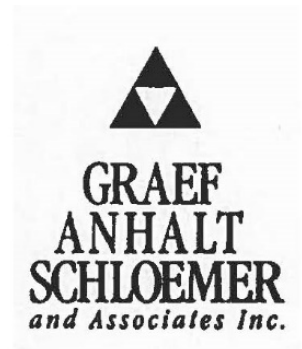


HOGBACK DETENTION
MASTER PLAN
FOR
CANON CITY, COLORADO

PREPARED BY:
GRAEF ANHALT SCHLOEMER
& ASSOCIATES, INC.
102 EAST PIKES PEAK AVENUE
SUITE 305
COLORADO SPRINGS, CO 80903

February, 1995
Job No. 94121502



ENGINEERS & SCIENTISTS

HOGBACK DETENTION MASTER PLAN

LOCATION

The Hogback Detention Master Plan encompasses the western portion of Canon City. The Hogback area is a geologic formation which can be found along the front range of Colorado. The Hogback's are a line of small hills which form a ridge with periodic openings. This ridge line occurs just east of a major ridge which comprises the Skyline Drive roadway. The Master Plan study area begins at Harding Avenue and continues south to Cooper Avenue along the Hogback formation.

BASIN DESCRIPTION

The Hogback topography is very steep with exposed rock and little vegetation. The slopes vary from nearly vertical slopes adjacent to Skyline Drive to approximate 5% slopes near the openings. There are nine (9) opening in the Hogback's within the study area. Most of these openings permit a direct flow through of runoff with only a few restricted openings comprised of small sumps constructed prior to the openings. These openings have been divided into drainage basins beginning at the northern most opening and continuing southward.

FLOW DETERMINATION

The hydrologic model used to determine peak flows and volumes throughout the Hogback Study area was the TR-20 Computer Program for Project Formulation Hydrology developed by the Soil Conservation Service.

The attached table is a summary of time of concentration calculations and the resultant 100-Yr flow for each basin.

HOGBACK DETENTION MASTER PLAN
TIME OF CONCENTRATION AND CN CALCULATIONS
EXISTING CONDITIONS

HOGBACK AREA DESIG.	C10 (10 yr)	L(ft)	Initial Tci Slope (%)	ti (min)	L(ft)	Travel Time Slope (%)	V (fps)	Tt (min)	TC (min)	TC (hr)	EXIST CN	BASIN AREA (ACRE)	BASIN AREA (SM)	EXIST. 100-YR FLOW(CFS)
1	0.60	570	1.33	20.32	3300	1.33	7.50	18.30	18.30	0.305	84	34.5	0.0539	66
2	0.60	570	52.63	6.04	630	8.89	4.50	2.33	8.37	0.139	84	14.7	0.0230	42
3	0.60	500	58.80	5.45	860	9.30	4.60	3.12	8.57	0.143	84	21.3	0.0333	60
4	0.60	400	66.00	5.00	900	11.11	5.20	2.88	7.88	0.131	84	21.0	0.0328	60
5	0.60	500	66.00	5.25	600	11.67	5.20	1.92	7.17	0.119	84	17.3	0.0270	49
6	0.60	100	24.00	5.00	80	17.50	6.40	0.21	5.21	0.087	84	0.4	0.0006	2.6
7	0.60	50	24.00	5.00	500	13.00	5.50	1.52	6.52	0.109	84	2.7	0.0042	8
8	0.60	250	74.00	5.00	1130	6.02	3.70	5.09	10.09	0.168	84	14.8	0.0231	48
9	0.60	50	20.00	2.46	1000	26.50	7.50	2.22	4.68	0.078	84	7.7	0.0120	22

EXISTING FLOW CONDITIONS

As was previously stated most of the existing Hogback drainage basins have unrestricted outlets. These outlets vary from roadside ditches to overland swales with no defined connection to a drainage system. This type of ill defined outlet combined with the debris flow caused by the fast flowing stormwater over nearly barren ground have caused some flooding and constant maintenance problems for the City.

Even in basins where flows outlet directly into roadside ditches the velocities generated by the steep terrain and bare ground have caused ditch erosion and costly road repairs. Another problem with these unrestricted outlets is that currently no drainage easement exists across private property to permit the City to make necessary repairs or perform routine maintenance.

PROPOSED DETENTION IMPROVEMENTS

In order to alleviate some of the downstream drainage problems it was determined that the placement of several detention basins along the Hogback's could reduce flows thereby reducing the subsequent velocities which contribute to erosion. A total of seven (7) small detention basins are proposed. These range in size from 0.4 Ac. Ft. to 2.0 Ac. Ft. Of the two (2) remaining drainage basins, Drainage Basin No. 6 is only 0.4 Ac. and does not produce a large enough runoff to cause a problem and Drainage Basin No. 7 is proposed to flow into Drainage Basin No. 8.

The detention basin designs were determined using existing topographic features with desiltation basins and simple outlet designs. The height of the embankment was determined by the depth of ponding water plus three (3) Ft. of freeboard. A riprap lined emergency spillway was placed at an elevation matching the top of ponding water depth and extending to the top of the embankment. The detention basins were sized to restrict flows by approximately 50%. A chart is included to detail each detention basin requirement.

HOGBACK DETENTION MASTER PLAN
DETENTION BASIN SIZES & FLOWS

HOGBACK AREA DESIG.	DETENTION BASIN SIZE(AC.FT.)	PONDING DEPTH (FT)	PIPE SIZE (IN)	DITCH OUTLET LENGTH (FT)	UNDETAINED/DETAINED FLOW			HOGBACK AREA DESIG.
					100YR(cfs)	50YR(cfs)	25YR(cfs)	
1	2.0	5.2	24	600	66/35	56/25	48/22	1
2	0.7	3.8	24	1100	42/22	35/20	30/17	2
3	1.0	5.2	24	650	60/35	50/26	42/22	3
4	1.0	5.2	24	----	60/35	50/26	42/22	4
5	0.8	4.5	24	250	49/25	41/22	35/19	5
6	----	----	----	----	2.6/2.6	2.4/2.4	2.2/2.2	6
7	----	----	30	----	8/8	6/6	5/5	7
8	0.8	4.5	24	600	48/25	41/22	34/19	8
9	0.4	3.3	18	250	22/12	18/10	15/9	9

The following is a summary of recommendations for each drainage basin.

Drainage Basin No. 1 - \$24,000

- Construct a 2.0 Ac. Ft. detention basin with a 24" CMP outlet.
- Provide a 600 Ft. improved ditch from the detention basin to 5th Street near Harding Avenue.
- Provide a minimum 25 Ft. drainage easement along the ditch route to provide maintenance access.

Drainage Basin No. 2 - \$16,500

- Construct a 0.7 Ac. Ft. detention basin with a 24" CMP outlet.
- Provide a 1100 Ft. improved ditch from the detention basin to the outlet from Detention Basin No. 3.
- Provide a minimum 25 Ft. drainage easement along the ditch route to provide maintenance access.

Drainage Basin No. 3 - \$17,000

- Construct a 1.0 Ac. Ft. detention basin with a 24" CMP outlet.
- Provide a 650 Ft. improved ditch from the detention basin to the ditch from Basin No. 2 and continuing to Fairview Avenue.
- Provide a minimum 25 Ft. drainage easement along the ditch route to provide maintenance access.

Drainage Basin No. 4 - \$11,600

- Construct a 1.0 Ac. Ft. detention basin with a 24" CMP outlet.
- Provide an outlet to roadside ditch on Allison Avenue.
- Provide a minimum 25 Ft. drainage easement along the ditch route to provide maintenance access.

Drainage Basin No. 5 - \$16,000

- Construct an 0.8 Ac. Ft. detention basin with a 24" CMP outlet.
- Provide a 250 Ft. improved ditch from the detention basin to Burrage Avenue.
- Provide a minimum 25 Ft. drainage easement along the ditch route to provide maintenance access.

Drainage Basin No. 6 - \$ 0

- No improvements required.

Drainage Basin No. 7 - See No. 8

- Construct a sump on the north side of Skyline Drive and place a 30" CMP under Skyline Drive to transport stormflows into Drainage Basin No. 8.

Drainage Basin No. 8 - \$19,000

- Construct a 0.8 Ac. Ft. detention basin with a 24" CMP outlet.
- Provide a 600 Ft. improved ditch from the detention basin outlet to the outlet form Drainage Basin No. 9.
- Provide a minimum 25 Ft. drainage easement along the ditch route to provide maintenance access.

Drainage Basin No. 9 - \$10,500

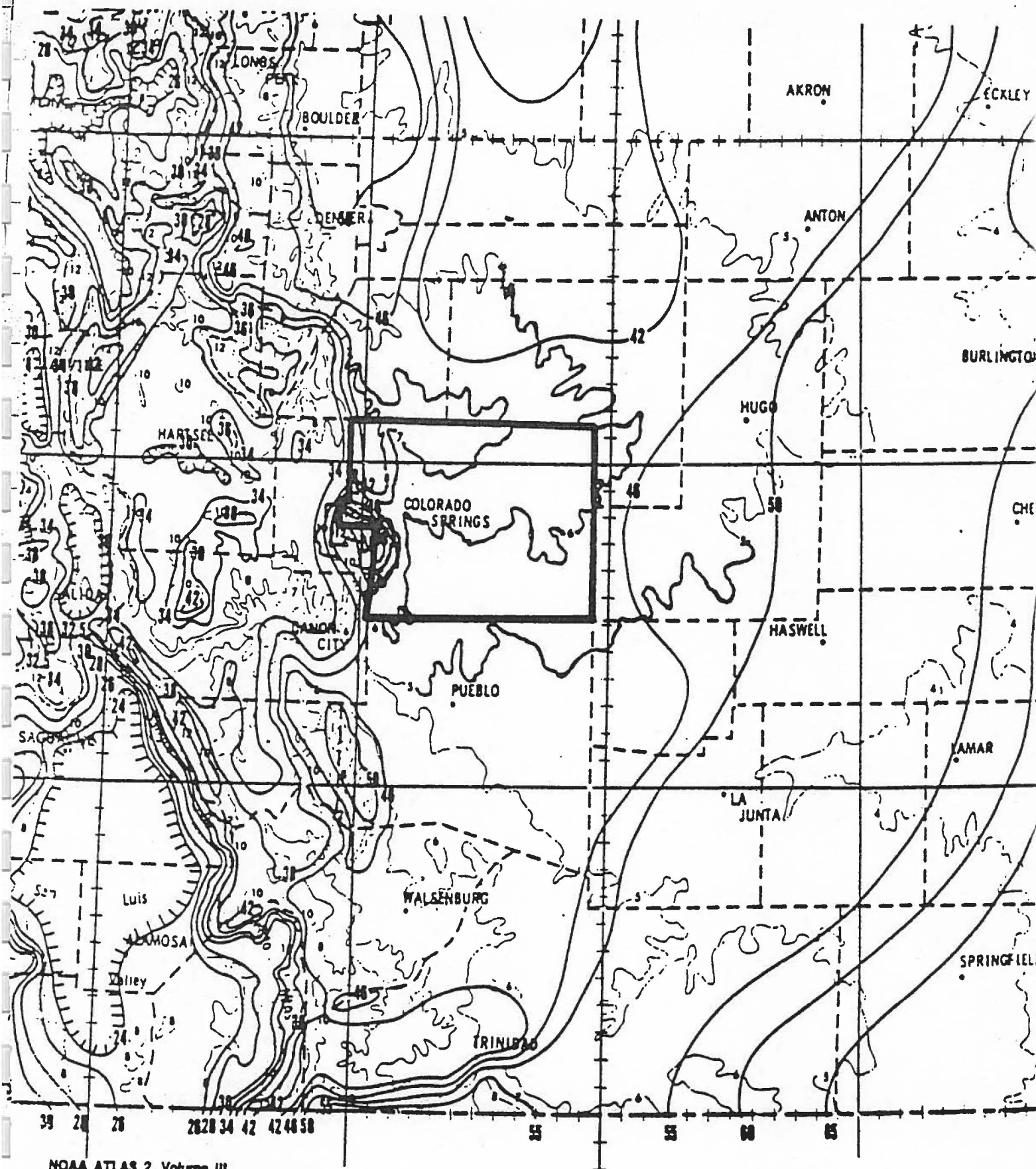
- Utilize the existing sump area to construct a 0.4 Ac. Ft. detention basin with an 18" CMP outlet.
- Provide a 250 Ft. improved ditch from the detention basin outlet to the ditch from Detention Basin No. 8 and continuing to Cooper Street.
- Provide a minimum 25 Ft. drainage easement along the ditch route to provide maintenance access.

APPENDIX A

DESIGN CHARTS



**GRAEF
ANHALT
SCHLOEMER**
and Associates Inc.

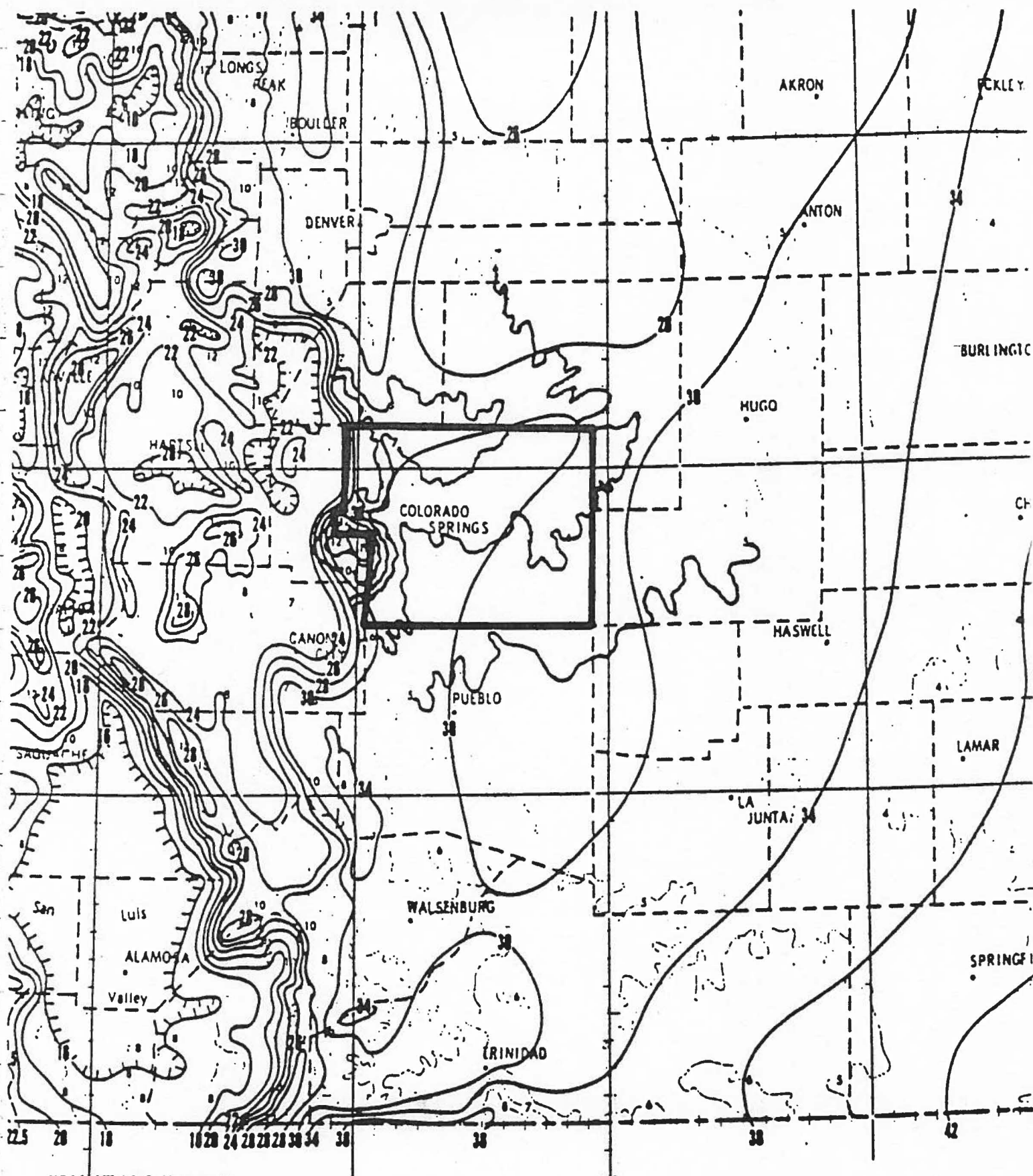


NOAA ATLAS 2, Volume III

Prepared by U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service, Office of Hydrology

Prepared for U.S. Department of Agriculture,
Soil Conservation Service, Engineering Division

**ISOPLUVIALS OF 100-YR 24-HR PRECIPITATION
IN TENTHS OF AN INCH**

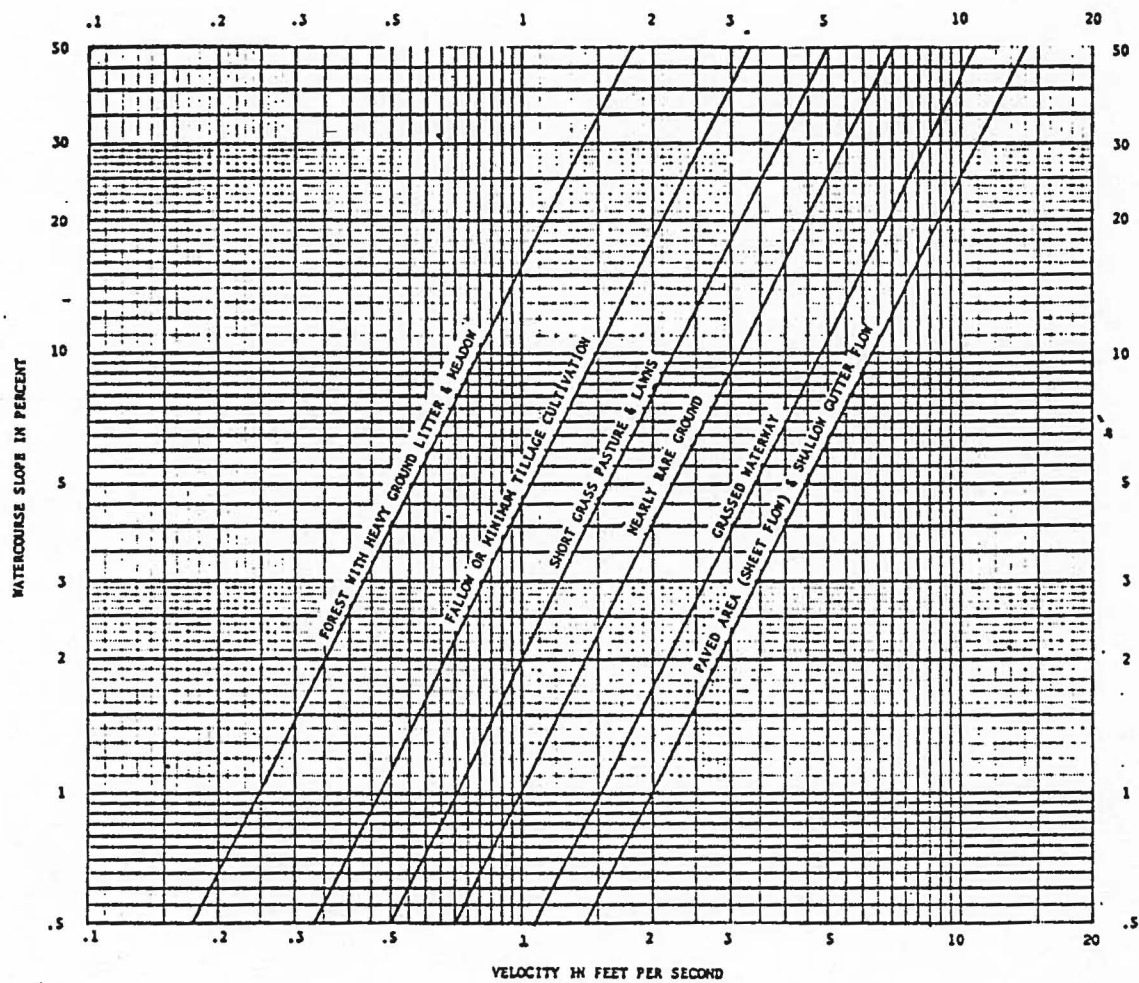


NOAA ATLAS 2, Volume III

Prepared by U.S. Department of Commerce
National Oceanic and Atmospheric Administration
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Prepared for U.S. Department of Agriculture,
Soil Conservation Service, Engineering Division

**ISOPLUVIALS OF 10-YR 24-HR PRECIPITATION
IN TENTHS OF AN INCH**



--Average velocities for estimating travel time for overland flow.

FIGURE 4

TABLE 5-5
 RUNOFF CURVE NUMBERS
 FOR HYDROLOGIC SOIL-COVER COMPLEXES
 URBAN AND SUBURBAN CONDITIONS ^{1/}
 (For Antecedent Moisture Condition II)
 (From: U.S. Department of Agriculture,
 Soil Conservation Service, 1977)

NOTE: THIS TABLE TO
 BE USED FOR 24-HOUR
 STORM ONLY.

<u>Land Use</u>	<u>Hydrologic Soil Group</u>			
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
Open spaces, lawns, parks, golf courses, cemeteries, etc.				
Good condition: grass cover on 75% or more of the area	39*	61	74	80
Fair condition: grass cover on 50% to 75% of the area	49*	69	79	84
Commercial and business areas (85% impervious)	89*	92	94	95
Industrial districts 72% impervious)	81*	88	91	93
Residential: ^{2/}				
<u>Acres per Dwelling Unit</u>	<u>Average % impervious^{3/}</u>			
1/8 acre or less	65	77*	85	90
1/4 acre	38	61*	75	83
1/3 acre	30	57*	72	81
1/2 acre	25	54*	70	80
1 acre	20	51*	68	79
Paved parking lots, roofs, driveways, etc.	98	98	98	98
Streets and roads:				
paved with curbs and storm sewers	98	98	98	98
gravel	76*	85	89	91
dirt	72*	82	87	89

^{1/} For a more detailed description of agricultural land use curve numbers, refer to in the National Engineering Handbook (U.S. Dept. of Agriculture, Soil Conservation Service, 1972).

^{2/} Curve numbers are computed assuming the runoff from the house and driveway is directed towards the street with a minimum of roof water directed to lawns where additional infiltration could occur.

^{3/} The remaining pervious areas (lawn) are considered to be in good pasture condition for these curve numbers.

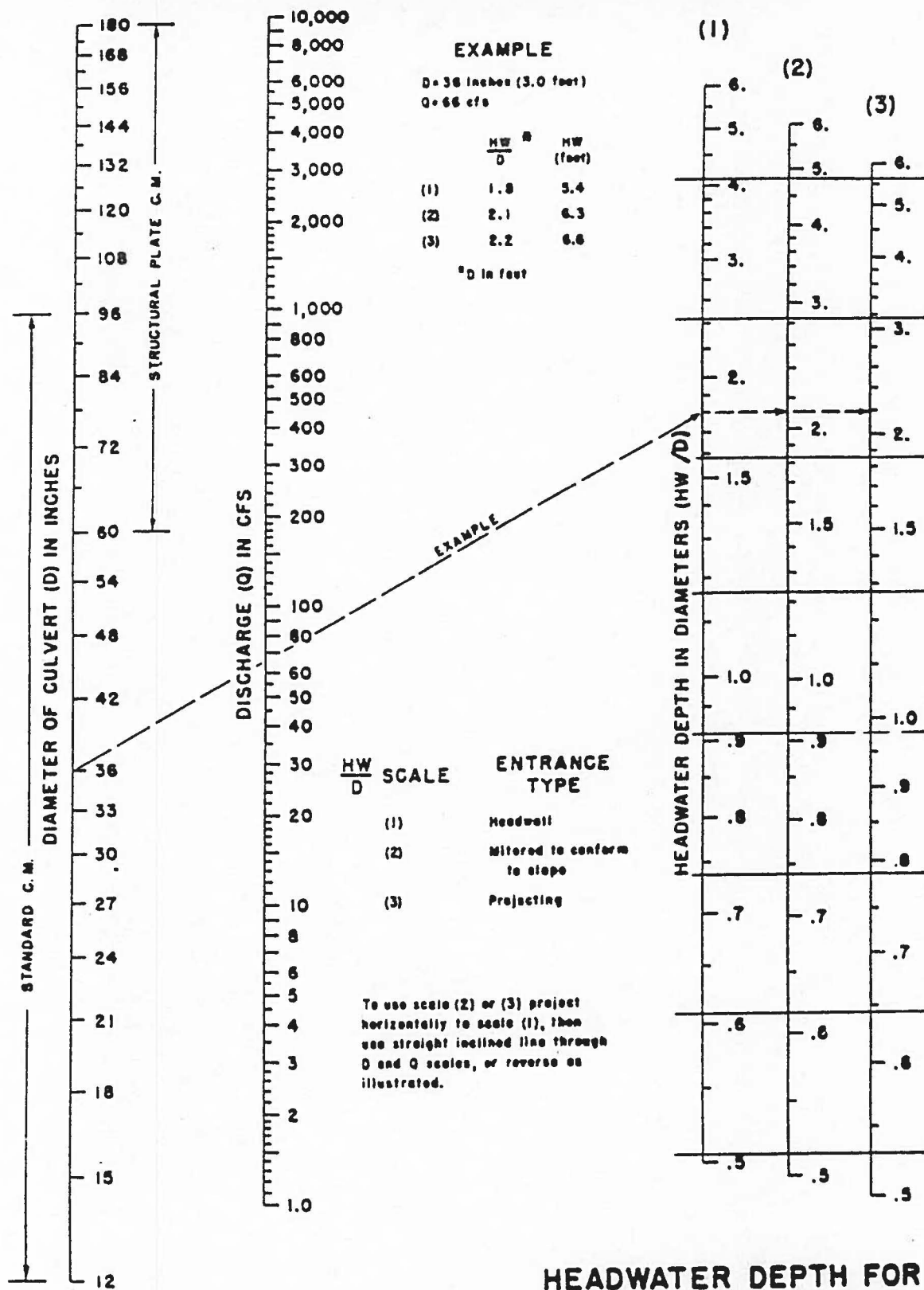
* Not to be used wherever overlot grading or filling is to occur.

TABLE 5-4
 RUNOFF CURVE NUMBERS FOR HYDROLOGIC
 SOIL-COVER COMPLEXES--RURAL CONDITIONS
 (Antecedent Moisture Condition II, and $I_a = 0.2 S$)
 (From: U.S. Dept. of Agriculture,
 Soil Conservation Service, 1977)

NOTE: THIS TABLE TO
 BE USED FOR 24-HOUR
 STORM ONLY.

Land Use	Cover Treatment or Practice	Hydrologic Condition	Runoff curve number by Hydrologic soil group			
			A	B	C	D
Fallow	Straight Row	----	77	86	91	94
Row crops	Straight Row	Poor	72	81	88	91
	Straight Row	Good	67	78	85	89
	Contoured	Poor	70	79	84	88
	Contoured	Good	65	75	82	86
	Cont. and terraced	Poor	66	74	80	82
	Cont. and terraced	Good	62	71	78	81
Small grain	Straight Row	Poor	65	76	84	88
		Good	63	75	83	87
	Contoured	Poor	63	74	82	85
		Good	61	73	81	84
	Cont. and terraced	Poor	61	72	79	82
		Good	59	70	78	81
Close-seeded legumes <u>1/</u> or rotation meadow	Straight Row	Poor	66	77	85	89
	Straight Row	Good	58	72	81	85
	Contoured	Poor	64	75	83	85
	Contoured	Good	55	69	78	83
	Cont. and terraced	Poor	63	73	80	83
	Cont. and terraced	Good	51	67	76	80
Pasture or range		Poor	68	79	86	89
		Fair	49	<u>69</u>	79	84
		Good	39	<u>61</u>	74	80
	Contoured	Poor	47	<u>67</u>	81	88
	Contoured	Fair	25	59	75	83
	Contoured	Good	6	35	70	79
Meadow		Good	30	58	71	78
Woods		Poor	45	66	77	83
		Fair	36	60	73	79
		Good	25	55	70	77
Farmsteads		----	59	74	82	86
Roads (dirt) <u>2/</u> (hard surface) <u>2/</u>		----	72	82	87	89
		----	74	84	90	92

1/ Close-drilled or broadcast
2/ Including right-of-way



HEADWATER DEPTH FOR C. M. PIPE CULVERTS WITH INLET CONTROL

APPENDIX B

TR20 COMPUTATIONS



**GRAEF
ANHALT
SCHLOEMER**
and Associates Inc.

*****BO-BO LIST OF INPUT DATA FOR TR-20 HYDROLOGY*****

```

JOB TR-20                                SUMMARY  NOPLOTS
TITLE 001  CANNON CITY HOGBACK1 BASIN  TR20 RUN  24 HR. 100 50 25 YR. STORM
TITLE      DEVELOPED CONDITIONS W/ TYPE II STORM  INPUT:HOBDET11
5 RAINFL 7                                0.5
8      0.0000      0.0040      0.0080      0.0100      0.0140
8      0.0190      0.0220      0.0260      0.0300      0.0450
8      0.0600      0.1000      0.7100      0.7500      0.7750
8      0.8000      0.8200      0.8300      0.8400      0.8500
8      0.8600      0.8700      0.8750      0.8850      0.8900
8      0.9000      0.9050      0.9100      0.9200      0.9250
8-     0.9300      0.9350      0.9400      0.9450      0.9500
8      0.9550      0.9600      0.9650      0.9700      0.9730
8      0.9750      0.9800      0.9830      0.9870      0.9900
8      0.9930      0.9960      0.9999      1.0000      1.0000
9 ENDTBL
2 XSECTN  002                                1.0
8      5450.0      0.0      0.0
8      5450.5      10.0      2.55
8      5451.2      50.0      7.95
8      5451.6      100.0     13.19
8      5452.3      200.0     21.99
8      5453.5      500.0     43.46
9 ENDTBL
2 XSECTN  004                                1.0
8      5490.0      0.0      0.0
8      5490.4      10.0      3.12
8      5490.9      50.0      9.96
8      5491.3      100.0     16.59
8      5491.8      200.0     27.74
8      5492.6      500.0     54.93
9 ENDTBL
3 STRUCT  01
8      5490.0      0.0      0.0
8      5491.5      7.5      0.38
8      5493.0      18.5     0.98
8      5494.0      23.0     1.40
8      5495.0      27.0     1.84
8      5496.0      62.0     2.29
8      5497.0      122.0     2.75
9 ENDTBL
6 RUNOFF 1 004      5      0.054      84.0      0.305      1 1      1 1
6 RESVOR 2      01 5      6      5490.0      1
6 REACH 3 002      6      3      650.0      1
6 RUNOFF 1 002      7      0.027      84.0      0.250      1
6 ADDHYD 4 002      7 3 4      1
ENDATA

```

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

```

7 INCREM 6                                0.10
7 COMPUT 7 004      002      0.0      3.40      1.0      7 2 01 01
ENDCMP 1

```

ENDCMP 1
7 INCREM 6 0.10
7 COMPUT 7 004 002 0.0 2.75 1.0 7 2 01 03

ENDCMP 1
ENDJOB 2

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

EXECUTIVE CONTROL OPERATION INCREM
ID

RECOR

MAIN TIME INCREMENT = .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT
ID

RECOR

FROM XSECTION 4

TO XSECTION 2

STARTING TIME = .00 RAIN DEPTH = 3.40 RAIN DURATION= 1.00 RAIN TABLE NO.= 7 ANT. MOIST. COND= 1
ALTERNATE NO.= 1 STORM NO.= 1 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 4

PEAK TIME(HRS)

PEAK DISCHARGE(CFS)

PEAK ELEVATION(FEET)

6.06

83.75

(RUNOFF)

7.45

4.71

(RUNOFF)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .05 SQ
MI.

5.00	DISCHG	.00	.00	.00	.00	.00	.01	1.53	12.41	34.64	58.61
6.00	DISCHG	77.86	81.88	57.14	30.81	17.91	12.06	9.17	7.08	5.71	5.00
7.00	DISCHG	4.79	4.73	4.70	4.69	4.70	4.70	4.61	4.31	4.03	3.90
8.00	DISCHG	3.84	3.62	2.99	2.41	2.13	2.01	1.95	1.93	1.92	1.90
9.00	DISCHG	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.93	1.93	1.93
10.00	DISCHG	1.93	1.93	1.93	1.93	1.94	1.93	1.83	1.52	1.23	1.00
11.00	DISCHG	1.02	1.10	1.40	1.69	1.83	1.89	1.82	1.51	1.23	1.00
12.00	DISCHG	1.03	1.10	1.41	1.70	1.84	1.90	1.83	1.52	1.24	1.00
13.00	DISCHG	1.03	1.00	.99	.98	.98	.98	1.09	1.41	1.71	1.83
14.00	DISCHG	1.91	1.84	1.53	1.24	1.10	1.04	1.01	1.00	.99	.99
15.00	DISCHG	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99
16.00	DISCHG	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99
17.00	DISCHG	.99	.99	.99	.99	.99	.99	.99	1.00	1.00	1.00
18.00	DISCHG	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
19.00	DISCHG	1.00	.95	.82	.71	.65	.62	.59	.52	.45	.42
20.00	DISCHG	.41	.47	.66	.84	.93	.97	.94	.82	.70	.65

TR20 XEQ 10-24-94 15:05

CANON CITY HOGBACK1 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

1 PASS 1

REV PC 09/83(.2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET11

PAGE 1

21.00	DISCHG	.62	.63	.69	.75	.78	.79	.78	.71	.65	.63
22.00	DISCHG	.61	.61	.60	.60	.60	.60	.60	.60	.60	.60
23.00	DISCHG	.60	.62	.68	.74	.76	.77	.70	.45	.22	.11
24.00	DISCHG	.06	.04	.02	.01	.00					

RUNOFF VOLUME ABOVE BASEFLOW = 1.85 WATERSHED INCHES, 64.54 CFS-HRS, 5.33 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR XSECTION 4, ALTERNATE 1, STORM 1, ADDED TO OUTPUT HYDROGRAPH FILE ---

OPERATION RESVOR STRUCTURE 1

PEAK TIME(HRS)
6.31

PEAK DISCHARGE(CFS)
35.47

PEAK ELEVATION(FEET)
5495.24

*** WARNING REACH 2 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

OPERATION REACH CROSS SECTION 2

PEAK TIME(HRS)
6.31

PEAK DISCHARGE(CFS)
35.47

PEAK ELEVATION(FEET)
5450.95

OPERATION RUNOFF CROSS SECTION 2

PEAK TIME(HRS)
6.03
7.46

PEAK DISCHARGE(CFS)
43.84
2.36

PEAK ELEVATION(FEET)
(RUNOFF)
(RUNOFF)

OPERATION ADDHYD CROSS SECTION 2

PEAK TIME(HRS)
6.07
23.48

PEAK DISCHARGE(CFS)
66.01
1.06

PEAK ELEVATION(FEET)
5451.33
5450.05

EXECUTIVE CONTROL OPERATION ENDCMP
ID

RECORD

+ COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL OPERATION INCREM
ID

RECORD

+ MAIN TIME INCREMENT = .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT
ID

RECORD

+ FROM XSECTION 4

+ TO XSECTION 2

STARTING TIME = .00 RAIN DEPTH = 3.05 RAIN DURATION= 1.00 RAIN TABLE NO.= 7 ANT. MOIST. COND= 2
ALTERNATE NO.= 1 STORM NO.= 2 MAIN TIME INCREMENT = .10 HOURS

1 TR20 XEQ 10-24-94 15:05

CANON CITY HOGBACK1 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

PASS 2

REV PC 09/83(.2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET11

PAGE 2

OPERATION RUNOFF CROSS SECTION 4

PEAK TIME(HRS)
6.07
7.46

PEAK DISCHARGE(CFS)
70.26
4.07

PEAK ELEVATION(FEET)
(RUNOFF)
(RUNOFF)

5.00	DISCHG	.00	.00	.00	.00	.00	.00	.89	8.74	26.68	47.3
6.00	DISCHG	64.59	68.95	48.39	26.16	15.25	10.31	7.86	6.09	4.91	4.3
7.00	DISCHG	4.13	4.07	4.05	4.05	4.05	4.06	3.98	3.72	3.49	3.3
8.00	DISCHG	3.32	3.13	2.58	2.08	1.84	1.74	1.69	1.67	1.66	1.6
9.00	DISCHG	1.66	1.66	1.66	1.66	1.66	1.67	1.67	1.67	1.67	1.6
10.00	DISCHG	1.67	1.67	1.68	1.68	1.68	1.68	1.59	1.31	1.06	.9
11.00	DISCHG	.89	.95	1.22	1.47	1.59	1.64	1.58	1.31	1.07	.9
12.00	DISCHG	.89	.96	1.23	1.48	1.60	1.65	1.59	1.32	1.07	.9
13.00	DISCHG	.90	.87	.86	.86	.85	.85	.94	1.23	1.48	1.6
14.00	DISCHG	1.66	1.60	1.33	1.08	.96	.90	.88	.87	.86	.8
15.00	DISCHG	.86	.86	.86	.86	.86	.86	.86	.86	.86	.8
16.00	DISCHG	.86	.86	.86	.86	.86	.86	.86	.86	.86	.8
17.00	DISCHG	.86	.86	.86	.87	.87	.87	.87	.87	.87	.8
18.00	DISCHG	.87	.87	.87	.87	.87	.87	.87	.87	.87	.8
19.00	DISCHG	.87	.83	.72	.61	.56	.54	.51	.45	.40	.3
20.00	DISCHG	.36	.41	.58	.73	.81	.84	.82	.72	.61	.5
21.00	DISCHG	.54	.55	.60	.65	.68	.69	.68	.62	.57	.5
22.00	DISCHG	.53	.53	.53	.53	.53	.53	.53	.53	.53	.5
23.00	DISCHG	.53	.54	.59	.64	.67	.68	.61	.39	.19	.1
24.00	DISCHG	.05	.03	.02	.01	.00					

RUNOFF VOLUME ABOVE BASEFLOW = 1.56 WATERSHED INCHES, 54.30 CFS-HRS, 4.49 ACRE-FEET; BASEFLOW = .00 CF

--- HYDROGRAPH FOR XSECTION 4, ALTERNATE 1, STORM 2, ADDED TO OUTPUT HYDROGRAPH FILE ---

OPERATION RESVOR STRUCTURE 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.33	24.89	5494.47

*** WARNING REACH 2 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

OPERATION REACH CROSS SECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.33	24.89	5450.76

TR20 XEQ 10-24-94 15:05 CANNON CITY HOGBACK1 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

1 PASS 2

REV PC 09/83(.2) DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET11

PAGE 3

OPERATION RUNOFF CROSS SECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.04	36.83	(RUNOFF)
7.46	2.04	(RUNOFF)

OPERATION ADDHYD CROSS SECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.08	56.25	5451.25

EXECUTIVE CONTROL OPERATION ENDCMP

RECORD

EXECUTIVE CONTROL OPERATION INCREM
ID

RECOF

+ MAIN TIME INCREMENT = .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT
ID

RECOF

+ FROM XSECTION 4

+ TO XSECTION 2

STARTING TIME = .00 RAIN DEPTH = 2.75 RAIN DURATION= 1.00 RAIN TABLE NO.= 7 ANT. MOIST. COND=
ALTERNATE NO.= 1 STORM NO.= 3 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.07	59.00	(RUNOFF)
7.46	3.52	(RUNOFF)

TIME(HRS)	FIRST HYDROGRAPH POINT = .00 HOURS	TIME INCREMENT = .10 HOURS	DRAINAGE AREA = .05 SQ
MI.			
5.00	DISCHG .00 .00 .00 .00 .00 .00 .50 6.05 20.40 38.11		
6.00	DISCHG 53.57 58.09 41.02 22.23 13.00 8.82 6.75 5.24 4.24 3.71		
7.00	DISCHG 3.57 3.52 3.50 3.50 3.50 3.51 3.44 3.22 3.02 2.91		
8.00	DISCHG 2.88 2.71 2.24 1.81 1.60 1.51 1.47 1.45 1.44 1.44		
9.00	DISCHG 1.44 1.44 1.44 1.44 1.44 1.45 1.45 1.45 1.45 1.45		
10.00	DISCHG 1.45 1.45 1.46 1.46 1.46 1.46 1.38 1.14 .92 .81		
11.00	DISCHG .77 .83 1.06 1.23 1.38 1.43 1.37 1.14 .93 .81		
12.00	DISCHG .78 .83 1.07 1.28 1.39 1.44 1.38 1.15 .93 .81		
13.00	DISCHG .78 .76 .75 .74 .74 .74 .82 1.07 1.29 1.41		
14.00	DISCHG 1.45 1.39 1.16 .94 .83 .79 .76 .75 .75 .75		
15.00	DISCHG .75 .75 .75 .75 .75 .75 .75 .75 .75 .75		
16.00	DISCHG .75 .75 .75 .75 .75 .75 .75 .75 .75 .75		
17.00	DISCHG .75 .75 .75 .75 .75 .76 .76 .76 .76 .76		
18.00	DISCHG .76 .76 .76 .76 .76 .76 .76 .76 .76 .76		

1 TR20 XEQ 10-24-94 15:05

CANNON CITY HOSBACK1 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

1 PASS 3

REV PC 09/83(2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOSDET11

PAGE 4

19.00	DISCHG	.76	.73	.63	.54	.49	.47	.45	.39	.35	.30
20.00	DISCHG	.31	.36	.51	.64	.71	.74	.72	.62	.54	.49
21.00	DISCHG	.47	.48	.53	.57	.59	.60	.59	.54	.50	.48
22.00	DISCHG	.47	.46	.46	.46	.46	.46	.46	.46	.46	.46
23.00	DISCHG	.46	.47	.52	.56	.58	.59	.53	.34	.17	.08
24.00	DISCHG	.05	.03	.01	.01	.00					

RUNOFF VOLUME ABOVE BASEFLOW = 1.31 WATERSHED INCHES, 45.79 CFS-HRS, 3.78 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR XSECTION 4, ALTERNATE 1, STORM 3, ADDED TO OUTPUT HYDROGRAPH FILE ---

OPERATION RESVOR STRUCTURE 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
----------------	---------------------	----------------------

*** WARNING REACH 2 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

OPERATION REACH CROSS SECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.32	21.94	5450.71

OPERATION RUNOFF CROSS SECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.04	30.97	(RUNOFF)
7.46	1.76	(RUNOFF)

OPERATION ADDHYD CROSS SECTION 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.08	48.07	5451.17

EXECUTIVE CONTROL OPERATION ENDCMP
ID

RECOR

COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL OPERATION ENDJOB
ID

RECOR

TR20 XEQ 10-24-94 15:05 CANON CITY HOGBACK1 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM
1 SUMMARY
REV PC 09/83(.2) DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET11
PAGE 5

JOB

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

SECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RAIN TABLE	ANTEC MOIST	MAIN TIME	PRECIPITATION				RUNOFF	PEAK DISCHARGE		
ID	OPERATION	AREA	#	COND	INCREM	BEGIN	AMOUNT	DURATION	AMOUNT	ELEVATION	TIME	RATE	
RATE		(SQ MI)			(HR)	(HR)	(IN)	(HR)	(IN)	(FT)	(HR)	(CFS)	
(CSM)													

ALTERNATE 1 STORM 1

XSECTION	4	RUNOFF	.05	7	2	.10	.0	3.40	24.00	1.85	---	6.06	83.75
1550.9													
STRUCTURE	1	RESVOR	.05	7	2	.10	.0	3.40	24.00	1.85	5495.24	6.31	35.47
656.8													
XSECTION	2	REACH	.05	7	2	.10	.0	3.40	24.00	1.85	5450.95	6.31	35.47
656.8													
XSECTION	2	RUNOFF	.03	7	2	.10	.0	3.40	24.00	1.85	---	6.03	43.86

815.0

ALTERNATE 1 STORM 2

XSECTION	4	RUNOFF	.05	7	2	.10	.0	3.05	24.00	1.56	---	6.07	70.26	
1301.2														
STRUCTURE	1	RESVDR	.05	7	2	.10	.0	3.05	24.00	1.56	5494.47	6.33	24.86	
460.9														
XSECTION	2	REACH	.05	7	2	.10	.0	3.05	24.00	1.56	5450.76	6.33	24.86	
460.9														
XSECTION	2	RUNOFF	.03	7	2	.10	.0	3.05	24.00	1.56	---	6.04	36.81	
1364.1														
XSECTION	2	ADDHYD	.08	7	2	.10	.0	3.05	24.00	1.56	5451.25	6.08	56.25	
694.4														

ALTERNATE 1 STORM 3

XSECTION	4	RUNOFF	.05	7	2	.10	.0	2.75	24.00	1.31	---	6.07	59.00
1092.6													
STRUCTURE	1	RESVDR	.05	7	2	.10	.0	2.75	24.00	1.31	5493.76	6.32	21.94
406.2													
XSECTION	2	REACH	.05	7	2	.10	.0	2.75	24.00	1.31	5450.71	6.32	21.94
406.2													
XSECTION	2	RUNOFF	.03	7	2	.10	.0	2.75	24.00	1.32	---	6.04	30.97
1147.2													
XSECTION	2	ADDHYD	.08	7	2	.10	.0	2.75	24.00	1.31	5451.17	6.08	48.07
593.4													

1

TR20 XEQ 10-24-94 15:05 CANON CITY HOGBACK1 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM JOB

1 SUMMARY

REV PC 09/83(.2) DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET11

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SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS

(A STAR(*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 1

0% OF PEAK

A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARN

INGS)

HYDROGRAPH INFORMATION

ROUTING PARAMETERS

PEAK		HYDROGRAPH INFORMATION								ROUTING PARAMETERS							
TRAVEL TIME		OUTFLOW+				VOLUME MAIN ITER-				Q AND A		PEAK	S/Q	ATT-			
XSEC REACH	INFLOW	OUTFLOW		INTERV.AREA		BASE-	ABOVE	TIME	ATION	EQUATION	LENGTH	RATIO	@PEAK	KIN			
STOR- KINE-																	
ID	LENGTH	PEAK	TIME	PEAK	TIME	PEAK	TIME	FLOW	BASE	INCR	#	COEFF	POWER	FACTOR	O/I	(K)	COEFF
AGE	MATIC	(CFS)	(HR)	(CFS)	(HR)	(CFS)	(HR)	(CFS)	(IN)	(HR)		(X)	(M)	(K*)	(Q*)	(SEC)	(C)
(HR)	(HR)																

ALTERNATE 1 STORM 1

65 6.1

ALTERNATE 1 STORM 2

2	650	25	6.3	25	6.3	0	1.56	.10	0	2.66	1.42	.003	1.000	90	1.000
.00	.00														

56 6.1

ALTERNATE 1 STORM 3

2	650	22	6.3	22	6.3	0	1.31	.10	0	2.66	1.42	.003	1.000	93	1.000
.00	.00														

46 6.1

TR20 XEQ 10-24-94 15:05

CANDON CITY HOGBACK1 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

1 SUMMARY

REV PC 09/83(.2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET11

PAGE 7

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

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....		
		1	2	3
0 STRUCTURE 1	.05			
ALTERNATE 1		35.47	24.89	21.94
0 XSECTION 2	.08			
ALTERNATE 1		66.01	56.25	48.07
0 XSECTION 4	.05			
ALTERNATE 1		83.75	70.26	59.00

MAIN - UNEXPECTED RECORD FOUND(IGNORED) >>>

<<<

1END OF 1 JOBS IN THIS RUN

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

JOB TR-20 SUMMARY NOPLOTS
 TITLE 001 CANYON CITY HOGBACK2 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

TITLE DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET02

5 RAINFL 7	0.5				
8	0.0000	0.0040	0.0060	0.0100	0.0140
8	0.0190	0.0220	0.0260	0.0300	0.0450
8	0.0600	0.1000	0.7100	0.7300	0.7750
8	0.8000	0.8200	0.8300	0.8400	0.8500
8	0.8600	0.8700	0.8750	0.8850	0.8900
8	0.9000	0.9050	0.9100	0.9200	0.9250
8	0.9300	0.9350	0.9400	0.9450	0.9500
8	0.9550	0.9600	0.9650	0.9700	0.9730
8	0.9750	0.9800	0.9830	0.9870	0.9900
8	0.9930	0.9960	0.9999	1.0000	1.0000

9 ENDTBL

2 XSECTN 004	1.0			
8	5460.0	0.0	0.0	
8	5460.4	10.0	3.12	
8	5460.9	50.0	9.96	
8	5461.3	100.0	16.59	
8	5461.8	200.0	27.74	
8	5462.6	500.0	54.93	

9 ENDTBL

3 STRUCT 01				
8	5460.0	0.0	0.0	
8	5461.5	7.5	0.20	
8	5463.0	18.5	0.50	
8	5464.0	23.0	0.70	
8	5465.0	27.5	0.90	
8	5466.0	62.0	1.15	
8	5467.0	122.0	1.30	

9 ENDTBL

6 RUNOFF 1 004	5	0.023	84.0	0.167	1 1	1 1
6 RESVOR 2 01 5	6	5460.0			1	

ENDATA

7 INCREM 6		0.10				
7 COMPUT 7 004	01	0.0	3.40	1.0	7 2	01 01
ENDCMP 1						
7 INCREM 6		0.10				
7 COMPUT 7 004	01	0.0	3.05	1.0	7 2	01 02
ENDCMP 1						
7 INCREM 6		0.10				
7 COMPUT 7 004	01	0.0	2.75	1.0	7 2	01 03
ENDCMP 1						
ENDJOB 2						

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

EXECUTIVE CONTROL OPERATION INCREM
 ID

RECORD

+ MAIN TIME INCREMENT = .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT
 ID

RECORD

STARTING TIME = .00 RAIN DEPTH = 3.40 RAIN DURATION= 1.00 RAIN TABLE NO.= 7 ANT. MOIST. COND= 2
ALTERNATE NO.= 1 STORM NO.= 1 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 4

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
5.98 41.57 (RUNOFF)
7.45 2.02 (RUNOFF)

TIME(HRS)	FIRST HYDROGRAPH POINT =	.00 HOURS	TIME INCREMENT =	.10 HOURS	DRAINAGE AREA =	.02 SQ.
5.00	DISCHG	.00	.00	.00	.00	.00
6.00	DISCHG	41.29	28.91	7.59	4.57	3.43
7.00	DISCHG	1.99	1.99	2.00	2.00	2.01
8.00	DISCHG	1.62	1.32	.94	.84	.82
9.00	DISCHG	.82	.82	.82	.82	.82
10.00	DISCHG	.82	.82	.82	.82	.82
11.00	DISCHG	.41	.57	.77	.81	.83
12.00	DISCHG	.42	.57	.77	.82	.83
13.00	DISCHG	.42	.42	.42	.42	.42
14.00	DISCHG	.84	.68	.48	.43	.42
15.00	DISCHG	.42	.42	.42	.42	.42
16.00	DISCHG	.42	.42	.42	.42	.42
17.00	DISCHG	.42	.42	.42	.42	.42
18.00	DISCHG	.42	.42	.42	.42	.42
19.00	DISCHG	.42	.35	.28	.26	.26
20.00	DISCHG	.17	.27	.39	.42	.43
21.00	DISCHG	.26	.29	.33	.34	.34
22.00	DISCHG	.26	.26	.26	.26	.26
23.00	DISCHG	.26	.29	.32	.33	.33
24.00	DISCHG	.01	.01	.00		

RUNOFF VOLUME ABOVE BASEFLOW = 1.55 WATERSHED INCHES, 27.48 CFS-HRS, 2.27 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR XSECTION 4, ALTERNATE 1, STORM 1, ADDED TO OUTPUT HYDROGRAPH FILE ---

OPERATION RESVOR STRUCTURE 1

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
6.13 22.27 5463.64

TR20 XEQ 01-25-95 12:59 CANON CITY HOBBACK2 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM JOB
PASS 2
REV PC 09/83(.2) DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:H05DET02
PAGE 1

EXECUTIVE CONTROL OPERATION ENDCMP

RECORD

COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL OPERATION INCREM

RECORD

MAIN TIME INCREMENT = .10 HOURS

FROM XSECTION 4

TO STRUCTURE 1

STARTING TIME = .00 RAIN DEPTH = 3.05 RAIN DURATION= 1.00 RAIN TABLE NO.= 7 ANT. MOIST. COND= 2
ALTERNATE NO.= 1 STORM NO.= 2 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 4

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
5.79 35.06 (RUNOFF)
7.45 1.75 (RUNOFF)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .02 SQ.

5.00	DISCHG	.00	.00	.00	.00	.00	.00	1.24	10.18	21.04	29.28
6.00	DISCHG	34.89	24.64	8.20	3.92	2.95	2.72	2.33	1.86	1.74	1.72
7.00	DISCHG	1.71	1.72	1.72	1.73	1.73	1.73	1.61	1.45	1.41	1.40
8.00	DISCHG	1.40	1.14	.81	.73	.71	.70	.70	.71	.71	.71
9.00	DISCHG	.71	.71	.71	.71	.71	.71	.71	.71	.71	.71
10.00	DISCHG	.71	.71	.71	.71	.72	.71	.58	.41	.37	.36
11.00	DISCHG	.36	.49	.66	.71	.72	.72	.59	.42	.37	.36
12.00	DISCHG	.36	.50	.67	.71	.72	.72	.59	.42	.38	.37
13.00	DISCHG	.36	.36	.36	.36	.36	.36	.50	.67	.72	.73
14.00	DISCHG	.73	.59	.42	.38	.37	.37	.37	.37	.37	.37
15.00	DISCHG	.37	.37	.37	.37	.37	.37	.37	.37	.37	.37
16.00	DISCHG	.37	.37	.37	.37	.37	.37	.37	.37	.37	.37
17.00	DISCHG	.37	.37	.37	.37	.37	.37	.37	.37	.37	.37
18.00	DISCHG	.37	.37	.37	.37	.37	.37	.37	.37	.37	.37
19.00	DISCHG	.37	.32	.25	.23	.22	.22	.19	.16	.15	.15
20.00	DISCHG	.15	.23	.34	.36	.37	.37	.32	.25	.23	.22
21.00	DISCHG	.22	.25	.29	.30	.30	.30	.27	.24	.23	.22
22.00	DISCHG	.22	.22	.22	.22	.22	.22	.22	.22	.22	.22
23.00	DISCHG	.22	.25	.28	.29	.29	.29	.19	.05	.02	.01
24.00	DISCHG	.01	.00								

RUNOFF VOLUME ABOVE BASEFLOW = 1.56 WATERSHED INCHES, 23.12 CFS-HRS, 1.91 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR XSECTION 4, ALTERNATE 1, STORM 2, ADDED TO OUTPUT HYDROGRAPH FILE ---

OPERATION RESVOR STRUCTURE 1

TR20 XEQ 01-25-95 12:59 SANDN CITY HOGBACK2 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

PASS 2

REV PC 09/83(2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET02

PAGE 2

PEAK TIME(HRS)
6.14

PEAK DISCHARGE(CFS)
19.59

PEAK ELEVATION(FEET)
5463.24

EXECUTIVE CONTROL OPERATION ENDCMP

RECORD

ID

COMPUTATIONS COMPLETED FOR PASS 2

ID

MAIN TIME INCREMENT = .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT
ID

RECORD

FROM XSECTION 4

TO STRUCTURE 1

STARTING TIME = .00 RAIN DEPTH = 2.75 RAIN DURATION= 1.00 RAIN TABLE NO.= 7 ANT. MOIST. COND= 2
 ALTERNATE NO.= 1 STORM NO.= 3 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 4

PEAK TIME(HRS)
5.99

PEAK DISCHARGE(CFS)
29.60

PEAK ELEVATION(FEET)
(RUNOFF)

TIME(HRS)	FIRST HYDROGRAPH POINT = .00 HOURS	TIME INCREMENT = .10 HOURS	DRAINAGE AREA = .02 SQ.
5.00 DISCHG	.00 .00 .00 .00 .00 .00 .00 .00 .66 7.38 16.78 24.25		
6.00 DISCHG	29.50 21.03 7.01 3.37 2.54 2.35 2.01 1.60 1.50 1.48		
7.00 DISCHG	1.48 1.48 1.49 1.49 1.50 1.50 1.39 1.25 1.22 1.21		
8.00 DISCHG	1.21 .99 .70 .63 .61 .61 .61 .61 .61 .61		
9.00 DISCHG	.61 .61 .61 .62 .62 .62 .62 .62 .62 .62		
10.00 DISCHG	.62 .62 .62 .62 .62 .62 .51 .36 .32 .31		
11.00 DISCHG	.31 .43 .58 .61 .62 .62 .51 .36 .32 .32		
12.00 DISCHG	.31 .43 .58 .62 .63 .63 .51 .36 .33 .32		
13.00 DISCHG	.32 .32 .32 .32 .32 .32 .44 .58 .62 .63		
14.00 DISCHG	.63 .52 .37 .33 .32 .32 .32 .32 .32 .32		
15.00 DISCHG	.32 .32 .32 .32 .32 .32 .32 .32 .32 .32		
16.00 DISCHG	.32 .32 .32 .32 .32 .32 .32 .32 .32 .32		
17.00 DISCHG	.32 .32 .32 .32 .32 .32 .32 .32 .32 .32		
18.00 DISCHG	.32 .32 .32 .32 .32 .32 .32 .32 .32 .32		
19.00 DISCHG	.32 .28 .21 .20 .20 .19 .17 .14 .13 .13		
20.00 DISCHG	.13 .20 .29 .32 .32 .32 .28 .22 .20 .20		
21.00 DISCHG	.20 .22 .25 .26 .26 .26 .24 .21 .20 .20		
22.00 DISCHG	.20 .20 .20 .20 .20 .20 .20 .20 .20 .20		
23.00 DISCHG	.20 .22 .25 .25 .25 .25 .16 .05 .02 .01		
24.00 DISCHG	.01 .00		

RUNOFF VOLUME ABOVE BASEFLOW = 1.31 WATERSHED INCHES, 19.48 CFS-HRS, 1.61 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR XSECTION 4, ALTERNATE 1, STORM 3, ADDED TO OUTPUT HYDROGRAPH FILE ---

TR20 XEQ 01-25-95 12:39

CANDON CITY HOGBACK2 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

PASS 3

REV PC 09/83(1.2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET02

PAGE 3

OPERATION RESVOR STRUCTURE 1

PEAK TIME(HRS)
6.13

PEAK DISCHARGE(CFS)
16.67

PEAK ELEVATION(FEET)
5462.75

EXECUTIVE CONTROL OPERATION ENDCMP
ID

RECORD

COMPUTATIONS COMPLETED FOR PASS 3

R20 XEQ 01-25-95 12:59
SUMMARY
REV PC 09/83(.2)
PAGE 4

CANON CITY HOGBACK2 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM
DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET02

JOB

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

SECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RAIN TABLE	ANTEC MOIST	MAIN TIME	PRECIPITATION			RUNOFF	PEAK DISCHARGE		
ID	OPERATION	AREA	#	COND	INCREM	BEGIN	AMOUNT	DURATION	AMOUNT	ELEVATION	TIME	RATE
(CSM)		(SQ MI)			(HR)	(HR)	(IN)	(HR)	(IN)	(FT)	(HR)	(CFS)
ALTERNATE 1 STORM 1												
XSECTION 1807.4	4 RUNOFF	.02	7	2	.10	.0	3.40	24.00	1.85	---	5.98	41.57
STRUCTURE 968.4	1 RESVDR	.02	7	2	.10	.0	3.40	24.00	1.85	5463.84	6.13	22.27
ALTERNATE 1 STORM 2												
XSECTION 1524.4	4 RUNOFF	.02	7	2	.10	.0	3.05	24.00	1.56	---	5.99	35.06
STRUCTURE 851.9	1 RESVDR	.02	7	2	.10	.0	3.05	24.00	1.55	5463.24	6.14	19.59
ALTERNATE 1 STORM 3												
XSECTION 1285.9	4 RUNOFF	.02	7	2	.10	.0	2.75	24.00	1.31	---	5.99	29.60
STRUCTURE 724.6	1 RESVDR	.02	7	2	.10	.0	2.75	24.00	1.31	5462.75	6.13	16.67

TR20 XEQ 01-25-95 12:59
1 SUMMARY
REV PC 09/83(.2)
PAGE 5

CANON CITY HOGBACK2 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM
DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET02

JOB

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

XSECTION/ STRUCTURE	DRAINAGE AREA	STORM NUMBERS.....
	(SQ MI)	1 2 3

+
ALTERNATE 1 22.27 19.59 16.67

SECTION 4 .02

+
ALTERNATE 1 41.57 35.06 29.60

END OF 1 JOBS IN THIS RUN

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

JOB TR-20 SUMMARY NOPLOTS
 TITLE 001 CANON CITY HOSEBACK BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM
 TITLE DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HO6DET03

5 RAINFL 7	0.5				
8	0.0000	0.0040	0.0080	0.0100	0.0140
8	0.0100	0.0220	0.0260	0.0300	0.0450
8	0.0600	0.1000	0.7100	0.7500	0.7750
8	0.8000	0.8200	0.8300	0.8400	0.8500
8	0.8600	0.8700	0.8750	0.8850	0.8900
8	0.9000	0.9050	0.9100	0.9200	0.9250
8	0.9300	0.9350	0.9400	0.9450	0.9500
8	0.9550	0.9600	0.9650	0.9700	0.9730
8	0.9750	0.9800	0.9850	0.9870	0.9900
8	0.9930	0.9960	0.9999	1.0000	1.0000

9 ENDTBL					
2 XSECTN 004	1.0				
8	5460.0	0.0	0.0		
8	5460.4	10.0	3.12		
8	5460.9	50.0	9.96		
8	5461.3	100.0	16.59		
8	5461.8	200.0	27.74		
8	5462.6	500.0	54.93		

9 ENDTBL					
3 STRUCT 01					
8	5460.0	0.0	0.0		
8	5461.5	7.5	0.20		
8	5463.0	18.5	0.50		
8	5464.0	23.0	0.70		
8	5465.0	27.5	0.90		
8	5466.0	62.0	1.15		
8	5467.0	122.0	1.30		

6 RUNOFF 1 004	5	0.033	84.0	0.167	1 1	1 1
6 RESVOR 2 01 5	6	5460.0			1	

7 INCREM 6		0.10				
7 COMPUT 7 004	01	0.0	3.40	1.0	7 2	01 01
ENDCMP 1						
7 INCREM 6		0.10				
7 COMPUT 7 004	01	0.0	3.05	1.0	7 2	01 02
ENDCMP 1						
7 INCREM 6		0.10				
7 COMPUT 7 004	01	0.0	2.75	1.0	7 2	01 03
ENDCMP 1						
ENDJOB 2						

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

EXECUTIVE CONTROL OPERATION INCREM
 ID

RECORD

MAIN TIME INCREMENT = .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT
 ID

RECORD

STARTING TIME = .00 RAIN DEPTH = 3.40 RAIN DURATION= 1.00 RAIN TABLE NO.= 7 ANT. MOIST. COND=
ALTERNATE NO.= 1 STORM NO.= 1 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 4

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
5.98 59.64 (RUNOFF)
7.45 2.90 (RUNOFF)

TIME(HRS)	FIRST HYDROGRAPH POINT =	.00 HOURS	TIME INCREMENT =	.10 HOURS	DRAINAGE AREA =	.03 SQ
MI.						
5.00	DISCHG	.00	.00	.00	.00	.00
6.00	DISCHG	59.24	41.48	13.76	6.56	4.92
7.00	DISCHG	2.85	2.86	2.86	2.87	2.87
8.00	DISCHG	2.32	1.89	1.35	1.21	1.18
9.00	DISCHG	1.17	1.17	1.17	1.18	1.18
10.00	DISCHG	1.18	1.18	1.18	1.18	1.18
11.00	DISCHG	.59	.82	1.10	1.17	1.19
12.00	DISCHG	.60	.82	1.10	1.17	1.19
13.00	DISCHG	.60	.60	.60	.60	.60
14.00	DISCHG	1.20	.98	.70	.62	.61
15.00	DISCHG	.60	.60	.60	.60	.60
16.00	DISCHG	.61	.61	.61	.61	.61
17.00	DISCHG	.61	.61	.61	.61	.61
18.00	DISCHG	.61	.61	.61	.61	.61
19.00	DISCHG	.61	.52	.40	.37	.37
20.00	DISCHG	.25	.38	.55	.60	.61
21.00	DISCHG	.37	.41	.47	.49	.49
22.00	DISCHG	.37	.37	.37	.37	.37
23.00	DISCHG	.37	.41	.46	.48	.48
24.00	DISCHG	.01	.01	.00		

RUNOFF VOLUME ABOVE BASEFLOW = 1.85 WATERSHED INCHES, 39.43 CFS-HRS, 3.26 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR XSECTION 4, ALTERNATE 1, STORM 1, ADDED TO OUTPUT HYDROGRAPH FILE ---

OPERATION RESVOR STRUCTURE 1

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
6.11 35.51 5465.23

TR20 REQ 01-30-95 16:31 CANYON CITY HOBBSACKS BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM JOB
1 PASS 2
REV PC 09/83(.2) DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:H06DET03
PAGE 1

EXECUTIVE CONTROL OPERATION ENDCMP
ID

RECORD

COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL OPERATION INCREM
ID

RECORD

MAIN TIME INCREMENT = .10 HOURS

ID

FROM XSECTION 4

TO STRUCTURE 1

STARTING TIME = .00 RAIN DEPTH = 3.05 RAIN DURATION = 1.00 RAIN TABLE NO. = 7 ANT. MOIST. COND = 2
 ALTERNATE NO. = 1 STORM NO. = 2 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 4

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
 5.99 50.30 (RUNOFF)
 7.45 2.51 (RUNOFF)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .03 SQ.
 MI.

5.00	DISCHG	.00	.00	.00	.00	.00	.00	1.78	14.60	30.19	42.01
6.00	DISCHG	50.06	35.36	11.76	5.62	4.23	3.91	3.34	2.66	2.50	2.46
7.00	DISCHG	2.46	2.46	2.47	2.48	2.48	2.49	2.31	2.08	2.02	2.01
8.00	DISCHG	2.01	1.64	1.16	1.04	1.02	1.01	1.01	1.01	1.01	1.01
9.00	DISCHG	1.01	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
10.00	DISCHG	1.02	1.02	1.02	1.03	1.03	1.03	.84	.59	.53	.52
11.00	DISCHG	.52	.71	.95	1.01	1.03	1.03	.84	.60	.54	.52
12.00	DISCHG	.52	.71	.96	1.02	1.03	1.04	.84	.60	.54	.52
13.00	DISCHG	.52	.52	.52	.52	.52	.52	.72	.96	1.03	1.04
14.00	DISCHG	1.04	.85	.60	.54	.53	.52	.52	.52	.52	.52
15.00	DISCHG	.52	.53	.53	.53	.53	.53	.53	.53	.53	.53
16.00	DISCHG	.53	.53	.53	.53	.53	.53	.53	.53	.53	.53
17.00	DISCHG	.53	.53	.53	.53	.53	.53	.53	.53	.53	.53
18.00	DISCHG	.53	.53	.53	.53	.53	.53	.53	.53	.53	.53
19.00	DISCHG	.53	.45	.35	.33	.32	.32	.28	.23	.22	.21
20.00	DISCHG	.21	.33	.48	.52	.53	.53	.45	.35	.33	.32
21.00	DISCHG	.32	.36	.41	.42	.43	.43	.39	.34	.32	.32
22.00	DISCHG	.32	.32	.32	.32	.32	.32	.32	.32	.32	.32
23.00	DISCHG	.32	.36	.40	.41	.42	.42	.27	.07	.02	.01
24.00	DISCHG	.01	.01	.00							

RUNOFF VOLUME ABOVE BASEFLOW = 1.56 WATERSHED INCHES, 33.17 CFS-HRS, 2.74 ACRE-FeET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR XSECTION 4, ALTERNATE 1, STORM 2, ADDED TO OUTPUT HYDROGRAPH FILE ---

OPERATION RESVOR STRUCTURE 1

TR20 XEQ 01-30-95 16:31

CANYON CITY HOGBACK3 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

PASS 2

REV PC 09/83(.2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET03

PAGE 2

PEAK TIME(HRS)
6.14

PEAK DISCHARGE(CFS)
25.56

PEAK ELEVATION(FEET)
5464.57

EXECUTIVE CONTROL OPERATION ENDCMP

RECORD

ID

COMPUTATIONS COMPLETED FOR PASS 2

ID

MAIN TIME INCREMENT = .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT

RECORD

ID

FROM XSECTION 4

TO STRUCTURE 1

STARTING TIME = .00 RAIN DEPTH = 2.75 RAIN DURATION = 1.00 RAIN TABLE NO. = 7 ANT. MOIST. COND = 2
 ALTERNATE NO. = 1 STORM NO. = 3 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 4

PEAK TIME(HRS)

PEAK DISCHARGE(CFS)

PEAK ELEVATION(FEET)

5.99

42.47

(RUNOFF)

7.45

2.17

(RUNOFF)

TIME(HRS)

FIRST HYDROGRAPH POINT = .00 HOURS

TIME INCREMENT = .10 HOURS

DRAINAGE AREA = .03 SQ.

MI.

5.00	DISCHG	.00	.00	.00	.00	.00	.00	.94	10.59	24.07	34.79
6.00	DISCHG	42.33	30.17	10.06	4.83	3.64	3.37	2.88	2.30	2.15	2.13
7.00	DISCHG	2.12	2.13	2.14	2.14	2.15	2.15	2.00	1.80	1.75	1.74
8.00	DISCHG	1.74	1.42	1.01	.90	.88	.88	.88	.88	.88	.88
9.00	DISCHG	.88	.88	.88	.88	.88	.88	.89	.89	.89	.89
10.00	DISCHG	.89	.89	.89	.89	.89	.89	.73	.52	.46	.45
11.00	DISCHG	.45	.62	.83	.88	.89	.90	.73	.52	.47	.45
12.00	DISCHG	.45	.62	.83	.89	.90	.90	.74	.52	.47	.46
13.00	DISCHG	.45	.45	.45	.45	.45	.46	.62	.84	.89	.91
14.00	DISCHG	.91	.74	.53	.47	.46	.46	.46	.46	.46	.46
15.00	DISCHG	.46	.46	.46	.46	.46	.46	.46	.46	.46	.46
16.00	DISCHG	.46	.46	.46	.46	.46	.46	.46	.46	.46	.46
17.00	DISCHG	.46	.46	.46	.46	.46	.46	.46	.46	.46	.46
18.00	DISCHG	.46	.46	.46	.46	.46	.46	.46	.46	.46	.46
19.00	DISCHG	.46	.39	.31	.29	.28	.28	.24	.20	.19	.19
20.00	DISCHG	.19	.29	.42	.46	.46	.46	.40	.31	.29	.28
21.00	DISCHG	.28	.31	.36	.37	.37	.37	.34	.29	.28	.28
22.00	DISCHG	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28
23.00	DISCHG	.28	.31	.35	.36	.36	.36	.23	.06	.02	.01
24.00	DISCHG	.01	.01	.00							

RUNOFF VOLUME ABOVE BASEFLOW = 1.31 WATERSHED INCHES, 27.96 CFS-HRS, 2.31 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR XSECTION 4, ALTERNATE 1, STORM 3, ADDED TO OUTPUT HYDROGRAPH FILE ---

1

TR20 XEQ 01-30-95 16:31

CANDON CITY HOGBACK BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

PASS 3

REV PC 09/83(.2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET03

PAGE 3

OPERATION RESVOR STRUCTURE 1

PEAK TIME(HRS)

PEAK DISCHARGE(CFS)

PEAK ELEVATION(FEET)

6.14

22.07

5463.80

EXECUTIVE CONTROL OPERATION ENDCMP

RECORD

ID

ID

TR20 XEQ 01-30-95 16:31

CANYON CITY HOSBACK3 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

SUMMARY

REV PC 09/83(1,2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET03

PAGE 4

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

SECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RAIN TABLE	ANTEC MOIST	MAIN TIME	PRECIPITATION			RUNOFF	PEAK DISCHARGE		
ID	OPERATION	AREA	#	COND	INCREM	BEGIN	AMOUNT	DURATION	AMOUNT	ELEVATION	TIME	RATE
(CSM)		(SQ MI)			(HR)	(HR)	(IN)	(HR)	(IN)	(FT)	(HR)	(CFS)
ALTERNATE	1	STORM	1									
XSECTION 1807.4	4 RUNOFF	.03	7	2	.10	.0	3.40	24.00	1.85	---	5.98	59.64
STRUCTURE 1075.9	1 RESVOR	.03	7	2	.10	.0	3.40	24.00	1.86	5465.23	6.11	35.51
ALTERNATE	1	STORM	2									
XSECTION 1524.4	4 RUNOFF	.03	7	2	.10	.0	3.05	24.00	1.56	---	5.99	50.30
STRUCTURE 774.5	1 RESVOR	.03	7	2	.10	.0	3.05	24.00	1.55	5464.57	6.14	25.56
ALTERNATE	1	STORM	3									
XSECTION 1286.9	4 RUNOFF	.03	7	2	.10	.0	2.75	24.00	1.31	---	5.99	42.47
STRUCTURE 669.5	1 RESVOR	.03	7	2	.10	.0	2.75	24.00	1.31	5463.60	6.14	22.09

TR20 XEQ 01-30-95 16:31

CANYON CITY HOSBACK3 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

SUMMARY

REV PC 09/83(1,2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOSDET03

PAGE 5

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

XSECTION/ STRUCTURE	DRAINAGE AREA	STORM NUMBERS.....
------------------------	------------------	--------------------

ALTERNATE 1 .00

ALTERNATE	1	35.31	25.36	22.09
XSECTION	4			

ALTERNATE	1	59.64	30.30	42.47
-----------	---	-------	-------	-------

END OF 1 JOBS IN THIS RUN

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

JOB TR-20 SUMMARY NOPLOTS
 TITLE 001 CANNON CITY HOBBACK4 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM
 TITLE DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOBDET04

5 RAINFL 7	0.5				
8	0.0000	0.0040	0.0020	0.0100	0.0140
8	0.0190	0.0220	0.0260	0.0300	0.0450
8	0.0600	0.1000	0.7100	0.7500	0.7750
8	0.8000	0.8200	0.8300	0.8400	0.8500
8	0.8600	0.8700	0.8750	0.8850	0.8900
8	0.9000	0.9050	0.9100	0.9200	0.9250
8	0.9300	0.9350	0.9400	0.9450	0.9500
8	0.9550	0.9600	0.9650	0.9700	0.9730
8	0.9750	0.9800	0.9830	0.9870	0.9900
8	0.9930	0.9960	0.9999	1.0000	1.0000

9 ENDTBL
 2 XSECTN 004 1.0

8	5440.0	0.0	0.0
8	5440.4	10.0	3.12
8	5440.9	50.0	9.96
8	5441.3	100.0	16.59
8	5441.8	200.0	27.74
8	5442.6	500.0	54.93

9 ENDTBL
 3 STRUCT 01

8	5440.0	0.0	0.0
8	5441.5	7.5	0.20
8	5443.0	18.5	0.50
8	5444.0	23.0	0.70
8	5445.0	27.5	0.90
8	5446.0	62.0	1.15
8	5447.0	122.0	1.30

9 ENDTBL
 6 RUNOFF 1 004 5 0.033 84.0 0.167 1 1 1 1
 6 RESVOR 2 01 5 6 5440.0 1
 ENDATA
 7 INCREM 6 0.10
 7 COMPUT 7 004 01 0.0 3.40 1.0 7 2 01 01
 ENDCMP 1
 7 INCREM 6 0.10
 7 COMPUT 7 004 01 0.0 3.05 1.0 7 2 01 02
 ENDCMP 1
 7 INCREM 6 0.10
 7 COMPUT 7 004 01 0.0 2.75 1.0 7 2 01 03
 ENDCMP 1
 ENDJOB 2

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

EXECUTIVE CONTROL OPERATION INCREM
 ID

MAIN TIME INCREMENT = .10 HOURS

RECORD

EXECUTIVE CONTROL OPERATION COMPUT
 ID

RECORD

STARTING TIME = .00 RAIN DEPTH = 3.40 RAIN DURATION= 1.00 RAIN TABLE NO.= 7 ANT. MOIST. COND= 1
 ALTERNATE NO.= 1 STORM NO.= 1 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 4

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
 5.98 59.64 (RUNOFF)
 7.45 2.90 (RUNOFF)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .03 SQ. MI.

5.00	DISCHG	.00	.00	.00	.00	.00	.00	3.12	19.78	37.71	50.68
6.00	DISCHG	59.24	41.48	13.76	6.56	4.92	4.54	3.88	3.09	2.90	2.81
7.00	DISCHG	2.85	2.86	2.66	2.87	2.87	2.88	2.67	2.40	2.34	2.31
8.00	DISCHG	2.32	1.89	1.35	1.21	1.18	1.17	1.17	1.17	1.17	1.17
9.00	DISCHG	1.17	1.17	1.17	1.17	1.18	1.18	1.18	1.18	1.18	1.18
10.00	DISCHG	1.18	1.18	1.18	1.18	1.18	1.18	.96	.69	.61	.60
11.00	DISCHG	.59	.82	1.10	1.17	1.19	1.19	.97	.69	.62	.60
12.00	DISCHG	.60	.82	1.10	1.17	1.19	1.19	.97	.69	.62	.60
13.00	DISCHG	.60	.60	.60	.60	.60	.60	.83	1.11	1.18	1.20
14.00	DISCHG	1.20	.96	.70	.62	.61	.60	.60	.60	.60	.60
15.00	DISCHG	.60	.60	.60	.60	.60	.60	.60	.60	.61	.61
16.00	DISCHG	.61	.61	.61	.61	.61	.61	.61	.61	.61	.61
17.00	DISCHG	.61	.61	.61	.61	.61	.61	.61	.61	.61	.61
18.00	DISCHG	.61	.61	.61	.61	.61	.61	.61	.61	.61	.61
19.00	DISCHG	.61	.52	.40	.37	.37	.37	.32	.26	.25	.25
20.00	DISCHG	.25	.38	.55	.60	.61	.61	.52	.41	.38	.37
21.00	DISCHG	.37	.41	.47	.49	.49	.49	.44	.39	.37	.37
22.00	DISCHG	.37	.37	.37	.37	.37	.37	.37	.37	.37	.37
23.00	DISCHG	.37	.41	.46	.48	.48	.48	.30	.09	.03	.02
24.00	DISCHG	.01	.01	.00							

RUNOFF VOLUME ABOVE BASEFLOW = 1.85 WATERSHED INCHES, 39.43 CFS-HRS, 3.26 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR XSECTION 4, ALTERNATE 1, STORM 1, ADDED TO OUTPUT HYDROGRAPH FILE ---

OPERATION RESVOR STRUCTURE 1

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
 6.11 35.5 5445.23

TR20 XEQ 01-25-95 13:08 CANON CITY HOGBACK4 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM JOB
 1 PASS 2
 REV PC 09/83(.2) DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:H0GDET04
 PAGE 1

EXECUTIVE CONTROL OPERATION ENDCMP
 ID

RECORD

COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL OPERATION INCREM
 ID

RECORD

MAIN TIME INCREMENT = .10 HOURS

ID

FROM XSECTION 4

TO STRUCTURE 1

STARTING TIME = .00 RAIN DEPTH = 3.05 RAIN DURATION= 1.00 RAIN TABLE NO.= 7 ANT. MOIST. COND= 2
 ALTERNATE NO.= 1 STORM NO.= 2 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 4

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
 5.99 30.30 (RUNOFF)
 7.45 2.51 (RUNOFF)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .03 SQ.
 MI.

5.00	DISCHG	.00	.00	.00	.00	.00	.00	1.78	14.60	30.19	42.01
6.00	DISCHG	50.06	35.36	11.76	5.62	4.23	3.91	3.34	2.66	2.50	2.46
7.00	DISCHG	2.46	2.46	2.47	2.48	2.48	2.49	2.31	2.08	2.02	2.01
8.00	DISCHG	2.01	1.64	1.16	1.04	1.02	1.01	1.01	1.01	1.01	1.01
9.00	DISCHG	1.01	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
10.00	DISCHG	1.02	1.02	1.02	1.03	1.03	1.03	.64	.59	.53	.52
11.00	DISCHG	.52	.71	.93	1.01	1.03	1.03	.84	.60	.54	.52
12.00	DISCHG	.52	.71	.96	1.02	1.03	1.04	.84	.60	.54	.52
13.00	DISCHG	.52	.52	.52	.52	.52	.52	.72	.96	1.03	1.04
14.00	DISCHG	1.04	.85	.60	.54	.53	.52	.52	.52	.52	.52
15.00	DISCHG	.52	.53	.53	.53	.53	.53	.53	.53	.53	.53
16.00	DISCHG	.53	.53	.53	.53	.53	.53	.53	.53	.53	.53
17.00	DISCHG	.53	.53	.53	.53	.53	.53	.53	.53	.53	.53
18.00	DISCHG	.53	.53	.53	.53	.53	.53	.53	.53	.53	.53
19.00	DISCHG	.53	.45	.35	.33	.32	.32	.28	.23	.22	.21
20.00	DISCHG	.21	.33	.48	.52	.53	.53	.45	.35	.33	.32
21.00	DISCHG	.32	.36	.41	.42	.43	.43	.39	.34	.32	.32
22.00	DISCHG	.32	.32	.32	.32	.32	.32	.32	.32	.32	.32
23.00	DISCHG	.32	.36	.40	.41	.42	.42	.27	.07	.02	.01
24.00	DISCHG	.01	.01	.00							

RUNOFF VOLUME ABOVE BASEFLOW = 1.56 WATERSHED INCHES, 33.17 CFS-HRS, 2.74 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR XSECTION 4, ALTERNATE 1, STORM 2, ADDED TO OUTPUT HYDROGRAPH FILE ---

OPERATION RESVOR STRUCTURE 1

TR20 XEQ 01-25-95 13:08 CANON CITY HOGBACK4 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM JOB
 PASS 2
 REV PC 09/83(.2) DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET04
 PAGE 2

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
 6.14 25.56 5444.57

EXECUTIVE CONTROL OPERATION ENDCMP

RECORD

D

COMPUTATIONS COMPLETED FOR PASS 2

ID

MAIN TIME INCREMENT = .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT

RECORD

ID

FROM XSECTION 4

TO STRUCTURE 1

STARTING TIME = .00 RAIN DEPTH = 2.75 RAIN DURATION = 1.00 RAIN TABLE NO. = 7 ANT. MOIST. COND = 2
 ALTERNATE NO. = 1 STORM NO. = 3 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 4

PEAK TIME(HRS)

PEAK DISCHARGE(CFS)

PEAK ELEVATION(FEET)

5.97

42.47

(RUNOFF)

7.45

2.17

(RUNOFF)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .03 SQ.

MI.

5.00	DISCHG	.00	.00	.00	.00	.00	.00	.94	10.59	24.07	34.79
6.00	DISCHG	42.33	30.17	10.06	4.83	3.64	3.37	2.88	2.30	2.15	2.13
7.00	DISCHG	2.12	2.13	2.14	2.14	2.15	2.15	2.00	1.80	1.75	1.74
8.00	DISCHG	1.74	1.42	1.01	.90	.88	.88	.88	.88	.88	.88
9.00	DISCHG	.88	.88	.88	.88	.88	.88	.89	.89	.89	.89
10.00	DISCHG	.89	.89	.89	.89	.89	.89	.73	.52	.46	.45
11.00	DISCHG	.45	.62	.83	.88	.89	.90	.73	.52	.47	.45
12.00	DISCHG	.45	.62	.83	.89	.90	.90	.74	.52	.47	.46
13.00	DISCHG	.45	.45	.45	.45	.45	.46	.62	.84	.89	.91
14.00	DISCHG	.91	.74	.53	.47	.46	.46	.46	.46	.46	.46
15.00	DISCHG	.46	.46	.46	.46	.46	.46	.46	.46	.46	.46
16.00	DISCHG	.46	.46	.46	.46	.46	.46	.46	.46	.46	.46
17.00	DISCHG	.46	.46	.46	.46	.46	.46	.46	.46	.46	.46
18.00	DISCHG	.46	.46	.46	.46	.46	.46	.46	.46	.46	.46
19.00	DISCHG	.46	.39	.31	.29	.28	.28	.24	.20	.19	.19
20.00	DISCHG	.19	.29	.42	.46	.46	.46	.40	.31	.29	.28
21.00	DISCHG	.28	.31	.36	.37	.37	.37	.34	.29	.28	.28
22.00	DISCHG	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28
23.00	DISCHG	.28	.31	.35	.36	.36	.36	.23	.06	.02	.01
24.00	DISCHG	.01	.01	.00							

RUNOFF VOLUME ABOVE BASEFLOW = 1.31 WATERSHED INCHES. 27.96 CFS-HRS, 2.31 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR XSECTION 4, ALTERNATE 1, STORM 3, ADDED TO OUTPUT HYDROGRAPH FILE ---

1

TR20 XEQ 01-25-95 13:08

CANYON CITY HOGBACK4 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

PASS 3

REV PC 09/83(.2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET04

PAGE 3

OPERATION RESVOR STRUCTURE 1

PEAK TIME(HRS)

PEAK DISCHARGE(CFS)

PEAK ELEVATION(FEET)

6.14

22.09

5443.80

EXECUTIVE CONTROL OPERATION ENDCMP

RECORD

ID

ID

TR20 XEQ 01-25-95 13:08

CANYON CITY HOGBACK4 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

SUMMARY

REV PC 09/83(.2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET04

PAGE 4

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

SECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RAIN TABLE	ANTEC KDIST	MAIN TIME	PRECIPITATION			RUNOFF	PEAK DISCHARGE		
ID	OPERATION	AREA	#	COND	INCREM	BEGIN	AMOUNT	DURATION	AMOUNT	ELEVATION	TIME	RATE
(CSM)		(SQ MI)			(HR)	(HR)	(IN)	(HR)	(IN)	(FT)	(HR)	(CFS)
ALTERNATE	1	STORM	1									
XSECTION 1807.4	4 RUNOFF	.03	7	2	.10	.0	3.40	24.00	1.85	---	5.98	59.64
STRUCTURE 1075.9	1 RESVDR	.03	7	2	.10	.0	3.40	24.00	1.86	5445.23	6.11	35.51
ALTERNATE	1	STORM	2									
XSECTION 1524.4	4 RUNOFF	.03	7	2	.10	.0	3.05	24.00	1.56	---	5.99	50.30
STRUCTURE 774.5	1 RESVDR	.03	7	2	.10	.0	3.05	24.00	1.55	5444.57	6.14	25.56
ALTERNATE	1	STORM	3									
XSECTION 1286.9	4 RUNOFF	.03	7	2	.10	.0	2.75	24.00	1.31	---	5.99	42.47
STRUCTURE 669.5	1 RESVDR	.03	7	2	.10	.0	2.75	24.00	1.31	5443.80	6.14	22.09

TR20 XEQ 01-25-95 13:08

CANYON CITY HOGBACK4 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

SUMMARY

REV PC 09/83(.2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET04

PAGE 5

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

XSECTION/ STRUCTURE	DRAINAGE AREA	STORM NUMBERS
------------------------	------------------	---------------

STRUCTURE 1 .03

ALTERNATE	1	35.51	25.56	22.09
XSECTION	4			

.03

ALTERNATE	1	59.64	50.30	42.47
-----------	---	-------	-------	-------

END OF 1 JOBS IN THIS RUN

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

JOB TR-20 SUMMARY NOFLOTS
 TITLE 001 CANNON CITY HOGBACKS BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

TITLE DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET05

5 RAINFL 7	0.5				
8	0.0000	0.0040	0.0080	0.0100	0.0140
8	0.0190	0.0220	0.0260	0.0300	0.0450
8	0.0600	0.1000	0.7100	0.7500	0.7750
8	0.8000	0.8200	0.8300	0.8400	0.8500
8	0.8600	0.8700	0.8750	0.8850	0.8900
8	0.9000	0.9050	0.9100	0.9200	0.9250
8	0.9300	0.9350	0.9400	0.9450	0.9500
8	0.9550	0.9600	0.9650	0.9700	0.9730
8	0.9750	0.9800	0.9830	0.9870	0.9900
8	0.9930	0.9960	0.9990	1.0000	1.0000

9 ENDTBL					
2 XSECTN 004	1.0				
8	5435.0	0.0	0.0		
8	5435.4	10.0	3.12		
8	5435.9	50.0	9.96		
8	5436.3	100.0	16.59		
8	5436.8	200.0	27.74		
8	5437.6	500.0	54.93		

9 ENDTBL					
3 STRUCT 01					
8	5435.0	0.0	0.0		
8	5436.5	7.5	0.20		
8	5438.0	18.5	0.50		
8	5439.0	23.0	0.70		
8	5440.0	27.5	0.90		
8	5441.0	62.0	1.15		
8	5442.0	122.0	1.30		

6 RUNOFF 1 004	5	0.027	84.0	0.167	1 1	1 1
6 RESVOR 2 01 5	6	5435.0			1	
ENDATA						
7 INCREM 6		0.10				
7 COMPUT 7 004	01	0.0	3.40	1.0	7 2	01 01
ENDCMP 1						
7 INCREM 6		0.10				
7 COMPUT 7 004	01	0.0	3.05	1.0	7 2	01 02
ENDCMP 1						
7 INCREM 6		0.10				
7 COMPUT 7 004	01	0.0	2.75	1.0	7 2	01 03
ENDCMP 1						
ENDJOB 2						

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

EXECUTIVE CONTROL OPERATION INCREM
 ID

RECORD

MAIN TIME INCREMENT = .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT
 ID

RECORD

STARTING TIME = .00 RAIN DEPTH = 3.40 RAIN DURATION= 1.00 RAIN TABLE NO.= 7 ANT. MOIST. COND= 2
ALTERNATE NO.= 1 STORM NO.= 1 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 4

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
5.98 48.80 (RUNOFF)
7.45 2.38 (RUNOFF)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .03 SQ.

1.	5.00	DISCHG	.00	.00	.00	.00	.00	2.56	16.19	30.85	41.46
	6.00	DISCHG	43.47	33.94	11.26	5.36	4.03	3.71	3.18	2.53	2.34
	7.00	DISCHG	2.33	2.34	2.34	2.35	2.35	2.36	2.19	1.97	1.90
	8.00	DISCHG	1.90	1.55	1.10	.99	.96	.96	.96	.96	.96
	9.00	DISCHG	.96	.96	.56	.96	.96	.96	.96	.96	.97
	10.00	DISCHG	.97	.97	.97	.97	.97	.97	.79	.56	.49
	11.00	DISCHG	.49	.67	.90	.96	.97	.97	.79	.56	.49
	12.00	DISCHG	.49	.67	.90	.96	.97	.98	.80	.57	.49
	13.00	DISCHG	.49	.49	.49	.49	.49	.49	.68	.91	.98
	14.00	DISCHG	.98	.80	.57	.51	.50	.49	.49	.49	.49
	15.00	DISCHG	.49	.49	.49	.49	.49	.49	.49	.49	.50
	16.00	DISCHG	.50	.50	.50	.50	.50	.50	.50	.50	.50
	17.00	DISCHG	.50	.50	.50	.50	.50	.50	.50	.50	.50
	18.00	DISCHG	.50	.50	.50	.50	.50	.50	.50	.50	.50
	19.00	DISCHG	.50	.42	.33	.31	.30	.30	.26	.22	.20
	20.00	DISCHG	.20	.31	.45	.49	.50	.50	.43	.33	.31
	21.00	DISCHG	.30	.34	.39	.40	.40	.40	.36	.32	.30
	22.00	DISCHG	.30	.30	.30	.30	.30	.30	.30	.30	.30
	23.00	DISCHG	.30	.34	.38	.39	.39	.39	.25	.07	.02
	24.00	DISCHG	.01	.01	.00						

RUNOFF VOLUME ABOVE BASEFLOW = 1.65 WATERSHED INCHES, 32.26 CFS-HRS, 2.67 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR XSECTION 4, ALTERNATE 1, STORM 1, ADDED TO OUTPUT HYDROGRAPH FILE ---

OPERATION RESVOR STRUCTURE 1

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
6.14 25.26 5439.50

TR20 XEQ 02-03-95 10:01 CANON CITY HOBBACKS BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM JOB
PASS 2
REV PC 09/83(1,2) DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOBDET05
PAGE 1

EXECUTIVE CONTROL OPERATION ENDCMP

RECORD

ID

COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL OPERATION INCREM

RECORD

ID

MAIN TIME INCREMENT = .10 HOURS

ID

FROM XSECTION 4

TO STRUCTURE 1

STARTING TIME = .00 RAIN DEPTH = 3.05 RAIN DURATION= 1.00 RAIN TABLE NO.= 7 ANT. MOIST. COND= 2
 ALTERNATE NO.= 1 STORM NO.= 2 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 4

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
 5.99 41.16 (RUNOFF)
 7.45 2.05 (RUNOFF)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .03 SQ.

TIME(HRS)	DISCHG	DISCHG	DISCHG	DISCHG	DISCHG	DISCHG	DISCHG	DISCHG	DISCHG	DISCHG	DISCHG	DISCHG
5.00	DISCHG	.00	.00	.00	.00	.00	.00	1.46	11.95	24.70	34.37	
6.00	DISCHG	40.96	28.93	9.62	4.60	3.46	3.20	2.74	2.18	2.04	2.01	
7.00	DISCHG	2.01	2.02	2.02	2.03	2.03	2.03	1.89	1.70	1.65	1.64	
8.00	DISCHG	1.64	1.34	.95	.88	.83	.83	.83	.83	.83	.83	
9.00	DISCHG	.83	.83	.83	.83	.83	.83	.83	.84	.84	.84	
10.00	DISCHG	.84	.84	.84	.84	.84	.84	.68	.49	.44	.42	
11.00	DISCHG	.42	.58	.78	.83	.84	.84	.69	.49	.44	.43	
12.00	DISCHG	.42	.58	.78	.83	.85	.85	.69	.49	.44	.43	
13.00	DISCHG	.43	.43	.43	.43	.43	.43	.59	.79	.84	.85	
14.00	DISCHG	.85	.70	.49	.44	.43	.43	.43	.43	.43	.43	
15.00	DISCHG	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	
16.00	DISCHG	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	
17.00	DISCHG	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	
18.00	DISCHG	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	
19.00	DISCHG	.43	.37	.29	.27	.26	.26	.23	.19	.18	.17	
20.00	DISCHG	.18	.27	.40	.43	.43	.44	.37	.29	.27	.26	
21.00	DISCHG	.26	.29	.34	.35	.35	.35	.32	.28	.27	.26	
22.00	DISCHG	.26	.26	.26	.26	.26	.26	.26	.26	.26	.26	
23.00	DISCHG	.26	.29	.33	.34	.34	.34	.22	.06	.02	.01	
24.00	DISCHG	.01	.01	.00								

RUNOFF VOLUME ABOVE BASEFLOW = 1.56 WATERSHED INCHES, 27.14 CFS-HRS, 2.24 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR XSECTION 4, ALTERNATE 1, STORM 2, ADDED TO OUTPUT HYDROGRAPH FILE ---

OPERATION RESVOR STRUCTURE 1

TR20 XEQ 02-03-95 10:01 CANON CITY HOGBACK5 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM JOB
 PASS 2
 REV PC 09/83(.2) DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET05
 PAGE 2

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
 6.14 21.84 5438.74

EXECUTIVE CONTROL OPERATION ENDCMP

RECORD

ID

COMPUTATIONS COMPLETED FOR PASS 2

ID

MAIN TIME INCREMENT = .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT

RECOR

ID

FROM XSECTION 4

TO STRUCTURE 1

STARTING TIME = .00 RAIN DEPTH = 2.75 RAIN DURATION = 1.00 RAIN TABLE NO. = 7 ANT. MOIST. COND = 1
 ALTERNATE NO. = 1 STORM NO. = 3 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 4

PEAK TIME(HRS)

PEAK DISCHARGE(CFS)

PEAK ELEVATION(FEET)

5.99

34.75

(RUNOFF)

7.45

1.77

(RUNOFF)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .03 SQ.

-11.

5.00	DISCHG	.00	.00	.00	.00	.00	.00	.77	8.66	19.70	28.47
6.00	DISCHG	34.64	24.69	8.23	3.95	2.98	2.75	2.36	1.88	1.76	1.74
7.00	DISCHG	1.74	1.74	1.75	1.75	1.76	1.75	1.63	1.47	1.43	1.42
8.00	DISCHG	1.42	1.16	.83	.74	.72	.72	.72	.72	.72	.72
9.00	DISCHG	.72	.72	.72	.72	.72	.72	.72	.72	.75	.73
10.00	DISCHG	.73	.73	.73	.73	.73	.73	.59	.42	.38	.37
11.00	DISCHG	.37	.50	.68	.72	.73	.73	.60	.43	.38	.37
12.00	DISCHG	.37	.51	.68	.73	.74	.74	.60	.43	.38	.37
13.00	DISCHG	.37	.37	.37	.37	.37	.37	.51	.69	.73	.74
14.00	DISCHG	.74	.61	.43	.39	.38	.37	.37	.37	.37	.37
15.00	DISCHG	.37	.37	.37	.37	.37	.38	.38	.38	.38	.38
16.00	DISCHG	.38	.38	.38	.38	.38	.38	.38	.38	.38	.38
17.00	DISCHG	.38	.38	.38	.38	.38	.38	.38	.38	.38	.38
18.00	DISCHG	.38	.38	.38	.38	.38	.38	.38	.38	.38	.38
19.00	DISCHG	.38	.32	.23	.23	.23	.23	.20	.16	.15	.15
20.00	DISCHG	.15	.24	.35	.37	.38	.38	.32	.25	.23	.23
21.00	DISCHG	.23	.26	.29	.30	.30	.31	.28	.24	.23	.23
22.00	DISCHG	.23	.23	.23	.23	.23	.23	.23	.23	.23	.23
23.00	DISCHG	.23	.26	.29	.30	.30	.30	.19	.05	.02	.01
24.00	DISCHG	.01	.00								

RUNOFF VOLUME ABOVE BASEFLOW = 1.31 WATERSHED INCHES, 22.87 CFS-HRS, 1.89 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR XSECTION 4, ALTERNATE 1, STORM 3, ADDED TO OUTPUT HYDROGRAPH FILE ---

TR20 XEQ 02-03-95 10:01

CANYON CITY HOGBACKS BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

PASS 3

REV PC 09/83(.2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET05

PAGE 3

PERATION RESVOR STRUCTURE 1

PEAK TIME(HRS)

PEAK DISCHARGE(CFS)

PEAK ELEVATION(FEET)

6.14

19.31

5438.18

EXECUTIVE CONTROL OPERATION ENDCMP

RECORD

ID

ID

TR20 XEQ 02-03-95 10:01

CANDON CITY HOGBACK5 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

1 SUMMARY

REV PC 09/83(.2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET05

PAGE 4

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED

(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH

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

SECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE AREA	RAIN TABLE	ANTEC MOIST	MAIN TIME	PRECIPITATION			RUNOFF	PEAK DISCHARGE		
ID	OPERATION	(SQ MI)	#	COND	INCREM	BEGIN	AMOUNT	DURATION	AMOUNT	ELEVATION	TIME	RATE
(CSM)					(HR)	(HR)	(IN)	(HR)	(IN)	(FT)	(HR)	(CFS)

ALTERNATE 1 STORM 1

+

XSECTION 4	RUNOFF	.03	7	2	.10	.0	3.40	24.00	1.85	---	5.98	48.80
1807.4												
STRUCTURE 1	RESVOR	.03	7	2	.10	.0	3.40	24.00	1.85	5439.50	6.14	25.26
935.5												

ALTERNATE 1 STORM 2

+

XSECTION 4	RUNOFF	.03	7	2	.10	.0	3.05	24.00	1.56	---	5.99	41.16
1524.4												
STRUCTURE 1	RESVOR	.03	7	2	.10	.0	3.05	24.00	1.55	5438.74	6.14	21.84
808.7												

ALTERNATE 1 STORM 3

+

XSECTION 4	RUNOFF	.03	7	2	.10	.0	2.75	24.00	1.31	---	5.99	34.75
1286.9												
STRUCTURE 1	RESVOR	.03	7	2	.10	.0	2.75	24.00	1.31	5438.18	6.14	19.31
715.2												

TR20 XEQ 02-03-95 10:01

CANDON CITY HOGBACK5 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

1 SUMMARY

REV PC 09/83(.2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET05

PAGE 5

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

XSECTION/ STRUCTURE	DRAINAGE AREA	STORM NUMBERS.....
------------------------	------------------	--------------------

0 STRUCTURE 1 .03

ALTERNATE 1

25.26

21.84

19.31

0 XSECTION 4 .03

ALTERNATE 1

48.80

41.16

34.75

END OF 1 JOBS IN THIS RUN

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

```

009 TR-20                                SUMMARY  NOPLOTS
TITLE 001  CANYON CITY HOBBSACKS BASIN  TR20 RUN  24 HR. 100 50 25 YR. STORM
TITLE      DEVELOPED CONDITIONS W/ TYPE II STORM  INPUT:H03DET09
5 RAINFL 7                                0.5
8      0.0000      0.0040      0.0080      0.0100      0.0140
8      0.0190      0.0220      0.0260      0.0300      0.0450
8      0.0600      0.1000      0.7100      0.7500      0.7750
8      0.8000      0.8200      0.8300      0.8400      0.8500
8      0.8600      0.8700      0.8750      0.8850      0.8900
8      0.9000      0.9050      0.9100      0.9200      0.9250
8      0.9300      0.9330      0.9400      0.9450      0.9500
8      0.9550      0.9600      0.9650      0.9700      0.9730
8      0.9750      0.9800      0.9830      0.9870      0.9900
8      0.9930      0.9960      0.9999      1.0000      1.0000
9 ENDTBL
2 XSECTN  004      1.0
8      5430.0      0.0      0.0
8      5430.4      10.0      3.12
8      5430.9      50.0      9.96
8      5431.3      100.0     16.59
8      5431.8      200.0     27.74
8      5432.6      500.0     54.93
9 ENDTBL
2 XSECTN  006      1.0
8      5450.0      0.0      0.0
8      5450.4      10.0      3.12
8      5450.9      50.0      9.96
8      5451.3      100.0     16.59
8      5451.8      200.0     27.74
8      5452.6      500.0     54.93
9 ENDTBL
3 STRUCT  01
8      5430.0      0.0      0.0
8      5431.5      7.5      0.20
8      5433.0      18.5     0.50
8      5434.0      23.0     0.70
8      5435.0      27.5     0.90
8      5436.0      62.0     1.15
8      5437.0     122.0     1.30
9 ENDTBL
5 RUNOFF 1 006      7      0.0042      84.0      0.167      1
6 REACH  3 004      7      6      500.0
6 RUNOFF 1 004      5      0.023      84.0      0.182      1
6 ADDHYD 4 004      6 5 4      1
6 RESVOR 2  01 4      6      5430.0      1 1      1 1
ENDATA

```

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

```

7 INCREM 6      0.10
COMPUT 7 006      01      0.0      3.40      1.0      7 2 01 01
ENDCMP 1

```

ENDCMP 1
 7 INCREM 6 0.10
 7 COMPUT 7 006 01 0.0 2.75 1.0 7 2 01 03

ENDCMP 1

ENDJOB 2

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

EXECUTIVE CONTROL OPERATION INCREM

RECORD

ID

MAIN TIME INCREMENT = .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT

RECORD

ID

FROM XSECTION 6

TO STRUCTURE 1

STARTING TIME = .00 RAIN DEPTH = 3.40 RAIN DURATION= 1.00 RAIN TABLE NO.= 7 ANT. MOIST. COND= 2
 ALTERNATE NO.= 1 STORM NO.= 1 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 6

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
5.98	7.59	(RUNOFF)

*** WARNING REACH 4 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

OPERATION RUNOFF CROSS SECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
5.99	40.68	(RUNOFF)
7.45	2.02	(RUNOFF)

OPERATION ADDHYD CROSS SECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
5.99	48.26	5430.88
7.45	2.39	5430.10

OPERATION RESVOR STRUCTURE 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.15	25.23	5434.50

TR20 XEQ 02-03-95 10:01 CANNON CITY HOGBACKS BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

PASS 1

REV PC 09/83(.2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGSET08

PAGE 1

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .03 SQ.

5.00	DISCHG	.00	.00	.00	.00	.00	.00	.30	2.51	7.82	15.03
6.00	DISCHG	21.26	24.80	24.76	22.18	19.28	15.70	12.50	9.98	8.01	6.51
7.00	DISCHG	5.40	4.58	3.98	3.55	3.23	3.00	2.81	2.62	2.45	2.31
8.00	DISCHG	2.20	2.08	1.89	1.67	1.49	1.35	1.25	1.17	1.12	1.07

11.00	DISCHG	.65	.63	.67	.74	.80	.85	.86	.82	.75	.68
12.00	DISCHG	.63	.62	.66	.73	.79	.84	.86	.82	.75	.68
13.00	DISCHG	.63	.60	.57	.55	.53	.52	.54	.60	.69	.77
14.00	DISCHG	.83	.85	.81	.74	.68	.63	.60	.57	.55	.54
15.00	DISCHG	.53	.52	.51	.51	.51	.50	.50	.50	.50	.50
16.00	DISCHG	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50
17.00	DISCHG	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50
18.00	DISCHG	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50
19.00	DISCHG	.50	.49	.47	.43	.40	.37	.35	.32	.29	.27
20.00	DISCHG	.25	.25	.26	.33	.38	.41	.43	.42	.39	.37
21.00	DISCHG	.35	.34	.35	.36	.37	.38	.38	.37	.36	.34
22.00	DISCHG	.33	.33	.32	.32	.31	.31	.31	.31	.31	.31
23.00	DISCHG	.31	.31	.32	.34	.35	.36	.36	.31	.24	.18
24.00	DISCHG	.13	.10	.07	.05	.04	.03	.02	.02	.01	.01
25.00	DISCHG	.01									

RUNOFF VOLUME ABOVE BASEFLOW = 1.85 WATERSHED INCHES, 32.44 CFS-HRS, 2.68 ACRE-FeET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR STRUCTURE 1, ALTERNATE 1, STORM 1, ADDED TO OUTPUT HYDROGRAPH FILE ---

EXECUTIVE CONTROL OPERATION ENDCMP
ID

RECORD

COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL OPERATION INCREM
ID

RECORD

MAIN TIME INCREMENT = .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT
ID

RECORD

FROM XSECTION 6

TO STRUCTURE 1

STARTING TIME = .00 RAIN DEPTH = 3.05 RAIN DURATION= 1.00 RAIN TABLE NO.= 7 ANT. MOIST. COND= 2
ALTERNATE NO.= 1 STORM NO.= 2 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 6

PEAK TIME(HRS)
5.99

PEAK DISCHARGE(CFS)
6.40

PEAK ELEVATION(FeET)
(RUNOFF)

*** WARNING REACH 4 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

TR20 XEQ 02-03-95 10:01
PASS 2
REV PC 09/83(.2)
PAGE 2

CANDON CITY HOGBACKS BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM
DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET08

JOB

OPERATION RUNOFF CROSS SECTION 4

PEAK TIME(HRS)
5.99
7.45

PEAK DISCHARGE(CFS)
34.27
1.75

PEAK ELEVATION(FeET)
(RUNOFF)
(RUNOFF)

OPERATION ADDHYD CROSS SECTION 4

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
5.99	40.67	5430.78
7.45	2.06	5430.08

OPERATION RESVOR STRUCTURE 1

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.15	21.79	5433.73

TIME(HRS)	FIRST HYDROGRAPH POINT =	.00 HOURS	TIME INCREMENT =	.10 HOURS	DRAINAGE AREA =	.03 SQ.
MI.						
5.00	DISCHG	.00	.00	.00	.00	.17
6.00	DISCHG	18.55	21.46	21.37	19.13	15.60
7.00	DISCHG	4.39	3.76	3.30	2.96	2.71
8.00	DISCHG	1.89	1.79	1.63	1.44	1.28
9.00	DISCHG	.90	.89	.87	.86	.86
10.00	DISCHG	.84	.84	.84	.84	.84
11.00	DISCHG	.57	.55	.58	.64	.69
12.00	DISCHG	.55	.53	.57	.63	.69
13.00	DISCHG	.55	.52	.49	.48	.46
14.00	DISCHG	.72	.74	.71	.65	.59
15.00	DISCHG	.46	.45	.45	.44	.44
16.00	DISCHG	.43	.43	.43	.43	.43
17.00	DISCHG	.44	.44	.44	.44	.44
18.00	DISCHG	.44	.44	.44	.44	.44
19.00	DISCHG	.44	.43	.41	.37	.34
20.00	DISCHG	.22	.22	.25	.29	.33
21.00	DISCHG	.31	.30	.30	.31	.32
22.00	DISCHG	.29	.28	.28	.27	.27
23.00	DISCHG	.27	.27	.28	.29	.31
24.00	DISCHG	.12	.09	.06	.05	.03

RUNOFF VOLUME ABOVE BASEFLOW = 1.55 WATERSHED INCHES, 27.28 CFS-HRS, 2.25 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR STRUCTURE 1, ALTERNATE 1, STORM 2, ADDED TO OUTPUT HYDROGRAPH FILE ---

EXECUTIVE CONTROL OPERATION ENDCMP
ID

RECORD

COMPUTATIONS COMPLETED FOR PASS 2

TR20 XEQ 02-03-95 10:01
PASS 3
REV PC 09/83(.2)
PAGE 3

CANON CITY HOGBACK BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM
DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET08

JOB

EXECUTIVE CONTROL OPERATION INCREM
ID

RECORD

MAIN TIME INCREMENT = .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT
ID

RECORD

STARTING TIME = .00 RAIN DEPTH = 2.75 RAIN DURATION= 1.00 RAIN TABLE NO.= 7 ANT. MOIST. COND= 2
 ALTERNATE NO.= 1 STORM NO.= 3 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 6

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
 5.99 5.40 (RUNOFF)

*** WARNING REACH 4 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

OPERATION RUNOFF CROSS SECTION 4

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
 6.00 28.90 (RUNOFF)

OPERATION ADDHYD CROSS SECTION 4

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
 5.99 34.30 5430.70
 7.45 1.79 5430.07

OPERATION RESVOR STRUCTURE 1

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
 6.15 19.31 5433.18

TIME(HRS)	FIRST HYDROGRAPH POINT = .00 HOURS	TIME INCREMENT = .10 HOURS	DRAINAGE AREA = .03 SQ.
5.00	DISCHG .00 .00 .00 .00 .00 .00 .09	1.21 4.47 9.48	
6.00	DISCHG 15.16 18.90 18.73 15.76 12.62 10.08 8.12	6.54 5.28 4.34	
7.00	DISCHG 3.65 3.14 2.77 2.50 2.30 2.16 2.04	1.92 1.80 1.70	
8.00	DISCHG 1.63 1.55 1.41 1.25 1.11 1.01 .93	.88 .83 .81	
9.00	DISCHG .78 .77 .76 .75 .74 .74 .74	.73 .73 .73	
10.00	DISCHG .73 .73 .73 .73 .73 .73 .72	.67 .60 .54	
11.00	DISCHG .49 .48 .50 .56 .60 .64 .65	.62 .56 .51	
12.00	DISCHG .48 .47 .50 .55 .60 .64 .65	.62 .56 .52	
13.00	DISCHG .48 .45 .43 .41 .40 .40 .41	.46 .52 .58	
14.00	DISCHG .63 .64 .61 .56 .52 .48 .45	.45 .42 .41	

TR20 XEQ 02-03-95 10:01 CANON CITY HOGBACKS BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM JOB
 PASS 3
 REV PC 09/83(2) DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET08
 PAGE 4

15.00	DISCHG .40 .39 .39 .39 .38 .38 .38 .38 .38 .38 .38
16.00	DISCHG .38 .38 .38 .38 .38 .38 .38 .38 .38 .38 .38
17.00	DISCHG .38 .38 .38 .38 .38 .38 .38 .38 .38 .38 .38
18.00	DISCHG .38 .38 .38 .38 .38 .38 .38 .38 .38 .38 .38
19.00	DISCHG .38 .38 .35 .33 .30 .28 .26 .24 .22 .20
20.00	DISCHG .19 .19 .22 .25 .27 .31 .32 .32 .30 .28
21.00	DISCHG .27 .26 .27 .27 .28 .29 .29 .28 .27 .26
22.00	DISCHG .25 .25 .24 .24 .24 .24 .23 .23 .23 .23
23.00	DISCHG .23 .24 .24 .26 .27 .28 .27 .23 .18 .14
24.00	DISCHG .10 .08 .06 .04 .03 .02 .02 .01 .01 .01

RUNOFF VOLUME ABOVE BASEFLOW = 1.31 WATERSHED INCHES, 23.01 CFS-HRS, 1.90 ACRE-FEET; BASEFLOW = .00 CFS

ID

COMPUTATIONS COMPLETED FOR PASS 3

ID

R20 XEQ 02-03-95 10:01

CANNON CITY HOGBACKS BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

SUMMARY

REV PC 09/83(.2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET08

PAGE 5

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED

(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH

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

SECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RAIN TABLE	ANTEC MOIST	MAIN TIME	PRECIPITATION			RUNOFF	PEAK DISCHARGE		
ID	OPERATION	AREA	#	COND	INCREM	BEGIN	AMOUNT	DURATION	AMOUNT	ELEVATION	TIME	RATE
(CSM)		(SQ MI)			(HR)	(HR)	(IN)	(HR)	(IN)	(FT)	(HR)	(CFS)
ALTERNATE 1 STORM 1												
XSECTION 1807.4	6 RUNOFF	.00	7	2	.10	.0	3.40	24.00	1.85	---	5.98	7.59
SECTION 1807.4	4 REACH	.00	7	2	.10	.0	3.40	24.00	1.85	5430.30	5.98	7.59
XSECTION 1768.6	4 RUNOFF	.02	7	2	.10	.0	3.40	24.00	1.85	---	5.99	40.68
SECTION 1774.3	4 ADDHYD	.03	7	2	.10	.0	3.40	24.00	1.85	5430.88	5.99	48.26
STRUCTURE 927.7	1 RESVOR	.03	7	2	.10	.0	3.40	24.00	1.85	5434.50	6.15	25.23
ALTERNATE 1 STORM 2												
XSECTION 1524.4	6 RUNOFF	.00	7	2	.10	.0	3.05	24.00	1.56	---	5.99	6.40
SECTION 1524.4	4 REACH	.00	7	2	.10	.0	3.05	24.00	1.56	5430.26	5.99	6.40
XSECTION 1490.0	4 RUNOFF	.02	7	2	.10	.0	3.05	24.00	1.56	---	5.99	34.27
SECTION 1495.1	4 ADDHYD	.03	7	2	.10	.0	3.05	24.00	1.56	5430.78	5.99	40.67
STRUCTURE 801.3	1 RESVOR	.03	7	2	.10	.0	3.05	24.00	1.55	5433.73	6.15	21.79
ALTERNATE 1 STORM 3												
SECTION	6 RUNOFF	.00	7	2	.10	.0	2.75	24.00	1.31	---	5.99	5.40

SUMMARY

REV PC 09/83(.2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET08

PAGE 7

SUMMARY TABLE 3 - DISCHARGE (CF5) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....		
		1	2	3
STRUCTURE 1	.03			
+				
ALTERNATE 1		25.23	21.79	19.31
XSECTION 4	.03			
+				
ALTERNATE 1		48.26	40.67	34.30
XSECTION 6	.00			
+				
ALTERNATE 1		7.59	6.40	5.40

END OF 1 JOBS IN THIS RUN

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

JOB TR-20 SUMMARY NOPLOTS
 TITLE 001 CANNON CITY HDSBACK9 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

TITLE DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HDSDET09

5 RAINFL 7	0.5				
8	0.0000	0.0040	0.0080	0.0100	0.0140
8	0.0100	0.0220	0.0260	0.0300	0.0450
8	0.0600	0.1000	0.7100	0.7500	0.7750
8	0.8000	0.8200	0.8300	0.8400	0.8500
8	0.8600	0.8700	0.8750	0.8850	0.8900
8	0.9000	0.9050	0.9100	0.9200	0.9250
8	0.9300	0.9350	0.9400	0.9450	0.9500
8	0.9550	0.9600	0.9650	0.9700	0.9730
8	0.9750	0.9800	0.9830	0.9870	0.9900
8	0.9930	0.9960	0.9999	1.0000	1.0000

9 ENDTBL					
2 XSECTN 004	1.0				
8	5430.0	0.0	0.0		
8	5430.4	10.0	3.12		
8	5430.9	50.0	9.96		
8	5431.3	100.0	16.39		
8	5431.8	200.0	27.74		
8	5432.6	500.0	54.93		

9 ENDTBL					
3 STRUCT 01					
8	5430.0	0.0	0.0		
8	5431.5	6.0	0.12		
8	5433.0	11.0	0.30		
8	5434.0	13.0	0.45		
8	5435.0	16.0	0.60		
8	5436.0	50.0	0.70		
8	5437.0	110.0	0.80		

6 RUNOFF 1 004	5	0.012	84.0	0.167	1			
6 RESVOR 2 01 5	6	5430.0			1 1	1 1		
ENDATA								
7 INCREM 6		0.10						
7 COMPUT 7 004	01	0.0	3.40	1.0	7 2	01	01	
ENDCMP 1								
7 INCREM 6		0.10						
7 COMPUT 7 004	01	0.0	3.05	1.0	7 2	01	02	
ENDCMP 1								
7 INCREM 6		0.10						
7 COMPUT 7 004	01	0.0	2.75	1.0	7 2	01	03	
ENDCMP 1								
ENDJOB 2								

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

EXECUTIVE CONTROL OPERATION INCREM
 ID

RECORD

MAIN TIME INCREMENT = .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT
 ID

RECORD

STARTING TIME = .00 RAIN DEPTH = 3.40 RAIN DURATION= 1.00 RAIN TABLE NO.= 7 ANT. MOIST. COND= 2
 ALTERNATE NO.= 1 STORM NO.= 1 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 4

PEAK TIME(HRS) 5.98 PEAK DISCHARGE(CFS) 21.69 PEAK ELEVATION(FEET) (RUNOFF)

OPERATION RESVOR STRUCTURE 1

PEAK TIME(HRS) 6.14 PEAK DISCHARGE(CFS) 11.51 PEAK ELEVATION(FEET) 5433.26

TIME(HRS)	FIRST HYDROGRAPH POINT =	.00 HOURS	TIME INCREMENT =	.10 HOURS	DRAINAGE AREA =	.01 SQ.
5.00	DISCHG	.00	.00	.00	.00	.00
6.00	DISCHG	10.09	11.40	11.26	9.95	8.33
7.00	DISCHG	1.95	1.64	1.43	1.30	1.21
8.00	DISCHG	.90	.86	.77	.66	.58
9.00	DISCHG	.44	.43	.43	.43	.43
10.00	DISCHG	.43	.43	.43	.43	.43
11.00	DISCHG	.27	.26	.29	.33	.37
12.00	DISCHG	.26	.26	.29	.33	.37
13.00	DISCHG	.26	.25	.24	.23	.23
14.00	DISCHG	.39	.39	.36	.32	.29
15.00	DISCHG	.22	.22	.22	.22	.22
16.00	DISCHG	.22	.22	.22	.22	.22
17.00	DISCHG	.22	.22	.22	.22	.22
18.00	DISCHG	.22	.22	.22	.22	.22
19.00	DISCHG	.22	.22	.20	.18	.16
20.00	DISCHG	.10	.11	.13	.16	.18
21.00	DISCHG	.15	.13	.15	.16	.17
22.00	DISCHG	.14	.14	.14	.14	.14
23.00	DISCHG	.13	.14	.14	.15	.16
24.00	DISCHG	.04	.03	.02	.01	.01

RUNOFF VOLUME ABOVE BASEFLOW = 1.85 WATERSHED INCHES, 14.30 CFS-HRS, 1.18 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR STRUCTURE 1, ALTERNATE 1, STORM 1, ADDED TO OUTPUT HYDROGRAPH FILE ---

EXECUTIVE CONTROL OPERATION ENDCMP

RECORD

ID

COMPUTATIONS COMPLETED FOR PASS 1

TR20 XEQ 02-03-95 09:43

CANON CITY HOGBACK9 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

PASS 2

REV PC 09/83(.2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:H0GDET09

PAGE 1

EXECUTIVE CONTROL OPERATION INCREM

RECORD

ID

MAIN TIME INCREMENT = .10 HOURS

ID

FROM XSECTION 4

TO STRUCTURE 1

STARTING TIME = .00 RAIN DEPTH = 3.05 RAIN DURATION= 1.00 RAIN TABLE NO.= 7 ANT. MOIST. COND= 2
 ALTERNATE NO.= 1 STORM NO.= 2 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 4

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
 5.99 18.29 (RUNOFF)

OPERATION RESVOR STRUCTURE 1

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
 6.13 10.12 5432.73

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .01 SQ.

1.

5.00	DISCHG	.00	.00	.00	.00	.00	.00	.11	1.09	3.51	6.48
6.00	DISCHG	8.59	10.02	9.72	8.37	7.02	5.79	4.26	3.18	2.41	1.89
7.00	DISCHG	1.55	1.33	1.18	1.08	1.02	.98	.94	.89	.84	.80
8.00	DISCHG	.78	.74	.66	.57	.50	.46	.43	.41	.39	.39
9.00	DISCHG	.38	.38	.37	.37	.37	.37	.37	.37	.37	.37
10.00	DISCHG	.37	.37	.37	.37	.37	.37	.36	.33	.28	.25
11.00	DISCHG	.23	.23	.25	.29	.32	.34	.34	.31	.28	.25
12.00	DISCHG	.23	.23	.25	.29	.32	.34	.34	.31	.28	.25
13.00	DISCHG	.23	.21	.21	.20	.20	.19	.20	.24	.28	.31
14.00	DISCHG	.34	.34	.31	.28	.25	.23	.22	.21	.20	.20
15.00	DISCHG	.20	.19	.19	.19	.19	.19	.19	.19	.19	.19
16.00	DISCHG	.19	.19	.19	.19	.19	.19	.19	.19	.19	.19
17.00	DISCHG	.19	.19	.19	.19	.19	.19	.19	.19	.19	.19
18.00	DISCHG	.19	.19	.19	.19	.19	.19	.19	.19	.19	.19
19.00	DISCHG	.19	.19	.17	.16	.14	.13	.13	.11	.10	.09
20.00	DISCHG	.09	.09	.11	.14	.15	.17	.17	.16	.15	.14
21.00	DISCHG	.13	.13	.13	.14	.14	.15	.15	.14	.13	.13
22.00	DISCHG	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12
23.00	DISCHG	.12	.12	.13	.13	.14	.14	.14	.11	.08	.05
24.00	DISCHG	.04	.02	.02	.01	.01	.00				

RUNOFF VOLUME ABOVE BASEFLOW = 1.56 WATERSHED INCHES, 12.05 CFS-HRS, 1.00 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR STRUCTURE 1, ALTERNATE 1, STORM 2, ADDED TO OUTPUT HYDROGRAPH FILE ---

TR20 XEQ 02-03-75 09:40

CANYON CITY HOGBACK9 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

PASS 3

REV PC 09/83(1.2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET09

PAGE 2

EXECUTIVE CONTROL OPERATION ENDCMP

RECORD

ID

COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL OPERATION INCREM

RECORD

FROM XSECTION 4

TO STRUCTURE 1

STARTING TIME = .00 RAIN DEPTH = 2.75 RAIN DURATION= 1.00 RAIN TABLE NO.= 7 ANT. MOIST. COND= 2
ALTERNATE NO.= 1 STORM NO.= 3 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF CROSS SECTION 4

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
5.99 15.44 (RUNOFF)

OPERATION RESVOR STRUCTURE 1

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
6.13 8.68 5432.30

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .01 SQ.

1.											
5.00	DISCHG	.00	.00	.00	.00	.00	.00	.06	.76	2.66	5.41
6.00	DISCHG	7.42	8.61	8.34	7.13	6.02	4.41	3.29	2.48	1.91	1.52
7.00	DISCHG	1.27	1.10	.99	.92	.87	.84	.81	.77	.73	.69
8.00	DISCHG	.67	.64	.57	.50	.44	.40	.37	.35	.34	.33
9.00	DISCHG	.33	.33	.32	.32	.32	.32	.32	.32	.32	.32
10.00	DISCHG	.32	.32	.32	.32	.32	.32	.31	.28	.25	.22
11.00	DISCHG	.20	.20	.22	.25	.28	.29	.29	.27	.24	.21
12.00	DISCHG	.20	.20	.22	.25	.28	.29	.30	.27	.24	.22
13.00	DISCHG	.20	.19	.18	.17	.17	.17	.18	.21	.24	.27
14.00	DISCHG	.29	.30	.27	.24	.22	.20	.19	.18	.18	.17
15.00	DISCHG	.17	.17	.17	.17	.17	.17	.17	.17	.17	.17
16.00	DISCHG	.17	.17	.17	.17	.17	.17	.17	.17	.17	.17
17.00	DISCHG	.17	.17	.17	.17	.17	.17	.17	.17	.17	.17
18.00	DISCHG	.17	.17	.17	.17	.17	.17	.17	.17	.17	.17
19.00	DISCHG	.17	.16	.15	.14	.13	.12	.11	.10	.09	.08
20.00	DISCHG	.08	.08	.10	.12	.14	.15	.15	.14	.13	.12
21.00	DISCHG	.11	.11	.12	.12	.13	.13	.13	.12	.12	.11
22.00	DISCHG	.11	.11	.11	.10	.10	.10	.10	.10	.10	.10
23.00	DISCHG	.10	.10	.11	.12	.12	.13	.12	.10	.07	.05
24.00	DISCHG	.03	.02	.01	.01	.01	.00				

RUNOFF VOLUME ABOVE BASEFLOW = 1.31 WATERSHED INCHES, 10.15 CFS-HRS, .84 ACRE-FEET; BASEFLOW = .00 CFS

TR20 XEQ 02-03-95 09:43

CANNON CITY HOGBACK9 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

PASS 3

REV PC 09/83(.2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGDET09

PAGE 3

--- HYDROGRAPH FOR STRUCTURE 1, ALTERNATE 1, STORM 3, ADDED TO OUTPUT HYDROGRAPH FILE ---

TR20 XEQ 02-03-95 09:43

CANNON CITY HOGBACK9 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

SUMMARY

REV PC 09/83(1,2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGGET09

PAGE 4

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

SECTION/ STRUCTURE	STANDARD CONTROL	DRAINAGE	RAIN TABLE	ANTEC MOIST	MAIN TIME	PRECIPITATION			RUNOFF	PEAK DISCHARGE		
ID	OPERATION	AREA	#	COND	INCREM	BEGIN	AMOUNT	DURATION	AMOUNT	ELEVATION	TIME	RATE
(CSM)		(SQ MI)			(HR)	(HR)	(IN)	(HR)	(IN)	(FT)	(HR)	(CFS)
ALTERNATE 1 STORM 1												
XSECTION 1807.4	4 RUNOFF	.01	7	2	.10	.0	3.40	24.00	1.85	---	5.98	21.69
STRUCTURE 959.5	1 RESVOR	.01	7	2	.10	.0	3.40	24.00	1.85	5433.26	6.14	11.51
ALTERNATE 1 STORM 2												
XSECTION 1524.4	4 RUNOFF	.01	7	2	.10	.0	3.05	24.00	1.56	---	5.99	18.29
STRUCTURE 842.9	1 RESVOR	.01	7	2	.10	.0	3.05	24.00	1.56	5432.73	6.13	10.12
ALTERNATE 1 STORM 3												
XSECTION 1286.9	4 RUNOFF	.01	7	2	.10	.0	2.75	24.00	1.31	---	5.99	15.44
STRUCTURE 723.3	1 RESVOR	.01	7	2	.10	.0	2.75	24.00	1.31	5432.30	6.13	8.68

TR20 XEQ 02-03-95 09:43

CANNON CITY HOGBACK9 BASIN TR20 RUN 24 HR. 100 50 25 YR. STORM

JOB

SUMMARY

REV PC 09/83(1,2)

DEVELOPED CONDITIONS W/ TYPE II STORM INPUT:HOGGET09

PAGE 5

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

XSECTION/ STRUCTURE	DRAINAGE AREA	STORM NUMBERS.....		
ID	(SQ MI)	1	2	3
0 STRUCTURE 1	.01			

0 XSECTION 4 .01

+

ALTERNATE 1

21.69

18.29

15.44

END OF 1 JOBS IN THIS RUN

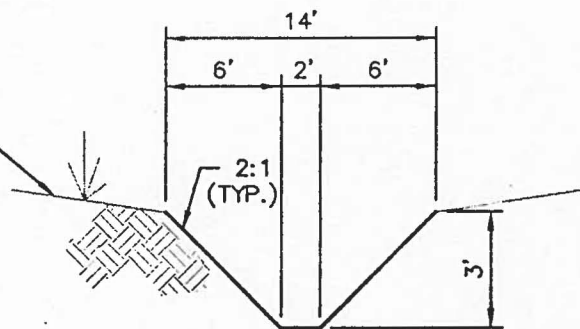
APPENDIX C

DITCH FLOW CALCULATIONS



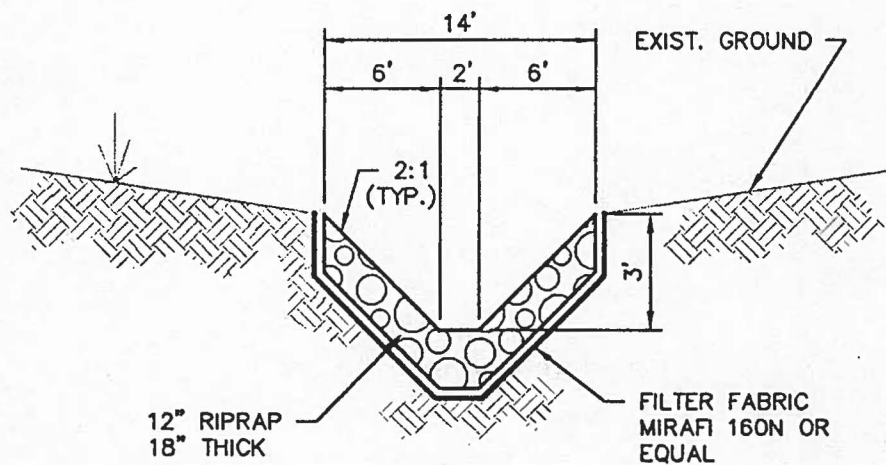
**GRAEF
ANHALT
SCHLOEMER**
and Associates Inc.

EXIST. GROUND



UNLINED DITCH

N.T.S.



12" RIPRAP
18" THICK

FILTER FABRIC
MIRAFI 160N OR
EQUAL

RIPRAP LINED DITCH

N.T.S.

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: HOBBACK NO. 1

Comment: DITCH CALCULATIONS

Solve For Depth

Given Input Data:

Bottom Width.....	2.00 ft
Left Side Slope..	2.00:1 (H:V)
Right Side Slope..	2.00:1 (H:V)
Manning's n.....	0.040
Channel Slope....	0.0460 ft/ft
Discharge.....	35.70 cfs

Computed Results:

Depth.....	1.23 ft
Velocity.....	6.48 fps
Flow Area.....	5.51 sf
Flow Top Width...	6.93 ft
Wetted Perimeter.	7.52 ft
Critical Depth...	1.40 ft
Critical Slope...	0.0272 ft/ft
Froude Number....	1.28 (flow is Supercritical)

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: HOEBACK NO. 1

Comment: DITCH CALCULATIONS

Solve For Depth

Given Input Data:

Bottom Width.....	2.00 ft
Left Side Slope..	2.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.035
Channel Slope....	0.0200 ft/ft
Discharge.....	35.70 cfs

Computed Results:

Depth.....	1.41 ft
Velocity.....	5.25 fps
Flow Area.....	6.80 sf
Flow Top Width...	7.64 ft
Wetted Perimeter.	8.31 ft
Critical Depth...	1.40 ft
Critical Slope...	0.0208 ft/ft
Froude Number....	0.98 (flow is Subcritical)

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: HOGBACK NO. 1

Comment: DITCH CALCULATIONS

Solve For Depth

Given Input Data:

Bottom Width.....	2.00 ft
Left Side Slope..	2.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.040
Channel Slope....	0.0290 ft/ft
Discharge.....	35.70 cfs

Computed Results:

Depth.....	1.38 ft
Velocity.....	3.46 fps
Flow Area.....	6.54 sf
Flow Top Width...	7.50 ft
Wetted Perimeter.	8.15 ft
Critical Depth...	1.40 ft
Critical Slope...	0.0272 ft/ft
Froude Number....	1.03 (flow is Supercritical)

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: HOSBACK MO. 1

Comment: DITCH CALCULATIONS

Solve For Depth

Given Input Data:

Bottom Width.....	2.00 ft
Left Side Slope..	2.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.040
Channel Slope....	0.0290 ft/ft
Discharge.....	56.30 cfs

Computed Results:

Depth.....	1.70 ft
Velocity.....	6.14 fps
Flow Area.....	9.17 sf
Flow Top Width...	8.80 ft
Wetted Perimeter.	9.60 ft
Critical Depth...	1.75 ft
Critical Slope...	0.0257 ft/ft
Froude Number....	1.06 (flow is Supercritical)

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: HOSBACK NO. 1

Comments: DITCH CALCULATIONS

Solve For Depth

Given Input Data:

Bottom Width.....	9.00 ft
Left Side Slope..	0.00:1 (H:V)
Right Side Slope.	0.00:1 (H:V)
Manning's n.....	0.015
Channel Slope....	0.0290 ft/ft
Discharge.....	56.30 cfs

Computed Results:

Depth.....	0.58 ft
Velocity.....	10.81 fps
Flow Area.....	5.21 sf
Flow Top Width...	9.00 ft
Wetted Perimeter.	10.16 ft
Critical Depth...	1.07 ft
Critical Slope...	0.0043 ft/ft
Froude Number....	2.50 (flow is Supercritical)

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: HOGBACK NO. 1

Comment: DITCH CALCULATIONS

Solve For Discharge

Given Input Data:

Bottom Width.....	9.00 ft
Left Side Slope..	0.00:1 (H:V)
Right Side Slope.	0.00:1 (H:V)
Manning's n.....	0.015
Channel Slope....	0.0290 ft/ft
Depth.....	0.33 ft

Computed Results:

Discharge.....	22.82 cfs
Velocity.....	7.69 fps
Flow Area.....	2.97 sf
Flow Top Width...	9.00 ft
Wetted Perimeter.	9.66 ft
Critical Depth...	0.58 ft
Critical Slope...	0.0046 ft/ft
Froude Number....	2.36 (flow is Supercritical)

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: HOGBACK DETENTION

Comment: DETENTION BASIN #2 OUTLET DITCH

Solve For Depth

Given Input Data:

Bottom Width.....	2.00 ft
Left Side Slope:..	2.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.035
Channel Slope....	0.0070 ft/ft
Discharge.....	22.00 cfs

Computed Results:

Depth.....	1.44 ft
Velocity.....	3.14 fps
Flow Area.....	7.01 sf
Flow Top Width...	7.75 ft
Wetted Perimeter.	8.43 ft
Critical Depth...	1.09 ft
Critical Slope...	0.0221 ft/ft
Froude Number....	0.58 (flow is Subcritical)

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: HOGBACK DETENTION

Comment: DETENTION BASIN #2 OUTLET DITCH

Solve For Depth

Given Input Data:

Bottom Width.....	2.00 ft
Left Side Slope..	2.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.035
Channel Slope....	0.0300 ft/ft
Discharge.....	22.00 cfs

Computed Results:

Depth.....	1.01 ft
Velocity.....	5.38 fps
Flow Area.....	4.09 sf
Flow Top Width...	6.06 ft
Wetted Perimeter.	6.54 ft
Critical Depth...	1.09 ft
Critical Slope...	0.0221 ft/ft
Froude Number....	1.15 (flow is Supercritical)

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: HOGBACK DETENTION

Comment: DETENTION BASIN #3 OUTLET DITCH

Solve For Depth

Given Input Data:

Bottom Width.....	2.00 ft
Left Side Slope..	2.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.035
Channel Slope....	0.0070 ft/ft
Discharge.....	35.00 cfs

Computed Results:

Depth.....	1.78 ft
Velocity.....	3.54 fps
Flow Area.....	9.90 sf
Flow Top Width...	9.12 ft
Wetted Perimeter.	9.96 ft
Critical Depth...	1.38 ft
Critical Slope...	0.0209 ft/ft
Froude Number....	0.60 (flow is Subcritical)

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: HOGBACK DETENTION

Comment: DETENTION BASIN #3 OUTLET DITCH

Solve For Depth

Given Input Data:

Bottom Width.....	2.00 ft
Left Side Slope..	2.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.035
Channel Slope....	0.0700 ft/ft
Discharge.....	35.00 cfs

Computed Results:

Depth.....	1.04 ft
Velocity.....	8.30 fps
Flow Area.....	4.21 sf
Flow Top Width...	6.14 ft
Wetted Perimeter.	6.63 ft
Critical Depth...	1.38 ft
Critical Slope...	0.0209 ft/ft
Froude Number....	1.77 (flow is Supercritical)

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: HOSBACK DETENTION

Comment: DETENTION BASIN #4 OUTLET DITCH

Solve For Depth

Given Input Data:

Bottom Width.....	2.00 ft
Left Side Slope..	2.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.035
Channel Slope....	0.0800 ft/ft
Discharge.....	35.00 cfs

Computed Results:

Depth.....	1.00 ft
Velocity.....	8.72 fps
Flow Area.....	4.01 sf
Flow Top Width...	6.01 ft
Wetted Perimeter.	6.48 ft
Critical Depth...	1.38 ft
Critical Slope...	0.0209 ft/ft
Froude Number....	1.88 (flow is Supercritical)

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: HOGBACK DETENTION

Comment: DETENTION BASIN #5 OUTLET DITCH

Solve For Depth

Given Input Data:

Bottom Width.....	2.00 ft
Left Side Slope..	2.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.035
Channel Slope....	0.0500 ft/ft
Discharge.....	25.00 cfs

Computed Results:

Depth.....	0.95 ft
Velocity.....	6.71 fps
Flow Area.....	3.72 sf
Flow Top Width...	5.81 ft
Wetted Perimeter.	6.26 ft
Critical Depth...	1.17 ft
Critical Slope...	0.0218 ft/ft
Froude Number....	1.48 (flow is Supercritical)

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: HDSBACK DETENTION

Comment: DETENTION BASIN #8 OUTLET DITCH

Solve For Depth

Given Input Data:

Bottom Width.....	2.00 ft
Left Side Slope..	2.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.035
Channel Slope....	0.0500 ft/ft
Discharge.....	25.00 cfs

Computed Results:

Depth.....	0.95 ft
Velocity.....	6.71 fps
Flow Area.....	3.72 sf
Flow Top Width...	5.81 ft
Wetted Perimeter..	6.26 ft
Critical Depth...	1.17 ft
Critical Slope...	0.0218 ft/ft
Froude Number....	1.48 (flow is Supercritical)

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: HOGBACK DETENTION

Comment: DETENTION BASIN #8 OUTLET DITCH

Solve For Depth

Given Input Data:

Bottom Width.....	2.00 ft
Left Side Slope..	2.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.035
Channel Slope....	0.0130 ft/ft
Discharge.....	25.00 cfs

Computed Results:

Depth.....	1.32 ft
Velocity.....	4.08 fps
Flow Area.....	6.12 sf
Flow Top Width...	7.28 ft
Wetted Perimeter.	7.90 ft
Critical Depth...	1.17 ft
Critical Slope...	0.0218 ft/ft
Froude Number....	0.78 (flow is Subcritical)

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: HOGBACK DETENTION

Comment: DETENTION BASIN #9 OUTLET DITCH

Solve For Depth

Given Input Data:

Bottom Width.....	2.00 ft
Left Side Slope..	2.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.035
Channel Slope....	0.0100 ft/ft
Discharge.....	12.00 cfs

Computed Results:

Depth.....	0.99 ft
Velocity.....	3.06 fps
Flow Area.....	3.92 sf
Flow Top Width...	5.95 ft
Wetted Perimeter.	6.41 ft
Critical Depth...	0.79 ft
Critical Slope...	0.0239 ft/ft
Froude Number....	0.66 (flow is Subcritical)

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: HOEBACK DETENTION

Comment: DETENTION BASIN #9 OUTLET DITCH

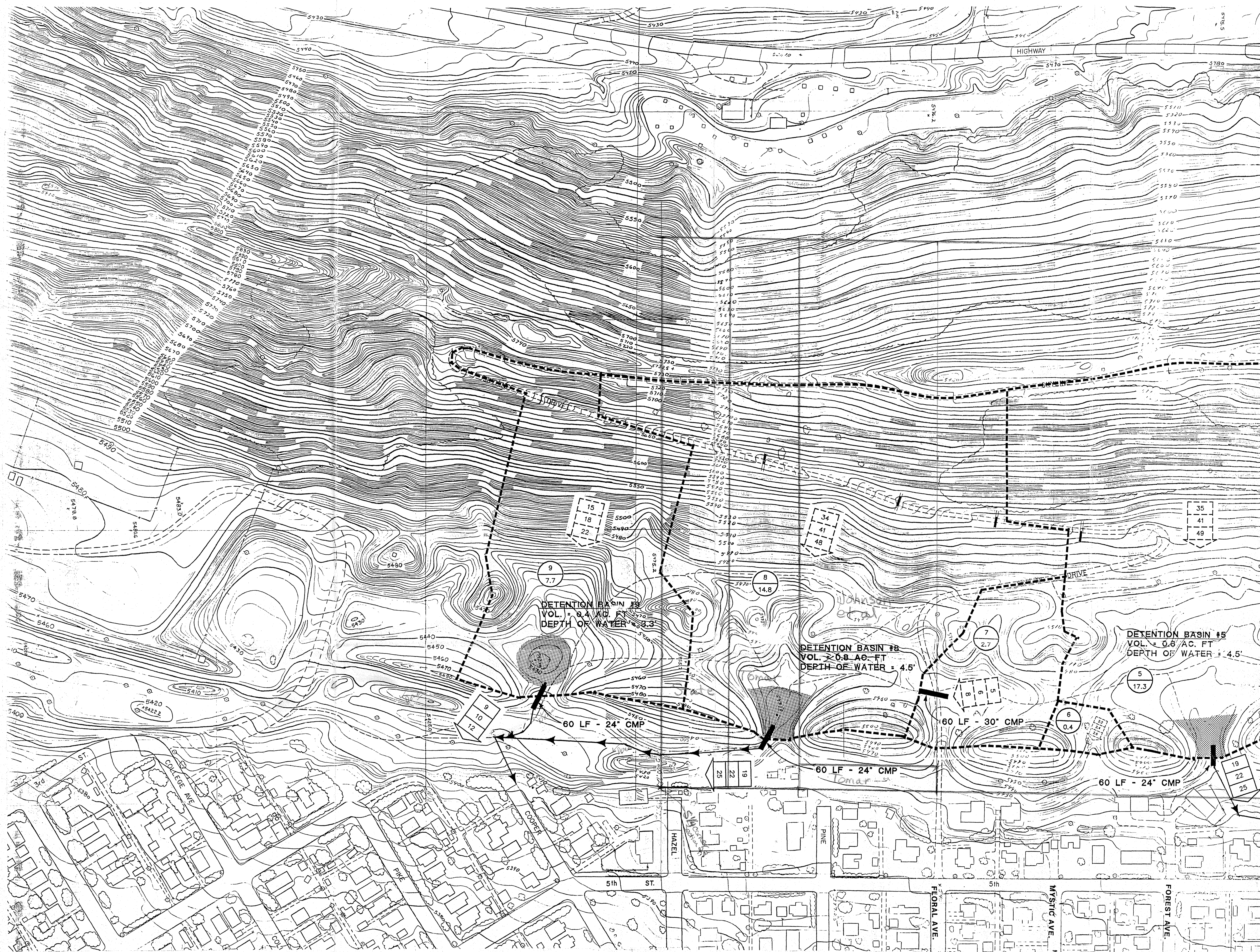
Solve For Depth

Given Input Data:

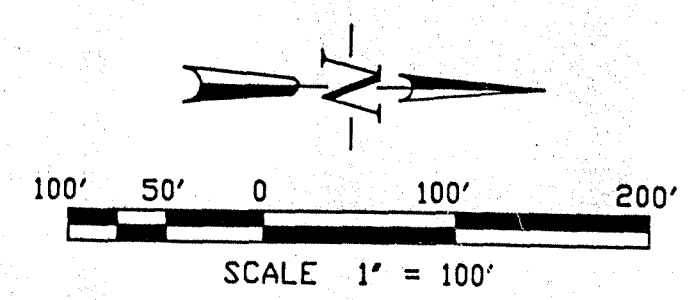
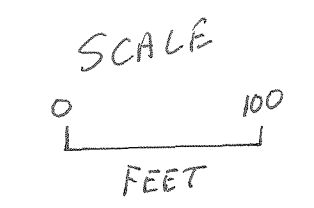
Bottom Width.....	2.00 ft
Left Side Slope..	2.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.035
Channel Slope....	0.1000 ft/ft
Discharge.....	12.00 cfs

Computed Results:

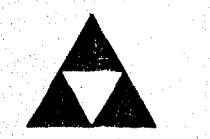
Depth.....	0.55 ft
Velocity.....	7.06 fps
Flow Area.....	1.70 sf
Flow Top Width...	4.19 ft
Wetted Perimeter.	4.45 ft
Critical Depth...	0.79 ft
Critical Slope...	0.0239 ft/ft
Froude Number....	1.96 (flow is Supercritical)



MATCHLINE SHEET 2



PREPARED BY:

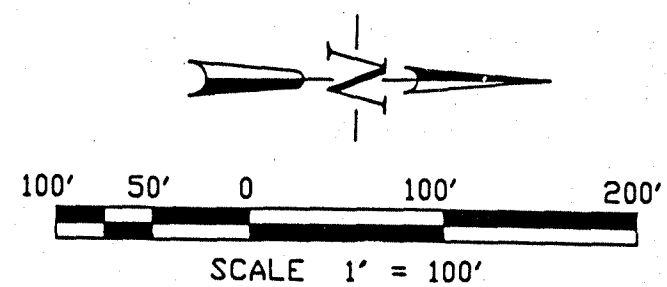

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LEGEND

- XX BASIN DESIGNATION
- XX BASIN AREA, ACRES
- XX 25 YEAR ACCUMULATED STORM, CFS
- XX 50 YEAR ACCUMULATED STORM, CFS
- XX 100 YEAR ACCUMULATED STORM, CFS
- XX 25 YEAR DETAINED FLOW, CFS
- XX 50 YEAR DETAINED FLOW, CFS
- XX 100 YEAR DETAINED FLOW, CFS
- PROPOSED DETENTION BASIN
- BASIN BOUNDARY
- PROPOSED CULVERT
- PROPOSED DITCH



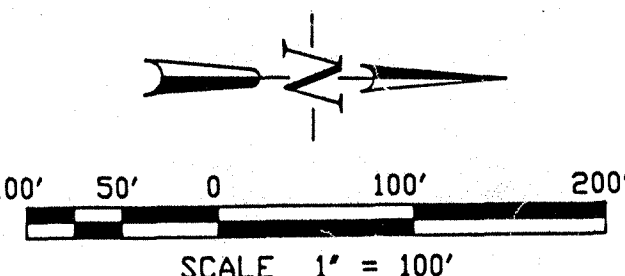
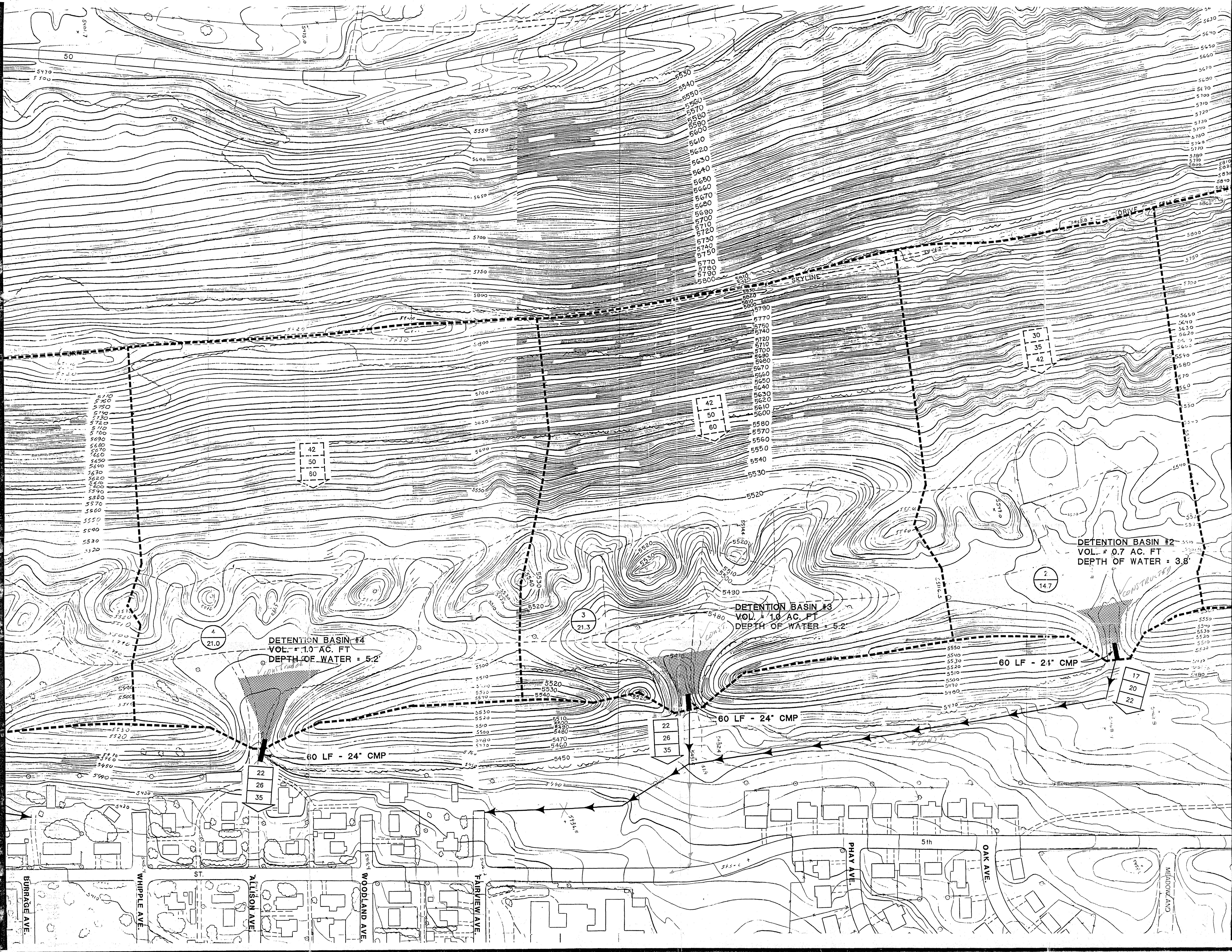
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MATCHLINE SHEET 3

MATCHLINE SHEET 1



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