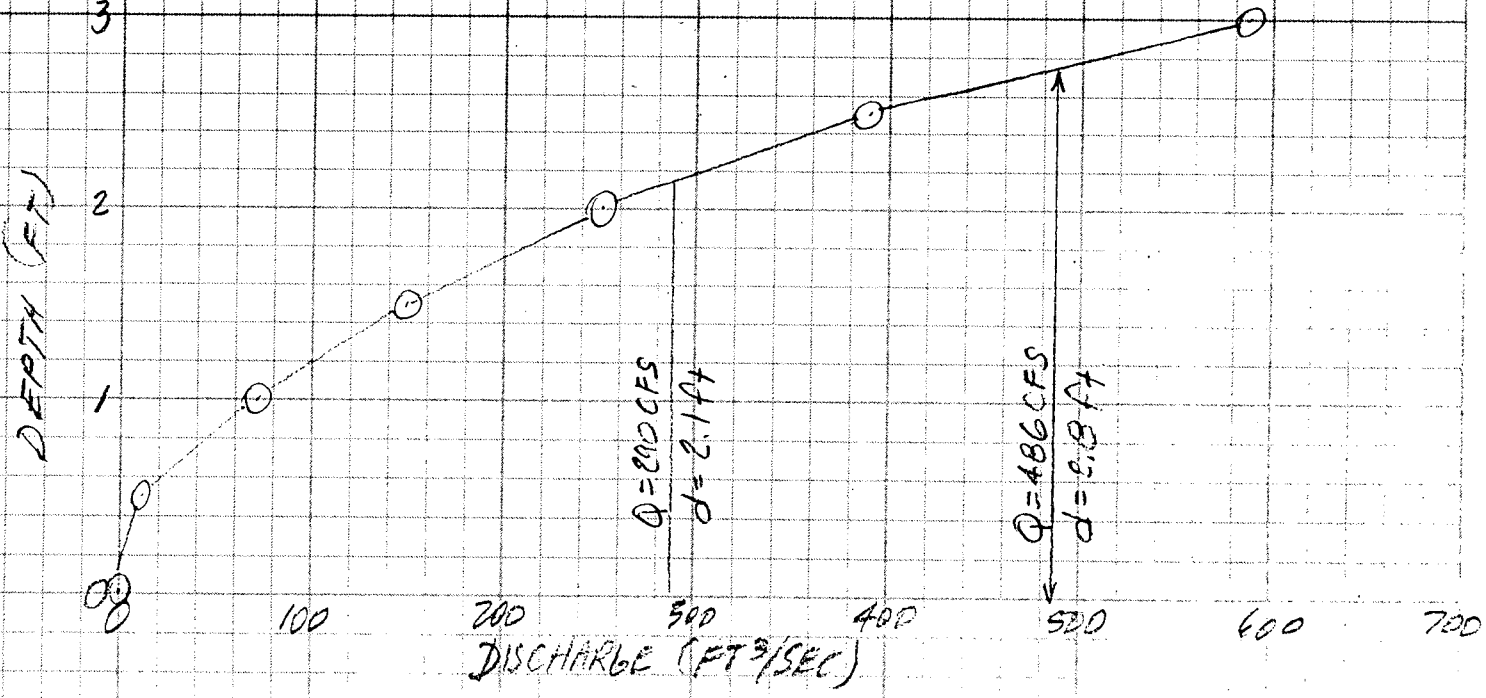
Date 2/8/93 MB Page ____ of ____

Project FOREST LAKES

Item 29TH ST DITCH CAPACITY

SLOPE = 1%
B = 10' Z = 4:1 RETARDANCE CLASS E

FLOW DEPTH	AREA	HYD. R.	VEL.	DISCHARGE
0.5	6	0.4	2.0	12
1.0	15	0.8	4.7	71
1.5	24	1.1	6.2	149
2.0	36	1.35	7.0	252
2.5	50	1.65	7.8	390
3.0	66	1.9	8.4	587
3.5	84	2.15	9.1	764
4.0	110	2.45		
4.5	125	2.7		
5.0	150	2.92		



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WICHITA, KANSAS
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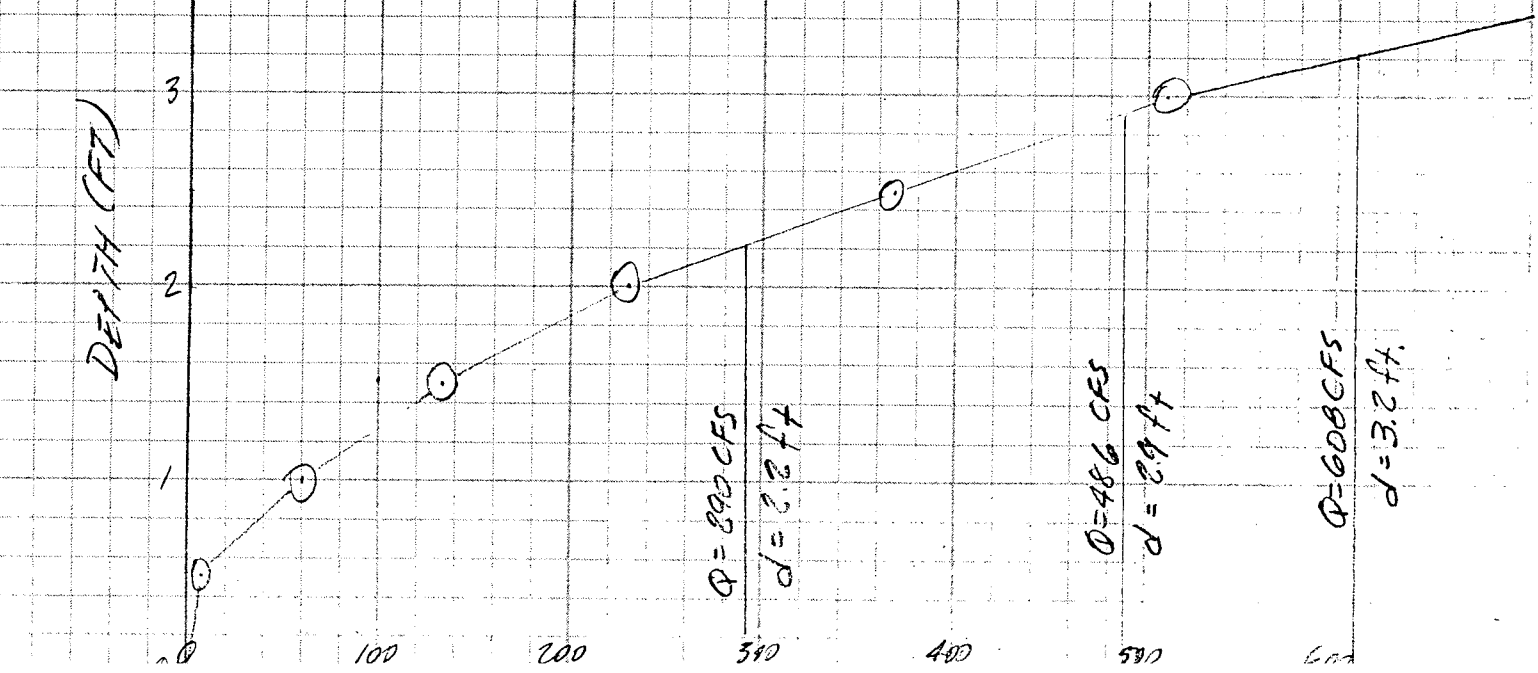
Date 2/8/93 MWB Page ____ of ____

Project FOREST LAKES

Item 29TH ST DITCH CAPACITY

SLOPE = 0.8%
B = 10' Z = 4:1 RETARDANCE CLASS E

FLOW DEPTH ft	AREA ft²	HYDR. RAD ft	VEL. ft/sec	Q ft³/sec
0.5	6	0.4	1.8	11
1.0	15	0.8	4.0	60
1.5	24	1.1	5.6	134
2.0	36	1.35	6.4	230
2.5	50	1.65	7.4	370
3.0	66	1.9	7.7	508
3.5	84	2.15	8.6	722
4.0	110	2.45	9.2	



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Date 10/24/92 MMB Page ____ of ____

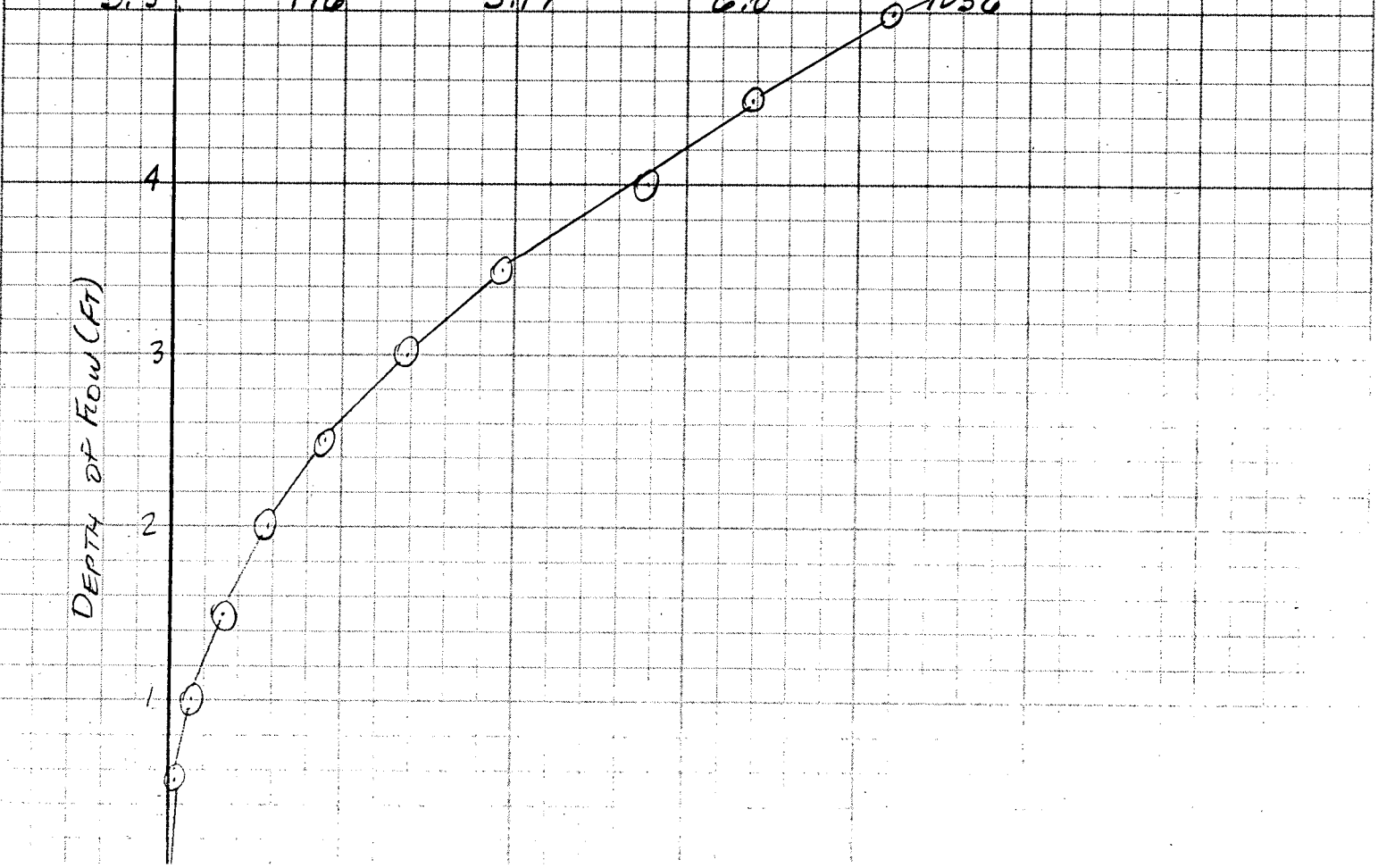
Project FOREST LAKES

Item DITCH CAPACITY

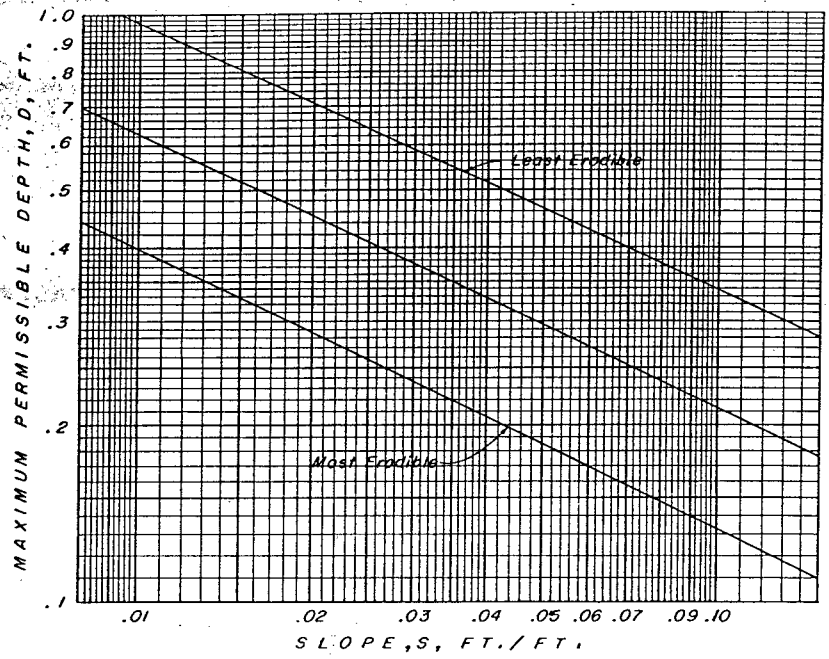
SLOPE = 0.2%

B = 10' Z = 4:1 RETARDANCE CLASS E

FLOW DEPTH ft	AREA ft²	HYDRAULIC RADIUS ft	VELOCITY ft/sec	DISCHARGE ft³/sec
0.5	6	0.4	0.58	3.5
1.0	15	0.8	1.7	25.5
1.5	29	1.1	2.4	57.6
2.0	36	1.35	3.2	115.2
2.5	50	1.65	3.7	185.0
3.0	66	1.9	4.2	277
3.5	84	2.15	4.6	386
4.0	110	2.45	5.0	550
4.5	125	2.7	5.4	675
5.0	150	2.92	5.6	840
5.5	176	3.17	6.0	1056



RETARDANCE CLASS E



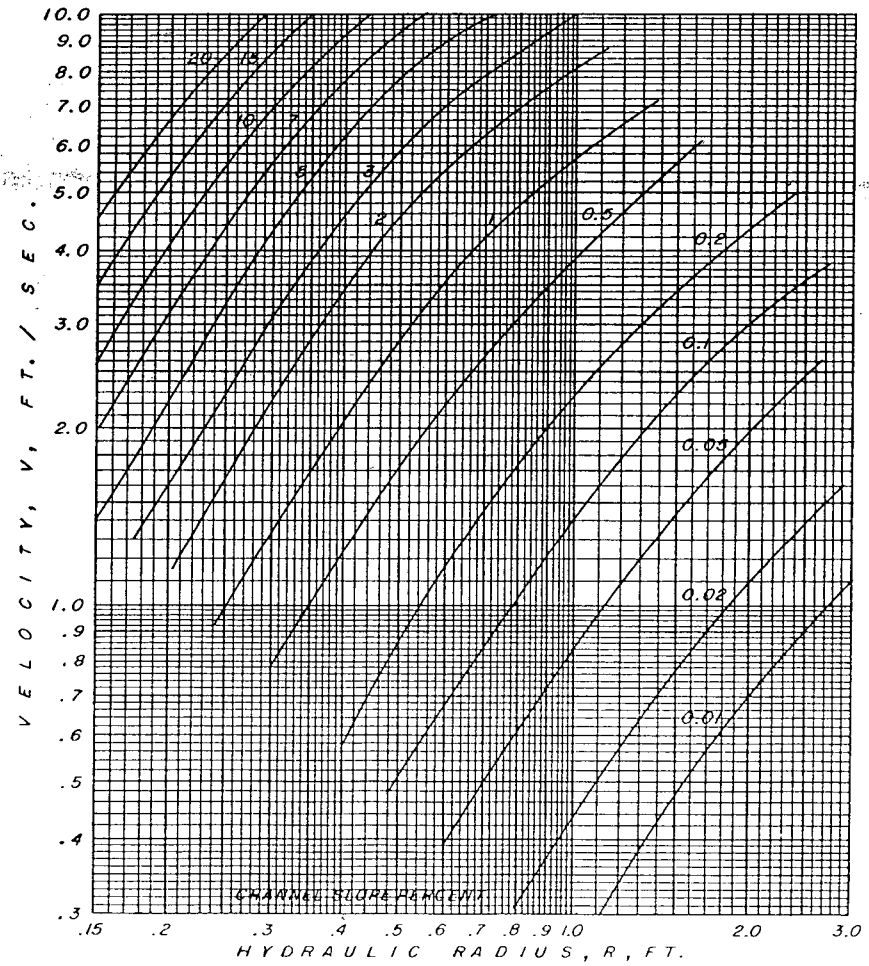


Figure 3D-4-1-1-E

HYDRAULIC PROPERTIES OF TRAPEZOIDAL CHANNELS (AREA OF FLOW)

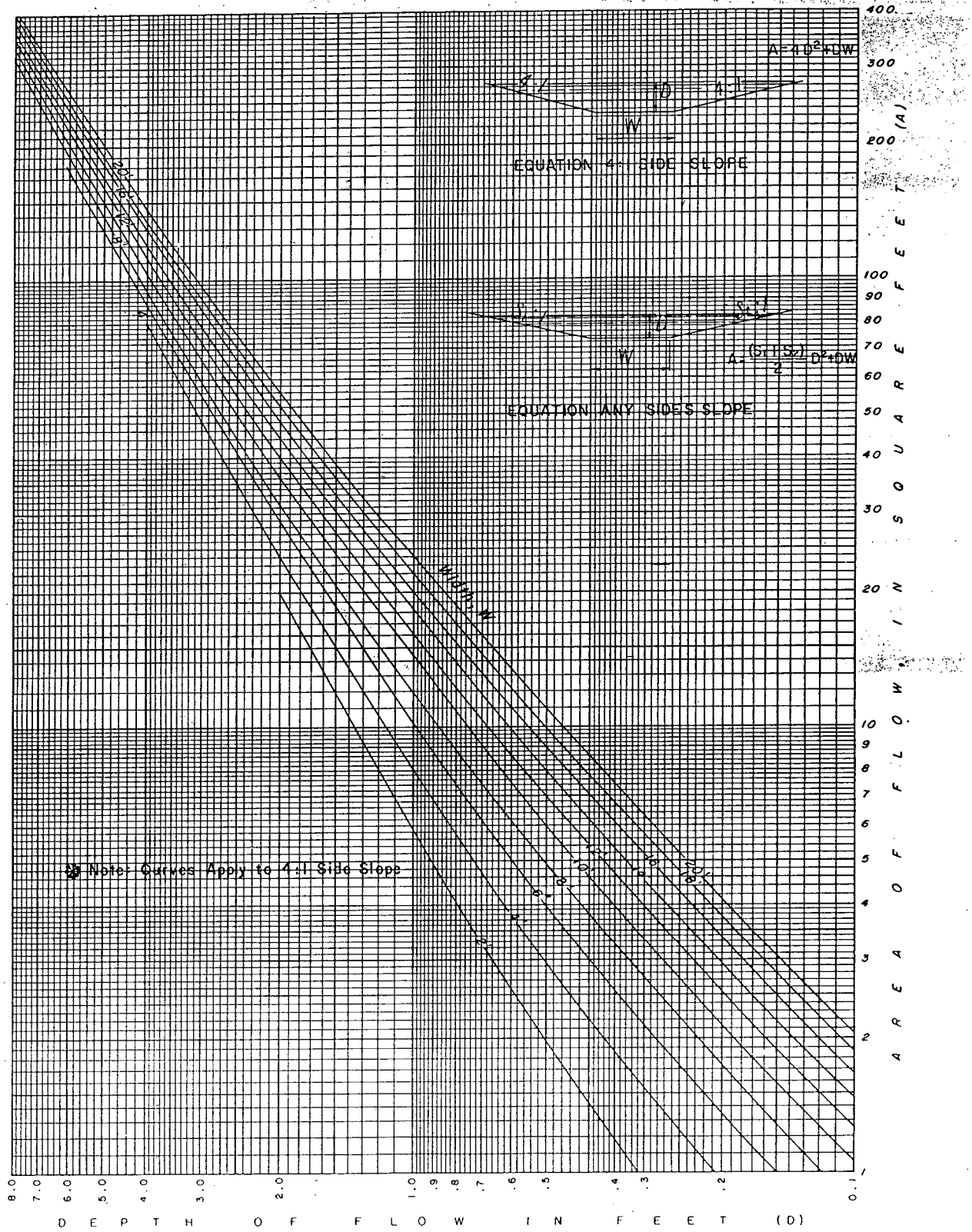


Figure 3D-4-1-1-3-A

HYDRAULIC PROPERTIES OF TRAPEZOIDAL CHANNELS (HYDRAULIC RADIUS)

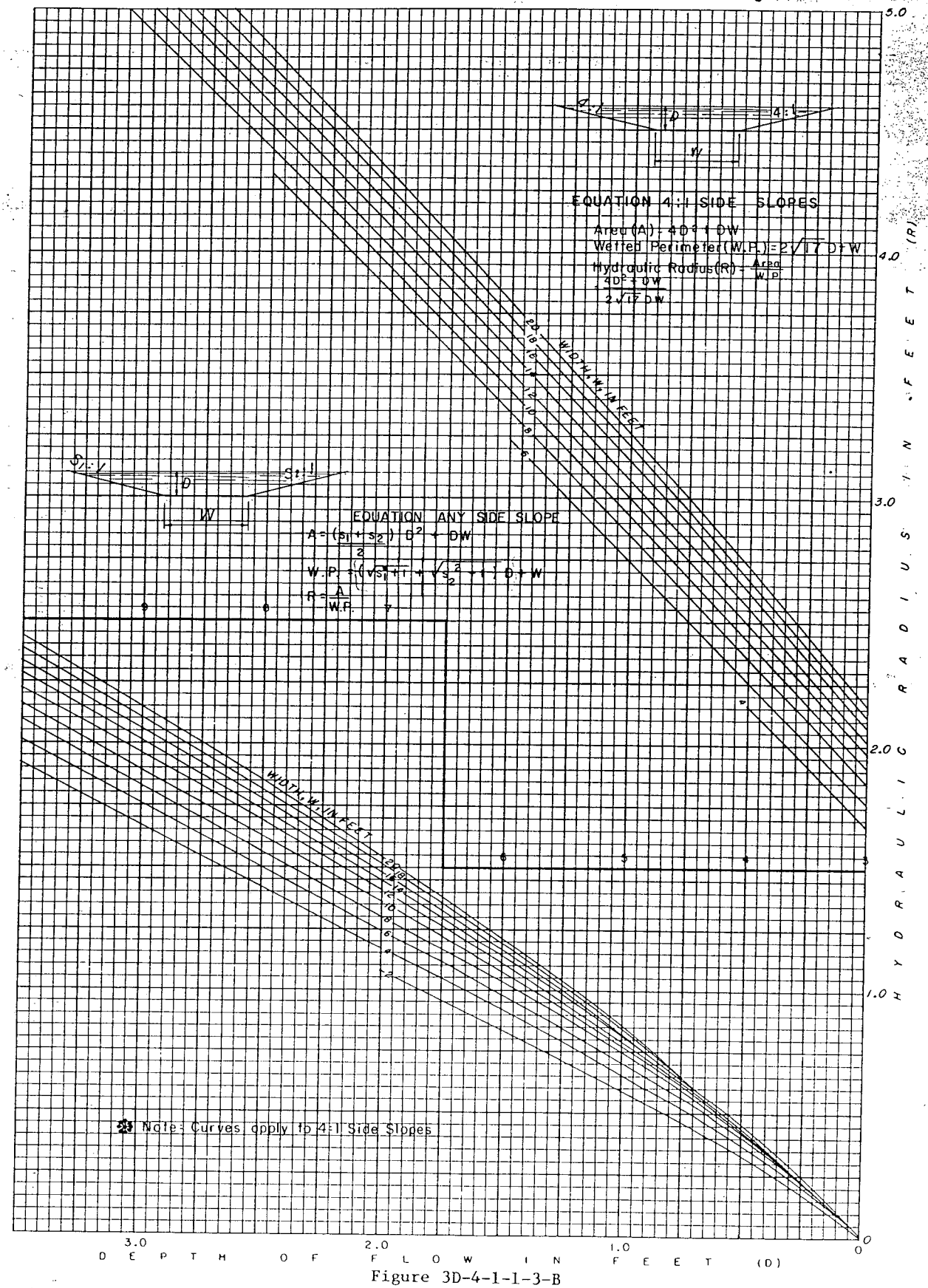


Figure 3D-4-1-1-3-B

NW CORNER
NW 1/4-4-27-1W

29TH

NE COR.
NW 1/4 4-27-1W

10 AC ±

1"=100'

TYLER

ASSUMED
DA BOUNDARY (TYP.)

EXISTING SHELTER BELT

TO STERLING FALLS
40 AC.

MWB
2/8/93

NW¼ SEC 4
T27S R11W

SUPPLEMENTAL DRAINAGE
REPORT
FOREST LAKES/R, R, 6TH, 7TH 19th

FOREST LAKES

ADDITION TO SEDGWICK COUNTY, KANSAS

SOIL BORING TABLE

Soil Boring No.	Water Surface Elev. Oct. 1992
B-1	1321.7
B-2	1322.5
B-3	1322.7
B-4	1323.5
B-5	1323.2
B-6	1321.9
B-7	1322.5
B-8	1323.2
B-9	1323.8
B-10	1327.2

MINIMUM PAD ELEVATIONS

Block 4 Lots 47 to 60	1332.0
Block 3 Lots 15 to 53	1329.0
Block 3 Lots 1 to 14	1327.0
Block 3 Lots 54 to 74	1327.0

SCALE: 1" = 1100'

LEGEND

- Drainage Basin Boundary
- Drainage Sub-Basin Boundary
- 0.4% Drainage Direction - Minor Storm & St. Grade
- Drainage Direction - Major Storm
- Proposed SWS & Inlet
- V.G. Proposed Valley Gutter
- (111) Storm Water Sewer Node Designation
- (A) Drainage Basin Designation
- SCS Hydrologic Soil Group
- 1321.5 Top of Curb Elevation
- B-6 Soil Boring Location

N80°31'45"E 1004.15'

RESERVE "E"

POND #1
Static Pool = 1328.0
DWS100 = 1330.8

POND #2
Static Pool = 1325.0
DWS100 = 1327.6

POND #3
Static Pool = 1322.0
DWS100 = 1324.9

RESERVE "D"

RESERVE "C"

D SOIL

C SOIL

B SOIL

B SOIL

C SOIL

N0°14'20"W 2087.01'

S80°28'16"W 887.65'

N0°14'20"W 545.00'

S89°28'16"W 1320.00'

S89°28'16"W

CENTER OF SEC 33, T26S, R1W

S 1/4 CORNER SEC. 33, T26S, R1W

NW 1/4 Sec. 4
DA = 70 Ac.
Q100 = 290 cfs
Tp = 6.0 HR

SW 1/4 Sec. 33
DA = 240 Ac.
Q100 = 462 cfs
Tp = 6.9 HR

Future RCBB By Others

Q100 = 486 cfs Tp = 6.8 HR
10' Ditch; Class E Reinforcing; S = 1.0%; d = 2.6'

3-7'x4' RCBB
H In = 1324.0
H Out = 1322.8
HW = 1328.11

7th/8th Additions
DA = 50 Ac.
Q100 = 207 cfs
Tp = 6.0 HR

Construct Berm to Elev. 1327.0

Q100 = 608 cfs Tp = 6.1 HR
10' Ditch; Class E Reinforcing, S = 0.8% d = 3.2'

Construct Berm to Elev. From Lot =

Minimum Pad = 1326.0
Reflection Pool = 1326.0

Existing 3-8'x4' RCBB
H In = 1320.6, H Out = 1320.5
HW = 1326.92

Existing 10'x8' RCB
Ultimate 5-8'x4' RCB
Ex. H In = 1319.64
Ultimate H In = 1320.64
HW = 1325.56

SE RCB SE 1/4 SEC 33, T26S, R1W

Future RCB

TEE TIME

WILD ROSE COURT

SHADY CREEK LANE

FOREST LAKES COURT

29TH STREET NORTH

TOPOGRAPHIC MAP OF LANDS LOCATED AT
SE. QUARTER SECTION 33, 26 S. / 1 W.
SEDGWICK COUNTY, KANSAS

SURVEYING & ENGINEERING
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
303 S. TOPEKA ST., WICHITA, KS 67202

0 100 200 300
1" 1200 100' 1

No.	Revision	By	Date
1	Supplemental Drainage Study	VAS	12-17-93

DRAINAGE PLAN
FOREST LAKES

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

Designed by MMP
Drawn by
Job No.
Date 12-17-93
Sht. of

RICHARD K. BERRY LICENSED 1089 KANSAS PROFESSIONAL ENGINEER