Appendix E

Preliminary Hydrology Report

HYDROLOGY REPORT

PREPARE FOR:

168 Builders, Inc
1211 Center Court Dr. #200
Covina, CA 91710

FOR THE PROJECT:

Tentative Tract Map No. 38683
Residential Development
Menifee, CA
County of Riverside

PREPARED BY:

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October, 2023

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Section

1

INTRODUCTION

1.1 PURPOSE OF STUDY

The project is located within the City of Menifee, California due west of Interstate 215 at APN: 360-3500-06 off the north side of Garbani Rd and 900 ft east from Bradley Rd, Menifee CA 92584. The purpose of this study is to hydrologically model the project's onsite and off-site tributary area watersheds and to determine the pre-development peak runoffs in order to analyze stormwater mitigation. The hydrologic analysis was prepared using the Rational Method as specified in the Riverside County Hydrology Manual. The flows were used to estimate the proposed above and below ground drainage facilities to support the project.

1.2 PROJECT DESCRIPTION

The project is comprised of approximately 9.42 acres and is located approximately 4,000 feet west of the intersection of I-215, on the north side of Garbani Rd in the City of Menifee, Riverside County, California. The project site is currently undeveloped with an estimate elevation difference of roughly 42 feet flowing from northeast to southwest the project hydrology and storm drain system will be designed in accordance with recent City of Menifee and Riverside County design requirements. The onsite storm drain, and inlet and outlet structures are to be privately maintained by the proposed Property Owners. Other drainage facilities offsite of the project site will be publicly maintained by the City of Menifee **Appendix A** contains the Vicinity Map.

1.3 FLOODPLAIN MAPPING

The National Flood Insurance Act (1968) established the National Flood Insurance Program, which is based on the minimal requirements for floodplain management and is designed to minimize flood damage within Special Flood Hazard Areas. The Federal Emergency Management Agency (FEMA) is the agency which administrates the National Flood Insurance Program. Special Flood Hazard Areas (SFHA) are defined as areas that have a 1% chance of flooding within a given year. This is also referred to as the 100-year flood. Flood Insurance Rate Maps (FIRMs) were developed to identify areas of flood hazards within a community. According to the Flood Insurance Rate Map (FIRM) catalog, there are FIRMs produced by FEMA for the project site:

MAP Number: 06065C2070H
MAP Revised: August 18, 2014.

Appendix J contains the FIRM panels which identify the flood zones designated for the project area. The project site is located on a Zone X area.

1.4 DESIGN CRITERIA

The following are design criteria for this project, based on the Riverside County Hydrology Manual.

Protection Levels

1. The 100-year flood shall be contained with the street R/W limits.

2. The 10-year flood shall be contained within the Top of Curbs.

3. Initiate a storm drain or channel when either condition is exceeded.

Section

2

HYDROLOGIC DATA AND MODEL DEVELOPMENT

2.1 PRE-DEVELOPMENT MODEL

The project site is one drainage area that drains from Southwest to Northeast with an approximate elevation difference of approximately 42 feet. Refer to the Pre-Development Hydrology Key Map in **Appendix C** for locations of the drainage area, and peak flows at the drainage area. The Riverside County Rational Method Hydrologic calculations (as described in the Riverside Hydrology Manual) were performed using the CivilDesign Hydrology / Hydraulics computer program. The existing condition watershed boundaries were delineated using surveyed topography. The soil type in this area is Type "D". Soil type "D" was used for calculating the rational method hydrology analysis. Refer to **Appendix B** for the NRCS Custom Soil Resource**.** Results of the pre-development hydrologic analysis are summarized in this section **Table 1 below**.

TABLE 1 - PRE-DEVELOPMENT CONDITION PEAK FLOW

Pre-Development Condition Rational Method Hydrology Summary Table: (Off-site area)

Sub-Drainage Area	Area (acres)	Q10 (cfs)	Q100 (cfs)	TC (min)
B1	3.39	6.81	10.71	8.92
B2	4.3	7.94	12.52	10.38
TOTAL:	7.69	14.75	23.23	

Pre-Development Condition Rational Method Hydrology Summary Table: (On-site area)

Sub-Drainage Area	Area (acres)	Q10 (cfs)	Q100 (cfs)	TC (min)
1A	9.21	14.15	22.61	14.19
2A	0.21	0.29	0.47	16.64
TOTAL:	9.42	14.44	23.08	

2.2 POST-DEVELOPMENT MODEL

The site will be developed into a single-family development with a total of 40 buildings. The project site will generally maintain the existing drainage patterns in the post-development condition of flowing from southwest to northeast. Refer to the Post-Development Hydrology Key Map in **Appendix E** for locations of the drainage area, and peak flows at the drainage area. The soil type in this area is Type "D". Soil type "D" was used for calculating the rational method hydrology analysis. Results of the post-development hydrologic analysis are summarized in this section **Table 2 below**.

TABLE 2 - POST-DEVELOPMENT CONDITION PEAK FLOW

Post-Development Condition Rational Method Hydrology Summary Table: (On-site area)

Sub-Drainage Area	Area (acres)	Q10 (cfs)	Q100 (cfs)	TC (min)
A1	1	1.99	3.15	8.83
A2	3.04	4.89	8.00	12.21
A3	1.3	2.48	3.94	9.48
A4	1.13	2.01	7.17	10.54
A5	2.74	4.91	7.83	10.53
A6	0.21	0.41	0.68	8.33
TOTAL:	9.42	16.69	30.77	

TABLE 3 - PEAK FLOW COMPARISON

Sub-Drainage Area	Pre-Dev Q10 (cfs)	Post-Dev Q10 (cfs)	Difference Q10 (cfs)	Pre-Dev Q100 (cfs)	Post-Dev Q100 (cfs)	Difference Q100 (cfs)
Confluence	14.44	16.69	2.25	22.61	30.77	8.16

2.3 UNIT HYDROGRAPH MODEL

The rational method analysis provided Q100 on the post-development condition that is slightly higher than the pre-development condition for the drainage area, therefore, unit hydrographs are required since detention is required onsite for the Q100 storm event. The 10 storm was run for the 1-, 3-, 6-, and 24-Hour storm events, 100-year storm was run for 1-hour events to determine the amount of runoff volume needed to be detained onsite. A summary of the results for the unit hydrographs are shown on **Table 4 below**. The unit hydrograph figures and calculations are shown on **Appendix G** for reference.

TABLE 4 – UNIT HYDROGRAPH COMPARISON

On-Site Area
Existing Condition

Drainage Area:
9.42 Ac
UH-Table:

10 Year	Flow (CFS)	Volume (AC-FT)
1 Hr	15.64	0.60
3 Hr	9.57	0.90
6 Hr	8.31	1.00
24 Hr	3.51	1.30
100 Year	**Flow (CFS)**	**Volume (AC-FT)**
1 Hr	22.43	1.16

On-Site Area:
Developed Condition Hydrograph

Drainage Area:
9.42 Ac
UH Table:

10 Year	Flow (CFS)	Volume (AC-FT)
1 Hr	15.42	0.67
3 Hr	9.81	0.94
6 Hr	8.61	1.17
24 Hr	3.80	1.88
100 Year	**Flow (CFS)**	**Volume (AC-FT)**
1 Hr	26.27	1.17

Table 4 above shows decrease in peak flowrate for the project. As a result of incorporating detention basins.

2.4 BASIN ANALYSIS

As shown in section **2.3 Unit Hydrograph Model Table 4**, the greatest difference in runoff is generated in the 100-yr 24-hr storm event and roughly 0.0711 acre-feet or 3,097 cubic feet of volume that must be detained. Drainage area "1" & "2" propose 7-foot-deep bioretention basin with 0.5 feet of free board that has the capacity to detain roughly 4,957.53 and 6,314.74 cubic feet respectively. while out letting through a 6 inch underdrain and 9 inch overflow pipe. A summary of the results for the basin routing are shown on **Table 5 below**. The basin routing and calculations are shown on **Appendix H** for reference.

TABLE 5 – BASIN ROUTING COMPARISON

Basin Bot: **1476.0** **Total Depth:** **3.00** **Pre vs. Post Condition Analysis**

Basin Top: **1479.0**

10 Year	Qpeak (CFS)	Volume (AC-FT)	Depth (FT)	WS (Ft)
1 Hr	12.45	0.67	1.34	1477.34
3 Hr	8.99	0.94	1.20	1477.20
6 Hr	8.16	1.17	1.16	1477.16
24 Hr	3.42	1.88	1.15	1477.15
100 Year	**Qpeak (CFS)**	**Volume (AC-FT)**	**Depth (FT)**	**WS (Ft)**
1 Hr	21.94	1.17	1.64	**1477.64**

10 Year	EXIST. Flow (cfs)	Mit. Flow (cfs)	% Decrease from Existing
1 Hr	15.64	12.45	20%
3 Hr	9.57	8.99	6%
6 Hr	8.31	8.16	2%
24 Hr	3.51	3.42	3%
100 Year	**EXIST. Flow (cfs)**	**Mit. Flow (cfs)**	**% Decrease from Existing**
1 Hr	22.43	21.94	2%

2.5 STORM DRAIN SYSTEM

The onsite runoff will be flowing from south to north and directed into a bioretention/detention basin using the general grading of the driveway and pad with gutters directing flow into catch basins. All on-site catch basins will install a filter insert for the storm water first treatment; runoff will be passing through it then outlet to the bio-retention/detention basin which will be employed to accommodate the increase in runoff, as well as a LID device, satisfying the City and County's WQMP requirement. The required stormwater treatment flow will drain through the 3' deep engineer soil (Bio-filter layer) then outlet to storm drain system. A 36" CMP standing riser controls the outlet flow rate to meet the hydrology requirements of this development. The outlet storm drainpipe will join a 36" RCP, the existing storm drain on Tupelo Street per Tract No. 31831 As-Bult Plan.

Approximately 8-acre hill site area on south of the Gurbani Road runoff is flowing through the subject site. For off-site runoff, this development is going to propose an off-site storm drain with easement on east of the property, through Linda Lee Drive to join the existing storm drain on Tupelo Streat. The study shows that there is no increase in runoff before joining the existing storm drain and the existing storm drain has suffice capacity for the development.

Appendix J of this report contains the existing storm drain as-built plan of Tract No. 31831 development.

Section

3

CONCLUSIONS

This hydrology study has evaluated the potential effects of runoff for the proposed project. In addition, this report has addressed the methodology used to analyze the existing and proposed conditions, which was based on the Riverside County Hydrology Manual. This section provides a summary discussion that evaluates the potential effects of the proposed project.

- The proposed project will not significantly alter drainage patterns on the site.
- The Rational Method results illustrate that there is an increase in peak flowrate for project sites. And increase runoff mitigation is proposed in the form of detention basin.
- The proposed onsite storm drain, catch basin and bio-retention/ detention basin will be privately owned and maintained by the Property Owners Association.
- Proposed storm drain alignment, inlets, and discharge points are shown on the hydrology key maps.

In conclusion, this report demonstrates that the proposed development is designed to not increase runoff and poses no flood risk to neighboring properties. The proposed storm drains and bio-retention/detention system will be designed to convey the flow rates indicated herein and will comply with the flood protection and storm water quality requirements of the City of Menifee and the County of Riverside.

Section

4

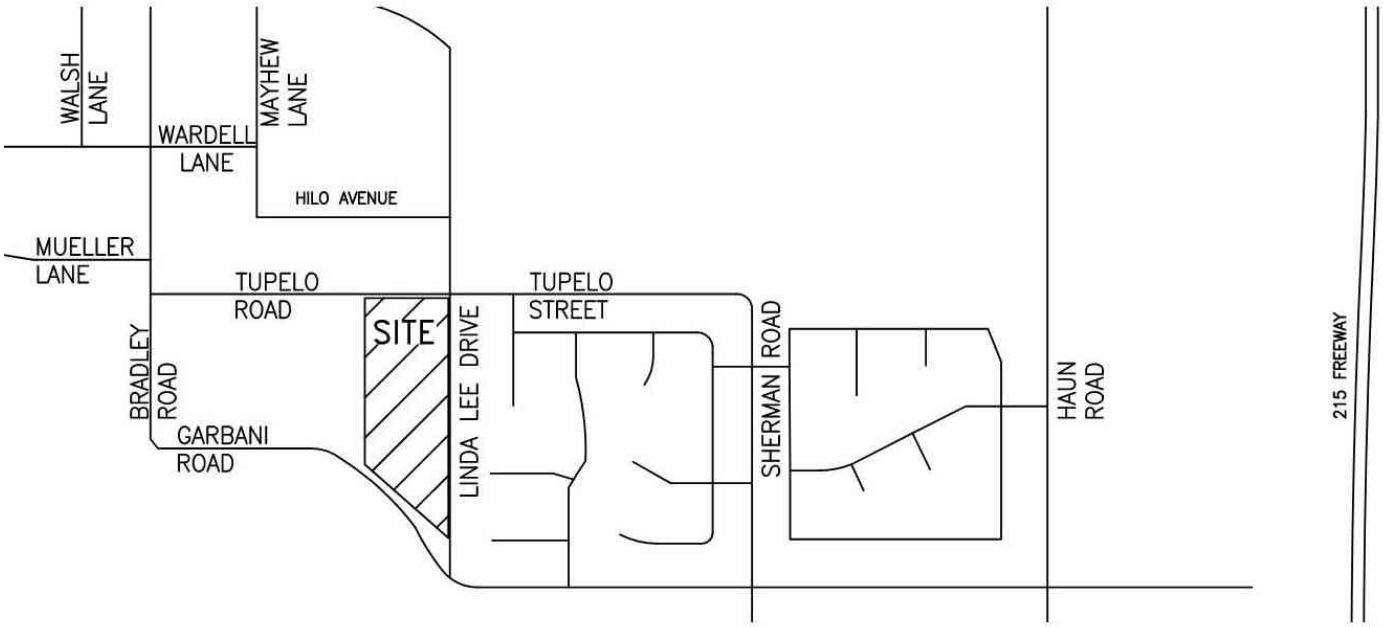
REFERENCES

Riverside County Flood Control and Water Conservation District. *Hydrology Manual*. September 2011.

Appendix

A

VICINITY MAP



VICINITY MAP

N.T.S

Appendix

B

HYDROLOGIC CLASSIFICATION OF SOILS & PRECIPITATION MAPS

NOAA Atlas 14, Volume 6, Version 2
Location name: Menifee, California, USA*
Latitude: 33.6584°, Longitude: -117.1848°
Elevation: 1497.57 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.087 (0.073-0.105)	0.123 (0.103-0.148)	0.171 (0.143-0.207)	0.212 (0.176-0.259)	0.271 (0.216-0.342)	0.317 (0.248-0.410)	0.366 (0.279-0.486)	0.418 (0.309-0.572)	0.492 (0.348-0.703)	0.552 (0.377-0.817)
10-min	0.125 (0.105-0.150)	0.176 (0.147-0.212)	0.245 (0.205-0.297)	0.304 (0.252-0.372)	0.388 (0.310-0.490)	0.455 (0.355-0.588)	0.525 (0.400-0.696)	0.600 (0.443-0.820)	0.706 (0.499-1.01)	0.791 (0.540-1.17)
15-min	0.151 (0.126-0.182)	0.213 (0.178-0.257)	0.297 (0.248-0.359)	0.368 (0.305-0.449)	0.469 (0.375-0.593)	0.550 (0.429-0.711)	0.635 (0.483-0.842)	0.725 (0.536-0.991)	0.853 (0.604-1.22)	0.957 (0.653-1.42)
30-min	0.243 (0.204-0.293)	0.342 (0.286-0.413)	0.478 (0.399-0.578)	0.592 (0.490-0.723)	0.755 (0.603-0.954)	0.885 (0.691-1.14)	1.02 (0.778-1.36)	1.17 (0.863-1.60)	1.37 (0.972-1.96)	1.54 (1.05-2.28)
60-min	0.365 (0.306-0.440)	0.514 (0.430-0.620)	0.717 (0.599-0.868)	0.890 (0.736-1.09)	1.13 (0.905-1.43)	1.33 (1.04-1.72)	1.53 (1.17-2.04)	1.75 (1.30-2.40)	2.06 (1.46-2.95)	2.31 (1.58-3.42)
2-hr	0.538 (0.451-0.649)	0.725 (0.607-0.875)	0.976 (0.815-1.18)	1.19 (0.980-1.45)	1.48 (1.18-1.87)	1.70 (1.33-2.20)	1.94 (1.48-2.58)	2.19 (1.62-2.99)	2.54 (1.79-3.62)	2.81 (1.92-4.16)
3-hr	0.661 (0.554-0.797)	0.878 (0.735-1.06)	1.17 (0.973-1.41)	1.40 (1.16-1.71)	1.73 (1.39-2.19)	1.99 (1.56-2.58)	2.26 (1.72-3.00)	2.54 (1.88-3.47)	2.92 (2.07-4.17)	3.22 (2.20-4.77)
6-hr	0.936 (0.785-1.13)	1.23 (1.03-1.48)	1.61 (1.35-1.95)	1.93 (1.60-2.36)	2.37 (1.89-2.99)	2.70 (2.11-3.49)	3.05 (2.32-4.04)	3.41 (2.52-4.65)	3.89 (2.76-5.56)	4.28 (2.92-6.33)
12-hr	1.23 (1.03-1.48)	1.62 (1.36-1.96)	2.14 (1.79-2.59)	2.57 (2.12-3.13)	3.15 (2.52-3.98)	3.60 (2.81-4.66)	4.06 (3.09-5.39)	4.54 (3.35-6.20)	5.19 (3.67-7.40)	5.69 (3.88-8.43)
24-hr	1.59 (1.41-1.84)	2.14 (1.89-2.48)	2.88 (2.53-3.33)	3.48 (3.04-4.06)	4.31 (3.64-5.19)	4.95 (4.10-6.09)	5.61 (4.54-7.06)	6.29 (4.96-8.14)	7.23 (5.48-9.73)	7.97 (5.84-11.1)
2-day	1.89 (1.67-2.18)	2.60 (2.30-3.01)	3.56 (3.13-4.12)	4.35 (3.80-5.08)	5.44 (4.61-6.56)	6.30 (5.23-7.75)	7.19 (5.83-9.06)	8.13 (6.41-10.5)	9.42 (7.14-12.7)	10.5 (7.66-14.6)
3-day	2.01 (1.78-2.32)	2.81 (2.48-3.25)	3.89 (3.42-4.50)	4.79 (4.18-5.59)	6.05 (5.12-7.29)	7.04 (5.84-8.66)	8.08 (6.55-10.2)	9.18 (7.24-11.9)	10.7 (8.12-14.4)	12.0 (8.76-16.6)
4-day	2.16 (1.91-2.50)	3.05 (2.69-3.53)	4.26 (3.75-4.93)	5.27 (4.60-6.15)	6.69 (5.66-8.07)	7.83 (6.49-9.63)	9.01 (7.30-11.4)	10.3 (8.11-13.3)	12.1 (9.14-16.2)	13.5 (9.89-18.8)
7-day	2.44 (2.16-2.82)	3.50 (3.09-4.04)	4.95 (4.36-5.73)	6.18 (5.40-7.22)	7.93 (6.71-9.56)	9.34 (7.74-11.5)	10.8 (8.77-13.6)	12.4 (9.80-16.1)	14.7 (11.1-19.8)	16.5 (12.1-23.0)
10-day	2.59 (2.29-2.98)	3.73 (3.30-4.32)	5.32 (4.69-6.17)	6.68 (5.84-7.80)	8.63 (7.30-10.4)	10.2 (8.47-12.6)	11.9 (9.63-15.0)	13.7 (10.8-17.7)	16.3 (12.3-21.9)	18.4 (13.5-25.6)
20-day	3.05 (2.70-3.53)	4.47 (3.95-5.16)	6.46 (5.69-7.48)	8.18 (7.15-9.55)	10.7 (9.05-12.9)	12.8 (10.6-15.7)	15.0 (12.2-18.9)	17.4 (13.8-22.6)	21.0 (15.9-28.3)	24.0 (17.6-33.3)
30-day	3.63 (3.21-4.18)	5.29 (4.68-6.12)	7.67 (6.75-8.88)	9.75 (8.52-11.4)	12.8 (10.8-15.4)	15.4 (12.7-18.9)	18.1 (14.7-22.8)	21.2 (16.7-27.4)	25.7 (19.5-34.6)	29.5 (21.6-41.0)
45-day	4.25 (3.76-4.91)	6.14 (5.42-7.09)	8.85 (7.79-10.3)	11.3 (9.83-13.1)	14.8 (12.6-17.9)	17.9 (14.8-22.0)	21.2 (17.2-26.7)	24.9 (19.6-32.2)	30.3 (23.0-40.9)	35.0 (25.6-48.7)
60-day	4.95 (4.38-5.71)	7.03 (6.21-8.13)	10.1 (8.86-11.6)	12.8 (11.1-14.9)	16.8 (14.2-20.3)	20.3 (16.8-24.9)	24.1 (19.5-30.3)	28.4 (22.4-36.7)	34.8 (26.3-46.8)	40.3 (29.5-56.1)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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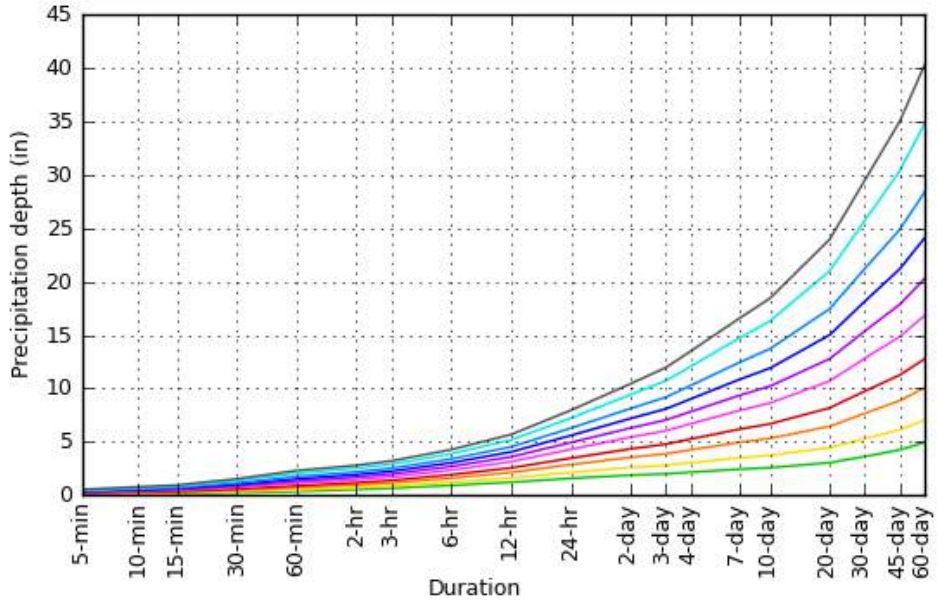
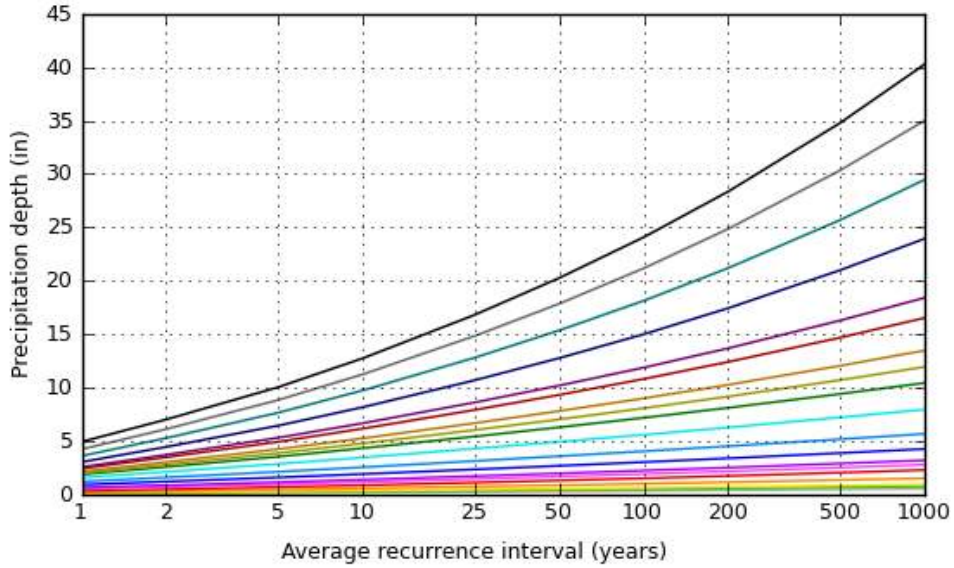
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 33.6584°, Longitude: -117.1848°





NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Mon Nov 28 23:40:03 2022

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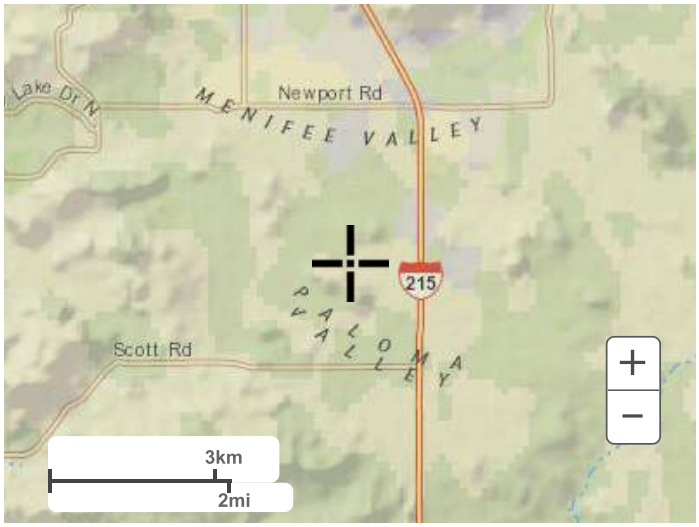
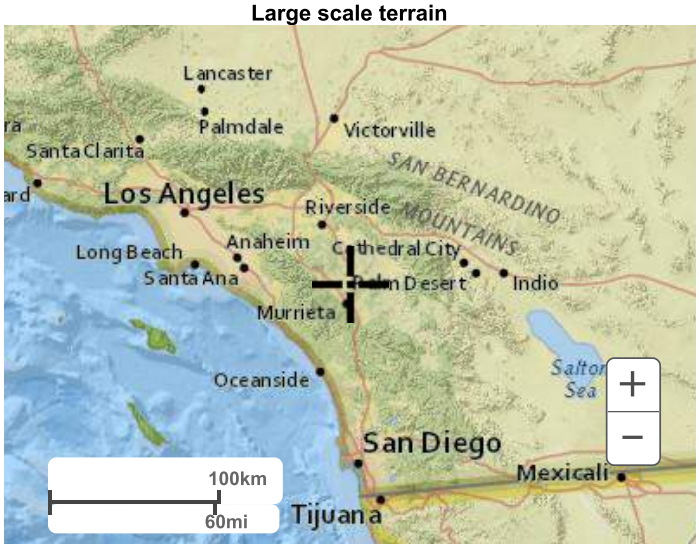
Maps & aerials

Small scale terrain



Large scale terrain



Large scale map

Large scale aerial

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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Map Scale: 1:2,100 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 15, Sep 6, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 14, 2022—Mar 17, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
LaD2	Las Posas loam, 8 to 15 percent slopes, eroded	D	1.2	12.4%
LkF3	Las Posas rocky loam, 15 to 50 percent slopes, severely eroded	D	1.0	11.1%
WxD2	Wyman fine sandy loam, 8 to 15 percent slopes, eroded	C	2.4	25.5%
YbC	Yokohl loam, 2 to 8 percent slopes	D	4.8	50.9%
Totals for Area of Interest			**9.4**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

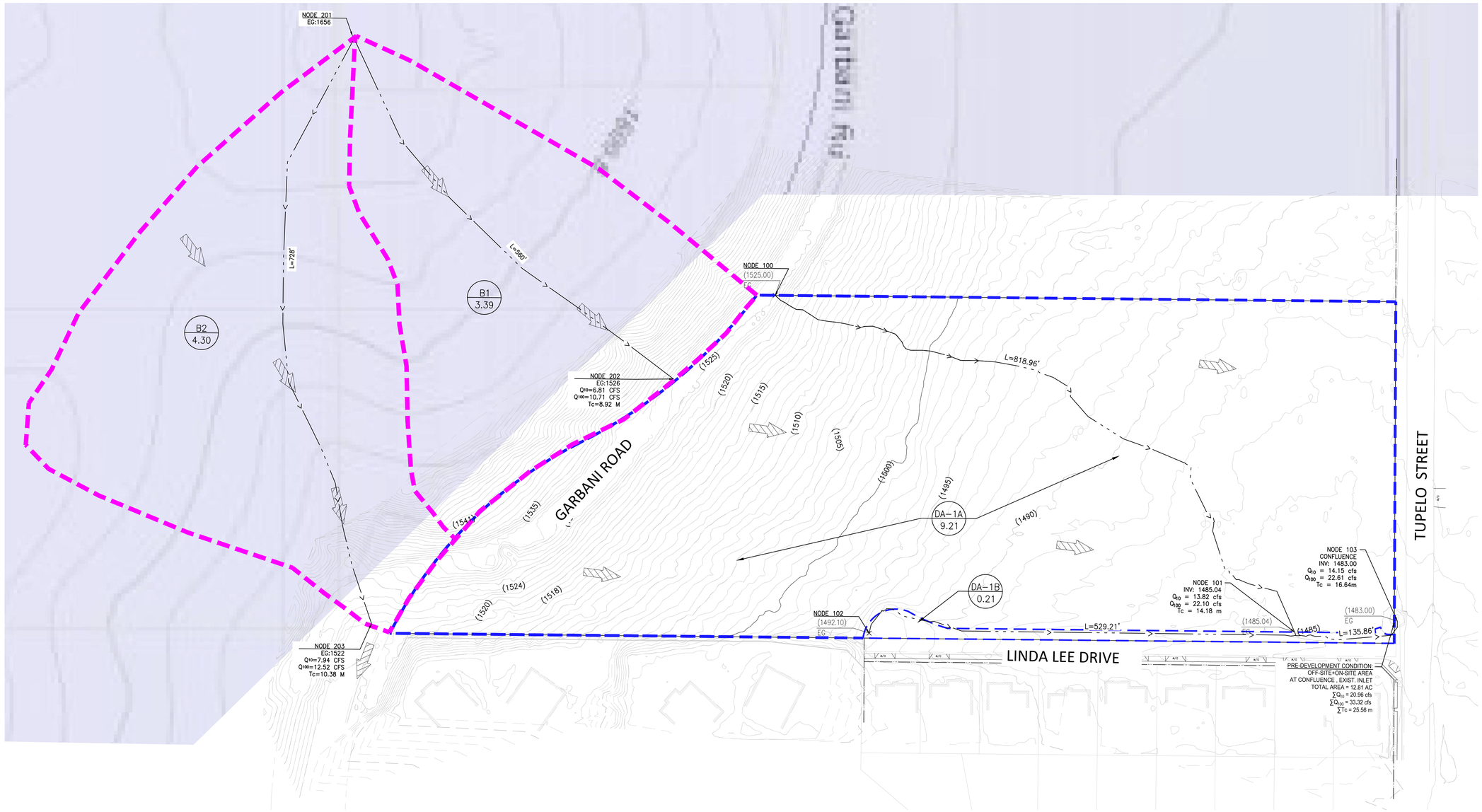
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Appendix

C

PRE-DEVELOPMENT CONDITION HYDROLOGY KEY MAP



LEGEND

- X / x.xx — DRAINAGE AREA DESIGNATION / AREA IN ACRES
- ON-SITE WATERSHED BOUNDARY
- OFF-SITE WATERSHED BOUNDARY
- FLOW LINE
- RIGHT-OF-WAY
- CENTER LINE
- DRAINAGE ARROW

SCALE
60 0 30 60 120
(FEET)
1 INCH = 60 FT.

DESIGNED BY: BY
DRAWN BY: VL
CHECKED BY: AC

SEAL-DESIGN ENGINEER
REGISTERED PROFESSIONAL ENGINEER — ANGEL CESAR — No. 87222 — CIVIL — STATE OF CALIFORNIA

BLUE ENGINEERING & CONSULTING, INC
FOREVER BLUE N.G.
9320 BASELINE RD., STE. D
RANCHO CUCAMONGA, CA 91701
909-248-6557
INFO@BLUECIVILENG.COM – WWW.BLUECIVILENG.COM

PLANS PREPARED UNDER THE SUPERVISION OF:
ANGEL CESAR, P.E. 87222 EXP. 9/30/23 — DATE

REV.	REVISION DESCRIPTION	BY	DATE

CITY OF MENIFEE
McCALL BLVD, MENIFEE, CA 92585

REVIEWED BY:
DANIEL PADILLA
P.E. NO. C-67008
EXP. DATE 09-30-2024 — DATE

PRE-DEVELOPMENT HYDROLOGY KEY MAP

TENTATIVE TRACT MAP No. 38683
RESIDENTIAL DEVELOPMENT

CUP:
LDP:
DATE: October 23, 2023
SHEET 6 OF 8 SHEETS
PROJECT NUMBER: 2022199

Plans Prepared On: 10/23/2023

Z:\Shared\Blue\2022199 - Carbonl_Plan Set_Entitlement Package\2022199 - PRE OFF-SITE.dwg - LAST PLOTTED ON Mon 10/23/23 - 12:15PM BY SilviaAlmaraz

Appendix

D

PRE-DEVELOPMENT CONDITION RATIONAL METHOD

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 06/21/23 File:199EONSITE.out

GARBANI ROAD RESIDENTIAL DEVELOPMENT
PRE-DEVELOPMENT HYDROLOGY STUDY
RATIONAL METHOD
10-YR, 1-HR

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6481

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Sun City] area used.
10 year storm 10 minute intensity = 2.250(In/Hr)
10 year storm 60 minute intensity = 0.870(In/Hr)
100 year storm 10 minute intensity = 3.360(In/Hr)
100 year storm 60 minute intensity = 1.300(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.870(In/Hr)
Slope of intensity duration curve = 0.5300

++

Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 818.960(Ft.)
Top (of initial area) elevation = 1525.000(Ft.)
Bottom (of initial area) elevation = 1485.000(Ft.)
Difference in elevation = 40.000(Ft.)
Slope = 0.04884 s(percent)= 4.88
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 14.185 min.
Rainfall intensity = 1.868(In/Hr) for a 10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.822
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.245
Decimal fraction soil group D = 0.755
RI index for soil(AMC 2) = 88.27
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 14.145(CFS)
Total initial stream area = 9.210(Ac.)
Pervious area fraction = 1.000

++

Process from Point/Station 102.000 to Point/Station 101.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****

Top of street segment elevation = 1492.100(Ft.)

```
End of street segment elevation =  1485.000(Ft.)
Length of street segment  =   529.210(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =  16.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     14.307(CFS)
Depth of flow =   0.416(Ft.), Average velocity =   3.225(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  14.462(Ft.)
Flow velocity =   3.22(Ft/s)
Travel time =    2.73 min.     TC =   16.92  min.
 Adding area flow to street
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.821
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  89.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.702(In/Hr) for a    10.0 year storm
Subarea runoff =      0.293(CFS) for      0.210(Ac.)
Total runoff =     14.438(CFS)  Total area =       9.420(Ac.)
Street flow at end of street =     14.438(CFS)
Half street flow at end of street =      7.219(CFS)
Depth of flow =   0.417(Ft.), Average velocity =   3.232(Ft/s)
Flow width (from curb towards crown)=  14.515(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      103.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      9.420(Ac.)
Runoff from this stream =     14.438(CFS)
Time of concentration =   16.92 min.
Rainfall intensity =     1.702(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       14.438     16.92                 1.702
Largest stream flow has longer time of concentration
Qp =     14.438 + sum of
Qp =     14.438

Total of 1 main streams to confluence:
Flow rates before confluence point:
      14.438
Area of streams before confluence:
        9.420


Results of confluence:
Total flow rate =     14.438(CFS)
Time of concentration =    16.920 min.
Effective stream area after confluence  =      9.420(Ac.)
End of computations, total study area =           9.42 (Ac.)
The following figures may
```

be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number = 88.3

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 06/21/23 File:199EONSITE.out

GARBANI ROAD RESIDENTIAL DEVELOPMENT
PRE-DEVELOPMENT HYDROLOGY STUDY
RATIONAL METHOD
100-YR, 1-HR

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6481

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [Sun City] area used.
10 year storm 10 minute intensity = 2.250(In/Hr)
10 year storm 60 minute intensity = 0.870(In/Hr)
100 year storm 10 minute intensity = 3.360(In/Hr)
100 year storm 60 minute intensity = 1.300(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.300(In/Hr)
Slope of intensity duration curve = 0.5300

++

Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 818.960(Ft.)
Top (of initial area) elevation = 1525.000(Ft.)
Bottom (of initial area) elevation = 1485.000(Ft.)
Difference in elevation = 40.000(Ft.)
Slope = 0.04884 s(percent)= 4.88
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 14.185 min.
Rainfall intensity = 2.792(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.245
Decimal fraction soil group D = 0.755
RI index for soil(AMC 3) = 95.31
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 22.610(CFS)
Total initial stream area = 9.210(Ac.)
Pervious area fraction = 1.000

++

Process from Point/Station 102.000 to Point/Station 101.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****

Top of street segment elevation = 1492.100(Ft.)

```
End of street segment elevation =  1485.000(Ft.)
Length of street segment  =   529.210(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =  16.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     22.868(CFS)
Depth of flow =   0.475(Ft.), Average velocity =   3.613(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  17.431(Ft.)
Flow velocity =   3.61(Ft/s)
Travel time =    2.44 min.     TC =   16.63  min.
 Adding area flow to street
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3)  =  95.60
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.567(In/Hr) for a   100.0 year storm
Subarea runoff =      0.474(CFS) for      0.210(Ac.)
Total runoff =     23.084(CFS)  Total area =       9.420(Ac.)
Street flow at end of street =     23.084(CFS)
Half street flow at end of street =     11.542(CFS)
Depth of flow =   0.477(Ft.), Average velocity =   3.621(Ft/s)
Flow width (from curb towards crown)=  17.495(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      103.000
**** CONFLUENCE OF MAIN STREAMS ****
_____________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      9.420(Ac.)
Runoff from this stream =     23.084(CFS)
Time of concentration =   16.63 min.
Rainfall intensity =     2.567(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       23.084     16.63                 2.567
Largest stream flow has longer time of concentration
Qp =     23.084 + sum of
Qp =     23.084

Total of 1 main streams to confluence:
Flow rates before confluence point:
      23.084
Area of streams before confluence:
        9.420


Results of confluence:
Total flow rate =     23.084(CFS)
Time of concentration =    16.626 min.
Effective stream area after confluence  =      9.420(Ac.)
End of computations, total study area =           9.42 (Ac.)
The following figures may
```

be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number = 88.3

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 06/14/23 File:199offsite.out

GARBANI ROAD RESIDENTIAL DEVELOPMENT
OFF-SITE AREA HYDROLOGY STUDY
RATIONAL METHOD
10-YEAR STORM

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6481

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Sun City] area used.
10 year storm 10 minute intensity = 2.250(In/Hr)
10 year storm 60 minute intensity = 0.870(In/Hr)
100 year storm 10 minute intensity = 3.360(In/Hr)
100 year storm 60 minute intensity = 1.300(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.870(In/Hr)
Slope of intensity duration curve = 0.5300

++

Process from Point/Station 201.000 to Point/Station 202.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 560.000(Ft.)
Top (of initial area) elevation = 1656.000(Ft.)
Bottom (of initial area) elevation = 1526.000(Ft.)
Difference in elevation = 130.000(Ft.)
Slope = 0.23214 s(percent)= 23.21
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.921 min.
Rainfall intensity = 2.389(In/Hr) for a 10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.842
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2) = 89.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 6.819(CFS)
Total initial stream area = 3.390(Ac.)
Pervious area fraction = 1.000

++

Process from Point/Station 201.000 to Point/Station 203.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 728.000(Ft.)

```
Top (of initial area) elevation =  1656.000(Ft.)
Bottom (of initial area) elevation =  1522.000(Ft.)
Difference in elevation =   134.000(Ft.)
Slope =    0.18407  s(percent)=      18.41
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.378 min.
Rainfall intensity =      2.205(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.837
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  89.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      7.940(CFS)
Total initial stream area =        4.300(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            7.69 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  89.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 06/14/23 File:199offsite.out

GARBANI ROAD RESIDENTIAL DEVELOPMENT
OFF-SITE AREA HYDROLOGY STUDY
RATIONAL METHOD
100-YEAR STORM

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6481

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [Sun City] area used.
10 year storm 10 minute intensity = 2.250(In/Hr)
10 year storm 60 minute intensity = 0.870(In/Hr)
100 year storm 10 minute intensity = 3.360(In/Hr)
100 year storm 60 minute intensity = 1.300(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.300(In/Hr)
Slope of intensity duration curve = 0.5300

++

Process from Point/Station 201.000 to Point/Station 202.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 560.000(Ft.)
Top (of initial area) elevation = 1656.000(Ft.)
Bottom (of initial area) elevation = 1526.000(Ft.)
Difference in elevation = 130.000(Ft.)
Slope = 0.23214 s(percent)= 23.21
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.921 min.
Rainfall intensity = 3.570(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.885
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3) = 95.60
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 10.708(CFS)
Total initial stream area = 3.390(Ac.)
Pervious area fraction = 1.000

++

Process from Point/Station 201.000 to Point/Station 203.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 728.000(Ft.)

```
Top (of initial area) elevation =  1656.000(Ft.)
Bottom (of initial area) elevation =  1522.000(Ft.)
Difference in elevation =   134.000(Ft.)
Slope =    0.18407  s(percent)=      18.41
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.378 min.
Rainfall intensity =      3.295(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3)  =  95.60
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =     12.517(CFS)
Total initial stream area =        4.300(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            7.69 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  89.0
```

Appendix

E

POST-DEVELOPMENT CONDITION HYDROLOGY KEY MAP

B1
3.39

NODE 202
EG:1526
Q_{10}=6.81 CFS
Q_{100}=10.71 CFS
Tc=8.92 M

B2
4.30

Q_{10}=7.94 CFS
Q_{100}=12.81 CFS
Tc=10.38 M

GARBANI ROAD

DA-1
1.00

DA-2
3.04

DA-3
1.30

DA-4
1.13

DA-5
2.74

DA-6
0.21

NODE 201
FG: 1521.69

NODE 202
FG: 1510.75

NODE 301
FG: 1514.72

NODE 302
FG: 1496.94

NODE 303
FG: 1494.52

NODE 304
FG: 1488.20
Q_{10} = 4.49 CFS
Q_{100} = 7.17 CFS
Tc = 10.54 MIN

NODE 203
FG: 1488.10
Q_{10} = 6.88 CFS
Q_{100} = 11.16 CFS
Tc = 12.21 MIN

NODE 305
INV: 1479.00
$\sum Q_{10}$ = 11.37 CFS
$\sum Q_{100}$ = 18.33 CFS
Tc = 12.22 MIN

NOTE 403
BASIN OUTLET FLOW
Q_{10} = 12.45 CFS
Q_{100} =21.91 CFS

NODE 401
FG: 1514.72

NODE 402
INV: 1479.00
Q_{10} = 4.91 CFS
Q_{100} = 7.83 CFS
Tc = 10.54 MIN

OFF-SITE SD
24" RCP
Q10=14.75 CFS
Q100=23.23 CFS

LINDA LEE DRIVE

TUPELO STREET

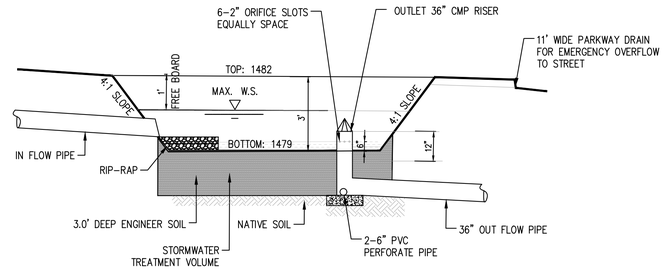
BIO-RETENTION/ DETENTION BASIN

POST-DEVELOPMENT CONDITION:
OFF-SITE AREA
AT CATCH BASIN
TOTAL AREA = 7.69 AC
$\sum Q_{10}$ = 14.75 cfs
$\sum Q_{100}$ = 23.23 cfs

POST-DEVELOPMENT CONDITION:
OFF-SITE+ON-SITE AREA
AT CONFLUENCE , JOIN EXISTING SD LOCATION
TOTAL AREA = 17.11 AC
$\sum Q_{10}$ = 27.20 cfs
$\sum Q_{100}$ = 45.16 cfs
(EX. Q100=46.8 CFS PER AS-BUILT SD PLAN PER TR. 31831)

LEGEND

- X / X.XX — DRAINAGE AREA DESIGNATION / AREA IN ACRES
- ON-SITE WATERSHED BOUNDARY
- OFF-SITE WATERSHED BOUNDARY
- FLOW LINE
- RIGHT-OF-WAY
- CENTER LINE
- DRAINAGE ARROW



A-A
BIO-RETETION/DETENTION BASIN DETAIL
N.T.S

SCALE
50 0 25 50 100
(FEET)
1 INCH = 50 FT.

DESIGNED BY:
DRAWN BY:
CHECKED BY:

SEAL-DESIGN ENGINEER
REGISTERED PROFESSIONAL ENGINEER ANGEL CESAR No. 87222 CIVIL STATE OF CALIFORNIA

BLUE ENGINEERING & CONSULTING, INC
FOREVER BLUE N.G.
9320 BASELINE RD., STE. D
RANCHO CUCAMONGA, CA 91701
909-248-6557
INFO@BLUECIVILENG.COM – WWW.BLUECIVILENG.COM

PLANS PREPARED UNDER THE SUPERVISION OF:
ANGEL CESAR, P.E. 87222 EXP. 9/30/23 DATE

REV.	REVISION DESCRIPTION	BY	DATE

CITY OF MENIFEE
McCALL BLVD, MENIFEE, CA 92585

REVIEWED BY:

DANIEL PADILLA
P.E. NO. C-67008
EXP. DATE 09-30-2024
DATE

POST-DEVELOPMENT HYDROLOGY KEY MAP

TENTATIVE TRACT MAP No. 38683
RESIDENTIAL DEVELOPMENT

CUP:	
LDP:	
DATE:	October 23, 2023
SHEET	7
OF	8 SHEETS
PROJECT NUMBER:	2022199

Plans Prepared On: 10/23/2023

Z:\Shared\Blue\2022199 - Garbani_Plan Set_Entitlement Package\2022199 - POST.dwg - LAST PLOTTED ON Mon 10/23/23 - 12:15PM BY SilviaAmaroz

Appendix

F

POST-DEVELOPMENT CONDITION RATIONAL METHOD

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 06/19/23 File:199post.out

GARBANI ROAD RESIDENTIAL DEVELOPMENT
POST-DEVELOPMENT CONDITION HYDROLOGY STUDY
RATIONAL METHOD
10-YEAR STORM

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6481

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Sun City] area used.
10 year storm 10 minute intensity = 2.250(In/Hr)
10 year storm 60 minute intensity = 0.870(In/Hr)
100 year storm 10 minute intensity = 3.360(In/Hr)
100 year storm 60 minute intensity = 1.300(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.870(In/Hr)
Slope of intensity duration curve = 0.5300

++

Process from Point/Station 201.000 to Point/Station 202.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 401.960(Ft.)
Top (of initial area) elevation = 1521.690(Ft.)
Bottom (of initial area) elevation = 1510.750(Ft.)
Difference in elevation = 10.940(Ft.)
Slope = 0.02722 s(percent)= 2.72
TC = k(0.390)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.826 min.
Rainfall intensity = 2.403(In/Hr) for a 10.0 year storm
SINGLE FAMILY (1/4 Acre Lot)
Runoff Coefficient = 0.830
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2) = 75.00
Pervious area fraction = 0.500; Impervious fraction = 0.500
Initial subarea runoff = 1.994(CFS)
Total initial stream area = 1.000(Ac.)
Pervious area fraction = 0.500

++

Process from Point/Station 202.000 to Point/Station 203.000
**** STREET INLET + AREA + PIPE TRAVEL TIME ****

Top of street segment elevation = 1510.750(Ft.)

```
End of street segment elevation =  1488.100(Ft.)
Length of street segment  =   877.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  13.000(Ft.)
Distance from crown to crossfall grade break  =  10.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =   0.000(Ft.)
Slope from curb to property line (v/hz) =   0.000
Gutter width =   1.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0140
 Manning's N from gutter to grade break =  0.0140
 Manning's N from grade break to crown =  0.0140
No street inlet installed at this point
Estimated mean flow rate at midpoint of street =      4.478(CFS)
Depth of flow =   0.355(Ft.), Average velocity =   3.857(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  10.429(Ft.)
Flow velocity =   3.86(Ft/s)
Travel time =    3.79 min.     TC =   12.62  min.
 Adding area flow to street
SINGLE FAMILY (1/4 Acre Lot)
Runoff Coefficient = 0.809
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.400
Decimal fraction soil group D = 0.600
RI index for soil(AMC 2)  =  72.60
Pervious area fraction =  0.500; Impervious fraction =  0.500
Rainfall intensity =      1.988(In/Hr) for a    10.0 year storm
Subarea runoff =      4.890(CFS) for      3.040(Ac.)
Total runoff =      6.884(CFS)  Total area =       4.040(Ac.)
Street flow at end of street =      6.884(CFS)
Half street flow at end of street =      6.884(CFS)
Depth of flow =   0.394(Ft.), Average velocity =   4.279(Ft/s)
Flow width (from curb towards crown)=  12.390(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      301.000 to Point/Station      302.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
Initial area flow distance =   532.000(Ft.)
Top (of initial area) elevation =  1514.720(Ft.)
Bottom (of initial area) elevation =  1496.940(Ft.)
Difference in elevation =    17.780(Ft.)
Slope =    0.03342  s(percent)=       3.34
TC = k(0.390)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.476 min.
Rainfall intensity =      2.314(In/Hr) for a    10.0 year storm
SINGLE FAMILY (1/4 Acre Lot)
Runoff Coefficient = 0.824
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.200
Decimal fraction soil group D = 0.800
RI index for soil(AMC 2)  =  73.80
Pervious area fraction =  0.500; Impervious fraction =  0.500
Initial subarea runoff =      2.477(CFS)
Total initial stream area =        1.300(Ac.)
Pervious area fraction = 0.500


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      302.000 to Point/Station      303.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  1496.940(Ft.)
Downstream point elevation =  1494.520(Ft.)
Channel length thru subarea  =    96.000(Ft.)
Channel base width      =    3.000(Ft.)
```

```
Slope or 'Z' of left channel bank =   0.166
Slope or 'Z' of right channel bank =   0.166
Manning's 'N'    = 0.014
Maximum depth of channel  =    0.500(Ft.)
Flow(q) thru subarea =      2.477(CFS)
Depth of flow =   0.169(Ft.), Average velocity =   4.830(Ft/s)
Channel flow top width =    3.056(Ft.)
Flow Velocity =    4.83(Ft/s)
Travel time  =    0.33 min.
Time of concentration =    9.81 min.

Sub-Channel No. 1 Critical depth =      0.275(Ft.)
  '     '       '     Critical flow top width =      3.091(Ft.)
  '     '       '     Critical flow velocity=    2.954(Ft/s)
  '     '       '     Critical flow area =      0.839(Sq.Ft)



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =  1494.520(Ft.)
End of street segment elevation =  1488.200(Ft.)
Length of street segment  =   370.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =  10.000(Ft.)
Slope from gutter to grade break (v/hz) =   1.000
Slope from grade break to crown (v/hz)  =  -1.000
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   2.000
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0140
 Manning's N from gutter to grade break =  0.0140
 Manning's N from grade break to crown =  0.0140
Estimated mean flow rate at midpoint of street =      3.518(CFS)
Depth of flow =   1.005(Ft.), Average velocity =   6.961(Ft/s)
Note:  depth of flow exceeds top of street crown.
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  18.000(Ft.)
Flow velocity =   6.96(Ft/s)
Travel time =    0.89 min.     TC =   10.69  min.
 Adding area flow to street
SINGLE FAMILY (1/4 Acre Lot)
Runoff Coefficient = 0.819
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.200
Decimal fraction soil group D = 0.800
RI index for soil(AMC 2)  =  73.80
Pervious area fraction =  0.500; Impervious fraction =  0.500
Rainfall intensity =      2.170(In/Hr) for a    10.0 year storm
Subarea runoff =      2.010(CFS) for      1.130(Ac.)
Total runoff =      4.487(CFS)  Total area =       2.430(Ac.)
Street flow at end of street =      4.487(CFS)
Half street flow at end of street =      4.487(CFS)
Depth of flow =   1.101(Ft.), Average velocity =   7.397(Ft/s)
Note:  depth of flow exceeds top of street crown.
Flow width (from curb towards crown)=  18.000(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.000 to Point/Station      402.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
Initial area flow distance =   801.140(Ft.)
Top (of initial area) elevation =  1514.720(Ft.)
Bottom (of initial area) elevation =  1479.000(Ft.)
Difference in elevation =    35.720(Ft.)
Slope =    0.04459  s(percent)=       4.46
```

```
TC = k(0.390)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.537 min.
Rainfall intensity =      2.187(In/Hr) for a    10.0 year storm
SINGLE FAMILY (1/4 Acre Lot)
Runoff Coefficient = 0.820
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.200
Decimal fraction soil group D = 0.800
RI index for soil(AMC 2)  =  73.80
Pervious area fraction =  0.500; Impervious fraction =  0.500
Initial subarea runoff =      4.914(CFS)
Total initial stream area =        2.740(Ac.)
Pervious area fraction = 0.500


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      402.000 to Point/Station      403.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =    65.000(Ft.)
Top (of initial area) elevation =  1479.000(Ft.)
Bottom (of initial area) elevation =  1474.000(Ft.)
Difference in elevation =     5.000(Ft.)
Slope =    0.07692  s(percent)=       7.69
TC = k(0.940)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.338 min.
Rainfall intensity =      2.476(In/Hr) for a    10.0 year storm
UNDEVELOPED (good cover) subarea
Runoff Coefficient = 0.793
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  80.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      0.412(CFS)
Total initial stream area =        0.210(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            9.42 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.511
Area averaged RI index number =  73.7
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 06/19/23 File:199post.out

GARBANI ROAD RESIDENTIAL DEVELOPMENT
POST-DEVELOPMENT CONDITION HYDROLOGY STUDY
RATIONAL METHOD
100-YEAR STORM

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6481

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [Sun City] area used.
10 year storm 10 minute intensity = 2.250(In/Hr)
10 year storm 60 minute intensity = 0.870(In/Hr)
100 year storm 10 minute intensity = 3.360(In/Hr)
100 year storm 60 minute intensity = 1.300(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.300(In/Hr)
Slope of intensity duration curve = 0.5300

++

Process from Point/Station 201.000 to Point/Station 202.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 401.960(Ft.)
Top (of initial area) elevation = 1521.690(Ft.)
Bottom (of initial area) elevation = 1510.750(Ft.)
Difference in elevation = 10.940(Ft.)
Slope = 0.02722 s(percent)= 2.72
TC = k(0.390)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.826 min.
Rainfall intensity = 3.590(In/Hr) for a 100.0 year storm
SINGLE FAMILY (1/4 Acre Lot)
Runoff Coefficient = 0.878
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3) = 88.00
Pervious area fraction = 0.500; Impervious fraction = 0.500
Initial subarea runoff = 3.153(CFS)
Total initial stream area = 1.000(Ac.)
Pervious area fraction = 0.500

++

Process from Point/Station 202.000 to Point/Station 203.000
**** STREET INLET + AREA + PIPE TRAVEL TIME ****

Top of street segment elevation = 1510.750(Ft.)

```
End of street segment elevation =  1488.100(Ft.)
Length of street segment  =   877.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  13.000(Ft.)
Distance from crown to crossfall grade break  =  10.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =   0.000(Ft.)
Slope from curb to property line (v/hz) =   0.000
Gutter width =   1.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0140
 Manning's N from gutter to grade break =  0.0140
 Manning's N from grade break to crown =  0.0140
No street inlet installed at this point
Estimated mean flow rate at midpoint of street =      7.183(CFS)
Depth of flow =   0.399(Ft.), Average velocity =   4.324(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  12.601(Ft.)
Flow velocity =   4.32(Ft/s)
Travel time =    3.38 min.     TC =   12.21  min.
 Adding area flow to street
SINGLE FAMILY (1/4 Acre Lot)
Runoff Coefficient = 0.871
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.400
Decimal fraction soil group D = 0.600
RI index for soil(AMC 3)  =  86.56
Pervious area fraction =  0.500; Impervious fraction =  0.500
Rainfall intensity =      3.023(In/Hr) for a   100.0 year storm
Subarea runoff =      8.006(CFS) for      3.040(Ac.)
Total runoff =     11.160(CFS)  Total area =       4.040(Ac.)
Street flow at end of street =     11.160(CFS)
Half street flow at end of street =     11.160(CFS)
Depth of flow =   0.440(Ft.), Average velocity =   5.089(Ft/s)
Note:  depth of flow exceeds top of street crown.
Flow width (from curb towards crown)=  13.000(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      301.000 to Point/Station      302.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
Initial area flow distance =   532.000(Ft.)
Top (of initial area) elevation =  1514.720(Ft.)
Bottom (of initial area) elevation =  1496.940(Ft.)
Difference in elevation =    17.780(Ft.)
Slope =    0.03342  s(percent)=       3.34
TC = k(0.390)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.476 min.
Rainfall intensity =      3.457(In/Hr) for a   100.0 year storm
SINGLE FAMILY (1/4 Acre Lot)
Runoff Coefficient = 0.876
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.200
Decimal fraction soil group D = 0.800
RI index for soil(AMC 3)  =  87.28
Pervious area fraction =  0.500; Impervious fraction =  0.500
Initial subarea runoff =      3.938(CFS)
Total initial stream area =        1.300(Ac.)
Pervious area fraction = 0.500


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      302.000 to Point/Station      303.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  1496.940(Ft.)
Downstream point elevation =  1494.520(Ft.)
Channel length thru subarea  =    96.000(Ft.)
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```
Channel base width      =    3.000(Ft.)
Slope or 'Z' of left channel bank =   0.166
Slope or 'Z' of right channel bank =   0.166
Manning's 'N'    = 0.014
Maximum depth of channel  =    0.500(Ft.)
Flow(q) thru subarea =      3.938(CFS)
Depth of flow =   0.226(Ft.), Average velocity =   5.735(Ft/s)
Channel flow top width =    3.075(Ft.)
Flow Velocity =    5.74(Ft/s)
Travel time  =    0.28 min.
Time of concentration =    9.75 min.

Sub-Channel No. 1 Critical depth =      0.375(Ft.)
  '     '       '     Critical flow top width =      3.125(Ft.)
  '     '       '     Critical flow velocity=    3.429(Ft/s)
  '     '       '     Critical flow area =      1.148(Sq.Ft)



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =  1494.520(Ft.)
End of street segment elevation =  1488.200(Ft.)
Length of street segment  =   370.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  18.000(Ft.)
Distance from crown to crossfall grade break  =  10.000(Ft.)
Slope from gutter to grade break (v/hz) =   1.000
Slope from grade break to crown (v/hz)  =  -1.000
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   2.000
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0140
 Manning's N from gutter to grade break =  0.0140
 Manning's N from grade break to crown =  0.0140
Estimated mean flow rate at midpoint of street =      5.601(CFS)
Depth of flow =   1.197(Ft.), Average velocity =   7.819(Ft/s)
Note:  depth of flow exceeds top of street crown.
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  18.000(Ft.)
Flow velocity =   7.82(Ft/s)
Travel time =    0.79 min.     TC =   10.54  min.
 Adding area flow to street
SINGLE FAMILY (1/4 Acre Lot)
Runoff Coefficient = 0.875
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.200
Decimal fraction soil group D = 0.800
RI index for soil(AMC 3)  =  87.28
Pervious area fraction =  0.500; Impervious fraction =  0.500
Rainfall intensity =      3.267(In/Hr) for a   100.0 year storm
Subarea runoff =      3.229(CFS) for      1.130(Ac.)
Total runoff =      7.167(CFS)  Total area =       2.430(Ac.)
Street flow at end of street =      7.167(CFS)
Half street flow at end of street =      7.167(CFS)
Depth of flow =   1.313(Ft.), Average velocity =   8.316(Ft/s)
Note:  depth of flow exceeds top of street crown.
Flow width (from curb towards crown)=  18.000(Ft.)



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.000 to Point/Station      402.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
Initial area flow distance =   801.140(Ft.)
Top (of initial area) elevation =  1514.720(Ft.)
Bottom (of initial area) elevation =  1479.000(Ft.)
Difference in elevation =    35.720(Ft.)
```

```
Slope =    0.04459  s(percent)=       4.46
TC = k(0.390)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.537 min.
Rainfall intensity =      3.268(In/Hr) for a   100.0 year storm
SINGLE FAMILY (1/4 Acre Lot)
Runoff Coefficient = 0.875
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.200
Decimal fraction soil group D = 0.800
RI index for soil(AMC 3)  =  87.28
Pervious area fraction =  0.500; Impervious fraction =  0.500
Initial subarea runoff =      7.834(CFS)
Total initial stream area =        2.740(Ac.)
Pervious area fraction = 0.500


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      402.000 to Point/Station      403.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
Initial area flow distance =    65.000(Ft.)
Top (of initial area) elevation =  1479.000(Ft.)
Bottom (of initial area) elevation =  1474.000(Ft.)
Difference in elevation =     5.000(Ft.)
Slope =    0.07692  s(percent)=       7.69
TC = k(0.940)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.338 min.
Rainfall intensity =      3.700(In/Hr) for a   100.0 year storm
UNDEVELOPED (good cover) subarea
Runoff Coefficient = 0.869
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3)  =  91.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      0.675(CFS)
Total initial stream area =        0.210(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            9.42 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.511
Area averaged RI index number =  73.7
```

Appendix

G

UNIT HYDROGRAPH ANALYSIS

UH Pre-Development Hydrograghs

U n i t H y d r o g r a p h A n a l y s i s

Study date 06/19/23 File: UH199E10110.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6481

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

GARBANT ROAD RESIDENTIAL DEVELOPMENT
PRE-DEVELOPMENT CONDITION
UNIT HYDROGRAGH METHOD
10-YEAR STORM, 1-HR

Drainage Area = 9.42(Ac.) = 0.015 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 9.42(Ac.) = 0.015 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.200 Hr.
Lag time = 12.00 Min.
25% of lag time = 3.00 Min.
40% of lag time = 4.80 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.42	0.51	4.84

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.42	1.53	14.41

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.514(In)
Area Averaged 100-Year Rainfall = 1.530(In)

Point rain (area averaged) = 0.932(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 0.932(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
9.420	88.20	0.220

Total Area Entered = 9.42(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
88.2	88.2	0.151	0.220	0.121	1.000	0.121
					Sum (F) =	0.121

Area averaged mean soil loss (F) (In/Hr) = 0.121
Minimum soil loss rate ((In/Hr)) = 0.060

(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.880

Slope of intensity-duration curve for a 1 hour storm =0.5300

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	41.667	3.315	0.315
2	0.167	83.333	12.797	1.215
3	0.250	125.000	33.618	3.192
4	0.333	166.667	20.629	1.958
5	0.417	208.333	9.665	0.918
6	0.500	250.000	6.397	0.607
7	0.583	291.667	4.527	0.430
8	0.667	333.333	3.227	0.306
9	0.750	375.000	2.167	0.206
10	0.833	416.667	1.390	0.132
11	0.917	458.333	0.618	0.059
12	1.000	500.000	0.443	0.042
13	1.083	541.667	0.333	0.032
14	1.167	583.333	0.277	0.026
15	1.250	625.000	0.302	0.029
16	1.333	666.667	0.173	0.016
17	1.417	708.333	0.123	0.012
		Sum = 100.000	Sum=	9.494

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	3.40	0.380	0.121	(0.335)	0.260
2	0.17	4.70	0.526	0.121	(0.463)	0.405
3	0.25	4.70	0.526	0.121	(0.463)	0.405
4	0.33	5.10	0.570	0.121	(0.502)	0.450
5	0.42	5.80	0.649	0.121	(0.571)	0.528
6	0.50	5.90	0.660	0.121	(0.581)	0.539
7	0.58	7.10	0.794	0.121	(0.699)	0.673
8	0.67	8.70	0.973	0.121	(0.856)	0.852
9	0.75	13.20	1.476	0.121	(1.299)	1.355
10	0.83	29.70	3.321	0.121	(2.923)	3.201
11	0.92	7.70	0.861	0.121	(0.758)	0.740
12	1.00	4.00	0.447	0.121	(0.394)	0.327
	(Loss Rate Not Used)				
Sum =	100.0			Sum =	9.7

Flood volume = Effective rainfall 0.81(In)
times area 9.4(Ac.)/[(In)/(Ft.)] = 0.6(Ac.Ft)
Total soil loss = 0.12(In)
Total soil loss = 0.095(Ac.Ft)
Total rainfall = 0.93(In)
Flood volume = 27738.5 Cubic Feet
Total soil loss = 4127.9 Cubic Feet

Peak flow rate of this hydrograph = 15.645(CFS)

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1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0

```
   0+ 5       0.0006      0.08  Q         |         |         |         |
   0+10       0.0036      0.44  Q         |         |         |         |
   0+15       0.0136      1.45  V Q       |         |         |         |
   0+20       0.0304      2.44  |V  Q      |         |         |         |
   0+25       0.0513      3.04  |  V  Q    |         |         |         |
   0+30       0.0759      3.57  |   V  Q   |         |         |         |
   0+35       0.1045      4.16  |     V Q  |         |         |         |
   0+40       0.1373      4.75  |       VQ|         |         |         |
   0+45       0.1771      5.78  |         |Q        |         |         |
   0+50       0.2318      7.95  |         |   VQ    |         |         |
   0+55       0.3116     11.58  |         |        V|  Q      |         |
   1+ 0       0.4193     15.64  |         |         |     V   |Q        |
   1+ 5       0.4983     11.47  |         |         | Q       |V        |
   1+10       0.5470      7.07  |         |   Q     |         |   V     |
   1+15       0.5773      4.40  |       Q |         |         |     V   |
   1+20       0.5973      2.90  |    Q    |         |         |      V  |
   1+25       0.6110      2.00  |   Q     |         |         |       V |
   1+30       0.6203      1.34  | Q       |         |         |       V |
   1+35       0.6261      0.85  |Q        |         |         |        V|
   1+40       0.6295      0.48  Q         |         |         |        V|
   1+45       0.6317      0.32  Q         |         |         |        V|
   1+50       0.6333      0.23  Q         |         |         |        V|
   1+55       0.6345      0.18  Q         |         |         |        V|
   2+ 0       0.6356      0.15  Q         |         |         |        V|
   2+ 5       0.6363      0.10  Q         |         |         |        V|
   2+10       0.6367      0.06  Q         |         |         |        V|
   2+15       0.6368      0.01  Q         |         |         |        V|
   2+20       0.6368      0.00  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

Study date 06/19/23 File: UH199E10310.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6481

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

GARBANT ROAD RESIDENTIAL DEVELOPMENT
PRE-DEVELOPMENT CONDITION
UNIT HYDROGRAGH METHOD
10-YEAR STORM, 3-HR

Drainage Area = 9.42(Ac.) = 0.015 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 9.42(Ac.) = 0.015 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.200 Hr.
Lag time = 12.00 Min.
25% of lag time = 3.00 Min.
40% of lag time = 4.80 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.42	0.88	8.27

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.42	2.26	21.29

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.878(In)
Area Averaged 100-Year Rainfall = 2.260(In)

Point rain (area averaged) = 1.447(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.447(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
9.420	88.20	0.220

Total Area Entered = 9.42(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
88.2	88.2	0.151	0.220	0.121	1.000	0.121
					Sum (F) =	0.121

Area averaged mean soil loss (F) (In/Hr) = 0.121
Minimum soil loss rate ((In/Hr)) = 0.060

(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.880

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	41.667	3.315	0.315
2	0.167	83.333	12.797	1.215
3	0.250	125.000	33.618	3.192
4	0.333	166.667	20.629	1.958
5	0.417	208.333	9.665	0.918
6	0.500	250.000	6.397	0.607
7	0.583	291.667	4.527	0.430
8	0.667	333.333	3.227	0.306
9	0.750	375.000	2.167	0.206
10	0.833	416.667	1.390	0.132
11	0.917	458.333	0.618	0.059
12	1.000	500.000	0.443	0.042
13	1.083	541.667	0.333	0.032
14	1.167	583.333	0.277	0.026
15	1.250	625.000	0.302	0.029
16	1.333	666.667	0.173	0.016
17	1.417	708.333	0.123	0.012
			Sum = 100.000	Sum= 9.494

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.226	0.121	(0.199)	0.105
2	0.17	1.30	0.226	0.121	(0.199)	0.105
3	0.25	1.10	0.191	0.121	(0.168)	0.070
4	0.33	1.50	0.260	0.121	(0.229)	0.140
5	0.42	1.50	0.260	0.121	(0.229)	0.140
6	0.50	1.80	0.312	0.121	(0.275)	0.192
7	0.58	1.50	0.260	0.121	(0.229)	0.140
8	0.67	1.80	0.312	0.121	(0.275)	0.192
9	0.75	1.80	0.312	0.121	(0.275)	0.192
10	0.83	1.50	0.260	0.121	(0.229)	0.140
11	0.92	1.60	0.278	0.121	(0.244)	0.157
12	1.00	1.80	0.312	0.121	(0.275)	0.192
13	1.08	2.20	0.382	0.121	(0.336)	0.261
14	1.17	2.20	0.382	0.121	(0.336)	0.261
15	1.25	2.20	0.382	0.121	(0.336)	0.261
16	1.33	2.00	0.347	0.121	(0.306)	0.226
17	1.42	2.60	0.451	0.121	(0.397)	0.331
18	1.50	2.70	0.469	0.121	(0.412)	0.348
19	1.58	2.40	0.417	0.121	(0.367)	0.296
20	1.67	2.70	0.469	0.121	(0.412)	0.348
21	1.75	3.30	0.573	0.121	(0.504)	0.452
22	1.83	3.10	0.538	0.121	(0.474)	0.417
23	1.92	2.90	0.503	0.121	(0.443)	0.383
24	2.00	3.00	0.521	0.121	(0.458)	0.400
25	2.08	3.10	0.538	0.121	(0.474)	0.417
26	2.17	4.20	0.729	0.121	(0.642)	0.608
27	2.25	5.00	0.868	0.121	(0.764)	0.747
28	2.33	3.50	0.608	0.121	(0.535)	0.487
29	2.42	6.80	1.180	0.121	(1.039)	1.060
30	2.50	7.30	1.267	0.121	(1.115)	1.146
31	2.58	8.20	1.423	0.121	(1.253)	1.303
32	2.67	5.90	1.024	0.121	(0.901)	0.903
33	2.75	2.00	0.347	0.121	(0.306)	0.226
34	2.83	1.80	0.312	0.121	(0.275)	0.192
35	2.92	1.80	0.312	0.121	(0.275)	0.192

```
36   3.00     0.60      0.104       (  0.121)       0.092        0.012
              (Loss Rate Not Used)
   Sum =     100.0                                   Sum =    13.0
      Flood volume = Effective rainfall      1.09(In)
       times area       9.4(Ac.)/[(In)/(Ft.)] =       0.9(Ac.Ft)
      Total soil loss =      0.36(In)
      Total soil loss =     0.282(Ac.Ft)
      Total rainfall =      1.45(In)
      Flood volume =       37161.9 Cubic Feet
      Total soil loss =       12300.8 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      9.572(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          3 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
-------------------------------------------------------------------------
  0+ 5       0.0002      0.03  Q         |         |         |         |
  0+10       0.0013      0.16  Q         |         |         |         |
  0+15       0.0047      0.48  VQ        |         |         |         |
  0+20       0.0093      0.67  V Q       |         |         |         |
  0+25       0.0144      0.74  V Q       |         |         |         |
  0+30       0.0211      0.97  V  Q      |         |         |         |
  0+35       0.0291      1.17  |V  Q     |         |         |         |
  0+40       0.0385      1.36  |V   Q    |         |         |         |
  0+45       0.0483      1.41  | V  Q    |         |         |         |
  0+50       0.0589      1.54  | V   Q   |         |         |         |
  0+55       0.0698      1.59  |  V  Q   |         |         |         |
  1+ 0       0.0802      1.51  |  V  Q   |         |         |         |
  1+ 5       0.0910      1.56  |   V Q   |         |         |         |
  1+10       0.1031      1.76  |   V  Q  |         |         |         |
  1+15       0.1173      2.06  |    V  Q |         |         |         |
  1+20       0.1325      2.21  |     V Q |         |         |         |
  1+25       0.1482      2.29  |     V  Q|         |         |         |
  1+30       0.1645      2.36  |      V Q|         |         |         |
  1+35       0.1829      2.67  |       V Q         |         |         |
  1+40       0.2028      2.88  |        V|Q        |         |         |
  1+45       0.2230      2.94  |         VQ        |         |         |
  1+50       0.2450      3.20  |         |VQ       |         |         |
  1+55       0.2696      3.58  |         | V Q     |         |         |
  2+ 0       0.2950      3.69  |         |  VQ     |         |         |
  2+ 5       0.3203      3.66  |         |   QV    |         |         |
  2+10       0.3464      3.79  |         |    QV   |         |         |
  2+15       0.3750      4.16  |         |     QV  |         |         |
  2+20       0.4089      4.91  |         |        Q|         |         |
  2+25       0.4476      5.62  |         |         V Q       |         |
  2+30       0.4888      5.98  |         |         | VQ      |         |
  2+35       0.5419      7.71  |         |         |    V    Q         |
  2+40       0.6046      9.11  |         |         |       V |     Q   |
  2+45       0.6705      9.57  |         |         |         |V      Q |
  2+50       0.7268      8.17  |         |         |         | Q V     |
  2+55       0.7654      5.60  |         |         | Q       |    V    |
  3+ 0       0.7931      4.03  |         |     Q   |         |      V  |
  3+ 5       0.8143      3.07  |         | Q       |         |       V |
  3+10       0.8281      2.01  |       Q |         |         |       V |
  3+15       0.8368      1.26  |    Q    |         |         |        V|
  3+20       0.8424      0.81  |  Q      |         |         |        V|
  3+25       0.8460      0.52  | Q       |         |         |        V|
  3+30       0.8483      0.34  |Q        |         |         |        V|
  3+35       0.8499      0.24  Q         |         |         |        V|
  3+40       0.8511      0.17  Q         |         |         |        V|
  3+45       0.8519      0.12  Q         |         |         |        V|
  3+50       0.8525      0.08  Q         |         |         |        V|
  3+55       0.8528      0.05  Q         |         |         |        V|
  4+ 0       0.8530      0.03  Q         |         |         |        V|
  4+ 5       0.8531      0.01  Q         |         |         |        V|
  4+10       0.8531      0.01  Q         |         |         |        V|
  4+15       0.8531      0.00  Q         |         |         |        V|
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    4+20       0.8531      0.00  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

Study date 06/19/23 File: UH199E10610.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6481

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

GARBANT ROAD RESIDENTIAL DEVELOPMENT
PRE-DEVELOPMENT CONDITION
UNIT HYDROGRAGH METHOD
10-YEAR STORM, 6-HR

Drainage Area = 9.42(Ac.) = 0.015 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 9.42(Ac.) = 0.015 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.200 Hr.
Lag time = 12.00 Min.
25% of lag time = 3.00 Min.
40% of lag time = 4.80 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.42	1.23	11.59

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.42	3.05	28.73

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.230(In)
Area Averaged 100-Year Rainfall = 3.050(In)

Point rain (area averaged) = 1.979(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.979(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
9.420	88.20	0.220

Total Area Entered = 9.42(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
88.2	88.2	0.151	0.220	0.121	1.000	0.121
					Sum (F) =	0.121

Area averaged mean soil loss (F) (In/Hr) = 0.121
Minimum soil loss rate ((In/Hr)) = 0.060

(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.880

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

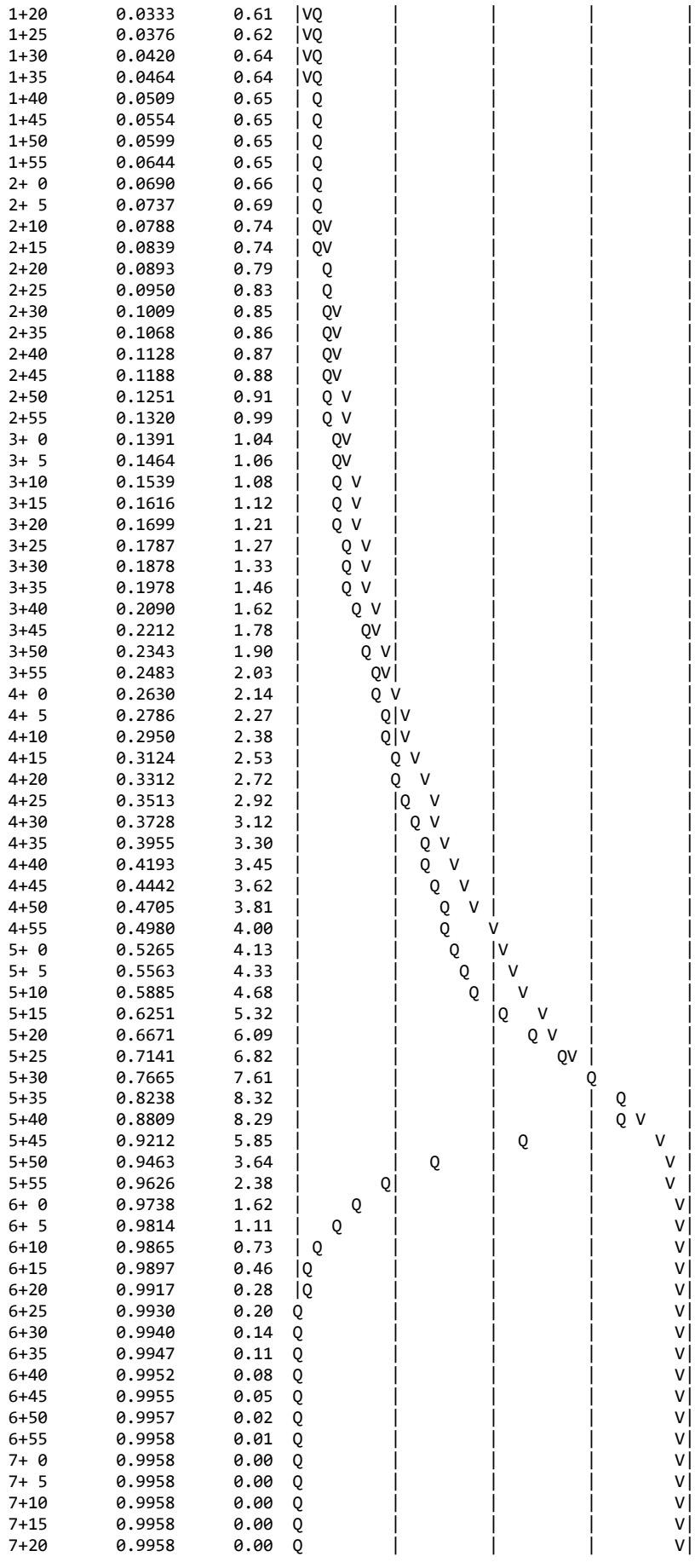
Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	41.667	3.315	0.315
2	0.167	83.333	12.797	1.215
3	0.250	125.000	33.618	3.192
4	0.333	166.667	20.629	1.958
5	0.417	208.333	9.665	0.918
6	0.500	250.000	6.397	0.607
7	0.583	291.667	4.527	0.430
8	0.667	333.333	3.227	0.306
9	0.750	375.000	2.167	0.206
10	0.833	416.667	1.390	0.132
11	0.917	458.333	0.618	0.059
12	1.000	500.000	0.443	0.042
13	1.083	541.667	0.333	0.032
14	1.167	583.333	0.277	0.026
15	1.250	625.000	0.302	0.029
16	1.333	666.667	0.173	0.016
17	1.417	708.333	0.123	0.012
		Sum = 100.000	Sum=	9.494

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.119	(0.121)	0.104	0.014
2	0.17	0.60	0.142	0.121	(0.125)	0.022
3	0.25	0.60	0.142	0.121	(0.125)	0.022
4	0.33	0.60	0.142	0.121	(0.125)	0.022
5	0.42	0.60	0.142	0.121	(0.125)	0.022
6	0.50	0.70	0.166	0.121	(0.146)	0.045
7	0.58	0.70	0.166	0.121	(0.146)	0.045
8	0.67	0.70	0.166	0.121	(0.146)	0.045
9	0.75	0.70	0.166	0.121	(0.146)	0.045
10	0.83	0.70	0.166	0.121	(0.146)	0.045
11	0.92	0.70	0.166	0.121	(0.146)	0.045
12	1.00	0.80	0.190	0.121	(0.167)	0.069
13	1.08	0.80	0.190	0.121	(0.167)	0.069
14	1.17	0.80	0.190	0.121	(0.167)	0.069
15	1.25	0.80	0.190	0.121	(0.167)	0.069
16	1.33	0.80	0.190	0.121	(0.167)	0.069
17	1.42	0.80	0.190	0.121	(0.167)	0.069
18	1.50	0.80	0.190	0.121	(0.167)	0.069
19	1.58	0.80	0.190	0.121	(0.167)	0.069
20	1.67	0.80	0.190	0.121	(0.167)	0.069
21	1.75	0.80	0.190	0.121	(0.167)	0.069
22	1.83	0.80	0.190	0.121	(0.167)	0.069
23	1.92	0.80	0.190	0.121	(0.167)	0.069
24	2.00	0.90	0.214	0.121	(0.188)	0.093
25	2.08	0.80	0.190	0.121	(0.167)	0.069
26	2.17	0.90	0.214	0.121	(0.188)	0.093
27	2.25	0.90	0.214	0.121	(0.188)	0.093
28	2.33	0.90	0.214	0.121	(0.188)	0.093
29	2.42	0.90	0.214	0.121	(0.188)	0.093
30	2.50	0.90	0.214	0.121	(0.188)	0.093
31	2.58	0.90	0.214	0.121	(0.188)	0.093
32	2.67	0.90	0.214	0.121	(0.188)	0.093
33	2.75	1.00	0.237	0.121	(0.209)	0.117
34	2.83	1.00	0.237	0.121	(0.209)	0.117
35	2.92	1.00	0.237	0.121	(0.209)	0.117

```
36   3.00     1.00      0.237          0.121    (  0.209)        0.117
37   3.08     1.00      0.237          0.121    (  0.209)        0.117
38   3.17     1.10      0.261          0.121    (  0.230)        0.140
39   3.25     1.10      0.261          0.121    (  0.230)        0.140
40   3.33     1.10      0.261          0.121    (  0.230)        0.140
41   3.42     1.20      0.285          0.121    (  0.251)        0.164
42   3.50     1.30      0.309          0.121    (  0.272)        0.188
43   3.58     1.40      0.332          0.121    (  0.293)        0.212
44   3.67     1.40      0.332          0.121    (  0.293)        0.212
45   3.75     1.50      0.356          0.121    (  0.313)        0.235
46   3.83     1.50      0.356          0.121    (  0.313)        0.235
47   3.92     1.60      0.380          0.121    (  0.334)        0.259
48   4.00     1.60      0.380          0.121    (  0.334)        0.259
49   4.08     1.70      0.404          0.121    (  0.355)        0.283
50   4.17     1.80      0.427          0.121    (  0.376)        0.307
51   4.25     1.90      0.451          0.121    (  0.397)        0.330
52   4.33     2.00      0.475          0.121    (  0.418)        0.354
53   4.42     2.10      0.499          0.121    (  0.439)        0.378
54   4.50     2.10      0.499          0.121    (  0.439)        0.378
55   4.58     2.20      0.522          0.121    (  0.460)        0.402
56   4.67     2.30      0.546          0.121    (  0.481)        0.425
57   4.75     2.40      0.570          0.121    (  0.501)        0.449
58   4.83     2.40      0.570          0.121    (  0.501)        0.449
59   4.92     2.50      0.594          0.121    (  0.522)        0.473
60   5.00     2.60      0.617          0.121    (  0.543)        0.497
61   5.08     3.10      0.736          0.121    (  0.648)        0.615
62   5.17     3.60      0.855          0.121    (  0.752)        0.734
63   5.25     3.90      0.926          0.121    (  0.815)        0.805
64   5.33     4.20      0.997          0.121    (  0.878)        0.877
65   5.42     4.70      1.116          0.121    (  0.982)        0.995
66   5.50     5.60      1.330          0.121    (  1.170)        1.209
67   5.58     1.90      0.451          0.121    (  0.397)        0.330
68   5.67     0.90      0.214          0.121    (  0.188)        0.093
69   5.75     0.60      0.142          0.121    (  0.125)        0.022
70   5.83     0.50      0.119       (  0.121)       0.104        0.014
71   5.92     0.30      0.071       (  0.121)       0.063        0.009
72   6.00     0.20      0.047       (  0.121)       0.042        0.006
              (Loss Rate Not Used)
   Sum =     100.0                                   Sum =    15.2
      Flood volume = Effective rainfall      1.27(In)
       times area       9.4(Ac.)/[(In)/(Ft.)] =       1.0(Ac.Ft)
      Total soil loss =      0.71(In)
      Total soil loss =     0.557(Ac.Ft)
      Total rainfall =      1.98(In)
      Flood volume =       43376.4 Cubic Feet
      Total soil loss =       24284.4 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      8.315(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          6 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
-------------------------------------------------------------------------
  0+ 5       0.0000      0.00  Q         |         |         |         |
  0+10       0.0002      0.02  Q         |         |         |         |
  0+15       0.0007      0.08  Q         |         |         |         |
  0+20       0.0016      0.13  Q         |         |         |         |
  0+25       0.0027      0.16  Q         |         |         |         |
  0+30       0.0040      0.18  Q         |         |         |         |
  0+35       0.0055      0.22  Q         |         |         |         |
  0+40       0.0076      0.30  VQ        |         |         |         |
  0+45       0.0101      0.36  VQ        |         |         |         |
  0+50       0.0127      0.38  VQ        |         |         |         |
  0+55       0.0154      0.40  VQ        |         |         |         |
  1+ 0       0.0183      0.42  VQ        |         |         |         |
  1+ 5       0.0214      0.45  VQ        |         |         |         |
  1+10       0.0251      0.53  |VQ       |         |         |         |
  1+15       0.0291      0.58  |VQ       |         |         |         |
```



U n i t H y d r o g r a p h A n a l y s i s

Study date 06/19/23 File: UH199E102410.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6481

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

GARBANT ROAD RESIDENTIAL DEVELOPMENT
PRE-DEVELOPMENT CONDITION
UNIT HYDROGRAGH METHOD
10-YEAR STORM, 24-HR

Drainage Area = 9.42(Ac.) = 0.015 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 9.42(Ac.) = 0.015 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.200 Hr.
Lag time = 12.00 Min.
25% of lag time = 3.00 Min.
40% of lag time = 4.80 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.42	2.14	20.16

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.42	5.61	52.85

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.140(In)
Area Averaged 100-Year Rainfall = 5.610(In)

Point rain (area averaged) = 3.568(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 3.568(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
9.420	88.20	0.220

Total Area Entered = 9.42(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
88.2	88.2	0.151	0.220	0.121	1.000	0.121
					Sum (F) =	0.121

Area averaged mean soil loss (F) (In/Hr) = 0.121
Minimum soil loss rate ((In/Hr)) = 0.060

(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.880

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	41.667	3.315	0.315
2	0.167	83.333	12.797	1.215
3	0.250	125.000	33.618	3.192
4	0.333	166.667	20.629	1.958
5	0.417	208.333	9.665	0.918
6	0.500	250.000	6.397	0.607
7	0.583	291.667	4.527	0.430
8	0.667	333.333	3.227	0.306
9	0.750	375.000	2.167	0.206
10	0.833	416.667	1.390	0.132
11	0.917	458.333	0.618	0.059
12	1.000	500.000	0.443	0.042
13	1.083	541.667	0.333	0.032
14	1.167	583.333	0.277	0.026
15	1.250	625.000	0.302	0.029
16	1.333	666.667	0.173	0.016
17	1.417	708.333	0.123	0.012
			Sum = 100.000	Sum= 9.494

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.029	(0.214)	0.025	0.003
2	0.17	0.07	0.029	(0.213)	0.025	0.003
3	0.25	0.07	0.029	(0.212)	0.025	0.003
4	0.33	0.10	0.043	(0.212)	0.038	0.005
5	0.42	0.10	0.043	(0.211)	0.038	0.005
6	0.50	0.10	0.043	(0.210)	0.038	0.005
7	0.58	0.10	0.043	(0.209)	0.038	0.005
8	0.67	0.10	0.043	(0.208)	0.038	0.005
9	0.75	0.10	0.043	(0.207)	0.038	0.005
10	0.83	0.13	0.057	(0.207)	0.050	0.007
11	0.92	0.13	0.057	(0.206)	0.050	0.007
12	1.00	0.13	0.057	(0.205)	0.050	0.007
13	1.08	0.10	0.043	(0.204)	0.038	0.005
14	1.17	0.10	0.043	(0.203)	0.038	0.005
15	1.25	0.10	0.043	(0.203)	0.038	0.005
16	1.33	0.10	0.043	(0.202)	0.038	0.005
17	1.42	0.10	0.043	(0.201)	0.038	0.005
18	1.50	0.10	0.043	(0.200)	0.038	0.005
19	1.58	0.10	0.043	(0.199)	0.038	0.005
20	1.67	0.10	0.043	(0.199)	0.038	0.005
21	1.75	0.10	0.043	(0.198)	0.038	0.005
22	1.83	0.13	0.057	(0.197)	0.050	0.007
23	1.92	0.13	0.057	(0.196)	0.050	0.007
24	2.00	0.13	0.057	(0.195)	0.050	0.007
25	2.08	0.13	0.057	(0.195)	0.050	0.007
26	2.17	0.13	0.057	(0.194)	0.050	0.007
27	2.25	0.13	0.057	(0.193)	0.050	0.007
28	2.33	0.13	0.057	(0.192)	0.050	0.007
29	2.42	0.13	0.057	(0.191)	0.050	0.007
30	2.50	0.13	0.057	(0.191)	0.050	0.007
31	2.58	0.17	0.071	(0.190)	0.063	0.009
32	2.67	0.17	0.071	(0.189)	0.063	0.009
33	2.75	0.17	0.071	(0.188)	0.063	0.009
34	2.83	0.17	0.071	(0.188)	0.063	0.009
35	2.92	0.17	0.071	(0.187)	0.063	0.009

36	3.00	0.17	0.071	(	0.186)	0.063		0.009
37	3.08	0.17	0.071	(	0.185)	0.063		0.009
38	3.17	0.17	0.071	(	0.184)	0.063		0.009
39	3.25	0.17	0.071	(	0.184)	0.063		0.009
40	3.33	0.17	0.071	(	0.183)	0.063		0.009
41	3.42	0.17	0.071	(	0.182)	0.063		0.009
42	3.50	0.17	0.071	(	0.181)	0.063		0.009
43	3.58	0.17	0.071	(	0.181)	0.063		0.009
44	3.67	0.17	0.071	(	0.180)	0.063		0.009
45	3.75	0.17	0.071	(	0.179)	0.063		0.009
46	3.83	0.20	0.086	(	0.178)	0.075		0.010
47	3.92	0.20	0.086	(	0.178)	0.075		0.010
48	4.00	0.20	0.086	(	0.177)	0.075		0.010
49	4.08	0.20	0.086	(	0.176)	0.075		0.010
50	4.17	0.20	0.086	(	0.175)	0.075		0.010
51	4.25	0.20	0.086	(	0.175)	0.075		0.010
52	4.33	0.23	0.100	(	0.174)	0.088		0.012
53	4.42	0.23	0.100	(	0.173)	0.088		0.012
54	4.50	0.23	0.100	(	0.172)	0.088		0.012
55	4.58	0.23	0.100	(	0.172)	0.088		0.012
56	4.67	0.23	0.100	(	0.171)	0.088		0.012
57	4.75	0.23	0.100	(	0.170)	0.088		0.012
58	4.83	0.27	0.114	(	0.169)	0.100		0.014
59	4.92	0.27	0.114	(	0.169)	0.100		0.014
60	5.00	0.27	0.114	(	0.168)	0.100		0.014
61	5.08	0.20	0.086	(	0.167)	0.075		0.010
62	5.17	0.20	0.086	(	0.167)	0.075		0.010
63	5.25	0.20	0.086	(	0.166)	0.075		0.010
64	5.33	0.23	0.100	(	0.165)	0.088		0.012
65	5.42	0.23	0.100	(	0.164)	0.088		0.012
66	5.50	0.23	0.100	(	0.164)	0.088		0.012
67	5.58	0.27	0.114	(	0.163)	0.100		0.014
68	5.67	0.27	0.114	(	0.162)	0.100		0.014
69	5.75	0.27	0.114	(	0.161)	0.100		0.014
70	5.83	0.27	0.114	(	0.161)	0.100		0.014
71	5.92	0.27	0.114	(	0.160)	0.100		0.014
72	6.00	0.27	0.114	(	0.159)	0.100		0.014
73	6.08	0.30	0.128	(	0.159)	0.113		0.015
74	6.17	0.30	0.128	(	0.158)	0.113		0.015
75	6.25	0.30	0.128	(	0.157)	0.113		0.015
76	6.33	0.30	0.128	(	0.157)	0.113		0.015
77	6.42	0.30	0.128	(	0.156)	0.113		0.015
78	6.50	0.30	0.128	(	0.155)	0.113		0.015
79	6.58	0.33	0.143	(	0.154)	0.126		0.017
80	6.67	0.33	0.143	(	0.154)	0.126		0.017
81	6.75	0.33	0.143	(	0.153)	0.126		0.017
82	6.83	0.33	0.143	(	0.152)	0.126		0.017
83	6.92	0.33	0.143	(	0.152)	0.126		0.017
84	7.00	0.33	0.143	(	0.151)	0.126		0.017
85	7.08	0.33	0.143	(	0.150)	0.126		0.017
86	7.17	0.33	0.143	(	0.150)	0.126		0.017
87	7.25	0.33	0.143	(	0.149)	0.126		0.017
88	7.33	0.37	0.157	(	0.148)	0.138		0.019
89	7.42	0.37	0.157	(	0.148)	0.138		0.019
90	7.50	0.37	0.157	(	0.147)	0.138		0.019
91	7.58	0.40	0.171		0.146	(	0.151)	0.025
92	7.67	0.40	0.171		0.146	(	0.151)	0.026
93	7.75	0.40	0.171		0.145	(	0.151)	0.026
94	7.83	0.43	0.186		0.144	(	0.163)	0.041
95	7.92	0.43	0.186		0.144	(	0.163)	0.042
96	8.00	0.43	0.186		0.143	(	0.163)	0.043
97	8.08	0.50	0.214		0.142	(	0.188)	0.072
98	8.17	0.50	0.214		0.142	(	0.188)	0.073
99	8.25	0.50	0.214		0.141	(	0.188)	0.073
100	8.33	0.50	0.214		0.140	(	0.188)	0.074
101	8.42	0.50	0.214		0.140	(	0.188)	0.074
102	8.50	0.50	0.214		0.139	(	0.188)	0.075
103	8.58	0.53	0.228		0.138	(	0.201)	0.090
104	8.67	0.53	0.228		0.138	(	0.201)	0.091
105	8.75	0.53	0.228		0.137	(	0.201)	0.091
106	8.83	0.57	0.243		0.136	(	0.213)	0.106
107	8.92	0.57	0.243		0.136	(	0.213)	0.107
108	9.00	0.57	0.243		0.135	(	0.213)	0.108

109	9.08	0.63	0.271	0.134	(	0.239)	0.137
110	9.17	0.63	0.271	0.134	(	0.239)	0.137
111	9.25	0.63	0.271	0.133	(	0.239)	0.138
112	9.33	0.67	0.285	0.132	(	0.251)	0.153
113	9.42	0.67	0.285	0.132	(	0.251)	0.154
114	9.50	0.67	0.285	0.131	(	0.251)	0.154
115	9.58	0.70	0.300	0.131	(	0.264)	0.169
116	9.67	0.70	0.300	0.130	(	0.264)	0.170
117	9.75	0.70	0.300	0.129	(	0.264)	0.170
118	9.83	0.73	0.314	0.129	(	0.276)	0.185
119	9.92	0.73	0.314	0.128	(	0.276)	0.186
120	10.00	0.73	0.314	0.127	(	0.276)	0.186
121	10.08	0.50	0.214	0.127	(	0.188)	0.087
122	10.17	0.50	0.214	0.126	(	0.188)	0.088
123	10.25	0.50	0.214	0.126	(	0.188)	0.088
124	10.33	0.50	0.214	0.125	(	0.188)	0.089
125	10.42	0.50	0.214	0.124	(	0.188)	0.090
126	10.50	0.50	0.214	0.124	(	0.188)	0.090
127	10.58	0.67	0.285	0.123	(	0.251)	0.162
128	10.67	0.67	0.285	0.123	(	0.251)	0.163
129	10.75	0.67	0.285	0.122	(	0.251)	0.163
130	10.83	0.67	0.285	0.121	(	0.251)	0.164
131	10.92	0.67	0.285	0.121	(	0.251)	0.165
132	11.00	0.67	0.285	0.120	(	0.251)	0.165
133	11.08	0.63	0.271	0.120	(	0.239)	0.152
134	11.17	0.63	0.271	0.119	(	0.239)	0.152
135	11.25	0.63	0.271	0.118	(	0.239)	0.153
136	11.33	0.63	0.271	0.118	(	0.239)	0.153
137	11.42	0.63	0.271	0.117	(	0.239)	0.154
138	11.50	0.63	0.271	0.117	(	0.239)	0.154
139	11.58	0.57	0.243	0.116	(	0.213)	0.126
140	11.67	0.57	0.243	0.116	(	0.213)	0.127
141	11.75	0.57	0.243	0.115	(	0.213)	0.128
142	11.83	0.60	0.257	0.114	(	0.226)	0.142
143	11.92	0.60	0.257	0.114	(	0.226)	0.143
144	12.00	0.60	0.257	0.113	(	0.226)	0.144
145	12.08	0.83	0.357	0.113	(	0.314)	0.244
146	12.17	0.83	0.357	0.112	(	0.314)	0.245
147	12.25	0.83	0.357	0.112	(	0.314)	0.245
148	12.33	0.87	0.371	0.111	(	0.326)	0.260
149	12.42	0.87	0.371	0.110	(	0.326)	0.261
150	12.50	0.87	0.371	0.110	(	0.326)	0.261
151	12.58	0.93	0.400	0.109	(	0.352)	0.290
152	12.67	0.93	0.400	0.109	(	0.352)	0.291
153	12.75	0.93	0.400	0.108	(	0.352)	0.291
154	12.83	0.97	0.414	0.108	(	0.364)	0.306
155	12.92	0.97	0.414	0.107	(	0.364)	0.307
156	13.00	0.97	0.414	0.107	(	0.364)	0.307
157	13.08	1.13	0.485	0.106	(	0.427)	0.379
158	13.17	1.13	0.485	0.106	(	0.427)	0.380
159	13.25	1.13	0.485	0.105	(	0.427)	0.380
160	13.33	1.13	0.485	0.104	(	0.427)	0.381
161	13.42	1.13	0.485	0.104	(	0.427)	0.381
162	13.50	1.13	0.485	0.103	(	0.427)	0.382
163	13.58	0.77	0.328	0.103	(	0.289)	0.225
164	13.67	0.77	0.328	0.102	(	0.289)	0.226
165	13.75	0.77	0.328	0.102	(	0.289)	0.226
166	13.83	0.77	0.328	0.101	(	0.289)	0.227
167	13.92	0.77	0.328	0.101	(	0.289)	0.227
168	14.00	0.77	0.328	0.100	(	0.289)	0.228
169	14.08	0.90	0.385	0.100	(	0.339)	0.286
170	14.17	0.90	0.385	0.099	(	0.339)	0.286
171	14.25	0.90	0.385	0.099	(	0.339)	0.287
172	14.33	0.87	0.371	0.098	(	0.326)	0.273
173	14.42	0.87	0.371	0.098	(	0.326)	0.273
174	14.50	0.87	0.371	0.097	(	0.326)	0.274
175	14.58	0.87	0.371	0.097	(	0.326)	0.274
176	14.67	0.87	0.371	0.096	(	0.326)	0.275
177	14.75	0.87	0.371	0.096	(	0.326)	0.275
178	14.83	0.83	0.357	0.095	(	0.314)	0.261
179	14.92	0.83	0.357	0.095	(	0.314)	0.262
180	15.00	0.83	0.357	0.094	(	0.314)	0.262
181	15.08	0.80	0.342	0.094	(	0.301)	0.249

182	15.17	0.80	0.342		0.093	(0.301)		0.249
183	15.25	0.80	0.342		0.093	(0.301)		0.250
184	15.33	0.77	0.328		0.092	(0.289)		0.236
185	15.42	0.77	0.328		0.092	(0.289)		0.236
186	15.50	0.77	0.328		0.091	(0.289)		0.237
187	15.58	0.63	0.271		0.091	(0.239)		0.180
188	15.67	0.63	0.271		0.090	(0.239)		0.181
189	15.75	0.63	0.271		0.090	(0.239)		0.181
190	15.83	0.63	0.271		0.090	(0.239)		0.182
191	15.92	0.63	0.271		0.089	(0.239)		0.182
192	16.00	0.63	0.271		0.089	(0.239)		0.182
193	16.08	0.13	0.057	(0.088)		0.050		0.007
194	16.17	0.13	0.057	(0.088)		0.050		0.007
195	16.25	0.13	0.057	(0.087)		0.050		0.007
196	16.33	0.13	0.057	(0.087)		0.050		0.007
197	16.42	0.13	0.057	(0.086)		0.050		0.007
198	16.50	0.13	0.057	(0.086)		0.050		0.007
199	16.58	0.10	0.043	(0.086)		0.038		0.005
200	16.67	0.10	0.043	(0.085)		0.038		0.005
201	16.75	0.10	0.043	(0.085)		0.038		0.005
202	16.83	0.10	0.043	(0.084)		0.038		0.005
203	16.92	0.10	0.043	(0.084)		0.038		0.005
204	17.00	0.10	0.043	(0.083)		0.038		0.005
205	17.08	0.17	0.071	(0.083)		0.063		0.009
206	17.17	0.17	0.071	(0.083)		0.063		0.009
207	17.25	0.17	0.071	(0.082)		0.063		0.009
208	17.33	0.17	0.071	(0.082)		0.063		0.009
209	17.42	0.17	0.071	(0.081)		0.063		0.009
210	17.50	0.17	0.071	(0.081)		0.063		0.009
211	17.58	0.17	0.071	(0.080)		0.063		0.009
212	17.67	0.17	0.071	(0.080)		0.063		0.009
213	17.75	0.17	0.071	(0.080)		0.063		0.009
214	17.83	0.13	0.057	(0.079)		0.050		0.007
215	17.92	0.13	0.057	(0.079)		0.050		0.007
216	18.00	0.13	0.057	(0.079)		0.050		0.007
217	18.08	0.13	0.057	(0.078)		0.050		0.007
218	18.17	0.13	0.057	(0.078)		0.050		0.007
219	18.25	0.13	0.057	(0.077)		0.050		0.007
220	18.33	0.13	0.057	(0.077)		0.050		0.007
221	18.42	0.13	0.057	(0.077)		0.050		0.007
222	18.50	0.13	0.057	(0.076)		0.050		0.007
223	18.58	0.10	0.043	(0.076)		0.038		0.005
224	18.67	0.10	0.043	(0.076)		0.038		0.005
225	18.75	0.10	0.043	(0.075)		0.038		0.005
226	18.83	0.07	0.029	(0.075)		0.025		0.003
227	18.92	0.07	0.029	(0.074)		0.025		0.003
228	19.00	0.07	0.029	(0.074)		0.025		0.003
229	19.08	0.10	0.043	(0.074)		0.038		0.005
230	19.17	0.10	0.043	(0.073)		0.038		0.005
231	19.25	0.10	0.043	(0.073)		0.038		0.005
232	19.33	0.13	0.057	(0.073)		0.050		0.007
233	19.42	0.13	0.057	(0.072)		0.050		0.007
234	19.50	0.13	0.057	(0.072)		0.050		0.007
235	19.58	0.10	0.043	(0.072)		0.038		0.005
236	19.67	0.10	0.043	(0.071)		0.038		0.005
237	19.75	0.10	0.043	(0.071)		0.038		0.005
238	19.83	0.07	0.029	(0.071)		0.025		0.003
239	19.92	0.07	0.029	(0.070)		0.025		0.003
240	20.00	0.07	0.029	(0.070)		0.025		0.003
241	20.08	0.10	0.043	(0.070)		0.038		0.005
242	20.17	0.10	0.043	(0.069)		0.038		0.005
243	20.25	0.10	0.043	(0.069)		0.038		0.005
244	20.33	0.10	0.043	(0.069)		0.038		0.005
245	20.42	0.10	0.043	(0.069)		0.038		0.005
246	20.50	0.10	0.043	(0.068)		0.038		0.005
247	20.58	0.10	0.043	(0.068)		0.038		0.005
248	20.67	0.10	0.043	(0.068)		0.038		0.005
249	20.75	0.10	0.043	(0.067)		0.038		0.005
250	20.83	0.07	0.029	(0.067)		0.025		0.003
251	20.92	0.07	0.029	(0.067)		0.025		0.003
252	21.00	0.07	0.029	(0.067)		0.025		0.003
253	21.08	0.10	0.043	(0.066)		0.038		0.005
254	21.17	0.10	0.043	(0.066)		0.038		0.005

```
255  21.25     0.10      0.043       (  0.066)       0.038        0.005
256  21.33     0.07      0.029       (  0.066)       0.025        0.003
257  21.42     0.07      0.029       (  0.065)       0.025        0.003
258  21.50     0.07      0.029       (  0.065)       0.025        0.003
259  21.58     0.10      0.043       (  0.065)       0.038        0.005
260  21.67     0.10      0.043       (  0.065)       0.038        0.005
261  21.75     0.10      0.043       (  0.064)       0.038        0.005
262  21.83     0.07      0.029       (  0.064)       0.025        0.003
263  21.92     0.07      0.029       (  0.064)       0.025        0.003
264  22.00     0.07      0.029       (  0.064)       0.025        0.003
265  22.08     0.10      0.043       (  0.064)       0.038        0.005
266  22.17     0.10      0.043       (  0.063)       0.038        0.005
267  22.25     0.10      0.043       (  0.063)       0.038        0.005
268  22.33     0.07      0.029       (  0.063)       0.025        0.003
269  22.42     0.07      0.029       (  0.063)       0.025        0.003
270  22.50     0.07      0.029       (  0.063)       0.025        0.003
271  22.58     0.07      0.029       (  0.062)       0.025        0.003
272  22.67     0.07      0.029       (  0.062)       0.025        0.003
273  22.75     0.07      0.029       (  0.062)       0.025        0.003
274  22.83     0.07      0.029       (  0.062)       0.025        0.003
275  22.92     0.07      0.029       (  0.062)       0.025        0.003
276  23.00     0.07      0.029       (  0.062)       0.025        0.003
277  23.08     0.07      0.029       (  0.061)       0.025        0.003
278  23.17     0.07      0.029       (  0.061)       0.025        0.003
279  23.25     0.07      0.029       (  0.061)       0.025        0.003
280  23.33     0.07      0.029       (  0.061)       0.025        0.003
281  23.42     0.07      0.029       (  0.061)       0.025        0.003
282  23.50     0.07      0.029       (  0.061)       0.025        0.003
283  23.58     0.07      0.029       (  0.061)       0.025        0.003
284  23.67     0.07      0.029       (  0.061)       0.025        0.003
285  23.75     0.07      0.029       (  0.061)       0.025        0.003
286  23.83     0.07      0.029       (  0.060)       0.025        0.003
287  23.92     0.07      0.029       (  0.060)       0.025        0.003
288  24.00     0.07      0.029       (  0.060)       0.025        0.003
               (Loss Rate Not Used)
    Sum =     100.0                                  Sum =    20.6
       Flood volume = Effective rainfall      1.72(In)
        times area       9.4(Ac.)/[(In)/(Ft.)] =       1.3(Ac.Ft)
       Total soil loss =      1.85(In)
       Total soil loss =     1.452(Ac.Ft)
       Total rainfall =      3.57(In)
       Flood volume =       58758.3 Cubic Feet
       Total soil loss =       63231.6 Cubic Feet
       ---------------------------------------------------------------------
        Peak flow rate of this hydrograph =      3.510(CFS)
       ---------------------------------------------------------------------
       +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
       ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

       ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0000      0.00  Q         |         |         |         |
   0+10       0.0000      0.01  Q         |         |         |         |
   0+15       0.0002      0.02  Q         |         |         |         |
   0+20       0.0003      0.02  Q         |         |         |         |
   0+25       0.0005      0.03  Q         |         |         |         |
   0+30       0.0008      0.04  Q         |         |         |         |
   0+35       0.0010      0.04  Q         |         |         |         |
   0+40       0.0013      0.04  Q         |         |         |         |
   0+45       0.0017      0.05  Q         |         |         |         |
   0+50       0.0020      0.05  Q         |         |         |         |
   0+55       0.0023      0.05  Q         |         |         |         |
   1+ 0       0.0027      0.06  Q         |         |         |         |
   1+ 5       0.0031      0.06  Q         |         |         |         |
   1+10       0.0035      0.06  Q         |         |         |         |
   1+15       0.0039      0.05  Q         |         |         |         |
   1+20       0.0043      0.05  Q         |         |         |         |
   1+25       0.0046      0.05  Q         |         |         |         |
   1+30       0.0050      0.05  Q         |         |         |         |
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1+35	0.0053	0.05	Q				
1+40	0.0056	0.05	Q				
1+45	0.0060	0.05	Q				
1+50	0.0063	0.05	Q				
1+55	0.0067	0.05	Q				
2+ 0	0.0071	0.06	Q				
2+ 5	0.0075	0.06	Q				
2+10	0.0079	0.06	Q				
2+15	0.0083	0.06	Q				
2+20	0.0088	0.06	Q				
2+25	0.0092	0.06	Q				
2+30	0.0097	0.06	Q				
2+35	0.0101	0.07	Q				
2+40	0.0106	0.07	Q				
2+45	0.0111	0.07	Q				
2+50	0.0116	0.08	Q				
2+55	0.0121	0.08	Q				
3+ 0	0.0127	0.08	Q				
3+ 5	0.0132	0.08	Q				
3+10	0.0138	0.08	Q				
3+15	0.0143	0.08	Q				
3+20	0.0149	0.08	Q				
3+25	0.0155	0.08	Q				
3+30	0.0160	0.08	Q				
3+35	0.0166	0.08	Q				
3+40	0.0171	0.08	Q				
3+45	0.0177	0.08	Q				
3+50	0.0183	0.08	Q				
3+55	0.0188	0.08	Q				
4+ 0	0.0195	0.09	Q				
4+ 5	0.0201	0.09	Q				
4+10	0.0207	0.09	Q				
4+15	0.0214	0.10	Q				
4+20	0.0221	0.10	Q				
4+25	0.0228	0.10	Q				
4+30	0.0235	0.11	Q				
4+35	0.0242	0.11	Q				
4+40	0.0250	0.11	Q				
4+45	0.0258	0.11	Q				
4+50	0.0265	0.11	Q				
4+55	0.0273	0.12	Q				
5+ 0	0.0282	0.12	Q				
5+ 5	0.0290	0.12	Q				
5+10	0.0298	0.12	Q				
5+15	0.0306	0.11	Q				
5+20	0.0313	0.11	Q				
5+25	0.0321	0.11	Q				
5+30	0.0328	0.11	Q				
5+35	0.0336	0.11	Q				
5+40	0.0344	0.11	QV				
5+45	0.0352	0.12	QV				
5+50	0.0361	0.12	QV				
5+55	0.0370	0.13	QV				
6+ 0	0.0378	0.13	QV				
6+ 5	0.0387	0.13	QV				
6+10	0.0396	0.13	QV				
6+15	0.0406	0.14	QV				
6+20	0.0415	0.14	QV				
6+25	0.0425	0.14	QV				
6+30	0.0435	0.14	QV				
6+35	0.0445	0.15	QV				
6+40	0.0455	0.15	QV				
6+45	0.0466	0.15	QV				
6+50	0.0477	0.16	QV				
6+55	0.0488	0.16	QV				
7+ 0	0.0499	0.16	QV				
7+ 5	0.0510	0.16	QV				
7+10	0.0521	0.16	QV				
7+15	0.0532	0.16	QV				
7+20	0.0543	0.16	QV				
7+25	0.0555	0.17	QV				
7+30	0.0567	0.17	QV				
7+35	0.0579	0.18	QV				

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 7+40       0.0591      0.19  QV        |         |         |         |
 7+45       0.0606      0.21  QV        |         |         |         |
 7+50       0.0621      0.23  QV        |         |         |         |
 7+55       0.0639      0.26  |Q        |         |         |         |
 8+ 0       0.0660      0.31  |Q        |         |         |         |
 8+ 5       0.0685      0.36  |QV       |         |         |         |
 8+10       0.0713      0.41  |QV       |         |         |         |
 8+15       0.0749      0.52  | Q       |         |         |         |
 8+20       0.0789      0.59  | Q       |         |         |         |
 8+25       0.0832      0.62  | Q       |         |         |         |
 8+30       0.0877      0.65  | Q       |         |         |         |
 8+35       0.0924      0.68  | Q       |         |         |         |
 8+40       0.0973      0.71  | Q       |         |         |         |
 8+45       0.1026      0.77  |  Q      |         |         |         |
 8+50       0.1082      0.81  |  Q      |         |         |         |
 8+55       0.1140      0.85  |  Q      |         |         |         |
 9+ 0       0.1203      0.91  |  Q      |         |         |         |
 9+ 5       0.1269      0.96  |  Q      |         |         |         |
 9+10       0.1339      1.02  |  VQ     |         |         |         |
 9+15       0.1417      1.13  |   Q     |         |         |         |
 9+20       0.1500      1.21  |   Q     |         |         |         |
 9+25       0.1587      1.26  |   VQ    |         |         |         |
 9+30       0.1679      1.33  |   VQ    |         |         |         |
 9+35       0.1775      1.39  |    Q    |         |         |         |
 9+40       0.1873      1.43  |    Q    |         |         |         |
 9+45       0.1977      1.50  |    VQ   |         |         |         |
 9+50       0.2083      1.55  |     Q   |         |         |         |
 9+55       0.2193      1.59  |     Q   |         |         |         |
10+ 0       0.2307      1.66  |     Q   |         |         |         |
10+ 5       0.2422      1.67  |     QV  |         |         |         |
10+10       0.2530      1.57  |     QV  |         |         |         |
10+15       0.2618      1.27  |    Q V  |         |         |         |
10+20       0.2693      1.09  |   Q  V  |         |         |         |
10+25       0.2763      1.01  |   Q   V |         |         |         |
10+30       0.2829      0.96  |  Q    V |         |         |         |
10+35       0.2894      0.95  |  Q    V |         |         |         |
10+40       0.2964      1.01  |   Q   V |         |         |         |
10+45       0.3048      1.23  |   Q    V|         |         |         |
10+50       0.3142      1.36  |    Q   V|         |         |         |
10+55       0.3240      1.42  |    Q   V|         |         |         |
11+ 0       0.3341      1.47  |    Q   V|         |         |         |
11+ 5       0.3445      1.50  |    Q    V         |         |         |
11+10       0.3548      1.51  |     Q   V         |         |         |
11+15       0.3650      1.48  |    Q    V         |         |         |
11+20       0.3751      1.46  |    Q    |V        |         |         |
11+25       0.3851      1.46  |    Q    |V        |         |         |
11+30       0.3952      1.46  |    Q    |V        |         |         |
11+35       0.4052      1.45  |    Q    | V       |         |         |
11+40       0.4150      1.42  |    Q    | V       |         |         |
11+45       0.4242      1.33  |    Q    | V       |         |         |
11+50       0.4330      1.29  |    Q    | V       |         |         |
11+55       0.4419      1.28  |    Q    |  V      |         |         |
12+ 0       0.4509      1.32  |    Q    |  V      |         |         |
12+ 5       0.4604      1.37  |    Q    |  V      |         |         |
12+10       0.4707      1.50  |    Q    |  V      |         |         |
12+15       0.4833      1.83  |      Q  |   V     |         |         |
12+20       0.4973      2.03  |       Q |   V     |         |         |
12+25       0.5121      2.15  |       Q |    V    |         |         |
12+30       0.5277      2.26  |        Q|    V    |         |         |
12+35       0.5439      2.35  |        Q|     V   |         |         |
12+40       0.5607      2.43  |        Q|     V   |         |         |
12+45       0.5783      2.56  |         Q      V  |         |         |
12+50       0.5965      2.65  |         Q      V  |         |         |
12+55       0.6151      2.70  |         Q       V |         |         |
13+ 0       0.6343      2.78  |         |Q      V |         |         |
13+ 5       0.6539      2.85  |         |Q       V|         |         |
13+10       0.6744      2.97  |         |Q       V|         |         |
13+15       0.6966      3.22  |         | Q       V         |         |
13+20       0.7198      3.38  |         |  Q      |V        |         |
13+25       0.7436      3.46  |         |  Q      | V       |         |
13+30       0.7678      3.51  |         |   Q     | V       |         |
13+35       0.7919      3.50  |         |  Q      |  V      |         |
13+40       0.8149      3.34  |         |  Q      |   V     |         |
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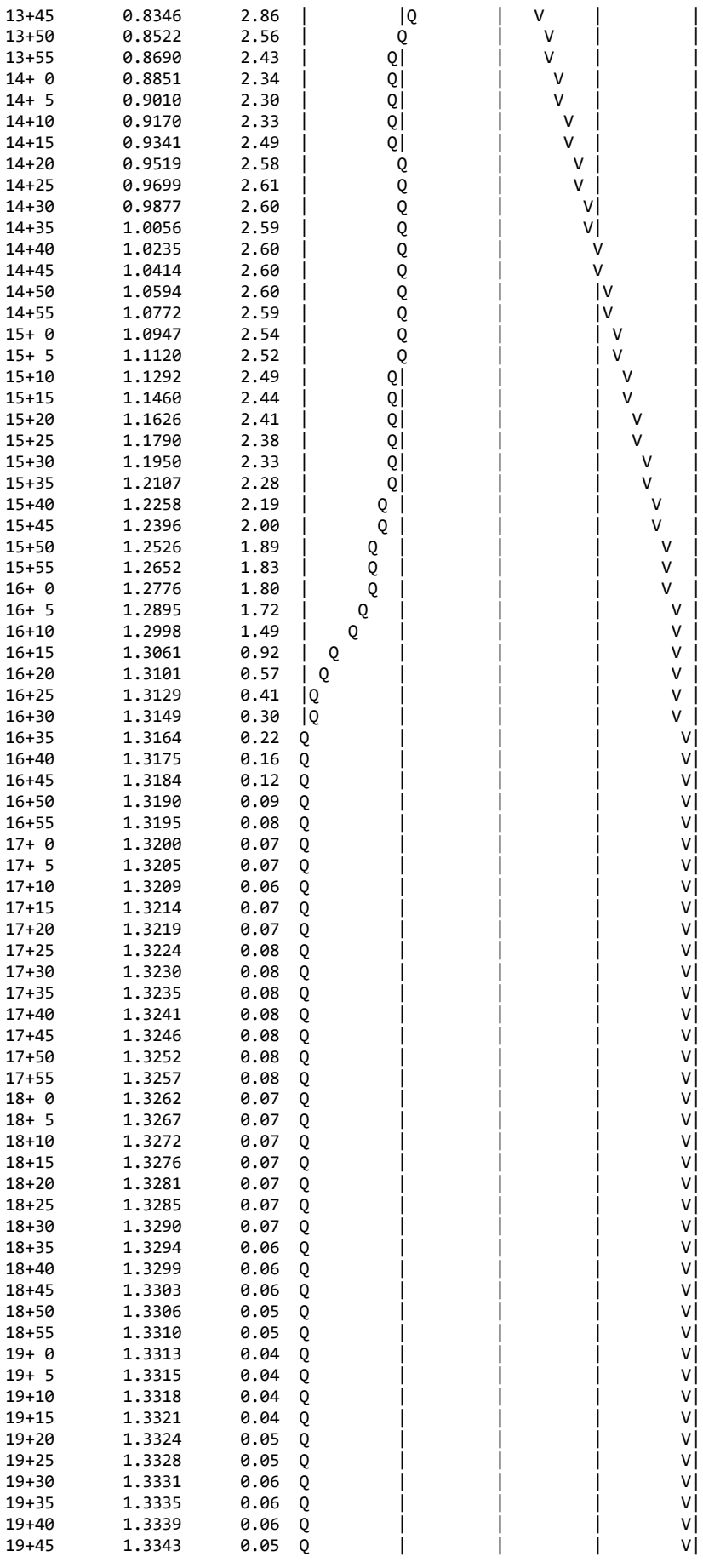
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13+50 0.8522 2.56
13+55 0.8690 2.43
14+ 0 0.8851 2.34
14+ 5 0.9010 2.30
14+10 0.9170 2.33
14+15 0.9341 2.49
14+20 0.9519 2.58
14+25 0.9699 2.61
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14+45 1.0414 2.60
14+50 1.0594 2.60
14+55 1.0772 2.59
15+ 0 1.0947 2.54
15+ 5 1.1120 2.52
15+10 1.1292 2.49
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15+25 1.1790 2.38
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19+25 1.3328 0.05
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19+50	1.3347	0.05	Q	|	|	|	V|
19+55	1.3350	0.05	Q	|	|	|	V|
20+ 0	1.3353	0.04	Q	|	|	|	V|
20+ 5	1.3356	0.04	Q	|	|	|	V|
20+10	1.3358	0.04	Q	|	|	|	V|
20+15	1.3361	0.04	Q	|	|	|	V|
20+20	1.3364	0.05	Q	|	|	|	V|
20+25	1.3368	0.05	Q	|	|	|	V|
20+30	1.3371	0.05	Q	|	|	|	V|
20+35	1.3374	0.05	Q	|	|	|	V|
20+40	1.3378	0.05	Q	|	|	|	V|
20+45	1.3381	0.05	Q	|	|	|	V|
20+50	1.3384	0.05	Q	|	|	|	V|
20+55	1.3387	0.05	Q	|	|	|	V|
21+ 0	1.3390	0.04	Q	|	|	|	V|
21+ 5	1.3393	0.04	Q	|	|	|	V|
21+10	1.3395	0.04	Q	|	|	|	V|
21+15	1.3398	0.04	Q	|	|	|	V|
21+20	1.3401	0.04	Q	|	|	|	V|
21+25	1.3404	0.04	Q	|	|	|	V|
21+30	1.3407	0.04	Q	|	|	|	V|
21+35	1.3410	0.04	Q	|	|	|	V|
21+40	1.3412	0.04	Q	|	|	|	V|
21+45	1.3415	0.04	Q	|	|	|	V|
21+50	1.3418	0.04	Q	|	|	|	V|
21+55	1.3421	0.04	Q	|	|	|	V|
22+ 0	1.3424	0.04	Q	|	|	|	V|
22+ 5	1.3427	0.04	Q	|	|	|	V|
22+10	1.3429	0.04	Q	|	|	|	V|
22+15	1.3432	0.04	Q	|	|	|	V|
22+20	1.3435	0.04	Q	|	|	|	V|
22+25	1.3438	0.04	Q	|	|	|	V|
22+30	1.3441	0.04	Q	|	|	|	V|
22+35	1.3443	0.04	Q	|	|	|	V|
22+40	1.3446	0.04	Q	|	|	|	V|
22+45	1.3448	0.03	Q	|	|	|	V|
22+50	1.3450	0.03	Q	|	|	|	V|
22+55	1.3453	0.03	Q	|	|	|	V|
23+ 0	1.3455	0.03	Q	|	|	|	V|
23+ 5	1.3457	0.03	Q	|	|	|	V|
23+10	1.3459	0.03	Q	|	|	|	V|
23+15	1.3462	0.03	Q	|	|	|	V|
23+20	1.3464	0.03	Q	|	|	|	V|
23+25	1.3466	0.03	Q	|	|	|	V|
23+30	1.3468	0.03	Q	|	|	|	V|
23+35	1.3471	0.03	Q	|	|	|	V|
23+40	1.3473	0.03	Q	|	|	|	V|
23+45	1.3475	0.03	Q	|	|	|	V|
23+50	1.3477	0.03	Q	|	|	|	V|
23+55	1.3480	0.03	Q	|	|	|	V|
24+ 0	1.3482	0.03	Q	|	|	|	V|
24+ 5	1.3484	0.03	Q	|	|	|	V|
24+10	1.3486	0.03	Q	|	|	|	V|
24+15	1.3487	0.02	Q	|	|	|	V|
24+20	1.3488	0.01	Q	|	|	|	V|
24+25	1.3488	0.01	Q	|	|	|	V|
24+30	1.3488	0.00	Q	|	|	|	V|
24+35	1.3489	0.00	Q	|	|	|	V|
24+40	1.3489	0.00	Q	|	|	|	V|
24+45	1.3489	0.00	Q	|	|	|	V|
24+50	1.3489	0.00	Q	|	|	|	V|
24+55	1.3489	0.00	Q	|	|	|	V|
25+ 0	1.3489	0.00	Q	|	|	|	V|
25+ 5	1.3489	0.00	Q	|	|	|	V|
25+10	1.3489	0.00	Q	|	|	|	V|
25+15	1.3489	0.00	Q	|	|	|	V|
25+20	1.3489	0.00	Q	|	|	|	V

U n i t H y d r o g r a p h A n a l y s i s

Study date 06/19/23 File: UH199E1001100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6481

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

GARBANT ROAD RESIDENTIAL DEVELOPMENT
PRE-DEVELOPMENT CONDITION
UNIT HYDROGRAGH METHOD
100-YEAR, 1-HOUR STORM

Drainage Area = 9.42(Ac.) = 0.015 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 9.42(Ac.) = 0.015 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.230 Hr.
Lag time = 13.80 Min.
25% of lag time = 3.45 Min.
40% of lag time = 5.52 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.42	0.51	4.84

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.42	1.53	14.41

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.514(In)
Area Averaged 100-Year Rainfall = 1.530(In)

Point rain (area averaged) = 1.530(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.530(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
9.420	88.20	0.220

Total Area Entered = 9.42(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
88.2	95.3	0.061	0.220	0.049	1.000	0.049
					Sum (F) =	0.049

Area averaged mean soil loss (F) (In/Hr) = 0.049
Minimum soil loss rate ((In/Hr)) = 0.025

(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.5300

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	36.232	3.766	0.358
2	0.167	72.464	14.992	1.423
3	0.250	108.696	24.259	2.303
4	0.333	144.928	19.151	1.818
5	0.417	181.159	9.861	0.936
6	0.500	217.391	5.746	0.546
7	0.583	253.623	4.257	0.404
8	0.667	289.855	3.332	0.316
9	0.750	326.087	2.597	0.247
10	0.833	362.319	2.157	0.205
11	0.917	398.551	1.720	0.163
12	1.000	434.783	1.394	0.132
13	1.083	471.014	1.148	0.109
14	1.167	507.246	1.088	0.103
15	1.250	543.478	0.890	0.084
16	1.333	579.710	0.748	0.071
17	1.417	615.942	0.640	0.061
18	1.500	652.174	0.530	0.050
19	1.583	688.406	0.426	0.040
20	1.667	724.638	0.362	0.034
21	1.750	760.870	0.362	0.034
22	1.833	797.101	0.362	0.034
23	1.917	833.333	0.210	0.020
		Sum = 100.000	Sum=	9.494

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	3.40	0.624	0.049	(0.562)	0.575
2	0.17	4.70	0.863	0.049	(0.777)	0.814
3	0.25	4.70	0.863	0.049	(0.777)	0.814
4	0.33	5.10	0.936	0.049	(0.843)	0.887
5	0.42	5.80	1.065	0.049	(0.958)	1.016
6	0.50	5.90	1.083	0.049	(0.975)	1.034
7	0.58	7.10	1.303	0.049	(1.173)	1.254
8	0.67	8.70	1.597	0.049	(1.437)	1.548
9	0.75	13.20	2.423	0.049	(2.181)	2.374
10	0.83	29.70	5.452	0.049	(4.907)	5.403
11	0.92	7.70	1.414	0.049	(1.272)	1.364
12	1.00	4.00	0.734	0.049	(0.661)	0.685
		(Loss Rate Not Used)				
Sum =	100.0				Sum =	17.8

Flood volume = Effective rainfall 1.48(In)
times area 9.4(Ac.)/[(In)/(Ft.)] = 1.2(Ac.Ft)
Total soil loss = 0.05(In)
Total soil loss = 0.039(Ac.Ft)
Total rainfall = 1.53(In)
Flood volume = 50630.5 Cubic Feet
Total soil loss = 1682.7 Cubic Feet

Peak flow rate of this hydrograph = 22.426(CFS)

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1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0014	0.21	Q				
0+10	0.0091	1.11	VQ				
0+15	0.0282	2.77	V Q				
0+20	0.0584	4.40	V Q				
0+25	0.0965	5.52	V Q				
0+30	0.1407	6.42	V Q				
0+35	0.1910	7.31	V Q				
0+40	0.2486	8.36	V Q				
0+45	0.3174	9.99	V Q				
0+50	0.4112	13.62	V Q				
0+55	0.5445	19.36	V Q				
1+ 0	0.6989	22.43	V Q				
1+ 5	0.8270	18.59	Q V				
1+10	0.9117	12.30	Q V				
1+15	0.9664	7.95	Q V				
1+20	1.0047	5.56	Q V				
1+25	1.0339	4.24	Q V				
1+30	1.0572	3.38	Q V				
1+35	1.0762	2.76	Q V				
1+40	1.0917	2.25	Q V				
1+45	1.1045	1.86	Q V				
1+50	1.1154	1.57	Q V				
1+55	1.1248	1.38	Q V				
2+ 0	1.1327	1.15	Q V				
2+ 5	1.1394	0.96	Q V				
2+10	1.1449	0.80	Q V				
2+15	1.1493	0.65	Q V				
2+20	1.1530	0.53	Q V				
2+25	1.1560	0.44	Q V				
2+30	1.1586	0.37	Q V				
2+35	1.1606	0.30	Q V				
2+40	1.1619	0.18	Q V				
2+45	1.1622	0.05	Q V				
2+50	1.1623	0.01	Q V				

UH Post-Development Hydrograghs

U n i t H y d r o g r a p h A n a l y s i s

Study date 06/19/23 File: UH199P10110.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6481

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

GARBANT ROAD RESIDENTIAL DEVELOPMENT
POSTDEVELOPMENT CONDITION
UNIT HYDROGRAGH METHOD
10-YEAR, 1-HR

Drainage Area = 9.42(Ac.) = 0.015 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 9.42(Ac.) = 0.015 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.210 Hr.
Lag time = 12.60 Min.
25% of lag time = 3.15 Min.
40% of lag time = 5.04 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.42	0.51	4.84

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.42	1.53	14.41

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.514(In)
Area Averaged 100-Year Rainfall = 1.530(In)

Point rain (area averaged) = 0.932(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 0.932(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
9.420	88.00	0.500

Total Area Entered = 9.42(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
88.0	88.0	0.153	0.500	0.084	1.000	0.084
					Sum (F) =	0.084

Area averaged mean soil loss (F) (In/Hr) = 0.084
Minimum soil loss rate ((In/Hr)) = 0.042

(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.500

Slope of intensity-duration curve for a 1 hour storm =0.5300

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	39.683	3.099	0.294
2	0.167	79.365	11.566	1.098
3	0.250	119.048	30.820	2.926
4	0.333	158.730	22.777	2.162
5	0.417	198.413	10.022	0.951
6	0.500	238.095	6.692	0.635
7	0.583	277.778	4.742	0.450
8	0.667	317.460	3.431	0.326
9	0.750	357.143	2.426	0.230
10	0.833	396.825	1.633	0.155
11	0.917	436.508	0.891	0.085
12	1.000	476.190	0.461	0.044
13	1.083	515.873	0.389	0.037
14	1.167	555.556	0.267	0.025
15	1.250	595.238	0.288	0.027
16	1.333	634.921	0.256	0.024
17	1.417	674.603	0.145	0.014
18	1.500	714.286	0.096	0.009
		Sum = 100.000	Sum=	9.494

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	3.40	0.380	0.084	(0.190)	0.296
2	0.17	4.70	0.526	0.084	(0.263)	0.442
3	0.25	4.70	0.526	0.084	(0.263)	0.442
4	0.33	5.10	0.570	0.084	(0.285)	0.486
5	0.42	5.80	0.649	0.084	(0.324)	0.565
6	0.50	5.90	0.660	0.084	(0.330)	0.576
7	0.58	7.10	0.794	0.084	(0.397)	0.710
8	0.67	8.70	0.973	0.084	(0.486)	0.889
9	0.75	13.20	1.476	0.084	(0.738)	1.392
10	0.83	29.70	3.321	0.084	(1.661)	3.237
11	0.92	7.70	0.861	0.084	(0.431)	0.777
12	1.00	4.00	0.447	0.084	(0.224)	0.363
	(Loss Rate Not Used)				
Sum =	100.0			Sum =	10.2

Flood volume = Effective rainfall 0.85(In)
times area 9.4(Ac.)/[(In)/(Ft.)] = 0.7(Ac.Ft)
Total soil loss = 0.08(In)
Total soil loss = 0.066(Ac.Ft)
Total rainfall = 0.93(In)
Flood volume = 28992.6 Cubic Feet
Total soil loss = 2873.7 Cubic Feet

Peak flow rate of this hydrograph = 15.421(CFS)

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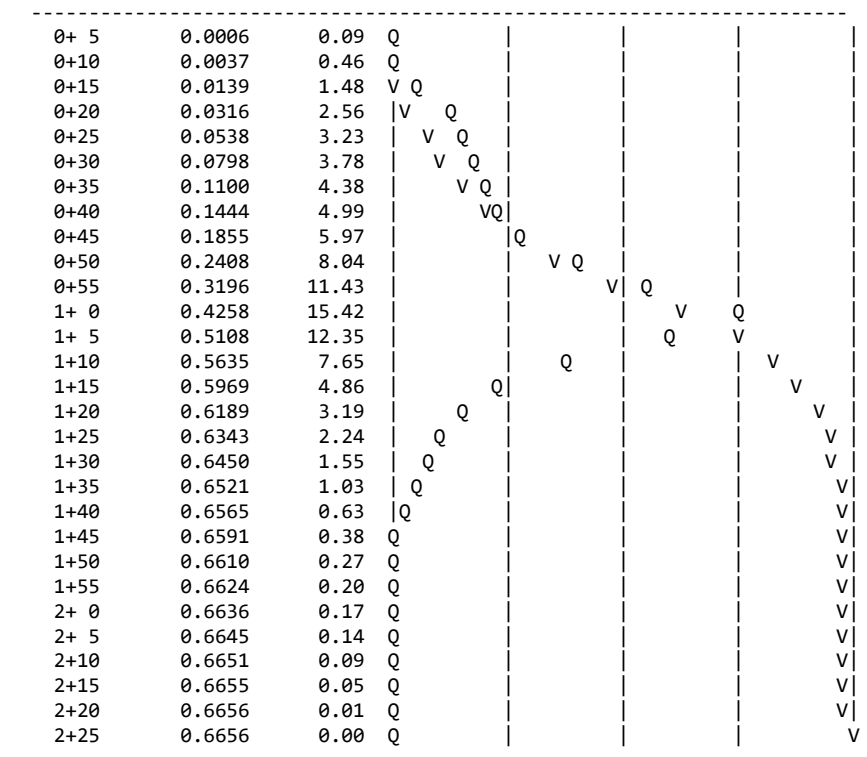
1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0



U n i t H y d r o g r a p h A n a l y s i s

Study date 06/19/23 File: UH199P10310.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6481

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

GARBANT ROAD RESIDENTIAL DEVELOPMENT
POSTDEVELOPMENT CONDITION
UNIT HYDROGRAGH METHOD
10-YEAR, 3-HR

Drainage Area = 9.42(Ac.) = 0.015 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 9.42(Ac.) = 0.015 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.210 Hr.
Lag time = 12.60 Min.
25% of lag time = 3.15 Min.
40% of lag time = 5.04 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.42	0.88	8.27

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.42	2.26	21.29

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.878(In)
Area Averaged 100-Year Rainfall = 2.260(In)

Point rain (area averaged) = 1.447(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.447(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
9.420	88.00	0.500

Total Area Entered = 9.42(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
88.0	88.0	0.153	0.500	0.084	1.000	0.084
					Sum (F) =	0.084

Area averaged mean soil loss (F) (In/Hr) = 0.084
Minimum soil loss rate ((In/Hr)) = 0.042

(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.500

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	39.683	3.099	0.294
2	0.167	79.365	11.566	1.098
3	0.250	119.048	30.820	2.926
4	0.333	158.730	22.777	2.162
5	0.417	198.413	10.022	0.951
6	0.500	238.095	6.692	0.635
7	0.583	277.778	4.742	0.450
8	0.667	317.460	3.431	0.326
9	0.750	357.143	2.426	0.230
10	0.833	396.825	1.633	0.155
11	0.917	436.508	0.891	0.085
12	1.000	476.190	0.461	0.044
13	1.083	515.873	0.389	0.037
14	1.167	555.556	0.267	0.025
15	1.250	595.238	0.288	0.027
16	1.333	634.921	0.256	0.024
17	1.417	674.603	0.145	0.014
18	1.500	714.286	0.096	0.009
			Sum = 100.000	Sum= 9.494

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.226	0.084	(0.113)	0.142
2	0.17	1.30	0.226	0.084	(0.113)	0.142
3	0.25	1.10	0.191	0.084	(0.095)	0.107
4	0.33	1.50	0.260	0.084	(0.130)	0.176
5	0.42	1.50	0.260	0.084	(0.130)	0.176
6	0.50	1.80	0.312	0.084	(0.156)	0.228
7	0.58	1.50	0.260	0.084	(0.130)	0.176
8	0.67	1.80	0.312	0.084	(0.156)	0.228
9	0.75	1.80	0.312	0.084	(0.156)	0.228
10	0.83	1.50	0.260	0.084	(0.130)	0.176
11	0.92	1.60	0.278	0.084	(0.139)	0.194
12	1.00	1.80	0.312	0.084	(0.156)	0.228
13	1.08	2.20	0.382	0.084	(0.191)	0.298
14	1.17	2.20	0.382	0.084	(0.191)	0.298
15	1.25	2.20	0.382	0.084	(0.191)	0.298
16	1.33	2.00	0.347	0.084	(0.174)	0.263
17	1.42	2.60	0.451	0.084	(0.226)	0.367
18	1.50	2.70	0.469	0.084	(0.234)	0.385
19	1.58	2.40	0.417	0.084	(0.208)	0.333
20	1.67	2.70	0.469	0.084	(0.234)	0.385
21	1.75	3.30	0.573	0.084	(0.286)	0.489
22	1.83	3.10	0.538	0.084	(0.269)	0.454
23	1.92	2.90	0.503	0.084	(0.252)	0.419
24	2.00	3.00	0.521	0.084	(0.260)	0.437
25	2.08	3.10	0.538	0.084	(0.269)	0.454
26	2.17	4.20	0.729	0.084	(0.365)	0.645
27	2.25	5.00	0.868	0.084	(0.434)	0.784
28	2.33	3.50	0.608	0.084	(0.304)	0.523
29	2.42	6.80	1.180	0.084	(0.590)	1.096
30	2.50	7.30	1.267	0.084	(0.634)	1.183
31	2.58	8.20	1.423	0.084	(0.712)	1.339
32	2.67	5.90	1.024	0.084	(0.512)	0.940
33	2.75	2.00	0.347	0.084	(0.174)	0.263
34	2.83	1.80	0.312	0.084	(0.156)	0.228

```
35   2.92     1.80      0.312          0.084    (  0.156)        0.228
36   3.00     0.60      0.104       (  0.084)       0.052        0.052
              (Loss Rate Not Used)
   Sum =     100.0                                  Sum =    14.4
      Flood volume = Effective rainfall      1.20(In)
       times area       9.4(Ac.)/[(In)/(Ft.)] =       0.9(Ac.Ft)
      Total soil loss =      0.25(In)
      Total soil loss =     0.196(Ac.Ft)
      Total rainfall =      1.45(In)
      Flood volume =       40932.7 Cubic Feet
      Total soil loss =        8530.1 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      9.812(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          3 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
-------------------------------------------------------------------------
  0+ 5       0.0003      0.04  Q         |         |         |         |
  0+10       0.0016      0.20  Q         |         |         |         |
  0+15       0.0058      0.60  V Q       |         |         |         |
  0+20       0.0119      0.89  V  Q      |         |         |         |
  0+25       0.0188      1.00  V  Q      |         |         |         |
  0+30       0.0273      1.23  |V  Q     |         |         |         |
  0+35       0.0373      1.46  |V   Q    |         |         |         |
  0+40       0.0487      1.66  | V   Q   |         |         |         |
  0+45       0.0607      1.74  | V   Q   |         |         |         |
  0+50       0.0734      1.85  |  V   Q  |         |         |         |
  0+55       0.0867      1.92  |  V   Q  |         |         |         |
  1+ 0       0.0995      1.86  |   V  Q  |         |         |         |
  1+ 5       0.1125      1.89  |   V  Q  |         |         |         |
  1+10       0.1268      2.08  |    V  Q |         |         |         |
  1+15       0.1431      2.36  |     V  Q|         |         |         |
  1+20       0.1606      2.54  |     V   Q         |         |         |
  1+25       0.1787      2.62  |      V  Q         |         |         |
  1+30       0.1972      2.70  |       V Q         |         |         |
  1+35       0.2177      2.97  |        V|Q        |         |         |
  1+40       0.2398      3.20  |         V Q       |         |         |
  1+45       0.2623      3.28  |         |V Q      |         |         |
  1+50       0.2864      3.50  |         | V Q     |         |         |
  1+55       0.3131      3.88  |         |  V Q    |         |         |
  2+ 0       0.3408      4.02  |         |   V Q   |         |         |
  2+ 5       0.3684      4.00  |         |    VQ   |         |         |
  2+10       0.3967      4.11  |         |     Q   |         |         |
  2+15       0.4275      4.46  |         |      QV |         |         |
  2+20       0.4630      5.16  |         |        VQ         |         |
  2+25       0.5036      5.89  |         |         |V Q      |         |
  2+30       0.5469      6.29  |         |         |  V Q    |         |
  2+35       0.6007      7.81  |         |         |    V    |Q        |
  2+40       0.6647      9.29  |         |         |       V |       Q |
  2+45       0.7322      9.81  |         |         |         |V       Q|
  2+50       0.7918      8.65  |         |         |         |  VQ      |
  2+55       0.8346      6.21  |         |         |   Q     |    V     |
  3+ 0       0.8657      4.52  |         |       Q |         |     V    |
  3+ 5       0.8901      3.55  |         |   Q     |         |      V   |
  3+10       0.9072      2.48  |         |Q        |         |       V  |
  3+15       0.9181      1.59  |     Q   |         |         |        V|
  3+20       0.9252      1.03  |   Q     |         |         |        V|
  3+25       0.9299      0.68  | Q       |         |         |        V|
  3+30       0.9330      0.45  |Q        |         |         |        V|
  3+35       0.9351      0.31  |Q        |         |         |        V|
  3+40       0.9367      0.22  Q         |         |         |        V|
  3+45       0.9377      0.16  Q         |         |         |        V|
  3+50       0.9385      0.11  Q         |         |         |        V|
  3+55       0.9390      0.08  Q         |         |         |        V|
  4+ 0       0.9394      0.05  Q         |         |         |        V|
  4+ 5       0.9395      0.03  Q         |         |         |        V|
  4+10       0.9396      0.01  Q         |         |         |        V|
```

```
    4+15       0.9397      0.01  Q         |         |         |        V|
    4+20       0.9397      0.00  Q         |         |         |        V|
    4+25       0.9397      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Study date 06/19/23 File: UH199P10610.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6481

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

GARBANT ROAD RESIDENTIAL DEVELOPMENT
POSTDEVELOPMENT CONDITION
UNIT HYDROGRAGH METHOD
10-YEAR, 6-HR

Drainage Area = 9.42(Ac.) = 0.015 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 9.42(Ac.) = 0.015 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.210 Hr.
Lag time = 12.60 Min.
25% of lag time = 3.15 Min.
40% of lag time = 5.04 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.42	1.23	11.59

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.42	3.05	28.73

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.230(In)
Area Averaged 100-Year Rainfall = 3.050(In)

Point rain (area averaged) = 1.979(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.979(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
9.420	88.00	0.500

Total Area Entered = 9.42(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
88.0	88.0	0.153	0.500	0.084	1.000	0.084
					Sum (F) =	0.084

Area averaged mean soil loss (F) (In/Hr) = 0.084
Minimum soil loss rate ((In/Hr)) = 0.042

(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.500

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

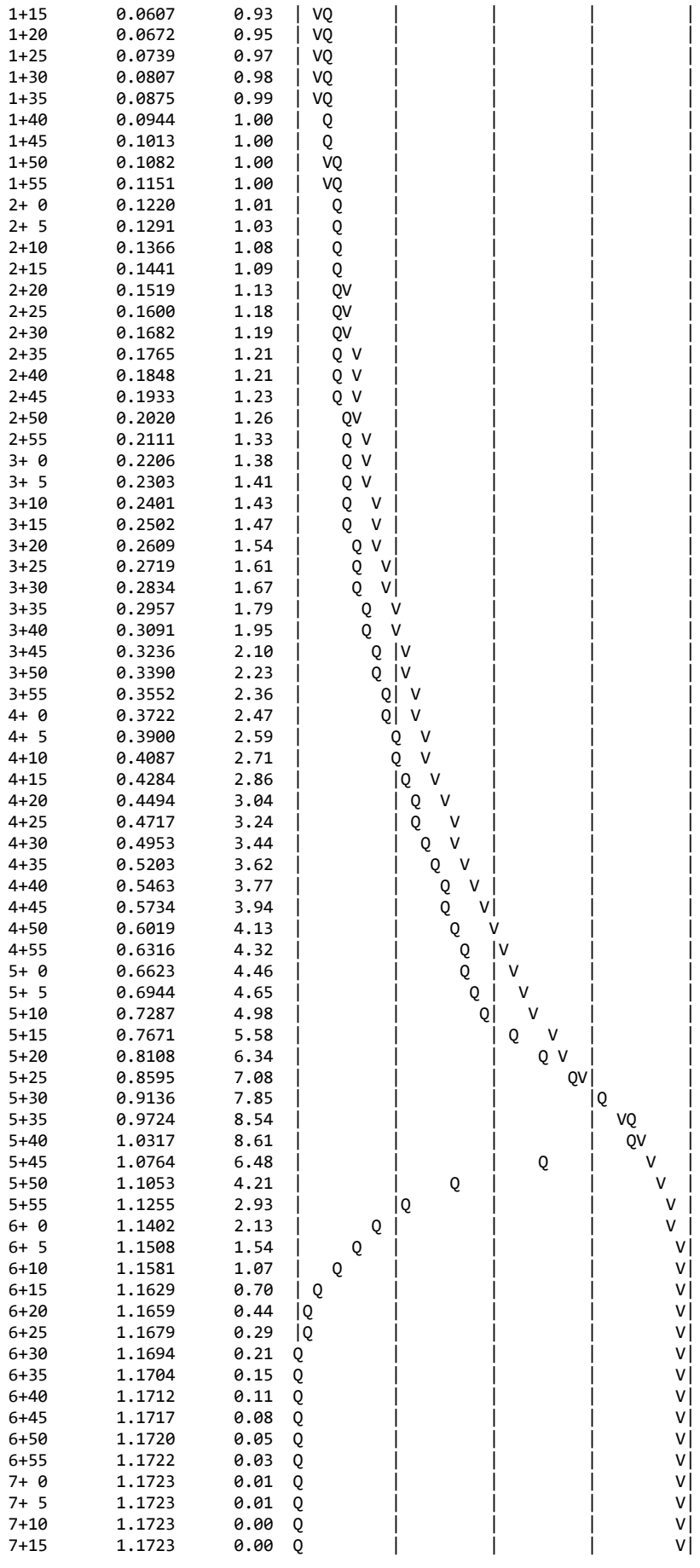
Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	39.683	3.099	0.294
2	0.167	79.365	11.566	1.098
3	0.250	119.048	30.820	2.926
4	0.333	158.730	22.777	2.162
5	0.417	198.413	10.022	0.951
6	0.500	238.095	6.692	0.635
7	0.583	277.778	4.742	0.450
8	0.667	317.460	3.431	0.326
9	0.750	357.143	2.426	0.230
10	0.833	396.825	1.633	0.155
11	0.917	436.508	0.891	0.085
12	1.000	476.190	0.461	0.044
13	1.083	515.873	0.389	0.037
14	1.167	555.556	0.267	0.025
15	1.250	595.238	0.288	0.027
16	1.333	634.921	0.256	0.024
17	1.417	674.603	0.145	0.014
18	1.500	714.286	0.096	0.009
			Sum = 100.000	Sum= 9.494

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.119	(0.084)	0.059	0.059
2	0.17	0.60	0.142	(0.084)	0.071	0.071
3	0.25	0.60	0.142	(0.084)	0.071	0.071
4	0.33	0.60	0.142	(0.084)	0.071	0.071
5	0.42	0.60	0.142	(0.084)	0.071	0.071
6	0.50	0.70	0.166	(0.084)	0.083	0.083
7	0.58	0.70	0.166	(0.084)	0.083	0.083
8	0.67	0.70	0.166	(0.084)	0.083	0.083
9	0.75	0.70	0.166	(0.084)	0.083	0.083
10	0.83	0.70	0.166	(0.084)	0.083	0.083
11	0.92	0.70	0.166	(0.084)	0.083	0.083
12	1.00	0.80	0.190	0.084	(0.095)	0.106
13	1.08	0.80	0.190	0.084	(0.095)	0.106
14	1.17	0.80	0.190	0.084	(0.095)	0.106
15	1.25	0.80	0.190	0.084	(0.095)	0.106
16	1.33	0.80	0.190	0.084	(0.095)	0.106
17	1.42	0.80	0.190	0.084	(0.095)	0.106
18	1.50	0.80	0.190	0.084	(0.095)	0.106
19	1.58	0.80	0.190	0.084	(0.095)	0.106
20	1.67	0.80	0.190	0.084	(0.095)	0.106
21	1.75	0.80	0.190	0.084	(0.095)	0.106
22	1.83	0.80	0.190	0.084	(0.095)	0.106
23	1.92	0.80	0.190	0.084	(0.095)	0.106
24	2.00	0.90	0.214	0.084	(0.107)	0.130
25	2.08	0.80	0.190	0.084	(0.095)	0.106
26	2.17	0.90	0.214	0.084	(0.107)	0.130
27	2.25	0.90	0.214	0.084	(0.107)	0.130
28	2.33	0.90	0.214	0.084	(0.107)	0.130
29	2.42	0.90	0.214	0.084	(0.107)	0.130
30	2.50	0.90	0.214	0.084	(0.107)	0.130
31	2.58	0.90	0.214	0.084	(0.107)	0.130
32	2.67	0.90	0.214	0.084	(0.107)	0.130
33	2.75	1.00	0.237	0.084	(0.119)	0.153
34	2.83	1.00	0.237	0.084	(0.119)	0.153

```
35   2.92     1.00      0.237          0.084    (  0.119)        0.153
36   3.00     1.00      0.237          0.084    (  0.119)        0.153
37   3.08     1.00      0.237          0.084    (  0.119)        0.153
38   3.17     1.10      0.261          0.084    (  0.131)        0.177
39   3.25     1.10      0.261          0.084    (  0.131)        0.177
40   3.33     1.10      0.261          0.084    (  0.131)        0.177
41   3.42     1.20      0.285          0.084    (  0.142)        0.201
42   3.50     1.30      0.309          0.084    (  0.154)        0.225
43   3.58     1.40      0.332          0.084    (  0.166)        0.248
44   3.67     1.40      0.332          0.084    (  0.166)        0.248
45   3.75     1.50      0.356          0.084    (  0.178)        0.272
46   3.83     1.50      0.356          0.084    (  0.178)        0.272
47   3.92     1.60      0.380          0.084    (  0.190)        0.296
48   4.00     1.60      0.380          0.084    (  0.190)        0.296
49   4.08     1.70      0.404          0.084    (  0.202)        0.320
50   4.17     1.80      0.427          0.084    (  0.214)        0.343
51   4.25     1.90      0.451          0.084    (  0.226)        0.367
52   4.33     2.00      0.475          0.084    (  0.237)        0.391
53   4.42     2.10      0.499          0.084    (  0.249)        0.415
54   4.50     2.10      0.499          0.084    (  0.249)        0.415
55   4.58     2.20      0.522          0.084    (  0.261)        0.438
56   4.67     2.30      0.546          0.084    (  0.273)        0.462
57   4.75     2.40      0.570          0.084    (  0.285)        0.486
58   4.83     2.40      0.570          0.084    (  0.285)        0.486
59   4.92     2.50      0.594          0.084    (  0.297)        0.510
60   5.00     2.60      0.617          0.084    (  0.309)        0.533
61   5.08     3.10      0.736          0.084    (  0.368)        0.652
62   5.17     3.60      0.855          0.084    (  0.427)        0.771
63   5.25     3.90      0.926          0.084    (  0.463)        0.842
64   5.33     4.20      0.997          0.084    (  0.499)        0.913
65   5.42     4.70      1.116          0.084    (  0.558)        1.032
66   5.50     5.60      1.330          0.084    (  0.665)        1.246
67   5.58     1.90      0.451          0.084    (  0.226)        0.367
68   5.67     0.90      0.214          0.084    (  0.107)        0.130
69   5.75     0.60      0.142       (  0.084)       0.071        0.071
70   5.83     0.50      0.119       (  0.084)       0.059        0.059
71   5.92     0.30      0.071       (  0.084)       0.036        0.036
72   6.00     0.20      0.047       (  0.084)       0.024        0.024
              (Loss Rate Not Used)
   Sum =     100.0                                   Sum =    17.9
      Flood volume = Effective rainfall      1.49(In)
       times area       9.4(Ac.)/[(In)/(Ft.)] =       1.2(Ac.Ft)
      Total soil loss =      0.49(In)
      Total soil loss =     0.381(Ac.Ft)
      Total rainfall =      1.98(In)
      Flood volume =       51067.4 Cubic Feet
      Total soil loss =       16593.4 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      8.607(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          6 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
-------------------------------------------------------------------------
  0+ 5       0.0001      0.02  Q         |         |         |         |
  0+10       0.0007      0.09  Q         |         |         |         |
  0+15       0.0026      0.27  VQ        |         |         |         |
  0+20       0.0056      0.44  VQ        |         |         |         |
  0+25       0.0092      0.52  V Q       |         |         |         |
  0+30       0.0131      0.57  V Q       |         |         |         |
  0+35       0.0174      0.62  V Q       |         |         |         |
  0+40       0.0220      0.68  V Q       |         |         |         |
  0+45       0.0270      0.72  V Q       |         |         |         |
  0+50       0.0321      0.74  |VQ       |         |         |         |
  0+55       0.0373      0.76  |V Q      |         |         |         |
  1+ 0       0.0427      0.77  |V Q      |         |         |         |
  1+ 5       0.0482      0.81  |V Q      |         |         |         |
  1+10       0.0543      0.88  |V Q      |         |         |         |
```



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    7+20       1.1723      0.00  Q         |         |         |        V|
    7+25       1.1723      0.00  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

Study date 06/19/23 File: UH199P102410.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6481

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

GARBANT ROAD RESIDENTIAL DEVELOPMENT
POSTDEVELOPMENT CONDITION
UNIT HYDROGRAGH METHOD
10-YEAR, 24-HR

Drainage Area = 9.42(Ac.) = 0.015 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 9.42(Ac.) = 0.015 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.210 Hr.
Lag time = 12.60 Min.
25% of lag time = 3.15 Min.
40% of lag time = 5.04 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.42	2.14	20.16

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.42	5.61	52.85

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.140(In)
Area Averaged 100-Year Rainfall = 5.610(In)

Point rain (area averaged) = 3.568(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 3.568(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
9.420	88.00	0.500

Total Area Entered = 9.42(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
88.0	88.0	0.153	0.500	0.084	1.000	0.084
					Sum (F) =	0.084

Area averaged mean soil loss (F) (In/Hr) = 0.084
Minimum soil loss rate ((In/Hr)) = 0.042

(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.500

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	39.683	3.099	0.294
2	0.167	79.365	11.566	1.098
3	0.250	119.048	30.820	2.926
4	0.333	158.730	22.777	2.162
5	0.417	198.413	10.022	0.951
6	0.500	238.095	6.692	0.635
7	0.583	277.778	4.742	0.450
8	0.667	317.460	3.431	0.326
9	0.750	357.143	2.426	0.230
10	0.833	396.825	1.633	0.155
11	0.917	436.508	0.891	0.085
12	1.000	476.190	0.461	0.044
13	1.083	515.873	0.389	0.037
14	1.167	555.556	0.267	0.025
15	1.250	595.238	0.288	0.027
16	1.333	634.921	0.256	0.024
17	1.417	674.603	0.145	0.014
18	1.500	714.286	0.096	0.009
			Sum = 100.000	Sum= 9.494

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.029	(0.149)	0.014	0.014
2	0.17	0.07	0.029	(0.148)	0.014	0.014
3	0.25	0.07	0.029	(0.148)	0.014	0.014
4	0.33	0.10	0.043	(0.147)	0.021	0.021
5	0.42	0.10	0.043	(0.147)	0.021	0.021
6	0.50	0.10	0.043	(0.146)	0.021	0.021
7	0.58	0.10	0.043	(0.146)	0.021	0.021
8	0.67	0.10	0.043	(0.145)	0.021	0.021
9	0.75	0.10	0.043	(0.144)	0.021	0.021
10	0.83	0.13	0.057	(0.144)	0.029	0.029
11	0.92	0.13	0.057	(0.143)	0.029	0.029
12	1.00	0.13	0.057	(0.143)	0.029	0.029
13	1.08	0.10	0.043	(0.142)	0.021	0.021
14	1.17	0.10	0.043	(0.142)	0.021	0.021
15	1.25	0.10	0.043	(0.141)	0.021	0.021
16	1.33	0.10	0.043	(0.140)	0.021	0.021
17	1.42	0.10	0.043	(0.140)	0.021	0.021
18	1.50	0.10	0.043	(0.139)	0.021	0.021
19	1.58	0.10	0.043	(0.139)	0.021	0.021
20	1.67	0.10	0.043	(0.138)	0.021	0.021
21	1.75	0.10	0.043	(0.138)	0.021	0.021
22	1.83	0.13	0.057	(0.137)	0.029	0.029
23	1.92	0.13	0.057	(0.137)	0.029	0.029
24	2.00	0.13	0.057	(0.136)	0.029	0.029
25	2.08	0.13	0.057	(0.135)	0.029	0.029
26	2.17	0.13	0.057	(0.135)	0.029	0.029
27	2.25	0.13	0.057	(0.134)	0.029	0.029
28	2.33	0.13	0.057	(0.134)	0.029	0.029
29	2.42	0.13	0.057	(0.133)	0.029	0.029
30	2.50	0.13	0.057	(0.133)	0.029	0.029
31	2.58	0.17	0.071	(0.132)	0.036	0.036
32	2.67	0.17	0.071	(0.132)	0.036	0.036
33	2.75	0.17	0.071	(0.131)	0.036	0.036
34	2.83	0.17	0.071	(0.131)	0.036	0.036

35	2.92	0.17	0.071	(	0.130)	0.036	0.036
36	3.00	0.17	0.071	(	0.129)	0.036	0.036
37	3.08	0.17	0.071	(	0.129)	0.036	0.036
38	3.17	0.17	0.071	(	0.128)	0.036	0.036
39	3.25	0.17	0.071	(	0.128)	0.036	0.036
40	3.33	0.17	0.071	(	0.127)	0.036	0.036
41	3.42	0.17	0.071	(	0.127)	0.036	0.036
42	3.50	0.17	0.071	(	0.126)	0.036	0.036
43	3.58	0.17	0.071	(	0.126)	0.036	0.036
44	3.67	0.17	0.071	(	0.125)	0.036	0.036
45	3.75	0.17	0.071	(	0.125)	0.036	0.036
46	3.83	0.20	0.086	(	0.124)	0.043	0.043
47	3.92	0.20	0.086	(	0.124)	0.043	0.043
48	4.00	0.20	0.086	(	0.123)	0.043	0.043
49	4.08	0.20	0.086	(	0.123)	0.043	0.043
50	4.17	0.20	0.086	(	0.122)	0.043	0.043
51	4.25	0.20	0.086	(	0.122)	0.043	0.043
52	4.33	0.23	0.100	(	0.121)	0.050	0.050
53	4.42	0.23	0.100	(	0.121)	0.050	0.050
54	4.50	0.23	0.100	(	0.120)	0.050	0.050
55	4.58	0.23	0.100	(	0.119)	0.050	0.050
56	4.67	0.23	0.100	(	0.119)	0.050	0.050
57	4.75	0.23	0.100	(	0.118)	0.050	0.050
58	4.83	0.27	0.114	(	0.118)	0.057	0.057
59	4.92	0.27	0.114	(	0.117)	0.057	0.057
60	5.00	0.27	0.114	(	0.117)	0.057	0.057
61	5.08	0.20	0.086	(	0.116)	0.043	0.043
62	5.17	0.20	0.086	(	0.116)	0.043	0.043
63	5.25	0.20	0.086	(	0.115)	0.043	0.043
64	5.33	0.23	0.100	(	0.115)	0.050	0.050
65	5.42	0.23	0.100	(	0.114)	0.050	0.050
66	5.50	0.23	0.100	(	0.114)	0.050	0.050
67	5.58	0.27	0.114	(	0.113)	0.057	0.057
68	5.67	0.27	0.114	(	0.113)	0.057	0.057
69	5.75	0.27	0.114	(	0.112)	0.057	0.057
70	5.83	0.27	0.114	(	0.112)	0.057	0.057
71	5.92	0.27	0.114	(	0.111)	0.057	0.057
72	6.00	0.27	0.114	(	0.111)	0.057	0.057
73	6.08	0.30	0.128	(	0.110)	0.064	0.064
74	6.17	0.30	0.128	(	0.110)	0.064	0.064
75	6.25	0.30	0.128	(	0.109)	0.064	0.064
76	6.33	0.30	0.128	(	0.109)	0.064	0.064
77	6.42	0.30	0.128	(	0.108)	0.064	0.064
78	6.50	0.30	0.128	(	0.108)	0.064	0.064
79	6.58	0.33	0.143	(	0.108)	0.071	0.071
80	6.67	0.33	0.143	(	0.107)	0.071	0.071
81	6.75	0.33	0.143	(	0.107)	0.071	0.071
82	6.83	0.33	0.143	(	0.106)	0.071	0.071
83	6.92	0.33	0.143	(	0.106)	0.071	0.071
84	7.00	0.33	0.143	(	0.105)	0.071	0.071
85	7.08	0.33	0.143	(	0.105)	0.071	0.071
86	7.17	0.33	0.143	(	0.104)	0.071	0.071
87	7.25	0.33	0.143	(	0.104)	0.071	0.071
88	7.33	0.37	0.157	(	0.103)	0.078	0.078
89	7.42	0.37	0.157	(	0.103)	0.078	0.078
90	7.50	0.37	0.157	(	0.102)	0.078	0.078
91	7.58	0.40	0.171	(	0.102)	0.086	0.086
92	7.67	0.40	0.171	(	0.101)	0.086	0.086
93	7.75	0.40	0.171	(	0.101)	0.086	0.086
94	7.83	0.43	0.186	(	0.100)	0.093	0.093
95	7.92	0.43	0.186	(	0.100)	0.093	0.093
96	8.00	0.43	0.186	(	0.099)	0.093	0.093
97	8.08	0.50	0.214		0.099	(0.107)	0.115
98	8.17	0.50	0.214		0.099	(0.107)	0.116
99	8.25	0.50	0.214		0.098	(0.107)	0.116
100	8.33	0.50	0.214		0.098	(0.107)	0.116
101	8.42	0.50	0.214		0.097	(0.107)	0.117
102	8.50	0.50	0.214		0.097	(0.107)	0.117
103	8.58	0.53	0.228		0.096	(0.114)	0.132
104	8.67	0.53	0.228		0.096	(0.114)	0.133
105	8.75	0.53	0.228		0.095	(0.114)	0.133
106	8.83	0.57	0.243		0.095	(0.121)	0.148
107	8.92	0.57	0.243		0.094	(0.121)	0.148

108	9.00	0.57	0.243	0.094	(	0.121)	0.149
109	9.08	0.63	0.271	0.094	(	0.136)	0.178
110	9.17	0.63	0.271	0.093	(	0.136)	0.178
111	9.25	0.63	0.271	0.093	(	0.136)	0.178
112	9.33	0.67	0.285	0.092	(	0.143)	0.193
113	9.42	0.67	0.285	0.092	(	0.143)	0.194
114	9.50	0.67	0.285	0.091	(	0.143)	0.194
115	9.58	0.70	0.300	0.091	(	0.150)	0.209
116	9.67	0.70	0.300	0.090	(	0.150)	0.209
117	9.75	0.70	0.300	0.090	(	0.150)	0.210
118	9.83	0.73	0.314	0.090	(	0.157)	0.224
119	9.92	0.73	0.314	0.089	(	0.157)	0.225
120	10.00	0.73	0.314	0.089	(	0.157)	0.225
121	10.08	0.50	0.214	0.088	(	0.107)	0.126
122	10.17	0.50	0.214	0.088	(	0.107)	0.126
123	10.25	0.50	0.214	0.087	(	0.107)	0.127
124	10.33	0.50	0.214	0.087	(	0.107)	0.127
125	10.42	0.50	0.214	0.087	(	0.107)	0.127
126	10.50	0.50	0.214	0.086	(	0.107)	0.128
127	10.58	0.67	0.285	0.086	(	0.143)	0.200
128	10.67	0.67	0.285	0.085	(	0.143)	0.200
129	10.75	0.67	0.285	0.085	(	0.143)	0.200
130	10.83	0.67	0.285	0.085	(	0.143)	0.201
131	10.92	0.67	0.285	0.084	(	0.143)	0.201
132	11.00	0.67	0.285	0.084	(	0.143)	0.202
133	11.08	0.63	0.271	0.083	(	0.136)	0.188
134	11.17	0.63	0.271	0.083	(	0.136)	0.188
135	11.25	0.63	0.271	0.082	(	0.136)	0.189
136	11.33	0.63	0.271	0.082	(	0.136)	0.189
137	11.42	0.63	0.271	0.082	(	0.136)	0.189
138	11.50	0.63	0.271	0.081	(	0.136)	0.190
139	11.58	0.57	0.243	0.081	(	0.121)	0.162
140	11.67	0.57	0.243	0.080	(	0.121)	0.162
141	11.75	0.57	0.243	0.080	(	0.121)	0.163
142	11.83	0.60	0.257	0.080	(	0.128)	0.177
143	11.92	0.60	0.257	0.079	(	0.128)	0.178
144	12.00	0.60	0.257	0.079	(	0.128)	0.178
145	12.08	0.83	0.357	0.078	(	0.178)	0.278
146	12.17	0.83	0.357	0.078	(	0.178)	0.279
147	12.25	0.83	0.357	0.078	(	0.178)	0.279
148	12.33	0.87	0.371	0.077	(	0.186)	0.294
149	12.42	0.87	0.371	0.077	(	0.186)	0.294
150	12.50	0.87	0.371	0.077	(	0.186)	0.295
151	12.58	0.93	0.400	0.076	(	0.200)	0.323
152	12.67	0.93	0.400	0.076	(	0.200)	0.324
153	12.75	0.93	0.400	0.075	(	0.200)	0.324
154	12.83	0.97	0.414	0.075	(	0.207)	0.339
155	12.92	0.97	0.414	0.075	(	0.207)	0.339
156	13.00	0.97	0.414	0.074	(	0.207)	0.340
157	13.08	1.13	0.485	0.074	(	0.243)	0.411
158	13.17	1.13	0.485	0.073	(	0.243)	0.412
159	13.25	1.13	0.485	0.073	(	0.243)	0.412
160	13.33	1.13	0.485	0.073	(	0.243)	0.412
161	13.42	1.13	0.485	0.072	(	0.243)	0.413
162	13.50	1.13	0.485	0.072	(	0.243)	0.413
163	13.58	0.77	0.328	0.072	(	0.164)	0.257
164	13.67	0.77	0.328	0.071	(	0.164)	0.257
165	13.75	0.77	0.328	0.071	(	0.164)	0.257
166	13.83	0.77	0.328	0.071	(	0.164)	0.258
167	13.92	0.77	0.328	0.070	(	0.164)	0.258
168	14.00	0.77	0.328	0.070	(	0.164)	0.258
169	14.08	0.90	0.385	0.069	(	0.193)	0.316
170	14.17	0.90	0.385	0.069	(	0.193)	0.316
171	14.25	0.90	0.385	0.069	(	0.193)	0.317
172	14.33	0.87	0.371	0.068	(	0.186)	0.303
173	14.42	0.87	0.371	0.068	(	0.186)	0.303
174	14.50	0.87	0.371	0.068	(	0.186)	0.303
175	14.58	0.87	0.371	0.067	(	0.186)	0.304
176	14.67	0.87	0.371	0.067	(	0.186)	0.304
177	14.75	0.87	0.371	0.067	(	0.186)	0.304
178	14.83	0.83	0.357	0.066	(	0.178)	0.290
179	14.92	0.83	0.357	0.066	(	0.178)	0.291
180	15.00	0.83	0.357	0.066	(	0.178)	0.291

181	15.08	0.80	0.342	0.065	(0.171)	0.277
182	15.17	0.80	0.342	0.065	(0.171)	0.278
183	15.25	0.80	0.342	0.065	(0.171)	0.278
184	15.33	0.77	0.328	0.064	(0.164)	0.264
185	15.42	0.77	0.328	0.064	(0.164)	0.264
186	15.50	0.77	0.328	0.064	(0.164)	0.265
187	15.58	0.63	0.271	0.063	(0.136)	0.208
188	15.67	0.63	0.271	0.063	(0.136)	0.208
189	15.75	0.63	0.271	0.063	(0.136)	0.208
190	15.83	0.63	0.271	0.062	(0.136)	0.209
191	15.92	0.63	0.271	0.062	(0.136)	0.209
192	16.00	0.63	0.271	0.062	(0.136)	0.209
193	16.08	0.13	0.057	(0.061)	0.029	0.029
194	16.17	0.13	0.057	(0.061)	0.029	0.029
195	16.25	0.13	0.057	(0.061)	0.029	0.029
196	16.33	0.13	0.057	(0.060)	0.029	0.029
197	16.42	0.13	0.057	(0.060)	0.029	0.029
198	16.50	0.13	0.057	(0.060)	0.029	0.029
199	16.58	0.10	0.043	(0.060)	0.021	0.021
200	16.67	0.10	0.043	(0.059)	0.021	0.021
201	16.75	0.10	0.043	(0.059)	0.021	0.021
202	16.83	0.10	0.043	(0.059)	0.021	0.021
203	16.92	0.10	0.043	(0.058)	0.021	0.021
204	17.00	0.10	0.043	(0.058)	0.021	0.021
205	17.08	0.17	0.071	(0.058)	0.036	0.036
206	17.17	0.17	0.071	(0.057)	0.036	0.036
207	17.25	0.17	0.071	(0.057)	0.036	0.036
208	17.33	0.17	0.071	(0.057)	0.036	0.036
209	17.42	0.17	0.071	(0.057)	0.036	0.036
210	17.50	0.17	0.071	(0.056)	0.036	0.036
211	17.58	0.17	0.071	(0.056)	0.036	0.036
212	17.67	0.17	0.071	(0.056)	0.036	0.036
213	17.75	0.17	0.071	(0.055)	0.036	0.036
214	17.83	0.13	0.057	(0.055)	0.029	0.029
215	17.92	0.13	0.057	(0.055)	0.029	0.029
216	18.00	0.13	0.057	(0.055)	0.029	0.029
217	18.08	0.13	0.057	(0.054)	0.029	0.029
218	18.17	0.13	0.057	(0.054)	0.029	0.029
219	18.25	0.13	0.057	(0.054)	0.029	0.029
220	18.33	0.13	0.057	(0.054)	0.029	0.029
221	18.42	0.13	0.057	(0.053)	0.029	0.029
222	18.50	0.13	0.057	(0.053)	0.029	0.029
223	18.58	0.10	0.043	(0.053)	0.021	0.021
224	18.67	0.10	0.043	(0.053)	0.021	0.021
225	18.75	0.10	0.043	(0.052)	0.021	0.021
226	18.83	0.07	0.029	(0.052)	0.014	0.014
227	18.92	0.07	0.029	(0.052)	0.014	0.014
228	19.00	0.07	0.029	(0.052)	0.014	0.014
229	19.08	0.10	0.043	(0.051)	0.021	0.021
230	19.17	0.10	0.043	(0.051)	0.021	0.021
231	19.25	0.10	0.043	(0.051)	0.021	0.021
232	19.33	0.13	0.057	(0.051)	0.029	0.029
233	19.42	0.13	0.057	(0.050)	0.029	0.029
234	19.50	0.13	0.057	(0.050)	0.029	0.029
235	19.58	0.10	0.043	(0.050)	0.021	0.021
236	19.67	0.10	0.043	(0.050)	0.021	0.021
237	19.75	0.10	0.043	(0.049)	0.021	0.021
238	19.83	0.07	0.029	(0.049)	0.014	0.014
239	19.92	0.07	0.029	(0.049)	0.014	0.014
240	20.00	0.07	0.029	(0.049)	0.014	0.014
241	20.08	0.10	0.043	(0.049)	0.021	0.021
242	20.17	0.10	0.043	(0.048)	0.021	0.021
243	20.25	0.10	0.043	(0.048)	0.021	0.021
244	20.33	0.10	0.043	(0.048)	0.021	0.021
245	20.42	0.10	0.043	(0.048)	0.021	0.021
246	20.50	0.10	0.043	(0.048)	0.021	0.021
247	20.58	0.10	0.043	(0.047)	0.021	0.021
248	20.67	0.10	0.043	(0.047)	0.021	0.021
249	20.75	0.10	0.043	(0.047)	0.021	0.021
250	20.83	0.07	0.029	(0.047)	0.014	0.014
251	20.92	0.07	0.029	(0.047)	0.014	0.014
252	21.00	0.07	0.029	(0.046)	0.014	0.014
253	21.08	0.10	0.043	(0.046)	0.021	0.021

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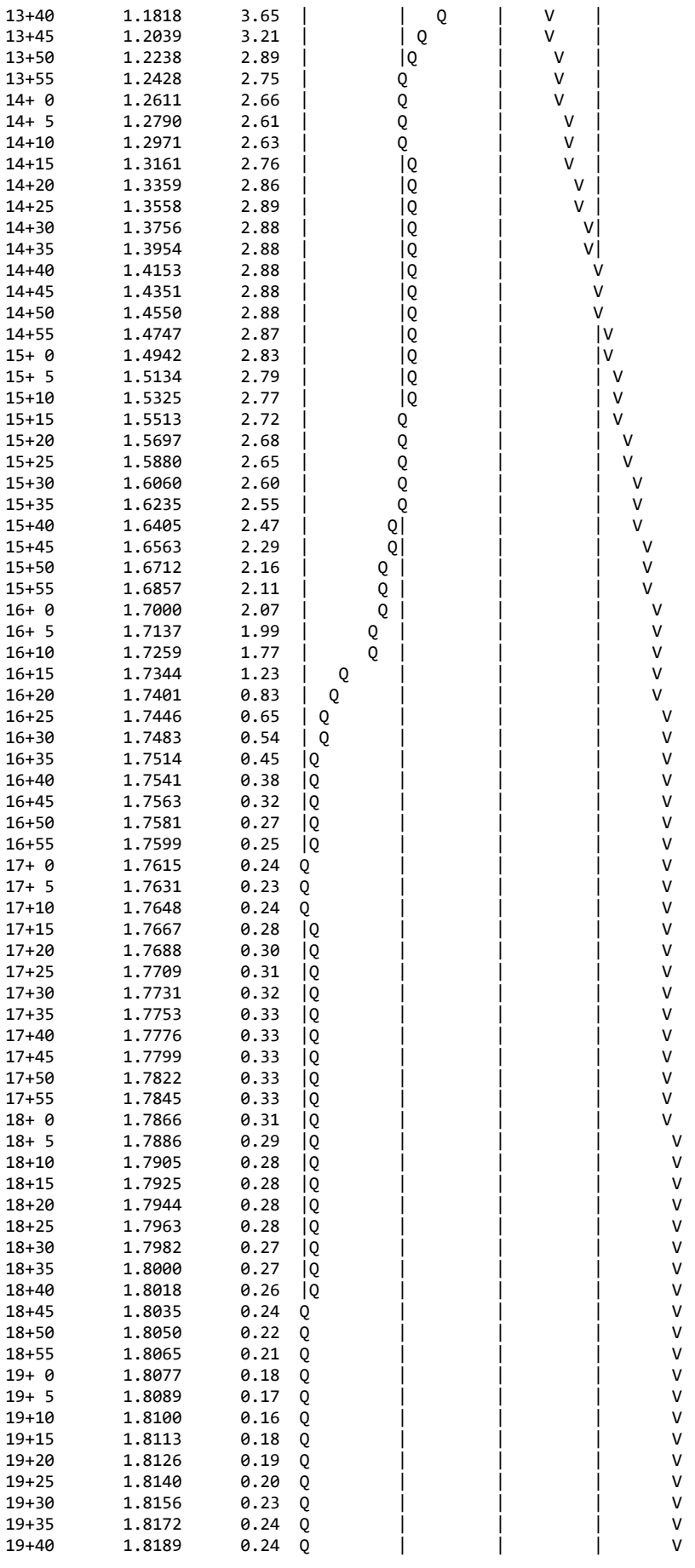
254  21.17     0.10      0.043       (  0.046)       0.021        0.021
255  21.25     0.10      0.043       (  0.046)       0.021        0.021
256  21.33     0.07      0.029       (  0.046)       0.014        0.014
257  21.42     0.07      0.029       (  0.045)       0.014        0.014
258  21.50     0.07      0.029       (  0.045)       0.014        0.014
259  21.58     0.10      0.043       (  0.045)       0.021        0.021
260  21.67     0.10      0.043       (  0.045)       0.021        0.021
261  21.75     0.10      0.043       (  0.045)       0.021        0.021
262  21.83     0.07      0.029       (  0.045)       0.014        0.014
263  21.92     0.07      0.029       (  0.045)       0.014        0.014
264  22.00     0.07      0.029       (  0.044)       0.014        0.014
265  22.08     0.10      0.043       (  0.044)       0.021        0.021
266  22.17     0.10      0.043       (  0.044)       0.021        0.021
267  22.25     0.10      0.043       (  0.044)       0.021        0.021
268  22.33     0.07      0.029       (  0.044)       0.014        0.014
269  22.42     0.07      0.029       (  0.044)       0.014        0.014
270  22.50     0.07      0.029       (  0.044)       0.014        0.014
271  22.58     0.07      0.029       (  0.043)       0.014        0.014
272  22.67     0.07      0.029       (  0.043)       0.014        0.014
273  22.75     0.07      0.029       (  0.043)       0.014        0.014
274  22.83     0.07      0.029       (  0.043)       0.014        0.014
275  22.92     0.07      0.029       (  0.043)       0.014        0.014
276  23.00     0.07      0.029       (  0.043)       0.014        0.014
277  23.08     0.07      0.029       (  0.043)       0.014        0.014
278  23.17     0.07      0.029       (  0.043)       0.014        0.014
279  23.25     0.07      0.029       (  0.043)       0.014        0.014
280  23.33     0.07      0.029       (  0.042)       0.014        0.014
281  23.42     0.07      0.029       (  0.042)       0.014        0.014
282  23.50     0.07      0.029       (  0.042)       0.014        0.014
283  23.58     0.07      0.029       (  0.042)       0.014        0.014
284  23.67     0.07      0.029       (  0.042)       0.014        0.014
285  23.75     0.07      0.029       (  0.042)       0.014        0.014
286  23.83     0.07      0.029       (  0.042)       0.014        0.014
287  23.92     0.07      0.029       (  0.042)       0.014        0.014
288  24.00     0.07      0.029       (  0.042)       0.014        0.014
               (Loss Rate Not Used)
    Sum =     100.0                                  Sum =    28.8
       Flood volume = Effective rainfall      2.40(In)
        times area       9.4(Ac.)/[(In)/(Ft.)] =       1.9(Ac.Ft)
       Total soil loss =      1.17(In)
       Total soil loss =     0.919(Ac.Ft)
       Total rainfall =      3.57(In)
       Flood volume =       81957.5 Cubic Feet
       Total soil loss =       40032.5 Cubic Feet
       ---------------------------------------------------------------------
        Peak flow rate of this hydrograph =      3.801(CFS)
       ---------------------------------------------------------------------
       +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
       ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

       ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0000      0.00  Q         |         |         |         |
   0+10       0.0002      0.02  Q         |         |         |         |
   0+15       0.0006      0.06  Q         |         |         |         |
   0+20       0.0012      0.09  Q         |         |         |         |
   0+25       0.0020      0.12  Q         |         |         |         |
   0+30       0.0030      0.15  Q         |         |         |         |
   0+35       0.0042      0.17  Q         |         |         |         |
   0+40       0.0054      0.18  Q         |         |         |         |
   0+45       0.0067      0.19  Q         |         |         |         |
   0+50       0.0081      0.19  Q         |         |         |         |
   0+55       0.0095      0.21  Q         |         |         |         |
   1+ 0       0.0111      0.23  Q         |         |         |         |
   1+ 5       0.0127      0.24  Q         |         |         |         |
   1+10       0.0144      0.24  Q         |         |         |         |
   1+15       0.0160      0.23  Q         |         |         |         |
   1+20       0.0175      0.22  Q         |         |         |         |
   1+25       0.0190      0.21  Q         |         |         |         |
```

1+30	0.0204	0.21	Q				
1+35	0.0218	0.21	Q				
1+40	0.0233	0.21	Q				
1+45	0.0247	0.21	Q				
1+50	0.0261	0.21	Q				
1+55	0.0276	0.21	Q				
2+ 0	0.0292	0.23	Q				
2+ 5	0.0309	0.25	VQ				
2+10	0.0327	0.26	VQ				
2+15	0.0345	0.26	VQ				
2+20	0.0363	0.26	VQ				
2+25	0.0381	0.27	VQ				
2+30	0.0400	0.27	VQ				
2+35	0.0419	0.27	VQ				
2+40	0.0438	0.28	VQ				
2+45	0.0459	0.30	VQ				
2+50	0.0480	0.32	|Q				
2+55	0.0503	0.32	|Q				
3+ 0	0.0525	0.33	|Q				
3+ 5	0.0548	0.33	|Q				
3+10	0.0571	0.33	|Q				
3+15	0.0594	0.34	|Q				
3+20	0.0617	0.34	|Q				
3+25	0.0641	0.34	|Q				
3+30	0.0664	0.34	|Q				
3+35	0.0687	0.34	|Q				
3+40	0.0711	0.34	|Q				
3+45	0.0734	0.34	|Q				
3+50	0.0757	0.34	|Q				
3+55	0.0781	0.35	|Q				
4+ 0	0.0807	0.37	|Q				
4+ 5	0.0833	0.39	|Q				
4+10	0.0860	0.39	|Q				
4+15	0.0888	0.40	|Q				
4+20	0.0915	0.40	|Q				
4+25	0.0944	0.41	|QV				
4+30	0.0974	0.43	|QV				
4+35	0.1005	0.45	|QV				
4+40	0.1036	0.46	|QV				
4+45	0.1068	0.46	|QV				
4+50	0.1100	0.47	|QV				
4+55	0.1133	0.48	|QV				
5+ 0	0.1168	0.50	| Q				
5+ 5	0.1203	0.51	| Q				
5+10	0.1238	0.51	| Q				
5+15	0.1271	0.47	|QV				
5+20	0.1301	0.44	|QV				
5+25	0.1332	0.44	|QV				
5+30	0.1363	0.45	|QV				
5+35	0.1395	0.47	|QV				
5+40	0.1428	0.48	|Q V				
5+45	0.1462	0.50	| QV				
5+50	0.1498	0.52	| QV				
5+55	0.1534	0.52	| QV				
6+ 0	0.1571	0.53	| QV				
6+ 5	0.1608	0.54	| QV				
6+10	0.1645	0.55	| QV				
6+15	0.1684	0.57	| QV				
6+20	0.1725	0.59	| QV				
6+25	0.1766	0.59	| QV				
6+30	0.1807	0.60	| QV				
6+35	0.1849	0.60	| QV				
6+40	0.1891	0.61	| Q V				
6+45	0.1935	0.64	| Q V				
6+50	0.1980	0.65	| Q V				
6+55	0.2025	0.66	| Q V				
7+ 0	0.2071	0.67	| Q V				
7+ 5	0.2117	0.67	| Q V				
7+10	0.2164	0.67	| Q V				
7+15	0.2210	0.67	| Q V				
7+20	0.2257	0.68	| Q V				
7+25	0.2304	0.69	| Q V				
7+30	0.2353	0.71	| Q V				

7+35	0.2403	0.73	Q V				
7+40	0.2454	0.74	Q V				
7+45	0.2507	0.77	Q V				
7+50	0.2561	0.79	Q V				
7+55	0.2616	0.80	Q V				
8+ 0	0.2673	0.83	Q V				
8+ 5	0.2732	0.86	Q V				
8+10	0.2794	0.89	Q V				
8+15	0.2860	0.96	Q V				
8+20	0.2930	1.02	Q V				
8+25	0.3002	1.05	Q V				
8+30	0.3076	1.07	Q V				
8+35	0.3151	1.09	Q V				
8+40	0.3227	1.11	Q V				
8+45	0.3307	1.16	Q V				
8+50	0.3391	1.21	Q V				
8+55	0.3476	1.24	Q V				
9+ 0	0.3566	1.30	Q V				
9+ 5	0.3659	1.35	Q V				
9+10	0.3755	1.40	Q V				
9+15	0.3859	1.51	Q V				
9+20	0.3968	1.59	Q V				
9+25	0.4081	1.64	Q V				
9+30	0.4199	1.71	Q V				
9+35	0.4320	1.76	Q V				
9+40	0.4444	1.81	Q V				
9+45	0.4573	1.87	Q V				
9+50	0.4705	1.92	Q V				
9+55	0.4840	1.96	Q V				
10+ 0	0.4979	2.02	Q V				
10+ 5	0.5120	2.04	Q V				
10+10	0.5254	1.95	Q V				
10+15	0.5369	1.68	Q V				
10+20	0.5471	1.47	Q V				
10+25	0.5567	1.39	Q V				
10+30	0.5659	1.33	Q V				
10+35	0.5749	1.32	Q V				
10+40	0.5844	1.37	Q V				
10+45	0.5951	1.56	Q V				
10+50	0.6068	1.70	Q V				
10+55	0.6190	1.77	Q V				
11+ 0	0.6315	1.81	Q V				
11+ 5	0.6442	1.84	Q V				
11+10	0.6570	1.85	Q V				
11+15	0.6695	1.83	Q V				
11+20	0.6820	1.81	Q V				
11+25	0.6944	1.80	Q V				
11+30	0.7068	1.80	Q V				
11+35	0.7192	1.79	Q V				
11+40	0.7313	1.76	Q V				
11+45	0.7429	1.68	Q V				
11+50	0.7541	1.63	Q V				
11+55	0.7653	1.62	Q V				
12+ 0	0.7766	1.65	Q V				
12+ 5	0.7883	1.70	Q V				
12+10	0.8008	1.82	Q V				
12+15	0.8154	2.11	Q V				
12+20	0.8315	2.34	Q V				
12+25	0.8484	2.46	Q V				
12+30	0.8661	2.57	Q V				
12+35	0.8843	2.66	Q V				
12+40	0.9032	2.74	Q V				
12+45	0.9229	2.86	Q V				
12+50	0.9432	2.95	Q V				
12+55	0.9639	3.01	Q V				
13+ 0	0.9851	3.08	Q V				
13+ 5	1.0068	3.15	Q V				
13+10	1.0293	3.26	Q V				
13+15	1.0533	3.49	Q V				
13+20	1.0786	3.67	Q V				
13+25	1.1044	3.75	Q V				
13+30	1.1306	3.80	Q V				
13+35	1.1567	3.79	Q V				



19+45	1.8205	0.23	Q				V
19+50	1.8220	0.21	Q				V
19+55	1.8234	0.20	Q				V
20+ 0	1.8246	0.18	Q				V
20+ 5	1.8257	0.16	Q				V
20+10	1.8268	0.16	Q				V
20+15	1.8281	0.18	Q				V
20+20	1.8294	0.19	Q				V
20+25	1.8307	0.19	Q				V
20+30	1.8321	0.20	Q				V
20+35	1.8334	0.20	Q				V
20+40	1.8348	0.20	Q				V
20+45	1.8362	0.20	Q				V
20+50	1.8376	0.20	Q				V
20+55	1.8389	0.19	Q				V
21+ 0	1.8401	0.17	Q				V
21+ 5	1.8412	0.16	Q				V
21+10	1.8423	0.16	Q				V
21+15	1.8435	0.18	Q				V
21+20	1.8448	0.19	Q				V
21+25	1.8460	0.18	Q				V
21+30	1.8472	0.17	Q				V
21+35	1.8482	0.15	Q				V
21+40	1.8493	0.16	Q				V
21+45	1.8505	0.17	Q				V
21+50	1.8518	0.19	Q				V
21+55	1.8531	0.18	Q				V
22+ 0	1.8542	0.16	Q				V
22+ 5	1.8553	0.15	Q				V
22+10	1.8563	0.16	Q				V
22+15	1.8575	0.17	Q				V
22+20	1.8588	0.19	Q				V
22+25	1.8601	0.18	Q				V
22+30	1.8612	0.16	Q				V
22+35	1.8622	0.15	Q				V
22+40	1.8633	0.15	Q				V
22+45	1.8642	0.14	Q				V
22+50	1.8652	0.14	Q				V
22+55	1.8662	0.14	Q				V
23+ 0	1.8671	0.14	Q				V
23+ 5	1.8681	0.14	Q				V
23+10	1.8690	0.14	Q				V
23+15	1.8699	0.14	Q				V
23+20	1.8709	0.14	Q				V
23+25	1.8718	0.14	Q				V
23+30	1.8727	0.14	Q				V
23+35	1.8737	0.14	Q				V
23+40	1.8746	0.14	Q				V
23+45	1.8756	0.14	Q				V
23+50	1.8765	0.14	Q				V
23+55	1.8774	0.14	Q				V
24+ 0	1.8784	0.14	Q				V
24+ 5	1.8793	0.13	Q				V
24+10	1.8801	0.12	Q				V
24+15	1.8806	0.07	Q				V
24+20	1.8809	0.04	Q				V
24+25	1.8811	0.03	Q				V
24+30	1.8812	0.02	Q				V
24+35	1.8813	0.01	Q				V
24+40	1.8814	0.01	Q				V
24+45	1.8814	0.01	Q				V
24+50	1.8814	0.00	Q				V
24+55	1.8814	0.00	Q				V
25+ 0	1.8815	0.00	Q				V
25+ 5	1.8815	0.00	Q				V
25+10	1.8815	0.00	Q				V
25+15	1.8815	0.00	Q				V
25+20	1.8815	0.00	Q				V
25+25	1.8815	0.00	Q				V

U n i t H y d r o g r a p h A n a l y s i s

Study date 06/19/23 File: UH199P1001100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6481

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

GARBANT ROAD RESIDENTIAL DEVELOPMENT
POSTDEVELOPMENT CONDITION
UNIT HYDROGRAGH METHOD
100-YEAR, 1-HOUR STORM

Drainage Area = 9.42(Ac.) = 0.015 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 9.42(Ac.) = 0.015 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.210 Hr.
Lag time = 12.60 Min.
25% of lag time = 3.15 Min.
40% of lag time = 5.04 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.42	0.51	4.84

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.42	1.53	14.41

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.514(In)
Area Averaged 100-Year Rainfall = 1.530(In)

Point rain (area averaged) = 1.530(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.530(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
9.420	88.00	0.500

Total Area Entered = 9.42(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
88.0	95.2	0.062	0.500	0.034	1.000	0.034
					Sum (F) =	0.034

Area averaged mean soil loss (F) (In/Hr) = 0.034
Minimum soil loss rate ((In/Hr)) = 0.017

(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.500

Slope of intensity-duration curve for a 1 hour storm =0.5300

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	39.683	3.099	0.294
2	0.167	79.365	11.566	1.098
3	0.250	119.048	30.820	2.926
4	0.333	158.730	22.777	2.162
5	0.417	198.413	10.022	0.951
6	0.500	238.095	6.692	0.635
7	0.583	277.778	4.742	0.450
8	0.667	317.460	3.431	0.326
9	0.750	357.143	2.426	0.230
10	0.833	396.825	1.633	0.155
11	0.917	436.508	0.891	0.085
12	1.000	476.190	0.461	0.044
13	1.083	515.873	0.389	0.037
14	1.167	555.556	0.267	0.025
15	1.250	595.238	0.288	0.027
16	1.333	634.921	0.256	0.024
17	1.417	674.603	0.145	0.014
18	1.500	714.286	0.096	0.009
		Sum = 100.000	Sum=	9.494

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	3.40	0.624	0.034	(0.312)	0.590
2	0.17	4.70	0.863	0.034	(0.431)	0.829
3	0.25	4.70	0.863	0.034	(0.431)	0.829
4	0.33	5.10	0.936	0.034	(0.468)	0.902
5	0.42	5.80	1.065	0.034	(0.532)	1.030
6	0.50	5.90	1.083	0.034	(0.542)	1.049
7	0.58	7.10	1.303	0.034	(0.652)	1.269
8	0.67	8.70	1.597	0.034	(0.799)	1.563
9	0.75	13.20	2.423	0.034	(1.212)	2.389
10	0.83	29.70	5.452	0.034	(2.726)	5.418
11	0.92	7.70	1.414	0.034	(0.707)	1.379
12	1.00	4.00	0.734	0.034	(0.367)	0.700
	(Loss Rate Not Used)				
Sum =	100.0				Sum =	17.9

Flood volume = Effective rainfall 1.50(In)
times area 9.4(Ac.)/[(In)/(Ft.)] = 1.2(Ac.Ft)
Total soil loss = 0.03(In)
Total soil loss = 0.027(Ac.Ft)
Total rainfall = 1.53(In)
Flood volume = 51139.7 Cubic Feet
Total soil loss = 1173.6 Cubic Feet

Peak flow rate of this hydrograph = 26.286(CFS)

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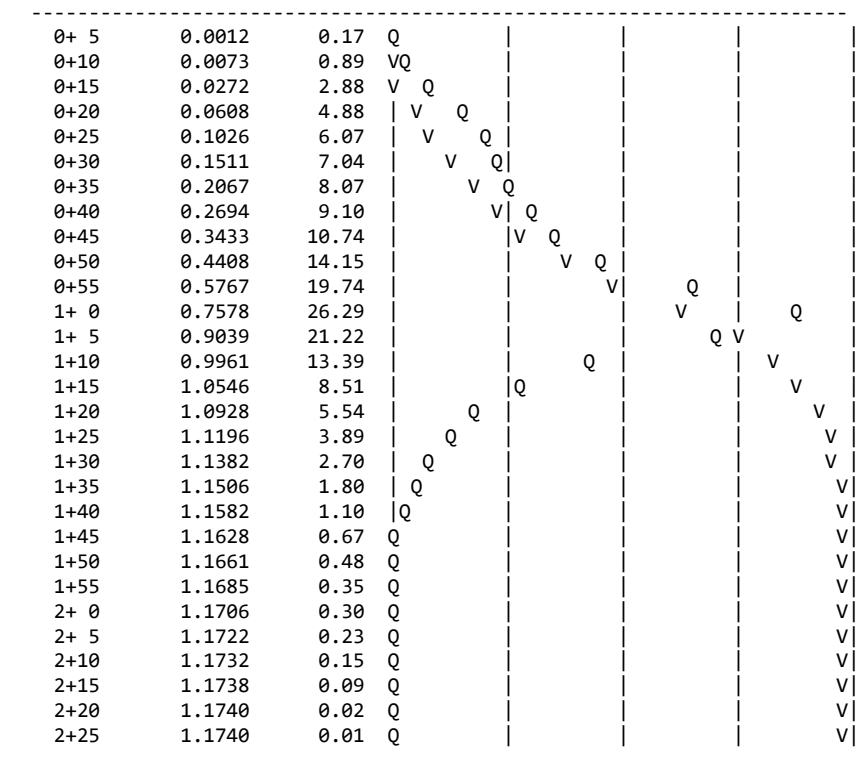
1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0



Appendix

H

BASIN ROUTING ANALYSIS

Detention Basin Stage Summary Table:

Elevation	Basin Area	Depth	Basin Volume	Basin Volume	2-6" PVC Pipe To Outlet Pipe	6-2 inch Orifice /Row	36" CMP Standing Outlet Pipe Weir Flow	Total Outlet Flow
(ft.)	(sf)	(ft.)	(cft)	(ac-ft)	(cfs)	(cfs)	(cfs)	(cfs)
Bottom of Basin	3,964	0.10	4757	0.11	3.40	0.00	0.00	3.40
	5,049	1.00	9,263	0.21	3.96	0.48	0.00	4.44
	5,630	1.50	11,952	0.27	4.22	0.72	11.12	16.06
	6,235	2.00	20,255	0.46	4.48	0.84	31.46	36.78
Top of Basin	7,522	3.00	21,986	0.50	4.94	1.14	88.99	95.07

Note: * 3' deep Filter Midial Layer under the basin bottom for stormwater Bio-Treamtment, the propsity of the media layer is 40%, Infiltration rate=5 in/hr

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018
Study date: 06/19/23

TENTATIVE TRACT MAP NO. 38683 RESIDENTIAL DEVELOPMENT
BASIN ROUTING
10-YR, 1-HR

Program License Serial Number 6481

********** HYDROGRAPH INFORMATION **********

From study/file name: UH199P10110.rte
**********HYDROGRAPH DATA**********
Number of intervals = 29
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 15.421 (CFS)
Total volume = 0.666 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

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Process from Point/Station 403.000 to Point/Station 403.000
**** RETARDING BASIN ROUTING ****
_____

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 29
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.010	0.110	3.400	0.098	0.122
1.000	0.210	4.440	0.195	0.225
1.500	0.270	16.060	0.215	0.325
2.000	0.460	36.780	0.333	0.587
3.000	0.500	95.070	0.173	0.827

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 3.9 7.71 11.57 15.42	Depth (Ft.)
0.083	0.09	0.01	0.000	O | | | |	0.00
0.167	0.46	0.06	0.002	O | | | |	0.00
0.250	1.48	0.23	0.008	O I | | | |	0.00

```
0.333    2.56    0.58      0.019  |O   I  |       |       |       |     0.00
0.417    3.23    1.02      0.033  | O   I |       |       |       |     0.00
0.500    3.78    1.50      0.049  |  O   I|       |       |       |     0.00
0.583    4.38    2.00      0.065  |   O   |I      |       |       |     0.01
0.667    4.99    2.51      0.081  |    O  | I     |       |       |     0.01
0.750    5.97    3.08      0.100  |     O |   I   |       |       |     0.01
0.833    8.04    3.56      0.125  |      O|       I       |       |     0.16
0.917   11.43    3.98      0.166  |       O       |      I|       |     0.57
1.000   15.42    6.73      0.222  |       |    O  |       |      I|     1.10
1.083   12.35   12.45      0.251  |       |       |       |O      |     1.34
1.167    7.65   10.49      0.241  |       |      I|    O  |       |     1.26
1.250    4.86    7.10      0.224  |       | I   O |       |       |     1.11
1.333    3.19    4.64      0.211  |     I |O      |       |       |     1.01
1.417    2.24    4.32      0.199  |   I   O       |       |       |     0.89
1.500    1.55    4.16      0.183  |  I    O       |       |       |     0.73
1.583    1.03    3.96      0.164  | I     O       |       |       |     0.54
1.667    0.63    3.74      0.143  |I     O|       |       |       |     0.34
1.750    0.38    3.52      0.121  I      O|       |       |       |     0.12
1.833    0.27    3.12      0.101  I     O |       |       |       |     0.01
1.917    0.20    2.56      0.083  I    O  |       |       |       |     0.01
2.000    0.17    2.11      0.068  I   O   |       |       |       |     0.01
2.083    0.14    1.73      0.056  I  O    |       |       |       |     0.01
2.167    0.09    1.42      0.046  I O     |       |       |       |     0.00
2.250    0.05    1.16      0.037  I O     |       |       |       |     0.00
2.333    0.01    0.94      0.030  IO      |       |       |       |     0.00
2.417    0.00    0.76      0.025  IO      |       |       |       |     0.00
2.500    0.00    0.62      0.020  IO      |       |       |       |     0.00
2.583    0.00    0.50      0.016  IO      |       |       |       |     0.00
2.667    0.00    0.40      0.013  O       |       |       |       |     0.00
2.750    0.00    0.32      0.010  O       |       |       |       |     0.00

      Remaining water in basin =    0.01 (Ac.Ft)


      ****************************HYDROGRAPH DATA****************************
                    Number of intervals =    33
                    Time interval =    5.0 (Min.)
                    Maximum/Peak flow rate =       12.454 (CFS)
                    Total volume =       0.656 (Ac.Ft)
              Status of hydrographs being held in storage
                         Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
              Peak (CFS)      0.000     0.000     0.000     0.000     0.000
              Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

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FLOOD HYDROGRAPH ROUTING PROGRAM

Study date: 06/19/23

TENTATIVE TRACT MAP NO. 38683 RESIDENTIAL DEVELOPMENT
BASIN ROUTING
10-YR, 3-HR

Program License Serial Number 6481

********** HYDROGRAPH INFORMATION **********

From study/file name: UH199P10310.rte
**********HYDROGRAPH DATA**********
Number of intervals = 53
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 9.812 (CFS)
Total volume = 0.940 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 403.000 to Point/Station 403.000
**** RETARDING BASIN ROUTING ****
_____

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 53
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.010	0.110	3.400	0.098	0.122
1.000	0.210	4.440	0.195	0.225
1.500	0.270	16.060	0.215	0.325
2.000	0.460	36.780	0.333	0.587
3.000	0.500	95.070	0.173	0.827

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	2.5	4.91	7.36	9.81	Depth (Ft.)
0.083	0.04	0.00	0.000	O	|	|	|	|	0.00
0.167	0.20	0.03	0.001	O	|	|	|	|	0.00
0.250	0.60	0.10	0.003	OI	|	|	|	|	0.00

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0.333    0.89    0.22      0.007  O I     |       |       |       |     0.00
0.417    1.00    0.36      0.012  |O I    |       |       |       |     0.00
0.500    1.23    0.51      0.016  |O  I   |       |       |       |     0.00
0.583    1.46    0.67      0.022  | O I   |       |       |       |     0.00
0.667    1.66    0.84      0.027  | O  I  |       |       |       |     0.00
0.750    1.74    1.00      0.032  |  O I  |       |       |       |     0.00
0.833    1.85    1.16      0.037  |  O  I |       |       |       |     0.00
0.917    1.92    1.30      0.042  |   O I |       |       |       |     0.00
1.000    1.86    1.41      0.046  |   O I |       |       |       |     0.00
1.083    1.89    1.50      0.049  |   O I |       |       |       |     0.00
1.167    2.08    1.59      0.052  |    OI |       |       |       |     0.00
1.250    2.36    1.71      0.055  |    O I|       |       |       |     0.01
1.333    2.54    1.86      0.060  |     O I       |       |       |     0.01
1.417    2.62    2.00      0.065  |     O I       |       |       |     0.01
1.500    2.70    2.12      0.069  |     O I       |       |       |     0.01
1.583    2.97    2.26      0.073  |      O|I      |       |       |     0.01
1.667    3.20    2.42      0.078  |      O| I     |       |       |     0.01
1.750    3.28    2.58      0.083  |       O I     |       |       |     0.01
1.833    3.50    2.73      0.088  |       O  I    |       |       |     0.01
1.917    3.88    2.92      0.094  |       |O  I   |       |       |     0.01
2.000    4.02    3.12      0.101  |       | O  I  |       |       |     0.01
2.083    4.00    3.29      0.106  |       | O  I  |       |       |     0.01
2.167    4.11    3.41      0.111  |       |  O I  |       |       |     0.02
2.250    4.46    3.47      0.117  |       |  O  I |       |       |     0.08
2.333    5.16    3.57      0.126  |       |  O    I       |       |     0.17
2.417    5.89    3.70      0.139  |       |   O   |  I    |       |     0.30
2.500    6.29    3.87      0.155  |       |   O   |   I   |       |     0.45
2.583    7.81    4.09      0.176  |       |    O  |       |I      |     0.66
2.667    9.29    4.40      0.206  |       |     O |       |     I |     0.96
2.750    9.81    8.05      0.229  |       |       |       | O     I     1.16
2.833    8.65    9.00      0.234  |       |       |       |   IO  |     1.20
2.917    6.21    7.74      0.227  |       |       |   I   |O      |     1.14
3.000    4.52    5.84      0.217  |       |     I |  O    |       |     1.06
3.083    3.55    4.44      0.210  |       |  I  O |       |       |     1.00
3.167    2.48    4.34      0.200  |       I     O |       |       |     0.90
3.250    1.59    4.18      0.185  |    I  |    O  |       |       |     0.75
3.333    1.03    3.98      0.166  |  I    |   O   |       |       |     0.56
3.417    0.68    3.76      0.145  | I     |   O   |       |       |     0.36
3.500    0.45    3.54      0.124  |I      |  O    |       |       |     0.15
3.583    0.31    3.19      0.103  |I      | O     |       |       |     0.01
3.667    0.22    2.63      0.085  I       O       |       |       |     0.01
3.750    0.16    2.16      0.070  I      O|       |       |       |     0.01
3.833    0.11    1.77      0.057  I    O  |       |       |       |     0.01
3.917    0.08    1.45      0.047  I   O   |       |       |       |     0.00
4.000    0.05    1.18      0.038  I  O    |       |       |       |     0.00
4.083    0.03    0.96      0.031  I  O    |       |       |       |     0.00
4.167    0.01    0.78      0.025  I O     |       |       |       |     0.00
4.250    0.01    0.63      0.020  I O     |       |       |       |     0.00
4.333    0.00    0.51      0.017  IO      |       |       |       |     0.00
4.417    0.00    0.41      0.013  IO      |       |       |       |     0.00
4.500    0.00    0.33      0.011  IO      |       |       |       |     0.00
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Remaining water in basin = 0.01 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 54
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 8.995 (CFS)
Total volume = 0.930 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

FLOOD HYDROGRAPH ROUTING PROGRAM

Study date: 06/19/23

TENTATIVE TRACT MAP NO. 38683 RESIDENTIAL DEVELOPMENT
BASIN ROUTING
10-YR, 6-HR

Program License Serial Number 6481

********** HYDROGRAPH INFORMATION **********

From study/file name: UH199P10610.rte
**********HYDROGRAPH DATA**********
Number of intervals = 89
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 8.607 (CFS)
Total volume = 1.172 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 403.000 to Point/Station 403.000
**** RETARDING BASIN ROUTING ****
_____

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 89
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

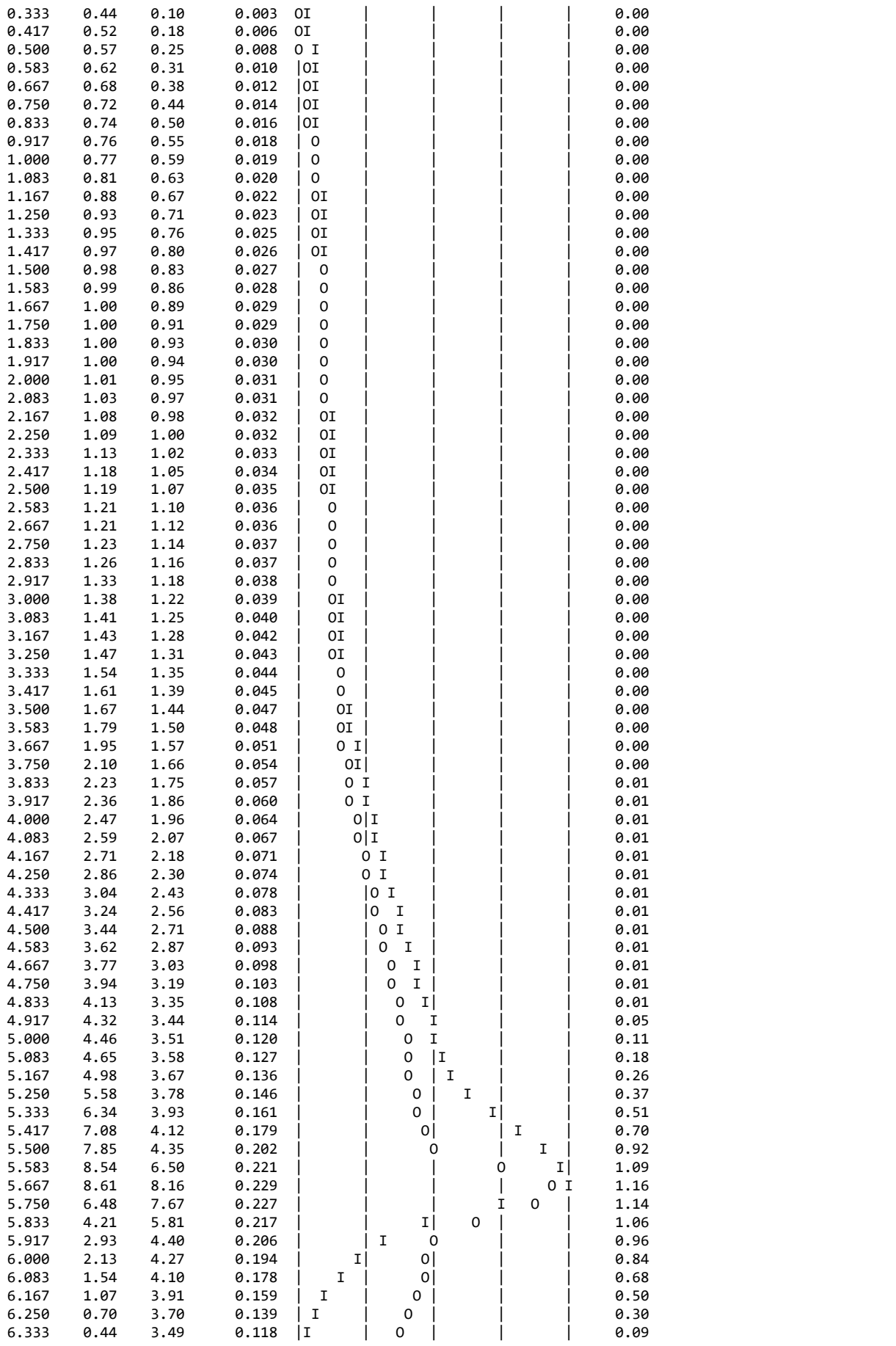
Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.010	0.110	3.400	0.098	0.122
1.000	0.210	4.440	0.195	0.225
1.500	0.270	16.060	0.215	0.325
2.000	0.460	36.780	0.333	0.587
3.000	0.500	95.070	0.173	0.827

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 2.2 4.30 6.46 8.61	Depth (Ft.)
0.083	0.02	0.00	0.000	O | | | |	0.00
0.167	0.09	0.01	0.000	O | | | |	0.00
0.250	0.27	0.04	0.001	OI | | | |	0.00



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6.417    0.29    3.04      0.098  |I      |  O    |       |       |     0.01
6.500    0.21    2.50      0.081  I       |O     |       |       |     0.01
6.583    0.15    2.05      0.066  I      O|       |       |       |     0.01
6.667    0.11    1.68      0.054  I     O |       |       |       |     0.00
6.750    0.08    1.38      0.045  I    O  |       |       |       |     0.00
6.833    0.05    1.13      0.036  I   O   |       |       |       |     0.00
6.917    0.03    0.92      0.030  I  O    |       |       |       |     0.00
7.000    0.01    0.74      0.024  I O     |       |       |       |     0.00
7.083    0.01    0.60      0.019  I O     |       |       |       |     0.00
7.167    0.00    0.49      0.016  IO      |       |       |       |     0.00
7.250    0.00    0.39      0.013  IO      |       |       |       |     0.00
7.333    0.00    0.32      0.010  IO      |       |       |       |     0.00
7.417    0.00    0.26      0.008  O       |       |       |       |     0.00
7.500    0.00    0.21      0.007  O       |       |       |       |     0.00

      Remaining water in basin =    0.01 (Ac.Ft)


      ****************************HYDROGRAPH DATA****************************
                    Number of intervals =    90
                    Time interval =    5.0 (Min.)
                    Maximum/Peak flow rate =        8.160 (CFS)
                    Total volume =       1.166 (Ac.Ft)
              Status of hydrographs being held in storage
                         Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
              Peak (CFS)      0.000     0.000     0.000     0.000     0.000
              Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
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FLOOD HYDROGRAPH ROUTING PROGRAM

Study date: 06/19/23

TENTATIVE TRACT MAP NO. 38683 RESIDENTIAL DEVELOPMENT
BASIN ROUTING
10-YR,24-HR

Program License Serial Number 6481

********** HYDROGRAPH INFORMATION **********

From study/file name: UH199P102410.rte
**********HYDROGRAPH DATA**********
Number of intervals = 305
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 3.801 (CFS)
Total volume = 1.881 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 403.000 to Point/Station 403.000
**** RETARDING BASIN ROUTING ****
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User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 305
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.010	0.110	3.400	0.098	0.122
1.000	0.210	4.440	0.195	0.225
1.500	0.270	16.060	0.215	0.325
2.000	0.460	36.780	0.333	0.587
3.000	0.500	95.070	0.173	0.827

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	1.0	1.90	2.85	3.80	Depth (Ft.)
0.083	0.00	0.00	0.000	O	|	|	|	|	0.00
0.167	0.02	0.00	0.000	O	|	|	|	|	0.00
0.250	0.06	0.01	0.000	O	|	|	|	|	0.00

0.333	0.09	0.02	0.001	O				0.00
0.417	0.12	0.04	0.001	O				0.00
0.500	0.15	0.06	0.002	OI				0.00
0.583	0.17	0.08	0.002	OI				0.00
0.667	0.18	0.09	0.003	OI				0.00
0.750	0.19	0.11	0.004	OI				0.00
0.833	0.19	0.13	0.004	|O				0.00
0.917	0.21	0.14	0.005	|O				0.00
1.000	0.23	0.16	0.005	|O				0.00
1.083	0.24	0.17	0.006	|OI				0.00
1.167	0.24	0.19	0.006	|OI				0.00
1.250	0.23	0.20	0.006	|O				0.00
1.333	0.22	0.20	0.006	|O				0.00
1.417	0.21	0.20	0.007	|O				0.00
1.500	0.21	0.20	0.007	|O				0.00
1.583	0.21	0.21	0.007	|O				0.00
1.667	0.21	0.21	0.007	|O				0.00
1.750	0.21	0.21	0.007	|O				0.00
1.833	0.21	0.21	0.007	|O				0.00
1.917	0.21	0.21	0.007	|O				0.00
2.000	0.23	0.21	0.007	|O				0.00
2.083	0.25	0.22	0.007	|OI				0.00
2.167	0.26	0.22	0.007	|OI				0.00
2.250	0.26	0.23	0.007	|OI				0.00
2.333	0.26	0.24	0.008	|OI				0.00
2.417	0.27	0.24	0.008	| O				0.00
2.500	0.27	0.25	0.008	| O				0.00
2.583	0.27	0.25	0.008	| O				0.00
2.667	0.28	0.26	0.008	| O				0.00
2.750	0.30	0.26	0.008	| O				0.00
2.833	0.32	0.27	0.009	| O				0.00
2.917	0.32	0.28	0.009	| O				0.00
3.000	0.33	0.29	0.009	| O				0.00
3.083	0.33	0.30	0.010	| O				0.00
3.167	0.33	0.30	0.010	| O				0.00
3.250	0.34	0.31	0.010	| O				0.00
3.333	0.34	0.32	0.010	| O				0.00
3.417	0.34	0.32	0.010	| O				0.00
3.500	0.34	0.32	0.010	| O				0.00
3.583	0.34	0.33	0.011	| O				0.00
3.667	0.34	0.33	0.011	| O				0.00
3.750	0.34	0.33	0.011	| O				0.00
3.833	0.34	0.33	0.011	| O				0.00
3.917	0.35	0.33	0.011	| O				0.00
4.000	0.37	0.34	0.011	| OI				0.00
4.083	0.39	0.35	0.011	| OI				0.00
4.167	0.39	0.35	0.011	| OI				0.00
4.250	0.40	0.36	0.012	| O				0.00
4.333	0.40	0.37	0.012	| O				0.00
4.417	0.41	0.38	0.012	| O				0.00
4.500	0.43	0.39	0.012	| O				0.00
4.583	0.45	0.40	0.013	| O				0.00
4.667	0.46	0.41	0.013	| O				0.00
4.750	0.46	0.42	0.014	| O				0.00
4.833	0.47	0.43	0.014	| O				0.00
4.917	0.48	0.44	0.014	| OI				0.00
5.000	0.50	0.45	0.014	| OI				0.00
5.083	0.51	0.46	0.015	| OI				0.00
5.167	0.51	0.47	0.015	| OI				0.00
5.250	0.47	0.47	0.015	| O				0.00
5.333	0.44	0.47	0.015	| O				0.00
5.417	0.44	0.46	0.015	| O				0.00
5.500	0.45	0.46	0.015	| O				0.00
5.583	0.47	0.46	0.015	| O				0.00
5.667	0.48	0.46	0.015	| OI				0.00
5.750	0.50	0.47	0.015	| OI				0.00
5.833	0.52	0.48	0.015	| O				0.00
5.917	0.52	0.48	0.016	| O				0.00
6.000	0.53	0.49	0.016	| O				0.00
6.083	0.54	0.50	0.016	| O				0.00
6.167	0.55	0.51	0.016	| O				0.00
6.250	0.57	0.52	0.017	| O				0.00
6.333	0.59	0.53	0.017	| O				0.00

6.417	0.59	0.54	0.018	O				0.00
6.500	0.60	0.55	0.018	OI				0.00
6.583	0.60	0.56	0.018	OI				0.00
6.667	0.61	0.57	0.018	OI				0.00
6.750	0.64	0.58	0.019	OI				0.00
6.833	0.65	0.59	0.019	OI				0.00
6.917	0.66	0.61	0.020	O				0.00
7.000	0.67	0.62	0.020	O				0.00
7.083	0.67	0.63	0.020	O				0.00
7.167	0.67	0.64	0.021	O				0.00
7.250	0.67	0.64	0.021	O				0.00
7.333	0.68	0.65	0.021	O				0.00
7.417	0.69	0.66	0.021	O				0.00
7.500	0.71	0.66	0.021	O				0.00
7.583	0.73	0.67	0.022	OI				0.00
7.667	0.74	0.69	0.022	OI				0.00
7.750	0.77	0.70	0.023	OI				0.00
7.833	0.79	0.71	0.023	O				0.00
7.917	0.80	0.73	0.024	O				0.00
8.000	0.83	0.75	0.024	O				0.00
8.083	0.86	0.76	0.025	OI				0.00
8.167	0.89	0.79	0.025	OI				0.00
8.250	0.96	0.81	0.026	O I				0.00
8.333	1.02	0.85	0.027	OI				0.00
8.417	1.05	0.88	0.029	OI				0.00
8.500	1.07	0.92	0.030	OI				0.00
8.583	1.09	0.95	0.031	O I				0.00
8.667	1.11	0.98	0.032	OI				0.00
8.750	1.16	1.01	0.033	OI				0.00
8.833	1.21	1.04	0.034	O I				0.00
8.917	1.24	1.08	0.035	OI				0.00
9.000	1.30	1.11	0.036	OI				0.00
9.083	1.35	1.16	0.037	O I				0.00
9.167	1.40	1.20	0.039	OI				0.00
9.250	1.51	1.25	0.040	O I				0.00
9.333	1.59	1.30	0.042	O I				0.00
9.417	1.64	1.36	0.044	O I				0.00
9.500	1.71	1.42	0.046	O I				0.00
9.583	1.76	1.48	0.048	O I				0.00
9.667	1.81	1.54	0.050	O I				0.00
9.750	1.87	1.60	0.052	O I				0.00
9.833	1.92	1.65	0.054	O I				0.00
9.917	1.96	1.71	0.055	O I				0.01
10.000	2.02	1.76	0.057	O I				0.01
10.083	2.04	1.81	0.059	O I				0.01
10.167	1.95	1.85	0.060	OI				0.01
10.250	1.68	1.84	0.060	IO				0.01
10.333	1.47	1.79	0.058	I O				0.01
10.417	1.39	1.72	0.056	I O				0.01
10.500	1.33	1.65	0.053	I O				0.00
10.583	1.32	1.59	0.051	I O				0.00
10.667	1.37	1.54	0.050	IO				0.00
10.750	1.56	1.53	0.049	OI				0.00
10.833	1.70	1.55	0.050	OI				0.00
10.917	1.77	1.58	0.051	OI				0.00
11.000	1.81	1.62	0.053	O I				0.00
11.083	1.84	1.66	0.054	OI				0.00
11.167	1.85	1.70	0.055	OI				0.00
11.250	1.83	1.73	0.056	OI				0.01
11.333	1.81	1.74	0.056	OI				0.01
11.417	1.80	1.76	0.057	OI				0.01
11.500	1.80	1.76	0.057	OI				0.01
11.583	1.79	1.77	0.057	OI				0.01
11.667	1.76	1.77	0.057	O				0.01
11.750	1.68	1.76	0.057	O				0.01
11.833	1.63	1.74	0.056	IO				0.01
11.917	1.62	1.72	0.056	IO				0.01
12.000	1.65	1.70	0.055	IO				0.01
12.083	1.70	1.70	0.055	O				0.00
12.167	1.82	1.71	0.055	OI				0.01
12.250	2.11	1.76	0.057	O I				0.01
12.333	2.34	1.85	0.060	O I				0.01
12.417	2.46	1.95	0.063	O I				0.01

12.500	2.57	2.06	0.067	|	|	|O I |	|	0.01
12.583	2.66	2.17	0.070	|	|	| O I |	|	0.01
12.667	2.74	2.27	0.073	|	|	| O I|	|	0.01
12.750	2.86	2.37	0.077	|	|	| O I |	|	0.01
12.833	2.95	2.47	0.080	|	|	| O I |	|	0.01
12.917	3.01	2.57	0.083	|	|	| O |I |	|	0.01
13.000	3.08	2.66	0.086	|	|	| O |I |	|	0.01
13.083	3.15	2.75	0.089	|	|	| O| I |	|	0.01
13.167	3.26	2.84	0.092	|	|	| O| I |	|	0.01
13.250	3.49	2.94	0.095	|	|	| O I |	|	0.01
13.333	3.67	3.06	0.099	|	|	| |O I |	|	0.01
13.417	3.75	3.19	0.103	|	|	| | O I|	|	0.01
13.500	3.80	3.30	0.107	|	|	| | O I |	|	0.01
13.583	3.79	3.40	0.110	|	|	| | O I|	|	0.01
13.667	3.65	3.42	0.112	|	|	| | O I |	|	0.03
13.750	3.21	3.42	0.112	|	|	| | IO |	|	0.03
13.833	2.89	3.39	0.110	|	|	| I O |	|	0.01
13.917	2.75	3.28	0.106	|	|	| I| O |	|	0.01
14.000	2.66	3.17	0.103	|	|	| I | O |	|	0.01
14.083	2.61	3.07	0.099	|	|	| I |O |	|	0.01
14.167	2.63	2.98	0.096	|	|	| I |O |	|	0.01
14.250	2.76	2.92	0.095	|	|	| IO |	|	0.01
14.333	2.86	2.90	0.094	|	|	| O |	|	0.01
14.417	2.89	2.90	0.094	|	|	| O |	|	0.01
14.500	2.88	2.90	0.094	|	|	| O |	|	0.01
14.583	2.88	2.89	0.094	|	|	| O |	|	0.01
14.667	2.88	2.89	0.094	|	|	| O |	|	0.01
14.750	2.88	2.89	0.093	|	|	| O |	|	0.01
14.833	2.88	2.89	0.093	|	|	| O |	|	0.01
14.917	2.87	2.88	0.093	|	|	| O |	|	0.01
15.000	2.83	2.88	0.093	|	|	| IO |	|	0.01
15.083	2.79	2.86	0.093	|	|	| IO |	|	0.01
15.167	2.77	2.85	0.092	|	|	| O| |	|	0.01
15.250	2.72	2.83	0.092	|	|	| IO| |	|	0.01
15.333	2.68	2.80	0.091	|	|	| IO| |	|	0.01
15.417	2.65	2.78	0.090	|	|	| IO| |	|	0.01
15.500	2.60	2.75	0.089	|	|	| I O| |	|	0.01
15.583	2.55	2.72	0.088	|	|	| IO |	|	0.01
15.667	2.47	2.68	0.087	|	|	| I O |	|	0.01
15.750	2.29	2.62	0.085	|	|	| I O |	|	0.01
15.833	2.16	2.54	0.082	|	|	| I O |	|	0.01
15.917	2.11	2.47	0.080	|	|	|I O |	|	0.01
16.000	2.07	2.39	0.077	|	|	|I O |	|	0.01
16.083	1.99	2.32	0.075	|	|	| I O |	|	0.01
16.167	1.77	2.24	0.072	|	| I | O |	|	0.01
16.250	1.23	2.10	0.068	|	| I |O |	|	0.01
16.333	0.83	1.89	0.061	| I |	| O| |	|	0.01
16.417	0.65	1.67	0.054	| I |	| O | |	|	0.00
16.500	0.54	1.46	0.047	| I |	| O | |	|	0.00
16.583	0.45	1.28	0.041	| I |	|O | |	|	0.00
16.667	0.38	1.11	0.036	| I |	|O | |	|	0.00
16.750	0.32	0.97	0.031	| I |	O | |	|	0.00
16.833	0.27	0.84	0.027	| I |	O| |	|	0.00
16.917	0.25	0.73	0.023	| I |	O | |	|	0.00
17.000	0.24	0.63	0.020	| I |	O | |	|	0.00
17.083	0.23	0.56	0.018	|I |	O | |	|	0.00
17.167	0.24	0.50	0.016	| I |	O | |	|	0.00
17.250	0.28	0.45	0.015	| I |	O | |	|	0.00
17.333	0.30	0.42	0.014	| I |	O | |	|	0.00
17.417	0.31	0.40	0.013	| I |	O | |	|	0.00
17.500	0.32	0.38	0.012	| I |	O | |	|	0.00
17.583	0.33	0.37	0.012	| I |	O | |	|	0.00
17.667	0.33	0.36	0.012	| I |	O | |	|	0.00
17.750	0.33	0.36	0.012	| I |	O | |	|	0.00
17.833	0.33	0.35	0.011	| O |	| |	|	0.00
17.917	0.33	0.35	0.011	| O |	| |	|	0.00
18.000	0.31	0.34	0.011	| O |	| |	|	0.00
18.083	0.29	0.33	0.011	| O |	| |	|	0.00
18.167	0.28	0.32	0.011	| O |	| |	|	0.00
18.250	0.28	0.32	0.010	| O |	| |	|	0.00
18.333	0.28	0.31	0.010	| O |	| |	|	0.00
18.417	0.28	0.30	0.010	| O |	| |	|	0.00
18.500	0.27	0.30	0.010	| O |	| |	|	0.00

18.583	0.27	0.29	0.009	| O	|	|	|	0.00
18.667	0.26	0.29	0.009	| O	|	|	|	0.00
18.750	0.24	0.28	0.009	| O	|	|	|	0.00
18.833	0.22	0.27	0.009	|IO	|	|	|	0.00
18.917	0.21	0.26	0.008	|IO	|	|	|	0.00
19.000	0.18	0.25	0.008	|IO	|	|	|	0.00
19.083	0.17	0.23	0.008	|O	|	|	|	0.00
19.167	0.16	0.22	0.007	|O	|	|	|	0.00
19.250	0.18	0.21	0.007	|O	|	|	|	0.00
19.333	0.19	0.21	0.007	|O	|	|	|	0.00
19.417	0.20	0.21	0.007	|O	|	|	|	0.00
19.500	0.23	0.21	0.007	|O	|	|	|	0.00
19.583	0.24	0.21	0.007	|OI	|	|	|	0.00
19.667	0.24	0.22	0.007	|OI	|	|	|	0.00
19.750	0.23	0.22	0.007	|O	|	|	|	0.00
19.833	0.21	0.22	0.007	|O	|	|	|	0.00
19.917	0.20	0.22	0.007	|O	|	|	|	0.00
20.000	0.18	0.21	0.007	|O	|	|	|	0.00
20.083	0.16	0.21	0.007	|O	|	|	|	0.00
20.167	0.16	0.20	0.006	|O	|	|	|	0.00
20.250	0.18	0.19	0.006	|O	|	|	|	0.00
20.333	0.19	0.19	0.006	|O	|	|	|	0.00
20.417	0.19	0.19	0.006	|O	|	|	|	0.00
20.500	0.20	0.19	0.006	|O	|	|	|	0.00
20.583	0.20	0.19	0.006	|O	|	|	|	0.00
20.667	0.20	0.19	0.006	|O	|	|	|	0.00
20.750	0.20	0.20	0.006	|O	|	|	|	0.00
20.833	0.20	0.20	0.006	|O	|	|	|	0.00
20.917	0.19	0.20	0.006	|O	|	|	|	0.00
21.000	0.17	0.19	0.006	|O	|	|	|	0.00
21.083	0.16	0.19	0.006	|O	|	|	|	0.00
21.167	0.16	0.18	0.006	|O	|	|	|	0.00
21.250	0.18	0.18	0.006	|O	|	|	|	0.00
21.333	0.19	0.18	0.006	|O	|	|	|	0.00
21.417	0.18	0.18	0.006	|O	|	|	|	0.00
21.500	0.17	0.18	0.006	|O	|	|	|	0.00
21.583	0.15	0.18	0.006	|O	|	|	|	0.00
21.667	0.16	0.17	0.006	|O	|	|	|	0.00
21.750	0.17	0.17	0.006	|O	|	|	|	0.00
21.833	0.19	0.17	0.006	|O	|	|	|	0.00
21.917	0.18	0.17	0.006	|O	|	|	|	0.00
22.000	0.16	0.17	0.006	|O	|	|	|	0.00
22.083	0.15	0.17	0.006	|O	|	|	|	0.00
22.167	0.16	0.17	0.005	|O	|	|	|	0.00
22.250	0.17	0.17	0.005	|O	|	|	|	0.00
22.333	0.19	0.17	0.006	|O	|	|	|	0.00
22.417	0.18	0.17	0.006	|O	|	|	|	0.00
22.500	0.16	0.17	0.006	|O	|	|	|	0.00
22.583	0.15	0.17	0.006	|O	|	|	|	0.00
22.667	0.15	0.17	0.005	|O	|	|	|	0.00
22.750	0.14	0.16	0.005	|O	|	|	|	0.00
22.833	0.14	0.16	0.005	|O	|	|	|	0.00
22.917	0.14	0.15	0.005	|O	|	|	|	0.00
23.000	0.14	0.15	0.005	|O	|	|	|	0.00
23.083	0.14	0.15	0.005	|O	|	|	|	0.00
23.167	0.14	0.15	0.005	|O	|	|	|	0.00
23.250	0.14	0.14	0.005	|O	|	|	|	0.00
23.333	0.14	0.14	0.005	|O	|	|	|	0.00
23.417	0.14	0.14	0.005	|O	|	|	|	0.00
23.500	0.14	0.14	0.005	|O	|	|	|	0.00
23.583	0.14	0.14	0.005	|O	|	|	|	0.00
23.667	0.14	0.14	0.004	|O	|	|	|	0.00
23.750	0.14	0.14	0.004	|O	|	|	|	0.00
23.833	0.14	0.14	0.004	|O	|	|	|	0.00
23.917	0.14	0.14	0.004	|O	|	|	|	0.00
24.000	0.14	0.14	0.004	|O	|	|	|	0.00
24.083	0.13	0.14	0.004	|O	|	|	|	0.00
24.167	0.12	0.13	0.004	IO	|	|	|	0.00
24.250	0.07	0.13	0.004	IO	|	|	|	0.00
24.333	0.04	0.11	0.004	O	|	|	|	0.00
24.417	0.03	0.10	0.003	O	|	|	|	0.00
24.500	0.02	0.08	0.003	O	|	|	|	0.00
24.583	0.01	0.07	0.002	O	|	|	|	0.00

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24.667    0.01    0.06      0.002  O       |       |       |       |     0.00
24.750    0.01    0.05      0.002  O       |       |       |       |     0.00
24.833    0.00    0.04      0.001  O       |       |       |       |     0.00
24.917    0.00    0.03      0.001  O       |       |       |       |     0.00
25.000    0.00    0.03      0.001  O       |       |       |       |     0.00
25.083    0.00    0.02      0.001  O       |       |       |       |     0.00
25.167    0.00    0.02      0.001  O       |       |       |       |     0.00
25.250    0.00    0.02      0.000  O       |       |       |       |     0.00
25.333    0.00    0.01      0.000  O       |       |       |       |     0.00
25.417    0.00    0.01      0.000  O       |       |       |       |     0.00
25.500    0.00    0.01      0.000  O       |       |       |       |     0.00

       ****************************HYDROGRAPH DATA****************************
                     Number of intervals =   306
                     Time interval =    5.0 (Min.)
                     Maximum/Peak flow rate =        3.422 (CFS)
                     Total volume =       1.881 (Ac.Ft)
              Status of hydrographs being held in storage
                        Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
              Peak (CFS)      0.000     0.000     0.000     0.000     0.000
              Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
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FLOOD HYDROGRAPH ROUTING PROGRAM

Study date: 06/19/23

TENTATIVE TRACT MAP NO. 38683 RESIDENTIAL DEVELOPMENT
BASIN ROUTING
100-YR, 1-HR

Program License Serial Number 6481

********** HYDROGRAPH INFORMATION **********

From study/file name: UH199P1001100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 29
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 26.286 (CFS)
Total volume = 1.174 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 403.000 to Point/Station 403.000
**** RETARDING BASIN ROUTING ****
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User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 29
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.010	0.110	3.400	0.098	0.122
1.000	0.210	4.440	0.195	0.225
1.500	0.270	16.060	0.215	0.325
2.000	0.460	36.780	0.333	0.587
3.000	0.500	95.070	0.173	0.827

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 6.6 13.14 19.71 26.29	Depth (Ft.)
0.083	0.17	0.02	0.001	O | | | |	0.00
0.167	0.89	0.12	0.004	OI | | | |	0.00
0.250	2.88	0.46	0.015	O I | | | |	0.00

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0.333    4.88    1.12      0.036  |O   I  |       |       |       |     0.00
0.417    6.07    1.95      0.063  | O    I|       |       |       |     0.01
0.500    7.04    2.84      0.092  |  O    I       |       |       |     0.01
0.583    8.07    3.52      0.122  |   O   |I      |       |       |     0.13
0.667    9.10    3.87      0.156  |   O   |  I    |       |       |     0.46
0.750   10.74    4.29      0.196  |    O  |    I  |       |       |     0.86
0.833   14.15    9.26      0.235  |       |  O    |I      |       |     1.21
0.917   19.74   15.41      0.267  |       |       | O     I       |     1.47
1.000   26.29   19.77      0.304  |       |       |       O       I     1.59
1.083   21.22   21.94      0.324  |       |       |       |IO     |     1.64
1.167   13.39   19.41      0.301  |       |       I      O|       |     1.58
1.250    8.51   14.20      0.260  |       | I     |O      |       |     1.42
1.333    5.54    8.46      0.231  |     I | O     |       |       |     1.17
1.417    3.89    5.46      0.215  |   I O |       |       |       |     1.04
1.500    2.70    4.38      0.204  |  I O  |       |       |       |     0.94
1.583    1.80    4.23      0.190  | I  O  |       |       |       |     0.80
1.667    1.10    4.04      0.171  |I  O   |       |       |       |     0.62
1.750    0.67    3.82      0.150  I   O   |       |       |       |     0.41
1.833    0.48    3.60      0.129  I   O   |       |       |       |     0.20
1.917    0.35    3.33      0.108  I   O   |       |       |       |     0.01
2.000    0.30    2.76      0.089  I  O    |       |       |       |     0.01
2.083    0.23    2.28      0.074  I O     |       |       |       |     0.01
2.167    0.15    1.88      0.061  I O     |       |       |       |     0.01
2.250    0.09    1.54      0.050  IO      |       |       |       |     0.00
2.333    0.02    1.25      0.041  IO      |       |       |       |     0.00
2.417    0.01    1.01      0.033  IO      |       |       |       |     0.00
2.500    0.00    0.82      0.027  O       |       |       |       |     0.00
2.583    0.00    0.66      0.021  O       |       |       |       |     0.00
2.667    0.00    0.53      0.017  O       |       |       |       |     0.00
2.750    0.00    0.43      0.014  O       |       |       |       |     0.00
2.833    0.00    0.35      0.011  O       |       |       |       |     0.00
2.917    0.00    0.28      0.009  O       |       |       |       |     0.00

 Remaining water in basin =    0.01 (Ac.Ft)


 ****************************HYDROGRAPH DATA****************************
                 Number of intervals =    35
                 Time interval =    5.0 (Min.)
                 Maximum/Peak flow rate =       21.942 (CFS)
                 Total volume =       1.166 (Ac.Ft)
         Status of hydrographs being held in storage
                    Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
         Peak (CFS)      0.000     0.000     0.000     0.000     0.000
         Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
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HYDRAULICS

PARKWAY DRAIN FOR EMERGENCY OVERFLOW

Project Description	
Friction Method	Manning Formula
Solve For	Bottom Width

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.020 ft/ft
Normal Depth	4.0 in
Discharge	26.27 cfs

Results	
Bottom Width	10.56 ft
Flow Area	3.5 ft²
Wetted Perimeter	11.2 ft
Hydraulic Radius	3.8 in
Top Width	10.56 ft
Critical Depth	6.9 in
Critical Slope	0.003 ft/ft
Velocity	7.46 ft/s
Velocity Head	0.86 ft
Specific Energy	1.20 ft
Froude Number	2.278
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	4.0 in
Critical Depth	6.9 in
Channel Slope	0.020 ft/ft
Critical Slope	0.003 ft/ft

Worksheet for Circular Orifice - 6" HW=1

Project Description	
Solve For	Discharge

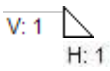
Input Data	
Headwater Elevation	1.00 ft
Centroid Elevation	0.25 ft
Tailwater Elevation	0.00 ft
Discharge Coefficient	0.670
Diameter	6.0 in

Results	
Discharge	0.91 cfs
Headwater Height Above Centroid	0.75 ft
Tailwater Height Above Centroid	-0.25 ft
Flow Area	0.2 ft^2
Velocity	4.65 ft/s

Cross Section for Circular Orifice - HW=1

Project Description	
Solve For	Discharge

Input Data	
Discharge	0.08 cfs
Headwater Elevation	1.00 ft
Centroid Elevation	0.50 ft
Tailwater Elevation	-4.00 ft
Discharge Coefficient	0.670
Diameter	2.0 in



Worksheet for Circular Orifice - HW=1.5

Project Description	
Solve For	Discharge

Input Data	
Headwater Elevation	1.50 ft
Centroid Elevation	0.50 ft
Tailwater Elevation	-4.00 ft
Discharge Coefficient	0.670
Diameter	2.0 in

Results	
Discharge	0.12 cfs
Headwater Height Above Centroid	1.00 ft
Tailwater Height Above Centroid	-4.50 ft
Flow Area	0.0 ft^2
Velocity	5.37 ft/s

Worksheet for Circular Orifice - HW=2.0

Project Description	
Solve For	Discharge

Input Data	
Headwater Elevation	2.00 ft
Centroid Elevation	0.50 ft
Tailwater Elevation	-4.00 ft
Discharge Coefficient	0.670
Diameter	2.0 in

Results	
Discharge	0.14 cfs
Headwater Height Above Centroid	1.50 ft
Tailwater Height Above Centroid	-4.50 ft
Flow Area	0.0 ft^2
Velocity	6.58 ft/s

Worksheet for Circular Orifice - HW=3.0

Project Description	
Solve For	Discharge

Input Data	
Headwater Elevation	3.00 ft
Centroid Elevation	0.50 ft
Tailwater Elevation	-4.00 ft
Discharge Coefficient	0.670
Diameter	2.0 in

Results	
Discharge	0.19 cfs
Headwater Height Above Centroid	2.50 ft
Tailwater Height Above Centroid	-4.50 ft
Flow Area	0.0 ft^2
Velocity	8.50 ft/s

Worksheet for Generic Weir - 1

Project Description	
Solve For	Discharge

Input Data	
Headwater Elevation	1.50 ft
Crest Elevation	1.00 ft
Weir Coefficient	3.34 ft^(1/2)/s
Crest Length	9.4 ft

Results	
Discharge	11.12 cfs
Headwater Height Above Crest	0.50 ft
Flow Area	4.7 ft²
Velocity	2.36 ft/s
Wetted Perimeter	10.4 ft
Top Width	9.42 ft

Worksheet for Generic Weir - 2

Project Description	
Solve For	Discharge

Input Data	
Headwater Elevation	2.00 ft
Crest Elevation	1.00 ft
Weir Coefficient	3.34 ft^(1/2)/s
Crest Length	9.4 ft

Results	
Discharge	31.46 cfs
Headwater Height Above Crest	1.00 ft
Flow Area	9.4 ft²
Velocity	3.34 ft/s
Wetted Perimeter	11.4 ft
Top Width	9.42 ft

Worksheet for Generic Weir - 3

Project Description	
Solve For	Discharge

Input Data	
Headwater Elevation	3.00 ft
Crest Elevation	1.00 ft
Weir Coefficient	3.34 ft^(1/2)/s
Crest Length	9.4 ft

Results	
Discharge	88.99 cfs
Headwater Height Above Crest	2.00 ft
Flow Area	18.8 ft²
Velocity	4.72 ft/s
Wetted Perimeter	13.4 ft
Top Width	9.42 ft

Inlet Report

OFF-SITE CB

Curb Inlet

Location	=	On grade
Curb Length (ft)	=	14.00
Throat Height (in)	=	8.33
Grate Area (sqft)	=	-0-
Grate Width (ft)	=	-0-
Grate Length (ft)	=	-0-

Gutter

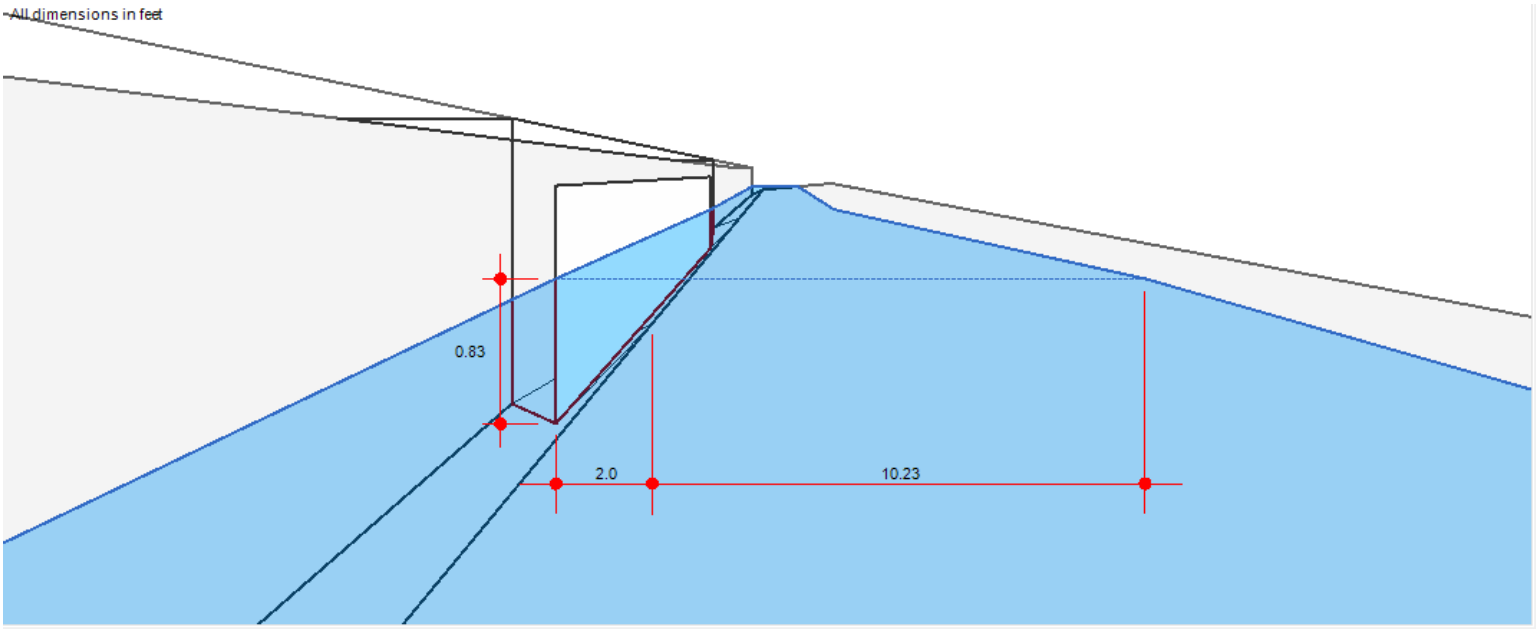
Slope, Sw (ft/ft)	=	0.120
Slope, Sx (ft/ft)	=	0.025
Local Depr (in)	=	4.00
Gutter Width (ft)	=	2.00
Gutter Slope (%)	=	6.50
Gutter n-value	=	0.013

Calculations

Compute by:		Known Q
Q (cfs)	=	23.23

Highlighted

Q Total (cfs)	=	23.23
Q Capt (cfs)	=	12.33
Q Bypass (cfs)	=	10.90
Depth at Inlet (in)	=	9.95
Efficiency (%)	=	53
Gutter Spread (ft)	=	12.23
Gutter Vel (ft/s)	=	11.28
Bypass Spread (ft)	=	8.54
Bypass Depth (in)	=	4.84



Appendix

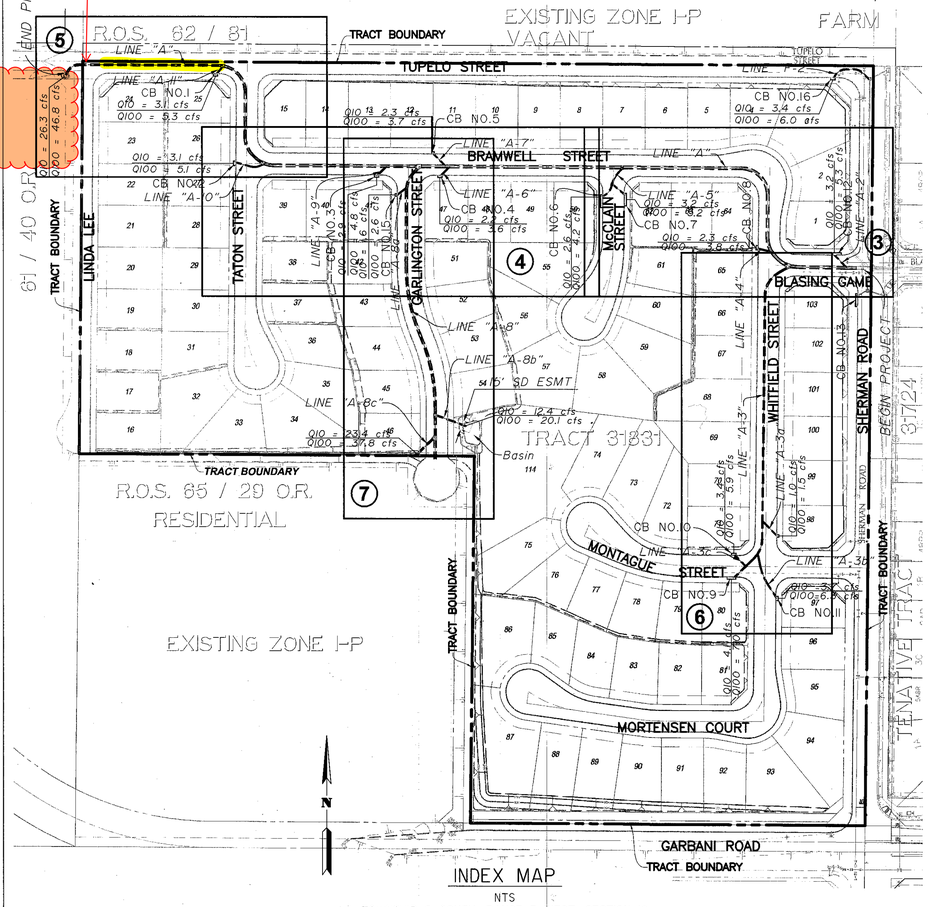
J

REFERENCES

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Proposed Basin Location

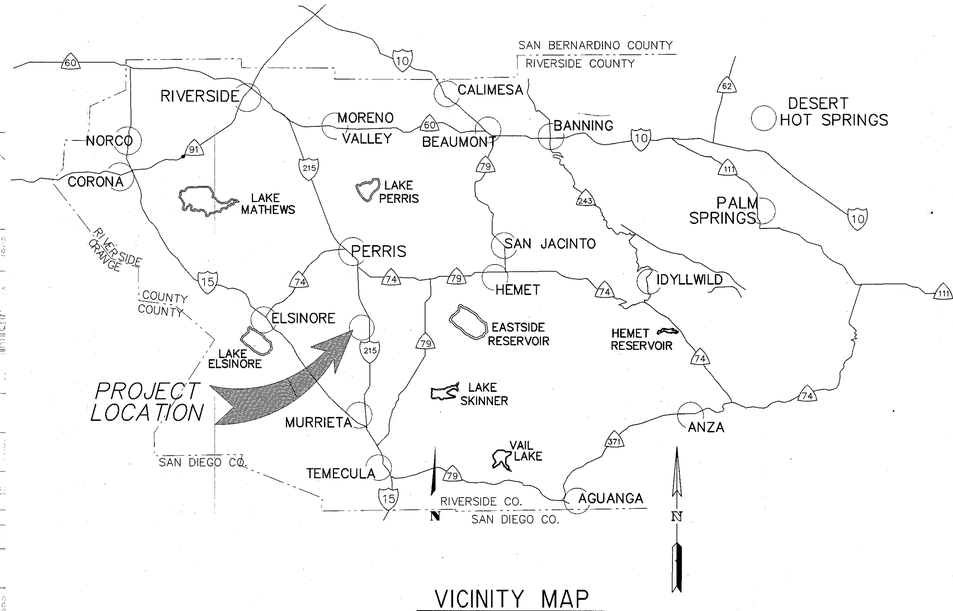
Proposed Storm Drain will Connect Location



INDEX MAP

NTS

TOWNSHIP 6 SOUTH, RANGE 3 WEST, SECTION 10



VICINITY MAP

NTS

INDEX

R.C.F.C. & W.C.D. STANDARD DRAWINGS

MH 251	MANHOLE NO. 1
MH 252	MANHOLE NO. 2
MH 254	MANHOLE NO. 4
JS 227	JUNCTION STRUCTURE NO. 2
JS 229	JUNCTION STRUCTURE NO. 4
CB 110	CONCRETE DROP INLET
JS 230	JUNCTION STRUCTURE NO. 5
M 803	CONCRETE COLLAR FOR PIPE
M 816	CONCRETE BULKHEAD

COUNTY OF RIVERSIDE STANDARD DRAWINGS

STD 300	CURB INLET CATCH BASIN
STD 311	GUTTER DEPRESSION

NOTICE TO CONTRACTOR:

CONTRACTOR AGREES HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER, THE ENGINEER, AND THE R.C.F.C. & W.C.D. AND R.C.T.D. HARMLESS FROM ANY AND ALL LIABILITY, REAL OF ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM SOLE NEGLIGENCE OF OWNER, ENGINEER, OR R.C.F.C. & W.C.D. AND R.C.T.D.

EXISTING UNDERGROUND UTILITIES ARE AS PER AVAILABLE RECORDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACTUAL LOCATION AND ELEVATION IN THE FIELD

GENERAL NOTES

1. THE CONTRACTOR SHALL CONSTRUCT THE FLOOD CONTROL IMPROVEMENTS SHOWN ON THE DRAWINGS IN CONFORMANCE WITH THE REQUIREMENTS OF THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONVERSATION DISTRICT'S MEMORANDUM OF UNDERSTANDING STANDARD SPECIFICATIONS DATED SEPTEMBER 1984, AND DESIGN MANUAL STANDARD DRAWINGS DATED APRIL 2004.
2. IF AN ENCROACHMENT PERMIT IS REQUIRED FROM RIVERSIDE COUNTY FLOOD CONTROL, THEN CONTACT ED LOTZ AT 909-955-1266. AFTER THE PERMIT IS ISSUED THE DISTRICT MUST BE NOTIFIED ONE WEEK PRIOR TO CONSTRUCTION.
3. CONSTRUCTION INSPECTION WILL BE PERFORMED BY RIVERSIDE COUNTY FLOOD CONTROL. CONTACT DALE ANDERSON AT 909-955-1288. THE DISTRICT MUST BE NOTIFIED TWENTY (20) DAYS PRIOR TO CONSTRUCTION.
4. ALL STATIONING REFERS TO CENTERLINE OF CONSTRUCTION UNLESS OTHERWISE NOTED.
5. STATIONING FOR LATERALS AND CONNECTOR PIPE REFER TO THE CENTERLINE-CENTERLINE INTERSECTION STATION.
6. FORTY-EIGHT (48) HOURS BEFORE EXCAVATION, CALL UNDERGROUND SERVICE ALERT 1-800-422-4133.
7. ALL ELEVATIONS SHOWN ARE IN FEET AND DECIMALS THEREOF BASED ON U.S.C. & G.S. DATUM.
8. ALL CROSS SECTIONS ARE TAKEN LOOKING DOWNSTREAM.
9. ELEVATIONS OF UTILITIES ARE APPROXIMATE UNLESS OTHERWISE NOTED.
10. OPENINGS RESULTING FROM THE CUTTING OR PARTIAL REMOVAL OF EXISTING CULVERTS, PIPES OR SIMILAR STRUCTURES TO BE ABANDONED SHALL BE SEALED WITH 6" OF CLASS "B" CONCRETE.
11. PIPE CONNECTED TO THE MAINLINE PIPE SHALL CONFORM TO JUNCTION STRUCTURE NO. 4 (JS 229) UNLESS OTHERWISE NOTED.
12. PIPE BEDDING SHALL CONFORM TO RCFC & WCD STD. DDWG. NO. M815 EXCEPT FOR COVER <2 FEET. FOR COVERT <2 FEET, CONCRETE SLURRY (2000 psi - 2 SACK) SHALL BE USED. THE ENTIRE TRENCH SHALL BE SLURRY EXTENDING 4 INCHES MINIMUM AND 12 INCHES MAXIMUM ABOVE THE TOP OF THE PIPE.
13. BH-1 INDICATES SOIL BORING LOCATIONS BASED ON THE SOILS REPORT DATED OCTOBER-21-2003. LOCATIONS SHOWN ARE APPROXIMATE.
14. "V" IS THE DEPTH OF CATCH BASINS MEASURED FROM THE TOP OF CURB TO INVERT OF CONNECTOR PIPE.
15. CATCH BASINS SHALL BE LOCATED SO THAT LOCAL DEPRESSION SHALL BEGIN AT EXISTING CURB RETURN JOINT, UNLESS OTHERWISE SPECIFIED.
16. ALL CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS AND OTHER EXISTING IMPROVEMENTS TO BE RECONSTRUCTED IN KIND AND AT THE SAME ELEVATION AND LOCATION AS THE EXISTING IMPROVEMENTS UNLESS OTHERWISE NOTED.
17. STANDARD DRAWINGS CALLED FOR ON THE PLAN AND PROFILE SHALL CONFORM TO DISTRICT STANDARD DRAWINGS UNLESS NOTED OTHERWISE.
18. THE CONTRACTOR IS REQUIRED TO CALL ALL UTILITY AGENCIES REGARDING TEMPORARY SHORING AND SUPPORT REQUIREMENTS FOR THE VARIOUS UTILITY LINES SHOWN ON THESE PLANS.
19. DURING ROUGH GRADING OPERATIONS AND PRIOR TO CONSTRUCTION OF PERMANENT DRAINAGE STRUCTURES, TEMPORARY DRAINAGE CONTROL SHOULD BE PROVIDED TO PREVENT PONDING WATER AND DAMAGE TO ADJACENT PROPERTIES.
20. APPROVAL OF THESE PLANS BY THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT DOES NOT RELIEVE THE DEVELOPER'S ENGINEER OF RESPONSIBILITY FOR THE ENGINEERING DESIGN. IF FIELD CHANGES ARE REQUIRED, IT WILL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER TO MAKE THE NECESSARY CORRECTIONS.
21. THE CONTRACTOR OR DEVELOPER SHALL SECURE ALL REQUIRED ENCROACHMENT AND/OR STATE AND FEDERAL REGULATORY PERMITS PRIOR TO THE COMMENCEMENT OF ANY WORK.
22. ALL PIPE LENGTHS ARE HORIZONTAL PROJECTIONS (NOT TRUE LENGTHS OF PIPES) AND ARE THE BASIS OF THE ESTIMATES OF QUANTITIES. THE CONTRACTOR SHALL DETERMINE THE TRUE QUANTITY OF PIPE REQUIRED FOR THIS PROJECT PRIOR TO
23. THE CONCRETE COATING ON THE INSIDE OF ALL REINFORCED CONCRETE PIPES MUST BE INCREASED TO PROVIDE A MINIMUM OF (-1/2" OVER THE REINFORCING WHEN THE DESIGN VELOCITIES EXCEED 20 FEET PER SECOND. THE CONCRETE DESIGN STRENGTH IN THESE REACHES SHALL BE f'c=5000 psi FOR VELOCITIES EXCEEDING 20 FEET PER SECOND AND f'c=6000 psi FOR VELOCITIES EXCEEDING 30 FEET PER SECOND.

DUPLICATE OF ORIGINAL - DO NOT REVISE

IP 050081

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MAYERS & ASSOCIATES
Civil Engineering, Inc.
PLANNING • ENGINEERING • SURVEYING
GARY A. MARTIN R.C.E. 50316 DATE 9/7/06
REGISTERED PROFESSIONAL ENGINEER GARY A. MARTIN No. 50316 Exp. 6/30/07 CIVIL STATE OF CALIFORNIA

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TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
RIVERSIDE COUNTY BENCHMARK
600-20-68 BRASS DISK IN CONCRETE POST 0.01 MILE WEST OF I-215 ON SOUTH SIDE OF SCOTT ROAD AND 78' S.E. OF P.P. £ 312098-S

DATE: 1970 ELEVATION=1517.545

REF.	REVISIONS	ENGINEER APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: PLANNING ENGINEER DATE: 12-15-2006
APPROVED BY: ENGINEER DATE: 12/15/06

REGISTERED PROFESSIONAL ENGINEER KHALED A. OTHMAN No. 33950 Exp. 6/30/08 CIVIL STATE OF CALIFORNIA

COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT
APPROVED BY:
KHALED A. OTHMAN DATE: 11/15/06
RECOMMENDED DATE:

SPECTRUM COMMUNITIES
TRACT 31831
STORM DRAIN
TITLE SHEET

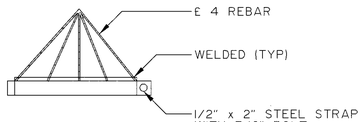
PROJECT NO. 4-0-00393 4-0-00397
DRAWING NO. 4-931
SHEET NO. 1 OF 10

Dwg. Revision Date: 08/30/2006 BY: D.P. PLOT DATE: 09/07/2006

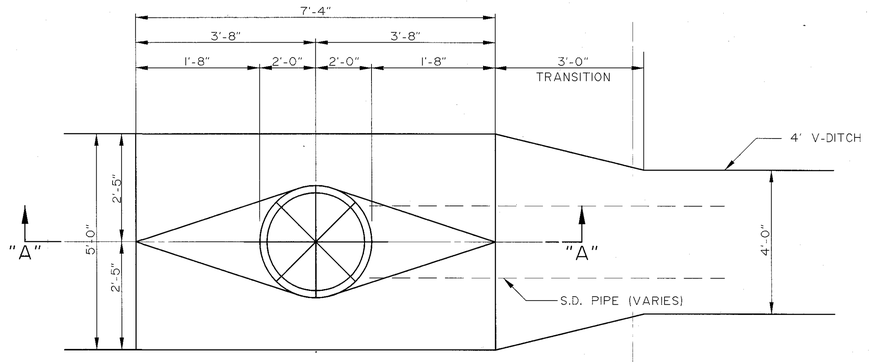
P:\04-0150-01 TR. 31831 - SPECTRUM COMMUNITIES\IMPROVEMENTS\STORM DRAIN\SD-SHT01.DWG

943-HH

Job No. 04-0150-01 Bin No. XXXX Doc No. XXXX TRACT 31831 SPECTRUM COMMUNITIES STORM DRAIN IMPROVEMENTS

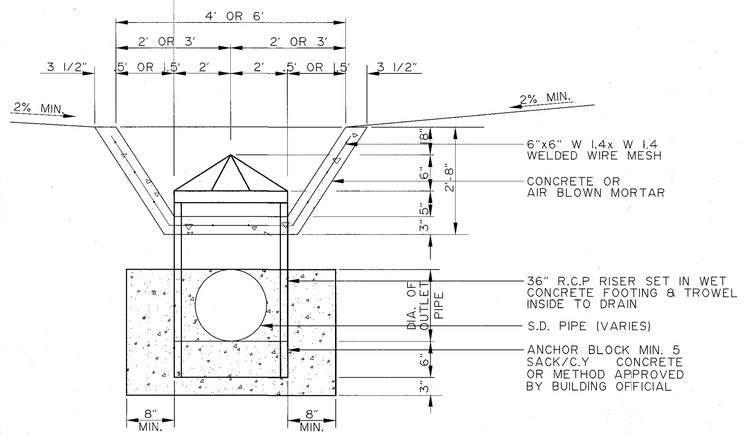


GRATE ASSEMBLY DETAIL



PLAN VIEW

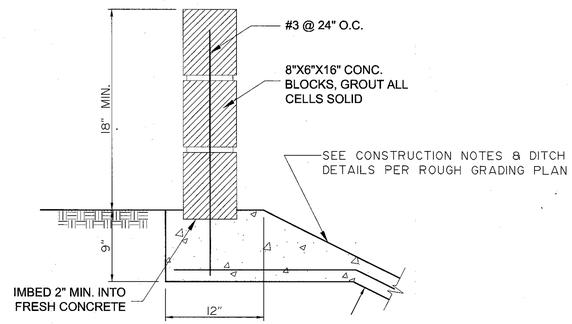
(SEE SHEET 7)



SECTION "A-A"

99 V-DITCH DRAIN INLET

N.T.S



95 SPLASHWALL

N.T.S

ESTIMATE OF QUANTITIES		MAINTAINED BY R.C.T.D.		MAINTAINED BY R.C.F.C.D.	
NO.	STORM DRAIN CONSTRUCTION NOTES	QTY.	UNITS	QTY.	UNITS
(80)	INSTALL 18" R.C.P. (SEE PROFILE FOR D-LOAD)	272	LF	--	L.F.
(81)	INSTALL 24" R.C.P. (SEE PROFILE FOR D-LOAD)	463	LF	--	L.F.
(82)	INSTALL 30" R.C.P. (SEE PROFILE FOR D-LOAD)	326	LF	---	---
(83)	INSTALL 36" R.C.P. (SEE PROFILE FOR D-LOAD)	---	---	282	L.F.
(84)	INSTALL 42" R.C.P. (SEE PROFILE FOR D-LOAD)	---	---	667	L.F.
(85)	INSTALL 48" R.C.P. (SEE PROFILE FOR D-LOAD)	---	---	290	L.F.
(86)	INSTALL 54" R.C.P. (SEE PROFILE FOR D-LOAD)	---	---	868	L.F.
(87)	INSTALL 60" R.C.P. (SEE PROFILE FOR D-LOAD)	---	---	--	L.F.
(90)	CONSTRUCT CURB INLET C.B. NO. 1 PER R.C.T.D. STD DWG NO. 300	15	EA.	---	---
(91)	CONSTRUCT M.H. NO. 2 PER R.C.F.C. & W.C.D. STD. DWG. NO. MH 252	---	EA.	2	E.A.
(92)	CONSTRUCT M.H. NO. 4 PER R.C.F.C. & W.C.D. STD. DWG. NO. MH 254	---	EA.	4	E.A.
(93)	CONSTRUCT M.H. NO. 1 PER R.C.F.C. & W.C.D. STD. DWG. NO. MH 251	---	EA.	2	E.A.
(94)	CONSTRUCT J.S. NO. 2 PER R.C.F.C. & W.C.D. STD. DWG. NO. JS 227	---	EA.	7	E.A.
(95)	CONSTRUCT SPLASHWALL PER DETAIL HEREON	---	LF.	5	L.F.
(96)	CONSTRUCT J.S. NO. 4 PER R.C.F.C. & W.C.D. STD. DWG. NO. JS 229	---	---	5	EA.
(98)	CONSTRUCT CONCRETE COLLAR PER R.C.F.C. & W.C.D. STD. DWG. NO. M 803	---	---	1	EA.
(99)	CONSTRUCT V-DITCH DRAIN INLET PER DETAIL HEREON	--	EA.	1	E.A.
(106)	CONSTRUCT ~~TIMBER~~ CONCRETE BULKHEAD PER R.C.F.C. & W.C.D. STD. DWG. NO. M ~~804~~ 816	---	---	1	EA.
(107)	REMOVE PLUG AND JOIN EXISTING	---	---	2	EA.
(115)	CONSTRUCT CONCRETE DROP INLET PER R.C.F.C. & W.C.D. STD. DWG. NO. CB 110	---	EA.	2	E.A.
(116)	INSTALL KATCHALL CURB INLET FILTERS OR APPROVED EQUAL. CATCH BASIN FILTER SYSTEM SHALL BE MAINTAINED BY THE LANDSCAPE MAINTENANCE DISTRICT.	106	L.F.	---	L.F.

11/28/06 IP 050081

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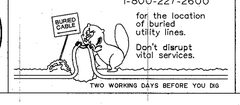
PLANNING • ENGINEERING • SURVEYING

REGISTERED PROFESSIONAL ENGINEER GARY A. MARTIN No. 50318 Exp. 6/30/07 CIVIL STATE OF CALIFORNIA

GARY A. MARTIN R.C.E. 50318 — DATE 9/7/06

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.



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RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: — DATE:
APPROVED BY: — DATE:

REGISTERED PROFESSIONAL ENGINEER KHALED A. OTHMAN No. 33950 Exp. 6/30/08 CIVIL STATE OF CALIFORNIA

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY: KHALED A. OTHMAN — DATE: 11/8/06
RECOMMENDED — DATE:

SPECTRUM COMMUNITIES
TRACT 31831
STORM DRAIN
QUANTITIES AND DETAILS

PROJECT NO. 4-0-00393 4-0-00397
DRAWING NO. 4-931
SHEET NO. 2 OF 10

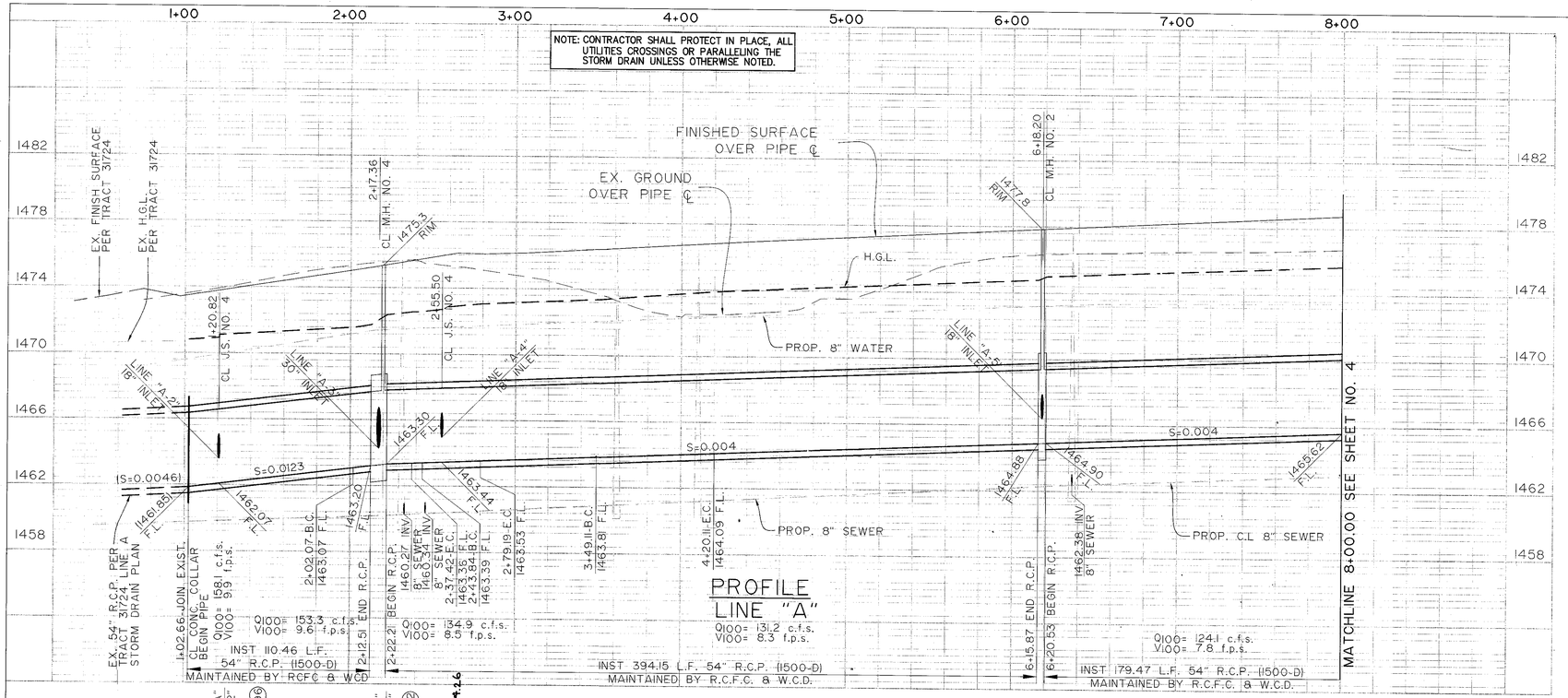
Dwg. Revision Date: 09/01/2006 BY: D.P. PLOT DATE: 09/07/2006

P:\04-0150-01 TR. 31831 - SPECTRUM COMMUNITIES\IMPROVEMENTS\STORM DRAIN\SD-SHT02.DWG

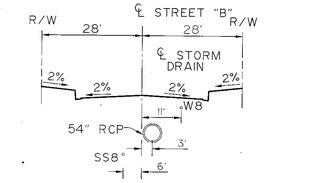
943-4H

Job No. 04-0150-01 Bin No. XXXX Doc No. XXXX TRACT 31831 SPECTRUM COMMUNITIES STORM DRAIN IMPROVEMENTS

NOTE: CONTRACTOR SHALL PROTECT IN PLACE, ALL UTILITIES CROSSINGS OR PARALLELING THE STORM DRAIN UNLESS OTHERWISE NOTED.



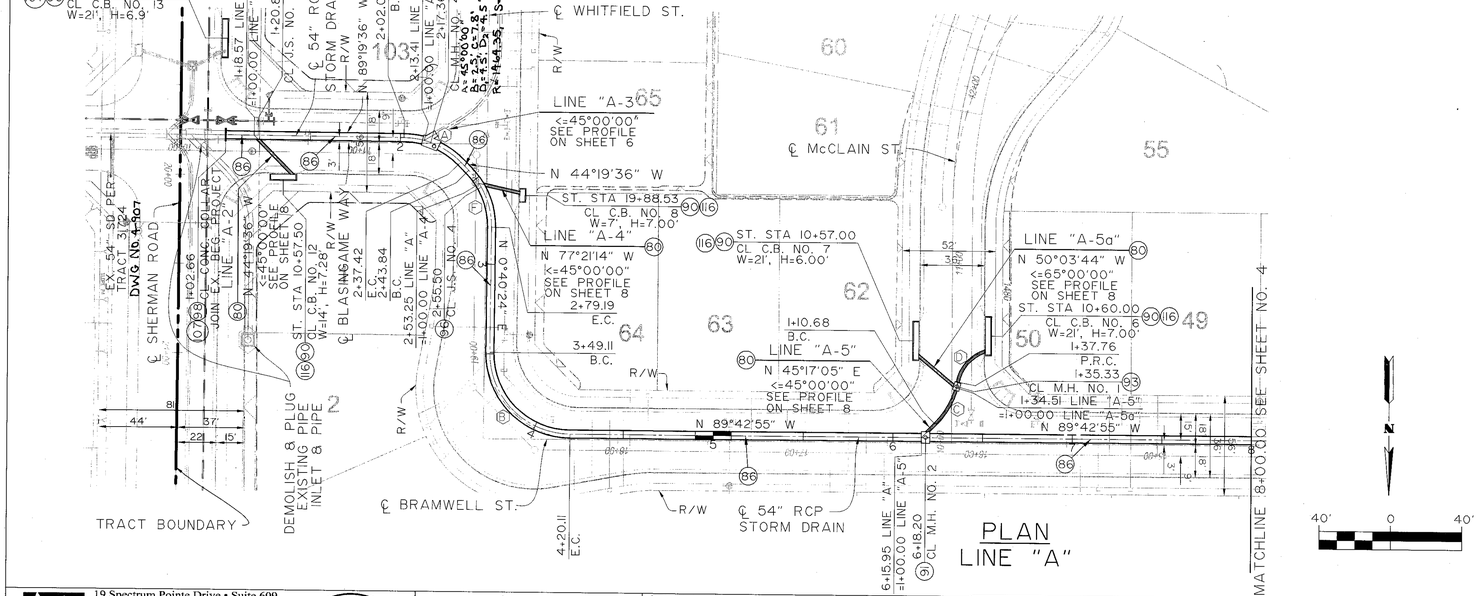
PROFILE LINE "A"



SECTION AT STA. 5+00.00

FROM STA. 1+00.00 TO STA. 8+00.00

20' 0 20'



PLAN LINE "A"

40' 0 40'

CONSTRUCTION NOTES

(80) INSTALL 18" R.C.P. (SEE PROFILE FOR D-LOAD)
(86) INSTALL 54" R.C.P. (SEE PROFILE FOR D-LOAD)
(90) CONSTRUCT CURB INLET CATCH BASIN PER R.C.T.D. STD. DWG. NO. CB 300
(91) CONSTRUCT M.H. NO. 2 PER R.C.F.C. & W.C.D. STD. DWG. NO. MH 252
(92) CONSTRUCT M.H. NO. 4 PER R.C.F.C. & W.C.D. STD. DWG. NO. MH 254
(94) CONSTRUCT J.S. NO. 2 PER R.C.F.C. & W.C.D. STD. DWG. NO. JS 227
(96) CONSTRUCT J.S. NO. 4 PER R.C.F.C. & W.C.D. STD. DWG. NO. JS 229
(98) CONSTRUCT CONCRETE COLLAR PER R.C.F.C. & W.C.D. STD. DWG. NO. M 803
(07) REMOVE PLUG AND JOIN EXISTING
(116) INSTALL KATCHALL CURB INLET FILTERS OR APPROVED EQUAL. CATCH BASIN FILTER SYSTEM SHALL BE MAINTAINED BY THE LANDSCAPE MAINTENANCE DISTRICT.

DATA TABLE

	BEARING/DELTA	RADIUS	LENGTH	TANGENT
A	45°00'00"	45.00	35.34	18.64
B	90°23'19"	45.00	70.99	45.31
C	34°28'59"	45.00	27.08	13.97
D	61°27'55"	22.50	24.14	13.38
E	45°00'00"	45.00	35.34	18.64

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Dwg. Revision Date: 09/07/2006 BY: D.P. PLOT DATE: 09/07/2006

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
RIVERSIDE COUNTY BENCHMARK
600-20-68 BRASS DISK IN CONCRETE POST 0.01 MILE WEST OF I-215 ON SOUTH SIDE OF SCOTT ROAD AND 78' S.E. OF P.P. E 312098-S

DATE: 1970 ELEVATION=1517.545

REVISIONS		ENGINEER	
REF.	DESCRIPTION	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: [signature] DATE: 12/15/06
APPROVED BY: [signature] DATE: 12-15-2006

REGISTERED PROFESSIONAL ENGINEER KHALED A. OTHMAN No. 33950 Exp. 6/30/08 CIVIL STATE OF CALIFORNIA

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY: [signature] KHALED A. OTHMAN DATE: 11/8/06
RECOMMENDED DATE:

[signature] IP 050081

SPECTRUM COMMUNITIES
TRACT 31831
STORM DRAIN
LINE "A"

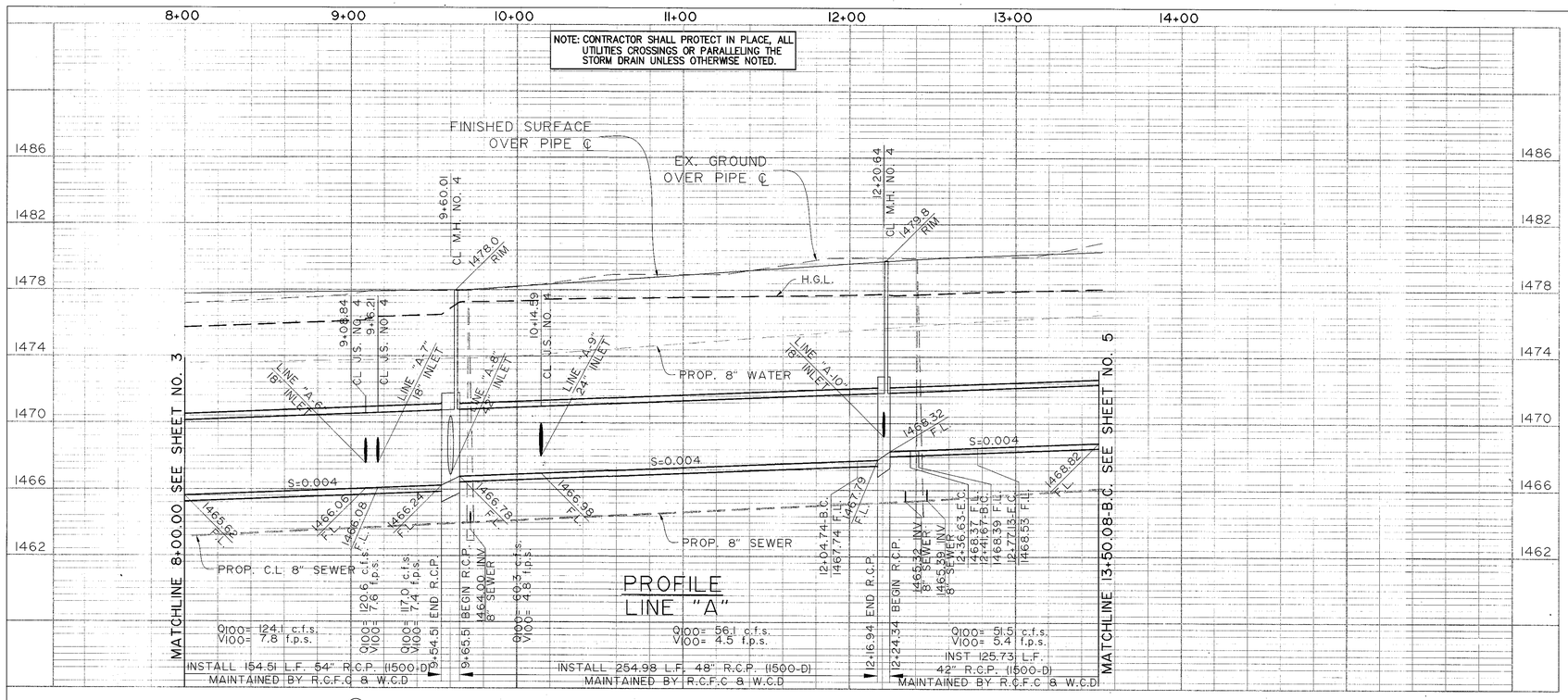
PROJECT NO. 4-0-00393 4-0-00397
DRAWING NO. 4-931
SHEET NO. 3 OF 10

P:\04-0150-01 TR. 31831 - SPECTRUM COMMUNITIES\IMPROVEMENTS\STORM DRAIN\SD-SHTC

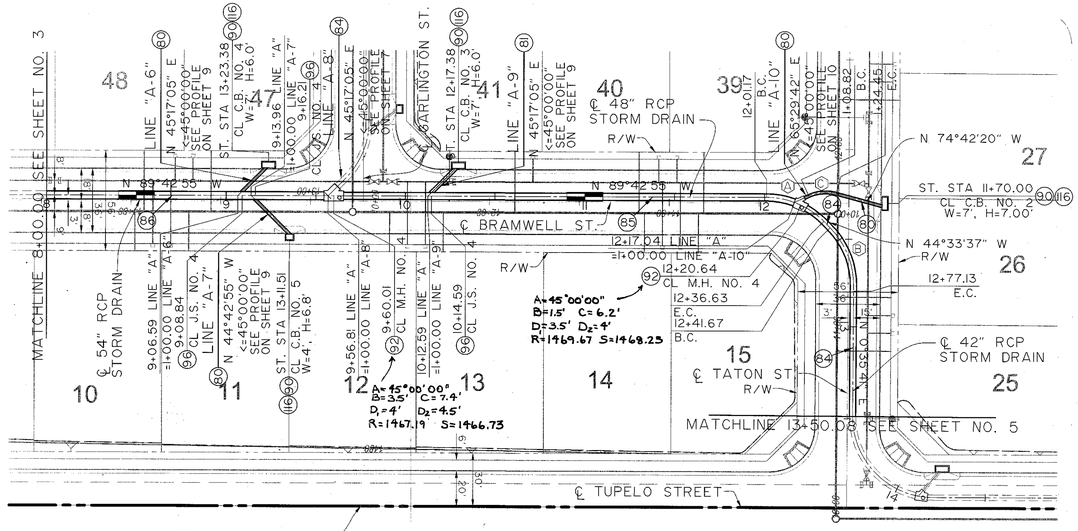
943 W

Job No. 04-0150-01 Bin No. XXXX Doc No. XXXX TRACT 31831 SPECTRUM COMMUNITIES STORM DRAIN IMPROVEMENTS

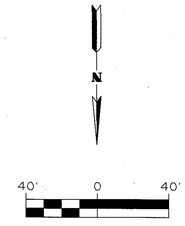
NOTE: CONTRACTOR SHALL PROTECT IN PLACE, ALL UTILITIES CROSSINGS OR PARALLELING THE STORM DRAIN UNLESS OTHERWISE NOTED.

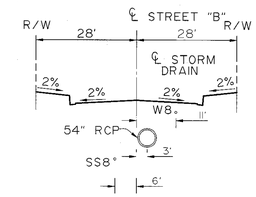


PROFILE
LINE "A"

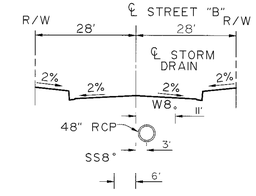


PLAN
LINE "A"





SECTION AT STA. 8+50.00
FROM STA. 8+00.00 TO STA. 9+54.51



SECTION AT STA. 11+00.00
FROM STA. 9+54.51 TO STA. 13+52.18

CONSTRUCTION NOTES

(80) INSTALLALL 18" R.C.P. (SEE PROFILE FOR D-LOAD)
(81) INSTALLALL 24" R.C.P. (SEE PROFILE FOR D-LOAD)
(83) INSTALLALL 36" R.C.P. (SEE PROFILE FOR D-LOAD)
(84) INSTALL. 42" R.C.P. (SEE PROFILE FOR D-LOAD)
(85) INSTALLALL 48" R.C.P. (SEE PROFILE FOR D-LOAD)
(86) INSTALLALL 54" R.C.P. (SEE PROFILE FOR D-LOAD)
(90) CONSTRUCT CURB INLET CATCH BASIN PER R.C.T.D. STD. DWG. NO. CB 300
(91) CONST. M.H. NO. 2 PER R.C.F.C. & W.C.D. STD. DWG. NO. MH 252
(92) CONST. M.H. NO. 4 PER R.C.F.C. & W.C.D. STD. DWG. NO. MH 254
(96) CONSTRUCT J.S. NO. 4 PER R.C.F.C. & W.C.D. STD. DWG. NO. JS 229
(116) INSTALL KATCHALL CURB INLET FILTERS OR APPROVED EQUAL. CATCH BASIN FILTER SYSTEM SHALL BE MAINTAINED BY THE LANDSCAPE MAINTENANCE DISTRICT.

DATA TABLE

	BEARING/DELTA	RADIUS	LENGTH	TANGENT
(A)	45°09'18"	45.00	35.46	18.71
(B)	45°09'18"	45.00	35.46	18.71
(C)	39°47'59"	22.50	15.63	8.14

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MAYERS & ASSOCIATES
Civil Engineering, Inc.
PLANNING • ENGINEERING • SURVEYING
GARY A. MARTIN R.C.E. 50318 9/7/06 DATE
REGISTERED PROFESSIONAL ENGINEER GARY A. MARTIN No. 50318 Exp. 6/30/07 CIVIL STATE OF CALIFORNIA

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services. TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
RIVERSIDE COUNTY BENCHMARK 600-20-68 BRASS DISK IN CONCRETE POST 0.01 MILE WEST OF I-215 ON SOUTH SIDE OF SCOTT ROAD AND 78' S.E. OF P.P. ℄ 312098-S
DATE: 1970 ELEVATION=1517.545

REVISIONS	ENGINEER
REF. DESCRIPTION	APPR. DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: APPROVED BY:
DATE: 12/15/06 DATE: 12-15-2006

REGISTERED PROFESSIONAL ENGINEER KHALED A. OTHMAN No. 33950 Exp. 6/30/08 CIVIL STATE OF CALIFORNIA

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY:
KHALED A. OTHMAN 11/8/06 DATE:
RECOMMENDED DATE:

SPECTRUM COMMUNITIES
TRACT 31831
STORM DRAIN
LINE "A"

PROJECT NO.	4-0-00393 4-0-00397
DRAWING NO.	4-931
SHEET NO.	4 OF 10

11/28/06 VP 050081

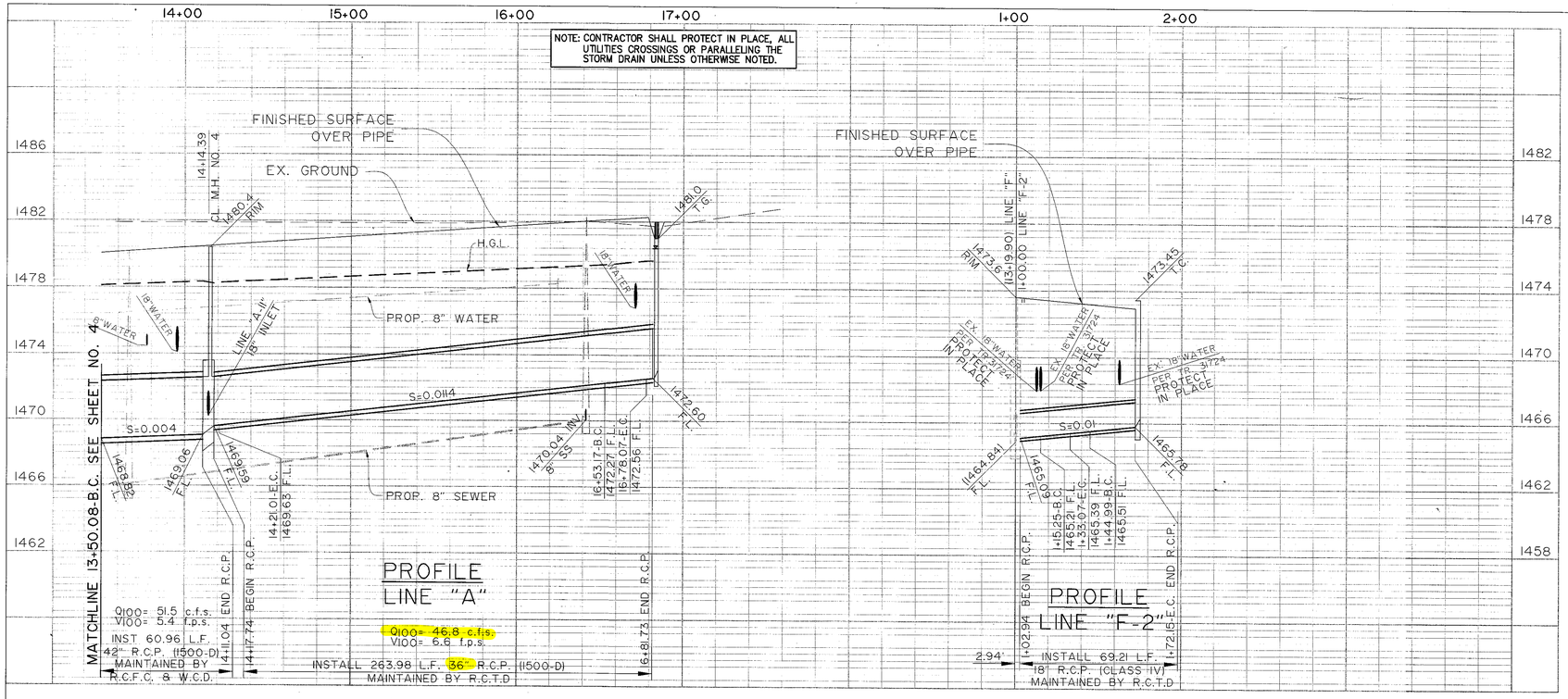
Dwg. Revision Date: 09/07/2006 BY: D.P. PLOT DATE: 09/07/2006

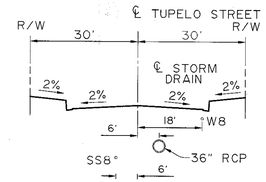
P:\04-0150-01 TR. 31831 - SPECTRUM COMMUNITIES\IMPROVEMENTS\STORM DRAIN\SD-SHT04.DWG

943 HH

Job No. 04-0150-01 Bin No. XXXX Doc No. XXXX TRACT 31831 SPECTRUM COMMUNITIES STORM DRAIN IMPROVEMENTS

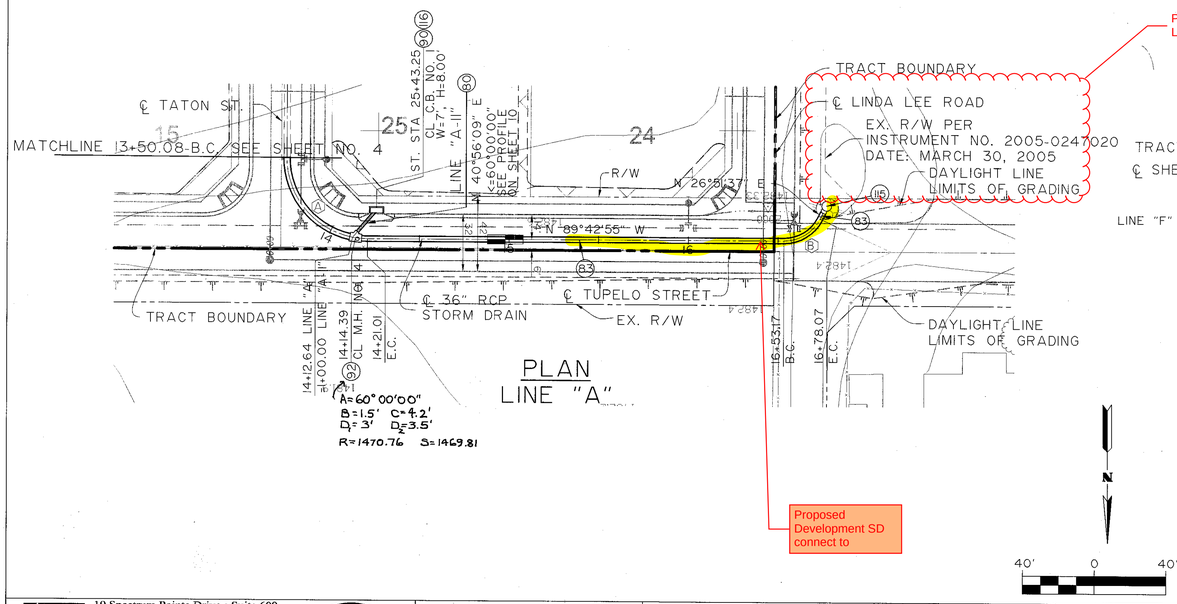
NOTE: CONTRACTOR SHALL PROTECT IN PLACE, ALL UTILITIES CROSSINGS OR PARALLELING THE STORM DRAIN UNLESS OTHERWISE NOTED.





SECTION AT STA. 15+00.00
FROM STA. 14+00.00 TO STA. 16+83.83

20' 0 20'



CONSTRUCTION NOTES

(80) INSTALL 18" R.C.P. (SEE PROFILE FOR D-LOAD)
(83) INSTALL 36" R.C.P. (SEE PROFILE FOR D-LOAD)
(84) INSTALL 42" R.C.P. (SEE PROFILE FOR D-LOAD)
(90) CONSTRUCT CURB INLET CATCH BASIN PER R.C.T.D. STD. DWG. NO. CB 300
(92) CONSTRUCT M.H. NO. 4 PER R.C.F.C. & W.C.D. STD. DWG. NO. MH 254
(115) CONSTRUCT CONCRETE DROP INLET PER R.C.F.C & W.C.D STD. DWG. NO. CB 110
(116) INSTALL KATCHALL CURB INLET FILTERS OR APPROVED EQUAL. CATCH BASIN FILTER SYSTEM SHALL BE MAINTAINED BY THE LANDSCAPE MAINTENANCE DISTRICT. OPEN ON BOTH LONG SIDES

DATA TABLE

	BEARING/DELTA	RADIUS	LENGTH	TANGENT
(A)	90°18'36"	45.00	70.93	45.24
(B)	63°25'28"	22.50	24.91	13.90
(C)	69°10'21"	22.50	27.16	15.51
(D)	45°23'20"	22.50	17.82	9.41

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GARY A. MARTIN R.C.E. 50318 DATE 9/7/06
REGISTERED PROFESSIONAL ENGINEER GARY A. MARTIN No. 50318 Exp. 6/30/07 CIVIL STATE OF CALIFORNIA

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TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
RIVERSIDE COUNTY BENCHMARK 600-20-68 BRASS DISK IN CONCRETE POST 0.01 MILE WEST OF I-215 ON SOUTH SIDE OF SCOTT ROAD AND 78' S.E. OF P.P. ℄ 312098-S
DATE: 1970 ELEVATION=1517.545

REF.	DESCRIPTION	APPR.	DATE
	REVISIONS	ENGINEER	

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE: 12/15/06
APPROVED BY: DATE: 12-15-2006

REGISTERED PROFESSIONAL ENGINEER KHALED A. OTHMAN No. 33950 Exp. 6/30/08 CIVIL STATE OF CALIFORNIA

COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT
APPROVED BY: KHALED A. OTHMAN DATE: 11/18/06
RECOMMENDED DATE:

IP 050081

SPECTRUM COMMUNITIES
TRACT 31831
STORM DRAIN
LINE "A"

PROJECT NO. 4-0-00393 4-0-00397
DRAWING NO. 4-931
SHEET NO. 5 OF 10

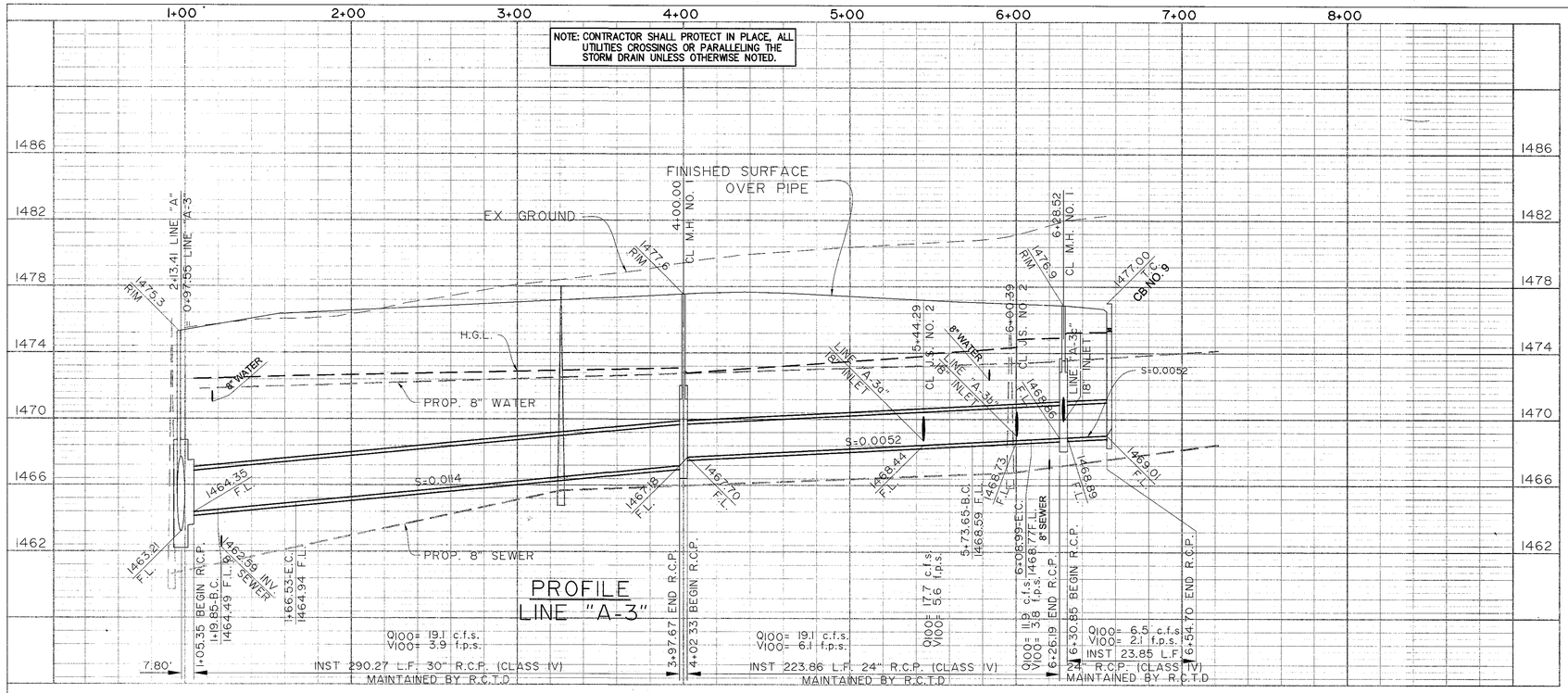
Dwg. Revision Date: 09/07/2006 BY: D.P. PLOT DATE: 09/07/2006

P:\04-0150-01 TR. 31831 - SPECTRUM COMMUNITIES\IMPROVEMENTS\STORM DRAIN\SD-SHT05.DWG

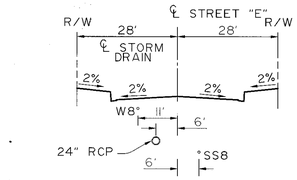
943-H4

Job No. 04-0150-01 Bin No. XXXX Doc No. XXXX TRACT 31831 SPECTRUM COMMUNITIES STORM DRAIN IMPROVEMENTS

NOTE: CONTRACTOR SHALL PROTECT IN PLACE, ALL UTILITIES CROSSINGS OR PARALLELING THE STORM DRAIN UNLESS OTHERWISE NOTED.

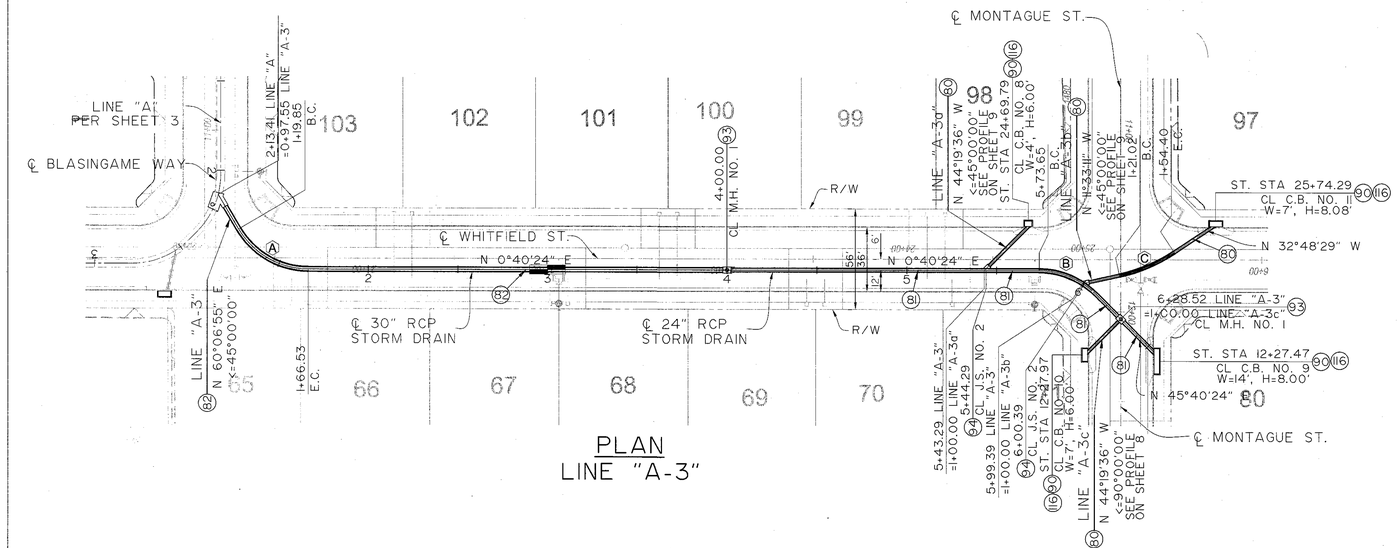


PROFILE
LINE "A-3"



SECTION AT STA. 3+00.00
FROM STA. 1+00.00 TO STA. 6+67.33

20' 0 20'



PLAN
LINE "A-3"

40' 0 40'

CONSTRUCTION NOTES

(80) INSTALL 18" R.C.P. (SEE PROFILE FOR CLASS)
(81) INSTALL 24" R.C.P. (SEE PROFILE FOR CLASS)
(82) INSTALL 30" R.C.P. (SEE PROFILE FOR CLASS)
(90) CONSTRUCT CURB INLET CATCH BASIN PER R.C.T.D. DWG. NO. CB 300
(93) CONSTRUCT M.H. NO. 1 PER R.C.F.C. & W.C.D. STD. DWG. NO. MH 251
(94) CONSTRUCT J.S. NO. 2 PER R.C.F.C. & W.C.D. STD. DWG. NO. JS 227
(116) INSTALL KATCHALL CURB INLET FILTERS OR APPROVED EQUAL. CATCH BASIN FILTER SYSTEM SHALL BE MAINTAINED BY THE LANDSCAPE MAINTENANCE DISTRICT.

DATA TABLE

	BEARING/DELTA	RADIUS	LENGTH	TANGENT
A	59°26'31"	45.00	46.69	25.69
B	45°00'00"	45.00	35.34	18.64
C	21°15'18"	90.00	33.39	16.89

IP 050081 11/20/06

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MAYERS & ASSOCIATES
Civil Engineering, Inc.
PLANNING • ENGINEERING • SURVEYING
GARY A. MARTIN R.C.E. 50318 DATE 8/30/06
REGISTERED PROFESSIONAL ENGINEER GARY A. MARTIN No. 50318 Exp. 6/30/07 CIVIL STATE OF CALIFORNIA

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
BURIED CABLE
TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
RIVERSIDE COUNTY BENCHMARK
600-20-68 BRASS DISK IN CONCRETE
POST 0.01 MILE WEST OF I-215 ON SOUTH SIDE OF SCOTT ROAD AND 78' S.E. OF P.P. £ 312098-S
DATE: 1970 ELEVATION=1517.545

REF.	REVISIONS	APPR.	DATE

ENGINEER

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE:
APPROVED BY: DATE:

REGISTERED PROFESSIONAL ENGINEER KHALED A. OTHMAN No. 33950 Exp. 6/30/08 CIVIL STATE OF CALIFORNIA

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY:
KHALED A. OTHMAN 11/29/06 DATE:
RECOMMENDED DATE:

SPECTRUM COMMUNITIES
TRACT 31831
STORM DRAIN
LINE "A-3"

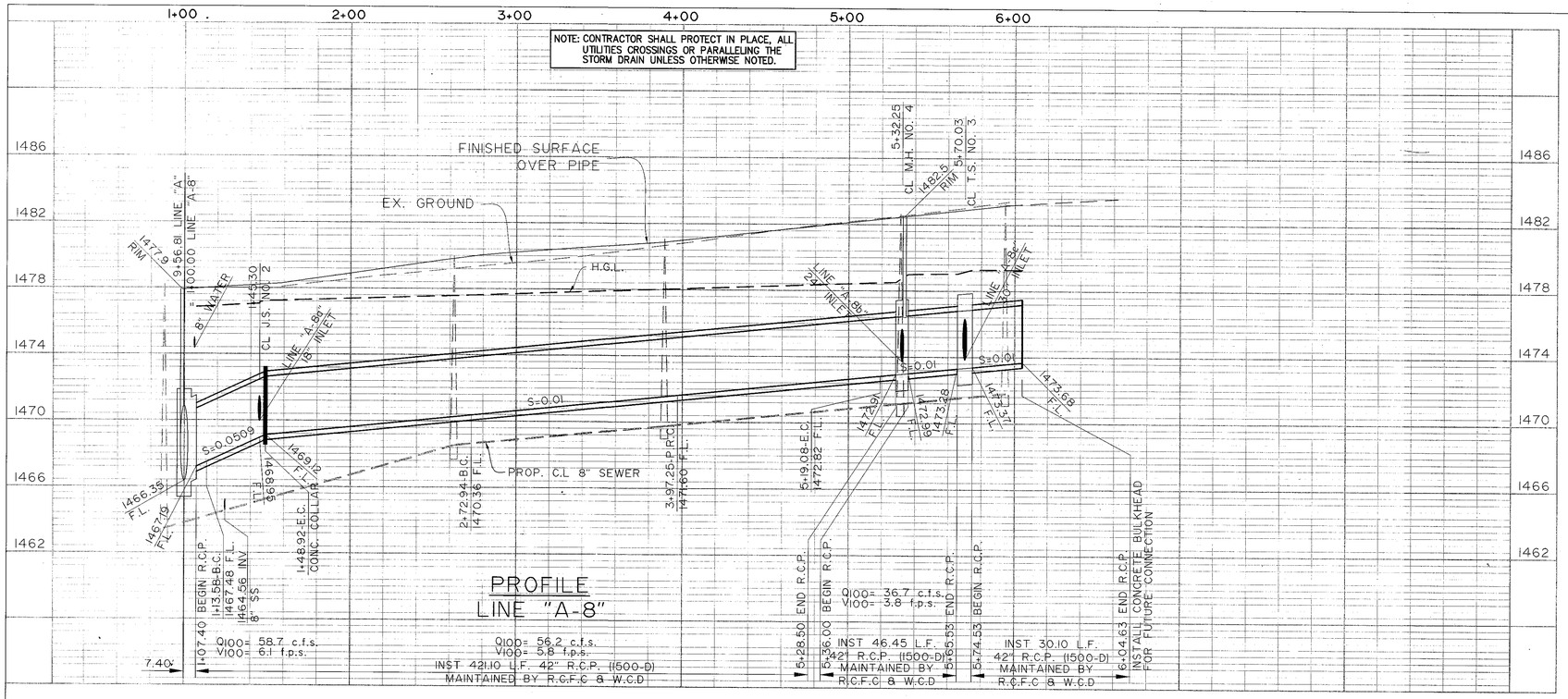
PROJECT NO. 4-0-00393 4-0-00397
DRAWING NO. 4-931
SHEET NO. 6 OF 10

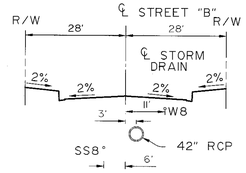
Dwg. Revision Date: 11/09/2006 BY: K.V. PLOT DATE: 11/09/2006

P:\04-0150-01 TR. 31831 - SPECTRUM COMMUNITIES\IMPROVEMENTS\STORM DRAIN\SD-SHT06.DWG

943 HH

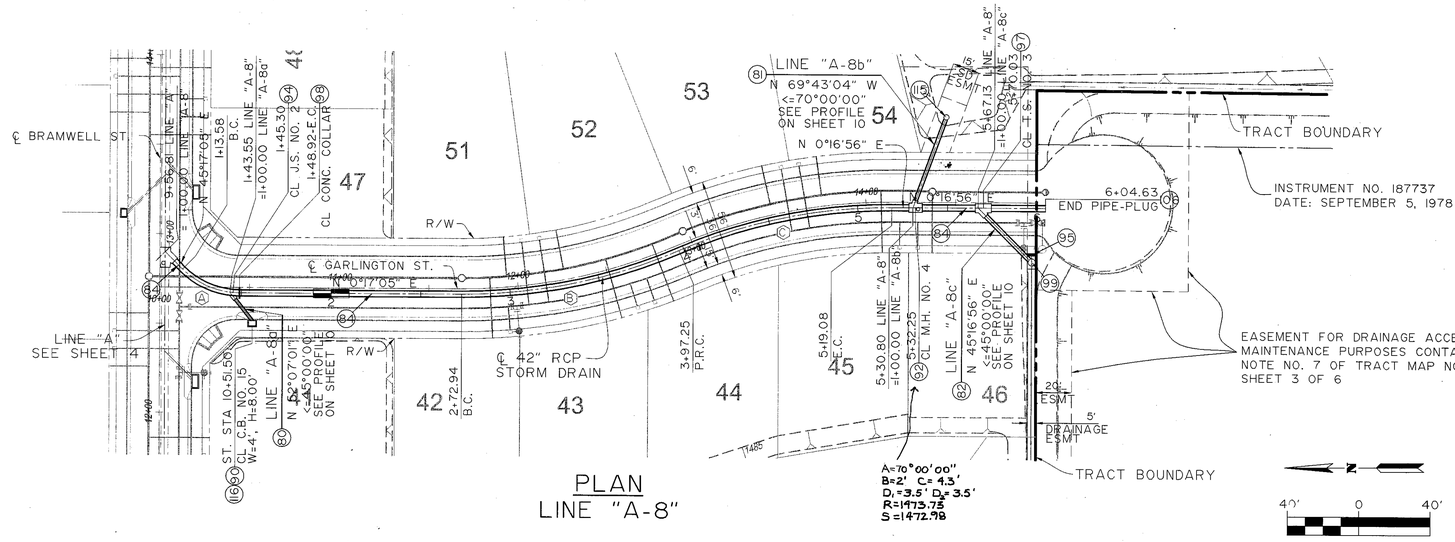
Job No. 04-0150-01 Bin No. XXXX Doc No. XXXX TRACT 31831 SPECTRUM COMMUNITIES STORM DRAIN IMPROVEMENTS





SECTION AT STA. 2+00.00
FROM STA. 1+00.00 TO STA. 6+01.50

20' 0 20'



PLAN
LINE "A-8"

CONSTRUCTION NOTES

(80) INST. 18" R.C.P. (SEE PROFILE FOR D-LOAD)
(81) INSTALL 24" R.C.P. (SEE PROFILE FOR D-LOAD)
(82) INSTALL 30" R.C.P. (SEE PROFILE FOR D-LOAD)
(84) INSTALL 42" R.C.P. (SEE PROFILE FOR D-LOAD)
(90) CONSTRUCT CURB INLET CATCH BASIN PER R.C.T.D. STD. DWG. NO. CB 300
(92) CONSTRUCT M.H. NO. 4 PER R.C.F.C. & W.C.D. STD. DWG. NO. MH 254
(94) CONSTRUCT J.S. NO. 2 PER R.C.F.C. & W.C.D. STD. DWG. NO. JS 227
(95) CONST. SPLASHWALL PER DETAIL ON SHEET NO. 2
(97) CONST. T.S. NO. 3 PER R.C.F.C. & W.C.D. STD. DWG. NO. TS 303
(98) CONSTRUCT CONCRETE COLLAR PER R.C.F.C. & W.C.D. STD. DWG. NO. M 803
(99) CONSTRUCT V-DITCH DRAIN INLET PER DETAIL ON SHEET NO. 2
(106) CONSTRUCT CONCRETE BULKHEAD PER R.C.F.C. & W.C.D. STD. DWG. NO. M 816 OPEN ON BOTH LONG SIDES
(115) CONSTRUCT CONCRETE DROP INLET PER R.C.F.C. & W.C.D. STD. DWG. NO. CB 110
(116) INSTALL KATCHALL CURB INLET FILTERS OR APPROVED EQUAL. CATCH BASIN FILTER SYSTEM SHALL BE MAINTAINED BY THE LANDSCAPE MAINTENANCE DISTRICT.

DATA TABLE

	BEARING/DELTA	RADIUS	LENGTH	TANGENT
(A)	45°00'00"	45.00	35.34	18.64
(B)	23°30'21"	303.00	124.31	63.04
(C)	23°30'13"	297.00	121.83	61.79

IP 050081

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MAYERS & ASSOCIATES
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PLANNING • ENGINEERING • SURVEYING
GARY A. MARTIN R.C.E. 50318 9/7/06 DATE
REGISTERED PROFESSIONAL ENGINEER GARY A. MARTIN No. 50318 Exp. 6/30/07 CIVIL STATE OF CALIFORNIA

Dwg. Revision Date: 09/07/2006 BY: D.P. PLOT DATE: 09/07/2006

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TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
RIVERSIDE COUNTY BENCHMARK
600-20-68 BRASS DISK IN CONCRETE POST 0.01 MILE WEST OF I-215 ON SOUTH SIDE OF SCOTT ROAD AND 78' S.E. OF P.P. ℄ 312098-S

DATE: 1970 · ELEVATION=1517.545

REF.	REVISIONS	APPR.	DATE
		ENGINEER	

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: APPROVED BY:
DATE: 12/18/06 DATE: 12-15-2006

REGISTERED PROFESSIONAL ENGINEER KHALED A. OTHMAN No. 33950 Exp. 6/30/08 CIVIL STATE OF CALIFORNIA

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY:
KHALED A. OTHMAN DATE: 11/28/06
RECOMMENDED DATE:

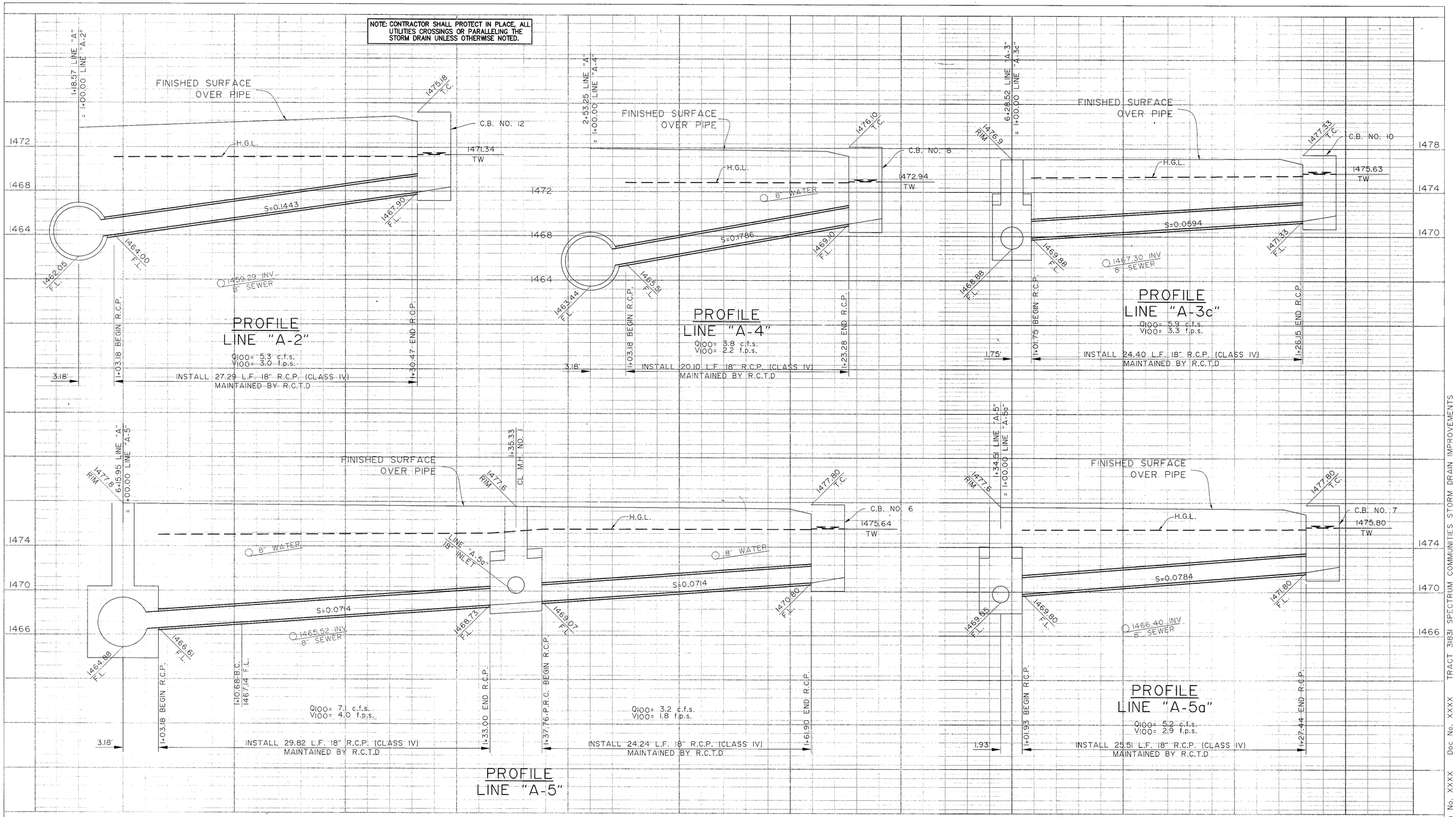
SPECTRUM COMMUNITIES
TRACT 31831
STORM DRAIN
LINE "A-8"

PROJECT NO. 4-0-00393 4-0-00397
DRAWING NO. 4-931
SHEET NO. 7 OF 10

P:\04-0150-01 TR. 31831 - SPECTRUM COMMUNITIES\IMPROVEMENTS\STORM DRAIN\SD-SHT07.DWG
943 HH

Job No. 04-0150-01 Bin No. XXXX Doc No. XXXX TRACT 31831 SPECTRUM COMMUNITIES STORM DRAIN IMPROVEMENTS

NOTE: CONTRACTOR SHALL PROTECT IN PLACE, ALL UTILITIES CROSSINGS OR PARALLELING THE STORM DRAIN UNLESS OTHERWISE NOTED.



PROFILE
LINE "A-5"

Nov 11/28/06
IP 050081

19 Spectrum Pointe Drive • Suite 609
Lake Forest, CA 92630
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(949) 599-0880 Fax
MAYERS & ASSOCIATES
Civil Engineering, Inc.
PLANNING • ENGINEERING • SURVEYING
GARY A. MARTIN R.C.E. 50318 DATE 8/30/06
REGISTERED PROFESSIONAL ENGINEER GARY A. MARTIN No. 50318 Exp. 6/30/07 CIVIL STATE OF CALIFORNIA

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BENCH MARK
RIVERSIDE COUNTY BENCHMARK
600-20-68 BRASS DISK IN CONCRETE
POST 0.01 MILE WEST OF I-215 ON
SOUTH SIDE OF 'SCOTT ROAD AND 78'
S.E. OF P.P. £ 312098-S
DATE: 1970 ELEVATION=1517.545

REF.	REVISIONS	ENGINEER APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE:
APPROVED BY: DATE:

REGISTERED PROFESSIONAL ENGINEER KHALED A. OTHMAN No. 33950 Exp. 6/30/08 CIVIL STATE OF CALIFORNIA

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY:
KHALED A. OTHMAN 11/28/06
RECOMMENDED DATE: DATE:

SPECTRUM COMMUNITIES
TRACT 31831
STORM DRAIN
LATERALS

PROJECT NO. 4-0-00393 4-0-00397
DRAWING NO. 4-931
SHEET NO. 8 OF 10

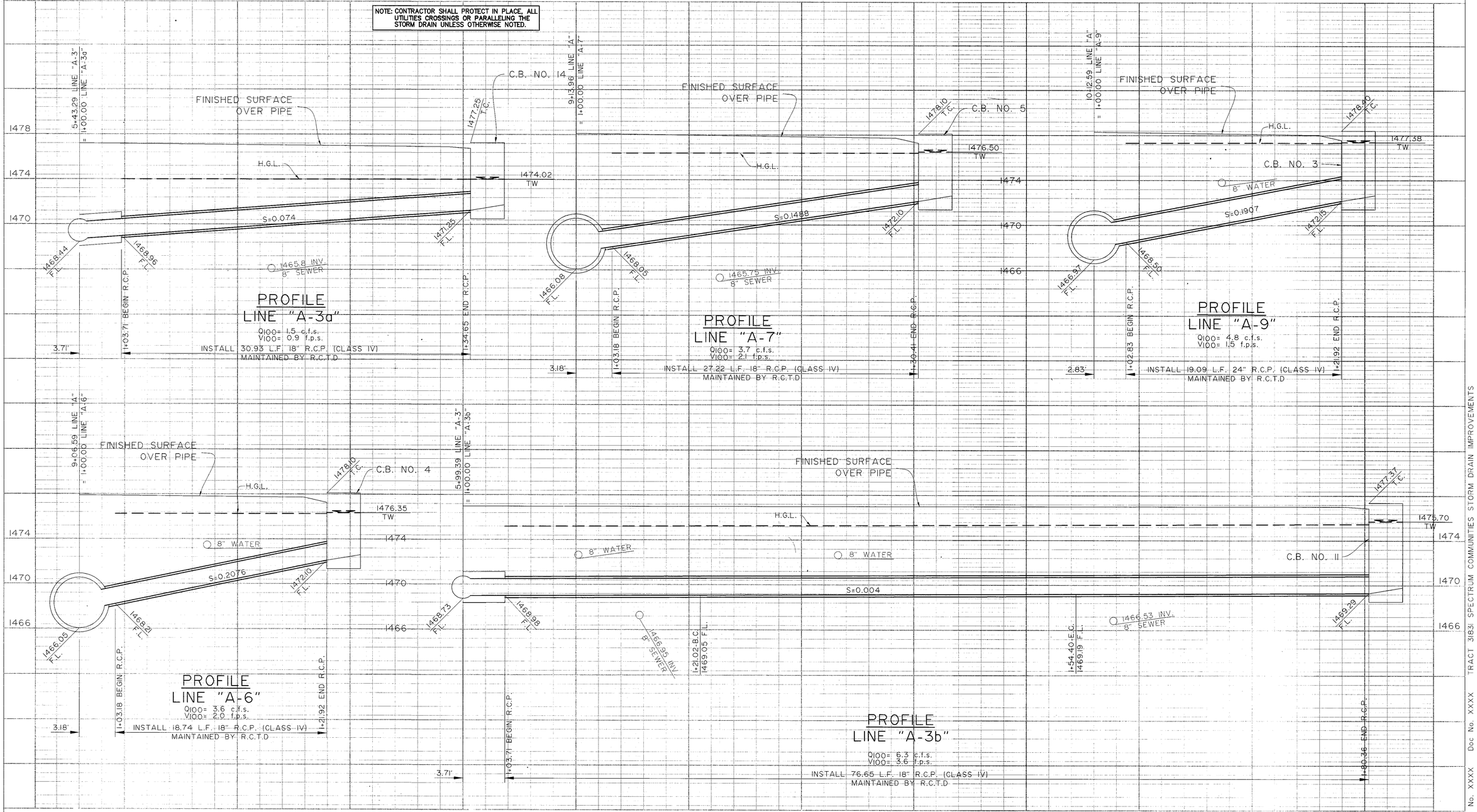
Dwg. Revision Date: 09/07/2006 BY: D.P. PLOT DATE: 11/09/2006

P:\04-0150-01 TR. 31831 - SPECTRUM COMMUNITIES\IMPROVEMENTS\STORM DRAIN\SD-SHT08.DWG

943 HH

Job No. 04-0150-01 Bin No. XXXX Doc No. XXXX TRACT 31831 SPECTRUM COMMUNITIES STORM DRAIN IMPROVEMENTS

NOTE: CONTRACTOR SHALL PROTECT IN PLACE, ALL UTILITIES CROSSINGS OR PARALLELING THE STORM DRAIN UNLESS OTHERWISE NOTED.



May 11/29/06 IP 050081

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MYERS & ASSOCIATES
Civil Engineering, Inc.
PLANNING • ENGINEERING • SURVEYING
GARY A. MARTIN R.C.E. 50318 DATE 8/30/06
REGISTERED PROFESSIONAL ENGINEER GARY A. MARTIN No. 50318 Exp. 9/30/07 CIVIL STATE OF CALIFORNIA

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Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
RIVERSIDE COUNTY BENCHMARK
600-20-68 BRASS DISK IN CONCRETE
POST 0.01 MILE WEST OF I-215 ON SOUTH SIDE OF SCOTT ROAD AND 78' S.E. OF P.P. ℄ 312098-S
DATE: 1970 ELEVATION=1517.545

REF.	DESCRIPTION	ENGINEER APPR.	DATE
	REVISIONS		

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE:
APPROVED BY: DATE:

REGISTERED PROFESSIONAL ENGINEER KHALED A. OTHMAN No. 33950 Exp. 6/30/08 CIVIL STATE OF CALIFORNIA

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY:
KHALED A. OTHMAN 11/18/06
RECOMMENDED DATE: DATE:

SPECTRUM COMMUNITIES
TRACT 31831
STORM DRAIN
LATERALS

PROJECT NO. 4-0-00393 4-0-00397
DRAWING NO. 4-931
SHEET NO. 9 OF 10

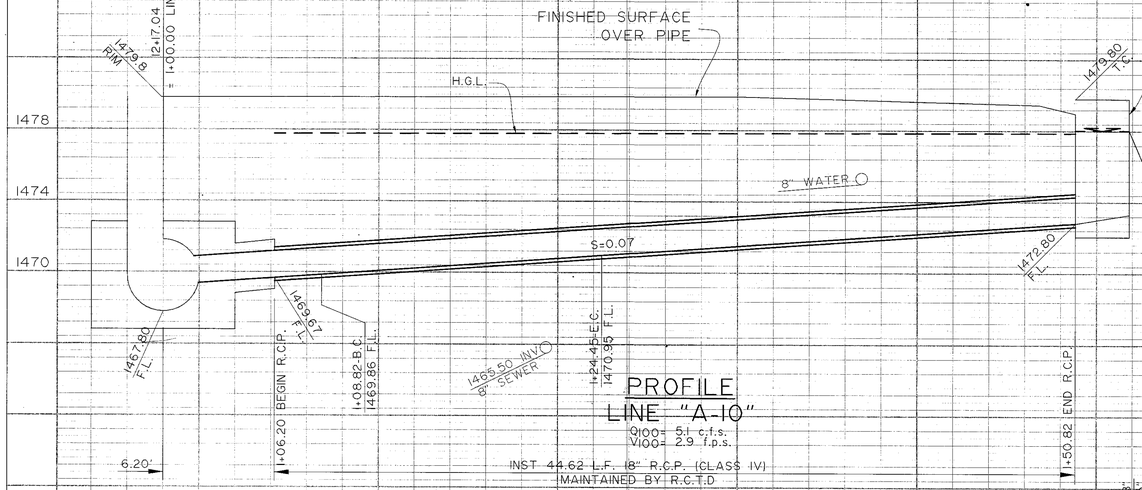
Dwg. Revision Date: 09/07/2006 BY: D.P. PLOT DATE: 11/09/2006

P:\04-0150-01 TR. 31831 - SPECTRUM COMMUNITIES\IMPROVEMENTS\STORM DRAIN\SD-SHT09.DWG

943 HH

Job No. 04-0150-01 Bin No. XXXX Doc No. XXXX TRACT 31831 SPECTRUM COMMUNITIES STORM DRAIN IMPROVEMENTS

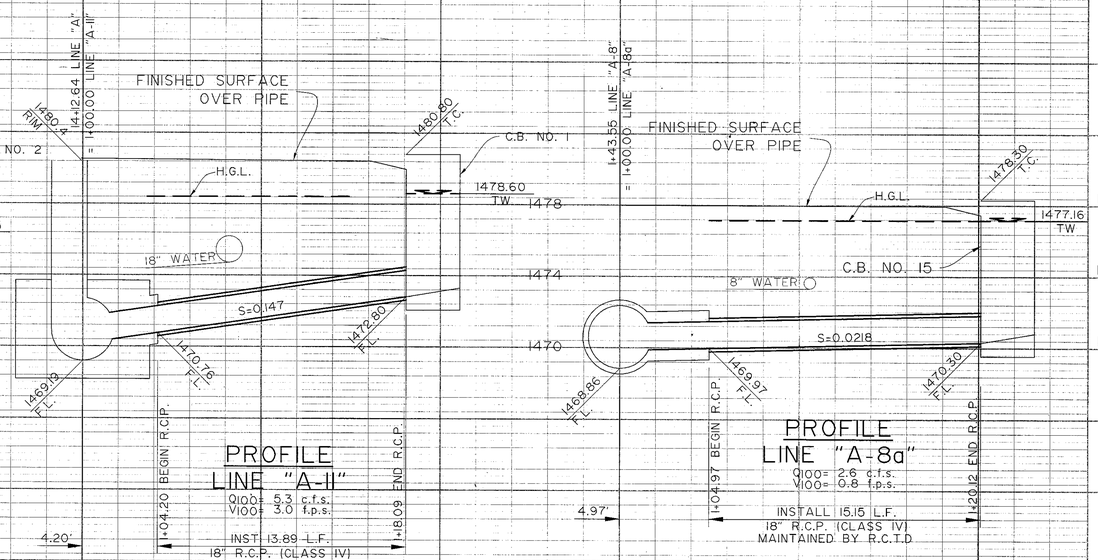
NOTE: CONTRACTOR SHALL PROTECT IN PLACE, ALL UTILITIES CROSSINGS OR PARALLELING THE STORM DRAIN UNLESS OTHERWISE NOTED.



PROFILE
LINE "A-10"

Q100= 5.1 c.f.s.
V100= 2.9 f.p.s.

INST 44.62 L.F. 18" R.C.P. (CLASS IV)
MAINTAINED BY R.C.T.D



PROFILE
LINE "A-11"

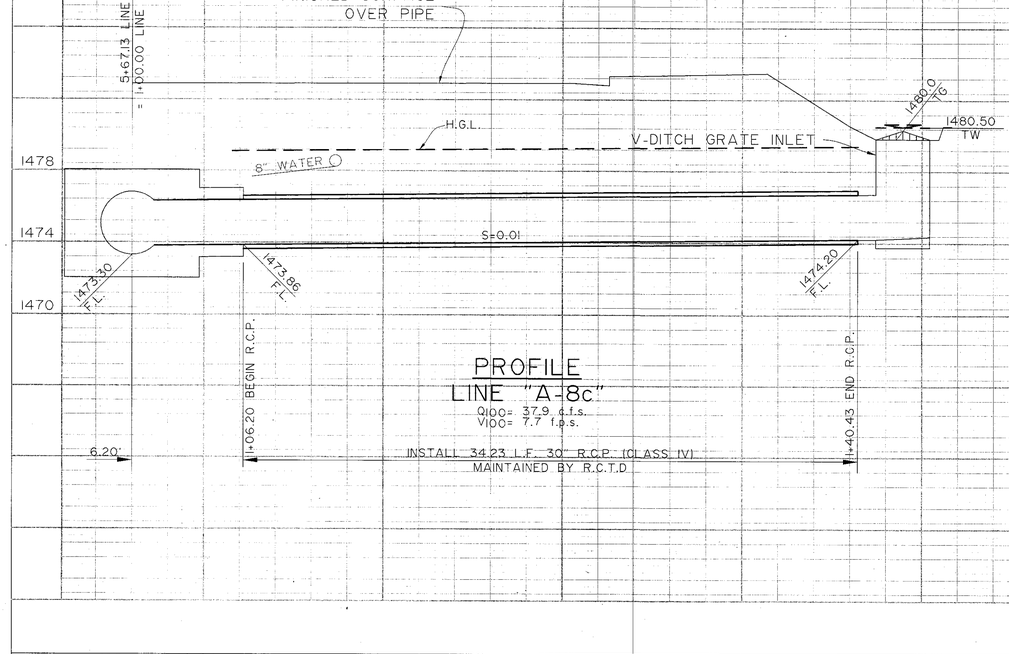
Q100= 5.3 c.f.s.
V100= 3.0 f.p.s.

INST 13.89 L.F.
18" R.C.P. (CLASS IV)
MAINTAINED BY R.C.T.D

PROFILE
LINE "A-8a"

Q100= 2.6 c.f.s.
V100= 0.8 f.p.s.

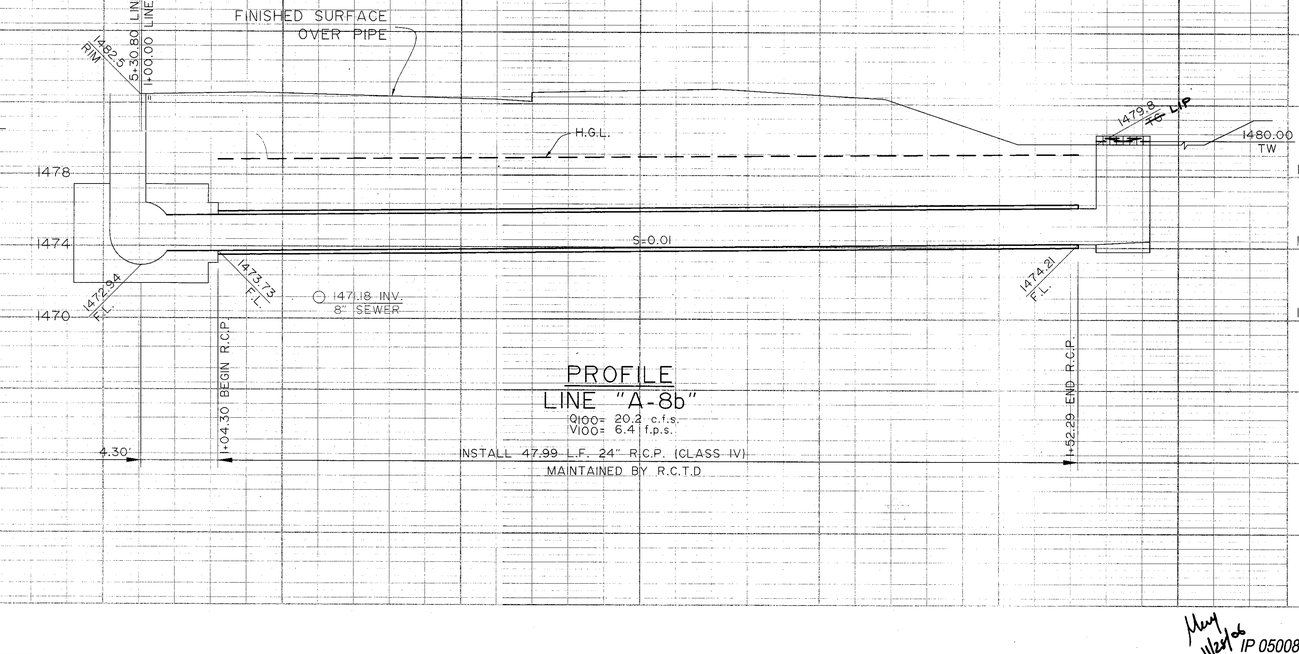
INSTALL 15.15 L.F.
18" R.C.P. (CLASS IV)
MAINTAINED BY R.C.T.D



PROFILE
LINE "A-8c"

Q100= 37.9 c.f.s.
V100= 7.7 f.p.s.

INSTALL 34.23 L.F. 30" R.C.P. (CLASS IV)
MAINTAINED BY R.C.T.D



PROFILE
LINE "A-8b"

Q100= 20.2 c.f.s.
V100= 6.4 f.p.s.

INSTALL 47.99 L.F. 24" R.C.P. (CLASS IV)
MAINTAINED BY R.C.T.D

IP 050081

19 Spectrum Pointe Drive • Suite 609
Lake Forest, CA 92630
(949) 599-0870
(949) 599-0880 Fax
MYERS & ASSOCIATES
Civil Engineering, Inc.
PLANNING • ENGINEERING • SURVEYING
GARY A. MARTIN R.C.E. 50318 DATE 8/30/06
REGISTERED PROFESSIONAL ENGINEER GARY A. MARTIN No. 50318 Exp. 6/30/07 CIVIL STATE OF CALIFORNIA

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
RIVERSIDE COUNTY BENCHMARK
600-20-68 BRASS DISK IN CONCRETE
POST 0.01 MILE WEST OF I-215 ON
SOUTH SIDE OF SCOTT ROAD AND 78'
S.E. OF P.P. ℄ 312098-5

DATE: 1970 ELEVATION=1517.545

REF.	REVISIONS	APPR.	DATE	ENGINEER

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE:
APPROVED BY: DATE:

REGISTERED PROFESSIONAL ENGINEER KHALED A. OTHMAN No. 33950 Exp. 6/30/08 CIVIL STATE OF CALIFORNIA

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY:
KHALED A. OTHMAN 11/28/06 DATE:
RECOMMENDED DATE:

SPECTRUM COMMUNITIES
TRACT 31831
STORM DRAIN
LATERALS

PROJECT NO. 4-0-00393 4-0-00397
DRAWING NO. 4-931
SHEET NO. 10 OF 10

Dwg. Revision Date: 11/09/2006 BY: K.V. PLOT DATE: 11/09/2006

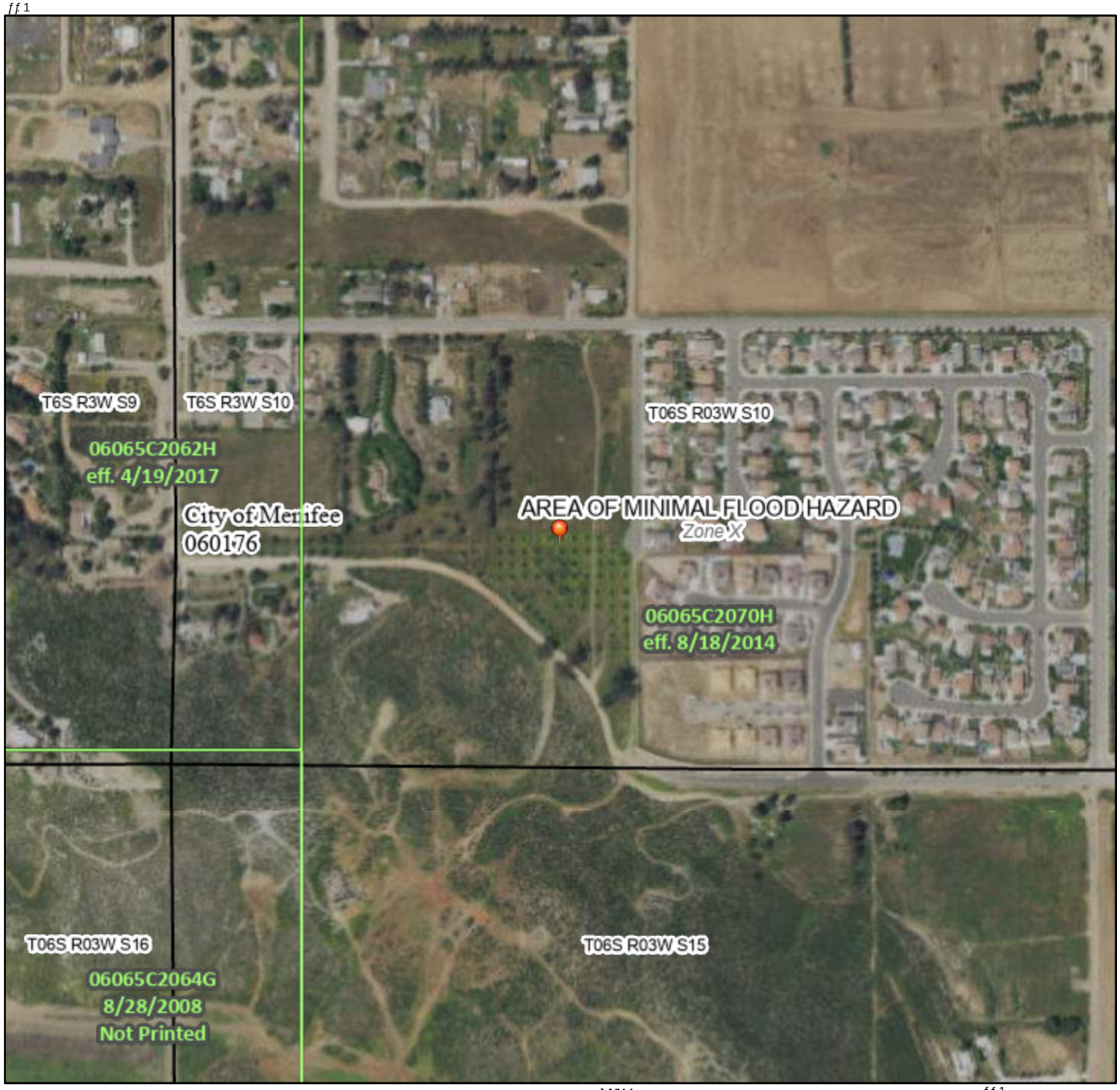
P:\04-0150-01 TR. 31831 - SPECTRUM COMMUNITIES\IMPROVEMENTS\STORM DRAIN\SD-SHT10.DWG

943 H H

Job No. 04-0150-01 Bin No. XXXX Doc No. XXXX TRACT 31831 SPECTRUM COMMUNITIES STORM DRAIN IMPROVEMENTS

1DWLRQDO)ORRG+D]DUG'DWD)ORRGWWH

FEMA



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/HJHQG

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/:K %RXQGDU\ =RQH $ 9 $ 9($
6WUXFWXUH \)ORRGZD\

$QQXDO &KDQFH)ORRG +D]DUG $UHDV
R DQQXDO FKDQFH IORRG ZDWHU GHSWKV OHVV WKDQ IHHW RU ZKHUH
DUHDV RI OHVV WKDQ VTXDUH PLOH=RQH;
)WXUH &RQGLWLRQV $QQXDO
&KDQFH)ORRG +D]DUG =RQH;
$UHD ZLWK 5HGXFHG)ORRG 5LVN GXH WR
/HYHH 6HH 1RWHV =RQH;
$UHD ZLWK)ORRG 5LVN GXH WR /HYHH =RQH'

$UHD RI 0LQLPDO)ORRG +D]DUG =RQH;
(IIHFWLYH /LQH
$UHD 8QGHWHUPLQHG)ORRG +D]DUG =RQH'
&KDQQHO &XOYHUW RU 6WUXFWXUH
/HYHH RU)ORRGZDOO
&URVV 6HFWLRQV ZLWK $QQXDO &KDQFH
DWHU 6XUIDFH (OHYDWLRQ
&RDVWDO 7UDQVHFW
%DVH)ORRG (OHYDWLRQ /LQH %)(
/LPLW R 6WUXFWXUH
-XULVGLFWLRQ %RXQGDU\
&RDVWDO 7UDQVHFW %DVHOLQH
3URJUHVV %DVHOLQH
+GURJUDSKLF)HDWXUH

L'LWDO DWD $YDLODEOH
1R'LWDO DWD $YDLODEOH
8QPDSSHG

7KH SLQG LV SODFHG RQ WKH PDS LV DQ DSSUR[LPDWH
SRLQW VHOHFWHG E\ WKH XVHU DQG GRHV QRW UHSUHV
DQ DWWHVWDWLRQ SURGXFW\ ORFDWLRQ

7KLV PSFRPROHV ZLWK \RXU VWDQGDUG IRU WKH XVHR
GL.LWDO IORRGPS/LI LW LV QRW YRLGV GHVFULEHG EHORZ
7KH EDVHPHQ VKRZQ FRPROHV ZLWK \RXU EDVHPHQ
DFFXUDWH WDQGDUG/

7KH IORRGKD]DUG LQIRUPDWLQ LV GHULYHG LUHFWO\ IURPWKH
DWWHVWDWLRQ LYHUHVHUYLFHV SURYLGHG E\ 7KLV PS
ZV HSRUWHG RQ DW 3 DQG GRHV QRW
UHOHFW FKDQHV RU DQGRQWV VXEVHTXW WR WKLV GDWH DQG
WLFH 7KH)HDQG HIHFWLYH LYHLQRUPWLRQ PKDQHRU
EHFRPXSUVHGHE\QHZGDWDRYHU WLFH

7KLV PSLPHLV YRLGLI WKHRQHRU RUHR WKHIRO ORZLQJPS
HOHPQWV GR QRW DSSHDU EDVHPSLPH\\ IORRGRQHODEHOV
OHHG VFDOHEDU PSFRHDWLRQGDWH FRRL W\LGHQWLILHUV
)5$QHO QXHU DQG)5HIHFWLYHGDWH DSLPHV IRU
XQPSSHG DQG XQRGHUHG)GDUHDV FDQQRW EH XVHGIRU
UHDODWRU\ SUSRVHV