

JR Engineering, Ltd.

4935 North 30th Street
Colorado Springs, Colorado 80919
(719) 593-2593 • FAX (719) 528-6613

6110 Greenwood Plaza Blvd.
Englewood, Colorado 80111
(303) 740-9393 • FAX (303) 721-9019

4812 South College Avenue
Fort Collins, Colorado 80525
(303) 282-4335 • FAX (303) 282-4340

MASTER DEVELOPMENT DRAINAGE PLAN FOR BRIARGATE BUSINESS CAMPUS IN PINE CREEK BASIN

August 1996
Revised October 1996

Prepared For:

LA PLATA INVESTMENTS
7150 Campus Drive, Suite 365
Colorado Springs, CO 80920
(719) 260-7477

Prepared By:

JR ENGINEERING, LTD.
4935 North 30th Street
Colorado Springs, CO 8019
(719) 593-2593

Job No. 8714.11



JR Engineering, Ltd.

4935 North 30th Street
Colorado Springs, Colorado 80919
(719) 593-2593 • FAX (719) 528-6613

6110 Greenwood Plaza Blvd.
Englewood, Colorado 80111
(303) 740-9393 • FAX (303) 721-9019

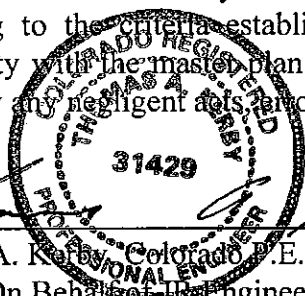
4812 South College Avenue
Fort Collins, Colorado 80525
(303) 282-4335 • FAX (303) 282-4340

MASTER DEVELOPMENT DRAINAGE PLAN FOR BRIARGATE BUSINESS CAMPUS IN PINE CREEK BASIN

DRAINAGE REPORT STATEMENT

ENGINEER'S STATEMENT:

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the City for drainage reports and said report is in conformity with the master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, omissions, or omissions on my part in preparing this report.


Thomas A. Korb Colorado P.E. #31429
For and On Behalf of JR Engineering, Ltd.

11-4-96
Date

DEVELOPER'S STATEMENT:

I, the developer, have read and will comply with all of the requirements specified in this drainage report and plan.

Business Name: La Plata Investments

By: 

Title: _____

Address: 7150 Campus Drive, Suite 365

Colorado Springs, CO 80920

CITY OF COLORADO SPRINGS ONLY:

Filed in accordance with Section 15-3-906 of the Code of the City of Colorado Springs, 1980, as amended.

Timothy R. White for November 7, 1996
City Engineer Date



Recycled

MASTER DEVELOPMENT DRAINAGE PLAN FOR BRIARGATE BUSINESS CAMPUS IN PINE CREEK BASIN

TABLE OF CONTENTS

Purpose	Page 1
General Description	Page 1
Existing Drainage Conditions	Page 1
Proposed Drainage Characteristics	Page 3
Drainage Criteria	Page 7
Opinion of Probable Cost	Page 9
Basin Fees	Page 9
FEMA Map	Page 10
Summary	Page 10
References	Page 11

APPENDIX

VICINITY MAP

SOILS MAP (S.C.S. SURVEY)

OPINION OF PROBABLE COST

HYDROLOGIC CALCULATIONS

CURRENT CONDITIONS - S.C.S. METHOD

DEVELOPMENT LIMITS - S.C.S. METHOD

BRIARGATE BUSINESS CAMPUS - RATIONAL METHOD

DRAINAGE MAPS

MASTER DEVELOPMENT DRAINAGE PLAN FOR BRIARGATE BUSINESS CAMPUS IN PINE CREEK BASIN

PURPOSE

This document is the Master Development Drainage Plan for the portion of the Briargate Business Campus in Pine Creek. The report estimates anticipated storm water runoff quantities, identifies the necessary master storm drain improvements to safely route the runoff to the outfall located at Highway 83, and identifies the limits of allowed development based on the outfall restrictions.

GENERAL DESCRIPTION

Briargate Business Campus is located east of Highway 83, north of Research Parkway, west of the Summerfield development, and south of the Pine Creek Golf Course in Sections 32 and 33, Township 12 South, Range 66 West.

The proposed use of this site is office/business. The zoning for this property is PIP-1 and PBC and the total site acreage is approximately 300 acres. The existing development consists of 53 acres with 247 acres remaining.

The soil type found on this property is primarily Group "A", as determined by the "Soil Survey of El Paso County Area" prepared by S.C.S., however Group "B" is used for developed conditions per the City/County Drainage Criteria Manual.

EXISTING DRAINAGE CONDITIONS

This project is located in the Pine Creek Drainage Basin. The area was examined by Obering, Wurth & Associates in June 1988, the report was titled "Pine Creek Drainage Basin". That report was updated by Amendment No. 1, dated July 1992. Other reports that addressed the drainage in this

basin are the "Pine Creek Detention Facility No. 1," dated December 1992 and its Revision No. 1, dated October 1993, prepared by Obering, Wurth & Associates.

The current storm water management program of the Pine Creek Drainage Basin calls for the Pine Creek Regional Detention Facility No. 1 to operate with a restrictor plate in order to limit the outfall flow to 1210 cfs until channel improvements can be constructed downstream of Highway 83. Using as-built information from FIMS maps, an S.C.S. model was calculated to determine that the current flow at Highway 83 is 1117 cfs for the 100-year storm event. Refer to the drainage map titled "Pine Creek Drainage Basin Current Conditions" found in the rear pocket for drainage areas and runoff flows at specific design points.

The existing Briargate Business Campus is comprised of three drainage sub-basins. The first sub-basin drains to the north overland into Pine Creek upstream of the Regional Detention Facility #1 at Briargate Parkway. Sub-basin #3 directs its runoff into the Regional Detention Facility #1 via an existing 54 inch RCP. The final sub-basin ^{#3} conveys the runoff overland into Pine Creek below the Regional Detention Facility #1. Below is a discussion of the existing drainage characteristics of each sub-basin:

Sub-Basin #1

This basin is roughly bounded to the north by Pine Creek, to the east by Lexington Drive, to the south by Briargate Parkway and Dynamic Drive, to the west by the Regional Detention Facility #1. This area is partially developed with residential housing in Summerfield 1 and 7 located south of future Briargate Parkway. The drainage from the 45 acres of development of Summerfield generates a Q_{100} of 143 cfs and is currently conveyed overland north of Briargate Parkway via unimproved drainage swales toward Pine Creek and enters the creek upstream of the Regional Detention Facility #1. The remaining area of sub-basin #1 north of Briargate Parkway and east of Chapel Hills Drive sheet flows toward Pine Creek.

basin are the "Pine Creek Detention Facility No. 1," dated December 1992 and its Revision No. 1, dated October 1993, prepared by Obering, Wurth & Associates.

The current storm water management program of the Pine Creek Drainage Basin calls for the Pine Creek Regional Detention Facility No. 1 to operate with a restrictor plate in order to limit the outfall flow to 1210 cfs until channel improvements can be constructed downstream of Highway 83. Using as-built information from FIMS maps, an S.C.S. model was calculated to determine that the current flow at Highway 83 is 1117 cfs for the 100-year storm event. Refer to the drainage map titled "Pine Creek Drainage Basin Current Conditions" found in the rear pocket for drainage areas and runoff flows at specific design points.

The existing Briargate Business Campus is comprised of three drainage sub-basins. The first sub-basin drains to the north overland into Pine Creek upstream of the Regional Detention Facility #1 at Briargate Parkway. Sub-basin #2 directs its runoff into the Regional Detention Facility #1 via an existing 54 inch RCP. The final sub-basin conveys the runoff overland into Pine Creek below the Regional Detention Facility #1. Below is a discussion of the existing drainage characteristics of each sub-basin:

Sub-Basin #1

This basin is roughly bounded to the north by Pine Creek, to the east by Lexington Drive, to the south by Briargate Parkway and Dynamic Drive, to the west by the Regional Detention Facility #1. This area is partially developed with residential housing in Summerfield 1 and 7 located south of future Briargate Parkway. The drainage from the 45 acres of development of Summerfield generates a Q_{100} of 143 cfs and is currently conveyed overland north of Briargate Parkway via unimproved drainage swales toward Pine Creek and enters the creek upstream of the Regional Detention Facility #1. The remaining area of sub-basin #1 north of Briargate Parkway and east of Chapel Hills Drive sheet flows toward Pine Creek.

Sub-Basin #2

Sub-basin #2 discharges directly into the Regional Detention Facility #1 via an existing 54 inch RCP constructed to convey runoff from the Summerfield Development , the Focus on the Family site and future Business Campus development east of Explorer Drive, south of Briargate Parkway and north of Research Parkway. This area includes 124 acres from the Business Campus and 172 acres from Summerfield and currently discharges approximately 315 cfs via the existing 54 inch RCP into the Regional Detention Facility #1.

Sub-Basin #3

The third basin consists of 76 acres west of Explorer Drive, south of Briargate Parkway, north of Research Parkway and east of Highway 83. This undeveloped area discharges 103 cfs directly into Pine Creek below the Regional Detention Facility primarily as sheet flow across undisturbed land.

PROPOSED DRAINAGE CHARACTERISTICS

Under proposed conditions associated with the development of the Business Campus, Pine Creek will remain unchanged upstream of the proposed Chapel Hills Drive crossing (see map in the back of report titled "Briargate Business Campus Allowable Development Limits"). Below Chapel Hills Drive, the Business Campus will be fully developed with the Regional Detention Facility No. 1 to continue to have a restrictor plate in place so that the total release rate under Highway 83 will be limited to 1209 cfs. The area upstream of proposed Chapel Hills Drive will be addressed in the Pine Creek Neighborhood MDDP.

The Briargate Business Campus storm water system will include surface runoff, private on-site drainage facilities, and a public storm sewer system that will convey the runoff to the Regional Pond or discharge directly into Pine Creek. The preliminary routing of the 100-year storm runoff is shown on the map titled "Briargate Business Campus Master Drainage Plan" found in the rear of the report. The storm sewer pipes shown are schematic in nature and the locations are for reference only. A preliminary drainage report and final drainage report will be required prior to final drainage approval for each site.

The Pine Creek DBPS prepared by Obering, Wurth & Associates provides for on-site detention facilities for all the Business Campus sites. Each developed parcel is to retain 35% of the difference between the developed and historic runoff quantities for a 100-year storm event. This was modeled by calculating the proposed and historic runoff quantities, and subtracting 35% of the difference from the proposed runoff quantities. The private on-site facilities have not been sized as a part of this study. The on-site facilities are shown for information purposes only. Private storm sewers are labeled "private" and proposed public systems show pipe sizes.

Sub-Basin #1

The developed runoff from sub-basin #1 will be conveyed via a 54 inch RCP along future Chapel Hills Drive. The future storm sewer will convey 308 cfs from approximately 100 acres east of Chapel Hills and south of Briargate Parkway.

Surface runoff from Summerfield 1 and 7 enters the Briargate Business Campus contributing 106 cfs, some of this runoff ($Q_{100} = 30$ cfs) will be collected by a pair of at grade inlets in Dynamic Drive, the remaining 76 cfs will continue as street flow. Parcels OC-21 and 24 contribute additional flow to the pipe under Dynamic Drive for a total pipe flow of 56 cfs. A pair of sump inlets collect the remaining runoff from Dynamic Drive for a total of 172 cfs. This flow is conveyed in a 48 inch RCP northerly along Chapel Hills Drive to the intersection at Briargate Parkway. At this point, 91 cfs is added from OC-20, 23 and 59 cfs from Summerfield 7 and Briargate Parkway, for a total $Q_{100} = 308$. This flow is conveyed to Pine Creek via a 54 inch RCP along Chapel Hills Drive.

Business Campus Sites OC-6, 25 and 27 sheet flow directly to Pine Creek above the Regional Detention Facility #1 under existing conditions. The proposed developed runoff will be discharged directly into the Regional Detention Facility #1 via public and private on-site storm sewer facilities.

The preliminary conceptual plans for OC-25 and 27 indicate that this area will be developed as smaller 4-7 acre sites with individual private storm sewer systems and on-site detention facilities connected by parallel public storm sewer systems. The developed flows will be discharged in a public storm

sewer which will convey a total $Q_{100} = 159$ cfs into the Regional Detention Facility #1 via a 36 inch RCP.

OC-1 and 6 will discharge directly to the Regional Detention Facility #1 via private storm sewer systems after being collected and detained on-site. OC-1 discharge is 25 cfs and OC-6 discharge is 44 cfs for the 100 year storm event.

Sub-Basin #2

Sub-basin #2 is serviced by an existing 54 inch RCP which conveys runoff from the Summerfield Development and the portion of the Briargate Business Campus bounded by Chapel Hills Drive, Explorer Drive, Briargate Parkway and Research Parkway. This 286 acre area will discharge 455 cfs directly into the Regional Detention Facility #1.

The upstream end of the Business Campus at Research Parkway accepts a total Q_{100} of 278 cfs from Summerfield via an existing 54 inch RCP. The storm sewer passes the southerly portion of OC-21 and 24, where 33 cfs of detained flow from 8.9 acres is added to the pipe for a total of Q_{100} of 287 cfs. The combined flow is conveyed across future Chapel Hills Drive where a private storm sewer system adds 18 cfs of on-site detained flow from 4.9 acres of the southerly portion of OC-18. The existing main line storm sewer crosses into the Focus on the Family site where additional storm flow is added for a total Q_{100} of 383 cfs. The storm sewer turns north and runs along Explorer Drive conveying the 383 cfs to the intersection with Briargate Parkway where it is combined with flows from OC-17, the northerly portion of OC-18 and Briargate Parkway yielding a $Q_{100} = 455$ cfs.

The runoff from OC-17 and the northerly portion OC-18 is conveyed to the intersection of Briargate Parkway and Explorer Drive via a 36 inch public storm sewer along Briargate Parkway. The northerly 9.4 acres of OC-18 yields 36 cfs and is conveyed to Briargate Parkway by a storm sewer through OC-17 and is combined with the runoff from OC-17. OC-17 adds 73 cfs to the storm drain for a total Q_{100} of 110 cfs. This total storm flow is conveyed westerly along Briargate Parkway via a 36 inch RCP.

Under the current conditions of sub-basin #2, the discharge from this basin is 315 cfs into the Regional Detention Facility. The capacity of the existing 54 inch RCP at its worst case is 450 cfs. When the Business Campus is fully developed, with a Q_{100} of 455 cfs and assuming that 100% of the flow is intercepted by the inlets, this leaves only 5 cfs for surface flow along the street, an acceptable level of service.

Sub-Basin #3

The final sub-basin will have its run-off conveyed through a 48 inch public storm sewer through OC-3 and by private on-site drainage facilities to Pine Creek below the Regional Detention Facility #1. A reinforced concrete box is proposed for the future development of OC-2, 7 and 8, the construction of this box will be the responsibility of the future owners/developers of this site. The box will be constructed at the time of development of OC-2, 7 and 8 and will be a publicly maintained system.

The drainage from OC-2, 7 and 8 will be discharged directly into the above mentioned box via a private on-site storm sewer system and detention facility. The total runoff from this development will be 133 cfs.

The drainage from OC-3 and 4 will be conveyed via a public 48 inch RCP through OC-3 and will discharge 145 cfs into the above mentioned box. OC-4 is projected to be divided into 3 or 4 individual developed parcels with separate on-site privately maintained drainage facilities. The east portion of OC-4 generates 55 cfs from 13.3 acres and is conveyed via a 36 inch RCP along the Telstar right-of-way to a sump located in Telstar Drive. The westerly 12.9 acres of OC-4 generates 50 cfs and is combined with the runoff from the easterly portion of OC-4 and Telstar for a Q_{100} of 121 cfs. A 48 inch RCP conveys the 121 cfs through OC-3 and is combined with runoff from OC-3 (Q_{100} = 30 cfs) for a total Q_{100} of 145 cfs. The runoff from OC-3 is collected by an on-site storm sewer system.

Regional Detention Facility #1

The development of the Briargate Business Campus increases the inflow to the Detention Facility from 2250 cfs existing flow to 2409 cfs proposed flow. This has a net effect of increasing the outflow from the facility by 67 cfs from 1075 cfs to 1142 cfs. The additional runoff raised the storage elevation from 6571.2 to 6572.6, an increase of 1.4, the overflow of the facility is at 6575.0.

In December, 1992, Obering, Wurth and Associates provided a detailed report of the Regional Detention Facility outlining the performance of the facility during interim conditions with a restrictor plate. At that time, it was determined that the maximum allowable inflow would be 2595 cfs with a peak storage elevation of 6574.0. With this information, it is therefore confirmed that the full development of the Briargate Business Campus has no adverse affects to the Regional Detention Facility #1.

DRAINAGE CRITERIA

This report has been prepared in accordance with the 1991 City/County Drainage Criteria Manual. The Pine Creek Basin total discharge at Highway 83 was determined by the S.C.S. Method using HEC-1 and the Rational Method was used to calculate the 100-year storm flows within the Business Campus.

In determining the current and the proposed outfall at Highway 83, several parameters had to be set. The type of storm found in this report is a Type IIA 100-year return frequency with a precipitation of 4.4" and an AMC II condition. Although a majority of the drainage basin is Type "A" soil, Type "B" soil was used for all developed areas per the Drainage Criteria Manual.

This report is in conformance with the report prepared by Obering, Wurth & Associates in October 1993 titled "Pine Creek Detention Facility No. 1: Allowable Development Change Limits". All variables are consistent with the previous study where no change in land use has occurred since that

report was prepared. These variables include the lag time, basin areas, CN's, and routing. The lag time as defined in the HEC-1 manual equals 60 percent of the Basin Time of Concentration (Lag = $0.6 T_c$).

The 1993 report by Obering, Wurth & Associates was prepared using the 1985 version of the HEC-1 program. Since that time, the HEC-1 program has been updated by the 1991 version. This is significant since this report was prepared using the 1991 version and the flows generated by this version of the program are two percent (2%) greater than the previous version. It was decided, however, that this report would limit the outfall at Highway 83 to 1210 cfs as determined by the original Pine Creek Basin Study, prepared by Obering, Wurth & Associates in 1988.

This report reflects current conditions as of July 1996. Where development has occurred since October of 1993, the revised sub-basin variables were determined by F.I.M.S. maps, field surveys, and field visits. These sub-basins can be identified with the basin identification number followed by the letter "R" (ie. 20R) on the "Current Conditions" map.

The Regional Detention Facility No. 1 volume was determined by the F.I.M.S. map with the invert and spillway by field survey. The outlet restrictor at Briargate Parkway was field measured and the HEC-1 model reflects all these as-built conditions.

The Rational Method was used to calculate the routing of a 100-year storm event through the Business Campus. Although two of the three Business Campus sub-basins are greater than 100 acres, this method was used because it provides a more detailed level of study for the routing of the runoffs. The Summerfield development located upstream of the Briargate Business Campus includes storm sewer systems which outlet onto this project. An existing detention facility is located in Summerfield and that pond was as-built by use of F.I.M.S. maps and field survey. These calculations reflect the as-built conditions of the Summerfield development. The as-built 100-year storm flow of 278 cfs is less than the developed flow of 311 cfs, determined by the original MDDP for the Summerfield development, prepared by JR Engineering, Ltd. in November 1993.

The Pine Creek DBPS requires the use of on-site detention facilities for the Business Campus. These on-site detention facilities are to detain 35% of the flow resulting from development (the difference between historic and developed). These on-site detention ponds were modeled by using the "Quick TR55" program to determine the outlet peak time of concentration for each site. The flow and time of concentration for each Business Campus site reflects a 35% detained storm flow.

Since there are no development plans for the Business Campus sites, a "typical lot" had to be used for hydrology calculations. The "typical lot" uses a "C" value of 0.80 and the overland time of concentration was determined by using an initial length of 50 lf @ 1% over a landscaped area, followed by conveyance via gutter at 2% to the on-site pond.

The hydraulics of the storm system assumed that the storm pipes will have a maximum slope of 2% and the inlet capacities were set at 1 cfs/lf for at-grade inlets and 3 cfs/lf for inlets at sumps.

OPINION OF PROBABLE COST

An estimate for the probable cost of all the public facilities proposed in this study can be found in the appendix of this report. The estimate includes those facilities located within the public right-of-way and those facilities that will be required to bring storm sewer systems to the individual Business Campus sites. The storm drain system will consist of reinforced concrete pipe, manholes, inlets, energy dissipators, and other appurtenances. The unit prices used were developed after reviewing records from numerous projects within the Colorado Springs area and it is felt that they accurately represent reasonable unit cost figures for the items identified.

BASIN FEES

The Pine Creek Drainage Basin is a "closed basin" per the DBPS. Therefore, there are no Drainage or Bridge Fees.

FEMA MAP

FEMA has mapped the floodplain for Pine Creek and the most current map shows that portions of Business Campus Parcels 2, 3, 7, and 8 are located within the floodplain. This portion of Pine Creek was mapped in 1986 and since that time CDOT has enlarged the undercrossing at State Highway 83 and therefore the floodplain shown is not current. The floodplain, as mapped by FEMA, is shown on the map titled "Allowable Development Limits" found in the back of the report.

SUMMARY

The S.C.S. calculations show that currently the outfall under Highway 83 onto USAFA property does not exceed the established maximum flow of 1210 cfs and the ultimate buildout of the Business Campus can be effected without further regional detention facilities being constructed. It should be noted, however, that any development outside of the areas designated on the map titled "BBC Developed" as developable would require additional analysis to the Pine Creek Drainage Basin and its outfall at Highway 83.

The Rational Method determines the size of the master storm drain facilities for the Business Campus and sets limits for the developed discharge from each Business Campus site. Subsequent preliminary drainage reports and final drainage reports will be required for each site detailing the proposed storm sewer system. These discharge goals must be strictly adhered to in order that the proposed master drainage facilities are not surcharged. If the actual developed outflow from an individual site is greater than the goal set in this report, then additional analysis will be required for that site.

Finally, the development of this site will not adversely effect the surrounding developments from future storm runoff.

REFERENCES

1. 1991 City/County Drainage Criteria Manual.
2. Pine Creek Drainage Basin, prepared by Obering, Wurth & Associates, June 1988.
3. Pine Creek Drainage Basin, Amendment No. 1, prepared by Obering, Wurth & Associates, July 1992.
4. Pine Creek Detention Facility No. 1, prepared by Obering, Wurth & Associates, December 1992.
5. Pine Creek Detention Facility No. 1, Revision No. 1, prepared by Obering, Wurth & Associates, October 1993.
6. Summerfield Development MDDP, prepared by JR Engineering, Ltd., November 1993.

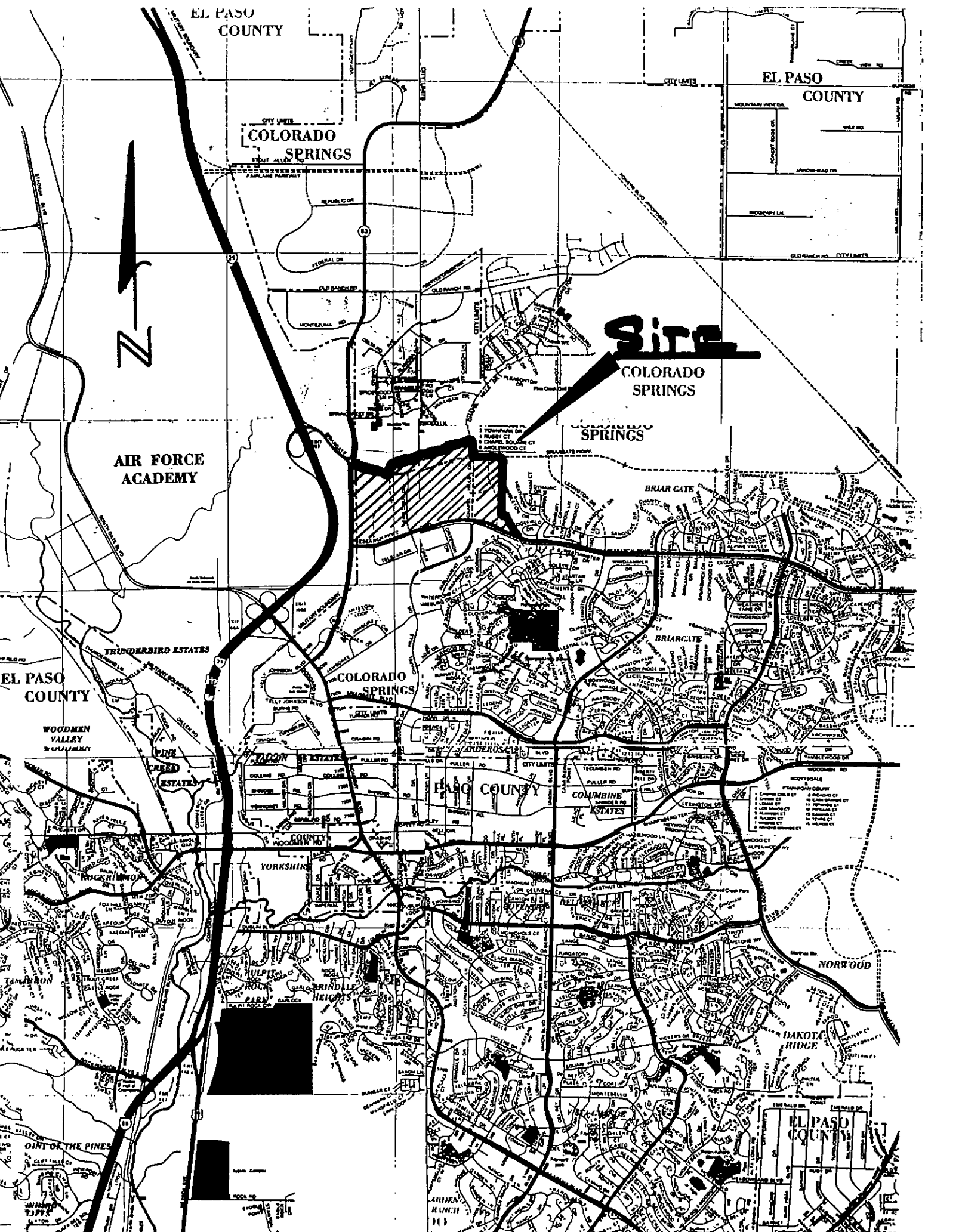
PREPARED BY:

Thomas A. Kerby, P.E.
Project Manager
For and On Behalf of JR Engineering, Ltd.

\\ew871411\mddp-rpt.jul

APPENDIX

VICINITY MAP



Site
COLORADO SPRINGS

AIR FORCE ACADEMY

EL PASO COUNTY

WOODMEN VALLEY WOODHARNS

THUNDERBIRD ESTATES

PINE CREEK ESTATES

YORKSHIRE

WINDY HILLS

WINDY HILLS

WINDY HILLS

WINDY HILLS

WINDY HILLS

WINDY HILLS

WINDY HILLS

CITY LIMITS
COLORADO SPRINGS

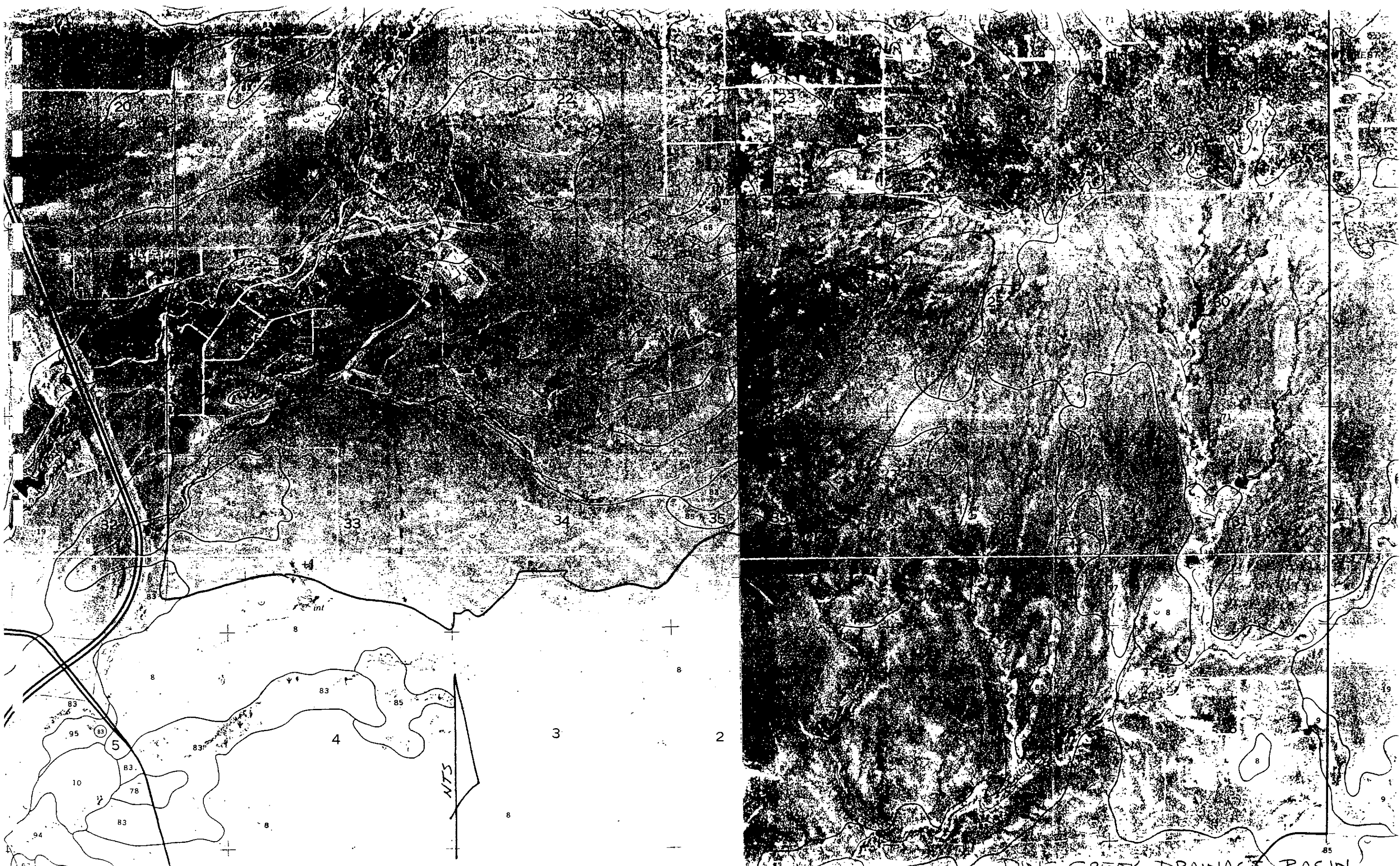
EL PASO COUNTY

EL PASO COUNTY

EL PASO COUNTY

- | | |
|---------------------|---------------|
| 1. CHERRY CREEK CT | 11. GARDEN CT |
| 2. CHERRY CREEK CT | 12. GARDEN CT |
| 3. CHERRY CREEK CT | 13. GARDEN CT |
| 4. CHERRY CREEK CT | 14. GARDEN CT |
| 5. CHERRY CREEK CT | 15. GARDEN CT |
| 6. CHERRY CREEK CT | 16. GARDEN CT |
| 7. CHERRY CREEK CT | 17. GARDEN CT |
| 8. CHERRY CREEK CT | 18. GARDEN CT |
| 9. CHERRY CREEK CT | 19. GARDEN CT |
| 10. CHERRY CREEK CT | 20. GARDEN CT |

SOIL MAP (S.C.S. SURVEY)



PINE CREEK DRAINAGE BASIN
SOIL MAP (SCS SURVEY)

OPINION OF PROBABLE COST

BRIARGATE BUSINESS CAMPUS MDDP
OPINION OF PROBABLE COST

<u>ITEM</u>	<u>QTY</u>	<u>UNIT</u>	<u>UNIT COST</u>	<u>TOTAL COST</u>
18" RCP	1700	LF	\$22.00	\$37,400.00
24" RCP	3000	LF	\$30.00	\$90,000.00
27" RCP	50	LF	\$34.00	\$1,700.00
30" RCP	1550	LF	\$38.00	\$58,900.00
36" RCP	2800	LF	\$50.00	\$140,000.00
42" RCP	100	LF	\$60.00	\$6,000.00
48" RCP	2000	LF	\$70.00	\$140,000.00
60" RCP	1300	LF	\$110.00	\$143,000.00
MANHOLE	20	EA	\$1,300.00	\$26,000.00
INLET	14	EA	\$2,900.00	\$40,600.00
RIP-RAP	450	CY	\$30.00	\$13,500.00
HEADWALL	2	EA	\$2,500.00	\$5,000.00
FLARED END SECTION	2	EA	\$500.00	\$1,000.00
SUBTOTAL				\$703,100.00
10% CONTINGENCIES				\$70,310.00
ENGINEERING				\$70,310.00
TOTAL				\$843,720.00

HYDROLOGIC CALCULATIONS

**DEVELOPMENT LIMITS
S.C.S. METHOD
HEC-1**

LINE	ID	1	2	3	4	5	6	7	8	9	10
1	ID	PINE CREEK DRAINAGE BASIN - 24HR, CURRENT DEV. (100 YEAR)									
2	ID	ALSO REVISED FOR BASIN CHANGES IN BUSINESS CAMPUS AREA									
3	ID	FILE JRSHADED									
*** FREE ***											
*DIAGRAM											
4	IT	8	0	0	181						
5	IO	5									
6	KK	SB1									
7	KM	SCS RUNOFF COMPUTATION									
8	BA	.2421									
9	IN	15									
10	PB	4.4									
11	PC	.0022	.0066	.0132	.0198	.0264	.0352	.0440	.0528	.0629	.0726
12	PC	.0827	.0924	.1025	.1122	.1223	.1408	.1716	.2024	.2332	.2640
13	PC	.3300	.4400	1.7600	3.0800	3.1900	3.3000	3.3660	3.4320	3.4760	3.5200
14	PC	3.5640	3.6080	3.6300	3.6520	3.6740	3.6960	3.7180	3.7400	3.7620	3.7840
15	PC	3.8007	3.8170	3.8337	3.8500	3.8667	3.8830	3.8997	3.9160	3.9327	3.9490
16	PC	3.9657	3.9820	3.9965	4.0106	4.0251	4.0392	4.0524	4.0656	4.0788	4.0920
17	PC	4.1030	4.1140	4.1250	4.1360	4.1470	4.1580	4.1690	4.1800	4.1910	4.2020
18	PC	4.2130	4.2240	4.2350	4.2460	4.2570	4.2680	4.2790	4.2900	4.3010	4.3120
19	PC	4.3177	4.3230	4.3287	4.3340	4.3397	4.3450	4.3507	4.3560	4.3617	4.3670
20	PC	4.3727	4.3802	4.3837	4.3890	4.3947	4.4000				
21	LS	0	70								
22	UD	.74									
23	KK	SB3									
24	KM	SCS RUNOFF COMPUTATION									
25	BA	.3593									
26	LS	0	70								
27	UD	.43									
28	KK	SUMMPT1									
29	KM	COMBINE 1 AND 3									
30	HC	2									
31	KK	ROUTE1 TO PT.4									
32	RK	5500	.0284	.040		TRAP	50	2			
33	KK	SB9									
34	KM	SCS RUNOFF - SUBBASIN NO. 9/WITH MAIN CHANNEL									
35	BA	.1765									
36	LS	0	69								
37	UD	.29									
38	KK	SB10									
39	KM	SCS RUNOFF - SUBBASIN NO 10									
40	BA	.1468									
41	LS	0	69								
42	UD	.29									

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

43	KK	SUMPT4							
44	KM	COMBINE PT.1, 9 AND 10							
45	HC	3							
46	KK	ROUTEPT4 TO PT 6							
47	RK	1600 .025 .04	TRAP	50	4.5				
48	KK	SB2							
49	KM	SCS RUNOFF SUBBASIN NO. 2							
50	BA	.1796							
51	LS	0 70							
52	UD	.96							
53	KK	ROUTETO PT.2A							
54	RK	2000 .028 .040	TRAP	25	4				
55	KK	SB4A							
56	KM	SCS RUNOFF - SUBBASIN NO. 4A							
57	BA	.2062							
58	LS	0 70							
59	UD	.19							
60	KK	SUMPT2A							
61	KM	SUMMARY SB2 AND SB4A							
62	HC	2							
63	KK	ROUTETO PT. 2B							
64	RK	2747 .028 .040	TRAP	25	4				
65	KK	SB4B							
66	KM	SCS RUNOFF - SUBBASIN NO. 4B							
67	BA	.1460							
68	LS	0 70							
69	UD	.14							
70	KK	SB5							
71	KM	SCS RUNOFF - SUBBASIN NO. 5							
72	BA	.2359							
73	LS	0 70							
74	UD	.65							
75	KK	SUMPT2B							
76	KM	COMBINE SUBBASINS 2,4 AND 5							
77	HC	3							
78	KK	ROUTEPT.2 TO SB6							
79	RK	2100 .025 .040	TRAP	10	10				
80	KK	SB6							
81	KM	SCS RUNOFF - SUBBASIN NO. 6							
82	BA	.0797							
83	LS	0 70							
84	UD	.40							

LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
85	KK COMBINEPT.2 ROUTED WITH SB6
86	HC 2
87	KK ROUTETO PT. 3
88	RK 1340 .025 .040 TRAP 30 2
89	KK SB7
90	KM SCS RUNOFF - SUBBASIN NO. 7
91	BA .2624
92	LS 0 66
93	UD .49
94	KK SB8R
95	KM SCS RUNOFF - SUBBASIN NO. 8
96	BA .1406
97	LS 0 68.5
98	UD .45
99	KK SUMPT3
100	KM COMBINE PT. 2 ROUTED WITH 6,7 AND 8
101	HC 3
102	KK ROUTEPT 3 TO PT 5
103	RK 3700 .025 .040 TRAP 30 5
104	KK SB11
105	KM SCS RUNOFF - SUBBASIN NO. 11
106	BA .1250
107	LS 0 65
108	UD .67
109	KK SB12
110	KM SCS RUNOFF - SUBBASIN NO. 12
111	BA .1718
112	LS 0 63
113	UD .438
114	KK SUMPT5
115	KM COMBINE PT. 3 WITH SUBBASINS 11 AND 12
116	HC 3
117	KK ROUTEPT.5 TO SB 6
118	RK 1720 .023 .04 TRAP 25 10
119	KK SB13R
120	KM SCS RUNOFF - SUBBASIN NO. 13R
121	BA .0955
122	LS 0 75
123	UD .32

LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
124	KK SB15
125	KM SCS RUNOFF - SUBBASIN NO. 15
126	BA .0843
127	LS 0 65
128	UD .34
129	KK SUMPT6
130	KM COMBINE PT. 4, PT.5, WITH SUBBASINS 13 AND 15
131	HC 4
132	KK SB16
133	KM SCS RUNOFF-SUBBASIN 16
134	BA 0.0359
135	LS 0 63
136	UD .17
137	KK SB14
138	KM SCS RUNOFF - SUBBASIN NO.14R
139	BA .3609
140	LS 0 57
141	UD .33
142	KK SUMPT7
143	KM COMBINE PT.6, SUBBASIN NO 14 AND 16
144	HC 3
145	KK ROUTEPT.7 TO PT.8
146	RK 1100 .01 .040 TRAP 30 5
147	RK 640 .01 .015 TRAP 20 1.5
148	KK SB19R
149	KM SCS RUNOFF - SUBBASIN NO. 19R
150	BA .1554
151	LS 0 73.5
152	UD .305
153	KK ROUTESB19 TO PT.8
154	RK 1600 .035 .019 TRAP 36 0
155	KK SB17R
156	KM SCS RUNOFF - SUBBASIN NO. 17R
157	BA .1203
158	LS 0 67
159	UD .15
160	KK COMBINESUBBASINS NO 17 AND 19
161	HC 2
162	KK SB18
163	KM SCS RUNOFF - SUBBASIN NO. 18
164	BA .1062
165	LS 0 55
166	UD .41

LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
167	KK SB22R
168	KM SCS RUNOFF-SUBBASIN NO.22R
169	BA .1204
170	LS 0 77
171	UD .21
172	KK SB22OC
173	KM SCS RUNOFF-SUBBASIN NO.22OC
174	BA .0655
175	LS 0 89
176	UD .36
177	KK COMBINE22OC & 22
178	HC 2
179	KK ROUTESB22 TO PT.8
180	RK 1400 .05 .013 CIRC 3.5
181	KK SUMPT8
182	KM COMBINE PT.7, SUBBASINS 17,18,19 & 22
183	HC 4
184	KK ROUTEPT.8 TO PT.9
185	RK 3960 .01 .040 TRAP 30 5
186	KK SB20R
187	KM SCS RUNOFF - SUBBASIN NO. 20R
188	BA .2640
189	LS 0 70.5
190	UD .135
191	KK SB21R
192	KM SCS RUNOFF - SUBBASIN NO. 21R
193	BA .0368
194	LS 0 61
195	UD .295
196	KK SB21-27
197	KM SCS RUNOFF - OC-27
198	BA .0313
199	LS 0 89
200	UD .34
201	KK SB21-25
202	KM SCS RUNOFF - OC-25
203	BA .0345
204	LS 0 89
205	UD .34

LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
206	KK COMBINEOC-27 AND 25
207	HC 2
208	KK SB21-6
209	KM SCS RUNOFF - OC-6
210	BA .0208
211	LS 0 89
212	UD .33
213	KK COMBINEOC-6, 27 AND 25
214	HC 2
215	KK SB23AR
216	KM SCS RUNOFF-SUBBASIN NO.23AR
217	BA .1497
218	LS 0 73
219	UD .25
220	KKSUMMERFIELD DETENTION POND
221	KM ROUTE FLOW THRU SUMMER FIELD DETENTION POND
222	RS 1 STOR 0
223	SA 0 0.206 0.738 1.09 1.53
224	SE 91.1 92 94 96 98
225	SL 91.1 7.829 0.60 0.50
226	SS 99.2
227	KK ROUTETO SB23BR
228	RK 3050 .02 .015 CIRC 5
229	KK SB23BR
230	KM SCS RUNOFF-SUBBASIN NO.23BR
231	BA .1289
232	LS 0 79
233	UD .140
234	KK SB23OC
235	KM SCS RUNOFF-PART OF OC-21 & 24
236	BA .0198
237	LS 0 89
238	UD .34
239	KK COMBINE
240	HC 3
241	KK ROUTESB23 TO SB24UP
242	RK 2000 .038 .013 CIRC 4
243	KK SB24UPR
244	KM SCS RUNOFF-SUBBASIN NO.24UPR
245	BA .0234
246	LS 0 80
247	UD .33

LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
248	KK COMBINE
249	HC 2
250	KK ROUTESB23 TO SB24UP
251	RK 1000 .038 .013 CIRC 4
252	KK FOCUSASITE
253	KM SCS RUNOFF-FOCUS A SITE
254	BA .0783
255	LS 0 80
256	UD .64
257	KK COMBINESB 23, 24UP & FOCUS A SITE
258	HC 2
259	KK ROUTETO PT.9
260	RK 830 .01 .013 CIRC 5.5
261	KK SB25UP
262	KM SCS RUNOFF-SUBBASIN NO.25UP
263	BA .0411
264	LS 0 80
265	UD .33
266	KK ROUTESB25UP TO FOCUS B SITE
267	RK 1000 .038 .013 CIRC 2.5
268	KK FOCUSBSITE
269	KM SCS RUNOFF-FOCUS B SITE
270	BA .0464
271	LS 0 75.5
272	UD .65
273	KK COMBINESB23, 24UP, 25UP & FOCUS SITE
274	HC 3
275	KK ROUTETO PT.9
276	RK 830 .01 .013 CIRC 5.5
277	KK SUMPT9
278	KM COMBINE PT.8, SUBBASINS 20,21,22 & 25A
279	HC 5
280	KK DF#1
281	KM ROUTE FLOW THRU DETENTION FACILITY NO. 1
282	RS 1 STOR 0
283	SA 0 0.512 4.156 6.476
284	SE 53.2 56 58 72
285	SL 53.2 54.0 0.60 0.50
286	SS 75

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

287 KK ROUTEPT.9 TO PT. 10
 288 RK 1450 .02 .040 TRAP 20 3

289 KKSBB24-4-1
 290 KM SB24-4-1 IS ALSO OC-4-1
 291 KM SCS RUNOFF - SUBBASIN NO. 24-4-1,-2
 292 BA .0190
 293 LS 0 85
 294 UD .28

295 KK ROUTETO OC-4-1, -2
 296 RK 650 .01 .013 CIRC 3.0

297 KKSBB24-4-3
 298 KM SB24-4-3 IS ALSO OC-4-3
 299 KM SCS RUNOFF - SUBBASIN NO. 24-4-3
 300 BA .0237
 301 LS 0 85
 302 UD .30

303 KK COMBINEOC-4-3 W/ OC-4-1 ,-2
 304 HC 2

305 KK ROUTETO OC-3,7,8
 306 RK 800 .01 .013 CIRC 4.0

307 KK SB24-3
 308 KM SB24-3 IS ALSO OC-3
 309 KM SCS RUNOFF - SUBBASIN NO. 24-3
 310 BA .0122
 311 LS 0 85
 312 UD .30

313 KK SB24DWN
 314 KM SCS RUNOFF - SUBBASIN NO. 24DWN
 315 BA .0258
 316 LS 0 92
 317 UD .35

318 KK SUMPT10
 319 KM COMBINE OC-3,4,7 & 8
 320 HC 3

321 KK SUMPT11
 322 KM COMBINE SUMPT10 AND SUMPT11
 323 HC 2

324 KKSBB25-2-7-8
 325 KM SB25-2-7-8 IS ALSO OC-2, -7, -8
 326 KM SCS RUNOFF - SUBBASIN NO. 25-2-7-8
 327 BA .0607
 328 LS 0 85
 329 UD .30

LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
330	KK SB26
331	KM SCS RUNOFF - SUBBASIN NO 26
332	BA .1703
333	LS 0 58
334	UD .48
335	KK SUMPT12
336	KM SUMMARY OF PTS 10 AND 11 AND SUBBASIN NO. 26
337	HC 3
338	ZZ

SCHMATIC DIAGRAM OF STREAM NETWORK

INPUT LINE	(V) ROUTING	(--->) DIVERSION OR PUMP FLOW
NO.	(.) CONNECTOR	(<---) RETURN OF DIVERTED OR PUMPED FLOW
6	SB1	
	.	
23	. SB3	
	.	
28	SUMMPT1.....	
	V	
	V	
31	ROUTE	
	.	
33	. SB9	
	.	
38	. SB10	
	.	
43	SUMPT4.....	
	V	
	V	
46	ROUTEPT	
	.	
48	. SB2	
	V	
	V	
53	. ROUTE	
	.	
55	. SB4A	
	.	
60	SUMPT2A.....	
	V	
	V	
63	. ROUTE	
	.	
65	. SB4B	
	.	
70	. SB5	
	.	
75	SUMPT2B.....	
	V	
	V	
78	. ROUTE	
	.	
80	. SB6	
	.	
85	COMBINE.....	
	V	
	V	
87	. ROUTE	
	.	
	.	

89 SB7
.
94 SB8R
.
99 SUMPT3.....
. V
. V
102 ROUTE
.
104 SB11
.
109 SB12
.
114 SUMPT5.....
. V
. V
117 ROUTE
.
119 SB13R
.
124 SB15
.
129 SUMPT6.....
.
132 SB16
.
137 SB14
.
142 SUMPT7.....
. V
. V
145 ROUTE
.
148 SB19R
. V
. V
153 ROUTE
.
155 SB17R
.
160 COMBINE.....
.
162 SB18
.
167 SB22R
.
172 SB22OC
.
177 COMBINE.....

```

      . . . . . V
      . . . . . V
179 . . . . . ROUTE
      . . . . .
181 SUMPT8.....
      . . . . . V
      . . . . . V
184 . . . . . ROUTE
      . . . . .
186 . . . . . SB20R
      . . . . .
191 . . . . . SB21R
      . . . . .
196 . . . . . SB21-27
      . . . . .
201 . . . . . SB21-25
      . . . . .
206 . . . . . COMBINE.....
      . . . . .
208 . . . . . SB21-6
      . . . . .
213 . . . . . COMBINE.....
      . . . . .
215 . . . . . SB23AR
      . . . . . V
      . . . . . V
220 . . . . . SUMMERFI
      . . . . . V
      . . . . . V
227 . . . . . ROUTE
      . . . . .
229 . . . . . SB23BR
      . . . . .
234 . . . . . SB23OC
      . . . . .
239 . . . . . COMBINE.....
      . . . . . V
      . . . . . V
241 . . . . . ROUTE
      . . . . .
243 . . . . . SB24UPR
      . . . . .
248 . . . . . COMBINE.....
      . . . . . V
      . . . . . V
250 . . . . . ROUTE
      . . . . .
252 . . . . . FOCUSA
      . . . . .
257 . . . . . COMBINE.....
      . . . . . V

```

```

259 . . . . . V
ROUTE
. . . . .
261 . . . . . SB25UP
. . . . . V
. . . . . V
266 . . . . . ROUTE
. . . . .
268 . . . . . FOCUSB
. . . . .
273 . . . . . COMBINE.....
. . . . . V
. . . . . V
275 . . . . . ROUTE
. . . . .
277 SUMPT9.....
. . . . . V
. . . . . V
280 . . . . . DF#1
. . . . . V
. . . . . V
287 . . . . . ROUTE
. . . . .
289 . . . . . SB24-4-1
. . . . . V
. . . . . V
295 . . . . . ROUTE
. . . . .
297 . . . . . SB24-4-3
. . . . .
303 . . . . . COMBINE.....
. . . . . V
. . . . . V
305 . . . . . ROUTE
. . . . .
307 . . . . . SB24-3
. . . . .
313 . . . . . SB24DWN
. . . . .
318 . . . . . SUMPT10.....
. . . . .
321 SUMPT11.....
. . . . .
324 . . . . . SB25-2-7
. . . . .
330 . . . . . SB26
. . . . .
335 SUMPT12.....

```

(**) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****
*                               *                               *
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *   * U.S. ARMY CORPS OF
ENGINEERS *                               *
*   MAY 1991   *                               *
*   VERSION 4.0.1E   *                               *
* RUN DATE 07/30/1996 TIME 10:19:30 *   *
*                               *                               *
*****
```

PINE CREEK DRAINAGE BASIN - 24HR, CURRENT DEV. (100 YEAR)
ALSO REVISED FOR BASIN CHANGES IN BUSINESS CAMPUS AREA
FILE JRSHADED

5 IO OUTPUT CONTROL VARIABLES
 IPRNT 5 PRINT CONTROL
 IPLOT 0 PLOT CONTROL
 QSCAL 0. HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA
 NMIN 8 MINUTES IN COMPUTATION INTERVAL
 IDATE 1 0 STARTING DATE
 ITIME 0000 STARTING TIME
 NQ 181 NUMBER OF HYDROGRAPH ORDINATES
 NDDATE 2 0 ENDING DATE
 NDTIME 0000 ENDING TIME
 ICENT 19 CENTURY MARK

COMPUTATION INTERVAL 0.13 HOURS
TOTAL TIME BASE 24.00 HOURS

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

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

TIME OF OPERATION	STATION	PEAK FLOW 6-HOUR	TIME OF FLOW 24-HOUR	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE MAX STAGE
				PEAK	24-HOUR	72-HOUR		
HYDROGRAPH AT SB1	117.	6.40	32.	10.	10.	0.24		
HYDROGRAPH AT SB3	250.	6.00	48.	15.	15.	0.36		
2 COMBINED AT SUMMPT1	345.	6.13	79.	26.	26.	0.60		
ROUTED TO ROUTE	340.	6.27	79.	26.	26.	0.60		
HYDROGRAPH AT SB9	145.	5.87	22.	7.	7.	0.18		
HYDROGRAPH AT SB10	121.	5.87	19.	6.	6.	0.15		
3 COMBINED AT SUMPT4	516.	6.13	119.	39.	39.	0.92		
ROUTED TO ROUTEPT	509.	6.13	119.	39.	39.	0.92		
HYDROGRAPH AT SB2	71.	6.67	23.	8.	8.	0.18		
ROUTED TO ROUTE	71.	6.67	23.	8.	8.	0.18		
HYDROGRAPH AT SB4A	223.	5.87	28.	9.	9.	0.21		
2 COMBINED AT SUMPT2A	231.	5.87	51.	17.	17.	0.39		
ROUTED TO ROUTE	215.	5.87	50.	16.	16.	0.39		
HYDROGRAPH AT SB4B	173.	5.73	20.	6.	6.	0.15		
HYDROGRAPH AT SB5	125.	6.27	31.	10.	10.	0.24		
3 COMBINED AT SUMPT2B	423.	5.87	101.	33.	33.	0.77		
ROUTED TO ROUTE	396.	5.87	100.	33.	33.	0.77		
HYDROGRAPH AT SB6	59.	6.00	11.	3.	3.	0.08		
2 COMBINED AT COMBINE	444.	6.00	111.	36.	36.	0.85		

ROUTED TO							
ROUTE	443.	6.00	111.	36.	36.	0.85	
HYDROGRAPH AT							
SB7	134.	6.13	28.	9.	9.	0.26	
HYDROGRAPH AT							
SB8R	88.	6.13	17.	6.	6.	0.14	
3 COMBINED AT							
SUMPT3	647.	6.00	157.	51.	51.	1.25	
ROUTED TO							
ROUTE	629.	6.13	155.	51.	51.	1.25	
HYDROGRAPH AT							
SB11	48.	6.40	13.	4.	4.	0.13	
HYDROGRAPH AT							
SB12	77.	6.13	16.	5.	5.	0.17	
3 COMBINED AT							
SUMPT5	747.	6.13	184.	60.	60.	1.55	
ROUTED TO							
ROUTE	737.	6.13	183.	60.	60.	1.55	
HYDROGRAPH AT							
SB13R	102.	6.00	16.	5.	5.	0.10	
HYDROGRAPH AT							
SB15	51.	6.00	9.	3.	3.	0.08	
4 COMBINED AT							
SUMPT6	1370.	6.13	326.	107.	107.	2.65	
HYDROGRAPH AT							
SB16	26.	5.87	3.	1.	1.	0.04	
HYDROGRAPH AT							
SB14	118.	6.00	22.	8.	8.	0.36	
3 COMBINED AT							
SUMPT7	1485.	6.13	351.	116.	116.	3.05	
ROUTED TO							
ROUTE	1482.	6.13	351.	116.	116.	3.05	
HYDROGRAPH AT							
SB19R	159.	5.87	24.	8.	8.	0.16	
ROUTED TO							
ROUTE	157.	6.00	24.	8.	8.	0.16	
HYDROGRAPH AT							
SB17R	114.	5.73	14.	5.	5.	0.12	
2 COMBINED AT							
COMBINE	262.	5.87	38.	12.	12.	0.28	
HYDROGRAPH AT							
SB18	25.	6.13	5.	2.	2.	0.11	
HYDROGRAPH AT							
SB22R	177.	5.87	22.	7.	7.	0.12	

HYDROGRAPH AT SB22OC	118.	6.00	19.	6.	6.	0.07
2 COMBINED AT COMBINE	295.	5.87	41.	13.	13.	0.19
ROUTED TO ROUTE	293.	5.87	41.	13.	13.	0.19
4 COMBINED AT SUMPT8	1871.	6.00	435.	143.	143.	3.62
ROUTED TO ROUTE	1854.	6.13	433.	142.	142.	3.62
HYDROGRAPH AT SB20R	328.	5.73	36.	12.	12.	0.26
HYDROGRAPH AT SB21R	18.	6.00	3.	1.	1.	0.04
HYDROGRAPH AT SB21-27	59.	5.87	9.	3.	3.	0.03
HYDROGRAPH AT SB21-25	65.	5.87	10.	3.	3.	0.03
2 COMBINED AT COMBINE	124.	5.87	19.	6.	6.	0.07
HYDROGRAPH AT SB21-6	40.	5.87	6.	2.	2.	0.02
2 COMBINED AT COMBINE	164.	5.87	25.	7.	7.	0.09
HYDROGRAPH AT SB23AR	172.	5.87	23.	7.	7.	0.15
ROUTED TO SUMMERFI	84.	6.13	23.	7.	7.	0.15
					96.08	6.13
ROUTED TO ROUTE	84.	6.27	23.	7.	7.	0.15
HYDROGRAPH AT SB23BR	236.	5.73	26.	8.	8.	0.13
HYDROGRAPH AT SB23OC	37.	5.87	6.	2.	2.	0.02
3 COMBINED AT COMBINE	319.	5.73	54.	17.	17.	0.30
ROUTED TO ROUTE	310.	5.73	55.	17.	17.	0.30
HYDROGRAPH AT SB24UPR	31.	6.00	5.	1.	1.	0.02
2 COMBINED AT COMBINE	334.	5.87	59.	18.	18.	0.32
ROUTED TO ROUTE	333.	5.87	59.	18.	18.	0.32

HYDROGRAPH AT FOCUSA	70.	6.27	16.	5.	5.	0.08
2 COMBINED AT COMBINE	371.	5.87	75.	23.	23.	0.40
ROUTED TO ROUTE	369.	5.87	75.	23.	23.	0.40
HYDROGRAPH AT SB25UP	54.	6.00	9.	3.	3.	0.04
ROUTED TO ROUTE	54.	6.00	9.	3.	3.	0.04
HYDROGRAPH AT FOCUSB	33.	6.27	8.	2.	2.	0.05
3 COMBINED AT COMBINE	438.	5.87	92.	29.	29.	0.49
ROUTED TO ROUTE	435.	5.87	92.	29.	29.	0.49
5 COMBINED AT SUMPT9	2409.	6.13	586.	191.	191.	4.49
ROUTED TO DF#1	1142.	6.80	586.	191.	191. 72.55	4.49 6.80
ROUTED TO ROUTE	1142.	6.80	586.	191.	191.	4.49
HYDROGRAPH AT SB24-4-1	35.	5.87	5.	1.	1.	0.02
ROUTED TO ROUTE	34.	5.87	5.	1.	1.	0.02
HYDROGRAPH AT SB24-4-3	42.	5.87	6.	2.	2.	0.02
2 COMBINED AT COMBINE	76.	5.87	11.	3.	3.	0.04
ROUTED TO ROUTE	75.	5.87	11.	3.	3.	0.04
HYDROGRAPH AT SB24-3	21.	5.87	3.	1.	1.	0.01
HYDROGRAPH AT SB24DWN	53.	5.87	8.	2.	2.	0.03
3 COMBINED AT SUMPT10	150.	5.87	22.	7.	7.	0.08
2 COMBINED AT SUMPT11	1163.	6.67	608.	197.	197.	4.57
HYDROGRAPH AT SB25-2-7	107.	5.87	15.	5.	5.	0.06
HYDROGRAPH AT SB26	47.	6.13	11.	4.	4.	0.17

3 COMBINED AT
SUMPT12 1209. 6.53 634. 206. 206. 4.80

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
INTERPOLATED TO
COMPUTATION INTERVAL

ISTAQ	ELEMENT	DT PEAK	PEAK PEAK	TIME TO (IN)	VOLUME (CFS)	DT PEAK	PEAK (IN)	TIME TO	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
	ROUTE MANE	3.31	342.47	375.05	1.58	8.00	339.76	376.00	1.58

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5119E+02 EXCESS=0.0000E+00 OUTFLOW=0.5078E+02 BASIN STORAGE=0.3304E+00 PERCENT ERROR= 0.1

	ROUTEPT MANE	1.07	513.20	369.43	1.56	8.00	509.36	368.00	1.56
--	--------------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7713E+02 EXCESS=0.0000E+00 OUTFLOW=0.7699E+02 BASIN STORAGE=0.1210E+00 PERCENT ERROR= 0.0

	ROUTE MANE	1.83	71.08	403.01	1.58	8.00	70.64	400.00	1.58
--	------------	------	-------	--------	------	------	-------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1521E+02 EXCESS=0.0000E+00 OUTFLOW=0.1517E+02 BASIN STORAGE=0.3841E-01 PERCENT ERROR= 0.0

	ROUTE MANE	1.71	228.39	354.88	1.59	8.00	214.77	352.00	1.58
--	------------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3277E+02 EXCESS=0.0000E+00 OUTFLOW=0.3268E+02 BASIN STORAGE=0.8135E-01 PERCENT ERROR= 0.0

	ROUTE MANE	1.36	417.71	355.37	1.59	8.00	395.66	352.00	1.59
--	------------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6514E+02 EXCESS=0.0000E+00 OUTFLOW=0.6503E+02 BASIN STORAGE=0.8689E-01 PERCENT ERROR= 0.0

	ROUTE MANE	0.79	443.45	359.91	1.59	8.00	443.44	360.00	1.59
--	------------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7186E+02 EXCESS=0.0000E+00 OUTFLOW=0.7178E+02 BASIN STORAGE=0.8242E-01 PERCENT ERROR= 0.0

	ROUTE MANE	1.89	646.61	363.78	1.52	8.00	628.71	368.00	1.52
--	------------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1017E+03 EXCESS=0.0000E+00 OUTFLOW=0.1013E+03 BASIN STORAGE=0.2843E+00 PERCENT ERROR= 0.1

	ROUTE MANE	1.11	743.89	369.94	1.45	8.00	737.38	368.00	1.45
--	------------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1199E+03 EXCESS=0.0000E+00 OUTFLOW=0.1198E+03 BASIN STORAGE=0.1467E+00 PERCENT ERROR= 0.0

	ROUTE MANE	0.23	1483.21	368.18	1.42	8.00	1481.94	368.00	1.42
--	------------	------	---------	--------	------	------	---------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2301E+03 EXCESS=0.0000E+00 OUTFLOW=0.2301E+03 BASIN STORAGE=0.5258E-01 PERCENT ERROR= 0.0

ROUTE MANE 0.59 158.80 353.33 1.85 8.00 157.01 360.00 1.86

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1537E+02 EXCESS=0.0000E+00 OUTFLOW=0.1535E+02 BASIN STORAGE=0.2402E-01 PERCENT ERROR= 0.0

ROUTE MANE 0.23 294.82 352.44 2.50 8.00 292.55 352.00 2.51

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2483E+02 EXCESS=0.0000E+00 OUTFLOW=0.2482E+02 BASIN STORAGE=0.2538E-02 PERCENT ERROR= 0.0

ROUTE MANE 1.90 1864.23 365.39 1.46 8.00 1853.72 368.00 1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2833E+03 EXCESS=0.0000E+00 OUTFLOW=0.2823E+03 BASIN STORAGE=0.8278E+00 PERCENT ERROR= 0.1

ROUTE MANE 0.99 84.01 370.12 1.82 8.00 83.65 376.00 1.82

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1452E+02 EXCESS=0.0000E+00 OUTFLOW=0.1451E+02 BASIN STORAGE=0.7129E-02 PERCENT ERROR= 0.0

ROUTE MANE 0.44 317.87 344.98 2.11 8.00 309.61 344.00 2.12

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3366E+02 EXCESS=0.0000E+00 OUTFLOW=0.3365E+02 BASIN STORAGE=0.5149E-02 PERCENT ERROR= 0.0

ROUTE MANE 0.22 333.40 351.88 2.14 8.00 333.39 352.00 2.14

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3665E+02 EXCESS=0.0000E+00 OUTFLOW=0.3664E+02 BASIN STORAGE=0.2925E-02 PERCENT ERROR= 0.0

ROUTE MANE 0.22 370.06 352.29 2.18 8.00 369.24 352.00 2.18

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4654E+02 EXCESS=0.0000E+00 OUTFLOW=0.4653E+02 BASIN STORAGE=0.5212E-02 PERCENT ERROR= 0.0

ROUTE MANE 0.35 54.28 359.77 2.37 8.00 54.27 360.00 2.37

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5201E+01 EXCESS=0.0000E+00 OUTFLOW=0.5200E+01 BASIN STORAGE=0.7280E-03 PERCENT ERROR= 0.0

ROUTE MANE 0.36 437.07 352.46 2.18 8.00 435.49 352.00 2.18

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5671E+02 EXCESS=0.0000E+00 OUTFLOW=0.5671E+02 BASIN STORAGE=0.6395E-02 PERCENT ERROR= 0.0

ROUTE MANE 0.66 1142.34 409.14 1.58 8.00 1142.10 408.00 1.58

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3785E+03 EXCESS=0.0000E+00 OUTFLOW=0.3782E+03 BASIN STORAGE=0.2444E+00 PERCENT ERROR= 0.0

ROUTE MANE 0.40 34.61 352.49 2.81 8.00 34.30 352.00 2.82

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2853E+01 EXCESS=0.0000E+00 OUTFLOW=0.2852E+01 BASIN STORAGE=0.4146E-03 PERCENT ERROR= 0.0

ROUTE MANE 0.35 75.85 352.80 2.82 8.00 74.89 352.00 2.82

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6413E+01 EXCESS=0.0000E+00 OUTFLOW=0.6412E+01 BASIN STORAGE=0.9840E-03 PERCENT ERROR= 0.0

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

CURRENT CONDITIONS
S.C.S. METHOD
HEC-1


```
*****
*                               *
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
ENGINEERS *
*   MAY 1991 *
*   VERSION 4.0.1E *
* RUN DATE 08/02/1996 TIME 10:50:49 *
*                               *
*****
```

```
*****
*                               *
* U.S. ARMY CORPS OF
* HYDROLOGIC ENGINEERING CENTER *
*   609 SECOND STREET *
* DAVIS, CALIFORNIA 95616 *
*   (916) 756-1104 *
*                               *
*****
```

```

X X XXXXXXX XXXXX X
X X X X X XX
X X X X X
XXXXXXXX XXXX X XXXXX X
X X X X X
X X X X X X
X X XXXXXXX XXXXX XXX
```

```

.....
.....
::: Full Microcomputer Implementation :::
::: by :::
::: Haestad Methods, Inc. :::
.....
.....
```

37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

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

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.

THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION

NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,

DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION

KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

LINE	ID	1	2	3	4	5	6	7	8	9	10	
1	ID	PINE CREEK DRAINAGE BASIN - 24HR, CURRENT DEV. (100 YEAR)										
2	ID	REVISED 7/9/92 TO INCLUDE GOLF COURSE DETENTION FACILITY NO. 6										
3	ID	ALSO REVISED FOR BASIN CHANGES IN BUSINESS CAMPUS AREA 6/96										
4	ID	FILE RVDOTDAY										
*** FREE ***												
*DIAGRAM												
5	IT	8	0	0	181							
6	IO	5										
7	KK	SB1										
8	KM	SCS RUNOFF COMPUTATION										
9	BA	.2421										
10	IN	15										
11	PB	4.4										
12	PC	.0022	.0066	.0132	.0198	.0264	.0352	.0440	.0528	.0629	.0726	
13	PC	.0827	.0924	.1025	.1122	.1223	.1408	.1716	.2024	.2332	.2640	
14	PC	.3300	.4400	1.7600	3.0800	3.1900	3.3000	3.3660	3.4320	3.4760	3.5200	
15	PC	3.5640	3.6080	3.6300	3.6520	3.6740	3.6960	3.7180	3.7400	3.7620	3.7840	
16	PC	3.8007	3.8170	3.8337	3.8500	3.8667	3.8830	3.8997	3.9160	3.9327	3.9490	
17	PC	3.9657	3.9820	3.9965	4.0106	4.0251	4.0392	4.0524	4.0656	4.0788	4.0920	
18	PC	4.1030	4.1140	4.1250	4.1360	4.1470	4.1580	4.1690	4.1800	4.1910	4.2020	
19	PC	4.2130	4.2240	4.2350	4.2460	4.2570	4.2680	4.2790	4.2900	4.3010	4.3120	
20	PC	4.3177	4.3230	4.3287	4.3340	4.3397	4.3450	4.3507	4.3560	4.3617	4.3670	
21	PC	4.3727	4.3802	4.3837	4.3890	4.3947	4.4000					
22	LS	0	70									
23	UD	.74										
24	KK	SB3										
25	KM	SCS RUNOFF COMPUTATION										
26	BA	.3593										
27	LS	0	70									
28	UD	.43										
29	KK	SUMMPT1										
30	KM	COMBINE 1 AND 3										
31	HC	2										
32	KK	ROUTE1 TO PT.4										
33	RK	5500	.0284	.040	TRAP	50	2					
34	KK	SB9										
35	KM	SCS RUNOFF - SUBBASIN NO. 9/WITH MAIN CHANNEL										
36	BA	.1765										
37	LS	0	69									
38	UD	.29										
39	KK	SB10										
40	KM	SCS RUNOFF - SUBBASIN NO 10										
41	BA	.1468										
42	LS	0	69									
43	UD	.29										

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

44	KK	SUMPT4							
45	KM	COMBINE PT.1, 9 AND 10							
46	HC	3							
47	KK	ROUTEPT4 TO PT 6							
48	RK	1600 .025 .04	TRAP	50	4.5				
49	KK	SB2							
50	KM	SCS RUNOFF SUBBASIN NO. 2							
51	BA	.1796							
52	LS	0 70							
53	UD	.96							
54	KK	ROUTETO PT.2A							
55	RK	2000 .028 .040	TRAP	25	4				
56	KK	SB4A							
57	KM	SCS RUNOFF - SUBBASIN NO. 4A							
58	BA	.2062							
59	LS	0 70							
60	UD	.19							
61	KK	SUMPT2A							
62	KM	SUMMARY SB2 AND SB4A							
63	HC	2							
64	KK	ROUTETO PT. 2B							
65	RK	2747 .028 .040	TRAP	25	4				
66	KK	SB4B							
67	KM	SCS RUNOFF - SUBBASIN NO. 4B							
68	BA	.1460							
69	LS	0 70							
70	UD	.14							
71	KK	SB5							
72	KM	SCS RUNOFF - SUBBASIN NO. 5							
73	BA	.2359							
74	LS	0 70							
75	UD	.65							
76	KK	SUMPT2B							
77	KM	COMBINE SUBBASINS 2,4 AND 5							
78	HC	3							
79	KK	ROUTEPT.2 TO SB6							
80	RK	2100 .025 .040	TRAP	10	10				
81	KK	SB6							
82	KM	SCS RUNOFF - SUBBASIN NO. 6							
83	BA	.0797							
84	LS	0 70							
85	UD	.40							

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

86	KK COMBINEPT.2 ROUTED WITH SB6
87	HC 2
88	KK ROUTETO PT. 3
89	RK 1340 .025 .040 TRAP 30 2
90	KK SB7
91	KM SCS RUNOFF - SUBBASIN NO. 7
92	BA .2624
93	LS 0 66
94	UD .49
95	KK SB8R
96	KM SCS RUNOFF - SUBBASIN NO. 8R
97	BA .1406
98	LS 0 68.5
99	UD .45
100	KK SUMPT3
101	KM COMBINE PT. 2 ROUTED WITH 6,7 AND 8
102	HC 3
103	KK ROUTEPT 3 TO PT 5
104	RK 3700 .025 .040 TRAP 30 5
105	KK SB11
106	KM SCS RUNOFF - SUBBASIN NO. 11
107	BA .1250
108	LS 0 65
109	UD .67
110	KK SB12R
111	KM SCS RUNOFF - SUBBASIN NO. 12R
112	BA .1718
113	LS 0 63
114	UD .438
115	KK SUMPT5
116	KM COMBINE PT. 3 WITH SUBBASINS 11 AND 12
117	HC 3
118	KK ROUTEPT.5 TO SB 6
119	RK 1720 .023 .04 TRAP 25 10
120	KK SB13R
121	KM SCS RUNOFF - SUBBASIN NO. 13R
122	BA .0955
123	LS 0 75
124	UD .32

LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
168	KK SB22R
169	KM SCS RUNOFF-SUBBASIN NO.22R
170	BA .1859
171	LS 0 72
172	UD .33
173	KK ROUTESB22 TO PT.8
174	RK 1400 .05 .013 CIRC 3.5
175	KK SUMPT8
176	KM COMBINE PT.7, SUBBASINS 17,18,19 & 22
177	HC 4
178	KK ROUTEPT.8 TO PT.9
179	RK 3960 .01 .040 TRAP 30 5
180	KK SB20R
181	KM SCS RUNOFF - SUBBASIN NO. 20R
182	BA .2640
183	LS 0 68.5
184	UD .135
185	KK SB21R
186	KM SCS RUNOFF - SUBBASIN NO. 21R
187	BA .1234
188	LS 0 62
189	UD .295
190	KK SB23AR
191	KM SCS RUNOFF-SUBBASIN NO.23AR
192	BA .1497
193	LS 0 79
194	UD .30
195	KKSUMMERFIELD DETENTION POND
196	KM ROUTE FLOW THRU SUMMER FIELD DETENTION POND
197	RS 1 STOR 0
198	SA 0 1.0142 1.4056 1.6012
199	SE 92 94 96 97.8
200	SL 92 7.829 0.60 0.50
201	SS 100
202	KK ROUTETO SB23BR
203	RK 3050 .02 .015 CIRC 5
204	KK SB23BR
205	KM SCS RUNOFF-SUBBASIN NO.23BR
206	BA .1487
207	LS 0 70
208	UD .240

LINE	ID	1	2	3	4	5	6	7	8	9	10
209	KK COMBINE										
210	HC	2									
211	KK ROUTESB23 TO SB24UP										
212	RK	2000	.038	.013		CIRC	4				
213	KK SB24UPR										
214	KM SCS RUNOFF-SUBBASIN NO.24UPR										
215	BA	.0234									
216	LS	0	63								
217	UD	.39									
218	KK COMBINE										
219	HC	2									
220	KK ROUTESB23 TO SB24UP										
221	RK	1000	.038	.013		CIRC	4				
222	KK FOCUSASITE										
223	KM SCS RUNOFF-FOCUS A SITE										
224	BA	.0783									
225	LS	0	80								
226	UD	.64									
227	KK COMBINESB 23, 24UP & FOCUS A SITE										
228	HC	2									
229	KK ROUTETO PT.9										
230	RK	830	.01	.013		CIRC	5.5				
231	KK SB25AR										
232	KM SCS RUNOFF-SUBBASIN NO.25AR										
233	BA	.0411									
234	LS	0	65								
235	UD	.336									
236	KK ROUTESB25AR TO FOCUS B SITE										
237	RK	1000	.038	.013		CIRC	2.5				
238	KK FOCUSBSITE										
239	KM SCS RUNOFF-FOCUS B SITE										
240	BA	.0464									
241	LS	0	75.5								
242	UD	.65									
243	KK COMBINESB23, 24UP, 25AR & FOCUS SITE										
244	HC	3									
245	KK ROUTETO PT.9										
246	RK	830	.01	.013		CIRC	5.5				

LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
247	KK SUMPT9
248	KM COMBINE PT.8, SUBBASINS 20,21,22 & 25AR
249	HC 4
250	KK DF#1
251	KM ROUTE FLOW THRU DETENTION FACILITY NO. 1
252	RS 1 STOR 0
253	SA 0 0.512 4.156 6.476
254	SE 54 56 58 72
255	SL 54.0 54.0 0.60 0.50
256	SS 72
257	KK ROUTEPT.9 TO PT. 11
258	RK 1450 .02 .040 TRAP 20 3
259	KK SB25BR
260	KM SCS RUNOFF - SUBBASIN NO 25BR
261	BA .0531
262	LS 0 65
263	UD .27
264	KK SMPT11
265	KM SUMMARY SB25BR AND POND 1 ROUTED
266	HC 2
267	KK SB24DWN
268	KM SB24DWN IS ALSO SUMPT.11
269	KM SCS RUNOFF - SUBBASIN NO. 24DWN
270	BA .0864
271	LS 0 70
272	UD .38
273	KK SB26
274	KM SCS RUNOFF - SUBBASIN NO 26
275	BA .1703
276	LS 0 58
277	UD .48
278	KK SUMPT12
279	KM SUMMARY OF PTS 10 AND 11 AND SUBBASIN NO. 26
280	HC 3
281	ZZ

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT LINE	(V) ROUTING	(-->) DIVERSION OR PUMP FLOW
NO.	(.) CONNECTOR	(<-->) RETURN OF DIVERTED OR PUMPED FLOW
7	SB1	
	.	
24	. SB3	
	.	
29	SUMMPT1.....	
	V	
	V	
32	ROUTE	
	.	
34	. SB9	
	.	
39	. SB10	
	.	
44	SUMPT4.....	
	V	
	V	
47	ROUTEPT	
	.	
49	. SB2	
	V	
	V	
54	. ROUTE	
	.	
56	. SB4A	
	.	
61	SUMPT2A.....	
	V	
	V	
64	. ROUTE	
	.	
66	. SB4B	
	.	
71	. SB5	
	.	
76	SUMPT2B.....	
	V	
	V	
79	. ROUTE	
	.	
81	. SB6	
	.	
86	COMBINE.....	
	V	
	V	
88	. ROUTE	
	.	
	.	

```

90      .      .      SB7
      .      .      .
      .      .      .
95      .      .      .      SB8R
      .      .      .      .
      .      .      .      .
100     .      SUMPT3.....
      .      V
      .      V
103     .      ROUTE
      .      .
      .      .
105     .      .      SB11
      .      .      .
      .      .      .
110     .      .      .      SB12R
      .      .      .      .
      .      .      .      .
115     .      SUMPT5.....
      .      V
      .      V
118     .      ROUTE
      .      .
      .      .
120     .      .      SB13R
      .      .      .
      .      .      .
125     .      .      .      SB15
      .      .      .      .
      .      .      .      .
130     SUMPT6.....
      .
      .
133     .      SB16R
      .      .
      .      .
138     .      .      SB14R
      .      .      .
      .      .      .
143     SUMPT7.....
      .      V
      .      V
146     .      ROUTE
      .
      .
149     .      SB19R
      .      V
      .      V
154     .      ROUTE
      .
      .
156     .      .      SB17R
      .      .      .
      .      .      .
161     .      COMBINE.....
      .
      .
163     .      .      SB18R
      .      .      .
      .      .      .
168     .      .      .      SB22R
      .      .      .      V
      .      .      .      V
173     .      .      .      ROUTE
      .      .      .      .
      .      .      .      .
175     SUMPT8.....

```

```

V
V
178 ROUTE
.
.
180 . SB20R
.
.
185 . SB21R
.
.
190 . SB23AR
.
.
195 . SUMMERFI
.
.
202 . ROUTE
.
.
204 . SB23BR
.
.
209 . COMBINE.....
.
.
211 . ROUTE
.
.
213 . SB24UPR
.
.
218 . COMBINE.....
.
.
220 . ROUTE
.
.
222 . FOCUSA
.
.
227 . COMBINE.....
.
.
229 . ROUTE
.
.
231 . SB25AR
.
.
236 . ROUTE
.
.
238 . FOCUSB
.
.
243 . COMBINE.....
.
.
245 . ROUTE
.
.
247 SUMPT9.....
.
.
250 DF#1
.
.

```

257 V
ROUTE
.
259 . SB25BR
.
264 SMPT11.....
.
267 . SB24DWN
.
273 . SB26
.
278 SUMPT12.....

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****
*                               *
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
ENGINEERS *
*   MAY 1991   *
*   VERSION 4.0.1E *
*                               *
* RUN DATE 08/02/1996 TIME 10:50:49 *
*                               *
*****
```

```
*****
*                               *
* U.S. ARMY CORPS OF
HYDROLOGIC ENGINEERING CENTER *
*   609 SECOND STREET   *
* DAVIS, CALIFORNIA 95616 *
*   (916) 756-1104 *
*                               *
*****
```

PINE CREEK DRAINAGE BASIN - 24HR, CURRENT DEV. (100 YEAR)
REVISED 7/9/92 TO INCLUDE GOLF COURSE DETENTION FACILITY NO. 6
ALSO REVISED FOR BASIN CHANGES IN BUSINESS CAMPUS AREA 6/96
FILE RVDDTDAY

6 IO OUTPUT CONTROL VARIABLES
IPRNT 5 PRINT CONTROL
IPLT 0 PLOT CONTROL
QSCAL 0. HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA
NMIN 8 MINUTES IN COMPUTATION INTERVAL
IDATE 1 0 STARTING DATE
ITIME 0000 STARTING TIME
NQ 181 NUMBER OF HYDROGRAPH ORDINATES
NDDATE 2 0 ENDING DATE
NDTIME 0000 ENDING TIME
ICENT 19 CENTURY MARK

COMPUTATION INTERVAL 0.13 HOURS
TOTAL TIME BASE 24.00 HOURS

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

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

TIME OF OPERATION	STATION	PEAK FLOW 6-HOUR	TIME OF FLOW PEAK 24-HOUR	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE MAX STAGE
				24-HOUR	72-HOUR			
HYDROGRAPH AT SB1	117.	6.40	32.	10.	10.	0.24		
HYDROGRAPH AT SB3	250.	6.00	48.	15.	15.	0.36		
2 COMBINED AT SUMMPT1	345.	6.13	79.	26.	26.	0.60		
ROUTED TO ROUTE	340.	6.27	79.	26.	26.	0.60		
HYDROGRAPH AT SB9	145.	5.87	22.	7.	7.	0.18		
HYDROGRAPH AT SB10	121.	5.87	19.	6.	6.	0.15		
3 COMBINED AT SUMPT4	516.	6.13	119.	39.	39.	0.92		
ROUTED TO ROUTEPT	509.	6.13	119.	39.	39.	0.92		
HYDROGRAPH AT SB2	71.	6.67	23.	8.	8.	0.18		
ROUTED TO ROUTE	71.	6.67	23.	8.	8.	0.18		
HYDROGRAPH AT SB4A	223.	5.87	28.	9.	9.	0.21		
2 COMBINED AT SUMPT2A	231.	5.87	51.	17.	17.	0.39		
ROUTED TO ROUTE	215.	5.87	50.	16.	16.	0.39		
HYDROGRAPH AT SB4B	173.	5.73	20.	6.	6.	0.15		
HYDROGRAPH AT SB5	125.	6.27	31.	10.	10.	0.24		
3 COMBINED AT SUMPT2B	423.	5.87	101.	33.	33.	0.77		
ROUTED TO ROUTE	396.	5.87	100.	33.	33.	0.77		
HYDROGRAPH AT SB6	59.	6.00	11.	3.	3.	0.08		
2 COMBINED AT COMBINE	444.	6.00	111.	36.	36.	0.85		

ROUTED TO ROUTE	443.	6.00	111.	36.	36.	0.85
HYDROGRAPH AT SB7	134.	6.13	28.	9.	9.	0.26
HYDROGRAPH AT SB8R	88.	6.13	17.	6.	6.	0.14
3 COMBINED AT SUMPT3	647.	6.00	157.	51.	51.	1.25
ROUTED TO ROUTE	629.	6.13	155.	51.	51.	1.25
HYDROGRAPH AT SB11	48.	6.40	13.	4.	4.	0.13
HYDROGRAPH AT SB12R	77.	6.13	16.	5.	5.	0.17
3 COMBINED AT SUMPT5	747.	6.13	184.	60.	60.	1.55
ROUTED TO ROUTE	737.	6.13	183.	60.	60.	1.55
HYDROGRAPH AT SB13R	102.	6.00	16.	5.	5.	0.10
HYDROGRAPH AT SB15	51.	6.00	9.	3.	3.	0.08
4 COMBINED AT SUMPT6	1370.	6.13	326.	107.	107.	2.65
HYDROGRAPH AT SB16R	26.	5.87	3.	1.	1.	0.04
HYDROGRAPH AT SB14R	118.	6.00	22.	8.	8.	0.36
3 COMBINED AT SUMPT7	1485.	6.13	351.	116.	116.	3.05
ROUTED TO ROUTE	1482.	6.13	351.	116.	116.	3.05
HYDROGRAPH AT SB19R	159.	5.87	24.	8.	8.	0.16
ROUTED TO ROUTE	157.	6.00	24.	8.	8.	0.16
HYDROGRAPH AT SB17R	114.	5.73	14.	5.	5.	0.12
2 COMBINED AT COMBINE	262.	5.87	38.	12.	12.	0.28
HYDROGRAPH AT SB18R	60.	6.00	10.	3.	3.	0.11
HYDROGRAPH AT SB22R	171.	6.00	27.	9.	9.	0.19

ROUTED TO ROUTE	171.	6.00	27.	9.	9.	0.19
4 COMBINED AT SUMPT8	1830.	6.00	426.	140.	140.	3.62
ROUTED TO ROUTE	1829.	6.13	423.	140.	140.	3.62
HYDROGRAPH AT SB20R	293.	5.73	33.	11.	11.	0.26
HYDROGRAPH AT SB21R	65.	6.00	11.	4.	4.	0.12
HYDROGRAPH AT SB23AR	204.	5.87	30.	9.	9.	0.15
ROUTED TO SUMMERFI	86.	6.27	30.	9.	9.	0.15
					97.19	6.27
ROUTED TO ROUTE	85.	6.40	30.	9.	9.	0.15
HYDROGRAPH AT SB23BR	149.	5.87	20.	6.	6.	0.15
2 COMBINED AT COMBINE	215.	5.87	50.	16.	16.	0.30
ROUTED TO ROUTE	210.	5.87	50.	16.	16.	0.30
HYDROGRAPH AT SB24UPR	11.	6.00	2.	1.	1.	0.02
2 COMBINED AT COMBINE	219.	5.87	52.	16.	16.	0.32
ROUTED TO ROUTE	216.	5.87	52.	16.	16.	0.32
HYDROGRAPH AT FOCUSA	70.	6.27	16.	5.	5.	0.08
2 COMBINED AT COMBINE	267.	6.00	68.	21.	21.	0.40
ROUTED TO ROUTE	266.	6.00	68.	21.	21.	0.40
HYDROGRAPH AT SB25AR	25.	6.00	4.	1.	1.	0.04
ROUTED TO ROUTE	25.	6.00	4.	1.	1.	0.04
HYDROGRAPH AT FOCUSB	33.	6.27	8.	2.	2.	0.05
3 COMBINED AT COMBINE	316.	6.00	80.	25.	25.	0.49
ROUTED TO ROUTE	314.	6.00	80.	25.	25.	0.49

4 COMBINED AT							
SUMPT9	2250.	6.13	544.	179.	179.	4.49	
ROUTED TO							
DF#1	1075.	6.80	544.	179.	179.	4.49	
					71.15	6.80	
ROUTED TO							
ROUTE	1074.	6.80	544.	179.	179.	4.49	
HYDROGRAPH AT							
SB25BR	36.	5.87	5.	2.	2.	0.05	
2 COMBINED AT							
SMPT11	1080.	6.80	550.	181.	181.	4.54	
HYDROGRAPH AT							
SB24DWN	67.	6.00	11.	4.	4.	0.09	
HYDROGRAPH AT							
SB26	47.	6.13	11.	4.	4.	0.17	
3 COMBINED AT							
SUMPT12	1117.	6.67	572.	188.	188.	4.80	

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

INTERPOLATED TO
COMPUTATION INTERVAL

ISTAQ	ELEMENT	DT	PEAK	TIME TO	VOLUME	DT	PEAK	TIME TO	VOLUME
		PEAK			PEAK				

	(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)	
--	-------	-------	-------	------	-------	-------	-------	------	--

ROUTE	MANE	3.31	342.47	375.05	1.58	8.00	339.76	376.00	1.58
-------	------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5119E+02 EXCESS=0.0000E+00 OUTFLOW=0.5078E+02 BASIN STORAGE=0.3304E+00 PERCENT ERROR= 0.1

ROUTEPT	MANE	1.07	513.20	369.43	1.56	8.00	509.36	368.00	1.56
---------	------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7713E+02 EXCESS=0.0000E+00 OUTFLOW=0.7699E+02 BASIN STORAGE=0.1210E+00 PERCENT ERROR= 0.0

ROUTE	MANE	1.83	71.08	403.01	1.58	8.00	70.64	400.00	1.58
-------	------	------	-------	--------	------	------	-------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1521E+02 EXCESS=0.0000E+00 OUTFLOW=0.1517E+02 BASIN STORAGE=0.3841E-01 PERCENT ERROR= 0.0

ROUTE	MANE	1.71	228.39	354.88	1.59	8.00	214.77	352.00	1.58
-------	------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3277E+02 EXCESS=0.0000E+00 OUTFLOW=0.3268E+02 BASIN STORAGE=0.8135E-01 PERCENT ERROR= 0.0

ROUTE	MANE	1.36	417.71	355.37	1.59	8.00	395.66	352.00	1.59
-------	------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.6514E+02 EXCESS=0.0000E+00 OUTFLOW=0.6503E+02 BASIN STORAGE=0.8689E-01 PERCENT ERROR= 0.0

ROUTE	MANE	0.79	443.45	359.91	1.59	8.00	443.44	360.00	1.59
-------	------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.7186E+02 EXCESS=0.0000E+00 OUTFLOW=0.7178E+02 BASIN STORAGE=0.8242E-01 PERCENT ERROR= 0.0

ROUTE	MANE	1.89	646.61	363.78	1.52	8.00	628.71	368.00	1.52
-------	------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1017E+03 EXCESS=0.0000E+00 OUTFLOW=0.1013E+03 BASIN STORAGE=0.2843E+00 PERCENT ERROR= 0.1

ROUTE	MANE	1.11	743.89	369.94	1.45	8.00	737.38	368.00	1.45
-------	------	------	--------	--------	------	------	--------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1199E+03 EXCESS=0.0000E+00 OUTFLOW=0.1198E+03 BASIN STORAGE=0.1467E+00 PERCENT ERROR= 0.0

ROUTE	MANE	0.23	1483.21	368.18	1.42	8.00	1481.94	368.00	1.42
-------	------	------	---------	--------	------	------	---------	--------	------

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2301E+03 EXCESS=0.0000E+00 OUTFLOW=0.2301E+03 BASIN STORAGE=0.5258E-01 PERCENT ERROR= 0.0

ROUTE MANE 0.59 158.80 353.33 1.85 8.00 157.01 360.00 1.86

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1537E+02 EXCESS=0.0000E+00 OUTFLOW=0.1535E+02 BASIN STORAGE=0.2402E-01 PERCENT ERROR= 0.0

ROUTE MANE 0.32 170.79 360.20 1.74 8.00 170.60 360.00 1.74

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1729E+02 EXCESS=0.0000E+00 OUTFLOW=0.1728E+02 BASIN STORAGE=0.2594E-02 PERCENT ERROR= 0.0

ROUTE MANE 1.95 1830.30 364.06 1.44 8.00 1828.83 368.00 1.44

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2783E+03 EXCESS=0.0000E+00 OUTFLOW=0.2773E+03 BASIN STORAGE=0.8349E+00 PERCENT ERROR= 0.1

ROUTE MANE 1.01 85.61 378.52 2.29 8.00 85.32 384.00 2.29

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1827E+02 EXCESS=0.0000E+00 OUTFLOW=0.1826E+02 BASIN STORAGE=0.8918E-02 PERCENT ERROR= 0.0

ROUTE MANE 0.49 214.18 353.15 1.95 8.00 210.50 352.00 1.95

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3097E+02 EXCESS=0.0000E+00 OUTFLOW=0.3097E+02 BASIN STORAGE=0.6203E-02 PERCENT ERROR= 0.0

ROUTE MANE 0.34 218.64 352.66 1.89 8.00 216.35 352.00 1.89

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3241E+02 EXCESS=0.0000E+00 OUTFLOW=0.3241E+02 BASIN STORAGE=0.3310E-02 PERCENT ERROR= 0.0

ROUTE MANE 0.33 266.52 360.24 1.98 8.00 266.19 360.00 1.98

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.4230E+02 EXCESS=0.0000E+00 OUTFLOW=0.4229E+02 BASIN STORAGE=0.5680E-02 PERCENT ERROR= 0.0

ROUTE MANE 0.34 25.04 360.61 1.26 8.00 24.87 360.00 1.27

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.2773E+01 EXCESS=0.0000E+00 OUTFLOW=0.2773E+01 BASIN STORAGE=0.5711E-03 PERCENT ERROR= 0.0

ROUTE MANE 0.37 314.94 360.45 1.92 8.00 313.92 360.00 1.92

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5004E+02 EXCESS=0.0000E+00 OUTFLOW=0.5003E+02 BASIN STORAGE=0.6675E-02 PERCENT ERROR= 0.0

ROUTE MANE 0.57 1074.72 408.98 1.48 8.00 1073.96 408.00 1.48

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.3552E+03 EXCESS=0.0000E+00 OUTFLOW=0.3550E+03 BASIN
STORAGE=0.2409E+00 PERCENT ERROR= 0.0

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

**BRIARGATE BUSINESS CAMPUS
RATIONAL METHOD**

BRIARGATE BUSINESS CAMPUS - SUMMERFIELD BASIN
(On-site Area Drainage Summary)

BASIN	AREA TOTAL (Ac)	WEIGHTED C(100)	OVERLAND			Section Type	FLOW ROUTING				TOTAL Tc (min)	INT I(100) (in/hr)	CA(100)	TOTAL Q(100) (c.f.s.)	REMARKS	
			C(S)	Length (ft)	Hght (ft)		tc (min)	Length (ft)	Slope (%)	Velocity (fps)						tc (min)
OC-21, 24																
	168.51	0.51										43.4	3.2	86.3	278.3	SUMMERFIELD
	3.50	0.79										10.0	7.1	2.8	19.7	AREA 14 - SUMMERFIELD
	172.01	0.52										43.4	3.2	89.1	287.2	CONFLUENCE
						EX 60" RCP	1200	1.3%	16.8	1.2		44.6				TRAVEL TIME
FA	8.89	0.80	0.25	50	1.00	8.9	GUTTER	950	2.0%	5.0	3.1	12.1	6.5	7.2	46.6	
		0.64										15.7	5.8	5.7	32.7	DETENTION POND OUTFALL
FB	7.58	0.88	0.95	300	8.50	3.4	GUTTER	1150	1.2%	3.9	4.9	8.3	7.6	6.7	50.7	
	188.48	0.54										44.6	3.2	101.4	321.2	CONFLUENCE
							EX 54" RCP	536	2.3%	20.2	0.4	45.0				TRAVEL TIME

HISTORICAL

HIST-A	8.9	0.20	0.20	1000	40.00	33.7						33.7	3.8	1.8	6.7	HISTORICAL FLOWS
--------	-----	------	------	------	-------	------	--	--	--	--	--	------	-----	-----	-----	------------------

OC-18S

FC	5.00	0.80	0.25	100	2.00	12.6	GUTTER	300	6.7%	8.0	0.6	13.3	6.2	4.0	25.1	
		0.65										17.1	5.5	3.2	17.9	DETENTION POND OUTFALL
	193.48	0.54										45.0	3.1	104.6	329.4	CONFLUENCE
							EX 48" RCP	737	4.4%	26.2	0.5	45.5				TRAVEL TIME

HISTORICAL

HIST-B	5.0	0.20	0.20	450	12.00	25.8						25.8	4.4	1.0	4.4	HISTORICAL FLOWS
--------	-----	------	------	-----	-------	------	--	--	--	--	--	------	-----	-----	-----	------------------

RESEARCH PKWY

FD	2.1	0.65	0.95	300	12.00	3.1	GUTTER	800	3.8%	5.9	2.3	5.3	8.9	1.4	12.1	
												5.3	8.9	0.5	4.2	8" INLET - PICK UP 4.2 CFS
												5.3	8.9	0.9	7.9	FLOW BY
FE	2.2	0.65	0.95	300	12.00	3.1	GUTTER	800	3.8%	6.0	2.2	5.3	8.9	1.4	12.7	
	4.30											5.3	8.9	1.9	17.0	CONFLUENCE
							18" RCP	530	2.0%	12.9	0.7	6.0	8.6			TRAVEL TIME
	197.78	0.54										45.5	3.1	106.5	333.2	CONFLUENCE
							EX 48" RCP	772	4.5%	26.5	0.5	46.0				TRAVEL TIME

FOCUS SITE

FF FOCUS SITE	22.1	0.70	0.25	300	12.00	17.4	GUTTER	1400	3.5%	6.7	3.5	20.9	5.0	15.5	76.9	
		0.44										31.6	3.9	9.7	38.2	DETENTION POND OUTFALL
FG	7.7	0.64	0.25	300	27.00	13.3	FLOW BY					5.3	8.9	0.9	7.9	FROM 'AY'
							GUTTER	400		3.5	1.9	15.2	5.8	5.8	33.9	FOCUS RB-5
	29.80	0.52										31.6	3.9	15.5	61.0	CONFLUENCE
							EX 36" RCP	55	1.0%	9.2	0.1	31.6	3.9			TRAVEL TIME
FH	5.0	0.69	0.25	200	17.00	11.1	GUTTER	400		3.5	1.9	13.0	6.3	3.5	21.9	FOCUS AREA 2
	232.58	0.52										46.0	3.1	122.1	379.1	CONFLUENCE
							EX 60" RCP	70	2.0%	19.3	0.1	46.1	3.1			TRAVEL TIME
FI	1.3	0.95	0.25	8	0.20	3.3	GUTTER	1000	1.0%	3.1	5.4	8.8	7.5	1.3	9.4	
	233.91	0.53										46.1	3.1	123.3	382.7	CONFLUENCE
							EX 60" RCP	830	1.0%	19.5	0.7	46.8				TRAVEL TIME

OC-18N

FJ	9.4	0.80	0.25	50	1.00	8.9	GUTTER	800	2.0%	5.1	2.6	11.5	6.7	7.6	50.3	
		0.64										14.8	5.9	6.0	35.7	DETENTION BASIN OUTFALL
							27" RCP	900	1.5%	9.4	1.6	16.4				TRAVEL TIME

HISTORICAL

HIST-C	9.4	0.20	0.20	700	37.00	25.7						25.7	4.4	1.9	8.3	HISTORICAL FLOWS
--------	-----	------	------	-----	-------	------	--	--	--	--	--	------	-----	-----	-----	------------------

BRIARGATE BUSINESS CAMPUS - SUMMERFIELD BASIN
(On-site Area Drainage Summary)

BASIN	AREA TOTAL (Ac)	WEIGHTED C(100)	OVERLAND			FLOW ROUTING				TOTAL Tc (min)	INT I(100) (in/hr)	CA(100)	TOTAL Q(100) (c.f.s.)	REMARKS		
			C(5)	Length (ft)	Hght (ft)	tc (min)	Section Type	Length (ft)	Slope (%)						Velocity (fps)	tc (min)
OC-17																
FK	19.5	0.80	0.25	50	1.00	8.9	GUTTER	1000	2.0%	6.1	2.7	11.7	6.6	15.7	103.9	
		0.64										15.1	5.9	12.4	73.0	DETENTION POND OUTFALL
								30" RCP	50	3.2%	14.9	0.1	15.2			

												16.4	5.6	6.3	35.7	FROM OC-17N
	28.90											15.2	5.9	18.8	109.9	CONFLUENCE
							36" RCP	760	2.7%	15.6	0.8	16.0	5.7			TRAVEL TIME

HISTORICAL

HIST-D	AREA	WEIGHTED C	C(5)	Length	Hght	tc	Section Type	Length	Slope	Velocity	tc	TOTAL Tc	INT I	CA	TOTAL Q	REMARKS
	19.5	0.20	0.20	750	30.00	29.2						29.2	4.1	3.9	16.1	HISTORICAL FLOWS

FL	7.6	0.65	0.25	26	0.52	6.4	GUTTER	1100		7.0	2.6	9.1	7.4	4.9	36.4	
							GUTTER	900		7.0	2.1	11.2				TRAVEL TIME
FM	3.9	0.50	0.25	300	10.00	18.5						18.5	5.3	1.9	10.3	
FN	11.8	0.70	0.25	300	18.50	15.1	GUTTER	1000		7.0	2.4	17.5	5.5	8.3	45.1	
												29.9	4.1	3.3	13.2	DETENTION POND OUTFALL
	23.30											11.2	6.7	6.1	41.3	CONFLUENCE
							EX 36" RCP	110	2.0%	18.1	0.1	11.3	6.7			TRAVEL TIME
												46.8	3.1	123.3	382.7	SUMMERFIELD & FOCUS 'A'
							EX 54" RCP	885	5.5%	28.7	0.5	46.8	3.1	148.2	455.4	CONFLUENCE
												47.3				TRAVEL TIME

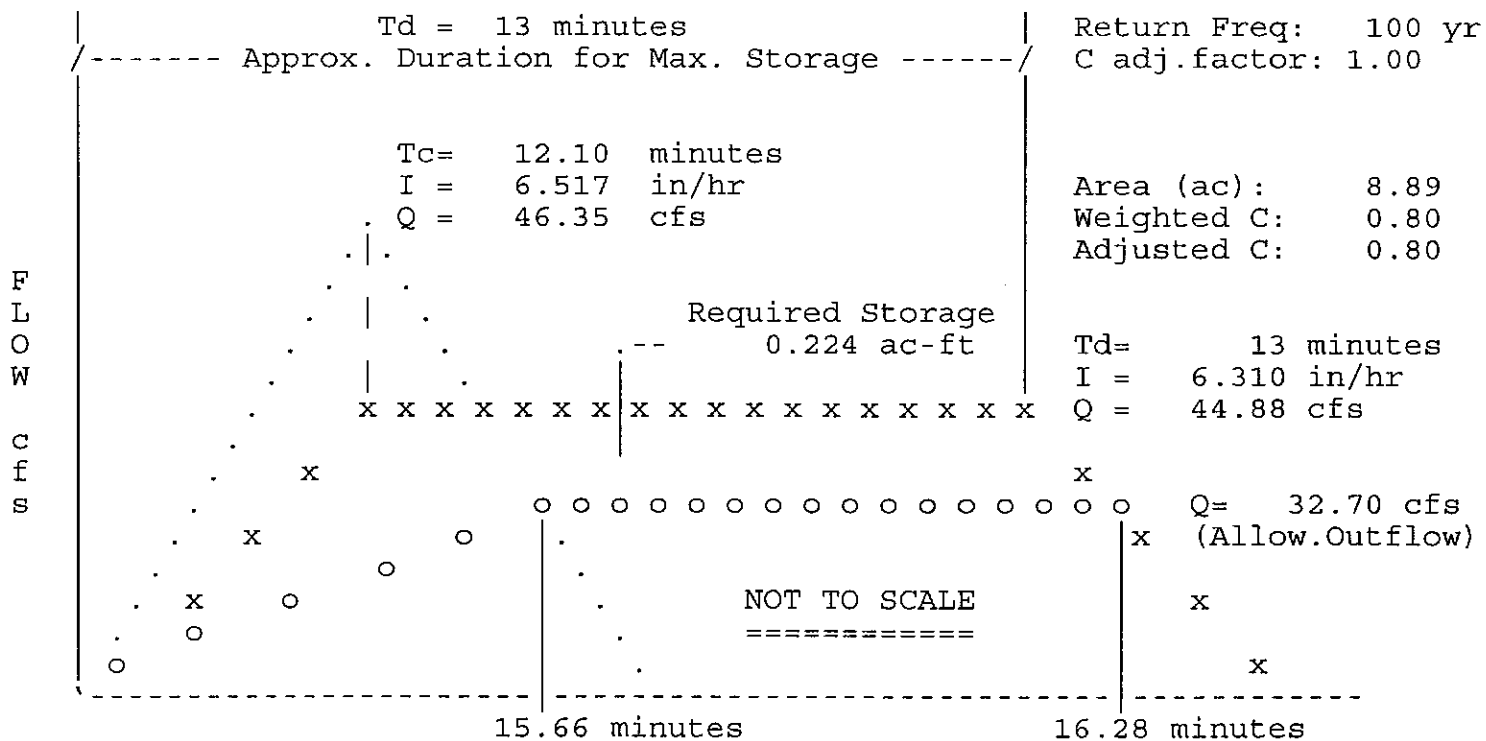
MODIFIED RATIONAL METHOD
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

OC-21, 24 PRELIMINARY HYDROLOGY - SOUTH
 35% DETENTION

```

*****
* RETURN FREQUENCY: 100 yr      | Allowable Outflow: 32.70 cfs *
* 'C' Adjustment: 1.000        | Required Storage: 0.224 ac-ft *
*-----*
* Peak Inflow: 44.88 cfs      | Inflow .HYD stored: 100YR .HYD *
*****
  
```



Quick TR-55 Ver.5.46 S/N:
Executed: 11:55:03 07-26-1996

OC-21, 24 PRELIMINARY HYDROLOGY - SOUTH
35% DETENTION

**** Modified Rational Hydrograph ****

Weighted C = 0.800 Area= 8.890 acres Tc = 12.10 minutes

Adjusted C = 0.800 Td= 13.00 min. I= 6.31 in/hr Qp= 44.88 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00

Output file: 100YR .HYD

HYDROGRAPH FOR MAXIMUM STORAGE
For the 100 Year Storm

Time Hours	Time increment = 0.017 Hours						
	Time on left represents time for first Q in each row.						
0.002	0.37	4.08	7.79	11.50	15.21	18.91	22.62
0.118	26.33	30.04	33.75	37.46	41.17	44.88	44.51
0.235	40.80	37.09	33.38	29.67	25.96	22.25	18.54
0.352	14.84	11.13	7.42	3.71	0.00		

Quick TR-55 Ver.5.46 S/N:
 Executed: 11:55:03 07-26-1996

OC-21, 24 PRELIMINARY HYDROLOGY - SOUTH
 35% DETENTION

* * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * *

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
 'C' adjustment, k = 1
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
AS	0.800	8.89						
			12.10	0.800	0.800	6.517	8.89	46.35

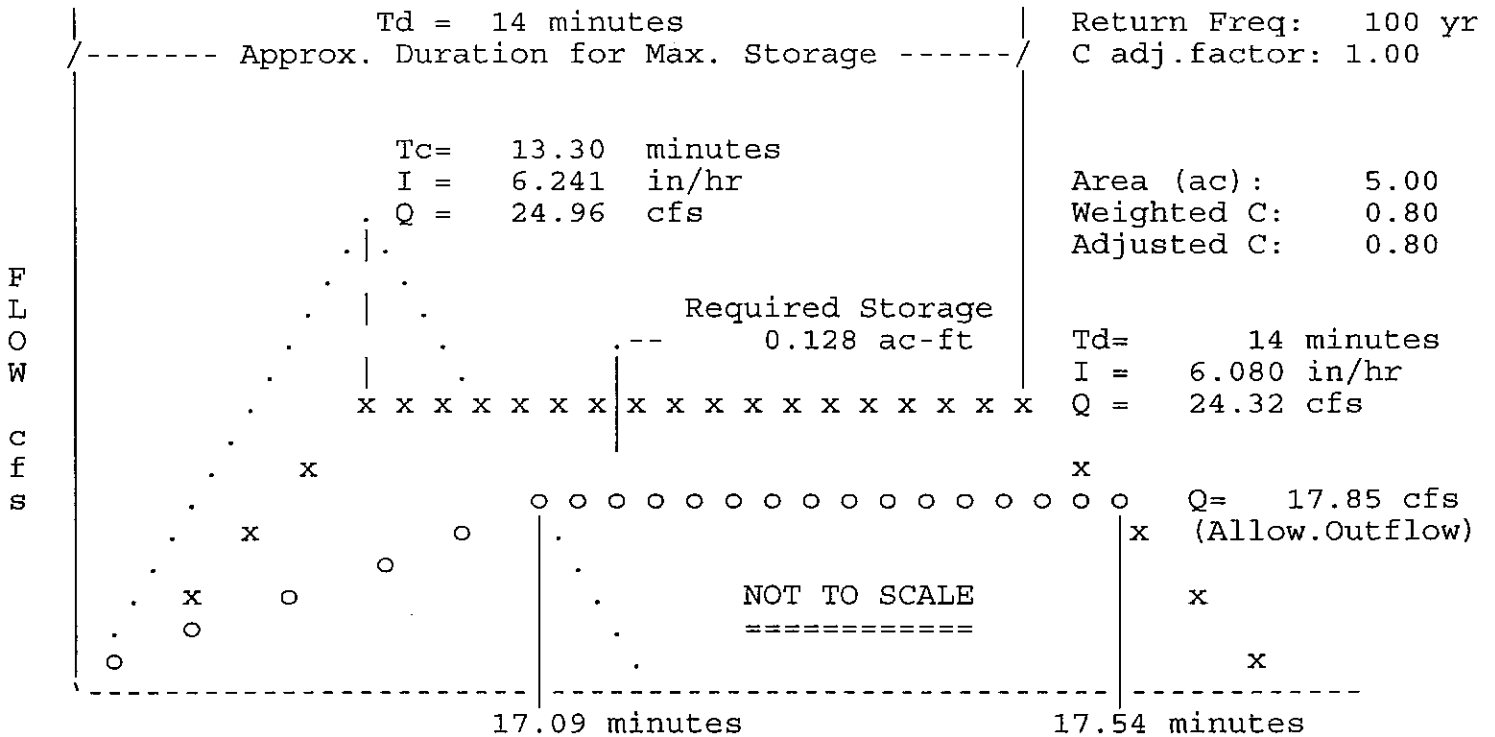
MODIFIED RATIONAL METHOD
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

OC-18S PRELIMINARY HYDROLOGY
 35% DETENTION

```

*****
* RETURN FREQUENCY: 100 yr      | Allowable Outflow: 17.85 cfs *
* 'C' Adjustment: 1.000        | Required Storage: 0.128 ac-ft *
*-----*
* Peak Inflow: 24.32 cfs      | Inflow .HYD stored: 100YR .HYD *
*****
  
```



Quick TR-55 Ver.5.46 S/N:
Executed: 16:27:10 07-26-1996

OC-18S PRELIMINARY HYDROLOGY
35% DETENTION

**** Modified Rational Hydrograph ****

Weighted C = 0.800 Area= 5.000 acres Tc = 13.30 minutes

Adjusted C = 0.800 Td= 14.00 min. I= 6.08 in/hr Qp= 24.32 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00
Output file: 100YR .HYD

HYDROGRAPH FOR MAXIMUM STORAGE
For the 100 Year Storm

Time Hours	Time increment = 0.017 Hours						
	Time on left represents time for first Q in each row.						
0.005	0.55	2.38	4.21	6.03	7.86	9.69	11.52
0.122	13.35	15.18	17.01	18.83	20.66	22.49	24.32
0.238	23.77	21.94	20.11	18.29	16.46	14.63	12.80
0.355	10.97	9.14	7.31	5.49	3.66	1.83	0.00

Quick TR-55 Ver.5.46 S/N:
 Executed: 16:27:10 07-26-1996

OC-18S PRELIMINARY HYDROLOGY
 35% DETENTION

* * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * *

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
 'C' adjustment, k = 1
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
AX	0.800	5.00						
			13.30	0.800	0.800	6.241	5.00	24.96

Quick TR-55 Ver.5.46 S/N:
Executed: 16:26:28 07-26-1996

OC-18N PRELIMINARY HYDROLOGY
35% DETENTION

**** Modified Rational Hydrograph ****

Weighted C = 0.800 Area= 9.400 acres Tc = 11.50 minutes

Adjusted C = 0.800 Td= 12.00 min. I= 6.54 in/hr Qp= 49.18 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00

Output file: 100YR .HYD

HYDROGRAPH FOR MAXIMUM STORAGE
For the 100 Year Storm

Time Hours	Time increment = 0.017 Hours						
	Time on left represents time for first Q in each row.						
0.008	2.14	6.41	10.69	14.97	19.24	23.52	27.80
0.125	32.07	36.35	40.63	44.90	49.18	47.04	42.77
0.242	38.49	34.21	29.94	25.66	21.38	17.11	12.83
0.358	8.55	4.28	0.00				

Quick TR-55 Ver.5.46 S/N:
 Executed: 16:26:28 07-26-1996

OC-18N PRELIMINARY HYDROLOGY
 35% DETENTION

* * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * *

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
 'C' adjustment, k = 1
 Adj. 'C' = Wtd.'C' x 1

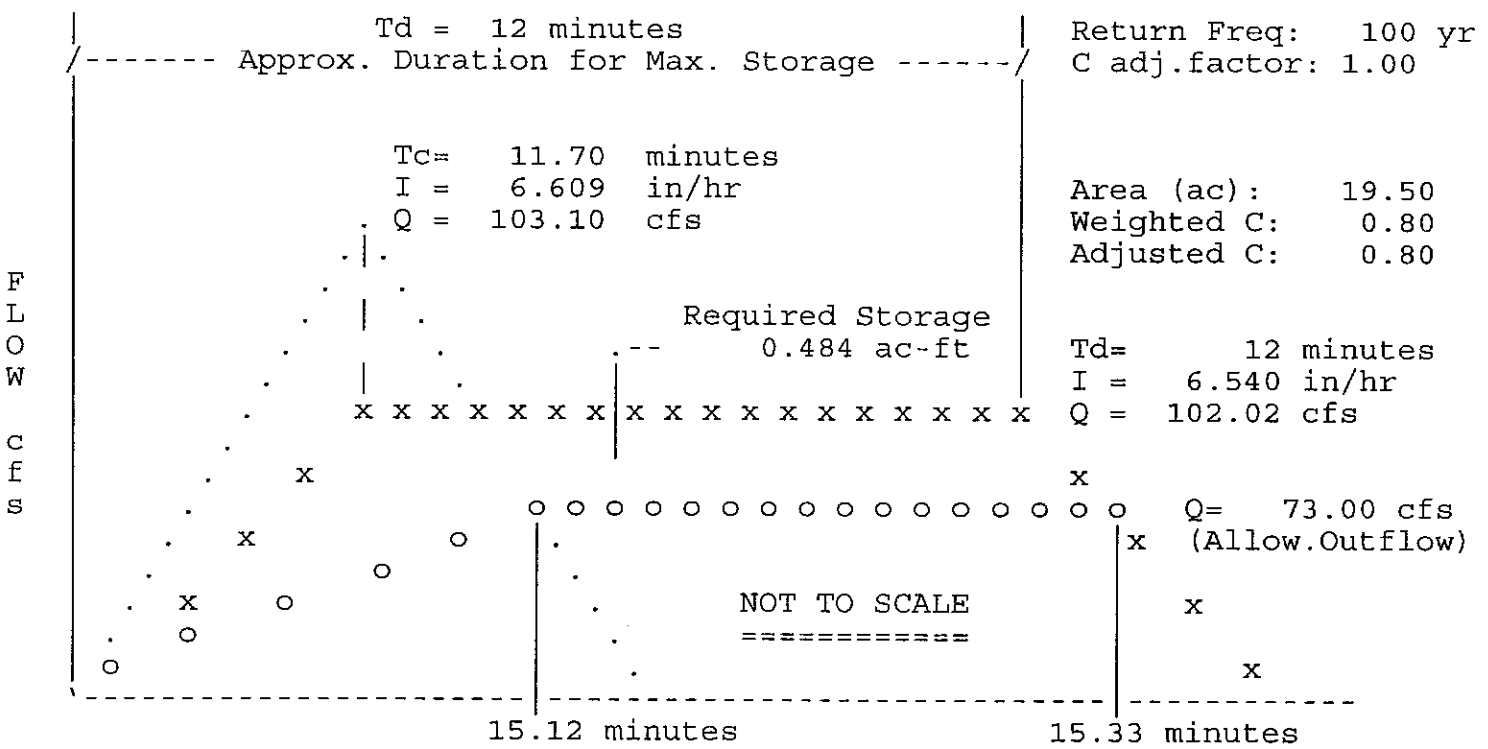
Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
BG	0.800	9.40						
			11.50	0.800	0.800	6.655	9.40	50.05

MODIFIED RATIONAL METHOD
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

OC-17 PRELIMINARY HYDROLOGY
 35% DETENTION

```
*****
* RETURN FREQUENCY: 100 yr      Allowable Outflow: 73.00 cfs  *
* 'C' Adjustment: 1.000        Required Storage: 0.484 ac-ft  *
*-----*
* Peak Inflow: 102.02 cfs      Inflow .HYD stored: 100YR .HYD  *
*****
```



Quick TR-55 Ver.5.46 S/N:
Executed: 16:25:51 07-26-1996

OC-17 PRELIMINARY HYDROLOGY
35% DETENTION

**** Modified Rational Hydrograph ****

Weighted C = 0.800 Area= 19.500 acres Tc = 11.70 minutes

Adjusted C = 0.800 Td= 12.00 min. I= 6.54 in/hr Qp= 102.02 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00

Output file: 100YR .HYD

HYDROGRAPH FOR MAXIMUM STORAGE
For the 100 Year Storm

Time Hours	Time increment = 0.017 Hours						
	Time on left represents time for first Q in each row.						
0.012	6.10	14.82	23.54	32.26	40.98	49.70	58.42
0.128	67.14	75.86	84.58	93.30	102.02	95.92	87.20
0.245	78.48	69.76	61.04	52.32	43.60	34.88	26.16
0.362	17.44	8.72	0.00				

Quick TR-55 Ver.5.46 S/N:
 Executed: 16:25:51 07-26-1996

OC-17 PRELIMINARY HYDROLOGY
 35% DETENTION

* * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * *

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
 'C' adjustment, k = 1
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
BJ	0.800	19.50						
			11.70	0.800	0.800	6.609	19.50	103.10

BRIARGATE BUSINESS CAMPUS - BASIN 22R
(On-site Area Drainage Summary)

BASIN	AREA TOTAL (Ac)	WEIGHTE C(100)	OVERLAND			FLOW ROUTING						Tc TOTAL (min)	I(100) (in/hr)	CA(100)	TOTAL Q(100) (c.f.s.)	REMARKS
			C(5)	Length (ft)	Hght (ft)	tc (min)	Section Type	Length (ft)	Slope (%)	Velocity (fps)	tc (min)					
OC-21, 24																
GA 21NE	8.52	0.80	0.25	50	1.00	8.9	GUTTER	650	2.0%	7.4	1.5	10.4	7.0	6.9	47.7	
	8.5	0.64										13.4	6.2	5.4	33.7	DETENTION POND OUTFAL
	36.8	0.59										21.7	4.9	21.7	105.7	FROM SUMMERFIELD
												21.7	4.9	6.2	30.0	AT GRADE INLETS
												21.7	4.9	11.6	56.4	CONFLUENCE
							30" RCP	800	2.0%	11.7	1.1	22.8				
GB	1.65	0.95					GUTTER	700	2.0%	5.6	2.1	21.7	4.9	15.6	75.7	BY-PASS FROM ABOVE
	46.97	0.61										23.8	4.6	17.1	79.3	DYNAMIC DR.
							48" RCP	100	1.0%	11.2	0.1	23.9		28.7	132.9	CONFLUENCE
																TRAVEL TIME
GC 21NW	12.9	0.80	0.25	50	1.00	8.9	GUTTER	850	2.0%	7.4	1.9	10.9	6.8	10.3	70.7	
	12.9	0.66										13.6	6.2	8.5	52.7	DETENTION POND OUTFAL
	45.3	0.82										23.9	4.6	37.2	171.8	CONFLUENCE @ DP #2
							48" RCP	1100	1.5%	13.9	1.3	25.2				
GD	4.0	0.95	0.25	10	0.20	4.0	GUTTER	1800	1.5%	4.3	7.0	11.0	6.8	3.8	25.8	
	49.3	0.83										25.2	4.5	41.0	183.7	CONFLUENCE

HISTORICAL

HIST-A	8.5	0.20	0.20	500	18.00	24.7						24.7	4.5	1.7	7.7	HISTORICAL FLOWS
HIST-B	12.9	0.20	0.20	800	28.00	31.5						24.7	4.5	4.3	19.4	HISTORICAL FLOWS

OC-20, 23

GE	23.95	0.80	0.25	50	1.00	8.9	GUTTER	1150	2.0%	7.6	2.5	11.5	6.7	19.3	128.7	
	23.95	0.64										14.8	5.9	15.3	90.6	DETENTION POND OUTFAL
	49.32	0.83										25.2	4.5	41.0	183.7	FROM: OC-21, 24 - above
	18.27	0.69										22.9	4.7	12.6	59.4	FROM: SUMMERFIELD
	91.54	0.73										25.2	4.5	68.9	308.4	CONFLUENCE
							60" RCP	400	1.4%	15.7	0.4	25.7				

HISTORICAL

HIST-C	24.0	0.20	0.20	750	30.00	29.2						29.2	4.1	4.8	19.7	HISTORICAL FLOWS
--------	------	------	------	-----	-------	------	--	--	--	--	--	------	-----	-----	------	------------------

Quick TR-55 Ver.5.46 S/N:
Executed: 11:19:13 07-29-1996

OC-21, 24 PRELIMINARY HYDROLOGY - NORTHEAST
35% DETENTION

**** Modified Rational Hydrograph ****

Weighted C = 0.800 Area= 8.520 acres Tc = 10.40 minutes

Adjusted C = 0.800 Td= 11.00 min. I= 6.77 in/hr Qp= 46.14 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00

Output file: 100YR .HYD

HYDROGRAPH FOR MAXIMUM STORAGE
For the 100 Year Storm

Time Hours	Time increment = 0.017 Hours Time on left represents time for first Q in each row.						
0.007	1.77	6.21	10.65	15.09	19.52	23.96	28.40
0.123	32.83	37.27	41.71	46.14	44.37	39.93	35.50
0.240	31.06	26.62	22.18	17.75	13.31	8.87	4.44
0.357	0.00						

Quick TR-55 Ver.5.46 S/N:
 Executed: 11:19:13 07-29-1996

OC-21, 24 PRELIMINARY HYDROLOGY - NORTHEAST
 35% DETENTION

* * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * *

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
 'C' adjustment, k = 1
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
GA	0.800	8.52						
			10.40	0.800	0.800	6.908	8.52	47.08

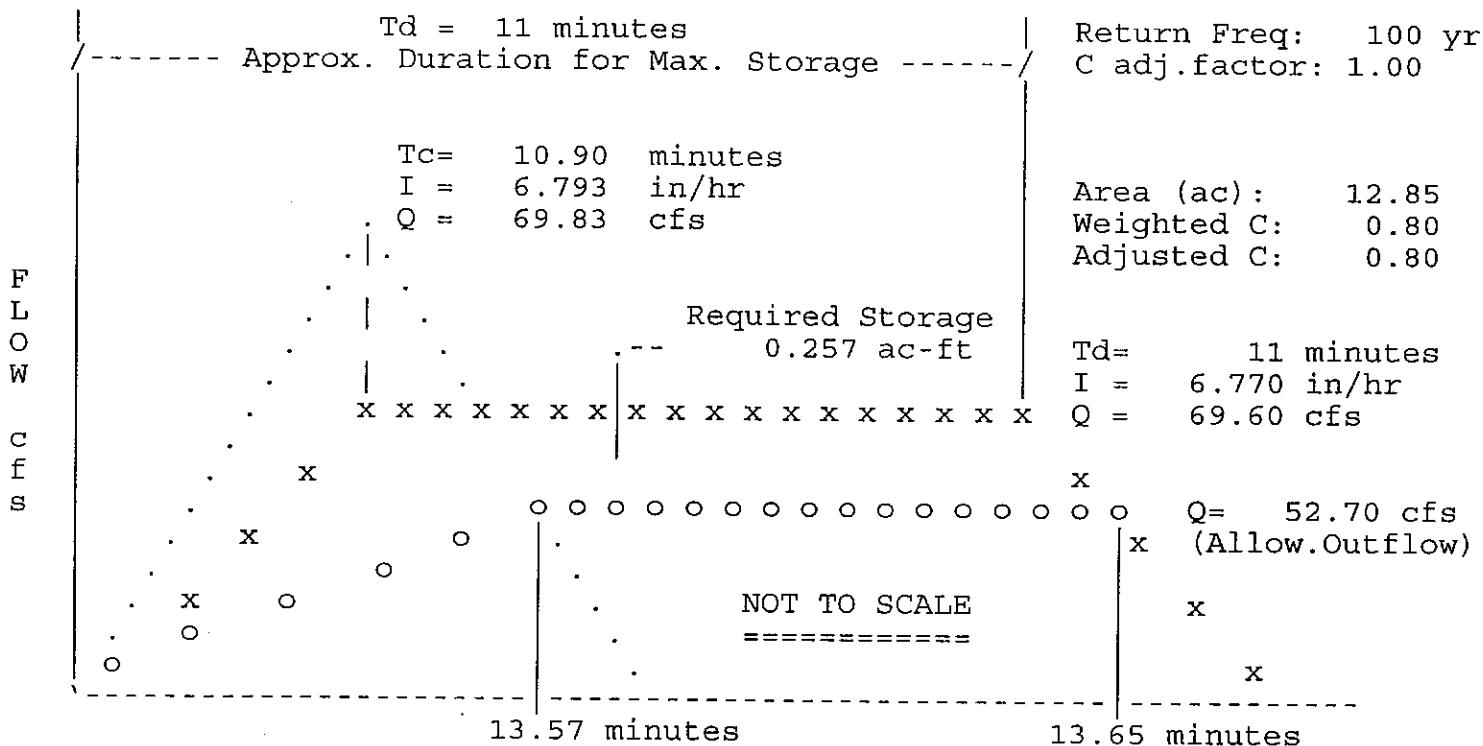
MODIFIED RATIONAL METHOD
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

OC-21, 24 PRELIMINARY HYDROLOGY - NORTHWEST
 35% DETENTION

```

*****
* RETURN FREQUENCY: 100 yr | Allowable Outflow: 52.70 cfs *
* 'C' Adjustment: 1.000 | Required Storage: 0.257 ac-ft *
*-----*
* Peak Inflow: 69.60 cfs | Inflow .HYD stored: 100YR .HYD *
*****
  
```



Quick TR-55 Ver.5.46 S/N:
Executed: 11:18:26 07-29-1996

OC-21, 24 PRELIMINARY HYDROLOGY - NORTHWEST
35% DETENTION

**** Modified Rational Hydrograph ****

Weighted C = 0.800 Area= 12.850 acres Tc = 10.90 minutes

Adjusted C = 0.800 Td= 11.00 min. I= 6.77 in/hr Qp= 69.60 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00

Output file: 100YR .HYD

HYDROGRAPH FOR MAXIMUM STORAGE
For the 100 Year Storm

Time Hours	Time increment = 0.017 Hours						
	Time on left represents time for first Q in each row.						
0.015	5.75	12.13	18.52	24.90	31.29	37.67	44.06
0.132	50.44	56.83	63.21	69.60	63.85	57.46	51.08
0.248	44.69	38.31	31.92	25.54	19.15	12.77	6.38
0.365	0.00						

Quick TR-55 Ver.5.46 S/N:
 Executed: 11:18:26 07-29-1996

OC-21, 24 PRELIMINARY HYDROLOGY - NORTHWEST
 35% DETENTION

* * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * *

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
 'C' adjustment, k = 1
 Adj. 'C' = Wtd.'C' x 1

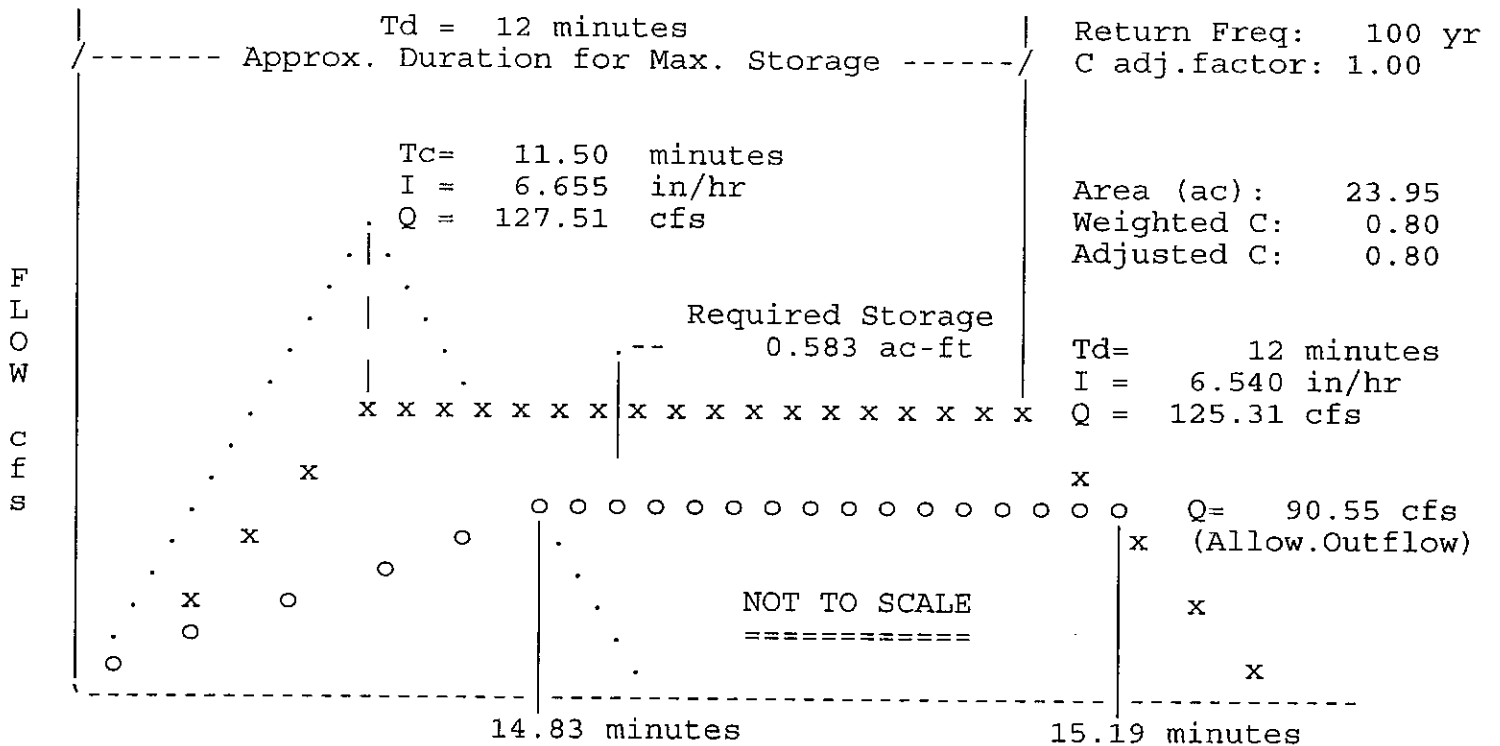
Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
GC	0.800	12.85						
			10.90	0.800	0.800	6.793	12.85	69.83

MODIFIED RATIONAL METHOD
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

OC-20, 23 PRELIMINARY HYDROLOGY
 35% DETENTION

```
*****
* RETURN FREQUENCY: 100 yr      | Allowable Outflow: 90.55 cfs *
* 'C' Adjustment: 1.000        | Required Storage: 0.583 ac-ft *
*-----*
* Peak Inflow: 125.31 cfs      | Inflow .HYD stored: 100YR .HYD *
*****
```



Quick TR-55 Ver.5.46 S/N:
Executed: 13:11:58 07-29-1996

OC-20, 23 PRELIMINARY HYDROLOGY
35% DETENTION

**** Modified Rational Hydrograph ****

Weighted C = 0.800 Area= 23.950 acres Tc = 11.50 minutes

Adjusted C = 0.800 Td= 12.00 min. I= 6.54 in/hr Qp= 125.31 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00

Output file: 100YR .HYD

HYDROGRAPH FOR MAXIMUM STORAGE
For the 100 Year Storm

Time Hours	Time increment = 0.017 Hours						
	Time on left represents time for first Q in each row.						
0.008	5.45	16.34	27.24	38.14	49.03	59.93	70.83
0.125	81.72	92.62	103.51	114.41	125.31	119.86	108.96
0.242	98.07	87.17	76.27	65.38	54.48	43.58	32.69
0.358	21.79	10.90	0.00				

Quick TR-55 Ver.5.46 S/N:
 Executed: 13:11:58 07-29-1996

OC-20, 23 PRELIMINARY HYDROLOGY
 35% DETENTION

* * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * *

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
 'C' adjustment, k = 1
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
GD	0.800	23.95						
			11.50	0.800	0.800	6.655	23.95	127.51

BRIARGATE BUSINESS CAMPUS - OC-1
(On-site Area Drainage Summary)

BASIN	AREA TOTAL (Ac)	WEIGHTED C(100)	OVERLAND			FLOW ROUTING						Tc		TOTAL Q(100) (c.f.s.)	REMARKS	
			C(5)	Length (ft)	Hght (ft)	tc (min)	Section Type	Length (ft)	Slope (%)	Velocity (fps)	tc (min)	TOTAL (min)	I(100) (in/hr)			CA(100)
A	6.66	0.80	0.25	50	1.00	8.9	GUTTER	900	2.0%	5.5	2.7	11.7	6.6	5.4	35.5	
	6.7	0.63										15.2	5.9	4.2	24.8	DETENTION POND DI
							24" RCP	50	2.0%	9.6	0.1	11.7				

HISTORICAL

HIST-A	7.41	0.20	0.20	1000	22.00	41.0						41.0	3.3	1.5	4.9	HISTORICAL FLOWS
																HISTORICAL FLOWS

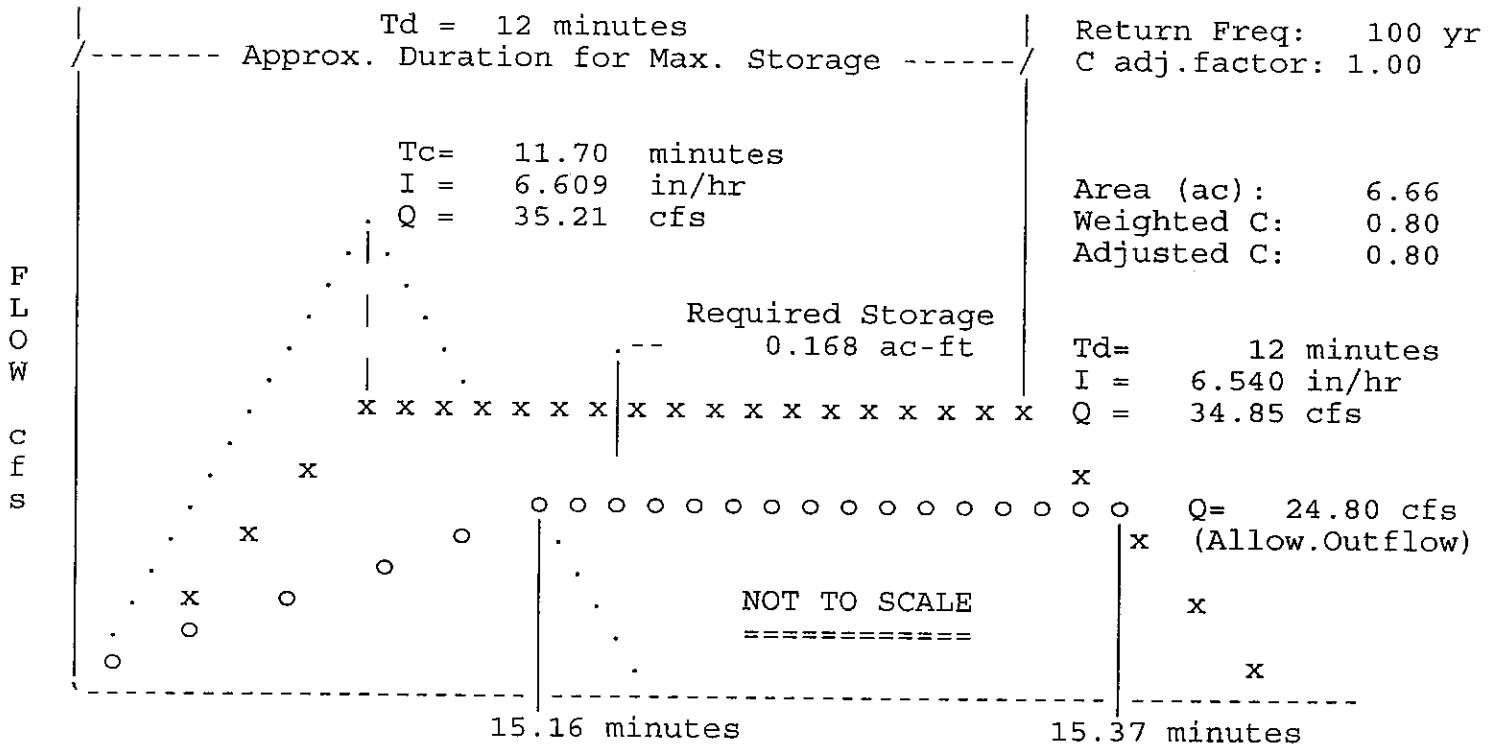
MODIFIED RATIONAL METHOD
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

OC-1 PRELIMINARY HYDROLOGY
 35% DETENTION

```

*****
* RETURN FREQUENCY: 100 yr | Allowable Outflow: 24.80 cfs *
* 'C' Adjustment: 1.000 | Required Storage: 0.168 ac-ft *
*-----*
* Peak Inflow: 34.85 cfs | Inflow .HYD stored: 100YR .HYD *
*****
  
```



Quick TR-55 Ver.5.46 S/N:
Executed: 16:21:08 07-26-1996

OC-1 PRELIMINARY HYDROLOGY
35% DETENTION

**** Modified Rational Hydrograph ****

Weighted C = 0.800 Area= 6.660 acres Tc = 11.70 minutes

Adjusted C = 0.800 Td= 12.00 min. I= 6.54 in/hr Qp= 34.85 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00

Output file: 100YR .HYD

HYDROGRAPH FOR MAXIMUM STORAGE
For the 100 Year Storm

Time Hours	Time increment = 0.017 Hours						
	Time on left represents time for first Q in each row.						
0.012	2.08	5.06	8.04	11.02	14.00	16.98	19.95
0.128	22.93	25.91	28.89	31.87	34.85	32.76	29.78
0.245	26.80	23.83	20.85	17.87	14.89	11.91	8.93
0.362	5.96	2.98	0.00				

Quick TR-55 Ver.5.46 S/N:
 Executed: 16:21:08 07-26-1996

OC-1 PRELIMINARY HYDROLOGY
 35% DETENTION

* * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * *

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
 'C' adjustment, k = 1
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
DA	0.800	6.66	11.70	0.800	0.800	6.609	6.66	35.21

BRIARGATE BUSINESS CAMPUS - OC-2, 7 & 8
(On-site Area Drainage Summary)

BASIN	AREA TOTAL (Ac)	OVERLAND					FLOW ROUTING					Tc		TOTAL CA(100) Q(100) (c.f.s.)	REMARKS
		C(100)	C(5)	Length (ft)	Hght (ft)	tc (min)	Section Type	Length (ft)	Slope (%)	Velocity (fps)	tc (min)	TOTAL (min)	I(100) (in/hr)		

NORTH

D	36.89	0.80	0.25	30	1.00	8.9	GUTTER	1630	2.0%	7.1	3.8	12.8	6.4	29.7	188.7		
	36.9	0.64										16.5	5.6	23.7	133.3	DETENTION POND A3 OUTFALL	
							42" RCP	100	2.0%	14.6	0.1	16.6					

HISTORICAL

HIST-A	17.16	0.20	0.20	900	60.00	27.0						27.0	4.3	3.4	14.8	HISTORICAL FLOWS
HIST-B	17.01	0.20	0.20				NAT. CH	600	6.7%	5.2	1.9	28.9	4.1	6.8	28.3	HISTORICAL FLOWS
HIST-C	2.72	0.20	0.20	600	26.00	25.4						25.4	4.5	0.5	2.4	HISTORICAL FLOWS
												28.9	4.1	7.4	30.5	CONFLUENCE

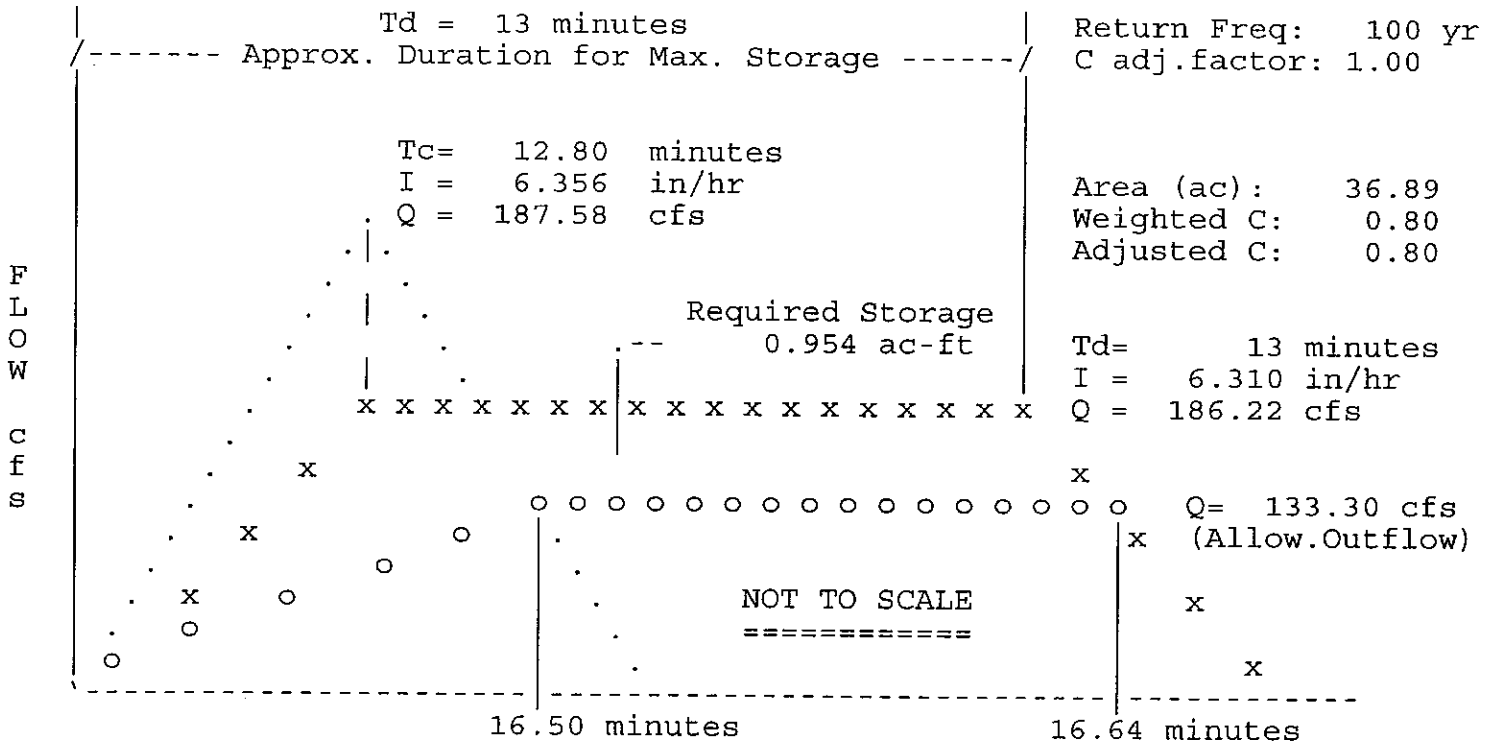
MODIFIED RATIONAL METHOD
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

OC-2, 7 & 8 PRELIMINARY HYDROLOGY
 35% DETENTION

```

*****
* RETURN FREQUENCY: 100 yr      | Allowable Outflow: 133.30 cfs *
* 'C' Adjustment: 1.000       | Required Storage: 0.954 ac-ft *
*-----*
* Peak Inflow: 186.22 cfs      | Inflow .HYD stored: 100YR .HYD *
*****
  
```



Quick TR-55 Ver.5.46 S/N:
Executed: 16:22:15 07-26-1996

OC-2, 7 & 8 PRELIMINARY HYDROLOGY
35% DETENTION

**** Modified Rational Hydrograph ****

Weighted C = 0.800 Area= 36.890 acres Tc = 12.80 minutes

Adjusted C = 0.800 Td= 13.00 min. I= 6.31 in/hr Qp= 186.22 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00

Output file: 100YR .HYD

HYDROGRAPH FOR MAXIMUM STORAGE
For the 100 Year Storm

Time Hours	Time increment = 0.017 Hours						
	Time on left represents time for first Q in each row.						
0.013	11.64	26.19	40.74	55.28	69.83	84.38	98.93
0.130	113.48	128.03	142.58	157.12	171.67	186.22	174.58
0.247	160.03	145.48	130.94	116.39	101.84	87.29	72.74
0.363	58.19	43.65	29.10	14.55	0.00		

Quick TR-55 Ver.5.46 S/N:
 Executed: 16:22:15 07-26-1996

OC-2, 7 & 8 PRELIMINARY HYDROLOGY
 35% DETENTION

* * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * *

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
 'C' adjustment, k = 1
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
AK	0.800	36.89						
			12.80	0.800	0.800	6.356	36.89	187.58

BRIARGATE BUSINESS CAMPUS - OC-3
(On-site Area Drainage Summary)

BASIN	AREA TOTAL (Ac)	OVERLAND					FLOW ROUTING					Tc TOTAL (min)	I(100) (in/hr)	CA(100)	TOTAL Q(100) (c.f.s.)	REMARKS
		C(100)	C(5)	Length (ft)	Hght (ft)	tc (min)	Section Type	Length (ft)	Slope (%)	Velocity (fps)	tc (min)					
NORTH																
EF	7.84	0.80	0.25	50	1.00	8.9	GUTTER	850	2.0%	4.9	2.9	11.8	6.6	6.3	41.5	
	7.8	0.65										15.1	5.9	5.1	29.9	DETENTION POND OUTFALL
							24" RCP	50	2.0%	5.5	0.2	0.2				
HISTORICAL																
HIST-A	7.84	0.20	0.20	750	50.00	24.6						24.6	4.5	1.6	7.1	HISTORICAL FLOWS

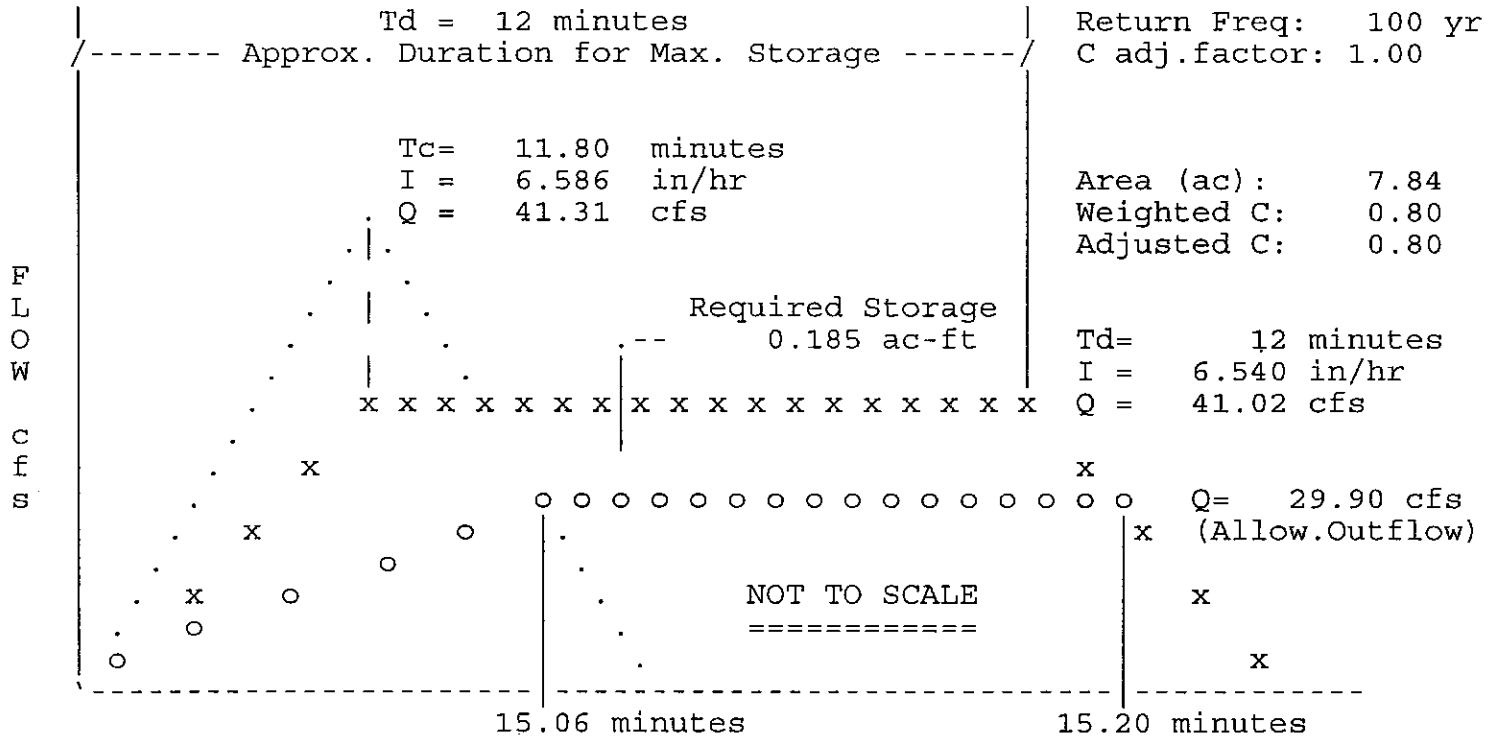
MODIFIED RATIONAL METHOD
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

OC-3 PRELIMINARY HYDROLOGY
 35% DETENTION

```

*****
* RETURN FREQUENCY: 100 yr      | Allowable Outflow: 29.90 cfs *
* 'C' Adjustment: 1.000        | Required Storage: 0.185 ac-ft *
*-----*
* Peak Inflow: 41.02 cfs      | Inflow .HYD stored: 100YR .HYD *
*****
  
```



Quick TR-55 Ver.5.46 S/N:
Executed: 16:23:16 07-26-1996

OC-3 PRELIMINARY HYDROLOGY
35% DETENTION

**** Modified Rational Hydrograph ****

Weighted C = 0.800 Area= 7.840 acres Tc = 11.80 minutes

Adjusted C = 0.800 Td= 12.00 min. I= 6.54 in/hr Qp= 41.02 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00

Output file: 100YR .HYD

HYDROGRAPH FOR MAXIMUM STORAGE
For the 100 Year Storm

Time Hours	Time increment = 0.017 Hours						
	Time on left represents time for first Q in each row.						
0.013	2.78	6.26	9.73	13.21	16.69	20.16	23.64
0.130	27.11	30.59	34.07	37.54	41.02	38.24	34.76
0.247	31.29	27.81	24.33	20.86	17.38	13.90	10.43
0.363	6.95	3.48	0.00				

Quick TR-55 Ver.5.46 S/N:
 Executed: 16:23:16 07-26-1996

OC-3 PRELIMINARY HYDROLOGY
 35% DETENTION

* * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * *

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
 'C' adjustment, k = 1
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
AS	0.800	7.84						
			11.80	0.800	0.800	6.586	7.84	41.31

BRIARGATE BUSINESS CAMPUS - OC-4
(On-site Area Drainage Summary)

BASIN	AREA TOTAL (Ac)	C(100)	C(5)	OVERLAND			Section Type	FLOW ROUTING				Tc			TOTAL Q(100) (c.f.s.)	REMARKS
				Length (ft)	Hght (ft)	tc (min)		Length (ft)	Slope (%)	Velocity (fps)	tc (min)	TOTAL (min)	I(100) (in/hr)	CA(100)		

OC-4-1

EA	8.54	0.80	0.25	50	1.00	8.9	GUTTER	800	2.0%	5.0	2.7	11.6	6.6	6.9	45.6	
HIST-A	8.54	0.20	0.20	800	50.00	26.0						26.0	4.4	1.7	7.5	HISTORIC FLOWS

OC-4-2

EB	5.86	0.80	0.25	50	1.00	8.9	GUTTER	600	2.0%	4.6	2.2	11.1	6.8	4.7	31.9	
												11.6	6.6	11.6	76.9	CONFLUENCE
	14.4	0.64										14.9	5.9	9.2	54.6	DETENTION POND A1 OUTFALL
HIST-A	5.86	0.20	0.20	525	30.00	21.7						21.7	4.9	1.2	5.7	HISTORICAL FLOWS

OC-4-3

EC	12.92	0.80	0.25	50	1.00	8.9	GUTTER	700	2.0%	5.6	2.1	11.0	6.8	10.4	70.6	
	12.9	0.64										14.2	6.1	8.2	49.8	DETENTION POND 2 OUTFALL
HIST-A	12.92	0.20	0.20	670	30.00	26.6						26.6	4.3	2.6	11.2	

POND-1	14.40							36" RCP	1100	1.0%	9.0	2.0	14.9	5.9	9.2	54.6	
																	TRAVEL TIME

ROUTING OC-4-3 TO OC-7,8

POND-2	12.92							36" RCP	350	1.0%	8.8	0.7	14.2	6.1	8.2	49.8	
																	TRAVEL TIME
ED	1.74	0.94	0.25	10	0.20	4.0	GUTTER	725	1.5%	3.9	3.1	14.8	5.9	1.6	9.7		
EE	2.42	0.94	0.25	10	0.20	4.0	GUTTER	1460	5.0%	6.7	3.6	7.6	7.9	2.3	17.8		
	4.16											7.6	7.9	2.9	22.8	CONFLUENCE	
	31.48	0.65										14.8	5.9	20.4	120.7	CONFLUENCE @ DP #1	
								48" RCP	850	1.0%	10.9	1.3	16.1				TRAVEL TIME
	7.84	0.65										15.1	5.9	5.1	29.9	From OC-3	
	39.32	0.65										16.1	5.7	25.5	144.7	CONFLUENCE w/ OC-3	
								42" RCP	100	2.0%	15.0	0.1	16.2				TRAVEL TIME

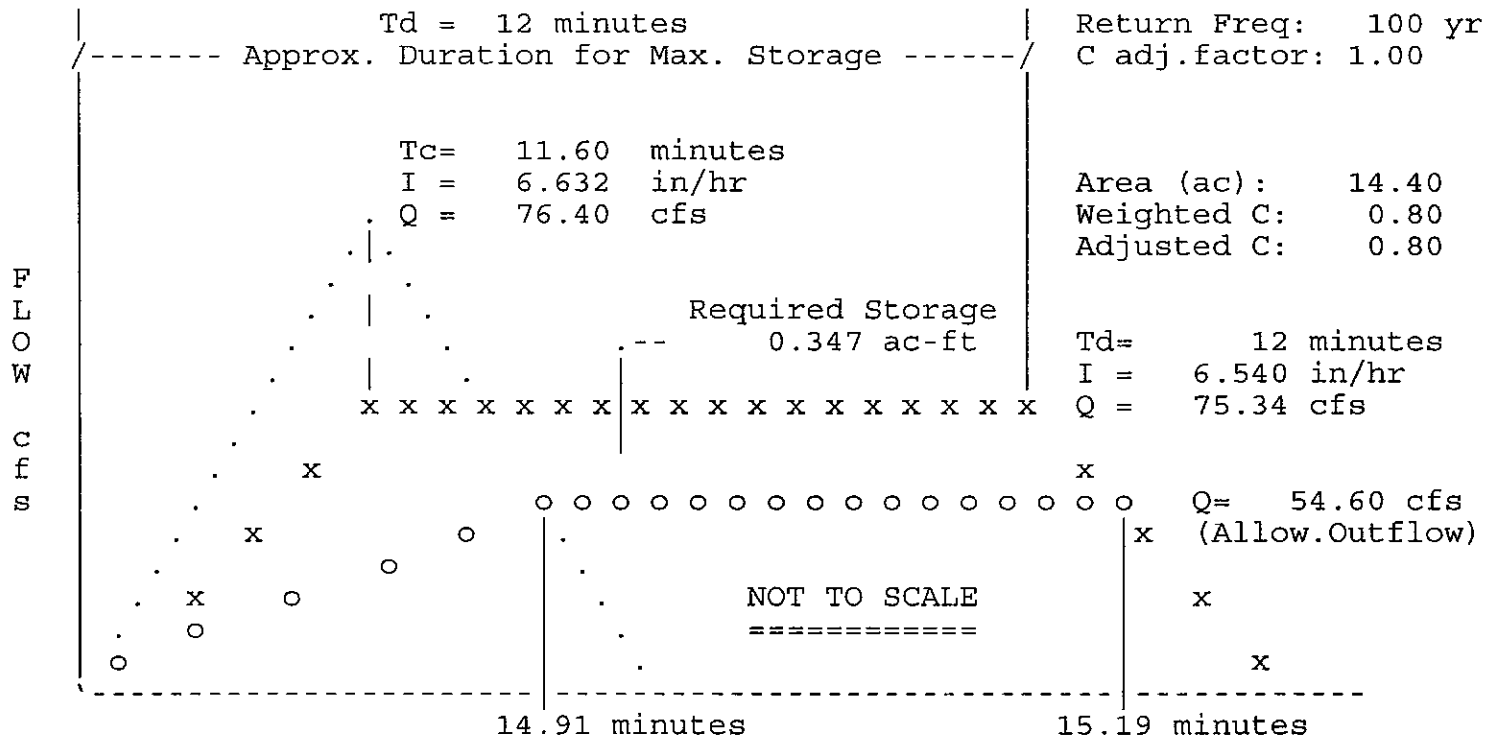
MODIFIED RATIONAL METHOD
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

OC-4-1, -2 PRELIMINARY HYDROLOGY
 35% DETENTION

 * RETURN FREQUENCY: 100 yr | Allowable Outflow: 54.60 cfs *
 * 'C' Adjustment: 1.000 | Required Storage: 0.347 ac-ft *

 * Peak Inflow: 75.34 cfs Inflow .HYD stored: 100YR .HYD *



Quick TR-55 Ver.5.46 S/N:
Executed: 13:24:52 07-29-1996

OC-4-1, -2 PRELIMINARY HYDROLOGY
35% DETENTION

**** Modified Rational Hydrograph ****

Weighted C = 0.800 Area= 14.400 acres Tc = 11.60 minutes

Adjusted C = 0.800 Td= 12.00 min. I= 6.54 in/hr Qp= 75.34 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00

Output file: 100YR .HYD

HYDROGRAPH FOR MAXIMUM STORAGE
For the 100 Year Storm

Time Hours	Time increment = 0.017 Hours Time on left represents time for first Q in each row.						
0.010	3.90	10.39	16.89	23.38	29.88	36.37	42.87
0.127	49.36	55.86	62.35	68.85	75.34	71.44	64.95
0.243	58.45	51.96	45.46	38.97	32.47	25.98	19.48
0.360	12.99	6.49	0.00				

Quick TR-55 Ver.5.46 S/N:
 Executed: 13:24:52 07-29-1996

OC-4-1, -2 PRELIMINARY HYDROLOGY
 35% DETENTION

* * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * *

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
 'C' adjustment, k = 1
 Adj. 'C' = Wtd.'C' x 1

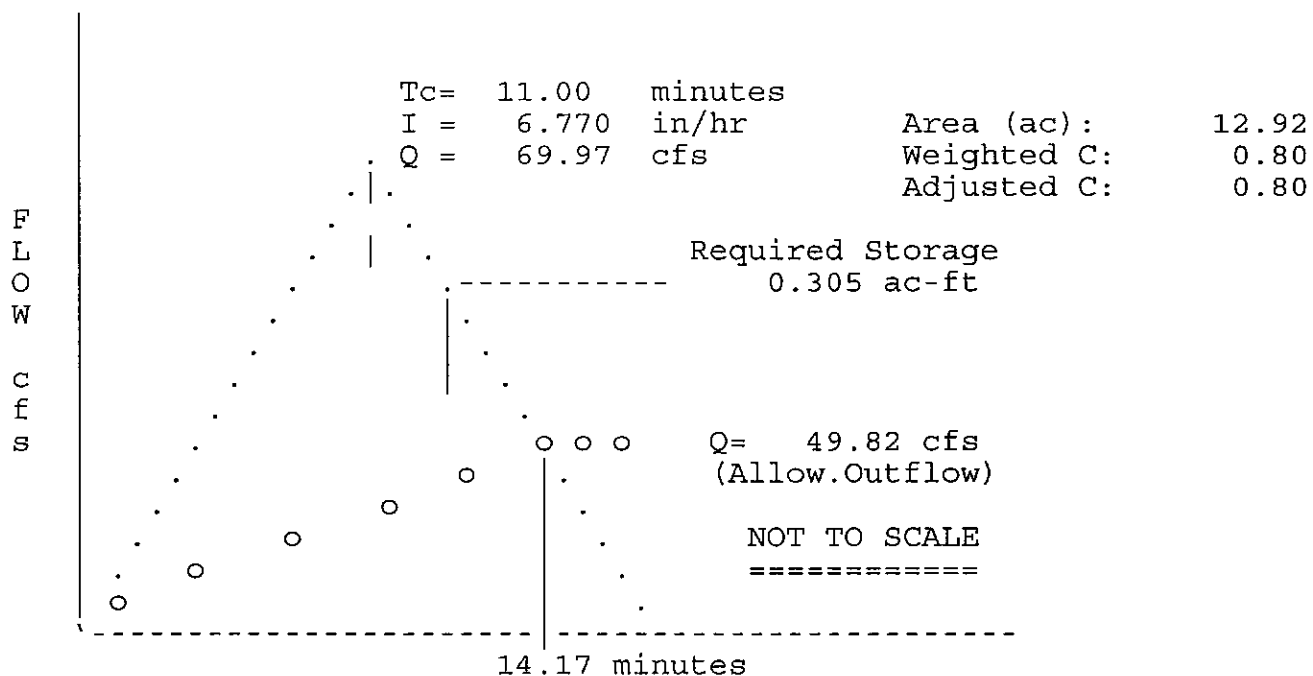
Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
EA	0.800	14.40						
			11.60	0.800	0.800	6.632	14.40	76.40

MODIFIED RATIONAL METHOD
 ---- Graphical Summary for Maximum Required Storage ----

OC-4-3 PRELIMINARY HYDROLOGY
 35% DETENTION

```

*****
*
* RETURN FREQUENCY: 100 yr      Allowable Outflow: 49.82 cfs *
* 'C' Adjustment: 1.000      Required Storage: 0.305 ac-ft *
*
* STORM DURATION = Tc for Max.Storage *
*-----*
* Peak Inflow: 69.97 cfs      Inflow .HYD stored: 100YR .HYD *
*****
  
```



Quick TR-55 Ver.5.46 S/N:
Executed: 13:25:13 07-29-1996

OC-4-3 PRELIMINARY HYDROLOGY
35% DETENTION

**** Modified Rational Hydrograph ****

Weighted C = 0.800 Area= 12.920 acres Tc = 11.00 minutes

Adjusted C = 0.800 Td= 11.00 min. I= 6.77 in/hr Qp= 69.97 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00
Output file: 100YR .HYD

HYDROGRAPH FOR MAXIMUM STORAGE
For the 100 Year Storm

Time Hours	Time increment = 0.017 Hours						
	Time on left represents time for first Q in each row.						

0.000	0.00	6.36	12.72	19.08	25.45	31.81	38.17
0.117	44.53	50.89	57.25	63.61	69.97	63.61	57.25
0.233	50.89	44.53	38.17	31.81	25.45	19.08	12.72
0.350	6.36	0.00					

Quick TR-55 Ver.5.46 S/N:
 Executed: 13:25:13 07-29-1996

OC-4-3 PRELIMINARY HYDROLOGY
 35% DETENTION

* * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * *

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
 'C' adjustment, k = 1
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
EC	0.800	12.92						
			11.00	0.800	0.800	6.770	12.92	69.97

BRIARGATE BUSINESS CAMPUS - OC-6, 25 & 27
(On-site Area Drainage Summary)

BASIN	AREA TOTAL (Ac)	OVERLAND					FLOW ROUTING					Tc TOTAL (min)	I(100) (in/hr)	CA(100)	TOTAL Q(100) (c.f.s.)	REMARKS
		C(100)	C(5)	Length (ft)	Hght (ft)	tc (min)	Section Type	Length (ft)	Slope (%)	Velocity (fps)	tc (min)					
BA	7.55	0.80	0.25	50	1.00	8.9	GUTTER	580	4.0%	7.1	1.4	10.3	7.0	6.1	42.5	
		0.63					18" RCP	650	2.0%	13.6	0.8	13.2	6.3	4.8	29.9	DETENTION POND B1 TRAVEL TIME
BB	6.18	0.80	0.25	50	1.00	8.9	GUTTER	600	4.0%	6.7	1.5	10.4	6.9	5.0	34.6	
		0.64										13.3	6.2	4.0	24.7	DETENTION POND B2
							24" RCP	800	2.0%	14.3	0.9	14.0	6.1	8.7	53.1	CONFLUENCE TRAVEL TIME
BC	5.74	0.80	0.25	50	1.00	8.9	GUTTER	750	4.0%	6.6	1.9	10.8	6.8	4.6	31.6	
		0.64										13.9	6.1	3.7	22.4	DETENTION POND B3
												15.0	5.9	12.4	73.1	CONFLUENCE
HIST-A OC-25	7.55	0.20	0.20	700	32.00	27.0					27.0	4.3	1.5	6.5		
HIST-B OC-25	6.18	0.20	0.20	480	28.00	20.6					20.6	5.0	1.2	6.2		
HIST-C OC-25	5.74	0.20	0.20	700	42.00	24.7					24.7	4.5	1.1	5.2		

BD	4.81	0.80	0.25	50	1.00	8.9	GUTTER	400	4.0%	6.3	1.1	10.0	7.1	3.9	27.4	
	0.63						18" RCP	500	2.0%	11.0	0.8	12.8	6.3	3.1	19.4	DETENTION POND B4 TRAVEL TIME
BE	4.52	0.80	0.25	50	1.00	8.9	GUTTER	450	4.0%	6.2	1.2	10.1	7.0	3.6	25.6	
	0.64											12.9	6.3	2.9	18.3	DETENTION POND B5
							21" RCP	500	2.0%	13.0	0.6	13.6	6.2	5.9	36.7	CONFLUENCE TRAVEL TIME
BF	4.29	0.80	0.25	50	1.00	8.9	GUTTER	450	4.0%	6.2	1.2	10.2	7.0	3.5	24.3	
	0.64											13.0	6.3	2.7	17.2	DETENTION POND B6
							24" RCP	350	2.0%	14.3	0.6	14.2	6.0	8.7	52.5	CONFLUENCE TRAVEL TIME
BG	4.69	0.80	0.25	50	1.00	8.9	GUTTER	500	4.0%	6.4	1.3	10.2	7.0	3.8	26.4	
	0.64											13.1	6.3	3.0	18.7	B7
	18.31						36" RCP	100	1.0%	9.1	0.2	14.8	5.9	11.7	69.0	CONFLUENCE TRAVEL TIME
HIST-E OC-27	4.81	0.20	0.20	650	40.00	23.6					23.6	4.7	1.0	4.5		
HIST-F OC-27	4.52	0.20	0.20	400	19.00	20.1					20.1	5.1	0.9	4.6		
HIST-G OC-27	4.29	0.20	0.20	520	26.00	22.6					22.6	4.8	0.9	4.1		
HIST-H OC-27	4.69	0.20	0.20	600	38.00	22.4					22.4	4.8	0.9	4.5		
OC-25,27	37.78															

BH	1.52	0.95	0.25	10	0.25	3.7	GUTTER	1000	3.5%	5.9	2.8	6.5	8.3	1.4	12.0	
BI	1.93	0.95					GUTTER	950	3.5%	5.4	8.2	8.2	7.7	3.3	25.1	
							36" RCP	175	1.3%	10.9	0.3	15.0	5.9	14.9	87.9	CONFLUENCE TRAVEL TIME
							36" RCP	350	5.0%	20.7	0.3	15.3	5.8	27.3	159.4	CONFLUENCE TRAVEL TIME
	41.23															

OC-6

C	11.46	0.80	0.25	50	1.00	8.9	GUTTER	850	2.0%	5.4	2.6	11.6	6.6	9.2	61.3	
POND	11.5	0.64										14.9	5.9	7.4	43.5	DETENTION POND C1
							27" RCP	50	2.0%	11.0	0.1	15.0				
HIST-A	13.33	0.20	0.20	1000	50.00	31.3						31.3	3.9	2.7	10.5	

Quick TR-55 Ver.5.46 S/N:
Executed: 16:24:32 07-26-1996

OC-6 PRELIMINARY HYDROLOGY
35% DETENTION

**** Modified Rational Hydrograph ****

Weighted C = 0.800 Area= 11.460 acres Tc = 11.60 minutes

Adjusted C = 0.800 Td= 12.00 min. I= 6.54 in/hr Qp= 59.96 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00

Output file: 100YR .HYD

HYDROGRAPH FOR MAXIMUM STORAGE
For the 100 Year Storm

Time Hours	Time increment = 0.017 Hours						
	Time on left represents time for first Q in each row.						
0.010	3.10	8.27	13.44	18.61	23.78	28.95	34.11
0.127	39.28	44.45	49.62	54.79	59.96	56.86	51.69
0.243	46.52	41.35	36.18	31.01	25.84	20.68	15.51
0.360	10.34	5.17	0.00				

Quick TR-55 Ver.5.46 S/N:
 Executed: 16:24:32 07-26-1996

OC-6 PRELIMINARY HYDROLOGY
 35% DETENTION

* * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * *

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
 'C' adjustment, k = 1
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
CA	0.800	11.46						
			11.60	0.800	0.800	6.632	11.46	60.80

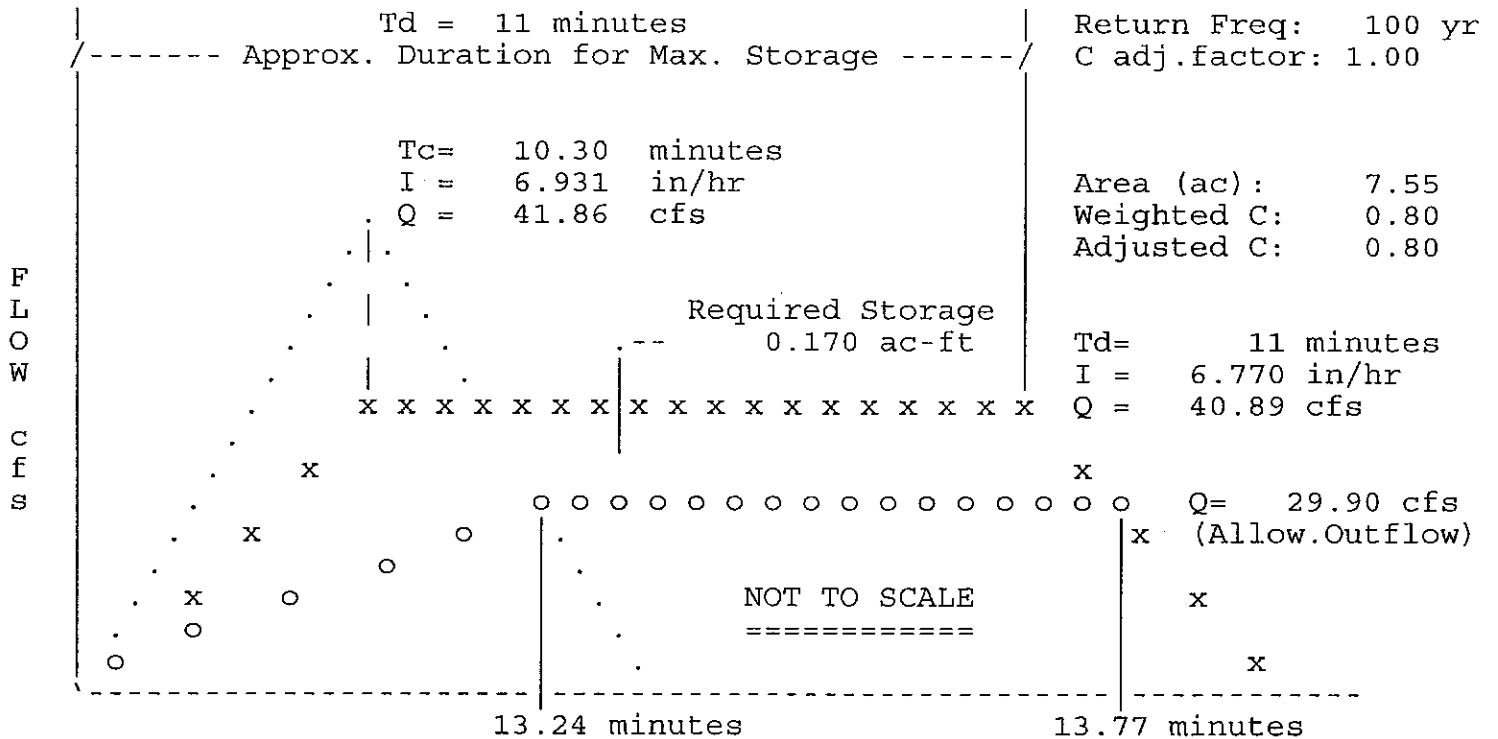
MODIFIED RATIONAL METHOD
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

OC-25-A PRELIMINARY HYDROLOGY
 35% DETENTION

```

*****
* RETURN FREQUENCY: 100 yr      | Allowable Outflow: 29.90 cfs *
* 'C' Adjustment: 1.000       | Required Storage: 0.170 ac-ft *
*-----*
* Peak Inflow: 40.89 cfs      | Inflow .HYD stored: 100YR .HYD *
*****
  
```



Quick TR-55 Ver.5.46 S/N:
Executed: 08:24:51 07-19-1996

OC-25-A PRELIMINARY HYDROLOGY
35% DETENTION

**** Modified Rational Hydrograph ****

Weighted C = 0.800 Area= 7.550 acres Tc = 10.30 minutes

Adjusted C = 0.800 Td= 11.00 min. I= 6.77 in/hr Qp= 40.89 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00

Output file: 100YR .HYD

HYDROGRAPH FOR MAXIMUM STORAGE
For the 100 Year Storm

Time Hours	Time increment = 0.017 Hours						
	Time on left represents time for first Q in each row.						
0.005	1.19	5.16	9.13	13.10	17.07	21.04	25.01
0.122	28.98	32.95	36.92	40.89	39.70	35.73	31.76
0.238	27.79	23.82	19.85	15.88	11.91	7.94	3.97
0.355	0.00						

Quick TR-55 Ver.5.46 S/N:
 Executed: 08:24:51 07-19-1996

OC-25-A PRELIMINARY HYDROLOGY
 35% DETENTION

* * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * *

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
 'C' adjustment, k = 1
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
A	0.800	7.55						
			10.30	0.800	0.800	6.931	7.55	41.86

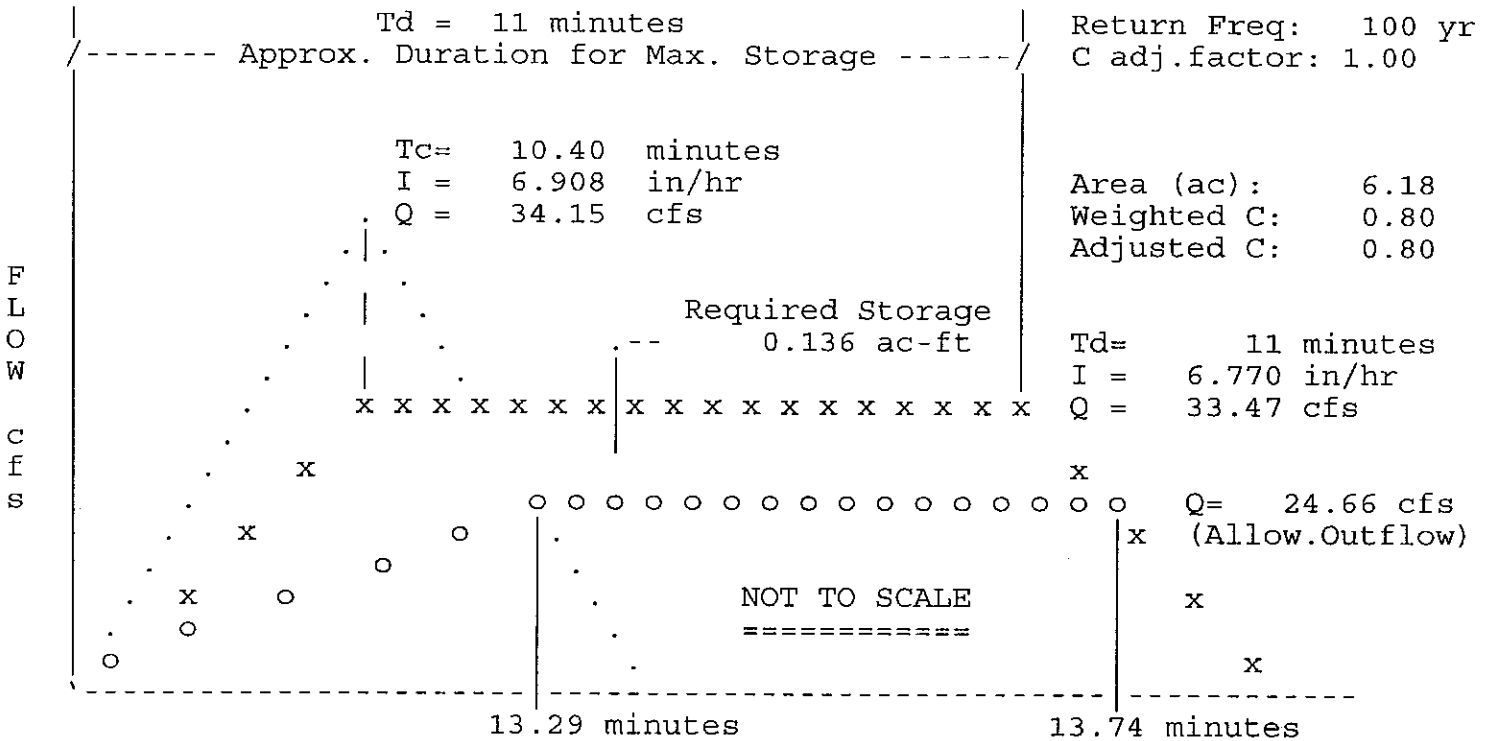
MODIFIED RATIONAL METHOD
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

OC-25-B PRELIMINARY HYDROLOGY
 35% DETENTION

```

*****
* RETURN FREQUENCY: 100 yr      | Allowable Outflow: 24.66 cfs *
* 'C' Adjustment: 1.000        | Required Storage: 0.136 ac-ft *
*-----*
* Peak Inflow: 33.47 cfs        | Inflow .HYD stored: 100YR .HYD *
*****
  
```



Quick TR-55 Ver.5.46 S/N:
Executed: 08:25:40 07-19-1996

OC-25-B PRELIMINARY HYDROLOGY
35% DETENTION

**** Modified Rational Hydrograph ****

Weighted C = 0.800 Area= 6.180 acres Tc = 10.40 minutes

Adjusted C = 0.800 Td= 11.00 min. I= 6.77 in/hr Qp= 33.47 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00

Output file: 100YR .HYD

HYDROGRAPH FOR MAXIMUM STORAGE
For the 100 Year Storm

Time Hours	Time increment = 0.017 Hours						
	Time on left represents time for first Q in each row.						
0.007	1.29	4.51	7.72	10.94	14.16	17.38	20.60
0.123	23.82	27.03	30.25	33.47	32.18	28.97	25.75
0.240	22.53	19.31	16.09	12.87	9.66	6.44	3.22
0.357	0.00						

OC-25-B PRELIMINARY HYDROLOGY
 35% DETENTION

* * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * *

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
 'C' adjustment, k = 1
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
B	0.800	6.18	10.40	0.800	0.800	6.908	6.18	34.15

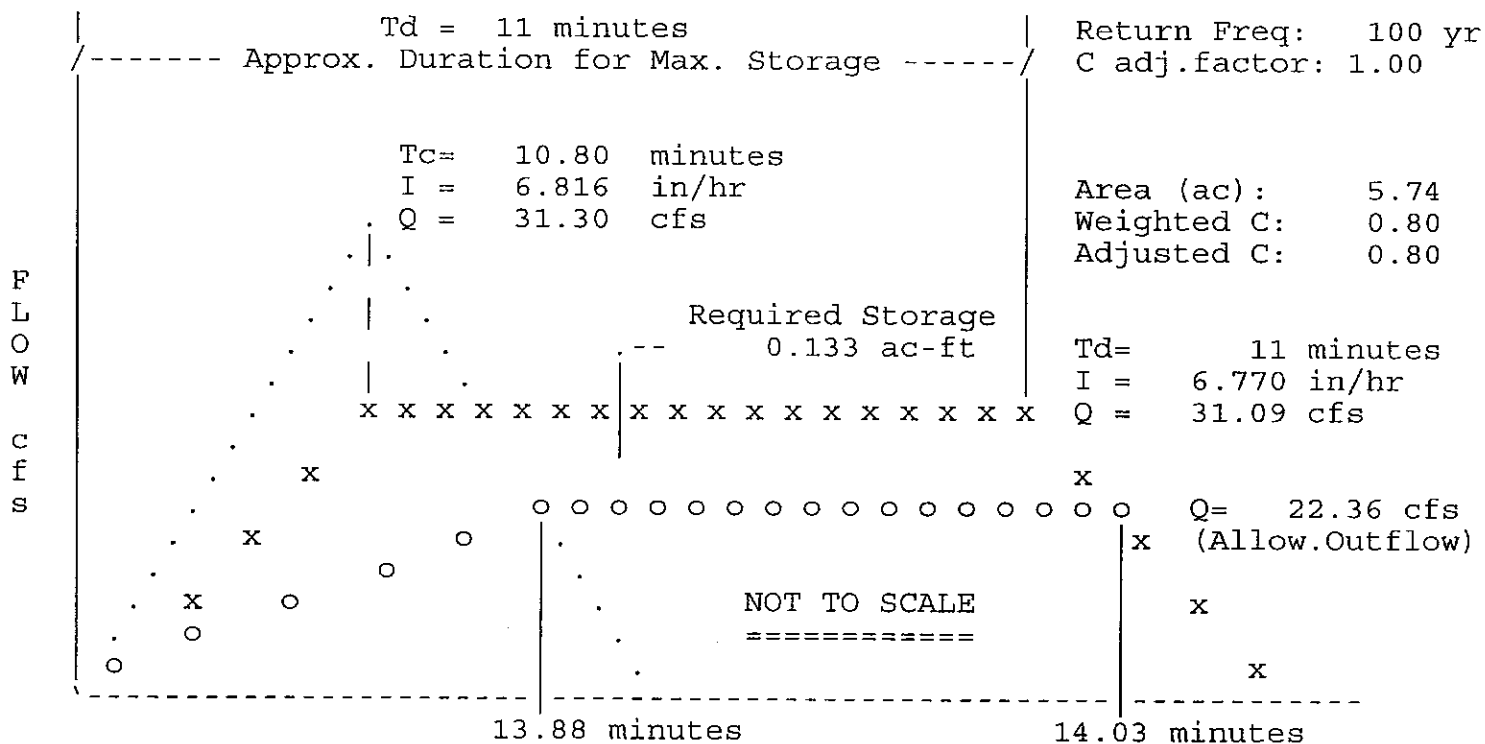
MODIFIED RATIONAL METHOD
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

OC-25-C PRELIMINARY HYDROLOGY
 35% DETENTION

```

*****
* RETURN FREQUENCY: 100 yr      | Allowable Outflow: 22.36 cfs *
* 'C' Adjustment: 1.000        | Required Storage: 0.133 ac-ft *
*-----*
* Peak Inflow: 31.09 cfs        | Inflow .HYD stored: 100YR .HYD *
*****
  
```



Quick TR-55 Ver.5.46 S/N:
Executed: 08:26:23 07-19-1996

OC-25-C PRELIMINARY HYDROLOGY
35% DETENTION

**** Modified Rational Hydrograph ****

Weighted C = 0.800 Area= 5.740 acres Tc = 10.80 minutes

Adjusted C = 0.800 Td= 11.00 min. I= 6.77 in/hr Qp= 31.09 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00

Output file: 100YR .HYD

HYDROGRAPH FOR MAXIMUM STORAGE
For the 100 Year Storm

Time Hours	Time increment = 0.017 Hours						
	Time on left represents time for first Q in each row.						
0.013	2.30	5.18	8.06	10.94	13.82	16.70	19.57
0.130	22.45	25.33	28.21	31.09	28.79	25.91	23.03
0.247	20.15	17.27	14.39	11.51	8.64	5.76	2.88
0.363	0.00						

Quick TR-55 Ver.5.46 S/N:
 Executed: 08:26:23 07-19-1996

OC-25-C PRELIMINARY HYDROLOGY
 35% DETENTION

* * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * *

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
 'C' adjustment, k = 1
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
C	0.800	5.74	10.80	0.800	0.800	6.816	5.74	31.30

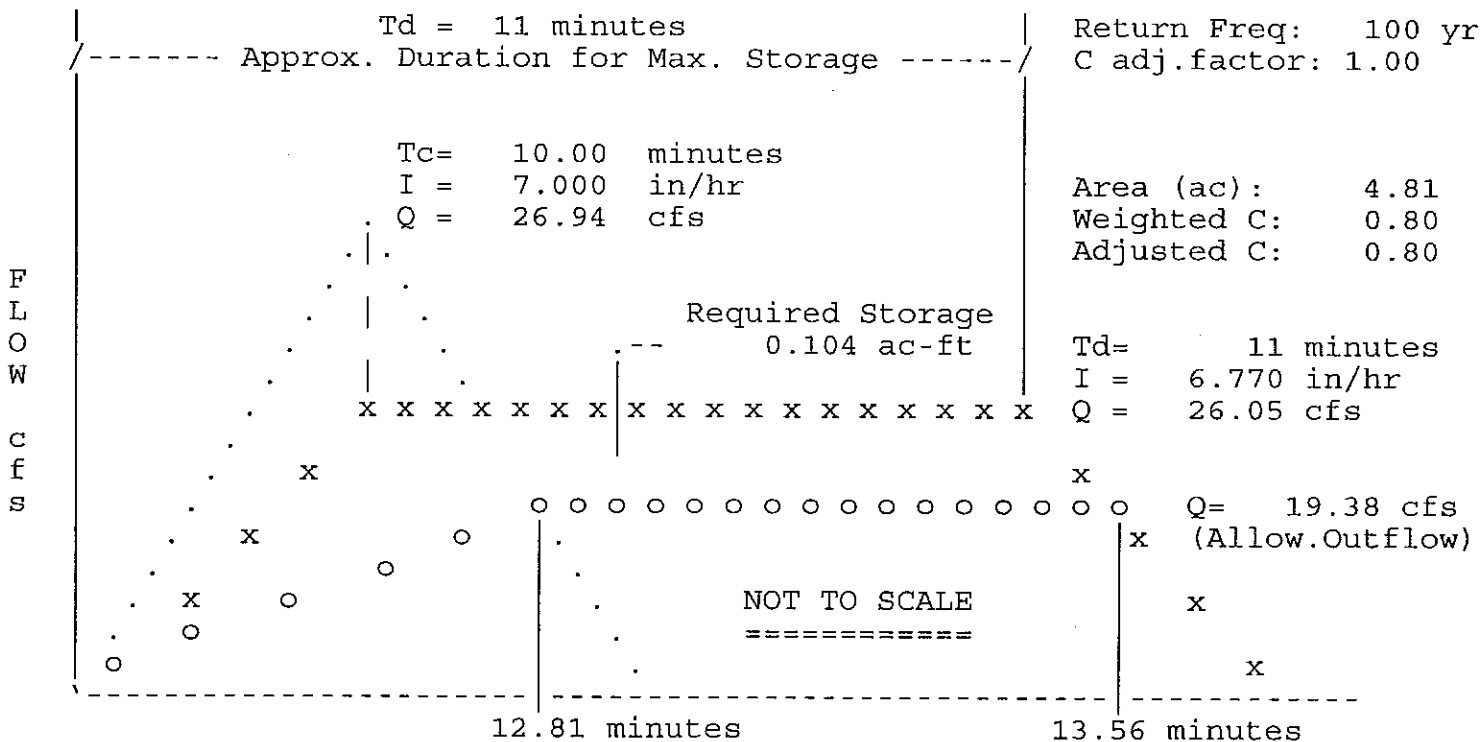
MODIFIED RATIONAL METHOD
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

OC-27-D PRELIMINARY HYDROLOGY
 35% DETENTION

```

*****
* RETURN FREQUENCY: 100 yr | Allowable Outflow: 19.38 cfs *
* 'C' Adjustment: 1.000 | Required Storage: 0.104 ac-ft *
*-----*
* Peak Inflow: 26.05 cfs | Inflow .HYD stored: 100YR .HYD *
*****
  
```



Quick TR-55 Ver.5.46 S/N:
Executed: 08:35:09 07-19-1996

OC-27-D PRELIMINARY HYDROLOGY
35% DETENTION

**** Modified Rational Hydrograph ****

Weighted C = 0.800 Area= 4.810 acres Tc = 10.00 minutes

Adjusted C = 0.800 Td= 11.00 min. I= 6.77 in/hr Qp= 26.05 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00

Output file: 100YR .HYD

HYDROGRAPH FOR MAXIMUM STORAGE
For the 100 Year Storm

Time increment = 0.017 Hours
Time on left represents time for first Q in each row.

Time Hours	0.00	2.61	5.21	7.82	10.42	13.03	15.63
0.000	0.00	2.61	5.21	7.82	10.42	13.03	15.63
0.117	18.24	20.84	23.45	26.05	26.05	23.45	20.84
0.233	18.24	15.63	13.03	10.42	7.82	5.21	2.61
0.350	0.00						

Quick TR-55 Ver.5.46 S/N:
 Executed: 08:35:09 07-19-1996

OC-27-D PRELIMINARY HYDROLOGY
 35% DETENTION

* * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * *

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
 'C' adjustment, k = 1
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
E	0.800	4.81	10.00	0.800	0.800	7.000	4.81	26.94

Quick TR-55 Ver.5.46 S/N:
Executed: 08:35:40 07-19-1996

OC-27-E PRELIMINARY HYDROLOGY
35% DETENTION

**** Modified Rational Hydrograph ****

Weighted C = 0.800 Area= 4.520 acres Tc = 10.10 minutes

Adjusted C = 0.800 Td= 11.00 min. I= 6.77 in/hr Qp= 24.48 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00

Output file: 100YR .HYD

HYDROGRAPH FOR MAXIMUM STORAGE
For the 100 Year Storm

Time Hours	Time increment = 0.017 Hours						
	Time on left represents time for first Q in each row.						
0.002	0.24	2.67	5.09	7.51	9.94	12.36	14.79
0.118	17.21	19.63	22.06	24.48	24.24	21.81	19.39
0.235	16.97	14.54	12.12	9.70	7.27	4.85	2.42
0.352	0.00						

Quick TR-55 Ver.5.46 S/N:
 Executed: 08:35:40 07-19-1996

OC-27-E PRELIMINARY HYDROLOGY
 35% DETENTION

* * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * *

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
 'C' adjustment, k = 1
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
E	0.800	4.52	10.10	0.800	0.800	6.977	4.52	25.23

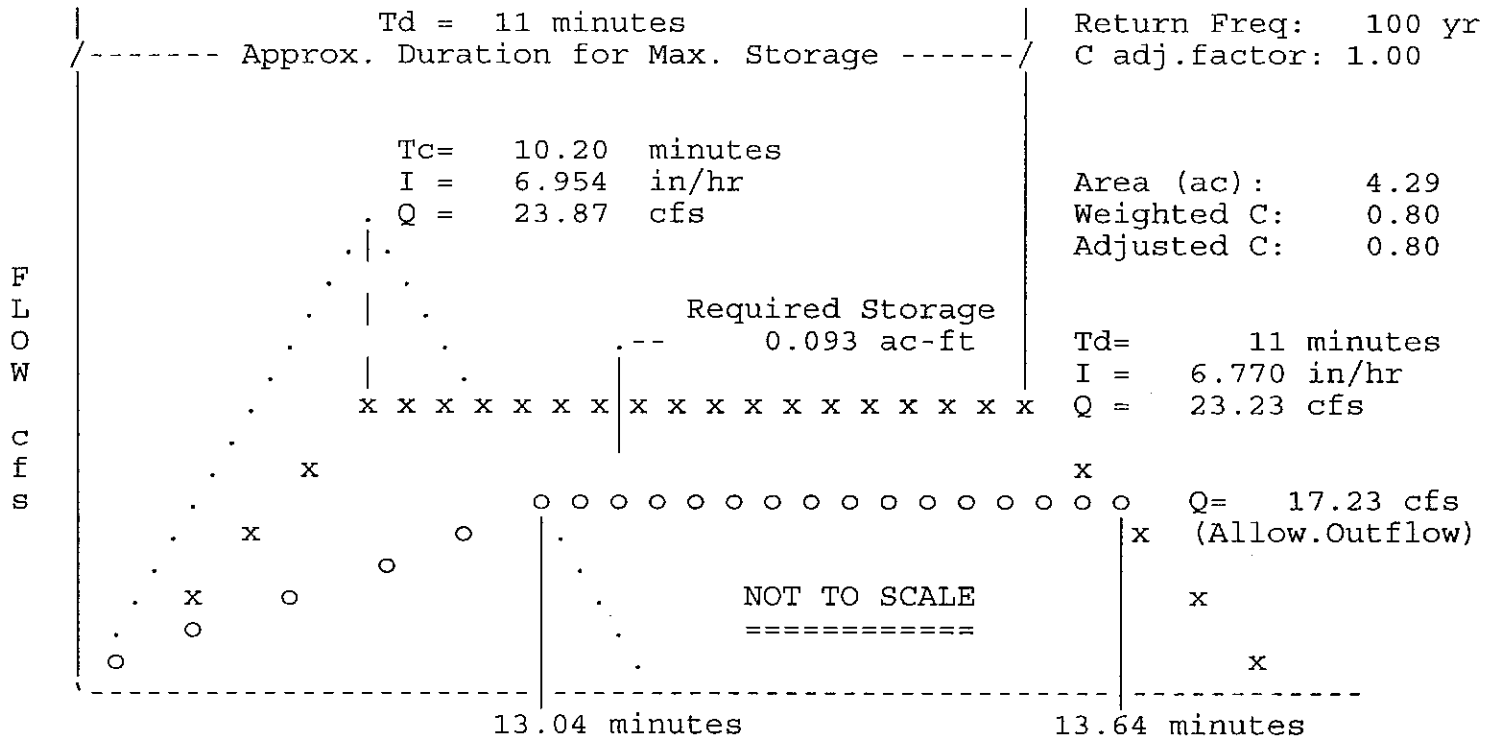
MODIFIED RATIONAL METHOD
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

OC-27-F PRELIMINARY HYDROLOGY
 35% DETENTION

```

*****
* RETURN FREQUENCY: 100 yr | Allowable Outflow: 17.23 cfs *
* 'C' Adjustment: 1.000 | Required Storage: 0.093 ac-ft *
*-----*
* Peak Inflow: 23.23 cfs | Inflow .HYD stored: 100YR .HYD *
*****
  
```



Quick TR-55 Ver.5.46 S/N:
Executed: 08:36:20 07-19-1996

OC-27-F PRELIMINARY HYDROLOGY
35% DETENTION

**** Modified Rational Hydrograph ****

Weighted C = 0.800 Area= 4.290 acres Tc = 10.20 minutes

Adjusted C = 0.800 Td= 11.00 min. I= 6.77 in/hr Qp= 23.23 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00

Output file: 100YR .HYD

HYDROGRAPH FOR MAXIMUM STORAGE
For the 100 Year Storm

Time Hours	Time increment = 0.017 Hours						
	Time on left represents time for first Q in each row.						
0.003	0.46	2.73	5.01	7.29	9.57	11.85	14.12
0.120	16.40	18.68	20.96	23.23	22.78	20.50	18.22
0.237	15.95	13.67	11.39	9.11	6.83	4.56	2.28
0.353	0.00						

Quick TR-55 Ver.5.46 S/N:
 Executed: 08:36:20 07-19-1996

OC-27-F PRELIMINARY HYDROLOGY
 35% DETENTION

* * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * *

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
 'C' adjustment, k = 1
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
E	0.800	4.29	10.20	0.800	0.800	6.954	4.29	23.87

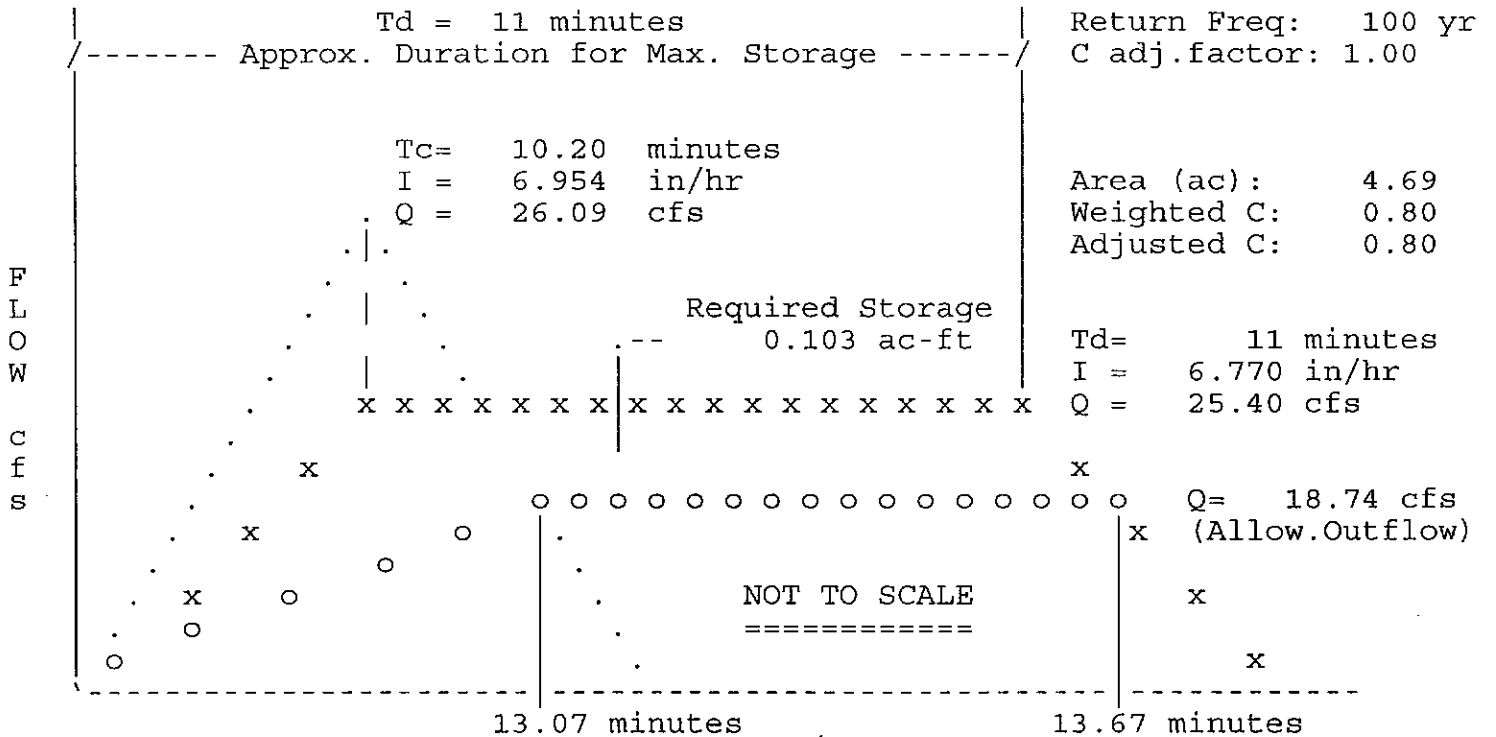
MODIFIED RATIONAL METHOD
 ---- Graphical Summary for Maximum Required Storage ----

First peak outflow point assumed to occur at Tc hydrograph recession leg.

OC-27-G PRELIMINARY HYDROLOGY
 35% DETENTION

```

*****
* RETURN FREQUENCY: 100 yr      | Allowable Outflow: 18.74 cfs *
* 'C' Adjustment: 1.000      | Required Storage: 0.103 ac-ft *
*-----*
* Peak Inflow: 25.40 cfs      | Inflow .HYD stored: 100YR .HYD *
*****
  
```



Quick TR-55 Ver.5.46 S/N:
Executed: 11:14:54 07-19-1996

OC-27-G PRELIMINARY HYDROLOGY
35% DETENTION

**** Modified Rational Hydrograph ****

Weighted C = 0.800 Area= 4.690 acres Tc = 10.20 minutes

Adjusted C = 0.800 Td= 11.00 min. I= 6.77 in/hr Qp= 25.40 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00

Output file: 100YR .HYD

HYDROGRAPH FOR MAXIMUM STORAGE
For the 100 Year Storm

Time Hours	Time increment = 0.017 Hours						
	Time on left represents time for first Q in each row.						
0.003	0.50	2.99	5.48	7.97	10.46	12.95	15.44
0.120	17.93	20.42	22.91	25.40	24.90	22.41	19.92
0.237	17.43	14.94	12.45	9.96	7.47	4.98	2.49
0.353	0.00						

Quick TR-55 Ver.5.46 S/N:
 Executed: 11:14:54 07-19-1996

OC-27-G PRELIMINARY HYDROLOGY
 35% DETENTION

* * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * *

$$Q = \text{adj} * C * I * A$$

Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
 adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
 'C' adjustment, k = 1
 Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
E	0.800	4.69	10.20	0.800	0.800	6.954	4.69	26.09

DRAINAGE MAPS