PRELIMINARY HYDROLOGY REPORT

VERANO-MULTI FAMILY APARTMENTS
APN 677-050-017 & 018

NW corner of Rio Pecos Drive and Landau Blvd.
Cathedral City, CA 92234

Prepared For

NCP VERANO, LLC
690 E Green Street, Suite 200
Pasadena, CA 1101
Ph. 323.874.8000

Prepared By

Ray Erillo, P.E.
Fuscoe Engineering, Inc.
2850 Inland Empire Blvd. Building B
Ontario, California 91764
909-581-0676
www.fuscoe.com

Project Manager: **Steve Ellis, P.E.**

Date Prepared : December 2023
Revision 1 :
Revision 2 :
Revision 3 :
Job Number: 4090-03

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PRELIMINARY HYDROLOGY AND HYDRAULICS REPORT

VERANO- MULTI FAMILY @ RIO VISTA VILLAGE
APN 677-050-017 & 018

Located at NW corner of Rio Pecos Drive and Landau Blvd.
in the
City of Cathedral City, CA 92234
Riverside County

Prepared for:

NCP VERANO, LLC
690 E Green Street, Suite 200
Pasadena, CA 91101
Tel. (323) 874-8000

Prepared by:
Ray Erillo, P.E.
Senior Engineer II
FUSCOE ENGINEERING, INC.
2850 Inland Empire Blvd., Suite B
Ontario, CA 91764
Tel. 909-581-0676

REGISTERED PROFESSIONAL ENGINEER
RAY P. ERILLO
NO. C 74963
EXP. 12/31/23

Date Prepared: December 2023
Revision 1 :
Revision 2 :

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1.0 INTRODUCTION

1.1 GEOGRAPHIC SETTING

The proposed Verano Multi Family project will be part of the master planned community named Rio Vista Village at Cathedral City, California. The total project site is approximately 32.60 acres. There are four (4) existing retention basins designated for the project site to drain per the approved Master Hydrology report for Rio Vista Village. Project site is bounded by Rio Pecos Drive to the south, future extension of Landau Blvd. to the east, future Rio Silverado Road to the North and future extension of Avenida Quintana to the west.

The project site is vacant and undeveloped under its existing conditions. Adjacent development surrounding the area site includes the Rio Vista Elementary school, hotels, commercial, retail, residential developments, and open land property. See Figure 1 below for the project location map.

The project consists of the construction of various buildings, landscape areas, drive aisles, sidewalks, parking areas, wall, water quality BMPs and wet/dry utilities.

1.2 PURPOSE OF THIS REPORT

The purpose of this report is to accomplish the following objective:

To determine hydrologic impacts resulting from the proposed development. Impacts are determined based on the comparison between the pre-development condition and the post-development condition. This hydrology report will also provide the peak flow rates for 10-year and 100-year at 24hr duration for post development condition and determine if the proposed storm drain system will be sufficient to convey the runoff generated by the proposed improvements. 100yr-24Hr Storm frequency unit Hydrograph will be used to calculate the runoff volume generated at post condition. Post development condition will also utilize the pro-rated volume provided for the existing retention basins: E, F, G and K2 as shown on the previously approved Master WQMP (M-WQMP) for Rio Vista Village. This will be considered in evaluating the peak flow rate after retention.

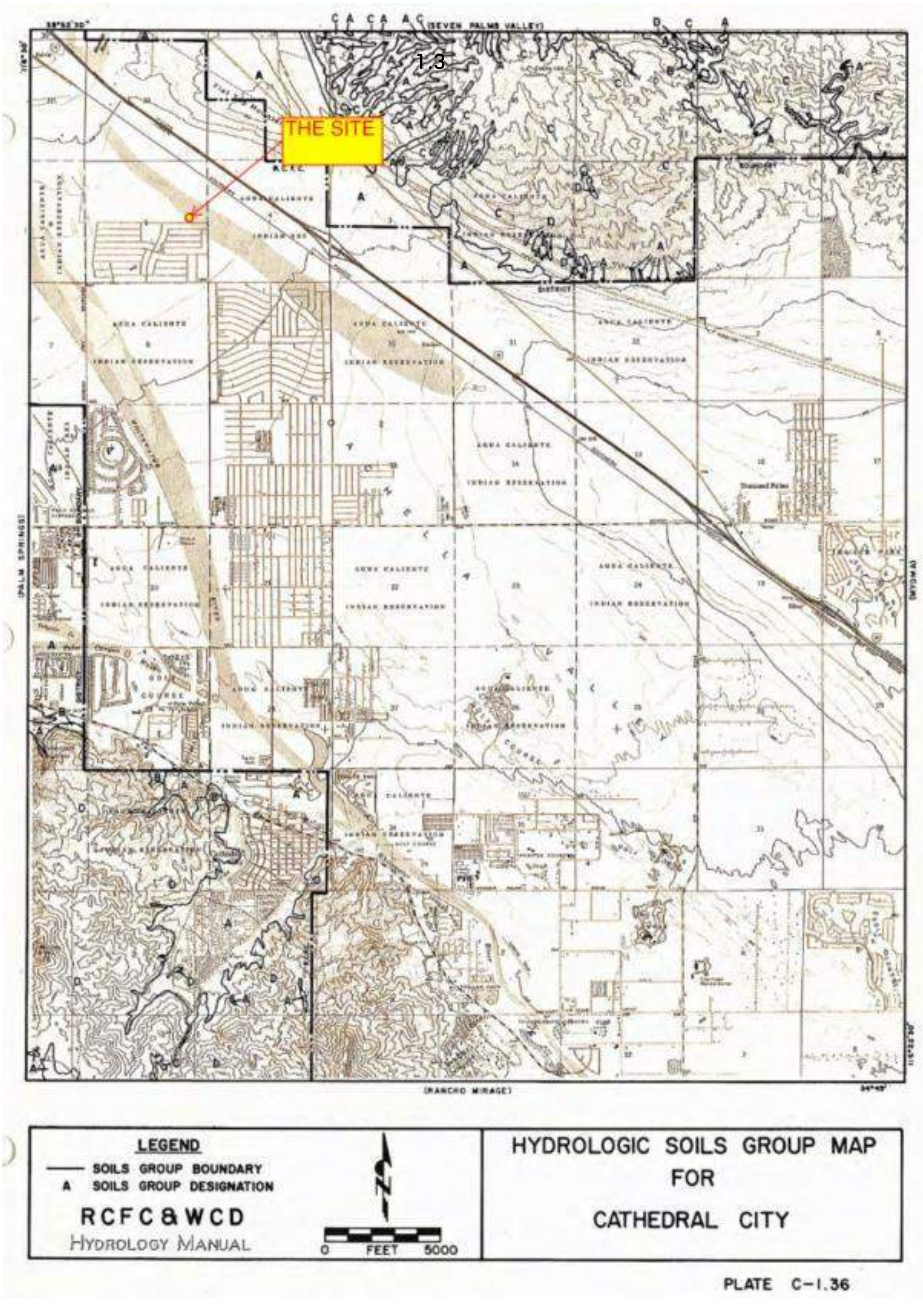
1.3 REFERENCES

- Riverside County Flood Control and Water Conservation District (RCFC & WCD) Hydrology Manual
- Approved Master WQMP for Rio Vista Village dated April 29, 2015

1.4 PROJECT SITE LOCATION MAP

Figure 1

1.5 HYDROLOGIC SOILS GROUP MAP FOR CATHEDRAL CITY



2.0 PRE-DEVELOPMENT CONDITION

2.1 PRE-DEVELOPMENT TOPOGRAPHY

The project site is vacant and undeveloped under existing conditions. Adjacent land uses include hotels, retail stores, single family residences, and undeveloped property. The overall property moderately slopes downward to the southeast direction towards Rio Pecos Drive.

2.2 PRE-DEVELOPMENT DRAINAGE SYSTEM

The existing site is an undeveloped property with no storm drain system within the site. Existing runoff infiltrates to the ground. Excess storm runoff from the site sheet flows towards the southeasterly direction to the existing street at Rio Pecos Drive then it sheet flows to the existing designated retention basins. The approved Master-WQMP for Rio Vista Village has designated four (4) existing retention basins to address flood control and WQMP requirements for the project site. These existing retention basins are Retention Basins E, F, G and K2. These runoffs will be part of the Whitewater watershed area which will drain to Whitewater River then to the Coachella Valley Storm Water Channel.

3.0 POST DEVELOPMENT CONDITION

3.1 POST DEVELOPMENT

The Verano Multi Family development lies within the project area of the Master WQMP (M-WQMP) for Rio Vista Village. The site is bounded by Rio Pecos Drive south, future extension of Landau Blvd. to the east, future Rio Silverado Road to the North and future extension of Avenida Quintana to the west. Verano Multi Family Project will develop 374 lots of multi-family residences and a multi-purpose center. It will also construct landscape areas, parking lots and drive aisles. This proposed development will increase the impervious area of the site to 80%. The total proposed area for this development is approximately 32.8 acres. This development will utilize the existing Retention Basins, E, F, G and K2 for treatment control as well as to address flood control requirements. Per the M-WQMP, the basin was designed with the capacity to retain for the 100-year, 24-hour storm event. This means the design of the existing basin exceed the current NPDES WQMP requirements per Cathedral City Municipal Code Title 8 § 8.24.070 requiring a minimum storage for 100yr-3Hr duration storm event. The Autodesk Civil3D Hydraflow Unit Hydrograph and RCFC & WCD data was utilized to calculate this. Runoff from the proposed development site will sheet flow through the curb and gutters then to the on-site storm drain system and eventually to the existing retention basins. A catch basin filter insert will be used as pre-filter.

Runoff Volume Comparison (Pre Vs Post) For 100yr 24hr & 100yr-3hr Storm Event.

STORM EVENT P-E	Pre-Dev't Runoff Volume (cu.ft.)	Post-Dev't Runoff Volume (cu.ft.)	Difference (cu.ft.)
100yr-24Hr	58,047	95,787	**37,740**
100yr-3hr	15,968	39,777	23,809
Remarks	*Use 100yr-24Hr storm event difference to size storage requirement.*		

STORM EVENT P-F	Pre-Dev't Runoff Volume (cu.ft.)	Post-Dev't Runoff Volume (cu.ft.)	Difference (cu.ft.)
100yr-24Hr	40,786	83,385	**42,599**
100yr-3hr	11,220	34,627	23,407
Remarks	*Use 100yr-24Hr storm event difference to size storage requirement.*		

STORM EVENT P-G	Pre-Dev't Runoff Volume (cu.ft.)	Post-Dev't Runoff Volume (cu.ft.)	Difference (cu.ft.)
100yr-24Hr	31,060	75,256	**44,196**
100yr-3hr	8,545	31,251	22,706
Remarks	*Use 100yr-24Hr storm event difference to size storage requirement.*		

STORM EVENT P-K2	Pre-Dev't Runoff Volume (cu.ft.)	Post-Dev't Runoff Volume (cu.ft.)	Difference (cu.ft.)
100yr-24Hr	13,584	18,190	**4,606**
100yr-3hr	3,737	7,554	3,817
Remarks	*Use 100yr-24Hr storm event difference to size storage requirement.*		

All on-site streets and storm drain system will be privately maintained.

In addition, the improvements will also include installation of appropriate drainage facilities, other dry and wet utilities, and LID BMPs to mitigate water quality objectives.

3.2 PROPOSED DRAINAGE FACILITY

To satisfy the approved Master Hydrology report for Rio Vista Village, the project's post development condition will have four drainage areas namely P-E, P-F, P-G and P-K2 as shown on the Post Development Drainage Maps. Drainage area P-E will be directed to existing retention basin, E. Drainage area P-F will flow to existing retention basin F. Drainage P-G will drain to existing retention basin G. Lastly, drainage area K2 will drain to existing retention basin K2. Discharge peak flow rates will be calculated per 100yr-24hr storm event. The capacity of the street and catch basins will also be designed per 100-yr storm event. Proposed development must also peak flow rate must not exceed pre-development condition at 100yr-24hr storm frequency. This will be achieved by the utilization of the existing retention Basin.

Proposed drainage structures and pipes are shown in the Hydrology Maps in Appendix 5.

4.0 METHODOLOGY

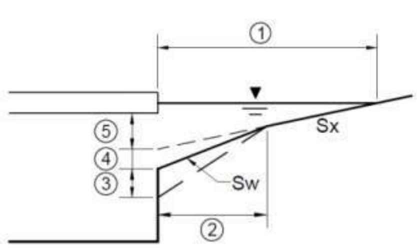
Section D of RCFC & WCD states that rational method is commonly used to determine peak discharge from relatively small areas. Additionally, it also suggests using Synthetic Unit Hydrograph method for areas in excess of 300 to 500-acres. However, in order to accurately compare results with the approved Hydrology Report for Rio Vista Village, this report used Synthetic Unit Hydrograph method in conformance with the Riverside County Hydrology Manual. Autodesk Civil3D Hydraflow NRCS Unit Hydrograph Calculator with the rainfall intensity and precipitation data from RCFC & WCD was used to determine the hydrograph volume and peak flow based on 100-year, 24hr storm duration. Soil type "A" was used for the site per the RCFC & WCD Hydrologic Soil Map for Cathedral City (Plate C-1.36) Methodology and supportive data for the hydrologic calculations may be found in this report, and in the "Riverside County Flood Control and Water Conservation District Hydrology Manual".

Manning's equation was used to calculate pipe and street capacity. A known Q and pipe/street cross section was specified and solved for the depth of water using an iterative procedure. The maximum Q flowing thru the specified pipe or street will be analyzed to determine its capacity.

Manning's Equation: Q = 1.49 AR^(2/3) (S^1/2) / n

Where: Q - Flow rate in cfs,
n - Roughness coefficient (0.013 for pipes, 0.011 for street)
A - Cross-sectional area (sq.ft.)
R - Hydraulic radius
S - Channel Slope (ft/ft)

Meanwhile, curb inlets operate as weirs to depths equal to the curb opening height and as orifices at depths greater than 1.4 times the total curb opening height (equal to the sum of the throat height, local depression, and gutter depression). At depths in between, flow is in a transition stage.



(1) Spread (3) Local Depression (5) Throat Height
(2) Gutter Width(4) Gutter Depression

Operating as a weir

The equation for a curb inlet operating as a weir depends on whether the curb opening is a depressed or non-depressed inlet.

- *Depressed curb opening*

  The equation used for the interception capacity of the inlet operating as a weir is:

  Q=Cw (L+1.8w)d^1.5
  Where:

  Cw = 2.3 (1.25), L = Length of curb opening in ft, W = Gutter width in ft

  d = Depth at the face of curb measured from the cross slope, Sx, in ft

For a given flow value, this equation is solved for the depth measured above the cross slope, Sx. Since Hydraflow reports inlet depth at the face of the inlet, the reported depth will include the gutter depression and local depression values added to this calculated depth. Furthermore, increasing local depression at the inlet does not increase the inlet's capacity or decrease the spread, as long as the inlet still operates as a weir.

- *Non-depressed curb inlets*

  The following equation is used to determine the interception capacity of inlets without any depression when operating as a weir:

  Where:

  Cw = 3.0 (1.60) , L = Length of curb opening in ft

  d = Depth at the face of the curb, measured from the cross slope, Sx, in ft

Solving for length

If the inlet length has been set to 0, Hydraflow Express Extension automatically computes a value using the above weir equations assuming the depth to be equal to the total curb opening and solving for L.

The results of the analysis are included in this report in Appendix 2 and 4.

5.0 CONCLUSIONS

The purpose of this drainage analysis is to identify the need to keep the post-development runoff volume and peak flow rate the same as the pre-development condition by utilizing the existing retention basins. RCFC & WCD requires that the difference in runoff hydrograph volume between the “post-developed” condition and the “pre-developed” condition for the 100hr-24hr storm frequency must be detained on-site. The rainfall volume for the pre-developed condition are as follows: 1) Drainage area, P-E is 58,047 cu.ft. , 2) Drainage area, P-F is 40,786 cu.ft., 3)

TABLE 1.3: REQUIRED STORAGE USING UNIT HYDROGRAPH:

(100 YR-3HR) – (DA-E) NPDES WQMP requirements per Cathedral City Municipal Code Title 8 § 8.24.070	**Runoff Volume**	**Pro-rated Volume Provided Per M-WQMP**	**Remarks**
Pre-Development Condition	15,968 cu.ft.		
Post Development Condition	39,777 cu.ft.		
DIFFERENCE – PRE vs POST CONDITION	**23,809 cu.ft.**	**52,251 cu.ft.**	**Adequate**
(100 YR-24HR) – (DA-E) RCFC & WCD Requirement	**Runoff Volume**	**Pro-rated Volume Provided Per M-WQMP**	**Remarks**
Pre-Development Condition	58,047 cu.ft.		
Post Development Condition	95,787 cu.ft.		
DIFFERENCE – PRE vs POST CONDITION	**37,740 cu.ft.**	**52,251 cu.ft.**	**Adequate**
PROVIDED STORAGE RETENTION BASIN, E – (PER M-WQMP FOR RIO VISTA VILLAGE: 100YR-24HR) FOR TRIBUTARY AREA, BASIN E (A=25.45 acres)	**2.18 Ac-Ft** **94,961 cu.ft.**		

(100 YR-3HR) – (DA-F) NPDES WQMP requirements per Cathedral City Municipal Code Title 8 § 8.24.070	**Runoff Volume**	**Pro-rated Volume Provided Per M-WQMP**	**Remarks**
Pre-Development Condition	11,220 cu.ft.		
Post Development Condition	34,627 cu.ft.		
DIFFERENCE – PRE vs POST CONDITION	**23,407 cu.ft.**	**44,173 cu.ft.**	**Adequate**
(100 YR-24HR) – (DA-F) RCFC & WCD Requirement	**Runoff Volume**	**Pro-rated Volume Provided Per M-WQMP**	**Remarks**
Pre-Development Condition	40,786 cu.ft.		
Post Development Condition	83,385 cu.ft.		
DIFFERENCE – PRE vs POST CONDITION	**42,599 cu.ft.**	**44,173 cu.ft.**	**Adequate**
PROVIDED STORAGE RETENTION BASIN, F – (PER M-WQMP FOR RIO VISTA VILLAGE: 100YR-24HR) FOR TRIBUTARY AREA, BASIN F (A=12.6 acres)	**1.26 Ac-Ft** **54,886 cu.ft.**		

(100 YR-3HR) – (DA-G) NPDES WQMP requirements per Cathedral City Municipal Code Title 8 § 8.24.070	**Runoff Volume**	**Pro-rated Volume Provided Per M-WQMP**	**Remarks**
Pre-Development Condition	8,545 cu.ft.		
Post Development Condition	31,251 cu.ft.		
DIFFERENCE – PRE vs POST CONDITION	**22,706 cu.ft.**	**59,139 cu.ft.**	**Adequate**
(100 YR-24HR) – (DA-G) RCFC & WCD Requirement	**Runoff Volume**	**Pro-rated Volume Provided Per M-WQMP**	**Remarks**
Pre-Development Condition	31,060 cu.ft.		
Post Development Condition	75,256 cu.ft.		
DIFFERENCE – PRE vs POST CONDITION	**44,196 cu.ft.**	**59,139 cu.ft.**	**Adequate**
TOTAL PROVIDED STORAGE RETENTION BASIN, G – (PER M-WQMP FOR RIO VISTA VILLAGE: 100YR-24HR) FOR TRIBUTARY AREA, BASIN G (A=21.85 acres)	**1.49 Ac-Ft** **69,904 cu.ft.**		

(100 YR-3HR) – (DA-K2) NPDES WQMP requirements per Cathedral City Municipal Code Title 8 § 8.24.070	**Runoff Volume**	**Pro-rated Volume Provided Per M-WQMP**	**Remarks**
Pre-Development Condition	3,737 cu.ft.		
Post Development Condition	7,554 cu.ft.		
DIFFERENCE – PRE vs POST CONDITION	**3,817 cu.ft.**	**17,177 cu.ft.**	**Adequate**
(100 YR-24HR) – (DA-K2) RCFC & WCD Requirement	**Runoff Volume**	**Pro-rated Volume Provided Per M-WQMP**	**Remarks**
Pre-Development Condition	13,584 cu.ft.		
Post Development Condition	18,190 cu.ft.		
DIFFERENCE – PRE vs POST CONDITION	**4,606 cu.ft.**	**17,177 cu.ft.**	**Adequate**
PROVIDED STORAGE RETENTION BASIN, K2 – (PER M-WQMP FOR RIO VISTA VILLAGE: 100YR-24HR) FOR TRIBUTARY AREA, BASIN K2 (A=22.45 acres)	**1.66 Ac-Ft** **72,309 cu.ft.**		

TABLE 1.4: PRE VS POST DEVELOPMENT CONDITION AFTER RETENTION (100YR-24HR)

PRE-CONSTRUCTION VS POST-CONSTRUCTION FLOW SUMMURY BEFORE AND AFTER RETENTION					
Discharge Location	**Total Pre-Development Flow Rate, Q100**	**Total Post-Development Flow Rate (No Retention), Q100**	**Retention Volume Provided (Pro-rated)**	**Total Post-Development Flow Rate (After Retention), Q100**	**Conclusion**
Existing Retetion Basin, E	**9.05 cfs**	**25.23 cfs**	**52,251 cu.ft.**	**0 cfs**	**Post development flow decreased.**

PRE-CONSTRUCTION VS POST-CONSTRUCTION FLOW SUMMURY BEFORE AND AFTER RETENTION					
Discharge Location	**Total Pre-Development Flow Rate, Q100**	**Total Post-Development Flow Rate (No Retention), Q100**	**Retention Volume Provided (Pro-rated)**	**Total Post-Development Flow Rate (After Retention), Q100**	**Conclusion**
Existing Retetion Basin, F	**7.50 cfs**	**23.23 cfs**	**44,173 cu.ft.**	**4.02 cfs**	**Post development flow decreased.**

PRE-CONSTRUCTION VS POST-CONSTRUCTION FLOW SUMMURY BEFORE AND AFTER RETENTION					
Discharge Location	**Total Pre-Development Flow Rate, Q100**	**Total Post-Development Flow Rate (No Retention), Q100**	**Retention Volume Provided (Pro-rated)**	**Total Post-Development Flow Rate (After Retention), Q100**	**Conclusion**
Existing Retetion Basin, G	**5.71 cfs**	**22.27 cfs**	**59,139 cu.ft.**	**0 cfs**	**Post development flow decreased.**

PRE-CONSTRUCTION VS POST-CONSTRUCTION FLOW SUMMURY BEFORE AND AFTER RETENTION					
Discharge Location	**Total Pre-Development Flow Rate, Q100**	**Total Post-Development Flow Rate (No Retention), Q100**	**Retention Volume Provided (Pro-rated)**	**Total Post-Development Flow Rate (After Retention), Q100**	**Conclusion**
Existing Retetion Basin, K2	**3.36 cfs**	**6.75 cfs**	**17,177 cu.ft.**	**0 cfs**	**Post development flow decreased.**

6.0 APPENDICES

Appendix 1 *Riverside County Flood Control Hydrology Manual Excepts.*

Appendix 2 *Unit Hydrograph: Pre and Post Development Conditions for 100yr-24Hr and 100yr-3Hr*

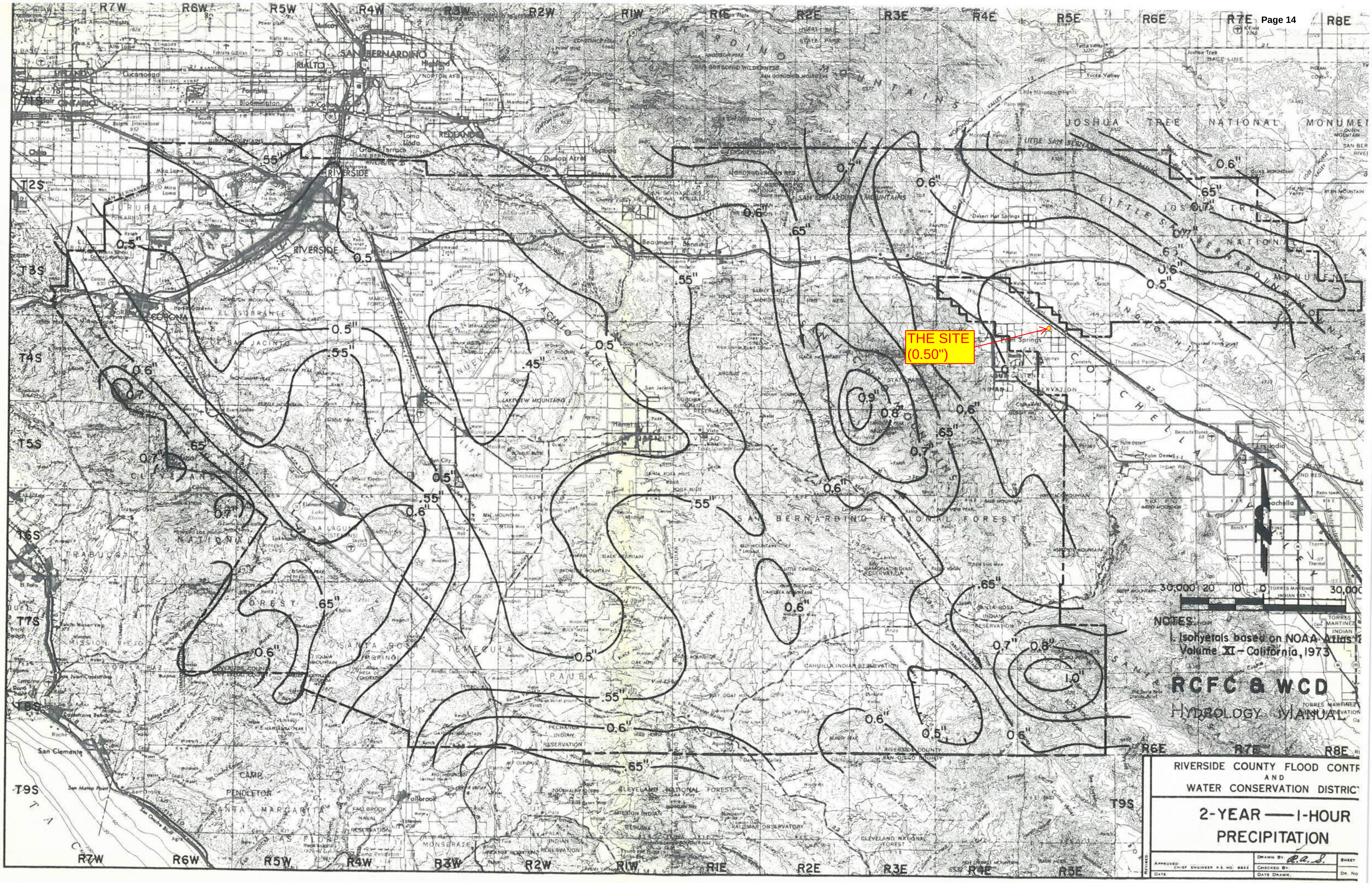
Appendix 3 *RCFC & WCD Hydrologic Soil Map (Plate C-1.36)*

Appendix 4 *Autodesk CIVIL3D Hydraflow Unit Hydrograph Calculations (STORAGE) 100yr-24Hr*
   a. *PRE VS POST Development Unit Hydrograph after Retention*

Appendix 5 *Hydrology Maps*
   a. *Pre-Development Drainage Map*
   b. *Post Development Drainage Map*
   c. *Post Development Unit Hydrograph Map*

Appendix 6 *Excerpts: Approved Master Hydrology for Rio Vista Village (FOR REFERENCE ONLY)*

Appendix 7 *Supporting Documents*
   1. *Approximate Geographic Boundaries for NRCS Rainfall Distribution*
   2. *Runoff Coefficient (c) Table*
   3. *SCS Curve Number (CN) Table*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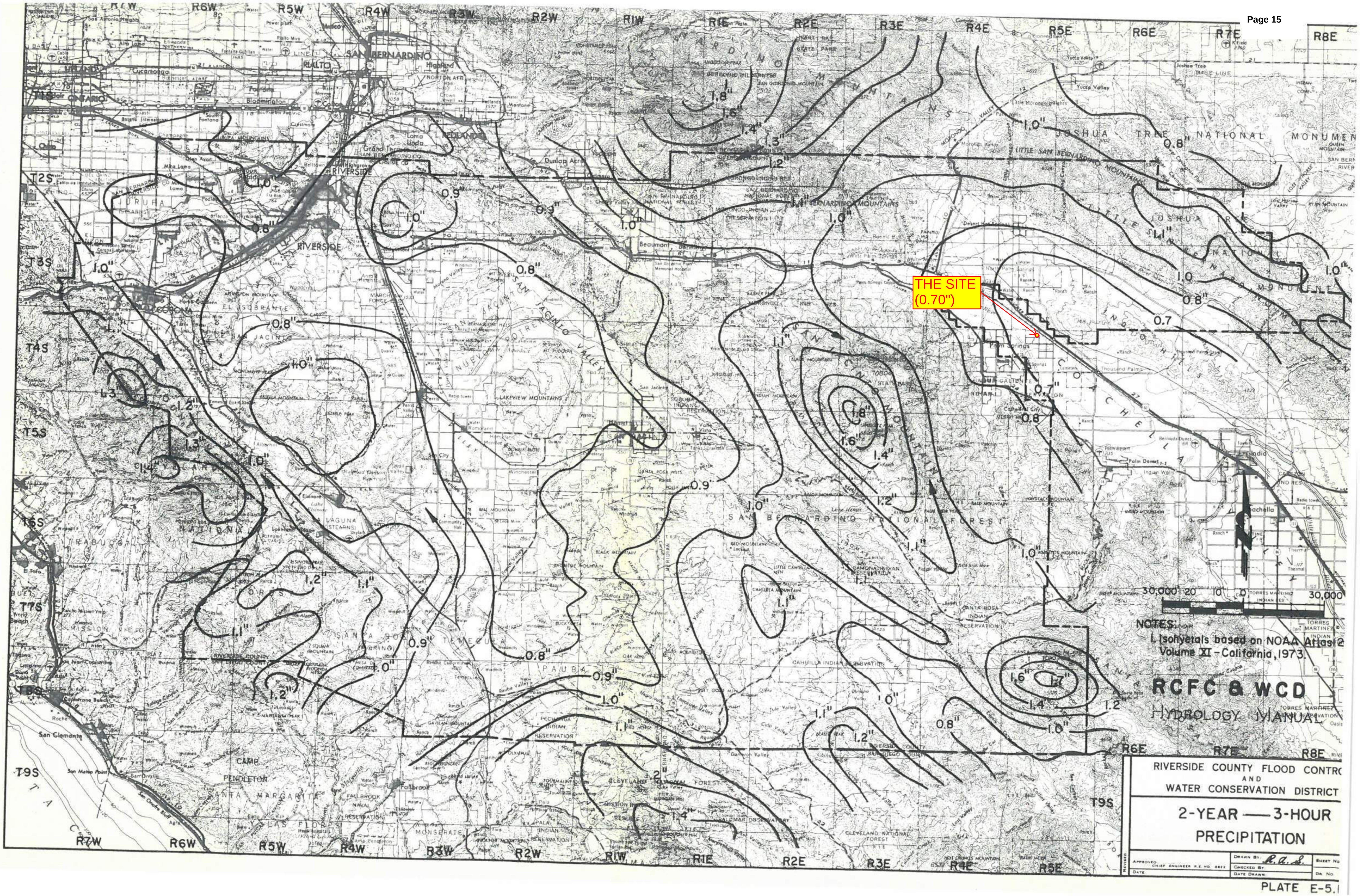
AND
WATER CONSERVATION DISTRIC
2-YEAR — 1-HOUR
PRECIPITATION
PLATE D-4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RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
2-YEAR — 3-HOUR
PRECIPITATION
PLATE E-5.1
SAN BERNARDINO
RIVERSIDE
CORONA
TEMECULA
JOSHUA TREE NATIONAL MONUMENT
SAN BERNARDINO NATIONAL FOREST
CLEVELAND NATIONAL FOREST

Drainage Area, P-G is 31,060 cu.ft. and lastly, 4) Drainage Area, P-K2 is 13,584 cu.ft. The existing retention basins E, F, G and K2 that captures the runoff from the proposed development have effectively reduced the peak flows to zero for Drainage Areas E, G and K2 at developed conditions. Meanwhile post development peak flow for Drainage Area F dropped from 7.50 cfs at existing condition to 4.02 cfs. Furthermore, the respective pro-rated volume provided by the existing retention basins E, F, G and K2 per the M-Hydrology Report for Rio Vista Village were adequate to contain the difference of the runoff volume at pre and post development conditions and can meet flood control requirements. Storm drain lines will be sized to convey 100-year storm event on the Final Hydrology report. Therefore, the proposed development meets the WQMP and flood requirements for this project and will not result in an adverse effect to the community.

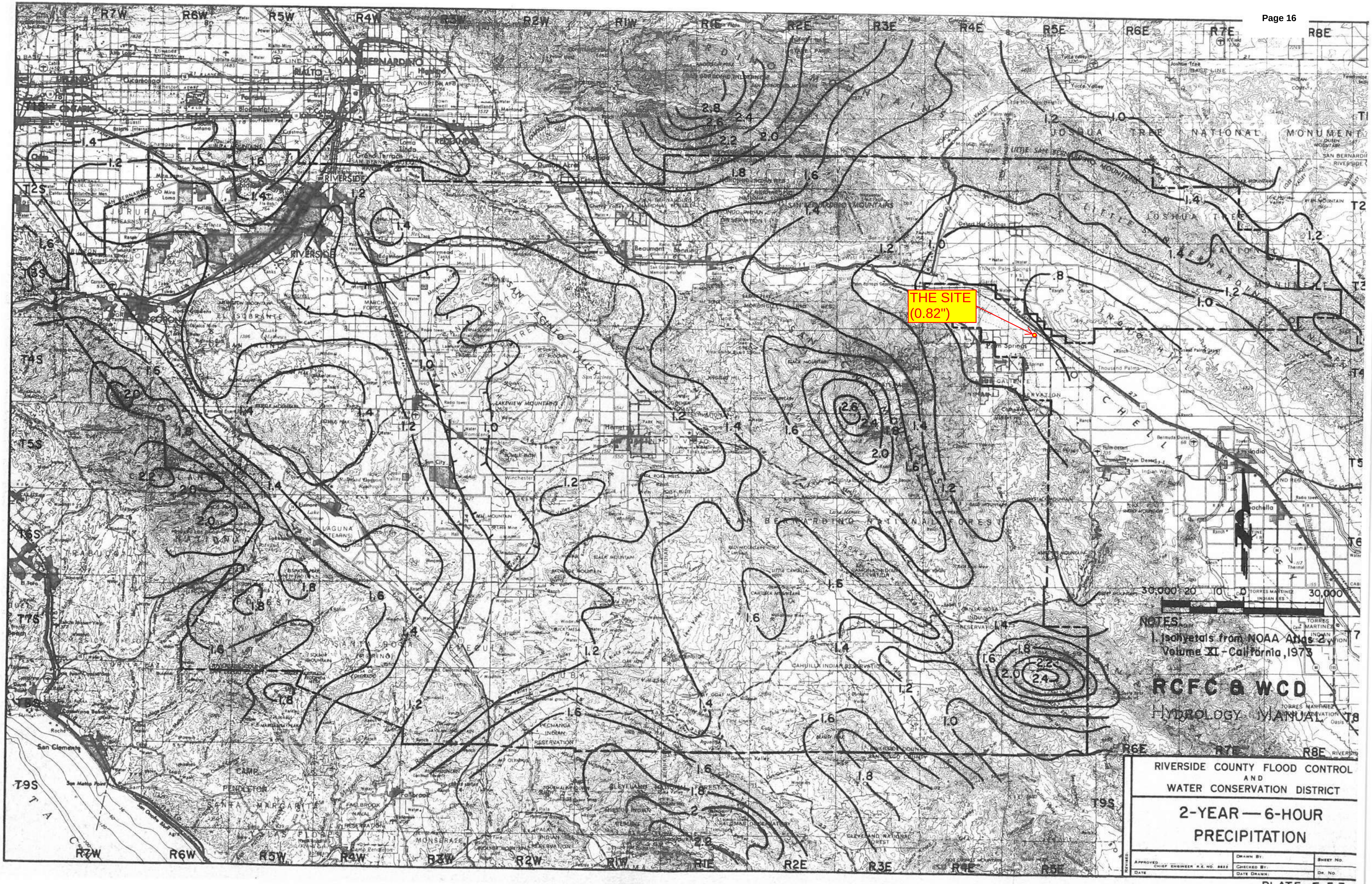
Summary of the peak flow rates for the existing and proposed conditions are shown in Tables 1.1 and 1.2.

TABLE 1.1: EXISTING CONDITIONS 100YR-24HR STORM EVENT

ID	Area (acre)	Tc, min	Q_{100} (cfs)
EX-E	13.25	50.1	9.05
EX-F	9.31	37.9	7.50
EX-G	7.09	40.2	5.71
EX-K2	3.15	25.6	3.36

TABLE 1.2: PROPOSED CONDITIONS 100YR-24HR STORM EVENT

ID	Area (acre)	Tc, min	Q_{100} (cfs)
P-E	11.43	35.9	25.23
P-F	9.95	32.9	23.23
P-G	8.98	28.3	22.27
P-K	2.21	14.9	6.75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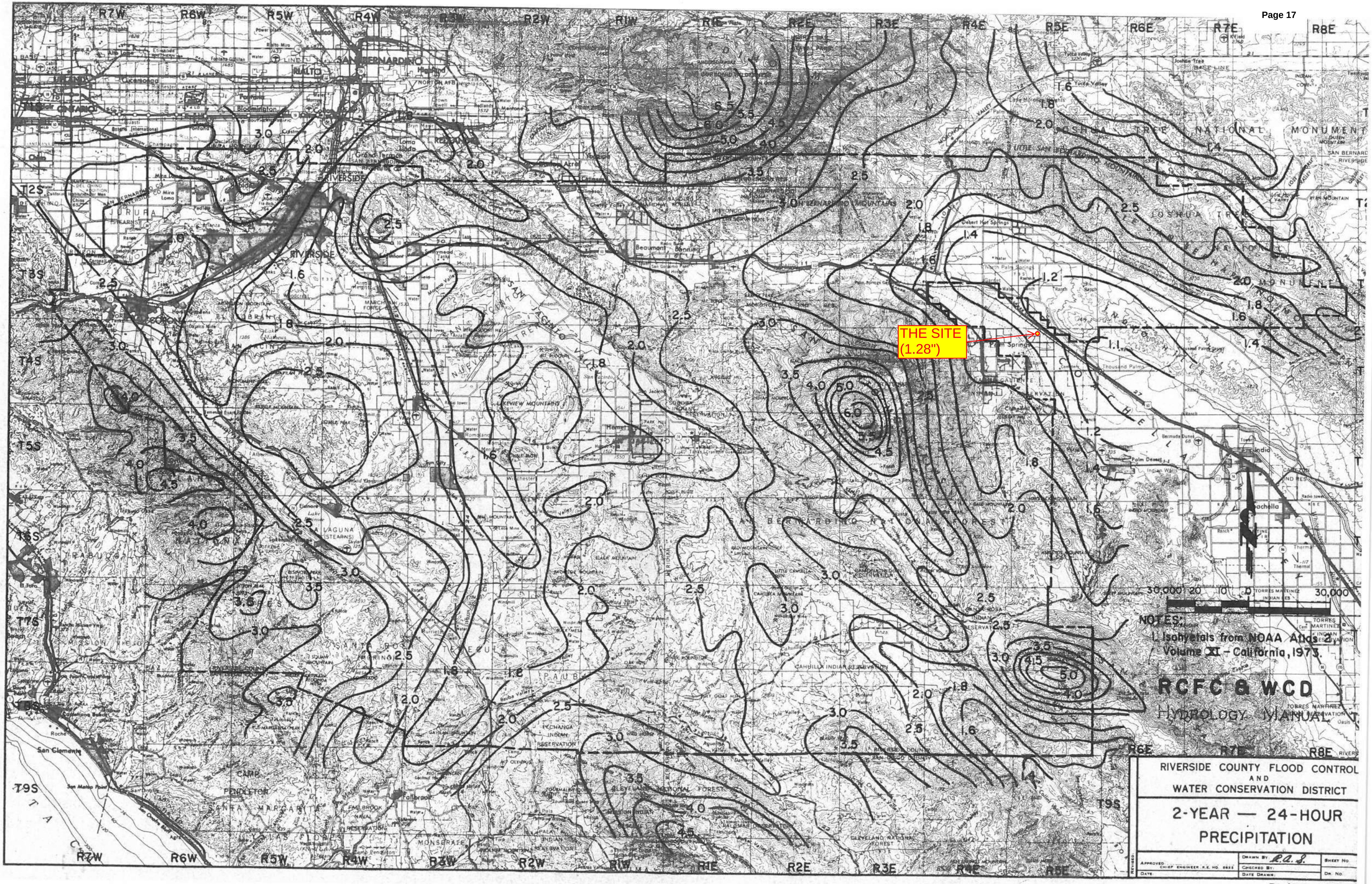
AND
WATER CONSERVATION DISTRICT
2-YEAR — 6-HOUR
PRECIPITATION
PLATE E-5.3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AND
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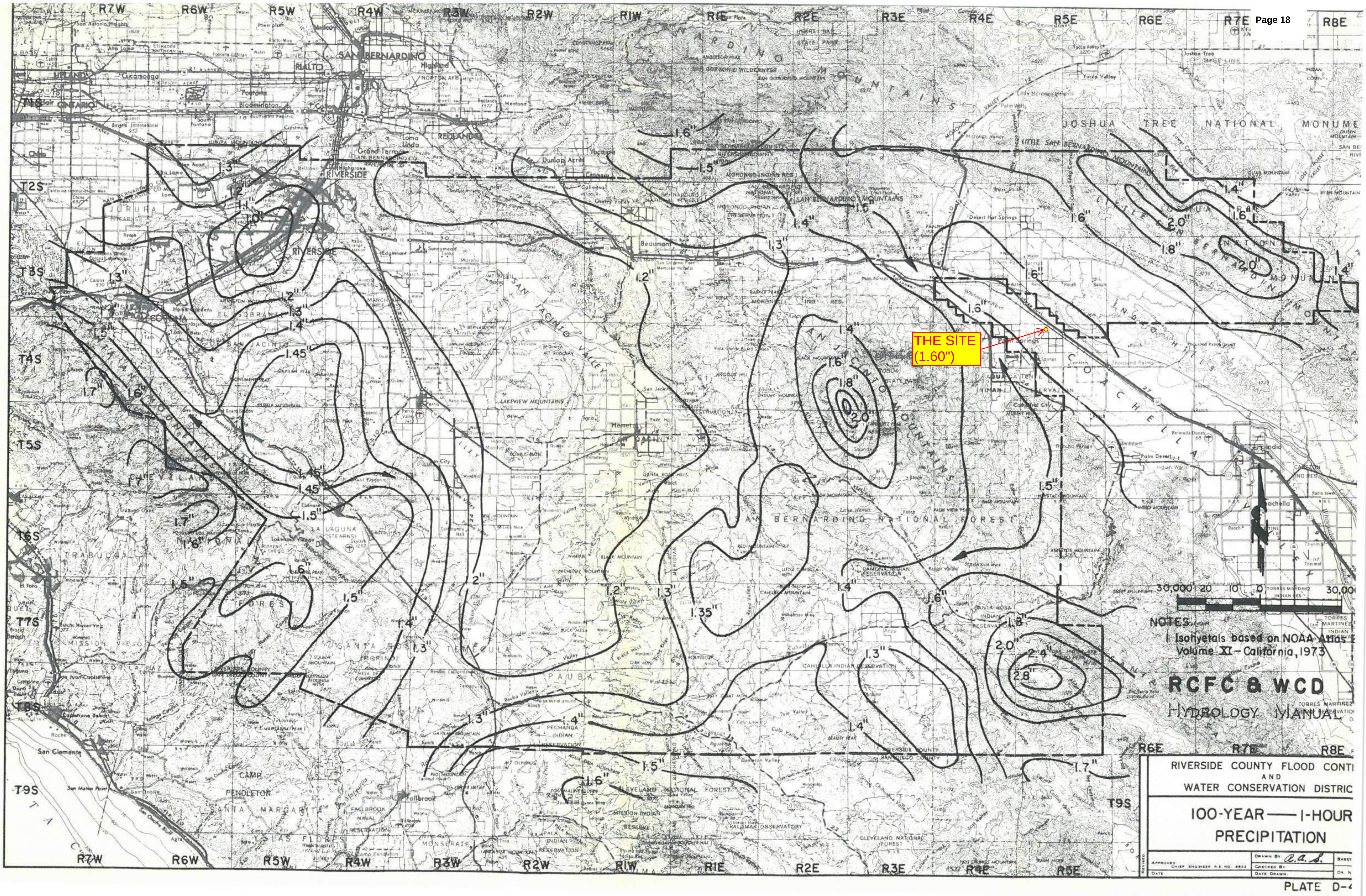
2-YEAR — 24-HOUR
PRECIPITATION

PLATE E-5.5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AND
WATER CONSERVATION DISTRIC
100-YEAR — 1-HOUR
PRECIPITATION
PLATE D-4
JOSHUA TREE NATIONAL MONUMENT
SAN BERNARDINO NATIONAL FOREST
CLEVELAND NATIONAL FOREST
SAN JACINTO MOUNTAINS
SAN BERNARDINO MOUNTAINS
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RIVERSIDE
SAN BERNARDINO
TEMECULA
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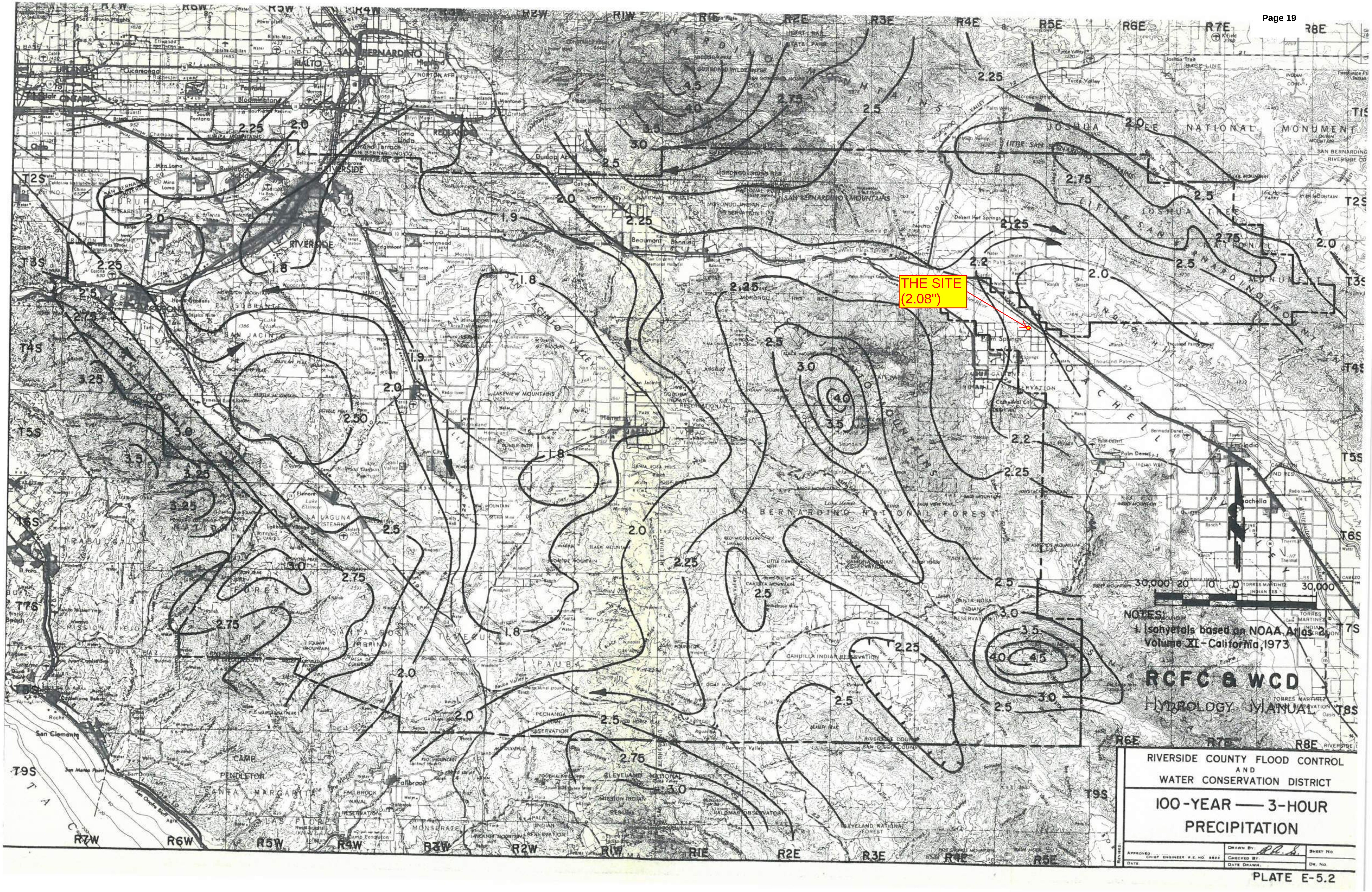
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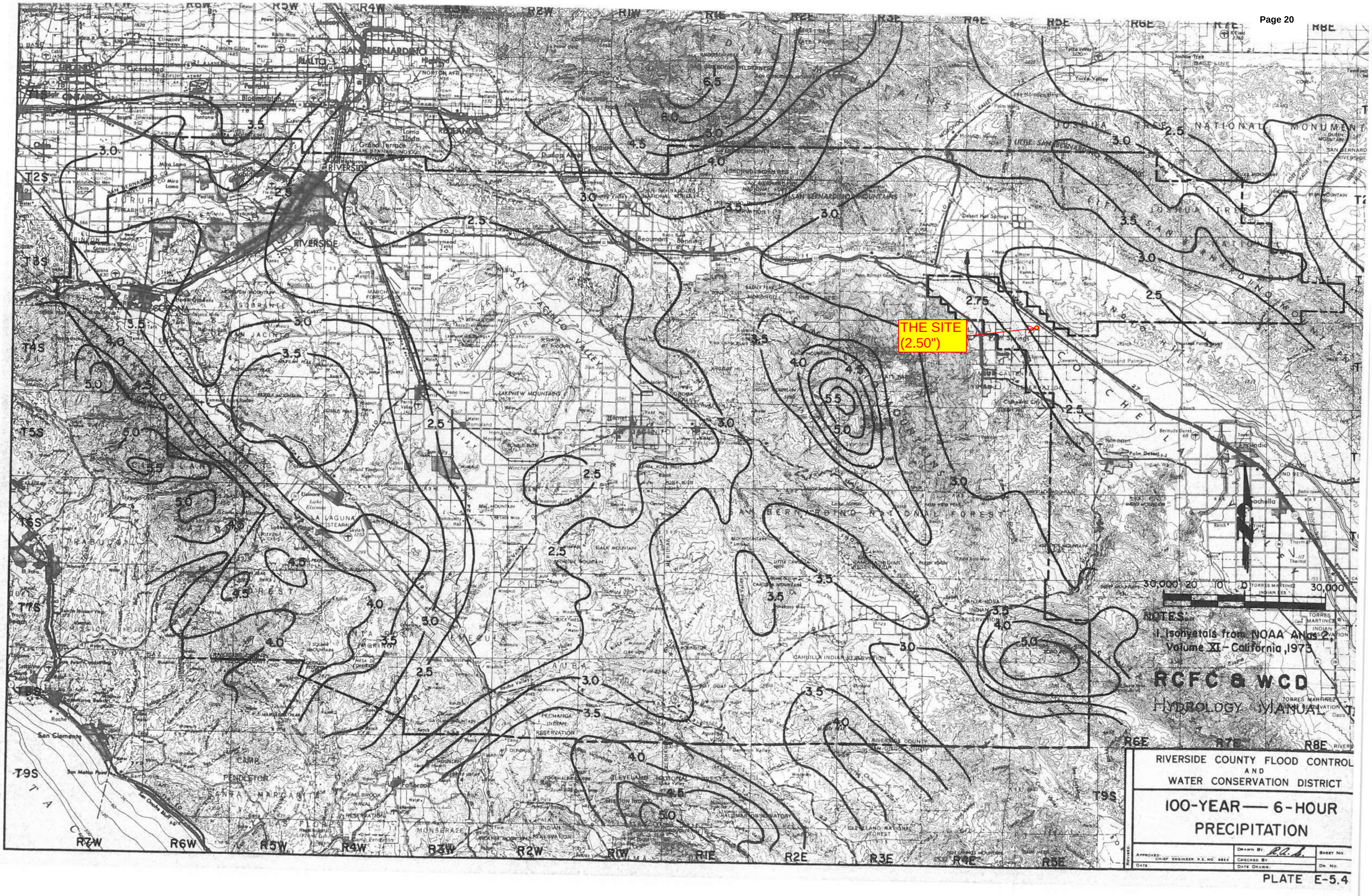
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 3-HOUR PRECIPITATION
PLATE E-5.2

APPENDIX 1

RIVERSIDE COUNTY FLOOD CONTROL HYDROLOGY MANUAL EXCEPTS.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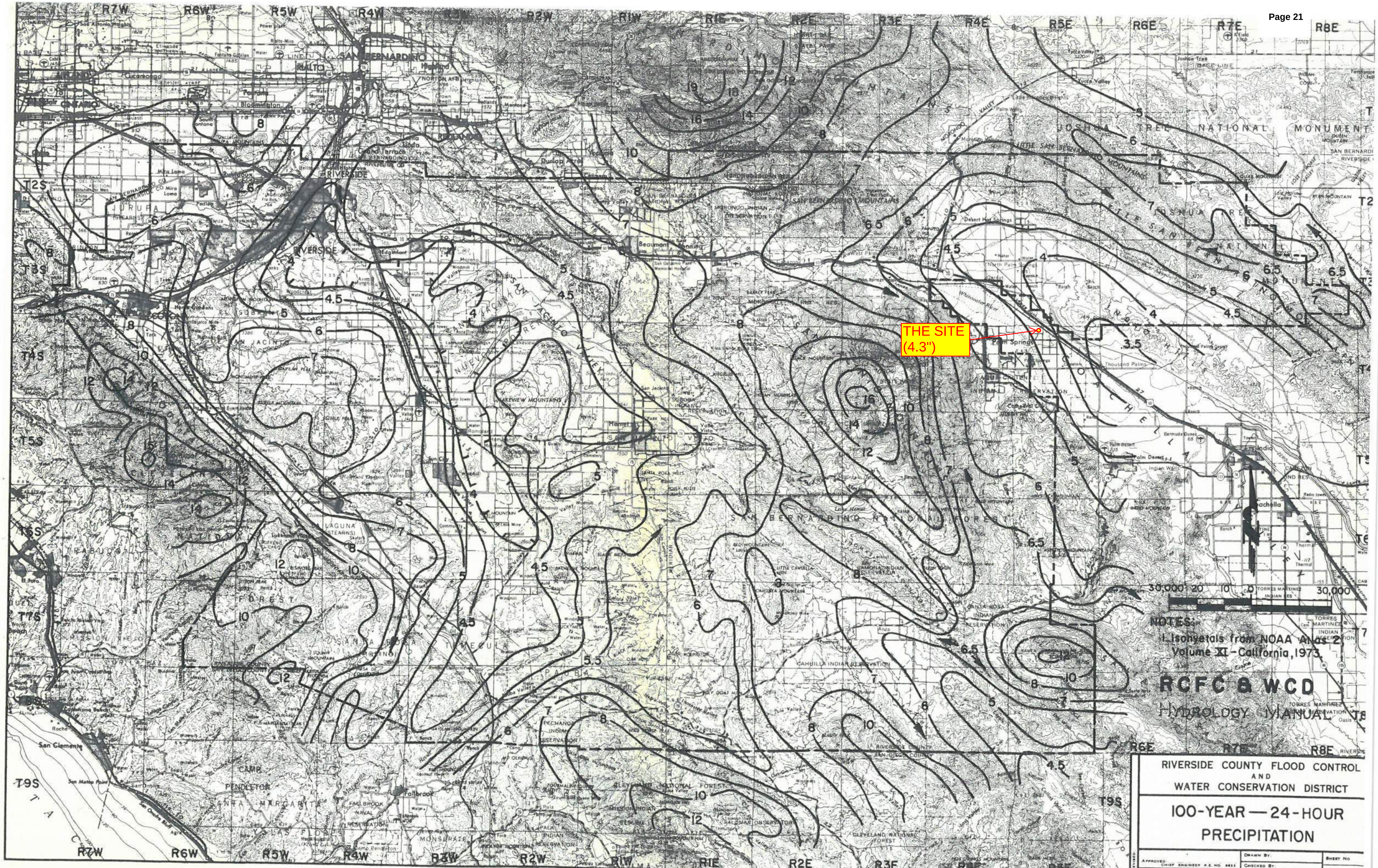
RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
100-YEAR — 6-HOUR
PRECIPITATION
PLATE E-5.4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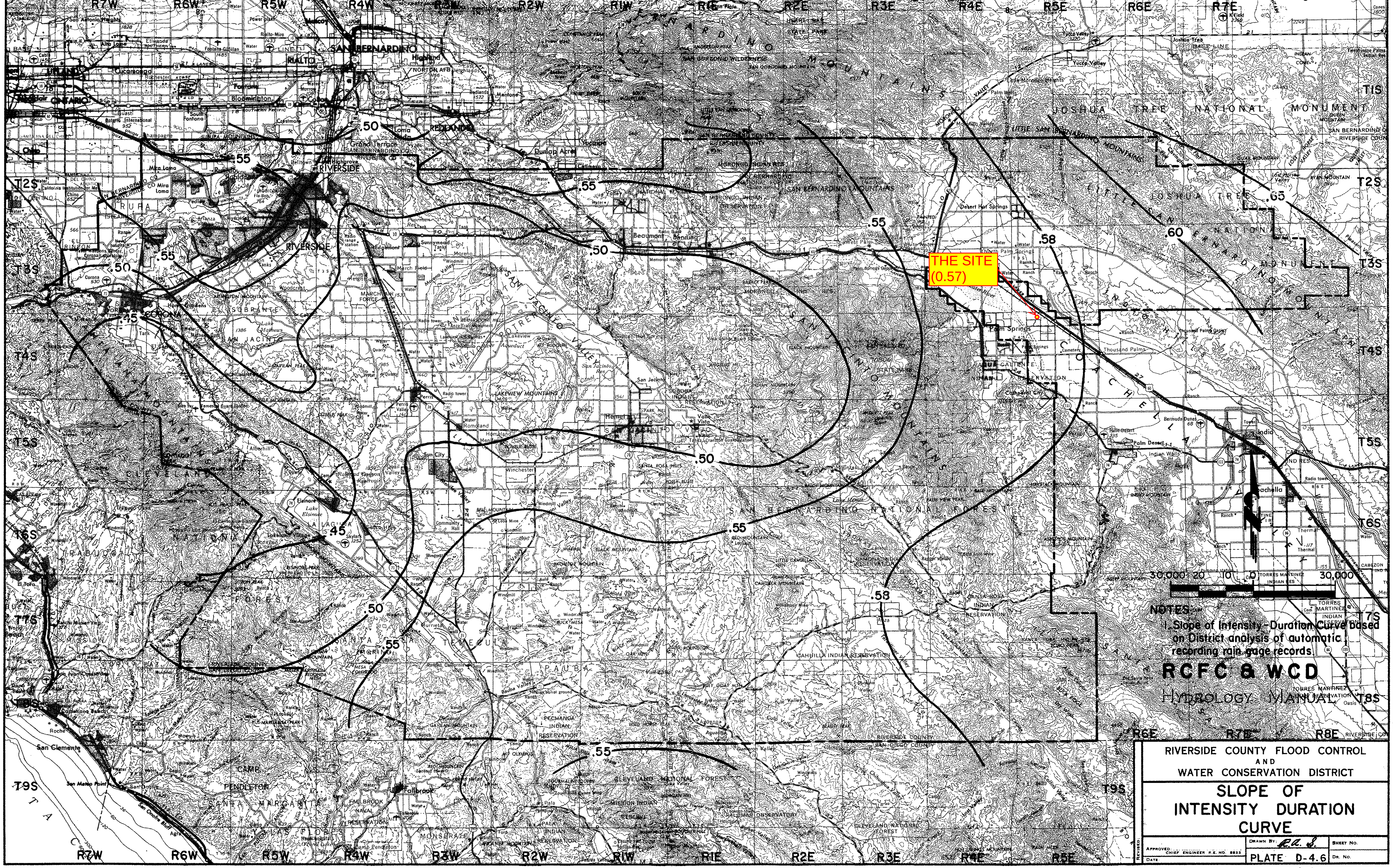
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
100-YEAR — 24-HOUR
PRECIPITATION

PLATE E-5.6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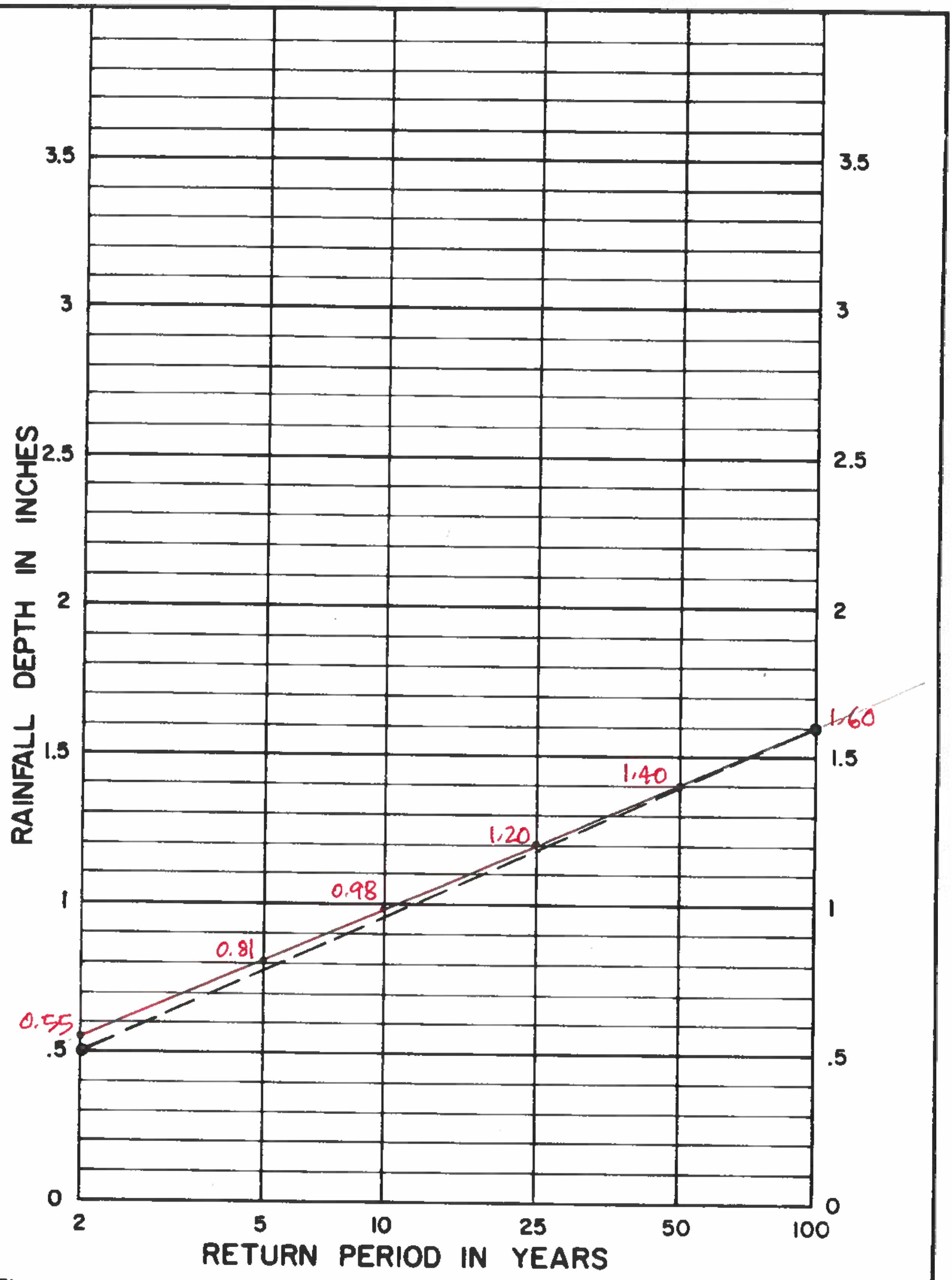
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
SLOPE OF INTENSITY DURATION CURVE
PLATE D-4.6
.45
.50
.55
.58
.60
.65
R7W
R6W
R5W
R4W
R3W
R2W
R1W
R1E
R2E
R3E
R4E
R5E
R6E
R7E
R8E
T1S
T2S
T3S
T4S
T5S
T6S
T7S
T8S
T9S
SAN BERNARDINO
RIVERSIDE
REDLANDS
Palm Springs
JOSHUA TREE NATIONAL MONUMENT
SAN JACINTO MOUNTAINS
SAN BERNARDINO NATIONAL FOREST
CLEVELAND NATIONAL FOREST
San Clemente
Fallbrook



NOTE:

1. For intermediate return periods plot 2-year and 100-year one hour values from maps, then connect points and read value for desired return period. For example given 2-year one hour = .50" and 100-year one hour = 1.60", 25-year one hour = 1.18"

Reference: NOAA Atlas 2, Volume XI-California, 1973.

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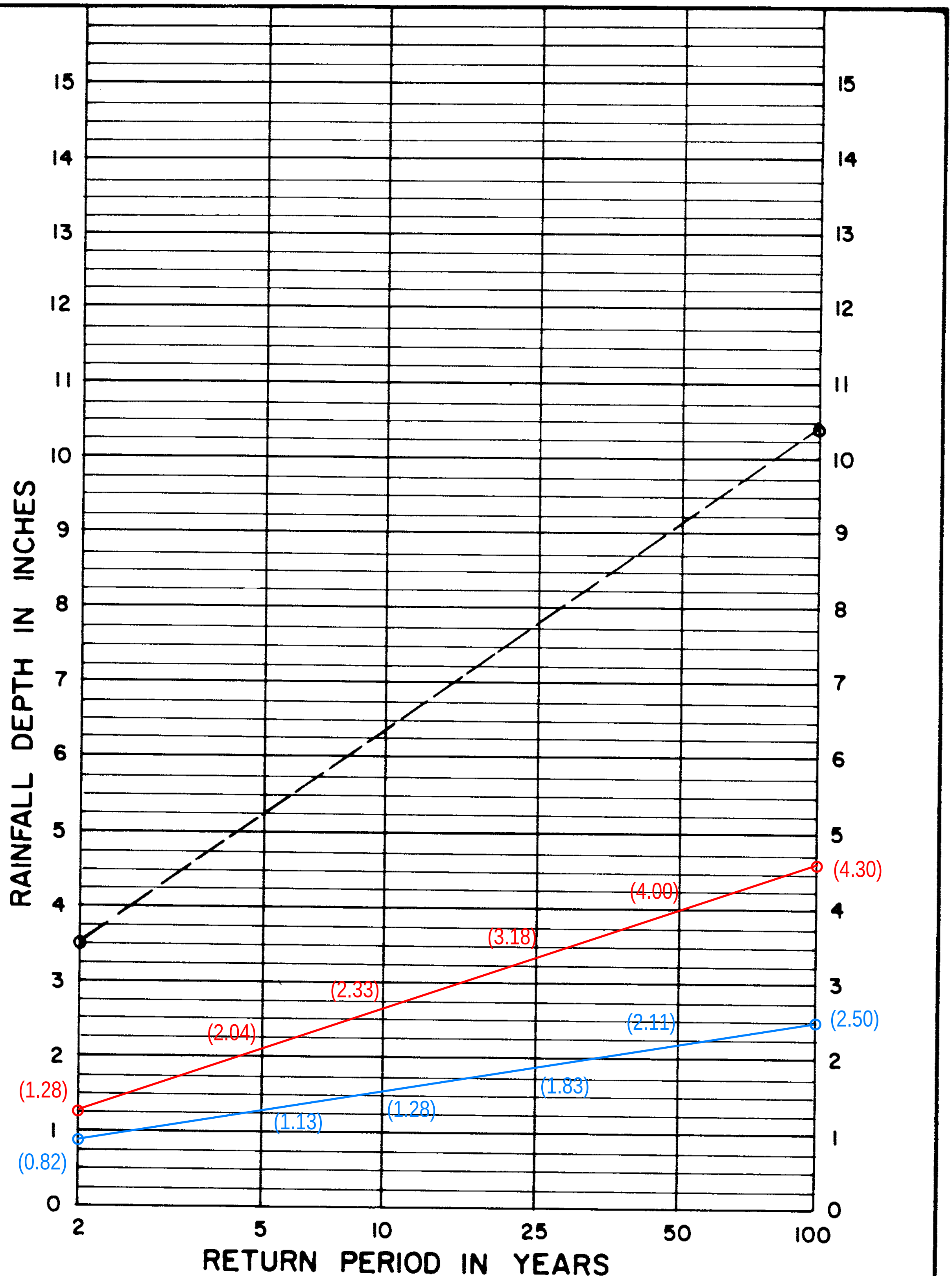
HYDROLOGY MANUAL

RAINFALL DEPTH VERSUS RETURN PERIOD FOR PARTIAL DURATION SERIES

VERANO - CATHEDRAL CITY, CA

(ONE HOUR VALUES)

PLATE D-4.5



NOTE:

1. For intermediate return periods plot 2-year and 100-year values from maps for a specific duration, then connect points and read value for desired return period. For example given 2-year 24-hour = 3.50" and 100-year 24-hour = 10.40", 25-year 24-hour = 7.80"

Reference: NOAA Atlas 2, Volume XI - California, 1973.

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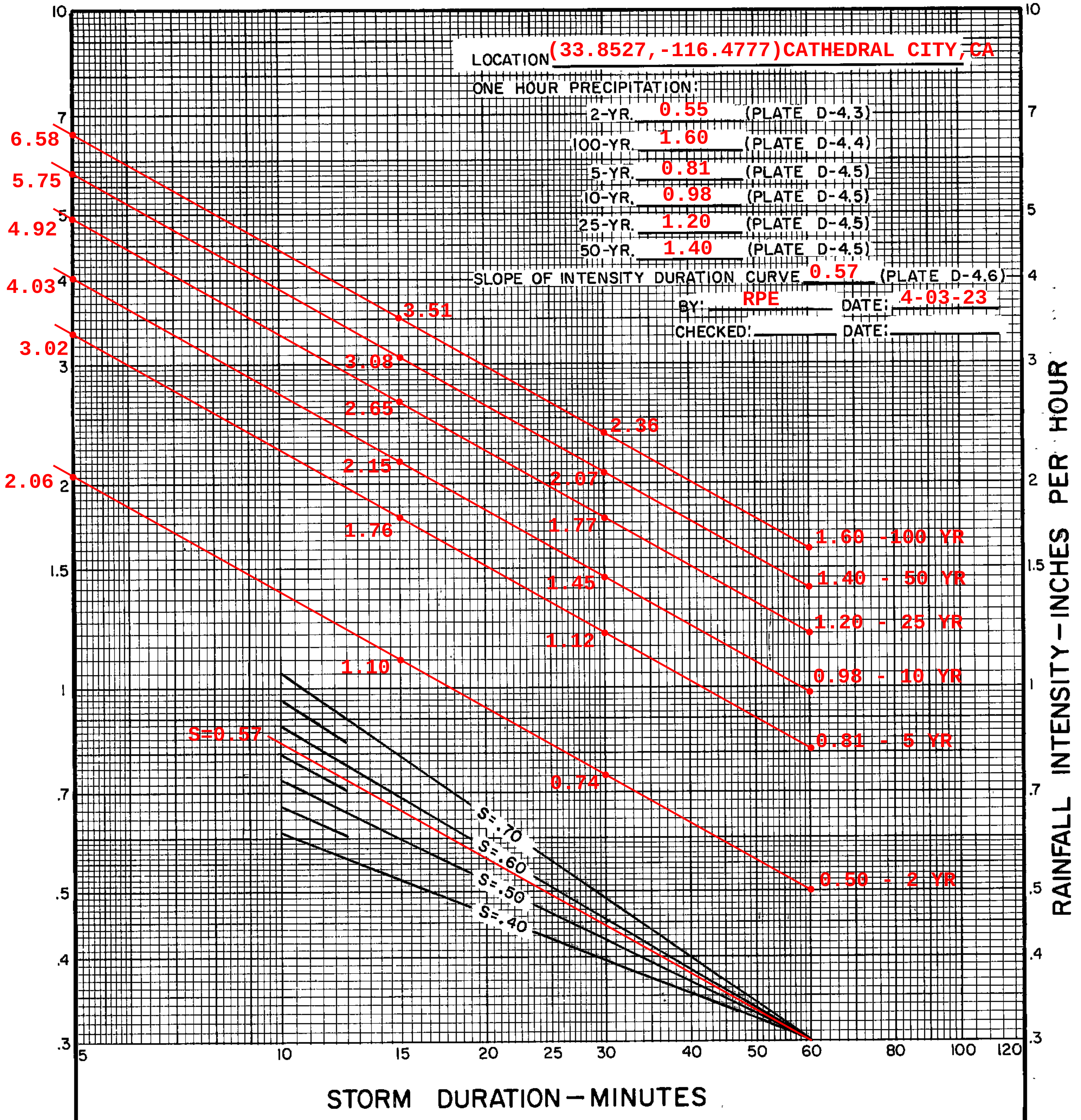
HYDROLOGY MANUAL

RAINFALL DEPTH VERSUS RETURN PERIOD FOR PARTIAL DURATION SERIES

VERANO-CATHEDRAL CITY, CA (24-HOUR VALUES)
(6-HOUR VALUES)



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HYDROLOGY MANUAL

INTENSITY—DURATION CURVES
CALCULATION SHEET

RAINFALL INTENSITY-INCHES PER HOUR

CATHEDRAL CITY

DURATION MINUTES	FREQUENCY 10 YEAR	FREQUENCY 100 YEAR
5	4.14	6.76
6	3.73	6.08
7	3.41	5.56
8	3.15	5.15
9	2.95	4.81
10	2.77	4.52
11	2.62	4.28
12	2.49	4.07
13	2.38	3.88
14	2.28	3.72
15	2.19	3.58
16	2.11	3.44
17	2.04	3.32
18	1.97	3.22
19	1.91	3.12
20	1.85	3.03
22	1.75	2.86
24	1.67	2.72
26	1.59	2.60
28	1.52	2.49
30	1.46	2.39
32	1.41	2.30
34	1.36	2.22
36	1.32	2.15
38	1.28	2.09
40	1.24	2.02
45	1.16	1.89
50	1.09	1.78
55	1.03	1.68
60	.98	1.60
65	.94	1.53
70	.90	1.46
75	.86	1.41
80	.83	1.35
85	.80	1.31

SLOPE = .580

CHERRY VALLEY

DURATION MINUTES	FREQUENCY 10 YEAR	FREQUENCY 100 YEAR
5	3.65	5.49
6	3.30	4.97
7	3.03	4.56
8	2.82	4.24
9	2.64	3.97
10	2.49	3.75
11	2.36	3.56
12	2.25	3.39
13	2.16	3.25
14	2.07	3.12
15	1.99	3.00
16	1.92	2.90
17	1.86	2.80
18	1.80	2.71
19	1.75	2.64
20	1.70	2.56
22	1.61	2.43
24	1.54	2.32
26	1.47	2.22
28	1.41	2.13
30	1.36	2.05
32	1.31	1.98
34	1.27	1.91
36	1.23	1.85
38	1.20	1.80
40	1.16	1.75
45	1.09	1.64
50	1.03	1.55
55	.99	1.47
60	.93	1.40
65	.89	1.34
70	.85	1.29
75	.82	1.24
80	.79	1.20
85	.77	1.16

SLOPE = .550

CORONA

DURATION MINUTES	FREQUENCY 10 YEAR	FREQUENCY 100 YEAR
5	3.10	4.78
6	2.84	4.38
7	2.64	4.07
8	2.47	3.81
9	2.34	3.60
10	2.22	3.43
11	2.12	3.27
12	2.04	3.14
13	1.96	3.02
14	1.89	2.92
15	1.83	2.82
16	1.77	2.73
17	1.72	2.66
18	1.68	2.58
19	1.63	2.52
20	1.59	2.46
22	1.52	2.35
24	1.46	2.25
26	1.40	2.17
28	1.36	2.09
30	1.31	2.02
32	1.27	1.96
34	1.23	1.90
36	1.20	1.85
38	1.17	1.81
40	1.14	1.76
45	1.08	1.66
50	1.03	1.58
55	.98	1.51
60	.94	1.45
65	.90	1.40
70	.87	1.35
75	.84	1.30
80	.82	1.26
85	.80	1.23

SLOPE = .480

DESERT HOT SPRINGS

DURATION MINUTES	FREQUENCY 10 YEAR	FREQUENCY 100 YEAR
5	4.39	6.76
6	3.95	6.08
7	3.62	5.56
8	3.35	5.15
9	3.13	4.81
10	2.94	4.52
11	2.78	4.28
12	2.65	4.07
13	2.53	3.88
14	2.42	3.72
15	2.32	3.58
16	2.24	3.44
17	2.16	3.32
18	2.09	3.22
19	2.03	3.12
20	1.97	3.03
22	1.86	2.86
24	1.77	2.72
26	1.69	2.60
28	1.62	2.49
30	1.55	2.39
32	1.50	2.30
34	1.45	2.22
36	1.40	2.15
38	1.36	2.09
40	1.32	2.02
45	1.23	1.89
50	1.16	1.78
55	1.09	1.68
60	1.04	1.60
65	.99	1.53
70	.95	1.46
75	.91	1.41
80	.88	1.35
85	.85	1.31

SLOPE = .580

ELSINORE - WILDOMAR

DURATION MINUTES	FREQUENCY 10 YEAR	FREQUENCY 100 YEAR
5	3.23	4.94
6	2.96	4.53
7	2.75	4.21
8	2.58	3.95
9	2.44	3.73
10	2.32	3.54
11	2.21	3.39
12	2.12	3.25
13	2.04	3.13
14	1.97	3.02
15	1.91	2.92
16	1.85	2.83
17	1.80	2.75
18	1.75	2.67
19	1.70	2.60
20	1.66	2.54
22	1.59	2.43
24	1.52	2.33
26	1.46	2.24
28	1.41	2.16
30	1.37	2.09
32	1.33	2.03
34	1.29	1.97
36	1.25	1.92
38	1.22	1.87
40	1.19	1.82
45	1.13	1.72
50	1.07	1.64
55	1.02	1.56
60	.98	1.50
65	.94	1.44
70	.91	1.39
75	.88	1.35
80	.85	1.31
85	.83	1.27

SLOPE = .480

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HYDROLOGY MANUAL

STANDARD INTENSITY-DURATION CURVES DATA

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	Soil Group B	Soil Group C	Soil Group D
NATURAL COVERS -					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparrel, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparrel, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	72	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	28	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
URBAN COVERS -					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
AGRICULTURAL COVERS -					
Fallow (Land plowed but not tilled or seeded)		76	85	90	92

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	Soil Group B	Soil Group C	Soil Group D
AGRICULTURAL COVERS (cont.) -					
Legumes, Close Seeded (Alfalfa, sweetclover, timothy, etc.)	Poor	66	77	85	89
	Good	58	72	81	85
Orchards, Deciduous (Apples, apricots, pears, walnuts, etc.)		See Note 4			
Orchards, Evergreen (Citrus, avocados, etc.)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
Pasture, Dryland (Annual grasses)	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Pasture, Irrigated (Legumes and perennial grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
Row Crops (Field crops - tomatoes, sugar beets, etc.)	Poor	72	81	88	91
	Good	67	78	85	89
Small Grain (Wheat, oats, barley, etc.)	Poor	65	76	84	88
	Good	63	75	83	87
Vineyard		See Note 4			

Notes:

1. All runoff index (RI) numbers are for Antecedent Moisture Condition (AMC) II.

2. Quality of cover definitions:
   Poor-Heavily grazed or regularly burned areas. Less than 50 percent of the ground surface is protected by plant cover or brush and tree canopy.
   Fair-Moderate cover with 50 percent to 75 percent of the ground surface protected.
   Good-Heavy or dense cover with more than 75 percent of the ground surface protected.

3. See Plate C-2 for a detailed description of cover types.

4. Use runoff index numbers based on ground cover type. See discussion under "Cover Type Descriptions" on Plate C-2.

5. Reference Bibliography item 17.

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HYDROLOGY MANUAL

RUNOFF INDEX NUMBERS FOR PERVIOUS AREA

ACTUAL IMPERVIOUS COVER

Land Use (1)	Range-Percent	Recommended Value For Average Conditions-Percent (2)
Natural or Agriculture	0 - 10	0
Single Family Residential: (3)		
40,000 S. F. (1 Acre) Lots	10 - 25	20
20,000 S. F. (½ Acre) Lots	30 - 45	40
7,200 - 10,000 S. F. Lots	45 - 55	50
Multiple Family Residential:		
Condominiums	45 - 70	65
Apartments	65 - 90	80
Mobile Home Park	60 - 85	75
Commercial, Downtown Business or Industrial	80 -100	90

Notes:

1. Land use should be based on ultimate development of the watershed. Long range master plans for the County and incorporated cities should be reviewed to insure reasonable land use assumptions.

2. Recommended values are based on average conditions which may not apply to a particular study area. The percentage impervious may vary greatly even on comparable sized lots due to differences in dwelling size, improvements, etc. Landscape practices should also be considered as it is common in some areas to use ornamental gravels underlain by impervious plastic materials in place of lawns and shrubs. A field investigation of a study area should always be made, and a review of aerial photos, where available may assist in estimating the percentage of impervious cover in developed areas.

3. For typical horse ranch subdivisions increase impervious area 5 percent over the values recommended in the table above.

Local land use authority	Ordinance	Requirement
Coachella	Ordinance #1014 Municipal Code Section 13.16.110	To minimize the discharge and transport of pollutants, the city requires all new development and redevelopment projects identified as a Priority Project under the newly implemented NPDES permit No. CAS617002 to retain 100% of the stormwater from the 100 year, 24-hour duration storm in order to prevent any deterioration of the water quality which would impair the subsequent or competing uses of water. Projects that retain and infiltrate 100% of the rainfall conditions specified in Section F.1.c.v.4 of the NPDES permit are deemed to comply with the Treatment Control BMP requirements found in that section of the NPDES permit. The NPDES permit establishes acceptable methods and standards for controlling stormwater runoff volumes, rates, and pollutant loading including but not limited to the following: A. Increase Permeable Areas, Avoid placing impervious surfaces in highly porous soil areas; incorporate landscaping and open space into the project design; use porous materials for or near driveways and walkways; incorporate retention basins that can infiltrate Stormwater onsite; and avoid placing pavement and other impervious surfaces in low lying areas. B. Direct Runoff to Permeable Areas. Direct Stormwater runoff away from impermeable areas to swales, berms, green strip filters, gravel beds, and French drains; install rain gutters and orient them toward permeable areas; modify the grade of the property to divert flow to permeable areas and minimize the amount of stormwater runoff leaving the property and when designing curbs, berms and other structures, avoid designs which isolate permeable or landscaped areas. C. Maximize Stormwater Storage for Reuse. Use retention structures, surface areas, cisterns, or other structures to store stormwater
Cathedral City	Municipal Code – Title 8 § 8.24.070	A. Except as noted below, development of all land within the city must include provisions for the management of stormwater runoff from the property which is to be developed. This management shall consist of constructing stormwater storage facilities, which includes detention basins. As a minimum, all development will make provisions to store runoff from rainfall events up to and including the one-hundred-year, three-hour duration event. If a suitable outlet for a detention basin is not available, or if engineering analysis indicates that available outlet systems would be overtaxed by detention basin outflow, a retention basin shall be constructed in lieu of a detention basin. B. The requirement for construction of a detention basin or a retention basin may be waived in the following cases: 1. The runoff has been included in a storage facility at another location. This may include storage facilities proposed as part of the Cathedral City Storm Drain Master Plan; 2. An application for a building permit to construct a single-family residential structure; 3. Development which will drain directly into a floodway or watercourse drainage channel which has been determined by the project review manager, using engineering analyses provided by the development, to have the capacity and be constructed to handle the additional runoff flow without increasing the potential for flood damage on any other downstream property. 4. Development of a parcel under one-half acre in an area where it can be demonstrated by engineering analyses that no significant increase in the potential for flood damage will be created by the development.

APPENDIX 2

UNIT HYDROGRAPH METHOD: PRE AND POST DEVELOPMENT CONDITIONS

Q100YR-24HR AND Q100YR-3HR

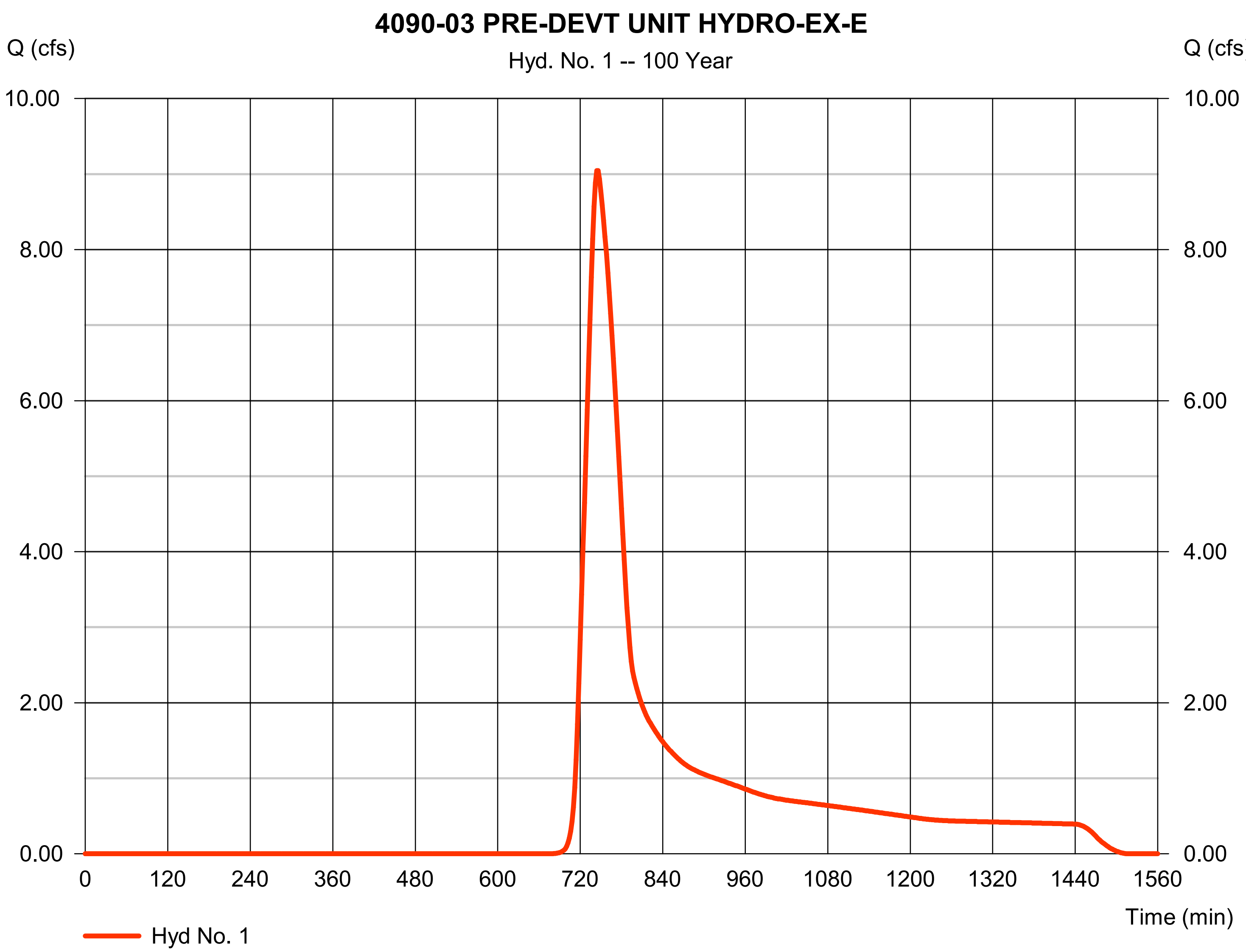
UNIT HYDROGRAPH
100YR-24HR

Hydrograph Report

Hyd. No. 1

4090-03 PRE-DEVT UNIT HYDRO-EX-E

Hydrograph type	= SCS Runoff	Peak discharge	= 9.046 cfs
Storm frequency	= 100 yrs	Time to peak	= 744 min
Time interval	= 2 min	Hyd. volume	= 58,047 cuft
Drainage area	= 13.250 ac	Curve number	= 65
Basin Slope	= 1.4 %	Hydraulic length	= 1286 ft
Tc method	= LAG	Time of conc. (Tc)	= 50.12 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	5.0994	0.1000	0.5670	--------
3	0.0000	0.0000	0.0000	--------
5	5.5223	0.1000	0.4686	--------
10	9.9784	0.1000	0.5666	--------
25	11.9956	0.1000	0.5621	--------
50	14.1968	0.1000	0.5656	--------
100	15.9941	0.1000	0.5621	--------

File name: 4090-03 Intensity.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2.02	1.37	1.09	0.93	0.82	0.74	0.68	0.63	0.59	0.55	0.53	0.50
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.57	1.87	1.55	1.35	1.22	1.12	1.04	0.98	0.93	0.88	0.84	0.81
10	3.96	2.69	2.14	1.82	1.61	1.45	1.33	1.23	1.15	1.09	1.03	0.98
25	4.80	3.27	2.61	2.22	1.96	1.77	1.62	1.51	1.41	1.33	1.26	1.20
50	5.65	3.84	3.06	2.60	2.29	2.07	1.90	1.76	1.65	1.55	1.47	1.40
100	6.40	4.36	3.48	2.96	2.61	2.36	2.16	2.01	1.88	1.77	1.68	1.60

Tc = time in minutes. Values may exceed 60.

e: F:\Projects\4090\003_Support Files\Reports\Hydrology\Preliminary Hydrology\Calculation\4090-03 Precipitation.pcp

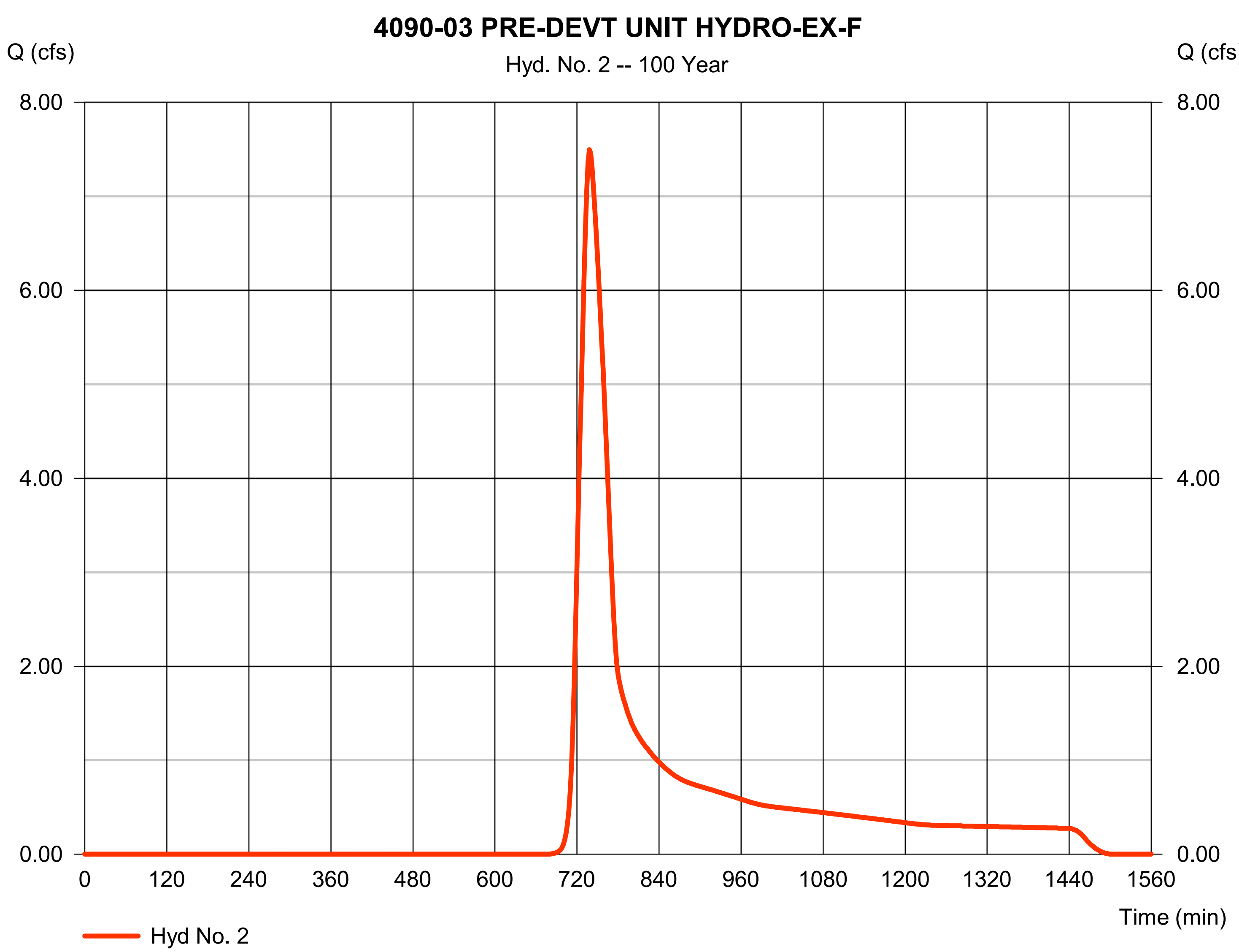
Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.28	0.00	2.04	2.33	3.18	4.00	4.30
SCS 6-Hr	0.00	0.82	0.00	1.13	1.28	1.83	2.11	2.50
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrograph Report

Hyd. No. 2

4090-03 PRE-DEVT UNIT HYDRO-EX-F

Hydrograph type	= SCS Runoff	Peak discharge	= 7.496 cfs
Storm frequency	= 100 yrs	Time to peak	= 738 min
Time interval	= 2 min	Hyd. volume	= 40,786 cuft
Drainage area	= 9.310 ac	Curve number	= 65
Basin Slope	= 1.6 %	Hydraulic length	= 975 ft
Tc method	= LAG	Time of conc. (Tc)	= 37.93 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	5.0994	0.1000	0.5670	--------
3	0.0000	0.0000	0.0000	--------
5	5.5223	0.1000	0.4686	--------
10	9.9784	0.1000	0.5666	--------
25	11.9956	0.1000	0.5621	--------
50	14.1968	0.1000	0.5656	--------
100	15.9941	0.1000	0.5621	--------

File name: 4090-03 Intensity.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2.02	1.37	1.09	0.93	0.82	0.74	0.68	0.63	0.59	0.55	0.53	0.50
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.57	1.87	1.55	1.35	1.22	1.12	1.04	0.98	0.93	0.88	0.84	0.81
10	3.96	2.69	2.14	1.82	1.61	1.45	1.33	1.23	1.15	1.09	1.03	0.98
25	4.80	3.27	2.61	2.22	1.96	1.77	1.62	1.51	1.41	1.33	1.26	1.20
50	5.65	3.84	3.06	2.60	2.29	2.07	1.90	1.76	1.65	1.55	1.47	1.40
100	6.40	4.36	3.48	2.96	2.61	2.36	2.16	2.01	1.88	1.77	1.68	1.60

Tc = time in minutes. Values may exceed 60.

e: F:\Projects\4090\003_Support Files\Reports\Hydrology\Preliminary Hydrology\Calculation\4090-03 Precipitation.pcp

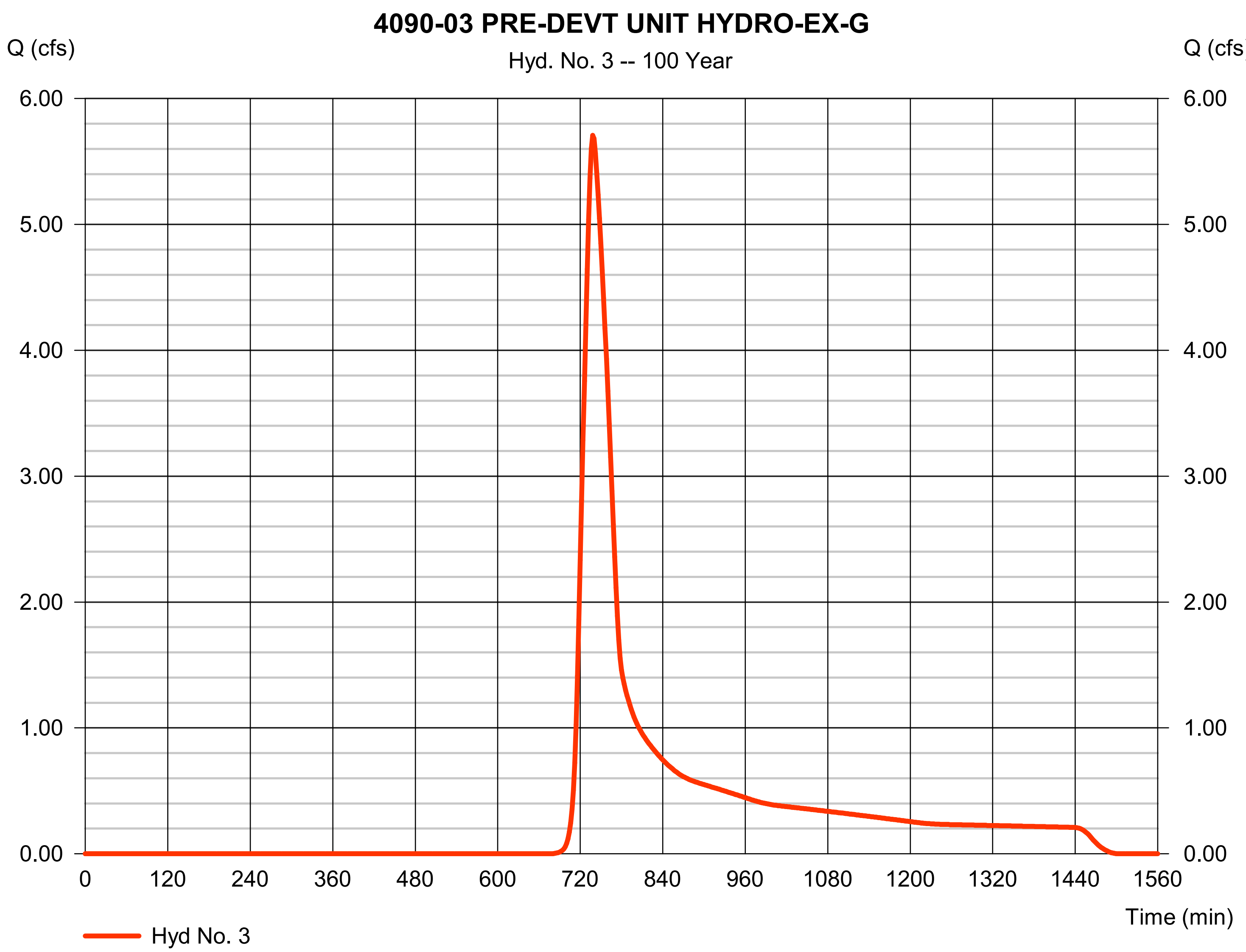
Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.28	0.00	2.04	2.33	3.18	4.00	4.30
SCS 6-Hr	0.00	0.82	0.00	1.13	1.28	1.83	2.11	2.50
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrograph Report

Hyd. No. 3

4090-03 PRE-DEVT UNIT HYDRO-EX-G

Hydrograph type	= SCS Runoff	Peak discharge	= 5.709 cfs
Storm frequency	= 100 yrs	Time to peak	= 738 min
Time interval	= 2 min	Hyd. volume	= 31,060 cuft
Drainage area	= 7.090 ac	Curve number	= 65
Basin Slope	= 1.1 %	Hydraulic length	= 834 ft
Tc method	= LAG	Time of conc. (Tc)	= 40.17 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	5.0994	0.1000	0.5670	--------
3	0.0000	0.0000	0.0000	--------
5	5.5223	0.1000	0.4686	--------
10	9.9784	0.1000	0.5666	--------
25	11.9956	0.1000	0.5621	--------
50	14.1968	0.1000	0.5656	--------
100	15.9941	0.1000	0.5621	--------

File name: 4090-03 Intensity.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2.02	1.37	1.09	0.93	0.82	0.74	0.68	0.63	0.59	0.55	0.53	0.50
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.57	1.87	1.55	1.35	1.22	1.12	1.04	0.98	0.93	0.88	0.84	0.81
10	3.96	2.69	2.14	1.82	1.61	1.45	1.33	1.23	1.15	1.09	1.03	0.98
25	4.80	3.27	2.61	2.22	1.96	1.77	1.62	1.51	1.41	1.33	1.26	1.20
50	5.65	3.84	3.06	2.60	2.29	2.07	1.90	1.76	1.65	1.55	1.47	1.40
100	6.40	4.36	3.48	2.96	2.61	2.36	2.16	2.01	1.88	1.77	1.68	1.60

Tc = time in minutes. Values may exceed 60.

e: F:\Projects\4090\003_Support Files\Reports\Hydrology\Preliminary Hydrology\Calculation\4090-03 Precipitation.pcp

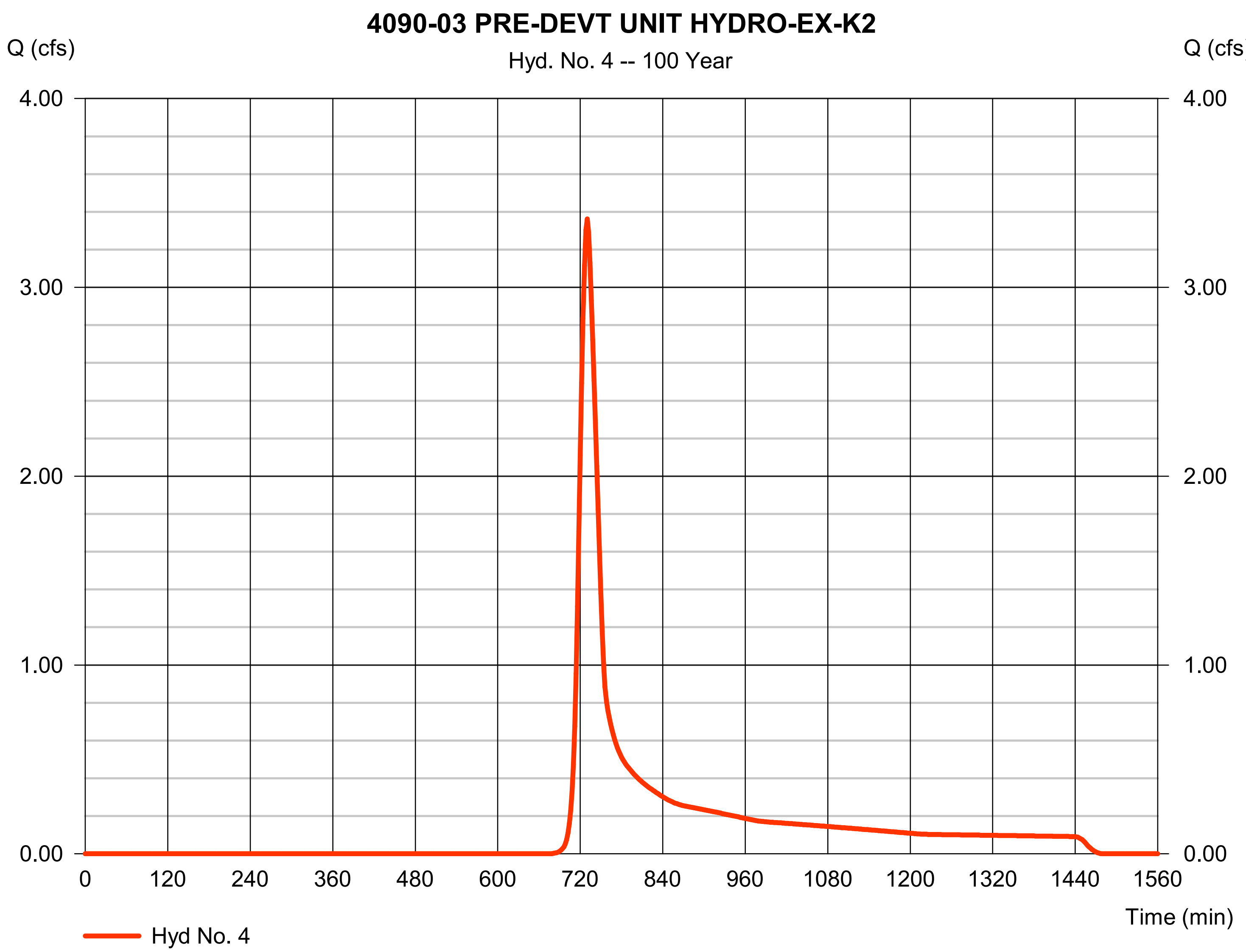
Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.28	0.00	2.04	2.33	3.18	4.00	4.30
SCS 6-Hr	0.00	0.82	0.00	1.13	1.28	1.83	2.11	2.50
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrograph Report

Hyd. No. 4

4090-03 PRE-DEVT UNIT HYDRO-EX-K2

Hydrograph type	= SCS Runoff	Peak discharge	= 3.363 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 13,584 cuft
Drainage area	= 3.150 ac	Curve number	= 65
Basin Slope	= 1.5 %	Hydraulic length	= 588 ft
Tc method	= LAG	Time of conc. (Tc)	= 25.64 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	5.0994	0.1000	0.5670	--------
3	0.0000	0.0000	0.0000	--------
5	5.5223	0.1000	0.4686	--------
10	9.9784	0.1000	0.5666	--------
25	11.9956	0.1000	0.5621	--------
50	14.1968	0.1000	0.5656	--------
100	15.9941	0.1000	0.5621	--------

File name: 4090-03 Intensity.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2.02	1.37	1.09	0.93	0.82	0.74	0.68	0.63	0.59	0.55	0.53	0.50
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.57	1.87	1.55	1.35	1.22	1.12	1.04	0.98	0.93	0.88	0.84	0.81
10	3.96	2.69	2.14	1.82	1.61	1.45	1.33	1.23	1.15	1.09	1.03	0.98
25	4.80	3.27	2.61	2.22	1.96	1.77	1.62	1.51	1.41	1.33	1.26	1.20
50	5.65	3.84	3.06	2.60	2.29	2.07	1.90	1.76	1.65	1.55	1.47	1.40
100	6.40	4.36	3.48	2.96	2.61	2.36	2.16	2.01	1.88	1.77	1.68	1.60

Tc = time in minutes. Values may exceed 60.

e: F:\Projects\4090\003_Support Files\Reports\Hydrology\Preliminary Hydrology\Calculation\4090-03 Precipitation.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.28	0.00	2.04	2.33	3.18	4.00	4.30
SCS 6-Hr	0.00	0.82	0.00	1.13	1.28	1.83	2.11	2.50
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

UNIT HYDROGRAPH

PRE-DEVELOPMENT 100YR-3HR

Hydrograph Report

Hyd. No. 45

4090-03 PRE-DEVT EX-E UH-3HR

Hydrograph type	= SCS Runoff	Peak discharge	= 2.965 cfs
Storm frequency	= 100 yrs	Time to peak	= 146 min
Time interval	= 2 min	Hyd. volume	= 15,968 cuft
Drainage area	= 13.250 ac	Curve number	= 65
Basin Slope	= 1.4 %	Hydraulic length	= 1286 ft
Tc method	= LAG	Time of conc. (Tc)	= 50.12 min
Total precip.	= 2.59 in	Distribution	= Synthetic
Storm duration	= 3.00 hrs	Shape factor	= 484

Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	5.0994	0.1000	0.5670	--------
3	0.0000	0.0000	0.0000	--------
5	5.5223	0.1000	0.4686	--------
10	9.9784	0.1000	0.5666	--------
25	11.9956	0.1000	0.5621	--------
50	14.1968	0.1000	0.5656	--------
100	15.9941	0.1000	0.5621	--------

File name: 4090-03 Intensity.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2.02	1.37	1.09	0.93	0.82	0.74	0.68	0.63	0.59	0.55	0.53	0.50
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.57	1.87	1.55	1.35	1.22	1.12	1.04	0.98	0.93	0.88	0.84	0.81
10	3.96	2.69	2.14	1.82	1.61	1.45	1.33	1.23	1.15	1.09	1.03	0.98
25	4.80	3.27	2.61	2.22	1.96	1.77	1.62	1.51	1.41	1.33	1.26	1.20
50	5.65	3.84	3.06	2.60	2.29	2.07	1.90	1.76	1.65	1.55	1.47	1.40
100	6.40	4.36	3.48	2.96	2.61	2.36	2.16	2.01	1.88	1.77	1.68	1.60

Tc = time in minutes. Values may exceed 60.

e: F:\Projects\4090\003_Support Files\Reports\Hydrology\Preliminary Hydrology\Calculation\4090-03 Precipitation.pcp

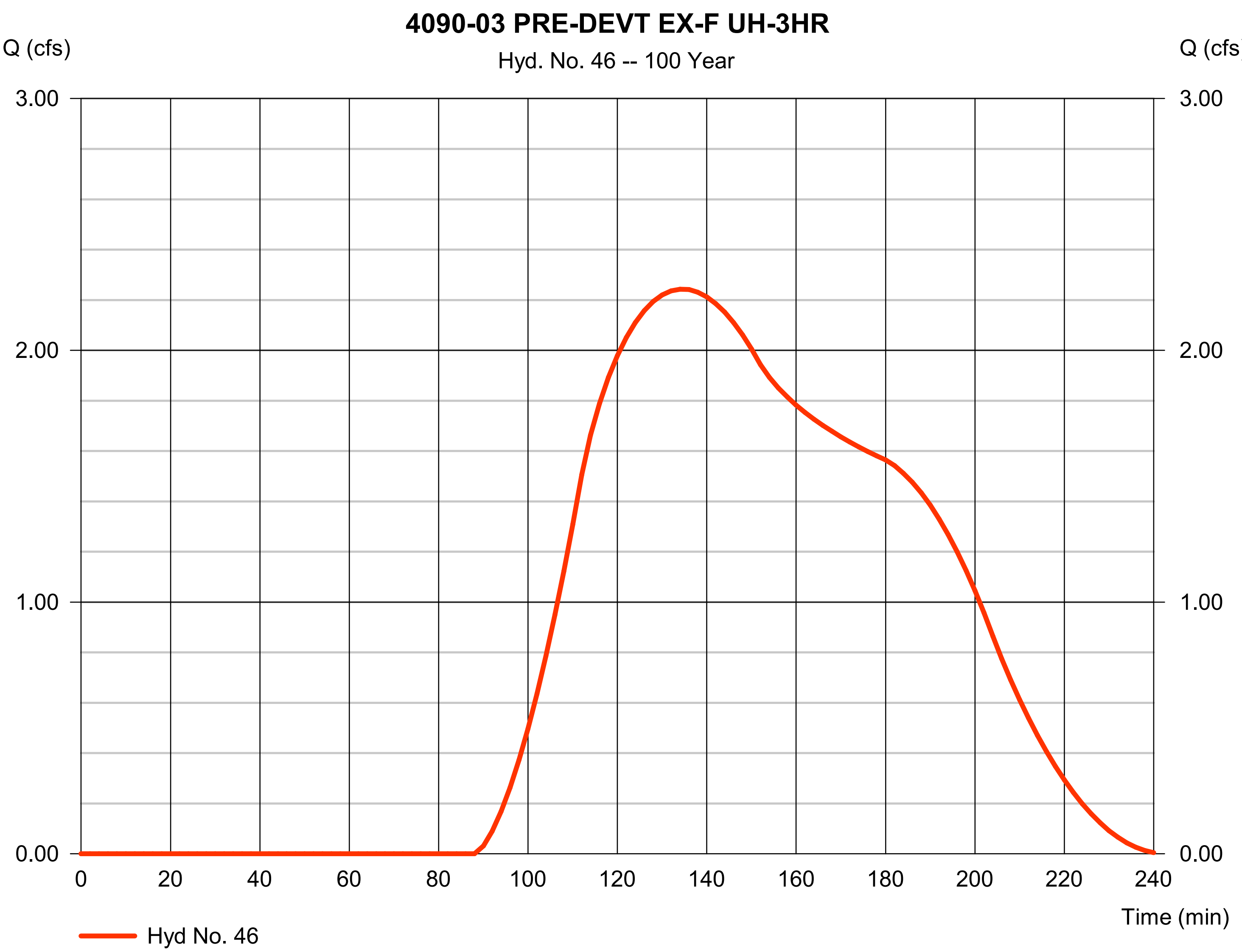
Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.28	0.00	2.04	2.33	3.18	4.00	4.30
SCS 6-Hr	0.00	0.82	0.00	1.13	1.28	1.83	2.11	2.50
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrograph Report

Hyd. No. 46

4090-03 PRE-DEVT EX-F UH-3HR

Hydrograph type	= SCS Runoff	Peak discharge	= 2.243 cfs
Storm frequency	= 100 yrs	Time to peak	= 134 min
Time interval	= 2 min	Hyd. volume	= 11,220 cuft
Drainage area	= 9.310 ac	Curve number	= 65
Basin Slope	= 1.6 %	Hydraulic length	= 975 ft
Tc method	= LAG	Time of conc. (Tc)	= 37.93 min
Total precip.	= 2.59 in	Distribution	= Synthetic
Storm duration	= 3.00 hrs	Shape factor	= 484



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	5.0994	0.1000	0.5670	--------
3	0.0000	0.0000	0.0000	--------
5	5.5223	0.1000	0.4686	--------
10	9.9784	0.1000	0.5666	--------
25	11.9956	0.1000	0.5621	--------
50	14.1968	0.1000	0.5656	--------
100	15.9941	0.1000	0.5621	--------

File name: 4090-03 Intensity.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2.02	1.37	1.09	0.93	0.82	0.74	0.68	0.63	0.59	0.55	0.53	0.50
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.57	1.87	1.55	1.35	1.22	1.12	1.04	0.98	0.93	0.88	0.84	0.81
10	3.96	2.69	2.14	1.82	1.61	1.45	1.33	1.23	1.15	1.09	1.03	0.98
25	4.80	3.27	2.61	2.22	1.96	1.77	1.62	1.51	1.41	1.33	1.26	1.20
50	5.65	3.84	3.06	2.60	2.29	2.07	1.90	1.76	1.65	1.55	1.47	1.40
100	6.40	4.36	3.48	2.96	2.61	2.36	2.16	2.01	1.88	1.77	1.68	1.60

Tc = time in minutes. Values may exceed 60.

e: F:\Projects\4090\003_Support Files\Reports\Hydrology\Preliminary Hydrology\Calculation\4090-03 Precipitation.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.28	0.00	2.04	2.33	3.18	4.00	4.30
SCS 6-Hr	0.00	0.82	0.00	1.13	1.28	1.83	2.11	2.50
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

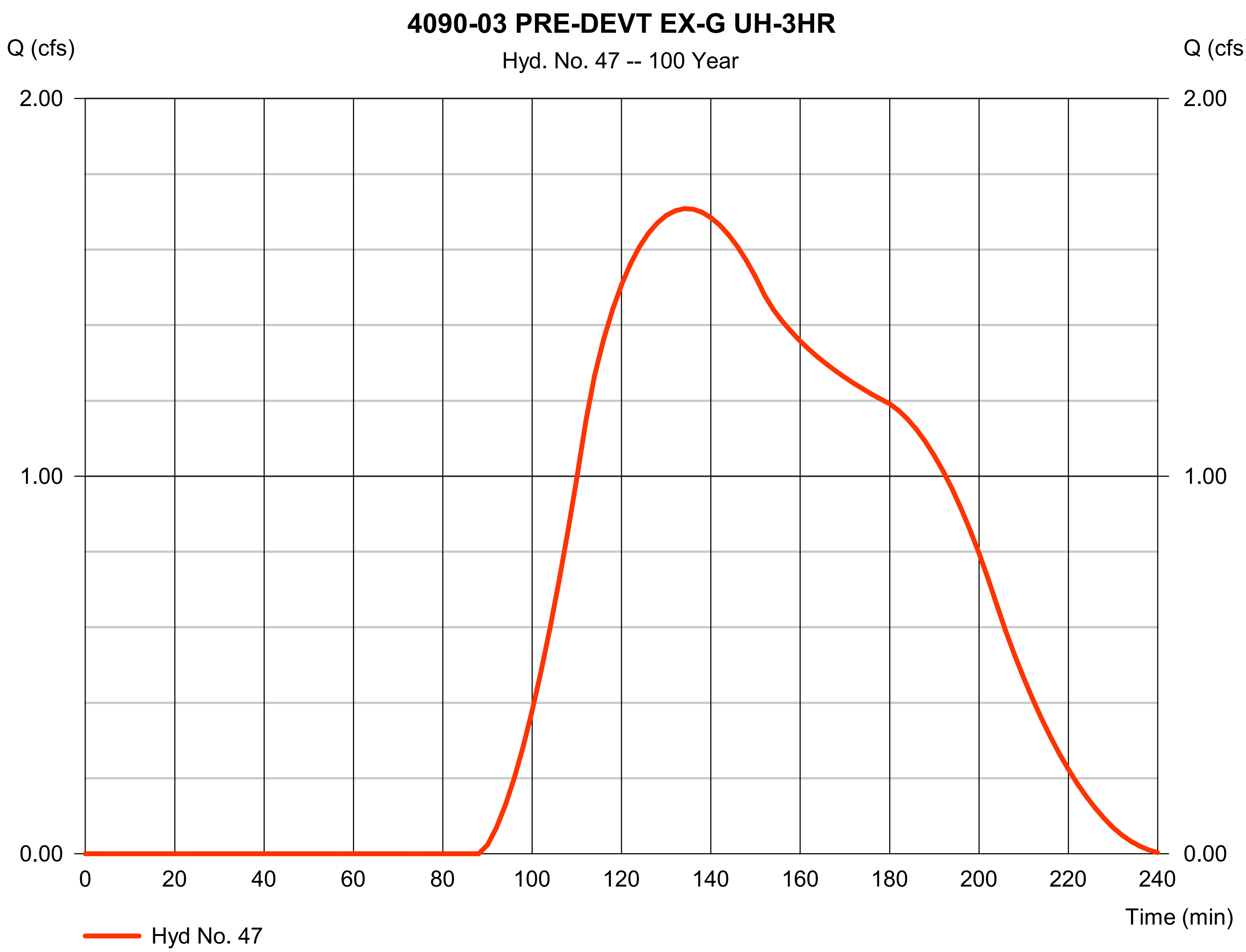
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 — Tuesday, 12 / 5 / 2023

Hyd. No. 47

4090-03 PRE-DEVT EX-G UH-3HR

Hydrograph type	= SCS Runoff	Peak discharge	= 1.708 cfs
Storm frequency	= 100 yrs	Time to peak	= 134 min
Time interval	= 2 min	Hyd. volume	= 8,545 cuft
Drainage area	= 7.090 ac	Curve number	= 65
Basin Slope	= 1.1 %	Hydraulic length	= 834 ft
Tc method	= LAG	Time of conc. (Tc)	= 40.17 min
Total precip.	= 2.59 in	Distribution	= Synthetic
Storm duration	= 3.00 hrs	Shape factor	= 484



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	5.0994	0.1000	0.5670	--------
3	0.0000	0.0000	0.0000	--------
5	5.5223	0.1000	0.4686	--------
10	9.9784	0.1000	0.5666	--------
25	11.9956	0.1000	0.5621	--------
50	14.1968	0.1000	0.5656	--------
100	15.9941	0.1000	0.5621	--------

File name: 4090-03 Intensity.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2.02	1.37	1.09	0.93	0.82	0.74	0.68	0.63	0.59	0.55	0.53	0.50
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.57	1.87	1.55	1.35	1.22	1.12	1.04	0.98	0.93	0.88	0.84	0.81
10	3.96	2.69	2.14	1.82	1.61	1.45	1.33	1.23	1.15	1.09	1.03	0.98
25	4.80	3.27	2.61	2.22	1.96	1.77	1.62	1.51	1.41	1.33	1.26	1.20
50	5.65	3.84	3.06	2.60	2.29	2.07	1.90	1.76	1.65	1.55	1.47	1.40
100	6.40	4.36	3.48	2.96	2.61	2.36	2.16	2.01	1.88	1.77	1.68	1.60

Tc = time in minutes. Values may exceed 60.

e: F:\Projects\4090\003_Support Files\Reports\Hydrology\Preliminary Hydrology\Calculation\4090-03 Precipitation.pcp

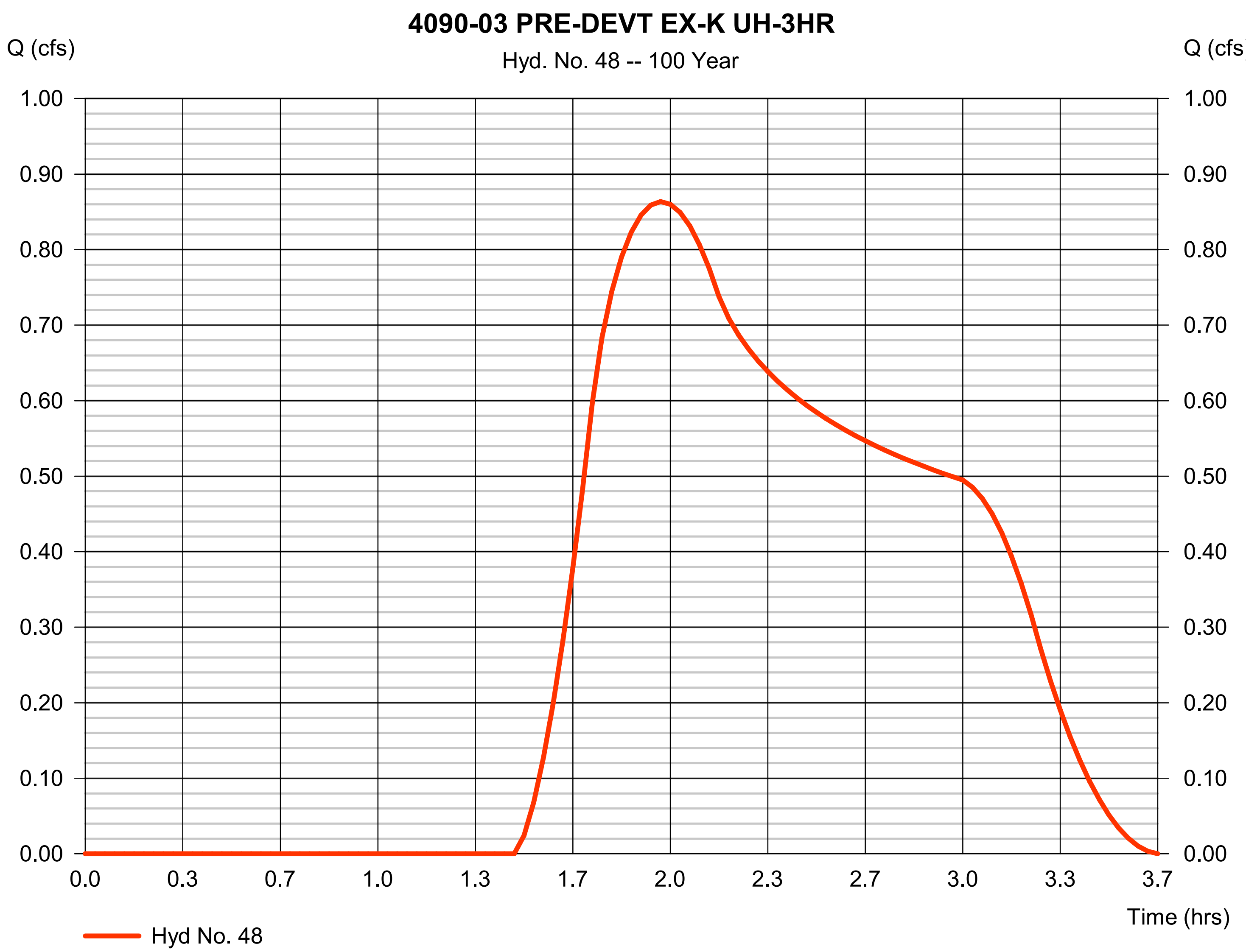
Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.28	0.00	2.04	2.33	3.18	4.00	4.30
SCS 6-Hr	0.00	0.82	0.00	1.13	1.28	1.83	2.11	2.50
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrograph Report

Hyd. No. 48

4090-03 PRE-DEVT EX-K UH-3HR

Hydrograph type	= SCS Runoff	Peak discharge	= 0.864 cfs
Storm frequency	= 100 yrs	Time to peak	= 1.97 hrs
Time interval	= 2 min	Hyd. volume	= 3,737 cuft
Drainage area	= 3.150 ac	Curve number	= 65
Basin Slope	= 1.5 %	Hydraulic length	= 588 ft
Tc method	= LAG	Time of conc. (Tc)	= 25.64 min
Total precip.	= 2.59 in	Distribution	= Synthetic
Storm duration	= 3.00 hrs	Shape factor	= 484



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	5.0994	0.1000	0.5670	--------
3	0.0000	0.0000	0.0000	--------
5	5.5223	0.1000	0.4686	--------
10	9.9784	0.1000	0.5666	--------
25	11.9956	0.1000	0.5621	--------
50	14.1968	0.1000	0.5656	--------
100	15.9941	0.1000	0.5621	--------

File name: 4090-03 Intensity.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2.02	1.37	1.09	0.93	0.82	0.74	0.68	0.63	0.59	0.55	0.53	0.50
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.57	1.87	1.55	1.35	1.22	1.12	1.04	0.98	0.93	0.88	0.84	0.81
10	3.96	2.69	2.14	1.82	1.61	1.45	1.33	1.23	1.15	1.09	1.03	0.98
25	4.80	3.27	2.61	2.22	1.96	1.77	1.62	1.51	1.41	1.33	1.26	1.20
50	5.65	3.84	3.06	2.60	2.29	2.07	1.90	1.76	1.65	1.55	1.47	1.40
100	6.40	4.36	3.48	2.96	2.61	2.36	2.16	2.01	1.88	1.77	1.68	1.60

Tc = time in minutes. Values may exceed 60.

e: F:\Projects\4090\003_Support Files\Reports\Hydrology\Preliminary Hydrology\Calculation\4090-03 Precipitation.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.28	0.00	2.04	2.33	3.18	4.00	4.30
SCS 6-Hr	0.00	0.82	0.00	1.13	1.28	1.83	2.11	2.50
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

UNIT HYDROGRAPH
100YR-24HR

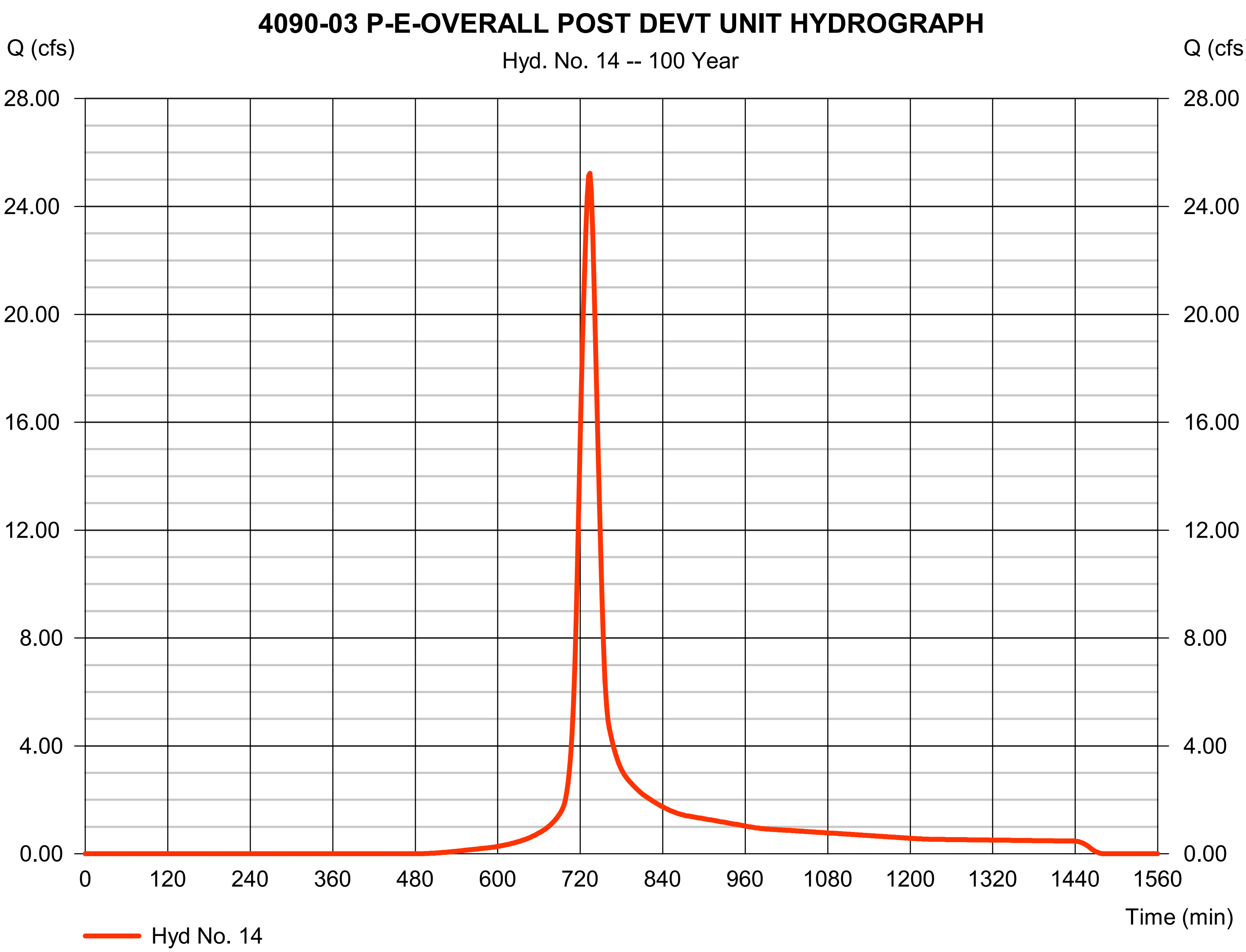
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 — Tuesday, 12 / 5 / 2023

Hyd. No. 14

4090-03 P-E-OVERALL POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 25.23 cfs
Storm frequency	= 100 yrs	Time to peak	= 734 min
Time interval	= 2 min	Hyd. volume	= 95,787 cuft
Drainage area	= 11.430 ac	Curve number	= 80
Basin Slope	= 1.6 %	Hydraulic length	= 1590 ft
Tc method	= LAG	Time of conc. (Tc)	= 35.92 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 650



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	5.0994	0.1000	0.5670	--------
3	0.0000	0.0000	0.0000	--------
5	5.5223	0.1000	0.4686	--------
10	9.9784	0.1000	0.5666	--------
25	11.9956	0.1000	0.5621	--------
50	14.1968	0.1000	0.5656	--------
100	15.9941	0.1000	0.5621	--------

File name: 4090-03 Intensity.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2.02	1.37	1.09	0.93	0.82	0.74	0.68	0.63	0.59	0.55	0.53	0.50
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.57	1.87	1.55	1.35	1.22	1.12	1.04	0.98	0.93	0.88	0.84	0.81
10	3.96	2.69	2.14	1.82	1.61	1.45	1.33	1.23	1.15	1.09	1.03	0.98
25	4.80	3.27	2.61	2.22	1.96	1.77	1.62	1.51	1.41	1.33	1.26	1.20
50	5.65	3.84	3.06	2.60	2.29	2.07	1.90	1.76	1.65	1.55	1.47	1.40
100	6.40	4.36	3.48	2.96	2.61	2.36	2.16	2.01	1.88	1.77	1.68	1.60

Tc = time in minutes. Values may exceed 60.

e: F:\Projects\4090\003_Support Files\Reports\Hydrology\Preliminary Hydrology\Calculation\4090-03 Precipitation.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.28	0.00	2.04	2.33	3.18	4.00	4.30
SCS 6-Hr	0.00	0.82	0.00	1.13	1.28	1.83	2.11	2.50
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

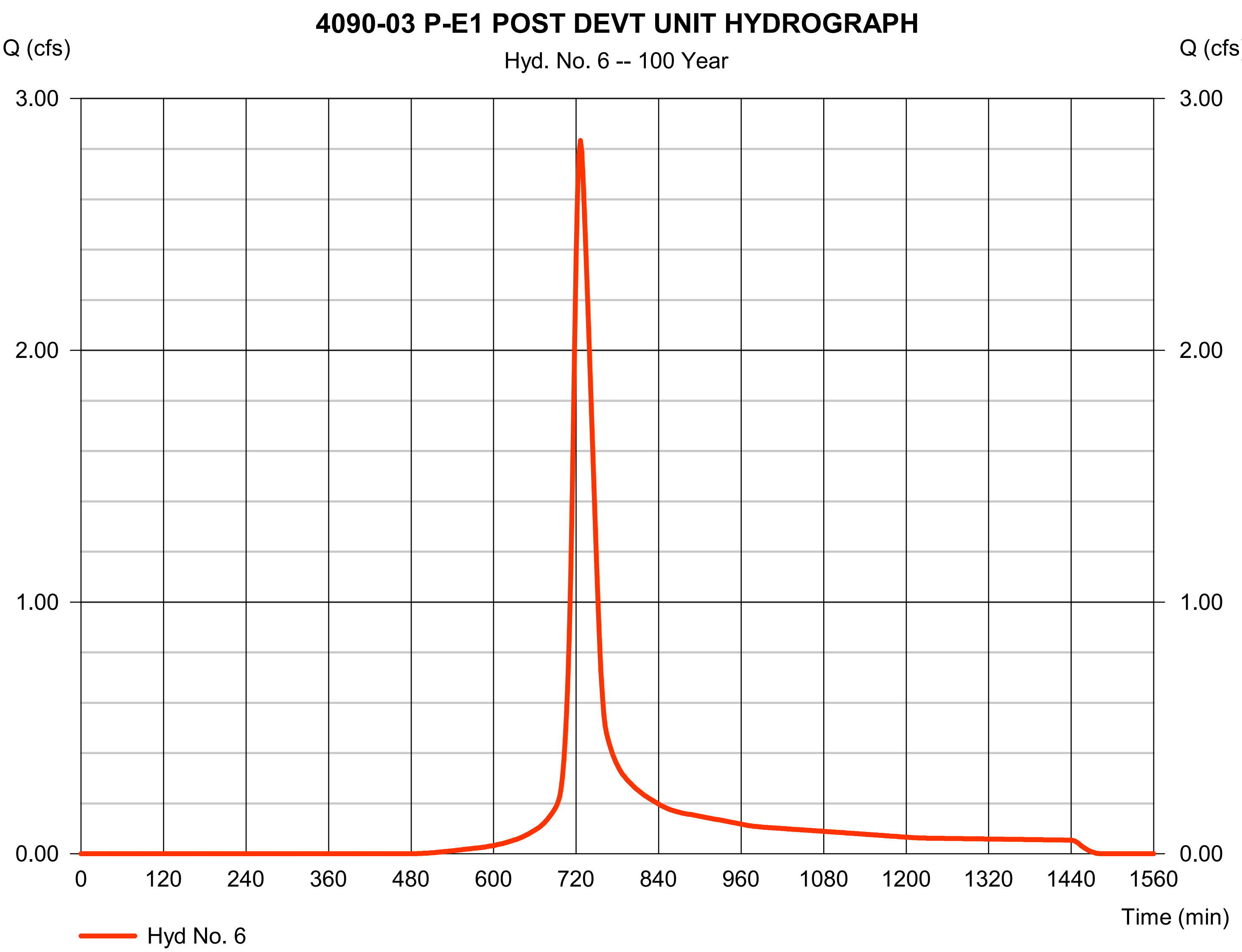
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Tuesday, 12 / 5 / 2023

Hyd. No. 6

4090-03 P-E1 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 2.834 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 11,076 cuft
Drainage area	= 1.350 ac	Curve number	= 80
Basin Slope	= 1.0 %	Hydraulic length	= 456 ft
Tc method	= LAG	Time of conc. (Tc)	= 16.90 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 332



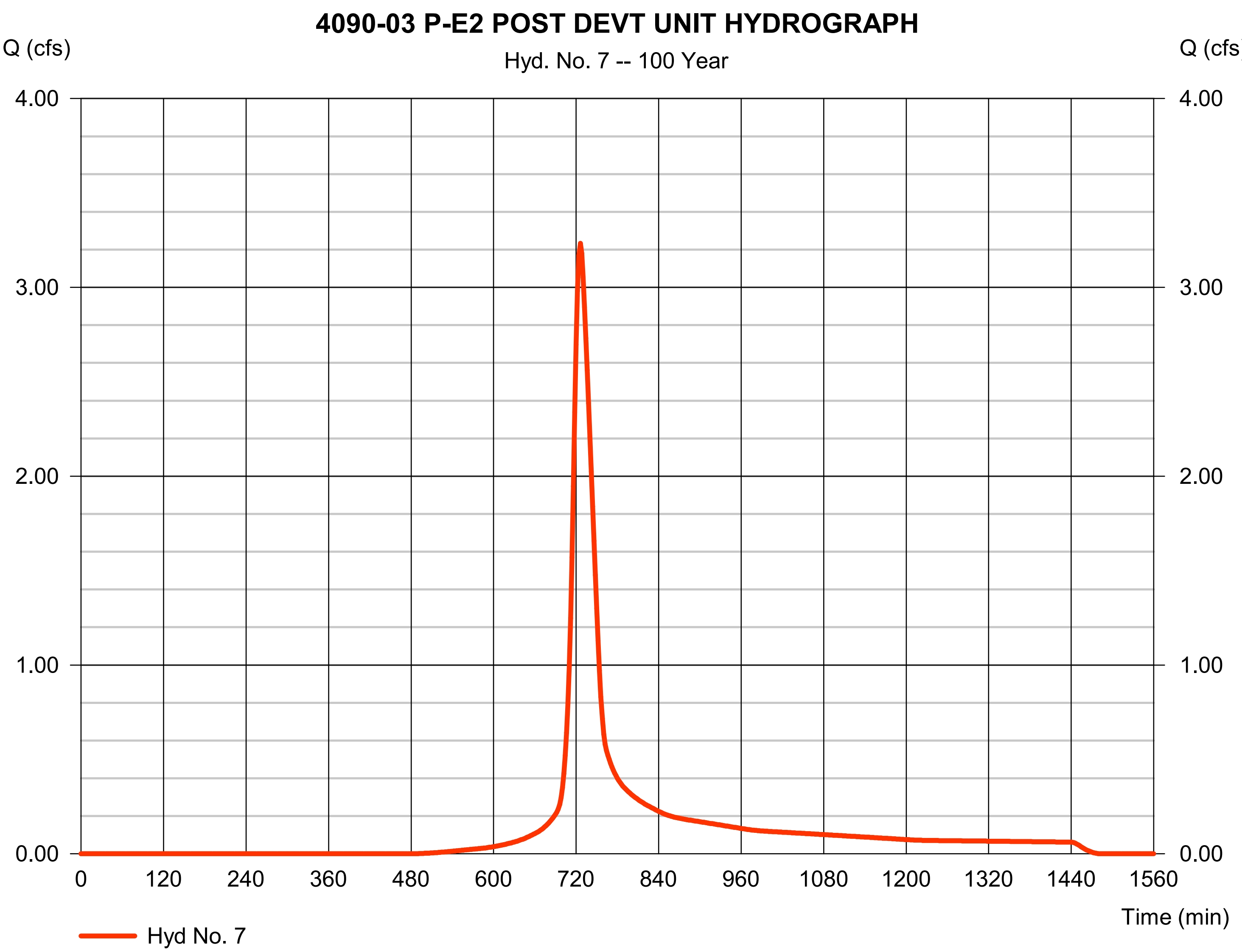
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 — Tuesday, 12 / 5 / 2023

Hyd. No. 7

4090-03 P-E2 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 3.232 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 12,634 cuft
Drainage area	= 1.540 ac	Curve number	= 80
Basin Slope	= 1.1 %	Hydraulic length	= 528 ft
Tc method	= LAG	Time of conc. (Tc)	= 17.89 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 332



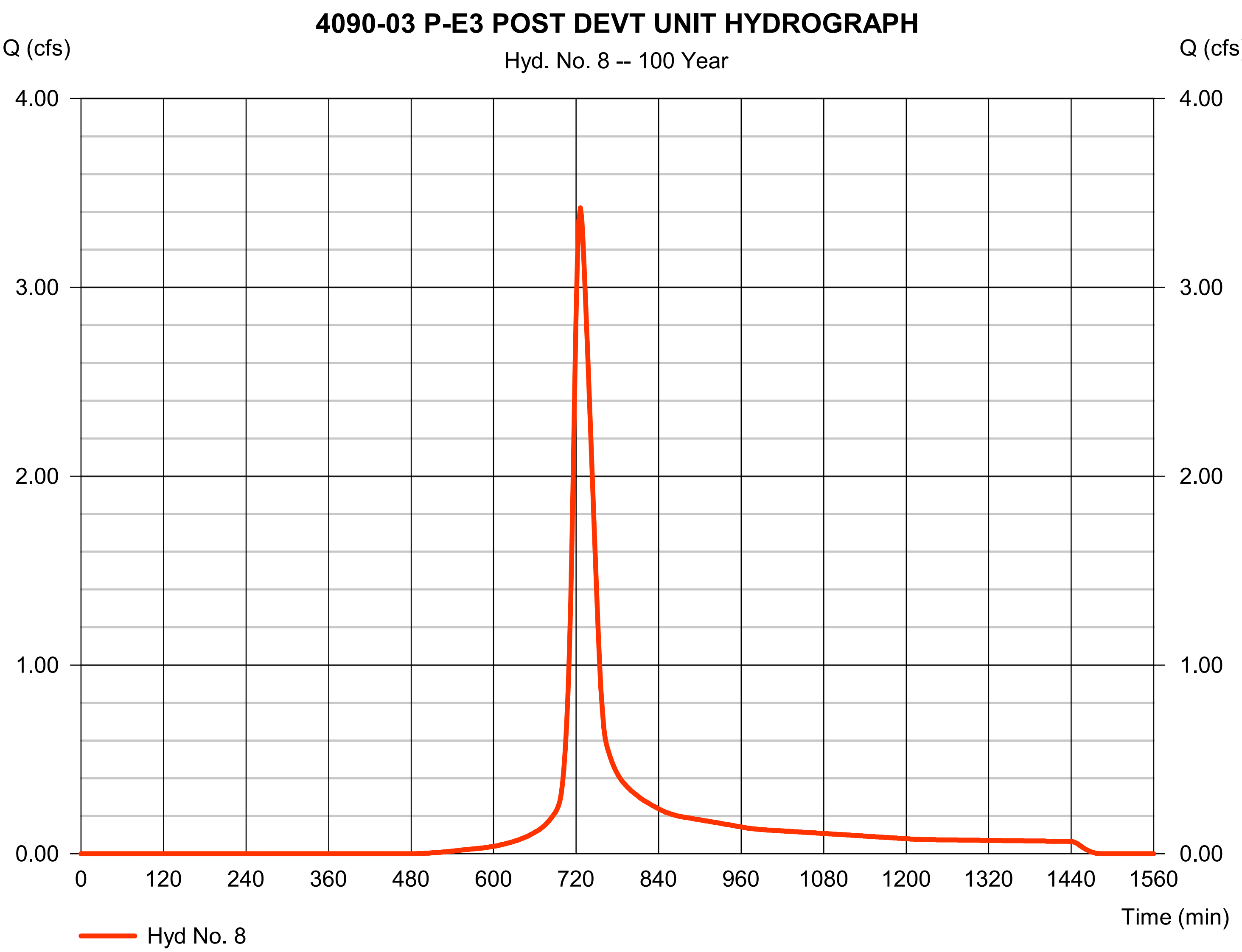
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Tuesday, 12 / 5 / 2023

Hyd. No. 8

4090-03 P-E3 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 3.421 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 13,373 cuft
Drainage area	= 1.630 ac	Curve number	= 80
Basin Slope	= 1.0 %	Hydraulic length	= 543 ft
Tc method	= LAG	Time of conc. (Tc)	= 19.63 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 332



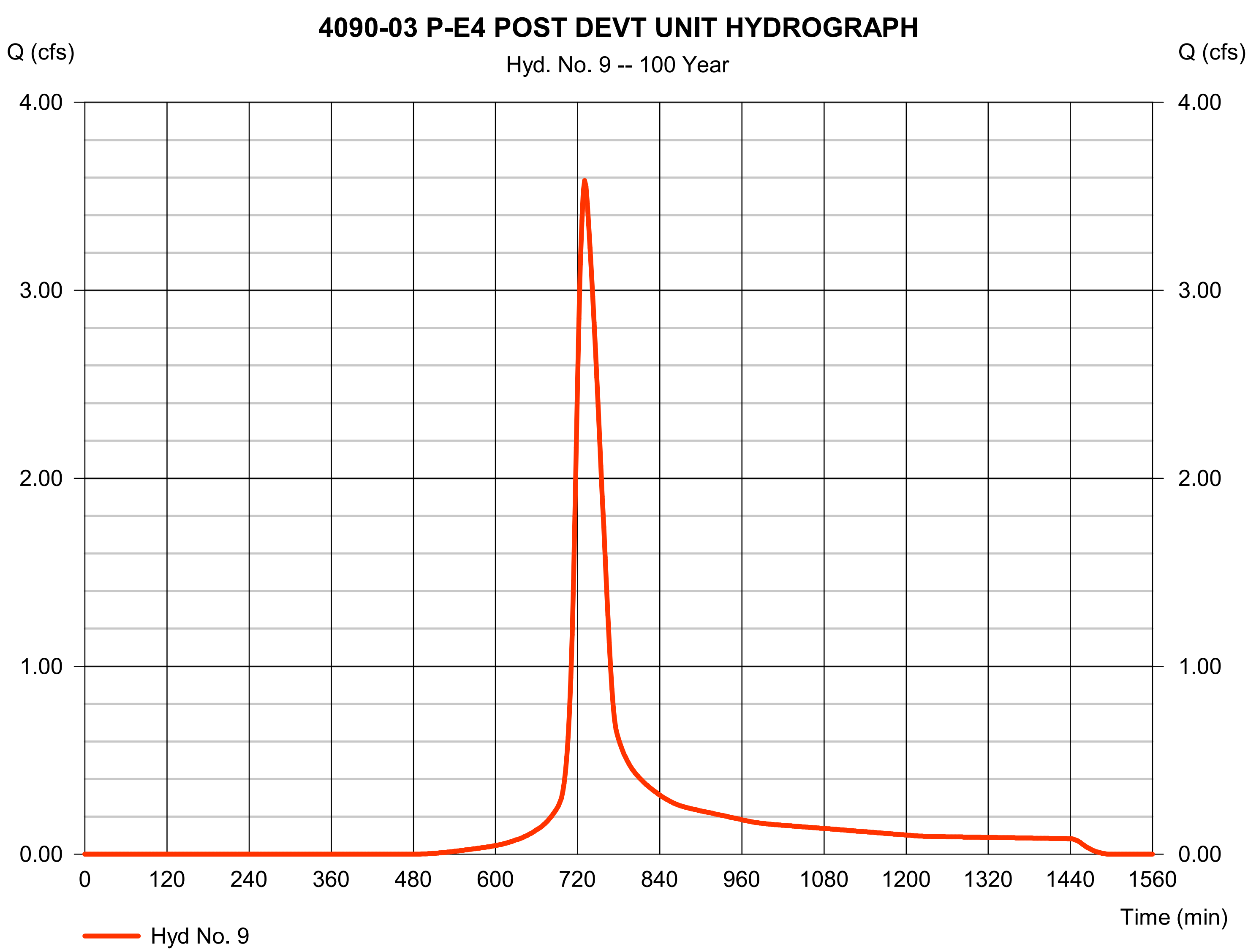
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Tuesday, 12 / 5 / 2023

Hyd. No. 9

4090-03 P-E4 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 3.585 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 16,816 cuft
Drainage area	= 2.040 ac	Curve number	= 80
Basin Slope	= 1.1 %	Hydraulic length	= 785 ft
Tc method	= LAG	Time of conc. (Tc)	= 24.90 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 341



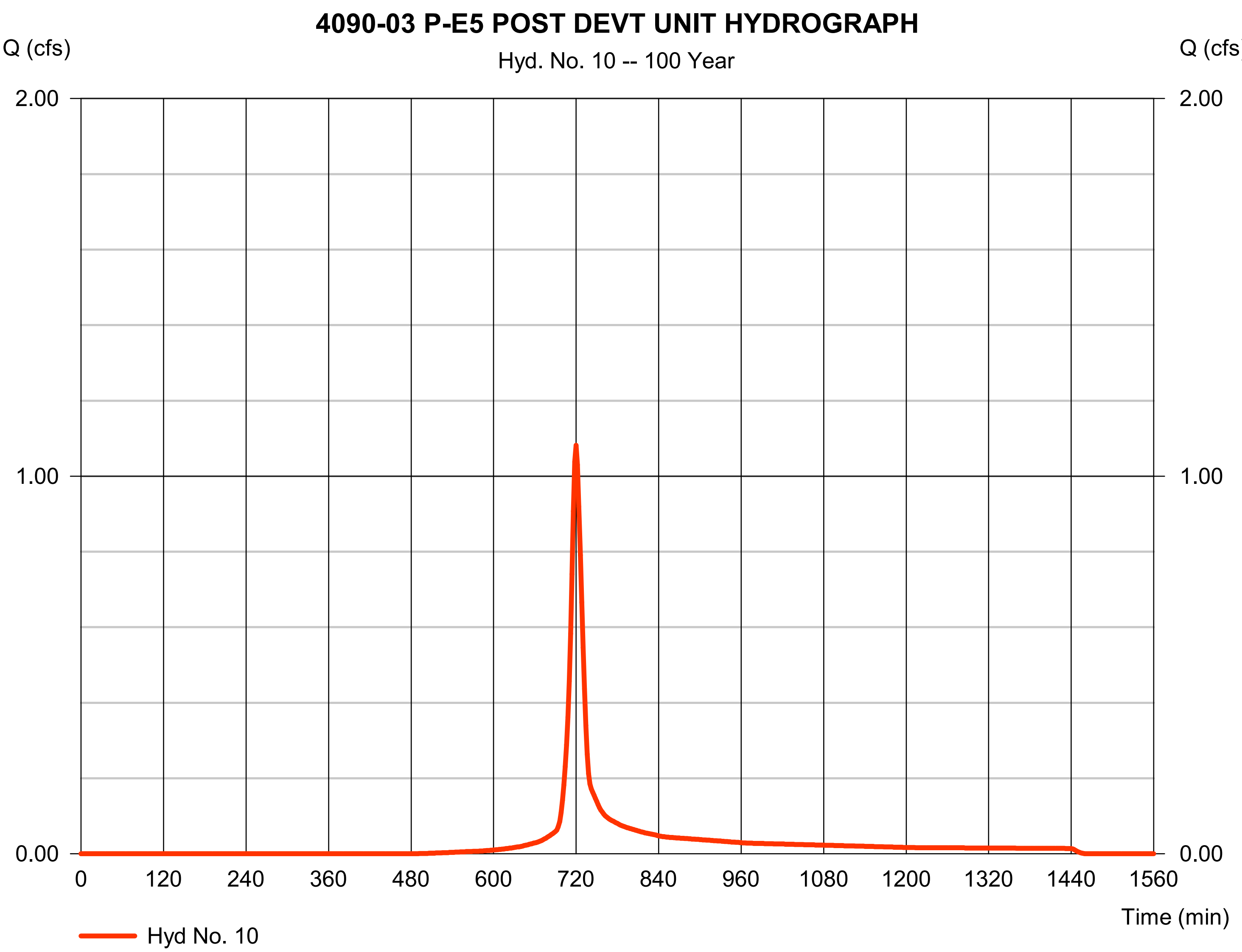
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Tuesday, 12 / 5 / 2023

Hyd. No. 10

4090-03 P-E5 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 1.082 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 2,893 cuft
Drainage area	= 0.340 ac	Curve number	= 80
Basin Slope	= 0.7 %	Hydraulic length	= 185 ft
Tc method	= LAG	Time of conc. (Tc)	= 9.87 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 330



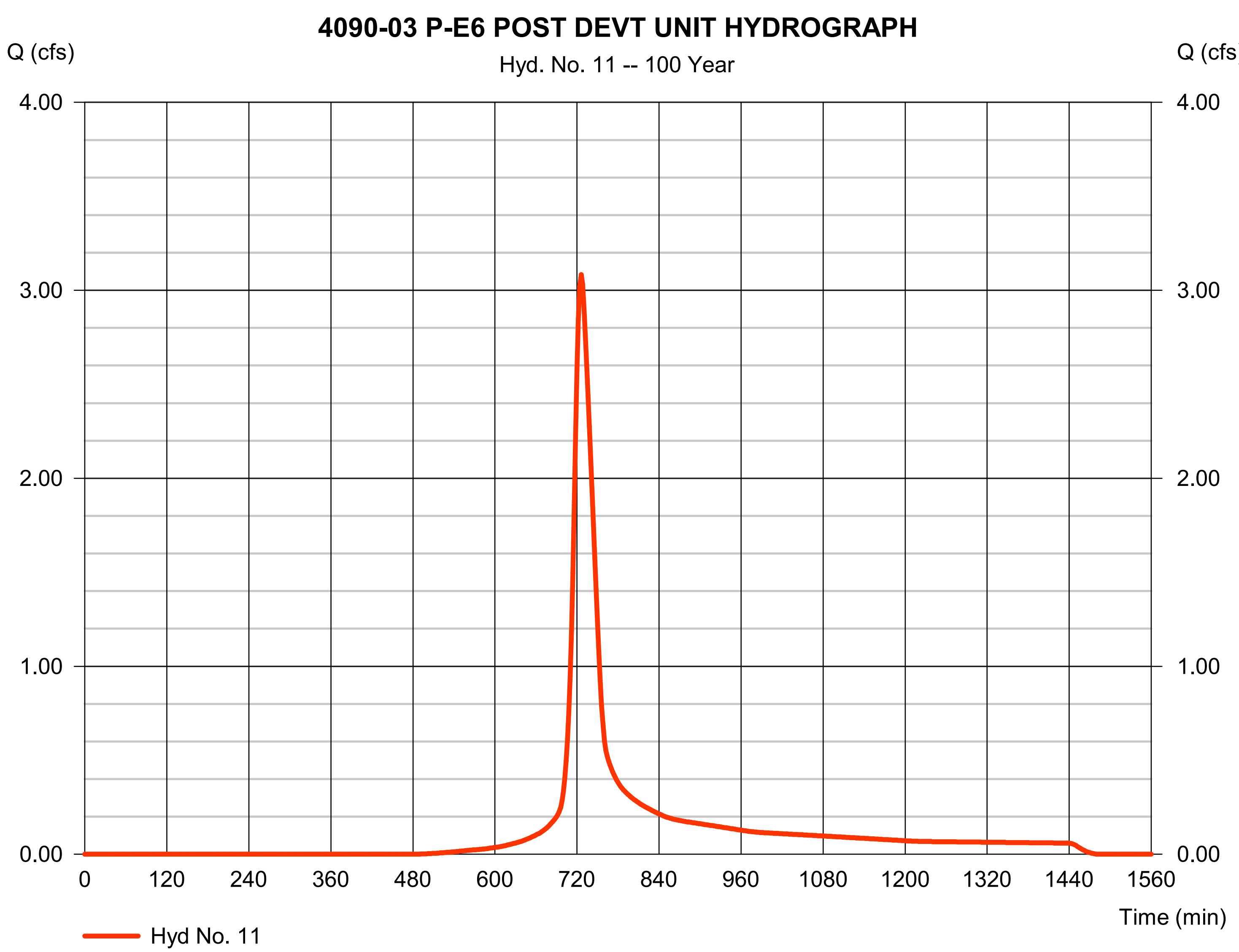
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Tuesday, 12 / 5 / 2023

Hyd. No. 11

4090-03 P-E6 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 3.083 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 12,050 cuft
Drainage area	= 1.430 ac	Curve number	= 80
Basin Slope	= 1.1 %	Hydraulic length	= 536 ft
Tc method	= LAG	Time of conc. (Tc)	= 18.60 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 341



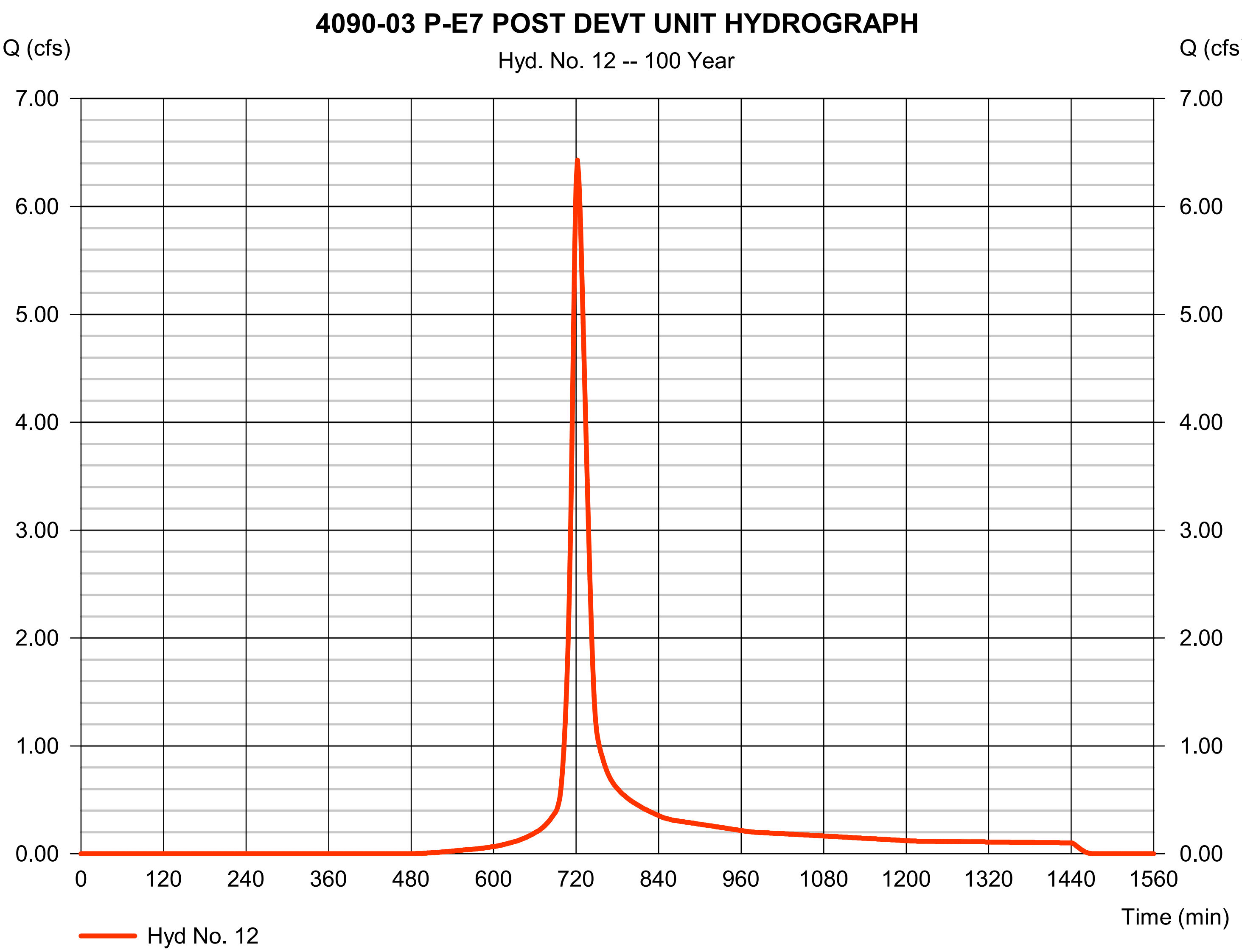
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 — Tuesday, 12 / 5 / 2023

Hyd. No. 12

4090-03 P-E7 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 6.430 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 20,753 cuft
Drainage area	= 2.500 ac	Curve number	= 80
Basin Slope	= 1.5 %	Hydraulic length	= 410 ft
Tc method	= LAG	Time of conc. (Tc)	= 12.87 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 303



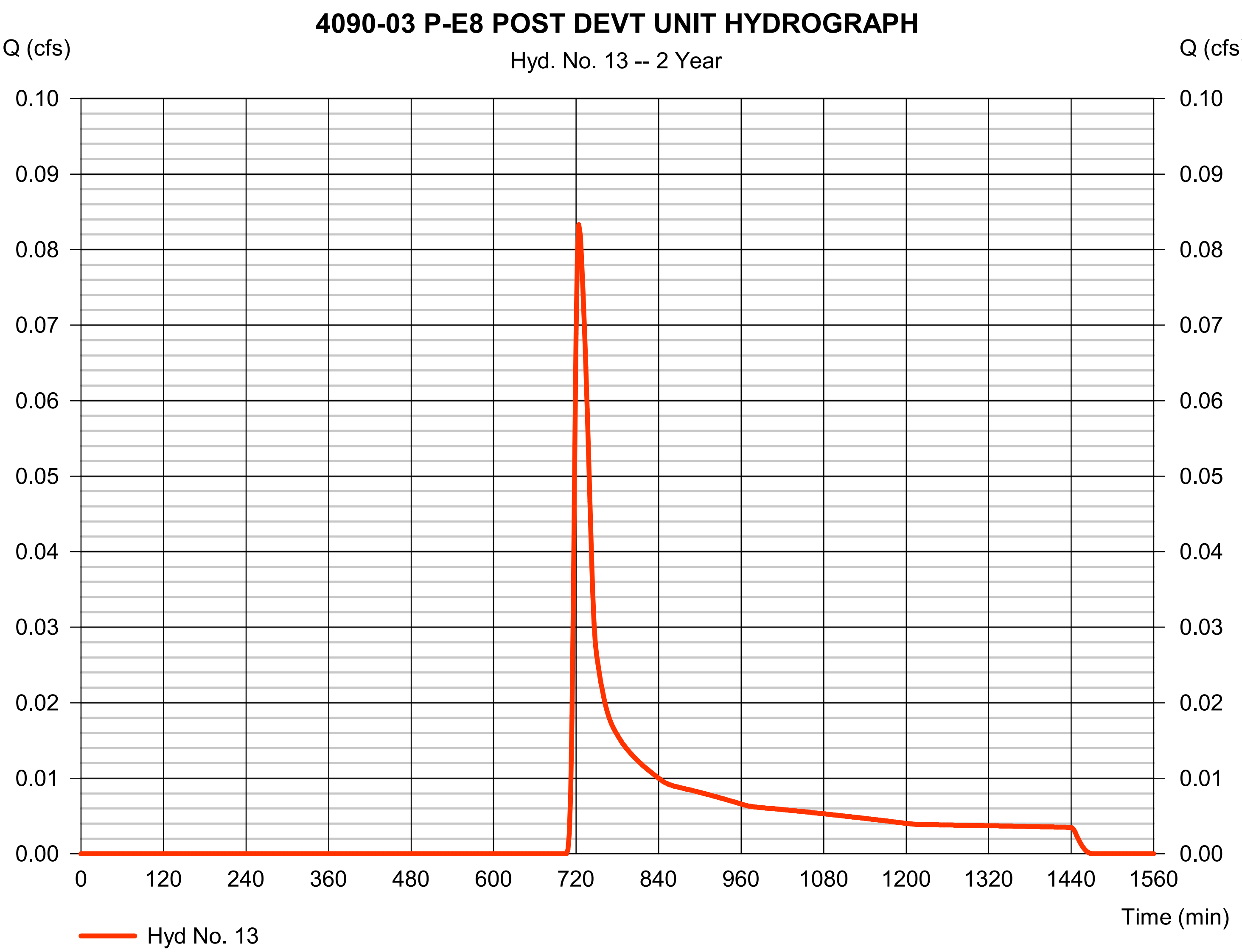
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Tuesday, 12 / 5 / 2023

Hyd. No. 13

4090-03 P-E8 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 0.083 cfs
Storm frequency	= 2 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 393 cuft
Drainage area	= 0.600 ac	Curve number	= 80
Basin Slope	= 1.1 %	Hydraulic length	= 335 ft
Tc method	= LAG	Time of conc. (Tc)	= 12.83 min
Total precip.	= 1.28 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 314



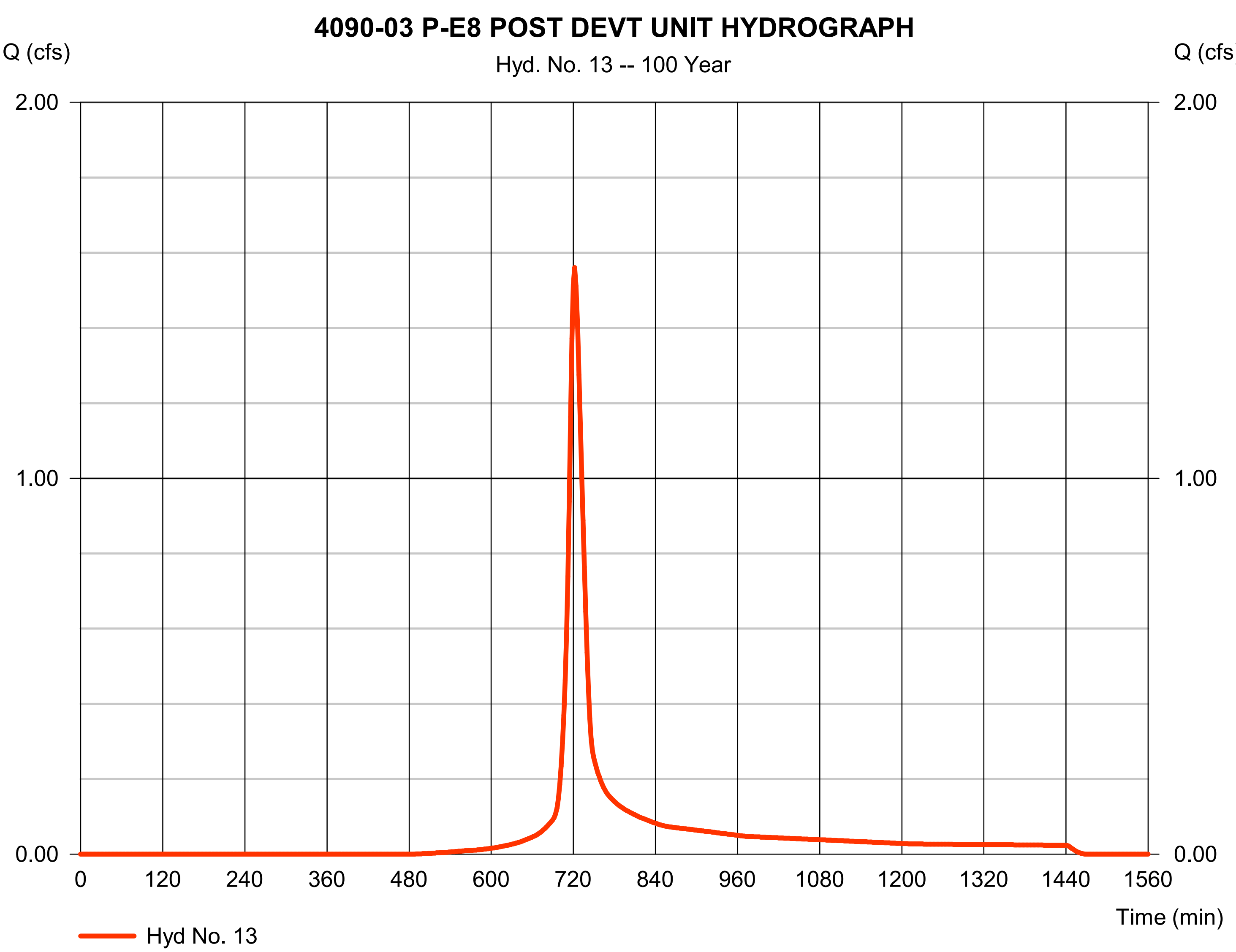
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 | Tuesday, 12 / 5 / 2023

Hyd. No. 13

4090-03 P-E8 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 1.560 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 4,858 cuft
Drainage area	= 0.600 ac	Curve number	= 80
Basin Slope	= 1.1 %	Hydraulic length	= 335 ft
Tc method	= LAG	Time of conc. (Tc)	= 12.83 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 314

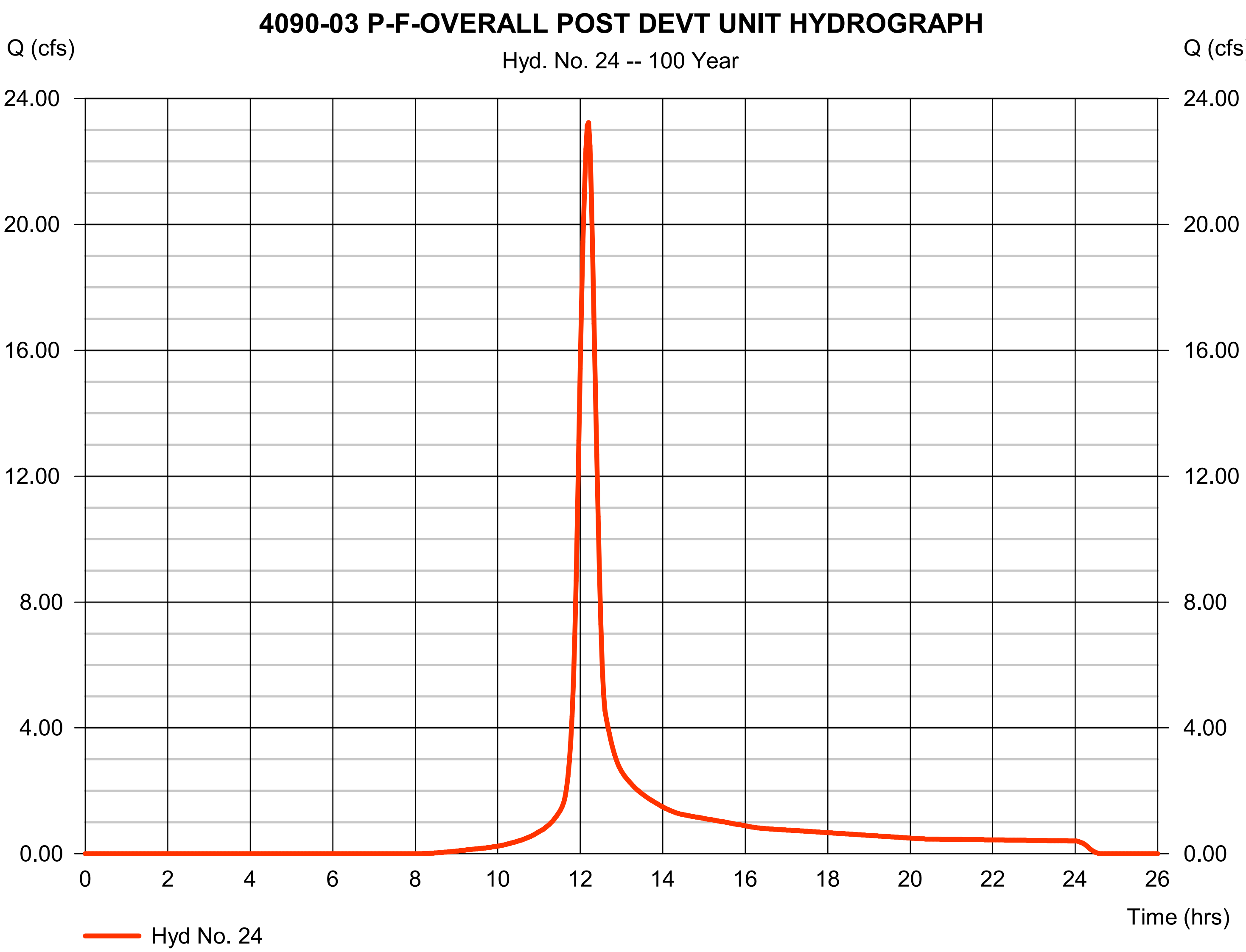


Hydrograph Report

Hyd. No. 24

4090-03 P-F-OVERALL POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 23.23 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 83,385 cuft
Drainage area	= 9.950 ac	Curve number	= 80
Basin Slope	= 1.7 %	Hydraulic length	= 1450 ft
Tc method	= LAG	Time of conc. (Tc)	= 32.87 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 650



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	5.0994	0.1000	0.5670	--------
3	0.0000	0.0000	0.0000	--------
5	5.5223	0.1000	0.4686	--------
10	9.9784	0.1000	0.5666	--------
25	11.9956	0.1000	0.5621	--------
50	14.1968	0.1000	0.5656	--------
100	15.9941	0.1000	0.5621	--------

File name: 4090-03 Intensity.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2.02	1.37	1.09	0.93	0.82	0.74	0.68	0.63	0.59	0.55	0.53	0.50
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.57	1.87	1.55	1.35	1.22	1.12	1.04	0.98	0.93	0.88	0.84	0.81
10	3.96	2.69	2.14	1.82	1.61	1.45	1.33	1.23	1.15	1.09	1.03	0.98
25	4.80	3.27	2.61	2.22	1.96	1.77	1.62	1.51	1.41	1.33	1.26	1.20
50	5.65	3.84	3.06	2.60	2.29	2.07	1.90	1.76	1.65	1.55	1.47	1.40
100	6.40	4.36	3.48	2.96	2.61	2.36	2.16	2.01	1.88	1.77	1.68	1.60

Tc = time in minutes. Values may exceed 60.

e: F:\Projects\4090\003_Support Files\Reports\Hydrology\Preliminary Hydrology\Calculation\4090-03 Precipitation.pcp

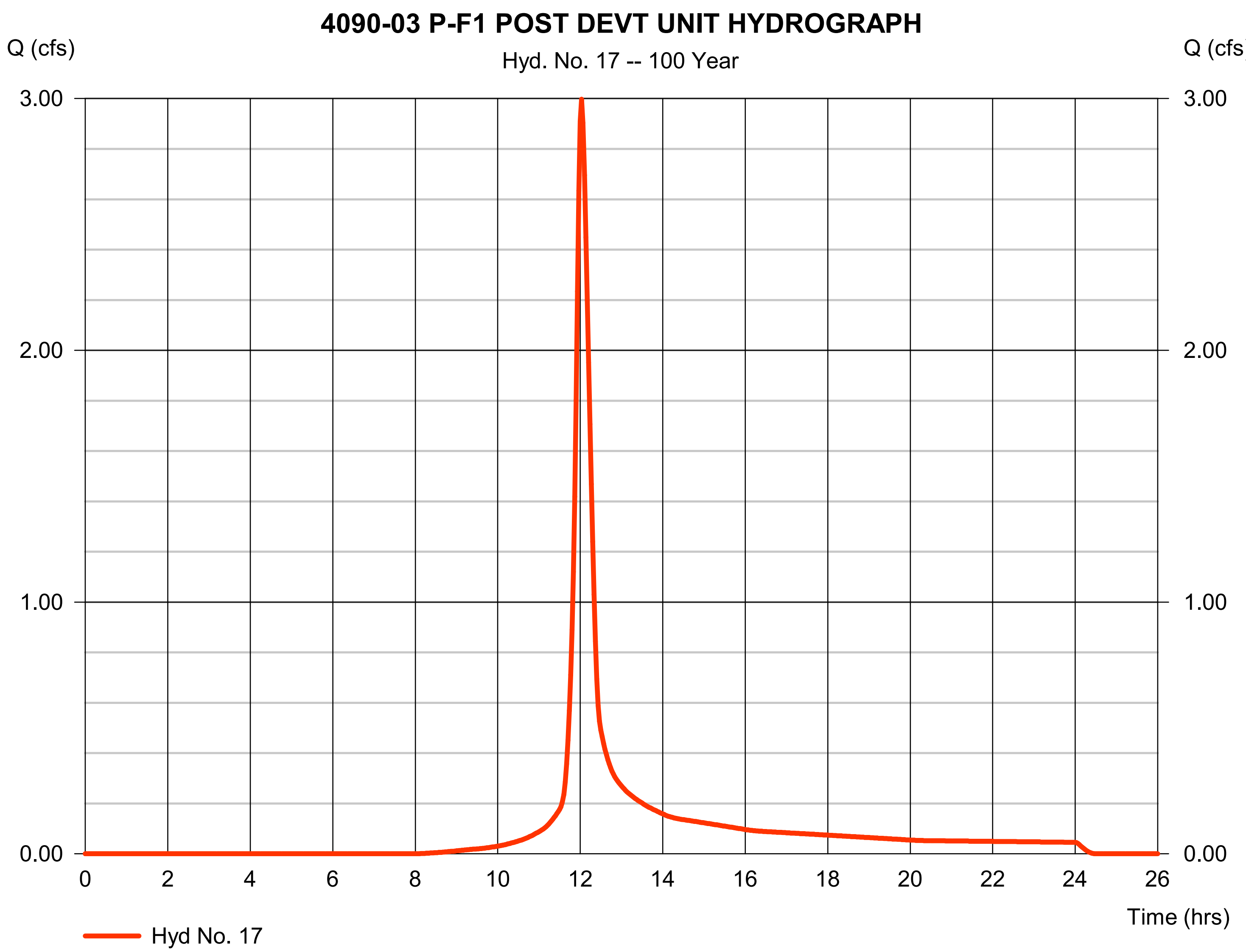
Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.28	0.00	2.04	2.33	3.18	4.00	4.30
SCS 6-Hr	0.00	0.82	0.00	1.13	1.28	1.83	2.11	2.50
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrograph Report

Hyd. No. 17

4090-03 P-F1 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 2.997 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 9,331 cuft
Drainage area	= 1.090 ac	Curve number	= 80
Basin Slope	= 1.2 %	Hydraulic length	= 342 ft
Tc method	= LAG	Time of conc. (Tc)	= 12.17 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 332

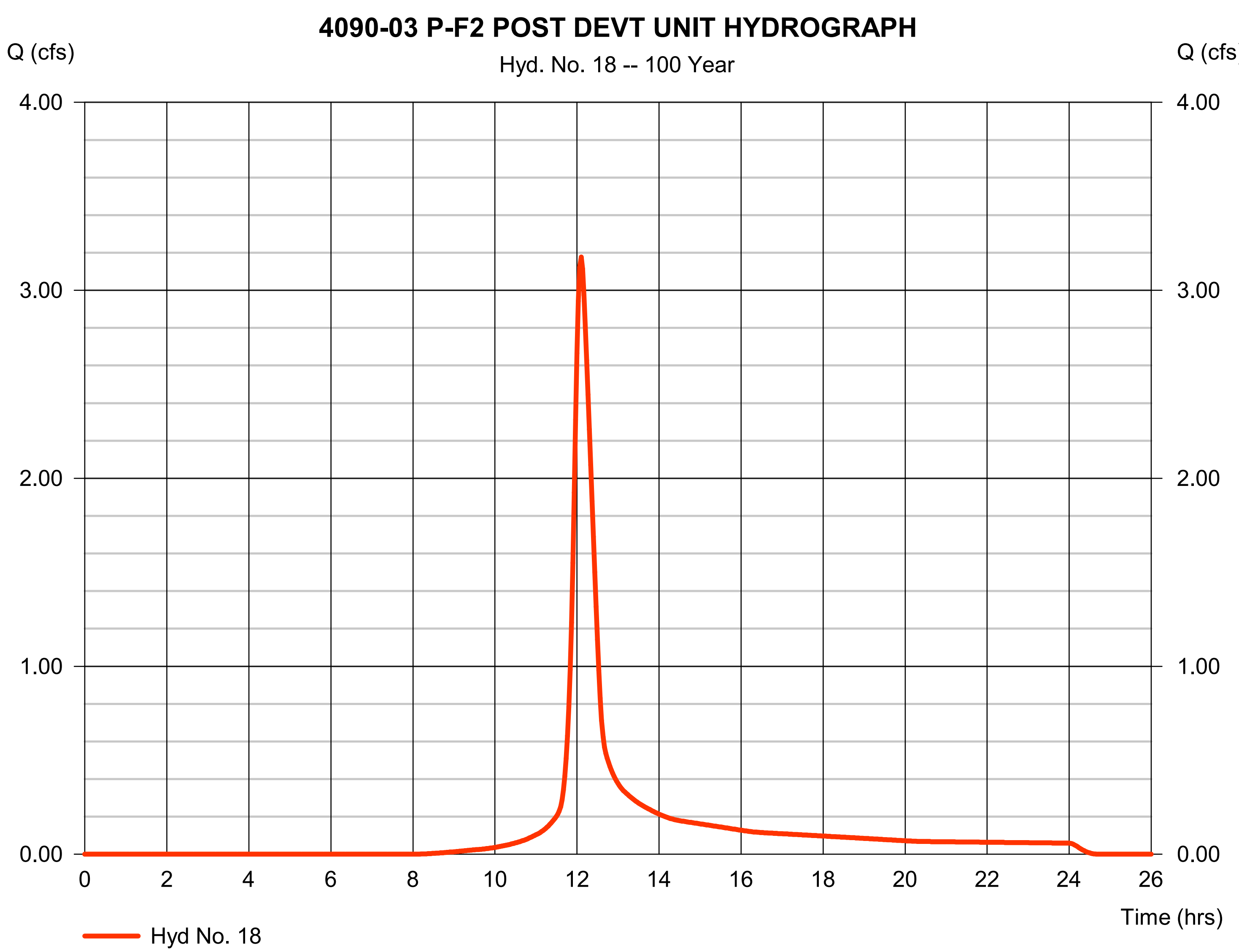


Hydrograph Report

Hyd. No. 18

4090-03 P-F2 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 3.177 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 12,049 cuft
Drainage area	= 1.440 ac	Curve number	= 80
Basin Slope	= 1.0 %	Hydraulic length	= 490 ft
Tc method	= LAG	Time of conc. (Tc)	= 17.99 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 354

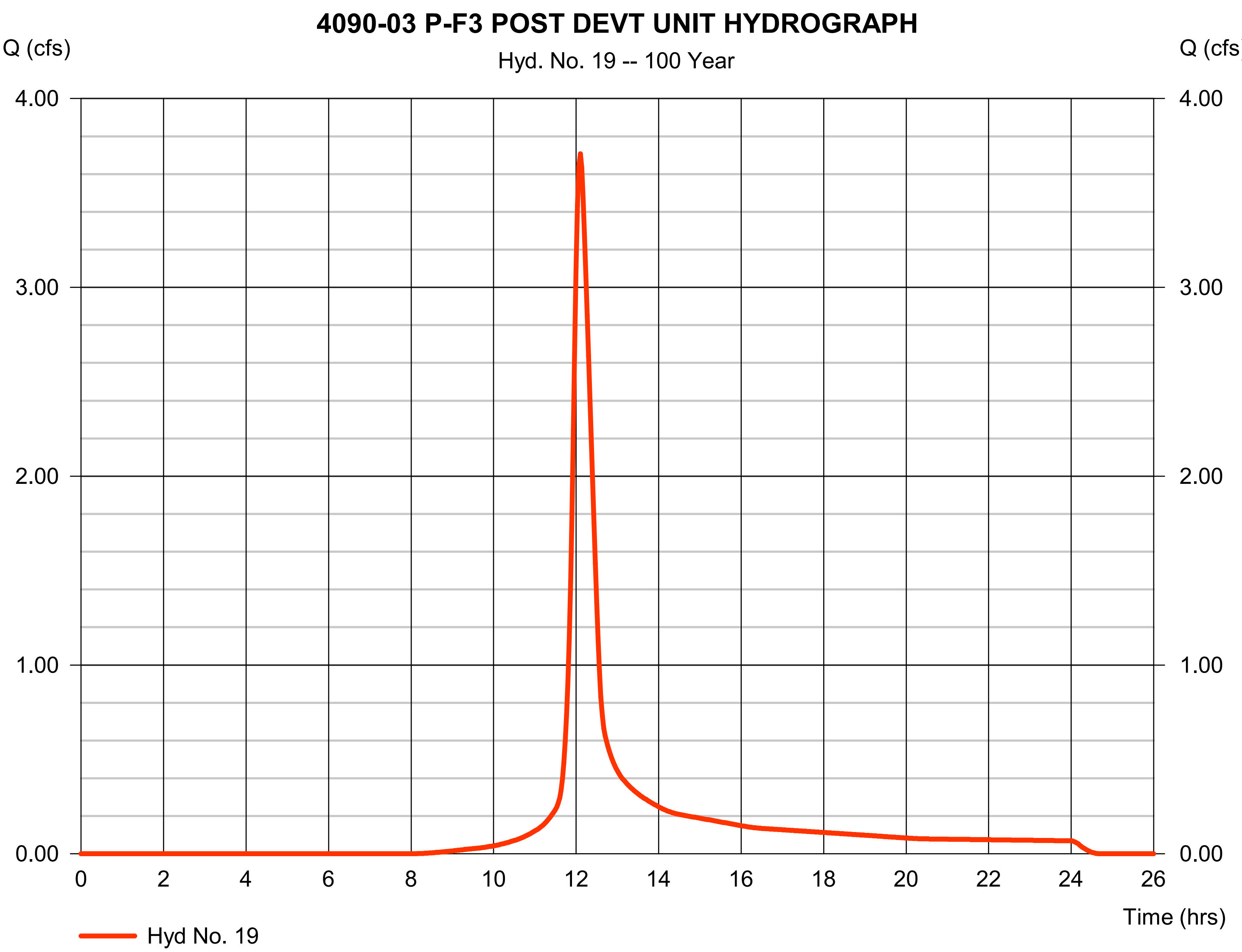


Hydrograph Report

Hyd. No. 19

4090-03 P-F3 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 3.707 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 14,057 cuft
Drainage area	= 1.680 ac	Curve number	= 80
Basin Slope	= 1.2 %	Hydraulic length	= 509 ft
Tc method	= LAG	Time of conc. (Tc)	= 17.22 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 354



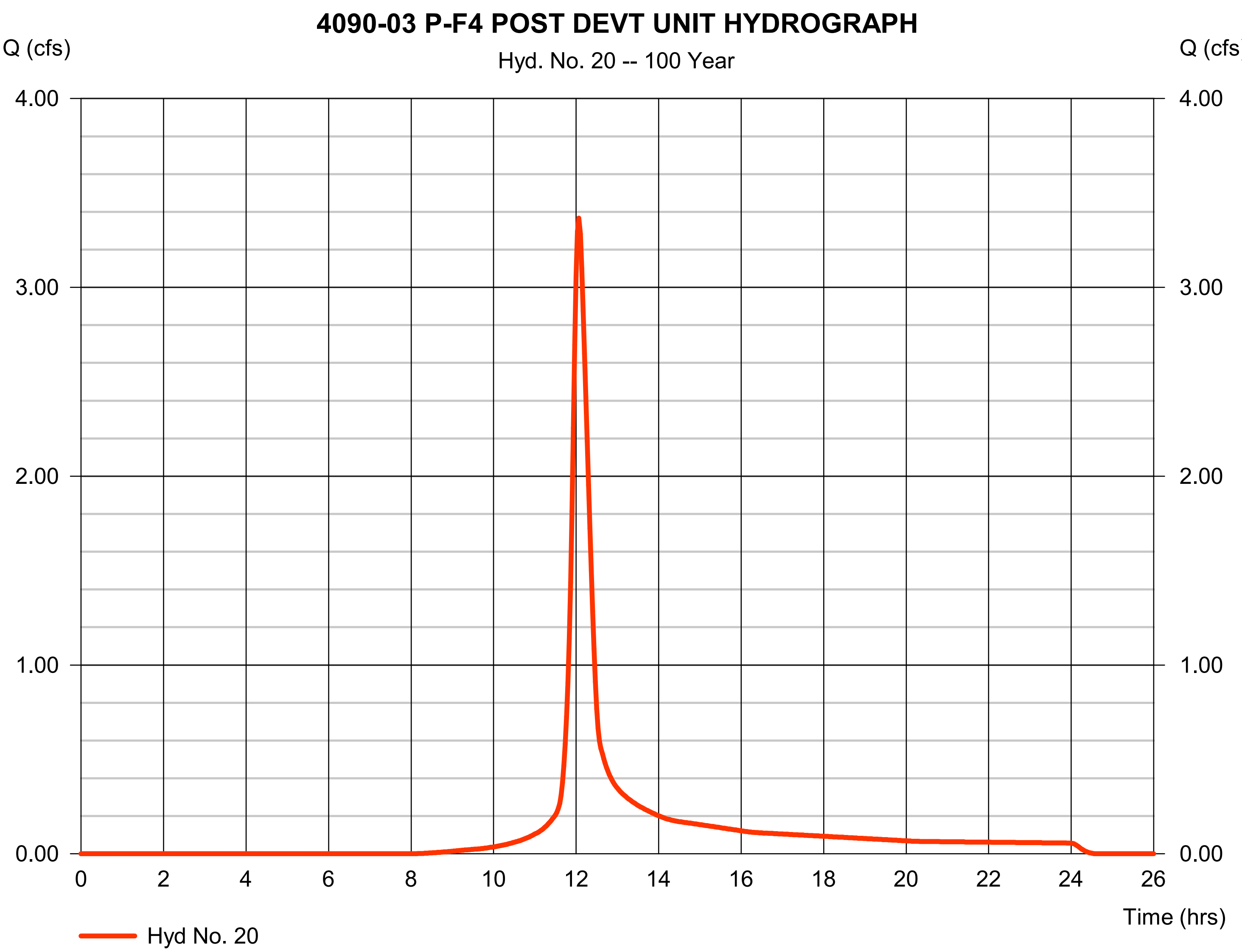
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 — Tuesday, 12 / 5 / 2023

Hyd. No. 20

4090-03 P-F4 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 3.367 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 11,626 cuft
Drainage area	= 1.400 ac	Curve number	= 80
Basin Slope	= 1.3 %	Hydraulic length	= 470 ft
Tc method	= LAG	Time of conc. (Tc)	= 15.03 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 339

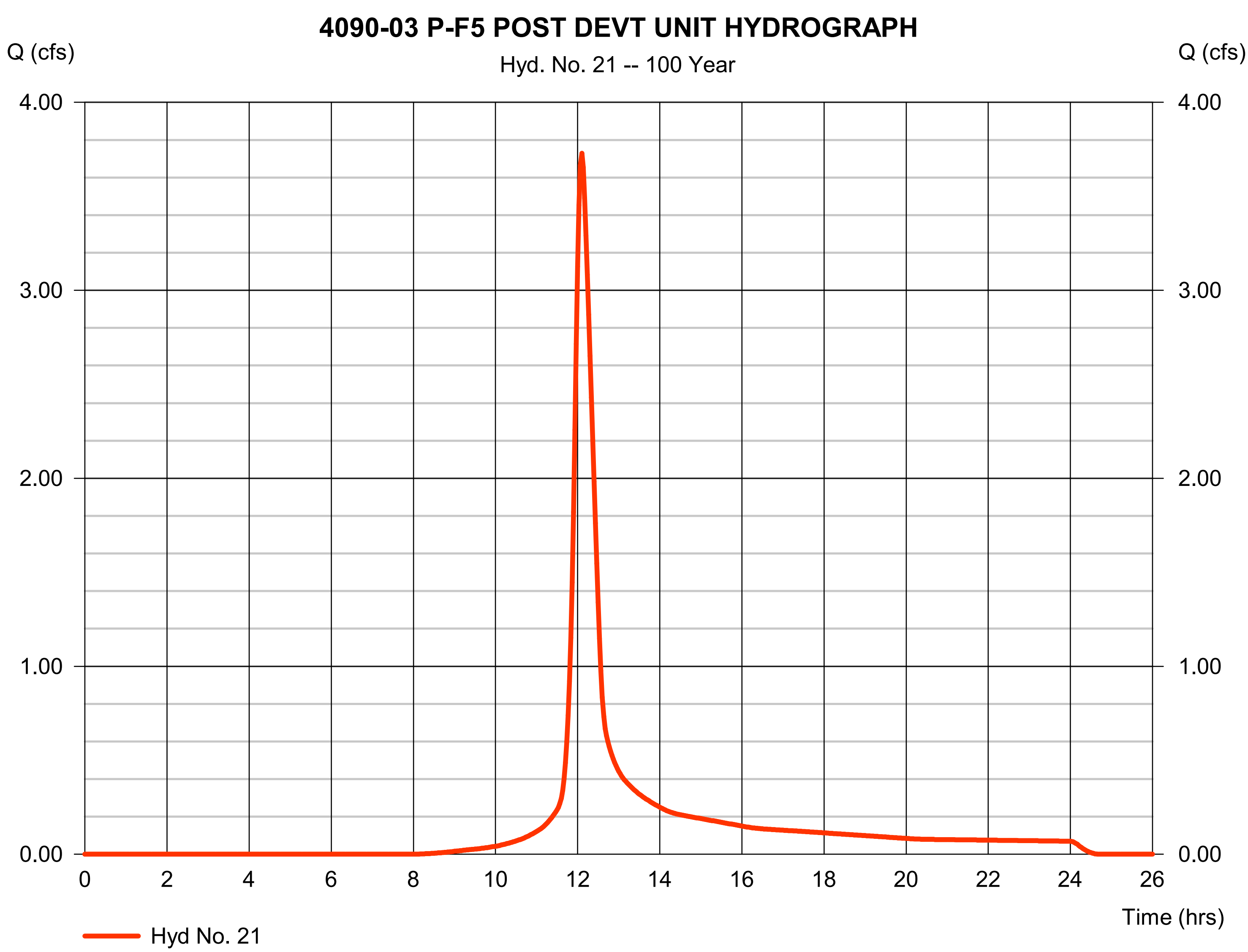


Hydrograph Report

Hyd. No. 21

4090-03 P-F5 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 3.729 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 14,141 cuft
Drainage area	= 1.690 ac	Curve number	= 80
Basin Slope	= 1.1 %	Hydraulic length	= 522 ft
Tc method	= LAG	Time of conc. (Tc)	= 17.97 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 354

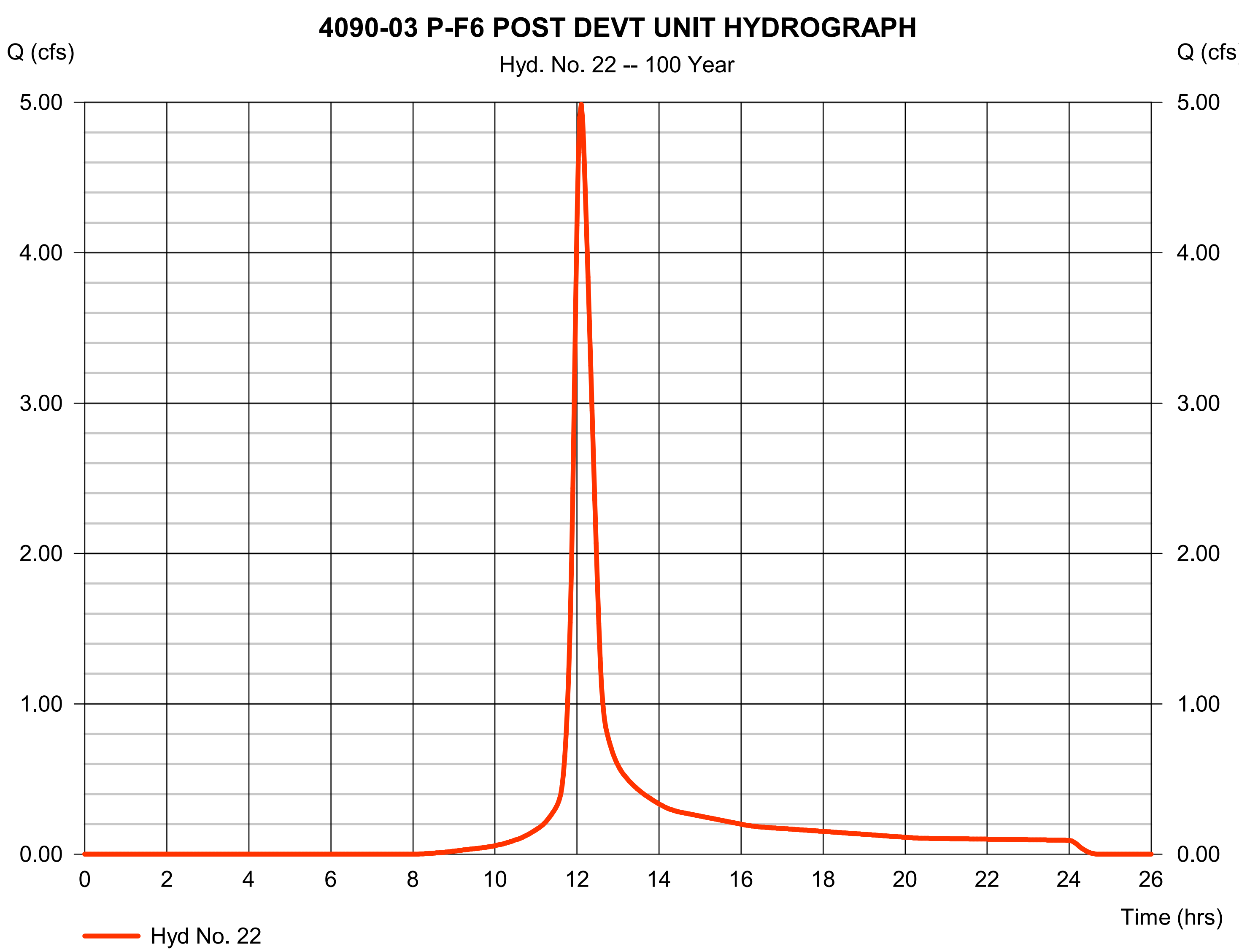


Hydrograph Report

Hyd. No. 22

4090-03 P-F6 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 4.986 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 18,910 cuft
Drainage area	= 2.260 ac	Curve number	= 80
Basin Slope	= 1.0 %	Hydraulic length	= 550 ft
Tc method	= LAG	Time of conc. (Tc)	= 19.54 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 354

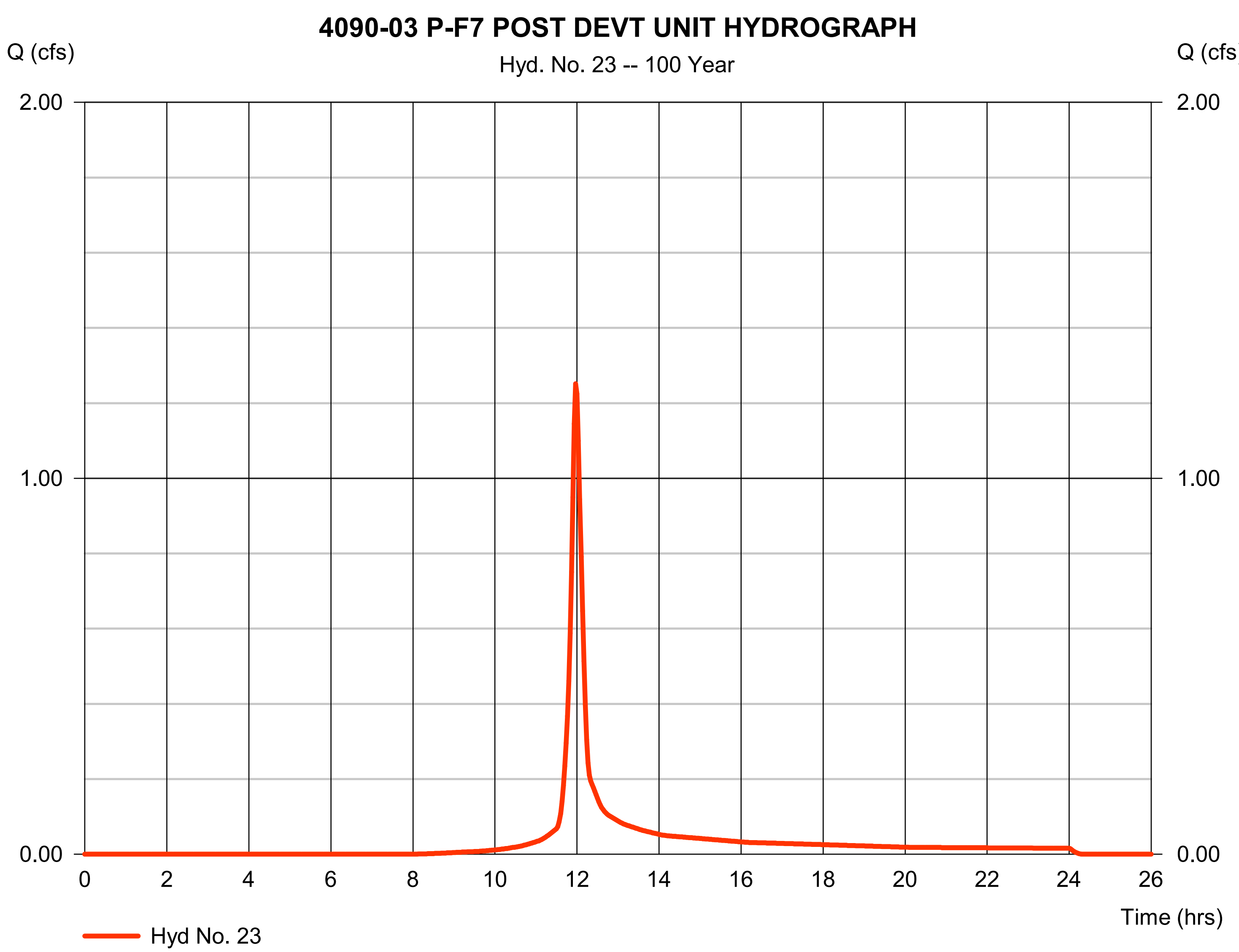


Hydrograph Report

Hyd. No. 23

4090-03 P-F7 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 1.252 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 3,236 cuft
Drainage area	= 0.390 ac	Curve number	= 80
Basin Slope	= 1.6 %	Hydraulic length	= 159 ft
Tc method	= LAG	Time of conc. (Tc)	= 5.71 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 234

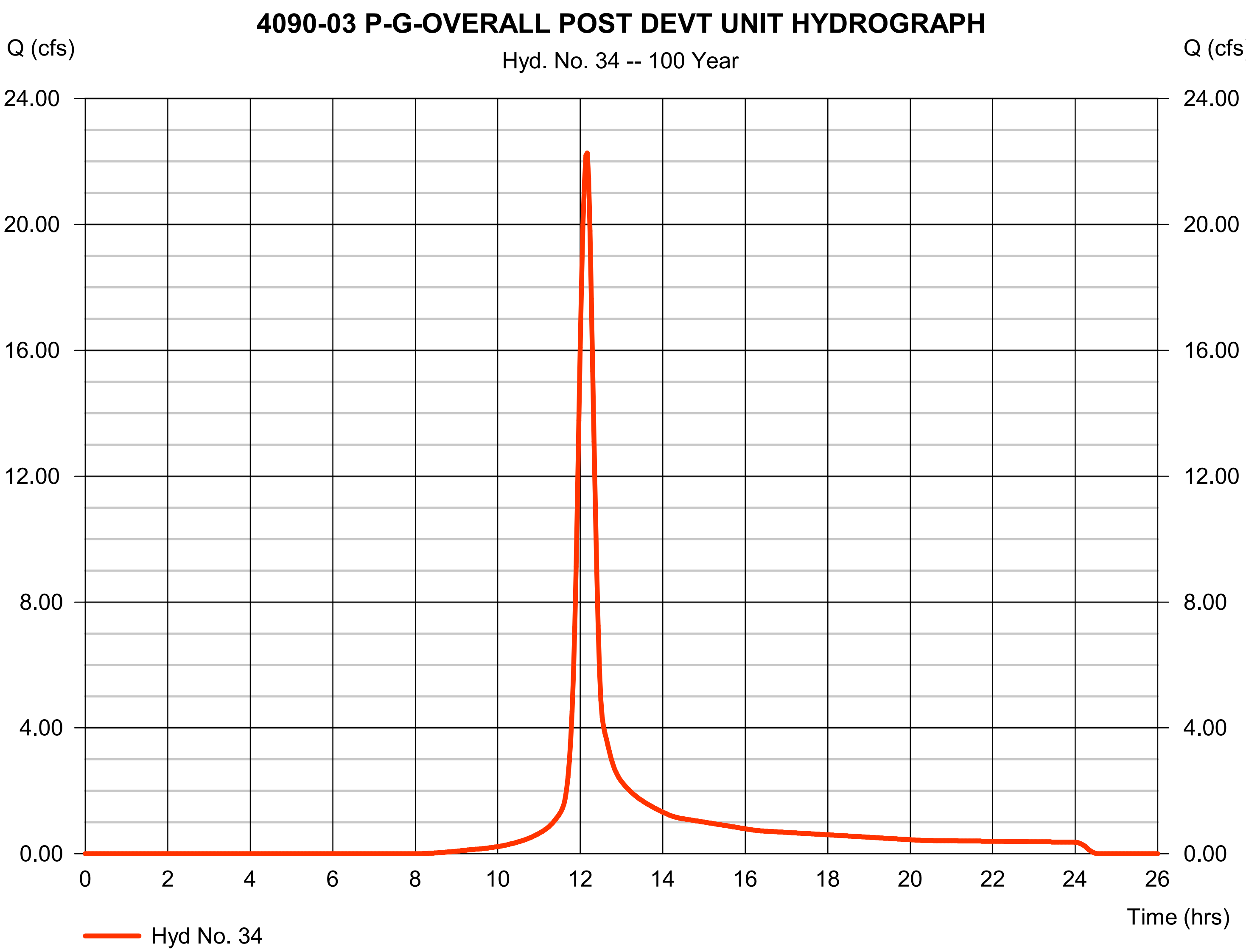


Hydrograph Report

Hyd. No. 34

4090-03 P-G-OVERALL POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 22.27 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 75,256 cuft
Drainage area	= 8.980 ac	Curve number	= 80
Basin Slope	= 1.7 %	Hydraulic length	= 1200 ft
Tc method	= LAG	Time of conc. (Tc)	= 28.25 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 650



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	5.0994	0.1000	0.5670	--------
3	0.0000	0.0000	0.0000	--------
5	5.5223	0.1000	0.4686	--------
10	9.9784	0.1000	0.5666	--------
25	11.9956	0.1000	0.5621	--------
50	14.1968	0.1000	0.5656	--------
100	15.9941	0.1000	0.5621	--------

File name: 4090-03 Intensity.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2.02	1.37	1.09	0.93	0.82	0.74	0.68	0.63	0.59	0.55	0.53	0.50
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.57	1.87	1.55	1.35	1.22	1.12	1.04	0.98	0.93	0.88	0.84	0.81
10	3.96	2.69	2.14	1.82	1.61	1.45	1.33	1.23	1.15	1.09	1.03	0.98
25	4.80	3.27	2.61	2.22	1.96	1.77	1.62	1.51	1.41	1.33	1.26	1.20
50	5.65	3.84	3.06	2.60	2.29	2.07	1.90	1.76	1.65	1.55	1.47	1.40
100	6.40	4.36	3.48	2.96	2.61	2.36	2.16	2.01	1.88	1.77	1.68	1.60

Tc = time in minutes. Values may exceed 60.

e: F:\Projects\4090\003_Support Files\Reports\Hydrology\Preliminary Hydrology\Calculation\4090-03 Precipitation.pcp

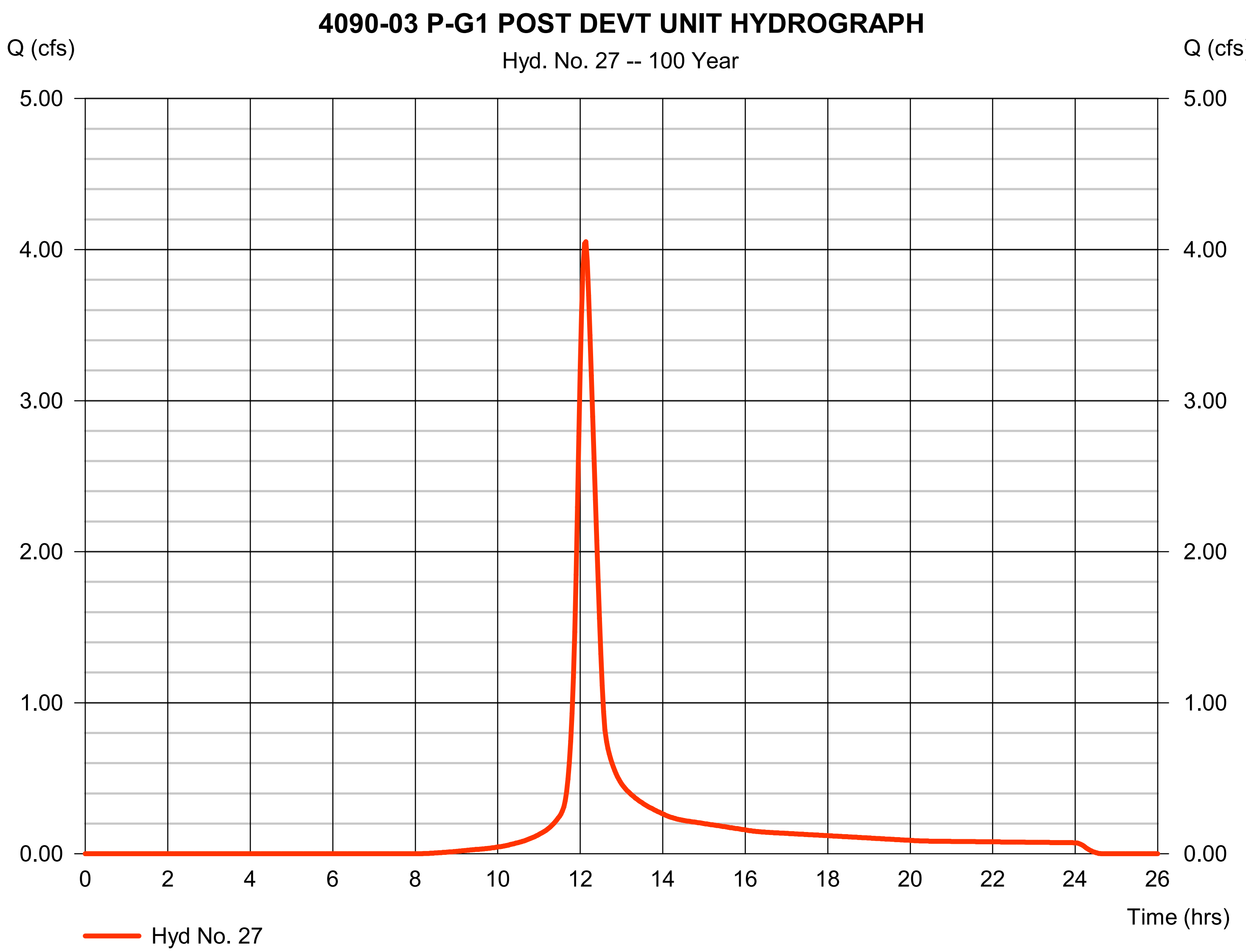
Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.28	0.00	2.04	2.33	3.18	4.00	4.30
SCS 6-Hr	0.00	0.82	0.00	1.13	1.28	1.83	2.11	2.50
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrograph Report

Hyd. No. 27

4090-03 P-G1 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 4.052 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 14,925 cuft
Drainage area	= 1.770 ac	Curve number	= 80
Basin Slope	= 0.9 %	Hydraulic length	= 586 ft
Tc method	= LAG	Time of conc. (Tc)	= 21.65 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 436

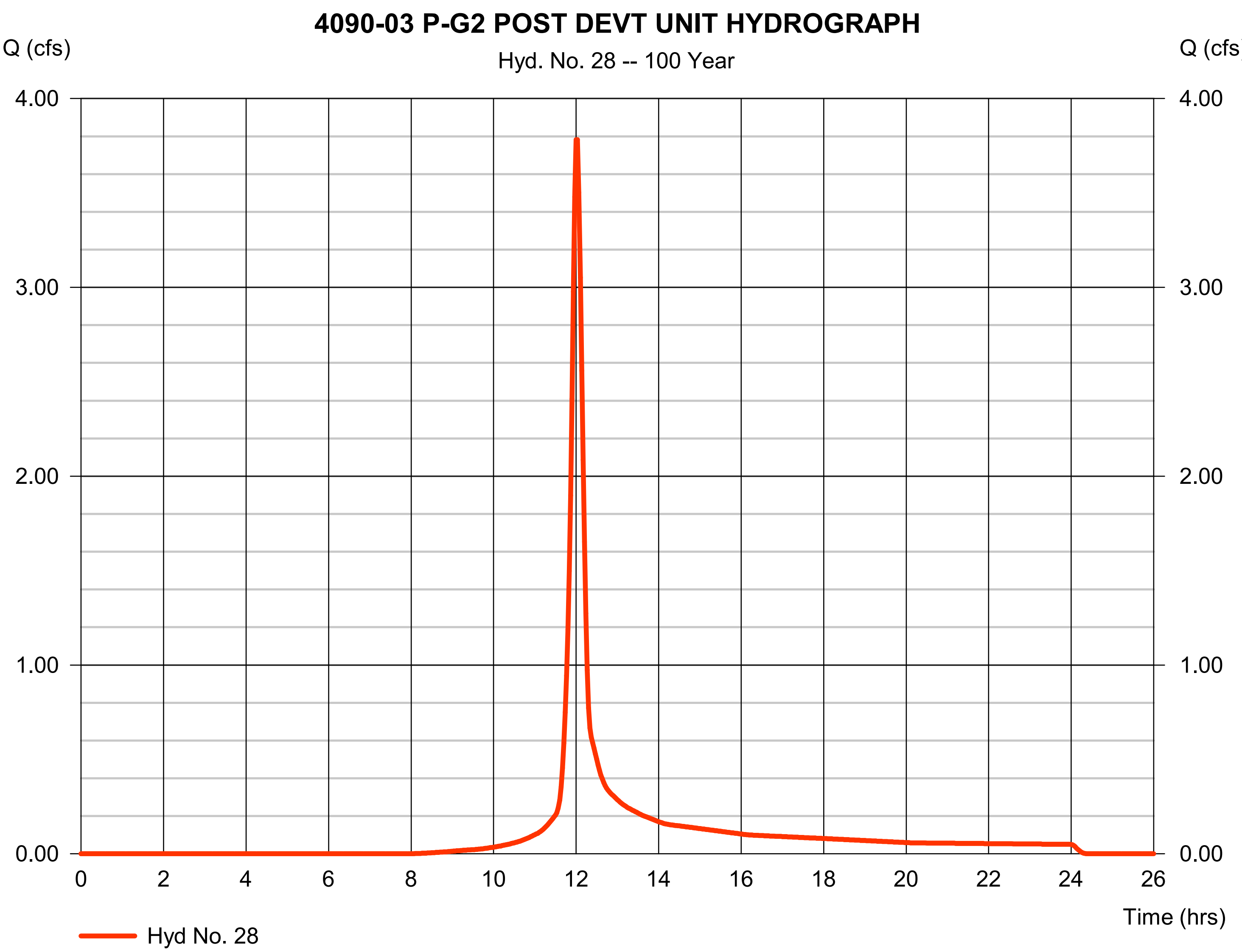


Hydrograph Report

Hyd. No. 28

4090-03 P-G2 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 3.783 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 10,240 cuft
Drainage area	= 1.220 ac	Curve number	= 80
Basin Slope	= 1.1 %	Hydraulic length	= 338 ft
Tc method	= LAG	Time of conc. (Tc)	= 12.47 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 434

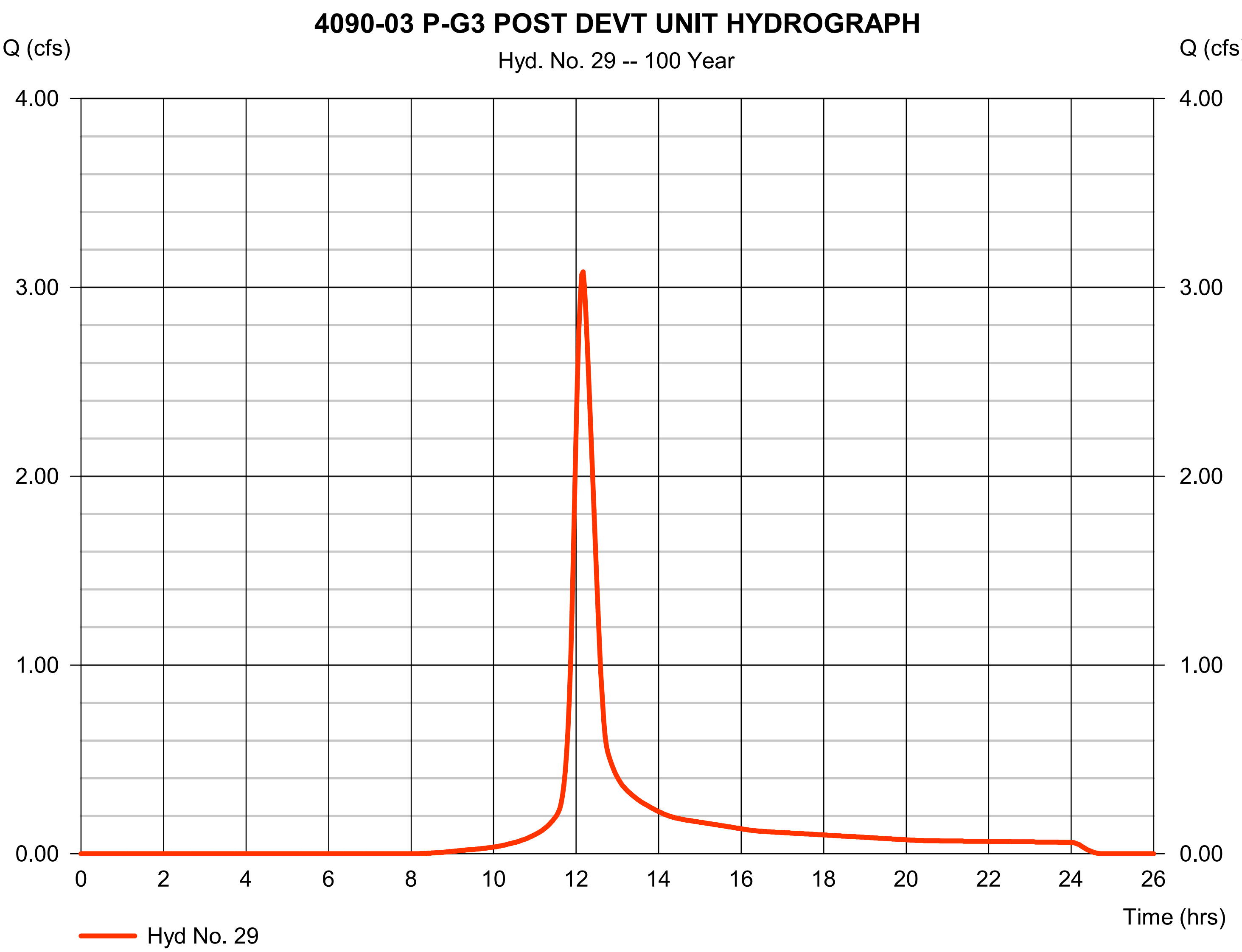


Hydrograph Report

Hyd. No. 29

4090-03 P-G3 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 3.082 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 12,365 cuft
Drainage area	= 1.480 ac	Curve number	= 80
Basin Slope	= 0.9 %	Hydraulic length	= 635 ft
Tc method	= LAG	Time of conc. (Tc)	= 23.60 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 432



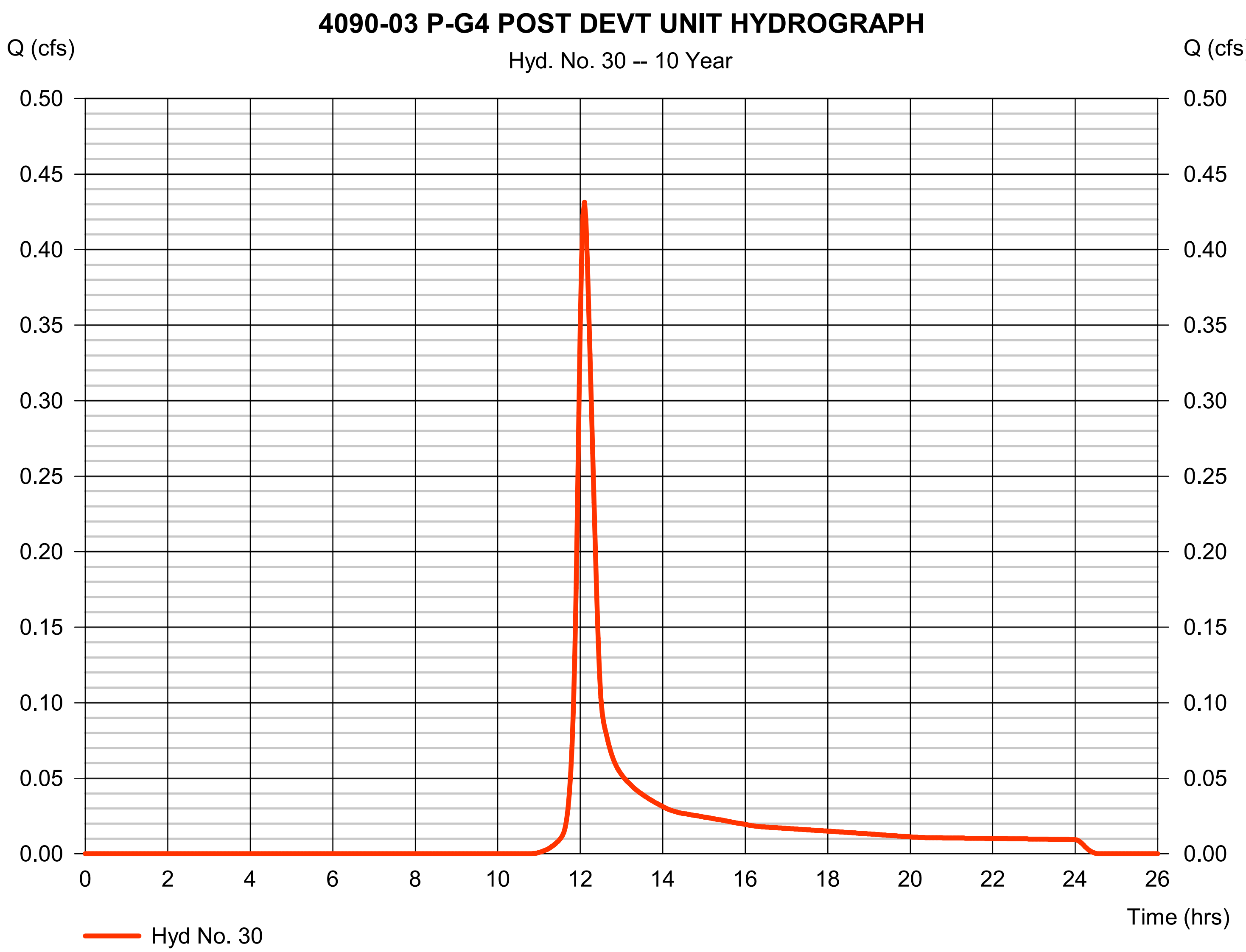
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 — Tuesday, 12 / 5 / 2023

Hyd. No. 30

4090-03 P-G4 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 0.432 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 1,519 cuft
Drainage area	= 0.540 ac	Curve number	= 80
Basin Slope	= 1.5 %	Hydraulic length	= 695 ft
Tc method	= LAG	Time of conc. (Tc)	= 19.63 min
Total precip.	= 2.33 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 431

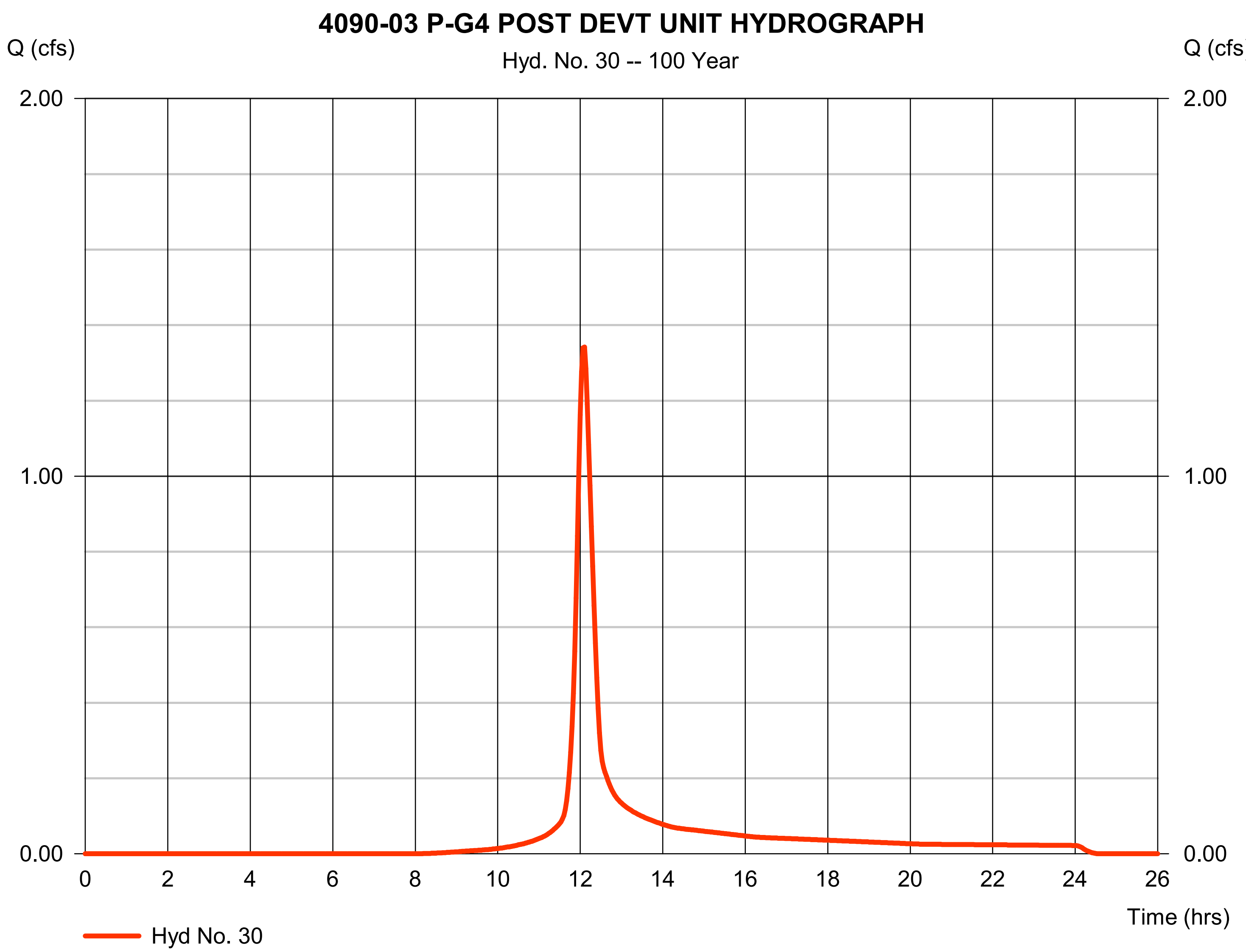


Hydrograph Report

Hyd. No. 30

4090-03 P-G4 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 1.342 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 4,501 cuft
Drainage area	= 0.540 ac	Curve number	= 80
Basin Slope	= 1.5 %	Hydraulic length	= 695 ft
Tc method	= LAG	Time of conc. (Tc)	= 19.63 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 431

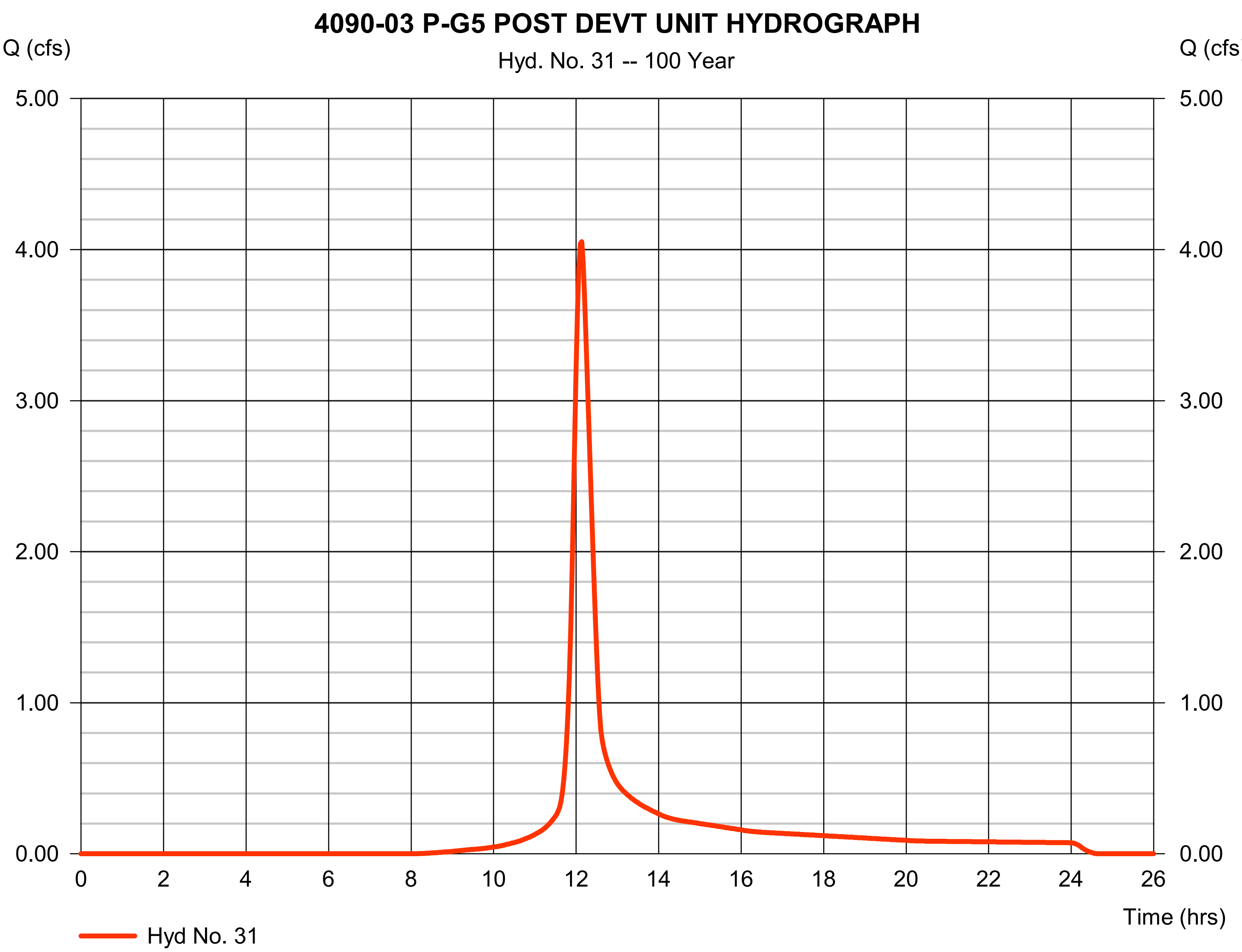


Hydrograph Report

Hyd. No. 31

4090-03 P-G5 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 4.052 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 14,925 cuft
Drainage area	= 1.770 ac	Curve number	= 80
Basin Slope	= 1.1 %	Hydraulic length	= 676 ft
Tc method	= LAG	Time of conc. (Tc)	= 22.29 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 436

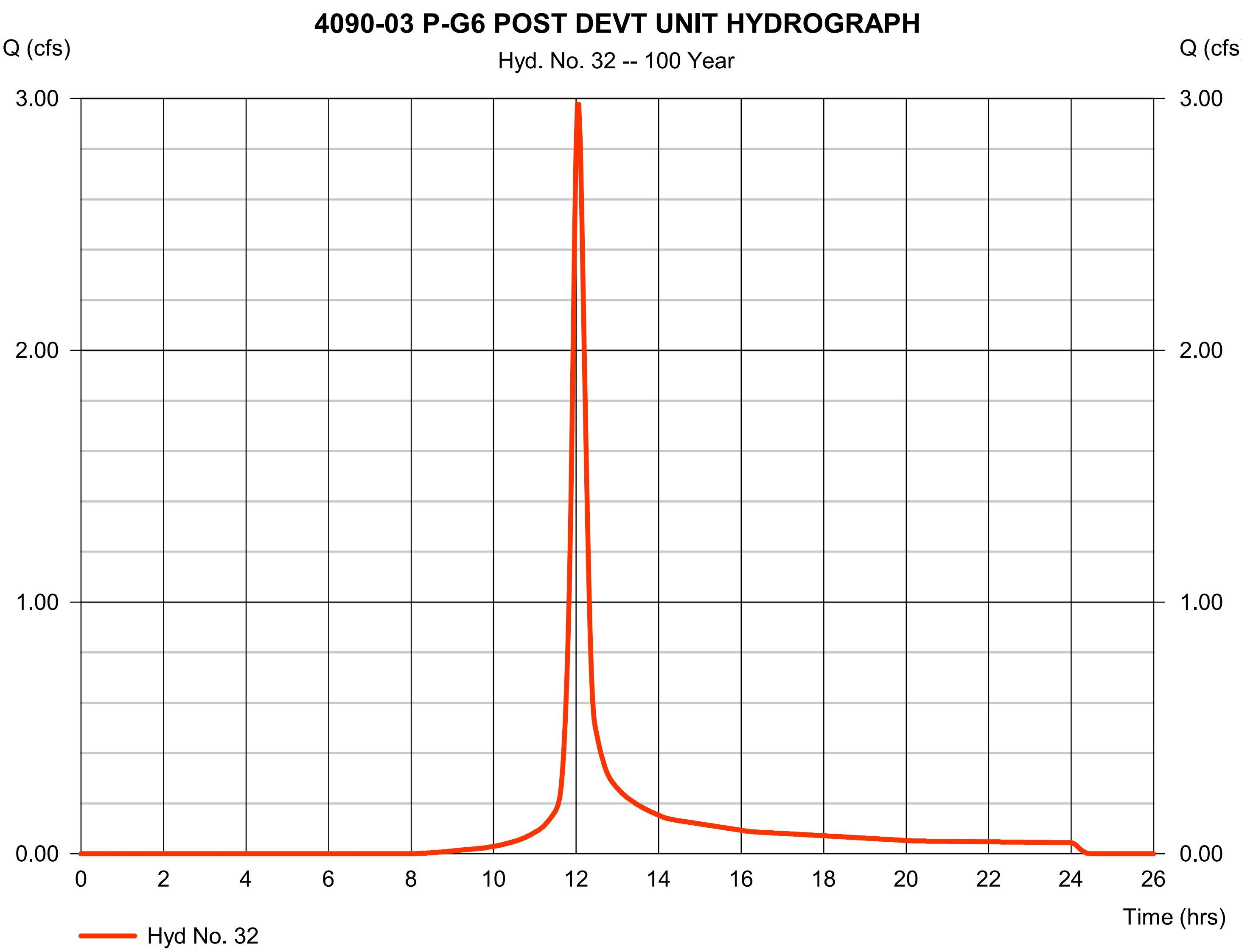


Hydrograph Report

Hyd. No. 32

4090-03 P-G6 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 2.978 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 9,020 cuft
Drainage area	= 1.100 ac	Curve number	= 80
Basin Slope	= 1.1 %	Hydraulic length	= 369 ft
Tc method	= LAG	Time of conc. (Tc)	= 13.80 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 424

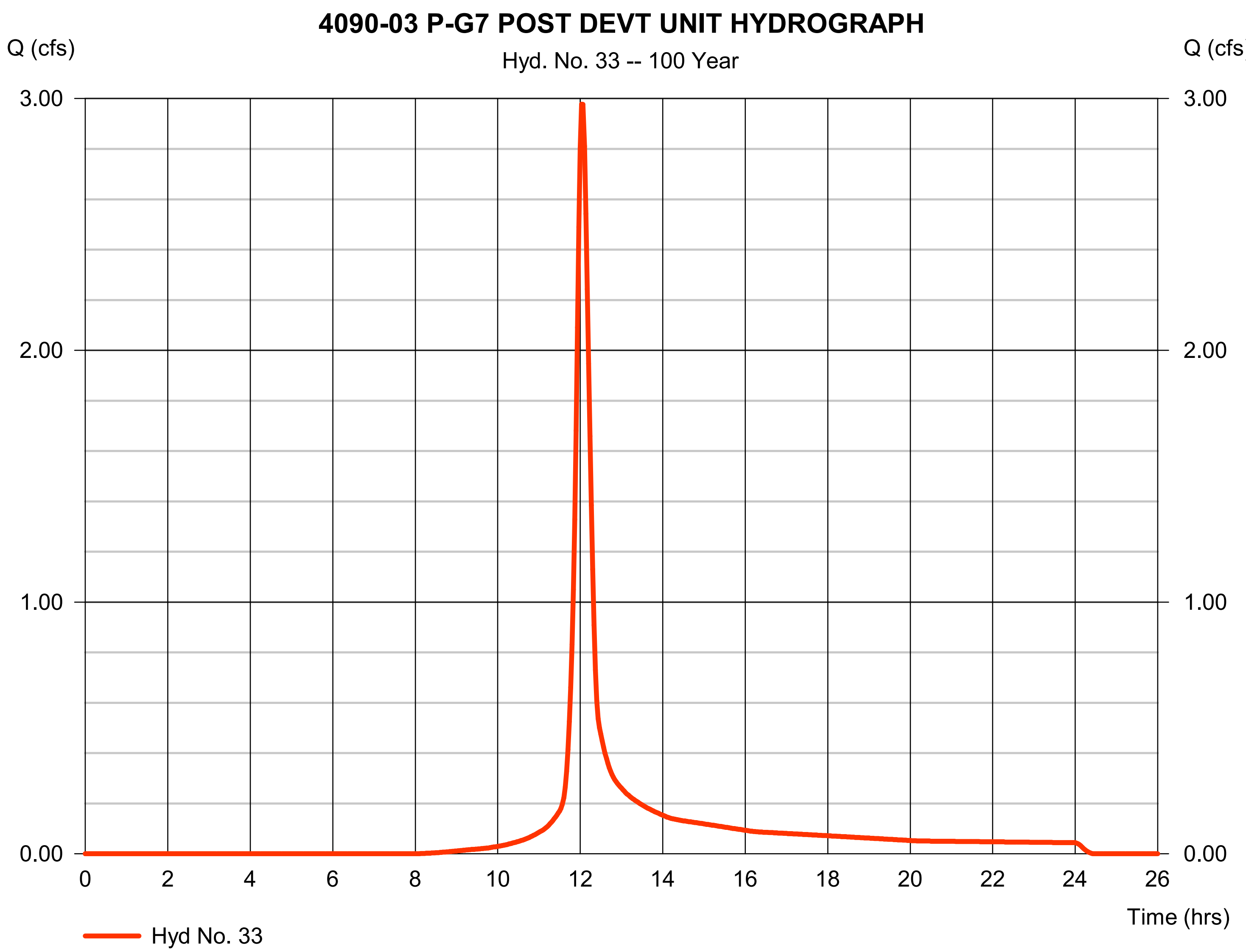


Hydrograph Report

Hyd. No. 33

4090-03 P-G7 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 2.978 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 9,020 cuft
Drainage area	= 1.100 ac	Curve number	= 80
Basin Slope	= 1.1 %	Hydraulic length	= 363 ft
Tc method	= LAG	Time of conc. (Tc)	= 13.68 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 424

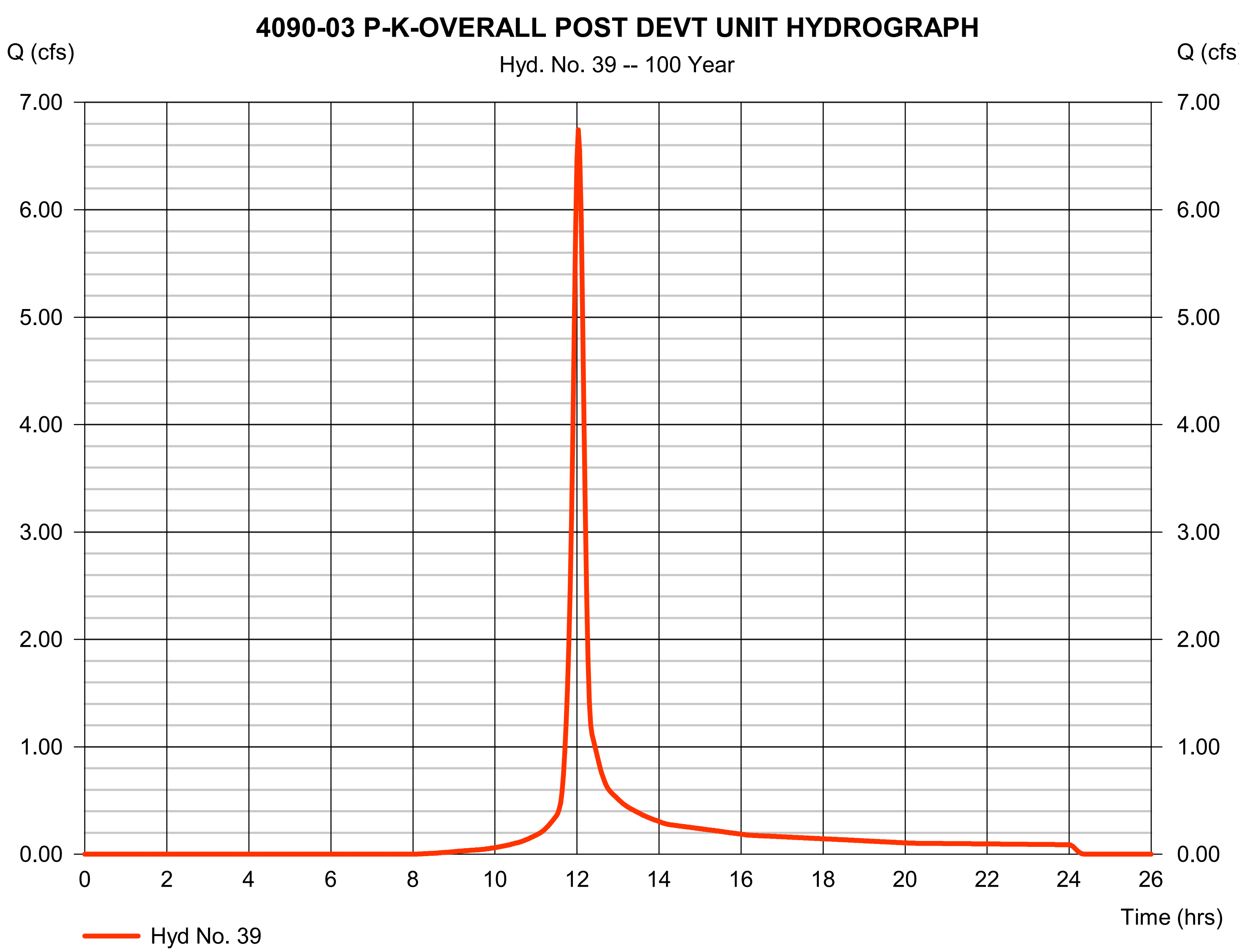


Hydrograph Report

Hyd. No. 39

4090-03 P-K-OVERALL POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 6.745 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 18,190 cuft
Drainage area	= 2.210 ac	Curve number	= 80
Basin Slope	= 1.2 %	Hydraulic length	= 435 ft
Tc method	= LAG	Time of conc. (Tc)	= 14.93 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 532



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	5.0994	0.1000	0.5670	--------
3	0.0000	0.0000	0.0000	--------
5	5.5223	0.1000	0.4686	--------
10	9.9784	0.1000	0.5666	--------
25	11.9956	0.1000	0.5621	--------
50	14.1968	0.1000	0.5656	--------
100	15.9941	0.1000	0.5621	--------

File name: 4090-03 Intensity.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2.02	1.37	1.09	0.93	0.82	0.74	0.68	0.63	0.59	0.55	0.53	0.50
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.57	1.87	1.55	1.35	1.22	1.12	1.04	0.98	0.93	0.88	0.84	0.81
10	3.96	2.69	2.14	1.82	1.61	1.45	1.33	1.23	1.15	1.09	1.03	0.98
25	4.80	3.27	2.61	2.22	1.96	1.77	1.62	1.51	1.41	1.33	1.26	1.20
50	5.65	3.84	3.06	2.60	2.29	2.07	1.90	1.76	1.65	1.55	1.47	1.40
100	6.40	4.36	3.48	2.96	2.61	2.36	2.16	2.01	1.88	1.77	1.68	1.60

Tc = time in minutes. Values may exceed 60.

e: F:\Projects\4090\003_Support Files\Reports\Hydrology\Preliminary Hydrology\Calculation\4090-03 Precipitation.pcp

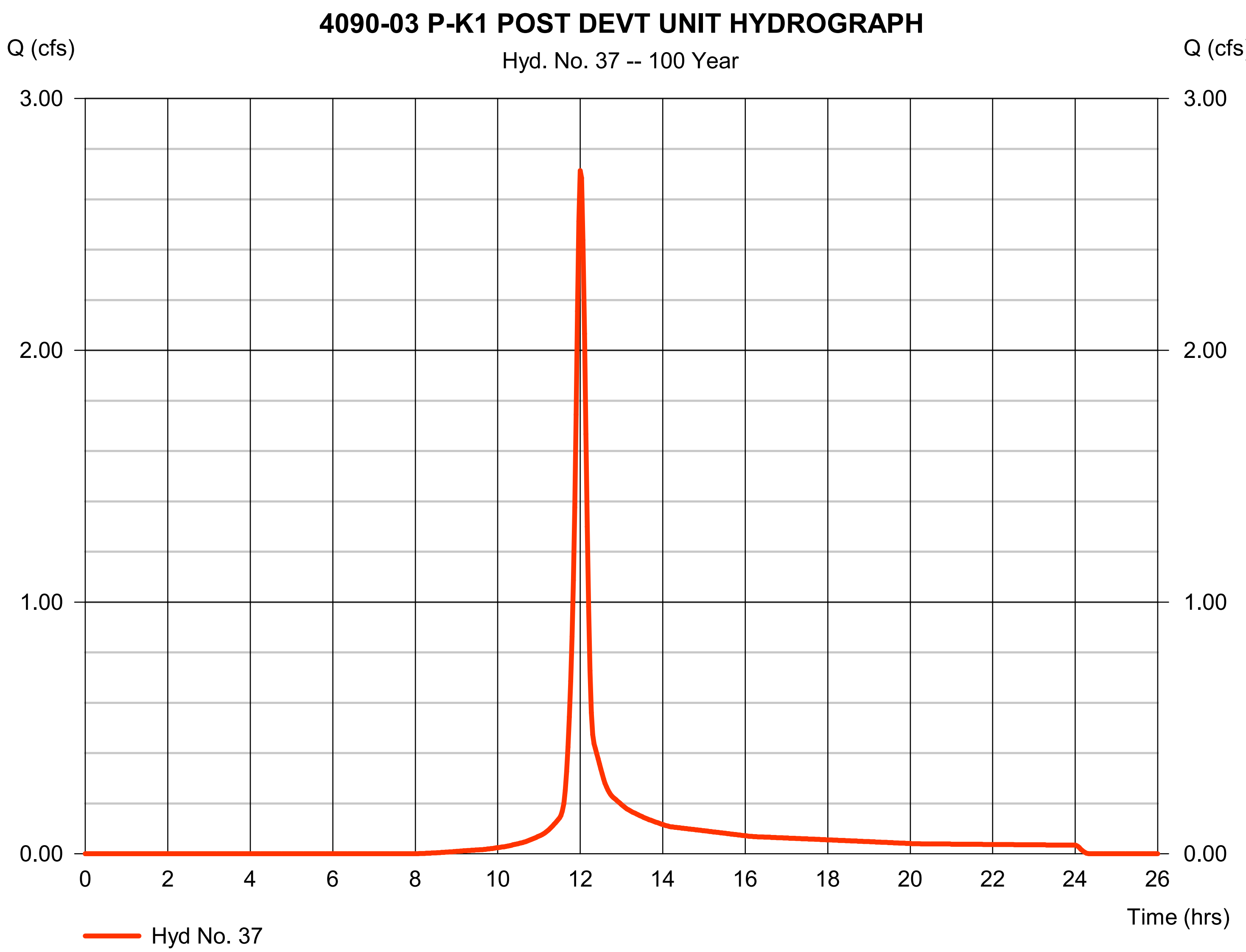
Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.28	0.00	2.04	2.33	3.18	4.00	4.30
SCS 6-Hr	0.00	0.82	0.00	1.13	1.28	1.83	2.11	2.50
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrograph Report

Hyd. No. 37

4090-03 P-K1 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 2.714 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 7,036 cuft
Drainage area	= 0.820 ac	Curve number	= 80
Basin Slope	= 1.4 %	Hydraulic length	= 390 ft
Tc method	= LAG	Time of conc. (Tc)	= 12.85 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

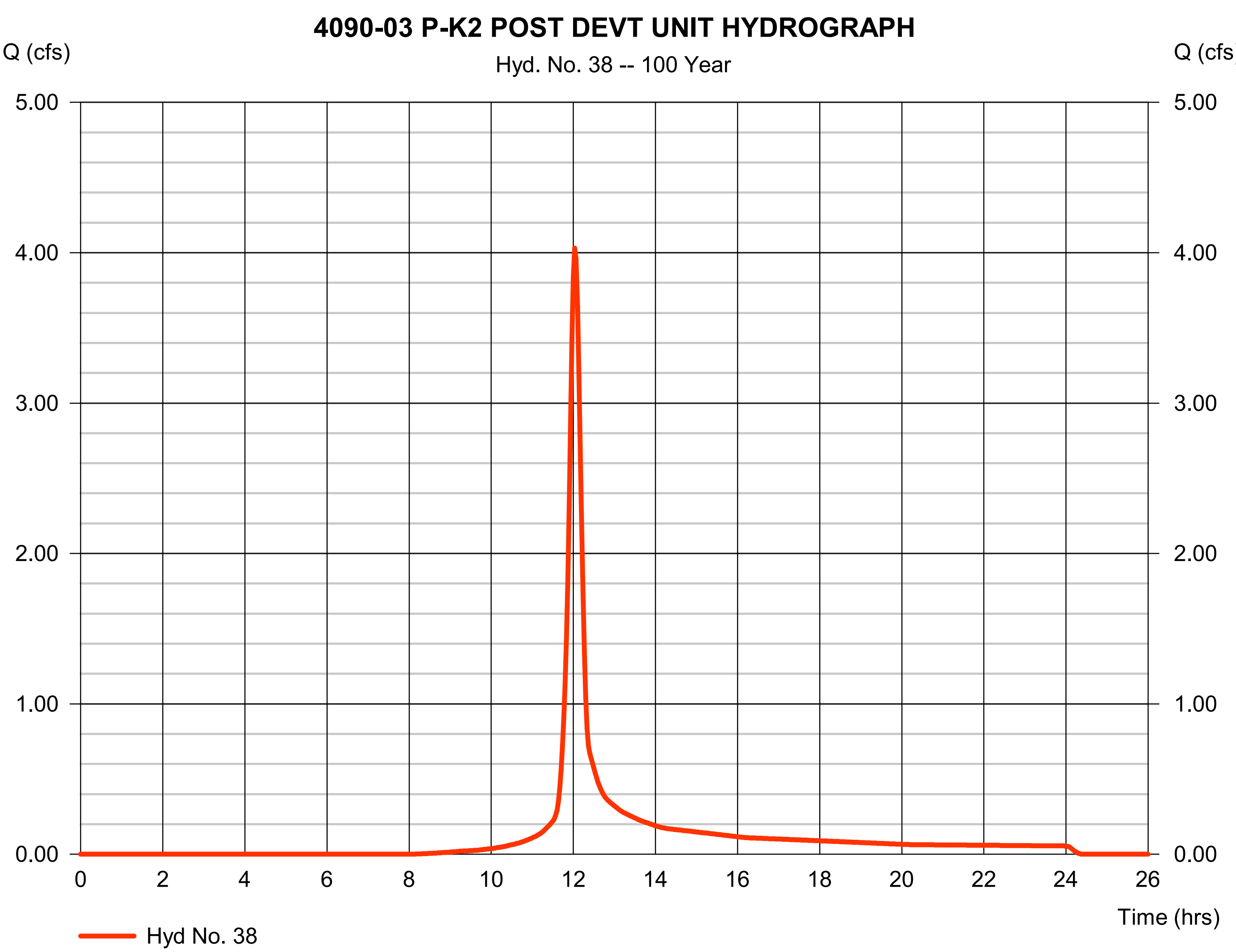


Hydrograph Report

Hyd. No. 38

4090-03 P-K2 POST DEVT UNIT HYDROGRAPH

Hydrograph type	= SCS Runoff	Peak discharge	= 4.031 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 11,299 cuft
Drainage area	= 1.390 ac	Curve number	= 80
Basin Slope	= 1.2 %	Hydraulic length	= 389 ft
Tc method	= LAG	Time of conc. (Tc)	= 13.60 min
Total precip.	= 4.30 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 485



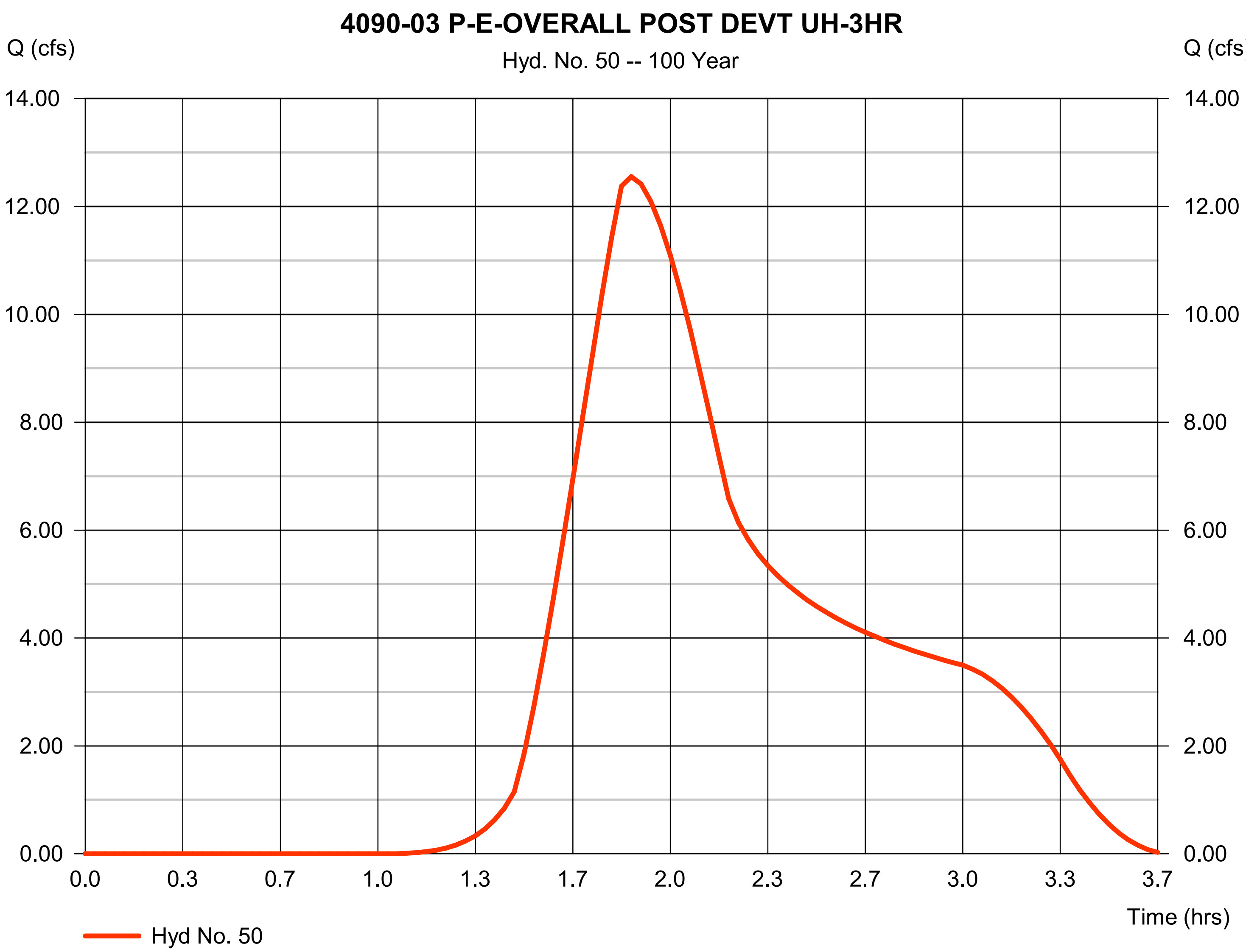
UNIT HYDROGRAPH
POST-DEVELOPMENT 100YR-3HR

Hydrograph Report

Hyd. No. 50

4090-03 P-E-OVERALL POST DEVT UH-3HR

Hydrograph type	= SCS Runoff	Peak discharge	= 12.55 cfs
Storm frequency	= 100 yrs	Time to peak	= 1.87 hrs
Time interval	= 2 min	Hyd. volume	= 39,778 cuft
Drainage area	= 11.430 ac	Curve number	= 80
Basin Slope	= 1.7 %	Hydraulic length	= 1650 ft
Tc method	= LAG	Time of conc. (Tc)	= 36.45 min
Total precip.	= 2.59 in	Distribution	= Synthetic
Storm duration	= 3.00 hrs	Shape factor	= 650

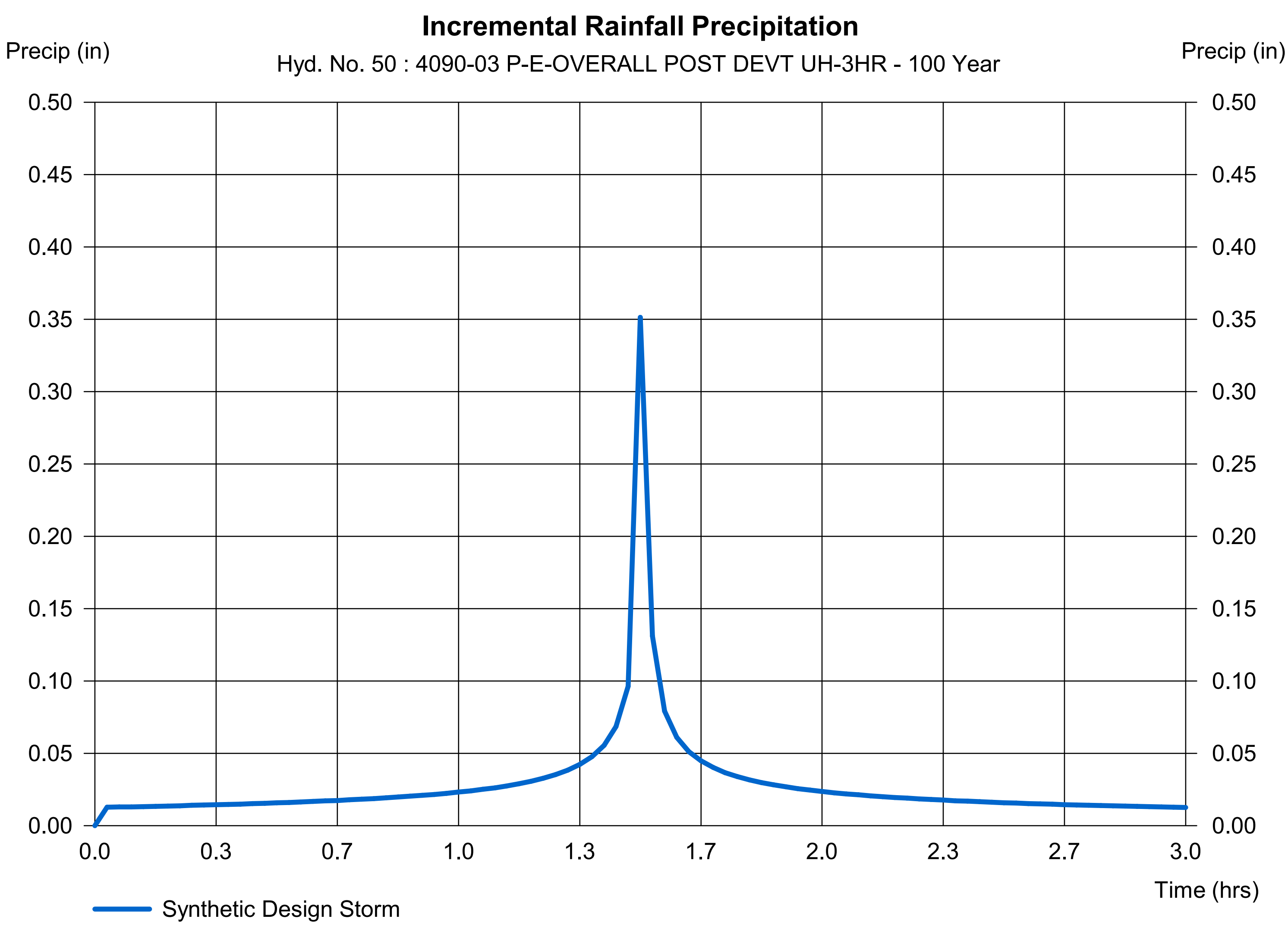


Precipitation Report

Hyd. No. 50

4090-03 P-E-OVERALL POST DEVT UH-3HR

Storm Frequency	= 100 yrs	Time interval	= 2 min
Total precip.	= 2.5902 in	Distribution	= Synthetic
Storm duration	= 3.00 hrs		



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	5.0994	0.1000	0.5670	--------
3	0.0000	0.0000	0.0000	--------
5	5.5223	0.1000	0.4686	--------
10	9.9784	0.1000	0.5666	--------
25	11.9956	0.1000	0.5621	--------
50	14.1968	0.1000	0.5656	--------
100	15.9941	0.1000	0.5621	--------

File name: 4090-03 Intensity.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2.02	1.37	1.09	0.93	0.82	0.74	0.68	0.63	0.59	0.55	0.53	0.50
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.57	1.87	1.55	1.35	1.22	1.12	1.04	0.98	0.93	0.88	0.84	0.81
10	3.96	2.69	2.14	1.82	1.61	1.45	1.33	1.23	1.15	1.09	1.03	0.98
25	4.80	3.27	2.61	2.22	1.96	1.77	1.62	1.51	1.41	1.33	1.26	1.20
50	5.65	3.84	3.06	2.60	2.29	2.07	1.90	1.76	1.65	1.55	1.47	1.40
100	6.40	4.36	3.48	2.96	2.61	2.36	2.16	2.01	1.88	1.77	1.68	1.60

Tc = time in minutes. Values may exceed 60.

e: F:\Projects\4090\003_Support Files\Reports\Hydrology\Preliminary Hydrology\Calculation\4090-03 Precipitation.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.28	0.00	2.04	2.33	3.18	4.00	4.30
SCS 6-Hr	0.00	0.82	0.00	1.13	1.28	1.83	2.11	2.50
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

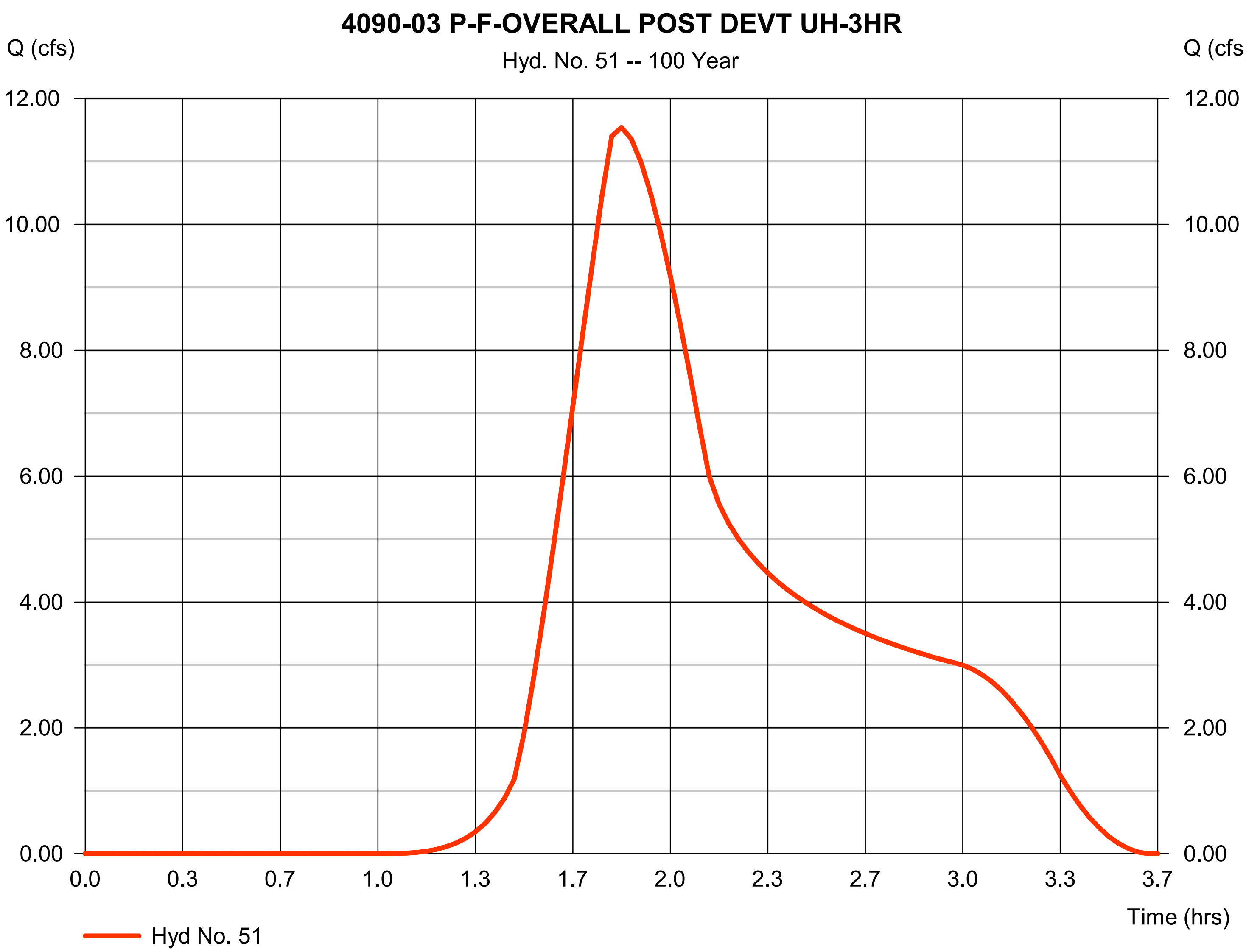
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Tuesday, 12 / 5 / 2023

Hyd. No. 51

4090-03 P-F-OVERALL POST DEVT UH-3HR

Hydrograph type	= SCS Runoff	Peak discharge	= 11.54 cfs
Storm frequency	= 100 yrs	Time to peak	= 1.83 hrs
Time interval	= 2 min	Hyd. volume	= 34,627 cuft
Drainage area	= 9.950 ac	Curve number	= 80
Basin Slope	= 1.7 %	Hydraulic length	= 1450 ft
Tc method	= LAG	Time of conc. (Tc)	= 32.87 min
Total precip.	= 2.59 in	Distribution	= Synthetic
Storm duration	= 3.00 hrs	Shape factor	= 650

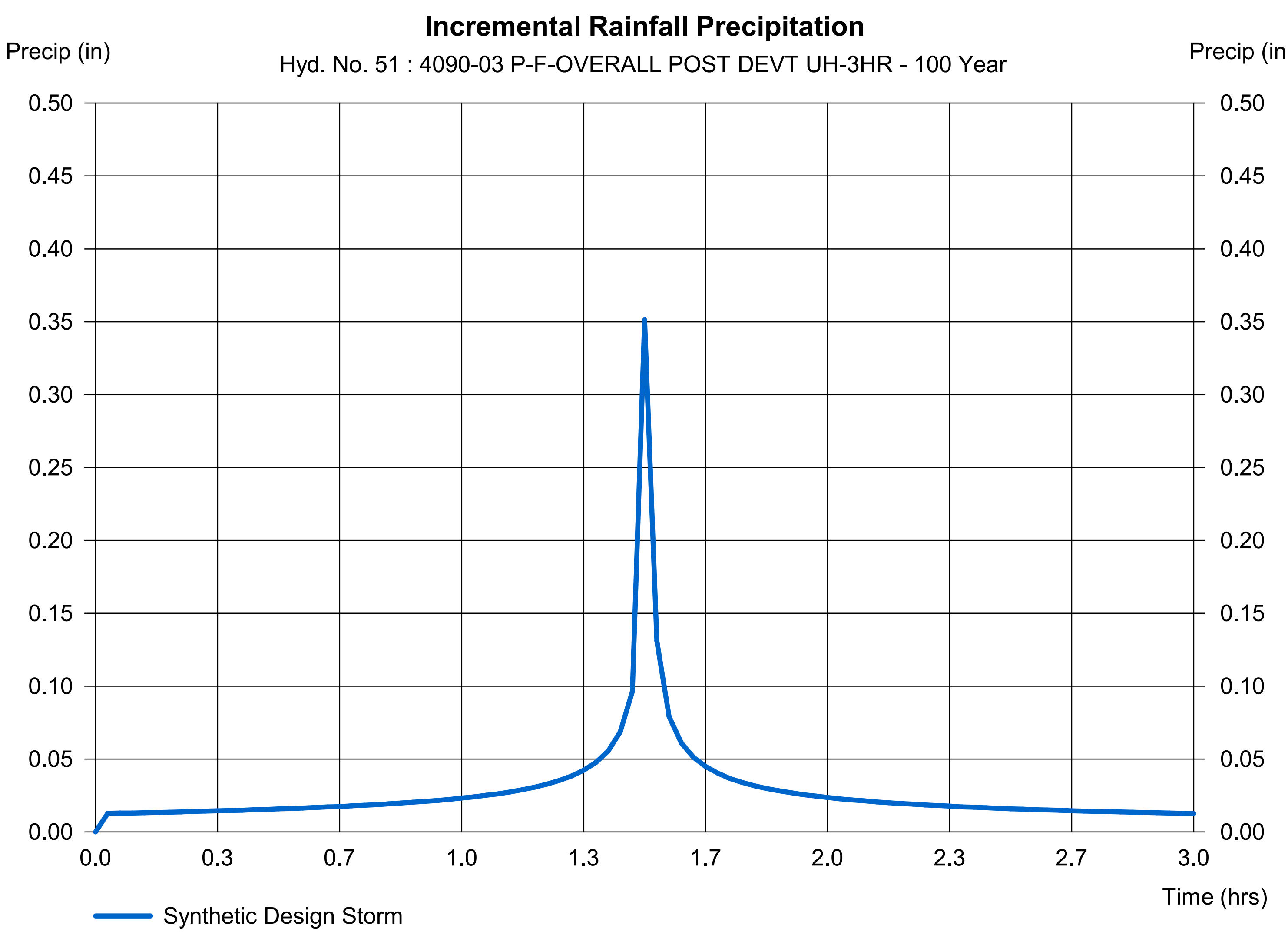


Precipitation Report

Hyd. No. 51

4090-03 P-F-OVERALL POST DEVT UH-3HR

Storm Frequency	= 100 yrs	Time interval	= 2 min
Total precip.	= 2.5902 in	Distribution	= Synthetic
Storm duration	= 3.00 hrs		



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	5.0994	0.1000	0.5670	--------
3	0.0000	0.0000	0.0000	--------
5	5.5223	0.1000	0.4686	--------
10	9.9784	0.1000	0.5666	--------
25	11.9956	0.1000	0.5621	--------
50	14.1968	0.1000	0.5656	--------
100	15.9941	0.1000	0.5621	--------

File name: 4090-03 Intensity.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2.02	1.37	1.09	0.93	0.82	0.74	0.68	0.63	0.59	0.55	0.53	0.50
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.57	1.87	1.55	1.35	1.22	1.12	1.04	0.98	0.93	0.88	0.84	0.81
10	3.96	2.69	2.14	1.82	1.61	1.45	1.33	1.23	1.15	1.09	1.03	0.98
25	4.80	3.27	2.61	2.22	1.96	1.77	1.62	1.51	1.41	1.33	1.26	1.20
50	5.65	3.84	3.06	2.60	2.29	2.07	1.90	1.76	1.65	1.55	1.47	1.40
100	6.40	4.36	3.48	2.96	2.61	2.36	2.16	2.01	1.88	1.77	1.68	1.60

Tc = time in minutes. Values may exceed 60.

e: F:\Projects\4090\003_Support Files\Reports\Hydrology\Preliminary Hydrology\Calculation\4090-03 Precipitation.pcp

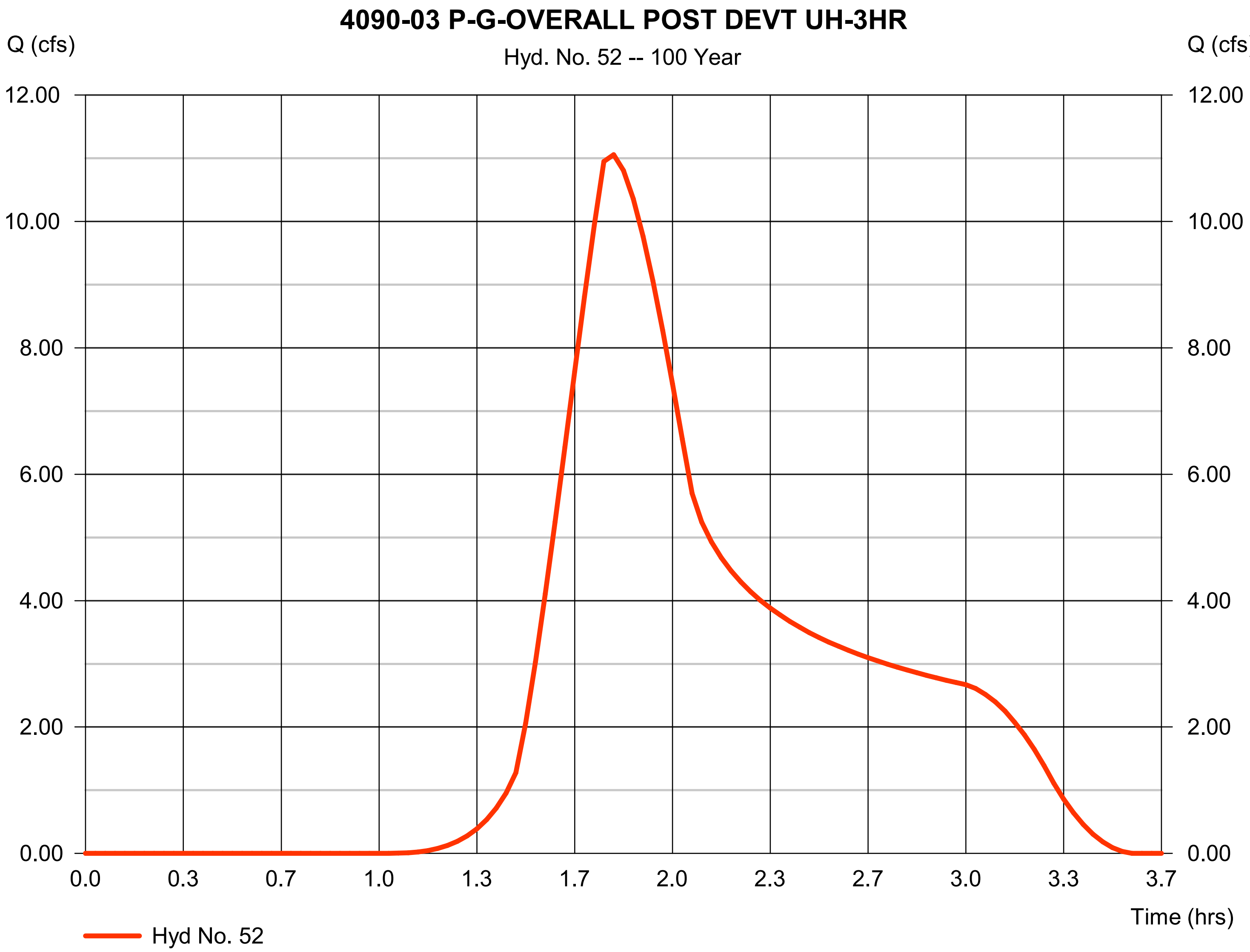
Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.28	0.00	2.04	2.33	3.18	4.00	4.30
SCS 6-Hr	0.00	0.82	0.00	1.13	1.28	1.83	2.11	2.50
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrograph Report

Hyd. No. 52

4090-03 P-G-OVERALL POST DEVT UH-3HR

Hydrograph type	= SCS Runoff	Peak discharge	= 11.06 cfs
Storm frequency	= 100 yrs	Time to peak	= 1.80 hrs
Time interval	= 2 min	Hyd. volume	= 31,251 cuft
Drainage area	= 8.980 ac	Curve number	= 80
Basin Slope	= 1.7 %	Hydraulic length	= 1200 ft
Tc method	= LAG	Time of conc. (Tc)	= 28.25 min
Total precip.	= 2.59 in	Distribution	= Synthetic
Storm duration	= 3.00 hrs	Shape factor	= 650

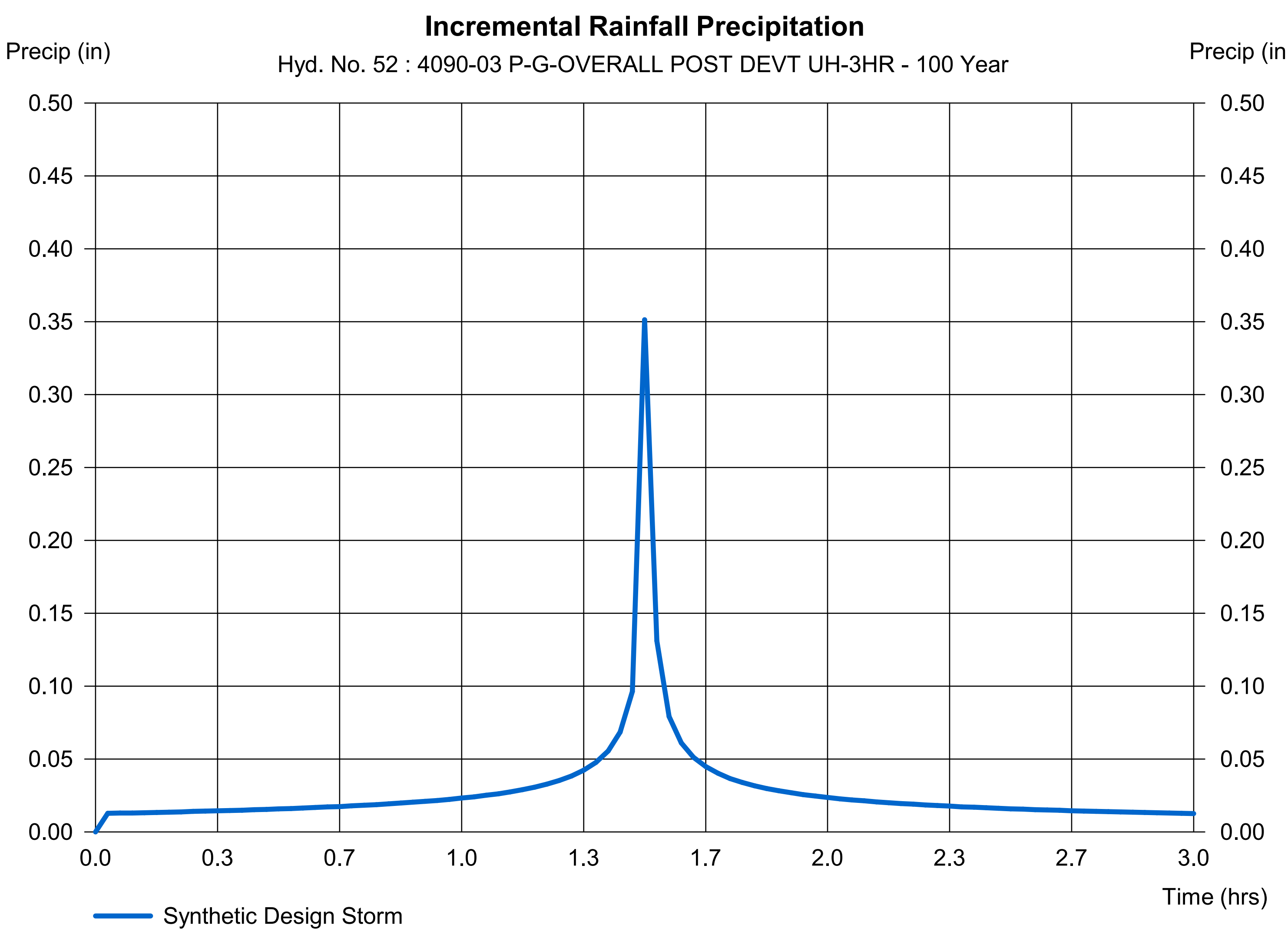


Precipitation Report

Hyd. No. 52

4090-03 P-G-OVERALL POST DEVT UH-3HR

Storm Frequency	= 100 yrs	Time interval	= 2 min
Total precip.	= 2.5902 in	Distribution	= Synthetic
Storm duration	= 3.00 hrs		



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	5.0994	0.1000	0.5670	--------
3	0.0000	0.0000	0.0000	--------
5	5.5223	0.1000	0.4686	--------
10	9.9784	0.1000	0.5666	--------
25	11.9956	0.1000	0.5621	--------
50	14.1968	0.1000	0.5656	--------
100	15.9941	0.1000	0.5621	--------

File name: 4090-03 Intensity.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2.02	1.37	1.09	0.93	0.82	0.74	0.68	0.63	0.59	0.55	0.53	0.50
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.57	1.87	1.55	1.35	1.22	1.12	1.04	0.98	0.93	0.88	0.84	0.81
10	3.96	2.69	2.14	1.82	1.61	1.45	1.33	1.23	1.15	1.09	1.03	0.98
25	4.80	3.27	2.61	2.22	1.96	1.77	1.62	1.51	1.41	1.33	1.26	1.20
50	5.65	3.84	3.06	2.60	2.29	2.07	1.90	1.76	1.65	1.55	1.47	1.40
100	6.40	4.36	3.48	2.96	2.61	2.36	2.16	2.01	1.88	1.77	1.68	1.60

Tc = time in minutes. Values may exceed 60.

e: F:\Projects\4090\003_Support Files\Reports\Hydrology\Preliminary Hydrology\Calculation\4090-03 Precipitation.pcp

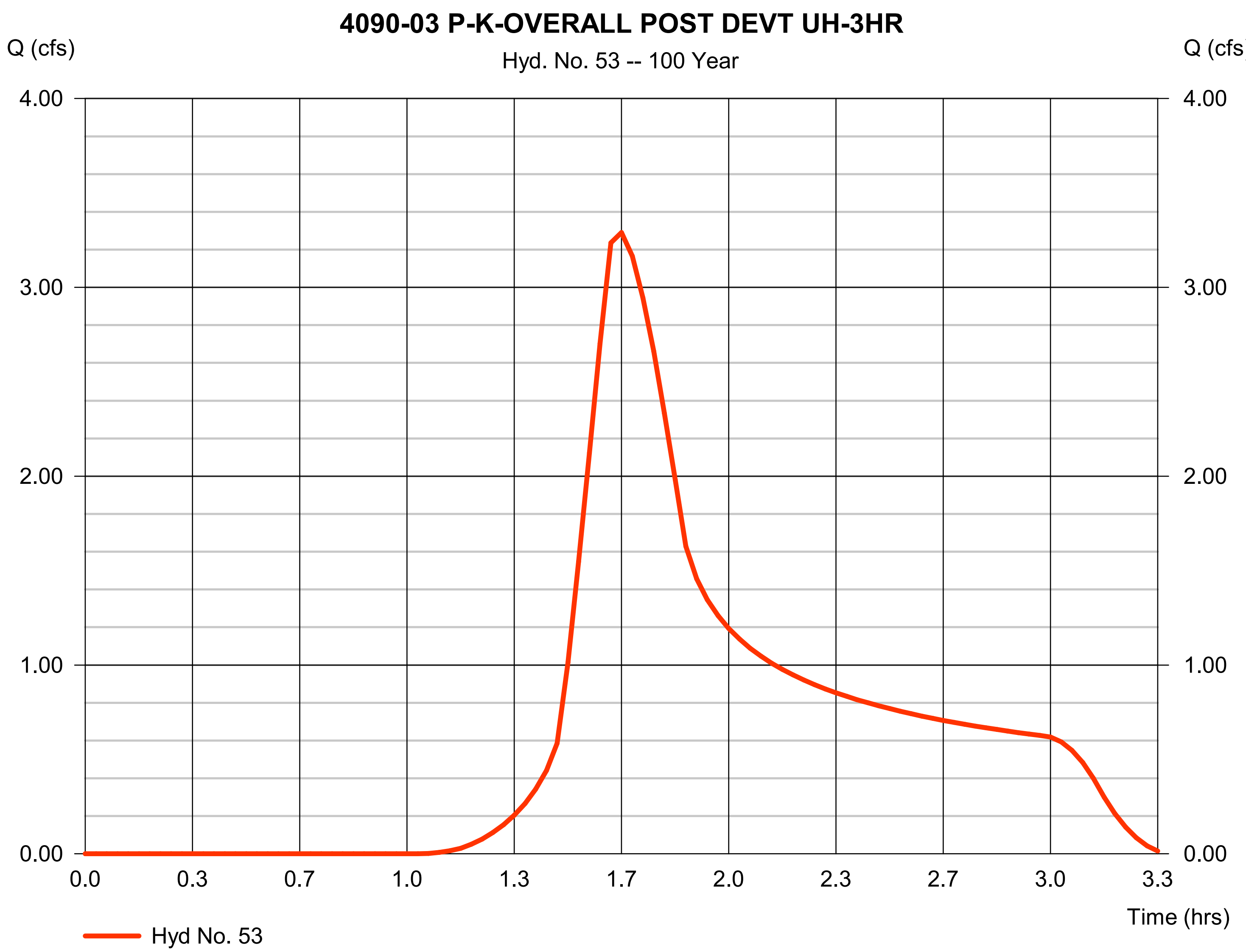
Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.28	0.00	2.04	2.33	3.18	4.00	4.30
SCS 6-Hr	0.00	0.82	0.00	1.13	1.28	1.83	2.11	2.50
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrograph Report

Hyd. No. 53

4090-03 P-K-OVERALL POST DEVT UH-3HR

Hydrograph type	= SCS Runoff	Peak discharge	= 3.291 cfs
Storm frequency	= 100 yrs	Time to peak	= 1.67 hrs
Time interval	= 2 min	Hyd. volume	= 7,554 cuft
Drainage area	= 2.210 ac	Curve number	= 80
Basin Slope	= 1.2 %	Hydraulic length	= 435 ft
Tc method	= LAG	Time of conc. (Tc)	= 14.93 min
Total precip.	= 2.59 in	Distribution	= Synthetic
Storm duration	= 3.00 hrs	Shape factor	= 532

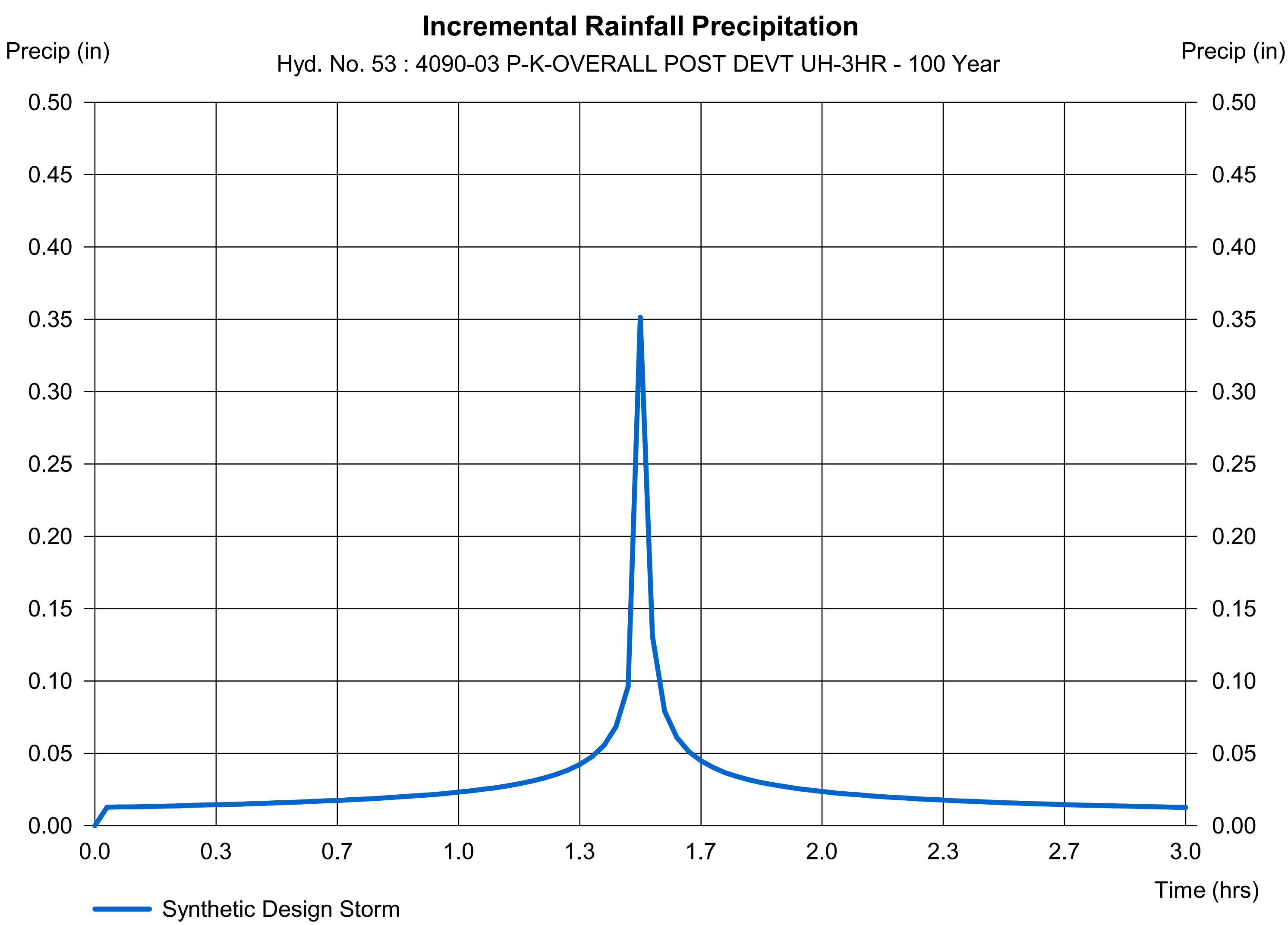


Precipitation Report

Hyd. No. 53

4090-03 P-K-OVERALL POST DEVT UH-3HR

Storm Frequency	= 100 yrs	Time interval	= 2 min
Total precip.	= 2.5902 in	Distribution	= Synthetic
Storm duration	= 3.00 hrs		



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	5.0994	0.1000	0.5670	--------
3	0.0000	0.0000	0.0000	--------
5	5.5223	0.1000	0.4686	--------
10	9.9784	0.1000	0.5666	--------
25	11.9956	0.1000	0.5621	--------
50	14.1968	0.1000	0.5656	--------
100	15.9941	0.1000	0.5621	--------

File name: 4090-03 Intensity.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2.02	1.37	1.09	0.93	0.82	0.74	0.68	0.63	0.59	0.55	0.53	0.50
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.57	1.87	1.55	1.35	1.22	1.12	1.04	0.98	0.93	0.88	0.84	0.81
10	3.96	2.69	2.14	1.82	1.61	1.45	1.33	1.23	1.15	1.09	1.03	0.98
25	4.80	3.27	2.61	2.22	1.96	1.77	1.62	1.51	1.41	1.33	1.26	1.20
50	5.65	3.84	3.06	2.60	2.29	2.07	1.90	1.76	1.65	1.55	1.47	1.40
100	6.40	4.36	3.48	2.96	2.61	2.36	2.16	2.01	1.88	1.77	1.68	1.60

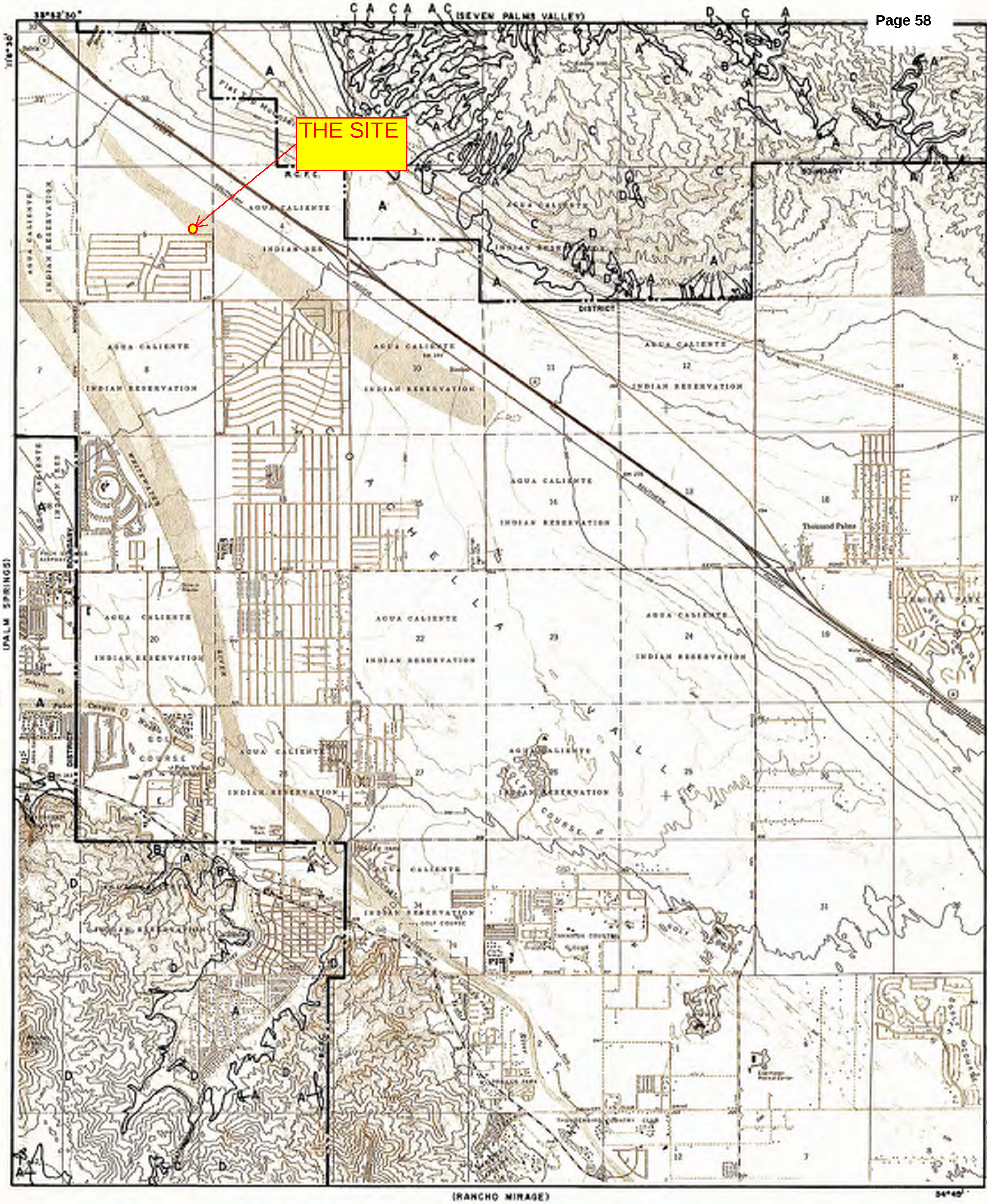
Tc = time in minutes. Values may exceed 60.

e: F:\Projects\4090\003_Support Files\Reports\Hydrology\Preliminary Hydrology\Calculation\4090-03 Precipitation.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.28	0.00	2.04	2.33	3.18	4.00	4.30
SCS 6-Hr	0.00	0.82	0.00	1.13	1.28	1.83	2.11	2.50
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX 3

RCFC & WCD HYDROLOGIC SOIL MAP
(PLATE C-1.35)



LEGEND

—— SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC & WCD

HYDROLOGY MANUAL

N

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR CATHEDRAL CITY

APPENDIX 4

HYDRAFLOW UNIT HYDROGRAPH CALCULATIONS STORAGE REQUIREMENT, 100YR-24HR

a. PRE VS POST Development Unit Hydrograph after Retention

PROJECT NAME **VERANO-MULTI FAMILY**

LOCATION Rio Pecos Dr., Cathedral City

Prorated Runoff Volume for Each Site

Site ID **DA-E**	Developed Site per M-Hydrology	Designated Apartment Site per M-Hydrology	Site ID **DA-F**	Developed Site per M-Hydrology	Designated Apartment Site per M-Hydrology
Tributary area (acre)	25.45	13.25	Tributary area (acre)	12.60	9.31
Site Imperviousness	0.625	0.8	Site Imperviousness	0.682	0.8
Delta Volume, 100YR-24HR (Cubic-ft)	94,960.80 2.18 ac-ft	63,282 1.45 ac-ft	Delta Volume, 100YR-24HR (Cubic-ft)	54,885.60 1.26 ac-ft	47,571 1.09 ac-ft
Total Ret. Volume Provided, cu.ft. per M-Hydrology	78,408.00 1.80 ac-ft		Total Ret. Volume Provided, cu.ft. per M-Hydrology	50,965.20 1.17 ac-ft	
Volume Allotted for the Apartment site, cu.ft.	52,251 1.20 ac-ft		Volume Allotted for the Apartment site, cu.ft.	44,173 1.01 ac-ft	
Volume Required for the Prop. Development site w/ Retention Basin, cu.ft.	46,826 1.07 ac-ft	Proposed < Volume Allotted. Therefore, it is adequate.	Volume Required for the Prop. Development site w/ Retention Basin, cu.ft.	42,294 0.97 ac-ft	Proposed < Volume Allotted. Therefore, it is adequate.

Site ID **DA-G**	Developed Site per M-Hydrology	Designated Apartment Site per M-Hydrology	Site ID **DA-K2**	Developed Site per M-Hydrology	Designated Apartment Site per M-Hydrology
Tributary area (acre)	21.85	7.09	Tributary area (acre)	22.45	3.15
Site Imperviousness	0.587	0.8	Site Imperviousness	0.575	0.8
Delta Volume, 100YR-24HR (Cubic-ft)	64,904.40 1.49 ac-ft	28,703 0.66 ac-ft	Delta Volume, 100YR-24HR (Cubic-ft)	72,309.60 1.66 ac-ft	14,116 0.32 ac-ft
Total Ret. Volume Provided, cu.ft. per M-Hydrology	133,729.20 3.07 ac-ft		Total Ret. Volume Provided, cu.ft. per M-Hydrology	87,991.20 2.02 ac-ft	
Volume Allotted for the site, cu.ft.	59,139 1.36 ac-ft		Volume Allotted for the site, cu.ft.	17,177 0.39 ac-ft	
Volume Required for the Prop. Development site w/ Retention Basin, cu.ft.	34,030 0.78 ac-ft	Proposed < Volume Allotted. Therefore, it is adequate.	Volume Required for the Prop. Development site w/ Retention Basin, cu.ft.	7,109 0.16 ac-ft	Proposed < Volume Allotted. Therefore, it is adequate.

RETENTION BASIN, E

DRAINAGE AREA "E"

Hydrograph Report

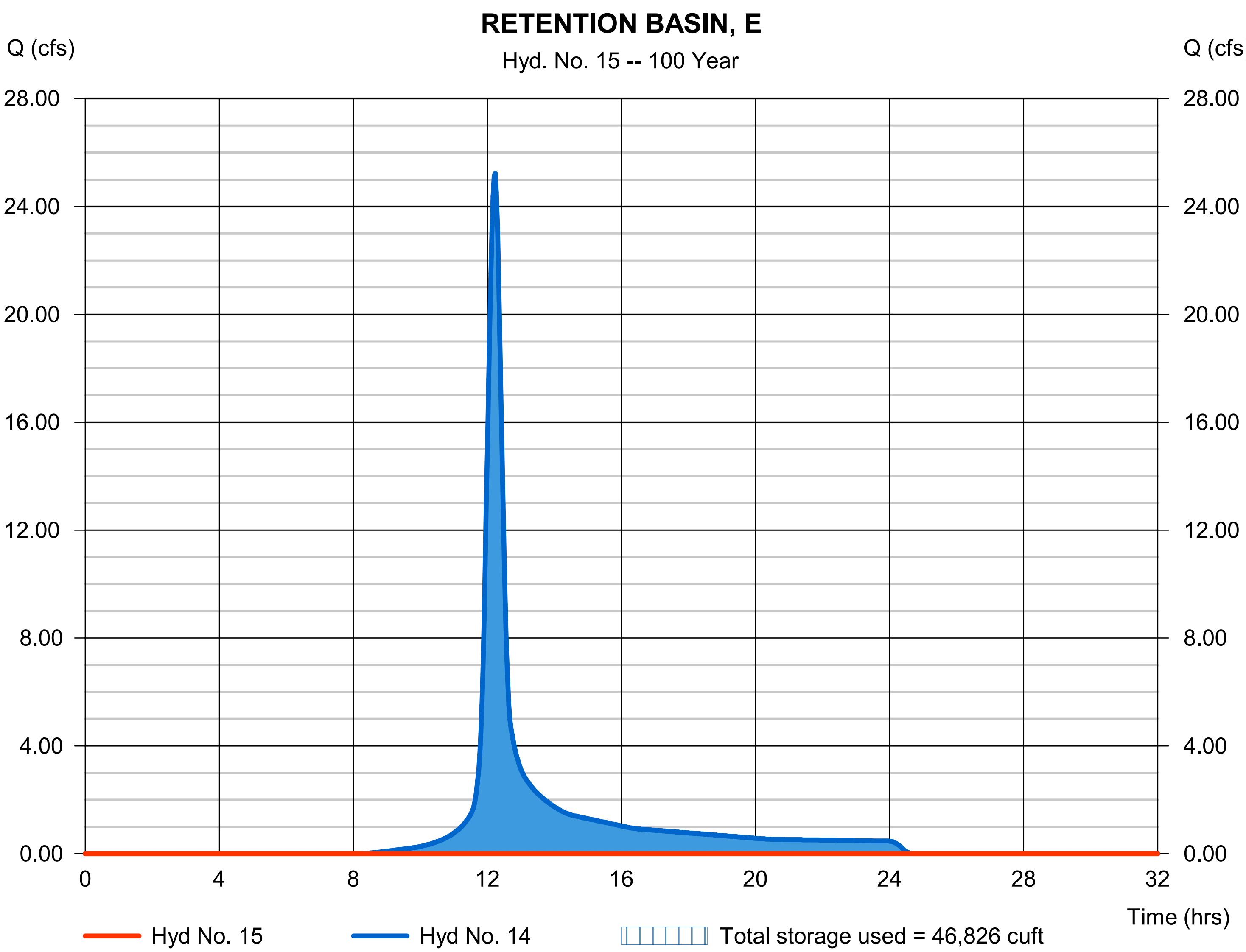
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 — Tuesday, 12 / 5 / 2023

Hyd. No. 15

RETENTION BASIN, E

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 24.50 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 14 - 4090-03 P-E-OVERALL POST DEV UNIT HYDROGRAPH	Max. Elevation	= 4[illegible].38 ft
Reservoir name	= RETENTION BASIN, E	Max. Storage	= 46,826 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 2 - RETENTION BASIN, E

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 441.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	441.00	4,578	0	0
1.00	442.00	5,990	5,268	5,268
2.00	443.00	7,571	6,764	12,032
3.00	444.00	9,039	8,293	20,325
4.00	445.00	10,650	9,833	30,158
5.00	446.00	12,502	11,562	41,720
6.00	447.00	14,471	13,473	55,194
7.00	448.00	16,579	15,512	70,705
8.00	449.00	18,800	17,676	88,381

Culvert / Orifice Structures

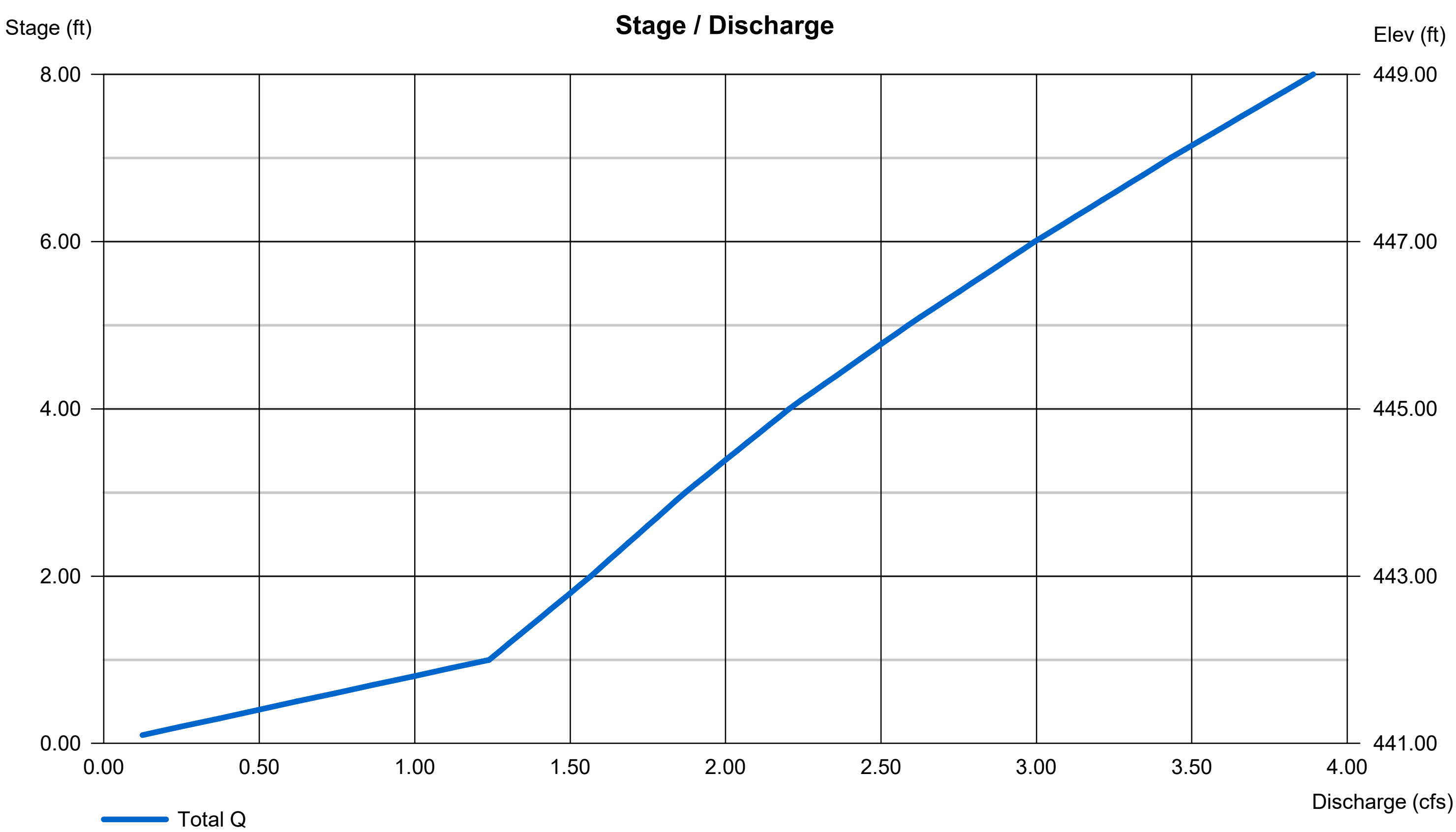
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 8.940 (by Contour)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Pond Report

Pond No. 2 - RETENTION BASIN, E

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 441.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	441.00	4,578	0	0
1.00	442.00	5,990	5,268	5,268
2.00	443.00	7,571	6,764	12,032
3.00	444.00	9,039	8,293	20,325
4.00	445.00	10,650	9,833	30,158
5.00	446.00	12,502	11,562	41,720
6.00	447.00	14,471	13,473	55,194
7.00	448.00	16,579	15,512	70,705
8.00	449.00	18,800	17,676	88,381

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 8.940 (by Contour)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	441.00	---	---	---	---	---	---	---	---	0.000	---	0.000
1.00	5,268	442.00	---	---	---	---	---	---	---	---	1.240	---	1.240
2.00	12,032	443.00	---	---	---	---	---	---	---	---	1.567	---	1.567
3.00	20,325	444.00	---	---	---	---	---	---	---	---	1.871	---	1.871
4.00	30,158	445.00	---	---	---	---	---	---	---	---	2.204	---	2.204
5.00	41,720	446.00	---	---	---	---	---	---	---	---	2.587	---	2.587
6.00	55,194	447.00	---	---	---	---	---	---	---	---	2.995	---	2.995
7.00	70,705	448.00	---	---	---	---	---	---	---	---	3.431	---	3.431
8.00	88,381	449.00	---	---	---	---	---	---	---	---	3.891	---	3.891

Hydrograph Report

Hyd. No. 40

RETENTION BASIN, K2

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 39 - 4090-03 P-K-OVERALL POST-DEVT UNIT HYDROGRAPH	Reservoir name	= RETENTION BASIN,
Max. Elevation	= 424.77 ft	Max. Storage	= 7,109 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp.)

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
9.70	0.045	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
9.80	0.050	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
9.93	0.057	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.00	0.061	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.07	0.065	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.10	0.068	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.13	0.070	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.23	0.078	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.27	0.080	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.33	0.086	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.37	0.089	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.40	0.093	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.50	0.102	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.63	0.117	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.67	0.122	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.73	0.131	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.77	0.136	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.80	0.142	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.97	0.171	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
11.07	0.191	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
11.37	0.294	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
11.67	0.738	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000

Hydraflow Rainfall Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Tuesday, 12 / 5 / 2023

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	5.0994	0.1000	0.5670	--------
3	0.0000	0.0000	0.0000	--------
5	5.5223	0.1000	0.4686	--------
10	9.9784	0.1000	0.5666	--------
25	11.9956	0.1000	0.5621	--------
50	14.1968	0.1000	0.5656	--------
100	15.9941	0.1000	0.5621	--------

File name: 4090-03 Intensity.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2.02	1.37	1.09	0.93	0.82	0.74	0.68	0.63	0.59	0.55	0.53	0.50
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.57	1.87	1.55	1.35	1.22	1.12	1.04	0.98	0.93	0.88	0.84	0.81
10	3.96	2.69	2.14	1.82	1.61	1.45	1.33	1.23	1.15	1.09	1.03	0.98
25	4.80	3.27	2.61	2.22	1.96	1.77	1.62	1.51	1.41	1.33	1.26	1.20
50	5.65	3.84	3.06	2.60	2.29	2.07	1.90	1.76	1.65	1.55	1.47	1.40
100	6.40	4.36	3.48	2.96	2.61	2.36	2.16	2.01	1.88	1.77	1.68	1.60

Tc = time in minutes. Values may exceed 60.

e: F:\Projects\4090\003_Support Files\Reports\Hydrology\Preliminary Hydrology\Calculation\4090-03 Precipitation.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.28	0.00	2.04	2.33	3.18	4.00	4.30
SCS 6-Hr	0.00	0.82	0.00	1.13	1.28	1.83	2.11	2.50
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Tuesday, 12 / 5 / 2023

Hyd. No. 15

RETENTION BASIN, E

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 24.50 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 14 - 4090-03 P-E-OVERALL POST DEVT UNIT HYDROGRAPH	Reservoir name	= RETENTION BASIN,
Max. Elevation	= 446.38 ft	Max. Storage	= 46,826 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp.)

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
8.83	0.070	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
9.23	0.134	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
9.30	0.145	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
9.67	0.204	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
9.70	0.209	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
9.73	0.215	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
9.77	0.220	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
9.90	0.248	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.40	0.408	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.50	0.452	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.57	0.485	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
11.03	0.801	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
11.10	0.864	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
24.50	0.081	0.000 <<	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000 <<
25.33	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
25.40	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
25.90	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
26.17	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
26.60	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
26.77	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
26.87	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000

26.93	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
26.97	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
27.03	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
27.43	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
27.47	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
27.57	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
27.63	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
27.80	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
27.90	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
27.97	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
28.27	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
28.30	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
28.37	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
28.57	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
28.67	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
29.07	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
29.10	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
29.13	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
29.47	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
29.50	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000

...End

RETENTION BASIN, F

DRAINAGE AREA "F"

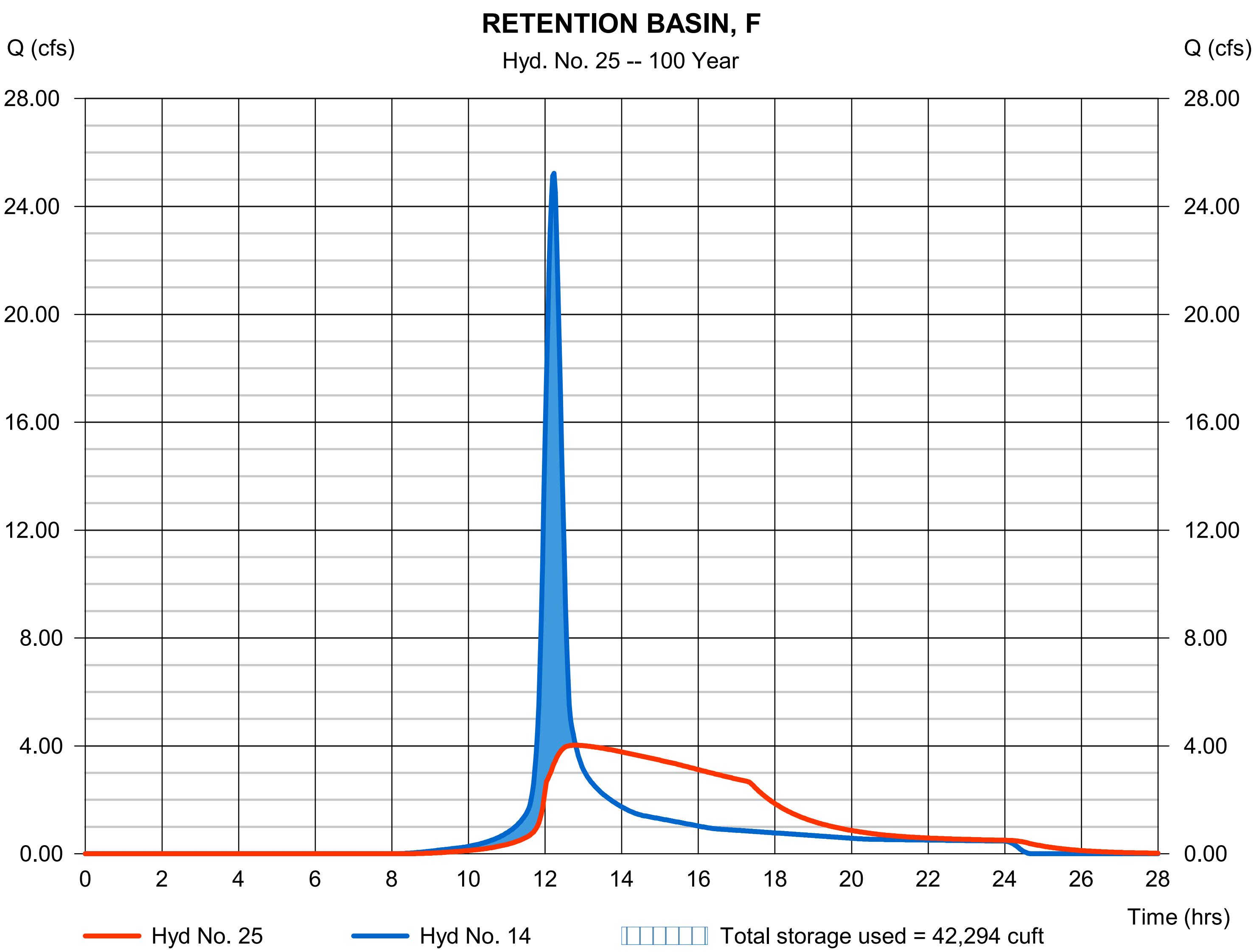
Hydrograph Report

Hyd. No. 25

RETENTION BASIN, F

Hydrograph type	= Reservoir	Peak discharge	= 4.024 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.80 hrs
Time interval	= 2 min	Hyd. volume	= 95,783 cuft
Inflow hyd. No.	= 14 - 4090-03 P-E-OVERALL POST DEVT UNIT HYDROGRAPH	Max. Elevation	= 439.93 ft
Reservoir name	= RETENTION BASIN, F	Max. Storage	= 42,294 cuft

Storage Indication method used. Outflow includes exfiltration.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Tuesday, 12 / 5 / 2023

Pond No. 3 - RETENTION BASIN, F

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 437.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	437.00	9,500	0	0
1.00	438.00	12,850	11,132	11,132
2.00	439.00	16,239	14,510	25,642
3.00	440.00	19,693	17,936	43,578
4.00	441.00	23,239	21,439	65,018
5.00	442.00	26,933	25,061	90,079
6.00	443.00	307,050	141,626	231,705
7.00	444.00	34,726	148,331	380,035

Culvert / Orifice Structures

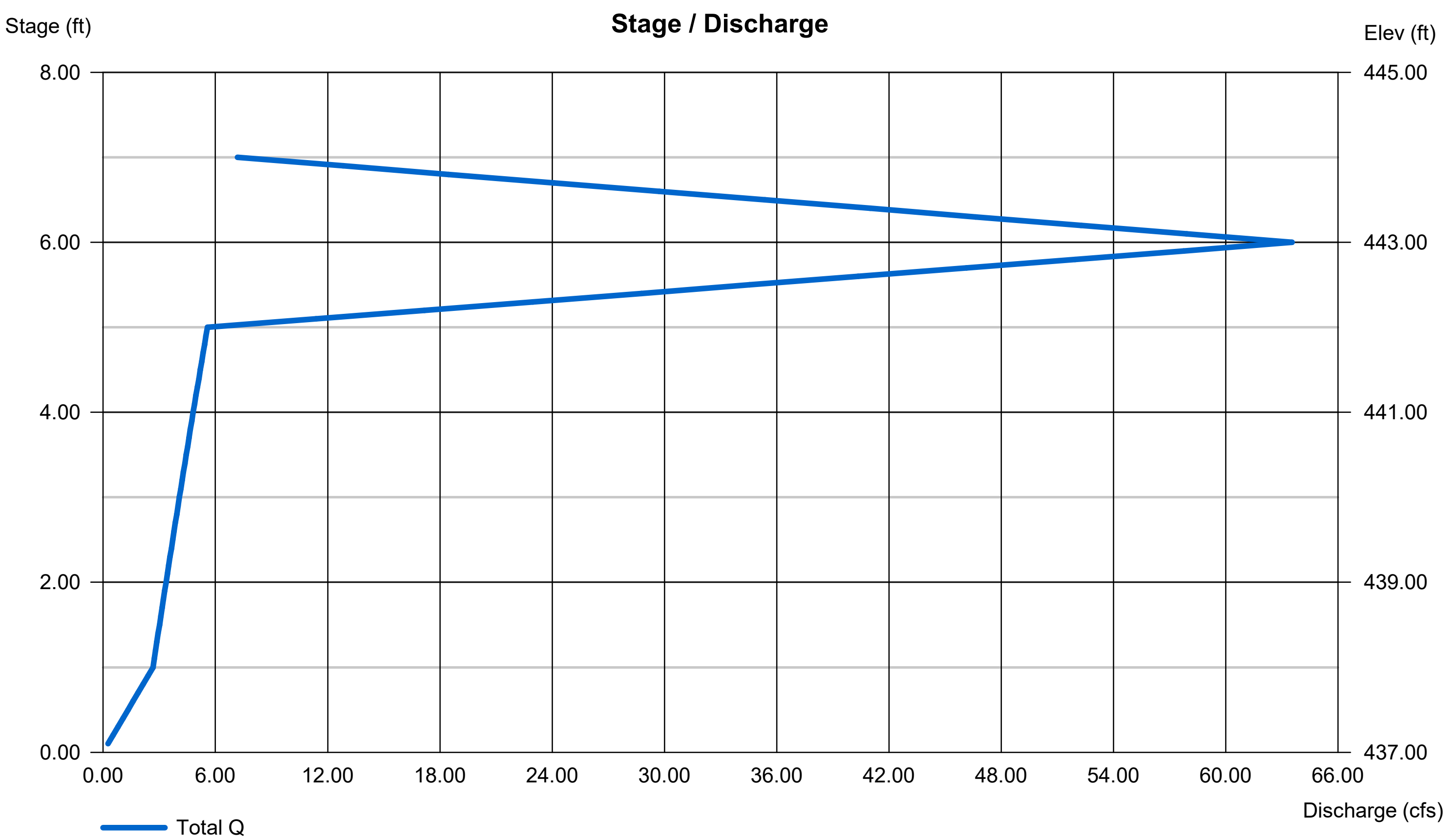
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 8.940 (by Contour)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 — Tuesday, 12 / 5 / 2023

Pond No. 3 - RETENTION BASIN, F

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 437.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	437.00	9,500	0	0
1.00	438.00	12,850	11,132	11,132
2.00	439.00	16,239	14,510	25,642
3.00	440.00	19,693	17,936	43,578
4.00	441.00	23,239	21,439	65,018
5.00	442.00	26,933	25,061	90,079
6.00	443.00	307,050	141,626	231,705
7.00	444.00	34,726	148,331	380,035

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 8.940 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	437.00	---	---	---	---	---	---	---	---	0.000	---	0.000
1.00	11,132	438.00	---	---	---	---	---	---	---	---	2.659	---	2.659
2.00	25,642	439.00	---	---	---	---	---	---	---	---	3.361	---	3.361
3.00	43,578	440.00	---	---	---	---	---	---	---	---	4.075	---	4.075
4.00	65,018	441.00	---	---	---	---	---	---	---	---	4.809	---	4.809
5.00	90,079	442.00	---	---	---	---	---	---	---	---	5.574	---	5.574
6.00	231,705	443.00	---	---	---	---	---	---	---	---	63.542	---	63.54
7.00	380,035	444.00	---	---	---	---	---	---	---	---	7.186	---	7.186

Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	5.0994	0.1000	0.5670	--------
3	0.0000	0.0000	0.0000	--------
5	5.5223	0.1000	0.4686	--------
10	9.9784	0.1000	0.5666	--------
25	11.9956	0.1000	0.5621	--------
50	14.1968	0.1000	0.5656	--------
100	15.9941	0.1000	0.5621	--------

File name: 4090-03 Intensity.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2.02	1.37	1.09	0.93	0.82	0.74	0.68	0.63	0.59	0.55	0.53	0.50
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.57	1.87	1.55	1.35	1.22	1.12	1.04	0.98	0.93	0.88	0.84	0.81
10	3.96	2.69	2.14	1.82	1.61	1.45	1.33	1.23	1.15	1.09	1.03	0.98
25	4.80	3.27	2.61	2.22	1.96	1.77	1.62	1.51	1.41	1.33	1.26	1.20
50	5.65	3.84	3.06	2.60	2.29	2.07	1.90	1.76	1.65	1.55	1.47	1.40
100	6.40	4.36	3.48	2.96	2.61	2.36	2.16	2.01	1.88	1.77	1.68	1.60

Tc = time in minutes. Values may exceed 60.

e: F:\Projects\4090\003_Support Files\Reports\Hydrology\Preliminary Hydrology\Calculation\4090-03 Precipitation.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.28	0.00	2.04	2.33	3.18	4.00	4.30
SCS 6-Hr	0.00	0.82	0.00	1.13	1.28	1.83	2.11	2.50
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrograph Report

Hyd. No. 25

RETENTION BASIN, F

Hydrograph type	= Reservoir	Peak discharge	= 4.024 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.80 hrs
Time interval	= 2 min	Hyd. volume	= 95,783 cuft
Inflow hyd. No.	= 14 - 4090-03 P-E-OVERALL POST DEVT UNIT HYDROGRAPH	Reservoir name	= RETENTION BASIN,
Max. Elevation	= 439.93 ft	Max. Storage	= 42,294 cuft

Storage Indication method used. Outflow includes exfiltration.

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp.)

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
9.23	0.134	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.041	0.041
9.27	0.140	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.044	0.044
9.30	0.145	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.046	0.046
9.33	0.151	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.049	0.049
9.37	0.157	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.052	0.052
9.40	0.162	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.055	0.055
9.43	0.167	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.058	0.058
9.47	0.173	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.062	0.062
9.50	0.178	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.065	0.065
9.53	0.183	437.03	-----	-----	-----	-----	-----	-----	-----	-----	0.068	0.068
9.57	0.188	437.03	-----	-----	-----	-----	-----	-----	-----	-----	0.071	0.071
9.60	0.193	437.03	-----	-----	-----	-----	-----	-----	-----	-----	0.075	0.075
9.63	0.198	437.03	-----	-----	-----	-----	-----	-----	-----	-----	0.078	0.078
9.67	0.204	437.03	-----	-----	-----	-----	-----	-----	-----	-----	0.082	0.082
9.70	0.209	437.03	-----	-----	-----	-----	-----	-----	-----	-----	0.085	0.085
9.73	0.215	437.03	-----	-----	-----	-----	-----	-----	-----	-----	0.089	0.089
9.77	0.220	437.03	-----	-----	-----	-----	-----	-----	-----	-----	0.092	0.092
9.80	0.227	437.04	-----	-----	-----	-----	-----	-----	-----	-----	0.096	0.096
9.83	0.233	437.04	-----	-----	-----	-----	-----	-----	-----	-----	0.100	0.100
9.87	0.240	437.04	-----	-----	-----	-----	-----	-----	-----	-----	0.104	0.104

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
9.90	0.248	437.04	-----	-----	-----	-----	-----	-----	-----	-----	0.108	0.108
9.93	0.256	437.04	-----	-----	-----	-----	-----	-----	-----	-----	0.112	0.112
9.97	0.264	437.04	-----	-----	-----	-----	-----	-----	-----	-----	0.116	0.116
10.00	0.272	437.05	-----	-----	-----	-----	-----	-----	-----	-----	0.120	0.120
10.03	0.282	437.05	-----	-----	-----	-----	-----	-----	-----	-----	0.125	0.125
10.07	0.291	437.05	-----	-----	-----	-----	-----	-----	-----	-----	0.129	0.129
10.10	0.301	437.05	-----	-----	-----	-----	-----	-----	-----	-----	0.134	0.134
10.13	0.311	437.05	-----	-----	-----	-----	-----	-----	-----	-----	0.139	0.139
10.17	0.322	437.05	-----	-----	-----	-----	-----	-----	-----	-----	0.144	0.144
10.20	0.333	437.06	-----	-----	-----	-----	-----	-----	-----	-----	0.149	0.149
10.23	0.344	437.06	-----	-----	-----	-----	-----	-----	-----	-----	0.154	0.154
10.27	0.356	437.06	-----	-----	-----	-----	-----	-----	-----	-----	0.160	0.160
10.30	0.368	437.06	-----	-----	-----	-----	-----	-----	-----	-----	0.166	0.166
10.33	0.381	437.06	-----	-----	-----	-----	-----	-----	-----	-----	0.171	0.172
10.37	0.394	437.07	-----	-----	-----	-----	-----	-----	-----	-----	0.178	0.178
10.40	0.408	437.07	-----	-----	-----	-----	-----	-----	-----	-----	0.184	0.184
10.43	0.422	437.07	-----	-----	-----	-----	-----	-----	-----	-----	0.190	0.190
10.47	0.437	437.07	-----	-----	-----	-----	-----	-----	-----	-----	0.197	0.197
10.50	0.452	437.08	-----	-----	-----	-----	-----	-----	-----	-----	0.204	0.204
10.53	0.468	437.08	-----	-----	-----	-----	-----	-----	-----	-----	0.211	0.211
10.57	0.485	437.08	-----	-----	-----	-----	-----	-----	-----	-----	0.219	0.219
10.60	0.502	437.09	-----	-----	-----	-----	-----	-----	-----	-----	0.227	0.227
10.63	0.519	437.09	-----	-----	-----	-----	-----	-----	-----	-----	0.235	0.235
10.67	0.538	437.09	-----	-----	-----	-----	-----	-----	-----	-----	0.243	0.243
10.70	0.557	437.09	-----	-----	-----	-----	-----	-----	-----	-----	0.252	0.252
10.73	0.577	437.10	-----	-----	-----	-----	-----	-----	-----	-----	0.260	0.261
10.77	0.597	437.10	-----	-----	-----	-----	-----	-----	-----	-----	0.270	0.270
10.80	0.619	437.11	-----	-----	-----	-----	-----	-----	-----	-----	0.279	0.279

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
10.83	0.642	437.11	-----	-----	-----	-----	-----	-----	-----	-----	0.289	0.289
10.87	0.666	437.11	-----	-----	-----	-----	-----	-----	-----	-----	0.300	0.300
10.90	0.690	437.12	-----	-----	-----	-----	-----	-----	-----	-----	0.310	0.310
10.93	0.717	437.12	-----	-----	-----	-----	-----	-----	-----	-----	0.321	0.321
10.97	0.744	437.13	-----	-----	-----	-----	-----	-----	-----	-----	0.333	0.333
11.00	0.772	437.13	-----	-----	-----	-----	-----	-----	-----	-----	0.345	0.345
11.03	0.801	437.13	-----	-----	-----	-----	-----	-----	-----	-----	0.357	0.357
11.07	0.832	437.14	-----	-----	-----	-----	-----	-----	-----	-----	0.370	0.370
11.10	0.864	437.14	-----	-----	-----	-----	-----	-----	-----	-----	0.384	0.384
11.13	0.898	437.15	-----	-----	-----	-----	-----	-----	-----	-----	0.398	0.398
11.17	0.935	437.16	-----	-----	-----	-----	-----	-----	-----	-----	0.413	0.413
11.20	0.973	437.16	-----	-----	-----	-----	-----	-----	-----	-----	0.428	0.428
11.23	1.014	437.17	-----	-----	-----	-----	-----	-----	-----	-----	0.444	0.444
11.27	1.058	437.17	-----	-----	-----	-----	-----	-----	-----	-----	0.461	0.461
11.30	1.106	437.18	-----	-----	-----	-----	-----	-----	-----	-----	0.478	0.478
11.33	1.156	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.497	0.497
11.37	1.211	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.516	0.516
11.40	1.270	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.537	0.537
11.43	1.333	437.21	-----	-----	-----	-----	-----	-----	-----	-----	0.558	0.558
11.47	1.400	437.22	-----	-----	-----	-----	-----	-----	-----	-----	0.581	0.581
11.50	1.470	437.23	-----	-----	-----	-----	-----	-----	-----	-----	0.605	0.605
11.53	1.551	437.24	-----	-----	-----	-----	-----	-----	-----	-----	0.631	0.631
11.57	1.654	437.25	-----	-----	-----	-----	-----	-----	-----	-----	0.658	0.658
11.60	1.794	437.26	-----	-----	-----	-----	-----	-----	-----	-----	0.688	0.688
11.63	1.988	437.27	-----	-----	-----	-----	-----	-----	-----	-----	0.722	0.722
11.67	2.251	437.29	-----	-----	-----	-----	-----	-----	-----	-----	0.762	0.762
11.70	2.603	437.30	-----	-----	-----	-----	-----	-----	-----	-----	0.809	0.809
11.73	3.066	437.33	-----	-----	-----	-----	-----	-----	-----	-----	0.866	0.866

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
11.77	3.664	437.35	-----	-----	-----	-----	-----	-----	-----	-----	0.937	0.937
11.80	4.455	437.39	-----	-----	-----	-----	-----	-----	-----	-----	1.025	1.025
11.83	5.502	437.43	-----	-----	-----	-----	-----	-----	-----	-----	1.137	1.137
11.87	6.879	437.48	-----	-----	-----	-----	-----	-----	-----	-----	1.280	1.280
11.90	8.652	437.55	-----	-----	-----	-----	-----	-----	-----	-----	1.463	1.463
11.93	10.77	437.64	-----	-----	-----	-----	-----	-----	-----	-----	1.696	1.696
11.97	13.08	437.75	-----	-----	-----	-----	-----	-----	-----	-----	1.985	1.985
12.00	15.39	437.88	-----	-----	-----	-----	-----	-----	-----	-----	2.331	2.331
12.03	17.60	438.02	-----	-----	-----	-----	-----	-----	-----	-----	2.674	2.674
12.07	19.65	438.15	-----	-----	-----	-----	-----	-----	-----	-----	2.766	2.766
12.10	21.52	438.30	-----	-----	-----	-----	-----	-----	-----	-----	2.869	2.869
12.13	23.13	438.46	-----	-----	-----	-----	-----	-----	-----	-----	2.982	2.982
12.17	24.38	438.63	-----	-----	-----	-----	-----	-----	-----	-----	3.102	3.102
12.20	25.12	438.81	-----	-----	-----	-----	-----	-----	-----	-----	3.227	3.227
12.23	25.23 <<	438.99	-----	-----	-----	-----	-----	-----	-----	-----	3.354	3.354
12.27	24.52	439.14	-----	-----	-----	-----	-----	-----	-----	-----	3.458	3.458
12.30	23.07	439.27	-----	-----	-----	-----	-----	-----	-----	-----	3.555	3.555
12.33	21.15	439.40	-----	-----	-----	-----	-----	-----	-----	-----	3.643	3.643
12.37	19.07	439.51	-----	-----	-----	-----	-----	-----	-----	-----	3.722	3.722
12.40	16.99	439.60	-----	-----	-----	-----	-----	-----	-----	-----	3.790	3.790
12.43	14.94	439.68	-----	-----	-----	-----	-----	-----	-----	-----	3.848	3.848
12.47	12.94	439.75	-----	-----	-----	-----	-----	-----	-----	-----	3.896	3.896
12.50	11.03	439.80	-----	-----	-----	-----	-----	-----	-----	-----	3.935	3.935
12.53	9.253	439.85	-----	-----	-----	-----	-----	-----	-----	-----	3.965	3.965
12.57	7.691	439.88	-----	-----	-----	-----	-----	-----	-----	-----	3.986	3.986
12.60	6.417	439.90	-----	-----	-----	-----	-----	-----	-----	-----	4.001	4.001
12.63	5.517	439.91	-----	-----	-----	-----	-----	-----	-----	-----	4.010	4.010
12.67	4.974	439.92	-----	-----	-----	-----	-----	-----	-----	-----	4.016	4.016

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
12.70	4.658	439.92	-----	-----	-----	-----	-----	-----	-----	-----	4.020	4.020
12.73	4.426	439.93	-----	-----	-----	-----	-----	-----	-----	-----	4.022	4.022
12.77	4.206	439.93	-----	-----	-----	-----	-----	-----	-----	-----	4.024	4.024
12.80	4.001	439.93 <<	-----	-----	-----	-----	-----	-----	-----	-----	4.024	4.024 <<
12.83	3.812	439.93	-----	-----	-----	-----	-----	-----	-----	-----	4.024	4.024
12.87	3.641	439.93	-----	-----	-----	-----	-----	-----	-----	-----	4.022	4.022
12.90	3.489	439.92	-----	-----	-----	-----	-----	-----	-----	-----	4.020	4.020
12.93	3.353	439.92	-----	-----	-----	-----	-----	-----	-----	-----	4.017	4.017
12.97	3.233	439.91	-----	-----	-----	-----	-----	-----	-----	-----	4.014	4.014
13.00	3.125	439.91	-----	-----	-----	-----	-----	-----	-----	-----	4.010	4.010
13.03	3.030	439.90	-----	-----	-----	-----	-----	-----	-----	-----	4.005	4.005
13.07	2.944	439.90	-----	-----	-----	-----	-----	-----	-----	-----	4.000	4.000
13.10	2.867	439.89	-----	-----	-----	-----	-----	-----	-----	-----	3.995	3.995
13.13	2.798	439.88	-----	-----	-----	-----	-----	-----	-----	-----	3.990	3.990
13.17	2.733	439.87	-----	-----	-----	-----	-----	-----	-----	-----	3.984	3.984
13.20	2.673	439.86	-----	-----	-----	-----	-----	-----	-----	-----	3.978	3.978
13.23	2.615	439.85	-----	-----	-----	-----	-----	-----	-----	-----	3.971	3.971
13.27	2.559	439.85	-----	-----	-----	-----	-----	-----	-----	-----	3.965	3.965
13.30	2.505	439.84	-----	-----	-----	-----	-----	-----	-----	-----	3.958	3.958
13.33	2.453	439.83	-----	-----	-----	-----	-----	-----	-----	-----	3.951	3.951
13.37	2.403	439.82	-----	-----	-----	-----	-----	-----	-----	-----	3.944	3.944
13.40	2.356	439.81	-----	-----	-----	-----	-----	-----	-----	-----	3.936	3.936
13.43	2.312	439.79	-----	-----	-----	-----	-----	-----	-----	-----	3.928	3.928
13.47	2.269	439.78	-----	-----	-----	-----	-----	-----	-----	-----	3.921	3.921
13.50	2.229	439.77	-----	-----	-----	-----	-----	-----	-----	-----	3.913	3.913
13.53	2.189	439.76	-----	-----	-----	-----	-----	-----	-----	-----	3.905	3.905
13.57	2.152	439.75	-----	-----	-----	-----	-----	-----	-----	-----	3.896	3.896

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
13.60	2.115	439.74	-----	-----	-----	-----	-----	-----	-----	-----	3.888	3.888
13.63	2.080	439.73	-----	-----	-----	-----	-----	-----	-----	-----	3.879	3.879
13.67	2.046	439.71	-----	-----	-----	-----	-----	-----	-----	-----	3.871	3.871
13.70	2.012	439.70	-----	-----	-----	-----	-----	-----	-----	-----	3.862	3.862
13.73	1.979	439.69	-----	-----	-----	-----	-----	-----	-----	-----	3.853	3.853
13.77	1.946	439.68	-----	-----	-----	-----	-----	-----	-----	-----	3.844	3.844
13.80	1.915	439.66	-----	-----	-----	-----	-----	-----	-----	-----	3.835	3.835
13.83	1.884	439.65	-----	-----	-----	-----	-----	-----	-----	-----	3.826	3.826
13.87	1.853	439.64	-----	-----	-----	-----	-----	-----	-----	-----	3.816	3.816
13.90	1.824	439.62	-----	-----	-----	-----	-----	-----	-----	-----	3.807	3.807
13.93	1.795	439.61	-----	-----	-----	-----	-----	-----	-----	-----	3.797	3.797
13.97	1.767	439.60	-----	-----	-----	-----	-----	-----	-----	-----	3.788	3.788
14.00	1.740	439.58	-----	-----	-----	-----	-----	-----	-----	-----	3.778	3.778
14.03	1.713	439.57	-----	-----	-----	-----	-----	-----	-----	-----	3.768	3.768
14.07	1.687	439.56	-----	-----	-----	-----	-----	-----	-----	-----	3.758	3.758
14.10	1.662	439.54	-----	-----	-----	-----	-----	-----	-----	-----	3.748	3.748
14.13	1.637	439.53	-----	-----	-----	-----	-----	-----	-----	-----	3.738	3.738
14.17	1.613	439.51	-----	-----	-----	-----	-----	-----	-----	-----	3.728	3.728
14.20	1.590	439.50	-----	-----	-----	-----	-----	-----	-----	-----	3.718	3.718
14.23	1.568	439.49	-----	-----	-----	-----	-----	-----	-----	-----	3.708	3.708
14.27	1.547	439.47	-----	-----	-----	-----	-----	-----	-----	-----	3.698	3.698
14.30	1.527	439.46	-----	-----	-----	-----	-----	-----	-----	-----	3.687	3.687
14.33	1.509	439.44	-----	-----	-----	-----	-----	-----	-----	-----	3.677	3.677
14.37	1.492	439.43	-----	-----	-----	-----	-----	-----	-----	-----	3.667	3.667
14.40	1.476	439.41	-----	-----	-----	-----	-----	-----	-----	-----	3.656	3.656
14.43	1.462	439.40	-----	-----	-----	-----	-----	-----	-----	-----	3.646	3.646
14.47	1.449	439.38	-----	-----	-----	-----	-----	-----	-----	-----	3.635	3.635
14.50	1.437	439.37	-----	-----	-----	-----	-----	-----	-----	-----	3.625	3.625

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
14.53	1.425	439.36	-----	-----	-----	-----	-----	-----	-----	-----	3.614	3.614
14.57	1.415	439.34	-----	-----	-----	-----	-----	-----	-----	-----	3.604	3.604
14.60	1.405	439.33	-----	-----	-----	-----	-----	-----	-----	-----	3.593	3.593
14.63	1.396	439.31	-----	-----	-----	-----	-----	-----	-----	-----	3.583	3.583
14.67	1.387	439.30	-----	-----	-----	-----	-----	-----	-----	-----	3.573	3.573
14.70	1.378	439.28	-----	-----	-----	-----	-----	-----	-----	-----	3.562	3.562
14.73	1.370	439.27	-----	-----	-----	-----	-----	-----	-----	-----	3.552	3.552
14.77	1.361	439.25	-----	-----	-----	-----	-----	-----	-----	-----	3.541	3.541
14.80	1.352	439.24	-----	-----	-----	-----	-----	-----	-----	-----	3.531	3.531
14.83	1.343	439.22	-----	-----	-----	-----	-----	-----	-----	-----	3.520	3.520
14.87	1.335	439.21	-----	-----	-----	-----	-----	-----	-----	-----	3.510	3.510
14.90	1.326	439.19	-----	-----	-----	-----	-----	-----	-----	-----	3.500	3.500
14.93	1.317	439.18	-----	-----	-----	-----	-----	-----	-----	-----	3.489	3.489
14.97	1.308	439.17	-----	-----	-----	-----	-----	-----	-----	-----	3.479	3.479
15.00	1.299	439.15	-----	-----	-----	-----	-----	-----	-----	-----	3.468	3.468
15.03	1.291	439.14	-----	-----	-----	-----	-----	-----	-----	-----	3.458	3.458
15.07	1.282	439.12	-----	-----	-----	-----	-----	-----	-----	-----	3.448	3.448
15.10	1.273	439.11	-----	-----	-----	-----	-----	-----	-----	-----	3.437	3.437
15.13	1.264	439.09	-----	-----	-----	-----	-----	-----	-----	-----	3.427	3.427
15.17	1.255	439.08	-----	-----	-----	-----	-----	-----	-----	-----	3.417	3.417
15.20	1.246	439.06	-----	-----	-----	-----	-----	-----	-----	-----	3.406	3.406
15.23	1.237	439.05	-----	-----	-----	-----	-----	-----	-----	-----	3.396	3.396
15.27	1.229	439.04	-----	-----	-----	-----	-----	-----	-----	-----	3.386	3.386
15.30	1.220	439.02	-----	-----	-----	-----	-----	-----	-----	-----	3.375	3.375
15.33	1.211	439.01	-----	-----	-----	-----	-----	-----	-----	-----	3.365	3.365
15.37	1.202	438.99	-----	-----	-----	-----	-----	-----	-----	-----	3.354	3.354
15.40	1.193	438.97	-----	-----	-----	-----	-----	-----	-----	-----	3.341	3.341
15.43	1.184	438.95	-----	-----	-----	-----	-----	-----	-----	-----	3.329	3.329

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
15.47	1.175	438.94	-----	-----	-----	-----	-----	-----	-----	-----	3.316	3.316
15.50	1.166	438.92	-----	-----	-----	-----	-----	-----	-----	-----	3.304	3.304
15.53	1.157	438.90	-----	-----	-----	-----	-----	-----	-----	-----	3.291	3.291
15.57	1.148	438.88	-----	-----	-----	-----	-----	-----	-----	-----	3.279	3.279
15.60	1.139	438.87	-----	-----	-----	-----	-----	-----	-----	-----	3.267	3.267
15.63	1.130	438.85	-----	-----	-----	-----	-----	-----	-----	-----	3.254	3.254
15.67	1.121	438.83	-----	-----	-----	-----	-----	-----	-----	-----	3.242	3.242
15.70	1.112	438.81	-----	-----	-----	-----	-----	-----	-----	-----	3.230	3.230
15.73	1.103	438.80	-----	-----	-----	-----	-----	-----	-----	-----	3.217	3.217
15.77	1.094	438.78	-----	-----	-----	-----	-----	-----	-----	-----	3.205	3.205
15.80	1.085	438.76	-----	-----	-----	-----	-----	-----	-----	-----	3.193	3.193
15.83	1.076	438.74	-----	-----	-----	-----	-----	-----	-----	-----	3.181	3.181
15.87	1.066	438.73	-----	-----	-----	-----	-----	-----	-----	-----	3.169	3.169
15.90	1.057	438.71	-----	-----	-----	-----	-----	-----	-----	-----	3.156	3.156
15.93	1.048	438.69	-----	-----	-----	-----	-----	-----	-----	-----	3.144	3.144
15.97	1.039	438.67	-----	-----	-----	-----	-----	-----	-----	-----	3.132	3.132
16.00	1.030	438.66	-----	-----	-----	-----	-----	-----	-----	-----	3.120	3.120
16.03	1.021	438.64	-----	-----	-----	-----	-----	-----	-----	-----	3.108	3.108
16.07	1.012	438.62	-----	-----	-----	-----	-----	-----	-----	-----	3.096	3.096
16.10	1.003	438.61	-----	-----	-----	-----	-----	-----	-----	-----	3.084	3.084
16.13	0.994	438.59	-----	-----	-----	-----	-----	-----	-----	-----	3.072	3.072
16.17	0.986	438.57	-----	-----	-----	-----	-----	-----	-----	-----	3.060	3.060
16.20	0.977	438.55	-----	-----	-----	-----	-----	-----	-----	-----	3.048	3.048
16.23	0.969	438.54	-----	-----	-----	-----	-----	-----	-----	-----	3.036	3.036
16.27	0.962	438.52	-----	-----	-----	-----	-----	-----	-----	-----	3.024	3.024
16.30	0.955	438.50	-----	-----	-----	-----	-----	-----	-----	-----	3.012	3.012
16.33	0.948	438.49	-----	-----	-----	-----	-----	-----	-----	-----	3.000	3.000
16.37	0.942	438.47	-----	-----	-----	-----	-----	-----	-----	-----	2.988	2.988

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
16.40	0.936	438.45	-----	-----	-----	-----	-----	-----	-----	-----	2.976	2.976
16.43	0.931	438.43	-----	-----	-----	-----	-----	-----	-----	-----	2.964	2.964
16.47	0.926	438.42	-----	-----	-----	-----	-----	-----	-----	-----	2.952	2.952
16.50	0.922	438.40	-----	-----	-----	-----	-----	-----	-----	-----	2.941	2.941
16.53	0.918	438.38	-----	-----	-----	-----	-----	-----	-----	-----	2.929	2.929
16.57	0.914	438.37	-----	-----	-----	-----	-----	-----	-----	-----	2.917	2.917
16.60	0.910	438.35	-----	-----	-----	-----	-----	-----	-----	-----	2.906	2.906
16.63	0.907	438.33	-----	-----	-----	-----	-----	-----	-----	-----	2.894	2.894
16.67	0.904	438.32	-----	-----	-----	-----	-----	-----	-----	-----	2.883	2.883
16.70	0.900	438.30	-----	-----	-----	-----	-----	-----	-----	-----	2.871	2.871
16.73	0.897	438.29	-----	-----	-----	-----	-----	-----	-----	-----	2.860	2.860
16.77	0.894	438.27	-----	-----	-----	-----	-----	-----	-----	-----	2.848	2.848
16.80	0.891	438.25	-----	-----	-----	-----	-----	-----	-----	-----	2.837	2.837
16.83	0.888	438.24	-----	-----	-----	-----	-----	-----	-----	-----	2.826	2.826
16.87	0.885	438.22	-----	-----	-----	-----	-----	-----	-----	-----	2.815	2.815
16.90	0.881	438.21	-----	-----	-----	-----	-----	-----	-----	-----	2.803	2.803
16.93	0.878	438.19	-----	-----	-----	-----	-----	-----	-----	-----	2.792	2.792
16.97	0.875	438.17	-----	-----	-----	-----	-----	-----	-----	-----	2.781	2.781
17.00	0.872	438.16	-----	-----	-----	-----	-----	-----	-----	-----	2.770	2.770
17.03	0.869	438.14	-----	-----	-----	-----	-----	-----	-----	-----	2.759	2.759
17.07	0.865	438.13	-----	-----	-----	-----	-----	-----	-----	-----	2.748	2.748
17.10	0.862	438.11	-----	-----	-----	-----	-----	-----	-----	-----	2.737	2.737
17.13	0.859	438.10	-----	-----	-----	-----	-----	-----	-----	-----	2.727	2.727
17.17	0.856	438.08	-----	-----	-----	-----	-----	-----	-----	-----	2.716	2.716
17.20	0.853	438.07	-----	-----	-----	-----	-----	-----	-----	-----	2.705	2.705
17.23	0.849	438.05	-----	-----	-----	-----	-----	-----	-----	-----	2.694	2.694
17.27	0.846	438.03	-----	-----	-----	-----	-----	-----	-----	-----	2.684	2.684
17.30	0.843	438.02	-----	-----	-----	-----	-----	-----	-----	-----	2.673	2.673

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
17.33	0.840	438.00	-----	-----	-----	-----	-----	-----	-----	-----	2.662	2.662
17.37	0.837	437.99	-----	-----	-----	-----	-----	-----	-----	-----	2.623	2.623
17.40	0.833	437.97	-----	-----	-----	-----	-----	-----	-----	-----	2.572	2.572
17.43	0.830	437.95	-----	-----	-----	-----	-----	-----	-----	-----	2.523	2.523
17.47	0.827	437.93	-----	-----	-----	-----	-----	-----	-----	-----	2.475	2.475
17.50	0.824	437.91	-----	-----	-----	-----	-----	-----	-----	-----	2.429	2.429
17.53	0.820	437.90	-----	-----	-----	-----	-----	-----	-----	-----	2.383	2.383
17.57	0.817	437.88	-----	-----	-----	-----	-----	-----	-----	-----	2.339	2.339
17.60	0.814	437.86	-----	-----	-----	-----	-----	-----	-----	-----	2.296	2.296
17.63	0.811	437.85	-----	-----	-----	-----	-----	-----	-----	-----	2.254	2.254
17.67	0.807	437.83	-----	-----	-----	-----	-----	-----	-----	-----	2.213	2.213
17.70	0.804	437.82	-----	-----	-----	-----	-----	-----	-----	-----	2.173	2.173
17.73	0.801	437.80	-----	-----	-----	-----	-----	-----	-----	-----	2.135	2.135
17.77	0.798	437.79	-----	-----	-----	-----	-----	-----	-----	-----	2.097	2.097
17.80	0.794	437.77	-----	-----	-----	-----	-----	-----	-----	-----	2.060	2.060
17.83	0.791	437.76	-----	-----	-----	-----	-----	-----	-----	-----	2.024	2.024
17.87	0.788	437.75	-----	-----	-----	-----	-----	-----	-----	-----	1.989	1.989
17.90	0.785	437.74	-----	-----	-----	-----	-----	-----	-----	-----	1.956	1.955
17.93	0.781	437.72	-----	-----	-----	-----	-----	-----	-----	-----	1.922	1.922
17.97	0.778	437.71	-----	-----	-----	-----	-----	-----	-----	-----	1.890	1.890
18.00	0.775	437.70	-----	-----	-----	-----	-----	-----	-----	-----	1.859	1.859
18.03	0.772	437.69	-----	-----	-----	-----	-----	-----	-----	-----	1.828	1.828
18.07	0.768	437.68	-----	-----	-----	-----	-----	-----	-----	-----	1.798	1.798
18.10	0.765	437.67	-----	-----	-----	-----	-----	-----	-----	-----	1.769	1.769
18.13	0.762	437.65	-----	-----	-----	-----	-----	-----	-----	-----	1.740	1.740
18.17	0.758	437.64	-----	-----	-----	-----	-----	-----	-----	-----	1.713	1.713
18.20	0.755	437.63	-----	-----	-----	-----	-----	-----	-----	-----	1.686	1.686
18.23	0.752	437.62	-----	-----	-----	-----	-----	-----	-----	-----	1.659	1.659

Continues on next page...

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
18.27	0.749	437.61	-----	-----	-----	-----	-----	-----	-----	-----	1.634	1.634
18.30	0.745	437.60	-----	-----	-----	-----	-----	-----	-----	-----	1.609	1.609
18.33	0.742	437.60	-----	-----	-----	-----	-----	-----	-----	-----	1.584	1.584
18.37	0.739	437.59	-----	-----	-----	-----	-----	-----	-----	-----	1.560	1.560
18.40	0.735	437.58	-----	-----	-----	-----	-----	-----	-----	-----	1.537	1.537
18.43	0.732	437.57	-----	-----	-----	-----	-----	-----	-----	-----	1.514	1.514
18.47	0.729	437.56	-----	-----	-----	-----	-----	-----	-----	-----	1.492	1.492
18.50	0.726	437.55	-----	-----	-----	-----	-----	-----	-----	-----	1.471	1.471
18.53	0.722	437.55	-----	-----	-----	-----	-----	-----	-----	-----	1.450	1.450
18.57	0.719	437.54	-----	-----	-----	-----	-----	-----	-----	-----	1.429	1.429
18.60	0.716	437.53	-----	-----	-----	-----	-----	-----	-----	-----	1.409	1.409
18.63	0.712	437.52	-----	-----	-----	-----	-----	-----	-----	-----	1.389	1.389
18.67	0.709	437.52	-----	-----	-----	-----	-----	-----	-----	-----	1.370	1.370
18.70	0.706	437.51	-----	-----	-----	-----	-----	-----	-----	-----	1.351	1.351
18.73	0.702	437.50	-----	-----	-----	-----	-----	-----	-----	-----	1.333	1.333
18.77	0.699	437.49	-----	-----	-----	-----	-----	-----	-----	-----	1.315	1.315
18.80	0.696	437.49	-----	-----	-----	-----	-----	-----	-----	-----	1.298	1.298
18.83	0.692	437.48	-----	-----	-----	-----	-----	-----	-----	-----	1.281	1.281
18.87	0.689	437.48	-----	-----	-----	-----	-----	-----	-----	-----	1.264	1.264
18.90	0.686	437.47	-----	-----	-----	-----	-----	-----	-----	-----	1.248	1.248
18.93	0.683	437.46	-----	-----	-----	-----	-----	-----	-----	-----	1.232	1.232
18.97	0.679	437.46	-----	-----	-----	-----	-----	-----	-----	-----	1.216	1.216
19.00	0.676	437.45	-----	-----	-----	-----	-----	-----	-----	-----	1.201	1.201
19.03	0.673	437.45	-----	-----	-----	-----	-----	-----	-----	-----	1.186	1.186
19.07	0.669	437.44	-----	-----	-----	-----	-----	-----	-----	-----	1.171	1.171
19.10	0.666	437.44	-----	-----	-----	-----	-----	-----	-----	-----	1.157	1.157
19.13	0.663	437.43	-----	-----	-----	-----	-----	-----	-----	-----	1.143	1.143
19.17	0.659	437.42	-----	-----	-----	-----	-----	-----	-----	-----	1.130	1.130

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
19.20	0.656	437.42	-----	-----	-----	-----	-----	-----	-----	-----	1.116	1.116
19.23	0.653	437.41	-----	-----	-----	-----	-----	-----	-----	-----	1.103	1.103
19.27	0.649	437.41	-----	-----	-----	-----	-----	-----	-----	-----	1.090	1.090
19.30	0.646	437.41	-----	-----	-----	-----	-----	-----	-----	-----	1.078	1.078
19.33	0.642	437.40	-----	-----	-----	-----	-----	-----	-----	-----	1.066	1.066
19.37	0.639	437.40	-----	-----	-----	-----	-----	-----	-----	-----	1.054	1.054
19.40	0.636	437.39	-----	-----	-----	-----	-----	-----	-----	-----	1.042	1.042
19.43	0.632	437.39	-----	-----	-----	-----	-----	-----	-----	-----	1.030	1.030
19.47	0.629	437.38	-----	-----	-----	-----	-----	-----	-----	-----	1.019	1.019
19.50	0.626	437.38	-----	-----	-----	-----	-----	-----	-----	-----	1.008	1.008
19.53	0.622	437.37	-----	-----	-----	-----	-----	-----	-----	-----	0.997	0.997
19.57	0.619	437.37	-----	-----	-----	-----	-----	-----	-----	-----	0.987	0.987
19.60	0.616	437.37	-----	-----	-----	-----	-----	-----	-----	-----	0.976	0.976
19.63	0.612	437.36	-----	-----	-----	-----	-----	-----	-----	-----	0.966	0.966
19.67	0.609	437.36	-----	-----	-----	-----	-----	-----	-----	-----	0.956	0.956
19.70	0.606	437.36	-----	-----	-----	-----	-----	-----	-----	-----	0.946	0.946
19.73	0.602	437.35	-----	-----	-----	-----	-----	-----	-----	-----	0.936	0.936
19.77	0.599	437.35	-----	-----	-----	-----	-----	-----	-----	-----	0.927	0.927
19.80	0.595	437.35	-----	-----	-----	-----	-----	-----	-----	-----	0.918	0.918
19.83	0.592	437.34	-----	-----	-----	-----	-----	-----	-----	-----	0.908	0.908
19.87	0.589	437.34	-----	-----	-----	-----	-----	-----	-----	-----	0.899	0.899
19.90	0.585	437.33	-----	-----	-----	-----	-----	-----	-----	-----	0.891	0.891
19.93	0.582	437.33	-----	-----	-----	-----	-----	-----	-----	-----	0.882	0.882
19.97	0.579	437.33	-----	-----	-----	-----	-----	-----	-----	-----	0.873	0.873
20.00	0.575	437.33	-----	-----	-----	-----	-----	-----	-----	-----	0.865	0.865
20.03	0.572	437.32	-----	-----	-----	-----	-----	-----	-----	-----	0.857	0.857
20.07	0.569	437.32	-----	-----	-----	-----	-----	-----	-----	-----	0.849	0.849
20.10	0.565	437.32	-----	-----	-----	-----	-----	-----	-----	-----	0.841	0.841

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
20.13	0.562	437.31	-----	-----	-----	-----	-----	-----	-----	-----	0.833	0.833
20.17	0.559	437.31	-----	-----	-----	-----	-----	-----	-----	-----	0.825	0.825
20.20	0.556	437.31	-----	-----	-----	-----	-----	-----	-----	-----	0.818	0.818
20.23	0.553	437.30	-----	-----	-----	-----	-----	-----	-----	-----	0.810	0.810
20.27	0.550	437.30	-----	-----	-----	-----	-----	-----	-----	-----	0.803	0.803
20.30	0.548	437.30	-----	-----	-----	-----	-----	-----	-----	-----	0.796	0.796
20.33	0.546	437.30	-----	-----	-----	-----	-----	-----	-----	-----	0.789	0.789
20.37	0.544	437.29	-----	-----	-----	-----	-----	-----	-----	-----	0.782	0.782
20.40	0.542	437.29	-----	-----	-----	-----	-----	-----	-----	-----	0.775	0.775
20.43	0.540	437.29	-----	-----	-----	-----	-----	-----	-----	-----	0.768	0.768
20.47	0.539	437.29	-----	-----	-----	-----	-----	-----	-----	-----	0.762	0.762
20.50	0.538	437.28	-----	-----	-----	-----	-----	-----	-----	-----	0.756	0.756
20.53	0.537	437.28	-----	-----	-----	-----	-----	-----	-----	-----	0.749	0.749
20.57	0.536	437.28	-----	-----	-----	-----	-----	-----	-----	-----	0.743	0.743
20.60	0.535	437.28	-----	-----	-----	-----	-----	-----	-----	-----	0.738	0.738
20.63	0.534	437.28	-----	-----	-----	-----	-----	-----	-----	-----	0.732	0.732
20.67	0.534	437.27	-----	-----	-----	-----	-----	-----	-----	-----	0.726	0.726
20.70	0.533	437.27	-----	-----	-----	-----	-----	-----	-----	-----	0.721	0.721
20.73	0.532	437.27	-----	-----	-----	-----	-----	-----	-----	-----	0.715	0.715
20.77	0.532	437.27	-----	-----	-----	-----	-----	-----	-----	-----	0.710	0.710
20.80	0.531	437.27	-----	-----	-----	-----	-----	-----	-----	-----	0.705	0.705
20.83	0.531	437.26	-----	-----	-----	-----	-----	-----	-----	-----	0.700	0.700
20.87	0.530	437.26	-----	-----	-----	-----	-----	-----	-----	-----	0.695	0.696
20.90	0.529	437.26	-----	-----	-----	-----	-----	-----	-----	-----	0.691	0.691
20.93	0.529	437.26	-----	-----	-----	-----	-----	-----	-----	-----	0.686	0.686
20.97	0.528	437.26	-----	-----	-----	-----	-----	-----	-----	-----	0.682	0.682
21.00	0.527	437.25	-----	-----	-----	-----	-----	-----	-----	-----	0.677	0.677
21.03	0.527	437.25	-----	-----	-----	-----	-----	-----	-----	-----	0.673	0.673

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
21.07	0.526	437.25	-----	-----	-----	-----	-----	-----	-----	-----	0.669	0.669
21.10	0.526	437.25	-----	-----	-----	-----	-----	-----	-----	-----	0.665	0.665
21.13	0.525	437.25	-----	-----	-----	-----	-----	-----	-----	-----	0.661	0.661
21.17	0.524	437.25	-----	-----	-----	-----	-----	-----	-----	-----	0.657	0.657
21.20	0.524	437.25	-----	-----	-----	-----	-----	-----	-----	-----	0.653	0.653
21.23	0.523	437.24	-----	-----	-----	-----	-----	-----	-----	-----	0.650	0.650
21.27	0.522	437.24	-----	-----	-----	-----	-----	-----	-----	-----	0.646	0.646
21.30	0.522	437.24	-----	-----	-----	-----	-----	-----	-----	-----	0.643	0.643
21.33	0.521	437.24	-----	-----	-----	-----	-----	-----	-----	-----	0.639	0.639
21.37	0.520	437.24	-----	-----	-----	-----	-----	-----	-----	-----	0.636	0.636
21.40	0.520	437.24	-----	-----	-----	-----	-----	-----	-----	-----	0.633	0.633
21.43	0.519	437.24	-----	-----	-----	-----	-----	-----	-----	-----	0.629	0.629
21.47	0.519	437.24	-----	-----	-----	-----	-----	-----	-----	-----	0.626	0.626
21.50	0.518	437.23	-----	-----	-----	-----	-----	-----	-----	-----	0.623	0.623
21.53	0.517	437.23	-----	-----	-----	-----	-----	-----	-----	-----	0.620	0.620
21.57	0.517	437.23	-----	-----	-----	-----	-----	-----	-----	-----	0.617	0.617
21.60	0.516	437.23	-----	-----	-----	-----	-----	-----	-----	-----	0.614	0.614
21.63	0.515	437.23	-----	-----	-----	-----	-----	-----	-----	-----	0.612	0.612
21.67	0.515	437.23	-----	-----	-----	-----	-----	-----	-----	-----	0.609	0.609
21.70	0.514	437.23	-----	-----	-----	-----	-----	-----	-----	-----	0.606	0.606
21.73	0.513	437.23	-----	-----	-----	-----	-----	-----	-----	-----	0.604	0.604
21.77	0.513	437.23	-----	-----	-----	-----	-----	-----	-----	-----	0.601	0.601
21.80	0.512	437.23	-----	-----	-----	-----	-----	-----	-----	-----	0.599	0.599
21.83	0.512	437.22	-----	-----	-----	-----	-----	-----	-----	-----	0.596	0.596
21.87	0.511	437.22	-----	-----	-----	-----	-----	-----	-----	-----	0.594	0.594
21.90	0.510	437.22	-----	-----	-----	-----	-----	-----	-----	-----	0.591	0.591
21.93	0.510	437.22	-----	-----	-----	-----	-----	-----	-----	-----	0.589	0.589
21.97	0.509	437.22	-----	-----	-----	-----	-----	-----	-----	-----	0.587	0.587

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
22.00	0.508	437.22	-----	-----	-----	-----	-----	-----	-----	-----	0.585	0.585
22.03	0.508	437.22	-----	-----	-----	-----	-----	-----	-----	-----	0.582	0.582
22.07	0.507	437.22	-----	-----	-----	-----	-----	-----	-----	-----	0.580	0.580
22.10	0.506	437.22	-----	-----	-----	-----	-----	-----	-----	-----	0.578	0.578
22.13	0.506	437.22	-----	-----	-----	-----	-----	-----	-----	-----	0.576	0.576
22.17	0.505	437.22	-----	-----	-----	-----	-----	-----	-----	-----	0.574	0.574
22.20	0.505	437.22	-----	-----	-----	-----	-----	-----	-----	-----	0.572	0.572
22.23	0.504	437.21	-----	-----	-----	-----	-----	-----	-----	-----	0.570	0.570
22.27	0.503	437.21	-----	-----	-----	-----	-----	-----	-----	-----	0.568	0.568
22.30	0.503	437.21	-----	-----	-----	-----	-----	-----	-----	-----	0.567	0.567
22.33	0.502	437.21	-----	-----	-----	-----	-----	-----	-----	-----	0.565	0.565
22.37	0.501	437.21	-----	-----	-----	-----	-----	-----	-----	-----	0.563	0.563
22.40	0.501	437.21	-----	-----	-----	-----	-----	-----	-----	-----	0.561	0.561
22.43	0.500	437.21	-----	-----	-----	-----	-----	-----	-----	-----	0.560	0.560
22.47	0.499	437.21	-----	-----	-----	-----	-----	-----	-----	-----	0.558	0.558
22.50	0.499	437.21	-----	-----	-----	-----	-----	-----	-----	-----	0.556	0.556
22.53	0.498	437.21	-----	-----	-----	-----	-----	-----	-----	-----	0.555	0.555
22.57	0.497	437.21	-----	-----	-----	-----	-----	-----	-----	-----	0.553	0.553
22.60	0.497	437.21	-----	-----	-----	-----	-----	-----	-----	-----	0.551	0.551
22.63	0.496	437.21	-----	-----	-----	-----	-----	-----	-----	-----	0.550	0.550
22.67	0.496	437.21	-----	-----	-----	-----	-----	-----	-----	-----	0.548	0.548
22.70	0.495	437.21	-----	-----	-----	-----	-----	-----	-----	-----	0.547	0.547
22.73	0.494	437.21	-----	-----	-----	-----	-----	-----	-----	-----	0.545	0.545
22.77	0.494	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.544	0.544
22.80	0.493	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.542	0.542
22.83	0.492	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.541	0.541
22.87	0.492	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.540	0.540
22.90	0.491	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.538	0.538

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
22.93	0.490	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.537	0.537
22.97	0.490	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.536	0.536
23.00	0.489	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.534	0.534
23.03	0.488	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.533	0.533
23.07	0.488	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.532	0.532
23.10	0.487	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.530	0.530
23.13	0.486	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.529	0.529
23.17	0.486	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.528	0.528
23.20	0.485	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.527	0.527
23.23	0.485	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.526	0.526
23.27	0.484	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.524	0.524
23.30	0.483	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.523	0.523
23.33	0.483	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.522	0.522
23.37	0.482	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.521	0.521
23.40	0.481	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.520	0.520
23.43	0.481	437.20	-----	-----	-----	-----	-----	-----	-----	-----	0.519	0.519
23.47	0.480	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.518	0.518
23.50	0.479	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.517	0.517
23.53	0.479	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.516	0.516
23.57	0.478	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.515	0.515
23.60	0.477	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.514	0.514
23.63	0.477	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.512	0.512
23.67	0.476	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.511	0.511
23.70	0.475	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.510	0.510
23.73	0.475	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.509	0.509
23.77	0.474	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.508	0.508
23.80	0.473	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.507	0.507
23.83	0.473	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.507	0.507

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
23.87	0.472	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.506	0.506
23.90	0.471	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.505	0.505
23.93	0.471	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.504	0.504
23.97	0.470	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.503	0.503
24.00	0.470	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.502	0.502
24.03	0.465	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.501	0.501
24.07	0.457	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.500	0.500
24.10	0.445	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.498	0.498
24.13	0.429	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.497	0.497
24.17	0.409	437.19	-----	-----	-----	-----	-----	-----	-----	-----	0.494	0.494
24.20	0.386	437.18	-----	-----	-----	-----	-----	-----	-----	-----	0.492	0.492
24.23	0.358	437.18	-----	-----	-----	-----	-----	-----	-----	-----	0.488	0.488
24.27	0.327	437.18	-----	-----	-----	-----	-----	-----	-----	-----	0.484	0.484
24.30	0.292	437.18	-----	-----	-----	-----	-----	-----	-----	-----	0.479	0.479
24.33	0.254	437.18	-----	-----	-----	-----	-----	-----	-----	-----	0.473	0.473
24.37	0.211	437.18	-----	-----	-----	-----	-----	-----	-----	-----	0.467	0.467
24.40	0.173	437.17	-----	-----	-----	-----	-----	-----	-----	-----	0.459	0.459
24.43	0.138	437.17	-----	-----	-----	-----	-----	-----	-----	-----	0.450	0.450
24.47	0.107	437.17	-----	-----	-----	-----	-----	-----	-----	-----	0.441	0.441
24.50	0.081	437.16	-----	-----	-----	-----	-----	-----	-----	-----	0.431	0.431
24.53	0.058	437.16	-----	-----	-----	-----	-----	-----	-----	-----	0.421	0.421
24.57	0.038	437.15	-----	-----	-----	-----	-----	-----	-----	-----	0.410	0.410
24.60	0.023	437.15	-----	-----	-----	-----	-----	-----	-----	-----	0.400	0.400
24.63	0.011	437.15	-----	-----	-----	-----	-----	-----	-----	-----	0.389	0.389
24.67	0.004	437.14	-----	-----	-----	-----	-----	-----	-----	-----	0.378	0.378
24.70	0.000	437.14	-----	-----	-----	-----	-----	-----	-----	-----	0.367	0.367
24.73	0.000	437.13	-----	-----	-----	-----	-----	-----	-----	-----	0.357	0.357
24.77	0.000	437.13	-----	-----	-----	-----	-----	-----	-----	-----	0.347	0.347

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
24.80	0.000	437.13	-----	-----	-----	-----	-----	-----	-----	-----	0.337	0.337
24.83	0.000	437.12	-----	-----	-----	-----	-----	-----	-----	-----	0.328	0.328
24.87	0.000	437.12	-----	-----	-----	-----	-----	-----	-----	-----	0.318	0.318
24.90	0.000	437.12	-----	-----	-----	-----	-----	-----	-----	-----	0.309	0.309
24.93	0.000	437.11	-----	-----	-----	-----	-----	-----	-----	-----	0.301	0.301
24.97	0.000	437.11	-----	-----	-----	-----	-----	-----	-----	-----	0.292	0.292
25.00	0.000	437.11	-----	-----	-----	-----	-----	-----	-----	-----	0.284	0.284
25.03	0.000	437.10	-----	-----	-----	-----	-----	-----	-----	-----	0.276	0.276
25.07	0.000	437.10	-----	-----	-----	-----	-----	-----	-----	-----	0.268	0.268
25.10	0.000	437.10	-----	-----	-----	-----	-----	-----	-----	-----	0.260	0.260
25.13	0.000	437.10	-----	-----	-----	-----	-----	-----	-----	-----	0.253	0.253
25.17	0.000	437.09	-----	-----	-----	-----	-----	-----	-----	-----	0.246	0.246
25.20	0.000	437.09	-----	-----	-----	-----	-----	-----	-----	-----	0.239	0.239
25.23	0.000	437.09	-----	-----	-----	-----	-----	-----	-----	-----	0.232	0.232
25.27	0.000	437.08	-----	-----	-----	-----	-----	-----	-----	-----	0.226	0.226
25.30	0.000	437.08	-----	-----	-----	-----	-----	-----	-----	-----	0.219	0.219
25.33	0.000	437.08	-----	-----	-----	-----	-----	-----	-----	-----	0.213	0.213
25.37	0.000	437.08	-----	-----	-----	-----	-----	-----	-----	-----	0.207	0.207
25.40	0.000	437.08	-----	-----	-----	-----	-----	-----	-----	-----	0.201	0.201
25.43	0.000	437.07	-----	-----	-----	-----	-----	-----	-----	-----	0.196	0.196
25.47	0.000	437.07	-----	-----	-----	-----	-----	-----	-----	-----	0.190	0.190
25.50	0.000	437.07	-----	-----	-----	-----	-----	-----	-----	-----	0.185	0.185
25.53	0.000	437.07	-----	-----	-----	-----	-----	-----	-----	-----	0.179	0.179
25.57	0.000	437.07	-----	-----	-----	-----	-----	-----	-----	-----	0.174	0.174
25.60	0.000	437.06	-----	-----	-----	-----	-----	-----	-----	-----	0.169	0.169
25.63	0.000	437.06	-----	-----	-----	-----	-----	-----	-----	-----	0.165	0.165
25.67	0.000	437.06	-----	-----	-----	-----	-----	-----	-----	-----	0.160	0.160
25.70	0.000	437.06	-----	-----	-----	-----	-----	-----	-----	-----	0.155	0.155

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Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
25.73	0.000	437.06	-----	-----	-----	-----	-----	-----	-----	-----	0.151	0.151
25.77	0.000	437.06	-----	-----	-----	-----	-----	-----	-----	-----	0.147	0.147
25.80	0.000	437.05	-----	-----	-----	-----	-----	-----	-----	-----	0.143	0.143
25.83	0.000	437.05	-----	-----	-----	-----	-----	-----	-----	-----	0.139	0.139
25.87	0.000	437.05	-----	-----	-----	-----	-----	-----	-----	-----	0.135	0.135
25.90	0.000	437.05	-----	-----	-----	-----	-----	-----	-----	-----	0.131	0.131
25.93	0.000	437.05	-----	-----	-----	-----	-----	-----	-----	-----	0.127	0.127
25.97	0.000	437.05	-----	-----	-----	-----	-----	-----	-----	-----	0.124	0.124
26.00	0.000	437.05	-----	-----	-----	-----	-----	-----	-----	-----	0.120	0.120
26.03	0.000	437.04	-----	-----	-----	-----	-----	-----	-----	-----	0.117	0.117
26.07	0.000	437.04	-----	-----	-----	-----	-----	-----	-----	-----	0.113	0.113
26.10	0.000	437.04	-----	-----	-----	-----	-----	-----	-----	-----	0.110	0.110
26.13	0.000	437.04	-----	-----	-----	-----	-----	-----	-----	-----	0.107	0.107
26.17	0.000	437.04	-----	-----	-----	-----	-----	-----	-----	-----	0.104	0.104
26.20	0.000	437.04	-----	-----	-----	-----	-----	-----	-----	-----	0.101	0.101
26.23	0.000	437.04	-----	-----	-----	-----	-----	-----	-----	-----	0.098	0.098
26.27	0.000	437.04	-----	-----	-----	-----	-----	-----	-----	-----	0.096	0.096
26.30	0.000	437.03	-----	-----	-----	-----	-----	-----	-----	-----	0.093	0.093
26.33	0.000	437.03	-----	-----	-----	-----	-----	-----	-----	-----	0.090	0.090
26.37	0.000	437.03	-----	-----	-----	-----	-----	-----	-----	-----	0.088	0.088
26.40	0.000	437.03	-----	-----	-----	-----	-----	-----	-----	-----	0.085	0.085
26.43	0.000	437.03	-----	-----	-----	-----	-----	-----	-----	-----	0.083	0.083
26.47	0.000	437.03	-----	-----	-----	-----	-----	-----	-----	-----	0.080	0.080
26.50	0.000	437.03	-----	-----	-----	-----	-----	-----	-----	-----	0.078	0.078
26.53	0.000	437.03	-----	-----	-----	-----	-----	-----	-----	-----	0.076	0.076
26.57	0.000	437.03	-----	-----	-----	-----	-----	-----	-----	-----	0.074	0.074
26.60	0.000	437.03	-----	-----	-----	-----	-----	-----	-----	-----	0.072	0.072
26.63	0.000	437.03	-----	-----	-----	-----	-----	-----	-----	-----	0.070	0.070

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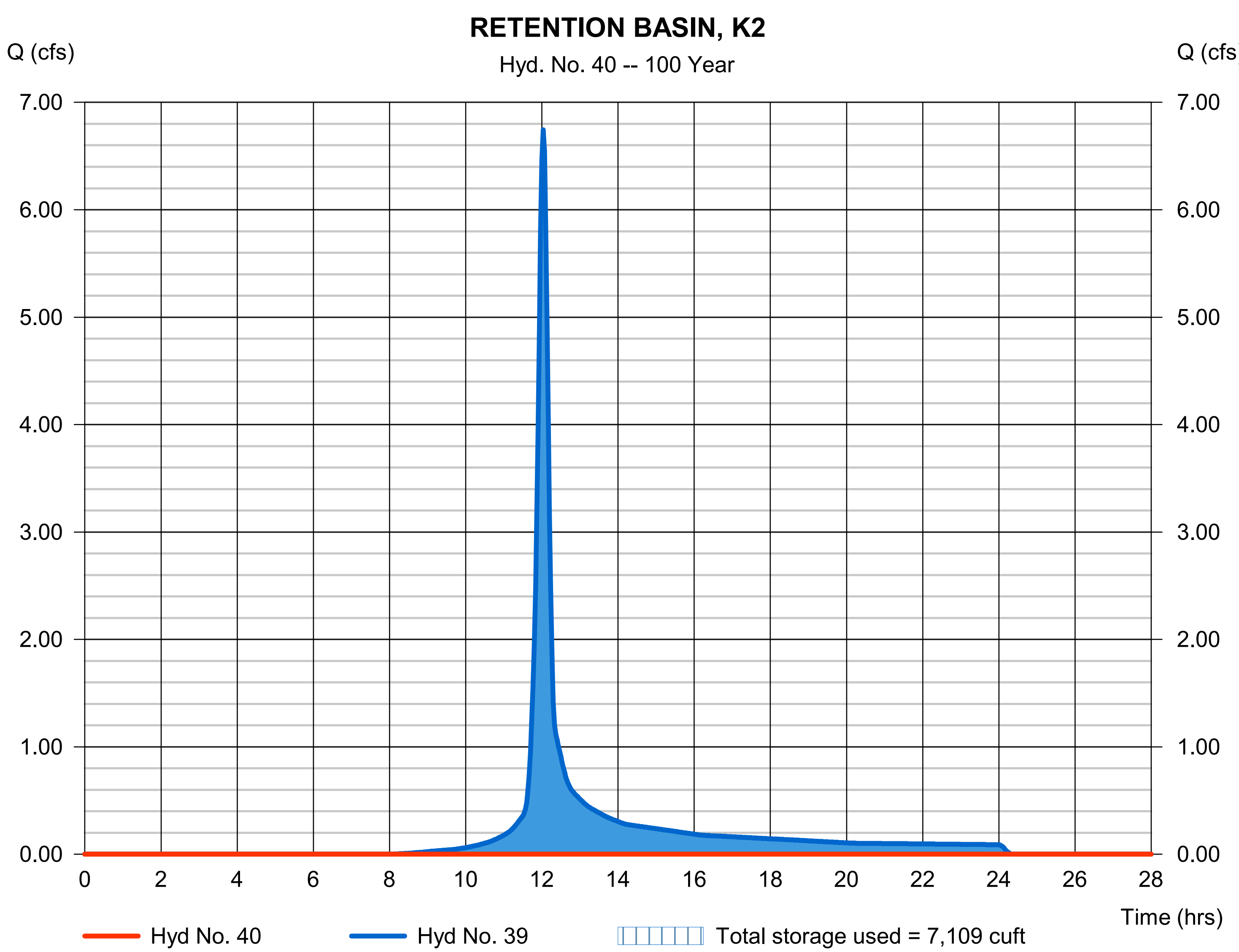
Hydrograph Report

Hyd. No. 40

RETENTION BASIN, K2

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 39 - 4090-03 P-K-OVERALL POST DEVT UNIT HYDROGRAPH	Max. Elevation	= 424.77 ft
Reservoir name	= RETENTION BASIN, K2	Max. Storage	= 7,109 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
26.67	0.000	437.03	-----	-----	-----	-----	-----	-----	-----	-----	0.068	0.068
26.70	0.000	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.066	0.066
26.73	0.000	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.064	0.064
26.77	0.000	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.062	0.062
26.80	0.000	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.060	0.060
26.83	0.000	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.059	0.059
26.87	0.000	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.057	0.057
26.90	0.000	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.055	0.055
26.93	0.000	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.054	0.054
26.97	0.000	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.052	0.052
27.00	0.000	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.051	0.051
27.03	0.000	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.049	0.049
27.07	0.000	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.048	0.048
27.10	0.000	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.047	0.047
27.13	0.000	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.045	0.045
27.17	0.000	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.044	0.044
27.20	0.000	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.043	0.043
27.23	0.000	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.042	0.042
27.27	0.000	437.02	-----	-----	-----	-----	-----	-----	-----	-----	0.040	0.040

...End

<u>RETENTION BASIN, G</u>

DRAINAGE AREA "G"

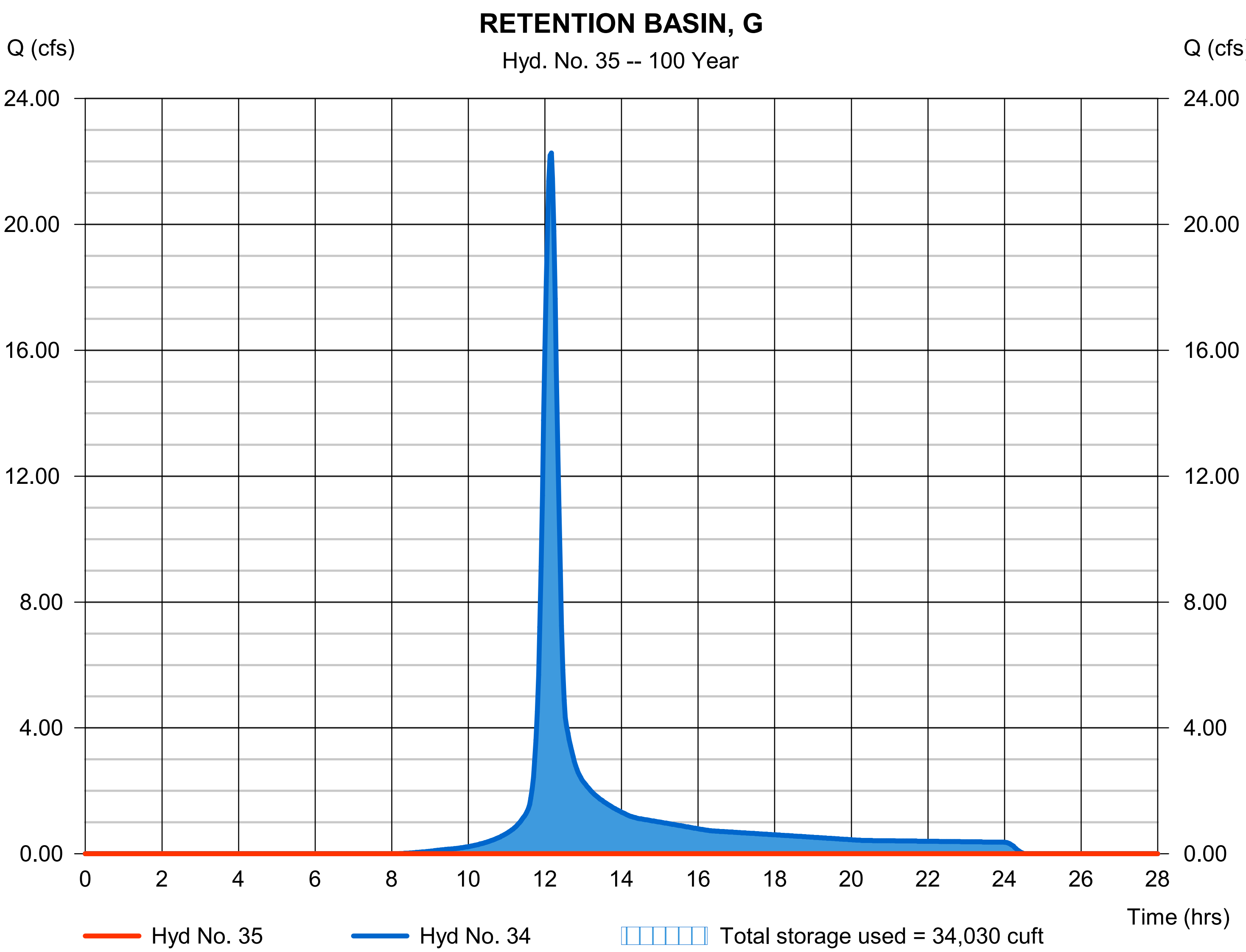
Hydrograph Report

Hyd. No. 35

RETENTION BASIN, G

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.70 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 34 - 4090-03 P-G-OVERALL POST DEV UNIT HYDROGRAPH	Max. Elevation	= 434.03 ft
Reservoir name	= RETENTION BASIN, G	Max. Storage	= 34,030 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 — Tuesday, 12 / 5 / 2023

Pond No. 4 - RETENTION BASIN, G

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 430.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	430.00	2,919	0	0
1.00	431.00	5,658	4,213	4,213
2.00	432.00	8,364	6,966	11,180
3.00	433.00	11,108	9,703	20,882
4.00	434.00	14,344	12,690	33,573
5.00	435.00	17,855	16,066	49,638
6.00	436.00	21,375	19,587	69,225
7.00	437.00	25,095	23,208	92,433

Culvert / Orifice Structures

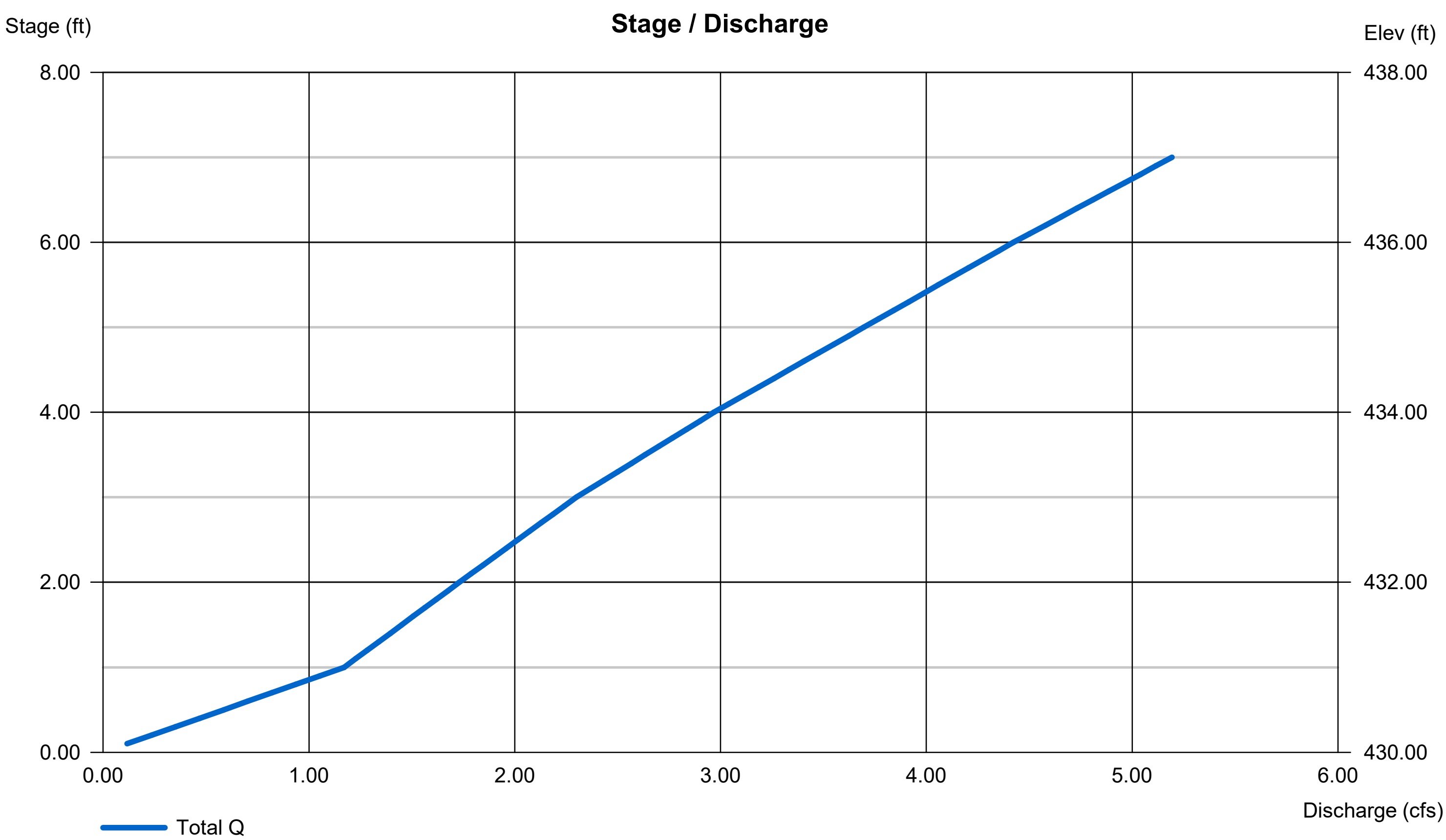
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 8.940 (by Contour)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Pond Report

Pond No. 4 - RETENTION BASIN, G

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 430.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	430.00	2,919	0	0
1.00	431.00	5,658	4,213	4,213
2.00	432.00	8,364	6,966	11,180
3.00	433.00	11,108	9,703	20,882
4.00	434.00	14,344	12,690	33,573
5.00	435.00	17,855	16,066	49,638
6.00	436.00	21,375	19,587	69,225
7.00	437.00	25,095	23,208	92,433

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 8.940 (by Contour)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	430.00	---	---	---	---	---	---	---	---	0.000	---	0.000
1.00	4,213	431.00	---	---	---	---	---	---	---	---	1.171	---	1.171
2.00	11,180	432.00	---	---	---	---	---	---	---	---	1.731	---	1.731
3.00	20,882	433.00	---	---	---	---	---	---	---	---	2.299	---	2.299
4.00	33,573	434.00	---	---	---	---	---	---	---	---	2.968	---	2.968
5.00	49,638	435.00	---	---	---	---	---	---	---	---	3.695	---	3.695
6.00	69,225	436.00	---	---	---	---	---	---	---	---	4.423	---	4.423
7.00	92,433	437.00	---	---	---	---	---	---	---	---	5.193	---	5.193

Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	5.0994	0.1000	0.5670	--------
3	0.0000	0.0000	0.0000	--------
5	5.5223	0.1000	0.4686	--------
10	9.9784	0.1000	0.5666	--------
25	11.9956	0.1000	0.5621	--------
50	14.1968	0.1000	0.5656	--------
100	15.9941	0.1000	0.5621	--------

File name: 4090-03 Intensity.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2.02	1.37	1.09	0.93	0.82	0.74	0.68	0.63	0.59	0.55	0.53	0.50
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.57	1.87	1.55	1.35	1.22	1.12	1.04	0.98	0.93	0.88	0.84	0.81
10	3.96	2.69	2.14	1.82	1.61	1.45	1.33	1.23	1.15	1.09	1.03	0.98
25	4.80	3.27	2.61	2.22	1.96	1.77	1.62	1.51	1.41	1.33	1.26	1.20
50	5.65	3.84	3.06	2.60	2.29	2.07	1.90	1.76	1.65	1.55	1.47	1.40
100	6.40	4.36	3.48	2.96	2.61	2.36	2.16	2.01	1.88	1.77	1.68	1.60

Tc = time in minutes. Values may exceed 60.

e: F:\Projects\4090\003_Support Files\Reports\Hydrology\Preliminary Hydrology\Calculation\4090-03 Precipitation.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.28	0.00	2.04	2.33	3.18	4.00	4.30
SCS 6-Hr	0.00	0.82	0.00	1.13	1.28	1.83	2.11	2.50
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Tuesday, 12 / 5 / 2023

Hyd. No. 35

RETENTION BASIN, G

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.70 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 34 - 4090-03 P-G-OVERALL POST DEVT UNIT HYDROGRAPH	Reservoir name	= RETENTION BASIN,
Max. Elevation	= 434.03 ft	Max. Storage	= 34,030 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp.)

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
9.30	0.123	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
9.43	0.140	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
9.67	0.168	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
9.87	0.200	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.00	0.228	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.63	0.435	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
10.67	0.451	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
11.10	0.729	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
12.70	3.259	0.000 <<	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000 <<
12.93	2.423	0.000 <<	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000 <<
17.67	0.629	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
20.60	0.419	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
21.13	0.411	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
21.23	0.410	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
21.30	0.409	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
22.27	0.394	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
22.63	0.389	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
22.70	0.388	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
23.07	0.382	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
23.20	0.380	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
23.77	0.371	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Tuesday, 12 / 5 / 2023

Pond No. 5 - RETENTION BASIN, K2

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 424.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	424.00	8,417	0	0
1.00	425.00	10,171	9,279	9,279
2.00	426.00	12,027	11,085	20,364
3.00	427.00	13,991	12,995	33,360
4.00	428.00	16,244	15,102	48,461
5.00	429.00	19,663	17,925	66,386
6.00	430.00	23,344	21,475	87,861

Culvert / Orifice Structures

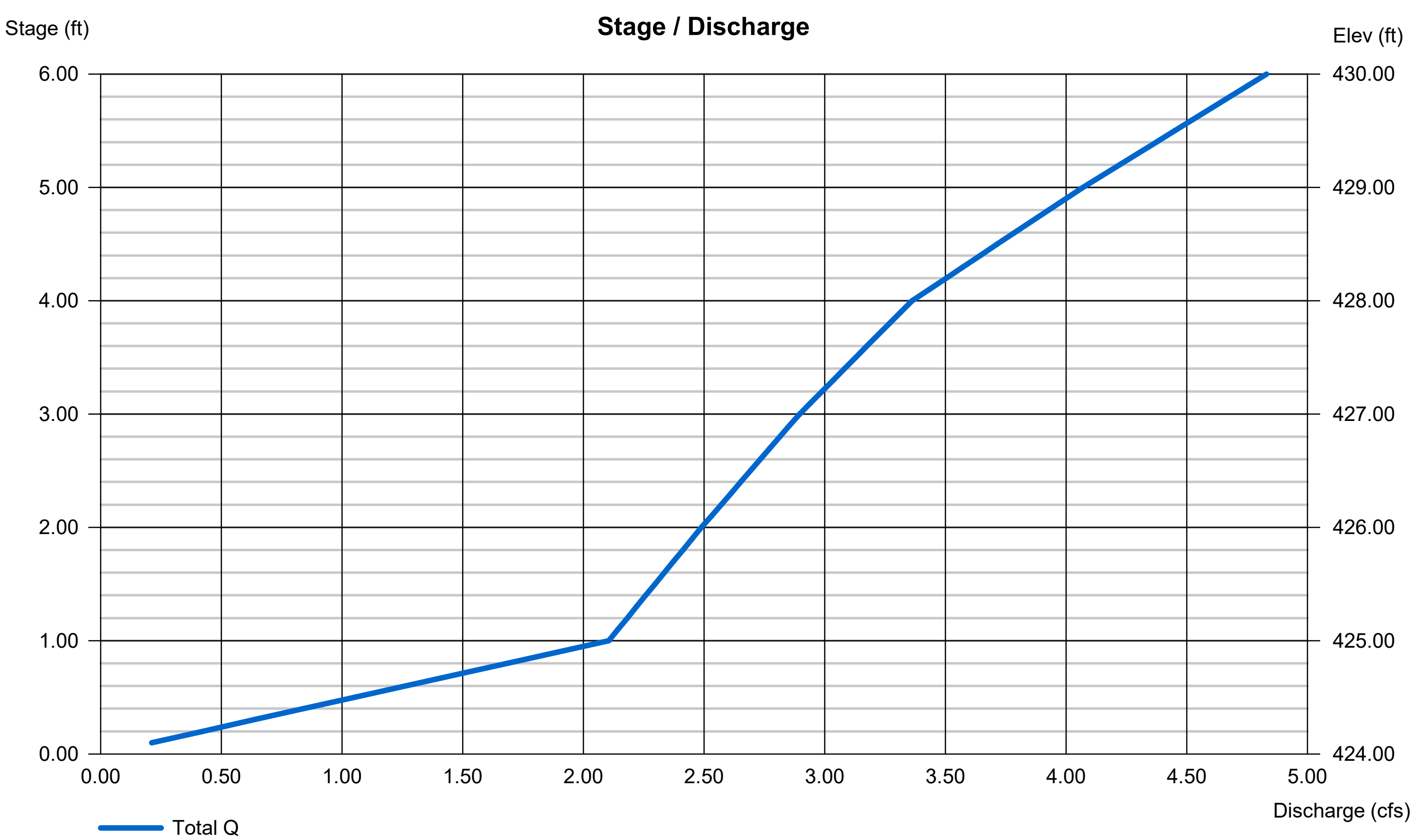
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 8.940 (by Contour)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



24.03	0.363	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
24.30	0.162	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
24.37	0.095	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
24.53	0.004	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
25.53	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
25.57	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
25.90	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
26.43	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
26.63	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000

...End

RETENTION BASIN, K2

DRAINAGE AREA, K2

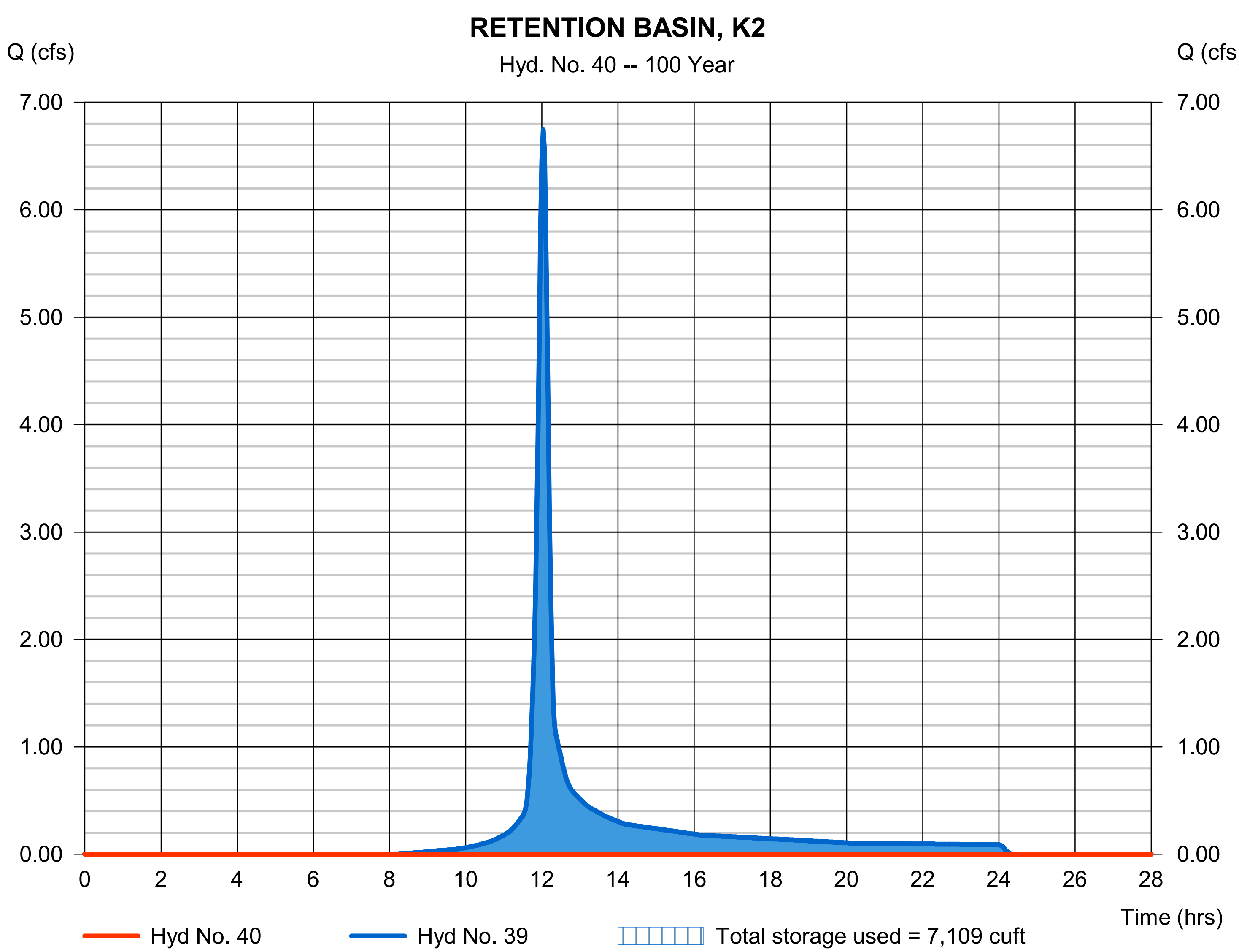
Hydrograph Report

Hyd. No. 40

RETENTION BASIN, K2

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.40 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 39 - 4090-03 P-K-OVERALL POST DEV UNIT HYDROGRAPH	Max. Elevation	= 424.77 ft
Reservoir name	= RETENTION BASIN, K2	Max. Storage	= 7,109 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 5 - RETENTION BASIN, K2

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 424.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	424.00	8,417	0	0
1.00	425.00	10,171	9,279	9,279
2.00	426.00	12,027	11,085	20,364
3.00	427.00	13,991	12,995	33,360
4.00	428.00	16,244	15,102	48,461
5.00	429.00	19,663	17,925	66,386
6.00	430.00	23,344	21,475	87,861

Culvert / Orifice Structures

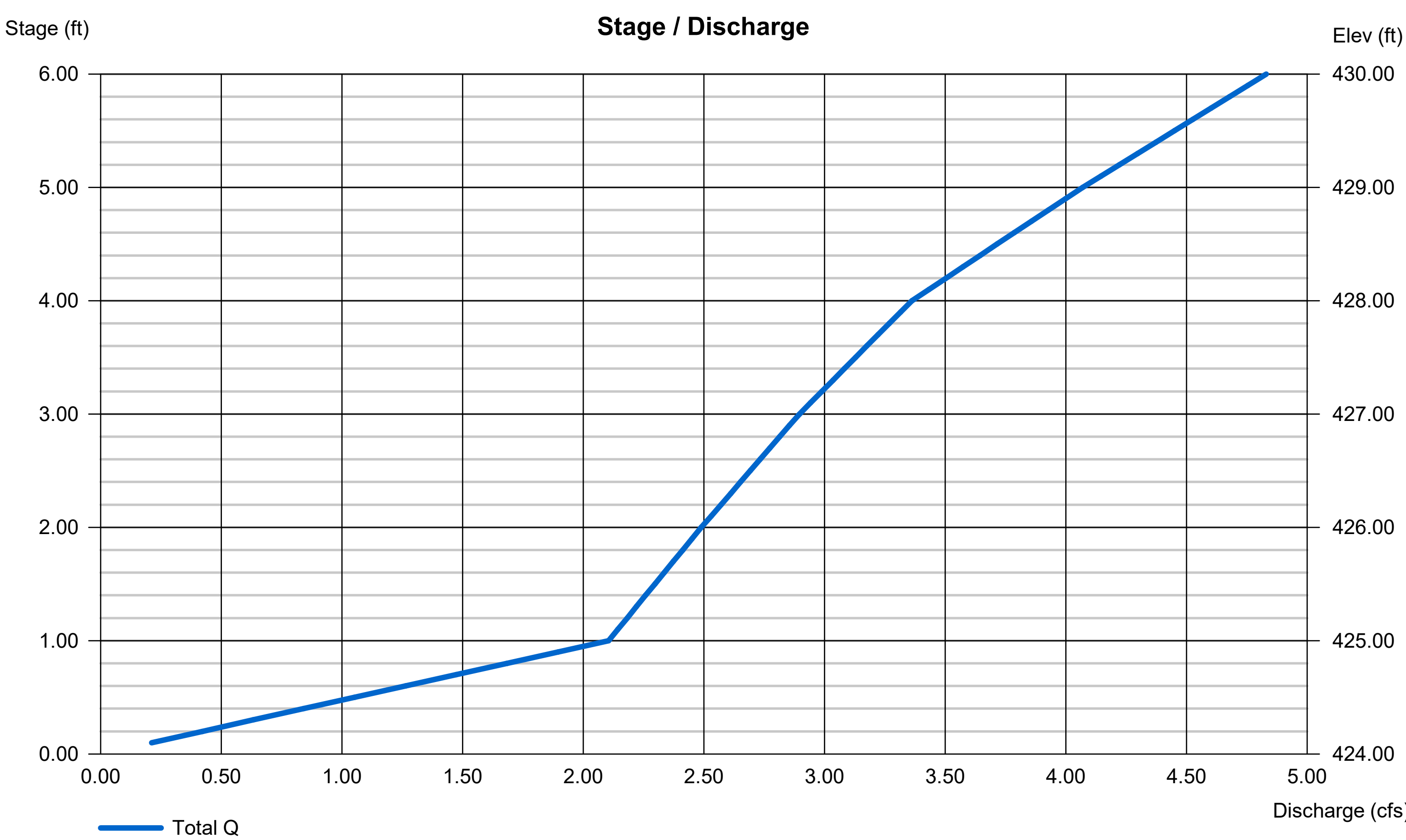
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 8.940 (by Contour)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Pond Report

Pond No. 5 - RETENTION BASIN, K2

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 424.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	424.00	8,417	0	0
1.00	425.00	10,171	9,279	9,279
2.00	426.00	12,027	11,085	20,364
3.00	427.00	13,991	12,995	33,360
4.00	428.00	16,244	15,102	48,461
5.00	429.00	19,663	17,925	66,386
6.00	430.00	23,344	21,475	87,861

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 8.940 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	424.00	---	---	---	---	---	---	---	---	0.000	---	0.000
1.00	9,279	425.00	---	---	---	---	---	---	---	---	2.105	---	2.105
2.00	20,364	426.00	---	---	---	---	---	---	---	---	2.489	---	2.489
3.00	33,360	427.00	---	---	---	---	---	---	---	---	2.895	---	2.895
4.00	48,461	428.00	---	---	---	---	---	---	---	---	3.362	---	3.362
5.00	66,386	429.00	---	---	---	---	---	---	---	---	4.069	---	4.069
6.00	87,861	430.00	---	---	---	---	---	---	---	---	4.831	---	4.831

Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	5.0994	0.1000	0.5670	--------
3	0.0000	0.0000	0.0000	--------
5	5.5223	0.1000	0.4686	--------
10	9.9784	0.1000	0.5666	--------
25	11.9956	0.1000	0.5621	--------
50	14.1968	0.1000	0.5656	--------
100	15.9941	0.1000	0.5621	--------

File name: 4090-03 Intensity.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2.02	1.37	1.09	0.93	0.82	0.74	0.68	0.63	0.59	0.55	0.53	0.50
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.57	1.87	1.55	1.35	1.22	1.12	1.04	0.98	0.93	0.88	0.84	0.81
10	3.96	2.69	2.14	1.82	1.61	1.45	1.33	1.23	1.15	1.09	1.03	0.98
25	4.80	3.27	2.61	2.22	1.96	1.77	1.62	1.51	1.41	1.33	1.26	1.20
50	5.65	3.84	3.06	2.60	2.29	2.07	1.90	1.76	1.65	1.55	1.47	1.40
100	6.40	4.36	3.48	2.96	2.61	2.36	2.16	2.01	1.88	1.77	1.68	1.60

Tc = time in minutes. Values may exceed 60.

e: F:\Projects\4090\003_Support Files\Reports\Hydrology\Preliminary Hydrology\Calculation\4090-03 Precipitation.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	1.28	0.00	2.04	2.33	3.18	4.00	4.30
SCS 6-Hr	0.00	0.82	0.00	1.13	1.28	1.83	2.11	2.50
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

12.40	1.061	0.000 <<	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000 <<
12.70	0.649	0.000 <<	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000 <<
13.43	0.399	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
14.00	0.304	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
14.43	0.266	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
15.43	0.216	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
15.57	0.209	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
15.70	0.202	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
15.73	0.200	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
16.17	0.179	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
17.43	0.154	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
17.63	0.151	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
17.67	0.150	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
17.70	0.149	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
17.83	0.147	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
17.87	0.146	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
17.90	0.146	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
18.00	0.144	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
18.30	0.138	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
18.33	0.138	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
18.50	0.134	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
18.63	0.132	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
18.70	0.131	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
18.77	0.129	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
18.80	0.129	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
19.13	0.122	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
19.20	0.121	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
19.27	0.120	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
19.40	0.117	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
19.53	0.115	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
19.77	0.110	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000

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25.03	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
25.20	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
25.27	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
25.40	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
25.57	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
25.73	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
25.77	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
25.93	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
26.07	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
26.17	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
26.20	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000

...End

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
19.80	0.110	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
19.90	0.108	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
20.00	0.106	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
20.43	0.102	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
20.50	0.101	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
20.67	0.101	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
20.70	0.101	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
20.77	0.100	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
20.83	0.100	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
20.87	0.100	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
20.90	0.100	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
20.93	0.100	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
20.97	0.100	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
21.00	0.100	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
21.07	0.099	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
21.10	0.099	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
21.27	0.099	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
21.37	0.098	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
21.50	0.098	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
21.53	0.098	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
21.57	0.097	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
21.60	0.097	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
21.83	0.096	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
21.87	0.096	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
22.00	0.096	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
22.07	0.096	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
22.17	0.095	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
22.23	0.095	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000

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RETENTION BASIN, K2

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
22.27	0.095	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
22.30	0.095	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
22.60	0.094	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
22.67	0.093	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
22.70	0.093	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
22.83	0.093	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
22.90	0.093	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
23.10	0.092	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
23.13	0.092	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
23.27	0.091	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
23.33	0.091	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
23.37	0.091	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
23.57	0.090	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
23.67	0.090	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
23.70	0.090	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
23.73	0.089	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
23.77	0.089	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
23.87	0.089	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
24.07	0.079	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
24.17	0.044	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
24.20	0.031	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
24.57	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
24.60	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
24.70	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
24.77	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
24.80	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
24.83	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
24.87	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000
24.97	0.000	0.000	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.000

APPENDIX 5

HYDROLOGY MAPS:
PRE-DEVELOPMENT DRAINAGE MAP
POST DEVELOPMENT DRAINAGE MAP
POST DEVELOPMENT UNIT HYDROGRAPH MAP

PRE-DEVELOPMENT DRAINAGE MAP

APN 677-050-017 & 018

CATHEDRAL CITY, CA

DRAINAGE AREA SUMMARY

DRAINAGE AREA	AREA, AC	IMPERVIOUS AREA, AC	% IMP	CN
EX-E	13.25	0.000	0.000	65
EX-F	9.31	0.000	0.000	65
EX-G	7.09	0.000	0.000	65
EX-K2	3.15	0.000	0.000	65
TOTAL	32.80	0.000	0.000	65

PREPARED BY:

NOVEMBER, 2023

FUSCOE ENGINEERING

full circle thinking

POST DEVELOPMENT DRAINAGE MAP

APN 677-050-017 & 018

CATHEDRAL CITY, CA

DRAINAGE AREA SUMMARY				
DRAINAGE AREA	AREA, AC	IMPERVIOUS AREA, AC	% IMP	CN
P-E	11.43	9.14	0.80	80
P-E1	1.35	1.08	0.80	80
P-E2	1.54	1.23	0.80	80
P-E3	1.63	1.30	0.80	80
P-E4	2.04	1.63	0.80	80
P-E5	0.34	0.27	0.80	80
P-E6	1.43	1.14	0.80	80
P-E7	2.50	2.00	0.80	80
P-E8	0.60	0.48	0.80	80
P-F	9.95	7.96	0.80	80
P-F1	1.09	0.87	0.80	80
P-F2	1.44	1.15	0.80	80
P-F3	1.68	1.34	0.80	80
P-F4	1.40	1.12	0.80	80
P-F5	1.69	1.35	0.80	80
P-F6	2.26	1.81	0.80	80
P-F7	0.39	0.31	0.80	80
P-G	8.98	7.18	0.00	80
P-G1	1.77	1.42	0.80	80
P-G2	1.22	0.98	0.80	80
P-G3	1.48	1.18	0.80	80
P-G4	0.54	0.43	0.80	80
P-G5	1.77	1.42	0.80	80
P-G6	1.10	0.88	0.80	80
P-G7	1.10	0.88	0.80	80
P-K2	2.21	1.77	0.00	80
P-K2.1	0.82	0.66	0.80	80
P-K2.2	1.39	1.11	0.80	80

40' 0' 20' 40'

SCALE: 1" = 40'

PREPARED BY:

NOVEMBER, 2023

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POST DEVELOPMENT UNIT HYDROGRAPH DRAINAGE MAP

APN 677-050-017 & 018

CATHEDRAL CITY, CA

DRAINAGE AREA SUMMARY

DRAINAGE AREA	AREA, AC	IMPERVIOUS AREA, AC	% IMP	CN
P-E	11.43	9.14	0.80	80
P-F	9.95	7.96	0.80	80
P-G	8.98	7.18	0.00	80
P-K2	2.21	1.77	0.00	80

REQUIRED RETAINED VOLUME

DA-ID	STORM EVENT-DURATION	DESCRIPTION: PRE DEV'T (VOLUME OF STORMWATER RUNOFF, CU.FT)	DESCRIPTION: POST DEV'T (VOLUME OF STORMWATER RUNOFF, CU.FT)	DESCRIPTION: DIFFERENCE BETWEEN PRE AND POST DEV'T, CU.FT.	PROVIDED PRO-RATED VOLUME FOR THE PROPOSED MULTI-FAMILY DEVELOPMENT PER M-WQMP FOR RIO VISTA VILLAGE, CU.FT.
P-E	100YR-3HR	15,968	39,777	23,809	52,251
	100YR-24HR	58,047	95,787	37,740	
P-F	100YR-3HR	11,220	34,627	23,407	44,173
	100YR-24HR	40,786	83,385	42,599	
P-G	100YR-3HR	8,545	31,251	22,706	59,139
	100YR-24HR	31,060	75,256	44,196	
P-K2	100YR-3HR	3,737	7,554	3,817	17,177
	100YR-24HR	13,584	18,190	4,606	

NOTE:

EXISTING RETENTION BASIN TO BE VERIFIED. VOLUME CAPACITY ARE REFERENCED FROM THE APPROVED MASTER HYDROLOGY REPORT FOR RIO VISTA VILLAGE.

LEGEND

AREA BOUNDARY

SUB-AREA (ACRES)

AREA NODE

SUB AREA

FLOW

PREPARED BY:

NOVEMBER, 2023

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APPENDIX 6

EXCERPTS: APPROVED MASTER-HYDROLOGY FOR RIO VISTA VILLAGE (FOR REFERENCE ONLY)

DRAINAGE REPORT

TRACT 28639-1

RIO VISTA VILLAGE
City of Cathedral City, California

Prepared for

BURNETT COMPANIES

REGISTERED PROFESSIONAL ENGINEER
JULIAN A. DE LA TORRE
Julian A. De La Torre
NO. 43880
exp. 6-30-01
CIVIL
STATE OF CALIFORNIA

Revised May 4, 2001

Prepared by

MAINIERO, SMITH AND ASSOCIATES, INC.
PLANNING / CIVIL ENGINEERING / LAND SURVEYING
777 East Tahquitz Canyon Way, Suite 301, Palm Springs, CA 92262
Telephone (760) 320-9811 / FAX (760) 323-7893 / www.mainierosmith.com

Project Description

The Rio Vista Village (development) watershed is generally bounded by the Southern Pacific Railroad right-of-way on the north, Verona Road to the south, Landau Boulevard on the east, and the Morongo Creek Stormwater Channel on the west (see Figure 1). Tract 28639-1 (project) occupies the eastern two-thirds of the Rio Vista Village development (see Figure 2).

Existing Hydrology and Flood Control Improvements

The Rio Vista Village watershed consists of undeveloped, flat desert terrain sloping in a southeasterly direction (see Figure 1).

An unlined earthen channel/levee system known as the Morongo Creek Stormwater Channel runs along the west side of the development. It is assumed that the existing facility will intercept and convey the tributary offsite storm flows.

Rio Vista Village Master Plan of Drainage

The Rio Vista Village Master Plan of Drainage and the Rio Vista Village Master Plan of Drainage Alternative were prepared by AEI-CASC Engineering in May of 2000. The two Master Plans and the Mass Grading Plan for the development were approved on August 24, 2000. The Master Drainage Plan Alternative was prepared to identify the advantages of conveying storm flows within the street right-of-way and public utility easement (P.U.C.). These Master Plans were used as a planning tool to collect and convey the 100-year storm flows associated with the final improvements of Tract 28639-1.

Hydrology and Hydraulic Methods

The City of Cathedral City has local flood control jurisdiction and has required that Rio Vista Village retain 100% of the 100-year, 24-hour storm that falls within the site. In addition, the 10-year storm flows shall not exceed the top of curb and the 100-year storm flows shall not exceed the public utility easement (located 10-feet outside the proposed curb).

The Rational Method Hydrology computer program, Version 1.5A was used to determine the peak flows during the10-year and 100-year, 1-hour storm events. Soil Type "A" was used throughout the analysis. Development types were interpreted from the "Land Used Plan" provided in the Specific Plan for this development (see Figure 3). 60-foot, 58-foot and some 48-foot wide lots with park areas were grouped into the 50-percent impervious category, while 38-foot and most 48-foot wide lots where grouped into the 65-percent impervious category. Park areas were considered to be 40-percent impervious and retention basin 15-percent impervious. The Rational Method program uses a County of Riverside standard curb when determining the depth of flow in the streets. The majority of the project streets have a wedge curb. The wedge curb, in combination with the typical street cross section, has the capacity to convey more flow at top of curb than the standard curb street. Figures 4 & 5 indicate the formula to determine the curb capacity based on the street width and slope. Using street slope from the Street Improvement Plans the true street capacity is indicated next to the appropriate Rational Method section. For Rational Method sections where no depth of flow is given, separate Rational Method calculations were performed, using flow, slope and street width. These calculations are not included in this report but can be provided for reference, if needed. The 10-year storm does not exceed the top of curb. The 100-year storm does not exceed the public utility easement (see Figures 6-10 for typical street sections and wedge curb detail). There are small drain boxes and small drain lines around Rio Vista Drive. These facilities are intended to pick-up nuisance flows while storm flows are assumed to flow-by. These facilities are not incorporated in the Rational Method or Storm Drain Analysis (see the Proposed Hydrology Map).

The Unit-Hydrograph Analysis computer program based on the 1978 RCFC&WCD Hydrology Manual was used to determine the runoff volume tributary to the proposed retention basins during the 100-year, 24-hour storm event. Figures 11-21 indicate the eleven drainage areas covered in this report. See Figure 22 for the Unit Hydrograph Summary Chart that identifies the characteristics of each drainage area. 100-percent of the 100-year, 24-hour storm runoff is captured and retained by the proposed retention basins. Figures 23-44 represent the retention capacity and shape of each retention basin. The 100-year, 1-hour runoff volume (hgl) and the 100-year, 24-hour runoff volume are also indicated on these figures.

The Simplified Method to Establish the 100-Year, 1-Hour Storm Hydraulic Grade Line in Retention Basins was used to determine the hydraulic grade line at the outlet of each storm drain system. This hydrologic method was proposed to the City of Cathedral City in an effort to establish a beginning hydraulic grade line for the storm drain systems of Rio Vista Village during the peak runoff of the 100-year, 1-hour storm. This method was approved by Dave Feassel (City Engineer) on March 7, 2001. A Simplified Method is provided for each drainage area (see Simplified Method to Establish the 100-Year, 1-Hour Storm Hydraulic Grade Line in Retention Basins).

The Eagle Point Storm Sewer Analysis program was used to determine the hydraulic grade line of the proposed storm drain system. The storm sewer line information is taken from the Storm Drain Improvement Plans for Tract 28639-1. The storm drain flow information is taken from the Rational Method results. The Storm Sewer Analysis program represents the storm drain system as a series of connected lines and manholes. Lines represent the storm drains, and manholes represent catch basins, manholes, junction structures and deflection angles (see Storm Drain System Hydraulics).

The Catch Basin Capacity Charts were used to determine the required catch basin openings in the 100-year storm. The 100-year peak runoff and depth of flow was taken from the Rational Method results. The catch basins are sized to capture the 100-percent of the 100-year flows (see Catch Basin Calculations).

Proposed Flood Control Improvements

Proposed flood control improvement for the eleven drainage areas, as shown on Figures 11-21, consists of the following:

Drainage Area "B" – Retention Area "B" is constructed in accordance with the Mass Grading Plan for Rio Vista Village. Storm Drain Line B-1 (33", 27" & 24"), B-2 (18") and B-3 (18") are constructed per the Storm Drain Plans for Tract 28639-1. Storm drain flows and hydraulic grade lines are also shown on the Storm Drain Plans (copy attached).

Drainage Area "C" – Retention Area "C" is constructed in accordance with the Construction Phase 4 Precise Grading Plans for Rio Vista Village. Storm Drain Line C-1 (24" & 18") are constructed per the Storm Drain Plans for Tract 28639-1. Storm drain flows and hydraulic grade lines are also shown on the Storm Drain Plans.

Drainage Area "D" – Retention Area "D" is constructed in accordance with the Construction Phase 3 Precise Grading Plans for Rio Vista Village. Storm Drain Line D-1 (42", 33" & 27"), D-2 (27" & 21") and D-3 (24") are constructed per the Storm Drain Plans for Tract 28639-1. Storm drain flows and hydraulic grade lines are also shown on the Storm Drain Plans.

Drainage Area "E" – Retention Area "E" is constructed in accordance with the Construction Phase 3 Precise Grading Plans for Rio Vista Village. Storm Drain Line E-1 (30" & 24") and E-2 (18") are constructed per the Storm Drain Plans for Tract 28639-1. Storm drain flows and hydraulic grade lines are also shown on the Storm Drain Plans.

Drainage Area "F" – Retention Area "F" is constructed in accordance with the Construction Phase 2 Precise Grading Plans for Rio Vista Village. Storm Drain Line F-1 (24" & 21") are constructed per the Storm Drain Plans for Tract 28639-1. Storm drain flows and hydraulic grade lines are also shown on the Storm Drain Plans.

Drainage Area "G" – Retention Area "G" is constructed in accordance with the Construction Phase 1B Precise Grading Plans for Rio Vista Village. Storm Drain Line G-1 (30", 24" & 18") and G-2 (18") are constructed per the Storm Drain

Plans for Tract 28639-1. Storm drain flows and hydraulic grade lines are also shown on the Storm Drain Plans.

Drainage Area "H1" – Retention Area "H1" is constructed in accordance with the Mass Grading Plan for Rio Vista Village. Storm Drain Line H1-1 (24" & 18") are constructed per the Storm Drain Plans for Tract 28639-1. Storm drain flows and hydraulic grade lines are also shown on the Storm Drain Plans.

Drainage Area "H2" – Retention Area "H2" is constructed in accordance with the Mass Grading Plan for Rio Vista Village. Storm drain facilities are not required at this time.

Drainage Area "H4" – Retention Area "H4" is constructed in accordance with the Mass Grading Plan for Rio Vista Village. Storm drain facilities are not required at this time.

Drainage Area "I" – Retention Area "I" is constructed in accordance with the Mass Grading Plan for Rio Vista Village. Storm Drain Line I-1 (24") is constructed per the Storm Drain Plans for Tract 28639-1. Storm drain flows and hydraulic grade lines are also shown on the Storm Drain Plans.

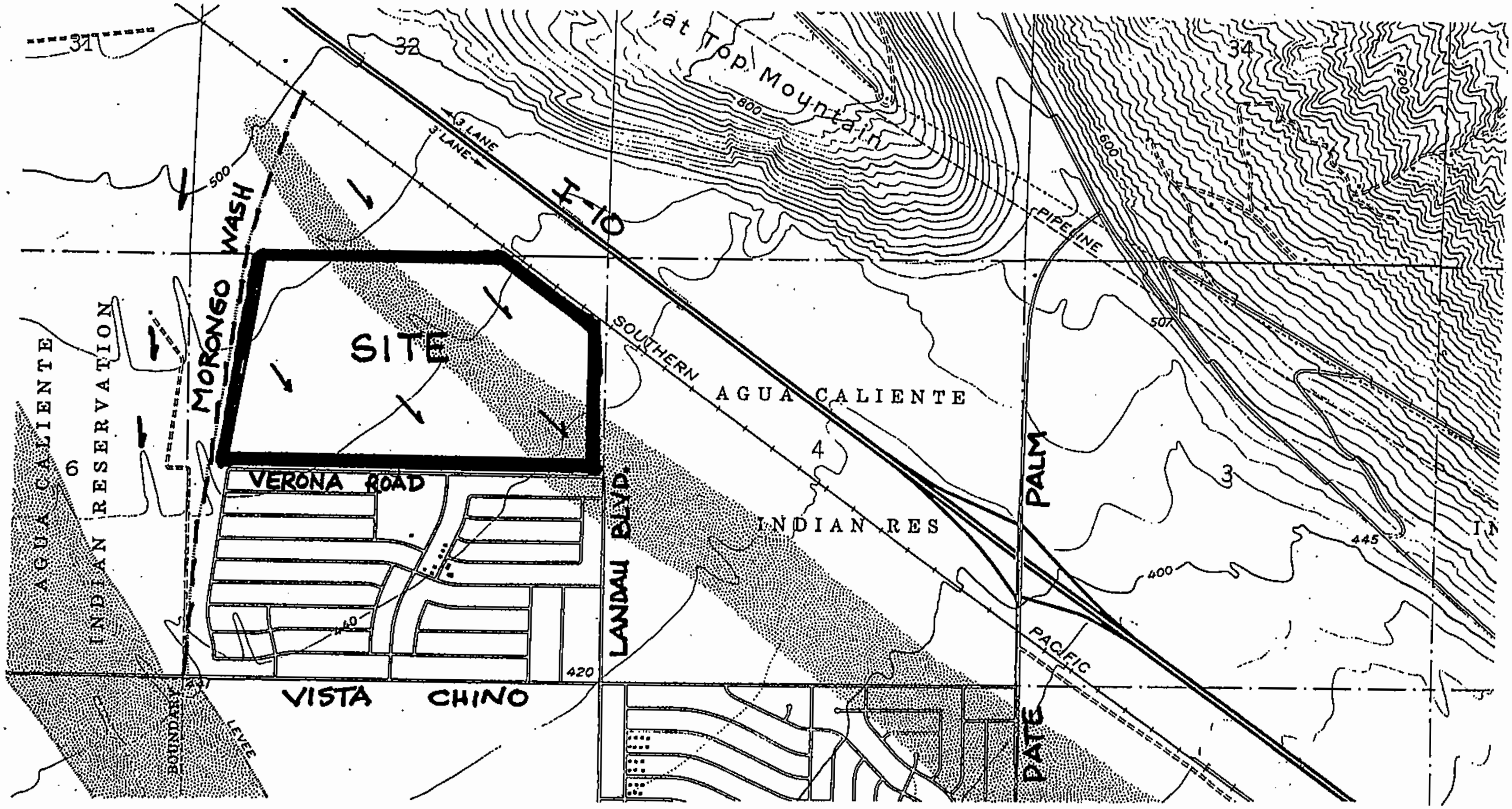
Drainage Area "K2" – Retention Area "B" is constructed in accordance with the Beach Club Precise Grading Plan for Rio Vista Village. Storm Drain Line K2-1 (30" & 27") are constructed per the Storm Drain Plans for Tract 28639-1. Storm drain flows and hydraulic grade lines are also shown on the Storm Drain Plans.

Conclusions

Based on results of this Drainage Report, it is concluded that:

1. Implementation of the proposed drainage facilities, as shown in this report, will provide Tract 28639-1 with 100-year flood protection from storm flows generated onsite.
2. The onsite 100-year storm flows will be intercepted and conveyed safely through proposed drainage facilities. These storm flows will be retained within the proposed retention basins.
3. In the event of storms larger than 100-year event, storm runoff will exceed the capacity of the retention basins, pond and safely overflow to Landau Boulevard.

Figures



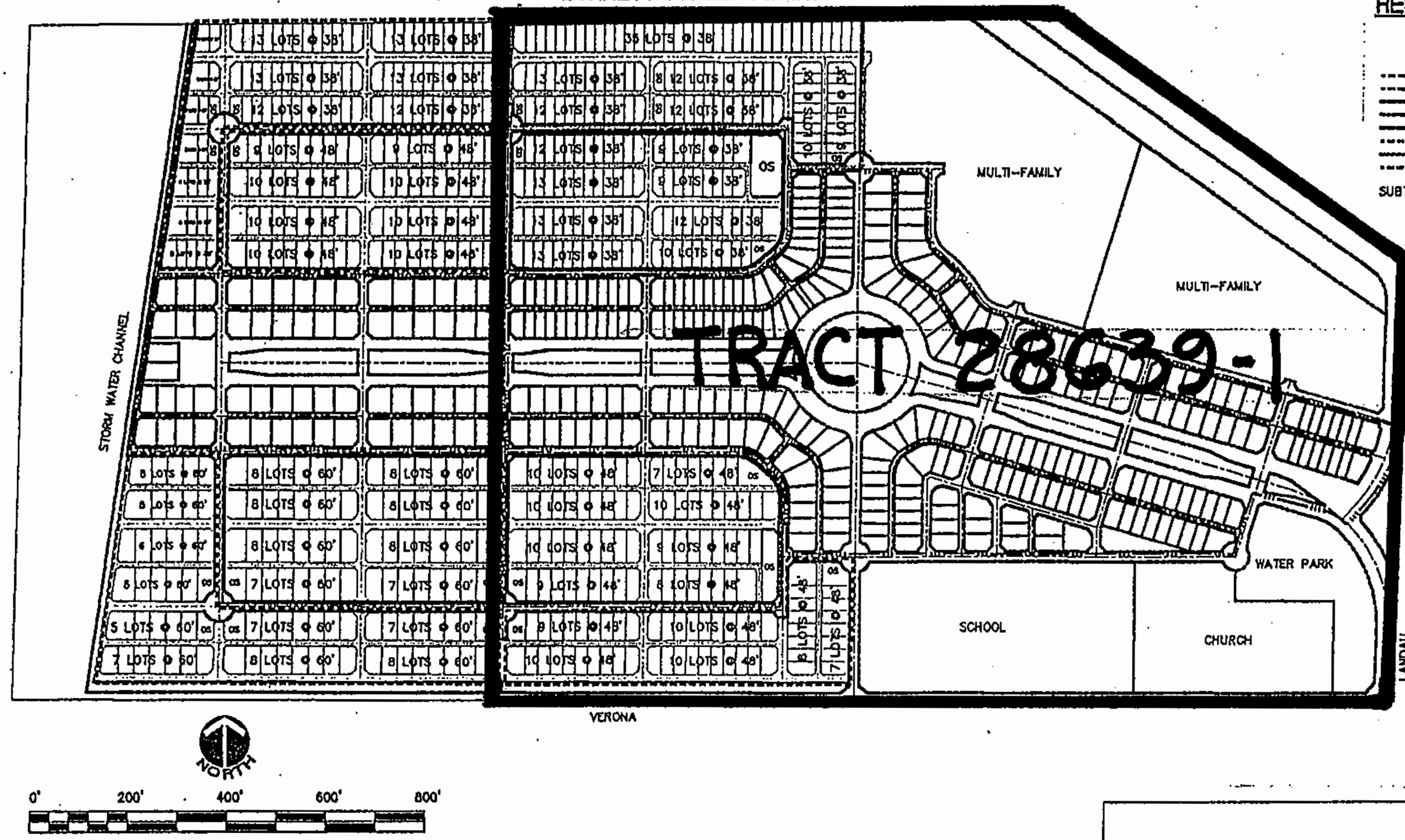
VICINITY MAP

Figure 1

TENTATIVE TRACT MAP NO. 28639

RIO VISTA VILLAGE

BURNETT DEVELOPMENT CORPORATION



RESIDENTIAL LOT ANALYSIS

LEGEND

Future Residential Lots	Open Space (OS)
54 LOTS @ 48'	.35 ACRES
83 LOTS @ 60'	.51 ACRES
62 LOTS @ 60'	.44 ACRES
73 LOTS @ 48'	.83 ACRES
91 LOTS @ 38'	.90 ACRES
78 LOTS @ 48'	.31 ACRES
103 LOTS @ 38'	.37 ACRES
97 LOTS @ 38'	.35 ACRES
SUBTOTAL 621 LOTS	4.06 ACRES

291 LOTS @ 38'
205 LOTS @ 48'
125 LOTS @ 60'

PHASE ONE
RESIDENTIAL LOTS = 268

PHASE TWO
RESIDENTIAL LOTS = 64

SUBTOTAL RESIDENTIAL LOTS
PHASE ONE AND PHASE TWO = 332

SUBTOTAL SINGLE FAMILY
RESIDENTIAL LOTS
PHASE ONE, TWO AND FUTURE = 953

MULTI-FAMILY
CLUSTER RESIDENTIAL = 162 UNITS
ATTACHED RESIDENTIAL = 204 UNITS

SUBTOTAL MULTI-FAMILY = 366 UNITS

TOTAL RESIDENTIAL = 1319 UNITS/LOTS

SPECIFIC PLAN
MAXIMUM DENSITY = 1362 UNITS/LOTS

LOT DIFFERENTIAL = 43

FIGURE 2

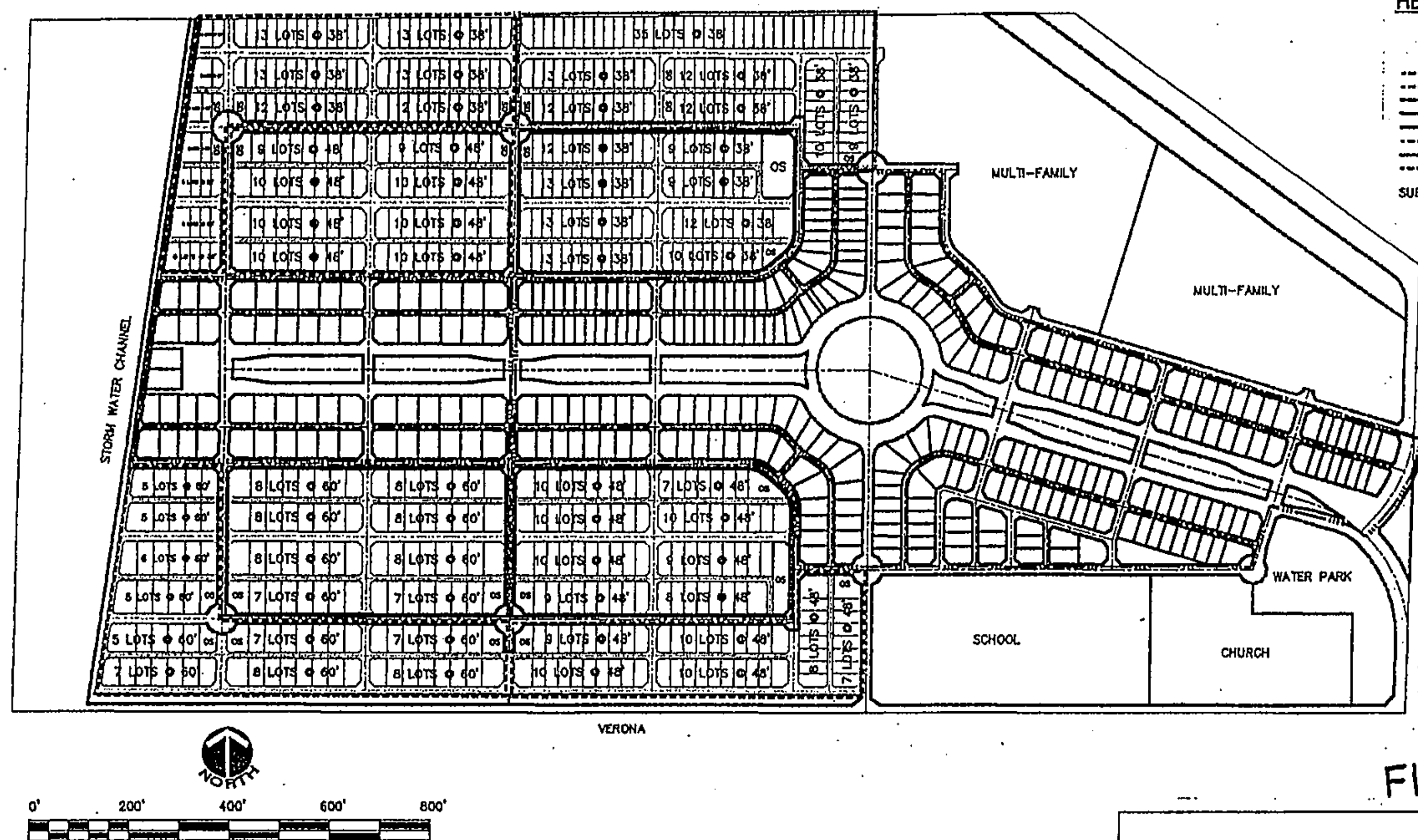
LAND USED PLAN

SCALE: N.T.S.	DATE: 1/19/2000	SHEET 1 OF 1

TENTATIVE TRACT MAP NO. 28639

RIO VISTA VILLAGE

BURNETT DEVELOPMENT CORPORATION



RESIDENTIAL LOT ANALYSIS

LEGEND

Future Residential Lots	Open Space (OS)
54 LOTS @ 48'	.35 ACRES
63 LOTS @ 60'	.51 ACRES
62 LOTS @ 60'	.44 ACRES
73 LOTS @ 48'	.83 ACRES
91 LOTS @ 38'	.90 ACRES
78 LOTS @ 48'	.31 ACRES
103 LOTS @ 38'	.37 ACRES
97 LOTS @ 38'	.35 ACRES
SUBTOTAL 621 LOTS	4.06 ACRES

291 LOTS @ 38'
205 LOTS @ 48'
125 LOTS @ 60'

PHASE ONE RESIDENTIAL LOTS = 268

PHASE TWO RESIDENTIAL LOTS = 64

SUBTOTAL RESIDENTIAL LOTS PHASE ONE AND PHASE TWO = 332

SUBTOTAL SINGLE FAMILY RESIDENTIAL LOTS PHASE ONE, TWO AND FUTURE = 953

MULTI-FAMILY
CLUSTER RESIDENTIAL = 162 UNITS
ATTACHED RESIDENTIAL = 204 UNITS

SUBTOTAL MULTI-FAMILY = 366 UNITS

TOTAL RESIDENTIAL = 1319 UNITS/LOTS

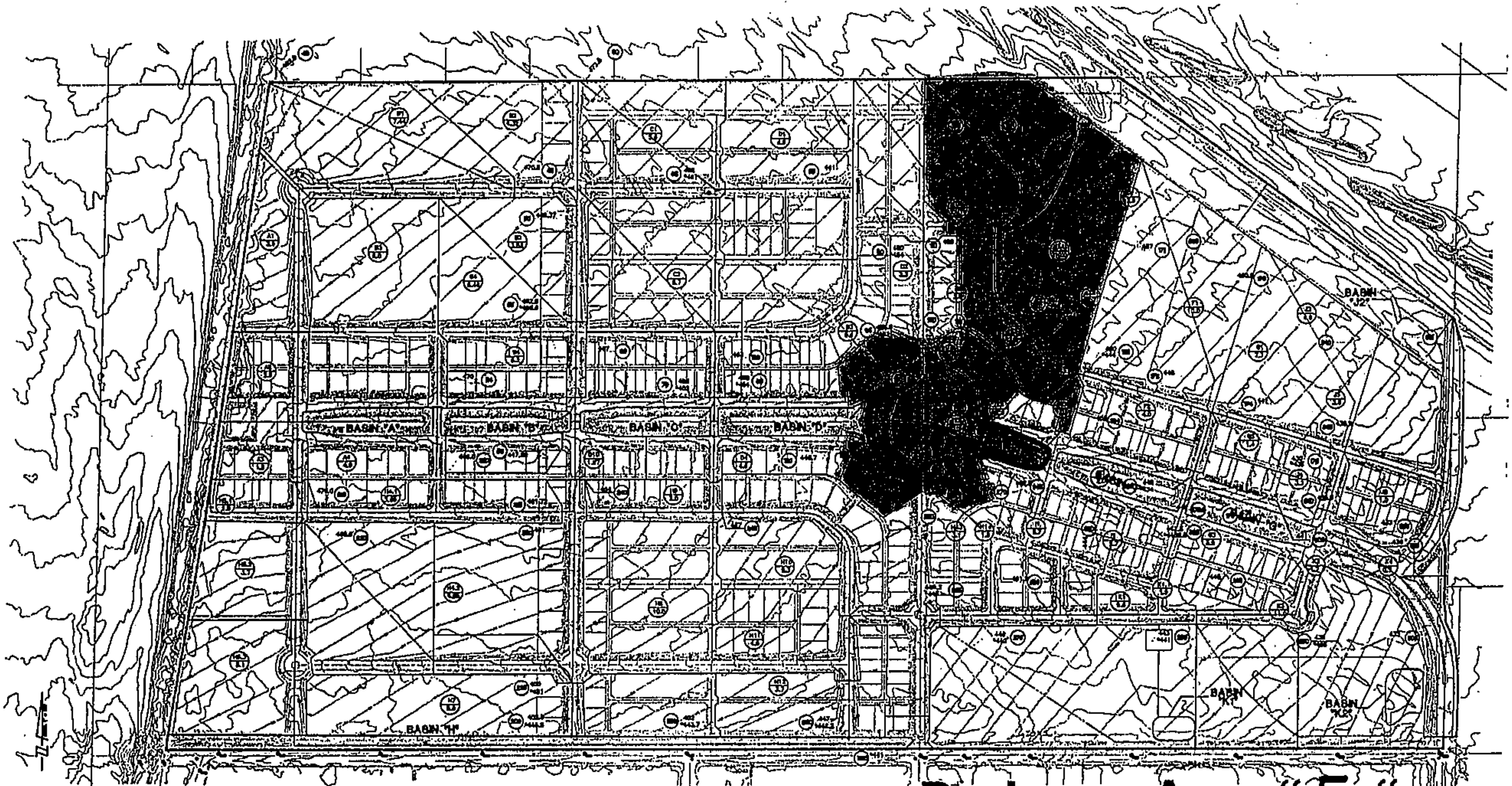
SPECIFIC PLAN MAXIMUM DENSITY = 1362 UNITS/LOTS

LOT DIFFERENTIAL = 43

FIGURE 3

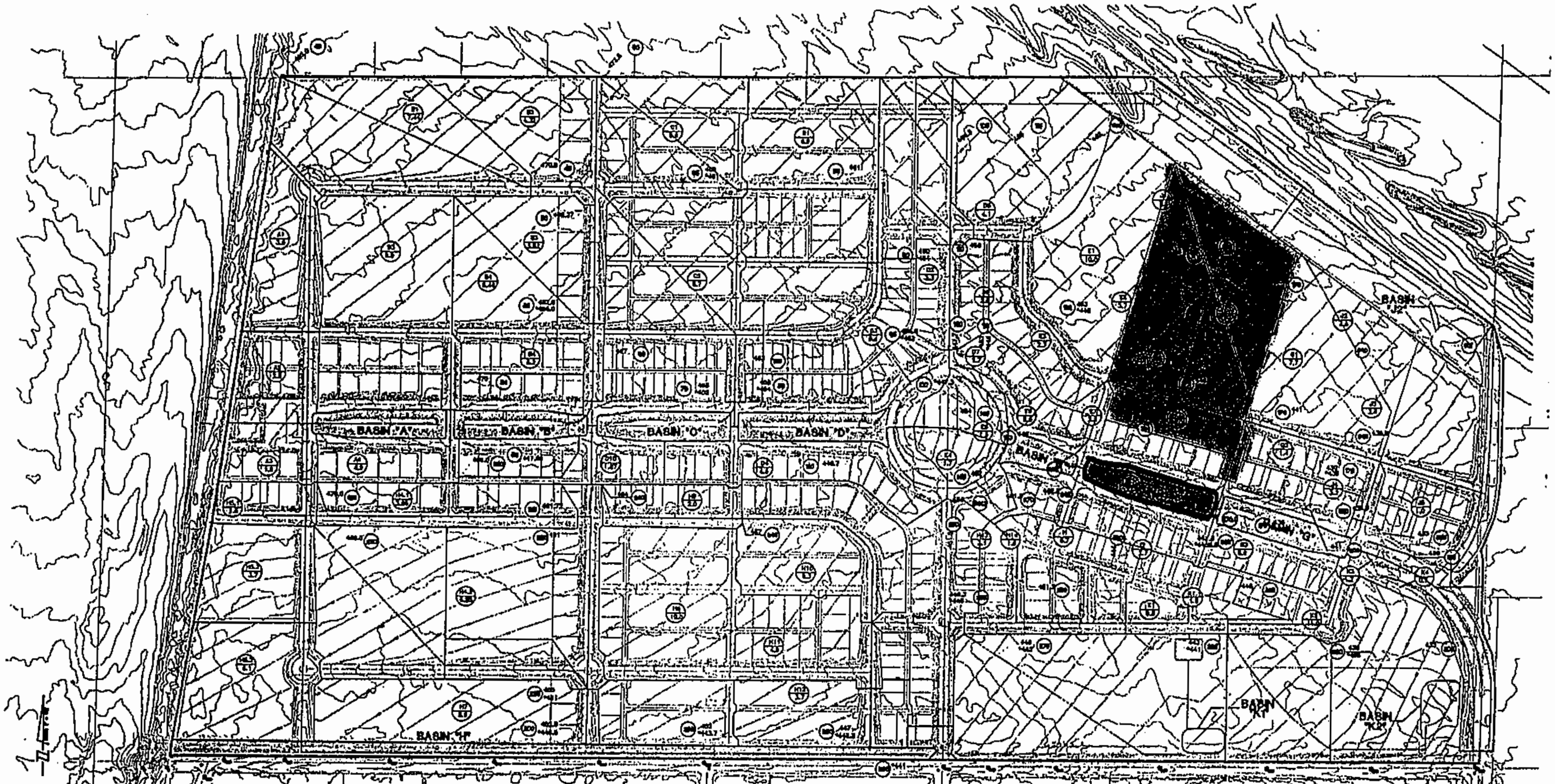
LAND USED PLAN

SCALE: N.T.S. | DATE: 1/19/2000 | SHEET 1 OF 1



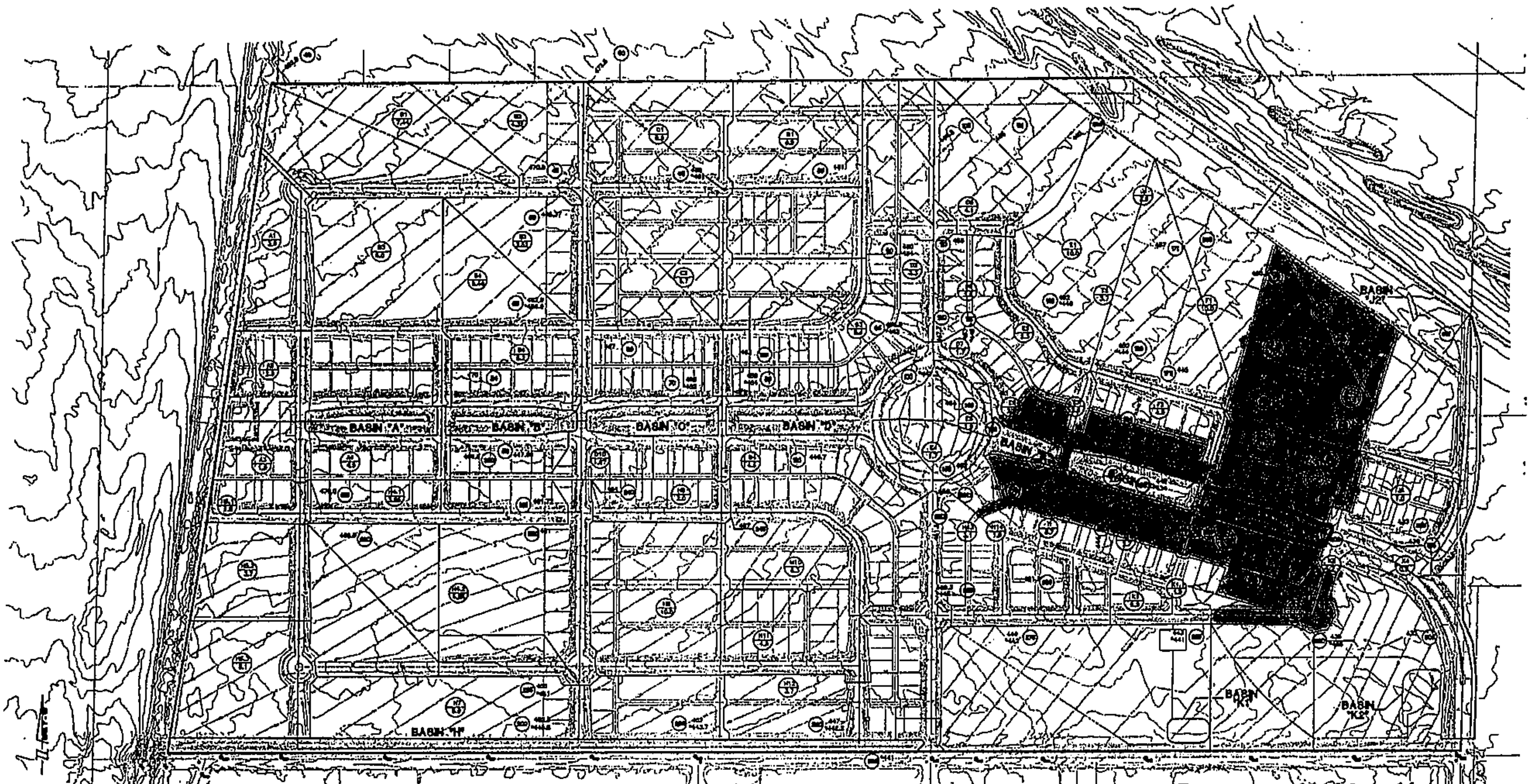
Drainage Area " E "

FIGURE 14



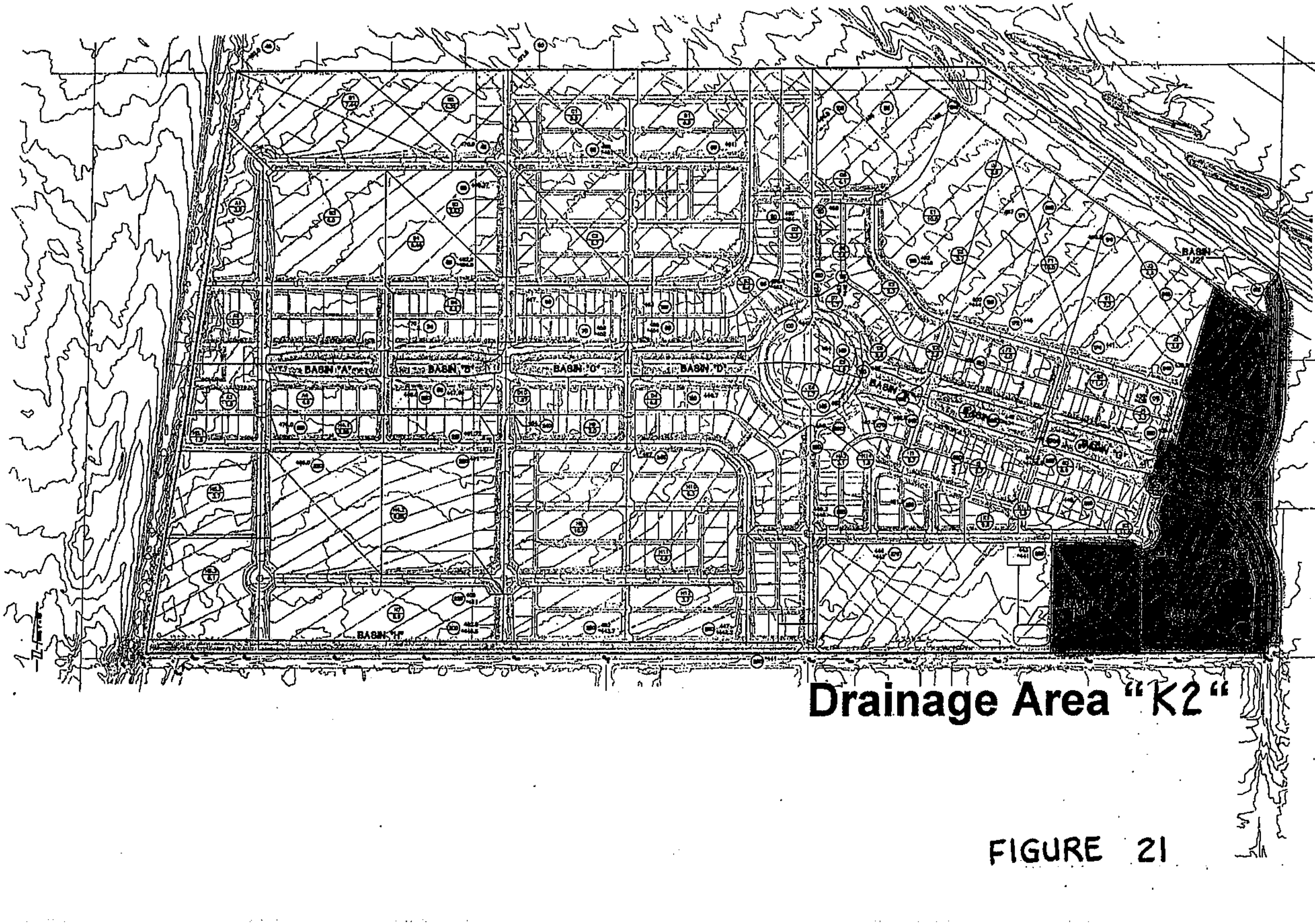
Drainage Area " F "

FIGURE 15



Drainage Area " G "

FIGURE 16



Drainage Area "K2"

FIGURE 21

Unit Hydrograph Summary Chart

Basin	L	Lc	H	"n"	Area Total	Ret.	1/2 ac.	1/4 ac.	Condo	Apt.	Comm.	Fp	Fp min.	Low Loss	Rain	Lag Time	Vol.
B	2095	950	16.15	0.015	22.26	1.22			21.04			0.325	0.16	90	4.5	15	1.93
C	1055	565	13.4	0.015	10	1.28			8.46			0.35	0.175	90	4.5	15	0.79
D	2260	760	26.4	0.015	35.26	1.47		4.5	29.29			0.33	0.017	90	4.5	15	2.98
E	1770	750	16.4	0.015	25.45	0.66	8.21	2.22		14.36		0.328	0.164	90	4.5	15	2.18
F	1372	680	13.09	0.015	12.6	1.2		1.96		9.44		0.29	0.145	90	4.5	15	1.26
G	1400	420	15.78	0.015	21.85	1.21		12.71		7.17	0.76	0.39	0.195	90	4.5	15	1.49
H1	2100	880	17.11	0.015	10			8.69				0.41	0.205	90	4.5	15	0.63
H2	1930	500	17.2	0.015	23				23			0.41	0.205	90	4.5	15	1.44
H4	2000	500	14.96	0.015	24.49			24.49				0.41	0.205	90	4.5	15	1.54
I	1078	358	8.73	0.015	10	0.223			8.2			0.316	0.158	90	4.5	15	0.89
K2	1784	704	12.1	0.015	22.45		11.1	3.41		3.84	4.1	0.37	0.185	90	4.5	15	1.66

L = Length of watercourse
Lc = Length from Concentration Point to point opposite centroid of area
H = Elevation difference along watercourse
"n" = Manning's friction factor along watercourse
Area Total = Total tributary area (10 acres minimum)
Ret. = Retention area
1/2 ac. = Land use with approximately 40% impervious area
1/4 ac. = Land use with approximately 50% impervious area
Condo = Land use with approximately 65% impervious area
Apt. = Land use with approximately 80% impervious area
Comm. = Land use with approximately 90% impervious area
Fp = Uniform mean soil loss
Fp min. = Minimun soil loss rate
Low Loss = Low soil loss rate
Rain = Rainfall
Lag Time = Unit hydrograph time unit
Vol. = Runoff Volume for drainage area

Figure 22

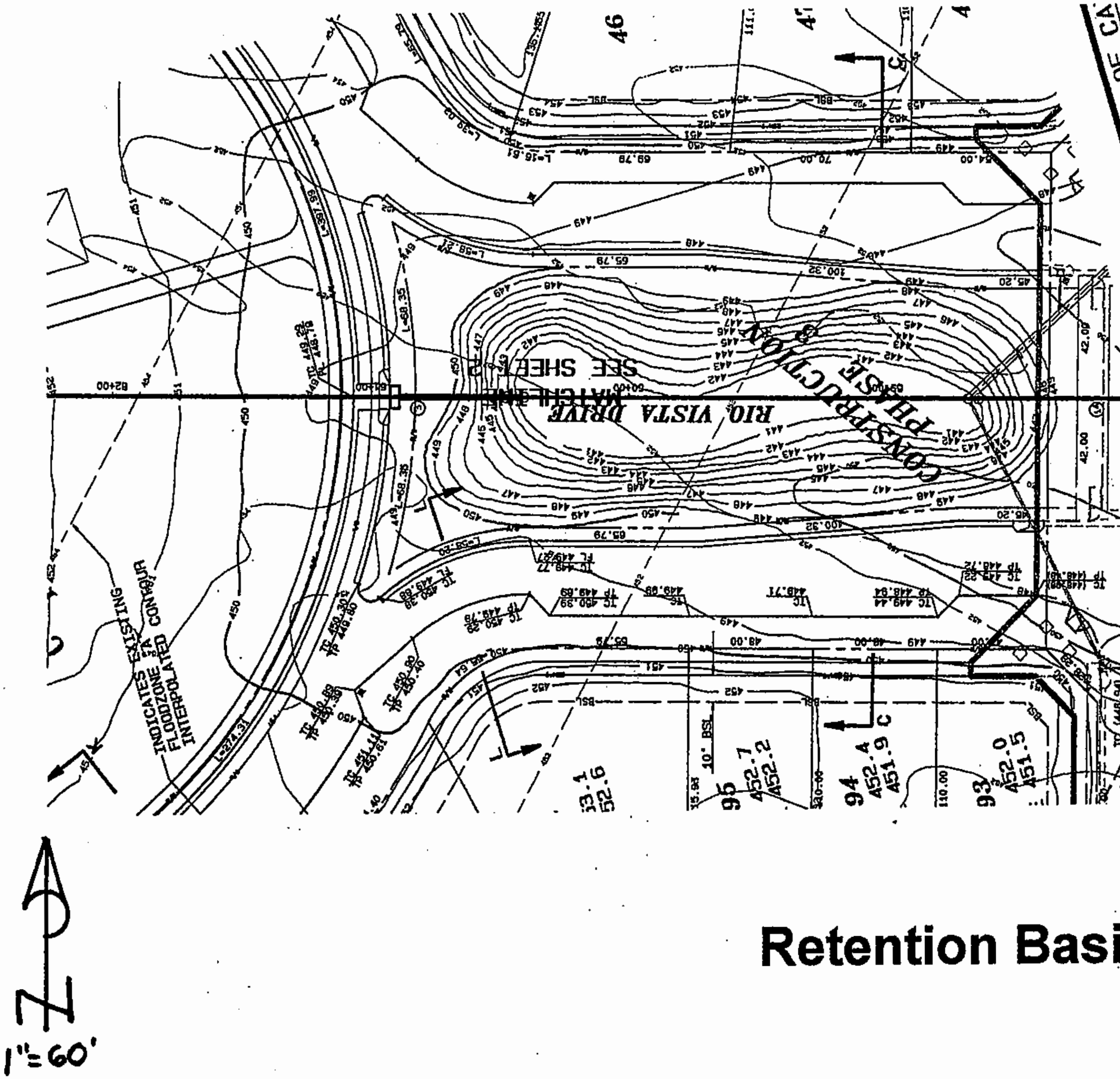
RETENTION BASIN "E" CAPACITY CHART

ELEVATION	AREA (A-C)	INCREMENTAL VOLUME (A-F)	ACCUMULATED VOLUME (A-F)
441.0	0.1051	0	0
442.0	0.1375	0.1213	0.1213
443.0	0.1738	0.1556	0.27695
444.0	0.2075	0.1906	0.4676
445.0	0.2445	0.2260	0.6936 *
446.0	0.2870	0.2658	0.9594
447.0	0.3322	0.3096	1.269
448.0	0.3806	0.3564	1.625
449.0	.4316	0.4061	2.031 **

* 100 Year, 1 Hour Retention Volume
(See Shortcut Method for 100-year, 1-hour HGL) 0.629 A-F = WS 444.71

** 100 Year, 24 Hour Retention Volume
(See Synthetic Unit Hydrograph Calculations) 2.177 A-F = WS 449.00 with 0.146 A-F overflowing to Retention Basin "F"

FIGURE 29



Retention Basin "E"

FIGURE 30

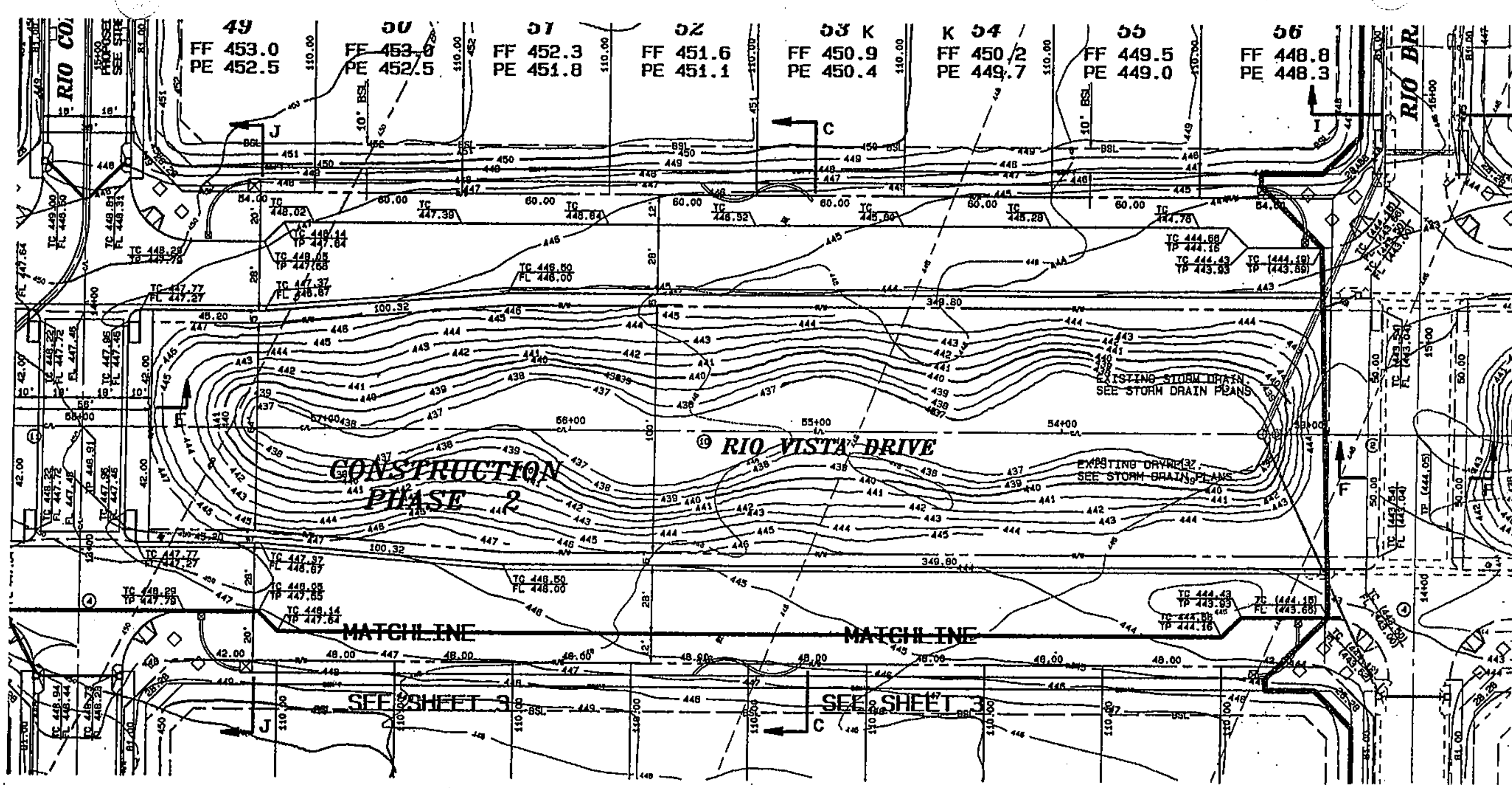
RETENTION BASIN "F" CAPACITY CHART

ELEVATION [illegible]	AREA (AC)	INCREMENTAL VOLUME (A-F)	ACCUMULATED VOLUME (A-F)
437.0	0.2181	0	0
438.0	0.2950	0.2566	0.2566
439.0	0.3728	0.3339	0.5905 *
440.0	0.4521	0.4125	1.003
441.0	0.5335	0.4928	1.496 **
442.0	0.6183	0.5759	2.072
443.0	0.7049	0.6616	2.734
444.0	0.7972	0.7511	3.485

* 100 Year, 1 Hour Retention Volume
(See Shortcut Method for 100-year, 1-hour HGL) 0.305 A-F = WS 438.14

** 100 Year, 24 Hour Retention Volume
(See Synthetic Unit Hydrograph Calculations) 1.26 A-F + 0.146 A-F from Retention Basin E = WS 440.82

FIGURE 31



Retention Basin "F"

FIGURE 32

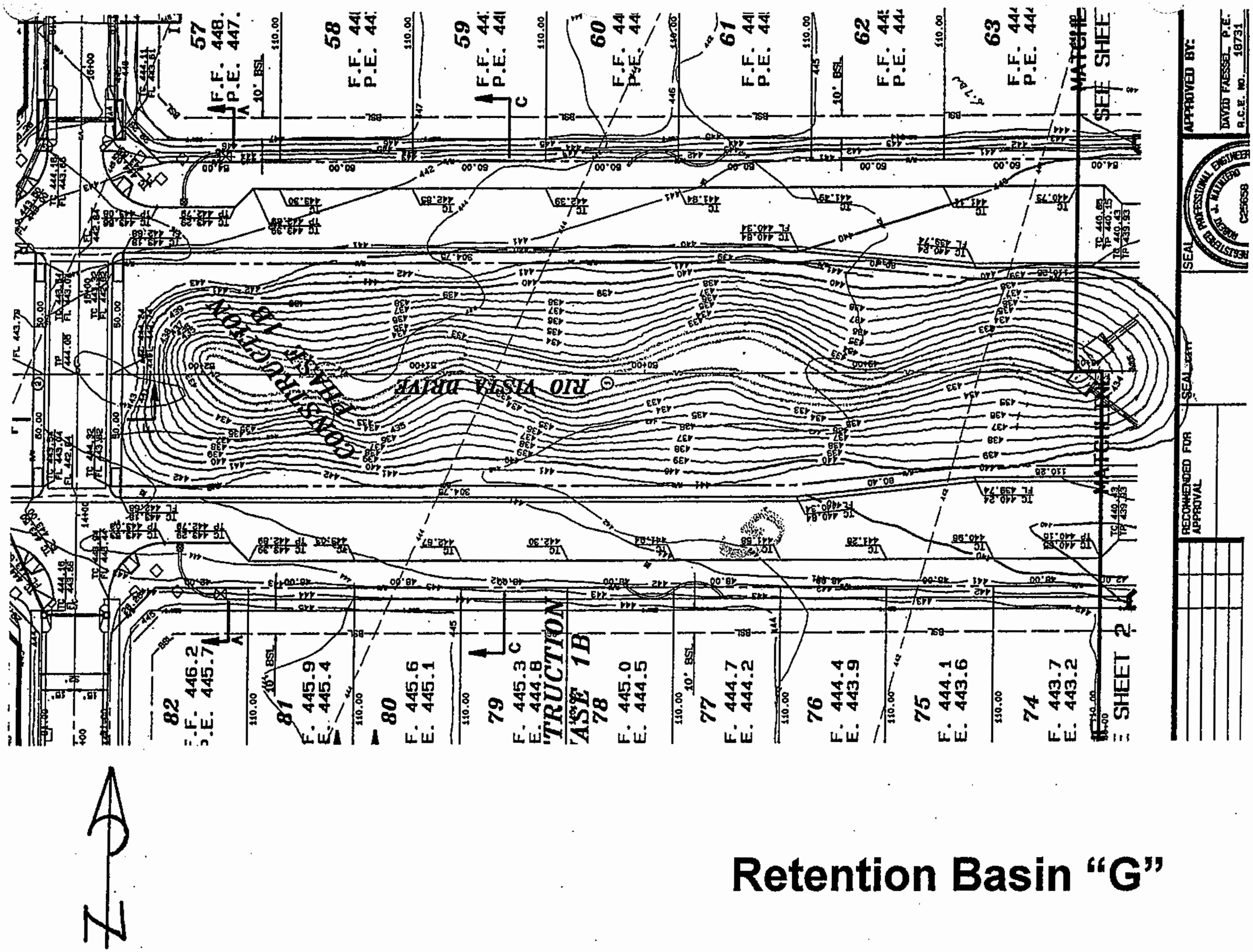
RETENTION BASIN "G" CAPACITY CHART

ELEVATION	AREA (A.C.)	INCREMENTAL VOLUME (A-F)	ACCUMULATED VOLUME (A-F)
430.0	0.0670	0	0
431.0	0.1299	0.098	0.098
432.0	0.1920	0.161	0.2589
433.0	0.2555	0.2235	0.385 *
434.0	0.3293	0.2924	0.52
435.0	0.4099	0.3696	0.8696
436.0	0.4907	0.4503	1.340
437.0	0.5761	0.5334	1.870 **

* 100 Year, 1 Hour Retention Volume
(See Shortcut Method for 100-year, 1-hour HGL) 0.458 A-F = WS 433.5

** 100 Year, 24 Hour Retention Volume
(See Synthetic Unit Hydrograph Calculations) 1.49 A-F = WS 436.28

FIGURE 33



1"=60'

Retention Basin "G"

FIGURE 34

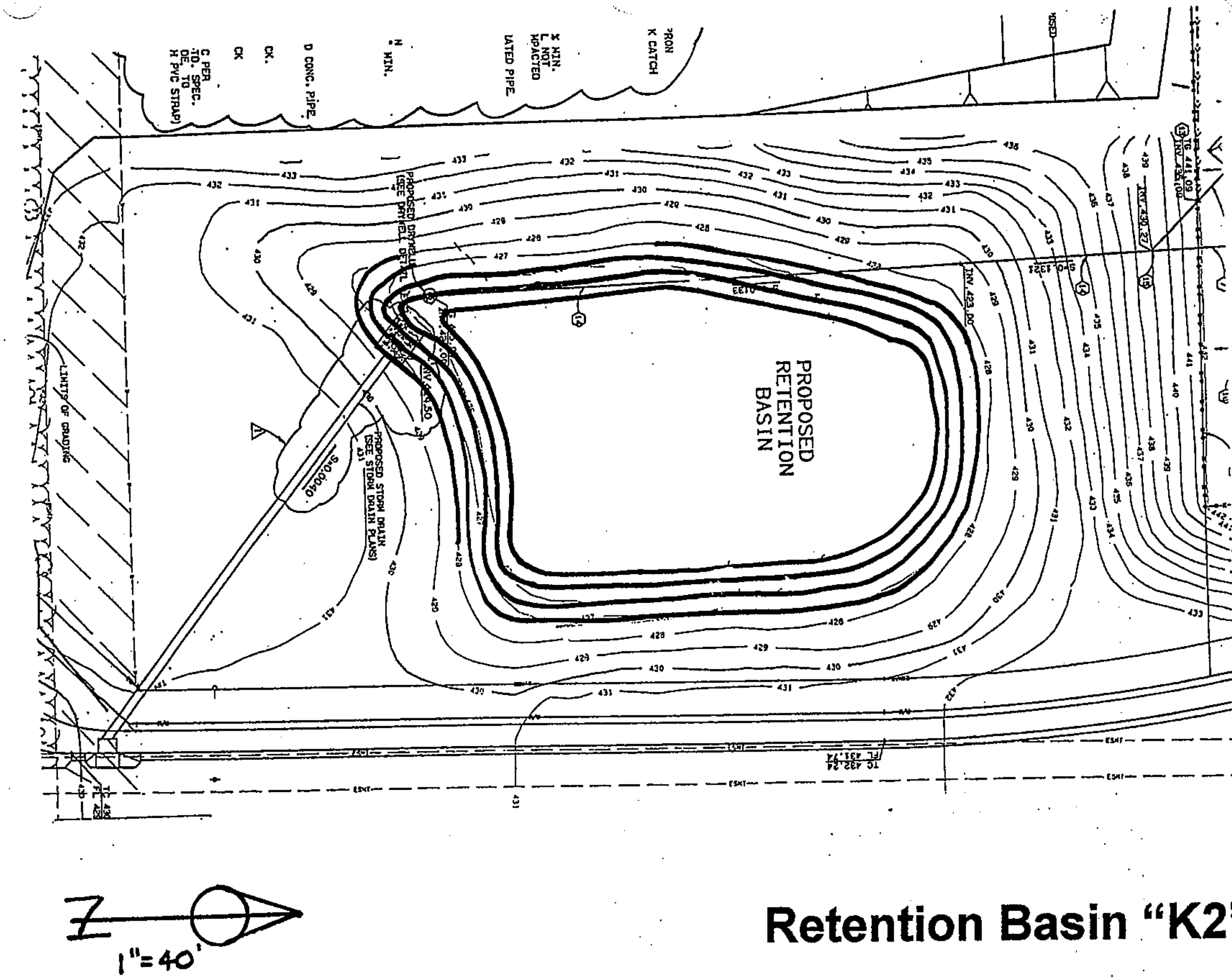
RETENTION BASIN "K2" CAPACITY CHART

ELEVATION	AREA (A.C.)	INCREMENTAL VOLUME (A-F)	ACCUMULATED VOLUME (A-F)
424.0	0.1946	0	0
425.0	0.2335	0.214	0.214
426.0	0.2761	0.2548	0.46885
427.0	0.3212	0.2998	0.7675 *
428.0	0.3729	0.34705	1.1145
429.0	0.4514	0.41215	1.5267 **
430.0	0.5359	0.49365	2.0203

* 100 Year, 1 Hour Retention Volume
(See Shortcut Method for 100-year, 1-hour HGL) 0.520 A-F = WS 426.17

** 100 Year, 24 Hour Retention Volume
(See Synthetic Unit Hydrograph Calculations) 1.66 A-F = WS 429.27

FIGURE 43



Retention Basin "K2"

FIGURE 44

Rational Method Calculations
100-Year Storm

****

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
(RCFC&WCD) 1978 HYDROLOGY MANUAL

Ver. 1.5A Release Date: 6/01/94 License ID 1304

Analysis prepared by:

MAINIERO, SMITH & ASSOCIATES, INC.
CIVIL & ENVIRONMENTAL ENGINEERING, SURVEYING AND LAND PLANNING
777 TAHQUIST CANYON WAY, SUITE 301
PALM SPRINGS, CALIFORNIA 92262-7066

************************** DESCRIPTION OF STUDY *************************
* Rio Vista Village - Tract 28639-1 *
* 100 Year Storm *
* Rational Method Calculations *
****

FILE NAME: 1064P.DAT
TIME/DATE OF STUDY: 9:46 3/20/2001

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

USER SPECIFIED STORM EVENT(YEAR) = 100.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 18.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = .85
10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) = 2.770
10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) = .980
100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) = 4.520
100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) = 1.600
SLOPE OF 10-YEAR INTENSITY-DURATION CURVE = .5799047
SLOPE OF 100-YEAR INTENSITY-DURATION CURVE = .5796024
COMPUTED RAINFALL INTENSITY DATA:
STORM EVENT = 100.00 1-HOUR INTENSITY(INCH/HOUR) = 1.6000
SLOPE OF INTENSITY DURATION CURVE = .5796
RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED
NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES

Begin Drainage Area "B"

****
FLOW PROCESS FROM NODE 40.00 TO NODE 45.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

==

ASSUMED INITIAL SUBAREA UNIFORM
DEVELOPMENT IS CONDOMINIUM
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH = 1050.00
UPSTREAM ELEVATION = 482.00
DOWNSTREAM ELEVATION = 470.50
ELEVATION DIFFERENCE = 11.50
TC = .359*[(1050.00**3)/(11.50)]**.2 = 14.319
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.671
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7628
SUBAREA RUNOFF(CFS) = 21.67
TOTAL AREA(ACRES) = 7.74 TOTAL RUNOFF(CFS) = 21.67

****
FLOW PROCESS FROM NODE 45.00 TO NODE 50.00 IS CODE = 6

>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<

```
===========================================================================
UPSTREAM ELEVATION =   470.50   DOWNSTREAM ELEVATION =   468.37
STREET LENGTH(FEET) =  300.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
INTERIOR STREET CROSSFALL(DECIMAL) =  .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

   **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =  27.34
***STREET FLOWING FULL***
 STREETFLOW MODEL RESULTS:
   NOTE: STREETFLOW EXCEEDS TOP OF CURB.
   THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
   THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
   THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
   STREET FLOWDEPTH(FEET) =  .55
   HALFSTREET FLOODWIDTH(FEET) =  18.00
   AVERAGE FLOW VELOCITY(FEET/SEC.) =  3.20
   PRODUCT OF DEPTH&VELOCITY =   1.77
STREETFLOW TRAVELTIME(MIN) =  1.56  TC(MIN) = 15.88

 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.457
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7581
SUBAREA AREA(ACRES) =   4.32  SUBAREA RUNOFF(CFS) =  11.32
SUMMED AREA(ACRES) =  12.06  TOTAL RUNOFF(CFS) =    33.00
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .59  HALFSTREET FLOODWIDTH(FEET) = 18.00
FLOW VELOCITY(FEET/SEC.) = 3.32  DEPTH*VELOCITY =  1.96


****************************************************************************
FLOW PROCESS FROM NODE    50.00 TO NODE    51.00 IS CODE =  6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
===========================================================================
UPSTREAM ELEVATION =   468.37   DOWNSTREAM ELEVATION =   465.72
STREET LENGTH(FEET) =  438.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
INTERIOR STREET CROSSFALL(DECIMAL) =  .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

   **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =  37.24
***STREET FLOWING FULL***
 STREETFLOW MODEL RESULTS:
   NOTE: STREETFLOW EXCEEDS TOP OF CURB.
   THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
   THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
   THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
   STREET FLOWDEPTH(FEET) =  .61
   HALFSTREET FLOODWIDTH(FEET) =  18.00
   AVERAGE FLOW VELOCITY(FEET/SEC.) =   3.50
   PRODUCT OF DEPTH&VELOCITY =   2.14
STREETFLOW TRAVELTIME(MIN) =  2.09  TC(MIN) =  17.97

 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.218
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7525
SUBAREA AREA(ACRES) =   3.52  SUBAREA RUNOFF(CFS) =   8.53
SUMMED AREA(ACRES) =  15.58  TOTAL RUNOFF(CFS) =   41.52
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .63  HALFSTREET FLOODWIDTH(FEET) = 18.00
FLOW VELOCITY(FEET/SEC.) = 3.66  DEPTH*VELOCITY =  2.31
```

41.52 CFS ENTERS TWO CATCH BASINS AT 23+53.50 RIO GUADALUPE. DEPTH = 0.63'
LINE B-1, MH 2 & MH 3

```
******************************************************************************
 FLOW PROCESS FROM NODE    51.00 TO NODE    55.00 IS CODE =  4
 ----------------------------------------------------------------
 >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED PIPESIZE<<<<<
==============================================================================
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.9 INCHES
 PIPEFLOW VELOCITY(FEET/SEC.) =  13.2
 UPSTREAM NODE ELEVATION =   458.47
 DOWNSTREAM NODE ELEVATION =   450.36
 FLOWLENGTH(FEET) =   306.49   MANNING'S N =  .013
 GIVEN PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPEFLOW THRU SUBAREA(CFS) =     41.52
 TRAVEL TIME(MIN.) =    .39    TC(MIN.) =  18.35

******************************************************************************
 FLOW PROCESS FROM NODE    55.00 TO NODE    55.00 IS CODE =  8
 ----------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.179
 SOIL CLASSIFICATION IS "A"
 CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7516
 SUBAREA AREA(ACRES) =    5.46   SUBAREA RUNOFF(CFS) =   13.04
 TOTAL AREA(ACRES) =    21.04   TOTAL RUNOFF(CFS) =    54.57
 TC(MIN) =  18.35
```

13.04 CFS ENTERS TWO CATCH BASINS AT 20+54 RIO GUADALUPE.
DEPTH = 0.41'
LINE B-2, MH 4
LINE B-3, MH 5

```
******************************************************************************
 FLOW PROCESS FROM NODE    55.00 TO NODE    56.00 IS CODE =  4
 ----------------------------------------------------------------
 >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED PIPESIZE<<<<<
==============================================================================
 DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.2 INCHES
 PIPEFLOW VELOCITY(FEET/SEC.) =  12.9
 UPSTREAM NODE ELEVATION =   449.77
 DOWNSTREAM NODE ELEVATION =   447.35
 FLOWLENGTH(FEET) =   121.35   MANNING'S N =  .013
 GIVEN PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
 PIPEFLOW THRU SUBAREA(CFS) =     54.57
 TRAVEL TIME(MIN.) =    .16    TC(MIN.) =  18.51
```

End Drainage Area "B"

Begin Drainage Area "C"

```
******************************************************************************
 FLOW PROCESS FROM NODE    67.00 TO NODE    68.00 IS CODE = 21
 ----------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
     ASSUMED INITIAL SUBAREA UNIFORM
     DEVELOPMENT IS CONDOMINIUM
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH =   700.00
 UPSTREAM ELEVATION =    470.40
 DOWNSTREAM ELEVATION =    461.61
 ELEVATION DIFFERENCE =      8.79
 TC = .359*[(  700.00**3)/(    8.79)]**.2 =   11.847
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.097
 SOIL CLASSIFICATION IS "A"
 CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7712
 SUBAREA RUNOFF(CFS) =    20.03
 TOTAL AREA(ACRES) =     6.34   TOTAL RUNOFF(CFS) =     20.03
```

****

FLOW PROCESS FROM NODE 68.00 TO NODE 69.00 IS CODE = 6

>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<

===

UPSTREAM ELEVATION = 461.61 DOWNSTREAM ELEVATION = 458.34
STREET LENGTH(FEET) = 242.00 CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 15.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 13.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

**TRAVELTIME COMPUTED USING MEAN FLOW(CFS) = 23.20
STREET FLOWING FULL
STREETFLOW MODEL RESULTS:
STREET FLOWDEPTH(FEET) = .49
HALFSTREET FLOODWIDTH(FEET) = 15.00
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.70
PRODUCT OF DEPTH&VELOCITY = 1.82
STREETFLOW TRAVELTIME(MIN) = 1.09 TC(MIN) = 12.94

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.894
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7673
SUBAREA AREA(ACRES) = 2.12 SUBAREA RUNOFF(CFS) = 6.33
SUMMED AREA(ACRES) = 8.46 TOTAL RUNOFF(CFS) = 26.37
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .49 HALFSTREET FLOODWIDTH(FEET) = 15.00
FLOW VELOCITY(FEET/SEC.) = 4.21 DEPTH*VELOCITY = 2.07

26.37 CFS ENTERS TWO CATCH BASINS AT 14+69 RIO FELICIA.
DEPTH = 0.49'.
LINE C, MH 1 & MH 2

****

FLOW PROCESS FROM NODE 69.00 TO NODE 70.00 IS CODE = 4

>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<

===

DEPTH OF FLOW IN 24.0 INCH PIPE IS 15.0 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) = 12.8
UPSTREAM NODE ELEVATION = 451.33
DOWNSTREAM NODE ELEVATION = 447.75
FLOWLENGTH(FEET) = 114.63 MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) = 26.37
TRAVEL TIME(MIN.) = .15 TC(MIN.) = 13.09

End Drainage Area "C"

Begin Drainage Area "D"

****

FLOW PROCESS FROM NODE 60.00 TO NODE 65.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

===

ASSUMED INITIAL SUBAREA UNIFORM
DEVELOPMENT IS CONDOMINIUM
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH = 680.00
UPSTREAM ELEVATION = 473.40
DOWNSTREAM ELEVATION = 465.95
ELEVATION DIFFERENCE = 7.45
TC = .359*[(680.00**3)/(7.45)]**.2 = 12.034

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.060
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7705
SUBAREA RUNOFF(CFS) = 18.08
TOTAL AREA(ACRES) = 5.78 TOTAL RUNOFF(CFS) = 18.08

****

FLOW PROCESS FROM NODE 65.00 TO NODE 85.00 IS CODE = 6

>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<

==

UPSTREAM ELEVATION = 465.95 DOWNSTREAM ELEVATION = 462.19
STREET LENGTH(FEET) = 537.00 CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

**TRAVELTIME COMPUTED USING MEAN FLOW(CFS) = 24.56
STREET FLOWING FULL
STREETFLOW MODEL RESULTS:
NOTE: STREETFLOW EXCEEDS TOP OF CURB.
THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
STREET FLOWDEPTH(FEET) = .53
HALFSTREET FLOODWIDTH(FEET) = 18.00
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.14
PRODUCT OF DEPTH&VELOCITY = 1.67
STREETFLOW TRAVELTIME(MIN) = 2.85 TC(MIN) = 14.89

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.589
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7610
SUBAREA AREA(ACRES) = 4.77 SUBAREA RUNOFF(CFS) = 13.03
SUMMED AREA(ACRES) = 10.55 TOTAL RUNOFF(CFS) = 31.11
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .57 HALFSTREET FLOODWIDTH(FEET) = 18.00
FLOW VELOCITY(FEET/SEC.) = 3.37 DEPTH*VELOCITY = 1.93

****

FLOW PROCESS FROM NODE 85.00 TO NODE 90.00 IS CODE = 6

>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<

==

UPSTREAM ELEVATION = 462.19 DOWNSTREAM ELEVATION = 461.13
STREET LENGTH(FEET) = 152.00 CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

**TRAVELTIME COMPUTED USING MEAN FLOW(CFS) = 35.45
STREET FLOWING FULL
STREETFLOW MODEL RESULTS:
NOTE: STREETFLOW EXCEEDS TOP OF CURB.
THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
STREET FLOWDEPTH(FEET) = .59
HALFSTREET FLOODWIDTH(FEET) = 18.00
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.57

PRODUCT OF DEPTH&VELOCITY = 2.11
STREETFLOW TRAVELTIME(MIN) = .71 TC(MIN) = 15.60

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.493
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7589
SUBAREA AREA(ACRES) = 3.27 SUBAREA RUNOFF(CFS) = 8.67
SUMMED AREA(ACRES) = 13.82 TOTAL RUNOFF(CFS) = 39.78
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .61 HALFSTREET FLOODWIDTH(FEET) = 18.00
FLOW VELOCITY(FEET/SEC.) = 3.74 DEPTH*VELOCITY = 2.28

FLOW SPLITS AT THIS POINT, 19.89 CFS ENTERS THE CATCH BASIN AT 11+50 RIO OSO; 19.89 CFS HEADS EAST ON RIO ROSALIA. DEPTH = 0.61'
LINE D-3, MH 6

****
FLOW PROCESS FROM NODE 90.00 TO NODE 90.10 IS CODE = 7

THE FOLLOWING SECTIONS MODEL THE FLOW THAT ENTERS THE CATCH BASIN.

>>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
==
USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN) = 15.60 RAIN INTENSITY(INCH/HOUR) = 3.49
TOTAL AREA(ACRES) = 6.91 TOTAL RUNOFF(CFS) = 19.89

****
FLOW PROCESS FROM NODE 90.10 TO NODE 91.00 IS CODE = 4

>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<
==
DEPTH OF FLOW IN 24.0 INCH PIPE IS 16.1 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) = 8.9
UPSTREAM NODE ELEVATION = 456.85
DOWNSTREAM NODE ELEVATION = 451.30
FLOWLENGTH(FEET) = 383.99 MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) = 19.89
TRAVEL TIME(MIN.) = .72 TC(MIN.) = 16.32

****
FLOW PROCESS FROM NODE 91.00 TO NODE 91.10 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 16.32
RAINFALL INTENSITY(INCH/HR) = 3.40
TOTAL STREAM AREA(ACRES) = 6.91
PEAK FLOW RATE(CFS) AT CONFLUENCE = 19.89

****
FLOW PROCESS FROM NODE 120.00 TO NODE 121.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==
ASSUMED INITIAL SUBAREA UNIFORM
DEVELOPMENT IS CONDOMINIUM
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH = 460.00
UPSTREAM ELEVATION = 466.00
DOWNSTREAM ELEVATION = 458.65
ELEVATION DIFFERENCE = 7.35
TC = .359*[(460.00**3)/(7.35)]**.2 = 9.544
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.644
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7806
SUBAREA RUNOFF(CFS) = 19.79
TOTAL AREA(ACRES) = 5.46 TOTAL RUNOFF(CFS) = 19.79

19.79 CFS ENTERS THE CATCH BASIN AT 15+25. RIO OSO. DEPTH = 0.7' LINE D-2, MH 5

```
******************************************************************************
FLOW PROCESS FROM NODE   121.00 TO NODE   122.00 IS CODE =  4
----------------------------------------------------------------------------
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<
============================================================================
DEPTH OF FLOW IN  21.0 INCH PIPE IS  11.6 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) =  14.5
UPSTREAM NODE ELEVATION =   453.89
DOWNSTREAM NODE ELEVATION =  451.88
FLOWLENGTH(FEET) =    38.00   MANNING'S N =  .013
GIVEN PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPEFLOW THRU SUBAREA(CFS) =      19.79
TRAVEL TIME(MIN.) =     .04    TC(MIN.) =    9.59

******************************************************************************
FLOW PROCESS FROM NODE   122.00 TO NODE    91.10 IS CODE =  1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   9.59
RAINFALL INTENSITY(INCH/HR) =   4.63
TOTAL STREAM AREA(ACRES) =    5.46
PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.79

** CONFLUENCE DATA **
STREAM    RUNOFF     Tc     INTENSITY     AREA
NUMBER     (CFS)   (MIN.)  (INCH/HOUR)   (ACRE)
   1      19.89   16.32     3.403         6.91
   2      19.79    9.59     4.632         5.46

*********************************WARNING**********************************
IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
**************************************************************************

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM    RUNOFF     Tc     INTENSITY
NUMBER     (CFS)   (MIN.)  (INCH/HOUR)
   1      31.48    9.59     4.632
   2      34.43   16.32     3.403

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     34.43  Tc(MIN.) =   16.32
TOTAL AREA(ACRES) =      12.37

******************************************************************************
FLOW PROCESS FROM NODE    91.10 TO NODE    92.00 IS CODE =  4
----------------------------------------------------------------------------
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<
============================================================================
DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.5 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) =  12.6
UPSTREAM NODE ELEVATION =   451.28
DOWNSTREAM NODE ELEVATION =   444.02
FLOWLENGTH(FEET) =   285.59   MANNING'S N =  .013
GIVEN PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
PIPEFLOW THRU SUBAREA(CFS) =      34.43
```

```
TRAVEL TIME(MIN.) =   .38   TC(MIN.) =  16.70

****************************************************************************
FLOW PROCESS FROM NODE    92.00 TO NODE    92.10 IS CODE =  1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) = 16.70
RAINFALL INTENSITY(INCH/HR) =  3.36
TOTAL STREAM AREA(ACRES) =  12.37
PEAK FLOW RATE(CFS) AT CONFLUENCE =    34.43

****************************************************************************
FLOW PROCESS FROM NODE   105.00 TO NODE   105.00 IS CODE =  7
----------------------------------------------------------------------------
>>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN) =  15.60   RAIN INTENSITY(INCH/HOUR) =  3.49
TOTAL AREA(ACRES) =     6.91   TOTAL RUNOFF(CFS) =     19.89
```

THE FOLLOW SECTIONS MODEL THE 19.89 CFS THAT FLOW EAST ON RIO ROSALIA.

```
****************************************************************************
FLOW PROCESS FROM NODE   105.00 TO NODE   106.00 IS CODE =  6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION =   461.89  DOWNSTREAM ELEVATION =   457.85
STREET LENGTH(FEET) =  336.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  16.00
INTERIOR STREET CROSSFALL(DECIMAL) =   .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2

    **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   22.99
  STREETFLOW MODEL RESULTS:
    STREET FLOWDEPTH(FEET) =   .49
    HALFSTREET FLOODWIDTH(FEET) =   17.50
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.58
    PRODUCT OF DEPTH&VELOCITY =    1.77
STREETFLOW TRAVELTIME(MIN) =   1.56   TC(MIN) =  17.16

 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.305
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7546
SUBAREA AREA(ACRES) =    2.48   SUBAREA RUNOFF(CFS) =    6.18
SUMMED AREA(ACRES) =    9.39   TOTAL RUNOFF(CFS) =    26.07
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) =  .51   HALFSTREET FLOODWIDTH(FEET) = 18.00
FLOW VELOCITY(FEET/SEC.) =  3.66   DEPTH*VELOCITY =   1.88

****************************************************************************
FLOW PROCESS FROM NODE   106.00 TO NODE   106.00 IS CODE =  8
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.305
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7546
SUBAREA AREA(ACRES) =    1.78   SUBAREA RUNOFF(CFS) =    4.44
TOTAL AREA(ACRES) =    11.17   TOTAL RUNOFF(CFS) =   30.51
TC(MIN) =  17.16
```

```
****************************************************************************
 FLOW PROCESS FROM NODE   106.00 TO NODE   107.00 IS CODE =  6
 ----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM ELEVATION =   457.85  DOWNSTREAM ELEVATION =   453.29
 STREET LENGTH(FEET) =   395.00  CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  16.00
 INTERIOR STREET CROSSFALL(DECIMAL) =   .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .055

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2

    **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   33.13
 ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS:
    NOTE: STREETFLOW EXCEEDS TOP OF CURB.
    THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
    THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
    THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOWDEPTH(FEET) =   .55
    HALFSTREET FLOODWIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.88
    PRODUCT OF DEPTH&VELOCITY =    2.15
 STREETFLOW TRAVELTIME(MIN) =   1.70   TC(MIN) =  18.86

  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.129
 SOIL CLASSIFICATION IS "A"
 CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7503
 SUBAREA AREA(ACRES) =     2.23   SUBAREA RUNOFF(CFS) =     5.24
 SUMMED AREA(ACRES) =   13.40   TOTAL RUNOFF(CFS) =     35.75
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) =  .55   HALFSTREET FLOODWIDTH(FEET) = 18.00
 FLOW VELOCITY(FEET/SEC.) =  4.19   DEPTH*VELOCITY =   2.31
```

35.75 CFS ENTERS TWO
CATCH BASINS AT 26+07.88
AVE. QUINTANA
DEPTH = 0.55
LINE D-1, MH 2 & MH 3

```
****************************************************************************
 FLOW PROCESS FROM NODE   107.00 TO NODE   92.00 IS CODE =  4
 ----------------------------------------------------------------------------
 >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED PIPESIZE<<<<<
============================================================================
 PIPEFLOW VELOCITY(FEET/SEC.) =   6.0
 UPSTREAM NODE ELEVATION =   444.84
 DOWNSTREAM NODE ELEVATION =   444.04
 FLOWLENGTH(FEET) =   201.12   MANNING'S N =  .013
 GIVEN PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
 PIPEFLOW THRU SUBAREA(CFS) =     35.75
 TRAVEL TIME(MIN.) =     .56    TC(MIN.) =  19.42


****************************************************************************
 FLOW PROCESS FROM NODE    92.00 TO NODE    92.10 IS CODE =  1
 ----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  19.42
 RAINFALL INTENSITY(INCH/HR) =   3.08
 TOTAL STREAM AREA(ACRES) =   13.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      35.75

 ** CONFLUENCE DATA **
 STREAM    RUNOFF     Tc      INTENSITY      AREA
```

NUMBER	(CFS)	(MIN.)	(INCH/HOUR)	(ACRE)
1	34.43	16.70	3.358	12.37
2	35.75	19.42	3.077	13.40

```
*********************************WARNING**********************************
IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
****************************************************************************

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM    RUNOFF     Tc     INTENSITY
NUMBER     (CFS)   (MIN.)  (INCH/HOUR)
  1       65.18    16.70     3.358
  2       67.30    19.42     3.077

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     67.30  Tc(MIN.) =  19.42
TOTAL AREA(ACRES) =     25.77

****************************************************************************
FLOW PROCESS FROM NODE    92.10 TO NODE    93.00 IS CODE =  4
----------------------------------------------------------------------------
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<
============================================================================
PIPEFLOW VELOCITY(FEET/SEC.) =  7.0
UPSTREAM NODE ELEVATION =  443.28
DOWNSTREAM NODE ELEVATION =  442.42
FLOWLENGTH(FEET) =  215.65   MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 42.00    NUMBER OF PIPES =  1
PIPEFLOW THRU SUBAREA(CFS) =     67.30
TRAVEL TIME(MIN.) =    .51    TC(MIN.) =  19.93

****************************************************************************
FLOW PROCESS FROM NODE    70.00 TO NODE    71.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
    ASSUMED INITIAL SUBAREA UNIFORM
    DEVELOPMENT IS CONDOMINIUM
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH =  660.00
UPSTREAM ELEVATION =    467.10
DOWNSTREAM ELEVATION =    457.36
ELEVATION DIFFERENCE =     9.74
TC = .359*[( 660.00**3)/(    9.74)]**.2 =  11.203
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.232
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7737
SUBAREA RUNOFF(CFS) =     6.22
TOTAL AREA(ACRES) =     1.90   TOTAL RUNOFF(CFS) =     6.22

****************************************************************************
FLOW PROCESS FROM NODE    71.00 TO NODE    72.00 IS CODE =  6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION =    457.36   DOWNSTREAM ELEVATION =    454.75
STREET LENGTH(FEET) =  520.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 28.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  14.00
INTERIOR STREET CROSSFALL(DECIMAL) =   .020
```

```
OUTSIDE STREET CROSSFALL(DECIMAL) =  .020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1

   **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   8.43
 STREETFLOW MODEL RESULTS:
   STREET FLOWDEPTH(FEET) =  .50
   HALFSTREET FLOODWIDTH(FEET) =  18.48
   AVERAGE FLOW VELOCITY(FEET/SEC.) =   2.39
   PRODUCT OF DEPTH&VELOCITY =   1.18
STREETFLOW TRAVELTIME(MIN) =  3.63  TC(MIN) =  14.84

 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.596
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7612
SUBAREA AREA(ACRES) =   1.62  SUBAREA RUNOFF(CFS) =   4.43
SUMMED AREA(ACRES) =   3.52  TOTAL RUNOFF(CFS) =   10.66
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) =  .55  HALFSTREET FLOODWIDTH(FEET) = 20.96
FLOW VELOCITY(FEET/SEC.) =  2.36  DEPTH*VELOCITY =   1.29
```

10.66 CFS ENTERS THE CATCH BASIN AT 66+21.30 (N) RIO VISTA DRIVE. D=0.55', LINE D-5, MH 1

```
****************************************************************************
 FLOW PROCESS FROM NODE   72.00 TO NODE   93.00 IS CODE =  4
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED PIPESIZE<<<<<
============================================================================
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.1 INCHES
 PIPEFLOW VELOCITY(FEET/SEC.) = 20.2
 UPSTREAM NODE ELEVATION =  450.88
 DOWNSTREAM NODE ELEVATION =  440.92
 FLOWLENGTH(FEET) =   50.19  MANNING'S N = .013
 GIVEN PIPE DIAMETER(INCH) = 18.00   NUMBER OF PIPES =  1
 PIPEFLOW THRU SUBAREA(CFS) =    10.66
 TRAVEL TIME(MIN.) =   .04   TC(MIN.) = 14.88

****************************************************************************
 FLOW PROCESS FROM NODE   73.00 TO NODE   74.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
    ASSUMED INITIAL SUBAREA UNIFORM
    DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH =  980.00
 UPSTREAM ELEVATION =   467.30
 DOWNSTREAM ELEVATION =   459.08
 ELEVATION DIFFERENCE =     8.22
 TC = .393*[( 980.00**3)/(    8.22)]**.2 =  16.059
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.435
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6966
 SUBAREA RUNOFF(CFS) =     4.00
 TOTAL AREA(ACRES) =      1.67  TOTAL RUNOFF(CFS) =      4.00

****************************************************************************
 FLOW PROCESS FROM NODE   74.00 TO NODE   75.00 IS CODE =  6
----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM ELEVATION =   459.08  DOWNSTREAM ELEVATION =   454.75
 STREET LENGTH(FEET) =   782.00  CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 28.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  14.00
 INTERIOR STREET CROSSFALL(DECIMAL) =  .020
 OUTSIDE STREET CROSSFALL(DECIMAL) =  .020
```

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1

**TRAVELTIME COMPUTED USING MEAN FLOW(CFS) = 6.75
STREETFLOW MODEL RESULTS:
STREET FLOWDEPTH(FEET) = .46
HALFSTREET FLOODWIDTH(FEET) = 16.82
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.29
PRODUCT OF DEPTH&VELOCITY = 1.06
STREETFLOW TRAVELTIME(MIN) = 5.69 TC(MIN) = 21.75

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.881
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6769
SUBAREA AREA(ACRES) = 2.83 SUBAREA RUNOFF(CFS) = 5.52
SUMMED AREA(ACRES) = 4.50 TOTAL RUNOFF(CFS) = 9.52
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .51 HALFSTREET FLOODWIDTH(FEET) = 19.30
FLOW VELOCITY(FEET/SEC.) = 2.47 DEPTH*VELOCITY = 1.27

9.52 CFS ENTERS CATCH BASIN AT 66+21.30 (S) RIO VISTA DRIVE D=0.51, LINE D-4, MH1

****

FLOW PROCESS FROM NODE 75.00 TO NODE 93.00 IS CODE = 4

>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<

==

DEPTH OF FLOW IN 18.0 INCH PIPE IS 5.9 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) = 18.8
UPSTREAM NODE ELEVATION = 450.97
DOWNSTREAM NODE ELEVATION = 442.07
FLOWLENGTH(FEET) = 50.40 MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) = 9.52
TRAVEL TIME(MIN.) = .04 TC(MIN.) = 21.79

End Drainage Area "D"

Begin Drainage Area "E"

****

FLOW PROCESS FROM NODE 131.00 TO NODE 131.10 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

==

ASSUMED INITIAL SUBAREA UNIFORM
DEVELOPMENT IS APARTMENT
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH = 800.00
UPSTREAM ELEVATION = 464.80
DOWNSTREAM ELEVATION = 456.37
ELEVATION DIFFERENCE = 8.43
TC = .323*[(800.00**3)/(8.43)]**.2 = 11.628
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.142
SOIL CLASSIFICATION IS "A"
APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8269
SUBAREA RUNOFF(CFS) = 23.73
TOTAL AREA(ACRES) = 6.93 TOTAL RUNOFF(CFS) = 23.73

****

FLOW PROCESS FROM NODE 131.10 TO NODE 132.00 IS CODE = 6

>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<

==

UPSTREAM ELEVATION = 456.37 DOWNSTREAM ELEVATION = 450.70
STREET LENGTH(FEET) = 724.00 CURB HEIGHT(INCHES) = 6.

STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

**TRAVELTIME COMPUTED USING MEAN FLOW(CFS) = 35.87
STREET FLOWING FULL
STREETFLOW MODEL RESULTS:
NOTE: STREETFLOW EXCEEDS TOP OF CURB.
THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
STREET FLOWDEPTH(FEET) = .59
HALFSTREET FLOODWIDTH(FEET) = 18.00
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.61
PRODUCT OF DEPTH&VELOCITY = 2.13
STREETFLOW TRAVELTIME(MIN) = 3.34 TC(MIN) = 14.97

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.577
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7608
SUBAREA AREA(ACRES) = 8.90 SUBAREA RUNOFF(CFS) = 24.22
SUMMED AREA(ACRES) = 15.83 TOTAL RUNOFF(CFS) = 47.95
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .65 HALFSTREET FLOODWIDTH(FEET) = 18.00
FLOW VELOCITY(FEET/SEC.) = 3.98 DEPTH*VELOCITY = 2.59

****

FLOW PROCESS FROM NODE 132.00 TO NODE 133.00 IS CODE = 6

>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<

===

UPSTREAM ELEVATION = 450.70 DOWNSTREAM ELEVATION = 448.40
STREET LENGTH(FEET) = 246.00 CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

**TRAVELTIME COMPUTED USING MEAN FLOW(CFS) = 48.86
STREET FLOWING FULL
STREETFLOW MODEL RESULTS:
NOTE: STREETFLOW EXCEEDS TOP OF CURB.
THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
STREET FLOWDEPTH(FEET) = .63
HALFSTREET FLOODWIDTH(FEET) = 18.00
AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.31
PRODUCT OF DEPTH&VELOCITY = 2.72
STREETFLOW TRAVELTIME(MIN) = .95 TC(MIN) = 15.92

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.452
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6971
SUBAREA AREA(ACRES) = .75 SUBAREA RUNOFF(CFS) = 1.80
SUMMED AREA(ACRES) = 16.58 TOTAL RUNOFF(CFS) = 49.76
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .63 HALFSTREET FLOODWIDTH(FEET) = 18.00
FLOW VELOCITY(FEET/SEC.) = 4.38 DEPTH*VELOCITY = 2.77

49.76 CFS ENTERS TWO
CATCH BASINS AT 14+70.08
RIO COLORADO.
DEPTH = 0.63'
LINE E-1, MH1 & MH2

****

```
FLOW PROCESS FROM NODE   133.00 TO NODE   134.00 IS CODE =  4
----------------------------------------------------------------------------
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<
============================================================================
DEPTH OF FLOW IN  30.0 INCH PIPE IS  17.3 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) =  17.0
UPSTREAM NODE ELEVATION =  441.61
DOWNSTREAM NODE ELEVATION =  436.58
FLOWLENGTH(FEET) =   115.00   MANNING'S N =  .013
GIVEN PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
PIPEFLOW THRU SUBAREA(CFS) =     49.76
TRAVEL TIME(MIN.) =    .11    TC(MIN.) =  16.04

****************************************************************************
FLOW PROCESS FROM NODE   140.00 TO NODE   141.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
    ASSUMED INITIAL SUBAREA UNIFORM
    DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH =   355.00
UPSTREAM ELEVATION =    454.07
DOWNSTREAM ELEVATION =    451.34
ELEVATION DIFFERENCE =      2.73
TC =  .393*[(  355.00**3)/(    2.73)]**.2 =   10.886
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.303
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7213
SUBAREA RUNOFF(CFS) =      5.25
TOTAL AREA(ACRES) =      1.69    TOTAL RUNOFF(CFS) =       5.25

****************************************************************************
FLOW PROCESS FROM NODE   141.00 TO NODE   142.00 IS CODE =  6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION =    451.34   DOWNSTREAM ELEVATION =    448.64
STREET LENGTH(FEET) =   289.70   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 14.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =   7.00
INTERIOR STREET CROSSFALL(DECIMAL) =    .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =    .020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

    **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =    7.85
***STREETFLOW SPLITS OVER STREET-CROWN***
  FULL DEPTH(FEET) =      .41   FLOODWIDTH(FEET) =    14.00
  FULL HALF-STREET VELOCITY(FEET/SEC.) =    2.63
  SPLIT DEPTH(FEET) =      .32   SPLIT FLOODWIDTH(FEET) =     9.70
  SPLIT FLOW(CFS) =    2.39   SPLIT VELOCITY(FEET/SEC.) =    2.26
  STREETFLOW MODEL RESULTS:
     STREET FLOWDEPTH(FEET) =   .41
     HALFSTREET FLOODWIDTH(FEET) =   14.00
     AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.63
     PRODUCT OF DEPTH&VELOCITY =     1.07
 STREETFLOW TRAVELTIME(MIN) =   1.84    TC(MIN) =  12.72

 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.931
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7115
 SUBAREA AREA(ACRES) =     1.86   SUBAREA RUNOFF(CFS) =     5.20
 SUMMED AREA(ACRES) =     3.55   TOTAL RUNOFF(CFS) =      10.45
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) =  .41    HALFSTREET FLOODWIDTH(FEET) = 14.00
```

```
FLOW VELOCITY(FEET/SEC.) = 2.63  DEPTH*VELOCITY = 1.07

****************************************************************************
FLOW PROCESS FROM NODE  142.00 TO NODE  143.00 IS CODE = 1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 12.72
RAINFALL INTENSITY(INCH/HR) = 3.93
TOTAL STREAM AREA(ACRES) = 3.55
PEAK FLOW RATE(CFS) AT CONFLUENCE = 10.45

****************************************************************************
FLOW PROCESS FROM NODE  156.00 TO NODE  157.00 IS CODE = 21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
    ASSUMED INITIAL SUBAREA UNIFORM
    DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH = 450.00
UPSTREAM ELEVATION = 461.30
DOWNSTREAM ELEVATION = 451.86
ELEVATION DIFFERENCE = 9.44
TC = .393*[( 450.00**3)/(  9.44)]**.2 = 9.792
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.575
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7279
SUBAREA RUNOFF(CFS) = 5.96
TOTAL AREA(ACRES) = 1.79  TOTAL RUNOFF(CFS) = 5.96

****************************************************************************
FLOW PROCESS FROM NODE  157.00 TO NODE  142.00 IS CODE = 6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION = 451.86  DOWNSTREAM ELEVATION = 448.64
STREET LENGTH(FEET) = 420.30  CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 14.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 7.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1

    **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) = 9.98
***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS:
    STREET FLOWDEPTH(FEET) = .42
    HALFSTREET FLOODWIDTH(FEET) = 14.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.25
    PRODUCT OF DEPTH&VELOCITY = .94
STREETFLOW TRAVELTIME(MIN) = 3.11  TC(MIN) = 12.90

 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.900
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7106
SUBAREA AREA(ACRES) = 2.87  SUBAREA RUNOFF(CFS) = 7.95
SUMMED AREA(ACRES) = 4.66  TOTAL RUNOFF(CFS) = 13.92
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .44  HALFSTREET FLOODWIDTH(FEET) = 14.00
FLOW VELOCITY(FEET/SEC.) = 2.80  DEPTH*VELOCITY = 1.22
```

****

FLOW PROCESS FROM NODE 142.00 TO NODE 143.00 IS CODE = 1

\>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
\>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

===

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 12.90
RAINFALL INTENSITY(INCH/HR) = 3.90
TOTAL STREAM AREA(ACRES) = 4.66
PEAK FLOW RATE(CFS) AT CONFLUENCE = 13.92

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	10.45	12.72	3.931	3.55
2	13.92	12.90	3.900	4.66

********************************WARNING********************************
IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
****

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	24.17	12.72	3.931
2	24.28	12.90	3.900

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 24.28 Tc(MIN.) = 12.90
TOTAL AREA(ACRES) = 8.21

24.28 CFS ENTERS THE CATCH BASIN AT 60+99.79 RIO VISTA DR.
DEPTH = 0.7'
LINE E-2, MH 1

****

FLOW PROCESS FROM NODE 143.00 TO NODE 144.00 IS CODE = 4

\>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
\>>>>>USING USER-SPECIFIED PIPESIZE<<<<<

===

DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.0 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) = 24.2
UPSTREAM NODE ELEVATION = 444.61
DOWNSTREAM NODE ELEVATION = 436.36
FLOWLENGTH(FEET) = 46.10 MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) = 24.28
TRAVEL TIME(MIN.) = .03 TC(MIN.) = 12.93

End Drainage Area "E"

Begin Drainage Area "F"

****

FLOW PROCESS FROM NODE 161.00 TO NODE 162.00 IS CODE = 21

\>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

===

ASSUMED INITIAL SUBAREA UNIFORM
DEVELOPMENT IS APARTMENT
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH = 1020.00
UPSTREAM ELEVATION = 457.00

DOWNSTREAM ELEVATION = 445.84
ELEVATION DIFFERENCE = 11.16
TC = .323*[(1020.00**3)/(11.16)]**.2 = 12.718
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.932
SOIL CLASSIFICATION IS "A"
APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8246
SUBAREA RUNOFF(CFS) = 30.61
TOTAL AREA(ACRES) = 9.44 TOTAL RUNOFF(CFS) = 30.61

****

FLOW PROCESS FROM NODE 162.00 TO NODE 163.00 IS CODE = 6

>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<

==

UPSTREAM ELEVATION = 445.84 DOWNSTREAM ELEVATION = 443.91
STREET LENGTH(FEET) = 239.00 CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 15.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 13.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

**TRAVELTIME COMPUTED USING MEAN FLOW(CFS) = 33.21
STREET FLOWING FULL
STREETFLOW MODEL RESULTS:
NOTE: STREETFLOW EXCEEDS TOP OF CURB.
THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
STREET FLOWDEPTH(FEET) = .57
HALFSTREET FLOODWIDTH(FEET) = 15.00
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.86
PRODUCT OF DEPTH&VELOCITY = 2.20
STREETFLOW TRAVELTIME(MIN) = 1.03 TC(MIN) = 13.75

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.758
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7066
SUBAREA AREA(ACRES) = 1.96 SUBAREA RUNOFF(CFS) = 5.20
SUMMED AREA(ACRES) = 11.40 TOTAL RUNOFF(CFS) = 35.81
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .59 HALFSTREET FLOODWIDTH(FEET) = 15.00
FLOW VELOCITY(FEET/SEC.) = 3.90 DEPTH*VELOCITY = 2.30

35.81 CFS ENTER TWO
CATCH BASINS AT 15+79.11
RIO BRAVO.
DEPTH = 0.59'
LINE F, MH 1 & MH 2

****

FLOW PROCESS FROM NODE 163.00 TO NODE 164.00 IS CODE = 4

>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<

==

DEPTH OF FLOW IN 24.0 INCH PIPE IS 16.3 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) = 15.8
UPSTREAM NODE ELEVATION = 437.18
DOWNSTREAM NODE ELEVATION = 432.02
FLOWLENGTH(FEET) = 113.01 MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) = 35.81
TRAVEL TIME(MIN.) = .12 TC(MIN.) = 13.87

End Drainage Area "F"

Begin Drainage Area "G"

```
****************************************************************************
 FLOW PROCESS FROM NODE   173.00 TO NODE   174.00 IS CODE =  21
------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
     ASSUMED INITIAL SUBAREA UNIFORM
     DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH =   900.00
 UPSTREAM ELEVATION =    451.00
 DOWNSTREAM ELEVATION =    440.98
 ELEVATION DIFFERENCE =     10.02
 TC = .323*[( 900.00**3)/(   10.02)]**.2 =  12.055
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.056
 SOIL CLASSIFICATION IS "A"
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8260
 SUBAREA RUNOFF(CFS) =    24.02
 TOTAL AREA(ACRES) =      7.17   TOTAL RUNOFF(CFS) =     24.02


****************************************************************************
 FLOW PROCESS FROM NODE   174.00 TO NODE   175.00 IS CODE =  6
------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 UPSTREAM ELEVATION =    440.98  DOWNSTREAM ELEVATION =    439.41
 STREET LENGTH(FEET) =   245.00  CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  16.00
 INTERIOR STREET CROSSFALL(DECIMAL) =   .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .055

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2

     **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   26.76
 ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS:
    NOTE: STREETFLOW EXCEEDS TOP OF CURB.
    THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
    THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
    THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOWDEPTH(FEET) =   .55
    HALFSTREET FLOODWIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.13
    PRODUCT OF DEPTH&VELOCITY =    1.73
 STREETFLOW TRAVELTIME(MIN) =    1.30   TC(MIN) =  13.36

  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.822
  SOIL CLASSIFICATION IS "A"
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7084
  SUBAREA AREA(ACRES) =    2.03   SUBAREA RUNOFF(CFS) =    5.50
  SUMMED AREA(ACRES) =    9.20   TOTAL RUNOFF(CFS) =    29.52
  END OF SUBAREA STREETFLOW HYDRAULICS:
  DEPTH(FEET) =  .57   HALFSTREET FLOODWIDTH(FEET) = 18.00
  FLOW VELOCITY(FEET/SEC.) =  3.19   DEPTH*VELOCITY =    1.83
```

29.52 CFS ENTERS TWO CATCH BASINS AT 14+15.56 RIO ARBOLITOS.
D=0.57'
LINE G-1, MH2 & MH3

```
****************************************************************************
 FLOW PROCESS FROM NODE   175.00 TO NODE   176.00 IS CODE =  4
------------------------------------------------------------------
 >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED PIPESIZE<<<<<
==========================================================================
 PIPEFLOW VELOCITY(FEET/SEC.) =   9.4
 UPSTREAM NODE ELEVATION =   432.10
 DOWNSTREAM NODE ELEVATION =   431.87
 FLOWLENGTH(FEET) =    57.34   MANNING'S N =  .013
 GIVEN PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPEFLOW THRU SUBAREA(CFS) =     29.52
```

```
TRAVEL TIME(MIN.) =   .10   TC(MIN.) = 13.46

****************************************************************************
FLOW PROCESS FROM NODE   176.00 TO NODE   176.10 IS CODE =  1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) = 13.46
RAINFALL INTENSITY(INCH/HR) =  3.81
TOTAL STREAM AREA(ACRES) =   9.20
PEAK FLOW RATE(CFS) AT CONFLUENCE =    29.52

****************************************************************************
FLOW PROCESS FROM NODE   170.00 TO NODE   170.10 IS CODE = 21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
    ASSUMED INITIAL SUBAREA UNIFORM
    DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH =  900.00
UPSTREAM ELEVATION =   454.50
DOWNSTREAM ELEVATION =   447.46
ELEVATION DIFFERENCE =     7.04
TC = .393*[( 900.00**3)/(   7.04)]**.2 =  15.739
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.475
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6979
SUBAREA RUNOFF(CFS) =      6.33
TOTAL AREA(ACRES) =     2.61   TOTAL RUNOFF(CFS) =      6.33

****************************************************************************
FLOW PROCESS FROM NODE   170.10 TO NODE   170.20 IS CODE =  6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION =   447.46  DOWNSTREAM ELEVATION =   439.09
STREET LENGTH(FEET) =  504.00  CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 28.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 14.00
INTERIOR STREET CROSSFALL(DECIMAL) =  .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  .020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1

    **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   8.25
  STREETFLOW MODEL RESULTS:
    STREET FLOWDEPTH(FEET) =  .41
    HALFSTREET FLOODWIDTH(FEET) =  14.34
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   3.79
    PRODUCT OF DEPTH&VELOCITY =    1.57
STREETFLOW TRAVELTIME(MIN) =  2.21   TC(MIN) =  17.95

 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.220
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6894
SUBAREA AREA(ACRES) =   1.74   SUBAREA RUNOFF(CFS) =   3.86
SUMMED AREA(ACRES) =   4.35   TOTAL RUNOFF(CFS) =    10.19
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .45   HALFSTREET FLOODWIDTH(FEET) = 15.99
FLOW VELOCITY(FEET/SEC.) = 3.81   DEPTH*VELOCITY =  1.70

****************************************************************************
```

10.19 CFS ENTERS THE CATCH BASIN AT 47+55.57 (N) RIO VISTA DR.
DEPTH = 0.45
LINE G-1, MH 1

FLOW PROCESS FROM NODE 170.20 TO NODE 176.10 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

===

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 17.95
RAINFALL INTENSITY(INCH/HR) = 3.22
TOTAL STREAM AREA(ACRES) = 4.35
PEAK FLOW RATE(CFS) AT CONFLUENCE = 10.19

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	29.52	13.46	3.805	9.20
2	10.19	17.95	3.220	4.35

**********************************WARNING**********************************
IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
****

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	37.16	13.46	3.805
2	35.17	17.95	3.220

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 37.16 Tc(MIN.) = 13.46
TOTAL AREA(ACRES) = 13.55

****

FLOW PROCESS FROM NODE 176.10 TO NODE 177.00 IS CODE = 4

>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<

===

PIPEFLOW VELOCITY(FEET/SEC.) = 7.6
UPSTREAM NODE ELEVATION = 431.25
DOWNSTREAM NODE ELEVATION = 431.05
FLOWLENGTH(FEET) = 50.47 MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) = 37.16
TRAVEL TIME(MIN.) = .11 TC(MIN.) = 13.57

****

FLOW PROCESS FROM NODE 170.80 TO NODE 170.90 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

===

ASSUMED INITIAL SUBAREA UNIFORM
DEVELOPMENT IS COMMERCIAL
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH = 673.00
UPSTREAM ELEVATION = 443.88
DOWNSTREAM ELEVATION = 439.59
ELEVATION DIFFERENCE = 4.29
TC = .303*[(673.00**3)/(4.29)]**.2 = 11.269
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.218
SOIL CLASSIFICATION IS "A"
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8638
SUBAREA RUNOFF(CFS) = 2.77

```
TOTAL AREA(ACRES) =     .76  TOTAL RUNOFF(CFS) =   2.77
```

2.77 CFS ENTERS CATCH BASIN
AT 12+01.56 (E) RIO ARBOLITOS
DEPTH = 0.35', LINE G-2, MH 3

```
****************************************************************************
 FLOW PROCESS FROM NODE   170.90 TO NODE   171.00 IS CODE =  4
 ----------------------------------------------------------------------------
 >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED PIPESIZE<<<<<
==============================================================================
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.5 INCHES
 PIPEFLOW VELOCITY(FEET/SEC.) =  3.4
 UPSTREAM NODE ELEVATION =  431.47
 DOWNSTREAM NODE ELEVATION =  431.32
 FLOWLENGTH(FEET) =   37.00   MANNING'S N = .013
 GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =  1
 PIPEFLOW THRU SUBAREA(CFS) =     2.77
 TRAVEL TIME(MIN.) =    .18    TC(MIN.) =  11.45

****************************************************************************
 FLOW PROCESS FROM NODE   171.00 TO NODE   171.00 IS CODE =  8
 ----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.179
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7182
 SUBAREA AREA(ACRES) =    1.39   SUBAREA RUNOFF(CFS) =   4.17
 TOTAL AREA(ACRES) =    2.15   TOTAL RUNOFF(CFS) =     6.94
 TC(MIN) =  11.45
```

4.17 CFS ENTERS CATCH BASIN
AT 12+00.56 (W) RIO ARBOLITOS
DEPTH = 0.43'
LINE G-2, MH 2

```
****************************************************************************
 FLOW PROCESS FROM NODE   171.00 TO NODE   171.10 IS CODE =  4
 ----------------------------------------------------------------------------
 >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED PIPESIZE<<<<<
==============================================================================
 PIPEFLOW VELOCITY(FEET/SEC.) =  3.9
 UPSTREAM NODE ELEVATION =  431.22
 DOWNSTREAM NODE ELEVATION =  430.99
 FLOWLENGTH(FEET) =   58.60   MANNING'S N =  .013
 GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =  1
 PIPEFLOW THRU SUBAREA(CFS) =      6.94
 TRAVEL TIME(MIN.) =    .25    TC(MIN.) =  11.70

****************************************************************************
 FLOW PROCESS FROM NODE   171.10 TO NODE   171.20 IS CODE =  1
 ----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.70
 RAINFALL INTENSITY(INCH/HR) =   4.13
 TOTAL STREAM AREA(ACRES) =    2.15
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.94

****************************************************************************
 FLOW PROCESS FROM NODE   315.00 TO NODE   172.00 IS CODE = 21
 ----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
      ASSUMED INITIAL SUBAREA UNIFORM
      DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH =  1090.00
 UPSTREAM ELEVATION =    452.98
```

```
DOWNSTREAM ELEVATION =   442.84
ELEVATION DIFFERENCE =    10.14
TC = .393*[( 1090.00**3)/(   10.14)]**.2 =  16.413
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.392
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6952
SUBAREA RUNOFF(CFS) =     7.59
TOTAL AREA(ACRES) =     3.22   TOTAL RUNOFF(CFS) =     7.59

****************************************************************************
 FLOW PROCESS FROM NODE   172.00 TO NODE   171.10 IS CODE =  6
----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM ELEVATION =   442.84  DOWNSTREAM ELEVATION =   439.10
 STREET LENGTH(FEET) =  503.00  CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 28.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  14.00
 INTERIOR STREET CROSSFALL(DECIMAL) =  .020
 OUTSIDE STREET CROSSFALL(DECIMAL) =  .020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

    **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =    9.40
  STREETFLOW MODEL RESULTS:
    STREET FLOWDEPTH(FEET) =   .50
    HALFSTREET FLOODWIDTH(FEET) =  18.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   2.66
    PRODUCT OF DEPTH&VELOCITY =   1.32
 STREETFLOW TRAVELTIME(MIN) =   3.15   TC(MIN) =  19.56

  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.063
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6838
 SUBAREA AREA(ACRES) =    1.72   SUBAREA RUNOFF(CFS) =    3.60
 SUMMED AREA(ACRES) =    4.94   TOTAL RUNOFF(CFS) =    11.20
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) =  .51   HALFSTREET FLOODWIDTH(FEET) = 19.30
 FLOW VELOCITY(FEET/SEC.) = 2.91   DEPTH*VELOCITY =   1.49
```

11.20 CFS ENTERS THE CATCH BASIN AT 47+55.01 (S) RIO VISTA DR.
DEPTH = 0.51'
LINE G-2, MH 1

```
****************************************************************************
 FLOW PROCESS FROM NODE   171.10 TO NODE   171.20 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  19.56
 RAINFALL INTENSITY(INCH/HR) =   3.06
 TOTAL STREAM AREA(ACRES) =    4.94
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.20

 ** CONFLUENCE DATA **
 STREAM    RUNOFF      Tc     INTENSITY      AREA
 NUMBER    (CFS)    (MIN.)  (INCH/HOUR)    (ACRE)
    1       6.94    11.70     4.127          2.15
    2      11.20    19.56     3.063          4.94

 **********************************WARNING**********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
****************************************************************************

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.
```

```
** PEAK FLOW RATE TABLE **
STREAM    RUNOFF    Tc      INTENSITY
NUMBER     (CFS)   (MIN.)  (INCH/HOUR)
  1       13.64    11.70    4.127
  2       16.35    19.56    3.063

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    16.35  Tc(MIN.) =  19.56
TOTAL AREA(ACRES) =      7.09

****************************************************************************
 FLOW PROCESS FROM NODE   171.20 TO NODE   171.30 IS CODE =  4
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED PIPESIZE<<<<<
============================================================================
 PIPEFLOW VELOCITY(FEET/SEC.) =  9.3
 UPSTREAM NODE ELEVATION =  430.87
 DOWNSTREAM NODE ELEVATION =  430.64
 FLOWLENGTH(FEET) =   58.74  MANNING'S N = .013
 GIVEN PIPE DIAMETER(INCH) = 18.00    NUMBER OF PIPES =  1
 PIPEFLOW THRU SUBAREA(CFS) =     16.35
 TRAVEL TIME(MIN.) =    .11    TC(MIN.) =  19.67
```

End Drainage Area "G"

Begin Drainage Area "H1"

```
****************************************************************************
 FLOW PROCESS FROM NODE   240.00 TO NODE   245.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
     ASSUMED INITIAL SUBAREA UNIFORM
     DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH =  640.00
 UPSTREAM ELEVATION =   464.00
 DOWNSTREAM ELEVATION =   457.61
 ELEVATION DIFFERENCE =      6.39
 TC =  .393*[(  640.00**3)/(    6.39)]**.2 =  13.078
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.869
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7098
 SUBAREA RUNOFF(CFS) =      5.35
 TOTAL AREA(ACRES) =      1.95  TOTAL RUNOFF(CFS) =      5.35

****************************************************************************
 FLOW PROCESS FROM NODE   245.00 TO NODE   250.00 IS CODE =  6
----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM ELEVATION =   457.61  DOWNSTREAM ELEVATION =   451.60
 STREET LENGTH(FEET) =  814.00  CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
 INTERIOR STREET CROSSFALL(DECIMAL) =  .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  .055

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2

    **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =  12.15
  STREETFLOW MODEL RESULTS:
    STREET FLOWDEPTH(FEET) =  .45
    HALFSTREET FLOODWIDTH(FEET) =  15.50
```

AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.38
PRODUCT OF DEPTH&VELOCITY = 1.08
STREETFLOW TRAVELTIME(MIN) = 5.70 TC(MIN) = 18.78

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.137
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6865
SUBAREA AREA(ACRES) = 6.28 SUBAREA RUNOFF(CFS) = 13.52
SUMMED AREA(ACRES) = 8.23 TOTAL RUNOFF(CFS) = 18.88
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .51 HALFSTREET FLOODWIDTH(FEET) = 18.00
FLOW VELOCITY(FEET/SEC.) = 2.65 DEPTH*VELOCITY = 1.36

FLOW SPLITS AT THIS POINT, 9.44 CFS FLOWS EAST ON WEST RIO LARGO, 9.44 CFS FLOWS SOUTH ON RIO MADRE

****

FLOW PROCESS FROM NODE 250.00 TO NODE 250.10 IS CODE = 7

THE FOLLOWING SECTIONS MODEL THE FLOW THAT FLOW EAST ON WEST RIO LARGO

>>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
==
USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN) = 18.78 RAIN INTENSITY(INCH/HOUR) = 3.14
TOTAL AREA(ACRES) = 4.12 TOTAL RUNOFF(CFS) = 9.44

****

FLOW PROCESS FROM NODE 250.10 TO NODE 275.00 IS CODE = 6

>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
==
UPSTREAM ELEVATION = 451.60 DOWNSTREAM ELEVATION = 446.89
STREET LENGTH(FEET) = 690.00 CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

**TRAVELTIME COMPUTED USING MEAN FLOW(CFS) = 13.70
STREETFLOW MODEL RESULTS:
STREET FLOWDEPTH(FEET) = .47
HALFSTREET FLOODWIDTH(FEET) = 16.50
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.38
PRODUCT OF DEPTH&VELOCITY = 1.13
STREETFLOW TRAVELTIME(MIN) = 4.82 TC(MIN) = 23.60

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.748
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6715
SUBAREA AREA(ACRES) = 4.57 SUBAREA RUNOFF(CFS) = 8.43
SUMMED AREA(ACRES) = 8.69 TOTAL RUNOFF(CFS) = 17.87
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .51 HALFSTREET FLOODWIDTH(FEET) = 18.00
FLOW VELOCITY(FEET/SEC.) = 2.51 DEPTH*VELOCITY = 1.29

17.87 CFS ENTERS TWO CATCH BASINS AT 11+34.81 AVE. QUINTANA
DEPTH = 0.51'
LINE H1, MH 7 & MH 2

****

FLOW PROCESS FROM NODE. 275.00 TO NODE 265.00 IS CODE = 4

>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<
==
DEPTH OF FLOW IN 24.0 INCH PIPE IS 11.3 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) = 12.3
UPSTREAM NODE ELEVATION = 438.57
DOWNSTREAM NODE ELEVATION = 435.57
FLOWLENGTH(FEET) = 82.83 MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) = 17.87

TRAVEL TIME(MIN.) = .11 TC(MIN.) = 23.71

End Drainage Area "H1"

Begin Drainage Area "H2"

```
****************************************************************************
FLOW PROCESS FROM NODE 250.00 TO NODE 250.00 IS CODE = 7
----------------------------------------------------------------------------
>>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN) = 18.78 RAIN INTENSITY(INCH/HOUR) = 3.14
TOTAL AREA(ACRES) = 4.12 TOTAL RUNOFF(CFS) = 9.44

****************************************************************************
FLOW PROCESS FROM NODE 250.00 TO NODE 251.00 IS CODE = 6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION = 451.60 DOWNSTREAM ELEVATION = 449.76
STREET LENGTH(FEET) = 235.00 CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

   **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) = 22.37
***STREET FLOWING FULL***
 STREETFLOW MODEL RESULTS:
   NOTE: STREETFLOW EXCEEDS TOP OF CURB.
   THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
   THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
   THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
   STREET FLOWDEPTH(FEET) = .51
   HALFSTREET FLOODWIDTH(FEET) = 18.00
   AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.14
   PRODUCT OF DEPTH&VELOCITY = 1.61
STREETFLOW TRAVELTIME(MIN) = 1.25 TC(MIN) = 20.03

 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.022
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7476
SUBAREA AREA(ACRES) = 11.49 SUBAREA RUNOFF(CFS) = 25.96
SUMMED AREA(ACRES) = 15.61 TOTAL RUNOFF(CFS) = 35.40
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .59 HALFSTREET FLOODWIDTH(FEET) = 18.00
FLOW VELOCITY(FEET/SEC.) = 3.56 DEPTH*VELOCITY = 2.11

****************************************************************************
FLOW PROCESS FROM NODE 251.00 TO NODE 252.00 IS CODE = 6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION = 449.76 DOWNSTREAM ELEVATION = 447.80
STREET LENGTH(FEET) = 220.00 CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
```

```
    **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =  43.53
***STREET FLOWING FULL***
 STREETFLOW MODEL RESULTS:
    NOTE: STREETFLOW EXCEEDS TOP OF CURB.
    THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
    THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
    THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOWDEPTH(FEET) =  .61
    HALFSTREET FLOODWIDTH(FEET) =  18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   4.09
    PRODUCT OF DEPTH&VELOCITY =   2.50
 STREETFLOW TRAVELTIME(MIN) =   .90   TC(MIN) =  20.92

 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.946
 SOIL CLASSIFICATION IS "A"
 CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7456
 SUBAREA AREA(ACRES) =    7.40   SUBAREA RUNOFF(CFS) =   16.26
 SUMMED AREA(ACRES) =   23.01   TOTAL RUNOFF(CFS) =    51.65
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) =  .65   HALFSTREET FLOODWIDTH(FEET) = 18.00
 FLOW VELOCITY(FEET/SEC.) = 4.29   DEPTH*VELOCITY =  2.79
============================================================================
 END OF STUDY SUMMARY:
 PEAK FLOW RATE(CFS) =     51.65   Tc(MIN.) =   20.92
 TOTAL AREA(ACRES) =     23.01
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

End Drainage Area "H2"

Begin Drainage Area "H4"

```
****************************************************************************
 FLOW PROCESS FROM NODE   210.00 TO NODE   215.00 IS CODE =  21
 ----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
     ASSUMED INITIAL SUBAREA UNIFORM
     DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH =  1090.00
 UPSTREAM ELEVATION =    470.00
 DOWNSTREAM ELEVATION =    461.72
 ELEVATION DIFFERENCE =      8.28
 TC =  .393*[( 1090.00**3)/(    8.28)]**.2 =   17.092
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.313
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6926
 SUBAREA RUNOFF(CFS) =      8.37
 TOTAL AREA(ACRES) =      3.65   TOTAL RUNOFF(CFS) =      8.37


****************************************************************************
 FLOW PROCESS FROM NODE   215.00 TO NODE   225.00 IS CODE =   6
 ----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM ELEVATION =    461.72  DOWNSTREAM ELEVATION =    455.04
 STREET LENGTH(FEET) =   708.00   CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  16.00
 INTERIOR STREET CROSSFALL(DECIMAL) =   .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .055

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
```

```
    **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   15.16
  STREETFLOW MODEL RESULTS:
    STREET FLOWDEPTH(FEET) =  .45
    HALFSTREET FLOODWIDTH(FEET) =  15.50
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   2.97
    PRODUCT OF DEPTH&VELOCITY =   1.35
 STREETFLOW TRAVELTIME(MIN) =  3.97  TC(MIN) =  21.07

 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.935
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6790
 SUBAREA AREA(ACRES) =    6.85   SUBAREA RUNOFF(CFS) =   13.65
 SUMMED AREA(ACRES) =   10.50   TOTAL RUNOFF(CFS) =     22.02
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) =  .51   HALFSTREET FLOODWIDTH(FEET) = 18.00
 FLOW VELOCITY(FEET/SEC.) =  3.09   DEPTH*VELOCITY =   1.59

****************************************************************************
 FLOW PROCESS FROM NODE   225.00 TO NODE   225.10 IS CODE =   1
 ----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  21.07
 RAINFALL INTENSITY(INCH/HR) =   2.93
 TOTAL STREAM AREA(ACRES) =   10.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     22.02

****************************************************************************
 FLOW PROCESS FROM NODE   220.00 TO NODE   221.00 IS CODE =  21
 ----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
    ASSUMED INITIAL SUBAREA UNIFORM
    DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH =   750.00
 UPSTREAM ELEVATION =    469.00
 DOWNSTREAM ELEVATION =    459.50
 ELEVATION DIFFERENCE =       9.50
 TC = .393*[(  750.00**3)/(     9.50)]**.2 =   13.287
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.833
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7088
 SUBAREA RUNOFF(CFS) =     18.23
 TOTAL AREA(ACRES) =       6.71   TOTAL RUNOFF(CFS) =      18.23

****************************************************************************
 FLOW PROCESS FROM NODE   221.00 TO NODE   225.00 IS CODE =   6
 ----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
 UPSTREAM ELEVATION =    459.50   DOWNSTREAM ELEVATION =    455.04
 STREET LENGTH(FEET) =   610.00   CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  16.00
 INTERIOR STREET CROSSFALL(DECIMAL) =   .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .055

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2

    **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   19.93
 ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS:
    NOTE: STREETFLOW EXCEEDS TOP OF CURB.
```

THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
STREET FLOWDEPTH(FEET) = .51
HALFSTREET FLOODWIDTH(FEET) = 18.00
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.80
PRODUCT OF DEPTH&VELOCITY = 1.44
STREETFLOW TRAVELTIME(MIN) = 3.64 TC(MIN) = 16.92

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.332
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6932
SUBAREA AREA(ACRES) = 1.47 SUBAREA RUNOFF(CFS) = 3.40
SUMMED AREA(ACRES) = 8.18 TOTAL RUNOFF(CFS) = 21.63
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .51 HALFSTREET FLOODWIDTH(FEET) = 18.00
FLOW VELOCITY(FEET/SEC.) = 3.03 DEPTH*VELOCITY = 1.56

****

FLOW PROCESS FROM NODE 225.00 TO NODE 225.10 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

==

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 16.92
RAINFALL INTENSITY(INCH/HR) = 3.33
TOTAL STREAM AREA(ACRES) = 8.18
PEAK FLOW RATE(CFS) AT CONFLUENCE = 21.63

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	22.02	21.07	2.935	10.50
2	21.63	16.92	3.332	8.18

**********************************WARNING**********************************
IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
****

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	39.32	16.92	3.332
2	41.07	21.07	2.935

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 41.07 Tc(MIN.) = 21.07
TOTAL AREA(ACRES) = 18.68

****

FLOW PROCESS FROM NODE 225.10 TO NODE 200.00 IS CODE = 6

>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<

==

UPSTREAM ELEVATION = 455.04 DOWNSTREAM ELEVATION = 453.60
STREET LENGTH(FEET) = 210.00 CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

```
    **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =  46.70
***STREET FLOWING FULL***
 STREETFLOW MODEL RESULTS:
    NOTE: STREETFLOW EXCEEDS TOP OF CURB.
    THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
    THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
    THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOWDEPTH(FEET) =  .65
    HALFSTREET FLOODWIDTH(FEET) =  18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   3.88
    PRODUCT OF DEPTH&VELOCITY =   2.52
STREETFLOW TRAVELTIME(MIN) =   .90   TC(MIN) = 21.97

 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.864
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6762
SUBAREA AREA(ACRES) =   5.81  SUBAREA RUNOFF(CFS) =  11.25
SUMMED AREA(ACRES) =  24.49  TOTAL RUNOFF(CFS) =   52.33
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .67  HALFSTREET FLOODWIDTH(FEET) = 18.00
FLOW VELOCITY(FEET/SEC.) = 4.10  DEPTH*VELOCITY =  2.75
```

End Drainage Area “H4”

Begin Drainage Area “I”

```
****************************************************************************
 FLOW PROCESS FROM NODE   315.00 TO NODE   320.00 IS CODE = 21
 ----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
      ASSUMED INITIAL SUBAREA UNIFORM
      DEVELOPMENT IS CONDOMINIUM
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH =  840.00
 UPSTREAM ELEVATION =   453.10
 DOWNSTREAM ELEVATION =   445.18
 ELEVATION DIFFERENCE =     7.92
 TC = .359*[( 840.00**3)/(   7.92)]**.2 =  13.495
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.799
 SOIL CLASSIFICATION IS "A"
 CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7654
 SUBAREA RUNOFF(CFS) =    16.14
 TOTAL AREA(ACRES) =     5.55  TOTAL RUNOFF(CFS) =    16.14

****************************************************************************
 FLOW PROCESS FROM NODE   320.00 TO NODE   325.00 IS CODE =  6
 ----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
 UPSTREAM ELEVATION =   445.18  DOWNSTREAM ELEVATION =   442.57
 STREET LENGTH(FEET) =  238.00  CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  16.00
 INTERIOR STREET CROSSFALL(DECIMAL) =  .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  .055

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2

     **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =  19.78
  STREETFLOW MODEL RESULTS:
     STREET FLOWDEPTH(FEET) =  .49
     HALFSTREET FLOODWIDTH(FEET) =  17.50
     AVERAGE FLOW VELOCITY(FEET/SEC.) =   3.08
     PRODUCT OF DEPTH&VELOCITY =   1.52
```

STREETFLOW TRAVELTIME(MIN) = 1.29 TC(MIN) = 14.78

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.604
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7613
SUBAREA AREA(ACRES) = 2.65 SUBAREA RUNOFF(CFS) = 7.27
SUMMED AREA(ACRES) = 8.20 TOTAL RUNOFF(CFS) = 23.41
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .51 HALFSTREET FLOODWIDTH(FEET) = 18.00
FLOW VELOCITY(FEET/SEC.) = 3.28 DEPTH*VELOCITY = 1.69

23.41 CFS ENTERS CATCH BASIN
AT 15+33.01 (S) EAST RIO
LARGO.
DEPTH = 0.7'
LINE I, MH I

****

FLOW PROCESS FROM NODE 325.00 TO NODE 326.00 IS CODE = 4

>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<

===

DEPTH OF FLOW IN 24.0 INCH PIPE IS 9.5 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) = 20.3
UPSTREAM NODE ELEVATION = 438.89
DOWNSTREAM NODE ELEVATION = 434.61
FLOWLENGTH(FEET) = 37.00 MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) = 23.41
TRAVEL TIME(MIN.) = .03 TC(MIN.) = 14.81

End Drainage Area "I"

Begin Drainage Area "K2"

****

FLOW PROCESS FROM NODE 351.00 TO NODE 352.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

===

ASSUMED INITIAL SUBAREA UNIFORM
DEVELOPMENT IS APARTMENT
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH = 630.00
UPSTREAM ELEVATION = 442.00
DOWNSTREAM ELEVATION = 438.65
ELEVATION DIFFERENCE = 3.35
TC = .323*[(630.00**3)/(3.35)]**.2 = 12.117
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.044
SOIL CLASSIFICATION IS "A"
APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8258
SUBAREA RUNOFF(CFS) = 12.82
TOTAL AREA(ACRES) = 3.84 TOTAL RUNOFF(CFS) = 12.82

****

FLOW PROCESS FROM NODE 352.00 TO NODE 353.00 IS CODE = 6

>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<

===

UPSTREAM ELEVATION = 438.65 DOWNSTREAM ELEVATION = 435.93
STREET LENGTH(FEET) = 430.00 CURB HEIGHT(INCHES) = 8.
STREET HALFWIDTH(FEET) = 32.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1

**TRAVELTIME COMPUTED USING MEAN FLOW(CFS) = 17.21

STREETFLOW MODEL RESULTS:
STREET FLOWDEPTH(FEET) = .62
HALFSTREET FLOODWIDTH(FEET) = 23.09
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.12
PRODUCT OF DEPTH&VELOCITY = 1.93
STREETFLOW TRAVELTIME(MIN) = 2.30 TC(MIN) = 14.42

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.656
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7035
SUBAREA AREA(ACRES) = 3.41 SUBAREA RUNOFF(CFS) = 8.77
SUMMED AREA(ACRES) = 7.25 TOTAL RUNOFF(CFS) = 21.60
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .68 HALFSTREET FLOODWIDTH(FEET) = 25.91
FLOW VELOCITY(FEET/SEC.) = 3.13 DEPTH*VELOCITY = 2.12

****

FLOW PROCESS FROM NODE 353.00 TO NODE 353.10 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 14.42
RAINFALL INTENSITY(INCH/HR) = 3.66
TOTAL STREAM AREA(ACRES) = 7.25
PEAK FLOW RATE(CFS) AT CONFLUENCE = 21.60

****

FLOW PROCESS FROM NODE 351.00 TO NODE 353.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

ASSUMED INITIAL SUBAREA UNIFORM
DEVELOPMENT IS COMMERCIAL
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH = 1030.00
UPSTREAM ELEVATION = 442.00
DOWNSTREAM ELEVATION = 435.93
ELEVATION DIFFERENCE = 6.07
TC = .303*[(1030.00**3)/(6.07)]**.2 = 13.572
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.787
SOIL CLASSIFICATION IS "A"
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8615
SUBAREA RUNOFF(CFS) = 3.98
TOTAL AREA(ACRES) = 1.22 TOTAL RUNOFF(CFS) = 3.98

****

FLOW PROCESS FROM NODE 353.00 TO NODE 353.10 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 13.57
RAINFALL INTENSITY(INCH/HR) = 3.79
TOTAL STREAM AREA(ACRES) = 1.22
PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.98

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	21.60	14.42	3.656	7.25
2	3.98	13.57	3.787	1.22

********************************WARNING********************************

IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
****

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	24.31	13.57	3.787
2	25.44	14.42	3.656

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 25.44 Tc(MIN.) = 14.42
TOTAL AREA(ACRES) = 8.47

****
FLOW PROCESS FROM NODE 353.10 TO NODE 354.00 IS CODE = 6

```
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
```

UPSTREAM ELEVATION = 435.93 DOWNSTREAM ELEVATION = 429.90
STREET LENGTH(FEET) = 680.00 CURB HEIGHT(INCHES) = 8.
STREET HALFWIDTH(FEET) = 28.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 14.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1

**TRAVELTIME COMPUTED USING MEAN FLOW(CFS) = 26.81
STREETFLOW MODEL RESULTS:
NOTE: STREETFLOW EXCEEDS TOP OF CURB.
THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
STREET FLOWDEPTH(FEET) = .68
HALFSTREET FLOODWIDTH(FEET) = 25.97
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.87
PRODUCT OF DEPTH&VELOCITY = 2.62
STREETFLOW TRAVELTIME(MIN) = 2.93 TC(MIN) = 17.35

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.284
SOIL CLASSIFICATION IS "A"
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8583
SUBAREA AREA(ACRES) = .97 SUBAREA RUNOFF(CFS) = 2.73
SUMMED AREA(ACRES) = 9.44 TOTAL RUNOFF(CFS) = 28.17
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .69 HALFSTREET FLOODWIDTH(FEET) = 26.78
FLOW VELOCITY(FEET/SEC.) = 3.83 DEPTH*VELOCITY = 2.66

28.17 CFS ENTER CATCH BASIN
AT 37+02.26 (E) LANDAU BLVD.
DEPTH = 0.69'
LINE K2, MH 2

****
FLOW PROCESS FROM NODE 354.00 TO NODE 355.00 IS CODE = 4

```
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<
==========================================================================
```

PIPEFLOW VELOCITY(FEET/SEC.) = 7.1
UPSTREAM NODE ELEVATION = 425.33
DOWNSTREAM NODE ELEVATION = 425.04
FLOWLENGTH(FEET) = 73.62 MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) = 28.17
TRAVEL TIME(MIN.) = .17 TC(MIN.) = 17.52

****

FLOW PROCESS FROM NODE 355.00 TO NODE 355.10 IS CODE = 8

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

==

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.266
SOIL CLASSIFICATION IS "A"
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8582
SUBAREA AREA(ACRES) = 1.91 SUBAREA RUNOFF(CFS) = 5.35
TOTAL AREA(ACRES) = 11.35 TOTAL RUNOFF(CFS) = 33.53
TC(MIN) = 17.52

5.35 CFS ENTERS CATCH BASIN AT 36+68.10 (W) LANDAU BLVD.
DEPTH = 0.43'
LINE K2, MH 1

****

FLOW PROCESS FROM NODE 355.10 TO NODE 356.00 IS CODE = 4

>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<

==

PIPEFLOW VELOCITY(FEET/SEC.) = 6.8
UPSTREAM NODE ELEVATION = 425.03
DOWNSTREAM NODE ELEVATION = 424.50
FLOWLENGTH(FEET) = 131.62 MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) = 33.53
TRAVEL TIME(MIN.) = .32 TC(MIN.) = 17.84

****

FLOW PROCESS FROM NODE 289.00 TO NODE 289.10 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

==

ASSUMED INITIAL SUBAREA UNIFORM
DEVELOPMENT IS SINGLE FAMILY(1/2 ACRE)
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH = 600.00
UPSTREAM ELEVATION = 445.00
DOWNSTREAM ELEVATION = 439.00
ELEVATION DIFFERENCE = 6.00
TC = .422*[(600.00**3)/(6.00)]**.2 = 13.699
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.766
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/2 ACRE LOT) RUNOFF COEFFICIENT = .6682
SUBAREA RUNOFF(CFS) = 11.02
TOTAL AREA(ACRES) = 4.38 TOTAL RUNOFF(CFS) = 11.02

****

FLOW PROCESS FROM NODE 289.10 TO NODE 290.00 IS CODE = 51

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<

==

UPSTREAM NODE ELEVATION = 439.00
DOWNSTREAM NODE ELEVATION = 435.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 400.00
CHANNEL SLOPE = .0100
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = .025 MAXIMUM DEPTH(FEET) = 1.00
CHANNEL FLOW THRU SUBAREA(CFS) = 11.02
FLOW VELOCITY(FEET/SEC) = 3.30 FLOW DEPTH(FEET) = .61
TRAVEL TIME(MIN.) = 2.02 TC(MIN.) = 15.72

****

FLOW PROCESS FROM NODE 290.00 TO NODE 290.10 IS CODE = 8

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

==
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.477
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/2 ACRE LOT) RUNOFF COEFFICIENT = .6576
SUBAREA AREA(ACRES) = 6.72 SUBAREA RUNOFF(CFS) = 15.37
TOTAL AREA(ACRES) = 11.10 TOTAL RUNOFF(CFS) = 26.39
TC(MIN) = 15.72

End Drainage Area “K2”

Rational Method Calculations
10-Year Storm

```
****************************************************************************
      RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
    RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
              (RCFC&WCD) 1978 HYDROLOGY MANUAL
     (c) Copyright 1982-94 Advanced Engineering Software (aes)
        Ver. 1.5A  Release Date: 6/01/94  License ID 1304

                Analysis prepared by:

             MAINIERO, SMITH & ASSOCIATES, INC.
    CIVIL & ENVIRONMENTAL ENGINEERING, SURVEYING AND LAND PLANNING
             777 TAHQUIST CANYON WAY, SUITE 301
             PALM SPRINGS, CALIFORNIA 92262-7066

************************** DESCRIPTION OF STUDY **************************
* Rio Vista Village - Tract 28639-1                                      *
* 10 Year Storm                                                          *
* Rational Method Calculations                                           *
**************************************************************************

 FILE NAME: 1064P.DAT
 TIME/DATE OF STUDY: 20:44  3/25/2001
----------------------------------------------------------------------------
 USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
 USER SPECIFIED STORM EVENT(YEAR) =  10.00
 SPECIFIED MINIMUM PIPE SIZE(INCH) = 18.00
 SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = .85
 10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) = 2.770
 10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  .980
 100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) = 4.520
 100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) = 1.600
 SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  .5799047
 SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  .5796024
 COMPUTED RAINFALL INTENSITY DATA:
 STORM EVENT =  10.00   1-HOUR INTENSITY(INCH/HOUR) = .9898
 SLOPE OF INTENSITY DURATION CURVE = .5799
 RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED
 NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
    AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
```

Begin Drainage Area "B"

```
****************************************************************************
 FLOW PROCESS FROM NODE   40.00 TO NODE   45.00 IS CODE = 21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
    ASSUMED INITIAL SUBAREA UNIFORM
    DEVELOPMENT IS CONDOMINIUM
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH = 1050.00
 UPSTREAM ELEVATION =  482.00
 DOWNSTREAM ELEVATION =  470.50
 ELEVATION DIFFERENCE =   11.50
 TC = .359*[( 1050.00**3)/(   11.50)]**.2 =  14.319
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.272
 SOIL CLASSIFICATION IS "A"
 CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7252
 SUBAREA RUNOFF(CFS) =   12.75
 TOTAL AREA(ACRES) =    7.74   TOTAL RUNOFF(CFS) =    12.75

****************************************************************************
 FLOW PROCESS FROM NODE   45.00 TO NODE   50.00 IS CODE =  6
----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
```

```
==========================================================================
 UPSTREAM ELEVATION =    470.50   DOWNSTREAM ELEVATION =    468.37
 STREET LENGTH(FEET) =   300.00   CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  16.00
 INTERIOR STREET CROSSFALL(DECIMAL) =   .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .055

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2

    **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =    16.03
  STREETFLOW MODEL RESULTS:
    STREET FLOWDEPTH(FEET) =   .49
    HALFSTREET FLOODWIDTH(FEET) =   17.50
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.50
    PRODUCT OF DEPTH&VELOCITY =    1.23
 STREETFLOW TRAVELTIME(MIN) =   2.00   TC(MIN) =   16.32

  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.106
 SOIL CLASSIFICATION IS "A"
 CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7193
 SUBAREA AREA(ACRES) =     4.32   SUBAREA RUNOFF(CFS) =     6.54
 SUMMED AREA(ACRES) =    12.06   TOTAL RUNOFF(CFS) =      19.30
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) =  .51   HALFSTREET FLOODWIDTH(FEET) = 18.00
 FLOW VELOCITY(FEET/SEC.) =  2.71   DEPTH*VELOCITY =    1.39


****************************************************************************
 FLOW PROCESS FROM NODE    50.00 TO NODE    51.00 IS CODE =   6
----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 UPSTREAM ELEVATION =    468.37   DOWNSTREAM ELEVATION =    465.72
 STREET LENGTH(FEET) =   438.00   CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  16.00
 INTERIOR STREET CROSSFALL(DECIMAL) =   .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .055

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2

    **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =    21.72
 ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS:
    NOTE: STREETFLOW EXCEEDS TOP OF CURB.
    THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
    THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
    THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOWDEPTH(FEET) =   .53
    HALFSTREET FLOODWIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.77
    PRODUCT OF DEPTH&VELOCITY =    1.48
 STREETFLOW TRAVELTIME(MIN) =   2.63   TC(MIN) =   18.95

  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.931
 SOIL CLASSIFICATION IS "A"
 CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7127
 SUBAREA AREA(ACRES) =     3.52   SUBAREA RUNOFF(CFS) =     4.84
 SUMMED AREA(ACRES) =    15.58   TOTAL RUNOFF(CFS) =      24.14
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) =  .55   HALFSTREET FLOODWIDTH(FEET) = 18.00
 FLOW VELOCITY(FEET/SEC.) =  2.83   DEPTH*VELOCITY =    1.56
```

SEE FIGURE 4
S=0.00605
⇒ STREET CAPACITY = 25.54 CFS
OK

```
****************************************************************************
 FLOW PROCESS FROM NODE    51.00 TO NODE    55.00 IS CODE =   4
----------------------------------------------------------------------------
```

```
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<
==========================================================================
DEPTH OF FLOW IN  27.0 INCH PIPE IS  13.8 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) =  11.8
UPSTREAM NODE ELEVATION =   458.47
DOWNSTREAM NODE ELEVATION =   450.36
FLOWLENGTH(FEET) =   306.49   MANNING'S N =  .013
GIVEN PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
PIPEFLOW THRU SUBAREA(CFS) =     24.14
TRAVEL TIME(MIN.) =    .43    TC(MIN.) =  19.39

****************************************************************************
FLOW PROCESS FROM NODE    55.00 TO NODE    55.00 IS CODE =   8
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.906
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7117
SUBAREA AREA(ACRES) =     5.46   SUBAREA RUNOFF(CFS) =     7.41
TOTAL AREA(ACRES) =     21.04   TOTAL RUNOFF(CFS) =     31.54
TC(MIN) =   19.39

****************************************************************************
FLOW PROCESS FROM NODE    55.00 TO NODE    56.00 IS CODE =   4
----------------------------------------------------------------------------
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<
==========================================================================
DEPTH OF FLOW IN  33.0 INCH PIPE IS  15.7 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) =  11.3
UPSTREAM NODE ELEVATION =   449.77
DOWNSTREAM NODE ELEVATION =   447.35
FLOWLENGTH(FEET) =   121.35   MANNING'S N =  .013
GIVEN PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
PIPEFLOW THRU SUBAREA(CFS) =     31.54
TRAVEL TIME(MIN.) =    .18    TC(MIN.) =  19.57
```

End Drainage Area "B"

Begin Drainage Area "C"

```
****************************************************************************
FLOW PROCESS FROM NODE    67.00 TO NODE    68.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
    ASSUMED INITIAL SUBAREA UNIFORM
    DEVELOPMENT IS CONDOMINIUM
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH =   700.00
UPSTREAM ELEVATION =    470.40
DOWNSTREAM ELEVATION =    461.61
ELEVATION DIFFERENCE =      8.79
TC = .359*[(  700.00**3)/(    8.79)]**.2 =  11.847
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.536
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7338
SUBAREA RUNOFF(CFS) =     11.80
TOTAL AREA(ACRES) =      6.34   TOTAL RUNOFF(CFS) =     11.80

****************************************************************************
FLOW PROCESS FROM NODE    68.00 TO NODE    69.00 IS CODE =   6
```

```
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
UPSTREAM ELEVATION =   461.61   DOWNSTREAM ELEVATION =   458.34
STREET LENGTH(FEET) =  242.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 15.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 13.00
INTERIOR STREET CROSSFALL(DECIMAL) =  .020
OUTSIDE STREET CROSSFALL(DECIMAL) =  .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

   **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =  13.65
 STREETFLOW MODEL RESULTS:
   STREET FLOWDEPTH(FEET) =  .42
   HALFSTREET FLOODWIDTH(FEET) =  13.78
   AVERAGE FLOW VELOCITY(FEET/SEC.) =   3.33
   PRODUCT OF DEPTH&VELOCITY =   1.40
STREETFLOW TRAVELTIME(MIN) =  1.21   TC(MIN) =  13.06

 10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.397
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7294
SUBAREA AREA(ACRES) =    2.12   SUBAREA RUNOFF(CFS) =    3.71
SUMMED AREA(ACRES) =    8.46   TOTAL RUNOFF(CFS) =    15.50
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .44   HALFSTREET FLOODWIDTH(FEET) = 14.59
FLOW VELOCITY(FEET/SEC.) = 3.40   DEPTH*VELOCITY =  1.48

****************************************************************************
 FLOW PROCESS FROM NODE    69.00 TO NODE    70.00 IS CODE =  4
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED PIPESIZE<<<<<
==========================================================================
 DEPTH OF FLOW IN  24.0 INCH PIPE IS  10.9 INCHES
 PIPEFLOW VELOCITY(FEET/SEC.) = 11.2
 UPSTREAM NODE ELEVATION =  451.33
 DOWNSTREAM NODE ELEVATION =  447.75
 FLOWLENGTH(FEET) =   114.63   MANNING'S N =  .013
 GIVEN PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPEFLOW THRU SUBAREA(CFS) =     15.50
 TRAVEL TIME(MIN.) =    .17    TC(MIN.) =  13.23
```

End Drainage Area "C"

Begin Drainage Area "D"

```
****************************************************************************
 FLOW PROCESS FROM NODE    60.00 TO NODE    65.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
    ASSUMED INITIAL SUBAREA UNIFORM
    DEVELOPMENT IS CONDOMINIUM
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH =  680.00
UPSTREAM ELEVATION =   473.40
DOWNSTREAM ELEVATION =    465.95
ELEVATION DIFFERENCE =      7.45
TC =  .359*[( 680.00**3)/(    7.45)]**.2 =   12.034
 10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.513
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7331
SUBAREA RUNOFF(CFS) =     10.65
```

TOTAL AREA(ACRES) = 5.78 TOTAL RUNOFF(CFS) = 10.65

```
****************************************************************************
 FLOW PROCESS FROM NODE    65.00 TO NODE    85.00 IS CODE =  6
 ----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
 UPSTREAM ELEVATION =   465.95  DOWNSTREAM ELEVATION =   462.19
 STREET LENGTH(FEET) =  537.00  CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
 INTERIOR STREET CROSSFALL(DECIMAL) =  .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  .055

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2

     **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =  14.39
  STREETFLOW MODEL RESULTS:
     STREET FLOWDEPTH(FEET) =  .47
     HALFSTREET FLOODWIDTH(FEET) =  16.50
     AVERAGE FLOW VELOCITY(FEET/SEC.) =   2.51
     PRODUCT OF DEPTH&VELOCITY =   1.19
 STREETFLOW TRAVELTIME(MIN) =   3.57   TC(MIN) =  15.61

  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.161
 SOIL CLASSIFICATION IS "A"
 CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7213
 SUBAREA AREA(ACRES) =    4.77   SUBAREA RUNOFF(CFS) =    7.44
 SUMMED AREA(ACRES) =   10.55   TOTAL RUNOFF(CFS) =     18.08
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) =  .49   HALFSTREET FLOODWIDTH(FEET) = 17.50
 FLOW VELOCITY(FEET/SEC.) =  2.82   DEPTH*VELOCITY =   1.39

****************************************************************************
 FLOW PROCESS FROM NODE    85.00 TO NODE    90.00 IS CODE =  6
 ----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
 UPSTREAM ELEVATION =   462.19  DOWNSTREAM ELEVATION =   461.13
 STREET LENGTH(FEET) =  152.00   CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
 INTERIOR STREET CROSSFALL(DECIMAL) =  .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  .055

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2

     **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =  20.55
 ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS:
     NOTE: STREETFLOW EXCEEDS TOP OF CURB.
     THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
     THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
     THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
     STREET FLOWDEPTH(FEET) =  .51
     HALFSTREET FLOODWIDTH(FEET) =  18.00
     AVERAGE FLOW VELOCITY(FEET/SEC.) =   2.88
     PRODUCT OF DEPTH&VELOCITY =   1.48
 STREETFLOW TRAVELTIME(MIN) =    .88   TC(MIN) =  16.48

  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.094
 SOIL CLASSIFICATION IS "A"
 CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7189
 SUBAREA AREA(ACRES) =    3.27   SUBAREA RUNOFF(CFS) =    4.92
 SUMMED AREA(ACRES) =   13.82   TOTAL RUNOFF(CFS) =     23.01
 END OF SUBAREA STREETFLOW HYDRAULICS:
```

SEE FIGURE 4

DEPTH(FEET) = .53 HALFSTREET FLOODWIDTH(FEET) = 18.00 ⇒ S= 0.00697
FLOW VELOCITY(FEET/SEC.) = 2.94 DEPTH*VELOCITY = 1.57

STREET CAPACITY = 26.34 CFS

ok

****

FLOW PROCESS FROM NODE 90.00 TO NODE 90.10 IS CODE = 7

>>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<

==

USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN) = 16.48 RAIN INTENSITY(INCH/HOUR) = 2.09
TOTAL AREA(ACRES) = 6.91 TOTAL RUNOFF(CFS) = 11.51

****

FLOW PROCESS FROM NODE 90.10 TO NODE 91.00 IS CODE = 4

>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<

==

DEPTH OF FLOW IN 24.0 INCH PIPE IS 11.4 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) = 7.8
UPSTREAM NODE ELEVATION = 456.85
DOWNSTREAM NODE ELEVATION = 451.30
FLOWLENGTH(FEET) = 383.99 MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) = 11.51
TRAVEL TIME(MIN.) = .82 TC(MIN.) = 17.30

****

FLOW PROCESS FROM NODE 91.00 TO NODE 91.10 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

==

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 17.30
RAINFALL INTENSITY(INCH/HR) = 2.04
TOTAL STREAM AREA(ACRES) = 6.91
PEAK FLOW RATE(CFS) AT CONFLUENCE = 11.51

****

FLOW PROCESS FROM NODE 120.00 TO NODE 121.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

==

ASSUMED INITIAL SUBAREA UNIFORM
DEVELOPMENT IS CONDOMINIUM
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH = 460.00
UPSTREAM ELEVATION = 466.00
DOWNSTREAM ELEVATION = 458.65
ELEVATION DIFFERENCE = 7.35
TC = .359*[(460.00**3)/(7.35)]**.2 = 9.544
10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.874
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7436
SUBAREA RUNOFF(CFS) = 11.67
TOTAL AREA(ACRES) = 5.46 TOTAL RUNOFF(CFS) = 11.67

****

FLOW PROCESS FROM NODE 121.00 TO NODE 122.00 IS CODE = 4

>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<

==

DEPTH OF FLOW IN 21.0 INCH PIPE IS 8.5 INCHES

```
PIPEFLOW VELOCITY(FEET/SEC.) = 12.7
UPSTREAM NODE ELEVATION = 453.89
DOWNSTREAM NODE ELEVATION = 451.88
FLOWLENGTH(FEET) = 38.00  MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 21.00  NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) = 11.67
TRAVEL TIME(MIN.) = .05  TC(MIN.) = 9.59

****************************************************************************
FLOW PROCESS FROM NODE 122.00 TO NODE 91.10 IS CODE = 1
----------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 9.59
RAINFALL INTENSITY(INCH/HR) = 2.87
TOTAL STREAM AREA(ACRES) = 5.46
PEAK FLOW RATE(CFS) AT CONFLUENCE = 11.67

** CONFLUENCE DATA **
STREAM   RUNOFF    Tc     INTENSITY    AREA
NUMBER    (CFS)   (MIN.)  (INCH/HOUR)  (ACRE)
  1       11.51   17.30    2.036        6.91
  2       11.67    9.59    2.866        5.46

*********************************WARNING**********************************
IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
****************************************************************************

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM   RUNOFF    Tc     INTENSITY
NUMBER    (CFS)   (MIN.)  (INCH/HOUR)
  1       18.05    9.59    2.866
  2       19.80   17.30    2.036

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 18.05  Tc(MIN.) = 9.59
TOTAL AREA(ACRES) = 12.37

****************************************************************************
FLOW PROCESS FROM NODE 91.10 TO NODE 92.00 IS CODE = 4
----------------------------------------------------------------
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<
================================================================================
DEPTH OF FLOW IN 27.0 INCH PIPE IS 11.8 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) = 10.8
UPSTREAM NODE ELEVATION = 451.28
DOWNSTREAM NODE ELEVATION = 444.02
FLOWLENGTH(FEET) = 285.59  MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 27.00  NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) = 18.05
TRAVEL TIME(MIN.) = .44  TC(MIN.) = 10.04

****************************************************************************
FLOW PROCESS FROM NODE 92.00 TO NODE 92.10 IS CODE = 1
----------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
TOTAL NUMBER OF STREAMS = 2
```

```
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  10.04
RAINFALL INTENSITY(INCH/HR) =   2.79
TOTAL STREAM AREA(ACRES) =  12.37
PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.05


****************************************************************************
 FLOW PROCESS FROM NODE   105.00 TO NODE   105.00 IS CODE =  7
----------------------------------------------------------------
 >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
 USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC(MIN) =  16.48   RAIN INTENSITY(INCH/HOUR) =  2.09
 TOTAL AREA(ACRES) =     6.91   TOTAL RUNOFF(CFS) =     11.51


****************************************************************************
 FLOW PROCESS FROM NODE   105.00 TO NODE   106.00 IS CODE =  6
----------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM ELEVATION =    461.89   DOWNSTREAM ELEVATION =    457.85
 STREET LENGTH(FEET) =   336.00   CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  16.00
 INTERIOR STREET CROSSFALL(DECIMAL) =   .020
 OUTSIDE STREET CROSSFALL(DECIMAL) =   .055

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2

    **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   13.25
  STREETFLOW MODEL RESULTS:
    STREET FLOWDEPTH(FEET) =   .43
    HALFSTREET FLOODWIDTH(FEET) =   14.50
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.94
    PRODUCT OF DEPTH&VELOCITY =    1.28
 STREETFLOW TRAVELTIME(MIN) =    1.90   TC(MIN) =  18.38

  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.965
 SOIL CLASSIFICATION IS "A"
 CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7140
 SUBAREA AREA(ACRES) =    2.48   SUBAREA RUNOFF(CFS) =    3.48
 SUMMED AREA(ACRES) =     9.39   TOTAL RUNOFF(CFS) =     14.99
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) =  .43   HALFSTREET FLOODWIDTH(FEET) = 14.50
 FLOW VELOCITY(FEET/SEC.) =  3.33   DEPTH*VELOCITY =   1.44


****************************************************************************
 FLOW PROCESS FROM NODE   106.00 TO NODE   106.00 IS CODE =  8
----------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.965
 SOIL CLASSIFICATION IS "A"
 CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7140
 SUBAREA AREA(ACRES) =    1.78   SUBAREA RUNOFF(CFS) =    2.50
 TOTAL AREA(ACRES) =     11.17   TOTAL RUNOFF(CFS) =    17.49
 TC(MIN) =  18.38


****************************************************************************
 FLOW PROCESS FROM NODE   106.00 TO NODE   107.00 IS CODE =  6
----------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM ELEVATION =    457.85   DOWNSTREAM ELEVATION =    453.29
 STREET LENGTH(FEET) =   395.00   CURB HEIGHT(INCHES) = 6.
```

STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

**TRAVELTIME COMPUTED USING MEAN FLOW(CFS) = 18.95
STREETFLOW MODEL RESULTS:
STREET FLOWDEPTH(FEET) = .47
HALFSTREET FLOODWIDTH(FEET) = 16.50
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.30
PRODUCT OF DEPTH&VELOCITY = 1.56
STREETFLOW TRAVELTIME(MIN) = 1.99 TC(MIN) = 20.38

10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.852
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7095
SUBAREA AREA(ACRES) = 2.23 SUBAREA RUNOFF(CFS) = 2.93
SUMMED AREA(ACRES) = 13.40 TOTAL RUNOFF(CFS) = 20.42
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .49 HALFSTREET FLOODWIDTH(FEET) = 17.50
FLOW VELOCITY(FEET/SEC.) = 3.18 DEPTH*VELOCITY = 1.57

****

FLOW PROCESS FROM NODE 107.00 TO NODE 92.00 IS CODE = 4

>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<

DEPTH OF FLOW IN 33.0 INCH PIPE IS 19.7 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) = 5.5
UPSTREAM NODE ELEVATION = 444.84
DOWNSTREAM NODE ELEVATION = 444.04
FLOWLENGTH(FEET) = 201.12 MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 33.00 NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) = 20.42
TRAVEL TIME(MIN.) = .61 TC(MIN.) = 20.98

****

FLOW PROCESS FROM NODE 92.00 TO NODE 92.10 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 20.98
RAINFALL INTENSITY(INCH/HR) = 1.82
TOTAL STREAM AREA(ACRES) = 13.40
PEAK FLOW RATE(CFS) AT CONFLUENCE = 20.42

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	18.05	10.04	2.792	12.37
2	20.42	20.98	1.820	13.40

*********************************WARNING*********************************
IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
****

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

```
** PEAK FLOW RATE TABLE **
STREAM   RUNOFF    Tc     INTENSITY
NUMBER    (CFS)  (MIN.)  (INCH/HOUR)
  1      27.82   10.04    2.792
  2      32.19   20.98    1.820

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    32.19  Tc(MIN.) =  20.98
TOTAL AREA(ACRES) =    25.77

****************************************************************************
FLOW PROCESS FROM NODE    92.10 TO NODE    93.00 IS CODE =  4
----------------------------------------------------------------------------
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<
============================================================================
DEPTH OF FLOW IN  42.0 INCH PIPE IS  22.2 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) =  6.2
UPSTREAM NODE ELEVATION =  443.28
DOWNSTREAM NODE ELEVATION =  442.42
FLOWLENGTH(FEET) =  215.65   MANNING'S N =  .013
GIVEN PIPE DIAMETER(INCH) =  42.00   NUMBER OF PIPES =  1
PIPEFLOW THRU SUBAREA(CFS) =     32.19
TRAVEL TIME(MIN.) =    .58    TC(MIN.) =  21.56

****************************************************************************
FLOW PROCESS FROM NODE    70.00 TO NODE    71.00 IS CODE = 21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
    ASSUMED INITIAL SUBAREA UNIFORM
    DEVELOPMENT IS CONDOMINIUM
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH =  660.00
UPSTREAM ELEVATION =    467.10
DOWNSTREAM ELEVATION =    457.36
ELEVATION DIFFERENCE =      9.74
TC = .359*[( 660.00**3)/(   9.74)]**.2 =  11.203
 10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.619
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7363
SUBAREA RUNOFF(CFS) =     3.66
TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      3.66

****************************************************************************
FLOW PROCESS FROM NODE    71.00 TO NODE    72.00 IS CODE =  6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION =    457.36  DOWNSTREAM ELEVATION =    454.75
STREET LENGTH(FEET) =   520.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 28.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  14.00
INTERIOR STREET CROSSFALL(DECIMAL) =   .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

    **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =    4.95
  STREETFLOW MODEL RESULTS:
    STREET FLOWDEPTH(FEET) =   .43
    HALFSTREET FLOODWIDTH(FEET) =   15.16
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.05
    PRODUCT OF DEPTH&VELOCITY =     .88
 STREETFLOW TRAVELTIME(MIN) =  4.23   TC(MIN) =  15.44
```

```
 10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.175
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7218
SUBAREA AREA(ACRES) =    1.62   SUBAREA RUNOFF(CFS) =    2.54
SUMMED AREA(ACRES) =    3.52   TOTAL RUNOFF(CFS) =     6.21
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .46   HALFSTREET FLOODWIDTH(FEET) = 16.82
FLOW VELOCITY(FEET/SEC.) = 2.11   DEPTH*VELOCITY =   .97


****************************************************************************
 FLOW PROCESS FROM NODE    72.00 TO NODE    93.00 IS CODE =  4
----------------------------------------------------------------
 >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED PIPESIZE<<<<<
============================================================================
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.6 INCHES
 PIPEFLOW VELOCITY(FEET/SEC.) = 17.4
 UPSTREAM NODE ELEVATION =   450.88
 DOWNSTREAM NODE ELEVATION =   440.92
 FLOWLENGTH(FEET) =    50.19   MANNING'S N = .013
 GIVEN PIPE DIAMETER(INCH) = 18.00    NUMBER OF PIPES =  1
 PIPEFLOW THRU SUBAREA(CFS) =     6.21
 TRAVEL TIME(MIN.) =    .05    TC(MIN.) = 15.49


****************************************************************************
 FLOW PROCESS FROM NODE    73.00 TO NODE    74.00 IS CODE = 21
----------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
     ASSUMED INITIAL SUBAREA UNIFORM
     DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH =   980.00
 UPSTREAM ELEVATION =    467.30
 DOWNSTREAM ELEVATION =    459.08
 ELEVATION DIFFERENCE =      8.22
 TC = .393*[( 980.00**3)/(    8.22)]**.2 =  16.059
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.126
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6429
 SUBAREA RUNOFF(CFS) =     2.28
 TOTAL AREA(ACRES) =     1.67   TOTAL RUNOFF(CFS) =     2.28


****************************************************************************
 FLOW PROCESS FROM NODE    74.00 TO NODE    75.00 IS CODE =  6
----------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM ELEVATION =    459.08   DOWNSTREAM ELEVATION =    454.75
 STREET LENGTH(FEET) =   782.00   CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 28.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 14.00
 INTERIOR STREET CROSSFALL(DECIMAL) =  .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  .020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

     **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =    3.81
   STREETFLOW MODEL RESULTS:
     STREET FLOWDEPTH(FEET) =  .40
     HALFSTREET FLOODWIDTH(FEET) =  13.51
     AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.96
     PRODUCT OF DEPTH&VELOCITY =     .78
 STREETFLOW TRAVELTIME(MIN) =   6.65   TC(MIN) =  22.71

  10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.739
```

SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6211
SUBAREA AREA(ACRES) = 2.83 SUBAREA RUNOFF(CFS) = 3.06
SUMMED AREA(ACRES) = 4.50 TOTAL RUNOFF(CFS) = 5.34
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .43 HALFSTREET FLOODWIDTH(FEET) = 15.16
FLOW VELOCITY(FEET/SEC.) = 2.21 DEPTH*VELOCITY = .95

****

FLOW PROCESS FROM NODE 75.00 TO NODE 93.00 IS CODE = 4

>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<

==

DEPTH OF FLOW IN 18.0 INCH PIPE IS 4.4 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) = 15.9
UPSTREAM NODE ELEVATION = 450.97
DOWNSTREAM NODE ELEVATION = 442.07
FLOWLENGTH(FEET) = 50.40 MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) = 5.34
TRAVEL TIME(MIN.) = .05 TC(MIN.) = 22.76

End Drainage Area "D"

Begin Drainage Area "E"

****

FLOW PROCESS FROM NODE 131.00 TO NODE 131.10 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

==

ASSUMED INITIAL SUBAREA UNIFORM
DEVELOPMENT IS APARTMENT
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH = 800.00
UPSTREAM ELEVATION = 464.80
DOWNSTREAM ELEVATION = 456.37
ELEVATION DIFFERENCE = 8.43
TC = .323*[(800.00**3)/(8.43)]**.2 = 11.628
10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.563
SOIL CLASSIFICATION IS "A"
APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8055
SUBAREA RUNOFF(CFS) = 14.31
TOTAL AREA(ACRES) = 6.93 TOTAL RUNOFF(CFS) = 14.31

****

FLOW PROCESS FROM NODE 131.10 TO NODE 132.00 IS CODE = 6

>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<

==

UPSTREAM ELEVATION = 456.37 DOWNSTREAM ELEVATION = 450.70
STREET LENGTH(FEET) = 724.00 CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

**TRAVELTIME COMPUTED USING MEAN FLOW(CFS) = 21.23
STREET FLOWING FULL
STREETFLOW MODEL RESULTS:
NOTE: STREETFLOW EXCEEDS TOP OF CURB.

THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
STREET FLOWDEPTH(FEET) = .51
HALFSTREET FLOODWIDTH(FEET) = 18.00
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.98
PRODUCT OF DEPTH&VELOCITY = 1.53
STREETFLOW TRAVELTIME(MIN) = 4.05 TC(MIN) = 15.68

10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.155
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7211
SUBAREA AREA(ACRES) = 8.90 SUBAREA RUNOFF(CFS) = 13.83
SUMMED AREA(ACRES) = 15.83 TOTAL RUNOFF(CFS) = 28.14
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .55 HALFSTREET FLOODWIDTH(FEET) = 18.00 ⇒
FLOW VELOCITY(FEET/SEC.) = 3.30 DEPTH*VELOCITY = 1.82

SEE FIGURE 4
S = 0.00783
STREET CAPACITY = 27.92 CFS
FLOW IS RIGHT AT TOP OF CURB

****
FLOW PROCESS FROM NODE 132.00 TO NODE 133.00 IS CODE = 6

>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
==
UPSTREAM ELEVATION = 450.70 DOWNSTREAM ELEVATION = 448.40
STREET LENGTH(FEET) = 246.00 CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

**TRAVELTIME COMPUTED USING MEAN FLOW(CFS) = 28.64
STREET FLOWING FULL
STREETFLOW MODEL RESULTS:
NOTE: STREETFLOW EXCEEDS TOP OF CURB.
THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
STREET FLOWDEPTH(FEET) = .55
HALFSTREET FLOODWIDTH(FEET) = 18.00
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.36
PRODUCT OF DEPTH&VELOCITY = 1.85
STREETFLOW TRAVELTIME(MIN) = 1.22 TC(MIN) = 16.90

10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.064
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6396
SUBAREA AREA(ACRES) = .75 SUBAREA RUNOFF(CFS) = .99
SUMMED AREA(ACRES) = 16.58 TOTAL RUNOFF(CFS) = 29.13
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .55 HALFSTREET FLOODWIDTH(FEET) = 18.00 ⇒
FLOW VELOCITY(FEET/SEC.) = 3.41 DEPTH*VELOCITY = 1.89

SEE FIGURE 4
S = 0.00935
STREET CAPACITY = 30.50 CFS
OK

****
FLOW PROCESS FROM NODE 133.00 TO NODE 134.00 IS CODE = 4

>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<
==
DEPTH OF FLOW IN 30.0 INCH PIPE IS 12.6 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) = 14.9
UPSTREAM NODE ELEVATION = 441.61
DOWNSTREAM NODE ELEVATION = 436.58
FLOWLENGTH(FEET) = 115.00 MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) = 29.13

```
TRAVEL TIME(MIN.) =    .13    TC(MIN.) =  17.03

****************************************************************************
 FLOW PROCESS FROM NODE   140.00 TO NODE   141.00 IS CODE =  21
 ----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
     ASSUMED INITIAL SUBAREA UNIFORM
     DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH =   355.00
 UPSTREAM ELEVATION =    454.07
 DOWNSTREAM ELEVATION =    451.34
 ELEVATION DIFFERENCE =      2.73
 TC = .393*[( 355.00**3)/(    2.73)]**.2 =  10.886
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.663
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6680
 SUBAREA RUNOFF(CFS) =      3.01
 TOTAL AREA(ACRES) =      1.69   TOTAL RUNOFF(CFS) =      3.01

****************************************************************************
 FLOW PROCESS FROM NODE   141.00 TO NODE   142.00 IS CODE =  6
 ----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM ELEVATION =    451.34   DOWNSTREAM ELEVATION =    448.64
 STREET LENGTH(FEET) =   289.70   CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 14.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  7.00
 INTERIOR STREET CROSSFALL(DECIMAL) =   .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

     **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =    4.50
   STREETFLOW MODEL RESULTS:
     STREET FLOWDEPTH(FEET) =   .38
     HALFSTREET FLOODWIDTH(FEET) =   12.83
     AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.55
     PRODUCT OF DEPTH&VELOCITY =     .98
 STREETFLOW TRAVELTIME(MIN) =   1.89   TC(MIN) =  12.78

  10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.427
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6576
 SUBAREA AREA(ACRES) =    1.86   SUBAREA RUNOFF(CFS) =    2.97
 SUMMED AREA(ACRES) =    3.55   TOTAL RUNOFF(CFS) =      5.98
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) =  .41   HALFSTREET FLOODWIDTH(FEET) = 14.00
 FLOW VELOCITY(FEET/SEC.) =  2.63   DEPTH*VELOCITY =    1.07

****************************************************************************
 FLOW PROCESS FROM NODE   142.00 TO NODE   143.00 IS CODE =  1
 ----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  12.78
 RAINFALL INTENSITY(INCH/HR) =   2.43
 TOTAL STREAM AREA(ACRES) =    3.55
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.98

****************************************************************************
```

```
FLOW PROCESS FROM NODE   156.00 TO NODE   157.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
     ASSUMED INITIAL SUBAREA UNIFORM
     DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH =   450.00
 UPSTREAM ELEVATION =    461.30
 DOWNSTREAM ELEVATION =    451.86
 ELEVATION DIFFERENCE =      9.44
 TC = .393*[( 450.00**3)/(    9.44)]**.2 =    9.792
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.832
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6749
 SUBAREA RUNOFF(CFS) =      3.42
 TOTAL AREA(ACRES) =      1.79   TOTAL RUNOFF(CFS) =      3.42

****************************************************************************
 FLOW PROCESS FROM NODE   157.00 TO NODE   142.00 IS CODE =   6
----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM ELEVATION =    451.86   DOWNSTREAM ELEVATION =    448.64
 STREET LENGTH(FEET) =   420.30   CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 14.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =   7.00
 INTERIOR STREET CROSSFALL(DECIMAL) =   .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =   1

     **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =     5.72
 ***STREETFLOW SPLITS OVER STREET-CROWN***
   FULL DEPTH(FEET) =      .41   FLOODWIDTH(FEET) =   14.00
   FULL HALF-STREET VELOCITY(FEET/SEC.) =    2.38
   SPLIT DEPTH(FEET) =      .24   SPLIT FLOODWIDTH(FEET) =     5.80
   SPLIT FLOW(CFS) =      .77   SPLIT VELOCITY(FEET/SEC.) =     1.70
   STREETFLOW MODEL RESULTS:
      STREET FLOWDEPTH(FEET) =   .41
      HALFSTREET FLOODWIDTH(FEET) =   14.00
      AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.38
      PRODUCT OF DEPTH&VELOCITY =      .97
 STREETFLOW TRAVELTIME(MIN) =    2.94   TC(MIN) =   12.73

  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.432
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6578
 SUBAREA AREA(ACRES) =    2.87   SUBAREA RUNOFF(CFS) =    4.59
 SUMMED AREA(ACRES) =    4.66   TOTAL RUNOFF(CFS) =      8.01
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) =  .41   HALFSTREET FLOODWIDTH(FEET) = 14.00
 FLOW VELOCITY(FEET/SEC.) =  2.38   DEPTH*VELOCITY =     .97

****************************************************************************
 FLOW PROCESS FROM NODE   142.00 TO NODE   143.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  12.73
 RAINFALL INTENSITY(INCH/HR) =   2.43
 TOTAL STREAM AREA(ACRES) =    4.66
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.01
```

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	5.98	12.78	2.427	3.55
2	8.01	12.73	2.432	4.66

*******************************WARNING*******************************
IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
****

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	13.97	12.73	2.432
2	13.97	12.78	2.427

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 13.97 Tc(MIN.) = 12.73
TOTAL AREA(ACRES) = 8.21

****

FLOW PROCESS FROM NODE 143.00 TO NODE 144.00 IS CODE = 4

>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<

==

DEPTH OF FLOW IN 18.0 INCH PIPE IS 7.2 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) = 21.0
UPSTREAM NODE ELEVATION = 444.61
DOWNSTREAM NODE ELEVATION = 436.36
FLOWLENGTH(FEET) = 46.10 MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) = 13.97
TRAVEL TIME(MIN.) = .04 TC(MIN.) = 12.77

End Drainage Area "E"

Begin Drainage Area "F"

****

FLOW PROCESS FROM NODE 161.00 TO NODE 162.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

==

ASSUMED INITIAL SUBAREA UNIFORM
DEVELOPMENT IS APARTMENT
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH = 1020.00
UPSTREAM ELEVATION = 457.00
DOWNSTREAM ELEVATION = 445.84
ELEVATION DIFFERENCE = 11.16
TC = .323*[(1020.00**3)/(11.16)]**.2 = 12.718
10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.434
SOIL CLASSIFICATION IS "A"
APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8032
SUBAREA RUNOFF(CFS) = 18.45
TOTAL AREA(ACRES) = 9.44 TOTAL RUNOFF(CFS) = 18.45

****

```
FLOW PROCESS FROM NODE   162.00 TO NODE   163.00 IS CODE =  6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION =   445.84  DOWNSTREAM ELEVATION =   443.91
STREET LENGTH(FEET) =  239.00   CURB HEIGHT(INCHES) =6.
STREET HALFWIDTH(FEET) = 15.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  13.00
INTERIOR STREET CROSSFALL(DECIMAL) =  .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2

    **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   19.93
***STREET FLOWING FULL***
 STREETFLOW MODEL RESULTS:
    STREET FLOWDEPTH(FEET) =   .49
    HALFSTREET FLOODWIDTH(FEET) =   15.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.18
    PRODUCT OF DEPTH&VELOCITY =    1.57
STREETFLOW TRAVELTIME(MIN) =   1.25   TC(MIN) =  13.97

 10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.305
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6518
SUBAREA AREA(ACRES) =    1.96   SUBAREA RUNOFF(CFS) =    2.94
SUMMED AREA(ACRES) =   11.40   TOTAL RUNOFF(CFS) =     21.40
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) =  .51   HALFSTREET FLOODWIDTH(FEET) = 15.00
FLOW VELOCITY(FEET/SEC.) =  3.12   DEPTH*VELOCITY =   1.60
```

SEE FIGURE 5
⇒ S = 0.00808
STREET CAPACITY = 28.36 CFS
OK

```
****************************************************************************
FLOW PROCESS FROM NODE   163.00 TO NODE   164.00 IS CODE =  4
----------------------------------------------------------------------------
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<
============================================================================
DEPTH OF FLOW IN  24.0 INCH PIPE IS  11.7 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) =  14.0
UPSTREAM NODE ELEVATION =   437.18
DOWNSTREAM NODE ELEVATION =   432.02
FLOWLENGTH(FEET) =   113.01   MANNING'S N =  .013
GIVEN PIPE DIAMETER(INCH) =  24.00   NUMBER OF PIPES =   1
PIPEFLOW THRU SUBAREA(CFS) =     21.40
TRAVEL TIME(MIN.) =    .13    TC(MIN.) =  14.10
```

End Drainage Area "F"

Begin Drainage Area "G"

```
****************************************************************************
FLOW PROCESS FROM NODE   173.00 TO NODE   174.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
    ASSUMED INITIAL SUBAREA UNIFORM
    DEVELOPMENT IS APARTMENT
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH =   900.00
UPSTREAM ELEVATION =    451.00
DOWNSTREAM ELEVATION =    440.98
ELEVATION DIFFERENCE =     10.02
TC =  .323*[(  900.00**3)/(   10.02)]**.2 =   12.055
 10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.510
```

SOIL CLASSIFICATION IS "A"
APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8046
SUBAREA RUNOFF(CFS) = 14.48
TOTAL AREA(ACRES) = 7.17 TOTAL RUNOFF(CFS) = 14.48

****

FLOW PROCESS FROM NODE 174.00 TO NODE 175.00 IS CODE = 6

>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<

==

UPSTREAM ELEVATION = 440.98 DOWNSTREAM ELEVATION = 439.41
STREET LENGTH(FEET) = 245.00 CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

**TRAVELTIME COMPUTED USING MEAN FLOW(CFS) = 16.03
STREETFLOW MODEL RESULTS:
STREET FLOWDEPTH(FEET) = .49
HALFSTREET FLOODWIDTH(FEET) = 17.50
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.50
PRODUCT OF DEPTH&VELOCITY = 1.23
STREETFLOW TRAVELTIME(MIN) = 1.64 TC(MIN) = 13.69

10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.332
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6531
SUBAREA AREA(ACRES) = 2.03 SUBAREA RUNOFF(CFS) = 3.09
SUMMED AREA(ACRES) = 9.20 TOTAL RUNOFF(CFS) = 17.57
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .51 HALFSTREET FLOODWIDTH(FEET) = 18.00 ⟹ SEE FIGURE 4
FLOW VELOCITY(FEET/SEC.) = 2.46 DEPTH*VELOCITY = 1.27

S=0.00641
STREET CAPACITY = 25.25 CFS

****

FLOW PROCESS FROM NODE 175.00 TO NODE 176.00 IS CODE = 4

>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<

==

PIPEFLOW VELOCITY(FEET/SEC.) = 5.6
UPSTREAM NODE ELEVATION = 432.10
DOWNSTREAM NODE ELEVATION = 431.87
FLOWLENGTH(FEET) = 57.34 MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) = 17.57
TRAVEL TIME(MIN.) = .17 TC(MIN.) = 13.86

****

FLOW PROCESS FROM NODE 176.00 TO NODE 176.10 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

==

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 13.86
RAINFALL INTENSITY(INCH/HR) = 2.32
TOTAL STREAM AREA(ACRES) = 9.20
PEAK FLOW RATE(CFS) AT CONFLUENCE = 17.57

****

FLOW PROCESS FROM NODE 170.00 TO NODE 170.10 IS CODE = 21

```
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
    ASSUMED INITIAL SUBAREA UNIFORM
    DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH =   900.00
UPSTREAM ELEVATION =    454.50
DOWNSTREAM ELEVATION =    447.46
ELEVATION DIFFERENCE =      7.04
TC = .393*[( 900.00**3)/(    7.04)]**.2 =  15.739
 10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.151
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6442
SUBAREA RUNOFF(CFS) =      3.62
TOTAL AREA(ACRES) =      2.61   TOTAL RUNOFF(CFS) =      3.62

****************************************************************************
FLOW PROCESS FROM NODE   170.10 TO NODE   170.20 IS CODE =  6
----------------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
UPSTREAM ELEVATION =    447.46  DOWNSTREAM ELEVATION =    439.09
STREET LENGTH(FEET) =   504.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 28.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  14.00
INTERIOR STREET CROSSFALL(DECIMAL) =   .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

    **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =    4.70
  STREETFLOW MODEL RESULTS:
    STREET FLOWDEPTH(FEET) =    .36
    HALFSTREET FLOODWIDTH(FEET) =   11.85
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.09
    PRODUCT OF DEPTH&VELOCITY =    1.12
STREETFLOW TRAVELTIME(MIN) =    2.72   TC(MIN) =   18.46

  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.961
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6340
SUBAREA AREA(ACRES) =     1.74   SUBAREA RUNOFF(CFS) =    2.16
SUMMED AREA(ACRES) =     4.35   TOTAL RUNOFF(CFS) =      5.78
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) =   .38   HALFSTREET FLOODWIDTH(FEET) = 12.68
FLOW VELOCITY(FEET/SEC.) =  3.35   DEPTH*VELOCITY =   1.27

****************************************************************************
FLOW PROCESS FROM NODE   170.20 TO NODE   176.10 IS CODE =  1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  18.46
RAINFALL INTENSITY(INCH/HR) =   1.96
TOTAL STREAM AREA(ACRES) =    4.35
PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.78

** CONFLUENCE DATA **
STREAM    RUNOFF    Tc    INTENSITY    AREA
NUMBER     (CFS)  (MIN.)  (INCH/HOUR)  (ACRE)
   1      17.57   13.86    2.315        9.20
   2       5.78   18.46    1.961        4.35

*********************************WARNING**********************************
```

IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
****

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	21.91	13.86	2.315
2	20.66	18.46	1.961

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 21.91 Tc(MIN.) = 13.86
TOTAL AREA(ACRES) = 13.55

****
FLOW PROCESS FROM NODE 176.10 TO NODE 177.00 IS CODE = 4

```
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<
```

==

DEPTH OF FLOW IN 30.0 INCH PIPE IS 22.7 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) = 5.5
UPSTREAM NODE ELEVATION = 431.25
DOWNSTREAM NODE ELEVATION = 431.05
FLOWLENGTH(FEET) = 50.47 MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) = 21.91
TRAVEL TIME(MIN.) = .15 TC(MIN.) = 14.01

****
FLOW PROCESS FROM NODE 170.80 TO NODE 170.90 IS CODE = 21

```
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

==

ASSUMED INITIAL SUBAREA UNIFORM
DEVELOPMENT IS COMMERCIAL
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH = 673.00
UPSTREAM ELEVATION = 443.88
DOWNSTREAM ELEVATION = 439.59
ELEVATION DIFFERENCE = 4.29
TC = .303*[(673.00**3)/(4.29)]**.2 = 11.269
10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.610
SOIL CLASSIFICATION IS "A"
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8532
SUBAREA RUNOFF(CFS) = 1.69
TOTAL AREA(ACRES) = .76 TOTAL RUNOFF(CFS) = 1.69

****
FLOW PROCESS FROM NODE 170.90 TO NODE 171.00 IS CODE = 4

```
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<
```

==

DEPTH OF FLOW IN 18.0 INCH PIPE IS 6.4 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) = 3.0
UPSTREAM NODE ELEVATION = 431.47
DOWNSTREAM NODE ELEVATION = 431.32
FLOWLENGTH(FEET) = 37.00 MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) = 1.69
TRAVEL TIME(MIN.) = .21 TC(MIN.) = 11.48

```
****************************************************************************
 FLOW PROCESS FROM NODE   171.00 TO NODE   171.00 IS CODE =  8
 ----------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.583
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6646
 SUBAREA AREA(ACRES) =    1.39   SUBAREA RUNOFF(CFS) =    2.39
 TOTAL AREA(ACRES) =     2.15   TOTAL RUNOFF(CFS) =     4.08
 TC(MIN) =  11.48

****************************************************************************
 FLOW PROCESS FROM NODE   171.00 TO NODE   171.10 IS CODE =  4
 ----------------------------------------------------------------
 >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED PIPESIZE<<<<<
==========================================================================
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.8 INCHES
 PIPEFLOW VELOCITY(FEET/SEC.) =  3.7
 UPSTREAM NODE ELEVATION =  431.22
 DOWNSTREAM NODE ELEVATION =  430.99
 FLOWLENGTH(FEET) =    58.60   MANNING'S N = .013
 GIVEN PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =  1
 PIPEFLOW THRU SUBAREA(CFS) =      4.08
 TRAVEL TIME(MIN.) =    .27    TC(MIN.) =  11.74

****************************************************************************
 FLOW PROCESS FROM NODE   171.10 TO NODE   171.20 IS CODE =  1
 ----------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.74
 RAINFALL INTENSITY(INCH/HR) =  2.55
 TOTAL STREAM AREA(ACRES) =    2.15
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.08

****************************************************************************
 FLOW PROCESS FROM NODE   315.00 TO NODE   172.00 IS CODE =  21
 ----------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
     ASSUMED INITIAL SUBAREA UNIFORM
     DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH =  1090.00
 UPSTREAM ELEVATION =    452.98
 DOWNSTREAM ELEVATION =    442.84
 ELEVATION DIFFERENCE =      10.14
 TC =  .393*[( 1090.00**3)/(    10.14)]**.2 =   16.413
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.099
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6415
 SUBAREA RUNOFF(CFS) =      4.34
 TOTAL AREA(ACRES) =      3.22   TOTAL RUNOFF(CFS) =       4.34

****************************************************************************
 FLOW PROCESS FROM NODE   172.00 TO NODE   171.10 IS CODE =  6
 ----------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 UPSTREAM ELEVATION =    442.84   DOWNSTREAM ELEVATION =    439.10
 STREET LENGTH(FEET) =   503.00    CURB HEIGHT(INCHES) = 6.
```

STREET HALFWIDTH(FEET) = 28.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 14.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1

**TRAVELTIME COMPUTED USING MEAN FLOW(CFS) = 5.36
STREETFLOW MODEL RESULTS:
STREET FLOWDEPTH(FEET) = .41
HALFSTREET FLOODWIDTH(FEET) = 14.34
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.47
PRODUCT OF DEPTH&VELOCITY = 1.02
STREETFLOW TRAVELTIME(MIN) = 3.40 TC(MIN) = 19.81

10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.882
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6296
SUBAREA AREA(ACRES) = 1.72 SUBAREA RUNOFF(CFS) = 2.04
SUMMED AREA(ACRES) = 4.94 TOTAL RUNOFF(CFS) = 6.37
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .45 HALFSTREET FLOODWIDTH(FEET) = 15.99
FLOW VELOCITY(FEET/SEC.) = 2.38 DEPTH*VELOCITY = 1.06

****

FLOW PROCESS FROM NODE 171.10 TO NODE 171.20 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

==

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 19.81
RAINFALL INTENSITY(INCH/HR) = 1.88
TOTAL STREAM AREA(ACRES) = 4.94
PEAK FLOW RATE(CFS) AT CONFLUENCE = 6.37

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	4.08	11.74	2.549	2.15
2	6.37	19.81	1.882	4.94

**********************************WARNING**********************************
IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
****

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	7.86	11.74	2.549
2	9.38	19.81	1.882

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 9.38 Tc(MIN.) = 19.81
TOTAL AREA(ACRES) = 7.09

****

FLOW PROCESS FROM NODE 171.20 TO NODE 171.30 IS CODE = 4

>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<

```
==========================================================================
 PIPEFLOW VELOCITY(FEET/SEC.) =  5.3
 UPSTREAM NODE ELEVATION =  430.87
 DOWNSTREAM NODE ELEVATION =  430.64
 FLOWLENGTH(FEET) =   58.74  MANNING'S N = .013
 GIVEN PIPE DIAMETER(INCH) = 18.00   NUMBER OF PIPES =  1
 PIPEFLOW THRU SUBAREA(CFS) =     9.38
 TRAVEL TIME(MIN.) =   .18   TC(MIN.) = 20.00
```

End Drainage Area "G"

Begin Drainage Area "H1"

```
****************************************************************************
 FLOW PROCESS FROM NODE   240.00 TO NODE   245.00 IS CODE =  21
 ----------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
     ASSUMED INITIAL SUBAREA UNIFORM
     DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH =  640.00
 UPSTREAM ELEVATION =   464.00
 DOWNSTREAM ELEVATION =   457.61
 ELEVATION DIFFERENCE =     6.39
 TC =  .393*[( 640.00**3)/(    6.39)]**.2 =  13.078
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.394
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6561
 SUBAREA RUNOFF(CFS) =     3.06
 TOTAL AREA(ACRES) =     1.95  TOTAL RUNOFF(CFS) =     3.06

****************************************************************************
 FLOW PROCESS FROM NODE   245.00 TO NODE   250.00 IS CODE =  6
 ----------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 UPSTREAM ELEVATION =   457.61  DOWNSTREAM ELEVATION =   451.60
 STREET LENGTH(FEET) =  814.00  CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
 INTERIOR STREET CROSSFALL(DECIMAL) =  .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  .055

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2

     **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =    6.91
  STREETFLOW MODEL RESULTS:
     STREET FLOWDEPTH(FEET) =  .39
     HALFSTREET FLOODWIDTH(FEET) =  12.50
     AVERAGE FLOW VELOCITY(FEET/SEC.) =  2.02
     PRODUCT OF DEPTH&VELOCITY =    .79
 STREETFLOW TRAVELTIME(MIN) =  6.72  TC(MIN) =  19.80

  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.883
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6296
 SUBAREA AREA(ACRES) =    6.28  SUBAREA RUNOFF(CFS) =   7.44
 SUMMED AREA(ACRES) =    8.23  TOTAL RUNOFF(CFS) =    10.51
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) = .43  HALFSTREET FLOODWIDTH(FEET) = 14.50
 FLOW VELOCITY(FEET/SEC.) = 2.33  DEPTH*VELOCITY =  1.01


****************************************************************************
```

```
FLOW PROCESS FROM NODE   250.00 TO NODE   250.10 IS CODE =  7
--------------------------------------------------------------------
>>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
==========================================================================
USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN) = 19.80   RAIN INTENSITY(INCH/HOUR) = 1.88
TOTAL AREA(ACRES) =     4.12   TOTAL RUNOFF(CFS) =      5.26


****************************************************************************
FLOW PROCESS FROM NODE   250.10 TO NODE   275.00 IS CODE =  6
--------------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
UPSTREAM ELEVATION =    451.60   DOWNSTREAM ELEVATION =    446.89
STREET LENGTH(FEET) =   690.00   CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
INTERIOR STREET CROSSFALL(DECIMAL) =  .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

    **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =    7.55
  STREETFLOW MODEL RESULTS:
    STREET FLOWDEPTH(FEET) =  .39
    HALFSTREET FLOODWIDTH(FEET) =  12.50
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   2.20
    PRODUCT OF DEPTH&VELOCITY =    .87
STREETFLOW TRAVELTIME(MIN) =  5.22   TC(MIN) =  25.02

 10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.644
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6152
SUBAREA AREA(ACRES) =    4.57   SUBAREA RUNOFF(CFS) =   4.62
SUMMED AREA(ACRES) =    8.69   TOTAL RUNOFF(CFS) =      9.88
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .43   HALFSTREET FLOODWIDTH(FEET) = 14.50
FLOW VELOCITY(FEET/SEC.) = 2.19   DEPTH*VELOCITY =    .95


****************************************************************************
FLOW PROCESS FROM NODE   275.00 TO NODE   265.00 IS CODE =  4
--------------------------------------------------------------------
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<
==========================================================================
DEPTH OF FLOW IN  24.0 INCH PIPE IS   8.2 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) =  10.5
UPSTREAM NODE ELEVATION =   438.57
DOWNSTREAM NODE ELEVATION =   435.57
FLOWLENGTH(FEET) =    82.83   MANNING'S N =  .013
GIVEN PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
PIPEFLOW THRU SUBAREA(CFS) =       9.88
TRAVEL TIME(MIN.) =    .13    TC(MIN.) =  25.15
```

End Drainage Area "H1"

Begin Drainage Area "H2"

□

```
FLOW PROCESS FROM NODE   250.00 TO NODE   250.00 IS CODE =
--------------------------------------------------------------------
>>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
==========================================================================
USER-SPECIFIED VALUES ARE AS FOLLOWS:
```

TC(MIN) = 19.80 RAIN INTENSITY(INCH/HOUR) = 1.88
TOTAL AREA(ACRES) = 4.12 TOTAL RUNOFF(CFS) = 5.26

****

FLOW PROCESS FROM NODE 250.00 TO NODE 251.00 IS CODE = 6

>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<

==

UPSTREAM ELEVATION = 451.60 DOWNSTREAM ELEVATION = 449.76
STREET LENGTH(FEET) = 235.00 CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

**TRAVELTIME COMPUTED USING MEAN FLOW(CFS) = 12.57
STREETFLOW MODEL RESULTS:
STREET FLOWDEPTH(FEET) = .45
HALFSTREET FLOODWIDTH(FEET) = 15.50
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.46
PRODUCT OF DEPTH&VELOCITY = 1.12
STREETFLOW TRAVELTIME(MIN) = 1.59 TC(MIN) = 21.39

10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.800
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7074
SUBAREA AREA(ACRES) = 11.49 SUBAREA RUNOFF(CFS) = 14.63
SUMMED AREA(ACRES) = 15.61 TOTAL RUNOFF(CFS) = 19.89
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .51 HALFSTREET FLOODWIDTH(FEET) = 18.00 ⟹
FLOW VELOCITY(FEET/SEC.) = 2.79 DEPTH*VELOCITY = 1.43

SEE FIGURE 4
S=0.00783
STREET CAPACITY = 27.91 CFS
OK

****

FLOW PROCESS FROM NODE 251.00 TO NODE 252.00 IS CODE = 6

>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<

==

UPSTREAM ELEVATION = 449.76 DOWNSTREAM ELEVATION = 447.80
STREET LENGTH(FEET) = 220.00 CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

**TRAVELTIME COMPUTED USING MEAN FLOW(CFS) = 24.44
STREET FLOWING FULL
STREETFLOW MODEL RESULTS:
NOTE: STREETFLOW EXCEEDS TOP OF CURB.
THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
STREET FLOWDEPTH(FEET) = .53
HALFSTREET FLOODWIDTH(FEET) = 18.00
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.12
PRODUCT OF DEPTH&VELOCITY = 1.66
STREETFLOW TRAVELTIME(MIN) = 1.18 TC(MIN) = 22.56

10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.745
SOIL CLASSIFICATION IS "A"
CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7051
SUBAREA AREA(ACRES) = 7.40 SUBAREA RUNOFF(CFS) = 9.11
SUMMED AREA(ACRES) = 23.01 TOTAL RUNOFF(CFS) = 28.99

END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .55 HALFSTREET FLOODWIDTH(FEET) = 18.00 ⇒ SEE FIGURE 4
FLOW VELOCITY(FEET/SEC.) = 3.40 DEPTH*VELOCITY = 1.88

S=0.00891
STREET CAPACITY = 29.77 CFS
OK

==

END OF STUDY SUMMARY:
PEAK FLOW RATE(CFS) = 28.99 Tc(MIN.) = 22.56
TOTAL AREA(ACRES) = 23.01

==

END OF RATIONAL METHOD ANALYSIS

End Drainage Area "H2"

Begin Drainage Area "H4"

****

FLOW PROCESS FROM NODE 210.00 TO NODE 215.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

==

ASSUMED INITIAL SUBAREA UNIFORM
DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH = 1090.00
UPSTREAM ELEVATION = 470.00
DOWNSTREAM ELEVATION = 461.72
ELEVATION DIFFERENCE = 8.28
TC = .393*[(1090.00**3)/(8.28)]**.2 = 17.092
10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.050
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6389
SUBAREA RUNOFF(CFS) = 4.78
TOTAL AREA(ACRES) = 3.65 TOTAL RUNOFF(CFS) = 4.78

****

FLOW PROCESS FROM NODE 215.00 TO NODE 225.00 IS CODE = 6

>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<

==

UPSTREAM ELEVATION = 461.72 DOWNSTREAM ELEVATION = 455.04
STREET LENGTH(FEET) = 708.00 CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

**TRAVELTIME COMPUTED USING MEAN FLOW(CFS) = 8.63
STREETFLOW MODEL RESULTS:
STREET FLOWDEPTH(FEET) = .39
HALFSTREET FLOODWIDTH(FEET) = 12.50
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.52
PRODUCT OF DEPTH&VELOCITY = .99
STREETFLOW TRAVELTIME(MIN) = 4.68 TC(MIN) = 21.77

10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.782
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6237
SUBAREA AREA(ACRES) = 6.85 SUBAREA RUNOFF(CFS) = 7.61
SUMMED AREA(ACRES) = 10.50 TOTAL RUNOFF(CFS) = 12.39
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .43 HALFSTREET FLOODWIDTH(FEET) = 14.50
FLOW VELOCITY(FEET/SEC.) = 2.75 DEPTH*VELOCITY = 1.19

```
****************************************************************************
 FLOW PROCESS FROM NODE   225.00 TO NODE   225.10 IS CODE =  1
 ----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) = 21.77
 RAINFALL INTENSITY(INCH/HR) =  1.78
 TOTAL STREAM AREA(ACRES) =  10.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.39

****************************************************************************
 FLOW PROCESS FROM NODE   220.00 TO NODE   221.00 IS CODE =  21
 ----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
     ASSUMED INITIAL SUBAREA UNIFORM
     DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH =   750.00
 UPSTREAM ELEVATION =    469.00
 DOWNSTREAM ELEVATION =    459.50
 ELEVATION DIFFERENCE =      9.50
 TC = .393*[(  750.00**3)/(     9.50)]**.2 =   13.287
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.373
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6551
 SUBAREA RUNOFF(CFS) =     10.43
 TOTAL AREA(ACRES) =      6.71   TOTAL RUNOFF(CFS) =     10.43

****************************************************************************
 FLOW PROCESS FROM NODE   221.00 TO NODE   225.00 IS CODE =  6
 ----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
 UPSTREAM ELEVATION =    459.50  DOWNSTREAM ELEVATION =    455.04
 STREET LENGTH(FEET) =   610.00   CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  16.00
 INTERIOR STREET CROSSFALL(DECIMAL) =   .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .055

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2

     **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   11.39
   STREETFLOW MODEL RESULTS:
     STREET FLOWDEPTH(FEET) =   .43
     HALFSTREET FLOODWIDTH(FEET) =   14.50
     AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.53
     PRODUCT OF DEPTH&VELOCITY =    1.10
 STREETFLOW TRAVELTIME(MIN) =   4.02   TC(MIN) =  17.31

  10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.035
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6381
 SUBAREA AREA(ACRES) =    1.47   SUBAREA RUNOFF(CFS) =    1.91
 SUMMED AREA(ACRES) =    8.18   TOTAL RUNOFF(CFS) =     12.34
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) = .45   HALFSTREET FLOODWIDTH(FEET) = 15.50
 FLOW VELOCITY(FEET/SEC.) = 2.42   DEPTH*VELOCITY =   1.10

****************************************************************************
 FLOW PROCESS FROM NODE   225.00 TO NODE   225.10 IS CODE =  1
 ----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 17.31
RAINFALL INTENSITY(INCH/HR) = 2.04
TOTAL STREAM AREA(ACRES) = 8.18
PEAK FLOW RATE(CFS) AT CONFLUENCE = 12.34

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	12.39	21.77	1.782	10.50
2	12.34	17.31	2.035	8.18

*********************************WARNING**********************************
IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
****

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	22.19	17.31	2.035
2	23.19	21.77	1.782

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 23.19 Tc(MIN.) = 21.77
TOTAL AREA(ACRES) = 18.68

****

FLOW PROCESS FROM NODE 225.10 TO NODE 200.00 IS CODE = 6

>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
==

UPSTREAM ELEVATION = 455.04 DOWNSTREAM ELEVATION = 453.60
STREET LENGTH(FEET) = 210.00 CURB HEIGHT(INCHES) = 6.
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK = 16.00
INTERIOR STREET CROSSFALL(DECIMAL) = .020
OUTSIDE STREET CROSSFALL(DECIMAL) = .055

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

**TRAVELTIME COMPUTED USING MEAN FLOW(CFS) = 26.31
STREET FLOWING FULL
STREETFLOW MODEL RESULTS:
NOTE: STREETFLOW EXCEEDS TOP OF CURB.
THE FOLLOWING STREETFLOW RESULTS ARE BASED ON THE ASSUMPTION
THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
STREET FLOWDEPTH(FEET) = .55
HALFSTREET FLOODWIDTH(FEET) = 18.00
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.08
PRODUCT OF DEPTH&VELOCITY = 1.70
STREETFLOW TRAVELTIME(MIN) = 1.14 TC(MIN) = 22.91

10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.730
SOIL CLASSIFICATION IS "A"
SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6206
SUBAREA AREA(ACRES) = 5.81 SUBAREA RUNOFF(CFS) = 6.24
SUMMED AREA(ACRES) = 24.49 TOTAL RUNOFF(CFS) = 29.43
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) = .57 HALFSTREET FLOODWIDTH(FEET) = 18.00 ⟹ THIS PORTION IS NOT WITHIN TRACT 28639-1 IMPROVEMENTS

FLOW VELOCITY(FEET/SEC.) = 3.19 DEPTH*VELOCITY = 1.82

End Drainage Area "H4"

Begin Drainage Area "I"

```
****************************************************************************
 FLOW PROCESS FROM NODE   315.00 TO NODE   320.00 IS CODE = 21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
      ASSUMED INITIAL SUBAREA UNIFORM
      DEVELOPMENT IS CONDOMINIUM
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH =  840.00
 UPSTREAM ELEVATION =   453.10
 DOWNSTREAM ELEVATION =    445.18
 ELEVATION DIFFERENCE =     7.92
 TC = .359*[( 840.00**3)/(    7.92)]**.2 =  13.495
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.351
 SOIL CLASSIFICATION IS "A"
 CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7279
 SUBAREA RUNOFF(CFS) =     9.50
 TOTAL AREA(ACRES) =     5.55   TOTAL RUNOFF(CFS) =     9.50

****************************************************************************
 FLOW PROCESS FROM NODE   320.00 TO NODE   325.00 IS CODE =  6
----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM ELEVATION =   445.18   DOWNSTREAM ELEVATION =   442.57
 STREET LENGTH(FEET) =  238.00   CURB HEIGHT(INCHES) = 6.
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  16.00
 INTERIOR STREET CROSSFALL(DECIMAL) =  .020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  .055

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2

     **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =  11.63
   STREETFLOW MODEL RESULTS:
     STREET FLOWDEPTH(FEET) =  .41
     HALFSTREET FLOODWIDTH(FEET) =  13.50
     AVERAGE FLOW VELOCITY(FEET/SEC.) =  2.95
     PRODUCT OF DEPTH&VELOCITY =   1.22
 STREETFLOW TRAVELTIME(MIN) =   1.34   TC(MIN) =  14.84

  10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.225
 SOIL CLASSIFICATION IS "A"
 CONDOMINIUM DEVELOPMENT RUNOFF COEFFICIENT = .7236
 SUBAREA AREA(ACRES) =    2.65   SUBAREA RUNOFF(CFS) =    4.27
 SUMMED AREA(ACRES) =    8.20   TOTAL RUNOFF(CFS) =     13.77
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) = .43   HALFSTREET FLOODWIDTH(FEET) = 14.50
 FLOW VELOCITY(FEET/SEC.) = 3.06   DEPTH*VELOCITY =   1.33

****************************************************************************
 FLOW PROCESS FROM NODE   325.00 TO NODE   326.00 IS CODE =  4
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED PIPESIZE<<<<<
============================================================================
 DEPTH OF FLOW IN 24.0 INCH PIPE IS   7.2 INCHES
 PIPEFLOW VELOCITY(FEET/SEC.) = 17.5
```

UPSTREAM NODE ELEVATION = 438.89
DOWNSTREAM NODE ELEVATION = 434.61
FLOWLENGTH(FEET) = 37.00 MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) = 13.77
TRAVEL TIME(MIN.) = .04 TC(MIN.) = 14.87

End Drainage Area "I"

Begin Drainage Area "K2"

```
****************************************************************************
 FLOW PROCESS FROM NODE   351.00 TO NODE   352.00 IS CODE = 21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
     ASSUMED INITIAL SUBAREA UNIFORM
     DEVELOPMENT IS APARTMENT
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH =   630.00
 UPSTREAM ELEVATION =   442.00
 DOWNSTREAM ELEVATION =   438.65
 ELEVATION DIFFERENCE =     3.35
 TC = .323*[(  630.00**3)/(    3.35)]**.2 =  12.117
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.503
 SOIL CLASSIFICATION IS "A"
 APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8044
 SUBAREA RUNOFF(CFS) =     7.73
 TOTAL AREA(ACRES) =     3.84   TOTAL RUNOFF(CFS) =     7.73


****************************************************************************
 FLOW PROCESS FROM NODE   352.00 TO NODE   353.00 IS CODE =  6
----------------------------------------------------------------------------
 >>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM ELEVATION =   438.65  DOWNSTREAM ELEVATION =   435.93
 STREET LENGTH(FEET) =   430.00   CURB HEIGHT(INCHES) = 8.
 STREET HALFWIDTH(FEET) = 32.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  16.00
 INTERIOR STREET CROSSFALL(DECIMAL) =  .020
 OUTSIDE STREET CROSSFALL(DECIMAL) =  .020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

     **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   10.19
   STREETFLOW MODEL RESULTS:
     STREET FLOWDEPTH(FEET) =  .55
     HALFSTREET FLOODWIDTH(FEET) =  19.34
     AVERAGE FLOW VELOCITY(FEET/SEC.) =   2.59
     PRODUCT OF DEPTH&VELOCITY =   1.41
 STREETFLOW TRAVELTIME(MIN) =   2.77   TC(MIN) =  14.88

  10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.222
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6478
 SUBAREA AREA(ACRES) =    3.41   SUBAREA RUNOFF(CFS) =    4.91
 SUMMED AREA(ACRES) =    7.25   TOTAL RUNOFF(CFS) =    12.64
 END OF SUBAREA STREETFLOW HYDRAULICS:
 DEPTH(FEET) = .58   HALFSTREET FLOODWIDTH(FEET) = 21.22
 FLOW VELOCITY(FEET/SEC.) = 2.69   DEPTH*VELOCITY =   1.57


****************************************************************************
 FLOW PROCESS FROM NODE   353.00 TO NODE   353.10 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
========================================================================
 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 14.88
 RAINFALL INTENSITY(INCH/HR) = 2.22
 TOTAL STREAM AREA(ACRES) = 7.25
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    12.64


****************************************************************************
 FLOW PROCESS FROM NODE  351.00 TO NODE  353.00 IS CODE = 21
----------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
     ASSUMED INITIAL SUBAREA UNIFORM
     DEVELOPMENT IS COMMERCIAL
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH = 1030.00
 UPSTREAM ELEVATION =   442.00
 DOWNSTREAM ELEVATION =   435.93
 ELEVATION DIFFERENCE =     6.07
 TC = .303*[( 1030.00**3)/(   6.07)]**.2 =  13.572
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.344
 SOIL CLASSIFICATION IS "A"
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8507
 SUBAREA RUNOFF(CFS) =    2.43
 TOTAL AREA(ACRES) =     1.22  TOTAL RUNOFF(CFS) =     2.43


****************************************************************************
 FLOW PROCESS FROM NODE  353.00 TO NODE  353.10 IS CODE =  1
----------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
========================================================================
 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 13.57
 RAINFALL INTENSITY(INCH/HR) = 2.34
 TOTAL STREAM AREA(ACRES) = 1.22
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    2.43

 ** CONFLUENCE DATA **
 STREAM   RUNOFF    Tc    INTENSITY    AREA
 NUMBER    (CFS)  (MIN.)  (INCH/HOUR)  (ACRE)
    1      12.64   14.88    2.222       7.25
    2       2.43   13.57    2.344       1.22

*********************************WARNING**********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
****************************************************************************

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM   RUNOFF    Tc    INTENSITY
 NUMBER    (CFS)  (MIN.)  (INCH/HOUR)
    1      13.96   13.57    2.344
    2      14.94   14.88    2.222

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    14.94  Tc(MIN.) =  14.88
 TOTAL AREA(ACRES) =     8.47


****************************************************************************
 FLOW PROCESS FROM NODE  353.10 TO NODE  354.00 IS CODE =  6
```

```
------------------------------------------------------------
>>>>>COMPUTE STREETFLOW TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM ELEVATION =   435.93  DOWNSTREAM ELEVATION =   429.90
STREET LENGTH(FEET) =   680.00  CURB HEIGHT(INCHES) = 8.
STREET HALFWIDTH(FEET) = 28.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK =  14.00
INTERIOR STREET CROSSFALL(DECIMAL) =  .020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  .020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1

   **TRAVELTIME COMPUTED USING MEAN FLOW(CFS) =   15.76
 STREETFLOW MODEL RESULTS:
   STREET FLOWDEPTH(FEET) =  .58
   HALFSTREET FLOODWIDTH(FEET) =  21.09
   AVERAGE FLOW VELOCITY(FEET/SEC.) =   3.40
   PRODUCT OF DEPTH&VELOCITY =   1.97
STREETFLOW TRAVELTIME(MIN) =   3.34   TC(MIN) =  18.22

 10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.976
SOIL CLASSIFICATION IS "A"
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8470
SUBAREA AREA(ACRES) =     .97   SUBAREA RUNOFF(CFS) =    1.62
SUMMED AREA(ACRES) =    9.44   TOTAL RUNOFF(CFS) =     16.57
END OF SUBAREA STREETFLOW HYDRAULICS:
DEPTH(FEET) =  .60   HALFSTREET FLOODWIDTH(FEET) = 21.91
FLOW VELOCITY(FEET/SEC.) =  3.32   DEPTH*VELOCITY =   1.98

****************************************************************************
FLOW PROCESS FROM NODE   354.00 TO NODE   355.00 IS CODE =  4
------------------------------------------------------------
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<
============================================================================
DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.5 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) =   5.1
UPSTREAM NODE ELEVATION =   425.33
DOWNSTREAM NODE ELEVATION =   425.04
FLOWLENGTH(FEET) =     73.62   MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
PIPEFLOW THRU SUBAREA(CFS) =     16.57
TRAVEL TIME(MIN.) =    .24    TC(MIN.) =  18.46

****************************************************************************
FLOW PROCESS FROM NODE   355.00 TO NODE   355.10 IS CODE =  8
------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.961
SOIL CLASSIFICATION IS "A"
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8468
SUBAREA AREA(ACRES) =     1.91   SUBAREA RUNOFF(CFS) =    3.17
TOTAL AREA(ACRES) =     11.35   TOTAL RUNOFF(CFS) =    19.74
TC(MIN) =  18.46

****************************************************************************
FLOW PROCESS FROM NODE   355.10 TO NODE   356.00 IS CODE =  4
------------------------------------------------------------
>>>>>COMPUTE PIPEFLOW TRAVELTIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE<<<<<
============================================================================
DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.7 INCHES
PIPEFLOW VELOCITY(FEET/SEC.) =   5.5
UPSTREAM NODE ELEVATION =   425.03
DOWNSTREAM NODE ELEVATION =   424.50
```

```
FLOWLENGTH(FEET) =  131.62   MANNING'S N = .013
GIVEN PIPE DIAMETER(INCH) = 30.00   NUMBER OF PIPES = 1
PIPEFLOW THRU SUBAREA(CFS) =    19.74
TRAVEL TIME(MIN.) =   .40   TC(MIN.) = 18.86

****************************************************************************
 FLOW PROCESS FROM NODE  289.00 TO NODE  289.10 IS CODE = 21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
    ASSUMED INITIAL SUBAREA UNIFORM
    DEVELOPMENT IS SINGLE FAMILY(1/2 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH =  600.00
 UPSTREAM ELEVATION =   445.00
 DOWNSTREAM ELEVATION =   439.00
 ELEVATION DIFFERENCE =     6.00
 TC = .422*[( 600.00**3)/(   6.00)]**.2 =  13.699
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.331
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/2 ACRE LOT) RUNOFF COEFFICIENT = .6037
 SUBAREA RUNOFF(CFS) =     6.16
 TOTAL AREA(ACRES) =     4.38   TOTAL RUNOFF(CFS) =     6.16

****************************************************************************
 FLOW PROCESS FROM NODE  289.10 TO NODE  290.00 IS CODE = 51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =   439.00
 DOWNSTREAM NODE ELEVATION =   435.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   400.00
 CHANNEL SLOPE =  .0100
 CHANNEL BASE(FEET) =   3.00  "Z" FACTOR =  4.000
 MANNING'S FACTOR = .025  MAXIMUM DEPTH(FEET) =  1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     6.16
 FLOW VELOCITY(FEET/SEC) =  2.81   FLOW DEPTH(FEET) =   .45
 TRAVEL TIME(MIN.) =  2.37   TC(MIN.) = 16.07

****************************************************************************
 FLOW PROCESS FROM NODE  290.00 TO NODE  290.10 IS CODE =  8
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.125
 SOIL CLASSIFICATION IS "A"
 SINGLE-FAMILY(1/2 ACRE LOT) RUNOFF COEFFICIENT = .5914
 SUBAREA AREA(ACRES) =    6.72   SUBAREA RUNOFF(CFS) =    8.45
 TOTAL AREA(ACRES) =    11.10   TOTAL RUNOFF(CFS) =   14.61
 TC(MIN) =  16.07
```

End Drainage Area “K2”

Unit Hydrograph Analyses

```
****************************************************************************

          U N I T - H Y D R O G R A P H   A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
                     (RCFC&WCD) 1978 HYDROLOGY MANUAL

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

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
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                       Especially prepared for:

                    MAINIERO, SMITH AND ASSOCIATES

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>


**********DESCRIPTION OF RESULTS********************************************
* Rio Vista Village                                                        *
* Area B                                                                   *
* 100 Year, 24 Hour Storm                                                  *
****************************************************************************

****************************************************************************
         WATERCOURSE LENGTH =     2095.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =    1145.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =      16.150 FEET
         MANNINGS FRICTION FACTOR ALONG WATERCOURSE =  .015
         WATERSHED AREA =      22.260 ACRES
         UNIT HYDROGRAPH TIME UNIT =  15.000 MINUTES
         DESERT S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =    .325
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) =  .900
         MINIMUM SOIL-LOSS RATE(INCH/HOUR) =    .160
         BASEFLOW =   .000 CFS/SQUARE-MILE
         USER-ENTERED RAINFALL =  4.50 INCHES
         PROGRAM NUMBER  9 SELECTED


         WATERCOURSE "LAG" TIME =      .070 HOURS
         UNIT INTERVAL PERCENTAGE OF LAG-TIME = 356.674
         HYDROGRAPH BASEFLOW =      .000 CFS
         RCFC&WCD AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 1.0000



<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

                    Advanced Engineering Software [AES]
                              SERIAL No.I06181
                    VER. 1.6C     RELEASE DATE: 2/21/86

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****************************************************************************
                       UNIT HYDROGRAPH DETERMINATION
```

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	61.581	55.260
2	96.909	31.702
3	99.901	2.685
4	100.000	.089

```
****************************************************************************
```

****

UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	.0090	.0081	.0009
2	.0135	.0121	.0013
3	.0135	.0121	.0013
4	.0180	.0162	.0018
5	.0135	.0121	.0013
6	.0135	.0121	.0013
7	.0135	.0121	.0013
8	.0180	.0162	.0018
9	.0180	.0162	.0018
10	.0180	.0162	.0018
11	.0225	.0202	.0022
12	.0225	.0202	.0022
13	.0225	.0202	.0022
14	.0225	.0202	.0022
15	.0225	.0202	.0022
16	.0270	.0243	.0027
17	.0270	.0243	.0027
18	.0315	.0283	.0031
19	.0315	.0283	.0031
20	.0360	.0324	.0036
21	.0270	.0243	.0027
22	.0315	.0283	.0031
23	.0360	.0324	.0036
24	.0360	.0324	.0036
25	.0405	.0364	.0040
26	.0405	.0364	.0040
27	.0450	.0405	.0045
28	.0450	.0405	.0045
29	.0450	.0405	.0045
30	.0495	.0445	.0049
31	.0540	.0486	.0054
32	.0585	.0526	.0058
33	.0675	.0607	.0067
34	.0675	.0607	.0067
35	.0720	.0648	.0072
36	.0765	.0688	.0076
37	.0855	.0769	.0085
38	.0900	.0810	.0090
39	.0945	.0850	.0094
40	.0990	.0863	.0127
41	.0675	.0607	.0067
42	.0675	.0607	.0067
43	.0900	.0810	.0090
44	.0900	.0810	.0090
45	.0855	.0769	.0085
46	.0855	.0769	.0085
47	.0765	.0688	.0076
48	.0810	.0729	.0081
49	.1125	.0754	.0371
50	.1170	.0742	.0428
51	.1260	.0731	.0529
52	.1305	.0720	.0585
53	.1530	.0709	.0821
54	.1530	.0698	.0832
55	.1035	.0687	.0348
56	.1035	.0676	.0359
57	.1215	.0666	.0549
58	.1170	.0655	.0515
59	.1170	.0645	.0525
60	.1125	.0635	.0490
61	.1080	.0625	.0455
62	.1035	.0616	.0419
63	.0855	.0606	.0249
64	.0855	.0596	.0259
65	.0180	.0162	.0018

66	.0180	.0162	.0018
67	.0135	.0121	.0013
68	.0135	.0121	.0013
69	.0225	.0202	.0022
70	.0225	.0202	.0022
71	.0225	.0202	.0022
72	.0180	.0162	.0018
73	.0180	.0162	.0018
74	.0180	.0162	.0018
75	.0135	.0121	.0013
76	.0090	.0081	.0009
77	.0135	.0121	.0013
78	.0180	.0162	.0018
79	.0135	.0121	.0013
80	.0090	.0081	.0009
81	.0135	.0121	.0013
82	.0135	.0121	.0013
83	.0135	.0121	.0013
84	.0090	.0081	.0009
85	.0135	.0121	.0013
86	.0090	.0081	.0009
87	.0135	.0121	.0013
88	.0090	.0081	.0009
89	.0135	.0121	.0013
90	.0090	.0081	.0009
91	.0090	.0081	.0009
92	.0090	.0081	.0009
93	.0090	.0081	.0009
94	.0090	.0081	.0009
95	.0090	.0081	.0009
96	.0090	.0081	.0009

TOTAL STORM RAINFALL(INCHES) = 4.50
TOTAL SOIL-LOSS(INCHES) = 3.46
TOTAL EFFECTIVE RAINFALL(INCHES) = 1.04

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 6.4158
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 1.9303

```
***************************************************************************

        RCFC&WCD 24-HOUR RUNOFF HYDROGRAPH

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

        HYDROGRAPH IN FIFTEEN-MINUTE INTERVALS(CFS)

---------------------------------------------------------------------------
INTERVAL# VOLUME(AF)   Q(CFS) 0.        2.5        5.0        7.5       10.0
---------------------------------------------------------------------------
      1       .0010       .05  Q         .         .         .         .
      2       .0032       .10  Q         .         .         .         .
      3       .0056       .12  Q         .         .         .         .
      4       .0086       .15  Q         .         .         .         .
      5       .0114       .14  Q         .         .         .         .
      6       .0140       .12  Q         .         .         .         .
      7       .0165       .12  Q         .         .         .         .
      8       .0195       .15  Q         .         .         .         .
      9       .0228       .16  Q         .         .         .         .
     10       .0261       .16  Q         .         .         .         .
     11       .0300       .19  Q         .         .         .         .
     12       .0341       .20  Q         .         .         .         .
     13       .0383       .20  Q         .         .         .         .
     14       .0425       .20  Q         .         .         .         .
     15       .0467       .20  Q         .         .         .         .
     16       .0513       .23  QV        .         .         .         .
     17       .0563       .24  QV        .         .         .         .
     18       .0618       .27  .Q        .         .         .         .
     19       .0677       .28  .Q        .         .         .         .
     20       .0740       .31  .Q        .         .         .         .
     21       .0796       .27  .Q        .         .         .         .
     22       .0852       .27  .Q        .         .         .         .
     23       .0915       .31  .Q        .         .         .         .
     24       .0982       .32  .QV       .         .         .         .
     25       .1054       .35  .QV       .         .         .         .
     26       .1128       .36  .QV       .         .         .         .
     27       .1209       .39  .QV       .         .         .         .
     28       .1292       .40  .QV       .         .         .         .
     29       .1375       .40  .QV       .         .         .         .
     30       .1464       .43  .Q V      .         .         .         .
     31       .1560       .47  .Q V      .         .         .         .
     32       .1665       .51  . QV      .         .         .         .
     33       .1784       .57  . QV      .         .         .         .
     34       .1909       .60  . QV      .         .         .         .
     35       .2039       .63  . Q V     .         .         .         .
     36       .2177       .67  . Q V     .         .         .         .
     37       .2329       .73  . Q V     .         .         .         .
     38       .2492       .79  .  Q V    .         .         .         .
     39       .2664       .83  .  Q V    .         .         .         .
     40       .2876      1.03  .   QV    .         .         .         .
     41       .3042       .80  .  Q  V   .         .         .         .
     42       .3170       .62  . Q   V   .         .         .         .
     43       .3321       .73  . Q   V   .         .         .         .
     44       .3487       .80  .  Q   V  .         .         .         .
     45       .3648       .78  .  Q   V  .         .         .         .
     46       .3807       .77  .  Q   V  .         .         .         .
     47       .3955       .72  . Q     V .         .         .         .
     48       .4103       .71  . Q     V .         .         .         .
     49       .4584      2.33  .        Q.         .         .         .
     50       .5320      3.56  .         .V  Q     .         .         .
     51       .6225      4.38  .         . V    Q  .         .         .
     52       .7264      5.03  .         .    V    Q         .         .
     53       .8615      6.54  .         .      V  .     Q   .         .
     54      1.0137      7.36  .         .         .V       Q.         .
     55      1.1126      4.79  .         .        Q.  V      .         .
     56      1.1811      3.32  .         .  Q      .   V     .         .
     57      1.2693      4.27  .         .      Q  .     V   .         .
     58      1.3661      4.68  .         .       Q .       V .         .
     59      1.4628      4.68  .         .       Q .         V         .
```

```
  60     1.5561    4.51  .         .     Q .        . V      .
  61     1.6431    4.21  .         .    Q  .        .   V    .
  62     1.7236    3.90  .         .   Q   .        .    V   .
  63     1.7821    2.83  .         .Q      .        .     V  .
  64     1.8303    2.33  .        Q.       .        .      V .
  65     1.8508     .99  .  Q      .       .        .       V.
  66     1.8555     .23  Q         .       .        .       V.
  67     1.8584     .14  Q         .       .        .       V.
  68     1.8609     .12  Q         .       .        .       V.
  69     1.8644     .17  Q         .       .        .       V.
  70     1.8685     .20  Q         .       .        .       V.
  71     1.8727     .20  Q         .       .        .       V.
  72     1.8764     .18  Q         .       .        .       V.
  73     1.8797     .16  Q         .       .        .       V.
  74     1.8831     .16  Q         .       .        .        V.
  75     1.8859     .14  Q         .       .        .        V.
  76     1.8879     .10  Q         .       .        .        V.
  77     1.8901     .11  Q         .       .        .        V.
  78     1.8931     .14  Q         .       .        .        V.
  79     1.8959     .14  Q         .       .        .        V.
  80     1.8979     .10  Q         .       .        .        V.
  81     1.9001     .11  Q         .       .        .        V.
  82     1.9026     .12  Q         .       .        .        V.
  83     1.9051     .12  Q         .       .        .        V.
  84     1.9071     .10  Q         .       .        .        V.
  85     1.9093     .11  Q         .       .        .        V.
  86     1.9113     .10  Q         .       .        .        V.
  87     1.9135     .11  Q         .       .        .        V.
  88     1.9154     .10  Q         .       .        .        V.
  89     1.9176     .11  Q         .       .        .        V.
  90     1.9196     .10  Q         .       .        .        V.
  91     1.9213     .08  Q         .       .        .        V.
  92     1.9230     .08  Q         .       .        .        V.
  93     1.9246     .08  Q         .       .        .        V.
  94     1.9263     .08  Q         .       .        .        V.
  95     1.9280     .08  Q         .       .        .        V.
  96     1.9296     .08  Q         .       .        .        V.
  97     1.9303     .03  Q         .       .        .        V.
  98     1.9303     .00  Q         .       .        .        V.
  99     1.9303     .00  Q         .       .        .        V.
*****************************************************************************
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          U N I T - H Y D R O G R A P H   A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
                    (RCFC&WCD) 1978 HYDROLOGY MANUAL

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Especially prepared for:

MAINIERO, SMITH AND ASSOCIATES

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<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>


**********DESCRIPTION OF RESULTS********************************************
* Rio Vista Village                                                        *
* Area C                                                                   *
* 100 Year, 24 Hour Storm                                                  *
****************************************************************************

****************************************************************************
         WATERCOURSE LENGTH =     1055.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =     565.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =     13.400 FEET
         MANNINGS FRICTION FACTOR ALONG WATERCOURSE =  .015
         WATERSHED AREA =      10.000 ACRES
         UNIT HYDROGRAPH TIME UNIT =  15.000 MINUTES
         DESERT S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =    .350
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) =  .900
         MINIMUM SOIL-LOSS RATE(INCH/HOUR) =    .175
         BASEFLOW =   .000 CFS/SQUARE-MILE
         USER-ENTERED RAINFALL =  4.50 INCHES
         PROGRAM NUMBER  9 SELECTED

         WATERCOURSE "LAG" TIME =      .038 HOURS
         UNIT INTERVAL PERCENTAGE OF LAG-TIME = 665.667
         HYDROGRAPH BASEFLOW =     .000 CFS
         RCFC&WCD AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 1.0000


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                   Advanced Engineering Software [AES]
                          SERIAL No.I06181
                   VER. 1.6C     RELEASE DATE: 2/21/86

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                      UNIT HYDROGRAPH DETERMINATION
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INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	77.804	31.365
2	99.897	8.906
3	100.000	.041

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****************************************************************************
```

UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	.0090	.0081	.0009
2	.0135	.0121	.0013
3	.0135	.0121	.0013
4	.0180	.0162	.0018
5	.0135	.0121	.0013
6	.0135	.0121	.0013
7	.0135	.0121	.0013
8	.0180	.0162	.0018
9	.0180	.0162	.0018
10	.0180	.0162	.0018
11	.0225	.0202	.0022
12	.0225	.0202	.0022
13	.0225	.0202	.0022
14	.0225	.0202	.0022
15	.0225	.0202	.0022
16	.0270	.0243	.0027
17	.0270	.0243	.0027
18	.0315	.0283	.0031
19	.0315	.0283	.0031
20	.0360	.0324	.0036
21	.0270	.0243	.0027
22	.0315	.0283	.0031
23	.0360	.0324	.0036
24	.0360	.0324	.0036
25	.0405	.0364	.0040
26	.0405	.0364	.0040
27	.0450	.0405	.0045
28	.0450	.0405	.0045
29	.0450	.0405	.0045
30	.0495	.0445	.0049
31	.0540	.0486	.0054
32	.0585	.0526	.0058
33	.0675	.0607	.0067
34	.0675	.0607	.0067
35	.0720	.0648	.0072
36	.0765	.0688	.0076
37	.0855	.0769	.0085
38	.0900	.0810	.0090
39	.0945	.0850	.0094
40	.0990	.0891	.0099
41	.0675	.0607	.0067
42	.0675	.0607	.0067
43	.0900	.0810	.0090
44	.0900	.0810	.0090
45	.0855	.0769	.0085
46	.0855	.0769	.0085
47	.0765	.0688	.0076
48	.0810	.0729	.0081
49	.1125	.0813	.0312
50	.1170	.0801	.0369
51	.1260	.0789	.0471
52	.1305	.0777	.0528
53	.1530	.0765	.0765
54	.1530	.0753	.0777
55	.1035	.0742	.0293
56	.1035	.0731	.0304
57	.1215	.0719	.0496
58	.1170	.0708	.0462
59	.1170	.0698	.0472
60	.1125	.0687	.0438
61	.1080	.0676	.0404
62	.1035	.0666	.0369
63	.0855	.0656	.0199
64	.0855	.0646	.0209
65	.0180	.0162	.0018

66	.0180	.0162	.0018
67	.0135	.0121	.0013
68	.0135	.0121	.0013
69	.0225	.0202	.0022
70	.0225	.0202	.0022
71	.0225	.0202	.0022
72	.0180	.0162	.0018
73	.0180	.0162	.0018
74	.0180	.0162	.0018
75	.0135	.0121	.0013
76	.0090	.0081	.0009
77	.0135	.0121	.0013
78	.0180	.0162	.0018
79	.0135	.0121	.0013
80	.0090	.0081	.0009
81	.0135	.0121	.0013
82	.0135	.0121	.0013
83	.0135	.0121	.0013
84	.0090	.0081	.0009
85	.0135	.0121	.0013
86	.0090	.0081	.0009
87	.0135	.0121	.0013
88	.0090	.0081	.0009
89	.0135	.0121	.0013
90	.0090	.0081	.0009
91	.0090	.0081	.0009
92	.0090	.0081	.0009
93	.0090	.0081	.0009
94	.0090	.0081	.0009
95	.0090	.0081	.0009
96	.0090	.0081	.0009

TOTAL STORM RAINFALL(INCHES) = 4.50
TOTAL SOIL-LOSS(INCHES) = 3.55
TOTAL EFFECTIVE RAINFALL(INCHES) = .95

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 2.9566
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = .7929

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         RCFC&WCD 24-HOUR RUNOFF HYDROGRAPH

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         HYDROGRAPH IN FIFTEEN-MINUTE INTERVALS(CFS)

----------------------------------------------------------------------------
INTERVAL# VOLUME(AF)   Q(CFS) 0.        2.5       5.0       7.5      10.0
----------------------------------------------------------------------------
       1       .0006       .03  Q         .         .         .         .
       2       .0016       .05  Q         .         .         .         .
       3       .0027       .05  Q         .         .         .         .
       4       .0042       .07  Q         .         .         .         .
       5       .0054       .06  Q         .         .         .         .
       6       .0065       .05  Q         .         .         .         .
       7       .0076       .05  Q         .         .         .         .
       8       .0090       .07  Q         .         .         .         .
       9       .0105       .07  Q         .         .         .         .
      10       .0120       .07  Q         .         .         .         .
      11       .0138       .09  Q         .         .         .         .
      12       .0157       .09  Q         .         .         .         .
      13       .0176       .09  Q         .         .         .         .
      14       .0194       .09  Q         .         .         .         .
      15       .0213       .09  QV        .         .         .         .
      16       .0235       .10  QV        .         .         .         .
      17       .0257       .11  QV        .         .         .         .
      18       .0283       .12  QV        .         .         .         .
      19       .0309       .13  QV        .         .         .         .
      20       .0338       .14  QV        .         .         .         .
      21       .0362       .12  QV        .         .         .         .
      22       .0388       .12  QV        .         .         .         .
      23       .0417       .14  Q V       .         .         .         .
      24       .0447       .15  Q V       .         .         .         .
      25       .0480       .16  Q V       .         .         .         .
      26       .0513       .16  Q V       .         .         .         .
      27       .0550       .18  Q V       .         .         .         .
      28       .0588       .18  Q V       .         .         .         .
      29       .0625       .18  Q  V      .         .         .         .
      30       .0665       .20  Q  V      .         .         .         .
      31       .0710       .21  Q  V      .         .         .         .
      32       .0757       .23  Q  V      .         .         .         .
      33       .0812       .26  .Q  V     .         .         .         .
      34       .0868       .27  .Q  V     .         .         .         .
      35       .0927       .29  .Q  V     .         .         .         .
      36       .0990       .30  .Q  V     .         .         .         .
      37       .1060       .34  .Q   V    .         .         .         .
      38       .1134       .36  .Q   V    .         .         .         .
      39       .1212       .38  .Q    V   .         .         .         .
      40       .1293       .40  .Q    V   .         .         .         .
      41       .1355       .30  .Q    V   .         .         .         .
      42       .1412       .27  .Q     V  .         .         .         .
      43       .1483       .34  .Q     V  .         .         .         .
      44       .1557       .36  .Q     V  .         .         .         .
      45       .1629       .35  .Q      V .         .         .         .
      46       .1701       .34  .Q      V .         .         .         .
      47       .1766       .32  .Q      V .         .         .         .
      48       .1833       .32  .Q       V.         .         .         .
      49       .2050      1.05  .   Q     V         .         .         .
      50       .2347      1.44  .    Q    .V        .         .         .
      51       .2721      1.81  .      Q  .  V      .         .         .
      52       .3150      2.08  .       Q .    V    .         .         .
      53       .3744      2.87  .         .Q      V .         .         .
      54       .4388      3.12  .         . Q       . V       .         .
      55       .4722      1.61  .     Q   .         .  V      .         .
      56       .4974      1.22  .   Q     .         .    V    .         .
      57       .5351      1.83  .      Q  .         .     V   .         .
      58       .5742      1.89  .      Q  .         .       V .         .
      59       .6133      1.89  .      Q  .         .         V         .
```

```
    60      .6504      1.80   .      Q  .         .         . V       .
    61      .6847      1.66   .     Q   .         .         .   V     .
    62      .7161      1.52   .     Q   .         .         .     V   .
    63      .7358       .95   .  Q      .         .         .      V  .
    64      .7530       .83   .  Q      .         .         .      V  .
    65      .7581       .24   Q         .         .         .       V .
    66      .7596       .07   Q         .         .         .       V .
    67      .7608       .06   Q         .         .         .       V .
    68      .7619       .05   Q         .         .         .       V .
    69      .7636       .08   Q         .         .         .       V .
    70      .7655       .09   Q         .         .         .       V .
    71      .7674       .09   Q         .         .         .       V .
    72      .7689       .08   Q         .         .         .       V .
    73      .7704       .07   Q         .         .         .       V .
    74      .7719       .07   Q         .         .         .       V .
    75      .7732       .06   Q         .         .         .        V.
    76      .7740       .04   Q         .         .         .        V.
    77      .7750       .05   Q         .         .         .        V.
    78      .7764       .07   Q         .         .         .        V.
    79      .7776       .06   Q         .         .         .        V.
    80      .7785       .04   Q         .         .         .        V.
    81      .7795       .05   Q         .         .         .        V.
    82      .7806       .05   Q         .         .         .        V.
    83      .7818       .05   Q         .         .         .        V.
    84      .7826       .04   Q         .         .         .        V.
    85      .7836       .05   Q         .         .         .        V.
    86      .7845       .04   Q         .         .         .        V.
    87      .7855       .05   Q         .         .         .        V.
    88      .7864       .04   Q         .         .         .        V.
    89      .7874       .05   Q         .         .         .        V.
    90      .7882       .04   Q         .         .         .        V.
    91      .7890       .04   Q         .         .         .        V.
    92      .7897       .04   Q         .         .         .        V.
    93      .7905       .04   Q         .         .         .        V.
    94      .7912       .04   Q         .         .         .        V.
    95      .7920       .04   Q         .         .         .        V.
    96      .7927       .04   Q         .         .         .        V.
    97      .7929       .01   Q         .         .         .        V.
    98      .7929       .00   Q         .         .         .        V.
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           U N I T - H Y D R O G R A P H   A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
                   (RCFC&WCD) 1978 HYDROLOGY MANUAL

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                      Especially prepared for:

                   MAINIERO, SMITH AND ASSOCIATES

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>


**********DESCRIPTION OF RESULTS********************************************
* Rio Vista Village                                                        *
* Area D                                                                   *
* 100 Year, 24 Hour Storm                                                  *
****************************************************************************

****************************************************************************
         WATERCOURSE LENGTH =     2260.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =      760.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =      26.400 FEET
         MANNINGS FRICTION FACTOR ALONG WATERCOURSE =  .015
         WATERSHED AREA =       35.260 ACRES
         UNIT HYDROGRAPH TIME UNIT =  15.000 MINUTES
         DESERT S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =    .330
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) =  .900
         MINIMUM SOIL-LOSS RATE(INCH/HOUR) =    .170
         BASEFLOW =   .000 CFS/SQUARE-MILE
         USER-ENTERED RAINFALL =  4.50 INCHES
         PROGRAM NUMBER  9 SELECTED


         WATERCOURSE "LAG" TIME =      .057 HOURS
         UNIT INTERVAL PERCENTAGE OF LAG-TIME = 438.221
         HYDROGRAPH BASEFLOW =     .000 CFS
         RCFC&WCD AREA ADJUSTMENT FACTOR(PLATE E-5.8) =  .9999



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              Advanced Engineering Software [AES]
                      SERIAL No.I0618I
              VER. 1.6C     RELEASE DATE: 2/21/86

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                    UNIT HYDROGRAPH DETERMINATION
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INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	67.556	96.025
2	98.590	44.112
3	99.982	1.979
4	100.000	.025

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UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	.0090	.0081	.0009
2	.0135	.0121	.0013
3	.0135	.0121	.0013
4	.0180	.0162	.0018
5	.0135	.0121	.0013
6	.0135	.0121	.0013
7	.0135	.0121	.0013
8	.0180	.0162	.0018
9	.0180	.0162	.0018
10	.0180	.0162	.0018
11	.0225	.0202	.0022
12	.0225	.0202	.0022
13	.0225	.0202	.0022
14	.0225	.0202	.0022
15	.0225	.0202	.0022
16	.0270	.0243	.0027
17	.0270	.0243	.0027
18	.0315	.0283	.0031
19	.0315	.0283	.0031
20	.0360	.0324	.0036
21	.0270	.0243	.0027
22	.0315	.0283	.0031
23	.0360	.0324	.0036
24	.0360	.0324	.0036
25	.0405	.0364	.0040
26	.0405	.0364	.0040
27	.0450	.0405	.0045
28	.0450	.0405	.0045
29	.0450	.0405	.0045
30	.0495	.0445	.0049
31	.0540	.0486	.0054
32	.0585	.0526	.0058
33	.0675	.0607	.0067
34	.0675	.0607	.0067
35	.0720	.0648	.0072
36	.0765	.0688	.0076
37	.0855	.0769	.0085
38	.0900	.0810	.0090
39	.0945	.0850	.0094
40	.0990	.0874	.0116
41	.0675	.0607	.0067
42	.0675	.0607	.0067
43	.0900	.0810	.0090
44	.0900	.0810	.0090
45	.0855	.0769	.0085
46	.0855	.0769	.0085
47	.0765	.0688	.0076
48	.0810	.0729	.0081
49	.1125	.0768	.0357
50	.1170	.0757	.0413
51	.1260	.0746	.0514
52	.1305	.0735	.0570
53	.1530	.0724	.0806
54	.1530	.0714	.0816
55	.1035	.0703	.0332
56	.1035	.0693	.0342
57	.1215	.0683	.0532
58	.1170	.0673	.0497
59	.1170	.0663	.0507
60	.1125	.0653	.0472
61	.1080	.0643	.0436
62	.1035	.0634	.0401
63	.0855	.0625	.0230
64	.0855	.0615	.0239
65	.0180	.0162	.0018

66	.0180	.0162	.0018
67	.0135	.0121	.0013
68	.0135	.0121	.0013
69	.0225	.0202	.0022
70	.0225	.0202	.0022
71	.0225	.0202	.0022
72	.0180	.0162	.0018
73	.0180	.0162	.0018
74	.0180	.0162	.0018
75	.0135	.0121	.0013
76	.0090	.0081	.0009
77	.0135	.0121	.0013
78	.0180	.0162	.0018
79	.0135	.0121	.0013
80	.0090	.0081	.0009
81	.0135	.0121	.0013
82	.0135	.0121	.0013
83	.0135	.0121	.0013
84	.0090	.0081	.0009
85	.0135	.0121	.0013
86	.0090	.0081	.0009
87	.0135	.0121	.0013
88	.0090	.0081	.0009
89	.0135	.0121	.0013
90	.0090	.0081	.0009
91	.0090	.0081	.0009
92	.0090	.0081	.0009
93	.0090	.0081	.0009
94	.0090	.0081	.0009
95	.0090	.0081	.0009
96	.0090	.0081	.0009

TOTAL STORM RAINFALL(INCHES) = 4.50
TOTAL SOIL-LOSS(INCHES) = 3.49
TOTAL EFFECTIVE RAINFALL(INCHES) = 1.01

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 10.2445
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 2.9756

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         RCFC&WCD 24-HOUR RUNOFF HYDROGRAPH

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         HYDROGRAPH IN FIFTEEN-MINUTE INTERVALS(CFS)

----------------------------------------------------------------------------
INTERVAL# VOLUME(AF)   Q(CFS) 0.        5.0      10.0      15.0      20.0
----------------------------------------------------------------------------
       1       .0018       .09 Q         .         .         .         .
       2       .0053       .17 Q         .         .         .         .
       3       .0092       .19 Q         .         .         .         .
       4       .0141       .24 Q         .         .         .         .
       5       .0185       .21 Q         .         .         .         .
       6       .0224       .19 Q         .         .         .         .
       7       .0264       .19 Q         .         .         .         .
       8       .0313       .24 Q         .         .         .         .
       9       .0365       .25 Q         .         .         .         .
      10       .0418       .26 Q         .         .         .         .
      11       .0480       .30 Q         .         .         .         .
      12       .0546       .32 Q         .         .         .         .
      13       .0612       .32 Q         .         .         .         .
      14       .0678       .32 Q         .         .         .         .
      15       .0744       .32 QV        .         .         .         .
      16       .0819       .36 QV        .         .         .         .
      17       .0898       .38 QV        .         .         .         .
      18       .0986       .43 QV        .         .         .         .
      19       .1079       .45 QV        .         .         .         .
      20       .1180       .49 QV        .         .         .         .
      21       .1268       .42 QV        .         .         .         .
      22       .1356       .43 QV        .         .         .         .
      23       .1458       .49 QV        .         .         .         .
      24       .1563       .51 .QV       .         .         .         .
      25       .1678       .55 .QV       .         .         .         .
      26       .1797       .57 .QV       .         .         .         .
      27       .1924       .62 .QV       .         .         .         .
      28       .2056       .64 .QV       .         .         .         .
      29       .2189       .64 .QV       .         .         .         .
      30       .2330       .68 .Q V      .         .         .         .
      31       .2484       .75 .Q V      .         .         .         .
      32       .2651       .81 .Q V      .         .         .         .
      33       .2840       .92 .Q V      .         .         .         .
      34       .3038       .96 .Q  V     .         .         .         .
      35       .3245      1.00 . Q V     .         .         .         .
      36       .3466      1.07 . Q V     .         .         .         .
      37       .3708      1.17 . Q V     .         .         .         .
      38       .3968      1.26 . Q  V    .         .         .         .
      39       .4241      1.32 . Q  V    .         .         .         .
      40       .4561      1.55 .  Q  V   .         .         .         .
      41       .4804      1.18 . Q   V   .         .         .         .
      42       .5005       .97 .Q    V   .         .         .         .
      43       .5247      1.18 . Q    V  .         .         .         .
      44       .5511      1.27 . Q    V  .         .         .         .
      45       .5766      1.24 . Q    V  .         .         .         .
      46       .6017      1.22 . Q     V .         .         .         .
      47       .6251      1.13 . Q     V .         .         .         .
      48       .6485      1.13 . Q     V .         .         .         .
      49       .7270      3.80 .      Q V.         .         .         .
      50       .8418      5.56 .         .Q        .         .         .
      51       .9829      6.83 .         .  Q      .         .         .
      52      1.1445      7.82 .         .    Q    .         .         .
      53      1.3584     10.35 .         .       V Q         .         .
      54      1.5961     11.51 .         .         .V Q       .         .
      55      1.7396      6.95 .         .  Q      .  V      .         .
      56      1.8410      4.91 .        Q.         .   V     .         .
      57      1.9792      6.69 .         .  Q      .     V   .         .
      58      2.1278      7.19 .         .   Q     .       V .         .
      59      2.2759      7.17 .         .   Q     .         V         .
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    60      2.4178       6.87  .         .  Q      .         . V       .
    61      2.5495       6.37  .         . Q       .         .   V     .
    62      2.6708       5.87  .         .Q        .         .    V    .
    63      2.7548       4.07  .       Q .         .         .      V  .
    64      2.8250       3.40  .     Q   .         .         .      V  .
    65      2.8513       1.28  . Q       .         .         .       V .
    66      2.8575        .30  Q         .         .         .       V .
    67      2.8619        .21  Q         .         .         .       V .
    68      2.8659        .19  Q         .         .         .       V .
    69      2.8717        .28  Q         .         .         .       V .
    70      2.8782        .32  Q         .         .         .       V .
    71      2.8849        .32  Q         .         .         .       V .
    72      2.8906        .28  Q         .         .         .       V .
    73      2.8959        .26  Q         .         .         .       V .
    74      2.9012        .26  Q         .         .         .       V .
    75      2.9056        .21  Q         .         .         .        V.
    76      2.9086        .15  Q         .         .         .        V.
    77      2.9122        .17  Q         .         .         .        V.
    78      2.9170        .23  Q         .         .         .        V.
    79      2.9214        .21  Q         .         .         .        V.
    80      2.9245        .15  Q         .         .         .        V.
    81      2.9281        .17  Q         .         .         .        V.
    82      2.9320        .19  Q         .         .         .        V.
    83      2.9360        .19  Q         .         .         .        V.
    84      2.9390        .15  Q         .         .         .        V.
    85      2.9426        .17  Q         .         .         .        V.
    86      2.9456        .15  Q         .         .         .        V.
    87      2.9492        .17  Q         .         .         .        V.
    88      2.9523        .15  Q         .         .         .        V.
    89      2.9558        .17  Q         .         .         .        V.
    90      2.9589        .15  Q         .         .         .        V.
    91      2.9615        .13  Q         .         .         .        V.
    92      2.9642        .13  Q         .         .         .        V.
    93      2.9668        .13  Q         .         .         .        V.
    94      2.9694        .13  Q         .         .         .        V.
    95      2.9721        .13  Q         .         .         .        V.
    96      2.9747        .13  Q         .         .         .        V.
    97      2.9756        .04  Q         .         .         .        V.
    98      2.9756        .00  Q         .         .         .         V
    99      2.9756        .00  Q         .         .         .         V
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U N I T - H Y D R O G R A P H   A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
(RCFC&WCD) 1978 HYDROLOGY MANUAL

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<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

Especially prepared for:

MAINIERO, SMITH AND ASSOCIATES

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

**********DESCRIPTION OF RESULTS**
* Rio Vista Village *
* Area E *
* 100 Year, 24 Hour Storm *
****

****
WATERCOURSE LENGTH = 1770.000 FEET
LENGTH FROM CONCENTRATION POINT TO CENTROID = 750.000 FEET
ELEVATION VARIATION ALONG WATERCOURSE = 16.400 FEET
MANNINGS FRICTION FACTOR ALONG WATERCOURSE = .015
WATERSHED AREA = 25.450 ACRES
UNIT HYDROGRAPH TIME UNIT = 15.000 MINUTES
DESERT S-GRAPH SELECTED
UNIFORM MEAN SOIL-LOSS(INCH/HOUR) = .328
LOW SOIL-LOSS RATE PERCENT(DECIMAL) = .900
MINIMUM SOIL-LOSS RATE(INCH/HOUR) = .164
BASEFLOW = .000 CFS/SQUARE-MILE
USER-ENTERED RAINFALL = 4.50 INCHES
PROGRAM NUMBER 9 SELECTED

WATERCOURSE "LAG" TIME = .054 HOURS
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 462.479
HYDROGRAPH BASEFLOW = .000 CFS
RCFC&WCD AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 1.0000

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Advanced Engineering Software [AES]
SERIAL No.I06181
VER. 1.6C RELEASE DATE: 2/21/86

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

****
UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	69.026	70.818
2	98.889	30.638
3	99.988	1.127
4	100.000	.013

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UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	.0090	.0081	.0009
2	.0135	.0121	.0013
3	.0135	.0121	.0013
4	.0180	.0162	.0018
5	.0135	.0121	.0013
6	.0135	.0121	.0013
7	.0135	.0121	.0013
8	.0180	.0162	.0018
9	.0180	.0162	.0018
10	.0180	.0162	.0018
11	.0225	.0202	.0022
12	.0225	.0202	.0022
13	.0225	.0202	.0022
14	.0225	.0202	.0022
15	.0225	.0202	.0022
16	.0270	.0243	.0027
17	.0270	.0243	.0027
18	.0315	.0283	.0031
19	.0315	.0283	.0031
20	.0360	.0324	.0036
21	.0270	.0243	.0027
22	.0315	.0283	.0031
23	.0360	.0324	.0036
24	.0360	.0324	.0036
25	.0405	.0364	.0040
26	.0405	.0364	.0040
27	.0450	.0405	.0045
28	.0450	.0405	.0045
29	.0450	.0405	.0045
30	.0495	.0445	.0049
31	.0540	.0486	.0054
32	.0585	.0526	.0058
33	.0675	.0607	.0067
34	.0675	.0607	.0067
35	.0720	.0648	.0072
36	.0765	.0688	.0076
37	.0855	.0769	.0085
38	.0900	.0810	.0090
39	.0945	.0850	.0094
40	.0990	.0870	.0120
41	.0675	.0607	.0067
42	.0675	.0607	.0067
43	.0900	.0810	.0090
44	.0900	.0810	.0090
45	.0855	.0769	.0085
46	.0855	.0769	.0085
47	.0765	.0688	.0076
48	.0810	.0729	.0081
49	.1125	.0762	.0363
50	.1170	.0750	.0420
51	.1260	.0739	.0521
52	.1305	.0728	.0577
53	.1530	.0717	.0813
54	.1530	.0706	.0824
55	.1035	.0695	.0340
56	.1035	.0685	.0350
57	.1215	.0674	.0541
58	.1170	.0664	.0506
59	.1170	.0654	.0516
60	.1125	.0644	.0481
61	.1080	.0634	.0446
62	.1035	.0624	.0411
63	.0855	.0615	.0240
64	.0855	.0605	.0250
65	.0180	.0162	.0018

66	.0180	.0162	.0018
67	.0135	.0121	.0013
68	.0135	.0121	.0013
69	.0225	.0202	.0022
70	.0225	.0202	.0022
71	.0225	.0202	.0022
72	.0180	.0162	.0018
73	.0180	.0162	.0018
74	.0180	.0162	.0018
75	.0135	.0121	.0013
76	.0090	.0081	.0009
77	.0135	.0121	.0013
78	.0180	.0162	.0018
79	.0135	.0121	.0013
80	.0090	.0081	.0009
81	.0135	.0121	.0013
82	.0135	.0121	.0013
83	.0135	.0121	.0013
84	.0090	.0081	.0009
85	.0135	.0121	.0013
86	.0090	.0081	.0009
87	.0135	.0121	.0013
88	.0090	.0081	.0009
89	.0135	.0121	.0013
90	.0090	.0081	.0009
91	.0090	.0081	.0009
92	.0090	.0081	.0009
93	.0090	.0081	.0009
94	.0090	.0081	.0009
95	.0090	.0081	.0009
96	.0090	.0081	.0009

TOTAL STORM RAINFALL(INCHES) = 4.50
TOTAL SOIL-LOSS(INCHES) = 3.47
TOTAL EFFECTIVE RAINFALL(INCHES) = 1.03

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 7.3651
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 2.1771

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

         RCFC&WCD 24-HOUR RUNOFF HYDROGRAPH

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

         HYDROGRAPH IN FIFTEEN-MINUTE INTERVALS(CFS)

---------------------------------------------------------------------------
INTERVAL# VOLUME(AF)   Q(CFS) 0.        2.5       5.0       7.5      10.0
---------------------------------------------------------------------------
      1       .0013       .06  Q         .         .         .         .
      2       .0039       .12  Q         .         .         .         .
      3       .0067       .14  Q         .         .         .         .
      4       .0102       .17  Q         .         .         .         .
      5       .0134       .15  Q         .         .         .         .
      6       .0163       .14  Q         .         .         .         .
      7       .0191       .14  Q         .         .         .         .
      8       .0226       .17  Q         .         .         .         .
      9       .0264       .18  Q         .         .         .         .
     10       .0303       .18  Q         .         .         .         .
     11       .0347       .22  Q         .         .         .         .
     12       .0395       .23  Q         .         .         .         .
     13       .0443       .23  Q         .         .         .         .
     14       .0490       .23  Q         .         .         .         .
     15       .0538       .23  Q         .         .         .         .
     16       .0592       .26  .Q        .         .         .         .
     17       .0649       .28  .Q        .         .         .         .
     18       .0713       .31  .Q        .         .         .         .
     19       .0780       .32  .Q        .         .         .         .
     20       .0853       .36  .Q        .         .         .         .
     21       .0916       .31  .Q        .         .         .         .
     22       .0980       .31  .Q        .         .         .         .
     23       .1053       .35  .Q        .         .         .         .
     24       .1130       .37  .QV       .         .         .         .
     25       .1213       .40  .QV       .         .         .         .
     26       .1298       .41  .QV       .         .         .         .
     27       .1391       .45  .QV       .         .         .         .
     28       .1486       .46  .QV       .         .         .         .
     29       .1581       .46  .QV       .         .         .         .
     30       .1683       .49  .Q V      .         .         .         .
     31       .1795       .54  . QV      .         .         .         .
     32       .1916       .59  . QV      .         .         .         .
     33       .2053       .66  . QV      .         .         .         .
     34       .2196       .69  . Q V     .         .         .         .
     35       .2345       .72  . Q V     .         .         .         .
     36       .2504       .77  .  QV     .         .         .         .
     37       .2680       .85  .  QV     .         .         .         .
     38       .2867       .91  .  Q V    .         .         .         .
     39       .3064       .95  .  Q V    .         .         .         .
     40       .3302      1.15  .   Q V   .         .         .         .
     41       .3479       .86  .  Q  V   .         .         .         .
     42       .3623       .70  . Q   V   .         .         .         .
     43       .3799       .85  .  Q  V   .         .         .         .
     44       .3989       .92  .  Q   V  .         .         .         .
     45       .4173       .89  .  Q   V  .         .         .         .
     46       .4355       .88  .  Q    V .         .         .         .
     47       .4523       .81  .  Q    V .         .         .         .
     48       .4692       .82  .  Q    V .         .         .         .
     49       .5276      2.83  .        V.Q        .         .         .
     50       .6122      4.09  .         .V    Q   .         .         .
     51       .7159      5.02  .         .  V      Q         .         .
     52       .8343      5.73  .         .    V    . Q       .         .
     53       .9910      7.59  .         .       V .         Q         .
     54      1.1644      8.39  .         .         .V        .  Q      .
     55      1.2682      5.02  .         .         Q  V      .         .
     56      1.3429      3.62  .         .   Q     .   V     .         .
     57      1.4450      4.94  .         .        Q.     V   .         .
     58      1.5541      5.28  .         .         .Q      V .         .
     59      1.6629      5.27  .         .         .Q        V         .
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60      1.7672      5.05  .         .         Q         . V       .
61      1.8642      4.69  .         .       Q .         .   V     .
62      1.9536      4.33  .         .      Q  .         .    V    .
63      2.0158      3.01  .         . Q       .         .      V  .
64      2.0686      2.55  .         Q         .         .       V .
65      2.0876       .92  .  Q      .         .         .       V .
66      2.0919       .21  Q         .         .         .       V .
67      2.0951       .15  Q         .         .         .       V .
68      2.0980       .14  Q         .         .         .       V .
69      2.1021       .20  Q         .         .         .       V .
70      2.1069       .23  Q         .         .         .       V .
71      2.1117       .23  Q         .         .         .       V .
72      2.1158       .20  Q         .         .         .       V .
73      2.1196       .19  Q         .         .         .       V .
74      2.1234       .18  Q         .         .         .        V.
75      2.1266       .15  Q         .         .         .        V.
76      2.1288       .11  Q         .         .         .        V.
77      2.1314       .12  Q         .         .         .        V.
78      2.1349       .17  Q         .         .         .        V.
79      2.1380       .15  Q         .         .         .        V.
80      2.1402       .11  Q         .         .         .        V.
81      2.1428       .12  Q         .         .         .        V.
82      2.1457       .14  Q         .         .         .        V.
83      2.1485       .14  Q         .         .         .        V.
84      2.1507       .11  Q         .         .         .        V.
85      2.1533       .12  Q         .         .         .        V.
86      2.1555       .11  Q         .         .         .        V.
87      2.1581       .12  Q         .         .         .        V.
88      2.1603       .11  Q         .         .         .        V.
89      2.1628       .12  Q         .         .         .        V.
90      2.1650       .11  Q         .         .         .        V.
91      2.1669       .09  Q         .         .         .        V.
92      2.1689       .09  Q         .         .         .        V.
93      2.1708       .09  Q         .         .         .        V.
94      2.1727       .09  Q         .         .         .        V.
95      2.1746       .09  Q         .         .         .        V.
96      2.1765       .09  Q         .         .         .        V.
97      2.1771       .03  Q         .         .         .        V.
98      2.1771       .00  Q         .         .         .        V.
99      2.1771       .00  Q         .         .         .        V.
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U N I T - H Y D R O G R A P H   A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
(RCFC&WCD) 1978 HYDROLOGY MANUAL

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<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

Especially prepared for:

MAINIERO, SMITH AND ASSOCIATES

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

**********DESCRIPTION OF RESULTS**
* Rio Vista Village *
* Area F *
* 100-Year, 24-Hour Storm *
****

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WATERCOURSE LENGTH = 1372.000 FEET
LENGTH FROM CONCENTRATION POINT TO CENTROID = 680.000 FEET
ELEVATION VARIATION ALONG WATERCOURSE = 13.090 FEET
MANNINGS FRICTION FACTOR ALONG WATERCOURSE = .015
WATERSHED AREA = 12.600 ACRES
UNIT HYDROGRAPH TIME UNIT = 15.000 MINUTES
DESERT S-GRAPH SELECTED
UNIFORM MEAN SOIL-LOSS(INCH/HOUR) = .290
LOW SOIL-LOSS RATE PERCENT(DECIMAL) = .900
MINIMUM SOIL-LOSS RATE(INCH/HOUR) = .145
BASEFLOW = .000 CFS/SQUARE-MILE
USER-ENTERED RAINFALL = 4.50 INCHES
PROGRAM NUMBER 9 SELECTED

WATERCOURSE "LAG" TIME = .047 HOURS
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 531.757
HYDROGRAPH BASEFLOW = .000 CFS
RCFC&WCD AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 1.0000

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Advanced Engineering Software [AES]
SERIAL No.I0618I
VER..1.6C RELEASE DATE: 2/21/86

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UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	72.640	36.897
2	99.450	13.618
3	99.990	.274
4	100.000	.005

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****

UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	.0090	.0081	.0009
2	.0135	.0121	.0013
3	.0135	.0121	.0013
4	.0180	.0162	.0018
5	.0135	.0121	.0013
6	.0135	.0121	.0013
7	.0135	.0121	.0013
8	.0180	.0162	.0018
9	.0180	.0162	.0018
10	.0180	.0162	.0018
11	.0225	.0202	.0022
12	.0225	.0202	.0022
13	.0225	.0202	.0022
14	.0225	.0202	.0022
15	.0225	.0202	.0022
16	.0270	.0243	.0027
17	.0270	.0243	.0027
18	.0315	.0283	.0031
19	.0315	.0283	.0031
20	.0360	.0324	.0036
21	.0270	.0243	.0027
22	.0315	.0283	.0031
23	.0360	.0324	.0036
24	.0360	.0324	.0036
25	.0405	.0364	.0040
26	.0405	.0364	.0040
27	.0450	.0405	.0045
28	.0450	.0405	.0045
29	.0450	.0405	.0045
30	.0495	.0445	.0049
31	.0540	.0486	.0054
32	.0585	.0526	.0058
33	.0675	.0607	.0067
34	.0675	.0607	.0067
35	.0720	.0648	.0072
36	.0765	.0688	.0076
37	.0855	.0769	.0085
38	.0900	.0792	.0108
39	.0945	.0781	.0164
40	.0990	.0769	.0221
41	.0675	.0607	.0067
42	.0675	.0607	.0067
43	.0900	.0736	.0164
44	.0900	.0726	.0174
45	.0855	.0715	.0140
46	.0855	.0704	.0151
47	.0765	.0688	.0076
48	.0810	.0684	.0126
49	.1125	.0673	.0452
50	.1170	.0663	.0507
51	.1260	.0653	.0607
52	.1305	.0643	.0661
53	.1530	.0634	.0896
54	.1530	.0624	.0906
55	.1035	.0615	.0420
56	.1035	.0605	.0430
57	.1215	.0596	.0619
58	.1170	.0587	.0583
59	.1170	.0578	.0592
60	.1125	.0569	.0556
61	.1080	.0560	.0520
62	.1035	.0552	.0483
63	.0855	.0543	.0312
64	.0855	.0535	.0320
65	.0180	.0162	.0018

66	.0180	.0162	.0018
67	.0135	.0121	.0013
68	.0135	.0121	.0013
69	.0225	.0202	.0022
70	.0225	.0202	.0022
71	.0225	.0202	.0022
72	.0180	.0162	.0018
73	.0180	.0162	.0018
74	.0180	.0162	.0018
75	.0135	.0121	.0013
76	.0090	.0081	.0009
77	.0135	.0121	.0013
78	.0180	.0162	.0018
79	.0135	.0121	.0013
80	.0090	.0081	.0009
81	.0135	.0121	.0013
82	.0135	.0121	.0013
83	.0135	.0121	.0013
84	.0090	.0081	.0009
85	.0135	.0121	.0013
86	.0090	.0081	.0009
87	.0135	.0121	.0013
88	.0090	.0081	.0009
89	.0135	.0121	.0013
90	.0090	.0081	.0009
91	.0090	.0081	.0009
92	.0090	.0081	.0009
93	.0090	.0081	.0009
94	.0090	.0081	.0009
95	.0090	.0081	.0009
96	.0090	.0081	.0009

TOTAL STORM RAINFALL(INCHES) = 4.50
TOTAL SOIL-LOSS(INCHES) = 3.30
TOTAL EFFECTIVE RAINFALL(INCHES) = 1.20

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 3.4601
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 1.2641

```
***************************************************************************

         RCFC&WCD 24-HOUR RUNOFF HYDROGRAPH

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

         HYDROGRAPH IN FIFTEEN-MINUTE INTERVALS(CFS)

---------------------------------------------------------------------------
INTERVAL# VOLUME(AF)   Q(CFS) 0.       2.5       5.0       7.5      10.0
---------------------------------------------------------------------------
       1      .0007       .03  Q         .         .         .         .
       2      .0020       .06  Q         .         .         .         .
       3      .0034       .07  Q         .         .         .         .
       4      .0051       .09  Q         .         .         .         .
       5      .0067       .07  Q         .         .         .         .
       6      .0081       .07  Q         .         .         .         .
       7      .0095       .07  Q         .         .         .         .
       8      .0113       .09  Q         .         .         .         .
       9      .0132       .09  Q         .         .         .         .
      10      .0151       .09  Q         .         .         .         .
      11      .0173       .11  Q         .         .         .         .
      12      .0196       .11  Q         .         .         .         .
      13      .0220       .11  Q         .         .         .         .
      14      .0244       .11  Q         .         .         .         .
      15      .0267       .11  Q         .         .         .         .
      16      .0294       .13  Q         .         .         .         .
      17      .0323       .14  QV        .         .         .         .
      18      .0354       .15  QV        .         .         .         .
      19      .0387       .16  QV        .         .         .         .
      20      .0424       .18  QV        .         .         .         .
      21      .0455       .15  QV        .         .         .         .
      22      .0487       .15  QV        .         .         .         .
      23      .0523       .18  QV        .         .         .         .
      24      .0561       .18  QV        .         .         .         .
      25      .0602       .20  QV        .         .         .         .
      26      .0645       .21  Q V       .         .         .         .
      27      .0690       .22  Q V       .         .         .         .
      28      .0738       .23  Q V       .         .         .         .
      29      .0785       .23  Q V       .         .         .         .
      30      .0836       .25  Q V       .         .         .         .
      31      .0891       .27  .QV       .         .         .         .
      32      .0951       .29  .Q V      .         .         .         .
      33      .1019       .33  .Q V      .         .         .         .
      34      .1090       .34  .Q V      .         .         .         .
      35      .1164       .36  .Q V      .         .         .         .
      36      .1243       .38  .Q V      .         .         .         .
      37      .1330       .42  .Q  V     .         .         .         .
      38      .1437       .52  . Q V     .         .         .         .
      39      .1594       .76  .  Q V    .         .         .         .
      40      .1809      1.04  .   QV    .         .         .         .
      41      .1923       .55  . Q   V   .         .         .         .
      42      .1995       .35  .Q    V   .         .         .         .
      43      .2139       .70  . Q   V   .         .         .         .
      44      .2318       .87  .  Q   V  .         .         .         .
      45      .2475       .76  .  Q   V  .         .         .         .
      46      .2630       .75  .  Q    V .         .         .         .
      47      .2732       .49  .Q      V .         .         .         .
      48      .2851       .57  . Q      V.         .         .         .
      49      .3231      1.84  .      Q  V         .         .         .
      50      .3745      2.49  .        Q.V        .         .         .
      51      .4353      2.94  .         .Q V      .         .         .
      52      .5031      3.28  .         .  Q V    .         .         .
      53      .5903      4.22  .         .     Q V .         .         .
      54      .6850      4.58  .         .       Q .V        .         .
      55      .7430      2.81  .         .Q        .  V      .         .
      56      .7881      2.18  .       Q .         .   V     .         .
      57      .8476      2.88  .         .Q        .     V   .         .
      58      .9097      3.01  .         . Q       .       V .         .
      59      .9716      3.00  .         .Q        .         V         .
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  60      1.0310      2.87  .          .Q        .         . V       .
  61      1.0866      2.69  .          Q         .         .   V     .
  62      1.1383      2.51  .          Q         .         .     V   .
  63      1.1760      1.82  .       Q  .         .         .      V  .
  64      1.2094      1.62  .      Q   .         .         .       V .
  65      1.2200       .51  . Q        .         .         .       V .
  66      1.2220       .10  Q          .         .         .       V .
  67      1.2236       .07  Q          .         .         .       V .
  68      1.2250       .07  Q          .         .         .       V .
  69      1.2271       .10  Q          .         .         .       V .
  70      1.2295       .11  Q          .         .         .       V .
  71      1.2318       .11  Q          .         .         .       V .
  72      1.2338       .10  Q          .         .         .        V.
  73      1.2357       .09  Q          .         .         .        V.
  74      1.2376       .09  Q          .         .         .        V.
  75      1.2392       .07  Q          .         .         .        V.
  76      1.2402       .05  Q          .         .         .        V.
  77      1.2415       .06  Q          .         .         .        V.
  78      1.2433       .09  Q          .         .         .        V.
  79      1.2448       .07  Q          .         .         .        V.
  80      1.2459       .05  Q          .         .         .        V.
  81      1.2472       .06  Q          .         .         .        V.
  82      1.2486       .07  Q          .         .         .        V.
  83      1.2500       .07  Q          .         .         .        V.
  84      1.2511       .05  Q          .         .         .        V.
  85      1.2524       .06  Q          .         .         .        V.
  86      1.2535       .05  Q          .         .         .        V.
  87      1.2548       .06  Q          .         .         .        V.
  88      1.2558       .05  Q          .         .         .        V.
  89      1.2571       .06  Q          .         .         .        V.
  90      1.2582       .05  Q          .         .         .        V.
  91      1.2591       .05  Q          .         .         .        V.
  92      1.2601       .05  Q          .         .         .        V.
  93      1.2610       .05  Q          .         .         .        V.
  94      1.2620       .05  Q          .         .         .        V.
  95      1.2629       .05  Q          .         .         .        V.
  96      1.2639       .05  Q          .         .         .        V.
  97      1.2641       .01  Q          .         .         .        V.
  98      1.2641       .00  Q          .         .         .        V.
  99      1.2641       .00  Q          .         .         .         V
*****************************************************************************
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U N I T - H Y D R O G R A P H   A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
(RCFC&WCD) 1978 HYDROLOGY MANUAL

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<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

Especially prepared for:

MAINIERO, SMITH AND ASSOCIATES

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

```
**********DESCRIPTION OF RESULTS********************************************
* Rio Vista Village                                                        *
* Area G                                                                   *
* 100 Year, 24 Hour Storm                                                  *
****************************************************************************

****************************************************************************
         WATERCOURSE LENGTH =     1400.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =     420.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =      15.780 FEET
         MANNINGS FRICTION FACTOR ALONG WATERCOURSE =  .015
         WATERSHED AREA =      21.850 ACRES
         UNIT HYDROGRAPH TIME UNIT =  15.000 MINUTES
         DESERT S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =   .390
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) =  .900
         MINIMUM SOIL-LOSS RATE(INCH/HOUR) =   .195
         BASEFLOW =   .000 CFS/SQUARE-MILE
         USER-ENTERED RAINFALL =  4.50 INCHES
         PROGRAM NUMBER  9 SELECTED

         WATERCOURSE "LAG" TIME =     .038 HOURS
         UNIT INTERVAL PERCENTAGE OF LAG-TIME = 654.112
         HYDROGRAPH BASEFLOW =    .000 CFS
         RCFC&WCD AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 1.0000
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Advanced Engineering Software [AES]
SERIAL No.I06181
VER. 1.6C   RELEASE DATE: 2/21/86

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UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	77.429	68.202
2	99.878	19.774
3	100.000	.107

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UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	.0090	.0081	.0009
2	.0135	.0121	.0013
3	.0135	.0121	.0013
4	.0180	.0162	.0018
5	.0135	.0121	.0013
6	.0135	.0121	.0013
7	.0135	.0121	.0013
8	.0180	.0162	.0018
9	.0180	.0162	.0018
10	.0180	.0162	.0018
11	.0225	.0202	.0022
12	.0225	.0202	.0022
13	.0225	.0202	.0022
14	.0225	.0202	.0022
15	.0225	.0202	.0022
16	.0270	.0243	.0027
17	.0270	.0243	.0027
18	.0315	.0283	.0031
19	.0315	.0283	.0031
20	.0360	.0324	.0036
21	.0270	.0243	.0027
22	.0315	.0283	.0031
23	.0360	.0324	.0036
24	.0360	.0324	.0036
25	.0405	.0364	.0040
26	.0405	.0364	.0040
27	.0450	.0405	.0045
28	.0450	.0405	.0045
29	.0450	.0405	.0045
30	.0495	.0445	.0049
31	.0540	.0486	.0054
32	.0585	.0526	.0058
33	.0675	.0607	.0067
34	.0675	.0607	.0067
35	.0720	.0648	.0072
36	.0765	.0688	.0076
37	.0855	.0769	.0085
38	.0900	.0810	.0090
39	.0945	.0850	.0094
40	.0990	.0891	.0099
41	.0675	.0607	.0067
42	.0675	.0607	.0067
43	.0900	.0810	.0090
44	.0900	.0810	.0090
45	.0855	.0769	.0085
46	.0855	.0769	.0085
47	.0765	.0688	.0076
48	.0810	.0729	.0081
49	.1125	.0906	.0219
50	.1170	.0892	.0278
51	.1260	.0879	.0381
52	.1305	.0865	.0440
53	.1530	.0852	.0678
54	.1530	.0839	.0691
55	.1035	.0827	.0208
56	.1035	.0814	.0221
57	.1215	.0802	.0413
58	.1170	.0789	.0381
59	.1170	.0777	.0393
60	.1125	.0765	.0360
61	.1080	.0754	.0326
62	.1035	.0742	.0293
63	.0855	.0731	.0124
64	.0855	.0720	.0135
65	.0180	.0162	.0018

66	.0180	.0162	.0018
67	.0135	.0121	.0013
68	.0135	.0121	.0013
69	.0225	.0202	.0022
70	.0225	.0202	.0022
71	.0225	.0202	.0022
72	.0180	.0162	.0018
73	.0180	.0162	.0018
74	.0180	.0162	.0018
75	.0135	.0121	.0013
76	.0090	.0081	.0009
77	.0135	.0121	.0013
78	.0180	.0162	.0018
79	.0135	.0121	.0013
80	.0090	.0081	.0009
81	.0135	.0121	.0013
82	.0135	.0121	.0013
83	.0135	.0121	.0013
84	.0090	.0081	.0009
85	.0135	.0121	.0013
86	.0090	.0081	.0009
87	.0135	.0121	.0013
88	.0090	.0081	.0009
89	.0135	.0121	.0013
90	.0090	.0081	.0009
91	.0090	.0081	.0009
92	.0090	.0081	.0009
93	.0090	.0081	.0009
94	.0090	.0081	.0009
95	.0090	.0081	.0009
96	.0090	.0081	.0009

TOTAL STORM RAINFALL(INCHES) = 4.50
TOTAL SOIL-LOSS(INCHES) = 3.68
TOTAL EFFECTIVE RAINFALL(INCHES) = .82

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 6.7021
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 1.4906

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

         RCFC&WCD 24-HOUR RUNOFF HYDROGRAPH

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

         HYDROGRAPH IN FIFTEEN-MINUTE INTERVALS(CFS)

-----------------------------------------------------------------------------
INTERVAL# VOLUME(AF)   Q(CFS) 0.        2.5       5.0       7.5       10.0
-----------------------------------------------------------------------------
       1      .0013       .06  Q         .         .         .         .
       2      .0035       .11  Q         .         .         .         .
       3      .0060       .12  Q         .         .         .         .
       4      .0091       .15  Q         .         .         .         .
       5      .0117       .13  Q         .         .         .         .
       6      .0142       .12  Q         .         .         .         .
       7      .0166       .12  Q         .         .         .         .
       8      .0197       .15  Q         .         .         .         .
       9      .0230       .16  Q         .         .         .         .
      10      .0263       .16  Q         .         .         .         .
      11      .0302       .19  Q         .         .         .         .
      12      .0343       .20  Q         .         .         .         .
      13      .0384       .20  QV        .         .         .         .
      14      .0425       .20  QV        .         .         .         .
      15      .0466       .20  QV        .         .         .         .
      16      .0513       .23  QV        .         .         .         .
      17      .0562       .24  QV        .         .         .         .
      18      .0618       .27  .Q        .         .         .         .
      19      .0675       .28  .Q        .         .         .         .
      20      .0739       .31  .Q        .         .         .         .
      21      .0791       .26  .QV       .         .         .         .
      22      .0847       .27  .QV       .         .         .         .
      23      .0911       .31  .QV       .         .         .         .
      24      .0976       .32  .QV       .         .         .         .
      25      .1048       .35  .QV       .         .         .         .
      26      .1122       .36  .Q V      .         .         .         .
      27      .1202       .39  .Q V      .         .         .         .
      28      .1283       .40  .Q V      .         .         .         .
      29      .1365       .40  .Q V      .         .         .         .
      30      .1454       .43  .Q V      .         .         .         .
      31      .1550       .47  .Q  V     .         .         .         .
      32      .1655       .51  . Q V     .         .         .         .
      33      .1774       .58  . Q V     .         .         .         .
      34      .1897       .59  . Q  V    .         .         .         .
      35      .2026       .63  . Q  V    .         .         .         .
      36      .2163       .66  . Q  V    .         .         .         .
      37      .2315       .74  . Q   V   .         .         .         .
      38      .2477       .78  .  Q  V   .         .         .         .
      39      .2647       .82  .  Q   V  .         .         .         .
      40      .2825       .86  .  Q   V  .         .         .         .
      41      .2961       .66  . Q    V  .         .         .         .
      42      .3084       .59  . Q     V .         .         .         .
      43      .3239       .75  . Q     V .         .         .         .
      44      .3402       .79  .  Q     V.         .         .         .
      45      .3560       .76  .  Q     V.         .         .         .
      46      .3715       .75  .  Q     V.         .         .         .
      47      .3858       .69  . Q       V         .         .         .
      48      .4004       .70  . Q       V         .         .         .
      49      .4346      1.66  .     Q   .V        .         .         .
      50      .4828      2.33  .        Q. V       .         .         .
      51      .5479      3.15  .         . Q V     .         .         .
      52      .6255      3.76  .         .    QV   .         .         .
      53      .7390      5.49  .         .        V.Q        .         .
      54      .8641      6.05  .         .         .  VQ     .         .
      55      .9218      2.79  .         .Q        .   V     .         .
      56      .9616      1.93  .      Q  .         .    V    .         .
      57     1.0289      3.26  .         .  Q      .      V  .         .
      58     1.0995      3.42  .         .  Q      .        V.         .
      59     1.1705      3.43  .         .  Q      .         .V        .
```

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     60        1.2373      3.23  .        . Q         .         .  V      .
     61        1.2980      2.94  .        .Q          .         .   V     .
     62        1.3527      2.65  .        Q           .         .     V   .
     63        1.3822      1.43  .    Q   .           .         .      V  .
     64        1.4064      1.17  .   Q    .           .         .      V  .
     65        1.4145       .39  .Q       .           .         .      V  .
     66        1.4178       .16  Q        .           .         .       V .
     67        1.4204       .13  Q        .           .         .       V .
     68        1.4229       .12  Q        .           .         .       V .
     69        1.4266       .18  Q        .           .         .       V .
     70        1.4307       .20  Q        .           .         .       V .
     71        1.4348       .20  Q        .           .         .       V .
     72        1.4383       .17  Q        .           .         .       V .
     73        1.4415       .16  Q        .           .         .       V .
     74        1.4448       .16  Q        .           .         .       V .
     75        1.4474       .13  Q        .           .         .       V .
     76        1.4493       .09  Q        .           .         .       V .
     77        1.4515       .11  Q        .           .         .       V .
     78        1.4546       .15  Q        .           .         .        V.
     79        1.4573       .13  Q        .           .         .        V.
     80        1.4591       .09  Q        .           .         .        V.
     81        1.4614       .11  Q        .           .         .        V.
     82        1.4638       .12  Q        .           .         .        V.
     83        1.4663       .12  Q        .           .         .        V.
     84        1.4681       .09  Q        .           .         .        V.
     85        1.4704       .11  Q        .           .         .        V.
     86        1.4722       .09  Q        .           .         .        V.
     87        1.4745       .11  Q        .           .         .        V.
     88        1.4763       .09  Q        .           .         .        V.
     89        1.4786       .11  Q        .           .         .        V.
     90        1.4804       .09  Q        .           .         .        V.
     91        1.4820       .08  Q        .           .         .        V.
     92        1.4837       .08  Q        .           .         .        V.
     93        1.4853       .08  Q        .           .         .        V.
     94        1.4869       .08  Q        .           .         .        V.
     95        1.4886       .08  Q        .           .         .        V.
     96        1.4902       .08  Q        .           .         .        V.
     97        1.4906       .02  Q        .           .         .        V.
     98        1.4906       .00  Q        .           .         .        V.
*****************************************************************************
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U N I T - H Y D R O G R A P H   A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
(RCFC&WCD) 1978 HYDROLOGY MANUAL

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<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

Especially prepared for:

MAINIERO, SMITH AND ASSOCIATES

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

**********DESCRIPTION OF RESULTS**
* Rio Vista Village *
* Area H1 *
* 100 Year, 24 Hour Storm *
****

****
WATERCOURSE LENGTH = 2100.000 FEET
LENGTH FROM CONCENTRATION POINT TO CENTROID = 880.000 FEET
ELEVATION VARIATION ALONG WATERCOURSE = 17.110 FEET
MANNINGS FRICTION FACTOR ALONG WATERCOURSE = .015
WATERSHED AREA = 10.000 ACRES
UNIT HYDROGRAPH TIME UNIT = 15.000 MINUTES
DESERT S-GRAPH SELECTED
UNIFORM MEAN SOIL-LOSS(INCH/HOUR) = .410
LOW SOIL-LOSS RATE PERCENT(DECIMAL) = .900
MINIMUM SOIL-LOSS RATE(INCH/HOUR) = .205
BASEFLOW = .000 CFS/SQUARE-MILE
USER-ENTERED RAINFALL = 4.50 INCHES
PROGRAM NUMBER 9 SELECTED

WATERCOURSE "LAG" TIME = .063 HOURS
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 398.005
HYDROGRAPH BASEFLOW = .000 CFS
RCFC&WCD AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 1.0000

***> NOTE: RATIO OF (AREA IN SQUARE FEET) / (WATERCOURSE LENGTH SQUARED)
IS NOT BETWEEN [.10] AND [1.0]

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Advanced Engineering Software [AES]
SERIAL No.I06181
VER. 1.6C RELEASE DATE: 2/21/86

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****
UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	64.832	26.135
2	97.910	13.335
3	99.966	.829

4	100.000	.014	

UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	.0090	.0081	.0009
2	.0135	.0121	.0013
3	.0135	.0121	.0013
4	.0180	.0162	.0018
5	.0135	.0121	.0013
6	.0135	.0121	.0013
7	.0135	.0121	.0013
8	.0180	.0162	.0018
9	.0180	.0162	.0018
10	.0180	.0162	.0018
11	.0225	.0202	.0022
12	.0225	.0202	.0022
13	.0225	.0202	.0022
14	.0225	.0202	.0022
15	.0225	.0202	.0022
16	.0270	.0243	.0027
17	.0270	.0243	.0027
18	.0315	.0283	.0031
19	.0315	.0283	.0031
20	.0360	.0324	.0036
21	.0270	.0243	.0027
22	.0315	.0283	.0031
23	.0360	.0324	.0036
24	.0360	.0324	.0036
25	.0405	.0364	.0040
26	.0405	.0364	.0040
27	.0450	.0405	.0045
28	.0450	.0405	.0045
29	.0450	.0405	.0045
30	.0495	.0445	.0049
31	.0540	.0486	.0054
32	.0585	.0526	.0058
33	.0675	.0607	.0067
34	.0675	.0607	.0067
35	.0720	.0648	.0072
36	.0765	.0688	.0076
37	.0855	.0769	.0085
38	.0900	.0810	.0090
39	.0945	.0850	.0094
40	.0990	.0891	.0099
41	.0675	.0607	.0067
42	.0675	.0607	.0067
43	.0900	.0810	.0090
44	.0900	.0810	.0090
45	.0855	.0769	.0085
46	.0855	.0769	.0085
47	.0765	.0688	.0076
48	.0810	.0729	.0081
49	.1125	.0952	.0173
50	.1170	.0938	.0232
51	.1260	.0924	.0336
52	.1305	.0910	.0395
53	.1530	.0896	.0634
54	.1530	.0882	.0648
55	.1035	.0869	.0166
56	.1035	.0856	.0179
57	.1215	.0843	.0372
58	.1170	.0830	.0340
59	.1170	.0817	.0353
60	.1125	.0805	.0320
61	.1080	.0792	.0288
62	.1035	.0780	.0255
63	.0855	.0768	.0087

64	.0855	.0757	.0098
65	.0180	.0162	.0018
66	.0180	.0162	.0018
67	.0135	.0121	.0013
68	.0135	.0121	.0013
69	.0225	.0202	.0022
70	.0225	.0202	.0022
71	.0225	.0202	.0022
72	.0180	.0162	.0018
73	.0180	.0162	.0018
74	.0180	.0162	.0018
75	.0135	.0121	.0013
76	.0090	.0081	.0009
77	.0135	.0121	.0013
78	.0180	.0162	.0018
79	.0135	.0121	.0013
80	.0090	.0081	.0009
81	.0135	.0121	.0013
82	.0135	.0121	.0013
83	.0135	.0121	.0013
84	.0090	.0081	.0009
85	.0135	.0121	.0013
86	.0090	.0081	.0009
87	.0135	.0121	.0013
88	.0090	.0081	.0009
89	.0135	.0121	.0013
90	.0090	.0081	.0009
91	.0090	.0081	.0009
92	.0090	.0081	.0009
93	.0090	.0081	.0009
94	.0090	.0081	.0009
95	.0090	.0081	.0009
96	.0090	.0081	.0009

TOTAL STORM RAINFALL(INCHES) = 4.50
TOTAL SOIL-LOSS(INCHES) = 3.75
TOTAL EFFECTIVE RAINFALL(INCHES) = .75

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 3.1227
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = .6269

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         RCFC&WCD 24-HOUR RUNOFF HYDROGRAPH

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         HYDROGRAPH IN FIFTEEN-MINUTE INTERVALS(CFS)

----------------------------------------------------------------------------
INTERVAL# VOLUME(AF)   Q(CFS) 0.        2.5       5.0       7.5      10.0
----------------------------------------------------------------------------
      1        .0005      .02  Q         .         .         .         .
      2        .0015      .05  Q         .         .         .         .
      3        .0026      .05  Q         .         .         .         .
      4        .0039      .07  Q         .         .         .         .
      5        .0052      .06  Q         .         .         .         .
      6        .0063      .05  Q         .         .         .         .
      7        .0075      .05  Q         .         .         .         .
      8        .0088      .07  Q         .         .         .         .
      9        .0103      .07  Q         .         .         .         .
     10        .0118      .07  Q         .         .         .         .
     11        .0136      .08  Q         .         .         .         .
     12        .0154      .09  Q         .         .         .         .
     13        .0173      .09  QV        .         .         .         .
     14        .0192      .09  QV        .         .         .         .
     15        .0210      .09  QV        .         .         .         .
     16        .0232      .10  QV        .         .         .         .
     17        .0254      .11  QV        .         .         .         .
     18        .0279      .12  QV        .         .         .         .
     19        .0305      .13  QV        .         .         .         .
     20        .0334      .14  Q V       .         .         .         .
     21        .0359      .12  Q V       .         .         .         .
     22        .0384      .12  Q V       .         .         .         .
     23        .0412      .14  Q V       .         .         .         .
     24        .0442      .14  Q V       .         .         .         .
     25        .0475      .16  Q  V      .         .         .         .
     26        .0508      .16  Q  V      .         .         .         .
     27        .0545      .18  Q  V      .         .         .         .
     28        .0582      .18  Q  V      .         .         .         .
     29        .0619      .18  Q  V      .         .         .         .
     30        .0659      .19  Q   V     .         .         .         .
     31        .0703      .21  Q   V     .         .         .         .
     32        .0750      .23  Q   V     .         .         .         .
     33        .0804      .26  .Q   V    .         .         .         .
     34        .0860      .27  .Q   V    .         .         .         .
     35        .0918      .28  .Q   V    .         .         .         .
     36        .0981      .30  .Q    V   .         .         .         .
     37        .1049      .33  .Q    V   .         .         .         .
     38        .1123      .36  .Q     V  .         .         .         .
     39        .1200      .37  .Q     V  .         .         .         .
     40        .1281      .39  .Q      V .         .         .         .
     41        .1346      .32  .Q      V .         .         .         .
     42        .1403      .27  .Q      V .         .         .         .
     43        .1472      .33  .Q       V.         .         .         .
     44        .1546      .36  .Q       V.         .         .         .
     45        .1619      .35  .Q        V         .         .         .
     46        .1690      .35  .Q        V         .         .         .
     47        .1756      .32  .Q        .V        .         .         .
     48        .1823      .32  .Q        .V        .         .         .
     49        .1940      .57  . Q       . V       .         .         .
     50        .2114      .84  .  Q      .  V      .         .         .
     51        .2363     1.20  .   Q     .    V    .         .         .
     52        .2673     1.50  .     Q   .      V  .         .         .
     53        .3130     2.21  .       Q .        V.         .         .
     54        .3661     2.57  .         Q         .  V      .         .
     55        .3940     1.35  .    Q    .         .    V    .         .
     56        .4094      .74  . Q       .         .     V   .         .
     57        .4347     1.23  .   Q     .         .      V  .         .
     58        .4637     1.40  .    Q    .         .        V.         .
     59        .4927     1.41  .    Q    .         .         .V        .
```

```
     60        .5203      1.34  .     Q    .         .         .  V      .
     61        .5453      1.21  .    Q     .         .         .   V     .
     62        .5675      1.08  .    Q     .         .         .     V   .
     63        .5797       .59  . Q        .         .         .     V   .
     64        .5879       .39  .Q         .         .         .      V  .
     65        .5917       .19  Q          .         .         .      V  .
     66        .5934       .08  Q          .         .         .      V  .
     67        .5946       .06  Q          .         .         .      V  .
     68        .5957       .05  Q          .         .         .       V .
     69        .5974       .08  Q          .         .         .       V .
     70        .5992       .09  Q          .         .         .       V .
     71        .6011       .09  Q          .         .         .       V .
     72        .6027       .08  Q          .         .         .       V .
     73        .6042       .07  Q          .         .         .       V .
     74        .6057       .07  Q          .         .         .       V .
     75        .6070       .06  Q          .         .         .       V .
     76        .6079       .04  Q          .         .         .       V .
     77        .6089       .05  Q          .         .         .       V .
     78        .6102       .07  Q          .         .         .       V .
     79        .6115       .06  Q          .         .         .        V.
     80        .6124       .04  Q          .         .         .        V.
     81        .6134       .05  Q          .         .         .        V.
     82        .6145       .05  Q          .         .         .        V.
     83        .6156       .05  Q          .         .         .        V.
     84        .6165       .04  Q          .         .         .        V.
     85        .6175       .05  Q          .         .         .        V.
     86        .6184       .04  Q          .         .         .        V.
     87        .6194       .05  Q          .         .         .        V.
     88        .6202       .04  Q          .         .         .        V.
     89        .6212       .05  Q          .         .         .        V.
     90        .6221       .04  Q          .         .         .        V.
     91        .6229       .04  Q          .         .         .        V.
     92        .6236       .04  Q          .         .         .        V.
     93        .6244       .04  Q          .         .         .        V.
     94        .6251       .04  Q          .         .         .        V.
     95        .6259       .04  Q          .         .         .        V.
     96        .6266       .04  Q          .         .         .        V.
     97        .6269       .01  Q          .         .         .        V.
     98        .6269       .00  Q          .         .         .        V.
     99        .6269       .00  Q          .         .         .        V.
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            U N I T - H Y D R O G R A P H   A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
                  (RCFC&WCD) 1978 HYDROLOGY MANUAL

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                        Especially prepared for:

                    MAINIERO, SMITH AND ASSOCIATES

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**********DESCRIPTION OF RESULTS********************************************
* Rio Vista Village                                                        *
* Area H2                                                                  *
* 100 Year, 24 Hour Storm                                                  *
****************************************************************************

****************************************************************************
         WATERCOURSE LENGTH =    1930.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =     500.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =      17.200 FEET
         MANNINGS FRICTION FACTOR ALONG WATERCOURSE =  .015
         WATERSHED AREA =      23.000 ACRES
         UNIT HYDROGRAPH TIME UNIT =  15.000 MINUTES
         DESERT S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =   .410
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) =  .900
         MINIMUM SOIL-LOSS RATE(INCH/HOUR) =    .205
         BASEFLOW =   .000 CFS/SQUARE-MILE
         USER-ENTERED RAINFALL =  4.50 INCHES
         PROGRAM NUMBER  9 SELECTED


         WATERCOURSE "LAG" TIME =     .048 HOURS
         UNIT INTERVAL PERCENTAGE OF LAG-TIME = 518.220
         HYDROGRAPH BASEFLOW =    .000 CFS
         RCFC&WCD AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 1.0000



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                 Advanced Engineering Software [AES]
                          SERIAL No.I06181
                 VER. 1.6C     RELEASE DATE: 2/21/86

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                      UNIT HYDROGRAPH DETERMINATION
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INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	71.995	66.753
2	99.367	25.379
3	99.990	.578
4	100.000	.009

****

****

UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	.0090	.0081	.0009
2	.0135	.0121	.0013
3	.0135	.0121	.0013
4	.0180	.0162	.0018
5	.0135	.0121	.0013
6	.0135	.0121	.0013
7	.0135	.0121	.0013
8	.0180	.0162	.0018
9	.0180	.0162	.0018
10	.0180	.0162	.0018
11	.0225	.0202	.0022
12	.0225	.0202	.0022
13	.0225	.0202	.0022
14	.0225	.0202	.0022
15	.0225	.0202	.0022
16	.0270	.0243	.0027
17	.0270	.0243	.0027
18	.0315	.0283	.0031
19	.0315	.0283	.0031
20	.0360	.0324	.0036
21	.0270	.0243	.0027
22	.0315	.0283	.0031
23	.0360	.0324	.0036
24	.0360	.0324	.0036
25	.0405	.0364	.0040
26	.0405	.0364	.0040
27	.0450	.0405	.0045
28	.0450	.0405	.0045
29	.0450	.0405	.0045
30	.0495	.0445	.0049
31	.0540	.0486	.0054
32	.0585	.0526	.0058
33	.0675	.0607	.0067
34	.0675	.0607	.0067
35	.0720	.0648	.0072
36	.0765	.0688	.0076
37	.0855	.0769	.0085
38	.0900	.0810	.0090
39	.0945	.0850	.0094
40	.0990	.0891	.0099
41	.0675	.0607	.0067
42	.0675	.0607	.0067
43	.0900	.0810	.0090
44	.0900	.0810	.0090
45	.0855	.0769	.0085
46	.0855	.0769	.0085
47	.0765	.0688	.0076
48	.0810	.0729	.0081
49	.1125	.0952	.0173
50	.1170	.0938	.0232
51	.1260	.0924	.0336
52	.1305	.0910	.0395
53	.1530	.0896	.0634
54	.1530	.0882	.0648
55	.1035	.0869	.0166
56	.1035	.0856	.0179
57	.1215	.0843	.0372
58	.1170	.0830	.0340
59	.1170	.0817	.0353
60	.1125	.0805	.0320
61	.1080	.0792	.0288
62	.1035	.0780	.0255
63	.0855	.0768	.0087
64	.0855	.0757	.0098
65	.0180	.0162	.0018

66	.0180	.0162	.0018
67	.0135	.0121	.0013
68	.0135	.0121	.0013
69	.0225	.0202	.0022
70	.0225	.0202	.0022
71	.0225	.0202	.0022
72	.0180	.0162	.0018
73	.0180	.0162	.0018
74	.0180	.0162	.0018
75	.0135	.0121	.0013
76	.0090	.0081	.0009
77	.0135	.0121	.0013
78	.0180	.0162	.0018
79	.0135	.0121	.0013
80	.0090	.0081	.0009
81	.0135	.0121	.0013
82	.0135	.0121	.0013
83	.0135	.0121	.0013
84	.0090	.0081	.0009
85	.0135	.0121	.0013
86	.0090	.0081	.0009
87	.0135	.0121	.0013
88	.0090	.0081	.0009
89	.0135	.0121	.0013
90	.0090	.0081	.0009
91	.0090	.0081	.0009
92	.0090	.0081	.0009
93	.0090	.0081	.0009
94	.0090	.0081	.0009
95	.0090	.0081	.0009
96	.0090	.0081	.0009

TOTAL STORM RAINFALL(INCHES) = 4.50
TOTAL SOIL-LOSS(INCHES) = 3.75
TOTAL EFFECTIVE RAINFALL(INCHES) = .75

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 7.1821
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 1.4418

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         RCFC&WCD 24-HOUR RUNOFF HYDROGRAPH

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

         HYDROGRAPH IN FIFTEEN-MINUTE INTERVALS(CFS)

----------------------------------------------------------------------------
INTERVAL# VOLUME(AF)   Q(CFS) 0.        2.5       5.0       7.5      10.0
----------------------------------------------------------------------------
      1       .0012       .06  Q         .         .         .         .
      2       .0036       .11  Q         .         .         .         .
      3       .0062       .12  Q         .         .         .         .
      4       .0094       .16  Q         .         .         .         .
      5       .0122       .14  Q         .         .         .         .
      6       .0148       .13  Q         .         .         .         .
      7       .0174       .13  Q         .         .         .         .
      8       .0206       .16  Q         .         .         .         .
      9       .0240       .17  Q         .         .         .         .
     10       .0275       .17  Q         .         .         .         .
     11       .0315       .20  Q         .         .         .         .
     12       .0358       .21  Q         .         .         .         .
     13       .0401       .21  QV        .         .         .         .
     14       .0445       .21  QV        .         .         .         .
     15       .0488       .21  QV        .         .         .         .
     16       .0537       .24  QV        .         .         .         .
     17       .0589       .25  .Q        .         .         .         .
     18       .0647       .28  .Q        .         .         .         .
     19       .0707       .29  .Q        .         .         .         .
     20       .0773       .32  .QV       .         .         .         .
     21       .0830       .27  .QV       .         .         .         .
     22       .0888       .28  .QV       .         .         .         .
     23       .0954       .32  .QV       .         .         .         .
     24       .1023       .33  .QV       .         .         .         .
     25       .1098       .36  .Q V      .         .         .         .
     26       .1176       .38  .Q V      .         .         .         .
     27       .1260       .41  .Q V      .         .         .         .
     28       .1346       .42  .Q V      .         .         .         .
     29       .1432       .42  .Q V      .         .         .         .
     30       .1525       .45  .Q  V     .         .         .         .
     31       .1625       .49  .Q  V     .         .         .         .
     32       .1735       .53  . Q V     .         .         .         .
     33       .1860       .60  . Q  V    .         .         .         .
     34       .1989       .63  . Q  V    .         .         .         .
     35       .2124       .66  . Q  V    .         .         .         .
     36       .2268       .70  . Q   V   .         .         .         .
     37       .2427       .77  .  Q  V   .         .         .         .
     38       .2597       .82  .  Q   V  .         .         .         .
     39       .2776       .86  .  Q   V  .         .         .         .
     40       .2963       .91  .  Q    V .         .         .         .
     41       .3109       .71  . Q     V .         .         .         .
     42       .3239       .63  . Q     V .         .         .         .
     43       .3399       .78  .  Q     V.         .         .         .
     44       .3571       .83  .  Q     V.         .         .         .
     45       .3737       .80  .  Q      V         .         .         .
     46       .3901       .79  .  Q      V         .         .         .
     47       .4052       .73  . Q       .V        .         .         .
     48       .4205       .74  . Q       .V        .         .         .
     49       .4487      1.36  .    Q    . V       .         .         .
     50       .4899      1.99  .      Q  .  V      .         .         .
     51       .5487      2.84  .         .Q   V    .         .         .
     52       .6211      3.51  .         .   Q  V  .         .         .
     53       .7297      5.25  .         .         VQ        .         .
     54       .8527      5.95  .         .         .  Q      .         .
     55       .9103      2.79  .         .Q        .    V    .         .
     56       .9445      1.66  .     Q   .         .     V   .         .
     57      1.0054      2.95  .         .Q        .      V  .         .
     58      1.0721      3.23  .         . Q       .        V.         .
     59      1.1390      3.24  .         . Q       .         .V        .
```

```
60      1.2021      3.05  .         . Q       .         .  V      .
61      1.2590      2.75  .         .Q        .         .   V     .
62      1.3096      2.45  .        Q.         .         .     V   .
63      1.3352      1.24  .   Q     .         .         .      V  .
64      1.3536       .89  .  Q      .         .         .      V  .
65      1.3614       .38  .Q        .         .         .      V  .
66      1.3649       .17  Q         .         .         .      V  .
67      1.3678       .14  Q         .         .         .      V  .
68      1.3703       .13  Q         .         .         .       V .
69      1.3742       .19  Q         .         .         .       V .
70      1.3785       .21  Q         .         .         .       V .
71      1.3828       .21  Q         .         .         .       V .
72      1.3865       .18  Q         .         .         .       V .
73      1.3899       .17  Q         .         .         .       V .
74      1.3934       .17  Q         .         .         .       V .
75      1.3962       .14  Q         .         .         .       V .
76      1.3982       .10  Q         .         .         .       V .
77      1.4005       .11  Q         .         .         .       V .
78      1.4037       .15  Q         .         .         .       V .
79      1.4065       .14  Q         .         .         .        V.
80      1.4085       .10  Q         .         .         .        V.
81      1.4109       .11  Q         .         .         .        V.
82      1.4134       .12  Q         .         .         .        V.
83      1.4160       .13  Q         .         .         .        V.
84      1.4180       .10  Q         .         .         .        V.
85      1.4203       .11  Q         .         .         .        V.
86      1.4223       .09  Q         .         .         .        V.
87      1.4247       .11  Q         .         .         .        V.
88      1.4266       .09  Q         .         .         .        V.
89      1.4290       .11  Q         .         .         .        V.
90      1.4309       .09  Q         .         .         .        V.
91      1.4327       .08  Q         .         .         .        V.
92      1.4344       .08  Q         .         .         .        V.
93      1.4361       .08  Q         .         .         .        V.
94      1.4378       .08  Q         .         .         .        V.
95      1.4396       .08  Q         .         .         .        V.
96      1.4413       .08  Q         .         .         .        V.
97      1.4418       .02  Q         .         .         .        V.
98      1.4418       .00  Q         .         .         .        V.
99      1.4418       .00  Q         .         .         .        V.
****************************************************************************
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            U N I T - H Y D R O G R A P H   A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
                    (RCFC&WCD) 1978 HYDROLOGY MANUAL

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                        Especially prepared for:

                      MAINIERO, SMITH AND ASSOCIATES

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**********DESCRIPTION OF RESULTS*********************************************
* Rio Vista Village                                                        *
* Area H4                                                                  *
* 100 Year, 24 Hour Storm                                                  *
****************************************************************************

****************************************************************************
         WATERCOURSE LENGTH =     2000.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =     500.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =      14.960 FEET
         MANNINGS FRICTION FACTOR ALONG WATERCOURSE =  .015
         WATERSHED AREA =       24.490 ACRES
         UNIT HYDROGRAPH TIME UNIT =  15.000 MINUTES
         DESERT S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =   .410
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) =  .900
         MINIMUM SOIL-LOSS RATE(INCH/HOUR) =    .205
         BASEFLOW =    .000 CFS/SQUARE-MILE
         USER-ENTERED RAINFALL =  4.50 INCHES
         PROGRAM NUMBER  9 SELECTED


         WATERCOURSE "LAG" TIME =      .051 HOURS
         UNIT INTERVAL PERCENTAGE OF LAG-TIME = 494.517
         HYDROGRAPH BASEFLOW =     .000 CFS
         RCFC&WCD AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 1.0000



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                  Advanced Engineering Software [AES]
                           SERIAL No.I0618I
                  VER. 1.6C     RELEASE DATE: 2/21/86

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                       UNIT HYDROGRAPH DETERMINATION
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INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	70.796	69.893
2	99.195	28.037
3	99.990	.785
4	100.000	.010

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```

UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	.0090	.0081	.0009
2	.0135	.0121	.0013
3	.0135	.0121	.0013
4	.0180	.0162	.0018
5	.0135	.0121	.0013
6	.0135	.0121	.0013
7	.0135	.0121	.0013
8	.0180	.0162	.0018
9	.0180	.0162	.0018
10	.0180	.0162	.0018
11	.0225	.0202	.0022
12	.0225	.0202	.0022
13	.0225	.0202	.0022
14	.0225	.0202	.0022
15	.0225	.0202	.0022
16	.0270	.0243	.0027
17	.0270	.0243	.0027
18	.0315	.0283	.0031
19	.0315	.0283	.0031
20	.0360	.0324	.0036
21	.0270	.0243	.0027
22	.0315	.0283	.0031
23	.0360	.0324	.0036
24	.0360	.0324	.0036
25	.0405	.0364	.0040
26	.0405	.0364	.0040
27	.0450	.0405	.0045
28	.0450	.0405	.0045
29	.0450	.0405	.0045
30	.0495	.0445	.0049
31	.0540	.0486	.0054
32	.0585	.0526	.0058
33	.0675	.0607	.0067
34	.0675	.0607	.0067
35	.0720	.0648	.0072
36	.0765	.0688	.0076
37	.0855	.0769	.0085
38	.0900	.0810	.0090
39	.0945	.0850	.0094
40	.0990	.0891	.0099
41	.0675	.0607	.0067
42	.0675	.0607	.0067
43	.0900	.0810	.0090
44	.0900	.0810	.0090
45	.0855	.0769	.0085
46	.0855	.0769	.0085
47	.0765	.0688	.0076
48	.0810	.0729	.0081
49	.1125	.0952	.0173
50	.1170	.0938	.0232
51	.1260	.0924	.0336
52	.1305	.0910	.0395
53	.1530	.0896	.0634
54	.1530	.0882	.0648
55	.1035	.0869	.0166
56	.1035	.0856	.0179
57	.1215	.0843	.0372
58	.1170	.0830	.0340
59	.1170	.0817	.0353
60	.1125	.0805	.0320
61	.1080	.0792	.0288
62	.1035	.0780	.0255
63	.0855	.0768	.0087
64	.0855	.0757	.0098
65	.0180	.0162	.0018

66	.0180	.0162	.0018
67	.0135	.0121	.0013
68	.0135	.0121	.0013
69	.0225	.0202	.0022
70	.0225	.0202	.0022
71	.0225	.0202	.0022
72	.0180	.0162	.0018
73	.0180	.0162	.0018
74	.0180	.0162	.0018
75	.0135	.0121	.0013
76	.0090	.0081	.0009
77	.0135	.0121	.0013
78	.0180	.0162	.0018
79	.0135	.0121	.0013
80	.0090	.0081	.0009
81	.0135	.0121	.0013
82	.0135	.0121	.0013
83	.0135	.0121	.0013
84	.0090	.0081	.0009
85	.0135	.0121	.0013
86	.0090	.0081	.0009
87	.0135	.0121	.0013
88	.0090	.0081	.0009
89	.0135	.0121	.0013
90	.0090	.0081	.0009
91	.0090	.0081	.0009
92	.0090	.0081	.0009
93	.0090	.0081	.0009
94	.0090	.0081	.0009
95	.0090	.0081	.0009
96	.0090	.0081	.0009

TOTAL STORM RAINFALL(INCHES) = 4.50
TOTAL SOIL-LOSS(INCHES) = 3.75
TOTAL EFFECTIVE RAINFALL(INCHES) = .75

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 7.6474
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 1.5352

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         RCFC&WCD 24-HOUR RUNOFF HYDROGRAPH

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

         HYDROGRAPH IN FIFTEEN-MINUTE INTERVALS(CFS)

----------------------------------------------------------------------------
INTERVAL# VOLUME(AF)   Q(CFS) 0.        2.5       5.0       7.5      10.0
----------------------------------------------------------------------------
      1       .0013       .06  Q         .         .         .         .
      2       .0038       .12  Q         .         .         .         .
      3       .0065       .13  Q         .         .         .         .
      4       .0099       .16  Q         .         .         .         .
      5       .0129       .15  Q         .         .         .         .
      6       .0157       .13  Q         .         .         .         .
      7       .0184       .13  Q         .         .         .         .
      8       .0219       .16  Q         .         .         .         .
      9       .0255       .18  Q         .         .         .         .
     10       .0292       .18  Q         .         .         .         .
     11       .0335       .21  Q         .         .         .         .
     12       .0381       .22  Q         .         .         .         .
     13       .0427       .22  QV        .         .         .         .
     14       .0473       .22  QV        .         .         .         .
     15       .0519       .22  QV        .         .         .         .
     16       .0571       .25  .Q        .         .         .         .
     17       .0626       .27  .Q        .         .         .         .
     18       .0688       .30  .Q        .         .         .         .
     19       .0752       .31  .Q        .         .         .         .
     20       .0822       .34  .QV       .         .         .         .
     21       .0883       .29  .QV       .         .         .         .
     22       .0945       .30  .QV       .         .         .         .
     23       .1015       .34  .QV       .         .         .         .
     24       .1089       .36  .QV       .         .         .         .
     25       .1168       .39  .Q V      .         .         .         .
     26       .1251       .40  .Q V      .         .         .         .
     27       .1340       .43  .Q V      .         .         .         .
     28       .1432       .44  .Q V      .         .         .         .
     29       .1524       .44  .Q V      .         .         .         .
     30       .1622       .48  .Q  V     .         .         .         .
     31       .1729       .52  . Q V     .         .         .         .
     32       .1846       .56  . Q V     .         .         .         .
     33       .1978       .64  . Q  V    .         .         .         .
     34       .2116       .67  . Q  V    .         .         .         .
     35       .2260       .70  . Q  V    .         .         .         .
     36       .2413       .74  . Q   V   .         .         .         .
     37       .2582       .82  .  Q  V   .         .         .         .
     38       .2763       .87  .  Q   V  .         .         .         .
     39       .2953       .92  .  Q   V  .         .         .         .
     40       .3152       .96  .  Q    V .         .         .         .
     41       .3308       .76  .  Q    V .         .         .         .
     42       .3447       .67  . Q     V .         .         .         .
     43       .3617       .82  .  Q     V.         .         .         .
     44       .3800       .89  .  Q     V.         .         .         .
     45       .3977       .86  .  Q      V         .         .         .
     46       .4151       .84  .  Q      V         .         .         .
     47       .4313       .78  .  Q      .V        .         .         .
     48       .4476       .79  .  Q      .V        .         .         .
     49       .4773      1.44  .    Q    . V       .         .         .
     50       .5210      2.11  .       Q .  V      .         .         .
     51       .5833      3.01  .         . Q  V    .         .         .
     52       .6602      3.72  .         .   Q  V  .         .         .
     53       .7752      5.57  .         .         V Q       .         .
     54       .9061      6.33  .         .         .  V Q    .         .
     55       .9686      3.03  .         . Q       .    V    .         .
     56      1.0052      1.77  .      Q  .         .     V   .         .
     57      1.0696      3.12  .         . Q       .      V  .         .
     58      1.1405      3.43  .         .  Q      .        V.         .
     59      1.2118      3.45  .         .  Q      .         .V        .
```

```
    60      1.2790       3.25  .         .  Q      .         .  V      .
    61      1.3397       2.94  .         .Q        .         .   V     .
    62      1.3937       2.61  .         Q         .         .     V   .
    63      1.4214       1.34  .    Q    .         .         .      V  .
    64      1.4410        .95  .  Q      .         .         .      V  .
    65      1.4495        .41  .Q        .         .         .      V  .
    66      1.4533        .18  Q         .         .         .      V  .
    67      1.4563        .15  Q         .         .         .      V  .
    68      1.4591        .13  Q         .         .         .       V .
    69      1.4631        .20  Q         .         .         .       V .
    70      1.4677        .22  Q         .         .         .       V .
    71      1.4723        .22  Q         .         .         .       V .
    72      1.4762        .19  Q         .         .         .       V .
    73      1.4799        .18  Q         .         .         .       V .
    74      1.4836        .18  Q         .         .         .       V .
    75      1.4866        .15  Q         .         .         .       V .
    76      1.4887        .10  Q         .         .         .       V .
    77      1.4912        .12  Q         .         .         .       V .
    78      1.4946        .16  Q         .         .         .       V .
    79      1.4976        .15  Q         .         .         .        V.
    80      1.4997        .10  Q         .         .         .        V.
    81      1.5022        .12  Q         .         .         .        V.
    82      1.5050        .13  Q         .         .         .        V.
    83      1.5077        .13  Q         .         .         .        V.
    84      1.5098        .10  Q         .         .         .        V.
    85      1.5123        .12  Q         .         .         .        V.
    86      1.5144        .10  Q         .         .         .        V.
    87      1.5169        .12  Q         .         .         .        V.
    88      1.5190        .10  Q         .         .         .        V.
    89      1.5215        .12  Q         .         .         .        V.
    90      1.5236        .10  Q         .         .         .        V.
    91      1.5254        .09  Q         .         .         .        V.
    92      1.5273        .09  Q         .         .         .        V.
    93      1.5291        .09  Q         .         .         .        V.
    94      1.5309        .09  Q         .         .         .        V.
    95      1.5328        .09  Q         .         .         .        V.
    96      1.5346        .09  Q         .         .         .        V.
    97      1.5351        .03  Q         .         .         .        V.
    98      1.5352        .00  Q         .         .         .        V.
    99      1.5352        .00  Q         .         .         .        V.
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          U N I T - H Y D R O G R A P H   A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
                   (RCFC&WCD) 1978 HYDROLOGY MANUAL

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                     Especially prepared for:

                  MAINIERO, SMITH AND ASSOCIATES

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>


**********DESCRIPTION OF RESULTS********************************************
* Rio Vista Village                                                        *
* Area I                                                                   *
* 100 Year, 24 Hour Storm                                                  *
****************************************************************************

****************************************************************************
         WATERCOURSE LENGTH =     1078.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =     358.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =       8.730 FEET
         MANNINGS FRICTION FACTOR ALONG WATERCOURSE =  .015
         WATERSHED AREA =       10.000 ACRES
         UNIT HYDROGRAPH TIME UNIT =  15.000 MINUTES
         DESERT S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =   .316
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) =  .900
         MINIMUM SOIL-LOSS RATE(INCH/HOUR) =    .158
         BASEFLOW =   .000 CFS/SQUARE-MILE
         USER-ENTERED RAINFALL =  4.50 INCHES
         PROGRAM NUMBER  9 SELECTED


         WATERCOURSE "LAG" TIME =      .035 HOURS
         UNIT INTERVAL PERCENTAGE OF LAG-TIME = 720.882
         HYDROGRAPH BASEFLOW =     .000 CFS
         RCFC&WCD AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 1.0000



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                  Advanced Engineering Software [AES]
                          SERIAL No.I06181
                  VER. 1.6C     RELEASE DATE: 2/21/86

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                      UNIT HYDROGRAPH DETERMINATION
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INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	79.457	32.031
2	99.950	8.261
3	100.000	.020

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UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	.0090	.0081	.0009
2	.0135	.0121	.0013
3	.0135	.0121	.0013
4	.0180	.0162	.0018
5	.0135	.0121	.0013
6	.0135	.0121	.0013
7	.0135	.0121	.0013
8	.0180	.0162	.0018
9	.0180	.0162	.0018
10	.0180	.0162	.0018
11	.0225	.0202	.0022
12	.0225	.0202	.0022
13	.0225	.0202	.0022
14	.0225	.0202	.0022
15	.0225	.0202	.0022
16	.0270	.0243	.0027
17	.0270	.0243	.0027
18	.0315	.0283	.0031
19	.0315	.0283	.0031
20	.0360	.0324	.0036
21	.0270	.0243	.0027
22	.0315	.0283	.0031
23	.0360	.0324	.0036
24	.0360	.0324	.0036
25	.0405	.0364	.0040
26	.0405	.0364	.0040
27	.0450	.0405	.0045
28	.0450	.0405	.0045
29	.0450	.0405	.0045
30	.0495	.0445	.0049
31	.0540	.0486	.0054
32	.0585	.0526	.0058
33	.0675	.0607	.0067
34	.0675	.0607	.0067
35	.0720	.0648	.0072
36	.0765	.0688	.0076
37	.0855	.0769	.0085
38	.0900	.0810	.0090
39	.0945	.0850	.0094
40	.0990	.0838	.0152
41	.0675	.0607	.0067
42	.0675	.0607	.0067
43	.0900	.0802	.0098
44	.0900	.0791	.0109
45	.0855	.0769	.0085
46	.0855	.0767	.0087
47	.0765	.0688	.0076
48	.0810	.0729	.0081
49	.1125	.0734	.0391
50	.1170	.0723	.0447
51	.1260	.0712	.0548
52	.1305	.0701	.0604
53	.1530	.0691	.0839
54	.1530	.0680	.0850
55	.1035	.0670	.0365
56	.1035	.0660	.0375
57	.1215	.0650	.0565
58	.1170	.0640	.0530
59	.1170	.0630	.0540
60	.1125	.0620	.0505
61	.1080	.0611	.0469
62	.1035	.0601	.0434
63	.0855	.0592	.0263
64	.0855	.0583	.0272
65	.0180	.0162	.0018

66	.0180	.0162	.0018
67	.0135	.0121	.0013
68	.0135	.0121	.0013
69	.0225	.0202	.0022
70	.0225	.0202	.0022
71	.0225	.0202	.0022
72	.0180	.0162	.0018
73	.0180	.0162	.0018
74	.0180	.0162	.0018
75	.0135	.0121	.0013
76	.0090	.0081	.0009
77	.0135	.0121	.0013
78	.0180	.0162	.0018
79	.0135	.0121	.0013
80	.0090	.0081	.0009
81	.0135	.0121	.0013
82	.0135	.0121	.0013
83	.0135	.0121	.0013
84	.0090	.0081	.0009
85	.0135	.0121	.0013
86	.0090	.0081	.0009
87	.0135	.0121	.0013
88	.0090	.0081	.0009
89	.0135	.0121	.0013
90	.0090	.0081	.0009
91	.0090	.0081	.0009
92	.0090	.0081	.0009
93	.0090	.0081	.0009
94	.0090	.0081	.0009
95	.0090	.0081	.0009
96	.0090	.0081	.0009

TOTAL STORM RAINFALL(INCHES) = 4.50
TOTAL SOIL-LOSS(INCHES) = 3.43
TOTAL EFFECTIVE RAINFALL(INCHES) = 1.07

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 2.8557
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = .8938

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         RCFC&WCD 24-HOUR RUNOFF HYDROGRAPH

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

         HYDROGRAPH IN FIFTEEN-MINUTE INTERVALS(CFS)

----------------------------------------------------------------------------
INTERVAL# VOLUME(AF)   Q(CFS) 0.       2.5       5.0       7.5       10.0
----------------------------------------------------------------------------
      1       .0006       .03  Q         .         .         .         .
      2       .0016       .05  Q         .         .         .         .
      3       .0028       .05  Q         .         .         .         .
      4       .0042       .07  Q         .         .         .         .
      5       .0054       .06  Q         .         .         .         .
      6       .0065       .05  Q         .         .         .         .
      7       .0076       .05  Q         .         .         .         .
      8       .0091       .07  Q         .         .         .         .
      9       .0106       .07  Q         .         .         .         .
     10       .0121       .07  Q         .         .         .         .
     11       .0139       .09  Q         .         .         .         .
     12       .0157       .09  Q         .         .         .         .
     13       .0176       .09  Q         .         .         .         .
     14       .0195       .09  Q         .         .         .         .
     15       .0214       .09  Q         .         .         .         .
     16       .0235       .11  QV        .         .         .         .
     17       .0258       .11  QV        .         .         .         .
     18       .0283       .12  QV        .         .         .         .
     19       .0309       .13  QV        .         .         .         .
     20       .0339       .14  QV        .         .         .         .
     21       .0363       .12  QV        .         .         .         .
     22       .0388       .12  QV        .         .         .         .
     23       .0417       .14  QV        .         .         .         .
     24       .0447       .15  Q V       .         .         .         .
     25       .0480       .16  Q V       .         .         .         .
     26       .0514       .16  Q V       .         .         .         .
     27       .0551       .18  Q V       .         .         .         .
     28       .0588       .18  Q V       .         .         .         .
     29       .0626       .18  Q V       .         .         .         .
     30       .0666       .20  Q V       .         .         .         .
     31       .0710       .21  Q  V      .         .         .         .
     32       .0758       .23  Q  V      .         .         .         .
     33       .0813       .26  .Q V      .         .         .         .
     34       .0869       .27  .Q V      .         .         .         .
     35       .0928       .29  .Q  V     .         .         .         .
     36       .0991       .30  .Q  V     .         .         .         .
     37       .1061       .34  .Q  V     .         .         .         .
     38       .1135       .36  .Q   V    .         .         .         .
     39       .1213       .38  .Q   V    .         .         .         .
     40       .1330       .56  . Q  V    .         .         .         .
     41       .1400       .34  .Q    V   .         .         .         .
     42       .1457       .27  .Q    V   .         .         .         .
     43       .1533       .37  .Q    V   .         .         .         .
     44       .1622       .43  .Q     V  .         .         .         .
     45       .1697       .36  .Q     V  .         .         .         .
     46       .1770       .35  .Q     V  .         .         .         .
     47       .1835       .32  .Q      V .         .         .         .
     48       .1902       .32  .Q      V .         .         .         .
     49       .2175      1.32  .    Q   V.         .         .         .
     50       .2537      1.76  .      Q   .V        .         .         .
     51       .2977      2.13  .       Q .  V      .         .         .
     52       .3470      2.39  .        Q.     V   .         .         .
     53       .4129      3.19  .         . Q     V .         .         .
     54       .4835      3.42  .         .  Q      .V        .         .
     55       .5222      1.87  .      Q  .         .  V      .         .
     56       .5533      1.51  .     Q   .         .   V     .         .
     57       .5971      2.12  .       Q .         .     V   .         .
     58       .6419      2.17  .       Q .         .       V .         .
     59       .6867      2.17  .       Q .         .         V         .
```

```
    60        .7294      2.06  .       Q  .         .         . V       .
    61        .7691      1.92  .      Q   .         .         .   V     .
    62        .8058      1.78  .      Q   .         .         .     V   .
    63        .8306      1.20  .   Q      .         .         .      V  .
    64        .8531      1.09  .   Q      .         .         .       V .
    65        .8590       .28  .Q         .         .         .       V .
    66        .8605       .07  Q          .         .         .       V .
    67        .8617       .06  Q          .         .         .       V .
    68        .8628       .05  Q          .         .         .       V .
    69        .8645       .08  Q          .         .         .       V .
    70        .8664       .09  Q          .         .         .       V .
    71        .8683       .09  Q          .         .         .       V .
    72        .8698       .08  Q          .         .         .       V .
    73        .8713       .07  Q          .         .         .       V .
    74        .8728       .07  Q          .         .         .        V.
    75        .8740       .06  Q          .         .         .        V.
    76        .8749       .04  Q          .         .         .        V.
    77        .8759       .05  Q          .         .         .        V.
    78        .8773       .07  Q          .         .         .        V.
    79        .8785       .06  Q          .         .         .        V.
    80        .8794       .04  Q          .         .         .        V.
    81        .8804       .05  Q          .         .         .        V.
    82        .8815       .05  Q          .         .         .        V.
    83        .8827       .05  Q          .         .         .        V.
    84        .8835       .04  Q          .         .         .        V.
    85        .8845       .05  Q          .         .         .        V.
    86        .8854       .04  Q          .         .         .        V.
    87        .8864       .05  Q          .         .         .        V.
    88        .8872       .04  Q          .         .         .        V.
    89        .8883       .05  Q          .         .         .        V.
    90        .8891       .04  Q          .         .         .        V.
    91        .8899       .04  Q          .         .         .        V.
    92        .8906       .04  Q          .         .         .        V.
    93        .8914       .04  Q          .         .         .        V.
    94        .8921       .04  Q          .         .         .        V.
    95        .8929       .04  Q          .         .         .        V.
    96        .8936       .04  Q          .         .         .        V.
    97        .8938       .01  Q          .         .         .        V.
    98        .8938       .00  Q          .         .         .        V.
*****************************************************************************
```

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****************************************************************************
          U N I T - H Y D R O G R A P H   A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
                 (RCFC&WCD) 1978 HYDROLOGY MANUAL

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<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

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                      Especially prepared for:

                  MAINIERO, SMITH AND ASSOCIATES

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>


**********DESCRIPTION OF RESULTS********************************************
* Rio Vista Village                                                        *
* Area K2                                                                  *
* 100 Year, 24 Hour Storm                                                  *
****************************************************************************

****************************************************************************
         WATERCOURSE LENGTH =    1784.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =     704.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =      12.100 FEET
         MANNINGS FRICTION FACTOR ALONG WATERCOURSE =  .015
         WATERSHED AREA =      22.450 ACRES
         UNIT HYDROGRAPH TIME UNIT =  15.000 MINUTES
         DESERT S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =    .370
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) =   .900
         MINIMUM SOIL-LOSS RATE(INCH/HOUR) =     .185
         BASEFLOW =    .000 CFS/SQUARE-MILE
         USER-ENTERED RAINFALL =  4.50 INCHES
         PROGRAM NUMBER  9 SELECTED


         WATERCOURSE "LAG" TIME =      .056 HOURS
         UNIT INTERVAL PERCENTAGE OF LAG-TIME = 445.140
         HYDROGRAPH BASEFLOW =     .000 CFS
         RCFC&WCD AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 1.0000



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                 Advanced Engineering Software [AES]
                          SERIAL No.I0618I
                 VER. 1.6C     RELEASE DATE: 2/21/86

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****************************************************************************
                      UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
----------------------------------------------------------------------------
        1               67.987               61.530
        2               98.682               27.780
        3               99.984                1.178
        4              100.000                 .014
****************************************************************************
```

UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	.0090	.0081	.0009
2	.0135	.0121	.0013
3	.0135	.0121	.0013
4	.0180	.0162	.0018
5	.0135	.0121	.0013
6	.0135	.0121	.0013
7	.0135	.0121	.0013
8	.0180	.0162	.0018
9	.0180	.0162	.0018
10	.0180	.0162	.0018
11	.0225	.0202	.0022
12	.0225	.0202	.0022
13	.0225	.0202	.0022
14	.0225	.0202	.0022
15	.0225	.0202	.0022
16	.0270	.0243	.0027
17	.0270	.0243	.0027
18	.0315	.0283	.0031
19	.0315	.0283	.0031
20	.0360	.0324	.0036
21	.0270	.0243	.0027
22	.0315	.0283	.0031
23	.0360	.0324	.0036
24	.0360	.0324	.0036
25	.0405	.0364	.0040
26	.0405	.0364	.0040
27	.0450	.0405	.0045
28	.0450	.0405	.0045
29	.0450	.0405	.0045
30	.0495	.0445	.0049
31	.0540	.0486	.0054
32	.0585	.0526	.0058
33	.0675	.0607	.0067
34	.0675	.0607	.0067
35	.0720	.0648	.0072
36	.0765	.0688	.0076
37	.0855	.0769	.0085
38	.0900	.0810	.0090
39	.0945	.0850	.0094
40	.0990	.0891	.0099
41	.0675	.0607	.0067
42	.0675	.0607	.0067
43	.0900	.0810	.0090
44	.0900	.0810	.0090
45	.0855	.0769	.0085
46	.0855	.0769	.0085
47	.0765	.0688	.0076
48	.0810	.0729	.0081
49	.1125	.0859	.0266
50	.1170	.0846	.0324
51	.1260	.0834	.0426
52	.1305	.0821	.0484
53	.1530	.0809	.0721
54	.1530	.0796	.0734
55	.1035	.0784	.0251
56	.1035	.0772	.0263
57	.1215	.0761	.0454
58	.1170	.0749	.0421
59	.1170	.0737	.0432
60	.1125	.0726	.0399
61	.1080	.0715	.0365
62	.1035	.0704	.0331
63	.0855	.0693	.0162
64	.0855	.0683	.0172
65	.0180	.0162	.0018

66	.0180	.0162	.0018
67	.0135	.0121	.0013
68	.0135	.0121	.0013
69	.0225	.0202	.0022
70	.0225	.0202	.0022
71	.0225	.0202	.0022
72	.0180	.0162	.0018
73	.0180	.0162	.0018
74	.0180	.0162	.0018
75	.0135	.0121	.0013
76	.0090	.0081	.0009
77	.0135	.0121	.0013
78	.0180	.0162	.0018
79	.0135	.0121	.0013
80	.0090	.0081	.0009
81	.0135	.0121	.0013
82	.0135	.0121	.0013
83	.0135	.0121	.0013
84	.0090	.0081	.0009
85	.0135	.0121	.0013
86	.0090	.0081	.0009
87	.0135	.0121	.0013
88	.0090	.0081	.0009
89	.0135	.0121	.0013
90	.0090	.0081	.0009
91	.0090	.0081	.0009
92	.0090	.0081	.0009
93	.0090	.0081	.0009
94	.0090	.0081	.0009
95	.0090	.0081	.0009
96	.0090	.0081	.0009

TOTAL STORM RAINFALL(INCHES) = 4.50
TOTAL SOIL-LOSS(INCHES) = 3.61
TOTAL EFFECTIVE RAINFALL(INCHES) = .89

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 6.7618
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 1.6557

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         RCFC&WCD 24-HOUR RUNOFF HYDROGRAPH

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

         HYDROGRAPH IN FIFTEEN-MINUTE INTERVALS(CFS)

----------------------------------------------------------------------------
INTERVAL# VOLUME(AF)  Q(CFS)   0.       2.5       5.0       7.5      10.0
----------------------------------------------------------------------------
       1       .0011      .06  Q         .         .         .         .
       2       .0034      .11  Q         .         .         .         .
       3       .0059      .12  Q         .         .         .         .
       4       .0090      .15  Q         .         .         .         .
       5       .0118      .13  Q         .         .         .         .
       6       .0143      .12  Q         .         .         .         .
       7       .0168      .12  Q         .         .         .         .
       8       .0199      .15  Q         .         .         .         .
       9       .0233      .16  Q         .         .         .         .
      10       .0266      .16  Q         .         .         .         .
      11       .0306      .19  Q         .         .         .         .
      12       .0348      .20  Q         .         .         .         .
      13       .0390      .20  Q         .         .         .         .
      14       .0432      .20  QV        .         .         .         .
      15       .0474      .20  QV        .         .         .         .
      16       .0522      .23  QV        .         .         .         .
      17       .0572      .24  QV        .         .         .         .
      18       .0628      .27  .Q        .         .         .         .
      19       .0687      .28  .Q        .         .         .         .
      20       .0752      .31  .Q        .         .         .         .
      21       .0808      .27  .Q        .         .         .         .
      22       .0864      .27  .QV       .         .         .         .
      23       .0928      .31  .QV       .         .         .         .
      24       .0996      .33  .QV       .         .         .         .
      25       .1069      .35  .QV       .         .         .         .
      26       .1144      .37  .QV       .         .         .         .
      27       .1226      .39  .QV       .         .         .         .
      28       .1310      .41  .Q V      .         .         .         .
      29       .1394      .41  .Q V      .         .         .         .
      30       .1484      .43  .Q V      .         .         .         .
      31       .1582      .48  .Q V      .         .         .         .
      32       .1689      .52  . Q V     .         .         .         .
      33       .1809      .58  . Q V     .         .         .         .
      34       .1935      .61  . Q V     .         .         .         .
      35       .2067      .64  . Q V     .         .         .         .
      36       .2207      .68  . Q  V    .         .         .         .
      37       .2362      .75  . Q  V    .         .         .         .
      38       .2527      .80  .  Q  V   .         .         .         .
      39       .2701      .84  .  Q  V   .         .         .         .
      40       .2883      .88  .  Q  V   .         .         .         .
      41       .3028      .70  . Q    V  .         .         .         .
      42       .3155      .61  . Q    V  .         .         .         .
      43       .3310      .75  . Q    V  .         .         .         .
      44       .3478      .81  .  Q    V .         .         .         .
      45       .3640      .79  .  Q    V .         .         .         .
      46       .3800      .77  .  Q     V.         .         .         .
      47       .3949      .72  . Q      V.         .         .         .
      48       .4098      .72  . Q      V.         .         .         .
      49       .4484     1.87  .      Q  V         .         .         .
      50       .5050     2.74  .         Q V       .         .         .
      51       .5784     3.55  .         .  VQ     .         .         .
      52       .6652     4.20  .         .      Q  .         .         .
      53       .7858     5.83  .         .        V.   Q     .         .
      54       .9216     6.58  .         .         . V   Q   .         .
      55       .9974     3.67  .         .    Q    .   V     .         .
      56      1.0470     2.40  .        Q.         .    V    .         .
      57      1.1204     3.56  .         .    Q    .      V  .         .
      58      1.2007     3.88  .         .     Q   .        V.         .
      59      1.2809     3.88  .         .     Q   .         V         .
```

```
    60      1.3575      3.71   .         .   Q     .         . V       .
    61      1.4278      3.40   .         .  Q      .         .   V     .
    62      1.4918      3.10   .         . Q       .         .     V   .
    63      1.5323      1.96   .      Q  .         .         .      V  .
    64      1.5642      1.55   .     Q   .         .         .      V  .
    65      1.5768       .61   . Q       .         .         .       V .
    66      1.5806       .18   Q         .         .         .       V .
    67      1.5834       .14   Q         .         .         .       V .
    68      1.5859       .12   Q         .         .         .       V .
    69      1.5896       .18   Q         .         .         .       V .
    70      1.5938       .20   Q         .         .         .       V .
    71      1.5980       .20   Q         .         .         .       V .
    72      1.6016       .18   Q         .         .         .       V .
    73      1.6050       .16   Q         .         .         .       V .
    74      1.6083       .16   Q         .         .         .       V .
    75      1.6111       .14   Q         .         .         .       V .
    76      1.6131       .10   Q         .         .         .       V .
    77      1.6154       .11   Q         .         .         .        V.
    78      1.6184       .15   Q         .         .         .        V.
    79      1.6212       .13   Q         .         .         .        V.
    80      1.6232       .10   Q         .         .         .        V.
    81      1.6255       .11   Q         .         .         .        V.
    82      1.6280       .12   Q         .         .         .        V.
    83      1.6305       .12   Q         .         .         .        V.
    84      1.6324       .09   Q         .         .         .        V.
    85      1.6347       .11   Q         .         .         .        V.
    86      1.6367       .09   Q         .         .         .        V.
    87      1.6389       .11   Q         .         .         .        V.
    88      1.6409       .09   Q         .         .         .        V.
    89      1.6431       .11   Q         .         .         .        V.
    90      1.6451       .09   Q         .         .         .        V.
    91      1.6468       .08   Q         .         .         .        V.
    92      1.6484       .08   Q         .         .         .        V.
    93      1.6501       .08   Q         .         .         .        V.
    94      1.6518       .08   Q         .         .         .        V.
    95      1.6535       .08   Q         .         .         .        V.
    96      1.6552       .08   Q         .         .         .        V.
    97      1.6557       .03   Q         .         .         .        V.
    98      1.6557       .00   Q         .         .         .        V.
    99      1.6557       .00   Q         .         .         .        V.
****************************************************************************
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Simplified Method to Establish the 100-Year, 1-Hour Storm Hydraulic Grade in Retention Basins

Simplified Method to Establish the 100-Year, 1-Hour Storm Hydraulic Grade Line in Retention Basins

Criteria:

In the Rio Vista project, several storm drains drain into retention basins during storm events. The retention basins are designed to retain 100% of the 100-year, 24-storm runoff. However, the storm drain and catch basin systems are designed to convey the 100-year, 1-hour storm. The following is our approach to establish the appropriate elevation for the hydraulic grade line at the outlet of each storm drain system.

Proposed Hydraulic Approach:

Using the "Shortcut Method" Synthetic Unit Hydrograph from the RCFC & WCD Hydrology Manual, we adjust the percentage rainfall in accordance with the Rainfall Pattern for the 100-year, 1-hour storm graph attached. We adjust the "constant loss rate" until the peak 100-year, 1-hour storm runoff rate equals the Rational Method peak runoff rate. In our sample problem, 15.20 acres produce 46.7 cubic feet per second of peak runoff. The Runoff Pattern graph attached indicates the runoff per 2.5-minute periods from the Shortcut Method calculations. In the "Shortcut Method", we allow a small portion of the runoff to percolate in the bottom of the basin. This percolation value is based on the size of the basin and the allowable percolation rate. Using the "Accumulated Volume" information for unit time period #13, we can estimate the maximum volume in each retention basin at the time of peak 100-year runoff. This volume will provide the Hydraulic Grade Line elevation for each storm drain system.

Results:

Results from the "Shortcut Method" indicate the depth in the retention basin is shallow at the time of peak runoff. This result is anticipated due to the nature of the 1-hour storm (thunderstorm type event).

RCFC & WCD HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD **Unit Hydrograph, Effective Rain and Retention Basin Calculation Form**	Project 1064 "Sample Problem" Net rain 100 yr. 1 hr. By JAD Date Checked Date	Sheet 1 of 1

[1] CONCENTRATION POINT	0	[2] AREA DESIGNATION	
[3] DRAINAGE AREA-ACRES	15.2	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	0
[5] UNIT TIME-MINUTES	2.5	[6] LAG TIME-MINUTES	0
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	0	[8] S-CURVE	0
[9] STORM FREQUENCY & DURATION 100 YEAR-	1 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.6
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0
[13] CONSTANT LOSS RATE-INCHES/HOUR	2.7	[14] LOW LOSS RATE-PERCENT	90
[15] RETENTION BASIN AREA-ACRES	0.35	[16] RETENTION BASIN PERCOLATION-INCHE!	2

	EFFECTIVE RAIN					FLOOD HYDROGRAPH	RETENTION BASIN PERCOLATION			
[17] UNIT TIME PERIOD minutes	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN in [10][20] / 100	[22] LOSS RATE in		[23] EFFECTIVE RAIN in [21]-[22]	[24] FLOW cfs	[25] EFFECTIVE RUNOFF acre-ft [23][3]/12	[26] PERCOLATION acre-ft [15][16]	[27] RETENTION PER PERIOD [25]-[26]	[28] ACCUMULATED VOLUME
			MAX	LOW						
1.000	0.030	0.000	0.113	0.000	0.000	0.018	0.0001	0.0024	-0.0024	0.000
2.000	0.210	0.003	0.113	0.003	0.000	0.124	0.0004	0.0024	-0.0020	0.000
3.000	0.520	0.008	0.113	0.007	0.001	0.306	0.0011	0.0024	-0.0014	0.000
4.000	0.890	0.014	0.113	0.013	0.001	0.524	0.0018	0.0024	-0.0006	0.000
5.000	1.410	0.023	0.113	0.020	0.002	0.830	0.0029	0.0024	0.0004	0.000
6.000	2.110	0.034	0.113	0.030	0.003	1.242	0.0043	0.0024	0.0018	0.002
7.000	3.060	0.049	0.113	0.044	0.005	1.801	0.0062	0.0024	0.0038	0.006
8.000	4.190	0.067	0.113	0.060	0.007	2.466	0.0085	0.0024	0.0061	0.012
9.000	5.600	0.090	0.113	0.081	0.009	3.296	0.0113	0.0024	0.0089	0.021
10.000	7.410	0.119	0.113	0.107	0.012	4.361	0.0150	0.0024	0.0126	0.034
11.000	9.790	0.157	0.113	0.141	0.044	16.236	0.0559	0.0024	0.0535	0.087
12.000	14.980	0.240	0.113	0.216	0.127	46.782	0.1611	0.0024	0.1587	0.246
13.000	14.980	0.240	0.113	0.216	0.127	46.782	0.1611	0.0024	0.1587	0.404
14.000	9.790	0.157	0.113	0.141	0.044	16.236	0.0559	0.0024	0.0535	0.458
15.000	7.410	0.119	0.113	0.107	0.012	4.361	0.0150	0.0024	0.0126	0.470
16.000	5.600	0.090	0.113	0.081	0.009	3.296	0.0113	0.0024	0.0089	0.479
17.000	4.190	0.067	0.113	0.060	0.007	2.466	0.0085	0.0024	0.0061	0.485
18.000	3.060	0.049	0.113	0.044	0.005	1.801	0.0062	0.0024	0.0038	0.489
19.000	2.110	0.034	0.113	0.030	0.003	1.242	0.0043	0.0024	0.0018	0.491
20.000	1.410	0.023	0.113	0.020	0.002	0.830	0.0029	0.0024	0.0004	0.492
21.000	0.890	0.014	0.113	0.013	0.001	0.524	0.0018	0.0024	-0.0006	0.491
22.000	0.520	0.008	0.113	0.007	0.001	0.306	0.0011	0.0024	-0.0014	0.490
23.000	0.210	0.003	0.113	0.003	0.000	0.124	0.0004	0.0024	-0.0020	0.488
24.000	0.030	0.000	0.113	0.000	0.000	0.018	0.0001	0.0024	-0.0024	0.485
TOTALS					0.4240	155.9700				MAX: .492

"SAMPLE PROBLEM"

EFFECTIVE RAIN = 0.018 INCHES/ACRE

MAX RETENTION = 0.492 ACRE-FT

R:\Documents\1064\Originals\STORMDRAIN CALCS\[jad Unit Hydrograph Effective Rain and H1 Basin 100 1hr.xls],

3/22/01 5:50 AM

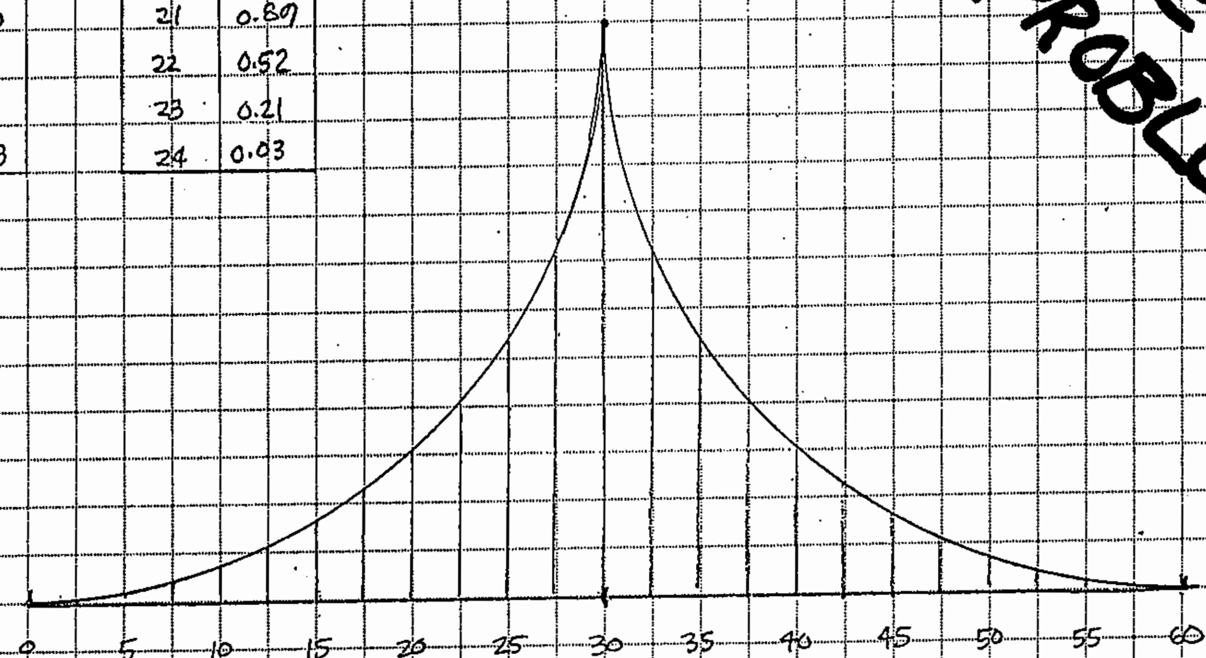
MAINIERO, SMITH ASSOCIATES, INC.

MAINIERO, SMITH AND ASSOCIATES, INC.
Planning/Civil Engineering/Land Surveying
777 E. Tahquitz Canyon Way Suite 301
PALM SPRINGS, CALIFORNIA 92262-6784
(760) 320-9811 FAX (760) 323-7893

JOB 1064 RIO VISTA
SHEET NO. ____ OF ____
CALCULATED BY ____ DATE 2-12-01
CHECKED BY ____ DATE ____
SCALE ____

"SAMPLE PROBLEM"

PERIOD	% STORM	PERIOD	% STORM
1	0.03	13	14.78
2	0.21	14	9.79
3	0.52	15	7.41
4	0.89	16	5.60
5	1.41	17	4.19
6	2.11	18	3.06
7	3.06	19	2.11
8	4.19	20	1.41
9	5.60	21	0.89
10	7.41	22	0.52
11	9.79	23	0.21
12	14.78	24	0.03



RAINFALL PATTERN FOR
100-YEAR, 1-HOUR STORM

MAINIERO, SMITH AND ASSOCIATES, INC.
Planning/Civil Engineering/Land Surveying
777 E. Tahquitz Canyon Way Suite 301
PALM SPRINGS, CALIFORNIA 92262-6784
(760) 320-9811 FAX (760) 323-7893

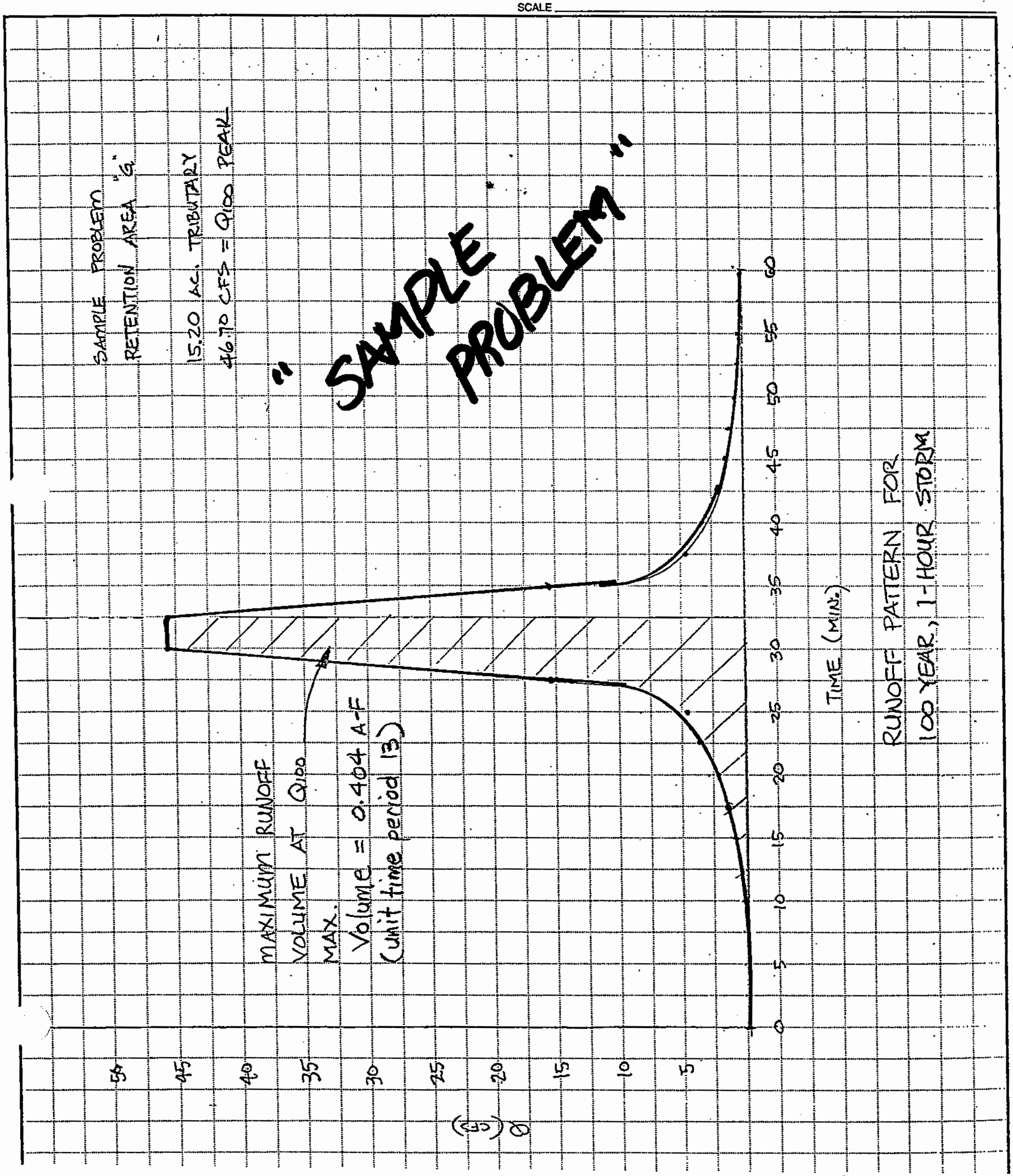
JOB 1064 RIO VISTA

SHEET NO. ______ OF ______

CALCULATED BY ______ DATE 2-12-01

CHECKED BY ______ DATE ______

SCALE ______



RCFC & WCD HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph, Effective Rain and Retention Basin Calculation Form	Project 1064 Retention Basin B Net rain 100 yr. 1 hr. By JAD Date Checked Date	Sheet 1 of 1

[1] CONCENTRATION POINT	0	[2] AREA DESIGNATION	
[3] DRAINAGE AREA-ACRES	21.04	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	0
[5] UNIT TIME-MINUTES	2.5	[6] LAG TIME-MINUTES	0
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	0	[8] S-CURVE	0
[9] STORM FREQUENCY & DURATION 100 YEAR-	1 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.6
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0
[13] CONSTANT LOSS RATE-INCHES/HOUR	3.18	[14] LOW LOSS RATE-PERCENT	90
[15] RETENTION BASIN AREA-ACRES	0.36835	[16] RETENTION BASIN PERCOLATION-INCHE!	2

	EFFECTIVE RAIN					FLOOD HYDROGRAPH	RETENTION BASIN PERCOLATION			
[17] UNIT TIME PERIOD minutes	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN in [10][20] / 100	[22] LOSS RATE in MAX	LOW	[23] EFFECTIVE RAIN in [21]-[22]	[24] FLOW cfs	[25] EFFECTIVE RUNOFF acre-ft [23][3]/12	[26] PERCOLATION acre-ft [15][16]	[27] RETENTION PER PERIOD [25]-[26]	[28] ACCUMULATED VOLUME
1.000	0.030	0.000	0.133	0.000	0.000	0.024	0.0001	0.0026	-0.0025	0.000
2.000	0.210	0.003	0.133	0.003	0.000	0.171	0.0006	0.0026	-0.0020	0.000
3.000	0.520	0.008	0.133	0.007	0.001	0.424	0.0015	0.0026	-0.0011	0.000
4.000	0.890	0.014	0.133	0.013	0.001	0.725	0.0025	0.0026	-0.0001	0.000
5.000	1.410	0.023	0.133	0.020	0.002	1.149	0.0040	0.0026	0.0014	0.001
6.000	2.110	0.034	0.133	0.030	0.003	1.719	0.0059	0.0026	0.0034	0.005
7.000	3.060	0.049	0.133	0.044	0.005	2.493	0.0086	0.0026	0.0060	0.011
8.000	4.190	0.067	0.133	0.060	0.007	3.413	0.0118	0.0026	0.0092	0.020
9.000	5.600	0.090	0.133	0.081	0.009	4.562	0.0157	0.0026	0.0132	0.033
10.000	7.410	0.119	0.133	0.107	0.012	6.037	0.0208	0.0026	0.0182	0.051
11.000	9.790	0.157	0.133	0.141	0.024	12.291	0.0423	0.0026	0.0398	0.091
12.000	14.980	0.240	0.133	0.216	0.107	54.573	0.1879	0.0026	0.1854	0.276
13.000	14.980	0.240	0.133	0.216	0.107	54.573	0.1879	0.0026	0.1854	0.462
14.000	9.790	0.157	0.133	0.141	0.024	12.291	0.0423	0.0026	0.0398	0.502
15.000	7.410	0.119	0.133	0.107	0.012	6.037	0.0208	0.0026	0.0182	0.520
16.000	5.600	0.090	0.133	0.081	0.009	4.562	0.0157	0.0026	0.0132	0.533
17.000	4.190	0.067	0.133	0.060	0.007	3.413	0.0118	0.0026	0.0092	0.542
18.000	3.060	0.049	0.133	0.044	0.005	2.493	0.0086	0.0026	0.0060	0.548
19.000	2.110	0.034	0.133	0.030	0.003	1.719	0.0059	0.0026	0.0034	0.552
20.000	1.410	0.023	0.133	0.020	0.002	1.149	0.0040	0.0026	0.0014	0.553
21.000	0.890	0.014	0.133	0.013	0.001	0.725	0.0025	0.0026	-0.0001	0.553
22.000	0.520	0.008	0.133	0.007	0.001	0.424	0.0015	0.0026	-0.0011	0.552
23.000	0.210	0.003	0.133	0.003	0.000	0.171	0.0006	0.0026	-0.0020	0.550
24.000	0.030	0.000	0.133	0.000	0.000	0.024	0.0001	0.0026	-0.0025	0.547
TOTALS					0.3440	175.1619				MAX: .553

EFFECTIVE RAIN = 0.014 INCHES/ACRE

MAX RETENTION = 0.553 ACRE-FT

RCFC&WCD HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph, Effective Rain and Retention Basin Calculation Form	Project 1064 Retention Basin C Net rain 100 yr. 1 hr. By JAD Date Checked Date	Sheet 1 of 1

[1] CONCENTRATION POINT	0	[2] AREA DESIGNATION	
[3] DRAINAGE AREA-ACRES	8.46	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	0
[5] UNIT TIME-MINUTES	2.5	[6] LAG TIME-MINUTES	0
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	0	[8] S-CURVE	0
[9] STORM FREQUENCY & DURATION 100 YEAR-	1 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.6
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0
[13] CONSTANT LOSS RATE-INCHES/HOUR	2.66	[14] LOW LOSS RATE-PERCENT	90
[15] RETENTION BASIN AREA-ACRES	0.259	[16] RETENTION BASIN PERCOLATION-INCHES	2

	EFFECTIVE RAIN					FLOOD HYDROGRAPH	RETENTION BASIN PERCOLATION			
[17] UNIT TIME PERIOD minutes	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN in [10][20]/100	[22] LOSS RATE in MAX	LOW	[23] EFFECTIVE RAIN in [21]-[22]	[24] FLOW cfs	[25] EFFECTIVE RUNOFF acre-ft [23][3]/12	[26] PERCOLATION acre-ft [15][16]	[27] RETENTION PER PERIOD [25]-[26]	[28] ACCUMULATED VOLUME
1.000	0.030	0.000	0.111	0.000	0.000	0.010	0.0000	0.0018	-0.0018	0.000
2.000	0.210	0.003	0.111	0.003	0.000	0.069	0.0002	0.0018	-0.0016	0.000
3.000	0.520	0.008	0.111	0.007	0.001	0.170	0.0006	0.0018	-0.0012	0.000
4.000	0.890	0.014	0.111	0.013	0.001	0.292	0.0010	0.0018	-0.0008	0.000
5.000	1.410	0.023	0.111	0.020	0.002	0.462	0.0016	0.0018	-0.0002	0.000
6.000	2.110	0.034	0.111	0.030	0.003	0.691	0.0024	0.0018	0.0006	0.001
7.000	3.060	0.049	0.111	0.044	0.005	1.002	0.0035	0.0018	0.0017	0.002
8.000	4.190	0.067	0.111	0.060	0.007	1.373	0.0047	0.0018	0.0029	0.005
9.000	5.600	0.090	0.111	0.081	0.009	1.834	0.0063	0.0018	0.0045	0.010
10.000	7.410	0.119	0.111	0.107	0.012	2.427	0.0084	0.0018	0.0066	0.016
11.000	9.790	0.157	0.111	0.141	0.046	9.378	0.0323	0.0018	0.0305	0.047
12.000	14.980	0.240	0.111	0.216	0.129	26.379	0.0908	0.0018	0.0890	0.136
13.000	14.980	0.240	0.111	0.216	0.129	26.379	0.0908	0.0018	0.0890	0.225
14.000	9.790	0.157	0.111	0.141	0.046	9.378	0.0323	0.0018	0.0305	0.255
15.000	7.410	0.119	0.111	0.107	0.012	2.427	0.0084	0.0018	0.0066	0.262
16.000	5.600	0.090	0.111	0.081	0.009	1.834	0.0063	0.0018	0.0045	0.266
17.000	4.190	0.067	0.111	0.060	0.007	1.373	0.0047	0.0018	0.0029	0.269
18.000	3.060	0.049	0.111	0.044	0.005	1.002	0.0035	0.0018	0.0017	0.271
19.000	2.110	0.034	0.111	0.030	0.003	0.691	0.0024	0.0018	0.0006	0.272
20.000	1.410	0.023	0.111	0.020	0.002	0.462	0.0016	0.0018	-0.0002	0.271
21.000	0.890	0.014	0.111	0.013	0.001	0.292	0.0010	0.0018	-0.0008	0.271
22.000	0.520	0.008	0.111	0.007	0.001	0.170	0.0006	0.0018	-0.0012	0.269
23.000	0.210	0.003	0.111	0.003	0.000	0.069	0.0002	0.0018	-0.0016	0.268
24.000	0.030	0.000	0.111	0.000	0.000	0.010	0.0000	0.0018	-0.0018	0.266
TOTALS					0.4307	88.1745				MAX: .272

EFFECTIVE RAIN = 0.018 INCHES/ACRE

MAX RETENTION = 0.272 ACRE-FT

RCFC&WCD HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD **Unit Hydrograph, Effective Rain and Retention Basin Calculation Form**	Project 1064 Retention Basin D Net rain ~~100 yr. 1 hr.~~ By JAD Date Checked Date	Sheet 1 of 1

[1] CONCENTRATION POINT	0	[2] AREA DESIGNATION	
[3] DRAINAGE AREA-ACRES	33.79	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	0
[5] UNIT TIME-MINUTES	2.5	[6] LAG TIME-MINUTES	0
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	0	[8] S-CURVE	0
[9] STORM FREQUENCY & DURATION 100 YEAR-	1 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.6
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0
[13] CONSTANT LOSS RATE-INCHES/HOUR	3.18	[14] LOW LOSS RATE-PERCENT	90
[15] RETENTION BASIN AREA-ACRES	0.738	[16] RETENTION BASIN PERCOLATION-INCHES	2

	EFFECTIVE RAIN					FLOOD HYDROGRAPH	RETENTION BASIN PERCOLATION			
[17] UNIT TIME PERIOD minutes	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN in [10][20]/100	[22] LOSS RATE in MAX	[22] LOSS RATE in LOW	[23] EFFECTIVE RAIN in [21]-[22]	[24] FLOW cfs	[25] EFFECTIVE RUNOFF acre-ft [23][3]/12	[26] PERCOLATION acre-ft [15][16]	[27] RETENTION PER PERIOD [25]-[26]	[28] ACCUMULATED VOLUME
1.000	0.030	0.000	0.133	0.000	0.000	0.039	0.0001	0.0051	-0.0050	0.000
2.000	0.210	0.003	0.133	0.003	0.000	0.275	0.0009	0.0051	-0.0042	0.000
3.000	0.520	0.008	0.133	0.007	0.001	0.680	0.0023	0.0051	-0.0028	0.000
4.000	0.890	0.014	0.133	0.013	0.001	1.164	0.0040	0.0051	-0.0011	0.000
5.000	1.410	0.023	0.133	0.020	0.002	1.845	0.0064	0.0051	0.0012	0.001
6.000	2.110	0.034	0.133	0.030	0.003	2.761	0.0095	0.0051	0.0044	0.006
7.000	3.060	0.049	0.133	0.044	0.005	4.004	0.0138	0.0051	0.0087	0.014
8.000	4.190	0.067	0.133	0.060	0.007	5.482	0.0189	0.0051	0.0138	0.028
9.000	5.600	0.090	0.133	0.081	0.009	7.327	0.0252	0.0051	0.0201	0.048
10.000	7.410	0.119	0.133	0.107	0.012	9.695	0.0334	0.0051	0.0283	0.076
11.000	9.790	0.157	0.133	0.141	0.024	19.740	0.0680	0.0051	0.0628	0.139
12.000	14.980	0.240	0.133	0.216	0.107	87.643	0.3018	0.0051	0.2967	0.436
13.000	14.980	0.240	0.133	0.216	0.107	87.643	0.3018	0.0051	0.2967	0.733
14.000	9.790	0.157	0.133	0.141	0.024	19.740	0.0680	0.0051	0.0628	0.795
15.000	7.410	0.119	0.133	0.107	0.012	9.695	0.0334	0.0051	0.0283	0.824
16.000	5.600	0.090	0.133	0.081	0.009	7.327	0.0252	0.0051	0.0201	0.844
17.000	4.190	0.067	0.133	0.060	0.007	5.482	0.0189	0.0051	0.0138	0.858
18.000	3.060	0.049	0.133	0.044	0.005	4.004	0.0138	0.0051	0.0087	0.866
19.000	2.110	0.034	0.133	0.030	0.003	2.761	0.0095	0.0051	0.0044	0.871
20.000	1.410	0.023	0.133	0.020	0.002	1.845	0.0064	0.0051	0.0012	0.872
21.000	0.890	0.014	0.133	0.013	0.001	1.164	0.0040	0.0051	-0.0011	0.871
22.000	0.520	0.008	0.133	0.007	0.001	0.680	0.0023	0.0051	-0.0028	0.868
23.000	0.210	0.003	0.133	0.003	0.000	0.275	0.0009	0.0051	-0.0042	0.864
24.000	0.030	0.000	0.133	0.000	0.000	0.039	0.0001	0.0051	-0.0050	0.859
TOTALS					0.3440	281.3081				MAX: .872

EFFECTIVE RAIN = 0.014 INCHES/ACRE

MAX RETENTION = 0.872 ACRE-FT

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RCFC & WCD HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph, Effective Rain and Retention Basin Calculation Form	Project 1064 Retention Basin E Net rain 100 yr. 1 hr. By JAD Date Checked Date	Sheet 1 of 1

[1] CONCENTRATION POINT	0	[2] AREA DESIGNATION	
[3] DRAINAGE AREA-ACRES	24.79	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	0
[5] UNIT TIME-MINUTES	2.5	[6] LAG TIME-MINUTES	0
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	0	[8] S-CURVE	0
[9] STORM FREQUENCY & DURATION 100 YEAR-	1 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.6
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0
[13] CONSTANT LOSS RATE-INCHES/HOUR	2.79	[14] LOW LOSS RATE-PERCENT	90
[15] RETENTION BASIN AREA-ACRES	0.6936	[16] RETENTION BASIN PERCOLATION-INCHES	2

	EFFECTIVE RAIN					FLOOD HYDROGRAPH	RETENTION BASIN PERCOLATION			
[17] UNIT TIME PERIOD minutes	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN in [10][20]/100	[22] LOSS RATE in MAX	[22] LOSS RATE in LOW	[23] EFFECTIVE RAIN in [21]-[22]	[24] FLOW cfs	[25] EFFECTIVE RUNOFF acre-ft [23][3]/12	[26] PERCOLATION acre-ft [15][16]	[27] RETENTION PER PERIOD [25]-[26]	[28] ACCUMULATED VOLUME
1.000	0.030	0.000	0.116	0.000	0.000	0.029	0.0001	0.0048	-0.0047	0.000
2.000	0.210	0.003	0.116	0.003	0.000	0.202	0.0007	0.0048	-0.0041	0.000
3.000	0.520	0.008	0.116	0.007	0.001	0.499	0.0017	0.0048	-0.0031	0.000
4.000	0.890	0.014	0.116	0.013	0.001	0.854	0.0029	0.0048	-0.0019	0.000
5.000	1.410	0.023	0.116	0.020	0.002	1.353	0.0047	0.0048	-0.0002	0.000
6.000	2.110	0.034	0.116	0.030	0.003	2.025	0.0070	0.0048	0.0022	0.002
7.000	3.060	0.049	0.116	0.044	0.005	2.937	0.0101	0.0048	0.0053	0.007
8.000	4.190	0.067	0.116	0.060	0.007	4.022	0.0138	0.0048	0.0090	0.016
9.000	5.600	0.090	0.116	0.081	0.009	5.375	0.0185	0.0048	0.0137	0.030
10.000	7.410	0.119	0.116	0.107	0.012	7.113	0.0245	0.0048	0.0197	0.050
11.000	9.790	0.157	0.116	0.141	0.040	24.231	0.0834	0.0048	0.0786	0.128
12.000	14.980	0.240	0.116	0.216	0.123	74.048	0.2550	0.0048	0.2502	0.379
13.000	14.980	0.240	0.116	0.216	0.123	74.048	0.2550	0.0048	0.2502	0.629
14.000	9.790	0.157	0.116	0.141	0.040	24.231	0.0834	0.0048	0.0786	0.707
15.000	7.410	0.119	0.116	0.107	0.012	7.113	0.0245	0.0048	0.0197	0.727
16.000	5.600	0.090	0.116	0.081	0.009	5.375	0.0185	0.0048	0.0137	0.741
17.000	4.190	0.067	0.116	0.060	0.007	4.022	0.0138	0.0048	0.0090	0.750
18.000	3.060	0.049	0.116	0.044	0.005	2.937	0.0101	0.0048	0.0053	0.755
19.000	2.110	0.034	0.116	0.030	0.003	2.025	0.0070	0.0048	0.0022	0.757
20.000	1.410	0.023	0.116	0.020	0.002	1.353	0.0047	0.0048	-0.0002	0.757
21.000	0.890	0.014	0.116	0.013	0.001	0.854	0.0029	0.0048	-0.0019	0.755
22.000	0.520	0.008	0.116	0.007	0.001	0.499	0.0017	0.0048	-0.0031	0.752
23.000	0.210	0.003	0.116	0.003	0.000	0.202	0.0007	0.0048	-0.0041	0.748
24.000	0.030	0.000	0.116	0.000	0.000	0.029	0.0001	0.0048	-0.0047	0.743
TOTALS					0.4090	245.3761				MAX: .757

EFFECTIVE RAIN = 0.017 INCHES/ACRE

MAX RETENTION = 0.757 ACRE-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph, Effective Rain and Retention Basin Calculation Form	Project 1064 Retention Basin F F Net rain 100 yr. 1 hr. By JAD Date Checked ______ Date	Sheet 1 of 1

[1] CONCENTRATION POINT	0	[2] AREA DESIGNATION	
[3] DRAINAGE AREA-ACRES	12.6	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	0
[5] UNIT TIME-MINUTES	2.5	[6] LAG TIME-MINUTES	0
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	0	[8] S-CURVE	0
[9] STORM FREQUENCY & DURATION 100 YEAR-	1 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.6
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0
[13] CONSTANT LOSS RATE-INCHES/HOUR	2.93	[14] LOW LOSS RATE-PERCENT	90
[15] RETENTION BASIN AREA-ACRES	0.295	[16] RETENTION BASIN PERCOLATION-INCHES	2

	EFFECTIVE RAIN					FLOOD HYDROGRAPH	RETENTION BASIN PERCOLATION			
[17] UNIT TIME PERIOD minutes	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN in [10][20] / 100	[22] LOSS RATE in MAX	[22] LOSS RATE in LOW	[23] EFFECTIVE RAIN in [21]-[22]	[24] FLOW cfs	[25] EFFECTIVE RUNOFF acre-ft [23][3]/12	[26] PERCOLATION acre-ft [15][16]	[27] RETENTION PER PERIOD [25]-[26]	[28] ACCUMULATED VOLUME
1.000	0.030	0.000	0.122	0.000	0.000	0.015	0.0001	0.0020	-0.0020	0.000
2.000	0.210	0.003	0.122	0.003	0.000	0.102	0.0004	0.0020	-0.0017	0.000
3.000	0.520	0.008	0.122	0.007	0.001	0.254	0.0009	0.0020	-0.0012	0.000
4.000	0.890	0.014	0.122	0.013	0.001	0.434	0.0015	0.0020	-0.0006	0.000
5.000	1.410	0.023	0.122	0.020	0.002	0.688	0.0024	0.0020	0.0003	0.000
6.000	2.110	0.034	0.122	0.030	0.003	1.029	0.0035	0.0020	0.0015	0.002
7.000	3.060	0.049	0.122	0.044	0.005	1.493	0.0051	0.0020	0.0031	0.005
8.000	4.190	0.067	0.122	0.060	0.007	2.044	0.0070	0.0020	0.0050	0.010
9.000	5.600	0.090	0.122	0.081	0.009	2.732	0.0094	0.0020	0.0074	0.017
10.000	7.410	0.119	0.122	0.107	0.012	3.615	0.0124	0.0020	0.0104	0.028
11.000	9.790	0.157	0.122	0.141	0.035	10.537	0.0363	0.0020	0.0342	0.062
12.000	14.980	0.240	0.122	0.216	0.118	35.858	0.1235	0.0020	0.1214	0.183
13.000	14.980	0.240	0.122	0.216	0.118	35.858	0.1235	0.0020	0.1214	0.305
14.000	9.790	0.157	0.122	0.141	0.035	10.537	0.0363	0.0020	0.0342	0.339
15.000	7.410	0.119	0.122	0.107	0.012	3.615	0.0124	0.0020	0.0104	0.349
16.000	5.600	0.090	0.122	0.081	0.009	2.732	0.0094	0.0020	0.0074	0.357
17.000	4.190	0.067	0.122	0.060	0.007	2.044	0.0070	0.0020	0.0050	0.362
18.000	3.060	0.049	0.122	0.044	0.005	1.493	0.0051	0.0020	0.0031	0.365
19.000	2.110	0.034	0.122	0.030	0.003	1.029	0.0035	0.0020	0.0015	0.366
20.000	1.410	0.023	0.122	0.020	0.002	0.688	0.0024	0.0020	0.0003	0.367
21.000	0.890	0.014	0.122	0.013	0.001	0.434	0.0015	0.0020	-0.0006	0.366
22.000	0.520	0.008	0.122	0.007	0.001	0.254	0.0009	0.0020	-0.0012	0.365
23.000	0.210	0.003	0.122	0.003	0.000	0.102	0.0004	0.0020	-0.0017	0.363
24.000	0.030	0.000	0.122	0.000	0.000	0.015	0.0001	0.0020	-0.0020	0.361
TOTALS					0.3857	117.6024				MAX: .367

EFFECTIVE RAIN = 0.016 INCHES/ACRE

MAX RETENTION = 0.367 ACRE-FT

R:\Documents\1064\Originals\STORMDRAIN CALCS\[jad Unit Hydrograph Effective Rain and F Basin 100 1hr.xls],

3/11/01 6:41 PM MAINIERO, SMITH ASSOCIATES, INC.

R C F C & W C D -HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD **Unit Hydrograph, Effective Rain and Retention Basin Calculation Form**	Project 1064 Retention Basin G	Sheet 1 of 1
		Net rain 100 yr. 1 hr.	
		By JAD Date	
		Checked Date	

[1] CONCENTRATION POINT	0	[2] AREA DESIGNATION	
[3] DRAINAGE AREA-ACRES	20.64	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	0
[5] UNIT TIME-MINUTES	2.5	[6] LAG TIME-MINUTES	0
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	0	[8] S-CURVE	0
[9] STORM FREQUENCY & DURATION 100 YEAR-	1 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.6
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0
[13] CONSTANT LOSS RATE-INCHES/HOUR	3.18	[14] LOW LOSS RATE-PERCENT	90
[15] RETENTION BASIN AREA-ACRES	0.292	[16] RETENTION BASIN PERCOLATION-INCHES	2

	EFFECTIVE RAIN					FLOOD HYDROGRAPH	RETENTION BASIN PERCOLATION			
[17] UNIT TIME PERIOD minutes	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN in [10][20] / 100	[22] LOSS RATE in MAX	[22] LOSS RATE in LOW	[23] EFFECTIVE RAIN in [21]-[22]	[24] FLOW cfs	[25] EFFECTIVE RUNOFF acre-ft [23][3]/12	[26] PERCOLATION acre-ft [15][16]	[27] RETENTION PER PERIOD [25]-[26]	[28] ACCUMULATED VOLUME
1.000	0.030	0.000	0.133	0.000	0.000	0.024	0.0001	0.0020	-0.0019	0.000
2.000	0.210	0.003	0.133	0.003	0.000	0.168	0.0006	0.0020	-0.0014	0.000
3.000	0.520	0.008	0.133	0.007	0.001	0.416	0.0014	0.0020	-0.0006	0.000
4.000	0.890	0.014	0.133	0.013	0.001	0.711	0.0024	0.0020	0.0004	0.000
5.000	1.410	0.023	0.133	0.020	0.002	1.127	0.0039	0.0020	0.0019	0.002
6.000	2.110	0.034	0.133	0.030	0.003	1.686	0.0058	0.0020	0.0038	0.006
7.000	3.060	0.049	0.133	0.044	0.005	2.445	0.0084	0.0020	0.0064	0.012
8.000	4.190	0.067	0.133	0.060	0.007	3.349	0.0115	0.0020	0.0095	0.022
9.000	5.600	0.090	0.133	0.081	0.009	4.475	0.0154	0.0020	0.0134	0.035
10.000	7.410	0.119	0.133	0.107	0.012	5.922	0.0204	0.0020	0.0184	0.054
11.000	9.790	0.157	0.133	0.141	0.024	12.058	0.0415	0.0020	0.0395	0.093
12.000	14.980	0.240	0.133	0.216	0.107	53.535	0.1843	0.0020	0.1823	0.276
13.000	14.980	0.240	0.133	0.216	0.107	53.535	0.1843	0.0020	0.1823	0.458
14.000	9.790	0.157	0.133	0.141	0.024	12.058	0.0415	0.0020	0.0395	0.497
15.000	7.410	0.119	0.133	0.107	0.012	5.922	0.0204	0.0020	0.0184	0.516
16.000	5.600	0.090	0.133	0.081	0.009	4.475	0.0154	0.0020	0.0134	0.529
17.000	4.190	0.067	0.133	0.060	0.007	3.349	0.0115	0.0020	0.0095	0.539
18.000	3.060	0.049	0.133	0.044	0.005	2.445	0.0084	0.0020	0.0064	0.545
19.000	2.110	0.034	0.133	0.030	0.003	1.686	0.0058	0.0020	0.0038	0.549
20.000	1.410	0.023	0.133	0.020	0.002	1.127	0.0039	0.0020	0.0019	0.551
21.000	0.890	0.014	0.133	0.013	0.001	0.711	0.0024	0.0020	0.0004	0.551
22.000	0.520	0.008	0.133	0.007	0.001	0.416	0.0014	0.0020	-0.0006	0.550
23.000	0.210	0.003	0.133	0.003	0.000	0.168	0.0006	0.0020	-0.0014	0.549
24.000	0.030	0.000	0.133	0.000	0.000	0.024	0.0001	0.0020	-0.0019	0.547
TOTALS					0.3440	171.8319				MAX: .551

EFFECTIVE RAIN = 0.014 INCHES/ACRE

MAX RETENTION = 0.551 ACRE-FT

RCFC & WCD HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph, Effective Rain and Retention Basin Calculation Form	Project 1064 Retention Basin H1 Net rain 100 yr. 1 hr. By JAD Date Checked Date	Sheet 1 of 1

[1] CONCENTRATION POINT	0	[2] AREA DESIGNATION	
[3] DRAINAGE AREA-ACRES	8.69	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	0
[5] UNIT TIME-MINUTES	2.5	[6] LAG TIME-MINUTES	0
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	0	[8] S-CURVE	0
[9] STORM FREQUENCY & DURATION 100 YEAR-	1 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.6
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0
[13] CONSTANT LOSS RATE-INCHES/HOUR	3.69	[14] LOW LOSS RATE-PERCENT	90
[15] RETENTION BASIN AREA-ACRES	0.1218	[16] RETENTION BASIN PERCOLATION-INCHE!	2

	EFFECTIVE RAIN					FLOOD HYDROGRAPH	RETENTION BASIN PERCOLATION			
[17] UNIT TIME PERIOD minutes	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN in [10][20] / 100	[22] LOSS RATE in		[23] EFFECTIVE RAIN in [21]-[22]	[24] FLOW cfs	[25] EFFECTIVE RUNOFF acre-ft [23][3]/12	[26] PERCOLATION acre-ft [15][16]	[27] RETENTION PER PERIOD [25]-[26]	[28] ACCUMULATED VOLUME
			MAX	LOW						
1.000	0.030	0.000	0.154	0.000	0.000	0.010	0.0000	0.0008	-0.0008	0.000
2.000	0.210	0.003	0.154	0.003	0.000	0.071	0.0002	0.0008	-0.0006	0.000
3.000	0.520	0.008	0.154	0.007	0.001	0.175	0.0006	0.0008	-0.0002	0.000
4.000	0.890	0.014	0.154	0.013	0.001	0.299	0.0010	0.0008	0.0002	0.000
5.000	1.410	0.023	0.154	0.020	0.002	0.474	0.0016	0.0008	0.0008	0.001
6.000	2.110	0.034	0.154	0.030	0.003	0.710	0.0024	0.0008	0.0016	0.003
7.000	3.060	0.049	0.154	0.044	0.005	1.030	0.0035	0.0008	0.0027	0.005
8.000	4.190	0.067	0.154	0.060	0.007	1.410	0.0049	0.0008	0.0040	0.009
9.000	5.600	0.090	0.154	0.081	0.009	1.884	0.0065	0.0008	0.0056	0.015
10.000	7.410	0.119	0.154	0.107	0.012	2.493	0.0086	0.0008	0.0077	0.023
11.000	9.790	0.157	0.154	0.141	0.016	3.294	0.0113	0.0008	0.0105	0.033
12.000	14.980	0.240	0.154	0.216	0.086	18.071	0.0622	0.0008	0.0614	0.095
13.000	14.980	0.240	0.154	0.216	0.086	18.071	0.0622	0.0008	0.0614	0.156
14.000	9.790	0.157	0.154	0.141	0.016	3.294	0.0113	0.0008	0.0105	0.166
15.000	7.410	0.119	0.154	0.107	0.012	2.493	0.0086	0.0008	0.0077	0.174
16.000	5.600	0.090	0.154	0.081	0.009	1.884	0.0065	0.0008	0.0056	0.180
17.000	4.190	0.067	0.154	0.060	0.007	1.410	0.0049	0.0008	0.0040	0.184
18.000	3.060	0.049	0.154	0.044	0.005	1.030	0.0035	0.0008	0.0027	0.187
19.000	2.110	0.034	0.154	0.030	0.003	0.710	0.0024	0.0008	0.0016	0.188
20.000	1.410	0.023	0.154	0.020	0.002	0.474	0.0016	0.0008	0.0008	0.189
21.000	0.890	0.014	0.154	0.013	0.001	0.299	0.0010	0.0008	0.0002	0.189
22.000	0.520	0.008	0.154	0.007	0.001	0.175	0.0006	0.0008	-0.0002	0.189
23.000	0.210	0.003	0.154	0.003	0.000	0.071	0.0002	0.0008	-0.0006	0.188
24.000	0.030	0.000	0.154	0.000	0.000	0.010	0.0000	0.0008	-0.0008	0.187
TOTALS					0.2846	59.8432				MAX: .189

EFFECTIVE RAIN = 0.012 INCHES/ACRE

MAX RETENTION = 0.189 ACRE-FT

R C F C & W C D HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD **Unit Hydrograph, Effective Rain and Retention Basin Calculation Form**	Project 1064 Retention Basin I Net rain 100 yr. 1 hr. By JAD Date Checked Date	Sheet 1 of 1

[1] CONCENTRATION POINT	0	[2] AREA DESIGNATION		
[3] DRAINAGE AREA-ACRES	8.2	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	0
[5] UNIT TIME-MINUTES	2.5	[6] LAG TIME-MINUTES	0
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	0	[8] S-CURVE	0
[9] STORM FREQUENCY & DURATION 100 YEAR-	1 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.6
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0
[13] CONSTANT LOSS RATE-INCHES/HOUR	2.92	[14] LOW LOSS RATE-PERCENT	90
[15] RETENTION BASIN AREA-ACRES	0.1254	[16] RETENTION BASIN PERCOLATION-INCHE:	2

	EFFECTIVE RAIN					FLOOD HYDROGRAPH	RETENTION BASIN PERCOLATION			
[17] UNIT TIME PERIOD minutes	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN in [10][20] / 100	[22] LOSS RATE in MAX	LOW	[23] EFFECTIVE RAIN in [21]-[22]	[24] FLOW cfs	[25] EFFECTIVE RUNOFF acre-ft [23][3]/12	[26] PERCOLATION acre-ft [15][16]	[27] RETENTION PER PERIOD [25]-[26]	[28] ACCUMULATED VOLUME
1.000	0.030	0.000	0.122	0.000	0.000	0.010	0.0000	0.0009	-0.0008	0.000
2.000	0.210	0.003	0.122	0.003	0.000	0.067	0.0002	0.0009	-0.0006	0.000
3.000	0.520	0.008	0.122	0.007	0.001	0.165	0.0006	0.0009	-0.0003	0.000
4.000	0.890	0.014	0.122	0.013	0.001	0.283	0.0010	0.0009	0.0001	0.000
5.000	1.410	0.023	0.122	0.020	0.002	0.448	0.0015	0.0009	0.0007	0.001
6.000	2.110	0.034	0.122	0.030	0.003	0.670	0.0023	0.0009	0.0014	0.002
7.000	3.060	0.049	0.122	0.044	0.005	0.972	0.0033	0.0009	0.0025	0.005
8.000	4.190	0.067	0.122	0.060	0.007	1.330	0.0046	0.0009	0.0037	0.008
9.000	5.600	0.090	0.122	0.081	0.009	1.778	0.0061	0.0009	0.0053	0.014
10.000	7.410	0.119	0.122	0.107	0.012	2.353	0.0081	0.0009	0.0072	0.021
11.000	9.790	0.157	0.122	0.141	0.035	6.940	0.0239	0.0009	0.0230	0.044
12.000	14.980	0.240	0.122	0.216	0.118	23.419	0.0806	0.0009	0.0798	0.124
13.000	14.980	0.240	0.122	0.216	0.118	23.419	0.0806	0.0009	0.0798	0.203
14.000	9.790	0.157	0.122	0.141	0.035	6.940	0.0239	0.0009	0.0230	0.226
15.000	7.410	0.119	0.122	0.107	0.012	2.353	0.0081	0.0009	0.0072	0.234
16.000	5.600	0.090	0.122	0.081	0.009	1.778	0.0061	0.0009	0.0053	0.239
17.000	4.190	0.067	0.122	0.060	0.007	1.330	0.0046	0.0009	0.0037	0.243
18.000	3.060	0.049	0.122	0.044	0.005	0.972	0.0033	0.0009	0.0025	0.245
19.000	2.110	0.034	0.122	0.030	0.003	0.670	0.0023	0.0009	0.0014	0.247
20.000	1.410	0.023	0.122	0.020	0.002	0.448	0.0015	0.0009	0.0007	0.247
21.000	0.890	0.014	0.122	0.013	0.001	0.283	0.0010	0.0009	0.0001	0.247
22.000	0.520	0.008	0.122	0.007	0.001	0.165	0.0006	0.0009	-0.0003	0.247
23.000	0.210	0.003	0.122	0.003	0.000	0.067	0.0002	0.0009	-0.0006	0.246
24.000	0.030	0.000	0.122	0.000	0.000	0.010	0.0000	0.0009	-0.0008	0.246
TOTALS					0.3873	76.8656				MAX: .247

EFFECTIVE RAIN = 0.016 INCHES/ACRE

MAX RETENTION = 0.247 ACRE-FT

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RCFC&WCD HYDROLOGY MANUAL	"SHORTCUT METHOD" SYNTHETIC UNIT HYDROGRAPH METHOD Unit Hydrograph, Effective Rain and Retention Basin Calculation Form	Project 1064 Retention Basin K2 [redacted] Net rain 100 yr. 1 hr. By JAD Date Checked Date	Sheet 1 of 1

[1] CONCENTRATION POINT	0	[2] AREA DESIGNATION	
[3] DRAINAGE AREA-ACRES	22.45	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])	0
[5] UNIT TIME-MINUTES	2.5	[6] LAG TIME-MINUTES	0
[7] UNIT TIME-PERCENT OF LAG (100*[5]/[6])	0	[8] S-CURVE	0
[9] STORM FREQUENCY & DURATION 100 YEAR-	1 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES	1.6
[11] VARIABLE LOSS RATE (AVG)-INCHES/HOUR	0	[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR	0
[13] CONSTANT LOSS RATE-INCHES/HOUR	3.11	[14] LOW LOSS RATE-PERCENT	90
[15] RETENTION BASIN AREA-ACRES	0.236	[16] RETENTION BASIN PERCOLATION-INCHE!	2

	EFFECTIVE RAIN					FLOOD HYDROGRAPH	RETENTION BASIN PERCOLATION			
[17] UNIT TIME PERIOD minutes	[20] PATTERN PERCENT (PL E-5.9)	[21] STORM RAIN in [10][20] / 100	[22] LOSS RATE in MAX	LOW	[23] EFFECTIVE RAIN in [21]-[22]	[24] FLOW cfs	[25] EFFECTIVE RUNOFF acre-ft [23][3]/12	[26] PERCOLATION acre-ft [15][16]	[27] RETENTION PER PERIOD [25]-[26]	[28] ACCUMULATED VOLUME
1.000	0.030	0.000	0.130	0.000	0.000	0.026	0.0001	0.0016	-0.0015	0.000
2.000	0.210	0.003	0.130	0.003	0.000	0.183	0.0006	0.0016	-0.0010	0.000
3.000	0.520	0.008	0.130	0.007	0.001	0.452	0.0016	0.0016	-0.0001	0.000
4.000	0.890	0.014	0.130	0.013	0.001	0.774	0.0027	0.0016	0.0010	0.001
5.000	1.410	0.023	0.130	0.020	0.002	1.226	0.0042	0.0016	0.0026	0.004
6.000	2.110	0.034	0.130	0.030	0.003	1.834	0.0063	0.0016	0.0047	0.008
7.000	3.060	0.049	0.130	0.044	0.005	2.660	0.0092	0.0016	0.0075	0.016
8.000	4.190	0.067	0.130	0.060	0.007	3.642	0.0125	0.0016	0.0109	0.027
9.000	5.600	0.090	0.130	0.081	0.009	4.868	0.0168	0.0016	0.0151	0.042
10.000	7.410	0.119	0.130	0.107	0.012	6.441	0.0222	0.0016	0.0205	0.062
11.000	9.790	0.157	0.130	0.141	0.027	14.700	0.0506	0.0016	0.0490	0.111
12.000	14.980	0.240	0.130	0.216	0.110	59.814	0.2060	0.0016	0.2043	0.316
13.000	14.980	0.240	0.130	0.216	0.110	59.814	0.2060	0.0016	0.2043	0.520
14.000	9.790	0.157	0.130	0.141	0.027	14.700	0.0506	0.0016	0.0490	0.569
15.000	7.410	0.119	0.130	0.107	0.012	6.441	0.0222	0.0016	0.0205	0.590
16.000	5.600	0.090	0.130	0.081	0.009	4.868	0.0168	0.0016	0.0151	0.605
17.000	4.190	0.067	0.130	0.060	0.007	3.642	0.0125	0.0016	0.0109	0.616
18.000	3.060	0.049	0.130	0.044	0.005	2.660	0.0092	0.0016	0.0075	0.623
19.000	2.110	0.034	0.130	0.030	0.003	1.834	0.0063	0.0016	0.0047	0.628
20.000	1.410	0.023	0.130	0.020	0.002	1.226	0.0042	0.0016	0.0026	0.630
21.000	0.890	0.014	0.130	0.013	0.001	0.774	0.0027	0.0016	0.0010	0.631
22.000	0.520	0.008	0.130	0.007	0.001	0.452	0.0016	0.0016	-0.0001	0.631
23.000	0.210	0.003	0.130	0.003	0.000	0.183	0.0006	0.0016	-0.0010	0.630
24.000	0.030	0.000	0.130	0.000	0.000	0.026	0.0001	0.0016	-0.0015	0.629
TOTALS					0.3557	193.2388				MAX: .631

EFFECTIVE RAIN = 0.015 INCHES/ACRE

MAX RETENTION = 0.631 ACRE-FT

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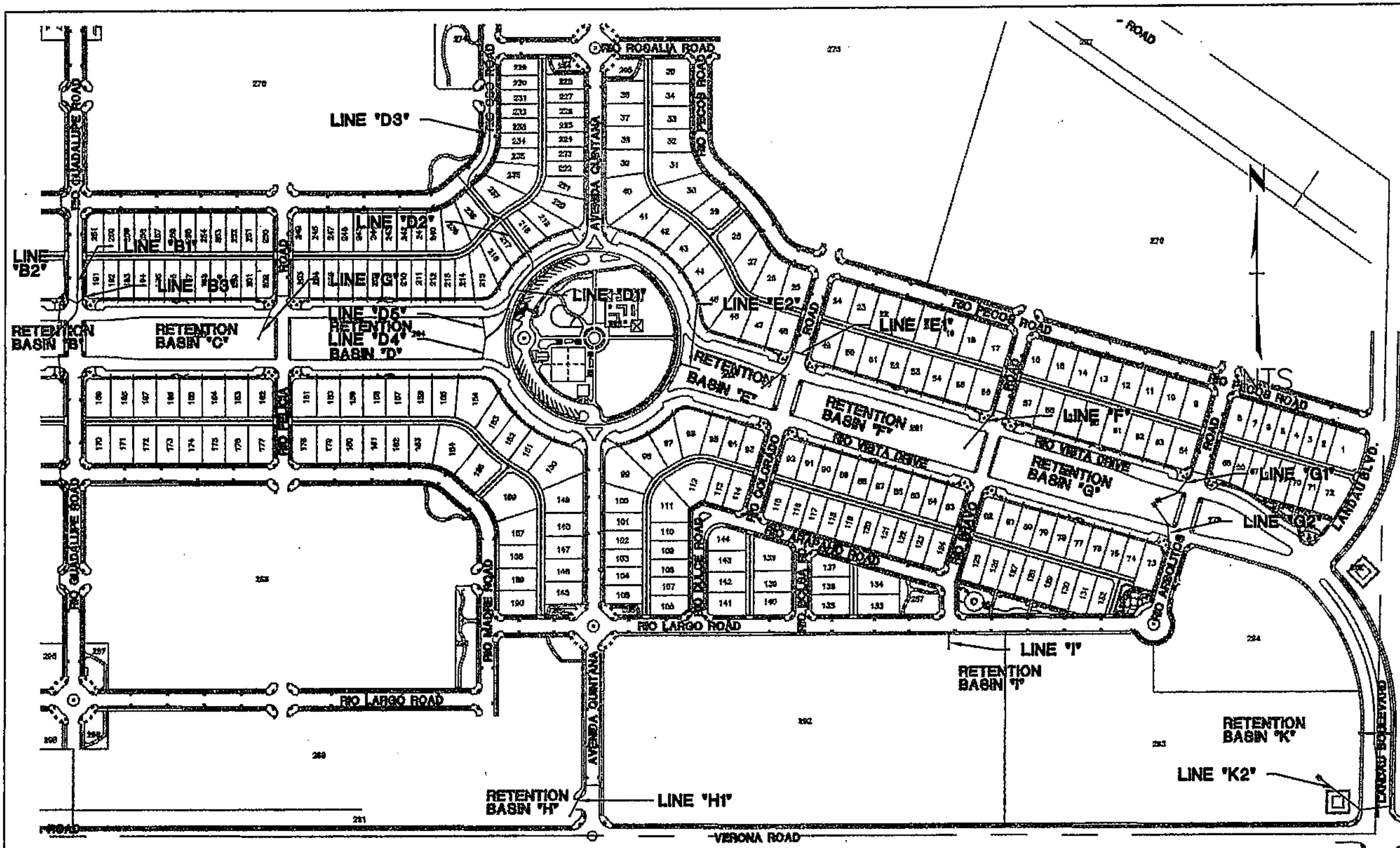
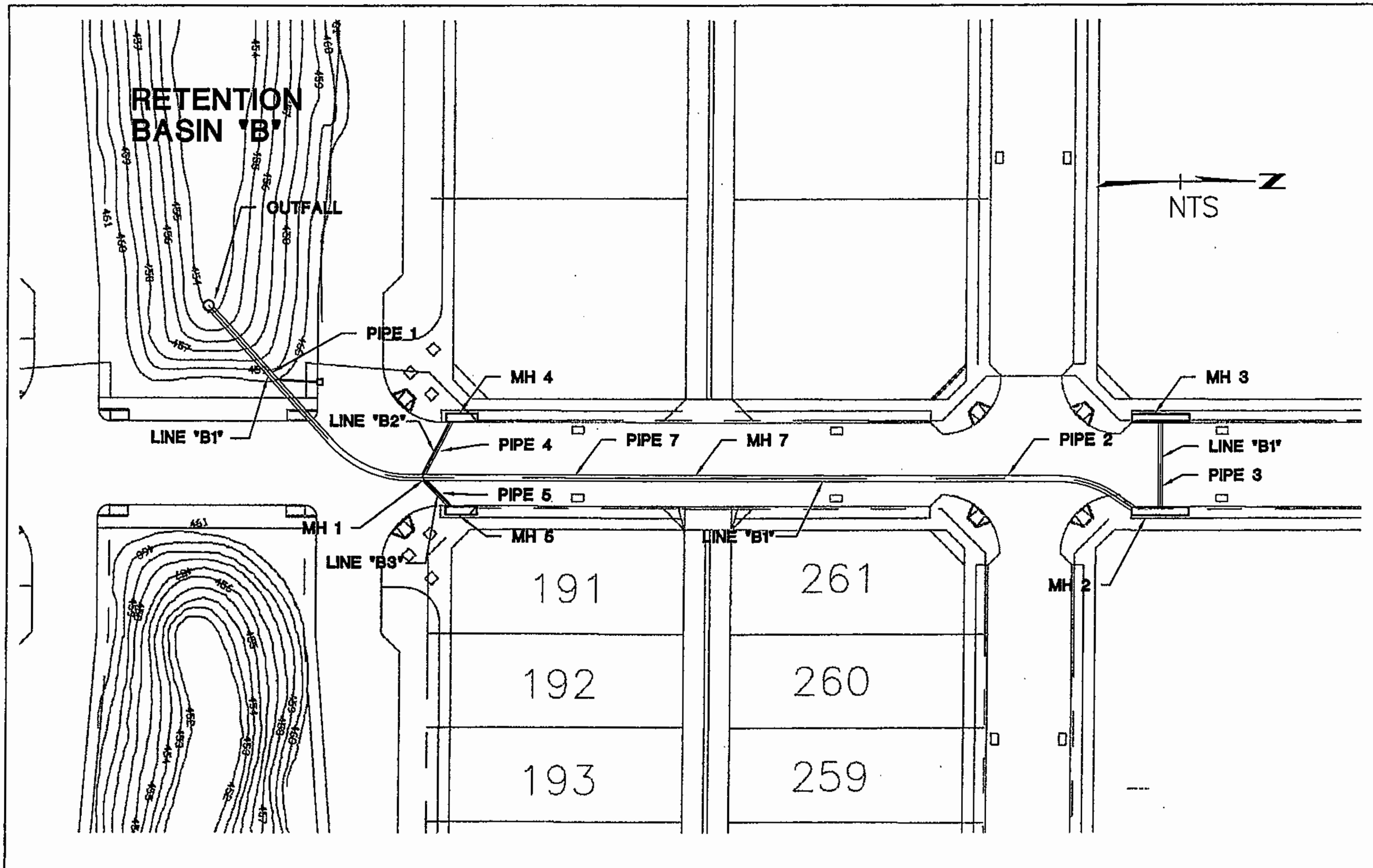
Storm Drain System
Hydraulic Calculations



STORM DRAIN MAP



STORM DRAIN LINE "B1,B2,B3"

Storm Drain Line "B-1, B-2, B-3"

PIPE DESCRIPTION: Pipe 1
—RAINFALL INFORMATION—
Return Period = 100 Year
Rainfall File = Tutorial

—PIPE INFORMATION—
Current Pipe = Pipe 1
Downstream Pipe = Outfall
Pipe Material = CONC
Pipe Length = 118.77 ft
Plan Length = 118.77 ft
Pipe Type = Circular
Pipe Dimensions = 33.00 in
Pipe Manning's "n" = 0.013
Pipe Capacity at Invert Slope = 79.62 cfs
Invert Elevation Downstream = 447.35 ft
Invert Elevation Upstream = 450.04 ft
Invert Slope = 2.33%
Invert Slope (Plan Length) = 2.27%
Rim Elevation Downstream = 454.00 ft
Rim Elevation Upstream = 461.92 ft
Natural Ground Slope = 6.67%
Crown Elevation Downstream = 450.10 ft
Crown Elevation Upstream = 452.79 ft

—FLOW INFORMATION—
Catchment Area = 0.00 ac
Runoff Coefficient = 0.500
Inlet Time = 0.00 min
Inlet Intensity = 0.00 in/hr
Inlet Rational Flow = 0.00 cfs
Inlet Input Flow = 0.00 cfs
Inlet Hydrograph Flow = 0.00 cfs
Total Area = 0.00 ac
Weighted Coefficient = 0.500
Total Time of Concentration = 0.46 min
Total Intensity = 12.77 in/hr
Total Rational Flow = 0.00 cfs
Total Flow = 54.55 cfs
Uniform Capacity = 79.62 cfs
Skipped flow = 0.00 cfs
Infiltration = 0.00 gpd

—HYDRAULIC INFORMATION—
HGL Elevation Downstream = 455.20 ft
HGL Elevation Upstream = 456.46 ft
HGL Slope = 1.09 %
EGL Elevation Downstream = 456.51 ft
EGL Elevation Upstream = 457.78 ft
EGL Slope = 1.09 %
Critical Depth = 28.90 in
Depth Downstream = 33.00 in
Depth Upstream = 33.00 in
Velocity Downstream = 9.18 ft/s
Velocity Upstream = 9.18 ft/s
Uniform Velocity Downstream = NA
Uniform Velocity Upstream = NA
Area Downstream = 5.94 ft^2
Area Upstream = 5.94 ft^2
Kj (JLC) = 0.50
Calculated Junction Loss = 0.656 ft

—INLET INFORMATION—
Downstream Inlet = Outfall
Inlet Description = <None>
Inlet Type = Undefined
Computation Case = Sag
Longitudinal Slope = 0.00 ft/ft
Mannings n-value = 0.000

Storm Drain Line "B-1, B-2, B-3"

Pavement Cross-Slope = 0.00 ft/ft
Gutter Cross-Slope = 0.00 ft/ft
Gutter Local Depression = 0.00 in
Gutter Width = 0.00 ft
Ponding Width = 0.00 ft
Intercept Efficiency = * %
Flow from Catchment = 0.00 cfs
Carryover from previous inlet = 0.00 cfs
Total Flow to Current Inlet = 0.00 cfs
Flow Intercepted by Current Inlet = 0.00 cfs
Bypassed Flow = 0.00 cfs
Pavement Flow = 0.00 cfs
Gutter Flow = 0.00 cfs
Depth at Curb = 0.00 in
Depth at Pavement/Gutter Joint = 0.00 in
Pavement Spread = 0.00 ft
Total Spread = 0.00 ft
Gutter Velocity = 0.00 ft/s
Curb Efficiency = * %
Grate Efficiency = * %
Slot Efficiency = * %
Total Efficiency = 0.00 %

PIPE DESCRIPTION: Pipe 7
—-RAINFALL INFORMATION—-
Return Period = 100 Year
Rainfall File = Tutorial

—-PIPE INFORMATION—-
Current Pipe = Pipe 7
Downstream Pipe = Pipe 1
Pipe Material = CONC
Pipe Length = 121.77 ft
Plan Length = 121.77 ft
Pipe Type = Circular
Pipe Dimensions = 27.00 in
Pipe Manning's "n" = 0.013
Pipe Capacity at Invert Slope = 41.59 cfs
Invert Elevation Downstream = 450.67 ft
Invert Elevation Upstream = 452.87 ft
Invert Slope = 1.81%
Invert Slope (Plan Length) = 1.81%
Rim Elevation Downstream = 461.92 ft
Rim Elevation Upstream = 463.00 ft
Natural Ground Slope = 0.89%
Crown Elevation Downstream = 452.92 ft
Crown Elevation Upstream = 455.12 ft

—-FLOW INFORMATION—-
Catchment Area = 0.00 ac
Runoff Coefficient = 0.500
Inlet Time = 0.00 min
Inlet Intensity = 0.00 in/hr
Inlet Rational Flow = 0.00 cfs
Inlet Input Flow = 0.00 cfs
Inlet Hydrograph Flow = 0.00 cfs
Total Area = 0.00 ac
Weighted Coefficient = 0.500
Total Time of Concentration = 0.29 min
Total Intensity = 12.89 in/hr
Total Rational Flow = 0.00 cfs
Total Flow = 41.52 cfs
Uniform Capacity = 41.59 cfs
Skipped flow = 0.00 cfs
Infiltration = 0.00 gpd

—-HYDRAULIC INFORMATION—-
HGL Elevation Downstream = 457.12 ft
HGL Elevation Upstream = 459.31 ft

Storm Drain Line "B-1, B-2, B-3"

HGL Slope = 1.80 %
EGL Elevation Downstream = 458.81 ft
EGL Elevation Upstream = 461.00 ft
EGL Slope = 1.80 %
Critical Depth = 25.33 in
Depth Downstream = 27.00 in
Depth Upstream = 27.00 in
Velocity Downstream = 10.44 ft/s
Velocity Upstream = 10.44 ft/s
Uniform Velocity Downstream = NA
Uniform Velocity Upstream = NA
Area Downstream = 3.98 ft^2
Area Upstream = 3.98 ft^2
Kj (JLC) = 0.00
Calculated Junction Loss = 0.002 ft

---INLET INFORMATION---
Downstream Inlet = MH 1
Inlet Description = <None>
Inlet Type = Undefined
Computation Case = Sag
Longitudinal Slope = 0.00 ft/ft
Mannings n-value = 0.000
Pavement Cross-Slope = 0.00 ft/ft
Gutter Cross-Slope = 0.00 ft/ft
Gutter Local Depression = 0.00 in
Gutter Width = 0.00 ft
Ponding Width = 0.00 ft
Intercept Efficiency = * %
Flow from Catchment = 0.00 cfs
Carryover from previous inlet = 0.00 cfs
Total Flow to Current Inlet = 0.00 cfs
Flow Intercepted by Current Inlet = 0.00 cfs
Bypassed Flow = 0.00 cfs
Pavement Flow = 0.00 cfs
Gutter Flow = 0.00 cfs
Depth at Curb = 0.00 in
Depth at Pavement/Gutter Joint = 0.00 in
Pavement Spread = 0.00 ft
Total Spread = 0.00 ft
Gutter Velocity = 0.00 ft/s
Curb Efficiency = * %
Grate Efficiency = * %
Slot Efficiency = * %
Total Efficiency = 0.00 %

PIPE DESCRIPTION: Pipe 2
---RAINFALL INFORMATION---
Return Period = 100 Year
Rainfall File = Tutorial

---PIPE INFORMATION---
Current Pipe = Pipe 2
Downstream Pipe = Pipe 7
Pipe Material = CONC
Pipe Length = 180.99 ft
Plan Length = 180.99 ft
Pipe Type = Circular
Pipe Dimensions = 27.00 in
Pipe Manning's "n" = 0.013
Pipe Capacity at Invert Slope = 54.45 cfs
Invert Elevation Downstream = 452.87 ft
Invert Elevation Upstream = 458.47 ft
Invert Slope = 3.36%
Invert Slope (Plan Length) = 3.09%
Rim Elevation Downstream = 463.00 ft
Rim Elevation Upstream = 465.73 ft
Natural Ground Slope = 1.51%
Crown Elevation Downstream = 455.12 ft

Crown Elevation Upstream	= 460.72 ft
---FLOW INFORMATION---	
Catchment Area	= 0.00 ac
Runoff Coefficient	= 0.500
Inlet Time	= 0.00 min
Inlet Intensity	= 0.00 in/hr
Inlet Rational Flow	= 0.00 cfs
Inlet Input Flow	= 20.76 cfs
Inlet Hydrograph Flow	= 0.00 cfs
Total Area	= 0.00 ac
Weighted Coefficient	= 0.500
Total Time of Concentration	= 0.09 min
Total Intensity	= 13.04 in/hr
Total Rational Flow	= 0.00 cfs
Total Flow	= 41.52 cfs
Uniform Capacity	= 54.45 cfs
Skipped flow	= 0.00 cfs
Infiltration	= 0.00 gpd
---HYDRAULIC INFORMATION---	
HGL Elevation Downstream	= 459.31 ft
HGL Elevation Upstream	= 462.57 ft
HGL Slope	= 1.96 %
EGL Elevation Downstream	= 461.01 ft
EGL Elevation Upstream	= 464.26 ft
EGL Slope	= 1.96 %
Critical Depth	= 25.33 in
Depth Downstream	= 27.00 in
Depth Upstream	= 27.00 in
Velocity Downstream	= 10.44 ft/s
Velocity Upstream	= 10.44 ft/s
Uniform Velocity Downstream	= NA
Uniform Velocity Upstream	= NA
Area Downstream	= 3.98 ft^2
Area Upstream	= 3.98 ft^2
Kj (JLC)	= 0.50
Calculated Junction Loss	= 0.848 ft
---INLET INFORMATION---	
Downstream Inlet	= MH 7
Inlet Description	= Grate 19-3/8x17-3/4
Inlet Type	= Undefined
Computation Case	= Sag
Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000
Pavement Cross-Slope	= 0.00 ft/ft
Gutter Cross-Slope	= 0.00 ft/ft
Gutter Local Depression	= 0.00 in
Gutter Width	= 0.00 ft
Ponding Width	= 0.00 ft
Intercept Efficiency	= * %
Flow from Catchment	= 0.00 cfs
Carryover from previous inlet	= 0.00 cfs
Total Flow to Current Inlet	= 0.00 cfs
Flow Intercepted by Current Inlet	= 0.00 cfs
Bypassed Flow	= 0.00 cfs
Pavement Flow	= 0.00 cfs
Gutter Flow	= 0.00 cfs
Depth at Curb	= 0.00 in
Depth at Pavement/Gutter Joint	= 0.00 in
Pavement Spread	= 0.00 ft
Total Spread	= 0.00 ft
Gutter Velocity	= 0.00 ft/s
Curb Efficiency	= * %
Grate Efficiency	= * %
Slot Efficiency	= * %
Total Efficiency	= 0.00 %

PIPE DESCRIPTION: Pipe 3

Storm Drain Line "B-1, B-2, B-3"

---RAINFALL INFORMATION---

Return Period	= 100 Year
Rainfall File	= Tutorial

---PIPE INFORMATION---

Current Pipe	= Pipe 3
Downstream Pipe	= Pipe 2
Pipe Material	= CONC
Pipe Length	= 37.00 ft
Plan Length	= 37.00 ft
Pipe Type	= Circular
Pipe Dimensions	= 24.00 in
Pipe Manning's "n"	= 0.013
Pipe Capacity at Invert Slope	= 14.40 cfs
Invert Elevation Downstream	= 458.97 ft
Invert Elevation Upstream	= 459.12 ft
Invert Slope	= 0.42%
Invert Slope (Plan Length)	= 0.41%
Rim Elevation Downstream	= 465.73 ft
Rim Elevation Upstream	= 465.72 ft
Natural Ground Slope	= -0.03%
Crown Elevation Downstream	= 460.97 ft
Crown Elevation Upstream	= 461.12 ft

---FLOW INFORMATION---

Catchment Area	= 0.00 ac
Runoff Coefficient	= 0.500
Inlet Time	= 0.00 min
Inlet Intensity	= 0.00 in/hr
Inlet Rational Flow	= 0.00 cfs
Inlet Input Flow	= 20.76 cfs
Inlet Hydrograph Flow	= 0.00 cfs
Total Area	= 0.00 ac
Weighted Coefficient	= 0.500
Total Time of Concentration	= 0.00 min
Total Intensity	= 13.11 in/hr
Total Rational Flow	= 0.00 cfs
Total Flow	= 20.76 cfs
Uniform Capacity	= 14.40 cfs
Skipped flow	= 0.00 cfs
Infiltration	= 0.00 gpd

---HYDRAULIC INFORMATION---

HGL Elevation Downstream	= 463.41 ft
HGL Elevation Upstream	= 464.06 ft
HGL Slope	= 1.82 %
EGL Elevation Downstream	= 464.09 ft
EGL Elevation Upstream	= 464.74 ft
EGL Slope	= 1.82 %
Critical Depth	= 19.60 in
Depth Downstream	= 24.00 in
Depth Upstream	= 24.00 in
Velocity Downstream	= 6.61 ft/s
Velocity Upstream	= 6.61 ft/s
Uniform Velocity Downstream	= NA
Uniform Velocity Upstream	= NA
Area Downstream	= 3.14 ft^2
Area Upstream	= 3.14 ft^2
Kj (JLC)	= 0.50
Calculated Junction Loss	= NA

---INLET INFORMATION---

Downstream Inlet	= MH 2
Inlet Description	= Grate 19-3/8x17-3/4
Inlet Type	= Undefined
Computation Case	= Sag
Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000
Pavement Cross-Slope	= 0.00 ft/ft

Gutter Cross-Slope = 0.00 ft/ft
Gutter Local Depression = 0.00 in
Gutter Width = 0.00 ft
Ponding Width = 0.00 ft
Intercept Efficiency = * %
Flow from Catchment = 0.00 cfs
Carryover from previous inlet = 0.00 cfs
Total Flow to Current Inlet = 0.00 cfs
Flow Intercepted by Current Inlet = 0.00 cfs
Bypassed Flow = 0.00 cfs
Pavement Flow = 0.00 cfs
Gutter Flow = 0.00 cfs
Depth at Curb = 0.00 in
Depth at Pavement/Gutter Joint = 0.00 in
Pavement Spread = 0.00 ft
Total Spread = 0.00 ft
Gutter Velocity = 0.00 ft/s
Curb Efficiency = * %
Grate Efficiency = * %
Slot Efficiency = * %
Total Efficiency = 0.00 %

PIPE DESCRIPTION: Pipe 4
—RAINFALL INFORMATION—
Return Period = 100 Year
Rainfall File = Tutorial

—PIPE INFORMATION—
Current Pipe = Pipe 4
Downstream Pipe = Pipe 1
Pipe Material = RCP
Pipe Length = 27.51 ft
Plan Length = 27.51 ft
Pipe Type = Circular
Pipe Dimensions = 18.00 in
Pipe Manning's "n" = 0.013
Pipe Capacity at Invert Slope = 59.76 cfs
Invert Elevation Downstream = 449.56 ft
Invert Elevation Upstream = 458.47 ft
Invert Slope = 38.75%
Invert Slope (Plan Length) = 32.39%
Rim Elevation Downstream = 461.92 ft
Rim Elevation Upstream = 462.08 ft
Natural Ground Slope = 0.58%
Crown Elevation Downstream = 451.06 ft
Crown Elevation Upstream = 459.97 ft

—FLOW INFORMATION—
Catchment Area = 0.00 ac
Runoff Coefficient = 0.500
Inlet Time = 0.00 min
Inlet Intensity = 0.00 in/hr
Inlet Rational Flow = 0.00 cfs
Inlet Input Flow = 6.51 cfs
Inlet Hydrograph Flow = 0.00 cfs
Total Area = 0.00 ac
Weighted Coefficient = 0.500
Total Time of Concentration = 0.00 min
Total Intensity = 13.11 in/hr
Total Rational Flow = 0.00 cfs
Total Flow = 6.51 cfs
Uniform Capacity = 59.76 cfs
Skipped flow = 0.00 cfs
Infiltration = 0.00 gpd

—HYDRAULIC INFORMATION—
HGL Elevation Downstream = 457.12 ft
HGL Elevation Upstream = 459.68 ft
HGL Slope = 11.12 %

EGL Elevation Downstream	= 457.33 ft
EGL Elevation Upstream	= 460.11 ft
EGL Slope	= 12.08 %
Critical Depth	= 11.85 in
Depth Downstream	= 18.00 in
Depth Upstream	= 11.85 in
Velocity Downstream	= 3.69 ft/s
Velocity Upstream	= 5.28 ft/s
Uniform Velocity Downstream	= NA
Uniform Velocity Upstream	= NA
Area Downstream	= 1.77 ft^2
Area Upstream	= 1.23 ft^2
Kj (JLC)	= 0.50
Calculated Junction Loss	= NA

—INLET INFORMATION—

Downstream Inlet	= MH 1
Inlet Description	= Grate 19-3/8x17-3/4
Inlet Type	= Undefined
Computation Case	= Sag
Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000
Pavement Cross-Slope	= 0.00 ft/ft
Gutter Cross-Slope	= 0.00 ft/ft
Gutter Local Depression	= 0.00 in
Gutter Width	= 0.00 ft
Ponding Width	= 0.00 ft
Intercept Efficiency	= * %
Flow from Catchment	= 0.00 cfs
Carryover from previous inlet	= 0.00 cfs
Total Flow to Current Inlet	= 0.00 cfs
Flow Intercepted by Current Inlet	= 0.00 cfs
Bypassed Flow	= 0.00 cfs
Pavement Flow	= 0.00 cfs
Gutter Flow	= 0.00 cfs
Depth at Curb	= 0.00 in
Depth at Pavement/Gutter Joint	= 0.00 in
Pavement Spread	= 0.00 ft
Total Spread	= 0.00 ft
Gutter Velocity	= 0.00 ft/s
Curb Efficiency	= * %
Grate Efficiency	= * %
Slot Efficiency	= * %
Total Efficiency	= 0.00 %

PIPE DESCRIPTION: Pipe 5

—RAINFALL INFORMATION—

Return Period	= 100 Year
Rainfall File	= Tutorial

—PIPE INFORMATION—

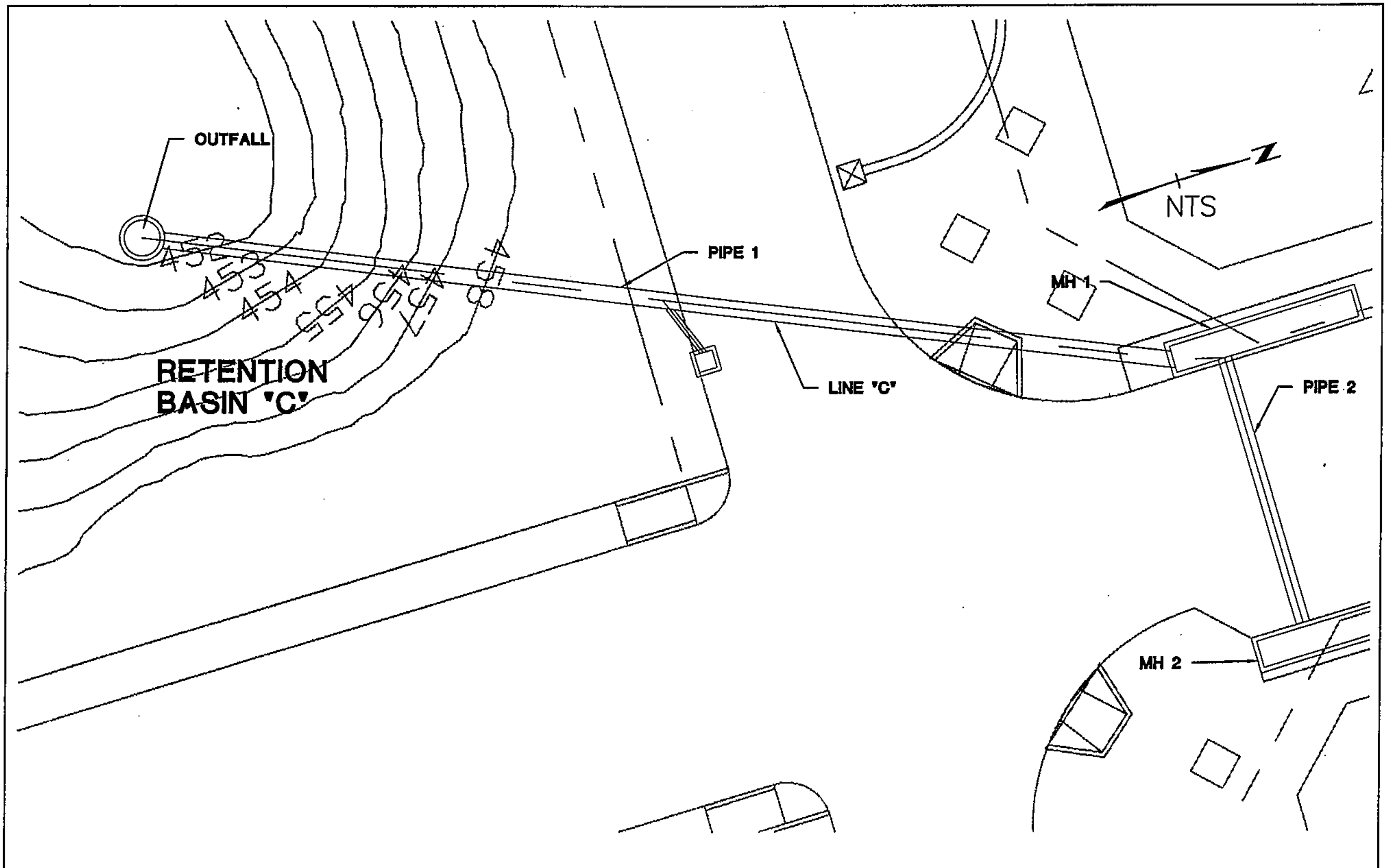
Current Pipe	= Pipe 5
Downstream Pipe	= Pipe 1
Pipe Material	= RCP
Pipe Length	= 16.35 ft
Plan Length	= 16.35 ft
Pipe Type	= Circular
Pipe Dimensions	= 18.00 in
Pipe Manning's "n"	= 0.013
Pipe Capacity at Invert Slope	= 69.72 cfs
Invert Elevation Downstream	= 451.26 ft
Invert Elevation Upstream	= 458.47 ft
Invert Slope	= 54.86%
Invert Slope (Plan Length)	= 44.10%
Rim Elevation Downstream	= 461.92 ft
Rim Elevation Upstream	= 462.02 ft
Natural Ground Slope	= 0.61%
Crown Elevation Downstream	= 452.76 ft
Crown Elevation Upstream	= 459.97 ft

Storm Drain Line "B-1, B-2, B-3"

—FLOW INFORMATION—
Catchment Area = 0.00 ac
Runoff Coefficient = 0.500
Inlet Time = 0.00 min
Inlet Intensity = 0.00 in/hr
Inlet Rational Flow = 0.00 cfs
Inlet Input Flow = 6.51 cfs
Inlet Hydrograph Flow = 0.00 cfs
Total Area = 0.00 ac
Weighted Coefficient = 0.500
Total Time of Concentration = 0.00 min
Total Intensity = 13.11 in/hr
Total Rational Flow = 0.00 cfs
Total Flow = 6.51 cfs
Uniform Capacity = 69.72 cfs
Skipped flow = 0.00 cfs
Infiltration = 0.00 gpd

—HYDRAULIC INFORMATION—
HGL Elevation Downstream = 457.12 ft
HGL Elevation Upstream = 459.67 ft
HGL Slope = 19.44 %
EGL Elevation Downstream = 457.33 ft
EGL Elevation Upstream = 460.11 ft
EGL Slope = 21.13 %
Critical Depth = 11.85 in
Depth Downstream = 18.00 in
Depth Upstream = 11.85 in
Velocity Downstream = 3.69 ft/s
Velocity Upstream = 5.28 ft/s
Uniform Velocity Downstream = NA
Uniform Velocity Upstream = NA
Area Downstream = 1.77 ft^2
Area Upstream = 1.23 ft^2
Kj (JLC) = 0.50
Calculated Junction Loss = NA

—INLET INFORMATION—
Downstream Inlet = MH 1
Inlet Description = Grate 19-3/8x17-3/4
Inlet Type = Undefined
Computation Case = Sag
Longitudinal Slope = 0.00 ft/ft
Mannings n-value = 0.000
Pavement Cross-Slope = 0.00 ft/ft
Gutter Cross-Slope = 0.00 ft/ft
Gutter Local Depression = 0.00 in
Gutter Width = 0.00 ft
Ponding Width = 0.00 ft
Intercept Efficiency = * %
Flow from Catchment = 0.00 cfs
Carryover from previous inlet = 0.00 cfs
Total Flow to Current Inlet = 0.00 cfs
Flow Intercepted by Current Inlet = 0.00 cfs
Bypassed Flow = 0.00 cfs
Pavement Flow = 0.00 cfs
Gutter Flow = 0.00 cfs
Depth at Curb = 0.00 in
Depth at Pavement/Gutter Joint = 0.00 in
Pavement Spread = 0.00 ft
Total Spread = 0.00 ft
Gutter Velocity = 0.00 ft/s
Curb Efficiency = * %
Grate Efficiency = * %
Slot Efficiency = * %
Total Efficiency = 0.00 %



STORM DRAIN LINE "C"

Storm Drain Line "C"

PIPE DESCRIPTION: Pipe 1
—RAINFALL INFORMATION—
Return Period = 100 Year
Rainfall File = Tutorial

—PIPE INFORMATION—
Current Pipe = Pipe 1
Downstream Pipe = Outfall
Pipe Material = CONC
Pipe Length = 113.10 ft
Plan Length = 113.10 ft
Pipe Type = Circular
Pipe Dimensions = 24.00 in
Pipe Manning's "n" = 0.013
Pipe Capacity at Invert Slope = 40.23 cfs
Invert Elevation Downstream = 447.75 ft
Invert Elevation Upstream = 451.33 ft
Invert Slope = 3.44%
Invert Slope (Plan Length) = 3.17%
Rim Elevation Downstream = 452.00 ft
Rim Elevation Upstream = 458.41 ft
Natural Ground Slope = 5.67%
Crown Elevation Downstream = 449.75 ft
Crown Elevation Upstream = 453.33 ft

—FLOW INFORMATION—
Catchment Area = 0.00 ac
Runoff Coefficient = 0.500
Inlet Time = 0.00 min
Inlet Intensity = 0.00 in/hr
Inlet Rational Flow = 0.00 cfs
Inlet Input Flow = 13.19 cfs
Inlet Hydrograph Flow = 0.00 cfs
Total Area = 0.00 ac
Weighted Coefficient = 0.500
Total Time of Concentration = 0.17 min
Total Intensity = 12.98 in/hr
Total Rational Flow = 0.00 cfs
Total Flow = 26.37 cfs
Uniform Capacity = 40.23 cfs
Skipped flow = 0.00 cfs
Infiltration = 0.00 gpd

—HYDRAULIC INFORMATION—
HGL Elevation Downstream = 452.75 ft
HGL Elevation Upstream = 454.29 ft
HGL Slope = 1.48 %
EGL Elevation Downstream = 453.85 ft
EGL Elevation Upstream = 455.38 ft
EGL Slope = 1.48 %
Critical Depth = 21.54 in
Depth Downstream = 24.00 in
Depth Upstream = 24.00 in
Velocity Downstream = 8.39 ft/s
Velocity Upstream = 8.39 ft/s
Uniform Velocity Downstream = NA
Uniform Velocity Upstream = NA
Area Downstream = 3.14 ft^2
Area Upstream = 3.14 ft^2
Kj (JLC) = 0.50
Calculated Junction Loss = 0.548 ft

—INLET INFORMATION—
Downstream Inlet = Outfall
Inlet Description = Grate 19-3/8x17-3/4
Inlet Type = Undefined
Computation Case = Sag

Storm Drain Line "C"

Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000
Pavement Cross-Slope	= 0.00 ft/ft
Gutter Cross-Slope	= 0.00 ft/ft
Gutter Local Depression	= 0.00 in
Gutter Width	= 0.00 ft
Ponding Width	= 0.00 ft
Intercept Efficiency	= * %
Flow from Catchment	= 0.00 cfs
Carryover from previous inlet	= 0.00 cfs
Total Flow to Current Inlet	= 0.00 cfs
Flow Intercepted by Current Inlet	= 0.00 cfs
Bypassed Flow	= 0.00 cfs
Pavement Flow	= 0.00 cfs
Gutter Flow	= 0.00 cfs
Depth at Curb	= 0.00 in
Depth at Pavement/Gutter Joint	= 0.00 in
Pavement Spread	= 0.00 ft
Total Spread	= 0.00 ft
Gutter Velocity	= 0.00 ft/s
Curb Efficiency	= * %
Grate Efficiency	= * %
Slot Efficiency	= * %
Total Efficiency	= 0.00 %

PIPE DESCRIPTION: Pipe 2

—RAINFALL INFORMATION—

Return Period	= 100 Year
Rainfall File	= Tutorial

—PIPE INFORMATION—

Current Pipe	= Pipe 2
Downstream Pipe	= Pipe 1
Pipe Material	= RCP
Pipe Length	= 31.00 ft
Plan Length	= 31.00 ft
Pipe Type	= Circular
Pipe Dimensions	= 18.00 in
Pipe Manning's "n"	= 0.013
Pipe Capacity at Invert Slope	= 6.77 cfs
Invert Elevation Downstream	= 452.06 ft
Invert Elevation Upstream	= 452.19 ft
Invert Slope	= 0.47%
Invert Slope (Plan Length)	= 0.42%
Rim Elevation Downstream	= 458.41 ft
Rim Elevation Upstream	= 458.41 ft
Natural Ground Slope	= 0.00%
Crown Elevation Downstream	= 453.56 ft
Crown Elevation Upstream	= 453.69 ft

—FLOW INFORMATION—

Catchment Area	= 0.00 ac
Runoff Coefficient	= 0.500
Inlet Time	= 0.00 min
Inlet Intensity	= 0.00 in/hr
Inlet Rational Flow	= 0.00 cfs
Inlet Input Flow	= 13.19 cfs
Inlet Hydrograph Flow	= 0.00 cfs
Total Area	= 0.00 ac
Weighted Coefficient	= 0.500
Total Time of Concentration	= 0.00 min
Total Intensity	= 13.11 in/hr
Total Rational Flow	= 0.00 cfs
Total Flow	= 13.19 cfs
Uniform Capacity	= 6.77 cfs
Skipped flow	= 0.00 cfs
Infiltration	= 0.00 gpd

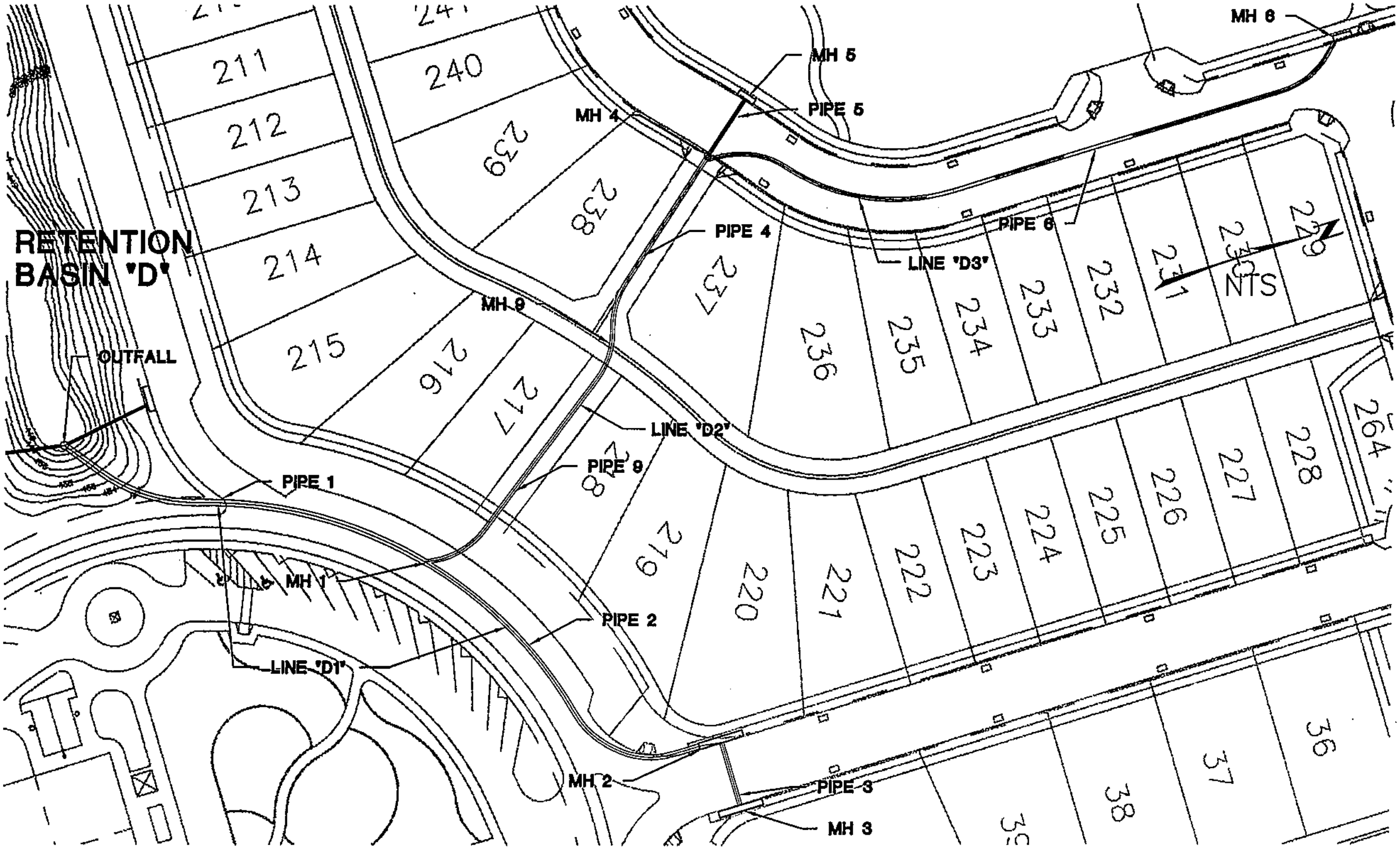
—HYDRAULIC INFORMATION—

Storm Drain Line "C"

HGL Elevation Downstream	= 454.84 ft
HGL Elevation Upstream	= 455.76 ft
HGL Slope	= 3.33 %
EGL Elevation Downstream	= 455.70 ft
EGL Elevation Upstream	= 456.62 ft
EGL Slope	= 3.33 %
Critical Depth	= 16.29 in
Depth Downstream	= 18.00 in
Depth Upstream	= 18.00 in
Velocity Downstream	= 7.46 ft/s
Velocity Upstream	= 7.46 ft/s
Uniform Velocity Downstream	= NA
Uniform Velocity Upstream	= NA
Area Downstream	= 1.77 ft^2
Area Upstream	= 1.77 ft^2
Kj (JLC)	= 0.50
Calculated Junction Loss	= NA

—INLET INFORMATION—

Downstream Inlet	= MH 1
Inlet Description	= Grate 19-3/8x17-3/4
Inlet Type	= Undefined
Computation Case	= Sag
Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000
Pavement Cross-Slope	= 0.00 ft/ft
Gutter Cross-Slope	= 0.00 ft/ft
Gutter Local Depression	= 0.00 in
Gutter Width	= 0.00 ft
Ponding Width	= 0.00 ft
Intercept Efficiency	= * %
Flow from Catchment	= 0.00 cfs
Carryover from previous inlet	= 0.00 cfs
Total Flow to Current Inlet	= 0.00 cfs
Flow Intercepted by Current Inlet	= 0.00 cfs
Bypassed Flow	= 0.00 cfs
Pavement Flow	= 0.00 cfs
Gutter Flow	= 0.00 cfs
Depth at Curb	= 0.00 in
Depth at Pavement/Gutter Joint	= 0.00 in
Pavement Spread	= 0.00 ft
Total Spread	= 0.00 ft
Gutter Velocity	= 0.00 ft/s
Curb Efficiency	= * %
Grate Efficiency	= * %
Slot Efficiency	= * %
Total Efficiency	= 0.00 %



STORM DRAIN LINE "D1,D2,D3"

Storm Drain Line "D-1, D-2, D-3"

PIPE DESCRIPTION: Pipe 1
—RAINFALL INFORMATION—
Return Period = 100 Year
Rainfall File = Tutorial

—PIPE INFORMATION—
Current Pipe = Pipe 1
Downstream Pipe = Outfall
Pipe Material = CONC
Pipe Length = 216.07 ft
Plan Length = 216.07 ft
Pipe Type = Circular
Pipe Dimensions = 42.00 in
Pipe Manning's "n" = 0.013
Pipe Capacity at Invert Slope = 63.30 cfs
Invert Elevation Downstream = 442.42 ft
Invert Elevation Upstream = 443.28 ft
Invert Slope = 0.41%
Invert Slope (Plan Length) = 0.40%
Rim Elevation Downstream = 447.00 ft
Rim Elevation Upstream = 453.74 ft
Natural Ground Slope = 3.12%
Crown Elevation Downstream = 445.92 ft
Crown Elevation Upstream = 446.78 ft

—FLOW INFORMATION—
Catchment Area = 0.00 ac
Runoff Coefficient = 0.500
Inlet Time = 0.00 min
Inlet Intensity = 0.00 in/hr
Inlet Rational Flow = 0.00 cfs
Inlet Input Flow = 0.00 cfs
Inlet Hydrograph Flow = 0.00 cfs
Total Area = 0.00 ac
Weighted Coefficient = 0.500
Total Time of Concentration = 2.97 min
Total Intensity = 11.21 in/hr
Total Rational Flow = 0.00 cfs
Total Flow = 67.30 cfs
Uniform Capacity = 63.30 cfs
Skipped flow = 0.00 cfs
Infiltration = 0.00 gpd

—HYDRAULIC INFORMATION—
HGL Elevation Downstream = 449.00 ft
HGL Elevation Upstream = 449.97 ft
HGL Slope = 0.46 %
EGL Elevation Downstream = 449.76 ft
EGL Elevation Upstream = 450.73 ft
EGL Slope = 0.46 %
Critical Depth = 30.87 in
Depth Downstream = 42.00 in
Depth Upstream = 42.00 in
Velocity Downstream = 7.00 ft/s
Velocity Upstream = 7.00 ft/s
Uniform Velocity Downstream = NA
Uniform Velocity Upstream = NA
Area Downstream = 9.62 ft^2
Area Upstream = 9.62 ft^2
Kj (JLC) = 0.50
Calculated Junction Loss = 0.380 ft

—INLET INFORMATION—
Downstream Inlet = Outfall
Inlet Description = <None>
Inlet Type = Undefined
Computation Case = Sag

Longitudinal Slope = 0.00 ft/ft
Mannings n-value = 0.000
Pavement Cross-Slope = 0.00 ft/ft
Gutter Cross-Slope = 0.00 ft/ft
Gutter Local Depression = 0.00 in
Gutter Width = 0.00 ft
Ponding Width = 0.00 ft
Intercept Efficiency = * %
Flow from Catchment = 0.00 cfs
Carryover from previous inlet = 0.00 cfs
Total Flow to Current Inlet = 0.00 cfs
Flow Intercepted by Current Inlet = 0.00 cfs
Bypassed Flow = 0.00 cfs
Pavement Flow = 0.00 cfs
Gutter Flow = 0.00 cfs
Depth at Curb = 0.00 in
Depth at Pavement/Gutter Joint = 0.00 in
Pavement Spread = 0.00 ft
Total Spread = 0.00 ft
Gutter Velocity = 0.00 ft/s
Curb Efficiency = * %
Grate Efficiency = * %
Slot Efficiency = * %
Total Efficiency = 0.00 %

PIPE DESCRIPTION: Pipe 2
----RAINFALL INFORMATION----
Return Period = 100 Year
Rainfall File = Tutorial

----PIPE INFORMATION----
Current Pipe = Pipe 2
Downstream Pipe = Pipe 1
Pipe Material = CONC
Pipe Length = 194.96 ft
Plan Length = 194.96 ft
Pipe Type = Circular
Pipe Dimensions = 33.00 in
Pipe Manning's "n" = 0.013
Pipe Capacity at Invert Slope = 33.22 cfs
Invert Elevation Downstream = 444.07 ft
Invert Elevation Upstream = 444.84 ft
Invert Slope = 0.45%
Invert Slope (Plan Length) = 0.39%
Rim Elevation Downstream = 453.74 ft
Rim Elevation Upstream = 453.40 ft
Natural Ground Slope = -0.17%
Crown Elevation Downstream = 446.82 ft
Crown Elevation Upstream = 447.59 ft

----FLOW INFORMATION----
Catchment Area = 0.00 ac
Runoff Coefficient = 0.500
Inlet Time = 0.00 min
Inlet Intensity = 0.00 in/hr
Inlet Rational Flow = 0.00 cfs
Inlet Input Flow = 17.88 cfs
Inlet Hydrograph Flow = 0.00 cfs
Total Area = 0.00 ac
Weighted Coefficient = 0.500
Total Time of Concentration = 0.21 min
Total Intensity = 12.96 in/hr
Total Rational Flow = 0.00 cfs
Total Flow = 35.75 cfs
Uniform Capacity = 33.22 cfs
Skipped flow = 0.00 cfs
Infiltration = 0.00 gpd

----HYDRAULIC INFORMATION----

Storm Drain Line "D-1, D-2, D-3"

HGL Elevation Downstream	= 450.35 ft
HGL Elevation Upstream	= 451.24 ft
HGL Slope	= 0.52 %
EGL Elevation Downstream	= 450.91 ft
EGL Elevation Upstream	= 451.80 ft
EGL Slope	= 0.52 %
Critical Depth	= 23.90 in
Depth Downstream	= 33.00 in
Depth Upstream	= 33.00 in
Velocity Downstream	= 6.02 ft/s
Velocity Upstream	= 6.02 ft/s
Uniform Velocity Downstream	= NA
Uniform Velocity Upstream	= NA
Area Downstream	= 5.94 ft^2
Area Upstream	= 5.94 ft^2
Kj (JLC)	= 0.50
Calculated Junction Loss	= 0.282 ft

---INLET INFORMATION---

Downstream Inlet	= MH 1
Inlet Description	= Grate 19-3/8x17-3/4
Inlet Type	= Undefined
Computation Case	= Sag
Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000
Pavement Cross-Slope	= 0.00 ft/ft
Gutter Cross-Slope	= 0.00 ft/ft
Gutter Local Depression	= 0.00 in
Gutter Width	= 0.00 ft
Ponding Width	= 0.00 ft
Intercept Efficiency	= * %
Flow from Catchment	= 0.00 cfs
Carryover from previous inlet	= 0.00 cfs
Total Flow to Current Inlet	= 0.00 cfs
Flow Intercepted by Current Inlet	= 0.00 cfs
Bypassed Flow	= 0.00 cfs
Pavement Flow	= 0.00 cfs
Gutter Flow	= 0.00 cfs
Depth at Curb	= 0.00 in
Depth at Pavement/Gutter Joint	= 0.00 in
Pavement Spread	= 0.00 ft
Total Spread	= 0.00 ft
Gutter Velocity	= 0.00 ft/s
Curb Efficiency	= * %
Grate Efficiency	= * %
Slot Efficiency	= * %
Total Efficiency	= 0.00 %

PIPE DESCRIPTION: Pipe 3

---RAINFALL INFORMATION---

Return Period	= 100 Year
Rainfall File	= Tutorial

---PIPE INFORMATION---

Current Pipe	= Pipe 3
Downstream Pipe	= Pipe 2
Pipe Material	= CONC
Pipe Length	= 37.00 ft
Plan Length	= 37.00 ft
Pipe Type	= Circular
Pipe Dimensions	= 27.00 in
Pipe Manning's "n"	= 0.013
Pipe Capacity at Invert Slope	= 19.04 cfs
Invert Elevation Downstream	= 445.75 ft
Invert Elevation Upstream	= 445.89 ft
Invert Slope	= 0.41%
Invert Slope (Plan Length)	= 0.38%
Rim Elevation Downstream	= 453.40 ft
Rim Elevation Upstream	= 453.38 ft

Storm Drain Line "D-1, D-2, D-3"

Natural Ground Slope	= -0.05%
Crown Elevation Downstream	= 448.00 ft
Crown Elevation Upstream	= 448.14 ft

—FLOW INFORMATION—

Catchment Area	= 0.00 ac
Runoff Coefficient	= 0.500
Inlet Time	= 0.00 min
Inlet Intensity	= 0.00 in/hr
Inlet Rational Flow	= 0.00 cfs
Inlet Input Flow	= 17.88 cfs
Inlet Hydrograph Flow	= 0.00 cfs
Total Area	= 0.00 ac
Weighted Coefficient	= 0.500
Total Time of Concentration	= 0.00 min
Total Intensity	= 13.11 in/hr
Total Rational Flow	= 0.00 cfs
Total Flow	= 17.88 cfs
Uniform Capacity	= 19.04 cfs
Skipped flow	= 0.00 cfs
Infiltration	= 0.00 gpd

—HYDRAULIC INFORMATION—

HGL Elevation Downstream	= 451.52 ft
HGL Elevation Upstream	= 451.80 ft
HGL Slope	= 0.82 %
EGL Elevation Downstream	= 451.83 ft
EGL Elevation Upstream	= 452.11 ft
EGL Slope	= 0.82 %
Critical Depth	= 17.73 in
Depth Downstream	= 27.00 in
Depth Upstream	= 27.00 in
Velocity Downstream	= 4.50 ft/s
Velocity Upstream	= 4.50 ft/s
Uniform Velocity Downstream	= NA
Uniform Velocity Upstream	= NA
Area Downstream	= 3.98 ft^2
Area Upstream	= 3.98 ft^2
Kj (JLC)	= 0.50
Calculated Junction Loss	= NA

—INLET INFORMATION—

Downstream Inlet	= MH 2
Inlet Description	= Grate 19-3/8x17-3/4
Inlet Type	= Undefined
Computation Case	= Sag
Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000
Pavement Cross-Slope	= 0.00 ft/ft
Gutter Cross-Slope	= 0.00 ft/ft
Gutter Local Depression	= 0.00 in
Gutter Width	= 0.00 ft
Ponding Width	= 0.00 ft
Intercept Efficiency	= * %
Flow from Catchment	= 0.00 cfs
Carryover from previous inlet	= 0.00 cfs
Total Flow to Current Inlet	= 0.00 cfs
Flow Intercepted by Current Inlet	= 0.00 cfs
Bypassed Flow	= 0.00 cfs
Pavement Flow	= 0.00 cfs
Gutter Flow	= 0.00 cfs
Depth at Curb	= 0.00 in
Depth at Pavement/Gutter Joint	= 0.00 in
Pavement Spread	= 0.00 ft
Total Spread	= 0.00 ft
Gutter Velocity	= 0.00 ft/s
Curb Efficiency	= * %
Grate Efficiency	= * %
Slot Efficiency	= * %

Total Efficiency = 0.00 %

PIPE DESCRIPTION: Pipe 9
---RAINFALL INFORMATION---
Return Period = 100 Year
Rainfall File = Tutorial

---PIPE INFORMATION---
Current Pipe = Pipe 9
Downstream Pipe = Pipe 1
Pipe Material = CONC
Pipe Length = 166.71 ft
Plan Length = 166.71 ft
Pipe Type = Circular
Pipe Dimensions = 27.00 in
Pipe Manning's "n" = 0.013
Pipe Capacity at Invert Slope = 41.18 cfs
Invert Elevation Downstream = 444.02 ft
Invert Elevation Upstream = 446.97 ft
Invert Slope = 1.86%
Invert Slope (Plan Length) = 1.77%
Rim Elevation Downstream = 453.74 ft
Rim Elevation Upstream = 460.50 ft
Natural Ground Slope = 4.05%
Crown Elevation Downstream = 446.27 ft
Crown Elevation Upstream = 449.22 ft

---FLOW INFORMATION---
Catchment Area = 0.00 ac
Runoff Coefficient = 0.500
Inlet Time = 0.00 min
Inlet Intensity = 0.00 in/hr
Inlet Rational Flow = 0.00 cfs
Inlet Input Flow = 0.00 cfs
Inlet Hydrograph Flow = 0.00 cfs
Total Area = 0.00 ac
Weighted Coefficient = 0.500
Total Time of Concentration = 2.72 min
Total Intensity = 11.34 in/hr
Total Rational Flow = 0.00 cfs
Total Flow = 31.55 cfs
Uniform Capacity = 41.18 cfs
Skipped flow = 0.00 cfs
Infiltration = 0.00 gpd

---HYDRAULIC INFORMATION---
HGL Elevation Downstream = 450.35 ft
HGL Elevation Upstream = 452.08 ft
HGL Slope = 1.09 %
EGL Elevation Downstream = 451.33 ft
EGL Elevation Upstream = 453.06 ft
EGL Slope = 1.09 %
Critical Depth = 23.24 in
Depth Downstream = 27.00 in
Depth Upstream = 27.00 in
Velocity Downstream = 7.93 ft/s
Velocity Upstream = 7.93 ft/s
Uniform Velocity Downstream = NA
Uniform Velocity Upstream = NA
Area Downstream = 3.98 ft^2
Area Upstream = 3.98 ft^2
Kj (JLC) = 0.00
Calculated Junction Loss = 0.003 ft

---INLET INFORMATION---
Downstream Inlet = MH 1
Inlet Description = <None>
Inlet Type = Undefined
Computation Case = Sag

Storm Drain Line "D-1, D-2, D-3"

Longitudinal Slope = 0.00 ft/ft
Mannings n-value = 0.000
Pavement Cross-Slope = 0.00 ft/ft
Gutter Cross-Slope = 0.00 ft/ft
Gutter Local Depression = 0.00 in
Gutter Width = 0.00 ft
Ponding Width = 0.00 ft
Intercept Efficiency = * %
Flow from Catchment = 0.00 cfs
Carryover from previous inlet = 0.00 cfs
Total Flow to Current Inlet = 0.00 cfs
Flow Intercepted by Current Inlet = 0.00 cfs
Bypassed Flow = 0.00 cfs
Pavement Flow = 0.00 cfs
Gutter Flow = 0.00 cfs
Depth at Curb = 0.00 in
Depth at Pavement/Gutter Joint = 0.00 in
Pavement Spread = 0.00 ft
Total Spread = 0.00 ft
Gutter Velocity = 0.00 ft/s
Curb Efficiency = * %
Grate Efficiency = * %
Slot Efficiency = * %
Total Efficiency = 0.00 %

PIPE DESCRIPTION: Pipe 4
—RAINFALL INFORMATION—
Return Period = 100 Year
Rainfall File = Tutorial

—PIPE INFORMATION—
Current Pipe = Pipe 4
Downstream Pipe = Pipe 9
Pipe Material = CONC
Pipe Length = 111.68 ft
Plan Length = 111.68 ft
Pipe Type = Circular
Pipe Dimensions = 27.00 in
Pipe Manning's "n" = 0.013
Pipe Capacity at Invert Slope = 60.81 cfs
Invert Elevation Downstream = 446.97 ft
Invert Elevation Upstream = 451.28 ft
Invert Slope = 3.86%
Invert Slope (Plan Length) = 3.86%
Rim Elevation Downstream = 460.50 ft
Rim Elevation Upstream = 459.28 ft
Natural Ground Slope = -1.09%
Crown Elevation Downstream = 449.22 ft
Crown Elevation Upstream = 453.53 ft

—FLOW INFORMATION—
Catchment Area = 0.00 ac
Runoff Coefficient = 0.500
Inlet Time = 0.00 min
Inlet Intensity = 0.00 in/hr
Inlet Rational Flow = 0.00 cfs
Inlet Input Flow = 0.00 cfs
Inlet Hydrograph Flow = 0.00 cfs
Total Area = 0.00 ac
Weighted Coefficient = 0.500
Total Time of Concentration = 2.10 min
Total Intensity = 11.69 in/hr
Total Rational Flow = 0.00 cfs
Total Flow = 31.55 cfs
Uniform Capacity = 60.81 cfs
Skipped flow = 0.00 cfs
Infiltration = 0.00 gpd

—HYDRAULIC INFORMATION—

Storm Drain Line "D-1, D-2, D-3"

HGL Elevation Downstream = 452.08 ft
HGL Elevation Upstream = 453.22 ft
HGL Slope = 1.02 %
EGL Elevation Downstream = 453.06 ft
EGL Elevation Upstream = 454.38 ft
EGL Slope = 1.19 %
Critical Depth = 23.24 in
Depth Downstream = 27.00 in
Depth Upstream = 23.24 in
Velocity Downstream = 7.93 ft/s
Velocity Upstream = 8.67 ft/s
Uniform Velocity Downstream = NA
Uniform Velocity Upstream = NA
Area Downstream = 3.98 ft^2
Area Upstream = 3.64 ft^2
Kj (JLC) = 0.50
Calculated Junction Loss = 0.584 ft

---INLET INFORMATION---
Downstream Inlet = MH 9
Inlet Description = <None>
Inlet Type = Undefined
Computation Case = Sag
Longitudinal Slope = 0.00 ft/ft
Mannings n-value = 0.000
Pavement Cross-Slope = 0.00 ft/ft
Gutter Cross-Slope = 0.00 ft/ft
Gutter Local Depression = 0.00 in
Gutter Width = 0.00 ft
Ponding Width = 0.00 ft
Intercept Efficiency = * %
Flow from Catchment = 0.00 cfs
Carryover from previous inlet = 0.00 cfs
Total Flow to Current Inlet = 0.00 cfs
Flow Intercepted by Current Inlet = 0.00 cfs
Bypassed Flow = 0.00 cfs
Pavement Flow = 0.00 cfs
Gutter Flow = 0.00 cfs
Depth at Curb = 0.00 in
Depth at Pavement/Gutter Joint = 0.00 in
Pavement Spread = 0.00 ft
Total Spread = 0.00 ft
Gutter Velocity = 0.00 ft/s
Curb Efficiency = * %
Grate Efficiency = * %
Slot Efficiency = * %
Total Efficiency = 0.00 %

PIPE DESCRIPTION: Pipe 5
---RAINFALL INFORMATION---
Return Period = 100 Year
Rainfall File = Tutorial

---PIPE INFORMATION---
Current Pipe = Pipe 5
Downstream Pipe = Pipe 4
Pipe Material = CONC
Pipe Length = 35.76 ft
Plan Length = 35.76 ft
Pipe Type = Circular
Pipe Dimensions = 21.00 in
Pipe Manning's "n" = 0.013
Pipe Capacity at Invert Slope = 37.56 cfs
Invert Elevation Downstream = 451.88 ft
Invert Elevation Upstream = 453.89 ft
Invert Slope = 6.01%
Invert Slope (Plan Length) = 5.63%
Rim Elevation Downstream = 459.28 ft
Rim Elevation Upstream = 458.65 ft

Storm Drain Line "D-1, D-2, D-3"

Natural Ground Slope	= -1.76%
Crown Elevation Downstream	= 453.63 ft
Crown Elevation Upstream	= 455.64 ft

—FLOW INFORMATION—

Catchment Area	= 0.00 ac
Runoff Coefficient	= 0.500
Inlet Time	= 0.00 min
Inlet Intensity	= 0.00 in/hr
Inlet Rational Flow	= 0.00 cfs
Inlet Input Flow	= 11.66 cfs
Inlet Hydrograph Flow	= 0.00 cfs
Total Area	= 0.00 ac
Weighted Coefficient	= 0.500
Total Time of Concentration	= 0.00 min
Total Intensity	= 13.11 in/hr
Total Rational Flow	= 0.00 cfs
Total Flow	= 11.66 cfs
Uniform Capacity	= 37.56 cfs
Skipped flow	= 0.00 cfs
Infiltration	= 0.00 gpd

—HYDRAULIC INFORMATION—

HGL Elevation Downstream	= 453.80 ft
HGL Elevation Upstream	= 455.47 ft
HGL Slope	= 4.97 %
EGL Elevation Downstream	= 454.17 ft
EGL Elevation Upstream	= 456.07 ft
EGL Slope	= 5.68 %
Critical Depth	= 15.28 in
Depth Downstream	= 21.00 in
Depth Upstream	= 15.28 in
Velocity Downstream	= 4.85 ft/s
Velocity Upstream	= 6.22 ft/s
Uniform Velocity Downstream	= NA
Uniform Velocity Upstream	= NA
Area Downstream	= 2.41 ft^2
Area Upstream	= 1.87 ft^2
Kj (JLC)	= 0.50
Calculated Junction Loss	= NA

—INLET INFORMATION—

Downstream Inlet	= MH 4
Inlet Description	= Grate 19-3/8x17-3/4
Inlet Type	= Undefined
Computation Case	= Sag
Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000
Pavement Cross-Slope	= 0.00 ft/ft
Gutter Cross-Slope	= 0.00 ft/ft
Gutter Local Depression	= 0.00 in
Gutter Width	= 0.00 ft
Ponding Width	= 0.00 ft
Intercept Efficiency	= * %
Flow from Catchment	= 0.00 cfs
Carryover from previous inlet	= 0.00 cfs
Total Flow to Current Inlet	= 0.00 cfs
Flow Intercepted by Current Inlet	= 0.00 cfs
Bypassed Flow	= 0.00 cfs
Pavement Flow	= 0.00 cfs
Gutter Flow	= 0.00 cfs
Depth at Curb	= 0.00 in
Depth at Pavement/Gutter Joint	= 0.00 in
Pavement Spread	= 0.00 ft
Total Spread	= 0.00 ft
Gutter Velocity	= 0.00 ft/s
Curb Efficiency	= * %
Grate Efficiency	= * %
Slot Efficiency	= * %

Total Efficiency = 0.00 %

PIPE DESCRIPTION: Pipe 6
—RAINFALL INFORMATION—
Return Period = 100 Year
Rainfall File = Tutorial

—PIPE INFORMATION—
Current Pipe = Pipe 6
Downstream Pipe = Pipe 4
Pipe Material = CONC
Pipe Length = 378.79 ft
Plan Length = 378.79 ft
Pipe Type = Circular
Pipe Dimensions = 24.00 in
Pipe Manning's "n" = 0.013
Pipe Capacity at Invert Slope = 26.85 cfs
Invert Elevation Downstream = 451.51 ft
Invert Elevation Upstream = 456.85 ft
Invert Slope = 1.52%
Invert Slope (Plan Length) = 1.41%
Rim Elevation Downstream = 459.28 ft
Rim Elevation Upstream = 461.47 ft
Natural Ground Slope = 0.58%
Crown Elevation Downstream = 453.51 ft
Crown Elevation Upstream = 458.85 ft

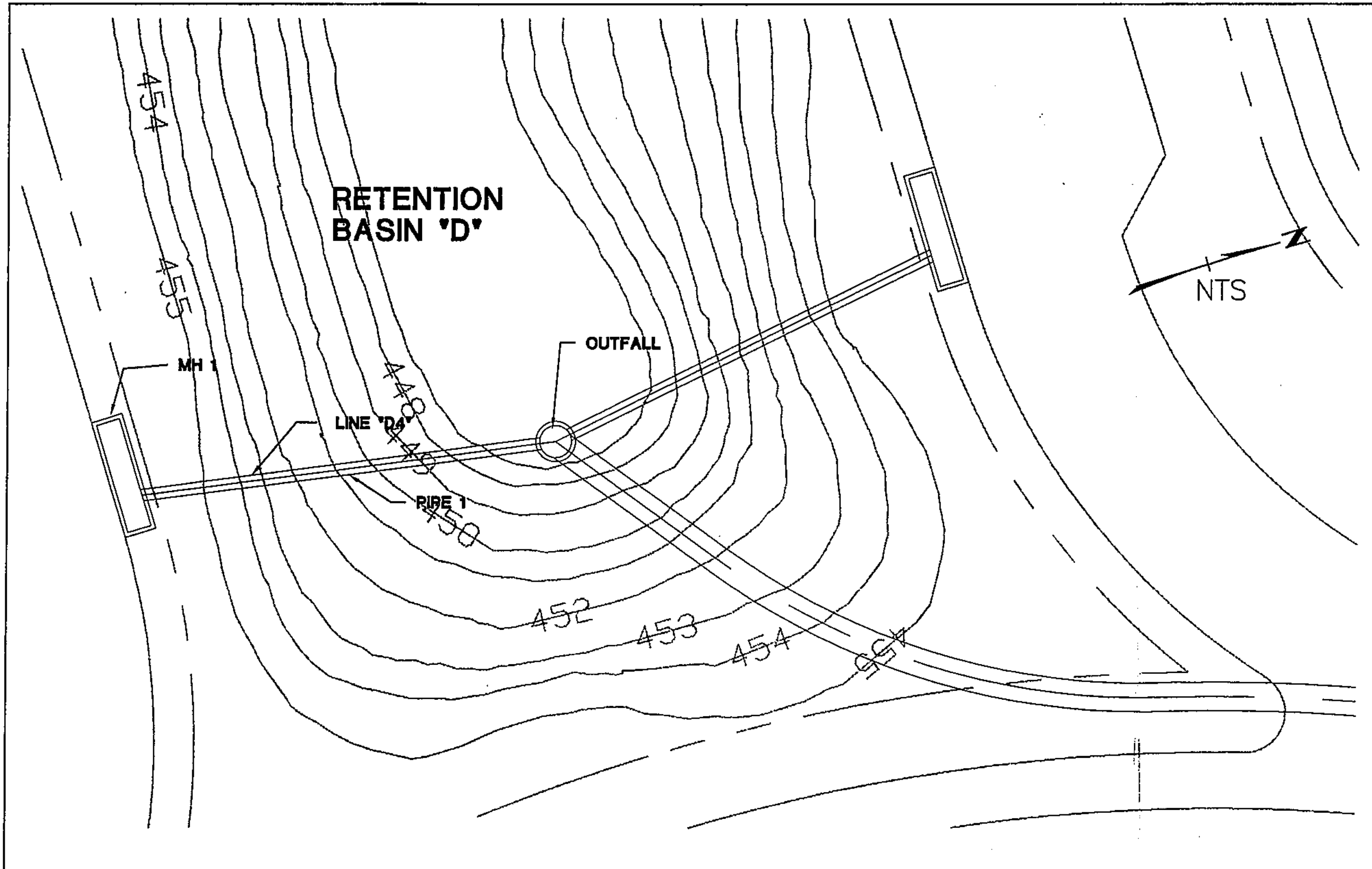
—FLOW INFORMATION—
Catchment Area = 0.00 ac
Runoff Coefficient = 0.500
Inlet Time = 0.00 min
Inlet Intensity = 0.00 in/hr
Inlet Rational Flow = 0.00 cfs
Inlet Input Flow = 19.89 cfs
Inlet Hydrograph Flow = 0.00 cfs
Total Area = 0.00 ac
Weighted Coefficient = 0.500
Total Time of Concentration = 0.00 min
Total Intensity = 13.11 in/hr
Total Rational Flow = 0.00 cfs
Total Flow = 19.89 cfs
Uniform Capacity = 26.85 cfs
Skipped flow = 0.00 cfs
Infiltration = 0.00 gpd

—HYDRAULIC INFORMATION—
HGL Elevation Downstream = 453.80 ft
HGL Elevation Upstream = 458.87 ft
HGL Slope = 1.44 %
EGL Elevation Downstream = 454.42 ft
EGL Elevation Upstream = 459.72 ft
EGL Slope = 1.51 %
Critical Depth = 19.23 in
Depth Downstream = 24.00 in
Depth Upstream = 19.23 in
Velocity Downstream = 6.33 ft/s
Velocity Upstream = 7.37 ft/s
Uniform Velocity Downstream = NA
Uniform Velocity Upstream = NA
Area Downstream = 3.14 ft^2
Area Upstream = 2.70 ft^2
Kj (JLC) = 0.50
Calculated Junction Loss = NA

—INLET INFORMATION—
Downstream Inlet = MH 4
Inlet Description = Grate 19-3/8x17-3/4
Inlet Type = Undefined
Computation Case = Sag

Storm Drain Line "D-1, D-2, D-3"

Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000
Pavement Cross-Slope	= 0.00 ft/ft
Gutter Cross-Slope	= 0.00 ft/ft
Gutter Local Depression	= 0.00 in
Gutter Width	= 0.00 ft
Ponding Width	= 0.00 ft
Intercept Efficiency	= * %
Flow from Catchment	= 0.00 cfs
Carryover from previous inlet	= 0.00 cfs
Total Flow to Current Inlet	= 0.00 cfs
Flow Intercepted by Current Inlet	= 0.00 cfs
Bypassed Flow	= 0.00 cfs
Pavement Flow	= 0.00 cfs
Gutter Flow	= 0.00 cfs
Depth at Curb	= 0.00 in
Depth at Pavement/Gutter Joint	= 0.00 in
Pavement Spread	= 0.00 ft
Total Spread	= 0.00 ft
Gutter Velocity	= 0.00 ft/s
Curb Efficiency	= * %
Grate Efficiency	= * %
Slot Efficiency	= * %
Total Efficiency	= 0.00 %



STORM DRAIN LINE "D4"

Storm Drain Line "D-4"

PIPE DESCRIPTION: Pipe 1

—RAINFALL INFORMATION—

Return Period	= 100 Year
Rainfall File	= Tutorial

—PIPE INFORMATION—

Current Pipe	= Pipe 1
Downstream Pipe	= Outfall
Pipe Material	= RCP
Pipe Length	= 50.19 ft
Plan Length	= 50.19 ft
Pipe Type	= Circular
Pipe Dimensions	= 18.00 in
Pipe Manning's "n"	= 0.013
Pipe Capacity at Invert Slope	= 44.21 cfs
Invert Elevation Downstream	= 442.07 ft
Invert Elevation Upstream	= 450.97 ft
Invert Slope	= 17.81%
Invert Slope (Plan Length)	= 17.73%
Rim Elevation Downstream	= 447.00 ft
Rim Elevation Upstream	= 454.71 ft
Natural Ground Slope	= 15.36%
Crown Elevation Downstream	= 443.57 ft
Crown Elevation Upstream	= 452.47 ft

—FLOW INFORMATION—

Catchment Area	= 0.00 ac
Runoff Coefficient	= 0.500
Inlet Time	= 0.00 min
Inlet Intensity	= 0.00 in/hr
Inlet Rational Flow	= 0.00 cfs
Inlet Input Flow	= 9.52 cfs
Inlet Hydrograph Flow	= 0.00 cfs
Total Area	= 0.00 ac
Weighted Coefficient	= 0.500
Total Time of Concentration	= 0.00 min
Total Intensity	= 13.11 in/hr
Total Rational Flow	= 0.00 cfs
Total Flow	= 9.52 cfs
Uniform Capacity	= 44.21 cfs
Skipped flow	= 0.00 cfs
Infiltration	= 0.00 gpd

—HYDRAULIC INFORMATION—

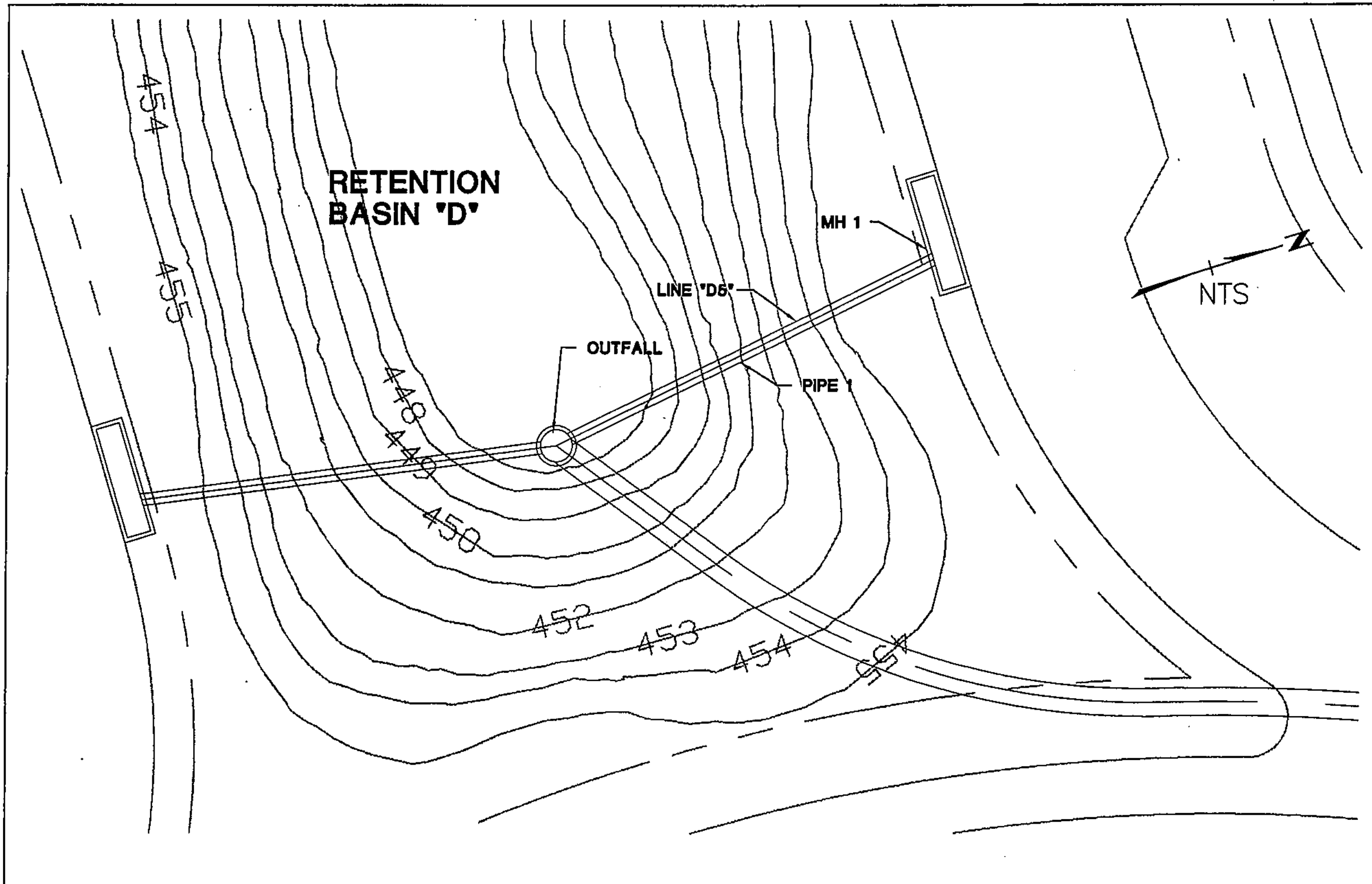
HGL Elevation Downstream	= 449.00 ft
HGL Elevation Upstream	= 452.47 ft
HGL Slope	= 6.95 %
EGL Elevation Downstream	= 449.45 ft
EGL Elevation Upstream	= 453.10 ft
EGL Slope	= 7.29 %
Critical Depth	= 14.30 in
Depth Downstream	= 18.00 in
Depth Upstream	= 14.30 in
Velocity Downstream	= 5.39 ft/s
Velocity Upstream	= 6.32 ft/s
Uniform Velocity Downstream	= NA
Uniform Velocity Upstream	= NA
Area Downstream	= 1.77 ft^2
Area Upstream	= 1.51 ft^2
Kj (JLC)	= 0.50
Calculated Junction Loss	= NA

—INLET INFORMATION—

Downstream Inlet	= Outfall
Inlet Description	= Grate 19-3/8x17-3/4
Inlet Type	= Undefined
Computation Case	= Sag

Storm Drain Line "D-4"

Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000
Pavement Cross-Slope	= 0.00 ft/ft
Gutter Cross-Slope	= 0.00 ft/ft
Gutter Local Depression	= 0.00 in
Gutter Width	= 0.00 ft
Ponding Width	= 0.00 ft
Intercept Efficiency	= * %
Flow from Catchment	= 0.00 cfs
Carryover from previous inlet	= 0.00 cfs
Total Flow to Current Inlet	= 0.00 cfs
Flow Intercepted by Current Inlet	= 0.00 cfs
Bypassed Flow	= 0.00 cfs
Pavement Flow	= 0.00 cfs
Gutter Flow	= 0.00 cfs
Depth at Curb	= 0.00 in
Depth at Pavement/Gutter Joint	= 0.00 in
Pavement Spread	= 0.00 ft
Total Spread	= 0.00 ft
Gutter Velocity	= 0.00 ft/s
Curb Efficiency	= * %
Grate Efficiency	= * %
Slot Efficiency	= * %
Total Efficiency	= 0.00 %



STORM DRAIN LINE "D5"

Storm Drain Line "D-5"

PIPE DESCRIPTION: Pipe 1
—RAINFALL INFORMATION—
Return Period = 100 Year
Rainfall File = Tutorial

—PIPE INFORMATION—
Current Pipe = Pipe 1
Downstream Pipe = Outfall
Pipe Material = RCP
Pipe Length = 50.19 ft
Plan Length = 50.19 ft
Pipe Type = Circular
Pipe Dimensions = 18.00 in
Pipe Manning's "n" = 0.013
Pipe Capacity at Invert Slope = 46.77 cfs
Invert Elevation Downstream = 440.92 ft
Invert Elevation Upstream = 450.88 ft
Invert Slope = 19.93%
Invert Slope (Plan Length) = 19.84%
Rim Elevation Downstream = 447.00 ft
Rim Elevation Upstream = 454.71 ft
Natural Ground Slope = 15.36%
Crown Elevation Downstream = 442.42 ft
Crown Elevation Upstream = 452.38 ft

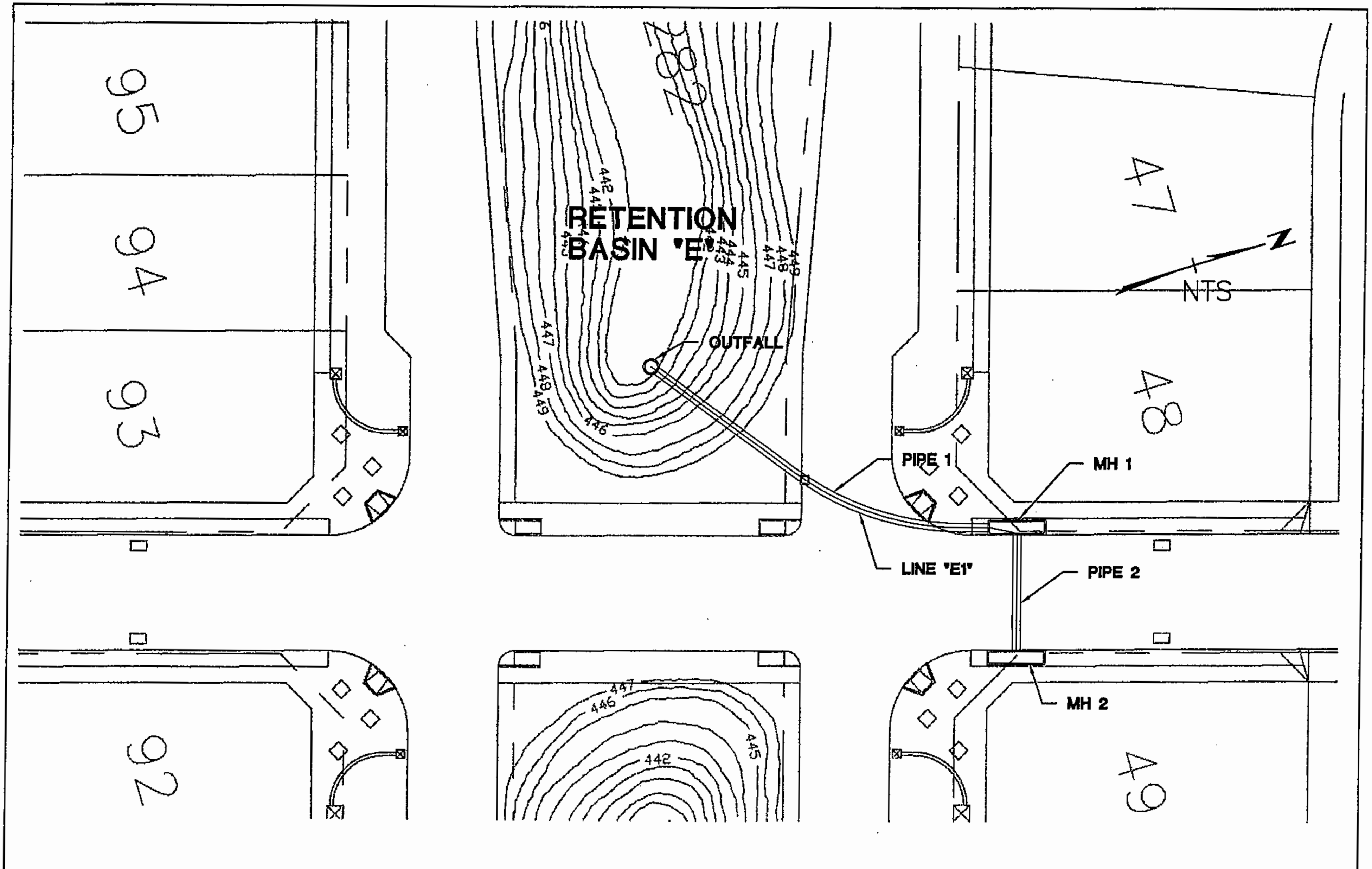
—FLOW INFORMATION—
Catchment Area = 0.00 ac
Runoff Coefficient = 0.500
Inlet Time = 0.00 min
Inlet Intensity = 0.00 in/hr
Inlet Rational Flow = 0.00 cfs
Inlet Input Flow = 10.66 cfs
Inlet Hydrograph Flow = 0.00 cfs
Total Area = 0.00 ac
Weighted Coefficient = 0.500
Total Time of Concentration = 0.00 min
Total Intensity = 13.11 in/hr
Total Rational Flow = 0.00 cfs
Total Flow = 10.66 cfs
Uniform Capacity = 46.77 cfs
Skipped flow = 0.00 cfs
Infiltration = 0.00 gpd

—HYDRAULIC INFORMATION—
HGL Elevation Downstream = 449.00 ft
HGL Elevation Upstream = 452.49 ft
HGL Slope = 6.98 %
EGL Elevation Downstream = 449.57 ft
EGL Elevation Upstream = 453.20 ft
EGL Slope = 7.27 %
Critical Depth = 15.04 in
Depth Downstream = 18.00 in
Depth Upstream = 15.04 in
Velocity Downstream = 6.03 ft/s
Velocity Upstream = 6.76 ft/s
Uniform Velocity Downstream = NA
Uniform Velocity Upstream = NA
Area Downstream = 1.77 ft^2
Area Upstream = 1.58 ft^2
Kj (JLC) = 0.50
Calculated Junction Loss = NA

—INLET INFORMATION—
Downstream Inlet = Outfall
Inlet Description = Grate 19-3/8x17-3/4
Inlet Type = Undefined
Computation Case = Sag

Storm Drain Line "D-5"

Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000
Pavement Cross-Slope	= 0.00 ft/ft
Gutter Cross-Slope	= 0.00 ft/ft
Gutter Local Depression	= 0.00 in
Gutter Width	= 0.00 ft
Ponding Width	= 0.00 ft
Intercept Efficiency	= * %
Flow from Catchment	= 0.00 cfs
Carryover from previous inlet	= 0.00 cfs
Total Flow to Current Inlet	= 0.00 cfs
Flow Intercepted by Current Inlet	= 0.00 cfs
Bypassed Flow	= 0.00 cfs
Pavement Flow	= 0.00 cfs
Gutter Flow	= 0.00 cfs
Depth at Curb	= 0.00 in
Depth at Pavement/Gutter Joint	= 0.00 in
Pavement Spread	= 0.00 ft
Total Spread	= 0.00 ft
Gutter Velocity	= 0.00 ft/s
Curb Efficiency	= * %
Grate Efficiency	= * %
Slot Efficiency	= * %
Total Efficiency	= 0.00 %



STORM DRAIN LINE "E1"

Storm Drain Line "E-1"

PIPE DESCRIPTION: Pipe 1
—RAINFALL INFORMATION—
Return Period = 100 Year
Rainfall File = Tutorial

—PIPE INFORMATION—
Current Pipe = Pipe 1
Downstream Pipe = Outfall
Pipe Material = CONC
Pipe Length = 117.79 ft
Plan Length = 117.79 ft
Pipe Type = Circular
Pipe Dimensions = 30.00 in
Pipe Manning's "n" = 0.013
Pipe Capacity at Invert Slope = 84.72 cfs
Invert Elevation Downstream = 436.58 ft
Invert Elevation Upstream = 441.61 ft
Invert Slope = 4.85%
Invert Slope (Plan Length) = 4.27%
Rim Elevation Downstream = 441.00 ft
Rim Elevation Upstream = 448.64 ft
Natural Ground Slope = 6.49%
Crown Elevation Downstream = 439.08 ft
Crown Elevation Upstream = 444.11 ft

—FLOW INFORMATION—
Catchment Area = 0.00 ac
Runoff Coefficient = 0.500
Inlet Time = 0.00 min
Inlet Intensity = 0.00 in/hr
Inlet Rational Flow = 0.00 cfs
Inlet Input Flow = 24.28 cfs
Total Area = 0.00 ac
Weighted Coefficient = 0.500
Total Time of Concentration = 0.08 min
Total Intensity = 13.05 in/hr
Total Rational Flow = 0.00 cfs
Total Flow = 48.56 cfs
Uniform Capacity = 84.72 cfs
Skipped flow = 0.00 cfs
Infiltration = 0.00 gpd

—HYDRAULIC INFORMATION—
HGL Elevation Downstream = 444.71 ft
HGL Elevation Upstream = 446.36 ft
HGL Slope = 1.59 %
EGL Elevation Downstream = 446.23 ft
EGL Elevation Upstream = 447.88 ft
EGL Slope = 1.59 %
Critical Depth = 27.37 in
Depth Downstream = 30.00 in
Depth Upstream = 30.00 in
Velocity Downstream = 9.89 ft/s
Velocity Upstream = 9.89 ft/s
Uniform Velocity Downstream = NA
Uniform Velocity Upstream = NA
Area Downstream = 4.91 ft^2
Area Upstream = 4.91 ft^2
Kj (JLC) = 0.50
Calculated Junction Loss = 0.761 ft

—INLET INFORMATION—
Downstream Inlet = Outfall
Inlet Description = Grate 19-3/8x17-3/4
Inlet Type = Undefined
Computation Case = Sag
Longitudinal Slope = 0.00 ft/ft
Mannings n-value = 0.000

Storm Drain Line "E-1"

Pavement Cross-Slope	= 0.00 ft/ft
Gutter Cross-Slope	= 0.00 ft/ft
Gutter Local Depression	= 0.00 in
Gutter Width	= 0.00 ft
Ponding Width	= 0.00 ft
Intercept Efficiency	= * %
Flow from Catchment	= 0.00 cfs
Carryover from previous inlet	= 0.00 cfs
Total Flow to Current Inlet	= 0.00 cfs
Flow Intercepted by Current Inlet	= 0.00 cfs
Bypassed Flow	= 0.00 cfs
Pavement Flow	= 0.00 cfs
Gutter Flow	= 0.00 cfs
Depth at Curb	= 0.00 in
Depth at Pavement/Gutter Joint	= 0.00 in
Pavement Spread	= 0.00 ft
Total Spread	= 0.00 ft
Gutter Velocity	= 0.00 ft/s
Curb Efficiency	= * %
Grate Efficiency	= * %
Slot Efficiency	= * %
Total Efficiency	= 0.00 %

PIPE DESCRIPTION: Pipe 2

—RAINFALL INFORMATION—

Return Period	= 100 Year
Rainfall File	= Tutorial

—PIPE INFORMATION—

Current Pipe	= Pipe 2
Downstream Pipe	= Pipe 1
Pipe Material	= CONC
Pipe Length	= 37.00 ft
Plan Length	= 37.00 ft
Pipe Type	= Circular
Pipe Dimensions	= 24.00 in
Pipe Manning's "n"	= 0.013
Pipe Capacity at Invert Slope	= 14.40 cfs
Invert Elevation Downstream	= 443.42 ft
Invert Elevation Upstream	= 443.57 ft
Invert Slope	= 0.44%
Invert Slope (Plan Length)	= 0.41%
Rim Elevation Downstream	= 448.64 ft
Rim Elevation Upstream	= 448.56 ft
Natural Ground Slope	= -0.22%
Crown Elevation Downstream	= 445.42 ft
Crown Elevation Upstream	= 445.57 ft

—FLOW INFORMATION—

Catchment Area	= 0.00 ac
Runoff Coefficient	= 0.500
Inlet Time	= 0.00 min
Inlet Intensity	= 0.00 in/hr
Inlet Rational Flow	= 0.00 cfs
Inlet Input Flow	= 24.28 cfs
Total Area	= 0.00 ac
Weighted Coefficient	= 0.500
Total Time of Concentration	= 0.00 min
Total Intensity	= 13.11 in/hr
Total Rational Flow	= 0.00 cfs
Total Flow	= 24.28 cfs
Uniform Capacity	= 14.40 cfs
Skipped flow	= 0.00 cfs
Infiltration	= 0.00 gpd

—HYDRAULIC INFORMATION—

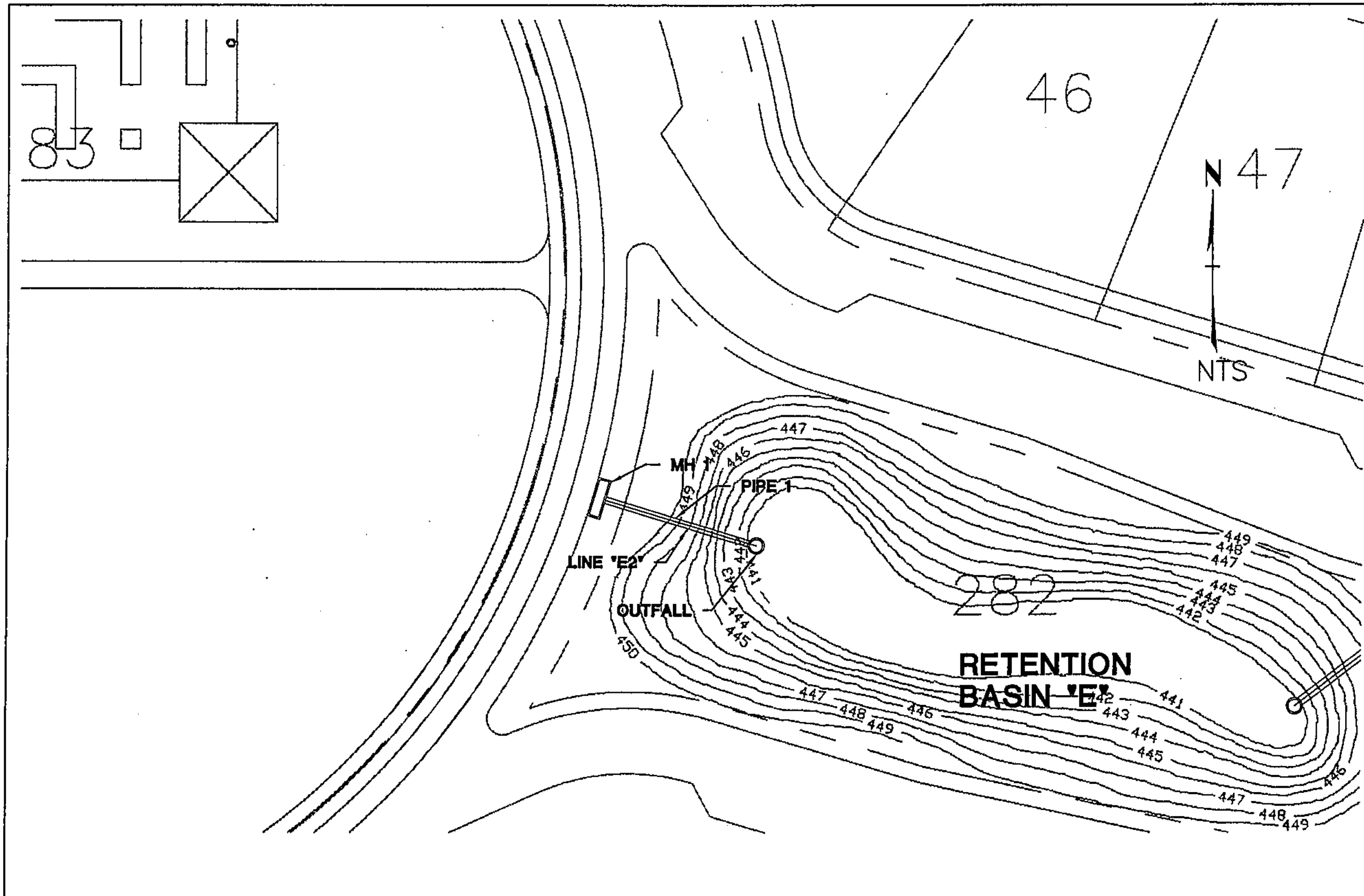
HGL Elevation Downstream	= 447.12 ft
HGL Elevation Upstream	= 448.01 ft
HGL Slope	= 2.59 %

Storm Drain Line "E-1"

EGL Elevation Downstream	= 448.05 ft
EGL Elevation Upstream	= 448.94 ft
EGL Slope	= 2.59 %
Critical Depth	= 20.92 in
Depth Downstream	= 24.00 in
Depth Upstream	= 24.00 in
Velocity Downstream	= 7.73 ft/s
Velocity Upstream	= 7.73 ft/s
Uniform Velocity Downstream	= NA
Uniform Velocity Upstream	= NA
Area Downstream	= 3.14 ft^2
Area Upstream	= 3.14 ft^2
Kj (JLC)	= 0.50
Calculated Junction Loss	= NA

----INLET INFORMATION----

Downstream Inlet	= MH 1
Inlet Description	= Grate 19-3/8x17-3/4
Inlet Type	= Undefined
Computation Case	= Sag
Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000
Pavement Cross-Slope	= 0.00 ft/ft
Gutter Cross-Slope	= 0.00 ft/ft
Gutter Local Depression	= 0.00 in
Gutter Width	= 0.00 ft
Ponding Width	= 0.00 ft
Intercept Efficiency	= * %
Flow from Catchment	= 0.00 cfs
Carryover from previous inlet	= 0.00 cfs
Total Flow to Current Inlet	= 0.00 cfs
Flow Intercepted by Current Inlet	= 0.00 cfs
Bypassed Flow	= 0.00 cfs
Pavement Flow	= 0.00 cfs
Gutter Flow	= 0.00 cfs
Depth at Curb	= 0.00 in
Depth at Pavement/Gutter Joint	= 0.00 in
Pavement Spread	= 0.00 ft
Total Spread	= 0.00 ft
Gutter Velocity	= 0.00 ft/s
Curb Efficiency	= * %
Grate Efficiency	= * %
Slot Efficiency	= * %
Total Efficiency	= 0.00 %



STORM DRAIN LINE "E2"

Storm Drain Line "E-2"

PIPE DESCRIPTION: Pipe 1
—RAINFALL INFORMATION—

Return Period	= 100 Year
Rainfall File	= Tutorial

—PIPE INFORMATION—

Current Pipe	= Pipe 1
Downstream Pipe	= Outfall
Pipe Material	= RCP
Pipe Length	= 46.60 ft
Plan Length	= 46.60 ft
Pipe Type	= Circular
Pipe Dimensions	= 18.00 in
Pipe Manning's "n"	= 0.013
Pipe Capacity at Invert Slope	= 44.18 cfs
Invert Elevation Downstream	= 436.36 ft
Invert Elevation Upstream	= 444.61 ft
Invert Slope	= 17.71%
Invert Slope (Plan Length)	= 17.70%
Rim Elevation Downstream	= 441.00 ft
Rim Elevation Upstream	= 448.72 ft
Natural Ground Slope	= 16.57%
Crown Elevation Downstream	= 437.86 ft
Crown Elevation Upstream	= 446.11 ft

—FLOW INFORMATION—

Catchment Area	= 0.00 ac
Runoff Coefficient	= 0.500
Inlet Time	= 0.00 min
Inlet Intensity	= 0.00 in/hr
Inlet Rational Flow	= 0.00 cfs
Inlet Input Flow	= 24.28 cfs
Inlet Hydrograph Flow	= 0.00 cfs
Total Area	= 0.00 ac
Weighted Coefficient	= 0.500
Total Time of Concentration	= 0.00 min
Total Intensity	= 13.11 in/hr
Total Rational Flow	= 0.00 cfs
Total Flow	= 24.28 cfs
Uniform Capacity	= 44.18 cfs
Skipped flow	= 0.00 cfs
Infiltration	= 0.00 gpd

—HYDRAULIC INFORMATION—

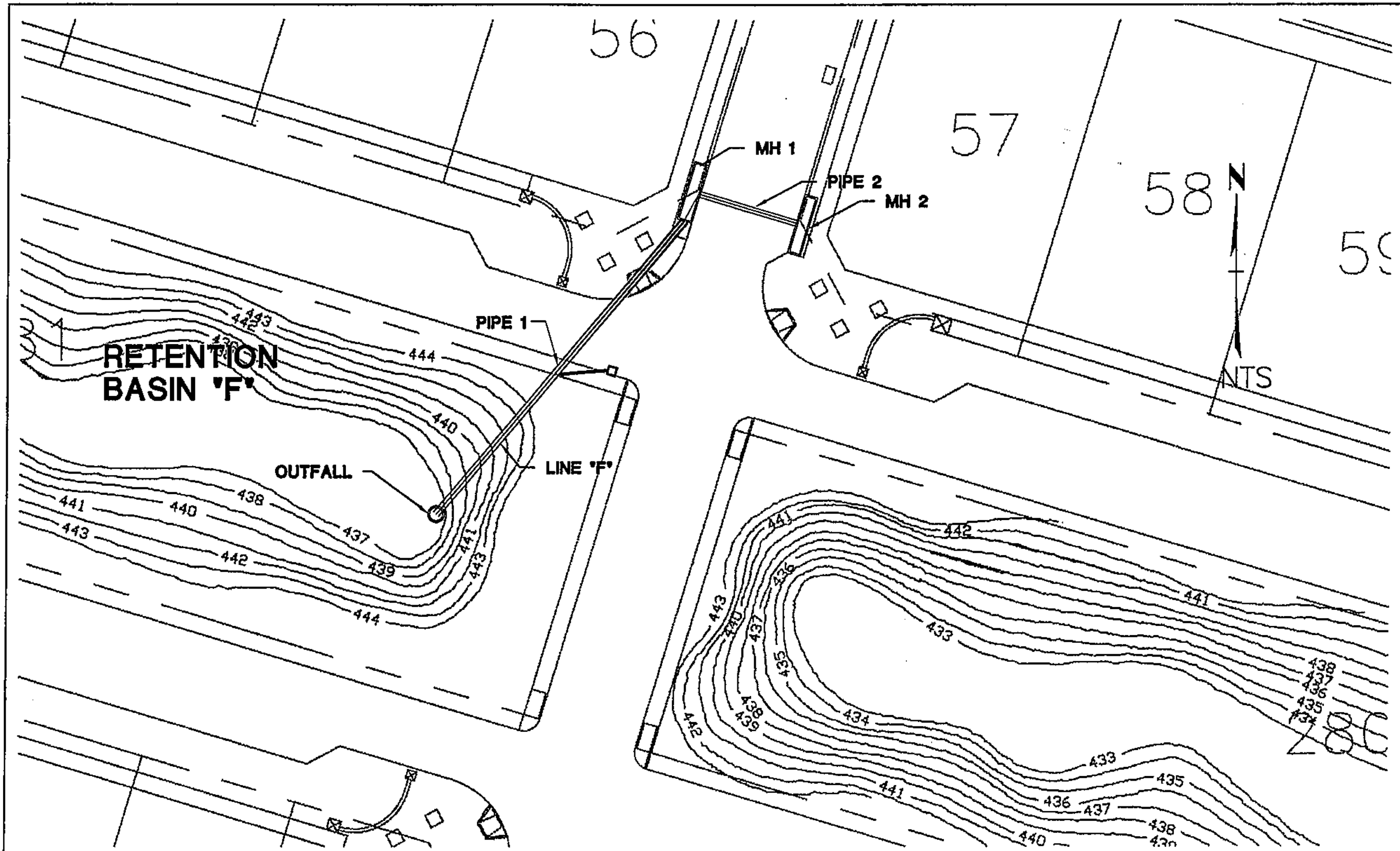
HGL Elevation Downstream	= 441.71 ft
HGL Elevation Upstream	= 447.57 ft
HGL Slope	= 12.57 %
EGL Elevation Downstream	= 444.64 ft
EGL Elevation Upstream	= 450.51 ft
EGL Slope	= 12.59 %
Critical Depth	= 17.82 in
Depth Downstream	= 18.00 in
Depth Upstream	= 17.82 in
Velocity Downstream	= 13.74 ft/s
Velocity Upstream	= 13.76 ft/s
Uniform Velocity Downstream	= NA
Uniform Velocity Upstream	= NA
Area Downstream	= 1.77 ft^2
Area Upstream	= 1.76 ft^2
Kj (JLC)	= 0.50
Calculated Junction Loss	= NA

—INLET INFORMATION—

Downstream Inlet	= Outfall
Inlet Description	= Grate 19-3/8x17-3/4
Inlet Type	= Undefined
Computation Case	= Sag

Storm Drain Line "E-2"

Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000
Pavement Cross-Slope	= 0.00 ft/ft
Gutter Cross-Slope	= 0.00 ft/ft
Gutter Local Depression	= 0.00 in
Gutter Width	= 0.00 ft
Ponding Width	= 0.00 ft
Intercept Efficiency	= * %
Flow from Catchment	= 0.00 cfs
Carryover from previous inlet	= 0.00 cfs
Total Flow to Current Inlet	= 0.00 cfs
Flow Intercepted by Current Inlet	= 0.00 cfs
Bypassed Flow	= 0.00 cfs
Pavement Flow	= 0.00 cfs
Gutter Flow	= 0.00 cfs
Depth at Curb	= 0.00 in
Depth at Pavement/Gutter Joint	= 0.00 in
Pavement Spread	= 0.00 ft
Total Spread	= 0.00 ft
Gutter Velocity	= 0.00 ft/s
Curb Efficiency	= * %
Grate Efficiency	= * %
Slot Efficiency	= * %
Total Efficiency	= 0.00 % %



STORM DRAIN LINE "F"

Storm Drain Line "F"

PIPE DESCRIPTION: Pipe 1

—RAINFALL INFORMATION—

Return Period	= 100 Year
Rainfall File	= Tutorial

—PIPE INFORMATION—

Current Pipe	= Pipe 1
Downstream Pipe	= Outfall
Pipe Material	= CONC
Pipe Length	= 113.01 ft
Plan Length	= 113.01 ft
Pipe Type	= Circular
Pipe Dimensions	= 24.00 in
Pipe Manning's "n"	= 0.013
Pipe Capacity at Invert Slope	= 48.31 cfs
Invert Elevation Downstream	= 432.02 ft
Invert Elevation Upstream	= 437.18 ft
Invert Slope	= 5.06%
Invert Slope (Plan Length)	= 4.56%
Rim Elevation Downstream	= 437.00 ft
Rim Elevation Upstream	= 443.80 ft
Natural Ground Slope	= 6.02%
Crown Elevation Downstream	= 434.02 ft
Crown Elevation Upstream	= 439.18 ft

—FLOW INFORMATION—

Catchment Area	= 0.00 ac
Runoff Coefficient	= 0.500
Inlet Time	= 0.00 min
Inlet Intensity	= 0.00 in/hr
Inlet Rational Flow	= 0.00 cfs
Inlet Input Flow	= 17.91 cfs
Total Area	= 0.00 ac
Weighted Coefficient	= 0.500
Total Time of Concentration	= 0.07 min
Total Intensity	= 13.06 in/hr
Total Rational Flow	= 0.00 cfs
Total Flow	= 35.81 cfs
Uniform Capacity	= 48.31 cfs
Skipped flow	= 0.00 cfs
Infiltration	= 0.00 gpd

—HYDRAULIC INFORMATION—

HGL Elevation Downstream	= 438.14 ft
HGL Elevation Upstream	= 440.97 ft
HGL Slope	= 2.78 %
EGL Elevation Downstream	= 440.16 ft
EGL Elevation Upstream	= 442.99 ft
EGL Slope	= 2.78 %
Critical Depth	= 23.12 in
Depth Downstream	= 24.00 in
Depth Upstream	= 24.00 in
Velocity Downstream	= 11.40 ft/s
Velocity Upstream	= 11.40 ft/s
Uniform Velocity Downstream	= NA
Uniform Velocity Upstream	= NA
Area Downstream	= 3.14 ft^2
Area Upstream	= 3.14 ft^2
Kj (JLC)	= 0.50
Calculated Junction Loss	= 1.010 ft

—INLET INFORMATION—

Downstream Inlet	= Outfall
Inlet Description	= Grate 19-3/8x17-3/4
Inlet Type	= Undefined
Computation Case	= Sag
Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000

Pavement Cross-Slope = 0.00 ft/ft
Gutter Cross-Slope = 0.00 ft/ft
Gutter Local Depression = 0.00 in
Gutter Width = 0.00 ft
Ponding Width = 0.00 ft
Intercept Efficiency = * %
Flow from Catchment = 0.00 cfs
Carryover from previous inlet = 0.00 cfs
Total Flow to Current Inlet = 0.00 cfs
Flow Intercepted by Current Inlet = 0.00 cfs
Bypassed Flow = 0.00 cfs
Pavement Flow = 0.00 cfs
Gutter Flow = 0.00 cfs
Depth at Curb = 0.00 in
Depth at Pavement/Gutter Joint = 0.00 in
Pavement Spread = 0.00 ft
Total Spread = 0.00 ft
Gutter Velocity = 0.00 ft/s
Curb Efficiency = * %
Grate Efficiency = * %
Slot Efficiency = * %
Total Efficiency = 0.00 %

PIPE DESCRIPTION: Pipe 2
—RAINFALL INFORMATION—
Return Period = 100 Year
Rainfall File = Tutorial

—PIPE INFORMATION—
Current Pipe = Pipe 2
Downstream Pipe = Pipe 1
Pipe Material = CONC
Pipe Length = 31.00 ft
Plan Length = 31.00 ft
Pipe Type = Circular
Pipe Dimensions = 21.00 in
Pipe Manning's "n" = 0.013
Pipe Capacity at Invert Slope = 10.18 cfs
Invert Elevation Downstream = 437.79 ft
Invert Elevation Upstream = 437.92 ft
Invert Slope = 0.42%
Invert Slope (Plan Length) = 0.41%
Rim Elevation Downstream = 443.80 ft
Rim Elevation Upstream = 443.74 ft
Natural Ground Slope = -0.19%
Crown Elevation Downstream = 439.54 ft
Crown Elevation Upstream = 439.67 ft

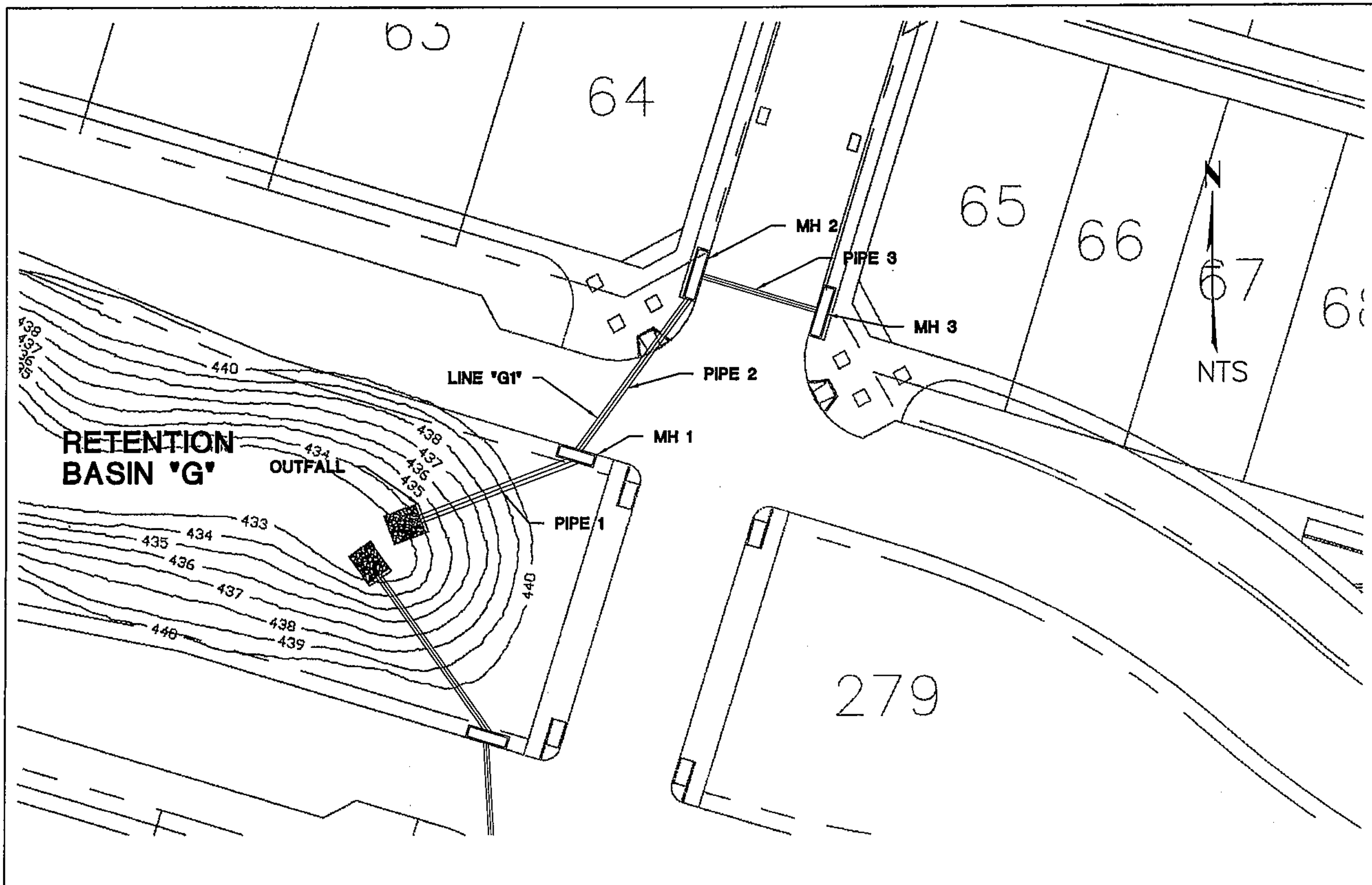
—FLOW INFORMATION—
Catchment Area = 0.00 ac
Runoff Coefficient = 0.500
Inlet Time = 0.00 min
Inlet Intensity = 0.00 in/hr
Inlet Rational Flow = 0.00 cfs
Inlet Input Flow = 17.91 cfs
Total Area = 0.00 ac
Weighted Coefficient = 0.500
Total Time of Concentration = 0.00 min
Total Intensity = 13.11 in/hr
Total Rational Flow = 0.00 cfs
Total Flow = 17.91 cfs
Uniform Capacity = 10.18 cfs
Skipped flow = 0.00 cfs
Infiltration = 0.00 gpd

—HYDRAULIC INFORMATION—
HGL Elevation Downstream = 441.98 ft
HGL Elevation Upstream = 442.81 ft
HGL Slope = 2.70 %

Storm Drain Line "F"

EGL Elevation Downstream = 442.84 ft
EGL Elevation Upstream = 443.67 ft
EGL Slope = 2.70 %
Critical Depth = 18.50 in
Depth Downstream = 21.00 in
Depth Upstream = 21.00 in
Velocity Downstream = 7.44 ft/s
Velocity Upstream = 7.44 ft/s
Uniform Velocity Downstream = NA
Uniform Velocity Upstream = NA
Area Downstream = 2.41 ft^2
Area Upstream = 2.41 ft^2
Kj (JLC) = 0.50
Calculated Junction Loss = NA

—INLET INFORMATION—
Downstream Inlet = MH 1
Inlet Description = Grate 19-3/8x17-3/4
Inlet Type = Undefined
Computation Case = Sag
Longitudinal Slope = 0.00 ft/ft
Mannings n-value = 0.000
Pavement Cross-Slope = 0.00 ft/ft
Gutter Cross-Slope = 0.00 ft/ft
Gutter Local Depression = 0.00 in
Gutter Width = 0.00 ft
Ponding Width = 0.00 ft
Intercept Efficiency = * %
Flow from Catchment = 0.00 cfs
Carryover from previous inlet = 0.00 cfs
Total Flow to Current Inlet = 0.00 cfs
Flow Intercepted by Current Inlet = 0.00 cfs
Bypassed Flow = 0.00 cfs
Pavement Flow = 0.00 cfs
Gutter Flow = 0.00 cfs
Depth at Curb = 0.00 in
Depth at Pavement/Gutter Joint = 0.00 in
Pavement Spread = 0.00 ft
Total Spread = 0.00 ft
Gutter Velocity = 0.00 ft/s
Curb Efficiency = * %
Grate Efficiency = * %
Slot Efficiency = * %
Total Efficiency = 0.00 %



STORM DRAIN LINE "G1"

Storm Drain Line "G-1"

PIPE DESCRIPTION: Pipe 1

—RAINFALL INFORMATION—

Return Period	= 100 Year
Rainfall File	= Tutorial

—PIPE INFORMATION—

Current Pipe	= Pipe 1
Downstream Pipe	= Outfall
Pipe Material	= CONC
Pipe Length	= 50.47 ft
Plan Length	= 50.47 ft
Pipe Type	= Circular
Pipe Dimensions	= 30.00 in
Pipe Manning's "n"	= 0.013
Pipe Capacity at Invert Slope	= 25.81 cfs
Invert Elevation Downstream	= 431.05 ft
Invert Elevation Upstream	= 431.25 ft
Invert Slope	= 0.19%
Invert Slope (Plan Length)	= 0.40%
Rim Elevation Downstream	= 433.79 ft
Rim Elevation Upstream	= 439.03 ft
Natural Ground Slope	= 10.38%
Crown Elevation Downstream	= 433.55 ft
Crown Elevation Upstream	= 433.75 ft

—FLOW INFORMATION—

Catchment Area	= 0.00 ac
Runoff Coefficient	= 0.500
Inlet Time	= 0.00 min
Inlet Intensity	= 0.00 in/hr
Inlet Rational Flow	= 0.00 cfs
Inlet Input Flow	= 7.64 cfs
Total Area	= 0.00 ac
Weighted Coefficient	= 0.500
Total Time of Concentration	= 0.52 min
Total Intensity	= 12.72 in/hr
Total Rational Flow	= 0.00 cfs
Total Flow	= 37.16 cfs
Uniform Capacity	= 25.81 cfs
Skipped flow	= 0.00 cfs
Infiltration	= 0.00 gpd

—HYDRAULIC INFORMATION—

HGL Elevation Downstream	= 433.50 ft
HGL Elevation Upstream	= 433.90 ft
HGL Slope	= 0.38 %
EGL Elevation Downstream	= 434.40 ft
EGL Elevation Upstream	= 434.79 ft
EGL Slope	= 0.37 %
Critical Depth	= 24.77 in
Depth Downstream	= 29.40 in
Depth Upstream	= 30.00 in
Velocity Downstream	= 7.61 ft/s
Velocity Upstream	= 7.57 ft/s
Uniform Velocity Downstream	= NA
Uniform Velocity Upstream	= NA
Area Downstream	= 4.89 ft^2
Area Upstream	= 4.91 ft^2
Kj (JLC)	= 0.50
Calculated Junction Loss	= 0.445 ft

—INLET INFORMATION—

Downstream Inlet	= Outfall
Inlet Description	= Grate 19-3/8x17-3/4
Inlet Type	= Undefined
Computation Case	= Sag
Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000

Storm Drain Line "G-1"

Pavement Cross-Slope = 0.00 ft/ft
Gutter Cross-Slope = 0.00 ft/ft
Gutter Local Depression = 0.00 in
Gutter Width = 0.00 ft
Ponding Width = 874.25 ft
Intercept Efficiency = * %
Flow from Catchment = 0.00 cfs
Carryover from previous inlet = 0.00 cfs
Total Flow to Current Inlet = 0.00 cfs
Flow Intercepted by Current Inlet = 0.00 cfs
Bypassed Flow = 0.00 cfs
Pavement Flow = 244355.87 cfs
Gutter Flow = 1123.75 cfs
Depth at Curb = 210.00 in
Depth at Pavement/Gutter Joint = 17.45 in
Pavement Spread = 872.75 ft
Total Spread = 874.25 ft
Gutter Velocity = 0.00 ft/s
Curb Efficiency = * %
Grate Efficiency = * %
Slot Efficiency = * %
Total Efficiency = 0.00 %

PIPE DESCRIPTION: Pipe 2
—RAINFALL INFORMATION—
Return Period = 100 Year
Rainfall File = Tutorial

—PIPE INFORMATION—
Current Pipe = Pipe 2
Downstream Pipe = Pipe 1
Pipe Material = CONC
Pipe Length = 57.34 ft
Plan Length = 57.34 ft
Pipe Type = Circular
Pipe Dimensions = 24.00 in
Pipe Manning's "n" = 0.013
Pipe Capacity at Invert Slope = 14.32 cfs
Invert Elevation Downstream = 431.87 ft
Invert Elevation Upstream = 432.10 ft
Invert Slope = 0.49%
Invert Slope (Plan Length) = 0.40%
Rim Elevation Downstream = 439.03 ft
Rim Elevation Upstream = 439.73 ft
Natural Ground Slope = 1.22%
Crown Elevation Downstream = 433.87 ft
Crown Elevation Upstream = 434.10 ft

—FLOW INFORMATION—
Catchment Area = 0.00 ac
Runoff Coefficient = 0.500
Inlet Time = 0.00 min
Inlet Intensity = 0.00 in/hr
Inlet Rational Flow = 0.00 cfs
Inlet Input Flow = 14.76 cfs
Total Area = 0.00 ac
Weighted Coefficient = 0.500
Total Time of Concentration = 0.21 min
Total Intensity = 12.96 in/hr
Total Rational Flow = 0.00 cfs
Total Flow = 29.52 cfs
Uniform Capacity = 14.32 cfs
Skipped flow = 0.00 cfs
Infiltration = 0.00 gpd

—HYDRAULIC INFORMATION—
HGL Elevation Downstream = 434.35 ft
HGL Elevation Upstream = 435.32 ft
HGL Slope = 2.08 %

Storm Drain Line "G-1"

EGL Elevation Downstream = 435.72 ft
EGL Elevation Upstream = 436.70 ft
EGL Slope = 2.08 %
Critical Depth = 22.26 in
Depth Downstream = 24.00 in
Depth Upstream = 24.00 in
Velocity Downstream = 9.40 ft/s
Velocity Upstream = 9.40 ft/s
Uniform Velocity Downstream = NA
Uniform Velocity Upstream = NA
Area Downstream = 3.14 ft^2
Area Upstream = 3.14 ft^2
Kj (JLC) = 0.50
Calculated Junction Loss = 0.686 ft

—-INLET INFORMATION—-
Downstream Inlet = MH 1
Inlet Description = Grate 19-3/8x17-3/4
Inlet Type = Undefined
Computation Case = Sag
Longitudinal Slope = 0.47 ft/ft
Mannings n-value = 0.000
Pavement Cross-Slope = 0.00 ft/ft
Gutter Cross-Slope = 0.00 ft/ft
Gutter Local Depression = 0.00 in
Gutter Width = 0.00 ft
Ponding Width = 874.25 ft
Intercept Efficiency = * %
Flow from Catchment = 0.00 cfs
Carryover from previous inlet = 0.00 cfs
Total Flow to Current Inlet = 0.00 cfs
Flow Intercepted by Current Inlet = 0.00 cfs
Bypassed Flow = 0.00 cfs
Pavement Flow = 2648754.51 cfs
Gutter Flow = 12181.16 cfs
Depth at Curb = 210.00 in
Depth at Pavement/Gutter Joint = 17.45 in
Pavement Spread = 872.75 ft
Total Spread = 874.25 ft
Gutter Velocity = 0.00 ft/s
Curb Efficiency = * %
Grate Efficiency = * %
Slot Efficiency = * %
Total Efficiency = 0.00 %

PIPE DESCRIPTION: Pipe 3
—-RAINFALL INFORMATION—-
Return Period = 100 Year
Rainfall File = Tutorial

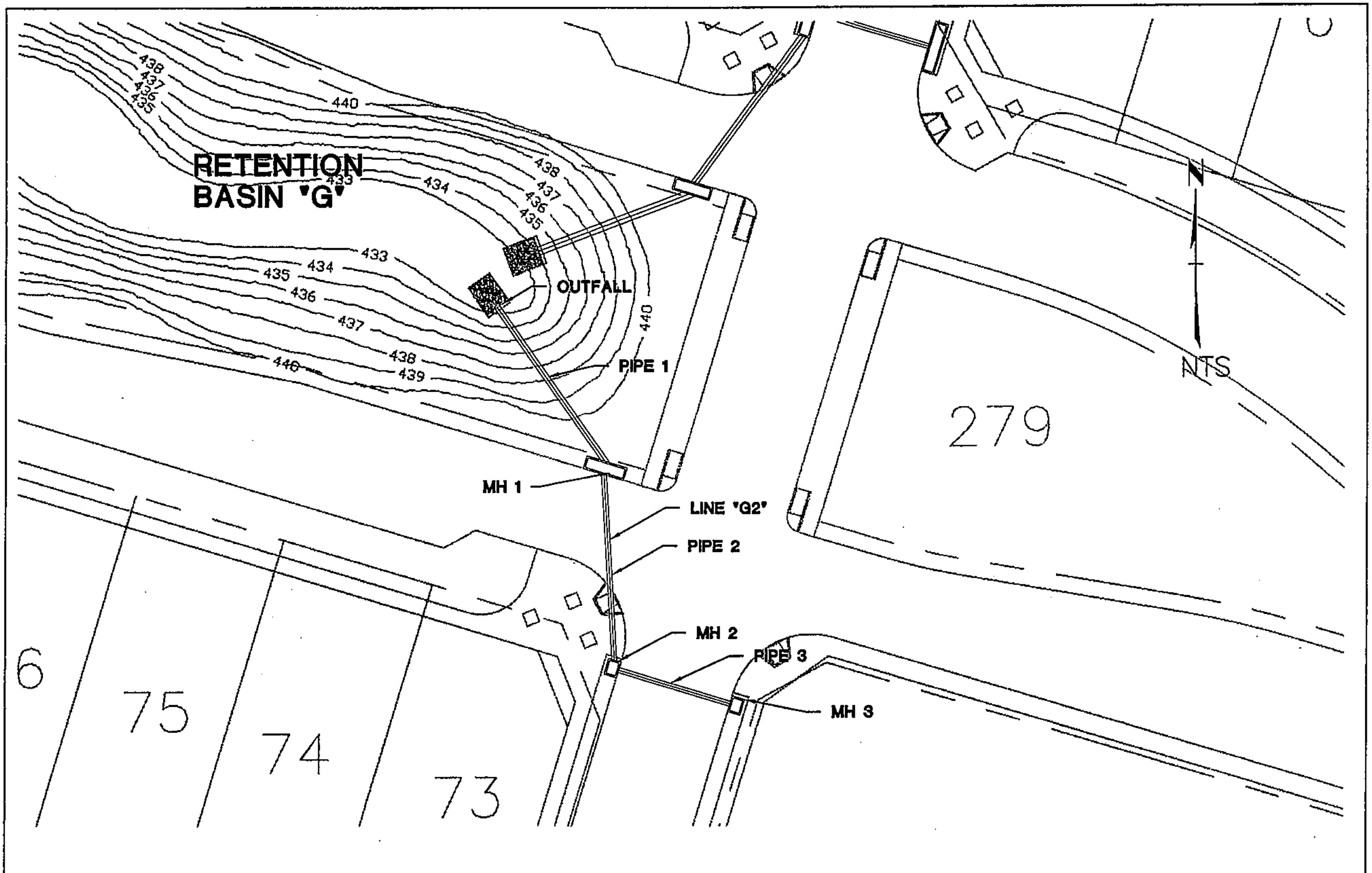
—-PIPE INFORMATION—-
Current Pipe = Pipe 3
Downstream Pipe = Pipe 2
Pipe Material = RCP
Pipe Length = 37.00 ft
Plan Length = 37.00 ft
Pipe Type = Circular
Pipe Dimensions = 18.00 in
Pipe Manning's "n" = 0.013
Pipe Capacity at Invert Slope = 10.50 cfs
Invert Elevation Downstream = 435.02 ft
Invert Elevation Upstream = 435.39 ft
Invert Slope = 1.07%
Invert Slope (Plan Length) = 1.00%
Rim Elevation Downstream = 439.73 ft
Rim Elevation Upstream = 439.52 ft
Natural Ground Slope = -0.57%
Crown Elevation Downstream = 436.52 ft
Crown Elevation Upstream = 436.89 ft

Storm Drain Line "G-1"

—FLOW INFORMATION—
Catchment Area = 0.00 ac
Runoff Coefficient = 0.500
Inlet Time = 0.00 min
Inlet Intensity = 0.00 in/hr
Inlet Rational Flow = 0.00 cfs
Inlet Input Flow = 14.76 cfs
Total Area = 0.00 ac
Weighted Coefficient = 0.500
Total Time of Concentration = 0.00 min
Total Intensity = 13.11 in/hr
Total Rational Flow = 0.00 cfs
Total Flow = 14.76 cfs
Uniform Capacity = 10.50 cfs
Skipped flow = 0.00 cfs
Infiltration = 0.00 gpd

—HYDRAULIC INFORMATION—
HGL Elevation Downstream = 436.42 ft
HGL Elevation Upstream = 437.71 ft
HGL Slope = 3.74 %
EGL Elevation Downstream = 437.57 ft
EGL Elevation Upstream = 438.79 ft
EGL Slope = 3.55 %
Critical Depth = 16.80 in
Depth Downstream = 16.80 in
Depth Upstream = 18.00 in
Velocity Downstream = 8.60 ft/s
Velocity Upstream = 8.35 ft/s
Uniform Velocity Downstream = NA
Uniform Velocity Upstream = NA
Area Downstream = 1.72 ft^2
Area Upstream = 1.77 ft^2
Kj (JLC) = 0.50
Calculated Junction Loss = NA

—INLET INFORMATION—
Downstream Inlet = MH 2
Inlet Description = Grate 19-3/8x17-3/4
Inlet Type = Undefined
Computation Case = Sag
Longitudinal Slope = 0.01 ft/ft
Mannings n-value = 0.000
Pavement Cross-Slope = 0.00 ft/ft
Gutter Cross-Slope = 0.00 ft/ft
Gutter Local Depression = 0.00 in
Gutter Width = 0.00 ft
Ponding Width = 874.25 ft
Intercept Efficiency = * %
Flow from Catchment = 0.00 cfs
Carryover from previous inlet = 0.00 cfs
Total Flow to Current Inlet = 0.00 cfs
Flow Intercepted by Current Inlet = 0.00 cfs
Bypassed Flow = 0.00 cfs
Pavement Flow = 386360.55 cfs
Gutter Flow = 1776.81 cfs
Depth at Curb = 210.00 in
Depth at Pavement/Gutter Joint = 17.45 in
Pavement Spread = 872.75 ft
Total Spread = 874.25 ft
Gutter Velocity = 0.00 ft/s
Curb Efficiency = * %
Grate Efficiency = * %
Slot Efficiency = * %
Total Efficiency = 0.00 %



STORM DRAIN LINE "G2"

Storm Drain Line "G-2"

PIPE DESCRIPTION: Pipe 1
—RAINFALL INFORMATION—

Return Period	= 100 Year
Rainfall File	= Tutorial

—PIPE INFORMATION—

Current Pipe	= Pipe 1
Downstream Pipe	= Outfall
Pipe Material	= RCP
Pipe Length	= 58.74 ft
Plan Length	= 58.74 ft
Pipe Type	= Circular
Pipe Dimensions	= 18.00 in
Pipe Manning's "n"	= 0.013
Pipe Capacity at Invert Slope	= 6.57 cfs
Invert Elevation Downstream	= 430.64 ft
Invert Elevation Upstream	= 430.87 ft
Invert Slope	= 0.24%
Invert Slope (Plan Length)	= 0.39%
Rim Elevation Downstream	= 433.82 ft
Rim Elevation Upstream	= 439.02 ft
Natural Ground Slope	= 8.85%
Crown Elevation Downstream	= 432.14 ft
Crown Elevation Upstream	= 432.37 ft

—FLOW INFORMATION—

Catchment Area	= 0.00 ac
Runoff Coefficient	= 0.500
Inlet Time	= 0.00 min
Inlet Intensity	= 0.00 in/hr
Inlet Rational Flow	= 0.00 cfs
Inlet Input Flow	= 9.41 cfs
Total Area	= 0.00 ac
Weighted Coefficient	= 0.500
Total Time of Concentration	= 0.53 min
Total Intensity	= 12.72 in/hr
Total Rational Flow	= 0.00 cfs
Total Flow	= 16.35 cfs
Uniform Capacity	= 6.57 cfs
Skipped flow	= 0.00 cfs
Infiltration	= 0.00 gpd

—HYDRAULIC INFORMATION—

HGL Elevation Downstream	= 433.50 ft
HGL Elevation Upstream	= 434.92 ft
HGL Slope	= 1.46 %
EGL Elevation Downstream	= 434.83 ft
EGL Elevation Upstream	= 436.25 ft
EGL Slope	= 1.46 %
Critical Depth	= 17.16 in
Depth Downstream	= 18.00 in
Depth Upstream	= 18.00 in
Velocity Downstream	= 9.25 ft/s
Velocity Upstream	= 9.25 ft/s
Uniform Velocity Downstream	= NA
Uniform Velocity Upstream	= NA
Area Downstream	= 1.77 ft^2
Area Upstream	= 1.77 ft^2
Kj (JLC)	= 0.50
Calculated Junction Loss	= 0.665 ft

—INLET INFORMATION—

Downstream Inlet	= Outfall
Inlet Description	= Grate 19-3/8x17-3/4
Inlet Type	= Undefined
Computation Case	= Sag
Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000

Storm Drain Line "G-2"

Pavement Cross-Slope = 0.00 ft/ft
Gutter Cross-Slope = 0.00 ft/ft
Gutter Local Depression = 0.00 in
Gutter Width = 0.00 ft
Ponding Width = 0.00 ft
Intercept Efficiency = * %
Flow from Catchment = 0.00 cfs
Carryover from previous inlet = 0.00 cfs
Total Flow to Current Inlet = 0.00 cfs
Flow Intercepted by Current Inlet = 0.00 cfs
Bypassed Flow = 0.00 cfs
Pavement Flow = 0.00 cfs
Gutter Flow = 0.00 cfs
Depth at Curb = 0.00 in
Depth at Pavement/Gutter Joint = 0.00 in
Pavement Spread = 0.00 ft
Total Spread = 0.00 ft
Gutter Velocity = 0.00 ft/s
Curb Efficiency = * %
Grate Efficiency = * %
Slot Efficiency = * %
Total Efficiency = 0.00 %

PIPE DESCRIPTION: Pipe 2
—RAINFALL INFORMATION—
Return Period = 100 Year
Rainfall File = Tutorial

—PIPE INFORMATION—
Current Pipe = Pipe 2
Downstream Pipe = Pipe 1
Pipe Material = RCP
Pipe Length = 58.60 ft
Plan Length = 58.60 ft
Pipe Type = Circular
Pipe Dimensions = 18.00 in
Pipe Manning's "n" = 0.013
Pipe Capacity at Invert Slope = 6.58 cfs
Invert Elevation Downstream = 430.99 ft
Invert Elevation Upstream = 431.22 ft
Invert Slope = 0.44%
Invert Slope (Plan Length) = 0.39%
Rim Elevation Downstream = 439.02 ft
Rim Elevation Upstream = 439.52 ft
Natural Ground Slope = 0.85%
Crown Elevation Downstream = 432.49 ft
Crown Elevation Upstream = 432.72 ft

—FLOW INFORMATION—
Catchment Area = 0.00 ac
Runoff Coefficient = 0.500
Inlet Time = 0.00 min
Inlet Intensity = 0.00 in/hr
Inlet Rational Flow = 0.00 cfs
Inlet Input Flow = 4.17 cfs
Total Area = 0.00 ac
Weighted Coefficient = 0.500
Total Time of Concentration = 0.21 min
Total Intensity = 12.96 in/hr
Total Rational Flow = 0.00 cfs
Total Flow = 6.94 cfs
Uniform Capacity = 6.58 cfs
Skipped flow = 0.00 cfs
Infiltration = 0.00 gpd

—HYDRAULIC INFORMATION—
HGL Elevation Downstream = 435.59 ft
HGL Elevation Upstream = 435.85 ft
HGL Slope = 0.48 %

Storm Drain Line "G-2"

EGL Elevation Downstream	= 435.83 ft
EGL Elevation Upstream	= 436.09 ft
EGL Slope	= 0.48 %
Critical Depth	= 12.24 in
Depth Downstream	= 18.00 in
Depth Upstream	= 18.00 in
Velocity Downstream	= 3.93 ft/s
Velocity Upstream	= 3.93 ft/s
Uniform Velocity Downstream	= NA
Uniform Velocity Upstream	= NA
Area Downstream	= 1.77 ft^2
Area Upstream	= 1.77 ft^2
Kj (JLC)	= 0.50
Calculated Junction Loss	= 0.120 ft

---INLET INFORMATION---

Downstream Inlet	= MH 1
Inlet Description	= Grate 19-3/8x17-3/4
Inlet Type	= Undefined
Computation Case	= Sag
Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000
Pavement Cross-Slope	= 0.00 ft/ft
Gutter Cross-Slope	= 0.00 ft/ft
Gutter Local Depression	= 0.00 in
Gutter Width	= 0.00 ft
Ponding Width	= 0.00 ft
Intercept Efficiency	= * %
Flow from Catchment	= 0.00 cfs
Carryover from previous inlet	= 0.00 cfs
Total Flow to Current Inlet	= 0.00 cfs
Flow Intercepted by Current Inlet	= 0.00 cfs
Bypassed Flow	= 0.00 cfs
Pavement Flow	= 0.00 cfs
Gutter Flow	= 0.00 cfs
Depth at Curb	= 0.00 in
Depth at Pavement/Gutter Joint	= 0.00 in
Pavement Spread	= 0.00 ft
Total Spread	= 0.00 ft
Gutter Velocity	= 0.00 ft/s
Curb Efficiency	= * %
Grate Efficiency	= * %
Slot Efficiency	= * %
Total Efficiency	= 0.00 %

PIPE DESCRIPTION: Pipe 3

---RAINFALL INFORMATION---

Return Period	= 100 Year
Rainfall File	= Tutorial

---PIPE INFORMATION---

Current Pipe	= Pipe 3
Downstream Pipe	= Pipe 2
Pipe Material	= RCP
Pipe Length	= 37.00 ft
Plan Length	= 37.00 ft
Pipe Type	= Circular
Pipe Dimensions	= 18.00 in
Pipe Manning's "n"	= 0.013
Pipe Capacity at Invert Slope	= 6.69 cfs
Invert Elevation Downstream	= 431.32 ft
Invert Elevation Upstream	= 431.47 ft
Invert Slope	= 0.43%
Invert Slope (Plan Length)	= 0.41%
Rim Elevation Downstream	= 439.52 ft
Rim Elevation Upstream	= 439.52 ft
Natural Ground Slope	= 0.00%
Crown Elevation Downstream	= 432.82 ft
Crown Elevation Upstream	= 432.97 ft

Storm Drain Line "G-2"

—FLOW INFORMATION—

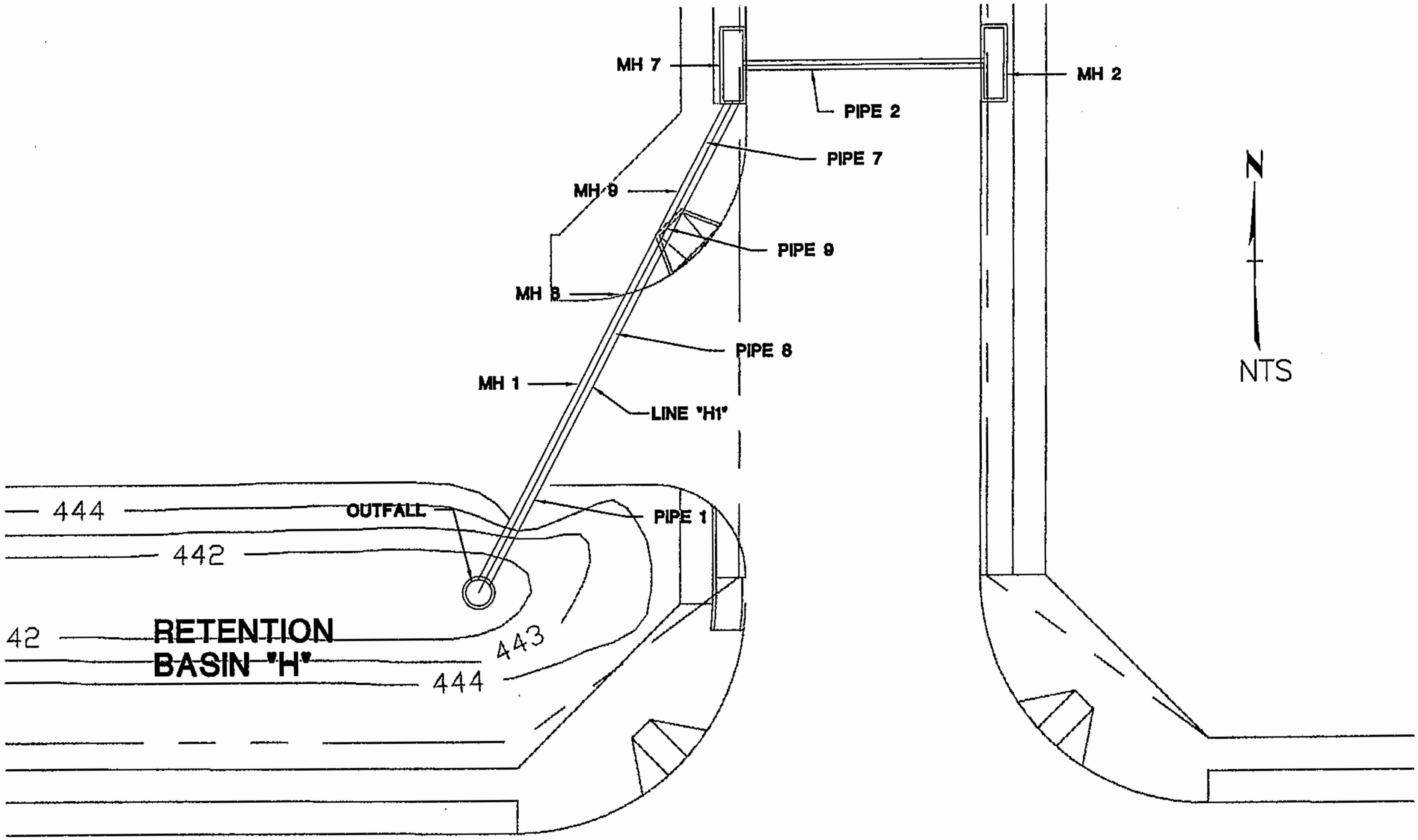
Catchment Area	= 0.00 ac
Runoff Coefficient	= 0.500
Inlet Time	= 0.00 min
Inlet Intensity	= 0.00 in/hr
Inlet Rational Flow	= 0.00 cfs
Inlet Input Flow	= 2.77 cfs
Total Area	= 0.00 ac
Weighted Coefficient	= 0.500
Total Time of Concentration	= 0.00 min
Total Intensity	= 13.11 in/hr
Total Rational Flow	= 0.00 cfs
Total Flow	= 2.77 cfs
Uniform Capacity	= 6.69 cfs
Skipped flow	= 0.00 cfs
Infiltration	= 0.00 gpd

—HYDRAULIC INFORMATION—

HGL Elevation Downstream	= 435.97 ft
HGL Elevation Upstream	= 436.01 ft
HGL Slope	= 0.13 %
EGL Elevation Downstream	= 436.00 ft
EGL Elevation Upstream	= 436.05 ft
EGL Slope	= 0.13 %
Critical Depth	= 7.58 in
Depth Downstream	= 18.00 in
Depth Upstream	= 18.00 in
Velocity Downstream	= 1.57 ft/s
Velocity Upstream	= 1.57 ft/s
Uniform Velocity Downstream	= NA
Uniform Velocity Upstream	= NA
Area Downstream	= 1.77 ft^2
Area Upstream	= 1.77 ft^2
Kj (JLC)	= 0.50
Calculated Junction Loss	= NA

—INLET INFORMATION—

Downstream Inlet	= MH 2
Inlet Description	= Grate 19-3/8x17-3/4
Inlet Type	= Undefined
Computation Case	= Sag
Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000
Pavement Cross-Slope	= 0.00 ft/ft
Gutter Cross-Slope	= 0.00 ft/ft
Gutter Local Depression	= 0.00 in
Gutter Width	= 0.00 ft
Ponding Width	= 0.00 ft
Intercept Efficiency	= * %
Flow from Catchment	= 0.00 cfs
Carryover from previous inlet	= 0.00 cfs
Total Flow to Current Inlet	= 0.00 cfs
Flow Intercepted by Current Inlet	= 0.00 cfs
Bypassed Flow	= 0.00 cfs
Pavement Flow	= 0.00 cfs
Gutter Flow	= 0.00 cfs
Depth at Curb	= 0.00 in
Depth at Pavement/Gutter Joint	= 0.00 in
Pavement Spread	= 0.00 ft
Total Spread	= 0.00 ft
Gutter Velocity	= 0.00 ft/s
Curb Efficiency	= * %
Grate Efficiency	= * %
Slot Efficiency	= * %
Total Efficiency	= 0.00 %



NOTE: MANHOLES 1, 8 AND 9 ARE PIPE DEFLECTIONS.

STORM DRAIN LINE "H1"

Storm Drain Line "H1"

PIPE DESCRIPTION: Pipe 1

—RAINFALL INFORMATION—

Return Period	= 100 Year
Rainfall File	= Tutorial

—PIPE INFORMATION—

Current Pipe	= Pipe 1
Downstream Pipe	= Outfall
Pipe Material	= CONC
Pipe Length	= 40.19 ft
Plan Length	= 40.19 ft
Pipe Type	= Circular
Pipe Dimensions	= 24.00 in
Pipe Manning's "n"	= 0.013
Pipe Capacity at Invert Slope	= 14.30 cfs
Invert Elevation Downstream	= 435.57 ft
Invert Elevation Upstream	= 435.73 ft
Invert Slope	= 0.41%
Invert Slope (Plan Length)	= 0.40%
Rim Elevation Downstream	= 442.00 ft
Rim Elevation Upstream	= 448.90 ft
Natural Ground Slope	= 17.17%
Crown Elevation Downstream	= 437.57 ft
Crown Elevation Upstream	= 437.73 ft

—FLOW INFORMATION—

Catchment Area	= 0.00 ac
Runoff Coefficient	= 0.500
Inlet Time	= 0.00 min
Inlet Intensity	= 0.00 in/hr
Inlet Rational Flow	= 0.00 cfs
Inlet Input Flow	= 0.00 cfs
Total Area	= 0.00 ac
Weighted Coefficient	= 0.500
Total Time of Concentration	= 0.25 min
Total Intensity	= 12.92 in/hr
Total Rational Flow	= 0.00 cfs
Total Flow	= 17.87 cfs
Uniform Capacity	= 14.30 cfs
Skipped flow	= 0.00 cfs
Infiltration	= 0.00 gpd

—HYDRAULIC INFORMATION—

HGL Elevation Downstream	= 444.32 ft
HGL Elevation Upstream	= 444.57 ft
HGL Slope	= 0.64 %
EGL Elevation Downstream	= 444.82 ft
EGL Elevation Upstream	= 445.07 ft
EGL Slope	= 0.64 %
Critical Depth	= 18.28 in
Depth Downstream	= 24.00 in
Depth Upstream	= 24.00 in
Velocity Downstream	= 5.69 ft/s
Velocity Upstream	= 5.69 ft/s
Uniform Velocity Downstream	= NA
Uniform Velocity Upstream	= NA
Area Downstream	= 3.14 ft^2
Area Upstream	= 3.14 ft^2
Kj (JLC)	= 0.01
Calculated Junction Loss	= 0.003 ft

—INLET INFORMATION—

Downstream Inlet	= Outfall
Inlet Description	= <None>
Inlet Type	= Undefined
Computation Case	= Sag
Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000

Pavement Cross-Slope = 0.00 ft/ft
Gutter Cross-Slope = 0.00 ft/ft
Gutter Local Depression = 0.00 in
Gutter Width = 0.00 ft
Ponding Width = 0.00 ft
Intercept Efficiency = * %
Flow from Catchment = 0.00 cfs
Carryover from previous inlet = 0.00 cfs
Total Flow to Current Inlet = 0.00 cfs
Flow Intercepted by Current Inlet = 0.00 cfs
Bypassed Flow = 0.00 cfs
Pavement Flow = 0.00 cfs
Gutter Flow = 0.00 cfs
Depth at Curb = 0.00 in
Depth at Pavement/Gutter Joint = 0.00 in
Pavement Spread = 0.00 ft
Total Spread = 0.00 ft
Gutter Velocity = 0.00 ft/s
Curb Efficiency = * %
Grate Efficiency = * %
Slot Efficiency = * %
Total Efficiency = 0.00 %

PIPE DESCRIPTION: Pipe 8
—RAINFALL INFORMATION—
Return Period = 100 Year
Rainfall File = Tutorial

—PIPE INFORMATION—
Current Pipe = Pipe 8
Downstream Pipe = Pipe 1
Pipe Material = CONC
Pipe Length = 12.01 ft
Plan Length = 12.01 ft
Pipe Type = Circular
Pipe Dimensions = 24.00 in
Pipe Manning's "n" = 0.013
Pipe Capacity at Invert Slope = 41.27 cfs
Invert Elevation Downstream = 435.73 ft
Invert Elevation Upstream = 436.13 ft
Invert Slope = 3.33%
Invert Slope (Plan Length) = 3.33%
Rim Elevation Downstream = 448.90 ft
Rim Elevation Upstream = 448.90 ft
Natural Ground Slope = 0.00%
Crown Elevation Downstream = 437.73 ft
Crown Elevation Upstream = 438.13 ft

—FLOW INFORMATION—
Catchment Area = 0.00 ac
Runoff Coefficient = 0.500
Inlet Time = 0.00 min
Inlet Intensity = 0.00 in/hr
Inlet Rational Flow = 0.00 cfs
Inlet Input Flow = 0.00 cfs
Total Area = 0.00 ac
Weighted Coefficient = 0.500
Total Time of Concentration = 0.24 min
Total Intensity = 12.93 in/hr
Total Rational Flow = 0.00 cfs
Total Flow = 17.87 cfs
Uniform Capacity = 41.27 cfs
Skipped flow = 0.00 cfs
Infiltration = 0.00 gpd

—HYDRAULIC INFORMATION—
HGL Elevation Downstream = 444.57 ft
HGL Elevation Upstream = 444.65 ft
HGL Slope = 0.62 %

Storm Drain Line "H1"

EGL Elevation Downstream	= 445.08 ft
EGL Elevation Upstream	= 445.15 ft
EGL Slope	= 0.62 %
Critical Depth	= 18.28 in
Depth Downstream	= 24.00 in
Depth Upstream	= 24.00 in
Velocity Downstream	= 5.69 ft/s
Velocity Upstream	= 5.69 ft/s
Uniform Velocity Downstream	= NA
Uniform Velocity Upstream	= NA
Area Downstream	= 3.14 ft^2
Area Upstream	= 3.14 ft^2
Kj (JLC)	= 0.01
Calculated Junction Loss	= 0.003 ft

—INLET INFORMATION—

Downstream Inlet	= MH 1
Inlet Description	= <None>
Inlet Type	= Undefined
Computation Case	= Sag
Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000
Pavement Cross-Slope	= 0.00 ft/ft
Gutter Cross-Slope	= 0.00 ft/ft
Gutter Local Depression	= 0.00 in
Gutter Width	= 0.00 ft
Ponding Width	= 0.00 ft
Intercept Efficiency	= * %
Flow from Catchment	= 0.00 cfs
Carryover from previous inlet	= 0.00 cfs
Total Flow to Current Inlet	= 0.00 cfs
Flow Intercepted by Current Inlet	= 0.00 cfs
Bypassed Flow	= 0.00 cfs
Pavement Flow	= 0.00 cfs
Gutter Flow	= 0.00 cfs
Depth at Curb	= 0.00 in
Depth at Pavement/Gutter Joint	= 0.00 in
Pavement Spread	= 0.00 ft
Total Spread	= 0.00 ft
Gutter Velocity	= 0.00 ft/s
Curb Efficiency	= * %
Grate Efficiency	= * %
Slot Efficiency	= * %
Total Efficiency	= 0.00 %

PIPE DESCRIPTION: Pipe 9

—RAINFALL INFORMATION—

Return Period	= 100 Year
Rainfall File	= Tutorial

—PIPE INFORMATION—

Current Pipe	= Pipe 9
Downstream Pipe	= Pipe 8
Pipe Material	= CONC
Pipe Length	= 12.01 ft
Plan Length	= 12.01 ft
Pipe Type	= Circular
Pipe Dimensions	= 24.00 in
Pipe Manning's "n"	= 0.013
Pipe Capacity at Invert Slope	= 56.13 cfs
Invert Elevation Downstream	= 436.13 ft
Invert Elevation Upstream	= 436.87 ft
Invert Slope	= 5.28%
Invert Slope (Plan Length)	= 6.16%
Rim Elevation Downstream	= 448.90 ft
Rim Elevation Upstream	= 448.35 ft
Natural Ground Slope	= -4.58%
Crown Elevation Downstream	= 438.13 ft
Crown Elevation Upstream	= 438.87 ft

—FLOW INFORMATION—

Catchment Area	= 0.00 ac
Runoff Coefficient	= 0.500
Inlet Time	= 0.00 min
Inlet Intensity	= 0.00 in/hr
Inlet Rational Flow	= 0.00 cfs
Inlet Input Flow	= 0.00 cfs
Total Area	= 0.00 ac
Weighted Coefficient	= 0.500
Total Time of Concentration	= 0.22 min
Total Intensity	= 12.94 in/hr
Total Rational Flow	= 0.00 cfs
Total Flow	= 17.87 cfs
Uniform Capacity	= 56.13 cfs
Skipped flow	= 0.00 cfs
Infiltration	= 0.00 gpd

—HYDRAULIC INFORMATION—

HGL Elevation Downstream	= 444.65 ft
HGL Elevation Upstream	= 444.73 ft
HGL Slope	= 0.54 %
EGL Elevation Downstream	= 445.15 ft
EGL Elevation Upstream	= 445.23 ft
EGL Slope	= 0.54 %
Critical Depth	= 18.28 in
Depth Downstream	= 24.00 in
Depth Upstream	= 24.00 in
Velocity Downstream	= 5.69 ft/s
Velocity Upstream	= 5.69 ft/s
Uniform Velocity Downstream	= NA
Uniform Velocity Upstream	= NA
Area Downstream	= 3.14 ft^2
Area Upstream	= 3.14 ft^2
Kj (JLC)	= 0.01
Calculated Junction Loss	= 0.003 ft

—INLET INFORMATION—

Downstream Inlet	= MH 8
Inlet Description	= <None>
Inlet Type	= Undefined
Computation Case	= Sag
Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000
Pavement Cross-Slope	= 0.00 ft/ft
Gutter Cross-Slope	= 0.00 ft/ft
Gutter Local Depression	= 0.00 in
Gutter Width	= 0.00 ft
Ponding Width	= 0.00 ft
Intercept Efficiency	= * %
Flow from Catchment	= 0.00 cfs
Carryover from previous inlet	= 0.00 cfs
Total Flow to Current Inlet	= 0.00 cfs
Flow Intercepted by Current Inlet	= 0.00 cfs
Bypassed Flow	= 0.00 cfs
Pavement Flow	= 0.00 cfs
Gutter Flow	= 0.00 cfs
Depth at Curb	= 0.00 in
Depth at Pavement/Gutter Joint	= 0.00 in
Pavement Spread	= 0.00 ft
Total Spread	= 0.00 ft
Gutter Velocity	= 0.00 ft/s
Curb Efficiency	= * %
Grate Efficiency	= * %
Slot Efficiency	= * %
Total Efficiency	= 0.00 %

PIPE DESCRIPTION: Pipe 7

—RAINFALL INFORMATION—

Storm Drain Line "H1"

Return Period = 100 Year
Rainfall File = Tutorial

—PIPE INFORMATION—
Current Pipe = Pipe 7
Downstream Pipe = Pipe 9
Pipe Material = CONC
Pipe Length = 18.62 ft
Plan Length = 18.62 ft
Pipe Type = Circular
Pipe Dimensions = 24.00 in
Pipe Manning's "n" = 0.013
Pipe Capacity at Invert Slope = 68.33 cfs
Invert Elevation Downstream = 436.87 ft
Invert Elevation Upstream = 438.57 ft
Invert Slope = 14.03%
Invert Slope (Plan Length) = 9.13%
Rim Elevation Downstream = 448.35 ft
Rim Elevation Upstream = 446.90 ft
Natural Ground Slope = -7.79%
Crown Elevation Downstream = 438.87 ft
Crown Elevation Upstream = 440.57 ft

—FLOW INFORMATION—
Catchment Area = 0.00 ac
Runoff Coefficient = 0.500
Inlet Time = 0.00 min
Inlet Intensity = 0.00 in/hr
Inlet Rational Flow = 0.00 cfs
Inlet Input Flow = 8.94 cfs
Total Area = 0.00 ac
Weighted Coefficient = 0.500
Total Time of Concentration = 0.21 min
Total Intensity = 12.96 in/hr
Total Rational Flow = 0.00 cfs
Total Flow = 17.87 cfs
Uniform Capacity = 68.33 cfs
Skipped flow = 0.00 cfs
Infiltration = 0.00 gpd

—HYDRAULIC INFORMATION—
HGL Elevation Downstream = 444.73 ft
HGL Elevation Upstream = 444.85 ft
HGL Slope = 0.96 %
EGL Elevation Downstream = 445.23 ft
EGL Elevation Upstream = 445.35 ft
EGL Slope = 0.96 %
Critical Depth = 18.28 in
Depth Downstream = 24.00 in
Depth Upstream = 24.00 in
Velocity Downstream = 5.69 ft/s
Velocity Upstream = 5.69 ft/s
Uniform Velocity Downstream = NA
Uniform Velocity Upstream = NA
Area Downstream = 3.14 ft^2
Area Upstream = 3.14 ft^2
Kj (JLC) = 0.50
Calculated Junction Loss = 0.252 ft

—INLET INFORMATION—
Downstream Inlet = MH 9
Inlet Description = Grate 19-3/8x17-3/4
Inlet Type = Undefined
Computation Case = Sag
Longitudinal Slope = 0.00 ft/ft
Mannings n-value = 0.000
Pavement Cross-Slope = 0.00 ft/ft
Gutter Cross-Slope = 0.00 ft/ft
Gutter Local Depression = 0.00 in

Gutter Width = 0.00 ft
Ponding Width = 0.00 ft
Intercept Efficiency = * %
Flow from Catchment = 0.00 cfs
Carryover from previous inlet = 0.00 cfs
Total Flow to Current Inlet = 0.00 cfs
Flow Intercepted by Current Inlet = 0.00 cfs
Bypassed Flow = 0.00 cfs
Pavement Flow = 0.00 cfs
Gutter Flow = 0.00 cfs
Depth at Curb = 0.00 in
Depth at Pavement/Gutter Joint = 0.00 in
Pavement Spread = 0.00 ft
Total Spread = 0.00 ft
Gutter Velocity = 0.00 ft/s
Curb Efficiency = * %
Grate Efficiency = * %
Slot Efficiency = * %
Total Efficiency = 0.00 %

PIPE DESCRIPTION: Pipe 2
----RAINFALL INFORMATION----
Return Period = 100 Year
Rainfall File = Tutorial

----PIPE INFORMATION----
Current Pipe = Pipe 2
Downstream Pipe = Pipe 7
Pipe Material = RCP
Pipe Length = 37.00 ft
Plan Length = 37.00 ft
Pipe Type = Circular
Pipe Dimensions = 18.00 in
Pipe Manning's "n" = 0.013
Pipe Capacity at Invert Slope = 30.14 cfs
Invert Elevation Downstream = 439.43 ft
Invert Elevation Upstream = 442.47 ft
Invert Slope = 8.28%
Invert Slope (Plan Length) = 8.24%
Rim Elevation Downstream = 446.90 ft
Rim Elevation Upstream = 446.90 ft
Natural Ground Slope = 0.00%
Crown Elevation Downstream = 440.93 ft
Crown Elevation Upstream = 443.97 ft

----FLOW INFORMATION----
Catchment Area = 0.00 ac
Runoff Coefficient = 0.500
Inlet Time = 0.00 min
Inlet Intensity = 0.00 in/hr
Inlet Rational Flow = 0.00 cfs
Inlet Input Flow = 8.94 cfs
Total Area = 0.00 ac
Weighted Coefficient = 0.500
Total Time of Concentration = 0.00 min
Total Intensity = 13.11 in/hr
Total Rational Flow = 0.00 cfs
Total Flow = 8.94 cfs
Uniform Capacity = 30.14 cfs
Skipped flow = 0.00 cfs
Infiltration = 0.00 gpd

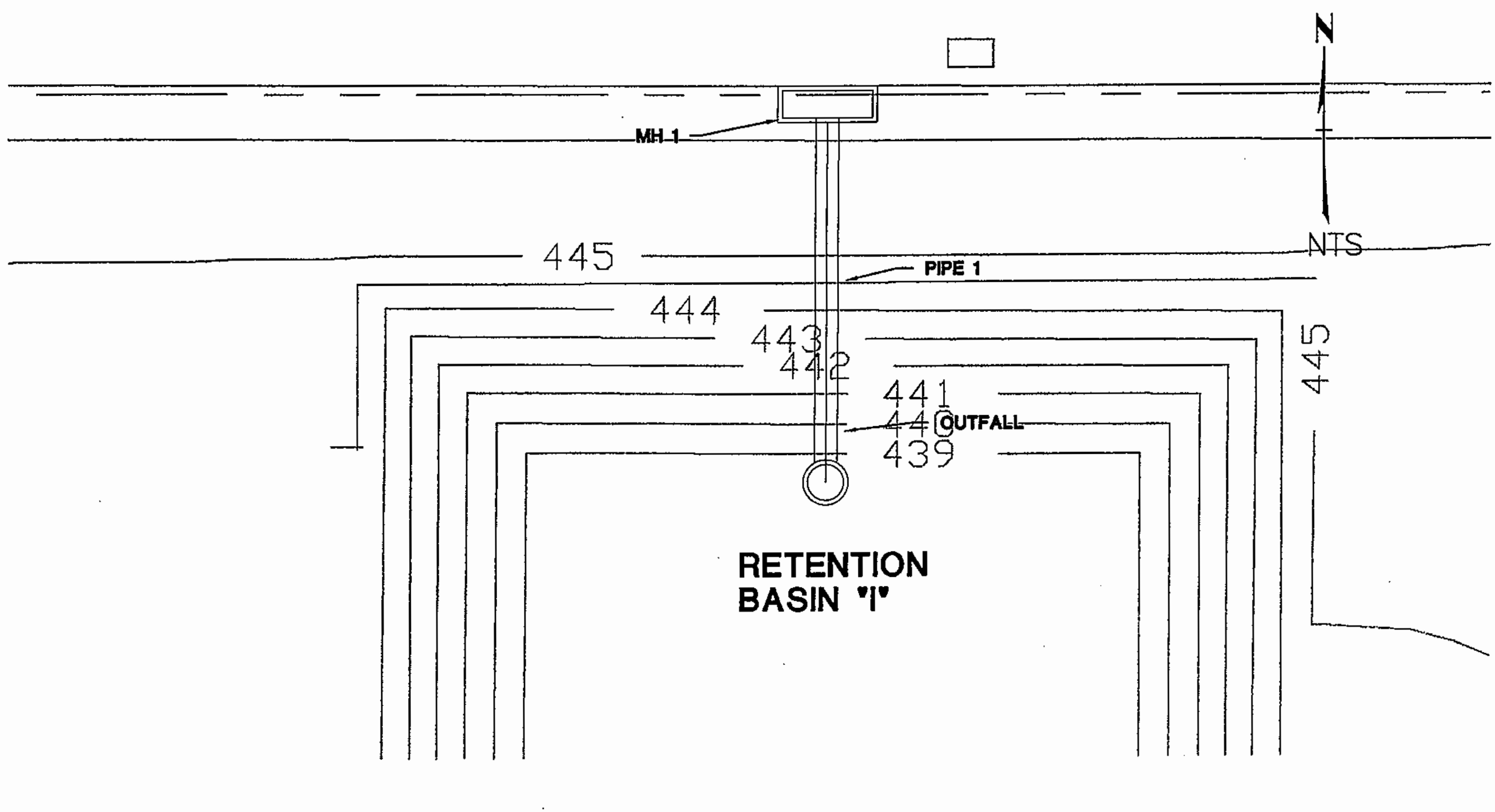
----HYDRAULIC INFORMATION----
HGL Elevation Downstream = 445.10 ft
HGL Elevation Upstream = 445.56 ft
HGL Slope = 1.27 %
EGL Elevation Downstream = 445.49 ft
EGL Elevation Upstream = 445.96 ft
EGL Slope = 1.27 %

Storm Drain Line "H1"

Critical Depth	= 13.88 in
Depth Downstream	= 18.00 in
Depth Upstream	= 18.00 in
Velocity Downstream	= 5.06 ft/s
Velocity Upstream	= 5.06 ft/s
Uniform Velocity Downstream	= NA
Uniform Velocity Upstream	= NA
Area Downstream	= 1.77 ft^2
Area Upstream	= 1.77 ft^2
Kj (JLC)	= 0.50
Calculated Junction Loss	= NA

—INLET INFORMATION—

Downstream Inlet	= MH 7
Inlet Description	= Grate 19-3/8x17-3/4
Inlet Type	= Undefined
Computation Case	= Sag
Longitudinal Slope	= 0.00 ft/ft
Mannings n-value	= 0.000
Pavement Cross-Slope	= 0.00 ft/ft
Gutter Cross-Slope	= 0.00 ft/ft
Gutter Local Depression	= 0.00 in
Gutter Width	= 0.00 ft
Ponding Width	= 0.00 ft
Intercept Efficiency	= * %
Flow from Catchment	= 0.00 cfs
Carryover from previous inlet	= 0.00 cfs
Total Flow to Current Inlet	= 0.00 cfs
Flow Intercepted by Current Inlet	= 0.00 cfs
Bypassed Flow	= 0.00 cfs
Pavement Flow	= 0.00 cfs
Gutter Flow	= 0.00 cfs
Depth at Curb	= 0.00 in
Depth at Pavement/Gutter Joint	= 0.00 in
Pavement Spread	= 0.00 ft
Total Spread	= 0.00 ft
Gutter Velocity	= 0.00 ft/s
Curb Efficiency	= * %
Grate Efficiency	= * %
Slot Efficiency	= * %
Total Efficiency	= 0.00 %



STORM DRAIN LINE "I"

Storm Drain Line "I"

PIPE DESCRIPTION: Pipe 1
—RAINFALL INFORMATION—
Return Period = 100 Year
Rainfall File = Tutorial

—PIPE INFORMATION—
Current Pipe = Pipe 1
Downstream Pipe = Outfall
Pipe Material = CONC
Pipe Length = 38.17 ft
Plan Length = 38.17 ft
Pipe Type = Circular
Pipe Dimensions = 24.00 in
Pipe Manning's "n" = 0.013
Pipe Capacity at Invert Slope = 75.74 cfs
Invert Elevation Downstream = 434.61 ft
Invert Elevation Upstream = 438.89 ft
Invert Slope = 13.18%
Invert Slope (Plan Length) = 11.22%
Rim Elevation Downstream = 439.00 ft
Rim Elevation Upstream = 442.57 ft
Natural Ground Slope = 9.35%
Crown Elevation Downstream = 436.61 ft
Crown Elevation Upstream = 440.89 ft

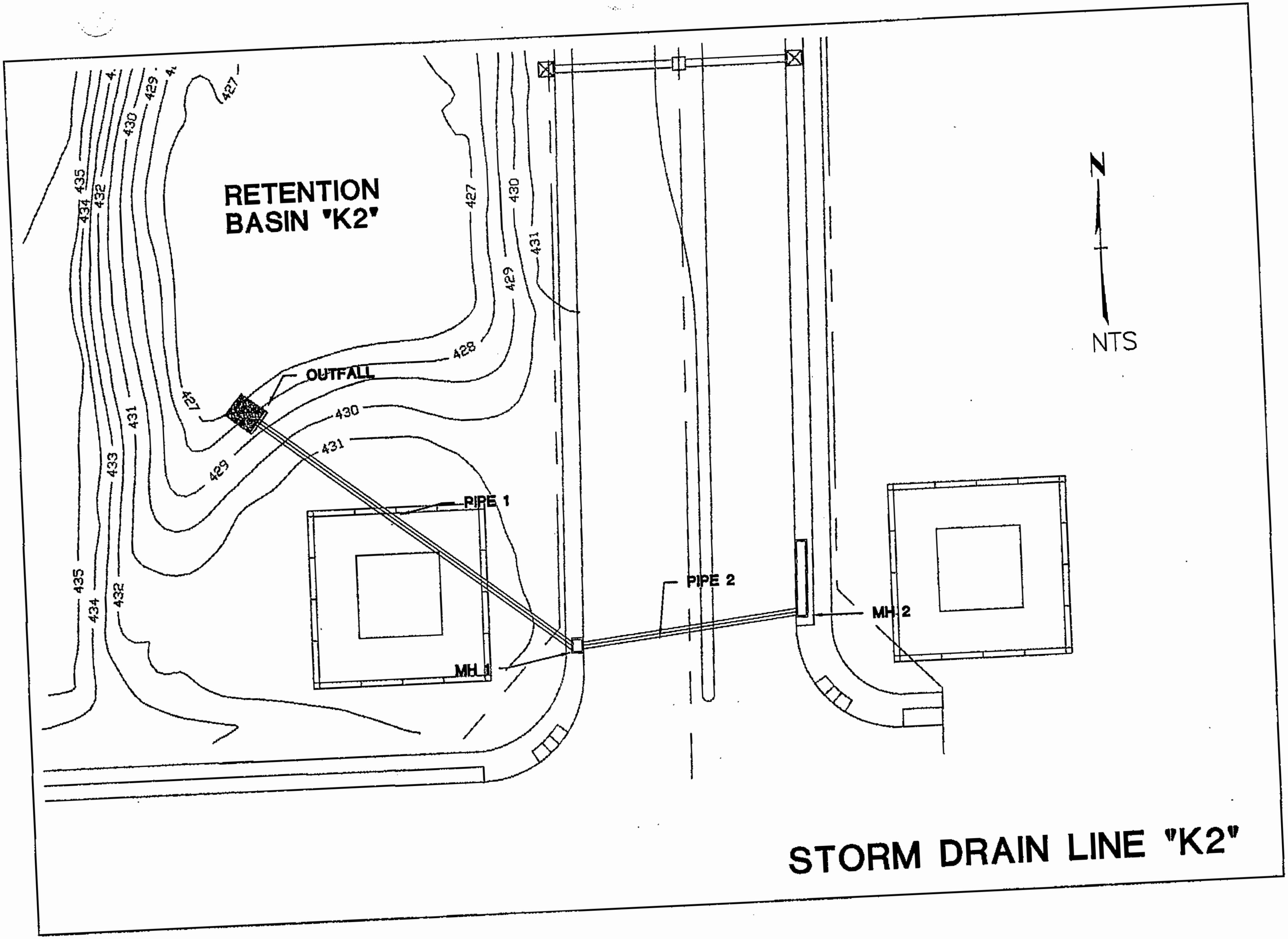
—FLOW INFORMATION—
Catchment Area = 0.00 ac
Runoff Coefficient = 0.500
Inlet Time = 0.00 min
Inlet Intensity = 0.00 in/hr
Inlet Rational Flow = 0.00 cfs
Inlet Input Flow = 23.41 cfs
Inlet Hydrograph Flow = 0.00 cfs
Total Area = 0.00 ac
Weighted Coefficient = 0.500
Total Time of Concentration = 0.00 min
Total Intensity = 13.11 in/hr
Total Rational Flow = 0.00 cfs
Total Flow = 23.41 cfs
Uniform Capacity = 75.74 cfs
Skipped flow = 0.00 cfs
Infiltration = 0.00 gpd

—HYDRAULIC INFORMATION—
HGL Elevation Downstream = 440.65 ft
HGL Elevation Upstream = 441.49 ft
HGL Slope = 2.59 %
EGL Elevation Downstream = 441.51 ft
EGL Elevation Upstream = 442.35 ft
EGL Slope = 2.59 %
Critical Depth = 20.62 in
Depth Downstream = 24.00 in
Depth Upstream = 24.00 in
Velocity Downstream = 7.45 ft/s
Velocity Upstream = 7.45 ft/s
Uniform Velocity Downstream = NA
Uniform Velocity Upstream = NA
Area Downstream = 3.14 ft^2
Area Upstream = 3.14 ft^2
Kj (JLC) = 0.50
Calculated Junction Loss = NA

—INLET INFORMATION—
Downstream Inlet = Outfall
Inlet Description = Grate 19-3/8x17-3/4
Inlet Type = Undefined
Computation Case = Sag
Longitudinal Slope = 0.00 ft/ft

Storm Drain Line "I"

Mannings n-value	= 0.000
Pavement Cross-Slope	= 0.00 ft/ft
Gutter Cross-Slope	= 0.00 ft/ft
Gutter Local Depression	= 0.00 in
Gutter Width	= 0.00 ft
Ponding Width	= 0.00 ft
Intercept Efficiency	= * %
Flow from Catchment	= 0.00 cfs
Carryover from previous inlet	= 0.00 cfs
Total Flow to Current Inlet	= 0.00 cfs
Flow Intercepted by Current Inlet	= 0.00 cfs
Bypassed Flow	= 0.00 cfs
Pavement Flow	= 0.00 cfs
Gutter Flow	= 0.00 cfs
Depth at Curb	= 0.00 in
Depth at Pavement/Gutter Joint	= 0.00 in
Pavement Spread	= 0.00 ft
Total Spread	= 0.00 ft
Gutter Velocity	= 0.00 ft/s
Curb Efficiency	= * %
Grate Efficiency	= * %
Slot Efficiency	= * %
Total Efficiency	= 0.00 %


RETENTION BASIN "K2"
OUTFALL
PIPE 1
PIPE 2
MH 1
MH 2
N
NTS
427
428
429
430
431
432
433
434
435
STORM DRAIN LINE "K2"

Storm Drain Line "K-2"

PIPE DESCRIPTION: Pipe 1

—RAINFALL INFORMATION—

Return Period	= 100 Year
Rainfall File	= Tutorial

—PIPE INFORMATION—

Current Pipe	= Pipe 1
Downstream Pipe	= Outfall
Pipe Material	= CONC
Pipe Length	= 131.62 ft
Plan Length	= 131.62 ft
Pipe Type	= Circular
Pipe Dimensions	= 30.00 in
Pipe Manning's "n"	= 0.013
Pipe Capacity at Invert Slope	= 26.0 cfs
Invert Elevation Downstream	= 424.50 ft
Invert Elevation Upstream	= 425.03 ft
Invert Slope	= 0.4%
Invert Slope (Plan Length)	= 0.4%
Rim Elevation Downstream	= 427.00 ft
Rim Elevation Upstream	= 429.97 ft
Natural Ground Slope	= 2.3%
Crown Elevation Downstream	= 427.00 ft
Crown Elevation Upstream	= 427.53 ft

—FLOW INFORMATION—

Catchment Area	= 0.00 ac
Runoff Coefficient	= 0.500
Inlet Time	= 0.00 min
Inlet Intensity	= 0.00 in/hr
Inlet Rational Flow	= 0.00 cfs
Inlet Input Flow	= 5.35 cfs
Total Area	= 0.00 ac
Weighted Coefficient	= 0.500
Total Time of Concentration	= 0.41 min
Total Intensity	= 12.81 in/hr
Total Rational Flow	= 0.00 cfs
Total Flow	= 33.52 cfs
Uniform Capacity	= 26.02 cfs
Skipped flow	= 0.00 cfs
Infiltration	= 0.00 gpd

—HYDRAULIC INFORMATION—

HGL Elevation Downstream	= 426.47 ft
HGL Elevation Upstream	= 427.67 ft
HGL Slope	= 0.8 %
EGL Elevation Downstream	= 427.48 ft
EGL Elevation Upstream	= 428.40 ft
EGL Slope	= 0.6 %
Critical Depth	= 23.64 in
Depth Downstream	= 23.64 in
Depth Upstream	= 30.00 in
Velocity Downstream	= 8.08 ft/s
Velocity Upstream	= 6.83 ft/s
Uniform Velocity Downstream	= NA
Uniform Velocity Upstream	= NA
Area Downstream	= 4.15 ft^2
Area Upstream	= 4.91 ft^2
Kj (JLC)	= 0.50
Calculated Junction Loss	= 0.362 ft

—INLET INFORMATION—

Downstream Inlet	= Outfall
Inlet Description	= Grate 19-3/8x17-3/4
Inlet Type	= Undefined
Computation Case	= Sag
Longitudinal Slope	= 0.0 ft/ft
Mannings n-value	= 0.000

Storm Drain Line "K-2"

Pavement Cross-Slope	= 0.0 ft/ft
Gutter Cross-Slope	= 0.0 ft/ft
Gutter Local Depression	= 0.00 in
Gutter Width	= 0.00 ft
Ponding Width	= 0.00 ft
Intercept Efficiency	= * %
Flow from Catchment	= 0.00 cfs
Carryover from previous inlet	= 0.00 cfs
Total Flow to Current Inlet	= 0.00 cfs
Flow Intercepted by Current Inlet	= 0.00 cfs
Bypassed Flow	= 0.00 cfs
Pavement Flow	= 0.00 cfs
Gutter Flow	= 0.00 cfs
Depth at Curb	= 0.00 in
Depth at Pavement/Gutter Joint	= 0.00 in
Pavement Spread	= 0.00 ft
Total Spread	= 0.00 ft
Gutter Velocity	= 0.00 ft/s
Curb Efficiency	= * %
Grate Efficiency	= * %
Slot Efficiency	= * %
Total Efficiency	= 0.00 %

PIPE DESCRIPTION: Pipe 2

—RAINFALL INFORMATION—

Return Period	= 100 Year
Rainfall File	= Tutorial

—PIPE INFORMATION—

Current Pipe	= Pipe 2
Downstream Pipe	= Pipe 1
Pipe Material	= CONC
Pipe Length	= 73.62 ft
Plan Length	= 73.62 ft
Pipe Type	= Circular
Pipe Dimensions	= 27.00 in
Pipe Manning's "n"	= 0.013
Pipe Capacity at Invert Slope	= 19.4 cfs
Invert Elevation Downstream	= 425.04 ft
Invert Elevation Upstream	= 425.33 ft
Invert Slope	= 0.4%
Invert Slope (Plan Length)	= 0.4%
Rim Elevation Downstream	= 429.97 ft
Rim Elevation Upstream	= 429.95 ft
Natural Ground Slope	= -0.0%
Crown Elevation Downstream	= 427.29 ft
Crown Elevation Upstream	= 427.58 ft

—FLOW INFORMATION—

Catchment Area	= 0.00 ac
Runoff Coefficient	= 0.500
Inlet Time	= 0.00 min
Inlet Intensity	= 0.00 in/hr
Inlet Rational Flow	= 0.00 cfs
Inlet Input Flow	= 28.17 cfs
Total Area	= 0.00 ac
Weighted Coefficient	= 0.500
Total Time of Concentration	= 0.00 min
Total Intensity	= 13.11 in/hr
Total Rational Flow	= 0.00 cfs
Total Flow	= 28.17 cfs
Uniform Capacity	= 19.43 cfs
Skipped flow	= 0.00 cfs
Infiltration	= 0.00 gpd

—HYDRAULIC INFORMATION—

HGL Elevation Downstream	= 428.04 ft
HGL Elevation Upstream	= 429.04 ft
HGL Slope	= 1.4 %

Storm Drain Line "K-2"

EGL Elevation Downstream	= 428.82 ft
EGL Elevation Upstream	= 429.82 ft
EGL Slope	= 1.4 %
Critical Depth	= 22.16 in
Depth Downstream	= 27.00 in
Depth Upstream	= 27.00 in
Velocity Downstream	= 7.08 ft/s
Velocity Upstream	= 7.08 ft/s
Uniform Velocity Downstream	= NA
Uniform Velocity Upstream	= NA
Area Downstream	= 3.98 ft^2
Area Upstream	= 3.98 ft^2
Kj (JLC)	= 0.50
Calculated Junction Loss	= NA

—INLET INFORMATION—

Downstream Inlet	= MH 1
Inlet Description	= Grate 19-3/8x17-3/4
Inlet Type	= Undefined
Computation Case	= Sag
Longitudinal Slope	= 0.0 ft/ft
Mannings n-value	= 0.000
Pavement Cross-Slope	= 0.0 ft/ft
Gutter Cross-Slope	= 0.0 ft/ft
Gutter Local Depression	= 0.00 in
Gutter Width	= 0.00 ft
Ponding Width	= 0.00 ft
Intercept Efficiency	= * %
Flow from Catchment	= 0.00 cfs
Carryover from previous inlet	= 0.00 cfs
Total Flow to Current Inlet	= 0.00 cfs
Flow Intercepted by Current Inlet	= 0.00 cfs
Bypassed Flow	= 0.00 cfs
Pavement Flow	= 0.00 cfs
Gutter Flow	= 0.00 cfs
Depth at Curb	= 0.00 in
Depth at Pavement/Gutter Joint	= 0.00 in
Pavement Spread	= 0.00 ft
Total Spread	= 0.00 ft
Gutter Velocity	= 0.00 ft/s
Curb Efficiency	= * %
Grate Efficiency	= * %
Slot Efficiency	= * %
Total Efficiency	= 0.00 %

Proposed Hydrology Map

BASIN A
FLOOD VOLUME = 1.44 AF
BASIN CAPACITY = 2.38 AF

BASIN B
FLOOD VOLUME = 1.93 AF
BASIN CAPACITY = 3.66 AF

BASIN C
FLOOD VOLUME = 1.41 AF
BASIN CAPACITY = 1.33 AF
SPILL TO BASIN D = .08 AF

BASIN D
FLOOD VOLUME = 1.96 AF
SPILL FROM BASIN C = .08 AF
TOTAL FLOOD VOLUME= 2.04 AF
BASIN CAPACITY = 2.42 AF

BASIN E
FLOOD VOLUME = 2.09 AF
BASIN CAPACITY = 1.80 AF
SPILL TO BASIN F = .29 AF

BASIN F
FLOOD VOLUME = 1.51 AF
SPILL FROM BASIN F = .29 AF
TOTAL FLOOD VOLUME= 1.80 AF
BASIN CAPACITY = 1.17 AF
SPILL TO BASIN G = .63 AF

BASIN G
FLOOD VOLUME = 1.31 AF
SPILL FROM BASIN F = .63 AF
TOTAL FLOOD VOLUME = 1.94 AF
BASIN CAPACITY = 3.07 AF

BASIN H
FLOOD VOLUME = 4.21 AF

BASIN I
FLOOD VOLUME = .47 AF

BASIN J1
FLOOD VOLUME = 3.85 AF

BASIN J2
FLOOD VOLUME = 1.54 AF

BASIN K1
FLOOD VOLUME = .55 AF

BASIN K2
FLOOD VOLUME = .69 AF

RIO VISTA VILLAGE MASTER PLAN OF DRAINAGE

PROPOSED FACILITIES MAP (ULTIMATE CONDITION)

EXHIBIT "B-1"

AEI•CASC ENGINEERING
937 SOUTH VIA LATA
SUITE # 500
COLTON, CA. 92324
PH. (909) 783-0101 FAX (909) 783-0108

DESIGNED BY:	DRAWN BY:	CHECKED BY:	FILING NO.
JB		CVA	

PLANS PREPARED UNDER THE SUPERVISION OF:

JOHN BURTON R.C.E. 47103 DATE

DRAWING NO.

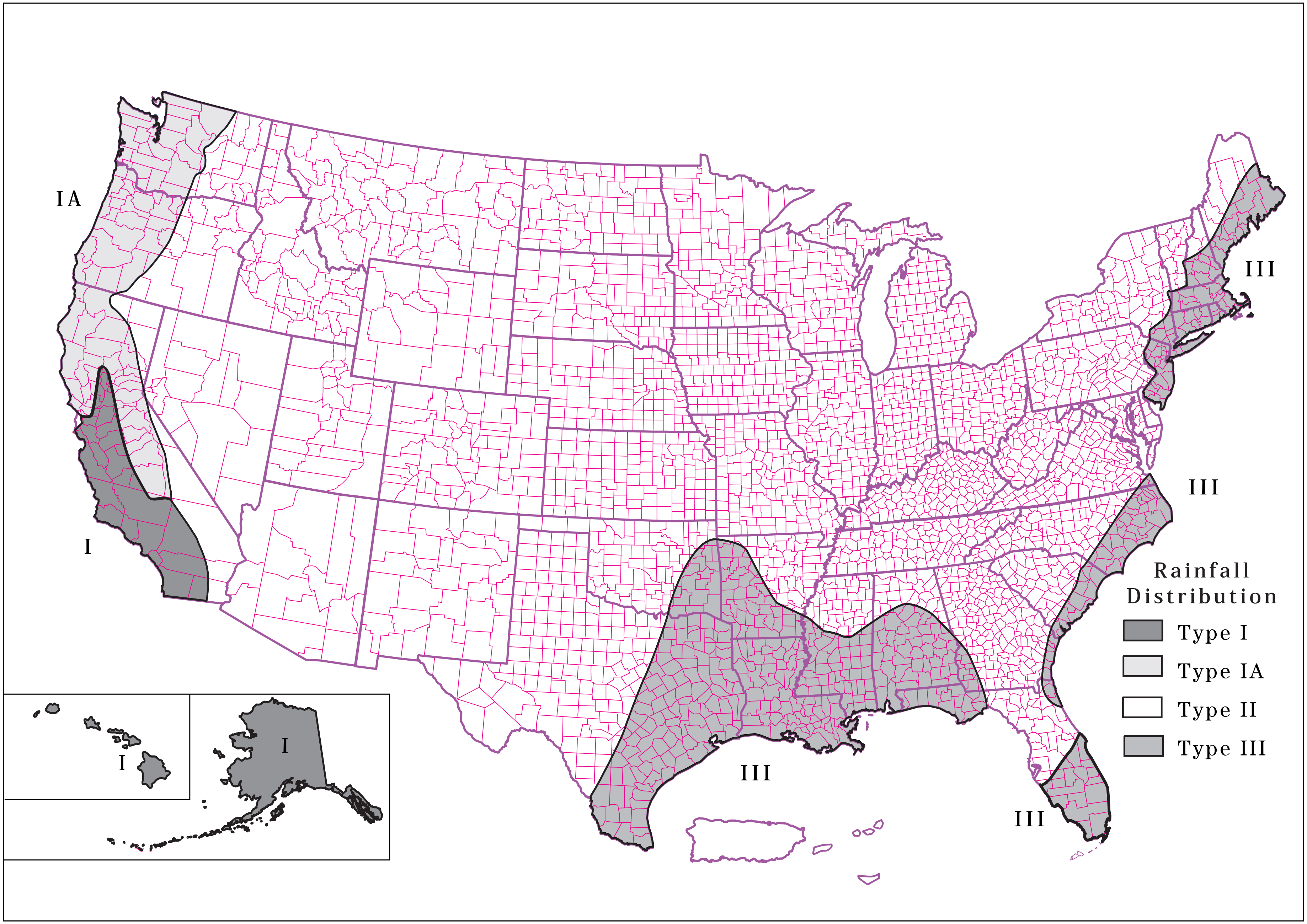
SHEET 1 OF 1

APPENDIX 7

SUPPORTING DOCUMENTS

1. Approximate Geographic Boundaries for NRCS Rainfall Distribution
2. Runoff Coefficient Table
3. SCS Curve Number Table

Figure B-2 Approximate geographic boundaries for NRCS (SCS) rainfall distributions



Runoff Coefficients (C)

Area Description	Coefficient Value	Typical Design
Business:		
Central business	0.70 - 0.95	
District and local	0.50 - 0.70	
Residential:		
Single family	0.35 - 0.45	
Multi-units detached	0.40 - 0.75	
Suburban	0.25 - 0.40	
Apartments	0.50 - 0.70	
Industrial:		
Light	0.50 - 0.80	
Heavy	0.60 - 0.90	
Parks, **cemeteries**	0.10 - 0.25	
Playgrounds	0.20 - 0.35	
Railroad yards	0.20 - 0.40	
Lawns		
Sandy soil	0.05 - 0.20	
Heavy soil	0.18 - 0.35	0.30
Unimproved	0.10 - 0.30	0.20
Asphaltic	0.70 - 0.95	0.90
Concrete	0.80 - 0.95	0.90
Roofs	0.75 - 0.95	0.90

Source: ASCE

The following table shows SCS curve number values, according to the SCS method for runoff calculations. Please scroll down for a description of the soil groups.

SCS Curve Numbers (CN)

Description of Land Use	**Hydrologic Soil Group**			
	A	**B**	**C**	**D**
Paved parking lots, roofs, driveways	98	98	98	98
Streets and Roads				
Paved with curbs and storm sewers	98	98	98	98
Gravel	76	85	89	91
Dirt	72	82	87	89
Cultivated (Agricultural Crop) Land				
Without conservation treatment (no terraces)	72	81	88	91
With conservation treatment (terraces, contours)	62	71	78	81
Pasture or Range Land				
Poor (<50% ground cover or heavily grazed)	68	79	86	89
Good (50-75% ground cover; Not heavily grazed)	39	61	74	80
Meadow (grass, no grazing, mowed for hay)	30	58	71	78
Brush (good, >75% ground cover)	30	48	65	73
Woods and Forests				
Poor (small trees/brush destroyed by over-grazing or burning)	45	66	77	83
Fair (grazing but not burned; some brush)	36	60	73	79
Good (no grazing; brush covers ground)	30	55	70	77
Open Spaces (lawns, parks, golf courses, cemeteries, etc.)				
Fair (grass covers 50 – 75% of area)	49	69	79	84
Good (grass covers >75% of area)	39	61	74	80
Commercial and Business Districts (85% impervious)	89	92	94	95
Industrial Districts (72% impervious)	81	88	91	93
Residential Areas				
1/8 acre lots, about 65% impervious	77	85	90	92
1/4 acre lots, about 38% impervious	61	75	83	87
1/2 acre lots, about 25% impervious	54	70	80	85
1 acre lots, about 20% impervious	51	68	79	84

Group A Soils: High infiltration (low runoff). Sand, loamy sand, or sandy loam. Infiltration rate > 0.3 in/hr when wet.
Group B Soils: Moderate infiltration (moderate runoff). Silt loam or loam. Infiltration rate 0.15 – 0.30 in/hr when wet.
Group C Soils: Low infiltration (moderate to high runoff). Sandy clay loam. Infiltration rate 0.05 – 0.150 in/hr when wet.
Group D Soils: Very low infiltration (high runoff). Clay loam, silty clay loam, sandy clay, silty clay, or clay. Infiltration rate 0 – 0.05 in/hr when wet.