CITY OF MORENO VALLEY

INITIAL STUDY FOR THE GATEWAY HEIGHTS PROJECT

GATEWAY HEIGHTS PROJECT
PEN 21-0066

February 2023

Lead Agency
CITY OF MORENO VALLEY
14177 Frederick Street
Moreno Valley, California 92553

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Volume 2b

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<u>**APPENDICES**</u>

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Appendix H

Preliminary Drainage Report

Preliminary
Drainage Report
For
Gateway Heights
Moreno Valley, CA

A Hillside Residential Cluster Unit Development
Located 220'N of Jennings Ct and Morton Rd.

February 22, 2021
Revised March 28, 2022
Revised October 24, 2022
Revised November 29, 2022

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Project # 30182

PEN21-0066
LST21-0026

This report has been prepared by or under the direction of the following registered civil engineer who attests to the technical information contained herein. The registered civil engineer has also judged the qualifications of any employees that have provided data and calculations upon which the recommendations, conclusions, and decisions are based.

Christopher F. Lenz, PE 63001

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1 INTRODUCTION

1.1. SITE DESCRIPTION

1.1.1. LOCATION

Gateway Heights is located 220 feet north of Jennings Court and east of Morton Road in the City of Moreno Valley, Riverside County. It is parcel 256-150-001.

1.1.2. EXISTING FEATURES

The property contains 32.8 acres in the foothill of the Box Springs Mountain Reserve Park. The project proposes to develop approx. 15.43 acres of 32.8 into 108 detached condominium units with the dwelling units in an 8-unit "cluster" concept. The site drains northeast to southwest with steep slopes, especially in the hillside areas. It is bordered on three sides with vacant land, and of the south by existing single-family residences.

1.1.3. PROPOSED CONDITION

It is proposed that the subject property be developed to permit development of residential lots per the request of the client. The site will contain 108 single family lots via Planned Unit Development. Access to the site will be from Morton Road. There will be open space area placed near the entrance at the base of the hill to provide flood and water quality mitigation.

1.2. PURPOSE OF REPORT

The purpose of this report is to review the West End Moreno Master Drainage Plan (adopted 1991) and ensure design compatibility with the proposed project. This report will analyze the hydrology of the landscape and assess the hydraulic conditions of the subject parcel to verify consistency with the previously listed reports. Where necessary, control measures will be recommended to alleviate existing flood problems and provide for water quality concerns using the County of Riverside Flood Control processes.

1.3. FEMA INFORMATION

The Flood Insurance Rate Maps (Panel 06065C0733G) for this subject property shows that the site falls within Zone X. Zone X denotes areas determined to be "Areas of Undermined Flood Hazard".

2. EXISTING DRAINAGE PATTERNS

2.1. OFFSITE

The West End Moreno Master Drainage Plan studied the drainage patterns for this overall area and identified Line A and Line B along the northwestern and southwestern edges of the property. Line A is to the north of the proposed development and thus no improvements are proposed. Line B is located offsite to the south and west of the property. The project area is within the contributory area of Line B. Flows that originate in the hillside areas drain southwesterly and some defined watercourses have formed. A portion of the site drains southwesterly to Line B, and the other portion drains westerly along another main flow path along the north side of Morton Road. This report analyzed three main watercourses affecting the development limits. Two of the watercourses continue southwesterly, join each other at point 305, and then intersect with the large wash that runs along the southwest edge of the property at point 306. Points 304 and 403 have been determined at 90.6 cfs and 26.7 cfs respectively. Another smaller area impacts the northeastern edge of the development area and is contributory to Line A. Point 502 has been determined at 7.8 cfs. Refer to the Existing Conditions Exhibit. In addition to the the main washes that impact the eastern edge of the site and continue through the site, there are four concentrations of flow that originate onsite and discharge along the western property line. Those too are analyzed. Points 602, 702, 802, and 902 have been determined at 5.8 cfs, 1.8 cfs, 5.7 cfs, and 8.0 cfs respectively. Refer to the Existing Conditions Exhibit.

2.2. ONSITE

The site has been disturbed and graded in recent history (mostly for fire mitigation). There are existing concentrations of storm runoff traversing the site. There are defined jurisdictional watercourses along the southwestern edge of the property that has historically conveyed storm runoff along the back of the existing homes, and then across Morton Road. There are a few minor non jurisdictional concentrations of flow at the base of the hills that originate on site from the hillside. Using the proposed development limits, this report analyzed the 1,3,6, and 24hr, 2,5,10, and 100 year runoff events (per the RCFCWCD method). Refer to the Onsite Existing Conditions Exhibit

3. PROPOSED DRAINAGE PATTERNS

3.1. OFFSITE

For the offsite, hillside runoff, the project is proposing three storm drain collection points. Point 502 is along the northern edge, is 7.8 cfs, and will be carried by a 24” pipe through the project, continuing westerly along the

existing flow path. The other two, points 403, and 304, are 26.7 cfs, and 90.6 cfs, respectively. 403 will be carried by a proposed 24” pipe and connected to a proposed 36” pipe that carries the flow from point 304. That proposed storm drain system also connects to the historic flow path. Preliminary pipe capacity calculations are located in Appendix B. At time of final design additional design including HGL will be required.
The project is adjacent to the proposed MDP Line B crossing, which is just south of the projects entrance, but is offsite. The project has been designed to route the hillside flows through the project via a proposed 36” pipe, then outlet to the Line B system. The project proposes to build the Line B Crossing. Two (2) 3’ x 6’ RCB culverts will be built under Morton Road. From there flows will outlet within an existing channel that carries the regional flows and mimicking the existing conditions just south of the project.

3.2. ONSITE

The *Gateway Heights* project will provide developed roads, combination bio retention and detention basins of sufficient size to accept, clean, mitigate the increase, and route the runoff from the proposed site. Basins for Gateway Heights have been designed to detain the difference in runoff hydrograph volume between the "developed" condition and the "pre-developed" condition using basin routing calculations. Runoff will be routed to bio-retention basins throughout the project via storm drain inlets. The water quality basins will drain via underdrains into a storm drain system and eventually into the proposed Line B System. Outlet design to be provided with final routing calculations to match existing conditions. It is anticipated that existing conditions can be matched.

4. HYDROLOGIC CONDITIONS

The Synthetic Unit Hydrograph and Rational Methods have been employed to determine peak runoff amounts and volumes. The Riverside County Flood Control and Water Conservation District (RCFCD & WCD) Hydrology Manual (reference 1) was used to develop the hydrological parameters for the 1, 3, 6, and 24 hr, 2, 5, 10, and 100 year storm events. Refer to appendix A for detail.

4.1. OFFSITE

The offsite runoff potential has been analyzed with the Rational Method per the Riverside County Flood Control and Water Conservation District (RCFCD & WCD) Hydrology Manual (reference 1).

The Following Data is the result of the calculations;

NODE	Tc	SUBAREA FLOW	TOTAL FLOW
102	8.2 MIN	22.6 CFS	22.6 CFS
103	11.1 MIN	39.3 CFS	61.9 CFS
202	10.7 MIN	22.7 CFS	22.7 CFS
203	12.0 MIN	27.2 CFS	49.9 CFS
103*	11.1 MIN		108.4 CFS
104	13.4 MIN	99.9 CFS	208.3 CFS
105	14.6 MIN	6.3 CFS	214.6 CFS
105*	12.3 MIN		334.2 CFS
302	10.7 MIN	25.4 CFS	25.4 CFS
303	12.5 MIN	35.5 CFS	61.0 CFS
304	14.4 MIN	29.6 CFS	90.6 CFS
305	15.0 MIN	3.3 CFS	93.9 CFS
305*	10.7 MIN		116.8 CFS
306	11.1 MIN	2.8 CFS	119.6 CFS
*STREAM CONFLUENCE			

NODE	Tc	SUBAREA FLOW	TOTAL FLOW
402	8.5 MIN	6.0 CFS	6.0 CFS
403	10.0 MIN	20.7 CFS	26.7 CFS
305	10.7 MIN	5.3 CFS	32.0 CFS
502	9.0 MIN	7.8 CFS	7.8 CFS
503	9.7 MIN	7.3 CFS	15.2 CFS
602	11.3 MIN	5.8 CFS	5.8 CFS
702	8.8 MIN	1.8 CFS	1.8 CFS
802	9.9 MIN	5.7 CFS	5.7 CFS
902	12.4 MIN	8.0 CFS	8.0 CFS

4.2. ONSITE

In the existing condition, the proposed development envelope is varying terrain with steeper areas. It is proposed to be developed into single family cluster lots. The onsite runoff potential has been analyzed with the Synthetic Unit Hydrograph Method per the Riverside County Flood Control and Water Conservation District (RCFCD & WCD) Hydrology Manual (reference 1).
The Following Data is used in the calculations;

Soils Group – C
Pre-development Runoff Index – 84 with 0% impervious
Post-development Runoff Index – 69 with 65% impervious

Rainfall Data – Winchester Slope = 0.52
2yr – 1hr = 0.466”
100yr – 1hr = 1.19”
2yr – 3hr = 0.799”
100yr – 3hr = 1.89”
2yr – 6hr = 1.09”
100yr – 6hr = 2.55”
2yr – 24hr = 1.93”
100yr – 24hr = 4.64”

Per RCFCWCD method, the results of the hydrograph analysis are in the below tables.

basin routing is provided to show the proposed condition can be mitigated to less than the existing condition. The following tables summarize that volume calculations.

Moreno Valley 33 - Area A Pre-Development								
	Storm Duration							
	1 hour		3 hour		6 hour		24 hour	
Frequency	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume
2 year	5.4	0.13	2.9	0.14	2.5	0.15	0.5	0.12
5 year	7.8	0.20	4.1	0.23	3.6	0.24	1.0	0.25
10 year	9.6	0.26	5.1	0.31	4.5	0.32	1.4	0.37
100 year	16.2	0.51	8.9	0.75	7.9	0.94	3.1	1.35

Moreno Valley 33 - Area A Post-Development								
	Storm Duration							
	1 hour		3 hour		6 hour		24 hour	
Frequency	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume
2 year	4.6	0.12	2.4	0.18	2.1	0.23	0.7	0.40
5 year	6.5	0.17	3.3	0.24	3.0	0.32	0.9	0.53
10 year	8.0	0.21	4.1	0.30	3.6	0.38	1.1	0.63
100 year	13.1	0.37	6.8	0.55	6.1	0.69	2.3	1.17

Moreno Valley 33 - Area B Pre-Development								
	Storm Duration							
	1 hour		3 hour		6 hour		24 hour	
Frequency	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume
2 year	8.2	0.18	4.1	0.20	3.5	0.21	0.7	0.18
5 year	11.8	0.29	6.0	0.33	5.1	0.35	1.4	0.37
10 year	14.5	0.38	7.4	0.45	6.3	0.47	2	0.54
100 year	24.4	0.74	12.9	1.09	11.2	1.37	4.5	1.96

Moreno Valley 33 - Area B Post-Development (Area B and C Pre-Development)								
	Storm Duration							
	1 hour		3 hour		6 hour		24 hour	
Frequency	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume
2 year	11.4	0.31	6.4	0.48	5.6	0.64	1.8	1.09
5 year	16.2	0.45	8.9	0.66	7.9	0.86	2.4	1.44
10 year	19.9	0.56	10.9	0.80	9.6	1.04	3.1	1.73
100 year	32.7	1.01	18.2	1.5	16.2	1.89	6.2	3.18

As seen in the above calculations, Area A post development runoff is less than the pre-development runoff. This is expected due to the reduced area in the post development area. The balance of the area is routed into Area B. Area B will still need to mitigate the developed condition of B, plus the areas of A and C that are routed to the basin in the proposed condition, to less than the existing runoff from Area B. While Basin A does not require flood runoff mitigation it is still needed for water quality. Basin stage storage discharge details are in the below tables;

Basin Stage-Storage-Outfall Chart					
	Depth [ft]	Area [sf]	Vol [acft]	Vol Total [acft]	Q out [cfs]*
Basin B	0	8356			
	1	8356	0.058	0.058	0.7
	2	8356	0.058	0.115	0.7
	3	9566	0.206	0.321	0.7
	4	10831	0.234	0.555	0.7
	5	12153	0.264	0.819	24.0
	6	13532	0.265	1.084	24.0

0.5 cfs limited by 6" underdrain or Orafice to match 2yr 24hr

Basin Stage-Storage-Outfall Chart					
	Depth [ft]	Area [sf]	Vol [acft]	Vol Total [acft]	Q out [cfs]*
Basin A	0	2355			
	1	2355	0.016	0.016	0.5
	2	2355	0.016	0.032	0.5
	3	3229	0.064	0.097	0.5
	4	4223	0.086	0.182	0.5
	5	5318	0.110	0.292	24.0
	6	6422	0.111	0.402	24.0

0.7 cfs limited by 6" underdrain or Orafice to match 2yr 24hr

Basin B is preliminarily sized at 1.1 ac-ft, and Basin A is sized at a volume of 0.4 ac-ft. The following tables show the results of routing the post development storms through the basins;

Moreno Valley 33 - Area A Post-Development Routed								
	Storm Duration							
	1 hour		3 hour		6 hour		24 hour	
Frequency	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume
2 year							0.5*	0.02
100 year	0.5	0.33	6.4	0.21	5.5	0.21	2.3	0.19

By orafice control or 6" underdrain slope

Moreno Valley 33 - Area B Post-Development Routed								
	Storm Duration							
	1 hour		3 hour		6 hour		24 hour	
Frequency	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume
2 year							0.7*	0.35
100 year	18.0	0.76	15.9	0.73	13.8	0.71	6.1	0.63

*By orafice control or 6" underdrain slope

5. HYDRAULIC CONDITIONS

5.1. Existing Conditions

There are 8 primary washes that were analyzed for hydraulic conditions in the existing condition. They are identified in the existing conditions maps at concentration points 104, 304, 403, 502, 602, 702, 802, and 902. These are mountain/foothill washes with steep slopes. The velocities are 15 ft/s, 12 ft/s, 8 ft/s, 11 ft/s, 7 ft/s, 5 ft/s, 6 ft/s, and 6 ft/s respectively.

5.2. Proposed Conditions

The proposed condition for this site will be to construct a network of public roads within the site to convey storm runoff into the bioretention/water quality basins. The two Bio-retention basins (Basins A and B) are planned in the southwest corner of the site to clean and discharge the flood water. Basin B is north of the main entrance, and Bains A is within the enlarged median of the main entrance. These structures will be designed per Riverside County LID – Bioretention standards in more detail at time of final design. Refer to the Proposed Conditions Exhibit for a sample section. The flows will be discharged offsite via underdrains and overflow grates connected to stormdrain pipes and outlets designed aligned with existing washes. The eastern offsite concentrations identified in section 4.1 and 5.1 and on the existing conditions offsite exhibit, points 304, 403, and 502, will be carried through the project by storm drain and discharged at or near historic flow paths. They are preliminarily sized as shown on Figure 2, with preliminary sizing in Appendix B. Point 503 will be diverted from its existing flow path slightly north within the same wash. This is a small diversion of flow. The discharge points at 602, 702, and 802 will be eliminated and all onsite drainage within area B will be routed through Basin B and outleted at point 902. This concentration of flow will require adjacent property owner approval. All of these concentration points join in the same stream within that owner’s site, and it is preferable to have them controlled via one outlet and channel system. It is assumed the project will be required to build its half width along the limited frontage of Morton Road along with any required tapers. Control of drainage along the project’s frontage is difficult. First, the project is well above grade from the road, eliminating any possibility to route road runoff northeasterly into the project. Second, there is a high point in Morton Road very near the project entrance, and thus the very minor road runoff (0.3 acre area total, <1cfs) will be routed northwesterly and southeasterly along the road as it is currently carried. Analysis and Design of drainage control facilities for this area will be provided at final design in conjunction with Morton Road design plans. The runoff carried by Morton Road will be reduced by the construction of the Project and the Line B System.

5.3. Roads

Interior roads will consist of pavement thickness in conformance with the Geotechnical Report, when available, and per County of Riverside Standards. Roads will have 36 foot widths measured curb face to curb face per County of Riverside Standards. Streets will be designed to pass the 10-year storm water within the curb, with the 100-year flows contained within the right-of-way. All interior roads will have cross slopes of two (2) percent. With the high slopes due to the hillside on the proposed map, the 10 yr peak runoff calculated for the 2.08% minimum slope can carry 76 cfs in the street. That exceeds the expected 100 year peak runoff for the onsite flows (28cfs). At final design storm drain may be placed to keep the intersections dry. Storm drain is also required for outlet from the bio-retention basins. Minimum size for these lines is 24" per City of Moreno Valley Standards, all lines are to be 24" unless otherwise noted. At time of final design, detailed storm drain calculations and sizing will be required. It is not anticipated that any onsite storm drain will require RCFCD maintenance, and thus will be reviewed by Moreno Valley.

Morton Road will be widened along the project entrance. Additionally, Line B will be constructed under Morton Road per the MDP just south of the project. This addition of Line B will remove a significant amount of existing runoff that enters Morton Road from the hillside (334 cfs). That existing runoff that floods Morton Road and Jennings Court intersection will be routed by Line B to the west side of Morton and discharged to an existing natural channel.

6. WATER QUALITY

All of the onsite water quality runoff volume is proposed to be collected within the proposed drainage system and treatment will be handled via combination bio-retention and flood storage basins at the southwestern edge. Detailed design of the basins, outlet structures, and any filter media will be prepared at final design but must treat the volume indicated in the Project Preliminary WQMP. Preliminary sizing and design for the basins is contained in Appendix C and as shown on the Proposed Conditions Exhibit Basin Detial. Final design of the basins, complete with landscaping and pipe plans will be provided with final construction plans and landscape plans.

7. MAINTENANCE

It is proposed that all of the onsite features including internal project open space, basins, and storm drainpipes will be maintained by the property owner association.

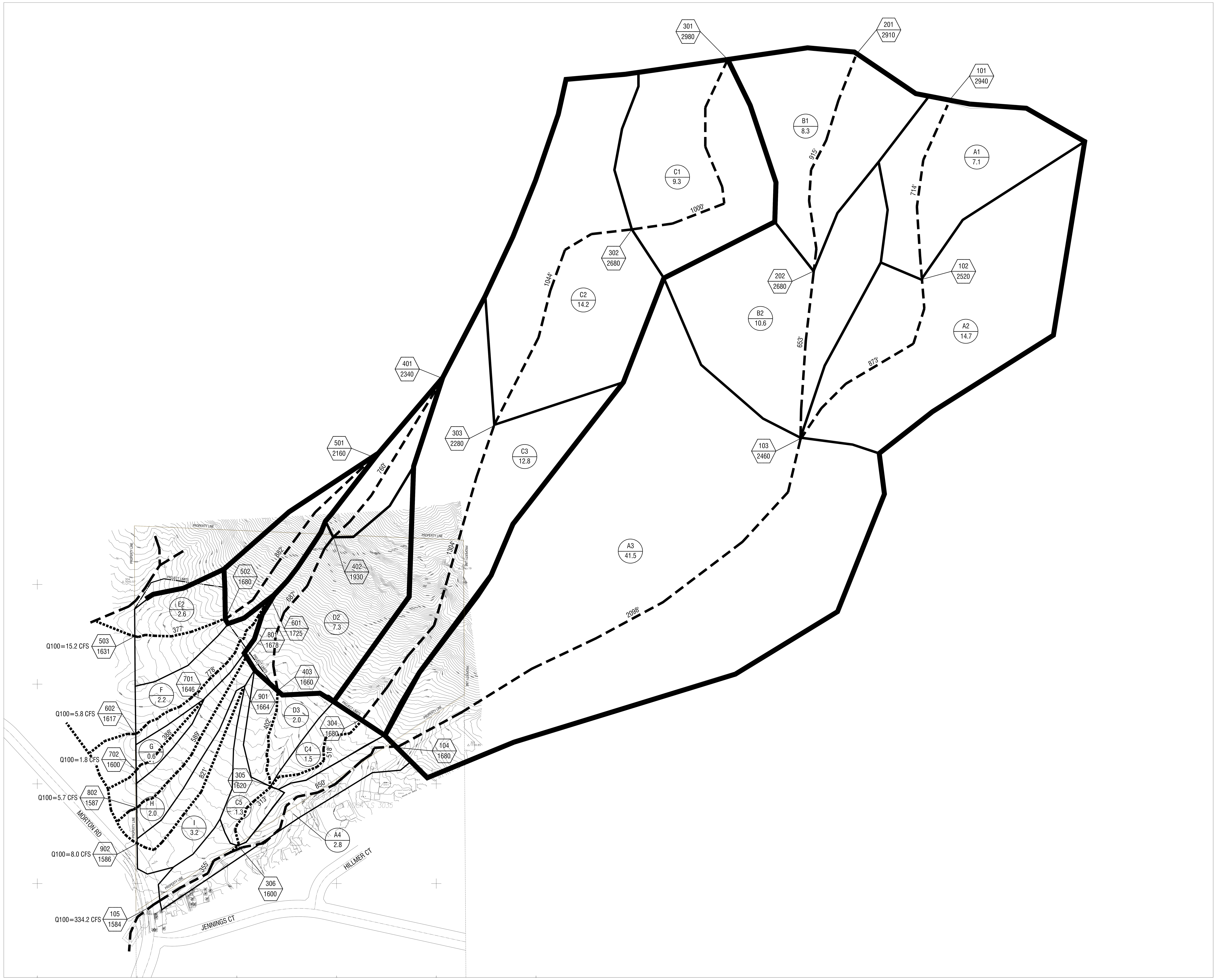
Determination of the Line B facility's maintenance responsibility will be determined during the final design process.

REFERENCES

1. Riverside County Flood Control and Water Conservation District Hydrology Manual, April 1978.

Figure 1

Existing Condition Exhibit



VICINITY MAP

N.T.S.

NOTES:

1. 5' INDEX CONTOURS SHOWN FOR EXHIBIT CLARITY. 1' CONTOURS OBTAINED BY AERIAL SURVEY AND USED FOR DESIGN AND ANALYSIS.

2. HILLSIDE CONTRIBUTARY AREA DELINEATION WAS DEVELOPED USING THE WEST END MOREANO VALLEY MASTER DRAINAGE PLAN TOPOGRAPHY. TOPOGRAPHY NOT SHOWN ON THIS EXHIBIT FOR CLARITY. WEST END MDP EXHIBIT INCLUDED IN APPENDIX E OF DRAINAGE REPORT FOR REFERENCE.

3. REFER TO APPENDIX A FOR CIVILD DRAINAGE ANALYSIS SOFTWARE OUTPUT AND INPUT DETAILS.

4.

NODE	Tc	SUBAREA FLOW	TOTAL FLOW
102	8.2 MIN	22.6 CFS	22.6 CFS
103	11.1 MIN	39.3 CFS	61.9 CFS
202	10.7 MIN	22.7 CFS	22.7 CFS
203	12.0 MIN	27.2 CFS	49.9 CFS
103*	11.1 MIN		108.4 CFS
104	13.4 MIN	99.9 CFS	208.3 CFS
105	14.6 MIN	6.3 CFS	214.6 CFS
105*	12.3 MIN		334.2 CFS
302	10.7 MIN	25.4 CFS	25.4 CFS
303	12.5 MIN	35.5 CFS	61.0 CFS
304	14.4 MIN	29.6 CFS	90.6 CFS
305	15.0 MIN	3.3 CFS	93.9 CFS
305*	10.7 MIN		116.8 CFS
306	11.1 MIN	2.8 CFS	119.6 CFS
*STREAM CONFLUENCE			

NODE	Tc	SUBAREA FLOW	TOTAL FLOW
402	8.5 MIN	6.0 CFS	6.0 CFS
403	10.0 MIN	20.7 CFS	26.7 CFS
305	10.7 MIN	5.3 CFS	32.0 CFS
502	9.0 MIN	7.8 CFS	7.8 CFS
503	9.7 MIN	7.3 CFS	15.2 CFS
602	11.3 MIN	5.8 CFS	5.8 CFS
702	8.8 MIN	1.8 CFS	1.8 CFS
802	9.9 MIN	5.7 CFS	5.7 CFS
902	12.4 MIN	8.0 CFS	8.0 CFS

LEGEND:

CONTRIBUTORY AREA

PROPOSED EDGE OF DISTURBANCE

MAJOR OFFSITE FLOWPATH

MINOR ONSITE FLOWPATH

FLOW DIRECTION

102
XXXX
NODE/CONCENTRATION POINT
FLOWLINE ELEVATION

A1
6.8
SUBAREA
ACRES

200' 100' 0' 200' 400'

GRAPHIC SCALE: 1"=200'

SUBMITTALS:	REVISIONS		
	NO.	DESCRIPTION	DATE

DESIGNED BY:
DRAWN BY:
CHECKED BY:

REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER F. LENZ
NO. 63001
EXP. 6/30/22
CIVIL
STATE OF CALIFORNIA

CHRISTOPHER F. LENZ DATE
R.C.E. No. 63001

LICENSED LAND SURVEYOR
DEAN C. PHILLIPS
EXP. 9/30/21
NO. 6974
STATE OF CALIFORNIA

DEAN C. PHILLIPS DATE
L.S. No. 6974
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GATEWAY HEIGHTS

EXISTING CONDITION EXHIBIT

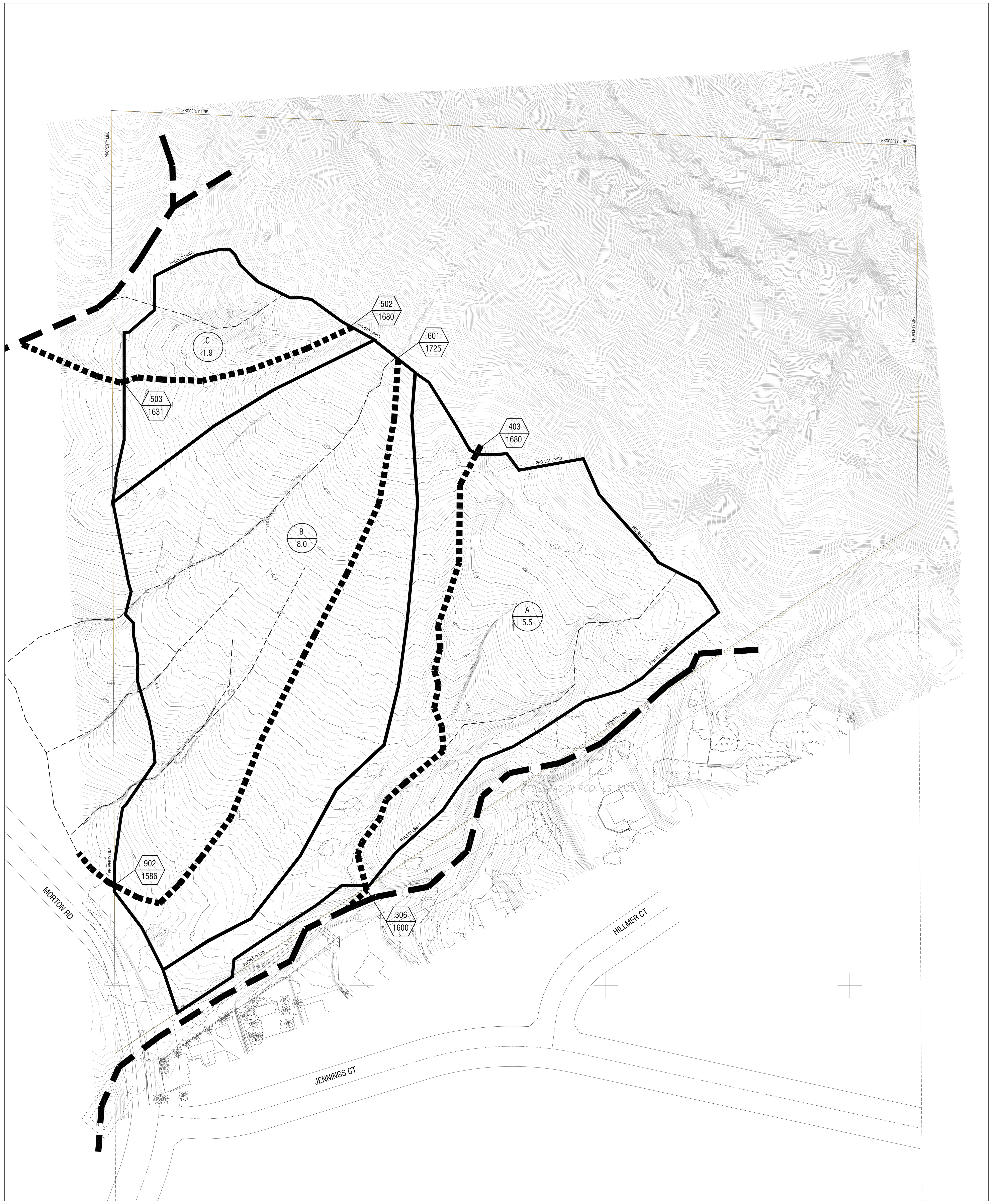
DATE
MARCH 2022

SHEET 1 OF 1

PROJECT NUMBER
CA-30182

Figure 2

Onsite Existing Condition Exhibit
(Used for SCS Pre-post analysis)



VICINITY MAP
N.T.S.

NOTES:

– PRE DEVELOPMENT AREAS DEVELOPED FROM POST DEVELOPMENT AREAS OF DISTURBANCE FOR COMPARISON PRE/POST RUNOFF.

– ALTHOUGH MULTIPLE POINTS OF RUNOFF ARE PRESENT IN THE EXISTING CONDITION FOR AREAS B AND C, DRAINAGE DIVERSION IS PROPOSED TO CONSOLIDATE OUTLETS. THEREFORE EXISTING CONDITIONS ARE ANALYZED WITH A SINGLE ASSUMED OUTLET. ALL AREA B WASHES JOIN IN A SINGLE STREAM DOWNSTREAM, AS DOES AREA C.

– REFER TO APPENDIX A FOR CIVILD DRAINAGE ANALYSIS SOFTWARE OUTPUT AND INPUT DETAILS. AND REFER TO TABLE IN SECTION 4.2 OF DRAINAGE REPORT.

AREA	L [FT]	Lc [FT]	AREA [AC]	RI	%IMP
A	852	341	5.53	84	0
B	1083	476	8.04	84	0
C	392	244	1.85	84	0

LEGEND:

- CONTRIBUTORY AREA
- PROPOSED EDGE OF DISTURBANCE
- MAJOR OFFSITE FLOWPATH
- MINOR ONSITE FLOWPATH USED IN ANALYSIS
- MINOR ONSITE FLOWPATH NOT USED IN ANALYSIS
- FLOW DIRECTION
- 102 / XXXX — NODE/CONCENTRATION POINT / FLOWLINE ELEVATION
- A1 / 6.8 — SUBAREA / ACRES

100' 50' 0' 100' 200'
GRAPHIC SCALE: 1"=100'

SUBMITTALS:

REVISIONS

NO.	DESCRIPTION	DATE

DESIGNED BY:
DRAWN BY:
CHECKED BY:

REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER F. LENZ
NO. 63001
EXP. 6/30/22
CIVIL
STATE OF CALIFORNIA

CHRISTOPHER F. LENZ DATE
R.C.E. No. 63001

LICENSED LAND SURVEYOR
DEAN C. PHILLIPS
EXP. 9/30/23
NO. 6974
STATE OF CALIFORNIA

DEAN C. PHILLIPS DATE
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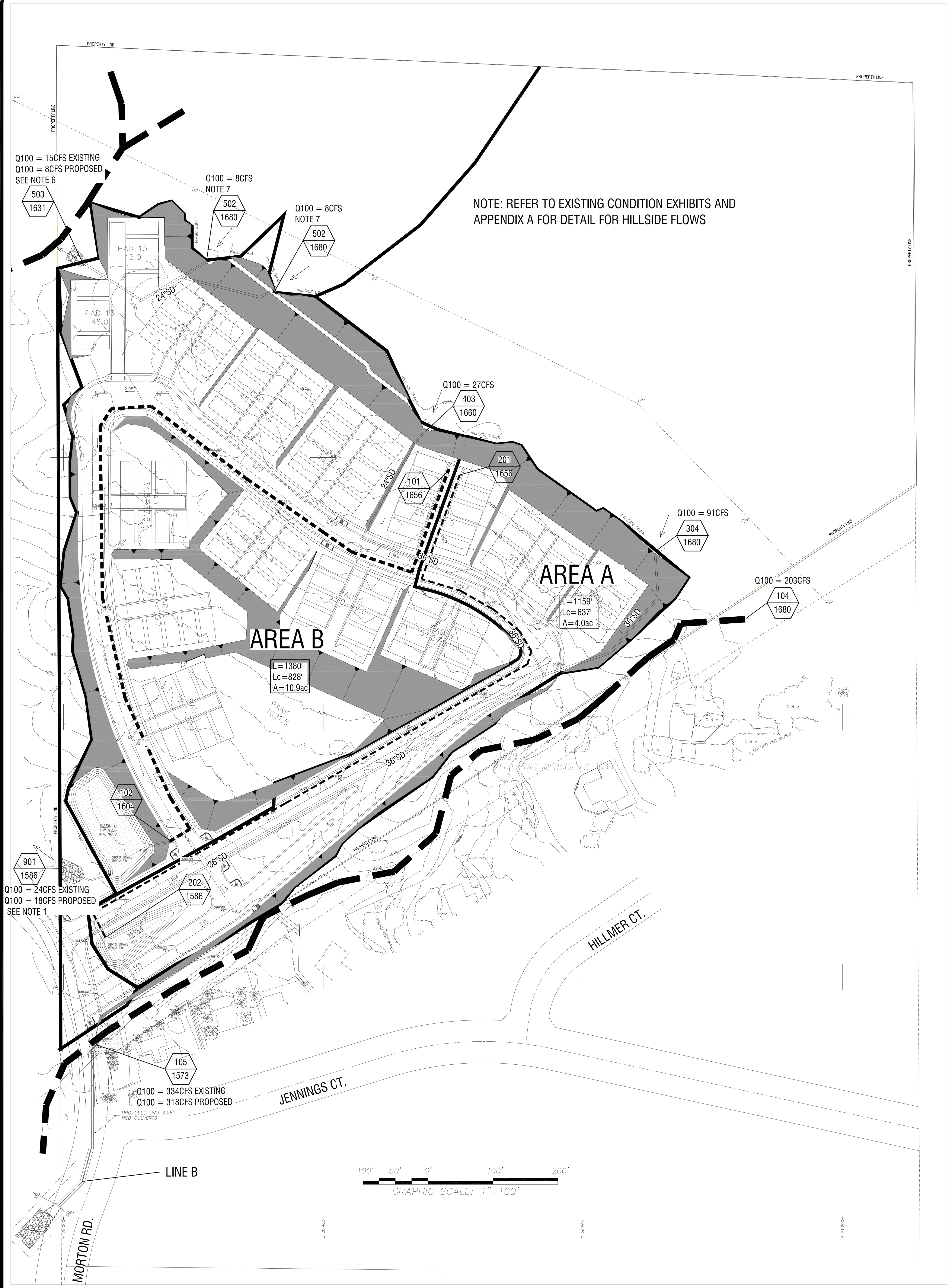
GATEWAY HEIGHTS

ONSITE EXISTING CONDITION EXHIBIT FOR SCS HYDROGRAPH PRE-POST COMPARISON

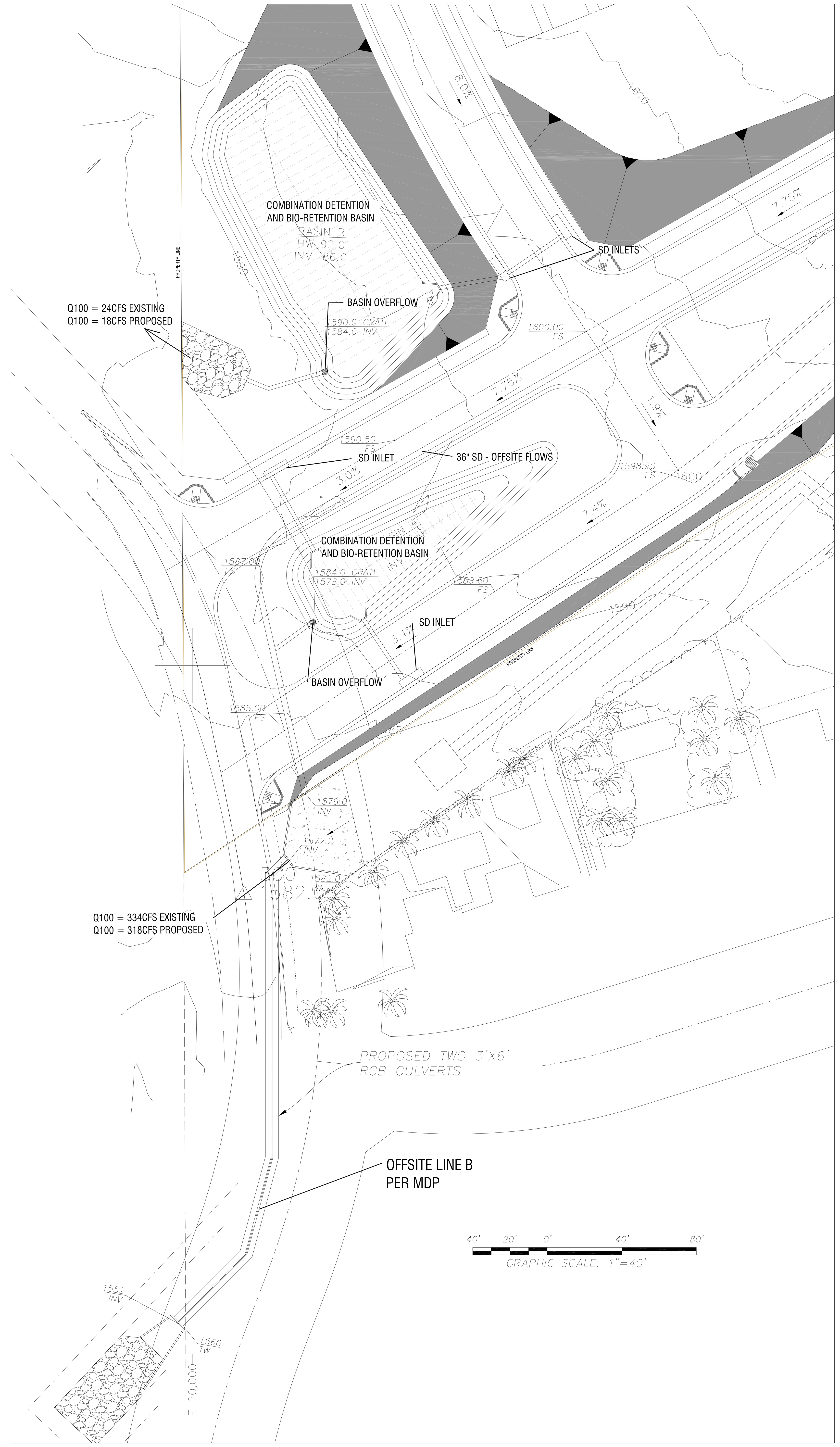
DATE
MARCH 2022
SHEET 1 OF 1
PROJECT NUMBER
CA-30182

Figure 3

Proposed Condition Exhibit

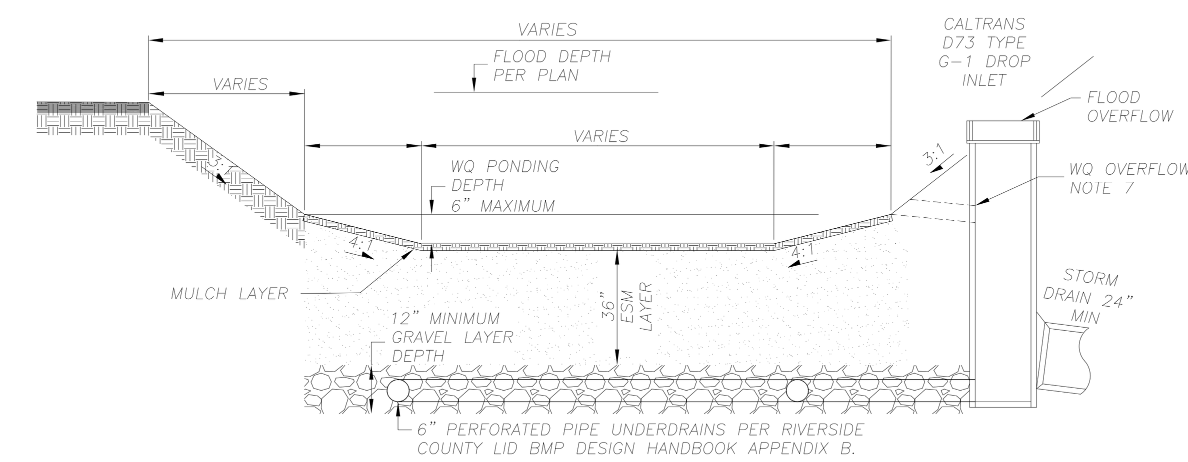


BASIN AND OUTLET DETAIL AREA



VICINITY MAP

N.T.S.



LEGEND:

- CONTRIBUTORY AREA & DISTURBANCE AREA
- FLOW DIRECTION
- ONSITE FLOWPATH
- 102 / XXXX — NODE/CONCENTRATION POINT / FLOWLINE ELEVATION
- L=XXX' Lc=XXX' A=XXac — DRAINAGE AREA & DETAILS
- 6" UNDERDRAINS
- 6" CLEANOUTS

NOTES:

1. ALTHOUGH MULTIPLE POINTS OF RUNOFF ARE PRESENT ALONG THE WEST EDGE OF THE PROPERTY (POINTS 602, 702, 802, & 902) IN THE EXISTING CONDITION, DRAINAGE DIVERSION IS PROPOSED TO CONSOLIDATE OUTLETS ALONG THE WESTERN EDGE AT POINT 902. ALL WASHES ALONG THE WESTERN EDGE JOIN IN A SINGLE STREAM DOWNSTREAM.

2. BASINS AS SHOWN AND WITH CONTROL STRUCTURES WILL BE DETAILED AT FINAL DESIGN TO ENSURE OUTLETS TO WEST AND SOUTH ARE MITIGATED TO DESIGN FLOWS.

3. 5' CONTOURS SHOWN FOR EASY VIEWING, HOWEVER 1' CONTOURS WERE OBTAINED AND USED FOR DESIGN.

4. REFER TO APPENDIX A FOR CIVILD COMPUTER ANALYSIS OUTPUT, AND DESIGN DETAILS.

5. REFER TO T YEAR SUMMARY TABLE IN SECTION 4.2 OF DRAINAGE REPORT FOR SUMMARY OF RETURN YEAR AND STORM DURATION FLOWS.

6. POINT 503 DISCHARGE POINT MOVED SLIGHTLY NORTH TO ALIGN WITH ANOTHER DISCHARGE POINT AND THE REGIONAL OFFSITE CHANNEL.

7. POINT 502 CONCENTRATION POINT HAS POTENTIAL TO MOVE, IN A SOMEWHAT UNDEFINED SHEET FLOW HILLSIDE CONDITION. DUE TO ITS SMALL EXPECTED RUNOFF, IT IS DESIGNED FOR COLLECTION IN TWO POSSIBLE CONCENTRATION POINTS, EACH AT THE PEAK RUNOFF.

SUBMITTALS:

DESIGNED BY:
DRAWN BY:
CHECKED BY:

REVISIONS		
NO.	DESCRIPTION	DATE

REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER F. LENZ NO. 63001 EXP. 6/30/24 CIVIL STATE OF CALIFORNIA

CHRISTOPHER F. LENZ DATE
R.C.E. No. 63001

LICENSED LAND SURVEYOR DEAN C. PHILLIPS EXP. 9/30/23 NO. 6974 STATE OF CALIFORNIA

DEAN C. PHILLIPS DATE
L.S. No. 6974
dphillips@unitedeng.com

ueg united engineering group
8885 Haven Avenue
Suite 195
Rancho Cucamonga, CA 91730
Phone: 909.466.9240
www.unitedeng.com

GATEWAY HEIGHTS

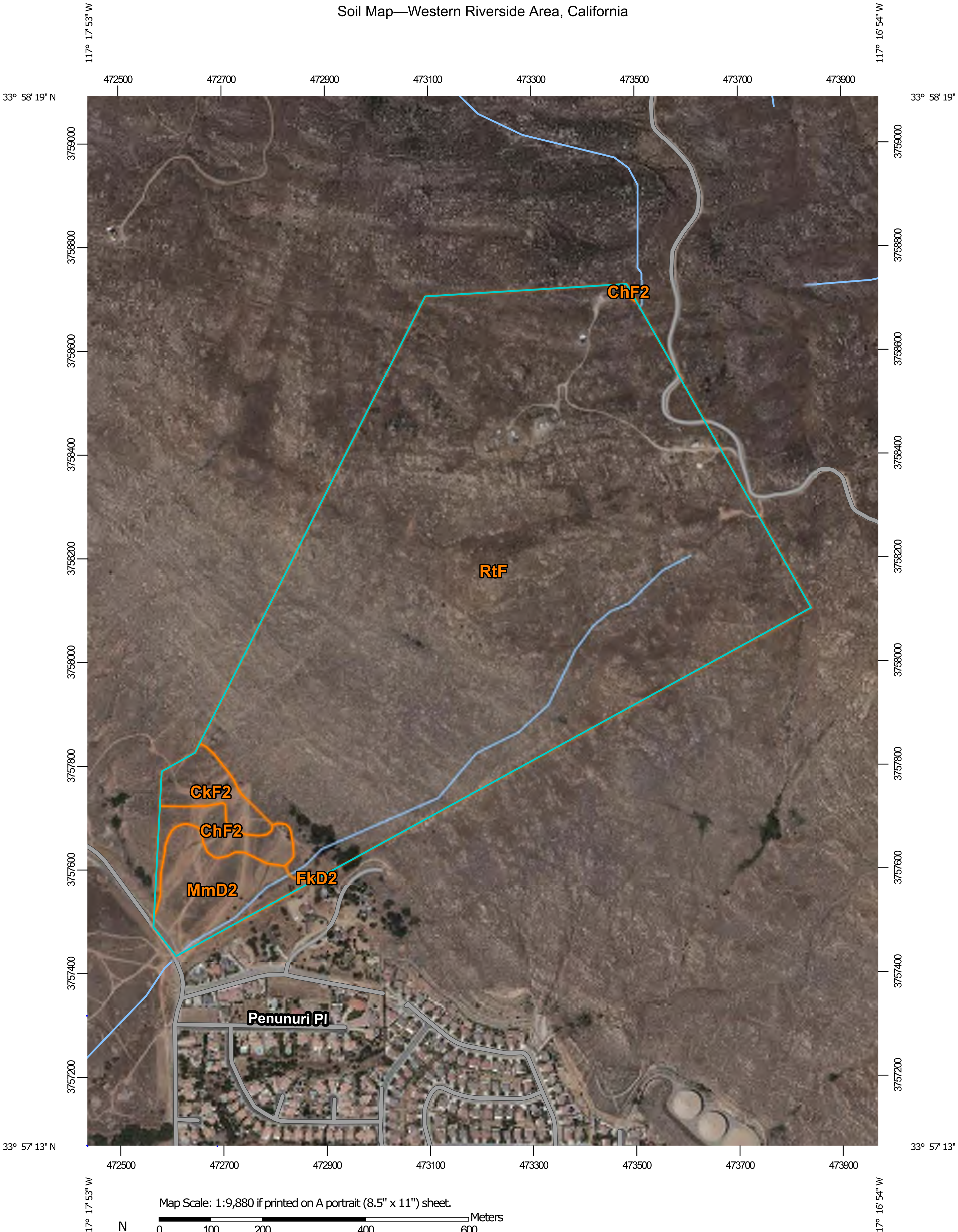
PROPOSED CONDITION EXHIBIT

DATE OCTOBER 2022

SHEET 1 OF 1

PROJECT NUMBER CA-30182

Appendix A



Map Scale: 1:9,880 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 100, 200, 400, 600

Feet: 0, 450, 900, 1800, 2700

N

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 Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

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.

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 13, May 27, 2020

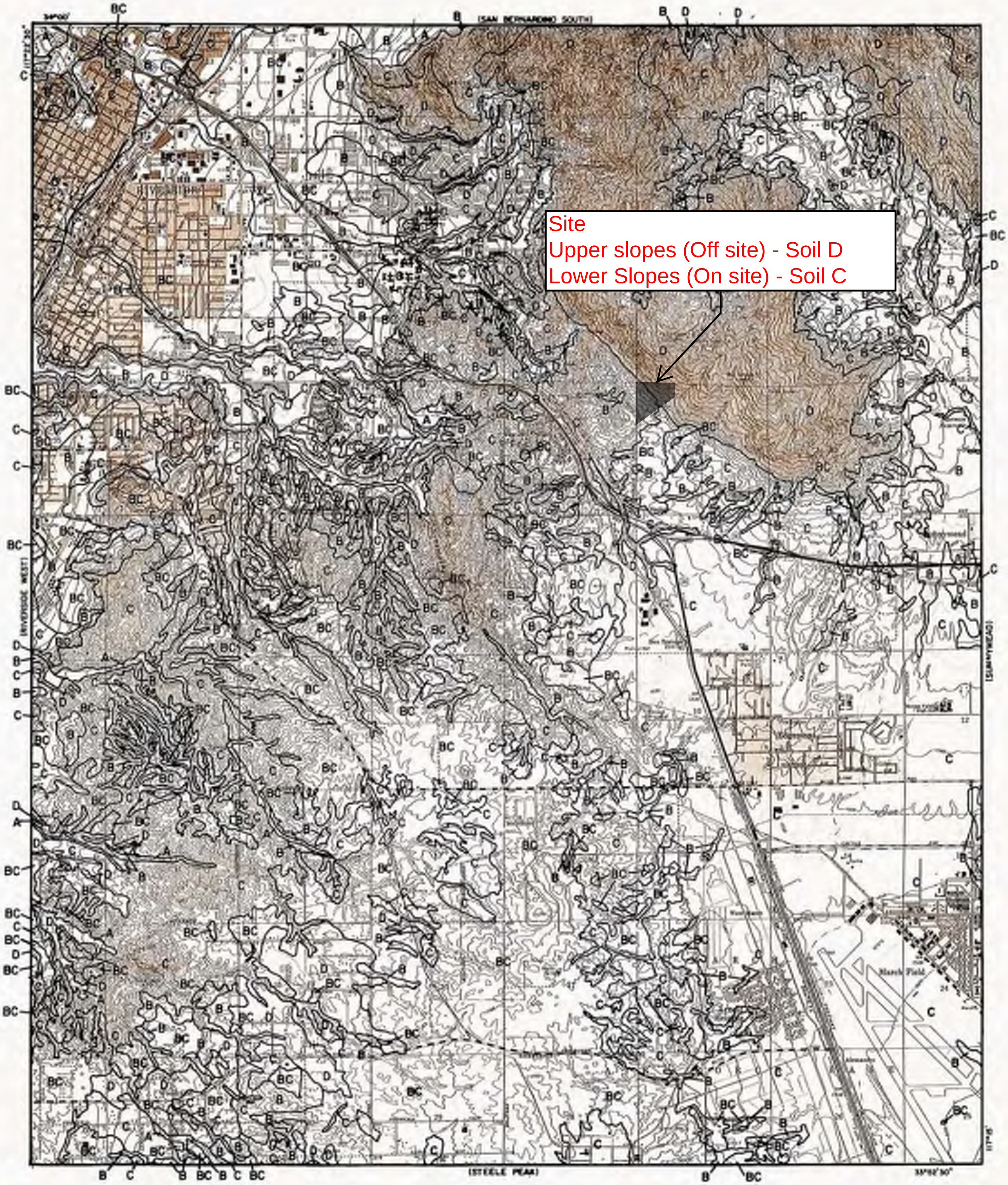
Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 25, 2019—Jun 25, 2019

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
ChF2	Cieneba sandy loam, 15 to 50 percent slopes, eroded	4.2	2.0%
CkF2	Cieneba rocky sandy loam, 15 to 50 percent slopes, eroded	4.3	2.1%
FkD2	Fallbrook fine sandy loam, shallow, 8 to 15 percent slopes, eroded	0.0	0.0%
MmD2	Monserate sandy loam, 8 to 15 percent slopes, eroded	9.7	4.6%
RtF	Rockland	189.4	91.2%
Totals for Area of Interest		**207.6**	**100.0%**



LEGEND

—— SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC & WCD

HYDROLOGY MANUAL

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR RIVERSIDE-EAST

PLATE C-1.16

Western Riverside Area, California

RtF—Rockland

Map Unit Setting

National map unit symbol: hcyn
Elevation: 650 to 4,000 feet
Mean annual precipitation: 8 to 15 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 110 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Rockland: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rockland

Setting

Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum derived from mixed sources

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Data Source Information

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 13, May 27, 2020

NOAA Atlas 14, Volume 6, Version 2
Location name: Moreno Valley, California, USA*
Latitude: 33.9583°, Longitude: -117.2954°
Elevation: 1628.79 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	**0.092** (0.077-0.112)	**0.121** (0.101-0.147)	**0.160** (0.133-0.194)	**0.192** (0.158-0.235)	**0.237** (0.188-0.300)	**0.272** (0.212-0.353)	**0.309** (0.234-0.411)	**0.348** (0.257-0.477)	**0.402** (0.284-0.576)	**0.446** (0.304-0.661)
10-min	**0.133** (0.111-0.161)	**0.174** (0.145-0.211)	**0.229** (0.190-0.278)	**0.275** (0.227-0.337)	**0.339** (0.270-0.430)	**0.390** (0.304-0.506)	**0.443** (0.336-0.589)	**0.499** (0.368-0.683)	**0.577** (0.407-0.825)	**0.640** (0.436-0.948)
15-min	**0.160** (0.134-0.194)	**0.210** (0.175-0.255)	**0.277** (0.230-0.336)	**0.332** (0.274-0.408)	**0.410** (0.326-0.521)	**0.472** (0.367-0.612)	**0.535** (0.406-0.713)	**0.603** (0.445-0.826)	**0.698** (0.493-0.998)	**0.774** (0.527-1.15)
30-min	**0.244** (0.204-0.296)	**0.320** (0.267-0.388)	**0.422** (0.350-0.512)	**0.506** (0.417-0.621)	**0.625** (0.497-0.793)	**0.718** (0.559-0.932)	**0.816** (0.619-1.09)	**0.918** (0.677-1.26)	**1.06** (0.750-1.52)	**1.18** (0.803-1.75)
60-min	**0.356** (0.297-0.431)	**0.466** (0.389-0.565)	**0.615** (0.511-0.747)	**0.738** (0.608-0.905)	**0.911** (0.725-1.16)	**1.05** (0.815-1.36)	**1.19** (0.903-1.58)	**1.34** (0.987-1.83)	**1.55** (1.09-2.22)	**1.72** (1.17-2.55)
2-hr	**0.510** (0.426-0.618)	**0.657** (0.548-0.797)	**0.852** (0.708-1.04)	**1.01** (0.835-1.24)	**1.24** (0.983-1.57)	**1.41** (1.10-1.83)	**1.59** (1.20-2.11)	**1.77** (1.31-2.43)	**2.03** (1.43-2.90)	**2.23** (1.52-3.31)
3-hr	**0.624** (0.520-0.755)	**0.799** (0.666-0.968)	**1.03** (0.856-1.25)	**1.22** (1.00-1.50)	**1.48** (1.18-1.88)	**1.68** (1.31-2.18)	**1.89** (1.44-2.52)	**2.11** (1.55-2.89)	**2.40** (1.70-3.44)	**2.64** (1.80-3.91)
6-hr	**0.856** (0.714-1.04)	**1.09** (0.911-1.33)	**1.40** (1.17-1.71)	**1.66** (1.37-2.03)	**2.01** (1.60-2.55)	**2.27** (1.77-2.95)	**2.55** (1.93-3.39)	**2.83** (2.09-3.87)	**3.21** (2.27-4.59)	**3.51** (2.39-5.20)
12-hr	**1.13** (0.939-1.36)	**1.45** (1.21-1.75)	**1.87** (1.55-2.27)	**2.21** (1.82-2.71)	**2.67** (2.13-3.39)	**3.03** (2.36-3.93)	**3.39** (2.57-4.51)	**3.77** (2.78-5.16)	**4.27** (3.02-6.11)	**4.67** (3.18-6.92)
24-hr	**1.49** (1.32-1.71)	**1.93** (1.71-2.23)	**2.52** (2.22-2.91)	**2.99** (2.62-3.49)	**3.64** (3.08-4.39)	**4.14** (3.43-5.09)	**4.64** (3.76-5.85)	**5.17** (4.07-6.69)	**5.88** (4.45-7.92)	**6.43** (4.70-8.96)
2-day	**1.79** (1.58-2.06)	**2.36** (2.09-2.72)	**3.12** (2.75-3.61)	**3.73** (3.26-4.35)	**4.57** (3.87-5.51)	**5.22** (4.33-6.43)	**5.89** (4.77-7.42)	**6.57** (5.18-8.51)	**7.50** (5.68-10.1)	**8.23** (6.02-11.5)
3-day	**1.91** (1.69-2.21)	**2.56** (2.27-2.96)	**3.42** (3.02-3.96)	**4.13** (3.61-4.82)	**5.09** (4.31-6.14)	**5.84** (4.85-7.18)	**6.61** (5.35-8.32)	**7.40** (5.83-9.57)	**8.48** (6.42-11.4)	**9.32** (6.83-13.0)
4-day	**2.07** (1.83-2.39)	**2.80** (2.48-3.23)	**3.77** (3.32-4.36)	**4.56** (3.99-5.32)	**5.65** (4.79-6.81)	**6.50** (5.39-7.99)	**7.37** (5.97-9.28)	**8.27** (6.52-10.7)	**9.51** (7.20-12.8)	**10.5** (7.67-14.6)
7-day	**2.38** (2.10-2.74)	**3.26** (2.88-3.76)	**4.43** (3.90-5.13)	**5.39** (4.72-6.29)	**6.72** (5.69-8.10)	**7.76** (6.44-9.54)	**8.82** (7.15-11.1)	**9.93** (7.83-12.9)	**11.5** (8.67-15.4)	**12.6** (9.26-17.6)
10-day	**2.57** (2.27-2.96)	**3.55** (3.14-4.10)	**4.85** (4.28-5.62)	**5.93** (5.19-6.92)	**7.42** (6.28-8.94)	**8.58** (7.12-10.6)	**9.78** (7.93-12.3)	**11.0** (8.70-14.3)	**12.8** (9.66-17.2)	**14.1** (10.3-19.7)
20-day	**3.10** (2.75-3.58)	**4.34** (3.83-5.01)	**5.99** (5.28-6.93)	**7.36** (6.44-8.59)	**9.28** (7.86-11.2)	**10.8** (8.95-13.3)	**12.3** (10.0-15.6)	**14.0** (11.0-18.1)	**16.3** (12.3-21.9)	**18.1** (13.2-25.2)
30-day	**3.70** (3.28-4.27)	**5.17** (4.57-5.97)	**7.15** (6.30-8.28)	**8.81** (7.70-10.3)	**11.1** (9.42-13.4)	**13.0** (10.8-15.9)	**14.9** (12.1-18.7)	**16.9** (13.3-21.9)	**19.7** (14.9-26.6)	**22.0** (16.1-30.7)
45-day	**4.43** (3.92-5.10)	**6.14** (5.42-7.08)	**8.46** (7.46-9.79)	**10.4** (9.11-12.1)	**13.2** (11.1-15.9)	**15.4** (12.7-18.9)	**17.7** (14.3-22.2)	**20.1** (15.9-26.0)	**23.6** (17.8-31.7)	**26.3** (19.3-36.7)
60-day	**5.18** (4.58-5.97)	**7.10** (6.28-8.20)	**9.72** (8.57-11.3)	**11.9** (10.4-13.9)	**15.1** (12.8-18.2)	**17.6** (14.6-21.6)	**20.2** (16.4-25.5)	**23.0** (18.2-29.8)	**27.0** (20.5-36.4)	**30.3** (22.1-42.2)

[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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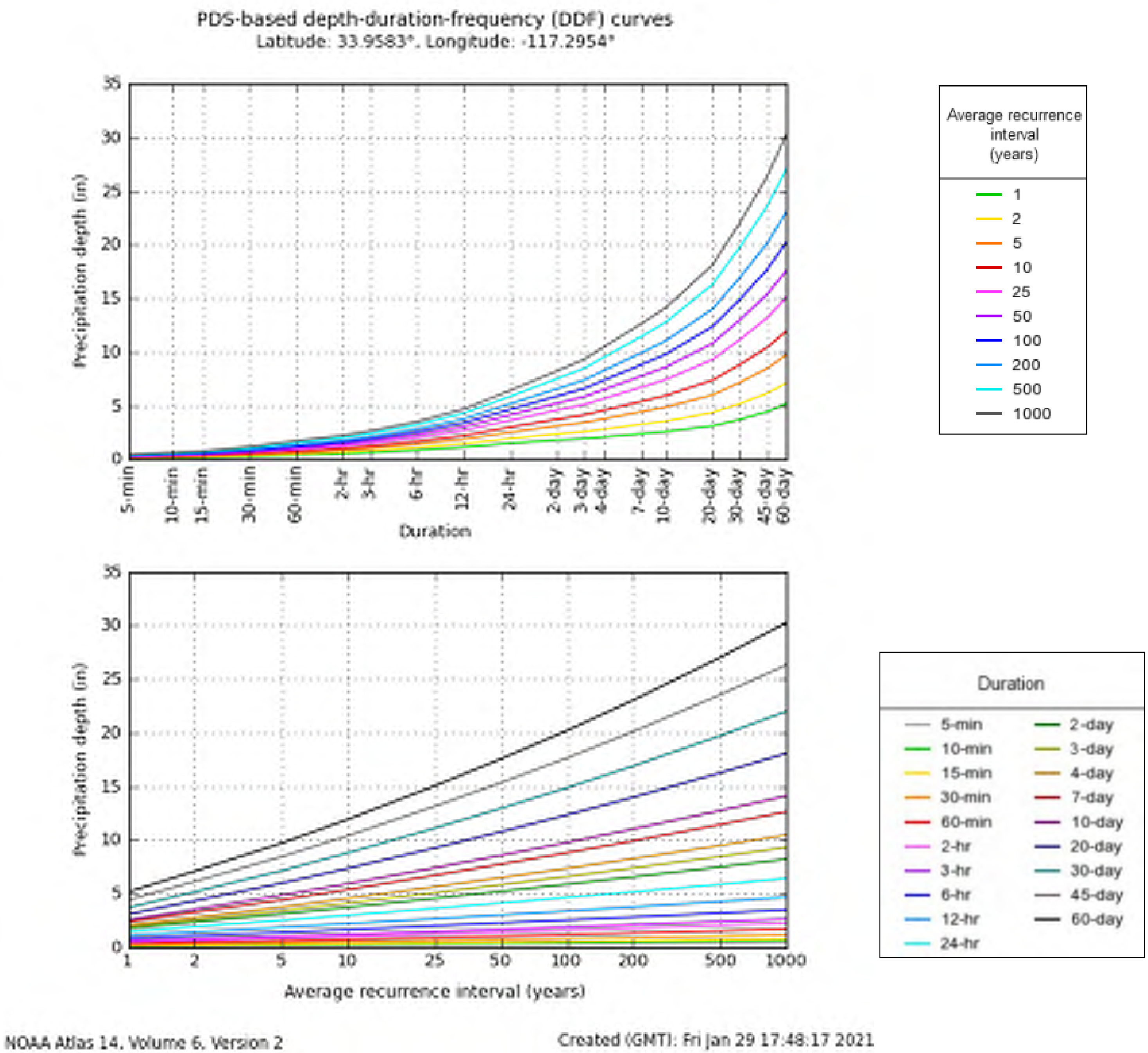
PF graphical



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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

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

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

Pre-Development

Post-Development

RCFC & WCD
HYDROLOGY MANUAL

RUNOFF INDEX NUMBERS FOR PERVIOUS AREA

ACTUAL IMPERVIOUS COVER

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

Notes:

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

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

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

IMPERVIOUS COVER FOR DEVELOPED AREAS

Existing Condition Rationale Runoff

```
                  Riverside County Rational Hydrology Program

      CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version
8.0
            Rational Hydrology Study        Date: 11/08/21
File:moval33.out
      ------------------------------------------------------------------
------
      Gateway Heights
      Offsite Drainage
      Area A - 100yr Peak Runoff

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

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

      ------------------------------------------------------------------
------


      Program License Serial Number 6232

      ------------------------------------------------------------------
------
      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 [ Riverside-Foothill ] area used.
      10 year storm 10 minute intensity =  2.140(In/Hr)
      10 year storm 60 minute intensity =  0.800(In/Hr)
      100 year storm 10 minute intensity =  3.210(In/Hr)
      100 year storm 60 minute intensity =  1.200(In/Hr)

      Storm event year = 100.0
      Calculated rainfall intensity data:
      1 hour intensity =  1.200(In/Hr)
      Slope of intensity duration curve = 0.5500




      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
      Process from Point/Station      101.000 to Point/Station
102.000
      **** INITIAL AREA EVALUATION ****
      __________________________________________________________________
____
      Initial area flow distance =   714.000(Ft.)
      Top (of initial area) elevation =  2940.000(Ft.)
      Bottom (of initial area) elevation =  2520.000(Ft.)
      Difference in elevation =   420.000(Ft.)
```

```
Slope =    0.58824  s(percent)=      58.82
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.163 min.
Rainfall intensity =      3.595(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 =     22.584(CFS)
Total initial stream area =        7.100(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
Process from Point/Station      102.000 to Point/Station
103.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
__________________________________________________________________
____
Estimated mean flow rate at midpoint of channel =     42.273(CFS)
Depth of flow =   0.587(Ft.), Average velocity =   4.912(Ft/s)
      ******* Irregular Channel Data ***********
-----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
      1              0.00              1.00
      2             25.00              0.00
      3             50.00              1.00
Manning's 'N' friction factor =   0.035
-----------------------------------------------------------------
Sub-Channel flow  =     42.273(CFS)
  '     '    flow top width =     29.337(Ft.)
  '     '    velocity=    4.912(Ft/s)
  '     '    area =      8.607(Sq.Ft)
  '     '    Froude number =     1.598

Upstream point elevation =  2520.000(Ft.)
Downstream point elevation =  2460.000(Ft.)
Flow length =   873.000(Ft.)
Travel time  =    2.96 min.
Time of concentration =   11.13 min.
Depth of flow =   0.587(Ft.)
Average velocity =   4.912(Ft/s)
Total irregular channel flow =    42.273(CFS)
Irregular channel normal depth above invert elev. =   0.587(Ft.)
Average velocity of channel(s) =   4.912(Ft/s)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.882
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 =   3.032(In/Hr) for a   100.0 year storm
Subarea runoff =   39.314(CFS) for   14.700(Ac.)
Total runoff =   61.898(CFS)   Total area =   21.800(Ac.)
Depth of flow =   0.677(Ft.), Average velocity =   5.403(Ft/s)

++
Process from Point/Station   102.000 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 =   21.800(Ac.)
Runoff from this stream =   61.898(CFS)
Time of concentration =   11.13 min.
Rainfall intensity =   3.032(In/Hr)
Program is now starting with Main Stream No. 2

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

Initial area flow distance =   915.000(Ft.)
Top (of initial area) elevation = 2910.000(Ft.)
Bottom (of initial area) elevation = 2680.000(Ft.)
Difference in elevation =   230.000(Ft.)
Slope =   0.25137 s(percent)=   25.14
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.685 min.
Rainfall intensity =   3.100(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.883
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 =   22.706(CFS)
Total initial stream area =   8.300(Ac.)
Pervious area fraction = 1.000

++
Process from Point/Station   202.000 to Point/Station   203.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel =   36.349(CFS)
Depth of flow =   0.412(Ft.), Average velocity =   8.585(Ft/s)
******* Irregular Channel Data ***********

```
----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
      1              0.00             1.00
      2             25.00             0.00
      3             50.00             1.00
Manning's 'N' friction factor =   0.035
----------------------------------------------------------------
Sub-Channel flow  =     36.350(CFS)
  '     '    flow top width =     20.577(Ft.)
  '     '    velocity=    8.585(Ft/s)
  '     '    area =      4.234(Sq.Ft)
  '     '    Froude number =     3.335

Upstream point elevation =  2680.000(Ft.)
Downstream point elevation =  2460.000(Ft.)
Flow length =   653.000(Ft.)
Travel time  =    1.27 min.
Time of concentration =   11.95 min.
Depth of flow =   0.412(Ft.)
Average velocity =   8.585(Ft/s)
Total irregular channel flow =    36.349(CFS)
Irregular channel normal depth above invert elev. =   0.412(Ft.)
Average velocity of channel(s) =   8.585(Ft/s)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.881
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 =      2.914(In/Hr) for a   100.0 year storm
Subarea runoff =     27.230(CFS) for     10.600(Ac.)
Total runoff =     49.936(CFS)      Total area =      18.900(Ac.)
Depth of flow =   0.464(Ft.), Average velocity =   9.294(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station
203.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     18.900(Ac.)
Runoff from this stream =     49.936(CFS)
Time of concentration =   11.95 min.
Rainfall intensity =     2.914(In/Hr)
Summary of stream data:

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


1       61.898     11.13                3.032
2       49.936     11.95                2.914
```

```
      Largest stream flow has longer or shorter time of concentration
      Qp =     61.898 + sum of
              Qa           Tb/Ta
              49.936 *    0.931 =     46.478
      Qp =    108.376

      Total of 2 main streams to confluence:
      Flow rates before confluence point:
            61.898      49.936
      Area of streams before confluence:
             21.800      18.900


      Results of confluence:
      Total flow rate =    108.376(CFS)
      Time of concentration =    11.125 min.
      Effective stream area after confluence  =     40.700(Ac.)


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
      Process from Point/Station      103.000 to Point/Station
104.000
      **** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
      __________________________________________________________________
____
      Estimated mean flow rate at midpoint of channel =    158.384(CFS)
      Depth of flow =   0.910(Ft.), Average velocity =  15.287(Ft/s)
            ******* Irregular Channel Data ***********
      -----------------------------------------------------------------
      Information entered for subchannel number 1 :
      Point number      'X' coordinate     'Y' coordinate
            1              0.00              2.00
            2             25.00              0.00
            3             50.00              2.00
      Manning's 'N' friction factor =   0.035
      -----------------------------------------------------------------
      Sub-Channel flow  =    158.384(CFS)
        '     '    flow top width =     22.761(Ft.)
        '     '    velocity=   15.287(Ft/s)
        '     '    area =     10.361(Sq.Ft)
        '     '    Froude number =     3.993

      Upstream point elevation =  2460.000(Ft.)
      Downstream point elevation =  1680.000(Ft.)
      Flow length =  2098.000(Ft.)
      Travel time  =    2.29 min.
      Time of concentration =   13.41 min.
      Depth of flow =   0.910(Ft.)
      Average velocity =  15.287(Ft/s)
      Total irregular channel flow =   158.384(CFS)
      Irregular channel normal depth above invert elev. =   0.910(Ft.)
      Average velocity of channel(s) =  15.287(Ft/s)
       Adding area flow to channel
      UNDEVELOPED (poor cover) subarea
      Runoff Coefficient = 0.880
      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 =      2.735(In/Hr) for a   100.0 year storm
      Subarea runoff =     99.928(CFS) for     41.500(Ac.)
      Total runoff =    208.305(CFS)      Total area =      82.200(Ac.)
      Depth of flow =   1.009(Ft.), Average velocity =  16.370(Ft/s)


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
      Process from Point/Station      104.000 to Point/Station
105.000
      **** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
      __________________________________________________________________
____
      Top of natural channel elevation =   1680.000(Ft.)
      End of natural channel elevation =   1584.000(Ft.)
      Length of natural channel  =  1205.000(Ft.)
      Estimated mean flow rate at midpoint of channel =    211.867(CFS)

      Natural valley channel type used
      L.A. County flood control district formula for channel velocity:
       Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
      Velocity using mean channel flow =  16.85(Ft/s)

      Correction to map slope used on extremely rugged channels with
      drops and waterfalls (Plate D-6.2)
            Normal channel slope =  0.0797
      Corrected/adjusted channel slope =  0.0797
      Travel time =    1.19 min.     TC =   14.60  min.


       Adding area flow to channel
      UNDEVELOPED (fair cover) subarea
      Runoff Coefficient = 0.854
      Decimal fraction soil group A = 0.000
      Decimal fraction soil group B = 0.000
      Decimal fraction soil group C = 1.000
      Decimal fraction soil group D = 0.000
      RI index for soil(AMC 3)  =  90.40
      Pervious area fraction =  1.000; Impervious fraction =  0.000
      Rainfall intensity =      2.610(In/Hr) for a   100.0 year storm
      Subarea runoff =      6.266(CFS) for      2.812(Ac.)
      Total runoff =    214.571(CFS)      Total area =      85.012(Ac.)
      End of computations, total study area =           85.01 (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 =  88.7
```

```
                  Riverside County Rational Hydrology Program

      CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version
8.0
            Rational Hydrology Study        Date: 11/08/21
File:moval332.out
      ------------------------------------------------------------------------
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      Gateway Heights
      Offsite Drainage
      Area C - 100yr Peak Runoff

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

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

      ------------------------------------------------------------------------
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      Program License Serial Number 6232

      ------------------------------------------------------------------------
------
      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 [ Riverside-Foothill ] area used.
      10 year storm 10 minute intensity =  2.140(In/Hr)
      10 year storm 60 minute intensity =  0.800(In/Hr)
      100 year storm 10 minute intensity =  3.210(In/Hr)
      100 year storm 60 minute intensity =  1.200(In/Hr)

      Storm event year = 100.0
      Calculated rainfall intensity data:
      1 hour intensity =  1.200(In/Hr)
      Slope of intensity duration curve = 0.5500




      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
      Process from Point/Station      301.000 to Point/Station
302.000
      **** INITIAL AREA EVALUATION ****
      __________________________________________________________________
____
      Initial area flow distance =  1000.000(Ft.)
      Top (of initial area) elevation =  2980.000(Ft.)
      Bottom (of initial area) elevation =  2680.000(Ft.)
      Difference in elevation =   300.000(Ft.)
```

```
Slope =    0.30000  s(percent)=      30.00
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.687 min.
Rainfall intensity =      3.100(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.883
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 =     25.439(CFS)
Total initial stream area =        9.300(Ac.)
Pervious area fraction = 1.000


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++++
Process from Point/Station      302.000 to Point/Station
303.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
__________________________________________________________________
____
Estimated mean flow rate at midpoint of channel =     43.224(CFS)
Depth of flow =   0.429(Ft.), Average velocity =   9.408(Ft/s)
      ******* Irregular Channel Data ***********
-----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
      1              0.00              1.00
      2             25.00              0.00
      3             50.00              1.00
Manning's 'N' friction factor =   0.035
-----------------------------------------------------------------
Sub-Channel flow  =     43.224(CFS)
  '     '    flow top width =     21.435(Ft.)
  '     '    velocity=    9.408(Ft/s)
  '     '    area =      4.595(Sq.Ft)
  '     '    Froude number =     3.581

Upstream point elevation =  2680.000(Ft.)
Downstream point elevation =  2280.000(Ft.)
Flow length =  1044.000(Ft.)
Travel time  =    1.85 min.
Time of concentration =   12.54 min.
Depth of flow =   0.429(Ft.)
Average velocity =   9.408(Ft/s)
Total irregular channel flow =    43.224(CFS)
Irregular channel normal depth above invert elev. =   0.429(Ft.)
Average velocity of channel(s) =   9.408(Ft/s)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.881
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 =      2.839(In/Hr) for a   100.0 year storm
Subarea runoff =     35.515(CFS) for     14.200(Ac.)
Total runoff =     60.954(CFS)      Total area =      23.500(Ac.)
Depth of flow =   0.488(Ft.), Average velocity =  10.252(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________
Estimated mean flow rate at midpoint of channel =     75.784(CFS)
Depth of flow =   0.511(Ft.), Average velocity =  11.595(Ft/s)
      ******* Irregular Channel Data ***********
-----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
      1              0.00              1.00
      2             25.00              0.00
      3             50.00              1.00
Manning's 'N' friction factor =   0.035
-----------------------------------------------------------------
Sub-Channel flow  =     75.784(CFS)
  '     '    flow top width =     25.566(Ft.)
  '     '    velocity=   11.595(Ft/s)
  '     '    area =      6.536(Sq.Ft)
  '     '    Froude number =     4.041

Upstream point elevation =  2280.000(Ft.)
Downstream point elevation =  1680.000(Ft.)
Flow length =  1304.000(Ft.)
Travel time  =    1.87 min.
Time of concentration =   14.41 min.
Depth of flow =   0.511(Ft.)
Average velocity =  11.595(Ft/s)
Total irregular channel flow =    75.784(CFS)
Irregular channel normal depth above invert elev. =   0.511(Ft.)
Average velocity of channel(s) =  11.595(Ft/s)
 Adding area flow to channel
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 =      2.630(In/Hr) for a   100.0 year storm
Subarea runoff =     29.602(CFS) for     12.800(Ac.)
Total runoff =     90.556(CFS)      Total area =      36.300(Ac.)
Depth of flow =   0.547(Ft.), Average velocity =  12.123(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      304.000 to Point/Station      305.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
```

```
Top of natural channel elevation =   1680.000(Ft.)
End of natural channel elevation =   1620.000(Ft.)
Length of natural channel  =   518.000(Ft.)
Estimated mean flow rate at midpoint of channel =     92.427(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  15.78(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
      Normal channel slope =  0.1158
Corrected/adjusted channel slope =  0.1158
Travel time =    0.55 min.     TC =   14.96  min.


 Adding area flow to channel
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.853
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  90.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.576(In/Hr) for a   100.0 year storm
Subarea runoff =      3.297(CFS) for      1.500(Ac.)
Total runoff =     93.853(CFS)      Total area =      37.800(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
Process from Point/Station      305.000 to Point/Station
306.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****

Top of natural channel elevation =   1620.000(Ft.)
End of natural channel elevation =   1600.000(Ft.)
Length of natural channel  =   313.000(Ft.)
Estimated mean flow rate at midpoint of channel =     95.467(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  11.83(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
      Normal channel slope =  0.0639
Corrected/adjusted channel slope =  0.0639
Travel time =    0.44 min.     TC =   15.40  min.


 Adding area flow to channel
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.852
```

```
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  90.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.535(In/Hr) for a   100.0 year storm
Subarea runoff =      2.810(CFS) for      1.300(Ac.)
Total runoff =     96.662(CFS)      Total area =      39.100(Ac.)
End of computations, total study area =           39.10 (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 - 2012 Version 8.0
Rational Hydrology Study   Date: 11/08/21
File:moval333.out

Gateway Heights
Offsite Drainage
Area D - 100yr Peak Runoff

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

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

Program License Serial Number 6232

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 [Riverside-Foothill] area used.
10 year storm 10 minute intensity = 2.140(In/Hr)
10 year storm 60 minute intensity = 0.800(In/Hr)
100 year storm 10 minute intensity = 3.210(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5500

++

Process from Point/Station   401.000 to Point/Station 402.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance =   760.000(Ft.)
Top (of initial area) elevation = 2340.000(Ft.)
Bottom (of initial area) elevation = 1930.000(Ft.)
Difference in elevation =   410.000(Ft.)

```
Slope =    0.53947  s(percent)=      53.95
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.515 min.
Rainfall intensity =      3.512(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 =      6.027(CFS)
Total initial stream area =        1.940(Ac.)
Pervious area fraction = 1.000


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++++
Process from Point/Station      402.000 to Point/Station
403.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
__________________________________________________________________
____
Estimated mean flow rate at midpoint of channel =     16.393(CFS)
Depth of flow =   0.297(Ft.), Average velocity =   7.453(Ft/s)
      ******* Irregular Channel Data ***********
-----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
      1              0.00              1.00
      2             25.00              0.00
      3             50.00              1.00
Manning's 'N' friction factor =   0.035
-----------------------------------------------------------------
Sub-Channel flow  =     16.393(CFS)
  '     '    flow top width =     14.830(Ft.)
  '     '    velocity=    7.453(Ft/s)
  '     '    area =      2.199(Sq.Ft)
  '     '    Froude number =     3.411

Upstream point elevation =  1930.000(Ft.)
Downstream point elevation =  1660.000(Ft.)
Flow length =   687.000(Ft.)
Travel time  =    1.54 min.
Time of concentration =   10.05 min.
Depth of flow =   0.297(Ft.)
Average velocity =   7.453(Ft/s)
Total irregular channel flow =    16.393(CFS)
Irregular channel normal depth above invert elev. =   0.297(Ft.)
Average velocity of channel(s) =   7.453(Ft/s)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.883
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 =   3.206(In/Hr) for a   100.0 year storm
Subarea runoff =   20.666(CFS) for   7.300(Ac.)
Total runoff =   26.693(CFS)   Total area =   9.240(Ac.)
Depth of flow =   0.356(Ft.), Average velocity =   8.420(Ft/s)

++

Process from Point/Station   403.000 to Point/Station 305.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****

Top of natural channel elevation =   1660.000(Ft.)
End of natural channel elevation =   1620.000(Ft.)
Length of natural channel =   402.000(Ft.)
Estimated mean flow rate at midpoint of channel =   29.582(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow = 10.52(Ft/s)

Correction to map slope used on extremely rugged channels with drops and waterfalls (Plate D-6.2)
Normal channel slope = 0.0995
Corrected/adjusted channel slope = 0.0995
Travel time =   0.64 min.   TC =   10.69 min.

Adding area flow to channel
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.861
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3) = 90.40
Pervious area fraction = 1.000; Impervious fraction = 0.000
Rainfall intensity =   3.099(In/Hr) for a   100.0 year storm
Subarea runoff =   5.335(CFS) for   2.000(Ac.)
Total runoff =   32.028(CFS)   Total area =   11.240(Ac.)
End of computations, total study area =   11.24 (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 = 87.2

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version 8.0
Rational Hydrology Study   Date: 11/08/21
File:moval334.out

Gateway Heights
Offsite Drainage
Area E - 100yr Runoff

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

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

Program License Serial Number 6232

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 [Riverside-Foothill] area used.
10 year storm 10 minute intensity = 2.140(In/Hr)
10 year storm 60 minute intensity = 0.800(In/Hr)
100 year storm 10 minute intensity = 3.210(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5500

++
Process from Point/Station   501.000 to Point/Station 502.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance =   882.000(Ft.)
Top (of initial area) elevation = 2160.000(Ft.)
Bottom (of initial area) elevation = 1680.000(Ft.)
Difference in elevation =   480.000(Ft.)

```
      Slope =    0.54422  s(percent)=      54.42
      TC = k(0.530)*[(length^3)/(elevation change)]^0.2
      Initial area time of concentration =    9.022 min.
      Rainfall intensity =      3.402(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 =      7.820(CFS)
      Total initial stream area =        2.600(Ac.)
      Pervious area fraction = 1.000


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
      Process from Point/Station      502.000 to Point/Station
503.000
      **** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
      __________________________________________________________________
____
      Top of natural channel elevation =   1680.000(Ft.)
      End of natural channel elevation =   1631.000(Ft.)
      Length of natural channel  =   377.000(Ft.)
      Estimated mean flow rate at midpoint of channel =     11.730(CFS)

      Natural valley channel type used
      L.A. County flood control district formula for channel velocity:
       Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
      Velocity using mean channel flow =   9.38(Ft/s)

      Correction to map slope used on extremely rugged channels with
      drops and waterfalls (Plate D-6.2)
            Normal channel slope =  0.1300
      Corrected/adjusted channel slope =  0.1300
      Travel time =    0.67 min.     TC =    9.69  min.


       Adding area flow to channel
      UNDEVELOPED (fair cover) subarea
      Runoff Coefficient = 0.863
      Decimal fraction soil group A = 0.000
      Decimal fraction soil group B = 0.000
      Decimal fraction soil group C = 1.000
      Decimal fraction soil group D = 0.000
      RI index for soil(AMC 3)  =  90.40
      Pervious area fraction =  1.000; Impervious fraction =  0.000
      Rainfall intensity =      3.271(In/Hr) for a   100.0 year storm
      Subarea runoff =      7.336(CFS) for      2.600(Ac.)
      Total runoff =     15.156(CFS)      Total area =       5.200(Ac.)
      End of computations, total study area =            5.20 (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 =  84.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version 8.0
Rational Hydrology Study Date: 03/29/22
File:moval33rev.out

Gateway Heights
Existing Conditions
Area F - 100 yr

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

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

Program License Serial Number 6232

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 [Riverside-Foothill] area used.
10 year storm 10 minute intensity = 2.140(In/Hr)
10 year storm 60 minute intensity = 0.800(In/Hr)
100 year storm 10 minute intensity = 3.210(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5500

++

Process from Point/Station 601.000 to Point/Station 602.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 778.000(Ft.)
Top (of initial area) elevation = 1725.000(Ft.)
Bottom (of initial area) elevation = 1617.000(Ft.)
Difference in elevation = 108.000(Ft.)

```
Slope =    0.13882  s(percent)=      13.88
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.277 min.
Rainfall intensity =      3.009(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.877
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  94.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      5.806(CFS)
Total initial stream area =        2.200(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            2.20 (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 =  86.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version 8.0

Rational Hydrology Study Date: 03/29/22 File:moval33rev.out

Gateway Heights
Existing Conditions
Area G - 100 yr

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

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

Program License Serial Number 6232

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 [Riverside-Foothill] area used.
10 year storm 10 minute intensity = 2.140(In/Hr)
10 year storm 60 minute intensity = 0.800(In/Hr)
100 year storm 10 minute intensity = 3.210(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5500

++

Process from Point/Station 701.000 to Point/Station 702.000

**** INITIAL AREA EVALUATION ****

Initial area flow distance = 388.000(Ft.)
Top (of initial area) elevation = 1646.000(Ft.)
Bottom (of initial area) elevation = 1600.000(Ft.)
Difference in elevation = 46.000(Ft.)

```
Slope =    0.11856  s(percent)=      11.86
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.811 min.
Rainfall intensity =      3.447(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.880
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  94.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      1.819(CFS)
Total initial stream area =        0.600(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            0.60 (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 =  86.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version 8.0
Rational Hydrology Study   Date: 03/29/22
File:moval33rev.out

Gateway Heights
Existing Conditions
Area H - 100 yr

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

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

Program License Serial Number 6232

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 [Riverside-Foothill] area used.
10 year storm 10 minute intensity = 2.140(In/Hr)
10 year storm 60 minute intensity = 0.800(In/Hr)
100 year storm 10 minute intensity = 3.210(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5500

++

Process from Point/Station   801.000 to Point/Station 802.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance =   589.000(Ft.)
Top (of initial area) elevation = 1678.000(Ft.)
Bottom (of initial area) elevation = 1587.000(Ft.)
Difference in elevation =   91.000(Ft.)

```
Slope =    0.15450  s(percent)=      15.45
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.875 min.
Rainfall intensity =      3.237(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 = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  94.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      5.688(CFS)
Total initial stream area =        2.000(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            2.00 (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 =  86.0
```

```
                  Riverside County Rational Hydrology Program

      CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version
8.0
            Rational Hydrology Study        Date: 03/29/22
File:moval33rev.out
      ------------------------------------------------------------------
------
      Gateway Heights
      Existing Conditions
      Area I - 100 yr

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

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

      ------------------------------------------------------------------
------


      Program License Serial Number 6232

      ------------------------------------------------------------------
------
      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 [ Riverside-Foothill ] area used.
      10 year storm 10 minute intensity =  2.140(In/Hr)
      10 year storm 60 minute intensity =  0.800(In/Hr)
      100 year storm 10 minute intensity =  3.210(In/Hr)
      100 year storm 60 minute intensity =  1.200(In/Hr)

      Storm event year = 100.0
      Calculated rainfall intensity data:
      1 hour intensity =  1.200(In/Hr)
      Slope of intensity duration curve = 0.5500




      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
      Process from Point/Station      901.000 to Point/Station
902.000
      **** INITIAL AREA EVALUATION ****
      __________________________________________________________________
____
      Initial area flow distance =   821.000(Ft.)
      Top (of initial area) elevation =  1664.000(Ft.)
      Bottom (of initial area) elevation =  1586.000(Ft.)
      Difference in elevation =    78.000(Ft.)
```

```
Slope =    0.09501  s(percent)=       9.50
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   12.430 min.
Rainfall intensity =      2.852(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.876
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  94.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      7.993(CFS)
Total initial stream area =        3.200(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            3.20 (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 =  86.0
```

Existing Condition SCS Hydrograph Runoff

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

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Study date 11/09/21 File: moval33prea12.out

++

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Existing Condition
Unit Hydrograph Runoff

Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) = 0.009 Sq. Mi.
Length along longest watercourse = 852.00(Ft.)
Length along longest watercourse measured to centroid = 341.00 (Ft.)
Length along longest watercourse = 0.161 Mi.
Length along longest watercourse measured to centroid = 0.065 Mi.
Difference in elevation = 75.00(Ft.)
Slope along watercourse = 464.7887 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.053 Hr.
Lag time = 3.17 Min.
25% of lag time = 0.79 Min.
40% of lag time = 1.27 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]

```
        5.53              0.47                   2.58

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        5.53              1.19                   6.58

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    0.466(In)
Area Averaged 100-Year Rainfall =    1.190(In)

Point rain (area averaged) =    0.466(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    0.466(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     5.530           84.00         0.000
 Total Area Entered =      5.53(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
84.0  84.0      0.198     0.000        0.198       1.000
0.198
                                                          Sum (F) =
0.198
Area averaged mean soil loss (F) (In/Hr) =  0.198
Minimum soil loss rate ((In/Hr)) =  0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.900
------------------------------------------------------------------
---
Slope of intensity-duration curve for a 1 hour storm =0.5500
------------------------------------------------------------------
----


            U n i t  H y d r o g r a p h
                  FOOTHILL S-Curve
------------------------------------------------------------------
--
            Unit Hydrograph Data
------------------------------------------------------------------
---
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                           Graph %           (CFS)
------------------------------------------------------------------
---
    1   0.083        157.948         32.675             1.821
    2   0.167        315.896         53.715             2.994
    3   0.250        473.844         10.920             0.609
    4   0.333        631.792          2.028             0.113
    5   0.417        789.740          0.662             0.037
                               Sum = 100.000   Sum=       5.573
------------------------------------------------------------------------


 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   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max   |   Low        (In/Hr)
   1   0.08     3.30      0.185        (  0.198)       0.166        0.018
   2   0.17     4.20      0.235           0.198    (  0.211)        0.036
   3   0.25     4.40      0.246           0.198    (  0.221)        0.048
   4   0.33     4.80      0.268           0.198    (  0.242)        0.070
   5   0.42     5.20      0.291           0.198    (  0.262)        0.092
   6   0.50     6.20      0.347           0.198    (  0.312)        0.148
   7   0.58     6.80      0.380           0.198    (  0.342)        0.182
   8   0.67     8.80      0.492           0.198    (  0.443)        0.294
   9   0.75    13.90      0.777           0.198    (  0.700)        0.579
  10   0.83    31.40      1.756           0.198    (  1.580)        1.557
  11   0.92     7.20      0.403           0.198    (  0.362)        0.204
  12   1.00     3.80      0.212        (  0.198)       0.191        0.021
             (Loss Rate Not Used)
     Sum =     100.0                                 Sum =     3.3
      Flood volume = Effective rainfall      0.27(In)
       times area       5.5(Ac.)/[(In)/(Ft.)] =      0.1(Ac.Ft)
      Total soil loss =      0.20(In)
      Total soil loss =     0.090(Ac.Ft)
      Total rainfall =      0.47(In)
      Flood volume =        5437.4 Cubic Feet
      Total soil loss =        3916.6 Cubic Feet
      ------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =      5.429(CFS)
      ------------------------------------------------------------------
--
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                          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        2.5       5.0       7.5
10.0

-----------------------------------------------------------------------
    0+ 5       0.0002      0.03  Q         |         |         |
|
    0+10       0.0011      0.12  Q         |         |         |
|
    0+15       0.0025      0.21  Q         |         |         |
|
    0+20       0.0045      0.29  |Q        |         |         |
|
    0+25       0.0074      0.41  |QV       |         |         |
|
    0+30       0.0115      0.60  | QV      |         |         |
|
    0+35       0.0173      0.84  |  Q V    |         |         |
|
```

```
      0+40       0.0254      1.18  |    Q    V |         |         |
|
      0+45       0.0396      2.07  |        Q | V       |         |
|
      0+50       0.0725      4.78  |          |        Q|   V     |
|
      0+55       0.1099      5.43  |          |         |Q        |    V
|
      1+ 0       0.1215      1.67  |      Q   |         |         |       V
|
      1+ 5       0.1241      0.39  |Q         |         |         |
V|
      1+10       0.1248      0.09  Q          |         |         |
V|
      1+15       0.1248      0.01  Q          |         |         |
V|
      1+20       0.1248      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 11/09/21 File: moval33prea15.out

++

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Existing Condition
Unit Hydrograph Runoff

Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) = 0.009 Sq. Mi.
Length along longest watercourse = 852.00(Ft.)
Length along longest watercourse measured to centroid = 341.00 (Ft.)
Length along longest watercourse = 0.161 Mi.
Length along longest watercourse measured to centroid = 0.065 Mi.
Difference in elevation = 75.00(Ft.)
Slope along watercourse = 464.7887 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.053 Hr.
Lag time = 3.17 Min.
25% of lag time = 0.79 Min.
40% of lag time = 1.27 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]

```
        5.53              0.47                    2.58

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        5.53              1.19                    6.58

STORM EVENT (YEAR) =    5.00
Area Averaged 2-Year Rainfall =    0.466(In)
Area Averaged 100-Year Rainfall =    1.190(In)

Point rain (area averaged) =    0.636(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    0.636(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     5.530           84.00         0.000
 Total Area Entered =      5.53(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
84.0  84.0      0.198     0.000        0.198       1.000
0.198
                                                      Sum (F) =
0.198
Area averaged mean soil loss (F) (In/Hr) =  0.198
Minimum soil loss rate ((In/Hr)) =  0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.900
-------------------------------------------------------------------
---
Slope of intensity-duration curve for a 1 hour storm =0.5500
-------------------------------------------------------------------
----

            U n i t  H y d r o g r a p h
                  FOOTHILL S-Curve
-------------------------------------------------------------------
--
            Unit Hydrograph Data
-------------------------------------------------------------------
---
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                           Graph %           (CFS)
-------------------------------------------------------------------
---
    1   0.083       157.948         32.675             1.821
    2   0.167       315.896         53.715             2.994
    3   0.250       473.844         10.920             0.609
    4   0.333       631.792          2.028             0.113
    5   0.417       789.740          0.662             0.037
                             Sum = 100.000   Sum=       5.573
-----------------------------------------------------------------------


 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	3.30	0.252	0.198	(0.227)	0.053
2	0.17	4.20	0.320	0.198	(0.288)	0.122
3	0.25	4.40	0.336	0.198	(0.302)	0.137
4	0.33	4.80	0.366	0.198	(0.329)	0.168
5	0.42	5.20	0.397	0.198	(0.357)	0.198
6	0.50	6.20	0.473	0.198	(0.426)	0.274
7	0.58	6.80	0.519	0.198	(0.467)	0.320
8	0.67	8.80	0.671	0.198	(0.604)	0.473
9	0.75	13.90	1.060	0.198	(0.954)	0.862
10	0.83	31.40	2.395	0.198	(2.155)	2.196
11	0.92	7.20	0.549	0.198	(0.494)	0.351
12	1.00	3.80	0.290	0.198	(0.261)	0.091
		(Loss Rate Not Used)				
Sum =		100.0			Sum =	5.2

Flood volume = Effective rainfall 0.44(In)
times area 5.5(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)
Total soil loss = 0.20(In)
Total soil loss = 0.091(Ac.Ft)
Total rainfall = 0.64(In)
Flood volume = 8775.2 Cubic Feet
Total soil loss = 3982.7 Cubic Feet

Peak flow rate of this hydrograph = 7.807(CFS)

++

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        2.5       5.0       7.5       10.0
-----------------------------------------------------------------------
    0+ 5       0.0007      0.10  Q         |         |         |         |
    0+10       0.0033      0.38  VQ        |         |         |         |
    0+15       0.0078      0.65  |VQ       |         |         |         |
    0+20       0.0132      0.80  | VQ      |         |         |         |
    0+25       0.0199      0.96  |  Q      |         |         |         |
    0+30       0.0282      1.22  |   QV    |         |         |         |
    0+35       0.0389      1.55  |     QV  |         |         |         |
```

```
    0+40       0.0528      2.02  |       Q V          |         |
|
    0+45       0.0750      3.22  |         | Q V      |         |
|
    0+50       0.1226      6.92  |         |          |   V  Q  |
|
    0+55       0.1764      7.81  |         |          |         |Q   V
|
    1+ 0       0.1948      2.67  |         Q          |         |       V
|
    1+ 5       0.2001      0.77  |  Q      |          |         |
V|
    1+10       0.2013      0.18  Q         |          |         |
V|
    1+15       0.2014      0.02  Q         |          |         |
V|
    1+20       0.2015      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

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8.2
                Study date  02/19/21 File: moval33prea110.out

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


      Program License Serial Number 6232

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

       English Units used in output format



      -----------------------------------------------------------------
---
      Gateway Heights
      Existing Condition
      Unit Hydrograph Runoff

      -----------------------------------------------------------------
--
      Drainage Area =       5.53(Ac.)  =      0.009 Sq. Mi.
      Drainage Area for Depth-Area Areal Adjustment =       5.53(Ac.)  =
0.009 Sq. Mi.
      Length along longest watercourse =     852.00(Ft.)
      Length along longest watercourse measured to centroid =     341.00
(Ft.)
      Length along longest watercourse =      0.161 Mi.
      Length along longest watercourse measured to centroid =      0.065
Mi.
      Difference in elevation =      75.00(Ft.)
      Slope along watercourse =    464.7887 Ft./Mi.
      Average Manning's 'N' = 0.040
      Lag time =    0.053 Hr.
      Lag time =     3.17 Min.
      25% of lag time =     0.79 Min.
      40% of lag time =     1.27 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]
```

5.53 0.47 2.58

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
5.53	1.19	6.58

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.466(In)
Area Averaged 100-Year Rainfall = 1.190(In)

Point rain (area averaged) = 0.764(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 0.764(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
5.530	84.00	0.000

Total Area Entered = 5.53(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	84.0	0.198	0.000	0.198	1.000	0.198
					Sum (F) =	0.198

Area averaged mean soil loss (F) (In/Hr) = 0.198
Minimum soil loss rate ((In/Hr)) = 0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.5500

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	157.948	32.675	1.821
2	0.167	315.896	53.715	2.994
3	0.250	473.844	10.920	0.609
4	0.333	631.792	2.028	0.113
5	0.417	789.740	0.662	0.037
			Sum = 100.000	Sum= 5.573

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	Loss rate(In./Hr) Low	Effective (In/Hr)
1	0.08	3.30	0.302	0.198	(0.272)	0.104
2	0.17	4.20	0.385	0.198	(0.346)	0.187
3	0.25	4.40	0.403	0.198	(0.363)	0.205
4	0.33	4.80	0.440	0.198	(0.396)	0.242
5	0.42	5.20	0.477	0.198	(0.429)	0.278
6	0.50	6.20	0.568	0.198	(0.511)	0.370
7	0.58	6.80	0.623	0.198	(0.561)	0.425
8	0.67	8.80	0.807	0.198	(0.726)	0.608
9	0.75	13.90	1.274	0.198	(1.147)	1.076
10	0.83	31.40	2.878	0.198	(2.590)	2.680
11	0.92	7.20	0.660	0.198	(0.594)	0.462
12	1.00	3.80	0.348	0.198	(0.313)	0.150

(Loss Rate Not Used)

Sum = 100.0 Sum = 6.8

Flood volume = Effective rainfall 0.57(In)
times area 5.5(Ac.)/[(In)/(Ft.)] = 0.3(Ac.Ft)
Total soil loss = 0.20(In)
Total soil loss = 0.091(Ac.Ft)
Total rainfall = 0.76(In)
Flood volume = 11350.2 Cubic Feet
Total soil loss = 3982.7 Cubic Feet

Peak flow rate of this hydrograph = 9.607(CFS)

++

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        2.5       5.0       7.5      10.0
-----------------------------------------------------------------------
    0+ 5       0.0013      0.19  Q         |         |         |         |
    0+10       0.0058      0.65  V Q       |         |         |         |
    0+15       0.0126      1.00  |V Q      |         |         |         |
    0+20       0.0208      1.18  |  VQ     |         |         |         |
    0+25       0.0303      1.38  |   VQ    |         |         |         |
    0+30       0.0419      1.68  |     Q   |         |         |         |
    0+35       0.0562      2.09  |       Q |         |         |         |
```

```
    0+40       0.0745      2.65  |         QV        |         |
|
    0+45       0.1027      4.09  |         |    VQ   |         |
|
    0+50       0.1614      8.54  |         |         |   V     |   Q
|
    0+55       0.2276      9.61  |         |         |         |   V   Q
|
    1+ 0       0.2512      3.43  |         |  Q      |         |       V
|
    1+ 5       0.2586      1.07  |   Q     |         |         |
V|
    1+10       0.2603      0.24  Q         |         |         |
V|
    1+15       0.2605      0.03  Q         |         |         |
V|
    1+20       0.2606      0.01  Q         |         |         |
V
-----------------------------------------------------------------------
```

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

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8.2
                Study date  11/09/21 File: moval33prea1100.out

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


      Program License Serial Number 6232

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

       English Units used in output format



      -----------------------------------------------------------------
---
      Gateway Heights
      Existing Condition
      Unit Hydrograph Runoff
      Area A
      -----------------------------------------------------------------
--
      Drainage Area =       5.53(Ac.)  =      0.009 Sq. Mi.
      Drainage Area for Depth-Area Areal Adjustment =       5.53(Ac.)  =
0.009 Sq. Mi.
      Length along longest watercourse =     852.00(Ft.)
      Length along longest watercourse measured to centroid =     341.00
(Ft.)
      Length along longest watercourse =      0.161 Mi.
      Length along longest watercourse measured to centroid =      0.065
Mi.
      Difference in elevation =      75.00(Ft.)
      Slope along watercourse =    464.7887 Ft./Mi.
      Average Manning's 'N' = 0.040
      Lag time =    0.053 Hr.
      Lag time =     3.17 Min.
      25% of lag time =     0.79 Min.
      40% of lag time =     1.27 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]
```

```
          5.53              0.47                    2.58

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
          5.53              1.19                    6.58

      STORM EVENT (YEAR) =  100.00
      Area Averaged 2-Year Rainfall =    0.466(In)
      Area Averaged 100-Year Rainfall =    1.190(In)

      Point rain (area averaged) =    1.190(In)
      Areal adjustment factor =   99.99 %
      Adjusted average point rain =    1.190(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
           5.530           84.00         0.000
       Total Area Entered =      5.53(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
      84.0  93.4      0.086     0.000        0.086       1.000
0.086
                                                          Sum (F) =
0.086
      Area averaged mean soil loss (F) (In/Hr) =  0.086
      Minimum soil loss rate ((In/Hr)) =  0.043
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.900
      -------------------------------------------------------------------
---
      Slope of intensity-duration curve for a 1 hour storm =0.5500
      -------------------------------------------------------------------
----

                  U n i t  H y d r o g r a p h
                        FOOTHILL S-Curve
      -------------------------------------------------------------------
--
                  Unit Hydrograph Data
      -------------------------------------------------------------------
---
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                           Graph %          (CFS)
      -------------------------------------------------------------------
---
          1   0.083        157.948         32.675             1.821
          2   0.167        315.896         53.715             2.994
          3   0.250        473.844         10.920             0.609
          4   0.333        631.792          2.028             0.113
          5   0.417        789.740          0.662             0.037
                                    Sum = 100.000   Sum=       5.573
-----------------------------------------------------------------------


 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   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max   |   Low        (In/Hr)
   1   0.08     3.30      0.471          0.086    (  0.424)       0.385
   2   0.17     4.20      0.600          0.086    (  0.540)       0.514
   3   0.25     4.40      0.628          0.086    (  0.565)       0.542
   4   0.33     4.80      0.685          0.086    (  0.617)       0.600
   5   0.42     5.20      0.743          0.086    (  0.668)       0.657
   6   0.50     6.20      0.885          0.086    (  0.797)       0.800
   7   0.58     6.80      0.971          0.086    (  0.874)       0.885
   8   0.67     8.80      1.257          0.086    (  1.131)       1.171
   9   0.75    13.90      1.985          0.086    (  1.786)       1.899
  10   0.83    31.40      4.484          0.086    (  4.035)       4.398
  11   0.92     7.20      1.028          0.086    (  0.925)       0.942
  12   1.00     3.80      0.543          0.086    (  0.488)       0.457
             (Loss Rate Not Used)
     Sum =     100.0                                    Sum =    13.2
      Flood volume = Effective rainfall      1.10(In)
       times area       5.5(Ac.)/[(In)/(Ft.)] =       0.5(Ac.Ft)
      Total soil loss =      0.09(In)
      Total soil loss =     0.040(Ac.Ft)
      Total rainfall =      1.19(In)
      Flood volume =       22164.4 Cubic Feet
      Total soil loss =       1722.3 Cubic Feet
      ------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =     16.211(CFS)
      ------------------------------------------------------------------
--
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                          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       0.0048      0.70  VQ        |         |         |
|
    0+10       0.0192      2.09  |V  Q     |         |         |
|
    0+15       0.0383      2.76  |  V Q    |         |         |
|
    0+20       0.0594      3.07  |   V Q   |         |         |
|
    0+25       0.0828      3.40  |     Q   |         |         |
|
    0+30       0.1095      3.87  |      QV |         |         |
|
    0+35       0.1404      4.50  |       Q |V        |         |
|
```

```
    0+40       0.1774       5.37  |         Q  V      |          |          |
|
    0+45       0.2299       7.62  |         |    Q  V |          |          |
|
    0+50       0.3300      14.54  |         |         |    V   Q|          |
|
    0+55       0.4417      16.21  |         |         |          | Q V      |
|
    1+ 0       0.4871       6.59  |         |  Q      |          |        V |
|
    1+ 5       0.5043       2.51  |    Q    |         |          |          |
V|
    1+10       0.5081       0.55  |Q        |         |          |          |
V|
    1+15       0.5087       0.09  Q         |         |          |          |
V|
    1+20       0.5088       0.02  Q         |         |          |          |
V
-----------------------------------------------------------------------
```

```
          U n i t   H y d r o g r a p h   A n a l y s i s
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8.2
                Study date  11/09/21 File: moval33prea32.out

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


      Program License Serial Number 6232

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

       English Units used in output format



      ------------------------------------------------------------------
---
      Gateway Heights
      Existing Condition
      Unit Hydrograph Runoff

      ------------------------------------------------------------------
--
      Drainage Area =       5.53(Ac.)  =      0.009 Sq. Mi.
      Drainage Area for Depth-Area Areal Adjustment =       5.53(Ac.)  =
0.009 Sq. Mi.
      Length along longest watercourse =     852.00(Ft.)
      Length along longest watercourse measured to centroid =     341.00
(Ft.)
      Length along longest watercourse =      0.161 Mi.
      Length along longest watercourse measured to centroid =      0.065
Mi.
      Difference in elevation =      75.00(Ft.)
      Slope along watercourse =    464.7887 Ft./Mi.
      Average Manning's 'N' = 0.040
      Lag time =    0.053 Hr.
      Lag time =     3.17 Min.
      25% of lag time =     0.79 Min.
      40% of lag time =     1.27 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]
```

5.53 0.80 4.42

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
5.53	1.89	10.45

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 0.799(In)
Area Averaged 100-Year Rainfall = 1.890(In)

Point rain (area averaged) = 0.799(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 0.799(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
5.530	84.00	0.000

Total Area Entered = 5.53(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	84.0	0.198	0.000	0.198	1.000	0.198

Sum (F) = 0.198

Area averaged mean soil loss (F) (In/Hr) = 0.198
Minimum soil loss rate ((In/Hr)) = 0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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	157.948	32.675		1.821
2	0.167	315.896	53.715		2.994
3	0.250	473.844	10.920		0.609
4	0.333	631.792	2.028		0.113
5	0.417	789.740	0.662		0.037
			Sum = 100.000	Sum=	5.573

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	Loss rate(In./Hr) Low	Effective (In/Hr)
1	0.08	1.30	0.125	(0.198)	0.112	0.012
2	0.17	1.30	0.125	(0.198)	0.112	0.012
3	0.25	1.10	0.105	(0.198)	0.095	0.011
4	0.33	1.50	0.144	(0.198)	0.129	0.014
5	0.42	1.50	0.144	(0.198)	0.129	0.014
6	0.50	1.80	0.173	(0.198)	0.155	0.017
7	0.58	1.50	0.144	(0.198)	0.129	0.014
8	0.67	1.80	0.173	(0.198)	0.155	0.017
9	0.75	1.80	0.173	(0.198)	0.155	0.017
10	0.83	1.50	0.144	(0.198)	0.129	0.014
11	0.92	1.60	0.153	(0.198)	0.138	0.015
12	1.00	1.80	0.173	(0.198)	0.155	0.017
13	1.08	2.20	0.211	(0.198)	0.190	0.021
14	1.17	2.20	0.211	(0.198)	0.190	0.021
15	1.25	2.20	0.211	(0.198)	0.190	0.021
16	1.33	2.00	0.192	(0.198)	0.173	0.019
17	1.42	2.60	0.249	0.198	(0.224)	0.051
18	1.50	2.70	0.259	0.198	(0.233)	0.060
19	1.58	2.40	0.230	0.198	(0.207)	0.032
20	1.67	2.70	0.259	0.198	(0.233)	0.060
21	1.75	3.30	0.316	0.198	(0.285)	0.118
22	1.83	3.10	0.297	0.198	(0.267)	0.099
23	1.92	2.90	0.278	0.198	(0.250)	0.080
24	2.00	3.00	0.288	0.198	(0.259)	0.089
25	2.08	3.10	0.297	0.198	(0.267)	0.099
26	2.17	4.20	0.403	0.198	(0.362)	0.204
27	2.25	5.00	0.479	0.198	(0.431)	0.281
28	2.33	3.50	0.336	0.198	(0.302)	0.137
29	2.42	6.80	0.652	0.198	(0.587)	0.454
30	2.50	7.30	0.700	0.198	(0.630)	0.502
31	2.58	8.20	0.786	0.198	(0.708)	0.588
32	2.67	5.90	0.566	0.198	(0.509)	0.367
33	2.75	2.00	0.192	(0.198)	0.173	0.019
34	2.83	1.80	0.173	(0.198)	0.155	0.017
35	2.92	1.80	0.173	(0.198)	0.155	0.017
36	3.00	0.60	0.058	(0.198)	0.052	0.006

(Loss Rate Not Used)

Sum = 100.0 Sum = 3.5

Flood volume = Effective rainfall 0.29(In)
times area 5.5(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 0.50(In)
Total soil loss = 0.232(Ac.Ft)
Total rainfall = 0.80(In)
Flood volume = 5921.7 Cubic Feet
Total soil loss = 10117.0 Cubic Feet

--

Peak flow rate of this hydrograph = 2.875(CFS)

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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      0.02  Q         |         |         |
|
    0+10       0.0006      0.06  Q         |         |         |
|
    0+15       0.0010      0.06  Q         |         |         |
|
    0+20       0.0015      0.07  Q         |         |         |
|
    0+25       0.0020      0.08  Q         |         |         |
|
    0+30       0.0026      0.08  Q         |         |         |
|
    0+35       0.0032      0.09  Q         |         |         |
|
    0+40       0.0038      0.09  QV        |         |         |
|
    0+45       0.0045      0.09  QV        |         |         |
|
    0+50       0.0051      0.09  QV        |         |         |
|
    0+55       0.0057      0.08  QV        |         |         |
|
    1+ 0       0.0063      0.09  QV        |         |         |
|
    1+ 5       0.0070      0.10  Q V       |         |         |
|
    1+10       0.0078      0.11  Q V       |         |         |
|
    1+15       0.0086      0.12  Q V       |         |         |
|
    1+20       0.0093      0.11  Q V       |         |         |
|
    1+25       0.0105      0.17  Q  V      |         |         |
|
    1+30       0.0124      0.28  |Q V      |         |         |
|
    1+35       0.0143      0.27  |Q  V     |         |         |
|
    1+40       0.0160      0.25  Q   V     |         |         |
|
    1+45       0.0189      0.42  |Q   V    |         |         |
|
    1+50       0.0229      0.58  | Q   V   |         |         |
|
    1+55       0.0265      0.52  | Q    V  |         |         |
|
    2+ 0       0.0298      0.48  |Q      V |         |         |
|
    2+ 5       0.0333      0.51  | Q      V|         |         |
|
    2+10       0.0383      0.74  | Q       |V        |         |
|
    2+15       0.0466      1.20  |   Q     |  V      |         |
```

```
|
     2+20       0.0551      1.23  |   Q      |      V   |         |
|
     2+25       0.0649      1.44  |    Q     |         V|         |
|
     2+30       0.0814      2.40  |        Q|         |  V      |
|
     2+35       0.1012      2.88  |         |Q        |        V|
|
     2+40       0.1205      2.79  |         |Q        |         |    V
|
     2+45       0.1312      1.57  |     Q   |         |         |       V
|
     2+50       0.1340      0.40  |Q        |         |         |
V|
     2+55       0.1351      0.16  Q         |         |         |
V|
     3+ 0       0.1357      0.09  Q         |         |         |
V|
     3+ 5       0.1359      0.03  Q         |         |         |
V|
     3+10       0.1359      0.01  Q         |         |         |
V|
     3+15       0.1359      0.00  Q         |         |         |
V|
     3+20       0.1359      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 11/09/21 File: moval33prea35.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Existing Condition
Unit Hydrograph Runoff

Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) = 0.009 Sq. Mi.
Length along longest watercourse = 852.00(Ft.)
Length along longest watercourse measured to centroid = 341.00 (Ft.)
Length along longest watercourse = 0.161 Mi.
Length along longest watercourse measured to centroid = 0.065 Mi.
Difference in elevation = 75.00(Ft.)
Slope along watercourse = 464.7887 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.053 Hr.
Lag time = 3.17 Min.
25% of lag time = 0.79 Min.
40% of lag time = 1.27 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]

5.53	0.80	4.42

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
5.53	1.89	10.45

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 0.799(In)
Area Averaged 100-Year Rainfall = 1.890(In)

Point rain (area averaged) = 1.055(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.055(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
5.530	84.00	0.000

Total Area Entered = 5.53(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	84.0	0.198	0.000	0.198	1.000	0.198
					Sum (F) =	0.198

Area averaged mean soil loss (F) (In/Hr) = 0.198
Minimum soil loss rate ((In/Hr)) = 0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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	157.948	32.675	1.821
2	0.167	315.896	53.715	2.994
3	0.250	473.844	10.920	0.609
4	0.333	631.792	2.028	0.113
5	0.417	789.740	0.662	0.037
			Sum = 100.000	Sum= 5.573

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	0.165	(0.198)	0.148	0.016
2	0.17	1.30	0.165	(0.198)	0.148	0.016
3	0.25	1.10	0.139	(0.198)	0.125	0.014
4	0.33	1.50	0.190	(0.198)	0.171	0.019
5	0.42	1.50	0.190	(0.198)	0.171	0.019
6	0.50	1.80	0.228	0.198	(0.205)	0.029
7	0.58	1.50	0.190	(0.198)	0.171	0.019
8	0.67	1.80	0.228	0.198	(0.205)	0.029
9	0.75	1.80	0.228	0.198	(0.205)	0.029
10	0.83	1.50	0.190	(0.198)	0.171	0.019
11	0.92	1.60	0.202	(0.198)	0.182	0.020
12	1.00	1.80	0.228	0.198	(0.205)	0.029
13	1.08	2.20	0.278	0.198	(0.251)	0.080
14	1.17	2.20	0.278	0.198	(0.251)	0.080
15	1.25	2.20	0.278	0.198	(0.251)	0.080
16	1.33	2.00	0.253	0.198	(0.228)	0.055
17	1.42	2.60	0.329	0.198	(0.296)	0.131
18	1.50	2.70	0.342	0.198	(0.307)	0.143
19	1.58	2.40	0.304	0.198	(0.273)	0.105
20	1.67	2.70	0.342	0.198	(0.307)	0.143
21	1.75	3.30	0.418	0.198	(0.376)	0.219
22	1.83	3.10	0.392	0.198	(0.353)	0.194
23	1.92	2.90	0.367	0.198	(0.330)	0.169
24	2.00	3.00	0.380	0.198	(0.342)	0.181
25	2.08	3.10	0.392	0.198	(0.353)	0.194
26	2.17	4.20	0.531	0.198	(0.478)	0.333
27	2.25	5.00	0.633	0.198	(0.569)	0.434
28	2.33	3.50	0.443	0.198	(0.399)	0.244
29	2.42	6.80	0.860	0.198	(0.774)	0.662
30	2.50	7.30	0.924	0.198	(0.831)	0.725
31	2.58	8.20	1.038	0.198	(0.934)	0.839
32	2.67	5.90	0.747	0.198	(0.672)	0.548
33	2.75	2.00	0.253	0.198	(0.228)	0.055
34	2.83	1.80	0.228	0.198	(0.205)	0.029
35	2.92	1.80	0.228	0.198	(0.205)	0.029
36	3.00	0.60	0.076	(0.198)	0.068	0.008

(Loss Rate Not Used)

Sum = 100.0 Sum = 5.9

Flood volume = Effective rainfall 0.50(In)
times area 5.5(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)
Total soil loss = 0.56(In)
Total soil loss = 0.258(Ac.Ft)
Total rainfall = 1.05(In)
Flood volume = 9940.1 Cubic Feet
Total soil loss = 11228.1 Cubic Feet

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Peak flow rate of this hydrograph = 4.148(CFS)

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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

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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       0.0008      0.08  Q         |         |         |
|
    0+15       0.0013      0.08  Q         |         |         |
|
    0+20       0.0019      0.09  Q         |         |         |
|
    0+25       0.0026      0.10  Q         |         |         |
|
    0+30       0.0035      0.12  Q         |         |         |
|
    0+35       0.0044      0.14  Q         |         |         |
|
    0+40       0.0053      0.13  Q         |         |         |
|
    0+45       0.0064      0.16  QV        |         |         |
|
    0+50       0.0074      0.14  QV        |         |         |
|
    0+55       0.0082      0.12  QV        |         |         |
|
    1+ 0       0.0091      0.13  QV        |         |         |
|
    1+ 5       0.0108      0.25  QV        |         |         |
|
    1+10       0.0136      0.41  |QV       |         |         |
|
    1+15       0.0166      0.44  |QV       |         |         |
|
    1+20       0.0194      0.40  |Q V      |         |         |
|
    1+25       0.0226      0.46  |Q V      |         |         |
|
    1+30       0.0274      0.70  | Q V     |         |         |
|
    1+35       0.0323      0.71  | Q  V    |         |         |
|
    1+40       0.0369      0.68  | Q   V   |         |         |
|
    1+45       0.0432      0.91  |  Q   V  |         |         |
|
    1+50       0.0509      1.11  |   Q   V |         |         |
|
    1+55       0.0581      1.04  |   Q     V         |         |
|
    2+ 0       0.0649      0.98  |  Q      |V        |         |
|
    2+ 5       0.0719      1.03  |   Q     | V       |         |
|
    2+10       0.0811      1.32  |    Q    |   V     |         |
|
    2+15       0.0944      1.93  |      Q  |     V   |         |
```

```
|
    2+20       0.1080      1.98  |      Q  |       V |         |
|
    2+25       0.1235      2.25  |       Q |         |V        |
|
    2+30       0.1477      3.51  |         |   Q     |    V    |
|
    2+35       0.1763      4.15  |         |     Q   |         V
|
    2+40       0.2041      4.04  |         |     Q   |         |    V
|
    2+45       0.2203      2.36  |        Q|         |         |       V
|
    2+50       0.2249      0.67  | Q       |         |         |
V|
    2+55       0.2268      0.27  |Q        |         |         |
V|
    3+ 0       0.2278      0.15  Q         |         |         |
V|
    3+ 5       0.2281      0.05  Q         |         |         |
V|
    3+10       0.2282      0.01  Q         |         |         |
V|
    3+15       0.2282      0.00  Q         |         |         |
V|
    3+20       0.2282      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 02/19/21 File: moval33prea310.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Existing Condition
Unit Hydrograph Runoff

Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) = 0.009 Sq. Mi.
Length along longest watercourse = 852.00(Ft.)
Length along longest watercourse measured to centroid = 341.00(Ft.)
Length along longest watercourse = 0.161 Mi.
Length along longest watercourse measured to centroid = 0.065 Mi.
Difference in elevation = 75.00(Ft.)
Slope along watercourse = 464.7887 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.053 Hr.
Lag time = 3.17 Min.
25% of lag time = 0.79 Min.
40% of lag time = 1.27 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]
5.53	0.80	4.42

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
5.53	1.89	10.45

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.799(In)
Area Averaged 100-Year Rainfall = 1.890(In)

Point rain (area averaged) = 1.248(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.248(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
5.530	84.00	0.000

Total Area Entered = 5.53(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	84.0	0.198	0.000	0.198	1.000	0.198
					Sum (F) =	0.198

Area averaged mean soil loss (F) (In/Hr) = 0.198
Minimum soil loss rate ((In/Hr)) = 0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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	157.948	32.675		1.821
2	0.167	315.896	53.715		2.994
3	0.250	473.844	10.920		0.609
4	0.333	631.792	2.028		0.113
5	0.417	789.740	0.662		0.037
			Sum = 100.000	Sum=	5.573

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	0.195	(0.198)	0.175	0.019
2	0.17	1.30	0.195	(0.198)	0.175	0.019
3	0.25	1.10	0.165	(0.198)	0.148	0.016
4	0.33	1.50	0.225	0.198	(0.202)	0.026
5	0.42	1.50	0.225	0.198	(0.202)	0.026
6	0.50	1.80	0.270	0.198	(0.243)	0.071
7	0.58	1.50	0.225	0.198	(0.202)	0.026
8	0.67	1.80	0.270	0.198	(0.243)	0.071
9	0.75	1.80	0.270	0.198	(0.243)	0.071
10	0.83	1.50	0.225	0.198	(0.202)	0.026
11	0.92	1.60	0.240	0.198	(0.216)	0.041
12	1.00	1.80	0.270	0.198	(0.243)	0.071
13	1.08	2.20	0.329	0.198	(0.296)	0.131
14	1.17	2.20	0.329	0.198	(0.296)	0.131
15	1.25	2.20	0.329	0.198	(0.296)	0.131
16	1.33	2.00	0.299	0.198	(0.270)	0.101
17	1.42	2.60	0.389	0.198	(0.350)	0.191
18	1.50	2.70	0.404	0.198	(0.364)	0.206
19	1.58	2.40	0.359	0.198	(0.323)	0.161
20	1.67	2.70	0.404	0.198	(0.364)	0.206

21	1.75	3.30	0.494	0.198	(0.445)	0.296
22	1.83	3.10	0.464	0.198	(0.418)	0.266
23	1.92	2.90	0.434	0.198	(0.391)	0.236
24	2.00	3.00	0.449	0.198	(0.404)	0.251
25	2.08	3.10	0.464	0.198	(0.418)	0.266
26	2.17	4.20	0.629	0.198	(0.566)	0.430
27	2.25	5.00	0.749	0.198	(0.674)	0.550
28	2.33	3.50	0.524	0.198	(0.472)	0.326
29	2.42	6.80	1.018	0.198	(0.916)	0.820
30	2.50	7.30	1.093	0.198	(0.984)	0.895
31	2.58	8.20	1.228	0.198	(1.105)	1.029
32	2.67	5.90	0.883	0.198	(0.795)	0.685
33	2.75	2.00	0.299	0.198	(0.270)	0.101
34	2.83	1.80	0.270	0.198	(0.243)	0.071
35	2.92	1.80	0.270	0.198	(0.243)	0.071
36	3.00	0.60	0.090	(0.198)	0.081	0.009

(Loss Rate Not Used)

Sum = 100.0 Sum = 8.0

```
Flood volume = Effective rainfall      0.67(In)
 times area       5.5(Ac.)/[(In)/(Ft.)] =       0.3(Ac.Ft)
Total soil loss =      0.58(In)
Total soil loss =     0.266(Ac.Ft)
Total rainfall =      1.25(In)
Flood volume =       13458.7 Cubic Feet
Total soil loss =       11589.8 Cubic Feet
--------------------------------------------------------------------
 Peak flow rate of this hydrograph =      5.112(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      0.04  Q         |         |         |         |
  0+10       0.0009      0.09  Q         |         |         |         |
  0+15       0.0016      0.10  Q         |         |         |         |
  0+20       0.0023      0.11  Q         |         |         |         |
  0+25       0.0033      0.14  Q         |         |         |         |
  0+30       0.0049      0.23  Q         |         |         |         |
  0+35       0.0068      0.28  VQ        |         |         |         |
  0+40       0.0086      0.26  |Q        |         |         |         |
  0+45       0.0111      0.37  |Q        |         |         |         |
  0+50       0.0132      0.31  |Q        |         |         |         |
  0+55       0.0146      0.21  QV        |         |         |         |
  1+ 0       0.0166      0.28  |QV       |         |         |         |
  1+ 5       0.0199      0.48  |QV       |         |         |         |
  1+10       0.0246      0.68  | QV      |         |         |         |
  1+15       0.0295      0.72  | QV      |         |         |         |
  1+20       0.0342      0.67  | Q V     |         |         |         |
  1+25       0.0393      0.75  |  Q V    |         |         |         |
  1+30       0.0464      1.03  |   Q V   |         |         |         |
  1+35       0.0536      1.04  |   Q V   |         |         |         |
  1+40       0.0605      1.01  |   Q  V  |         |         |         |
  1+45       0.0694      1.28  |    Q  V |         |         |         |
  1+50       0.0799      1.52  |     Q   V         |         |         |
  1+55       0.0897      1.44  |    Q    |V        |         |         |
  2+ 0       0.0992      1.37  |    Q    | V       |         |         |
  2+ 5       0.1089      1.42  |    Q    |   V     |         |         |
  2+10       0.1211      1.77  |      Q  |    V    |         |         |
```

```
    2+15       0.1383      2.49   |        Q|      V  |         |         |
    2+20       0.1558      2.54   |         Q         V         |         |
    2+25       0.1755      2.86   |         |Q        | V       |         |
    2+30       0.2055      4.36   |         |      Q  |     V   |         |
    2+35       0.2408      5.11   |         |         Q         |V        |
    2+40       0.2751      4.98   |         |        Q|         |    V    |
    2+45       0.2957      2.99   |         |Q        |         |       V |
    2+50       0.3026      1.00   |  Q      |         |         |        V|
    2+55       0.3061      0.52   | Q       |         |         |        V|
    3+ 0       0.3083      0.31   |Q        |         |         |        V|
    3+ 5       0.3088      0.08   Q         |         |         |        V|
    3+10       0.3089      0.02   Q         |         |         |        V|
    3+15       0.3090      0.00   Q         |         |         |        V|
    3+20       0.3090      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 11/09/21 File: moval33prea3100.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Existing Condition
Unit Hydrograph Runoff
Area A

Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) = 0.009 Sq. Mi.
Length along longest watercourse = 852.00(Ft.)
Length along longest watercourse measured to centroid = 341.00 (Ft.)
Length along longest watercourse = 0.161 Mi.
Length along longest watercourse measured to centroid = 0.065 Mi.
Difference in elevation = 75.00(Ft.)
Slope along watercourse = 464.7887 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.053 Hr.
Lag time = 3.17 Min.
25% of lag time = 0.79 Min.
40% of lag time = 1.27 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]

```
        5.53              0.80                    4.42

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        5.53              1.89                   10.45

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    0.799(In)
Area Averaged 100-Year Rainfall =    1.890(In)

Point rain (area averaged) =    1.890(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    1.890(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     5.530           84.00         0.000
 Total Area Entered =      5.53(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
84.0  93.4      0.086     0.000        0.086       1.000
0.086
                                                          Sum (F) =
0.086
Area averaged mean soil loss (F) (In/Hr) =  0.086
Minimum soil loss rate ((In/Hr)) =  0.043
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.900
------------------------------------------------------------------
---

            U n i t  H y d r o g r a p h
                  FOOTHILL S-Curve
------------------------------------------------------------------
--
            Unit Hydrograph Data
------------------------------------------------------------------
---
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                           Graph %           (CFS)
------------------------------------------------------------------
---
    1   0.083       157.948        32.675              1.821
    2   0.167       315.896        53.715              2.994
    3   0.250       473.844        10.920              0.609
    4   0.333       631.792         2.028              0.113
    5   0.417       789.740         0.662              0.037
                              Sum = 100.000   Sum=       5.573
------------------------------------------------------------------


 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	0.295	0.086	(0.265)	0.209
2	0.17	1.30	0.295	0.086	(0.265)	0.209
3	0.25	1.10	0.249	0.086	(0.225)	0.164
4	0.33	1.50	0.340	0.086	(0.306)	0.254
5	0.42	1.50	0.340	0.086	(0.306)	0.254
6	0.50	1.80	0.408	0.086	(0.367)	0.322
7	0.58	1.50	0.340	0.086	(0.306)	0.254
8	0.67	1.80	0.408	0.086	(0.367)	0.322
9	0.75	1.80	0.408	0.086	(0.367)	0.322
10	0.83	1.50	0.340	0.086	(0.306)	0.254
11	0.92	1.60	0.363	0.086	(0.327)	0.277
12	1.00	1.80	0.408	0.086	(0.367)	0.322
13	1.08	2.20	0.499	0.086	(0.449)	0.413
14	1.17	2.20	0.499	0.086	(0.449)	0.413
15	1.25	2.20	0.499	0.086	(0.449)	0.413
16	1.33	2.00	0.454	0.086	(0.408)	0.368
17	1.42	2.60	0.590	0.086	(0.531)	0.504
18	1.50	2.70	0.612	0.086	(0.551)	0.527
19	1.58	2.40	0.544	0.086	(0.490)	0.459
20	1.67	2.70	0.612	0.086	(0.551)	0.527
21	1.75	3.30	0.748	0.086	(0.674)	0.663
22	1.83	3.10	0.703	0.086	(0.633)	0.617
23	1.92	2.90	0.658	0.086	(0.592)	0.572
24	2.00	3.00	0.680	0.086	(0.612)	0.595
25	2.08	3.10	0.703	0.086	(0.633)	0.617
26	2.17	4.20	0.953	0.086	(0.857)	0.867
27	2.25	5.00	1.134	0.086	(1.021)	1.048
28	2.33	3.50	0.794	0.086	(0.714)	0.708
29	2.42	6.80	1.542	0.086	(1.388)	1.456
30	2.50	7.30	1.656	0.086	(1.490)	1.570
31	2.58	8.20	1.860	0.086	(1.674)	1.774
32	2.67	5.90	1.338	0.086	(1.204)	1.252
33	2.75	2.00	0.454	0.086	(0.408)	0.368
34	2.83	1.80	0.408	0.086	(0.367)	0.322
35	2.92	1.80	0.408	0.086	(0.367)	0.322
36	3.00	0.60	0.136	0.086	(0.122)	0.050

(Loss Rate Not Used)

Sum = 100.0 Sum = 19.6

Flood volume = Effective rainfall 1.63(In)
times area 5.5(Ac.)/[(In)/(Ft.)] = 0.8(Ac.Ft)
Total soil loss = 0.26(In)
Total soil loss = 0.119(Ac.Ft)
Total rainfall = 1.89(In)
Flood volume = 32771.7 Cubic Feet
Total soil loss = 5167.0 Cubic Feet

Peak flow rate of this hydrograph = 8.939(CFS)

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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       0.0026      0.38  VQ        |         |         |
|
    0+10       0.0096      1.01  V   Q     |         |         |
|
    0+15       0.0168      1.05  V   Q     |         |         |
|
    0+20       0.0244      1.10  |V  Q     |         |         |
|
    0+25       0.0338      1.36  |V   Q    |         |         |
|
    0+30       0.0443      1.53  | V   Q   |         |         |
|
    0+35       0.0554      1.62  | V   Q   |         |         |
|
    0+40       0.0663      1.58  |  V  Q   |         |         |
|
    0+45       0.0784      1.75  |   V  Q  |         |         |
|
    0+50       0.0899      1.67  |   V Q   |         |         |
|
    0+55       0.1003      1.51  |    VQ   |         |         |
|
    1+ 0       0.1115      1.62  |    VQ   |         |         |
|
    1+ 5       0.1247      1.93  |     VQ  |         |         |
|
    1+10       0.1401      2.23  |      VQ |         |         |
|
    1+15       0.1558      2.29  |       VQ|         |         |
|
    1+20       0.1711      2.22  |       QV|         |         |
|
    1+25       0.1872      2.33  |        Q|         |         |
|
    1+30       0.2061      2.75  |         VQ        |         |
|
    1+35       0.2253      2.78  |         |Q        |         |
|
    1+40       0.2440      2.72  |         Q V       |         |
|
    1+45       0.2657      3.14  |         | Q V     |         |
|
    1+50       0.2898      3.50  |         |   QV    |         |
|
    1+55       0.3130      3.37  |         |  Q  V   |         |
|
    2+ 0       0.3355      3.27  |         |  Q   V  |         |
|
    2+ 5       0.3585      3.35  |         |  Q     V|         |
|
    2+10       0.3853      3.88  |         |    Q    V         |
|
    2+15       0.4195      4.97  |         |        Q| V       |
```

```
|
   2+20      0.4543      5.05  |         |         Q   V      |
|
   2+25      0.4924      5.53  |         |         | Q   V    |
|
   2+30      0.5461      7.80  |         |         |        V|Q
|
   2+35      0.6077      8.94  |         |         |         | V  Q
|
   2+40      0.6679      8.74  |         |         |         |   QV
|
   2+45      0.7074      5.73  |         |         | Q       |      V
|
   2+50      0.7260      2.71  |         Q         |         |       V
|
   2+55      0.7397      1.98  |      Q  |         |         |
V|
   3+ 0      0.7489      1.34  |    Q    |         |         |
V|
   3+ 5      0.7517      0.40  |Q        |         |         |
V|
   3+10      0.7522      0.08  Q         |         |         |
V|
   3+15      0.7523      0.02  Q         |         |         |
V|
   3+20      0.7523      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 11/09/21 File: moval33prea62.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Existing Condition
Unit Hydrograph Runoff

Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) = 0.009 Sq. Mi.
Length along longest watercourse = 852.00(Ft.)
Length along longest watercourse measured to centroid = 341.00 (Ft.)
Length along longest watercourse = 0.161 Mi.
Length along longest watercourse measured to centroid = 0.065 Mi.
Difference in elevation = 75.00(Ft.)
Slope along watercourse = 464.7887 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.053 Hr.
Lag time = 3.17 Min.
25% of lag time = 0.79 Min.
40% of lag time = 1.27 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]

5.53 1.09 6.03

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
5.53	2.55	14.10

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.090(In)
Area Averaged 100-Year Rainfall = 2.550(In)

Point rain (area averaged) = 1.090(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.090(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
5.530	84.00	0.000

Total Area Entered = 5.53(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	84.0	0.198	0.000	0.198	1.000	0.198

Sum (F) = 0.198
Area averaged mean soil loss (F) (In/Hr) = 0.198
Minimum soil loss rate ((In/Hr)) = 0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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	157.948	32.675	1.821
2	0.167	315.896	53.715	2.994
3	0.250	473.844	10.920	0.609
4	0.333	631.792	2.028	0.113
5	0.417	789.740	0.662	0.037
			Sum = 100.000	Sum= 5.573

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	0.065	(0.198)	0.059	0.007
2	0.17	0.60	0.078	(0.198)	0.071	0.008
3	0.25	0.60	0.078	(0.198)	0.071	0.008
4	0.33	0.60	0.078	(0.198)	0.071	0.008
5	0.42	0.60	0.078	(0.198)	0.071	0.008
6	0.50	0.70	0.092	(0.198)	0.082	0.009
7	0.58	0.70	0.092	(0.198)	0.082	0.009
8	0.67	0.70	0.092	(0.198)	0.082	0.009
9	0.75	0.70	0.092	(0.198)	0.082	0.009
10	0.83	0.70	0.092	(0.198)	0.082	0.009
11	0.92	0.70	0.092	(0.198)	0.082	0.009
12	1.00	0.80	0.105	(0.198)	0.094	0.010
13	1.08	0.80	0.105	(0.198)	0.094	0.010
14	1.17	0.80	0.105	(0.198)	0.094	0.010
15	1.25	0.80	0.105	(0.198)	0.094	0.010
16	1.33	0.80	0.105	(0.198)	0.094	0.010
17	1.42	0.80	0.105	(0.198)	0.094	0.010
18	1.50	0.80	0.105	(0.198)	0.094	0.010
19	1.58	0.80	0.105	(0.198)	0.094	0.010
20	1.67	0.80	0.105	(0.198)	0.094	0.010
21	1.75	0.80	0.105	(0.198)	0.094	0.010
22	1.83	0.80	0.105	(0.198)	0.094	0.010
23	1.92	0.80	0.105	(0.198)	0.094	0.010
24	2.00	0.90	0.118	(0.198)	0.106	0.012
25	2.08	0.80	0.105	(0.198)	0.094	0.010
26	2.17	0.90	0.118	(0.198)	0.106	0.012
27	2.25	0.90	0.118	(0.198)	0.106	0.012
28	2.33	0.90	0.118	(0.198)	0.106	0.012
29	2.42	0.90	0.118	(0.198)	0.106	0.012
30	2.50	0.90	0.118	(0.198)	0.106	0.012
31	2.58	0.90	0.118	(0.198)	0.106	0.012
32	2.67	0.90	0.118	(0.198)	0.106	0.012
33	2.75	1.00	0.131	(0.198)	0.118	0.013
34	2.83	1.00	0.131	(0.198)	0.118	0.013
35	2.92	1.00	0.131	(0.198)	0.118	0.013
36	3.00	1.00	0.131	(0.198)	0.118	0.013
37	3.08	1.00	0.131	(0.198)	0.118	0.013
38	3.17	1.10	0.144	(0.198)	0.129	0.014
39	3.25	1.10	0.144	(0.198)	0.129	0.014
40	3.33	1.10	0.144	(0.198)	0.129	0.014
41	3.42	1.20	0.157	(0.198)	0.141	0.016
42	3.50	1.30	0.170	(0.198)	0.153	0.017
43	3.58	1.40	0.183	(0.198)	0.165	0.018
44	3.67	1.40	0.183	(0.198)	0.165	0.018
45	3.75	1.50	0.196	(0.198)	0.177	0.020
46	3.83	1.50	0.196	(0.198)	0.177	0.020
47	3.92	1.60	0.209	(0.198)	0.188	0.021
48	4.00	1.60	0.209	(0.198)	0.188	0.021
49	4.08	1.70	0.222	0.198	(0.200)	0.024
50	4.17	1.80	0.235	0.198	(0.212)	0.037
51	4.25	1.90	0.249	0.198	(0.224)	0.050
52	4.33	2.00	0.262	0.198	(0.235)	0.063
53	4.42	2.10	0.275	0.198	(0.247)	0.076
54	4.50	2.10	0.275	0.198	(0.247)	0.076
55	4.58	2.20	0.288	0.198	(0.259)	0.089
56	4.67	2.30	0.301	0.198	(0.271)	0.102
57	4.75	2.40	0.314	0.198	(0.283)	0.116

58	4.83	2.40	0.314	0.198	(0.283)	0.116
59	4.92	2.50	0.327	0.198	(0.294)	0.129
60	5.00	2.60	0.340	0.198	(0.306)	0.142
61	5.08	3.10	0.405	0.198	(0.365)	0.207
62	5.17	3.60	0.471	0.198	(0.424)	0.272
63	5.25	3.90	0.510	0.198	(0.459)	0.312
64	5.33	4.20	0.549	0.198	(0.494)	0.351
65	5.42	4.70	0.615	0.198	(0.553)	0.416
66	5.50	5.60	0.732	0.198	(0.659)	0.534
67	5.58	1.90	0.249	0.198	(0.224)	0.050
68	5.67	0.90	0.118	(0.198)	0.106	0.012
69	5.75	0.60	0.078	(0.198)	0.071	0.008
70	5.83	0.50	0.065	(0.198)	0.059	0.007
71	5.92	0.30	0.039	(0.198)	0.035	0.004
72	6.00	0.20	0.026	(0.198)	0.024	0.003

(Loss Rate Not Used)

Sum = 100.0 Sum = 3.8

Flood volume = Effective rainfall 0.31(In)
times area 5.5(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 0.78(In)
Total soil loss = 0.357(Ac.Ft)
Total rainfall = 1.09(In)
Flood volume = 6319.0 Cubic Feet
Total soil loss = 15561.2 Cubic Feet

```
      ------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =      2.479(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      0.01  Q         |         |         |
|
    0+10       0.0003      0.03  Q         |         |         |
|
    0+15       0.0006      0.04  Q         |         |         |
|
    0+20       0.0009      0.04  Q         |         |         |
|
    0+25       0.0012      0.04  Q         |         |         |
|
    0+30       0.0015      0.05  Q         |         |         |
|
    0+35       0.0019      0.05  Q         |         |         |
|
    0+40       0.0022      0.05  Q         |         |         |
|
    0+45       0.0026      0.05  Q         |         |         |
```

0+50	0.0029	0.05	Q
0+55	0.0033	0.05	Q
1+ 0	0.0036	0.05	QV
1+ 5	0.0040	0.06	QV
1+10	0.0044	0.06	QV
1+15	0.0048	0.06	QV
1+20	0.0052	0.06	QV
1+25	0.0056	0.06	QV
1+30	0.0060	0.06	QV
1+35	0.0064	0.06	QV
1+40	0.0068	0.06	QV
1+45	0.0072	0.06	QV
1+50	0.0076	0.06	Q V
1+55	0.0080	0.06	Q V
2+ 0	0.0085	0.06	Q V
2+ 5	0.0089	0.06	Q V
2+10	0.0093	0.06	Q V
2+15	0.0098	0.06	Q V
2+20	0.0102	0.07	Q V
2+25	0.0107	0.07	Q V
2+30	0.0111	0.07	Q V
2+35	0.0116	0.07	Q V
2+40	0.0120	0.07	Q V
2+45	0.0125	0.07	Q V
2+50	0.0130	0.07	Q V
2+55	0.0135	0.07	Q V
3+ 0	0.0140	0.07	Q V
3+ 5	0.0145	0.07	Q V
3+10	0.0150	0.08	Q V
3+15	0.0156	0.08	Q V

```
|
    3+20       0.0161      0.08  Q   V     |         |         |
|
    3+25       0.0167      0.08  Q   V     |         |         |
|
    3+30       0.0173      0.09  Q   V     |         |         |
|
    3+35       0.0180      0.10  Q   V     |         |         |
|
    3+40       0.0186      0.10  Q    V    |         |         |
|
    3+45       0.0194      0.10  Q    V    |         |         |
|
    3+50       0.0201      0.11  Q    V    |         |         |
|
    3+55       0.0209      0.11  Q    V    |         |         |
|
    4+ 0       0.0217      0.12  Q    V    |         |         |
|
    4+ 5       0.0225      0.12  Q     V   |         |         |
|
    4+10       0.0236      0.16  Q     V   |         |         |
|
    4+15       0.0251      0.22  Q     V   |         |         |
|
    4+20       0.0271      0.29  |Q     V  |         |         |
|
    4+25       0.0296      0.36  |Q      V |         |         |
|
    4+30       0.0325      0.41  |Q      V |         |         |
|
    4+35       0.0355      0.45  |Q       V|         |         |
|
    4+40       0.0391      0.51  | Q       V         |         |
|
    4+45       0.0431      0.58  | Q       |V        |         |
|
    4+50       0.0474      0.63  | Q       |  V      |         |
|
    4+55       0.0520      0.67  | Q       |   V     |         |
|
    5+ 0       0.0570      0.73  | Q       |    V    |         |
|
    5+ 5       0.0632      0.90  |  Q      |      V  |         |
|
    5+10       0.0716      1.22  |   Q     |        V|         |
|
    5+15       0.0822      1.53  |     Q   |         | V       |
|
    5+20       0.0943      1.77  |      Q  |         |     V   |
|
    5+25       0.1084      2.04  |       Q |         |        V|
|
    5+30       0.1255      2.48  |        Q|         |         |   V
|
    5+35       0.1392      2.00  |      Q  |         |         |       V
|
    5+40       0.1430      0.56  | Q       |         |         |
V|
    5+45       0.1441      0.16  Q         |         |         |
```

```
V|
    5+50       0.1446      0.07  Q          |          |          |
V|
    5+55       0.1448      0.03  Q          |          |          |
V|
    6+ 0       0.1450      0.02  Q          |          |          |
V|
    6+ 5       0.1450      0.01  Q          |          |          |
V|
    6+10       0.1451      0.00  Q          |          |          |
V|
    6+15       0.1451      0.00  Q          |          |          |
V|
    6+20       0.1451      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 11/09/21 File: moval33prea65.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Existing Condition
Unit Hydrograph Runoff

Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) = 0.009 Sq. Mi.
Length along longest watercourse = 852.00(Ft.)
Length along longest watercourse measured to centroid = 341.00 (Ft.)
Length along longest watercourse = 0.161 Mi.
Length along longest watercourse measured to centroid = 0.065 Mi.
Difference in elevation = 75.00(Ft.)
Slope along watercourse = 464.7887 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.053 Hr.
Lag time = 3.17 Min.
25% of lag time = 0.79 Min.
40% of lag time = 1.27 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]

```
        5.53              1.09                    6.03

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
              5.53              2.55                   14.10

      STORM EVENT (YEAR) =    5.00
      Area Averaged 2-Year Rainfall =    1.090(In)
      Area Averaged 100-Year Rainfall =    2.550(In)

      Point rain (area averaged) =    1.432(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    1.432(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
           5.530           84.00         0.000
       Total Area Entered =      5.53(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
      84.0  84.0      0.198     0.000        0.198       1.000
0.198
                                                       Sum (F) =
0.198
      Area averaged mean soil loss (F) (In/Hr) =  0.198
      Minimum soil loss rate ((In/Hr)) =  0.099
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.900
      -----------------------------------------------------------------
---

                  U n i t  H y d r o g r a p h
                        FOOTHILL S-Curve
      -----------------------------------------------------------------
--
                  Unit Hydrograph Data
      -----------------------------------------------------------------
---
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                           Graph %           (CFS)
      -----------------------------------------------------------------
---
          1   0.083        157.948         32.675              1.821
          2   0.167        315.896         53.715              2.994
          3   0.250        473.844         10.920              0.609
          4   0.333        631.792          2.028              0.113
          5   0.417        789.740          0.662              0.037
                                      Sum = 100.000   Sum=       5.573
----------------------------------------------------------------------
```

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	0.086	(0.198)	0.077	0.009
2	0.17	0.60	0.103	(0.198)	0.093	0.010
3	0.25	0.60	0.103	(0.198)	0.093	0.010
4	0.33	0.60	0.103	(0.198)	0.093	0.010
5	0.42	0.60	0.103	(0.198)	0.093	0.010
6	0.50	0.70	0.120	(0.198)	0.108	0.012
7	0.58	0.70	0.120	(0.198)	0.108	0.012
8	0.67	0.70	0.120	(0.198)	0.108	0.012
9	0.75	0.70	0.120	(0.198)	0.108	0.012
10	0.83	0.70	0.120	(0.198)	0.108	0.012
11	0.92	0.70	0.120	(0.198)	0.108	0.012
12	1.00	0.80	0.137	(0.198)	0.124	0.014
13	1.08	0.80	0.137	(0.198)	0.124	0.014
14	1.17	0.80	0.137	(0.198)	0.124	0.014
15	1.25	0.80	0.137	(0.198)	0.124	0.014
16	1.33	0.80	0.137	(0.198)	0.124	0.014
17	1.42	0.80	0.137	(0.198)	0.124	0.014
18	1.50	0.80	0.137	(0.198)	0.124	0.014
19	1.58	0.80	0.137	(0.198)	0.124	0.014
20	1.67	0.80	0.137	(0.198)	0.124	0.014
21	1.75	0.80	0.137	(0.198)	0.124	0.014
22	1.83	0.80	0.137	(0.198)	0.124	0.014
23	1.92	0.80	0.137	(0.198)	0.124	0.014
24	2.00	0.90	0.155	(0.198)	0.139	0.015
25	2.08	0.80	0.137	(0.198)	0.124	0.014
26	2.17	0.90	0.155	(0.198)	0.139	0.015
27	2.25	0.90	0.155	(0.198)	0.139	0.015
28	2.33	0.90	0.155	(0.198)	0.139	0.015
29	2.42	0.90	0.155	(0.198)	0.139	0.015
30	2.50	0.90	0.155	(0.198)	0.139	0.015
31	2.58	0.90	0.155	(0.198)	0.139	0.015
32	2.67	0.90	0.155	(0.198)	0.139	0.015
33	2.75	1.00	0.172	(0.198)	0.155	0.017
34	2.83	1.00	0.172	(0.198)	0.155	0.017
35	2.92	1.00	0.172	(0.198)	0.155	0.017
36	3.00	1.00	0.172	(0.198)	0.155	0.017
37	3.08	1.00	0.172	(0.198)	0.155	0.017
38	3.17	1.10	0.189	(0.198)	0.170	0.019
39	3.25	1.10	0.189	(0.198)	0.170	0.019
40	3.33	1.10	0.189	(0.198)	0.170	0.019
41	3.42	1.20	0.206	(0.198)	0.186	0.021
42	3.50	1.30	0.223	0.198	(0.201)	0.025
43	3.58	1.40	0.241	0.198	(0.217)	0.042
44	3.67	1.40	0.241	0.198	(0.217)	0.042
45	3.75	1.50	0.258	0.198	(0.232)	0.059
46	3.83	1.50	0.258	0.198	(0.232)	0.059
47	3.92	1.60	0.275	0.198	(0.247)	0.077
48	4.00	1.60	0.275	0.198	(0.247)	0.077
49	4.08	1.70	0.292	0.198	(0.263)	0.094
50	4.17	1.80	0.309	0.198	(0.278)	0.111
51	4.25	1.90	0.326	0.198	(0.294)	0.128
52	4.33	2.00	0.344	0.198	(0.309)	0.145
53	4.42	2.10	0.361	0.198	(0.325)	0.162
54	4.50	2.10	0.361	0.198	(0.325)	0.162
55	4.58	2.20	0.378	0.198	(0.340)	0.180
56	4.67	2.30	0.395	0.198	(0.356)	0.197
57	4.75	2.40	0.412	0.198	(0.371)	0.214

```
  58   4.83     2.40      0.412          0.198    (  0.371)        0.214
  59   4.92     2.50      0.430          0.198    (  0.387)        0.231
  60   5.00     2.60      0.447          0.198    (  0.402)        0.248
  61   5.08     3.10      0.533          0.198    (  0.479)        0.334
  62   5.17     3.60      0.619          0.198    (  0.557)        0.420
  63   5.25     3.90      0.670          0.198    (  0.603)        0.472
  64   5.33     4.20      0.722          0.198    (  0.650)        0.523
  65   5.42     4.70      0.808          0.198    (  0.727)        0.609
  66   5.50     5.60      0.962          0.198    (  0.866)        0.764
  67   5.58     1.90      0.326          0.198    (  0.294)        0.128
  68   5.67     0.90      0.155       (  0.198)       0.139        0.015
  69   5.75     0.60      0.103       (  0.198)       0.093        0.010
  70   5.83     0.50      0.086       (  0.198)       0.077        0.009
  71   5.92     0.30      0.052       (  0.198)       0.046        0.005
  72   6.00     0.20      0.034       (  0.198)       0.031        0.003
             (Loss Rate Not Used)
     Sum =     100.0                              Sum =     6.3
      Flood volume = Effective rainfall      0.53(In)
       times area       5.5(Ac.)/[(In)/(Ft.)] =      0.2(Ac.Ft)
      Total soil loss =      0.90(In)
      Total soil loss =     0.416(Ac.Ft)
      Total rainfall =      1.43(In)
      Flood volume =       10621.2 Cubic Feet
      Total soil loss =      18123.4 Cubic Feet
      ------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =      3.604(CFS)
      ------------------------------------------------------------------
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      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                           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       0.0004      0.04  Q         |         |         |
|
    0+15       0.0008      0.05  Q         |         |         |
|
    0+20       0.0012      0.06  Q         |         |         |
|
    0+25       0.0016      0.06  Q         |         |         |
|
    0+30       0.0020      0.06  Q         |         |         |
|
    0+35       0.0025      0.07  Q         |         |         |
|
    0+40       0.0029      0.07  Q         |         |         |
|
    0+45       0.0034      0.07  Q         |         |         |
```

0+50	0.0038	0.07	Q	|	|	|
0+55	0.0043	0.07	Q	|	|	|
1+ 0	0.0048	0.07	Q	|	|	|
1+ 5	0.0053	0.08	Q	|	|	|
1+10	0.0058	0.08	Q	|	|	|
1+15	0.0064	0.08	QV	|	|	|
1+20	0.0069	0.08	QV	|	|	|
1+25	0.0074	0.08	QV	|	|	|
1+30	0.0079	0.08	QV	|	|	|
1+35	0.0085	0.08	QV	|	|	|
1+40	0.0090	0.08	QV	|	|	|
1+45	0.0095	0.08	QV	|	|	|
1+50	0.0100	0.08	QV	|	|	|
1+55	0.0106	0.08	QV	|	|	|
2+ 0	0.0111	0.08	QV	|	|	|
2+ 5	0.0117	0.08	QV	|	|	|
2+10	0.0122	0.08	Q V	|	|	|
2+15	0.0128	0.09	Q V	|	|	|
2+20	0.0134	0.09	Q V	|	|	|
2+25	0.0140	0.09	Q V	|	|	|
2+30	0.0146	0.09	Q V	|	|	|
2+35	0.0152	0.09	Q V	|	|	|
2+40	0.0158	0.09	Q V	|	|	|
2+45	0.0164	0.09	Q V	|	|	|
2+50	0.0171	0.09	Q V	|	|	|
2+55	0.0177	0.10	Q V	|	|	|
3+ 0	0.0184	0.10	Q V	|	|	|
3+ 5	0.0190	0.10	Q V	|	|	|
3+10	0.0197	0.10	Q V	|	|	|
3+15	0.0204	0.10	Q V	|	|	|

```
|
     3+20      0.0212      0.11  Q  V       |         |         |
|
     3+25      0.0219      0.11  Q  V       |         |         |
|
     3+30      0.0227      0.12  Q  V       |         |         |
|
     3+35      0.0239      0.17  Q  V       |         |         |
|
     3+40      0.0254      0.22  Q   V      |         |         |
|
     3+45      0.0272      0.26  |Q  V      |         |         |
|
     3+50      0.0294      0.32  |Q  V      |         |         |
|
     3+55      0.0319      0.36  |Q   V     |         |         |
|
     4+ 0      0.0347      0.41  |Q   V     |         |         |
|
     4+ 5      0.0379      0.46  |Q    V    |         |         |
|
     4+10      0.0416      0.54  | Q   V    |         |         |
|
     4+15      0.0460      0.63  | Q    V   |         |         |
|
     4+20      0.0510      0.73  | Q     V  |         |         |
|
     4+25      0.0567      0.83  |  Q     V|         |         |
|
     4+30      0.0628      0.89  |  Q      V          |         |
|
     4+35      0.0692      0.93  |  Q      |V         |         |
|
     4+40      0.0763      1.02  |   Q     | V        |         |
|
     4+45      0.0839      1.11  |   Q     |  V       |         |
|
     4+50      0.0920      1.18  |   Q     |    V     |         |
|
     4+55      0.1004      1.22  |   Q     |     V    |         |
|
     5+ 0      0.1094      1.31  |    Q    |      V   |         |
|
     5+ 5      0.1199      1.53  |     Q   |        V|         |
|
     5+10      0.1334      1.95  |      Q  |         |V        |
|
     5+15      0.1496      2.36  |        Q|         |   V     |
|
     5+20      0.1680      2.67  |         Q         |      V  |
|
     5+25      0.1888      3.02  |         | Q       |         V
|
     5+30      0.2137      3.60  |         |   Q     |         |    V
|
     5+35      0.2341      2.97  |         |Q        |         |       V
|
     5+40      0.2408      0.97  |  Q      |         |         |
V|
     5+45      0.2425      0.25  |Q        |         |         |
```

```
V|
    5+50        0.2432      0.10  Q          |         |         |
V|
    5+55        0.2435      0.05  Q          |         |         |
V|
    6+ 0        0.2437      0.03  Q          |         |         |
V|
    6+ 5        0.2438      0.01  Q          |         |         |
V|
    6+10        0.2438      0.00  Q          |         |         |
V|
    6+15        0.2438      0.00  Q          |         |         |
V|
    6+20        0.2438      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 02/19/21 File: moval33prea610.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Existing Condition
Unit Hydrograph Runoff

Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) = 0.009 Sq. Mi.
Length along longest watercourse = 852.00(Ft.)
Length along longest watercourse measured to centroid = 341.00(Ft.)
Length along longest watercourse = 0.161 Mi.
Length along longest watercourse measured to centroid = 0.065 Mi.
Difference in elevation = 75.00(Ft.)
Slope along watercourse = 464.7887 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.053 Hr.
Lag time = 3.17 Min.
25% of lag time = 0.79 Min.
40% of lag time = 1.27 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]
5.53	1.09	6.03

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
5.53	2.55	14.10

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.090(In)
Area Averaged 100-Year Rainfall = 2.550(In)

Point rain (area averaged) = 1.691(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.691(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
5.530	84.00	0.000

Total Area Entered = 5.53(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	84.0	0.198	0.000	0.198	1.000	0.198
					Sum (F) =	0.198

Area averaged mean soil loss (F) (In/Hr) = 0.198
Minimum soil loss rate ((In/Hr)) = 0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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	157.948	32.675	1.821
2	0.167	315.896	53.715	2.994
3	0.250	473.844	10.920	0.609
4	0.333	631.792	2.028	0.113
5	0.417	789.740	0.662	0.037
			Sum = 100.000	Sum= 5.573

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	0.101	(0.198)	0.091	0.010
2	0.17	0.60	0.122	(0.198)	0.110	0.012
3	0.25	0.60	0.122	(0.198)	0.110	0.012
4	0.33	0.60	0.122	(0.198)	0.110	0.012
5	0.42	0.60	0.122	(0.198)	0.110	0.012
6	0.50	0.70	0.142	(0.198)	0.128	0.014
7	0.58	0.70	0.142	(0.198)	0.128	0.014
8	0.67	0.70	0.142	(0.198)	0.128	0.014
9	0.75	0.70	0.142	(0.198)	0.128	0.014
10	0.83	0.70	0.142	(0.198)	0.128	0.014
11	0.92	0.70	0.142	(0.198)	0.128	0.014
12	1.00	0.80	0.162	(0.198)	0.146	0.016
13	1.08	0.80	0.162	(0.198)	0.146	0.016
14	1.17	0.80	0.162	(0.198)	0.146	0.016
15	1.25	0.80	0.162	(0.198)	0.146	0.016
16	1.33	0.80	0.162	(0.198)	0.146	0.016
17	1.42	0.80	0.162	(0.198)	0.146	0.016
18	1.50	0.80	0.162	(0.198)	0.146	0.016
19	1.58	0.80	0.162	(0.198)	0.146	0.016
20	1.67	0.80	0.162	(0.198)	0.146	0.016

21	1.75	0.80	0.162	(0.198)	0.146	0.016
22	1.83	0.80	0.162	(0.198)	0.146	0.016
23	1.92	0.80	0.162	(0.198)	0.146	0.016
24	2.00	0.90	0.183	(0.198)	0.164	0.018
25	2.08	0.80	0.162	(0.198)	0.146	0.016
26	2.17	0.90	0.183	(0.198)	0.164	0.018
27	2.25	0.90	0.183	(0.198)	0.164	0.018
28	2.33	0.90	0.183	(0.198)	0.164	0.018
29	2.42	0.90	0.183	(0.198)	0.164	0.018
30	2.50	0.90	0.183	(0.198)	0.164	0.018
31	2.58	0.90	0.183	(0.198)	0.164	0.018
32	2.67	0.90	0.183	(0.198)	0.164	0.018
33	2.75	1.00	0.203	(0.198)	0.183	0.020
34	2.83	1.00	0.203	(0.198)	0.183	0.020
35	2.92	1.00	0.203	(0.198)	0.183	0.020
36	3.00	1.00	0.203	(0.198)	0.183	0.020
37	3.08	1.00	0.203	(0.198)	0.183	0.020
38	3.17	1.10	0.223	0.198	(0.201)	0.025
39	3.25	1.10	0.223	0.198	(0.201)	0.025
40	3.33	1.10	0.223	0.198	(0.201)	0.025
41	3.42	1.20	0.243	0.198	(0.219)	0.045
42	3.50	1.30	0.264	0.198	(0.237)	0.065
43	3.58	1.40	0.284	0.198	(0.256)	0.086
44	3.67	1.40	0.284	0.198	(0.256)	0.086
45	3.75	1.50	0.304	0.198	(0.274)	0.106
46	3.83	1.50	0.304	0.198	(0.274)	0.106
47	3.92	1.60	0.325	0.198	(0.292)	0.126
48	4.00	1.60	0.325	0.198	(0.292)	0.126
49	4.08	1.70	0.345	0.198	(0.310)	0.146
50	4.17	1.80	0.365	0.198	(0.329)	0.167
51	4.25	1.90	0.385	0.198	(0.347)	0.187
52	4.33	2.00	0.406	0.198	(0.365)	0.207
53	4.42	2.10	0.426	0.198	(0.383)	0.228
54	4.50	2.10	0.426	0.198	(0.383)	0.228
55	4.58	2.20	0.446	0.198	(0.402)	0.248
56	4.67	2.30	0.467	0.198	(0.420)	0.268
57	4.75	2.40	0.487	0.198	(0.438)	0.288
58	4.83	2.40	0.487	0.198	(0.438)	0.288
59	4.92	2.50	0.507	0.198	(0.456)	0.309
60	5.00	2.60	0.527	0.198	(0.475)	0.329
61	5.08	3.10	0.629	0.198	(0.566)	0.431
62	5.17	3.60	0.730	0.198	(0.657)	0.532
63	5.25	3.90	0.791	0.198	(0.712)	0.593
64	5.33	4.20	0.852	0.198	(0.767)	0.654
65	5.42	4.70	0.954	0.198	(0.858)	0.755
66	5.50	5.60	1.136	0.198	(1.022)	0.938
67	5.58	1.90	0.385	0.198	(0.347)	0.187
68	5.67	0.90	0.183	(0.198)	0.164	0.018
69	5.75	0.60	0.122	(0.198)	0.110	0.012
70	5.83	0.50	0.101	(0.198)	0.091	0.010
71	5.92	0.30	0.061	(0.198)	0.055	0.006
72	6.00	0.20	0.041	(0.198)	0.037	0.004

(Loss Rate Not Used)

Sum = 100.0 Sum = 8.5

Flood volume = Effective rainfall 0.70(In)
times area 5.5(Ac.)/[(In)/(Ft.)] = 0.3(Ac.Ft)
Total soil loss = 0.99(In)
Total soil loss = 0.454(Ac.Ft)
Total rainfall = 1.69(In)
Flood volume = 14145.7 Cubic Feet
Total soil loss = 19791.7 Cubic Feet

Peak flow rate of this hydrograph = 4.455(CFS)

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      --------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          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       0.0005      0.05  Q         |         |         |         |
  0+15       0.0009      0.06  Q         |         |         |         |
  0+20       0.0014      0.07  Q         |         |         |         |
  0+25       0.0019      0.07  Q         |         |         |         |
  0+30       0.0024      0.07  Q         |         |         |         |
  0+35       0.0029      0.08  Q         |         |         |         |
  0+40       0.0034      0.08  Q         |         |         |         |
  0+45       0.0040      0.08  Q         |         |         |         |
  0+50       0.0045      0.08  Q         |         |         |         |
  0+55       0.0051      0.08  Q         |         |         |         |
  1+ 0       0.0056      0.08  Q         |         |         |         |
  1+ 5       0.0063      0.09  Q         |         |         |         |
  1+10       0.0069      0.09  Q         |         |         |         |
  1+15       0.0075      0.09  Q         |         |         |         |
  1+20       0.0081      0.09  QV        |         |         |         |
  1+25       0.0087      0.09  QV        |         |         |         |
  1+30       0.0094      0.09  QV        |         |         |         |
  1+35       0.0100      0.09  QV        |         |         |         |
  1+40       0.0106      0.09  QV        |         |         |         |
  1+45       0.0112      0.09  QV        |         |         |         |
  1+50       0.0119      0.09  QV        |         |         |         |
  1+55       0.0125      0.09  QV        |         |         |         |
  2+ 0       0.0131      0.09  QV        |         |         |         |
  2+ 5       0.0138      0.10  QV        |         |         |         |
  2+10       0.0145      0.10  QV        |         |         |         |
  2+15       0.0151      0.10  QV        |         |         |         |
  2+20       0.0158      0.10  QV        |         |         |         |
  2+25       0.0165      0.10  Q V       |         |         |         |
  2+30       0.0173      0.10  Q V       |         |         |         |
  2+35       0.0180      0.10  Q V       |         |         |         |
  2+40       0.0187      0.10  Q V       |         |         |         |
  2+45       0.0194      0.11  Q V       |         |         |         |
  2+50       0.0201      0.11  Q V       |         |         |         |
  2+55       0.0209      0.11  Q V       |         |         |         |
  3+ 0       0.0217      0.11  Q V       |         |         |         |
  3+ 5       0.0225      0.11  Q V       |         |         |         |
  3+10       0.0233      0.12  Q V       |         |         |         |
  3+15       0.0242      0.13  Q V       |         |         |         |
  3+20       0.0252      0.14  Q  V      |         |         |         |
  3+25       0.0264      0.17  Q  V      |         |         |         |
  3+30       0.0283      0.27  |Q V      |         |         |         |
  3+35       0.0309      0.38  |Q V      |         |         |         |
  3+40       0.0341      0.46  |Q  V     |         |         |         |
  3+45       0.0376      0.51  | Q V     |         |         |         |
  3+50       0.0415      0.57  | Q  V    |         |         |         |
  3+55       0.0458      0.62  | Q  V    |         |         |         |
  4+ 0       0.0506      0.69  | Q   V   |         |         |         |
  4+ 5       0.0557      0.74  | Q   V   |         |         |         |
  4+10       0.0614      0.84  |  Q   V  |         |         |         |
  4+15       0.0680      0.95  |  Q    V |         |         |         |
  4+20       0.0753      1.06  |   Q    V|         |         |         |
  4+25       0.0833      1.17  |   Q     V         |         |         |
```

```
     4+30      0.0920      1.25  |    Q    |V        |         |         |
     4+35      0.1009      1.30  |    Q    | V       |         |         |
     4+40      0.1106      1.40  |    Q    |  V      |         |         |
     4+45      0.1210      1.51  |     Q   |   V     |         |         |
     4+50      0.1320      1.59  |     Q   |     V   |         |         |
     4+55      0.1433      1.64  |     Q   |      V  |         |         |
     5+ 0      0.1553      1.74  |     Q   |        V|         |         |
     5+ 5      0.1691      2.00  |       Q |         V         |         |
     5+10      0.1863      2.50  |         Q         | V       |         |
     5+15      0.2069      2.98  |         |Q        |    V    |         |
     5+20      0.2299      3.35  |         |  Q      |       V |         |
     5+25      0.2559      3.77  |         |    Q    |         |V        |
     5+30      0.2866      4.45  |         |      Q  |         |    V    |
     5+35      0.3121      3.71  |         |   Q     |         |       V |
     5+40      0.3209      1.27  |    Q    |         |         |        V|
     5+45      0.3231      0.32  |Q        |         |         |        V|
     5+50      0.3240      0.12  Q         |         |         |        V|
     5+55      0.3244      0.06  Q         |         |         |        V|
     6+ 0      0.3246      0.03  Q         |         |         |        V|
     6+ 5      0.3247      0.02  Q         |         |         |        V|
     6+10      0.3247      0.00  Q         |         |         |        V|
     6+15      0.3247      0.00  Q         |         |         |        V|
     6+20      0.3247      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

           Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
8.2
                 Study date  11/09/21 File: moval33prea6100.out

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


      Program License Serial Number 6232

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

       English Units used in output format



      -----------------------------------------------------------------
---
      Gateway Heights
      Existing Condition
      Unit Hydrograph Runoff
      Area A
      -----------------------------------------------------------------
--
      Drainage Area =       5.53(Ac.)  =      0.009 Sq. Mi.
      Drainage Area for Depth-Area Areal Adjustment =       5.53(Ac.)  =
0.009 Sq. Mi.
      Length along longest watercourse =     852.00(Ft.)
      Length along longest watercourse measured to centroid =     341.00
(Ft.)
      Length along longest watercourse =      0.161 Mi.
      Length along longest watercourse measured to centroid =      0.065
Mi.
      Difference in elevation =      75.00(Ft.)
      Slope along watercourse =    464.7887 Ft./Mi.
      Average Manning's 'N' = 0.040
      Lag time =    0.053 Hr.
      Lag time =     3.17 Min.
      25% of lag time =     0.79 Min.
      40% of lag time =     1.27 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]
```

5.53 1.09 6.03

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
5.53	2.55	14.10

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.090(In)
Area Averaged 100-Year Rainfall = 2.550(In)

Point rain (area averaged) = 2.550(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.550(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
5.530	84.00	0.000

Total Area Entered = 5.53(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	93.4	0.086	0.000	0.086	1.000	0.086
					Sum (F) =	0.086

Area averaged mean soil loss (F) (In/Hr) = 0.086
Minimum soil loss rate ((In/Hr)) = 0.043
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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	157.948	32.675	1.821
2	0.167	315.896	53.715	2.994
3	0.250	473.844	10.920	0.609
4	0.333	631.792	2.028	0.113
5	0.417	789.740	0.662	0.037
			Sum = 100.000	Sum= 5.573

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	0.153	0.086	(0.138)	0.067
2	0.17	0.60	0.184	0.086	(0.165)	0.098
3	0.25	0.60	0.184	0.086	(0.165)	0.098
4	0.33	0.60	0.184	0.086	(0.165)	0.098
5	0.42	0.60	0.184	0.086	(0.165)	0.098
6	0.50	0.70	0.214	0.086	(0.193)	0.128
7	0.58	0.70	0.214	0.086	(0.193)	0.128
8	0.67	0.70	0.214	0.086	(0.193)	0.128
9	0.75	0.70	0.214	0.086	(0.193)	0.128
10	0.83	0.70	0.214	0.086	(0.193)	0.128
11	0.92	0.70	0.214	0.086	(0.193)	0.128
12	1.00	0.80	0.245	0.086	(0.220)	0.159
13	1.08	0.80	0.245	0.086	(0.220)	0.159
14	1.17	0.80	0.245	0.086	(0.220)	0.159
15	1.25	0.80	0.245	0.086	(0.220)	0.159
16	1.33	0.80	0.245	0.086	(0.220)	0.159
17	1.42	0.80	0.245	0.086	(0.220)	0.159
18	1.50	0.80	0.245	0.086	(0.220)	0.159
19	1.58	0.80	0.245	0.086	(0.220)	0.159
20	1.67	0.80	0.245	0.086	(0.220)	0.159
21	1.75	0.80	0.245	0.086	(0.220)	0.159
22	1.83	0.80	0.245	0.086	(0.220)	0.159
23	1.92	0.80	0.245	0.086	(0.220)	0.159
24	2.00	0.90	0.275	0.086	(0.248)	0.190
25	2.08	0.80	0.245	0.086	(0.220)	0.159
26	2.17	0.90	0.275	0.086	(0.248)	0.190
27	2.25	0.90	0.275	0.086	(0.248)	0.190
28	2.33	0.90	0.275	0.086	(0.248)	0.190
29	2.42	0.90	0.275	0.086	(0.248)	0.190
30	2.50	0.90	0.275	0.086	(0.248)	0.190
31	2.58	0.90	0.275	0.086	(0.248)	0.190
32	2.67	0.90	0.275	0.086	(0.248)	0.190
33	2.75	1.00	0.306	0.086	(0.275)	0.220
34	2.83	1.00	0.306	0.086	(0.275)	0.220
35	2.92	1.00	0.306	0.086	(0.275)	0.220
36	3.00	1.00	0.306	0.086	(0.275)	0.220
37	3.08	1.00	0.306	0.086	(0.275)	0.220
38	3.17	1.10	0.337	0.086	(0.303)	0.251
39	3.25	1.10	0.337	0.086	(0.303)	0.251
40	3.33	1.10	0.337	0.086	(0.303)	0.251
41	3.42	1.20	0.367	0.086	(0.330)	0.281
42	3.50	1.30	0.398	0.086	(0.358)	0.312
43	3.58	1.40	0.428	0.086	(0.386)	0.343
44	3.67	1.40	0.428	0.086	(0.386)	0.343
45	3.75	1.50	0.459	0.086	(0.413)	0.373
46	3.83	1.50	0.459	0.086	(0.413)	0.373
47	3.92	1.60	0.490	0.086	(0.441)	0.404
48	4.00	1.60	0.490	0.086	(0.441)	0.404
49	4.08	1.70	0.520	0.086	(0.468)	0.434
50	4.17	1.80	0.551	0.086	(0.496)	0.465
51	4.25	1.90	0.581	0.086	(0.523)	0.496
52	4.33	2.00	0.612	0.086	(0.551)	0.526
53	4.42	2.10	0.643	0.086	(0.578)	0.557
54	4.50	2.10	0.643	0.086	(0.578)	0.557
55	4.58	2.20	0.673	0.086	(0.606)	0.587
56	4.67	2.30	0.704	0.086	(0.633)	0.618
57	4.75	2.40	0.734	0.086	(0.661)	0.649

58	4.83	2.40	0.734	0.086	(0.661)	0.649
59	4.92	2.50	0.765	0.086	(0.688)	0.679
60	5.00	2.60	0.796	0.086	(0.716)	0.710
61	5.08	3.10	0.949	0.086	(0.854)	0.863
62	5.17	3.60	1.102	0.086	(0.991)	1.016
63	5.25	3.90	1.193	0.086	(1.074)	1.108
64	5.33	4.20	1.285	0.086	(1.157)	1.199
65	5.42	4.70	1.438	0.086	(1.294)	1.352
66	5.50	5.60	1.714	0.086	(1.542)	1.628
67	5.58	1.90	0.581	0.086	(0.523)	0.496
68	5.67	0.90	0.275	0.086	(0.248)	0.190
69	5.75	0.60	0.184	0.086	(0.165)	0.098
70	5.83	0.50	0.153	0.086	(0.138)	0.067
71	5.92	0.30	0.092	(0.086)	0.083	0.009
72	6.00	0.20	0.061	(0.086)	0.055	0.006

(Loss Rate Not Used)
Sum = 100.0 Sum = 24.5

```
     Flood volume = Effective rainfall      2.04(In)
      times area       5.5(Ac.)/[(In)/(Ft.)] =       0.9(Ac.Ft)
     Total soil loss =      0.51(In)
     Total soil loss =     0.236(Ac.Ft)
     Total rainfall =      2.55(In)
     Flood volume =       40910.1 Cubic Feet
     Total soil loss =       10277.3 Cubic Feet
     ------------------------------------------------------------------
--
      Peak flow rate of this hydrograph =      7.909(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       0.0008      0.12  Q         |         |         |
|
    0+10       0.0035      0.38  VQ        |         |         |
|
    0+15       0.0070      0.51  V Q       |         |         |
|
    0+20       0.0107      0.54  V Q       |         |         |
|
    0+25       0.0144      0.54  V Q       |         |         |
|
    0+30       0.0186      0.60  V Q       |         |         |
|
    0+35       0.0233      0.69  V Q       |         |         |
|
    0+40       0.0282      0.71  |VQ       |         |         |
|
    0+45       0.0332      0.71  |VQ       |         |         |
```

```
|
    0+50       0.0381      0.72  |VQ       |         |         |
|
    0+55       0.0430      0.72  |VQ       |         |         |
|
    1+ 0       0.0483      0.77  | VQ      |         |         |
|
    1+ 5       0.0543      0.86  | VQ      |         |         |
|
    1+10       0.0604      0.88  | VQ      |         |         |
|
    1+15       0.0665      0.89  | VQ      |         |         |
|
    1+20       0.0726      0.89  |  Q      |         |         |
|
    1+25       0.0787      0.89  |  Q      |         |         |
|
    1+30       0.0848      0.89  |  Q      |         |         |
|
    1+35       0.0909      0.89  |  Q      |         |         |
|
    1+40       0.0970      0.89  |  QV     |         |         |
|
    1+45       0.1031      0.89  |  QV     |         |         |
|
    1+50       0.1092      0.89  |  QV     |         |         |
|
    1+55       0.1153      0.89  |  QV     |         |         |
|
    2+ 0       0.1218      0.94  |  Q V    |         |         |
|
    2+ 5       0.1285      0.98  |  Q V    |         |         |
|
    2+10       0.1352      0.96  |  Q V    |         |         |
|
    2+15       0.1423      1.04  |   Q V   |         |         |
|
    2+20       0.1496      1.05  |   Q V   |         |         |
|
    2+25       0.1568      1.06  |   Q V   |         |         |
|
    2+30       0.1641      1.06  |   Q V   |         |         |
|
    2+35       0.1714      1.06  |   Q  V  |         |         |
|
    2+40       0.1787      1.06  |   Q  V  |         |         |
|
    2+45       0.1863      1.11  |   Q  V  |         |         |
|
    2+50       0.1946      1.20  |   Q   V |         |         |
|
    2+55       0.2031      1.22  |   Q   V |         |         |
|
    3+ 0       0.2115      1.23  |   Q    V|         |         |
|
    3+ 5       0.2200      1.23  |   Q    V|         |         |
|
    3+10       0.2288      1.28  |    Q   V|         |         |
|
    3+15       0.2383      1.38  |    Q    V         |         |
```

```
|
    3+20       0.2479      1.39  |    Q    V         |         |
|
    3+25       0.2579      1.45  |    Q    V         |         |
|
    3+30       0.2689      1.60  |     Q   |V        |         |
|
    3+35       0.2811      1.77  |      Q  |V        |         |
|
    3+40       0.2940      1.88  |      Q  | V       |         |
|
    3+45       0.3075      1.96  |      Q  |  V      |         |
|
    3+50       0.3217      2.06  |       Q |  V      |         |
|
    3+55       0.3364      2.13  |       Q |   V     |         |
|
    4+ 0       0.3517      2.23  |       Q |   V     |         |
|
    4+ 5       0.3676      2.30  |        Q|    V    |         |
|
    4+10       0.3845      2.45  |        Q|     V   |         |
|
    4+15       0.4025      2.62  |         Q      V  |         |
|
    4+20       0.4218      2.79  |         |Q     V  |         |
|
    4+25       0.4421      2.96  |         |Q      V |         |
|
    4+30       0.4633      3.08  |         | Q      V|         |
|
    4+35       0.4851      3.15  |         | Q       V         |
|
    4+40       0.5078      3.31  |         |  Q      |V        |
|
    4+45       0.5318      3.47  |         |  Q      | V       |
|
    4+50       0.5565      3.59  |         |   Q     |  V      |
|
    4+55       0.5817      3.67  |         |   Q     |   V     |
|
    5+ 0       0.6080      3.82  |         |    Q    |    V    |
|
    5+ 5       0.6370      4.21  |         |     Q   |      V  |
|
    5+10       0.6712      4.97  |         |       Q|       V |
|
    5+15       0.7104      5.69  |         |         | Q       V
|
    5+20       0.7534      6.24  |         |         |   Q     | V
|
    5+25       0.8008      6.88  |         |         |      Q  |   V
|
    5+30       0.8553      7.91  |         |         |         |Q    V
|
    5+35       0.9019      6.78  |         |         |      Q  |       V
|
    5+40       0.9227      3.02  |         | Q       |         |
V|
    5+45       0.9316      1.28  |    Q    |         |         |
```

```
V|
   5+50       0.9360      0.65  | Q       |         |         |
V|
   5+55       0.9382      0.32  |Q        |         |         |
V|
   6+ 0       0.9389      0.10  Q         |         |         |
V|
   6+ 5       0.9391      0.04  Q         |         |         |
V|
   6+10       0.9392      0.01  Q         |         |         |
V|
   6+15       0.9392      0.00  Q         |         |         |
V|
   6+20       0.9392      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 11/09/21 File: moval33prea242.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Existing Condition
Unit Hydrograph Runoff

Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) = 0.009 Sq. Mi.
Length along longest watercourse = 852.00(Ft.)
Length along longest watercourse measured to centroid = 341.00 (Ft.)
Length along longest watercourse = 0.161 Mi.
Length along longest watercourse measured to centroid = 0.065 Mi.
Difference in elevation = 75.00(Ft.)
Slope along watercourse = 464.7887 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.053 Hr.
Lag time = 3.17 Min.
25% of lag time = 0.79 Min.
40% of lag time = 1.27 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]

5.53	1.93	10.67

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
5.53	4.64	25.66

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.930(In)
Area Averaged 100-Year Rainfall = 4.640(In)

Point rain (area averaged) = 1.930(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.930(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
5.530	84.00	0.000

Total Area Entered = 5.53(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	84.0	0.198	0.000	0.198	1.000	0.198
					Sum (F) =	0.198

Area averaged mean soil loss (F) (In/Hr) = 0.198
Minimum soil loss rate ((In/Hr)) = 0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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	157.948	32.675		1.821
2	0.167	315.896	53.715		2.994
3	0.250	473.844	10.920		0.609
4	0.333	631.792	2.028		0.113
5	0.417	789.740	0.662		0.037
			Sum = 100.000	Sum=	5.573

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	0.015	(0.352)	0.014	0.002
2	0.17	0.07	0.015	(0.350)	0.014	0.002
3	0.25	0.07	0.015	(0.349)	0.014	0.002
4	0.33	0.10	0.023	(0.348)	0.021	0.002
5	0.42	0.10	0.023	(0.346)	0.021	0.002
6	0.50	0.10	0.023	(0.345)	0.021	0.002
7	0.58	0.10	0.023	(0.344)	0.021	0.002
8	0.67	0.10	0.023	(0.342)	0.021	0.002
9	0.75	0.10	0.023	(0.341)	0.021	0.002
10	0.83	0.13	0.031	(0.340)	0.028	0.003
11	0.92	0.13	0.031	(0.338)	0.028	0.003
12	1.00	0.13	0.031	(0.337)	0.028	0.003
13	1.08	0.10	0.023	(0.336)	0.021	0.002
14	1.17	0.10	0.023	(0.334)	0.021	0.002
15	1.25	0.10	0.023	(0.333)	0.021	0.002
16	1.33	0.10	0.023	(0.332)	0.021	0.002
17	1.42	0.10	0.023	(0.330)	0.021	0.002
18	1.50	0.10	0.023	(0.329)	0.021	0.002
19	1.58	0.10	0.023	(0.328)	0.021	0.002
20	1.67	0.10	0.023	(0.326)	0.021	0.002
21	1.75	0.10	0.023	(0.325)	0.021	0.002
22	1.83	0.13	0.031	(0.324)	0.028	0.003
23	1.92	0.13	0.031	(0.322)	0.028	0.003
24	2.00	0.13	0.031	(0.321)	0.028	0.003
25	2.08	0.13	0.031	(0.320)	0.028	0.003
26	2.17	0.13	0.031	(0.318)	0.028	0.003
27	2.25	0.13	0.031	(0.317)	0.028	0.003
28	2.33	0.13	0.031	(0.316)	0.028	0.003
29	2.42	0.13	0.031	(0.315)	0.028	0.003
30	2.50	0.13	0.031	(0.313)	0.028	0.003
31	2.58	0.17	0.039	(0.312)	0.035	0.004
32	2.67	0.17	0.039	(0.311)	0.035	0.004
33	2.75	0.17	0.039	(0.310)	0.035	0.004
34	2.83	0.17	0.039	(0.308)	0.035	0.004
35	2.92	0.17	0.039	(0.307)	0.035	0.004
36	3.00	0.17	0.039	(0.306)	0.035	0.004
37	3.08	0.17	0.039	(0.304)	0.035	0.004
38	3.17	0.17	0.039	(0.303)	0.035	0.004
39	3.25	0.17	0.039	(0.302)	0.035	0.004
40	3.33	0.17	0.039	(0.301)	0.035	0.004
41	3.42	0.17	0.039	(0.299)	0.035	0.004
42	3.50	0.17	0.039	(0.298)	0.035	0.004
43	3.58	0.17	0.039	(0.297)	0.035	0.004
44	3.67	0.17	0.039	(0.296)	0.035	0.004
45	3.75	0.17	0.039	(0.294)	0.035	0.004
46	3.83	0.20	0.046	(0.293)	0.042	0.005
47	3.92	0.20	0.046	(0.292)	0.042	0.005
48	4.00	0.20	0.046	(0.291)	0.042	0.005
49	4.08	0.20	0.046	(0.289)	0.042	0.005
50	4.17	0.20	0.046	(0.288)	0.042	0.005
51	4.25	0.20	0.046	(0.287)	0.042	0.005
52	4.33	0.23	0.054	(0.286)	0.049	0.005
53	4.42	0.23	0.054	(0.285)	0.049	0.005
54	4.50	0.23	0.054	(0.283)	0.049	0.005
55	4.58	0.23	0.054	(0.282)	0.049	0.005
56	4.67	0.23	0.054	(0.281)	0.049	0.005
57	4.75	0.23	0.054	(0.280)	0.049	0.005

58	4.83	0.27	0.062	(0.278)	0.056	0.006
59	4.92	0.27	0.062	(0.277)	0.056	0.006
60	5.00	0.27	0.062	(0.276)	0.056	0.006
61	5.08	0.20	0.046	(0.275)	0.042	0.005
62	5.17	0.20	0.046	(0.274)	0.042	0.005
63	5.25	0.20	0.046	(0.272)	0.042	0.005
64	5.33	0.23	0.054	(0.271)	0.049	0.005
65	5.42	0.23	0.054	(0.270)	0.049	0.005
66	5.50	0.23	0.054	(0.269)	0.049	0.005
67	5.58	0.27	0.062	(0.268)	0.056	0.006
68	5.67	0.27	0.062	(0.267)	0.056	0.006
69	5.75	0.27	0.062	(0.265)	0.056	0.006
70	5.83	0.27	0.062	(0.264)	0.056	0.006
71	5.92	0.27	0.062	(0.263)	0.056	0.006
72	6.00	0.27	0.062	(0.262)	0.056	0.006
73	6.08	0.30	0.069	(0.261)	0.063	0.007
74	6.17	0.30	0.069	(0.260)	0.063	0.007
75	6.25	0.30	0.069	(0.258)	0.063	0.007
76	6.33	0.30	0.069	(0.257)	0.063	0.007
77	6.42	0.30	0.069	(0.256)	0.063	0.007
78	6.50	0.30	0.069	(0.255)	0.063	0.007
79	6.58	0.33	0.077	(0.254)	0.069	0.008
80	6.67	0.33	0.077	(0.253)	0.069	0.008
81	6.75	0.33	0.077	(0.252)	0.069	0.008
82	6.83	0.33	0.077	(0.250)	0.069	0.008
83	6.92	0.33	0.077	(0.249)	0.069	0.008
84	7.00	0.33	0.077	(0.248)	0.069	0.008
85	7.08	0.33	0.077	(0.247)	0.069	0.008
86	7.17	0.33	0.077	(0.246)	0.069	0.008
87	7.25	0.33	0.077	(0.245)	0.069	0.008
88	7.33	0.37	0.085	(0.244)	0.076	0.008
89	7.42	0.37	0.085	(0.243)	0.076	0.008
90	7.50	0.37	0.085	(0.241)	0.076	0.008
91	7.58	0.40	0.093	(0.240)	0.083	0.009
92	7.67	0.40	0.093	(0.239)	0.083	0.009
93	7.75	0.40	0.093	(0.238)	0.083	0.009
94	7.83	0.43	0.100	(0.237)	0.090	0.010
95	7.92	0.43	0.100	(0.236)	0.090	0.010
96	8.00	0.43	0.100	(0.235)	0.090	0.010
97	8.08	0.50	0.116	(0.234)	0.104	0.012
98	8.17	0.50	0.116	(0.233)	0.104	0.012
99	8.25	0.50	0.116	(0.232)	0.104	0.012
100	8.33	0.50	0.116	(0.230)	0.104	0.012
101	8.42	0.50	0.116	(0.229)	0.104	0.012
102	8.50	0.50	0.116	(0.228)	0.104	0.012
103	8.58	0.53	0.124	(0.227)	0.111	0.012
104	8.67	0.53	0.124	(0.226)	0.111	0.012
105	8.75	0.53	0.124	(0.225)	0.111	0.012
106	8.83	0.57	0.131	(0.224)	0.118	0.013
107	8.92	0.57	0.131	(0.223)	0.118	0.013
108	9.00	0.57	0.131	(0.222)	0.118	0.013
109	9.08	0.63	0.147	(0.221)	0.132	0.015
110	9.17	0.63	0.147	(0.220)	0.132	0.015
111	9.25	0.63	0.147	(0.219)	0.132	0.015
112	9.33	0.67	0.154	(0.218)	0.139	0.015
113	9.42	0.67	0.154	(0.217)	0.139	0.015
114	9.50	0.67	0.154	(0.216)	0.139	0.015
115	9.58	0.70	0.162	(0.215)	0.146	0.016
116	9.67	0.70	0.162	(0.214)	0.146	0.016
117	9.75	0.70	0.162	(0.213)	0.146	0.016

118	9.83	0.73	0.170	(0.212)	0.153	0.017
119	9.92	0.73	0.170	(0.211)	0.153	0.017
120	10.00	0.73	0.170	(0.210)	0.153	0.017
121	10.08	0.50	0.116	(0.208)	0.104	0.012
122	10.17	0.50	0.116	(0.207)	0.104	0.012
123	10.25	0.50	0.116	(0.206)	0.104	0.012
124	10.33	0.50	0.116	(0.205)	0.104	0.012
125	10.42	0.50	0.116	(0.204)	0.104	0.012
126	10.50	0.50	0.116	(0.203)	0.104	0.012
127	10.58	0.67	0.154	(0.202)	0.139	0.015
128	10.67	0.67	0.154	(0.201)	0.139	0.015
129	10.75	0.67	0.154	(0.201)	0.139	0.015
130	10.83	0.67	0.154	(0.200)	0.139	0.015
131	10.92	0.67	0.154	(0.199)	0.139	0.015
132	11.00	0.67	0.154	(0.198)	0.139	0.015
133	11.08	0.63	0.147	(0.197)	0.132	0.015
134	11.17	0.63	0.147	(0.196)	0.132	0.015
135	11.25	0.63	0.147	(0.195)	0.132	0.015
136	11.33	0.63	0.147	(0.194)	0.132	0.015
137	11.42	0.63	0.147	(0.193)	0.132	0.015
138	11.50	0.63	0.147	(0.192)	0.132	0.015
139	11.58	0.57	0.131	(0.191)	0.118	0.013
140	11.67	0.57	0.131	(0.190)	0.118	0.013
141	11.75	0.57	0.131	(0.189)	0.118	0.013
142	11.83	0.60	0.139	(0.188)	0.125	0.014
143	11.92	0.60	0.139	(0.187)	0.125	0.014
144	12.00	0.60	0.139	(0.186)	0.125	0.014
145	12.08	0.83	0.193	(0.185)	0.174	0.019
146	12.17	0.83	0.193	(0.184)	0.174	0.019
147	12.25	0.83	0.193	(0.183)	0.174	0.019
148	12.33	0.87	0.201	(0.182)	0.181	0.020
149	12.42	0.87	0.201	(0.182)	0.181	0.020
150	12.50	0.87	0.201	0.181	(0.181)	0.020
151	12.58	0.93	0.216	0.180	(0.195)	0.036
152	12.67	0.93	0.216	0.179	(0.195)	0.037
153	12.75	0.93	0.216	0.178	(0.195)	0.038
154	12.83	0.97	0.224	0.177	(0.201)	0.047
155	12.92	0.97	0.224	0.176	(0.201)	0.048
156	13.00	0.97	0.224	0.175	(0.201)	0.049
157	13.08	1.13	0.262	0.174	(0.236)	0.088
158	13.17	1.13	0.262	0.173	(0.236)	0.089
159	13.25	1.13	0.262	0.173	(0.236)	0.090
160	13.33	1.13	0.262	0.172	(0.236)	0.091
161	13.42	1.13	0.262	0.171	(0.236)	0.092
162	13.50	1.13	0.262	0.170	(0.236)	0.093
163	13.58	0.77	0.178	(0.169)	0.160	0.018
164	13.67	0.77	0.178	(0.168)	0.160	0.018
165	13.75	0.77	0.178	(0.167)	0.160	0.018
166	13.83	0.77	0.178	(0.166)	0.160	0.018
167	13.92	0.77	0.178	(0.166)	0.160	0.018
168	14.00	0.77	0.178	(0.165)	0.160	0.018
169	14.08	0.90	0.208	0.164	(0.188)	0.044
170	14.17	0.90	0.208	0.163	(0.188)	0.045
171	14.25	0.90	0.208	0.162	(0.188)	0.046
172	14.33	0.87	0.201	0.161	(0.181)	0.039
173	14.42	0.87	0.201	0.161	(0.181)	0.040
174	14.50	0.87	0.201	0.160	(0.181)	0.041
175	14.58	0.87	0.201	0.159	(0.181)	0.042
176	14.67	0.87	0.201	0.158	(0.181)	0.043
177	14.75	0.87	0.201	0.157	(0.181)	0.043

178	14.83	0.83	0.193	0.157	(0.174)	0.036
179	14.92	0.83	0.193	0.156	(0.174)	0.037
180	15.00	0.83	0.193	0.155	(0.174)	0.038
181	15.08	0.80	0.185	0.154	(0.167)	0.031
182	15.17	0.80	0.185	0.153	(0.167)	0.032
183	15.25	0.80	0.185	0.153	(0.167)	0.033
184	15.33	0.77	0.178	0.152	(0.160)	0.026
185	15.42	0.77	0.178	0.151	(0.160)	0.027
186	15.50	0.77	0.178	0.150	(0.160)	0.027
187	15.58	0.63	0.147	(0.149)	0.132	0.015
188	15.67	0.63	0.147	(0.149)	0.132	0.015
189	15.75	0.63	0.147	(0.148)	0.132	0.015
190	15.83	0.63	0.147	(0.147)	0.132	0.015
191	15.92	0.63	0.147	(0.146)	0.132	0.015
192	16.00	0.63	0.147	(0.146)	0.132	0.015
193	16.08	0.13	0.031	(0.145)	0.028	0.003
194	16.17	0.13	0.031	(0.144)	0.028	0.003
195	16.25	0.13	0.031	(0.143)	0.028	0.003
196	16.33	0.13	0.031	(0.143)	0.028	0.003
197	16.42	0.13	0.031	(0.142)	0.028	0.003
198	16.50	0.13	0.031	(0.141)	0.028	0.003
199	16.58	0.10	0.023	(0.141)	0.021	0.002
200	16.67	0.10	0.023	(0.140)	0.021	0.002
201	16.75	0.10	0.023	(0.139)	0.021	0.002
202	16.83	0.10	0.023	(0.138)	0.021	0.002
203	16.92	0.10	0.023	(0.138)	0.021	0.002
204	17.00	0.10	0.023	(0.137)	0.021	0.002
205	17.08	0.17	0.039	(0.136)	0.035	0.004
206	17.17	0.17	0.039	(0.136)	0.035	0.004
207	17.25	0.17	0.039	(0.135)	0.035	0.004
208	17.33	0.17	0.039	(0.134)	0.035	0.004
209	17.42	0.17	0.039	(0.134)	0.035	0.004
210	17.50	0.17	0.039	(0.133)	0.035	0.004
211	17.58	0.17	0.039	(0.132)	0.035	0.004
212	17.67	0.17	0.039	(0.132)	0.035	0.004
213	17.75	0.17	0.039	(0.131)	0.035	0.004
214	17.83	0.13	0.031	(0.130)	0.028	0.003
215	17.92	0.13	0.031	(0.130)	0.028	0.003
216	18.00	0.13	0.031	(0.129)	0.028	0.003
217	18.08	0.13	0.031	(0.128)	0.028	0.003
218	18.17	0.13	0.031	(0.128)	0.028	0.003
219	18.25	0.13	0.031	(0.127)	0.028	0.003
220	18.33	0.13	0.031	(0.127)	0.028	0.003
221	18.42	0.13	0.031	(0.126)	0.028	0.003
222	18.50	0.13	0.031	(0.125)	0.028	0.003
223	18.58	0.10	0.023	(0.125)	0.021	0.002
224	18.67	0.10	0.023	(0.124)	0.021	0.002
225	18.75	0.10	0.023	(0.124)	0.021	0.002
226	18.83	0.07	0.015	(0.123)	0.014	0.002
227	18.92	0.07	0.015	(0.122)	0.014	0.002
228	19.00	0.07	0.015	(0.122)	0.014	0.002
229	19.08	0.10	0.023	(0.121)	0.021	0.002
230	19.17	0.10	0.023	(0.121)	0.021	0.002
231	19.25	0.10	0.023	(0.120)	0.021	0.002
232	19.33	0.13	0.031	(0.119)	0.028	0.003
233	19.42	0.13	0.031	(0.119)	0.028	0.003
234	19.50	0.13	0.031	(0.118)	0.028	0.003
235	19.58	0.10	0.023	(0.118)	0.021	0.002
236	19.67	0.10	0.023	(0.117)	0.021	0.002
237	19.75	0.10	0.023	(0.117)	0.021	0.002

238	19.83	0.07	0.015	(0.116)	0.014	0.002
239	19.92	0.07	0.015	(0.116)	0.014	0.002
240	20.00	0.07	0.015	(0.115)	0.014	0.002
241	20.08	0.10	0.023	(0.115)	0.021	0.002
242	20.17	0.10	0.023	(0.114)	0.021	0.002
243	20.25	0.10	0.023	(0.114)	0.021	0.002
244	20.33	0.10	0.023	(0.113)	0.021	0.002
245	20.42	0.10	0.023	(0.113)	0.021	0.002
246	20.50	0.10	0.023	(0.112)	0.021	0.002
247	20.58	0.10	0.023	(0.112)	0.021	0.002
248	20.67	0.10	0.023	(0.111)	0.021	0.002
249	20.75	0.10	0.023	(0.111)	0.021	0.002
250	20.83	0.07	0.015	(0.110)	0.014	0.002
251	20.92	0.07	0.015	(0.110)	0.014	0.002
252	21.00	0.07	0.015	(0.110)	0.014	0.002
253	21.08	0.10	0.023	(0.109)	0.021	0.002
254	21.17	0.10	0.023	(0.109)	0.021	0.002
255	21.25	0.10	0.023	(0.108)	0.021	0.002
256	21.33	0.07	0.015	(0.108)	0.014	0.002
257	21.42	0.07	0.015	(0.107)	0.014	0.002
258	21.50	0.07	0.015	(0.107)	0.014	0.002
259	21.58	0.10	0.023	(0.107)	0.021	0.002
260	21.67	0.10	0.023	(0.106)	0.021	0.002
261	21.75	0.10	0.023	(0.106)	0.021	0.002
262	21.83	0.07	0.015	(0.105)	0.014	0.002
263	21.92	0.07	0.015	(0.105)	0.014	0.002
264	22.00	0.07	0.015	(0.105)	0.014	0.002
265	22.08	0.10	0.023	(0.104)	0.021	0.002
266	22.17	0.10	0.023	(0.104)	0.021	0.002
267	22.25	0.10	0.023	(0.104)	0.021	0.002
268	22.33	0.07	0.015	(0.103)	0.014	0.002
269	22.42	0.07	0.015	(0.103)	0.014	0.002
270	22.50	0.07	0.015	(0.103)	0.014	0.002
271	22.58	0.07	0.015	(0.102)	0.014	0.002
272	22.67	0.07	0.015	(0.102)	0.014	0.002
273	22.75	0.07	0.015	(0.102)	0.014	0.002
274	22.83	0.07	0.015	(0.102)	0.014	0.002
275	22.92	0.07	0.015	(0.101)	0.014	0.002
276	23.00	0.07	0.015	(0.101)	0.014	0.002
277	23.08	0.07	0.015	(0.101)	0.014	0.002
278	23.17	0.07	0.015	(0.101)	0.014	0.002
279	23.25	0.07	0.015	(0.100)	0.014	0.002
280	23.33	0.07	0.015	(0.100)	0.014	0.002
281	23.42	0.07	0.015	(0.100)	0.014	0.002
282	23.50	0.07	0.015	(0.100)	0.014	0.002
283	23.58	0.07	0.015	(0.100)	0.014	0.002
284	23.67	0.07	0.015	(0.100)	0.014	0.002
285	23.75	0.07	0.015	(0.099)	0.014	0.002
286	23.83	0.07	0.015	(0.099)	0.014	0.002
287	23.92	0.07	0.015	(0.099)	0.014	0.002
288	24.00	0.07	0.015	(0.099)	0.014	0.002

(Loss Rate Not Used)

Sum = 100.0 Sum = 3.1

Flood volume = Effective rainfall 0.26(In)
times area 5.5(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 1.67(In)
Total soil loss = 0.769(Ac.Ft)
Total rainfall = 1.93(In)
Flood volume = 5261.5 Cubic Feet
Total soil loss = 33480.7 Cubic Feet

```
      ------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =      0.512(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       0.0001      0.01  Q         |         |         |
|
    0+15       0.0001      0.01  Q         |         |         |
|
    0+20       0.0002      0.01  Q         |         |         |
|
    0+25       0.0003      0.01  Q         |         |         |
|
    0+30       0.0004      0.01  Q         |         |         |
|
    0+35       0.0005      0.01  Q         |         |         |
|
    0+40       0.0005      0.01  Q         |         |         |
|
    0+45       0.0006      0.01  Q         |         |         |
|
    0+50       0.0007      0.01  Q         |         |         |
|
    0+55       0.0008      0.02  Q         |         |         |
|
    1+ 0       0.0010      0.02  Q         |         |         |
|
    1+ 5       0.0011      0.02  Q         |         |         |
|
    1+10       0.0012      0.01  Q         |         |         |
|
    1+15       0.0013      0.01  Q         |         |         |
|
    1+20       0.0013      0.01  Q         |         |         |
|
    1+25       0.0014      0.01  Q         |         |         |
|
    1+30       0.0015      0.01  Q         |         |         |
|
    1+35       0.0016      0.01  Q         |         |         |
|
    1+40       0.0017      0.01  Q         |         |         |
|
    1+45       0.0018      0.01  Q         |         |         |
```

1+50	0.0019	0.01	Q
1+55	0.0020	0.02	Q
2+ 0	0.0021	0.02	Q
2+ 5	0.0022	0.02	Q
2+10	0.0024	0.02	Q
2+15	0.0025	0.02	Q
2+20	0.0026	0.02	Q
2+25	0.0027	0.02	Q
2+30	0.0028	0.02	Q
2+35	0.0030	0.02	Q
2+40	0.0031	0.02	QV
2+45	0.0033	0.02	QV
2+50	0.0034	0.02	QV
2+55	0.0036	0.02	QV
3+ 0	0.0037	0.02	QV
3+ 5	0.0038	0.02	QV
3+10	0.0040	0.02	QV
3+15	0.0041	0.02	QV
3+20	0.0043	0.02	QV
3+25	0.0044	0.02	QV
3+30	0.0046	0.02	QV
3+35	0.0047	0.02	QV
3+40	0.0049	0.02	QV
3+45	0.0050	0.02	QV
3+50	0.0052	0.02	QV
3+55	0.0054	0.03	QV
4+ 0	0.0055	0.03	QV
4+ 5	0.0057	0.03	QV
4+10	0.0059	0.03	QV
4+15	0.0061	0.03	Q V

4+20	0.0063	0.03	Q V	|	|	|
4+25	0.0065	0.03	Q V	|	|	|
4+30	0.0067	0.03	Q V	|	|	|
4+35	0.0069	0.03	Q V	|	|	|
4+40	0.0071	0.03	Q V	|	|	|
4+45	0.0073	0.03	Q V	|	|	|
4+50	0.0075	0.03	Q V	|	|	|
4+55	0.0077	0.03	Q V	|	|	|
5+ 0	0.0080	0.03	Q V	|	|	|
5+ 5	0.0082	0.03	Q V	|	|	|
5+10	0.0084	0.03	Q V	|	|	|
5+15	0.0086	0.03	Q V	|	|	|
5+20	0.0088	0.03	Q V	|	|	|
5+25	0.0090	0.03	Q V	|	|	|
5+30	0.0092	0.03	Q V	|	|	|
5+35	0.0094	0.03	Q V	|	|	|
5+40	0.0096	0.03	Q V	|	|	|
5+45	0.0099	0.03	Q V	|	|	|
5+50	0.0101	0.03	Q V	|	|	|
5+55	0.0103	0.03	Q V	|	|	|
6+ 0	0.0106	0.03	Q V	|	|	|
6+ 5	0.0108	0.04	Q V	|	|	|
6+10	0.0111	0.04	Q V	|	|	|
6+15	0.0113	0.04	Q V	|	|	|
6+20	0.0116	0.04	Q V	|	|	|
6+25	0.0119	0.04	Q V	|	|	|
6+30	0.0121	0.04	Q V	|	|	|
6+35	0.0124	0.04	Q V	|	|	|
6+40	0.0127	0.04	Q V	|	|	|
6+45	0.0130	0.04	Q V	|	|	|

```
|
       6+50        0.0133       0.04  Q   V     |         |         |
|
       6+55        0.0136       0.04  Q   V     |         |         |
|
       7+ 0        0.0139       0.04  Q   V     |         |         |
|
       7+ 5        0.0142       0.04  Q   V     |         |         |
|
       7+10        0.0145       0.04  Q   V     |         |         |
|
       7+15        0.0148       0.04  Q   V     |         |         |
|
       7+20        0.0151       0.04  Q   V     |         |         |
|
       7+25        0.0154       0.05  Q    V    |         |         |
|
       7+30        0.0157       0.05  Q    V    |         |         |
|
       7+35        0.0161       0.05  Q    V    |         |         |
|
       7+40        0.0164       0.05  Q    V    |         |         |
|
       7+45        0.0168       0.05  Q    V    |         |         |
|
       7+50        0.0171       0.05  Q    V    |         |         |
|
       7+55        0.0175       0.06  Q    V    |         |         |
|
       8+ 0        0.0179       0.06  Q    V    |         |         |
|
       8+ 5        0.0183       0.06  Q     V   |         |         |
|
       8+10        0.0187       0.06  Q     V   |         |         |
|
       8+15        0.0192       0.06  Q     V   |         |         |
|
       8+20        0.0196       0.06  Q     V   |         |         |
|
       8+25        0.0201       0.06  Q     V   |         |         |
|
       8+30        0.0205       0.06  Q     V   |         |         |
|
       8+35        0.0210       0.07  Q     V   |         |         |
|
       8+40        0.0215       0.07  Q      V  |         |         |
|
       8+45        0.0219       0.07  Q      V  |         |         |
|
       8+50        0.0224       0.07  Q      V  |         |         |
|
       8+55        0.0229       0.07  Q      V  |         |         |
|
       9+ 0        0.0234       0.07  Q      V  |         |         |
|
       9+ 5        0.0239       0.08  Q      V  |         |         |
|
       9+10        0.0245       0.08  Q       V |         |         |
|
       9+15        0.0251       0.08  Q       V |         |         |
```

```
|
    9+20       0.0256      0.08  Q       V |         |         |
|
    9+25       0.0262      0.09  Q       V |         |         |
|
    9+30       0.0268      0.09  Q       V |         |         |
|
    9+35       0.0274      0.09  Q        V|         |         |
|
    9+40       0.0280      0.09  Q        V|         |         |
|
    9+45       0.0286      0.09  Q        V|         |         |
|
    9+50       0.0293      0.09  Q        V|         |         |
|
    9+55       0.0299      0.09  Q        V|         |         |
|
   10+ 0       0.0306      0.09  Q         V         |         |
|
   10+ 5       0.0312      0.08  Q         V         |         |
|
   10+10       0.0316      0.07  Q         V         |         |
|
   10+15       0.0321      0.07  Q         V         |         |
|
   10+20       0.0325      0.06  Q         V         |         |
|
   10+25       0.0330      0.06  Q         V         |         |
|
   10+30       0.0334      0.06  Q         |V        |         |
|
   10+35       0.0339      0.07  Q         |V        |         |
|
   10+40       0.0345      0.08  Q         |V        |         |
|
   10+45       0.0351      0.09  Q         |V        |         |
|
   10+50       0.0357      0.09  Q         |V        |         |
|
   10+55       0.0363      0.09  Q         | V       |         |
|
   11+ 0       0.0369      0.09  Q         | V       |         |
|
   11+ 5       0.0374      0.08  Q         | V       |         |
|
   11+10       0.0380      0.08  Q         | V       |         |
|
   11+15       0.0386      0.08  Q         | V       |         |
|
   11+20       0.0391      0.08  Q         | V       |         |
|
   11+25       0.0397      0.08  Q         |  V      |         |
|
   11+30       0.0403      0.08  Q         |  V      |         |
|
   11+35       0.0408      0.08  Q         |  V      |         |
|
   11+40       0.0413      0.07  Q         |  V      |         |
|
   11+45       0.0418      0.07  Q         |  V      |         |
```

```
|
   11+50       0.0423      0.07  Q         |   V     |         |
|
   11+55       0.0429      0.08  Q         |   V     |         |
|
   12+ 0       0.0434      0.08  Q         |   V     |         |
|
   12+ 5       0.0440      0.09  Q         |   V     |         |
|
   12+10       0.0447      0.10  Q         |   V     |         |
|
   12+15       0.0454      0.11  Q         |    V    |         |
|
   12+20       0.0462      0.11  Q         |    V    |         |
|
   12+25       0.0470      0.11  Q         |    V    |         |
|
   12+30       0.0477      0.11  Q         |    V    |         |
|
   12+35       0.0487      0.14  Q         |     V   |         |
|
   12+40       0.0500      0.19  Q         |     V   |         |
|
   12+45       0.0515      0.21  Q         |      V  |         |
|
   12+50       0.0530      0.23  Q         |      V  |         |
|
   12+55       0.0548      0.26  |Q        |       V |         |
|
   13+ 0       0.0566      0.27  |Q        |       V |         |
|
   13+ 5       0.0590      0.34  |Q        |        V|         |
|
   13+10       0.0622      0.46  |Q        |         V         |
|
   13+15       0.0656      0.49  |Q        |         |V        |
|
   13+20       0.0690      0.50  | Q       |         | V       |
|
   13+25       0.0725      0.51  | Q       |         |   V     |
|
   13+30       0.0760      0.51  | Q       |         |    V    |
|
   13+35       0.0786      0.38  |Q        |         |     V   |
|
   13+40       0.0797      0.16  Q         |         |     V   |
|
   13+45       0.0805      0.11  Q         |         |     V   |
|
   13+50       0.0812      0.10  Q         |         |     V   |
|
   13+55       0.0819      0.10  Q         |         |      V  |
|
   14+ 0       0.0825      0.10  Q         |         |      V  |
|
   14+ 5       0.0835      0.15  Q         |         |      V  |
|
   14+10       0.0851      0.23  Q         |         |       V |
|
   14+15       0.0868      0.25  Q         |         |       V |
```

```
|
  14+20       0.0885      0.24  Q         |         |        V|
|
  14+25       0.0901      0.23  Q         |         |        V|
|
  14+30       0.0916      0.23  Q         |         |         V
|
  14+35       0.0932      0.23  Q         |         |         V
|
  14+40       0.0948      0.23  Q         |         |         |V
|
  14+45       0.0964      0.24  Q         |         |         |V
|
  14+50       0.0980      0.23  Q         |         |         | V
|
  14+55       0.0995      0.21  Q         |         |         | V
|
  15+ 0       0.1009      0.21  Q         |         |         |  V
|
  15+ 5       0.1023      0.20  Q         |         |         |  V
|
  15+10       0.1035      0.18  Q         |         |         |   V
|
  15+15       0.1048      0.18  Q         |         |         |   V
|
  15+20       0.1059      0.17  Q         |         |         |    V
|
  15+25       0.1070      0.15  Q         |         |         |    V
|
  15+30       0.1080      0.15  Q         |         |         |    V
|
  15+35       0.1089      0.13  Q         |         |         |     V
|
  15+40       0.1095      0.09  Q         |         |         |     V
|
  15+45       0.1101      0.08  Q         |         |         |     V
|
  15+50       0.1106      0.08  Q         |         |         |     V
|
  15+55       0.1112      0.08  Q         |         |         |     V
|
  16+ 0       0.1118      0.08  Q         |         |         |      V
|
  16+ 5       0.1122      0.06  Q         |         |         |      V
|
  16+10       0.1124      0.03  Q         |         |         |      V
|
  16+15       0.1125      0.02  Q         |         |         |      V
|
  16+20       0.1126      0.02  Q         |         |         |      V
|
  16+25       0.1127      0.02  Q         |         |         |      V
|
  16+30       0.1129      0.02  Q         |         |         |      V
|
  16+35       0.1130      0.02  Q         |         |         |      V
|
  16+40       0.1131      0.01  Q         |         |         |      V
|
  16+45       0.1132      0.01  Q         |         |         |      V
```

16+50	0.1132	0.01	Q	|	|	|	V
16+55	0.1133	0.01	Q	|	|	|	V
17+ 0	0.1134	0.01	Q	|	|	|	V
17+ 5	0.1135	0.02	Q	|	|	|	V
17+10	0.1137	0.02	Q	|	|	|	V
17+15	0.1138	0.02	Q	|	|	|	V
17+20	0.1140	0.02	Q	|	|	|	V
17+25	0.1141	0.02	Q	|	|	|	V
17+30	0.1143	0.02	Q	|	|	|	V
17+35	0.1144	0.02	Q	|	|	|	V
17+40	0.1146	0.02	Q	|	|	|	V
17+45	0.1147	0.02	Q	|	|	|	V
17+50	0.1148	0.02	Q	|	|	|	V
17+55	0.1150	0.02	Q	|	|	|	V
18+ 0	0.1151	0.02	Q	|	|	|	V
18+ 5	0.1152	0.02	Q	|	|	|	V
18+10	0.1153	0.02	Q	|	|	|	V
18+15	0.1154	0.02	Q	|	|	|	V
18+20	0.1156	0.02	Q	|	|	|	V
18+25	0.1157	0.02	Q	|	|	|	V
18+30	0.1158	0.02	Q	|	|	|	V
18+35	0.1159	0.02	Q	|	|	|	V
18+40	0.1160	0.01	Q	|	|	|	V
18+45	0.1161	0.01	Q	|	|	|	V
18+50	0.1162	0.01	Q	|	|	|	V
18+55	0.1162	0.01	Q	|	|	|	V
19+ 0	0.1163	0.01	Q	|	|	|	V
19+ 5	0.1164	0.01	Q	|	|	|	V
19+10	0.1164	0.01	Q	|	|	|	V
19+15	0.1165	0.01	Q	|	|	|	V

```
|
     19+20        0.1166        0.01  Q          |          |          |       V
|
     19+25        0.1167        0.02  Q          |          |          |       V
|
     19+30        0.1169        0.02  Q          |          |          |       V
|
     19+35        0.1170        0.02  Q          |          |          |       V
|
     19+40        0.1171        0.01  Q          |          |          |       V
|
     19+45        0.1172        0.01  Q          |          |          |       V
|
     19+50        0.1172        0.01  Q          |          |          |       V
|
     19+55        0.1173        0.01  Q          |          |          |       V
|
     20+ 0        0.1174        0.01  Q          |          |          |       V
|
     20+ 5        0.1174        0.01  Q          |          |          |       V
|
     20+10        0.1175        0.01  Q          |          |          |       V
|
     20+15        0.1176        0.01  Q          |          |          |       V
|
     20+20        0.1177        0.01  Q          |          |          |       V
|
     20+25        0.1178        0.01  Q          |          |          |
V|
     20+30        0.1179        0.01  Q          |          |          |
V|
     20+35        0.1180        0.01  Q          |          |          |
V|
     20+40        0.1180        0.01  Q          |          |          |
V|
     20+45        0.1181        0.01  Q          |          |          |
V|
     20+50        0.1182        0.01  Q          |          |          |
V|
     20+55        0.1183        0.01  Q          |          |          |
V|
     21+ 0        0.1183        0.01  Q          |          |          |
V|
     21+ 5        0.1184        0.01  Q          |          |          |
V|
     21+10        0.1185        0.01  Q          |          |          |
V|
     21+15        0.1186        0.01  Q          |          |          |
V|
     21+20        0.1187        0.01  Q          |          |          |
V|
     21+25        0.1187        0.01  Q          |          |          |
V|
     21+30        0.1188        0.01  Q          |          |          |
V|
     21+35        0.1188        0.01  Q          |          |          |
V|
     21+40        0.1189        0.01  Q          |          |          |
V|
     21+45        0.1190        0.01  Q          |          |          |
```

```
V|
    21+50        0.1191       0.01  Q           |           |           |
V|
    21+55        0.1192       0.01  Q           |           |           |
V|
    22+ 0        0.1192       0.01  Q           |           |           |
V|
    22+ 5        0.1193       0.01  Q           |           |           |
V|
    22+10        0.1194       0.01  Q           |           |           |
V|
    22+15        0.1195       0.01  Q           |           |           |
V|
    22+20        0.1195       0.01  Q           |           |           |
V|
    22+25        0.1196       0.01  Q           |           |           |
V|
    22+30        0.1197       0.01  Q           |           |           |
V|
    22+35        0.1197       0.01  Q           |           |           |
V|
    22+40        0.1198       0.01  Q           |           |           |
V|
    22+45        0.1198       0.01  Q           |           |           |
V|
    22+50        0.1199       0.01  Q           |           |           |
V|
    22+55        0.1200       0.01  Q           |           |           |
V|
    23+ 0        0.1200       0.01  Q           |           |           |
V|
    23+ 5        0.1201       0.01  Q           |           |           |
V|
    23+10        0.1201       0.01  Q           |           |           |
V|
    23+15        0.1202       0.01  Q           |           |           |
V|
    23+20        0.1203       0.01  Q           |           |           |
V|
    23+25        0.1203       0.01  Q           |           |           |
V|
    23+30        0.1204       0.01  Q           |           |           |
V|
    23+35        0.1204       0.01  Q           |           |           |
V|
    23+40        0.1205       0.01  Q           |           |           |
V|
    23+45        0.1206       0.01  Q           |           |           |
V|
    23+50        0.1206       0.01  Q           |           |           |
V|
    23+55        0.1207       0.01  Q           |           |           |
V|
    24+ 0        0.1207       0.01  Q           |           |           |
V|
    24+ 5        0.1208       0.01  Q           |           |           |
V|
    24+10        0.1208       0.00  Q           |           |           |
V|
    24+15        0.1208       0.00  Q           |           |           |
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V|
   24+20        0.1208       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 11/09/21 File: moval33prea245.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Existing Condition
Unit Hydrograph Runoff

Drainage Area =   5.53(Ac.) =   0.009 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =   5.53(Ac.) = 0.009 Sq. Mi.
Length along longest watercourse =   852.00(Ft.)
Length along longest watercourse measured to centroid =   341.00 (Ft.)
Length along longest watercourse =   0.161 Mi.
Length along longest watercourse measured to centroid =   0.065 Mi.
Difference in elevation =   75.00(Ft.)
Slope along watercourse =   464.7887 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time =   0.053 Hr.
Lag time =   3.17 Min.
25% of lag time =   0.79 Min.
40% of lag time =   1.27 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]

5.53	1.93	10.67

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
5.53	4.64	25.66

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 1.930(In)
Area Averaged 100-Year Rainfall = 4.640(In)

Point rain (area averaged) = 2.565(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.565(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
5.530	84.00	0.000

Total Area Entered = 5.53(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	84.0	0.198	0.000	0.198	1.000	0.198

Sum (F) = 0.198

Area averaged mean soil loss (F) (In/Hr) = 0.198
Minimum soil loss rate ((In/Hr)) = 0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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	157.948	32.675		1.821
2	0.167	315.896	53.715		2.994
3	0.250	473.844	10.920		0.609
4	0.333	631.792	2.028		0.113
5	0.417	789.740	0.662		0.037
			Sum = 100.000	Sum=	5.573

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	0.021	(0.352)	0.018	0.002
2	0.17	0.07	0.021	(0.350)	0.018	0.002
3	0.25	0.07	0.021	(0.349)	0.018	0.002
4	0.33	0.10	0.031	(0.348)	0.028	0.003
5	0.42	0.10	0.031	(0.346)	0.028	0.003
6	0.50	0.10	0.031	(0.345)	0.028	0.003
7	0.58	0.10	0.031	(0.344)	0.028	0.003
8	0.67	0.10	0.031	(0.342)	0.028	0.003
9	0.75	0.10	0.031	(0.341)	0.028	0.003
10	0.83	0.13	0.041	(0.340)	0.037	0.004
11	0.92	0.13	0.041	(0.338)	0.037	0.004
12	1.00	0.13	0.041	(0.337)	0.037	0.004
13	1.08	0.10	0.031	(0.336)	0.028	0.003
14	1.17	0.10	0.031	(0.334)	0.028	0.003
15	1.25	0.10	0.031	(0.333)	0.028	0.003
16	1.33	0.10	0.031	(0.332)	0.028	0.003
17	1.42	0.10	0.031	(0.330)	0.028	0.003
18	1.50	0.10	0.031	(0.329)	0.028	0.003
19	1.58	0.10	0.031	(0.328)	0.028	0.003
20	1.67	0.10	0.031	(0.326)	0.028	0.003
21	1.75	0.10	0.031	(0.325)	0.028	0.003
22	1.83	0.13	0.041	(0.324)	0.037	0.004
23	1.92	0.13	0.041	(0.322)	0.037	0.004
24	2.00	0.13	0.041	(0.321)	0.037	0.004
25	2.08	0.13	0.041	(0.320)	0.037	0.004
26	2.17	0.13	0.041	(0.318)	0.037	0.004
27	2.25	0.13	0.041	(0.317)	0.037	0.004
28	2.33	0.13	0.041	(0.316)	0.037	0.004
29	2.42	0.13	0.041	(0.315)	0.037	0.004
30	2.50	0.13	0.041	(0.313)	0.037	0.004
31	2.58	0.17	0.051	(0.312)	0.046	0.005
32	2.67	0.17	0.051	(0.311)	0.046	0.005
33	2.75	0.17	0.051	(0.310)	0.046	0.005
34	2.83	0.17	0.051	(0.308)	0.046	0.005
35	2.92	0.17	0.051	(0.307)	0.046	0.005
36	3.00	0.17	0.051	(0.306)	0.046	0.005
37	3.08	0.17	0.051	(0.304)	0.046	0.005
38	3.17	0.17	0.051	(0.303)	0.046	0.005
39	3.25	0.17	0.051	(0.302)	0.046	0.005
40	3.33	0.17	0.051	(0.301)	0.046	0.005
41	3.42	0.17	0.051	(0.299)	0.046	0.005
42	3.50	0.17	0.051	(0.298)	0.046	0.005
43	3.58	0.17	0.051	(0.297)	0.046	0.005
44	3.67	0.17	0.051	(0.296)	0.046	0.005
45	3.75	0.17	0.051	(0.294)	0.046	0.005
46	3.83	0.20	0.062	(0.293)	0.055	0.006
47	3.92	0.20	0.062	(0.292)	0.055	0.006
48	4.00	0.20	0.062	(0.291)	0.055	0.006
49	4.08	0.20	0.062	(0.289)	0.055	0.006
50	4.17	0.20	0.062	(0.288)	0.055	0.006
51	4.25	0.20	0.062	(0.287)	0.055	0.006
52	4.33	0.23	0.072	(0.286)	0.065	0.007
53	4.42	0.23	0.072	(0.285)	0.065	0.007
54	4.50	0.23	0.072	(0.283)	0.065	0.007
55	4.58	0.23	0.072	(0.282)	0.065	0.007
56	4.67	0.23	0.072	(0.281)	0.065	0.007
57	4.75	0.23	0.072	(0.280)	0.065	0.007

58	4.83	0.27	0.082	(0.278)	0.074	0.008
59	4.92	0.27	0.082	(0.277)	0.074	0.008
60	5.00	0.27	0.082	(0.276)	0.074	0.008
61	5.08	0.20	0.062	(0.275)	0.055	0.006
62	5.17	0.20	0.062	(0.274)	0.055	0.006
63	5.25	0.20	0.062	(0.272)	0.055	0.006
64	5.33	0.23	0.072	(0.271)	0.065	0.007
65	5.42	0.23	0.072	(0.270)	0.065	0.007
66	5.50	0.23	0.072	(0.269)	0.065	0.007
67	5.58	0.27	0.082	(0.268)	0.074	0.008
68	5.67	0.27	0.082	(0.267)	0.074	0.008
69	5.75	0.27	0.082	(0.265)	0.074	0.008
70	5.83	0.27	0.082	(0.264)	0.074	0.008
71	5.92	0.27	0.082	(0.263)	0.074	0.008
72	6.00	0.27	0.082	(0.262)	0.074	0.008
73	6.08	0.30	0.092	(0.261)	0.083	0.009
74	6.17	0.30	0.092	(0.260)	0.083	0.009
75	6.25	0.30	0.092	(0.258)	0.083	0.009
76	6.33	0.30	0.092	(0.257)	0.083	0.009
77	6.42	0.30	0.092	(0.256)	0.083	0.009
78	6.50	0.30	0.092	(0.255)	0.083	0.009
79	6.58	0.33	0.103	(0.254)	0.092	0.010
80	6.67	0.33	0.103	(0.253)	0.092	0.010
81	6.75	0.33	0.103	(0.252)	0.092	0.010
82	6.83	0.33	0.103	(0.250)	0.092	0.010
83	6.92	0.33	0.103	(0.249)	0.092	0.010
84	7.00	0.33	0.103	(0.248)	0.092	0.010
85	7.08	0.33	0.103	(0.247)	0.092	0.010
86	7.17	0.33	0.103	(0.246)	0.092	0.010
87	7.25	0.33	0.103	(0.245)	0.092	0.010
88	7.33	0.37	0.113	(0.244)	0.102	0.011
89	7.42	0.37	0.113	(0.243)	0.102	0.011
90	7.50	0.37	0.113	(0.241)	0.102	0.011
91	7.58	0.40	0.123	(0.240)	0.111	0.012
92	7.67	0.40	0.123	(0.239)	0.111	0.012
93	7.75	0.40	0.123	(0.238)	0.111	0.012
94	7.83	0.43	0.133	(0.237)	0.120	0.013
95	7.92	0.43	0.133	(0.236)	0.120	0.013
96	8.00	0.43	0.133	(0.235)	0.120	0.013
97	8.08	0.50	0.154	(0.234)	0.138	0.015
98	8.17	0.50	0.154	(0.233)	0.138	0.015
99	8.25	0.50	0.154	(0.232)	0.138	0.015
100	8.33	0.50	0.154	(0.230)	0.138	0.015
101	8.42	0.50	0.154	(0.229)	0.138	0.015
102	8.50	0.50	0.154	(0.228)	0.138	0.015
103	8.58	0.53	0.164	(0.227)	0.148	0.016
104	8.67	0.53	0.164	(0.226)	0.148	0.016
105	8.75	0.53	0.164	(0.225)	0.148	0.016
106	8.83	0.57	0.174	(0.224)	0.157	0.017
107	8.92	0.57	0.174	(0.223)	0.157	0.017
108	9.00	0.57	0.174	(0.222)	0.157	0.017
109	9.08	0.63	0.195	(0.221)	0.175	0.019
110	9.17	0.63	0.195	(0.220)	0.175	0.019
111	9.25	0.63	0.195	(0.219)	0.175	0.019
112	9.33	0.67	0.205	(0.218)	0.185	0.021
113	9.42	0.67	0.205	(0.217)	0.185	0.021
114	9.50	0.67	0.205	(0.216)	0.185	0.021
115	9.58	0.70	0.215	(0.215)	0.194	0.022
116	9.67	0.70	0.215	(0.214)	0.194	0.022
117	9.75	0.70	0.215	(0.213)	0.194	0.022

118	9.83	0.73	0.226	(0.212)	0.203	0.023
119	9.92	0.73	0.226	(0.211)	0.203	0.023
120	10.00	0.73	0.226	(0.210)	0.203	0.023
121	10.08	0.50	0.154	(0.208)	0.138	0.015
122	10.17	0.50	0.154	(0.207)	0.138	0.015
123	10.25	0.50	0.154	(0.206)	0.138	0.015
124	10.33	0.50	0.154	(0.205)	0.138	0.015
125	10.42	0.50	0.154	(0.204)	0.138	0.015
126	10.50	0.50	0.154	(0.203)	0.138	0.015
127	10.58	0.67	0.205	(0.202)	0.185	0.021
128	10.67	0.67	0.205	(0.201)	0.185	0.021
129	10.75	0.67	0.205	(0.201)	0.185	0.021
130	10.83	0.67	0.205	(0.200)	0.185	0.021
131	10.92	0.67	0.205	(0.199)	0.185	0.021
132	11.00	0.67	0.205	(0.198)	0.185	0.021
133	11.08	0.63	0.195	(0.197)	0.175	0.019
134	11.17	0.63	0.195	(0.196)	0.175	0.019
135	11.25	0.63	0.195	(0.195)	0.175	0.019
136	11.33	0.63	0.195	(0.194)	0.175	0.019
137	11.42	0.63	0.195	(0.193)	0.175	0.019
138	11.50	0.63	0.195	(0.192)	0.175	0.019
139	11.58	0.57	0.174	(0.191)	0.157	0.017
140	11.67	0.57	0.174	(0.190)	0.157	0.017
141	11.75	0.57	0.174	(0.189)	0.157	0.017
142	11.83	0.60	0.185	(0.188)	0.166	0.018
143	11.92	0.60	0.185	(0.187)	0.166	0.018
144	12.00	0.60	0.185	(0.186)	0.166	0.018
145	12.08	0.83	0.256	0.185	(0.231)	0.071
146	12.17	0.83	0.256	0.184	(0.231)	0.072
147	12.25	0.83	0.256	0.183	(0.231)	0.073
148	12.33	0.87	0.267	0.182	(0.240)	0.084
149	12.42	0.87	0.267	0.182	(0.240)	0.085
150	12.50	0.87	0.267	0.181	(0.240)	0.086
151	12.58	0.93	0.287	0.180	(0.259)	0.108
152	12.67	0.93	0.287	0.179	(0.259)	0.108
153	12.75	0.93	0.287	0.178	(0.259)	0.109
154	12.83	0.97	0.298	0.177	(0.268)	0.121
155	12.92	0.97	0.298	0.176	(0.268)	0.121
156	13.00	0.97	0.298	0.175	(0.268)	0.122
157	13.08	1.13	0.349	0.174	(0.314)	0.174
158	13.17	1.13	0.349	0.173	(0.314)	0.175
159	13.25	1.13	0.349	0.173	(0.314)	0.176
160	13.33	1.13	0.349	0.172	(0.314)	0.177
161	13.42	1.13	0.349	0.171	(0.314)	0.178
162	13.50	1.13	0.349	0.170	(0.314)	0.179
163	13.58	0.77	0.236	0.169	(0.212)	0.067
164	13.67	0.77	0.236	0.168	(0.212)	0.068
165	13.75	0.77	0.236	0.167	(0.212)	0.069
166	13.83	0.77	0.236	0.166	(0.212)	0.069
167	13.92	0.77	0.236	0.166	(0.212)	0.070
168	14.00	0.77	0.236	0.165	(0.212)	0.071
169	14.08	0.90	0.277	0.164	(0.249)	0.113
170	14.17	0.90	0.277	0.163	(0.249)	0.114
171	14.25	0.90	0.277	0.162	(0.249)	0.115
172	14.33	0.87	0.267	0.161	(0.240)	0.105
173	14.42	0.87	0.267	0.161	(0.240)	0.106
174	14.50	0.87	0.267	0.160	(0.240)	0.107
175	14.58	0.87	0.267	0.159	(0.240)	0.108
176	14.67	0.87	0.267	0.158	(0.240)	0.109
177	14.75	0.87	0.267	0.157	(0.240)	0.109

178	14.83	0.83	0.256	0.157	(0.231)	0.100
179	14.92	0.83	0.256	0.156	(0.231)	0.101
180	15.00	0.83	0.256	0.155	(0.231)	0.102
181	15.08	0.80	0.246	0.154	(0.222)	0.092
182	15.17	0.80	0.246	0.153	(0.222)	0.093
183	15.25	0.80	0.246	0.153	(0.222)	0.094
184	15.33	0.77	0.236	0.152	(0.212)	0.084
185	15.42	0.77	0.236	0.151	(0.212)	0.085
186	15.50	0.77	0.236	0.150	(0.212)	0.086
187	15.58	0.63	0.195	0.149	(0.175)	0.045
188	15.67	0.63	0.195	0.149	(0.175)	0.046
189	15.75	0.63	0.195	0.148	(0.175)	0.047
190	15.83	0.63	0.195	0.147	(0.175)	0.048
191	15.92	0.63	0.195	0.146	(0.175)	0.048
192	16.00	0.63	0.195	0.146	(0.175)	0.049
193	16.08	0.13	0.041	(0.145)	0.037	0.004
194	16.17	0.13	0.041	(0.144)	0.037	0.004
195	16.25	0.13	0.041	(0.143)	0.037	0.004
196	16.33	0.13	0.041	(0.143)	0.037	0.004
197	16.42	0.13	0.041	(0.142)	0.037	0.004
198	16.50	0.13	0.041	(0.141)	0.037	0.004
199	16.58	0.10	0.031	(0.141)	0.028	0.003
200	16.67	0.10	0.031	(0.140)	0.028	0.003
201	16.75	0.10	0.031	(0.139)	0.028	0.003
202	16.83	0.10	0.031	(0.138)	0.028	0.003
203	16.92	0.10	0.031	(0.138)	0.028	0.003
204	17.00	0.10	0.031	(0.137)	0.028	0.003
205	17.08	0.17	0.051	(0.136)	0.046	0.005
206	17.17	0.17	0.051	(0.136)	0.046	0.005
207	17.25	0.17	0.051	(0.135)	0.046	0.005
208	17.33	0.17	0.051	(0.134)	0.046	0.005
209	17.42	0.17	0.051	(0.134)	0.046	0.005
210	17.50	0.17	0.051	(0.133)	0.046	0.005
211	17.58	0.17	0.051	(0.132)	0.046	0.005
212	17.67	0.17	0.051	(0.132)	0.046	0.005
213	17.75	0.17	0.051	(0.131)	0.046	0.005
214	17.83	0.13	0.041	(0.130)	0.037	0.004
215	17.92	0.13	0.041	(0.130)	0.037	0.004
216	18.00	0.13	0.041	(0.129)	0.037	0.004
217	18.08	0.13	0.041	(0.128)	0.037	0.004
218	18.17	0.13	0.041	(0.128)	0.037	0.004
219	18.25	0.13	0.041	(0.127)	0.037	0.004
220	18.33	0.13	0.041	(0.127)	0.037	0.004
221	18.42	0.13	0.041	(0.126)	0.037	0.004
222	18.50	0.13	0.041	(0.125)	0.037	0.004
223	18.58	0.10	0.031	(0.125)	0.028	0.003
224	18.67	0.10	0.031	(0.124)	0.028	0.003
225	18.75	0.10	0.031	(0.124)	0.028	0.003
226	18.83	0.07	0.021	(0.123)	0.018	0.002
227	18.92	0.07	0.021	(0.122)	0.018	0.002
228	19.00	0.07	0.021	(0.122)	0.018	0.002
229	19.08	0.10	0.031	(0.121)	0.028	0.003
230	19.17	0.10	0.031	(0.121)	0.028	0.003
231	19.25	0.10	0.031	(0.120)	0.028	0.003
232	19.33	0.13	0.041	(0.119)	0.037	0.004
233	19.42	0.13	0.041	(0.119)	0.037	0.004
234	19.50	0.13	0.041	(0.118)	0.037	0.004
235	19.58	0.10	0.031	(0.118)	0.028	0.003
236	19.67	0.10	0.031	(0.117)	0.028	0.003
237	19.75	0.10	0.031	(0.117)	0.028	0.003

238	19.83	0.07	0.021	(0.116)	0.018	0.002
239	19.92	0.07	0.021	(0.116)	0.018	0.002
240	20.00	0.07	0.021	(0.115)	0.018	0.002
241	20.08	0.10	0.031	(0.115)	0.028	0.003
242	20.17	0.10	0.031	(0.114)	0.028	0.003
243	20.25	0.10	0.031	(0.114)	0.028	0.003
244	20.33	0.10	0.031	(0.113)	0.028	0.003
245	20.42	0.10	0.031	(0.113)	0.028	0.003
246	20.50	0.10	0.031	(0.112)	0.028	0.003
247	20.58	0.10	0.031	(0.112)	0.028	0.003
248	20.67	0.10	0.031	(0.111)	0.028	0.003
249	20.75	0.10	0.031	(0.111)	0.028	0.003
250	20.83	0.07	0.021	(0.110)	0.018	0.002
251	20.92	0.07	0.021	(0.110)	0.018	0.002
252	21.00	0.07	0.021	(0.110)	0.018	0.002
253	21.08	0.10	0.031	(0.109)	0.028	0.003
254	21.17	0.10	0.031	(0.109)	0.028	0.003
255	21.25	0.10	0.031	(0.108)	0.028	0.003
256	21.33	0.07	0.021	(0.108)	0.018	0.002
257	21.42	0.07	0.021	(0.107)	0.018	0.002
258	21.50	0.07	0.021	(0.107)	0.018	0.002
259	21.58	0.10	0.031	(0.107)	0.028	0.003
260	21.67	0.10	0.031	(0.106)	0.028	0.003
261	21.75	0.10	0.031	(0.106)	0.028	0.003
262	21.83	0.07	0.021	(0.105)	0.018	0.002
263	21.92	0.07	0.021	(0.105)	0.018	0.002
264	22.00	0.07	0.021	(0.105)	0.018	0.002
265	22.08	0.10	0.031	(0.104)	0.028	0.003
266	22.17	0.10	0.031	(0.104)	0.028	0.003
267	22.25	0.10	0.031	(0.104)	0.028	0.003
268	22.33	0.07	0.021	(0.103)	0.018	0.002
269	22.42	0.07	0.021	(0.103)	0.018	0.002
270	22.50	0.07	0.021	(0.103)	0.018	0.002
271	22.58	0.07	0.021	(0.102)	0.018	0.002
272	22.67	0.07	0.021	(0.102)	0.018	0.002
273	22.75	0.07	0.021	(0.102)	0.018	0.002
274	22.83	0.07	0.021	(0.102)	0.018	0.002
275	22.92	0.07	0.021	(0.101)	0.018	0.002
276	23.00	0.07	0.021	(0.101)	0.018	0.002
277	23.08	0.07	0.021	(0.101)	0.018	0.002
278	23.17	0.07	0.021	(0.101)	0.018	0.002
279	23.25	0.07	0.021	(0.100)	0.018	0.002
280	23.33	0.07	0.021	(0.100)	0.018	0.002
281	23.42	0.07	0.021	(0.100)	0.018	0.002
282	23.50	0.07	0.021	(0.100)	0.018	0.002
283	23.58	0.07	0.021	(0.100)	0.018	0.002
284	23.67	0.07	0.021	(0.100)	0.018	0.002
285	23.75	0.07	0.021	(0.099)	0.018	0.002
286	23.83	0.07	0.021	(0.099)	0.018	0.002
287	23.92	0.07	0.021	(0.099)	0.018	0.002
288	24.00	0.07	0.021	(0.099)	0.018	0.002

(Loss Rate Not Used)

Sum = 100.0 Sum = 6.6

Flood volume = Effective rainfall 0.55(In)
times area 5.5(Ac.)/[(In)/(Ft.)] = 0.3(Ac.Ft)
Total soil loss = 2.02(In)
Total soil loss = 0.930(Ac.Ft)
Total rainfall = 2.56(In)
Flood volume = 10963.5 Cubic Feet
Total soil loss = 40520.4 Cubic Feet

```
      ------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =      0.993(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       0.0001      0.01  Q         |         |         |
|
    0+15       0.0002      0.01  Q         |         |         |
|
    0+20       0.0003      0.01  Q         |         |         |
|
    0+25       0.0004      0.02  Q         |         |         |
|
    0+30       0.0005      0.02  Q         |         |         |
|
    0+35       0.0006      0.02  Q         |         |         |
|
    0+40       0.0007      0.02  Q         |         |         |
|
    0+45       0.0008      0.02  Q         |         |         |
|
    0+50       0.0010      0.02  Q         |         |         |
|
    0+55       0.0011      0.02  Q         |         |         |
|
    1+ 0       0.0013      0.02  Q         |         |         |
|
    1+ 5       0.0014      0.02  Q         |         |         |
|
    1+10       0.0016      0.02  Q         |         |         |
|
    1+15       0.0017      0.02  Q         |         |         |
|
    1+20       0.0018      0.02  Q         |         |         |
|
    1+25       0.0019      0.02  Q         |         |         |
|
    1+30       0.0020      0.02  Q         |         |         |
|
    1+35       0.0021      0.02  Q         |         |         |
|
    1+40       0.0023      0.02  Q         |         |         |
|
    1+45       0.0024      0.02  Q         |         |         |
```

1+50	0.0025	0.02	Q			
1+55	0.0027	0.02	Q			
2+ 0	0.0028	0.02	Q			
2+ 5	0.0030	0.02	Q			
2+10	0.0031	0.02	Q			
2+15	0.0033	0.02	Q			
2+20	0.0035	0.02	Q			
2+25	0.0036	0.02	Q			
2+30	0.0038	0.02	Q			
2+35	0.0039	0.02	Q			
2+40	0.0041	0.03	Q			
2+45	0.0043	0.03	Q			
2+50	0.0045	0.03	Q			
2+55	0.0047	0.03	Q			
3+ 0	0.0049	0.03	Q			
3+ 5	0.0051	0.03	Q			
3+10	0.0053	0.03	Q			
3+15	0.0055	0.03	Q			
3+20	0.0057	0.03	Q			
3+25	0.0059	0.03	Q			
3+30	0.0061	0.03	Q			
3+35	0.0063	0.03	QV			
3+40	0.0065	0.03	QV			
3+45	0.0067	0.03	QV			
3+50	0.0069	0.03	QV			
3+55	0.0071	0.03	QV			
4+ 0	0.0074	0.03	QV			
4+ 5	0.0076	0.03	QV			
4+10	0.0078	0.03	QV			
4+15	0.0081	0.03	QV			

4+20	0.0083	0.04	QV	|	|	|
4+25	0.0086	0.04	QV	|	|	|
4+30	0.0089	0.04	QV	|	|	|
4+35	0.0091	0.04	QV	|	|	|
4+40	0.0094	0.04	QV	|	|	|
4+45	0.0097	0.04	QV	|	|	|
4+50	0.0100	0.04	QV	|	|	|
4+55	0.0103	0.04	QV	|	|	|
5+ 0	0.0106	0.05	QV	|	|	|
5+ 5	0.0109	0.04	QV	|	|	|
5+10	0.0111	0.04	QV	|	|	|
5+15	0.0114	0.03	QV	|	|	|
5+20	0.0116	0.04	QV	|	|	|
5+25	0.0119	0.04	QV	|	|	|
5+30	0.0122	0.04	QV	|	|	|
5+35	0.0125	0.04	QV	|	|	|
5+40	0.0128	0.04	Q V	|	|	|
5+45	0.0131	0.05	Q V	|	|	|
5+50	0.0134	0.05	Q V	|	|	|
5+55	0.0137	0.05	Q V	|	|	|
6+ 0	0.0140	0.05	Q V	|	|	|
6+ 5	0.0144	0.05	Q V	|	|	|
6+10	0.0147	0.05	Q V	|	|	|
6+15	0.0151	0.05	Q V	|	|	|
6+20	0.0154	0.05	Q V	|	|	|
6+25	0.0158	0.05	Q V	|	|	|
6+30	0.0161	0.05	Q V	|	|	|
6+35	0.0165	0.05	Q V	|	|	|
6+40	0.0169	0.06	Q V	|	|	|
6+45	0.0173	0.06	Q V	|	|	|

6+50	0.0177	0.06	Q V	|	|	|
6+55	0.0181	0.06	Q V	|	|	|
7+ 0	0.0185	0.06	Q V	|	|	|
7+ 5	0.0189	0.06	Q V	|	|	|
7+10	0.0192	0.06	Q V	|	|	|
7+15	0.0196	0.06	Q V	|	|	|
7+20	0.0200	0.06	Q V	|	|	|
7+25	0.0205	0.06	Q V	|	|	|
7+30	0.0209	0.06	Q V	|	|	|
7+35	0.0214	0.06	Q V	|	|	|
7+40	0.0218	0.07	Q V	|	|	|
7+45	0.0223	0.07	Q V	|	|	|
7+50	0.0228	0.07	Q V	|	|	|
7+55	0.0233	0.07	Q V	|	|	|
8+ 0	0.0238	0.07	Q V	|	|	|
8+ 5	0.0243	0.08	Q V	|	|	|
8+10	0.0249	0.08	Q V	|	|	|
8+15	0.0255	0.09	Q V	|	|	|
8+20	0.0261	0.09	Q V	|	|	|
8+25	0.0267	0.09	Q V	|	|	|
8+30	0.0273	0.09	Q V	|	|	|
8+35	0.0279	0.09	Q V	|	|	|
8+40	0.0285	0.09	Q V	|	|	|
8+45	0.0291	0.09	Q V	|	|	|
8+50	0.0298	0.09	Q V	|	|	|
8+55	0.0304	0.10	Q V	|	|	|
9+ 0	0.0311	0.10	Q V	|	|	|
9+ 5	0.0318	0.10	Q V	|	|	|
9+10	0.0325	0.11	Q V	|	|	|
9+15	0.0333	0.11	Q V	|	|	|

9+20	0.0341	0.11	Q V			
9+25	0.0348	0.11	Q V			
9+30	0.0356	0.11	Q V			
9+35	0.0364	0.12	Q V			
9+40	0.0372	0.12	Q V			
9+45	0.0381	0.12	Q V			
9+50	0.0389	0.12	Q V			
9+55	0.0398	0.13	Q V			
10+ 0	0.0406	0.13	Q V			
10+ 5	0.0414	0.11	Q V			
10+10	0.0420	0.09	Q V			
10+15	0.0426	0.09	Q V			
10+20	0.0432	0.09	Q V			
10+25	0.0438	0.09	Q V			
10+30	0.0444	0.09	Q V			
10+35	0.0451	0.10	Q V			
10+40	0.0458	0.11	Q V			
10+45	0.0466	0.11	Q V			
10+50	0.0474	0.11	Q V			
10+55	0.0482	0.11	Q V			
11+ 0	0.0490	0.11	Q V			
11+ 5	0.0498	0.11	Q V			
11+10	0.0505	0.11	Q V			
11+15	0.0513	0.11	Q V			
11+20	0.0520	0.11	Q V			
11+25	0.0528	0.11	Q V			
11+30	0.0535	0.11	Q V			
11+35	0.0542	0.10	Q V			
11+40	0.0549	0.10	Q V			
11+45	0.0556	0.10	Q V			

```
|
  11+50       0.0563      0.10  Q       V |         |         |
|
  11+55       0.0570      0.10  Q        V|         |         |
|
  12+ 0       0.0577      0.10  Q        V|         |         |
|
  12+ 5       0.0590      0.20  Q        V|         |         |
|
  12+10       0.0615      0.36  |Q       V|         |         |
|
  12+15       0.0642      0.40  |Q        V         |         |
|
  12+20       0.0672      0.43  |Q        V         |         |
|
  12+25       0.0704      0.46  |Q        |V        |         |
|
  12+30       0.0736      0.47  |Q        |V        |         |
|
  12+35       0.0772      0.52  | Q       | V       |         |
|
  12+40       0.0812      0.58  | Q       | V       |         |
|
  12+45       0.0854      0.60  | Q       |  V      |         |
|
  12+50       0.0897      0.63  | Q       |   V     |         |
|
  12+55       0.0943      0.67  | Q       |   V     |         |
|
  13+ 0       0.0989      0.68  | Q       |    V    |         |
|
  13+ 5       0.1043      0.78  |  Q      |     V   |         |
|
  13+10       0.1107      0.93  |  Q      |      V  |         |
|
  13+15       0.1174      0.97  |  Q      |       V |         |
|
  13+20       0.1242      0.98  |  Q      |        V|         |
|
  13+25       0.1310      0.99  |  Q      |         V         |
|
  13+30       0.1378      0.99  |  Q      |         |V        |
|
  13+35       0.1433      0.79  |  Q      |         | V       |
|
  13+40       0.1464      0.46  |Q        |         |  V      |
|
  13+45       0.1492      0.40  |Q        |         |  V      |
|
  13+50       0.1518      0.39  |Q        |         |   V     |
|
  13+55       0.1545      0.39  |Q        |         |   V     |
|
  14+ 0       0.1572      0.39  |Q        |         |   V     |
|
  14+ 5       0.1605      0.47  |Q        |         |    V    |
|
  14+10       0.1646      0.60  | Q       |         |     V   |
|
  14+15       0.1689      0.63  | Q       |         |     V   |
```

```
|
  14+20       0.1732      0.62  | Q        |         |      V  |
|
  14+25       0.1773      0.60  | Q        |         |       V |
|
  14+30       0.1814      0.59  | Q        |         |       V |
|
  14+35       0.1855      0.60  | Q        |         |        V|
|
  14+40       0.1896      0.60  | Q        |         |         V
|
  14+45       0.1938      0.61  | Q        |         |         V
|
  14+50       0.1979      0.59  | Q        |         |         |V
|
  14+55       0.2018      0.57  | Q        |         |         | V
|
  15+ 0       0.2057      0.56  | Q        |         |         | V
|
  15+ 5       0.2094      0.55  | Q        |         |         |  V
|
  15+10       0.2130      0.52  | Q        |         |         |  V
|
  15+15       0.2166      0.52  | Q        |         |         |   V
|
  15+20       0.2201      0.50  | Q        |         |         |   V
|
  15+25       0.2234      0.48  |Q         |         |         |    V
|
  15+30       0.2267      0.48  |Q         |         |         |     V
|
  15+35       0.2294      0.40  |Q         |         |         |     V
|
  15+40       0.2314      0.29  |Q         |         |         |     V
|
  15+45       0.2332      0.26  |Q         |         |         |      V
|
  15+50       0.2351      0.26  |Q         |         |         |      V
|
  15+55       0.2369      0.27  |Q         |         |         |      V
|
  16+ 0       0.2388      0.27  |Q         |         |         |      V
|
  16+ 5       0.2401      0.19  Q          |         |         |       V
|
  16+10       0.2405      0.06  Q          |         |         |       V
|
  16+15       0.2407      0.03  Q          |         |         |       V
|
  16+20       0.2408      0.02  Q          |         |         |       V
|
  16+25       0.2410      0.02  Q          |         |         |       V
|
  16+30       0.2412      0.02  Q          |         |         |       V
|
  16+35       0.2413      0.02  Q          |         |         |       V
|
  16+40       0.2414      0.02  Q          |         |         |       V
|
  16+45       0.2415      0.02  Q          |         |         |       V
```

|	16+50	0.2417	0.02	Q	|	|	|	V
|	16+55	0.2418	0.02	Q	|	|	|	V
|	17+ 0	0.2419	0.02	Q	|	|	|	V
|	17+ 5	0.2420	0.02	Q	|	|	|	V
|	17+10	0.2422	0.03	Q	|	|	|	V
|	17+15	0.2424	0.03	Q	|	|	|	V
|	17+20	0.2426	0.03	Q	|	|	|	V
|	17+25	0.2428	0.03	Q	|	|	|	V
|	17+30	0.2430	0.03	Q	|	|	|	V
|	17+35	0.2432	0.03	Q	|	|	|	V
|	17+40	0.2434	0.03	Q	|	|	|	V
|	17+45	0.2436	0.03	Q	|	|	|	V
|	17+50	0.2438	0.03	Q	|	|	|	V
|	17+55	0.2439	0.02	Q	|	|	|	V
|	18+ 0	0.2441	0.02	Q	|	|	|	V
|	18+ 5	0.2443	0.02	Q	|	|	|	V
|	18+10	0.2444	0.02	Q	|	|	|	V
|	18+15	0.2446	0.02	Q	|	|	|	V
|	18+20	0.2447	0.02	Q	|	|	|	V
|	18+25	0.2449	0.02	Q	|	|	|	V
|	18+30	0.2451	0.02	Q	|	|	|	V
|	18+35	0.2452	0.02	Q	|	|	|	V
|	18+40	0.2453	0.02	Q	|	|	|	V
|	18+45	0.2454	0.02	Q	|	|	|	
V|	18+50	0.2455	0.02	Q	|	|	|	
V|	18+55	0.2456	0.01	Q	|	|	|	
V|	19+ 0	0.2457	0.01	Q	|	|	|	
V|	19+ 5	0.2458	0.01	Q	|	|	|	
V|	19+10	0.2459	0.02	Q	|	|	|	
V|	19+15	0.2460	0.02	Q	|	|	|	

V|
19+20 0.2462 0.02 Q | | |
V|
19+25 0.2463 0.02 Q | | |
V|
19+30 0.2465 0.02 Q | | |
V|
19+35 0.2466 0.02 Q | | |
V|
19+40 0.2467 0.02 Q | | |
V|
19+45 0.2469 0.02 Q | | |
V|
19+50 0.2470 0.02 Q | | |
V|
19+55 0.2470 0.01 Q | | |
V|
20+ 0 0.2471 0.01 Q | | |
V|
20+ 5 0.2472 0.01 Q | | |
V|
20+10 0.2473 0.02 Q | | |
V|
20+15 0.2475 0.02 Q | | |
V|
20+20 0.2476 0.02 Q | | |
V|
20+25 0.2477 0.02 Q | | |
V|
20+30 0.2478 0.02 Q | | |
V|
20+35 0.2479 0.02 Q | | |
V|
20+40 0.2480 0.02 Q | | |
V|
20+45 0.2482 0.02 Q | | |
V|
20+50 0.2483 0.02 Q | | |
V|
20+55 0.2483 0.01 Q | | |
V|
21+ 0 0.2484 0.01 Q | | |
V|
21+ 5 0.2485 0.01 Q | | |
V|
21+10 0.2486 0.02 Q | | |
V|
21+15 0.2488 0.02 Q | | |
V|
21+20 0.2489 0.02 Q | | |
V|
21+25 0.2489 0.01 Q | | |
V|
21+30 0.2490 0.01 Q | | |
V|
21+35 0.2491 0.01 Q | | |
V|
21+40 0.2492 0.02 Q | | |
V|
21+45 0.2493 0.02 Q | | |

V|
21+50 0.2494 0.02 Q | | |
V|
21+55 0.2495 0.01 Q | | |
V|
22+ 0 0.2496 0.01 Q | | |
V|
22+ 5 0.2497 0.01 Q | | |
V|
22+10 0.2498 0.02 Q | | |
V|
22+15 0.2499 0.02 Q | | |
V|
22+20 0.2500 0.02 Q | | |
V|
22+25 0.2501 0.01 Q | | |
V|
22+30 0.2502 0.01 Q | | |
V|
22+35 0.2503 0.01 Q | | |
V|
22+40 0.2504 0.01 Q | | |
V|
22+45 0.2504 0.01 Q | | |
V|
22+50 0.2505 0.01 Q | | |
V|
22+55 0.2506 0.01 Q | | |
V|
23+ 0 0.2507 0.01 Q | | |
V|
23+ 5 0.2508 0.01 Q | | |
V|
23+10 0.2508 0.01 Q | | |
V|
23+15 0.2509 0.01 Q | | |
V|
23+20 0.2510 0.01 Q | | |
V|
23+25 0.2511 0.01 Q | | |
V|
23+30 0.2511 0.01 Q | | |
V|
23+35 0.2512 0.01 Q | | |
V|
23+40 0.2513 0.01 Q | | |
V|
23+45 0.2514 0.01 Q | | |
V|
23+50 0.2515 0.01 Q | | |
V|
23+55 0.2515 0.01 Q | | |
V|
24+ 0 0.2516 0.01 Q | | |
V|
24+ 5 0.2517 0.01 Q | | |
V|
24+10 0.2517 0.00 Q | | |
V|
24+15 0.2517 0.00 Q | | |

```
V|
   24+20        0.2517       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 02/19/21 File: moval33prea2410.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Existing Condition
Unit Hydrograph Runoff

Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) = 0.009 Sq. Mi.
Length along longest watercourse = 852.00(Ft.)
Length along longest watercourse measured to centroid = 341.00(Ft.)
Length along longest watercourse = 0.161 Mi.
Length along longest watercourse measured to centroid = 0.065 Mi.
Difference in elevation = 75.00(Ft.)
Slope along watercourse = 464.7887 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.053 Hr.
Lag time = 3.17 Min.
25% of lag time = 0.79 Min.
40% of lag time = 1.27 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]
5.53	1.93	10.67

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
5.53	4.64	25.66

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.930(In)
Area Averaged 100-Year Rainfall = 4.640(In)

```
Point rain (area averaged) =    3.045(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    3.045(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     5.530           84.00          0.000
 Total Area Entered =      5.53(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
84.0  84.0      0.198     0.000        0.198       1.000      0.198
                                                  Sum (F) =   0.198
Area averaged mean soil loss (F) (In/Hr) =  0.198
Minimum soil loss rate ((In/Hr)) =  0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.900
---------------------------------------------------------------------

                U n i t  H y d r o g r a p h
                        FOOTHILL S-Curve
--------------------------------------------------------------------
                Unit Hydrograph Data
---------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                            Graph %           (CFS)
---------------------------------------------------------------------
    1   0.083        157.948         32.675              1.821
    2   0.167        315.896         53.715              2.994
    3   0.250        473.844         10.920              0.609
    4   0.333        631.792          2.028              0.113
    5   0.417        789.740          0.662              0.037
                               Sum = 100.000   Sum=       5.573
----------------------------------------------------------------------
```

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	Loss rate(In./Hr) Low	Effective (In/Hr)
1	0.08	0.07	0.024	(0.352)	0.022	0.002
2	0.17	0.07	0.024	(0.350)	0.022	0.002
3	0.25	0.07	0.024	(0.349)	0.022	0.002
4	0.33	0.10	0.037	(0.348)	0.033	0.004
5	0.42	0.10	0.037	(0.346)	0.033	0.004
6	0.50	0.10	0.037	(0.345)	0.033	0.004
7	0.58	0.10	0.037	(0.344)	0.033	0.004
8	0.67	0.10	0.037	(0.342)	0.033	0.004
9	0.75	0.10	0.037	(0.341)	0.033	0.004
10	0.83	0.13	0.049	(0.340)	0.044	0.005
11	0.92	0.13	0.049	(0.338)	0.044	0.005
12	1.00	0.13	0.049	(0.337)	0.044	0.005
13	1.08	0.10	0.037	(0.336)	0.033	0.004
14	1.17	0.10	0.037	(0.334)	0.033	0.004
15	1.25	0.10	0.037	(0.333)	0.033	0.004
16	1.33	0.10	0.037	(0.332)	0.033	0.004
17	1.42	0.10	0.037	(0.330)	0.033	0.004
18	1.50	0.10	0.037	(0.329)	0.033	0.004
19	1.58	0.10	0.037	(0.328)	0.033	0.004
20	1.67	0.10	0.037	(0.326)	0.033	0.004

21	1.75	0.10	0.037	(0.325)	0.033	0.004
22	1.83	0.13	0.049	(0.324)	0.044	0.005
23	1.92	0.13	0.049	(0.322)	0.044	0.005
24	2.00	0.13	0.049	(0.321)	0.044	0.005
25	2.08	0.13	0.049	(0.320)	0.044	0.005
26	2.17	0.13	0.049	(0.318)	0.044	0.005
27	2.25	0.13	0.049	(0.317)	0.044	0.005
28	2.33	0.13	0.049	(0.316)	0.044	0.005
29	2.42	0.13	0.049	(0.315)	0.044	0.005
30	2.50	0.13	0.049	(0.313)	0.044	0.005
31	2.58	0.17	0.061	(0.312)	0.055	0.006
32	2.67	0.17	0.061	(0.311)	0.055	0.006
33	2.75	0.17	0.061	(0.310)	0.055	0.006
34	2.83	0.17	0.061	(0.308)	0.055	0.006
35	2.92	0.17	0.061	(0.307)	0.055	0.006
36	3.00	0.17	0.061	(0.306)	0.055	0.006
37	3.08	0.17	0.061	(0.304)	0.055	0.006
38	3.17	0.17	0.061	(0.303)	0.055	0.006
39	3.25	0.17	0.061	(0.302)	0.055	0.006
40	3.33	0.17	0.061	(0.301)	0.055	0.006
41	3.42	0.17	0.061	(0.299)	0.055	0.006
42	3.50	0.17	0.061	(0.298)	0.055	0.006
43	3.58	0.17	0.061	(0.297)	0.055	0.006
44	3.67	0.17	0.061	(0.296)	0.055	0.006
45	3.75	0.17	0.061	(0.294)	0.055	0.006
46	3.83	0.20	0.073	(0.293)	0.066	0.007
47	3.92	0.20	0.073	(0.292)	0.066	0.007
48	4.00	0.20	0.073	(0.291)	0.066	0.007
49	4.08	0.20	0.073	(0.289)	0.066	0.007
50	4.17	0.20	0.073	(0.288)	0.066	0.007
51	4.25	0.20	0.073	(0.287)	0.066	0.007
52	4.33	0.23	0.085	(0.286)	0.077	0.009
53	4.42	0.23	0.085	(0.285)	0.077	0.009
54	4.50	0.23	0.085	(0.283)	0.077	0.009
55	4.58	0.23	0.085	(0.282)	0.077	0.009
56	4.67	0.23	0.085	(0.281)	0.077	0.009
57	4.75	0.23	0.085	(0.280)	0.077	0.009
58	4.83	0.27	0.097	(0.278)	0.088	0.010
59	4.92	0.27	0.097	(0.277)	0.088	0.010
60	5.00	0.27	0.097	(0.276)	0.088	0.010
61	5.08	0.20	0.073	(0.275)	0.066	0.007
62	5.17	0.20	0.073	(0.274)	0.066	0.007
63	5.25	0.20	0.073	(0.272)	0.066	0.007
64	5.33	0.23	0.085	(0.271)	0.077	0.009
65	5.42	0.23	0.085	(0.270)	0.077	0.009
66	5.50	0.23	0.085	(0.269)	0.077	0.009
67	5.58	0.27	0.097	(0.268)	0.088	0.010
68	5.67	0.27	0.097	(0.267)	0.088	0.010
69	5.75	0.27	0.097	(0.265)	0.088	0.010
70	5.83	0.27	0.097	(0.264)	0.088	0.010
71	5.92	0.27	0.097	(0.263)	0.088	0.010
72	6.00	0.27	0.097	(0.262)	0.088	0.010
73	6.08	0.30	0.110	(0.261)	0.099	0.011
74	6.17	0.30	0.110	(0.260)	0.099	0.011
75	6.25	0.30	0.110	(0.258)	0.099	0.011
76	6.33	0.30	0.110	(0.257)	0.099	0.011
77	6.42	0.30	0.110	(0.256)	0.099	0.011
78	6.50	0.30	0.110	(0.255)	0.099	0.011
79	6.58	0.33	0.122	(0.254)	0.110	0.012
80	6.67	0.33	0.122	(0.253)	0.110	0.012
81	6.75	0.33	0.122	(0.252)	0.110	0.012
82	6.83	0.33	0.122	(0.250)	0.110	0.012
83	6.92	0.33	0.122	(0.249)	0.110	0.012

84	7.00	0.33	0.122	(0.248)	0.110	0.012
85	7.08	0.33	0.122	(0.247)	0.110	0.012
86	7.17	0.33	0.122	(0.246)	0.110	0.012
87	7.25	0.33	0.122	(0.245)	0.110	0.012
88	7.33	0.37	0.134	(0.244)	0.121	0.013
89	7.42	0.37	0.134	(0.243)	0.121	0.013
90	7.50	0.37	0.134	(0.241)	0.121	0.013
91	7.58	0.40	0.146	(0.240)	0.132	0.015
92	7.67	0.40	0.146	(0.239)	0.132	0.015
93	7.75	0.40	0.146	(0.238)	0.132	0.015
94	7.83	0.43	0.158	(0.237)	0.143	0.016
95	7.92	0.43	0.158	(0.236)	0.143	0.016
96	8.00	0.43	0.158	(0.235)	0.143	0.016
97	8.08	0.50	0.183	(0.234)	0.164	0.018
98	8.17	0.50	0.183	(0.233)	0.164	0.018
99	8.25	0.50	0.183	(0.232)	0.164	0.018
100	8.33	0.50	0.183	(0.230)	0.164	0.018
101	8.42	0.50	0.183	(0.229)	0.164	0.018
102	8.50	0.50	0.183	(0.228)	0.164	0.018
103	8.58	0.53	0.195	(0.227)	0.175	0.019
104	8.67	0.53	0.195	(0.226)	0.175	0.019
105	8.75	0.53	0.195	(0.225)	0.175	0.019
106	8.83	0.57	0.207	(0.224)	0.186	0.021
107	8.92	0.57	0.207	(0.223)	0.186	0.021
108	9.00	0.57	0.207	(0.222)	0.186	0.021
109	9.08	0.63	0.231	(0.221)	0.208	0.023
110	9.17	0.63	0.231	(0.220)	0.208	0.023
111	9.25	0.63	0.231	(0.219)	0.208	0.023
112	9.33	0.67	0.244	0.218	(0.219)	0.026
113	9.42	0.67	0.244	0.217	(0.219)	0.027
114	9.50	0.67	0.244	0.216	(0.219)	0.028
115	9.58	0.70	0.256	0.215	(0.230)	0.041
116	9.67	0.70	0.256	0.214	(0.230)	0.042
117	9.75	0.70	0.256	0.213	(0.230)	0.043
118	9.83	0.73	0.268	0.212	(0.241)	0.056
119	9.92	0.73	0.268	0.211	(0.241)	0.057
120	10.00	0.73	0.268	0.210	(0.241)	0.058
121	10.08	0.50	0.183	(0.208)	0.164	0.018
122	10.17	0.50	0.183	(0.207)	0.164	0.018
123	10.25	0.50	0.183	(0.206)	0.164	0.018
124	10.33	0.50	0.183	(0.205)	0.164	0.018
125	10.42	0.50	0.183	(0.204)	0.164	0.018
126	10.50	0.50	0.183	(0.203)	0.164	0.018
127	10.58	0.67	0.244	0.202	(0.219)	0.041
128	10.67	0.67	0.244	0.201	(0.219)	0.042
129	10.75	0.67	0.244	0.201	(0.219)	0.043
130	10.83	0.67	0.244	0.200	(0.219)	0.044
131	10.92	0.67	0.244	0.199	(0.219)	0.045
132	11.00	0.67	0.244	0.198	(0.219)	0.046
133	11.08	0.63	0.231	0.197	(0.208)	0.035
134	11.17	0.63	0.231	0.196	(0.208)	0.036
135	11.25	0.63	0.231	0.195	(0.208)	0.037
136	11.33	0.63	0.231	0.194	(0.208)	0.038
137	11.42	0.63	0.231	0.193	(0.208)	0.039
138	11.50	0.63	0.231	0.192	(0.208)	0.040
139	11.58	0.57	0.207	(0.191)	0.186	0.021
140	11.67	0.57	0.207	(0.190)	0.186	0.021
141	11.75	0.57	0.207	(0.189)	0.186	0.021
142	11.83	0.60	0.219	0.188	(0.197)	0.031
143	11.92	0.60	0.219	0.187	(0.197)	0.032
144	12.00	0.60	0.219	0.186	(0.197)	0.033
145	12.08	0.83	0.304	0.185	(0.274)	0.119
146	12.17	0.83	0.304	0.184	(0.274)	0.120

147	12.25	0.83	0.304	0.183	(0.274)	0.121
148	12.33	0.87	0.317	0.182	(0.285)	0.134
149	12.42	0.87	0.317	0.182	(0.285)	0.135
150	12.50	0.87	0.317	0.181	(0.285)	0.136
151	12.58	0.93	0.341	0.180	(0.307)	0.161
152	12.67	0.93	0.341	0.179	(0.307)	0.162
153	12.75	0.93	0.341	0.178	(0.307)	0.163
154	12.83	0.97	0.353	0.177	(0.318)	0.176
155	12.92	0.97	0.353	0.176	(0.318)	0.177
156	13.00	0.97	0.353	0.175	(0.318)	0.178
157	13.08	1.13	0.414	0.174	(0.373)	0.240
158	13.17	1.13	0.414	0.173	(0.373)	0.241
159	13.25	1.13	0.414	0.173	(0.373)	0.242
160	13.33	1.13	0.414	0.172	(0.373)	0.242
161	13.42	1.13	0.414	0.171	(0.373)	0.243
162	13.50	1.13	0.414	0.170	(0.373)	0.244
163	13.58	0.77	0.280	0.169	(0.252)	0.111
164	13.67	0.77	0.280	0.168	(0.252)	0.112
165	13.75	0.77	0.280	0.167	(0.252)	0.113
166	13.83	0.77	0.280	0.166	(0.252)	0.114
167	13.92	0.77	0.280	0.166	(0.252)	0.114
168	14.00	0.77	0.280	0.165	(0.252)	0.115
169	14.08	0.90	0.329	0.164	(0.296)	0.165
170	14.17	0.90	0.329	0.163	(0.296)	0.166
171	14.25	0.90	0.329	0.162	(0.296)	0.167
172	14.33	0.87	0.317	0.161	(0.285)	0.155
173	14.42	0.87	0.317	0.161	(0.285)	0.156
174	14.50	0.87	0.317	0.160	(0.285)	0.157
175	14.58	0.87	0.317	0.159	(0.285)	0.158
176	14.67	0.87	0.317	0.158	(0.285)	0.158
177	14.75	0.87	0.317	0.157	(0.285)	0.159
178	14.83	0.83	0.304	0.157	(0.274)	0.148
179	14.92	0.83	0.304	0.156	(0.274)	0.149
180	15.00	0.83	0.304	0.155	(0.274)	0.150
181	15.08	0.80	0.292	0.154	(0.263)	0.138
182	15.17	0.80	0.292	0.153	(0.263)	0.139
183	15.25	0.80	0.292	0.153	(0.263)	0.140
184	15.33	0.77	0.280	0.152	(0.252)	0.128
185	15.42	0.77	0.280	0.151	(0.252)	0.129
186	15.50	0.77	0.280	0.150	(0.252)	0.130
187	15.58	0.63	0.231	0.149	(0.208)	0.082
188	15.67	0.63	0.231	0.149	(0.208)	0.083
189	15.75	0.63	0.231	0.148	(0.208)	0.083
190	15.83	0.63	0.231	0.147	(0.208)	0.084
191	15.92	0.63	0.231	0.146	(0.208)	0.085
192	16.00	0.63	0.231	0.146	(0.208)	0.086
193	16.08	0.13	0.049	(0.145)	0.044	0.005
194	16.17	0.13	0.049	(0.144)	0.044	0.005
195	16.25	0.13	0.049	(0.143)	0.044	0.005
196	16.33	0.13	0.049	(0.143)	0.044	0.005
197	16.42	0.13	0.049	(0.142)	0.044	0.005
198	16.50	0.13	0.049	(0.141)	0.044	0.005
199	16.58	0.10	0.037	(0.141)	0.033	0.004
200	16.67	0.10	0.037	(0.140)	0.033	0.004
201	16.75	0.10	0.037	(0.139)	0.033	0.004
202	16.83	0.10	0.037	(0.138)	0.033	0.004
203	16.92	0.10	0.037	(0.138)	0.033	0.004
204	17.00	0.10	0.037	(0.137)	0.033	0.004
205	17.08	0.17	0.061	(0.136)	0.055	0.006
206	17.17	0.17	0.061	(0.136)	0.055	0.006
207	17.25	0.17	0.061	(0.135)	0.055	0.006
208	17.33	0.17	0.061	(0.134)	0.055	0.006
209	17.42	0.17	0.061	(0.134)	0.055	0.006

210	17.50	0.17	0.061	(0.133)	0.055	0.006
211	17.58	0.17	0.061	(0.132)	0.055	0.006
212	17.67	0.17	0.061	(0.132)	0.055	0.006
213	17.75	0.17	0.061	(0.131)	0.055	0.006
214	17.83	0.13	0.049	(0.130)	0.044	0.005
215	17.92	0.13	0.049	(0.130)	0.044	0.005
216	18.00	0.13	0.049	(0.129)	0.044	0.005
217	18.08	0.13	0.049	(0.128)	0.044	0.005
218	18.17	0.13	0.049	(0.128)	0.044	0.005
219	18.25	0.13	0.049	(0.127)	0.044	0.005
220	18.33	0.13	0.049	(0.127)	0.044	0.005
221	18.42	0.13	0.049	(0.126)	0.044	0.005
222	18.50	0.13	0.049	(0.125)	0.044	0.005
223	18.58	0.10	0.037	(0.125)	0.033	0.004
224	18.67	0.10	0.037	(0.124)	0.033	0.004
225	18.75	0.10	0.037	(0.124)	0.033	0.004
226	18.83	0.07	0.024	(0.123)	0.022	0.002
227	18.92	0.07	0.024	(0.122)	0.022	0.002
228	19.00	0.07	0.024	(0.122)	0.022	0.002
229	19.08	0.10	0.037	(0.121)	0.033	0.004
230	19.17	0.10	0.037	(0.121)	0.033	0.004
231	19.25	0.10	0.037	(0.120)	0.033	0.004
232	19.33	0.13	0.049	(0.119)	0.044	0.005
233	19.42	0.13	0.049	(0.119)	0.044	0.005
234	19.50	0.13	0.049	(0.118)	0.044	0.005
235	19.58	0.10	0.037	(0.118)	0.033	0.004
236	19.67	0.10	0.037	(0.117)	0.033	0.004
237	19.75	0.10	0.037	(0.117)	0.033	0.004
238	19.83	0.07	0.024	(0.116)	0.022	0.002
239	19.92	0.07	0.024	(0.116)	0.022	0.002
240	20.00	0.07	0.024	(0.115)	0.022	0.002
241	20.08	0.10	0.037	(0.115)	0.033	0.004
242	20.17	0.10	0.037	(0.114)	0.033	0.004
243	20.25	0.10	0.037	(0.114)	0.033	0.004
244	20.33	0.10	0.037	(0.113)	0.033	0.004
245	20.42	0.10	0.037	(0.113)	0.033	0.004
246	20.50	0.10	0.037	(0.112)	0.033	0.004
247	20.58	0.10	0.037	(0.112)	0.033	0.004
248	20.67	0.10	0.037	(0.111)	0.033	0.004
249	20.75	0.10	0.037	(0.111)	0.033	0.004
250	20.83	0.07	0.024	(0.110)	0.022	0.002
251	20.92	0.07	0.024	(0.110)	0.022	0.002
252	21.00	0.07	0.024	(0.110)	0.022	0.002
253	21.08	0.10	0.037	(0.109)	0.033	0.004
254	21.17	0.10	0.037	(0.109)	0.033	0.004
255	21.25	0.10	0.037	(0.108)	0.033	0.004
256	21.33	0.07	0.024	(0.108)	0.022	0.002
257	21.42	0.07	0.024	(0.107)	0.022	0.002
258	21.50	0.07	0.024	(0.107)	0.022	0.002
259	21.58	0.10	0.037	(0.107)	0.033	0.004
260	21.67	0.10	0.037	(0.106)	0.033	0.004
261	21.75	0.10	0.037	(0.106)	0.033	0.004
262	21.83	0.07	0.024	(0.105)	0.022	0.002
263	21.92	0.07	0.024	(0.105)	0.022	0.002
264	22.00	0.07	0.024	(0.105)	0.022	0.002
265	22.08	0.10	0.037	(0.104)	0.033	0.004
266	22.17	0.10	0.037	(0.104)	0.033	0.004
267	22.25	0.10	0.037	(0.104)	0.033	0.004
268	22.33	0.07	0.024	(0.103)	0.022	0.002
269	22.42	0.07	0.024	(0.103)	0.022	0.002
270	22.50	0.07	0.024	(0.103)	0.022	0.002
271	22.58	0.07	0.024	(0.102)	0.022	0.002
272	22.67	0.07	0.024	(0.102)	0.022	0.002

273	22.75	0.07	0.024	(0.102)	0.022	0.002
274	22.83	0.07	0.024	(0.102)	0.022	0.002
275	22.92	0.07	0.024	(0.101)	0.022	0.002
276	23.00	0.07	0.024	(0.101)	0.022	0.002
277	23.08	0.07	0.024	(0.101)	0.022	0.002
278	23.17	0.07	0.024	(0.101)	0.022	0.002
279	23.25	0.07	0.024	(0.100)	0.022	0.002
280	23.33	0.07	0.024	(0.100)	0.022	0.002
281	23.42	0.07	0.024	(0.100)	0.022	0.002
282	23.50	0.07	0.024	(0.100)	0.022	0.002
283	23.58	0.07	0.024	(0.100)	0.022	0.002
284	23.67	0.07	0.024	(0.100)	0.022	0.002
285	23.75	0.07	0.024	(0.099)	0.022	0.002
286	23.83	0.07	0.024	(0.099)	0.022	0.002
287	23.92	0.07	0.024	(0.099)	0.022	0.002
288	24.00	0.07	0.024	(0.099)	0.022	0.002
		(Loss Rate Not Used)				
Sum =	100.0				Sum =	9.6

Flood volume = Effective rainfall 0.80(In)
times area 5.5(Ac.)/[(In)/(Ft.)] = 0.4(Ac.Ft)
Total soil loss = 2.24(In)
Total soil loss = 1.033(Ac.Ft)
Total rainfall = 3.04(In)
Flood volume = 16127.9 Cubic Feet
Total soil loss = 44994.8 Cubic Feet

Peak flow rate of this hydrograph = 1.357(CFS)

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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	0.0001	0.01	Q	|	|	|	|
0+15	0.0002	0.01	Q	|	|	|	|
0+20	0.0003	0.02	Q	|	|	|	|
0+25	0.0004	0.02	Q	|	|	|	|
0+30	0.0006	0.02	Q	|	|	|	|
0+35	0.0007	0.02	Q	|	|	|	|
0+40	0.0009	0.02	Q	|	|	|	|
0+45	0.0010	0.02	Q	|	|	|	|
0+50	0.0012	0.02	Q	|	|	|	|
0+55	0.0013	0.03	Q	|	|	|	|
1+ 0	0.0015	0.03	Q	|	|	|	|
1+ 5	0.0017	0.02	Q	|	|	|	|
1+10	0.0018	0.02	Q	|	|	|	|
1+15	0.0020	0.02	Q	|	|	|	|
1+20	0.0021	0.02	Q	|	|	|	|
1+25	0.0023	0.02	Q	|	|	|	|
1+30	0.0024	0.02	Q	|	|	|	|
1+35	0.0025	0.02	Q	|	|	|	|
1+40	0.0027	0.02	Q	|	|	|	|
1+45	0.0028	0.02	Q	|	|	|	|
1+50	0.0030	0.02	Q	|	|	|	|
1+55	0.0032	0.03	Q	|	|	|	|
2+ 0	0.0034	0.03	Q	|	|	|	|
2+ 5	0.0035	0.03	Q	|	|	|	|
2+10	0.0037	0.03	Q	|	|	|	|

2+15	0.0039	0.03	Q	|	|	|	|
2+20	0.0041	0.03	Q	|	|	|	|
2+25	0.0043	0.03	Q	|	|	|	|
2+30	0.0045	0.03	Q	|	|	|	|
2+35	0.0047	0.03	Q	|	|	|	|
2+40	0.0049	0.03	Q	|	|	|	|
2+45	0.0051	0.03	Q	|	|	|	|
2+50	0.0054	0.03	Q	|	|	|	|
2+55	0.0056	0.03	Q	|	|	|	|
3+ 0	0.0058	0.03	Q	|	|	|	|
3+ 5	0.0061	0.03	Q	|	|	|	|
3+10	0.0063	0.03	Q	|	|	|	|
3+15	0.0065	0.03	Q	|	|	|	|
3+20	0.0068	0.03	Q	|	|	|	|
3+25	0.0070	0.03	Q	|	|	|	|
3+30	0.0072	0.03	Q	|	|	|	|
3+35	0.0075	0.03	Q	|	|	|	|
3+40	0.0077	0.03	Q	|	|	|	|
3+45	0.0079	0.03	Q	|	|	|	|
3+50	0.0082	0.04	Q	|	|	|	|
3+55	0.0085	0.04	Q	|	|	|	|
4+ 0	0.0087	0.04	Q	|	|	|	|
4+ 5	0.0090	0.04	Q	|	|	|	|
4+10	0.0093	0.04	QV	|	|	|	|
4+15	0.0096	0.04	QV	|	|	|	|
4+20	0.0099	0.04	QV	|	|	|	|
4+25	0.0102	0.05	QV	|	|	|	|
4+30	0.0105	0.05	QV	|	|	|	|
4+35	0.0109	0.05	QV	|	|	|	|
4+40	0.0112	0.05	QV	|	|	|	|
4+45	0.0115	0.05	QV	|	|	|	|
4+50	0.0119	0.05	QV	|	|	|	|
4+55	0.0122	0.05	QV	|	|	|	|
5+ 0	0.0126	0.05	QV	|	|	|	|
5+ 5	0.0129	0.05	QV	|	|	|	|
5+10	0.0132	0.04	QV	|	|	|	|
5+15	0.0135	0.04	QV	|	|	|	|
5+20	0.0138	0.04	QV	|	|	|	|
5+25	0.0141	0.05	QV	|	|	|	|
5+30	0.0145	0.05	QV	|	|	|	|
5+35	0.0148	0.05	QV	|	|	|	|
5+40	0.0152	0.05	QV	|	|	|	|
5+45	0.0155	0.05	QV	|	|	|	|
5+50	0.0159	0.05	QV	|	|	|	|
5+55	0.0163	0.05	QV	|	|	|	|
6+ 0	0.0167	0.05	QV	|	|	|	|
6+ 5	0.0171	0.06	QV	|	|	|	|
6+10	0.0175	0.06	QV	|	|	|	|
6+15	0.0179	0.06	QV	|	|	|	|
6+20	0.0183	0.06	QV	|	|	|	|
6+25	0.0187	0.06	Q V	|	|	|	|
6+30	0.0191	0.06	Q V	|	|	|	|
6+35	0.0196	0.06	Q V	|	|	|	|
6+40	0.0200	0.07	Q V	|	|	|	|
6+45	0.0205	0.07	Q V	|	|	|	|
6+50	0.0210	0.07	Q V	|	|	|	|
6+55	0.0214	0.07	Q V	|	|	|	|
7+ 0	0.0219	0.07	Q V	|	|	|	|
7+ 5	0.0224	0.07	Q V	|	|	|	|
7+10	0.0229	0.07	Q V	|	|	|	|
7+15	0.0233	0.07	Q V	|	|	|	|
7+20	0.0238	0.07	Q V	|	|	|	|
7+25	0.0243	0.07	Q V	|	|	|	|

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 7+30       0.0248      0.07  Q V       |         |         |         |
 7+35       0.0254      0.08  Q V       |         |         |         |
 7+40       0.0259      0.08  Q V       |         |         |         |
 7+45       0.0265      0.08  Q V       |         |         |         |
 7+50       0.0270      0.08  Q V       |         |         |         |
 7+55       0.0276      0.09  Q V       |         |         |         |
 8+ 0       0.0283      0.09  Q  V      |         |         |         |
 8+ 5       0.0289      0.09  Q  V      |         |         |         |
 8+10       0.0296      0.10  Q  V      |         |         |         |
 8+15       0.0303      0.10  Q  V      |         |         |         |
 8+20       0.0310      0.10  Q  V      |         |         |         |
 8+25       0.0317      0.10  Q  V      |         |         |         |
 8+30       0.0324      0.10  Q  V      |         |         |         |
 8+35       0.0331      0.10  Q  V      |         |         |         |
 8+40       0.0338      0.11  Q  V      |         |         |         |
 8+45       0.0346      0.11  Q  V      |         |         |         |
 8+50       0.0354      0.11  Q  V      |         |         |         |
 8+55       0.0361      0.11  Q  V      |         |         |         |
 9+ 0       0.0369      0.12  Q  V      |         |         |         |
 9+ 5       0.0378      0.12  Q   V     |         |         |         |
 9+10       0.0386      0.13  Q   V     |         |         |         |
 9+15       0.0395      0.13  Q   V     |         |         |         |
 9+20       0.0404      0.13  Q   V     |         |         |         |
 9+25       0.0414      0.14  Q   V     |         |         |         |
 9+30       0.0425      0.15  Q   V     |         |         |         |
 9+35       0.0437      0.18  Q   V     |         |         |         |
 9+40       0.0452      0.22  Q   V     |         |         |         |
 9+45       0.0468      0.23  Q    V    |         |         |         |
 9+50       0.0487      0.26  |Q   V    |         |         |         |
 9+55       0.0508      0.31  |Q   V    |         |         |         |
10+ 0       0.0530      0.32  |Q   V    |         |         |         |
10+ 5       0.0547      0.25  |Q   V    |         |         |         |
10+10       0.0556      0.13  Q     V   |         |         |         |
10+15       0.0563      0.11  Q     V   |         |         |         |
10+20       0.0571      0.10  Q     V   |         |         |         |
10+25       0.0578      0.10  Q     V   |         |         |         |
10+30       0.0585      0.10  Q     V   |         |         |         |
10+35       0.0595      0.14  Q     V   |         |         |         |
10+40       0.0609      0.21  Q     V   |         |         |         |
10+45       0.0625      0.23  Q     V   |         |         |         |
10+50       0.0642      0.24  Q     V   |         |         |         |
10+55       0.0659      0.25  Q      V  |         |         |         |
11+ 0       0.0676      0.25  |Q     V  |         |         |         |
11+ 5       0.0692      0.24  Q      V  |         |         |         |
11+10       0.0706      0.20  Q      V  |         |         |         |
11+15       0.0720      0.20  Q      V  |         |         |         |
11+20       0.0734      0.21  Q      V  |         |         |         |
11+25       0.0749      0.21  Q       V |         |         |         |
11+30       0.0764      0.22  Q       V |         |         |         |
11+35       0.0777      0.19  Q       V |         |         |         |
11+40       0.0786      0.13  Q       V |         |         |         |
11+45       0.0794      0.12  Q       V |         |         |         |
11+50       0.0803      0.14  Q       V |         |         |         |
11+55       0.0815      0.17  Q       V |         |         |         |
12+ 0       0.0827      0.18  Q       V |         |         |         |
12+ 5       0.0850      0.34  |Q       V|         |         |         |
12+10       0.0892      0.60  | Q      V|         |         |         |
12+15       0.0937      0.66  | Q       V         |         |         |
12+20       0.0985      0.70  | Q       V         |         |         |
12+25       0.1036      0.74  | Q       |V        |         |         |
12+30       0.1088      0.75  |  Q      |V        |         |         |
12+35       0.1143      0.80  |  Q      | V       |         |         |
12+40       0.1204      0.88  |  Q      |  V      |         |         |
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12+45       0.1266      0.90  |  Q      |  V      |         |         |
12+50       0.1330      0.93  |  Q      |   V     |         |         |
12+55       0.1397      0.97  |  Q      |    V    |         |         |
13+ 0       0.1465      0.99  |  Q      |    V    |         |         |
13+ 5       0.1541      1.10  |   Q     |     V   |         |         |
13+10       0.1630      1.29  |    Q    |      V  |         |         |
13+15       0.1722      1.33  |    Q    |       V |         |         |
13+20       0.1815      1.35  |    Q    |        V|         |         |
13+25       0.1908      1.35  |    Q    |         V         |         |
13+30       0.2001      1.36  |    Q    |         |V        |         |
13+35       0.2078      1.12  |   Q     |         | V       |         |
13+40       0.2128      0.72  | Q       |         | V       |         |
13+45       0.2172      0.64  | Q       |         |  V      |         |
13+50       0.2216      0.63  | Q       |         |  V      |         |
13+55       0.2260      0.63  | Q       |         |   V     |         |
14+ 0       0.2304      0.64  | Q       |         |   V     |         |
14+ 5       0.2354      0.73  | Q       |         |    V    |         |
14+10       0.2415      0.88  |  Q      |         |     V   |         |
14+15       0.2478      0.92  |  Q      |         |     V   |         |
14+20       0.2541      0.91  |  Q      |         |      V  |         |
14+25       0.2601      0.88  |  Q      |         |       V |         |
14+30       0.2661      0.87  |  Q      |         |       V |         |
14+35       0.2721      0.88  |  Q      |         |        V|         |
14+40       0.2782      0.88  |  Q      |         |         V         |
14+45       0.2843      0.88  |  Q      |         |         V         |
14+50       0.2903      0.87  |  Q      |         |         |V        |
14+55       0.2960      0.83  |  Q      |         |         |V        |
15+ 0       0.3017      0.83  |  Q      |         |         | V       |
15+ 5       0.3073      0.81  |  Q      |         |         |  V      |
15+10       0.3127      0.78  |  Q      |         |         |  V      |
15+15       0.3181      0.78  |  Q      |         |         |   V     |
15+20       0.3233      0.76  |  Q      |         |         |   V     |
15+25       0.3283      0.73  | Q       |         |         |    V    |
15+30       0.3333      0.72  | Q       |         |         |     V   |
15+35       0.3376      0.64  | Q       |         |         |     V   |
15+40       0.3410      0.49  |Q        |         |         |     V   |
15+45       0.3443      0.47  |Q        |         |         |      V  |
15+50       0.3475      0.47  |Q        |         |         |      V  |
15+55       0.3507      0.47  |Q        |         |         |      V  |
16+ 0       0.3540      0.47  |Q        |         |         |       V |
16+ 5       0.3563      0.33  |Q        |         |         |       V |
16+10       0.3569      0.09  Q         |         |         |       V |
16+15       0.3572      0.04  Q         |         |         |       V |
16+20       0.3574      0.03  Q         |         |         |       V |
16+25       0.3576      0.03  Q         |         |         |       V |
16+30       0.3577      0.03  Q         |         |         |       V |
16+35       0.3579      0.02  Q         |         |         |       V |
16+40       0.3581      0.02  Q         |         |         |       V |
16+45       0.3582      0.02  Q         |         |         |       V |
16+50       0.3583      0.02  Q         |         |         |       V |
16+55       0.3585      0.02  Q         |         |         |       V |
17+ 0       0.3586      0.02  Q         |         |         |       V |
17+ 5       0.3588      0.02  Q         |         |         |       V |
17+10       0.3590      0.03  Q         |         |         |       V |
17+15       0.3592      0.03  Q         |         |         |       V |
17+20       0.3595      0.03  Q         |         |         |       V |
17+25       0.3597      0.03  Q         |         |         |       V |
17+30       0.3599      0.03  Q         |         |         |       V |
17+35       0.3602      0.03  Q         |         |         |       V |
17+40       0.3604      0.03  Q         |         |         |       V |
17+45       0.3606      0.03  Q         |         |         |       V |
17+50       0.3609      0.03  Q         |         |         |       V |
17+55       0.3611      0.03  Q         |         |         |        V|
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18+ 0	0.3612	0.03	Q	|	|	|	V|
18+ 5	0.3614	0.03	Q	|	|	|	V|
18+10	0.3616	0.03	Q	|	|	|	V|
18+15	0.3618	0.03	Q	|	|	|	V|
18+20	0.3620	0.03	Q	|	|	|	V|
18+25	0.3622	0.03	Q	|	|	|	V|
18+30	0.3624	0.03	Q	|	|	|	V|
18+35	0.3625	0.02	Q	|	|	|	V|
18+40	0.3627	0.02	Q	|	|	|	V|
18+45	0.3628	0.02	Q	|	|	|	V|
18+50	0.3630	0.02	Q	|	|	|	V|
18+55	0.3631	0.01	Q	|	|	|	V|
19+ 0	0.3632	0.01	Q	|	|	|	V|
19+ 5	0.3633	0.02	Q	|	|	|	V|
19+10	0.3634	0.02	Q	|	|	|	V|
19+15	0.3635	0.02	Q	|	|	|	V|
19+20	0.3637	0.02	Q	|	|	|	V|
19+25	0.3639	0.03	Q	|	|	|	V|
19+30	0.3641	0.03	Q	|	|	|	V|
19+35	0.3642	0.02	Q	|	|	|	V|
19+40	0.3644	0.02	Q	|	|	|	V|
19+45	0.3645	0.02	Q	|	|	|	V|
19+50	0.3646	0.02	Q	|	|	|	V|
19+55	0.3647	0.01	Q	|	|	|	V|
20+ 0	0.3648	0.01	Q	|	|	|	V|
20+ 5	0.3649	0.02	Q	|	|	|	V|
20+10	0.3651	0.02	Q	|	|	|	V|
20+15	0.3652	0.02	Q	|	|	|	V|
20+20	0.3654	0.02	Q	|	|	|	V|
20+25	0.3655	0.02	Q	|	|	|	V|
20+30	0.3656	0.02	Q	|	|	|	V|
20+35	0.3658	0.02	Q	|	|	|	V|
20+40	0.3659	0.02	Q	|	|	|	V|
20+45	0.3661	0.02	Q	|	|	|	V|
20+50	0.3662	0.02	Q	|	|	|	V|
20+55	0.3663	0.01	Q	|	|	|	V|
21+ 0	0.3664	0.01	Q	|	|	|	V|
21+ 5	0.3665	0.02	Q	|	|	|	V|
21+10	0.3666	0.02	Q	|	|	|	V|
21+15	0.3668	0.02	Q	|	|	|	V|
21+20	0.3669	0.02	Q	|	|	|	V|
21+25	0.3670	0.01	Q	|	|	|	V|
21+30	0.3671	0.01	Q	|	|	|	V|
21+35	0.3672	0.02	Q	|	|	|	V|
21+40	0.3673	0.02	Q	|	|	|	V|
21+45	0.3675	0.02	Q	|	|	|	V|
21+50	0.3676	0.02	Q	|	|	|	V|
21+55	0.3677	0.01	Q	|	|	|	V|
22+ 0	0.3678	0.01	Q	|	|	|	V|
22+ 5	0.3679	0.02	Q	|	|	|	V|
22+10	0.3680	0.02	Q	|	|	|	V|
22+15	0.3682	0.02	Q	|	|	|	V|
22+20	0.3683	0.02	Q	|	|	|	V|
22+25	0.3684	0.01	Q	|	|	|	V|
22+30	0.3685	0.01	Q	|	|	|	V|
22+35	0.3686	0.01	Q	|	|	|	V|
22+40	0.3687	0.01	Q	|	|	|	V|
22+45	0.3688	0.01	Q	|	|	|	V|
22+50	0.3689	0.01	Q	|	|	|	V|
22+55	0.3690	0.01	Q	|	|	|	V|
23+ 0	0.3690	0.01	Q	|	|	|	V|
23+ 5	0.3691	0.01	Q	|	|	|	V|
23+10	0.3692	0.01	Q	|	|	|	V|

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  23+15        0.3693      0.01  Q          |         |         |        V|
  23+20        0.3694      0.01  Q          |         |         |        V|
  23+25        0.3695      0.01  Q          |         |         |        V|
  23+30        0.3696      0.01  Q          |         |         |        V|
  23+35        0.3697      0.01  Q          |         |         |        V|
  23+40        0.3698      0.01  Q          |         |         |        V|
  23+45        0.3699      0.01  Q          |         |         |        V|
  23+50        0.3700      0.01  Q          |         |         |        V|
  23+55        0.3701      0.01  Q          |         |         |        V|
  24+ 0        0.3702      0.01  Q          |         |         |        V|
  24+ 5        0.3702      0.01  Q          |         |         |        V|
  24+10        0.3702      0.00  Q          |         |         |        V|
  24+15        0.3702      0.00  Q          |         |         |        V|
  24+20        0.3702      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 11/09/21 File: moval33prea24100.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Existing Condition
Unit Hydrograph Runoff
Area A

Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) = 0.009 Sq. Mi.
Length along longest watercourse = 852.00(Ft.)
Length along longest watercourse measured to centroid = 341.00 (Ft.)
Length along longest watercourse = 0.161 Mi.
Length along longest watercourse measured to centroid = 0.065 Mi.
Difference in elevation = 75.00(Ft.)
Slope along watercourse = 464.7887 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.053 Hr.
Lag time = 3.17 Min.
25% of lag time = 0.79 Min.
40% of lag time = 1.27 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]

5.53	1.93	10.67

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
5.53	4.64	25.66

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.930(In)
Area Averaged 100-Year Rainfall = 4.640(In)

Point rain (area averaged) = 4.640(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 4.640(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
5.530	84.00	0.000

Total Area Entered = 5.53(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	93.4	0.086	0.000	0.086	1.000	0.086
					Sum (F) =	0.086

Area averaged mean soil loss (F) (In/Hr) = 0.086
Minimum soil loss rate ((In/Hr)) = 0.043
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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	157.948	32.675	1.821
2	0.167	315.896	53.715	2.994
3	0.250	473.844	10.920	0.609
4	0.333	631.792	2.028	0.113
5	0.417	789.740	0.662	0.037
			Sum = 100.000	Sum= 5.573

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	0.037	(0.152)	0.033	0.004
2	0.17	0.07	0.037	(0.152)	0.033	0.004
3	0.25	0.07	0.037	(0.151)	0.033	0.004
4	0.33	0.10	0.056	(0.150)	0.050	0.006
5	0.42	0.10	0.056	(0.150)	0.050	0.006
6	0.50	0.10	0.056	(0.149)	0.050	0.006
7	0.58	0.10	0.056	(0.149)	0.050	0.006
8	0.67	0.10	0.056	(0.148)	0.050	0.006
9	0.75	0.10	0.056	(0.147)	0.050	0.006
10	0.83	0.13	0.074	(0.147)	0.067	0.007
11	0.92	0.13	0.074	(0.146)	0.067	0.007
12	1.00	0.13	0.074	(0.146)	0.067	0.007
13	1.08	0.10	0.056	(0.145)	0.050	0.006
14	1.17	0.10	0.056	(0.145)	0.050	0.006
15	1.25	0.10	0.056	(0.144)	0.050	0.006
16	1.33	0.10	0.056	(0.143)	0.050	0.006
17	1.42	0.10	0.056	(0.143)	0.050	0.006
18	1.50	0.10	0.056	(0.142)	0.050	0.006
19	1.58	0.10	0.056	(0.142)	0.050	0.006
20	1.67	0.10	0.056	(0.141)	0.050	0.006
21	1.75	0.10	0.056	(0.141)	0.050	0.006
22	1.83	0.13	0.074	(0.140)	0.067	0.007
23	1.92	0.13	0.074	(0.139)	0.067	0.007
24	2.00	0.13	0.074	(0.139)	0.067	0.007
25	2.08	0.13	0.074	(0.138)	0.067	0.007
26	2.17	0.13	0.074	(0.138)	0.067	0.007
27	2.25	0.13	0.074	(0.137)	0.067	0.007
28	2.33	0.13	0.074	(0.137)	0.067	0.007
29	2.42	0.13	0.074	(0.136)	0.067	0.007
30	2.50	0.13	0.074	(0.136)	0.067	0.007
31	2.58	0.17	0.093	(0.135)	0.084	0.009
32	2.67	0.17	0.093	(0.134)	0.084	0.009
33	2.75	0.17	0.093	(0.134)	0.084	0.009
34	2.83	0.17	0.093	(0.133)	0.084	0.009
35	2.92	0.17	0.093	(0.133)	0.084	0.009
36	3.00	0.17	0.093	(0.132)	0.084	0.009
37	3.08	0.17	0.093	(0.132)	0.084	0.009
38	3.17	0.17	0.093	(0.131)	0.084	0.009
39	3.25	0.17	0.093	(0.131)	0.084	0.009
40	3.33	0.17	0.093	(0.130)	0.084	0.009
41	3.42	0.17	0.093	(0.129)	0.084	0.009
42	3.50	0.17	0.093	(0.129)	0.084	0.009
43	3.58	0.17	0.093	(0.128)	0.084	0.009
44	3.67	0.17	0.093	(0.128)	0.084	0.009
45	3.75	0.17	0.093	(0.127)	0.084	0.009
46	3.83	0.20	0.111	(0.127)	0.100	0.011
47	3.92	0.20	0.111	(0.126)	0.100	0.011
48	4.00	0.20	0.111	(0.126)	0.100	0.011
49	4.08	0.20	0.111	(0.125)	0.100	0.011
50	4.17	0.20	0.111	(0.125)	0.100	0.011
51	4.25	0.20	0.111	(0.124)	0.100	0.011
52	4.33	0.23	0.130	(0.124)	0.117	0.013
53	4.42	0.23	0.130	(0.123)	0.117	0.013
54	4.50	0.23	0.130	(0.123)	0.117	0.013
55	4.58	0.23	0.130	(0.122)	0.117	0.013
56	4.67	0.23	0.130	(0.121)	0.117	0.013
57	4.75	0.23	0.130	(0.121)	0.117	0.013

58	4.83	0.27	0.148	0.120	(0.134)	0.028
59	4.92	0.27	0.148	0.120	(0.134)	0.029
60	5.00	0.27	0.148	0.119	(0.134)	0.029
61	5.08	0.20	0.111	(0.119)	0.100	0.011
62	5.17	0.20	0.111	(0.118)	0.100	0.011
63	5.25	0.20	0.111	(0.118)	0.100	0.011
64	5.33	0.23	0.130	(0.117)	0.117	0.013
65	5.42	0.23	0.130	0.117	(0.117)	0.013
66	5.50	0.23	0.130	0.116	(0.117)	0.014
67	5.58	0.27	0.148	0.116	(0.134)	0.033
68	5.67	0.27	0.148	0.115	(0.134)	0.033
69	5.75	0.27	0.148	0.115	(0.134)	0.034
70	5.83	0.27	0.148	0.114	(0.134)	0.034
71	5.92	0.27	0.148	0.114	(0.134)	0.035
72	6.00	0.27	0.148	0.113	(0.134)	0.035
73	6.08	0.30	0.167	0.113	(0.150)	0.054
74	6.17	0.30	0.167	0.112	(0.150)	0.055
75	6.25	0.30	0.167	0.112	(0.150)	0.055
76	6.33	0.30	0.167	0.111	(0.150)	0.056
77	6.42	0.30	0.167	0.111	(0.150)	0.056
78	6.50	0.30	0.167	0.110	(0.150)	0.057
79	6.58	0.33	0.186	0.110	(0.167)	0.076
80	6.67	0.33	0.186	0.109	(0.167)	0.076
81	6.75	0.33	0.186	0.109	(0.167)	0.077
82	6.83	0.33	0.186	0.108	(0.167)	0.077
83	6.92	0.33	0.186	0.108	(0.167)	0.078
84	7.00	0.33	0.186	0.107	(0.167)	0.078
85	7.08	0.33	0.186	0.107	(0.167)	0.079
86	7.17	0.33	0.186	0.106	(0.167)	0.079
87	7.25	0.33	0.186	0.106	(0.167)	0.080
88	7.33	0.37	0.204	0.105	(0.184)	0.099
89	7.42	0.37	0.204	0.105	(0.184)	0.099
90	7.50	0.37	0.204	0.104	(0.184)	0.100
91	7.58	0.40	0.223	0.104	(0.200)	0.119
92	7.67	0.40	0.223	0.103	(0.200)	0.119
93	7.75	0.40	0.223	0.103	(0.200)	0.120
94	7.83	0.43	0.241	0.102	(0.217)	0.139
95	7.92	0.43	0.241	0.102	(0.217)	0.139
96	8.00	0.43	0.241	0.102	(0.217)	0.140
97	8.08	0.50	0.278	0.101	(0.251)	0.177
98	8.17	0.50	0.278	0.101	(0.251)	0.178
99	8.25	0.50	0.278	0.100	(0.251)	0.178
100	8.33	0.50	0.278	0.100	(0.251)	0.179
101	8.42	0.50	0.278	0.099	(0.251)	0.179
102	8.50	0.50	0.278	0.099	(0.251)	0.180
103	8.58	0.53	0.297	0.098	(0.267)	0.199
104	8.67	0.53	0.297	0.098	(0.267)	0.199
105	8.75	0.53	0.297	0.097	(0.267)	0.200
106	8.83	0.57	0.316	0.097	(0.284)	0.219
107	8.92	0.57	0.316	0.096	(0.284)	0.219
108	9.00	0.57	0.316	0.096	(0.284)	0.220
109	9.08	0.63	0.353	0.096	(0.317)	0.257
110	9.17	0.63	0.353	0.095	(0.317)	0.258
111	9.25	0.63	0.353	0.095	(0.317)	0.258
112	9.33	0.67	0.371	0.094	(0.334)	0.277
113	9.42	0.67	0.371	0.094	(0.334)	0.277
114	9.50	0.67	0.371	0.093	(0.334)	0.278
115	9.58	0.70	0.390	0.093	(0.351)	0.297
116	9.67	0.70	0.390	0.092	(0.351)	0.297
117	9.75	0.70	0.390	0.092	(0.351)	0.298

118	9.83	0.73	0.408	0.091	(0.367)	0.317
119	9.92	0.73	0.408	0.091	(0.367)	0.317
120	10.00	0.73	0.408	0.091	(0.367)	0.318
121	10.08	0.50	0.278	0.090	(0.251)	0.188
122	10.17	0.50	0.278	0.090	(0.251)	0.189
123	10.25	0.50	0.278	0.089	(0.251)	0.189
124	10.33	0.50	0.278	0.089	(0.251)	0.190
125	10.42	0.50	0.278	0.088	(0.251)	0.190
126	10.50	0.50	0.278	0.088	(0.251)	0.190
127	10.58	0.67	0.371	0.088	(0.334)	0.284
128	10.67	0.67	0.371	0.087	(0.334)	0.284
129	10.75	0.67	0.371	0.087	(0.334)	0.284
130	10.83	0.67	0.371	0.086	(0.334)	0.285
131	10.92	0.67	0.371	0.086	(0.334)	0.285
132	11.00	0.67	0.371	0.085	(0.334)	0.286
133	11.08	0.63	0.353	0.085	(0.317)	0.268
134	11.17	0.63	0.353	0.085	(0.317)	0.268
135	11.25	0.63	0.353	0.084	(0.317)	0.268
136	11.33	0.63	0.353	0.084	(0.317)	0.269
137	11.42	0.63	0.353	0.083	(0.317)	0.269
138	11.50	0.63	0.353	0.083	(0.317)	0.270
139	11.58	0.57	0.316	0.083	(0.284)	0.233
140	11.67	0.57	0.316	0.082	(0.284)	0.233
141	11.75	0.57	0.316	0.082	(0.284)	0.234
142	11.83	0.60	0.334	0.081	(0.301)	0.253
143	11.92	0.60	0.334	0.081	(0.301)	0.253
144	12.00	0.60	0.334	0.080	(0.301)	0.254
145	12.08	0.83	0.464	0.080	(0.418)	0.384
146	12.17	0.83	0.464	0.080	(0.418)	0.384
147	12.25	0.83	0.464	0.079	(0.418)	0.385
148	12.33	0.87	0.483	0.079	(0.434)	0.404
149	12.42	0.87	0.483	0.078	(0.434)	0.404
150	12.50	0.87	0.483	0.078	(0.434)	0.404
151	12.58	0.93	0.520	0.078	(0.468)	0.442
152	12.67	0.93	0.520	0.077	(0.468)	0.442
153	12.75	0.93	0.520	0.077	(0.468)	0.443
154	12.83	0.97	0.538	0.077	(0.484)	0.462
155	12.92	0.97	0.538	0.076	(0.484)	0.462
156	13.00	0.97	0.538	0.076	(0.484)	0.462
157	13.08	1.13	0.631	0.075	(0.568)	0.556
158	13.17	1.13	0.631	0.075	(0.568)	0.556
159	13.25	1.13	0.631	0.075	(0.568)	0.556
160	13.33	1.13	0.631	0.074	(0.568)	0.557
161	13.42	1.13	0.631	0.074	(0.568)	0.557
162	13.50	1.13	0.631	0.073	(0.568)	0.558
163	13.58	0.77	0.427	0.073	(0.384)	0.354
164	13.67	0.77	0.427	0.073	(0.384)	0.354
165	13.75	0.77	0.427	0.072	(0.384)	0.355
166	13.83	0.77	0.427	0.072	(0.384)	0.355
167	13.92	0.77	0.427	0.072	(0.384)	0.355
168	14.00	0.77	0.427	0.071	(0.384)	0.356
169	14.08	0.90	0.501	0.071	(0.451)	0.430
170	14.17	0.90	0.501	0.071	(0.451)	0.431
171	14.25	0.90	0.501	0.070	(0.451)	0.431
172	14.33	0.87	0.483	0.070	(0.434)	0.413
173	14.42	0.87	0.483	0.069	(0.434)	0.413
174	14.50	0.87	0.483	0.069	(0.434)	0.413
175	14.58	0.87	0.483	0.069	(0.434)	0.414
176	14.67	0.87	0.483	0.068	(0.434)	0.414
177	14.75	0.87	0.483	0.068	(0.434)	0.415

178	14.83	0.83	0.464	0.068	(0.418)	0.396
179	14.92	0.83	0.464	0.067	(0.418)	0.397
180	15.00	0.83	0.464	0.067	(0.418)	0.397
181	15.08	0.80	0.445	0.067	(0.401)	0.379
182	15.17	0.80	0.445	0.066	(0.401)	0.379
183	15.25	0.80	0.445	0.066	(0.401)	0.379
184	15.33	0.77	0.427	0.066	(0.384)	0.361
185	15.42	0.77	0.427	0.065	(0.384)	0.362
186	15.50	0.77	0.427	0.065	(0.384)	0.362
187	15.58	0.63	0.353	0.065	(0.317)	0.288
188	15.67	0.63	0.353	0.064	(0.317)	0.288
189	15.75	0.63	0.353	0.064	(0.317)	0.289
190	15.83	0.63	0.353	0.064	(0.317)	0.289
191	15.92	0.63	0.353	0.063	(0.317)	0.289
192	16.00	0.63	0.353	0.063	(0.317)	0.290
193	16.08	0.13	0.074	0.063	(0.067)	0.012
194	16.17	0.13	0.074	0.062	(0.067)	0.012
195	16.25	0.13	0.074	0.062	(0.067)	0.012
196	16.33	0.13	0.074	0.062	(0.067)	0.013
197	16.42	0.13	0.074	0.061	(0.067)	0.013
198	16.50	0.13	0.074	0.061	(0.067)	0.013
199	16.58	0.10	0.056	(0.061)	0.050	0.006
200	16.67	0.10	0.056	(0.060)	0.050	0.006
201	16.75	0.10	0.056	(0.060)	0.050	0.006
202	16.83	0.10	0.056	(0.060)	0.050	0.006
203	16.92	0.10	0.056	(0.060)	0.050	0.006
204	17.00	0.10	0.056	(0.059)	0.050	0.006
205	17.08	0.17	0.093	0.059	(0.084)	0.034
206	17.17	0.17	0.093	0.059	(0.084)	0.034
207	17.25	0.17	0.093	0.058	(0.084)	0.034
208	17.33	0.17	0.093	0.058	(0.084)	0.035
209	17.42	0.17	0.093	0.058	(0.084)	0.035
210	17.50	0.17	0.093	0.058	(0.084)	0.035
211	17.58	0.17	0.093	0.057	(0.084)	0.036
212	17.67	0.17	0.093	0.057	(0.084)	0.036
213	17.75	0.17	0.093	0.057	(0.084)	0.036
214	17.83	0.13	0.074	0.056	(0.067)	0.018
215	17.92	0.13	0.074	0.056	(0.067)	0.018
216	18.00	0.13	0.074	0.056	(0.067)	0.018
217	18.08	0.13	0.074	0.056	(0.067)	0.019
218	18.17	0.13	0.074	0.055	(0.067)	0.019
219	18.25	0.13	0.074	0.055	(0.067)	0.019
220	18.33	0.13	0.074	0.055	(0.067)	0.020
221	18.42	0.13	0.074	0.054	(0.067)	0.020
222	18.50	0.13	0.074	0.054	(0.067)	0.020
223	18.58	0.10	0.056	(0.054)	0.050	0.006
224	18.67	0.10	0.056	(0.054)	0.050	0.006
225	18.75	0.10	0.056	(0.053)	0.050	0.006
226	18.83	0.07	0.037	(0.053)	0.033	0.004
227	18.92	0.07	0.037	(0.053)	0.033	0.004
228	19.00	0.07	0.037	(0.053)	0.033	0.004
229	19.08	0.10	0.056	(0.052)	0.050	0.006
230	19.17	0.10	0.056	(0.052)	0.050	0.006
231	19.25	0.10	0.056	(0.052)	0.050	0.006
232	19.33	0.13	0.074	0.052	(0.067)	0.023
233	19.42	0.13	0.074	0.051	(0.067)	0.023
234	19.50	0.13	0.074	0.051	(0.067)	0.023
235	19.58	0.10	0.056	(0.051)	0.050	0.006
236	19.67	0.10	0.056	(0.051)	0.050	0.006
237	19.75	0.10	0.056	(0.050)	0.050	0.006

238	19.83	0.07	0.037	(0.050)	0.033	0.004
239	19.92	0.07	0.037	(0.050)	0.033	0.004
240	20.00	0.07	0.037	(0.050)	0.033	0.004
241	20.08	0.10	0.056	0.050	(0.050)	0.006
242	20.17	0.10	0.056	0.049	(0.050)	0.006
243	20.25	0.10	0.056	0.049	(0.050)	0.007
244	20.33	0.10	0.056	0.049	(0.050)	0.007
245	20.42	0.10	0.056	0.049	(0.050)	0.007
246	20.50	0.10	0.056	0.049	(0.050)	0.007
247	20.58	0.10	0.056	0.048	(0.050)	0.007
248	20.67	0.10	0.056	0.048	(0.050)	0.008
249	20.75	0.10	0.056	0.048	(0.050)	0.008
250	20.83	0.07	0.037	(0.048)	0.033	0.004
251	20.92	0.07	0.037	(0.048)	0.033	0.004
252	21.00	0.07	0.037	(0.047)	0.033	0.004
253	21.08	0.10	0.056	0.047	(0.050)	0.009
254	21.17	0.10	0.056	0.047	(0.050)	0.009
255	21.25	0.10	0.056	0.047	(0.050)	0.009
256	21.33	0.07	0.037	(0.047)	0.033	0.004
257	21.42	0.07	0.037	(0.046)	0.033	0.004
258	21.50	0.07	0.037	(0.046)	0.033	0.004
259	21.58	0.10	0.056	0.046	(0.050)	0.010
260	21.67	0.10	0.056	0.046	(0.050)	0.010
261	21.75	0.10	0.056	0.046	(0.050)	0.010
262	21.83	0.07	0.037	(0.046)	0.033	0.004
263	21.92	0.07	0.037	(0.045)	0.033	0.004
264	22.00	0.07	0.037	(0.045)	0.033	0.004
265	22.08	0.10	0.056	0.045	(0.050)	0.011
266	22.17	0.10	0.056	0.045	(0.050)	0.011
267	22.25	0.10	0.056	0.045	(0.050)	0.011
268	22.33	0.07	0.037	(0.045)	0.033	0.004
269	22.42	0.07	0.037	(0.045)	0.033	0.004
270	22.50	0.07	0.037	(0.044)	0.033	0.004
271	22.58	0.07	0.037	(0.044)	0.033	0.004
272	22.67	0.07	0.037	(0.044)	0.033	0.004
273	22.75	0.07	0.037	(0.044)	0.033	0.004
274	22.83	0.07	0.037	(0.044)	0.033	0.004
275	22.92	0.07	0.037	(0.044)	0.033	0.004
276	23.00	0.07	0.037	(0.044)	0.033	0.004
277	23.08	0.07	0.037	(0.044)	0.033	0.004
278	23.17	0.07	0.037	(0.044)	0.033	0.004
279	23.25	0.07	0.037	(0.043)	0.033	0.004
280	23.33	0.07	0.037	(0.043)	0.033	0.004
281	23.42	0.07	0.037	(0.043)	0.033	0.004
282	23.50	0.07	0.037	(0.043)	0.033	0.004
283	23.58	0.07	0.037	(0.043)	0.033	0.004
284	23.67	0.07	0.037	(0.043)	0.033	0.004
285	23.75	0.07	0.037	(0.043)	0.033	0.004
286	23.83	0.07	0.037	(0.043)	0.033	0.004
287	23.92	0.07	0.037	(0.043)	0.033	0.004
288	24.00	0.07	0.037	(0.043)	0.033	0.004

(Loss Rate Not Used)

Sum = 100.0 Sum = 35.1

Flood volume = Effective rainfall 2.92(In)
times area 5.5(Ac.)/[(In)/(Ft.)] = 1.3(Ac.Ft)
Total soil loss = 1.72(In)
Total soil loss = 0.791(Ac.Ft)
Total rainfall = 4.64(In)
Flood volume = 58694.6 Cubic Feet
Total soil loss = 34447.3 Cubic Feet

Peak flow rate of this hydrograph = 3.107(CFS)

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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	0.01	Q	|	|	|	|
0+10	0.0002	0.02	Q	|	|	|	|
0+15	0.0003	0.02	Q	|	|	|	|
0+20	0.0005	0.02	Q	|	|	|	|
0+25	0.0007	0.03	Q	|	|	|	|
0+30	0.0009	0.03	Q	|	|	|	|
0+35	0.0011	0.03	Q	|	|	|	|
0+40	0.0013	0.03	Q	|	|	|	|
0+45	0.0015	0.03	Q	|	|	|	|
0+50	0.0018	0.03	Q	|	|	|	|
0+55	0.0020	0.04	Q	|	|	|	|
1+ 0	0.0023	0.04	Q	|	|	|	|
1+ 5	0.0026	0.04	Q	|	|	|	|
1+10	0.0028	0.03	Q	|	|	|	|
1+15	0.0030	0.03	Q	|	|	|	|
1+20	0.0032	0.03	Q	|	|	|	|
1+25	0.0035	0.03	Q	|	|	|	|
1+30	0.0037	0.03	Q	|	|	|	|
1+35	0.0039	0.03	Q	|	|	|	|
1+40	0.0041	0.03	Q	|	|	|	|
1+45	0.0043	0.03	Q	|	|	|	

1+50	0.0045	0.03	Q
1+55	0.0048	0.04	Q
2+ 0	0.0051	0.04	Q
2+ 5	0.0054	0.04	Q
2+10	0.0057	0.04	Q
2+15	0.0060	0.04	Q
2+20	0.0062	0.04	Q
2+25	0.0065	0.04	Q
2+30	0.0068	0.04	Q
2+35	0.0071	0.04	Q
2+40	0.0075	0.05	Q
2+45	0.0078	0.05	Q
2+50	0.0082	0.05	Q
2+55	0.0085	0.05	Q
3+ 0	0.0089	0.05	Q
3+ 5	0.0093	0.05	Q
3+10	0.0096	0.05	Q
3+15	0.0100	0.05	Q
3+20	0.0103	0.05	Q
3+25	0.0107	0.05	Q
3+30	0.0110	0.05	Q
3+35	0.0114	0.05	Q
3+40	0.0117	0.05	Q
3+45	0.0121	0.05	Q
3+50	0.0125	0.06	Q
3+55	0.0129	0.06	Q
4+ 0	0.0133	0.06	Q
4+ 5	0.0138	0.06	Q
4+10	0.0142	0.06	Q
4+15	0.0146	0.06	Q

4+20	0.0151	0.07	Q	|	|	|
4+25	0.0155	0.07	Q	|	|	|
4+30	0.0160	0.07	Q	|	|	|
4+35	0.0165	0.07	Q	|	|	|
4+40	0.0170	0.07	Q	|	|	|
4+45	0.0175	0.07	Q	|	|	|
4+50	0.0182	0.10	Q	|	|	|
4+55	0.0192	0.15	Q	|	|	|
5+ 0	0.0203	0.16	Q	|	|	|
5+ 5	0.0212	0.13	Q	|	|	|
5+10	0.0217	0.08	Q	|	|	|
5+15	0.0222	0.06	Q	|	|	|
5+20	0.0226	0.07	Q	|	|	|
5+25	0.0231	0.07	Q	|	|	|
5+30	0.0236	0.07	Q	|	|	|
5+35	0.0244	0.11	Q	|	|	|
5+40	0.0255	0.17	Q	|	|	|
5+45	0.0268	0.18	Q	|	|	|
5+50	0.0281	0.19	Q	|	|	|
5+55	0.0294	0.19	Q	|	|	|
6+ 0	0.0307	0.19	Q	|	|	|
6+ 5	0.0323	0.23	Q	|	|	|
6+10	0.0343	0.29	|Q	|	|	|
6+15	0.0364	0.30	|Q	|	|	|
6+20	0.0385	0.31	|Q	|	|	|
6+25	0.0407	0.31	|Q	|	|	|
6+30	0.0428	0.31	|Q	|	|	|
6+35	0.0453	0.35	|Q	|	|	|
6+40	0.0481	0.41	|Q	|	|	|
6+45	0.0510	0.42	|Q	|	|	|

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|
  6+50       0.0539      0.43  |Q         |         |         |
  6+55       0.0569      0.43  |Q         |         |         |
  7+ 0       0.0599      0.43  |Q         |         |         |
  7+ 5       0.0629      0.44  |Q         |         |         |
  7+10       0.0659      0.44  |Q         |         |         |
  7+15       0.0690      0.44  |QV        |         |         |
  7+20       0.0723      0.48  |QV        |         |         |
  7+25       0.0760      0.54  | Q        |         |         |
  7+30       0.0798      0.55  | Q        |         |         |
  7+35       0.0839      0.59  | Q        |         |         |
  7+40       0.0883      0.65  | Q        |         |         |
  7+45       0.0929      0.66  | Q        |         |         |
  7+50       0.0977      0.70  | Q        |         |         |
  7+55       0.1029      0.76  |  Q       |         |         |
  8+ 0       0.1083      0.77  |  Q       |         |         |
  8+ 5       0.1141      0.85  |  Q       |         |         |
  8+10       0.1207      0.96  |  Q       |         |         |
  8+15       0.1275      0.99  |  Q       |         |         |
  8+20       0.1344      0.99  |  Q       |         |         |
  8+25       0.1412      1.00  |  QV      |         |         |
  8+30       0.1481      1.00  |  QV      |         |         |
  8+35       0.1552      1.04  |   Q      |         |         |
  8+40       0.1628      1.09  |   Q      |         |         |
  8+45       0.1704      1.11  |   QV     |         |         |
  8+50       0.1783      1.15  |   QV     |         |         |
  8+55       0.1866      1.21  |   QV     |         |         |
  9+ 0       0.1950      1.22  |   QV     |         |         |
  9+ 5       0.2039      1.29  |    QV    |         |         |
  9+10       0.2136      1.41  |    QV    |         |         |
  9+15       0.2234      1.43  |    QV    |         |         |
```

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|
    9+20      0.2336      1.47  |    QV   |         |         |
|
    9+25      0.2441      1.53  |     QV  |         |         |
|
    9+30      0.2548      1.54  |     QV  |         |         |
|
    9+35      0.2657      1.58  |     QV  |         |         |
|
    9+40      0.2770      1.64  |     Q V |         |         |
|
    9+45      0.2884      1.66  |     Q V |         |         |
|
    9+50      0.3000      1.69  |     Q V |         |         |
|
    9+55      0.3121      1.75  |      Q V|         |         |
|
   10+ 0      0.3243      1.77  |      Q V|         |         |
|
   10+ 5      0.3349      1.53  |     Q  V|         |         |
|
   10+10      0.3428      1.15  |   Q     V         |         |
|
   10+15      0.3502      1.07  |   Q     V         |         |
|
   10+20      0.3574      1.06  |   Q     V         |         |
|
   10+25      0.3647      1.06  |   Q     V         |         |
|
   10+30      0.3720      1.06  |   Q     |V        |         |
|
   10+35      0.3805      1.23  |   Q     |V        |         |
|
   10+40      0.3909      1.51  |     Q   |V        |         |
|
   10+45      0.4017      1.57  |     Q   |V        |         |
|
   10+50      0.4126      1.58  |     Q   | V       |         |
|
   10+55      0.4236      1.59  |     Q   | V       |         |
|
   11+ 0      0.4345      1.59  |     Q   | V       |         |
|
   11+ 5      0.4453      1.56  |     Q   |  V      |         |
|
   11+10      0.4557      1.51  |     Q   |  V      |         |
|
   11+15      0.4660      1.50  |    Q    |  V      |         |
|
   11+20      0.4763      1.50  |    Q    |   V     |         |
|
   11+25      0.4866      1.50  |    Q    |   V     |         |
|
   11+30      0.4970      1.50  |     Q   |   V     |         |
|
   11+35      0.5069      1.44  |    Q    |    V    |         |
|
   11+40      0.5160      1.33  |    Q    |    V    |         |
|
   11+45      0.5250      1.31  |    Q    |    V    |         |
```

```
|
  11+50       0.5342      1.34  |    Q    |    V    |         |
|
  11+55       0.5438      1.40  |    Q    |     V   |         |
|
  12+ 0       0.5535      1.41  |    Q    |     V   |         |
|
  12+ 5       0.5649      1.65  |     Q   |     V   |         |
|
  12+10       0.5790      2.04  |       Q |      V  |         |
|
  12+15       0.5936      2.12  |       Q |      V  |         |
|
  12+20       0.6086      2.17  |       Q |       V |         |
|
  12+25       0.6240      2.24  |       Q |       V |         |
|
  12+30       0.6395      2.25  |        Q|       V |         |
|
  12+35       0.6555      2.32  |        Q|        V|         |
|
  12+40       0.6723      2.44  |        Q|        V|         |
|
  12+45       0.6892      2.46  |        Q|         V         |
|
  12+50       0.7064      2.50  |         Q         V         |
|
  12+55       0.7241      2.56  |         Q         |V        |
|
  13+ 0       0.7418      2.57  |         Q         | V       |
|
  13+ 5       0.7607      2.75  |         Q         | V       |
|
  13+10       0.7816      3.03  |         | Q       |  V      |
|
  13+15       0.8028      3.09  |         | Q       |  V      |
|
  13+20       0.8242      3.10  |         | Q       |   V     |
|
  13+25       0.8456      3.11  |         | Q       |    V    |
|
  13+30       0.8670      3.11  |         | Q       |    V    |
|
  13+35       0.8858      2.74  |         Q         |     V   |
|
  13+40       0.9005      2.13  |       Q |         |     V   |
|
  13+45       0.9143      2.01  |       Q |         |      V  |
|
  13+50       0.9280      1.98  |      Q  |         |      V  |
|
  13+55       0.9416      1.98  |      Q  |         |      V  |
|
  14+ 0       0.9552      1.98  |      Q  |         |       V |
|
  14+ 5       0.9698      2.12  |       Q |         |       V |
|
  14+10       0.9860      2.34  |        Q|         |        V|
|
  14+15       1.0024      2.39  |        Q|         |        V|
```

```
|
   14+20       1.0187      2.37  |        Q|         |         V
|
   14+25       1.0347      2.32  |        Q|         |         V
|
   14+30       1.0506      2.31  |        Q|         |         |V
|
   14+35       1.0664      2.31  |        Q|         |         |V
|
   14+40       1.0823      2.31  |        Q|         |         | V
|
   14+45       1.0982      2.31  |        Q|         |         | V
|
   14+50       1.1139      2.28  |        Q|         |         |  V
|
   14+55       1.1292      2.22  |       Q |         |         |  V
|
   15+ 0       1.1445      2.21  |       Q |         |         |  V
|
   15+ 5       1.1595      2.18  |       Q |         |         |   V
|
   15+10       1.1742      2.13  |       Q |         |         |   V
|
   15+15       1.1887      2.12  |       Q |         |         |    V
|
   15+20       1.2031      2.08  |       Q |         |         |    V
|
   15+25       1.2171      2.03  |       Q |         |         |     V
|
   15+30       1.2310      2.02  |       Q |         |         |     V
|
   15+35       1.2439      1.88  |      Q  |         |         |     V
|
   15+40       1.2554      1.66  |     Q   |         |         |      V
|
   15+45       1.2665      1.62  |     Q   |         |         |      V
|
   15+50       1.2776      1.61  |     Q   |         |         |      V
|
   15+55       1.2887      1.61  |     Q   |         |         |       V
|
   16+ 0       1.2999      1.61  |     Q   |         |         |       V
|
   16+ 5       1.3075      1.11  |   Q     |         |         |       V
|
   16+10       1.3094      0.28  |Q        |         |         |       V
|
   16+15       1.3101      0.11  Q         |         |         |       V
|
   16+20       1.3107      0.08  Q         |         |         |       V
|
   16+25       1.3112      0.07  Q         |         |         |       V
|
   16+30       1.3117      0.07  Q         |         |         |       V
|
   16+35       1.3121      0.06  Q         |         |         |       V
|
   16+40       1.3123      0.04  Q         |         |         |       V
|
   16+45       1.3125      0.03  Q         |         |         |       V
```

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|
   16+50       1.3127       0.03  Q          |          |          |        V
|
   16+55       1.3130       0.03  Q          |          |          |        V
|
   17+ 0       1.3132       0.03  Q          |          |          |        V
|
   17+ 5       1.3137       0.08  Q          |          |          |        V
|
   17+10       1.3149       0.17  Q          |          |          |
V|
   17+15       1.3162       0.19  Q          |          |          |
V|
   17+20       1.3175       0.19  Q          |          |          |
V|
   17+25       1.3188       0.19  Q          |          |          |
V|
   17+30       1.3202       0.20  Q          |          |          |
V|
   17+35       1.3215       0.20  Q          |          |          |
V|
   17+40       1.3229       0.20  Q          |          |          |
V|
   17+45       1.3243       0.20  Q          |          |          |
V|
   17+50       1.3254       0.17  Q          |          |          |
V|
   17+55       1.3262       0.11  Q          |          |          |
V|
   18+ 0       1.3269       0.10  Q          |          |          |
V|
   18+ 5       1.3277       0.10  Q          |          |          |
V|
   18+10       1.3284       0.10  Q          |          |          |
V|
   18+15       1.3291       0.11  Q          |          |          |
V|
   18+20       1.3299       0.11  Q          |          |          |
V|
   18+25       1.3306       0.11  Q          |          |          |
V|
   18+30       1.3314       0.11  Q          |          |          |
V|
   18+35       1.3320       0.09  Q          |          |          |
V|
   18+40       1.3322       0.04  Q          |          |          |
V|
   18+45       1.3325       0.03  Q          |          |          |
V|
   18+50       1.3327       0.03  Q          |          |          |
V|
   18+55       1.3328       0.02  Q          |          |          |
V|
   19+ 0       1.3330       0.02  Q          |          |          |
V|
   19+ 5       1.3331       0.02  Q          |          |          |
V|
   19+10       1.3333       0.03  Q          |          |          |
V|
   19+15       1.3335       0.03  Q          |          |          |
```

V|
19+20 1.3340 0.06 Q | | |
V|
19+25 1.3348 0.11 Q | | |
V|
19+30 1.3356 0.12 Q | | |
V|
19+35 1.3363 0.10 Q | | |
V|
19+40 1.3366 0.04 Q | | |
V|
19+45 1.3368 0.03 Q | | |
V|
19+50 1.3370 0.03 Q | | |
V|
19+55 1.3372 0.02 Q | | |
V|
20+ 0 1.3373 0.02 Q | | |
V|
20+ 5 1.3375 0.03 Q | | |
V|
20+10 1.3377 0.03 Q | | |
V|
20+15 1.3379 0.03 Q | | |
V|
20+20 1.3382 0.04 Q | | |
V|
20+25 1.3384 0.04 Q | | |
V|
20+30 1.3387 0.04 Q | | |
V|
20+35 1.3390 0.04 Q | | |
V|
20+40 1.3393 0.04 Q | | |
V|
20+45 1.3396 0.04 Q | | |
V|
20+50 1.3398 0.04 Q | | |
V|
20+55 1.3400 0.02 Q | | |
V|
21+ 0 1.3401 0.02 Q | | |
V|
21+ 5 1.3403 0.03 Q | | |
V|
21+10 1.3406 0.04 Q | | |
V|
21+15 1.3410 0.05 Q | | |
V|
21+20 1.3412 0.04 Q | | |
V|
21+25 1.3414 0.02 Q | | |
V|
21+30 1.3415 0.02 Q | | |
V|
21+35 1.3418 0.03 Q | | |
V|
21+40 1.3421 0.05 Q | | |
V|
21+45 1.3425 0.05 Q | | |

```
V|
    21+50        1.3428       0.04  Q           |           |           |
V|
    21+55        1.3429       0.03  Q           |           |           |
V|
    22+ 0        1.3431       0.02  Q           |           |           |
V|
    22+ 5        1.3433       0.03  Q           |           |           |
V|
    22+10        1.3437       0.05  Q           |           |           |
V|
    22+15        1.3441       0.06  Q           |           |           |
V|
    22+20        1.3444       0.05  Q           |           |           |
V|
    22+25        1.3446       0.03  Q           |           |           |
V|
    22+30        1.3448       0.02  Q           |           |           |
V|
    22+35        1.3449       0.02  Q           |           |           |
V|
    22+40        1.3450       0.02  Q           |           |           |
V|
    22+45        1.3452       0.02  Q           |           |           |
V|
    22+50        1.3453       0.02  Q           |           |           |
V|
    22+55        1.3455       0.02  Q           |           |           |
V|
    23+ 0        1.3456       0.02  Q           |           |           |
V|
    23+ 5        1.3458       0.02  Q           |           |           |
V|
    23+10        1.3459       0.02  Q           |           |           |
V|
    23+15        1.3460       0.02  Q           |           |           |
V|
    23+20        1.3462       0.02  Q           |           |           |
V|
    23+25        1.3463       0.02  Q           |           |           |
V|
    23+30        1.3465       0.02  Q           |           |           |
V|
    23+35        1.3466       0.02  Q           |           |           |
V|
    23+40        1.3468       0.02  Q           |           |           |
V|
    23+45        1.3469       0.02  Q           |           |           |
V|
    23+50        1.3470       0.02  Q           |           |           |
V|
    23+55        1.3472       0.02  Q           |           |           |
V|
    24+ 0        1.3473       0.02  Q           |           |           |
V|
    24+ 5        1.3474       0.01  Q           |           |           |
V|
    24+10        1.3474       0.00  Q           |           |           |
V|
    24+15        1.3474       0.00  Q           |           |           |
```

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

            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
8.2
                  Study date  11/09/21 File: moval33preb12.out

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


      Program License Serial Number 6232

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

       English Units used in output format



      ------------------------------------------------------------------
---
      Gateway Heights
      Predevlopment Conditions
      Unit Hydrograph Runoff

      ------------------------------------------------------------------
--
      Drainage Area =       8.04(Ac.)  =      0.013 Sq. Mi.
      Drainage Area for Depth-Area Areal Adjustment =       8.04(Ac.)  =
0.013 Sq. Mi.
      Length along longest watercourse =    1083.00(Ft.)
      Length along longest watercourse measured to centroid =     476.00
(Ft.)
      Length along longest watercourse =      0.205 Mi.
      Length along longest watercourse measured to centroid =      0.090
Mi.
      Difference in elevation =     110.00(Ft.)
      Slope along watercourse =    536.2881 Ft./Mi.
      Average Manning's 'N' = 0.040
      Lag time =    0.064 Hr.
      Lag time =     3.83 Min.
      25% of lag time =     0.96 Min.
      40% of lag time =     1.53 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]
```

```
        8.04              0.47                    3.75

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        8.04              1.19                    9.57

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    0.466(In)
Area Averaged 100-Year Rainfall =    1.190(In)

Point rain (area averaged) =    0.466(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    0.466(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     8.040           84.00         0.000
 Total Area Entered =      8.04(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
84.0  84.0      0.198     0.000        0.198       1.000
0.198
                                                     Sum (F) =
0.198
Area averaged mean soil loss (F) (In/Hr) =  0.198
Minimum soil loss rate ((In/Hr)) =  0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.900
-------------------------------------------------------------------
---
Slope of intensity-duration curve for a 1 hour storm =0.5500
-------------------------------------------------------------------
----

            U n i t  H y d r o g r a p h
                  FOOTHILL S-Curve
-------------------------------------------------------------------
--
            Unit Hydrograph Data
-------------------------------------------------------------------
---
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                            Graph %           (CFS)
-------------------------------------------------------------------
---
    1   0.083        130.523         24.817              2.011
    2   0.167        261.045         55.614              4.506
    3   0.250        391.568         14.211              1.151
    4   0.333        522.090          3.889              0.315
    5   0.417        652.613          1.032              0.084
    6   0.500        783.135          0.438              0.035
                               Sum = 100.000   Sum=       8.103
-----------------------------------------------------------------------
```

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	3.30	0.185	(0.198)	0.166	0.018
2	0.17	4.20	0.235	0.198	(0.211)	0.036
3	0.25	4.40	0.246	0.198	(0.221)	0.048
4	0.33	4.80	0.268	0.198	(0.242)	0.070
5	0.42	5.20	0.291	0.198	(0.262)	0.092
6	0.50	6.20	0.347	0.198	(0.312)	0.148
7	0.58	6.80	0.380	0.198	(0.342)	0.182
8	0.67	8.80	0.492	0.198	(0.443)	0.294
9	0.75	13.90	0.777	0.198	(0.700)	0.579
10	0.83	31.40	1.756	0.198	(1.580)	1.557
11	0.92	7.20	0.403	0.198	(0.362)	0.204
12	1.00	3.80	0.212	(0.198)	0.191	0.021

(Loss Rate Not Used)

Sum = 100.0 Sum = 3.3

Flood volume = Effective rainfall 0.27(In)
times area 8.0(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)
Total soil loss = 0.20(In)
Total soil loss = 0.131(Ac.Ft)
Total rainfall = 0.47(In)
Flood volume = 7905.0 Cubic Feet
Total soil loss = 5694.3 Cubic Feet

Peak flow rate of this hydrograph = 8.212(CFS)

+++

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        2.5       5.0       7.5       10.0
-----------------------------------------------------------------------
    0+ 5       0.0003      0.04  Q         |         |         |         |
    0+10       0.0013      0.16  Q         |         |         |         |
    0+15       0.0033      0.28  VQ        |         |         |         |
    0+20       0.0060      0.40  |Q        |         |         |         |
    0+25       0.0100      0.57  | Q       |         |         |         |
    0+30       0.0156      0.81  |  Q      |         |         |         |
    0+35       0.0236      1.17  |   QV    |         |         |
```

```
|
    0+40       0.0348      1.62  |     QV  |         |         |
|
    0+45       0.0537      2.75  |         |Q        |         |
|
    0+50       0.0961      6.15  |         |         |V  Q     |
|
    0+55       0.1527      8.21  |         |         |         | QV
|
    1+ 0       0.1731      2.97  |         |Q        |         |       V
|
    1+ 5       0.1792      0.88  |  Q      |         |         |
V|
    1+10       0.1809      0.24  Q         |         |         |
V|
    1+15       0.1814      0.08  Q         |         |         |
V|
    1+20       0.1815      0.01  Q         |         |         |
V|
    1+25       0.1815      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 11/09/21 File: moval33preb15.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Predevlopment Conditions
Unit Hydrograph Runoff
Area B

Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) = 0.013 Sq. Mi.
Length along longest watercourse = 1083.00(Ft.)
Length along longest watercourse measured to centroid = 476.00 (Ft.)
Length along longest watercourse = 0.205 Mi.
Length along longest watercourse measured to centroid = 0.090 Mi.
Difference in elevation = 110.00(Ft.)
Slope along watercourse = 536.2881 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.064 Hr.
Lag time = 3.83 Min.
25% of lag time = 0.96 Min.
40% of lag time = 1.53 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]

8.04 0.47 3.75

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.04	1.19	9.57

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 0.466(In)
Area Averaged 100-Year Rainfall = 1.190(In)

Point rain (area averaged) = 0.636(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 0.636(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.040	84.00	0.000

Total Area Entered = 8.04(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	84.0	0.198	0.000	0.198	1.000	0.198

Sum (F) = 0.198

Area averaged mean soil loss (F) (In/Hr) = 0.198
Minimum soil loss rate ((In/Hr)) = 0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.5500

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	130.523	24.817	2.011
2	0.167	261.045	55.614	4.506
3	0.250	391.568	14.211	1.151
4	0.333	522.090	3.889	0.315
5	0.417	652.613	1.032	0.084
6	0.500	783.135	0.438	0.035
			Sum = 100.000	Sum= 8.103

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	3.30	0.252	0.198	(0.227)	0.053
2	0.17	4.20	0.320	0.198	(0.288)	0.122
3	0.25	4.40	0.336	0.198	(0.302)	0.137
4	0.33	4.80	0.366	0.198	(0.329)	0.168
5	0.42	5.20	0.397	0.198	(0.357)	0.198
6	0.50	6.20	0.473	0.198	(0.426)	0.274
7	0.58	6.80	0.519	0.198	(0.467)	0.320
8	0.67	8.80	0.671	0.198	(0.604)	0.473
9	0.75	13.90	1.060	0.198	(0.954)	0.862
10	0.83	31.40	2.395	0.198	(2.155)	2.196
11	0.92	7.20	0.549	0.198	(0.494)	0.351
12	1.00	3.80	0.290	0.198	(0.261)	0.091
		(Loss Rate Not Used)				
Sum =		100.0			Sum =	5.2

Flood volume = Effective rainfall 0.44(In)
times area 8.0(Ac.)/[(In)/(Ft.)] = 0.3(Ac.Ft)
Total soil loss = 0.20(In)
Total soil loss = 0.133(Ac.Ft)
Total rainfall = 0.64(In)
Flood volume = 12757.8 Cubic Feet
Total soil loss = 5790.3 Cubic Feet

Peak flow rate of this hydrograph = 11.786(CFS)

++

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       0.0007      0.11  Q         |         |         |         |
    0+10       0.0041      0.49  Q         |         |         |         |
    0+15       0.0102      0.89  |Q        |         |         |         |
    0+20       0.0179      1.11  | Q       |         |         |         |
    0+25       0.0272      1.36  | QV      |         |         |         |
    0+30       0.0389      1.69  |  Q V    |         |         |         |
    0+35       0.0539      2.18  |   Q  V  |         |         |
```

```
|
     0+40        0.0731       2.79  |     Q   V|         |         |
|
     0+45        0.1030       4.34  |        Q |   V     |         |
|
     0+50        0.1648       8.98  |          |      Q  | V       |
|
     0+55        0.2460      11.79  |          |         |  Q      |  V
|
     1+ 0        0.2778       4.62  |         Q|         |         |      V
|
     1+ 5        0.2888       1.60  |  Q       |         |         |
V|
     1+10        0.2918       0.43  Q          |         |         |
V|
     1+15        0.2927       0.14  Q          |         |         |
V|
     1+20        0.2929       0.02  Q          |         |         |
V|
     1+25        0.2929       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 02/19/21 File: moval33preb110.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Predevlopment Conditions
Unit Hydrograph Runoff

Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) = 0.013 Sq. Mi.
Length along longest watercourse = 1083.00(Ft.)
Length along longest watercourse measured to centroid = 476.00(Ft.)
Length along longest watercourse = 0.205 Mi.
Length along longest watercourse measured to centroid = 0.090 Mi.
Difference in elevation = 110.00(Ft.)
Slope along watercourse = 536.2881 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.064 Hr.
Lag time = 3.83 Min.
25% of lag time = 0.96 Min.
40% of lag time = 1.53 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]
8.04	0.47	3.75

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.04	1.19	9.57

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.466(In)
Area Averaged 100-Year Rainfall = 1.190(In)

```
Point rain (area averaged) =    0.764(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    0.764(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     8.040           84.00         0.000
 Total Area Entered =      8.04(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
84.0  84.0      0.198     0.000        0.198       1.000      0.198
                                                  Sum (F) =   0.198
Area averaged mean soil loss (F) (In/Hr) =  0.198
Minimum soil loss rate ((In/Hr)) =  0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.900
--------------------------------------------------------------------
Slope of intensity-duration curve for a 1 hour storm =0.5500
----------------------------------------------------------------------

                U n i t  H y d r o g r a p h
                        FOOTHILL S-Curve
-------------------------------------------------------------------
                Unit Hydrograph Data
--------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                           Graph %           (CFS)
--------------------------------------------------------------------
    1   0.083       130.523         24.817              2.011
    2   0.167       261.045         55.614              4.506
    3   0.250       391.568         14.211              1.151
    4   0.333       522.090          3.889              0.315
    5   0.417       652.613          1.032              0.084
    6   0.500       783.135          0.438              0.035
                              Sum = 100.000   Sum=      8.103
----------------------------------------------------------------------
```

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   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
     (Hr.)  Percent   (In/Hr)         Max    |   Low        (In/Hr)
  1   0.08     3.30     0.302          0.198    (  0.272)        0.104
  2   0.17     4.20     0.385          0.198    (  0.346)        0.187
  3   0.25     4.40     0.403          0.198    (  0.363)        0.205
  4   0.33     4.80     0.440          0.198    (  0.396)        0.242
  5   0.42     5.20     0.477          0.198    (  0.429)        0.278
  6   0.50     6.20     0.568          0.198    (  0.511)        0.370
  7   0.58     6.80     0.623          0.198    (  0.561)        0.425
  8   0.67     8.80     0.807          0.198    (  0.726)        0.608
  9   0.75    13.90     1.274          0.198    (  1.147)        1.076
 10   0.83    31.40     2.878          0.198    (  2.590)        2.680
 11   0.92     7.20     0.660          0.198    (  0.594)        0.462
 12   1.00     3.80     0.348          0.198    (  0.313)        0.150
               (Loss Rate Not Used)
   Sum =     100.0                                 Sum =     6.8
      Flood volume = Effective rainfall      0.57(In)
       times area       8.0(Ac.)/[(In)/(Ft.)] =       0.4(Ac.Ft)
      Total soil loss =      0.20(In)
```

```
Total soil loss =     0.133(Ac.Ft)
Total rainfall =      0.76(In)
Flood volume =       16501.4 Cubic Feet
Total soil loss =        5790.3 Cubic Feet
--------------------------------------------------------------------
 Peak flow rate of this hydrograph =     14.490(CFS)
--------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    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       0.0014      0.21  Q         |         |         |         |
  0+10       0.0073      0.84  VQ        |         |         |         |
  0+15       0.0167      1.37  |VQ       |         |         |         |
  0+20       0.0281      1.66  | VQ      |         |         |         |
  0+25       0.0416      1.95  |  QV     |         |         |         |
  0+30       0.0578      2.36  |   Q V   |         |         |         |
  0+35       0.0781      2.94  |    Q  V |         |         |         |
  0+40       0.1034      3.68  |      Q  V         |         |         |
  0+45       0.1416      5.54  |         |Q  V     |         |         |
  0+50       0.2182     11.12  |         |         | QV      |         |
  0+55       0.3180     14.49  |         |         |       Q |   V     |
  1+ 0       0.3584      5.87  |         |Q        |         |       V |
  1+ 5       0.3733      2.16  |   Q     |         |         |         V|
  1+10       0.3773      0.58  |Q        |         |         |         V|
  1+15       0.3786      0.18  Q         |         |         |         V|
  1+20       0.3788      0.03  Q         |         |         |         V|
  1+25       0.3788      0.01  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 11/09/21 File: moval33preb1100.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Predevlopment Conditions
Unit Hydrograph Runoff
Area B

Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) = 0.013 Sq. Mi.
Length along longest watercourse = 1083.00(Ft.)
Length along longest watercourse measured to centroid = 476.00 (Ft.)
Length along longest watercourse = 0.205 Mi.
Length along longest watercourse measured to centroid = 0.090 Mi.
Difference in elevation = 110.00(Ft.)
Slope along watercourse = 536.2881 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.064 Hr.
Lag time = 3.83 Min.
25% of lag time = 0.96 Min.
40% of lag time = 1.53 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]

8.04	0.47	3.75

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.04	1.19	9.57

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.466(In)
Area Averaged 100-Year Rainfall = 1.190(In)

Point rain (area averaged) = 1.190(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.190(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.040	84.00	0.000

Total Area Entered = 8.04(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	93.4	0.086	0.000	0.086	1.000	0.086
					Sum (F) =	0.086

Area averaged mean soil loss (F) (In/Hr) = 0.086
Minimum soil loss rate ((In/Hr)) = 0.043
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.5500

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	130.523	24.817	2.011
2	0.167	261.045	55.614	4.506
3	0.250	391.568	14.211	1.151
4	0.333	522.090	3.889	0.315
5	0.417	652.613	1.032	0.084
6	0.500	783.135	0.438	0.035
			Sum = 100.000	Sum= 8.103

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	3.30	0.471	0.086	(0.424)	0.385
2	0.17	4.20	0.600	0.086	(0.540)	0.514
3	0.25	4.40	0.628	0.086	(0.565)	0.542
4	0.33	4.80	0.685	0.086	(0.617)	0.600
5	0.42	5.20	0.743	0.086	(0.668)	0.657
6	0.50	6.20	0.885	0.086	(0.797)	0.799
7	0.58	6.80	0.971	0.086	(0.874)	0.885
8	0.67	8.80	1.257	0.086	(1.131)	1.171
9	0.75	13.90	1.985	0.086	(1.786)	1.899
10	0.83	31.40	4.484	0.086	(4.035)	4.398
11	0.92	7.20	1.028	0.086	(0.925)	0.942
12	1.00	3.80	0.543	0.086	(0.488)	0.457
		(Loss Rate Not Used)				
Sum =		100.0			Sum =	13.2

Flood volume = Effective rainfall 1.10(In)
times area 8.0(Ac.)/[(In)/(Ft.)] = 0.7(Ac.Ft)
Total soil loss = 0.09(In)
Total soil loss = 0.057(Ac.Ft)
Total rainfall = 1.19(In)
Flood volume = 32223.8 Cubic Feet
Total soil loss = 2504.1 Cubic Feet

```
      ------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =     24.383(CFS)
      ------------------------------------------------------------------
--
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                          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       0.0053      0.78  VQ        |         |         |
|
    0+10       0.0244      2.77  |V Q      |         |         |
|
    0+15       0.0510      3.85  | V  Q    |         |         |
|
    0+20       0.0810      4.37  |   VQ    |         |         |
|
    0+25       0.1144      4.84  |     Q   |         |         |
|
    0+30       0.1522      5.49  |      QV |         |         |
|
    0+35       0.1962      6.39  |       Q V         |         |
```

```
|
   0+40       0.2482      7.54  |         Q  V      |         |
|
   0+45       0.3201     10.45  |         |  Q   V  |         |
|
   0+50       0.4519     19.13  |         |         |   VQ    |
|
   0+55       0.6198     24.38  |         |         |         | QV
|
   1+ 0       0.6953     10.96  |         |   Q     |         |      V
|
   1+ 5       0.7279      4.73  |     Q   |         |         |
V|
   1+10       0.7365      1.26  |Q        |         |         |
V|
   1+15       0.7392      0.38  Q         |         |         |
V|
   1+20       0.7396      0.07  Q         |         |         |
V|
   1+25       0.7398      0.02  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 11/09/21 File: moval33preb32.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Predevlopment Conditions
Unit Hydrograph Runoff
Area B

Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) = 0.013 Sq. Mi.
Length along longest watercourse = 1083.00(Ft.)
Length along longest watercourse measured to centroid = 476.00 (Ft.)
Length along longest watercourse = 0.205 Mi.
Length along longest watercourse measured to centroid = 0.090 Mi.
Difference in elevation = 110.00(Ft.)
Slope along watercourse = 536.2881 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.064 Hr.
Lag time = 3.83 Min.
25% of lag time = 0.96 Min.
40% of lag time = 1.53 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]

```
          8.04              0.80                    6.42

  100 YEAR Area rainfall data:


  Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
          8.04              1.89                   15.20

  STORM EVENT (YEAR) =    2.00
  Area Averaged 2-Year Rainfall =    0.799(In)
  Area Averaged 100-Year Rainfall =    1.890(In)

  Point rain (area averaged) =    0.799(In)
  Areal adjustment factor =  100.00 %
  Adjusted average point rain =    0.799(In)

  Sub-Area Data:
  Area(Ac.)         Runoff Index   Impervious %
       8.040           84.00         0.000
   Total Area Entered =      8.04(Ac.)


  RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
  AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
  84.0  84.0      0.198     0.000        0.198       1.000
0.198
                                                       Sum (F) =
0.198
  Area averaged mean soil loss (F) (In/Hr) =  0.198
  Minimum soil loss rate ((In/Hr)) =  0.099
  (for 24 hour storm duration)
  Soil low loss rate (decimal) =   0.900
  -----------------------------------------------------------------
---

              U n i t  H y d r o g r a p h
                    FOOTHILL S-Curve
  -----------------------------------------------------------------
--
              Unit Hydrograph Data
  -----------------------------------------------------------------
---
  Unit time period   Time % of lag   Distribution   Unit Hydrograph
      (hrs)                            Graph %           (CFS)
  -----------------------------------------------------------------
---
      1   0.083        130.523         24.817             2.011
      2   0.167        261.045         55.614             4.506
      3   0.250        391.568         14.211             1.151
      4   0.333        522.090          3.889             0.315
      5   0.417        652.613          1.032             0.084
      6   0.500        783.135          0.438             0.035
                                  Sum = 100.000   Sum=       8.103
-----------------------------------------------------------------------


 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	Loss rate(In./Hr) Low	Effective (In/Hr)
1	0.08	1.30	0.125	(0.198)	0.112	0.012
2	0.17	1.30	0.125	(0.198)	0.112	0.012
3	0.25	1.10	0.105	(0.198)	0.095	0.011
4	0.33	1.50	0.144	(0.198)	0.129	0.014
5	0.42	1.50	0.144	(0.198)	0.129	0.014
6	0.50	1.80	0.173	(0.198)	0.155	0.017
7	0.58	1.50	0.144	(0.198)	0.129	0.014
8	0.67	1.80	0.173	(0.198)	0.155	0.017
9	0.75	1.80	0.173	(0.198)	0.155	0.017
10	0.83	1.50	0.144	(0.198)	0.129	0.014
11	0.92	1.60	0.153	(0.198)	0.138	0.015
12	1.00	1.80	0.173	(0.198)	0.155	0.017
13	1.08	2.20	0.211	(0.198)	0.190	0.021
14	1.17	2.20	0.211	(0.198)	0.190	0.021
15	1.25	2.20	0.211	(0.198)	0.190	0.021
16	1.33	2.00	0.192	(0.198)	0.173	0.019
17	1.42	2.60	0.249	0.198	(0.224)	0.051
18	1.50	2.70	0.259	0.198	(0.233)	0.060
19	1.58	2.40	0.230	0.198	(0.207)	0.032
20	1.67	2.70	0.259	0.198	(0.233)	0.060
21	1.75	3.30	0.316	0.198	(0.285)	0.118
22	1.83	3.10	0.297	0.198	(0.267)	0.099
23	1.92	2.90	0.278	0.198	(0.250)	0.080
24	2.00	3.00	0.288	0.198	(0.259)	0.089
25	2.08	3.10	0.297	0.198	(0.267)	0.099
26	2.17	4.20	0.403	0.198	(0.362)	0.204
27	2.25	5.00	0.479	0.198	(0.431)	0.281
28	2.33	3.50	0.336	0.198	(0.302)	0.137
29	2.42	6.80	0.652	0.198	(0.587)	0.454
30	2.50	7.30	0.700	0.198	(0.630)	0.501
31	2.58	8.20	0.786	0.198	(0.708)	0.588
32	2.67	5.90	0.566	0.198	(0.509)	0.367
33	2.75	2.00	0.192	(0.198)	0.173	0.019
34	2.83	1.80	0.173	(0.198)	0.155	0.017
35	2.92	1.80	0.173	(0.198)	0.155	0.017
36	3.00	0.60	0.058	(0.198)	0.052	0.006
		(Loss Rate Not Used)				
Sum =		100.0			Sum =	3.5

Flood volume = Effective rainfall 0.29(In)
times area 8.0(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)
Total soil loss = 0.50(In)
Total soil loss = 0.338(Ac.Ft)
Total rainfall = 0.80(In)
Flood volume = 8609.2 Cubic Feet
Total soil loss = 14708.9 Cubic Feet

--

Peak flow rate of this hydrograph = 4.131(CFS)

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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       0.0007      0.08  Q         |         |         |
|
    0+15       0.0014      0.09  Q         |         |         |
|
    0+20       0.0020      0.09  Q         |         |         |
|
    0+25       0.0028      0.11  Q         |         |         |
|
    0+30       0.0036      0.12  Q         |         |         |
|
    0+35       0.0045      0.13  Q         |         |         |
|
    0+40       0.0054      0.13  QV        |         |         |
|
    0+45       0.0063      0.14  QV        |         |         |
|
    0+50       0.0072      0.13  QV        |         |         |
|
    0+55       0.0081      0.12  QV        |         |         |
|
    1+ 0       0.0089      0.13  QV        |         |         |
|
    1+ 5       0.0099      0.14  Q V       |         |         |
|
    1+10       0.0111      0.16  Q V       |         |         |
|
    1+15       0.0122      0.17  Q V       |         |         |
|
    1+20       0.0134      0.17  Q V       |         |         |
|
    1+25       0.0149      0.22  Q  V      |         |         |
|
    1+30       0.0175      0.38  |Q V      |         |         |
|
    1+35       0.0203      0.40  |Q  V     |         |         |
|
    1+40       0.0228      0.35  |Q  V     |         |         |
|
    1+45       0.0267      0.57  | Q  V    |         |         |
|
    1+50       0.0323      0.82  |  Q  V   |         |         |
|
    1+55       0.0376      0.77  |  Q   V  |         |         |
|
    2+ 0       0.0424      0.70  | Q     V |         |         |
|
    2+ 5       0.0474      0.74  | Q      V|         |         |
|
    2+10       0.0543      1.00  |  Q      V         |         |
|
```

```
      2+15       0.0656      1.64  |      Q   |  V       |         |
|
      2+20       0.0781      1.82  |       Q  |    V     |         |
|
      2+25       0.0914      1.93  |       Q  |       V |         |
|
      2+30       0.1143      3.32  |          |  Q       |  V      |
|
      2+35       0.1421      4.04  |          |     Q   |       V |
|
      2+40       0.1706      4.13  |          |     Q   |         |   V
|
      2+45       0.1883      2.57  |          Q          |         |       V
|
      2+50       0.1937      0.79  |  Q       |          |         |
V|
      2+55       0.1959      0.32  |Q         |          |         |
V|
      3+ 0       0.1971      0.17  Q          |          |         |
V|
      3+ 5       0.1975      0.07  Q          |          |         |
V|
      3+10       0.1976      0.01  Q          |          |         |
V|
      3+15       0.1976      0.00  Q          |          |         |
V|
      3+20       0.1976      0.00  Q          |          |         |
V|
      3+25       0.1976      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 11/09/21 File: moval33preb35.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Predevlopment Conditions
Unit Hydrograph Runoff
Area B

Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) = 0.013 Sq. Mi.
Length along longest watercourse = 1083.00(Ft.)
Length along longest watercourse measured to centroid = 476.00 (Ft.)
Length along longest watercourse = 0.205 Mi.
Length along longest watercourse measured to centroid = 0.090 Mi.
Difference in elevation = 110.00(Ft.)
Slope along watercourse = 536.2881 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.064 Hr.
Lag time = 3.83 Min.
25% of lag time = 0.96 Min.
40% of lag time = 1.53 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]

8.04 0.80 6.42

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.04	1.89	15.20

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 0.799(In)
Area Averaged 100-Year Rainfall = 1.890(In)

Point rain (area averaged) = 1.055(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.055(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.040	84.00	0.000

Total Area Entered = 8.04(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	84.0	0.198	0.000	0.198	1.000	0.198
					Sum (F) =	0.198

Area averaged mean soil loss (F) (In/Hr) = 0.198
Minimum soil loss rate ((In/Hr)) = 0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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	130.523	24.817	2.011
2	0.167	261.045	55.614	4.506
3	0.250	391.568	14.211	1.151
4	0.333	522.090	3.889	0.315
5	0.417	652.613	1.032	0.084
6	0.500	783.135	0.438	0.035
			Sum = 100.000	Sum= 8.103

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	0.165	(0.198)	0.148	0.016
2	0.17	1.30	0.165	(0.198)	0.148	0.016
3	0.25	1.10	0.139	(0.198)	0.125	0.014
4	0.33	1.50	0.190	(0.198)	0.171	0.019
5	0.42	1.50	0.190	(0.198)	0.171	0.019
6	0.50	1.80	0.228	0.198	(0.205)	0.029
7	0.58	1.50	0.190	(0.198)	0.171	0.019
8	0.67	1.80	0.228	0.198	(0.205)	0.029
9	0.75	1.80	0.228	0.198	(0.205)	0.029
10	0.83	1.50	0.190	(0.198)	0.171	0.019
11	0.92	1.60	0.202	(0.198)	0.182	0.020
12	1.00	1.80	0.228	0.198	(0.205)	0.029
13	1.08	2.20	0.278	0.198	(0.251)	0.080
14	1.17	2.20	0.278	0.198	(0.251)	0.080
15	1.25	2.20	0.278	0.198	(0.251)	0.080
16	1.33	2.00	0.253	0.198	(0.228)	0.055
17	1.42	2.60	0.329	0.198	(0.296)	0.131
18	1.50	2.70	0.342	0.198	(0.307)	0.143
19	1.58	2.40	0.304	0.198	(0.273)	0.105
20	1.67	2.70	0.342	0.198	(0.307)	0.143
21	1.75	3.30	0.418	0.198	(0.376)	0.219
22	1.83	3.10	0.392	0.198	(0.353)	0.194
23	1.92	2.90	0.367	0.198	(0.330)	0.169
24	2.00	3.00	0.380	0.198	(0.342)	0.181
25	2.08	3.10	0.392	0.198	(0.353)	0.194
26	2.17	4.20	0.531	0.198	(0.478)	0.333
27	2.25	5.00	0.633	0.198	(0.569)	0.434
28	2.33	3.50	0.443	0.198	(0.399)	0.244
29	2.42	6.80	0.860	0.198	(0.774)	0.662
30	2.50	7.30	0.924	0.198	(0.831)	0.725
31	2.58	8.20	1.038	0.198	(0.934)	0.839
32	2.67	5.90	0.747	0.198	(0.672)	0.548
33	2.75	2.00	0.253	0.198	(0.228)	0.055
34	2.83	1.80	0.228	0.198	(0.205)	0.029
35	2.92	1.80	0.228	0.198	(0.205)	0.029
36	3.00	0.60	0.076	(0.198)	0.068	0.008

(Loss Rate Not Used)

Sum = 100.0 Sum = 5.9

Flood volume = Effective rainfall 0.50(In)
times area 8.0(Ac.)/[(In)/(Ft.)] = 0.3(Ac.Ft)
Total soil loss = 0.56(In)
Total soil loss = 0.375(Ac.Ft)
Total rainfall = 1.05(In)
Flood volume = 14451.5 Cubic Feet
Total soil loss = 16324.4 Cubic Feet

Peak flow rate of this hydrograph = 5.967(CFS)

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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       0.0010      0.11  Q          |         |         |
|
    0+15       0.0018      0.12  Q          |         |         |
|
    0+20       0.0027      0.13  Q          |         |         |
|
    0+25       0.0037      0.15  Q          |         |         |
|
    0+30       0.0049      0.17  Q          |         |         |
|
    0+35       0.0062      0.20  Q          |         |         |
|
    0+40       0.0075      0.19  Q          |         |         |
|
    0+45       0.0091      0.22  QV         |         |         |
|
    0+50       0.0105      0.21  QV         |         |         |
|
    0+55       0.0117      0.17  QV         |         |         |
|
    1+ 0       0.0130      0.18  QV         |         |         |
|
    1+ 5       0.0152      0.33  |Q         |         |         |
|
    1+10       0.0191      0.56  | Q        |         |         |
|
    1+15       0.0234      0.63  | Q        |         |         |
|
    1+20       0.0275      0.59  | QV       |         |         |
|
    1+25       0.0319      0.63  | QV       |         |         |
|
    1+30       0.0386      0.97  |  QV      |         |         |
|
    1+35       0.0457      1.03  |   QV     |         |         |
|
    1+40       0.0524      0.98  |  Q  V    |         |         |
|
    1+45       0.0612      1.27  |    Q V   |         |         |
|
    1+50       0.0721      1.59  |     Q V  |         |         |
|
    1+55       0.0826      1.52  |     Q  V|         |         |
|
    2+ 0       0.0925      1.43  |    Q    |V        |         |
|
    2+ 5       0.1027      1.49  |    Q    | V       |         |
|
    2+10       0.1153      1.83  |      Q  |  V      |         |
|
```

```
    2+15       0.1338      2.68  |         Q     V   |         |
|
    2+20       0.1539      2.92  |         |Q      V |         |
|
    2+25       0.1750      3.06  |         | Q       |V        |
|
    2+30       0.2087      4.90  |         |        Q|    V    |
|
    2+35       0.2490      5.85  |         |         |  Q      V
|
    2+40       0.2900      5.97  |         |         |  Q      |   V
|
    2+45       0.3165      3.84  |         |    Q    |         |       V
|
    2+50       0.3254      1.29  |    Q    |         |         |
V|
    2+55       0.3290      0.52  | Q       |         |         |
V|
    3+ 0       0.3309      0.27  |Q        |         |         |
V|
    3+ 5       0.3316      0.10  Q         |         |         |
V|
    3+10       0.3317      0.02  Q         |         |         |
V|
    3+15       0.3317      0.01  Q         |         |         |
V|
    3+20       0.3318      0.00  Q         |         |         |
V|
    3+25       0.3318      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 02/19/21 File: moval33preb310.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Predevlopment Conditions
Unit Hydrograph Runoff

Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) = 0.013 Sq. Mi.
Length along longest watercourse = 1083.00(Ft.)
Length along longest watercourse measured to centroid = 476.00(Ft.)
Length along longest watercourse = 0.205 Mi.
Length along longest watercourse measured to centroid = 0.090 Mi.
Difference in elevation = 110.00(Ft.)
Slope along watercourse = 536.2881 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.064 Hr.
Lag time = 3.83 Min.
25% of lag time = 0.96 Min.
40% of lag time = 1.53 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]
8.04	0.80	6.42

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.04	1.89	15.20

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.799(In)
Area Averaged 100-Year Rainfall = 1.890(In)

Point rain (area averaged) = 1.248(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.248(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.040	84.00	0.000

Total Area Entered = 8.04(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	84.0	0.198	0.000	0.198	1.000	0.198
					Sum (F) =	0.198

Area averaged mean soil loss (F) (In/Hr) = 0.198
Minimum soil loss rate ((In/Hr)) = 0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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	130.523	24.817	2.011
2	0.167	261.045	55.614	4.506
3	0.250	391.568	14.211	1.151
4	0.333	522.090	3.889	0.315
5	0.417	652.613	1.032	0.084
6	0.500	783.135	0.438	0.035
			Sum = 100.000	Sum= 8.103

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	0.195	(0.198)	0.175	0.019
2	0.17	1.30	0.195	(0.198)	0.175	0.019
3	0.25	1.10	0.165	(0.198)	0.148	0.016
4	0.33	1.50	0.225	0.198	(0.202)	0.026
5	0.42	1.50	0.225	0.198	(0.202)	0.026
6	0.50	1.80	0.270	0.198	(0.243)	0.071
7	0.58	1.50	0.225	0.198	(0.202)	0.026
8	0.67	1.80	0.270	0.198	(0.243)	0.071
9	0.75	1.80	0.270	0.198	(0.243)	0.071
10	0.83	1.50	0.225	0.198	(0.202)	0.026
11	0.92	1.60	0.240	0.198	(0.216)	0.041
12	1.00	1.80	0.270	0.198	(0.243)	0.071
13	1.08	2.20	0.329	0.198	(0.296)	0.131
14	1.17	2.20	0.329	0.198	(0.296)	0.131
15	1.25	2.20	0.329	0.198	(0.296)	0.131
16	1.33	2.00	0.299	0.198	(0.270)	0.101
17	1.42	2.60	0.389	0.198	(0.350)	0.191
18	1.50	2.70	0.404	0.198	(0.364)	0.206
19	1.58	2.40	0.359	0.198	(0.323)	0.161

```
20   1.67     2.70      0.404          0.198    (  0.364)        0.206
21   1.75     3.30      0.494          0.198    (  0.445)        0.296
22   1.83     3.10      0.464          0.198    (  0.418)        0.266
23   1.92     2.90      0.434          0.198    (  0.391)        0.236
24   2.00     3.00      0.449          0.198    (  0.404)        0.251
25   2.08     3.10      0.464          0.198    (  0.418)        0.266
26   2.17     4.20      0.629          0.198    (  0.566)        0.430
27   2.25     5.00      0.749          0.198    (  0.674)        0.550
28   2.33     3.50      0.524          0.198    (  0.472)        0.326
29   2.42     6.80      1.018          0.198    (  0.916)        0.820
30   2.50     7.30      1.093          0.198    (  0.984)        0.895
31   2.58     8.20      1.228          0.198    (  1.105)        1.029
32   2.67     5.90      0.883          0.198    (  0.795)        0.685
33   2.75     2.00      0.299          0.198    (  0.270)        0.101
34   2.83     1.80      0.270          0.198    (  0.243)        0.071
35   2.92     1.80      0.270          0.198    (  0.243)        0.071
36   3.00     0.60      0.090       (  0.198)       0.081        0.009
                (Loss Rate Not Used)
   Sum =     100.0                                   Sum =     8.0
      Flood volume = Effective rainfall      0.67(In)
       times area       8.0(Ac.)/[(In)/(Ft.)] =       0.4(Ac.Ft)
      Total soil loss =      0.58(In)
      Total soil loss =     0.387(Ac.Ft)
      Total rainfall =      1.25(In)
      Flood volume =       19567.1 Cubic Feet
      Total soil loss =       16850.3 Cubic Feet
      --------------------------------------------------------------------
       Peak flow rate of this hydrograph =      7.356(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       0.0011      0.13  Q         |         |         |         |
  0+15       0.0021      0.14  Q         |         |         |         |
  0+20       0.0032      0.16  Q         |         |         |         |
  0+25       0.0046      0.20  Q         |         |         |         |
  0+30       0.0066      0.30  VQ        |         |         |         |
  0+35       0.0095      0.41  VQ        |         |         |         |
  0+40       0.0119      0.35   |Q       |         |         |         |
  0+45       0.0155      0.52   |VQ      |         |         |         |
  0+50       0.0187      0.47   |Q       |         |         |         |
  0+55       0.0209      0.31   |Q       |         |         |         |
  1+ 0       0.0235      0.39   |QV      |         |         |         |
  1+ 5       0.0280      0.65   | Q      |         |         |         |
  1+10       0.0346      0.95   |   Q    |         |         |         |
  1+15       0.0417      1.03   |   VQ   |         |         |         |
  1+20       0.0485      0.99   |   QV   |         |         |         |
  1+25       0.0557      1.05   |    Q   |         |         |         |
  1+30       0.0657      1.45   |     Q  |         |         |         |
  1+35       0.0762      1.52   |      Q |         |         |         |
  1+40       0.0862      1.45   |     Q V|         |         |         |
  1+45       0.0985      1.79   |       QV         |         |         |
  1+50       0.1135      2.18   |        Q V       |         |         |
  1+55       0.1280      2.10   |        Q |V      |         |         |
  2+ 0       0.1417      1.99   |       Q  | V     |         |         |
  2+ 5       0.1558      2.05   |        Q |  V    |         |         |
```

```
  2+10        0.1728       2.46  |        Q|     V    |         |         |
  2+15        0.1966       3.46  |         |  Q   V   |         |         |
  2+20        0.2224       3.75  |         |   Q    V|         |         |
  2+25        0.2494       3.92  |         |    Q     | V       |         |
  2+30        0.2913       6.09  |         |          |   QV    |         |
  2+35        0.3410       7.21  |         |          |       Q V         |
  2+40        0.3917       7.36  |         |          |        Q|   V     |
  2+45        0.4250       4.84  |         |         Q|         |      V  |
  2+50        0.4375       1.82  |      Q  |          |         |       V |
  2+55        0.4438       0.91  |  Q      |          |         |        V|
  3+ 0        0.4476       0.55  | Q       |          |         |        V|
  3+ 5        0.4488       0.18  Q         |          |         |        V|
  3+10        0.4491       0.04  Q         |          |         |        V|
  3+15        0.4492       0.01  Q         |          |         |        V|
  3+20        0.4492       0.00  Q         |          |         |        V|
  3+25        0.4492       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

          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
8.2
                Study date  11/09/21 File: moval33preb3100.out


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


      Program License Serial Number 6232

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

       English Units used in output format



      ------------------------------------------------------------------
---
      Gateway Heights
      Predevlopment Conditions
      Unit Hydrograph Runoff
      Area B
      ------------------------------------------------------------------
--
      Drainage Area =       8.04(Ac.)  =      0.013 Sq. Mi.
      Drainage Area for Depth-Area Areal Adjustment =       8.04(Ac.)  =
0.013 Sq. Mi.
      Length along longest watercourse =    1083.00(Ft.)
      Length along longest watercourse measured to centroid =     476.00
(Ft.)
      Length along longest watercourse =      0.205 Mi.
      Length along longest watercourse measured to centroid =      0.090
Mi.
      Difference in elevation =     110.00(Ft.)
      Slope along watercourse =    536.2881 Ft./Mi.
      Average Manning's 'N' = 0.040
      Lag time =    0.064 Hr.
      Lag time =     3.83 Min.
      25% of lag time =     0.96 Min.
      40% of lag time =     1.53 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]
```

8.04	0.80	6.42

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.04	1.89	15.20

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.799(In)
Area Averaged 100-Year Rainfall = 1.890(In)

Point rain (area averaged) = 1.890(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.890(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.040	84.00	0.000

Total Area Entered = 8.04(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	93.4	0.086	0.000	0.086	1.000	0.086
					Sum (F) =	0.086

Area averaged mean soil loss (F) (In/Hr) = 0.086
Minimum soil loss rate ((In/Hr)) = 0.043
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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	130.523	24.817	2.011
2	0.167	261.045	55.614	4.506
3	0.250	391.568	14.211	1.151
4	0.333	522.090	3.889	0.315
5	0.417	652.613	1.032	0.084
6	0.500	783.135	0.438	0.035
			Sum = 100.000	Sum= 8.103

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	0.295	0.086	(0.265)	0.209
2	0.17	1.30	0.295	0.086	(0.265)	0.209
3	0.25	1.10	0.249	0.086	(0.225)	0.164
4	0.33	1.50	0.340	0.086	(0.306)	0.254
5	0.42	1.50	0.340	0.086	(0.306)	0.254
6	0.50	1.80	0.408	0.086	(0.367)	0.322
7	0.58	1.50	0.340	0.086	(0.306)	0.254
8	0.67	1.80	0.408	0.086	(0.367)	0.322
9	0.75	1.80	0.408	0.086	(0.367)	0.322
10	0.83	1.50	0.340	0.086	(0.306)	0.254
11	0.92	1.60	0.363	0.086	(0.327)	0.277
12	1.00	1.80	0.408	0.086	(0.367)	0.322
13	1.08	2.20	0.499	0.086	(0.449)	0.413
14	1.17	2.20	0.499	0.086	(0.449)	0.413
15	1.25	2.20	0.499	0.086	(0.449)	0.413
16	1.33	2.00	0.454	0.086	(0.408)	0.368
17	1.42	2.60	0.590	0.086	(0.531)	0.504
18	1.50	2.70	0.612	0.086	(0.551)	0.527
19	1.58	2.40	0.544	0.086	(0.490)	0.459
20	1.67	2.70	0.612	0.086	(0.551)	0.527
21	1.75	3.30	0.748	0.086	(0.674)	0.663
22	1.83	3.10	0.703	0.086	(0.633)	0.617
23	1.92	2.90	0.658	0.086	(0.592)	0.572
24	2.00	3.00	0.680	0.086	(0.612)	0.595
25	2.08	3.10	0.703	0.086	(0.633)	0.617
26	2.17	4.20	0.953	0.086	(0.857)	0.867
27	2.25	5.00	1.134	0.086	(1.021)	1.048
28	2.33	3.50	0.794	0.086	(0.714)	0.708
29	2.42	6.80	1.542	0.086	(1.388)	1.456
30	2.50	7.30	1.656	0.086	(1.490)	1.570
31	2.58	8.20	1.860	0.086	(1.674)	1.774
32	2.67	5.90	1.338	0.086	(1.204)	1.252
33	2.75	2.00	0.454	0.086	(0.408)	0.368
34	2.83	1.80	0.408	0.086	(0.367)	0.322
35	2.92	1.80	0.408	0.086	(0.367)	0.322
36	3.00	0.60	0.136	0.086	(0.122)	0.050

(Loss Rate Not Used)

Sum = 100.0 Sum = 19.6

Flood volume = Effective rainfall 1.63(In)
times area 8.0(Ac.)/[(In)/(Ft.)] = 1.1(Ac.Ft)
Total soil loss = 0.26(In)
Total soil loss = 0.172(Ac.Ft)
Total rainfall = 1.89(In)
Flood volume = 47645.8 Cubic Feet
Total soil loss = 7512.3 Cubic Feet

Peak flow rate of this hydrograph = 12.881(CFS)

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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        5.0      10.0      15.0
20.0

-----------------------------------------------------------------------
    0+ 5       0.0029      0.42  Q         |         |         |
|
    0+10       0.0123      1.36  V Q       |         |         |
|
    0+15       0.0227      1.51  V  Q      |         |         |
|
    0+20       0.0334      1.56  |V Q      |         |         |
|
    0+25       0.0467      1.93  |V Q      |         |         |
|
    0+30       0.0616      2.17  | V Q     |         |         |
|
    0+35       0.0779      2.36  | V Q     |         |         |
|
    0+40       0.0935      2.27  |  VQ     |         |         |
|
    0+45       0.1110      2.53  |   VQ    |         |         |
|
    0+50       0.1278      2.45  |   Q     |         |         |
|
    0+55       0.1431      2.21  |   QV    |         |         |
|
    1+ 0       0.1591      2.33  |   QV    |         |         |
|
    1+ 5       0.1779      2.72  |    QV   |         |         |
|
    1+10       0.1998      3.19  |     QV  |         |         |
|
    1+15       0.2225      3.30  |     Q V |         |         |
|
    1+20       0.2449      3.25  |     Q V |         |         |
|
    1+25       0.2678      3.32  |     Q  V|         |         |
|
    1+30       0.2949      3.93  |      Q  V         |         |
|
    1+35       0.3227      4.04  |       Q |V        |         |
|
    1+40       0.3498      3.94  |      Q  | V       |         |
|
    1+45       0.3805      4.46  |       Q |  V      |         |
|
    1+50       0.4153      5.04  |         Q    V    |         |
|
    1+55       0.4491      4.92  |        Q|     V   |         |
|
    2+ 0       0.4819      4.76  |        Q|      V  |         |
|
    2+ 5       0.5153      4.85  |        Q|       V |         |
|
    2+10       0.5530      5.47  |         Q         V         |
|
```

```
      2+15       0.6011      6.98  |         |  Q      |V         |
|
      2+20       0.6521      7.41  |         |   Q     |  V       |
|
      2+25       0.7050      7.68  |         |    Q    |    V     |
|
      2+30       0.7805     10.97  |         |         |Q       V |
|
      2+35       0.8677     12.67  |         |         |    Q    |V
|
      2+40       0.9564     12.88  |         |         |    Q    |   V
|
      2+45       1.0189      9.07  |         |       Q |         |      V
|
      2+50       1.0498      4.49  |       Q |         |         |       V
|
      2+55       1.0714      3.13  |     Q   |         |         |
V|
      3+ 0       1.0866      2.21  |   Q     |         |         |
V|
      3+ 5       1.0919      0.77  |Q        |         |         |
V|
      3+10       1.0933      0.20  Q         |         |         |
V|
      3+15       1.0937      0.05  Q         |         |         |
V|
      3+20       1.0938      0.02  Q         |         |         |
V|
      3+25       1.0938      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 11/09/21 File: moval33preb62.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Predevlopment Conditions
Unit Hydrograph Runoff
Area B

Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) = 0.013 Sq. Mi.
Length along longest watercourse = 1083.00(Ft.)
Length along longest watercourse measured to centroid = 476.00 (Ft.)
Length along longest watercourse = 0.205 Mi.
Length along longest watercourse measured to centroid = 0.090 Mi.
Difference in elevation = 110.00(Ft.)
Slope along watercourse = 536.2881 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.064 Hr.
Lag time = 3.83 Min.
25% of lag time = 0.96 Min.
40% of lag time = 1.53 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]

```
          2.55             1.09                 2.78
          5.49             1.09                 5.98

 100 YEAR Area rainfall data:


 Area(Ac.)[1]      Rainfall(In)[2]      Weighting[1*2]
        8.04             2.55                    20.50

 STORM EVENT (YEAR) =    2.00
 Area Averaged 2-Year Rainfall =    1.090(In)
 Area Averaged 100-Year Rainfall =    2.550(In)

 Point rain (area averaged) =    1.090(In)
 Areal adjustment factor =  100.00 %
 Adjusted average point rain =    1.090(In)

 Sub-Area Data:
 Area(Ac.)         Runoff Index   Impervious %
      8.040           84.00          0.000
  Total Area Entered =      8.04(Ac.)


 RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
 AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
 84.0  84.0      0.198     0.000        0.198       1.000
0.198
                                                      Sum (F) =
0.198
 Area averaged mean soil loss (F) (In/Hr) =  0.198
 Minimum soil loss rate ((In/Hr)) =  0.099
 (for 24 hour storm duration)
 Soil low loss rate (decimal) =   0.900
 ------------------------------------------------------------------
---

             U n i t  H y d r o g r a p h
                   FOOTHILL S-Curve
 ------------------------------------------------------------------
--
             Unit Hydrograph Data
 ------------------------------------------------------------------
---
 Unit time period   Time % of lag   Distribution   Unit Hydrograph
     (hrs)                           Graph %          (CFS)
 ------------------------------------------------------------------
---
     1   0.083        130.523         24.817             2.011
     2   0.167        261.045         55.614             4.506
     3   0.250        391.568         14.211             1.151
     4   0.333        522.090          3.889             0.315
     5   0.417        652.613          1.032             0.084
     6   0.500        783.135          0.438             0.035
                               Sum = 100.000   Sum=       8.103
-----------------------------------------------------------------------


 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	0.065	(0.198)	0.059	0.007
2	0.17	0.60	0.078	(0.198)	0.071	0.008
3	0.25	0.60	0.078	(0.198)	0.071	0.008
4	0.33	0.60	0.078	(0.198)	0.071	0.008
5	0.42	0.60	0.078	(0.198)	0.071	0.008
6	0.50	0.70	0.092	(0.198)	0.082	0.009
7	0.58	0.70	0.092	(0.198)	0.082	0.009
8	0.67	0.70	0.092	(0.198)	0.082	0.009
9	0.75	0.70	0.092	(0.198)	0.082	0.009
10	0.83	0.70	0.092	(0.198)	0.082	0.009
11	0.92	0.70	0.092	(0.198)	0.082	0.009
12	1.00	0.80	0.105	(0.198)	0.094	0.010
13	1.08	0.80	0.105	(0.198)	0.094	0.010
14	1.17	0.80	0.105	(0.198)	0.094	0.010
15	1.25	0.80	0.105	(0.198)	0.094	0.010
16	1.33	0.80	0.105	(0.198)	0.094	0.010
17	1.42	0.80	0.105	(0.198)	0.094	0.010
18	1.50	0.80	0.105	(0.198)	0.094	0.010
19	1.58	0.80	0.105	(0.198)	0.094	0.010
20	1.67	0.80	0.105	(0.198)	0.094	0.010
21	1.75	0.80	0.105	(0.198)	0.094	0.010
22	1.83	0.80	0.105	(0.198)	0.094	0.010
23	1.92	0.80	0.105	(0.198)	0.094	0.010
24	2.00	0.90	0.118	(0.198)	0.106	0.012
25	2.08	0.80	0.105	(0.198)	0.094	0.010
26	2.17	0.90	0.118	(0.198)	0.106	0.012
27	2.25	0.90	0.118	(0.198)	0.106	0.012
28	2.33	0.90	0.118	(0.198)	0.106	0.012
29	2.42	0.90	0.118	(0.198)	0.106	0.012
30	2.50	0.90	0.118	(0.198)	0.106	0.012
31	2.58	0.90	0.118	(0.198)	0.106	0.012
32	2.67	0.90	0.118	(0.198)	0.106	0.012
33	2.75	1.00	0.131	(0.198)	0.118	0.013
34	2.83	1.00	0.131	(0.198)	0.118	0.013
35	2.92	1.00	0.131	(0.198)	0.118	0.013
36	3.00	1.00	0.131	(0.198)	0.118	0.013
37	3.08	1.00	0.131	(0.198)	0.118	0.013
38	3.17	1.10	0.144	(0.198)	0.129	0.014
39	3.25	1.10	0.144	(0.198)	0.129	0.014
40	3.33	1.10	0.144	(0.198)	0.129	0.014
41	3.42	1.20	0.157	(0.198)	0.141	0.016
42	3.50	1.30	0.170	(0.198)	0.153	0.017
43	3.58	1.40	0.183	(0.198)	0.165	0.018
44	3.67	1.40	0.183	(0.198)	0.165	0.018
45	3.75	1.50	0.196	(0.198)	0.177	0.020
46	3.83	1.50	0.196	(0.198)	0.177	0.020
47	3.92	1.60	0.209	(0.198)	0.188	0.021
48	4.00	1.60	0.209	(0.198)	0.188	0.021
49	4.08	1.70	0.222	0.198	(0.200)	0.024
50	4.17	1.80	0.235	0.198	(0.212)	0.037
51	4.25	1.90	0.249	0.198	(0.224)	0.050
52	4.33	2.00	0.262	0.198	(0.235)	0.063
53	4.42	2.10	0.275	0.198	(0.247)	0.076
54	4.50	2.10	0.275	0.198	(0.247)	0.076
55	4.58	2.20	0.288	0.198	(0.259)	0.089

```
  56   4.67     2.30      0.301          0.198    (  0.271)        0.102
  57   4.75     2.40      0.314          0.198    (  0.283)        0.116
  58   4.83     2.40      0.314          0.198    (  0.283)        0.116
  59   4.92     2.50      0.327          0.198    (  0.294)        0.129
  60   5.00     2.60      0.340          0.198    (  0.306)        0.142
  61   5.08     3.10      0.405          0.198    (  0.365)        0.207
  62   5.17     3.60      0.471          0.198    (  0.424)        0.272
  63   5.25     3.90      0.510          0.198    (  0.459)        0.312
  64   5.33     4.20      0.549          0.198    (  0.494)        0.351
  65   5.42     4.70      0.615          0.198    (  0.553)        0.416
  66   5.50     5.60      0.732          0.198    (  0.659)        0.534
  67   5.58     1.90      0.249          0.198    (  0.224)        0.050
  68   5.67     0.90      0.118       (  0.198)       0.106        0.012
  69   5.75     0.60      0.078       (  0.198)       0.071        0.008
  70   5.83     0.50      0.065       (  0.198)       0.059        0.007
  71   5.92     0.30      0.039       (  0.198)       0.035        0.004
  72   6.00     0.20      0.026       (  0.198)       0.024        0.003
             (Loss Rate Not Used)
     Sum =     100.0                              Sum =     3.8
      Flood volume = Effective rainfall      0.31(In)
       times area       8.0(Ac.)/[(In)/(Ft.)] =      0.2(Ac.Ft)
      Total soil loss =      0.78(In)
      Total soil loss =     0.519(Ac.Ft)
      Total rainfall =      1.09(In)
      Flood volume =        9186.9 Cubic Feet
      Total soil loss =       22624.1 Cubic Feet
      ------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =      3.484(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      0.01  Q         |         |         |
|
    0+10      0.0004      0.05  Q         |         |         |
|
    0+15      0.0008      0.06  Q         |         |         |
|
    0+20      0.0012      0.06  Q         |         |         |
|
    0+25      0.0017      0.06  Q         |         |         |
|
    0+30      0.0021      0.07  Q         |         |         |
|
    0+35      0.0026      0.07  Q         |         |         |
|
    0+40      0.0031      0.07  Q         |         |         |
```

0+45	0.0036	0.07	Q	|	|	|
0+50	0.0042	0.07	Q	|	|	|
0+55	0.0047	0.07	Q	|	|	|
1+ 0	0.0052	0.08	Q	|	|	|
1+ 5	0.0058	0.08	QV	|	|	|
1+10	0.0063	0.08	QV	|	|	|
1+15	0.0069	0.08	QV	|	|	|
1+20	0.0075	0.08	QV	|	|	|
1+25	0.0081	0.08	QV	|	|	|
1+30	0.0087	0.08	QV	|	|	|
1+35	0.0093	0.08	QV	|	|	|
1+40	0.0098	0.08	QV	|	|	|
1+45	0.0104	0.08	QV	|	|	|
1+50	0.0110	0.08	Q V	|	|	|
1+55	0.0116	0.08	Q V	|	|	|
2+ 0	0.0122	0.09	Q V	|	|	|
2+ 5	0.0128	0.09	Q V	|	|	|
2+10	0.0134	0.09	Q V	|	|	|
2+15	0.0141	0.09	Q V	|	|	|
2+20	0.0147	0.09	Q V	|	|	|
2+25	0.0154	0.10	Q V	|	|	|
2+30	0.0161	0.10	Q V	|	|	|
2+35	0.0167	0.10	Q V	|	|	|
2+40	0.0174	0.10	Q V	|	|	|
2+45	0.0180	0.10	Q V	|	|	|
2+50	0.0188	0.10	Q V	|	|	|
2+55	0.0195	0.11	Q V	|	|	|
3+ 0	0.0202	0.11	Q V	|	|	|
3+ 5	0.0209	0.11	Q V	|	|	|
3+10	0.0217	0.11	Q V	|	|	|

```
|
   3+15       0.0225      0.11  Q   V     |         |         |
|
   3+20       0.0233      0.12  Q   V     |         |         |
|
   3+25       0.0241      0.12  Q   V     |         |         |
|
   3+30       0.0250      0.13  Q   V     |         |         |
|
   3+35       0.0259      0.14  Q   V     |         |         |
|
   3+40       0.0269      0.15  Q    V    |         |         |
|
   3+45       0.0280      0.15  Q    V    |         |         |
|
   3+50       0.0290      0.16  Q    V    |         |         |
|
   3+55       0.0302      0.16  Q    V    |         |         |
|
   4+ 0       0.0313      0.17  Q    V    |         |         |
|
   4+ 5       0.0325      0.18  Q     V   |         |         |
|
   4+10       0.0340      0.22  Q     V   |         |         |
|
   4+15       0.0361      0.30  |Q    V   |         |         |
|
   4+20       0.0389      0.41  |Q     V  |         |         |
|
   4+25       0.0424      0.51  | Q     V |         |         |
|
   4+30       0.0465      0.59  | Q     V |         |         |
|
   4+35       0.0509      0.64  | Q      V|         |         |
|
   4+40       0.0559      0.73  | Q       V         |         |
|
   4+45       0.0616      0.83  |  Q      |V        |         |
|
   4+50       0.0678      0.91  |  Q      | V       |         |
|
   4+55       0.0744      0.96  |  Q      |   V     |         |
|
   5+ 0       0.0816      1.05  |   Q     |    V    |         |
|
   5+ 5       0.0903      1.25  |    Q    |      V  |         |
|
   5+10       0.1020      1.70  |     Q   |        V|         |
|
   5+15       0.1168      2.15  |       Q |         | V       |
|
   5+20       0.1341      2.51  |         Q         |    V    |
|
   5+25       0.1539      2.89  |         |Q        |        V|
|
   5+30       0.1779      3.48  |         |  Q      |         |  V
|
   5+35       0.1995      3.13  |         | Q       |         |      V
|
   5+40       0.2067      1.04  |   Q     |         |         |
```

```
V|
    5+45      0.2090      0.34  |Q         |         |         |
V|
    5+50      0.2100      0.14  Q          |         |         |
V|
    5+55      0.2105      0.07  Q          |         |         |
V|
    6+ 0      0.2107      0.04  Q          |         |         |
V|
    6+ 5      0.2109      0.02  Q          |         |         |
V|
    6+10      0.2109      0.01  Q          |         |         |
V|
    6+15      0.2109      0.00  Q          |         |         |
V|
    6+20      0.2109      0.00  Q          |         |         |
V|
    6+25      0.2109      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 11/09/21 File: moval33preb65.out

++

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Predevlopment Conditions
Unit Hydrograph Runoff
Area B

Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) = 0.013 Sq. Mi.
Length along longest watercourse = 1083.00(Ft.)
Length along longest watercourse measured to centroid = 476.00 (Ft.)
Length along longest watercourse = 0.205 Mi.
Length along longest watercourse measured to centroid = 0.090 Mi.
Difference in elevation = 110.00(Ft.)
Slope along watercourse = 536.2881 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.064 Hr.
Lag time = 3.83 Min.
25% of lag time = 0.96 Min.
40% of lag time = 1.53 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]

```
          2.55              1.09                    2.78
          5.49              1.09                    5.98

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
              8.04              2.55                   20.50

      STORM EVENT (YEAR) =    5.00
      Area Averaged 2-Year Rainfall =    1.090(In)
      Area Averaged 100-Year Rainfall =    2.550(In)

      Point rain (area averaged) =    1.432(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    1.432(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
           8.040           84.00         0.000
       Total Area Entered =      8.04(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
      84.0  84.0      0.198     0.000        0.198       1.000
0.198
                                                         Sum (F) =
0.198
      Area averaged mean soil loss (F) (In/Hr) =  0.198
      Minimum soil loss rate ((In/Hr)) =  0.099
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.900
      ------------------------------------------------------------------
---

                  U n i t  H y d r o g r a p h
                        FOOTHILL S-Curve
      ------------------------------------------------------------------
--
                  Unit Hydrograph Data
      ------------------------------------------------------------------
---
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                            Graph %          (CFS)
      ------------------------------------------------------------------
---
          1   0.083        130.523         24.817            2.011
          2   0.167        261.045         55.614            4.506
          3   0.250        391.568         14.211            1.151
          4   0.333        522.090          3.889            0.315
          5   0.417        652.613          1.032            0.084
          6   0.500        783.135          0.438            0.035
                                      Sum = 100.000   Sum=       8.103
-----------------------------------------------------------------------


 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	0.086	(0.198)	0.077	0.009
2	0.17	0.60	0.103	(0.198)	0.093	0.010
3	0.25	0.60	0.103	(0.198)	0.093	0.010
4	0.33	0.60	0.103	(0.198)	0.093	0.010
5	0.42	0.60	0.103	(0.198)	0.093	0.010
6	0.50	0.70	0.120	(0.198)	0.108	0.012
7	0.58	0.70	0.120	(0.198)	0.108	0.012
8	0.67	0.70	0.120	(0.198)	0.108	0.012
9	0.75	0.70	0.120	(0.198)	0.108	0.012
10	0.83	0.70	0.120	(0.198)	0.108	0.012
11	0.92	0.70	0.120	(0.198)	0.108	0.012
12	1.00	0.80	0.137	(0.198)	0.124	0.014
13	1.08	0.80	0.137	(0.198)	0.124	0.014
14	1.17	0.80	0.137	(0.198)	0.124	0.014
15	1.25	0.80	0.137	(0.198)	0.124	0.014
16	1.33	0.80	0.137	(0.198)	0.124	0.014
17	1.42	0.80	0.137	(0.198)	0.124	0.014
18	1.50	0.80	0.137	(0.198)	0.124	0.014
19	1.58	0.80	0.137	(0.198)	0.124	0.014
20	1.67	0.80	0.137	(0.198)	0.124	0.014
21	1.75	0.80	0.137	(0.198)	0.124	0.014
22	1.83	0.80	0.137	(0.198)	0.124	0.014
23	1.92	0.80	0.137	(0.198)	0.124	0.014
24	2.00	0.90	0.155	(0.198)	0.139	0.015
25	2.08	0.80	0.137	(0.198)	0.124	0.014
26	2.17	0.90	0.155	(0.198)	0.139	0.015
27	2.25	0.90	0.155	(0.198)	0.139	0.015
28	2.33	0.90	0.155	(0.198)	0.139	0.015
29	2.42	0.90	0.155	(0.198)	0.139	0.015
30	2.50	0.90	0.155	(0.198)	0.139	0.015
31	2.58	0.90	0.155	(0.198)	0.139	0.015
32	2.67	0.90	0.155	(0.198)	0.139	0.015
33	2.75	1.00	0.172	(0.198)	0.155	0.017
34	2.83	1.00	0.172	(0.198)	0.155	0.017
35	2.92	1.00	0.172	(0.198)	0.155	0.017
36	3.00	1.00	0.172	(0.198)	0.155	0.017
37	3.08	1.00	0.172	(0.198)	0.155	0.017
38	3.17	1.10	0.189	(0.198)	0.170	0.019
39	3.25	1.10	0.189	(0.198)	0.170	0.019
40	3.33	1.10	0.189	(0.198)	0.170	0.019
41	3.42	1.20	0.206	(0.198)	0.186	0.021
42	3.50	1.30	0.223	0.198	(0.201)	0.025
43	3.58	1.40	0.241	0.198	(0.217)	0.042
44	3.67	1.40	0.241	0.198	(0.217)	0.042
45	3.75	1.50	0.258	0.198	(0.232)	0.059
46	3.83	1.50	0.258	0.198	(0.232)	0.059
47	3.92	1.60	0.275	0.198	(0.247)	0.077
48	4.00	1.60	0.275	0.198	(0.247)	0.077
49	4.08	1.70	0.292	0.198	(0.263)	0.094
50	4.17	1.80	0.309	0.198	(0.278)	0.111
51	4.25	1.90	0.326	0.198	(0.294)	0.128
52	4.33	2.00	0.344	0.198	(0.309)	0.145
53	4.42	2.10	0.361	0.198	(0.325)	0.162
54	4.50	2.10	0.361	0.198	(0.325)	0.162
55	4.58	2.20	0.378	0.198	(0.340)	0.180

56	4.67	2.30	0.395	0.198	(0.356)	0.197
57	4.75	2.40	0.412	0.198	(0.371)	0.214
58	4.83	2.40	0.412	0.198	(0.371)	0.214
59	4.92	2.50	0.430	0.198	(0.387)	0.231
60	5.00	2.60	0.447	0.198	(0.402)	0.248
61	5.08	3.10	0.533	0.198	(0.479)	0.334
62	5.17	3.60	0.619	0.198	(0.557)	0.420
63	5.25	3.90	0.670	0.198	(0.603)	0.472
64	5.33	4.20	0.722	0.198	(0.650)	0.523
65	5.42	4.70	0.808	0.198	(0.727)	0.609
66	5.50	5.60	0.962	0.198	(0.866)	0.764
67	5.58	1.90	0.326	0.198	(0.294)	0.128
68	5.67	0.90	0.155	(0.198)	0.139	0.015
69	5.75	0.60	0.103	(0.198)	0.093	0.010
70	5.83	0.50	0.086	(0.198)	0.077	0.009
71	5.92	0.30	0.052	(0.198)	0.046	0.005
72	6.00	0.20	0.034	(0.198)	0.031	0.003

(Loss Rate Not Used)

Sum = 100.0 Sum = 6.3

Flood volume = Effective rainfall 0.53(In)
times area 8.0(Ac.)/[(In)/(Ft.)] = 0.4(Ac.Ft)
Total soil loss = 0.90(In)
Total soil loss = 0.605(Ac.Ft)
Total rainfall = 1.43(In)
Flood volume = 15441.8 Cubic Feet
Total soil loss = 26349.3 Cubic Feet

Peak flow rate of this hydrograph = 5.082(CFS)

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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	0.0005	0.06	Q	|	|	|	|
0+15	0.0011	0.08	Q	|	|	|	|
0+20	0.0016	0.08	Q	|	|	|	|
0+25	0.0022	0.08	Q	|	|	|	|
0+30	0.0028	0.09	Q	|	|	|	|
0+35	0.0034	0.09	Q	|	|	|	|
0+40	0.0041	0.10	Q	|	|	|	

0+45	0.0048	0.10	Q	|	|	|
0+50	0.0055	0.10	Q	|	|	|
0+55	0.0061	0.10	Q	|	|	|
1+ 0	0.0068	0.10	Q	|	|	|
1+ 5	0.0076	0.11	Q	|	|	|
1+10	0.0083	0.11	Q	|	|	|
1+15	0.0091	0.11	QV	|	|	|
1+20	0.0099	0.11	QV	|	|	|
1+25	0.0106	0.11	QV	|	|	|
1+30	0.0114	0.11	QV	|	|	|
1+35	0.0122	0.11	QV	|	|	|
1+40	0.0129	0.11	QV	|	|	|
1+45	0.0137	0.11	QV	|	|	|
1+50	0.0145	0.11	QV	|	|	|
1+55	0.0152	0.11	QV	|	|	|
2+ 0	0.0160	0.11	QV	|	|	|
2+ 5	0.0169	0.12	QV	|	|	|
2+10	0.0177	0.12	QV	|	|	|
2+15	0.0185	0.12	Q V	|	|	|
2+20	0.0194	0.12	Q V	|	|	|
2+25	0.0202	0.13	Q V	|	|	|
2+30	0.0211	0.13	Q V	|	|	|
2+35	0.0220	0.13	Q V	|	|	|
2+40	0.0228	0.13	Q V	|	|	|
2+45	0.0237	0.13	Q V	|	|	|
2+50	0.0246	0.14	Q V	|	|	|
2+55	0.0256	0.14	Q V	|	|	|
3+ 0	0.0266	0.14	Q V	|	|	|
3+ 5	0.0275	0.14	Q V	|	|	|
3+10	0.0285	0.14	Q V	|	|	|

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|
   3+15       0.0295      0.15   Q  V      |         |         |
|
   3+20       0.0306      0.15   Q  V      |         |         |
|
   3+25       0.0317      0.16   Q  V      |         |         |
|
   3+30       0.0329      0.17   Q  V      |         |         |
|
   3+35       0.0344      0.23   Q  V      |         |         |
|
   3+40       0.0366      0.31   |Q  V     |         |         |
|
   3+45       0.0391      0.37   |Q  V     |         |         |
|
   3+50       0.0422      0.45   |Q  V     |         |         |
|
   3+55       0.0457      0.51   | Q  V    |         |         |
|
   4+ 0       0.0498      0.59   | Q  V    |         |         |
|
   4+ 5       0.0543      0.65   | Q   V   |         |         |
|
   4+10       0.0595      0.76   |  Q  V   |         |         |
|
   4+15       0.0657      0.90   |  Q   V  |         |         |
|
   4+20       0.0728      1.04   |   Q   V |         |         |
|
   4+25       0.0809      1.17   |   Q    V|         |         |
|
   4+30       0.0898      1.28   |    Q    V         |         |
|
   4+35       0.0990      1.34   |    Q    |V        |         |
|
   4+40       0.1091      1.46   |    Q    | V       |         |
|
   4+45       0.1200      1.59   |     Q   |  V      |         |
|
   4+50       0.1317      1.70   |     Q   |   V     |         |
|
   4+55       0.1438      1.76   |      Q  |     V   |         |
|
   5+ 0       0.1568      1.88   |      Q  |      V  |         |
|
   5+ 5       0.1716      2.15   |       Q |        V|         |
|
   5+10       0.1904      2.74   |         Q         |V        |
|
   5+15       0.2134      3.33   |         |  Q      |   V     |
|
   5+20       0.2396      3.80   |         |    Q    |      V  |
|
   5+25       0.2692      4.30   |         |      Q  |         V
|
   5+30       0.3042      5.08   |         |         Q         |   V
|
   5+35       0.3360      4.62   |         |       Q |         |      V
|
   5+40       0.3480      1.74   |     Q   |         |         |
```

```
V|
    5+45       0.3518      0.55  | Q       |         |         |
V|
    5+50       0.3532      0.21  Q         |         |         |
V|
    5+55       0.3539      0.10  Q         |         |         |
V|
    6+ 0       0.3543      0.05  Q         |         |         |
V|
    6+ 5       0.3544      0.03  Q         |         |         |
V|
    6+10       0.3545      0.01  Q         |         |         |
V|
    6+15       0.3545      0.00  Q         |         |         |
V|
    6+20       0.3545      0.00  Q         |         |         |
V|
    6+25       0.3545      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 02/19/21 File: moval33preb610.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Predevlopment Conditions
Unit Hydrograph Runoff

Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) = 0.013 Sq. Mi.
Length along longest watercourse = 1083.00(Ft.)
Length along longest watercourse measured to centroid = 476.00(Ft.)
Length along longest watercourse = 0.205 Mi.
Length along longest watercourse measured to centroid = 0.090 Mi.
Difference in elevation = 110.00(Ft.)
Slope along watercourse = 536.2881 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.064 Hr.
Lag time = 3.83 Min.
25% of lag time = 0.96 Min.
40% of lag time = 1.53 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]
2.55	1.09	2.78
5.49	1.09	5.98

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.04	2.55	20.50

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.090(In)

Area Averaged 100-Year Rainfall = 2.550(In)

Point rain (area averaged) = 1.691(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.691(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.040	84.00	0.000

Total Area Entered = 8.04(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	84.0	0.198	0.000	0.198	1.000	0.198
					Sum (F) =	0.198

Area averaged mean soil loss (F) (In/Hr) = 0.198
Minimum soil loss rate ((In/Hr)) = 0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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	130.523	24.817	2.011
2	0.167	261.045	55.614	4.506
3	0.250	391.568	14.211	1.151
4	0.333	522.090	3.889	0.315
5	0.417	652.613	1.032	0.084
6	0.500	783.135	0.438	0.035
			Sum = 100.000	Sum= 8.103

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	Loss rate(In./Hr) Low	Effective (In/Hr)
1	0.08	0.50	0.101	(0.198)	0.091	0.010
2	0.17	0.60	0.122	(0.198)	0.110	0.012
3	0.25	0.60	0.122	(0.198)	0.110	0.012
4	0.33	0.60	0.122	(0.198)	0.110	0.012
5	0.42	0.60	0.122	(0.198)	0.110	0.012
6	0.50	0.70	0.142	(0.198)	0.128	0.014
7	0.58	0.70	0.142	(0.198)	0.128	0.014
8	0.67	0.70	0.142	(0.198)	0.128	0.014
9	0.75	0.70	0.142	(0.198)	0.128	0.014
10	0.83	0.70	0.142	(0.198)	0.128	0.014
11	0.92	0.70	0.142	(0.198)	0.128	0.014
12	1.00	0.80	0.162	(0.198)	0.146	0.016
13	1.08	0.80	0.162	(0.198)	0.146	0.016
14	1.17	0.80	0.162	(0.198)	0.146	0.016
15	1.25	0.80	0.162	(0.198)	0.146	0.016
16	1.33	0.80	0.162	(0.198)	0.146	0.016
17	1.42	0.80	0.162	(0.198)	0.146	0.016
18	1.50	0.80	0.162	(0.198)	0.146	0.016

19	1.58	0.80	0.162	(0.198)	0.146	0.016
20	1.67	0.80	0.162	(0.198)	0.146	0.016
21	1.75	0.80	0.162	(0.198)	0.146	0.016
22	1.83	0.80	0.162	(0.198)	0.146	0.016
23	1.92	0.80	0.162	(0.198)	0.146	0.016
24	2.00	0.90	0.183	(0.198)	0.164	0.018
25	2.08	0.80	0.162	(0.198)	0.146	0.016
26	2.17	0.90	0.183	(0.198)	0.164	0.018
27	2.25	0.90	0.183	(0.198)	0.164	0.018
28	2.33	0.90	0.183	(0.198)	0.164	0.018
29	2.42	0.90	0.183	(0.198)	0.164	0.018
30	2.50	0.90	0.183	(0.198)	0.164	0.018
31	2.58	0.90	0.183	(0.198)	0.164	0.018
32	2.67	0.90	0.183	(0.198)	0.164	0.018
33	2.75	1.00	0.203	(0.198)	0.183	0.020
34	2.83	1.00	0.203	(0.198)	0.183	0.020
35	2.92	1.00	0.203	(0.198)	0.183	0.020
36	3.00	1.00	0.203	(0.198)	0.183	0.020
37	3.08	1.00	0.203	(0.198)	0.183	0.020
38	3.17	1.10	0.223	0.198	(0.201)	0.025
39	3.25	1.10	0.223	0.198	(0.201)	0.025
40	3.33	1.10	0.223	0.198	(0.201)	0.025
41	3.42	1.20	0.243	0.198	(0.219)	0.045
42	3.50	1.30	0.264	0.198	(0.237)	0.065
43	3.58	1.40	0.284	0.198	(0.256)	0.086
44	3.67	1.40	0.284	0.198	(0.256)	0.086
45	3.75	1.50	0.304	0.198	(0.274)	0.106
46	3.83	1.50	0.304	0.198	(0.274)	0.106
47	3.92	1.60	0.325	0.198	(0.292)	0.126
48	4.00	1.60	0.325	0.198	(0.292)	0.126
49	4.08	1.70	0.345	0.198	(0.310)	0.146
50	4.17	1.80	0.365	0.198	(0.329)	0.167
51	4.25	1.90	0.385	0.198	(0.347)	0.187
52	4.33	2.00	0.406	0.198	(0.365)	0.207
53	4.42	2.10	0.426	0.198	(0.383)	0.228
54	4.50	2.10	0.426	0.198	(0.383)	0.228
55	4.58	2.20	0.446	0.198	(0.402)	0.248
56	4.67	2.30	0.467	0.198	(0.420)	0.268
57	4.75	2.40	0.487	0.198	(0.438)	0.288
58	4.83	2.40	0.487	0.198	(0.438)	0.288
59	4.92	2.50	0.507	0.198	(0.456)	0.309
60	5.00	2.60	0.527	0.198	(0.475)	0.329
61	5.08	3.10	0.629	0.198	(0.566)	0.431
62	5.17	3.60	0.730	0.198	(0.657)	0.532
63	5.25	3.90	0.791	0.198	(0.712)	0.593
64	5.33	4.20	0.852	0.198	(0.767)	0.654
65	5.42	4.70	0.954	0.198	(0.858)	0.755
66	5.50	5.60	1.136	0.198	(1.022)	0.938
67	5.58	1.90	0.385	0.198	(0.347)	0.187
68	5.67	0.90	0.183	(0.198)	0.164	0.018
69	5.75	0.60	0.122	(0.198)	0.110	0.012
70	5.83	0.50	0.101	(0.198)	0.091	0.010
71	5.92	0.30	0.061	(0.198)	0.055	0.006
72	6.00	0.20	0.041	(0.198)	0.037	0.004

(Loss Rate Not Used)

Sum = 100.0 Sum = 8.5

Flood volume = Effective rainfall 0.70(In)
times area 8.0(Ac.)/[(In)/(Ft.)] = 0.5(Ac.Ft)
Total soil loss = 0.99(In)
Total soil loss = 0.661(Ac.Ft)
Total rainfall = 1.69(In)
Flood volume = 20566.0 Cubic Feet
Total soil loss = 28774.8 Cubic Feet

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 Peak flow rate of this hydrograph =      6.291(CFS)
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 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                      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       0.0006      0.07  Q         |         |         |         |
  0+15       0.0013      0.09  Q         |         |         |         |
  0+20       0.0019      0.10  Q         |         |         |         |
  0+25       0.0026      0.10  Q         |         |         |         |
  0+30       0.0033      0.10  Q         |         |         |         |
  0+35       0.0041      0.11  Q         |         |         |         |
  0+40       0.0049      0.11  Q         |         |         |         |
  0+45       0.0056      0.11  Q         |         |         |         |
  0+50       0.0064      0.12  Q         |         |         |         |
  0+55       0.0072      0.12  Q         |         |         |         |
  1+ 0       0.0081      0.12  Q         |         |         |         |
  1+ 5       0.0089      0.13  Q         |         |         |         |
  1+10       0.0098      0.13  Q         |         |         |         |
  1+15       0.0107      0.13  Q         |         |         |         |
  1+20       0.0116      0.13  Q         |         |         |         |
  1+25       0.0126      0.13  QV        |         |         |         |
  1+30       0.0135      0.13  QV        |         |         |         |
  1+35       0.0144      0.13  QV        |         |         |         |
  1+40       0.0153      0.13  QV        |         |         |         |
  1+45       0.0162      0.13  QV        |         |         |         |
  1+50       0.0171      0.13  QV        |         |         |         |
  1+55       0.0180      0.13  QV        |         |         |         |
  2+ 0       0.0189      0.14  QV        |         |         |         |
  2+ 5       0.0199      0.14  QV        |         |         |         |
  2+10       0.0208      0.14  QV        |         |         |         |
  2+15       0.0218      0.15  QV        |         |         |         |
  2+20       0.0229      0.15  QV        |         |         |         |
  2+25       0.0239      0.15  Q V       |         |         |         |
  2+30       0.0249      0.15  Q V       |         |         |         |
  2+35       0.0259      0.15  Q V       |         |         |         |
  2+40       0.0269      0.15  Q V       |         |         |         |
  2+45       0.0280      0.15  Q V       |         |         |         |
  2+50       0.0291      0.16  Q V       |         |         |         |
  2+55       0.0302      0.16  Q V       |         |         |         |
  3+ 0       0.0314      0.16  Q V       |         |         |         |
  3+ 5       0.0325      0.16  Q V       |         |         |         |
  3+10       0.0337      0.17  Q V       |         |         |         |
  3+15       0.0350      0.19  Q V       |         |         |         |
  3+20       0.0364      0.20  Q  V      |         |         |         |
  3+25       0.0380      0.24  Q  V      |         |         |         |
  3+30       0.0406      0.37  |Q V      |         |         |         |
  3+35       0.0443      0.53  | QV      |         |         |         |
  3+40       0.0487      0.65  | Q V     |         |         |         |
  3+45       0.0537      0.72  | Q V     |         |         |         |
  3+50       0.0594      0.82  |  Q V    |         |         |         |
  3+55       0.0655      0.89  |  Q V    |         |         |         |
  4+ 0       0.0723      0.99  |  Q  V   |         |         |         |
  4+ 5       0.0796      1.05  |   Q V   |         |         |         |
  4+10       0.0878      1.19  |   Q  V  |         |         |         |
  4+15       0.0971      1.35  |    Q  V |         |         |         |
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    4+20       0.1075      1.51  |     Q  V|         |         |         |
    4+25       0.1191      1.68  |     Q   V         |         |         |
    4+30       0.1315      1.80  |      Q  |V        |         |         |
    4+35       0.1444      1.87  |      Q  | V       |         |         |
    4+40       0.1583      2.02  |       Q |  V      |         |         |
    4+45       0.1733      2.17  |       Q |   V     |         |         |
    4+50       0.1891      2.30  |        Q|     V   |         |         |
    4+55       0.2054      2.37  |        Q|      V  |         |         |
    5+ 0       0.2227      2.51  |         Q       V |         |         |
    5+ 5       0.2421      2.83  |         |Q        V         |         |
    5+10       0.2664      3.52  |         |   Q     | V       |         |
    5+15       0.2955      4.23  |         |     Q   |    V    |         |
    5+20       0.3284      4.77  |         |        Q|      V  |         |
    5+25       0.3653      5.36  |         |         |Q        V         |
    5+30       0.4087      6.29  |         |         |    Q    |   V     |
    5+35       0.4483      5.75  |         |         | Q       |      V  |
    5+40       0.4639      2.27  |        Q|         |         |        V|
    5+45       0.4688      0.70  | Q       |         |         |        V|
    5+50       0.4706      0.26  |Q        |         |         |        V|
    5+55       0.4714      0.13  Q         |         |         |        V|
    6+ 0       0.4718      0.06  Q         |         |         |        V|
    6+ 5       0.4721      0.03  Q         |         |         |        V|
    6+10       0.4721      0.01  Q         |         |         |        V|
    6+15       0.4721      0.00  Q         |         |         |        V|
    6+20       0.4721      0.00  Q         |         |         |        V|
    6+25       0.4721      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 11/09/21 File: moval33preb6100.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Predevlopment Conditions
Unit Hydrograph Runoff
Area B

Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) = 0.013 Sq. Mi.
Length along longest watercourse = 1083.00(Ft.)
Length along longest watercourse measured to centroid = 476.00 (Ft.)
Length along longest watercourse = 0.205 Mi.
Length along longest watercourse measured to centroid = 0.090 Mi.
Difference in elevation = 110.00(Ft.)
Slope along watercourse = 536.2881 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.064 Hr.
Lag time = 3.83 Min.
25% of lag time = 0.96 Min.
40% of lag time = 1.53 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]

2.55	1.09	2.78
5.49	1.09	5.98

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.04	2.55	20.50

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.090(In)
Area Averaged 100-Year Rainfall = 2.550(In)

Point rain (area averaged) = 2.550(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.550(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.040	84.00	0.000

Total Area Entered = 8.04(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	93.4	0.086	0.000	0.086	1.000	0.086
					Sum (F) =	0.086

Area averaged mean soil loss (F) (In/Hr) = 0.086
Minimum soil loss rate ((In/Hr)) = 0.043
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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	130.523	24.817	2.011
2	0.167	261.045	55.614	4.506
3	0.250	391.568	14.211	1.151
4	0.333	522.090	3.889	0.315
5	0.417	652.613	1.032	0.084
6	0.500	783.135	0.438	0.035
			Sum = 100.000	Sum= 8.103

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	Loss rate(In./Hr) Low	Effective (In/Hr)
1	0.08	0.50	0.153	0.086	(0.138)	0.067
2	0.17	0.60	0.184	0.086	(0.165)	0.098
3	0.25	0.60	0.184	0.086	(0.165)	0.098
4	0.33	0.60	0.184	0.086	(0.165)	0.098
5	0.42	0.60	0.184	0.086	(0.165)	0.098
6	0.50	0.70	0.214	0.086	(0.193)	0.128
7	0.58	0.70	0.214	0.086	(0.193)	0.128
8	0.67	0.70	0.214	0.086	(0.193)	0.128
9	0.75	0.70	0.214	0.086	(0.193)	0.128
10	0.83	0.70	0.214	0.086	(0.193)	0.128
11	0.92	0.70	0.214	0.086	(0.193)	0.128
12	1.00	0.80	0.245	0.086	(0.220)	0.159
13	1.08	0.80	0.245	0.086	(0.220)	0.159
14	1.17	0.80	0.245	0.086	(0.220)	0.159
15	1.25	0.80	0.245	0.086	(0.220)	0.159
16	1.33	0.80	0.245	0.086	(0.220)	0.159
17	1.42	0.80	0.245	0.086	(0.220)	0.159
18	1.50	0.80	0.245	0.086	(0.220)	0.159
19	1.58	0.80	0.245	0.086	(0.220)	0.159
20	1.67	0.80	0.245	0.086	(0.220)	0.159
21	1.75	0.80	0.245	0.086	(0.220)	0.159
22	1.83	0.80	0.245	0.086	(0.220)	0.159
23	1.92	0.80	0.245	0.086	(0.220)	0.159
24	2.00	0.90	0.275	0.086	(0.248)	0.190
25	2.08	0.80	0.245	0.086	(0.220)	0.159
26	2.17	0.90	0.275	0.086	(0.248)	0.190
27	2.25	0.90	0.275	0.086	(0.248)	0.190
28	2.33	0.90	0.275	0.086	(0.248)	0.190
29	2.42	0.90	0.275	0.086	(0.248)	0.190
30	2.50	0.90	0.275	0.086	(0.248)	0.190
31	2.58	0.90	0.275	0.086	(0.248)	0.190
32	2.67	0.90	0.275	0.086	(0.248)	0.190
33	2.75	1.00	0.306	0.086	(0.275)	0.220
34	2.83	1.00	0.306	0.086	(0.275)	0.220
35	2.92	1.00	0.306	0.086	(0.275)	0.220
36	3.00	1.00	0.306	0.086	(0.275)	0.220
37	3.08	1.00	0.306	0.086	(0.275)	0.220
38	3.17	1.10	0.337	0.086	(0.303)	0.251
39	3.25	1.10	0.337	0.086	(0.303)	0.251
40	3.33	1.10	0.337	0.086	(0.303)	0.251
41	3.42	1.20	0.367	0.086	(0.330)	0.281
42	3.50	1.30	0.398	0.086	(0.358)	0.312
43	3.58	1.40	0.428	0.086	(0.386)	0.343
44	3.67	1.40	0.428	0.086	(0.386)	0.343
45	3.75	1.50	0.459	0.086	(0.413)	0.373
46	3.83	1.50	0.459	0.086	(0.413)	0.373
47	3.92	1.60	0.490	0.086	(0.441)	0.404
48	4.00	1.60	0.490	0.086	(0.441)	0.404
49	4.08	1.70	0.520	0.086	(0.468)	0.434
50	4.17	1.80	0.551	0.086	(0.496)	0.465
51	4.25	1.90	0.581	0.086	(0.523)	0.496
52	4.33	2.00	0.612	0.086	(0.551)	0.526
53	4.42	2.10	0.643	0.086	(0.578)	0.557
54	4.50	2.10	0.643	0.086	(0.578)	0.557
55	4.58	2.20	0.673	0.086	(0.606)	0.587

56	4.67	2.30	0.704	0.086	(0.633)	0.618
57	4.75	2.40	0.734	0.086	(0.661)	0.649
58	4.83	2.40	0.734	0.086	(0.661)	0.649
59	4.92	2.50	0.765	0.086	(0.688)	0.679
60	5.00	2.60	0.796	0.086	(0.716)	0.710
61	5.08	3.10	0.949	0.086	(0.854)	0.863
62	5.17	3.60	1.102	0.086	(0.991)	1.016
63	5.25	3.90	1.193	0.086	(1.074)	1.108
64	5.33	4.20	1.285	0.086	(1.157)	1.199
65	5.42	4.70	1.438	0.086	(1.294)	1.352
66	5.50	5.60	1.714	0.086	(1.542)	1.628
67	5.58	1.90	0.581	0.086	(0.523)	0.496
68	5.67	0.90	0.275	0.086	(0.248)	0.190
69	5.75	0.60	0.184	0.086	(0.165)	0.098
70	5.83	0.50	0.153	0.086	(0.138)	0.067
71	5.92	0.30	0.092	(0.086)	0.083	0.009
72	6.00	0.20	0.061	(0.086)	0.055	0.006

```
            (Loss Rate Not Used)
    Sum =     100.0                               Sum =    24.5
     Flood volume = Effective rainfall      2.04(In)
      times area       8.0(Ac.)/[(In)/(Ft.)] =      1.4(Ac.Ft)
     Total soil loss =      0.51(In)
     Total soil loss =     0.343(Ac.Ft)
     Total rainfall =      2.55(In)
     Flood volume =       59478.1 Cubic Feet
     Total soil loss =       14942.1 Cubic Feet
     -----------------------------------------------------------------
--
      Peak flow rate of this hydrograph =     11.219(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        5.0      10.0      15.0
20.0

-----------------------------------------------------------------------
    0+ 5       0.0009      0.14  Q         |         |         |
|
    0+10       0.0044      0.50  Q         |         |         |
|
    0+15       0.0093      0.72  VQ        |         |         |
|
    0+20       0.0146      0.77  VQ        |         |         |
|
    0+25       0.0200      0.79  VQ        |         |         |
|
    0+30       0.0259      0.85  VQ        |         |         |
|
    0+35       0.0327      0.99  VQ        |         |         |
|
    0+40       0.0398      1.03  |VQ       |         |         |
```

```
|
     0+45        0.0470       1.04  |VQ       |         |         |
|
     0+50        0.0541       1.04  |VQ       |         |         |
|
     0+55        0.0613       1.04  |VQ       |         |         |
|
     1+ 0        0.0689       1.10  | Q       |         |         |
|
     1+ 5        0.0774       1.24  | Q       |         |         |
|
     1+10        0.0862       1.28  | Q       |         |         |
|
     1+15        0.0951       1.29  | Q       |         |         |
|
     1+20        0.1039       1.29  | QV      |         |         |
|
     1+25        0.1128       1.29  | QV      |         |         |
|
     1+30        0.1217       1.29  | QV      |         |         |
|
     1+35        0.1306       1.29  | QV      |         |         |
|
     1+40        0.1394       1.29  | Q V     |         |         |
|
     1+45        0.1483       1.29  | Q V     |         |         |
|
     1+50        0.1572       1.29  | Q V     |         |         |
|
     1+55        0.1661       1.29  | Q V     |         |         |
|
     2+ 0        0.1754       1.35  | Q  V    |         |         |
|
     2+ 5        0.1852       1.43  | Q  V    |         |         |
|
     2+10        0.1947       1.39  | Q  V    |         |         |
|
     2+15        0.2051       1.50  | Q   V   |         |         |
|
     2+20        0.2156       1.53  |  Q  V   |         |         |
|
     2+25        0.2261       1.53  |  Q  V   |         |         |
|
     2+30        0.2367       1.54  |  Q  V   |         |         |
|
     2+35        0.2473       1.54  |  Q   V  |         |         |
|
     2+40        0.2579       1.54  |  Q   V  |         |         |
|
     2+45        0.2689       1.60  |  Q   V  |         |         |
|
     2+50        0.2809       1.74  |  Q    V |         |         |
|
     2+55        0.2931       1.77  |  Q    V |         |         |
|
     3+ 0        0.3053       1.78  |  Q    V |         |         |
|
     3+ 5        0.3176       1.78  |  Q     V|         |         |
|
     3+10        0.3303       1.85  |  Q     V|         |         |
```

```
|
    3+15       0.3440      1.98  |  Q      V         |         |
|
    3+20       0.3579      2.02  |   Q     V         |         |
|
    3+25       0.3723      2.09  |   Q     V         |         |
|
    3+30       0.3881      2.29  |   Q     |V        |         |
|
    3+35       0.4055      2.53  |    Q    |V        |         |
|
    3+40       0.4242      2.71  |    Q    | V       |         |
|
    3+45       0.4436      2.82  |    Q    | V       |         |
|
    3+50       0.4641      2.97  |    Q    |  V      |         |
|
    3+55       0.4853      3.07  |     Q   |   V     |         |
|
    4+ 0       0.5074      3.22  |     Q   |   V     |         |
|
    4+ 5       0.5303      3.32  |     Q   |    V    |         |
|
    4+10       0.5546      3.53  |      Q  |     V   |         |
|
    4+15       0.5806      3.77  |      Q  |      V  |         |
|
    4+20       0.6082      4.01  |       Q |      V  |         |
|
    4+25       0.6376      4.26  |       Q |       V |         |
|
    4+30       0.6682      4.45  |       Q |        V|         |
|
    4+35       0.6996      4.56  |        Q|         V         |
|
    4+40       0.7324      4.77  |        Q|         |V        |
|
    4+45       0.7669      5.01  |         Q         | V       |
|
    4+50       0.8027      5.19  |         Q         |  V      |
|
    4+55       0.8392      5.30  |         Q         |   V     |
|
    5+ 0       0.8772      5.51  |         |Q        |    V    |
|
    5+ 5       0.9185      6.00  |         |Q        |     V   |
|
    5+10       0.9670      7.04  |         |   Q     |       V |
|
    5+15       1.0228      8.11  |         |     Q   |        V|
|
    5+20       1.0843      8.93  |         |      Q  |         |V
|
    5+25       1.1520      9.82  |         |        Q|         |  V
|
    5+30       1.2293     11.22  |         |         | Q       |     V
|
    5+35       1.3009     10.40  |         |         Q         |       V
|
    5+40       1.3357      5.06  |         Q         |         |
```

```
V|
    5+45       1.3515      2.29  |   Q      |         |         |
V|
    5+50       1.3593      1.13  | Q        |         |         |
V|
    5+55       1.3634      0.59  |Q         |         |         |
V|
    6+ 0       1.3647      0.20  Q          |         |         |
V|
    6+ 5       1.3653      0.07  Q          |         |         |
V|
    6+10       1.3654      0.02  Q          |         |         |
V|
    6+15       1.3654      0.01  Q          |         |         |
V|
    6+20       1.3654      0.00  Q          |         |         |
V|
    6+25       1.3654      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

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Study date 11/09/21 File: moval33preb242.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Predevlopment Conditions
Unit Hydrograph Runoff
Area B

Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) = 0.013 Sq. Mi.
Length along longest watercourse = 1083.00(Ft.)
Length along longest watercourse measured to centroid = 476.00 (Ft.)
Length along longest watercourse = 0.205 Mi.
Length along longest watercourse measured to centroid = 0.090 Mi.
Difference in elevation = 110.00(Ft.)
Slope along watercourse = 536.2881 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.064 Hr.
Lag time = 3.83 Min.
25% of lag time = 0.96 Min.
40% of lag time = 1.53 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]

8.04	1.93	15.52

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.04	4.64	37.31

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.930(In)
Area Averaged 100-Year Rainfall = 4.640(In)

Point rain (area averaged) = 1.930(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.930(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.040	84.00	0.000

Total Area Entered = 8.04(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	84.0	0.198	0.000	0.198	1.000	0.198
					Sum (F) =	0.198

Area averaged mean soil loss (F) (In/Hr) = 0.198
Minimum soil loss rate ((In/Hr)) = 0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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	130.523	24.817	2.011
2	0.167	261.045	55.614	4.506
3	0.250	391.568	14.211	1.151
4	0.333	522.090	3.889	0.315
5	0.417	652.613	1.032	0.084
6	0.500	783.135	0.438	0.035
			Sum = 100.000	Sum= 8.103

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	0.015	(0.352)	0.014	0.002
2	0.17	0.07	0.015	(0.350)	0.014	0.002
3	0.25	0.07	0.015	(0.349)	0.014	0.002
4	0.33	0.10	0.023	(0.348)	0.021	0.002
5	0.42	0.10	0.023	(0.346)	0.021	0.002
6	0.50	0.10	0.023	(0.345)	0.021	0.002
7	0.58	0.10	0.023	(0.344)	0.021	0.002
8	0.67	0.10	0.023	(0.342)	0.021	0.002
9	0.75	0.10	0.023	(0.341)	0.021	0.002
10	0.83	0.13	0.031	(0.340)	0.028	0.003
11	0.92	0.13	0.031	(0.338)	0.028	0.003
12	1.00	0.13	0.031	(0.337)	0.028	0.003
13	1.08	0.10	0.023	(0.336)	0.021	0.002
14	1.17	0.10	0.023	(0.334)	0.021	0.002
15	1.25	0.10	0.023	(0.333)	0.021	0.002
16	1.33	0.10	0.023	(0.332)	0.021	0.002
17	1.42	0.10	0.023	(0.330)	0.021	0.002
18	1.50	0.10	0.023	(0.329)	0.021	0.002
19	1.58	0.10	0.023	(0.328)	0.021	0.002
20	1.67	0.10	0.023	(0.326)	0.021	0.002
21	1.75	0.10	0.023	(0.325)	0.021	0.002
22	1.83	0.13	0.031	(0.324)	0.028	0.003
23	1.92	0.13	0.031	(0.322)	0.028	0.003
24	2.00	0.13	0.031	(0.321)	0.028	0.003
25	2.08	0.13	0.031	(0.320)	0.028	0.003
26	2.17	0.13	0.031	(0.318)	0.028	0.003
27	2.25	0.13	0.031	(0.317)	0.028	0.003
28	2.33	0.13	0.031	(0.316)	0.028	0.003
29	2.42	0.13	0.031	(0.315)	0.028	0.003
30	2.50	0.13	0.031	(0.313)	0.028	0.003
31	2.58	0.17	0.039	(0.312)	0.035	0.004
32	2.67	0.17	0.039	(0.311)	0.035	0.004
33	2.75	0.17	0.039	(0.310)	0.035	0.004
34	2.83	0.17	0.039	(0.308)	0.035	0.004
35	2.92	0.17	0.039	(0.307)	0.035	0.004
36	3.00	0.17	0.039	(0.306)	0.035	0.004
37	3.08	0.17	0.039	(0.304)	0.035	0.004
38	3.17	0.17	0.039	(0.303)	0.035	0.004
39	3.25	0.17	0.039	(0.302)	0.035	0.004
40	3.33	0.17	0.039	(0.301)	0.035	0.004
41	3.42	0.17	0.039	(0.299)	0.035	0.004
42	3.50	0.17	0.039	(0.298)	0.035	0.004
43	3.58	0.17	0.039	(0.297)	0.035	0.004
44	3.67	0.17	0.039	(0.296)	0.035	0.004
45	3.75	0.17	0.039	(0.294)	0.035	0.004
46	3.83	0.20	0.046	(0.293)	0.042	0.005
47	3.92	0.20	0.046	(0.292)	0.042	0.005
48	4.00	0.20	0.046	(0.291)	0.042	0.005
49	4.08	0.20	0.046	(0.289)	0.042	0.005
50	4.17	0.20	0.046	(0.288)	0.042	0.005
51	4.25	0.20	0.046	(0.287)	0.042	0.005
52	4.33	0.23	0.054	(0.286)	0.049	0.005
53	4.42	0.23	0.054	(0.285)	0.049	0.005
54	4.50	0.23	0.054	(0.283)	0.049	0.005
55	4.58	0.23	0.054	(0.282)	0.049	0.005
56	4.67	0.23	0.054	(0.281)	0.049	0.005

57	4.75	0.23	0.054	(0.280)	0.049	0.005
58	4.83	0.27	0.062	(0.278)	0.056	0.006
59	4.92	0.27	0.062	(0.277)	0.056	0.006
60	5.00	0.27	0.062	(0.276)	0.056	0.006
61	5.08	0.20	0.046	(0.275)	0.042	0.005
62	5.17	0.20	0.046	(0.274)	0.042	0.005
63	5.25	0.20	0.046	(0.272)	0.042	0.005
64	5.33	0.23	0.054	(0.271)	0.049	0.005
65	5.42	0.23	0.054	(0.270)	0.049	0.005
66	5.50	0.23	0.054	(0.269)	0.049	0.005
67	5.58	0.27	0.062	(0.268)	0.056	0.006
68	5.67	0.27	0.062	(0.267)	0.056	0.006
69	5.75	0.27	0.062	(0.265)	0.056	0.006
70	5.83	0.27	0.062	(0.264)	0.056	0.006
71	5.92	0.27	0.062	(0.263)	0.056	0.006
72	6.00	0.27	0.062	(0.262)	0.056	0.006
73	6.08	0.30	0.069	(0.261)	0.063	0.007
74	6.17	0.30	0.069	(0.260)	0.063	0.007
75	6.25	0.30	0.069	(0.258)	0.063	0.007
76	6.33	0.30	0.069	(0.257)	0.063	0.007
77	6.42	0.30	0.069	(0.256)	0.063	0.007
78	6.50	0.30	0.069	(0.255)	0.063	0.007
79	6.58	0.33	0.077	(0.254)	0.069	0.008
80	6.67	0.33	0.077	(0.253)	0.069	0.008
81	6.75	0.33	0.077	(0.252)	0.069	0.008
82	6.83	0.33	0.077	(0.250)	0.069	0.008
83	6.92	0.33	0.077	(0.249)	0.069	0.008
84	7.00	0.33	0.077	(0.248)	0.069	0.008
85	7.08	0.33	0.077	(0.247)	0.069	0.008
86	7.17	0.33	0.077	(0.246)	0.069	0.008
87	7.25	0.33	0.077	(0.245)	0.069	0.008
88	7.33	0.37	0.085	(0.244)	0.076	0.008
89	7.42	0.37	0.085	(0.243)	0.076	0.008
90	7.50	0.37	0.085	(0.241)	0.076	0.008
91	7.58	0.40	0.093	(0.240)	0.083	0.009
92	7.67	0.40	0.093	(0.239)	0.083	0.009
93	7.75	0.40	0.093	(0.238)	0.083	0.009
94	7.83	0.43	0.100	(0.237)	0.090	0.010
95	7.92	0.43	0.100	(0.236)	0.090	0.010
96	8.00	0.43	0.100	(0.235)	0.090	0.010
97	8.08	0.50	0.116	(0.234)	0.104	0.012
98	8.17	0.50	0.116	(0.233)	0.104	0.012
99	8.25	0.50	0.116	(0.232)	0.104	0.012
100	8.33	0.50	0.116	(0.230)	0.104	0.012
101	8.42	0.50	0.116	(0.229)	0.104	0.012
102	8.50	0.50	0.116	(0.228)	0.104	0.012
103	8.58	0.53	0.124	(0.227)	0.111	0.012
104	8.67	0.53	0.124	(0.226)	0.111	0.012
105	8.75	0.53	0.124	(0.225)	0.111	0.012
106	8.83	0.57	0.131	(0.224)	0.118	0.013
107	8.92	0.57	0.131	(0.223)	0.118	0.013
108	9.00	0.57	0.131	(0.222)	0.118	0.013
109	9.08	0.63	0.147	(0.221)	0.132	0.015
110	9.17	0.63	0.147	(0.220)	0.132	0.015
111	9.25	0.63	0.147	(0.219)	0.132	0.015
112	9.33	0.67	0.154	(0.218)	0.139	0.015
113	9.42	0.67	0.154	(0.217)	0.139	0.015
114	9.50	0.67	0.154	(0.216)	0.139	0.015
115	9.58	0.70	0.162	(0.215)	0.146	0.016
116	9.67	0.70	0.162	(0.214)	0.146	0.016

117	9.75	0.70	0.162	(0.213)	0.146	0.016
118	9.83	0.73	0.170	(0.212)	0.153	0.017
119	9.92	0.73	0.170	(0.211)	0.153	0.017
120	10.00	0.73	0.170	(0.210)	0.153	0.017
121	10.08	0.50	0.116	(0.208)	0.104	0.012
122	10.17	0.50	0.116	(0.207)	0.104	0.012
123	10.25	0.50	0.116	(0.206)	0.104	0.012
124	10.33	0.50	0.116	(0.205)	0.104	0.012
125	10.42	0.50	0.116	(0.204)	0.104	0.012
126	10.50	0.50	0.116	(0.203)	0.104	0.012
127	10.58	0.67	0.154	(0.202)	0.139	0.015
128	10.67	0.67	0.154	(0.201)	0.139	0.015
129	10.75	0.67	0.154	(0.201)	0.139	0.015
130	10.83	0.67	0.154	(0.200)	0.139	0.015
131	10.92	0.67	0.154	(0.199)	0.139	0.015
132	11.00	0.67	0.154	(0.198)	0.139	0.015
133	11.08	0.63	0.147	(0.197)	0.132	0.015
134	11.17	0.63	0.147	(0.196)	0.132	0.015
135	11.25	0.63	0.147	(0.195)	0.132	0.015
136	11.33	0.63	0.147	(0.194)	0.132	0.015
137	11.42	0.63	0.147	(0.193)	0.132	0.015
138	11.50	0.63	0.147	(0.192)	0.132	0.015
139	11.58	0.57	0.131	(0.191)	0.118	0.013
140	11.67	0.57	0.131	(0.190)	0.118	0.013
141	11.75	0.57	0.131	(0.189)	0.118	0.013
142	11.83	0.60	0.139	(0.188)	0.125	0.014
143	11.92	0.60	0.139	(0.187)	0.125	0.014
144	12.00	0.60	0.139	(0.186)	0.125	0.014
145	12.08	0.83	0.193	(0.185)	0.174	0.019
146	12.17	0.83	0.193	(0.184)	0.174	0.019
147	12.25	0.83	0.193	(0.183)	0.174	0.019
148	12.33	0.87	0.201	(0.182)	0.181	0.020
149	12.42	0.87	0.201	(0.182)	0.181	0.020
150	12.50	0.87	0.201	0.181	(0.181)	0.020
151	12.58	0.93	0.216	0.180	(0.195)	0.036
152	12.67	0.93	0.216	0.179	(0.195)	0.037
153	12.75	0.93	0.216	0.178	(0.195)	0.038
154	12.83	0.97	0.224	0.177	(0.201)	0.047
155	12.92	0.97	0.224	0.176	(0.201)	0.048
156	13.00	0.97	0.224	0.175	(0.201)	0.049
157	13.08	1.13	0.262	0.174	(0.236)	0.088
158	13.17	1.13	0.262	0.173	(0.236)	0.089
159	13.25	1.13	0.262	0.173	(0.236)	0.090
160	13.33	1.13	0.262	0.172	(0.236)	0.091
161	13.42	1.13	0.262	0.171	(0.236)	0.092
162	13.50	1.13	0.262	0.170	(0.236)	0.093
163	13.58	0.77	0.178	(0.169)	0.160	0.018
164	13.67	0.77	0.178	(0.168)	0.160	0.018
165	13.75	0.77	0.178	(0.167)	0.160	0.018
166	13.83	0.77	0.178	(0.166)	0.160	0.018
167	13.92	0.77	0.178	(0.166)	0.160	0.018
168	14.00	0.77	0.178	(0.165)	0.160	0.018
169	14.08	0.90	0.208	0.164	(0.188)	0.044
170	14.17	0.90	0.208	0.163	(0.188)	0.045
171	14.25	0.90	0.208	0.162	(0.188)	0.046
172	14.33	0.87	0.201	0.161	(0.181)	0.039
173	14.42	0.87	0.201	0.161	(0.181)	0.040
174	14.50	0.87	0.201	0.160	(0.181)	0.041
175	14.58	0.87	0.201	0.159	(0.181)	0.042
176	14.67	0.87	0.201	0.158	(0.181)	0.043

177	14.75	0.87	0.201	0.157	(0.181)	0.043
178	14.83	0.83	0.193	0.157	(0.174)	0.036
179	14.92	0.83	0.193	0.156	(0.174)	0.037
180	15.00	0.83	0.193	0.155	(0.174)	0.038
181	15.08	0.80	0.185	0.154	(0.167)	0.031
182	15.17	0.80	0.185	0.153	(0.167)	0.032
183	15.25	0.80	0.185	0.153	(0.167)	0.033
184	15.33	0.77	0.178	0.152	(0.160)	0.026
185	15.42	0.77	0.178	0.151	(0.160)	0.027
186	15.50	0.77	0.178	0.150	(0.160)	0.027
187	15.58	0.63	0.147	(0.149)	0.132	0.015
188	15.67	0.63	0.147	(0.149)	0.132	0.015
189	15.75	0.63	0.147	(0.148)	0.132	0.015
190	15.83	0.63	0.147	(0.147)	0.132	0.015
191	15.92	0.63	0.147	(0.146)	0.132	0.015
192	16.00	0.63	0.147	(0.146)	0.132	0.015
193	16.08	0.13	0.031	(0.145)	0.028	0.003
194	16.17	0.13	0.031	(0.144)	0.028	0.003
195	16.25	0.13	0.031	(0.143)	0.028	0.003
196	16.33	0.13	0.031	(0.143)	0.028	0.003
197	16.42	0.13	0.031	(0.142)	0.028	0.003
198	16.50	0.13	0.031	(0.141)	0.028	0.003
199	16.58	0.10	0.023	(0.141)	0.021	0.002
200	16.67	0.10	0.023	(0.140)	0.021	0.002
201	16.75	0.10	0.023	(0.139)	0.021	0.002
202	16.83	0.10	0.023	(0.138)	0.021	0.002
203	16.92	0.10	0.023	(0.138)	0.021	0.002
204	17.00	0.10	0.023	(0.137)	0.021	0.002
205	17.08	0.17	0.039	(0.136)	0.035	0.004
206	17.17	0.17	0.039	(0.136)	0.035	0.004
207	17.25	0.17	0.039	(0.135)	0.035	0.004
208	17.33	0.17	0.039	(0.134)	0.035	0.004
209	17.42	0.17	0.039	(0.134)	0.035	0.004
210	17.50	0.17	0.039	(0.133)	0.035	0.004
211	17.58	0.17	0.039	(0.132)	0.035	0.004
212	17.67	0.17	0.039	(0.132)	0.035	0.004
213	17.75	0.17	0.039	(0.131)	0.035	0.004
214	17.83	0.13	0.031	(0.130)	0.028	0.003
215	17.92	0.13	0.031	(0.130)	0.028	0.003
216	18.00	0.13	0.031	(0.129)	0.028	0.003
217	18.08	0.13	0.031	(0.128)	0.028	0.003
218	18.17	0.13	0.031	(0.128)	0.028	0.003
219	18.25	0.13	0.031	(0.127)	0.028	0.003
220	18.33	0.13	0.031	(0.127)	0.028	0.003
221	18.42	0.13	0.031	(0.126)	0.028	0.003
222	18.50	0.13	0.031	(0.125)	0.028	0.003
223	18.58	0.10	0.023	(0.125)	0.021	0.002
224	18.67	0.10	0.023	(0.124)	0.021	0.002
225	18.75	0.10	0.023	(0.124)	0.021	0.002
226	18.83	0.07	0.015	(0.123)	0.014	0.002
227	18.92	0.07	0.015	(0.122)	0.014	0.002
228	19.00	0.07	0.015	(0.122)	0.014	0.002
229	19.08	0.10	0.023	(0.121)	0.021	0.002
230	19.17	0.10	0.023	(0.121)	0.021	0.002
231	19.25	0.10	0.023	(0.120)	0.021	0.002
232	19.33	0.13	0.031	(0.119)	0.028	0.003
233	19.42	0.13	0.031	(0.119)	0.028	0.003
234	19.50	0.13	0.031	(0.118)	0.028	0.003
235	19.58	0.10	0.023	(0.118)	0.021	0.002
236	19.67	0.10	0.023	(0.117)	0.021	0.002

237	19.75	0.10	0.023	(0.117)	0.021	0.002
238	19.83	0.07	0.015	(0.116)	0.014	0.002
239	19.92	0.07	0.015	(0.116)	0.014	0.002
240	20.00	0.07	0.015	(0.115)	0.014	0.002
241	20.08	0.10	0.023	(0.115)	0.021	0.002
242	20.17	0.10	0.023	(0.114)	0.021	0.002
243	20.25	0.10	0.023	(0.114)	0.021	0.002
244	20.33	0.10	0.023	(0.113)	0.021	0.002
245	20.42	0.10	0.023	(0.113)	0.021	0.002
246	20.50	0.10	0.023	(0.112)	0.021	0.002
247	20.58	0.10	0.023	(0.112)	0.021	0.002
248	20.67	0.10	0.023	(0.111)	0.021	0.002
249	20.75	0.10	0.023	(0.111)	0.021	0.002
250	20.83	0.07	0.015	(0.110)	0.014	0.002
251	20.92	0.07	0.015	(0.110)	0.014	0.002
252	21.00	0.07	0.015	(0.110)	0.014	0.002
253	21.08	0.10	0.023	(0.109)	0.021	0.002
254	21.17	0.10	0.023	(0.109)	0.021	0.002
255	21.25	0.10	0.023	(0.108)	0.021	0.002
256	21.33	0.07	0.015	(0.108)	0.014	0.002
257	21.42	0.07	0.015	(0.107)	0.014	0.002
258	21.50	0.07	0.015	(0.107)	0.014	0.002
259	21.58	0.10	0.023	(0.107)	0.021	0.002
260	21.67	0.10	0.023	(0.106)	0.021	0.002
261	21.75	0.10	0.023	(0.106)	0.021	0.002
262	21.83	0.07	0.015	(0.105)	0.014	0.002
263	21.92	0.07	0.015	(0.105)	0.014	0.002
264	22.00	0.07	0.015	(0.105)	0.014	0.002
265	22.08	0.10	0.023	(0.104)	0.021	0.002
266	22.17	0.10	0.023	(0.104)	0.021	0.002
267	22.25	0.10	0.023	(0.104)	0.021	0.002
268	22.33	0.07	0.015	(0.103)	0.014	0.002
269	22.42	0.07	0.015	(0.103)	0.014	0.002
270	22.50	0.07	0.015	(0.103)	0.014	0.002
271	22.58	0.07	0.015	(0.102)	0.014	0.002
272	22.67	0.07	0.015	(0.102)	0.014	0.002
273	22.75	0.07	0.015	(0.102)	0.014	0.002
274	22.83	0.07	0.015	(0.102)	0.014	0.002
275	22.92	0.07	0.015	(0.101)	0.014	0.002
276	23.00	0.07	0.015	(0.101)	0.014	0.002
277	23.08	0.07	0.015	(0.101)	0.014	0.002
278	23.17	0.07	0.015	(0.101)	0.014	0.002
279	23.25	0.07	0.015	(0.100)	0.014	0.002
280	23.33	0.07	0.015	(0.100)	0.014	0.002
281	23.42	0.07	0.015	(0.100)	0.014	0.002
282	23.50	0.07	0.015	(0.100)	0.014	0.002
283	23.58	0.07	0.015	(0.100)	0.014	0.002
284	23.67	0.07	0.015	(0.100)	0.014	0.002
285	23.75	0.07	0.015	(0.099)	0.014	0.002
286	23.83	0.07	0.015	(0.099)	0.014	0.002
287	23.92	0.07	0.015	(0.099)	0.014	0.002
288	24.00	0.07	0.015	(0.099)	0.014	0.002

(Loss Rate Not Used)

Sum = 100.0 Sum = 3.1

Flood volume = Effective rainfall 0.26(In)
times area 8.0(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)
Total soil loss = 1.67(In)
Total soil loss = 1.117(Ac.Ft)
Total rainfall = 1.93(In)
Flood volume = 7649.5 Cubic Feet

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      Total soil loss =       48677.0 Cubic Feet
      ------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =      0.743(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       0.0001      0.01  Q         |         |         |
|
    0+15       0.0002      0.01  Q         |         |         |
|
    0+20       0.0003      0.01  Q         |         |         |
|
    0+25       0.0004      0.02  Q         |         |         |
|
    0+30       0.0005      0.02  Q         |         |         |
|
    0+35       0.0006      0.02  Q         |         |         |
|
    0+40       0.0008      0.02  Q         |         |         |
|
    0+45       0.0009      0.02  Q         |         |         |
|
    0+50       0.0010      0.02  Q         |         |         |
|
    0+55       0.0012      0.02  Q         |         |         |
|
    1+ 0       0.0014      0.02  Q         |         |         |
|
    1+ 5       0.0015      0.02  Q         |         |         |
|
    1+10       0.0017      0.02  Q         |         |         |
|
    1+15       0.0018      0.02  Q         |         |         |
|
    1+20       0.0019      0.02  Q         |         |         |
|
    1+25       0.0021      0.02  Q         |         |         |
|
    1+30       0.0022      0.02  Q         |         |         |
|
    1+35       0.0023      0.02  Q         |         |         |
|
    1+40       0.0025      0.02  Q         |         |         |
|
```

1+45	0.0026	0.02	Q	|	|	|	|
1+50	0.0027	0.02	Q	|	|	|	|
1+55	0.0029	0.02	Q	|	|	|	|
2+ 0	0.0031	0.02	Q	|	|	|	|
2+ 5	0.0032	0.02	Q	|	|	|	|
2+10	0.0034	0.03	Q	|	|	|	|
2+15	0.0036	0.03	Q	|	|	|	|
2+20	0.0037	0.03	Q	|	|	|	|
2+25	0.0039	0.03	Q	|	|	|	|
2+30	0.0041	0.03	Q	|	|	|	|
2+35	0.0043	0.03	Q	|	|	|	|
2+40	0.0045	0.03	QV	|	|	|	|
2+45	0.0047	0.03	QV	|	|	|	|
2+50	0.0049	0.03	QV	|	|	|	|
2+55	0.0051	0.03	QV	|	|	|	|
3+ 0	0.0053	0.03	QV	|	|	|	|
3+ 5	0.0056	0.03	QV	|	|	|	|
3+10	0.0058	0.03	QV	|	|	|	|
3+15	0.0060	0.03	QV	|	|	|	|
3+20	0.0062	0.03	QV	|	|	|	|
3+25	0.0064	0.03	QV	|	|	|	|
3+30	0.0066	0.03	QV	|	|	|	|
3+35	0.0068	0.03	QV	|	|	|	|
3+40	0.0071	0.03	QV	|	|	|	|
3+45	0.0073	0.03	QV	|	|	|	|
3+50	0.0075	0.03	QV	|	|	|	|
3+55	0.0078	0.04	QV	|	|	|	|
4+ 0	0.0080	0.04	QV	|	|	|	|
4+ 5	0.0083	0.04	QV	|	|	|	|
4+10	0.0085	0.04	QV	|	|	|	|

```
      4+15       0.0088      0.04  Q V        |         |         |
|
      4+20       0.0091      0.04  Q V        |         |         |
|
      4+25       0.0094      0.04  Q V        |         |         |
|
      4+30       0.0096      0.04  Q V        |         |         |
|
      4+35       0.0100      0.04  Q V        |         |         |
|
      4+40       0.0103      0.04  Q V        |         |         |
|
      4+45       0.0106      0.04  Q V        |         |         |
|
      4+50       0.0109      0.05  Q V        |         |         |
|
      4+55       0.0112      0.05  Q V        |         |         |
|
      5+ 0       0.0115      0.05  Q V        |         |         |
|
      5+ 5       0.0119      0.05  Q V        |         |         |
|
      5+10       0.0121      0.04  Q V        |         |         |
|
      5+15       0.0124      0.04  Q V        |         |         |
|
      5+20       0.0127      0.04  Q V        |         |         |
|
      5+25       0.0130      0.04  Q V        |         |         |
|
      5+30       0.0133      0.04  Q  V       |         |         |
|
      5+35       0.0136      0.05  Q  V       |         |         |
|
      5+40       0.0139      0.05  Q  V       |         |         |
|
      5+45       0.0143      0.05  Q  V       |         |         |
|
      5+50       0.0146      0.05  Q  V       |         |         |
|
      5+55       0.0149      0.05  Q  V       |         |         |
|
      6+ 0       0.0153      0.05  Q  V       |         |         |
|
      6+ 5       0.0156      0.05  Q  V       |         |         |
|
      6+10       0.0160      0.06  Q  V       |         |         |
|
      6+15       0.0164      0.06  Q  V       |         |         |
|
      6+20       0.0168      0.06  Q  V       |         |         |
|
      6+25       0.0172      0.06  Q  V       |         |         |
|
      6+30       0.0176      0.06  Q   V      |         |         |
|
      6+35       0.0180      0.06  Q   V      |         |         |
|
      6+40       0.0184      0.06  Q   V      |         |         |
|
```

```
    6+45       0.0188      0.06  Q   V      |         |         |
|
    6+50       0.0193      0.06  Q   V      |         |         |
|
    6+55       0.0197      0.06  Q   V      |         |         |
|
    7+ 0       0.0201      0.06  Q   V      |         |         |
|
    7+ 5       0.0206      0.06  Q   V      |         |         |
|
    7+10       0.0210      0.06  Q   V      |         |         |
|
    7+15       0.0214      0.06  Q   V      |         |         |
|
    7+20       0.0219      0.06  Q   V      |         |         |
|
    7+25       0.0223      0.07  Q    V     |         |         |
|
    7+30       0.0228      0.07  Q    V     |         |         |
|
    7+35       0.0233      0.07  Q    V     |         |         |
|
    7+40       0.0238      0.07  Q    V     |         |         |
|
    7+45       0.0243      0.07  Q    V     |         |         |
|
    7+50       0.0248      0.08  Q    V     |         |         |
|
    7+55       0.0254      0.08  Q    V     |         |         |
|
    8+ 0       0.0259      0.08  Q    V     |         |         |
|
    8+ 5       0.0265      0.08  Q     V    |         |         |
|
    8+10       0.0271      0.09  Q     V    |         |         |
|
    8+15       0.0278      0.09  Q     V    |         |         |
|
    8+20       0.0284      0.09  Q     V    |         |         |
|
    8+25       0.0291      0.09  Q     V    |         |         |
|
    8+30       0.0297      0.09  Q     V    |         |         |
|
    8+35       0.0304      0.10  Q     V    |         |         |
|
    8+40       0.0311      0.10  Q      V   |         |         |
|
    8+45       0.0318      0.10  Q      V   |         |         |
|
    8+50       0.0325      0.10  Q      V   |         |         |
|
    8+55       0.0332      0.11  Q      V   |         |         |
|
    9+ 0       0.0339      0.11  Q      V   |         |         |
|
    9+ 5       0.0347      0.11  Q      V   |         |         |
|
    9+10       0.0355      0.12  Q       V  |         |         |
|
```

```
      9+15       0.0363      0.12  Q       V |         |         |
|
      9+20       0.0371      0.12  Q       V |         |         |
|
      9+25       0.0380      0.12  Q       V |         |         |
|
      9+30       0.0388      0.12  Q       V |         |         |
|
      9+35       0.0397      0.13  Q        V|         |         |
|
      9+40       0.0406      0.13  Q        V|         |         |
|
      9+45       0.0415      0.13  Q        V|         |         |
|
      9+50       0.0424      0.13  Q        V|         |         |
|
      9+55       0.0433      0.14  Q        V|         |         |
|
     10+ 0       0.0443      0.14  Q         V         |         |
|
     10+ 5       0.0452      0.13  Q         V         |         |
|
     10+10       0.0459      0.10  Q         V         |         |
|
     10+15       0.0465      0.10  Q         V         |         |
|
     10+20       0.0472      0.09  Q         V         |         |
|
     10+25       0.0478      0.09  Q         V         |         |
|
     10+30       0.0485      0.09  Q         |V        |         |
|
     10+35       0.0492      0.10  Q         |V        |         |
|
     10+40       0.0500      0.12  Q         |V        |         |
|
     10+45       0.0508      0.12  Q         |V        |         |
|
     10+50       0.0517      0.12  Q         |V        |         |
|
     10+55       0.0526      0.13  Q         |V        |         |
|
     11+ 0       0.0534      0.13  Q         | V       |         |
|
     11+ 5       0.0543      0.12  Q         | V       |         |
|
     11+10       0.0551      0.12  Q         | V       |         |
|
     11+15       0.0559      0.12  Q         | V       |         |
|
     11+20       0.0567      0.12  Q         | V       |         |
|
     11+25       0.0576      0.12  Q         |  V      |         |
|
     11+30       0.0584      0.12  Q         |  V      |         |
|
     11+35       0.0592      0.12  Q         |  V      |         |
|
     11+40       0.0599      0.11  Q         |  V      |         |
|
```

```
  11+45       0.0607      0.11  Q          |  V      |         |
|
  11+50       0.0614      0.11  Q          |  V      |         |
|
  11+55       0.0622      0.11  Q          |   V     |         |
|
  12+ 0       0.0630      0.11  Q          |   V     |         |
|
  12+ 5       0.0638      0.12  Q          |   V     |         |
|
  12+10       0.0648      0.15  Q          |   V     |         |
|
  12+15       0.0659      0.15  Q          |    V    |         |
|
  12+20       0.0670      0.16  Q          |    V    |         |
|
  12+25       0.0681      0.16  Q          |    V    |         |
|
  12+30       0.0692      0.16  Q          |    V    |         |
|
  12+35       0.0706      0.20  Q          |     V   |         |
|
  12+40       0.0724      0.27  |Q         |     V   |         |
|
  12+45       0.0745      0.30  |Q         |     V   |         |
|
  12+50       0.0767      0.32  |Q         |      V  |         |
|
  12+55       0.0792      0.37  |Q         |       V |         |
|
  13+ 0       0.0819      0.38  |Q         |       V |         |
|
  13+ 5       0.0851      0.47  |Q         |        V|         |
|
  13+10       0.0896      0.65  | Q        |         V         |
|
  13+15       0.0945      0.70  | Q        |         |V        |
|
  13+20       0.0994      0.72  | Q        |         | V       |
|
  13+25       0.1045      0.73  | Q        |         |  V      |
|
  13+30       0.1096      0.74  | Q        |         |   V     |
|
  13+35       0.1137      0.60  | Q        |         |    V    |
|
  13+40       0.1155      0.26  |Q         |         |     V   |
|
  13+45       0.1168      0.18  Q          |         |     V   |
|
  13+50       0.1178      0.15  Q          |         |     V   |
|
  13+55       0.1188      0.15  Q          |         |      V  |
|
  14+ 0       0.1198      0.14  Q          |         |      V  |
|
  14+ 5       0.1212      0.20  Q          |         |      V  |
|
  14+10       0.1234      0.32  |Q         |         |       V |
|
```

```
     14+15       0.1258      0.36  |Q        |         |       V |
|
     14+20       0.1283      0.36  |Q        |         |        V|
|
     14+25       0.1305      0.33  |Q        |         |        V|
|
     14+30       0.1328      0.33  |Q        |         |         V
|
     14+35       0.1351      0.33  |Q        |         |         V
|
     14+40       0.1374      0.34  |Q        |         |         |V
|
     14+45       0.1398      0.34  |Q        |         |         |V
|
     14+50       0.1421      0.34  |Q        |         |         | V
|
     14+55       0.1442      0.31  |Q        |         |         | V
|
     15+ 0       0.1463      0.31  |Q        |         |         |  V
|
     15+ 5       0.1484      0.29  |Q        |         |         |  V
|
     15+10       0.1502      0.26  |Q        |         |         |   V
|
     15+15       0.1520      0.26  |Q        |         |         |   V
|
     15+20       0.1537      0.25  |Q        |         |         |    V
|
     15+25       0.1552      0.22  Q         |         |         |    V
|
     15+30       0.1567      0.22  Q         |         |         |    V
|
     15+35       0.1581      0.20  Q         |         |         |     V
|
     15+40       0.1590      0.14  Q         |         |         |     V
|
     15+45       0.1599      0.12  Q         |         |         |     V
|
     15+50       0.1607      0.12  Q         |         |         |     V
|
     15+55       0.1615      0.12  Q         |         |         |     V
|
     16+ 0       0.1624      0.12  Q         |         |         |     V
|
     16+ 5       0.1630      0.10  Q         |         |         |      V
|
     16+10       0.1633      0.04  Q         |         |         |      V
|
     16+15       0.1635      0.03  Q         |         |         |      V
|
     16+20       0.1637      0.03  Q         |         |         |      V
|
     16+25       0.1639      0.03  Q         |         |         |      V
|
     16+30       0.1641      0.03  Q         |         |         |      V
|
     16+35       0.1642      0.02  Q         |         |         |      V
|
     16+40       0.1644      0.02  Q         |         |         |      V
|
```

16+45	0.1645	0.02	Q	|	|	|	V	|
16+50	0.1646	0.02	Q	|	|	|	V	|
16+55	0.1647	0.02	Q	|	|	|	V	|
17+ 0	0.1649	0.02	Q	|	|	|	V	|
17+ 5	0.1650	0.02	Q	|	|	|	V	|
17+10	0.1652	0.03	Q	|	|	|	V	|
17+15	0.1654	0.03	Q	|	|	|	V	|
17+20	0.1656	0.03	Q	|	|	|	V	|
17+25	0.1659	0.03	Q	|	|	|	V	|
17+30	0.1661	0.03	Q	|	|	|	V	|
17+35	0.1663	0.03	Q	|	|	|	V	|
17+40	0.1665	0.03	Q	|	|	|	V	|
17+45	0.1667	0.03	Q	|	|	|	V	|
17+50	0.1669	0.03	Q	|	|	|	V	|
17+55	0.1671	0.03	Q	|	|	|	V	|
18+ 0	0.1673	0.03	Q	|	|	|	V	|
18+ 5	0.1675	0.03	Q	|	|	|	V	|
18+10	0.1676	0.03	Q	|	|	|	V	|
18+15	0.1678	0.03	Q	|	|	|	V	|
18+20	0.1680	0.03	Q	|	|	|	V	|
18+25	0.1681	0.03	Q	|	|	|	V	|
18+30	0.1683	0.03	Q	|	|	|	V	|
18+35	0.1685	0.02	Q	|	|	|	V	|
18+40	0.1686	0.02	Q	|	|	|	V	|
18+45	0.1688	0.02	Q	|	|	|	V	|
18+50	0.1689	0.02	Q	|	|	|	V	|
18+55	0.1690	0.01	Q	|	|	|	V	|
19+ 0	0.1691	0.01	Q	|	|	|	V	|
19+ 5	0.1692	0.01	Q	|	|	|	V	|
19+10	0.1693	0.02	Q	|	|	|	V	|

19+15	0.1694	0.02	Q	|	|	|	V	|
19+20	0.1695	0.02	Q	|	|	|	V	|
19+25	0.1697	0.02	Q	|	|	|	V	|
19+30	0.1699	0.02	Q	|	|	|	V	|
19+35	0.1700	0.02	Q	|	|	|	V	|
19+40	0.1702	0.02	Q	|	|	|	V	|
19+45	0.1703	0.02	Q	|	|	|	V	|
19+50	0.1704	0.02	Q	|	|	|	V	|
19+55	0.1705	0.01	Q	|	|	|	V	|
20+ 0	0.1706	0.01	Q	|	|	|	V	|
20+ 5	0.1707	0.01	Q	|	|	|	V	|
20+10	0.1708	0.02	Q	|	|	|	V	|
20+15	0.1710	0.02	Q	|	|	|	V	|
20+20	0.1711	0.02	Q	|	|	|	V	|
20+25	0.1712	0.02	Q	|	|	|	V	|
20+30	0.1713	0.02	Q	|	|	|		V|
20+35	0.1715	0.02	Q	|	|	|		V|
20+40	0.1716	0.02	Q	|	|	|		V|
20+45	0.1717	0.02	Q	|	|	|		V|
20+50	0.1718	0.02	Q	|	|	|		V|
20+55	0.1719	0.01	Q	|	|	|		V|
21+ 0	0.1720	0.01	Q	|	|	|		V|
21+ 5	0.1721	0.01	Q	|	|	|		V|
21+10	0.1722	0.02	Q	|	|	|		V|
21+15	0.1724	0.02	Q	|	|	|		V|
21+20	0.1725	0.02	Q	|	|	|		V|
21+25	0.1726	0.01	Q	|	|	|		V|
21+30	0.1727	0.01	Q	|	|	|		V|
21+35	0.1728	0.01	Q	|	|	|		V|
21+40	0.1729	0.02	Q	|	|	|		V|

21+45	0.1730	0.02	Q	|	|	|	V|
21+50	0.1731	0.02	Q	|	|	|	V|
21+55	0.1732	0.01	Q	|	|	|	V|
22+ 0	0.1733	0.01	Q	|	|	|	V|
22+ 5	0.1734	0.01	Q	|	|	|	V|
22+10	0.1735	0.02	Q	|	|	|	V|
22+15	0.1737	0.02	Q	|	|	|	V|
22+20	0.1738	0.02	Q	|	|	|	V|
22+25	0.1739	0.01	Q	|	|	|	V|
22+30	0.1740	0.01	Q	|	|	|	V|
22+35	0.1741	0.01	Q	|	|	|	V|
22+40	0.1741	0.01	Q	|	|	|	V|
22+45	0.1742	0.01	Q	|	|	|	V|
22+50	0.1743	0.01	Q	|	|	|	V|
22+55	0.1744	0.01	Q	|	|	|	V|
23+ 0	0.1745	0.01	Q	|	|	|	V|
23+ 5	0.1746	0.01	Q	|	|	|	V|
23+10	0.1747	0.01	Q	|	|	|	V|
23+15	0.1747	0.01	Q	|	|	|	V|
23+20	0.1748	0.01	Q	|	|	|	V|
23+25	0.1749	0.01	Q	|	|	|	V|
23+30	0.1750	0.01	Q	|	|	|	V|
23+35	0.1751	0.01	Q	|	|	|	V|
23+40	0.1752	0.01	Q	|	|	|	V|
23+45	0.1753	0.01	Q	|	|	|	V|
23+50	0.1753	0.01	Q	|	|	|	V|
23+55	0.1754	0.01	Q	|	|	|	V|
24+ 0	0.1755	0.01	Q	|	|	|	V|
24+ 5	0.1756	0.01	Q	|	|	|	V|
24+10	0.1756	0.00	Q	|	|	|	V|

```
   24+15       0.1756      0.00  Q          |          |          |
V|
   24+20       0.1756      0.00  Q          |          |          |
V|
   24+25       0.1756      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

          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
8.2
                Study date  11/09/21 File: moval33preb245.out

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++++++
      -----------------------------------------------------------------
------

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


      Program License Serial Number 6232

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

       English Units used in output format



      -----------------------------------------------------------------
---
      Gateway Heights
      Predevlopment Conditions
      Unit Hydrograph Runoff
      Area B
      -----------------------------------------------------------------
--
      Drainage Area =       8.04(Ac.)  =      0.013 Sq. Mi.
      Drainage Area for Depth-Area Areal Adjustment =      8.04(Ac.)  =
0.013 Sq. Mi.
      Length along longest watercourse =    1083.00(Ft.)
      Length along longest watercourse measured to centroid =     476.00
(Ft.)
      Length along longest watercourse =      0.205 Mi.
      Length along longest watercourse measured to centroid =      0.090
Mi.
      Difference in elevation =     110.00(Ft.)
      Slope along watercourse =    536.2881 Ft./Mi.
      Average Manning's 'N' = 0.040
      Lag time =    0.064 Hr.
      Lag time =     3.83 Min.
      25% of lag time =     0.96 Min.
      40% of lag time =     1.53 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]
```

8.04	1.93	15.52

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.04	4.64	37.31

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 1.930(In)
Area Averaged 100-Year Rainfall = 4.640(In)

Point rain (area averaged) = 2.565(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.565(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.040	84.00	0.000

Total Area Entered = 8.04(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	84.0	0.198	0.000	0.198	1.000	0.198
					Sum (F) =	0.198

Area averaged mean soil loss (F) (In/Hr) = 0.198
Minimum soil loss rate ((In/Hr)) = 0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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	130.523	24.817	2.011
2	0.167	261.045	55.614	4.506
3	0.250	391.568	14.211	1.151
4	0.333	522.090	3.889	0.315
5	0.417	652.613	1.032	0.084
6	0.500	783.135	0.438	0.035
			Sum = 100.000	Sum= 8.103

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	0.021	(0.352)	0.018	0.002
2	0.17	0.07	0.021	(0.350)	0.018	0.002
3	0.25	0.07	0.021	(0.349)	0.018	0.002
4	0.33	0.10	0.031	(0.348)	0.028	0.003
5	0.42	0.10	0.031	(0.346)	0.028	0.003
6	0.50	0.10	0.031	(0.345)	0.028	0.003
7	0.58	0.10	0.031	(0.344)	0.028	0.003
8	0.67	0.10	0.031	(0.342)	0.028	0.003
9	0.75	0.10	0.031	(0.341)	0.028	0.003
10	0.83	0.13	0.041	(0.340)	0.037	0.004
11	0.92	0.13	0.041	(0.338)	0.037	0.004
12	1.00	0.13	0.041	(0.337)	0.037	0.004
13	1.08	0.10	0.031	(0.336)	0.028	0.003
14	1.17	0.10	0.031	(0.334)	0.028	0.003
15	1.25	0.10	0.031	(0.333)	0.028	0.003
16	1.33	0.10	0.031	(0.332)	0.028	0.003
17	1.42	0.10	0.031	(0.330)	0.028	0.003
18	1.50	0.10	0.031	(0.329)	0.028	0.003
19	1.58	0.10	0.031	(0.328)	0.028	0.003
20	1.67	0.10	0.031	(0.326)	0.028	0.003
21	1.75	0.10	0.031	(0.325)	0.028	0.003
22	1.83	0.13	0.041	(0.324)	0.037	0.004
23	1.92	0.13	0.041	(0.322)	0.037	0.004
24	2.00	0.13	0.041	(0.321)	0.037	0.004
25	2.08	0.13	0.041	(0.320)	0.037	0.004
26	2.17	0.13	0.041	(0.318)	0.037	0.004
27	2.25	0.13	0.041	(0.317)	0.037	0.004
28	2.33	0.13	0.041	(0.316)	0.037	0.004
29	2.42	0.13	0.041	(0.315)	0.037	0.004
30	2.50	0.13	0.041	(0.313)	0.037	0.004
31	2.58	0.17	0.051	(0.312)	0.046	0.005
32	2.67	0.17	0.051	(0.311)	0.046	0.005
33	2.75	0.17	0.051	(0.310)	0.046	0.005
34	2.83	0.17	0.051	(0.308)	0.046	0.005
35	2.92	0.17	0.051	(0.307)	0.046	0.005
36	3.00	0.17	0.051	(0.306)	0.046	0.005
37	3.08	0.17	0.051	(0.304)	0.046	0.005
38	3.17	0.17	0.051	(0.303)	0.046	0.005
39	3.25	0.17	0.051	(0.302)	0.046	0.005
40	3.33	0.17	0.051	(0.301)	0.046	0.005
41	3.42	0.17	0.051	(0.299)	0.046	0.005
42	3.50	0.17	0.051	(0.298)	0.046	0.005
43	3.58	0.17	0.051	(0.297)	0.046	0.005
44	3.67	0.17	0.051	(0.296)	0.046	0.005
45	3.75	0.17	0.051	(0.294)	0.046	0.005
46	3.83	0.20	0.062	(0.293)	0.055	0.006
47	3.92	0.20	0.062	(0.292)	0.055	0.006
48	4.00	0.20	0.062	(0.291)	0.055	0.006
49	4.08	0.20	0.062	(0.289)	0.055	0.006
50	4.17	0.20	0.062	(0.288)	0.055	0.006
51	4.25	0.20	0.062	(0.287)	0.055	0.006
52	4.33	0.23	0.072	(0.286)	0.065	0.007
53	4.42	0.23	0.072	(0.285)	0.065	0.007
54	4.50	0.23	0.072	(0.283)	0.065	0.007
55	4.58	0.23	0.072	(0.282)	0.065	0.007
56	4.67	0.23	0.072	(0.281)	0.065	0.007

57	4.75	0.23	0.072	(0.280)	0.065	0.007
58	4.83	0.27	0.082	(0.278)	0.074	0.008
59	4.92	0.27	0.082	(0.277)	0.074	0.008
60	5.00	0.27	0.082	(0.276)	0.074	0.008
61	5.08	0.20	0.062	(0.275)	0.055	0.006
62	5.17	0.20	0.062	(0.274)	0.055	0.006
63	5.25	0.20	0.062	(0.272)	0.055	0.006
64	5.33	0.23	0.072	(0.271)	0.065	0.007
65	5.42	0.23	0.072	(0.270)	0.065	0.007
66	5.50	0.23	0.072	(0.269)	0.065	0.007
67	5.58	0.27	0.082	(0.268)	0.074	0.008
68	5.67	0.27	0.082	(0.267)	0.074	0.008
69	5.75	0.27	0.082	(0.265)	0.074	0.008
70	5.83	0.27	0.082	(0.264)	0.074	0.008
71	5.92	0.27	0.082	(0.263)	0.074	0.008
72	6.00	0.27	0.082	(0.262)	0.074	0.008
73	6.08	0.30	0.092	(0.261)	0.083	0.009
74	6.17	0.30	0.092	(0.260)	0.083	0.009
75	6.25	0.30	0.092	(0.258)	0.083	0.009
76	6.33	0.30	0.092	(0.257)	0.083	0.009
77	6.42	0.30	0.092	(0.256)	0.083	0.009
78	6.50	0.30	0.092	(0.255)	0.083	0.009
79	6.58	0.33	0.103	(0.254)	0.092	0.010
80	6.67	0.33	0.103	(0.253)	0.092	0.010
81	6.75	0.33	0.103	(0.252)	0.092	0.010
82	6.83	0.33	0.103	(0.250)	0.092	0.010
83	6.92	0.33	0.103	(0.249)	0.092	0.010
84	7.00	0.33	0.103	(0.248)	0.092	0.010
85	7.08	0.33	0.103	(0.247)	0.092	0.010
86	7.17	0.33	0.103	(0.246)	0.092	0.010
87	7.25	0.33	0.103	(0.245)	0.092	0.010
88	7.33	0.37	0.113	(0.244)	0.102	0.011
89	7.42	0.37	0.113	(0.243)	0.102	0.011
90	7.50	0.37	0.113	(0.241)	0.102	0.011
91	7.58	0.40	0.123	(0.240)	0.111	0.012
92	7.67	0.40	0.123	(0.239)	0.111	0.012
93	7.75	0.40	0.123	(0.238)	0.111	0.012
94	7.83	0.43	0.133	(0.237)	0.120	0.013
95	7.92	0.43	0.133	(0.236)	0.120	0.013
96	8.00	0.43	0.133	(0.235)	0.120	0.013
97	8.08	0.50	0.154	(0.234)	0.138	0.015
98	8.17	0.50	0.154	(0.233)	0.138	0.015
99	8.25	0.50	0.154	(0.232)	0.138	0.015
100	8.33	0.50	0.154	(0.230)	0.138	0.015
101	8.42	0.50	0.154	(0.229)	0.138	0.015
102	8.50	0.50	0.154	(0.228)	0.138	0.015
103	8.58	0.53	0.164	(0.227)	0.148	0.016
104	8.67	0.53	0.164	(0.226)	0.148	0.016
105	8.75	0.53	0.164	(0.225)	0.148	0.016
106	8.83	0.57	0.174	(0.224)	0.157	0.017
107	8.92	0.57	0.174	(0.223)	0.157	0.017
108	9.00	0.57	0.174	(0.222)	0.157	0.017
109	9.08	0.63	0.195	(0.221)	0.175	0.019
110	9.17	0.63	0.195	(0.220)	0.175	0.019
111	9.25	0.63	0.195	(0.219)	0.175	0.019
112	9.33	0.67	0.205	(0.218)	0.185	0.021
113	9.42	0.67	0.205	(0.217)	0.185	0.021
114	9.50	0.67	0.205	(0.216)	0.185	0.021
115	9.58	0.70	0.215	(0.215)	0.194	0.022
116	9.67	0.70	0.215	(0.214)	0.194	0.022

117	9.75	0.70	0.215	(0.213)	0.194	0.022
118	9.83	0.73	0.226	(0.212)	0.203	0.023
119	9.92	0.73	0.226	(0.211)	0.203	0.023
120	10.00	0.73	0.226	(0.210)	0.203	0.023
121	10.08	0.50	0.154	(0.208)	0.138	0.015
122	10.17	0.50	0.154	(0.207)	0.138	0.015
123	10.25	0.50	0.154	(0.206)	0.138	0.015
124	10.33	0.50	0.154	(0.205)	0.138	0.015
125	10.42	0.50	0.154	(0.204)	0.138	0.015
126	10.50	0.50	0.154	(0.203)	0.138	0.015
127	10.58	0.67	0.205	(0.202)	0.185	0.021
128	10.67	0.67	0.205	(0.201)	0.185	0.021
129	10.75	0.67	0.205	(0.201)	0.185	0.021
130	10.83	0.67	0.205	(0.200)	0.185	0.021
131	10.92	0.67	0.205	(0.199)	0.185	0.021
132	11.00	0.67	0.205	(0.198)	0.185	0.021
133	11.08	0.63	0.195	(0.197)	0.175	0.019
134	11.17	0.63	0.195	(0.196)	0.175	0.019
135	11.25	0.63	0.195	(0.195)	0.175	0.019
136	11.33	0.63	0.195	(0.194)	0.175	0.019
137	11.42	0.63	0.195	(0.193)	0.175	0.019
138	11.50	0.63	0.195	(0.192)	0.175	0.019
139	11.58	0.57	0.174	(0.191)	0.157	0.017
140	11.67	0.57	0.174	(0.190)	0.157	0.017
141	11.75	0.57	0.174	(0.189)	0.157	0.017
142	11.83	0.60	0.185	(0.188)	0.166	0.018
143	11.92	0.60	0.185	(0.187)	0.166	0.018
144	12.00	0.60	0.185	(0.186)	0.166	0.018
145	12.08	0.83	0.256	0.185	(0.231)	0.071
146	12.17	0.83	0.256	0.184	(0.231)	0.072
147	12.25	0.83	0.256	0.183	(0.231)	0.073
148	12.33	0.87	0.267	0.182	(0.240)	0.084
149	12.42	0.87	0.267	0.182	(0.240)	0.085
150	12.50	0.87	0.267	0.181	(0.240)	0.086
151	12.58	0.93	0.287	0.180	(0.259)	0.108
152	12.67	0.93	0.287	0.179	(0.259)	0.108
153	12.75	0.93	0.287	0.178	(0.259)	0.109
154	12.83	0.97	0.298	0.177	(0.268)	0.121
155	12.92	0.97	0.298	0.176	(0.268)	0.121
156	13.00	0.97	0.298	0.175	(0.268)	0.122
157	13.08	1.13	0.349	0.174	(0.314)	0.174
158	13.17	1.13	0.349	0.173	(0.314)	0.175
159	13.25	1.13	0.349	0.173	(0.314)	0.176
160	13.33	1.13	0.349	0.172	(0.314)	0.177
161	13.42	1.13	0.349	0.171	(0.314)	0.178
162	13.50	1.13	0.349	0.170	(0.314)	0.179
163	13.58	0.77	0.236	0.169	(0.212)	0.067
164	13.67	0.77	0.236	0.168	(0.212)	0.068
165	13.75	0.77	0.236	0.167	(0.212)	0.069
166	13.83	0.77	0.236	0.166	(0.212)	0.069
167	13.92	0.77	0.236	0.166	(0.212)	0.070
168	14.00	0.77	0.236	0.165	(0.212)	0.071
169	14.08	0.90	0.277	0.164	(0.249)	0.113
170	14.17	0.90	0.277	0.163	(0.249)	0.114
171	14.25	0.90	0.277	0.162	(0.249)	0.115
172	14.33	0.87	0.267	0.161	(0.240)	0.105
173	14.42	0.87	0.267	0.161	(0.240)	0.106
174	14.50	0.87	0.267	0.160	(0.240)	0.107
175	14.58	0.87	0.267	0.159	(0.240)	0.108
176	14.67	0.87	0.267	0.158	(0.240)	0.109

177	14.75	0.87	0.267	0.157	(0.240)	0.109
178	14.83	0.83	0.256	0.157	(0.231)	0.100
179	14.92	0.83	0.256	0.156	(0.231)	0.101
180	15.00	0.83	0.256	0.155	(0.231)	0.102
181	15.08	0.80	0.246	0.154	(0.222)	0.092
182	15.17	0.80	0.246	0.153	(0.222)	0.093
183	15.25	0.80	0.246	0.153	(0.222)	0.094
184	15.33	0.77	0.236	0.152	(0.212)	0.084
185	15.42	0.77	0.236	0.151	(0.212)	0.085
186	15.50	0.77	0.236	0.150	(0.212)	0.086
187	15.58	0.63	0.195	0.149	(0.175)	0.045
188	15.67	0.63	0.195	0.149	(0.175)	0.046
189	15.75	0.63	0.195	0.148	(0.175)	0.047
190	15.83	0.63	0.195	0.147	(0.175)	0.048
191	15.92	0.63	0.195	0.146	(0.175)	0.048
192	16.00	0.63	0.195	0.146	(0.175)	0.049
193	16.08	0.13	0.041	(0.145)	0.037	0.004
194	16.17	0.13	0.041	(0.144)	0.037	0.004
195	16.25	0.13	0.041	(0.143)	0.037	0.004
196	16.33	0.13	0.041	(0.143)	0.037	0.004
197	16.42	0.13	0.041	(0.142)	0.037	0.004
198	16.50	0.13	0.041	(0.141)	0.037	0.004
199	16.58	0.10	0.031	(0.141)	0.028	0.003
200	16.67	0.10	0.031	(0.140)	0.028	0.003
201	16.75	0.10	0.031	(0.139)	0.028	0.003
202	16.83	0.10	0.031	(0.138)	0.028	0.003
203	16.92	0.10	0.031	(0.138)	0.028	0.003
204	17.00	0.10	0.031	(0.137)	0.028	0.003
205	17.08	0.17	0.051	(0.136)	0.046	0.005
206	17.17	0.17	0.051	(0.136)	0.046	0.005
207	17.25	0.17	0.051	(0.135)	0.046	0.005
208	17.33	0.17	0.051	(0.134)	0.046	0.005
209	17.42	0.17	0.051	(0.134)	0.046	0.005
210	17.50	0.17	0.051	(0.133)	0.046	0.005
211	17.58	0.17	0.051	(0.132)	0.046	0.005
212	17.67	0.17	0.051	(0.132)	0.046	0.005
213	17.75	0.17	0.051	(0.131)	0.046	0.005
214	17.83	0.13	0.041	(0.130)	0.037	0.004
215	17.92	0.13	0.041	(0.130)	0.037	0.004
216	18.00	0.13	0.041	(0.129)	0.037	0.004
217	18.08	0.13	0.041	(0.128)	0.037	0.004
218	18.17	0.13	0.041	(0.128)	0.037	0.004
219	18.25	0.13	0.041	(0.127)	0.037	0.004
220	18.33	0.13	0.041	(0.127)	0.037	0.004
221	18.42	0.13	0.041	(0.126)	0.037	0.004
222	18.50	0.13	0.041	(0.125)	0.037	0.004
223	18.58	0.10	0.031	(0.125)	0.028	0.003
224	18.67	0.10	0.031	(0.124)	0.028	0.003
225	18.75	0.10	0.031	(0.124)	0.028	0.003
226	18.83	0.07	0.021	(0.123)	0.018	0.002
227	18.92	0.07	0.021	(0.122)	0.018	0.002
228	19.00	0.07	0.021	(0.122)	0.018	0.002
229	19.08	0.10	0.031	(0.121)	0.028	0.003
230	19.17	0.10	0.031	(0.121)	0.028	0.003
231	19.25	0.10	0.031	(0.120)	0.028	0.003
232	19.33	0.13	0.041	(0.119)	0.037	0.004
233	19.42	0.13	0.041	(0.119)	0.037	0.004
234	19.50	0.13	0.041	(0.118)	0.037	0.004
235	19.58	0.10	0.031	(0.118)	0.028	0.003
236	19.67	0.10	0.031	(0.117)	0.028	0.003

237	19.75	0.10	0.031	(0.117)	0.028	0.003
238	19.83	0.07	0.021	(0.116)	0.018	0.002
239	19.92	0.07	0.021	(0.116)	0.018	0.002
240	20.00	0.07	0.021	(0.115)	0.018	0.002
241	20.08	0.10	0.031	(0.115)	0.028	0.003
242	20.17	0.10	0.031	(0.114)	0.028	0.003
243	20.25	0.10	0.031	(0.114)	0.028	0.003
244	20.33	0.10	0.031	(0.113)	0.028	0.003
245	20.42	0.10	0.031	(0.113)	0.028	0.003
246	20.50	0.10	0.031	(0.112)	0.028	0.003
247	20.58	0.10	0.031	(0.112)	0.028	0.003
248	20.67	0.10	0.031	(0.111)	0.028	0.003
249	20.75	0.10	0.031	(0.111)	0.028	0.003
250	20.83	0.07	0.021	(0.110)	0.018	0.002
251	20.92	0.07	0.021	(0.110)	0.018	0.002
252	21.00	0.07	0.021	(0.110)	0.018	0.002
253	21.08	0.10	0.031	(0.109)	0.028	0.003
254	21.17	0.10	0.031	(0.109)	0.028	0.003
255	21.25	0.10	0.031	(0.108)	0.028	0.003
256	21.33	0.07	0.021	(0.108)	0.018	0.002
257	21.42	0.07	0.021	(0.107)	0.018	0.002
258	21.50	0.07	0.021	(0.107)	0.018	0.002
259	21.58	0.10	0.031	(0.107)	0.028	0.003
260	21.67	0.10	0.031	(0.106)	0.028	0.003
261	21.75	0.10	0.031	(0.106)	0.028	0.003
262	21.83	0.07	0.021	(0.105)	0.018	0.002
263	21.92	0.07	0.021	(0.105)	0.018	0.002
264	22.00	0.07	0.021	(0.105)	0.018	0.002
265	22.08	0.10	0.031	(0.104)	0.028	0.003
266	22.17	0.10	0.031	(0.104)	0.028	0.003
267	22.25	0.10	0.031	(0.104)	0.028	0.003
268	22.33	0.07	0.021	(0.103)	0.018	0.002
269	22.42	0.07	0.021	(0.103)	0.018	0.002
270	22.50	0.07	0.021	(0.103)	0.018	0.002
271	22.58	0.07	0.021	(0.102)	0.018	0.002
272	22.67	0.07	0.021	(0.102)	0.018	0.002
273	22.75	0.07	0.021	(0.102)	0.018	0.002
274	22.83	0.07	0.021	(0.102)	0.018	0.002
275	22.92	0.07	0.021	(0.101)	0.018	0.002
276	23.00	0.07	0.021	(0.101)	0.018	0.002
277	23.08	0.07	0.021	(0.101)	0.018	0.002
278	23.17	0.07	0.021	(0.101)	0.018	0.002
279	23.25	0.07	0.021	(0.100)	0.018	0.002
280	23.33	0.07	0.021	(0.100)	0.018	0.002
281	23.42	0.07	0.021	(0.100)	0.018	0.002
282	23.50	0.07	0.021	(0.100)	0.018	0.002
283	23.58	0.07	0.021	(0.100)	0.018	0.002
284	23.67	0.07	0.021	(0.100)	0.018	0.002
285	23.75	0.07	0.021	(0.099)	0.018	0.002
286	23.83	0.07	0.021	(0.099)	0.018	0.002
287	23.92	0.07	0.021	(0.099)	0.018	0.002
288	24.00	0.07	0.021	(0.099)	0.018	0.002

(Loss Rate Not Used)

Sum = 100.0 Sum = 6.6

Flood volume = Effective rainfall 0.55(In)
times area 8.0(Ac.)/[(In)/(Ft.)] = 0.4(Ac.Ft)
Total soil loss = 2.02(In)
Total soil loss = 1.352(Ac.Ft)
Total rainfall = 2.56(In)
Flood volume = 15939.5 Cubic Feet

```
      Total soil loss =       58912.0 Cubic Feet
      ------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =      1.443(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       0.0001      0.01  Q         |         |         |
|
    0+15       0.0002      0.02  Q         |         |         |
|
    0+20       0.0004      0.02  Q         |         |         |
|
    0+25       0.0005      0.02  Q         |         |         |
|
    0+30       0.0007      0.02  Q         |         |         |
|
    0+35       0.0009      0.02  Q         |         |         |
|
    0+40       0.0010      0.02  Q         |         |         |
|
    0+45       0.0012      0.02  Q         |         |         |
|
    0+50       0.0014      0.03  Q         |         |         |
|
    0+55       0.0016      0.03  Q         |         |         |
|
    1+ 0       0.0018      0.03  Q         |         |         |
|
    1+ 5       0.0020      0.03  Q         |         |         |
|
    1+10       0.0022      0.03  Q         |         |         |
|
    1+15       0.0024      0.03  Q         |         |         |
|
    1+20       0.0026      0.03  Q         |         |         |
|
    1+25       0.0027      0.02  Q         |         |         |
|
    1+30       0.0029      0.02  Q         |         |         |
|
    1+35       0.0031      0.02  Q         |         |         |
|
    1+40       0.0033      0.02  Q         |         |         |
|
```

1+45	0.0034	0.02	Q	|	|	|	|
1+50	0.0036	0.03	Q	|	|	|	|
1+55	0.0038	0.03	Q	|	|	|	|
2+ 0	0.0041	0.03	Q	|	|	|	|
2+ 5	0.0043	0.03	Q	|	|	|	|
2+10	0.0045	0.03	Q	|	|	|	|
2+15	0.0047	0.03	Q	|	|	|	|
2+20	0.0050	0.03	Q	|	|	|	|
2+25	0.0052	0.03	Q	|	|	|	|
2+30	0.0054	0.03	Q	|	|	|	|
2+35	0.0057	0.04	Q	|	|	|	|
2+40	0.0060	0.04	Q	|	|	|	|
2+45	0.0062	0.04	Q	|	|	|	|
2+50	0.0065	0.04	Q	|	|	|	|
2+55	0.0068	0.04	Q	|	|	|	|
3+ 0	0.0071	0.04	Q	|	|	|	|
3+ 5	0.0074	0.04	Q	|	|	|	|
3+10	0.0077	0.04	Q	|	|	|	|
3+15	0.0080	0.04	Q	|	|	|	|
3+20	0.0082	0.04	Q	|	|	|	|
3+25	0.0085	0.04	Q	|	|	|	|
3+30	0.0088	0.04	Q	|	|	|	|
3+35	0.0091	0.04	Q	|	|	|	|
3+40	0.0094	0.04	QV	|	|	|	|
3+45	0.0097	0.04	QV	|	|	|	|
3+50	0.0100	0.04	QV	|	|	|	|
3+55	0.0103	0.05	QV	|	|	|	|
4+ 0	0.0106	0.05	QV	|	|	|	|
4+ 5	0.0110	0.05	QV	|	|	|	|
4+10	0.0113	0.05	QV	|	|	|	|

```
   4+15       0.0117      0.05   QV          |          |          |
|
   4+20       0.0120      0.05   QV          |          |          |
|
   4+25       0.0124      0.06   QV          |          |          |
|
   4+30       0.0128      0.06   QV          |          |          |
|
   4+35       0.0132      0.06   QV          |          |          |
|
   4+40       0.0136      0.06   QV          |          |          |
|
   4+45       0.0140      0.06   QV          |          |          |
|
   4+50       0.0144      0.06   QV          |          |          |
|
   4+55       0.0149      0.06   QV          |          |          |
|
   5+ 0       0.0153      0.07   QV          |          |          |
|
   5+ 5       0.0158      0.06   QV          |          |          |
|
   5+10       0.0161      0.05   QV          |          |          |
|
   5+15       0.0165      0.05   QV          |          |          |
|
   5+20       0.0168      0.05   QV          |          |          |
|
   5+25       0.0172      0.06   QV          |          |          |
|
   5+30       0.0176      0.06   QV          |          |          |
|
   5+35       0.0180      0.06   QV          |          |          |
|
   5+40       0.0185      0.06   Q V         |          |          |
|
   5+45       0.0190      0.07   Q V         |          |          |
|
   5+50       0.0194      0.07   Q V         |          |          |
|
   5+55       0.0199      0.07   Q V         |          |          |
|
   6+ 0       0.0203      0.07   Q V         |          |          |
|
   6+ 5       0.0208      0.07   Q V         |          |          |
|
   6+10       0.0213      0.07   Q V         |          |          |
|
   6+15       0.0218      0.07   Q V         |          |          |
|
   6+20       0.0223      0.07   Q V         |          |          |
|
   6+25       0.0228      0.07   Q V         |          |          |
|
   6+30       0.0234      0.07   Q V         |          |          |
|
   6+35       0.0239      0.08   Q V         |          |          |
|
   6+40       0.0245      0.08   Q V         |          |          |
|
```

6+45	0.0250	0.08	Q V	|	|	|	|
6+50	0.0256	0.08	Q V	|	|	|	|
6+55	0.0262	0.08	Q V	|	|	|	|
7+ 0	0.0267	0.08	Q V	|	|	|	|
7+ 5	0.0273	0.08	Q V	|	|	|	|
7+10	0.0279	0.08	Q V	|	|	|	|
7+15	0.0285	0.08	Q V	|	|	|	|
7+20	0.0290	0.09	Q V	|	|	|	|
7+25	0.0297	0.09	Q V	|	|	|	|
7+30	0.0303	0.09	Q V	|	|	|	|
7+35	0.0309	0.09	Q V	|	|	|	|
7+40	0.0316	0.10	Q V	|	|	|	|
7+45	0.0323	0.10	Q V	|	|	|	|
7+50	0.0330	0.10	Q V	|	|	|	|
7+55	0.0337	0.11	Q V	|	|	|	|
8+ 0	0.0345	0.11	Q V	|	|	|	|
8+ 5	0.0352	0.11	Q V	|	|	|	|
8+10	0.0361	0.12	Q V	|	|	|	|
8+15	0.0369	0.12	Q V	|	|	|	|
8+20	0.0378	0.12	Q V	|	|	|	|
8+25	0.0386	0.12	Q V	|	|	|	|
8+30	0.0395	0.12	Q V	|	|	|	|
8+35	0.0404	0.13	Q V	|	|	|	|
8+40	0.0413	0.13	Q V	|	|	|	|
8+45	0.0422	0.13	Q V	|	|	|	|
8+50	0.0431	0.14	Q V	|	|	|	|
8+55	0.0441	0.14	Q V	|	|	|	|
9+ 0	0.0451	0.14	Q V	|	|	|	|
9+ 5	0.0461	0.15	Q V	|	|	|	|
9+10	0.0471	0.15	Q V	|	|	|	|

```
   9+15        0.0482        0.16  Q     V    |           |           |
|
   9+20        0.0493        0.16  Q     V    |           |           |
|
   9+25        0.0504        0.16  Q     V    |           |           |
|
   9+30        0.0516        0.17  Q     V    |           |           |
|
   9+35        0.0527        0.17  Q     V    |           |           |
|
   9+40        0.0539        0.17  Q     V    |           |           |
|
   9+45        0.0551        0.17  Q      V   |           |           |
|
   9+50        0.0564        0.18  Q      V   |           |           |
|
   9+55        0.0576        0.18  Q      V   |           |           |
|
  10+ 0        0.0589        0.18  Q      V   |           |           |
|
  10+ 5        0.0600        0.17  Q      V   |           |           |
|
  10+10        0.0610        0.14  Q      V   |           |           |
|
  10+15        0.0618        0.13  Q      V   |           |           |
|
  10+20        0.0627        0.13  Q      V   |           |           |
|
  10+25        0.0636        0.13  Q      V   |           |           |
|
  10+30        0.0644        0.12  Q       V  |           |           |
|
  10+35        0.0654        0.14  Q       V  |           |           |
|
  10+40        0.0664        0.16  Q       V  |           |           |
|
  10+45        0.0676        0.16  Q       V  |           |           |
|
  10+50        0.0687        0.17  Q       V  |           |           |
|
  10+55        0.0699        0.17  Q       V  |           |           |
|
  11+ 0        0.0710        0.17  Q       V  |           |           |
|
  11+ 5        0.0721        0.16  Q       V  |           |           |
|
  11+10        0.0732        0.16  Q        V |           |           |
|
  11+15        0.0743        0.16  Q        V |           |           |
|
  11+20        0.0754        0.16  Q        V |           |           |
|
  11+25        0.0765        0.16  Q        V |           |           |
|
  11+30        0.0776        0.16  Q        V |           |           |
|
  11+35        0.0787        0.15  Q        V |           |           |
|
  11+40        0.0796        0.14  Q        V |           |           |
|
```

```
   11+45       0.0806      0.14  Q       V |         |         |
|
   11+50       0.0816      0.14  Q       V |         |         |
|
   11+55       0.0826      0.15  Q        V|         |         |
|
   12+ 0       0.0837      0.15  Q        V|         |         |
|
   12+ 5       0.0854      0.26  |Q       V|         |         |
|
   12+10       0.0888      0.50  |Q       V|         |         |
|
   12+15       0.0927      0.56  | Q       V         |         |
|
   12+20       0.0969      0.61  | Q       V         |         |
|
   12+25       0.1015      0.67  | Q       |V        |         |
|
   12+30       0.1062      0.69  | Q       |V        |         |
|
   12+35       0.1113      0.74  | Q       | V       |         |
|
   12+40       0.1171      0.84  |  Q      | V       |         |
|
   12+45       0.1231      0.87  |  Q      |  V      |         |
|
   12+50       0.1293      0.90  |  Q      |   V     |         |
|
   12+55       0.1359      0.96  |  Q      |   V     |         |
|
   13+ 0       0.1426      0.98  |  Q      |    V    |         |
|
   13+ 5       0.1502      1.09  |   Q     |     V   |         |
|
   13+10       0.1594      1.33  |    Q    |      V  |         |
|
   13+15       0.1690      1.40  |    Q    |       V |         |
|
   13+20       0.1788      1.42  |    Q    |        V|         |
|
   13+25       0.1887      1.43  |    Q    |         V         |
|
   13+30       0.1986      1.44  |    Q    |         |V        |
|
   13+35       0.2070      1.22  |   Q     |         | V       |
|
   13+40       0.2120      0.72  | Q       |         |  V      |
|
   13+45       0.2161      0.60  | Q       |         |  V      |
|
   13+50       0.2200      0.57  | Q       |         |   V     |
|
   13+55       0.2239      0.57  | Q       |         |   V     |
|
   14+ 0       0.2279      0.57  | Q       |         |   V     |
|
   14+ 5       0.2324      0.66  | Q       |         |    V    |
|
   14+10       0.2383      0.85  |  Q      |         |     V   |
|
```

```
   14+15       0.2445       0.91  |  Q       |         |     V   |
|
   14+20       0.2507       0.90  |  Q       |         |      V  |
|
   14+25       0.2567       0.87  |  Q       |         |       V |
|
   14+30       0.2627       0.86  |  Q       |         |       V |
|
   14+35       0.2686       0.87  |  Q       |         |        V|
|
   14+40       0.2746       0.87  |  Q       |         |         V
|
   14+45       0.2807       0.88  |  Q       |         |         V
|
   14+50       0.2867       0.87  |  Q       |         |         |V
|
   14+55       0.2924       0.83  |  Q       |         |         |V
|
   15+ 0       0.2980       0.82  |  Q       |         |         | V
|
   15+ 5       0.3035       0.80  |  Q       |         |         |  V
|
   15+10       0.3088       0.76  |  Q       |         |         |  V
|
   15+15       0.3140       0.76  |  Q       |         |         |   V
|
   15+20       0.3191       0.74  | Q        |         |         |   V
|
   15+25       0.3239       0.70  | Q        |         |         |    V
|
   15+30       0.3287       0.69  | Q        |         |         |    V
|
   15+35       0.3329       0.61  | Q        |         |         |     V
|
   15+40       0.3359       0.43  |Q         |         |         |     V
|
   15+45       0.3386       0.39  |Q         |         |         |      V
|
   15+50       0.3413       0.39  |Q         |         |         |      V
|
   15+55       0.3439       0.39  |Q         |         |         |      V
|
   16+ 0       0.3466       0.39  |Q         |         |         |      V
|
   16+ 5       0.3487       0.31  |Q         |         |         |       V
|
   16+10       0.3495       0.10  Q          |         |         |       V
|
   16+15       0.3498       0.05  Q          |         |         |       V
|
   16+20       0.3501       0.04  Q          |         |         |       V
|
   16+25       0.3503       0.03  Q          |         |         |       V
|
   16+30       0.3506       0.03  Q          |         |         |       V
|
   16+35       0.3508       0.03  Q          |         |         |       V
|
   16+40       0.3510       0.03  Q          |         |         |       V
|
```

```
       16+45       0.3511      0.03  Q         |         |         |       V
  |
       16+50       0.3513      0.03  Q         |         |         |       V
  |
       16+55       0.3515      0.02  Q         |         |         |       V
  |
       17+ 0       0.3517      0.02  Q         |         |         |       V
  |
       17+ 5       0.3519      0.03  Q         |         |         |       V
  |
       17+10       0.3521      0.04  Q         |         |         |       V
  |
       17+15       0.3524      0.04  Q         |         |         |       V
  |
       17+20       0.3527      0.04  Q         |         |         |       V
  |
       17+25       0.3530      0.04  Q         |         |         |       V
  |
       17+30       0.3533      0.04  Q         |         |         |       V
  |
       17+35       0.3535      0.04  Q         |         |         |       V
  |
       17+40       0.3538      0.04  Q         |         |         |       V
  |
       17+45       0.3541      0.04  Q         |         |         |       V
  |
       17+50       0.3544      0.04  Q         |         |         |       V
  |
       17+55       0.3546      0.03  Q         |         |         |       V
  |
       18+ 0       0.3549      0.03  Q         |         |         |       V
  |
       18+ 5       0.3551      0.03  Q         |         |         |       V
  |
       18+10       0.3553      0.03  Q         |         |         |       V
  |
       18+15       0.3555      0.03  Q         |         |         |       V
  |
       18+20       0.3558      0.03  Q         |         |         |       V
  |
       18+25       0.3560      0.03  Q         |         |         |       V
  |
       18+30       0.3562      0.03  Q         |         |         |       V
  |
       18+35       0.3565      0.03  Q         |         |         |       V
  |
       18+40       0.3566      0.03  Q         |         |         |       V
  |
       18+45       0.3568      0.03  Q         |         |         |
 V|
       18+50       0.3570      0.02  Q         |         |         |
 V|
       18+55       0.3571      0.02  Q         |         |         |
 V|
       19+ 0       0.3572      0.02  Q         |         |         |
 V|
       19+ 5       0.3573      0.02  Q         |         |         |
 V|
       19+10       0.3575      0.02  Q         |         |         |
 V|
```

19+15	0.3577	0.02	Q	|	|	|	V|
19+20	0.3579	0.03	Q	|	|	|	V|
19+25	0.3581	0.03	Q	|	|	|	V|
19+30	0.3583	0.03	Q	|	|	|	V|
19+35	0.3585	0.03	Q	|	|	|	V|
19+40	0.3587	0.03	Q	|	|	|	V|
19+45	0.3589	0.03	Q	|	|	|	V|
19+50	0.3590	0.02	Q	|	|	|	V|
19+55	0.3592	0.02	Q	|	|	|	V|
20+ 0	0.3593	0.02	Q	|	|	|	V|
20+ 5	0.3594	0.02	Q	|	|	|	V|
20+10	0.3596	0.02	Q	|	|	|	V|
20+15	0.3597	0.02	Q	|	|	|	V|
20+20	0.3599	0.02	Q	|	|	|	V|
20+25	0.3601	0.02	Q	|	|	|	V|
20+30	0.3602	0.02	Q	|	|	|	V|
20+35	0.3604	0.02	Q	|	|	|	V|
20+40	0.3606	0.02	Q	|	|	|	V|
20+45	0.3608	0.02	Q	|	|	|	V|
20+50	0.3609	0.02	Q	|	|	|	V|
20+55	0.3610	0.02	Q	|	|	|	V|
21+ 0	0.3612	0.02	Q	|	|	|	V|
21+ 5	0.3613	0.02	Q	|	|	|	V|
21+10	0.3615	0.02	Q	|	|	|	V|
21+15	0.3616	0.02	Q	|	|	|	V|
21+20	0.3618	0.02	Q	|	|	|	V|
21+25	0.3619	0.02	Q	|	|	|	V|
21+30	0.3620	0.02	Q	|	|	|	V|
21+35	0.3622	0.02	Q	|	|	|	V|
21+40	0.3623	0.02	Q	|	|	|	V|

```
    21+45       0.3625      0.02  Q         |         |         |
V|
    21+50       0.3626      0.02  Q         |         |         |
V|
    21+55       0.3628      0.02  Q         |         |         |
V|
    22+ 0       0.3629      0.02  Q         |         |         |
V|
    22+ 5       0.3630      0.02  Q         |         |         |
V|
    22+10       0.3632      0.02  Q         |         |         |
V|
    22+15       0.3633      0.02  Q         |         |         |
V|
    22+20       0.3635      0.02  Q         |         |         |
V|
    22+25       0.3636      0.02  Q         |         |         |
V|
    22+30       0.3637      0.02  Q         |         |         |
V|
    22+35       0.3639      0.02  Q         |         |         |
V|
    22+40       0.3640      0.02  Q         |         |         |
V|
    22+45       0.3641      0.02  Q         |         |         |
V|
    22+50       0.3642      0.02  Q         |         |         |
V|
    22+55       0.3643      0.02  Q         |         |         |
V|
    23+ 0       0.3644      0.02  Q         |         |         |
V|
    23+ 5       0.3645      0.02  Q         |         |         |
V|
    23+10       0.3647      0.02  Q         |         |         |
V|
    23+15       0.3648      0.02  Q         |         |         |
V|
    23+20       0.3649      0.02  Q         |         |         |
V|
    23+25       0.3650      0.02  Q         |         |         |
V|
    23+30       0.3651      0.02  Q         |         |         |
V|
    23+35       0.3652      0.02  Q         |         |         |
V|
    23+40       0.3653      0.02  Q         |         |         |
V|
    23+45       0.3655      0.02  Q         |         |         |
V|
    23+50       0.3656      0.02  Q         |         |         |
V|
    23+55       0.3657      0.02  Q         |         |         |
V|
    24+ 0       0.3658      0.02  Q         |         |         |
V|
    24+ 5       0.3659      0.01  Q         |         |         |
V|
    24+10       0.3659      0.00  Q         |         |         |
V|
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   24+15       0.3659      0.00  Q          |          |          |
V|
   24+20       0.3659      0.00  Q          |          |          |
V|
   24+25       0.3659      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 02/19/21 File: moval33preb2410.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Predevlopment Conditions
Unit Hydrograph Runoff

Drainage Area =   8.04(Ac.) =   0.013 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =   8.04(Ac.) =
0.013 Sq. Mi.
Length along longest watercourse =   1083.00(Ft.)
Length along longest watercourse measured to centroid =   476.00(Ft.)
Length along longest watercourse =   0.205 Mi.
Length along longest watercourse measured to centroid =   0.090 Mi.
Difference in elevation =   110.00(Ft.)
Slope along watercourse =   536.2881 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time =   0.064 Hr.
Lag time =   3.83 Min.
25% of lag time =   0.96 Min.
40% of lag time =   1.53 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]
8.04	1.93	15.52

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.04	4.64	37.31

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =   1.930(In)
Area Averaged 100-Year Rainfall =   4.640(In)

Point rain (area averaged) = 3.045(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 3.045(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.040	84.00	0.000

Total Area Entered = 8.04(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	84.0	0.198	0.000	0.198	1.000	0.198
					Sum (F) =	0.198

Area averaged mean soil loss (F) (In/Hr) = 0.198
Minimum soil loss rate ((In/Hr)) = 0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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	130.523	24.817		2.011
2	0.167	261.045	55.614		4.506
3	0.250	391.568	14.211		1.151
4	0.333	522.090	3.889		0.315
5	0.417	652.613	1.032		0.084
6	0.500	783.135	0.438		0.035
			Sum = 100.000	Sum=	8.103

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	0.024	(0.352)	0.022	0.002
2	0.17	0.07	0.024	(0.350)	0.022	0.002
3	0.25	0.07	0.024	(0.349)	0.022	0.002
4	0.33	0.10	0.037	(0.348)	0.033	0.004
5	0.42	0.10	0.037	(0.346)	0.033	0.004
6	0.50	0.10	0.037	(0.345)	0.033	0.004
7	0.58	0.10	0.037	(0.344)	0.033	0.004
8	0.67	0.10	0.037	(0.342)	0.033	0.004
9	0.75	0.10	0.037	(0.341)	0.033	0.004
10	0.83	0.13	0.049	(0.340)	0.044	0.005
11	0.92	0.13	0.049	(0.338)	0.044	0.005
12	1.00	0.13	0.049	(0.337)	0.044	0.005
13	1.08	0.10	0.037	(0.336)	0.033	0.004
14	1.17	0.10	0.037	(0.334)	0.033	0.004
15	1.25	0.10	0.037	(0.333)	0.033	0.004
16	1.33	0.10	0.037	(0.332)	0.033	0.004
17	1.42	0.10	0.037	(0.330)	0.033	0.004
18	1.50	0.10	0.037	(0.329)	0.033	0.004
19	1.58	0.10	0.037	(0.328)	0.033	0.004

20	1.67	0.10	0.037	(0.326)	0.033	0.004
21	1.75	0.10	0.037	(0.325)	0.033	0.004
22	1.83	0.13	0.049	(0.324)	0.044	0.005
23	1.92	0.13	0.049	(0.322)	0.044	0.005
24	2.00	0.13	0.049	(0.321)	0.044	0.005
25	2.08	0.13	0.049	(0.320)	0.044	0.005
26	2.17	0.13	0.049	(0.318)	0.044	0.005
27	2.25	0.13	0.049	(0.317)	0.044	0.005
28	2.33	0.13	0.049	(0.316)	0.044	0.005
29	2.42	0.13	0.049	(0.315)	0.044	0.005
30	2.50	0.13	0.049	(0.313)	0.044	0.005
31	2.58	0.17	0.061	(0.312)	0.055	0.006
32	2.67	0.17	0.061	(0.311)	0.055	0.006
33	2.75	0.17	0.061	(0.310)	0.055	0.006
34	2.83	0.17	0.061	(0.308)	0.055	0.006
35	2.92	0.17	0.061	(0.307)	0.055	0.006
36	3.00	0.17	0.061	(0.306)	0.055	0.006
37	3.08	0.17	0.061	(0.304)	0.055	0.006
38	3.17	0.17	0.061	(0.303)	0.055	0.006
39	3.25	0.17	0.061	(0.302)	0.055	0.006
40	3.33	0.17	0.061	(0.301)	0.055	0.006
41	3.42	0.17	0.061	(0.299)	0.055	0.006
42	3.50	0.17	0.061	(0.298)	0.055	0.006
43	3.58	0.17	0.061	(0.297)	0.055	0.006
44	3.67	0.17	0.061	(0.296)	0.055	0.006
45	3.75	0.17	0.061	(0.294)	0.055	0.006
46	3.83	0.20	0.073	(0.293)	0.066	0.007
47	3.92	0.20	0.073	(0.292)	0.066	0.007
48	4.00	0.20	0.073	(0.291)	0.066	0.007
49	4.08	0.20	0.073	(0.289)	0.066	0.007
50	4.17	0.20	0.073	(0.288)	0.066	0.007
51	4.25	0.20	0.073	(0.287)	0.066	0.007
52	4.33	0.23	0.085	(0.286)	0.077	0.009
53	4.42	0.23	0.085	(0.285)	0.077	0.009
54	4.50	0.23	0.085	(0.283)	0.077	0.009
55	4.58	0.23	0.085	(0.282)	0.077	0.009
56	4.67	0.23	0.085	(0.281)	0.077	0.009
57	4.75	0.23	0.085	(0.280)	0.077	0.009
58	4.83	0.27	0.097	(0.278)	0.088	0.010
59	4.92	0.27	0.097	(0.277)	0.088	0.010
60	5.00	0.27	0.097	(0.276)	0.088	0.010
61	5.08	0.20	0.073	(0.275)	0.066	0.007
62	5.17	0.20	0.073	(0.274)	0.066	0.007
63	5.25	0.20	0.073	(0.272)	0.066	0.007
64	5.33	0.23	0.085	(0.271)	0.077	0.009
65	5.42	0.23	0.085	(0.270)	0.077	0.009
66	5.50	0.23	0.085	(0.269)	0.077	0.009
67	5.58	0.27	0.097	(0.268)	0.088	0.010
68	5.67	0.27	0.097	(0.267)	0.088	0.010
69	5.75	0.27	0.097	(0.265)	0.088	0.010
70	5.83	0.27	0.097	(0.264)	0.088	0.010
71	5.92	0.27	0.097	(0.263)	0.088	0.010
72	6.00	0.27	0.097	(0.262)	0.088	0.010
73	6.08	0.30	0.110	(0.261)	0.099	0.011
74	6.17	0.30	0.110	(0.260)	0.099	0.011
75	6.25	0.30	0.110	(0.258)	0.099	0.011
76	6.33	0.30	0.110	(0.257)	0.099	0.011
77	6.42	0.30	0.110	(0.256)	0.099	0.011
78	6.50	0.30	0.110	(0.255)	0.099	0.011
79	6.58	0.33	0.122	(0.254)	0.110	0.012
80	6.67	0.33	0.122	(0.253)	0.110	0.012
81	6.75	0.33	0.122	(0.252)	0.110	0.012
82	6.83	0.33	0.122	(0.250)	0.110	0.012

83	6.92	0.33	0.122	(0.249)	0.110	0.012
84	7.00	0.33	0.122	(0.248)	0.110	0.012
85	7.08	0.33	0.122	(0.247)	0.110	0.012
86	7.17	0.33	0.122	(0.246)	0.110	0.012
87	7.25	0.33	0.122	(0.245)	0.110	0.012
88	7.33	0.37	0.134	(0.244)	0.121	0.013
89	7.42	0.37	0.134	(0.243)	0.121	0.013
90	7.50	0.37	0.134	(0.241)	0.121	0.013
91	7.58	0.40	0.146	(0.240)	0.132	0.015
92	7.67	0.40	0.146	(0.239)	0.132	0.015
93	7.75	0.40	0.146	(0.238)	0.132	0.015
94	7.83	0.43	0.158	(0.237)	0.142	0.016
95	7.92	0.43	0.158	(0.236)	0.142	0.016
96	8.00	0.43	0.158	(0.235)	0.142	0.016
97	8.08	0.50	0.183	(0.234)	0.164	0.018
98	8.17	0.50	0.183	(0.233)	0.164	0.018
99	8.25	0.50	0.183	(0.232)	0.164	0.018
100	8.33	0.50	0.183	(0.230)	0.164	0.018
101	8.42	0.50	0.183	(0.229)	0.164	0.018
102	8.50	0.50	0.183	(0.228)	0.164	0.018
103	8.58	0.53	0.195	(0.227)	0.175	0.019
104	8.67	0.53	0.195	(0.226)	0.175	0.019
105	8.75	0.53	0.195	(0.225)	0.175	0.019
106	8.83	0.57	0.207	(0.224)	0.186	0.021
107	8.92	0.57	0.207	(0.223)	0.186	0.021
108	9.00	0.57	0.207	(0.222)	0.186	0.021
109	9.08	0.63	0.231	(0.221)	0.208	0.023
110	9.17	0.63	0.231	(0.220)	0.208	0.023
111	9.25	0.63	0.231	(0.219)	0.208	0.023
112	9.33	0.67	0.244	0.218	(0.219)	0.026
113	9.42	0.67	0.244	0.217	(0.219)	0.027
114	9.50	0.67	0.244	0.216	(0.219)	0.028
115	9.58	0.70	0.256	0.215	(0.230)	0.041
116	9.67	0.70	0.256	0.214	(0.230)	0.042
117	9.75	0.70	0.256	0.213	(0.230)	0.043
118	9.83	0.73	0.268	0.212	(0.241)	0.056
119	9.92	0.73	0.268	0.211	(0.241)	0.057
120	10.00	0.73	0.268	0.210	(0.241)	0.058
121	10.08	0.50	0.183	(0.208)	0.164	0.018
122	10.17	0.50	0.183	(0.207)	0.164	0.018
123	10.25	0.50	0.183	(0.206)	0.164	0.018
124	10.33	0.50	0.183	(0.205)	0.164	0.018
125	10.42	0.50	0.183	(0.204)	0.164	0.018
126	10.50	0.50	0.183	(0.203)	0.164	0.018
127	10.58	0.67	0.244	0.202	(0.219)	0.041
128	10.67	0.67	0.244	0.201	(0.219)	0.042
129	10.75	0.67	0.244	0.201	(0.219)	0.043
130	10.83	0.67	0.244	0.200	(0.219)	0.044
131	10.92	0.67	0.244	0.199	(0.219)	0.045
132	11.00	0.67	0.244	0.198	(0.219)	0.046
133	11.08	0.63	0.231	0.197	(0.208)	0.035
134	11.17	0.63	0.231	0.196	(0.208)	0.036
135	11.25	0.63	0.231	0.195	(0.208)	0.037
136	11.33	0.63	0.231	0.194	(0.208)	0.038
137	11.42	0.63	0.231	0.193	(0.208)	0.039
138	11.50	0.63	0.231	0.192	(0.208)	0.040
139	11.58	0.57	0.207	(0.191)	0.186	0.021
140	11.67	0.57	0.207	(0.190)	0.186	0.021
141	11.75	0.57	0.207	(0.189)	0.186	0.021
142	11.83	0.60	0.219	0.188	(0.197)	0.031
143	11.92	0.60	0.219	0.187	(0.197)	0.032
144	12.00	0.60	0.219	0.186	(0.197)	0.033
145	12.08	0.83	0.304	0.185	(0.274)	0.119

146	12.17	0.83	0.304	0.184	(0.274)	0.120
147	12.25	0.83	0.304	0.183	(0.274)	0.121
148	12.33	0.87	0.317	0.182	(0.285)	0.134
149	12.42	0.87	0.317	0.182	(0.285)	0.135
150	12.50	0.87	0.317	0.181	(0.285)	0.136
151	12.58	0.93	0.341	0.180	(0.307)	0.161
152	12.67	0.93	0.341	0.179	(0.307)	0.162
153	12.75	0.93	0.341	0.178	(0.307)	0.163
154	12.83	0.97	0.353	0.177	(0.318)	0.176
155	12.92	0.97	0.353	0.176	(0.318)	0.177
156	13.00	0.97	0.353	0.175	(0.318)	0.178
157	13.08	1.13	0.414	0.174	(0.373)	0.240
158	13.17	1.13	0.414	0.173	(0.373)	0.241
159	13.25	1.13	0.414	0.173	(0.373)	0.242
160	13.33	1.13	0.414	0.172	(0.373)	0.242
161	13.42	1.13	0.414	0.171	(0.373)	0.243
162	13.50	1.13	0.414	0.170	(0.373)	0.244
163	13.58	0.77	0.280	0.169	(0.252)	0.111
164	13.67	0.77	0.280	0.168	(0.252)	0.112
165	13.75	0.77	0.280	0.167	(0.252)	0.113
166	13.83	0.77	0.280	0.166	(0.252)	0.114
167	13.92	0.77	0.280	0.166	(0.252)	0.114
168	14.00	0.77	0.280	0.165	(0.252)	0.115
169	14.08	0.90	0.329	0.164	(0.296)	0.165
170	14.17	0.90	0.329	0.163	(0.296)	0.166
171	14.25	0.90	0.329	0.162	(0.296)	0.167
172	14.33	0.87	0.317	0.161	(0.285)	0.155
173	14.42	0.87	0.317	0.161	(0.285)	0.156
174	14.50	0.87	0.317	0.160	(0.285)	0.157
175	14.58	0.87	0.317	0.159	(0.285)	0.158
176	14.67	0.87	0.317	0.158	(0.285)	0.158
177	14.75	0.87	0.317	0.157	(0.285)	0.159
178	14.83	0.83	0.304	0.157	(0.274)	0.148
179	14.92	0.83	0.304	0.156	(0.274)	0.149
180	15.00	0.83	0.304	0.155	(0.274)	0.150
181	15.08	0.80	0.292	0.154	(0.263)	0.138
182	15.17	0.80	0.292	0.153	(0.263)	0.139
183	15.25	0.80	0.292	0.153	(0.263)	0.140
184	15.33	0.77	0.280	0.152	(0.252)	0.128
185	15.42	0.77	0.280	0.151	(0.252)	0.129
186	15.50	0.77	0.280	0.150	(0.252)	0.130
187	15.58	0.63	0.231	0.149	(0.208)	0.082
188	15.67	0.63	0.231	0.149	(0.208)	0.083
189	15.75	0.63	0.231	0.148	(0.208)	0.083
190	15.83	0.63	0.231	0.147	(0.208)	0.084
191	15.92	0.63	0.231	0.146	(0.208)	0.085
192	16.00	0.63	0.231	0.146	(0.208)	0.086
193	16.08	0.13	0.049	(0.145)	0.044	0.005
194	16.17	0.13	0.049	(0.144)	0.044	0.005
195	16.25	0.13	0.049	(0.143)	0.044	0.005
196	16.33	0.13	0.049	(0.143)	0.044	0.005
197	16.42	0.13	0.049	(0.142)	0.044	0.005
198	16.50	0.13	0.049	(0.141)	0.044	0.005
199	16.58	0.10	0.037	(0.141)	0.033	0.004
200	16.67	0.10	0.037	(0.140)	0.033	0.004
201	16.75	0.10	0.037	(0.139)	0.033	0.004
202	16.83	0.10	0.037	(0.138)	0.033	0.004
203	16.92	0.10	0.037	(0.138)	0.033	0.004
204	17.00	0.10	0.037	(0.137)	0.033	0.004
205	17.08	0.17	0.061	(0.136)	0.055	0.006
206	17.17	0.17	0.061	(0.136)	0.055	0.006
207	17.25	0.17	0.061	(0.135)	0.055	0.006
208	17.33	0.17	0.061	(0.134)	0.055	0.006

209	17.42	0.17	0.061	(0.134)	0.055	0.006
210	17.50	0.17	0.061	(0.133)	0.055	0.006
211	17.58	0.17	0.061	(0.132)	0.055	0.006
212	17.67	0.17	0.061	(0.132)	0.055	0.006
213	17.75	0.17	0.061	(0.131)	0.055	0.006
214	17.83	0.13	0.049	(0.130)	0.044	0.005
215	17.92	0.13	0.049	(0.130)	0.044	0.005
216	18.00	0.13	0.049	(0.129)	0.044	0.005
217	18.08	0.13	0.049	(0.128)	0.044	0.005
218	18.17	0.13	0.049	(0.128)	0.044	0.005
219	18.25	0.13	0.049	(0.127)	0.044	0.005
220	18.33	0.13	0.049	(0.127)	0.044	0.005
221	18.42	0.13	0.049	(0.126)	0.044	0.005
222	18.50	0.13	0.049	(0.125)	0.044	0.005
223	18.58	0.10	0.037	(0.125)	0.033	0.004
224	18.67	0.10	0.037	(0.124)	0.033	0.004
225	18.75	0.10	0.037	(0.124)	0.033	0.004
226	18.83	0.07	0.024	(0.123)	0.022	0.002
227	18.92	0.07	0.024	(0.122)	0.022	0.002
228	19.00	0.07	0.024	(0.122)	0.022	0.002
229	19.08	0.10	0.037	(0.121)	0.033	0.004
230	19.17	0.10	0.037	(0.121)	0.033	0.004
231	19.25	0.10	0.037	(0.120)	0.033	0.004
232	19.33	0.13	0.049	(0.119)	0.044	0.005
233	19.42	0.13	0.049	(0.119)	0.044	0.005
234	19.50	0.13	0.049	(0.118)	0.044	0.005
235	19.58	0.10	0.037	(0.118)	0.033	0.004
236	19.67	0.10	0.037	(0.117)	0.033	0.004
237	19.75	0.10	0.037	(0.117)	0.033	0.004
238	19.83	0.07	0.024	(0.116)	0.022	0.002
239	19.92	0.07	0.024	(0.116)	0.022	0.002
240	20.00	0.07	0.024	(0.115)	0.022	0.002
241	20.08	0.10	0.037	(0.115)	0.033	0.004
242	20.17	0.10	0.037	(0.114)	0.033	0.004
243	20.25	0.10	0.037	(0.114)	0.033	0.004
244	20.33	0.10	0.037	(0.113)	0.033	0.004
245	20.42	0.10	0.037	(0.113)	0.033	0.004
246	20.50	0.10	0.037	(0.112)	0.033	0.004
247	20.58	0.10	0.037	(0.112)	0.033	0.004
248	20.67	0.10	0.037	(0.111)	0.033	0.004
249	20.75	0.10	0.037	(0.111)	0.033	0.004
250	20.83	0.07	0.024	(0.110)	0.022	0.002
251	20.92	0.07	0.024	(0.110)	0.022	0.002
252	21.00	0.07	0.024	(0.110)	0.022	0.002
253	21.08	0.10	0.037	(0.109)	0.033	0.004
254	21.17	0.10	0.037	(0.109)	0.033	0.004
255	21.25	0.10	0.037	(0.108)	0.033	0.004
256	21.33	0.07	0.024	(0.108)	0.022	0.002
257	21.42	0.07	0.024	(0.107)	0.022	0.002
258	21.50	0.07	0.024	(0.107)	0.022	0.002
259	21.58	0.10	0.037	(0.107)	0.033	0.004
260	21.67	0.10	0.037	(0.106)	0.033	0.004
261	21.75	0.10	0.037	(0.106)	0.033	0.004
262	21.83	0.07	0.024	(0.105)	0.022	0.002
263	21.92	0.07	0.024	(0.105)	0.022	0.002
264	22.00	0.07	0.024	(0.105)	0.022	0.002
265	22.08	0.10	0.037	(0.104)	0.033	0.004
266	22.17	0.10	0.037	(0.104)	0.033	0.004
267	22.25	0.10	0.037	(0.104)	0.033	0.004
268	22.33	0.07	0.024	(0.103)	0.022	0.002
269	22.42	0.07	0.024	(0.103)	0.022	0.002
270	22.50	0.07	0.024	(0.103)	0.022	0.002
271	22.58	0.07	0.024	(0.102)	0.022	0.002

```
272  22.67     0.07      0.024       (  0.102)       0.022         0.002
273  22.75     0.07      0.024       (  0.102)       0.022         0.002
274  22.83     0.07      0.024       (  0.102)       0.022         0.002
275  22.92     0.07      0.024       (  0.101)       0.022         0.002
276  23.00     0.07      0.024       (  0.101)       0.022         0.002
277  23.08     0.07      0.024       (  0.101)       0.022         0.002
278  23.17     0.07      0.024       (  0.101)       0.022         0.002
279  23.25     0.07      0.024       (  0.100)       0.022         0.002
280  23.33     0.07      0.024       (  0.100)       0.022         0.002
281  23.42     0.07      0.024       (  0.100)       0.022         0.002
282  23.50     0.07      0.024       (  0.100)       0.022         0.002
283  23.58     0.07      0.024       (  0.100)       0.022         0.002
284  23.67     0.07      0.024       (  0.100)       0.022         0.002
285  23.75     0.07      0.024       (  0.099)       0.022         0.002
286  23.83     0.07      0.024       (  0.099)       0.022         0.002
287  23.92     0.07      0.024       (  0.099)       0.022         0.002
288  24.00     0.07      0.024       (  0.099)       0.022         0.002
                (Loss Rate Not Used)
    Sum =     100.0                                  Sum =     9.6
       Flood volume = Effective rainfall      0.80(In)
        times area       8.0(Ac.)/[(In)/(Ft.)] =       0.5(Ac.Ft)
       Total soil loss =      2.24(In)
       Total soil loss =     1.502(Ac.Ft)
       Total rainfall =      3.04(In)
       Flood volume =       23447.9 Cubic Feet
       Total soil loss =       65417.2 Cubic Feet
       --------------------------------------------------------------------
        Peak flow rate of this hydrograph =      1.972(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       0.0001      0.02  Q         |         |         |         |
   0+15       0.0003      0.02  Q         |         |         |         |
   0+20       0.0004      0.02  Q         |         |         |         |
   0+25       0.0006      0.03  Q         |         |         |         |
   0+30       0.0008      0.03  Q         |         |         |         |
   0+35       0.0010      0.03  Q         |         |         |         |
   0+40       0.0012      0.03  Q         |         |         |         |
   0+45       0.0014      0.03  Q         |         |         |         |
   0+50       0.0016      0.03  Q         |         |         |         |
   0+55       0.0019      0.04  Q         |         |         |         |
   1+ 0       0.0022      0.04  Q         |         |         |         |
   1+ 5       0.0024      0.04  Q         |         |         |         |
   1+10       0.0026      0.03  Q         |         |         |         |
   1+15       0.0029      0.03  Q         |         |         |         |
   1+20       0.0031      0.03  Q         |         |         |         |
   1+25       0.0033      0.03  Q         |         |         |         |
   1+30       0.0035      0.03  Q         |         |         |         |
   1+35       0.0037      0.03  Q         |         |         |         |
   1+40       0.0039      0.03  Q         |         |         |         |
   1+45       0.0041      0.03  Q         |         |         |         |
   1+50       0.0043      0.03  Q         |         |         |         |
   1+55       0.0046      0.04  Q         |         |         |         |
   2+ 0       0.0048      0.04  Q         |         |         |         |
   2+ 5       0.0051      0.04  Q         |         |         |         |
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2+10	0.0054	0.04	Q
2+15	0.0056	0.04	Q
2+20	0.0059	0.04	Q
2+25	0.0062	0.04	Q
2+30	0.0065	0.04	Q
2+35	0.0067	0.04	Q
2+40	0.0071	0.05	Q
2+45	0.0074	0.05	Q
2+50	0.0077	0.05	Q
2+55	0.0081	0.05	Q
3+ 0	0.0084	0.05	Q
3+ 5	0.0088	0.05	Q
3+10	0.0091	0.05	Q
3+15	0.0094	0.05	Q
3+20	0.0098	0.05	Q
3+25	0.0101	0.05	Q
3+30	0.0105	0.05	Q
3+35	0.0108	0.05	Q
3+40	0.0111	0.05	Q
3+45	0.0115	0.05	Q
3+50	0.0118	0.05	Q
3+55	0.0122	0.06	Q
4+ 0	0.0126	0.06	Q
4+ 5	0.0130	0.06	Q
4+10	0.0135	0.06	Q
4+15	0.0139	0.06	QV
4+20	0.0143	0.06	QV
4+25	0.0148	0.07	QV
4+30	0.0152	0.07	QV
4+35	0.0157	0.07	QV
4+40	0.0162	0.07	QV
4+45	0.0167	0.07	QV
4+50	0.0171	0.07	QV
4+55	0.0177	0.08	QV
5+ 0	0.0182	0.08	QV
5+ 5	0.0187	0.07	QV
5+10	0.0192	0.06	QV
5+15	0.0196	0.06	QV
5+20	0.0200	0.06	QV
5+25	0.0205	0.07	QV
5+30	0.0209	0.07	QV
5+35	0.0214	0.07	QV
5+40	0.0220	0.08	QV
5+45	0.0225	0.08	QV
5+50	0.0230	0.08	QV
5+55	0.0236	0.08	QV
6+ 0	0.0241	0.08	QV
6+ 5	0.0247	0.08	QV
6+10	0.0253	0.09	QV
6+15	0.0259	0.09	QV
6+20	0.0265	0.09	QV
6+25	0.0271	0.09	Q V
6+30	0.0277	0.09	Q V
6+35	0.0284	0.09	Q V
6+40	0.0290	0.10	Q V
6+45	0.0297	0.10	Q V
6+50	0.0304	0.10	Q V
6+55	0.0311	0.10	Q V
7+ 0	0.0317	0.10	Q V
7+ 5	0.0324	0.10	Q V
7+10	0.0331	0.10	Q V
7+15	0.0338	0.10	Q V
7+20	0.0345	0.10	Q V

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  7+25        0.0352       0.11  Q V       |         |         |         |
  7+30        0.0360       0.11  Q V       |         |         |         |
  7+35        0.0367       0.11  Q V       |         |         |         |
  7+40        0.0375       0.12  Q V       |         |         |         |
  7+45        0.0383       0.12  Q V       |         |         |         |
  7+50        0.0392       0.12  Q V       |         |         |         |
  7+55        0.0400       0.13  Q V       |         |         |         |
  8+ 0        0.0409       0.13  Q  V      |         |         |         |
  8+ 5        0.0418       0.13  Q  V      |         |         |         |
  8+10        0.0428       0.14  Q  V      |         |         |         |
  8+15        0.0438       0.15  Q  V      |         |         |         |
  8+20        0.0449       0.15  Q  V      |         |         |         |
  8+25        0.0459       0.15  Q  V      |         |         |         |
  8+30        0.0469       0.15  Q  V      |         |         |         |
  8+35        0.0479       0.15  Q  V      |         |         |         |
  8+40        0.0490       0.16  Q  V      |         |         |         |
  8+45        0.0501       0.16  Q  V      |         |         |         |
  8+50        0.0512       0.16  Q  V      |         |         |         |
  8+55        0.0523       0.17  Q  V      |         |         |         |
  9+ 0        0.0535       0.17  Q  V      |         |         |         |
  9+ 5        0.0547       0.17  Q   V     |         |         |         |
  9+10        0.0559       0.18  Q   V     |         |         |         |
  9+15        0.0572       0.19  Q   V     |         |         |         |
  9+20        0.0586       0.19  Q   V     |         |         |         |
  9+25        0.0600       0.21  Q   V     |         |         |         |
  9+30        0.0615       0.22  Q   V     |         |         |         |
  9+35        0.0632       0.25  |Q  V     |         |         |         |
  9+40        0.0654       0.31  |Q  V     |         |         |         |
  9+45        0.0677       0.34  |Q   V    |         |         |         |
  9+50        0.0703       0.37  |Q   V    |         |         |         |
  9+55        0.0733       0.44  |Q   V    |         |         |         |
 10+ 0        0.0764       0.46  |Q   V    |         |         |         |
 10+ 5        0.0791       0.39  |Q   V    |         |         |         |
 10+10        0.0806       0.21  Q    V    |         |         |         |
 10+15        0.0817       0.17  Q     V   |         |         |         |
 10+20        0.0828       0.15  Q     V   |         |         |         |
 10+25        0.0838       0.15  Q     V   |         |         |         |
 10+30        0.0848       0.15  Q     V   |         |         |         |
 10+35        0.0862       0.19  Q     V   |         |         |         |
 10+40        0.0882       0.30  |Q    V   |         |         |         |
 10+45        0.0905       0.33  |Q    V   |         |         |         |
 10+50        0.0929       0.35  |Q    V   |         |         |         |
 10+55        0.0953       0.36  |Q     V  |         |         |         |
 11+ 0        0.0978       0.36  |Q     V  |         |         |         |
 11+ 5        0.1002       0.35  |Q     V  |         |         |         |
 11+10        0.1023       0.30  |Q     V  |         |         |         |
 11+15        0.1044       0.30  |Q     V  |         |         |         |
 11+20        0.1064       0.30  |Q     V  |         |         |         |
 11+25        0.1085       0.31  |Q      V |         |         |         |
 11+30        0.1107       0.31  |Q      V |         |         |         |
 11+35        0.1126       0.28  |Q      V |         |         |         |
 11+40        0.1140       0.20  Q       V |         |         |         |
 11+45        0.1152       0.18  Q       V |         |         |         |
 11+50        0.1165       0.19  Q       V |         |         |         |
 11+55        0.1182       0.24  Q       V |         |         |         |
 12+ 0        0.1199       0.26  |Q      V |         |         |         |
 12+ 5        0.1229       0.44  |Q       V|         |         |         |
 12+10        0.1287       0.83  |  Q     V|         |         |         |
 12+15        0.1351       0.94  |  Q      V         |         |         |
 12+20        0.1420       1.00  |  Q      V         |         |         |
 12+25        0.1493       1.07  |   Q     |V        |         |         |
 12+30        0.1568       1.09  |   Q     |V        |         |         |
 12+35        0.1648       1.15  |   Q     | V       |         |         |
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12+40       0.1735      1.27  |    Q    | V       |         |         |
12+45       0.1825      1.30  |    Q    |  V      |         |         |
12+50       0.1917      1.34  |    Q    |   V     |         |         |
12+55       0.2014      1.41  |    Q    |   V     |         |         |
13+ 0       0.2113      1.43  |    Q    |    V    |         |         |
13+ 5       0.2221      1.56  |     Q   |     V   |         |         |
13+10       0.2348      1.85  |      Q  |      V  |         |         |
13+15       0.2480      1.92  |      Q  |       V |         |         |
13+20       0.2615      1.95  |      Q  |        V|         |         |
13+25       0.2750      1.96  |      Q  |         V         |         |
13+30       0.2886      1.97  |      Q  |         |V        |         |
13+35       0.3003      1.71  |     Q   |         | V       |         |
13+40       0.3080      1.11  |   Q     |         | V       |         |
13+45       0.3146      0.97  |  Q      |         |  V      |         |
13+50       0.3211      0.93  |  Q      |         |  V      |         |
13+55       0.3274      0.93  |  Q      |         |   V     |         |
14+ 0       0.3338      0.93  |  Q      |         |   V     |         |
14+ 5       0.3409      1.03  |   Q     |         |    V    |         |
14+10       0.3496      1.26  |    Q    |         |    V    |         |
14+15       0.3587      1.32  |    Q    |         |     V   |         |
14+20       0.3678      1.32  |    Q    |         |      V  |         |
14+25       0.3766      1.28  |    Q    |         |      V  |         |
14+30       0.3853      1.27  |    Q    |         |       V |         |
14+35       0.3941      1.27  |    Q    |         |        V|         |
14+40       0.4029      1.28  |    Q    |         |        V|         |
14+45       0.4118      1.28  |    Q    |         |         V         |
14+50       0.4205      1.27  |    Q    |         |         |V        |
14+55       0.4289      1.22  |   Q     |         |         |V        |
15+ 0       0.4372      1.21  |   Q     |         |         | V       |
15+ 5       0.4454      1.19  |   Q     |         |         |  V      |
15+10       0.4533      1.14  |   Q     |         |         |  V      |
15+15       0.4610      1.13  |   Q     |         |         |   V     |
15+20       0.4687      1.11  |   Q     |         |         |   V     |
15+25       0.4760      1.06  |   Q     |         |         |    V    |
15+30       0.4832      1.05  |   Q     |         |         |    V    |
15+35       0.4898      0.96  |  Q      |         |         |     V   |
15+40       0.4949      0.74  | Q       |         |         |     V   |
15+45       0.4997      0.69  | Q       |         |         |      V  |
15+50       0.5044      0.68  | Q       |         |         |      V  |
15+55       0.5091      0.68  | Q       |         |         |      V  |
16+ 0       0.5138      0.69  | Q       |         |         |       V |
16+ 5       0.5175      0.53  | Q       |         |         |       V |
16+10       0.5186      0.17  Q         |         |         |       V |
16+15       0.5192      0.07  Q         |         |         |       V |
16+20       0.5195      0.05  Q         |         |         |       V |
16+25       0.5198      0.04  Q         |         |         |       V |
16+30       0.5201      0.04  Q         |         |         |       V |
16+35       0.5203      0.04  Q         |         |         |       V |
16+40       0.5205      0.03  Q         |         |         |       V |
16+45       0.5207      0.03  Q         |         |         |       V |
16+50       0.5209      0.03  Q         |         |         |       V |
16+55       0.5211      0.03  Q         |         |         |       V |
17+ 0       0.5214      0.03  Q         |         |         |       V |
17+ 5       0.5216      0.03  Q         |         |         |       V |
17+10       0.5219      0.05  Q         |         |         |       V |
17+15       0.5222      0.05  Q         |         |         |       V |
17+20       0.5226      0.05  Q         |         |         |       V |
17+25       0.5229      0.05  Q         |         |         |       V |
17+30       0.5233      0.05  Q         |         |         |       V |
17+35       0.5236      0.05  Q         |         |         |       V |
17+40       0.5239      0.05  Q         |         |         |       V |
17+45       0.5243      0.05  Q         |         |         |       V |
17+50       0.5246      0.05  Q         |         |         |       V |
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17+55	0.5249	0.04	Q	|	|	|	V|
18+ 0	0.5252	0.04	Q	|	|	|	V|
18+ 5	0.5254	0.04	Q	|	|	|	V|
18+10	0.5257	0.04	Q	|	|	|	V|
18+15	0.5260	0.04	Q	|	|	|	V|
18+20	0.5262	0.04	Q	|	|	|	V|
18+25	0.5265	0.04	Q	|	|	|	V|
18+30	0.5268	0.04	Q	|	|	|	V|
18+35	0.5270	0.04	Q	|	|	|	V|
18+40	0.5273	0.03	Q	|	|	|	V|
18+45	0.5275	0.03	Q	|	|	|	V|
18+50	0.5277	0.03	Q	|	|	|	V|
18+55	0.5278	0.02	Q	|	|	|	V|
19+ 0	0.5279	0.02	Q	|	|	|	V|
19+ 5	0.5281	0.02	Q	|	|	|	V|
19+10	0.5283	0.03	Q	|	|	|	V|
19+15	0.5285	0.03	Q	|	|	|	V|
19+20	0.5287	0.03	Q	|	|	|	V|
19+25	0.5290	0.04	Q	|	|	|	V|
19+30	0.5292	0.04	Q	|	|	|	V|
19+35	0.5295	0.04	Q	|	|	|	V|
19+40	0.5297	0.03	Q	|	|	|	V|
19+45	0.5299	0.03	Q	|	|	|	V|
19+50	0.5301	0.03	Q	|	|	|	V|
19+55	0.5303	0.02	Q	|	|	|	V|
20+ 0	0.5304	0.02	Q	|	|	|	V|
20+ 5	0.5306	0.02	Q	|	|	|	V|
20+10	0.5307	0.03	Q	|	|	|	V|
20+15	0.5309	0.03	Q	|	|	|	V|
20+20	0.5311	0.03	Q	|	|	|	V|
20+25	0.5313	0.03	Q	|	|	|	V|
20+30	0.5316	0.03	Q	|	|	|	V|
20+35	0.5318	0.03	Q	|	|	|	V|
20+40	0.5320	0.03	Q	|	|	|	V|
20+45	0.5322	0.03	Q	|	|	|	V|
20+50	0.5324	0.03	Q	|	|	|	V|
20+55	0.5325	0.02	Q	|	|	|	V|
21+ 0	0.5326	0.02	Q	|	|	|	V|
21+ 5	0.5328	0.02	Q	|	|	|	V|
21+10	0.5330	0.03	Q	|	|	|	V|
21+15	0.5332	0.03	Q	|	|	|	V|
21+20	0.5334	0.03	Q	|	|	|	V|
21+25	0.5335	0.02	Q	|	|	|	V|
21+30	0.5337	0.02	Q	|	|	|	V|
21+35	0.5338	0.02	Q	|	|	|	V|
21+40	0.5340	0.03	Q	|	|	|	V|
21+45	0.5342	0.03	Q	|	|	|	V|
21+50	0.5344	0.03	Q	|	|	|	V|
21+55	0.5345	0.02	Q	|	|	|	V|
22+ 0	0.5347	0.02	Q	|	|	|	V|
22+ 5	0.5348	0.02	Q	|	|	|	V|
22+10	0.5350	0.03	Q	|	|	|	V|
22+15	0.5352	0.03	Q	|	|	|	V|
22+20	0.5354	0.03	Q	|	|	|	V|
22+25	0.5356	0.02	Q	|	|	|	V|
22+30	0.5357	0.02	Q	|	|	|	V|
22+35	0.5358	0.02	Q	|	|	|	V|
22+40	0.5360	0.02	Q	|	|	|	V|
22+45	0.5361	0.02	Q	|	|	|	V|
22+50	0.5362	0.02	Q	|	|	|	V|
22+55	0.5364	0.02	Q	|	|	|	V|
23+ 0	0.5365	0.02	Q	|	|	|	V|
23+ 5	0.5367	0.02	Q	|	|	|	V|

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   23+10        0.5368       0.02  Q           |         |         |        V|
   23+15        0.5369       0.02  Q           |         |         |        V|
   23+20        0.5371       0.02  Q           |         |         |        V|
   23+25        0.5372       0.02  Q           |         |         |        V|
   23+30        0.5373       0.02  Q           |         |         |        V|
   23+35        0.5375       0.02  Q           |         |         |        V|
   23+40        0.5376       0.02  Q           |         |         |        V|
   23+45        0.5377       0.02  Q           |         |         |        V|
   23+50        0.5379       0.02  Q           |         |         |        V|
   23+55        0.5380       0.02  Q           |         |         |        V|
   24+ 0        0.5382       0.02  Q           |         |         |        V|
   24+ 5        0.5383       0.01  Q           |         |         |        V|
   24+10        0.5383       0.00  Q           |         |         |        V|
   24+15        0.5383       0.00  Q           |         |         |        V|
   24+20        0.5383       0.00  Q           |         |         |        V|
   24+25        0.5383       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 11/09/21 File: moval33preb24100.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Predevlopment Conditions
Unit Hydrograph Runoff
Area B

Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) = 0.013 Sq. Mi.
Length along longest watercourse = 1083.00(Ft.)
Length along longest watercourse measured to centroid = 476.00 (Ft.)
Length along longest watercourse = 0.205 Mi.
Length along longest watercourse measured to centroid = 0.090 Mi.
Difference in elevation = 110.00(Ft.)
Slope along watercourse = 536.2881 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.064 Hr.
Lag time = 3.83 Min.
25% of lag time = 0.96 Min.
40% of lag time = 1.53 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]

8.04	1.93	15.52

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.04	4.64	37.31

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.930(In)
Area Averaged 100-Year Rainfall = 4.640(In)

Point rain (area averaged) = 4.640(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 4.640(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.040	84.00	0.000

Total Area Entered = 8.04(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	93.4	0.086	0.000	0.086	1.000	0.086

Sum (F) = 0.086

Area averaged mean soil loss (F) (In/Hr) = 0.086
Minimum soil loss rate ((In/Hr)) = 0.043
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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	130.523	24.817	2.011
2	0.167	261.045	55.614	4.506
3	0.250	391.568	14.211	1.151
4	0.333	522.090	3.889	0.315
5	0.417	652.613	1.032	0.084
6	0.500	783.135	0.438	0.035
			Sum = 100.000	Sum= 8.103

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	0.037	(0.152)	0.033	0.004
2	0.17	0.07	0.037	(0.152)	0.033	0.004
3	0.25	0.07	0.037	(0.151)	0.033	0.004
4	0.33	0.10	0.056	(0.150)	0.050	0.006
5	0.42	0.10	0.056	(0.150)	0.050	0.006
6	0.50	0.10	0.056	(0.149)	0.050	0.006
7	0.58	0.10	0.056	(0.149)	0.050	0.006
8	0.67	0.10	0.056	(0.148)	0.050	0.006
9	0.75	0.10	0.056	(0.147)	0.050	0.006
10	0.83	0.13	0.074	(0.147)	0.067	0.007
11	0.92	0.13	0.074	(0.146)	0.067	0.007
12	1.00	0.13	0.074	(0.146)	0.067	0.007
13	1.08	0.10	0.056	(0.145)	0.050	0.006
14	1.17	0.10	0.056	(0.145)	0.050	0.006
15	1.25	0.10	0.056	(0.144)	0.050	0.006
16	1.33	0.10	0.056	(0.143)	0.050	0.006
17	1.42	0.10	0.056	(0.143)	0.050	0.006
18	1.50	0.10	0.056	(0.142)	0.050	0.006
19	1.58	0.10	0.056	(0.142)	0.050	0.006
20	1.67	0.10	0.056	(0.141)	0.050	0.006
21	1.75	0.10	0.056	(0.141)	0.050	0.006
22	1.83	0.13	0.074	(0.140)	0.067	0.007
23	1.92	0.13	0.074	(0.139)	0.067	0.007
24	2.00	0.13	0.074	(0.139)	0.067	0.007
25	2.08	0.13	0.074	(0.138)	0.067	0.007
26	2.17	0.13	0.074	(0.138)	0.067	0.007
27	2.25	0.13	0.074	(0.137)	0.067	0.007
28	2.33	0.13	0.074	(0.137)	0.067	0.007
29	2.42	0.13	0.074	(0.136)	0.067	0.007
30	2.50	0.13	0.074	(0.136)	0.067	0.007
31	2.58	0.17	0.093	(0.135)	0.084	0.009
32	2.67	0.17	0.093	(0.134)	0.084	0.009
33	2.75	0.17	0.093	(0.134)	0.084	0.009
34	2.83	0.17	0.093	(0.133)	0.084	0.009
35	2.92	0.17	0.093	(0.133)	0.084	0.009
36	3.00	0.17	0.093	(0.132)	0.084	0.009
37	3.08	0.17	0.093	(0.132)	0.084	0.009
38	3.17	0.17	0.093	(0.131)	0.084	0.009
39	3.25	0.17	0.093	(0.131)	0.084	0.009
40	3.33	0.17	0.093	(0.130)	0.084	0.009
41	3.42	0.17	0.093	(0.129)	0.084	0.009
42	3.50	0.17	0.093	(0.129)	0.084	0.009
43	3.58	0.17	0.093	(0.128)	0.084	0.009
44	3.67	0.17	0.093	(0.128)	0.084	0.009
45	3.75	0.17	0.093	(0.127)	0.084	0.009
46	3.83	0.20	0.111	(0.127)	0.100	0.011
47	3.92	0.20	0.111	(0.126)	0.100	0.011
48	4.00	0.20	0.111	(0.126)	0.100	0.011
49	4.08	0.20	0.111	(0.125)	0.100	0.011
50	4.17	0.20	0.111	(0.125)	0.100	0.011
51	4.25	0.20	0.111	(0.124)	0.100	0.011
52	4.33	0.23	0.130	(0.124)	0.117	0.013
53	4.42	0.23	0.130	(0.123)	0.117	0.013
54	4.50	0.23	0.130	(0.123)	0.117	0.013
55	4.58	0.23	0.130	(0.122)	0.117	0.013
56	4.67	0.23	0.130	(0.121)	0.117	0.013

57	4.75	0.23	0.130	(0.121)	0.117	0.013
58	4.83	0.27	0.148	0.120	(0.134)	0.028
59	4.92	0.27	0.148	0.120	(0.134)	0.029
60	5.00	0.27	0.148	0.119	(0.134)	0.029
61	5.08	0.20	0.111	(0.119)	0.100	0.011
62	5.17	0.20	0.111	(0.118)	0.100	0.011
63	5.25	0.20	0.111	(0.118)	0.100	0.011
64	5.33	0.23	0.130	(0.117)	0.117	0.013
65	5.42	0.23	0.130	0.117	(0.117)	0.013
66	5.50	0.23	0.130	0.116	(0.117)	0.014
67	5.58	0.27	0.148	0.116	(0.134)	0.033
68	5.67	0.27	0.148	0.115	(0.134)	0.033
69	5.75	0.27	0.148	0.115	(0.134)	0.034
70	5.83	0.27	0.148	0.114	(0.134)	0.034
71	5.92	0.27	0.148	0.114	(0.134)	0.035
72	6.00	0.27	0.148	0.113	(0.134)	0.035
73	6.08	0.30	0.167	0.113	(0.150)	0.054
74	6.17	0.30	0.167	0.112	(0.150)	0.055
75	6.25	0.30	0.167	0.112	(0.150)	0.055
76	6.33	0.30	0.167	0.111	(0.150)	0.056
77	6.42	0.30	0.167	0.111	(0.150)	0.056
78	6.50	0.30	0.167	0.110	(0.150)	0.057
79	6.58	0.33	0.186	0.110	(0.167)	0.076
80	6.67	0.33	0.186	0.109	(0.167)	0.076
81	6.75	0.33	0.186	0.109	(0.167)	0.077
82	6.83	0.33	0.186	0.108	(0.167)	0.077
83	6.92	0.33	0.186	0.108	(0.167)	0.078
84	7.00	0.33	0.186	0.107	(0.167)	0.078
85	7.08	0.33	0.186	0.107	(0.167)	0.079
86	7.17	0.33	0.186	0.106	(0.167)	0.079
87	7.25	0.33	0.186	0.106	(0.167)	0.080
88	7.33	0.37	0.204	0.105	(0.184)	0.099
89	7.42	0.37	0.204	0.105	(0.184)	0.099
90	7.50	0.37	0.204	0.104	(0.184)	0.100
91	7.58	0.40	0.223	0.104	(0.200)	0.119
92	7.67	0.40	0.223	0.103	(0.200)	0.119
93	7.75	0.40	0.223	0.103	(0.200)	0.120
94	7.83	0.43	0.241	0.102	(0.217)	0.139
95	7.92	0.43	0.241	0.102	(0.217)	0.139
96	8.00	0.43	0.241	0.102	(0.217)	0.140
97	8.08	0.50	0.278	0.101	(0.251)	0.177
98	8.17	0.50	0.278	0.101	(0.251)	0.178
99	8.25	0.50	0.278	0.100	(0.251)	0.178
100	8.33	0.50	0.278	0.100	(0.251)	0.179
101	8.42	0.50	0.278	0.099	(0.251)	0.179
102	8.50	0.50	0.278	0.099	(0.251)	0.180
103	8.58	0.53	0.297	0.098	(0.267)	0.199
104	8.67	0.53	0.297	0.098	(0.267)	0.199
105	8.75	0.53	0.297	0.097	(0.267)	0.200
106	8.83	0.57	0.316	0.097	(0.284)	0.219
107	8.92	0.57	0.316	0.096	(0.284)	0.219
108	9.00	0.57	0.316	0.096	(0.284)	0.220
109	9.08	0.63	0.353	0.096	(0.317)	0.257
110	9.17	0.63	0.353	0.095	(0.317)	0.258
111	9.25	0.63	0.353	0.095	(0.317)	0.258
112	9.33	0.67	0.371	0.094	(0.334)	0.277
113	9.42	0.67	0.371	0.094	(0.334)	0.277
114	9.50	0.67	0.371	0.093	(0.334)	0.278
115	9.58	0.70	0.390	0.093	(0.351)	0.297
116	9.67	0.70	0.390	0.092	(0.351)	0.297

117	9.75	0.70	0.390	0.092	(0.351)	0.298
118	9.83	0.73	0.408	0.091	(0.367)	0.317
119	9.92	0.73	0.408	0.091	(0.367)	0.317
120	10.00	0.73	0.408	0.091	(0.367)	0.318
121	10.08	0.50	0.278	0.090	(0.251)	0.188
122	10.17	0.50	0.278	0.090	(0.251)	0.189
123	10.25	0.50	0.278	0.089	(0.251)	0.189
124	10.33	0.50	0.278	0.089	(0.251)	0.190
125	10.42	0.50	0.278	0.088	(0.251)	0.190
126	10.50	0.50	0.278	0.088	(0.251)	0.190
127	10.58	0.67	0.371	0.088	(0.334)	0.284
128	10.67	0.67	0.371	0.087	(0.334)	0.284
129	10.75	0.67	0.371	0.087	(0.334)	0.284
130	10.83	0.67	0.371	0.086	(0.334)	0.285
131	10.92	0.67	0.371	0.086	(0.334)	0.285
132	11.00	0.67	0.371	0.085	(0.334)	0.286
133	11.08	0.63	0.353	0.085	(0.317)	0.268
134	11.17	0.63	0.353	0.085	(0.317)	0.268
135	11.25	0.63	0.353	0.084	(0.317)	0.268
136	11.33	0.63	0.353	0.084	(0.317)	0.269
137	11.42	0.63	0.353	0.083	(0.317)	0.269
138	11.50	0.63	0.353	0.083	(0.317)	0.270
139	11.58	0.57	0.316	0.083	(0.284)	0.233
140	11.67	0.57	0.316	0.082	(0.284)	0.233
141	11.75	0.57	0.316	0.082	(0.284)	0.234
142	11.83	0.60	0.334	0.081	(0.301)	0.253
143	11.92	0.60	0.334	0.081	(0.301)	0.253
144	12.00	0.60	0.334	0.080	(0.301)	0.254
145	12.08	0.83	0.464	0.080	(0.418)	0.384
146	12.17	0.83	0.464	0.080	(0.418)	0.384
147	12.25	0.83	0.464	0.079	(0.418)	0.385
148	12.33	0.87	0.483	0.079	(0.434)	0.404
149	12.42	0.87	0.483	0.078	(0.434)	0.404
150	12.50	0.87	0.483	0.078	(0.434)	0.404
151	12.58	0.93	0.520	0.078	(0.468)	0.442
152	12.67	0.93	0.520	0.077	(0.468)	0.442
153	12.75	0.93	0.520	0.077	(0.468)	0.443
154	12.83	0.97	0.538	0.077	(0.484)	0.462
155	12.92	0.97	0.538	0.076	(0.484)	0.462
156	13.00	0.97	0.538	0.076	(0.484)	0.462
157	13.08	1.13	0.631	0.075	(0.568)	0.556
158	13.17	1.13	0.631	0.075	(0.568)	0.556
159	13.25	1.13	0.631	0.075	(0.568)	0.556
160	13.33	1.13	0.631	0.074	(0.568)	0.557
161	13.42	1.13	0.631	0.074	(0.568)	0.557
162	13.50	1.13	0.631	0.073	(0.568)	0.558
163	13.58	0.77	0.427	0.073	(0.384)	0.354
164	13.67	0.77	0.427	0.073	(0.384)	0.354
165	13.75	0.77	0.427	0.072	(0.384)	0.355
166	13.83	0.77	0.427	0.072	(0.384)	0.355
167	13.92	0.77	0.427	0.072	(0.384)	0.355
168	14.00	0.77	0.427	0.071	(0.384)	0.356
169	14.08	0.90	0.501	0.071	(0.451)	0.430
170	14.17	0.90	0.501	0.071	(0.451)	0.431
171	14.25	0.90	0.501	0.070	(0.451)	0.431
172	14.33	0.87	0.483	0.070	(0.434)	0.413
173	14.42	0.87	0.483	0.069	(0.434)	0.413
174	14.50	0.87	0.483	0.069	(0.434)	0.413
175	14.58	0.87	0.483	0.069	(0.434)	0.414
176	14.67	0.87	0.483	0.068	(0.434)	0.414

177	14.75	0.87	0.483	0.068	(0.434)	0.414
178	14.83	0.83	0.464	0.068	(0.418)	0.396
179	14.92	0.83	0.464	0.067	(0.418)	0.397
180	15.00	0.83	0.464	0.067	(0.418)	0.397
181	15.08	0.80	0.445	0.067	(0.401)	0.379
182	15.17	0.80	0.445	0.066	(0.401)	0.379
183	15.25	0.80	0.445	0.066	(0.401)	0.379
184	15.33	0.77	0.427	0.066	(0.384)	0.361
185	15.42	0.77	0.427	0.065	(0.384)	0.362
186	15.50	0.77	0.427	0.065	(0.384)	0.362
187	15.58	0.63	0.353	0.065	(0.317)	0.288
188	15.67	0.63	0.353	0.064	(0.317)	0.288
189	15.75	0.63	0.353	0.064	(0.317)	0.289
190	15.83	0.63	0.353	0.064	(0.317)	0.289
191	15.92	0.63	0.353	0.063	(0.317)	0.289
192	16.00	0.63	0.353	0.063	(0.317)	0.290
193	16.08	0.13	0.074	0.063	(0.067)	0.012
194	16.17	0.13	0.074	0.062	(0.067)	0.012
195	16.25	0.13	0.074	0.062	(0.067)	0.012
196	16.33	0.13	0.074	0.062	(0.067)	0.013
197	16.42	0.13	0.074	0.061	(0.067)	0.013
198	16.50	0.13	0.074	0.061	(0.067)	0.013
199	16.58	0.10	0.056	(0.061)	0.050	0.006
200	16.67	0.10	0.056	(0.060)	0.050	0.006
201	16.75	0.10	0.056	(0.060)	0.050	0.006
202	16.83	0.10	0.056	(0.060)	0.050	0.006
203	16.92	0.10	0.056	(0.060)	0.050	0.006
204	17.00	0.10	0.056	(0.059)	0.050	0.006
205	17.08	0.17	0.093	0.059	(0.084)	0.034
206	17.17	0.17	0.093	0.059	(0.084)	0.034
207	17.25	0.17	0.093	0.058	(0.084)	0.034
208	17.33	0.17	0.093	0.058	(0.084)	0.035
209	17.42	0.17	0.093	0.058	(0.084)	0.035
210	17.50	0.17	0.093	0.058	(0.084)	0.035
211	17.58	0.17	0.093	0.057	(0.084)	0.036
212	17.67	0.17	0.093	0.057	(0.084)	0.036
213	17.75	0.17	0.093	0.057	(0.084)	0.036
214	17.83	0.13	0.074	0.056	(0.067)	0.018
215	17.92	0.13	0.074	0.056	(0.067)	0.018
216	18.00	0.13	0.074	0.056	(0.067)	0.018
217	18.08	0.13	0.074	0.056	(0.067)	0.019
218	18.17	0.13	0.074	0.055	(0.067)	0.019
219	18.25	0.13	0.074	0.055	(0.067)	0.019
220	18.33	0.13	0.074	0.055	(0.067)	0.020
221	18.42	0.13	0.074	0.054	(0.067)	0.020
222	18.50	0.13	0.074	0.054	(0.067)	0.020
223	18.58	0.10	0.056	(0.054)	0.050	0.006
224	18.67	0.10	0.056	(0.054)	0.050	0.006
225	18.75	0.10	0.056	(0.053)	0.050	0.006
226	18.83	0.07	0.037	(0.053)	0.033	0.004
227	18.92	0.07	0.037	(0.053)	0.033	0.004
228	19.00	0.07	0.037	(0.053)	0.033	0.004
229	19.08	0.10	0.056	(0.052)	0.050	0.006
230	19.17	0.10	0.056	(0.052)	0.050	0.006
231	19.25	0.10	0.056	(0.052)	0.050	0.006
232	19.33	0.13	0.074	0.052	(0.067)	0.023
233	19.42	0.13	0.074	0.051	(0.067)	0.023
234	19.50	0.13	0.074	0.051	(0.067)	0.023
235	19.58	0.10	0.056	(0.051)	0.050	0.006
236	19.67	0.10	0.056	(0.051)	0.050	0.006

237	19.75	0.10	0.056	(0.050)	0.050	0.006
238	19.83	0.07	0.037	(0.050)	0.033	0.004
239	19.92	0.07	0.037	(0.050)	0.033	0.004
240	20.00	0.07	0.037	(0.050)	0.033	0.004
241	20.08	0.10	0.056	0.050	(0.050)	0.006
242	20.17	0.10	0.056	0.049	(0.050)	0.006
243	20.25	0.10	0.056	0.049	(0.050)	0.007
244	20.33	0.10	0.056	0.049	(0.050)	0.007
245	20.42	0.10	0.056	0.049	(0.050)	0.007
246	20.50	0.10	0.056	0.049	(0.050)	0.007
247	20.58	0.10	0.056	0.048	(0.050)	0.007
248	20.67	0.10	0.056	0.048	(0.050)	0.008
249	20.75	0.10	0.056	0.048	(0.050)	0.008
250	20.83	0.07	0.037	(0.048)	0.033	0.004
251	20.92	0.07	0.037	(0.048)	0.033	0.004
252	21.00	0.07	0.037	(0.047)	0.033	0.004
253	21.08	0.10	0.056	0.047	(0.050)	0.009
254	21.17	0.10	0.056	0.047	(0.050)	0.009
255	21.25	0.10	0.056	0.047	(0.050)	0.009
256	21.33	0.07	0.037	(0.047)	0.033	0.004
257	21.42	0.07	0.037	(0.046)	0.033	0.004
258	21.50	0.07	0.037	(0.046)	0.033	0.004
259	21.58	0.10	0.056	0.046	(0.050)	0.010
260	21.67	0.10	0.056	0.046	(0.050)	0.010
261	21.75	0.10	0.056	0.046	(0.050)	0.010
262	21.83	0.07	0.037	(0.046)	0.033	0.004
263	21.92	0.07	0.037	(0.045)	0.033	0.004
264	22.00	0.07	0.037	(0.045)	0.033	0.004
265	22.08	0.10	0.056	0.045	(0.050)	0.011
266	22.17	0.10	0.056	0.045	(0.050)	0.011
267	22.25	0.10	0.056	0.045	(0.050)	0.011
268	22.33	0.07	0.037	(0.045)	0.033	0.004
269	22.42	0.07	0.037	(0.045)	0.033	0.004
270	22.50	0.07	0.037	(0.044)	0.033	0.004
271	22.58	0.07	0.037	(0.044)	0.033	0.004
272	22.67	0.07	0.037	(0.044)	0.033	0.004
273	22.75	0.07	0.037	(0.044)	0.033	0.004
274	22.83	0.07	0.037	(0.044)	0.033	0.004
275	22.92	0.07	0.037	(0.044)	0.033	0.004
276	23.00	0.07	0.037	(0.044)	0.033	0.004
277	23.08	0.07	0.037	(0.044)	0.033	0.004
278	23.17	0.07	0.037	(0.044)	0.033	0.004
279	23.25	0.07	0.037	(0.043)	0.033	0.004
280	23.33	0.07	0.037	(0.043)	0.033	0.004
281	23.42	0.07	0.037	(0.043)	0.033	0.004
282	23.50	0.07	0.037	(0.043)	0.033	0.004
283	23.58	0.07	0.037	(0.043)	0.033	0.004
284	23.67	0.07	0.037	(0.043)	0.033	0.004
285	23.75	0.07	0.037	(0.043)	0.033	0.004
286	23.83	0.07	0.037	(0.043)	0.033	0.004
287	23.92	0.07	0.037	(0.043)	0.033	0.004
288	24.00	0.07	0.037	(0.043)	0.033	0.004

(Loss Rate Not Used)

Sum = 100.0 Sum = 35.1

Flood volume = Effective rainfall 2.92(In)
times area 8.0(Ac.)/[(In)/(Ft.)] = 2.0(Ac.Ft)
Total soil loss = 1.72(In)
Total soil loss = 1.150(Ac.Ft)
Total rainfall = 4.64(In)
Flood volume = 85334.8 Cubic Feet

```
      Total soil loss =       50082.4 Cubic Feet
      -----------------------------------------------------------------
--
       Peak flow rate of this hydrograph =      4.517(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       0.0001      0.01  Q         |         |         |
|
    0+10       0.0002      0.02  Q         |         |         |
|
    0+15       0.0004      0.03  Q         |         |         |
|
    0+20       0.0006      0.03  Q         |         |         |
|
    0+25       0.0009      0.04  Q         |         |         |
|
    0+30       0.0012      0.04  Q         |         |         |
|
    0+35       0.0015      0.04  Q         |         |         |
|
    0+40       0.0019      0.05  Q         |         |         |
|
    0+45       0.0022      0.05  Q         |         |         |
|
    0+50       0.0025      0.05  Q         |         |         |
|
    0+55       0.0029      0.06  Q         |         |         |
|
    1+ 0       0.0033      0.06  Q         |         |         |
|
    1+ 5       0.0037      0.06  Q         |         |         |
|
    1+10       0.0040      0.05  Q         |         |         |
|
    1+15       0.0043      0.05  Q         |         |         |
|
    1+20       0.0047      0.05  Q         |         |         |
|
    1+25       0.0050      0.05  Q         |         |         |
|
    1+30       0.0053      0.05  Q         |         |         |
|
    1+35       0.0056      0.05  Q         |         |         |
|
    1+40       0.0059      0.05  Q         |         |         |
|
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1+45	0.0062	0.05	Q	|	|	|	|
1+50	0.0065	0.05	Q	|	|	|	|
1+55	0.0069	0.06	Q	|	|	|	|
2+ 0	0.0074	0.06	Q	|	|	|	|
2+ 5	0.0078	0.06	Q	|	|	|	|
2+10	0.0082	0.06	Q	|	|	|	|
2+15	0.0086	0.06	Q	|	|	|	|
2+20	0.0090	0.06	Q	|	|	|	|
2+25	0.0094	0.06	Q	|	|	|	|
2+30	0.0098	0.06	Q	|	|	|	|
2+35	0.0103	0.06	Q	|	|	|	|
2+40	0.0108	0.07	Q	|	|	|	|
2+45	0.0113	0.07	Q	|	|	|	|
2+50	0.0118	0.08	Q	|	|	|	|
2+55	0.0123	0.08	Q	|	|	|	|
3+ 0	0.0128	0.08	Q	|	|	|	|
3+ 5	0.0134	0.08	Q	|	|	|	|
3+10	0.0139	0.08	Q	|	|	|	|
3+15	0.0144	0.08	Q	|	|	|	|
3+20	0.0149	0.08	Q	|	|	|	|
3+25	0.0154	0.08	Q	|	|	|	|
3+30	0.0159	0.08	Q	|	|	|	|
3+35	0.0165	0.08	Q	|	|	|	|
3+40	0.0170	0.08	Q	|	|	|	|
3+45	0.0175	0.08	Q	|	|	|	|
3+50	0.0180	0.08	Q	|	|	|	|
3+55	0.0186	0.09	Q	|	|	|	|
4+ 0	0.0193	0.09	Q	|	|	|	|
4+ 5	0.0199	0.09	Q	|	|	|	|
4+10	0.0205	0.09	Q	|	|	|	|

```
       4+15        0.0211       0.09  Q          |          |          |
  |
       4+20        0.0218       0.09  Q          |          |          |
  |
       4+25        0.0225       0.10  Q          |          |          |
  |
       4+30        0.0232       0.10  Q          |          |          |
  |
       4+35        0.0239       0.11  Q          |          |          |
  |
       4+40        0.0246       0.11  Q          |          |          |
  |
       4+45        0.0254       0.11  Q          |          |          |
  |
       4+50        0.0263       0.14  Q          |          |          |
  |
       4+55        0.0277       0.20  Q          |          |          |
  |
       5+ 0        0.0293       0.23  Q          |          |          |
  |
       5+ 5        0.0306       0.20  Q          |          |          |
  |
       5+10        0.0314       0.12  Q          |          |          |
  |
       5+15        0.0321       0.10  Q          |          |          |
  |
       5+20        0.0328       0.10  Q          |          |          |
  |
       5+25        0.0335       0.10  Q          |          |          |
  |
       5+30        0.0342       0.11  Q          |          |          |
  |
       5+35        0.0352       0.15  Q          |          |          |
  |
       5+40        0.0369       0.24  Q          |          |          |
  |
       5+45        0.0387       0.26  VQ         |          |          |
  |
       5+50        0.0405       0.27  VQ         |          |          |
  |
       5+55        0.0424       0.28  VQ         |          |          |
  |
       6+ 0        0.0444       0.28  VQ         |          |          |
  |
       6+ 5        0.0466       0.32  VQ         |          |          |
  |
       6+10        0.0494       0.41  |Q         |          |          |
  |
       6+15        0.0524       0.44  |Q         |          |          |
  |
       6+20        0.0555       0.45  |Q         |          |          |
  |
       6+25        0.0586       0.45  |Q         |          |          |
  |
       6+30        0.0617       0.46  |Q         |          |          |
  |
       6+35        0.0652       0.50  |Q         |          |          |
  |
       6+40        0.0692       0.59  |VQ        |          |          |
  |
```

```
    6+45       0.0734      0.61  |VQ       |         |         |
|
    6+50       0.0777      0.62  |VQ       |         |         |
|
    6+55       0.0820      0.63  |VQ       |         |         |
|
    7+ 0       0.0863      0.63  |VQ       |         |         |
|
    7+ 5       0.0907      0.63  |VQ       |         |         |
|
    7+10       0.0951      0.64  |VQ       |         |         |
|
    7+15       0.0995      0.64  | Q       |         |         |
|
    7+20       0.1042      0.68  | Q       |         |         |
|
    7+25       0.1095      0.77  | VQ      |         |         |
|
    7+30       0.1150      0.80  | VQ      |         |         |
|
    7+35       0.1208      0.84  | VQ      |         |         |
|
    7+40       0.1273      0.93  | VQ      |         |         |
|
    7+45       0.1339      0.96  | VQ      |         |         |
|
    7+50       0.1408      1.01  | V Q     |         |         |
|
    7+55       0.1483      1.09  |  VQ     |         |         |
|
    8+ 0       0.1561      1.12  |  VQ     |         |         |
|
    8+ 5       0.1644      1.21  |  VQ     |         |         |
|
    8+10       0.1739      1.38  |  V Q    |         |         |
|
    8+15       0.1837      1.43  |  V Q    |         |         |
|
    8+20       0.1936      1.44  |  V Q    |         |         |
|
    8+25       0.2036      1.45  |   VQ    |         |         |
|
    8+30       0.2136      1.45  |   VQ    |         |         |
|
    8+35       0.2239      1.49  |   VQ    |         |         |
|
    8+40       0.2347      1.58  |   V Q   |         |         |
|
    8+45       0.2458      1.61  |    VQ   |         |         |
|
    8+50       0.2572      1.65  |    VQ   |         |         |
|
    8+55       0.2692      1.74  |    VQ   |         |         |
|
    9+ 0       0.2814      1.77  |    V Q  |         |         |
|
    9+ 5       0.2941      1.85  |     VQ  |         |         |
|
    9+10       0.3081      2.02  |     V Q |         |         |
|
```

```
    9+15       0.3223      2.07  |     V Q |         |         |
|
    9+20       0.3370      2.12  |     V Q |         |         |
|
    9+25       0.3522      2.22  |      VQ |         |         |
|
    9+30       0.3677      2.24  |      VQ |         |         |
|
    9+35       0.3834      2.29  |      V Q|         |         |
|
    9+40       0.3998      2.38  |       VQ|         |         |
|
    9+45       0.4163      2.40  |       VQ|         |         |
|
    9+50       0.4332      2.45  |       VQ|         |         |
|
    9+55       0.4507      2.54  |        VQ         |         |
|
   10+ 0       0.4683      2.56  |        VQ         |         |
|
   10+ 5       0.4843      2.31  |        Q|         |         |
|
   10+10       0.4962      1.73  |     Q   V         |         |
|
   10+15       0.5071      1.59  |     Q   V         |         |
|
   10+20       0.5178      1.55  |     Q   V         |         |
|
   10+25       0.5284      1.54  |     Q   V         |         |
|
   10+30       0.5390      1.54  |     Q   |V        |         |
|
   10+35       0.5509      1.73  |     Q   |V        |         |
|
   10+40       0.5657      2.15  |       Q |V        |         |
|
   10+45       0.5813      2.26  |        Q|V        |         |
|
   10+50       0.5971      2.30  |        Q| V       |         |
|
   10+55       0.6130      2.31  |        Q| V       |         |
|
   11+ 0       0.6289      2.31  |        Q| V       |         |
|
   11+ 5       0.6446      2.28  |        Q|  V      |         |
|
   11+10       0.6598      2.20  |       Q |  V      |         |
|
   11+15       0.6748      2.18  |       Q |  V      |         |
|
   11+20       0.6898      2.18  |       Q |   V     |         |
|
   11+25       0.7048      2.18  |       Q |   V     |         |
|
   11+30       0.7199      2.18  |       Q |   V     |         |
|
   11+35       0.7344      2.11  |       Q |   V     |         |
|
   11+40       0.7478      1.95  |      Q  |    V    |         |
|
```

```
   11+45       0.7610      1.91  |      Q  |    V    |         |
|
   11+50       0.7743      1.94  |      Q  |    V    |         |
|
   11+55       0.7882      2.02  |       Q |     V   |         |
|
   12+ 0       0.8023      2.04  |       Q |     V   |         |
|
   12+ 5       0.8182      2.31  |        Q|     V   |         |
|
   12+10       0.8382      2.91  |         |Q     V  |         |
|
   12+15       0.8593      3.06  |         | Q    V  |         |
|
   12+20       0.8809      3.14  |         | Q    V  |         |
|
   12+25       0.9032      3.24  |         | Q     V |         |
|
   12+30       0.9257      3.27  |         |  Q    V |         |
|
   12+35       0.9488      3.35  |         |  Q     V|         |
|
   12+40       0.9731      3.52  |         |   Q    V|         |
|
   12+45       0.9977      3.57  |         |   Q     V         |
|
   12+50       1.0226      3.62  |         |   Q     V         |
|
   12+55       1.0482      3.71  |         |   Q     |V        |
|
   13+ 0       1.0739      3.74  |         |   Q     |V        |
|
   13+ 5       1.1010      3.93  |         |    Q    | V       |
|
   13+10       1.1310      4.36  |         |      Q  |  V      |
|
   13+15       1.1618      4.47  |         |      Q  |  V      |
|
   13+20       1.1928      4.50  |         |      Q  |   V     |
|
   13+25       1.2239      4.51  |         |       Q |   V     |
|
   13+30       1.2550      4.52  |         |       Q |    V    |
|
   13+35       1.2833      4.11  |         |     Q   |     V   |
|
   13+40       1.3052      3.19  |         | Q       |     V   |
|
   13+45       1.3256      2.96  |         |Q        |      V  |
|
   13+50       1.3456      2.90  |         |Q        |      V  |
|
   13+55       1.3654      2.88  |         |Q        |      V  |
|
   14+ 0       1.3853      2.88  |         |Q        |       V |
|
   14+ 5       1.4062      3.03  |         | Q       |       V |
|
   14+10       1.4294      3.37  |         |  Q      |        V|
|
```

```
   14+15       1.4532      3.46  |         |  Q      |        V|
|
   14+20       1.4769      3.45  |         |  Q      |         V
|
   14+25       1.5002      3.37  |         |  Q      |         V
|
   14+30       1.5233      3.36  |         |  Q      |         |V
|
   14+35       1.5464      3.35  |         |  Q      |         |V
|
   14+40       1.5695      3.36  |         |  Q      |         | V
|
   14+45       1.5926      3.36  |         |  Q      |         | V
|
   14+50       1.6155      3.32  |         |  Q      |         | V
|
   14+55       1.6378      3.24  |         | Q       |         |  V
|
   15+ 0       1.6600      3.22  |         | Q       |         |  V
|
   15+ 5       1.6819      3.18  |         | Q       |         |   V
|
   15+10       1.7033      3.10  |         | Q       |         |   V
|
   15+15       1.7245      3.08  |         | Q       |         |    V
|
   15+20       1.7455      3.04  |         | Q       |         |    V
|
   15+25       1.7658      2.96  |         |Q        |         |     V
|
   15+30       1.7861      2.94  |         |Q        |         |     V
|
   15+35       1.8053      2.79  |         |Q        |         |     V
|
   15+40       1.8222      2.45  |        Q|         |         |      V
|
   15+45       1.8385      2.37  |        Q|         |         |      V
|
   15+50       1.8547      2.35  |        Q|         |         |      V
|
   15+55       1.8708      2.35  |        Q|         |         |       V
|
   16+ 0       1.8870      2.35  |        Q|         |         |       V
|
   16+ 5       1.8993      1.79  |      Q  |         |         |       V
|
   16+10       1.9030      0.54  | Q       |         |         |       V
|
   16+15       1.9045      0.22  Q         |         |         |       V
|
   16+20       1.9054      0.13  Q         |         |         |       V
|
   16+25       1.9061      0.11  Q         |         |         |       V
|
   16+30       1.9069      0.10  Q         |         |         |       V
|
   16+35       1.9075      0.09  Q         |         |         |       V
|
   16+40       1.9079      0.06  Q         |         |         |       V
|
```

```
 16+45      1.9082      0.05  Q         |         |         |       V
|
 16+50      1.9085      0.05  Q         |         |         |       V
|
 16+55      1.9088      0.05  Q         |         |         |       V
|
 17+ 0      1.9091      0.05  Q         |         |         |       V
|
 17+ 5      1.9098      0.10  Q         |         |         |       V
|
 17+10      1.9114      0.23  Q         |         |         |
V|
 17+15      1.9133      0.26  |Q        |         |         |
V|
 17+20      1.9152      0.28  |Q        |         |         |
V|
 17+25      1.9171      0.28  |Q        |         |         |
V|
 17+30      1.9190      0.28  |Q        |         |         |
V|
 17+35      1.9210      0.29  |Q        |         |         |
V|
 17+40      1.9230      0.29  |Q        |         |         |
V|
 17+45      1.9250      0.29  |Q        |         |         |
V|
 17+50      1.9268      0.26  |Q        |         |         |
V|
 17+55      1.9280      0.17  Q         |         |         |
V|
 18+ 0      1.9290      0.16  Q         |         |         |
V|
 18+ 5      1.9301      0.15  Q         |         |         |
V|
 18+10      1.9311      0.15  Q         |         |         |
V|
 18+15      1.9322      0.15  Q         |         |         |
V|
 18+20      1.9333      0.16  Q         |         |         |
V|
 18+25      1.9343      0.16  Q         |         |         |
V|
 18+30      1.9354      0.16  Q         |         |         |
V|
 18+35      1.9364      0.13  Q         |         |         |
V|
 18+40      1.9368      0.07  Q         |         |         |
V|
 18+45      1.9372      0.05  Q         |         |         |
V|
 18+50      1.9375      0.04  Q         |         |         |
V|
 18+55      1.9377      0.03  Q         |         |         |
V|
 19+ 0      1.9379      0.03  Q         |         |         |
V|
 19+ 5      1.9382      0.03  Q         |         |         |
V|
 19+10      1.9384      0.04  Q         |         |         |
V|
```

19+15	1.9388	0.04	Q	|	|	|	V|
19+20	1.9393	0.08	Q	|	|	|	V|
19+25	1.9404	0.16	Q	|	|	|	V|
19+30	1.9416	0.18	Q	|	|	|	V|
19+35	1.9426	0.15	Q	|	|	|	V|
19+40	1.9431	0.07	Q	|	|	|	V|
19+45	1.9435	0.05	Q	|	|	|	V|
19+50	1.9438	0.04	Q	|	|	|	V|
19+55	1.9440	0.03	Q	|	|	|	V|
20+ 0	1.9442	0.03	Q	|	|	|	V|
20+ 5	1.9445	0.04	Q	|	|	|	V|
20+10	1.9448	0.05	Q	|	|	|	V|
20+15	1.9451	0.05	Q	|	|	|	V|
20+20	1.9455	0.05	Q	|	|	|	V|
20+25	1.9459	0.05	Q	|	|	|	V|
20+30	1.9463	0.06	Q	|	|	|	V|
20+35	1.9467	0.06	Q	|	|	|	V|
20+40	1.9471	0.06	Q	|	|	|	V|
20+45	1.9475	0.06	Q	|	|	|	V|
20+50	1.9479	0.05	Q	|	|	|	V|
20+55	1.9481	0.04	Q	|	|	|	V|
21+ 0	1.9483	0.03	Q	|	|	|	V|
21+ 5	1.9486	0.04	Q	|	|	|	V|
21+10	1.9490	0.06	Q	|	|	|	V|
21+15	1.9495	0.07	Q	|	|	|	V|
21+20	1.9499	0.06	Q	|	|	|	V|
21+25	1.9502	0.04	Q	|	|	|	V|
21+30	1.9504	0.03	Q	|	|	|	V|
21+35	1.9507	0.04	Q	|	|	|	V|
21+40	1.9512	0.07	Q	|	|	|	V|

21+45	1.9517	0.08	Q	|	|	|	V|
21+50	1.9522	0.07	Q	|	|	|	V|
21+55	1.9524	0.04	Q	|	|	|	V|
22+ 0	1.9527	0.03	Q	|	|	|	V|
22+ 5	1.9530	0.04	Q	|	|	|	V|
22+10	1.9535	0.08	Q	|	|	|	V|
22+15	1.9541	0.08	Q	|	|	|	V|
22+20	1.9546	0.07	Q	|	|	|	V|
22+25	1.9548	0.04	Q	|	|	|	V|
22+30	1.9551	0.03	Q	|	|	|	V|
22+35	1.9553	0.03	Q	|	|	|	V|
22+40	1.9555	0.03	Q	|	|	|	V|
22+45	1.9557	0.03	Q	|	|	|	V|
22+50	1.9559	0.03	Q	|	|	|	V|
22+55	1.9561	0.03	Q	|	|	|	V|
23+ 0	1.9563	0.03	Q	|	|	|	V|
23+ 5	1.9565	0.03	Q	|	|	|	V|
23+10	1.9567	0.03	Q	|	|	|	V|
23+15	1.9569	0.03	Q	|	|	|	V|
23+20	1.9571	0.03	Q	|	|	|	V|
23+25	1.9574	0.03	Q	|	|	|	V|
23+30	1.9576	0.03	Q	|	|	|	V|
23+35	1.9578	0.03	Q	|	|	|	V|
23+40	1.9580	0.03	Q	|	|	|	V|
23+45	1.9582	0.03	Q	|	|	|	V|
23+50	1.9584	0.03	Q	|	|	|	V|
23+55	1.9586	0.03	Q	|	|	|	V|
24+ 0	1.9588	0.03	Q	|	|	|	V|
24+ 5	1.9590	0.02	Q	|	|	|	V|
24+10	1.9590	0.01	Q	|	|	|	V|

```
    24+15       1.9590      0.00  Q         |         |         |
V|
    24+20       1.9590      0.00  Q         |         |         |
V|
    24+25       1.9590      0.00  Q         |         |         |
V|
-----------------------------------------------------------------------
```

Proposed Condition SCS Hydrograph Runoff

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

Study date 11/09/21 File: moval33post12.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area A

Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) = 0.006 Sq. Mi.
Length along longest watercourse = 1159.00(Ft.)
Length along longest watercourse measured to centroid = 637.00 (Ft.)
Length along longest watercourse = 0.220 Mi.
Length along longest watercourse measured to centroid = 0.121 Mi.
Difference in elevation = 70.00(Ft.)
Slope along watercourse = 318.8956 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.030 Hr.
Lag time = 1.82 Min.
25% of lag time = 0.45 Min.
40% of lag time = 0.73 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]

```
        4.00              0.47                    1.86

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
              4.00              1.19                    4.76

      STORM EVENT (YEAR) =    2.00
      Area Averaged 2-Year Rainfall =    0.466(In)
      Area Averaged 100-Year Rainfall =    1.190(In)

      Point rain (area averaged) =    0.466(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    0.466(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
           4.000           69.00         0.650
       Total Area Entered =      4.00(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
      69.0  69.0      0.373     0.650        0.155       1.000
0.155
                                                              Sum (F) =
0.155
      Area averaged mean soil loss (F) (In/Hr) =  0.155
      Minimum soil loss rate ((In/Hr)) =  0.077
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.380
      ------------------------------------------------------------------
---
      Slope of intensity-duration curve for a 1 hour storm =0.5500
      ------------------------------------------------------------------
----


                  U n i t  H y d r o g r a p h
                        FOOTHILL S-Curve
      ------------------------------------------------------------------
--
                  Unit Hydrograph Data
      ------------------------------------------------------------------
---
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                            Graph %           (CFS)
      ------------------------------------------------------------------
---
          1   0.083        275.097         54.570             2.200
          2   0.167        550.195         42.583             1.717
          3   0.250        825.292          2.846             0.115
                                     Sum = 100.000   Sum=       4.031
-----------------------------------------------------------------------


 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   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)          Max   |   Low        (In/Hr)
   1   0.08     3.30      0.185        (  0.155)       0.070        0.114
   2   0.17     4.20      0.235        (  0.155)       0.089        0.146
   3   0.25     4.40      0.246        (  0.155)       0.093        0.153
   4   0.33     4.80      0.268        (  0.155)       0.102        0.166
   5   0.42     5.20      0.291        (  0.155)       0.110        0.180
   6   0.50     6.20      0.347        (  0.155)       0.132        0.215
   7   0.58     6.80      0.380        (  0.155)       0.144        0.236
   8   0.67     8.80      0.492           0.155    (  0.187)        0.337
   9   0.75    13.90      0.777           0.155    (  0.295)        0.623
  10   0.83    31.40      1.756           0.155    (  0.667)        1.601
  11   0.92     7.20      0.403        (  0.155)       0.153        0.250
  12   1.00     3.80      0.212        (  0.155)       0.081        0.132
             (Loss Rate Not Used)
     Sum =     100.0                                  Sum =     4.2
      Flood volume = Effective rainfall      0.35(In)
       times area       4.0(Ac.)/[(In)/(Ft.)] =       0.1(Ac.Ft)
      Total soil loss =      0.12(In)
      Total soil loss =     0.040(Ac.Ft)
      Total rainfall =      0.47(In)
      Flood volume =        5024.3 Cubic Feet
      Total soil loss =        1741.7 Cubic Feet
      ------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =      4.632(CFS)
      ------------------------------------------------------------------
--
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                          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        2.5       5.0       7.5
10.0

-----------------------------------------------------------------------
    0+ 5       0.0017      0.25  VQ        |         |         |
|
    0+10       0.0053      0.52  |VQ       |         |         |
|
    0+15       0.0094      0.60  | QV      |         |         |
|
    0+20       0.0139      0.64  | Q V     |         |         |
|
    0+25       0.0187      0.70  | Q   V   |         |         |
|
    0+30       0.0242      0.80  |  Q    V |         |         |
|
    0+35       0.0305      0.91  |  Q      V         |         |
|
    0+40       0.0385      1.17  |   Q     |  V      |         |
|
```

```
      0+45       0.0522      1.98  |      Q  |        V |         |
|
      0+50       0.0841      4.63  |         |        Q |        V|
|
      0+55       0.1073      3.37  |         |  Q       |         |      V
|
      1+ 0       0.1135      0.90  |  Q      |          |         |
V|
      1+ 5       0.1152      0.25  |Q        |          |         |
V|
      1+10       0.1153      0.02  Q         |          |         |
V|
-----------------------------------------------------------------------
```

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

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Study date 11/09/21 File: moval33post15.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area A

Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) = 0.006 Sq. Mi.
Length along longest watercourse = 1159.00(Ft.)
Length along longest watercourse measured to centroid = 637.00 (Ft.)
Length along longest watercourse = 0.220 Mi.
Length along longest watercourse measured to centroid = 0.121 Mi.
Difference in elevation = 70.00(Ft.)
Slope along watercourse = 318.8956 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.030 Hr.
Lag time = 1.82 Min.
25% of lag time = 0.45 Min.
40% of lag time = 0.73 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]

```
        4.00             0.47                   1.86

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        4.00             1.19                   4.76

STORM EVENT (YEAR) =    5.00
Area Averaged 2-Year Rainfall =    0.466(In)
Area Averaged 100-Year Rainfall =    1.190(In)

Point rain (area averaged) =    0.636(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    0.636(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     4.000           69.00         0.650
 Total Area Entered =      4.00(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
69.0  69.0      0.373     0.650        0.155       1.000
0.155
                                                Sum (F) =
0.155
Area averaged mean soil loss (F) (In/Hr) =  0.155
Minimum soil loss rate ((In/Hr)) =  0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.380
------------------------------------------------------------------
---
Slope of intensity-duration curve for a 1 hour storm =0.5500
------------------------------------------------------------------
----

            U n i t  H y d r o g r a p h
                  FOOTHILL S-Curve
------------------------------------------------------------------
--
            Unit Hydrograph Data
------------------------------------------------------------------
---
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                            Graph %           (CFS)
------------------------------------------------------------------
---
    1   0.083        275.097         54.570            2.200
    2   0.167        550.195         42.583            1.717
    3   0.250        825.292          2.846            0.115
                               Sum = 100.000   Sum=       4.031
----------------------------------------------------------------------
```

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   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)          Max   |   Low        (In/Hr)
   1   0.08     3.30      0.252        (  0.155)       0.096        0.156
   2   0.17     4.20      0.320        (  0.155)       0.122        0.199
   3   0.25     4.40      0.336        (  0.155)       0.128        0.208
   4   0.33     4.80      0.366        (  0.155)       0.139        0.227
   5   0.42     5.20      0.397        (  0.155)       0.151        0.246
   6   0.50     6.20      0.473           0.155    (  0.180)        0.318
   7   0.58     6.80      0.519           0.155    (  0.197)        0.364
   8   0.67     8.80      0.671           0.155    (  0.255)        0.516
   9   0.75    13.90      1.060           0.155    (  0.403)        0.905
  10   0.83    31.40      2.395           0.155    (  0.910)        2.240
  11   0.92     7.20      0.549           0.155    (  0.209)        0.394
  12   1.00     3.80      0.290        (  0.155)       0.110        0.180
              (Loss Rate Not Used)
     Sum =     100.0                                 Sum =     6.0
      Flood volume = Effective rainfall      0.50(In)
       times area       4.0(Ac.)/[(In)/(Ft.)] =      0.2(Ac.Ft)
      Total soil loss =      0.14(In)
      Total soil loss =     0.046(Ac.Ft)
      Total rainfall =      0.64(In)
      Flood volume =        7203.8 Cubic Feet
      Total soil loss =       2024.4 Cubic Feet
      ------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =      6.545(CFS)
      ------------------------------------------------------------------
--
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                          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        2.5       5.0       7.5
10.0

-----------------------------------------------------------------------
    0+ 5       0.0024      0.34  VQ        |         |         |
|
    0+10       0.0072      0.71  |VQ       |         |         |
|
    0+15       0.0128      0.82  |  Q      |         |         |
|
    0+20       0.0189      0.88  |  QV     |         |         |
|
    0+25       0.0255      0.95  |  Q  V   |         |         |
|
    0+30       0.0334      1.15  |   Q   V |         |         |
|
    0+35       0.0429      1.38  |    Q    V         |         |
|
    0+40       0.0553      1.80  |      Q  |  V      |         |
|
```

```
      0+45        0.0754       2.92  |         |Q       V |         |
|
      0+50        0.1204       6.54  |         |          |     Q  V|
|
      0+55        0.1536       4.82  |         |         Q|         |      V
|
      1+ 0        0.1628       1.33  |    Q    |          |         |
V|
      1+ 5        0.1652       0.35  |Q        |          |         |
V|
      1+10        0.1654       0.02  Q         |          |         |
V|
-----------------------------------------------------------------------
```

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

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Study date 11/09/21 File: moval33post110.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area A

Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) = 0.006 Sq. Mi.
Length along longest watercourse = 1159.00(Ft.)
Length along longest watercourse measured to centroid = 637.00 (Ft.)
Length along longest watercourse = 0.220 Mi.
Length along longest watercourse measured to centroid = 0.121 Mi.
Difference in elevation = 70.00(Ft.)
Slope along watercourse = 318.8956 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.030 Hr.
Lag time = 1.82 Min.
25% of lag time = 0.45 Min.
40% of lag time = 0.73 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]

4.00 0.47 1.86

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.00	1.19	4.76

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.466(In)
Area Averaged 100-Year Rainfall = 1.190(In)

Point rain (area averaged) = 0.764(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 0.764(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
4.000	69.00	0.650

Total Area Entered = 4.00(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.650	0.155	1.000	0.155

Sum (F) = 0.155

Area averaged mean soil loss (F) (In/Hr) = 0.155
Minimum soil loss rate ((In/Hr)) = 0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

Slope of intensity-duration curve for a 1 hour storm =0.5500

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	275.097	54.570	2.200
2	0.167	550.195	42.583	1.717
3	0.250	825.292	2.846	0.115
			Sum = 100.000	Sum= 4.031

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   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)          Max    |   Low        (In/Hr)
   1   0.08     3.30      0.302       (  0.155)       0.115        0.188
   2   0.17     4.20      0.385       (  0.155)       0.146        0.239
   3   0.25     4.40      0.403       (  0.155)       0.153        0.250
   4   0.33     4.80      0.440          0.155    (  0.167)        0.285
   5   0.42     5.20      0.477          0.155    (  0.181)        0.322
   6   0.50     6.20      0.568          0.155    (  0.216)        0.414
   7   0.58     6.80      0.623          0.155    (  0.237)        0.469
   8   0.67     8.80      0.807          0.155    (  0.307)        0.652
   9   0.75    13.90      1.274          0.155    (  0.484)        1.119
  10   0.83    31.40      2.878          0.155    (  1.094)        2.723
  11   0.92     7.20      0.660          0.155    (  0.251)        0.505
  12   1.00     3.80      0.348       (  0.155)       0.132        0.216
             (Loss Rate Not Used)
     Sum =     100.0                                  Sum =     7.4
      Flood volume = Effective rainfall      0.62(In)
       times area       4.0(Ac.)/[(In)/(Ft.)] =      0.2(Ac.Ft)
      Total soil loss =      0.15(In)
      Total soil loss =     0.050(Ac.Ft)
      Total rainfall =      0.76(In)
      Flood volume =        8931.5 Cubic Feet
      Total soil loss =       2159.3 Cubic Feet
      ------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =      7.992(CFS)
      ------------------------------------------------------------------
--
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                          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        2.5       5.0       7.5
10.0

-----------------------------------------------------------------------
    0+ 5      0.0028      0.41  VQ        |         |         |
|
    0+10      0.0087      0.85  |V Q      |         |         |
|
    0+15      0.0154      0.98  |  Q      |         |         |
|
    0+20      0.0229      1.08  |   Q     |         |         |
|
    0+25      0.0314      1.23  |   Q V   |         |         |
|
    0+30      0.0417      1.50  |    Q  V |         |         |
|
    0+35      0.0539      1.78  |      Q  V         |         |
|
    0+40      0.0697      2.29  |        Q|  V      |         |
|
```

```
     0+45       0.0947      3.64  |         |   Q   V |         |
|
     0+50       0.1498      7.99  |         |         |        V|Q
|
     0+55       0.1905      5.92  |         |         |  Q      |       V
|
     1+ 0       0.2019      1.66  |     Q   |         |         |
V|
     1+ 5       0.2049      0.43  |Q        |         |         |
V|
     1+10       0.2050      0.02  Q         |         |         |
V
-----------------------------------------------------------------------
```

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

          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
8.2
                Study date  11/09/21 File: moval33post1100.out

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


      Program License Serial Number 6232

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

       English Units used in output format



      ------------------------------------------------------------------
---
      Gateway Heights
      Proposed Condition
      Unit Hydrograph
      Area A
      ------------------------------------------------------------------
--
      Drainage Area =       4.00(Ac.)  =      0.006 Sq. Mi.
      Drainage Area for Depth-Area Areal Adjustment =       4.00(Ac.)  =
0.006 Sq. Mi.
      Length along longest watercourse =    1159.00(Ft.)
      Length along longest watercourse measured to centroid =     637.00
(Ft.)
      Length along longest watercourse =      0.220 Mi.
      Length along longest watercourse measured to centroid =      0.121
Mi.
      Difference in elevation =      70.00(Ft.)
      Slope along watercourse =    318.8956 Ft./Mi.
      Average Manning's 'N' = 0.015
      Lag time =    0.030 Hr.
      Lag time =     1.82 Min.
      25% of lag time =     0.45 Min.
      40% of lag time =     0.73 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]
```

```
        4.00              0.47                    1.86

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        4.00              1.19                    4.76

      STORM EVENT (YEAR) =  100.00
      Area Averaged 2-Year Rainfall =    0.466(In)
      Area Averaged 100-Year Rainfall =    1.190(In)

      Point rain (area averaged) =    1.190(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    1.190(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
         4.000           69.00         0.650
       Total Area Entered =      4.00(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
      69.0  84.4      0.194     0.650        0.080       1.000
0.080
                                                           Sum (F) =
0.080
      Area averaged mean soil loss (F) (In/Hr) =  0.080
      Minimum soil loss rate ((In/Hr)) =  0.040
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.380
      ------------------------------------------------------------------
---
      Slope of intensity-duration curve for a 1 hour storm =0.5500
      ------------------------------------------------------------------
----

                  U n i t  H y d r o g r a p h
                        FOOTHILL S-Curve
      ------------------------------------------------------------------
--
                  Unit Hydrograph Data
      ------------------------------------------------------------------
---
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                           Graph %           (CFS)
      ------------------------------------------------------------------
---
          1   0.083        275.097         54.570              2.200
          2   0.167        550.195         42.583              1.717
          3   0.250        825.292          2.846              0.115
                                      Sum = 100.000   Sum=       4.031
-----------------------------------------------------------------------


 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   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)          Max   |   Low         (In/Hr)
    1   0.08     3.30      0.471           0.080    (  0.179)        0.391
    2   0.17     4.20      0.600           0.080    (  0.228)        0.519
    3   0.25     4.40      0.628           0.080    (  0.239)        0.548
    4   0.33     4.80      0.685           0.080    (  0.260)        0.605
    5   0.42     5.20      0.743           0.080    (  0.282)        0.662
    6   0.50     6.20      0.885           0.080    (  0.336)        0.805
    7   0.58     6.80      0.971           0.080    (  0.369)        0.891
    8   0.67     8.80      1.257           0.080    (  0.478)        1.176
    9   0.75    13.90      1.985           0.080    (  0.754)        1.904
   10   0.83    31.40      4.484           0.080    (  1.704)        4.403
   11   0.92     7.20      1.028           0.080    (  0.391)        0.948
   12   1.00     3.80      0.543           0.080    (  0.206)        0.462
             (Loss Rate Not Used)
     Sum =     100.0                                     Sum =    13.3
      Flood volume = Effective rainfall      1.11(In)
       times area       4.0(Ac.)/[(In)/(Ft.)] =      0.4(Ac.Ft)
      Total soil loss =      0.08(In)
      Total soil loss =     0.027(Ac.Ft)
      Total rainfall =      1.19(In)
      Flood volume =       16110.1 Cubic Feet
      Total soil loss =       1168.0 Cubic Feet
      ------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =     13.098(CFS)
      ------------------------------------------------------------------
--
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                          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       0.0059      0.86  VQ        |         |         |
|
    0+10       0.0184      1.81  |V Q      |         |         |
|
    0+15       0.0332      2.14  |  VQ     |         |         |
|
    0+20       0.0492      2.33  |   QV    |         |         |
|
    0+25       0.0669      2.56  |    Q V  |         |         |
|
    0+30       0.0874      2.98  |    Q   V|         |         |
|
    0+35       0.1109      3.42  |     Q   |V        |         |
|
    0+40       0.1399      4.21  |       Q |    V    |         |
|
```

```
      0+45       0.1834      6.31  |         | Q      V|         |
|
      0+50       0.2736     13.10  |         |         |     Q  V|
|
      0+55       0.3416      9.87  |         |        Q|         |     V
|
      1+ 0       0.3633      3.15  |     Q   |         |         |
V|
      1+ 5       0.3695      0.90  |Q        |         |         |
V|
      1+10       0.3698      0.05  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 11/09/21 File: moval33post32.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area A

Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) = 0.006 Sq. Mi.
Length along longest watercourse = 1159.00(Ft.)
Length along longest watercourse measured to centroid = 637.00 (Ft.)
Length along longest watercourse = 0.220 Mi.
Length along longest watercourse measured to centroid = 0.121 Mi.
Difference in elevation = 70.00(Ft.)
Slope along watercourse = 318.8956 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.030 Hr.
Lag time = 1.82 Min.
25% of lag time = 0.45 Min.
40% of lag time = 0.73 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]

4.00	0.80	3.20

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.00	1.89	7.56

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 0.799(In)
Area Averaged 100-Year Rainfall = 1.890(In)

Point rain (area averaged) = 0.799(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 0.799(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
4.000	69.00	0.650

Total Area Entered = 4.00(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.650	0.155	1.000	0.155

Sum (F) = 0.155

Area averaged mean soil loss (F) (In/Hr) = 0.155
Minimum soil loss rate ((In/Hr)) = 0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

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	275.097	54.570	2.200
2	0.167	550.195	42.583	1.717
3	0.250	825.292	2.846	0.115
			Sum = 100.000	Sum= 4.031

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 Pattern Storm Rain Loss rate(In./Hr) Effective

	(Hr.)	Percent	(In/Hr)	Max |	Low	(In/Hr)
1	0.08	1.30	0.125	(0.155)	0.047	0.077
2	0.17	1.30	0.125	(0.155)	0.047	0.077
3	0.25	1.10	0.105	(0.155)	0.040	0.065
4	0.33	1.50	0.144	(0.155)	0.055	0.089
5	0.42	1.50	0.144	(0.155)	0.055	0.089
6	0.50	1.80	0.173	(0.155)	0.066	0.107
7	0.58	1.50	0.144	(0.155)	0.055	0.089
8	0.67	1.80	0.173	(0.155)	0.066	0.107
9	0.75	1.80	0.173	(0.155)	0.066	0.107
10	0.83	1.50	0.144	(0.155)	0.055	0.089
11	0.92	1.60	0.153	(0.155)	0.058	0.095
12	1.00	1.80	0.173	(0.155)	0.066	0.107
13	1.08	2.20	0.211	(0.155)	0.080	0.131
14	1.17	2.20	0.211	(0.155)	0.080	0.131
15	1.25	2.20	0.211	(0.155)	0.080	0.131
16	1.33	2.00	0.192	(0.155)	0.073	0.119
17	1.42	2.60	0.249	(0.155)	0.095	0.155
18	1.50	2.70	0.259	(0.155)	0.098	0.161
19	1.58	2.40	0.230	(0.155)	0.087	0.143
20	1.67	2.70	0.259	(0.155)	0.098	0.161
21	1.75	3.30	0.316	(0.155)	0.120	0.196
22	1.83	3.10	0.297	(0.155)	0.113	0.184
23	1.92	2.90	0.278	(0.155)	0.106	0.172
24	2.00	3.00	0.288	(0.155)	0.109	0.178
25	2.08	3.10	0.297	(0.155)	0.113	0.184
26	2.17	4.20	0.403	(0.155)	0.153	0.250
27	2.25	5.00	0.479	0.155	(0.182)	0.325
28	2.33	3.50	0.336	(0.155)	0.128	0.208
29	2.42	6.80	0.652	0.155	(0.248)	0.497
30	2.50	7.30	0.700	0.155	(0.266)	0.545
31	2.58	8.20	0.786	0.155	(0.299)	0.631
32	2.67	5.90	0.566	0.155	(0.215)	0.411
33	2.75	2.00	0.192	(0.155)	0.073	0.119
34	2.83	1.80	0.173	(0.155)	0.066	0.107
35	2.92	1.80	0.173	(0.155)	0.066	0.107
36	3.00	0.60	0.058	(0.155)	0.022	0.036

(Loss Rate Not Used)

Sum = 100.0 Sum = 6.4

Flood volume = Effective rainfall 0.53(In)
times area 4.0(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)
Total soil loss = 0.27(In)
Total soil loss = 0.089(Ac.Ft)
Total rainfall = 0.80(In)
Flood volume = 7720.4 Cubic Feet
Total soil loss = 3880.9 Cubic Feet

--

Peak flow rate of this hydrograph = 2.383(CFS)

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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       0.0012      0.17  Q         |         |         |
|
    0+10       0.0033      0.30  VQ        |         |         |
|
    0+15       0.0052      0.29  |Q        |         |         |
|
    0+20       0.0074      0.32  |Q        |         |         |
|
    0+25       0.0099      0.36  |QV       |         |         |
|
    0+30       0.0126      0.40  |QV       |         |         |
|
    0+35       0.0153      0.39  |Q V      |         |         |
|
    0+40       0.0181      0.40  |Q  V     |         |         |
|
    0+45       0.0210      0.43  |Q  V     |         |         |
|
    0+50       0.0237      0.39  |Q   V    |         |         |
|
    0+55       0.0263      0.37  |Q   V    |         |         |
|
    1+ 0       0.0291      0.41  |Q    V   |         |         |
|
    1+ 5       0.0324      0.48  |Q     V  |         |         |
|
    1+10       0.0361      0.52  | Q     V |         |         |
|
    1+15       0.0397      0.53  | Q     V |         |         |
|
    1+20       0.0431      0.50  | Q      V|         |         |
|
    1+25       0.0470      0.56  | Q       V         |         |
|
    1+30       0.0514      0.63  | Q       |V        |         |
|
    1+35       0.0555      0.61  | Q       | V       |         |
|
    1+40       0.0598      0.62  | Q       |  V      |         |
|
    1+45       0.0648      0.72  | Q       |   V     |         |
|
    1+50       0.0700      0.76  |  Q      |    V    |         |
|
    1+55       0.0750      0.72  | Q       |     V   |         |
|
    2+ 0       0.0798      0.71  | Q       |       V |         |
|
    2+ 5       0.0849      0.73  | Q       |        V|         |
|
    2+10       0.0910      0.89  |  Q      |         V         |
|
    2+15       0.0990      1.16  |   Q     |         | V       |
|
    2+20       0.1062      1.04  |   Q     |         |  V      |
```

```
|
    2+25       0.1165      1.49  |    Q     |         |     V   |
|
    2+30       0.1308      2.08  |       Q  |         |        V|
|
    2+35       0.1472      2.38  |        Q|         |         |  V
|
    2+40       0.1613      2.05  |       Q  |         |         |     V
|
    2+45       0.1685      1.04  |   Q      |         |         |       V
|
    2+50       0.1718      0.49  |Q         |         |         |       V
|
    2+55       0.1748      0.43  |Q         |         |         |
V|
    3+ 0       0.1767      0.27  |Q         |         |         |
V|
    3+ 5       0.1772      0.07  Q          |         |         |
V|
    3+10       0.1772      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 11/09/21 File: moval33post35.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area A

Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) = 0.006 Sq. Mi.
Length along longest watercourse = 1159.00(Ft.)
Length along longest watercourse measured to centroid = 637.00 (Ft.)
Length along longest watercourse = 0.220 Mi.
Length along longest watercourse measured to centroid = 0.121 Mi.
Difference in elevation = 70.00(Ft.)
Slope along watercourse = 318.8956 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.030 Hr.
Lag time = 1.82 Min.
25% of lag time = 0.45 Min.
40% of lag time = 0.73 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]

4.00 0.80 3.20

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.00	1.89	7.56

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 0.799(In)
Area Averaged 100-Year Rainfall = 1.890(In)

Point rain (area averaged) = 1.055(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.055(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
4.000	69.00	0.650

Total Area Entered = 4.00(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.650	0.155	1.000	0.155
					Sum (F) =	0.155

Area averaged mean soil loss (F) (In/Hr) = 0.155
Minimum soil loss rate ((In/Hr)) = 0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

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	275.097	54.570	2.200
2	0.167	550.195	42.583	1.717
3	0.250	825.292	2.846	0.115
			Sum = 100.000	Sum= 4.031

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 Pattern Storm Rain Loss rate(In./Hr) Effective

	(Hr.)	Percent	(In/Hr)	Max |	Low	(In/Hr)
1	0.08	1.30	0.165	(0.155)	0.063	0.102
2	0.17	1.30	0.165	(0.155)	0.063	0.102
3	0.25	1.10	0.139	(0.155)	0.053	0.086
4	0.33	1.50	0.190	(0.155)	0.072	0.118
5	0.42	1.50	0.190	(0.155)	0.072	0.118
6	0.50	1.80	0.228	(0.155)	0.087	0.141
7	0.58	1.50	0.190	(0.155)	0.072	0.118
8	0.67	1.80	0.228	(0.155)	0.087	0.141
9	0.75	1.80	0.228	(0.155)	0.087	0.141
10	0.83	1.50	0.190	(0.155)	0.072	0.118
11	0.92	1.60	0.202	(0.155)	0.077	0.126
12	1.00	1.80	0.228	(0.155)	0.087	0.141
13	1.08	2.20	0.278	(0.155)	0.106	0.173
14	1.17	2.20	0.278	(0.155)	0.106	0.173
15	1.25	2.20	0.278	(0.155)	0.106	0.173
16	1.33	2.00	0.253	(0.155)	0.096	0.157
17	1.42	2.60	0.329	(0.155)	0.125	0.204
18	1.50	2.70	0.342	(0.155)	0.130	0.212
19	1.58	2.40	0.304	(0.155)	0.115	0.188
20	1.67	2.70	0.342	(0.155)	0.130	0.212
21	1.75	3.30	0.418	0.155	(0.159)	0.263
22	1.83	3.10	0.392	(0.155)	0.149	0.243
23	1.92	2.90	0.367	(0.155)	0.139	0.228
24	2.00	3.00	0.380	(0.155)	0.144	0.235
25	2.08	3.10	0.392	(0.155)	0.149	0.243
26	2.17	4.20	0.531	0.155	(0.202)	0.377
27	2.25	5.00	0.633	0.155	(0.240)	0.478
28	2.33	3.50	0.443	0.155	(0.168)	0.288
29	2.42	6.80	0.860	0.155	(0.327)	0.706
30	2.50	7.30	0.924	0.155	(0.351)	0.769
31	2.58	8.20	1.038	0.155	(0.394)	0.883
32	2.67	5.90	0.747	0.155	(0.284)	0.592
33	2.75	2.00	0.253	(0.155)	0.096	0.157
34	2.83	1.80	0.228	(0.155)	0.087	0.141
35	2.92	1.80	0.228	(0.155)	0.087	0.141
36	3.00	0.60	0.076	(0.155)	0.029	0.047
		(Loss Rate Not Used)				
Sum =		100.0			Sum =	8.7

Flood volume = Effective rainfall 0.73(In)
times area 4.0(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)
Total soil loss = 0.33(In)
Total soil loss = 0.109(Ac.Ft)
Total rainfall = 1.05(In)
Flood volume = 10567.3 Cubic Feet
Total soil loss = 4744.3 Cubic Feet

Peak flow rate of this hydrograph = 3.345(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       0.0015      0.22  Q         |         |         |
|
    0+10       0.0043      0.40  VQ        |         |         |
|
    0+15       0.0069      0.38  |Q        |         |         |
|
    0+20       0.0098      0.42  |Q        |         |         |
|
    0+25       0.0130      0.47  |QV       |         |         |
|
    0+30       0.0166      0.53  | Q       |         |         |
|
    0+35       0.0202      0.52  | QV      |         |         |
|
    0+40       0.0238      0.53  | QV      |         |         |
|
    0+45       0.0277      0.57  | Q V     |         |         |
|
    0+50       0.0313      0.52  | Q  V    |         |         |
|
    0+55       0.0347      0.49  |Q   V    |         |         |
|
    1+ 0       0.0384      0.54  | Q   V   |         |         |
|
    1+ 5       0.0428      0.64  | Q    V  |         |         |
|
    1+10       0.0476      0.69  | Q    V  |         |         |
|
    1+15       0.0524      0.70  | Q     V |         |         |
|
    1+20       0.0569      0.66  | Q      V|         |         |
|
    1+25       0.0620      0.74  | Q       V         |         |
|
    1+30       0.0678      0.83  |  Q      |V        |         |
|
    1+35       0.0733      0.80  |  Q      | V       |         |
|
    1+40       0.0789      0.81  |  Q      |  V      |         |
|
    1+45       0.0855      0.96  |  Q      |   V     |         |
|
    1+50       0.0925      1.01  |   Q     |    V    |         |
|
    1+55       0.0990      0.95  |  Q      |     V   |         |
|
    2+ 0       0.1055      0.94  |  Q      |      V  |         |
|
    2+ 5       0.1121      0.97  |  Q      |       V |         |
|
    2+10       0.1209      1.27  |    Q    |        V|         |
|
    2+15       0.1328      1.73  |     Q   |         |V        |
|
    2+20       0.1431      1.50  |    Q    |         |  V      |
```

```
|
    2+25       0.1576      2.10  |       Q |         |    V    |
|
    2+30       0.1779      2.94  |         |Q        |        V|
|
    2+35       0.2009      3.35  |         |  Q      |         |  V
|
    2+40       0.2209      2.91  |         |Q        |         |     V
|
    2+45       0.2310      1.46  |    Q    |         |         |       V
|
    2+50       0.2355      0.65  | Q       |         |         |       V
|
    2+55       0.2394      0.57  | Q       |         |         |
V|
    3+ 0       0.2419      0.36  |Q        |         |         |
V|
    3+ 5       0.2426      0.10  Q         |         |         |
V|
    3+10       0.2426      0.01  Q         |         |         |
V
-----------------------------------------------------------------------
```

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

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Study date 11/09/21 File: moval33post310.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area A

Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) = 0.006 Sq. Mi.
Length along longest watercourse = 1159.00(Ft.)
Length along longest watercourse measured to centroid = 637.00 (Ft.)
Length along longest watercourse = 0.220 Mi.
Length along longest watercourse measured to centroid = 0.121 Mi.
Difference in elevation = 70.00(Ft.)
Slope along watercourse = 318.8956 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.030 Hr.
Lag time = 1.82 Min.
25% of lag time = 0.45 Min.
40% of lag time = 0.73 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]

4.00 0.80 3.20

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.00	1.89	7.56

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.799(In)
Area Averaged 100-Year Rainfall = 1.890(In)

Point rain (area averaged) = 1.248(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.248(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
4.000	69.00	0.650

Total Area Entered = 4.00(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.650	0.155	1.000	0.155
					Sum (F) =	0.155

Area averaged mean soil loss (F) (In/Hr) = 0.155
Minimum soil loss rate ((In/Hr)) = 0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

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	275.097	54.570	2.200
2	0.167	550.195	42.583	1.717
3	0.250	825.292	2.846	0.115
			Sum = 100.000	Sum= 4.031

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 Pattern Storm Rain Loss rate(In./Hr) Effective

	(Hr.)	Percent	(In/Hr)	Max	Low	(In/Hr)
1	0.08	1.30	0.195	(0.155)	0.074	0.121
2	0.17	1.30	0.195	(0.155)	0.074	0.121
3	0.25	1.10	0.165	(0.155)	0.063	0.102
4	0.33	1.50	0.225	(0.155)	0.085	0.139
5	0.42	1.50	0.225	(0.155)	0.085	0.139
6	0.50	1.80	0.270	(0.155)	0.102	0.167
7	0.58	1.50	0.225	(0.155)	0.085	0.139
8	0.67	1.80	0.270	(0.155)	0.102	0.167
9	0.75	1.80	0.270	(0.155)	0.102	0.167
10	0.83	1.50	0.225	(0.155)	0.085	0.139
11	0.92	1.60	0.240	(0.155)	0.091	0.149
12	1.00	1.80	0.270	(0.155)	0.102	0.167
13	1.08	2.20	0.329	(0.155)	0.125	0.204
14	1.17	2.20	0.329	(0.155)	0.125	0.204
15	1.25	2.20	0.329	(0.155)	0.125	0.204
16	1.33	2.00	0.299	(0.155)	0.114	0.186
17	1.42	2.60	0.389	(0.155)	0.148	0.241
18	1.50	2.70	0.404	(0.155)	0.154	0.251
19	1.58	2.40	0.359	(0.155)	0.137	0.223
20	1.67	2.70	0.404	(0.155)	0.154	0.251
21	1.75	3.30	0.494	0.155	(0.188)	0.339
22	1.83	3.10	0.464	0.155	(0.176)	0.309
23	1.92	2.90	0.434	0.155	(0.165)	0.280
24	2.00	3.00	0.449	0.155	(0.171)	0.295
25	2.08	3.10	0.464	0.155	(0.176)	0.309
26	2.17	4.20	0.629	0.155	(0.239)	0.474
27	2.25	5.00	0.749	0.155	(0.285)	0.594
28	2.33	3.50	0.524	0.155	(0.199)	0.369
29	2.42	6.80	1.018	0.155	(0.387)	0.864
30	2.50	7.30	1.093	0.155	(0.415)	0.938
31	2.58	8.20	1.228	0.155	(0.467)	1.073
32	2.67	5.90	0.883	0.155	(0.336)	0.729
33	2.75	2.00	0.299	(0.155)	0.114	0.186
34	2.83	1.80	0.270	(0.155)	0.102	0.167
35	2.92	1.80	0.270	(0.155)	0.102	0.167
36	3.00	0.60	0.090	(0.155)	0.034	0.056

(Loss Rate Not Used)

Sum = 100.0 Sum = 10.6

Flood volume = Effective rainfall 0.89(In)
times area 4.0(Ac.)/[(In)/(Ft.)] = 0.3(Ac.Ft)
Total soil loss = 0.36(In)
Total soil loss = 0.121(Ac.Ft)
Total rainfall = 1.25(In)
Flood volume = 12863.2 Cubic Feet
Total soil loss = 5255.2 Cubic Feet

Peak flow rate of this hydrograph = 4.073(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       0.0018      0.27  VQ        |         |         |
|
    0+10       0.0051      0.47  VQ        |         |         |
|
    0+15       0.0082      0.45  |Q        |         |         |
|
    0+20       0.0116      0.50  |Q        |         |         |
|
    0+25       0.0154      0.56  | Q       |         |         |
|
    0+30       0.0197      0.62  | Q       |         |         |
|
    0+35       0.0239      0.61  | QV      |         |         |
|
    0+40       0.0282      0.63  | QV      |         |         |
|
    0+45       0.0328      0.67  | Q V     |         |         |
|
    0+50       0.0371      0.61  | Q  V    |         |         |
|
    0+55       0.0411      0.59  | Q  V    |         |         |
|
    1+ 0       0.0455      0.64  | Q   V   |         |         |
|
    1+ 5       0.0507      0.75  |  Q  V   |         |         |
|
    1+10       0.0563      0.82  |  Q   V  |         |         |
|
    1+15       0.0620      0.82  |  Q    V |         |         |
|
    1+20       0.0674      0.78  |  Q     V|         |         |
|
    1+25       0.0734      0.87  |  Q     V|         |         |
|
    1+30       0.0802      0.99  |  Q      V         |         |
|
    1+35       0.0867      0.95  |  Q      |V        |         |
|
    1+40       0.0934      0.96  |  Q      | V       |         |
|
    1+45       0.1017      1.20  |   Q     |  V      |         |
|
    1+50       0.1106      1.29  |    Q    |   V     |         |
|
    1+55       0.1187      1.19  |   Q     |     V   |         |
|
    2+ 0       0.1267      1.16  |   Q     |      V  |         |
|
    2+ 5       0.1351      1.22  |   Q     |       V |         |
|
    2+10       0.1462      1.61  |     Q   |        V|         |
|
    2+15       0.1611      2.16  |       Q |         |V        |
|
    2+20       0.1741      1.89  |      Q  |         |  V      |
```

```
|
    2+25       0.1920      2.60  |         Q         |      V   |
|
    2+30       0.2167      3.59  |         |   Q     |         V|
|
    2+35       0.2448      4.07  |         |     Q   |         |  V
|
    2+40       0.2693      3.55  |         |   Q     |         |     V
|
    2+45       0.2815      1.78  |      Q  |         |         |       V
|
    2+50       0.2869      0.77  |  Q      |         |         |       V
|
    2+55       0.2915      0.68  | Q       |         |         |
V|
    3+ 0       0.2945      0.43  |Q        |         |         |
V|
    3+ 5       0.2953      0.11  Q         |         |         |
V|
    3+10       0.2953      0.01  Q         |         |         |
V
-----------------------------------------------------------------------
```

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

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8.2
                Study date  11/09/21 File: moval33post3100.out

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


      Program License Serial Number 6232

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

       English Units used in output format



      ------------------------------------------------------------------
---
      Gateway Heights
      Proposed Condition
      Unit Hydrograph
      Area A
      ------------------------------------------------------------------
--
      Drainage Area =       4.00(Ac.)  =      0.006 Sq. Mi.
      Drainage Area for Depth-Area Areal Adjustment =       4.00(Ac.)  =
0.006 Sq. Mi.
      Length along longest watercourse =    1159.00(Ft.)
      Length along longest watercourse measured to centroid =     637.00
(Ft.)
      Length along longest watercourse =      0.220 Mi.
      Length along longest watercourse measured to centroid =      0.121
Mi.
      Difference in elevation =      70.00(Ft.)
      Slope along watercourse =    318.8956 Ft./Mi.
      Average Manning's 'N' = 0.015
      Lag time =    0.030 Hr.
      Lag time =     1.82 Min.
      25% of lag time =     0.45 Min.
      40% of lag time =     0.73 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]
```

4.00 0.80 3.20

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.00	1.89	7.56

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.799(In)
Area Averaged 100-Year Rainfall = 1.890(In)

Point rain (area averaged) = 1.890(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.890(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
4.000	69.00	0.650

Total Area Entered = 4.00(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	84.4	0.194	0.650	0.080	1.000	0.080
					Sum (F) =	0.080

Area averaged mean soil loss (F) (In/Hr) = 0.080
Minimum soil loss rate ((In/Hr)) = 0.040
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

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	275.097	54.570		2.200
2	0.167	550.195	42.583		1.717
3	0.250	825.292	2.846		0.115
			Sum = 100.000	Sum=	4.031

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 Pattern Storm Rain Loss rate(In./Hr) Effective

	(Hr.)	Percent	(In/Hr)	Max	Low	(In/Hr)
1	0.08	1.30	0.295	0.080	(0.112)	0.214
2	0.17	1.30	0.295	0.080	(0.112)	0.214
3	0.25	1.10	0.249	0.080	(0.095)	0.169
4	0.33	1.50	0.340	0.080	(0.129)	0.260
5	0.42	1.50	0.340	0.080	(0.129)	0.260
6	0.50	1.80	0.408	0.080	(0.155)	0.328
7	0.58	1.50	0.340	0.080	(0.129)	0.260
8	0.67	1.80	0.408	0.080	(0.155)	0.328
9	0.75	1.80	0.408	0.080	(0.155)	0.328
10	0.83	1.50	0.340	0.080	(0.129)	0.260
11	0.92	1.60	0.363	0.080	(0.138)	0.282
12	1.00	1.80	0.408	0.080	(0.155)	0.328
13	1.08	2.20	0.499	0.080	(0.190)	0.419
14	1.17	2.20	0.499	0.080	(0.190)	0.419
15	1.25	2.20	0.499	0.080	(0.190)	0.419
16	1.33	2.00	0.454	0.080	(0.172)	0.373
17	1.42	2.60	0.590	0.080	(0.224)	0.509
18	1.50	2.70	0.612	0.080	(0.233)	0.532
19	1.58	2.40	0.544	0.080	(0.207)	0.464
20	1.67	2.70	0.612	0.080	(0.233)	0.532
21	1.75	3.30	0.748	0.080	(0.284)	0.668
22	1.83	3.10	0.703	0.080	(0.267)	0.623
23	1.92	2.90	0.658	0.080	(0.250)	0.577
24	2.00	3.00	0.680	0.080	(0.259)	0.600
25	2.08	3.10	0.703	0.080	(0.267)	0.623
26	2.17	4.20	0.953	0.080	(0.362)	0.872
27	2.25	5.00	1.134	0.080	(0.431)	1.054
28	2.33	3.50	0.794	0.080	(0.302)	0.713
29	2.42	6.80	1.542	0.080	(0.586)	1.462
30	2.50	7.30	1.656	0.080	(0.629)	1.575
31	2.58	8.20	1.860	0.080	(0.707)	1.779
32	2.67	5.90	1.338	0.080	(0.508)	1.258
33	2.75	2.00	0.454	0.080	(0.172)	0.373
34	2.83	1.80	0.408	0.080	(0.155)	0.328
35	2.92	1.80	0.408	0.080	(0.155)	0.328
36	3.00	0.60	0.136	(0.080)	0.052	0.084

```
          (Loss Rate Not Used)
   Sum =     100.0                              Sum =    19.8
    Flood volume = Effective rainfall      1.65(In)
     times area       4.0(Ac.)/[(In)/(Ft.)] =      0.6(Ac.Ft)
    Total soil loss =      0.24(In)
    Total soil loss =     0.080(Ac.Ft)
    Total rainfall =      1.89(In)
    Flood volume =       23973.0 Cubic Feet
    Total soil loss =       3469.4 Cubic Feet
    ------------------------------------------------------------------
--
     Peak flow rate of this hydrograph =      6.789(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       0.0032      0.47  VQ        |         |         |
|
    0+10       0.0090      0.84  V  Q      |         |         |
|
    0+15       0.0143      0.76  |V Q      |         |         |
|
    0+20       0.0204      0.89  |V Q      |         |         |
|
    0+25       0.0276      1.04  | V Q     |         |         |
|
    0+30       0.0358      1.20  | V Q     |         |         |
|
    0+35       0.0438      1.16  |  VQ     |         |         |
|
    0+40       0.0521      1.21  |  VQ     |         |         |
|
    0+45       0.0612      1.31  |   VQ    |         |         |
|
    0+50       0.0692      1.17  |   QV    |         |         |
|
    0+55       0.0769      1.11  |   QV    |         |         |
|
    1+ 0       0.0854      1.24  |   Q V   |         |         |
|
    1+ 5       0.0958      1.52  |     Q   |         |         |
|
    1+10       0.1074      1.68  |     QV  |         |         |
|
    1+15       0.1190      1.69  |     Q V |         |         |
|
    1+20       0.1299      1.59  |     Q  V|         |         |
|
    1+25       0.1424      1.81  |      Q  V         |         |
|
    1+30       0.1568      2.09  |       Q |V        |         |
|
    1+35       0.1705      1.99  |      Q  | V       |         |
|
    1+40       0.1845      2.03  |       Q |  V      |         |
|
    1+45       0.2013      2.44  |        Q|   V     |         |
|
    1+50       0.2190      2.58  |         Q    V    |         |
|
    1+55       0.2357      2.42  |        Q|      V  |         |
|
    2+ 0       0.2521      2.38  |        Q|       V |         |
|
    2+ 5       0.2691      2.47  |        Q|        V|         |
|
    2+10       0.2901      3.06  |         | Q       |V        |
|
    2+15       0.3169      3.89  |         |    Q    |  V      |
|
    2+20       0.3409      3.48  |         |  Q      |   V     |
```

```
|
     2+25        0.3723       4.56  |         |       Q |      V  |
|
     2+30        0.4140       6.06  |         |         |   Q     V
|
     2+35        0.4608       6.79  |         |         |      Q  |  V
|
     2+40        0.5021       6.00  |         |         |   Q     |     V
|
     2+45        0.5241       3.19  |         | Q       |         |       V
|
     2+50        0.5345       1.51  |     Q   |         |         |       V
|
     2+55        0.5436       1.33  |    Q    |         |         |
V|
     3+ 0        0.5490       0.79  |  Q      |         |         |
V|
     3+ 5        0.5503       0.18  Q         |         |         |
V|
     3+10        0.5503       0.01  Q         |         |         |
V
-----------------------------------------------------------------------
```

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

            Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
8.2
                  Study date  11/09/21 File: moval33post62.out


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


      Program License Serial Number 6232

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

       English Units used in output format



      -----------------------------------------------------------------
---
      Gateway Heights
      Proposed Condition
      Unit Hydrograph
      Area A
      -----------------------------------------------------------------
--
      Drainage Area =       4.00(Ac.)  =      0.006 Sq. Mi.
      Drainage Area for Depth-Area Areal Adjustment =       4.00(Ac.)  =
0.006 Sq. Mi.
      Length along longest watercourse =    1159.00(Ft.)
      Length along longest watercourse measured to centroid =     637.00
(Ft.)
      Length along longest watercourse =      0.220 Mi.
      Length along longest watercourse measured to centroid =      0.121
Mi.
      Difference in elevation =      70.00(Ft.)
      Slope along watercourse =    318.8956 Ft./Mi.
      Average Manning's 'N' = 0.015
      Lag time =    0.030 Hr.
      Lag time =     1.82 Min.
      25% of lag time =     0.45 Min.
      40% of lag time =     0.73 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]
```

```
        4.00              1.09                    4.36

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        4.00              2.55                   10.20

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    1.090(In)
Area Averaged 100-Year Rainfall =    2.550(In)

Point rain (area averaged) =    1.090(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    1.090(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     4.000           69.00         0.650
 Total Area Entered =      4.00(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
69.0  69.0      0.373     0.650        0.155       1.000
0.155
                                                          Sum (F) =
0.155
Area averaged mean soil loss (F) (In/Hr) =  0.155
Minimum soil loss rate ((In/Hr)) =  0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.380
------------------------------------------------------------------
---

            U n i t  H y d r o g r a p h
                  FOOTHILL S-Curve
------------------------------------------------------------------
--
            Unit Hydrograph Data
------------------------------------------------------------------
---
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                            Graph %           (CFS)
------------------------------------------------------------------
---
    1   0.083        275.097         54.570              2.200
    2   0.167        550.195         42.583              1.717
    3   0.250        825.292          2.846              0.115
                              Sum = 100.000   Sum=       4.031
--------------------------------------------------------------------


 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   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
```

	(Hr.)	Percent	(In/Hr)	Max	Low	(In/Hr)
1	0.08	0.50	0.065	(0.155)	0.025	0.041
2	0.17	0.60	0.078	(0.155)	0.030	0.049
3	0.25	0.60	0.078	(0.155)	0.030	0.049
4	0.33	0.60	0.078	(0.155)	0.030	0.049
5	0.42	0.60	0.078	(0.155)	0.030	0.049
6	0.50	0.70	0.092	(0.155)	0.035	0.057
7	0.58	0.70	0.092	(0.155)	0.035	0.057
8	0.67	0.70	0.092	(0.155)	0.035	0.057
9	0.75	0.70	0.092	(0.155)	0.035	0.057
10	0.83	0.70	0.092	(0.155)	0.035	0.057
11	0.92	0.70	0.092	(0.155)	0.035	0.057
12	1.00	0.80	0.105	(0.155)	0.040	0.065
13	1.08	0.80	0.105	(0.155)	0.040	0.065
14	1.17	0.80	0.105	(0.155)	0.040	0.065
15	1.25	0.80	0.105	(0.155)	0.040	0.065
16	1.33	0.80	0.105	(0.155)	0.040	0.065
17	1.42	0.80	0.105	(0.155)	0.040	0.065
18	1.50	0.80	0.105	(0.155)	0.040	0.065
19	1.58	0.80	0.105	(0.155)	0.040	0.065
20	1.67	0.80	0.105	(0.155)	0.040	0.065
21	1.75	0.80	0.105	(0.155)	0.040	0.065
22	1.83	0.80	0.105	(0.155)	0.040	0.065
23	1.92	0.80	0.105	(0.155)	0.040	0.065
24	2.00	0.90	0.118	(0.155)	0.045	0.073
25	2.08	0.80	0.105	(0.155)	0.040	0.065
26	2.17	0.90	0.118	(0.155)	0.045	0.073
27	2.25	0.90	0.118	(0.155)	0.045	0.073
28	2.33	0.90	0.118	(0.155)	0.045	0.073
29	2.42	0.90	0.118	(0.155)	0.045	0.073
30	2.50	0.90	0.118	(0.155)	0.045	0.073
31	2.58	0.90	0.118	(0.155)	0.045	0.073
32	2.67	0.90	0.118	(0.155)	0.045	0.073
33	2.75	1.00	0.131	(0.155)	0.050	0.081
34	2.83	1.00	0.131	(0.155)	0.050	0.081
35	2.92	1.00	0.131	(0.155)	0.050	0.081
36	3.00	1.00	0.131	(0.155)	0.050	0.081
37	3.08	1.00	0.131	(0.155)	0.050	0.081
38	3.17	1.10	0.144	(0.155)	0.055	0.089
39	3.25	1.10	0.144	(0.155)	0.055	0.089
40	3.33	1.10	0.144	(0.155)	0.055	0.089
41	3.42	1.20	0.157	(0.155)	0.060	0.097
42	3.50	1.30	0.170	(0.155)	0.065	0.105
43	3.58	1.40	0.183	(0.155)	0.070	0.114
44	3.67	1.40	0.183	(0.155)	0.070	0.114
45	3.75	1.50	0.196	(0.155)	0.075	0.122
46	3.83	1.50	0.196	(0.155)	0.075	0.122
47	3.92	1.60	0.209	(0.155)	0.080	0.130
48	4.00	1.60	0.209	(0.155)	0.080	0.130
49	4.08	1.70	0.222	(0.155)	0.084	0.138
50	4.17	1.80	0.235	(0.155)	0.089	0.146
51	4.25	1.90	0.249	(0.155)	0.094	0.154
52	4.33	2.00	0.262	(0.155)	0.099	0.162
53	4.42	2.10	0.275	(0.155)	0.104	0.170
54	4.50	2.10	0.275	(0.155)	0.104	0.170
55	4.58	2.20	0.288	(0.155)	0.109	0.178
56	4.67	2.30	0.301	(0.155)	0.114	0.187
57	4.75	2.40	0.314	(0.155)	0.119	0.195
58	4.83	2.40	0.314	(0.155)	0.119	0.195
59	4.92	2.50	0.327	(0.155)	0.124	0.203

```
  60   5.00     2.60      0.340       (  0.155)       0.129        0.211
  61   5.08     3.10      0.405       (  0.155)       0.154        0.251
  62   5.17     3.60      0.471          0.155    (  0.179)        0.316
  63   5.25     3.90      0.510          0.155    (  0.194)        0.355
  64   5.33     4.20      0.549          0.155    (  0.209)        0.395
  65   5.42     4.70      0.615          0.155    (  0.234)        0.460
  66   5.50     5.60      0.732          0.155    (  0.278)        0.578
  67   5.58     1.90      0.249       (  0.155)       0.094        0.154
  68   5.67     0.90      0.118       (  0.155)       0.045        0.073
  69   5.75     0.60      0.078       (  0.155)       0.030        0.049
  70   5.83     0.50      0.065       (  0.155)       0.025        0.041
  71   5.92     0.30      0.039       (  0.155)       0.015        0.024
  72   6.00     0.20      0.026       (  0.155)       0.010        0.016
             (Loss Rate Not Used)
     Sum =     100.0                                 Sum =     8.4
      Flood volume = Effective rainfall      0.70(In)
       times area       4.0(Ac.)/[(In)/(Ft.)] =       0.2(Ac.Ft)
      Total soil loss =      0.39(In)
      Total soil loss =     0.129(Ac.Ft)
      Total rainfall =      1.09(In)
      Flood volume =       10199.6 Cubic Feet
      Total soil loss =       5627.0 Cubic Feet
      -----------------------------------------------------------------
--
       Peak flow rate of this hydrograph =      2.107(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      0.0006      0.09  Q         |         |         |
|
    0+10      0.0018      0.18  Q         |         |         |
|
    0+15      0.0032      0.20  Q         |         |         |
|
    0+20      0.0045      0.20  Q         |         |         |
|
    0+25      0.0059      0.20  QV        |         |         |
|
    0+30      0.0074      0.21  QV        |         |         |
|
    0+35      0.0089      0.23  QV        |         |         |
|
    0+40      0.0105      0.23  QV        |         |         |
|
    0+45      0.0121      0.23  Q V       |         |         |
|
    0+50      0.0137      0.23  Q V       |         |         |
```

```
|
    0+55       0.0152      0.23  Q V       |         |         |
|
    1+ 0       0.0169      0.25  Q V       |         |         |
|
    1+ 5       0.0187      0.26  |Q V      |         |         |
|
    1+10       0.0205      0.26  |Q V      |         |         |
|
    1+15       0.0223      0.26  |Q V      |         |         |
|
    1+20       0.0241      0.26  |Q  V     |         |         |
|
    1+25       0.0259      0.26  |Q  V     |         |         |
|
    1+30       0.0277      0.26  |Q  V     |         |         |
|
    1+35       0.0295      0.26  |Q   V    |         |         |
|
    1+40       0.0313      0.26  |Q   V    |         |         |
|
    1+45       0.0331      0.26  |Q   V    |         |         |
|
    1+50       0.0349      0.26  |Q   V    |         |         |
|
    1+55       0.0367      0.26  |Q    V   |         |         |
|
    2+ 0       0.0387      0.28  |Q    V   |         |         |
|
    2+ 5       0.0406      0.28  |Q    V   |         |         |
|
    2+10       0.0425      0.28  |Q     V  |         |         |
|
    2+15       0.0445      0.29  |Q     V  |         |         |
|
    2+20       0.0466      0.29  |Q     V  |         |         |
|
    2+25       0.0486      0.29  |Q      V |         |         |
|
    2+30       0.0506      0.29  |Q      V |         |         |
|
    2+35       0.0526      0.29  |Q      V |         |         |
|
    2+40       0.0547      0.29  |Q       V|         |         |
|
    2+45       0.0568      0.31  |Q       V|         |         |
|
    2+50       0.0591      0.33  |Q        V         |         |
|
    2+55       0.0613      0.33  |Q        V         |         |
|
    3+ 0       0.0636      0.33  |Q        V         |         |
|
    3+ 5       0.0658      0.33  |Q        |V        |         |
|
    3+10       0.0682      0.34  |Q        |V        |         |
|
    3+15       0.0707      0.36  |Q        | V       |         |
|
    3+20       0.0731      0.36  |Q        | V       |         |
```

```
|
    3+25       0.0757      0.38  |Q        | V       |         |
|
    3+30       0.0786      0.41  |Q        |  V      |         |
|
    3+35       0.0816      0.44  |Q        |  V      |         |
|
    3+40       0.0848      0.46  |Q        |   V     |         |
|
    3+45       0.0880      0.48  |Q        |    V    |         |
|
    3+50       0.0914      0.49  |Q        |    V    |         |
|
    3+55       0.0949      0.51  | Q       |     V   |         |
|
    4+ 0       0.0985      0.52  | Q       |     V   |         |
|
    4+ 5       0.1022      0.54  | Q       |      V  |         |
|
    4+10       0.1062      0.57  | Q       |       V |         |
|
    4+15       0.1103      0.61  | Q       |       V |         |
|
    4+20       0.1147      0.64  | Q       |        V|         |
|
    4+25       0.1194      0.67  | Q       |         V         |
|
    4+30       0.1241      0.69  | Q       |         |V        |
|
    4+35       0.1289      0.70  | Q       |         | V       |
|
    4+40       0.1340      0.74  | Q       |         | V       |
|
    4+45       0.1393      0.77  |  Q      |         |  V      |
|
    4+50       0.1447      0.78  |  Q      |         |   V     |
|
    4+55       0.1502      0.80  |  Q      |         |    V    |
|
    5+ 0       0.1560      0.83  |  Q      |         |     V   |
|
    5+ 5       0.1625      0.94  |  Q      |         |      V  |
|
    5+10       0.1704      1.15  |   Q     |         |        V|
|
    5+15       0.1797      1.35  |    Q    |         |         V
|
    5+20       0.1901      1.52  |     Q   |         |         | V
|
    5+25       0.2021      1.73  |     Q   |         |         |   V
|
    5+30       0.2166      2.11  |       Q |         |         |     V
|
    5+35       0.2261      1.38  |    Q    |         |         |       V
|
    5+40       0.2295      0.49  |Q        |         |         |
V|
    5+45       0.2312      0.25  |Q        |         |         |
V|
    5+50       0.2325      0.18  Q         |         |         |
```

```
V|
    5+55       0.2334      0.13  Q          |          |          |
V|
    6+ 0       0.2339      0.08  Q          |          |          |
V|
    6+ 5       0.2341      0.03  Q          |          |          |
V|
    6+10       0.2342      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

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8.2
                Study date  11/09/21 File: moval33post65.out


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


      Program License Serial Number 6232

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

       English Units used in output format




      ----------------------------------------------------------------
---
      Gateway Heights
      Proposed Condition
      Unit Hydrograph
      Area A
      ----------------------------------------------------------------
--
      Drainage Area =       4.00(Ac.)  =      0.006 Sq. Mi.
      Drainage Area for Depth-Area Areal Adjustment =       4.00(Ac.)  =
0.006 Sq. Mi.
      Length along longest watercourse =    1159.00(Ft.)
      Length along longest watercourse measured to centroid =     637.00
(Ft.)
      Length along longest watercourse =      0.220 Mi.
      Length along longest watercourse measured to centroid =      0.121
Mi.
      Difference in elevation =      70.00(Ft.)
      Slope along watercourse =    318.8956 Ft./Mi.
      Average Manning's 'N' = 0.015
      Lag time =    0.030 Hr.
      Lag time =     1.82 Min.
      25% of lag time =     0.45 Min.
      40% of lag time =     0.73 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]
```

4.00	1.09	4.36

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.00	2.55	10.20

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 1.090(In)
Area Averaged 100-Year Rainfall = 2.550(In)

Point rain (area averaged) = 1.432(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.432(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
4.000	69.00	0.650

Total Area Entered = 4.00(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.650	0.155	1.000	0.155
					Sum (F) =	0.155

Area averaged mean soil loss (F) (In/Hr) = 0.155
Minimum soil loss rate ((In/Hr)) = 0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

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	275.097	54.570		2.200
2	0.167	550.195	42.583		1.717
3	0.250	825.292	2.846		0.115
			Sum = 100.000	Sum=	4.031

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 Pattern Storm Rain Loss rate(In./Hr) Effective

	(Hr.)	Percent	(In/Hr)	Max |	Low	(In/Hr)
1	0.08	0.50	0.086	(0.155)	0.033	0.053
2	0.17	0.60	0.103	(0.155)	0.039	0.064
3	0.25	0.60	0.103	(0.155)	0.039	0.064
4	0.33	0.60	0.103	(0.155)	0.039	0.064
5	0.42	0.60	0.103	(0.155)	0.039	0.064
6	0.50	0.70	0.120	(0.155)	0.046	0.075
7	0.58	0.70	0.120	(0.155)	0.046	0.075
8	0.67	0.70	0.120	(0.155)	0.046	0.075
9	0.75	0.70	0.120	(0.155)	0.046	0.075
10	0.83	0.70	0.120	(0.155)	0.046	0.075
11	0.92	0.70	0.120	(0.155)	0.046	0.075
12	1.00	0.80	0.137	(0.155)	0.052	0.085
13	1.08	0.80	0.137	(0.155)	0.052	0.085
14	1.17	0.80	0.137	(0.155)	0.052	0.085
15	1.25	0.80	0.137	(0.155)	0.052	0.085
16	1.33	0.80	0.137	(0.155)	0.052	0.085
17	1.42	0.80	0.137	(0.155)	0.052	0.085
18	1.50	0.80	0.137	(0.155)	0.052	0.085
19	1.58	0.80	0.137	(0.155)	0.052	0.085
20	1.67	0.80	0.137	(0.155)	0.052	0.085
21	1.75	0.80	0.137	(0.155)	0.052	0.085
22	1.83	0.80	0.137	(0.155)	0.052	0.085
23	1.92	0.80	0.137	(0.155)	0.052	0.085
24	2.00	0.90	0.155	(0.155)	0.059	0.096
25	2.08	0.80	0.137	(0.155)	0.052	0.085
26	2.17	0.90	0.155	(0.155)	0.059	0.096
27	2.25	0.90	0.155	(0.155)	0.059	0.096
28	2.33	0.90	0.155	(0.155)	0.059	0.096
29	2.42	0.90	0.155	(0.155)	0.059	0.096
30	2.50	0.90	0.155	(0.155)	0.059	0.096
31	2.58	0.90	0.155	(0.155)	0.059	0.096
32	2.67	0.90	0.155	(0.155)	0.059	0.096
33	2.75	1.00	0.172	(0.155)	0.065	0.107
34	2.83	1.00	0.172	(0.155)	0.065	0.107
35	2.92	1.00	0.172	(0.155)	0.065	0.107
36	3.00	1.00	0.172	(0.155)	0.065	0.107
37	3.08	1.00	0.172	(0.155)	0.065	0.107
38	3.17	1.10	0.189	(0.155)	0.072	0.117
39	3.25	1.10	0.189	(0.155)	0.072	0.117
40	3.33	1.10	0.189	(0.155)	0.072	0.117
41	3.42	1.20	0.206	(0.155)	0.078	0.128
42	3.50	1.30	0.223	(0.155)	0.085	0.138
43	3.58	1.40	0.241	(0.155)	0.091	0.149
44	3.67	1.40	0.241	(0.155)	0.091	0.149
45	3.75	1.50	0.258	(0.155)	0.098	0.160
46	3.83	1.50	0.258	(0.155)	0.098	0.160
47	3.92	1.60	0.275	(0.155)	0.104	0.170
48	4.00	1.60	0.275	(0.155)	0.104	0.170
49	4.08	1.70	0.292	(0.155)	0.111	0.181
50	4.17	1.80	0.309	(0.155)	0.118	0.192
51	4.25	1.90	0.326	(0.155)	0.124	0.202
52	4.33	2.00	0.344	(0.155)	0.131	0.213
53	4.42	2.10	0.361	(0.155)	0.137	0.224
54	4.50	2.10	0.361	(0.155)	0.137	0.224
55	4.58	2.20	0.378	(0.155)	0.144	0.234
56	4.67	2.30	0.395	(0.155)	0.150	0.245
57	4.75	2.40	0.412	0.155	(0.157)	0.258
58	4.83	2.40	0.412	0.155	(0.157)	0.258
59	4.92	2.50	0.430	0.155	(0.163)	0.275

60	5.00	2.60	0.447	0.155	(0.170)	0.292
61	5.08	3.10	0.533	0.155	(0.202)	0.378
62	5.17	3.60	0.619	0.155	(0.235)	0.464
63	5.25	3.90	0.670	0.155	(0.255)	0.515
64	5.33	4.20	0.722	0.155	(0.274)	0.567
65	5.42	4.70	0.808	0.155	(0.307)	0.653
66	5.50	5.60	0.962	0.155	(0.366)	0.808
67	5.58	1.90	0.326	(0.155)	0.124	0.202
68	5.67	0.90	0.155	(0.155)	0.059	0.096
69	5.75	0.60	0.103	(0.155)	0.039	0.064
70	5.83	0.50	0.086	(0.155)	0.033	0.053
71	5.92	0.30	0.052	(0.155)	0.020	0.032
72	6.00	0.20	0.034	(0.155)	0.013	0.021

```
          (Loss Rate Not Used)
   Sum =     100.0                                Sum =    11.4
    Flood volume = Effective rainfall      0.95(In)
     times area       4.0(Ac.)/[(In)/(Ft.)] =       0.3(Ac.Ft)
    Total soil loss =      0.48(In)
    Total soil loss =     0.161(Ac.Ft)
    Total rainfall =      1.43(In)
    Flood volume =       13784.3 Cubic Feet
    Total soil loss =        7007.6 Cubic Feet
    ------------------------------------------------------------------
--
     Peak flow rate of this hydrograph =      2.964(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      0.0008      0.12  Q         |         |         |
|
    0+10      0.0024      0.23  Q         |         |         |
|
    0+15      0.0042      0.26  VQ        |         |         |
|
    0+20      0.0059      0.26  VQ        |         |         |
|
    0+25      0.0077      0.26  VQ        |         |         |
|
    0+30      0.0097      0.28  |Q        |         |         |
|
    0+35      0.0117      0.30  |Q        |         |         |
|
    0+40      0.0138      0.30  |Q        |         |         |
|
    0+45      0.0159      0.30  |QV       |         |         |
|
    0+50      0.0179      0.30  |QV       |         |         |
```

```
|
    0+55       0.0200      0.30  |QV       |         |         |
|
    1+ 0       0.0222      0.32  |QV       |         |         |
|
    1+ 5       0.0246      0.34  |Q V      |         |         |
|
    1+10       0.0270      0.34  |Q V      |         |         |
|
    1+15       0.0293      0.34  |Q V      |         |         |
|
    1+20       0.0317      0.34  |Q  V     |         |         |
|
    1+25       0.0341      0.34  |Q  V     |         |         |
|
    1+30       0.0364      0.34  |Q  V     |         |         |
|
    1+35       0.0388      0.34  |Q  V     |         |         |
|
    1+40       0.0412      0.34  |Q   V    |         |         |
|
    1+45       0.0435      0.34  |Q   V    |         |         |
|
    1+50       0.0459      0.34  |Q   V    |         |         |
|
    1+55       0.0483      0.34  |Q    V   |         |         |
|
    2+ 0       0.0508      0.37  |Q    V   |         |         |
|
    2+ 5       0.0533      0.36  |Q    V   |         |         |
|
    2+10       0.0558      0.37  |Q     V  |         |         |
|
    2+15       0.0585      0.39  |Q     V  |         |         |
|
    2+20       0.0612      0.39  |Q     V  |         |         |
|
    2+25       0.0638      0.39  |Q      V |         |         |
|
    2+30       0.0665      0.39  |Q      V |         |         |
|
    2+35       0.0691      0.39  |Q      V |         |         |
|
    2+40       0.0718      0.39  |Q       V|         |         |
|
    2+45       0.0746      0.41  |Q       V|         |         |
|
    2+50       0.0776      0.43  |Q       V|         |         |
|
    2+55       0.0805      0.43  |Q        V         |         |
|
    3+ 0       0.0835      0.43  |Q        V         |         |
|
    3+ 5       0.0865      0.43  |Q        V         |         |
|
    3+10       0.0896      0.45  |Q        |V        |         |
|
    3+15       0.0928      0.47  |Q        |V        |         |
|
    3+20       0.0961      0.47  |Q        | V       |         |
```

```
|
    3+25       0.0995      0.50  |Q        | V       |         |
|
    3+30       0.1032      0.54  | Q       |  V      |         |
|
    3+35       0.1072      0.58  | Q       |  V      |         |
|
    3+40       0.1113      0.60  | Q       |   V     |         |
|
    3+45       0.1156      0.63  | Q       |   V     |         |
|
    3+50       0.1201      0.64  | Q       |    V    |         |
|
    3+55       0.1247      0.67  | Q       |    V    |         |
|
    4+ 0       0.1294      0.69  | Q       |     V   |         |
|
    4+ 5       0.1343      0.71  | Q       |     V   |         |
|
    4+10       0.1395      0.75  |  Q      |      V  |         |
|
    4+15       0.1450      0.80  |  Q      |       V |         |
|
    4+20       0.1507      0.84  |  Q      |        V|         |
|
    4+25       0.1568      0.88  |  Q      |        V|         |
|
    4+30       0.1630      0.90  |  Q      |         V         |
|
    4+35       0.1694      0.93  |  Q      |         |V        |
|
    4+40       0.1761      0.97  |  Q      |         | V       |
|
    4+45       0.1830      1.01  |   Q     |         |  V      |
|
    4+50       0.1902      1.04  |   Q     |         |   V     |
|
    4+55       0.1976      1.08  |   Q     |         |   V     |
|
    5+ 0       0.2055      1.14  |   Q     |         |    V    |
|
    5+ 5       0.2149      1.37  |    Q    |         |      V  |
|
    5+10       0.2266      1.70  |     Q   |         |       V |
|
    5+15       0.2402      1.97  |      Q  |         |         V
|
    5+20       0.2553      2.19  |       Q |         |         | V
|
    5+25       0.2723      2.47  |        Q|         |         |   V
|
    5+30       0.2927      2.96  |         |Q        |         |      V
|
    5+35       0.3059      1.91  |      Q  |         |         |       V
|
    5+40       0.3103      0.65  | Q       |         |         |
V|
    5+45       0.3126      0.33  |Q        |         |         |
V|
    5+50       0.3142      0.24  Q         |         |         |
```

```
V|
    5+55       0.3154      0.17  Q          |          |          |
V|
    6+ 0       0.3161      0.11  Q          |          |          |
V|
    6+ 5       0.3164      0.04  Q          |          |          |
V|
    6+10       0.3164      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

          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
8.2
                Study date  11/09/21 File: moval33post610.out


      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++++
      -----------------------------------------------------------------
------

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


      Program License Serial Number 6232

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

       English Units used in output format



      -----------------------------------------------------------------
---
      Gateway Heights
      Proposed Condition
      Unit Hydrograph
      Area A
      -----------------------------------------------------------------
--
      Drainage Area =       4.00(Ac.)  =      0.006 Sq. Mi.
      Drainage Area for Depth-Area Areal Adjustment =       4.00(Ac.)  =
0.006 Sq. Mi.
      Length along longest watercourse =    1159.00(Ft.)
      Length along longest watercourse measured to centroid =     637.00
(Ft.)
      Length along longest watercourse =      0.220 Mi.
      Length along longest watercourse measured to centroid =      0.121
Mi.
      Difference in elevation =      70.00(Ft.)
      Slope along watercourse =    318.8956 Ft./Mi.
      Average Manning's 'N' = 0.015
      Lag time =    0.030 Hr.
      Lag time =     1.82 Min.
      25% of lag time =     0.45 Min.
      40% of lag time =     0.73 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]
```

4.00 1.09 4.36

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.00	2.55	10.20

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.090(In)
Area Averaged 100-Year Rainfall = 2.550(In)

Point rain (area averaged) = 1.691(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.691(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
4.000	69.00	0.650

Total Area Entered = 4.00(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.650	0.155	1.000	0.155

Sum (F) = 0.155

Area averaged mean soil loss (F) (In/Hr) = 0.155
Minimum soil loss rate ((In/Hr)) = 0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

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	275.097	54.570	2.200
2	0.167	550.195	42.583	1.717
3	0.250	825.292	2.846	0.115
			Sum = 100.000	Sum= 4.031

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 Pattern Storm Rain Loss rate(In./Hr) Effective

	(Hr.)	Percent	(In/Hr)	Max	Low	(In/Hr)
1	0.08	0.50	0.101	(0.155)	0.039	0.063
2	0.17	0.60	0.122	(0.155)	0.046	0.075
3	0.25	0.60	0.122	(0.155)	0.046	0.075
4	0.33	0.60	0.122	(0.155)	0.046	0.075
5	0.42	0.60	0.122	(0.155)	0.046	0.075
6	0.50	0.70	0.142	(0.155)	0.054	0.088
7	0.58	0.70	0.142	(0.155)	0.054	0.088
8	0.67	0.70	0.142	(0.155)	0.054	0.088
9	0.75	0.70	0.142	(0.155)	0.054	0.088
10	0.83	0.70	0.142	(0.155)	0.054	0.088
11	0.92	0.70	0.142	(0.155)	0.054	0.088
12	1.00	0.80	0.162	(0.155)	0.062	0.101
13	1.08	0.80	0.162	(0.155)	0.062	0.101
14	1.17	0.80	0.162	(0.155)	0.062	0.101
15	1.25	0.80	0.162	(0.155)	0.062	0.101
16	1.33	0.80	0.162	(0.155)	0.062	0.101
17	1.42	0.80	0.162	(0.155)	0.062	0.101
18	1.50	0.80	0.162	(0.155)	0.062	0.101
19	1.58	0.80	0.162	(0.155)	0.062	0.101
20	1.67	0.80	0.162	(0.155)	0.062	0.101
21	1.75	0.80	0.162	(0.155)	0.062	0.101
22	1.83	0.80	0.162	(0.155)	0.062	0.101
23	1.92	0.80	0.162	(0.155)	0.062	0.101
24	2.00	0.90	0.183	(0.155)	0.069	0.113
25	2.08	0.80	0.162	(0.155)	0.062	0.101
26	2.17	0.90	0.183	(0.155)	0.069	0.113
27	2.25	0.90	0.183	(0.155)	0.069	0.113
28	2.33	0.90	0.183	(0.155)	0.069	0.113
29	2.42	0.90	0.183	(0.155)	0.069	0.113
30	2.50	0.90	0.183	(0.155)	0.069	0.113
31	2.58	0.90	0.183	(0.155)	0.069	0.113
32	2.67	0.90	0.183	(0.155)	0.069	0.113
33	2.75	1.00	0.203	(0.155)	0.077	0.126
34	2.83	1.00	0.203	(0.155)	0.077	0.126
35	2.92	1.00	0.203	(0.155)	0.077	0.126
36	3.00	1.00	0.203	(0.155)	0.077	0.126
37	3.08	1.00	0.203	(0.155)	0.077	0.126
38	3.17	1.10	0.223	(0.155)	0.085	0.138
39	3.25	1.10	0.223	(0.155)	0.085	0.138
40	3.33	1.10	0.223	(0.155)	0.085	0.138
41	3.42	1.20	0.243	(0.155)	0.093	0.151
42	3.50	1.30	0.264	(0.155)	0.100	0.164
43	3.58	1.40	0.284	(0.155)	0.108	0.176
44	3.67	1.40	0.284	(0.155)	0.108	0.176
45	3.75	1.50	0.304	(0.155)	0.116	0.189
46	3.83	1.50	0.304	(0.155)	0.116	0.189
47	3.92	1.60	0.325	(0.155)	0.123	0.201
48	4.00	1.60	0.325	(0.155)	0.123	0.201
49	4.08	1.70	0.345	(0.155)	0.131	0.214
50	4.17	1.80	0.365	(0.155)	0.139	0.226
51	4.25	1.90	0.385	(0.155)	0.146	0.239
52	4.33	2.00	0.406	(0.155)	0.154	0.252
53	4.42	2.10	0.426	0.155	(0.162)	0.271
54	4.50	2.10	0.426	0.155	(0.162)	0.271
55	4.58	2.20	0.446	0.155	(0.170)	0.292
56	4.67	2.30	0.467	0.155	(0.177)	0.312
57	4.75	2.40	0.487	0.155	(0.185)	0.332
58	4.83	2.40	0.487	0.155	(0.185)	0.332
59	4.92	2.50	0.507	0.155	(0.193)	0.352

```
  60   5.00     2.60      0.527          0.155    (  0.200)        0.373
  61   5.08     3.10      0.629          0.155    (  0.239)        0.474
  62   5.17     3.60      0.730          0.155    (  0.278)        0.576
  63   5.25     3.90      0.791          0.155    (  0.301)        0.637
  64   5.33     4.20      0.852          0.155    (  0.324)        0.697
  65   5.42     4.70      0.954          0.155    (  0.362)        0.799
  66   5.50     5.60      1.136          0.155    (  0.432)        0.981
  67   5.58     1.90      0.385       (  0.155)        0.146        0.239
  68   5.67     0.90      0.183       (  0.155)        0.069        0.113
  69   5.75     0.60      0.122       (  0.155)        0.046        0.075
  70   5.83     0.50      0.101       (  0.155)        0.039        0.063
  71   5.92     0.30      0.061       (  0.155)        0.023        0.038
  72   6.00     0.20      0.041       (  0.155)        0.015        0.025
           (Loss Rate Not Used)
     Sum =     100.0                                 Sum =    13.8
      Flood volume = Effective rainfall      1.15(In)
       times area       4.0(Ac.)/[(In)/(Ft.)] =       0.4(Ac.Ft)
      Total soil loss =      0.54(In)
      Total soil loss =     0.181(Ac.Ft)
      Total rainfall =      1.69(In)
      Flood volume =       16675.4 Cubic Feet
      Total soil loss =       7872.6 Cubic Feet
      ------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =      3.612(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      0.0010      0.14  Q         |         |         |
|
    0+10      0.0028      0.27  VQ        |         |         |
|
    0+15      0.0049      0.30  VQ        |         |         |
|
    0+20      0.0070      0.30  VQ        |         |         |
|
    0+25      0.0091      0.30  VQ        |         |         |
|
    0+30      0.0114      0.33  |Q        |         |         |
|
    0+35      0.0138      0.35  |Q        |         |         |
|
    0+40      0.0163      0.36  |Q        |         |         |
|
    0+45      0.0187      0.36  |Q        |         |         |
|
    0+50      0.0212      0.36  |QV       |         |         |
```

```
|
     0+55       0.0236      0.36  |QV       |         |         |
|
     1+ 0       0.0263      0.38  |QV       |         |         |
|
     1+ 5       0.0290      0.40  |Q V      |         |         |
|
     1+10       0.0318      0.41  |Q V      |         |         |
|
     1+15       0.0346      0.41  |Q V      |         |         |
|
     1+20       0.0374      0.41  |Q V      |         |         |
|
     1+25       0.0402      0.41  |Q  V     |         |         |
|
     1+30       0.0430      0.41  |Q  V     |         |         |
|
     1+35       0.0458      0.41  |Q  V     |         |         |
|
     1+40       0.0486      0.41  |Q   V    |         |         |
|
     1+45       0.0514      0.41  |Q   V    |         |         |
|
     1+50       0.0542      0.41  |Q   V    |         |         |
|
     1+55       0.0570      0.41  |Q   V    |         |         |
|
     2+ 0       0.0600      0.43  |Q    V   |         |         |
|
     2+ 5       0.0629      0.43  |Q    V   |         |         |
|
     2+10       0.0659      0.43  |Q    V   |         |         |
|
     2+15       0.0691      0.46  |Q     V  |         |         |
|
     2+20       0.0722      0.46  |Q     V  |         |         |
|
     2+25       0.0753      0.46  |Q     V  |         |         |
|
     2+30       0.0785      0.46  |Q      V |         |         |
|
     2+35       0.0816      0.46  |Q      V |         |         |
|
     2+40       0.0848      0.46  |Q      V |         |         |
|
     2+45       0.0881      0.48  |Q       V|         |         |
|
     2+50       0.0916      0.51  | Q      V|         |         |
|
     2+55       0.0951      0.51  | Q      V|         |         |
|
     3+ 0       0.0986      0.51  | Q       V         |         |
|
     3+ 5       0.1021      0.51  | Q       V         |         |
|
     3+10       0.1058      0.54  | Q       |V        |         |
|
     3+15       0.1096      0.56  | Q       |V        |         |
|
     3+20       0.1134      0.56  | Q       |V        |         |
```

```
|
    3+25       0.1175      0.59  | Q       | V       |         |
|
    3+30       0.1219      0.64  | Q       | V       |         |
|
    3+35       0.1266      0.69  | Q       |  V      |         |
|
    3+40       0.1315      0.71  | Q       |  V      |         |
|
    3+45       0.1365      0.74  | Q       |   V     |         |
|
    3+50       0.1418      0.76  |  Q      |   V     |         |
|
    3+55       0.1472      0.79  |  Q      |    V    |         |
|
    4+ 0       0.1528      0.81  |  Q      |    V    |         |
|
    4+ 5       0.1586      0.84  |  Q      |     V   |         |
|
    4+10       0.1647      0.89  |  Q      |      V  |         |
|
    4+15       0.1712      0.94  |  Q      |      V  |         |
|
    4+20       0.1780      0.99  |  Q      |       V |         |
|
    4+25       0.1853      1.06  |   Q     |        V|         |
|
    4+30       0.1928      1.09  |   Q     |         V         |
|
    4+35       0.2006      1.14  |   Q     |         V         |
|
    4+40       0.2090      1.22  |   Q     |         |V        |
|
    4+45       0.2180      1.30  |    Q    |         | V       |
|
    4+50       0.2272      1.34  |    Q    |         |  V      |
|
    4+55       0.2367      1.38  |    Q    |         |   V     |
|
    5+ 0       0.2468      1.46  |    Q    |         |    V    |
|
    5+ 5       0.2587      1.72  |     Q   |         |      V  |
|
    5+10       0.2733      2.12  |       Q |         |       V |
|
    5+15       0.2901      2.44  |        Q|         |         V
|
    5+20       0.3087      2.69  |         Q         |         | V
|
    5+25       0.3295      3.03  |         | Q       |         |   V
|
    5+30       0.3544      3.61  |         |   Q     |         |      V
|
    5+35       0.3703      2.30  |        Q|         |         |       V
|
    5+40       0.3756      0.77  |  Q      |         |         |
V|
    5+45       0.3783      0.39  |Q        |         |         |
V|
    5+50       0.3802      0.28  |Q        |         |         |
```

```
V|
    5+55       0.3816      0.20  Q          |         |         |
V|
    6+ 0       0.3825      0.13  Q          |         |         |
V|
    6+ 5       0.3828      0.05  Q          |         |         |
V|
    6+10       0.3828      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 11/09/21 File: moval33post6100.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area A

Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) = 0.006 Sq. Mi.
Length along longest watercourse = 1159.00(Ft.)
Length along longest watercourse measured to centroid = 637.00 (Ft.)
Length along longest watercourse = 0.220 Mi.
Length along longest watercourse measured to centroid = 0.121 Mi.
Difference in elevation = 70.00(Ft.)
Slope along watercourse = 318.8956 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.030 Hr.
Lag time = 1.82 Min.
25% of lag time = 0.45 Min.
40% of lag time = 0.73 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]

4.00 1.09 4.36

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.00	2.55	10.20

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.090(In)
Area Averaged 100-Year Rainfall = 2.550(In)

Point rain (area averaged) = 2.550(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.550(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
4.000	69.00	0.650

Total Area Entered = 4.00(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	84.4	0.194	0.650	0.080	1.000	0.080

Sum (F) = 0.080

Area averaged mean soil loss (F) (In/Hr) = 0.080
Minimum soil loss rate ((In/Hr)) = 0.040
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

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	275.097	54.570	2.200
2	0.167	550.195	42.583	1.717
3	0.250	825.292	2.846	0.115
			Sum = 100.000	Sum= 4.031

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 Pattern Storm Rain Loss rate(In./Hr) Effective

	(Hr.)	Percent	(In/Hr)	Max |	Low	(In/Hr)
1	0.08	0.50	0.153	(0.080)	0.058	0.095
2	0.17	0.60	0.184	(0.080)	0.070	0.114
3	0.25	0.60	0.184	(0.080)	0.070	0.114
4	0.33	0.60	0.184	(0.080)	0.070	0.114
5	0.42	0.60	0.184	(0.080)	0.070	0.114
6	0.50	0.70	0.214	0.080	(0.081)	0.134
7	0.58	0.70	0.214	0.080	(0.081)	0.134
8	0.67	0.70	0.214	0.080	(0.081)	0.134
9	0.75	0.70	0.214	0.080	(0.081)	0.134
10	0.83	0.70	0.214	0.080	(0.081)	0.134
11	0.92	0.70	0.214	0.080	(0.081)	0.134
12	1.00	0.80	0.245	0.080	(0.093)	0.164
13	1.08	0.80	0.245	0.080	(0.093)	0.164
14	1.17	0.80	0.245	0.080	(0.093)	0.164
15	1.25	0.80	0.245	0.080	(0.093)	0.164
16	1.33	0.80	0.245	0.080	(0.093)	0.164
17	1.42	0.80	0.245	0.080	(0.093)	0.164
18	1.50	0.80	0.245	0.080	(0.093)	0.164
19	1.58	0.80	0.245	0.080	(0.093)	0.164
20	1.67	0.80	0.245	0.080	(0.093)	0.164
21	1.75	0.80	0.245	0.080	(0.093)	0.164
22	1.83	0.80	0.245	0.080	(0.093)	0.164
23	1.92	0.80	0.245	0.080	(0.093)	0.164
24	2.00	0.90	0.275	0.080	(0.105)	0.195
25	2.08	0.80	0.245	0.080	(0.093)	0.164
26	2.17	0.90	0.275	0.080	(0.105)	0.195
27	2.25	0.90	0.275	0.080	(0.105)	0.195
28	2.33	0.90	0.275	0.080	(0.105)	0.195
29	2.42	0.90	0.275	0.080	(0.105)	0.195
30	2.50	0.90	0.275	0.080	(0.105)	0.195
31	2.58	0.90	0.275	0.080	(0.105)	0.195
32	2.67	0.90	0.275	0.080	(0.105)	0.195
33	2.75	1.00	0.306	0.080	(0.116)	0.226
34	2.83	1.00	0.306	0.080	(0.116)	0.226
35	2.92	1.00	0.306	0.080	(0.116)	0.226
36	3.00	1.00	0.306	0.080	(0.116)	0.226
37	3.08	1.00	0.306	0.080	(0.116)	0.226
38	3.17	1.10	0.337	0.080	(0.128)	0.256
39	3.25	1.10	0.337	0.080	(0.128)	0.256
40	3.33	1.10	0.337	0.080	(0.128)	0.256
41	3.42	1.20	0.367	0.080	(0.140)	0.287
42	3.50	1.30	0.398	0.080	(0.151)	0.317
43	3.58	1.40	0.428	0.080	(0.163)	0.348
44	3.67	1.40	0.428	0.080	(0.163)	0.348
45	3.75	1.50	0.459	0.080	(0.174)	0.379
46	3.83	1.50	0.459	0.080	(0.174)	0.379
47	3.92	1.60	0.490	0.080	(0.186)	0.409
48	4.00	1.60	0.490	0.080	(0.186)	0.409
49	4.08	1.70	0.520	0.080	(0.198)	0.440
50	4.17	1.80	0.551	0.080	(0.209)	0.470
51	4.25	1.90	0.581	0.080	(0.221)	0.501
52	4.33	2.00	0.612	0.080	(0.233)	0.532
53	4.42	2.10	0.643	0.080	(0.244)	0.562
54	4.50	2.10	0.643	0.080	(0.244)	0.562
55	4.58	2.20	0.673	0.080	(0.256)	0.593
56	4.67	2.30	0.704	0.080	(0.267)	0.623
57	4.75	2.40	0.734	0.080	(0.279)	0.654
58	4.83	2.40	0.734	0.080	(0.279)	0.654
59	4.92	2.50	0.765	0.080	(0.291)	0.685

```
  60   5.00     2.60      0.796          0.080    (  0.302)        0.715
  61   5.08     3.10      0.949          0.080    (  0.360)        0.868
  62   5.17     3.60      1.102          0.080    (  0.419)        1.021
  63   5.25     3.90      1.193          0.080    (  0.453)        1.113
  64   5.33     4.20      1.285          0.080    (  0.488)        1.205
  65   5.42     4.70      1.438          0.080    (  0.547)        1.358
  66   5.50     5.60      1.714          0.080    (  0.651)        1.633
  67   5.58     1.90      0.581          0.080    (  0.221)        0.501
  68   5.67     0.90      0.275          0.080    (  0.105)        0.195
  69   5.75     0.60      0.184       (  0.080)      0.070         0.114
  70   5.83     0.50      0.153       (  0.080)      0.058         0.095
  71   5.92     0.30      0.092       (  0.080)      0.035         0.057
  72   6.00     0.20      0.061       (  0.080)      0.023         0.038
             (Loss Rate Not Used)
     Sum =     100.0                                 Sum =    25.0
      Flood volume = Effective rainfall      2.08(In)
       times area       4.0(Ac.)/[(In)/(Ft.)] =       0.7(Ac.Ft)
      Total soil loss =      0.47(In)
      Total soil loss =     0.155(Ac.Ft)
      Total rainfall =      2.55(In)
      Flood volume =       30260.1 Cubic Feet
      Total soil loss =       6765.4 Cubic Feet
      ------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =      6.065(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       0.0014      0.21  Q         |         |         |
|
    0+10       0.0043      0.41  VQ        |         |         |
|
    0+15       0.0074      0.46  VQ        |         |         |
|
    0+20       0.0106      0.46  VQ        |         |         |
|
    0+25       0.0138      0.46  VQ        |         |         |
|
    0+30       0.0172      0.50  V Q       |         |         |
|
    0+35       0.0209      0.54  |VQ       |         |         |
|
    0+40       0.0246      0.54  |VQ       |         |         |
|
    0+45       0.0284      0.54  |VQ       |         |         |
|
    0+50       0.0321      0.54  |VQ       |         |         |
```

```
|
0+55       0.0358      0.54  | Q       |         |         |
|
1+ 0       0.0400      0.61  | Q       |         |         |
|
1+ 5       0.0445      0.66  | Q       |         |         |
|
1+10       0.0491      0.66  | Q       |         |         |
|
1+15       0.0536      0.66  | QV      |         |         |
|
1+20       0.0582      0.66  | QV      |         |         |
|
1+25       0.0628      0.66  | QV      |         |         |
|
1+30       0.0673      0.66  | QV      |         |         |
|
1+35       0.0719      0.66  | Q V     |         |         |
|
1+40       0.0765      0.66  | Q V     |         |         |
|
1+45       0.0810      0.66  | Q V     |         |         |
|
1+50       0.0856      0.66  | Q V     |         |         |
|
1+55       0.0902      0.66  | Q  V    |         |         |
|
2+ 0       0.0952      0.73  | Q  V    |         |         |
|
2+ 5       0.1001      0.72  | Q  V    |         |         |
|
2+10       0.1052      0.73  | Q   V   |         |         |
|
2+15       0.1106      0.78  |  Q  V   |         |         |
|
2+20       0.1160      0.79  |  Q  V   |         |         |
|
2+25       0.1214      0.79  |  Q  V   |         |         |
|
2+30       0.1268      0.79  |  Q   V  |         |         |
|
2+35       0.1322      0.79  |  Q   V  |         |         |
|
2+40       0.1376      0.79  |  Q   V  |         |         |
|
2+45       0.1435      0.85  |  Q    V |         |         |
|
2+50       0.1498      0.91  |  Q    V |         |         |
|
2+55       0.1560      0.91  |  Q    V |         |         |
|
3+ 0       0.1623      0.91  |  Q     V|         |         |
|
3+ 5       0.1685      0.91  |  Q     V|         |         |
|
3+10       0.1753      0.98  |  Q      V         |         |
|
3+15       0.1824      1.03  |   Q     V         |         |
|
3+20       0.1895      1.03  |   Q     V         |         |
```

```
|
     3+25        0.1971      1.10  |   Q      |V         |         |
|
     3+30        0.2055      1.22  |   Q      |V         |         |
|
     3+35        0.2147      1.34  |    Q     | V        |         |
|
     3+40        0.2244      1.40  |    Q     | V        |         |
|
     3+45        0.2345      1.47  |    Q     |  V       |         |
|
     3+50        0.2450      1.52  |     Q    |   V      |         |
|
     3+55        0.2560      1.59  |     Q    |   V      |         |
|
     4+ 0        0.2673      1.65  |     Q    |    V     |         |
|
     4+ 5        0.2791      1.72  |     Q    |     V    |         |
|
     4+10        0.2918      1.84  |      Q   |     V    |         |
|
     4+15        0.3053      1.96  |      Q   |      V   |         |
|
     4+20        0.3196      2.08  |       Q  |       V  |         |
|
     4+25        0.3349      2.21  |       Q  |        V|         |
|
     4+30        0.3504      2.26  |        Q|         V         |
|
     4+35        0.3665      2.33  |        Q|         |V        |
|
     4+40        0.3834      2.45  |        Q|         | V       |
|
     4+45        0.4012      2.58  |         Q         |  V      |
|
     4+50        0.4193      2.63  |         Q         |   V     |
|
     4+55        0.4380      2.70  |         Q         |    V    |
|
     5+ 0        0.4574      2.82  |         |Q        |     V   |
|
     5+ 5        0.4796      3.22  |         | Q       |      V  |
|
     5+10        0.5059      3.82  |         |    Q    |        V|
|
     5+15        0.5355      4.30  |         |      Q  |         V
|
     5+20        0.5678      4.68  |         |       Q |         | V
|
     5+25        0.6035      5.19  |         |         Q         |   V
|
     5+30        0.6452      6.06  |         |         |   Q     |      V
|
     5+35        0.6732      4.06  |         |     Q   |         |       V
|
     5+40        0.6834      1.48  |    Q    |         |         |
V|
     5+45        0.6878      0.64  | Q       |         |         |
V|
     5+50        0.6908      0.43  |Q        |         |         |
```

```
V|
    5+55       0.6928      0.30  |Q         |         |         |
V|
    6+ 0       0.6942      0.19  Q          |         |         |
V|
    6+ 5       0.6946      0.07  Q          |         |         |
V|
    6+10       0.6947      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 11/09/21 File: moval33post242.out

++

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area A

Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) = 0.006 Sq. Mi.
Length along longest watercourse = 1159.00(Ft.)
Length along longest watercourse measured to centroid = 637.00 (Ft.)
Length along longest watercourse = 0.220 Mi.
Length along longest watercourse measured to centroid = 0.121 Mi.
Difference in elevation = 70.00(Ft.)
Slope along watercourse = 318.8956 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.030 Hr.
Lag time = 1.82 Min.
25% of lag time = 0.45 Min.
40% of lag time = 0.73 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]

4.00 1.93 7.72

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.00	4.64	18.56

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.930(In)
Area Averaged 100-Year Rainfall = 4.640(In)

Point rain (area averaged) = 1.930(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.930(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
4.000	69.00	0.650

Total Area Entered = 4.00(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.650	0.155	1.000	0.155

Sum (F) = 0.155

Area averaged mean soil loss (F) (In/Hr) = 0.155
Minimum soil loss rate ((In/Hr)) = 0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

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	275.097	54.570	2.200
2	0.167	550.195	42.583	1.717
3	0.250	825.292	2.846	0.115
			Sum = 100.000	Sum= 4.031

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 Pattern Storm Rain Loss rate(In./Hr) Effective

	(Hr.)	Percent	(In/Hr)	Max	Low	(In/Hr)
1	0.08	0.07	0.015	(0.274)	0.006	0.010
2	0.17	0.07	0.015	(0.273)	0.006	0.010
3	0.25	0.07	0.015	(0.272)	0.006	0.010
4	0.33	0.10	0.023	(0.271)	0.009	0.014
5	0.42	0.10	0.023	(0.270)	0.009	0.014
6	0.50	0.10	0.023	(0.269)	0.009	0.014
7	0.58	0.10	0.023	(0.268)	0.009	0.014
8	0.67	0.10	0.023	(0.267)	0.009	0.014
9	0.75	0.10	0.023	(0.266)	0.009	0.014
10	0.83	0.13	0.031	(0.265)	0.012	0.019
11	0.92	0.13	0.031	(0.264)	0.012	0.019
12	1.00	0.13	0.031	(0.263)	0.012	0.019
13	1.08	0.10	0.023	(0.262)	0.009	0.014
14	1.17	0.10	0.023	(0.261)	0.009	0.014
15	1.25	0.10	0.023	(0.260)	0.009	0.014
16	1.33	0.10	0.023	(0.259)	0.009	0.014
17	1.42	0.10	0.023	(0.258)	0.009	0.014
18	1.50	0.10	0.023	(0.257)	0.009	0.014
19	1.58	0.10	0.023	(0.255)	0.009	0.014
20	1.67	0.10	0.023	(0.254)	0.009	0.014
21	1.75	0.10	0.023	(0.253)	0.009	0.014
22	1.83	0.13	0.031	(0.252)	0.012	0.019
23	1.92	0.13	0.031	(0.251)	0.012	0.019
24	2.00	0.13	0.031	(0.250)	0.012	0.019
25	2.08	0.13	0.031	(0.249)	0.012	0.019
26	2.17	0.13	0.031	(0.248)	0.012	0.019
27	2.25	0.13	0.031	(0.247)	0.012	0.019
28	2.33	0.13	0.031	(0.246)	0.012	0.019
29	2.42	0.13	0.031	(0.245)	0.012	0.019
30	2.50	0.13	0.031	(0.244)	0.012	0.019
31	2.58	0.17	0.039	(0.243)	0.015	0.024
32	2.67	0.17	0.039	(0.242)	0.015	0.024
33	2.75	0.17	0.039	(0.241)	0.015	0.024
34	2.83	0.17	0.039	(0.240)	0.015	0.024
35	2.92	0.17	0.039	(0.239)	0.015	0.024
36	3.00	0.17	0.039	(0.238)	0.015	0.024
37	3.08	0.17	0.039	(0.237)	0.015	0.024
38	3.17	0.17	0.039	(0.236)	0.015	0.024
39	3.25	0.17	0.039	(0.235)	0.015	0.024
40	3.33	0.17	0.039	(0.234)	0.015	0.024
41	3.42	0.17	0.039	(0.233)	0.015	0.024
42	3.50	0.17	0.039	(0.232)	0.015	0.024
43	3.58	0.17	0.039	(0.232)	0.015	0.024
44	3.67	0.17	0.039	(0.231)	0.015	0.024
45	3.75	0.17	0.039	(0.230)	0.015	0.024
46	3.83	0.20	0.046	(0.229)	0.018	0.029
47	3.92	0.20	0.046	(0.228)	0.018	0.029
48	4.00	0.20	0.046	(0.227)	0.018	0.029
49	4.08	0.20	0.046	(0.226)	0.018	0.029
50	4.17	0.20	0.046	(0.225)	0.018	0.029
51	4.25	0.20	0.046	(0.224)	0.018	0.029
52	4.33	0.23	0.054	(0.223)	0.021	0.034
53	4.42	0.23	0.054	(0.222)	0.021	0.034
54	4.50	0.23	0.054	(0.221)	0.021	0.034
55	4.58	0.23	0.054	(0.220)	0.021	0.034
56	4.67	0.23	0.054	(0.219)	0.021	0.034
57	4.75	0.23	0.054	(0.218)	0.021	0.034
58	4.83	0.27	0.062	(0.217)	0.023	0.038
59	4.92	0.27	0.062	(0.216)	0.023	0.038

60	5.00	0.27	0.062	(0.215)	0.023	0.038
61	5.08	0.20	0.046	(0.214)	0.018	0.029
62	5.17	0.20	0.046	(0.213)	0.018	0.029
63	5.25	0.20	0.046	(0.212)	0.018	0.029
64	5.33	0.23	0.054	(0.212)	0.021	0.034
65	5.42	0.23	0.054	(0.211)	0.021	0.034
66	5.50	0.23	0.054	(0.210)	0.021	0.034
67	5.58	0.27	0.062	(0.209)	0.023	0.038
68	5.67	0.27	0.062	(0.208)	0.023	0.038
69	5.75	0.27	0.062	(0.207)	0.023	0.038
70	5.83	0.27	0.062	(0.206)	0.023	0.038
71	5.92	0.27	0.062	(0.205)	0.023	0.038
72	6.00	0.27	0.062	(0.204)	0.023	0.038
73	6.08	0.30	0.069	(0.203)	0.026	0.043
74	6.17	0.30	0.069	(0.202)	0.026	0.043
75	6.25	0.30	0.069	(0.202)	0.026	0.043
76	6.33	0.30	0.069	(0.201)	0.026	0.043
77	6.42	0.30	0.069	(0.200)	0.026	0.043
78	6.50	0.30	0.069	(0.199)	0.026	0.043
79	6.58	0.33	0.077	(0.198)	0.029	0.048
80	6.67	0.33	0.077	(0.197)	0.029	0.048
81	6.75	0.33	0.077	(0.196)	0.029	0.048
82	6.83	0.33	0.077	(0.195)	0.029	0.048
83	6.92	0.33	0.077	(0.194)	0.029	0.048
84	7.00	0.33	0.077	(0.193)	0.029	0.048
85	7.08	0.33	0.077	(0.193)	0.029	0.048
86	7.17	0.33	0.077	(0.192)	0.029	0.048
87	7.25	0.33	0.077	(0.191)	0.029	0.048
88	7.33	0.37	0.085	(0.190)	0.032	0.053
89	7.42	0.37	0.085	(0.189)	0.032	0.053
90	7.50	0.37	0.085	(0.188)	0.032	0.053
91	7.58	0.40	0.093	(0.187)	0.035	0.057
92	7.67	0.40	0.093	(0.187)	0.035	0.057
93	7.75	0.40	0.093	(0.186)	0.035	0.057
94	7.83	0.43	0.100	(0.185)	0.038	0.062
95	7.92	0.43	0.100	(0.184)	0.038	0.062
96	8.00	0.43	0.100	(0.183)	0.038	0.062
97	8.08	0.50	0.116	(0.182)	0.044	0.072
98	8.17	0.50	0.116	(0.181)	0.044	0.072
99	8.25	0.50	0.116	(0.181)	0.044	0.072
100	8.33	0.50	0.116	(0.180)	0.044	0.072
101	8.42	0.50	0.116	(0.179)	0.044	0.072
102	8.50	0.50	0.116	(0.178)	0.044	0.072
103	8.58	0.53	0.124	(0.177)	0.047	0.077
104	8.67	0.53	0.124	(0.176)	0.047	0.077
105	8.75	0.53	0.124	(0.176)	0.047	0.077
106	8.83	0.57	0.131	(0.175)	0.050	0.081
107	8.92	0.57	0.131	(0.174)	0.050	0.081
108	9.00	0.57	0.131	(0.173)	0.050	0.081
109	9.08	0.63	0.147	(0.172)	0.056	0.091
110	9.17	0.63	0.147	(0.171)	0.056	0.091
111	9.25	0.63	0.147	(0.171)	0.056	0.091
112	9.33	0.67	0.154	(0.170)	0.059	0.096
113	9.42	0.67	0.154	(0.169)	0.059	0.096
114	9.50	0.67	0.154	(0.168)	0.059	0.096
115	9.58	0.70	0.162	(0.167)	0.062	0.101
116	9.67	0.70	0.162	(0.167)	0.062	0.101
117	9.75	0.70	0.162	(0.166)	0.062	0.101
118	9.83	0.73	0.170	(0.165)	0.065	0.105
119	9.92	0.73	0.170	(0.164)	0.065	0.105

120	10.00	0.73	0.170	(0.163)	0.065	0.105
121	10.08	0.50	0.116	(0.163)	0.044	0.072
122	10.17	0.50	0.116	(0.162)	0.044	0.072
123	10.25	0.50	0.116	(0.161)	0.044	0.072
124	10.33	0.50	0.116	(0.160)	0.044	0.072
125	10.42	0.50	0.116	(0.159)	0.044	0.072
126	10.50	0.50	0.116	(0.159)	0.044	0.072
127	10.58	0.67	0.154	(0.158)	0.059	0.096
128	10.67	0.67	0.154	(0.157)	0.059	0.096
129	10.75	0.67	0.154	(0.156)	0.059	0.096
130	10.83	0.67	0.154	(0.156)	0.059	0.096
131	10.92	0.67	0.154	(0.155)	0.059	0.096
132	11.00	0.67	0.154	(0.154)	0.059	0.096
133	11.08	0.63	0.147	(0.153)	0.056	0.091
134	11.17	0.63	0.147	(0.153)	0.056	0.091
135	11.25	0.63	0.147	(0.152)	0.056	0.091
136	11.33	0.63	0.147	(0.151)	0.056	0.091
137	11.42	0.63	0.147	(0.150)	0.056	0.091
138	11.50	0.63	0.147	(0.150)	0.056	0.091
139	11.58	0.57	0.131	(0.149)	0.050	0.081
140	11.67	0.57	0.131	(0.148)	0.050	0.081
141	11.75	0.57	0.131	(0.147)	0.050	0.081
142	11.83	0.60	0.139	(0.147)	0.053	0.086
143	11.92	0.60	0.139	(0.146)	0.053	0.086
144	12.00	0.60	0.139	(0.145)	0.053	0.086
145	12.08	0.83	0.193	(0.144)	0.073	0.120
146	12.17	0.83	0.193	(0.144)	0.073	0.120
147	12.25	0.83	0.193	(0.143)	0.073	0.120
148	12.33	0.87	0.201	(0.142)	0.076	0.124
149	12.42	0.87	0.201	(0.142)	0.076	0.124
150	12.50	0.87	0.201	(0.141)	0.076	0.124
151	12.58	0.93	0.216	(0.140)	0.082	0.134
152	12.67	0.93	0.216	(0.139)	0.082	0.134
153	12.75	0.93	0.216	(0.139)	0.082	0.134
154	12.83	0.97	0.224	(0.138)	0.085	0.139
155	12.92	0.97	0.224	(0.137)	0.085	0.139
156	13.00	0.97	0.224	(0.137)	0.085	0.139
157	13.08	1.13	0.262	(0.136)	0.100	0.163
158	13.17	1.13	0.262	(0.135)	0.100	0.163
159	13.25	1.13	0.262	(0.135)	0.100	0.163
160	13.33	1.13	0.262	(0.134)	0.100	0.163
161	13.42	1.13	0.262	(0.133)	0.100	0.163
162	13.50	1.13	0.262	(0.133)	0.100	0.163
163	13.58	0.77	0.178	(0.132)	0.067	0.110
164	13.67	0.77	0.178	(0.131)	0.067	0.110
165	13.75	0.77	0.178	(0.130)	0.067	0.110
166	13.83	0.77	0.178	(0.130)	0.067	0.110
167	13.92	0.77	0.178	(0.129)	0.067	0.110
168	14.00	0.77	0.178	(0.129)	0.067	0.110
169	14.08	0.90	0.208	(0.128)	0.079	0.129
170	14.17	0.90	0.208	(0.127)	0.079	0.129
171	14.25	0.90	0.208	(0.127)	0.079	0.129
172	14.33	0.87	0.201	(0.126)	0.076	0.124
173	14.42	0.87	0.201	(0.125)	0.076	0.124
174	14.50	0.87	0.201	(0.125)	0.076	0.124
175	14.58	0.87	0.201	(0.124)	0.076	0.124
176	14.67	0.87	0.201	(0.123)	0.076	0.124
177	14.75	0.87	0.201	(0.123)	0.076	0.124
178	14.83	0.83	0.193	(0.122)	0.073	0.120
179	14.92	0.83	0.193	(0.121)	0.073	0.120

180	15.00	0.83	0.193	(0.121)	0.073	0.120
181	15.08	0.80	0.185	(0.120)	0.070	0.115
182	15.17	0.80	0.185	(0.120)	0.070	0.115
183	15.25	0.80	0.185	(0.119)	0.070	0.115
184	15.33	0.77	0.178	(0.118)	0.067	0.110
185	15.42	0.77	0.178	(0.118)	0.067	0.110
186	15.50	0.77	0.178	(0.117)	0.067	0.110
187	15.58	0.63	0.147	(0.117)	0.056	0.091
188	15.67	0.63	0.147	(0.116)	0.056	0.091
189	15.75	0.63	0.147	(0.115)	0.056	0.091
190	15.83	0.63	0.147	(0.115)	0.056	0.091
191	15.92	0.63	0.147	(0.114)	0.056	0.091
192	16.00	0.63	0.147	(0.114)	0.056	0.091
193	16.08	0.13	0.031	(0.113)	0.012	0.019
194	16.17	0.13	0.031	(0.112)	0.012	0.019
195	16.25	0.13	0.031	(0.112)	0.012	0.019
196	16.33	0.13	0.031	(0.111)	0.012	0.019
197	16.42	0.13	0.031	(0.111)	0.012	0.019
198	16.50	0.13	0.031	(0.110)	0.012	0.019
199	16.58	0.10	0.023	(0.110)	0.009	0.014
200	16.67	0.10	0.023	(0.109)	0.009	0.014
201	16.75	0.10	0.023	(0.109)	0.009	0.014
202	16.83	0.10	0.023	(0.108)	0.009	0.014
203	16.92	0.10	0.023	(0.107)	0.009	0.014
204	17.00	0.10	0.023	(0.107)	0.009	0.014
205	17.08	0.17	0.039	(0.106)	0.015	0.024
206	17.17	0.17	0.039	(0.106)	0.015	0.024
207	17.25	0.17	0.039	(0.105)	0.015	0.024
208	17.33	0.17	0.039	(0.105)	0.015	0.024
209	17.42	0.17	0.039	(0.104)	0.015	0.024
210	17.50	0.17	0.039	(0.104)	0.015	0.024
211	17.58	0.17	0.039	(0.103)	0.015	0.024
212	17.67	0.17	0.039	(0.103)	0.015	0.024
213	17.75	0.17	0.039	(0.102)	0.015	0.024
214	17.83	0.13	0.031	(0.102)	0.012	0.019
215	17.92	0.13	0.031	(0.101)	0.012	0.019
216	18.00	0.13	0.031	(0.101)	0.012	0.019
217	18.08	0.13	0.031	(0.100)	0.012	0.019
218	18.17	0.13	0.031	(0.100)	0.012	0.019
219	18.25	0.13	0.031	(0.099)	0.012	0.019
220	18.33	0.13	0.031	(0.099)	0.012	0.019
221	18.42	0.13	0.031	(0.098)	0.012	0.019
222	18.50	0.13	0.031	(0.098)	0.012	0.019
223	18.58	0.10	0.023	(0.097)	0.009	0.014
224	18.67	0.10	0.023	(0.097)	0.009	0.014
225	18.75	0.10	0.023	(0.096)	0.009	0.014
226	18.83	0.07	0.015	(0.096)	0.006	0.010
227	18.92	0.07	0.015	(0.095)	0.006	0.010
228	19.00	0.07	0.015	(0.095)	0.006	0.010
229	19.08	0.10	0.023	(0.094)	0.009	0.014
230	19.17	0.10	0.023	(0.094)	0.009	0.014
231	19.25	0.10	0.023	(0.094)	0.009	0.014
232	19.33	0.13	0.031	(0.093)	0.012	0.019
233	19.42	0.13	0.031	(0.093)	0.012	0.019
234	19.50	0.13	0.031	(0.092)	0.012	0.019
235	19.58	0.10	0.023	(0.092)	0.009	0.014
236	19.67	0.10	0.023	(0.091)	0.009	0.014
237	19.75	0.10	0.023	(0.091)	0.009	0.014
238	19.83	0.07	0.015	(0.091)	0.006	0.010
239	19.92	0.07	0.015	(0.090)	0.006	0.010

240	20.00	0.07	0.015	(0.090)	0.006	0.010
241	20.08	0.10	0.023	(0.089)	0.009	0.014
242	20.17	0.10	0.023	(0.089)	0.009	0.014
243	20.25	0.10	0.023	(0.089)	0.009	0.014
244	20.33	0.10	0.023	(0.088)	0.009	0.014
245	20.42	0.10	0.023	(0.088)	0.009	0.014
246	20.50	0.10	0.023	(0.088)	0.009	0.014
247	20.58	0.10	0.023	(0.087)	0.009	0.014
248	20.67	0.10	0.023	(0.087)	0.009	0.014
249	20.75	0.10	0.023	(0.086)	0.009	0.014
250	20.83	0.07	0.015	(0.086)	0.006	0.010
251	20.92	0.07	0.015	(0.086)	0.006	0.010
252	21.00	0.07	0.015	(0.085)	0.006	0.010
253	21.08	0.10	0.023	(0.085)	0.009	0.014
254	21.17	0.10	0.023	(0.085)	0.009	0.014
255	21.25	0.10	0.023	(0.084)	0.009	0.014
256	21.33	0.07	0.015	(0.084)	0.006	0.010
257	21.42	0.07	0.015	(0.084)	0.006	0.010
258	21.50	0.07	0.015	(0.083)	0.006	0.010
259	21.58	0.10	0.023	(0.083)	0.009	0.014
260	21.67	0.10	0.023	(0.083)	0.009	0.014
261	21.75	0.10	0.023	(0.083)	0.009	0.014
262	21.83	0.07	0.015	(0.082)	0.006	0.010
263	21.92	0.07	0.015	(0.082)	0.006	0.010
264	22.00	0.07	0.015	(0.082)	0.006	0.010
265	22.08	0.10	0.023	(0.081)	0.009	0.014
266	22.17	0.10	0.023	(0.081)	0.009	0.014
267	22.25	0.10	0.023	(0.081)	0.009	0.014
268	22.33	0.07	0.015	(0.081)	0.006	0.010
269	22.42	0.07	0.015	(0.080)	0.006	0.010
270	22.50	0.07	0.015	(0.080)	0.006	0.010
271	22.58	0.07	0.015	(0.080)	0.006	0.010
272	22.67	0.07	0.015	(0.080)	0.006	0.010
273	22.75	0.07	0.015	(0.079)	0.006	0.010
274	22.83	0.07	0.015	(0.079)	0.006	0.010
275	22.92	0.07	0.015	(0.079)	0.006	0.010
276	23.00	0.07	0.015	(0.079)	0.006	0.010
277	23.08	0.07	0.015	(0.079)	0.006	0.010
278	23.17	0.07	0.015	(0.079)	0.006	0.010
279	23.25	0.07	0.015	(0.078)	0.006	0.010
280	23.33	0.07	0.015	(0.078)	0.006	0.010
281	23.42	0.07	0.015	(0.078)	0.006	0.010
282	23.50	0.07	0.015	(0.078)	0.006	0.010
283	23.58	0.07	0.015	(0.078)	0.006	0.010
284	23.67	0.07	0.015	(0.078)	0.006	0.010
285	23.75	0.07	0.015	(0.078)	0.006	0.010
286	23.83	0.07	0.015	(0.077)	0.006	0.010
287	23.92	0.07	0.015	(0.077)	0.006	0.010
288	24.00	0.07	0.015	(0.077)	0.006	0.010

(Loss Rate Not Used)

Sum = 100.0 Sum = 14.4

Flood volume = Effective rainfall 1.20(In)
times area 4.0(Ac.)/[(In)/(Ft.)] = 0.4(Ac.Ft)
Total soil loss = 0.73(In)
Total soil loss = 0.244(Ac.Ft)
Total rainfall = 1.93(In)
Flood volume = 17374.5 Cubic Feet
Total soil loss = 10648.9 Cubic Feet

--

Peak flow rate of this hydrograph = 0.656(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	0.0001	0.02	Q	|	|	|	|
0+10	0.0004	0.04	Q	|	|	|	|
0+15	0.0007	0.04	Q	|	|	|	|
0+20	0.0010	0.05	Q	|	|	|	|
0+25	0.0014	0.06	Q	|	|	|	|
0+30	0.0018	0.06	Q	|	|	|	|
0+35	0.0022	0.06	Q	|	|	|	|
0+40	0.0026	0.06	Q	|	|	|	|
0+45	0.0030	0.06	Q	|	|	|	|
0+50	0.0035	0.07	Q	|	|	|	|
0+55	0.0040	0.08	Q	|	|	|	|
1+ 0	0.0045	0.08	Q	|	|	|	|
1+ 5	0.0050	0.07	Q	|	|	|	|
1+10	0.0054	0.06	Q	|	|	|	|
1+15	0.0058	0.06	Q	|	|	|	|
1+20	0.0062	0.06	Q	|	|	|	|
1+25	0.0066	0.06	Q	|	|	|	|
1+30	0.0070	0.06	Q	|	|	|	|
1+35	0.0074	0.06	Q	|	|	|	|
1+40	0.0078	0.06	Q	|	|	|	|
1+45	0.0082	0.06	Q	|	|	|	|
1+50	0.0087	0.07	Q	|	|	|	

1+55	0.0092	0.08	Q			
2+ 0	0.0097	0.08	Q			
2+ 5	0.0102	0.08	QV			
2+10	0.0108	0.08	QV			
2+15	0.0113	0.08	QV			
2+20	0.0118	0.08	QV			
2+25	0.0124	0.08	QV			
2+30	0.0129	0.08	QV			
2+35	0.0135	0.09	QV			
2+40	0.0142	0.10	QV			
2+45	0.0148	0.10	QV			
2+50	0.0155	0.10	QV			
2+55	0.0162	0.10	QV			
3+ 0	0.0168	0.10	QV			
3+ 5	0.0175	0.10	QV			
3+10	0.0182	0.10	QV			
3+15	0.0188	0.10	QV			
3+20	0.0195	0.10	QV			
3+25	0.0202	0.10	Q V			
3+30	0.0208	0.10	Q V			
3+35	0.0215	0.10	Q V			
3+40	0.0221	0.10	Q V			
3+45	0.0228	0.10	Q V			
3+50	0.0236	0.11	Q V			
3+55	0.0243	0.12	Q V			
4+ 0	0.0251	0.12	Q V			
4+ 5	0.0259	0.12	Q V			
4+10	0.0267	0.12	Q V			
4+15	0.0275	0.12	Q V			
4+20	0.0284	0.13	Q V			

```
|
   4+25       0.0293      0.13  Q V        |         |         |
|
   4+30       0.0303      0.14  Q  V       |         |         |
|
   4+35       0.0312      0.14  Q  V       |         |         |
|
   4+40       0.0321      0.14  Q  V       |         |         |
|
   4+45       0.0331      0.14  Q  V       |         |         |
|
   4+50       0.0341      0.15  Q  V       |         |         |
|
   4+55       0.0351      0.15  Q  V       |         |         |
|
   5+ 0       0.0362      0.15  Q  V       |         |         |
|
   5+ 5       0.0371      0.13  Q  V       |         |         |
|
   5+10       0.0379      0.12  Q  V       |         |         |
|
   5+15       0.0387      0.12  Q  V       |         |         |
|
   5+20       0.0396      0.13  Q  V       |         |         |
|
   5+25       0.0405      0.13  Q   V      |         |         |
|
   5+30       0.0414      0.14  Q   V      |         |         |
|
   5+35       0.0424      0.15  Q   V      |         |         |
|
   5+40       0.0435      0.15  Q   V      |         |         |
|
   5+45       0.0446      0.15  Q   V      |         |         |
|
   5+50       0.0456      0.15  Q   V      |         |         |
|
   5+55       0.0467      0.15  Q   V      |         |         |
|
   6+ 0       0.0477      0.15  Q   V      |         |         |
|
   6+ 5       0.0489      0.16  Q   V      |         |         |
|
   6+10       0.0501      0.17  Q    V     |         |         |
|
   6+15       0.0513      0.17  Q    V     |         |         |
|
   6+20       0.0525      0.17  Q    V     |         |         |
|
   6+25       0.0537      0.17  Q    V     |         |         |
|
   6+30       0.0549      0.17  Q    V     |         |         |
|
   6+35       0.0561      0.18  Q    V     |         |         |
|
   6+40       0.0575      0.19  Q    V     |         |         |
|
   6+45       0.0588      0.19  Q    V     |         |         |
|
   6+50       0.0601      0.19  Q     V    |         |         |
```

```
|
 6+55       0.0614      0.19  Q     V   |         |         |
|
 7+ 0       0.0628      0.19  Q     V   |         |         |
|
 7+ 5       0.0641      0.19  Q     V   |         |         |
|
 7+10       0.0654      0.19  Q     V   |         |         |
|
 7+15       0.0668      0.19  Q     V   |         |         |
|
 7+20       0.0682      0.20  Q     V   |         |         |
|
 7+25       0.0696      0.21  Q     V   |         |         |
|
 7+30       0.0711      0.21  Q      V  |         |         |
|
 7+35       0.0726      0.22  Q      V  |         |         |
|
 7+40       0.0742      0.23  Q      V  |         |         |
|
 7+45       0.0758      0.23  Q      V  |         |         |
|
 7+50       0.0775      0.24  Q      V  |         |         |
|
 7+55       0.0792      0.25  |Q     V  |         |         |
|
 8+ 0       0.0809      0.25  |Q      V |         |         |
|
 8+ 5       0.0828      0.27  |Q      V |         |         |
|
 8+10       0.0848      0.29  |Q      V |         |         |
|
 8+15       0.0868      0.29  |Q      V |         |         |
|
 8+20       0.0888      0.29  |Q      V |         |         |
|
 8+25       0.0908      0.29  |Q       V|         |         |
|
 8+30       0.0928      0.29  |Q       V|         |         |
|
 8+35       0.0948      0.30  |Q       V|         |         |
|
 8+40       0.0970      0.31  |Q       V|         |         |
|
 8+45       0.0991      0.31  |Q       V|         |         |
|
 8+50       0.1013      0.32  |Q        V         |         |
|
 8+55       0.1035      0.33  |Q        V         |         |
|
 9+ 0       0.1058      0.33  |Q        V         |         |
|
 9+ 5       0.1082      0.35  |Q        V         |         |
|
 9+10       0.1107      0.37  |Q        |V        |         |
|
 9+15       0.1133      0.37  |Q        |V        |         |
|
 9+20       0.1159      0.38  |Q        |V        |         |
```

```
|
    9+25       0.1185      0.39  |Q        |V        |         |
|
    9+30       0.1212      0.39  |Q        | V       |         |
|
    9+35       0.1239      0.40  |Q        | V       |         |
|
    9+40       0.1267      0.40  |Q        | V       |         |
|
    9+45       0.1295      0.41  |Q        | V       |         |
|
    9+50       0.1323      0.42  |Q        |  V      |         |
|
    9+55       0.1353      0.42  |Q        |  V      |         |
|
   10+ 0       0.1382      0.42  |Q        |  V      |         |
|
   10+ 5       0.1406      0.35  |Q        |   V     |         |
|
   10+10       0.1426      0.29  |Q        |   V     |         |
|
   10+15       0.1446      0.29  |Q        |   V     |         |
|
   10+20       0.1466      0.29  |Q        |   V     |         |
|
   10+25       0.1486      0.29  |Q        |   V     |         |
|
   10+30       0.1506      0.29  |Q        |    V    |         |
|
   10+35       0.1530      0.34  |Q        |    V    |         |
|
   10+40       0.1556      0.38  |Q        |    V    |         |
|
   10+45       0.1583      0.39  |Q        |    V    |         |
|
   10+50       0.1609      0.39  |Q        |     V   |         |
|
   10+55       0.1636      0.39  |Q        |     V   |         |
|
   11+ 0       0.1662      0.39  |Q        |     V   |         |
|
   11+ 5       0.1688      0.38  |Q        |     V   |         |
|
   11+10       0.1714      0.37  |Q        |      V  |         |
|
   11+15       0.1739      0.37  |Q        |      V  |         |
|
   11+20       0.1764      0.37  |Q        |      V  |         |
|
   11+25       0.1789      0.37  |Q        |      V  |         |
|
   11+30       0.1815      0.37  |Q        |       V |         |
|
   11+35       0.1838      0.35  |Q        |       V |         |
|
   11+40       0.1861      0.33  |Q        |       V |         |
|
   11+45       0.1884      0.33  |Q        |       V |         |
|
   11+50       0.1907      0.34  |Q        |        V|         |
```

```
|
  11+55       0.1931      0.35  |Q         |        V|         |
|
  12+ 0       0.1955      0.35  |Q         |        V|         |
|
  12+ 5       0.1984      0.42  |Q         |        V|         |
|
  12+10       0.2017      0.48  |Q         |         V         |
|
  12+15       0.2050      0.48  |Q         |         V         |
|
  12+20       0.2084      0.49  |Q         |         V         |
|
  12+25       0.2119      0.50  | Q        |         |V        |
|
  12+30       0.2153      0.50  | Q        |         |V        |
|
  12+35       0.2189      0.52  | Q        |         |V        |
|
  12+40       0.2226      0.54  | Q        |         | V       |
|
  12+45       0.2264      0.54  | Q        |         | V       |
|
  12+50       0.2301      0.55  | Q        |         |  V      |
|
  12+55       0.2340      0.56  | Q        |         |  V      |
|
  13+ 0       0.2379      0.56  | Q        |         |  V      |
|
  13+ 5       0.2421      0.61  | Q        |         |   V     |
|
  13+10       0.2466      0.65  | Q        |         |   V     |
|
  13+15       0.2511      0.66  | Q        |         |    V    |
|
  13+20       0.2556      0.66  | Q        |         |    V    |
|
  13+25       0.2601      0.66  | Q        |         |     V   |
|
  13+30       0.2647      0.66  | Q        |         |     V   |
|
  13+35       0.2684      0.54  | Q        |         |     V   |
|
  13+40       0.2715      0.45  |Q         |         |      V  |
|
  13+45       0.2745      0.44  |Q         |         |      V  |
|
  13+50       0.2776      0.44  |Q         |         |      V  |
|
  13+55       0.2807      0.44  |Q         |         |       V |
|
  14+ 0       0.2837      0.44  |Q         |         |       V |
|
  14+ 5       0.2871      0.49  |Q         |         |       V |
|
  14+10       0.2906      0.52  | Q        |         |        V|
|
  14+15       0.2942      0.52  | Q        |         |        V|
|
  14+20       0.2977      0.51  | Q        |         |        V|
```

```
|
  14+25       0.3012      0.50  | Q        |         |         V
|
  14+30       0.3047      0.50  | Q        |         |         V
|
  14+35       0.3081      0.50  | Q        |         |         V
|
  14+40       0.3116      0.50  | Q        |         |         |V
|
  14+45       0.3150      0.50  | Q        |         |         |V
|
  14+50       0.3184      0.49  |Q         |         |         |V
|
  14+55       0.3217      0.48  |Q         |         |         | V
|
  15+ 0       0.3251      0.48  |Q         |         |         | V
|
  15+ 5       0.3283      0.47  |Q         |         |         | V
|
  15+10       0.3315      0.46  |Q         |         |         |  V
|
  15+15       0.3347      0.46  |Q         |         |         |  V
|
  15+20       0.3378      0.45  |Q         |         |         |  V
|
  15+25       0.3409      0.44  |Q         |         |         |   V
|
  15+30       0.3439      0.44  |Q         |         |         |   V
|
  15+35       0.3467      0.40  |Q         |         |         |   V
|
  15+40       0.3492      0.37  |Q         |         |         |    V
|
  15+45       0.3518      0.37  |Q         |         |         |    V
|
  15+50       0.3543      0.37  |Q         |         |         |    V
|
  15+55       0.3568      0.37  |Q         |         |         |    V
|
  16+ 0       0.3594      0.37  |Q         |         |         |     V
|
  16+ 5       0.3608      0.21  Q          |         |         |     V
|
  16+10       0.3614      0.09  Q          |         |         |     V
|
  16+15       0.3619      0.08  Q          |         |         |     V
|
  16+20       0.3624      0.08  Q          |         |         |     V
|
  16+25       0.3630      0.08  Q          |         |         |     V
|
  16+30       0.3635      0.08  Q          |         |         |     V
|
  16+35       0.3640      0.07  Q          |         |         |     V
|
  16+40       0.3644      0.06  Q          |         |         |     V
|
  16+45       0.3648      0.06  Q          |         |         |     V
|
  16+50       0.3652      0.06  Q          |         |         |     V
```

	16+55	0.3656	0.06	Q	|	|	|	V
	17+ 0	0.3660	0.06	Q	|	|	|	V
	17+ 5	0.3665	0.08	Q	|	|	|	V
	17+10	0.3672	0.10	Q	|	|	|	V
	17+15	0.3678	0.10	Q	|	|	|	V
	17+20	0.3685	0.10	Q	|	|	|	V
	17+25	0.3692	0.10	Q	|	|	|	V
	17+30	0.3698	0.10	Q	|	|	|	V
	17+35	0.3705	0.10	Q	|	|	|	V
	17+40	0.3712	0.10	Q	|	|	|	V
	17+45	0.3718	0.10	Q	|	|	|	V
	17+50	0.3724	0.09	Q	|	|	|	V
	17+55	0.3729	0.08	Q	|	|	|	V
	18+ 0	0.3735	0.08	Q	|	|	|	V
	18+ 5	0.3740	0.08	Q	|	|	|	V
	18+10	0.3745	0.08	Q	|	|	|	V
	18+15	0.3751	0.08	Q	|	|	|	V
	18+20	0.3756	0.08	Q	|	|	|	V
	18+25	0.3761	0.08	Q	|	|	|	V
	18+30	0.3767	0.08	Q	|	|	|	V
	18+35	0.3771	0.07	Q	|	|	|	V
	18+40	0.3775	0.06	Q	|	|	|	V
	18+45	0.3779	0.06	Q	|	|	|	V
	18+50	0.3783	0.05	Q	|	|	|	V
	18+55	0.3785	0.04	Q	|	|	|	V
	19+ 0	0.3788	0.04	Q	|	|	|	V
	19+ 5	0.3791	0.05	Q	|	|	|	V
	19+10	0.3795	0.06	Q	|	|	|	V
	19+15	0.3799	0.06	Q	|	|	|	V
	19+20	0.3804	0.07	Q	|	|	|	V

|
19+25 0.3809 0.08 Q | | | V
|
19+30 0.3815 0.08 Q | | | V
|
19+35 0.3819 0.07 Q | | | V
|
19+40 0.3823 0.06 Q | | | V
|
19+45 0.3827 0.06 Q | | | V
|
19+50 0.3830 0.05 Q | | | V
|
19+55 0.3833 0.04 Q | | | V
|
20+ 0 0.3836 0.04 Q | | | V
|
20+ 5 0.3839 0.05 Q | | | V
|
20+10 0.3843 0.06 Q | | | V
|
20+15 0.3847 0.06 Q | | | V
|
20+20 0.3851 0.06 Q | | | V
|
20+25 0.3855 0.06 Q | | | V
|
20+30 0.3859 0.06 Q | | | V
|
20+35 0.3863 0.06 Q | | | V
|
20+40 0.3867 0.06 Q | | | V
|
20+45 0.3871 0.06 Q | | | V
|
20+50 0.3874 0.05 Q | | | V
|
20+55 0.3877 0.04 Q | | | V
|
21+ 0 0.3880 0.04 Q | | | V
|
21+ 5 0.3883 0.05 Q | | | V
|
21+10 0.3887 0.06 Q | | | V
|
21+15 0.3891 0.06 Q | | |
V|
21+20 0.3894 0.05 Q | | |
V|
21+25 0.3897 0.04 Q | | |
V|
21+30 0.3900 0.04 Q | | |
V|
21+35 0.3903 0.05 Q | | |
V|
21+40 0.3907 0.06 Q | | |
V|
21+45 0.3911 0.06 Q | | |
V|
21+50 0.3914 0.05 Q | | |

```
V|
   21+55       0.3917      0.04  Q          |          |          |
V|
   22+ 0       0.3920      0.04  Q          |          |          |
V|
   22+ 5       0.3923      0.05  Q          |          |          |
V|
   22+10       0.3927      0.06  Q          |          |          |
V|
   22+15       0.3931      0.06  Q          |          |          |
V|
   22+20       0.3934      0.05  Q          |          |          |
V|
   22+25       0.3937      0.04  Q          |          |          |
V|
   22+30       0.3939      0.04  Q          |          |          |
V|
   22+35       0.3942      0.04  Q          |          |          |
V|
   22+40       0.3945      0.04  Q          |          |          |
V|
   22+45       0.3947      0.04  Q          |          |          |
V|
   22+50       0.3950      0.04  Q          |          |          |
V|
   22+55       0.3953      0.04  Q          |          |          |
V|
   23+ 0       0.3955      0.04  Q          |          |          |
V|
   23+ 5       0.3958      0.04  Q          |          |          |
V|
   23+10       0.3961      0.04  Q          |          |          |
V|
   23+15       0.3963      0.04  Q          |          |          |
V|
   23+20       0.3966      0.04  Q          |          |          |
V|
   23+25       0.3969      0.04  Q          |          |          |
V|
   23+30       0.3971      0.04  Q          |          |          |
V|
   23+35       0.3974      0.04  Q          |          |          |
V|
   23+40       0.3977      0.04  Q          |          |          |
V|
   23+45       0.3979      0.04  Q          |          |          |
V|
   23+50       0.3982      0.04  Q          |          |          |
V|
   23+55       0.3985      0.04  Q          |          |          |
V|
   24+ 0       0.3987      0.04  Q          |          |          |
V|
   24+ 5       0.3989      0.02  Q          |          |          |
V|
   24+10       0.3989      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

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Study date 11/09/21 File: moval33post245.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area A

Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) = 0.006 Sq. Mi.
Length along longest watercourse = 1159.00(Ft.)
Length along longest watercourse measured to centroid = 637.00 (Ft.)
Length along longest watercourse = 0.220 Mi.
Length along longest watercourse measured to centroid = 0.121 Mi.
Difference in elevation = 70.00(Ft.)
Slope along watercourse = 318.8956 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.030 Hr.
Lag time = 1.82 Min.
25% of lag time = 0.45 Min.
40% of lag time = 0.73 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]

```
        4.00              1.93                    7.72

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        4.00              4.64                   18.56

STORM EVENT (YEAR) =    5.00
Area Averaged 2-Year Rainfall =    1.930(In)
Area Averaged 100-Year Rainfall =    4.640(In)

Point rain (area averaged) =    2.565(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    2.565(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     4.000           69.00         0.650
 Total Area Entered =      4.00(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
69.0  69.0      0.373     0.650        0.155       1.000
0.155
                                                       Sum (F) =
0.155
Area averaged mean soil loss (F) (In/Hr) =  0.155
Minimum soil loss rate ((In/Hr)) =  0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.380
-----------------------------------------------------------------
---

            U n i t  H y d r o g r a p h
                  FOOTHILL S-Curve
-----------------------------------------------------------------
--
            Unit Hydrograph Data
-----------------------------------------------------------------
---
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                           Graph %            (CFS)
-----------------------------------------------------------------
---
    1   0.083        275.097         54.570             2.200
    2   0.167        550.195         42.583             1.717
    3   0.250        825.292          2.846             0.115
                              Sum = 100.000   Sum=       4.031
-----------------------------------------------------------------


 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   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
```

	(Hr.)	Percent	(In/Hr)	Max	Low	(In/Hr)
1	0.08	0.07	0.021	(0.274)	0.008	0.013
2	0.17	0.07	0.021	(0.273)	0.008	0.013
3	0.25	0.07	0.021	(0.272)	0.008	0.013
4	0.33	0.10	0.031	(0.271)	0.012	0.019
5	0.42	0.10	0.031	(0.270)	0.012	0.019
6	0.50	0.10	0.031	(0.269)	0.012	0.019
7	0.58	0.10	0.031	(0.268)	0.012	0.019
8	0.67	0.10	0.031	(0.267)	0.012	0.019
9	0.75	0.10	0.031	(0.266)	0.012	0.019
10	0.83	0.13	0.041	(0.265)	0.016	0.025
11	0.92	0.13	0.041	(0.264)	0.016	0.025
12	1.00	0.13	0.041	(0.263)	0.016	0.025
13	1.08	0.10	0.031	(0.262)	0.012	0.019
14	1.17	0.10	0.031	(0.261)	0.012	0.019
15	1.25	0.10	0.031	(0.260)	0.012	0.019
16	1.33	0.10	0.031	(0.259)	0.012	0.019
17	1.42	0.10	0.031	(0.258)	0.012	0.019
18	1.50	0.10	0.031	(0.257)	0.012	0.019
19	1.58	0.10	0.031	(0.255)	0.012	0.019
20	1.67	0.10	0.031	(0.254)	0.012	0.019
21	1.75	0.10	0.031	(0.253)	0.012	0.019
22	1.83	0.13	0.041	(0.252)	0.016	0.025
23	1.92	0.13	0.041	(0.251)	0.016	0.025
24	2.00	0.13	0.041	(0.250)	0.016	0.025
25	2.08	0.13	0.041	(0.249)	0.016	0.025
26	2.17	0.13	0.041	(0.248)	0.016	0.025
27	2.25	0.13	0.041	(0.247)	0.016	0.025
28	2.33	0.13	0.041	(0.246)	0.016	0.025
29	2.42	0.13	0.041	(0.245)	0.016	0.025
30	2.50	0.13	0.041	(0.244)	0.016	0.025
31	2.58	0.17	0.051	(0.243)	0.019	0.032
32	2.67	0.17	0.051	(0.242)	0.019	0.032
33	2.75	0.17	0.051	(0.241)	0.019	0.032
34	2.83	0.17	0.051	(0.240)	0.019	0.032
35	2.92	0.17	0.051	(0.239)	0.019	0.032
36	3.00	0.17	0.051	(0.238)	0.019	0.032
37	3.08	0.17	0.051	(0.237)	0.019	0.032
38	3.17	0.17	0.051	(0.236)	0.019	0.032
39	3.25	0.17	0.051	(0.235)	0.019	0.032
40	3.33	0.17	0.051	(0.234)	0.019	0.032
41	3.42	0.17	0.051	(0.233)	0.019	0.032
42	3.50	0.17	0.051	(0.232)	0.019	0.032
43	3.58	0.17	0.051	(0.232)	0.019	0.032
44	3.67	0.17	0.051	(0.231)	0.019	0.032
45	3.75	0.17	0.051	(0.230)	0.019	0.032
46	3.83	0.20	0.062	(0.229)	0.023	0.038
47	3.92	0.20	0.062	(0.228)	0.023	0.038
48	4.00	0.20	0.062	(0.227)	0.023	0.038
49	4.08	0.20	0.062	(0.226)	0.023	0.038
50	4.17	0.20	0.062	(0.225)	0.023	0.038
51	4.25	0.20	0.062	(0.224)	0.023	0.038
52	4.33	0.23	0.072	(0.223)	0.027	0.045
53	4.42	0.23	0.072	(0.222)	0.027	0.045
54	4.50	0.23	0.072	(0.221)	0.027	0.045
55	4.58	0.23	0.072	(0.220)	0.027	0.045
56	4.67	0.23	0.072	(0.219)	0.027	0.045
57	4.75	0.23	0.072	(0.218)	0.027	0.045
58	4.83	0.27	0.082	(0.217)	0.031	0.051
59	4.92	0.27	0.082	(0.216)	0.031	0.051

60	5.00	0.27	0.082	(0.215)	0.031	0.051
61	5.08	0.20	0.062	(0.214)	0.023	0.038
62	5.17	0.20	0.062	(0.213)	0.023	0.038
63	5.25	0.20	0.062	(0.212)	0.023	0.038
64	5.33	0.23	0.072	(0.212)	0.027	0.045
65	5.42	0.23	0.072	(0.211)	0.027	0.045
66	5.50	0.23	0.072	(0.210)	0.027	0.045
67	5.58	0.27	0.082	(0.209)	0.031	0.051
68	5.67	0.27	0.082	(0.208)	0.031	0.051
69	5.75	0.27	0.082	(0.207)	0.031	0.051
70	5.83	0.27	0.082	(0.206)	0.031	0.051
71	5.92	0.27	0.082	(0.205)	0.031	0.051
72	6.00	0.27	0.082	(0.204)	0.031	0.051
73	6.08	0.30	0.092	(0.203)	0.035	0.057
74	6.17	0.30	0.092	(0.202)	0.035	0.057
75	6.25	0.30	0.092	(0.202)	0.035	0.057
76	6.33	0.30	0.092	(0.201)	0.035	0.057
77	6.42	0.30	0.092	(0.200)	0.035	0.057
78	6.50	0.30	0.092	(0.199)	0.035	0.057
79	6.58	0.33	0.103	(0.198)	0.039	0.064
80	6.67	0.33	0.103	(0.197)	0.039	0.064
81	6.75	0.33	0.103	(0.196)	0.039	0.064
82	6.83	0.33	0.103	(0.195)	0.039	0.064
83	6.92	0.33	0.103	(0.194)	0.039	0.064
84	7.00	0.33	0.103	(0.193)	0.039	0.064
85	7.08	0.33	0.103	(0.193)	0.039	0.064
86	7.17	0.33	0.103	(0.192)	0.039	0.064
87	7.25	0.33	0.103	(0.191)	0.039	0.064
88	7.33	0.37	0.113	(0.190)	0.043	0.070
89	7.42	0.37	0.113	(0.189)	0.043	0.070
90	7.50	0.37	0.113	(0.188)	0.043	0.070
91	7.58	0.40	0.123	(0.187)	0.047	0.076
92	7.67	0.40	0.123	(0.187)	0.047	0.076
93	7.75	0.40	0.123	(0.186)	0.047	0.076
94	7.83	0.43	0.133	(0.185)	0.051	0.083
95	7.92	0.43	0.133	(0.184)	0.051	0.083
96	8.00	0.43	0.133	(0.183)	0.051	0.083
97	8.08	0.50	0.154	(0.182)	0.058	0.095
98	8.17	0.50	0.154	(0.181)	0.058	0.095
99	8.25	0.50	0.154	(0.181)	0.058	0.095
100	8.33	0.50	0.154	(0.180)	0.058	0.095
101	8.42	0.50	0.154	(0.179)	0.058	0.095
102	8.50	0.50	0.154	(0.178)	0.058	0.095
103	8.58	0.53	0.164	(0.177)	0.062	0.102
104	8.67	0.53	0.164	(0.176)	0.062	0.102
105	8.75	0.53	0.164	(0.176)	0.062	0.102
106	8.83	0.57	0.174	(0.175)	0.066	0.108
107	8.92	0.57	0.174	(0.174)	0.066	0.108
108	9.00	0.57	0.174	(0.173)	0.066	0.108
109	9.08	0.63	0.195	(0.172)	0.074	0.121
110	9.17	0.63	0.195	(0.171)	0.074	0.121
111	9.25	0.63	0.195	(0.171)	0.074	0.121
112	9.33	0.67	0.205	(0.170)	0.078	0.127
113	9.42	0.67	0.205	(0.169)	0.078	0.127
114	9.50	0.67	0.205	(0.168)	0.078	0.127
115	9.58	0.70	0.215	(0.167)	0.082	0.134
116	9.67	0.70	0.215	(0.167)	0.082	0.134
117	9.75	0.70	0.215	(0.166)	0.082	0.134
118	9.83	0.73	0.226	(0.165)	0.086	0.140
119	9.92	0.73	0.226	(0.164)	0.086	0.140

120	10.00	0.73	0.226	(0.163)	0.086	0.140
121	10.08	0.50	0.154	(0.163)	0.058	0.095
122	10.17	0.50	0.154	(0.162)	0.058	0.095
123	10.25	0.50	0.154	(0.161)	0.058	0.095
124	10.33	0.50	0.154	(0.160)	0.058	0.095
125	10.42	0.50	0.154	(0.159)	0.058	0.095
126	10.50	0.50	0.154	(0.159)	0.058	0.095
127	10.58	0.67	0.205	(0.158)	0.078	0.127
128	10.67	0.67	0.205	(0.157)	0.078	0.127
129	10.75	0.67	0.205	(0.156)	0.078	0.127
130	10.83	0.67	0.205	(0.156)	0.078	0.127
131	10.92	0.67	0.205	(0.155)	0.078	0.127
132	11.00	0.67	0.205	(0.154)	0.078	0.127
133	11.08	0.63	0.195	(0.153)	0.074	0.121
134	11.17	0.63	0.195	(0.153)	0.074	0.121
135	11.25	0.63	0.195	(0.152)	0.074	0.121
136	11.33	0.63	0.195	(0.151)	0.074	0.121
137	11.42	0.63	0.195	(0.150)	0.074	0.121
138	11.50	0.63	0.195	(0.150)	0.074	0.121
139	11.58	0.57	0.174	(0.149)	0.066	0.108
140	11.67	0.57	0.174	(0.148)	0.066	0.108
141	11.75	0.57	0.174	(0.147)	0.066	0.108
142	11.83	0.60	0.185	(0.147)	0.070	0.114
143	11.92	0.60	0.185	(0.146)	0.070	0.114
144	12.00	0.60	0.185	(0.145)	0.070	0.114
145	12.08	0.83	0.256	(0.144)	0.097	0.159
146	12.17	0.83	0.256	(0.144)	0.097	0.159
147	12.25	0.83	0.256	(0.143)	0.097	0.159
148	12.33	0.87	0.267	(0.142)	0.101	0.165
149	12.42	0.87	0.267	(0.142)	0.101	0.165
150	12.50	0.87	0.267	(0.141)	0.101	0.165
151	12.58	0.93	0.287	(0.140)	0.109	0.178
152	12.67	0.93	0.287	(0.139)	0.109	0.178
153	12.75	0.93	0.287	(0.139)	0.109	0.178
154	12.83	0.97	0.298	(0.138)	0.113	0.184
155	12.92	0.97	0.298	(0.137)	0.113	0.184
156	13.00	0.97	0.298	(0.137)	0.113	0.184
157	13.08	1.13	0.349	(0.136)	0.133	0.216
158	13.17	1.13	0.349	(0.135)	0.133	0.216
159	13.25	1.13	0.349	(0.135)	0.133	0.216
160	13.33	1.13	0.349	(0.134)	0.133	0.216
161	13.42	1.13	0.349	(0.133)	0.133	0.216
162	13.50	1.13	0.349	0.133	(0.133)	0.216
163	13.58	0.77	0.236	(0.132)	0.090	0.146
164	13.67	0.77	0.236	(0.131)	0.090	0.146
165	13.75	0.77	0.236	(0.130)	0.090	0.146
166	13.83	0.77	0.236	(0.130)	0.090	0.146
167	13.92	0.77	0.236	(0.129)	0.090	0.146
168	14.00	0.77	0.236	(0.129)	0.090	0.146
169	14.08	0.90	0.277	(0.128)	0.105	0.172
170	14.17	0.90	0.277	(0.127)	0.105	0.172
171	14.25	0.90	0.277	(0.127)	0.105	0.172
172	14.33	0.87	0.267	(0.126)	0.101	0.165
173	14.42	0.87	0.267	(0.125)	0.101	0.165
174	14.50	0.87	0.267	(0.125)	0.101	0.165
175	14.58	0.87	0.267	(0.124)	0.101	0.165
176	14.67	0.87	0.267	(0.123)	0.101	0.165
177	14.75	0.87	0.267	(0.123)	0.101	0.165
178	14.83	0.83	0.256	(0.122)	0.097	0.159
179	14.92	0.83	0.256	(0.121)	0.097	0.159

180	15.00	0.83	0.256	(0.121)	0.097	0.159
181	15.08	0.80	0.246	(0.120)	0.094	0.153
182	15.17	0.80	0.246	(0.120)	0.094	0.153
183	15.25	0.80	0.246	(0.119)	0.094	0.153
184	15.33	0.77	0.236	(0.118)	0.090	0.146
185	15.42	0.77	0.236	(0.118)	0.090	0.146
186	15.50	0.77	0.236	(0.117)	0.090	0.146
187	15.58	0.63	0.195	(0.117)	0.074	0.121
188	15.67	0.63	0.195	(0.116)	0.074	0.121
189	15.75	0.63	0.195	(0.115)	0.074	0.121
190	15.83	0.63	0.195	(0.115)	0.074	0.121
191	15.92	0.63	0.195	(0.114)	0.074	0.121
192	16.00	0.63	0.195	(0.114)	0.074	0.121
193	16.08	0.13	0.041	(0.113)	0.016	0.025
194	16.17	0.13	0.041	(0.112)	0.016	0.025
195	16.25	0.13	0.041	(0.112)	0.016	0.025
196	16.33	0.13	0.041	(0.111)	0.016	0.025
197	16.42	0.13	0.041	(0.111)	0.016	0.025
198	16.50	0.13	0.041	(0.110)	0.016	0.025
199	16.58	0.10	0.031	(0.110)	0.012	0.019
200	16.67	0.10	0.031	(0.109)	0.012	0.019
201	16.75	0.10	0.031	(0.109)	0.012	0.019
202	16.83	0.10	0.031	(0.108)	0.012	0.019
203	16.92	0.10	0.031	(0.107)	0.012	0.019
204	17.00	0.10	0.031	(0.107)	0.012	0.019
205	17.08	0.17	0.051	(0.106)	0.019	0.032
206	17.17	0.17	0.051	(0.106)	0.019	0.032
207	17.25	0.17	0.051	(0.105)	0.019	0.032
208	17.33	0.17	0.051	(0.105)	0.019	0.032
209	17.42	0.17	0.051	(0.104)	0.019	0.032
210	17.50	0.17	0.051	(0.104)	0.019	0.032
211	17.58	0.17	0.051	(0.103)	0.019	0.032
212	17.67	0.17	0.051	(0.103)	0.019	0.032
213	17.75	0.17	0.051	(0.102)	0.019	0.032
214	17.83	0.13	0.041	(0.102)	0.016	0.025
215	17.92	0.13	0.041	(0.101)	0.016	0.025
216	18.00	0.13	0.041	(0.101)	0.016	0.025
217	18.08	0.13	0.041	(0.100)	0.016	0.025
218	18.17	0.13	0.041	(0.100)	0.016	0.025
219	18.25	0.13	0.041	(0.099)	0.016	0.025
220	18.33	0.13	0.041	(0.099)	0.016	0.025
221	18.42	0.13	0.041	(0.098)	0.016	0.025
222	18.50	0.13	0.041	(0.098)	0.016	0.025
223	18.58	0.10	0.031	(0.097)	0.012	0.019
224	18.67	0.10	0.031	(0.097)	0.012	0.019
225	18.75	0.10	0.031	(0.096)	0.012	0.019
226	18.83	0.07	0.021	(0.096)	0.008	0.013
227	18.92	0.07	0.021	(0.095)	0.008	0.013
228	19.00	0.07	0.021	(0.095)	0.008	0.013
229	19.08	0.10	0.031	(0.094)	0.012	0.019
230	19.17	0.10	0.031	(0.094)	0.012	0.019
231	19.25	0.10	0.031	(0.094)	0.012	0.019
232	19.33	0.13	0.041	(0.093)	0.016	0.025
233	19.42	0.13	0.041	(0.093)	0.016	0.025
234	19.50	0.13	0.041	(0.092)	0.016	0.025
235	19.58	0.10	0.031	(0.092)	0.012	0.019
236	19.67	0.10	0.031	(0.091)	0.012	0.019
237	19.75	0.10	0.031	(0.091)	0.012	0.019
238	19.83	0.07	0.021	(0.091)	0.008	0.013
239	19.92	0.07	0.021	(0.090)	0.008	0.013

240	20.00	0.07	0.021	(0.090)	0.008	0.013
241	20.08	0.10	0.031	(0.089)	0.012	0.019
242	20.17	0.10	0.031	(0.089)	0.012	0.019
243	20.25	0.10	0.031	(0.089)	0.012	0.019
244	20.33	0.10	0.031	(0.088)	0.012	0.019
245	20.42	0.10	0.031	(0.088)	0.012	0.019
246	20.50	0.10	0.031	(0.088)	0.012	0.019
247	20.58	0.10	0.031	(0.087)	0.012	0.019
248	20.67	0.10	0.031	(0.087)	0.012	0.019
249	20.75	0.10	0.031	(0.086)	0.012	0.019
250	20.83	0.07	0.021	(0.086)	0.008	0.013
251	20.92	0.07	0.021	(0.086)	0.008	0.013
252	21.00	0.07	0.021	(0.085)	0.008	0.013
253	21.08	0.10	0.031	(0.085)	0.012	0.019
254	21.17	0.10	0.031	(0.085)	0.012	0.019
255	21.25	0.10	0.031	(0.084)	0.012	0.019
256	21.33	0.07	0.021	(0.084)	0.008	0.013
257	21.42	0.07	0.021	(0.084)	0.008	0.013
258	21.50	0.07	0.021	(0.083)	0.008	0.013
259	21.58	0.10	0.031	(0.083)	0.012	0.019
260	21.67	0.10	0.031	(0.083)	0.012	0.019
261	21.75	0.10	0.031	(0.083)	0.012	0.019
262	21.83	0.07	0.021	(0.082)	0.008	0.013
263	21.92	0.07	0.021	(0.082)	0.008	0.013
264	22.00	0.07	0.021	(0.082)	0.008	0.013
265	22.08	0.10	0.031	(0.081)	0.012	0.019
266	22.17	0.10	0.031	(0.081)	0.012	0.019
267	22.25	0.10	0.031	(0.081)	0.012	0.019
268	22.33	0.07	0.021	(0.081)	0.008	0.013
269	22.42	0.07	0.021	(0.080)	0.008	0.013
270	22.50	0.07	0.021	(0.080)	0.008	0.013
271	22.58	0.07	0.021	(0.080)	0.008	0.013
272	22.67	0.07	0.021	(0.080)	0.008	0.013
273	22.75	0.07	0.021	(0.079)	0.008	0.013
274	22.83	0.07	0.021	(0.079)	0.008	0.013
275	22.92	0.07	0.021	(0.079)	0.008	0.013
276	23.00	0.07	0.021	(0.079)	0.008	0.013
277	23.08	0.07	0.021	(0.079)	0.008	0.013
278	23.17	0.07	0.021	(0.079)	0.008	0.013
279	23.25	0.07	0.021	(0.078)	0.008	0.013
280	23.33	0.07	0.021	(0.078)	0.008	0.013
281	23.42	0.07	0.021	(0.078)	0.008	0.013
282	23.50	0.07	0.021	(0.078)	0.008	0.013
283	23.58	0.07	0.021	(0.078)	0.008	0.013
284	23.67	0.07	0.021	(0.078)	0.008	0.013
285	23.75	0.07	0.021	(0.078)	0.008	0.013
286	23.83	0.07	0.021	(0.077)	0.008	0.013
287	23.92	0.07	0.021	(0.077)	0.008	0.013
288	24.00	0.07	0.021	(0.077)	0.008	0.013

(Loss Rate Not Used)

Sum = 100.0 Sum = 19.1

Flood volume = Effective rainfall 1.59(In)
times area 4.0(Ac.)/[(In)/(Ft.)] = 0.5(Ac.Ft)
Total soil loss = 0.97(In)
Total soil loss = 0.325(Ac.Ft)
Total rainfall = 2.56(In)
Flood volume = 23088.7 Cubic Feet
Total soil loss = 14151.1 Cubic Feet

--

Peak flow rate of this hydrograph = 0.872(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	0.0002	0.03	Q	|	|	|	|
0+10	0.0005	0.05	Q	|	|	|	|
0+15	0.0009	0.05	Q	|	|	|	|
0+20	0.0013	0.07	Q	|	|	|	|
0+25	0.0019	0.08	Q	|	|	|	|
0+30	0.0024	0.08	Q	|	|	|	|
0+35	0.0029	0.08	Q	|	|	|	|
0+40	0.0035	0.08	Q	|	|	|	|
0+45	0.0040	0.08	Q	|	|	|	|
0+50	0.0046	0.09	Q	|	|	|	|
0+55	0.0053	0.10	Q	|	|	|	|
1+ 0	0.0060	0.10	Q	|	|	|	|
1+ 5	0.0066	0.09	Q	|	|	|	|
1+10	0.0072	0.08	Q	|	|	|	|
1+15	0.0077	0.08	Q	|	|	|	|
1+20	0.0082	0.08	Q	|	|	|	|
1+25	0.0088	0.08	Q	|	|	|	|
1+30	0.0093	0.08	Q	|	|	|	|
1+35	0.0098	0.08	Q	|	|	|	|
1+40	0.0103	0.08	Q	|	|	|	|
1+45	0.0109	0.08	Q	|	|	|	|
1+50	0.0115	0.09	Q	|	|	|	

1+55	0.0122	0.10	Q			
2+ 0	0.0129	0.10	Q			
2+ 5	0.0136	0.10	QV			
2+10	0.0143	0.10	QV			
2+15	0.0150	0.10	QV			
2+20	0.0157	0.10	QV			
2+25	0.0164	0.10	QV			
2+30	0.0172	0.10	QV			
2+35	0.0180	0.12	QV			
2+40	0.0188	0.13	QV			
2+45	0.0197	0.13	QV			
2+50	0.0206	0.13	QV			
2+55	0.0215	0.13	QV			
3+ 0	0.0224	0.13	QV			
3+ 5	0.0232	0.13	QV			
3+10	0.0241	0.13	QV			
3+15	0.0250	0.13	QV			
3+20	0.0259	0.13	QV			
3+25	0.0268	0.13	Q V			
3+30	0.0277	0.13	Q V			
3+35	0.0285	0.13	Q V			
3+40	0.0294	0.13	Q V			
3+45	0.0303	0.13	Q V			
3+50	0.0313	0.14	Q V			
3+55	0.0324	0.15	Q V			
4+ 0	0.0334	0.15	Q V			
4+ 5	0.0345	0.15	Q V			
4+10	0.0355	0.15	Q V			
4+15	0.0366	0.15	Q V			
4+20	0.0377	0.17	Q V			

4+25	0.0390	0.18	Q V	|	|	|
4+30	0.0402	0.18	Q V	|	|	|
4+35	0.0415	0.18	Q V	|	|	|
4+40	0.0427	0.18	Q V	|	|	|
4+45	0.0439	0.18	Q V	|	|	|
4+50	0.0453	0.19	Q V	|	|	|
4+55	0.0467	0.20	Q V	|	|	|
5+ 0	0.0481	0.21	Q V	|	|	|
5+ 5	0.0493	0.18	Q V	|	|	|
5+10	0.0504	0.16	Q V	|	|	|
5+15	0.0514	0.15	Q V	|	|	|
5+20	0.0526	0.17	Q V	|	|	|
5+25	0.0538	0.18	Q V	|	|	|
5+30	0.0551	0.18	Q V	|	|	|
5+35	0.0564	0.19	Q V	|	|	|
5+40	0.0578	0.20	Q V	|	|	|
5+45	0.0592	0.21	Q V	|	|	|
5+50	0.0606	0.21	Q V	|	|	|
5+55	0.0620	0.21	Q V	|	|	|
6+ 0	0.0635	0.21	Q V	|	|	|
6+ 5	0.0650	0.22	Q V	|	|	|
6+10	0.0665	0.23	Q V	|	|	|
6+15	0.0681	0.23	Q V	|	|	|
6+20	0.0697	0.23	Q V	|	|	|
6+25	0.0713	0.23	Q V	|	|	|
6+30	0.0729	0.23	Q V	|	|	|
6+35	0.0746	0.24	Q V	|	|	|
6+40	0.0764	0.26	|Q V	|	|	|
6+45	0.0781	0.26	|Q V	|	|	|
6+50	0.0799	0.26	|Q V	|	|	|

```
|
    6+55       0.0817      0.26  |Q    V   |         |         |
|
    7+ 0       0.0834      0.26  |Q    V   |         |         |
|
    7+ 5       0.0852      0.26  |Q    V   |         |         |
|
    7+10       0.0870      0.26  |Q    V   |         |         |
|
    7+15       0.0887      0.26  |Q    V   |         |         |
|
    7+20       0.0906      0.27  |Q    V   |         |         |
|
    7+25       0.0925      0.28  |Q    V   |         |         |
|
    7+30       0.0945      0.28  |Q     V  |         |         |
|
    7+35       0.0965      0.30  |Q     V  |         |         |
|
    7+40       0.0986      0.31  |Q     V  |         |         |
|
    7+45       0.1007      0.31  |Q     V  |         |         |
|
    7+50       0.1030      0.32  |Q     V  |         |         |
|
    7+55       0.1053      0.33  |Q     V  |         |         |
|
    8+ 0       0.1076      0.33  |Q      V |         |         |
|
    8+ 5       0.1100      0.36  |Q      V |         |         |
|
    8+10       0.1127      0.38  |Q      V |         |         |
|
    8+15       0.1153      0.38  |Q      V |         |         |
|
    8+20       0.1180      0.38  |Q      V |         |         |
|
    8+25       0.1206      0.38  |Q       V|         |         |
|
    8+30       0.1233      0.38  |Q       V|         |         |
|
    8+35       0.1260      0.40  |Q       V|         |         |
|
    8+40       0.1288      0.41  |Q       V|         |         |
|
    8+45       0.1317      0.41  |Q       V|         |         |
|
    8+50       0.1346      0.42  |Q        V         |         |
|
    8+55       0.1376      0.44  |Q        V         |         |
|
    9+ 0       0.1406      0.44  |Q        V         |         |
|
    9+ 5       0.1438      0.46  |Q        V         |         |
|
    9+10       0.1471      0.49  |Q        |V        |         |
|
    9+15       0.1505      0.49  |Q        |V        |         |
|
    9+20       0.1540      0.50  | Q       |V        |         |
```

```
|
  9+25      0.1575      0.51  | Q       |V        |         |
|
  9+30      0.1610      0.51  | Q       | V       |         |
|
  9+35      0.1646      0.53  | Q       | V       |         |
|
  9+40      0.1684      0.54  | Q       | V       |         |
|
  9+45      0.1721      0.54  | Q       | V       |         |
|
  9+50      0.1759      0.55  | Q       |  V      |         |
|
  9+55      0.1798      0.56  | Q       |  V      |         |
|
 10+ 0      0.1836      0.56  | Q       |  V      |         |
|
 10+ 5      0.1869      0.47  |Q        |   V     |         |
|
 10+10      0.1895      0.39  |Q        |   V     |         |
|
 10+15      0.1922      0.38  |Q        |   V     |         |
|
 10+20      0.1948      0.38  |Q        |   V     |         |
|
 10+25      0.1975      0.38  |Q        |   V     |         |
|
 10+30      0.2001      0.38  |Q        |    V    |         |
|
 10+35      0.2033      0.45  |Q        |    V    |         |
|
 10+40      0.2068      0.51  | Q       |    V    |         |
|
 10+45      0.2103      0.51  | Q       |    V    |         |
|
 10+50      0.2138      0.51  | Q       |     V   |         |
|
 10+55      0.2174      0.51  | Q       |     V   |         |
|
 11+ 0      0.2209      0.51  | Q       |     V   |         |
|
 11+ 5      0.2243      0.50  |Q        |     V   |         |
|
 11+10      0.2277      0.49  |Q        |      V  |         |
|
 11+15      0.2311      0.49  |Q        |      V  |         |
|
 11+20      0.2344      0.49  |Q        |      V  |         |
|
 11+25      0.2378      0.49  |Q        |      V  |         |
|
 11+30      0.2411      0.49  |Q        |       V |         |
|
 11+35      0.2443      0.46  |Q        |       V |         |
|
 11+40      0.2473      0.44  |Q        |       V |         |
|
 11+45      0.2503      0.44  |Q        |       V |         |
|
 11+50      0.2534      0.45  |Q        |        V|         |
```

```
|
  11+55       0.2566      0.46  |Q         |        V|         |
|
  12+ 0       0.2598      0.46  |Q         |        V|         |
|
  12+ 5       0.2636      0.56  | Q        |        V|         |
|
  12+10       0.2680      0.64  | Q        |         V         |
|
  12+15       0.2724      0.64  | Q        |         V         |
|
  12+20       0.2769      0.66  | Q        |         V         |
|
  12+25       0.2815      0.67  | Q        |         |V        |
|
  12+30       0.2861      0.67  | Q        |         |V        |
|
  12+35       0.2909      0.70  | Q        |         |V        |
|
  12+40       0.2958      0.72  | Q        |         | V       |
|
  12+45       0.3008      0.72  | Q        |         | V       |
|
  12+50       0.3058      0.73  | Q        |         |  V      |
|
  12+55       0.3110      0.74  | Q        |         |  V      |
|
  13+ 0       0.3161      0.74  | Q        |         |  V      |
|
  13+ 5       0.3217      0.81  |  Q       |         |   V     |
|
  13+10       0.3277      0.87  |  Q       |         |   V     |
|
  13+15       0.3337      0.87  |  Q       |         |    V    |
|
  13+20       0.3397      0.87  |  Q       |         |    V    |
|
  13+25       0.3457      0.87  |  Q       |         |     V   |
|
  13+30       0.3517      0.87  |  Q       |         |     V   |
|
  13+35       0.3566      0.72  | Q        |         |     V   |
|
  13+40       0.3608      0.60  | Q        |         |      V  |
|
  13+45       0.3648      0.59  | Q        |         |      V  |
|
  13+50       0.3689      0.59  | Q        |         |      V  |
|
  13+55       0.3730      0.59  | Q        |         |       V |
|
  14+ 0       0.3770      0.59  | Q        |         |       V |
|
  14+ 5       0.3815      0.65  | Q        |         |       V |
|
  14+10       0.3862      0.69  | Q        |         |        V|
|
  14+15       0.3910      0.69  | Q        |         |        V|
|
  14+20       0.3957      0.68  | Q        |         |        V|
```

```
|
  14+25       0.4003      0.67  | Q        |         |         V
|
  14+30       0.4049      0.67  | Q        |         |         V
|
  14+35       0.4095      0.67  | Q        |         |         V
|
  14+40       0.4140      0.67  | Q        |         |         |V
|
  14+45       0.4186      0.67  | Q        |         |         |V
|
  14+50       0.4231      0.65  | Q        |         |         |V
|
  14+55       0.4276      0.64  | Q        |         |         | V
|
  15+ 0       0.4320      0.64  | Q        |         |         | V
|
  15+ 5       0.4363      0.63  | Q        |         |         | V
|
  15+10       0.4405      0.62  | Q        |         |         |  V
|
  15+15       0.4448      0.62  | Q        |         |         |  V
|
  15+20       0.4489      0.60  | Q        |         |         |  V
|
  15+25       0.4530      0.59  | Q        |         |         |   V
|
  15+30       0.4571      0.59  | Q        |         |         |   V
|
  15+35       0.4607      0.53  | Q        |         |         |   V
|
  15+40       0.4641      0.49  |Q         |         |         |    V
|
  15+45       0.4675      0.49  |Q         |         |         |    V
|
  15+50       0.4708      0.49  |Q         |         |         |    V
|
  15+55       0.4742      0.49  |Q         |         |         |    V
|
  16+ 0       0.4775      0.49  |Q         |         |         |     V
|
  16+ 5       0.4795      0.28  |Q         |         |         |     V
|
  16+10       0.4802      0.11  Q          |         |         |     V
|
  16+15       0.4809      0.10  Q          |         |         |     V
|
  16+20       0.4816      0.10  Q          |         |         |     V
|
  16+25       0.4824      0.10  Q          |         |         |     V
|
  16+30       0.4831      0.10  Q          |         |         |     V
|
  16+35       0.4837      0.09  Q          |         |         |     V
|
  16+40       0.4842      0.08  Q          |         |         |     V
|
  16+45       0.4847      0.08  Q          |         |         |     V
|
  16+50       0.4853      0.08  Q          |         |         |     V
```

```
|
  16+55       0.4858       0.08  Q          |         |         |    V
|
  17+ 0       0.4863       0.08  Q          |         |         |    V
|
  17+ 5       0.4870       0.10  Q          |         |         |    V
|
  17+10       0.4879       0.13  Q          |         |         |    V
|
  17+15       0.4888       0.13  Q          |         |         |    V
|
  17+20       0.4897       0.13  Q          |         |         |    V
|
  17+25       0.4906       0.13  Q          |         |         |     V
|
  17+30       0.4915       0.13  Q          |         |         |     V
|
  17+35       0.4923       0.13  Q          |         |         |     V
|
  17+40       0.4932       0.13  Q          |         |         |     V
|
  17+45       0.4941       0.13  Q          |         |         |     V
|
  17+50       0.4949       0.11  Q          |         |         |     V
|
  17+55       0.4956       0.10  Q          |         |         |     V
|
  18+ 0       0.4963       0.10  Q          |         |         |     V
|
  18+ 5       0.4970       0.10  Q          |         |         |     V
|
  18+10       0.4977       0.10  Q          |         |         |     V
|
  18+15       0.4984       0.10  Q          |         |         |     V
|
  18+20       0.4991       0.10  Q          |         |         |     V
|
  18+25       0.4998       0.10  Q          |         |         |     V
|
  18+30       0.5006       0.10  Q          |         |         |     V
|
  18+35       0.5012       0.09  Q          |         |         |     V
|
  18+40       0.5017       0.08  Q          |         |         |     V
|
  18+45       0.5022       0.08  Q          |         |         |     V
|
  18+50       0.5027       0.06  Q          |         |         |     V
|
  18+55       0.5030       0.05  Q          |         |         |     V
|
  19+ 0       0.5034       0.05  Q          |         |         |     V
|
  19+ 5       0.5038       0.07  Q          |         |         |      V
|
  19+10       0.5043       0.08  Q          |         |         |      V
|
  19+15       0.5049       0.08  Q          |         |         |      V
|
  19+20       0.5055       0.09  Q          |         |         |      V
```

```
|
     19+25       0.5062       0.10  Q          |          |          |        V
|
     19+30       0.5069       0.10  Q          |          |          |        V
|
     19+35       0.5075       0.09  Q          |          |          |        V
|
     19+40       0.5081       0.08  Q          |          |          |        V
|
     19+45       0.5086       0.08  Q          |          |          |        V
|
     19+50       0.5090       0.06  Q          |          |          |        V
|
     19+55       0.5094       0.05  Q          |          |          |        V
|
     20+ 0       0.5097       0.05  Q          |          |          |        V
|
     20+ 5       0.5102       0.07  Q          |          |          |        V
|
     20+10       0.5107       0.08  Q          |          |          |        V
|
     20+15       0.5112       0.08  Q          |          |          |        V
|
     20+20       0.5118       0.08  Q          |          |          |        V
|
     20+25       0.5123       0.08  Q          |          |          |        V
|
     20+30       0.5128       0.08  Q          |          |          |        V
|
     20+35       0.5134       0.08  Q          |          |          |        V
|
     20+40       0.5139       0.08  Q          |          |          |        V
|
     20+45       0.5144       0.08  Q          |          |          |        V
|
     20+50       0.5149       0.06  Q          |          |          |        V
|
     20+55       0.5152       0.05  Q          |          |          |        V
|
     21+ 0       0.5156       0.05  Q          |          |          |        V
|
     21+ 5       0.5160       0.07  Q          |          |          |        V
|
     21+10       0.5165       0.08  Q          |          |          |        V
|
     21+15       0.5171       0.08  Q          |          |          |
V|
     21+20       0.5175       0.06  Q          |          |          |
V|
     21+25       0.5179       0.05  Q          |          |          |
V|
     21+30       0.5182       0.05  Q          |          |          |
V|
     21+35       0.5187       0.07  Q          |          |          |
V|
     21+40       0.5192       0.08  Q          |          |          |
V|
     21+45       0.5197       0.08  Q          |          |          |
V|
     21+50       0.5202       0.06  Q          |          |          |
```

```
V|
    21+55       0.5205      0.05  Q         |         |         |
V|
    22+ 0       0.5209      0.05  Q         |         |         |
V|
    22+ 5       0.5213      0.07  Q         |         |         |
V|
    22+10       0.5218      0.08  Q         |         |         |
V|
    22+15       0.5224      0.08  Q         |         |         |
V|
    22+20       0.5228      0.06  Q         |         |         |
V|
    22+25       0.5232      0.05  Q         |         |         |
V|
    22+30       0.5235      0.05  Q         |         |         |
V|
    22+35       0.5239      0.05  Q         |         |         |
V|
    22+40       0.5242      0.05  Q         |         |         |
V|
    22+45       0.5246      0.05  Q         |         |         |
V|
    22+50       0.5249      0.05  Q         |         |         |
V|
    22+55       0.5253      0.05  Q         |         |         |
V|
    23+ 0       0.5256      0.05  Q         |         |         |
V|
    23+ 5       0.5260      0.05  Q         |         |         |
V|
    23+10       0.5263      0.05  Q         |         |         |
V|
    23+15       0.5267      0.05  Q         |         |         |
V|
    23+20       0.5270      0.05  Q         |         |         |
V|
    23+25       0.5274      0.05  Q         |         |         |
V|
    23+30       0.5278      0.05  Q         |         |         |
V|
    23+35       0.5281      0.05  Q         |         |         |
V|
    23+40       0.5285      0.05  Q         |         |         |
V|
    23+45       0.5288      0.05  Q         |         |         |
V|
    23+50       0.5292      0.05  Q         |         |         |
V|
    23+55       0.5295      0.05  Q         |         |         |
V|
    24+ 0       0.5299      0.05  Q         |         |         |
V|
    24+ 5       0.5300      0.02  Q         |         |         |
V|
    24+10       0.5300      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

           Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
8.2
                 Study date  11/09/21 File: moval33post2410.out

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


      Program License Serial Number 6232

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

       English Units used in output format



      -----------------------------------------------------------------
---
      Gateway Heights
      Proposed Condition
      Unit Hydrograph
      Area A
      -----------------------------------------------------------------
--
      Drainage Area =       4.00(Ac.)  =      0.006 Sq. Mi.
      Drainage Area for Depth-Area Areal Adjustment =       4.00(Ac.)  =
0.006 Sq. Mi.
      Length along longest watercourse =    1159.00(Ft.)
      Length along longest watercourse measured to centroid =     637.00
(Ft.)
      Length along longest watercourse =      0.220 Mi.
      Length along longest watercourse measured to centroid =      0.121
Mi.
      Difference in elevation =      70.00(Ft.)
      Slope along watercourse =    318.8956 Ft./Mi.
      Average Manning's 'N' = 0.015
      Lag time =    0.030 Hr.
      Lag time =     1.82 Min.
      25% of lag time =     0.45 Min.
      40% of lag time =     0.73 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]
```

4.00	1.93	7.72

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.00	4.64	18.56

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.930(In)
Area Averaged 100-Year Rainfall = 4.640(In)

Point rain (area averaged) = 3.045(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 3.045(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
4.000	69.00	0.650

Total Area Entered = 4.00(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.650	0.155	1.000	0.155

Sum (F) = 0.155

Area averaged mean soil loss (F) (In/Hr) = 0.155
Minimum soil loss rate ((In/Hr)) = 0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

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	275.097	54.570		2.200
2	0.167	550.195	42.583		1.717
3	0.250	825.292	2.846		0.115
			Sum = 100.000	Sum=	4.031

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   Pattern   Storm Rain   Loss rate(In./Hr)   Effective

	(Hr.)	Percent	(In/Hr)	Max |	Low	(In/Hr)
1	0.08	0.07	0.024	(0.274)	0.009	0.015
2	0.17	0.07	0.024	(0.273)	0.009	0.015
3	0.25	0.07	0.024	(0.272)	0.009	0.015
4	0.33	0.10	0.037	(0.271)	0.014	0.023
5	0.42	0.10	0.037	(0.270)	0.014	0.023
6	0.50	0.10	0.037	(0.269)	0.014	0.023
7	0.58	0.10	0.037	(0.268)	0.014	0.023
8	0.67	0.10	0.037	(0.267)	0.014	0.023
9	0.75	0.10	0.037	(0.266)	0.014	0.023
10	0.83	0.13	0.049	(0.265)	0.019	0.030
11	0.92	0.13	0.049	(0.264)	0.019	0.030
12	1.00	0.13	0.049	(0.263)	0.019	0.030
13	1.08	0.10	0.037	(0.262)	0.014	0.023
14	1.17	0.10	0.037	(0.261)	0.014	0.023
15	1.25	0.10	0.037	(0.260)	0.014	0.023
16	1.33	0.10	0.037	(0.259)	0.014	0.023
17	1.42	0.10	0.037	(0.258)	0.014	0.023
18	1.50	0.10	0.037	(0.257)	0.014	0.023
19	1.58	0.10	0.037	(0.255)	0.014	0.023
20	1.67	0.10	0.037	(0.254)	0.014	0.023
21	1.75	0.10	0.037	(0.253)	0.014	0.023
22	1.83	0.13	0.049	(0.252)	0.019	0.030
23	1.92	0.13	0.049	(0.251)	0.019	0.030
24	2.00	0.13	0.049	(0.250)	0.019	0.030
25	2.08	0.13	0.049	(0.249)	0.019	0.030
26	2.17	0.13	0.049	(0.248)	0.019	0.030
27	2.25	0.13	0.049	(0.247)	0.019	0.030
28	2.33	0.13	0.049	(0.246)	0.019	0.030
29	2.42	0.13	0.049	(0.245)	0.019	0.030
30	2.50	0.13	0.049	(0.244)	0.019	0.030
31	2.58	0.17	0.061	(0.243)	0.023	0.038
32	2.67	0.17	0.061	(0.242)	0.023	0.038
33	2.75	0.17	0.061	(0.241)	0.023	0.038
34	2.83	0.17	0.061	(0.240)	0.023	0.038
35	2.92	0.17	0.061	(0.239)	0.023	0.038
36	3.00	0.17	0.061	(0.238)	0.023	0.038
37	3.08	0.17	0.061	(0.237)	0.023	0.038
38	3.17	0.17	0.061	(0.236)	0.023	0.038
39	3.25	0.17	0.061	(0.235)	0.023	0.038
40	3.33	0.17	0.061	(0.234)	0.023	0.038
41	3.42	0.17	0.061	(0.233)	0.023	0.038
42	3.50	0.17	0.061	(0.232)	0.023	0.038
43	3.58	0.17	0.061	(0.232)	0.023	0.038
44	3.67	0.17	0.061	(0.231)	0.023	0.038
45	3.75	0.17	0.061	(0.230)	0.023	0.038
46	3.83	0.20	0.073	(0.229)	0.028	0.045
47	3.92	0.20	0.073	(0.228)	0.028	0.045
48	4.00	0.20	0.073	(0.227)	0.028	0.045
49	4.08	0.20	0.073	(0.226)	0.028	0.045
50	4.17	0.20	0.073	(0.225)	0.028	0.045
51	4.25	0.20	0.073	(0.224)	0.028	0.045
52	4.33	0.23	0.085	(0.223)	0.032	0.053
53	4.42	0.23	0.085	(0.222)	0.032	0.053
54	4.50	0.23	0.085	(0.221)	0.032	0.053
55	4.58	0.23	0.085	(0.220)	0.032	0.053
56	4.67	0.23	0.085	(0.219)	0.032	0.053
57	4.75	0.23	0.085	(0.218)	0.032	0.053
58	4.83	0.27	0.097	(0.217)	0.037	0.060
59	4.92	0.27	0.097	(0.216)	0.037	0.060

60	5.00	0.27	0.097	(0.215)	0.037	0.060
61	5.08	0.20	0.073	(0.214)	0.028	0.045
62	5.17	0.20	0.073	(0.213)	0.028	0.045
63	5.25	0.20	0.073	(0.212)	0.028	0.045
64	5.33	0.23	0.085	(0.212)	0.032	0.053
65	5.42	0.23	0.085	(0.211)	0.032	0.053
66	5.50	0.23	0.085	(0.210)	0.032	0.053
67	5.58	0.27	0.097	(0.209)	0.037	0.060
68	5.67	0.27	0.097	(0.208)	0.037	0.060
69	5.75	0.27	0.097	(0.207)	0.037	0.060
70	5.83	0.27	0.097	(0.206)	0.037	0.060
71	5.92	0.27	0.097	(0.205)	0.037	0.060
72	6.00	0.27	0.097	(0.204)	0.037	0.060
73	6.08	0.30	0.110	(0.203)	0.042	0.068
74	6.17	0.30	0.110	(0.202)	0.042	0.068
75	6.25	0.30	0.110	(0.202)	0.042	0.068
76	6.33	0.30	0.110	(0.201)	0.042	0.068
77	6.42	0.30	0.110	(0.200)	0.042	0.068
78	6.50	0.30	0.110	(0.199)	0.042	0.068
79	6.58	0.33	0.122	(0.198)	0.046	0.076
80	6.67	0.33	0.122	(0.197)	0.046	0.076
81	6.75	0.33	0.122	(0.196)	0.046	0.076
82	6.83	0.33	0.122	(0.195)	0.046	0.076
83	6.92	0.33	0.122	(0.194)	0.046	0.076
84	7.00	0.33	0.122	(0.193)	0.046	0.076
85	7.08	0.33	0.122	(0.193)	0.046	0.076
86	7.17	0.33	0.122	(0.192)	0.046	0.076
87	7.25	0.33	0.122	(0.191)	0.046	0.076
88	7.33	0.37	0.134	(0.190)	0.051	0.083
89	7.42	0.37	0.134	(0.189)	0.051	0.083
90	7.50	0.37	0.134	(0.188)	0.051	0.083
91	7.58	0.40	0.146	(0.187)	0.056	0.091
92	7.67	0.40	0.146	(0.187)	0.056	0.091
93	7.75	0.40	0.146	(0.186)	0.056	0.091
94	7.83	0.43	0.158	(0.185)	0.060	0.098
95	7.92	0.43	0.158	(0.184)	0.060	0.098
96	8.00	0.43	0.158	(0.183)	0.060	0.098
97	8.08	0.50	0.183	(0.182)	0.069	0.113
98	8.17	0.50	0.183	(0.181)	0.069	0.113
99	8.25	0.50	0.183	(0.181)	0.069	0.113
100	8.33	0.50	0.183	(0.180)	0.069	0.113
101	8.42	0.50	0.183	(0.179)	0.069	0.113
102	8.50	0.50	0.183	(0.178)	0.069	0.113
103	8.58	0.53	0.195	(0.177)	0.074	0.121
104	8.67	0.53	0.195	(0.176)	0.074	0.121
105	8.75	0.53	0.195	(0.176)	0.074	0.121
106	8.83	0.57	0.207	(0.175)	0.079	0.128
107	8.92	0.57	0.207	(0.174)	0.079	0.128
108	9.00	0.57	0.207	(0.173)	0.079	0.128
109	9.08	0.63	0.231	(0.172)	0.088	0.143
110	9.17	0.63	0.231	(0.171)	0.088	0.143
111	9.25	0.63	0.231	(0.171)	0.088	0.143
112	9.33	0.67	0.244	(0.170)	0.093	0.151
113	9.42	0.67	0.244	(0.169)	0.093	0.151
114	9.50	0.67	0.244	(0.168)	0.093	0.151
115	9.58	0.70	0.256	(0.167)	0.097	0.159
116	9.67	0.70	0.256	(0.167)	0.097	0.159
117	9.75	0.70	0.256	(0.166)	0.097	0.159
118	9.83	0.73	0.268	(0.165)	0.102	0.166
119	9.92	0.73	0.268	(0.164)	0.102	0.166

120	10.00	0.73	0.268	(0.163)	0.102	0.166
121	10.08	0.50	0.183	(0.163)	0.069	0.113
122	10.17	0.50	0.183	(0.162)	0.069	0.113
123	10.25	0.50	0.183	(0.161)	0.069	0.113
124	10.33	0.50	0.183	(0.160)	0.069	0.113
125	10.42	0.50	0.183	(0.159)	0.069	0.113
126	10.50	0.50	0.183	(0.159)	0.069	0.113
127	10.58	0.67	0.244	(0.158)	0.093	0.151
128	10.67	0.67	0.244	(0.157)	0.093	0.151
129	10.75	0.67	0.244	(0.156)	0.093	0.151
130	10.83	0.67	0.244	(0.156)	0.093	0.151
131	10.92	0.67	0.244	(0.155)	0.093	0.151
132	11.00	0.67	0.244	(0.154)	0.093	0.151
133	11.08	0.63	0.231	(0.153)	0.088	0.143
134	11.17	0.63	0.231	(0.153)	0.088	0.143
135	11.25	0.63	0.231	(0.152)	0.088	0.143
136	11.33	0.63	0.231	(0.151)	0.088	0.143
137	11.42	0.63	0.231	(0.150)	0.088	0.143
138	11.50	0.63	0.231	(0.150)	0.088	0.143
139	11.58	0.57	0.207	(0.149)	0.079	0.128
140	11.67	0.57	0.207	(0.148)	0.079	0.128
141	11.75	0.57	0.207	(0.147)	0.079	0.128
142	11.83	0.60	0.219	(0.147)	0.083	0.136
143	11.92	0.60	0.219	(0.146)	0.083	0.136
144	12.00	0.60	0.219	(0.145)	0.083	0.136
145	12.08	0.83	0.304	(0.144)	0.116	0.189
146	12.17	0.83	0.304	(0.144)	0.116	0.189
147	12.25	0.83	0.304	(0.143)	0.116	0.189
148	12.33	0.87	0.317	(0.142)	0.120	0.196
149	12.42	0.87	0.317	(0.142)	0.120	0.196
150	12.50	0.87	0.317	(0.141)	0.120	0.196
151	12.58	0.93	0.341	(0.140)	0.130	0.211
152	12.67	0.93	0.341	(0.139)	0.130	0.211
153	12.75	0.93	0.341	(0.139)	0.130	0.211
154	12.83	0.97	0.353	(0.138)	0.134	0.219
155	12.92	0.97	0.353	(0.137)	0.134	0.219
156	13.00	0.97	0.353	(0.137)	0.134	0.219
157	13.08	1.13	0.414	0.136	(0.157)	0.278
158	13.17	1.13	0.414	0.135	(0.157)	0.279
159	13.25	1.13	0.414	0.135	(0.157)	0.280
160	13.33	1.13	0.414	0.134	(0.157)	0.280
161	13.42	1.13	0.414	0.133	(0.157)	0.281
162	13.50	1.13	0.414	0.133	(0.157)	0.282
163	13.58	0.77	0.280	(0.132)	0.106	0.174
164	13.67	0.77	0.280	(0.131)	0.106	0.174
165	13.75	0.77	0.280	(0.130)	0.106	0.174
166	13.83	0.77	0.280	(0.130)	0.106	0.174
167	13.92	0.77	0.280	(0.129)	0.106	0.174
168	14.00	0.77	0.280	(0.129)	0.106	0.174
169	14.08	0.90	0.329	(0.128)	0.125	0.204
170	14.17	0.90	0.329	(0.127)	0.125	0.204
171	14.25	0.90	0.329	(0.127)	0.125	0.204
172	14.33	0.87	0.317	(0.126)	0.120	0.196
173	14.42	0.87	0.317	(0.125)	0.120	0.196
174	14.50	0.87	0.317	(0.125)	0.120	0.196
175	14.58	0.87	0.317	(0.124)	0.120	0.196
176	14.67	0.87	0.317	(0.123)	0.120	0.196
177	14.75	0.87	0.317	(0.123)	0.120	0.196
178	14.83	0.83	0.304	(0.122)	0.116	0.189
179	14.92	0.83	0.304	(0.121)	0.116	0.189

180	15.00	0.83	0.304	(0.121)	0.116	0.189
181	15.08	0.80	0.292	(0.120)	0.111	0.181
182	15.17	0.80	0.292	(0.120)	0.111	0.181
183	15.25	0.80	0.292	(0.119)	0.111	0.181
184	15.33	0.77	0.280	(0.118)	0.106	0.174
185	15.42	0.77	0.280	(0.118)	0.106	0.174
186	15.50	0.77	0.280	(0.117)	0.106	0.174
187	15.58	0.63	0.231	(0.117)	0.088	0.143
188	15.67	0.63	0.231	(0.116)	0.088	0.143
189	15.75	0.63	0.231	(0.115)	0.088	0.143
190	15.83	0.63	0.231	(0.115)	0.088	0.143
191	15.92	0.63	0.231	(0.114)	0.088	0.143
192	16.00	0.63	0.231	(0.114)	0.088	0.143
193	16.08	0.13	0.049	(0.113)	0.019	0.030
194	16.17	0.13	0.049	(0.112)	0.019	0.030
195	16.25	0.13	0.049	(0.112)	0.019	0.030
196	16.33	0.13	0.049	(0.111)	0.019	0.030
197	16.42	0.13	0.049	(0.111)	0.019	0.030
198	16.50	0.13	0.049	(0.110)	0.019	0.030
199	16.58	0.10	0.037	(0.110)	0.014	0.023
200	16.67	0.10	0.037	(0.109)	0.014	0.023
201	16.75	0.10	0.037	(0.109)	0.014	0.023
202	16.83	0.10	0.037	(0.108)	0.014	0.023
203	16.92	0.10	0.037	(0.107)	0.014	0.023
204	17.00	0.10	0.037	(0.107)	0.014	0.023
205	17.08	0.17	0.061	(0.106)	0.023	0.038
206	17.17	0.17	0.061	(0.106)	0.023	0.038
207	17.25	0.17	0.061	(0.105)	0.023	0.038
208	17.33	0.17	0.061	(0.105)	0.023	0.038
209	17.42	0.17	0.061	(0.104)	0.023	0.038
210	17.50	0.17	0.061	(0.104)	0.023	0.038
211	17.58	0.17	0.061	(0.103)	0.023	0.038
212	17.67	0.17	0.061	(0.103)	0.023	0.038
213	17.75	0.17	0.061	(0.102)	0.023	0.038
214	17.83	0.13	0.049	(0.102)	0.019	0.030
215	17.92	0.13	0.049	(0.101)	0.019	0.030
216	18.00	0.13	0.049	(0.101)	0.019	0.030
217	18.08	0.13	0.049	(0.100)	0.019	0.030
218	18.17	0.13	0.049	(0.100)	0.019	0.030
219	18.25	0.13	0.049	(0.099)	0.019	0.030
220	18.33	0.13	0.049	(0.099)	0.019	0.030
221	18.42	0.13	0.049	(0.098)	0.019	0.030
222	18.50	0.13	0.049	(0.098)	0.019	0.030
223	18.58	0.10	0.037	(0.097)	0.014	0.023
224	18.67	0.10	0.037	(0.097)	0.014	0.023
225	18.75	0.10	0.037	(0.096)	0.014	0.023
226	18.83	0.07	0.024	(0.096)	0.009	0.015
227	18.92	0.07	0.024	(0.095)	0.009	0.015
228	19.00	0.07	0.024	(0.095)	0.009	0.015
229	19.08	0.10	0.037	(0.094)	0.014	0.023
230	19.17	0.10	0.037	(0.094)	0.014	0.023
231	19.25	0.10	0.037	(0.094)	0.014	0.023
232	19.33	0.13	0.049	(0.093)	0.019	0.030
233	19.42	0.13	0.049	(0.093)	0.019	0.030
234	19.50	0.13	0.049	(0.092)	0.019	0.030
235	19.58	0.10	0.037	(0.092)	0.014	0.023
236	19.67	0.10	0.037	(0.091)	0.014	0.023
237	19.75	0.10	0.037	(0.091)	0.014	0.023
238	19.83	0.07	0.024	(0.091)	0.009	0.015
239	19.92	0.07	0.024	(0.090)	0.009	0.015

240	20.00	0.07	0.024	(0.090)	0.009	0.015
241	20.08	0.10	0.037	(0.089)	0.014	0.023
242	20.17	0.10	0.037	(0.089)	0.014	0.023
243	20.25	0.10	0.037	(0.089)	0.014	0.023
244	20.33	0.10	0.037	(0.088)	0.014	0.023
245	20.42	0.10	0.037	(0.088)	0.014	0.023
246	20.50	0.10	0.037	(0.088)	0.014	0.023
247	20.58	0.10	0.037	(0.087)	0.014	0.023
248	20.67	0.10	0.037	(0.087)	0.014	0.023
249	20.75	0.10	0.037	(0.086)	0.014	0.023
250	20.83	0.07	0.024	(0.086)	0.009	0.015
251	20.92	0.07	0.024	(0.086)	0.009	0.015
252	21.00	0.07	0.024	(0.085)	0.009	0.015
253	21.08	0.10	0.037	(0.085)	0.014	0.023
254	21.17	0.10	0.037	(0.085)	0.014	0.023
255	21.25	0.10	0.037	(0.084)	0.014	0.023
256	21.33	0.07	0.024	(0.084)	0.009	0.015
257	21.42	0.07	0.024	(0.084)	0.009	0.015
258	21.50	0.07	0.024	(0.083)	0.009	0.015
259	21.58	0.10	0.037	(0.083)	0.014	0.023
260	21.67	0.10	0.037	(0.083)	0.014	0.023
261	21.75	0.10	0.037	(0.083)	0.014	0.023
262	21.83	0.07	0.024	(0.082)	0.009	0.015
263	21.92	0.07	0.024	(0.082)	0.009	0.015
264	22.00	0.07	0.024	(0.082)	0.009	0.015
265	22.08	0.10	0.037	(0.081)	0.014	0.023
266	22.17	0.10	0.037	(0.081)	0.014	0.023
267	22.25	0.10	0.037	(0.081)	0.014	0.023
268	22.33	0.07	0.024	(0.081)	0.009	0.015
269	22.42	0.07	0.024	(0.080)	0.009	0.015
270	22.50	0.07	0.024	(0.080)	0.009	0.015
271	22.58	0.07	0.024	(0.080)	0.009	0.015
272	22.67	0.07	0.024	(0.080)	0.009	0.015
273	22.75	0.07	0.024	(0.079)	0.009	0.015
274	22.83	0.07	0.024	(0.079)	0.009	0.015
275	22.92	0.07	0.024	(0.079)	0.009	0.015
276	23.00	0.07	0.024	(0.079)	0.009	0.015
277	23.08	0.07	0.024	(0.079)	0.009	0.015
278	23.17	0.07	0.024	(0.079)	0.009	0.015
279	23.25	0.07	0.024	(0.078)	0.009	0.015
280	23.33	0.07	0.024	(0.078)	0.009	0.015
281	23.42	0.07	0.024	(0.078)	0.009	0.015
282	23.50	0.07	0.024	(0.078)	0.009	0.015
283	23.58	0.07	0.024	(0.078)	0.009	0.015
284	23.67	0.07	0.024	(0.078)	0.009	0.015
285	23.75	0.07	0.024	(0.078)	0.009	0.015
286	23.83	0.07	0.024	(0.077)	0.009	0.015
287	23.92	0.07	0.024	(0.077)	0.009	0.015
288	24.00	0.07	0.024	(0.077)	0.009	0.015
		(Loss Rate Not Used)				
Sum =		100.0			Sum =	22.8

Flood volume = Effective rainfall 1.90(In)
times area 4.0(Ac.)/[(In)/(Ft.)] = 0.6(Ac.Ft)
Total soil loss = 1.15(In)
Total soil loss = 0.382(Ac.Ft)
Total rainfall = 3.04(In)
Flood volume = 27579.4 Cubic Feet
Total soil loss = 16632.5 Cubic Feet

--

```
       Peak flow rate of this hydrograph =      1.134(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       0.0002      0.03  Q         |         |         |
|
    0+10       0.0006      0.06  Q         |         |         |
|
    0+15       0.0011      0.06  Q         |         |         |
|
    0+20       0.0016      0.08  Q         |         |         |
|
    0+25       0.0022      0.09  Q         |         |         |
|
    0+30       0.0028      0.09  Q         |         |         |
|
    0+35       0.0035      0.09  Q         |         |         |
|
    0+40       0.0041      0.09  Q         |         |         |
|
    0+45       0.0047      0.09  Q         |         |         |
|
    0+50       0.0055      0.11  Q         |         |         |
|
    0+55       0.0063      0.12  Q         |         |         |
|
    1+ 0       0.0071      0.12  Q         |         |         |
|
    1+ 5       0.0079      0.11  Q         |         |         |
|
    1+10       0.0085      0.09  Q         |         |         |
|
    1+15       0.0091      0.09  Q         |         |         |
|
    1+20       0.0098      0.09  Q         |         |         |
|
    1+25       0.0104      0.09  Q         |         |         |
|
    1+30       0.0110      0.09  Q         |         |         |
|
    1+35       0.0117      0.09  Q         |         |         |
|
    1+40       0.0123      0.09  Q         |         |         |
|
    1+45       0.0129      0.09  Q         |         |         |
|
    1+50       0.0137      0.11  Q         |         |         |
```

1+55	0.0145	0.12	Q			
2+ 0	0.0153	0.12	Q			
2+ 5	0.0162	0.12	QV			
2+10	0.0170	0.12	QV			
2+15	0.0178	0.12	QV			
2+20	0.0187	0.12	QV			
2+25	0.0195	0.12	QV			
2+30	0.0204	0.12	QV			
2+35	0.0213	0.14	QV			
2+40	0.0224	0.15	QV			
2+45	0.0234	0.15	QV			
2+50	0.0245	0.15	QV			
2+55	0.0255	0.15	QV			
3+ 0	0.0266	0.15	QV			
3+ 5	0.0276	0.15	QV			
3+10	0.0287	0.15	QV			
3+15	0.0297	0.15	QV			
3+20	0.0307	0.15	QV			
3+25	0.0318	0.15	Q V			
3+30	0.0328	0.15	Q V			
3+35	0.0339	0.15	Q V			
3+40	0.0349	0.15	Q V			
3+45	0.0360	0.15	Q V			
3+50	0.0372	0.17	Q V			
3+55	0.0384	0.18	Q V			
4+ 0	0.0397	0.18	Q V			
4+ 5	0.0409	0.18	Q V			
4+10	0.0422	0.18	Q V			
4+15	0.0434	0.18	Q V			
4+20	0.0448	0.20	Q V			

```
|
   4+25      0.0463     0.21  Q V       |         |         |
|
   4+30      0.0477     0.21  Q  V      |         |         |
|
   4+35      0.0492     0.21  Q  V      |         |         |
|
   4+40      0.0507     0.21  Q  V      |         |         |
|
   4+45      0.0522     0.21  Q  V      |         |         |
|
   4+50      0.0537     0.23  Q  V      |         |         |
|
   4+55      0.0554     0.24  Q  V      |         |         |
|
   5+ 0      0.0571     0.24  Q  V      |         |         |
|
   5+ 5      0.0585     0.21  Q  V      |         |         |
|
   5+10      0.0598     0.18  Q  V      |         |         |
|
   5+15      0.0611     0.18  Q  V      |         |         |
|
   5+20      0.0624     0.20  Q  V      |         |         |
|
   5+25      0.0639     0.21  Q   V     |         |         |
|
   5+30      0.0654     0.21  Q   V     |         |         |
|
   5+35      0.0669     0.23  Q   V     |         |         |
|
   5+40      0.0686     0.24  Q   V     |         |         |
|
   5+45      0.0703     0.24  Q   V     |         |         |
|
   5+50      0.0720     0.24  Q   V     |         |         |
|
   5+55      0.0737     0.24  Q   V     |         |         |
|
   6+ 0      0.0753     0.24  Q   V     |         |         |
|
   6+ 5      0.0771     0.26  |Q  V     |         |         |
|
   6+10      0.0790     0.27  |Q  V     |         |         |
|
   6+15      0.0809     0.27  |Q   V    |         |         |
|
   6+20      0.0828     0.27  |Q   V    |         |         |
|
   6+25      0.0847     0.27  |Q   V    |         |         |
|
   6+30      0.0866     0.27  |Q   V    |         |         |
|
   6+35      0.0886     0.29  |Q   V    |         |         |
|
   6+40      0.0907     0.30  |Q   V    |         |         |
|
   6+45      0.0927     0.30  |Q   V    |         |         |
|
   6+50      0.0948     0.30  |Q   V    |         |         |
```

```
|
     6+55        0.0969      0.30  |Q     V    |         |         |
|
     7+ 0        0.0990      0.30  |Q     V    |         |         |
|
     7+ 5        0.1011      0.30  |Q     V    |         |         |
|
     7+10        0.1032      0.30  |Q     V    |         |         |
|
     7+15        0.1053      0.30  |Q     V    |         |         |
|
     7+20        0.1075      0.32  |Q     V    |         |         |
|
     7+25        0.1098      0.33  |Q     V    |         |         |
|
     7+30        0.1122      0.34  |Q      V   |         |         |
|
     7+35        0.1146      0.35  |Q      V   |         |         |
|
     7+40        0.1171      0.36  |Q      V   |         |         |
|
     7+45        0.1196      0.37  |Q      V   |         |         |
|
     7+50        0.1222      0.38  |Q      V   |         |         |
|
     7+55        0.1250      0.40  |Q      V   |         |         |
|
     8+ 0        0.1277      0.40  |Q       V  |         |         |
|
     8+ 5        0.1306      0.43  |Q       V  |         |         |
|
     8+10        0.1338      0.46  |Q       V  |         |         |
|
     8+15        0.1369      0.46  |Q       V  |         |         |
|
     8+20        0.1401      0.46  |Q       V  |         |         |
|
     8+25        0.1432      0.46  |Q        V|         |         |
|
     8+30        0.1464      0.46  |Q        V|         |         |
|
     8+35        0.1496      0.47  |Q        V|         |         |
|
     8+40        0.1530      0.49  |Q        V|         |         |
|
     8+45        0.1563      0.49  |Q        V|         |         |
|
     8+50        0.1598      0.50  | Q        V         |         |
|
     8+55        0.1634      0.52  | Q        V         |         |
|
     9+ 0        0.1669      0.52  | Q        V         |         |
|
     9+ 5        0.1707      0.55  | Q        V         |         |
|
     9+10        0.1747      0.58  | Q        |V        |         |
|
     9+15        0.1787      0.58  | Q        |V        |         |
|
     9+20        0.1828      0.60  | Q        |V        |         |
```

```
|
    9+25       0.1870      0.61  | Q       |V        |         |
|
    9+30       0.1912      0.61  | Q       | V       |         |
|
    9+35       0.1955      0.63  | Q       | V       |         |
|
    9+40       0.1999      0.64  | Q       | V       |         |
|
    9+45       0.2043      0.64  | Q       | V       |         |
|
    9+50       0.2088      0.66  | Q       |  V      |         |
|
    9+55       0.2134      0.67  | Q       |  V      |         |
|
   10+ 0       0.2180      0.67  | Q       |  V      |         |
|
   10+ 5       0.2218      0.55  | Q       |   V     |         |
|
   10+10       0.2250      0.46  |Q        |   V     |         |
|
   10+15       0.2282      0.46  |Q        |   V     |         |
|
   10+20       0.2313      0.46  |Q        |   V     |         |
|
   10+25       0.2345      0.46  |Q        |   V     |         |
|
   10+30       0.2376      0.46  |Q        |    V    |         |
|
   10+35       0.2413      0.54  | Q       |    V    |         |
|
   10+40       0.2455      0.60  | Q       |    V    |         |
|
   10+45       0.2497      0.61  | Q       |    V    |         |
|
   10+50       0.2539      0.61  | Q       |     V   |         |
|
   10+55       0.2581      0.61  | Q       |     V   |         |
|
   11+ 0       0.2623      0.61  | Q       |     V   |         |
|
   11+ 5       0.2664      0.59  | Q       |     V   |         |
|
   11+10       0.2703      0.58  | Q       |      V  |         |
|
   11+15       0.2743      0.58  | Q       |      V  |         |
|
   11+20       0.2783      0.58  | Q       |      V  |         |
|
   11+25       0.2823      0.58  | Q       |      V  |         |
|
   11+30       0.2863      0.58  | Q       |       V |         |
|
   11+35       0.2900      0.55  | Q       |       V |         |
|
   11+40       0.2936      0.52  | Q       |       V |         |
|
   11+45       0.2972      0.52  | Q       |       V |         |
|
   11+50       0.3009      0.53  | Q       |        V|         |
```

```
|
11+55       0.3046      0.55  | Q       |        V|         |
|
12+ 0       0.3084      0.55  | Q       |        V|         |
|
12+ 5       0.3130      0.66  | Q       |        V|         |
|
12+10       0.3182      0.76  |  Q      |         V         |
|
12+15       0.3234      0.76  |  Q      |         V         |
|
12+20       0.3288      0.78  |  Q      |         V         |
|
12+25       0.3342      0.79  |  Q      |         |V        |
|
12+30       0.3397      0.79  |  Q      |         |V        |
|
12+35       0.3454      0.83  |  Q      |         |V        |
|
12+40       0.3512      0.85  |  Q      |         | V       |
|
12+45       0.3571      0.85  |  Q      |         | V       |
|
12+50       0.3631      0.87  |  Q      |         | V       |
|
12+55       0.3692      0.88  |  Q      |         |  V      |
|
13+ 0       0.3753      0.88  |  Q      |         |  V      |
|
13+ 5       0.3822      1.01  |   Q     |         |   V     |
|
13+10       0.3899      1.12  |   Q     |         |   V     |
|
13+15       0.3977      1.13  |   Q     |         |    V    |
|
13+20       0.4055      1.13  |   Q     |         |    V    |
|
13+25       0.4133      1.13  |   Q     |         |     V   |
|
13+30       0.4211      1.13  |   Q     |         |     V   |
|
13+35       0.4273      0.90  |  Q      |         |     V   |
|
13+40       0.4322      0.71  | Q       |         |      V  |
|
13+45       0.4370      0.70  | Q       |         |      V  |
|
13+50       0.4418      0.70  | Q       |         |      V  |
|
13+55       0.4466      0.70  | Q       |         |       V |
|
14+ 0       0.4515      0.70  | Q       |         |       V |
|
14+ 5       0.4567      0.77  |  Q      |         |       V |
|
14+10       0.4624      0.82  |  Q      |         |        V|
|
14+15       0.4680      0.82  |  Q      |         |        V|
|
14+20       0.4736      0.81  |  Q      |         |        V|
```

```
|
  14+25      0.4791      0.79  |  Q       |         |         V
|
  14+30      0.4845      0.79  |  Q       |         |         V
|
  14+35      0.4900      0.79  |  Q       |         |         V
|
  14+40      0.4954      0.79  |  Q       |         |         |V
|
  14+45      0.5009      0.79  |  Q       |         |         |V
|
  14+50      0.5062      0.78  |  Q       |         |         |V
|
  14+55      0.5115      0.76  |  Q       |         |         | V
|
  15+ 0      0.5167      0.76  |  Q       |         |         | V
|
  15+ 5      0.5218      0.74  | Q        |         |         | V
|
  15+10      0.5269      0.73  | Q        |         |         |  V
|
  15+15      0.5319      0.73  | Q        |         |         |  V
|
  15+20      0.5368      0.71  | Q        |         |         |  V
|
  15+25      0.5417      0.70  | Q        |         |         |   V
|
  15+30      0.5465      0.70  | Q        |         |         |   V
|
  15+35      0.5508      0.63  | Q        |         |         |   V
|
  15+40      0.5549      0.58  | Q        |         |         |    V
|
  15+45      0.5588      0.58  | Q        |         |         |    V
|
  15+50      0.5628      0.58  | Q        |         |         |    V
|
  15+55      0.5668      0.58  | Q        |         |         |    V
|
  16+ 0      0.5708      0.58  | Q        |         |         |     V
|
  16+ 5      0.5731      0.33  |Q         |         |         |     V
|
  16+10      0.5740      0.13  Q          |         |         |     V
|
  16+15      0.5748      0.12  Q          |         |         |     V
|
  16+20      0.5757      0.12  Q          |         |         |     V
|
  16+25      0.5765      0.12  Q          |         |         |     V
|
  16+30      0.5774      0.12  Q          |         |         |     V
|
  16+35      0.5781      0.11  Q          |         |         |     V
|
  16+40      0.5787      0.09  Q          |         |         |     V
|
  16+45      0.5793      0.09  Q          |         |         |     V
|
  16+50      0.5800      0.09  Q          |         |         |     V
```

16+55	0.5806	0.09	Q	|	|	|	V	|
17+ 0	0.5812	0.09	Q	|	|	|	V	|
17+ 5	0.5821	0.12	Q	|	|	|	V	|
17+10	0.5831	0.15	Q	|	|	|	V	|
17+15	0.5842	0.15	Q	|	|	|	V	|
17+20	0.5852	0.15	Q	|	|	|	V	|
17+25	0.5863	0.15	Q	|	|	|	V	|
17+30	0.5873	0.15	Q	|	|	|	V	|
17+35	0.5884	0.15	Q	|	|	|	V	|
17+40	0.5894	0.15	Q	|	|	|	V	|
17+45	0.5905	0.15	Q	|	|	|	V	|
17+50	0.5914	0.14	Q	|	|	|	V	|
17+55	0.5922	0.12	Q	|	|	|	V	|
18+ 0	0.5931	0.12	Q	|	|	|	V	|
18+ 5	0.5939	0.12	Q	|	|	|	V	|
18+10	0.5948	0.12	Q	|	|	|	V	|
18+15	0.5956	0.12	Q	|	|	|	V	|
18+20	0.5964	0.12	Q	|	|	|	V	|
18+25	0.5973	0.12	Q	|	|	|	V	|
18+30	0.5981	0.12	Q	|	|	|	V	|
18+35	0.5988	0.11	Q	|	|	|	V	|
18+40	0.5995	0.09	Q	|	|	|	V	|
18+45	0.6001	0.09	Q	|	|	|	V	|
18+50	0.6006	0.07	Q	|	|	|	V	|
18+55	0.6010	0.06	Q	|	|	|	V	|
19+ 0	0.6015	0.06	Q	|	|	|	V	|
19+ 5	0.6020	0.08	Q	|	|	|	V	|
19+10	0.6026	0.09	Q	|	|	|	V	|
19+15	0.6033	0.09	Q	|	|	|	V	|
19+20	0.6040	0.11	Q	|	|	|	V	

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|
   19+25       0.6048       0.12  Q          |          |          |        V
|
   19+30       0.6057       0.12  Q          |          |          |        V
|
   19+35       0.6064       0.11  Q          |          |          |        V
|
   19+40       0.6070       0.09  Q          |          |          |        V
|
   19+45       0.6077       0.09  Q          |          |          |        V
|
   19+50       0.6082       0.07  Q          |          |          |        V
|
   19+55       0.6086       0.06  Q          |          |          |        V
|
   20+ 0       0.6090       0.06  Q          |          |          |        V
|
   20+ 5       0.6096       0.08  Q          |          |          |        V
|
   20+10       0.6102       0.09  Q          |          |          |        V
|
   20+15       0.6108       0.09  Q          |          |          |        V
|
   20+20       0.6114       0.09  Q          |          |          |        V
|
   20+25       0.6121       0.09  Q          |          |          |        V
|
   20+30       0.6127       0.09  Q          |          |          |        V
|
   20+35       0.6133       0.09  Q          |          |          |        V
|
   20+40       0.6140       0.09  Q          |          |          |        V
|
   20+45       0.6146       0.09  Q          |          |          |        V
|
   20+50       0.6151       0.07  Q          |          |          |        V
|
   20+55       0.6155       0.06  Q          |          |          |        V
|
   21+ 0       0.6159       0.06  Q          |          |          |        V
|
   21+ 5       0.6165       0.08  Q          |          |          |        V
|
   21+10       0.6171       0.09  Q          |          |          |        V
|
   21+15       0.6177       0.09  Q          |          |          |
V|
   21+20       0.6182       0.07  Q          |          |          |
V|
   21+25       0.6187       0.06  Q          |          |          |
V|
   21+30       0.6191       0.06  Q          |          |          |
V|
   21+35       0.6196       0.08  Q          |          |          |
V|
   21+40       0.6202       0.09  Q          |          |          |
V|
   21+45       0.6209       0.09  Q          |          |          |
V|
   21+50       0.6214       0.07  Q          |          |          |
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V|
   21+55       0.6218      0.06  Q          |          |          |
V|
   22+ 0       0.6222      0.06  Q          |          |          |
V|
   22+ 5       0.6228      0.08  Q          |          |          |
V|
   22+10       0.6234      0.09  Q          |          |          |
V|
   22+15       0.6240      0.09  Q          |          |          |
V|
   22+20       0.6245      0.07  Q          |          |          |
V|
   22+25       0.6250      0.06  Q          |          |          |
V|
   22+30       0.6254      0.06  Q          |          |          |
V|
   22+35       0.6258      0.06  Q          |          |          |
V|
   22+40       0.6262      0.06  Q          |          |          |
V|
   22+45       0.6266      0.06  Q          |          |          |
V|
   22+50       0.6271      0.06  Q          |          |          |
V|
   22+55       0.6275      0.06  Q          |          |          |
V|
   23+ 0       0.6279      0.06  Q          |          |          |
V|
   23+ 5       0.6283      0.06  Q          |          |          |
V|
   23+10       0.6287      0.06  Q          |          |          |
V|
   23+15       0.6292      0.06  Q          |          |          |
V|
   23+20       0.6296      0.06  Q          |          |          |
V|
   23+25       0.6300      0.06  Q          |          |          |
V|
   23+30       0.6304      0.06  Q          |          |          |
V|
   23+35       0.6308      0.06  Q          |          |          |
V|
   23+40       0.6313      0.06  Q          |          |          |
V|
   23+45       0.6317      0.06  Q          |          |          |
V|
   23+50       0.6321      0.06  Q          |          |          |
V|
   23+55       0.6325      0.06  Q          |          |          |
V|
   24+ 0       0.6329      0.06  Q          |          |          |
V|
   24+ 5       0.6331      0.03  Q          |          |          |
V|
   24+10       0.6331      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 11/09/21 File: moval33post24100.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area A

Drainage Area = 4.00(Ac.) = 0.006 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 4.00(Ac.) = 0.006 Sq. Mi.
Length along longest watercourse = 1159.00(Ft.)
Length along longest watercourse measured to centroid = 637.00 (Ft.)
Length along longest watercourse = 0.220 Mi.
Length along longest watercourse measured to centroid = 0.121 Mi.
Difference in elevation = 70.00(Ft.)
Slope along watercourse = 318.8956 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.030 Hr.
Lag time = 1.82 Min.
25% of lag time = 0.45 Min.
40% of lag time = 0.73 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]

4.00	1.93	7.72

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.00	4.64	18.56

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.930(In)
Area Averaged 100-Year Rainfall = 4.640(In)

Point rain (area averaged) = 4.640(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 4.640(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
4.000	69.00	0.650

Total Area Entered = 4.00(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	84.4	0.194	0.650	0.080	1.000	0.080
					Sum (F) =	0.080

Area averaged mean soil loss (F) (In/Hr) = 0.080
Minimum soil loss rate ((In/Hr)) = 0.040
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

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	275.097	54.570	2.200
2	0.167	550.195	42.583	1.717
3	0.250	825.292	2.846	0.115
			Sum = 100.000	Sum= 4.031

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   Pattern   Storm Rain   Loss rate(In./Hr)   Effective

	(Hr.)	Percent	(In/Hr)	Max |	Low	(In/Hr)
1	0.08	0.07	0.037	(0.143)	0.014	0.023
2	0.17	0.07	0.037	(0.142)	0.014	0.023
3	0.25	0.07	0.037	(0.142)	0.014	0.023
4	0.33	0.10	0.056	(0.141)	0.021	0.035
5	0.42	0.10	0.056	(0.140)	0.021	0.035
6	0.50	0.10	0.056	(0.140)	0.021	0.035
7	0.58	0.10	0.056	(0.139)	0.021	0.035
8	0.67	0.10	0.056	(0.139)	0.021	0.035
9	0.75	0.10	0.056	(0.138)	0.021	0.035
10	0.83	0.13	0.074	(0.138)	0.028	0.046
11	0.92	0.13	0.074	(0.137)	0.028	0.046
12	1.00	0.13	0.074	(0.137)	0.028	0.046
13	1.08	0.10	0.056	(0.136)	0.021	0.035
14	1.17	0.10	0.056	(0.136)	0.021	0.035
15	1.25	0.10	0.056	(0.135)	0.021	0.035
16	1.33	0.10	0.056	(0.134)	0.021	0.035
17	1.42	0.10	0.056	(0.134)	0.021	0.035
18	1.50	0.10	0.056	(0.133)	0.021	0.035
19	1.58	0.10	0.056	(0.133)	0.021	0.035
20	1.67	0.10	0.056	(0.132)	0.021	0.035
21	1.75	0.10	0.056	(0.132)	0.021	0.035
22	1.83	0.13	0.074	(0.131)	0.028	0.046
23	1.92	0.13	0.074	(0.131)	0.028	0.046
24	2.00	0.13	0.074	(0.130)	0.028	0.046
25	2.08	0.13	0.074	(0.130)	0.028	0.046
26	2.17	0.13	0.074	(0.129)	0.028	0.046
27	2.25	0.13	0.074	(0.129)	0.028	0.046
28	2.33	0.13	0.074	(0.128)	0.028	0.046
29	2.42	0.13	0.074	(0.128)	0.028	0.046
30	2.50	0.13	0.074	(0.127)	0.028	0.046
31	2.58	0.17	0.093	(0.127)	0.035	0.058
32	2.67	0.17	0.093	(0.126)	0.035	0.058
33	2.75	0.17	0.093	(0.125)	0.035	0.058
34	2.83	0.17	0.093	(0.125)	0.035	0.058
35	2.92	0.17	0.093	(0.124)	0.035	0.058
36	3.00	0.17	0.093	(0.124)	0.035	0.058
37	3.08	0.17	0.093	(0.123)	0.035	0.058
38	3.17	0.17	0.093	(0.123)	0.035	0.058
39	3.25	0.17	0.093	(0.122)	0.035	0.058
40	3.33	0.17	0.093	(0.122)	0.035	0.058
41	3.42	0.17	0.093	(0.121)	0.035	0.058
42	3.50	0.17	0.093	(0.121)	0.035	0.058
43	3.58	0.17	0.093	(0.120)	0.035	0.058
44	3.67	0.17	0.093	(0.120)	0.035	0.058
45	3.75	0.17	0.093	(0.119)	0.035	0.058
46	3.83	0.20	0.111	(0.119)	0.042	0.069
47	3.92	0.20	0.111	(0.118)	0.042	0.069
48	4.00	0.20	0.111	(0.118)	0.042	0.069
49	4.08	0.20	0.111	(0.117)	0.042	0.069
50	4.17	0.20	0.111	(0.117)	0.042	0.069
51	4.25	0.20	0.111	(0.116)	0.042	0.069
52	4.33	0.23	0.130	(0.116)	0.049	0.081
53	4.42	0.23	0.130	(0.115)	0.049	0.081
54	4.50	0.23	0.130	(0.115)	0.049	0.081
55	4.58	0.23	0.130	(0.114)	0.049	0.081
56	4.67	0.23	0.130	(0.114)	0.049	0.081
57	4.75	0.23	0.130	(0.113)	0.049	0.081
58	4.83	0.27	0.148	(0.113)	0.056	0.092
59	4.92	0.27	0.148	(0.112)	0.056	0.092

60	5.00	0.27	0.148	(0.112)	0.056	0.092
61	5.08	0.20	0.111	(0.111)	0.042	0.069
62	5.17	0.20	0.111	(0.111)	0.042	0.069
63	5.25	0.20	0.111	(0.110)	0.042	0.069
64	5.33	0.23	0.130	(0.110)	0.049	0.081
65	5.42	0.23	0.130	(0.110)	0.049	0.081
66	5.50	0.23	0.130	(0.109)	0.049	0.081
67	5.58	0.27	0.148	(0.109)	0.056	0.092
68	5.67	0.27	0.148	(0.108)	0.056	0.092
69	5.75	0.27	0.148	(0.108)	0.056	0.092
70	5.83	0.27	0.148	(0.107)	0.056	0.092
71	5.92	0.27	0.148	(0.107)	0.056	0.092
72	6.00	0.27	0.148	(0.106)	0.056	0.092
73	6.08	0.30	0.167	(0.106)	0.063	0.104
74	6.17	0.30	0.167	(0.105)	0.063	0.104
75	6.25	0.30	0.167	(0.105)	0.063	0.104
76	6.33	0.30	0.167	(0.104)	0.063	0.104
77	6.42	0.30	0.167	(0.104)	0.063	0.104
78	6.50	0.30	0.167	(0.103)	0.063	0.104
79	6.58	0.33	0.186	(0.103)	0.071	0.115
80	6.67	0.33	0.186	(0.102)	0.071	0.115
81	6.75	0.33	0.186	(0.102)	0.071	0.115
82	6.83	0.33	0.186	(0.102)	0.071	0.115
83	6.92	0.33	0.186	(0.101)	0.071	0.115
84	7.00	0.33	0.186	(0.101)	0.071	0.115
85	7.08	0.33	0.186	(0.100)	0.071	0.115
86	7.17	0.33	0.186	(0.100)	0.071	0.115
87	7.25	0.33	0.186	(0.099)	0.071	0.115
88	7.33	0.37	0.204	(0.099)	0.078	0.127
89	7.42	0.37	0.204	(0.098)	0.078	0.127
90	7.50	0.37	0.204	(0.098)	0.078	0.127
91	7.58	0.40	0.223	(0.097)	0.085	0.138
92	7.67	0.40	0.223	(0.097)	0.085	0.138
93	7.75	0.40	0.223	(0.097)	0.085	0.138
94	7.83	0.43	0.241	(0.096)	0.092	0.150
95	7.92	0.43	0.241	(0.096)	0.092	0.150
96	8.00	0.43	0.241	(0.095)	0.092	0.150
97	8.08	0.50	0.278	0.095	(0.106)	0.184
98	8.17	0.50	0.278	0.094	(0.106)	0.184
99	8.25	0.50	0.278	0.094	(0.106)	0.185
100	8.33	0.50	0.278	0.093	(0.106)	0.185
101	8.42	0.50	0.278	0.093	(0.106)	0.185
102	8.50	0.50	0.278	0.093	(0.106)	0.186
103	8.58	0.53	0.297	0.092	(0.113)	0.205
104	8.67	0.53	0.297	0.092	(0.113)	0.205
105	8.75	0.53	0.297	0.091	(0.113)	0.206
106	8.83	0.57	0.316	0.091	(0.120)	0.225
107	8.92	0.57	0.316	0.090	(0.120)	0.225
108	9.00	0.57	0.316	0.090	(0.120)	0.226
109	9.08	0.63	0.353	0.090	(0.134)	0.263
110	9.17	0.63	0.353	0.089	(0.134)	0.264
111	9.25	0.63	0.353	0.089	(0.134)	0.264
112	9.33	0.67	0.371	0.088	(0.141)	0.283
113	9.42	0.67	0.371	0.088	(0.141)	0.283
114	9.50	0.67	0.371	0.087	(0.141)	0.284
115	9.58	0.70	0.390	0.087	(0.148)	0.303
116	9.67	0.70	0.390	0.087	(0.148)	0.303
117	9.75	0.70	0.390	0.086	(0.148)	0.304
118	9.83	0.73	0.408	0.086	(0.155)	0.323
119	9.92	0.73	0.408	0.085	(0.155)	0.323

120	10.00	0.73	0.408	0.085	(0.155)	0.323
121	10.08	0.50	0.278	0.085	(0.106)	0.194
122	10.17	0.50	0.278	0.084	(0.106)	0.194
123	10.25	0.50	0.278	0.084	(0.106)	0.195
124	10.33	0.50	0.278	0.083	(0.106)	0.195
125	10.42	0.50	0.278	0.083	(0.106)	0.195
126	10.50	0.50	0.278	0.083	(0.106)	0.196
127	10.58	0.67	0.371	0.082	(0.141)	0.289
128	10.67	0.67	0.371	0.082	(0.141)	0.289
129	10.75	0.67	0.371	0.081	(0.141)	0.290
130	10.83	0.67	0.371	0.081	(0.141)	0.290
131	10.92	0.67	0.371	0.081	(0.141)	0.291
132	11.00	0.67	0.371	0.080	(0.141)	0.291
133	11.08	0.63	0.353	0.080	(0.134)	0.273
134	11.17	0.63	0.353	0.079	(0.134)	0.273
135	11.25	0.63	0.353	0.079	(0.134)	0.274
136	11.33	0.63	0.353	0.079	(0.134)	0.274
137	11.42	0.63	0.353	0.078	(0.134)	0.274
138	11.50	0.63	0.353	0.078	(0.134)	0.275
139	11.58	0.57	0.316	0.077	(0.120)	0.238
140	11.67	0.57	0.316	0.077	(0.120)	0.239
141	11.75	0.57	0.316	0.077	(0.120)	0.239
142	11.83	0.60	0.334	0.076	(0.127)	0.258
143	11.92	0.60	0.334	0.076	(0.127)	0.258
144	12.00	0.60	0.334	0.075	(0.127)	0.259
145	12.08	0.83	0.464	0.075	(0.176)	0.389
146	12.17	0.83	0.464	0.075	(0.176)	0.389
147	12.25	0.83	0.464	0.074	(0.176)	0.390
148	12.33	0.87	0.483	0.074	(0.183)	0.409
149	12.42	0.87	0.483	0.074	(0.183)	0.409
150	12.50	0.87	0.483	0.073	(0.183)	0.409
151	12.58	0.93	0.520	0.073	(0.197)	0.447
152	12.67	0.93	0.520	0.072	(0.197)	0.447
153	12.75	0.93	0.520	0.072	(0.197)	0.448
154	12.83	0.97	0.538	0.072	(0.205)	0.466
155	12.92	0.97	0.538	0.071	(0.205)	0.467
156	13.00	0.97	0.538	0.071	(0.205)	0.467
157	13.08	1.13	0.631	0.071	(0.240)	0.560
158	13.17	1.13	0.631	0.070	(0.240)	0.561
159	13.25	1.13	0.631	0.070	(0.240)	0.561
160	13.33	1.13	0.631	0.070	(0.240)	0.561
161	13.42	1.13	0.631	0.069	(0.240)	0.562
162	13.50	1.13	0.631	0.069	(0.240)	0.562
163	13.58	0.77	0.427	0.069	(0.162)	0.358
164	13.67	0.77	0.427	0.068	(0.162)	0.359
165	13.75	0.77	0.427	0.068	(0.162)	0.359
166	13.83	0.77	0.427	0.068	(0.162)	0.359
167	13.92	0.77	0.427	0.067	(0.162)	0.360
168	14.00	0.77	0.427	0.067	(0.162)	0.360
169	14.08	0.90	0.501	0.066	(0.190)	0.435
170	14.17	0.90	0.501	0.066	(0.190)	0.435
171	14.25	0.90	0.501	0.066	(0.190)	0.435
172	14.33	0.87	0.483	0.065	(0.183)	0.417
173	14.42	0.87	0.483	0.065	(0.183)	0.417
174	14.50	0.87	0.483	0.065	(0.183)	0.418
175	14.58	0.87	0.483	0.064	(0.183)	0.418
176	14.67	0.87	0.483	0.064	(0.183)	0.418
177	14.75	0.87	0.483	0.064	(0.183)	0.419
178	14.83	0.83	0.464	0.063	(0.176)	0.401
179	14.92	0.83	0.464	0.063	(0.176)	0.401

180	15.00	0.83	0.464	0.063	(0.176)	0.401
181	15.08	0.80	0.445	0.063	(0.169)	0.383
182	15.17	0.80	0.445	0.062	(0.169)	0.383
183	15.25	0.80	0.445	0.062	(0.169)	0.384
184	15.33	0.77	0.427	0.062	(0.162)	0.365
185	15.42	0.77	0.427	0.061	(0.162)	0.366
186	15.50	0.77	0.427	0.061	(0.162)	0.366
187	15.58	0.63	0.353	0.061	(0.134)	0.292
188	15.67	0.63	0.353	0.060	(0.134)	0.292
189	15.75	0.63	0.353	0.060	(0.134)	0.293
190	15.83	0.63	0.353	0.060	(0.134)	0.293
191	15.92	0.63	0.353	0.059	(0.134)	0.293
192	16.00	0.63	0.353	0.059	(0.134)	0.294
193	16.08	0.13	0.074	(0.059)	0.028	0.046
194	16.17	0.13	0.074	(0.058)	0.028	0.046
195	16.25	0.13	0.074	(0.058)	0.028	0.046
196	16.33	0.13	0.074	(0.058)	0.028	0.046
197	16.42	0.13	0.074	(0.058)	0.028	0.046
198	16.50	0.13	0.074	(0.057)	0.028	0.046
199	16.58	0.10	0.056	(0.057)	0.021	0.035
200	16.67	0.10	0.056	(0.057)	0.021	0.035
201	16.75	0.10	0.056	(0.056)	0.021	0.035
202	16.83	0.10	0.056	(0.056)	0.021	0.035
203	16.92	0.10	0.056	(0.056)	0.021	0.035
204	17.00	0.10	0.056	(0.056)	0.021	0.035
205	17.08	0.17	0.093	(0.055)	0.035	0.058
206	17.17	0.17	0.093	(0.055)	0.035	0.058
207	17.25	0.17	0.093	(0.055)	0.035	0.058
208	17.33	0.17	0.093	(0.054)	0.035	0.058
209	17.42	0.17	0.093	(0.054)	0.035	0.058
210	17.50	0.17	0.093	(0.054)	0.035	0.058
211	17.58	0.17	0.093	(0.054)	0.035	0.058
212	17.67	0.17	0.093	(0.053)	0.035	0.058
213	17.75	0.17	0.093	(0.053)	0.035	0.058
214	17.83	0.13	0.074	(0.053)	0.028	0.046
215	17.92	0.13	0.074	(0.053)	0.028	0.046
216	18.00	0.13	0.074	(0.052)	0.028	0.046
217	18.08	0.13	0.074	(0.052)	0.028	0.046
218	18.17	0.13	0.074	(0.052)	0.028	0.046
219	18.25	0.13	0.074	(0.052)	0.028	0.046
220	18.33	0.13	0.074	(0.051)	0.028	0.046
221	18.42	0.13	0.074	(0.051)	0.028	0.046
222	18.50	0.13	0.074	(0.051)	0.028	0.046
223	18.58	0.10	0.056	(0.051)	0.021	0.035
224	18.67	0.10	0.056	(0.050)	0.021	0.035
225	18.75	0.10	0.056	(0.050)	0.021	0.035
226	18.83	0.07	0.037	(0.050)	0.014	0.023
227	18.92	0.07	0.037	(0.050)	0.014	0.023
228	19.00	0.07	0.037	(0.049)	0.014	0.023
229	19.08	0.10	0.056	(0.049)	0.021	0.035
230	19.17	0.10	0.056	(0.049)	0.021	0.035
231	19.25	0.10	0.056	(0.049)	0.021	0.035
232	19.33	0.13	0.074	(0.048)	0.028	0.046
233	19.42	0.13	0.074	(0.048)	0.028	0.046
234	19.50	0.13	0.074	(0.048)	0.028	0.046
235	19.58	0.10	0.056	(0.048)	0.021	0.035
236	19.67	0.10	0.056	(0.048)	0.021	0.035
237	19.75	0.10	0.056	(0.047)	0.021	0.035
238	19.83	0.07	0.037	(0.047)	0.014	0.023
239	19.92	0.07	0.037	(0.047)	0.014	0.023

240	20.00	0.07	0.037	(0.047)	0.014	0.023
241	20.08	0.10	0.056	(0.047)	0.021	0.035
242	20.17	0.10	0.056	(0.046)	0.021	0.035
243	20.25	0.10	0.056	(0.046)	0.021	0.035
244	20.33	0.10	0.056	(0.046)	0.021	0.035
245	20.42	0.10	0.056	(0.046)	0.021	0.035
246	20.50	0.10	0.056	(0.046)	0.021	0.035
247	20.58	0.10	0.056	(0.045)	0.021	0.035
248	20.67	0.10	0.056	(0.045)	0.021	0.035
249	20.75	0.10	0.056	(0.045)	0.021	0.035
250	20.83	0.07	0.037	(0.045)	0.014	0.023
251	20.92	0.07	0.037	(0.045)	0.014	0.023
252	21.00	0.07	0.037	(0.044)	0.014	0.023
253	21.08	0.10	0.056	(0.044)	0.021	0.035
254	21.17	0.10	0.056	(0.044)	0.021	0.035
255	21.25	0.10	0.056	(0.044)	0.021	0.035
256	21.33	0.07	0.037	(0.044)	0.014	0.023
257	21.42	0.07	0.037	(0.044)	0.014	0.023
258	21.50	0.07	0.037	(0.043)	0.014	0.023
259	21.58	0.10	0.056	(0.043)	0.021	0.035
260	21.67	0.10	0.056	(0.043)	0.021	0.035
261	21.75	0.10	0.056	(0.043)	0.021	0.035
262	21.83	0.07	0.037	(0.043)	0.014	0.023
263	21.92	0.07	0.037	(0.043)	0.014	0.023
264	22.00	0.07	0.037	(0.042)	0.014	0.023
265	22.08	0.10	0.056	(0.042)	0.021	0.035
266	22.17	0.10	0.056	(0.042)	0.021	0.035
267	22.25	0.10	0.056	(0.042)	0.021	0.035
268	22.33	0.07	0.037	(0.042)	0.014	0.023
269	22.42	0.07	0.037	(0.042)	0.014	0.023
270	22.50	0.07	0.037	(0.042)	0.014	0.023
271	22.58	0.07	0.037	(0.042)	0.014	0.023
272	22.67	0.07	0.037	(0.041)	0.014	0.023
273	22.75	0.07	0.037	(0.041)	0.014	0.023
274	22.83	0.07	0.037	(0.041)	0.014	0.023
275	22.92	0.07	0.037	(0.041)	0.014	0.023
276	23.00	0.07	0.037	(0.041)	0.014	0.023
277	23.08	0.07	0.037	(0.041)	0.014	0.023
278	23.17	0.07	0.037	(0.041)	0.014	0.023
279	23.25	0.07	0.037	(0.041)	0.014	0.023
280	23.33	0.07	0.037	(0.041)	0.014	0.023
281	23.42	0.07	0.037	(0.041)	0.014	0.023
282	23.50	0.07	0.037	(0.041)	0.014	0.023
283	23.58	0.07	0.037	(0.040)	0.014	0.023
284	23.67	0.07	0.037	(0.040)	0.014	0.023
285	23.75	0.07	0.037	(0.040)	0.014	0.023
286	23.83	0.07	0.037	(0.040)	0.014	0.023
287	23.92	0.07	0.037	(0.040)	0.014	0.023
288	24.00	0.07	0.037	(0.040)	0.014	0.023

(Loss Rate Not Used)

Sum = 100.0 Sum = 42.0

Flood volume = Effective rainfall 3.50(In)

times area 4.0(Ac.)/[(In)/(Ft.)] = 1.2(Ac.Ft)

Total soil loss = 1.14(In)

Total soil loss = 0.379(Ac.Ft)

Total rainfall = 4.64(In)

Flood volume = 50857.1 Cubic Feet

Total soil loss = 16515.2 Cubic Feet

--

Peak flow rate of this hydrograph = 2.267(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	0.0003	0.05	Q	|	|	|	|
0+10	0.0010	0.09	Q	|	|	|	|
0+15	0.0016	0.09	Q	|	|	|	|
0+20	0.0024	0.12	Q	|	|	|	|
0+25	0.0034	0.14	Q	|	|	|	|
0+30	0.0043	0.14	Q	|	|	|	|
0+35	0.0053	0.14	Q	|	|	|	|
0+40	0.0062	0.14	Q	|	|	|	|
0+45	0.0072	0.14	Q	|	|	|	|
0+50	0.0083	0.16	Q	|	|	|	|
0+55	0.0096	0.18	Q	|	|	|	|
1+ 0	0.0109	0.19	Q	|	|	|	|
1+ 5	0.0120	0.16	Q	|	|	|	|
1+10	0.0130	0.14	Q	|	|	|	|
1+15	0.0139	0.14	Q	|	|	|	|
1+20	0.0149	0.14	Q	|	|	|	|
1+25	0.0158	0.14	Q	|	|	|	|
1+30	0.0168	0.14	Q	|	|	|	|
1+35	0.0178	0.14	Q	|	|	|	|
1+40	0.0187	0.14	Q	|	|	|	|
1+45	0.0197	0.14	Q	|	|	|	|
1+50	0.0208	0.16	Q	|	|	|	

```
|
  1+55      0.0221     0.18  Q          |          |          |
|
  2+ 0      0.0234     0.19  Q          |          |          |
|
  2+ 5      0.0246     0.19  Q          |          |          |
|
  2+10      0.0259     0.19  Q          |          |          |
|
  2+15      0.0272     0.19  Q          |          |          |
|
  2+20      0.0285     0.19  Q          |          |          |
|
  2+25      0.0297     0.19  QV         |          |          |
|
  2+30      0.0310     0.19  QV         |          |          |
|
  2+35      0.0325     0.21  QV         |          |          |
|
  2+40      0.0341     0.23  QV         |          |          |
|
  2+45      0.0357     0.23  QV         |          |          |
|
  2+50      0.0373     0.23  QV         |          |          |
|
  2+55      0.0389     0.23  QV         |          |          |
|
  3+ 0      0.0405     0.23  QV         |          |          |
|
  3+ 5      0.0421     0.23  QV         |          |          |
|
  3+10      0.0437     0.23  QV         |          |          |
|
  3+15      0.0453     0.23  QV         |          |          |
|
  3+20      0.0469     0.23  QV         |          |          |
|
  3+25      0.0485     0.23  QV         |          |          |
|
  3+30      0.0501     0.23  QV         |          |          |
|
  3+35      0.0516     0.23  QV         |          |          |
|
  3+40      0.0532     0.23  QV         |          |          |
|
  3+45      0.0548     0.23  QV         |          |          |
|
  3+50      0.0566     0.26  |Q         |          |          |
|
  3+55      0.0585     0.28  |QV        |          |          |
|
  4+ 0      0.0604     0.28  |QV        |          |          |
|
  4+ 5      0.0624     0.28  |QV        |          |          |
|
  4+10      0.0643     0.28  |QV        |          |          |
|
  4+15      0.0662     0.28  |QV        |          |          |
|
  4+20      0.0683     0.30  |QV        |          |          |
```

```
|
    4+25        0.0705      0.32  |QV        |         |         |
|
    4+30        0.0728      0.32  |QV        |         |         |
|
    4+35        0.0750      0.32  |QV        |         |         |
|
    4+40        0.0772      0.32  |QV        |         |         |
|
    4+45        0.0795      0.32  |QV        |         |         |
|
    4+50        0.0819      0.35  |QV        |         |         |
|
    4+55        0.0844      0.37  |QV        |         |         |
|
    5+ 0        0.0870      0.37  |QV        |         |         |
|
    5+ 5        0.0892      0.32  |Q V       |         |         |
|
    5+10        0.0911      0.28  |Q V       |         |         |
|
    5+15        0.0930      0.28  |Q V       |         |         |
|
    5+20        0.0951      0.30  |Q V       |         |         |
|
    5+25        0.0974      0.32  |Q V       |         |         |
|
    5+30        0.0996      0.32  |Q V       |         |         |
|
    5+35        0.1020      0.35  |Q V       |         |         |
|
    5+40        0.1046      0.37  |Q V       |         |         |
|
    5+45        0.1071      0.37  |Q V       |         |         |
|
    5+50        0.1097      0.37  |Q V       |         |         |
|
    5+55        0.1122      0.37  |Q V       |         |         |
|
    6+ 0        0.1148      0.37  |Q V       |         |         |
|
    6+ 5        0.1175      0.40  |Q  V      |         |         |
|
    6+10        0.1204      0.42  |Q  V      |         |         |
|
    6+15        0.1233      0.42  |Q  V      |         |         |
|
    6+20        0.1261      0.42  |Q  V      |         |         |
|
    6+25        0.1290      0.42  |Q  V      |         |         |
|
    6+30        0.1319      0.42  |Q  V      |         |         |
|
    6+35        0.1350      0.44  |Q  V      |         |         |
|
    6+40        0.1381      0.46  |Q  V      |         |         |
|
    6+45        0.1413      0.46  |Q  V      |         |         |
|
    6+50        0.1445      0.46  |Q  V      |         |         |
```

```
|
  6+55      0.1477      0.46  |Q   V    |         |         |
|
  7+ 0      0.1509      0.46  |Q   V    |         |         |
|
  7+ 5      0.1541      0.46  |Q   V    |         |         |
|
  7+10      0.1573      0.46  |Q   V    |         |         |
|
  7+15      0.1605      0.46  |Q   V    |         |         |
|
  7+20      0.1639      0.49  |Q   V    |         |         |
|
  7+25      0.1674      0.51  | Q  V    |         |         |
|
  7+30      0.1709      0.51  | Q  V    |         |         |
|
  7+35      0.1746      0.54  | Q  V    |         |         |
|
  7+40      0.1784      0.56  | Q   V   |         |         |
|
  7+45      0.1823      0.56  | Q   V   |         |         |
|
  7+50      0.1863      0.58  | Q   V   |         |         |
|
  7+55      0.1904      0.60  | Q   V   |         |         |
|
  8+ 0      0.1946      0.60  | Q   V   |         |         |
|
  8+ 5      0.1992      0.68  | Q   V   |         |         |
|
  8+10      0.2043      0.74  | Q    V  |         |         |
|
  8+15      0.2094      0.74  | Q    V  |         |         |
|
  8+20      0.2146      0.75  | Q    V  |         |         |
|
  8+25      0.2197      0.75  | Q    V  |         |         |
|
  8+30      0.2249      0.75  | Q    V  |         |         |
|
  8+35      0.2303      0.79  |  Q   V  |         |         |
|
  8+40      0.2360      0.82  |  Q    V |         |         |
|
  8+45      0.2417      0.83  |  Q    V |         |         |
|
  8+50      0.2477      0.87  |  Q    V |         |         |
|
  8+55      0.2539      0.90  |  Q    V |         |         |
|
  9+ 0      0.2602      0.91  |  Q    V |         |         |
|
  9+ 5      0.2670      0.99  |  Q     V|         |         |
|
  9+10      0.2743      1.06  |   Q    V|         |         |
|
  9+15      0.2817      1.06  |   Q    V|         |         |
|
  9+20      0.2893      1.11  |   Q    V|         |         |
```

```
|
 9+25       0.2971      1.14  |   Q     V         |         |
|
 9+30       0.3050      1.14  |   Q     V         |         |
|
 9+35       0.3132      1.19  |   Q     V         |         |
|
 9+40       0.3216      1.22  |   Q     |V        |         |
|
 9+45       0.3300      1.22  |   Q     |V        |         |
|
 9+50       0.3387      1.27  |    Q    |V        |         |
|
 9+55       0.3477      1.30  |    Q    |V        |         |
|
10+ 0       0.3566      1.30  |    Q    | V       |         |
|
10+ 5       0.3637      1.02  |   Q     | V       |         |
|
10+10       0.3692      0.80  |  Q      | V       |         |
|
10+15       0.3746      0.78  |  Q      | V       |         |
|
10+20       0.3800      0.79  |  Q      |  V      |         |
|
10+25       0.3854      0.79  |  Q      |  V      |         |
|
10+30       0.3908      0.79  |  Q      |  V      |         |
|
10+35       0.3977      1.00  |  Q      |  V      |         |
|
10+40       0.4056      1.16  |   Q     |  V      |         |
|
10+45       0.4137      1.17  |   Q     |   V     |         |
|
10+50       0.4218      1.17  |   Q     |   V     |         |
|
10+55       0.4298      1.17  |   Q     |   V     |         |
|
11+ 0       0.4379      1.17  |   Q     |    V    |         |
|
11+ 5       0.4457      1.13  |   Q     |    V    |         |
|
11+10       0.4533      1.10  |   Q     |    V    |         |
|
11+15       0.4609      1.10  |   Q     |    V    |         |
|
11+20       0.4685      1.10  |   Q     |     V   |         |
|
11+25       0.4761      1.11  |   Q     |     V   |         |
|
11+30       0.4838      1.11  |   Q     |     V   |         |
|
11+35       0.4909      1.03  |   Q     |     V   |         |
|
11+40       0.4975      0.97  |  Q      |      V  |         |
|
11+45       0.5041      0.96  |  Q      |      V  |         |
|
11+50       0.5111      1.01  |   Q     |      V  |         |
```

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|
   11+55       0.5182      1.04  |   Q     |      V  |         |
|
   12+ 0       0.5254      1.04  |   Q     |       V |         |
|
   12+ 5       0.5345      1.33  |    Q    |       V |         |
|
   12+10       0.5452      1.55  |     Q   |       V |         |
|
   12+15       0.5561      1.57  |     Q   |        V|         |
|
   12+20       0.5672      1.61  |     Q   |        V|         |
|
   12+25       0.5785      1.65  |     Q   |        V|         |
|
   12+30       0.5899      1.65  |     Q   |         V         |
|
   12+35       0.6018      1.73  |     Q   |         V         |
|
   12+40       0.6142      1.80  |      Q  |         |V        |
|
   12+45       0.6266      1.80  |      Q  |         |V        |
|
   12+50       0.6394      1.85  |      Q  |         |V        |
|
   12+55       0.6523      1.88  |      Q  |         | V       |
|
   13+ 0       0.6653      1.88  |      Q  |         | V       |
|
   13+ 5       0.6797      2.09  |       Q |         |  V      |
|
   13+10       0.6952      2.25  |        Q|         |  V      |
|
   13+15       0.7107      2.26  |        Q|         |   V     |
|
   13+20       0.7263      2.26  |        Q|         |   V     |
|
   13+25       0.7419      2.27  |        Q|         |    V    |
|
   13+30       0.7575      2.27  |        Q|         |    V    |
|
   13+35       0.7701      1.82  |      Q  |         |     V   |
|
   13+40       0.7802      1.47  |    Q    |         |     V   |
|
   13+45       0.7902      1.45  |    Q    |         |      V  |
|
   13+50       0.8001      1.45  |    Q    |         |      V  |
|
   13+55       0.8101      1.45  |    Q    |         |      V  |
|
   14+ 0       0.8201      1.45  |    Q    |         |       V |
|
   14+ 5       0.8313      1.62  |     Q   |         |       V |
|
   14+10       0.8433      1.75  |     Q   |         |       V |
|
   14+15       0.8554      1.76  |      Q  |         |        V|
|
   14+20       0.8672      1.72  |     Q   |         |        V|
```

```
|
14+25       0.8788      1.69  |     Q   |         |         V
|
14+30       0.8904      1.68  |     Q   |         |         V
|
14+35       0.9020      1.69  |     Q   |         |         V
|
14+40       0.9136      1.69  |     Q   |         |         |V
|
14+45       0.9252      1.69  |     Q   |         |         |V
|
14+50       0.9366      1.65  |     Q   |         |         | V
|
14+55       0.9477      1.62  |     Q   |         |         | V
|
15+ 0       0.9589      1.62  |     Q   |         |         | V
|
15+ 5       0.9697      1.58  |     Q   |         |         |  V
|
15+10       0.9804      1.55  |     Q   |         |         |  V
|
15+15       0.9910      1.55  |     Q   |         |         |  V
|
15+20       1.0014      1.51  |     Q   |         |         |   V
|
15+25       1.0116      1.48  |    Q    |         |         |   V
|
15+30       1.0218      1.48  |    Q    |         |         |    V
|
15+35       1.0308      1.31  |    Q    |         |         |    V
|
15+40       1.0390      1.19  |   Q     |         |         |    V
|
15+45       1.0471      1.18  |   Q     |         |         |    V
|
15+50       1.0552      1.18  |   Q     |         |         |     V
|
15+55       1.0634      1.18  |   Q     |         |         |     V
|
16+ 0       1.0715      1.18  |   Q     |         |         |     V
|
16+ 5       1.0759      0.64  | Q       |         |         |     V
|
16+10       1.0774      0.21  Q         |         |         |     V
|
16+15       1.0787      0.19  Q         |         |         |     V
|
16+20       1.0800      0.19  Q         |         |         |      V
|
16+25       1.0812      0.19  Q         |         |         |      V
|
16+30       1.0825      0.19  Q         |         |         |      V
|
16+35       1.0836      0.16  Q         |         |         |      V
|
16+40       1.0846      0.14  Q         |         |         |      V
|
16+45       1.0855      0.14  Q         |         |         |      V
|
16+50       1.0865      0.14  Q         |         |         |      V
```

```
|
  16+55      1.0875      0.14  Q         |         |         |      V
|
  17+ 0      1.0884      0.14  Q         |         |         |      V
|
  17+ 5      1.0897      0.19  Q         |         |         |      V
|
  17+10      1.0913      0.23  Q         |         |         |      V
|
  17+15      1.0929      0.23  Q         |         |         |      V
|
  17+20      1.0945      0.23  Q         |         |         |      V
|
  17+25      1.0961      0.23  Q         |         |         |      V
|
  17+30      1.0977      0.23  Q         |         |         |      V
|
  17+35      1.0993      0.23  Q         |         |         |      V
|
  17+40      1.1009      0.23  Q         |         |         |      V
|
  17+45      1.1025      0.23  Q         |         |         |      V
|
  17+50      1.1039      0.21  Q         |         |         |      V
|
  17+55      1.1052      0.19  Q         |         |         |      V
|
  18+ 0      1.1065      0.19  Q         |         |         |      V
|
  18+ 5      1.1078      0.19  Q         |         |         |      V
|
  18+10      1.1090      0.19  Q         |         |         |      V
|
  18+15      1.1103      0.19  Q         |         |         |       V
|
  18+20      1.1116      0.19  Q         |         |         |       V
|
  18+25      1.1129      0.19  Q         |         |         |       V
|
  18+30      1.1142      0.19  Q         |         |         |       V
|
  18+35      1.1153      0.16  Q         |         |         |       V
|
  18+40      1.1162      0.14  Q         |         |         |       V
|
  18+45      1.1172      0.14  Q         |         |         |       V
|
  18+50      1.1180      0.11  Q         |         |         |       V
|
  18+55      1.1186      0.09  Q         |         |         |       V
|
  19+ 0      1.1193      0.09  Q         |         |         |       V
|
  19+ 5      1.1201      0.12  Q         |         |         |       V
|
  19+10      1.1210      0.14  Q         |         |         |       V
|
  19+15      1.1220      0.14  Q         |         |         |       V
|
  19+20      1.1231      0.16  Q         |         |         |       V
```

```
|
    19+25      1.1244      0.18  Q          |          |          |        V
|
    19+30      1.1257      0.19  Q          |          |          |        V
|
    19+35      1.1268      0.16  Q          |          |          |        V
|
    19+40      1.1277      0.14  Q          |          |          |        V
|
    19+45      1.1287      0.14  Q          |          |          |        V
|
    19+50      1.1295      0.11  Q          |          |          |        V
|
    19+55      1.1301      0.09  Q          |          |          |        V
|
    20+ 0      1.1308      0.09  Q          |          |          |        V
|
    20+ 5      1.1316      0.12  Q          |          |          |        V
|
    20+10      1.1325      0.14  Q          |          |          |        V
|
    20+15      1.1335      0.14  Q          |          |          |        V
|
    20+20      1.1345      0.14  Q          |          |          |        V
|
    20+25      1.1354      0.14  Q          |          |          |        V
|
    20+30      1.1364      0.14  Q          |          |          |        V
|
    20+35      1.1373      0.14  Q          |          |          |        V
|
    20+40      1.1383      0.14  Q          |          |          |        V
|
    20+45      1.1392      0.14  Q          |          |          |
V|
    20+50      1.1400      0.11  Q          |          |          |
V|
    20+55      1.1407      0.09  Q          |          |          |
V|
    21+ 0      1.1413      0.09  Q          |          |          |
V|
    21+ 5      1.1421      0.12  Q          |          |          |
V|
    21+10      1.1431      0.14  Q          |          |          |
V|
    21+15      1.1440      0.14  Q          |          |          |
V|
    21+20      1.1448      0.11  Q          |          |          |
V|
    21+25      1.1455      0.09  Q          |          |          |
V|
    21+30      1.1461      0.09  Q          |          |          |
V|
    21+35      1.1469      0.12  Q          |          |          |
V|
    21+40      1.1479      0.14  Q          |          |          |
V|
    21+45      1.1488      0.14  Q          |          |          |
V|
    21+50      1.1496      0.11  Q          |          |          |
```

```
V|
  21+55      1.1503      0.09  Q         |         |         |
V|
  22+ 0      1.1509      0.09  Q         |         |         |
V|
  22+ 5      1.1517      0.12  Q         |         |         |
V|
  22+10      1.1527      0.14  Q         |         |         |
V|
  22+15      1.1536      0.14  Q         |         |         |
V|
  22+20      1.1544      0.11  Q         |         |         |
V|
  22+25      1.1551      0.09  Q         |         |         |
V|
  22+30      1.1557      0.09  Q         |         |         |
V|
  22+35      1.1563      0.09  Q         |         |         |
V|
  22+40      1.1570      0.09  Q         |         |         |
V|
  22+45      1.1576      0.09  Q         |         |         |
V|
  22+50      1.1583      0.09  Q         |         |         |
V|
  22+55      1.1589      0.09  Q         |         |         |
V|
  23+ 0      1.1595      0.09  Q         |         |         |
V|
  23+ 5      1.1602      0.09  Q         |         |         |
V|
  23+10      1.1608      0.09  Q         |         |         |
V|
  23+15      1.1615      0.09  Q         |         |         |
V|
  23+20      1.1621      0.09  Q         |         |         |
V|
  23+25      1.1627      0.09  Q         |         |         |
V|
  23+30      1.1634      0.09  Q         |         |         |
V|
  23+35      1.1640      0.09  Q         |         |         |
V|
  23+40      1.1647      0.09  Q         |         |         |
V|
  23+45      1.1653      0.09  Q         |         |         |
V|
  23+50      1.1659      0.09  Q         |         |         |
V|
  23+55      1.1666      0.09  Q         |         |         |
V|
  24+ 0      1.1672      0.09  Q         |         |         |
V|
  24+ 5      1.1675      0.04  Q         |         |         |
V|
  24+10      1.1675      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 11/09/21 File: moval33post12.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area B

Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) = 0.017 Sq. Mi.
Length along longest watercourse = 1380.00(Ft.)
Length along longest watercourse measured to centroid = 828.00 (Ft.)
Length along longest watercourse = 0.261 Mi.
Length along longest watercourse measured to centroid = 0.157 Mi.
Difference in elevation = 52.00(Ft.)
Slope along watercourse = 198.9565 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.039 Hr.
Lag time = 2.35 Min.
25% of lag time = 0.59 Min.
40% of lag time = 0.94 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]

10.90	0.47	5.08

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
10.90	1.19	12.97

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 0.466(In)
Area Averaged 100-Year Rainfall = 1.190(In)

Point rain (area averaged) = 0.466(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 0.466(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
10.900	69.00	0.650

Total Area Entered = 10.90(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.650	0.155	1.000	0.155
					Sum (F) =	0.155

Area averaged mean soil loss (F) (In/Hr) = 0.155
Minimum soil loss rate ((In/Hr)) = 0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

Slope of intensity-duration curve for a 1 hour storm =0.5500

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	213.048	44.793	4.921
2	0.167	426.095	48.755	5.356
3	0.250	639.143	5.617	0.617
4	0.333	852.190	0.835	0.092
			Sum = 100.000	Sum= 10.985

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   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)          Max   |   Low        (In/Hr)
   1   0.08     3.30      0.185        (  0.155)       0.070        0.114
   2   0.17     4.20      0.235        (  0.155)       0.089        0.146
   3   0.25     4.40      0.246        (  0.155)       0.093        0.153
   4   0.33     4.80      0.268        (  0.155)       0.102        0.166
   5   0.42     5.20      0.291        (  0.155)       0.110        0.180
   6   0.50     6.20      0.347        (  0.155)       0.132        0.215
   7   0.58     6.80      0.380        (  0.155)       0.144        0.236
   8   0.67     8.80      0.492           0.155    (  0.187)        0.337
   9   0.75    13.90      0.777           0.155    (  0.295)        0.622
  10   0.83    31.40      1.756           0.155    (  0.667)        1.601
  11   0.92     7.20      0.403        (  0.155)       0.153        0.250
  12   1.00     3.80      0.212        (  0.155)       0.081        0.132
             (Loss Rate Not Used)
     Sum =     100.0                                  Sum =     4.2
      Flood volume = Effective rainfall      0.35(In)
       times area      10.9(Ac.)/[(In)/(Ft.)] =       0.3(Ac.Ft)
      Total soil loss =      0.12(In)
      Total soil loss =     0.109(Ac.Ft)
      Total rainfall =      0.47(In)
      Flood volume =       13690.4 Cubic Feet
      Total soil loss =       4746.0 Cubic Feet
      ------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =     11.448(CFS)
      ------------------------------------------------------------------
--
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                          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       0.0039      0.56  VQ        |         |         |
|
    0+10       0.0130      1.33  |VQ       |         |         |
|
    0+15       0.0241      1.60  |  Q      |         |         |
|
    0+20       0.0360      1.74  |  QV     |         |         |
|
    0+25       0.0490      1.89  |  Q  V   |         |         |
|
    0+30       0.0638      2.14  |   Q   V |         |         |
|
    0+35       0.0806      2.44  |   Q     V         |         |
|
    0+40       0.1017      3.07  |     Q   | V       |         |
```

```
|
    0+45        0.1364       5.04  |         Q      V  |         |
|
    0+50        0.2153      11.45  |         |         | Q    V  |
|
    0+55        0.2857      10.22  |         |         Q         |     V
|
    1+ 0        0.3066       3.03  |     Q   |         |         |
V|
    1+ 5        0.3135       1.01  | Q       |         |         |
V|
    1+10        0.3142       0.10  Q         |         |         |
V|
    1+15        0.3143       0.01  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 11/09/21 File: moval33post15.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area B

Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) = 0.017 Sq. Mi.
Length along longest watercourse = 1380.00(Ft.)
Length along longest watercourse measured to centroid = 828.00 (Ft.)
Length along longest watercourse = 0.261 Mi.
Length along longest watercourse measured to centroid = 0.157 Mi.
Difference in elevation = 52.00(Ft.)
Slope along watercourse = 198.9565 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.039 Hr.
Lag time = 2.35 Min.
25% of lag time = 0.59 Min.
40% of lag time = 0.94 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]

```
        10.90              0.47                    5.08

    100 YEAR Area rainfall data:


    Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        10.90              1.19                   12.97

    STORM EVENT (YEAR) =    5.00
    Area Averaged 2-Year Rainfall =    0.466(In)
    Area Averaged 100-Year Rainfall =    1.190(In)

    Point rain (area averaged) =    0.636(In)
    Areal adjustment factor =   99.99 %
    Adjusted average point rain =    0.636(In)

    Sub-Area Data:
    Area(Ac.)         Runoff Index   Impervious %
        10.900           69.00         0.650
     Total Area Entered =     10.90(Ac.)


    RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
    AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
    69.0  69.0      0.373     0.650        0.155       1.000
0.155
                                                          Sum (F) =
0.155
    Area averaged mean soil loss (F) (In/Hr) =  0.155
    Minimum soil loss rate ((In/Hr)) =  0.077
    (for 24 hour storm duration)
    Soil low loss rate (decimal) =   0.380
    ------------------------------------------------------------------
---
    Slope of intensity-duration curve for a 1 hour storm =0.5500
    ------------------------------------------------------------------
----

                U n i t  H y d r o g r a p h
                      FOOTHILL S-Curve
    ------------------------------------------------------------------
--
                Unit Hydrograph Data
    ------------------------------------------------------------------
---
    Unit time period   Time % of lag   Distribution   Unit Hydrograph
        (hrs)                           Graph %           (CFS)
    ------------------------------------------------------------------
---
        1   0.083        213.048         44.793              4.921
        2   0.167        426.095         48.755              5.356
        3   0.250        639.143          5.617              0.617
        4   0.333        852.190          0.835              0.092
                                   Sum = 100.000   Sum=      10.985
----------------------------------------------------------------------


 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   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)          Max   |   Low        (In/Hr)
    1  0.08     3.30      0.252        (  0.155)       0.096        0.156
    2  0.17     4.20      0.320        (  0.155)       0.122        0.199
    3  0.25     4.40      0.336        (  0.155)       0.128        0.208
    4  0.33     4.80      0.366        (  0.155)       0.139        0.227
    5  0.42     5.20      0.397        (  0.155)       0.151        0.246
    6  0.50     6.20      0.473           0.155    (  0.180)        0.318
    7  0.58     6.80      0.519           0.155    (  0.197)        0.364
    8  0.67     8.80      0.671           0.155    (  0.255)        0.516
    9  0.75    13.90      1.060           0.155    (  0.403)        0.905
   10  0.83    31.40      2.395           0.155    (  0.910)        2.240
   11  0.92     7.20      0.549           0.155    (  0.209)        0.394
   12  1.00     3.80      0.290        (  0.155)       0.110        0.180
             (Loss Rate Not Used)
     Sum =     100.0                                Sum =     6.0
      Flood volume = Effective rainfall      0.50(In)
       times area      10.9(Ac.)/[(In)/(Ft.)] =      0.5(Ac.Ft)
      Total soil loss =      0.14(In)
      Total soil loss =     0.127(Ac.Ft)
      Total rainfall =      0.64(In)
      Flood volume =       19629.0 Cubic Feet
      Total soil loss =       5516.4 Cubic Feet
      ------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =     16.231(CFS)
      ------------------------------------------------------------------
--
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                          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       0.0053      0.77  VQ        |         |         |
|
    0+10       0.0178      1.81  |V Q      |         |         |
|
    0+15       0.0328      2.18  | V Q     |         |         |
|
    0+20       0.0491      2.37  |   Q     |         |         |
|
    0+25       0.0669      2.57  |    Q    |         |         |
|
    0+30       0.0878      3.04  |     QV  |         |         |
|
    0+35       0.1131      3.67  |      Q  V         |         |
|
    0+40       0.1455      4.71  |        Q| V       |         |
```

```
|
    0+45       0.1970      7.48  |         |   Q  V  |         |
|
    0+50       0.3088     16.23  |         |         |      V  | Q
|
    0+55       0.4090     14.55  |         |         |        Q|      V
|
    1+ 0       0.4398      4.46  |       Q |         |         |
V|
    1+ 5       0.4495      1.41  | Q       |         |         |
V|
    1+10       0.4505      0.15  Q         |         |         |
V|
    1+15       0.4506      0.02  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 11/09/21 File: moval33post110.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area B

Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) = 0.017 Sq. Mi.
Length along longest watercourse = 1380.00(Ft.)
Length along longest watercourse measured to centroid = 828.00 (Ft.)
Length along longest watercourse = 0.261 Mi.
Length along longest watercourse measured to centroid = 0.157 Mi.
Difference in elevation = 52.00(Ft.)
Slope along watercourse = 198.9565 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.039 Hr.
Lag time = 2.35 Min.
25% of lag time = 0.59 Min.
40% of lag time = 0.94 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]

10.90	0.47	5.08

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
10.90	1.19	12.97

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.466(In)
Area Averaged 100-Year Rainfall = 1.190(In)

Point rain (area averaged) = 0.764(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 0.764(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
10.900	69.00	0.650

Total Area Entered = 10.90(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.650	0.155	1.000	0.155
					Sum (F) =	0.155

Area averaged mean soil loss (F) (In/Hr) = 0.155
Minimum soil loss rate ((In/Hr)) = 0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

Slope of intensity-duration curve for a 1 hour storm =0.5500

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	213.048	44.793	4.921
2	0.167	426.095	48.755	5.356
3	0.250	639.143	5.617	0.617
4	0.333	852.190	0.835	0.092
			Sum = 100.000	Sum= 10.985

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	3.30	0.302	(0.155)	0.115	0.188
2	0.17	4.20	0.385	(0.155)	0.146	0.239
3	0.25	4.40	0.403	(0.155)	0.153	0.250
4	0.33	4.80	0.440	0.155	(0.167)	0.285
5	0.42	5.20	0.477	0.155	(0.181)	0.322
6	0.50	6.20	0.568	0.155	(0.216)	0.414
7	0.58	6.80	0.623	0.155	(0.237)	0.469
8	0.67	8.80	0.807	0.155	(0.306)	0.652
9	0.75	13.90	1.274	0.155	(0.484)	1.119
10	0.83	31.40	2.878	0.155	(1.094)	2.723
11	0.92	7.20	0.660	0.155	(0.251)	0.505
12	1.00	3.80	0.348	(0.155)	0.132	0.216

(Loss Rate Not Used)

Sum = 100.0 Sum = 7.4

Flood volume = Effective rainfall 0.62(In)
times area 10.9(Ac.)/[(In)/(Ft.)] = 0.6(Ac.Ft)
Total soil loss = 0.15(In)
Total soil loss = 0.135(Ac.Ft)
Total rainfall = 0.76(In)
Flood volume = 24336.7 Cubic Feet
Total soil loss = 5884.0 Cubic Feet

Peak flow rate of this hydrograph = 19.850(CFS)

++

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      0.0064      0.92  VQ        |         |         |         |
   0+10      0.0214      2.18  |V  Q     |         |         |         |
   0+15      0.0395      2.63  | V  Q    |         |         |         |
   0+20      0.0595      2.91  |   VQ    |         |         |         |
   0+25      0.0821      3.29  |    VQ   |         |         |         |
   0+30      0.1094      3.96  |      Q  |         |         |         |
   0+35      0.1421      4.75  |        QV         |         |         |
   0+40      0.1835      6.00  |         | QV      |         |
```

```
|
   0+45       0.2477       9.33  |         |       VQ |         |
|
   0+50       0.3844      19.85  |         |          |      V  |
Q|
   0+55       0.5072      17.83  |         |          |         |    QV
|
   1+ 0       0.5455       5.55  |         |Q         |         |
V|
   1+ 5       0.5573       1.72  |  Q      |          |         |
V|
   1+10       0.5586       0.18  Q         |          |         |
V|
   1+15       0.5587       0.02  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 11/09/21 File: moval33post1100.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area B

Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) = 0.017 Sq. Mi.
Length along longest watercourse = 1380.00(Ft.)
Length along longest watercourse measured to centroid = 828.00 (Ft.)
Length along longest watercourse = 0.261 Mi.
Length along longest watercourse measured to centroid = 0.157 Mi.
Difference in elevation = 52.00(Ft.)
Slope along watercourse = 198.9565 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.039 Hr.
Lag time = 2.35 Min.
25% of lag time = 0.59 Min.
40% of lag time = 0.94 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]

```
        10.90              0.47                    5.08

 100 YEAR Area rainfall data:


 Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        10.90              1.19                   12.97

 STORM EVENT (YEAR) =  100.00
 Area Averaged 2-Year Rainfall =    0.466(In)
 Area Averaged 100-Year Rainfall =    1.190(In)

 Point rain (area averaged) =    1.190(In)
 Areal adjustment factor =   99.99 %
 Adjusted average point rain =    1.190(In)

 Sub-Area Data:
 Area(Ac.)         Runoff Index   Impervious %
     10.900           69.00         0.650
  Total Area Entered =     10.90(Ac.)


 RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
 AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
 69.0  84.4      0.194     0.650        0.080       1.000
0.080
                                                           Sum (F) =
0.080
 Area averaged mean soil loss (F) (In/Hr) =  0.080
 Minimum soil loss rate ((In/Hr)) =  0.040
 (for 24 hour storm duration)
 Soil low loss rate (decimal) =   0.380
 ------------------------------------------------------------------
---
 Slope of intensity-duration curve for a 1 hour storm =0.5500
 ------------------------------------------------------------------
----

             U n i t  H y d r o g r a p h
                   FOOTHILL S-Curve
 ------------------------------------------------------------------
--
             Unit Hydrograph Data
 ------------------------------------------------------------------
---
 Unit time period   Time % of lag   Distribution   Unit Hydrograph
     (hrs)                           Graph %           (CFS)
 ------------------------------------------------------------------
---
     1   0.083        213.048         44.793             4.921
     2   0.167        426.095         48.755             5.356
     3   0.250        639.143          5.617             0.617
     4   0.333        852.190          0.835             0.092
                               Sum = 100.000   Sum=      10.985
----------------------------------------------------------------------


 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   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max   |   Low        (In/Hr)
   1   0.08     3.30      0.471          0.080    (  0.179)        0.391
   2   0.17     4.20      0.600          0.080    (  0.228)        0.519
   3   0.25     4.40      0.628          0.080    (  0.239)        0.548
   4   0.33     4.80      0.685          0.080    (  0.260)        0.605
   5   0.42     5.20      0.742          0.080    (  0.282)        0.662
   6   0.50     6.20      0.885          0.080    (  0.336)        0.805
   7   0.58     6.80      0.971          0.080    (  0.369)        0.891
   8   0.67     8.80      1.257          0.080    (  0.477)        1.176
   9   0.75    13.90      1.985          0.080    (  0.754)        1.904
  10   0.83    31.40      4.483          0.080    (  1.704)        4.403
  11   0.92     7.20      1.028          0.080    (  0.391)        0.948
  12   1.00     3.80      0.543          0.080    (  0.206)        0.462
             (Loss Rate Not Used)
     Sum =     100.0                                  Sum =    13.3
      Flood volume = Effective rainfall      1.11(In)
       times area      10.9(Ac.)/[(In)/(Ft.)] =      1.0(Ac.Ft)
      Total soil loss =      0.08(In)
      Total soil loss =     0.073(Ac.Ft)
      Total rainfall =      1.19(In)
      Flood volume =       43897.2 Cubic Feet
      Total soil loss =       3182.9 Cubic Feet
      -----------------------------------------------------------------
--
       Peak flow rate of this hydrograph =     32.689(CFS)
      -----------------------------------------------------------------
--
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                          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       10.0      20.0      30.0
40.0

-----------------------------------------------------------------------
    0+ 5       0.0132      1.92  VQ        |         |         |
|
    0+10       0.0453      4.65  |V  Q     |         |         |
|
    0+15       0.0847      5.72  |  V Q    |         |         |
|
    0+20       0.1279      6.27  |    VQ   |         |         |
|
    0+25       0.1753      6.89  |     Q   |         |         |
|
    0+30       0.2299      7.93  |      Q V|         |         |
|
    0+35       0.2930      9.16  |        Q|V        |         |
|
    0+40       0.3696     11.12  |         |Q  V     |         |
```

```
|
    0+45       0.4819     16.30  |         |     Q  V|         |
|
    0+50       0.7070     32.69  |         |         |       V | Q
|
    0+55       0.9105     29.54  |         |         |        Q|      V
|
    1+ 0       0.9810     10.25  |         Q         |         |       V
|
    1+ 5       1.0049      3.47  |  Q      |         |         |
V|
    1+10       1.0074      0.37  Q         |         |         |
V|
    1+15       1.0077      0.04  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 11/09/21 File: moval33post32.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area B

Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) = 0.017 Sq. Mi.
Length along longest watercourse = 1380.00(Ft.)
Length along longest watercourse measured to centroid = 828.00 (Ft.)
Length along longest watercourse = 0.261 Mi.
Length along longest watercourse measured to centroid = 0.157 Mi.
Difference in elevation = 52.00(Ft.)
Slope along watercourse = 198.9565 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.039 Hr.
Lag time = 2.35 Min.
25% of lag time = 0.59 Min.
40% of lag time = 0.94 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]

10.90 0.80 8.71

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
10.90	1.89	20.60

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 0.799(In)
Area Averaged 100-Year Rainfall = 1.890(In)

Point rain (area averaged) = 0.799(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 0.799(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
10.900	69.00	0.650

Total Area Entered = 10.90(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.650	0.155	1.000	0.155

Sum (F) = 0.155

Area averaged mean soil loss (F) (In/Hr) = 0.155
Minimum soil loss rate ((In/Hr)) = 0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

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	213.048	44.793	4.921
2	0.167	426.095	48.755	5.356
3	0.250	639.143	5.617	0.617
4	0.333	852.190	0.835	0.092
			Sum = 100.000	Sum= 10.985

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	0.125	(0.155)	0.047	0.077
2	0.17	1.30	0.125	(0.155)	0.047	0.077
3	0.25	1.10	0.105	(0.155)	0.040	0.065
4	0.33	1.50	0.144	(0.155)	0.055	0.089
5	0.42	1.50	0.144	(0.155)	0.055	0.089
6	0.50	1.80	0.173	(0.155)	0.066	0.107
7	0.58	1.50	0.144	(0.155)	0.055	0.089
8	0.67	1.80	0.173	(0.155)	0.066	0.107
9	0.75	1.80	0.173	(0.155)	0.066	0.107
10	0.83	1.50	0.144	(0.155)	0.055	0.089
11	0.92	1.60	0.153	(0.155)	0.058	0.095
12	1.00	1.80	0.173	(0.155)	0.066	0.107
13	1.08	2.20	0.211	(0.155)	0.080	0.131
14	1.17	2.20	0.211	(0.155)	0.080	0.131
15	1.25	2.20	0.211	(0.155)	0.080	0.131
16	1.33	2.00	0.192	(0.155)	0.073	0.119
17	1.42	2.60	0.249	(0.155)	0.095	0.155
18	1.50	2.70	0.259	(0.155)	0.098	0.160
19	1.58	2.40	0.230	(0.155)	0.087	0.143
20	1.67	2.70	0.259	(0.155)	0.098	0.160
21	1.75	3.30	0.316	(0.155)	0.120	0.196
22	1.83	3.10	0.297	(0.155)	0.113	0.184
23	1.92	2.90	0.278	(0.155)	0.106	0.172
24	2.00	3.00	0.288	(0.155)	0.109	0.178
25	2.08	3.10	0.297	(0.155)	0.113	0.184
26	2.17	4.20	0.403	(0.155)	0.153	0.250
27	2.25	5.00	0.479	0.155	(0.182)	0.325
28	2.33	3.50	0.336	(0.155)	0.128	0.208
29	2.42	6.80	0.652	0.155	(0.248)	0.497
30	2.50	7.30	0.700	0.155	(0.266)	0.545
31	2.58	8.20	0.786	0.155	(0.299)	0.631
32	2.67	5.90	0.566	0.155	(0.215)	0.411
33	2.75	2.00	0.192	(0.155)	0.073	0.119
34	2.83	1.80	0.173	(0.155)	0.066	0.107
35	2.92	1.80	0.173	(0.155)	0.066	0.107
36	3.00	0.60	0.058	(0.155)	0.022	0.036

(Loss Rate Not Used)

Sum = 100.0 Sum = 6.4

Flood volume = Effective rainfall 0.53(In)
times area 10.9(Ac.)/[(In)/(Ft.)] = 0.5(Ac.Ft)
Total soil loss = 0.27(In)
Total soil loss = 0.243(Ac.Ft)
Total rainfall = 0.80(In)
Flood volume = 21037.4 Cubic Feet
Total soil loss = 10575.1 Cubic Feet

Peak flow rate of this hydrograph = 6.356(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       0.0026      0.38  VQ        |         |         |
|
    0+10       0.0081      0.79  V  Q      |         |         |
|
    0+15       0.0135      0.78  |V Q      |         |         |
|
    0+20       0.0193      0.84  |V Q      |         |         |
|
    0+25       0.0259      0.96  | VQ      |         |         |
|
    0+30       0.0333      1.07  | V Q     |         |         |
|
    0+35       0.0407      1.08  |  VQ     |         |         |
|
    0+40       0.0481      1.08  |  VQ     |         |         |
|
    0+45       0.0561      1.16  |   Q     |         |         |
|
    0+50       0.0636      1.09  |   QV    |         |         |
|
    0+55       0.0707      1.02  |   QV    |         |         |
|
    1+ 0       0.0782      1.10  |   Q V   |         |         |
|
    1+ 5       0.0871      1.28  |    Q V  |         |         |
|
    1+10       0.0969      1.42  |    Q  V |         |         |
|
    1+15       0.1068      1.44  |    Q  V |         |         |
|
    1+20       0.1162      1.38  |    Q   V|         |         |
|
    1+25       0.1265      1.49  |    Q    V         |         |
|
    1+30       0.1382      1.70  |     Q   |V        |         |
|
    1+35       0.1497      1.67  |     Q   | V       |         |
|
    1+40       0.1612      1.67  |     Q   |  V      |         |
|
    1+45       0.1745      1.93  |      Q  |   V     |         |
|
    1+50       0.1888      2.07  |       Q |    V    |         |
|
    1+55       0.2023      1.97  |      Q  |     V   |         |
|
    2+ 0       0.2157      1.93  |      Q  |      V  |         |
|
    2+ 5       0.2293      1.99  |      Q  |       V |         |
|
    2+10       0.2455      2.34  |        Q|         V         |
|
    2+15       0.2666      3.07  |         | Q       | V       |
|
```

```
      2+20       0.2868      2.94  |         |Q        |  V      |
|
      2+25       0.3129      3.79  |         |    Q    |    V    |
|
      2+30       0.3508      5.51  |         |         | Q      V|
|
      2+35       0.3946      6.36  |         |         |    Q    | V
|
      2+40       0.4345      5.79  |         |         |  Q      |    V
|
      2+45       0.4567      3.23  |         | Q       |         |      V
|
      2+50       0.4668      1.48  |    Q    |         |         |       V
|
      2+55       0.4752      1.21  |   Q     |         |         |
V|
      3+ 0       0.4809      0.83  |  Q      |         |         |
V|
      3+ 5       0.4827      0.27  |Q        |         |         |
V|
      3+10       0.4829      0.03  Q         |         |         |
V|
      3+15       0.4830      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
          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
8.2
                Study date  11/09/21 File: moval33post35.out

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


      Program License Serial Number 6232

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

       English Units used in output format



      ------------------------------------------------------------------
---
      Gateway Heights
      Proposed Condition
      Unit Hydrograph
      Area B
      ------------------------------------------------------------------
--
      Drainage Area =      10.90(Ac.)  =      0.017 Sq. Mi.
      Drainage Area for Depth-Area Areal Adjustment =      10.90(Ac.)  =
0.017 Sq. Mi.
      Length along longest watercourse =    1380.00(Ft.)
      Length along longest watercourse measured to centroid =     828.00
(Ft.)
      Length along longest watercourse =      0.261 Mi.
      Length along longest watercourse measured to centroid =      0.157
Mi.
      Difference in elevation =      52.00(Ft.)
      Slope along watercourse =    198.9565 Ft./Mi.
      Average Manning's 'N' = 0.015
      Lag time =    0.039 Hr.
      Lag time =     2.35 Min.
      25% of lag time =     0.59 Min.
      40% of lag time =     0.94 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]
```

10.90	0.80	8.71

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
10.90	1.89	20.60

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 0.799(In)
Area Averaged 100-Year Rainfall = 1.890(In)

Point rain (area averaged) = 1.055(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.054(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
10.900	69.00	0.650

Total Area Entered = 10.90(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.650	0.155	1.000	0.155
					Sum (F) =	0.155

Area averaged mean soil loss (F) (In/Hr) = 0.155
Minimum soil loss rate ((In/Hr)) = 0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

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	213.048	44.793	4.921
2	0.167	426.095	48.755	5.356
3	0.250	639.143	5.617	0.617
4	0.333	852.190	0.835	0.092
			Sum = 100.000	Sum= 10.985

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	0.165	(0.155)	0.063	0.102
2	0.17	1.30	0.165	(0.155)	0.063	0.102
3	0.25	1.10	0.139	(0.155)	0.053	0.086
4	0.33	1.50	0.190	(0.155)	0.072	0.118
5	0.42	1.50	0.190	(0.155)	0.072	0.118
6	0.50	1.80	0.228	(0.155)	0.087	0.141
7	0.58	1.50	0.190	(0.155)	0.072	0.118
8	0.67	1.80	0.228	(0.155)	0.087	0.141
9	0.75	1.80	0.228	(0.155)	0.087	0.141
10	0.83	1.50	0.190	(0.155)	0.072	0.118
11	0.92	1.60	0.202	(0.155)	0.077	0.126
12	1.00	1.80	0.228	(0.155)	0.087	0.141
13	1.08	2.20	0.278	(0.155)	0.106	0.173
14	1.17	2.20	0.278	(0.155)	0.106	0.173
15	1.25	2.20	0.278	(0.155)	0.106	0.173
16	1.33	2.00	0.253	(0.155)	0.096	0.157
17	1.42	2.60	0.329	(0.155)	0.125	0.204
18	1.50	2.70	0.342	(0.155)	0.130	0.212
19	1.58	2.40	0.304	(0.155)	0.115	0.188
20	1.67	2.70	0.342	(0.155)	0.130	0.212
21	1.75	3.30	0.418	0.155	(0.159)	0.263
22	1.83	3.10	0.392	(0.155)	0.149	0.243
23	1.92	2.90	0.367	(0.155)	0.139	0.228
24	2.00	3.00	0.380	(0.155)	0.144	0.235
25	2.08	3.10	0.392	(0.155)	0.149	0.243
26	2.17	4.20	0.531	0.155	(0.202)	0.377
27	2.25	5.00	0.633	0.155	(0.240)	0.478
28	2.33	3.50	0.443	0.155	(0.168)	0.288
29	2.42	6.80	0.860	0.155	(0.327)	0.706
30	2.50	7.30	0.924	0.155	(0.351)	0.769
31	2.58	8.20	1.038	0.155	(0.394)	0.883
32	2.67	5.90	0.747	0.155	(0.284)	0.592
33	2.75	2.00	0.253	(0.155)	0.096	0.157
34	2.83	1.80	0.228	(0.155)	0.087	0.141
35	2.92	1.80	0.228	(0.155)	0.087	0.141
36	3.00	0.60	0.076	(0.155)	0.029	0.047

(Loss Rate Not Used)

Sum = 100.0 Sum = 8.7

Flood volume = Effective rainfall 0.73(In)
times area 10.9(Ac.)/[(In)/(Ft.)] = 0.7(Ac.Ft)
Total soil loss = 0.33(In)
Total soil loss = 0.297(Ac.Ft)
Total rainfall = 1.05(In)
Flood volume = 28795.0 Cubic Feet
Total soil loss = 12927.9 Cubic Feet

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Peak flow rate of this hydrograph = 8.930(CFS)

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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

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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       0.0035      0.50  V Q        |         |         |
|
    0+10       0.0107      1.05  V   Q      |         |         |
|
    0+15       0.0178      1.03  |V  Q      |         |         |
|
    0+20       0.0255      1.11  |V  Q      |         |         |
|
    0+25       0.0342      1.27  | V  Q     |         |         |
|
    0+30       0.0439      1.41  | V  Q     |         |         |
|
    0+35       0.0537      1.42  |  V Q     |         |         |
|
    0+40       0.0635      1.42  |  V Q     |         |         |
|
    0+45       0.0741      1.54  |   V Q    |         |         |
|
    0+50       0.0840      1.43  |    Q     |         |         |
|
    0+55       0.0933      1.35  |    Q     |         |         |
|
    1+ 0       0.1033      1.45  |    QV    |         |         |
|
    1+ 5       0.1149      1.69  |     Q    |         |         |
|
    1+10       0.1278      1.87  |      Q   |         |         |
|
    1+15       0.1409      1.89  |      QV  |         |         |
|
    1+20       0.1534      1.82  |      Q V|         |         |
|
    1+25       0.1670      1.97  |      Q  V         |         |
|
    1+30       0.1825      2.25  |       Q |V        |         |
|
    1+35       0.1976      2.20  |       Q |V        |         |
|
    1+40       0.2128      2.20  |       Q | V       |         |
|
    1+45       0.2305      2.56  |         Q  V      |         |
|
    1+50       0.2494      2.75  |         |Q   V    |         |
|
    1+55       0.2674      2.61  |         Q     V   |         |
|
    2+ 0       0.2849      2.55  |         Q      V  |         |
|
    2+ 5       0.3030      2.62  |         Q       V |         |
|
    2+10       0.3259      3.32  |         |  Q     V|         |
|
    2+15       0.3572      4.54  |         |       Q |V        |
|
```

```
       2+20        0.3863      4.23  |         |     Q   |  V      |
|
       2+25        0.4232      5.35  |         |         |Q   V    |
|
       2+30        0.4768      7.79  |         |         |       V |Q
|
       2+35        0.5383      8.93  |         |         |         | V  Q
|
       2+40        0.5947      8.18  |         |         |         | Q  V
|
       2+45        0.6261      4.56  |         |       Q |         |      V
|
       2+50        0.6397      1.98  |      Q  |         |         |       V
|
       2+55        0.6508      1.60  |     Q   |         |         |
V|
       3+ 0        0.6583      1.09  |   Q     |         |         |
V|
       3+ 5        0.6607      0.35  |Q        |         |         |
V|
       3+10        0.6610      0.04  Q         |         |         |
V|
       3+15        0.6610      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

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Study date 11/09/21 File: moval33post310.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area B

Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) = 0.017 Sq. Mi.
Length along longest watercourse = 1380.00(Ft.)
Length along longest watercourse measured to centroid = 828.00 (Ft.)
Length along longest watercourse = 0.261 Mi.
Length along longest watercourse measured to centroid = 0.157 Mi.
Difference in elevation = 52.00(Ft.)
Slope along watercourse = 198.9565 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.039 Hr.
Lag time = 2.35 Min.
25% of lag time = 0.59 Min.
40% of lag time = 0.94 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]

```
              10.90              0.80                        8.71

       100 YEAR Area rainfall data:


       Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
              10.90              1.89                       20.60

       STORM EVENT (YEAR) =   10.00
       Area Averaged 2-Year Rainfall =    0.799(In)
       Area Averaged 100-Year Rainfall =    1.890(In)

       Point rain (area averaged) =    1.248(In)
       Areal adjustment factor =  100.00 %
       Adjusted average point rain =    1.248(In)

       Sub-Area Data:
       Area(Ac.)         Runoff Index   Impervious %
           10.900           69.00         0.650
        Total Area Entered =     10.90(Ac.)


       RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
       AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
 (In/Hr)
       69.0  69.0      0.373     0.650        0.155       1.000
 0.155
                                                              Sum (F) =
 0.155
       Area averaged mean soil loss (F) (In/Hr) =  0.155
       Minimum soil loss rate ((In/Hr)) =  0.077
       (for 24 hour storm duration)
       Soil low loss rate (decimal) =   0.380
       ------------------------------------------------------------------
 ---

                   U n i t  H y d r o g r a p h
                         FOOTHILL S-Curve
       ------------------------------------------------------------------
 --
                   Unit Hydrograph Data
       ------------------------------------------------------------------
 ---
       Unit time period   Time % of lag   Distribution   Unit Hydrograph
           (hrs)                           Graph %           (CFS)
       ------------------------------------------------------------------
 ---
           1   0.083        213.048         44.793              4.921
           2   0.167        426.095         48.755              5.356
           3   0.250        639.143          5.617              0.617
           4   0.333        852.190          0.835              0.092
                                      Sum = 100.000   Sum=      10.985
 -----------------------------------------------------------------------


  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	0.195	(0.155)	0.074	0.121
2	0.17	1.30	0.195	(0.155)	0.074	0.121
3	0.25	1.10	0.165	(0.155)	0.063	0.102
4	0.33	1.50	0.225	(0.155)	0.085	0.139
5	0.42	1.50	0.225	(0.155)	0.085	0.139
6	0.50	1.80	0.270	(0.155)	0.102	0.167
7	0.58	1.50	0.225	(0.155)	0.085	0.139
8	0.67	1.80	0.270	(0.155)	0.102	0.167
9	0.75	1.80	0.270	(0.155)	0.102	0.167
10	0.83	1.50	0.225	(0.155)	0.085	0.139
11	0.92	1.60	0.240	(0.155)	0.091	0.149
12	1.00	1.80	0.270	(0.155)	0.102	0.167
13	1.08	2.20	0.329	(0.155)	0.125	0.204
14	1.17	2.20	0.329	(0.155)	0.125	0.204
15	1.25	2.20	0.329	(0.155)	0.125	0.204
16	1.33	2.00	0.299	(0.155)	0.114	0.186
17	1.42	2.60	0.389	(0.155)	0.148	0.241
18	1.50	2.70	0.404	(0.155)	0.154	0.251
19	1.58	2.40	0.359	(0.155)	0.137	0.223
20	1.67	2.70	0.404	(0.155)	0.154	0.251
21	1.75	3.30	0.494	0.155	(0.188)	0.339
22	1.83	3.10	0.464	0.155	(0.176)	0.309
23	1.92	2.90	0.434	0.155	(0.165)	0.280
24	2.00	3.00	0.449	0.155	(0.171)	0.294
25	2.08	3.10	0.464	0.155	(0.176)	0.309
26	2.17	4.20	0.629	0.155	(0.239)	0.474
27	2.25	5.00	0.749	0.155	(0.284)	0.594
28	2.33	3.50	0.524	0.155	(0.199)	0.369
29	2.42	6.80	1.018	0.155	(0.387)	0.863
30	2.50	7.30	1.093	0.155	(0.415)	0.938
31	2.58	8.20	1.228	0.155	(0.467)	1.073
32	2.67	5.90	0.883	0.155	(0.336)	0.729
33	2.75	2.00	0.299	(0.155)	0.114	0.186
34	2.83	1.80	0.270	(0.155)	0.102	0.167
35	2.92	1.80	0.270	(0.155)	0.102	0.167
36	3.00	0.60	0.090	(0.155)	0.034	0.056

(Loss Rate Not Used)

Sum = 100.0 Sum = 10.6

Flood volume = Effective rainfall 0.89(In)
times area 10.9(Ac.)/[(In)/(Ft.)] = 0.8(Ac.Ft)
Total soil loss = 0.36(In)
Total soil loss = 0.329(Ac.Ft)
Total rainfall = 1.25(In)
Flood volume = 35051.1 Cubic Feet
Total soil loss = 14320.1 Cubic Feet

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Peak flow rate of this hydrograph = 10.878(CFS)

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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

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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       0.0041      0.59  VQ        |         |         |
|
    0+10       0.0126      1.24  V Q       |         |         |
|
    0+15       0.0211      1.22  |VQ       |         |         |
|
    0+20       0.0301      1.32  |VQ       |         |         |
|
    0+25       0.0405      1.51  | VQ      |         |         |
|
    0+30       0.0520      1.66  | VQ      |         |         |
|
    0+35       0.0635      1.68  |  Q      |         |         |
|
    0+40       0.0752      1.68  |  Q      |         |         |
|
    0+45       0.0877      1.82  |  QV     |         |         |
|
    0+50       0.0994      1.70  |  QV     |         |         |
|
    0+55       0.1104      1.60  |  Q V    |         |         |
|
    1+ 0       0.1222      1.72  |  Q  V   |         |         |
|
    1+ 5       0.1360      2.01  |   Q V   |         |         |
|
    1+10       0.1513      2.22  |   Q  V  |         |         |
|
    1+15       0.1667      2.24  |   Q   V |         |         |
|
    1+20       0.1815      2.15  |   Q    V|         |         |
|
    1+25       0.1976      2.33  |   Q    V|         |         |
|
    1+30       0.2159      2.66  |    Q    V         |         |
|
    1+35       0.2339      2.61  |    Q    |V        |         |
|
    1+40       0.2518      2.60  |    Q    | V       |         |
|
    1+45       0.2737      3.17  |     Q   |  V      |         |
|
    1+50       0.2979      3.52  |      Q  |   V     |         |
|
    1+55       0.3204      3.27  |     Q   |    V    |         |
|
    2+ 0       0.3422      3.17  |     Q   |      V  |         |
|
    2+ 5       0.3650      3.30  |     Q   |       V |         |
|
    2+10       0.3939      4.20  |       Q |        V|         |
|
    2+15       0.4330      5.68  |         |Q        |V        |
|
```

```
        2+20       0.4697      5.32  |         Q         |  V       |
|
        2+25       0.5154      6.64  |         |  Q      |    V     |
|
        2+30       0.5810      9.53  |         |        Q|       V  |
|
        2+35       0.6560     10.88  |         |         |Q        | V
|
        2+40       0.7248     10.00  |         |        Q|         |    V
|
        2+45       0.7632      5.57  |         |Q        |         |     V
|
        2+50       0.7794      2.37  |   Q     |         |         |      V
|
        2+55       0.7925      1.90  |  Q      |         |         |
V|
        3+ 0       0.8014      1.29  | Q       |         |         |
V|
        3+ 5       0.8043      0.42  Q         |         |         |
V|
        3+10       0.8046      0.05  Q         |         |         |
V|
        3+15       0.8047      0.01  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 11/09/21 File: moval33post3100.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area B

Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) = 0.017 Sq. Mi.
Length along longest watercourse = 1380.00(Ft.)
Length along longest watercourse measured to centroid = 828.00 (Ft.)
Length along longest watercourse = 0.261 Mi.
Length along longest watercourse measured to centroid = 0.157 Mi.
Difference in elevation = 52.00(Ft.)
Slope along watercourse = 198.9565 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.039 Hr.
Lag time = 2.35 Min.
25% of lag time = 0.59 Min.
40% of lag time = 0.94 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]

```
              10.90              0.80                    8.71

       100 YEAR Area rainfall data:


       Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
              10.90              1.89                   20.60

       STORM EVENT (YEAR) =  100.00
       Area Averaged 2-Year Rainfall =    0.799(In)
       Area Averaged 100-Year Rainfall =    1.890(In)

       Point rain (area averaged) =    1.890(In)
       Areal adjustment factor =  100.00 %
       Adjusted average point rain =    1.890(In)

       Sub-Area Data:
       Area(Ac.)         Runoff Index   Impervious %
           10.900           69.00         0.650
        Total Area Entered =     10.90(Ac.)


       RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
       AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
 (In/Hr)
       69.0  84.4      0.194     0.650        0.080       1.000
 0.080
                                                           Sum (F) =
 0.080
       Area averaged mean soil loss (F) (In/Hr) =  0.080
       Minimum soil loss rate ((In/Hr)) =  0.040
       (for 24 hour storm duration)
       Soil low loss rate (decimal) =   0.380
       ------------------------------------------------------------------
 ---

                   U n i t  H y d r o g r a p h
                         FOOTHILL S-Curve
       ------------------------------------------------------------------
 --
                   Unit Hydrograph Data
       ------------------------------------------------------------------
 ---
       Unit time period   Time % of lag   Distribution   Unit Hydrograph
           (hrs)                            Graph %           (CFS)
       ------------------------------------------------------------------
 ---
           1   0.083        213.048         44.793              4.921
           2   0.167        426.095         48.755              5.356
           3   0.250        639.143          5.617              0.617
           4   0.333        852.190          0.835              0.092
                                      Sum = 100.000   Sum=      10.985
 -----------------------------------------------------------------------


  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	0.295	0.080	(0.112)	0.214
2	0.17	1.30	0.295	0.080	(0.112)	0.214
3	0.25	1.10	0.249	0.080	(0.095)	0.169
4	0.33	1.50	0.340	0.080	(0.129)	0.260
5	0.42	1.50	0.340	0.080	(0.129)	0.260
6	0.50	1.80	0.408	0.080	(0.155)	0.328
7	0.58	1.50	0.340	0.080	(0.129)	0.260
8	0.67	1.80	0.408	0.080	(0.155)	0.328
9	0.75	1.80	0.408	0.080	(0.155)	0.328
10	0.83	1.50	0.340	0.080	(0.129)	0.260
11	0.92	1.60	0.363	0.080	(0.138)	0.282
12	1.00	1.80	0.408	0.080	(0.155)	0.328
13	1.08	2.20	0.499	0.080	(0.190)	0.418
14	1.17	2.20	0.499	0.080	(0.190)	0.418
15	1.25	2.20	0.499	0.080	(0.190)	0.418
16	1.33	2.00	0.454	0.080	(0.172)	0.373
17	1.42	2.60	0.590	0.080	(0.224)	0.509
18	1.50	2.70	0.612	0.080	(0.233)	0.532
19	1.58	2.40	0.544	0.080	(0.207)	0.464
20	1.67	2.70	0.612	0.080	(0.233)	0.532
21	1.75	3.30	0.748	0.080	(0.284)	0.668
22	1.83	3.10	0.703	0.080	(0.267)	0.623
23	1.92	2.90	0.658	0.080	(0.250)	0.577
24	2.00	3.00	0.680	0.080	(0.259)	0.600
25	2.08	3.10	0.703	0.080	(0.267)	0.623
26	2.17	4.20	0.953	0.080	(0.362)	0.872
27	2.25	5.00	1.134	0.080	(0.431)	1.054
28	2.33	3.50	0.794	0.080	(0.302)	0.713
29	2.42	6.80	1.542	0.080	(0.586)	1.462
30	2.50	7.30	1.656	0.080	(0.629)	1.575
31	2.58	8.20	1.860	0.080	(0.707)	1.779
32	2.67	5.90	1.338	0.080	(0.508)	1.258
33	2.75	2.00	0.454	0.080	(0.172)	0.373
34	2.83	1.80	0.408	0.080	(0.155)	0.328
35	2.92	1.80	0.408	0.080	(0.155)	0.328
36	3.00	0.60	0.136	(0.080)	0.052	0.084

(Loss Rate Not Used)

Sum = 100.0 Sum = 19.8

Flood volume = Effective rainfall 1.65(In)
times area 10.9(Ac.)/[(In)/(Ft.)] = 1.5(Ac.Ft)
Total soil loss = 0.24(In)
Total soil loss = 0.217(Ac.Ft)
Total rainfall = 1.89(In)
Flood volume = 65324.1 Cubic Feet
Total soil loss = 9454.0 Cubic Feet

Peak flow rate of this hydrograph = 18.168(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        5.0      10.0      15.0
20.0

-----------------------------------------------------------------------
    0+ 5       0.0073      1.06  V Q       |         |         |
|
    0+10       0.0224      2.20  V   Q     |         |         |
|
    0+15       0.0370      2.11  V   Q     |         |         |
|
    0+20       0.0531      2.34  |V  Q     |         |         |
|
    0+25       0.0723      2.79  |V   Q    |         |         |
|
    0+30       0.0943      3.18  | V   Q   |         |         |
|
    0+35       0.1164      3.22  |  V  Q   |         |         |
|
    0+40       0.1387      3.23  |  V  Q   |         |         |
|
    0+45       0.1632      3.56  |   V  Q  |         |         |
|
    0+50       0.1857      3.26  |   V Q   |         |         |
|
    0+55       0.2064      3.01  |    VQ   |         |         |
|
    1+ 0       0.2293      3.32  |     Q   |         |         |
|
    1+ 5       0.2569      4.01  |     V Q |         |         |
|
    1+10       0.2881      4.53  |      V Q|         |         |
|
    1+15       0.3198      4.59  |       VQ|         |         |
|
    1+20       0.3499      4.38  |       QV|         |         |
|
    1+25       0.3830      4.80  |        QV         |         |
|
    1+30       0.4216      5.62  |         |Q        |         |
|
    1+35       0.4594      5.48  |         Q V       |         |
|
    1+40       0.4971      5.48  |         Q  V      |         |
|
    1+45       0.5417      6.47  |         | Q V     |         |
|
    1+50       0.5900      7.02  |         |   QV    |         |
|
    1+55       0.6358      6.64  |         |  Q  V   |         |
|
    2+ 0       0.6805      6.49  |         | Q     V |         |
|
    2+ 5       0.7266      6.69  |         |  Q     V|         |
|
    2+10       0.7820      8.05  |         |     Q   V         |
|
    2+15       0.8530     10.30  |         |         Q V       |
|
```

```
    2+20       0.9201      9.75  |         |        Q|   V     |
|
    2+25       1.0011     11.75  |         |         |  Q  V   |
|
    2+30       1.1121     16.12  |         |         |        V| Q
|
    2+35       1.2372     18.17  |         |         |         |  V  Q
|
    2+40       1.3531     16.83  |         |         |         |  Q  V
|
    2+45       1.4208      9.82  |         |        Q|         |      V
|
    2+50       1.4521      4.55  |        Q|         |         |       V
|
    2+55       1.4777      3.72  |      Q  |         |         |
V|
    3+ 0       1.4943      2.41  |   Q     |         |         |
V|
    3+ 5       1.4990      0.68  |Q        |         |         |
V|
    3+10       1.4996      0.08  Q         |         |         |
V|
    3+15       1.4996      0.01  Q         |         |         |
V
-----------------------------------------------------------------------
```

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

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Study date 11/09/21 File: moval33post62.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area B

Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) = 0.017 Sq. Mi.
Length along longest watercourse = 1380.00(Ft.)
Length along longest watercourse measured to centroid = 828.00 (Ft.)
Length along longest watercourse = 0.261 Mi.
Length along longest watercourse measured to centroid = 0.157 Mi.
Difference in elevation = 52.00(Ft.)
Slope along watercourse = 198.9565 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.039 Hr.
Lag time = 2.35 Min.
25% of lag time = 0.59 Min.
40% of lag time = 0.94 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]

```
        10.90              1.09                  11.88

    100 YEAR Area rainfall data:


    Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
           10.90              2.55                  27.79

    STORM EVENT (YEAR) =    2.00
    Area Averaged 2-Year Rainfall =    1.090(In)
    Area Averaged 100-Year Rainfall =    2.550(In)

    Point rain (area averaged) =    1.090(In)
    Areal adjustment factor =  100.00 %
    Adjusted average point rain =    1.090(In)

    Sub-Area Data:
    Area(Ac.)         Runoff Index   Impervious %
        10.900           69.00         0.650
     Total Area Entered =     10.90(Ac.)


    RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
    AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
    69.0  69.0      0.373     0.650        0.155       1.000
0.155
                                                         Sum (F) =
0.155
    Area averaged mean soil loss (F) (In/Hr) =  0.155
    Minimum soil loss rate ((In/Hr)) =  0.077
    (for 24 hour storm duration)
    Soil low loss rate (decimal) =   0.380
    -----------------------------------------------------------------
---

                U n i t  H y d r o g r a p h
                      FOOTHILL S-Curve
    -----------------------------------------------------------------
--
                Unit Hydrograph Data
    -----------------------------------------------------------------
---
    Unit time period   Time % of lag   Distribution   Unit Hydrograph
        (hrs)                            Graph %           (CFS)
    -----------------------------------------------------------------
---
        1   0.083        213.048        44.793             4.921
        2   0.167        426.095        48.755             5.356
        3   0.250        639.143         5.617             0.617
        4   0.333        852.190         0.835             0.092
                              Sum = 100.000   Sum=      10.985
----------------------------------------------------------------------
```

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	0.065	(0.155)	0.025	0.041
2	0.17	0.60	0.078	(0.155)	0.030	0.049
3	0.25	0.60	0.078	(0.155)	0.030	0.049
4	0.33	0.60	0.078	(0.155)	0.030	0.049
5	0.42	0.60	0.078	(0.155)	0.030	0.049
6	0.50	0.70	0.092	(0.155)	0.035	0.057
7	0.58	0.70	0.092	(0.155)	0.035	0.057
8	0.67	0.70	0.092	(0.155)	0.035	0.057
9	0.75	0.70	0.092	(0.155)	0.035	0.057
10	0.83	0.70	0.092	(0.155)	0.035	0.057
11	0.92	0.70	0.092	(0.155)	0.035	0.057
12	1.00	0.80	0.105	(0.155)	0.040	0.065
13	1.08	0.80	0.105	(0.155)	0.040	0.065
14	1.17	0.80	0.105	(0.155)	0.040	0.065
15	1.25	0.80	0.105	(0.155)	0.040	0.065
16	1.33	0.80	0.105	(0.155)	0.040	0.065
17	1.42	0.80	0.105	(0.155)	0.040	0.065
18	1.50	0.80	0.105	(0.155)	0.040	0.065
19	1.58	0.80	0.105	(0.155)	0.040	0.065
20	1.67	0.80	0.105	(0.155)	0.040	0.065
21	1.75	0.80	0.105	(0.155)	0.040	0.065
22	1.83	0.80	0.105	(0.155)	0.040	0.065
23	1.92	0.80	0.105	(0.155)	0.040	0.065
24	2.00	0.90	0.118	(0.155)	0.045	0.073
25	2.08	0.80	0.105	(0.155)	0.040	0.065
26	2.17	0.90	0.118	(0.155)	0.045	0.073
27	2.25	0.90	0.118	(0.155)	0.045	0.073
28	2.33	0.90	0.118	(0.155)	0.045	0.073
29	2.42	0.90	0.118	(0.155)	0.045	0.073
30	2.50	0.90	0.118	(0.155)	0.045	0.073
31	2.58	0.90	0.118	(0.155)	0.045	0.073
32	2.67	0.90	0.118	(0.155)	0.045	0.073
33	2.75	1.00	0.131	(0.155)	0.050	0.081
34	2.83	1.00	0.131	(0.155)	0.050	0.081
35	2.92	1.00	0.131	(0.155)	0.050	0.081
36	3.00	1.00	0.131	(0.155)	0.050	0.081
37	3.08	1.00	0.131	(0.155)	0.050	0.081
38	3.17	1.10	0.144	(0.155)	0.055	0.089
39	3.25	1.10	0.144	(0.155)	0.055	0.089
40	3.33	1.10	0.144	(0.155)	0.055	0.089
41	3.42	1.20	0.157	(0.155)	0.060	0.097
42	3.50	1.30	0.170	(0.155)	0.065	0.105
43	3.58	1.40	0.183	(0.155)	0.070	0.114
44	3.67	1.40	0.183	(0.155)	0.070	0.114
45	3.75	1.50	0.196	(0.155)	0.075	0.122
46	3.83	1.50	0.196	(0.155)	0.075	0.122
47	3.92	1.60	0.209	(0.155)	0.080	0.130
48	4.00	1.60	0.209	(0.155)	0.080	0.130
49	4.08	1.70	0.222	(0.155)	0.084	0.138
50	4.17	1.80	0.235	(0.155)	0.089	0.146
51	4.25	1.90	0.249	(0.155)	0.094	0.154
52	4.33	2.00	0.262	(0.155)	0.099	0.162
53	4.42	2.10	0.275	(0.155)	0.104	0.170
54	4.50	2.10	0.275	(0.155)	0.104	0.170
55	4.58	2.20	0.288	(0.155)	0.109	0.178
56	4.67	2.30	0.301	(0.155)	0.114	0.187
57	4.75	2.40	0.314	(0.155)	0.119	0.195
58	4.83	2.40	0.314	(0.155)	0.119	0.195

```
  59   4.92     2.50      0.327       (  0.155)       0.124        0.203
  60   5.00     2.60      0.340       (  0.155)       0.129        0.211
  61   5.08     3.10      0.405       (  0.155)       0.154        0.251
  62   5.17     3.60      0.471          0.155    (  0.179)        0.316
  63   5.25     3.90      0.510          0.155    (  0.194)        0.355
  64   5.33     4.20      0.549          0.155    (  0.209)        0.395
  65   5.42     4.70      0.615          0.155    (  0.234)        0.460
  66   5.50     5.60      0.732          0.155    (  0.278)        0.578
  67   5.58     1.90      0.249       (  0.155)       0.094        0.154
  68   5.67     0.90      0.118       (  0.155)       0.045        0.073
  69   5.75     0.60      0.078       (  0.155)       0.030        0.049
  70   5.83     0.50      0.065       (  0.155)       0.025        0.041
  71   5.92     0.30      0.039       (  0.155)       0.015        0.024
  72   6.00     0.20      0.026       (  0.155)       0.010        0.016
             (Loss Rate Not Used)
     Sum =     100.0                                 Sum =     8.4
      Flood volume = Effective rainfall      0.70(In)
       times area      10.9(Ac.)/[(In)/(Ft.)] =       0.6(Ac.Ft)
      Total soil loss =      0.39(In)
      Total soil loss =     0.352(Ac.Ft)
      Total rainfall =      1.09(In)
      Flood volume =       27793.1 Cubic Feet
      Total soil loss =       15333.3 Cubic Feet
      ------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =      5.586(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      0.0014      0.20  Q         |         |         |
|
    0+10      0.0045      0.46  VQ        |         |         |
|
    0+15      0.0081      0.53  V Q       |         |         |
|
    0+20      0.0118      0.53  V Q       |         |         |
|
    0+25      0.0155      0.53  V Q       |         |         |
|
    0+30      0.0195      0.57  |VQ       |         |         |
|
    0+35      0.0237      0.62  |VQ       |         |         |
|
    0+40      0.0280      0.62  |VQ       |         |         |
|
    0+45      0.0323      0.62  | Q       |         |         |
|
```

```
   0+50       0.0366      0.62  | Q       |         |         |
|
   0+55       0.0409      0.62  | Q       |         |         |
|
   1+ 0       0.0455      0.66  | Q       |         |         |
|
   1+ 5       0.0503      0.71  | QV      |         |         |
|
   1+10       0.0552      0.71  | QV      |         |         |
|
   1+15       0.0602      0.71  | QV      |         |         |
|
   1+20       0.0651      0.71  | Q V     |         |         |
|
   1+25       0.0700      0.71  | Q V     |         |         |
|
   1+30       0.0749      0.71  | Q V     |         |         |
|
   1+35       0.0798      0.71  | Q  V    |         |         |
|
   1+40       0.0847      0.71  | Q  V    |         |         |
|
   1+45       0.0896      0.71  | Q  V    |         |         |
|
   1+50       0.0945      0.71  | Q  V    |         |         |
|
   1+55       0.0994      0.71  | Q   V   |         |         |
|
   2+ 0       0.1046      0.75  |  Q  V   |         |         |
|
   2+ 5       0.1098      0.76  |  Q  V   |         |         |
|
   2+10       0.1151      0.76  |  Q   V  |         |         |
|
   2+15       0.1205      0.80  |  Q   V  |         |         |
|
   2+20       0.1261      0.80  |  Q   V  |         |         |
|
   2+25       0.1316      0.80  |  Q    V |         |         |
|
   2+30       0.1371      0.80  |  Q    V |         |         |
|
   2+35       0.1426      0.80  |  Q    V |         |         |
|
   2+40       0.1482      0.80  |  Q     V|         |         |
|
   2+45       0.1540      0.84  |  Q     V|         |         |
|
   2+50       0.1601      0.89  |  Q      V         |         |
|
   2+55       0.1662      0.89  |  Q      V         |         |
|
   3+ 0       0.1723      0.89  |  Q      V         |         |
|
   3+ 5       0.1785      0.89  |  Q      |V        |         |
|
   3+10       0.1849      0.93  |  Q      |V        |         |
|
   3+15       0.1916      0.97  |  Q      | V       |         |
|
```

```
    3+20       0.1983      0.98  |  Q      | V       |         |
|
    3+25       0.2054      1.02  |   Q     | V       |         |
|
    3+30       0.2130      1.10  |   Q     |  V      |         |
|
    3+35       0.2212      1.19  |   Q     |  V      |         |
|
    3+40       0.2297      1.24  |   Q     |   V     |         |
|
    3+45       0.2386      1.29  |    Q    |   V     |         |
|
    3+50       0.2478      1.33  |    Q    |    V    |         |
|
    3+55       0.2572      1.38  |    Q    |     V   |         |
|
    4+ 0       0.2670      1.42  |    Q    |     V   |         |
|
    4+ 5       0.2771      1.47  |    Q    |      V  |         |
|
    4+10       0.2878      1.55  |     Q   |       V |         |
|
    4+15       0.2991      1.64  |     Q   |       V |         |
|
    4+20       0.3110      1.73  |     Q   |        V|         |
|
    4+25       0.3235      1.82  |      Q  |         V         |
|
    4+30       0.3363      1.87  |      Q  |         |V        |
|
    4+35       0.3495      1.91  |      Q  |         |V        |
|
    4+40       0.3632      1.99  |      Q  |         | V       |
|
    4+45       0.3776      2.08  |       Q |         |  V      |
|
    4+50       0.3922      2.13  |       Q |         |   V     |
|
    4+55       0.4072      2.18  |       Q |         |    V    |
|
    5+ 0       0.4228      2.26  |        Q|         |     V   |
|
    5+ 5       0.4401      2.51  |         Q         |      V  |
|
    5+10       0.4611      3.05  |         | Q       |       V |
|
    5+15       0.4861      3.62  |         |   Q     |         V
|
    5+20       0.5141      4.07  |         |     Q   |         | V
|
    5+25       0.5459      4.63  |         |       Q |         |   V
|
    5+30       0.5844      5.59  |         |         | Q       |     V
|
    5+35       0.6131      4.17  |         |     Q   |         |       V
|
    5+40       0.6241      1.58  |     Q   |         |         |
V|
    5+45       0.6294      0.78  |  Q      |         |         |
V|
```

```
     5+50       0.6330      0.52  | Q        |         |         |
V|
     5+55       0.6356      0.37  |Q         |         |         |
V|
     6+ 0       0.6372      0.24  Q          |         |         |
V|
     6+ 5       0.6379      0.11  Q          |         |         |
V|
     6+10       0.6380      0.01  Q          |         |         |
V|
     6+15       0.6380      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 11/09/21 File: moval33post65.out

++

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area B

Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) = 0.017 Sq. Mi.
Length along longest watercourse = 1380.00(Ft.)
Length along longest watercourse measured to centroid = 828.00 (Ft.)
Length along longest watercourse = 0.261 Mi.
Length along longest watercourse measured to centroid = 0.157 Mi.
Difference in elevation = 52.00(Ft.)
Slope along watercourse = 198.9565 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.039 Hr.
Lag time = 2.35 Min.
25% of lag time = 0.59 Min.
40% of lag time = 0.94 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]

10.90	1.09	11.88

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
10.90	2.55	27.79

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 1.090(In)
Area Averaged 100-Year Rainfall = 2.550(In)

Point rain (area averaged) = 1.432(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.432(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
10.900	69.00	0.650

Total Area Entered = 10.90(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.650	0.155	1.000	0.155

Sum (F) = 0.155

Area averaged mean soil loss (F) (In/Hr) = 0.155
Minimum soil loss rate ((In/Hr)) = 0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

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	213.048	44.793	4.921
2	0.167	426.095	48.755	5.356
3	0.250	639.143	5.617	0.617
4	0.333	852.190	0.835	0.092
			Sum = 100.000	Sum= 10.985

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	0.086	(0.155)	0.033	0.053
2	0.17	0.60	0.103	(0.155)	0.039	0.064
3	0.25	0.60	0.103	(0.155)	0.039	0.064
4	0.33	0.60	0.103	(0.155)	0.039	0.064
5	0.42	0.60	0.103	(0.155)	0.039	0.064
6	0.50	0.70	0.120	(0.155)	0.046	0.075
7	0.58	0.70	0.120	(0.155)	0.046	0.075
8	0.67	0.70	0.120	(0.155)	0.046	0.075
9	0.75	0.70	0.120	(0.155)	0.046	0.075
10	0.83	0.70	0.120	(0.155)	0.046	0.075
11	0.92	0.70	0.120	(0.155)	0.046	0.075
12	1.00	0.80	0.137	(0.155)	0.052	0.085
13	1.08	0.80	0.137	(0.155)	0.052	0.085
14	1.17	0.80	0.137	(0.155)	0.052	0.085
15	1.25	0.80	0.137	(0.155)	0.052	0.085
16	1.33	0.80	0.137	(0.155)	0.052	0.085
17	1.42	0.80	0.137	(0.155)	0.052	0.085
18	1.50	0.80	0.137	(0.155)	0.052	0.085
19	1.58	0.80	0.137	(0.155)	0.052	0.085
20	1.67	0.80	0.137	(0.155)	0.052	0.085
21	1.75	0.80	0.137	(0.155)	0.052	0.085
22	1.83	0.80	0.137	(0.155)	0.052	0.085
23	1.92	0.80	0.137	(0.155)	0.052	0.085
24	2.00	0.90	0.155	(0.155)	0.059	0.096
25	2.08	0.80	0.137	(0.155)	0.052	0.085
26	2.17	0.90	0.155	(0.155)	0.059	0.096
27	2.25	0.90	0.155	(0.155)	0.059	0.096
28	2.33	0.90	0.155	(0.155)	0.059	0.096
29	2.42	0.90	0.155	(0.155)	0.059	0.096
30	2.50	0.90	0.155	(0.155)	0.059	0.096
31	2.58	0.90	0.155	(0.155)	0.059	0.096
32	2.67	0.90	0.155	(0.155)	0.059	0.096
33	2.75	1.00	0.172	(0.155)	0.065	0.107
34	2.83	1.00	0.172	(0.155)	0.065	0.107
35	2.92	1.00	0.172	(0.155)	0.065	0.107
36	3.00	1.00	0.172	(0.155)	0.065	0.107
37	3.08	1.00	0.172	(0.155)	0.065	0.107
38	3.17	1.10	0.189	(0.155)	0.072	0.117
39	3.25	1.10	0.189	(0.155)	0.072	0.117
40	3.33	1.10	0.189	(0.155)	0.072	0.117
41	3.42	1.20	0.206	(0.155)	0.078	0.128
42	3.50	1.30	0.223	(0.155)	0.085	0.138
43	3.58	1.40	0.241	(0.155)	0.091	0.149
44	3.67	1.40	0.241	(0.155)	0.091	0.149
45	3.75	1.50	0.258	(0.155)	0.098	0.160
46	3.83	1.50	0.258	(0.155)	0.098	0.160
47	3.92	1.60	0.275	(0.155)	0.104	0.170
48	4.00	1.60	0.275	(0.155)	0.104	0.170
49	4.08	1.70	0.292	(0.155)	0.111	0.181
50	4.17	1.80	0.309	(0.155)	0.118	0.192
51	4.25	1.90	0.326	(0.155)	0.124	0.202
52	4.33	2.00	0.344	(0.155)	0.131	0.213
53	4.42	2.10	0.361	(0.155)	0.137	0.224
54	4.50	2.10	0.361	(0.155)	0.137	0.224
55	4.58	2.20	0.378	(0.155)	0.144	0.234
56	4.67	2.30	0.395	(0.155)	0.150	0.245
57	4.75	2.40	0.412	0.155	(0.157)	0.258
58	4.83	2.40	0.412	0.155	(0.157)	0.258

```
  59   4.92     2.50      0.430         0.155    (  0.163)        0.275
  60   5.00     2.60      0.447         0.155    (  0.170)        0.292
  61   5.08     3.10      0.533         0.155    (  0.202)        0.378
  62   5.17     3.60      0.619         0.155    (  0.235)        0.464
  63   5.25     3.90      0.670         0.155    (  0.255)        0.515
  64   5.33     4.20      0.722         0.155    (  0.274)        0.567
  65   5.42     4.70      0.808         0.155    (  0.307)        0.653
  66   5.50     5.60      0.962         0.155    (  0.366)        0.808
  67   5.58     1.90      0.326      (  0.155)        0.124       0.202
  68   5.67     0.90      0.155      (  0.155)        0.059       0.096
  69   5.75     0.60      0.103      (  0.155)        0.039       0.064
  70   5.83     0.50      0.086      (  0.155)        0.033       0.053
  71   5.92     0.30      0.052      (  0.155)        0.020       0.032
  72   6.00     0.20      0.034      (  0.155)        0.013       0.021
             (Loss Rate Not Used)
     Sum =     100.0                                  Sum =    11.4
      Flood volume = Effective rainfall      0.95(In)
       times area      10.9(Ac.)/[(In)/(Ft.)] =       0.9(Ac.Ft)
      Total soil loss =      0.48(In)
      Total soil loss =     0.438(Ac.Ft)
      Total rainfall =      1.43(In)
      Flood volume =       37561.1 Cubic Feet
      Total soil loss =       19095.4 Cubic Feet
      -----------------------------------------------------------------
--
       Peak flow rate of this hydrograph =      7.871(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      0.0018      0.26  VQ        |         |         |
|
    0+10      0.0059      0.60  V Q       |         |         |
|
    0+15      0.0107      0.69  V Q       |         |         |
|
    0+20      0.0155      0.70  V Q       |         |         |
|
    0+25      0.0204      0.70  V Q       |         |         |
|
    0+30      0.0256      0.75  |V Q      |         |         |
|
    0+35      0.0312      0.81  |V Q      |         |         |
|
    0+40      0.0368      0.82  |V Q      |         |         |
|
    0+45      0.0424      0.82  |V Q      |         |         |
|
```

```
    0+50       0.0481      0.82  | VQ      |         |         |
|
    0+55       0.0537      0.82  | VQ      |         |         |
|
    1+ 0       0.0597      0.87  | VQ      |         |         |
|
    1+ 5       0.0661      0.93  |  Q      |         |         |
|
    1+10       0.0726      0.94  |  Q      |         |         |
|
    1+15       0.0790      0.94  |  Q      |         |         |
|
    1+20       0.0855      0.94  |  Q      |         |         |
|
    1+25       0.0919      0.94  |  QV     |         |         |
|
    1+30       0.0984      0.94  |  QV     |         |         |
|
    1+35       0.1048      0.94  |  QV     |         |         |
|
    1+40       0.1113      0.94  |  Q V    |         |         |
|
    1+45       0.1177      0.94  |  Q V    |         |         |
|
    1+50       0.1242      0.94  |  Q V    |         |         |
|
    1+55       0.1306      0.94  |  Q  V   |         |         |
|
    2+ 0       0.1375      0.99  |  Q  V   |         |         |
|
    2+ 5       0.1443      0.99  |  Q  V   |         |         |
|
    2+10       0.1512      1.00  |  Q   V  |         |         |
|
    2+15       0.1584      1.05  |   Q  V  |         |         |
|
    2+20       0.1656      1.05  |   Q  V  |         |         |
|
    2+25       0.1729      1.05  |   Q   V |         |         |
|
    2+30       0.1801      1.05  |   Q   V |         |         |
|
    2+35       0.1874      1.05  |   Q   V |         |         |
|
    2+40       0.1946      1.05  |   Q    V|         |         |
|
    2+45       0.2023      1.11  |   Q    V|         |         |
|
    2+50       0.2103      1.16  |   Q    V|         |         |
|
    2+55       0.2183      1.17  |   Q     V         |         |
|
    3+ 0       0.2264      1.17  |   Q     V         |         |
|
    3+ 5       0.2345      1.17  |   Q     V         |         |
|
    3+10       0.2429      1.22  |   Q     |V        |         |
|
    3+15       0.2517      1.28  |    Q    |V        |         |
|
```

```
    3+20       0.2606      1.29  |    Q    | V       |         |
|
    3+25       0.2698      1.34  |    Q    | V       |         |
|
    3+30       0.2798      1.45  |    Q    | V       |         |
|
    3+35       0.2906      1.57  |     Q   |  V      |         |
|
    3+40       0.3018      1.63  |     Q   |   V     |         |
|
    3+45       0.3134      1.69  |     Q   |   V     |         |
|
    3+50       0.3255      1.75  |     Q   |    V    |         |
|
    3+55       0.3379      1.81  |      Q  |    V    |         |
|
    4+ 0       0.3508      1.87  |      Q  |     V   |         |
|
    4+ 5       0.3641      1.92  |      Q  |     V   |         |
|
    4+10       0.3781      2.04  |       Q |      V  |         |
|
    4+15       0.3929      2.15  |       Q |       V |         |
|
    4+20       0.4085      2.27  |        Q|       V |         |
|
    4+25       0.4249      2.39  |        Q|        V|         |
|
    4+30       0.4418      2.45  |        Q|         V         |
|
    4+35       0.4591      2.51  |         Q         |V        |
|
    4+40       0.4772      2.62  |         Q         | V       |
|
    4+45       0.4961      2.75  |         Q         |  V      |
|
    4+50       0.5155      2.82  |         |Q        |  V      |
|
    4+55       0.5356      2.92  |         |Q        |   V     |
|
    5+ 0       0.5569      3.09  |         | Q       |    V    |
|
    5+ 5       0.5818      3.62  |         |   Q     |     V   |
|
    5+10       0.6129      4.51  |         |       Q |       V |
|
    5+15       0.6493      5.28  |         |         |Q        V
|
    5+20       0.6898      5.87  |         |         |  Q      |V
|
    5+25       0.7353      6.61  |         |         |     Q   |   V
|
    5+30       0.7895      7.87  |         |         |         |Q    V
|
    5+35       0.8293      5.78  |         |         |  Q      |       V
|
    5+40       0.8439      2.12  |       Q |         |         |
V|
    5+45       0.8510      1.03  |   Q     |         |         |
V|
```

```
    5+50       0.8557      0.68  | Q       |         |         |
V|
    5+55       0.8590      0.49  |Q        |         |         |
V|
    6+ 0       0.8612      0.31  |Q        |         |         |
V|
    6+ 5       0.8622      0.14  Q         |         |         |
V|
    6+10       0.8623      0.02  Q         |         |         |
V|
    6+15       0.8623      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 11/09/21 File: moval33post610.out

++

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area B

Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) = 0.017 Sq. Mi.
Length along longest watercourse = 1380.00(Ft.)
Length along longest watercourse measured to centroid = 828.00 (Ft.)
Length along longest watercourse = 0.261 Mi.
Length along longest watercourse measured to centroid = 0.157 Mi.
Difference in elevation = 52.00(Ft.)
Slope along watercourse = 198.9565 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.039 Hr.
Lag time = 2.35 Min.
25% of lag time = 0.59 Min.
40% of lag time = 0.94 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]

```
        10.90              1.09                   11.88

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
             10.90              2.55                   27.79

      STORM EVENT (YEAR) =   10.00
      Area Averaged 2-Year Rainfall =    1.090(In)
      Area Averaged 100-Year Rainfall =    2.550(In)

      Point rain (area averaged) =    1.691(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    1.691(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
          10.900           69.00         0.650
       Total Area Entered =     10.90(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
      69.0  69.0      0.373     0.650        0.155       1.000
0.155
                                                                Sum (F) =
0.155
      Area averaged mean soil loss (F) (In/Hr) =  0.155
      Minimum soil loss rate ((In/Hr)) =  0.077
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.380
      ------------------------------------------------------------------
---

                  U n i t  H y d r o g r a p h
                        FOOTHILL S-Curve
      ------------------------------------------------------------------
--
                  Unit Hydrograph Data
      ------------------------------------------------------------------
---
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                           Graph %           (CFS)
      ------------------------------------------------------------------
---
          1   0.083        213.048         44.793              4.921
          2   0.167        426.095         48.755              5.356
          3   0.250        639.143          5.617              0.617
          4   0.333        852.190          0.835              0.092
                                     Sum = 100.000   Sum=      10.985
-----------------------------------------------------------------------


 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	0.101	(0.155)	0.039	0.063
2	0.17	0.60	0.122	(0.155)	0.046	0.075
3	0.25	0.60	0.122	(0.155)	0.046	0.075
4	0.33	0.60	0.122	(0.155)	0.046	0.075
5	0.42	0.60	0.122	(0.155)	0.046	0.075
6	0.50	0.70	0.142	(0.155)	0.054	0.088
7	0.58	0.70	0.142	(0.155)	0.054	0.088
8	0.67	0.70	0.142	(0.155)	0.054	0.088
9	0.75	0.70	0.142	(0.155)	0.054	0.088
10	0.83	0.70	0.142	(0.155)	0.054	0.088
11	0.92	0.70	0.142	(0.155)	0.054	0.088
12	1.00	0.80	0.162	(0.155)	0.062	0.101
13	1.08	0.80	0.162	(0.155)	0.062	0.101
14	1.17	0.80	0.162	(0.155)	0.062	0.101
15	1.25	0.80	0.162	(0.155)	0.062	0.101
16	1.33	0.80	0.162	(0.155)	0.062	0.101
17	1.42	0.80	0.162	(0.155)	0.062	0.101
18	1.50	0.80	0.162	(0.155)	0.062	0.101
19	1.58	0.80	0.162	(0.155)	0.062	0.101
20	1.67	0.80	0.162	(0.155)	0.062	0.101
21	1.75	0.80	0.162	(0.155)	0.062	0.101
22	1.83	0.80	0.162	(0.155)	0.062	0.101
23	1.92	0.80	0.162	(0.155)	0.062	0.101
24	2.00	0.90	0.183	(0.155)	0.069	0.113
25	2.08	0.80	0.162	(0.155)	0.062	0.101
26	2.17	0.90	0.183	(0.155)	0.069	0.113
27	2.25	0.90	0.183	(0.155)	0.069	0.113
28	2.33	0.90	0.183	(0.155)	0.069	0.113
29	2.42	0.90	0.183	(0.155)	0.069	0.113
30	2.50	0.90	0.183	(0.155)	0.069	0.113
31	2.58	0.90	0.183	(0.155)	0.069	0.113
32	2.67	0.90	0.183	(0.155)	0.069	0.113
33	2.75	1.00	0.203	(0.155)	0.077	0.126
34	2.83	1.00	0.203	(0.155)	0.077	0.126
35	2.92	1.00	0.203	(0.155)	0.077	0.126
36	3.00	1.00	0.203	(0.155)	0.077	0.126
37	3.08	1.00	0.203	(0.155)	0.077	0.126
38	3.17	1.10	0.223	(0.155)	0.085	0.138
39	3.25	1.10	0.223	(0.155)	0.085	0.138
40	3.33	1.10	0.223	(0.155)	0.085	0.138
41	3.42	1.20	0.243	(0.155)	0.093	0.151
42	3.50	1.30	0.264	(0.155)	0.100	0.164
43	3.58	1.40	0.284	(0.155)	0.108	0.176
44	3.67	1.40	0.284	(0.155)	0.108	0.176
45	3.75	1.50	0.304	(0.155)	0.116	0.189
46	3.83	1.50	0.304	(0.155)	0.116	0.189
47	3.92	1.60	0.325	(0.155)	0.123	0.201
48	4.00	1.60	0.325	(0.155)	0.123	0.201
49	4.08	1.70	0.345	(0.155)	0.131	0.214
50	4.17	1.80	0.365	(0.155)	0.139	0.226
51	4.25	1.90	0.385	(0.155)	0.146	0.239
52	4.33	2.00	0.406	(0.155)	0.154	0.252
53	4.42	2.10	0.426	0.155	(0.162)	0.271
54	4.50	2.10	0.426	0.155	(0.162)	0.271
55	4.58	2.20	0.446	0.155	(0.170)	0.292
56	4.67	2.30	0.467	0.155	(0.177)	0.312
57	4.75	2.40	0.487	0.155	(0.185)	0.332
58	4.83	2.40	0.487	0.155	(0.185)	0.332

```
  59   4.92     2.50      0.507          0.155    (  0.193)        0.352
  60   5.00     2.60      0.527          0.155    (  0.200)        0.373
  61   5.08     3.10      0.629          0.155    (  0.239)        0.474
  62   5.17     3.60      0.730          0.155    (  0.278)        0.576
  63   5.25     3.90      0.791          0.155    (  0.301)        0.636
  64   5.33     4.20      0.852          0.155    (  0.324)        0.697
  65   5.42     4.70      0.953          0.155    (  0.362)        0.799
  66   5.50     5.60      1.136          0.155    (  0.432)        0.981
  67   5.58     1.90      0.385       (  0.155)      0.146        0.239
  68   5.67     0.90      0.183       (  0.155)      0.069        0.113
  69   5.75     0.60      0.122       (  0.155)      0.046        0.075
  70   5.83     0.50      0.101       (  0.155)      0.039        0.063
  71   5.92     0.30      0.061       (  0.155)      0.023        0.038
  72   6.00     0.20      0.041       (  0.155)      0.015        0.025
             (Loss Rate Not Used)
     Sum =     100.0                                 Sum =    13.8
      Flood volume = Effective rainfall      1.15(In)
       times area      10.9(Ac.)/[(In)/(Ft.)] =      1.0(Ac.Ft)
      Total soil loss =      0.54(In)
      Total soil loss =     0.492(Ac.Ft)
      Total rainfall =      1.69(In)
      Flood volume =       45439.1 Cubic Feet
      Total soil loss =      21452.5 Cubic Feet
      ------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =      9.601(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      0.0021      0.31  VQ        |         |         |
|
    0+10      0.0070      0.71  V Q       |         |         |
|
    0+15      0.0126      0.81  V  Q      |         |         |
|
    0+20      0.0183      0.83  V  Q      |         |         |
|
    0+25      0.0240      0.83  V  Q      |         |         |
|
    0+30      0.0302      0.89  |V Q      |         |         |
|
    0+35      0.0368      0.96  |V Q      |         |         |
|
    0+40      0.0434      0.97  |V Q      |         |         |
|
    0+45      0.0501      0.97  |V Q      |         |         |
|
```

```
    0+50       0.0568      0.97  | VQ      |         |         |
|
    0+55       0.0634      0.97  | VQ      |         |         |
|
    1+ 0       0.0705      1.03  | V Q     |         |         |
|
    1+ 5       0.0781      1.10  | V Q     |         |         |
|
    1+10       0.0857      1.10  |  VQ     |         |         |
|
    1+15       0.0933      1.11  |  VQ     |         |         |
|
    1+20       0.1009      1.11  |  VQ     |         |         |
|
    1+25       0.1085      1.11  |   Q     |         |         |
|
    1+30       0.1162      1.11  |   Q     |         |         |
|
    1+35       0.1238      1.11  |   Q     |         |         |
|
    1+40       0.1314      1.11  |   QV    |         |         |
|
    1+45       0.1390      1.11  |   QV    |         |         |
|
    1+50       0.1466      1.11  |   QV    |         |         |
|
    1+55       0.1542      1.11  |   QV    |         |         |
|
    2+ 0       0.1623      1.17  |   Q V   |         |         |
|
    2+ 5       0.1704      1.17  |   Q V   |         |         |
|
    2+10       0.1785      1.18  |   Q V   |         |         |
|
    2+15       0.1870      1.24  |   Q  V  |         |         |
|
    2+20       0.1955      1.24  |   Q  V  |         |         |
|
    2+25       0.2041      1.24  |   Q  V  |         |         |
|
    2+30       0.2127      1.24  |   Q   V |         |         |
|
    2+35       0.2212      1.24  |   Q   V |         |         |
|
    2+40       0.2298      1.24  |   Q   V |         |         |
|
    2+45       0.2388      1.31  |    Q   V|         |         |
|
    2+50       0.2483      1.37  |    Q   V|         |         |
|
    2+55       0.2578      1.38  |    Q   V|         |         |
|
    3+ 0       0.2673      1.38  |    Q    V         |         |
|
    3+ 5       0.2768      1.38  |    Q    V         |         |
|
    3+10       0.2868      1.44  |    Q    V         |         |
|
    3+15       0.2972      1.51  |     Q   |V        |         |
|
```

```
    3+20       0.3076      1.52  |     Q   |V        |         |
|
    3+25       0.3185      1.58  |     Q   | V       |         |
|
    3+30       0.3303      1.71  |     Q   | V       |         |
|
    3+35       0.3431      1.85  |      Q  |  V      |         |
|
    3+40       0.3563      1.93  |      Q  |  V      |         |
|
    3+45       0.3701      2.00  |      Q  |   V     |         |
|
    3+50       0.3843      2.06  |       Q |   V     |         |
|
    3+55       0.3990      2.13  |       Q |    V    |         |
|
    4+ 0       0.4142      2.20  |       Q |    V    |         |
|
    4+ 5       0.4298      2.27  |        Q|     V   |         |
|
    4+10       0.4464      2.40  |        Q|      V  |         |
|
    4+15       0.4639      2.54  |         Q      V  |         |
|
    4+20       0.4823      2.68  |         Q       V |         |
|
    4+25       0.5020      2.85  |         |Q       V|         |
|
    4+30       0.5224      2.97  |         |Q        V         |
|
    4+35       0.5436      3.08  |         | Q       V         |
|
    4+40       0.5663      3.29  |         |  Q      |V        |
|
    4+45       0.5904      3.51  |         |   Q     | V       |
|
    4+50       0.6155      3.63  |         |   Q     |  V      |
|
    4+55       0.6413      3.75  |         |   Q     |   V     |
|
    5+ 0       0.6686      3.96  |         |    Q    |    V    |
|
    5+ 5       0.7001      4.58  |         |       Q |     V   |
|
    5+10       0.7389      5.64  |         |         | Q     V |
|
    5+15       0.7840      6.54  |         |         |     Q   V
|
    5+20       0.8339      7.24  |         |         |       Q |V
|
    5+25       0.8898      8.12  |         |         |         | Q V
|
    5+30       0.9559      9.60  |         |         |         |     V Q
|
    5+35       1.0041      6.99  |         |         |      Q  |       V
|
    5+40       1.0214      2.52  |         Q         |         |
V|
    5+45       1.0298      1.22  |   Q     |         |         |
V|
```

```
     5+50       1.0353      0.81  |  Q      |         |         |
V|
     5+55       1.0393      0.58  | Q       |         |         |
V|
     6+ 0       1.0419      0.37  |Q        |         |         |
V|
     6+ 5       1.0430      0.16  Q         |         |         |
V|
     6+10       1.0431      0.02  Q         |         |         |
V|
     6+15       1.0431      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 11/09/21 File: moval33post6100.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area B

Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) = 0.017 Sq. Mi.
Length along longest watercourse = 1380.00(Ft.)
Length along longest watercourse measured to centroid = 828.00 (Ft.)
Length along longest watercourse = 0.261 Mi.
Length along longest watercourse measured to centroid = 0.157 Mi.
Difference in elevation = 52.00(Ft.)
Slope along watercourse = 198.9565 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.039 Hr.
Lag time = 2.35 Min.
25% of lag time = 0.59 Min.
40% of lag time = 0.94 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]

```
        10.90              1.09                  11.88

   100 YEAR Area rainfall data:


   Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        10.90              2.55                  27.79

   STORM EVENT (YEAR) =  100.00
   Area Averaged 2-Year Rainfall =    1.090(In)
   Area Averaged 100-Year Rainfall =    2.550(In)

   Point rain (area averaged) =    2.550(In)
   Areal adjustment factor =  100.00 %
   Adjusted average point rain =    2.550(In)

   Sub-Area Data:
   Area(Ac.)         Runoff Index   Impervious %
       10.900           69.00         0.650
    Total Area Entered =     10.90(Ac.)


   RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
   AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
   69.0  84.4      0.194     0.650        0.080       1.000
0.080
                                                         Sum (F) =
0.080
   Area averaged mean soil loss (F) (In/Hr) =  0.080
   Minimum soil loss rate ((In/Hr)) =  0.040
   (for 24 hour storm duration)
   Soil low loss rate (decimal) =   0.380
   ------------------------------------------------------------------
---

               U n i t  H y d r o g r a p h
                     FOOTHILL S-Curve
   ------------------------------------------------------------------
--
               Unit Hydrograph Data
   ------------------------------------------------------------------
---
   Unit time period   Time % of lag   Distribution   Unit Hydrograph
       (hrs)                            Graph %           (CFS)
   ------------------------------------------------------------------
---
       1   0.083        213.048        44.793             4.921
       2   0.167        426.095        48.755             5.356
       3   0.250        639.143         5.617             0.617
       4   0.333        852.190         0.835             0.092
                                  Sum = 100.000   Sum=      10.985
-----------------------------------------------------------------------
```

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	0.153	(0.080)	0.058	0.095
2	0.17	0.60	0.184	(0.080)	0.070	0.114
3	0.25	0.60	0.184	(0.080)	0.070	0.114
4	0.33	0.60	0.184	(0.080)	0.070	0.114
5	0.42	0.60	0.184	(0.080)	0.070	0.114
6	0.50	0.70	0.214	0.080	(0.081)	0.134
7	0.58	0.70	0.214	0.080	(0.081)	0.134
8	0.67	0.70	0.214	0.080	(0.081)	0.134
9	0.75	0.70	0.214	0.080	(0.081)	0.134
10	0.83	0.70	0.214	0.080	(0.081)	0.134
11	0.92	0.70	0.214	0.080	(0.081)	0.134
12	1.00	0.80	0.245	0.080	(0.093)	0.164
13	1.08	0.80	0.245	0.080	(0.093)	0.164
14	1.17	0.80	0.245	0.080	(0.093)	0.164
15	1.25	0.80	0.245	0.080	(0.093)	0.164
16	1.33	0.80	0.245	0.080	(0.093)	0.164
17	1.42	0.80	0.245	0.080	(0.093)	0.164
18	1.50	0.80	0.245	0.080	(0.093)	0.164
19	1.58	0.80	0.245	0.080	(0.093)	0.164
20	1.67	0.80	0.245	0.080	(0.093)	0.164
21	1.75	0.80	0.245	0.080	(0.093)	0.164
22	1.83	0.80	0.245	0.080	(0.093)	0.164
23	1.92	0.80	0.245	0.080	(0.093)	0.164
24	2.00	0.90	0.275	0.080	(0.105)	0.195
25	2.08	0.80	0.245	0.080	(0.093)	0.164
26	2.17	0.90	0.275	0.080	(0.105)	0.195
27	2.25	0.90	0.275	0.080	(0.105)	0.195
28	2.33	0.90	0.275	0.080	(0.105)	0.195
29	2.42	0.90	0.275	0.080	(0.105)	0.195
30	2.50	0.90	0.275	0.080	(0.105)	0.195
31	2.58	0.90	0.275	0.080	(0.105)	0.195
32	2.67	0.90	0.275	0.080	(0.105)	0.195
33	2.75	1.00	0.306	0.080	(0.116)	0.226
34	2.83	1.00	0.306	0.080	(0.116)	0.226
35	2.92	1.00	0.306	0.080	(0.116)	0.226
36	3.00	1.00	0.306	0.080	(0.116)	0.226
37	3.08	1.00	0.306	0.080	(0.116)	0.226
38	3.17	1.10	0.337	0.080	(0.128)	0.256
39	3.25	1.10	0.337	0.080	(0.128)	0.256
40	3.33	1.10	0.337	0.080	(0.128)	0.256
41	3.42	1.20	0.367	0.080	(0.140)	0.287
42	3.50	1.30	0.398	0.080	(0.151)	0.317
43	3.58	1.40	0.428	0.080	(0.163)	0.348
44	3.67	1.40	0.428	0.080	(0.163)	0.348
45	3.75	1.50	0.459	0.080	(0.174)	0.379
46	3.83	1.50	0.459	0.080	(0.174)	0.379
47	3.92	1.60	0.490	0.080	(0.186)	0.409
48	4.00	1.60	0.490	0.080	(0.186)	0.409
49	4.08	1.70	0.520	0.080	(0.198)	0.440
50	4.17	1.80	0.551	0.080	(0.209)	0.470
51	4.25	1.90	0.581	0.080	(0.221)	0.501
52	4.33	2.00	0.612	0.080	(0.233)	0.532
53	4.42	2.10	0.643	0.080	(0.244)	0.562
54	4.50	2.10	0.643	0.080	(0.244)	0.562
55	4.58	2.20	0.673	0.080	(0.256)	0.593
56	4.67	2.30	0.704	0.080	(0.267)	0.623
57	4.75	2.40	0.734	0.080	(0.279)	0.654
58	4.83	2.40	0.734	0.080	(0.279)	0.654

```
  59   4.92     2.50      0.765          0.080    (  0.291)        0.685
  60   5.00     2.60      0.796          0.080    (  0.302)        0.715
  61   5.08     3.10      0.949          0.080    (  0.360)        0.868
  62   5.17     3.60      1.102          0.080    (  0.419)        1.021
  63   5.25     3.90      1.193          0.080    (  0.453)        1.113
  64   5.33     4.20      1.285          0.080    (  0.488)        1.205
  65   5.42     4.70      1.438          0.080    (  0.546)        1.358
  66   5.50     5.60      1.714          0.080    (  0.651)        1.633
  67   5.58     1.90      0.581          0.080    (  0.221)        0.501
  68   5.67     0.90      0.275          0.080    (  0.105)        0.195
  69   5.75     0.60      0.184       (  0.080)      0.070         0.114
  70   5.83     0.50      0.153       (  0.080)      0.058         0.095
  71   5.92     0.30      0.092       (  0.080)      0.035         0.057
  72   6.00     0.20      0.061       (  0.080)      0.023         0.038
           (Loss Rate Not Used)
     Sum =     100.0                                  Sum =    25.0
      Flood volume = Effective rainfall      2.08(In)
       times area      10.9(Ac.)/[(In)/(Ft.)] =      1.9(Ac.Ft)
      Total soil loss =      0.47(In)
      Total soil loss =     0.423(Ac.Ft)
      Total rainfall =      2.55(In)
      Flood volume =       82456.5 Cubic Feet
      Total soil loss =      18435.5 Cubic Feet
      -----------------------------------------------------------------
--
       Peak flow rate of this hydrograph =     16.161(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        5.0      10.0      15.0
20.0

----------------------------------------------------------------------
    0+ 5      0.0032      0.47  Q         |         |         |
|
    0+10      0.0106      1.07  V Q       |         |         |
|
    0+15      0.0190      1.23  V Q       |         |         |
|
    0+20      0.0276      1.25  V Q       |         |         |
|
    0+25      0.0363      1.25  V Q       |         |         |
|
    0+30      0.0456      1.35  V Q       |         |         |
|
    0+35      0.0556      1.46  |VQ       |         |         |
|
    0+40      0.0657      1.47  |VQ       |         |         |
|
    0+45      0.0758      1.47  |VQ       |         |         |
|
```

```
    0+50       0.0859       1.47  |VQ       |         |         |
|
    0+55       0.0961       1.47  | Q       |         |         |
|
    1+ 0       0.1072       1.62  | VQ      |         |         |
|
    1+ 5       0.1195       1.78  | VQ      |         |         |
|
    1+10       0.1319       1.80  | VQ      |         |         |
|
    1+15       0.1444       1.81  |  Q      |         |         |
|
    1+20       0.1568       1.81  |  Q      |         |         |
|
    1+25       0.1693       1.81  |  Q      |         |         |
|
    1+30       0.1817       1.81  |  Q      |         |         |
|
    1+35       0.1941       1.81  |  QV     |         |         |
|
    1+40       0.2066       1.81  |  QV     |         |         |
|
    1+45       0.2190       1.81  |  QV     |         |         |
|
    1+50       0.2315       1.81  |  QV     |         |         |
|
    1+55       0.2439       1.81  |  Q V    |         |         |
|
    2+ 0       0.2574       1.96  |  Q V    |         |         |
|
    2+ 5       0.2709       1.97  |  Q V    |         |         |
|
    2+10       0.2846       1.98  |  Q  V   |         |         |
|
    2+15       0.2992       2.12  |   Q V   |         |         |
|
    2+20       0.3139       2.14  |   Q V   |         |         |
|
    2+25       0.3287       2.14  |   Q V   |         |         |
|
    2+30       0.3434       2.14  |   Q  V  |         |         |
|
    2+35       0.3582       2.14  |   Q  V  |         |         |
|
    2+40       0.3729       2.14  |   Q  V  |         |         |
|
    2+45       0.3887       2.29  |   Q   V |         |         |
|
    2+50       0.4057       2.46  |   Q   V |         |         |
|
    2+55       0.4227       2.48  |   Q   V |         |         |
|
    3+ 0       0.4398       2.48  |   Q    V|         |         |
|
    3+ 5       0.4569       2.48  |   Q    V|         |         |
|
    3+10       0.4750       2.63  |    Q    V         |         |
|
    3+15       0.4942       2.79  |    Q    V         |         |
|
```

```
    3+20       0.5136      2.81  |    Q    V         |         |
|
    3+25       0.5340      2.97  |    Q    |V        |         |
|
    3+30       0.5566      3.28  |     Q   |V        |         |
|
    3+35       0.5815      3.61  |      Q  | V       |         |
|
    3+40       0.6077      3.80  |      Q  | V       |         |
|
    3+45       0.6350      3.97  |      Q  |  V      |         |
|
    3+50       0.6635      4.14  |       Q |   V     |         |
|
    3+55       0.6932      4.31  |       Q |   V     |         |
|
    4+ 0       0.7240      4.48  |       Q |    V    |         |
|
    4+ 5       0.7560      4.64  |        Q|    V    |         |
|
    4+10       0.7902      4.96  |        Q|     V   |         |
|
    4+15       0.8266      5.30  |         Q      V  |         |
|
    4+20       0.8654      5.63  |         |Q      V |         |
|
    4+25       0.9065      5.97  |         |Q       V|         |
|
    4+30       0.9489      6.15  |         | Q       V         |
|
    4+35       0.9925      6.33  |         | Q       V         |
|
    4+40       1.0382      6.64  |         |  Q      |V        |
|
    4+45       1.0863      6.98  |         |  Q      | V       |
|
    4+50       1.1356      7.16  |         |   Q     |  V      |
|
    4+55       1.1861      7.34  |         |   Q     |    V    |
|
    5+ 0       1.2388      7.65  |         |    Q    |     V   |
|
    5+ 5       1.2980      8.59  |         |      Q  |      V  |
|
    5+10       1.3681     10.18  |         |         Q       V |
|
    5+15       1.4477     11.55  |         |         |  Q      V
|
    5+20       1.5345     12.60  |         |         |    Q    | V
|
    5+25       1.6304     13.92  |         |         |      Q  |   V
|
    5+30       1.7417     16.16  |         |         |         | Q   V
|
    5+35       1.8254     12.17  |         |         |   Q     |       V
|
    5+40       1.8583      4.78  |        Q|         |         |
V|
    5+45       1.8726      2.06  |   Q     |         |         |
V|
```

```
     5+50       1.8811      1.24  | Q        |         |         |
V|
     5+55       1.8872      0.88  |Q         |         |         |
V|
     6+ 0       1.8910      0.56  |Q         |         |         |
V|
     6+ 5       1.8927      0.25  Q          |         |         |
V|
     6+10       1.8929      0.03  Q          |         |         |
V|
     6+15       1.8929      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

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Study date 11/09/21 File: moval33post242.out

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

Program License Serial Number 6232

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English Rainfall Data (Inches) Input Values Used

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area B

Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) = 0.017 Sq. Mi.
Length along longest watercourse = 1380.00(Ft.)
Length along longest watercourse measured to centroid = 828.00 (Ft.)
Length along longest watercourse = 0.261 Mi.
Length along longest watercourse measured to centroid = 0.157 Mi.
Difference in elevation = 52.00(Ft.)
Slope along watercourse = 198.9565 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.039 Hr.
Lag time = 2.35 Min.
25% of lag time = 0.59 Min.
40% of lag time = 0.94 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]

10.90	1.93	21.04

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
10.90	4.64	50.58

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.930(In)
Area Averaged 100-Year Rainfall = 4.640(In)

Point rain (area averaged) = 1.930(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.930(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
10.900	69.00	0.650

Total Area Entered = 10.90(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.650	0.155	1.000	0.155
					Sum (F) =	0.155

Area averaged mean soil loss (F) (In/Hr) = 0.155
Minimum soil loss rate ((In/Hr)) = 0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

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	213.048	44.793	4.921
2	0.167	426.095	48.755	5.356
3	0.250	639.143	5.617	0.617
4	0.333	852.190	0.835	0.092
			Sum = 100.000	Sum= 10.985

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	0.015	(0.274)	0.006	0.010
2	0.17	0.07	0.015	(0.273)	0.006	0.010
3	0.25	0.07	0.015	(0.272)	0.006	0.010
4	0.33	0.10	0.023	(0.271)	0.009	0.014
5	0.42	0.10	0.023	(0.270)	0.009	0.014
6	0.50	0.10	0.023	(0.269)	0.009	0.014
7	0.58	0.10	0.023	(0.268)	0.009	0.014
8	0.67	0.10	0.023	(0.267)	0.009	0.014
9	0.75	0.10	0.023	(0.266)	0.009	0.014
10	0.83	0.13	0.031	(0.265)	0.012	0.019
11	0.92	0.13	0.031	(0.264)	0.012	0.019
12	1.00	0.13	0.031	(0.263)	0.012	0.019
13	1.08	0.10	0.023	(0.262)	0.009	0.014
14	1.17	0.10	0.023	(0.261)	0.009	0.014
15	1.25	0.10	0.023	(0.260)	0.009	0.014
16	1.33	0.10	0.023	(0.259)	0.009	0.014
17	1.42	0.10	0.023	(0.258)	0.009	0.014
18	1.50	0.10	0.023	(0.257)	0.009	0.014
19	1.58	0.10	0.023	(0.255)	0.009	0.014
20	1.67	0.10	0.023	(0.254)	0.009	0.014
21	1.75	0.10	0.023	(0.253)	0.009	0.014
22	1.83	0.13	0.031	(0.252)	0.012	0.019
23	1.92	0.13	0.031	(0.251)	0.012	0.019
24	2.00	0.13	0.031	(0.250)	0.012	0.019
25	2.08	0.13	0.031	(0.249)	0.012	0.019
26	2.17	0.13	0.031	(0.248)	0.012	0.019
27	2.25	0.13	0.031	(0.247)	0.012	0.019
28	2.33	0.13	0.031	(0.246)	0.012	0.019
29	2.42	0.13	0.031	(0.245)	0.012	0.019
30	2.50	0.13	0.031	(0.244)	0.012	0.019
31	2.58	0.17	0.039	(0.243)	0.015	0.024
32	2.67	0.17	0.039	(0.242)	0.015	0.024
33	2.75	0.17	0.039	(0.241)	0.015	0.024
34	2.83	0.17	0.039	(0.240)	0.015	0.024
35	2.92	0.17	0.039	(0.239)	0.015	0.024
36	3.00	0.17	0.039	(0.238)	0.015	0.024
37	3.08	0.17	0.039	(0.237)	0.015	0.024
38	3.17	0.17	0.039	(0.236)	0.015	0.024
39	3.25	0.17	0.039	(0.235)	0.015	0.024
40	3.33	0.17	0.039	(0.234)	0.015	0.024
41	3.42	0.17	0.039	(0.233)	0.015	0.024
42	3.50	0.17	0.039	(0.232)	0.015	0.024
43	3.58	0.17	0.039	(0.232)	0.015	0.024
44	3.67	0.17	0.039	(0.231)	0.015	0.024
45	3.75	0.17	0.039	(0.230)	0.015	0.024
46	3.83	0.20	0.046	(0.229)	0.018	0.029
47	3.92	0.20	0.046	(0.228)	0.018	0.029
48	4.00	0.20	0.046	(0.227)	0.018	0.029
49	4.08	0.20	0.046	(0.226)	0.018	0.029
50	4.17	0.20	0.046	(0.225)	0.018	0.029
51	4.25	0.20	0.046	(0.224)	0.018	0.029
52	4.33	0.23	0.054	(0.223)	0.021	0.034
53	4.42	0.23	0.054	(0.222)	0.021	0.034
54	4.50	0.23	0.054	(0.221)	0.021	0.034
55	4.58	0.23	0.054	(0.220)	0.021	0.034
56	4.67	0.23	0.054	(0.219)	0.021	0.034
57	4.75	0.23	0.054	(0.218)	0.021	0.034
58	4.83	0.27	0.062	(0.217)	0.023	0.038

59	4.92	0.27	0.062	(0.216)	0.023	0.038
60	5.00	0.27	0.062	(0.215)	0.023	0.038
61	5.08	0.20	0.046	(0.214)	0.018	0.029
62	5.17	0.20	0.046	(0.213)	0.018	0.029
63	5.25	0.20	0.046	(0.212)	0.018	0.029
64	5.33	0.23	0.054	(0.212)	0.021	0.034
65	5.42	0.23	0.054	(0.211)	0.021	0.034
66	5.50	0.23	0.054	(0.210)	0.021	0.034
67	5.58	0.27	0.062	(0.209)	0.023	0.038
68	5.67	0.27	0.062	(0.208)	0.023	0.038
69	5.75	0.27	0.062	(0.207)	0.023	0.038
70	5.83	0.27	0.062	(0.206)	0.023	0.038
71	5.92	0.27	0.062	(0.205)	0.023	0.038
72	6.00	0.27	0.062	(0.204)	0.023	0.038
73	6.08	0.30	0.069	(0.203)	0.026	0.043
74	6.17	0.30	0.069	(0.202)	0.026	0.043
75	6.25	0.30	0.069	(0.202)	0.026	0.043
76	6.33	0.30	0.069	(0.201)	0.026	0.043
77	6.42	0.30	0.069	(0.200)	0.026	0.043
78	6.50	0.30	0.069	(0.199)	0.026	0.043
79	6.58	0.33	0.077	(0.198)	0.029	0.048
80	6.67	0.33	0.077	(0.197)	0.029	0.048
81	6.75	0.33	0.077	(0.196)	0.029	0.048
82	6.83	0.33	0.077	(0.195)	0.029	0.048
83	6.92	0.33	0.077	(0.194)	0.029	0.048
84	7.00	0.33	0.077	(0.193)	0.029	0.048
85	7.08	0.33	0.077	(0.193)	0.029	0.048
86	7.17	0.33	0.077	(0.192)	0.029	0.048
87	7.25	0.33	0.077	(0.191)	0.029	0.048
88	7.33	0.37	0.085	(0.190)	0.032	0.053
89	7.42	0.37	0.085	(0.189)	0.032	0.053
90	7.50	0.37	0.085	(0.188)	0.032	0.053
91	7.58	0.40	0.093	(0.187)	0.035	0.057
92	7.67	0.40	0.093	(0.187)	0.035	0.057
93	7.75	0.40	0.093	(0.186)	0.035	0.057
94	7.83	0.43	0.100	(0.185)	0.038	0.062
95	7.92	0.43	0.100	(0.184)	0.038	0.062
96	8.00	0.43	0.100	(0.183)	0.038	0.062
97	8.08	0.50	0.116	(0.182)	0.044	0.072
98	8.17	0.50	0.116	(0.181)	0.044	0.072
99	8.25	0.50	0.116	(0.181)	0.044	0.072
100	8.33	0.50	0.116	(0.180)	0.044	0.072
101	8.42	0.50	0.116	(0.179)	0.044	0.072
102	8.50	0.50	0.116	(0.178)	0.044	0.072
103	8.58	0.53	0.124	(0.177)	0.047	0.077
104	8.67	0.53	0.124	(0.176)	0.047	0.077
105	8.75	0.53	0.124	(0.176)	0.047	0.077
106	8.83	0.57	0.131	(0.175)	0.050	0.081
107	8.92	0.57	0.131	(0.174)	0.050	0.081
108	9.00	0.57	0.131	(0.173)	0.050	0.081
109	9.08	0.63	0.147	(0.172)	0.056	0.091
110	9.17	0.63	0.147	(0.171)	0.056	0.091
111	9.25	0.63	0.147	(0.171)	0.056	0.091
112	9.33	0.67	0.154	(0.170)	0.059	0.096
113	9.42	0.67	0.154	(0.169)	0.059	0.096
114	9.50	0.67	0.154	(0.168)	0.059	0.096
115	9.58	0.70	0.162	(0.167)	0.062	0.101
116	9.67	0.70	0.162	(0.167)	0.062	0.101
117	9.75	0.70	0.162	(0.166)	0.062	0.101
118	9.83	0.73	0.170	(0.165)	0.065	0.105

119	9.92	0.73	0.170	(0.164)	0.065	0.105
120	10.00	0.73	0.170	(0.163)	0.065	0.105
121	10.08	0.50	0.116	(0.163)	0.044	0.072
122	10.17	0.50	0.116	(0.162)	0.044	0.072
123	10.25	0.50	0.116	(0.161)	0.044	0.072
124	10.33	0.50	0.116	(0.160)	0.044	0.072
125	10.42	0.50	0.116	(0.159)	0.044	0.072
126	10.50	0.50	0.116	(0.159)	0.044	0.072
127	10.58	0.67	0.154	(0.158)	0.059	0.096
128	10.67	0.67	0.154	(0.157)	0.059	0.096
129	10.75	0.67	0.154	(0.156)	0.059	0.096
130	10.83	0.67	0.154	(0.156)	0.059	0.096
131	10.92	0.67	0.154	(0.155)	0.059	0.096
132	11.00	0.67	0.154	(0.154)	0.059	0.096
133	11.08	0.63	0.147	(0.153)	0.056	0.091
134	11.17	0.63	0.147	(0.153)	0.056	0.091
135	11.25	0.63	0.147	(0.152)	0.056	0.091
136	11.33	0.63	0.147	(0.151)	0.056	0.091
137	11.42	0.63	0.147	(0.150)	0.056	0.091
138	11.50	0.63	0.147	(0.150)	0.056	0.091
139	11.58	0.57	0.131	(0.149)	0.050	0.081
140	11.67	0.57	0.131	(0.148)	0.050	0.081
141	11.75	0.57	0.131	(0.147)	0.050	0.081
142	11.83	0.60	0.139	(0.147)	0.053	0.086
143	11.92	0.60	0.139	(0.146)	0.053	0.086
144	12.00	0.60	0.139	(0.145)	0.053	0.086
145	12.08	0.83	0.193	(0.144)	0.073	0.120
146	12.17	0.83	0.193	(0.144)	0.073	0.120
147	12.25	0.83	0.193	(0.143)	0.073	0.120
148	12.33	0.87	0.201	(0.142)	0.076	0.124
149	12.42	0.87	0.201	(0.142)	0.076	0.124
150	12.50	0.87	0.201	(0.141)	0.076	0.124
151	12.58	0.93	0.216	(0.140)	0.082	0.134
152	12.67	0.93	0.216	(0.139)	0.082	0.134
153	12.75	0.93	0.216	(0.139)	0.082	0.134
154	12.83	0.97	0.224	(0.138)	0.085	0.139
155	12.92	0.97	0.224	(0.137)	0.085	0.139
156	13.00	0.97	0.224	(0.137)	0.085	0.139
157	13.08	1.13	0.262	(0.136)	0.100	0.163
158	13.17	1.13	0.262	(0.135)	0.100	0.163
159	13.25	1.13	0.262	(0.135)	0.100	0.163
160	13.33	1.13	0.262	(0.134)	0.100	0.163
161	13.42	1.13	0.262	(0.133)	0.100	0.163
162	13.50	1.13	0.262	(0.133)	0.100	0.163
163	13.58	0.77	0.178	(0.132)	0.067	0.110
164	13.67	0.77	0.178	(0.131)	0.067	0.110
165	13.75	0.77	0.178	(0.130)	0.067	0.110
166	13.83	0.77	0.178	(0.130)	0.067	0.110
167	13.92	0.77	0.178	(0.129)	0.067	0.110
168	14.00	0.77	0.178	(0.129)	0.067	0.110
169	14.08	0.90	0.208	(0.128)	0.079	0.129
170	14.17	0.90	0.208	(0.127)	0.079	0.129
171	14.25	0.90	0.208	(0.127)	0.079	0.129
172	14.33	0.87	0.201	(0.126)	0.076	0.124
173	14.42	0.87	0.201	(0.125)	0.076	0.124
174	14.50	0.87	0.201	(0.125)	0.076	0.124
175	14.58	0.87	0.201	(0.124)	0.076	0.124
176	14.67	0.87	0.201	(0.123)	0.076	0.124
177	14.75	0.87	0.201	(0.123)	0.076	0.124
178	14.83	0.83	0.193	(0.122)	0.073	0.120

179	14.92	0.83	0.193	(0.121)	0.073	0.120
180	15.00	0.83	0.193	(0.121)	0.073	0.120
181	15.08	0.80	0.185	(0.120)	0.070	0.115
182	15.17	0.80	0.185	(0.120)	0.070	0.115
183	15.25	0.80	0.185	(0.119)	0.070	0.115
184	15.33	0.77	0.178	(0.118)	0.067	0.110
185	15.42	0.77	0.178	(0.118)	0.067	0.110
186	15.50	0.77	0.178	(0.117)	0.067	0.110
187	15.58	0.63	0.147	(0.117)	0.056	0.091
188	15.67	0.63	0.147	(0.116)	0.056	0.091
189	15.75	0.63	0.147	(0.115)	0.056	0.091
190	15.83	0.63	0.147	(0.115)	0.056	0.091
191	15.92	0.63	0.147	(0.114)	0.056	0.091
192	16.00	0.63	0.147	(0.114)	0.056	0.091
193	16.08	0.13	0.031	(0.113)	0.012	0.019
194	16.17	0.13	0.031	(0.112)	0.012	0.019
195	16.25	0.13	0.031	(0.112)	0.012	0.019
196	16.33	0.13	0.031	(0.111)	0.012	0.019
197	16.42	0.13	0.031	(0.111)	0.012	0.019
198	16.50	0.13	0.031	(0.110)	0.012	0.019
199	16.58	0.10	0.023	(0.110)	0.009	0.014
200	16.67	0.10	0.023	(0.109)	0.009	0.014
201	16.75	0.10	0.023	(0.109)	0.009	0.014
202	16.83	0.10	0.023	(0.108)	0.009	0.014
203	16.92	0.10	0.023	(0.107)	0.009	0.014
204	17.00	0.10	0.023	(0.107)	0.009	0.014
205	17.08	0.17	0.039	(0.106)	0.015	0.024
206	17.17	0.17	0.039	(0.106)	0.015	0.024
207	17.25	0.17	0.039	(0.105)	0.015	0.024
208	17.33	0.17	0.039	(0.105)	0.015	0.024
209	17.42	0.17	0.039	(0.104)	0.015	0.024
210	17.50	0.17	0.039	(0.104)	0.015	0.024
211	17.58	0.17	0.039	(0.103)	0.015	0.024
212	17.67	0.17	0.039	(0.103)	0.015	0.024
213	17.75	0.17	0.039	(0.102)	0.015	0.024
214	17.83	0.13	0.031	(0.102)	0.012	0.019
215	17.92	0.13	0.031	(0.101)	0.012	0.019
216	18.00	0.13	0.031	(0.101)	0.012	0.019
217	18.08	0.13	0.031	(0.100)	0.012	0.019
218	18.17	0.13	0.031	(0.100)	0.012	0.019
219	18.25	0.13	0.031	(0.099)	0.012	0.019
220	18.33	0.13	0.031	(0.099)	0.012	0.019
221	18.42	0.13	0.031	(0.098)	0.012	0.019
222	18.50	0.13	0.031	(0.098)	0.012	0.019
223	18.58	0.10	0.023	(0.097)	0.009	0.014
224	18.67	0.10	0.023	(0.097)	0.009	0.014
225	18.75	0.10	0.023	(0.096)	0.009	0.014
226	18.83	0.07	0.015	(0.096)	0.006	0.010
227	18.92	0.07	0.015	(0.095)	0.006	0.010
228	19.00	0.07	0.015	(0.095)	0.006	0.010
229	19.08	0.10	0.023	(0.094)	0.009	0.014
230	19.17	0.10	0.023	(0.094)	0.009	0.014
231	19.25	0.10	0.023	(0.094)	0.009	0.014
232	19.33	0.13	0.031	(0.093)	0.012	0.019
233	19.42	0.13	0.031	(0.093)	0.012	0.019
234	19.50	0.13	0.031	(0.092)	0.012	0.019
235	19.58	0.10	0.023	(0.092)	0.009	0.014
236	19.67	0.10	0.023	(0.091)	0.009	0.014
237	19.75	0.10	0.023	(0.091)	0.009	0.014
238	19.83	0.07	0.015	(0.091)	0.006	0.010

239	19.92	0.07	0.015	(0.090)	0.006	0.010
240	20.00	0.07	0.015	(0.090)	0.006	0.010
241	20.08	0.10	0.023	(0.089)	0.009	0.014
242	20.17	0.10	0.023	(0.089)	0.009	0.014
243	20.25	0.10	0.023	(0.089)	0.009	0.014
244	20.33	0.10	0.023	(0.088)	0.009	0.014
245	20.42	0.10	0.023	(0.088)	0.009	0.014
246	20.50	0.10	0.023	(0.088)	0.009	0.014
247	20.58	0.10	0.023	(0.087)	0.009	0.014
248	20.67	0.10	0.023	(0.087)	0.009	0.014
249	20.75	0.10	0.023	(0.086)	0.009	0.014
250	20.83	0.07	0.015	(0.086)	0.006	0.010
251	20.92	0.07	0.015	(0.086)	0.006	0.010
252	21.00	0.07	0.015	(0.085)	0.006	0.010
253	21.08	0.10	0.023	(0.085)	0.009	0.014
254	21.17	0.10	0.023	(0.085)	0.009	0.014
255	21.25	0.10	0.023	(0.084)	0.009	0.014
256	21.33	0.07	0.015	(0.084)	0.006	0.010
257	21.42	0.07	0.015	(0.084)	0.006	0.010
258	21.50	0.07	0.015	(0.083)	0.006	0.010
259	21.58	0.10	0.023	(0.083)	0.009	0.014
260	21.67	0.10	0.023	(0.083)	0.009	0.014
261	21.75	0.10	0.023	(0.083)	0.009	0.014
262	21.83	0.07	0.015	(0.082)	0.006	0.010
263	21.92	0.07	0.015	(0.082)	0.006	0.010
264	22.00	0.07	0.015	(0.082)	0.006	0.010
265	22.08	0.10	0.023	(0.081)	0.009	0.014
266	22.17	0.10	0.023	(0.081)	0.009	0.014
267	22.25	0.10	0.023	(0.081)	0.009	0.014
268	22.33	0.07	0.015	(0.081)	0.006	0.010
269	22.42	0.07	0.015	(0.080)	0.006	0.010
270	22.50	0.07	0.015	(0.080)	0.006	0.010
271	22.58	0.07	0.015	(0.080)	0.006	0.010
272	22.67	0.07	0.015	(0.080)	0.006	0.010
273	22.75	0.07	0.015	(0.079)	0.006	0.010
274	22.83	0.07	0.015	(0.079)	0.006	0.010
275	22.92	0.07	0.015	(0.079)	0.006	0.010
276	23.00	0.07	0.015	(0.079)	0.006	0.010
277	23.08	0.07	0.015	(0.079)	0.006	0.010
278	23.17	0.07	0.015	(0.079)	0.006	0.010
279	23.25	0.07	0.015	(0.078)	0.006	0.010
280	23.33	0.07	0.015	(0.078)	0.006	0.010
281	23.42	0.07	0.015	(0.078)	0.006	0.010
282	23.50	0.07	0.015	(0.078)	0.006	0.010
283	23.58	0.07	0.015	(0.078)	0.006	0.010
284	23.67	0.07	0.015	(0.078)	0.006	0.010
285	23.75	0.07	0.015	(0.078)	0.006	0.010
286	23.83	0.07	0.015	(0.077)	0.006	0.010
287	23.92	0.07	0.015	(0.077)	0.006	0.010
288	24.00	0.07	0.015	(0.077)	0.006	0.010

(Loss Rate Not Used)

Sum = 100.0 Sum = 14.4

Flood volume = Effective rainfall 1.20(In)
times area 10.9(Ac.)/[(In)/(Ft.)] = 1.1(Ac.Ft)
Total soil loss = 0.73(In)
Total soil loss = 0.666(Ac.Ft)
Total rainfall = 1.93(In)
Flood volume = 47344.9 Cubic Feet
Total soil loss = 29017.8 Cubic Feet

--
Peak flow rate of this hydrograph = 1.789(CFS)

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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

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Hydrograph in 5 Minute intervals ((CFS))

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Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0003	0.05	Q	|	|	|	|
0+10	0.0010	0.10	Q	|	|	|	|
0+15	0.0017	0.10	Q	|	|	|	|
0+20	0.0026	0.13	Q	|	|	|	|
0+25	0.0037	0.15	Q	|	|	|	|
0+30	0.0048	0.16	Q	|	|	|	|
0+35	0.0058	0.16	Q	|	|	|	|
0+40	0.0069	0.16	Q	|	|	|	|
0+45	0.0080	0.16	Q	|	|	|	|
0+50	0.0093	0.18	Q	|	|	|	|
0+55	0.0107	0.21	Q	|	|	|	|
1+ 0	0.0121	0.21	Q	|	|	|	|
1+ 5	0.0134	0.19	Q	|	|	|	|
1+10	0.0145	0.16	Q	|	|	|	|
1+15	0.0156	0.16	Q	|	|	|	|
1+20	0.0167	0.16	Q	|	|	|	|
1+25	0.0178	0.16	Q	|	|	|	|
1+30	0.0189	0.16	Q	|	|	|	|
1+35	0.0200	0.16	Q	|	|	|	|
1+40	0.0211	0.16	Q	|	|	|	|
1+45	0.0221	0.16	Q	|	|	|	|

```
      1+50       0.0234      0.18  Q          |         |         |
|
      1+55       0.0248      0.21  Q          |         |         |
|
      2+ 0       0.0263      0.21  Q          |         |         |
|
      2+ 5       0.0277      0.21  QV         |         |         |
|
      2+10       0.0292      0.21  QV         |         |         |
|
      2+15       0.0306      0.21  QV         |         |         |
|
      2+20       0.0321      0.21  QV         |         |         |
|
      2+25       0.0335      0.21  QV         |         |         |
|
      2+30       0.0350      0.21  QV         |         |         |
|
      2+35       0.0366      0.23  QV         |         |         |
|
      2+40       0.0384      0.26  |Q         |         |         |
|
      2+45       0.0402      0.26  |Q         |         |         |
|
      2+50       0.0420      0.26  |Q         |         |         |
|
      2+55       0.0438      0.26  |Q         |         |         |
|
      3+ 0       0.0456      0.26  |Q         |         |         |
|
      3+ 5       0.0474      0.26  |Q         |         |         |
|
      3+10       0.0492      0.26  |Q         |         |         |
|
      3+15       0.0510      0.26  |Q         |         |         |
|
      3+20       0.0529      0.26  |Q         |         |         |
|
      3+25       0.0547      0.26  |QV        |         |         |
|
      3+30       0.0565      0.26  |QV        |         |         |
|
      3+35       0.0583      0.26  |QV        |         |         |
|
      3+40       0.0601      0.26  |QV        |         |         |
|
      3+45       0.0619      0.26  |QV        |         |         |
|
      3+50       0.0639      0.29  |QV        |         |         |
|
      3+55       0.0660      0.31  |QV        |         |         |
|
      4+ 0       0.0682      0.32  |QV        |         |         |
|
      4+ 5       0.0704      0.32  |QV        |         |         |
|
      4+10       0.0725      0.32  |QV        |         |         |
|
      4+15       0.0747      0.32  |QV        |         |         |
|
```

```
        4+20        0.0771       0.34  |QV         |          |          |
|
        4+25        0.0796       0.36  |QV         |          |          |
|
        4+30        0.0821       0.37  |Q V        |          |          |
|
        4+35        0.0846       0.37  |Q V        |          |          |
|
        4+40        0.0872       0.37  |Q V        |          |          |
|
        4+45        0.0897       0.37  |Q V        |          |          |
|
        4+50        0.0924       0.39  |Q V        |          |          |
|
        4+55        0.0953       0.42  |Q V        |          |          |
|
        5+ 0        0.0982       0.42  |Q V        |          |          |
|
        5+ 5        0.1008       0.37  |Q V        |          |          |
|
        5+10        0.1030       0.32  |Q V        |          |          |
|
        5+15        0.1052       0.32  |Q V        |          |          |
|
        5+20        0.1075       0.34  |Q V        |          |          |
|
        5+25        0.1100       0.36  |Q  V       |          |          |
|
        5+30        0.1125       0.37  |Q  V       |          |          |
|
        5+35        0.1152       0.39  |Q  V       |          |          |
|
        5+40        0.1181       0.42  |Q  V       |          |          |
|
        5+45        0.1210       0.42  |Q  V       |          |          |
|
        5+50        0.1239       0.42  |Q  V       |          |          |
|
        5+55        0.1268       0.42  |Q  V       |          |          |
|
        6+ 0        0.1297       0.42  |Q  V       |          |          |
|
        6+ 5        0.1328       0.44  |Q  V       |          |          |
|
        6+10        0.1360       0.47  |Q   V      |          |          |
|
        6+15        0.1393       0.47  |Q   V      |          |          |
|
        6+20        0.1425       0.47  |Q   V      |          |          |
|
        6+25        0.1458       0.47  |Q   V      |          |          |
|
        6+30        0.1490       0.47  |Q   V      |          |          |
|
        6+35        0.1525       0.50  |Q   V      |          |          |
|
        6+40        0.1561       0.52  | Q  V      |          |          |
|
        6+45        0.1597       0.53  | Q  V      |          |          |
|
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    6+50       0.1633      0.53  | Q   V   |         |         |
|
    6+55       0.1669      0.53  | Q   V   |         |         |
|
    7+ 0       0.1706      0.53  | Q   V   |         |         |
|
    7+ 5       0.1742      0.53  | Q   V   |         |         |
|
    7+10       0.1778      0.53  | Q   V   |         |         |
|
    7+15       0.1814      0.53  | Q   V   |         |         |
|
    7+20       0.1852      0.55  | Q   V   |         |         |
|
    7+25       0.1892      0.58  | Q   V   |         |         |
|
    7+30       0.1931      0.58  | Q    V  |         |         |
|
    7+35       0.1973      0.60  | Q    V  |         |         |
|
    7+40       0.2016      0.63  | Q    V  |         |         |
|
    7+45       0.2060      0.63  | Q    V  |         |         |
|
    7+50       0.2105      0.65  | Q    V  |         |         |
|
    7+55       0.2152      0.68  | Q    V  |         |         |
|
    8+ 0       0.2199      0.68  | Q     V |         |         |
|
    8+ 5       0.2249      0.73  | Q     V |         |         |
|
    8+10       0.2303      0.78  |  Q    V |         |         |
|
    8+15       0.2357      0.79  |  Q    V |         |         |
|
    8+20       0.2412      0.79  |  Q    V |         |         |
|
    8+25       0.2466      0.79  |  Q     V|         |         |
|
    8+30       0.2520      0.79  |  Q     V|         |         |
|
    8+35       0.2576      0.81  |  Q     V|         |         |
|
    8+40       0.2634      0.84  |  Q     V|         |         |
|
    8+45       0.2692      0.84  |  Q     V|         |         |
|
    8+50       0.2751      0.87  |  Q      V         |         |
|
    8+55       0.2813      0.89  |  Q      V         |         |
|
    9+ 0       0.2874      0.89  |  Q      V         |         |
|
    9+ 5       0.2939      0.94  |  Q      V         |         |
|
    9+10       0.3008      0.99  |  Q      |V        |         |
|
    9+15       0.3076      1.00  |  Q      |V        |         |
|
```

```
    9+20       0.3147      1.02  |   Q     |V        |         |
|
    9+25       0.3219      1.05  |   Q     |V        |         |
|
    9+30       0.3291      1.05  |   Q     | V       |         |
|
    9+35       0.3366      1.08  |   Q     | V       |         |
|
    9+40       0.3441      1.10  |   Q     | V       |         |
|
    9+45       0.3517      1.10  |   Q     | V       |         |
|
    9+50       0.3595      1.13  |   Q     |  V      |         |
|
    9+55       0.3675      1.15  |   Q     |  V      |         |
|
   10+ 0       0.3754      1.16  |   Q     |  V      |         |
|
   10+ 5       0.3823      0.99  |  Q      |   V     |         |
|
   10+10       0.3879      0.81  |  Q      |   V     |         |
|
   10+15       0.3933      0.79  |  Q      |   V     |         |
|
   10+20       0.3988      0.79  |  Q      |   V     |         |
|
   10+25       0.4042      0.79  |  Q      |   V     |         |
|
   10+30       0.4096      0.79  |  Q      |    V    |         |
|
   10+35       0.4159      0.91  |  Q      |    V    |         |
|
   10+40       0.4230      1.04  |   Q     |    V    |         |
|
   10+45       0.4302      1.05  |   Q     |    V    |         |
|
   10+50       0.4375      1.05  |   Q     |     V   |         |
|
   10+55       0.4447      1.05  |   Q     |     V   |         |
|
   11+ 0       0.4520      1.05  |   Q     |     V   |         |
|
   11+ 5       0.4590      1.03  |   Q     |     V   |         |
|
   11+10       0.4660      1.00  |   Q     |      V  |         |
|
   11+15       0.4728      1.00  |  Q      |      V  |         |
|
   11+20       0.4797      1.00  |  Q      |      V  |         |
|
   11+25       0.4866      1.00  |  Q      |      V  |         |
|
   11+30       0.4935      1.00  |  Q      |       V |         |
|
   11+35       0.5001      0.95  |  Q      |       V |         |
|
   11+40       0.5063      0.90  |  Q      |       V |         |
|
   11+45       0.5124      0.90  |  Q      |       V |         |
|
```

```
   11+50       0.5187      0.92  |  Q      |        V|         |
|
   11+55       0.5252      0.94  |  Q      |        V|         |
|
   12+ 0       0.5318      0.95  |  Q      |        V|         |
|
   12+ 5       0.5394      1.11  |   Q     |        V|         |
|
   12+10       0.5483      1.29  |    Q    |         V         |
|
   12+15       0.5573      1.31  |    Q    |         V         |
|
   12+20       0.5666      1.34  |    Q    |         V         |
|
   12+25       0.5760      1.36  |    Q    |         |V        |
|
   12+30       0.5854      1.37  |    Q    |         |V        |
|
   12+35       0.5951      1.41  |    Q    |         |V        |
|
   12+40       0.6052      1.47  |    Q    |         | V       |
|
   12+45       0.6154      1.47  |    Q    |         | V       |
|
   12+50       0.6257      1.50  |    Q    |         |  V      |
|
   12+55       0.6362      1.52  |     Q   |         |  V      |
|
   13+ 0       0.6467      1.53  |     Q   |         |  V      |
|
   13+ 5       0.6580      1.64  |     Q   |         |   V     |
|
   13+10       0.6702      1.77  |      Q  |         |   V     |
|
   13+15       0.6825      1.79  |      Q  |         |    V    |
|
   13+20       0.6948      1.79  |      Q  |         |    V    |
|
   13+25       0.7071      1.79  |      Q  |         |     V   |
|
   13+30       0.7194      1.79  |      Q  |         |     V   |
|
   13+35       0.7300      1.53  |     Q   |         |     V   |
|
   13+40       0.7386      1.25  |   Q     |         |      V  |
|
   13+45       0.7469      1.21  |   Q     |         |      V  |
|
   13+50       0.7553      1.21  |   Q     |         |      V  |
|
   13+55       0.7636      1.21  |   Q     |         |       V |
|
   14+ 0       0.7719      1.21  |   Q     |         |       V |
|
   14+ 5       0.7809      1.30  |    Q    |         |       V |
|
   14+10       0.7906      1.41  |    Q    |         |        V|
|
   14+15       0.8004      1.42  |    Q    |         |        V|
|
```

```
   14+20       0.8100      1.40  |    Q    |         |        V|
|
   14+25       0.8194      1.37  |    Q    |         |         V
|
   14+30       0.8288      1.37  |    Q    |         |         V
|
   14+35       0.8383      1.37  |    Q    |         |         V
|
   14+40       0.8477      1.37  |    Q    |         |         |V
|
   14+45       0.8571      1.37  |    Q    |         |         |V
|
   14+50       0.8664      1.34  |    Q    |         |         |V
|
   14+55       0.8754      1.32  |    Q    |         |         | V
|
   15+ 0       0.8845      1.32  |    Q    |         |         | V
|
   15+ 5       0.8934      1.29  |    Q    |         |         | V
|
   15+10       0.9021      1.27  |    Q    |         |         |  V
|
   15+15       0.9108      1.26  |    Q    |         |         |  V
|
   15+20       0.9193      1.24  |   Q     |         |         |  V
|
   15+25       0.9277      1.21  |   Q     |         |         |   V
|
   15+30       0.9360      1.21  |   Q     |         |         |   V
|
   15+35       0.9437      1.12  |   Q     |         |         |   V
|
   15+40       0.9507      1.01  |   Q     |         |         |   V
|
   15+45       0.9576      1.00  |   Q     |         |         |    V
|
   15+50       0.9645      1.00  |  Q      |         |         |    V
|
   15+55       0.9714      1.00  |  Q      |         |         |    V
|
   16+ 0       0.9782      1.00  |  Q      |         |         |     V
|
   16+ 5       0.9827      0.65  | Q       |         |         |     V
|
   16+10       0.9845      0.26  |Q        |         |         |     V
|
   16+15       0.9860      0.22  Q         |         |         |     V
|
   16+20       0.9874      0.21  Q         |         |         |     V
|
   16+25       0.9889      0.21  Q         |         |         |     V
|
   16+30       0.9903      0.21  Q         |         |         |     V
|
   16+35       0.9916      0.19  Q         |         |         |     V
|
   16+40       0.9927      0.16  Q         |         |         |     V
|
   16+45       0.9938      0.16  Q         |         |         |     V
|
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16+50	0.9949	0.16	Q	|	|	|	V	|
16+55	0.9960	0.16	Q	|	|	|	V	|
17+ 0	0.9971	0.16	Q	|	|	|	V	|
17+ 5	0.9985	0.20	Q	|	|	|	V	|
17+10	1.0003	0.26	|Q	|	|	|	V	|
17+15	1.0021	0.26	|Q	|	|	|	V	|
17+20	1.0039	0.26	|Q	|	|	|	V	|
17+25	1.0057	0.26	|Q	|	|	|	V	|
17+30	1.0075	0.26	|Q	|	|	|	V	|
17+35	1.0093	0.26	|Q	|	|	|	V	|
17+40	1.0111	0.26	|Q	|	|	|	V	|
17+45	1.0129	0.26	|Q	|	|	|	V	|
17+50	1.0146	0.24	Q	|	|	|	V	|
17+55	1.0161	0.21	Q	|	|	|	V	|
18+ 0	1.0175	0.21	Q	|	|	|	V	|
18+ 5	1.0190	0.21	Q	|	|	|	V	|
18+10	1.0204	0.21	Q	|	|	|	V	|
18+15	1.0219	0.21	Q	|	|	|	V	|
18+20	1.0233	0.21	Q	|	|	|	V	|
18+25	1.0248	0.21	Q	|	|	|	V	|
18+30	1.0262	0.21	Q	|	|	|	V	|
18+35	1.0275	0.19	Q	|	|	|	V	|
18+40	1.0286	0.16	Q	|	|	|	V	|
18+45	1.0297	0.16	Q	|	|	|	V	|
18+50	1.0306	0.13	Q	|	|	|	V	|
18+55	1.0314	0.11	Q	|	|	|	V	|
19+ 0	1.0321	0.11	Q	|	|	|	V	|
19+ 5	1.0330	0.13	Q	|	|	|	V	|
19+10	1.0340	0.15	Q	|	|	|	V	|
19+15	1.0351	0.16	Q	|	|	|	V	|

```
   19+20       1.0364      0.18  Q         |         |         |       V
|
   19+25       1.0378      0.21  Q         |         |         |       V
|
   19+30       1.0392      0.21  Q         |         |         |       V
|
   19+35       1.0405      0.19  Q         |         |         |       V
|
   19+40       1.0416      0.16  Q         |         |         |       V
|
   19+45       1.0427      0.16  Q         |         |         |       V
|
   19+50       1.0437      0.13  Q         |         |         |       V
|
   19+55       1.0444      0.11  Q         |         |         |       V
|
   20+ 0       1.0451      0.11  Q         |         |         |       V
|
   20+ 5       1.0460      0.13  Q         |         |         |       V
|
   20+10       1.0471      0.15  Q         |         |         |       V
|
   20+15       1.0482      0.16  Q         |         |         |       V
|
   20+20       1.0493      0.16  Q         |         |         |       V
|
   20+25       1.0503      0.16  Q         |         |         |       V
|
   20+30       1.0514      0.16  Q         |         |         |       V
|
   20+35       1.0525      0.16  Q         |         |         |       V
|
   20+40       1.0536      0.16  Q         |         |         |       V
|
   20+45       1.0547      0.16  Q         |         |         |       V
|
   20+50       1.0556      0.13  Q         |         |         |       V
|
   20+55       1.0564      0.11  Q         |         |         |       V
|
   21+ 0       1.0571      0.11  Q         |         |         |       V
|
   21+ 5       1.0580      0.13  Q         |         |         |       V
|
   21+10       1.0590      0.15  Q         |         |         |       V
|
   21+15       1.0601      0.16  Q         |         |         |
V|
   21+20       1.0610      0.13  Q         |         |         |
V|
   21+25       1.0618      0.11  Q         |         |         |
V|
   21+30       1.0625      0.11  Q         |         |         |
V|
   21+35       1.0634      0.13  Q         |         |         |
V|
   21+40       1.0645      0.15  Q         |         |         |
V|
   21+45       1.0656      0.16  Q         |         |         |
V|
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      21+50      1.0665      0.13  Q          |          |          |
   V|
      21+55      1.0672      0.11  Q          |          |          |
   V|
      22+ 0      1.0680      0.11  Q          |          |          |
   V|
      22+ 5      1.0688      0.13  Q          |          |          |
   V|
      22+10      1.0699      0.15  Q          |          |          |
   V|
      22+15      1.0710      0.16  Q          |          |          |
   V|
      22+20      1.0719      0.13  Q          |          |          |
   V|
      22+25      1.0727      0.11  Q          |          |          |
   V|
      22+30      1.0734      0.11  Q          |          |          |
   V|
      22+35      1.0741      0.11  Q          |          |          |
   V|
      22+40      1.0748      0.11  Q          |          |          |
   V|
      22+45      1.0756      0.11  Q          |          |          |
   V|
      22+50      1.0763      0.11  Q          |          |          |
   V|
      22+55      1.0770      0.11  Q          |          |          |
   V|
      23+ 0      1.0777      0.11  Q          |          |          |
   V|
      23+ 5      1.0785      0.11  Q          |          |          |
   V|
      23+10      1.0792      0.11  Q          |          |          |
   V|
      23+15      1.0799      0.11  Q          |          |          |
   V|
      23+20      1.0806      0.11  Q          |          |          |
   V|
      23+25      1.0814      0.11  Q          |          |          |
   V|
      23+30      1.0821      0.11  Q          |          |          |
   V|
      23+35      1.0828      0.11  Q          |          |          |
   V|
      23+40      1.0835      0.11  Q          |          |          |
   V|
      23+45      1.0843      0.11  Q          |          |          |
   V|
      23+50      1.0850      0.11  Q          |          |          |
   V|
      23+55      1.0857      0.11  Q          |          |          |
   V|
      24+ 0      1.0864      0.11  Q          |          |          |
   V|
      24+ 5      1.0868      0.06  Q          |          |          |
   V|
      24+10      1.0869      0.01  Q          |          |          |
   V|
      24+15      1.0869      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 11/09/21 File: moval33post245.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area B

Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) = 0.017 Sq. Mi.
Length along longest watercourse = 1380.00(Ft.)
Length along longest watercourse measured to centroid = 828.00 (Ft.)
Length along longest watercourse = 0.261 Mi.
Length along longest watercourse measured to centroid = 0.157 Mi.
Difference in elevation = 52.00(Ft.)
Slope along watercourse = 198.9565 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.039 Hr.
Lag time = 2.35 Min.
25% of lag time = 0.59 Min.
40% of lag time = 0.94 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]

10.90	1.93	21.04

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
10.90	4.64	50.58

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 1.930(In)
Area Averaged 100-Year Rainfall = 4.640(In)

Point rain (area averaged) = 2.565(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.565(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
10.900	69.00	0.650

Total Area Entered = 10.90(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.650	0.155	1.000	0.155
					Sum (F) =	0.155

Area averaged mean soil loss (F) (In/Hr) = 0.155
Minimum soil loss rate ((In/Hr)) = 0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

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	213.048	44.793	4.921
2	0.167	426.095	48.755	5.356
3	0.250	639.143	5.617	0.617
4	0.333	852.190	0.835	0.092
			Sum = 100.000	Sum= 10.985

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	0.021	(0.274)	0.008	0.013
2	0.17	0.07	0.021	(0.273)	0.008	0.013
3	0.25	0.07	0.021	(0.272)	0.008	0.013
4	0.33	0.10	0.031	(0.271)	0.012	0.019
5	0.42	0.10	0.031	(0.270)	0.012	0.019
6	0.50	0.10	0.031	(0.269)	0.012	0.019
7	0.58	0.10	0.031	(0.268)	0.012	0.019
8	0.67	0.10	0.031	(0.267)	0.012	0.019
9	0.75	0.10	0.031	(0.266)	0.012	0.019
10	0.83	0.13	0.041	(0.265)	0.016	0.025
11	0.92	0.13	0.041	(0.264)	0.016	0.025
12	1.00	0.13	0.041	(0.263)	0.016	0.025
13	1.08	0.10	0.031	(0.262)	0.012	0.019
14	1.17	0.10	0.031	(0.261)	0.012	0.019
15	1.25	0.10	0.031	(0.260)	0.012	0.019
16	1.33	0.10	0.031	(0.259)	0.012	0.019
17	1.42	0.10	0.031	(0.258)	0.012	0.019
18	1.50	0.10	0.031	(0.257)	0.012	0.019
19	1.58	0.10	0.031	(0.255)	0.012	0.019
20	1.67	0.10	0.031	(0.254)	0.012	0.019
21	1.75	0.10	0.031	(0.253)	0.012	0.019
22	1.83	0.13	0.041	(0.252)	0.016	0.025
23	1.92	0.13	0.041	(0.251)	0.016	0.025
24	2.00	0.13	0.041	(0.250)	0.016	0.025
25	2.08	0.13	0.041	(0.249)	0.016	0.025
26	2.17	0.13	0.041	(0.248)	0.016	0.025
27	2.25	0.13	0.041	(0.247)	0.016	0.025
28	2.33	0.13	0.041	(0.246)	0.016	0.025
29	2.42	0.13	0.041	(0.245)	0.016	0.025
30	2.50	0.13	0.041	(0.244)	0.016	0.025
31	2.58	0.17	0.051	(0.243)	0.019	0.032
32	2.67	0.17	0.051	(0.242)	0.019	0.032
33	2.75	0.17	0.051	(0.241)	0.019	0.032
34	2.83	0.17	0.051	(0.240)	0.019	0.032
35	2.92	0.17	0.051	(0.239)	0.019	0.032
36	3.00	0.17	0.051	(0.238)	0.019	0.032
37	3.08	0.17	0.051	(0.237)	0.019	0.032
38	3.17	0.17	0.051	(0.236)	0.019	0.032
39	3.25	0.17	0.051	(0.235)	0.019	0.032
40	3.33	0.17	0.051	(0.234)	0.019	0.032
41	3.42	0.17	0.051	(0.233)	0.019	0.032
42	3.50	0.17	0.051	(0.232)	0.019	0.032
43	3.58	0.17	0.051	(0.232)	0.019	0.032
44	3.67	0.17	0.051	(0.231)	0.019	0.032
45	3.75	0.17	0.051	(0.230)	0.019	0.032
46	3.83	0.20	0.062	(0.229)	0.023	0.038
47	3.92	0.20	0.062	(0.228)	0.023	0.038
48	4.00	0.20	0.062	(0.227)	0.023	0.038
49	4.08	0.20	0.062	(0.226)	0.023	0.038
50	4.17	0.20	0.062	(0.225)	0.023	0.038
51	4.25	0.20	0.062	(0.224)	0.023	0.038
52	4.33	0.23	0.072	(0.223)	0.027	0.045
53	4.42	0.23	0.072	(0.222)	0.027	0.045
54	4.50	0.23	0.072	(0.221)	0.027	0.045
55	4.58	0.23	0.072	(0.220)	0.027	0.045
56	4.67	0.23	0.072	(0.219)	0.027	0.045
57	4.75	0.23	0.072	(0.218)	0.027	0.045
58	4.83	0.27	0.082	(0.217)	0.031	0.051

59	4.92	0.27	0.082	(0.216)	0.031	0.051
60	5.00	0.27	0.082	(0.215)	0.031	0.051
61	5.08	0.20	0.062	(0.214)	0.023	0.038
62	5.17	0.20	0.062	(0.213)	0.023	0.038
63	5.25	0.20	0.062	(0.212)	0.023	0.038
64	5.33	0.23	0.072	(0.212)	0.027	0.045
65	5.42	0.23	0.072	(0.211)	0.027	0.045
66	5.50	0.23	0.072	(0.210)	0.027	0.045
67	5.58	0.27	0.082	(0.209)	0.031	0.051
68	5.67	0.27	0.082	(0.208)	0.031	0.051
69	5.75	0.27	0.082	(0.207)	0.031	0.051
70	5.83	0.27	0.082	(0.206)	0.031	0.051
71	5.92	0.27	0.082	(0.205)	0.031	0.051
72	6.00	0.27	0.082	(0.204)	0.031	0.051
73	6.08	0.30	0.092	(0.203)	0.035	0.057
74	6.17	0.30	0.092	(0.202)	0.035	0.057
75	6.25	0.30	0.092	(0.202)	0.035	0.057
76	6.33	0.30	0.092	(0.201)	0.035	0.057
77	6.42	0.30	0.092	(0.200)	0.035	0.057
78	6.50	0.30	0.092	(0.199)	0.035	0.057
79	6.58	0.33	0.103	(0.198)	0.039	0.064
80	6.67	0.33	0.103	(0.197)	0.039	0.064
81	6.75	0.33	0.103	(0.196)	0.039	0.064
82	6.83	0.33	0.103	(0.195)	0.039	0.064
83	6.92	0.33	0.103	(0.194)	0.039	0.064
84	7.00	0.33	0.103	(0.193)	0.039	0.064
85	7.08	0.33	0.103	(0.193)	0.039	0.064
86	7.17	0.33	0.103	(0.192)	0.039	0.064
87	7.25	0.33	0.103	(0.191)	0.039	0.064
88	7.33	0.37	0.113	(0.190)	0.043	0.070
89	7.42	0.37	0.113	(0.189)	0.043	0.070
90	7.50	0.37	0.113	(0.188)	0.043	0.070
91	7.58	0.40	0.123	(0.187)	0.047	0.076
92	7.67	0.40	0.123	(0.187)	0.047	0.076
93	7.75	0.40	0.123	(0.186)	0.047	0.076
94	7.83	0.43	0.133	(0.185)	0.051	0.083
95	7.92	0.43	0.133	(0.184)	0.051	0.083
96	8.00	0.43	0.133	(0.183)	0.051	0.083
97	8.08	0.50	0.154	(0.182)	0.058	0.095
98	8.17	0.50	0.154	(0.181)	0.058	0.095
99	8.25	0.50	0.154	(0.181)	0.058	0.095
100	8.33	0.50	0.154	(0.180)	0.058	0.095
101	8.42	0.50	0.154	(0.179)	0.058	0.095
102	8.50	0.50	0.154	(0.178)	0.058	0.095
103	8.58	0.53	0.164	(0.177)	0.062	0.102
104	8.67	0.53	0.164	(0.176)	0.062	0.102
105	8.75	0.53	0.164	(0.176)	0.062	0.102
106	8.83	0.57	0.174	(0.175)	0.066	0.108
107	8.92	0.57	0.174	(0.174)	0.066	0.108
108	9.00	0.57	0.174	(0.173)	0.066	0.108
109	9.08	0.63	0.195	(0.172)	0.074	0.121
110	9.17	0.63	0.195	(0.171)	0.074	0.121
111	9.25	0.63	0.195	(0.171)	0.074	0.121
112	9.33	0.67	0.205	(0.170)	0.078	0.127
113	9.42	0.67	0.205	(0.169)	0.078	0.127
114	9.50	0.67	0.205	(0.168)	0.078	0.127
115	9.58	0.70	0.215	(0.167)	0.082	0.134
116	9.67	0.70	0.215	(0.167)	0.082	0.134
117	9.75	0.70	0.215	(0.166)	0.082	0.134
118	9.83	0.73	0.226	(0.165)	0.086	0.140

119	9.92	0.73	0.226	(0.164)	0.086	0.140
120	10.00	0.73	0.226	(0.163)	0.086	0.140
121	10.08	0.50	0.154	(0.163)	0.058	0.095
122	10.17	0.50	0.154	(0.162)	0.058	0.095
123	10.25	0.50	0.154	(0.161)	0.058	0.095
124	10.33	0.50	0.154	(0.160)	0.058	0.095
125	10.42	0.50	0.154	(0.159)	0.058	0.095
126	10.50	0.50	0.154	(0.159)	0.058	0.095
127	10.58	0.67	0.205	(0.158)	0.078	0.127
128	10.67	0.67	0.205	(0.157)	0.078	0.127
129	10.75	0.67	0.205	(0.156)	0.078	0.127
130	10.83	0.67	0.205	(0.156)	0.078	0.127
131	10.92	0.67	0.205	(0.155)	0.078	0.127
132	11.00	0.67	0.205	(0.154)	0.078	0.127
133	11.08	0.63	0.195	(0.153)	0.074	0.121
134	11.17	0.63	0.195	(0.153)	0.074	0.121
135	11.25	0.63	0.195	(0.152)	0.074	0.121
136	11.33	0.63	0.195	(0.151)	0.074	0.121
137	11.42	0.63	0.195	(0.150)	0.074	0.121
138	11.50	0.63	0.195	(0.150)	0.074	0.121
139	11.58	0.57	0.174	(0.149)	0.066	0.108
140	11.67	0.57	0.174	(0.148)	0.066	0.108
141	11.75	0.57	0.174	(0.147)	0.066	0.108
142	11.83	0.60	0.185	(0.147)	0.070	0.114
143	11.92	0.60	0.185	(0.146)	0.070	0.114
144	12.00	0.60	0.185	(0.145)	0.070	0.114
145	12.08	0.83	0.256	(0.144)	0.097	0.159
146	12.17	0.83	0.256	(0.144)	0.097	0.159
147	12.25	0.83	0.256	(0.143)	0.097	0.159
148	12.33	0.87	0.267	(0.142)	0.101	0.165
149	12.42	0.87	0.267	(0.142)	0.101	0.165
150	12.50	0.87	0.267	(0.141)	0.101	0.165
151	12.58	0.93	0.287	(0.140)	0.109	0.178
152	12.67	0.93	0.287	(0.139)	0.109	0.178
153	12.75	0.93	0.287	(0.139)	0.109	0.178
154	12.83	0.97	0.298	(0.138)	0.113	0.184
155	12.92	0.97	0.298	(0.137)	0.113	0.184
156	13.00	0.97	0.298	(0.137)	0.113	0.184
157	13.08	1.13	0.349	(0.136)	0.133	0.216
158	13.17	1.13	0.349	(0.135)	0.133	0.216
159	13.25	1.13	0.349	(0.135)	0.133	0.216
160	13.33	1.13	0.349	(0.134)	0.133	0.216
161	13.42	1.13	0.349	(0.133)	0.133	0.216
162	13.50	1.13	0.349	0.133	(0.133)	0.216
163	13.58	0.77	0.236	(0.132)	0.090	0.146
164	13.67	0.77	0.236	(0.131)	0.090	0.146
165	13.75	0.77	0.236	(0.130)	0.090	0.146
166	13.83	0.77	0.236	(0.130)	0.090	0.146
167	13.92	0.77	0.236	(0.129)	0.090	0.146
168	14.00	0.77	0.236	(0.129)	0.090	0.146
169	14.08	0.90	0.277	(0.128)	0.105	0.172
170	14.17	0.90	0.277	(0.127)	0.105	0.172
171	14.25	0.90	0.277	(0.127)	0.105	0.172
172	14.33	0.87	0.267	(0.126)	0.101	0.165
173	14.42	0.87	0.267	(0.125)	0.101	0.165
174	14.50	0.87	0.267	(0.125)	0.101	0.165
175	14.58	0.87	0.267	(0.124)	0.101	0.165
176	14.67	0.87	0.267	(0.123)	0.101	0.165
177	14.75	0.87	0.267	(0.123)	0.101	0.165
178	14.83	0.83	0.256	(0.122)	0.097	0.159

179	14.92	0.83	0.256	(0.121)	0.097	0.159
180	15.00	0.83	0.256	(0.121)	0.097	0.159
181	15.08	0.80	0.246	(0.120)	0.094	0.153
182	15.17	0.80	0.246	(0.120)	0.094	0.153
183	15.25	0.80	0.246	(0.119)	0.094	0.153
184	15.33	0.77	0.236	(0.118)	0.090	0.146
185	15.42	0.77	0.236	(0.118)	0.090	0.146
186	15.50	0.77	0.236	(0.117)	0.090	0.146
187	15.58	0.63	0.195	(0.117)	0.074	0.121
188	15.67	0.63	0.195	(0.116)	0.074	0.121
189	15.75	0.63	0.195	(0.115)	0.074	0.121
190	15.83	0.63	0.195	(0.115)	0.074	0.121
191	15.92	0.63	0.195	(0.114)	0.074	0.121
192	16.00	0.63	0.195	(0.114)	0.074	0.121
193	16.08	0.13	0.041	(0.113)	0.016	0.025
194	16.17	0.13	0.041	(0.112)	0.016	0.025
195	16.25	0.13	0.041	(0.112)	0.016	0.025
196	16.33	0.13	0.041	(0.111)	0.016	0.025
197	16.42	0.13	0.041	(0.111)	0.016	0.025
198	16.50	0.13	0.041	(0.110)	0.016	0.025
199	16.58	0.10	0.031	(0.110)	0.012	0.019
200	16.67	0.10	0.031	(0.109)	0.012	0.019
201	16.75	0.10	0.031	(0.109)	0.012	0.019
202	16.83	0.10	0.031	(0.108)	0.012	0.019
203	16.92	0.10	0.031	(0.107)	0.012	0.019
204	17.00	0.10	0.031	(0.107)	0.012	0.019
205	17.08	0.17	0.051	(0.106)	0.019	0.032
206	17.17	0.17	0.051	(0.106)	0.019	0.032
207	17.25	0.17	0.051	(0.105)	0.019	0.032
208	17.33	0.17	0.051	(0.105)	0.019	0.032
209	17.42	0.17	0.051	(0.104)	0.019	0.032
210	17.50	0.17	0.051	(0.104)	0.019	0.032
211	17.58	0.17	0.051	(0.103)	0.019	0.032
212	17.67	0.17	0.051	(0.103)	0.019	0.032
213	17.75	0.17	0.051	(0.102)	0.019	0.032
214	17.83	0.13	0.041	(0.102)	0.016	0.025
215	17.92	0.13	0.041	(0.101)	0.016	0.025
216	18.00	0.13	0.041	(0.101)	0.016	0.025
217	18.08	0.13	0.041	(0.100)	0.016	0.025
218	18.17	0.13	0.041	(0.100)	0.016	0.025
219	18.25	0.13	0.041	(0.099)	0.016	0.025
220	18.33	0.13	0.041	(0.099)	0.016	0.025
221	18.42	0.13	0.041	(0.098)	0.016	0.025
222	18.50	0.13	0.041	(0.098)	0.016	0.025
223	18.58	0.10	0.031	(0.097)	0.012	0.019
224	18.67	0.10	0.031	(0.097)	0.012	0.019
225	18.75	0.10	0.031	(0.096)	0.012	0.019
226	18.83	0.07	0.021	(0.096)	0.008	0.013
227	18.92	0.07	0.021	(0.095)	0.008	0.013
228	19.00	0.07	0.021	(0.095)	0.008	0.013
229	19.08	0.10	0.031	(0.094)	0.012	0.019
230	19.17	0.10	0.031	(0.094)	0.012	0.019
231	19.25	0.10	0.031	(0.094)	0.012	0.019
232	19.33	0.13	0.041	(0.093)	0.016	0.025
233	19.42	0.13	0.041	(0.093)	0.016	0.025
234	19.50	0.13	0.041	(0.092)	0.016	0.025
235	19.58	0.10	0.031	(0.092)	0.012	0.019
236	19.67	0.10	0.031	(0.091)	0.012	0.019
237	19.75	0.10	0.031	(0.091)	0.012	0.019
238	19.83	0.07	0.021	(0.091)	0.008	0.013

239	19.92	0.07	0.021	(0.090)	0.008	0.013
240	20.00	0.07	0.021	(0.090)	0.008	0.013
241	20.08	0.10	0.031	(0.089)	0.012	0.019
242	20.17	0.10	0.031	(0.089)	0.012	0.019
243	20.25	0.10	0.031	(0.089)	0.012	0.019
244	20.33	0.10	0.031	(0.088)	0.012	0.019
245	20.42	0.10	0.031	(0.088)	0.012	0.019
246	20.50	0.10	0.031	(0.088)	0.012	0.019
247	20.58	0.10	0.031	(0.087)	0.012	0.019
248	20.67	0.10	0.031	(0.087)	0.012	0.019
249	20.75	0.10	0.031	(0.086)	0.012	0.019
250	20.83	0.07	0.021	(0.086)	0.008	0.013
251	20.92	0.07	0.021	(0.086)	0.008	0.013
252	21.00	0.07	0.021	(0.085)	0.008	0.013
253	21.08	0.10	0.031	(0.085)	0.012	0.019
254	21.17	0.10	0.031	(0.085)	0.012	0.019
255	21.25	0.10	0.031	(0.084)	0.012	0.019
256	21.33	0.07	0.021	(0.084)	0.008	0.013
257	21.42	0.07	0.021	(0.084)	0.008	0.013
258	21.50	0.07	0.021	(0.083)	0.008	0.013
259	21.58	0.10	0.031	(0.083)	0.012	0.019
260	21.67	0.10	0.031	(0.083)	0.012	0.019
261	21.75	0.10	0.031	(0.083)	0.012	0.019
262	21.83	0.07	0.021	(0.082)	0.008	0.013
263	21.92	0.07	0.021	(0.082)	0.008	0.013
264	22.00	0.07	0.021	(0.082)	0.008	0.013
265	22.08	0.10	0.031	(0.081)	0.012	0.019
266	22.17	0.10	0.031	(0.081)	0.012	0.019
267	22.25	0.10	0.031	(0.081)	0.012	0.019
268	22.33	0.07	0.021	(0.081)	0.008	0.013
269	22.42	0.07	0.021	(0.080)	0.008	0.013
270	22.50	0.07	0.021	(0.080)	0.008	0.013
271	22.58	0.07	0.021	(0.080)	0.008	0.013
272	22.67	0.07	0.021	(0.080)	0.008	0.013
273	22.75	0.07	0.021	(0.079)	0.008	0.013
274	22.83	0.07	0.021	(0.079)	0.008	0.013
275	22.92	0.07	0.021	(0.079)	0.008	0.013
276	23.00	0.07	0.021	(0.079)	0.008	0.013
277	23.08	0.07	0.021	(0.079)	0.008	0.013
278	23.17	0.07	0.021	(0.079)	0.008	0.013
279	23.25	0.07	0.021	(0.078)	0.008	0.013
280	23.33	0.07	0.021	(0.078)	0.008	0.013
281	23.42	0.07	0.021	(0.078)	0.008	0.013
282	23.50	0.07	0.021	(0.078)	0.008	0.013
283	23.58	0.07	0.021	(0.078)	0.008	0.013
284	23.67	0.07	0.021	(0.078)	0.008	0.013
285	23.75	0.07	0.021	(0.078)	0.008	0.013
286	23.83	0.07	0.021	(0.077)	0.008	0.013
287	23.92	0.07	0.021	(0.077)	0.008	0.013
288	24.00	0.07	0.021	(0.077)	0.008	0.013

(Loss Rate Not Used)

Sum = 100.0 Sum = 19.1

Flood volume = Effective rainfall 1.59(In)
times area 10.9(Ac.)/[(In)/(Ft.)] = 1.4(Ac.Ft)
Total soil loss = 0.97(In)
Total soil loss = 0.885(Ac.Ft)
Total rainfall = 2.56(In)
Flood volume = 62916.0 Cubic Feet
Total soil loss = 38561.2 Cubic Feet

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Peak flow rate of this hydrograph = 2.377(CFS)

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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

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Hydrograph in 5 Minute intervals ((CFS))

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Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0004	0.06	Q	|	|	|	|
0+10	0.0013	0.13	Q	|	|	|	|
0+15	0.0023	0.14	Q	|	|	|	|
0+20	0.0035	0.17	Q	|	|	|	|
0+25	0.0049	0.21	Q	|	|	|	|
0+30	0.0063	0.21	Q	|	|	|	|
0+35	0.0078	0.21	Q	|	|	|	|
0+40	0.0092	0.21	Q	|	|	|	|
0+45	0.0107	0.21	Q	|	|	|	|
0+50	0.0123	0.24	Q	|	|	|	|
0+55	0.0142	0.28	VQ	|	|	|	|
1+ 0	0.0161	0.28	VQ	|	|	|	|
1+ 5	0.0178	0.25	Q	|	|	|	|
1+10	0.0193	0.21	Q	|	|	|	|
1+15	0.0208	0.21	Q	|	|	|	|
1+20	0.0222	0.21	Q	|	|	|	|
1+25	0.0237	0.21	Q	|	|	|	|
1+30	0.0251	0.21	Q	|	|	|	|
1+35	0.0265	0.21	Q	|	|	|	|
1+40	0.0280	0.21	Q	|	|	|	|
1+45	0.0294	0.21	Q	|	|	|	|

1+50	0.0311	0.24	Q	|	|	|
1+55	0.0330	0.28	VQ	|	|	|
2+ 0	0.0349	0.28	VQ	|	|	|
2+ 5	0.0368	0.28	|Q	|	|	|
2+10	0.0388	0.28	|Q	|	|	|
2+15	0.0407	0.28	|Q	|	|	|
2+20	0.0426	0.28	|Q	|	|	|
2+25	0.0445	0.28	|Q	|	|	|
2+30	0.0465	0.28	|Q	|	|	|
2+35	0.0486	0.31	|Q	|	|	|
2+40	0.0510	0.35	|Q	|	|	|
2+45	0.0534	0.35	|Q	|	|	|
2+50	0.0558	0.35	|Q	|	|	|
2+55	0.0582	0.35	|Q	|	|	|
3+ 0	0.0606	0.35	|Q	|	|	|
3+ 5	0.0630	0.35	|Q	|	|	|
3+10	0.0654	0.35	|Q	|	|	|
3+15	0.0678	0.35	|Q	|	|	|
3+20	0.0702	0.35	|Q	|	|	|
3+25	0.0726	0.35	|QV	|	|	|
3+30	0.0750	0.35	|QV	|	|	|
3+35	0.0775	0.35	|QV	|	|	|
3+40	0.0799	0.35	|QV	|	|	|
3+45	0.0823	0.35	|QV	|	|	|
3+50	0.0849	0.38	|QV	|	|	|
3+55	0.0877	0.41	|QV	|	|	|
4+ 0	0.0906	0.42	|QV	|	|	|
4+ 5	0.0935	0.42	|QV	|	|	|
4+10	0.0964	0.42	|QV	|	|	|
4+15	0.0993	0.42	|QV	|	|	|

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   4+20       0.1024      0.45  |QV        |          |          |
|
   4+25       0.1057      0.48  |QV        |          |          |
|
   4+30       0.1091      0.49  |Q V       |          |          |
|
   4+35       0.1125      0.49  |Q V       |          |          |
|
   4+40       0.1158      0.49  |Q V       |          |          |
|
   4+45       0.1192      0.49  |Q V       |          |          |
|
   4+50       0.1228      0.52  | QV       |          |          |
|
   4+55       0.1266      0.55  | QV       |          |          |
|
   5+ 0       0.1305      0.56  | QV       |          |          |
|
   5+ 5       0.1339      0.50  |Q V       |          |          |
|
   5+10       0.1368      0.43  |Q V       |          |          |
|
   5+15       0.1397      0.42  |Q V       |          |          |
|
   5+20       0.1428      0.45  |Q V       |          |          |
|
   5+25       0.1462      0.48  |Q  V      |          |          |
|
   5+30       0.1496      0.49  |Q  V      |          |          |
|
   5+35       0.1531      0.52  | Q V      |          |          |
|
   5+40       0.1570      0.55  | Q V      |          |          |
|
   5+45       0.1608      0.56  | Q V      |          |          |
|
   5+50       0.1647      0.56  | Q V      |          |          |
|
   5+55       0.1685      0.56  | Q V      |          |          |
|
   6+ 0       0.1724      0.56  | Q V      |          |          |
|
   6+ 5       0.1764      0.59  | Q V      |          |          |
|
   6+10       0.1807      0.62  | Q  V     |          |          |
|
   6+15       0.1851      0.63  | Q  V     |          |          |
|
   6+20       0.1894      0.63  | Q  V     |          |          |
|
   6+25       0.1937      0.63  | Q  V     |          |          |
|
   6+30       0.1981      0.63  | Q  V     |          |          |
|
   6+35       0.2026      0.66  | Q  V     |          |          |
|
   6+40       0.2074      0.69  | Q  V     |          |          |
|
   6+45       0.2122      0.70  | Q  V     |          |          |
|
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    6+50       0.2170      0.70  | Q   V   |         |         |
|
    6+55       0.2218      0.70  | Q   V   |         |         |
|
    7+ 0       0.2266      0.70  | Q   V   |         |         |
|
    7+ 5       0.2315      0.70  | Q   V   |         |         |
|
    7+10       0.2363      0.70  | Q   V   |         |         |
|
    7+15       0.2411      0.70  | Q   V   |         |         |
|
    7+20       0.2461      0.73  | Q   V   |         |         |
|
    7+25       0.2514      0.76  |  Q  V   |         |         |
|
    7+30       0.2567      0.77  |  Q   V  |         |         |
|
    7+35       0.2622      0.80  |  Q   V  |         |         |
|
    7+40       0.2679      0.83  |  Q   V  |         |         |
|
    7+45       0.2737      0.84  |  Q   V  |         |         |
|
    7+50       0.2797      0.87  |  Q   V  |         |         |
|
    7+55       0.2859      0.90  |  Q   V  |         |         |
|
    8+ 0       0.2922      0.91  |  Q    V |         |         |
|
    8+ 5       0.2989      0.97  |  Q    V |         |         |
|
    8+10       0.3060      1.04  |   Q   V |         |         |
|
    8+15       0.3132      1.05  |   Q   V |         |         |
|
    8+20       0.3205      1.05  |   Q   V |         |         |
|
    8+25       0.3277      1.05  |   Q    V|         |         |
|
    8+30       0.3349      1.05  |   Q    V|         |         |
|
    8+35       0.3423      1.08  |   Q    V|         |         |
|
    8+40       0.3500      1.11  |   Q    V|         |         |
|
    8+45       0.3577      1.12  |   Q    V|         |         |
|
    8+50       0.3656      1.15  |   Q     V         |         |
|
    8+55       0.3738      1.18  |   Q     V         |         |
|
    9+ 0       0.3820      1.19  |   Q     V         |         |
|
    9+ 5       0.3906      1.25  |    Q    V         |         |
|
    9+10       0.3997      1.32  |    Q    |V        |         |
|
    9+15       0.4088      1.33  |    Q    |V        |         |
|
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```
    9+20       0.4182      1.36  |    Q    |V        |         |
|
    9+25       0.4278      1.39  |    Q    |V        |         |
|
    9+30       0.4374      1.40  |    Q    | V       |         |
|
    9+35       0.4472      1.43  |    Q    | V       |         |
|
    9+40       0.4573      1.46  |    Q    | V       |         |
|
    9+45       0.4674      1.47  |    Q    | V       |         |
|
    9+50       0.4778      1.50  |    Q    |  V      |         |
|
    9+55       0.4883      1.53  |     Q   |  V      |         |
|
   10+ 0       0.4989      1.54  |     Q   |  V      |         |
|
   10+ 5       0.5080      1.32  |    Q    |   V     |         |
|
   10+10       0.5154      1.08  |   Q     |   V     |         |
|
   10+15       0.5227      1.05  |   Q     |   V     |         |
|
   10+20       0.5299      1.05  |   Q     |   V     |         |
|
   10+25       0.5371      1.05  |   Q     |   V     |         |
|
   10+30       0.5443      1.05  |   Q     |    V    |         |
|
   10+35       0.5526      1.21  |   Q     |    V    |         |
|
   10+40       0.5621      1.38  |    Q    |    V    |         |
|
   10+45       0.5717      1.40  |    Q    |    V    |         |
|
   10+50       0.5814      1.40  |    Q    |     V   |         |
|
   10+55       0.5910      1.40  |    Q    |     V   |         |
|
   11+ 0       0.6006      1.40  |    Q    |     V   |         |
|
   11+ 5       0.6100      1.37  |    Q    |     V   |         |
|
   11+10       0.6192      1.33  |    Q    |      V  |         |
|
   11+15       0.6284      1.33  |    Q    |      V  |         |
|
   11+20       0.6375      1.33  |    Q    |      V  |         |
|
   11+25       0.6466      1.33  |    Q    |      V  |         |
|
   11+30       0.6558      1.33  |    Q    |       V |         |
|
   11+35       0.6645      1.27  |    Q    |       V |         |
|
   11+40       0.6728      1.20  |   Q     |       V |         |
|
   11+45       0.6810      1.19  |   Q     |       V |         |
|
```

```
   11+50       0.6894      1.22  |   Q     |        V|         |
|
   11+55       0.6980      1.25  |    Q    |        V|         |
|
   12+ 0       0.7066      1.26  |    Q    |        V|         |
|
   12+ 5       0.7168      1.48  |    Q    |        V|         |
|
   12+10       0.7286      1.72  |     Q   |         V         |
|
   12+15       0.7407      1.74  |     Q   |         V         |
|
   12+20       0.7529      1.78  |      Q  |         V         |
|
   12+25       0.7654      1.81  |      Q  |         |V        |
|
   12+30       0.7779      1.82  |      Q  |         |V        |
|
   12+35       0.7909      1.88  |      Q  |         |V        |
|
   12+40       0.8043      1.95  |      Q  |         | V       |
|
   12+45       0.8177      1.96  |      Q  |         | V       |
|
   12+50       0.8314      1.99  |      Q  |         |  V      |
|
   12+55       0.8454      2.02  |       Q |         |  V      |
|
   13+ 0       0.8593      2.03  |       Q |         |  V      |
|
   13+ 5       0.8744      2.18  |       Q |         |   V     |
|
   13+10       0.8906      2.35  |        Q|         |   V     |
|
   13+15       0.9069      2.37  |        Q|         |    V    |
|
   13+20       0.9233      2.38  |        Q|         |    V    |
|
   13+25       0.9397      2.38  |        Q|         |     V   |
|
   13+30       0.9560      2.38  |        Q|         |     V   |
|
   13+35       0.9700      2.03  |       Q |         |     V   |
|
   13+40       0.9815      1.66  |     Q   |         |      V  |
|
   13+45       0.9926      1.61  |     Q   |         |      V  |
|
   13+50       1.0036      1.61  |     Q   |         |      V  |
|
   13+55       1.0147      1.61  |     Q   |         |       V |
|
   14+ 0       1.0258      1.61  |     Q   |         |       V |
|
   14+ 5       1.0377      1.73  |     Q   |         |       V |
|
   14+10       1.0506      1.87  |      Q  |         |        V|
|
   14+15       1.0636      1.89  |      Q  |         |        V|
|
```

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  14+20       1.0764      1.86   |      Q  |         |        V|
|
  14+25       1.0889      1.82   |      Q  |         |         V
|
  14+30       1.1014      1.82   |      Q  |         |         V
|
  14+35       1.1140      1.82   |      Q  |         |         V
|
  14+40       1.1265      1.82   |      Q  |         |         |V
|
  14+45       1.1390      1.82   |      Q  |         |         |V
|
  14+50       1.1513      1.79   |      Q  |         |         |V
|
  14+55       1.1634      1.75   |      Q  |         |         | V
|
  15+ 0       1.1754      1.75   |     Q   |         |         | V
|
  15+ 5       1.1872      1.72   |     Q   |         |         | V
|
  15+10       1.1988      1.68   |     Q   |         |         |  V
|
  15+15       1.2104      1.68   |     Q   |         |         |  V
|
  15+20       1.2217      1.65   |     Q   |         |         |  V
|
  15+25       1.2328      1.61   |     Q   |         |         |   V
|
  15+30       1.2439      1.61   |     Q   |         |         |   V
|
  15+35       1.2541      1.48   |    Q    |         |         |   V
|
  15+40       1.2634      1.35   |    Q    |         |         |   V
|
  15+45       1.2725      1.33   |    Q    |         |         |    V
|
  15+50       1.2817      1.33   |    Q    |         |         |    V
|
  15+55       1.2908      1.33   |    Q    |         |         |    V
|
  16+ 0       1.3000      1.33   |    Q    |         |         |     V
|
  16+ 5       1.3059      0.86   |  Q      |         |         |     V
|
  16+10       1.3083      0.35   |Q        |         |         |     V
|
  16+15       1.3103      0.29   |Q        |         |         |     V
|
  16+20       1.3122      0.28   |Q        |         |         |     V
|
  16+25       1.3141      0.28   |Q        |         |         |     V
|
  16+30       1.3160      0.28   |Q        |         |         |     V
|
  16+35       1.3178      0.25   Q         |         |         |     V
|
  16+40       1.3192      0.21   Q         |         |         |     V
|
  16+45       1.3207      0.21   Q         |         |         |     V
|
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  16+50     1.3221    0.21  Q         |         |         |     V
|
  16+55     1.3236    0.21  Q         |         |         |     V
|
  17+ 0     1.3250    0.21  Q         |         |         |     V
|
  17+ 5     1.3269    0.27  |Q        |         |         |     V
|
  17+10     1.3292    0.34  |Q        |         |         |     V
|
  17+15     1.3316    0.35  |Q        |         |         |     V
|
  17+20     1.3340    0.35  |Q        |         |         |     V
|
  17+25     1.3364    0.35  |Q        |         |         |      V
|
  17+30     1.3389    0.35  |Q        |         |         |      V
|
  17+35     1.3413    0.35  |Q        |         |         |      V
|
  17+40     1.3437    0.35  |Q        |         |         |      V
|
  17+45     1.3461    0.35  |Q        |         |         |      V
|
  17+50     1.3483    0.32  |Q        |         |         |      V
|
  17+55     1.3502    0.28  |Q        |         |         |      V
|
  18+ 0     1.3522    0.28  |Q        |         |         |      V
|
  18+ 5     1.3541    0.28  |Q        |         |         |      V
|
  18+10     1.3560    0.28  |Q        |         |         |      V
|
  18+15     1.3579    0.28  |Q        |         |         |      V
|
  18+20     1.3599    0.28  |Q        |         |         |      V
|
  18+25     1.3618    0.28  |Q        |         |         |      V
|
  18+30     1.3637    0.28  |Q        |         |         |      V
|
  18+35     1.3654    0.25  Q         |         |         |      V
|
  18+40     1.3669    0.21  Q         |         |         |      V
|
  18+45     1.3683    0.21  Q         |         |         |      V
|
  18+50     1.3696    0.18  Q         |         |         |      V
|
  18+55     1.3706    0.14  Q         |         |         |      V
|
  19+ 0     1.3715    0.14  Q         |         |         |      V
|
  19+ 5     1.3727    0.17  Q         |         |         |       V
|
  19+10     1.3741    0.21  Q         |         |         |       V
|
  19+15     1.3756    0.21  Q         |         |         |       V
|
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19+20	1.3772	0.24	Q	|	|	|	V	|
19+25	1.3791	0.28	|Q	|	|	|	V	|
19+30	1.3810	0.28	|Q	|	|	|	V	|
19+35	1.3828	0.25	Q	|	|	|	V	|
19+40	1.3842	0.21	Q	|	|	|	V	|
19+45	1.3857	0.21	Q	|	|	|	V	|
19+50	1.3869	0.18	Q	|	|	|	V	|
19+55	1.3879	0.14	Q	|	|	|	V	|
20+ 0	1.3889	0.14	Q	|	|	|	V	|
20+ 5	1.3900	0.17	Q	|	|	|	V	|
20+10	1.3915	0.21	Q	|	|	|	V	|
20+15	1.3929	0.21	Q	|	|	|	V	|
20+20	1.3943	0.21	Q	|	|	|	V	|
20+25	1.3958	0.21	Q	|	|	|	V	|
20+30	1.3972	0.21	Q	|	|	|	V	|
20+35	1.3987	0.21	Q	|	|	|	V	|
20+40	1.4001	0.21	Q	|	|	|	V	|
20+45	1.4016	0.21	Q	|	|	|	V	|
20+50	1.4028	0.18	Q	|	|	|	V	|
20+55	1.4038	0.14	Q	|	|	|	V	|
21+ 0	1.4048	0.14	Q	|	|	|	V	|
21+ 5	1.4059	0.17	Q	|	|	|	V	|
21+10	1.4073	0.21	Q	|	|	|	V	|
21+15	1.4088	0.21	Q	|	|	|		V|
21+20	1.4100	0.18	Q	|	|	|		V|
21+25	1.4110	0.14	Q	|	|	|		V|
21+30	1.4120	0.14	Q	|	|	|		V|
21+35	1.4132	0.17	Q	|	|	|		V|
21+40	1.4146	0.21	Q	|	|	|		V|
21+45	1.4160	0.21	Q	|	|	|		V|

21+50	1.4172	0.18	Q	V
21+55	1.4182	0.14	Q	V
22+ 0	1.4192	0.14	Q	V
22+ 5	1.4204	0.17	Q	V
22+10	1.4218	0.21	Q	V
22+15	1.4232	0.21	Q	V
22+20	1.4245	0.18	Q	V
22+25	1.4255	0.14	Q	V
22+30	1.4264	0.14	Q	V
22+35	1.4274	0.14	Q	V
22+40	1.4283	0.14	Q	V
22+45	1.4293	0.14	Q	V
22+50	1.4303	0.14	Q	V
22+55	1.4312	0.14	Q	V
23+ 0	1.4322	0.14	Q	V
23+ 5	1.4332	0.14	Q	V
23+10	1.4341	0.14	Q	V
23+15	1.4351	0.14	Q	V
23+20	1.4360	0.14	Q	V
23+25	1.4370	0.14	Q	V
23+30	1.4380	0.14	Q	V
23+35	1.4389	0.14	Q	V
23+40	1.4399	0.14	Q	V
23+45	1.4409	0.14	Q	V
23+50	1.4418	0.14	Q	V
23+55	1.4428	0.14	Q	V
24+ 0	1.4438	0.14	Q	V
24+ 5	1.4443	0.08	Q	V
24+10	1.4443	0.01	Q	V
24+15	1.4444	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 11/09/21 File: moval33post2410.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area B

Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) = 0.017 Sq. Mi.
Length along longest watercourse = 1380.00(Ft.)
Length along longest watercourse measured to centroid = 828.00 (Ft.)
Length along longest watercourse = 0.261 Mi.
Length along longest watercourse measured to centroid = 0.157 Mi.
Difference in elevation = 52.00(Ft.)
Slope along watercourse = 198.9565 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.039 Hr.
Lag time = 2.35 Min.
25% of lag time = 0.59 Min.
40% of lag time = 0.94 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]

10.90	1.93	21.04

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
10.90	4.64	50.58

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.930(In)
Area Averaged 100-Year Rainfall = 4.640(In)

Point rain (area averaged) = 3.045(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 3.045(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
10.900	69.00	0.650

Total Area Entered = 10.90(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.650	0.155	1.000	0.155
					Sum (F) =	0.155

Area averaged mean soil loss (F) (In/Hr) = 0.155
Minimum soil loss rate ((In/Hr)) = 0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

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	213.048	44.793	4.921
2	0.167	426.095	48.755	5.356
3	0.250	639.143	5.617	0.617
4	0.333	852.190	0.835	0.092
			Sum = 100.000	Sum= 10.985

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	0.024	(0.274)	0.009	0.015
2	0.17	0.07	0.024	(0.273)	0.009	0.015
3	0.25	0.07	0.024	(0.272)	0.009	0.015
4	0.33	0.10	0.037	(0.271)	0.014	0.023
5	0.42	0.10	0.037	(0.270)	0.014	0.023
6	0.50	0.10	0.037	(0.269)	0.014	0.023
7	0.58	0.10	0.037	(0.268)	0.014	0.023
8	0.67	0.10	0.037	(0.267)	0.014	0.023
9	0.75	0.10	0.037	(0.266)	0.014	0.023
10	0.83	0.13	0.049	(0.265)	0.019	0.030
11	0.92	0.13	0.049	(0.264)	0.019	0.030
12	1.00	0.13	0.049	(0.263)	0.019	0.030
13	1.08	0.10	0.037	(0.262)	0.014	0.023
14	1.17	0.10	0.037	(0.261)	0.014	0.023
15	1.25	0.10	0.037	(0.260)	0.014	0.023
16	1.33	0.10	0.037	(0.259)	0.014	0.023
17	1.42	0.10	0.037	(0.258)	0.014	0.023
18	1.50	0.10	0.037	(0.257)	0.014	0.023
19	1.58	0.10	0.037	(0.255)	0.014	0.023
20	1.67	0.10	0.037	(0.254)	0.014	0.023
21	1.75	0.10	0.037	(0.253)	0.014	0.023
22	1.83	0.13	0.049	(0.252)	0.019	0.030
23	1.92	0.13	0.049	(0.251)	0.019	0.030
24	2.00	0.13	0.049	(0.250)	0.019	0.030
25	2.08	0.13	0.049	(0.249)	0.019	0.030
26	2.17	0.13	0.049	(0.248)	0.019	0.030
27	2.25	0.13	0.049	(0.247)	0.019	0.030
28	2.33	0.13	0.049	(0.246)	0.019	0.030
29	2.42	0.13	0.049	(0.245)	0.019	0.030
30	2.50	0.13	0.049	(0.244)	0.019	0.030
31	2.58	0.17	0.061	(0.243)	0.023	0.038
32	2.67	0.17	0.061	(0.242)	0.023	0.038
33	2.75	0.17	0.061	(0.241)	0.023	0.038
34	2.83	0.17	0.061	(0.240)	0.023	0.038
35	2.92	0.17	0.061	(0.239)	0.023	0.038
36	3.00	0.17	0.061	(0.238)	0.023	0.038
37	3.08	0.17	0.061	(0.237)	0.023	0.038
38	3.17	0.17	0.061	(0.236)	0.023	0.038
39	3.25	0.17	0.061	(0.235)	0.023	0.038
40	3.33	0.17	0.061	(0.234)	0.023	0.038
41	3.42	0.17	0.061	(0.233)	0.023	0.038
42	3.50	0.17	0.061	(0.232)	0.023	0.038
43	3.58	0.17	0.061	(0.232)	0.023	0.038
44	3.67	0.17	0.061	(0.231)	0.023	0.038
45	3.75	0.17	0.061	(0.230)	0.023	0.038
46	3.83	0.20	0.073	(0.229)	0.028	0.045
47	3.92	0.20	0.073	(0.228)	0.028	0.045
48	4.00	0.20	0.073	(0.227)	0.028	0.045
49	4.08	0.20	0.073	(0.226)	0.028	0.045
50	4.17	0.20	0.073	(0.225)	0.028	0.045
51	4.25	0.20	0.073	(0.224)	0.028	0.045
52	4.33	0.23	0.085	(0.223)	0.032	0.053
53	4.42	0.23	0.085	(0.222)	0.032	0.053
54	4.50	0.23	0.085	(0.221)	0.032	0.053
55	4.58	0.23	0.085	(0.220)	0.032	0.053
56	4.67	0.23	0.085	(0.219)	0.032	0.053
57	4.75	0.23	0.085	(0.218)	0.032	0.053
58	4.83	0.27	0.097	(0.217)	0.037	0.060

59	4.92	0.27	0.097	(0.216)	0.037	0.060
60	5.00	0.27	0.097	(0.215)	0.037	0.060
61	5.08	0.20	0.073	(0.214)	0.028	0.045
62	5.17	0.20	0.073	(0.213)	0.028	0.045
63	5.25	0.20	0.073	(0.212)	0.028	0.045
64	5.33	0.23	0.085	(0.212)	0.032	0.053
65	5.42	0.23	0.085	(0.211)	0.032	0.053
66	5.50	0.23	0.085	(0.210)	0.032	0.053
67	5.58	0.27	0.097	(0.209)	0.037	0.060
68	5.67	0.27	0.097	(0.208)	0.037	0.060
69	5.75	0.27	0.097	(0.207)	0.037	0.060
70	5.83	0.27	0.097	(0.206)	0.037	0.060
71	5.92	0.27	0.097	(0.205)	0.037	0.060
72	6.00	0.27	0.097	(0.204)	0.037	0.060
73	6.08	0.30	0.110	(0.203)	0.042	0.068
74	6.17	0.30	0.110	(0.202)	0.042	0.068
75	6.25	0.30	0.110	(0.202)	0.042	0.068
76	6.33	0.30	0.110	(0.201)	0.042	0.068
77	6.42	0.30	0.110	(0.200)	0.042	0.068
78	6.50	0.30	0.110	(0.199)	0.042	0.068
79	6.58	0.33	0.122	(0.198)	0.046	0.076
80	6.67	0.33	0.122	(0.197)	0.046	0.076
81	6.75	0.33	0.122	(0.196)	0.046	0.076
82	6.83	0.33	0.122	(0.195)	0.046	0.076
83	6.92	0.33	0.122	(0.194)	0.046	0.076
84	7.00	0.33	0.122	(0.193)	0.046	0.076
85	7.08	0.33	0.122	(0.193)	0.046	0.076
86	7.17	0.33	0.122	(0.192)	0.046	0.076
87	7.25	0.33	0.122	(0.191)	0.046	0.076
88	7.33	0.37	0.134	(0.190)	0.051	0.083
89	7.42	0.37	0.134	(0.189)	0.051	0.083
90	7.50	0.37	0.134	(0.188)	0.051	0.083
91	7.58	0.40	0.146	(0.187)	0.056	0.091
92	7.67	0.40	0.146	(0.187)	0.056	0.091
93	7.75	0.40	0.146	(0.186)	0.056	0.091
94	7.83	0.43	0.158	(0.185)	0.060	0.098
95	7.92	0.43	0.158	(0.184)	0.060	0.098
96	8.00	0.43	0.158	(0.183)	0.060	0.098
97	8.08	0.50	0.183	(0.182)	0.069	0.113
98	8.17	0.50	0.183	(0.181)	0.069	0.113
99	8.25	0.50	0.183	(0.181)	0.069	0.113
100	8.33	0.50	0.183	(0.180)	0.069	0.113
101	8.42	0.50	0.183	(0.179)	0.069	0.113
102	8.50	0.50	0.183	(0.178)	0.069	0.113
103	8.58	0.53	0.195	(0.177)	0.074	0.121
104	8.67	0.53	0.195	(0.176)	0.074	0.121
105	8.75	0.53	0.195	(0.176)	0.074	0.121
106	8.83	0.57	0.207	(0.175)	0.079	0.128
107	8.92	0.57	0.207	(0.174)	0.079	0.128
108	9.00	0.57	0.207	(0.173)	0.079	0.128
109	9.08	0.63	0.231	(0.172)	0.088	0.143
110	9.17	0.63	0.231	(0.171)	0.088	0.143
111	9.25	0.63	0.231	(0.171)	0.088	0.143
112	9.33	0.67	0.244	(0.170)	0.093	0.151
113	9.42	0.67	0.244	(0.169)	0.093	0.151
114	9.50	0.67	0.244	(0.168)	0.093	0.151
115	9.58	0.70	0.256	(0.167)	0.097	0.159
116	9.67	0.70	0.256	(0.167)	0.097	0.159
117	9.75	0.70	0.256	(0.166)	0.097	0.159
118	9.83	0.73	0.268	(0.165)	0.102	0.166

119	9.92	0.73	0.268	(0.164)	0.102	0.166
120	10.00	0.73	0.268	(0.163)	0.102	0.166
121	10.08	0.50	0.183	(0.163)	0.069	0.113
122	10.17	0.50	0.183	(0.162)	0.069	0.113
123	10.25	0.50	0.183	(0.161)	0.069	0.113
124	10.33	0.50	0.183	(0.160)	0.069	0.113
125	10.42	0.50	0.183	(0.159)	0.069	0.113
126	10.50	0.50	0.183	(0.159)	0.069	0.113
127	10.58	0.67	0.244	(0.158)	0.093	0.151
128	10.67	0.67	0.244	(0.157)	0.093	0.151
129	10.75	0.67	0.244	(0.156)	0.093	0.151
130	10.83	0.67	0.244	(0.156)	0.093	0.151
131	10.92	0.67	0.244	(0.155)	0.093	0.151
132	11.00	0.67	0.244	(0.154)	0.093	0.151
133	11.08	0.63	0.231	(0.153)	0.088	0.143
134	11.17	0.63	0.231	(0.153)	0.088	0.143
135	11.25	0.63	0.231	(0.152)	0.088	0.143
136	11.33	0.63	0.231	(0.151)	0.088	0.143
137	11.42	0.63	0.231	(0.150)	0.088	0.143
138	11.50	0.63	0.231	(0.150)	0.088	0.143
139	11.58	0.57	0.207	(0.149)	0.079	0.128
140	11.67	0.57	0.207	(0.148)	0.079	0.128
141	11.75	0.57	0.207	(0.147)	0.079	0.128
142	11.83	0.60	0.219	(0.147)	0.083	0.136
143	11.92	0.60	0.219	(0.146)	0.083	0.136
144	12.00	0.60	0.219	(0.145)	0.083	0.136
145	12.08	0.83	0.304	(0.144)	0.116	0.189
146	12.17	0.83	0.304	(0.144)	0.116	0.189
147	12.25	0.83	0.304	(0.143)	0.116	0.189
148	12.33	0.87	0.317	(0.142)	0.120	0.196
149	12.42	0.87	0.317	(0.142)	0.120	0.196
150	12.50	0.87	0.317	(0.141)	0.120	0.196
151	12.58	0.93	0.341	(0.140)	0.130	0.211
152	12.67	0.93	0.341	(0.139)	0.130	0.211
153	12.75	0.93	0.341	(0.139)	0.130	0.211
154	12.83	0.97	0.353	(0.138)	0.134	0.219
155	12.92	0.97	0.353	(0.137)	0.134	0.219
156	13.00	0.97	0.353	(0.137)	0.134	0.219
157	13.08	1.13	0.414	0.136	(0.157)	0.278
158	13.17	1.13	0.414	0.135	(0.157)	0.279
159	13.25	1.13	0.414	0.135	(0.157)	0.280
160	13.33	1.13	0.414	0.134	(0.157)	0.280
161	13.42	1.13	0.414	0.133	(0.157)	0.281
162	13.50	1.13	0.414	0.133	(0.157)	0.282
163	13.58	0.77	0.280	(0.132)	0.106	0.174
164	13.67	0.77	0.280	(0.131)	0.106	0.174
165	13.75	0.77	0.280	(0.130)	0.106	0.174
166	13.83	0.77	0.280	(0.130)	0.106	0.174
167	13.92	0.77	0.280	(0.129)	0.106	0.174
168	14.00	0.77	0.280	(0.129)	0.106	0.174
169	14.08	0.90	0.329	(0.128)	0.125	0.204
170	14.17	0.90	0.329	(0.127)	0.125	0.204
171	14.25	0.90	0.329	(0.127)	0.125	0.204
172	14.33	0.87	0.317	(0.126)	0.120	0.196
173	14.42	0.87	0.317	(0.125)	0.120	0.196
174	14.50	0.87	0.317	(0.125)	0.120	0.196
175	14.58	0.87	0.317	(0.124)	0.120	0.196
176	14.67	0.87	0.317	(0.123)	0.120	0.196
177	14.75	0.87	0.317	(0.123)	0.120	0.196
178	14.83	0.83	0.304	(0.122)	0.116	0.189

179	14.92	0.83	0.304	(0.121)	0.116	0.189
180	15.00	0.83	0.304	(0.121)	0.116	0.189
181	15.08	0.80	0.292	(0.120)	0.111	0.181
182	15.17	0.80	0.292	(0.120)	0.111	0.181
183	15.25	0.80	0.292	(0.119)	0.111	0.181
184	15.33	0.77	0.280	(0.118)	0.106	0.174
185	15.42	0.77	0.280	(0.118)	0.106	0.174
186	15.50	0.77	0.280	(0.117)	0.106	0.174
187	15.58	0.63	0.231	(0.117)	0.088	0.143
188	15.67	0.63	0.231	(0.116)	0.088	0.143
189	15.75	0.63	0.231	(0.115)	0.088	0.143
190	15.83	0.63	0.231	(0.115)	0.088	0.143
191	15.92	0.63	0.231	(0.114)	0.088	0.143
192	16.00	0.63	0.231	(0.114)	0.088	0.143
193	16.08	0.13	0.049	(0.113)	0.019	0.030
194	16.17	0.13	0.049	(0.112)	0.019	0.030
195	16.25	0.13	0.049	(0.112)	0.019	0.030
196	16.33	0.13	0.049	(0.111)	0.019	0.030
197	16.42	0.13	0.049	(0.111)	0.019	0.030
198	16.50	0.13	0.049	(0.110)	0.019	0.030
199	16.58	0.10	0.037	(0.110)	0.014	0.023
200	16.67	0.10	0.037	(0.109)	0.014	0.023
201	16.75	0.10	0.037	(0.109)	0.014	0.023
202	16.83	0.10	0.037	(0.108)	0.014	0.023
203	16.92	0.10	0.037	(0.107)	0.014	0.023
204	17.00	0.10	0.037	(0.107)	0.014	0.023
205	17.08	0.17	0.061	(0.106)	0.023	0.038
206	17.17	0.17	0.061	(0.106)	0.023	0.038
207	17.25	0.17	0.061	(0.105)	0.023	0.038
208	17.33	0.17	0.061	(0.105)	0.023	0.038
209	17.42	0.17	0.061	(0.104)	0.023	0.038
210	17.50	0.17	0.061	(0.104)	0.023	0.038
211	17.58	0.17	0.061	(0.103)	0.023	0.038
212	17.67	0.17	0.061	(0.103)	0.023	0.038
213	17.75	0.17	0.061	(0.102)	0.023	0.038
214	17.83	0.13	0.049	(0.102)	0.019	0.030
215	17.92	0.13	0.049	(0.101)	0.019	0.030
216	18.00	0.13	0.049	(0.101)	0.019	0.030
217	18.08	0.13	0.049	(0.100)	0.019	0.030
218	18.17	0.13	0.049	(0.100)	0.019	0.030
219	18.25	0.13	0.049	(0.099)	0.019	0.030
220	18.33	0.13	0.049	(0.099)	0.019	0.030
221	18.42	0.13	0.049	(0.098)	0.019	0.030
222	18.50	0.13	0.049	(0.098)	0.019	0.030
223	18.58	0.10	0.037	(0.097)	0.014	0.023
224	18.67	0.10	0.037	(0.097)	0.014	0.023
225	18.75	0.10	0.037	(0.096)	0.014	0.023
226	18.83	0.07	0.024	(0.096)	0.009	0.015
227	18.92	0.07	0.024	(0.095)	0.009	0.015
228	19.00	0.07	0.024	(0.095)	0.009	0.015
229	19.08	0.10	0.037	(0.094)	0.014	0.023
230	19.17	0.10	0.037	(0.094)	0.014	0.023
231	19.25	0.10	0.037	(0.094)	0.014	0.023
232	19.33	0.13	0.049	(0.093)	0.019	0.030
233	19.42	0.13	0.049	(0.093)	0.019	0.030
234	19.50	0.13	0.049	(0.092)	0.019	0.030
235	19.58	0.10	0.037	(0.092)	0.014	0.023
236	19.67	0.10	0.037	(0.091)	0.014	0.023
237	19.75	0.10	0.037	(0.091)	0.014	0.023
238	19.83	0.07	0.024	(0.091)	0.009	0.015

239	19.92	0.07	0.024	(0.090)	0.009	0.015
240	20.00	0.07	0.024	(0.090)	0.009	0.015
241	20.08	0.10	0.037	(0.089)	0.014	0.023
242	20.17	0.10	0.037	(0.089)	0.014	0.023
243	20.25	0.10	0.037	(0.089)	0.014	0.023
244	20.33	0.10	0.037	(0.088)	0.014	0.023
245	20.42	0.10	0.037	(0.088)	0.014	0.023
246	20.50	0.10	0.037	(0.088)	0.014	0.023
247	20.58	0.10	0.037	(0.087)	0.014	0.023
248	20.67	0.10	0.037	(0.087)	0.014	0.023
249	20.75	0.10	0.037	(0.086)	0.014	0.023
250	20.83	0.07	0.024	(0.086)	0.009	0.015
251	20.92	0.07	0.024	(0.086)	0.009	0.015
252	21.00	0.07	0.024	(0.085)	0.009	0.015
253	21.08	0.10	0.037	(0.085)	0.014	0.023
254	21.17	0.10	0.037	(0.085)	0.014	0.023
255	21.25	0.10	0.037	(0.084)	0.014	0.023
256	21.33	0.07	0.024	(0.084)	0.009	0.015
257	21.42	0.07	0.024	(0.084)	0.009	0.015
258	21.50	0.07	0.024	(0.083)	0.009	0.015
259	21.58	0.10	0.037	(0.083)	0.014	0.023
260	21.67	0.10	0.037	(0.083)	0.014	0.023
261	21.75	0.10	0.037	(0.083)	0.014	0.023
262	21.83	0.07	0.024	(0.082)	0.009	0.015
263	21.92	0.07	0.024	(0.082)	0.009	0.015
264	22.00	0.07	0.024	(0.082)	0.009	0.015
265	22.08	0.10	0.037	(0.081)	0.014	0.023
266	22.17	0.10	0.037	(0.081)	0.014	0.023
267	22.25	0.10	0.037	(0.081)	0.014	0.023
268	22.33	0.07	0.024	(0.081)	0.009	0.015
269	22.42	0.07	0.024	(0.080)	0.009	0.015
270	22.50	0.07	0.024	(0.080)	0.009	0.015
271	22.58	0.07	0.024	(0.080)	0.009	0.015
272	22.67	0.07	0.024	(0.080)	0.009	0.015
273	22.75	0.07	0.024	(0.079)	0.009	0.015
274	22.83	0.07	0.024	(0.079)	0.009	0.015
275	22.92	0.07	0.024	(0.079)	0.009	0.015
276	23.00	0.07	0.024	(0.079)	0.009	0.015
277	23.08	0.07	0.024	(0.079)	0.009	0.015
278	23.17	0.07	0.024	(0.079)	0.009	0.015
279	23.25	0.07	0.024	(0.078)	0.009	0.015
280	23.33	0.07	0.024	(0.078)	0.009	0.015
281	23.42	0.07	0.024	(0.078)	0.009	0.015
282	23.50	0.07	0.024	(0.078)	0.009	0.015
283	23.58	0.07	0.024	(0.078)	0.009	0.015
284	23.67	0.07	0.024	(0.078)	0.009	0.015
285	23.75	0.07	0.024	(0.078)	0.009	0.015
286	23.83	0.07	0.024	(0.077)	0.009	0.015
287	23.92	0.07	0.024	(0.077)	0.009	0.015
288	24.00	0.07	0.024	(0.077)	0.009	0.015

(Loss Rate Not Used)

Sum = 100.0 Sum = 22.8

Flood volume = Effective rainfall 1.90(In)
times area 10.9(Ac.)/[(In)/(Ft.)] = 1.7(Ac.Ft)
Total soil loss = 1.15(In)
Total soil loss = 1.040(Ac.Ft)
Total rainfall = 3.04(In)
Flood volume = 75152.7 Cubic Feet
Total soil loss = 45322.9 Cubic Feet

```
--
       Peak flow rate of this hydrograph =      3.090(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       0.0005      0.07  Q         |         |         |
|
    0+10       0.0016      0.16  Q         |         |         |
|
    0+15       0.0027      0.16  Q         |         |         |
|
    0+20       0.0041      0.20  Q         |         |         |
|
    0+25       0.0058      0.24  Q         |         |         |
|
    0+30       0.0075      0.25  Q         |         |         |
|
    0+35       0.0092      0.25  Q         |         |         |
|
    0+40       0.0109      0.25  Q         |         |         |
|
    0+45       0.0126      0.25  Q         |         |         |
|
    0+50       0.0146      0.29  VQ        |         |         |
|
    0+55       0.0169      0.33  VQ        |         |         |
|
    1+ 0       0.0191      0.33  VQ        |         |         |
|
    1+ 5       0.0212      0.29  VQ        |         |         |
|
    1+10       0.0229      0.25  VQ        |         |         |
|
    1+15       0.0246      0.25  Q         |         |         |
|
    1+20       0.0264      0.25  Q         |         |         |
|
    1+25       0.0281      0.25  Q         |         |         |
|
    1+30       0.0298      0.25  Q         |         |         |
|
    1+35       0.0315      0.25  Q         |         |         |
|
    1+40       0.0332      0.25  Q         |         |         |
|
    1+45       0.0349      0.25  Q         |         |         |
|
```

```
      1+50       0.0369      0.29  VQ         |          |          |
|
      1+55       0.0392      0.33  VQ         |          |          |
|
      2+ 0       0.0414      0.33  VQ         |          |          |
|
      2+ 5       0.0437      0.33  |Q         |          |          |
|
      2+10       0.0460      0.33  |Q         |          |          |
|
      2+15       0.0483      0.33  |Q         |          |          |
|
      2+20       0.0506      0.33  |Q         |          |          |
|
      2+25       0.0529      0.33  |Q         |          |          |
|
      2+30       0.0552      0.33  |Q         |          |          |
|
      2+35       0.0577      0.37  |Q         |          |          |
|
      2+40       0.0605      0.41  |Q         |          |          |
|
      2+45       0.0634      0.41  |Q         |          |          |
|
      2+50       0.0662      0.41  |Q         |          |          |
|
      2+55       0.0691      0.41  |Q         |          |          |
|
      3+ 0       0.0719      0.41  |Q         |          |          |
|
      3+ 5       0.0748      0.41  |Q         |          |          |
|
      3+10       0.0777      0.41  |Q         |          |          |
|
      3+15       0.0805      0.41  |Q         |          |          |
|
      3+20       0.0834      0.41  |Q         |          |          |
|
      3+25       0.0862      0.41  |Q         |          |          |
|
      3+30       0.0891      0.41  |QV        |          |          |
|
      3+35       0.0920      0.41  |QV        |          |          |
|
      3+40       0.0948      0.41  |QV        |          |          |
|
      3+45       0.0977      0.41  |QV        |          |          |
|
      3+50       0.1008      0.45  |QV        |          |          |
|
      3+55       0.1042      0.49  |QV        |          |          |
|
      4+ 0       0.1076      0.50  |QV        |          |          |
|
      4+ 5       0.1110      0.50  |QV        |          |          |
|
      4+10       0.1145      0.50  |QV        |          |          |
|
      4+15       0.1179      0.50  |QV        |          |          |
|
```

4+20	0.1216	0.54	Q			
4+25	0.1255	0.58	Q			
4+30	0.1295	0.58	QV			
4+35	0.1335	0.58	QV			
4+40	0.1375	0.58	QV			
4+45	0.1415	0.58	QV			
4+50	0.1458	0.62	QV			
4+55	0.1503	0.66	QV			
5+ 0	0.1549	0.66	QV			
5+ 5	0.1590	0.59	QV			
5+10	0.1625	0.51	QV			
5+15	0.1659	0.50	Q V			
5+20	0.1696	0.54	QV			
5+25	0.1736	0.58	Q V			
5+30	0.1775	0.58	Q V			
5+35	0.1818	0.62	Q V			
5+40	0.1863	0.66	Q V			
5+45	0.1909	0.66	Q V			
5+50	0.1955	0.66	Q V			
5+55	0.2001	0.66	Q V			
6+ 0	0.2046	0.66	Q V			
6+ 5	0.2095	0.70	Q V			
6+10	0.2146	0.74	Q V			
6+15	0.2197	0.75	Q V			
6+20	0.2248	0.75	Q V			
6+25	0.2300	0.75	Q V			
6+30	0.2351	0.75	Q V			
6+35	0.2405	0.78	Q V			
6+40	0.2462	0.82	Q V			
6+45	0.2519	0.83	Q V			

```
    6+50       0.2576      0.83  |  Q V    |         |         |
|
    6+55       0.2634      0.83  |  Q  V   |         |         |
|
    7+ 0       0.2691      0.83  |  Q  V   |         |         |
|
    7+ 5       0.2748      0.83  |  Q  V   |         |         |
|
    7+10       0.2805      0.83  |  Q  V   |         |         |
|
    7+15       0.2862      0.83  |  Q  V   |         |         |
|
    7+20       0.2922      0.87  |  Q  V   |         |         |
|
    7+25       0.2984      0.91  |  Q  V   |         |         |
|
    7+30       0.3047      0.91  |  Q   V  |         |         |
|
    7+35       0.3113      0.95  |  Q   V  |         |         |
|
    7+40       0.3181      0.99  |  Q   V  |         |         |
|
    7+45       0.3249      1.00  |  Q   V  |         |         |
|
    7+50       0.3321      1.03  |   Q  V  |         |         |
|
    7+55       0.3395      1.07  |   Q  V  |         |         |
|
    8+ 0       0.3469      1.08  |   Q   V |         |         |
|
    8+ 5       0.3548      1.15  |   Q   V |         |         |
|
    8+10       0.3633      1.23  |   Q   V |         |         |
|
    8+15       0.3719      1.24  |   Q   V |         |         |
|
    8+20       0.3805      1.24  |   Q   V |         |         |
|
    8+25       0.3890      1.24  |   Q    V|         |         |
|
    8+30       0.3976      1.24  |   Q    V|         |         |
|
    8+35       0.4064      1.28  |    Q   V|         |         |
|
    8+40       0.4155      1.32  |    Q   V|         |         |
|
    8+45       0.4247      1.33  |    Q   V|         |         |
|
    8+50       0.4341      1.37  |    Q    V         |         |
|
    8+55       0.4438      1.41  |    Q    V         |         |
|
    9+ 0       0.4535      1.41  |    Q    V         |         |
|
    9+ 5       0.4637      1.49  |    Q    V         |         |
|
    9+10       0.4745      1.57  |     Q   |V        |         |
|
    9+15       0.4853      1.58  |     Q   |V        |         |
|
```

```
    9+20       0.4965      1.61  |     Q   |V        |         |
|
    9+25       0.5079      1.65  |     Q   |V        |         |
|
    9+30       0.5193      1.66  |     Q   | V       |         |
|
    9+35       0.5310      1.70  |     Q   | V       |         |
|
    9+40       0.5429      1.74  |     Q   | V       |         |
|
    9+45       0.5549      1.74  |     Q   | V       |         |
|
    9+50       0.5672      1.78  |      Q  |  V      |         |
|
    9+55       0.5797      1.82  |      Q  |  V      |         |
|
   10+ 0       0.5923      1.83  |      Q  |  V      |         |
|
   10+ 5       0.6031      1.57  |     Q   |  V      |         |
|
   10+10       0.6119      1.28  |    Q    |   V     |         |
|
   10+15       0.6205      1.25  |   Q     |   V     |         |
|
   10+20       0.6291      1.24  |   Q     |   V     |         |
|
   10+25       0.6377      1.24  |   Q     |   V     |         |
|
   10+30       0.6463      1.24  |   Q     |   V     |         |
|
   10+35       0.6561      1.43  |    Q    |    V    |         |
|
   10+40       0.6674      1.63  |     Q   |    V    |         |
|
   10+45       0.6788      1.66  |     Q   |    V    |         |
|
   10+50       0.6902      1.66  |     Q   |     V   |         |
|
   10+55       0.7016      1.66  |     Q   |     V   |         |
|
   11+ 0       0.7131      1.66  |     Q   |     V   |         |
|
   11+ 5       0.7242      1.62  |     Q   |     V   |         |
|
   11+10       0.7351      1.58  |     Q   |      V  |         |
|
   11+15       0.7460      1.58  |     Q   |      V  |         |
|
   11+20       0.7569      1.58  |     Q   |      V  |         |
|
   11+25       0.7677      1.58  |     Q   |      V  |         |
|
   11+30       0.7786      1.58  |     Q   |       V |         |
|
   11+35       0.7889      1.50  |     Q   |       V |         |
|
   11+40       0.7987      1.42  |    Q    |       V |         |
|
   11+45       0.8084      1.41  |    Q    |       V |         |
|
```

```
   11+50       0.8184      1.45  |    Q    |       V |         |
|
   11+55       0.8287      1.49  |    Q    |        V|         |
|
   12+ 0       0.8389      1.49  |    Q    |        V|         |
|
   12+ 5       0.8510      1.75  |      Q  |        V|         |
|
   12+10       0.8651      2.04  |       Q |         V         |
|
   12+15       0.8793      2.07  |       Q |         V         |
|
   12+20       0.8939      2.11  |       Q |         V         |
|
   12+25       0.9087      2.15  |       Q |         |V        |
|
   12+30       0.9235      2.16  |       Q |         |V        |
|
   12+35       0.9389      2.23  |       Q |         |V        |
|
   12+40       0.9548      2.31  |        Q|         | V       |
|
   12+45       0.9708      2.32  |        Q|         | V       |
|
   12+50       0.9871      2.36  |        Q|         | V       |
|
   12+55       1.0036      2.40  |        Q|         |  V      |
|
   13+ 0       1.0202      2.41  |        Q|         |  V      |
|
   13+ 5       1.0388      2.70  |         Q         |   V     |
|
   13+10       1.0596      3.02  |         | Q       |   V     |
|
   13+15       1.0807      3.06  |         | Q       |    V    |
|
   13+20       1.1019      3.08  |         | Q       |    V    |
|
   13+25       1.1231      3.08  |         | Q       |     V   |
|
   13+30       1.1444      3.09  |         | Q       |     V   |
|
   13+35       1.1620      2.56  |         Q         |     V   |
|
   13+40       1.1757      1.99  |      Q  |         |      V  |
|
   13+45       1.1889      1.92  |      Q  |         |      V  |
|
   13+50       1.2021      1.91  |      Q  |         |      V  |
|
   13+55       1.2152      1.91  |      Q  |         |       V |
|
   14+ 0       1.2283      1.91  |      Q  |         |       V |
|
   14+ 5       1.2425      2.06  |       Q |         |       V |
|
   14+10       1.2578      2.22  |       Q |         |        V|
|
   14+15       1.2732      2.24  |       Q |         |        V|
|
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   14+20       1.2884      2.20  |       Q |         |        V|
|
   14+25       1.3033      2.16  |       Q |         |         V
|
   14+30       1.3182      2.16  |       Q |         |         V
|
   14+35       1.3330      2.16  |       Q |         |         V
|
   14+40       1.3479      2.16  |       Q |         |         |V
|
   14+45       1.3627      2.16  |       Q |         |         |V
|
   14+50       1.3773      2.12  |       Q |         |         |V
|
   14+55       1.3917      2.08  |       Q |         |         | V
|
   15+ 0       1.4060      2.08  |       Q |         |         | V
|
   15+ 5       1.4200      2.04  |       Q |         |         | V
|
   15+10       1.4338      2.00  |      Q  |         |         |  V
|
   15+15       1.4475      1.99  |      Q  |         |         |  V
|
   15+20       1.4609      1.95  |      Q  |         |         |  V
|
   15+25       1.4741      1.91  |      Q  |         |         |   V
|
   15+30       1.4873      1.91  |      Q  |         |         |   V
|
   15+35       1.4994      1.76  |      Q  |         |         |   V
|
   15+40       1.5104      1.60  |     Q   |         |         |    V
|
   15+45       1.5213      1.58  |     Q   |         |         |    V
|
   15+50       1.5321      1.58  |     Q   |         |         |    V
|
   15+55       1.5430      1.58  |     Q   |         |         |    V
|
   16+ 0       1.5539      1.58  |     Q   |         |         |     V
|
   16+ 5       1.5609      1.02  |   Q     |         |         |     V
|
   16+10       1.5637      0.41  |Q        |         |         |     V
|
   16+15       1.5661      0.34  |Q        |         |         |     V
|
   16+20       1.5684      0.33  |Q        |         |         |     V
|
   16+25       1.5707      0.33  |Q        |         |         |     V
|
   16+30       1.5729      0.33  |Q        |         |         |     V
|
   16+35       1.5750      0.29  |Q        |         |         |     V
|
   16+40       1.5767      0.25  |Q        |         |         |     V
|
   16+45       1.5784      0.25  Q         |         |         |     V
|
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16+50	1.5802	0.25	Q	|	|	|	V	|
16+55	1.5819	0.25	Q	|	|	|	V	|
17+ 0	1.5836	0.25	Q	|	|	|	V	|
17+ 5	1.5858	0.32	|Q	|	|	|	V	|
17+10	1.5886	0.40	|Q	|	|	|	V	|
17+15	1.5914	0.41	|Q	|	|	|	V	|
17+20	1.5943	0.41	|Q	|	|	|	V	|
17+25	1.5972	0.41	|Q	|	|	|	V	|
17+30	1.6000	0.41	|Q	|	|	|	V	|
17+35	1.6029	0.41	|Q	|	|	|	V	|
17+40	1.6057	0.41	|Q	|	|	|	V	|
17+45	1.6086	0.41	|Q	|	|	|	V	|
17+50	1.6112	0.38	|Q	|	|	|	V	|
17+55	1.6135	0.34	|Q	|	|	|	V	|
18+ 0	1.6158	0.33	|Q	|	|	|	V	|
18+ 5	1.6181	0.33	|Q	|	|	|	V	|
18+10	1.6204	0.33	|Q	|	|	|	V	|
18+15	1.6227	0.33	|Q	|	|	|	V	|
18+20	1.6250	0.33	|Q	|	|	|	V	|
18+25	1.6272	0.33	|Q	|	|	|	V	|
18+30	1.6295	0.33	|Q	|	|	|	V	|
18+35	1.6316	0.29	|Q	|	|	|	V	|
18+40	1.6333	0.25	|Q	|	|	|	V	|
18+45	1.6350	0.25	Q	|	|	|	V	|
18+50	1.6365	0.21	Q	|	|	|	V	|
18+55	1.6377	0.17	Q	|	|	|	V	|
19+ 0	1.6388	0.17	Q	|	|	|	V	|
19+ 5	1.6402	0.20	Q	|	|	|	V	|
19+10	1.6419	0.24	Q	|	|	|	V	|
19+15	1.6436	0.25	Q	|	|	|	V	|

19+20 1.6456 0.29 |Q | | | V
|
19+25 1.6478 0.33 |Q | | | V
|
19+30 1.6501 0.33 |Q | | | V
|
19+35 1.6521 0.29 |Q | | | V
|
19+40 1.6539 0.25 |Q | | | V
|
19+45 1.6556 0.25 Q | | | V
|
19+50 1.6571 0.21 Q | | | V
|
19+55 1.6582 0.17 Q | | | V
|
20+ 0 1.6594 0.17 Q | | | V
|
20+ 5 1.6608 0.20 Q | | | V
|
20+10 1.6625 0.24 Q | | | V
|
20+15 1.6642 0.25 Q | | | V
|
20+20 1.6659 0.25 Q | | | V
|
20+25 1.6676 0.25 Q | | | V
|
20+30 1.6693 0.25 Q | | | V
|
20+35 1.6710 0.25 Q | | | V
|
20+40 1.6728 0.25 Q | | | V
|
20+45 1.6745 0.25 Q | | | V
|
20+50 1.6759 0.21 Q | | | V
|
20+55 1.6771 0.17 Q | | | V
|
21+ 0 1.6783 0.17 Q | | | V
|
21+ 5 1.6797 0.20 Q | | | V
|
21+10 1.6813 0.24 Q | | | V
|
21+15 1.6830 0.25 Q | | |
V|
21+20 1.6845 0.21 Q | | |
V|
21+25 1.6857 0.17 Q | | |
V|
21+30 1.6868 0.17 Q | | |
V|
21+35 1.6882 0.20 Q | | |
V|
21+40 1.6899 0.24 Q | | |
V|
21+45 1.6916 0.25 Q | | |
V|

```
  21+50       1.6931      0.21  Q         |         |         |
V|
  21+55       1.6943      0.17  Q         |         |         |
V|
  22+ 0       1.6954      0.17  Q         |         |         |
V|
  22+ 5       1.6968      0.20  Q         |         |         |
V|
  22+10       1.6985      0.24  Q         |         |         |
V|
  22+15       1.7002      0.25  Q         |         |         |
V|
  22+20       1.7016      0.21  Q         |         |         |
V|
  22+25       1.7028      0.17  Q         |         |         |
V|
  22+30       1.7040      0.17  Q         |         |         |
V|
  22+35       1.7051      0.17  Q         |         |         |
V|
  22+40       1.7063      0.17  Q         |         |         |
V|
  22+45       1.7074      0.17  Q         |         |         |
V|
  22+50       1.7085      0.17  Q         |         |         |
V|
  22+55       1.7097      0.17  Q         |         |         |
V|
  23+ 0       1.7108      0.17  Q         |         |         |
V|
  23+ 5       1.7120      0.17  Q         |         |         |
V|
  23+10       1.7131      0.17  Q         |         |         |
V|
  23+15       1.7143      0.17  Q         |         |         |
V|
  23+20       1.7154      0.17  Q         |         |         |
V|
  23+25       1.7166      0.17  Q         |         |         |
V|
  23+30       1.7177      0.17  Q         |         |         |
V|
  23+35       1.7188      0.17  Q         |         |         |
V|
  23+40       1.7200      0.17  Q         |         |         |
V|
  23+45       1.7211      0.17  Q         |         |         |
V|
  23+50       1.7223      0.17  Q         |         |         |
V|
  23+55       1.7234      0.17  Q         |         |         |
V|
  24+ 0       1.7246      0.17  Q         |         |         |
V|
  24+ 5       1.7252      0.09  Q         |         |         |
V|
  24+10       1.7253      0.01  Q         |         |         |
V|
  24+15       1.7253      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

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Study date 11/09/21 File: moval33post24100.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area B

Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) = 0.017 Sq. Mi.
Length along longest watercourse = 1380.00(Ft.)
Length along longest watercourse measured to centroid = 828.00 (Ft.)
Length along longest watercourse = 0.261 Mi.
Length along longest watercourse measured to centroid = 0.157 Mi.
Difference in elevation = 52.00(Ft.)
Slope along watercourse = 198.9565 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.039 Hr.
Lag time = 2.35 Min.
25% of lag time = 0.59 Min.
40% of lag time = 0.94 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]

10.90	1.93	21.04

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
10.90	4.64	50.58

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.930(In)
Area Averaged 100-Year Rainfall = 4.640(In)

Point rain (area averaged) = 4.640(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 4.640(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
10.900	69.00	0.650

Total Area Entered = 10.90(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	84.4	0.194	0.650	0.080	1.000	0.080
					Sum (F) =	0.080

Area averaged mean soil loss (F) (In/Hr) = 0.080
Minimum soil loss rate ((In/Hr)) = 0.040
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

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	213.048	44.793	4.921
2	0.167	426.095	48.755	5.356
3	0.250	639.143	5.617	0.617
4	0.333	852.190	0.835	0.092
			Sum = 100.000	Sum= 10.985

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	0.037	(0.143)	0.014	0.023
2	0.17	0.07	0.037	(0.142)	0.014	0.023
3	0.25	0.07	0.037	(0.142)	0.014	0.023
4	0.33	0.10	0.056	(0.141)	0.021	0.035
5	0.42	0.10	0.056	(0.140)	0.021	0.035
6	0.50	0.10	0.056	(0.140)	0.021	0.035
7	0.58	0.10	0.056	(0.139)	0.021	0.035
8	0.67	0.10	0.056	(0.139)	0.021	0.035
9	0.75	0.10	0.056	(0.138)	0.021	0.035
10	0.83	0.13	0.074	(0.138)	0.028	0.046
11	0.92	0.13	0.074	(0.137)	0.028	0.046
12	1.00	0.13	0.074	(0.137)	0.028	0.046
13	1.08	0.10	0.056	(0.136)	0.021	0.035
14	1.17	0.10	0.056	(0.136)	0.021	0.035
15	1.25	0.10	0.056	(0.135)	0.021	0.035
16	1.33	0.10	0.056	(0.134)	0.021	0.035
17	1.42	0.10	0.056	(0.134)	0.021	0.035
18	1.50	0.10	0.056	(0.133)	0.021	0.035
19	1.58	0.10	0.056	(0.133)	0.021	0.035
20	1.67	0.10	0.056	(0.132)	0.021	0.035
21	1.75	0.10	0.056	(0.132)	0.021	0.035
22	1.83	0.13	0.074	(0.131)	0.028	0.046
23	1.92	0.13	0.074	(0.131)	0.028	0.046
24	2.00	0.13	0.074	(0.130)	0.028	0.046
25	2.08	0.13	0.074	(0.130)	0.028	0.046
26	2.17	0.13	0.074	(0.129)	0.028	0.046
27	2.25	0.13	0.074	(0.129)	0.028	0.046
28	2.33	0.13	0.074	(0.128)	0.028	0.046
29	2.42	0.13	0.074	(0.128)	0.028	0.046
30	2.50	0.13	0.074	(0.127)	0.028	0.046
31	2.58	0.17	0.093	(0.127)	0.035	0.058
32	2.67	0.17	0.093	(0.126)	0.035	0.058
33	2.75	0.17	0.093	(0.125)	0.035	0.058
34	2.83	0.17	0.093	(0.125)	0.035	0.058
35	2.92	0.17	0.093	(0.124)	0.035	0.058
36	3.00	0.17	0.093	(0.124)	0.035	0.058
37	3.08	0.17	0.093	(0.123)	0.035	0.058
38	3.17	0.17	0.093	(0.123)	0.035	0.058
39	3.25	0.17	0.093	(0.122)	0.035	0.058
40	3.33	0.17	0.093	(0.122)	0.035	0.058
41	3.42	0.17	0.093	(0.121)	0.035	0.058
42	3.50	0.17	0.093	(0.121)	0.035	0.058
43	3.58	0.17	0.093	(0.120)	0.035	0.058
44	3.67	0.17	0.093	(0.120)	0.035	0.058
45	3.75	0.17	0.093	(0.119)	0.035	0.058
46	3.83	0.20	0.111	(0.119)	0.042	0.069
47	3.92	0.20	0.111	(0.118)	0.042	0.069
48	4.00	0.20	0.111	(0.118)	0.042	0.069
49	4.08	0.20	0.111	(0.117)	0.042	0.069
50	4.17	0.20	0.111	(0.117)	0.042	0.069
51	4.25	0.20	0.111	(0.116)	0.042	0.069
52	4.33	0.23	0.130	(0.116)	0.049	0.081
53	4.42	0.23	0.130	(0.115)	0.049	0.081
54	4.50	0.23	0.130	(0.115)	0.049	0.081
55	4.58	0.23	0.130	(0.114)	0.049	0.081
56	4.67	0.23	0.130	(0.114)	0.049	0.081
57	4.75	0.23	0.130	(0.113)	0.049	0.081
58	4.83	0.27	0.148	(0.113)	0.056	0.092

59	4.92	0.27	0.148	(0.112)	0.056	0.092
60	5.00	0.27	0.148	(0.112)	0.056	0.092
61	5.08	0.20	0.111	(0.111)	0.042	0.069
62	5.17	0.20	0.111	(0.111)	0.042	0.069
63	5.25	0.20	0.111	(0.110)	0.042	0.069
64	5.33	0.23	0.130	(0.110)	0.049	0.081
65	5.42	0.23	0.130	(0.110)	0.049	0.081
66	5.50	0.23	0.130	(0.109)	0.049	0.081
67	5.58	0.27	0.148	(0.109)	0.056	0.092
68	5.67	0.27	0.148	(0.108)	0.056	0.092
69	5.75	0.27	0.148	(0.108)	0.056	0.092
70	5.83	0.27	0.148	(0.107)	0.056	0.092
71	5.92	0.27	0.148	(0.107)	0.056	0.092
72	6.00	0.27	0.148	(0.106)	0.056	0.092
73	6.08	0.30	0.167	(0.106)	0.063	0.104
74	6.17	0.30	0.167	(0.105)	0.063	0.104
75	6.25	0.30	0.167	(0.105)	0.063	0.104
76	6.33	0.30	0.167	(0.104)	0.063	0.104
77	6.42	0.30	0.167	(0.104)	0.063	0.104
78	6.50	0.30	0.167	(0.103)	0.063	0.104
79	6.58	0.33	0.186	(0.103)	0.071	0.115
80	6.67	0.33	0.186	(0.102)	0.071	0.115
81	6.75	0.33	0.186	(0.102)	0.071	0.115
82	6.83	0.33	0.186	(0.102)	0.071	0.115
83	6.92	0.33	0.186	(0.101)	0.071	0.115
84	7.00	0.33	0.186	(0.101)	0.071	0.115
85	7.08	0.33	0.186	(0.100)	0.071	0.115
86	7.17	0.33	0.186	(0.100)	0.071	0.115
87	7.25	0.33	0.186	(0.099)	0.071	0.115
88	7.33	0.37	0.204	(0.099)	0.078	0.127
89	7.42	0.37	0.204	(0.098)	0.078	0.127
90	7.50	0.37	0.204	(0.098)	0.078	0.127
91	7.58	0.40	0.223	(0.097)	0.085	0.138
92	7.67	0.40	0.223	(0.097)	0.085	0.138
93	7.75	0.40	0.223	(0.097)	0.085	0.138
94	7.83	0.43	0.241	(0.096)	0.092	0.150
95	7.92	0.43	0.241	(0.096)	0.092	0.150
96	8.00	0.43	0.241	(0.095)	0.092	0.150
97	8.08	0.50	0.278	0.095	(0.106)	0.184
98	8.17	0.50	0.278	0.094	(0.106)	0.184
99	8.25	0.50	0.278	0.094	(0.106)	0.185
100	8.33	0.50	0.278	0.093	(0.106)	0.185
101	8.42	0.50	0.278	0.093	(0.106)	0.185
102	8.50	0.50	0.278	0.093	(0.106)	0.186
103	8.58	0.53	0.297	0.092	(0.113)	0.205
104	8.67	0.53	0.297	0.092	(0.113)	0.205
105	8.75	0.53	0.297	0.091	(0.113)	0.206
106	8.83	0.57	0.316	0.091	(0.120)	0.225
107	8.92	0.57	0.316	0.090	(0.120)	0.225
108	9.00	0.57	0.316	0.090	(0.120)	0.226
109	9.08	0.63	0.353	0.090	(0.134)	0.263
110	9.17	0.63	0.353	0.089	(0.134)	0.264
111	9.25	0.63	0.353	0.089	(0.134)	0.264
112	9.33	0.67	0.371	0.088	(0.141)	0.283
113	9.42	0.67	0.371	0.088	(0.141)	0.283
114	9.50	0.67	0.371	0.087	(0.141)	0.284
115	9.58	0.70	0.390	0.087	(0.148)	0.303
116	9.67	0.70	0.390	0.087	(0.148)	0.303
117	9.75	0.70	0.390	0.086	(0.148)	0.304
118	9.83	0.73	0.408	0.086	(0.155)	0.323

119	9.92	0.73	0.408	0.085	(0.155)	0.323
120	10.00	0.73	0.408	0.085	(0.155)	0.323
121	10.08	0.50	0.278	0.085	(0.106)	0.194
122	10.17	0.50	0.278	0.084	(0.106)	0.194
123	10.25	0.50	0.278	0.084	(0.106)	0.195
124	10.33	0.50	0.278	0.083	(0.106)	0.195
125	10.42	0.50	0.278	0.083	(0.106)	0.195
126	10.50	0.50	0.278	0.083	(0.106)	0.196
127	10.58	0.67	0.371	0.082	(0.141)	0.289
128	10.67	0.67	0.371	0.082	(0.141)	0.289
129	10.75	0.67	0.371	0.081	(0.141)	0.290
130	10.83	0.67	0.371	0.081	(0.141)	0.290
131	10.92	0.67	0.371	0.081	(0.141)	0.291
132	11.00	0.67	0.371	0.080	(0.141)	0.291
133	11.08	0.63	0.353	0.080	(0.134)	0.273
134	11.17	0.63	0.353	0.079	(0.134)	0.273
135	11.25	0.63	0.353	0.079	(0.134)	0.274
136	11.33	0.63	0.353	0.079	(0.134)	0.274
137	11.42	0.63	0.353	0.078	(0.134)	0.274
138	11.50	0.63	0.353	0.078	(0.134)	0.275
139	11.58	0.57	0.316	0.077	(0.120)	0.238
140	11.67	0.57	0.316	0.077	(0.120)	0.239
141	11.75	0.57	0.316	0.077	(0.120)	0.239
142	11.83	0.60	0.334	0.076	(0.127)	0.258
143	11.92	0.60	0.334	0.076	(0.127)	0.258
144	12.00	0.60	0.334	0.075	(0.127)	0.259
145	12.08	0.83	0.464	0.075	(0.176)	0.389
146	12.17	0.83	0.464	0.075	(0.176)	0.389
147	12.25	0.83	0.464	0.074	(0.176)	0.390
148	12.33	0.87	0.483	0.074	(0.183)	0.409
149	12.42	0.87	0.483	0.074	(0.183)	0.409
150	12.50	0.87	0.483	0.073	(0.183)	0.409
151	12.58	0.93	0.520	0.073	(0.197)	0.447
152	12.67	0.93	0.520	0.072	(0.197)	0.447
153	12.75	0.93	0.520	0.072	(0.197)	0.448
154	12.83	0.97	0.538	0.072	(0.205)	0.466
155	12.92	0.97	0.538	0.071	(0.205)	0.467
156	13.00	0.97	0.538	0.071	(0.205)	0.467
157	13.08	1.13	0.631	0.071	(0.240)	0.560
158	13.17	1.13	0.631	0.070	(0.240)	0.561
159	13.25	1.13	0.631	0.070	(0.240)	0.561
160	13.33	1.13	0.631	0.070	(0.240)	0.561
161	13.42	1.13	0.631	0.069	(0.240)	0.562
162	13.50	1.13	0.631	0.069	(0.240)	0.562
163	13.58	0.77	0.427	0.069	(0.162)	0.358
164	13.67	0.77	0.427	0.068	(0.162)	0.359
165	13.75	0.77	0.427	0.068	(0.162)	0.359
166	13.83	0.77	0.427	0.068	(0.162)	0.359
167	13.92	0.77	0.427	0.067	(0.162)	0.360
168	14.00	0.77	0.427	0.067	(0.162)	0.360
169	14.08	0.90	0.501	0.066	(0.190)	0.435
170	14.17	0.90	0.501	0.066	(0.190)	0.435
171	14.25	0.90	0.501	0.066	(0.190)	0.435
172	14.33	0.87	0.483	0.065	(0.183)	0.417
173	14.42	0.87	0.483	0.065	(0.183)	0.417
174	14.50	0.87	0.483	0.065	(0.183)	0.418
175	14.58	0.87	0.483	0.064	(0.183)	0.418
176	14.67	0.87	0.483	0.064	(0.183)	0.418
177	14.75	0.87	0.483	0.064	(0.183)	0.419
178	14.83	0.83	0.464	0.063	(0.176)	0.401

179	14.92	0.83	0.464	0.063	(0.176)	0.401
180	15.00	0.83	0.464	0.063	(0.176)	0.401
181	15.08	0.80	0.445	0.063	(0.169)	0.383
182	15.17	0.80	0.445	0.062	(0.169)	0.383
183	15.25	0.80	0.445	0.062	(0.169)	0.384
184	15.33	0.77	0.427	0.062	(0.162)	0.365
185	15.42	0.77	0.427	0.061	(0.162)	0.366
186	15.50	0.77	0.427	0.061	(0.162)	0.366
187	15.58	0.63	0.353	0.061	(0.134)	0.292
188	15.67	0.63	0.353	0.060	(0.134)	0.292
189	15.75	0.63	0.353	0.060	(0.134)	0.293
190	15.83	0.63	0.353	0.060	(0.134)	0.293
191	15.92	0.63	0.353	0.059	(0.134)	0.293
192	16.00	0.63	0.353	0.059	(0.134)	0.294
193	16.08	0.13	0.074	(0.059)	0.028	0.046
194	16.17	0.13	0.074	(0.058)	0.028	0.046
195	16.25	0.13	0.074	(0.058)	0.028	0.046
196	16.33	0.13	0.074	(0.058)	0.028	0.046
197	16.42	0.13	0.074	(0.058)	0.028	0.046
198	16.50	0.13	0.074	(0.057)	0.028	0.046
199	16.58	0.10	0.056	(0.057)	0.021	0.035
200	16.67	0.10	0.056	(0.057)	0.021	0.035
201	16.75	0.10	0.056	(0.056)	0.021	0.035
202	16.83	0.10	0.056	(0.056)	0.021	0.035
203	16.92	0.10	0.056	(0.056)	0.021	0.035
204	17.00	0.10	0.056	(0.056)	0.021	0.035
205	17.08	0.17	0.093	(0.055)	0.035	0.058
206	17.17	0.17	0.093	(0.055)	0.035	0.058
207	17.25	0.17	0.093	(0.055)	0.035	0.058
208	17.33	0.17	0.093	(0.054)	0.035	0.058
209	17.42	0.17	0.093	(0.054)	0.035	0.058
210	17.50	0.17	0.093	(0.054)	0.035	0.058
211	17.58	0.17	0.093	(0.054)	0.035	0.058
212	17.67	0.17	0.093	(0.053)	0.035	0.058
213	17.75	0.17	0.093	(0.053)	0.035	0.058
214	17.83	0.13	0.074	(0.053)	0.028	0.046
215	17.92	0.13	0.074	(0.053)	0.028	0.046
216	18.00	0.13	0.074	(0.052)	0.028	0.046
217	18.08	0.13	0.074	(0.052)	0.028	0.046
218	18.17	0.13	0.074	(0.052)	0.028	0.046
219	18.25	0.13	0.074	(0.052)	0.028	0.046
220	18.33	0.13	0.074	(0.051)	0.028	0.046
221	18.42	0.13	0.074	(0.051)	0.028	0.046
222	18.50	0.13	0.074	(0.051)	0.028	0.046
223	18.58	0.10	0.056	(0.051)	0.021	0.035
224	18.67	0.10	0.056	(0.050)	0.021	0.035
225	18.75	0.10	0.056	(0.050)	0.021	0.035
226	18.83	0.07	0.037	(0.050)	0.014	0.023
227	18.92	0.07	0.037	(0.050)	0.014	0.023
228	19.00	0.07	0.037	(0.049)	0.014	0.023
229	19.08	0.10	0.056	(0.049)	0.021	0.035
230	19.17	0.10	0.056	(0.049)	0.021	0.035
231	19.25	0.10	0.056	(0.049)	0.021	0.035
232	19.33	0.13	0.074	(0.048)	0.028	0.046
233	19.42	0.13	0.074	(0.048)	0.028	0.046
234	19.50	0.13	0.074	(0.048)	0.028	0.046
235	19.58	0.10	0.056	(0.048)	0.021	0.035
236	19.67	0.10	0.056	(0.048)	0.021	0.035
237	19.75	0.10	0.056	(0.047)	0.021	0.035
238	19.83	0.07	0.037	(0.047)	0.014	0.023

239	19.92	0.07	0.037	(0.047)	0.014	0.023
240	20.00	0.07	0.037	(0.047)	0.014	0.023
241	20.08	0.10	0.056	(0.047)	0.021	0.035
242	20.17	0.10	0.056	(0.046)	0.021	0.035
243	20.25	0.10	0.056	(0.046)	0.021	0.035
244	20.33	0.10	0.056	(0.046)	0.021	0.035
245	20.42	0.10	0.056	(0.046)	0.021	0.035
246	20.50	0.10	0.056	(0.046)	0.021	0.035
247	20.58	0.10	0.056	(0.045)	0.021	0.035
248	20.67	0.10	0.056	(0.045)	0.021	0.035
249	20.75	0.10	0.056	(0.045)	0.021	0.035
250	20.83	0.07	0.037	(0.045)	0.014	0.023
251	20.92	0.07	0.037	(0.045)	0.014	0.023
252	21.00	0.07	0.037	(0.044)	0.014	0.023
253	21.08	0.10	0.056	(0.044)	0.021	0.035
254	21.17	0.10	0.056	(0.044)	0.021	0.035
255	21.25	0.10	0.056	(0.044)	0.021	0.035
256	21.33	0.07	0.037	(0.044)	0.014	0.023
257	21.42	0.07	0.037	(0.044)	0.014	0.023
258	21.50	0.07	0.037	(0.043)	0.014	0.023
259	21.58	0.10	0.056	(0.043)	0.021	0.035
260	21.67	0.10	0.056	(0.043)	0.021	0.035
261	21.75	0.10	0.056	(0.043)	0.021	0.035
262	21.83	0.07	0.037	(0.043)	0.014	0.023
263	21.92	0.07	0.037	(0.043)	0.014	0.023
264	22.00	0.07	0.037	(0.042)	0.014	0.023
265	22.08	0.10	0.056	(0.042)	0.021	0.035
266	22.17	0.10	0.056	(0.042)	0.021	0.035
267	22.25	0.10	0.056	(0.042)	0.021	0.035
268	22.33	0.07	0.037	(0.042)	0.014	0.023
269	22.42	0.07	0.037	(0.042)	0.014	0.023
270	22.50	0.07	0.037	(0.042)	0.014	0.023
271	22.58	0.07	0.037	(0.042)	0.014	0.023
272	22.67	0.07	0.037	(0.041)	0.014	0.023
273	22.75	0.07	0.037	(0.041)	0.014	0.023
274	22.83	0.07	0.037	(0.041)	0.014	0.023
275	22.92	0.07	0.037	(0.041)	0.014	0.023
276	23.00	0.07	0.037	(0.041)	0.014	0.023
277	23.08	0.07	0.037	(0.041)	0.014	0.023
278	23.17	0.07	0.037	(0.041)	0.014	0.023
279	23.25	0.07	0.037	(0.041)	0.014	0.023
280	23.33	0.07	0.037	(0.041)	0.014	0.023
281	23.42	0.07	0.037	(0.041)	0.014	0.023
282	23.50	0.07	0.037	(0.041)	0.014	0.023
283	23.58	0.07	0.037	(0.040)	0.014	0.023
284	23.67	0.07	0.037	(0.040)	0.014	0.023
285	23.75	0.07	0.037	(0.040)	0.014	0.023
286	23.83	0.07	0.037	(0.040)	0.014	0.023
287	23.92	0.07	0.037	(0.040)	0.014	0.023
288	24.00	0.07	0.037	(0.040)	0.014	0.023

(Loss Rate Not Used)

Sum = 100.0 Sum = 42.0

Flood volume = Effective rainfall 3.50(In)
times area 10.9(Ac.)/[(In)/(Ft.)] = 3.2(Ac.Ft)
Total soil loss = 1.14(In)
Total soil loss = 1.033(Ac.Ft)
Total rainfall = 4.64(In)
Flood volume = 138583.4 Cubic Feet
Total soil loss = 45003.6 Cubic Feet

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--
      Peak flow rate of this hydrograph =      6.176(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       0.0008      0.11  Q         |         |         |
|
    0+10       0.0024      0.24  Q         |         |         |
|
    0+15       0.0041      0.25  VQ        |         |         |
|
    0+20       0.0063      0.31  VQ        |         |         |
|
    0+25       0.0088      0.37  VQ        |         |         |
|
    0+30       0.0114      0.38  VQ        |         |         |
|
    0+35       0.0140      0.38  VQ        |         |         |
|
    0+40       0.0167      0.38  VQ        |         |         |
|
    0+45       0.0193      0.38  VQ        |         |         |
|
    0+50       0.0223      0.44  VQ        |         |         |
|
    0+55       0.0257      0.50  VQ        |         |         |
|
    1+ 0       0.0292      0.50  V Q       |         |         |
|
    1+ 5       0.0323      0.45  VQ        |         |         |
|
    1+10       0.0349      0.39  VQ        |         |         |
|
    1+15       0.0376      0.38  VQ        |         |         |
|
    1+20       0.0402      0.38  VQ        |         |         |
|
    1+25       0.0428      0.38  VQ        |         |         |
|
    1+30       0.0454      0.38  VQ        |         |         |
|
    1+35       0.0480      0.38  VQ        |         |         |
|
    1+40       0.0506      0.38  VQ        |         |         |
|
    1+45       0.0532      0.38  VQ        |         |         |
|
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      1+50       0.0562      0.44  VQ        |         |         |
|
      1+55       0.0597      0.50  VQ        |         |         |
|
      2+ 0       0.0631      0.50  V Q       |         |         |
|
      2+ 5       0.0666      0.51  V Q       |         |         |
|
      2+10       0.0701      0.51  V Q       |         |         |
|
      2+15       0.0736      0.51  V Q       |         |         |
|
      2+20       0.0771      0.51  V Q       |         |         |
|
      2+25       0.0806      0.51  |VQ       |         |         |
|
      2+30       0.0841      0.51  |VQ       |         |         |
|
      2+35       0.0879      0.56  |VQ       |         |         |
|
      2+40       0.0922      0.62  |VQ       |         |         |
|
      2+45       0.0966      0.63  |VQ       |         |         |
|
      2+50       0.1009      0.63  |VQ       |         |         |
|
      2+55       0.1053      0.63  |VQ       |         |         |
|
      3+ 0       0.1096      0.63  |VQ       |         |         |
|
      3+ 5       0.1140      0.63  |VQ       |         |         |
|
      3+10       0.1183      0.63  |VQ       |         |         |
|
      3+15       0.1227      0.63  |VQ       |         |         |
|
      3+20       0.1271      0.63  |VQ       |         |         |
|
      3+25       0.1314      0.63  |VQ       |         |         |
|
      3+30       0.1358      0.63  |VQ       |         |         |
|
      3+35       0.1401      0.63  |VQ       |         |         |
|
      3+40       0.1445      0.63  |VQ       |         |         |
|
      3+45       0.1488      0.63  |VQ       |         |         |
|
      3+50       0.1536      0.69  |VQ       |         |         |
|
      3+55       0.1587      0.75  |V Q      |         |         |
|
      4+ 0       0.1640      0.76  | VQ      |         |         |
|
      4+ 5       0.1692      0.76  | VQ      |         |         |
|
      4+10       0.1744      0.76  | VQ      |         |         |
|
      4+15       0.1796      0.76  | VQ      |         |         |
|
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4+20	0.1853	0.82	VQ			
4+25	0.1913	0.88	VQ			
4+30	0.1974	0.88	VQ			
4+35	0.2035	0.89	VQ			
4+40	0.2096	0.89	VQ			
4+45	0.2157	0.89	VQ			
4+50	0.2222	0.94	VQ			
4+55	0.2291	1.00	V Q			
5+ 0	0.2360	1.01	V Q			
5+ 5	0.2422	0.90	Q			
5+10	0.2476	0.78	Q			
5+15	0.2528	0.76	Q			
5+20	0.2584	0.82	Q			
5+25	0.2645	0.88	Q			
5+30	0.2706	0.88	Q			
5+35	0.2770	0.94	Q			
5+40	0.2840	1.00	VQ			
5+45	0.2909	1.01	VQ			
5+50	0.2979	1.01	VQ			
5+55	0.3049	1.01	VQ			
6+ 0	0.3118	1.01	VQ			
6+ 5	0.3192	1.07	Q			
6+10	0.3270	1.13	Q			
6+15	0.3348	1.14	Q			
6+20	0.3426	1.14	Q			
6+25	0.3505	1.14	Q			
6+30	0.3583	1.14	Q			
6+35	0.3665	1.19	Q			
6+40	0.3752	1.26	VQ			
6+45	0.3839	1.26	VQ			

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    6+50       0.3926      1.26  |   VQ     |         |         |
|
    6+55       0.4013      1.26  |    Q     |         |         |
|
    7+ 0       0.4100      1.26  |    Q     |         |         |
|
    7+ 5       0.4187      1.26  |    Q     |         |         |
|
    7+10       0.4274      1.26  |    Q     |         |         |
|
    7+15       0.4362      1.26  |    Q     |         |         |
|
    7+20       0.4453      1.32  |    Q     |         |         |
|
    7+25       0.4548      1.38  |    Q     |         |         |
|
    7+30       0.4644      1.39  |    Q     |         |         |
|
    7+35       0.4743      1.45  |    Q     |         |         |
|
    7+40       0.4847      1.51  |     Q    |         |         |
|
    7+45       0.4952      1.52  |     Q    |         |         |
|
    7+50       0.5060      1.57  |     Q    |         |         |
|
    7+55       0.5173      1.64  |     Q    |         |         |
|
    8+ 0       0.5286      1.64  |     Q    |         |         |
|
    8+ 5       0.5411      1.81  |     VQ   |         |         |
|
    8+10       0.5548      2.00  |     VQ   |         |         |
|
    8+15       0.5687      2.02  |      VQ  |         |         |
|
    8+20       0.5827      2.03  |      VQ  |         |         |
|
    8+25       0.5967      2.03  |      VQ  |         |         |
|
    8+30       0.6108      2.04  |      VQ  |         |         |
|
    8+35       0.6255      2.14  |      VQ  |         |         |
|
    8+40       0.6409      2.24  |       Q  |         |         |
|
    8+45       0.6565      2.26  |       VQ|         |         |
|
    8+50       0.6727      2.35  |       VQ|         |         |
|
    8+55       0.6896      2.46  |       VQ|         |         |
|
    9+ 0       0.7066      2.47  |       VQ|         |         |
|
    9+ 5       0.7250      2.66  |        VQ         |         |
|
    9+10       0.7447      2.87  |        V|Q        |         |
|
    9+15       0.7647      2.89  |        V|Q        |         |
|
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    9+20      0.7853      2.99  |        V|Q        |         |
|
    9+25      0.8066      3.10  |         V Q       |         |
|
    9+30      0.8281      3.11  |         V Q       |         |
|
    9+35      0.8502      3.21  |         V Q       |         |
|
    9+40      0.8730      3.32  |         V  Q      |         |
|
    9+45      0.8960      3.33  |         |V Q      |         |
|
    9+50      0.9196      3.43  |         |V Q      |         |
|
    9+55      0.9439      3.53  |         |V  Q     |         |
|
   10+ 0      0.9684      3.55  |         | V Q     |         |
|
   10+ 5      0.9884      2.92  |         |QV       |         |
|
   10+10      1.0038      2.22  |       Q | V       |         |
|
   10+15      1.0186      2.15  |       Q | V       |         |
|
   10+20      1.0333      2.14  |       Q | V       |         |
|
   10+25      1.0481      2.15  |       Q |  V      |         |
|
   10+30      1.0629      2.15  |       Q |  V      |         |
|
   10+35      1.0809      2.61  |         Q  V      |         |
|
   10+40      1.1023      3.11  |         | QV      |         |
|
   10+45      1.1242      3.17  |         | Q V     |         |
|
   10+50      1.1461      3.19  |         | Q V     |         |
|
   10+55      1.1681      3.19  |         | Q V     |         |
|
   11+ 0      1.1901      3.20  |         | Q V     |         |
|
   11+ 5      1.2116      3.11  |         | Q  V    |         |
|
   11+10      1.2323      3.01  |         | Q  V    |         |
|
   11+15      1.2530      3.01  |         | Q  V    |         |
|
   11+20      1.2738      3.01  |         | Q   V   |         |
|
   11+25      1.2945      3.01  |         | Q   V   |         |
|
   11+30      1.3153      3.02  |         | Q   V   |         |
|
   11+35      1.3349      2.84  |         |Q    V   |         |
|
   11+40      1.3531      2.65  |         Q      V  |         |
|
   11+45      1.3712      2.63  |         Q      V  |         |
|
```

```
   11+50       1.3899      2.72  |         Q      V  |         |
|
   11+55       1.4093      2.82  |         |Q     V  |         |
|
   12+ 0       1.4289      2.84  |         |Q     V  |         |
|
   12+ 5       1.4529      3.48  |         |  Q    V |         |
|
   12+10       1.4817      4.18  |         |     Q V |         |
|
   12+15       1.5111      4.27  |         |      QV |         |
|
   12+20       1.5412      4.38  |         |      Q V|         |
|
   12+25       1.5721      4.48  |         |      Q V|         |
|
   12+30       1.6030      4.49  |         |      Q  V         |
|
   12+35       1.6353      4.68  |         |       Q V         |
|
   12+40       1.6689      4.89  |         |        QV         |
|
   12+45       1.7027      4.91  |         |        Q|V        |
|
   12+50       1.7373      5.01  |         |         QV        |
|
   12+55       1.7725      5.12  |         |         Q V       |
|
   13+ 0       1.8078      5.13  |         |         Q V       |
|
   13+ 5       1.8463      5.59  |         |         | QV      |
|
   13+10       1.8883      6.09  |         |         |  VQ     |
|
   13+15       1.9307      6.16  |         |         |   Q     |
|
   13+20       1.9732      6.17  |         |         |   Q     |
|
   13+25       2.0157      6.17  |         |         |   QV    |
|
   13+30       2.0582      6.18  |         |         |   QV    |
|
   13+35       2.0939      5.17  |         |         Q     V   |
|
   13+40       2.1220      4.08  |         |     Q   |     V   |
|
   13+45       2.1493      3.96  |         |    Q    |      V  |
|
   13+50       2.1765      3.95  |         |    Q    |      V  |
|
   13+55       2.2037      3.95  |         |    Q    |      V  |
|
   14+ 0       2.2309      3.95  |         |    Q    |       V |
|
   14+ 5       2.2607      4.32  |         |      Q  |       V |
|
   14+10       2.2932      4.73  |         |       Q |       V |
|
   14+15       2.3261      4.78  |         |        Q|        V|
|
```

```
14+20       2.3585      4.69  |         |       Q |        V|
|
14+25       2.3901      4.60  |         |       Q |         V
|
14+30       2.4218      4.59  |         |       Q |         V
|
14+35       2.4534      4.59  |         |       Q |         V
|
14+40       2.4850      4.60  |         |       Q |         |V
|
14+45       2.5167      4.60  |         |       Q |         |V
|
14+50       2.5478      4.51  |         |       Q |         | V
|
14+55       2.5782      4.42  |         |      Q  |         | V
|
15+ 0       2.6086      4.41  |         |      Q  |         | V
|
15+ 5       2.6383      4.32  |         |      Q  |         |  V
|
15+10       2.6674      4.22  |         |     Q   |         |  V
|
15+15       2.6964      4.22  |         |     Q   |         |  V
|
15+20       2.7248      4.13  |         |     Q   |         |   V
|
15+25       2.7526      4.03  |         |     Q   |         |   V
|
15+30       2.7803      4.02  |         |     Q   |         |   V
|
15+35       2.8055      3.66  |         |   Q     |         |    V
|
15+40       2.8280      3.26  |         |  Q      |         |    V
|
15+45       2.8502      3.22  |         | Q       |         |    V
|
15+50       2.8723      3.22  |         | Q       |         |     V
|
15+55       2.8945      3.22  |         | Q       |         |     V
|
16+ 0       2.9167      3.22  |         | Q       |         |     V
|
16+ 5       2.9305      2.01  |       Q |         |         |     V
|
16+10       2.9352      0.68  | Q       |         |         |     V
|
16+15       2.9389      0.53  | Q       |         |         |     V
|
16+20       2.9423      0.51  | Q       |         |         |     V
|
16+25       2.9458      0.51  | Q       |         |         |      V
|
16+30       2.9493      0.51  | Q       |         |         |      V
|
16+35       2.9524      0.45  |Q        |         |         |      V
|
16+40       2.9551      0.39  |Q        |         |         |      V
|
16+45       2.9577      0.38  |Q        |         |         |      V
|
```

16+50	2.9603	0.38	Q			V	
16+55	2.9629	0.38	Q			V	
17+ 0	2.9655	0.38	Q			V	
17+ 5	2.9689	0.49	Q			V	
17+10	2.9732	0.62	Q			V	
17+15	2.9775	0.63	Q			V	
17+20	2.9819	0.63	Q			V	
17+25	2.9862	0.63	Q			V	
17+30	2.9906	0.63	Q			V	
17+35	2.9949	0.63	Q			V	
17+40	2.9993	0.63	Q			V	
17+45	3.0036	0.63	Q			V	
17+50	3.0076	0.58	Q			V	
17+55	3.0111	0.51	Q			V	
18+ 0	3.0146	0.51	Q			V	
18+ 5	3.0181	0.51	Q			V	
18+10	3.0216	0.51	Q			V	
18+15	3.0251	0.51	Q			V	
18+20	3.0286	0.51	Q			V	
18+25	3.0321	0.51	Q			V	
18+30	3.0355	0.51	Q			V	
18+35	3.0386	0.45	Q			V	
18+40	3.0413	0.39	Q			V	
18+45	3.0439	0.38	Q			V	
18+50	3.0461	0.32	Q			V	
18+55	3.0479	0.26	Q			V	
19+ 0	3.0497	0.25	Q			V	
19+ 5	3.0518	0.31	Q			V	
19+10	3.0544	0.37	Q			V	
19+15	3.0570	0.38	Q			V	

19+20	3.0600	0.44	|Q	|	|	|	V |
19+25	3.0634	0.50	|Q	|	|	|	V |
19+30	3.0669	0.50	| Q	|	|	|	V |
19+35	3.0700	0.45	|Q	|	|	|	V |
19+40	3.0727	0.39	|Q	|	|	|	V |
19+45	3.0753	0.38	|Q	|	|	|	V |
19+50	3.0775	0.32	|Q	|	|	|	V |
19+55	3.0793	0.26	|Q	|	|	|	V |
20+ 0	3.0811	0.25	|Q	|	|	|	V |
20+ 5	3.0832	0.31	|Q	|	|	|	V |
20+10	3.0857	0.37	|Q	|	|	|	V |
20+15	3.0883	0.38	|Q	|	|	|	V |
20+20	3.0910	0.38	|Q	|	|	|	V |
20+25	3.0936	0.38	|Q	|	|	|	V |
20+30	3.0962	0.38	|Q	|	|	|	V |
20+35	3.0988	0.38	|Q	|	|	|	V |
20+40	3.1014	0.38	|Q	|	|	|	V |
20+45	3.1040	0.38	|Q	|	|	|	V|
20+50	3.1062	0.32	|Q	|	|	|	V|
20+55	3.1080	0.26	|Q	|	|	|	V|
21+ 0	3.1098	0.25	|Q	|	|	|	V|
21+ 5	3.1119	0.31	|Q	|	|	|	V|
21+10	3.1145	0.37	|Q	|	|	|	V|
21+15	3.1171	0.38	|Q	|	|	|	V|
21+20	3.1193	0.32	|Q	|	|	|	V|
21+25	3.1211	0.26	|Q	|	|	|	V|
21+30	3.1229	0.25	|Q	|	|	|	V|
21+35	3.1250	0.31	|Q	|	|	|	V|
21+40	3.1276	0.37	|Q	|	|	|	V|
21+45	3.1302	0.38	|Q	|	|	|	V|

```
   21+50       3.1324      0.32  |Q         |          |          |
V|
   21+55       3.1342      0.26  |Q         |          |          |
V|
   22+ 0       3.1359      0.25  |Q         |          |          |
V|
   22+ 5       3.1381      0.31  |Q         |          |          |
V|
   22+10       3.1406      0.37  |Q         |          |          |
V|
   22+15       3.1432      0.38  |Q         |          |          |
V|
   22+20       3.1454      0.32  |Q         |          |          |
V|
   22+25       3.1472      0.26  |Q         |          |          |
V|
   22+30       3.1490      0.25  |Q         |          |          |
V|
   22+35       3.1507      0.25  |Q         |          |          |
V|
   22+40       3.1525      0.25  |Q         |          |          |
V|
   22+45       3.1542      0.25  |Q         |          |          |
V|
   22+50       3.1560      0.25  |Q         |          |          |
V|
   22+55       3.1577      0.25  |Q         |          |          |
V|
   23+ 0       3.1594      0.25  |Q         |          |          |
V|
   23+ 5       3.1612      0.25  |Q         |          |          |
V|
   23+10       3.1629      0.25  |Q         |          |          |
V|
   23+15       3.1647      0.25  |Q         |          |          |
V|
   23+20       3.1664      0.25  |Q         |          |          |
V|
   23+25       3.1682      0.25  |Q         |          |          |
V|
   23+30       3.1699      0.25  |Q         |          |          |
V|
   23+35       3.1716      0.25  |Q         |          |          |
V|
   23+40       3.1734      0.25  |Q         |          |          |
V|
   23+45       3.1751      0.25  |Q         |          |          |
V|
   23+50       3.1769      0.25  |Q         |          |          |
V|
   23+55       3.1786      0.25  |Q         |          |          |
V|
   24+ 0       3.1803      0.25  |Q         |          |          |
V|
   24+ 5       3.1813      0.14  Q          |          |          |
V|
   24+10       3.1814      0.02  Q          |          |          |
V|
   24+15       3.1814      0.00  Q          |          |          |
V
```

Proposed Condition Basin Routing

FLOOD HYDROGRAPH ROUTING PROGRAM

Study date: 11/11/21

Gateway Height
Basin Routing
Area A
2yr 24hr

Program License Serial Number 6232

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

From study/file name: moval33post242.rte

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

Number of intervals = 290
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 0.656 (CFS)
Total volume = 0.399 (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

****

++

Process from Point/Station 202.000 to Point/Station 203.000

**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 290
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  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
           (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
      ------------------------------------------------------------------
---
          0.000      0.000      0.000      0.000        0.000
          1.000      0.016      0.500      0.014        0.018
          2.000      0.032      0.500      0.030        0.034
          3.000      0.097      0.500      0.095        0.099
          4.000      0.182      0.500      0.180        0.184
          5.000      0.292      0.500      0.290        0.294
          6.000      0.402      0.500      0.400        0.404
      ------------------------------------------------------------------
--
                  Hydrograph Detention Basin Routing
      ------------------------------------------------------------------
---

      Graph values: 'I'= unit inflow; 'O'=outflow at time shown
      ------------------------------------------------------------------
---
  Time   Inflow  Outflow    Storage
Depth
 (Hours)  (CFS)   (CFS)     (Ac.Ft) .0       0.2    0.33    0.49    0.66
(Ft.)
  0.083    0.02    0.00      0.000  OI      |       |       |       |
0.00
  0.167    0.04    0.01      0.000  OI      |       |       |       |
0.01
  0.250    0.04    0.01      0.000  OI      |       |       |       |
0.03
  0.333    0.05    0.02      0.001  O I     |       |       |       |
0.04
  0.417    0.06    0.03      0.001  |OI     |       |       |       |
0.05
  0.500    0.06    0.03      0.001  |OI     |       |       |       |
0.06
  0.583    0.06    0.04      0.001  |OI     |       |       |       |
0.07
  0.667    0.06    0.04      0.001  | O     |       |       |       |
0.08
  0.750    0.06    0.04      0.001  | O     |       |       |       |
0.09
  0.833    0.07    0.05      0.002  | OI    |       |       |       |
0.10
  0.917    0.08    0.05      0.002  | OI    |       |       |       |
0.11
  1.000    0.08    0.06      0.002  | OI    |       |       |       |
0.11
  1.083    0.07    0.06      0.002  | OI    |       |       |       |
0.12
  1.167    0.06    0.06      0.002  | O     |       |       |       |
```

```
0.12
  1.250    0.06    0.06      0.002  | O      |       |       |       |
0.12
  1.333    0.06    0.06      0.002  | O      |       |       |       |
0.12
  1.417    0.06    0.06      0.002  | O      |       |       |       |
0.12
  1.500    0.06    0.06      0.002  | O      |       |       |       |
0.12
  1.583    0.06    0.06      0.002  | O      |       |       |       |
0.12
  1.667    0.06    0.06      0.002  | O      |       |       |       |
0.12
  1.750    0.06    0.06      0.002  | O      |       |       |       |
0.12
  1.833    0.07    0.06      0.002  | OI     |       |       |       |
0.12
  1.917    0.08    0.06      0.002  |  O     |       |       |       |
0.12
  2.000    0.08    0.06      0.002  |  O     |       |       |       |
0.13
  2.083    0.08    0.07      0.002  |  O     |       |       |       |
0.13
  2.167    0.08    0.07      0.002  |  O     |       |       |       |
0.14
  2.250    0.08    0.07      0.002  |  O     |       |       |       |
0.14
  2.333    0.08    0.07      0.002  |  O     |       |       |       |
0.14
  2.417    0.08    0.07      0.002  |  O     |       |       |       |
0.15
  2.500    0.08    0.07      0.002  |  O     |       |       |       |
0.15
  2.583    0.09    0.08      0.002  |  OI    |       |       |       |
0.15
  2.667    0.10    0.08      0.003  |  OI    |       |       |       |
0.16
  2.750    0.10    0.08      0.003  |   O    |       |       |       |
0.16
  2.833    0.10    0.08      0.003  |   O    |       |       |       |
0.17
  2.917    0.10    0.09      0.003  |   O    |       |       |       |
0.17
  3.000    0.10    0.09      0.003  |   O    |       |       |       |
0.18
  3.083    0.10    0.09      0.003  |   O    |       |       |       |
0.18
  3.167    0.10    0.09      0.003  |   O    |       |       |       |
0.18
  3.250    0.10    0.09      0.003  |   O    |       |       |       |
0.19
  3.333    0.10    0.09      0.003  |   O    |       |       |       |
0.19
  3.417    0.10    0.09      0.003  |   O    |       |       |       |
0.19
  3.500    0.10    0.09      0.003  |   O    |       |       |       |
0.19
  3.583    0.10    0.09      0.003  |   O    |       |       |       |
0.19
  3.667    0.10    0.10      0.003  |   O    |       |       |       |
```

```
0.19
  3.750    0.10    0.10      0.003  |   O   |       |       |       |
0.19
  3.833    0.11    0.10      0.003  |   OI  |       |       |       |
0.19
  3.917    0.12    0.10      0.003  |   OI  |       |       |       |
0.20
  4.000    0.12    0.10      0.003  |    O  |       |       |       |
0.21
  4.083    0.12    0.11      0.003  |    O  |       |       |       |
0.21
  4.167    0.12    0.11      0.003  |    O  |       |       |       |
0.21
  4.250    0.12    0.11      0.003  |    O  |       |       |       |
0.22
  4.333    0.13    0.11      0.004  |    OI |       |       |       |
0.22
  4.417    0.13    0.12      0.004  |    OI |       |       |       |
0.23
  4.500    0.14    0.12      0.004  |    OI |       |       |       |
0.24
  4.583    0.14    0.12      0.004  |    OI |       |       |       |
0.24
  4.667    0.14    0.12      0.004  |     O |       |       |       |
0.25
  4.750    0.14    0.13      0.004  |     O |       |       |       |
0.25
  4.833    0.15    0.13      0.004  |     OI|       |       |       |
0.26
  4.917    0.15    0.13      0.004  |     OI|       |       |       |
0.27
  5.000    0.15    0.14      0.004  |     OI|       |       |       |
0.27
  5.083    0.13    0.14      0.004  |     O |       |       |       |
0.28
  5.167    0.12    0.14      0.004  |    IO |       |       |       |
0.27
  5.250    0.12    0.13      0.004  |    IO |       |       |       |
0.26
  5.333    0.13    0.13      0.004  |     O |       |       |       |
0.26
  5.417    0.13    0.13      0.004  |     O |       |       |       |
0.26
  5.500    0.14    0.13      0.004  |     O |       |       |       |
0.26
  5.583    0.15    0.13      0.004  |     OI|       |       |       |
0.27
  5.667    0.15    0.14      0.004  |     OI|       |       |       |
0.27
  5.750    0.15    0.14      0.004  |     OI|       |       |       |
0.28
  5.833    0.15    0.14      0.005  |     OI|       |       |       |
0.29
  5.917    0.15    0.14      0.005  |      O|       |       |       |
0.29
  6.000    0.15    0.15      0.005  |      O|       |       |       |
0.29
  6.083    0.16    0.15      0.005  |      OI       |       |       |
0.30
  6.167    0.17    0.15      0.005  |      OI       |       |       |
```

```
0.31
  6.250    0.17    0.16      0.005  |      OI       |       |       |
0.31
  6.333    0.17    0.16      0.005  |      OI       |       |       |
0.32
  6.417    0.17    0.16      0.005  |      OI       |       |       |
0.33
  6.500    0.17    0.17      0.005  |       O       |       |       |
0.33
  6.583    0.18    0.17      0.005  |       O       |       |       |
0.34
  6.667    0.19    0.17      0.005  |       OI      |       |       |
0.34
  6.750    0.19    0.18      0.006  |       OI      |       |       |
0.35
  6.833    0.19    0.18      0.006  |       OI      |       |       |
0.36
  6.917    0.19    0.18      0.006  |       OI      |       |       |
0.36
  7.000    0.19    0.18      0.006  |       OI      |       |       |
0.37
  7.083    0.19    0.19      0.006  |       |O      |       |       |
0.37
  7.167    0.19    0.19      0.006  |       |O      |       |       |
0.37
  7.250    0.19    0.19      0.006  |       |O      |       |       |
0.38
  7.333    0.20    0.19      0.006  |       |O      |       |       |
0.38
  7.417    0.21    0.19      0.006  |       |OI     |       |       |
0.39
  7.500    0.21    0.20      0.006  |       |OI     |       |       |
0.39
  7.583    0.22    0.20      0.006  |       |OI     |       |       |
0.40
  7.667    0.23    0.21      0.007  |       | OI    |       |       |
0.41
  7.750    0.23    0.21      0.007  |       | OI    |       |       |
0.42
  7.833    0.24    0.22      0.007  |       | OI    |       |       |
0.43
  7.917    0.25    0.22      0.007  |       | O I   |       |       |
0.44
  8.000    0.25    0.23      0.007  |       |  OI   |       |       |
0.46
  8.083    0.27    0.23      0.007  |       |  O I  |       |       |
0.47
  8.167    0.29    0.24      0.008  |       |  O  I |       |       |
0.49
  8.250    0.29    0.25      0.008  |       |   O I |       |       |
0.50
  8.333    0.29    0.26      0.008  |       |   O I |       |       |
0.52
  8.417    0.29    0.27      0.008  |       |   O I |       |       |
0.53
  8.500    0.29    0.27      0.009  |       |    OI |       |       |
0.54
  8.583    0.30    0.27      0.009  |       |    OI |       |       |
0.55
  8.667    0.31    0.28      0.009  |       |    O I|       |       |
```

```
0.56
  8.750    0.31    0.29      0.009  |       |    O I|       |       |
0.57
  8.833    0.32    0.29      0.009  |       |     OI|       |       |
0.58
  8.917    0.33    0.30      0.010  |       |     OI|       |       |
0.60
  9.000    0.33    0.30      0.010  |       |     O I       |       |
0.61
  9.083    0.35    0.31      0.010  |       |      O|I      |       |
0.62
  9.167    0.37    0.32      0.010  |       |      O|I      |       |
0.64
  9.250    0.37    0.33      0.011  |       |       OI      |       |
0.66
  9.333    0.38    0.34      0.011  |       |       O I     |       |
0.67
  9.417    0.39    0.35      0.011  |       |       O I     |       |
0.69
  9.500    0.39    0.35      0.011  |       |       |OI     |       |
0.71
  9.583    0.40    0.36      0.012  |       |       |O I    |       |
0.72
  9.667    0.40    0.37      0.012  |       |       |O I    |       |
0.74
  9.750    0.41    0.38      0.012  |       |       | OI    |       |
0.75
  9.833    0.42    0.38      0.012  |       |       | O I   |       |
0.76
  9.917    0.42    0.39      0.012  |       |       |  OI   |       |
0.78
 10.000    0.42    0.40      0.013  |       |       |  OI   |       |
0.79
 10.083    0.35    0.39      0.013  |       |       |I O    |       |
0.79
 10.167    0.29    0.38      0.012  |       |     I | O     |       |
0.76
 10.250    0.29    0.36      0.012  |       |     I |O      |       |
0.73
 10.333    0.29    0.35      0.011  |       |     I |O      |       |
0.70
 10.417    0.29    0.34      0.011  |       |     I O       |       |
0.67
 10.500    0.29    0.33      0.011  |       |     IO|       |       |
0.66
 10.583    0.34    0.33      0.010  |       |      OI       |       |
0.65
 10.667    0.38    0.33      0.011  |       |       O I     |       |
0.67
 10.750    0.39    0.34      0.011  |       |       O I     |       |
0.69
 10.833    0.39    0.35      0.011  |       |       |OI     |       |
0.70
 10.917    0.39    0.36      0.011  |       |       |OI     |       |
0.72
 11.000    0.39    0.36      0.012  |       |       |OI     |       |
0.73
 11.083    0.38    0.37      0.012  |       |       |OI     |       |
0.73
 11.167    0.37    0.37      0.012  |       |       |O      |       |
```

```
0.74
 11.250    0.37    0.37      0.012  |       |       |O      |       |
0.74
 11.333    0.37    0.37      0.012  |       |       |O      |       |
0.73
 11.417    0.37    0.37      0.012  |       |       |O      |       |
0.73
 11.500    0.37    0.37      0.012  |       |       |O      |       |
0.73
 11.583    0.35    0.37      0.012  |       |       IO      |       |
0.73
 11.667    0.33    0.36      0.012  |       |       IO      |       |
0.72
 11.750    0.33    0.35      0.011  |       |       IO      |       |
0.71
 11.833    0.34    0.35      0.011  |       |       IO      |       |
0.70
 11.917    0.35    0.35      0.011  |       |       O       |       |
0.70
 12.000    0.35    0.35      0.011  |       |       O       |       |
0.70
 12.083    0.42    0.36      0.011  |       |       |O  I   |       |
0.71
 12.167    0.48    0.37      0.012  |       |       | O    I|       |
0.75
 12.250    0.48    0.39      0.013  |       |       |  O   I|       |
0.79
 12.333    0.49    0.41      0.013  |       |       |   O   I       |
0.83
 12.417    0.50    0.43      0.014  |       |       |   O   I       |
0.86
 12.500    0.50    0.44      0.014  |       |       |    O  I       |
0.89
 12.583    0.52    0.46      0.015  |       |       |     O |I      |
0.91
 12.667    0.54    0.47      0.015  |       |       |     O | I     |
0.94
 12.750    0.54    0.48      0.016  |       |       |      O| I     |
0.97
 12.833    0.55    0.50      0.016  |       |       |       O I     |
0.99
 12.917    0.56    0.50      0.016  |       |       |       O  I    |
1.02
 13.000    0.56    0.50      0.017  |       |       |       O  I    |
1.04
 13.083    0.61    0.50      0.017  |       |       |       O    I  |
1.08
 13.167    0.65    0.50      0.018  |       |       |       O      I|
1.14
 13.250    0.66    0.50      0.019  |       |       |       O       I
1.20
 13.333    0.66    0.50      0.020  |       |       |       O       I
1.27
 13.417    0.66    0.50      0.021  |       |       |       O       I
1.34
 13.500    0.66    0.50      0.022  |       |       |       O       I
1.41
 13.583    0.54    0.50      0.023  |       |       |       O I     |
1.45
 13.667    0.45    0.50      0.023  |       |       |    I  O       |
```

```
1.45
 13.750    0.44    0.50      0.023  |       |       |    I  O       |
1.42
 13.833    0.44    0.50      0.022  |       |       |    I  O       |
1.40
 13.917    0.44    0.50      0.022  |       |       |    I  O       |
1.38
 14.000    0.44    0.50      0.022  |       |       |    I  O       |
1.35
 14.083    0.49    0.50      0.021  |       |       |      IO       |
1.34
 14.167    0.52    0.50      0.021  |       |       |       OI      |
1.34
 14.250    0.52    0.50      0.022  |       |       |       OI      |
1.35
 14.333    0.51    0.50      0.022  |       |       |       O       |
1.35
 14.417    0.50    0.50      0.022  |       |       |       O       |
1.36
 14.500    0.50    0.50      0.022  |       |       |       O       |
1.36
 14.583    0.50    0.50      0.022  |       |       |       O       |
1.36
 14.667    0.50    0.50      0.022  |       |       |       O       |
1.36
 14.750    0.50    0.50      0.022  |       |       |       O       |
1.36
 14.833    0.49    0.50      0.022  |       |       |      IO       |
1.36
 14.917    0.48    0.50      0.022  |       |       |      IO       |
1.35
 15.000    0.48    0.50      0.022  |       |       |      IO       |
1.34
 15.083    0.47    0.50      0.021  |       |       |      IO       |
1.34
 15.167    0.46    0.50      0.021  |       |       |     I O       |
1.32
 15.250    0.46    0.50      0.021  |       |       |     I O       |
1.31
 15.333    0.45    0.50      0.021  |       |       |     I O       |
1.29
 15.417    0.44    0.50      0.020  |       |       |    I  O       |
1.27
 15.500    0.44    0.50      0.020  |       |       |    I  O       |
1.24
 15.583    0.40    0.50      0.019  |       |       |  I    O       |
1.21
 15.667    0.37    0.50      0.019  |       |       |I      O       |
1.16
 15.750    0.37    0.50      0.018  |       |       |I      O       |
1.10
 15.833    0.37    0.50      0.017  |       |       |I      O       |
1.04
 15.917    0.37    0.49      0.016  |       |       |I      O       |
0.99
 16.000    0.37    0.47      0.015  |       |       |I    O |       |
0.94
 16.083    0.21    0.43      0.014  |       | I     |    O  |       |
0.87
 16.167    0.09    0.38      0.012  |   I   |       | O      |       |
```

```
0.76
 16.250    0.08    0.32      0.010  |  I    |      O|       |       |
0.64
 16.333    0.08    0.27      0.009  |  I    |    O  |       |       |
0.55
 16.417    0.08    0.24      0.008  |  I    |  O    |       |       |
0.47
 16.500    0.08    0.20      0.007  |  I    |O      |       |       |
0.41
 16.583    0.07    0.18      0.006  |  I    O       |       |       |
0.36
 16.667    0.06    0.16      0.005  | I    O|       |       |       |
0.31
 16.750    0.06    0.14      0.004  | I   O |       |       |       |
0.27
 16.833    0.06    0.12      0.004  | I  O  |       |       |       |
0.24
 16.917    0.06    0.11      0.003  | I  O  |       |       |       |
0.22
 17.000    0.06    0.10      0.003  | I O   |       |       |       |
0.20
 17.083    0.08    0.09      0.003  |  IO   |       |       |       |
0.19
 17.167    0.10    0.09      0.003  |   O   |       |       |       |
0.18
 17.250    0.10    0.09      0.003  |   O   |       |       |       |
0.19
 17.333    0.10    0.09      0.003  |   O   |       |       |       |
0.19
 17.417    0.10    0.09      0.003  |   O   |       |       |       |
0.19
 17.500    0.10    0.09      0.003  |   O   |       |       |       |
0.19
 17.583    0.10    0.09      0.003  |   O   |       |       |       |
0.19
 17.667    0.10    0.10      0.003  |   O   |       |       |       |
0.19
 17.750    0.10    0.10      0.003  |   O   |       |       |       |
0.19
 17.833    0.09    0.09      0.003  |   O   |       |       |       |
0.19
 17.917    0.08    0.09      0.003  |  IO   |       |       |       |
0.18
 18.000    0.08    0.09      0.003  |  IO   |       |       |       |
0.18
 18.083    0.08    0.09      0.003  |  IO   |       |       |       |
0.17
 18.167    0.08    0.09      0.003  |  IO   |       |       |       |
0.17
 18.250    0.08    0.08      0.003  |  IO   |       |       |       |
0.17
 18.333    0.08    0.08      0.003  |  IO   |       |       |       |
0.16
 18.417    0.08    0.08      0.003  |  O    |       |       |       |
0.16
 18.500    0.08    0.08      0.003  |  O    |       |       |       |
0.16
 18.583    0.07    0.08      0.003  |  O    |       |       |       |
0.16
 18.667    0.06    0.08      0.002  | IO    |       |       |       |
```

```
0.15
 18.750    0.06    0.07      0.002  | IO     |       |       |       |
0.14
 18.833    0.05    0.07      0.002  | IO     |       |       |       |
0.14
 18.917    0.04    0.06      0.002  |I O     |       |       |       |
0.13
 19.000    0.04    0.06      0.002  |IO      |       |       |       |
0.12
 19.083    0.05    0.06      0.002  | O      |       |       |       |
0.11
 19.167    0.06    0.06      0.002  | O      |       |       |       |
0.11
 19.250    0.06    0.06      0.002  | O      |       |       |       |
0.11
 19.333    0.07    0.06      0.002  | OI     |       |       |       |
0.11
 19.417    0.08    0.06      0.002  | OI     |       |       |       |
0.12
 19.500    0.08    0.06      0.002  |  O     |       |       |       |
0.13
 19.583    0.07    0.07      0.002  |  O     |       |       |       |
0.13
 19.667    0.06    0.06      0.002  | IO     |       |       |       |
0.13
 19.750    0.06    0.06      0.002  | IO     |       |       |       |
0.13
 19.833    0.05    0.06      0.002  | O      |       |       |       |
0.12
 19.917    0.04    0.06      0.002  |IO      |       |       |       |
0.12
 20.000    0.04    0.05      0.002  |IO      |       |       |       |
0.11
 20.083    0.05    0.05      0.002  | O      |       |       |       |
0.10
 20.167    0.06    0.05      0.002  | O      |       |       |       |
0.10
 20.250    0.06    0.05      0.002  | O      |       |       |       |
0.11
 20.333    0.06    0.05      0.002  | O      |       |       |       |
0.11
 20.417    0.06    0.05      0.002  | O      |       |       |       |
0.11
 20.500    0.06    0.06      0.002  | O      |       |       |       |
0.11
 20.583    0.06    0.06      0.002  | O      |       |       |       |
0.11
 20.667    0.06    0.06      0.002  | O      |       |       |       |
0.11
 20.750    0.06    0.06      0.002  | O      |       |       |       |
0.11
 20.833    0.05    0.06      0.002  | O      |       |       |       |
0.11
 20.917    0.04    0.05      0.002  |IO      |       |       |       |
0.11
 21.000    0.04    0.05      0.002  |IO      |       |       |       |
0.10
 21.083    0.05    0.05      0.002  | O      |       |       |       |
0.10
 21.167    0.06    0.05      0.002  | O      |       |       |       |
```

```
0.10
 21.250    0.06    0.05      0.002  | O      |       |       |       |
0.10
 21.333    0.05    0.05      0.002  | O      |       |       |       |
0.10
 21.417    0.04    0.05      0.002  |IO      |       |       |       |
0.10
 21.500    0.04    0.05      0.002  |IO      |       |       |       |
0.10
 21.583    0.05    0.05      0.002  | O      |       |       |       |
0.09
 21.667    0.06    0.05      0.002  | O      |       |       |       |
0.10
 21.750    0.06    0.05      0.002  | O      |       |       |       |
0.10
 21.833    0.05    0.05      0.002  | O      |       |       |       |
0.10
 21.917    0.04    0.05      0.002  |IO      |       |       |       |
0.10
 22.000    0.04    0.05      0.002  |IO      |       |       |       |
0.09
 22.083    0.05    0.05      0.001  | O      |       |       |       |
0.09
 22.167    0.06    0.05      0.002  | O      |       |       |       |
0.10
 22.250    0.06    0.05      0.002  | O      |       |       |       |
0.10
 22.333    0.05    0.05      0.002  | O      |       |       |       |
0.10
 22.417    0.04    0.05      0.002  |IO      |       |       |       |
0.10
 22.500    0.04    0.05      0.002  |IO      |       |       |       |
0.09
 22.583    0.04    0.05      0.001  |IO      |       |       |       |
0.09
 22.667    0.04    0.04      0.001  |IO      |       |       |       |
0.09
 22.750    0.04    0.04      0.001  |IO      |       |       |       |
0.09
 22.833    0.04    0.04      0.001  |IO      |       |       |       |
0.08
 22.917    0.04    0.04      0.001  |IO      |       |       |       |
0.08
 23.000    0.04    0.04      0.001  |O       |       |       |       |
0.08
 23.083    0.04    0.04      0.001  |O       |       |       |       |
0.08
 23.167    0.04    0.04      0.001  |O       |       |       |       |
0.08
 23.250    0.04    0.04      0.001  |O       |       |       |       |
0.08
 23.333    0.04    0.04      0.001  |O       |       |       |       |
0.08
 23.417    0.04    0.04      0.001  |O       |       |       |       |
0.08
 23.500    0.04    0.04      0.001  |O       |       |       |       |
0.08
 23.583    0.04    0.04      0.001  |O       |       |       |       |
0.08
 23.667    0.04    0.04      0.001  |O       |       |       |       |
```

```
0.08
 23.750    0.04    0.04      0.001  |O      |       |       |       |
0.08
 23.833    0.04    0.04      0.001  |O      |       |       |       |
0.08
 23.917    0.04    0.04      0.001  |O      |       |       |       |
0.08
 24.000    0.04    0.04      0.001  |O      |       |       |       |
0.08
 24.083    0.02    0.04      0.001  IO      |       |       |       |
0.07
 24.167    0.00    0.03      0.001  IO      |       |       |       |
0.06
 24.250    0.00    0.03      0.001  IO      |       |       |       |
0.05
 24.333    0.00    0.02      0.001  O       |       |       |       |
0.04
 24.417    0.00    0.02      0.001  O       |       |       |       |
0.03
 24.500    0.00    0.01      0.000  O       |       |       |       |
0.03
 24.583    0.00    0.01      0.000  O       |       |       |       |
0.02
 24.667    0.00    0.01      0.000  O       |       |       |       |
0.02
 24.750    0.00    0.01      0.000  O       |       |       |       |
0.01
 24.833    0.00    0.01      0.000  O       |       |       |       |
0.01
 24.917    0.00    0.00      0.000  O       |       |       |       |
0.01
 25.000    0.00    0.00      0.000  O       |       |       |       |
0.01
 25.083    0.00    0.00      0.000  O       |       |       |       |
0.01
 25.167    0.00    0.00      0.000  O       |       |       |       |
0.00
 25.250    0.00    0.00      0.000  O       |       |       |       |
0.00
 25.333    0.00    0.00      0.000  O       |       |       |       |
0.00
 25.417    0.00    0.00      0.000  O       |       |       |       |
0.00
 25.500    0.00    0.00      0.000  O       |       |       |       |
0.00

      ****************************HYDROGRAPH
DATA****************************
                 Number of intervals =   306
                 Time interval =    5.0 (Min.)
                 Maximum/Peak flow rate =        0.500 (CFS)
                 Total volume =       0.399 (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: 11/11/21

Gateway Height
Basin Routing
Area A
100yr 1hr

--

Program License Serial Number 6232

--
********************* HYDROGRAPH INFORMATION
****

From study/file name: moval33post1100.rte
****************************HYDROGRAPH
DATA***************************
Number of intervals =   14
Time interval =   5.0 (Min.)
Maximum/Peak flow rate =   13.098 (CFS)
Total volume =   0.370 (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

****
*****

++
++++
Process from Point/Station   202.000 to Point/Station
203.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

--
Total number of inflow hydrograph intervals = 14
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  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
           (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
      ------------------------------------------------------------------
---
          0.000      0.000      0.000      0.000        0.000
          1.000      0.016      0.500      0.014        0.018
          2.000      0.032      0.500      0.030        0.034
          3.000      0.097      0.500      0.095        0.099
          4.000      0.182      0.500      0.180        0.184
          5.000      0.292      0.500      0.290        0.294
          6.000      0.402      0.500      0.400        0.404
      ------------------------------------------------------------------
--
                  Hydrograph Detention Basin Routing
      ------------------------------------------------------------------
---

      Graph values: 'I'= unit inflow; 'O'=outflow at time shown
      ------------------------------------------------------------------
---
  Time   Inflow  Outflow    Storage
Depth
 (Hours)  (CFS)   (CFS)     (Ac.Ft) .0       3.3    6.55    9.82   13.10
(Ft.)
  0.083    0.86    0.08      0.003  O I     |       |       |       |
0.17
  0.167    1.81    0.33      0.010  O   I   |       |       |       |
0.65
  0.250    2.14    0.50      0.021  |O   I  |       |       |       |
1.33
  0.333    2.33    0.50      0.033  |O   I  |       |       |       |
2.02
  0.417    2.56    0.50      0.047  |O    I |       |       |       |
2.22
  0.500    2.98    0.50      0.062  |O     I|       |       |       |
2.47
  0.583    3.42    0.50      0.081  |O      I       |       |       |
2.75
  0.667    4.21    0.50      0.104  |O      | I     |       |       |
3.08
  0.750    6.31    0.50      0.136  |O      |      I|       |       |
3.46
  0.833   13.10    0.50      0.200  |O      |       |       |       I
4.16
  0.917    9.87    0.50      0.275  |O      |       |       I       |
4.85
  1.000    3.15    0.50      0.317  |O     I|       |       |       |
5.23
  1.083    0.90    0.50      0.327  |OI     |       |       |       |
5.32
  1.167    0.05    0.50      0.327  IO      |       |       |       |
```

```
5.32
  1.250    0.00    0.50      0.324  IO       |       |       |       |
5.29
  1.333    0.00    0.50      0.321  IO       |       |       |       |
5.26
  1.417    0.00    0.50      0.317  IO       |       |       |       |
5.23
  1.500    0.00    0.50      0.314  IO       |       |       |       |
5.20
  1.583    0.00    0.50      0.310  IO       |       |       |       |
5.17
  1.667    0.00    0.50      0.307  IO       |       |       |       |
5.13
  1.750    0.00    0.50      0.303  IO       |       |       |       |
5.10
  1.833    0.00    0.50      0.300  IO       |       |       |       |
5.07
  1.917    0.00    0.50      0.296  IO       |       |       |       |
5.04
  2.000    0.00    0.50      0.293  IO       |       |       |       |
5.01
  2.083    0.00    0.50      0.290  IO       |       |       |       |
4.98
  2.167    0.00    0.50      0.286  IO       |       |       |       |
4.95
  2.250    0.00    0.50      0.283  IO       |       |       |       |
4.91
  2.333    0.00    0.50      0.279  IO       |       |       |       |
4.88
  2.417    0.00    0.50      0.276  IO       |       |       |       |
4.85
  2.500    0.00    0.50      0.272  IO       |       |       |       |
4.82
  2.583    0.00    0.50      0.269  IO       |       |       |       |
4.79
  2.667    0.00    0.50      0.265  IO       |       |       |       |
4.76
  2.750    0.00    0.50      0.262  IO       |       |       |       |
4.73
  2.833    0.00    0.50      0.259  IO       |       |       |       |
4.70
  2.917    0.00    0.50      0.255  IO       |       |       |       |
4.66
  3.000    0.00    0.50      0.252  IO       |       |       |       |
4.63
  3.083    0.00    0.50      0.248  IO       |       |       |       |
4.60
  3.167    0.00    0.50      0.245  IO       |       |       |       |
4.57
  3.250    0.00    0.50      0.241  IO       |       |       |       |
4.54
  3.333    0.00    0.50      0.238  IO       |       |       |       |
4.51
  3.417    0.00    0.50      0.234  IO       |       |       |       |
4.48
  3.500    0.00    0.50      0.231  IO       |       |       |       |
4.45
  3.583    0.00    0.50      0.228  IO       |       |       |       |
4.41
  3.667    0.00    0.50      0.224  IO       |       |       |       |
```

```
4.38
  3.750    0.00    0.50      0.221  IO       |        |        |        |
4.35
  3.833    0.00    0.50      0.217  IO       |        |        |        |
4.32
  3.917    0.00    0.50      0.214  IO       |        |        |        |
4.29
  4.000    0.00    0.50      0.210  IO       |        |        |        |
4.26
  4.083    0.00    0.50      0.207  IO       |        |        |        |
4.23
  4.167    0.00    0.50      0.203  IO       |        |        |        |
4.19
  4.250    0.00    0.50      0.200  IO       |        |        |        |
4.16
  4.333    0.00    0.50      0.197  IO       |        |        |        |
4.13
  4.417    0.00    0.50      0.193  IO       |        |        |        |
4.10
  4.500    0.00    0.50      0.190  IO       |        |        |        |
4.07
  4.583    0.00    0.50      0.186  IO       |        |        |        |
4.04
  4.667    0.00    0.50      0.183  IO       |        |        |        |
4.01
  4.750    0.00    0.50      0.179  IO       |        |        |        |
3.97
  4.833    0.00    0.50      0.176  IO       |        |        |        |
3.93
  4.917    0.00    0.50      0.172  IO       |        |        |        |
3.89
  5.000    0.00    0.50      0.169  IO       |        |        |        |
3.85
  5.083    0.00    0.50      0.166  IO       |        |        |        |
3.81
  5.167    0.00    0.50      0.162  IO       |        |        |        |
3.77
  5.250    0.00    0.50      0.159  IO       |        |        |        |
3.73
  5.333    0.00    0.50      0.155  IO       |        |        |        |
3.69
  5.417    0.00    0.50      0.152  IO       |        |        |        |
3.64
  5.500    0.00    0.50      0.148  IO       |        |        |        |
3.60
  5.583    0.00    0.50      0.145  IO       |        |        |        |
3.56
  5.667    0.00    0.50      0.141  IO       |        |        |        |
3.52
  5.750    0.00    0.50      0.138  IO       |        |        |        |
3.48
  5.833    0.00    0.50      0.135  IO       |        |        |        |
3.44
  5.917    0.00    0.50      0.131  IO       |        |        |        |
3.40
  6.000    0.00    0.50      0.128  IO       |        |        |        |
3.36
  6.083    0.00    0.50      0.124  IO       |        |        |        |
3.32
  6.167    0.00    0.50      0.121  IO       |        |        |        |
```

```
3.28
  6.250    0.00    0.50      0.117  IO      |       |       |       |
3.24
  6.333    0.00    0.50      0.114  IO      |       |       |       |
3.20
  6.417    0.00    0.50      0.110  IO      |       |       |       |
3.16
  6.500    0.00    0.50      0.107  IO      |       |       |       |
3.12
  6.583    0.00    0.50      0.104  IO      |       |       |       |
3.08
  6.667    0.00    0.50      0.100  IO      |       |       |       |
3.04
  6.750    0.00    0.50      0.097  IO      |       |       |       |
3.00
  6.833    0.00    0.50      0.093  IO      |       |       |       |
2.94
  6.917    0.00    0.50      0.090  IO      |       |       |       |
2.89
  7.000    0.00    0.50      0.086  IO      |       |       |       |
2.84
  7.083    0.00    0.50      0.083  IO      |       |       |       |
2.78
  7.167    0.00    0.50      0.079  IO      |       |       |       |
2.73
  7.250    0.00    0.50      0.076  IO      |       |       |       |
2.68
  7.333    0.00    0.50      0.073  IO      |       |       |       |
2.62
  7.417    0.00    0.50      0.069  IO      |       |       |       |
2.57
  7.500    0.00    0.50      0.066  IO      |       |       |       |
2.52
  7.583    0.00    0.50      0.062  IO      |       |       |       |
2.47
  7.667    0.00    0.50      0.059  IO      |       |       |       |
2.41
  7.750    0.00    0.50      0.055  IO      |       |       |       |
2.36
  7.833    0.00    0.50      0.052  IO      |       |       |       |
2.31
  7.917    0.00    0.50      0.048  IO      |       |       |       |
2.25
  8.000    0.00    0.50      0.045  IO      |       |       |       |
2.20
  8.083    0.00    0.50      0.042  IO      |       |       |       |
2.15
  8.167    0.00    0.50      0.038  IO      |       |       |       |
2.09
  8.250    0.00    0.50      0.035  IO      |       |       |       |
2.04
  8.333    0.00    0.50      0.031  IO      |       |       |       |
1.95
  8.417    0.00    0.50      0.028  IO      |       |       |       |
1.74
  8.500    0.00    0.50      0.024  IO      |       |       |       |
1.52
  8.583    0.00    0.50      0.021  IO      |       |       |       |
1.31
  8.667    0.00    0.50      0.017  IO      |       |       |       |
```

1.09
8.750 0.00 0.44 0.014 IO | | | |
0.89
8.833 0.00 0.36 0.011 O | | | |
0.72
8.917 0.00 0.29 0.009 O | | | |
0.58
9.000 0.00 0.23 0.007 O | | | |
0.47
9.083 0.00 0.19 0.006 O | | | |
0.37
9.167 0.00 0.15 0.005 O | | | |
0.30
9.250 0.00 0.12 0.004 O | | | |
0.24
9.333 0.00 0.10 0.003 O | | | |
0.20
9.417 0.00 0.08 0.003 O | | | |
0.16
9.500 0.00 0.06 0.002 O | | | |
0.13
9.583 0.00 0.05 0.002 O | | | |
0.10
9.667 0.00 0.04 0.001 O | | | |
0.08
9.750 0.00 0.03 0.001 O | | | |
0.07
9.833 0.00 0.03 0.001 O | | | |
0.05
9.917 0.00 0.02 0.001 O | | | |
0.04
10.000 0.00 0.02 0.001 O | | | |
0.03
10.083 0.00 0.01 0.000 O | | | |
0.03
10.167 0.00 0.01 0.000 O | | | |
0.02
10.250 0.00 0.01 0.000 O | | | |
0.02
10.333 0.00 0.01 0.000 O | | | |
0.01
10.417 0.00 0.01 0.000 O | | | |
0.01
10.500 0.00 0.00 0.000 O | | | |
0.01
10.583 0.00 0.00 0.000 O | | | |
0.01
10.667 0.00 0.00 0.000 O | | | |
0.01
10.750 0.00 0.00 0.000 O | | | |
0.00
10.833 0.00 0.00 0.000 O | | | |
0.00
10.917 0.00 0.00 0.000 O | | | |
0.00
11.000 0.00 0.00 0.000 O | | | |
0.00
11.083 0.00 0.00 0.000 O | | | |
0.00
11.167 0.00 0.00 0.000 O | | | |

0.00

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

Number of intervals = 134
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 0.500 (CFS)
Total volume = 0.370 (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: 11/11/21

Gateway Height
Basin Routing
Area A
100yr 3hr

--

Program License Serial Number 6232

--
********************* HYDROGRAPH INFORMATION
****

From study/file name: moval33post3100.rte
****************************HYDROGRAPH
DATA****************************
Number of intervals =   38
Time interval =   5.0 (Min.)
Maximum/Peak flow rate =   6.789 (CFS)
Total volume =   0.550 (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

****

++
Process from Point/Station   202.000 to Point/Station
203.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

--
Total number of inflow hydrograph intervals = 38
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  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
           (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
      ------------------------------------------------------------------
---
          0.000      0.000      0.000      0.000        0.000
          1.000      0.016      0.500      0.014        0.018
          2.000      0.032      0.500      0.030        0.034
          3.000      0.097      0.500      0.095        0.099
          4.000      0.182      0.500      0.180        0.184
          5.000      0.292     24.000      0.209        0.375
          6.000      0.402     24.000      0.319        0.485
      ------------------------------------------------------------------
--
                  Hydrograph Detention Basin Routing
      ------------------------------------------------------------------
---

      Graph values: 'I'= unit inflow; 'O'=outflow at time shown
      ------------------------------------------------------------------
---
  Time   Inflow  Outflow    Storage
Depth
 (Hours)  (CFS)   (CFS)     (Ac.Ft) .0       1.7    3.39    5.09    6.79
(Ft.)
  0.083    0.47    0.05      0.001  O I     |       |       |       |
0.09
  0.167    0.84    0.16      0.005  O  I    |       |       |       |
0.33
  0.250    0.76    0.29      0.009  |O I    |       |       |       |
0.58
  0.333    0.89    0.39      0.013  |O  I   |       |       |       |
0.79
  0.417    1.04    0.50      0.016  | O I   |       |       |       |
1.01
  0.500    1.20    0.50      0.020  | O  I  |       |       |       |
1.27
  0.583    1.16    0.50      0.025  | O  I  |       |       |       |
1.57
  0.667    1.21    0.50      0.030  | O  I  |       |       |       |
1.86
  0.750    1.31    0.50      0.035  | O   I |       |       |       |
2.05
  0.833    1.17    0.50      0.040  | O  I  |       |       |       |
2.13
  0.917    1.11    0.50      0.045  | O  I  |       |       |       |
2.19
  1.000    1.24    0.50      0.049  | O  I  |       |       |       |
2.26
  1.083    1.52    0.50      0.055  | O    I|       |       |       |
2.36
  1.167    1.68    0.50      0.063  | O    I|       |       |       |
```

```
2.47
  1.250    1.69    0.50      0.071  | O    I|       |       |       |
2.60
  1.333    1.59    0.50      0.079  | O    I|       |       |       |
2.72
  1.417    1.81    0.50      0.087  | O     I       |       |       |
2.85
  1.500    2.09    0.50      0.097  | O     |I      |       |       |
3.00
  1.583    1.99    0.50      0.108  | O     |I      |       |       |
3.12
  1.667    2.03    0.50      0.118  | O     |I      |       |       |
3.25
  1.750    2.44    0.50      0.130  | O     |  I    |       |       |
3.39
  1.833    2.58    0.50      0.144  | O     |   I   |       |       |
3.55
  1.917    2.42    0.50      0.157  | O     |  I    |       |       |
3.71
  2.000    2.38    0.50      0.171  | O     |  I    |       |       |
3.87
  2.083    2.47    0.73      0.183  |  O    |  I    |       |       |
4.01
  2.167    3.06    2.45      0.191  |       |  O  I |       |       |
4.08
  2.250    3.89    3.32      0.195  |       |      O| I     |       |
4.12
  2.333    3.48    3.63      0.197  |       |       IO      |       |
4.13
  2.417    4.56    3.96      0.198  |       |       | O  I  |       |
4.15
  2.500    6.06    5.11      0.204  |       |       |       O   I   |
4.20
  2.583    6.79    6.22      0.209  |       |       |       |    O  I
4.24
  2.667    6.00    6.37      0.209  |       |       |       |   I O |
4.25
  2.750    3.19    4.87      0.202  |       |      I|     O |       |
4.19
  2.833    1.51    2.73      0.192  |      I|   O   |       |       |
4.09
  2.917    1.33    1.62      0.187  |     IO|       |       |       |
4.05
  3.000    0.79    1.14      0.185  |  I O  |       |       |       |
4.03
  3.083    0.18    0.58      0.182  I O     |       |       |       |
4.00
  3.167    0.01    0.50      0.179  I O     |       |       |       |
3.97
  3.250    0.00    0.50      0.176  I O     |       |       |       |
3.93
  3.333    0.00    0.50      0.172  I O     |       |       |       |
3.89
  3.417    0.00    0.50      0.169  I O     |       |       |       |
3.85
  3.500    0.00    0.50      0.166  I O     |       |       |       |
3.81
  3.583    0.00    0.50      0.162  I O     |       |       |       |
3.77
  3.667    0.00    0.50      0.159  I O     |       |       |       |
```

```
3.73
  3.750    0.00    0.50      0.155  I O     |       |       |       |
3.69
  3.833    0.00    0.50      0.152  I O     |       |       |       |
3.64
  3.917    0.00    0.50      0.148  I O     |       |       |       |
3.60
  4.000    0.00    0.50      0.145  I O     |       |       |       |
3.56
  4.083    0.00    0.50      0.141  I O     |       |       |       |
3.52
  4.167    0.00    0.50      0.138  I O     |       |       |       |
3.48
  4.250    0.00    0.50      0.135  I O     |       |       |       |
3.44
  4.333    0.00    0.50      0.131  I O     |       |       |       |
3.40
  4.417    0.00    0.50      0.128  I O     |       |       |       |
3.36
  4.500    0.00    0.50      0.124  I O     |       |       |       |
3.32
  4.583    0.00    0.50      0.121  I O     |       |       |       |
3.28
  4.667    0.00    0.50      0.117  I O     |       |       |       |
3.24
  4.750    0.00    0.50      0.114  I O     |       |       |       |
3.20
  4.833    0.00    0.50      0.110  I O     |       |       |       |
3.16
  4.917    0.00    0.50      0.107  I O     |       |       |       |
3.12
  5.000    0.00    0.50      0.104  I O     |       |       |       |
3.08
  5.083    0.00    0.50      0.100  I O     |       |       |       |
3.04
  5.167    0.00    0.50      0.097  I O     |       |       |       |
3.00
  5.250    0.00    0.50      0.093  I O     |       |       |       |
2.94
  5.333    0.00    0.50      0.090  I O     |       |       |       |
2.89
  5.417    0.00    0.50      0.086  I O     |       |       |       |
2.84
  5.500    0.00    0.50      0.083  I O     |       |       |       |
2.78
  5.583    0.00    0.50      0.079  I O     |       |       |       |
2.73
  5.667    0.00    0.50      0.076  I O     |       |       |       |
2.68
  5.750    0.00    0.50      0.073  I O     |       |       |       |
2.62
  5.833    0.00    0.50      0.069  I O     |       |       |       |
2.57
  5.917    0.00    0.50      0.066  I O     |       |       |       |
2.52
  6.000    0.00    0.50      0.062  I O     |       |       |       |
2.47
  6.083    0.00    0.50      0.059  I O     |       |       |       |
2.41
  6.167    0.00    0.50      0.055  I O     |       |       |       |
```

2.36
6.250 0.00 0.50 0.052 I O | | | |
2.31
6.333 0.00 0.50 0.049 I O | | | |
2.25
6.417 0.00 0.50 0.045 I O | | | |
2.20
6.500 0.00 0.50 0.042 I O | | | |
2.15
6.583 0.00 0.50 0.038 I O | | | |
2.09
6.667 0.00 0.50 0.035 I O | | | |
2.04
6.750 0.00 0.50 0.031 I O | | | |
1.96
6.833 0.00 0.50 0.028 I O | | | |
1.74
6.917 0.00 0.50 0.024 I O | | | |
1.52
7.000 0.00 0.50 0.021 I O | | | |
1.31
7.083 0.00 0.50 0.018 I O | | | |
1.09
7.167 0.00 0.45 0.014 I O | | | |
0.89
7.250 0.00 0.36 0.011 IO | | | |
0.72
7.333 0.00 0.29 0.009 IO | | | |
0.58
7.417 0.00 0.23 0.007 IO | | | |
0.47
7.500 0.00 0.19 0.006 O | | | |
0.38
7.583 0.00 0.15 0.005 O | | | |
0.30
7.667 0.00 0.12 0.004 O | | | |
0.24
7.750 0.00 0.10 0.003 O | | | |
0.20
7.833 0.00 0.08 0.003 O | | | |
0.16
7.917 0.00 0.06 0.002 O | | | |
0.13
8.000 0.00 0.05 0.002 O | | | |
0.10
8.083 0.00 0.04 0.001 O | | | |
0.08
8.167 0.00 0.03 0.001 O | | | |
0.07
8.250 0.00 0.03 0.001 O | | | |
0.05
8.333 0.00 0.02 0.001 O | | | |
0.04
8.417 0.00 0.02 0.001 O | | | |
0.03
8.500 0.00 0.01 0.000 O | | | |
0.03
8.583 0.00 0.01 0.000 O | | | |
0.02
8.667 0.00 0.01 0.000 O | | | |

```
0.02
  8.750    0.00    0.01      0.000  O       |       |       |       |
0.01
  8.833    0.00    0.01      0.000  O       |       |       |       |
0.01
  8.917    0.00    0.00      0.000  O       |       |       |       |
0.01
  9.000    0.00    0.00      0.000  O       |       |       |       |
0.01
  9.083    0.00    0.00      0.000  O       |       |       |       |
0.01
  9.167    0.00    0.00      0.000  O       |       |       |       |
0.00
  9.250    0.00    0.00      0.000  O       |       |       |       |
0.00
  9.333    0.00    0.00      0.000  O       |       |       |       |
0.00
  9.417    0.00    0.00      0.000  O       |       |       |       |
0.00
  9.500    0.00    0.00      0.000  O       |       |       |       |
0.00
  9.583    0.00    0.00      0.000  O       |       |       |       |
0.00

      ****************************HYDROGRAPH
DATA***************************
                  Number of intervals =   115
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        6.371 (CFS)
                  Total volume =       0.550 (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
          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
                        Study date: 11/11/21

      ------------------------------------------------------------------
---

      Gateway Height
      Basin Routing
      Area A
      100yr 6hr
      ------------------------------------------------------------------
--

      Program License Serial Number 6232

      ------------------------------------------------------------------
--
      ********************* HYDROGRAPH INFORMATION
**********************

                  From study/file name: moval33post6100.rte
      ***************************HYDROGRAPH
DATA***************************
                  Number of intervals =    74
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        6.065 (CFS)
                  Total volume =       0.695 (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
      ******************************************************************
*****


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
      Process from Point/Station      202.000 to Point/Station
203.000
      **** RETARDING BASIN ROUTING ****
      __________________________________________________________________
____

      User entry of depth-outflow-storage data
      ------------------------------------------------------------------
--
      Total number of inflow hydrograph intervals = 74
      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  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
           (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
      ------------------------------------------------------------------
---
          0.000      0.000      0.000      0.000        0.000
          1.000      0.016      0.500      0.014        0.018
          2.000      0.032      0.500      0.030        0.034
          3.000      0.097      0.500      0.095        0.099
          4.000      0.182      0.500      0.180        0.184
          5.000      0.292     24.000      0.209        0.375
          6.000      0.402     24.000      0.319        0.485
      ------------------------------------------------------------------
--
                  Hydrograph Detention Basin Routing
      ------------------------------------------------------------------
---

      Graph values: 'I'= unit inflow; 'O'=outflow at time shown
      ------------------------------------------------------------------
---
  Time   Inflow  Outflow    Storage
Depth
 (Hours)  (CFS)   (CFS)     (Ac.Ft) .0       1.5    3.03    4.55    6.06
(Ft.)
  0.083    0.21    0.02      0.001  OI      |       |       |       |
0.04
  0.167    0.41    0.08      0.002  O I     |       |       |       |
0.15
  0.250    0.46    0.15      0.005  O I     |       |       |       |
0.29
  0.333    0.46    0.21      0.007  |OI     |       |       |       |
0.41
  0.417    0.46    0.26      0.008  |OI     |       |       |       |
0.51
  0.500    0.50    0.30      0.010  |OI     |       |       |       |
0.60
  0.583    0.54    0.34      0.011  |OI     |       |       |       |
0.69
  0.667    0.54    0.38      0.012  | O     |       |       |       |
0.76
  0.750    0.54    0.41      0.013  | O     |       |       |       |
0.82
  0.833    0.54    0.44      0.014  | O     |       |       |       |
0.87
  0.917    0.54    0.46      0.015  | O     |       |       |       |
0.91
  1.000    0.61    0.48      0.015  | OI    |       |       |       |
0.96
  1.083    0.66    0.50      0.016  | OI    |       |       |       |
1.02
  1.167    0.66    0.50      0.017  | OI    |       |       |       |
```

```
1.09
  1.250    0.66    0.50      0.019  | OI     |       |       |       |
1.16
  1.333    0.66    0.50      0.020  | OI     |       |       |       |
1.23
  1.417    0.66    0.50      0.021  | OI     |       |       |       |
1.30
  1.500    0.66    0.50      0.022  | OI     |       |       |       |
1.37
  1.583    0.66    0.50      0.023  | OI     |       |       |       |
1.44
  1.667    0.66    0.50      0.024  | OI     |       |       |       |
1.51
  1.750    0.66    0.50      0.025  | OI     |       |       |       |
1.58
  1.833    0.66    0.50      0.026  | OI     |       |       |       |
1.65
  1.917    0.66    0.50      0.028  | OI     |       |       |       |
1.72
  2.000    0.73    0.50      0.029  | OI     |       |       |       |
1.80
  2.083    0.72    0.50      0.030  | OI     |       |       |       |
1.90
  2.167    0.73    0.50      0.032  | OI     |       |       |       |
2.00
  2.250    0.78    0.50      0.034  | O I    |       |       |       |
2.03
  2.333    0.79    0.50      0.036  | O I    |       |       |       |
2.06
  2.417    0.79    0.50      0.038  | O I    |       |       |       |
2.09
  2.500    0.79    0.50      0.040  | O I    |       |       |       |
2.12
  2.583    0.79    0.50      0.042  | O I    |       |       |       |
2.15
  2.667    0.79    0.50      0.044  | O I    |       |       |       |
2.18
  2.750    0.85    0.50      0.046  | O I    |       |       |       |
2.21
  2.833    0.91    0.50      0.048  | O I    |       |       |       |
2.25
  2.917    0.91    0.50      0.051  | O I    |       |       |       |
2.30
  3.000    0.91    0.50      0.054  | O I    |       |       |       |
2.34
  3.083    0.91    0.50      0.057  | O I    |       |       |       |
2.38
  3.167    0.98    0.50      0.060  | O  I   |       |       |       |
2.43
  3.250    1.03    0.50      0.063  | O  I   |       |       |       |
2.48
  3.333    1.03    0.50      0.067  | O  I   |       |       |       |
2.54
  3.417    1.10    0.50      0.071  | O  I   |       |       |       |
2.60
  3.500    1.22    0.50      0.075  | O   I  |       |       |       |
2.67
  3.583    1.34    0.50      0.081  | O     I|       |       |       |
2.75
  3.667    1.40    0.50      0.087  | O     I|       |       |       |
```

```
2.84
  3.750    1.47    0.50      0.093  | O    I|       |       |       |
2.94
  3.833    1.52    0.50      0.100  | O     I       |       |       |
3.04
  3.917    1.59    0.50      0.107  | O     I       |       |       |
3.12
  4.000    1.65    0.50      0.115  | O     I       |       |       |
3.21
  4.083    1.72    0.50      0.123  | O     |I      |       |       |
3.31
  4.167    1.84    0.50      0.132  | O     |I      |       |       |
3.41
  4.250    1.96    0.50      0.142  | O     | I     |       |       |
3.53
  4.333    2.08    0.50      0.152  | O     | I     |       |       |
3.65
  4.417    2.21    0.50      0.164  | O     |  I    |       |       |
3.78
  4.500    2.26    0.50      0.176  | O     |  I    |       |       |
3.92
  4.583    2.33    1.23      0.185  |     O |   I   |       |       |
4.03
  4.667    2.45    2.22      0.190  |       |  OI   |       |       |
4.07
  4.750    2.58    2.47      0.191  |       |    O  |       |       |
4.08
  4.833    2.63    2.59      0.192  |       |    O  |       |       |
4.09
  4.917    2.70    2.66      0.192  |       |     O |       |       |
4.09
  5.000    2.82    2.75      0.193  |       |     O |       |       |
4.10
  5.083    3.22    2.98      0.194  |       |      OI       |       |
4.11
  5.167    3.82    3.44      0.196  |       |       | O I   |       |
4.12
  5.250    4.30    3.97      0.198  |       |       |   O I |       |
4.15
  5.333    4.68    4.41      0.200  |       |       |      OI       |
4.17
  5.417    5.19    4.85      0.202  |       |       |       |O I    |
4.19
  5.500    6.06    5.51      0.205  |       |       |       |    O I|
4.21
  5.583    4.06    5.13      0.204  |       |       |    I  |  O    |
4.20
  5.667    1.48    3.13      0.194  |      I|       O       |       |
4.11
  5.750    0.64    1.38      0.186  |  I   O|       |       |       |
4.04
  5.833    0.43    0.66      0.183  | IO    |       |       |       |
4.01
  5.917    0.30    0.50      0.181  |IO     |       |       |       |
3.99
  6.000    0.19    0.50      0.180  |IO     |       |       |       |
3.97
  6.083    0.07    0.50      0.177  I O     |       |       |       |
3.94
  6.167    0.00    0.50      0.174  I O     |       |       |       |
```

3.90
6.250 0.00 0.50 0.170 I O | | | |
3.86
6.333 0.00 0.50 0.167 I O | | | |
3.82
6.417 0.00 0.50 0.163 I O | | | |
3.78
6.500 0.00 0.50 0.160 I O | | | |
3.74
6.583 0.00 0.50 0.157 I O | | | |
3.70
6.667 0.00 0.50 0.153 I O | | | |
3.66
6.750 0.00 0.50 0.150 I O | | | |
3.62
6.833 0.00 0.50 0.146 I O | | | |
3.58
6.917 0.00 0.50 0.143 I O | | | |
3.54
7.000 0.00 0.50 0.139 I O | | | |
3.50
7.083 0.00 0.50 0.136 I O | | | |
3.46
7.167 0.00 0.50 0.132 I O | | | |
3.42
7.250 0.00 0.50 0.129 I O | | | |
3.38
7.333 0.00 0.50 0.126 I O | | | |
3.34
7.417 0.00 0.50 0.122 I O | | | |
3.30
7.500 0.00 0.50 0.119 I O | | | |
3.26
7.583 0.00 0.50 0.115 I O | | | |
3.22
7.667 0.00 0.50 0.112 I O | | | |
3.17
7.750 0.00 0.50 0.108 I O | | | |
3.13
7.833 0.00 0.50 0.105 I O | | | |
3.09
7.917 0.00 0.50 0.102 I O | | | |
3.05
8.000 0.00 0.50 0.098 I O | | | |
3.01
8.083 0.00 0.50 0.095 I O | | | |
2.96
8.167 0.00 0.50 0.091 I O | | | |
2.91
8.250 0.00 0.50 0.088 I O | | | |
2.86
8.333 0.00 0.50 0.084 I O | | | |
2.80
8.417 0.00 0.50 0.081 I O | | | |
2.75
8.500 0.00 0.50 0.077 I O | | | |
2.70
8.583 0.00 0.50 0.074 I O | | | |
2.65
8.667 0.00 0.50 0.071 I O | | | |

```
2.59
  8.750    0.00    0.50      0.067  I O      |        |        |        |
2.54
  8.833    0.00    0.50      0.064  I O      |        |        |        |
2.49
  8.917    0.00    0.50      0.060  I O      |        |        |        |
2.43
  9.000    0.00    0.50      0.057  I O      |        |        |        |
2.38
  9.083    0.00    0.50      0.053  I O      |        |        |        |
2.33
  9.167    0.00    0.50      0.050  I O      |        |        |        |
2.27
  9.250    0.00    0.50      0.046  I O      |        |        |        |
2.22
  9.333    0.00    0.50      0.043  I O      |        |        |        |
2.17
  9.417    0.00    0.50      0.040  I O      |        |        |        |
2.12
  9.500    0.00    0.50      0.036  I O      |        |        |        |
2.06
  9.583    0.00    0.50      0.033  I O      |        |        |        |
2.01
  9.667    0.00    0.50      0.029  I O      |        |        |        |
1.82
  9.750    0.00    0.50      0.026  I O      |        |        |        |
1.61
  9.833    0.00    0.50      0.022  I O      |        |        |        |
1.39
  9.917    0.00    0.50      0.019  I O      |        |        |        |
1.18
 10.000    0.00    0.48      0.015  I O      |        |        |        |
0.97
 10.083    0.00    0.39      0.012  I O      |        |        |        |
0.78
 10.167    0.00    0.31      0.010  IO       |        |        |        |
0.63
 10.250    0.00    0.25      0.008  IO       |        |        |        |
0.51
 10.333    0.00    0.20      0.007  IO       |        |        |        |
0.41
 10.417    0.00    0.16      0.005  O        |        |        |        |
0.33
 10.500    0.00    0.13      0.004  O        |        |        |        |
0.26
 10.583    0.00    0.11      0.003  O        |        |        |        |
0.21
 10.667    0.00    0.09      0.003  O        |        |        |        |
0.17
 10.750    0.00    0.07      0.002  O        |        |        |        |
0.14
 10.833    0.00    0.06      0.002  O        |        |        |        |
0.11
 10.917    0.00    0.04      0.001  O        |        |        |        |
0.09
 11.000    0.00    0.04      0.001  O        |        |        |        |
0.07
 11.083    0.00    0.03      0.001  O        |        |        |        |
0.06
 11.167    0.00    0.02      0.001  O        |        |        |        |
```

```
0.05
 11.250    0.00    0.02      0.001  O       |       |       |       |
0.04
 11.333    0.00    0.02      0.000  O       |       |       |       |
0.03
 11.417    0.00    0.01      0.000  O       |       |       |       |
0.02
 11.500    0.00    0.01      0.000  O       |       |       |       |
0.02
 11.583    0.00    0.01      0.000  O       |       |       |       |
0.02
 11.667    0.00    0.01      0.000  O       |       |       |       |
0.01
 11.750    0.00    0.01      0.000  O       |       |       |       |
0.01
 11.833    0.00    0.00      0.000  O       |       |       |       |
0.01
 11.917    0.00    0.00      0.000  O       |       |       |       |
0.01
 12.000    0.00    0.00      0.000  O       |       |       |       |
0.01
 12.083    0.00    0.00      0.000  O       |       |       |       |
0.00
 12.167    0.00    0.00      0.000  O       |       |       |       |
0.00
 12.250    0.00    0.00      0.000  O       |       |       |       |
0.00
 12.333    0.00    0.00      0.000  O       |       |       |       |
0.00
 12.417    0.00    0.00      0.000  O       |       |       |       |
0.00

      ****************************HYDROGRAPH
DATA****************************
                  Number of intervals =   149
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        5.508 (CFS)
                  Total volume =       0.695 (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: 11/11/21

Gateway Height
Basin Routing
Area A
100yr 24hr

--

Program License Serial Number 6232

--
********************* HYDROGRAPH INFORMATION
****

From study/file name: moval33post24100.rte
****************************HYDROGRAPH
DATA****************************
Number of intervals = 290
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 2.267 (CFS)
Total volume = 1.168 (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

****
*****

+++
++++
Process from Point/Station 202.000 to Point/Station
203.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

--
Total number of inflow hydrograph intervals = 290
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  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
           (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
      ------------------------------------------------------------------
---
          0.000      0.000      0.000      0.000        0.000
          1.000      0.016      0.500      0.014        0.018
          2.000      0.032      0.500      0.030        0.034
          3.000      0.097      0.500      0.095        0.099
          4.000      0.182      0.500      0.180        0.184
          5.000      0.292     24.000      0.209        0.375
          6.000      0.402     24.000      0.319        0.485
      ------------------------------------------------------------------
--
                  Hydrograph Detention Basin Routing
      ------------------------------------------------------------------
---

      Graph values: 'I'= unit inflow; 'O'=outflow at time shown
      ------------------------------------------------------------------
---
  Time   Inflow  Outflow    Storage
Depth
 (Hours)  (CFS)   (CFS)     (Ac.Ft) .0       0.6    1.13    1.70    2.27
(Ft.)
  0.083    0.05    0.00      0.000  O        |       |       |       |
0.01
  0.167    0.09    0.02      0.001  OI       |       |       |       |
0.04
  0.250    0.09    0.03      0.001  OI       |       |       |       |
0.06
  0.333    0.12    0.05      0.001  OI       |       |       |       |
0.09
  0.417    0.14    0.06      0.002  OI       |       |       |       |
0.12
  0.500    0.14    0.08      0.002  |O       |       |       |       |
0.15
  0.583    0.14    0.09      0.003  |O       |       |       |       |
0.18
  0.667    0.14    0.10      0.003  |O       |       |       |       |
0.20
  0.750    0.14    0.11      0.003  |O       |       |       |       |
0.21
  0.833    0.16    0.12      0.004  |OI      |       |       |       |
0.23
  0.917    0.18    0.13      0.004  |OI      |       |       |       |
0.25
  1.000    0.19    0.14      0.004  |OI      |       |       |       |
0.28
  1.083    0.16    0.14      0.005  | O      |       |       |       |
0.29
  1.167    0.14    0.15      0.005  |IO      |       |       |       |
```

```
0.29
  1.250    0.14    0.14      0.005  |IO      |       |       |       |
0.29
  1.333    0.14    0.14      0.005  |IO      |       |       |       |
0.29
  1.417    0.14    0.14      0.005  |IO      |       |       |       |
0.29
  1.500    0.14    0.14      0.005  |IO      |       |       |       |
0.28
  1.583    0.14    0.14      0.005  |O       |       |       |       |
0.28
  1.667    0.14    0.14      0.005  |O       |       |       |       |
0.28
  1.750    0.14    0.14      0.005  |O       |       |       |       |
0.28
  1.833    0.16    0.14      0.005  | O      |       |       |       |
0.29
  1.917    0.18    0.15      0.005  | O      |       |       |       |
0.30
  2.000    0.19    0.16      0.005  | O      |       |       |       |
0.31
  2.083    0.19    0.16      0.005  | O      |       |       |       |
0.32
  2.167    0.19    0.17      0.005  | O      |       |       |       |
0.33
  2.250    0.19    0.17      0.005  | O      |       |       |       |
0.34
  2.333    0.19    0.17      0.006  | O      |       |       |       |
0.35
  2.417    0.19    0.18      0.006  | O      |       |       |       |
0.35
  2.500    0.19    0.18      0.006  | O      |       |       |       |
0.36
  2.583    0.21    0.18      0.006  | O      |       |       |       |
0.36
  2.667    0.23    0.19      0.006  | OI     |       |       |       |
0.38
  2.750    0.23    0.20      0.006  | OI     |       |       |       |
0.39
  2.833    0.23    0.20      0.007  | OI     |       |       |       |
0.41
  2.917    0.23    0.21      0.007  | OI     |       |       |       |
0.42
  3.000    0.23    0.21      0.007  |  O     |       |       |       |
0.43
  3.083    0.23    0.22      0.007  |  O     |       |       |       |
0.43
  3.167    0.23    0.22      0.007  |  O     |       |       |       |
0.44
  3.250    0.23    0.22      0.007  |  O     |       |       |       |
0.45
  3.333    0.23    0.22      0.007  |  O     |       |       |       |
0.45
  3.417    0.23    0.23      0.007  |  O     |       |       |       |
0.45
  3.500    0.23    0.23      0.007  |  O     |       |       |       |
0.45
  3.583    0.23    0.23      0.007  |  O     |       |       |       |
0.46
  3.667    0.23    0.23      0.007  |  O     |       |       |       |
```

```
0.46
  3.750    0.23    0.23      0.007  |  O    |       |       |       |
0.46
  3.833    0.26    0.23      0.007  |  O    |       |       |       |
0.46
  3.917    0.28    0.24      0.008  |  O    |       |       |       |
0.48
  4.000    0.28    0.25      0.008  |  O    |       |       |       |
0.49
  4.083    0.28    0.25      0.008  |  O    |       |       |       |
0.51
  4.167    0.28    0.26      0.008  |  O    |       |       |       |
0.52
  4.250    0.28    0.26      0.008  |  O    |       |       |       |
0.52
  4.333    0.30    0.27      0.009  |  OI   |       |       |       |
0.54
  4.417    0.32    0.28      0.009  |  OI   |       |       |       |
0.55
  4.500    0.32    0.29      0.009  |   O   |       |       |       |
0.57
  4.583    0.32    0.29      0.009  |   O   |       |       |       |
0.59
  4.667    0.32    0.30      0.010  |   O   |       |       |       |
0.60
  4.750    0.32    0.30      0.010  |   O   |       |       |       |
0.61
  4.833    0.35    0.31      0.010  |   O   |       |       |       |
0.62
  4.917    0.37    0.32      0.010  |   OI  |       |       |       |
0.64
  5.000    0.37    0.33      0.011  |   OI  |       |       |       |
0.66
  5.083    0.32    0.33      0.011  |   O   |       |       |       |
0.67
  5.167    0.28    0.33      0.010  |  IO   |       |       |       |
0.65
  5.250    0.28    0.32      0.010  |  IO   |       |       |       |
0.64
  5.333    0.30    0.31      0.010  |   O   |       |       |       |
0.63
  5.417    0.32    0.31      0.010  |   O   |       |       |       |
0.63
  5.500    0.32    0.32      0.010  |   O   |       |       |       |
0.63
  5.583    0.35    0.32      0.010  |   O   |       |       |       |
0.64
  5.667    0.37    0.33      0.010  |   OI  |       |       |       |
0.65
  5.750    0.37    0.34      0.011  |   OI  |       |       |       |
0.67
  5.833    0.37    0.34      0.011  |   OI  |       |       |       |
0.69
  5.917    0.37    0.35      0.011  |   OI  |       |       |       |
0.70
  6.000    0.37    0.35      0.011  |   OI  |       |       |       |
0.71
  6.083    0.40    0.36      0.011  |    O  |       |       |       |
0.72
  6.167    0.42    0.37      0.012  |    O  |       |       |       |
```

```
0.74
  6.250    0.42    0.38      0.012  |    O  |       |       |       |
0.76
  6.333    0.42    0.39      0.012  |    O  |       |       |       |
0.77
  6.417    0.42    0.39      0.013  |    O  |       |       |       |
0.78
  6.500    0.42    0.40      0.013  |    O  |       |       |       |
0.79
  6.583    0.44    0.40      0.013  |    OI |       |       |       |
0.81
  6.667    0.46    0.41      0.013  |    OI |       |       |       |
0.83
  6.750    0.46    0.42      0.014  |    OI |       |       |       |
0.85
  6.833    0.46    0.43      0.014  |     O |       |       |       |
0.86
  6.917    0.46    0.44      0.014  |     O |       |       |       |
0.87
  7.000    0.46    0.44      0.014  |     O |       |       |       |
0.88
  7.083    0.46    0.45      0.014  |     O |       |       |       |
0.89
  7.167    0.46    0.45      0.014  |     O |       |       |       |
0.90
  7.250    0.46    0.45      0.014  |     O |       |       |       |
0.91
  7.333    0.49    0.46      0.015  |     O |       |       |       |
0.91
  7.417    0.51    0.47      0.015  |     OI|       |       |       |
0.93
  7.500    0.51    0.47      0.015  |     OI|       |       |       |
0.95
  7.583    0.54    0.48      0.015  |     OI|       |       |       |
0.97
  7.667    0.56    0.50      0.016  |     OI|       |       |       |
0.99
  7.750    0.56    0.50      0.016  |      O|       |       |       |
1.02
  7.833    0.58    0.50      0.017  |      OI       |       |       |
1.05
  7.917    0.60    0.50      0.017  |      OI       |       |       |
1.09
  8.000    0.60    0.50      0.018  |      OI       |       |       |
1.13
  8.083    0.68    0.50      0.019  |      O|I      |       |       |
1.19
  8.167    0.74    0.50      0.020  |      O| I     |       |       |
1.28
  8.250    0.74    0.50      0.022  |      O| I     |       |       |
1.38
  8.333    0.75    0.50      0.024  |      O| I     |       |       |
1.49
  8.417    0.75    0.50      0.026  |      O| I     |       |       |
1.60
  8.500    0.75    0.50      0.027  |      O| I     |       |       |
1.70
  8.583    0.79    0.50      0.029  |      O|  I    |       |       |
1.82
  8.667    0.82    0.50      0.031  |      O|  I    |       |       |
```

```
1.95
  8.750    0.83    0.50      0.033  |      O|  I    |       |       |
2.02
  8.833    0.87    0.50      0.036  |      O|   I   |       |       |
2.06
  8.917    0.90    0.50      0.039  |      O|   I   |       |       |
2.10
  9.000    0.91    0.50      0.041  |      O|   I   |       |       |
2.14
  9.083    0.99    0.50      0.044  |      O|     I |       |       |
2.19
  9.167    1.06    0.50      0.048  |      O|     I |       |       |
2.25
  9.250    1.06    0.50      0.052  |      O|      I|       |       |
2.31
  9.333    1.11    0.50      0.056  |      O|      I|       |       |
2.37
  9.417    1.14    0.50      0.060  |      O|       I       |       |
2.43
  9.500    1.14    0.50      0.065  |      O|       I       |       |
2.50
  9.583    1.19    0.50      0.069  |      O|       I       |       |
2.57
  9.667    1.22    0.50      0.074  |      O|       |I      |       |
2.65
  9.750    1.22    0.50      0.079  |      O|       |I      |       |
2.72
  9.833    1.27    0.50      0.084  |      O|       |I      |       |
2.80
  9.917    1.30    0.50      0.090  |      O|       | I     |       |
2.89
 10.000    1.30    0.50      0.095  |      O|       | I     |       |
2.97
 10.083    1.02    0.50      0.100  |      O|     I |       |       |
3.03
 10.167    0.80    0.50      0.102  |      O|  I    |       |       |
3.06
 10.250    0.78    0.50      0.104  |      O|  I    |       |       |
3.09
 10.333    0.79    0.50      0.106  |      O|  I    |       |       |
3.11
 10.417    0.79    0.50      0.108  |      O|  I    |       |       |
3.13
 10.500    0.79    0.50      0.110  |      O|  I    |       |       |
3.16
 10.583    1.00    0.50      0.113  |      O|     I |       |       |
3.19
 10.667    1.16    0.50      0.117  |      O|       I       |       |
3.24
 10.750    1.17    0.50      0.122  |      O|       I       |       |
3.29
 10.833    1.17    0.50      0.126  |      O|       I       |       |
3.34
 10.917    1.17    0.50      0.131  |      O|       I       |       |
3.40
 11.000    1.17    0.50      0.135  |      O|       I       |       |
3.45
 11.083    1.13    0.50      0.140  |      O|       I       |       |
3.51
 11.167    1.10    0.50      0.144  |      O|      I|       |       |
```

```
3.56
 11.250    1.10    0.50      0.148  |      O|      I|       |       |
3.60
 11.333    1.10    0.50      0.153  |      O|      I|       |       |
3.65
 11.417    1.11    0.50      0.157  |      O|      I|       |       |
3.70
 11.500    1.11    0.50      0.161  |      O|      I|       |       |
3.75
 11.583    1.03    0.50      0.165  |      O|     I |       |       |
3.80
 11.667    0.97    0.50      0.168  |      O|    I  |       |       |
3.84
 11.750    0.96    0.50      0.171  |      O|    I  |       |       |
3.88
 11.833    1.01    0.50      0.175  |      O|     I |       |       |
3.92
 11.917    1.04    0.50      0.178  |      O|     I |       |       |
3.96
 12.000    1.04    0.51      0.182  |      O|     I |       |       |
4.00
 12.083    1.33    1.08      0.185  |       |      O| I     |       |
4.02
 12.167    1.55    1.39      0.186  |       |       |  O I  |       |
4.04
 12.250    1.57    1.54      0.187  |       |       |    OI |       |
4.04
 12.333    1.61    1.58      0.187  |       |       |     O |       |
4.05
 12.417    1.65    1.62      0.187  |       |       |     OI|       |
4.05
 12.500    1.65    1.64      0.187  |       |       |      O|       |
4.05
 12.583    1.73    1.68      0.188  |       |       |      OI       |
4.05
 12.667    1.80    1.75      0.188  |       |       |       OI      |
4.05
 12.750    1.80    1.79      0.188  |       |       |       |O      |
4.06
 12.833    1.85    1.82      0.188  |       |       |       |OI     |
4.06
 12.917    1.88    1.86      0.188  |       |       |       | O     |
4.06
 13.000    1.88    1.88      0.188  |       |       |       | O     |
4.06
 13.083    2.09    1.97      0.189  |       |       |       |  O I  |
4.06
 13.167    2.25    2.14      0.190  |       |       |       |     OI|
4.07
 13.250    2.26    2.24      0.190  |       |       |       |      O|
4.07
 13.333    2.26    2.26      0.190  |       |       |       |      O|
4.07
 13.417    2.27    2.26      0.190  |       |       |       |      O|
4.08
 13.500    2.27    2.27      0.190  |       |       |       |      OI
4.08
 13.583    1.82    2.08      0.189  |       |       |       |I   O  |
4.07
 13.667    1.47    1.71      0.188  |       |       |   I   O       |
```

```
4.05
 13.750    1.45    1.50      0.187  |       |       |   IO  |       |
4.04
 13.833    1.45    1.46      0.186  |       |       |   O   |       |
4.04
 13.917    1.45    1.45      0.186  |       |       |   O   |       |
4.04
 14.000    1.45    1.45      0.186  |       |       |   O   |       |
4.04
 14.083    1.62    1.52      0.187  |       |       |    OI |       |
4.04
 14.167    1.75    1.66      0.187  |       |       |      OI       |
4.05
 14.250    1.76    1.74      0.188  |       |       |       O       |
4.05
 14.333    1.72    1.74      0.188  |       |       |       O       |
4.05
 14.417    1.69    1.71      0.188  |       |       |      IO       |
4.05
 14.500    1.68    1.69      0.188  |       |       |      O|       |
4.05
 14.583    1.69    1.69      0.188  |       |       |      O|       |
4.05
 14.667    1.69    1.69      0.188  |       |       |      O|       |
4.05
 14.750    1.69    1.69      0.188  |       |       |      O|       |
4.05
 14.833    1.65    1.67      0.187  |       |       |      O|       |
4.05
 14.917    1.62    1.64      0.187  |       |       |     IO|       |
4.05
 15.000    1.62    1.62      0.187  |       |       |     O |       |
4.05
 15.083    1.58    1.60      0.187  |       |       |     O |       |
4.05
 15.167    1.55    1.57      0.187  |       |       |    IO |       |
4.05
 15.250    1.55    1.55      0.187  |       |       |    O  |       |
4.04
 15.333    1.51    1.53      0.187  |       |       |    O  |       |
4.04
 15.417    1.48    1.50      0.187  |       |       |   IO  |       |
4.04
 15.500    1.48    1.48      0.187  |       |       |   O   |       |
4.04
 15.583    1.31    1.41      0.186  |       |       | IO    |       |
4.04
 15.667    1.19    1.27      0.186  |       |       IO      |       |
4.03
 15.750    1.18    1.20      0.185  |       |       O       |       |
4.03
 15.833    1.18    1.18      0.185  |       |       O       |       |
4.03
 15.917    1.18    1.18      0.185  |       |       O       |       |
4.03
 16.000    1.18    1.18      0.185  |       |       O       |       |
4.03
 16.083    0.64    0.95      0.184  |       |I   O  |       |       |
4.02
 16.167    0.21    0.51      0.182  |  I   O|       |       |       |
```

```
4.00
 16.250    0.19    0.50      0.180  | I     O|       |       |       |
3.98
 16.333    0.19    0.50      0.178  | I     O|       |       |       |
3.95
 16.417    0.19    0.50      0.176  | I     O|       |       |       |
3.92
 16.500    0.19    0.50      0.173  | I     O|       |       |       |
3.90
 16.583    0.16    0.50      0.171  | I     O|       |       |       |
3.87
 16.667    0.14    0.50      0.169  |I      O|       |       |       |
3.84
 16.750    0.14    0.50      0.166  |I      O|       |       |       |
3.82
 16.833    0.14    0.50      0.164  |I      O|       |       |       |
3.79
 16.917    0.14    0.50      0.161  |I      O|       |       |       |
3.76
 17.000    0.14    0.50      0.159  |I      O|       |       |       |
3.73
 17.083    0.19    0.50      0.157  | I     O|       |       |       |
3.70
 17.167    0.23    0.50      0.155  |  I    O|       |       |       |
3.68
 17.250    0.23    0.50      0.153  |  I    O|       |       |       |
3.66
 17.333    0.23    0.50      0.151  |  I    O|       |       |       |
3.63
 17.417    0.23    0.50      0.149  |  I    O|       |       |       |
3.61
 17.500    0.23    0.50      0.147  |  I    O|       |       |       |
3.59
 17.583    0.23    0.50      0.145  |  I    O|       |       |       |
3.57
 17.667    0.23    0.50      0.143  |  I    O|       |       |       |
3.55
 17.750    0.23    0.50      0.142  |  I    O|       |       |       |
3.52
 17.833    0.21    0.50      0.140  | I     O|       |       |       |
3.50
 17.917    0.19    0.50      0.138  | I     O|       |       |       |
3.48
 18.000    0.19    0.50      0.135  | I     O|       |       |       |
3.45
 18.083    0.19    0.50      0.133  | I     O|       |       |       |
3.43
 18.167    0.19    0.50      0.131  | I     O|       |       |       |
3.40
 18.250    0.19    0.50      0.129  | I     O|       |       |       |
3.38
 18.333    0.19    0.50      0.127  | I     O|       |       |       |
3.35
 18.417    0.19    0.50      0.125  | I     O|       |       |       |
3.32
 18.500    0.19    0.50      0.122  | I     O|       |       |       |
3.30
 18.583    0.16    0.50      0.120  | I     O|       |       |       |
3.27
 18.667    0.14    0.50      0.118  |I      O|       |       |       |
```

```
3.24
 18.750    0.14    0.50      0.115  |I      O|       |       |       |
3.22
 18.833    0.11    0.50      0.113  |I      O|       |       |       |
3.19
 18.917    0.09    0.50      0.110  |I      O|       |       |       |
3.15
 19.000    0.09    0.50      0.107  |I      O|       |       |       |
3.12
 19.083    0.12    0.50      0.104  |I      O|       |       |       |
3.09
 19.167    0.14    0.50      0.102  |I      O|       |       |       |
3.06
 19.250    0.14    0.50      0.099  |I      O|       |       |       |
3.03
 19.333    0.16    0.50      0.097  | I     O|       |       |       |
3.00
 19.417    0.18    0.50      0.095  | I     O|       |       |       |
2.97
 19.500    0.19    0.50      0.093  | I     O|       |       |       |
2.93
 19.583    0.16    0.50      0.090  | I     O|       |       |       |
2.90
 19.667    0.14    0.50      0.088  |I      O|       |       |       |
2.86
 19.750    0.14    0.50      0.085  |I      O|       |       |       |
2.82
 19.833    0.11    0.50      0.083  |I      O|       |       |       |
2.78
 19.917    0.09    0.50      0.080  |I      O|       |       |       |
2.74
 20.000    0.09    0.50      0.077  |I      O|       |       |       |
2.70
 20.083    0.12    0.50      0.075  |I      O|       |       |       |
2.66
 20.167    0.14    0.50      0.072  |I      O|       |       |       |
2.62
 20.250    0.14    0.50      0.070  |I      O|       |       |       |
2.58
 20.333    0.14    0.50      0.067  |I      O|       |       |       |
2.54
 20.417    0.14    0.50      0.065  |I      O|       |       |       |
2.50
 20.500    0.14    0.50      0.062  |I      O|       |       |       |
2.46
 20.583    0.14    0.50      0.060  |I      O|       |       |       |
2.43
 20.667    0.14    0.50      0.057  |I      O|       |       |       |
2.39
 20.750    0.14    0.50      0.055  |I      O|       |       |       |
2.35
 20.833    0.11    0.50      0.052  |I      O|       |       |       |
2.31
 20.917    0.09    0.50      0.049  |I      O|       |       |       |
2.27
 21.000    0.09    0.50      0.047  |I      O|       |       |       |
2.22
 21.083    0.12    0.50      0.044  |I      O|       |       |       |
2.18
 21.167    0.14    0.50      0.041  |I      O|       |       |       |
```

```
2.14
 21.250    0.14    0.50      0.039  |I     O|       |       |       |
2.11
 21.333    0.11    0.50      0.036  |I     O|       |       |       |
2.07
 21.417    0.09    0.50      0.034  |I     O|       |       |       |
2.02
 21.500    0.09    0.50      0.031  |I     O|       |       |       |
1.92
 21.583    0.12    0.50      0.028  |I     O|       |       |       |
1.75
 21.667    0.14    0.50      0.025  |I     O|       |       |       |
1.59
 21.750    0.14    0.50      0.023  |I     O|       |       |       |
1.44
 21.833    0.11    0.50      0.020  |I     O|       |       |       |
1.28
 21.917    0.09    0.50      0.018  |I     O|       |       |       |
1.11
 22.000    0.09    0.47      0.015  |I    O |       |       |       |
0.94
 22.083    0.12    0.40      0.013  |I   O  |       |       |       |
0.80
 22.167    0.14    0.35      0.011  |I  O   |       |       |       |
0.69
 22.250    0.14    0.31      0.010  |I  O   |       |       |       |
0.61
 22.333    0.11    0.27      0.009  |I O    |       |       |       |
0.54
 22.417    0.09    0.24      0.008  |I O    |       |       |       |
0.48
 22.500    0.09    0.21      0.007  |IO     |       |       |       |
0.42
 22.583    0.09    0.19      0.006  |IO     |       |       |       |
0.37
 22.667    0.09    0.17      0.005  |IO     |       |       |       |
0.34
 22.750    0.09    0.15      0.005  |IO     |       |       |       |
0.31
 22.833    0.09    0.14      0.005  |IO     |       |       |       |
0.28
 22.917    0.09    0.13      0.004  |O      |       |       |       |
0.27
 23.000    0.09    0.12      0.004  |O      |       |       |       |
0.25
 23.083    0.09    0.12      0.004  |O      |       |       |       |
0.24
 23.167    0.09    0.11      0.004  |O      |       |       |       |
0.23
 23.250    0.09    0.11      0.004  |O      |       |       |       |
0.22
 23.333    0.09    0.11      0.003  |O      |       |       |       |
0.21
 23.417    0.09    0.10      0.003  |O      |       |       |       |
0.21
 23.500    0.09    0.10      0.003  |O      |       |       |       |
0.20
 23.583    0.09    0.10      0.003  |O      |       |       |       |
0.20
 23.667    0.09    0.10      0.003  |O      |       |       |       |
```

```
0.20
 23.750    0.09    0.10      0.003  |O       |       |       |       |
0.19
 23.833    0.09    0.10      0.003  |O       |       |       |       |
0.19
 23.917    0.09    0.10      0.003  |O       |       |       |       |
0.19
 24.000    0.09    0.10      0.003  |O       |       |       |       |
0.19
 24.083    0.04    0.09      0.003  IO       |       |       |       |
0.18
 24.167    0.00    0.08      0.002  IO       |       |       |       |
0.15
 24.250    0.00    0.06      0.002  O        |       |       |       |
0.12
 24.333    0.00    0.05      0.002  O        |       |       |       |
0.10
 24.417    0.00    0.04      0.001  O        |       |       |       |
0.08
 24.500    0.00    0.03      0.001  O        |       |       |       |
0.06
 24.583    0.00    0.03      0.001  O        |       |       |       |
0.05
 24.667    0.00    0.02      0.001  O        |       |       |       |
0.04
 24.750    0.00    0.02      0.001  O        |       |       |       |
0.03
 24.833    0.00    0.01      0.000  O        |       |       |       |
0.03
 24.917    0.00    0.01      0.000  O        |       |       |       |
0.02
 25.000    0.00    0.01      0.000  O        |       |       |       |
0.02
 25.083    0.00    0.01      0.000  O        |       |       |       |
0.01
 25.167    0.00    0.01      0.000  O        |       |       |       |
0.01
 25.250    0.00    0.00      0.000  O        |       |       |       |
0.01
 25.333    0.00    0.00      0.000  O        |       |       |       |
0.01
 25.417    0.00    0.00      0.000  O        |       |       |       |
0.01
 25.500    0.00    0.00      0.000  O        |       |       |       |
0.00
 25.583    0.00    0.00      0.000  O        |       |       |       |
0.00
 25.667    0.00    0.00      0.000  O        |       |       |       |
0.00
 25.750    0.00    0.00      0.000  O        |       |       |       |
0.00
 25.833    0.00    0.00      0.000  O        |       |       |       |
0.00
 25.917    0.00    0.00      0.000  O        |       |       |       |
0.00

      ****************************HYDROGRAPH
DATA****************************
                  Number of intervals =   311
                  Time interval =    5.0 (Min.)
```

```
                  Maximum/Peak flow rate =        2.266 (CFS)
                  Total volume =       1.167 (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
          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
                       Study date: 11/09/21

      ------------------------------------------------------------------
---

      Gateway Heights
      Basin Routing
      2 yr 24hr
      Basin B
      ------------------------------------------------------------------
--

      Program License Serial Number 6232

      ------------------------------------------------------------------
--
      ********************* HYDROGRAPH INFORMATION
**********************

                  From study/file name: moval33post242.rte
      ***************************HYDROGRAPH
DATA****************************
                  Number of intervals =   291
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =       1.789 (CFS)
                  Total volume =       1.087 (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
      ******************************************************************
*****

      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
      Process from Point/Station      102.000 to Point/Station
103.000
      **** RETARDING BASIN ROUTING ****
      __________________________________________________________________
____

      User entry of depth-outflow-storage data
      ------------------------------------------------------------------
--
      Total number of inflow hydrograph intervals = 291
      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  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
           (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
      -------------------------------------------------------------------
---
          0.000      0.000      0.000      0.000        0.000
          1.000      0.060      0.700      0.058        0.062
          2.000      0.120      0.700      0.118        0.122
          3.000      0.320      0.700      0.318        0.322
          4.000      0.560      0.700      0.558        0.562
          5.000      0.820     24.000      0.737        0.903
          6.000      1.100     24.000      1.017        1.183
      -------------------------------------------------------------------
--
                  Hydrograph Detention Basin Routing
      -------------------------------------------------------------------
---

      Graph values: 'I'= unit inflow; 'O'=outflow at time shown
      -------------------------------------------------------------------
---
  Time   Inflow  Outflow    Storage
Depth
 (Hours)  (CFS)   (CFS)     (Ac.Ft) .0       0.4    0.89    1.34    1.79
(Ft.)
  0.083    0.05    0.00      0.000  O       |       |       |       |
0.00
  0.167    0.10    0.01      0.001  OI      |       |       |       |
0.01
  0.250    0.10    0.01      0.001  OI      |       |       |       |
0.02
  0.333    0.13    0.02      0.002  O I     |       |       |       |
0.03
  0.417    0.15    0.03      0.003  O I     |       |       |       |
0.05
  0.500    0.16    0.04      0.004  O I     |       |       |       |
0.06
  0.583    0.16    0.05      0.004  O I     |       |       |       |
0.07
  0.667    0.16    0.06      0.005  |OI     |       |       |       |
0.08
  0.750    0.16    0.07      0.006  |OI     |       |       |       |
0.09
  0.833    0.18    0.07      0.006  |O I    |       |       |       |
0.11
  0.917    0.21    0.08      0.007  |O I    |       |       |       |
0.12
  1.000    0.21    0.09      0.008  |O I    |       |       |       |
0.13
  1.083    0.19    0.10      0.009  |O I    |       |       |       |
0.14
  1.167    0.16    0.11      0.009  |OI     |       |       |       |
```

```
0.15
  1.250    0.16    0.11      0.010  |OI     |       |       |       |
0.16
  1.333    0.16    0.11      0.010  | O     |       |       |       |
0.16
  1.417    0.16    0.12      0.010  | O     |       |       |       |
0.17
  1.500    0.16    0.12      0.010  | O     |       |       |       |
0.17
  1.583    0.16    0.12      0.011  | O     |       |       |       |
0.18
  1.667    0.16    0.13      0.011  | O     |       |       |       |
0.18
  1.750    0.16    0.13      0.011  | O     |       |       |       |
0.18
  1.833    0.18    0.13      0.011  | OI    |       |       |       |
0.19
  1.917    0.21    0.14      0.012  | OI    |       |       |       |
0.20
  2.000    0.21    0.14      0.012  | OI    |       |       |       |
0.20
  2.083    0.21    0.15      0.013  | OI    |       |       |       |
0.21
  2.167    0.21    0.15      0.013  | OI    |       |       |       |
0.22
  2.250    0.21    0.16      0.013  | OI    |       |       |       |
0.22
  2.333    0.21    0.16      0.014  | OI    |       |       |       |
0.23
  2.417    0.21    0.16      0.014  | OI    |       |       |       |
0.24
  2.500    0.21    0.17      0.014  |  O    |       |       |       |
0.24
  2.583    0.23    0.17      0.015  |  OI   |       |       |       |
0.25
  2.667    0.26    0.18      0.015  |  OI   |       |       |       |
0.25
  2.750    0.26    0.18      0.016  |  OI   |       |       |       |
0.26
  2.833    0.26    0.19      0.016  |  OI   |       |       |       |
0.27
  2.917    0.26    0.20      0.017  |  OI   |       |       |       |
0.28
  3.000    0.26    0.20      0.017  |  OI   |       |       |       |
0.29
  3.083    0.26    0.21      0.018  |  OI   |       |       |       |
0.29
  3.167    0.26    0.21      0.018  |  OI   |       |       |       |
0.30
  3.250    0.26    0.21      0.018  |  OI   |       |       |       |
0.31
  3.333    0.26    0.22      0.019  |  OI   |       |       |       |
0.31
  3.417    0.26    0.22      0.019  |  OI   |       |       |       |
0.32
  3.500    0.26    0.23      0.019  |   O   |       |       |       |
0.32
  3.583    0.26    0.23      0.020  |   O   |       |       |       |
0.33
  3.667    0.26    0.23      0.020  |   O   |       |       |       |
```

```
0.33
  3.750    0.26    0.23      0.020  |   O   |       |       |       |
0.33
  3.833    0.29    0.24      0.020  |   OI  |       |       |       |
0.34
  3.917    0.31    0.24      0.021  |   OI  |       |       |       |
0.34
  4.000    0.32    0.25      0.021  |   OI  |       |       |       |
0.35
  4.083    0.32    0.25      0.022  |   OI  |       |       |       |
0.36
  4.167    0.32    0.26      0.022  |   OI  |       |       |       |
0.37
  4.250    0.32    0.26      0.022  |   OI  |       |       |       |
0.37
  4.333    0.34    0.27      0.023  |   O I |       |       |       |
0.38
  4.417    0.36    0.27      0.023  |   O I |       |       |       |
0.39
  4.500    0.37    0.28      0.024  |    OI |       |       |       |
0.40
  4.583    0.37    0.29      0.025  |    OI |       |       |       |
0.41
  4.667    0.37    0.29      0.025  |    OI |       |       |       |
0.42
  4.750    0.37    0.30      0.026  |    OI |       |       |       |
0.43
  4.833    0.39    0.31      0.026  |    O I|       |       |       |
0.44
  4.917    0.42    0.31      0.027  |    O I|       |       |       |
0.45
  5.000    0.42    0.32      0.028  |    O I|       |       |       |
0.46
  5.083    0.37    0.33      0.028  |    OI |       |       |       |
0.47
  5.167    0.32    0.33      0.028  |    O  |       |       |       |
0.47
  5.250    0.32    0.33      0.028  |    O  |       |       |       |
0.47
  5.333    0.34    0.33      0.028  |    OI |       |       |       |
0.47
  5.417    0.36    0.33      0.028  |    OI |       |       |       |
0.47
  5.500    0.37    0.33      0.029  |    OI |       |       |       |
0.48
  5.583    0.39    0.34      0.029  |     OI|       |       |       |
0.48
  5.667    0.42    0.34      0.029  |     OI|       |       |       |
0.49
  5.750    0.42    0.35      0.030  |     OI|       |       |       |
0.50
  5.833    0.42    0.35      0.030  |     OI|       |       |       |
0.50
  5.917    0.42    0.36      0.031  |     OI|       |       |       |
0.51
  6.000    0.42    0.36      0.031  |     OI|       |       |       |
0.52
  6.083    0.44    0.37      0.032  |     OI|       |       |       |
0.53
  6.167    0.47    0.38      0.032  |     O I       |       |       |
```

```
0.54
  6.250    0.47    0.38      0.033  |     O I       |       |       |
0.55
  6.333    0.47    0.39      0.033  |     O I       |       |       |
0.56
  6.417    0.47    0.40      0.034  |      OI       |       |       |
0.57
  6.500    0.47    0.40      0.034  |      OI       |       |       |
0.57
  6.583    0.50    0.41      0.035  |      OI       |       |       |
0.58
  6.667    0.52    0.42      0.036  |      O|I      |       |       |
0.60
  6.750    0.53    0.42      0.036  |      O|I      |       |       |
0.61
  6.833    0.53    0.43      0.037  |      O|I      |       |       |
0.62
  6.917    0.53    0.44      0.038  |      O|I      |       |       |
0.63
  7.000    0.53    0.45      0.038  |      O|I      |       |       |
0.64
  7.083    0.53    0.45      0.039  |       OI      |       |       |
0.65
  7.167    0.53    0.46      0.039  |       OI      |       |       |
0.65
  7.250    0.53    0.46      0.040  |       OI      |       |       |
0.66
  7.333    0.55    0.47      0.040  |       OI      |       |       |
0.67
  7.417    0.58    0.48      0.041  |       O I     |       |       |
0.68
  7.500    0.58    0.48      0.042  |       O I     |       |       |
0.69
  7.583    0.60    0.49      0.042  |       O I     |       |       |
0.70
  7.667    0.63    0.50      0.043  |       O  I    |       |       |
0.72
  7.750    0.63    0.51      0.044  |       |O I    |       |       |
0.73
  7.833    0.65    0.52      0.045  |       |O I    |       |       |
0.75
  7.917    0.68    0.53      0.046  |       |O  I   |       |       |
0.76
  8.000    0.68    0.54      0.047  |       |O  I   |       |       |
0.78
  8.083    0.73    0.56      0.048  |       |O   I  |       |       |
0.80
  8.167    0.78    0.57      0.049  |       | O  I  |       |       |
0.82
  8.250    0.79    0.59      0.050  |       | O   I |       |       |
0.84
  8.333    0.79    0.60      0.052  |       | O   I |       |       |
0.86
  8.417    0.79    0.62      0.053  |       |  O  I |       |       |
0.88
  8.500    0.79    0.63      0.054  |       |  O  I |       |       |
0.90
  8.583    0.81    0.64      0.055  |       |  O  I |       |       |
0.92
  8.667    0.84    0.66      0.056  |       |  O  I |       |       |
```

```
0.94
  8.750    0.84    0.67      0.058  |       |   O  I|       |       |
0.96
  8.833    0.87    0.69      0.059  |       |   O  I|       |       |
0.98
  8.917    0.89    0.70      0.060  |       |   O  I|       |       |
1.00
  9.000    0.89    0.70      0.061  |       |   O  I|       |       |
1.02
  9.083    0.94    0.70      0.063  |       |   O   I       |       |
1.05
  9.167    0.99    0.70      0.065  |       |   O   |I      |       |
1.08
  9.250    1.00    0.70      0.067  |       |   O   |I      |       |
1.11
  9.333    1.02    0.70      0.069  |       |   O   | I     |       |
1.15
  9.417    1.05    0.70      0.071  |       |   O   | I     |       |
1.19
  9.500    1.05    0.70      0.074  |       |   O   | I     |       |
1.23
  9.583    1.08    0.70      0.076  |       |   O   |  I    |       |
1.27
  9.667    1.10    0.70      0.079  |       |   O   |  I    |       |
1.31
  9.750    1.10    0.70      0.082  |       |   O   |  I    |       |
1.36
  9.833    1.13    0.70      0.085  |       |   O   |   I   |       |
1.41
  9.917    1.15    0.70      0.088  |       |   O   |   I   |       |
1.46
 10.000    1.16    0.70      0.091  |       |   O   |   I   |       |
1.51
 10.083    0.99    0.70      0.093  |       |   O   |I      |       |
1.55
 10.167    0.81    0.70      0.095  |       |   O I |       |       |
1.58
 10.250    0.79    0.70      0.095  |       |   O I |       |       |
1.59
 10.333    0.79    0.70      0.096  |       |   O I |       |       |
1.60
 10.417    0.79    0.70      0.097  |       |   O I |       |       |
1.61
 10.500    0.79    0.70      0.097  |       |   O I |       |       |
1.62
 10.583    0.91    0.70      0.098  |       |   O   I       |       |
1.64
 10.667    1.04    0.70      0.100  |       |   O   | I     |       |
1.67
 10.750    1.05    0.70      0.102  |       |   O   | I     |       |
1.71
 10.833    1.05    0.70      0.105  |       |   O   | I     |       |
1.75
 10.917    1.05    0.70      0.107  |       |   O   | I     |       |
1.79
 11.000    1.05    0.70      0.110  |       |   O   | I     |       |
1.83
 11.083    1.03    0.70      0.112  |       |   O   | I     |       |
1.87
 11.167    1.00    0.70      0.114  |       |   O   |I      |       |
```

```
1.90
 11.250    1.00    0.70      0.116   |       |   O   |I      |       |
1.94
 11.333    1.00    0.70      0.118   |       |   O   |I      |       |
1.97
 11.417    1.00    0.70      0.120   |       |   O   |I      |       |
2.00
 11.500    1.00    0.70      0.123   |       |   O   |I      |       |
2.01
 11.583    0.95    0.70      0.124   |       |   O   |I      |       |
2.02
 11.667    0.90    0.70      0.126   |       |   O   I       |       |
2.03
 11.750    0.90    0.70      0.127   |       |   O   I       |       |
2.04
 11.833    0.92    0.70      0.129   |       |   O   I       |       |
2.04
 11.917    0.94    0.70      0.130   |       |   O   I       |       |
2.05
 12.000    0.95    0.70      0.132   |       |   O   I       |       |
2.06
 12.083    1.11    0.70      0.134   |       |   O   |  I    |       |
2.07
 12.167    1.29    0.70      0.138   |       |   O   |      I|       |
2.09
 12.250    1.31    0.70      0.142   |       |   O   |      I|       |
2.11
 12.333    1.34    0.70      0.146   |       |   O   |      I|       |
2.13
 12.417    1.36    0.70      0.151   |       |   O   |       I       |
2.15
 12.500    1.37    0.70      0.155   |       |   O   |       I       |
2.18
 12.583    1.41    0.70      0.160   |       |   O   |       |I      |
2.20
 12.667    1.47    0.70      0.165   |       |   O   |       | I     |
2.23
 12.750    1.47    0.70      0.170   |       |   O   |       | I     |
2.25
 12.833    1.50    0.70      0.176   |       |   O   |       | I     |
2.28
 12.917    1.52    0.70      0.181   |       |   O   |       |  I    |
2.31
 13.000    1.53    0.70      0.187   |       |   O   |       |  I    |
2.34
 13.083    1.64    0.70      0.193   |       |   O   |       |    I  |
2.37
 13.167    1.77    0.70      0.200   |       |   O   |       |      I|
2.40
 13.250    1.79    0.70      0.208   |       |   O   |       |      I|
2.44
 13.333    1.79    0.70      0.215   |       |   O   |       |      I|
2.48
 13.417    1.79    0.70      0.223   |       |   O   |       |      I|
2.51
 13.500    1.79    0.70      0.230   |       |   O   |       |      I|
2.55
 13.583    1.53    0.70      0.237   |       |   O   |       |  I    |
2.58
 13.667    1.25    0.70      0.241   |       |   O   |     I |       |
```

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2.61
 13.750    1.21    0.70      0.245  |       |   O   |    I  |       |
2.63
 13.833    1.21    0.70      0.249  |       |   O   |    I  |       |
2.64
 13.917    1.21    0.70      0.252  |       |   O   |    I  |       |
2.66
 14.000    1.21    0.70      0.256  |       |   O   |    I  |       |
2.68
 14.083    1.30    0.70      0.259  |       |   O   |      I|       |
2.70
 14.167    1.41    0.70      0.264  |       |   O   |       |I      |
2.72
 14.250    1.42    0.70      0.269  |       |   O   |       |I      |
2.74
 14.333    1.40    0.70      0.274  |       |   O   |       I       |
2.77
 14.417    1.37    0.70      0.278  |       |   O   |       I       |
2.79
 14.500    1.37    0.70      0.283  |       |   O   |       I       |
2.82
 14.583    1.37    0.70      0.288  |       |   O   |       I       |
2.84
 14.667    1.37    0.70      0.292  |       |   O   |       I       |
2.86
 14.750    1.37    0.70      0.297  |       |   O   |       I       |
2.88
 14.833    1.34    0.70      0.301  |       |   O   |       I       |
2.91
 14.917    1.32    0.70      0.306  |       |   O   |      I|       |
2.93
 15.000    1.32    0.70      0.310  |       |   O   |      I|       |
2.95
 15.083    1.29    0.70      0.314  |       |   O   |      I|       |
2.97
 15.167    1.27    0.70      0.318  |       |   O   |     I |       |
2.99
 15.250    1.26    0.70      0.322  |       |   O   |     I |       |
3.01
 15.333    1.24    0.70      0.326  |       |   O   |     I |       |
3.02
 15.417    1.21    0.70      0.329  |       |   O   |    I  |       |
3.04
 15.500    1.21    0.70      0.333  |       |   O   |    I  |       |
3.05
 15.583    1.12    0.70      0.336  |       |   O   |  I    |       |
3.07
 15.667    1.01    0.70      0.339  |       |   O   | I     |       |
3.08
 15.750    1.00    0.70      0.341  |       |   O   |I      |       |
3.09
 15.833    1.00    0.70      0.343  |       |   O   |I      |       |
3.10
 15.917    1.00    0.70      0.345  |       |   O   |I      |       |
3.10
 16.000    1.00    0.70      0.347  |       |   O   |I      |       |
3.11
 16.083    0.65    0.70      0.348  |       |  IO   |       |       |
3.12
 16.167    0.26    0.70      0.346  |   I   |   O   |       |       |
```

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3.11
 16.250    0.22    0.70      0.343  |  I    |   O   |       |       |
3.10
 16.333    0.21    0.70      0.340  |  I    |   O   |       |       |
3.08
 16.417    0.21    0.70      0.336  |  I    |   O   |       |       |
3.07
 16.500    0.21    0.70      0.333  |  I    |   O   |       |       |
3.05
 16.583    0.19    0.70      0.329  |  I    |   O   |       |       |
3.04
 16.667    0.16    0.70      0.326  | I     |   O   |       |       |
3.02
 16.750    0.16    0.70      0.322  | I     |   O   |       |       |
3.01
 16.833    0.16    0.70      0.318  | I     |   O   |       |       |
2.99
 16.917    0.16    0.70      0.315  | I     |   O   |       |       |
2.97
 17.000    0.16    0.70      0.311  | I     |   O   |       |       |
2.95
 17.083    0.20    0.70      0.307  |  I    |   O   |       |       |
2.94
 17.167    0.26    0.70      0.304  |   I   |   O   |       |       |
2.92
 17.250    0.26    0.70      0.301  |   I   |   O   |       |       |
2.90
 17.333    0.26    0.70      0.298  |   I   |   O   |       |       |
2.89
 17.417    0.26    0.70      0.295  |   I   |   O   |       |       |
2.87
 17.500    0.26    0.70      0.292  |   I   |   O   |       |       |
2.86
 17.583    0.26    0.70      0.289  |   I   |   O   |       |       |
2.84
 17.667    0.26    0.70      0.286  |   I   |   O   |       |       |
2.83
 17.750    0.26    0.70      0.283  |   I   |   O   |       |       |
2.81
 17.833    0.24    0.70      0.280  |   I   |   O   |       |       |
2.80
 17.917    0.21    0.70      0.277  |  I    |   O   |       |       |
2.78
 18.000    0.21    0.70      0.273  |  I    |   O   |       |       |
2.77
 18.083    0.21    0.70      0.270  |  I    |   O   |       |       |
2.75
 18.167    0.21    0.70      0.266  |  I    |   O   |       |       |
2.73
 18.250    0.21    0.70      0.263  |  I    |   O   |       |       |
2.72
 18.333    0.21    0.70      0.260  |  I    |   O   |       |       |
2.70
 18.417    0.21    0.70      0.256  |  I    |   O   |       |       |
2.68
 18.500    0.21    0.70      0.253  |  I    |   O   |       |       |
2.66
 18.583    0.19    0.70      0.250  |  I    |   O   |       |       |
2.65
 18.667    0.16    0.70      0.246  | I     |   O   |       |       |
```

```
2.63
 18.750    0.16    0.70      0.242  | I      |   O    |        |        |
2.61
 18.833    0.13    0.70      0.238  | I      |   O    |        |        |
2.59
 18.917    0.11    0.70      0.234  |I       |   O    |        |        |
2.57
 19.000    0.11    0.70      0.230  |I       |   O    |        |        |
2.55
 19.083    0.13    0.70      0.226  | I      |   O    |        |        |
2.53
 19.167    0.15    0.70      0.222  | I      |   O    |        |        |
2.51
 19.250    0.16    0.70      0.219  | I      |   O    |        |        |
2.49
 19.333    0.18    0.70      0.215  |  I     |   O    |        |        |
2.48
 19.417    0.21    0.70      0.212  |  I     |   O    |        |        |
2.46
 19.500    0.21    0.70      0.208  |  I     |   O    |        |        |
2.44
 19.583    0.19    0.70      0.205  |  I     |   O    |        |        |
2.42
 19.667    0.16    0.70      0.201  | I      |   O    |        |        |
2.41
 19.750    0.16    0.70      0.197  | I      |   O    |        |        |
2.39
 19.833    0.13    0.70      0.194  | I      |   O    |        |        |
2.37
 19.917    0.11    0.70      0.190  |I       |   O    |        |        |
2.35
 20.000    0.11    0.70      0.186  |I       |   O    |        |        |
2.33
 20.083    0.13    0.70      0.181  | I      |   O    |        |        |
2.31
 20.167    0.15    0.70      0.178  | I      |   O    |        |        |
2.29
 20.250    0.16    0.70      0.174  | I      |   O    |        |        |
2.27
 20.333    0.16    0.70      0.170  | I      |   O    |        |        |
2.25
 20.417    0.16    0.70      0.166  | I      |   O    |        |        |
2.23
 20.500    0.16    0.70      0.163  | I      |   O    |        |        |
2.21
 20.583    0.16    0.70      0.159  | I      |   O    |        |        |
2.19
 20.667    0.16    0.70      0.155  | I      |   O    |        |        |
2.18
 20.750    0.16    0.70      0.151  | I      |   O    |        |        |
2.16
 20.833    0.13    0.70      0.148  | I      |   O    |        |        |
2.14
 20.917    0.11    0.70      0.144  |I       |   O    |        |        |
2.12
 21.000    0.11    0.70      0.140  |I       |   O    |        |        |
2.10
 21.083    0.13    0.70      0.136  | I      |   O    |        |        |
2.08
 21.167    0.15    0.70      0.132  | I      |   O    |        |        |
```

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2.06
 21.250    0.16    0.70      0.128  | I     |   O   |       |       |
2.04
 21.333    0.13    0.70      0.124  | I     |   O   |       |       |
2.02
 21.417    0.11    0.70      0.120  |I      |   O   |       |       |
2.00
 21.500    0.11    0.70      0.116  |I      |   O   |       |       |
1.94
 21.583    0.13    0.70      0.112  | I     |   O   |       |       |
1.87
 21.667    0.15    0.70      0.108  | I     |   O   |       |       |
1.80
 21.750    0.16    0.70      0.105  | I     |   O   |       |       |
1.74
 21.833    0.13    0.70      0.101  | I     |   O   |       |       |
1.68
 21.917    0.11    0.70      0.097  |I      |   O   |       |       |
1.61
 22.000    0.11    0.70      0.093  |I      |   O   |       |       |
1.54
 22.083    0.13    0.70      0.089  | I     |   O   |       |       |
1.48
 22.167    0.15    0.70      0.085  | I     |   O   |       |       |
1.41
 22.250    0.16    0.70      0.081  | I     |   O   |       |       |
1.35
 22.333    0.13    0.70      0.077  | I     |   O   |       |       |
1.29
 22.417    0.11    0.70      0.073  |I      |   O   |       |       |
1.22
 22.500    0.11    0.70      0.069  |I      |   O   |       |       |
1.15
 22.583    0.11    0.70      0.065  |I      |   O   |       |       |
1.08
 22.667    0.11    0.70      0.061  |I      |   O   |       |       |
1.02
 22.750    0.11    0.66      0.057  |I      |  O    |       |       |
0.95
 22.833    0.11    0.62      0.053  |I      |  O    |       |       |
0.89
 22.917    0.11    0.58      0.050  |I      | O     |       |       |
0.83
 23.000    0.11    0.54      0.047  |I      |O      |       |       |
0.78
 23.083    0.11    0.51      0.044  |I      |O      |       |       |
0.73
 23.167    0.11    0.48      0.041  |I      O       |       |       |
0.69
 23.250    0.11    0.45      0.039  |I      O       |       |       |
0.64
 23.333    0.11    0.42      0.036  |I     O|       |       |       |
0.61
 23.417    0.11    0.40      0.034  |I     O|       |       |       |
0.57
 23.500    0.11    0.38      0.032  |I    O |       |       |       |
0.54
 23.583    0.11    0.36      0.030  |I    O |       |       |       |
0.51
 23.667    0.11    0.34      0.029  |I    O |       |       |       |
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0.48
 23.750    0.11    0.32      0.027  |I   O  |       |       |       |
0.45
 23.833    0.11    0.30      0.026  |I   O  |       |       |       |
0.43
 23.917    0.11    0.29      0.025  |I   O  |       |       |       |
0.41
 24.000    0.11    0.27      0.023  |I  O   |       |       |       |
0.39
 24.083    0.06    0.26      0.022  |I  O   |       |       |       |
0.37
 24.167    0.01    0.24      0.021  I   O   |       |       |       |
0.34
 24.250    0.00    0.22      0.019  I  O    |       |       |       |
0.32
 24.333    0.00    0.21      0.018  I  O    |       |       |       |
0.29
 24.417    0.00    0.19      0.016  I  O    |       |       |       |
0.27
 24.500    0.00    0.17      0.015  I  O    |       |       |       |
0.25
 24.583    0.00    0.16      0.014  I O     |       |       |       |
0.23
 24.667    0.00    0.15      0.013  I O     |       |       |       |
0.21
 24.750    0.00    0.14      0.012  I O     |       |       |       |
0.20
 24.833    0.00    0.13      0.011  I O     |       |       |       |
0.18
 24.917    0.00    0.12      0.010  I O     |       |       |       |
0.17
 25.000    0.00    0.11      0.009  IO      |       |       |       |
0.15
 25.083    0.00    0.10      0.009  IO      |       |       |       |
0.14
 25.167    0.00    0.09      0.008  IO      |       |       |       |
0.13
 25.250    0.00    0.08      0.007  IO      |       |       |       |
0.12
 25.333    0.00    0.08      0.007  IO      |       |       |       |
0.11
 25.417    0.00    0.07      0.006  IO      |       |       |       |
0.10
 25.500    0.00    0.07      0.006  IO      |       |       |       |
0.10
 25.583    0.00    0.06      0.005  IO      |       |       |       |
0.09
 25.667    0.00    0.06      0.005  IO      |       |       |       |
0.08
 25.750    0.00    0.05      0.004  O       |       |       |       |
0.07
 25.833    0.00    0.05      0.004  O       |       |       |       |
0.07
 25.917    0.00    0.04      0.004  O       |       |       |       |
0.06
 26.000    0.00    0.04      0.004  O       |       |       |       |
0.06
 26.083    0.00    0.04      0.003  O       |       |       |       |
0.05
 26.167    0.00    0.03      0.003  O       |       |       |       |
```

```
0.05
 26.250    0.00    0.03      0.003  O        |        |        |        |
0.05
 26.333    0.00    0.03      0.003  O        |        |        |        |
0.04
 26.417    0.00    0.03      0.002  O        |        |        |        |
0.04
 26.500    0.00    0.03      0.002  O        |        |        |        |
0.04
 26.583    0.00    0.02      0.002  O        |        |        |        |
0.03
 26.667    0.00    0.02      0.002  O        |        |        |        |
0.03
 26.750    0.00    0.02      0.002  O        |        |        |        |
0.03
 26.833    0.00    0.02      0.002  O        |        |        |        |
0.03
 26.917    0.00    0.02      0.001  O        |        |        |        |
0.02
 27.000    0.00    0.02      0.001  O        |        |        |        |
0.02
 27.083    0.00    0.01      0.001  O        |        |        |        |
0.02
 27.167    0.00    0.01      0.001  O        |        |        |        |
0.02
 27.250    0.00    0.01      0.001  O        |        |        |        |
0.02
 27.333    0.00    0.01      0.001  O        |        |        |        |
0.02
 27.417    0.00    0.01      0.001  O        |        |        |        |
0.01
 27.500    0.00    0.01      0.001  O        |        |        |        |
0.01
 27.583    0.00    0.01      0.001  O        |        |        |        |
0.01
 27.667    0.00    0.01      0.001  O        |        |        |        |
0.01
 27.750    0.00    0.01      0.001  O        |        |        |        |
0.01
 27.833    0.00    0.01      0.001  O        |        |        |        |
0.01
 27.917    0.00    0.01      0.001  O        |        |        |        |
0.01
 28.000    0.00    0.01      0.001  O        |        |        |        |
0.01
 28.083    0.00    0.01      0.000  O        |        |        |        |
0.01
 28.167    0.00    0.01      0.000  O        |        |        |        |
0.01
 28.250    0.00    0.00      0.000  O        |        |        |        |
0.01
 28.333    0.00    0.00      0.000  O        |        |        |        |
0.01
 28.417    0.00    0.00      0.000  O        |        |        |        |
0.01
 28.500    0.00    0.00      0.000  O        |        |        |        |
0.01
 28.583    0.00    0.00      0.000  O        |        |        |        |
0.00
 28.667    0.00    0.00      0.000  O        |        |        |        |
```

```
0.00
 28.750    0.00    0.00      0.000  O       |       |       |       |
0.00
 28.833    0.00    0.00      0.000  O       |       |       |       |
0.00
 28.917    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.000    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.083    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.167    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.250    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.333    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.417    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.500    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.583    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.667    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.750    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.833    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.917    0.00    0.00      0.000  O       |       |       |       |
0.00

      ****************************HYDROGRAPH
DATA****************************
                  Number of intervals =   359
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        0.700 (CFS)
                  Total volume =       1.087 (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: 11/09/21

Gateway Heights
Basin Routing
1ooyr 1hr
Basin C

Now Basin B

--

Program License Serial Number 6232

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

From study/file name: moval33post1100.rte
****************************HYDROGRAPH
DATA****************************
Number of intervals = 15
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 32.689 (CFS)
Total volume = 1.008 (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 102.000 to Point/Station
103.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

--
Total number of inflow hydrograph intervals = 15
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  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
           (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
      ------------------------------------------------------------------
---
          0.000      0.000      0.000      0.000        0.000
          1.000      0.060      0.010      0.060        0.060
          2.000      0.120      0.010      0.120        0.120
          3.000      0.320      0.010      0.320        0.320
          4.000      0.560      0.010      0.560        0.560
          5.000      0.820     24.000      0.737        0.903
          6.000      1.100     24.000      1.017        1.183
      ------------------------------------------------------------------
--
                  Hydrograph Detention Basin Routing
      ------------------------------------------------------------------
---

      Graph values: 'I'= unit inflow; 'O'=outflow at time shown
      ------------------------------------------------------------------
---
  Time   Inflow  Outflow    Storage
Depth
 (Hours)  (CFS)   (CFS)     (Ac.Ft) .0       8.2   16.34   24.52   32.69
(Ft.)
  0.083    1.92    0.00      0.007  OI       |       |       |       |
0.11
  0.167    4.65    0.00      0.029  O   I    |       |       |       |
0.49
  0.250    5.72    0.01      0.065  O    I   |       |       |       |
1.08
  0.333    6.27    0.01      0.106  O     I  |       |       |       |
1.77
  0.417    6.89    0.01      0.151  O     I  |       |       |       |
2.16
  0.500    7.93    0.01      0.202  O      I|       |       |       |
2.41
  0.583    9.16    0.01      0.261  O       I       |       |       |
2.71
  0.667   11.12    0.01      0.331  O       | I     |       |       |
3.05
  0.750   16.30    0.01      0.425  O       |      I|       |       |
3.44
  0.833   32.69    2.38      0.586  | O     |       |       |       I
4.10
  0.917   29.54   16.24      0.736  |       |      O|       |   I   |
4.68
  1.000   10.25   18.00      0.755  |       | I     |O      |       |
4.75
  1.083    3.47   12.63      0.697  |  I    |   O   |       |       |
4.53
  1.167    0.37    7.46      0.641  I      O|       |       |       |
```

```
4.31
  1.250    0.04    3.96      0.603  I  O     |       |       |       |
4.16
  1.333    0.00    2.06      0.582  I O      |       |       |       |
4.09
  1.417    0.00    1.07      0.571  IO       |       |       |       |
4.04
  1.500    0.00    0.55      0.566  O        |       |       |       |
4.02
  1.583    0.00    0.29      0.563  O        |       |       |       |
4.01
  1.667    0.00    0.15      0.561  O        |       |       |       |
4.01
  1.750    0.00    0.08      0.561  O        |       |       |       |
4.00
  1.833    0.00    0.04      0.560  O        |       |       |       |
4.00
  1.917    0.00    0.02      0.560  O        |       |       |       |
4.00
  2.000    0.00    0.01      0.560  O        |       |       |       |
4.00
  2.083    0.00    0.01      0.560  O        |       |       |       |
4.00
  2.167    0.00    0.01      0.560  O        |       |       |       |
4.00
  2.250    0.00    0.01      0.560  O        |       |       |       |
4.00
  2.333    0.00    0.01      0.560  O        |       |       |       |
4.00
  2.417    0.00    0.01      0.560  O        |       |       |       |
4.00
  2.500    0.00    0.01      0.560  O        |       |       |       |
4.00
  2.583    0.00    0.01      0.560  O        |       |       |       |
4.00
  2.667    0.00    0.01      0.559  O        |       |       |       |
4.00
  2.750    0.00    0.01      0.559  O        |       |       |       |
4.00
  2.833    0.00    0.01      0.559  O        |       |       |       |
4.00
  2.917    0.00    0.01      0.559  O        |       |       |       |
4.00
  3.000    0.00    0.01      0.559  O        |       |       |       |
4.00
  3.083    0.00    0.01      0.559  O        |       |       |       |
4.00
  3.167    0.00    0.01      0.559  O        |       |       |       |
4.00
  3.250    0.00    0.01      0.559  O        |       |       |       |
4.00
  3.333    0.00    0.01      0.559  O        |       |       |       |
4.00
  3.417    0.00    0.01      0.559  O        |       |       |       |
4.00
  3.500    0.00    0.01      0.559  O        |       |       |       |
3.99
  3.583    0.00    0.01      0.559  O        |       |       |       |
3.99
  3.667    0.00    0.01      0.559  O        |       |       |       |
```

```
2.49
416.250    0.00    0.01      0.218  O       |       |       |       |
2.49
416.333    0.00    0.01      0.218  O       |       |       |       |
2.49
416.417    0.00    0.01      0.218  O       |       |       |       |
2.49
416.500    0.00    0.01      0.217  O       |       |       |       |
2.49
416.583    0.00    0.01      0.217  O       |       |       |       |
2.49
416.667    0.00    0.01      0.217  O       |       |       |       |
2.49


      Remaining water in basin =    0.22 (Ac.Ft)


      ****************************HYDROGRAPH
DATA****************************
                  Number of intervals =  5001
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =      18.001 (CFS)
                  Total volume =      0.790 (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: 11/09/21

Gateway Heights
Basin Routing
100yr 3hr
Basin C

Now Basin B

Program License Serial Number 6232

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

From study/file name: moval33post3100.rte

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

Number of intervals = 39
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 18.168 (CFS)
Total volume = 1.500 (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

****

++

Process from Point/Station 102.000 to Point/Station 103.000

**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 39
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  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
           (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
      ------------------------------------------------------------------
---
          0.000      0.000      0.000      0.000        0.000
          1.000      0.060      0.010      0.060        0.060
          2.000      0.120      0.010      0.120        0.120
          3.000      0.320      0.010      0.320        0.320
          4.000      0.560      0.010      0.560        0.560
          5.000      0.820     24.000      0.737        0.903
          6.000      1.100     24.000      1.017        1.183
      ------------------------------------------------------------------
--
                  Hydrograph Detention Basin Routing
      ------------------------------------------------------------------
---

      Graph values: 'I'= unit inflow; 'O'=outflow at time shown
      ------------------------------------------------------------------
---
  Time   Inflow  Outflow    Storage
Depth
 (Hours)  (CFS)   (CFS)     (Ac.Ft) .0       4.5    9.08   13.63   18.17
(Ft.)
  0.083    1.06    0.00      0.004  OI       |       |       |       |
0.06
  0.167    2.20    0.00      0.015  O  I     |       |       |       |
0.25
  0.250    2.11    0.00      0.030  O  I     |       |       |       |
0.49
  0.333    2.34    0.01      0.045  O   I    |       |       |       |
0.75
  0.417    2.79    0.01      0.063  O   I    |       |       |       |
1.04
  0.500    3.18    0.01      0.083  O    I   |       |       |       |
1.38
  0.583    3.22    0.01      0.105  O    I   |       |       |       |
1.75
  0.667    3.23    0.01      0.127  O    I   |       |       |       |
2.04
  0.750    3.56    0.01      0.151  O     I  |       |       |       |
2.15
  0.833    3.26    0.01      0.174  O    I   |       |       |       |
2.27
  0.917    3.01    0.01      0.195  O    I   |       |       |       |
2.38
  1.000    3.32    0.01      0.217  O    I   |       |       |       |
2.49
  1.083    4.01    0.01      0.242  O      I|       |       |       |
2.61
  1.167    4.53    0.01      0.272  O      I|       |       |       |
```

```
2.76
  1.250    4.59    0.01      0.303  O       I       |       |       |
2.92
  1.333    4.38    0.01      0.334  O      I|       |       |       |
3.06
  1.417    4.80    0.01      0.365  O       I       |       |       |
3.19
  1.500    5.62    0.01      0.401  O       |I      |       |       |
3.34
  1.583    5.48    0.01      0.439  O       |I      |       |       |
3.50
  1.667    5.48    0.01      0.477  O       |I      |       |       |
3.65
  1.750    6.47    0.01      0.518  O       |  I    |       |       |
3.83
  1.833    7.02    0.33      0.563  O       |   I   |       |       |
4.01
  1.917    6.64    3.46      0.597  |     O |  I    |       |       |
4.14
  2.000    6.49    4.96      0.614  |       O  I    |       |       |
4.21
  2.083    6.69    5.75      0.622  |       | OI    |       |       |
4.24
  2.167    8.05    6.53      0.631  |       |  O  I |       |       |
4.27
  2.250   10.30    7.81      0.644  |       |    O  | I     |       |
4.32
  2.333    9.75    8.88      0.656  |       |      O|I      |       |
4.37
  2.417   11.75    9.78      0.666  |       |       |O  I   |       |
4.41
  2.500   16.12   11.78      0.688  |       |       |   O   |   I   |
4.49
  2.583   18.17   14.37      0.716  |       |       |       |O      I
4.60
  2.667   16.83   15.88      0.732  |       |       |       |  O I  |
4.66
  2.750    9.82   14.65      0.719  |       |       |I      |O      |
4.61
  2.833    4.55   11.05      0.680  |       I       |  O    |       |
4.46
  2.917    3.72    7.71      0.644  |     I |    O  |       |       |
4.32
  3.000    2.41    5.47      0.619  |   I   |O      |       |       |
4.23
  3.083    0.68    3.58      0.599  |I    O |       |       |       |
4.15
  3.167    0.08    2.04      0.582  I  O    |       |       |       |
4.08
  3.250    0.01    1.08      0.572  IO      |       |       |       |
4.04
  3.333    0.00    0.56      0.566  O       |       |       |       |
4.02
  3.417    0.00    0.29      0.563  O       |       |       |       |
4.01
  3.500    0.00    0.15      0.562  O       |       |       |       |
4.01
  3.583    0.00    0.08      0.561  O       |       |       |       |
4.00
  3.667    0.00    0.04      0.560  O       |       |       |       |
```

```
4.00
  3.750    0.00    0.02      0.560  O        |        |        |        |
4.00
  3.833    0.00    0.01      0.560  O        |        |        |        |
4.00
  3.917    0.00    0.01      0.560  O        |        |        |        |
4.00
  4.000    0.00    0.01      0.560  O        |        |        |        |
4.00
  4.083    0.00    0.01      0.560  O        |        |        |        |
4.00
  4.167    0.00    0.01      0.560  O        |        |        |        |
4.00
  4.250    0.00    0.01      0.560  O        |        |        |        |
4.00
  4.333    0.00    0.01      0.560  O        |        |        |        |
4.00
  4.417    0.00    0.01      0.560  O        |        |        |        |
4.00
  4.500    0.00    0.01      0.559  O        |        |        |        |
4.00
  4.583    0.00    0.01      0.559  O        |        |        |        |
4.00
  4.667    0.00    0.01      0.559  O        |        |        |        |
4.00
  4.750    0.00    0.01      0.559  O        |        |        |        |
4.00
  4.833    0.00    0.01      0.559  O        |        |        |        |
4.00
  4.917    0.00    0.01      0.559  O        |        |        |        |
4.00
  5.000    0.00    0.01      0.559  O        |        |        |        |
4.00
  5.083    0.00    0.01      0.559  O        |        |        |        |
4.00
  5.167    0.00    0.01      0.559  O        |        |        |        |
4.00
  5.250    0.00    0.01      0.559  O        |        |        |        |
4.00
  5.333    0.00    0.01      0.559  O        |        |        |        |
3.99
  5.417    0.00    0.01      0.559  O        |        |        |        |
3.99
  5.500    0.00    0.01      0.559  O        |        |        |        |
3.99
  5.583    0.00    0.01      0.559  O        |        |        |        |
3.99
  5.667    0.00    0.01      0.558  O        |        |        |        |
3.99
  5.750    0.00    0.01      0.558  O        |        |        |        |
3.99
  5.833    0.00    0.01      0.558  O        |        |        |        |
3.99
  5.917    0.00    0.01      0.558  O        |        |        |        |
3.99
  6.000    0.00    0.01      0.558  O        |        |        |        |
3.99
  6.083    0.00    0.01      0.558  O        |        |        |        |
3.99
  6.167    0.00    0.01      0.558  O        |        |        |        |
```

2.50
416.250   0.00   0.01   0.219 O | | | |
2.50
416.333   0.00   0.01   0.219 O | | | |
2.50
416.417   0.00   0.01   0.219 O | | | |
2.50
416.500   0.00   0.01   0.219 O | | | |
2.49
416.583   0.00   0.01   0.219 O | | | |
2.49
416.667   0.00   0.01   0.219 O | | | |
2.49

Remaining water in basin =   0.22 (Ac.Ft)

****************************HYDROGRAPH
DATA****************************
Number of intervals = 5001
Time interval =   5.0 (Min.)
Maximum/Peak flow rate =   15.879 (CFS)
Total volume =   1.281 (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: 11/09/21

Gateway Heights
Basin Routing
100yr 6hr
Basin C

Now Basin B

Program License Serial Number 6232

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

From study/file name: moval33post6100.rte
****************************HYDROGRAPH DATA****************************
Number of intervals = 75
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 16.161 (CFS)
Total volume = 1.893 (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

****

++
Process from Point/Station 102.000 to Point/Station 103.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 75
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  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
           (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
      ------------------------------------------------------------------
---
          0.000      0.000      0.000      0.000        0.000
          1.000      0.060      0.010      0.060        0.060
          2.000      0.120      0.010      0.120        0.120
          3.000      0.320      0.010      0.320        0.320
          4.000      0.560      0.010      0.560        0.560
          5.000      0.820     24.000      0.737        0.903
          6.000      1.100     24.000      1.017        1.183
      ------------------------------------------------------------------
--
                  Hydrograph Detention Basin Routing
      ------------------------------------------------------------------
---

      Graph values: 'I'= unit inflow; 'O'=outflow at time shown
      ------------------------------------------------------------------
---
  Time   Inflow  Outflow    Storage
Depth
 (Hours)  (CFS)   (CFS)     (Ac.Ft) .0       4.0    8.08   12.12   16.16
(Ft.)
  0.083    0.47    0.00      0.002  O       |       |       |       |
0.03
  0.167    1.07    0.00      0.007  O I     |       |       |       |
0.11
  0.250    1.23    0.00      0.015  O I     |       |       |       |
0.25
  0.333    1.25    0.00      0.023  O I     |       |       |       |
0.39
  0.417    1.25    0.01      0.032  O I     |       |       |       |
0.53
  0.500    1.35    0.01      0.041  O I     |       |       |       |
0.68
  0.583    1.46    0.01      0.050  O I     |       |       |       |
0.84
  0.667    1.47    0.01      0.060  O I     |       |       |       |
1.01
  0.750    1.47    0.01      0.070  O I     |       |       |       |
1.17
  0.833    1.47    0.01      0.081  O I     |       |       |       |
1.34
  0.917    1.47    0.01      0.091  O I     |       |       |       |
1.51
  1.000    1.62    0.01      0.101  O  I    |       |       |       |
1.69
  1.083    1.78    0.01      0.113  O  I    |       |       |       |
1.88
  1.167    1.80    0.01      0.125  O  I    |       |       |       |
```

```
2.03
  1.250    1.81    0.01      0.137  O  I    |       |       |       |
2.09
  1.333    1.81    0.01      0.150  O  I    |       |       |       |
2.15
  1.417    1.81    0.01      0.162  O  I    |       |       |       |
2.21
  1.500    1.81    0.01      0.175  O  I    |       |       |       |
2.27
  1.583    1.81    0.01      0.187  O  I    |       |       |       |
2.33
  1.667    1.81    0.01      0.199  O  I    |       |       |       |
2.40
  1.750    1.81    0.01      0.212  O  I    |       |       |       |
2.46
  1.833    1.81    0.01      0.224  O  I    |       |       |       |
2.52
  1.917    1.81    0.01      0.236  O  I    |       |       |       |
2.58
  2.000    1.96    0.01      0.249  O  I    |       |       |       |
2.65
  2.083    1.97    0.01      0.263  O  I    |       |       |       |
2.71
  2.167    1.98    0.01      0.276  O  I    |       |       |       |
2.78
  2.250    2.12    0.01      0.290  O   I   |       |       |       |
2.85
  2.333    2.14    0.01      0.305  O   I   |       |       |       |
2.92
  2.417    2.14    0.01      0.320  O   I   |       |       |       |
3.00
  2.500    2.14    0.01      0.334  O   I   |       |       |       |
3.06
  2.583    2.14    0.01      0.349  O   I   |       |       |       |
3.12
  2.667    2.14    0.01      0.364  O   I   |       |       |       |
3.18
  2.750    2.29    0.01      0.379  O   I   |       |       |       |
3.25
  2.833    2.46    0.01      0.395  O   I   |       |       |       |
3.31
  2.917    2.48    0.01      0.412  O   I   |       |       |       |
3.38
  3.000    2.48    0.01      0.429  O   I   |       |       |       |
3.45
  3.083    2.48    0.01      0.446  O   I   |       |       |       |
3.53
  3.167    2.63    0.01      0.464  O    I  |       |       |       |
3.60
  3.250    2.79    0.01      0.482  O    I  |       |       |       |
3.68
  3.333    2.81    0.01      0.501  O    I  |       |       |       |
3.76
  3.417    2.97    0.01      0.521  O    I  |       |       |       |
3.84
  3.500    3.28    0.01      0.543  O     I |       |       |       |
3.93
  3.583    3.61    0.46      0.565  O      I|       |       |       |
4.02
  3.667    3.80    2.02      0.582  |   O  I|       |       |       |
```

```
4.08
  3.750    3.97    2.92      0.592  |    O I|       |       |       |
4.12
  3.833    4.14    3.47      0.597  |     O I       |       |       |
4.14
  3.917    4.31    3.83      0.601  |      OI       |       |       |
4.16
  4.000    4.48    4.10      0.604  |       O       |       |       |
4.17
  4.083    4.64    4.32      0.607  |       OI      |       |       |
4.18
  4.167    4.96    4.55      0.609  |       |O      |       |       |
4.19
  4.250    5.30    4.83      0.612  |       |OI     |       |       |
4.20
  4.333    5.63    5.14      0.616  |       | OI    |       |       |
4.21
  4.417    5.97    5.46      0.619  |       | OI    |       |       |
4.23
  4.500    6.15    5.75      0.622  |       |  OI   |       |       |
4.24
  4.583    6.33    5.99      0.625  |       |  OI   |       |       |
4.25
  4.667    6.64    6.23      0.627  |       |   OI  |       |       |
4.26
  4.750    6.98    6.51      0.630  |       |   OI  |       |       |
4.27
  4.833    7.16    6.78      0.633  |       |    OI |       |       |
4.28
  4.917    7.34    7.01      0.636  |       |    OI |       |       |
4.29
  5.000    7.65    7.24      0.638  |       |     OI|       |       |
4.30
  5.083    8.59    7.67      0.643  |       |      O|I      |       |
4.32
  5.167   10.18    8.49      0.652  |       |       O   I   |       |
4.35
  5.250   11.55    9.64      0.664  |       |       |  O  I |       |
4.40
  5.333   12.60   10.82      0.677  |       |       |    O  I       |
4.45
  5.417   13.92   12.00      0.690  |       |       |      O|   I   |
4.50
  5.500   16.16   13.46      0.706  |       |       |       | O     I
4.56
  5.583   12.17   13.80      0.709  |       |       |       I  O    |
4.57
  5.667    4.78   11.23      0.682  |       |I      |     O |       |
4.47
  5.750    2.06    7.46      0.641  |   I   |     O |       |       |
4.31
  5.833    1.24    4.66      0.610  | I     |O      |       |       |
4.19
  5.917    0.88    2.93      0.592  |I   O  |       |       |       |
4.12
  6.000    0.56    1.86      0.580  |I O    |       |       |       |
4.08
  6.083    0.25    1.16      0.572  I O     |       |       |       |
4.05
  6.167    0.03    0.67      0.567  IO      |       |       |       |
```

```
4.03
  6.250    0.00    0.35      0.564  O        |        |        |        |
4.01
  6.333    0.00    0.18      0.562  O        |        |        |        |
4.01
  6.417    0.00    0.09      0.561  O        |        |        |        |
4.00
  6.500    0.00    0.05      0.560  O        |        |        |        |
4.00
  6.583    0.00    0.03      0.560  O        |        |        |        |
4.00
  6.667    0.00    0.01      0.560  O        |        |        |        |
4.00
  6.750    0.00    0.01      0.560  O        |        |        |        |
4.00
  6.833    0.00    0.01      0.560  O        |        |        |        |
4.00
  6.917    0.00    0.01      0.560  O        |        |        |        |
4.00
  7.000    0.00    0.01      0.560  O        |        |        |        |
4.00
  7.083    0.00    0.01      0.560  O        |        |        |        |
4.00
  7.167    0.00    0.01      0.560  O        |        |        |        |
4.00
  7.250    0.00    0.01      0.560  O        |        |        |        |
4.00
  7.333    0.00    0.01      0.559  O        |        |        |        |
4.00
  7.417    0.00    0.01      0.559  O        |        |        |        |
4.00
  7.500    0.00    0.01      0.559  O        |        |        |        |
4.00
  7.583    0.00    0.01      0.559  O        |        |        |        |
4.00
  7.667    0.00    0.01      0.559  O        |        |        |        |
4.00
  7.750    0.00    0.01      0.559  O        |        |        |        |
4.00
  7.833    0.00    0.01      0.559  O        |        |        |        |
4.00
  7.917    0.00    0.01      0.559  O        |        |        |        |
4.00
  8.000    0.00    0.01      0.559  O        |        |        |        |
4.00
  8.083    0.00    0.01      0.559  O        |        |        |        |
4.00
  8.167    0.00    0.01      0.559  O        |        |        |        |
3.99
  8.250    0.00    0.01      0.559  O        |        |        |        |
3.99
  8.333    0.00    0.01      0.559  O        |        |        |        |
3.99
  8.417    0.00    0.01      0.559  O        |        |        |        |
3.99
  8.500    0.00    0.01      0.559  O        |        |        |        |
3.99
  8.583    0.00    0.01      0.558  O        |        |        |        |
3.99
  8.667    0.00    0.01      0.558  O        |        |        |        |
```

```
2.51
416.250    0.00    0.01      0.222  O       |       |       |       |
2.51
416.333    0.00    0.01      0.221  O       |       |       |       |
2.51
416.417    0.00    0.01      0.221  O       |       |       |       |
2.51
416.500    0.00    0.01      0.221  O       |       |       |       |
2.51
416.583    0.00    0.01      0.221  O       |       |       |       |
2.51
416.667    0.00    0.01      0.221  O       |       |       |       |
2.51


      Remaining water in basin =    0.22 (Ac.Ft)


      ****************************HYDROGRAPH
DATA****************************
                  Number of intervals =  5001
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =      13.801 (CFS)
                  Total volume =      1.672 (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: 11/09/21

Gateway Heights
Basin Routing
100 year 24hr
Basin C

Now Basin B

Program License Serial Number 6232

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

From study/file name: moval33post24100.rte

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

Number of intervals = 291
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 6.176 (CFS)
Total volume = 3.181 (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

****

++

Process from Point/Station 102.000 to Point/Station 103.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 291
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  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
           (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
      ------------------------------------------------------------------
---
          0.000      0.000      0.000      0.000        0.000
          1.000      0.060      0.010      0.060        0.060
          2.000      0.120      0.010      0.120        0.120
          3.000      0.320      0.010      0.320        0.320
          4.000      0.560      0.010      0.560        0.560
          5.000      0.820     24.000      0.737        0.903
          6.000      1.100     24.000      1.017        1.183
      ------------------------------------------------------------------
--
                  Hydrograph Detention Basin Routing
      ------------------------------------------------------------------
---

      Graph values: 'I'= unit inflow; 'O'=outflow at time shown
      ------------------------------------------------------------------
---
  Time   Inflow  Outflow    Storage
Depth
 (Hours)  (CFS)   (CFS)     (Ac.Ft) .0       1.5    3.09    4.63    6.18
(Ft.)
  0.083    0.11    0.00      0.000  O        |       |       |       |
0.01
  0.167    0.24    0.00      0.002  OI       |       |       |       |
0.03
  0.250    0.25    0.00      0.003  OI       |       |       |       |
0.05
  0.333    0.31    0.00      0.005  OI       |       |       |       |
0.09
  0.417    0.37    0.00      0.008  OI       |       |       |       |
0.13
  0.500    0.38    0.00      0.010  OI       |       |       |       |
0.17
  0.583    0.38    0.00      0.013  OI       |       |       |       |
0.21
  0.667    0.38    0.00      0.015  OI       |       |       |       |
0.25
  0.750    0.38    0.00      0.018  OI       |       |       |       |
0.30
  0.833    0.44    0.00      0.021  O I      |       |       |       |
0.34
  0.917    0.50    0.00      0.024  O I      |       |       |       |
0.40
  1.000    0.50    0.00      0.027  O I      |       |       |       |
0.45
  1.083    0.45    0.01      0.031  O I      |       |       |       |
0.51
  1.167    0.39    0.01      0.033  O I      |       |       |       |
```

```
0.56
  1.250    0.38    0.01      0.036  OI       |        |        |        |
0.60
  1.333    0.38    0.01      0.039  OI       |        |        |        |
0.64
  1.417    0.38    0.01      0.041  OI       |        |        |        |
0.69
  1.500    0.38    0.01      0.044  OI       |        |        |        |
0.73
  1.583    0.38    0.01      0.046  OI       |        |        |        |
0.77
  1.667    0.38    0.01      0.049  OI       |        |        |        |
0.81
  1.750    0.38    0.01      0.051  OI       |        |        |        |
0.86
  1.833    0.44    0.01      0.054  O I      |        |        |        |
0.90
  1.917    0.50    0.01      0.057  O I      |        |        |        |
0.95
  2.000    0.50    0.01      0.061  O I      |        |        |        |
1.01
  2.083    0.51    0.01      0.064  O I      |        |        |        |
1.07
  2.167    0.51    0.01      0.067  O I      |        |        |        |
1.12
  2.250    0.51    0.01      0.071  O I      |        |        |        |
1.18
  2.333    0.51    0.01      0.074  O I      |        |        |        |
1.24
  2.417    0.51    0.01      0.078  O I      |        |        |        |
1.30
  2.500    0.51    0.01      0.081  O I      |        |        |        |
1.35
  2.583    0.56    0.01      0.085  O I      |        |        |        |
1.41
  2.667    0.62    0.01      0.089  O  I     |        |        |        |
1.48
  2.750    0.63    0.01      0.093  O  I     |        |        |        |
1.55
  2.833    0.63    0.01      0.097  O  I     |        |        |        |
1.62
  2.917    0.63    0.01      0.102  O  I     |        |        |        |
1.69
  3.000    0.63    0.01      0.106  O  I     |        |        |        |
1.76
  3.083    0.63    0.01      0.110  O  I     |        |        |        |
1.84
  3.167    0.63    0.01      0.114  O  I     |        |        |        |
1.91
  3.250    0.63    0.01      0.119  O  I     |        |        |        |
1.98
  3.333    0.63    0.01      0.123  O  I     |        |        |        |
2.02
  3.417    0.63    0.01      0.127  O  I     |        |        |        |
2.04
  3.500    0.63    0.01      0.132  O  I     |        |        |        |
2.06
  3.583    0.63    0.01      0.136  O  I     |        |        |        |
2.08
  3.667    0.63    0.01      0.140  O  I     |        |        |        |
```

```
2.10
  3.750    0.63    0.01      0.144  O  I    |       |       |       |
2.12
  3.833    0.69    0.01      0.149  O  I    |       |       |       |
2.14
  3.917    0.75    0.01      0.154  O  I    |       |       |       |
2.17
  4.000    0.76    0.01      0.159  O  I    |       |       |       |
2.19
  4.083    0.76    0.01      0.164  O  I    |       |       |       |
2.22
  4.167    0.76    0.01      0.169  O  I    |       |       |       |
2.25
  4.250    0.76    0.01      0.174  O  I    |       |       |       |
2.27
  4.333    0.82    0.01      0.180  O   I   |       |       |       |
2.30
  4.417    0.88    0.01      0.186  O   I   |       |       |       |
2.33
  4.500    0.88    0.01      0.192  O   I   |       |       |       |
2.36
  4.583    0.89    0.01      0.198  O   I   |       |       |       |
2.39
  4.667    0.89    0.01      0.204  O   I   |       |       |       |
2.42
  4.750    0.89    0.01      0.210  O   I   |       |       |       |
2.45
  4.833    0.94    0.01      0.216  O   I   |       |       |       |
2.48
  4.917    1.00    0.01      0.222  O    I  |       |       |       |
2.51
  5.000    1.01    0.01      0.229  O    I  |       |       |       |
2.55
  5.083    0.90    0.01      0.236  O   I   |       |       |       |
2.58
  5.167    0.78    0.01      0.242  O   I   |       |       |       |
2.61
  5.250    0.76    0.01      0.247  O  I    |       |       |       |
2.63
  5.333    0.82    0.01      0.252  O   I   |       |       |       |
2.66
  5.417    0.88    0.01      0.258  O   I   |       |       |       |
2.69
  5.500    0.88    0.01      0.264  O   I   |       |       |       |
2.72
  5.583    0.94    0.01      0.270  O   I   |       |       |       |
2.75
  5.667    1.00    0.01      0.277  O    I  |       |       |       |
2.78
  5.750    1.01    0.01      0.284  O    I  |       |       |       |
2.82
  5.833    1.01    0.01      0.290  O    I  |       |       |       |
2.85
  5.917    1.01    0.01      0.297  O    I  |       |       |       |
2.89
  6.000    1.01    0.01      0.304  O    I  |       |       |       |
2.92
  6.083    1.07    0.01      0.311  O    I  |       |       |       |
2.96
  6.167    1.13    0.01      0.319  O    I  |       |       |       |
```

```
2.99
  6.250    1.14    0.01      0.327   O    I  |       |       |       |
3.03
  6.333    1.14    0.01      0.334   O    I  |       |       |       |
3.06
  6.417    1.14    0.01      0.342   O    I  |       |       |       |
3.09
  6.500    1.14    0.01      0.350   O    I  |       |       |       |
3.12
  6.583    1.19    0.01      0.358   O     I |       |       |       |
3.16
  6.667    1.26    0.01      0.366   O     I |       |       |       |
3.19
  6.750    1.26    0.01      0.375   O     I |       |       |       |
3.23
  6.833    1.26    0.01      0.384   O     I |       |       |       |
3.26
  6.917    1.26    0.01      0.392   O     I |       |       |       |
3.30
  7.000    1.26    0.01      0.401   O     I |       |       |       |
3.34
  7.083    1.26    0.01      0.409   O     I |       |       |       |
3.37
  7.167    1.26    0.01      0.418   O     I |       |       |       |
3.41
  7.250    1.26    0.01      0.427   O     I |       |       |       |
3.44
  7.333    1.32    0.01      0.436   O     I |       |       |       |
3.48
  7.417    1.38    0.01      0.445   O      I|       |       |       |
3.52
  7.500    1.39    0.01      0.454   O      I|       |       |       |
3.56
  7.583    1.45    0.01      0.464   O      I|       |       |       |
3.60
  7.667    1.51    0.01      0.474   O      I|       |       |       |
3.64
  7.750    1.52    0.01      0.484   O      I|       |       |       |
3.69
  7.833    1.57    0.01      0.495   O       I       |       |       |
3.73
  7.917    1.64    0.01      0.506   O       I       |       |       |
3.78
  8.000    1.64    0.01      0.517   O       I       |       |       |
3.82
  8.083    1.81    0.01      0.529   O       |I      |       |       |
3.87
  8.167    2.00    0.01      0.542   O       | I     |       |       |
3.93
  8.250    2.02    0.01      0.556   O       | I     |       |       |
3.98
  8.333    2.03    0.69      0.567   |  O    | I     |       |       |
4.03
  8.417    2.03    1.34      0.574   |     O | I     |       |       |
4.06
  8.500    2.04    1.68      0.578   |       O I     |       |       |
4.07
  8.583    2.14    1.87      0.580   |       |O I    |       |       |
4.08
  8.667    2.24    2.03      0.582   |       | OI    |       |       |
```

```
4.08
  8.750    2.26    2.13      0.583  |       |  O    |       |       |
4.09
  8.833    2.35    2.22      0.584  |       |  OI   |       |       |
4.09
  8.917    2.46    2.31      0.585  |       |  OI   |       |       |
4.10
  9.000    2.47    2.38      0.586  |       |   O   |       |       |
4.10
  9.083    2.66    2.47      0.587  |       |   OI  |       |       |
4.10
  9.167    2.87    2.61      0.588  |       |    OI |       |       |
4.11
  9.250    2.89    2.74      0.590  |       |     O |       |       |
4.11
  9.333    2.99    2.84      0.591  |       |     OI|       |       |
4.12
  9.417    3.10    2.94      0.592  |       |      OI       |       |
4.12
  9.500    3.11    3.02      0.593  |       |      OI       |       |
4.13
  9.583    3.21    3.09      0.593  |       |       O       |       |
4.13
  9.667    3.32    3.17      0.594  |       |       OI      |       |
4.13
  9.750    3.33    3.25      0.595  |       |       OI      |       |
4.13
  9.833    3.43    3.31      0.596  |       |       |O      |       |
4.14
  9.917    3.53    3.39      0.597  |       |       |OI     |       |
4.14
 10.000    3.55    3.46      0.597  |       |       |OI     |       |
4.14
 10.083    2.92    3.35      0.596  |       |      I|O      |       |
4.14
 10.167    2.22    2.98      0.592  |       |  I   O|       |       |
4.12
 10.250    2.15    2.60      0.588  |       |  I O  |       |       |
4.11
 10.333    2.14    2.38      0.586  |       |  IO   |       |       |
4.10
 10.417    2.15    2.26      0.584  |       |  O    |       |       |
4.09
 10.500    2.15    2.21      0.584  |       |  O    |       |       |
4.09
 10.583    2.61    2.29      0.585  |       |  O I  |       |       |
4.10
 10.667    3.11    2.57      0.588  |       |    O  I       |       |
4.11
 10.750    3.17    2.85      0.591  |       |     O I       |       |
4.12
 10.833    3.19    3.01      0.592  |       |      OI       |       |
4.12
 10.917    3.19    3.10      0.593  |       |       O       |       |
4.13
 11.000    3.20    3.14      0.594  |       |       O       |       |
4.13
 11.083    3.11    3.15      0.594  |       |       O       |       |
4.13
 11.167    3.01    3.11      0.594  |       |      IO       |       |
```

```
4.13
 11.250    3.01    3.06      0.593   |       |      O|       |       |
4.13
 11.333    3.01    3.04      0.593   |       |      O|       |       |
4.13
 11.417    3.01    3.02      0.593   |       |      O|       |       |
4.13
 11.500    3.02    3.02      0.593   |       |      O|       |       |
4.13
 11.583    2.84    2.98      0.592   |       |     IO|       |       |
4.12
 11.667    2.65    2.86      0.591   |       |    IO |       |       |
4.12
 11.750    2.63    2.75      0.590   |       |    IO |       |       |
4.11
 11.833    2.72    2.71      0.589   |       |     O |       |       |
4.11
 11.917    2.82    2.74      0.590   |       |     O |       |       |
4.11
 12.000    2.84    2.78      0.590   |       |     O |       |       |
4.12
 12.083    3.48    2.97      0.592   |       |      O| I     |       |
4.12
 12.167    4.18    3.38      0.597   |       |       |O   I  |       |
4.14
 12.250    4.27    3.79      0.601   |       |       |  O  I |       |
4.16
 12.333    4.38    4.05      0.604   |       |       |   O I |       |
4.17
 12.417    4.48    4.23      0.606   |       |       |    O I|       |
4.18
 12.500    4.49    4.35      0.607   |       |       |     OI|       |
4.18
 12.583    4.68    4.47      0.608   |       |       |      OI       |
4.19
 12.667    4.89    4.62      0.610   |       |       |      O|I      |
4.19
 12.750    4.91    4.75      0.611   |       |       |       OI      |
4.20
 12.833    5.01    4.85      0.613   |       |       |       |O      |
4.20
 12.917    5.12    4.96      0.614   |       |       |       |OI     |
4.21
 13.000    5.13    5.04      0.614   |       |       |       | O     |
4.21
 13.083    5.59    5.19      0.616   |       |       |       | O I   |
4.22
 13.167    6.09    5.51      0.620   |       |       |       |   O  I|
4.23
 13.250    6.16    5.80      0.623   |       |       |       |     OI|
4.24
 13.333    6.17    5.98      0.625   |       |       |       |     OI|
4.25
 13.417    6.17    6.07      0.626   |       |       |       |      O|
4.25
 13.500    6.18    6.12      0.626   |       |       |       |      OI
4.25
 13.583    5.17    5.91      0.624   |       |       |       | I   O |
4.25
 13.667    4.08    5.29      0.617   |       |       |    I  |  O    |
```

```
4.22
 13.750    3.96    4.68      0.611 |       |       |   I   O       |
4.19
 13.833    3.95    4.33      0.607 |       |       |   I O |       |
4.18
 13.917    3.95    4.15      0.605 |       |       |   IO  |       |
4.17
 14.000    3.95    4.05      0.604 |       |       |   IO  |       |
4.17
 14.083    4.32    4.09      0.604 |       |       |    OI |       |
4.17
 14.167    4.73    4.30      0.607 |       |       |     O I       |
4.18
 14.250    4.78    4.52      0.609 |       |       |      OI       |
4.19
 14.333    4.69    4.62      0.610 |       |       |      OI       |
4.19
 14.417    4.60    4.63      0.610 |       |       |      IO       |
4.19
 14.500    4.59    4.62      0.610 |       |       |      O|       |
4.19
 14.583    4.59    4.60      0.610 |       |       |      O|       |
4.19
 14.667    4.60    4.60      0.610 |       |       |      O|       |
4.19
 14.750    4.60    4.60      0.610 |       |       |      O|       |
4.19
 14.833    4.51    4.58      0.610 |       |       |      O|       |
4.19
 14.917    4.42    4.52      0.609 |       |       |     IO|       |
4.19
 15.000    4.41    4.47      0.608 |       |       |     IO|       |
4.19
 15.083    4.32    4.42      0.608 |       |       |     O |       |
4.18
 15.167    4.22    4.35      0.607 |       |       |    IO |       |
4.18
 15.250    4.22    4.29      0.606 |       |       |    IO |       |
4.18
 15.333    4.13    4.23      0.606 |       |       |    O  |       |
4.18
 15.417    4.03    4.16      0.605 |       |       |   IO  |       |
4.17
 15.500    4.02    4.09      0.604 |       |       |   IO  |       |
4.17
 15.583    3.66    3.97      0.603 |       |       | I O   |       |
4.17
 15.667    3.26    3.72      0.600 |       |       I  O    |       |
4.15
 15.750    3.22    3.49      0.598 |       |       I O     |       |
4.15
 15.833    3.22    3.36      0.596 |       |       IO      |       |
4.14
 15.917    3.22    3.29      0.596 |       |       IO      |       |
4.14
 16.000    3.22    3.26      0.595 |       |       O       |       |
4.14
 16.083    2.01    2.95      0.592 |       | I    O|       |       |
4.12
 16.167    0.68    2.18      0.583 |  I    |  O    |       |       |
```

```
4.09
 16.250    0.53    1.42      0.575  | I    O|       |       |       |
4.06
 16.333    0.51    0.98      0.571  | I  O  |       |       |       |
4.04
 16.417    0.51    0.75      0.568  | IO    |       |       |       |
4.03
 16.500    0.51    0.63      0.567  | IO    |       |       |       |
4.03
 16.583    0.45    0.56      0.566  | O     |       |       |       |
4.02
 16.667    0.39    0.49      0.565  | O     |       |       |       |
4.02
 16.750    0.38    0.44      0.565  |IO     |       |       |       |
4.02
 16.833    0.38    0.41      0.564  |IO     |       |       |       |
4.02
 16.917    0.38    0.40      0.564  |IO     |       |       |       |
4.02
 17.000    0.38    0.39      0.564  |IO     |       |       |       |
4.02
 17.083    0.49    0.41      0.564  | O     |       |       |       |
4.02
 17.167    0.62    0.48      0.565  | OI    |       |       |       |
4.02
 17.250    0.63    0.55      0.566  | OI    |       |       |       |
4.02
 17.333    0.63    0.59      0.566  |  O    |       |       |       |
4.02
 17.417    0.63    0.61      0.567  |  O    |       |       |       |
4.03
 17.500    0.63    0.62      0.567  |  O    |       |       |       |
4.03
 17.583    0.63    0.63      0.567  |  O    |       |       |       |
4.03
 17.667    0.63    0.63      0.567  |  O    |       |       |       |
4.03
 17.750    0.63    0.63      0.567  |  O    |       |       |       |
4.03
 17.833    0.58    0.62      0.567  | IO    |       |       |       |
4.03
 17.917    0.51    0.58      0.566  | IO    |       |       |       |
4.02
 18.000    0.51    0.55      0.566  | O     |       |       |       |
4.02
 18.083    0.51    0.53      0.566  | O     |       |       |       |
4.02
 18.167    0.51    0.52      0.565  | O     |       |       |       |
4.02
 18.250    0.51    0.51      0.565  | O     |       |       |       |
4.02
 18.333    0.51    0.51      0.565  | O     |       |       |       |
4.02
 18.417    0.51    0.51      0.565  | O     |       |       |       |
4.02
 18.500    0.51    0.51      0.565  | O     |       |       |       |
4.02
 18.583    0.45    0.49      0.565  | O     |       |       |       |
4.02
 18.667    0.39    0.46      0.565  | O     |       |       |       |
```

```
4.02
 18.750    0.38    0.42      0.564  |IO      |       |       |       |
4.02
 18.833    0.32    0.39      0.564  |IO      |       |       |       |
4.02
 18.917    0.26    0.34      0.564  |O       |       |       |       |
4.01
 19.000    0.25    0.30      0.563  |O       |       |       |       |
4.01
 19.083    0.31    0.29      0.563  |O       |       |       |       |
4.01
 19.167    0.37    0.32      0.563  |O       |       |       |       |
4.01
 19.250    0.38    0.34      0.564  |O       |       |       |       |
4.01
 19.333    0.44    0.37      0.564  |OI      |       |       |       |
4.02
 19.417    0.50    0.42      0.564  | O      |       |       |       |
4.02
 19.500    0.50    0.46      0.565  | O      |       |       |       |
4.02
 19.583    0.45    0.47      0.565  | O      |       |       |       |
4.02
 19.667    0.39    0.44      0.565  | O      |       |       |       |
4.02
 19.750    0.38    0.41      0.564  |IO      |       |       |       |
4.02
 19.833    0.32    0.38      0.564  |O       |       |       |       |
4.02
 19.917    0.26    0.34      0.564  |O       |       |       |       |
4.01
 20.000    0.25    0.30      0.563  |O       |       |       |       |
4.01
 20.083    0.31    0.29      0.563  |O       |       |       |       |
4.01
 20.167    0.37    0.31      0.563  |O       |       |       |       |
4.01
 20.250    0.38    0.34      0.564  |O       |       |       |       |
4.01
 20.333    0.38    0.36      0.564  |O       |       |       |       |
4.01
 20.417    0.38    0.37      0.564  |O       |       |       |       |
4.01
 20.500    0.38    0.37      0.564  |O       |       |       |       |
4.02
 20.583    0.38    0.38      0.564  |O       |       |       |       |
4.02
 20.667    0.38    0.38      0.564  |O       |       |       |       |
4.02
 20.750    0.38    0.38      0.564  |O       |       |       |       |
4.02
 20.833    0.32    0.37      0.564  |O       |       |       |       |
4.01
 20.917    0.26    0.33      0.563  |O       |       |       |       |
4.01
 21.000    0.25    0.30      0.563  |O       |       |       |       |
4.01
 21.083    0.31    0.29      0.563  |O       |       |       |       |
4.01
 21.167    0.37    0.31      0.563  |O       |       |       |       |
```

```
2.58
416.250    0.00    0.01      0.236  O       |       |       |       |
2.58
416.333    0.00    0.01      0.236  O       |       |       |       |
2.58
416.417    0.00    0.01      0.236  O       |       |       |       |
2.58
416.500    0.00    0.01      0.236  O       |       |       |       |
2.58
416.583    0.00    0.01      0.236  O       |       |       |       |
2.58
416.667    0.00    0.01      0.236  O       |       |       |       |
2.58


      Remaining water in basin =    0.24 (Ac.Ft)


      ****************************HYDROGRAPH
DATA****************************
                  Number of intervals =  5001
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =       6.120 (CFS)
                  Total volume =       2.946 (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
      ******************************************************************
*****

      ------------------------------------------------------------------
--
```

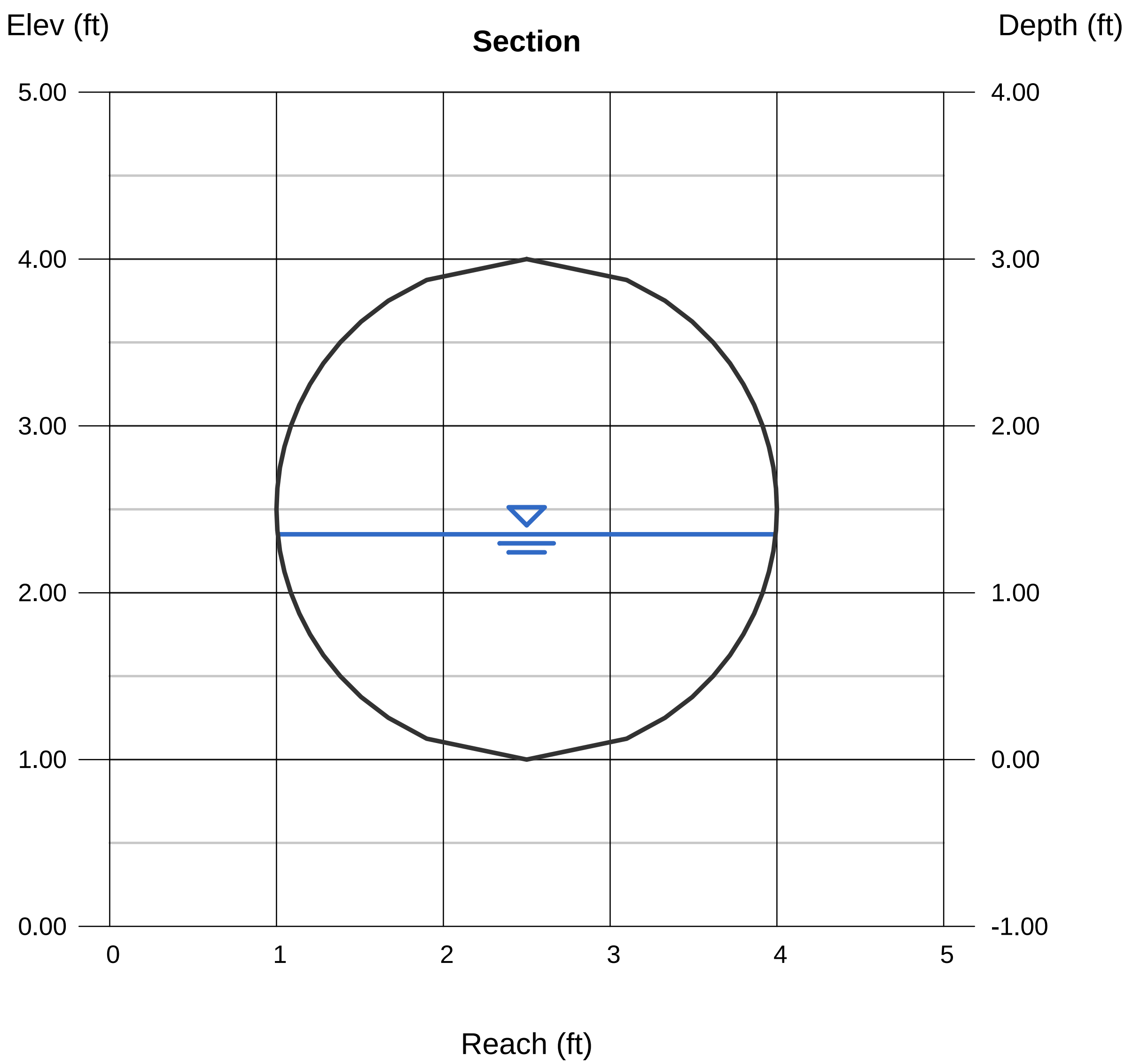
Appendix B

Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. Monday, Mar 28 2022

Preliminary Design - Offsite Flows - Point 304

Circular		**Highlighted**	
Diameter (ft)	= 3.00	Depth (ft)	= 1.35
		Q (cfs)	= 90.60
		Area (sqft)	= 3.10
Invert Elev (ft)	= 1.00	Velocity (ft/s)	= 29.18
Slope (%)	= 9.20	Wetted Perim (ft)	= 4.42
N-Value	= 0.012	Crit Depth, Yc (ft)	= 2.85
		Top Width (ft)	= 2.99
Calculations		EGL (ft)	= 14.59
Compute by:	Known Q		
Known Q (cfs)	= 90.60		



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. Tuesday, Feb 23 2021

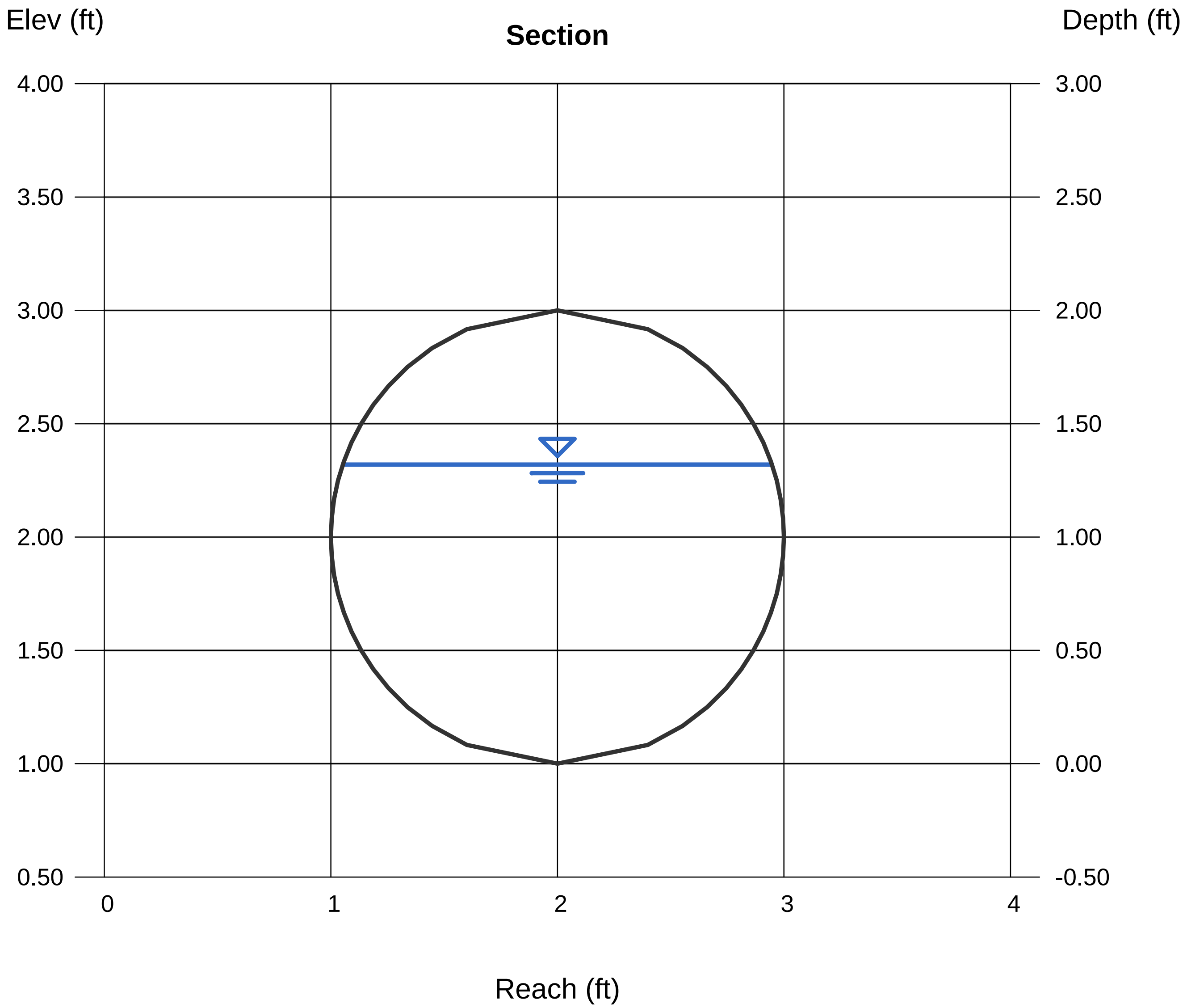
Preliminary Design - Offsite Flows - Point 403

Circular
Diameter (ft) = 2.00

Invert Elev (ft) = 1.00
Slope (%) = 2.00
N-Value = 0.012

Calculations
Compute by: Known Q
Known Q (cfs) = 26.70

Highlighted
Depth (ft) = 1.32
Q (cfs) = 26.70
Area (sqft) = 2.21
Velocity (ft/s) = 12.10
Wetted Perim (ft) = 3.80
Crit Depth, Yc (ft) = 1.81
Top Width (ft) = 1.89
EGL (ft) = 3.60



Channel Report

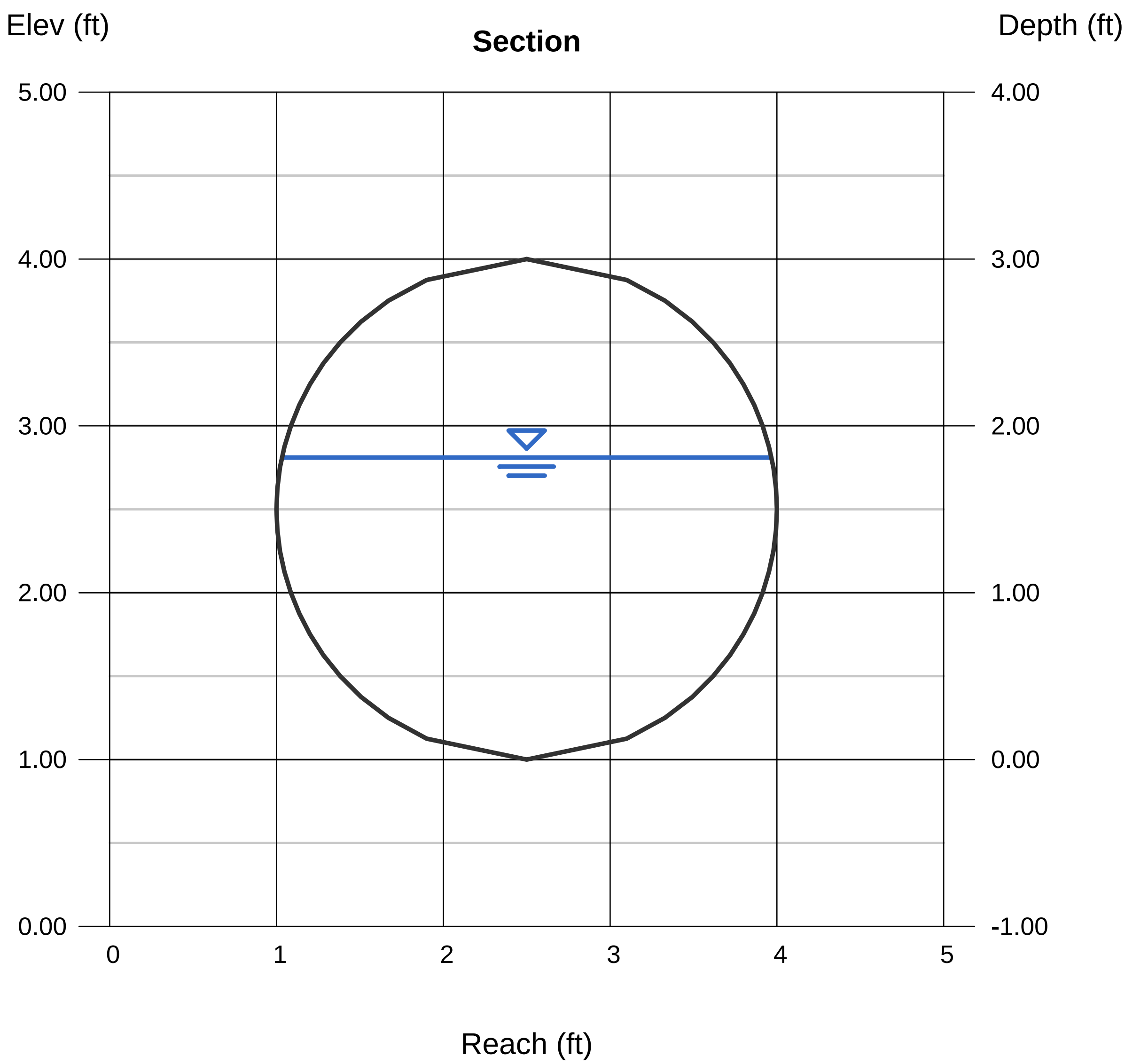
Preliminary Design - Offsite Flows - Point 403 - Alt Min slope

Circular
Diameter (ft) = 3.00

Invert Elev (ft) = 1.00
Slope (%) = 0.30
N-Value = 0.012

Calculations
Compute by: Known Q
Known Q (cfs) = 26.70

Highlighted
Depth (ft) = 1.81
Q (cfs) = 26.70
Area (sqft) = 4.46
Velocity (ft/s) = 5.98
Wetted Perim (ft) = 5.34
Crit Depth, Yc (ft) = 1.67
Top Width (ft) = 2.93
EGL (ft) = 2.37



Channel Report

Preliminary Design - Offsite Flows - Point 502

Circular

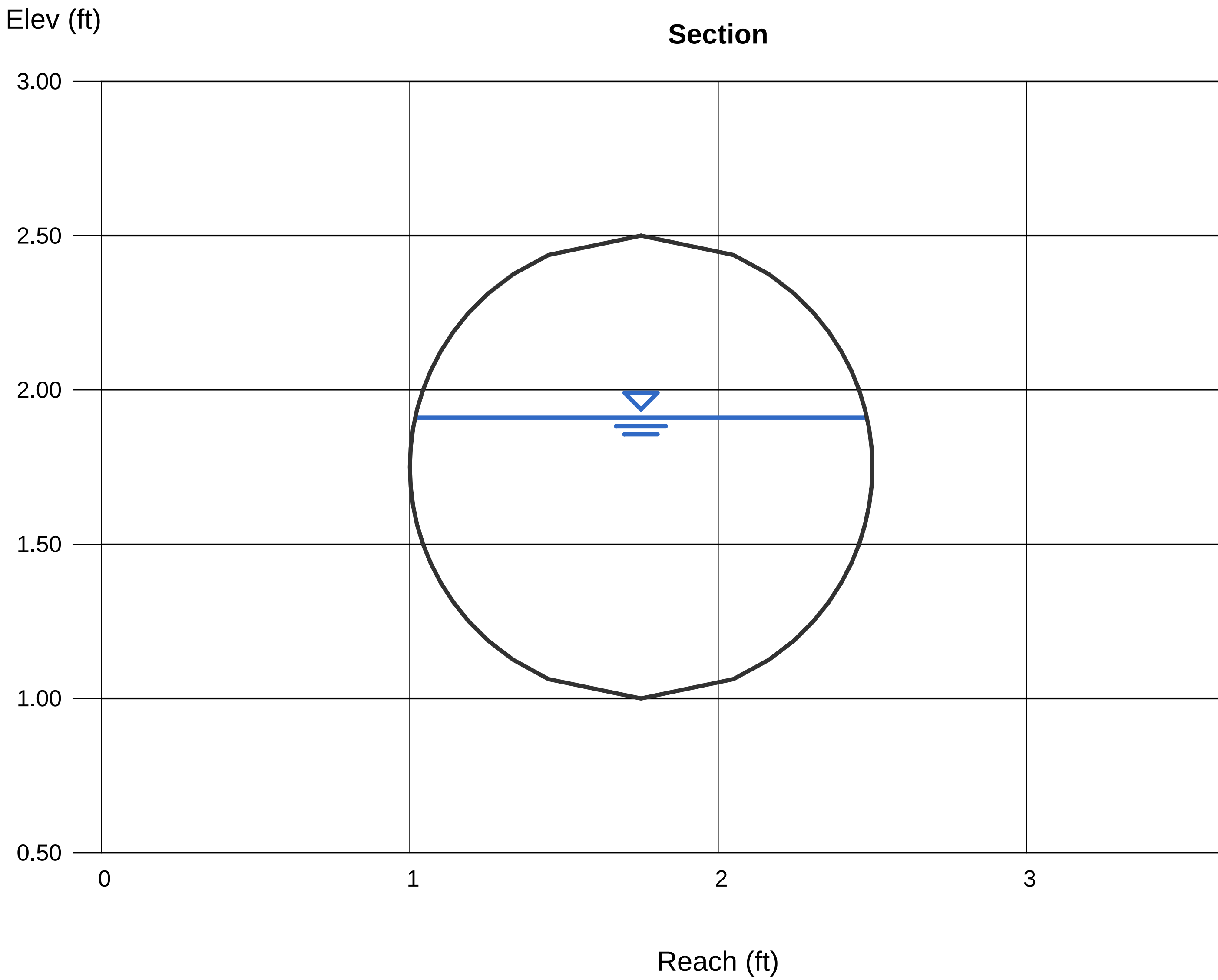
Diameter (ft)	= 1.50
Invert Elev (ft)	= 1.00
Slope (%)	= 1.00
N-Value	= 0.012

Calculations

Compute by:	Known Q
Known Q (cfs)	= 7.80

Highlighted

Depth (ft)	= 0.91
Q (cfs)	= 7.800
Area (sqft)	= 1.13
Velocity (ft/s)	= 6.93
Wetted Perim (ft)	= 2.68
Crit Depth, Yc (ft)	= 1.08
Top Width (ft)	= 1.46
EGL (ft)	= 1.66



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. Tuesday, Nov 9 2021

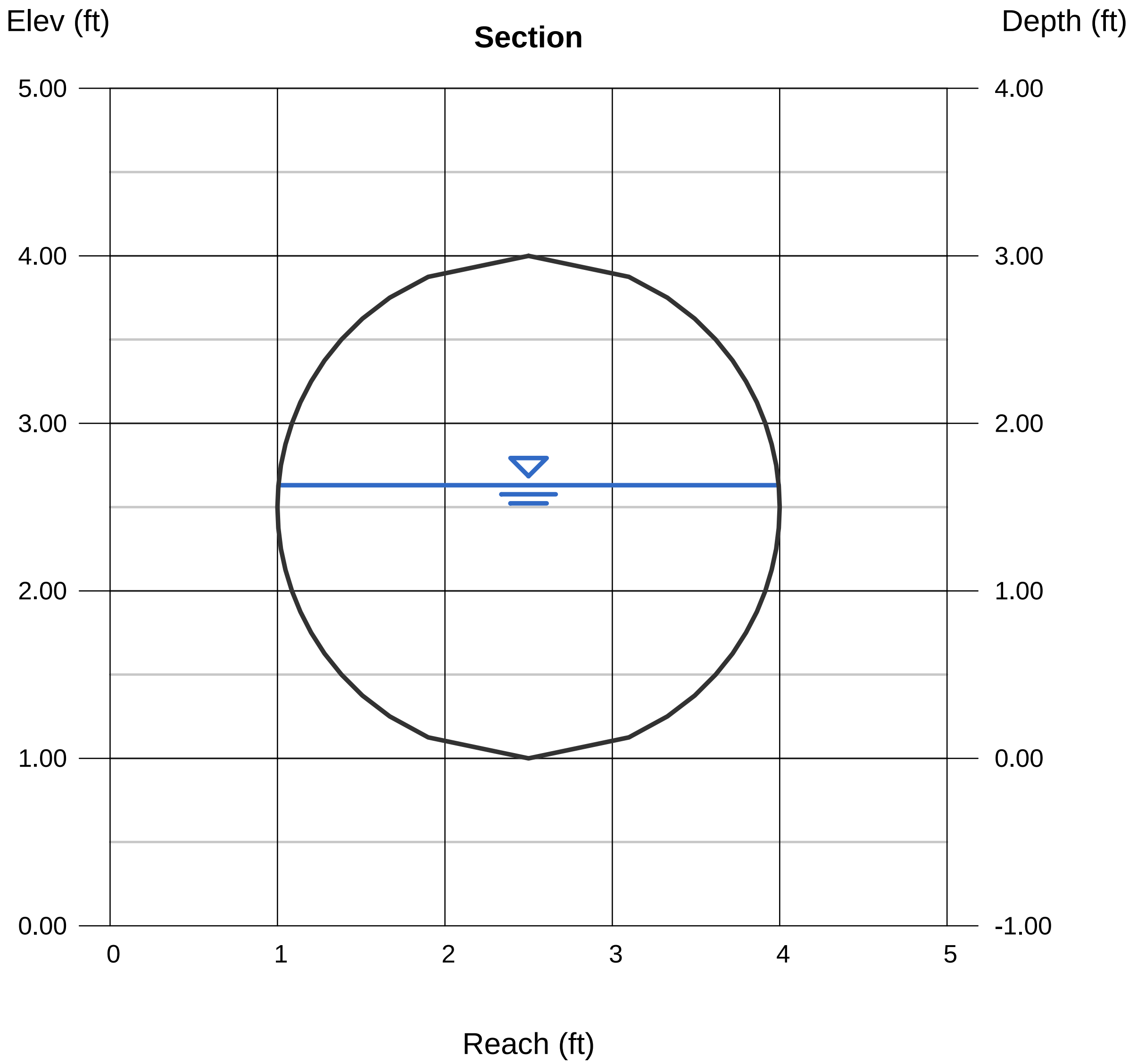
Prelim Check of Offsite Storm Drain PT304+PT403

Circular
Diameter (ft) = 3.00

Invert Elev (ft) = 1.00
Slope (%) = 8.00
N-Value = 0.012

Calculations
Compute by: Known Q
Known Q (cfs) = 117.00

Highlighted
Depth (ft) = 1.63
Q (cfs) = 117.00
Area (sqft) = 3.93
Velocity (ft/s) = 29.74
Wetted Perim (ft) = 4.98
Crit Depth, Yc (ft) = 2.95
Top Width (ft) = 2.99
EGL (ft) = 15.38



Channel Report

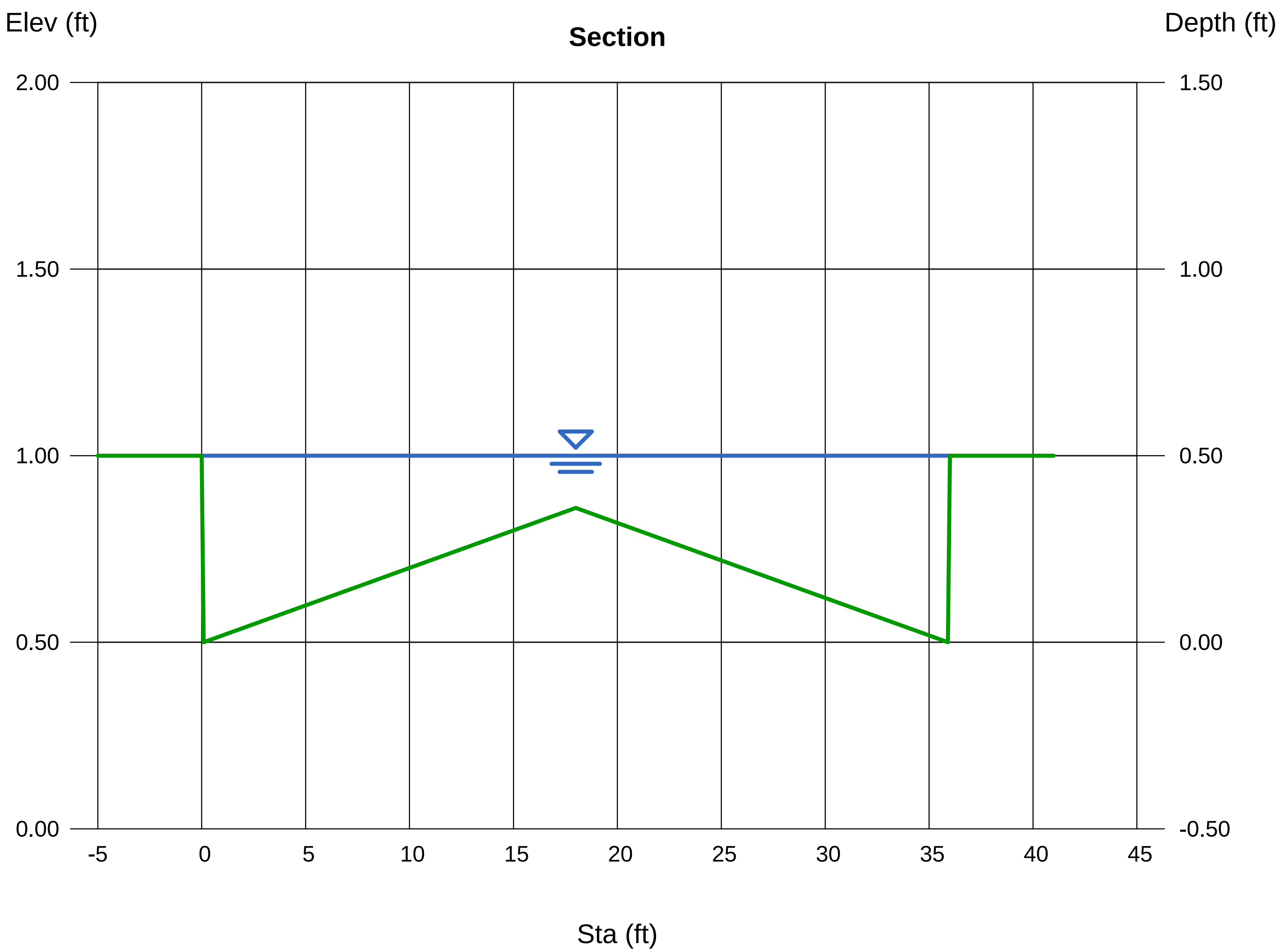
Gateway Heights Street Capcity - Min slope 2.08%

User-defined
Invert Elev (ft) = 0.50
Slope (%) = 2.08
N-Value = Composite

Calculations
Compute by: Q vs Depth
No. Increments = 10

(Sta, El, n)-(Sta, El, n)...
(0.00, 1.00)-(0.10, 0.50, 0.015)-(18.00, 0.86, 0.015)-(35.90, 0.50, 0.015)-(36.00, 1.00, 0.015)

Highlighted
Depth (ft) = 0.50
Q (cfs) = 75.82
Area (sqft) = 11.51
Velocity (ft/s) = 6.59
Wetted Perim (ft) = 36.83
Crit Depth, Yc (ft) = 0.50
Top Width (ft) = 36.00
EGL (ft) = 1.18



Culvert Report

Line B Prelim Design

Invert Elev Dn (ft)	=	1552.00
Pipe Length (ft)	=	268.00
Slope (%)	=	7.54
Invert Elev Up (ft)	=	1572.20
Rise (in)	=	72.0
Shape	=	Box
Span (in)	=	36.0
No. Barrels	=	2
n-Value	=	0.012
Culvert Type	=	Flared Wingwalls, Top Edge Bevel
Culvert Entrance	=	45D wingwall flare d=0.043D
Coeff. K,M,c,Y,k	=	0.51, 0.667, 0.0309, 0.8, 0.2

Embankment

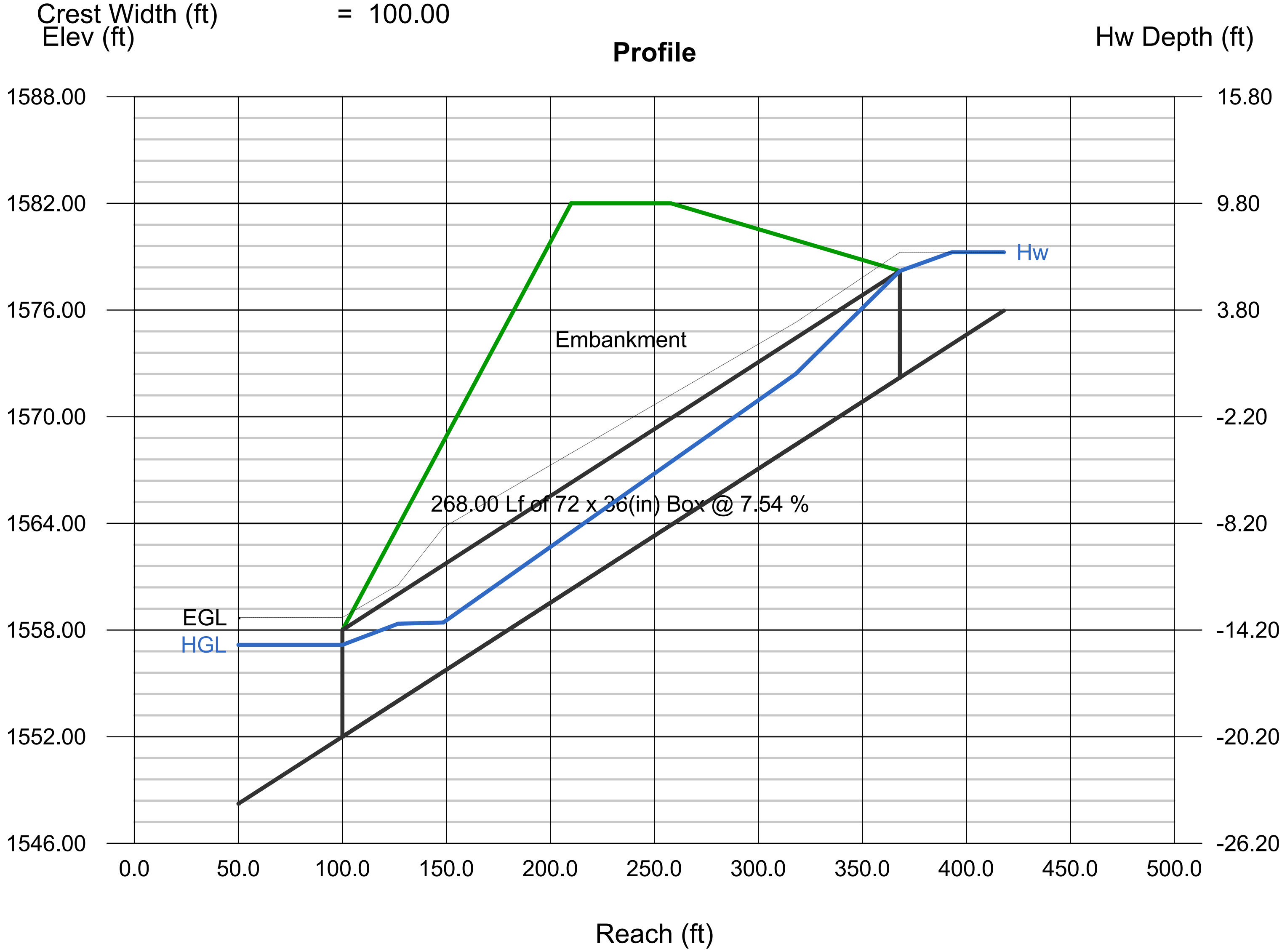
Top Elevation (ft)	=	1582.00
Top Width (ft)	=	48.00
Crest Width (ft)	=	100.00

Calculations

Qmin (cfs)	=	308.00
Qmax (cfs)	=	308.00
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	308.00
Qpipe (cfs)	=	308.00
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	9.93
Veloc Up (ft/s)	=	11.84
HGL Dn (ft)	=	1557.17
HGL Up (ft)	=	1576.54
Hw Elev (ft)	=	1579.25
Hw/D (ft)	=	1.17
Flow Regime	=	Inlet Control



Appendix C

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries | Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name UEG | Date 11/4/2021
Designed by CSM | Case No
Company Project Number/Name Gateway Heights

BMP Identification

BMP NAME / ID Overall Site - Contirbutory to the 3 shared basins

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.63 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
A&B	*662547*	*Mixed Surface Types*	*0.65*	*0.45*	*297601.7*			
	662547	***Total***			**297601.7**	**0.63**	**15624.1**	**80150**

Notes:

Basin Stage-Storage-Outfall Chart					
	Depth [ft]	Area [sf]	Vol [acft]	Vol Total [acft]	Q out [cfs]*
Basin B	0	8356			
	1	8356	0.058	0.058	0.7
	2	8356	0.058	0.115	0.7
	3	9566	0.206	0.321	0.7
	4	10831	0.234	0.555	0.7
	5	12153	0.264	0.819	24.0
	6	13532	0.265	1.084	24.0

0.5 cfs limited by 6" underdrain or Orafice to match 2yr 24hr

Basin Stage-Storage-Outfall Chart					
	Depth [ft]	Area [sf]	Vol [acft]	Vol Total [acft]	Q out [cfs]*
Basin A	0	2355			
	1	2355	0.016	0.016	0.5
	2	2355	0.016	0.032	0.5
	3	3229	0.064	0.097	0.5
	4	4223	0.086	0.182	0.5
	5	5318	0.110	0.292	24.0
	6	6422	0.111	0.402	24.0

0.7 cfs limited by 6" underdrain or Orafice to match 2yr 24hr

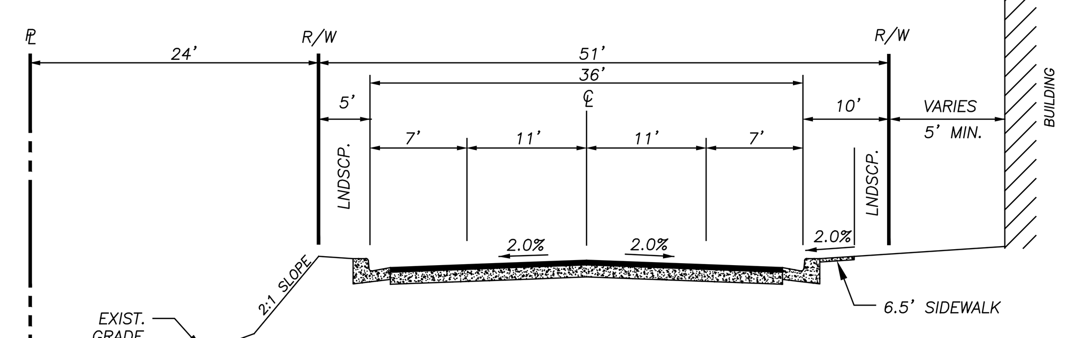
Appendix D

IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.

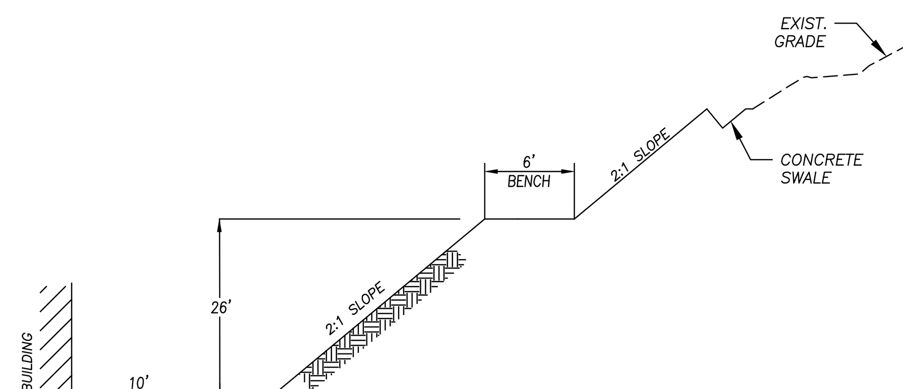
PRELIMINARY GRADING PLAN (PEN21-0066)

BEING A PORTION OF SECTION 34, TOWNSHIP 2 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN

UNITED ENGINEERING GROUP CA., INC NOVEMBER 2022

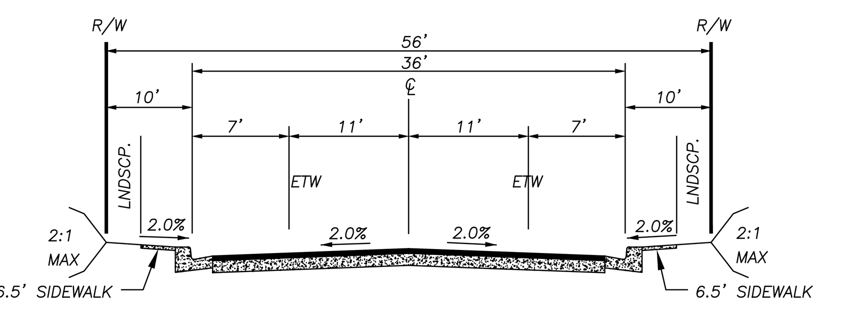


SECTION "A" – "A"
N.T.S.

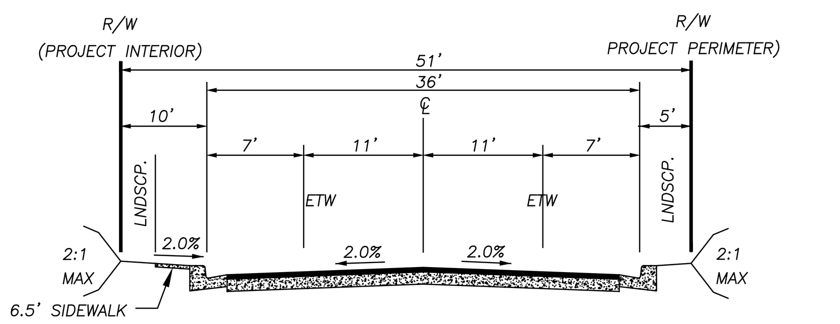


SECTION "B" – "B"
N.T.S.

* MINIMUM SETBACKS PER CALIFORNIA BUILDING CODE 1808.7;
– TOE OF SLOPE = AT LEAST THE SMALLER OF H/2 OR 15'
– TOP OF SLOPE = AT LEAST THE SMALLER OF H/3 OR 40'



STREET B
CITY OF MORENO VALLEY STANDARD MVSI-107A-0
N.T.S.



STREET A & C
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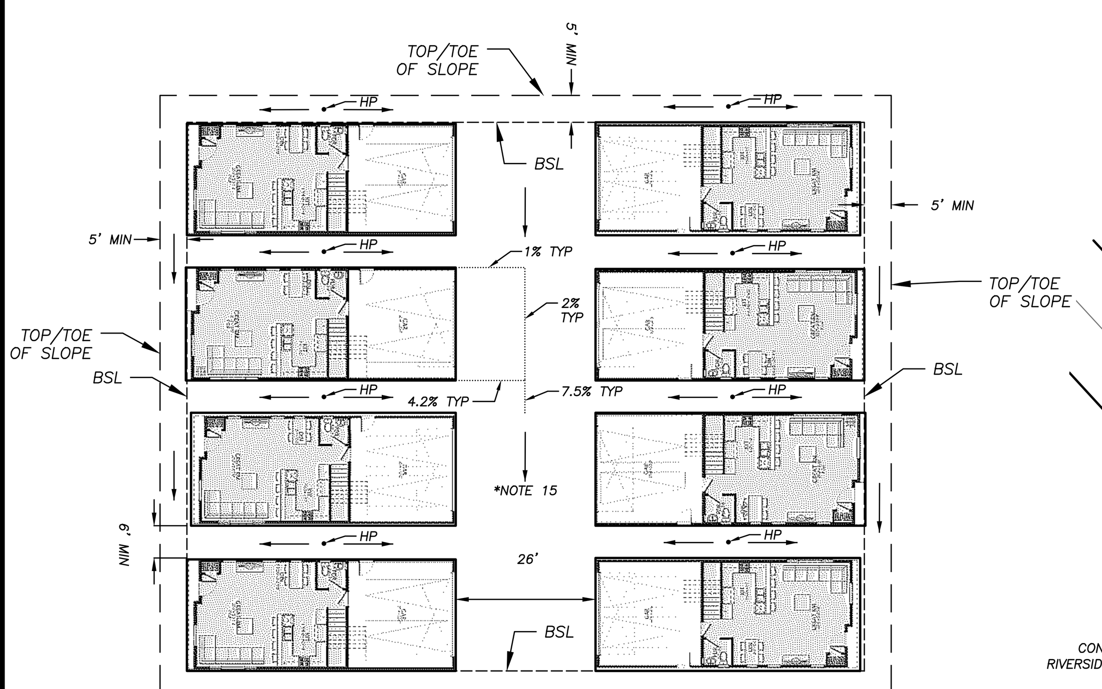
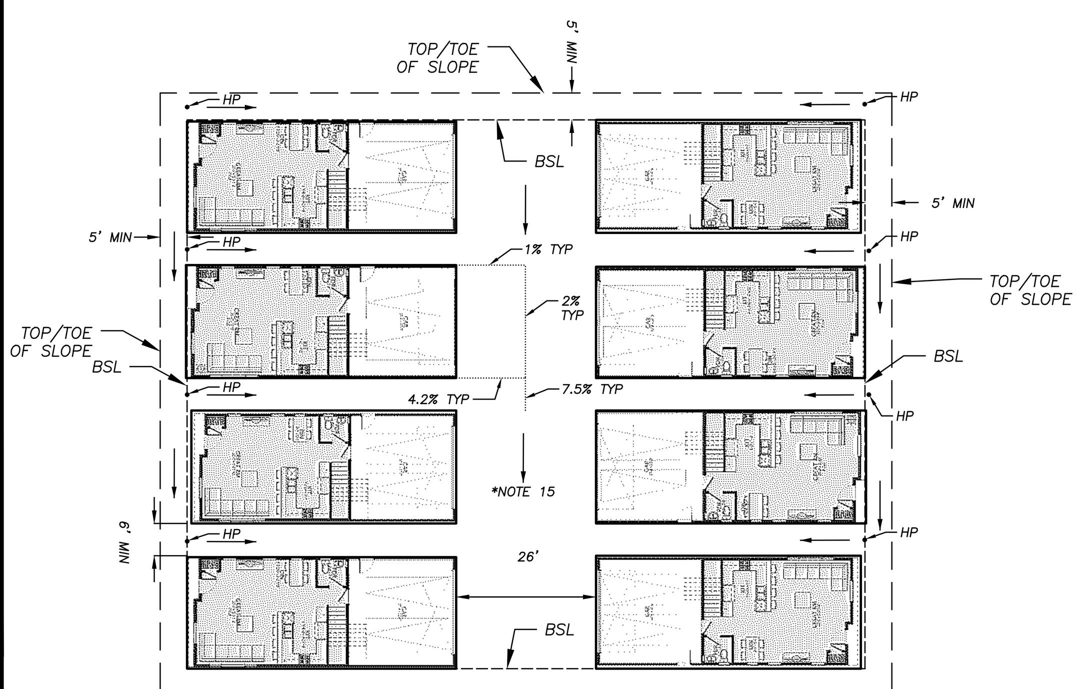


TYPICAL CLUSTER GRADING – OPTION 1



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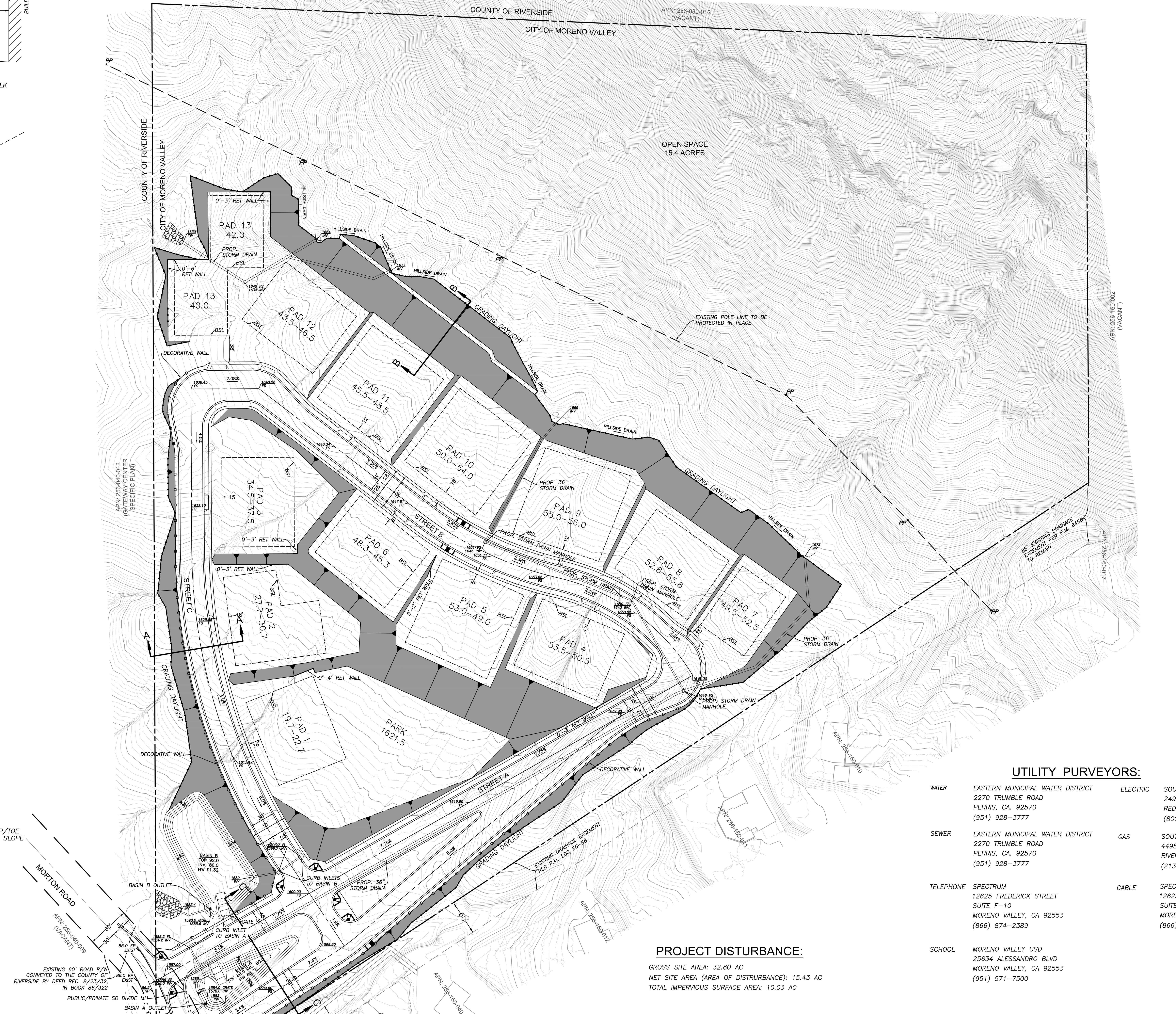
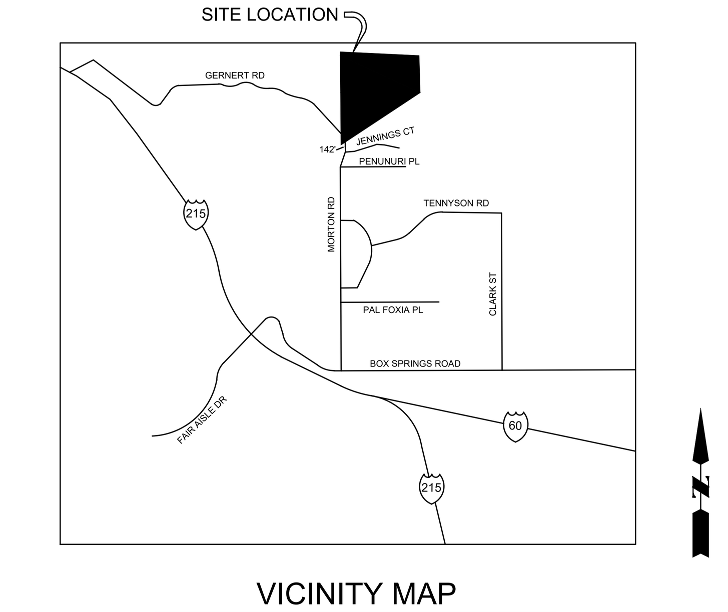




VICINITY MAP

N.T.S.

GENERAL NOTES:

1. APN: 256-150-001
2. TOPOGRAPHY SOURCE: CALVADA SURVEYING, INC. COMPILED 4-2018. CONTOUR INTERVAL-1FT.
3. THE LAND DOES NOT LIE WITHIN AN ALQUIST-PRIOLO EARTHQUAKE FAULT HAZARD ZONE AS DEFINED BY THE STATE OF CALIFORNIA IN THE ALQUIST-PRIOLO EARTHQUAKE FAULT HAZARD ZONE ACT OR A RIVERSIDE COUNTY FAULT HAZARD MAP , PER GEOTECHNICAL STUDY DATED 9-22-2018 PREPARED BY LGC GEO-ENVIRONMENTAL, INC.
4. THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) MAP FOR THIS SITE IS NO. 06071C5780H. THE SITE IS DESIGNATED AS OTHER FLOOD AREA-ZONE X.
5. THE LAND IS SUBJECT TO LOW LIQUEFACTION HAZARD.
6. THIS AREA IS NOT WITHIN FAULT ZONE.
7. BOUNDARY INFORMATION DISPLAYED ON THIS PLAN HAS BEEN COMPILED FROM RECORD INFORMATION AND IS NOT TO BE USED AS A BOUNDARY SURVEY.
8. PROJECT IS NOT WITHIN A COMMUNITY SERVICES DISTRICT.
9. HOMEOWNERS ASSOCIATION TO MAINTAIN SLOPES, DRAINAGE BASINS, DRAINAGE EASEMENTS, STREETS AND FUEL MODIFICATION AREAS.
10. PROJECT WILL COMPLY WITH WATER QUALITY TREATMENT REQUIRED IN THE PROJECT SPECIFIC WATER QUALITY MANAGEMENT PLAN.
11. ALL GRADING WORK SHOWN ON THIS PLAN SHALL BE DONE IN COMPLIANCE WITH CHAPTER 33 OF THE UNIFORM BUILDING CODE AND LOCAL ORDINANCE.
12. PRIOR TO ANY GRADING WORK, A GRADING PERMIT SHALL BE OBTAINED FROM THE CITY OF MORENO VALLEY BUILDING DEPARTMENT.
13. ALL GRADING SHALL CONFORM TO THE RECOMMENDATIONS AND REQUIREMENTS OF THE PRELIMINARY SOILS REPORT DATED SEPTEMBER 22, 2018 BY LGC GEO-ENVIRONMENTAL, INC.
14. ALL SLOPES ARE 2:1 UNLESS OTHERWISE NOTED
15. PADS 4, 5, AND 6 DEVIATE FROM THE STANDARD GRADING DETAILS TO DRAIN TOWARDS THE PARK, AWAY FROM THE STREET. AT FINAL DESIGN STORM DRAIN MAY BE REQUIRED TO COLLECT AND ROUTE FLOWS TO THE PARK AREA.
16. PROJECT IS WITHIN THE HIGH FIRE AREA. ALL BUILDINGS ARE TO BE CONSTRUCTED TO BE IN ACCORDANCE WITH 2019 CBC, CHAPTER 7A, FOR HIGH FIRE.
17. REMOVE AND REPLACE WITH TRANSITIONS TO BE DETERMINED AT FINAL STREET PLANS BASED ON CORINGS AND GEOTECHNICAL RECOMMENDATION AND PER CITY ENGINEER.
18. OFFSITE AREA OUTSIDE OF PROJECT TOPOGRAPHY LIMITS. AT FINAL DESIGN AND IN CONJUNCTION WITH LINE B DESIGN, ADDITIONAL DESIGN SURVEY WILL BE REQUIRED.
19. PROJECT STREET LIGHT DESIGN TO COMPLY WITH CITY STANDARDS. STREET LIGHT DESIGN PLANS TO BE PREPARED WITH FINAL DESIGN DRAWINGS.

LEGEND

FF	FINISHED FLOOR	FS	FINISHED SURFACE
FL	FLOW LINE	HW	HIGH WATER
R/W	RIGHT-OF-WAY	INV	INVERT
BSL	BUILDING SETBACK LINE	TC	TOP OF CURB
EP	EDGE OF PAVEMENT	HP	HIGH POINT

PROPOSED SEWER LINE
PROPOSED WATER LINE
EXISTING SEWER LINE
EXISTING WATER LINE
DEVELOPMENT LIMITS
PROJECT BOUNDARY
CENTERLINE
EXISTING DIRT ROAD
PP POWER POLE
OVERHEAD POWER LINE
FUEL MODIFICATION ZONE
2:1 SLOPE (UNLESS OTHERWISE NOTED)
DECORATIVE WALL

UTILITY PURVEYORS:

WATER	EASTERN MUNICIPAL WATER DISTRICT 2270 TRUMBLE ROAD PERRIS, CA. 92570 (951) 928-3777	ELECTRIC	SOUTHERN CALIFORNIA EDISON 2492 W. SAN BERNARDINO AVE REDLANDS, CA. 92374 (800) 655-4555
SEWER	EASTERN MUNICIPAL WATER DISTRICT 2270 TRUMBLE ROAD PERRIS, CA. 92570 (951) 928-3777	GAS	SOUTHERN CALIFORNIA GAS 4495 HOWARD AVE RIVERSIDE, CA. 92507 (213) 244-8344
TELEPHONE	SPECTRUM 12625 FREDERICK STREET SUITE F-10 MORENO VALLEY, CA 92553 (866) 874-2389	CABLE	SPECTRUM 12625 FREDERICK STREET SUITE F-10 MORENO VALLEY, CA 92553 (866) 874-2389
SCHOOL	MORENO VALLEY USD 25634 ALESSANDRO BLVD MORENO VALLEY, CA 92553 (951) 571-7500		

ESTIMATED EARTHWORK QUANTITIES (RAW)

CUT: 90,148 CU. YDS. FILL: 56,011 CU. YDS.

NOTE:
THE ABOVE QUANTITIES DO NOT REFLECT ANY SWELLING, SUBSIDENCE, OVER EXCATION, OR ANY SPECIAL CONDITIONS THAT MAY BE SPECIFIED IN THE PRELIMINARY SOILS REPORT AND ARE FOR REFERENCE AND FEE PURPOSES ONLY. SINCE THE ENGINEER CANNOT CONTROL THE EXACT METHOD OR MEANS USED BY THE CONTRACTOR DURING GRADING OPERATIONS, NOR CAN THE ENGINEER GUARANTEE THE EXACT SOIL CONDITION OVER THE ENTIRE SITE, THE ENGINEER ASSUME NO RESPONSIBILITY FOR THE FINAL EARTHWORK QUANTITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THEIR OWN EARTHWORK QUANTITIES FOR BIDDING, CONTRACT, AND CONSTRUCTION PURPOSES.

PROJECT DISTURBANCE:

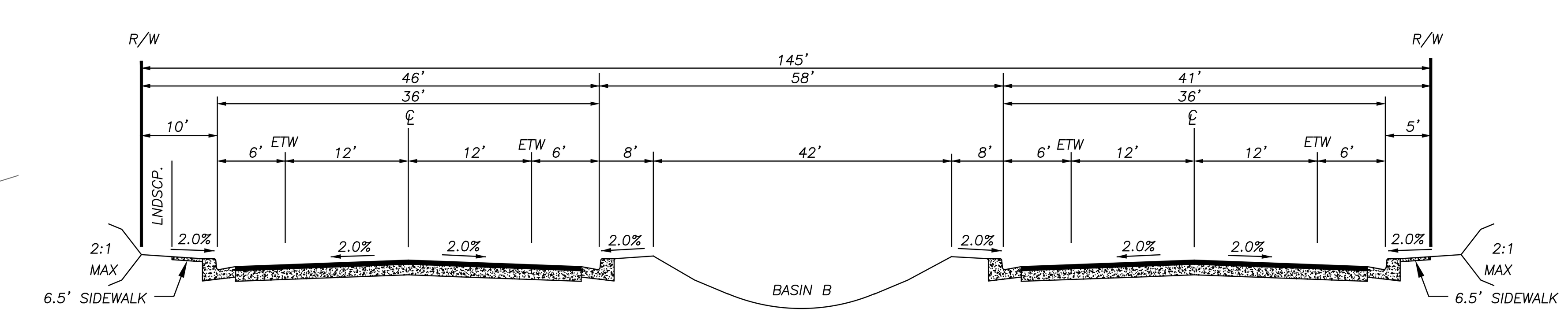
GROSS SITE AREA: 32.80 AC
NET SITE AREA (AREA OF DISTRURBANCE): 15.43 AC
TOTAL IMPERVIOUS SURFACE AREA: 10.03 AC

DEVELOPER:

JASON ACKERMAN
3200 GUASTI ROAD #100
ONTARIO, CA 91761
(909) 456-1460 OFFICE
(909) 223-3302 MOBILE
jason.ackerman@ackermanlawpc.com

OWNER/APPLICANT:

SHIZAO ZHENG
1378 WEST ZHONGSHAN ROAD
NINGBO, CHINA 315-016
(626) 666-1470



SECTION C-C
PROJECT ENTRANCE
(LOOKING EAST)
N.T.S.

ENGINEER/PLAN PREPARER

UNITED ENGINEERING GROUP CA, INC
8885 HAVEN AVENUE, SUITE 195
RANCHO CUCAMONGA, CA 91730
(909) 466-9240 x203 OFFICE
(909) 292-6677 MOBILE
bcooper@unitedeng.com

GEOTECHNICAL ENGINEER

LGC GEO-ENVIRONMENTAL, INC.
27570 COMMERCE CENTER DRIVE
SUITE 128
TEMECULA, CA 92590
(951) 297-2450

GRAPHIC SCALE: 1"=60'

SUBMITTALS:

REVISIONS

NO.	DESCRIPTION	DATE

DESIGNED BY:
DRAWN BY:
CHECKED BY:

REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER F. LENZ
NO. 63001
EXP. 6/30/23
CIVIL
STATE OF CALIFORNIA

CHRISTOPHER F. LENZ DATE
R.C.E. No. 63001

united engineering group

8885 Haven Avenue
Suite 195
Rancho Cucamonga, CA 91730
Phone: 909.466.9240
www.unitedeng.com

PRELIMINARY GRADING PLAN

GATEWAY HEIGHTS
CONDITIONAL USE PERMIT
PEN21-0066

NOVEMBER 2022

SHEET 1 OF 1

PROJECT NUMBER
CA-30182

IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.

SITE PLAN (PEN21-0066)

BEING A PORTION OF SECTION 34, TOWNSHIP 2 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN

UNITED ENGINEERING GROUP CA., INC NOVEMBER 2022

LEGAL DESCRIPTION:

THAT PORTION OF SECTION 34, TOWNSHIP 2 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN, IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF SECTION 34, TOWNSHIP 2 SOUTH, RANGE 4 WEST, SAN BERNARDINO, AS SHOWN BY UNITED STATES GOVERNMENT SURVEY; THENCE RUNNING SOUTH ALONG THE WEST LINE OF SAID SECTION 34, 23.50 CHAINS TO THE CORNER MONUMENT MARKING THE NORTHWEST CORNER OF THE LAND CONVEYED TO CECIL R. G. WEBBE TO CHARLES M. DEXTER BY DEED RECORDED IN BOOK 141, PAGE 398, OF DEEDS, SAN BERNARDINO COUNTY RECORDS;
THENCE NORTH 56 DEGREES 31' EAST ALONG THE LINE OF LAND SO CONVEYED TO CHARLES M. DEXTER, 23.91 CHAINS TO THE NORTHEAST CORNER OF SAID LAND SO CONVEYED TO CHARLES M. DEXTER;
THENCE NORTH ALONG THE CENTER LINE OF THE NORTHWEST QUARTER OF SAID SECTION 34, 10.40 CHAINS TO THE NORTH LINE OF SAID SECTION 34; THENCE WEST ALONG THE NORTH LINE OF SAID SECTION, 20 CHAINS TO THE TRUE POINT OF BEGINNING.

EXCEPTING THEREFROM ANY INTEREST OF THE COUNTY OF RIVERSIDE IN AND TO THAT PORTION LYING WITHIN MORTON ROAD.

ALSO EXCEPTING THEREFROM THAT PORTION OF THE ABOVE DESCRIBED PARCEL LYING SOUTHWESTERLY OF SAID MORTON ROAD.

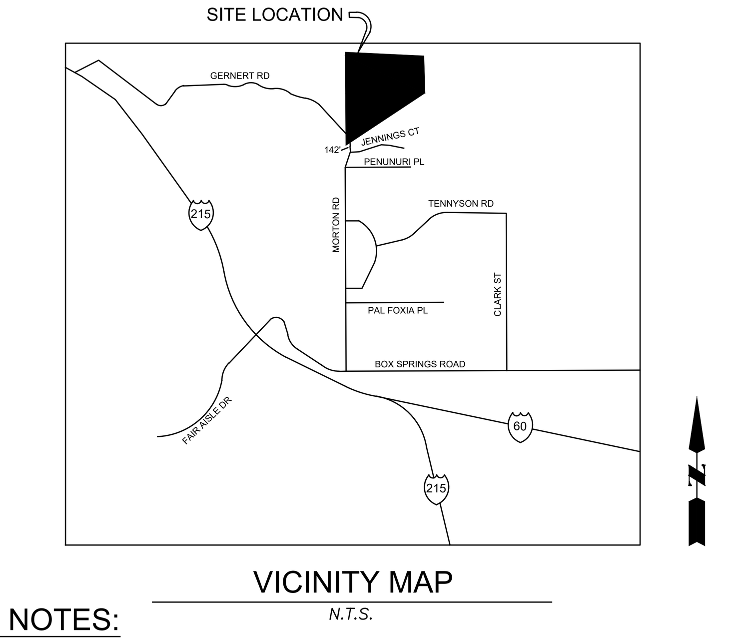
PARCEL NUMBER(S): 256–150–001

UTILITY PURVEYORS:

WATER	EASTERN MUNICIPAL WATER DISTRICT 2270 TRUMBLE ROAD PERRIS, CA. 92570 (951) 928–3777	ELECTRIC	SOUTHERN CALIFORNIA EDISON 2492 W. SAN BERNARDINO AVE REDLANDS, CA. 92374 (800) 655–4555
SEWER	EASTERN MUNICIPAL WATER DISTRICT 2270 TRUMBLE ROAD PERRIS, CA. 92570 (951) 928–3777	GAS	SOUTHERN CALIFORNIA GAS 4495 HOWARD AVE RIVERSIDE, CA. 92507 (213) 244–8344
TELEPHONE	SPECTRUM 12625 FREDERICK STREET SUITE F–10 MORENO VALLEY, CA 92553 (866) 874–2389	CABLE	SPECTRUM 12625 FREDERICK STREET SUITE F–10 MORENO VALLEY, CA 92553 (866) 874–2389
SCHOOL	MORENO VALLEY USD 25634 ALESSANDRO BLVD MORENO VALLEY, CA 92553 (951) 571–7500		

LEGEND

FF	FINISHED FLOOR
FL	FLOW LINE
R/W	RIGHT–OF–WAY
BSL	BUILDING SETBACK LINE
FSL	FIRE SEPERATION LINE
—— S —— S ——	PROPOSED SEWER LINE
—— W —— W ——	PROPOSED WATER LINE
——(S)——	EXISTING SEWER LINE
——(W)——	EXISTING WATER LINE
	DEVELOPMENT LIMITS
	PROJECT BOUNDARY
	CENTERLINE
	EXISTING DIRT ROAD
PP	POWER POLE
	OVERHEAD POWER LINE
	FUEL MODIFICATION ZONE
	DECORATIVE WALL



VICINITY MAP

N.T.S.

GENERAL NOTES:

1. APN: 256–150–001
2. TOPOGRAPHY SOURCE: CALVADA SURVEYING, INC. COMPILED 4–2018. CONTOUR INTERVAL–1FT.
3. THE LAND DOES NOT LIE WITHIN AN ALQUIST–PRIOLO EARTHQUAKE FAULT HAZARD ZONE AS DEFINED BY THE STATE OF CALIFORNIA IN THE ALQUIST–PRIOLO EARTHQUAKE FAULT HAZARD ZONE ACT OR A RIVERSIDE COUNTY FAULT HAZARD MAP , PER GEOTECHNICAL STUDY DATED 9–22–2018 PREPARED BY LGC GEO–ENVIRONMENTAL, INC.
4. THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) MAP FOR THIS SITE IS NO. 06071C5780H. THE SITE IS DESIGNATED AS OTHER FLOOD AREA–ZONE X.
5. THE LAND IS SUBJECT TO LOW LIQUEFACTION HAZARD.
6. THIS AREA IS NOT WITHIN FAULT ZONE.
7. BOUNDARY INFORMATION DISPLAYED ON THIS PLAN HAS BEEN COMPILED FROM RECORD INFORMATION AND IS NOT TO BE USED AS A BOUNDARY SURVEY.
8. PROJECT IS NOT WITHIN A COMMUNITY SERVICES DISTRICT.
9. HOMEOWNERS ASSOCIATION TO MAINTAIN SLOPES, DRAINAGE BASINS, DRAINAGE EASEMENTS, STREETS AND FUEL MODIFICATION AREAS.
10. PROJECT WILL COMPLY WITH WATER QUALITY TREATMENT REQUIRED IN THE PROJECT SPECIFIC WATER QUALITY MANAGEMENT PLAN.
11. ALL SLOPES ARE 2:1 UNLESS OTHERWISE NOTED.
12. TO THE BEST OF OUR KNOWLEDGE, MORTON ROAD NORTHERLY OF JENNINGS COURT HAS NOT BEEN VACATED FROM THE CURVE ALIGNMENT THAT IS RECORDED ON PM27548.
13. PROJECT IS WITHIN THE HIGH FIRE AREA. ALL BUILDINGS ARE TO BE CONSTRUCTED TO BE IN ACCORDANCE WITH 2019 CBC, CHAPTER 7A, FOR HIGH FIRE.
14. REMOVE AND REPLACE WITH TRANSITIONS TO BE DETERMINED AT FINAL STREET PLANS BASED ON CORINGS AND GEOTECHNICAL RECOMMENDATION AND PER CITY ENGINEER.

SITE DATA

TOTAL GROSS AREA.......................... 32.56 ACRES
TOTAL NET AREA.............................. 32.56 ACRES
PROPOSED R10 ZONE.................... 16.59 ACRES
PROPOSED OPEN SPACE ZONE......... 15.97 ACRES

DEVELOPMENT AREA.......................... 16.59 ACRES
UNITS 1 – 108................................ 2,100 S.F./EACH (ALL 2 STORY)
PARKING SPACES REQ'D.................. 216 (ENCLOSED GARAGE)
PROVIDED.................. 216 (ENCLOSED GARAGE)

PARK AREA.. 0.89 ACRES
BASIN A.. 12,131.24 S.F.
BASIN B.. 13,852.37 S.F
STREET A, B, & C............................ 2,447.60 L.F.

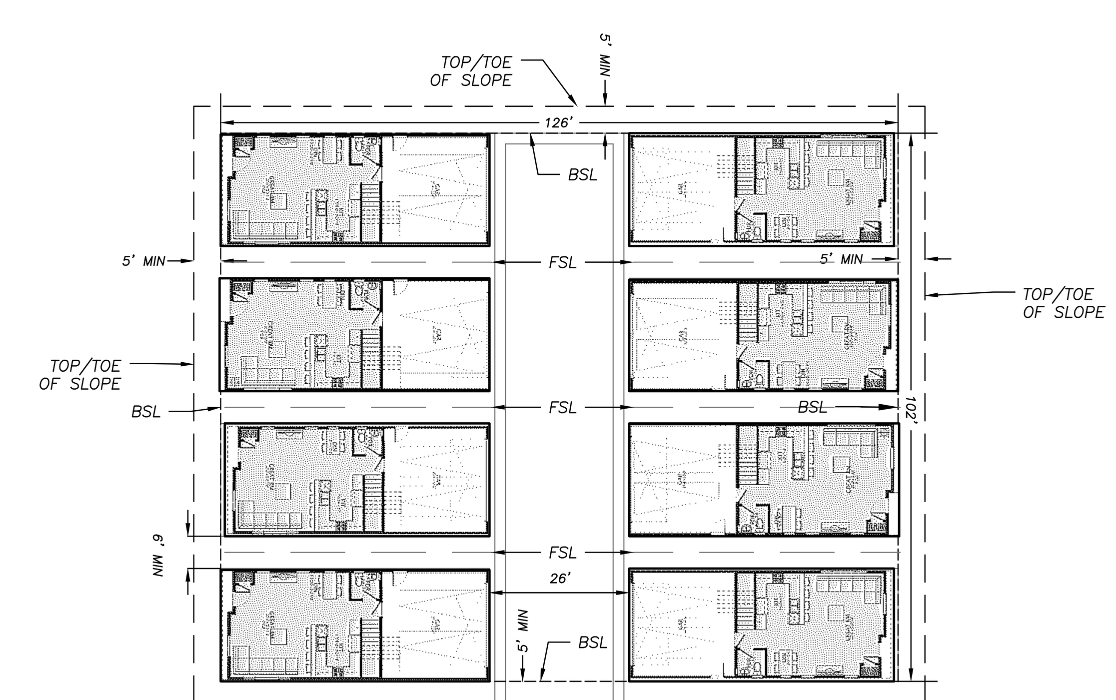
BUILDING SETBACKS
FRONT/STREET SIDE.......................... 5' TO RIGHT OF WAY
MIN. BUILDING SEPARATION.............. 6'
SIDE & REAR SETBACKS.................. 5' MINIMUM TO TOP/TOE OF SLOPE
(TOE OF SLOPE = H/2)
(TOP OF SLOPE = H/3)

PROJECT LAND USE

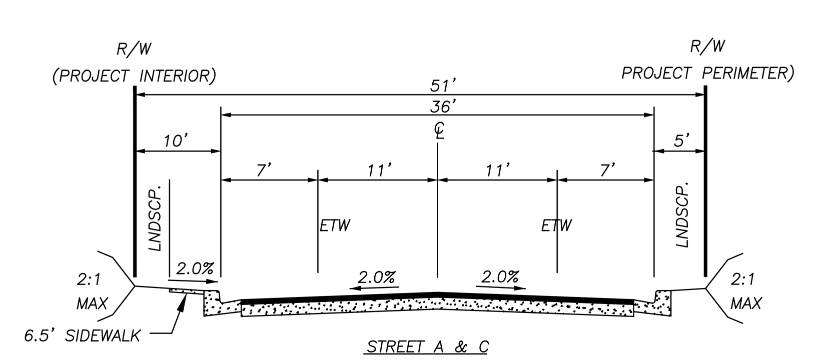
EXISTING LAND USE................. VACANT
PROPOSED LAND USE.............. RESIDENTIAL
EXISTING ZONING...................... R2 AND HR
PROPOSED ZONING.................. R10 AND OS

SURROUNDING LAND USE

NORTH: HILLSIDE RESIDENTIAL (HR) & CONSERVATION (COUNTY OF RIVERSIDE)
SOUTH: RESIDENTIAL MAX 5DU/ACE (R5)
EAST: HILLSIDE RESIDENTIAL (HR)
WEST: GATEWAY CENTER SPECIFIC PLAN (COUNTY OF RIVERSIDE)



TYPICAL CLUSTER LAYOUT



STREET A & C
CITY OF MORENO VALLEY STANDARD MVSI–107A–0 (MODIFIED)
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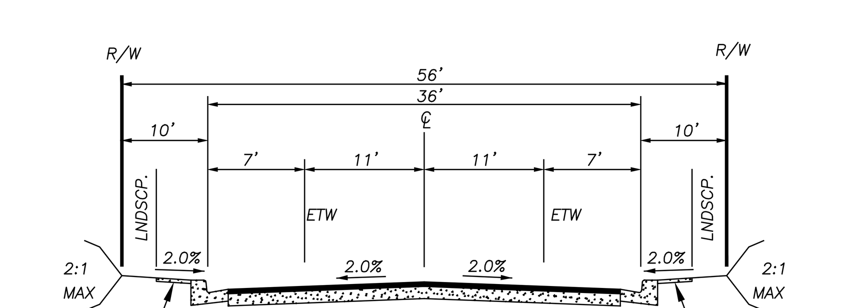
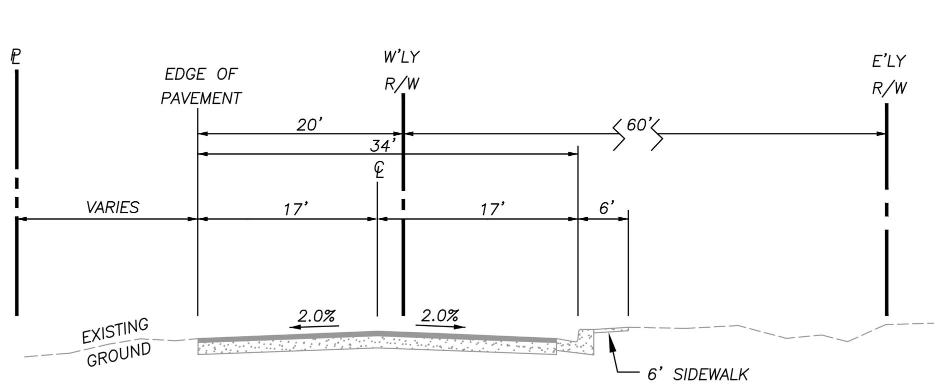


STREET B
CITY OF MORENO VALLEY STANDARD MVSI–107A–0
N.T.S.



EXISTING MORTON STREET SECTION @ SOUTH PROPERTY LINE
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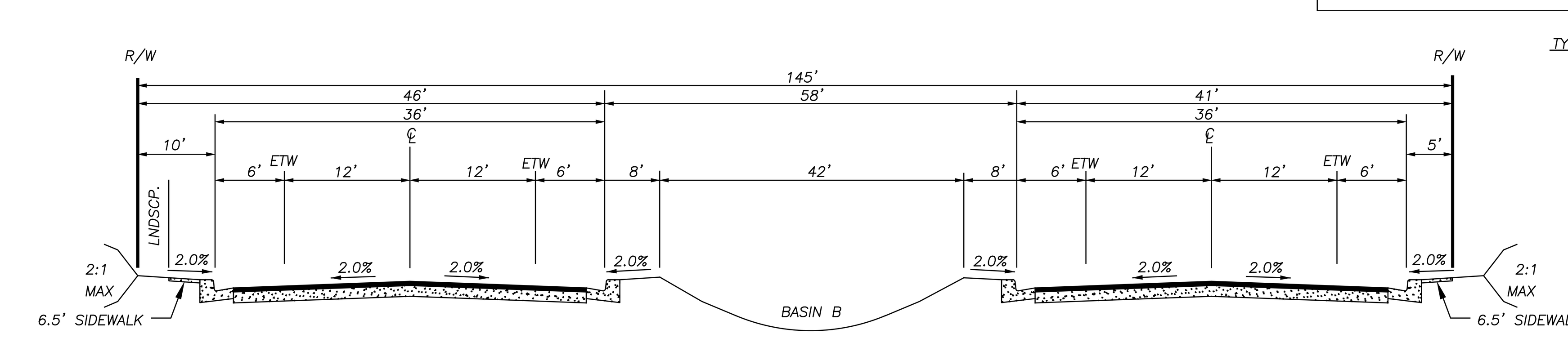


STREET A @ PROJECT ENTRANCE (LOOKING EAST)
N.T.S.

DEVELOPER:

JASON ACKERMAN
3200 GUASTI ROAD #100
ONTARIO, CA 91761
(909) 456–1460 OFFICE
(909) 223–3302 MOBILE
jason.ackerman@ackermanlawpc.com

OWNER/APPLICANT:

SHIZAO ZHENG
1378 WEST ZHONGSHAN ROAD
NINGBO, CHINA 315–016
(626) 666–1470

ENGINEER/PLAN PREPARER

UNITED ENGINEERING GROUP CA, INC
8885 HAVEN AVENUE, SUITE 195
RANCHO CUCAMONGA, CA 91730
(909) 466–9240 x203 OFFICE
(909) 292–6677 MOBILE
bcooper@unitedeng.com

60' 30' 0' 60'
GRAPHIC SCALE: 1"=60'

SUBMITTALS:

DESIGNED BY:
DRAWN BY:
CHECKED BY:

REVISIONS		
NO.	DESCRIPTION	DATE

REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER F. LENZ NO. 63001 EXP. 6/30/23 CIVIL STATE OF CALIFORNIA

CHRISTOPHER F. LENZ DATE
R.C.E. No. 63001

LICENSED LAND SURVEYOR DEAN C. PHILLIPS EXP. 9/30/21 NO. 6974 STATE OF CALIFORNIA

DEAN C. PHILLIPS DATE
L.S. No. 6974
dphillips@unitedeng.com

united engineering group
8885 Haven Avenue
Suite 195
Rancho Cucamonga,
CA 91730
Phone: 909.466.9240
www.unitedeng.com

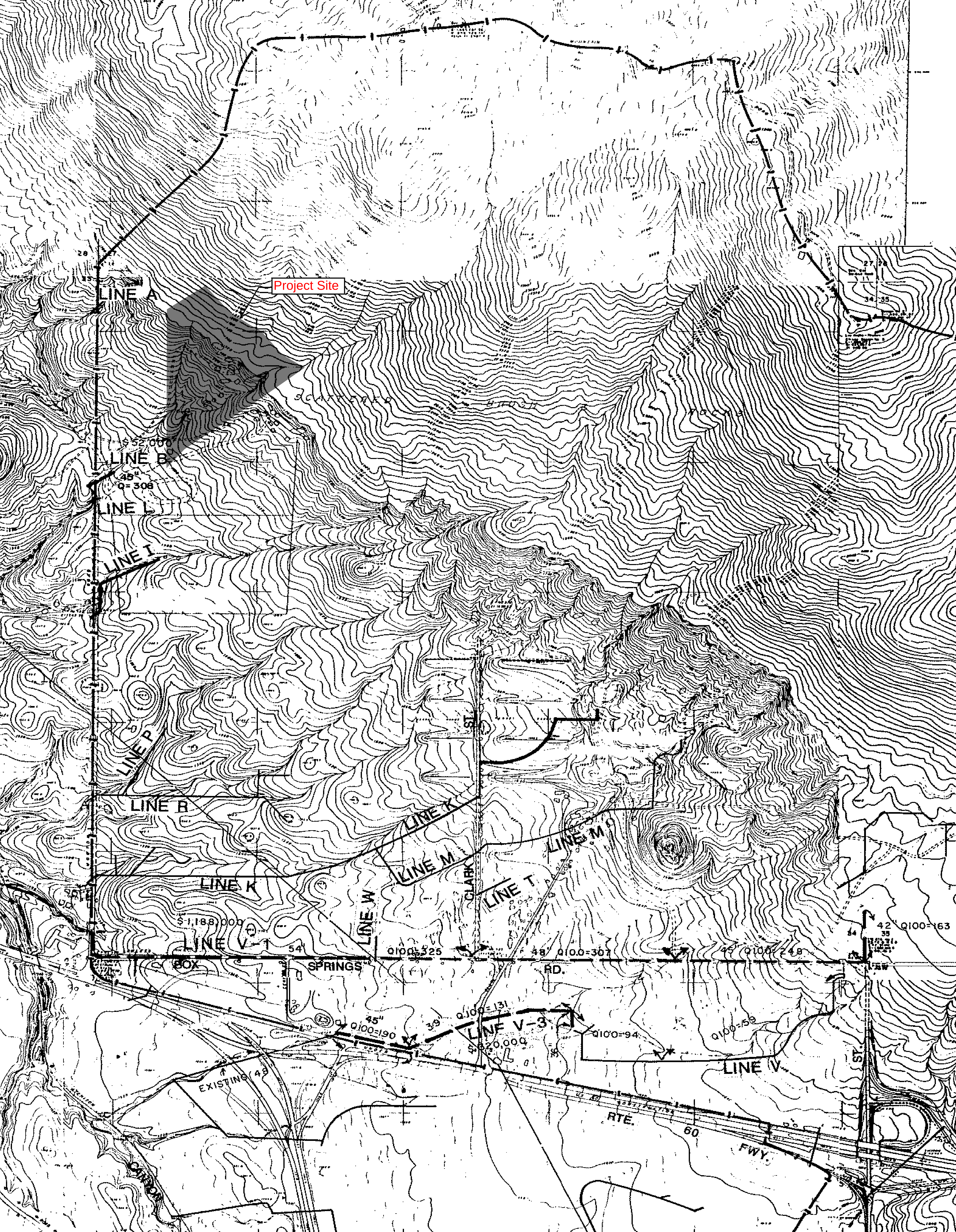
SITE PLAN

GATEWAY HEIGHTS
CONDITIONAL USE PERMIT
PEN21-0066

NOVEMBER 2022
SHEET 1 OF 1
PROJECT NUMBER
CA–30182

Appendix E


Area of Enlargement
Project Site
LINE A
$52,000
LINE B
45"
Q= 308
LINE L
LINE I
LINE P
LINE R
LINE K
LINE M
LINE M
LINE K
LINE T
LINE W
CLARK
ST.
$1,188,000
LINE V-1
54
BOX
SPRINGS
Q100=325
48" Q10.0=307
RD.
45" Q100=248
42" Q100=163
45"
Q100=190
39"
Q100=131
LINE V-3
$320,000
Q100=94
Q100=59
LINE V
EXISTING 48"
RTE.
60
FWY.
CANYON
ST.



Project Site
LINE A
$52,000
LINE B
45"
Q=308
LINE L
LINE I
LINE P
LINE R
LINE K
LINE K
LINE M
LINE M
LINE W
CLARK ST.
LINE T
$1,188,000
LINE V-1
54"
BOX SPRINGS RD.
Q100=325
48"
Q100=307
45"
Q100=248
42"
Q100=163
45"
Q100=190
39"
Q100=131
LINE V-3
$820,000
Q100=94
Q100=59
LINE V
EXISTING 48"
RTE. 60 FWY.
ST.
CANYON

Appendix I

Project Specific Water Quality Management Plan

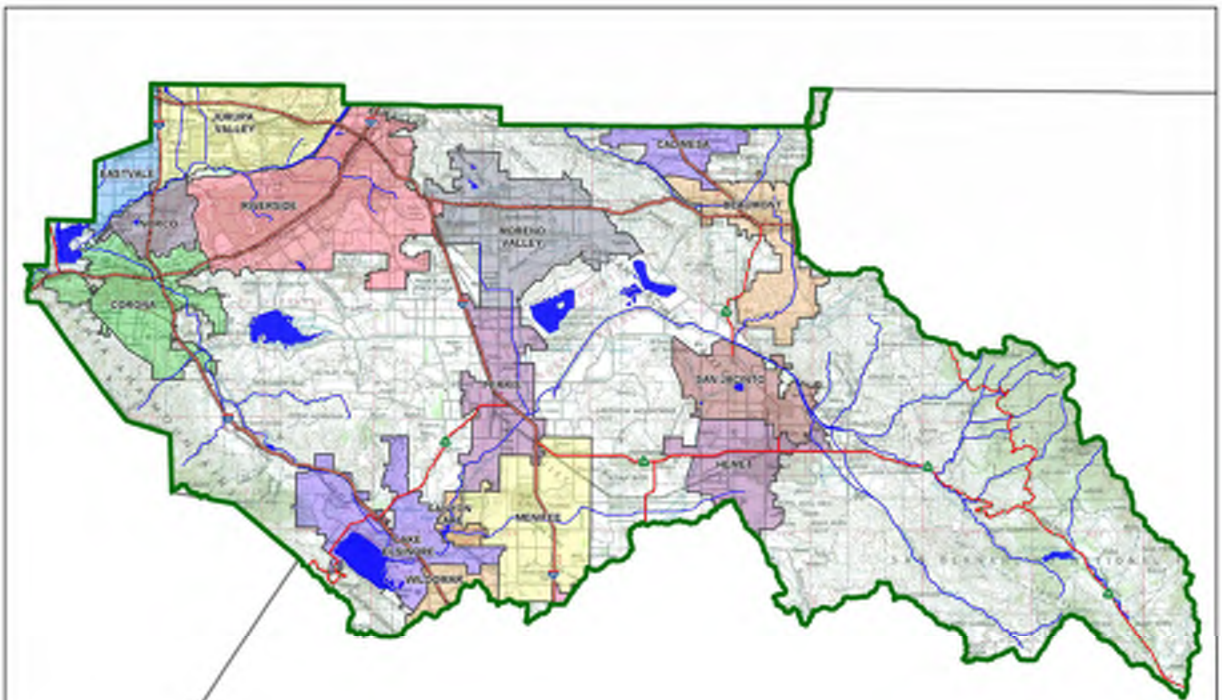
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Gateway Heights

Development No: PEN21-0066

Design Review/Case No: LWQ21-0014



Contact Information:

Prepared for: HengHou Group
Shizao Zheng
1378 West Zhongshan Rd
Ningbo, China 315-016
Prepared by: Christopher Lenz, P.E., Principal
United Engineering Group CA, Inc.
8885 Haven Avenue, Suite 195
Rancho Cucamonga, CA 91730
(909) 466-9240

☒ **Preliminary**
☐ **Final**

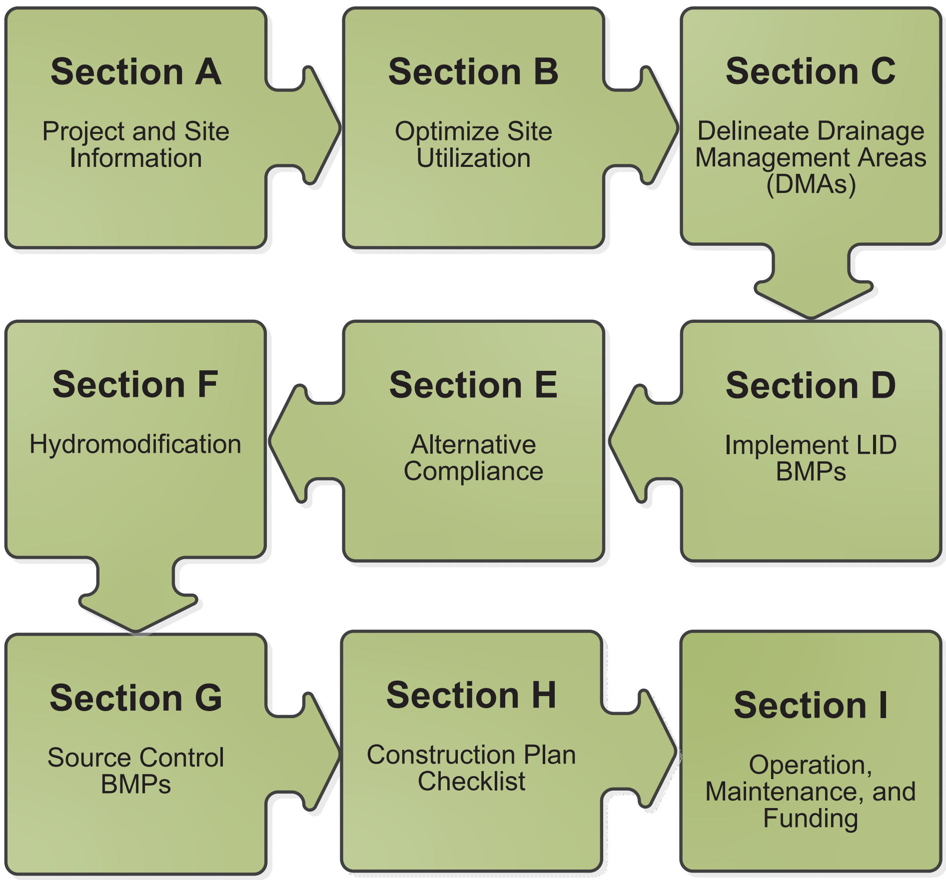
Original Date Prepared: March 8, 2021

Revision Date(s): Nov 24, 2021; March 23, 2022; Oct 24, 2022; Nov 10, 2022

Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**

A Brief Introduction

This Project-Specific WQMP Template for the **Santa Ana Region** has been prepared to help guide you in documenting compliance for your project. Because this document has been designed to specifically document compliance, you will need to utilize the WQMP Guidance Document as your "how-to" manual to help guide you through this process. Both the Template and Guidance Document go hand-in-hand, and will help facilitate a well prepared Project-Specific WQMP. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for HengHou Group by United Engineering Group CA, Inc. for the Gateway Heights project, PEN21-0066.

This WQMP is intended to comply with the requirements of City of Moreno Valley Ordinance 827 which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under the City of Moreno Valley Water Quality Ordinance (Municipal Code 8.10).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

______________________	11-15-2022
Owner's Signature	Date
郑士灶	President
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

______________________	11-10-2022
Preparer's Signature	Date
Christopher F. Lenz	PE/ Principal Engineer
Preparer's Printed Name	Preparer's Title/Position

Preparer's Licensure: CA 63001

Table of Contents

List of Tables

List of Appendices

Section A: Project and Site Information

PROJECT INFORMATION		
Type of Project:	Residential Development	
Planning Area:	N/A	
Community Name:	Moreno Valley	
Development Name:	Gateway Heights	
PROJECT LOCATION		
Latitude & Longitude (DMS): 33.956531, -117.296198		
Project Watershed and Sub-Watershed: Santa Ana, Middle Santa Ana River Watershed		
APN(s): 256-150-001, and -008		
Map Book and Page No.:		
PROJECT CHARACTERISTICS		
Proposed or Potential Land Use(s)		Townhome Residential
Proposed or Potential SIC Code(s)		NA
Area of Impervious Project Footprint (SF)		672,131 @65%
Total Area of proposed Impervious Surfaces within the Project Limits (SF)/or Replacement		436,885
Does the project consist of offsite road improvements?		☐ Y ☒ N
Does the project propose to construct unpaved roads?		☐ Y ☒ N
Is the project part of a larger common plan of development (phased project)?		☐ Y ☒ N
EXISTING SITE CHARACTERISTICS		
Total area of existing Impervious Surfaces within the project limits (SF)		0
Is the project located within any MSHCP Criteria Cell?		☐ Y ☒ N
If so, identify the Cell number:		Insert text here.
Are there any natural hydrologic features on the project site?		☒ Y ☐ N
Is a Geotechnical Report attached?		☒ Y ☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)		C
What is the Water Quality Design Storm Depth for the project?		0.63”
Project Description: The 33 gross acre (includes hillside), 15.4 acre net, project is a proposed 216 cluster type unit development. There are offsite flows that impact the property, and the Line B Master Plan flows proposed to be routed along the south side of the project. Onsite flows are divided into 6 DMA’s with DMA A and B Routed to combination Bio Retention and Flood Detention Basins for treatment. There are three areas DMA’s D, E, and F that are self treating hillside areas. And there is one area at the southwest corner, DMA C, that cannot be accepted into the projects water quality treatment due to design grades. The site has no infiltration potential.		

A.1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the local vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a **minimum**, your WQMP Site Plan should include the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Source Control BMPs
- Buildings, Roof Lines, Downspouts

- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Impervious Surfaces
- Standard Labeling

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Co-Permittee plan reviewer must be able to easily analyze your project utilizing this template and its associated site plans and maps.

A.2 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Box Springs Canyon	None	None	None
Tequesquite Arroyo	None	GWR, REC1, REC2, WARM, WILD,SPWN	None
Santa Ana River Reach 3	Indicator Bacteria, Copper, Lead	AGR, GWR, REC1, REC2, WARM, WILD, RARE, SPWN	7.8 mi
Prado Flood Control Basin	PH	REC1, REC2, WARM, WILD, RARE	16.4 mi

A.3 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☒ Y	☐ N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	☒ Y	☐ N
US Army Corps of Engineers, CWA Section 404 Permit	☒ Y	☐ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☒ Y	☐ N
Other *(please list in the space below as required)* City of Moreno Valley Grading Permit	☒ Y	☐ N

If yes is answered to any of the questions above, the Co-Permittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Section B: Optimize Site Utilization (LID Principles)

Review of the information collected in Section 'A' will aid in identifying the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. For example, **constraints** might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. **Opportunities** might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your LID design and explain your design decisions to others.

The 2010 Santa Ana MS4 Permit further requires that LID Retention BMPs (Infiltration Only or Harvest and Use) be used unless it can be shown that those BMPs are infeasible. Therefore, it is important that your narrative identify and justify if there are any constraints that would prevent the use of those categories of LID BMPs. Similarly, you should also note opportunities that exist which will be utilized during project design. Upon completion of identifying Constraints and Opportunities, include these on your WQMP Site plan in Appendix 1.

Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document. Review of the WQMP Guidance Document will help you determine how best to optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

Did you identify and preserve existing drainage patterns? If so, how? If not, why?

Yes. Existing drainage patterns are preserved at the northern edge of the site, and along the southern edge of the site, through avoidance by the development limits, and dedication of a 50' drainage easement along the southern wash.

Did you identify and protect existing vegetation? If so, how? If not, why?

Yes, the 50' setback and avoidance of the wash will preserve existing vegetation.

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

n/a. The site has limited to no infiltration potential.

Did you identify and minimize impervious area? If so, how? If not, why?

Yes. Impervious areas have been minimized by utilizing narrow streets, providing natural open space, developed open space, trails, recreational areas and park areas.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

Yes, bio retention basins have been incorporated into the design of the project.

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C.1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s)[1]	Area (acres)	DMA Type
DMA A	Townhomes, roads, slopes	4.0	Type D
DMA B	Townhomes, roads, slopes	10.9	Type D
DMA C	Road	0.3	No Treatment Possible
DMA D	Hillside	4.5	Type A
DMA E	Hillside	12.7	Type A
DMA F	Hillside	0.6	Type A

[1]*Reference Table 2-1 in the WQMP Guidance Document to populate this column*

Table C.2 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
DMA D	194131	none	none
DMA E	554069	none	none
DMA F	25195	Landscaping	Irrigated (Design at Final)

Table C.3 Type 'B', Self-Retaining Areas

Self-Retaining Area				**Type 'C' DMAs that are draining to the Self-Retaining Area**		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C.4 = [C]	Required Retention Depth (inches) [D]

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet) [A]	Post-project surface type	Runoff factor [B]	Product [C] = [A] x [B]	DMA name /ID	Area (square feet) [D]	Ratio [C]/[D]

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
DMA A	BMP A
DMA B	BMP B

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

DMA C – A portion of the main entrance to the site (Street A) and Morton Road is not able to be treated. The grades and conditions of the road in this area do not allow for the collection and treatment of the runoff, as the site sits well above grade from Morton Road. Also, the project is at a highpoint in Morton Rd so any acceptance and routing of street flow should be further downstream along Morton Road. The areas around Morton Road, including any future right of way, is also unable to provide for treatment as the grades in the area fall off significantly to the southwest. Runoff from this area will continue in the existing condition, by flowing into the natural channel southwest of the road.

At 0.3 acres, DMA C represents a negligible percentage of the impervious area at less than 5%.

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? ☐ Y ☒ N

If yes has been checked, Infiltration BMPs shall not be used for the site. If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Co-Permittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the WQMP Guidance Document. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☐ Y ☒ N

Infiltration Feasibility

Table D.1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.4.5. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D.1 Infiltration Feasibility

Does the project site…	**YES**	**NO**
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		x
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		x
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		x
If Yes, list affected DMAs:		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?	x	
If Yes, list affected DMAs:	all	
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		x
If Yes, list affected DMAs:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?		x
Describe here:		

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

D.2 Harvest and Use Assessment

Please check what applies*:*

☐ Reclaimed water will be used for the non-potable water demands for the project.

☐Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).

☐The Design Capture Volume will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the Design Capture Volume will be infiltrated or evapotranspired.

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If neither of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape: 5.4 acres (15.43 acres *35%)

Type of Landscaping (Conservation Design or Active Turf): Mixed (Active Turf in Park)

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: 10.0 acres (15.43 acres *65%)

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor: 1.05

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area: 10.5 acres

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
10.5 acres	5.4 acres

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users: 346

Project Type: Residential Condo Estimate (108 units x 3.2 persons/unit)

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: 10.0 acres (15.43 acres *65%)

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-1 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor: 108

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.

Minimum number of toilet users: 1,080

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	Projected number of toilet users (Step 1)
1,080	346

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

N/A

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand: Projected Average Daily Use (gpd)

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-3 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-3: Enter Value

Step 4: Multiply the unit value obtained from Step 4 by the total of impervious areas from Step 3 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: Minimum use required (gpd)

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required non-potable use (Step 4)	**Projected average daily use (Step 1)**
Minimum use required (gpd)	Projected Average Daily Use (gpd)

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment, unless a site-specific analysis has been completed that demonstrates technical infeasibility as noted in D.3 below.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

X LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.

D.4 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D.2 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA A	☐	☐	☒	☐	☐
DMA B	☐	☐	☒	☐	☐
DMA C	☐	☐	☐	☐	☒
DMA D	☐	☐	☐	☐	☐
DMA E	☐	☐	☐	☐	☐
DMA F	☐	☐	☐	☐	☐

For those DMAs where LID BMPs are not feasible, provide a brief narrative below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section E below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

DMA C – A portion of the main entrance to the site (Street A) is not able to be treated. The grades required in this area do not allow for the collection and treatment of the runoff, as the site sits well above grade from Morton Road. At 0.3 acres, DMA C represents a negligible percentage of the impervious area at less than 5%.

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First**,** calculate the Design Capture Volume for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second**,** design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	**DMA Area (square feet)**	**Post-Project Surface Type**	**Effective Impervious Fraction, I_f**	**DMA Runoff Factor**	**DMA Areas x Runoff Factor**	***Underground Storage North pumped to BMP 1***		
	[A]		[B]	[C]	[A] x [C]			
A	174240	MIxed	*0.65*	*0.45*	78265	*Design Storm Depth (in)*	*Design Capture Volume,* V_{BMP} *(cubic feet)*	*Proposed Volume on Plans (cubic feet)*
	174240				78265	0.63	4,109	***17,511***

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Underground Storage South pumped to BMP 4*		
	[A]		[B]	[C]	[A] x [C]			
B	474804	MIxed	*0.65*	*0.45*	213272	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
	474804				213272	0.63	11,197	***47,219***

Note: The final Effective Impervious Fraction, If, for Mixed surface types to be calculated and verified per Section 2.1.1 of the Riverside County Low Impact Development BMP Design Handbook, with final WQMP design, coupled with final building product design.

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

X LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- *Or* -

The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Co-Permittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

E.1 Identify Pollutants of Concern

Utilizing Table A.1 from Section A above which noted your project's receiving waters and their associated EPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table E.1 below. If the identified General Pollutant Categories are the same as those listed for your receiving waters, then these will be your Pollutants of Concern and the appropriate box or boxes will be checked on the last row. The purpose of this is to document compliance and to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs.

Table E.1 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)	General Pollutant Categories							
	Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease
☐ Detached Residential Development	P	N	P	P	N	P	P	P
☐ Attached Residential Development	P	N	P	P	N	P	P	P(2)
☐ Commercial/Industrial Development	P(3)	P	P(1)	P(1)	P(5)	P(1)	P	P
☐ Automotive Repair Shops	N	P	N	N	P(4, 5)	N	P	P
☐ Restaurants (>5,000 ft^2)	P	N	N	N	N	N	P	P
☐ Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P
☐ Parking Lots (>5,000 ft^2)	P(6)	P	P(1)	P(1)	P(4)	P(1)	P	P
☐ Retail Gasoline Outlets	N	P	N	N	P	N	P	P
Project Priority Pollutant(s) of Concern	☐	☐	☐	☐	☐	☐	☐	☐

P = Potential

N = Not Potential

(1) *A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected*

(2) *A potential Pollutant if the project includes uncovered parking areas; otherwise not expected*

(3) *A potential Pollutant is land use involving animal waste*

(4) *Specifically petroleum hydrocarbons*

(5) *Specifically solvents*

(6) *Bacterial indicators are routinely detected in pavement runoff*

E.2 Stormwater Credits

Projects that cannot implement LID BMPs but nevertheless implement smart growth principles are potentially eligible for Stormwater Credits. Utilize Table 3-8 within the WQMP Guidance Document to identify your Project Category and its associated Water Quality Credit. If not applicable, write N/A.

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage[2]
N/A	
Total Credit Percentage[1]	

[1]Cannot Exceed 50%
[2]Obtain corresponding data from Table 3-8 in the WQMP Guidance Document

E.3 Sizing Criteria

After you appropriately considered Stormwater Credits for your project, utilize Table E.3 below to appropriately size them to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.2 of the WQMP Guidance Document for further information.

Table E.3 Treatment Control BMP Sizing

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Area x Runoff Factor		***Enter BMP Name / Identifier Here***		
	[A]		[B]	[C]	[A] x [C]				
						Design Storm Depth (in)	*Minimum Design Capture Volume or Design Flow Rate (cubic feet or cfs)*	*Total Storm Water Credit % Reduction*	*Proposed Volume or Flow on Plans (cubic feet or cfs)*
	$A_T = \Sigma[A]$				$\Sigma =$ [D]	[E]			[I]

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document
[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12
[H] is from the Total Credit Percentage as Calculated from Table E.2 above
[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.4 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- **High**: equal to or greater than 80% removal efficiency
- **Medium**: between 40% and 80% removal efficiency

Such removal efficiency documentation (e.g., studies, reports, etc.) as further discussed in Chapter 3.5.2 of the WQMP Guidance Document, must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]

[1] Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.
[2] Cross Reference Table E.1 above to populate this column.
[3] As documented in a Co-Permittee Approved Study and provided in Appendix 6.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermittee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

DMA A	**2 year – 24 hour**		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration	INSERT VALUE	INSERT VALUE	INSERT VALUE
Volume (Cubic Feet)	INSERT VALUE	INSERT VALUE	INSERT VALUE
DMA B	**2 year – 24 hour**		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration	INSERT VALUE	INSERT VALUE	INSERT VALUE
Volume (Cubic Feet)	INSERT VALUE	INSERT VALUE	INSERT VALUE

PT3	**2 year – 24 hour**		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration	INSERT VALUE	INSERT VALUE	INSERT VALUE
Volume (Cubic Feet)	INSERT VALUE	INSERT VALUE	INSERT VALUE

[1] Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Sensitivity Maps.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

F.2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:

a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

   Note: This project has no infiltration potential. It has been designed to detain the post development runoff and discharge it at rates less than the pre-development rates. In compliance with condition C above this project will match the 2yr 24hr predevelopment runoff rates through storage volume and discharge control. It is assumed that the 6" underdrains or orifice design will be used to limit the peak runoff. Refer to Appendix 7 for detailed output files for pre and post 2-yr 24-hr unit hydrographs and for basin sizing information. Summary table is below.

Moreno Valley 33 - Area A Pre-Development								
	Storm Duration							
	1 hour		3 hour		6 hour		24 hour	
Frequency	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume
2 year	5.4	0.13	2.9	0.14	2.5	0.15	0.5	0.12
5 year	7.8	0.20	4.1	0.23	3.6	0.24	1.0	0.25
10 year	9.6	0.26	5.1	0.31	4.5	0.32	1.4	0.37
100 year	16.2	0.51	8.9	0.75	7.9	0.94	3.1	1.35

Moreno Valley 33 - Area A Post-Development								
	Storm Duration							
	1 hour		3 hour		6 hour		24 hour	
Frequency	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume
2 year	4.6	0.12	2.4	0.18	2.1	0.23	0.7	0.40
5 year	6.5	0.17	3.3	0.24	3.0	0.32	0.9	0.53
10 year	8.0	0.21	4.1	0.30	3.6	0.38	1.1	0.63
100 year	13.1	0.37	6.8	0.55	6.1	0.69	2.3	1.17

Moreno Valley 33 - Area A Post-Development Routed								
	Storm Duration							
	1 hour		3 hour		6 hour		24 hour	
Frequency	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume
2 year							0.5*	0.02
100 year	0.5	0.33	6.4	0.21	5.5	0.21	2.3	0.19

By orafice control or 6" underdrain slope

Moreno Valley 33 - Area B Pre-Development								
	Storm Duration							
	1 hour		3 hour		6 hour		24 hour	
Frequency	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume
2 year	8.2	0.18	4.1	0.20	3.5	0.21	0.7	0.18
5 year	11.8	0.29	6.0	0.33	5.1	0.35	1.4	0.37
10 year	14.5	0.38	7.4	0.45	6.3	0.47	2	0.54
100 year	24.4	0.74	12.9	1.09	11.2	1.37	4.5	1.96

Moreno Valley 33 - Area B Post-Development (Area B and C Pre-Development)								
	Storm Duration							
	1 hour		3 hour		6 hour		24 hour	
Frequency	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume
2 year	11.4	0.31	6.4	0.48	5.6	0.64	1.8	1.09
5 year	16.2	0.45	8.9	0.66	7.9	0.86	2.4	1.44
10 year	19.9	0.56	10.9	0.80	9.6	1.04	3.1	1.73
100 year	32.7	1.01	18.2	1.5	16.2	1.89	6.2	3.18

Moreno Valley 33 - Area B Post-Development Routed								
	Storm Duration							
	1 hour		3 hour		6 hour		24 hour	
Frequency	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume
2 year							0.7*	0.35
100 year	18.0	0.76	15.9	0.73	13.8	0.71	6.1	0.63

*By orafice control or 6" underdrain slope

Section G: Source Control BMPs

Source control BMPs include permanent, structural features that may be required in your project plans — such as roofs over and berms around trash and recycling areas — and Operational BMPs, such as regular sweeping and "housekeeping", that must be implemented by the site's occupant or user. The MEP standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective permanent BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8, review the following procedure to specify Source Control BMPs for your site:

1. ***Identify Pollutant Sources*:** Review Column 1 in the Pollutant Sources/Source Control Checklist. Check off the potential sources of Pollutants that apply to your site.

2. ***Note Locations on Project-Specific WQMP Exhibit*:** Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist. Show the location of each Pollutant source and each permanent Source Control BMP in your Project-Specific WQMP Exhibit located in Appendix 1.

3. ***Prepare a Table and Narrative*:** Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist. In the left column of Table G.1 below, list each potential source of runoff Pollutants on your site (from those that you checked in the Pollutant Sources/Source Control Checklist). In the middle column, list the corresponding permanent, Structural Source Control BMPs (from Columns 2 and 3 of the Pollutant Sources/Source Control Checklist) used to prevent Pollutants from entering runoff. **Add additional narrative** in this column that explains any special features, materials or methods of construction that will be used to implement these permanent, Structural Source Control BMPs.

4. ***Identify Operational Source Control BMPs:*** To complete your table, refer once again to the Pollutant Sources/Source Control Checklist. List in the right column of your table the Operational BMPs that should be implemented as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
On site storm drain inlets	Mark all inlets with "Only Rain Down the Storm Drain".	Maintain markings and provide info to owners. Provide stormwater pollution prevention information to new site owners, lessees, or operators. See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at

		www.cabmphandbooks.com Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."
Landscape/Outdoor Pesticides	Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. Consider using pest-resistant plants, especially adjacent to hardscape. To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	Maintain with no or minimal pesticides. See applicable operational BMPs in "What you should know for…..Landscape and Gardening" at http://rcflood.org/stormwater/ Provide IPM information to new owners, lessees and operators.
Vehicle and Equipment Cleaning	If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced. HOA to discourage onsite washing.	Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system. Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/
Miscellaneous Drain or Wash Water or Other Sources - Condensate drain lines - Rooftop equipment	Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system.	

- Roofing, gutters, and trim.	Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment. Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.	

Section H: Construction Plan Checklist

Populate Table H.1 below to assist the plan checker in an expeditious review of your project. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)
BMP A	Basin at the southwest corner of site within the street section	Preliminary BMP Siteplan
BMP B	Basin at the southwest corner of site north of the entrance	Preliminary BMP Siteplan

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. Co-Permittee staff can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

Section I: Operation, Maintenance and Funding

The Copermittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a Stormwater BMP Operation and Maintenance Plan are in Chapter 5 of the WQMP Guidance Document.

Maintenance Mechanism: Home Owner or Property Owners Association

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

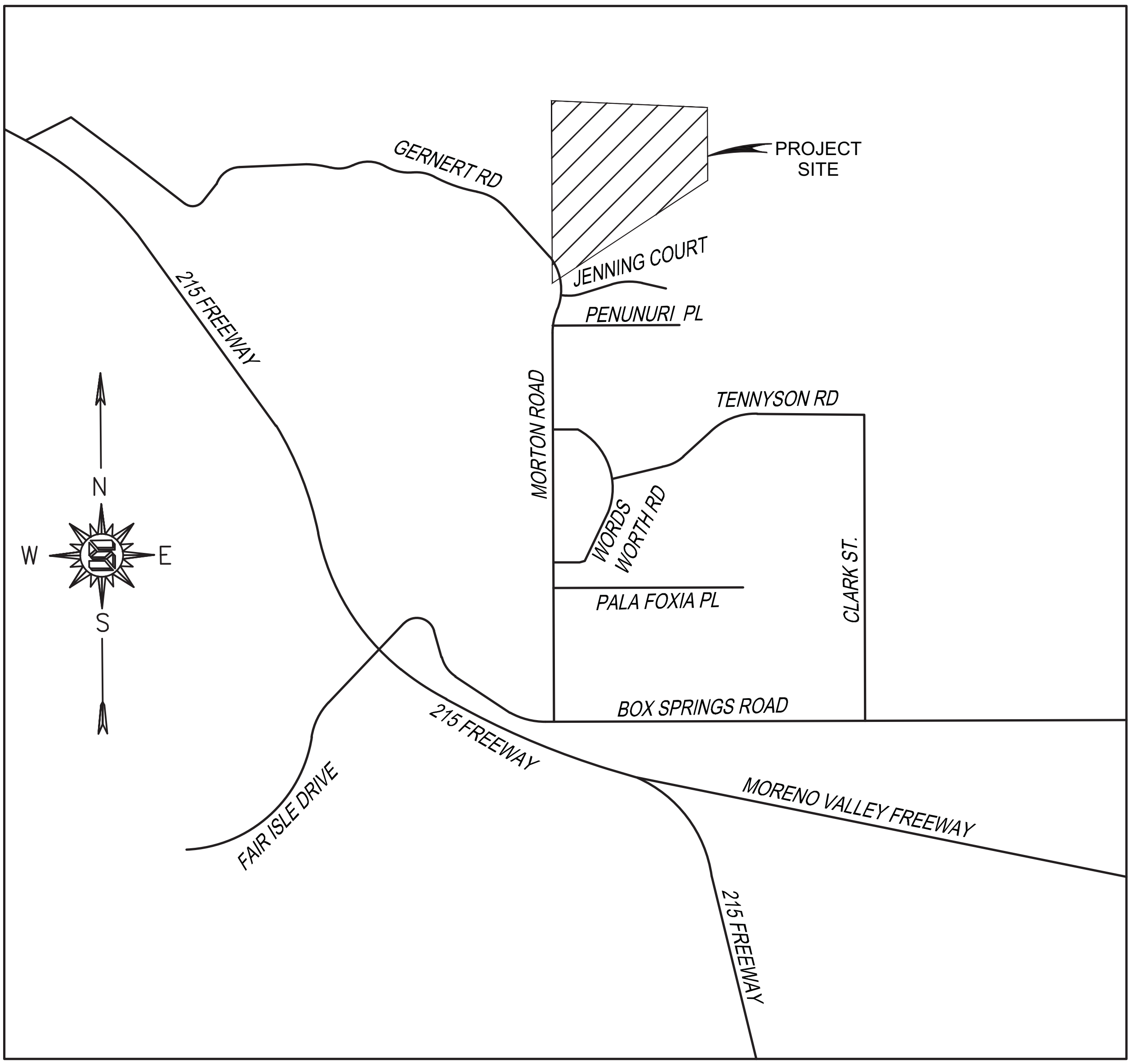
☒ Y ☐ N

Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

Figure 1- Vicinity Map



VICINITY MAP

NOT TO SCALE

Figure 2- Receiving Waters Map

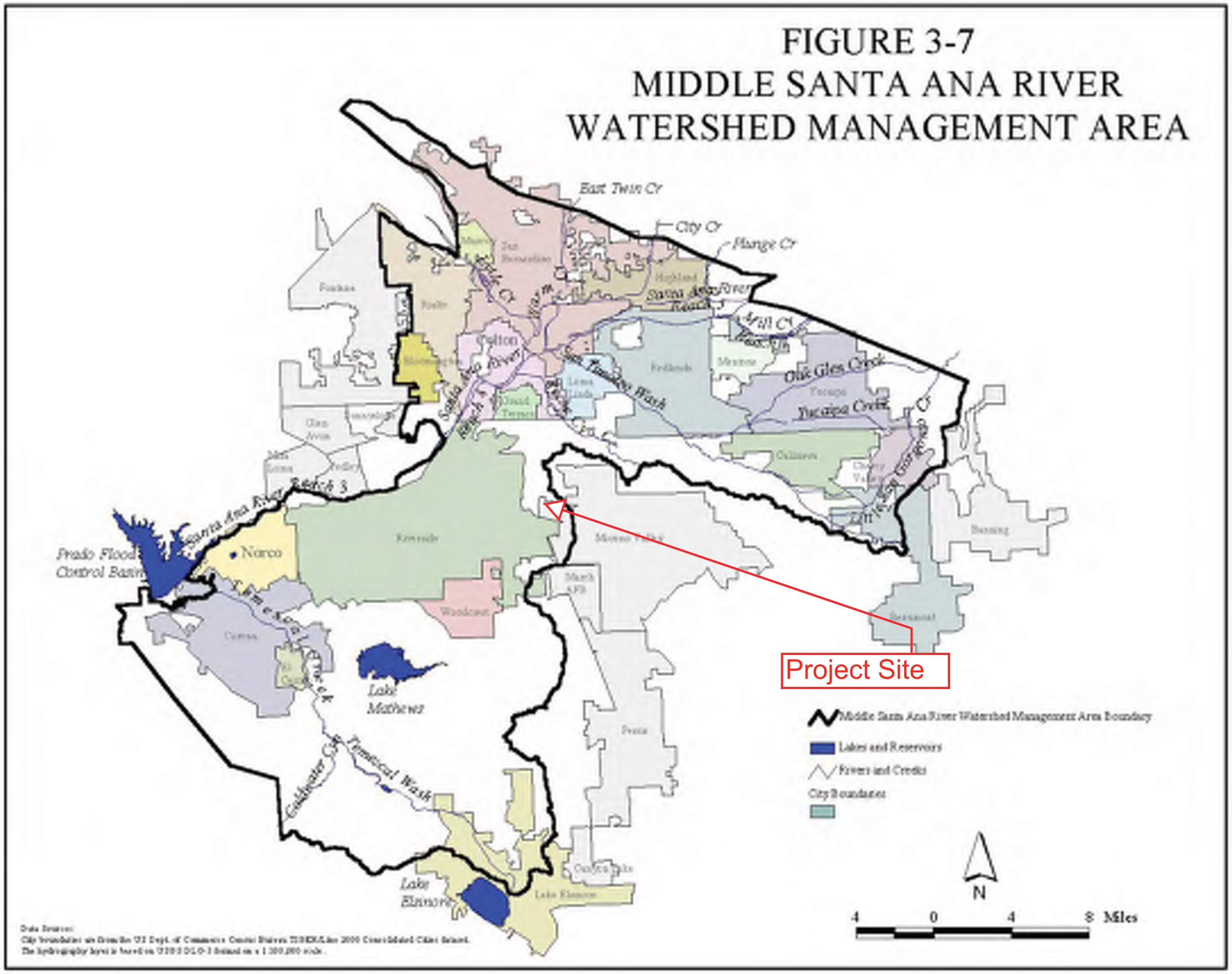
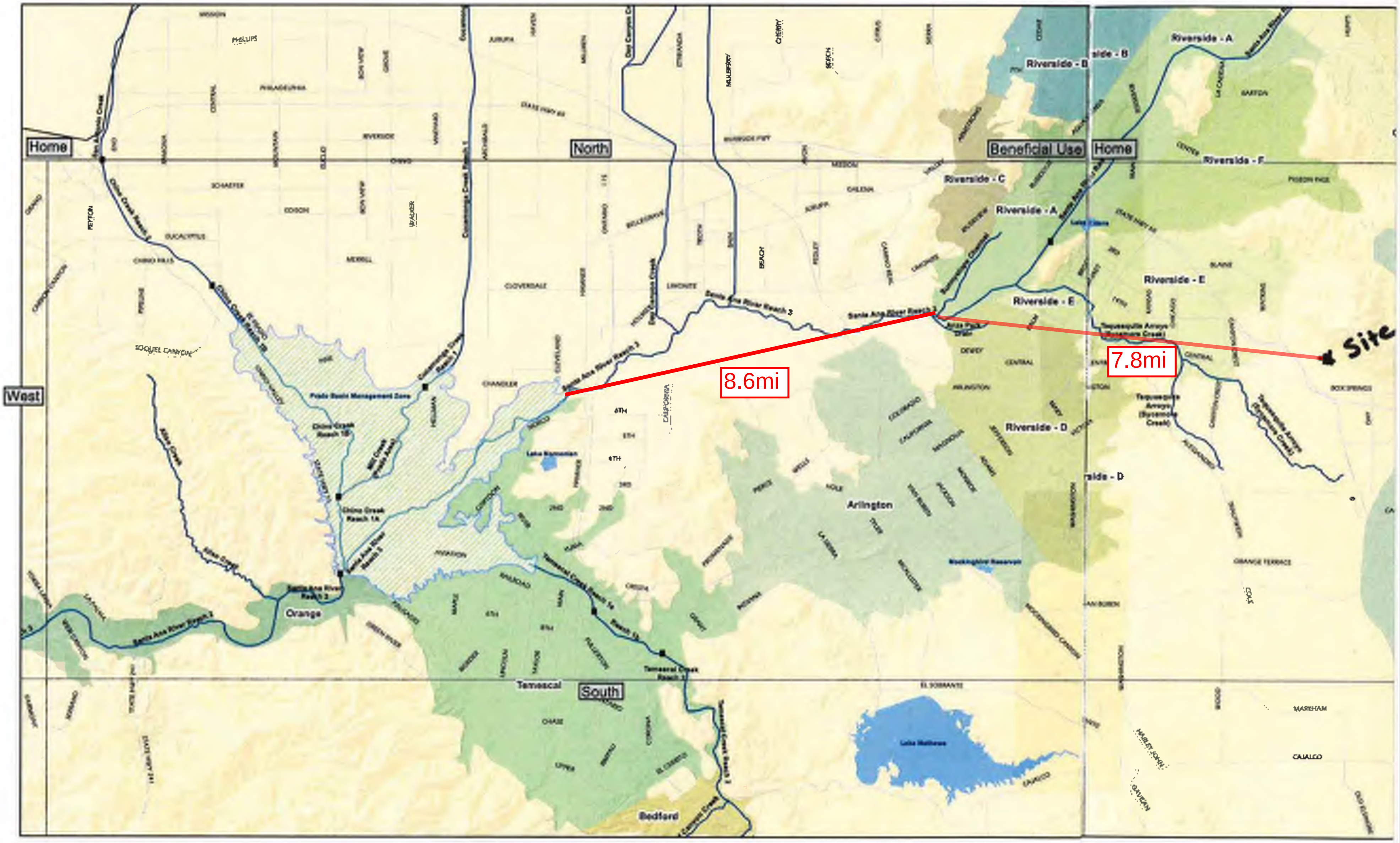
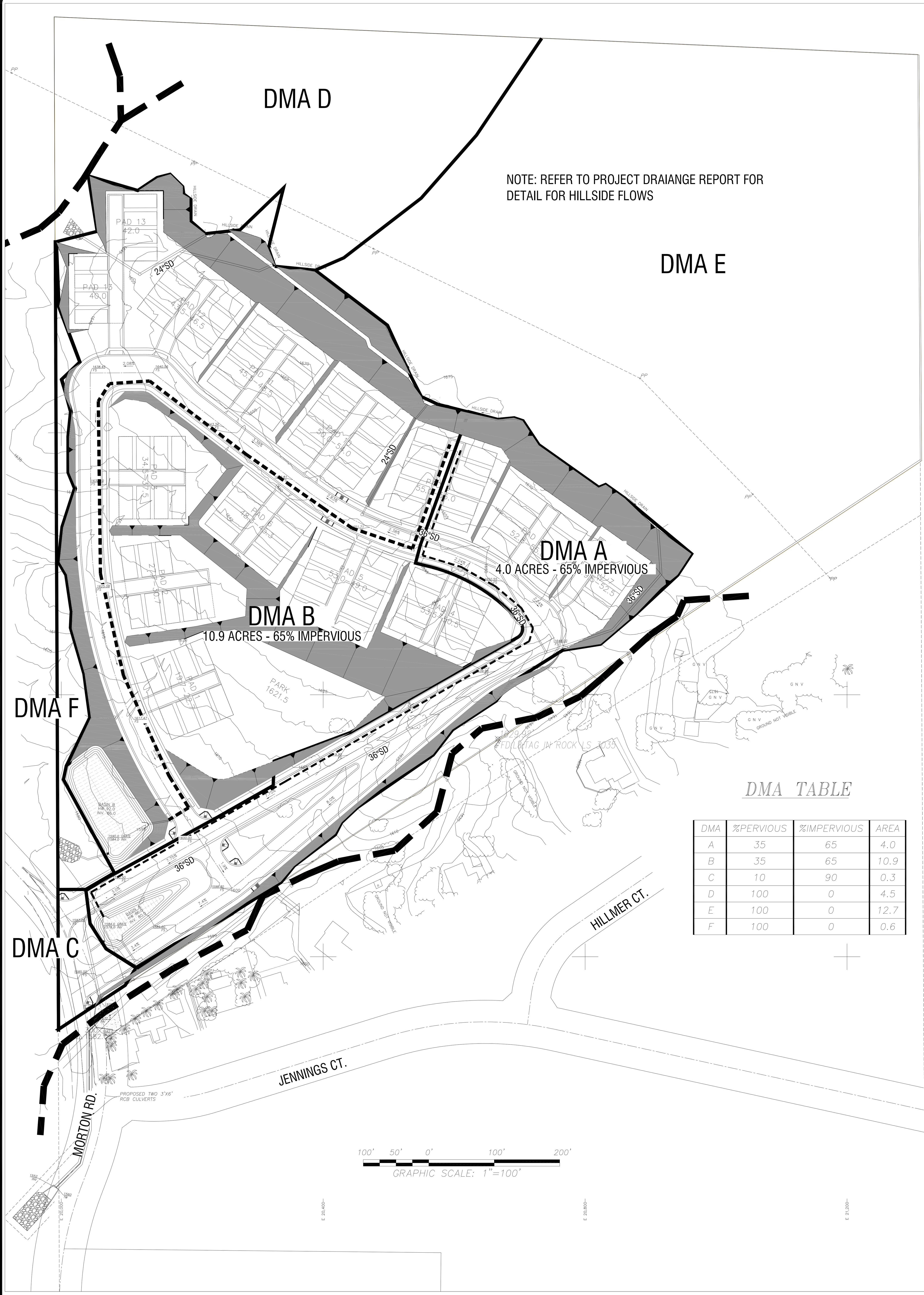


FIGURE 3-7
MIDDLE SANTA ANA RIVER WATERSHED MANAGEMENT AREA



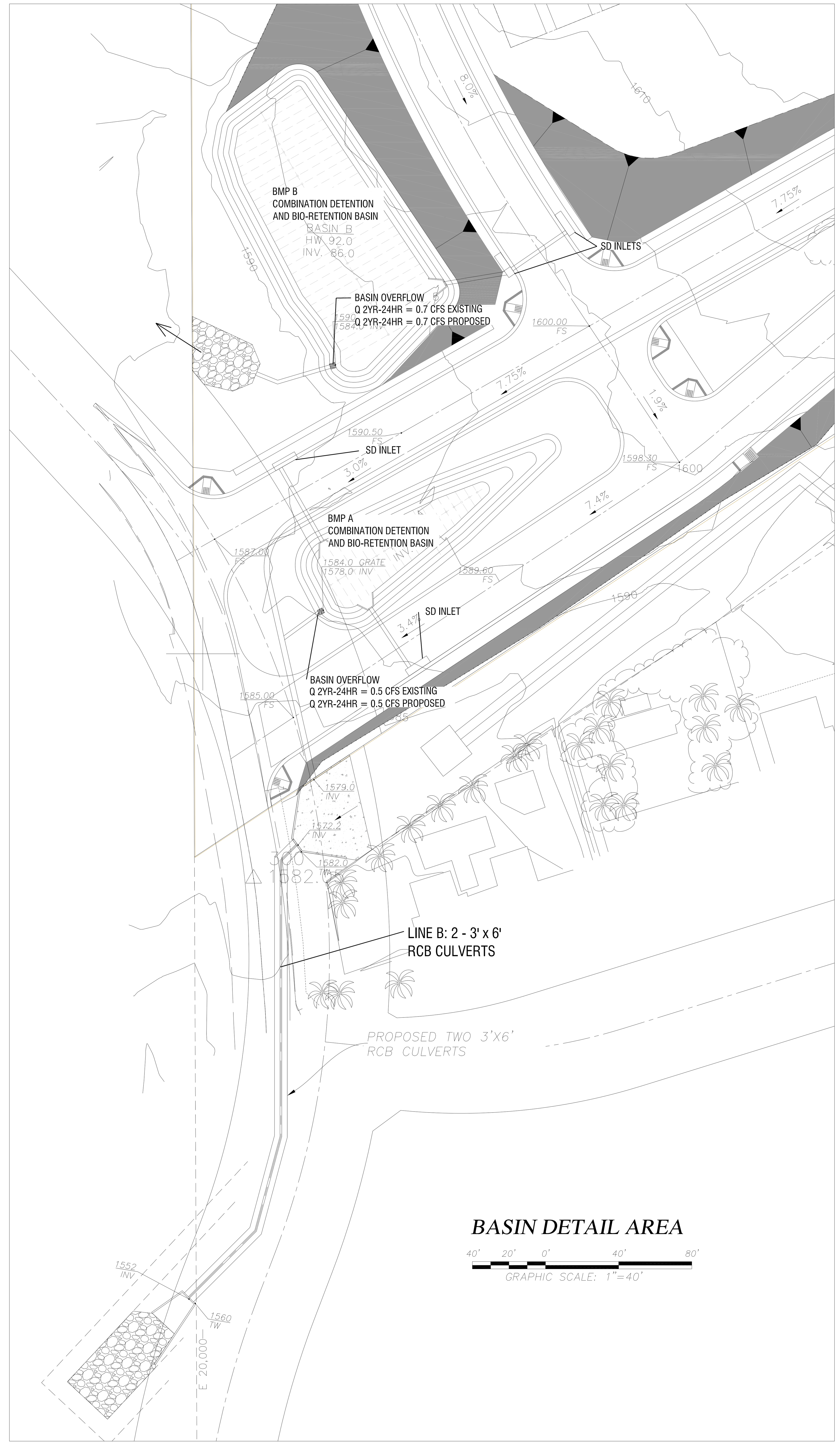
Home
North
Beneficial Use
Home
West
South
Riverside - A
Riverside - B
Riverside - C
Riverside - D
Riverside - E
Riverside - F
Arlington
Orange
Temescal
Bedford
Santa Ana River Reach 3
Prado Basin Management Zone
Chino Creek Reach 1A
Chino Creek Reach 1B
Temescal Creek Reach 1
Lake Mathews
8.6mi
7.8mi
Site

Figure 3- WQMP Site Plan



DMA TABLE

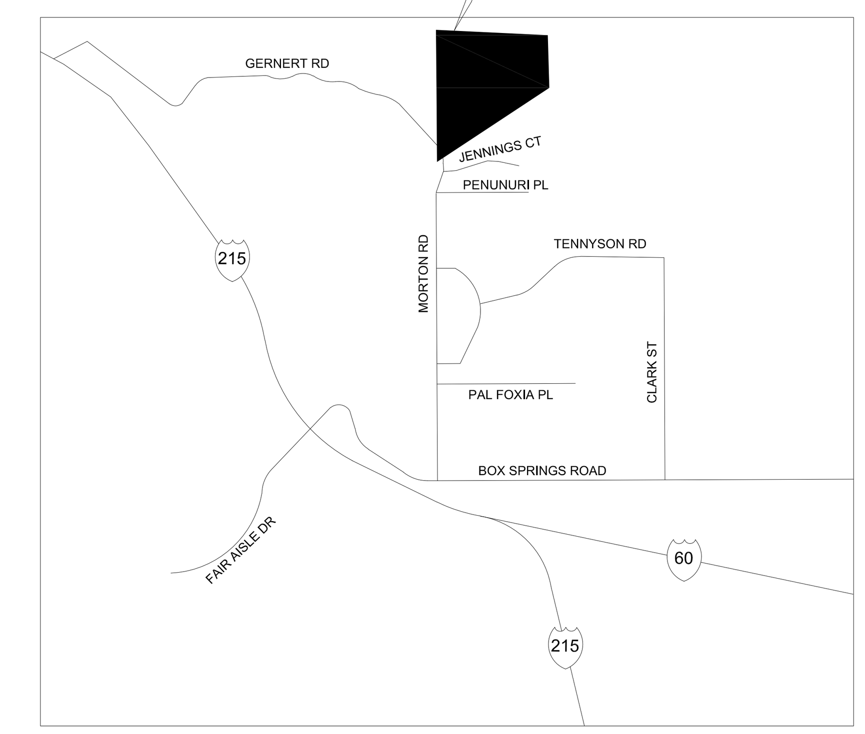
DMA	%PERVIOUS	%IMPERVIOUS	AREA
A	35	65	4.0
B	35	65	10.9
C	10	90	0.3
D	100	0	4.5
E	100	0	12.7
F	100	0	0.6



BASIN DETAIL AREA

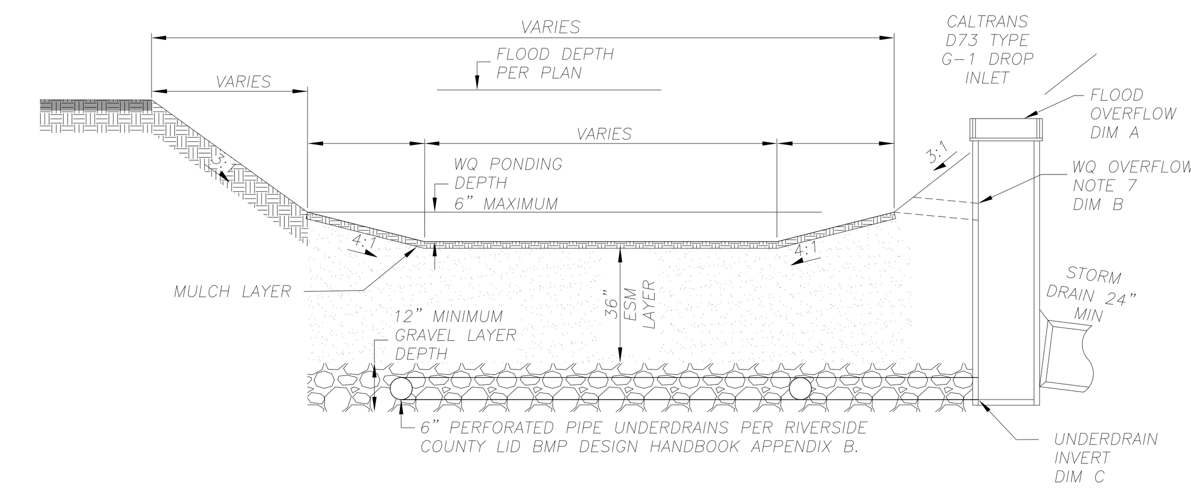
GRAPHIC SCALE: 1"=40'

SITE LOCATION



VICINITY MAP

N.T.S.



TYPICAL WATER QUALITY BASIN

N.T.S.

BMP/BASIN	DIM A	DIM B	DIM C
A	84.0	81.5	78.0
B	90.0	87.5	84.0

WATER QUALITY BASIN DIMENSIONS

LEGEND:

- CONTRIBUTORY AREA & DISTURBANCE AREA
- FLOW DIRECTION
- ONSITE FLOWPATH
- 102 / XXXX — NODE/CONCENTRATION POINT / FLOWLINE ELEVATION
- L=XXX' / Lc=XXX' / A=XXac — DRAINAGE AREA & DETAILS
- 6" UNDERDRAINS
- 6" CLEANOUTS

NOTES:

1. ALTHOUGH MULTIPLE POINTS OF RUNOFF ARE PRESENT IN THE EXISTING CONDITION, DRAINAGE DIVERSION IS PROPOSED TO CONSOLIDATE OUTLETS ALONG THE WESTERN EDGE. ALL WASHES ALONG THE WESTERN EDGE JOIN IN A SINGLE STREAM DOWNSTREAM.

2. BASINS AS SHOWN AND WITH CONTROL STRUCTURES WILL BE DETAILED AT FINAL DESIGN TO ENSURE OUTLETS TO WEST AND SOUTH ARE MITIGATED TO DESIGN FLOWS.

3. 5' CONTOURS SHOWN FOR EASY VIEWING, HOWEVER 1' CONTOURS WERE OBTAINED AND USED FOR DESIGN.

4. REFER TO APPENDIX 6 FOR DESIGN DETAILS.

5. "ESM" OR ENGINEERED SOIL MIX TO BE DESIGNED AND CALCULATIONS CONFIRMED AT FWQMP.

6. WATER QUALITY BASINS TO BE IRRIGATED AND LANDSCAPED PER RIVERSIDE COUNTY REQUIREMENTS.

7. OVERFLOW SET AT WATER QUALITY ELEVATION MAY BE USED TO DISCHARGE FLOOD STORAGE VOLUME ABOVE WATER QUALITY VOLUME AT TIME OF FINAL DESIGN.

SUBMITTALS:

REVISIONS

NO.	DESCRIPTION	DATE

DESIGNED BY:
DRAWN BY:
CHECKED BY:

REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER F. LENZ NO. 63001 EXP. 6/30/24 CIVIL STATE OF CALIFORNIA

CHRISTOPHER F. LENZ DATE
R.C.E. No. 63001

LICENSED LAND SURVEYOR DEAN C. PHILLIPS EXP. 9/30/23 NO. 6974 STATE OF CALIFORNIA

DEAN C. PHILLIPS DATE
L.S. No. 6974
dphillips@unitedeng.com

united engineering group
8885 Haven Avenue
Suite 195
Rancho Cucamonga,
CA 91730
Phone: 909.466.9240
www.unitedeng.com

GATEWAY HEIGHTS

WQMP SITEPLAN

DATE OCTOBER 2022

SHEET 1 OF 1

PROJECT NUMBER CA-30182

Appendix 2: Construction Plans

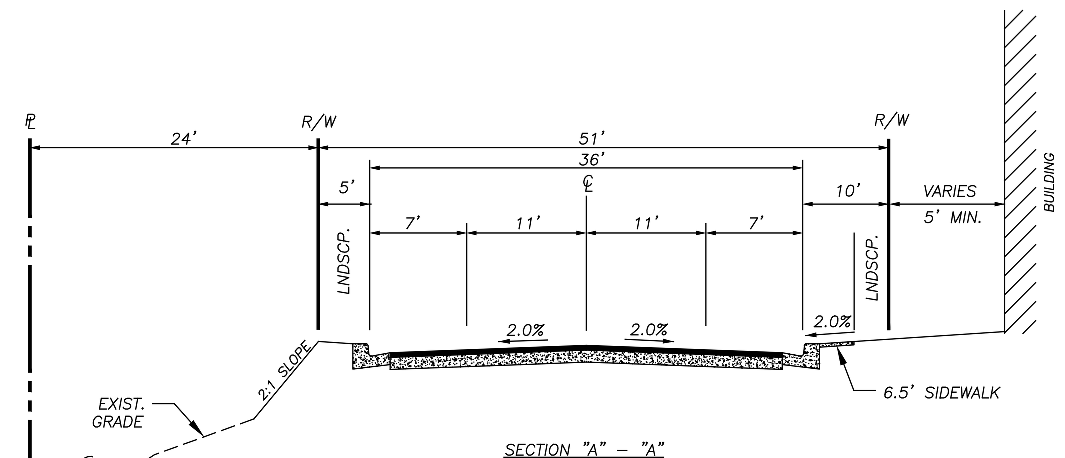
Grading and Drainage Plans

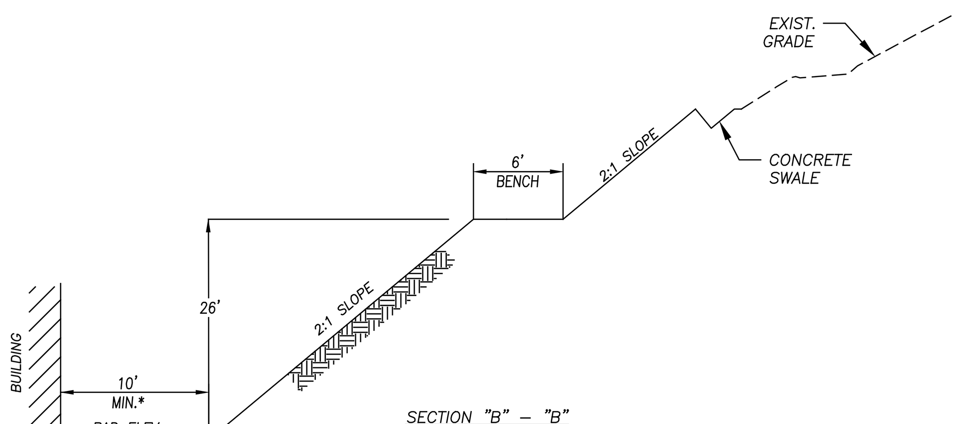
IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.

PRELIMINARY GRADING PLAN (PEN21-0066)

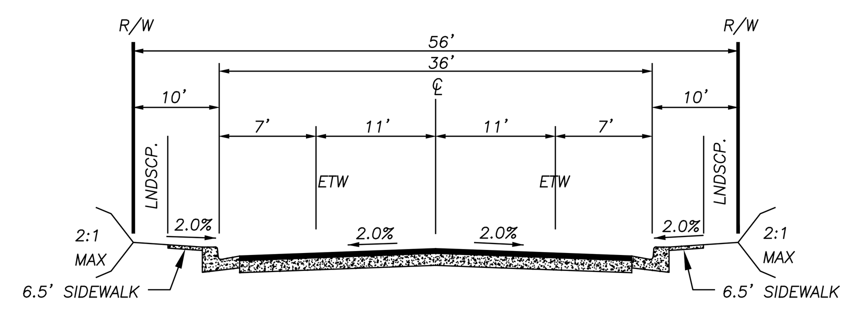
BEING A PORTION OF SECTION 34, TOWNSHIP 2 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN

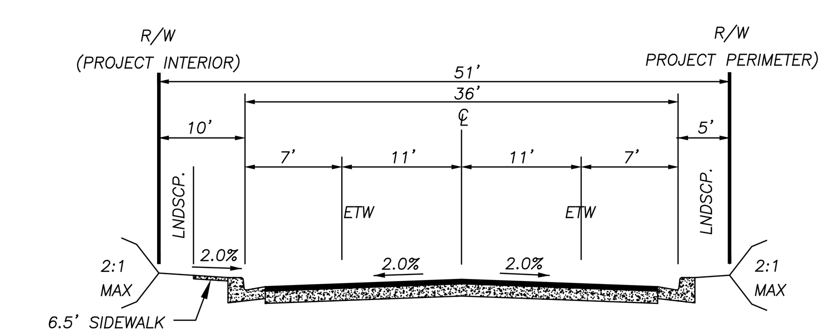
UNITED ENGINEERING GROUP CA., INC NOVEMBER 2022

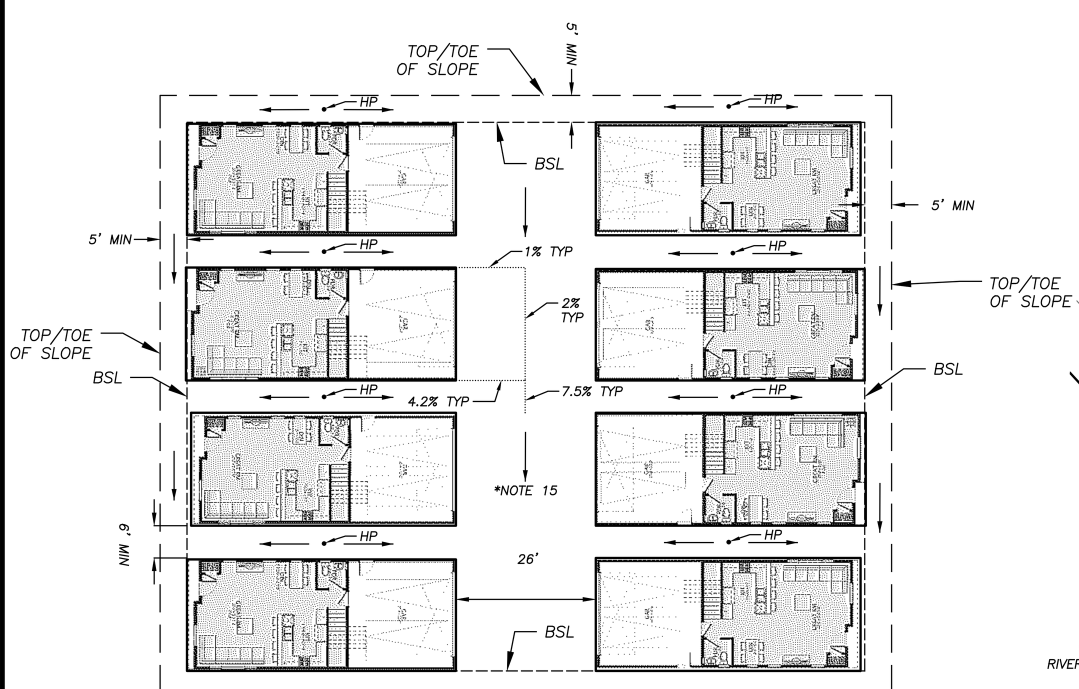


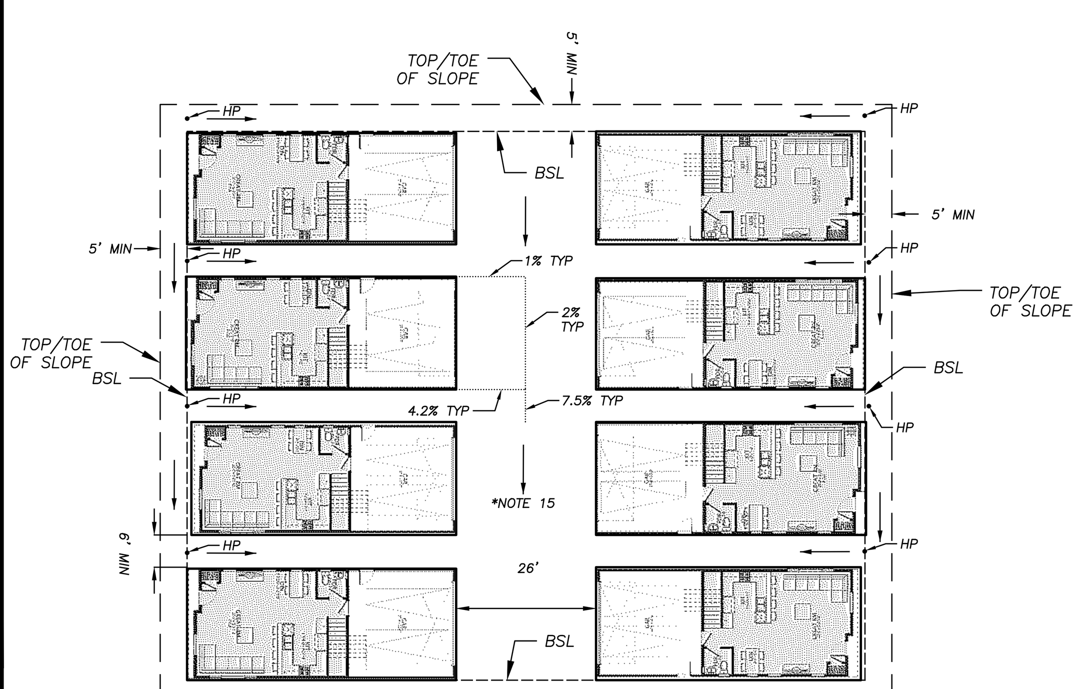


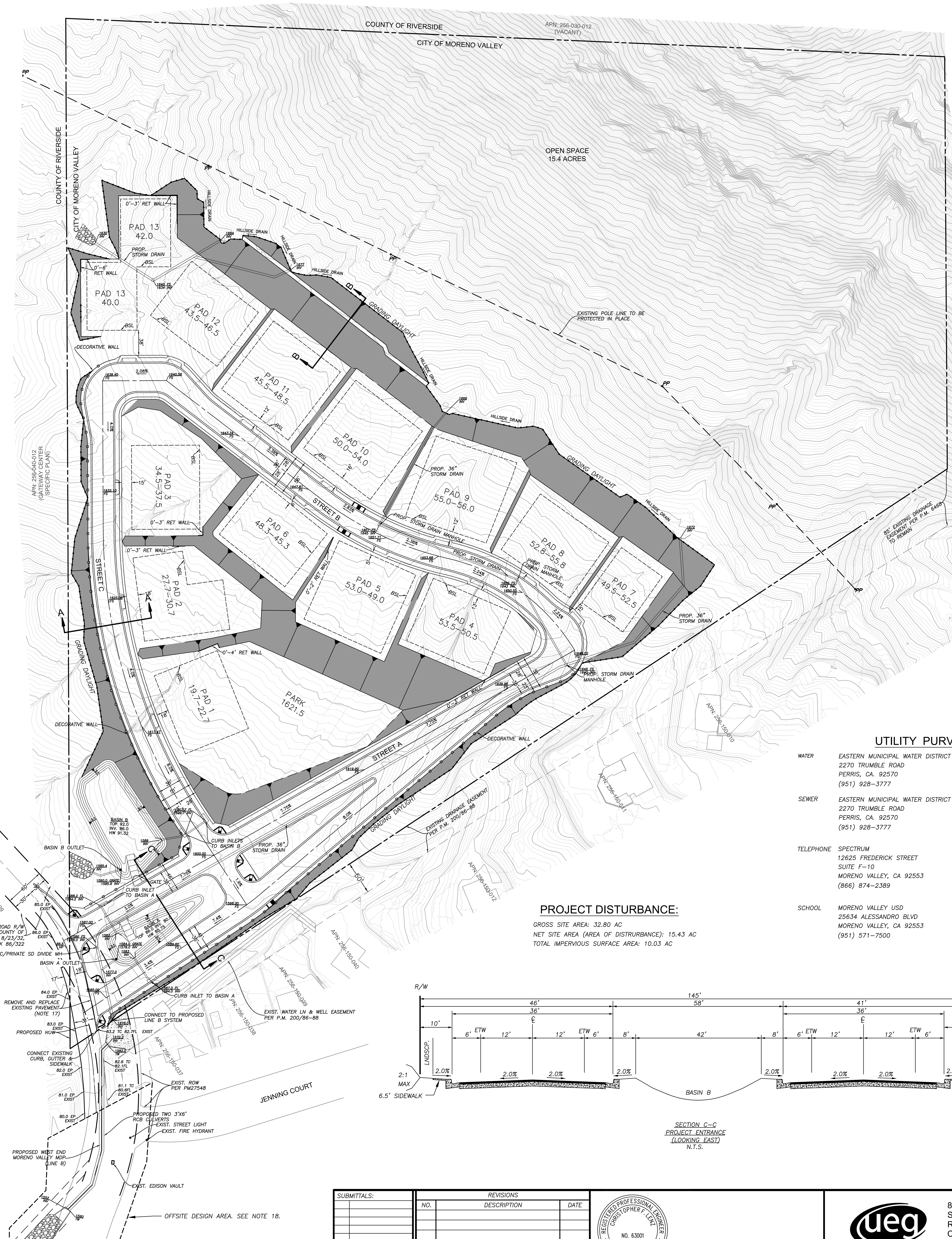
* MINIMUM SETBACKS PER CALIFORNIA BUILDING CODE 1808.7;
- TOE OF SLOPE = AT LEAST THE SMALLER OF H/2 OR 15'
- TOP OF SLOPE = AT LEAST THE SMALLER OF H/3 OR 40'

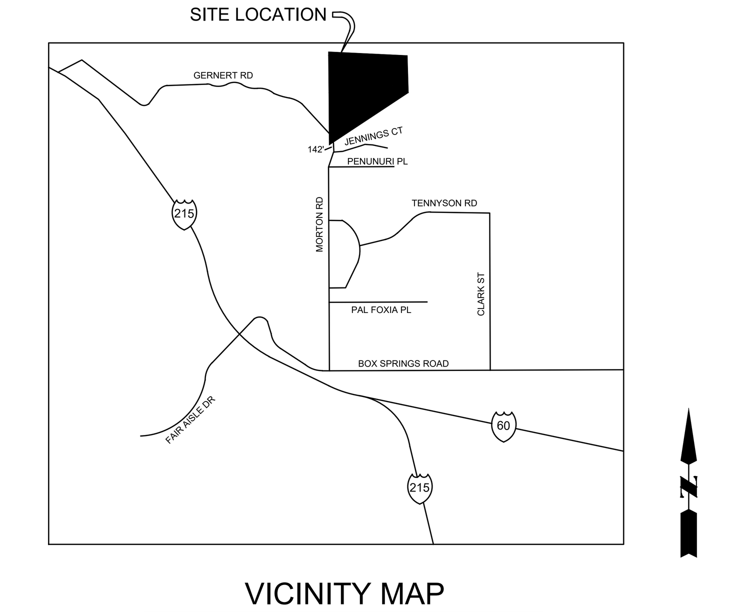












GENERAL NOTES:

1. APN: 256-150-001
2. TOPOGRAPHY SOURCE: CALVADA SURVEYING, INC. COMPILED 4-2018. CONTOUR INTERVAL-1FT.
3. THE LAND DOES NOT LIE WITHIN AN ALQUIST-PRIOLO EARTHQUAKE FAULT HAZARD ZONE AS DEFINED BY THE STATE OF CALIFORNIA IN THE ALQUIST-PRIOLO EARTHQUAKE FAULT HAZARD ZONE ACT OR A RIVERSIDE COUNTY FAULT HAZARD MAP , PER GEOTECHNICAL STUDY DATED 9-22-2018 PREPARED BY LGC GEO-ENVIRONMENTAL, INC.
4. THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) MAP FOR THIS SITE IS NO. 06071C5780H. THE SITE IS DESIGNATED AS OTHER FLOOD AREA-ZONE X.
5. THE LAND IS SUBJECT TO LOW LIQUEFACTION HAZARD.
6. THIS AREA IS NOT WITHIN FAULT ZONE.
7. BOUNDARY INFORMATION DISPLAYED ON THIS PLAN HAS BEEN COMPILED FROM RECORD INFORMATION AND IS NOT TO BE USED AS A BOUNDARY SURVEY.
8. PROJECT IS NOT WITHIN A COMMUNITY SERVICES DISTRICT.
9. HOMEOWNERS ASSOCIATION TO MAINTAIN SLOPES, DRAINAGE BASINS, DRAINAGE EASEMENTS, STREETS AND FUEL MODIFICATION AREAS.
10. PROJECT WILL COMPLY WITH WATER QUALITY TREATMENT REQUIRED IN THE PROJECT SPECIFIC WATER QUALITY MANAGEMENT PLAN.
11. ALL GRADING WORK SHOWN ON THIS PLAN SHALL BE DONE IN COMPLIANCE WITH CHAPTER 33 OF THE UNIFORM BUILDING CODE AND LOCAL ORDINANCE.
12. PRIOR TO ANY GRADING WORK, A GRADING PERMIT SHALL BE OBTAINED FROM THE CITY OF MORENO VALLEY BUILDING DEPARTMENT.
13. ALL GRADING SHALL CONFORM TO THE RECOMMENDATIONS AND REQUIREMENTS OF THE PRELIMINARY SOILS REPORT DATED SEPTEMBER 22, 2018 BY LGC GEO-ENVIRONMENTAL, INC.
14. ALL SLOPES ARE 2:1 UNLESS OTHERWISE NOTED
15. PADS 4, 5, AND 6 DEVIATE FROM THE STANDARD GRADING DETAILS TO DRAIN TOWARDS THE PARK, AWAY FROM THE STREET. AT FINAL DESIGN STORM DRAIN MAY BE REQUIRED TO COLLECT AND ROUTE FLOWS TO THE PARK AREA.
16. PROJECT IS WITHIN THE HIGH FIRE AREA. ALL BUILDINGS ARE TO BE CONSTRUCTED TO BE IN ACCORDANCE WITH 2019 CBC, CHAPTER 7A, FOR HIGH FIRE.
17. REMOVE AND REPLACE WITH TRANSITIONS TO BE DETERMINED AT FINAL STREET PLANS BASED ON CORINGS AND GEOTECHNICAL RECOMMENDATION AND PER CITY ENGINEER.
18. OFFSITE AREA OUTSIDE OF PROJECT TOPOGRAPHY LIMITS. AT FINAL DESIGN AND IN CONJUNCTION WITH LINE B DESIGN, ADDITIONAL DESIGN SURVEY WILL BE REQUIRED.
19. PROJECT STREET LIGHT DESIGN TO COMPLY WITH CITY STANDARDS. STREET LIGHT DESIGN PLANS TO BE PREPARED WITH FINAL DESIGN DRAWINGS.

LEGEND

FF	FINISHED FLOOR	FS	FINISHED SURFACE
FL	FLOW LINE	HW	HIGH WATER
R/W	RIGHT-OF-WAY	INV	INVERT
BSL	BUILDING SETBACK LINE	TC	TOP OF CURB
EP	EDGE OF PAVEMENT	HP	HIGH POINT

PROPOSED SEWER LINE
PROPOSED WATER LINE
EXISTING SEWER LINE
EXISTING WATER LINE
DEVELOPMENT LIMITS
PROJECT BOUNDARY
CENTERLINE
EXISTING DIRT ROAD
PP POWER POLE
OVERHEAD POWER LINE
FUEL MODIFICATION ZONE
2:1 SLOPE (UNLESS OTHERWISE NOTED)
DECORATIVE WALL

UTILITY PURVEYORS:

WATER	EASTERN MUNICIPAL WATER DISTRICT 2270 TRUMBLE ROAD PERRIS, CA. 92570 (951) 928-3777	ELECTRIC	SOUTHERN CALIFORNIA EDISON 2492 W. SAN BERNARDINO AVE REDLANDS, CA. 92374 (800) 655-4555
SEWER	EASTERN MUNICIPAL WATER DISTRICT 2270 TRUMBLE ROAD PERRIS, CA. 92570 (951) 928-3777	GAS	SOUTHERN CALIFORNIA GAS 4495 HOWARD AVE RIVERSIDE, CA. 92507 (213) 244-8344
TELEPHONE	SPECTRUM 12625 FREDERICK STREET SUITE F-10 MORENO VALLEY, CA 92553 (866) 874-2389	CABLE	SPECTRUM 12625 FREDERICK STREET SUITE F-10 MORENO VALLEY, CA 92553 (866) 874-2389
SCHOOL	MORENO VALLEY USD 25634 ALESSANDRO BLVD MORENO VALLEY, CA 92553 (951) 571-7500		

ESTIMATED EARTHWORK QUANTITIES (RAW)

CUT: 90,148 CU. YDS. FILL: 56,011 CU. YDS.

NOTE:
THE ABOVE QUANTITIES DO NOT REFLECT ANY SWELLING, SUBSIDENCE, OVER EXCATION, OR ANY SPECIAL CONDITIONS THAT MAY BE SPECIFIED IN THE PRELIMINARY SOILS REPORT AND ARE FOR REFERENCE AND FEE PURPOSES ONLY. SINCE THE ENGINEER CANNOT CONTROL THE EXACT METHOD OR MEANS USED BY THE CONTRACTOR DURING GRADING OPERATIONS, NOR CAN THE ENGINEER GUARANTEE THE EXACT SOIL CONDITION OVER THE ENTIRE SITE, THE ENGINEER ASSUME NO RESPONSIBILITY FOR THE FINAL EARTHWORK QUANTITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THEIR OWN EARTHWORK QUANTITIES FOR BIDDING, CONTRACT, AND CONSTRUCTION PURPOSES.

PROJECT DISTURBANCE:

GROSS SITE AREA: 32.80 AC
NET SITE AREA (AREA OF DISTRURBANCE): 15.43 AC
TOTAL IMPERVIOUS SURFACE AREA: 10.03 AC

DEVELOPER:

JASON ACKERMAN
3200 GUASTI ROAD #100
ONTARIO, CA 91761
(909) 456-1460 OFFICE
(909) 223-3302 MOBILE
jason.ackerman@ackermanlawpc.com

OWNER/APPLICANT:

SHIZAO ZHENG
1378 WEST ZHONGSHAN ROAD
NINGBO, CHINA 315-016
(626) 666-1470

ENGINEER/PLAN PREPARER

UNITED ENGINEERING GROUP CA, INC
8885 HAVEN AVENUE, SUITE 195
RANCHO CUCAMONGA, CA 91730
(909) 466-9240 x203 OFFICE
(909) 292-6677 MOBILE
bcooper@unitedeng.com

GEOTECHNICAL ENGINEER

LGC GEO-ENVIRONMENTAL, INC.
27570 COMMERCE CENTER DRIVE
SUITE 128
TEMECULA, CA 92590
(951) 297-2450

SECTION C-C
PROJECT ENTRANCE
(LOOKING EAST)
N.T.S.

GRAPHIC SCALE: 1"=60'

SUBMITTALS:
DESIGNED BY:
DRAWN BY:
CHECKED BY:

REVISIONS

NO.	DESCRIPTION	DATE

REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER F. LENZ NO. 63001 EXP. 6/30/23 CIVIL STATE OF CALIFORNIA

CHRISTOPHER F. LENZ DATE
R.C.E. No. 63001

united engineering group
8885 Haven Avenue
Suite 195
Rancho Cucamonga,
CA 91730
Phone: 909.466.9240
www.unitedeng.com

PRELIMINARY GRADING PLAN

GATEWAY HEIGHTS
CONDITIONAL USE PERMIT
PEN21-0066

NOVEMBER 2022
SHEET 1 OF 1
PROJECT NUMBER
CA-30182

IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.

SITE PLAN (PEN21-0066)

BEING A PORTION OF SECTION 34, TOWNSHIP 2 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN

UNITED ENGINEERING GROUP CA., INC NOVEMBER 2022

LEGAL DESCRIPTION:

THAT PORTION OF SECTION 34, TOWNSHIP 2 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN, IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF SECTION 34, TOWNSHIP 2 SOUTH, RANGE 4 WEST, SAN BERNARDINO, AS SHOWN BY UNITED STATES GOVERNMENT SURVEY; THENCE RUNNING SOUTH ALONG THE WEST LINE OF SAID SECTION 34, 23.50 CHAINS TO THE CORNER MONUMENT MARKING THE NORTHWEST CORNER OF THE LAND CONVEYED TO CECIL R. G. WEBBE TO CHARLES M. DEXTER BY DEED RECORDED IN BOOK 141, PAGE 398, OF DEEDS, SAN BERNARDINO COUNTY RECORDS;
THENCE NORTH 56 DEGREES 31' EAST ALONG THE LINE OF LAND SO CONVEYED TO CHARLES M. DEXTER, 23.91 CHAINS TO THE NORTHEAST CORNER OF SAID LAND SO CONVEYED TO CHARLES M. DEXTER;
THENCE NORTH ALONG THE CENTER LINE OF THE NORTHWEST QUARTER OF SAID SECTION 34, 10.40 CHAINS TO THE NORTH LINE OF SAID SECTION 34; THENCE WEST ALONG THE NORTH LINE OF SAID SECTION, 20 CHAINS TO THE TRUE POINT OF BEGINNING.

EXCEPTING THEREFROM ANY INTEREST OF THE COUNTY OF RIVERSIDE IN AND TO THAT PORTION LYING WITHIN MORTON ROAD.

ALSO EXCEPTING THEREFROM THAT PORTION OF THE ABOVE DESCRIBED PARCEL LYING SOUTHWESTERLY OF SAID MORTON ROAD.

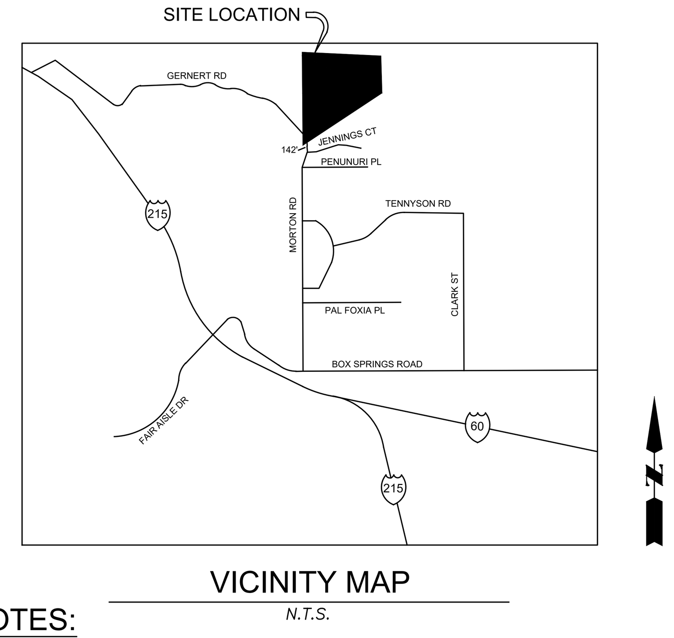
PARCEL NUMBER(S): 256–150–001

UTILITY PURVEYORS:

WATER	EASTERN MUNICIPAL WATER DISTRICT 2270 TRUMBLE ROAD PERRIS, CA. 92570 (951) 928–3777	ELECTRIC	SOUTHERN CALIFORNIA EDISON 2492 W. SAN BERNARDINO AVE REDLANDS, CA. 92374 (800) 655–4555
SEWER	EASTERN MUNICIPAL WATER DISTRICT 2270 TRUMBLE ROAD PERRIS, CA. 92570 (951) 928–3777	GAS	SOUTHERN CALIFORNIA GAS 4495 HOWARD AVE RIVERSIDE, CA. 92507 (213) 244–8344
TELEPHONE	SPECTRUM 12625 FREDERICK STREET SUITE F–10 MORENO VALLEY, CA 92553 (866) 874–2389	CABLE	SPECTRUM 12625 FREDERICK STREET SUITE F–10 MORENO VALLEY, CA 92553 (866) 874–2389
SCHOOL	MORENO VALLEY USD 25634 ALESSANDRO BLVD MORENO VALLEY, CA 92553 (951) 571–7500		

LEGEND

FF	FINISHED FLOOR
FL	FLOW LINE
R/W	RIGHT–OF–WAY
BSL	BUILDING SETBACK LINE
FSL	FIRE SEPERATION LINE
S	PROPOSED SEWER LINE
W	PROPOSED WATER LINE
	EXISTING SEWER LINE
	EXISTING WATER LINE
	DEVELOPMENT LIMITS
	PROJECT BOUNDARY
	CENTERLINE
	EXISTING DIRT ROAD
PP	POWER POLE
	OVERHEAD POWER LINE
	FUEL MODIFICATION ZONE
	DECORATIVE WALL



VICINITY MAP

N.T.S.

GENERAL NOTES:

1. APN: 256–150–001
2. TOPOGRAPHY SOURCE: CALVADA SURVEYING, INC. COMPILED 4–2018. CONTOUR INTERVAL–1FT.
3. THE LAND DOES NOT LIE WITHIN AN ALQUIST–PRIOLO EARTHQUAKE FAULT HAZARD ZONE AS DEFINED BY THE STATE OF CALIFORNIA IN THE ALQUIST–PRIOLO EARTHQUAKE FAULT HAZARD ZONE ACT OR A RIVERSIDE COUNTY FAULT HAZARD MAP , PER GEOTECHNICAL STUDY DATED 9–22–2018 PREPARED BY LGC GEO–ENVIRONMENTAL, INC.
4. THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) MAP FOR THIS SITE IS NO. 06071C5780H. THE SITE IS DESIGNATED AS OTHER FLOOD AREA–ZONE X.
5. THE LAND IS SUBJECT TO LOW LIQUEFACTION HAZARD.
6. THIS AREA IS NOT WITHIN FAULT ZONE.
7. BOUNDARY INFORMATION DISPLAYED ON THIS PLAN HAS BEEN COMPILED FROM RECORD INFORMATION AND IS NOT TO BE USED AS A BOUNDARY SURVEY.
8. PROJECT IS NOT WITHIN A COMMUNITY SERVICES DISTRICT.
9. HOMEOWNERS ASSOCIATION TO MAINTAIN SLOPES, DRAINAGE BASINS, DRAINAGE EASEMENTS, STREETS AND FUEL MODIFICATION AREAS.
10. PROJECT WILL COMPLY WITH WATER QUALITY TREATMENT REQUIRED IN THE PROJECT SPECIFIC WATER QUALITY MANAGEMENT PLAN.
11. ALL SLOPES ARE 2:1 UNLESS OTHERWISE NOTED.
12. TO THE BEST OF OUR KNOWLEDGE, MORTON ROAD NORTHERLY OF JENNINGS COURT HAS NOT BEEN VACATED FROM THE CURVE ALIGNMENT THAT IS RECORDED ON PM27548.
13. PROJECT IS WITHIN THE HIGH FIRE AREA. ALL BUILDINGS ARE TO BE CONSTRUCTED TO BE IN ACCORDANCE WITH 2019 CBC, CHAPTER 7A, FOR HIGH FIRE.
14. REMOVE AND REPLACE WITH TRANSITIONS TO BE DETERMINED AT FINAL STREET PLANS BASED ON CORINGS AND GEOTECHNICAL RECOMMENDATION AND PER CITY ENGINEER.

SITE DATA

TOTAL GROSS AREA............................32.56 ACRES
TOTAL NET AREA...............................32.56 ACRES
PROPOSED R10 ZONE.....................16.59 ACRES
PROPOSED OPEN SPACE ZONE.........15.97 ACRES

DEVELOPMENT AREA..........................16.59 ACRES
UNITS 1 – 108................................2,100 S.F./EACH (ALL 2 STORY)
PARKING SPACES REQ'D....................216 (ENCLOSED GARAGE)
PROVIDED....................216 (ENCLOSED GARAGE)

PARK AREA..0.89 ACRES
BASIN A...12,131.24 S.F.
BASIN B...13,852.37 S.F
STREET A, B, & C............................2,447.60 L.F.

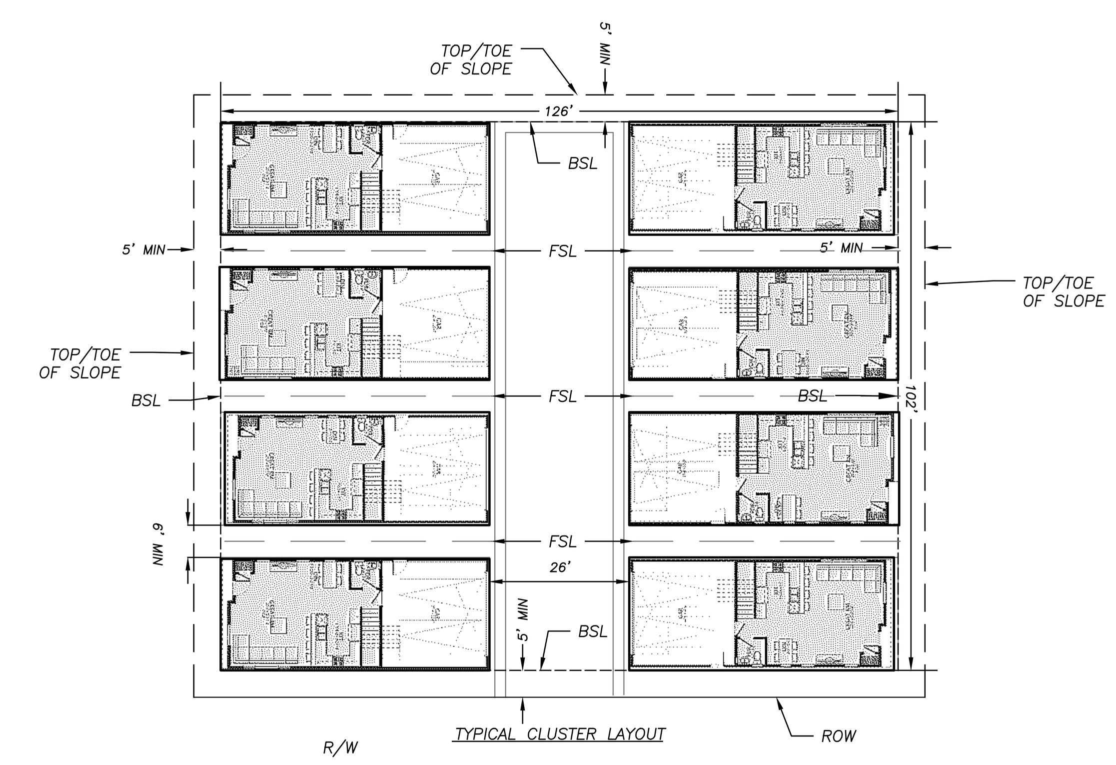
BUILDING SETBACKS
FRONT/STREET SIDE.........................5' TO RIGHT OF WAY
MIN. BUILDING SEPARATION..............6'
SIDE & REAR SETBACKS..................5' MINIMUM TO TOP/TOE OF SLOPE
(TOE OF SLOPE = H/2)
(TOP OF SLOPE = H/3)

PROJECT LAND USE

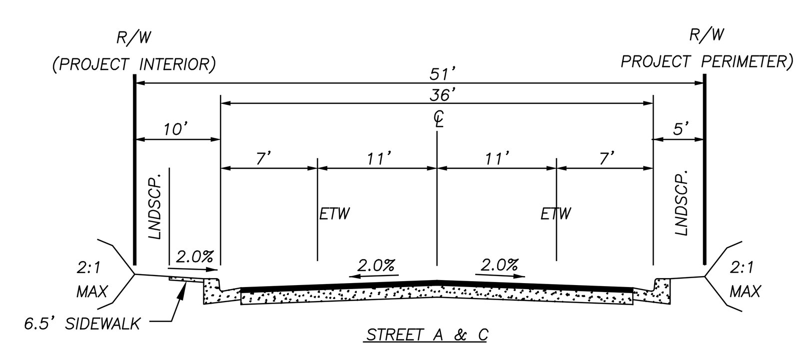
EXISTING LAND USE..................VACANT
PROPOSED LAND USE...............RESIDENTIAL
EXISTING ZONING.......................R2 AND HR
PROPOSED ZONING...................R10 AND OS

SURROUNDING LAND USE

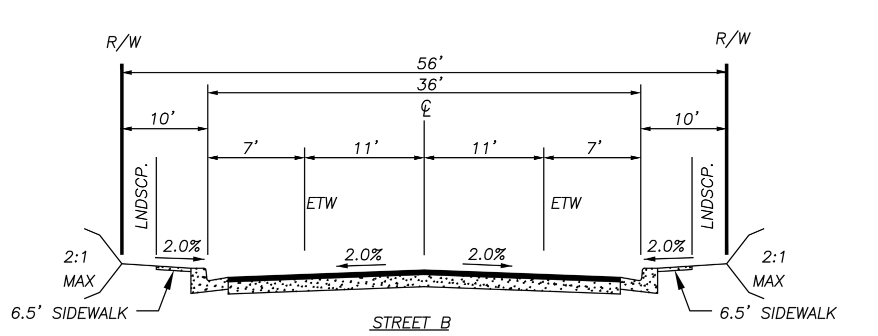
NORTH: HILLSIDE RESIDENTIAL (HR) & CONSERVATION (COUNTY OF RIVERSIDE)
SOUTH: RESIDENTIAL MAX 5DU/ACE (R5)
EAST: HILLSIDE RESIDENTIAL (HR)
WEST: GATEWAY CENTER SPECIFIC PLAN (COUNTY OF RIVERSIDE)



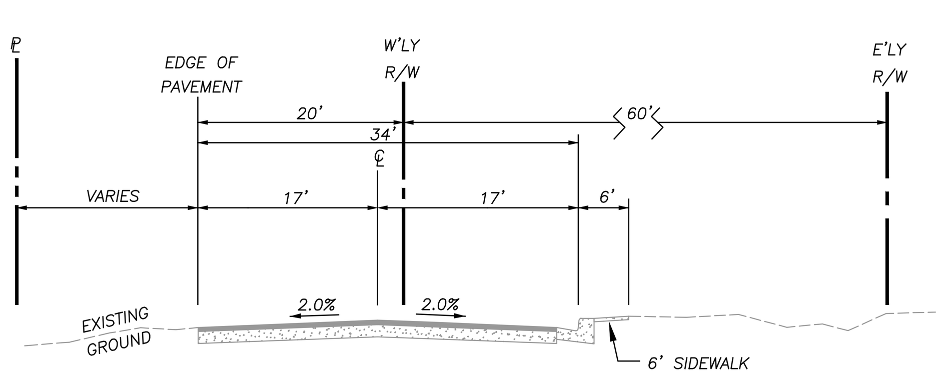
TYPICAL CLUSTER LAYOUT



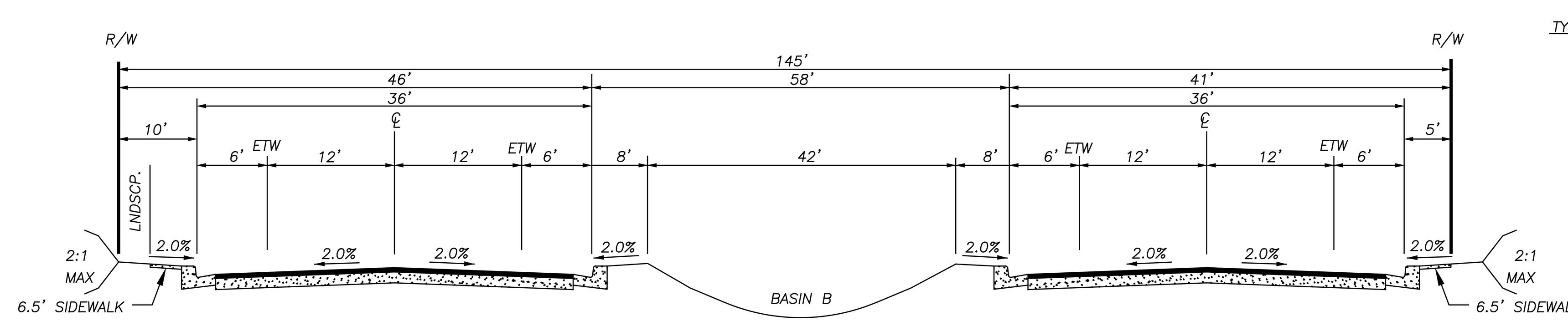
STREET A & C
CITY OF MORENO VALLEY STANDARD MVSI–107A–0 (MODIFIED)
N.T.S.



STREET B
CITY OF MORENO VALLEY STANDARD MVSI–107A–0
N.T.S.



EXISTING MORTON STREET SECTION @ SOUTH PROPERTY LINE
N.T.S.



STREET A @ PROJECT ENTRANCE (LOOKING EAST)
N.T.S.

DEVELOPER:

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3200 GUASTI ROAD #100
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jason.ackerman@ackermanlawpc.com

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ENGINEER/PLAN PREPARER

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RANCHO CUCAMONGA, CA 91730
(909) 466–9240 x203 OFFICE
(909) 292–6677 MOBILE
bcooper@unitedeng.com

60' 30' 0' 60'
GRAPHIC SCALE: 1"=60'

SUBMITTALS:
REVISIONS
NO. DESCRIPTION DATE
DESIGNED BY:
DRAWN BY:
CHECKED BY:

REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER F. LENZ NO. 63001 EXP. 6/30/23 CIVIL STATE OF CALIFORNIA

CHRISTOPHER F. LENZ DATE
R.C.E. No. 63001

LICENSED LAND SURVEYOR DEAN C. PHILLIPS EXP. 9/30/21 NO. 6974 STATE OF CALIFORNIA

DEAN C. PHILLIPS DATE
L.S. No. 6974
dphillips@unitedeng.com

ueg united engineering group
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Suite 195
Rancho Cucamonga,
CA 91730
Phone: 909.466.9240
www.unitedeng.com

SITE PLAN

GATEWAY HEIGHTS
CONDITIONAL USE PERMIT
PEN21-0066

NOVEMBER 2022
SHEET 1 OF 1
PROJECT NUMBER
CA–30182

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

September 21, 2018

Project No. G18-1648-20

Shizao Zheng
1378 West Zhorgshan Road
Ningbo City, Zhejiang Province
China

Subject: ***Preliminary Infiltration Testing Investigation for the Proposed Single-Family Residential Development, Tentative Tract Map No. 37557, City of Moreno Valley, Riverside County, California.***

Reference: *Sikand Engineering, Coneptual Grading Plan Tract No. 37557, City of Moreno Valley, County of Riverside, State of California.*

1.0 INTRODUCTION

LGC Geo-Environmental, Inc. (LGC) is pleased to present this preliminary infiltration testing investigation for the proposed single-family residential development, Tentative Tract Map No. 37557, city of Moreno Valley, Riverside County, California. The purpose of our study was to determine the vertical infiltration rates and physical characteristics of the subsurface soils in selected areas of proposed onsite storm water infiltration BMP devices within specific portions of the subject property.

2.0 PROPERTY LOCATIONS AND DESCRIPTION

The subject site proposed to be developed is irregularly shaped at the base of a mountain. The site is located north of Jennings Court and east of Morton Road in the City of Moreno Valley, Riverside County, California.

Throughout the site there are shrubs, cactuses, annual weeds, trees, and boulders. Scattered trash and debris exist on the site.

The topography of the site is undulating with approximately four drainage courses through the site from the northeast. Elevations range from approximately 2,040 feet above mean sea level (msl) in the northeastern portion of the site to approximately 1,588 feet msl in the western portion of the site.

3.0 PROPOSED CONSTRUCTION

Based on the referenced conceptual grading plan tract no. 37557, the proposed 32.79-acre development will consist of single-family residences with associated roadways, hardscaping, landscaping and an infiltration device. As per discussion with Leslie Frazier of Sikand Engineering, one infiltration basin is proposed at depths of approximately 10 feet to 12 feet.

4.0 SUBSURFACE EXPLORATION: INFILTRATION TESTING

4.1 Subsurface Exploration

Subsurface exploration of the subject site consisted of two (2) infiltration test trench locations utilizing a backhoe, on September 4, 2018, within the proposed onsite storm water infiltration BMP locations, at depths ranging from 5 to 10.5 feet below existing grade. Earth materials encountered within the locations were classified in general accordance with the visual manual procedures of the Unified Soil Classification System (USCS). Logs of the infiltration test trenches are presented in Appendix A, and their approximate locations are depicted on the Infiltration Test Location Map (Plate 1).

Prior to the subsurface exploration work, an underground utilities clearance was obtained from Underground Service Alert of Southern California.

4.2 Infiltration Testing

On September 4, 2018, one (1) infiltration test was conducted within the proposed area of the infiltration device. The infiltration test trenches were labeled IT-1 and IT-2 and are depicted on the Infiltration Test Location Map (Plate 1). The tests were performed as per the referenced Riverside Technical Guidance Manual for Onsite Wastewater Treatment Systems.

Due to the very hard nature of the soil and bedrock, only the 10.5-foot-deep test trench was dug to the required depth. The 5-foot test trench was inadequate for testing. An 8-inch diameter, 12-inch long, plastic liner was placed within a 6-inch deep excavated test hole. At least 6 inches of clean water was filled within the test hole. From a fixed test point, the drop-in water level, in inches, and the amount of water used was measured and recorded at intervals over a period of at least 6 readings or until the rate for two consecutive readings was within a five percent variation. The field infiltration rates were reduced utilizing a reduction factor per the Porchet Method. The test results are presented in Table 1. The infiltration test data sheets are presented in Appendix A.

5.0 FINDINGS

5.1 Earth Materials

Based on our review of the data from the in progress geotechnical investigation and current exploration of the earth materials underlying the proposed onsite storm water infiltration BMP area, the materials encountered to the depths explored include undocumented artificial fill, older alluvial fan deposits, and granitic bedrock (tonalite). A description of the earth material soils encountered is described below:

Artificial Fill, Undocumented (Afu): During our subsurface exploration, artificial fill (undocumented) was encountered down to depths ranging from approximately 2.0 feet to 5.5 feet. The artificial fill generally consists of silty sand and clayey silt and is various shades of brown, red and black; very fine to medium grained with some coarse grains; coarse and very coarse rock fragments; dry to damp; medium dense; blocky; contains some pores; roothairs; oxidation staining and traces of concrete.

Older Alluvial Fan Deposits (Qoa): Older alluvial fan deposits encountered on the site during our subsurface exploration, was observed to be at approximately 2.0 feet to 5.5 feet deep, below the undocumented artificial fill. The alluvial fan deposits generally consist of silty sand and is characterized as various shades of brown, green, gray, and red; dry; very dense; very fine to medium grained with coarse grains; pinhole pores; roothairs; and has oxidation staining.

Bedrock: Bonzal Tonalite (Kqdi) – Bedrock of the Peninsular Ranges was present below older alluvial fan deposits in trench IT-2 at a depth of about 6.5 feet. This bedrock consists of quartz diorite and is massive; grayish white with black minerals; dry; hard to very hard; and has oxidation staining.

5.2 Groundwater

Groundwater was not encountered during the infiltration testing to depths of up to 10.5 feet. A review of the California Department of Water Resources, Water Data Library 2018 online database indicates groundwater approximately four miles away from the general site area is about 72.9 feet below the existing ground surface at an elevation of approximately 1,638 above mean sea level (Well ID: Station 335628N1171932W001).

5.3 Infiltration Testing Results

The shallow infiltration testing rates for design considerations for each of proposed drainage device areas which were tested are presented in the table below.

Infiltration Design Rates

TEST NO.	*TEST DEPTH (Feet)*	*FIELD PERCOLATION RATE (INCHES/HOUR)*	*SOIL DESCRIPTION (USCS)*
IT-2	10.5	0	Tonalite

6.0 CONCLUSIONS AND RECOMMENDATIONS

Shallow infiltration testing for the proposed drainage devices indicated a design rate of 0.0 inches/hour, after applying reduction factors shown in Table 1 above, per the Porchet Method, at depths of approximately ten and a half (10.5) feet below the existing ground surface as presented in the above infiltration design rate table, Section 5.3. The rate is **0.0 inches/hour** represented by testing from infiltration test trench IT-2.

Based on the failing design rate and nature of the onsite material, we recommend the proposed infiltration basin be relocated or using an alternative infiltration design.

7.0 PLAN REVIEWS AND CONSTRUCTION SERVICES

This report was prepared for the exclusive use of **Shizao Zheng** to assist the project civil engineer in the design of the proposed infiltration systems for the proposed development. It is recommended that LGC be engaged to review infiltration device plans, grading plans, foundation plans and the final infiltration design drawings and specifications prior to construction. This is to document that the recommendations contained in this report were properly interpreted and incorporated into the project plans and specifications from a geotechnical standpoint. Plans should be forwarded to the project geotechnical engineer and/or engineering geologist for LGC for review and comments, as deemed necessary. LGC's review of infiltration device plans, grading plans, foundation plans and the final infiltration design drawings and specifications may indicate that additional subsurface exploration, laboratory testing and analysis should be performed to address areas of concern. If LGC is not accorded the opportunity to review these documents, we can not take responsibility for misinterpretation of our recommendations.

If the project plans change significantly (e.g., location and type of infiltration devices), LGC should be retained to review our original design recommendations and applicability to the revised construction. If conditions are encountered during construction that appears to be different from those indicated in this report, this office should be notified immediately. Design and construction revisions may be required.

The preliminary conclusions and recommendations provided in this report are based on review of previous geotechnical reports, infiltration testing, geologic field mapping, and geotechnical/geologic analyses to date. A representative of LGC should observe the interpolated subsurface conditions in the field during construction

We recommend that LGC be retained to provide geotechnical engineering services during future grading, infiltration device excavations, installation of infiltration materials, backfill of infiltration devices, or when an unusual soil condition is encountered at the site. This is to document compliance with the design, specifications or recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to start of construction.

8.0 INVESTIGATION LIMITATIONS

This report is based upon information provided by the client and the project civil engineer, a limited number of subsurface excavations, field observations and percolation/infiltration tests to which we applied various methods of analysis and interpretation. The materials encountered and tested in the field on the project site are believed representative of the project area, and the conclusions and recommendations contained herein are presented on that basis. However, soil materials can vary in characteristics between points of exploration, both laterally and vertically, and those variations could affect the conclusions, recommendations, and performance of the proposed storm water infiltration device BMP systems. Fluctuations in the level of groundwater may occur due to variations in rainfall, irrigation, and the other factors not in evidence at the time measurements were made. If this occurs, the changed conditions must be evaluated by the project geotechnical engineer and engineering geologist and design(s) adjusted as required or alternate design(s) recommended.

This report is issued with the understanding that it is the responsibility of the owner, or of his/her representative, to ensure that the information and recommendations contained herein are brought to the attention of the project engineer and incorporated into the plans, and the necessary steps are taken to see that the contractor and/or subcontractor properly implements the recommendations in the field.

The conclusions and opinions contained in this report are based on the results of the described geotechnical evaluations and represent our professional judgment. The findings, conclusions and recommendations contained in this report are to be considered tentative only and subject to confirmation by the undersigned during the construction process. Without this confirmation, this report is to be considered incomplete and LGC or the undersigned professionals assume no responsibility for its use.

The conclusions and opinions contained in this report are valid up to a period of 2 years from the date of this report. Changes in the conditions of a property can and do occur with the passage of time, whether they be because of natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate codes or standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, if any of the above mentioned situations occur, an update of this report should be completed.

This report has not been prepared for use by parties or projects other than those named or designed above. It may not contain sufficient information for other parties or other purposes.

The opportunity to be of service is appreciated. Should you have any questions regarding the content of this report, or should you require additional information, please do not hesitate to contact this office at your earliest convenience.
Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by engineers and geologists practicing in this or other localities. The contents of this report are professional opinions and as such, are not to be considered a guarantee or warranty.

The opportunity to be of service is appreciated. Should you have any questions regarding the content of this report, or should you require additional information, please do not hesitate to contact this office at your earliest convenience.

Respectfully submitted,

LGC Geo-Environmental, Inc.

REGISTERED GEOLOGIST
ROBERT L. GREGOREK II
No. 1257
CERTIFIED ENGINEERING GEOLOGIST
Exp. 8/31/19
STATE OF CALIFORNIA

Robert L. Gregorek, II CEG 1257
Certified Engineering Geologist

AJR/RLG

Distribution: (4) Addressee

Attachments:
Figure 1 – Site Location Map *(Rear of Text)*
Appendix A – Infiltration Trench Logs *(Rear of Text)*
Appendix B – Infiltration Test Results *(Rear of Text)*
Plate 1 – Infiltration Test Location Map *(Pocket Enclosure)*

FIGURE 1
SITE LOCATION MAP

Project Name	SIKAND - MORENO VALLEY
Project No.	G18-1648-20
Geol./ Eng.	RLG
Scale	NOT TO SCALE
Date	SEPTEMBER 2018

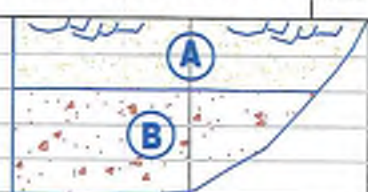
APPENDIX A

INFILTRATION TRENCH LOGS

Project Name: SIKAND - MORENO VALLEY	Logged by: AJR	LOG OF TRENCH IT-1
Project Number: G18-1648-20	Elevation: 1594'	Engineering Properties
Equipment: BACKHOE	Location/Grid: SEE PLATE 1	

Depth	Date: 9/4/18 Description:	Geologic Unit	USCS	Sample No.	Moisture (%)	Dry Density (pcf)
0.0'-2.0'	A ARTIFICIAL FILL, UNDOCUMENTED: Silty SAND/Clayey SILT; dark reddish brown to blackish brown, dry to damp, medium dense, very fine to medium grained with some coarse to very coarse grains, coarse to very coarse rock fragments, some pores, roothairs, blocky, oxidation staining	Afu	SM/ML			
2.0'-5.0'	B OLDER ALLUVIAL FAN DEPOSITS: Silty SAND; greenish gray and reddish brown, dry, very dense, very fine to medium grained, with some coarse grains, pinhole pores, roothairs, stopped digging at 5.0 feet due to practical refusal	Qoa	SM			

GRAPHICAL REPRESENTATION: NORTH WALL | SCALE: 1" = 5' | SURFACE SLOPE: LEVEL | TREND: N19E

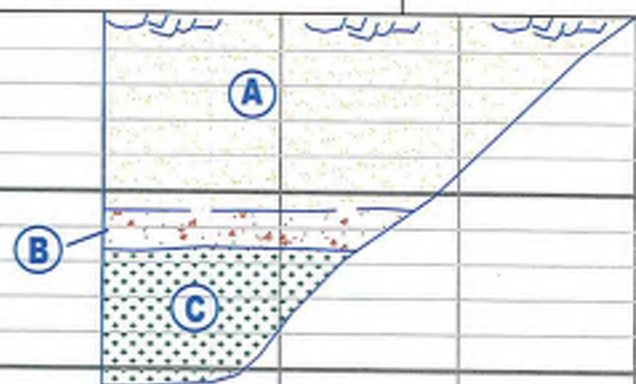


TOTAL DEPTH= 5.0 FEET
NO GROUNDWATER
ENCOUNTERED

Project Name: SIKAND - MORENO VALLEY	Logged by: AJR	LOG OF TRENCH IT-2
Project Number: G18-1648-20	Elevation: 1592'	Engineering Properties
Equipment: BACKHOE	Location/Grid: SEE PLATE 1	

Depth	Date: 9/4/18 Description:	Geologic Unit	USCS	Sample No.	Moisture (%)	Dry Density (pcf)
0.0'-5.5'	A ARTIFICIAL FILL, UNDOCUMENTED: Silty SAND/Clayey SILT; dark reddish brown to blackish brown, dry to damp, medium dense, very fine to medium grained with some coarse to very coarse grains, coarse to very coarse rock fragments, some pores, roothairs, blocky, pieces of concrete	Afu	SM/ML			
5.5'-6.5'	B OLDER ALLUVIAL FAN DEPOSITS: Silty SAND; greenish gray and reddish brown, dry, very dense, very fine to medium grained, with some coarse grains, pinhole pores, roothairs, oxidation staining	Qoa	SM			
6.5'-10.5'	C BEDROCK (TONALITE): Quartz diorite, grayish white, dry, hard to very hard, oxidation staining @10.0'; some moderately weathered sections at one bottom of trench	Kqdi				

GRAPHICAL REPRESENTATION: NORTH WALL	SCALE: 1" = 5'	SURFACE SLOPE: LEVEL	TREND: N65E



TOTAL DEPTH=10.5 FEET
NO GROUNDWATER
ENCOUNTERED

APPENDIX B

INFILTRATION TEST RESULTS

Project:	Sikand-Moreno Valley	Job No.:	G18-1648-20
Test Hole No.:	IT-2	Date Excavated:	9/4/2018
Depth of Test Hole:	6" / Pit Depth: 10.5'	Soil Classification:	Bedrock
Check for Sandy Soil Criteria By: JM		Date of Perc Test:	9/5/2018 Diameter: 8 inches

SANDY SOIL CRITERIA TEST

TIME	Time Interval (Minutes)	Time Interval (Minutes)	Initial Water Level (Inches)	Final Water Level (Inches)	Change In Water Level (Inches)

PRESOAK PERIOD

	Date	Time	Interval	Amount of Water Used
Start	9/4/2018	1:57 PM	22 HRS	4 3/4 Gal
Stop	9/5/2018	11:10 AM		

TEST PERIOD

Time	Time Interval (min.)	Total Elapsed Time (min.)	Initial Water Level (inches)	Final Water Level (inches)	Change In Water Level (Inches)	Field Percolation Rate (minutes/inch)
11:24 11:54	30	30	6	6.00	0.00	0.00
11:54 12:24	30	6	6	6.00	0.00	0.00
12:24 12:54	30	90	6	6.00	0.00	0.00
12:54 1:04	30	12	6	6.00	0.00	0.00
1:04 1:54	30	150	6	6.00	0.00	0.00
1:54 2:24	30	180	6	6.00	0.00	0.00

Reduction Factor:	2.50
Design Infiltration Rate (in/hr):	0.00

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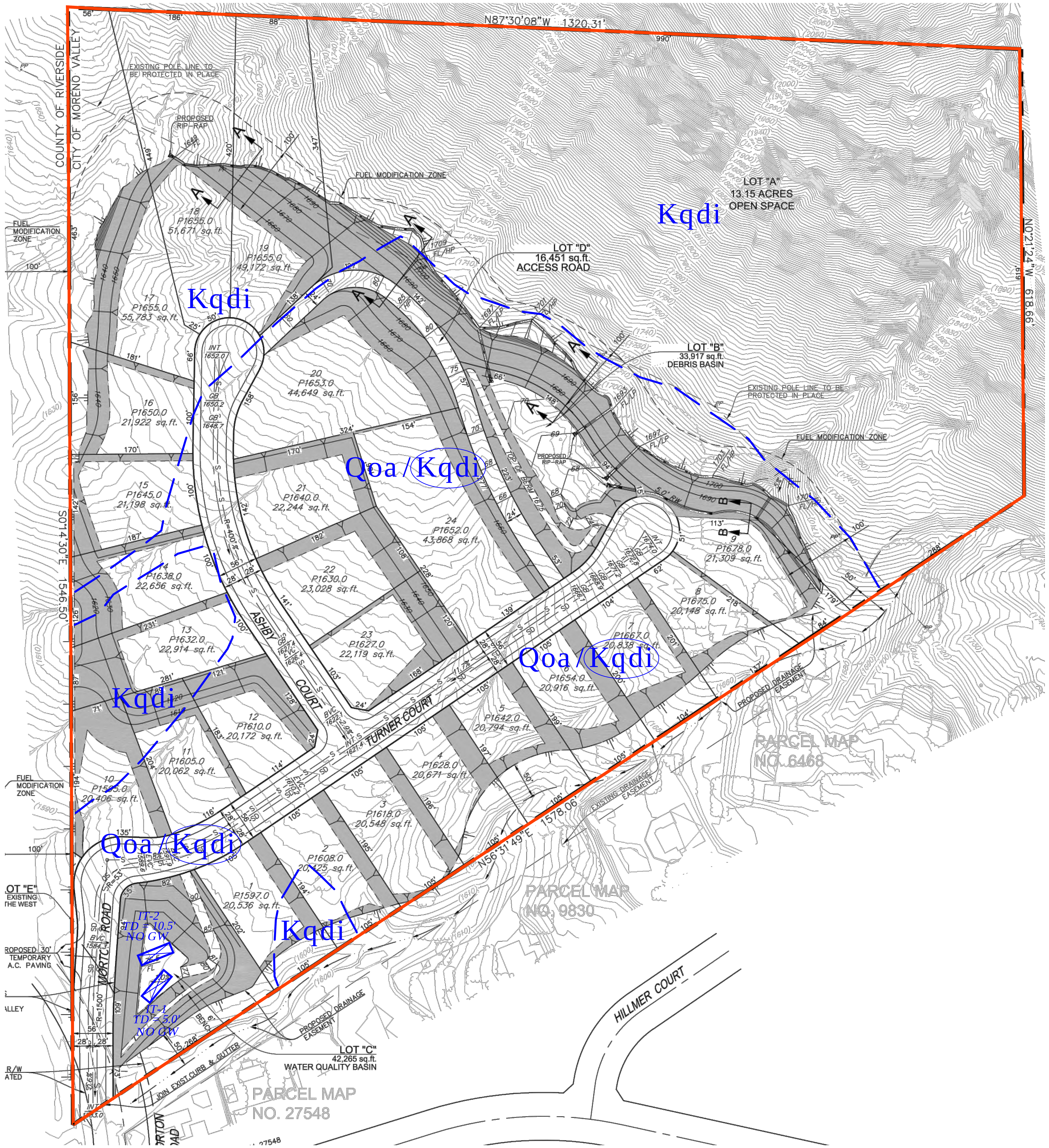

LEGEND
(Locations are Approximate)

Geologic Earth Units

Qoa - Older Alluvial Fan Deposits

Qdi - Bedrock: Bonzal Tonalite (circled where buried)

Symbols

- Limits of This Report

- Approximate Geologic Contact

IT-2
TD=10.5'
NO GW

- Infiltration Trench Location

0 80' 160'

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Robert L. Gregorek, II
Engineering Geologist

INFILTRATION TEST LOCATION MAP

Tentative Tract Map No. 37557
City of Moreno Valley, Riverside County, California

Name:	Tentative Tract Map No. 37557
Project No.	G18-1648-20
Client:	Shizao Zheng
Scale:	1" = 80'
Date:	September 2018
Reference:	Sikand Engineering, Conceptual Grading Plan, Sheet 2 of 2, Dated June 13, 2018
Plate No.	1 OF 1

LGC GEO-ENVIRONMENTAL, INC.

PRELIMINARY GEOTECHNICAL INVESTIGATION FOR THE PROPOSED SINGLE-FAMILY RESIDENTIAL DEVELOPMENT, TENTATIVE TRACT MAP NO. 37557, CITY OF MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA.

Dated: September 22, 2018
Project No. G18-1648-10

Prepared For:

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September 22, 2018

Project No. G18-1648-10

Shizao Zheng
1378 West Zhorgshan Road
Ningbo City, Zhejiang Province
China

Subject: ***Preliminary Geotechnical Investigation for the Proposed Single-Family Residential Development, Tentative Tract Map No. 37557, City of Moreno Valley, Riverside County, California.***

LGC Geo-Environmental, Inc. (LGC) is pleased to submit herewith our preliminary geotechnical investigation report for the proposed single-family residential development, Tentative Tract Map No. 37557, City of Moreno Valley, Riverside County, California.

This report presents the results of our review of published geologic/geotechnical reports, maps, and aerial photographs relative to the area that includes the site; our field exploration, geologic mapping, and laboratory testing; and geotechnical and geologic judgment, opinions, conclusions and preliminary recommendations associated with the proposed residential development.

Based on the results of the scope of our work and our review of the conceptual grading plan tract map, it is our opinion that the subject site is suitable for the proposed residential development, provided that the recommendations presented herein are incorporated into the design and implemented during grading and construction. LGC should review the final grading plans, as well as any foundation/structural plans when those become available, and revise the recommendations presented herein, if necessary.

LGC is pleased to have been retained to be of service to you during the design stages of this project. Should you have any questions regarding the contents of this report or should you require additional information, please do not hesitate to contact us.

Respectfully submitted,

LGC Geo-Environmental, Inc.

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Distribution: (4) Addressee

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1.0 INTRODUCTION

This report presents the results of LGC Geo-Environmental, Inc.'s (LGC) geotechnical investigation for the proposed single-family residential development, Conceptual Grading Plan Tract Map No. 37557, City of Moreno Valley, Riverside County, California. The purpose of this geotechnical investigation was to evaluate the soil engineering properties of the surface and subsurface soil conditions on the site, and to provide geotechnical recommendations with respect to grading, construction, foundation design and other relevant geotechnical aspects related to the proposed residential development. The referenced conceptual grading plan tract map which was provided to LGC, was utilized as the base map for our Geotechnical Map (Plate 1) of the site.

Our scope of services included:

- A review of available published geologic/geotechnical literature, geologic maps, and aerial photographs pertinent to the site (Appendix A).
- Geologic mapping of the site.
- Subsurface exploration consisting of the excavating, sampling, and logging of ten (10) exploratory trenches, TR-1 through TR-8 and IT-1 through IT-2, to depths ranging from approximately 3.0 to 13.5 feet below the existing ground surface. All of the trenches were excavated using a backhoe. The trenches were excavated to evaluate the general characteristics of the subsurface geologic/geotechnical conditions on the project site, including classification of site soil, determination of depth to groundwater (if present), and to obtain representative soil samples.
- Laboratory testing of representative soil specimens collected during our subsurface exploration (Appendix C).
- Geotechnical engineering and geologic analyses of the data with respect to the proposed single-family development.
- Preparation of General Earthwork and Grading Specifications (Appendix D).
- Preparation of this report presenting our findings, conclusions and preliminary geotechnical design recommendations for the proposed development.

1.1 Proposed Construction and Grading

The referenced conceptual grading plan tract map prepared by Sikand Engineering dated June 13, 2018 indicates that the proposed development will consist of 24 single-family residential lots with associated roadways, walk ways, and hardscape, landscape areas and a water quality basin and a debris basin. It is anticipated that the structures will be up to two-stories, with wood/steel frame and masonry wall construction and some masonry block walls. This type of construction provides for relatively moderate to heavy loads imposed on the underlying foundation soil.

The referenced 80-scale tentative tract map indicates proposed cut and fill depths will be generally be approximately 32 and 22 feet, respectively. Proposed maximum cut and fill slope heights are about 55 feet and 22 feet respectively, at slope ratios of 2:1 (h:v) or flatter.

1.2 Location and Site Description

The site is located north of Jennings Court, west of Morton Road and east of the mountains at the base, in the City of Moreno Valley, in Riverside County, California. The site is irregular in shape and is approximately 32.8-acres in size. The site is moderately covered with annual weeds and shrubs, some cluster of trees and scatter boulders, mainly at the base of the mountain. The site also contains some scattered trash and debris. The general location and configuration of the site is shown on the Site Location Map (Figure 1).

FIGURE 1
SITE LOCATION MAP

Project Name	TENTATIVE TRACT MAP NO. 37557
Project No.	G18-1648-10
Geol./ Eng.	RLG/JPN
Scale	NOT TO SCALE
Date	SEPTEMBER 2018

1.3 Topography and Drainage

The topography of the site is undulated with approximately four washes running down the site from the northeast. Elevations range from approximately 2,040 feet above mean sea level (msl) in the northeastern portion of the site to approximately 1,588 feet msl in the western portion of the site.

1.4 Existing Improvements and Vegetation

The site has not been previously developed. Vegetation consists of a moderate to dense cover of annual weeds/shrubs

1.5 Research of Previous Geological and Geotechnical Data

LGC researched published and unpublished geotechnical reports and geologic data (Appendix A). Pertinent site and geologic information were incorporated into the conclusions and recommendations presented in this report.

1.6 Aerial Photograph Analysis

Google Earth Pro aerial imagery (from 1994 to 2018) was evaluated for the subject site and surrounding vicinity. The available information, as it pertains to the geologic and geotechnical issues of the proposed single-family residence, has been incorporated into the conclusions and recommendations presented in this report.

Our review of the aerial photographs indicates that the site has been a vacant property from 1994 to the present.

2.0 FIELD INVESTIGATION

2.1 Geologic Mapping

Surface geologic mapping of the site and accessible surrounding areas was completed by a geologist from this firm during September 2018, utilizing the referenced Conceptual Grading Plan Tract Map No. 37557 for plotting geologic observations. This information is plotted on the enclosed Geotechnical Map (Plate 1).

2.2 Field Exploration

Ten (10) exploratory trenches, TR-1 through TR-8 and IT-1 through IT-2, were excavated with a backhoe on September 4, 2018 and September 6, 2018 to depths of approximately 3.0 to 13.5 feet below the existing ground surface. The trenches were excavated to evaluate the general characteristics of the subsurface geologic/geotechnical conditions beneath the site, those include classification of site soil and bedrock, determination of groundwater elevations (if present), and the collection of representative soil samples.

Prior to our subsurface work, an underground utilities clearance was obtained from Underground Services Alert of Southern California. At the conclusion of the subsurface exploration, the trenches were backfilled with on-site materials with some compactive effort. Minor settlement of the backfill soil may occur over time.

Earth materials recovered from beneath the site were classified and logged by a geologist from LGC in accordance with the visual-manual procedures of the Unified Soil Classification System. The approximate locations of the exploratory borings and trenches are shown on the Geotechnical Map (Plate 1) and descriptive logs are presented in Appendix B.

Bulk samples of soil associated with the exploratory trenches were collected for laboratory testing. Bulk samples consisted of selected soil and bedrock materials obtained at various depth intervals from the exploratory trenches.

2.3 Laboratory Testing

During our subsurface exploration, relatively undisturbed and bulk soil samples were retained for laboratory testing. Laboratory tests were performed on selected representative samples of onsite soil materials and included maximum dry density and optimum water content, expansion index, sulfate content, chloride content, pH, resistivity, and shear strength. A brief description of the laboratory test results and test data are presented in Appendix C.

3.0 FINDINGS

3.1 Regional Geologic Setting

The site is located in the Peninsular Ranges Geomorphic Province of California. The Peninsular Ranges are characterized by steep, elongated valleys that trend west to northwest. Locally the northwest-trending topography is controlled by the Elsinore fault zone, which extends from the San Gabriel River Valley southeasterly to the United States/Mexico border. The Santa Ana Mountains lie along the western side of the Elsinore fault zone, while the Perris Block is located along the eastern side of the fault zone. These mountainous regions are underlain by Pre-Cretaceous, metasedimentary and metavolcanic rocks and Cretaceous plutonic rocks of the Southern California Batholith. Tertiary and Quaternary rocks are generally comprised of non-marine sediments consisting of sandstone, mudstones, conglomerates, and occasional volcanic units. A map of the regional geology is presented on the Regional Geologic Map (Figure 2).

3.2 Local Geology and Soil Conditions

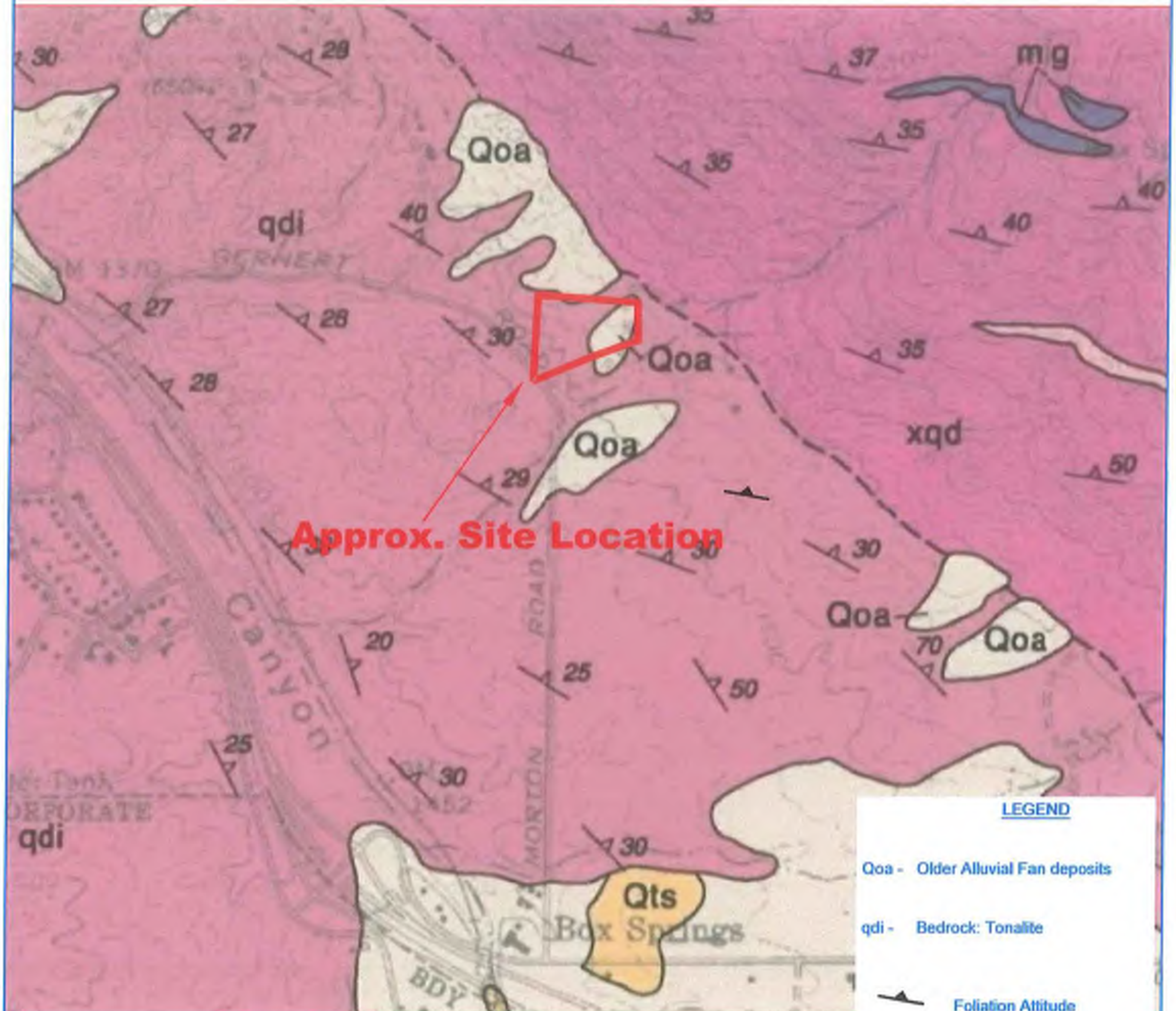
Based on our review of available geological and geotechnical literature, current field mapping, exploratory trenches and exploratory borings conducted at the site, it is our understanding that the site is primarily underlain by undocumented artificial fill, older alluvial fan deposits, and Bonzal Tonalite bedrock. Each unit is described in greater detail below and presented within the exploratory trench and boring logs (Appendix B). The approximate locations of the observed geologic units are depicted on the Geotechnical Map (Plate 1).

Artificial Fill, Undocumented (Afu): During our subsurface exploration, artificial fill (undocumented) was encountered down to depths ranging from approximately 2.0 feet to 5.5 feet. The artificial fill generally consists of silty sand and clayey silt and is various shades of brown, red and black; very fine to medium grained with some coarse grains; coarse and very coarse rock fragments; dry to damp; medium dense/firm; contains some pores; roothairs; desiccated; with traces of concrete pieces.

Topsoil (No Map Symbol): Topsoil was present within portions of the site overlying the older alluvial deposits or bedrock. The topsoil consisted of silty sand which was generally very fine to coarse grained, various shades of red and brown, dry to damp, loose to medium dense, desiccated with some pores and roots. These materials were generally 0.5 foot to 2.0 foot thick where explored.

Alluvium (Qal): Alluvium is present within drainage courses on the site and consist of silty sand which is generally very fine to coarse grained, various shades of read and brown, dry to damp, loose to medium dense with some rock fragments, pores, and roots. The alluvium where explored is about 2.0 feet to 7.0 feet deep and could be as much aa 10.0 feet deep.

Older Alluvial Fan Deposits (Qoa): Older alluvial fan deposits encountered on the site during our subsurface exploration, were observed to range from the surface approximately 2.0 feet to 6.5 feet deep to as deep as 12 feet. The older alluvial fan deposits generally consist of silty sand and is



LEGEND

Qoa - Older Alluvial Fan deposits

qdi - Bedrock: Tonalite

Foliation Attitude

Geologic Contact

Fault Trace
(Dotted where concealed)

GEOLOGIC MAP OF THE RIVERSIDE EAST/SOUTH 1/2 IF SAN BERNARDINO SOUTH QUADRANGLES, SAN BERNARDINO AND RIVERSIDE COUNTY, CALIFORNIA
By Thomas W. Dibble, Jr.. 2003 Edited by John A. Minch

FIGURE 2
REGIONAL GEOLOGIC MAP

Project Name	TENTATIVE TRACT MAP NO. 37557
Project No.	G18-1648-10
Geol./ Eng.	RLG/JPN
Scale	NOT TO SCALE
Date	SEPTEMBER 2018

characterized as being various shades of brown, green, gray, and red; dry; medium to very dense; very fine to medium grained with coarse grains; pinhole pores; roothairs; with oxidation staining. Portions of the upper 1.0 foot to 2.0 foot are weathered.

Bedrock: Bonzal Tonalite (Qdi) – Bedrock of the Peninsular Ranges was present at the near surface, but mostly below the topsoil, alluvium and older alluvial fan deposits at depths of about 0.5 feet to 12.0 feet. The bedrock consists of quartz diorite. The bedrock was slightly to moderately weathered; various shades of black, orange, gray, yellow, brown and white; dry to damp; moderately hard to very hard; friable; fine to very coarse grained; with oxidation staining; and manganese staining.

3.3 Landslides

Our review of geologic literature did not indicate the presence of landslides on or directly adjacent to the site.

3.4 Groundwater

Groundwater was not encountered during the subsurface exploration performed for this report. Our review of the California Department of Water Resources, Water Data Library 2018 online database indicates historical depths of groundwater approximately four miles away from the general site area is about 73 feet below the existing ground surface at an elevation of approximately 1,638 above mean sea level (Well ID: Station 335628N1171932W001).

3.5 Caving

Caving was not encountered in the exploratory trenches. Caving may occur within excavations made into the friable portions of the alluvium, older alluvial fan deposits and weathered bedrock.

3.6 Surface Water

Surface water runoff relative to project design is the purview of the project civil engineer and should be designed to be directed away from all structures and walls.

3.7 Faulting

The geologic structure of the Southern California area is mainly dominated by northwest-trending faults associated with the San Andreas system. Faults, such as the Whittier, Elsinore, San Jacinto and San Andreas, are major faults in this system and are known to be active and may produce moderate to strong ground shaking during an earthquake. In addition, the San Andreas, Elsinore and San Jacinto faults are known to have ruptured the ground surface in historic times.

The following table is comprised of a list of the significant faults located within 20 miles of the proposed project site. We have also included the Maximum Earthquake Magnitude predicted for each of these faults.

TABLE 1
Significant Faults in Proximity of the Project Site

ABBREVIATED FAULT NAME	*APPROXIMATE DISTANCE (mi)*	*MAXIMUM EARTHQUAKE MAGNITUDE (Mw)*
San Jacinto-San Bernardino	5.2	6.7
San Jacinto-San Jacinto Valley	5.6	6.9
San Andreas-San Bernardino	14.9	7.3
San Andreas-Southern	14.9	7.4
Elsinore-Glen Ivy	18.5	6.8
Chino-Central Ave (Elsinore)	19.0	6.7
Cucamonga	19.4	7.0

Source: EQFAULT for Windows Version 3.00b

Active, potentially active, or inactive faults are not known to project through the site. The site does not lie within an Alquist-Priolo Earthquake Fault Hazard Zone as defined by the State of California in the Alquist-Priolo Earthquake Fault Hazard Zoning Act or a Riverside County Fault Zone Map. The possibility of damage to structures or site improvements because of ground rupture is considered negligible because active faults are not known to cross the site.

3.8 Seismicity

Secondary effects of seismic shaking resulting from large earthquakes on the major faults in the southern California region, which may affect the site, include soil liquefaction and dynamic settlement. Liquefaction is a seismic phenomenon in which loose, saturated, granular soil behave similarly to a fluid when subject to high-intensity ground shaking. Liquefaction occurs when three general conditions exist: 1) groundwater within 50 feet of the ground surface 2) low density non-cohesive (granular) soil; and 3) high-intensity ground motion. Studies indicate that saturated, loose to medium dense, near surface cohesionless soil exhibit the highest liquefaction potential, while dry, dense, cohesionless soil and cohesive soil exhibit low to negligible liquefaction potential.

Other secondary seismic effects include shallow ground rupture, seiches, and tsunamis. In general, these secondary effects of seismic shaking are a possibility throughout the Southern California region and are dependent on the distance between the site and causative fault and the onsite geology. A risk assessment of these secondary effects is provided in the following sections.

3.9 Settlement Analysis

The results of our subsurface exploration and laboratory testing indicate the site is underlain by approximately 2 feet to 7 feet to possibly up to 10 feet of potentially compressible and/or hydro-collapsible soil, consisting of artificial fill, undocumented, topsoil, alluvium, weathered older alluvial fan deposits and weathered bedrock. These materials exhibit the potential to settle or hydro-consolidate under the surcharge of proposed fill loads and anticipated future structural loads.

In areas where overexcavation to competent underlying older alluvial fan deposits or bedrock is accomplished, total settlement of about 0.50-inch, and a differential settlement of about 0.25-inch over a distance of about 40 feet could be anticipated.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 General

Based on the results of our current geotechnical investigation, it is our opinion that the proposed residential development, as indicated on the conceptual grading plan tract map, is feasible from a geotechnical and geologic standpoint, provided that the following recommendations are incorporated into the design criteria and project specifications and implemented during site grading and during construction. When actual grading plans for the site and foundation/structural plans for the proposed development are available, a comprehensive plan review should be performed by LGC. Depending on the results, additional recommendations may be necessary to provide updated geotechnical design parameters for both earthwork and foundations. Grading should be conducted in accordance with local codes, the recommendations within this report, and future plan reviews. It is also our opinion that the proposed construction and grading will not adversely impact the geologic stability of adjoining properties.

The following is a summary of the primary geotechnical factors determined from our geotechnical investigation.

- The site is underlain by undocumented artificial fill, topsoil, alluvium, older alluvial fan deposits and bedrock.
- Landslides are not known to impact the site.
- Groundwater are not considered a constraint for the proposed development.
- The potential for liquefaction is considered negligible because of shallow depths to very dense older alluvial fan deposits and hard bedrock.
- Active or potentially active faults are not known to exist on the site.
- Laboratory test results of the upper soil and bedrock indicate a very low expansion potential and negligible potential for soluble sulfate effects on normal concrete and chloride effects on reinforcing steel.
- The majority of the site is underlain by approximately 2 feet to 7 feet to as much as 10 feet locally of undocumented artificial fill, topsoil, alluvium, weathered older alluvial fan deposits and weathered bedrock which may be prone to potential intolerable post-grading settlement and/or hydroconsolidation, under the surcharge of the future proposed structural loads and/or fill loads. These materials should be overexcavated to underlying competent older alluvial fan deposits or bedrock.
- The existing onsite soil from a geotechnical perspective, appear to be suitable material for use as fill, provided those are relatively free from rocks (larger than 12 inches in maximum dimension), construction debris, and organic material. It is anticipated that the onsite soil may be excavated with conventional heavy-duty construction equipment.

5.0 GEOLOGIC CONSIDERATIONS

5.1 Slopes

Cut slopes and fill slopes to the proposed slope heights and slope ratios of approximately 2:1 (H:V) or flatter and should be grossly and surficially stable.

5.2 Faulting

Geologic hazards related to fault rupture are not known or not detected during our field exploration and site reconnaissance to be present at the site.

5.3 Groundwater

Adverse effects on the proposed development resulting from groundwater are not anticipated.

5.4 Subsidence

In consideration of the anticipated grading, recommended overexcavations, proposed structures and improvements, and subsurface material types and their conditions, unfavorable ground subsidence is not anticipated. This should be confirmed with additional consolidation testing in the older alluvial fan deposits.

5.5 Landsliding

Landslides or surface failures were not observed at or directly adjacent to the site. As a result, the probability of the site being affected by landslides is considered nil.

5.6 Ground Rupture

Ground rupture because of active faulting is not likely to occur on site because of the absence of known active fault traces on the site. Cracking because of shaking from distant seismic events is not considered a significant hazard, although it is a possibility at any site.

5.7 Rock Fall

The potential for rock fall is considered moderate, due to the close proximity of the mountainside. See referenced report in Appendix A.

5.8 Tsunamis and Seiches

Based on the elevation of the site with respect to sea level and its distance from large open bodies of water, the potentials for seiche and/or tsunami is considered to be negligible.

6.0 SEISMIC-DESIGN CONSIDERATIONS

6.1 Ground Motions

The site will probably experience ground shaking from moderate to large size earthquakes during the life of the proposed development. Furthermore, it should be recognized that the Southern California region is an area of high seismic risk, and that it is not considered feasible to make structures totally resistant to seismic-related hazards.

Structures within the site should be designed and constructed to resist the effects of seismic ground motions as provided in the 2016 CBC, Section 1613. The method of design is dependent on the seismic zoning, site characterizations, occupancy category, building configuration, type of structural system, and building height.

The following seismic design parameters, presented in Table 2, were developed based on the CBC 2016 and should be used for the proposed structures. A site coordinate of 33.8066° N, 117.1195° W was used to derive the seismic parameters presented below.

TABLE 2
Seismic Design Soil Parameters

***SEISMIC DESIGN SOIL PARAMETERS* (2016 CBC Section 1613)**	
Site Class Definition ASCE 7; Chapter 20 (Table 20.3-1)	D
Mapped Spectral Response Acceleration Parameter S_s (for 0.2 second) (Figure 1613.5.3.(1)	1.51
Mapped Spectral Response Acceleration Parameter, S_1 (for 1.0 second) (Figure 1613.5.3.(2)	0.64
Site Coefficient F_a (short period) [Table 1613.3.3.(1)]	1.0
Site Coefficient F_v (1-second period) [Table 1613.3.3.(2)]	1.5
Adjusted Maximum Considered Earthquake (MCE) Spectral Response Acceleration Parameter S_{MS} (short period) (Eq. 16-37)	1.51
Adjusted Maximum Considered Earthquake (MCE) Spectral Response Acceleration Parameter S_{M1} (1-second period) (Eq. 16-38)	0.96
Design Spectral Response Acceleration Parameter, S_{DS} (short period) (Eq. 16-39)	1.00
Design Spectral Response Acceleration Parameter, S_{D1} (1-second period) (Eq. 16-40)	0.64
Mean Peak Ground Acceleration (PGA_m)	0.59

6.2 Secondary Seismic Hazards

Secondary effects of seismic activity normally considered as possible hazards to a site include several types of ground failure, as well as induced flooding. Various general types of ground failures which might occur as a consequence of severe ground shaking of the site include liquefaction, landsliding, ground subsidence, ground lurching, and shallow ground rupture. The probability of occurrence of each type of ground failure depends on the severity of the earthquake, distance from faults, topography, subsoil and groundwater conditions, in addition to other factors. Based on the proposed grading and recommended overexcavation of potentially compressible materials within areas of proposed development, the secondary effects of liquefaction and other seismic activity noted above are considered unlikely at the site.

Seismically induced flooding, which might be considered a potential hazard to a site, normally includes flooding because of a tsunami (seismic sea wave), a seiche (i.e., a wave-like oscillation of the surface of water in an enclosed basin that may be initiated by a strong earthquake) or failure of a major reservoir or retention structure upstream of the site. The site is located several miles inland from the nearest coastline of the Pacific Ocean at an elevation in excess of approximately 1630 feet above msl, the potential for seismically induced flooding because of tsunami inundation is considered nonexistent. Enclosed bodies of water do not lie adjacent to the site, the potential for seiche induced flooding at the site is considered nonexistent.

7.0 GEOTECHNICAL DESIGN PARAMETERS

7.1 Shrinkage/Bulking and Subsidence

Volumetric changes in earth quantities occur when excavated onsite soil are replaced as properly compacted fill. The following table, Table 3, is an estimate of the shrinkage and bulking factors for the various geologic units present onsite. These estimates are based on in-place densities of the various materials and on the estimated average degree of relative compaction that will be achieved during grading.

TABLE 3
Estimated Shrinkage/Bulking

GEOLOGIC UNIT	SHRINKAGE PERCENT
Artificial Fill, Undoctumented	6% to 15%
Alluvium	10% to 15%
Topsoil	10% to 15%
Older Alluvial Fan Deposits (Qoa)	9% to 13%
GEOLOGIC UNIT	**BULKING PERCENT**
Bedrock: Bonzal Tonalite	0% TO 10%

Subsidence of the older alluvial fan deposits and bedrock, because of recompaction of exposed soil or bedrock prior to fill placement, and placement of proposed fills, is estimated to be about 0.15 to 0.20 feet.

The above estimates of shrinkage are intended as an aid for project engineers in determining earthwork quantities. **However, these estimates should be used with some caution since they are not absolute values.** These are preliminary rough estimates which may vary with depth of removal, stripping losses, field conditions at the time of grading, etc. Handling losses, and reduction in volume due to removal of oversized material, are not included in the estimates.

7.2 Excavation Characteristics

The following excavation characteristics of the various material types at the site have been developed based on LGC's geologic mapping and experience with these materials in the area and are presented in Table 4 below:

TABLE 4
Excavation Characteristics

GEOLOGIC UNIT	Easy* Ripping	Moderately** Difficult Ripping	Oversized Material (>6 inches)
Artificial Fill (Afu)	X	X	X
Topsoil	X		
Alluvium (Qal)	X		X
Alluvial Fan Deposits (Qf)	X	X	
Bedrock: Bonzal Tonalite (Qdl)		X	X

To better determine if rip-ability with conventional equipment is feasible or if alternative excavation methods such as blasting is necessary, we recommend a seismic refraction survey.

7.3 Compressible/Collapsible Soil

The results of our laboratory in-situ moisture and density testing indicate that the existing undocumented artificial fill, topsoil, alluvium and weathered portions of the older alluvial fan deposits and bedrock are susceptible to varying degrees of intolerable settlement and/or hydro-consolidation (collapse) when a load is applied, or the soil is saturated. Consequently, these materials should be collectively overexcavated to underlying competent older alluvial fan deposits or bedrock and replaced as engineered compacted fill.

8.0 SITE EARTHWORK

8.1 General Earthwork and Grading Specifications

Earthwork and grading should be performed in accordance with applicable requirements of the grading code of the County of Riverside and in accordance with the following recommendations prepared by this firm. Grading should also be performed in accordance with the applicable provisions of the attached "Standard Grading Specifications" prepared by LGC (Appendix D), unless specifically revised or amended herein. In case of conflict, the following recommendations shall supersede those included in as part of LGC's General Earthwork and Grading Specifications (Appendix D).

8.2 Geotechnical Observations and Testing

Prior to the start of grading, a meeting should be held on the site with the owner or his representative, developer, grading contractor, civil engineer and geotechnical consultant to discuss the work schedule and geotechnical aspects of the grading. Rough grading, which includes clearing, overexcavation, scarification/processing and fill placement, should be accomplished under the full-time observation and testing of the geotechnical consultant. Fills should not be placed without prior approval from the geotechnical consultant.

A representative of the project geotechnical consultant should also be present onsite on a full-time basis during grading operations to document proper placement and compaction of fills, as well as to document excavations and compliance with the other recommendations presented herein.

8.3 Clearing and Grubbing

Weeds/shrubs, grasses, boulders and trees in areas to be graded should be stripped and hauled offsite. Trees to be removed should be grubbed so that the stumps and major-root systems are removed and the organic materials hauled offsite. During site grading, roots, tree branches and other deleterious materials missed during clearing and grubbing operations should be removed from fill sources prior to placement.

The project geotechnical consultant or his qualified representative should be notified at the appropriate times to provide observation and testing services during clearing and grubbing operations to observe and document compliance with the above recommendations. In addition, buried structures, unusual or adverse soil conditions encountered that are not described or anticipated herein should be brought to the immediate attention of the geotechnical consultant. The existing drainage courses must be cleared of organics, debris, and sediment and widened to accommodate compaction equipment.

8.4 Private Sewage System Abandonment

Private sewage systems and/or other subsurface structures that may be encountered should be located, removed and/or properly abandoned. Abandonment and/or removal of septic systems that may exist should be in accordance with local codes. Seepage pits, if abandoned in-place, should be pumped clean, backfilled with gravel or clean sand jetted into place, and then capped with 2 feet or more of at least a 2-sack slurry for a minimum distance of 2 feet outside the edge of the seepage pit. The top of the slurry cap should be at least 10 feet below proposed grade.

8.5 Water-Well Capping

Unknown water wells that are encountered within the site, which are to be abandoned, should be abandoned and capped under permit by the appropriate governmental agency from Riverside County. In addition, a minimum 10-foot thick compacted fill blanket, below proposed grade, should be placed above the previously or newly-capped water wells.

8.6 Overexcavation and Ground Preparation

The site is underlain by approximately 2 feet to 7 feet and possibly as much as 10 feet of compressible materials. Existing undocumented artificial fill, topsoil, alluvium and weathered portions of the older alluvial fan deposits and bedrock are considered unsuitable for support of proposed fills, structures, and/or improvements, and should be overexcavated to expose underlying competent older alluvial fan deposits or bedrock. Where overexcavation and grading do not provide 5 feet or more of fill below finished pad-grade within areas for proposed structures, retaining walls, or fence walls, the area should be overexcavated to 5 feet or more below proposed grade or 2 feet or more below the bottom of footings for structures or walls, whichever is deeper. Actual depths of overexcavation should be evaluated upon review of final grading and foundation plans as well as during grading on the basis of observations and testing during grading by the project geotechnical consultant.

Prior to placing engineered fill, the exposed bottom surfaces in each overexcavated area should first be scarified to a depth of approximately 6 inches, watered or air-dried as necessary to achieve a uniform water content near optimum or slightly higher, and then compacted in place to a relative compaction of 90 percent or more (based on American Standard of Testing and Materials [ASTM] Test Method D1557).

The estimated locations, extent, and approximate depths for overexcavation of unsuitable materials are indicated on the enclosed Geotechnical Map (Plate 1). The geotechnical consultant should be provided with appropriate survey staking during grading to document that depths and/or locations of recommended overexcavation are adequate.

Sidewalls for overexcavations greater than 4 feet in height should not be steeper than 1:1 horizontal to vertical (h:v) and should be periodically slope-boarded during excavation to remove loose surficial debris and facilitate geologic mapping. Flatter excavations may be necessary for stability.

The grading contractor will need to consider appropriate measures necessary to excavate existing improvements adjacent to the site without endangering those because of caving or sloughing.

8.7 Subdrains

Following overexcavation of the topsoil, alluvium and weathered portions of the older alluvial fan deposits or bedrock, in the existing drainage course of the site a subdrain should be installed where the ultimate depth of fill below proposed grade exceeds approximately 10 feet. Tentative locations of the recommended subdrains should be evaluated once actual grading plans are developed. Actual locations should also be determined by the geotechnical consultant once conditions are exposed during grading. The subdrains will help mitigate potential buildup of hydrostatic pressures below compacted fill due to infiltration of sub-surface and surface waters.

8.8 Fill Suitability

Soil materials excavated during on-site grading are generally considered suitable for use as compacted fill provided that such soil does not contain significant amounts of trash, vegetation, organic material, construction debris, and oversize material.

8.9 Oversized Material

Oversized material that may be encountered during grading, greater than 6 inches, should be reduced in size or removed from the site

8.10 Cut/Fill Transitions and Differential Fill Thicknesses

To mitigate distress to structures and walls related to the detrimental effect of differential settlement, the cut portions should be eliminated from cut/fill transition areas in order that the entire structure or wall be founded on a approved uniform material. This should be accomplished by overexcavating the "cut" portions and shallow fill portions 5 feet or more below proposed pad grade or 2 feet below proposed footings for structures or walls, whichever is deeper and replacing the excavated materials as properly compacted fill. Recommended depths of overexcavation are provided in the following table:

DEPTH OF FILL ("fill" portion)	*DEPTH OF OVEREXCAVATION ("cut" portion)*
Up to 15 feet	5 feet (minimum)
Greater than 15 feet	One-third the maximum thickness of fill placed on the "fill" portion (12 feet maximum)

8.11 Benching

Where compacted fills are to be placed on natural slope surfaces inclining at 5:1 (h:v) or greater, the ground should be excavated to create a series of level benches, which have at least a minimum height of 4 feet, excavated into competent bedrock or existing compacted engineered materials. Typical benching details are described in the attached LGC "Standard Grading Specifications" (Appendix D).

8.12 Fill Placement

Fills should be placed in lifts not greater than 6 inches in uncompacted thickness, watered or air-dried as necessary to achieve a uniform water content of at least optimum moisture content, and then compacted in place to relative compaction of 90 percent or more. Fills should be maintained in a relatively level condition. The laboratory maximum dry density and optimum moisture content for each change in soil type should be determined in accordance with ASTM Test Method D1557.

8.13 Inclement Weather

Inclement weather may cause rapid erosion during mass grading and/or construction. Proper erosion and drainage control measures should be in-place during periods of inclement weather in accordance with Riverside County and California State requirements.

9.0 SLOPE CONSTRUCTION

9.1 Slope Stability

Cut slopes and fill slopes at the proposed heights at slope ratios of approximately 2:1 (H:V) or flatter and should be grossly and surficially stable.

9.2 Fill Slopes

Following overexcavation of unsuitable materials, fill slopes and fill over cut slopes should be initiated on a minimum 15 feet wide key excavated into competent older alluvial fan deposits or bedrock if the ground gradient is steeper than 5:1 (H:V) as approved by LGC. The bottom of the fill keys should be tilted at 2 percent back into the slope.

9.3 Cut Slopes

Proposed cut slopes may expose low-density, dry and/or cohesionless soil or bedrock with out-of-slope planner features, which will likely require stabilization by overexcavation and replacement with compacted fill.

9.4 *Temporary Excavations*

Temporary excavations varying up to a height of approximately 2 feet to 10 feet below existing grades will be necessary to accommodate the recommended overexcavation of the unsuitable soil. Based on the physical properties of the onsite soil, temporary excavations exceeding 4 feet in height should be cut back at a ratio of 1:1 (h:v) or flatter, for the duration of the overexcavation and recompaction of unsuitable soil material. Temporary slopes excavated at the above slope configurations are expected to remain stable during grading operations. However, temporary excavations should be observed by a representative of the project geotechnical consultant for any evidence of potential instability. Depending on the results of these observations, revised slope configurations may be necessary.

Other factors which should be considered with respect to the stability of the temporary slopes include construction traffic and storage of materials on or near the tops of the slopes, construction scheduling, presence of nearby walls or structures on adjacent properties, and weather conditions at the time of construction. Applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act of 1970, and the Construction Safety Act should also be followed.

10.0 *POST-GRADING CONSIDERATIONS*

10.1 *Control of Surface Water and Drainage Control*

Positive-drainage devices such as sloping sidewalks, graded-swales, and/or area drains, should be provided to collect and direct water away from the structure and slopes. Neither rain nor excess irrigation water should be allowed to collect or pond against building foundations. Drainage should be directed to adjacent driveways, adjacent streets or storm-drain faculties and maintained at all times. The site is in a semi-arid climate area, from a geotechnical standpoint, thus the ground surface adjacent to the structures should be sloped at a gradient of at least 2 percent for a distance of at least 10 feet. Each graded lot should be further maintained by a swale or drainage path at a gradient of at least 1 percent. Where necessary, drainage paths may be shortened by use of area drains and collector pipes. Planters with open bottoms adjacent to buildings should be avoided. Over watering must be avoided.

10.2 *Utility Trenches*

Utility-trench backfill within roadways, utility easements, under walls, sidewalks, driveways, floor slabs and any other structures or improvements should be mechanical compacted. The onsite soil should generally be suitable as trench backfill provided those are screened of rocks and other material over 3 inches in diameter and organic matter. Trench backfill should be compacted in uniform lifts (generally not exceeding 6 inches to 8 inches in uncompacted thickness) by mechanical means to at least 90 percent relative density (per ASTM Test Method D1557). Density testing, along with probing, should be performed by the project geotechnical consultant or his representative, to document proper compaction.

If trenches are shallow, the use of conventional equipment may result in damage to the utilities. Clean sand, having a sand equivalent (SE) of 30 or greater should be used to bed and shade the utilities. Sand backfill should be densified. The densification may be accomplished by jetting or flooding and then tamping to ensure adequate compaction. A representative from LGC should observe, probe, and test the backfill to verify compliance with the project specifications.

Utility-trench sidewalls deeper than 4 feet should be laid back at a ratio of 1:1 (h:v) or flatter or braced. A trench box may be used in lieu of shoring. If shoring is anticipated, LGC should be contacted to provide design parameters.

To avoid point-loads and subsequent distress to clay, cement or plastic pipe, imported sand bedding should be placed 1-foot or more above pipe in areas where excavated trench materials contain significant cobbles. Sand-bedding materials should be compacted and tested prior to placement of backfill.

Where utility trenches are proposed parallel to building footings (interior and/or exterior trenches), the bottom of the trench should not be located within a 1:1 (h:v) plane projected downward from the outside bottom edge of the adjacent footing.

11.0 PRELIMINARY FOUNDATION DESIGN RECOMMENDATIONS

11.1 General

Provided that site grading is performed in accordance with the recommendations of this report, conventional shallow foundations are considered feasible for support of the proposed residential structures. Tentative foundation recommendations are provided herein. However, these recommendations may require modification depending on existing as-graded conditions within the building sites upon completion of grading.

11.2 Allowable-Bearing Values

An allowable-bearing value of 2,500 pounds per square foot (psf) may be used for 12-inch wide or greater continuous footings or 24-inch square pad footings, founded completely within in competent compacted fill at a depth of 12-inches or more below the lowest adjacent compacted pad grade. This value may be increased by 20 percent for each additional foot of width and depth, to a value not greater than 3,500 psf. The recommended allowable-bearing value includes both dead and live loads. The bearing capacities should be re-evaluated when loads and footing sizes have been finalized.

11.3 Settlement

Based on the general settlement characteristics of compacted fill, the previous overexcavation recommendations in this report and anticipated loading, it is estimated the site would be subjected to a total settlement about 0.50-inch, and a differential settlement of about 0.25-inch over a distance of about 30 feet. It is anticipated that the majority of the settlement will occur during construction or shortly thereafter as building loads are applied.

The above settlement estimates are based on the assumption that a actual rough grading plan will be submitted to LGC for review, that additional soil tests may be deemed necessary, that revised settlement prediction may result and that grading will be performed in accordance with the final grading recommendations presented in a supplemental report and that the project geotechnical consultant will observe and/or test the soil conditions in the footing trenches.

11.4 Lateral Resistance

Lateral forces on footings should be resisted by passive earth resistance and friction at the bottom of the footing. Foundations should be designed for a passive earth pressure of 330 psf per foot of depth to a maximum value of 3,300 psf and a coefficient of friction of 0.40. The passive earth pressure incorporates a minimum factor of safety of 1.5. The above values may be increased by 1/3 when designing for short-duration wind or seismic forces.

The above values are based on footings placed directly against compacted fill. In the case where footing sides are formed, backfill placed against the footings should be compacted to 90 percent or more of maximum dry density as determined by ASTM D1557.

11.5 Footing Setbacks from Descending Slopes

Where structures are proposed near the tops of descending graded or natural slopes, the footing setbacks from the slope face should conform to the 2016 CBC, Figure 1808.7.1. The required setback is H/3 (one-third the slope height) measured along a horizontal line projected from the lower outside face of the footing to the slope face. The footing setbacks should be 5 feet or more where the slope height is 15 feet or less and vary up to 40 feet where the slope height exceeds 15 feet.

11.6 Building Clearances from Ascending Slopes

Building setbacks from ascending graded or natural slopes should conform with the 2016 CBC, Figure 1808.7.1, which requires a building clearance of H/2 (one-half the slope height) varying from 5 to 15 feet. The building clearance is measured along a horizontal line projected from the toe of the slope to the face of the building. A retaining wall may be constructed at the base of the slope to achieve the required building clearance.

11.7 Footing Observations

Footing trenches should be observed by the project geotechnical consultant to document that they have been excavated into competent bearing compacted fill soil. The foundation trenches should be observed prior to the placement of forms, reinforcement or concrete. The trenches should be trimmed neat, level and square. Loose, sloughed or moisture-softened soil should be removed prior to concrete placement.

Excavated materials from footing excavations should not be placed in slab-on-ground areas unless the soil are compacted to 90 percent or more of maximum dry density as determined by ASTM D1557.

11.8 Expansive Soil Considerations

Results of preliminary laboratory tests by LGC indicate onsite soil materials exhibit expansion potentials of **VERY LOW** in accordance with 2016 CBC, Chapter 18. Given that generally the expansion index of the onsite soil is **VERY LOW**, recommendations to mitigate the effects of expansive soil may not be required. However, expansive soil conditions of the near surface finish grade soil should be evaluated and tested for individual building pads on a pad-by-pad basis during and at the completion of rough grading to verify and/or modify the anticipated conditions. The design and construction details presented herein are intended to provide recommendations for the levels of expansion potential which may be evident at the completion of rough grading. Furthermore, it should be noted that additional slab thickness, footing sizes and/or reinforcement more stringent than the recommendations that follow should be provided as recommended by the project structural engineer.

11.9 Footing/Floor Slabs - Very Low Expansion Potential

The following are our recommendations where foundation soil exhibit **VERY LOW** expansion potential as classified in accordance with 2016 CBC. For this condition, it is recommended that footings and floors be constructed and reinforced in accordance with the following criteria. However, additional slab thickness, footing sizes and/or reinforcement may be required by the project architect or structural engineer.

- ***Footings***
  - Exterior continuous footings should be founded entirely in compacted engineered fill below the lowest adjacent final exterior pad grade at minimum depths of 12 inches and 18 inches deep for one-story and for two-story construction, respectively. Interior continuous footings may be founded at a depth of 12 inches or greater for one-story and two-story structures. Continuous footings should have a minimum width of 12 inches for one-story and 15 inches for two-story structures.

- Continuous footings should be reinforced with a minimum of two (2) No. 4 bars, one near the top and one near the bottom.
- Interior isolated pad footings should be 24 inches or more square and founded at a depth of 12 inches or more for one-story and two-story structures and 18-inches or more for three-story and four-story structures, below the lowest adjacent grade. Footings should be reinforced in accordance with the structural engineer's recommendation.
- Exterior pad footings should be 24 inches or more square and founded at a depth of 18 inches or more below the lowest adjacent grade. Isolated exterior footings should be connected with grade beams. Footings should be reinforced in accordance with the structural engineer's recommendations.

• ***Floor Slabs***

- Concrete floor slabs should be 4 inches or more thick and reinforced with No. 3 bars spaced 24 inches or less on-centers, both ways. Slab reinforcement should be supported on concrete chairs or bricks so that the desired placement is near mid-depth.
- Concrete floors should be underlain with a moisture-vapor retarder consisting of 15-mil thick vapor barrier. Laps within the membrane should be sealed and overlapped 12 inches. Two inches or more of clean sand should be placed above and below the membrane to promote uniform curing of the concrete.
- Prior to placing concrete, subgrade soil should be thoroughly moistened to approximately 100% of optimum water content to promote uniform curing of the concrete and reduce the development of shrinkage cracks. The moisture content should penetrate to a minimum depth of 12 inches.

12.0 RETAINING WALLS

12.1 Lateral Earth Pressures and Retaining Wall Design Parameters

Conventional footings for retaining walls founded entirely in properly compacted fill should be embedded at least 18 inches below lowest adjacent grade. At this depth, an allowable uniform bearing capacity of 2,500 psf may be assumed for retaining walls founded in competent compacted fill.

The following are lateral earth pressures are recommended for retaining walls up to 10 feet high that may be proposed. The recommended lateral pressures for approved on-site or import soil **(with an expansion index of 20 or less and an angle of internal friction (phi) of at least 36 degrees)** for level or sloping backfill are presented in Table 5. Onsite soil should be screened of rocks and other material over 3 inches in diameter.

TABLE 5
Lateral Earth Pressures

CONDITIONS	***EQUIVALENT FLUID WEIGHT (pcf)***			
	Level Backfill (up to 6 feet)	***Level Backfill Dynamic (>6 feet to 10 feet)***	***2:1 Backfill Ascending (up to 6 feet)***	***2:1 Backfill Ascending-Dynamic (>6 feet to 10 feet)***
Active	35	55	50	70
At-Rest	55	75	80	100
Passive	330	330	190	190

The friction coefficient of 0.40 may be used at the concrete footing and soil interface for sliding resistance. Wall footings should be designed in accordance with structural considerations.

Embedded structural walls should be designed to resist the lateral earth pressures. Restrained structural walls should be designed for at rest conditions. The magnitude of those pressures depends on the amount of deformation that the wall can yield under load. If the wall can yield enough to mobilize the full shear strength of the soil, it can be designed for "active" pressure. If the wall cannot yield under the applied load, the shear strength of the retained soil cannot be mobilized and the earth pressure will be higher. Such walls should be designed for "at-rest" conditions. If a structure moves toward the soil, the resulting resistance developed by the soil is the "passive" resistance.

The equivalent fluid pressure values assume free-draining conditions and a soil expansion index of 20 or less. If conditions other than those assumed above are anticipated, revised equivalent fluid pressure values should be provided on an individual-case basis by the geotechnical engineer.

Surcharge loading effects from the adjacent structures should be evaluated by the geotechnical and structural engineers.

12.2 Footing Embedments

The base of retaining wall footings constructed on level ground should be founded at a depth of 18 inches or more below the lowest adjacent final grade. Where retaining walls are proposed on or within 15 feet from the top of an adjacent descending fill slopes, the footings should be deepened such that a horizontal clearance of H/3 or more (one-third the slope height) is maintained between the outside bottom edges of the footings and the face of the slope but not to exceed 15 feet nor be less than 5 feet. The above recommended footing setbacks are preliminary and may be revised based on site specific soil conditions. Footing or pier excavations should be observed by the project geotechnical representative to document that the footing trenches have been excavated into competent bearing soil and to the embedments recommended above. These observations should be performed prior to placing forms or reinforcing steel.

12.3 Drainage

All retaining wall structures should be provided with appropriate wall drainage and appropriately waterproofed. Outlet pipes should be sloped to drain to a suitable outlet. It should be noted that that recommended wall drains does not provide protection against seepage through the face of the wall and/or efflorescence. If such seepage or efflorescence is undesirable, retaining walls should be waterproofed to reduce this potential.

Weep holes or open vertical masonry joints should be provided in retaining walls 3 feet or less in height to reduce the likelihood of entrapment of water in the backfill. Weep holes, if used, should be 3 inches or more in diameter and provided at intervals of 6 feet or less along the wall. Open vertical masonry joints, if used, should be provided at 32-inch or less intervals. A continuous gravel fill, 12 inches by 12 inches, should be placed behind the weep holes or open masonry joints. The gravel should be wrapped in filter fabric to reduce infiltration of fines and subsequent clogging of the gravel. Filter fabric may consist of Mirafi 140N or equivalent.

In lieu of weep holes or open joints, for retaining walls less than 3 feet, a perforated pipe and gravel subdrain may be used. Perforated pipe should consist of 4-inch or more diameter PVC Schedule 40 or ABS SDR-35, with the perforations laid down. The pipe should be embedded in 1.5 cubic feet per foot of 0.75 or 1.5-inch open graded gravel wrapped in Mirafi 140N filter fabric.

Retaining walls greater than 3 feet high should be provided with a continuous backdrain for the mean full height of the wall. This drain could consist of geosynthetic drainage composite, such as Miradrain 6000 or equivalent, or a permeable drain material, placed against the entire backside of the wall. If a permeable drain material is used, the backdrain should be 1 or more feet thick. Caltrans Class II permeable material or open graded gravel or crushed stone may be used as permeable drain material. If gravel or crushed stone is used, it should have less than 5 percent material passing the No. 200 sieve. The drain should be separated from the backfill with a geofabric. The upper 1-foot of the backdrain should be covered with compacted fill. A drainage pipe consisting of 4-inch diameter perforated pipe (described above) surrounded by 1 cubic foot per foot of gravel or crushed rock wrapped in a filter fabric should be provided along the back of the wall. The pipe should be placed with perforations down, sloped at 2 percent or more to discharge towards an appropriate outlet through a solid pipe. The pipe should outlet away from structures and slopes. The outside portions of retaining walls supporting backfill should be coated with an approved waterproofing compound to inhibit infiltration of moisture through the walls.

12.4 Temporary Excavations

Retaining walls should be constructed and backfilled as soon as possible after backcuts are excavated. Prolonged exposure of backcut slopes may result in localized slope instability. To facilitate retaining wall construction, the lower 4 feet of temporary slopes may be cut vertical and the upper portions exceeding a height of 4 feet should be cut back at a gradient of 1:1 (h:v) or flatter for the duration of construction. Temporary slopes should be observed by the project geotechnical consultant for evidence of potential instability. Depending on the results of these observations, flatter slopes may be necessary. The potential effects of various parameters such as weather, heavy equipment travel, storage near the tops of the temporary excavations and construction scheduling should also be considered in the stability of temporary slopes. Water should not be permitted to drain towards the slope. Surcharges from equipment, spoil piles, etc., should not be allowed within 10 feet of the top of the slope.

All excavations should be made in accordance with Cal/OSHA. Excavation safety is the sole responsibility of the contractor.

12.5 Retaining Wall Backfill

The retaining wall backfill soil (with an expansion index of 20 or less and an angle of internal friction of at least 36 degree) should be placed in 6 to 8 inch loose lifts, moisture-conditioned or air-dried as necessary to achieve near optimum water conditions, and compacted to at least 90 percent relative density (based on ASTM Test Methods D2922 and D3017).

13.0 MASONRY GARDEN WALLS

13.1 Construction on Level Ground

Where masonry screen walls or garden walls are proposed on level ground and 5 feet or more from the tops of descending slopes, the footings for these walls may be founded at a depth of 18 inches or more below the lowest adjacent final grade. These footings should also be reinforced with two No. 4 bars, one top and one bottom and in accordance with the structural engineer's recommendations.

13.2 Construction Joints

In order to mitigate the potential for unsightly cracking related to the effects of differential settlement, positive separations (construction joints) should be provided in the walls at horizontal intervals of approximately 25 feet and at each corner. The separations should be provided in the blocks only and not extend through the footings. The footings should be placed monolithically with continuous rebar to serve as effective "grade beams" along the full lengths of the walls.

14.0 CONCRETE FLATWORK

14.1 Nonstructural Concrete Flatwork

Concrete flatwork (such as walkways, driveways, patios, bicycle trails, etc.) has a high potential for cracking because of changes in soil volume related to soil-moisture fluctuations. To reduce the potential for excessive cracking and lifting, concrete should be designed in accordance with the minimum guidelines outlined in Table 6. These guidelines will reduce the potential for irregular cracking and promote cracking along construction joints, but will not eliminate all cracking or lifting. Thickening the concrete and/or adding additional reinforcement will further reduce cosmetic distress.

TABLE 6
Minimun Recommendations for Nonstructural Concrete Flatwork Over Very Low Expansive Soil

	Private Sidewalks	***Private Drives***	***Patios/ Entryways***	***City Sidewalk Curb and Gutters***
Minimum Thickness (in.)	4 (nominal)	4(full)	4 (full)	City/Agency Standard
Presaturation	Presoak to 12 inches	Presoak to 12 inches	Presoak to 12 inches	City/Agency Standard
Reinforcement	—	No. 3 at 24 inches on centers	No. 3 at 24 inches on centers	City/Agency Standard
Thickened Edge	—	8" x 8"	8" X 8"	City/Agency Standard
Crack Control	Saw cut or deep open tool joint to a minimum of 1/3 the concrete thickness	Saw cut or deep open tool joint to a minimum of 1/3 the concrete thickness	Saw cut or deep open tool joint to a minimum of 1/3 the concrete thickness	City/Agency Standard
Maximum Joint Spacing	5 feet	10 feet or quarter cut whichever is closer	6 feet	City/Agency Standard

14.2 Joint Spacing

To reduce the potential for unsightly cracking, concrete sidewalks and patio type slabs should be provided with construction or expansion joints every 6 feet or less. Concrete driveway slabs should be provided with construction or expansion joints every 10 feet or less, with an aspect ratio of 1.2, to provide rectangular shaped joint patterns.

14.3 Subgrade Preparation

As a further measure to reduce cracking of concrete flatwork, the upper 12 inches of subgrade soil below concrete-flatwork areas should first be compacted to a relative density of 90 percent of more and then thoroughly wetted to achieve a moisture content that is equal to or slightly greater than optimum moisture content. This moisture should extend to a depth of 12 inches or more below subgrade and maintained in the soil during placement of concrete. Pre-watering of the subgrade will promote uniform curing of the concrete and reduce the potential for the development of shrinkage cracks. A representative of the project geotechnical consultant should observe and document the density and moisture content of subgrade soil and depth of moisture penetration prior to placing concrete.

15.0 PLANTERS

Area drains should be extended into planters that are located within 5 feet of building walls, foundations, retaining walls and masonry garden walls to reduce excessive infiltration of water into the underlying foundation soil. The surface of the ground in these areas should be sloped at a gradient of 2 percent or more away from the walls and foundations. Drip-irrigation systems are also recommended to reduce overwatering and subsequent saturation of the adjacent foundation soil.

16.0 SOIL CORROSIVITY

16.1 Corrosivity to Concrete and Metal

The National Association of Corrosion Engineers (NACE) defines corrosion as "a deterioration of a substance or its properties because of a reaction with its environment". From a geotechnical viewpoint, the "environment" is the prevailing foundation soil and the "substances" are the reinforced concrete foundations or various buried metallic elements such as rebar, piles, pipes, etc., which are in direct contact with or within close vicinity of the foundation soil.

In general, soil environments that are detrimental to concrete have high concentrations of soluble sulfates. ACI 318R-05, Table 4.3.1 provides specific guidelines for the concrete mix design based on different amount of soluble sulfate content. The minimum amount of chloride ions in the soil environment that are corrosive to steel, either in the form of reinforcement protected by concrete cover, or plain steel substructures such as steel pipes or piles, is 500 ppm per California Test 532 and ACI 318R-05, Table 4.4.1.

The corrosion potential of the onsite materials was evaluated for its effect on steel and concrete. The corrosion potential was evaluated using the results of laboratory tests on representative samples obtained during our field exploration. Laboratory testing was performed to evaluate pH, minimum electrical resistivity and chloride and soluble sulfate content. Based on testing performed during this investigation within the project site, the onsite soil are classified as having a negligible sulfate exposure condition in accordance with ACI 318R-05, Table 4.3.1, and negligible chloride exposure condition in accordance with ACI 318R-05, Table 4.4.1. Based on laboratory testing of on-site soil it is also our opinion that onsite soil should be considered highly corrosive to buried metals due to the low resistivity. Metal piping should be corrosion-protected or consideration should be given to using plastic piping instead of metal or plastic sleeving around the metal pipe.

Despite the minimum recommendation above, LGC is not a corrosion-engineering firm. Therefore, we recommend that you consult with a competent corrosion engineer and conduct additional testing (if required) to evaluate the actual corrosion potential of the site and to provide recommendations to reduce the corrosion potential with respect to the proposed improvements. The recommendations of the corrosion engineer may supersede the above requirements.

These recommendations are based on the current and previous samples of the subsurface soil or bedrock. The initiation of grading at the site could blend various soil types and import soil may be used locally. These changes made to the foundation soil could alter sulfate-content levels. Accordingly, it is recommended that additional testing be performed at the completion of grading.

17.0 PLAN REVIEWS AND CONSTRUCTION SERVICES

This report is a preliminary geotechnical investigation prepared for the exclusive use of **Mr. Shizao Zheng** to assist the project engineer and architect in the design of the proposed development. It is recommended that LGC be engaged to review the actual grading plans, foundation plans and final design drawings and specifications prior to construction. This is to document that the recommendations contained in this report have been properly interpreted and/or are incorporated into the project specifications. LGC's review of such plans and those that might result from the recommended reviews may indicate that additional subsurface exploration, laboratory testing and analysis should be performed to address areas of concern. If LGC is not accorded the opportunity to review those documents, LGC cannot take responsibility for misinterpretation of our recommendations.

We recommend that LGC be retained to provide geotechnical engineering services during both the rough grading and construction phases of the work. This is to document compliance with the design, specifications or recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to start of construction.

If the project plans change significantly (e.g., building loads or type of structures or grading), LGC should be retained to review our original design recommendations and applicability to the revised construction. If conditions are encountered during construction that appear to be different than those indicated in this report, this office should be notified immediately. Design and construction revisions may be required.

18.0 LIMITATIONS

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by engineers and geologists practicing in this or similar localities. The professional opinions contained herein were derived in accordance with current standards of practice for preliminary reports. Other warranties, expressed or implied, are not made or implied as to the conclusions and professional advice included in this report. The soil samples taken and submitted for laboratory testing, the observations made and the in-situ field testing performed are believed representative of the entire project; however, soil and geologic conditions can vary in characteristics between excavations, both laterally and vertically and may be different than our preliminary findings. If this occurs, the changed conditions must be evaluated by the project geotechnical engineer and engineering geologist and design adjustments may be required recommended.

This report is issued with the understanding that it is the responsibility of the owner, or of his/her representative, to ensure that the information and recommendations contained herein are brought to the attention of the project engineers and incorporated into the plans, and that necessary steps are taken to assure that the contractor and/or subcontractor properly implements the recommendations in the field during construction. The contractor and/or subcontractor should notify the owner if they consider any of the recommendations presented herein to be unsafe.

The conclusions and opinions contained in this report are based on the results of our scope of work and represent our professional judgment. The findings, conclusions and recommendations presented in this report are to be considered preliminary only and subject to confirmation by LGC during the construction process. Without this confirmation, this report is to be considered incomplete; and LGC will not assume any responsibility for its use.

The conclusions and opinions contained in this report are valid up to a period of 2 years from the date of this report. Changes in the conditions of a property can and do occur with the passage of time, whether those be because of natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate codes or standards may occur, whether those result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside LGC's control. Therefore, pending such changes made or if the scope of this project changes, an update of this report should be completed.

This report was not prepared for use by parties or projects other than those named or designed above and is otherwise considered insufficient for other parties or other purposes.

APPENDIX A

REFERENCES AND AERIAL PHOTOGRAPHS

APPENDIX A

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Aerial Photographs Reviewed

SOURCE	*FLIGHT DATE*
Google Earth Pro.	2/2018
Google Earth Pro.	3/2017
Google Earth Pro.	10/2016
Google Earth Pro.	2/2016
Google Earth Pro.	4/2014
Google Earth Pro.	11/2013
Google Earth Pro.	11/2012
Google Earth Pro.	6/2012
Google Earth Pro.	3/2011
Google Earth Pro.	11/2009
Google Earth Pro.	6/2009
Google Earth Pro.	6/2008
Google Earth Pro.	12/2006
Google Earth Pro.	8/2006
Google Earth Pro.	1/2006
Google Earth Pro.	12/2005
Google Earth Pro.	10/2005
Google Earth Pro.	12/2004
Google Earth Pro.	1/2004
Google Earth Pro.	12/2003
Google Earth Pro.	11/2003
Google Earth Pro.	12/2002
Google Earth Pro.	6/2002
Google Earth Pro.	6/1994

APPENDIX B

EXPLORATORY TRENCH LOGS

Project Name: SIKAND - MORENO VALLEY	Logged by: AJR	LOG OF TRENCH IT-1
Project Number: G18-1648-10	Elevation: 1594'	Engineering Properties
Equipment: BACKHOE	Location/Grid: SEE PLATE 1	

Depth	Date: 9/4/18 Description:	Geologic Unit	USCS	Sample No.	Moisture (%)	Dry Density (pcf)
0.0'-2.0'	A ARTIFICIAL FILL, UNDOCUMENTED: Silty SAND/Clayey SILT; dark reddish brown to blackish brown, dry to damp, medium dense/firm, very fine to medium grained with some coarse to very coarse grains, coarse to very coarse rock fragments, some pores, roothairs, desiccated, oxidation staining	Afu	SM/ML	Bulk @ 0'-2.0' Nuke @1.0'	4.3	107.5
2.0'-5.0'	B OLDER ALLUVIAL FAN DEPOSITS: Silty SAND; greenish gray and reddish brown, dry, very dense, very fine to medium grained, with some coarse grains, pinhole pores, roothairs, stopped digging at 5.0 feet due to practical refusal	Qoa	SM			

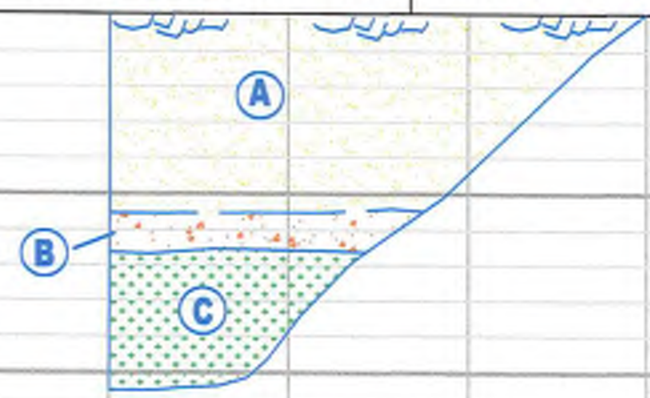
GRAPHICAL REPRESENTATION: NORTH WALL | SCALE: 1" = 5' | SURFACE SLOPE: LEVEL | TREND: N19E

TOTAL DEPTH= 5.0 FEET
NO GROUNDWATER
ENCOUNTERED

Project Name: SIKAND - MORENO VALLEY	Logged by: AJR	LOG OF TRENCH IT-2
Project Number: G18-1648-10	Elevation: 1592'	Engineering Properties
Equipment: BACKHOE	Location/Grid: SEE PLATE 1	

Depth	Date: 9/4/18 Description:	Geologic Unit	USCS	Sample No.	Moisture (%)	Dry Density (pcf)
0.0'-5.5'	A ARTIFICIAL FILL, UNDOCUMENTED: Silty SAND/Clayey SILT; dark reddish brown to blackish brown, dry to damp, medium dense, very fine to medium grained with some coarse to very coarse grains, coarse to very coarse rock fragments, some pores, roothairs, desiccated, pieces of concrete	Afu	SM/ML			
5.5'-6.5'	B OLDER ALLUVIAL FAN DEPOSITS: Silty SAND; greenish gray and reddish brown, dry, very dense, very fine to medium grained, with some coarse grains, pinhole pores, roothairs, oxidation staining	Qoa	SM			
6.5'-10.5'	C BEDROCK (TONALITE): Quartz diorite, grayish white, dry, hard to very hard, oxidation staining @10.0'; some moderately weathered sections at one bottom of trench	Kqdi				

GRAPHICAL REPRESENTATION: NORTH WALL	SCALE: 1" = 5'	SURFACE SLOPE: LEVEL	TREND: N65E

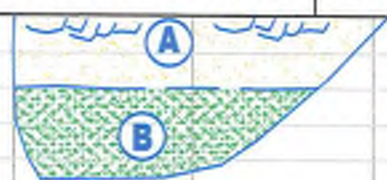


TOTAL DEPTH=10.5 FEET
NO GROUNDWATER
ENCOUNTERED

Project Name: SIKAND - MORENO VALLEY	Logged by: AJR	LOG OF TRENCH TR-1
Project Number: G18-1648-10	Elevation: 1638'	Engineering Properties
Equipment: BACKHOE	Location/Grid: SEE PLATE 1	

Depth	Date: 9/4/18 Description:	Geologic Unit	USCS	Sample No.	Moisture (%)	Dry Density (pcf)
0.0'-2.0'	A Alluvium: Silty SAND; light reddish brown to gray brown, dry, loose, very fine to medium grained with some coarse grains, desiccated, roothairs and roots, pinhole pores and pores	Qal	SM			
2.0'-4.5'	B BEDROCK (TONALITE): Quartz Diorite, grayish white to blackish orange, dry to damp, moderately hard to hard, fine to very coarse grained, oxidation staining, moderately to very weathered, friable @3.0' moderately weathered	Kqd				

GRAPHICAL REPRESENTATION: NORTH WALL | SCALE: 1" = 5' | SURFACE SLOPE: LEVEL | TREND: N30E

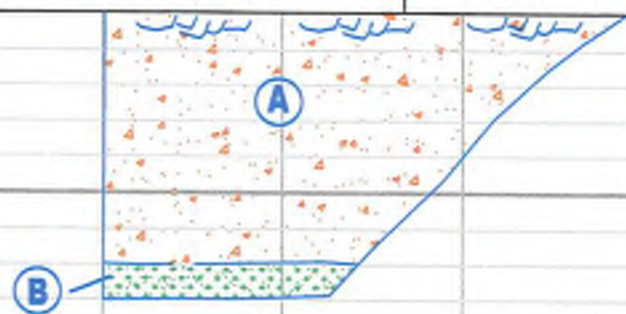


TOTAL DEPTH= 4.5 FEET
NO GROUNDWATER
ENCOUNTERED

Project Name: SIKAND - MORENO VALLEY	Logged by: AJR	LOG OF TRENCH TR-2
Project Number: G18-1648-10	Elevation: 1640'	Engineering Properties
Equipment: BACKHOE	Location/Grid: SEE PLATE 1	

Depth	Date: 9/4/18 Description:	Geologic Unit	USCS	Sample No.	Moisture (%)	Dry Density (pcf)
0.0'-7.0'	A ALLUVIUM: Silty SAND; dark reddish brown,dry to damp, loose to medium dense, very fine to medium grained with some coarse grains, occasional coarse rock fragments, pores, roothairs @2.0'; medium dense, desiccated	Qal	SM	Bulk @ 5.0'-7.0'		
7.0'-8.0'	B BEDROCK (TONALITE): Quartz Diorite, yellowish gray to blackish orange, dry to damp, hard, fine to very coarse grained, oxidation staining, manganese staining, slightly to moderately weathered, friable	Kqd				

GRAPHICAL REPRESENTATION: NORTH WALL | SCALE: 1" = 5' | SURFACE SLOPE: LEVEL | TREND: N28W



TOTAL DEPTH= 8.0 FEET
NO GROUNDWATER
ENCOUNTERED

Project Name: SIKAND - MORENO VALLEY | **Logged by:** AJR | **LOG OF TRENCH TR-3**

Project Number: G18-1648-10 | **Elevation:** 1612'

Equipment: BACKHOE | **Location/Grid:** SEE PLATE 1

Depth	Date: 9/4/18 Description:	Geologic Unit	USCS	Sample No.	Moisture (%)	Dry Density (pcf)
0.0'-1.0'	A TOPSOIL: Silty SAND; light reddish brown to gray brown, dry, loose, very fine to medium grained with some coarse and very coarse grains, desiccated, roothairs and roots, pores		SM			
1.0'-2.5'	B OLDER ALLUVIUM FAN DEPOSITS: Silty SAND; dark reddish brown, dry to damp, medium dense, very fine to coarse grained, clayey matrix, pores, root hairs, weathered	Qoa	SM			
2.5'-3.0'	C Silty SAND; olive gray to dark reddish purple, dry to damp, very dense, very fine to coarse grained, with some very coarse grains, caliche stringers and coating, pores and pinhole pores, roothairs @ 3.0', stopped digging pratical refusal		SM			

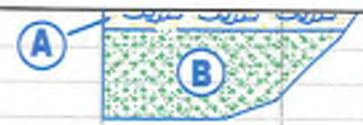
GRAPHICAL REPRESENTATION: NORTH WALL | **SCALE: 1" = 5'** | **SURFACE SLOPE: LEVEL** | **TREND: N60E**

TOTAL DEPTH= 3.0 FEET
NO GROUNDWATER
ENCOUNTERED

Project Name: SIKAND - MORENO VALLEY	Logged by: AJR	LOG OF TRENCH TR-4	
Project Number: G18-1648-10	Elevation: 1608'	Engineering Properties	
Equipment: BACKHOE	Location/Grid: SEE PLATE 1		

Depth	Date: 9/4/18 Description:	Geologic Unit	USCS	Sample No.	Moisture (%)	Dry Density (pcf)
0.0'-0.5'	A TOPSOIL: Silty SAND; reddish brown, loose, dry, very fine to medium grained with some coarse and very coarse grains, roots and roothairs, pores, desiccated		SM			
0.5'-4.5'	B BEDROCK (TONALITE): Quartz Diorite, grayish white to blackish orange, dry to damp, moderately hard to hard, fine to very coarse grained, oxidation staining, very weathered, friable @ 2.0', moderately weathered	Kqd		Bulk @ 2.0'-4.5'		

GRAPHICAL REPRESENTATION: NORTH WALL	SCALE: 1" = 5'	SURFACE SLOPE: LEVEL	TREND: N43E

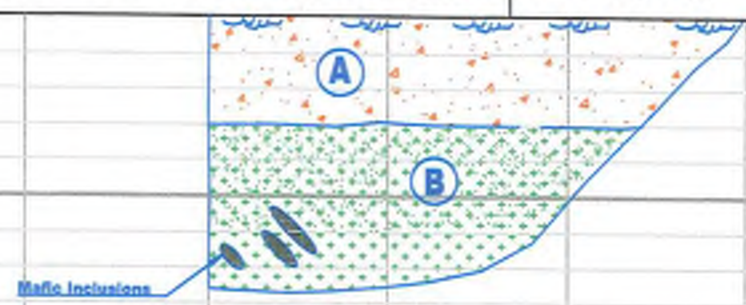


TOTAL DEPTH= 3.0 FEET
NO GROUNDWATER
ENCOUNTERED

Project Name: SIKAND - MORENO VALLEY	Logged by: AJR	LOG OF TRENCH TR-5			
Project Number: G18-1648-10	Elevation: 1690'	Engineering Properties			
Equipment: BACKHOE	Location/Grid: SEE PLATE 1				

Depth	Date: 9/6/18 Description:	Geologic Unit	USCS	Sample No.	Moisture (%)	Dry Density (pcf)
0.0'-1.5'	A OLDER ALLUVIUM FAN DEPOSITS Silty SAND; dark reddish purple to dark red brown, dry, loose to medium dense, very fine to medium grained, with occasional coarse grains, pores and pinhole pores, roots and roothairs, oxidation staining, weathered, blocky	Qoa	SM	Bulk @ 0.0'-2.0'		
1.5'-3.0'	B Silty SAND; reddish orange to light orange brown, dry, dense to very dense, very fine to medium grained with some coarse to very coarse grains, pinhole pores, roothairs, trace manganese staining					
3.0'-7.5'	C BEDROCK (TONALITE): Quartz Diorite; grayish white to blackish orange, dry to damp, moderately hard to hard, fine to very coarse grained, oxidation staining, manganese staining, moderately weathered, friable @6.0'; slightly weathered, hard to very hard, practical refusal at 7.5'	Kqd				

GRAPHICAL REPRESENTATION: NORTH WALL | SCALE: 1" = 5' | SURFACE SLOPE: LEVEL | TREND: N12W

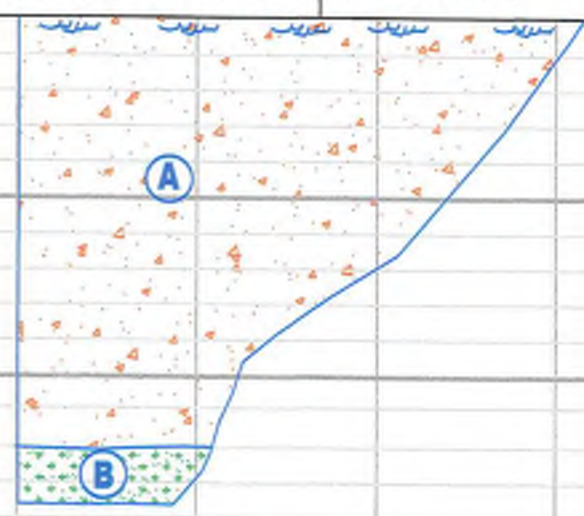


TOTAL DEPTH= 7.5 FEET
NO GROUNDWATER
ENCOUNTERED

Project Name: SIKAND - MORENO VALLEY	Logged by: AJR	LOG OF TRENCH TR-6
Project Number: G18-1648-10	Elevation: 1672'	Engineering Properties
Equipment: BACKHOE	Location/Grid: SEE PLATE 1	

Depth	Date: 9/6/18 Description:	Geologic Unit	USCS	Sample No.	Moisture (%)	Dry Density (pcf)
0.0'-6.0'	A OLDER ALLUVIUM FAN DEPOSITS: Silty SAND; dark brown to reddish brown, dry to damp, loose to medium dense, very fine to medium grained, with some coarse and very coarse grains, occasional coarse rock fragments, desiccated, pores, roots and roothairs, oxidation staining @3.0'; medium dense, trace rock fragments, caliche stringers and coating	Qoa	SM	Bulk @ 2.0'-6.0' Nuke @ 2.0'	2.6	106.2
6.0'-12.0'	B Silty SAND; reddish brown, dry, medium dense to dense, very fine to medium grained, with occasional coarse and very coarse grains, trace rock fragments, desiccated, pores, roots and roothairs, caliche stringers and coating		SM			
12.0'-13.5'	C BEDROCK (TONALITE): Quartz Diorite, blackish orange to yellow brown, dry to damp, hard, fine to very coarse grains, friable, oxidation staining, moderately weathered	Kqd				

GRAPHICAL REPRESENTATION: NORTH WALL | SCALE: 1" = 5' | SURFACE SLOPE: LEVEL | TREND: N4E



TOTAL DEPTH=13.5 FEET
NO GROUNDWATER ENCOUNTERED

Project Name: SIKAND - MORENO VALLEY		Logged by: AJR			LOG OF TRENCH TR-7			
Project Number: G18-1648-10		Elevation: 1624'			Engineering Properties			
Equipment: BACKHOE		Location/Grid: SEE PLATE 1						
Depth	Date: 9/6/18	Description:	Geologic Unit		USCS	Sample No.	Moisture (%)	Dry Density (pcf)
0.0'-2.0'	A	TOPSOIL: Silty SAND; reddish brown, dry to damp, medium dense, very fine to medium grained, with some coarse and very coarse grains, desiccated, pores, roothairs	Qoa		SM			
2.0'-4.5'	B	WEATHERED BEDROCK (TONALITE): Well Grade GRAVEL; blackish orange to gray white, damp, moderately hard, fine to very coarse grained, highly weathered, oxidation staining, friable @3.0'; dry, very hard, slightly weathered @4.5', stopping digging practical refusal	Qdi		SM			

GRAPHICAL REPRESENTATION: NORTH WALL | SCALE: 1" = 5' | SURFACE SLOPE: LEVEL | TREND: N13E

TOTAL DEPTH= 4.5 FEET
NO GROUNDWATER
ENCOUNTERED

Project Name: SIKAND - MORENO VALLEY	Logged by: AJR	LOG OF TRENCH TR-8
Project Number: G18-1648-10	Elevation: 1612'	Engineering Properties
Equipment: BACKHOE	Location/Grid: SEE PLATE 1	

Depth	Date: 9/8/18 Description:	Geologic Unit	USCS	Sample No.	Moisture (%)	Dry Density (pcf)
0.0'-2.0'	A TOPSOIL: Silty SAND; light reddish brown to gray brown, dry, loose, very fine to medium grained with some coarse and very coarse grains, desiccated, roothairs and roots, pores		SM			
2.0'-3.0'	B OLDER ALLUVIUM FAN DEPOSITS: Silty SAND; dark reddish purple to olive gray, dry to damp, dense to very dense, very fine to coarse grained, clayey matrix, pores, root hairs, caliche stringers and coating, weathered	Qoa	SM	Nuke @ 2.5'	5.8	105.7
3.0'-7.0'	C Silty SAND/Clayey SILT; dark brown to olive brown, damp, dense to very dense, very fine to medium grained with some coarse grains, occasional coarse and very coarse rock fragments, clayey matrix, oxidation staining, difficulty digging		SM/ML	Bulk @ 4.0'-6.0' Nuke @7.0'	 8.3	 117.8

GRAPHICAL REPRESENTATION: NORTH WALL	SCALE: 1" = 5'	SURFACE SLOPE: LEVEL	TREND: N62E

TOTAL DEPTH= 7.0 FEET
NO GROUNDWATER
ENCOUNTERED

APPENDIX B

Field Exploration

B-1 General

Geologic mapping of the site was performed by LGC's personnel. The locations of the exploratory excavations were chosen to obtain site and trench specific subsurface information needed to achieve the objective for this investigation.

A visual survey was conducted to verify that the proposed excavations would not encounter any subsurface utility lines. Underground utilities were not encountered during the field exploratory program.

B-2 Excavation and Sampling

Surface geologic mapping of the site and accessible surrounding areas was completed by a geologist from this firm during September 2018, utilizing the referenced Conceptual Grading Plan Tract Map No. 37557 for plotting geologic units. This information is plotted on the enclosed Geotechnical Map (Plate 1).

Ten (10) exploratory trenches, TR-1 through TR-8 and IT-1 through IT-2, were excavated with a backhoe on September 4, 2018 and September 6, 2018 to depths of approximately 3.0 to 13.5 feet below the existing ground surface. The trenches were excavated to evaluate the general characteristics of the subsurface geologic/geotechnical conditions at the subject site, which consisted of classification of site soil, determination of groundwater elevations (if present), and collection of representative soil and bedrock samples.

Prior to our subsurface work, an underground utilities clearance was obtained from Underground Service Alert of Southern California. At the conclusion of the subsurface investigation, test pits were backfilled with native materials. Minor settlement of the backfill soil may occur over time.

During our subsurface investigation, representative bulk samples were retained for laboratory testing. Laboratory testing was performed on selected representative samples of onsite soil and/or bedrock materials and included maximum dry density and optimum water content, expansion index, sulfate content, chloride content, pH, resistivity, grain size analysis, and direct shear. A discussion of the tests performed and a summary of the results are presented in Appendix C. Moisture and density test results are presented on the trench logs which are presented on the following pages.

B-3 Miscellaneous

The trench logs describe the earth materials encountered, sampling method used, and the results of field and laboratory tests. The logs also show the test pit number, date of completion, and the name of the logger. A geologist logged the trenches in accordance with the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) ASTM D2488-93. The boundaries between soil types shown on the logs are approximate and the transition between different soil layers may be gradual. The logs of the trenches are presented on the following pages.

APPENDIX C

LABORATORY TESTING PROCEDURES AND TEST RESULTS

APPENDIX C

Laboratory Testing Procedures and Test Results

The laboratory testing program was directed towards providing quantitative data relating to the relevant engineering properties of the soil. Samples considered representative of site conditions were tested in general accordance with American Society for Testing and Materials (ASTM) procedure and/or California Test Methods (CTM), where applicable. The following summary is a brief outline of the test type and a table summarizing the test results.

Soil Classification: Soil were classified according the Unified Soil Classification System (USCS) in accordance with ASTM Test Methods D2487 and D2488. The soil classifications (or group symbol) are shown on the laboratory test data, and boring logs.

Maximum Dry Density Tests: The maximum dry density and optimum water content of typical materials were determined in accordance with ASTM test method D1557. The test results are presented in the table below:

SAMPLE LOCATION	SAMPLE DESCRIPTION (USCS)	MAXIMUM DRY DENSITY (% by weight)	OPTIMUM WATER CONTENT (%)
IT-1 @ 0-2'	Silty SAND/Clayey SILT (SM/ML)	135.9	7.0
TR-4 @ 2-4'	Bedrock; Quartz Diorite	133.2	7.0
TR-8 @ 4-6'	Silty SAND/Clayey SILT (SM/ML)	128.3	9.0

Expansion Index: The expansion potential of a selected sample was evaluated by the Expansion Index Test, U.B.C. Standard No. 18-2 and/or ASTM test method D4829. Specimens are molded under a given compactive energy at or near the optimum moisture content and approximately 50 percent saturation or approximately 90 percent relative compaction. The prepared 1-inch thick by 4-inch diameter specimens are loaded to an equivalent 144 psf surcharge and are inundated with tap water until volumetric equilibrium is reached. The results of these tests are presented in the table below:

SAMPLE LOCATION	*SAMPLE DESCRIPTION* (USCS)	*EXPANSION INDEX*	*EXPANSION POTENTIAL**
TR-8 @ 4-6'	Silty SAND/Clayey SILT (SM/ML)	19	Very Low

*Per ASTM D4829

Soluble Sulfates: The soluble sulfate content of selected samples was determined by standard geotechnical methods (CTM 417). The soluble sulfate content is used to determine the appropriate cement type and maximum water-cement ratios. The test results are presented in the table below:

SAMPLE LOCATION	*SAMPLE DESCRIPTION* (USCS)	*SULFATE CONTENT (ppm)*	*SULFATE EXPOSURE**
TR-8 @ 4-6'	Silty SAND/Clayey SILT (SM/ML)	Non-Detect	Negligible

*Per ACI 318R-05 Table 4.3.1

Chloride Content: Chloride content was tested with CTM 422. The results are presented below:

SAMPLE LOCATION	*SAMPLE DESCRIPTION* (USCS)	*CHLORIDE CONTENT (ppm)*
TR-8 @ 4-6'	Silty SAND/Clayey SILT (SM/ML)	128

Minimum Resistivity and pH Tests: Minimum resistivity and pH tests were performed with CTM 643. The results are presented in the table below:

SAMPLE LOCATION	*SAMPLE DESCRIPTION* (USCS)	*pH*	*MINIMUM RESISTIVITY (ohm-cm)*
TR-8 @ 4-6'	Silty SAND/Clayey SILT (SM/ML)	7.5	1,100

Direct Shear: Direct shear tests were performed on selected remolded samples, which were soaked for a minimum of 24 hours under a surcharge equal to the applied normal force during testing. After transfer of the sample to the shear box, and reloading the sample, pore pressures set up in the sample due to the transfer were allowed to dissipate for a period of approximately 1 hour prior to application of shearing force. The samples were tested under various normal loads, a motor-driven, strain-controlled, direct-shear testing apparatus at a strain rate of less than 0.001 to 0.5 inch per minute (depending upon the soil type). The graphical test results are presented in the table below:

SAMPLE LOCATION	*SAMPLE DESCRIPTION*	*ANGLE OF INTERNAL FRICTION (degrees)*	*COHESION (psf)*
TR-8 @ 4-6'	Silty SAND/Clayey SILT (SM/ML)	36	20

APPENDIX D

GENERAL EARTHWORK AND GRADING SPECIFICATIONS

APPENDIX D

General Earthwork and Grading Specifications

1.0 General

1.1 ***Intent:*** These General Earthwork and Grading Specifications are for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the specific recommendations in the geotechnical report shall supersede these more general Specifications. Observations of the earthwork by the project Geotechnical Consultant during the course of grading may result in new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).

1.2 ***The Geotechnical Consultant of Record:*** Prior to commencement of work, the owner shall employ a qualified Geotechnical Consultant of Record (Geotechnical Consultant). The Geotechnical Consultant shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading.

Prior to commencement of grading, the Geotechnical Consultant shall review the "work plan" prepared by the Earthwork Contractor (Contractor) and schedule sufficient personnel to perform the appropriate level of observation, mapping, and compaction testing.

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owner, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required.

The Geotechnical Consultant shall observe the moisture-conditioning and processing of the subgrade and fill materials and perform relative compaction testing of fill to confirm that the attained level of compaction is being accomplished as specified. The Geotechnical Consultant shall provide the test results to the owner and the Contractor on a routine and frequent basis.

1.3 ***The Earthwork Contractor:*** The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, geotechnical report(s), and these Specifications prior to commencement of grading. The Contractor shall be solely responsible for performing the grading in accordance with the project plans and specifications. The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "equipment" of work and the estimated quantities of daily earthwork contemplated for the site prior to commencement of grading.

The Contractor shall inform the owner and the Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate personnel will be available for observation and testing. The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish the earthwork in accordance with the applicable grading codes and agency ordinances, these Specifications, and the recommendations in the approved geotechnical report(s) and grading plan(s). If, in the opinion of the Geotechnical Consultant, unsatisfactory conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, insufficient buttress key size, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the Geotechnical Consultant shall reject the work and may recommend to the owner that construction be stopped until the conditions are rectified. It is the contractor's sole responsibility to provide proper fill compaction.

2.0 *Preparation of Areas to be Filled*

2.1 ***Clearing and Grubbing:*** Vegetation, such as brush, grass, roots, and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies, and the Geotechnical Consultant.

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). No fill lift shall contain more than 10 percent of organic matter. Nesting of the organic materials shall not be allowed.

If potentially hazardous materials are encountered, the Contractor shall stop work in the affected area, and a hazardous material specialist shall be informed immediately for proper evaluation and handling of these materials prior to continuing to work in that area.

As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed. The contractor is responsible for all hazardous waste relating to his work. The Geotechnical Consultant does not have expertise in this area. If hazardous waste is a concern, then the Client should acquire the services of a qualified environmental assessor.

2.2 ***Processing:*** Existing ground that has been declared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory shall be overexcavated as specified in the following section. Scarification shall continue until soil are broken down and free of oversize material and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.

2.3 ***Overexcavation:*** In addition to removals and overexcavations recommended in the approved geotechnical report(s) and the grading plan, soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be overexcavated to competent ground as evaluated by the Geotechnical Consultant during grading.

2.4 ***Benching:*** Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical Consultant. Fill placed on ground sloping flatter than 5:1 shall also be benched or otherwise overexcavated to provide a flat subgrade for the fill.

2.5 ***Evaluation/Acceptance of Fill Areas:*** All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys, and benches.

3.0 ***Fill Material***

3.1 ***General:*** Material to be used as fill shall be essentially free of organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant prior to placement. Soil of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soil to achieve satisfactory fill material.

3.2 ***Oversize:*** Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 8 inches, shall not be buried or placed in fill unless location, materials, and placement methods are specifically accepted by the Geotechnical Consultant. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 vertical feet of finish grade or within 2 feet of future utilities or underground construction.

3.3 ***Import:*** If importing of fill material is required for grading, proposed import material shall meet the requirements of Section 3.1. The potential import source shall be given to the Geotechnical Consultant at least 48 hours (2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

4.0 ***Fill Placement and Compaction***

4.1 ***Fill Layers:*** Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.

4.2 ***Fill Moisture Conditioning:*** Fill soil shall be watered, dried back, blended, and/or mixed, as necessary to attain relatively uniform moisture content at or slightly over optimum. Maximum density and optimum soil moisture content tests shall be performed in accordance with the American Society of Testing and Materials (ASTM Test Method D1557-91).

4.3 ***Compaction of Fill:*** After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density (ASTM Test Method D1557-91). Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.

4.4 ***Compaction of Fill Slopes:*** In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepsfoot rollers at increments of 3 to 4 feet in fill elevation, or by other methods producing satisfactory results acceptable to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent of maximum density per ASTM Test Method D1557-91.

4.5 ***Compaction Testing:*** Field tests for moisture content and relative compaction of the fill soil shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant's discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction (such as close to slope faces and at the fill/bedrock benches).

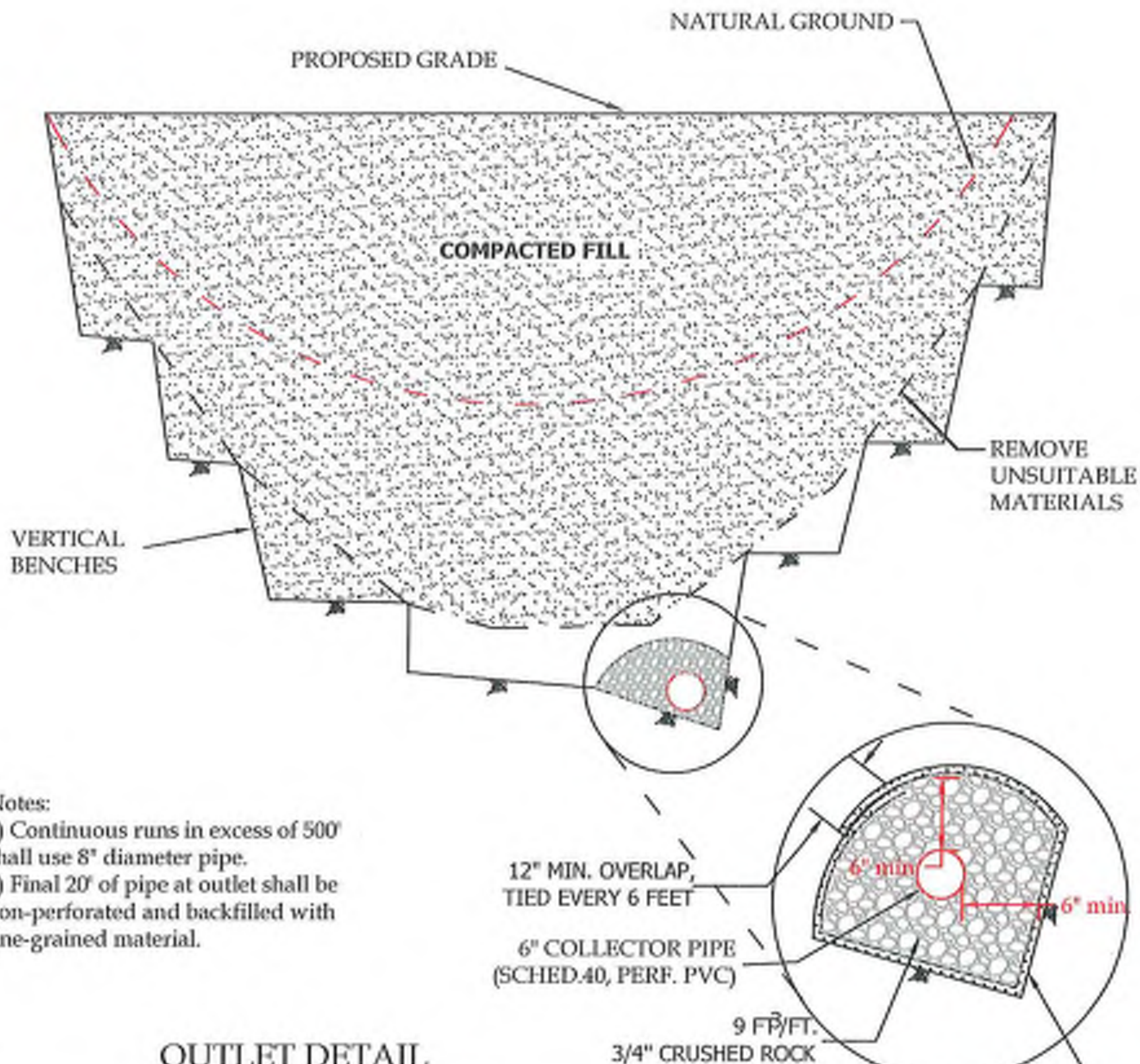
4.6 ***Frequency of Compaction Testing:*** Tests shall be taken at intervals not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of compacted fill soil embankment. In addition, as a guideline, at least one (1) test shall be taken on slope faces for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the testing schedule can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

4.7 ***Compaction Test Locations:***

The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two (2) grade stakes within a horizontal distance of 100 feet and vertically less than 5 feet apart from potential test locations shall be provided.

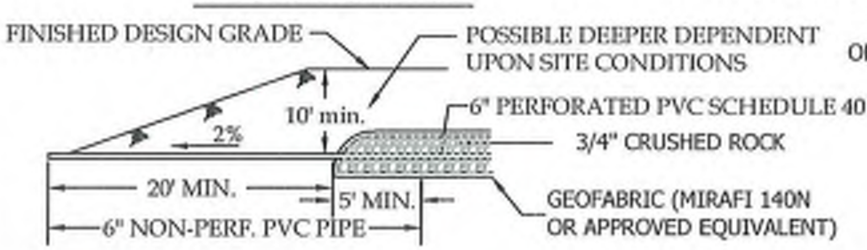
5.0 ***Subdrain Installation***

Subdrain systems shall be installed in accordance with the approved geotechnical report(s) and grading plan. The Geotechnical Consultant may recommend additional subdrain and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.

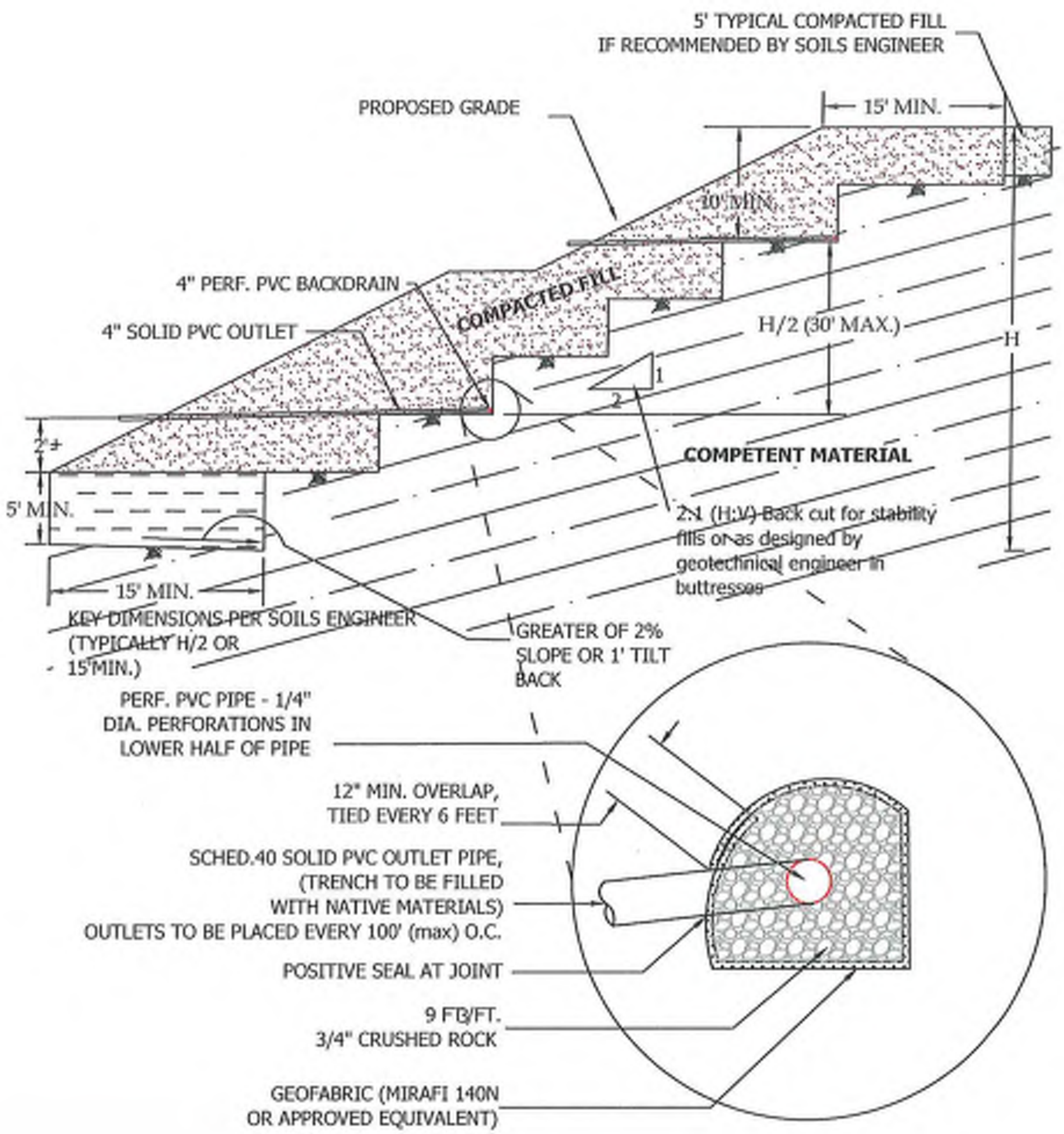


Notes:
1) Continuous runs in excess of 500' shall use 8" diameter pipe.
2) Final 20' of pipe at outlet shall be non-perforated and backfilled with fine-grained material.

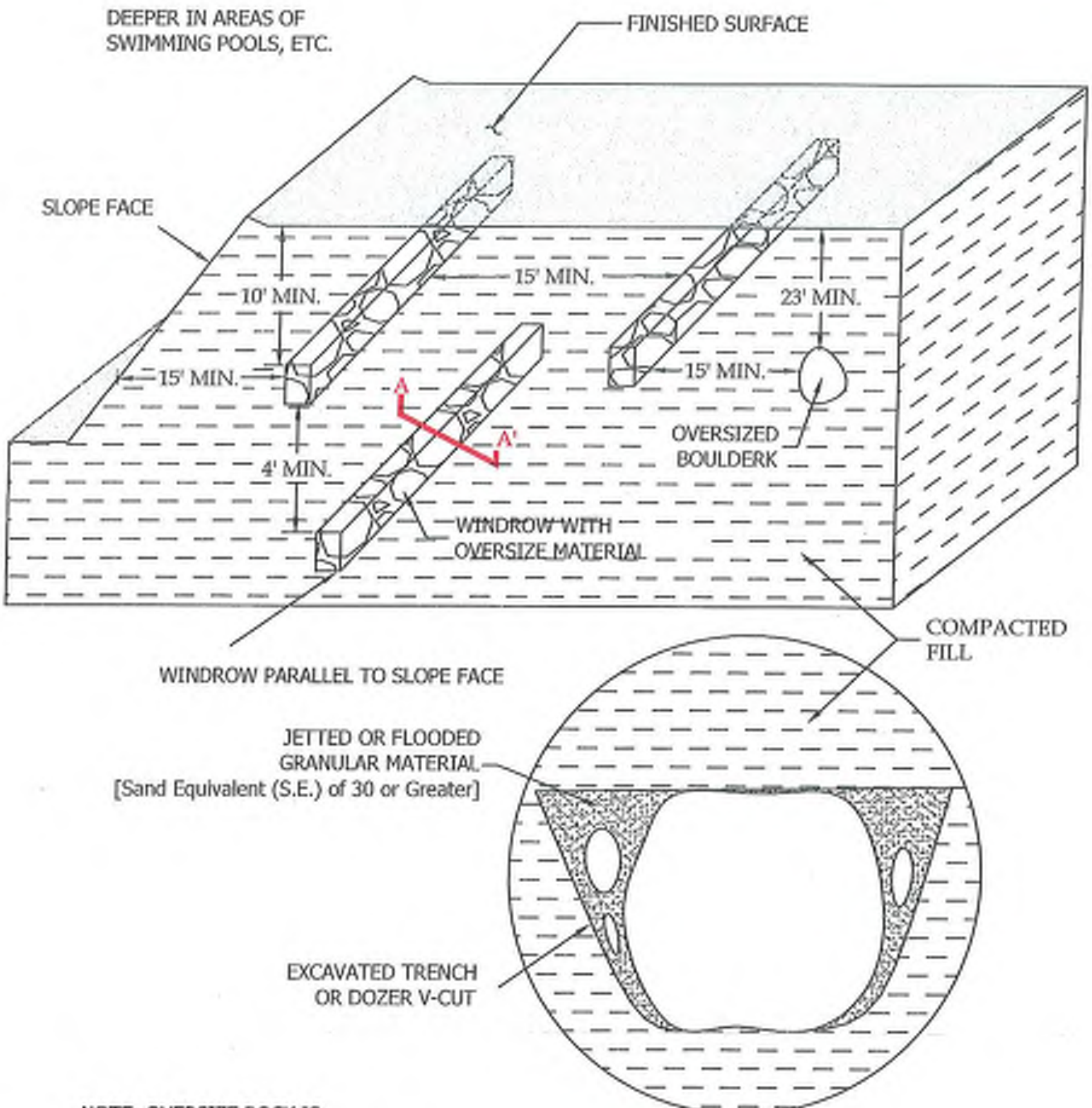
OUTLET DETAIL



CANYON & STREET SUBDRAINS



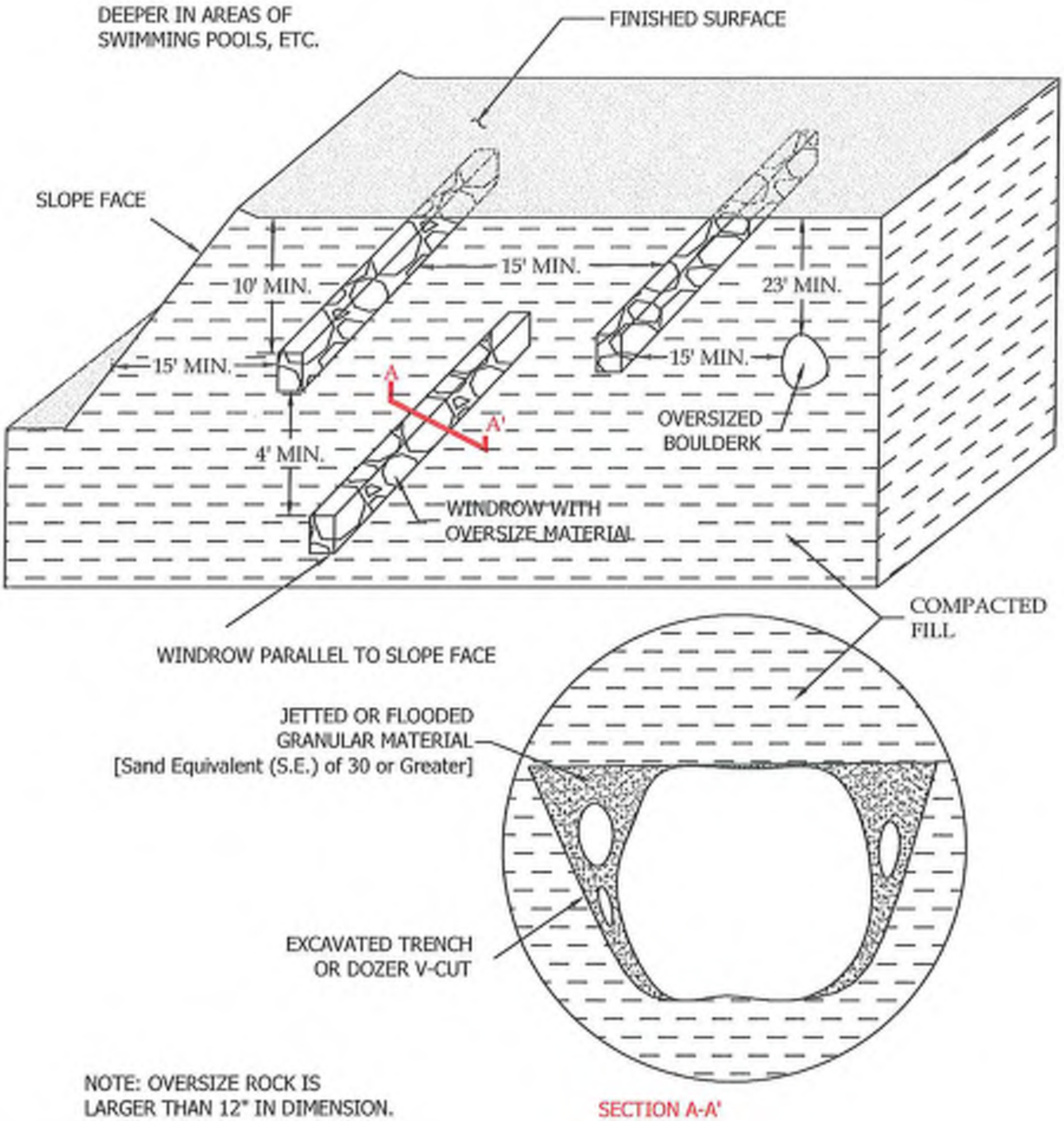
TYPICAL BUTTRESS/ STABILIZATION FILL DETAIL



NOTE: OVERSIZE ROCK IS
LARGER THAN 12" IN DIMENSION.

SECTION A-A'

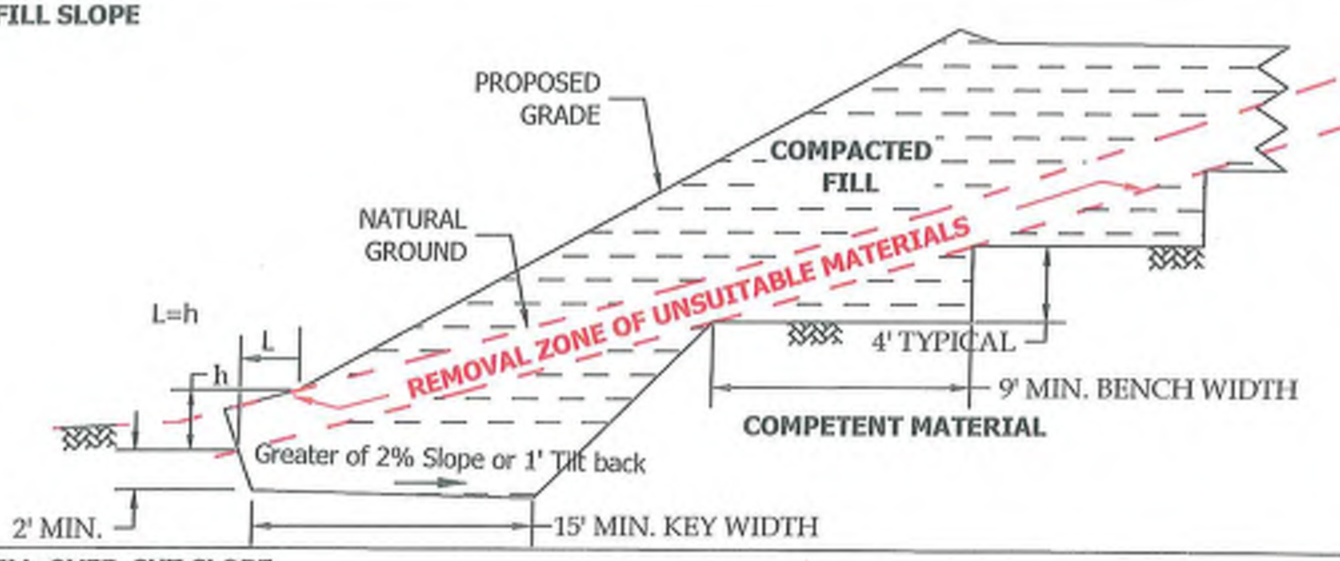
OVERSIZE ROCK DISPOSAL



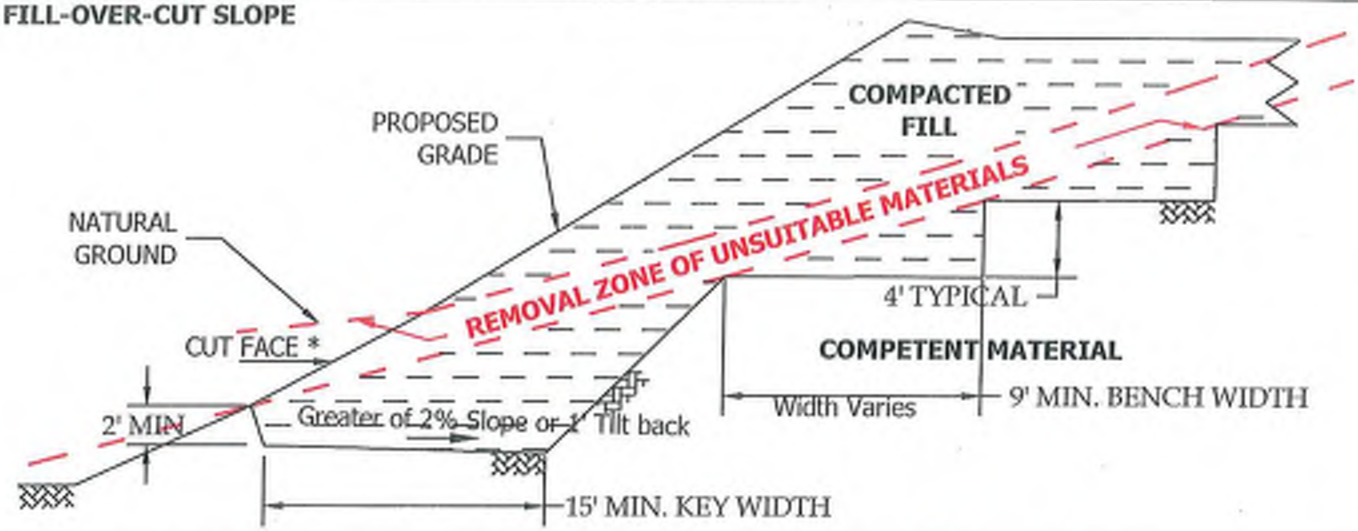
NOTE: OVERSIZE ROCK IS
LARGER THAN 12" IN DIMENSION.

OVERSIZE ROCK DISPOSAL

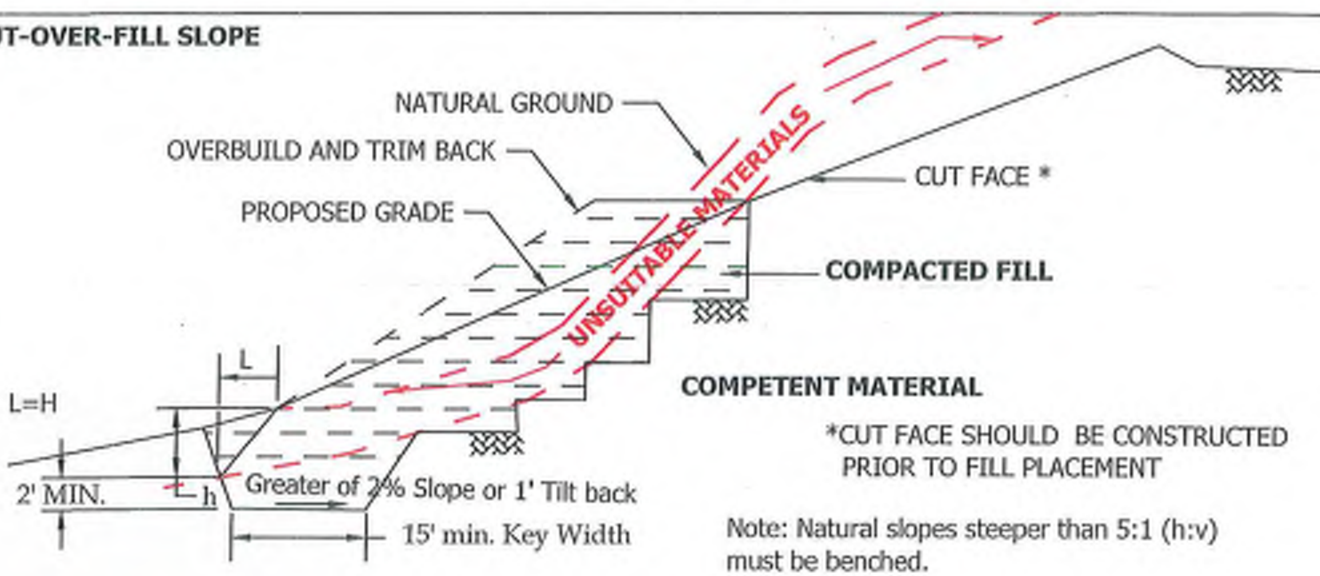
FILL SLOPE



FILL-OVER-CUT SLOPE



CUT-OVER-FILL SLOPE



*CUT FACE SHOULD BE CONSTRUCTED PRIOR TO FILL PLACEMENT

Note: Natural slopes steeper than 5:1 (h:v) must be benched.

KEYING AND BENCHING

Appendix 4: Historical Site Conditions
None Provided at this time

Phase I Environmental Site Assessment or Other Information on Past Site Use

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

See pages 11 thru 16 of the Preliminary Project Specific WQMP.

Per project geotechnical report and infiltration report, the site does not meet minimum infiltration rate of 1.6 in/hr. Thus, infiltration is not a feasible treatment option.

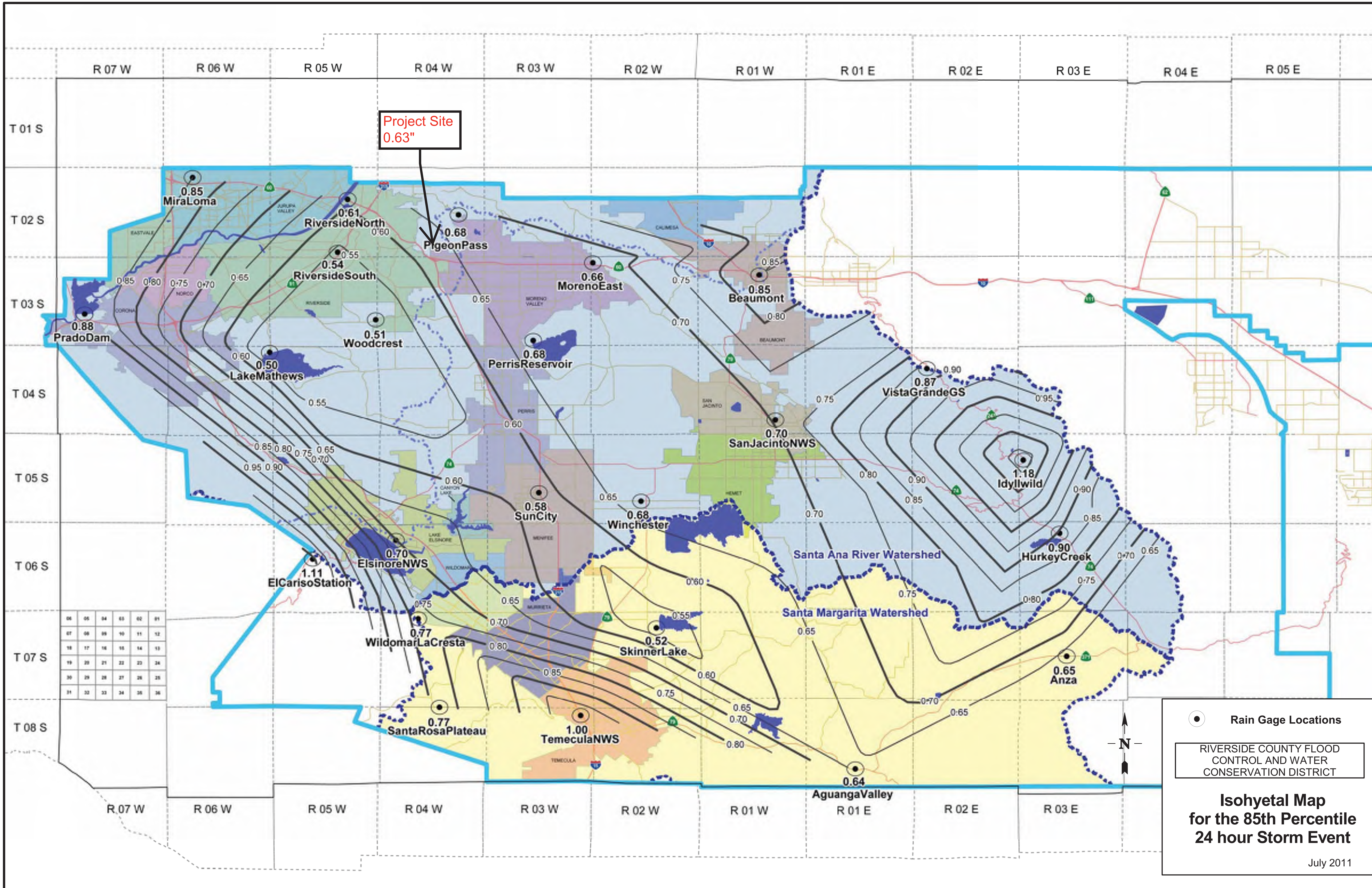
Per Section D.2 Harvest and Use is not a possibility as the site does not meet minimum requirements for landscape or toilet use.

DMA C – A portion of the main entrance to the site (Street A) and Morton Road is not able to be treated. The grades and conditions of the road in this area do not allow for the collection and treatment of the runoff, as the site sits well above grade from Morton Road. Also, the project is at a highpoint in Morton Rd so any acceptance and routing of street flow should be further downstream along Morton Road. The areas around Morton Road, including any future right of way, is also unable to provide for treatment as the grades in the area fall off significantly to the southwest. Runoff from this area will continue in the existing condition, by flowing into the natural channel southwest of the road.

At 0.3 acres, DMA C represents a negligible percentage of the impervious area at less than 5%.

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation



Project Site
0.63"
R 07 W
R 06 W
R 05 W
R 04 W
R 03 W
R 02 W
R 01 W
R 01 E
R 02 E
R 03 E
R 04 E
R 05 E
T 01 S
T 02 S
T 03 S
T 04 S
T 05 S
T 06 S
T 07 S
T 08 S
0.85 MiraLoma
0.61 RiversideNorth
0.68 PigeonPass
0.54 RiversideSouth
0.66 MorenoEast
0.85 Beaumont
0.88 PradoDam
0.51 Woodcrest
0.68 PerrisReservoir
0.50 LakeMathews
0.87 VistaGrandeGS
0.70 SanJacintoNWS
1.18 Idyllwild
0.58 SunCity
0.68 Winchester
0.90 HurkeyCreek
0.70 ElsinoreNWS
1.11 ElCarisoStation
Santa Ana River Watershed
Santa Margarita Watershed
0.77 WildomarLaCresta
0.52 SkinnerLake
0.65 Anza
0.77 SantaRosaPlateau
1.00 TemeculaNWS
0.64 AguangaValley
N
Rain Gage Locations
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
Isohyetal Map
for the 85th Percentile
24 hour Storm Event
July 2011

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name UEG — Date 11/10/2021
Designed by CSM — Case No
Company Project Number/Name Gateway Heights

BMP Identification

BMP NAME / ID DMA A - To Basin A

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth,
from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.63 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
A	*174240*	*Mixed Surface Types*	*0.65*	*0.45*	*78264.8*			
	174240	***Total***			**78264.8**	**0.63**	***4108.9***	***17511***

Notes:

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries; Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name UEG — Date 11/10/2021
Designed by CSM — Case No
Company Project Number/Name Gateway Heights

BMP Identification

BMP NAME / ID DMA B - To Basin B

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E — D_{85}= 0.63 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
B	*474804*	*Mixed Surface Types*	*0.65*	*0.45*	*213271.6*			
	474804	***Total***			**213271.6**	**0.63**	***11196.8***	***47219***

Notes:

Bioretention Facility - Design Procedure	BMP ID	Legend:	Required Entries
	Basin A		Calculated Cells

Company Name:	United Engineering Group	Date:	3/23/2022
Designed by:	Chris Morgan	County/City Case No.:	PEN21-00 66

Design Volume

Enter the area tributary to this feature	A_T=	4	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	4,109	ft^3

Type of Bioretention Facility Design

- [x] Side slopes required (parallel to parking spaces or adjacent to walkways)
- [ ] No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	3.0	ft
Top Width of Bioretention Facility, excluding curb	w_T =	21.8	ft
Total Effective Depth, d_E $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$	d_E =	1.77	ft
Minimum Surface Area, A_m $A_M (ft^2) = \frac{V_{BMP} (ft^3)}{d_E (ft)}$	A_M =	2,325	ft^2
Proposed Surface Area	A=	2,335	ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	4	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		0.5	%
6" Check Dam Spacing		0	feet

Describe Vegetation: Other

Notes: Ornimental Landscaping with Mulch to be used. Deisign at Final.

Bioretention Facility - Design Procedure	BMP ID	Legend:	Required Entries
	Basin B		Calculated Cells

Company Name: United Engineering Group — Date: 3/23/2022

Designed by: Chris Morgan — County/City Case No.: PEN21-00 66

Design Volume

Enter the area tributary to this feature — A_T= 10.9 acres

Enter V_{BMP} determined from Section 2.1 of this Handbook — V_{BMP}= 11,197 ft^3

Type of Bioretention Facility Design

◉ Side slopes required (parallel to parking spaces or adjacent to walkways)

◯ No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer — d_S = 3.0 ft

Top Width of Bioretention Facility, excluding curb — w_T = 56.0 ft

Total Effective Depth, d_E

$d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$ — d_E = 1.79 ft

Minimum Surface Area, A_m

$$A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$$

A_M = 6,265 ft^2

Proposed Surface Area — A= 8,339 ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility — z = 4 :1

Diameter of Underdrain — 6 inches

Longitudinal Slope of Site (3% maximum) — 0.5 %

6" Check Dam Spacing — 0 feet

Describe Vegetation: Other

Notes: Ornimental Landscaping with Mulch to be used. Deisign at Final.

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

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

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Study date 11/09/21 File: moval33preb242.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Predevlopment Conditions
Unit Hydrograph Runoff
Area B

Drainage Area = 8.04(Ac.) = 0.013 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 8.04(Ac.) = 0.013 Sq. Mi.
Length along longest watercourse = 1083.00(Ft.)
Length along longest watercourse measured to centroid = 476.00 (Ft.)
Length along longest watercourse = 0.205 Mi.
Length along longest watercourse measured to centroid = 0.090 Mi.
Difference in elevation = 110.00(Ft.)
Slope along watercourse = 536.2881 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.064 Hr.
Lag time = 3.83 Min.
25% of lag time = 0.96 Min.
40% of lag time = 1.53 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]

8.04	1.93	15.52

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.04	4.64	37.31

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.930(In)
Area Averaged 100-Year Rainfall = 4.640(In)

Point rain (area averaged) = 1.930(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.930(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.040	84.00	0.000

Total Area Entered = 8.04(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
84.0	84.0	0.198	0.000	0.198	1.000	0.198

Sum (F) = 0.198

Area averaged mean soil loss (F) (In/Hr) = 0.198
Minimum soil loss rate ((In/Hr)) = 0.099
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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	130.523	24.817	2.011
2	0.167	261.045	55.614	4.506
3	0.250	391.568	14.211	1.151
4	0.333	522.090	3.889	0.315
5	0.417	652.613	1.032	0.084
6	0.500	783.135	0.438	0.035
			Sum = 100.000	Sum= 8.103

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	0.015	(0.352)	0.014	0.002
2	0.17	0.07	0.015	(0.350)	0.014	0.002
3	0.25	0.07	0.015	(0.349)	0.014	0.002
4	0.33	0.10	0.023	(0.348)	0.021	0.002
5	0.42	0.10	0.023	(0.346)	0.021	0.002
6	0.50	0.10	0.023	(0.345)	0.021	0.002
7	0.58	0.10	0.023	(0.344)	0.021	0.002
8	0.67	0.10	0.023	(0.342)	0.021	0.002
9	0.75	0.10	0.023	(0.341)	0.021	0.002
10	0.83	0.13	0.031	(0.340)	0.028	0.003
11	0.92	0.13	0.031	(0.338)	0.028	0.003
12	1.00	0.13	0.031	(0.337)	0.028	0.003
13	1.08	0.10	0.023	(0.336)	0.021	0.002
14	1.17	0.10	0.023	(0.334)	0.021	0.002
15	1.25	0.10	0.023	(0.333)	0.021	0.002
16	1.33	0.10	0.023	(0.332)	0.021	0.002
17	1.42	0.10	0.023	(0.330)	0.021	0.002
18	1.50	0.10	0.023	(0.329)	0.021	0.002
19	1.58	0.10	0.023	(0.328)	0.021	0.002
20	1.67	0.10	0.023	(0.326)	0.021	0.002
21	1.75	0.10	0.023	(0.325)	0.021	0.002
22	1.83	0.13	0.031	(0.324)	0.028	0.003
23	1.92	0.13	0.031	(0.322)	0.028	0.003
24	2.00	0.13	0.031	(0.321)	0.028	0.003
25	2.08	0.13	0.031	(0.320)	0.028	0.003
26	2.17	0.13	0.031	(0.318)	0.028	0.003
27	2.25	0.13	0.031	(0.317)	0.028	0.003
28	2.33	0.13	0.031	(0.316)	0.028	0.003
29	2.42	0.13	0.031	(0.315)	0.028	0.003
30	2.50	0.13	0.031	(0.313)	0.028	0.003
31	2.58	0.17	0.039	(0.312)	0.035	0.004
32	2.67	0.17	0.039	(0.311)	0.035	0.004
33	2.75	0.17	0.039	(0.310)	0.035	0.004
34	2.83	0.17	0.039	(0.308)	0.035	0.004
35	2.92	0.17	0.039	(0.307)	0.035	0.004
36	3.00	0.17	0.039	(0.306)	0.035	0.004
37	3.08	0.17	0.039	(0.304)	0.035	0.004
38	3.17	0.17	0.039	(0.303)	0.035	0.004
39	3.25	0.17	0.039	(0.302)	0.035	0.004
40	3.33	0.17	0.039	(0.301)	0.035	0.004
41	3.42	0.17	0.039	(0.299)	0.035	0.004
42	3.50	0.17	0.039	(0.298)	0.035	0.004
43	3.58	0.17	0.039	(0.297)	0.035	0.004
44	3.67	0.17	0.039	(0.296)	0.035	0.004
45	3.75	0.17	0.039	(0.294)	0.035	0.004
46	3.83	0.20	0.046	(0.293)	0.042	0.005
47	3.92	0.20	0.046	(0.292)	0.042	0.005
48	4.00	0.20	0.046	(0.291)	0.042	0.005
49	4.08	0.20	0.046	(0.289)	0.042	0.005
50	4.17	0.20	0.046	(0.288)	0.042	0.005
51	4.25	0.20	0.046	(0.287)	0.042	0.005
52	4.33	0.23	0.054	(0.286)	0.049	0.005
53	4.42	0.23	0.054	(0.285)	0.049	0.005
54	4.50	0.23	0.054	(0.283)	0.049	0.005
55	4.58	0.23	0.054	(0.282)	0.049	0.005
56	4.67	0.23	0.054	(0.281)	0.049	0.005

57	4.75	0.23	0.054	(0.280)	0.049	0.005
58	4.83	0.27	0.062	(0.278)	0.056	0.006
59	4.92	0.27	0.062	(0.277)	0.056	0.006
60	5.00	0.27	0.062	(0.276)	0.056	0.006
61	5.08	0.20	0.046	(0.275)	0.042	0.005
62	5.17	0.20	0.046	(0.274)	0.042	0.005
63	5.25	0.20	0.046	(0.272)	0.042	0.005
64	5.33	0.23	0.054	(0.271)	0.049	0.005
65	5.42	0.23	0.054	(0.270)	0.049	0.005
66	5.50	0.23	0.054	(0.269)	0.049	0.005
67	5.58	0.27	0.062	(0.268)	0.056	0.006
68	5.67	0.27	0.062	(0.267)	0.056	0.006
69	5.75	0.27	0.062	(0.265)	0.056	0.006
70	5.83	0.27	0.062	(0.264)	0.056	0.006
71	5.92	0.27	0.062	(0.263)	0.056	0.006
72	6.00	0.27	0.062	(0.262)	0.056	0.006
73	6.08	0.30	0.069	(0.261)	0.063	0.007
74	6.17	0.30	0.069	(0.260)	0.063	0.007
75	6.25	0.30	0.069	(0.258)	0.063	0.007
76	6.33	0.30	0.069	(0.257)	0.063	0.007
77	6.42	0.30	0.069	(0.256)	0.063	0.007
78	6.50	0.30	0.069	(0.255)	0.063	0.007
79	6.58	0.33	0.077	(0.254)	0.069	0.008
80	6.67	0.33	0.077	(0.253)	0.069	0.008
81	6.75	0.33	0.077	(0.252)	0.069	0.008
82	6.83	0.33	0.077	(0.250)	0.069	0.008
83	6.92	0.33	0.077	(0.249)	0.069	0.008
84	7.00	0.33	0.077	(0.248)	0.069	0.008
85	7.08	0.33	0.077	(0.247)	0.069	0.008
86	7.17	0.33	0.077	(0.246)	0.069	0.008
87	7.25	0.33	0.077	(0.245)	0.069	0.008
88	7.33	0.37	0.085	(0.244)	0.076	0.008
89	7.42	0.37	0.085	(0.243)	0.076	0.008
90	7.50	0.37	0.085	(0.241)	0.076	0.008
91	7.58	0.40	0.093	(0.240)	0.083	0.009
92	7.67	0.40	0.093	(0.239)	0.083	0.009
93	7.75	0.40	0.093	(0.238)	0.083	0.009
94	7.83	0.43	0.100	(0.237)	0.090	0.010
95	7.92	0.43	0.100	(0.236)	0.090	0.010
96	8.00	0.43	0.100	(0.235)	0.090	0.010
97	8.08	0.50	0.116	(0.234)	0.104	0.012
98	8.17	0.50	0.116	(0.233)	0.104	0.012
99	8.25	0.50	0.116	(0.232)	0.104	0.012
100	8.33	0.50	0.116	(0.230)	0.104	0.012
101	8.42	0.50	0.116	(0.229)	0.104	0.012
102	8.50	0.50	0.116	(0.228)	0.104	0.012
103	8.58	0.53	0.124	(0.227)	0.111	0.012
104	8.67	0.53	0.124	(0.226)	0.111	0.012
105	8.75	0.53	0.124	(0.225)	0.111	0.012
106	8.83	0.57	0.131	(0.224)	0.118	0.013
107	8.92	0.57	0.131	(0.223)	0.118	0.013
108	9.00	0.57	0.131	(0.222)	0.118	0.013
109	9.08	0.63	0.147	(0.221)	0.132	0.015
110	9.17	0.63	0.147	(0.220)	0.132	0.015
111	9.25	0.63	0.147	(0.219)	0.132	0.015
112	9.33	0.67	0.154	(0.218)	0.139	0.015
113	9.42	0.67	0.154	(0.217)	0.139	0.015
114	9.50	0.67	0.154	(0.216)	0.139	0.015
115	9.58	0.70	0.162	(0.215)	0.146	0.016
116	9.67	0.70	0.162	(0.214)	0.146	0.016

117	9.75	0.70	0.162	(0.213)	0.146	0.016
118	9.83	0.73	0.170	(0.212)	0.153	0.017
119	9.92	0.73	0.170	(0.211)	0.153	0.017
120	10.00	0.73	0.170	(0.210)	0.153	0.017
121	10.08	0.50	0.116	(0.208)	0.104	0.012
122	10.17	0.50	0.116	(0.207)	0.104	0.012
123	10.25	0.50	0.116	(0.206)	0.104	0.012
124	10.33	0.50	0.116	(0.205)	0.104	0.012
125	10.42	0.50	0.116	(0.204)	0.104	0.012
126	10.50	0.50	0.116	(0.203)	0.104	0.012
127	10.58	0.67	0.154	(0.202)	0.139	0.015
128	10.67	0.67	0.154	(0.201)	0.139	0.015
129	10.75	0.67	0.154	(0.201)	0.139	0.015
130	10.83	0.67	0.154	(0.200)	0.139	0.015
131	10.92	0.67	0.154	(0.199)	0.139	0.015
132	11.00	0.67	0.154	(0.198)	0.139	0.015
133	11.08	0.63	0.147	(0.197)	0.132	0.015
134	11.17	0.63	0.147	(0.196)	0.132	0.015
135	11.25	0.63	0.147	(0.195)	0.132	0.015
136	11.33	0.63	0.147	(0.194)	0.132	0.015
137	11.42	0.63	0.147	(0.193)	0.132	0.015
138	11.50	0.63	0.147	(0.192)	0.132	0.015
139	11.58	0.57	0.131	(0.191)	0.118	0.013
140	11.67	0.57	0.131	(0.190)	0.118	0.013
141	11.75	0.57	0.131	(0.189)	0.118	0.013
142	11.83	0.60	0.139	(0.188)	0.125	0.014
143	11.92	0.60	0.139	(0.187)	0.125	0.014
144	12.00	0.60	0.139	(0.186)	0.125	0.014
145	12.08	0.83	0.193	(0.185)	0.174	0.019
146	12.17	0.83	0.193	(0.184)	0.174	0.019
147	12.25	0.83	0.193	(0.183)	0.174	0.019
148	12.33	0.87	0.201	(0.182)	0.181	0.020
149	12.42	0.87	0.201	(0.182)	0.181	0.020
150	12.50	0.87	0.201	0.181	(0.181)	0.020
151	12.58	0.93	0.216	0.180	(0.195)	0.036
152	12.67	0.93	0.216	0.179	(0.195)	0.037
153	12.75	0.93	0.216	0.178	(0.195)	0.038
154	12.83	0.97	0.224	0.177	(0.201)	0.047
155	12.92	0.97	0.224	0.176	(0.201)	0.048
156	13.00	0.97	0.224	0.175	(0.201)	0.049
157	13.08	1.13	0.262	0.174	(0.236)	0.088
158	13.17	1.13	0.262	0.173	(0.236)	0.089
159	13.25	1.13	0.262	0.173	(0.236)	0.090
160	13.33	1.13	0.262	0.172	(0.236)	0.091
161	13.42	1.13	0.262	0.171	(0.236)	0.092
162	13.50	1.13	0.262	0.170	(0.236)	0.093
163	13.58	0.77	0.178	(0.169)	0.160	0.018
164	13.67	0.77	0.178	(0.168)	0.160	0.018
165	13.75	0.77	0.178	(0.167)	0.160	0.018
166	13.83	0.77	0.178	(0.166)	0.160	0.018
167	13.92	0.77	0.178	(0.166)	0.160	0.018
168	14.00	0.77	0.178	(0.165)	0.160	0.018
169	14.08	0.90	0.208	0.164	(0.188)	0.044
170	14.17	0.90	0.208	0.163	(0.188)	0.045
171	14.25	0.90	0.208	0.162	(0.188)	0.046
172	14.33	0.87	0.201	0.161	(0.181)	0.039
173	14.42	0.87	0.201	0.161	(0.181)	0.040
174	14.50	0.87	0.201	0.160	(0.181)	0.041
175	14.58	0.87	0.201	0.159	(0.181)	0.042
176	14.67	0.87	0.201	0.158	(0.181)	0.043

177	14.75	0.87	0.201	0.157	(0.181)	0.043
178	14.83	0.83	0.193	0.157	(0.174)	0.036
179	14.92	0.83	0.193	0.156	(0.174)	0.037
180	15.00	0.83	0.193	0.155	(0.174)	0.038
181	15.08	0.80	0.185	0.154	(0.167)	0.031
182	15.17	0.80	0.185	0.153	(0.167)	0.032
183	15.25	0.80	0.185	0.153	(0.167)	0.033
184	15.33	0.77	0.178	0.152	(0.160)	0.026
185	15.42	0.77	0.178	0.151	(0.160)	0.027
186	15.50	0.77	0.178	0.150	(0.160)	0.027
187	15.58	0.63	0.147	(0.149)	0.132	0.015
188	15.67	0.63	0.147	(0.149)	0.132	0.015
189	15.75	0.63	0.147	(0.148)	0.132	0.015
190	15.83	0.63	0.147	(0.147)	0.132	0.015
191	15.92	0.63	0.147	(0.146)	0.132	0.015
192	16.00	0.63	0.147	(0.146)	0.132	0.015
193	16.08	0.13	0.031	(0.145)	0.028	0.003
194	16.17	0.13	0.031	(0.144)	0.028	0.003
195	16.25	0.13	0.031	(0.143)	0.028	0.003
196	16.33	0.13	0.031	(0.143)	0.028	0.003
197	16.42	0.13	0.031	(0.142)	0.028	0.003
198	16.50	0.13	0.031	(0.141)	0.028	0.003
199	16.58	0.10	0.023	(0.141)	0.021	0.002
200	16.67	0.10	0.023	(0.140)	0.021	0.002
201	16.75	0.10	0.023	(0.139)	0.021	0.002
202	16.83	0.10	0.023	(0.138)	0.021	0.002
203	16.92	0.10	0.023	(0.138)	0.021	0.002
204	17.00	0.10	0.023	(0.137)	0.021	0.002
205	17.08	0.17	0.039	(0.136)	0.035	0.004
206	17.17	0.17	0.039	(0.136)	0.035	0.004
207	17.25	0.17	0.039	(0.135)	0.035	0.004
208	17.33	0.17	0.039	(0.134)	0.035	0.004
209	17.42	0.17	0.039	(0.134)	0.035	0.004
210	17.50	0.17	0.039	(0.133)	0.035	0.004
211	17.58	0.17	0.039	(0.132)	0.035	0.004
212	17.67	0.17	0.039	(0.132)	0.035	0.004
213	17.75	0.17	0.039	(0.131)	0.035	0.004
214	17.83	0.13	0.031	(0.130)	0.028	0.003
215	17.92	0.13	0.031	(0.130)	0.028	0.003
216	18.00	0.13	0.031	(0.129)	0.028	0.003
217	18.08	0.13	0.031	(0.128)	0.028	0.003
218	18.17	0.13	0.031	(0.128)	0.028	0.003
219	18.25	0.13	0.031	(0.127)	0.028	0.003
220	18.33	0.13	0.031	(0.127)	0.028	0.003
221	18.42	0.13	0.031	(0.126)	0.028	0.003
222	18.50	0.13	0.031	(0.125)	0.028	0.003
223	18.58	0.10	0.023	(0.125)	0.021	0.002
224	18.67	0.10	0.023	(0.124)	0.021	0.002
225	18.75	0.10	0.023	(0.124)	0.021	0.002
226	18.83	0.07	0.015	(0.123)	0.014	0.002
227	18.92	0.07	0.015	(0.122)	0.014	0.002
228	19.00	0.07	0.015	(0.122)	0.014	0.002
229	19.08	0.10	0.023	(0.121)	0.021	0.002
230	19.17	0.10	0.023	(0.121)	0.021	0.002
231	19.25	0.10	0.023	(0.120)	0.021	0.002
232	19.33	0.13	0.031	(0.119)	0.028	0.003
233	19.42	0.13	0.031	(0.119)	0.028	0.003
234	19.50	0.13	0.031	(0.118)	0.028	0.003
235	19.58	0.10	0.023	(0.118)	0.021	0.002
236	19.67	0.10	0.023	(0.117)	0.021	0.002

237	19.75	0.10	0.023	(0.117)	0.021	0.002
238	19.83	0.07	0.015	(0.116)	0.014	0.002
239	19.92	0.07	0.015	(0.116)	0.014	0.002
240	20.00	0.07	0.015	(0.115)	0.014	0.002
241	20.08	0.10	0.023	(0.115)	0.021	0.002
242	20.17	0.10	0.023	(0.114)	0.021	0.002
243	20.25	0.10	0.023	(0.114)	0.021	0.002
244	20.33	0.10	0.023	(0.113)	0.021	0.002
245	20.42	0.10	0.023	(0.113)	0.021	0.002
246	20.50	0.10	0.023	(0.112)	0.021	0.002
247	20.58	0.10	0.023	(0.112)	0.021	0.002
248	20.67	0.10	0.023	(0.111)	0.021	0.002
249	20.75	0.10	0.023	(0.111)	0.021	0.002
250	20.83	0.07	0.015	(0.110)	0.014	0.002
251	20.92	0.07	0.015	(0.110)	0.014	0.002
252	21.00	0.07	0.015	(0.110)	0.014	0.002
253	21.08	0.10	0.023	(0.109)	0.021	0.002
254	21.17	0.10	0.023	(0.109)	0.021	0.002
255	21.25	0.10	0.023	(0.108)	0.021	0.002
256	21.33	0.07	0.015	(0.108)	0.014	0.002
257	21.42	0.07	0.015	(0.107)	0.014	0.002
258	21.50	0.07	0.015	(0.107)	0.014	0.002
259	21.58	0.10	0.023	(0.107)	0.021	0.002
260	21.67	0.10	0.023	(0.106)	0.021	0.002
261	21.75	0.10	0.023	(0.106)	0.021	0.002
262	21.83	0.07	0.015	(0.105)	0.014	0.002
263	21.92	0.07	0.015	(0.105)	0.014	0.002
264	22.00	0.07	0.015	(0.105)	0.014	0.002
265	22.08	0.10	0.023	(0.104)	0.021	0.002
266	22.17	0.10	0.023	(0.104)	0.021	0.002
267	22.25	0.10	0.023	(0.104)	0.021	0.002
268	22.33	0.07	0.015	(0.103)	0.014	0.002
269	22.42	0.07	0.015	(0.103)	0.014	0.002
270	22.50	0.07	0.015	(0.103)	0.014	0.002
271	22.58	0.07	0.015	(0.102)	0.014	0.002
272	22.67	0.07	0.015	(0.102)	0.014	0.002
273	22.75	0.07	0.015	(0.102)	0.014	0.002
274	22.83	0.07	0.015	(0.102)	0.014	0.002
275	22.92	0.07	0.015	(0.101)	0.014	0.002
276	23.00	0.07	0.015	(0.101)	0.014	0.002
277	23.08	0.07	0.015	(0.101)	0.014	0.002
278	23.17	0.07	0.015	(0.101)	0.014	0.002
279	23.25	0.07	0.015	(0.100)	0.014	0.002
280	23.33	0.07	0.015	(0.100)	0.014	0.002
281	23.42	0.07	0.015	(0.100)	0.014	0.002
282	23.50	0.07	0.015	(0.100)	0.014	0.002
283	23.58	0.07	0.015	(0.100)	0.014	0.002
284	23.67	0.07	0.015	(0.100)	0.014	0.002
285	23.75	0.07	0.015	(0.099)	0.014	0.002
286	23.83	0.07	0.015	(0.099)	0.014	0.002
287	23.92	0.07	0.015	(0.099)	0.014	0.002
288	24.00	0.07	0.015	(0.099)	0.014	0.002

(Loss Rate Not Used)

Sum = 100.0 Sum = 3.1

Flood volume = Effective rainfall 0.26(In)
times area 8.0(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)
Total soil loss = 1.67(In)
Total soil loss = 1.117(Ac.Ft)
Total rainfall = 1.93(In)
Flood volume = 7649.5 Cubic Feet

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      Total soil loss =       48677.0 Cubic Feet
      -------------------------------------------------------------------
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       Peak flow rate of this hydrograph =      0.743(CFS)
      -------------------------------------------------------------------
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      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                          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       0.0001      0.01  Q         |         |         |
|
    0+15       0.0002      0.01  Q         |         |         |
|
    0+20       0.0003      0.01  Q         |         |         |
|
    0+25       0.0004      0.02  Q         |         |         |
|
    0+30       0.0005      0.02  Q         |         |         |
|
    0+35       0.0006      0.02  Q         |         |         |
|
    0+40       0.0008      0.02  Q         |         |         |
|
    0+45       0.0009      0.02  Q         |         |         |
|
    0+50       0.0010      0.02  Q         |         |         |
|
    0+55       0.0012      0.02  Q         |         |         |
|
    1+ 0       0.0014      0.02  Q         |         |         |
|
    1+ 5       0.0015      0.02  Q         |         |         |
|
    1+10       0.0017      0.02  Q         |         |         |
|
    1+15       0.0018      0.02  Q         |         |         |
|
    1+20       0.0019      0.02  Q         |         |         |
|
    1+25       0.0021      0.02  Q         |         |         |
|
    1+30       0.0022      0.02  Q         |         |         |
|
    1+35       0.0023      0.02  Q         |         |         |
|
    1+40       0.0025      0.02  Q         |         |         |
|
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      1+45        0.0026      0.02  Q         |         |         |
 |
      1+50        0.0027      0.02  Q         |         |         |
 |
      1+55        0.0029      0.02  Q         |         |         |
 |
      2+ 0        0.0031      0.02  Q         |         |         |
 |
      2+ 5        0.0032      0.02  Q         |         |         |
 |
      2+10        0.0034      0.03  Q         |         |         |
 |
      2+15        0.0036      0.03  Q         |         |         |
 |
      2+20        0.0037      0.03  Q         |         |         |
 |
      2+25        0.0039      0.03  Q         |         |         |
 |
      2+30        0.0041      0.03  Q         |         |         |
 |
      2+35        0.0043      0.03  Q         |         |         |
 |
      2+40        0.0045      0.03  QV        |         |         |
 |
      2+45        0.0047      0.03  QV        |         |         |
 |
      2+50        0.0049      0.03  QV        |         |         |
 |
      2+55        0.0051      0.03  QV        |         |         |
 |
      3+ 0        0.0053      0.03  QV        |         |         |
 |
      3+ 5        0.0056      0.03  QV        |         |         |
 |
      3+10        0.0058      0.03  QV        |         |         |
 |
      3+15        0.0060      0.03  QV        |         |         |
 |
      3+20        0.0062      0.03  QV        |         |         |
 |
      3+25        0.0064      0.03  QV        |         |         |
 |
      3+30        0.0066      0.03  QV        |         |         |
 |
      3+35        0.0068      0.03  QV        |         |         |
 |
      3+40        0.0071      0.03  QV        |         |         |
 |
      3+45        0.0073      0.03  QV        |         |         |
 |
      3+50        0.0075      0.03  QV        |         |         |
 |
      3+55        0.0078      0.04  QV        |         |         |
 |
      4+ 0        0.0080      0.04  QV        |         |         |
 |
      4+ 5        0.0083      0.04  QV        |         |         |
 |
      4+10        0.0085      0.04  QV        |         |         |
 |
```

```
      4+15       0.0088      0.04  Q V        |         |         |
|
      4+20       0.0091      0.04  Q V        |         |         |
|
      4+25       0.0094      0.04  Q V        |         |         |
|
      4+30       0.0096      0.04  Q V        |         |         |
|
      4+35       0.0100      0.04  Q V        |         |         |
|
      4+40       0.0103      0.04  Q V        |         |         |
|
      4+45       0.0106      0.04  Q V        |         |         |
|
      4+50       0.0109      0.05  Q V        |         |         |
|
      4+55       0.0112      0.05  Q V        |         |         |
|
      5+ 0       0.0115      0.05  Q V        |         |         |
|
      5+ 5       0.0119      0.05  Q V        |         |         |
|
      5+10       0.0121      0.04  Q V        |         |         |
|
      5+15       0.0124      0.04  Q V        |         |         |
|
      5+20       0.0127      0.04  Q V        |         |         |
|
      5+25       0.0130      0.04  Q V        |         |         |
|
      5+30       0.0133      0.04  Q  V       |         |         |
|
      5+35       0.0136      0.05  Q  V       |         |         |
|
      5+40       0.0139      0.05  Q  V       |         |         |
|
      5+45       0.0143      0.05  Q  V       |         |         |
|
      5+50       0.0146      0.05  Q  V       |         |         |
|
      5+55       0.0149      0.05  Q  V       |         |         |
|
      6+ 0       0.0153      0.05  Q  V       |         |         |
|
      6+ 5       0.0156      0.05  Q  V       |         |         |
|
      6+10       0.0160      0.06  Q  V       |         |         |
|
      6+15       0.0164      0.06  Q  V       |         |         |
|
      6+20       0.0168      0.06  Q  V       |         |         |
|
      6+25       0.0172      0.06  Q  V       |         |         |
|
      6+30       0.0176      0.06  Q   V      |         |         |
|
      6+35       0.0180      0.06  Q   V      |         |         |
|
      6+40       0.0184      0.06  Q   V      |         |         |
|
```

```
    6+45       0.0188      0.06  Q   V     |         |         |
|
    6+50       0.0193      0.06  Q   V     |         |         |
|
    6+55       0.0197      0.06  Q   V     |         |         |
|
    7+ 0       0.0201      0.06  Q   V     |         |         |
|
    7+ 5       0.0206      0.06  Q   V     |         |         |
|
    7+10       0.0210      0.06  Q   V     |         |         |
|
    7+15       0.0214      0.06  Q   V     |         |         |
|
    7+20       0.0219      0.06  Q   V     |         |         |
|
    7+25       0.0223      0.07  Q    V    |         |         |
|
    7+30       0.0228      0.07  Q    V    |         |         |
|
    7+35       0.0233      0.07  Q    V    |         |         |
|
    7+40       0.0238      0.07  Q    V    |         |         |
|
    7+45       0.0243      0.07  Q    V    |         |         |
|
    7+50       0.0248      0.08  Q    V    |         |         |
|
    7+55       0.0254      0.08  Q    V    |         |         |
|
    8+ 0       0.0259      0.08  Q    V    |         |         |
|
    8+ 5       0.0265      0.08  Q     V   |         |         |
|
    8+10       0.0271      0.09  Q     V   |         |         |
|
    8+15       0.0278      0.09  Q     V   |         |         |
|
    8+20       0.0284      0.09  Q     V   |         |         |
|
    8+25       0.0291      0.09  Q     V   |         |         |
|
    8+30       0.0297      0.09  Q     V   |         |         |
|
    8+35       0.0304      0.10  Q     V   |         |         |
|
    8+40       0.0311      0.10  Q      V  |         |         |
|
    8+45       0.0318      0.10  Q      V  |         |         |
|
    8+50       0.0325      0.10  Q      V  |         |         |
|
    8+55       0.0332      0.11  Q      V  |         |         |
|
    9+ 0       0.0339      0.11  Q      V  |         |         |
|
    9+ 5       0.0347      0.11  Q      V  |         |         |
|
    9+10       0.0355      0.12  Q       V |         |         |
|
```

```
   9+15        0.0363       0.12  Q        V |         |         |
|
   9+20        0.0371       0.12  Q        V |         |         |
|
   9+25        0.0380       0.12  Q        V |         |         |
|
   9+30        0.0388       0.12  Q        V |         |         |
|
   9+35        0.0397       0.13  Q         V|         |         |
|
   9+40        0.0406       0.13  Q         V|         |         |
|
   9+45        0.0415       0.13  Q         V|         |         |
|
   9+50        0.0424       0.13  Q         V|         |         |
|
   9+55        0.0433       0.14  Q         V|         |         |
|
  10+ 0        0.0443       0.14  Q          V         |         |
|
  10+ 5        0.0452       0.13  Q          V         |         |
|
  10+10        0.0459       0.10  Q          V         |         |
|
  10+15        0.0465       0.10  Q          V         |         |
|
  10+20        0.0472       0.09  Q          V         |         |
|
  10+25        0.0478       0.09  Q          V         |         |
|
  10+30        0.0485       0.09  Q          |V        |         |
|
  10+35        0.0492       0.10  Q          |V        |         |
|
  10+40        0.0500       0.12  Q          |V        |         |
|
  10+45        0.0508       0.12  Q          |V        |         |
|
  10+50        0.0517       0.12  Q          |V        |         |
|
  10+55        0.0526       0.13  Q          |V        |         |
|
  11+ 0        0.0534       0.13  Q          | V       |         |
|
  11+ 5        0.0543       0.12  Q          | V       |         |
|
  11+10        0.0551       0.12  Q          | V       |         |
|
  11+15        0.0559       0.12  Q          | V       |         |
|
  11+20        0.0567       0.12  Q          | V       |         |
|
  11+25        0.0576       0.12  Q          |  V      |         |
|
  11+30        0.0584       0.12  Q          |  V      |         |
|
  11+35        0.0592       0.12  Q          |  V      |         |
|
  11+40        0.0599       0.11  Q          |  V      |         |
|
```

```
   11+45       0.0607      0.11  Q         |  V      |         |
|
   11+50       0.0614      0.11  Q         |  V      |         |
|
   11+55       0.0622      0.11  Q         |   V     |         |
|
   12+ 0       0.0630      0.11  Q         |   V     |         |
|
   12+ 5       0.0638      0.12  Q         |   V     |         |
|
   12+10       0.0648      0.15  Q         |   V     |         |
|
   12+15       0.0659      0.15  Q         |    V    |         |
|
   12+20       0.0670      0.16  Q         |    V    |         |
|
   12+25       0.0681      0.16  Q         |    V    |         |
|
   12+30       0.0692      0.16  Q         |    V    |         |
|
   12+35       0.0706      0.20  Q         |     V   |         |
|
   12+40       0.0724      0.27  |Q        |     V   |         |
|
   12+45       0.0745      0.30  |Q        |     V   |         |
|
   12+50       0.0767      0.32  |Q        |      V  |         |
|
   12+55       0.0792      0.37  |Q        |       V |         |
|
   13+ 0       0.0819      0.38  |Q        |       V |         |
|
   13+ 5       0.0851      0.47  |Q        |        V|         |
|
   13+10       0.0896      0.65  | Q       |         V         |
|
   13+15       0.0945      0.70  | Q       |         |V        |
|
   13+20       0.0994      0.72  | Q       |         | V       |
|
   13+25       0.1045      0.73  | Q       |         |  V      |
|
   13+30       0.1096      0.74  | Q       |         |   V     |
|
   13+35       0.1137      0.60  | Q       |         |    V    |
|
   13+40       0.1155      0.26  |Q        |         |     V   |
|
   13+45       0.1168      0.18  Q         |         |     V   |
|
   13+50       0.1178      0.15  Q         |         |     V   |
|
   13+55       0.1188      0.15  Q         |         |      V  |
|
   14+ 0       0.1198      0.14  Q         |         |      V  |
|
   14+ 5       0.1212      0.20  Q         |         |      V  |
|
   14+10       0.1234      0.32  |Q        |         |       V |
|
```

```
  14+15       0.1258      0.36  |Q        |         |       V |
|
  14+20       0.1283      0.36  |Q        |         |        V|
|
  14+25       0.1305      0.33  |Q        |         |        V|
|
  14+30       0.1328      0.33  |Q        |         |         V
|
  14+35       0.1351      0.33  |Q        |         |         V
|
  14+40       0.1374      0.34  |Q        |         |         |V
|
  14+45       0.1398      0.34  |Q        |         |         |V
|
  14+50       0.1421      0.34  |Q        |         |         | V
|
  14+55       0.1442      0.31  |Q        |         |         | V
|
  15+ 0       0.1463      0.31  |Q        |         |         |  V
|
  15+ 5       0.1484      0.29  |Q        |         |         |  V
|
  15+10       0.1502      0.26  |Q        |         |         |   V
|
  15+15       0.1520      0.26  |Q        |         |         |   V
|
  15+20       0.1537      0.25  |Q        |         |         |    V
|
  15+25       0.1552      0.22  Q         |         |         |    V
|
  15+30       0.1567      0.22  Q         |         |         |    V
|
  15+35       0.1581      0.20  Q         |         |         |     V
|
  15+40       0.1590      0.14  Q         |         |         |     V
|
  15+45       0.1599      0.12  Q         |         |         |     V
|
  15+50       0.1607      0.12  Q         |         |         |     V
|
  15+55       0.1615      0.12  Q         |         |         |     V
|
  16+ 0       0.1624      0.12  Q         |         |         |     V
|
  16+ 5       0.1630      0.10  Q         |         |         |      V
|
  16+10       0.1633      0.04  Q         |         |         |      V
|
  16+15       0.1635      0.03  Q         |         |         |      V
|
  16+20       0.1637      0.03  Q         |         |         |      V
|
  16+25       0.1639      0.03  Q         |         |         |      V
|
  16+30       0.1641      0.03  Q         |         |         |      V
|
  16+35       0.1642      0.02  Q         |         |         |      V
|
  16+40       0.1644      0.02  Q         |         |         |      V
|
```

```
  16+45      0.1645      0.02  Q         |         |         |      V
|
  16+50      0.1646      0.02  Q         |         |         |      V
|
  16+55      0.1647      0.02  Q         |         |         |      V
|
  17+ 0      0.1649      0.02  Q         |         |         |      V
|
  17+ 5      0.1650      0.02  Q         |         |         |      V
|
  17+10      0.1652      0.03  Q         |         |         |      V
|
  17+15      0.1654      0.03  Q         |         |         |      V
|
  17+20      0.1656      0.03  Q         |         |         |      V
|
  17+25      0.1659      0.03  Q         |         |         |      V
|
  17+30      0.1661      0.03  Q         |         |         |      V
|
  17+35      0.1663      0.03  Q         |         |         |      V
|
  17+40      0.1665      0.03  Q         |         |         |      V
|
  17+45      0.1667      0.03  Q         |         |         |      V
|
  17+50      0.1669      0.03  Q         |         |         |       V
|
  17+55      0.1671      0.03  Q         |         |         |       V
|
  18+ 0      0.1673      0.03  Q         |         |         |       V
|
  18+ 5      0.1675      0.03  Q         |         |         |       V
|
  18+10      0.1676      0.03  Q         |         |         |       V
|
  18+15      0.1678      0.03  Q         |         |         |       V
|
  18+20      0.1680      0.03  Q         |         |         |       V
|
  18+25      0.1681      0.03  Q         |         |         |       V
|
  18+30      0.1683      0.03  Q         |         |         |       V
|
  18+35      0.1685      0.02  Q         |         |         |       V
|
  18+40      0.1686      0.02  Q         |         |         |       V
|
  18+45      0.1688      0.02  Q         |         |         |       V
|
  18+50      0.1689      0.02  Q         |         |         |       V
|
  18+55      0.1690      0.01  Q         |         |         |       V
|
  19+ 0      0.1691      0.01  Q         |         |         |       V
|
  19+ 5      0.1692      0.01  Q         |         |         |       V
|
  19+10      0.1693      0.02  Q         |         |         |       V
|
```

```
    19+15      0.1694     0.02  Q         |         |         |       V
|
    19+20      0.1695     0.02  Q         |         |         |       V
|
    19+25      0.1697     0.02  Q         |         |         |       V
|
    19+30      0.1699     0.02  Q         |         |         |       V
|
    19+35      0.1700     0.02  Q         |         |         |       V
|
    19+40      0.1702     0.02  Q         |         |         |       V
|
    19+45      0.1703     0.02  Q         |         |         |       V
|
    19+50      0.1704     0.02  Q         |         |         |       V
|
    19+55      0.1705     0.01  Q         |         |         |       V
|
    20+ 0      0.1706     0.01  Q         |         |         |       V
|
    20+ 5      0.1707     0.01  Q         |         |         |       V
|
    20+10      0.1708     0.02  Q         |         |         |       V
|
    20+15      0.1710     0.02  Q         |         |         |       V
|
    20+20      0.1711     0.02  Q         |         |         |       V
|
    20+25      0.1712     0.02  Q         |         |         |       V
|
    20+30      0.1713     0.02  Q         |         |         |
V|
    20+35      0.1715     0.02  Q         |         |         |
V|
    20+40      0.1716     0.02  Q         |         |         |
V|
    20+45      0.1717     0.02  Q         |         |         |
V|
    20+50      0.1718     0.02  Q         |         |         |
V|
    20+55      0.1719     0.01  Q         |         |         |
V|
    21+ 0      0.1720     0.01  Q         |         |         |
V|
    21+ 5      0.1721     0.01  Q         |         |         |
V|
    21+10      0.1722     0.02  Q         |         |         |
V|
    21+15      0.1724     0.02  Q         |         |         |
V|
    21+20      0.1725     0.02  Q         |         |         |
V|
    21+25      0.1726     0.01  Q         |         |         |
V|
    21+30      0.1727     0.01  Q         |         |         |
V|
    21+35      0.1728     0.01  Q         |         |         |
V|
    21+40      0.1729     0.02  Q         |         |         |
V|
```

21+45	0.1730	0.02	Q	|	|	| V|
21+50	0.1731	0.02	Q	|	|	| V|
21+55	0.1732	0.01	Q	|	|	| V|
22+ 0	0.1733	0.01	Q	|	|	| V|
22+ 5	0.1734	0.01	Q	|	|	| V|
22+10	0.1735	0.02	Q	|	|	| V|
22+15	0.1737	0.02	Q	|	|	| V|
22+20	0.1738	0.02	Q	|	|	| V|
22+25	0.1739	0.01	Q	|	|	| V|
22+30	0.1740	0.01	Q	|	|	| V|
22+35	0.1741	0.01	Q	|	|	| V|
22+40	0.1741	0.01	Q	|	|	| V|
22+45	0.1742	0.01	Q	|	|	| V|
22+50	0.1743	0.01	Q	|	|	| V|
22+55	0.1744	0.01	Q	|	|	| V|
23+ 0	0.1745	0.01	Q	|	|	| V|
23+ 5	0.1746	0.01	Q	|	|	| V|
23+10	0.1747	0.01	Q	|	|	| V|
23+15	0.1747	0.01	Q	|	|	| V|
23+20	0.1748	0.01	Q	|	|	| V|
23+25	0.1749	0.01	Q	|	|	| V|
23+30	0.1750	0.01	Q	|	|	| V|
23+35	0.1751	0.01	Q	|	|	| V|
23+40	0.1752	0.01	Q	|	|	| V|
23+45	0.1753	0.01	Q	|	|	| V|
23+50	0.1753	0.01	Q	|	|	| V|
23+55	0.1754	0.01	Q	|	|	| V|
24+ 0	0.1755	0.01	Q	|	|	| V|
24+ 5	0.1756	0.01	Q	|	|	| V|
24+10	0.1756	0.00	Q	|	|	| V|

```
    24+15       0.1756      0.00  Q         |         |         |
V|
    24+20       0.1756      0.00  Q         |         |         |
V|
    24+25       0.1756      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 11/09/21 File: moval33prea242.out

++

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Existing Condition
Unit Hydrograph Runoff

Drainage Area = 5.53(Ac.) = 0.009 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 5.53(Ac.) = 0.009 Sq. Mi.
Length along longest watercourse = 852.00(Ft.)
Length along longest watercourse measured to centroid = 341.00 (Ft.)
Length along longest watercourse = 0.161 Mi.
Length along longest watercourse measured to centroid = 0.065 Mi.
Difference in elevation = 75.00(Ft.)
Slope along watercourse = 464.7887 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.053 Hr.
Lag time = 3.17 Min.
25% of lag time = 0.79 Min.
40% of lag time = 1.27 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]

```
          5.53            1.93                 10.67

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
              5.53            4.64                 25.66

      STORM EVENT (YEAR) =    2.00
      Area Averaged 2-Year Rainfall =    1.930(In)
      Area Averaged 100-Year Rainfall =    4.640(In)

      Point rain (area averaged) =    1.930(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    1.930(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
           5.530           84.00         0.000
       Total Area Entered =      5.53(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
      84.0  84.0      0.198     0.000        0.198       1.000
0.198
                                                                 Sum (F) =
0.198
      Area averaged mean soil loss (F) (In/Hr) =  0.198
      Minimum soil loss rate ((In/Hr)) =  0.099
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.900
      -----------------------------------------------------------------
---

                  U n i t   H y d r o g r a p h
                        FOOTHILL S-Curve
      -----------------------------------------------------------------
--
                  Unit Hydrograph Data
      -----------------------------------------------------------------
---
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                           Graph %           (CFS)
      -----------------------------------------------------------------
---
          1   0.083        157.948         32.675              1.821
          2   0.167        315.896         53.715              2.994
          3   0.250        473.844         10.920              0.609
          4   0.333        631.792          2.028              0.113
          5   0.417        789.740          0.662              0.037
                                     Sum = 100.000   Sum=       5.573
-----------------------------------------------------------------------


 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	Loss rate(In./Hr) Low	Effective (In/Hr)
1	0.08	0.07	0.015	(0.352)	0.014	0.002
2	0.17	0.07	0.015	(0.350)	0.014	0.002
3	0.25	0.07	0.015	(0.349)	0.014	0.002
4	0.33	0.10	0.023	(0.348)	0.021	0.002
5	0.42	0.10	0.023	(0.346)	0.021	0.002
6	0.50	0.10	0.023	(0.345)	0.021	0.002
7	0.58	0.10	0.023	(0.344)	0.021	0.002
8	0.67	0.10	0.023	(0.342)	0.021	0.002
9	0.75	0.10	0.023	(0.341)	0.021	0.002
10	0.83	0.13	0.031	(0.340)	0.028	0.003
11	0.92	0.13	0.031	(0.338)	0.028	0.003
12	1.00	0.13	0.031	(0.337)	0.028	0.003
13	1.08	0.10	0.023	(0.336)	0.021	0.002
14	1.17	0.10	0.023	(0.334)	0.021	0.002
15	1.25	0.10	0.023	(0.333)	0.021	0.002
16	1.33	0.10	0.023	(0.332)	0.021	0.002
17	1.42	0.10	0.023	(0.330)	0.021	0.002
18	1.50	0.10	0.023	(0.329)	0.021	0.002
19	1.58	0.10	0.023	(0.328)	0.021	0.002
20	1.67	0.10	0.023	(0.326)	0.021	0.002
21	1.75	0.10	0.023	(0.325)	0.021	0.002
22	1.83	0.13	0.031	(0.324)	0.028	0.003
23	1.92	0.13	0.031	(0.322)	0.028	0.003
24	2.00	0.13	0.031	(0.321)	0.028	0.003
25	2.08	0.13	0.031	(0.320)	0.028	0.003
26	2.17	0.13	0.031	(0.318)	0.028	0.003
27	2.25	0.13	0.031	(0.317)	0.028	0.003
28	2.33	0.13	0.031	(0.316)	0.028	0.003
29	2.42	0.13	0.031	(0.315)	0.028	0.003
30	2.50	0.13	0.031	(0.313)	0.028	0.003
31	2.58	0.17	0.039	(0.312)	0.035	0.004
32	2.67	0.17	0.039	(0.311)	0.035	0.004
33	2.75	0.17	0.039	(0.310)	0.035	0.004
34	2.83	0.17	0.039	(0.308)	0.035	0.004
35	2.92	0.17	0.039	(0.307)	0.035	0.004
36	3.00	0.17	0.039	(0.306)	0.035	0.004
37	3.08	0.17	0.039	(0.304)	0.035	0.004
38	3.17	0.17	0.039	(0.303)	0.035	0.004
39	3.25	0.17	0.039	(0.302)	0.035	0.004
40	3.33	0.17	0.039	(0.301)	0.035	0.004
41	3.42	0.17	0.039	(0.299)	0.035	0.004
42	3.50	0.17	0.039	(0.298)	0.035	0.004
43	3.58	0.17	0.039	(0.297)	0.035	0.004
44	3.67	0.17	0.039	(0.296)	0.035	0.004
45	3.75	0.17	0.039	(0.294)	0.035	0.004
46	3.83	0.20	0.046	(0.293)	0.042	0.005
47	3.92	0.20	0.046	(0.292)	0.042	0.005
48	4.00	0.20	0.046	(0.291)	0.042	0.005
49	4.08	0.20	0.046	(0.289)	0.042	0.005
50	4.17	0.20	0.046	(0.288)	0.042	0.005
51	4.25	0.20	0.046	(0.287)	0.042	0.005
52	4.33	0.23	0.054	(0.286)	0.049	0.005
53	4.42	0.23	0.054	(0.285)	0.049	0.005
54	4.50	0.23	0.054	(0.283)	0.049	0.005
55	4.58	0.23	0.054	(0.282)	0.049	0.005
56	4.67	0.23	0.054	(0.281)	0.049	0.005
57	4.75	0.23	0.054	(0.280)	0.049	0.005

58	4.83	0.27	0.062	(0.278)	0.056	0.006
59	4.92	0.27	0.062	(0.277)	0.056	0.006
60	5.00	0.27	0.062	(0.276)	0.056	0.006
61	5.08	0.20	0.046	(0.275)	0.042	0.005
62	5.17	0.20	0.046	(0.274)	0.042	0.005
63	5.25	0.20	0.046	(0.272)	0.042	0.005
64	5.33	0.23	0.054	(0.271)	0.049	0.005
65	5.42	0.23	0.054	(0.270)	0.049	0.005
66	5.50	0.23	0.054	(0.269)	0.049	0.005
67	5.58	0.27	0.062	(0.268)	0.056	0.006
68	5.67	0.27	0.062	(0.267)	0.056	0.006
69	5.75	0.27	0.062	(0.265)	0.056	0.006
70	5.83	0.27	0.062	(0.264)	0.056	0.006
71	5.92	0.27	0.062	(0.263)	0.056	0.006
72	6.00	0.27	0.062	(0.262)	0.056	0.006
73	6.08	0.30	0.069	(0.261)	0.063	0.007
74	6.17	0.30	0.069	(0.260)	0.063	0.007
75	6.25	0.30	0.069	(0.258)	0.063	0.007
76	6.33	0.30	0.069	(0.257)	0.063	0.007
77	6.42	0.30	0.069	(0.256)	0.063	0.007
78	6.50	0.30	0.069	(0.255)	0.063	0.007
79	6.58	0.33	0.077	(0.254)	0.069	0.008
80	6.67	0.33	0.077	(0.253)	0.069	0.008
81	6.75	0.33	0.077	(0.252)	0.069	0.008
82	6.83	0.33	0.077	(0.250)	0.069	0.008
83	6.92	0.33	0.077	(0.249)	0.069	0.008
84	7.00	0.33	0.077	(0.248)	0.069	0.008
85	7.08	0.33	0.077	(0.247)	0.069	0.008
86	7.17	0.33	0.077	(0.246)	0.069	0.008
87	7.25	0.33	0.077	(0.245)	0.069	0.008
88	7.33	0.37	0.085	(0.244)	0.076	0.008
89	7.42	0.37	0.085	(0.243)	0.076	0.008
90	7.50	0.37	0.085	(0.241)	0.076	0.008
91	7.58	0.40	0.093	(0.240)	0.083	0.009
92	7.67	0.40	0.093	(0.239)	0.083	0.009
93	7.75	0.40	0.093	(0.238)	0.083	0.009
94	7.83	0.43	0.100	(0.237)	0.090	0.010
95	7.92	0.43	0.100	(0.236)	0.090	0.010
96	8.00	0.43	0.100	(0.235)	0.090	0.010
97	8.08	0.50	0.116	(0.234)	0.104	0.012
98	8.17	0.50	0.116	(0.233)	0.104	0.012
99	8.25	0.50	0.116	(0.232)	0.104	0.012
100	8.33	0.50	0.116	(0.230)	0.104	0.012
101	8.42	0.50	0.116	(0.229)	0.104	0.012
102	8.50	0.50	0.116	(0.228)	0.104	0.012
103	8.58	0.53	0.124	(0.227)	0.111	0.012
104	8.67	0.53	0.124	(0.226)	0.111	0.012
105	8.75	0.53	0.124	(0.225)	0.111	0.012
106	8.83	0.57	0.131	(0.224)	0.118	0.013
107	8.92	0.57	0.131	(0.223)	0.118	0.013
108	9.00	0.57	0.131	(0.222)	0.118	0.013
109	9.08	0.63	0.147	(0.221)	0.132	0.015
110	9.17	0.63	0.147	(0.220)	0.132	0.015
111	9.25	0.63	0.147	(0.219)	0.132	0.015
112	9.33	0.67	0.154	(0.218)	0.139	0.015
113	9.42	0.67	0.154	(0.217)	0.139	0.015
114	9.50	0.67	0.154	(0.216)	0.139	0.015
115	9.58	0.70	0.162	(0.215)	0.146	0.016
116	9.67	0.70	0.162	(0.214)	0.146	0.016
117	9.75	0.70	0.162	(0.213)	0.146	0.016

118	9.83	0.73	0.170	(0.212)	0.153	0.017
119	9.92	0.73	0.170	(0.211)	0.153	0.017
120	10.00	0.73	0.170	(0.210)	0.153	0.017
121	10.08	0.50	0.116	(0.208)	0.104	0.012
122	10.17	0.50	0.116	(0.207)	0.104	0.012
123	10.25	0.50	0.116	(0.206)	0.104	0.012
124	10.33	0.50	0.116	(0.205)	0.104	0.012
125	10.42	0.50	0.116	(0.204)	0.104	0.012
126	10.50	0.50	0.116	(0.203)	0.104	0.012
127	10.58	0.67	0.154	(0.202)	0.139	0.015
128	10.67	0.67	0.154	(0.201)	0.139	0.015
129	10.75	0.67	0.154	(0.201)	0.139	0.015
130	10.83	0.67	0.154	(0.200)	0.139	0.015
131	10.92	0.67	0.154	(0.199)	0.139	0.015
132	11.00	0.67	0.154	(0.198)	0.139	0.015
133	11.08	0.63	0.147	(0.197)	0.132	0.015
134	11.17	0.63	0.147	(0.196)	0.132	0.015
135	11.25	0.63	0.147	(0.195)	0.132	0.015
136	11.33	0.63	0.147	(0.194)	0.132	0.015
137	11.42	0.63	0.147	(0.193)	0.132	0.015
138	11.50	0.63	0.147	(0.192)	0.132	0.015
139	11.58	0.57	0.131	(0.191)	0.118	0.013
140	11.67	0.57	0.131	(0.190)	0.118	0.013
141	11.75	0.57	0.131	(0.189)	0.118	0.013
142	11.83	0.60	0.139	(0.188)	0.125	0.014
143	11.92	0.60	0.139	(0.187)	0.125	0.014
144	12.00	0.60	0.139	(0.186)	0.125	0.014
145	12.08	0.83	0.193	(0.185)	0.174	0.019
146	12.17	0.83	0.193	(0.184)	0.174	0.019
147	12.25	0.83	0.193	(0.183)	0.174	0.019
148	12.33	0.87	0.201	(0.182)	0.181	0.020
149	12.42	0.87	0.201	(0.182)	0.181	0.020
150	12.50	0.87	0.201	0.181	(0.181)	0.020
151	12.58	0.93	0.216	0.180	(0.195)	0.036
152	12.67	0.93	0.216	0.179	(0.195)	0.037
153	12.75	0.93	0.216	0.178	(0.195)	0.038
154	12.83	0.97	0.224	0.177	(0.201)	0.047
155	12.92	0.97	0.224	0.176	(0.201)	0.048
156	13.00	0.97	0.224	0.175	(0.201)	0.049
157	13.08	1.13	0.262	0.174	(0.236)	0.088
158	13.17	1.13	0.262	0.173	(0.236)	0.089
159	13.25	1.13	0.262	0.173	(0.236)	0.090
160	13.33	1.13	0.262	0.172	(0.236)	0.091
161	13.42	1.13	0.262	0.171	(0.236)	0.092
162	13.50	1.13	0.262	0.170	(0.236)	0.093
163	13.58	0.77	0.178	(0.169)	0.160	0.018
164	13.67	0.77	0.178	(0.168)	0.160	0.018
165	13.75	0.77	0.178	(0.167)	0.160	0.018
166	13.83	0.77	0.178	(0.166)	0.160	0.018
167	13.92	0.77	0.178	(0.166)	0.160	0.018
168	14.00	0.77	0.178	(0.165)	0.160	0.018
169	14.08	0.90	0.208	0.164	(0.188)	0.044
170	14.17	0.90	0.208	0.163	(0.188)	0.045
171	14.25	0.90	0.208	0.162	(0.188)	0.046
172	14.33	0.87	0.201	0.161	(0.181)	0.039
173	14.42	0.87	0.201	0.161	(0.181)	0.040
174	14.50	0.87	0.201	0.160	(0.181)	0.041
175	14.58	0.87	0.201	0.159	(0.181)	0.042
176	14.67	0.87	0.201	0.158	(0.181)	0.043
177	14.75	0.87	0.201	0.157	(0.181)	0.043

178	14.83	0.83	0.193	0.157	(0.174)	0.036
179	14.92	0.83	0.193	0.156	(0.174)	0.037
180	15.00	0.83	0.193	0.155	(0.174)	0.038
181	15.08	0.80	0.185	0.154	(0.167)	0.031
182	15.17	0.80	0.185	0.153	(0.167)	0.032
183	15.25	0.80	0.185	0.153	(0.167)	0.033
184	15.33	0.77	0.178	0.152	(0.160)	0.026
185	15.42	0.77	0.178	0.151	(0.160)	0.027
186	15.50	0.77	0.178	0.150	(0.160)	0.027
187	15.58	0.63	0.147	(0.149)	0.132	0.015
188	15.67	0.63	0.147	(0.149)	0.132	0.015
189	15.75	0.63	0.147	(0.148)	0.132	0.015
190	15.83	0.63	0.147	(0.147)	0.132	0.015
191	15.92	0.63	0.147	(0.146)	0.132	0.015
192	16.00	0.63	0.147	(0.146)	0.132	0.015
193	16.08	0.13	0.031	(0.145)	0.028	0.003
194	16.17	0.13	0.031	(0.144)	0.028	0.003
195	16.25	0.13	0.031	(0.143)	0.028	0.003
196	16.33	0.13	0.031	(0.143)	0.028	0.003
197	16.42	0.13	0.031	(0.142)	0.028	0.003
198	16.50	0.13	0.031	(0.141)	0.028	0.003
199	16.58	0.10	0.023	(0.141)	0.021	0.002
200	16.67	0.10	0.023	(0.140)	0.021	0.002
201	16.75	0.10	0.023	(0.139)	0.021	0.002
202	16.83	0.10	0.023	(0.138)	0.021	0.002
203	16.92	0.10	0.023	(0.138)	0.021	0.002
204	17.00	0.10	0.023	(0.137)	0.021	0.002
205	17.08	0.17	0.039	(0.136)	0.035	0.004
206	17.17	0.17	0.039	(0.136)	0.035	0.004
207	17.25	0.17	0.039	(0.135)	0.035	0.004
208	17.33	0.17	0.039	(0.134)	0.035	0.004
209	17.42	0.17	0.039	(0.134)	0.035	0.004
210	17.50	0.17	0.039	(0.133)	0.035	0.004
211	17.58	0.17	0.039	(0.132)	0.035	0.004
212	17.67	0.17	0.039	(0.132)	0.035	0.004
213	17.75	0.17	0.039	(0.131)	0.035	0.004
214	17.83	0.13	0.031	(0.130)	0.028	0.003
215	17.92	0.13	0.031	(0.130)	0.028	0.003
216	18.00	0.13	0.031	(0.129)	0.028	0.003
217	18.08	0.13	0.031	(0.128)	0.028	0.003
218	18.17	0.13	0.031	(0.128)	0.028	0.003
219	18.25	0.13	0.031	(0.127)	0.028	0.003
220	18.33	0.13	0.031	(0.127)	0.028	0.003
221	18.42	0.13	0.031	(0.126)	0.028	0.003
222	18.50	0.13	0.031	(0.125)	0.028	0.003
223	18.58	0.10	0.023	(0.125)	0.021	0.002
224	18.67	0.10	0.023	(0.124)	0.021	0.002
225	18.75	0.10	0.023	(0.124)	0.021	0.002
226	18.83	0.07	0.015	(0.123)	0.014	0.002
227	18.92	0.07	0.015	(0.122)	0.014	0.002
228	19.00	0.07	0.015	(0.122)	0.014	0.002
229	19.08	0.10	0.023	(0.121)	0.021	0.002
230	19.17	0.10	0.023	(0.121)	0.021	0.002
231	19.25	0.10	0.023	(0.120)	0.021	0.002
232	19.33	0.13	0.031	(0.119)	0.028	0.003
233	19.42	0.13	0.031	(0.119)	0.028	0.003
234	19.50	0.13	0.031	(0.118)	0.028	0.003
235	19.58	0.10	0.023	(0.118)	0.021	0.002
236	19.67	0.10	0.023	(0.117)	0.021	0.002
237	19.75	0.10	0.023	(0.117)	0.021	0.002

238	19.83	0.07	0.015	(0.116)	0.014	0.002
239	19.92	0.07	0.015	(0.116)	0.014	0.002
240	20.00	0.07	0.015	(0.115)	0.014	0.002
241	20.08	0.10	0.023	(0.115)	0.021	0.002
242	20.17	0.10	0.023	(0.114)	0.021	0.002
243	20.25	0.10	0.023	(0.114)	0.021	0.002
244	20.33	0.10	0.023	(0.113)	0.021	0.002
245	20.42	0.10	0.023	(0.113)	0.021	0.002
246	20.50	0.10	0.023	(0.112)	0.021	0.002
247	20.58	0.10	0.023	(0.112)	0.021	0.002
248	20.67	0.10	0.023	(0.111)	0.021	0.002
249	20.75	0.10	0.023	(0.111)	0.021	0.002
250	20.83	0.07	0.015	(0.110)	0.014	0.002
251	20.92	0.07	0.015	(0.110)	0.014	0.002
252	21.00	0.07	0.015	(0.110)	0.014	0.002
253	21.08	0.10	0.023	(0.109)	0.021	0.002
254	21.17	0.10	0.023	(0.109)	0.021	0.002
255	21.25	0.10	0.023	(0.108)	0.021	0.002
256	21.33	0.07	0.015	(0.108)	0.014	0.002
257	21.42	0.07	0.015	(0.107)	0.014	0.002
258	21.50	0.07	0.015	(0.107)	0.014	0.002
259	21.58	0.10	0.023	(0.107)	0.021	0.002
260	21.67	0.10	0.023	(0.106)	0.021	0.002
261	21.75	0.10	0.023	(0.106)	0.021	0.002
262	21.83	0.07	0.015	(0.105)	0.014	0.002
263	21.92	0.07	0.015	(0.105)	0.014	0.002
264	22.00	0.07	0.015	(0.105)	0.014	0.002
265	22.08	0.10	0.023	(0.104)	0.021	0.002
266	22.17	0.10	0.023	(0.104)	0.021	0.002
267	22.25	0.10	0.023	(0.104)	0.021	0.002
268	22.33	0.07	0.015	(0.103)	0.014	0.002
269	22.42	0.07	0.015	(0.103)	0.014	0.002
270	22.50	0.07	0.015	(0.103)	0.014	0.002
271	22.58	0.07	0.015	(0.102)	0.014	0.002
272	22.67	0.07	0.015	(0.102)	0.014	0.002
273	22.75	0.07	0.015	(0.102)	0.014	0.002
274	22.83	0.07	0.015	(0.102)	0.014	0.002
275	22.92	0.07	0.015	(0.101)	0.014	0.002
276	23.00	0.07	0.015	(0.101)	0.014	0.002
277	23.08	0.07	0.015	(0.101)	0.014	0.002
278	23.17	0.07	0.015	(0.101)	0.014	0.002
279	23.25	0.07	0.015	(0.100)	0.014	0.002
280	23.33	0.07	0.015	(0.100)	0.014	0.002
281	23.42	0.07	0.015	(0.100)	0.014	0.002
282	23.50	0.07	0.015	(0.100)	0.014	0.002
283	23.58	0.07	0.015	(0.100)	0.014	0.002
284	23.67	0.07	0.015	(0.100)	0.014	0.002
285	23.75	0.07	0.015	(0.099)	0.014	0.002
286	23.83	0.07	0.015	(0.099)	0.014	0.002
287	23.92	0.07	0.015	(0.099)	0.014	0.002
288	24.00	0.07	0.015	(0.099)	0.014	0.002

(Loss Rate Not Used)

Sum = 100.0 Sum = 3.1

Flood volume = Effective rainfall 0.26(In)
times area 5.5(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 1.67(In)
Total soil loss = 0.769(Ac.Ft)
Total rainfall = 1.93(In)
Flood volume = 5261.5 Cubic Feet
Total soil loss = 33480.7 Cubic Feet

```
     -----------------------------------------------------------------
--
      Peak flow rate of this hydrograph =      0.512(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       0.0001      0.01  Q         |         |         |
|
    0+15       0.0001      0.01  Q         |         |         |
|
    0+20       0.0002      0.01  Q         |         |         |
|
    0+25       0.0003      0.01  Q         |         |         |
|
    0+30       0.0004      0.01  Q         |         |         |
|
    0+35       0.0005      0.01  Q         |         |         |
|
    0+40       0.0005      0.01  Q         |         |         |
|
    0+45       0.0006      0.01  Q         |         |         |
|
    0+50       0.0007      0.01  Q         |         |         |
|
    0+55       0.0008      0.02  Q         |         |         |
|
    1+ 0       0.0010      0.02  Q         |         |         |
|
    1+ 5       0.0011      0.02  Q         |         |         |
|
    1+10       0.0012      0.01  Q         |         |         |
|
    1+15       0.0013      0.01  Q         |         |         |
|
    1+20       0.0013      0.01  Q         |         |         |
|
    1+25       0.0014      0.01  Q         |         |         |
|
    1+30       0.0015      0.01  Q         |         |         |
|
    1+35       0.0016      0.01  Q         |         |         |
|
    1+40       0.0017      0.01  Q         |         |         |
|
    1+45       0.0018      0.01  Q         |         |         |
```

1+50	0.0019	0.01	Q
1+55	0.0020	0.02	Q
2+ 0	0.0021	0.02	Q
2+ 5	0.0022	0.02	Q
2+10	0.0024	0.02	Q
2+15	0.0025	0.02	Q
2+20	0.0026	0.02	Q
2+25	0.0027	0.02	Q
2+30	0.0028	0.02	Q
2+35	0.0030	0.02	Q
2+40	0.0031	0.02	QV
2+45	0.0033	0.02	QV
2+50	0.0034	0.02	QV
2+55	0.0036	0.02	QV
3+ 0	0.0037	0.02	QV
3+ 5	0.0038	0.02	QV
3+10	0.0040	0.02	QV
3+15	0.0041	0.02	QV
3+20	0.0043	0.02	QV
3+25	0.0044	0.02	QV
3+30	0.0046	0.02	QV
3+35	0.0047	0.02	QV
3+40	0.0049	0.02	QV
3+45	0.0050	0.02	QV
3+50	0.0052	0.02	QV
3+55	0.0054	0.03	QV
4+ 0	0.0055	0.03	QV
4+ 5	0.0057	0.03	QV
4+10	0.0059	0.03	QV
4+15	0.0061	0.03	Q V

```
|
  4+20       0.0063      0.03  Q V        |          |          |
|
  4+25       0.0065      0.03  Q V        |          |          |
|
  4+30       0.0067      0.03  Q V        |          |          |
|
  4+35       0.0069      0.03  Q V        |          |          |
|
  4+40       0.0071      0.03  Q V        |          |          |
|
  4+45       0.0073      0.03  Q V        |          |          |
|
  4+50       0.0075      0.03  Q V        |          |          |
|
  4+55       0.0077      0.03  Q V        |          |          |
|
  5+ 0       0.0080      0.03  Q V        |          |          |
|
  5+ 5       0.0082      0.03  Q V        |          |          |
|
  5+10       0.0084      0.03  Q V        |          |          |
|
  5+15       0.0086      0.03  Q V        |          |          |
|
  5+20       0.0088      0.03  Q V        |          |          |
|
  5+25       0.0090      0.03  Q V        |          |          |
|
  5+30       0.0092      0.03  Q  V       |          |          |
|
  5+35       0.0094      0.03  Q  V       |          |          |
|
  5+40       0.0096      0.03  Q  V       |          |          |
|
  5+45       0.0099      0.03  Q  V       |          |          |
|
  5+50       0.0101      0.03  Q  V       |          |          |
|
  5+55       0.0103      0.03  Q  V       |          |          |
|
  6+ 0       0.0106      0.03  Q  V       |          |          |
|
  6+ 5       0.0108      0.04  Q  V       |          |          |
|
  6+10       0.0111      0.04  Q  V       |          |          |
|
  6+15       0.0113      0.04  Q  V       |          |          |
|
  6+20       0.0116      0.04  Q  V       |          |          |
|
  6+25       0.0119      0.04  Q  V       |          |          |
|
  6+30       0.0121      0.04  Q   V      |          |          |
|
  6+35       0.0124      0.04  Q   V      |          |          |
|
  6+40       0.0127      0.04  Q   V      |          |          |
|
  6+45       0.0130      0.04  Q   V      |          |          |
```

6+50	0.0133	0.04	Q	V		
6+55	0.0136	0.04	Q	V		
7+ 0	0.0139	0.04	Q	V		
7+ 5	0.0142	0.04	Q	V		
7+10	0.0145	0.04	Q	V		
7+15	0.0148	0.04	Q	V		
7+20	0.0151	0.04	Q	V		
7+25	0.0154	0.05	Q	V		
7+30	0.0157	0.05	Q	V		
7+35	0.0161	0.05	Q	V		
7+40	0.0164	0.05	Q	V		
7+45	0.0168	0.05	Q	V		
7+50	0.0171	0.05	Q	V		
7+55	0.0175	0.06	Q	V		
8+ 0	0.0179	0.06	Q	V		
8+ 5	0.0183	0.06	Q	V		
8+10	0.0187	0.06	Q	V		
8+15	0.0192	0.06	Q	V		
8+20	0.0196	0.06	Q	V		
8+25	0.0201	0.06	Q	V		
8+30	0.0205	0.06	Q	V		
8+35	0.0210	0.07	Q	V		
8+40	0.0215	0.07	Q	V		
8+45	0.0219	0.07	Q	V		
8+50	0.0224	0.07	Q	V		
8+55	0.0229	0.07	Q	V		
9+ 0	0.0234	0.07	Q	V		
9+ 5	0.0239	0.08	Q	V		
9+10	0.0245	0.08	Q	V		
9+15	0.0251	0.08	Q	V		

```
|
    9+20       0.0256      0.08  Q       V |         |         |
|
    9+25       0.0262      0.09  Q       V |         |         |
|
    9+30       0.0268      0.09  Q       V |         |         |
|
    9+35       0.0274      0.09  Q        V|         |         |
|
    9+40       0.0280      0.09  Q        V|         |         |
|
    9+45       0.0286      0.09  Q        V|         |         |
|
    9+50       0.0293      0.09  Q        V|         |         |
|
    9+55       0.0299      0.09  Q        V|         |         |
|
   10+ 0       0.0306      0.09  Q         V         |         |
|
   10+ 5       0.0312      0.08  Q         V         |         |
|
   10+10       0.0316      0.07  Q         V         |         |
|
   10+15       0.0321      0.07  Q         V         |         |
|
   10+20       0.0325      0.06  Q         V         |         |
|
   10+25       0.0330      0.06  Q         V         |         |
|
   10+30       0.0334      0.06  Q         |V        |         |
|
   10+35       0.0339      0.07  Q         |V        |         |
|
   10+40       0.0345      0.08  Q         |V        |         |
|
   10+45       0.0351      0.09  Q         |V        |         |
|
   10+50       0.0357      0.09  Q         |V        |         |
|
   10+55       0.0363      0.09  Q         | V       |         |
|
   11+ 0       0.0369      0.09  Q         | V       |         |
|
   11+ 5       0.0374      0.08  Q         | V       |         |
|
   11+10       0.0380      0.08  Q         | V       |         |
|
   11+15       0.0386      0.08  Q         | V       |         |
|
   11+20       0.0391      0.08  Q         | V       |         |
|
   11+25       0.0397      0.08  Q         |  V      |         |
|
   11+30       0.0403      0.08  Q         |  V      |         |
|
   11+35       0.0408      0.08  Q         |  V      |         |
|
   11+40       0.0413      0.07  Q         |  V      |         |
|
   11+45       0.0418      0.07  Q         |  V      |         |
```

```
|
 11+50       0.0423      0.07  Q         |   V     |         |
|
 11+55       0.0429      0.08  Q         |   V     |         |
|
 12+ 0       0.0434      0.08  Q         |   V     |         |
|
 12+ 5       0.0440      0.09  Q         |   V     |         |
|
 12+10       0.0447      0.10  Q         |   V     |         |
|
 12+15       0.0454      0.11  Q         |    V    |         |
|
 12+20       0.0462      0.11  Q         |    V    |         |
|
 12+25       0.0470      0.11  Q         |    V    |         |
|
 12+30       0.0477      0.11  Q         |    V    |         |
|
 12+35       0.0487      0.14  Q         |     V   |         |
|
 12+40       0.0500      0.19  Q         |     V   |         |
|
 12+45       0.0515      0.21  Q         |      V  |         |
|
 12+50       0.0530      0.23  Q         |      V  |         |
|
 12+55       0.0548      0.26  |Q        |       V |         |
|
 13+ 0       0.0566      0.27  |Q        |       V |         |
|
 13+ 5       0.0590      0.34  |Q        |        V|         |
|
 13+10       0.0622      0.46  |Q        |         V         |
|
 13+15       0.0656      0.49  |Q        |         |V        |
|
 13+20       0.0690      0.50  | Q       |         | V       |
|
 13+25       0.0725      0.51  | Q       |         |   V     |
|
 13+30       0.0760      0.51  | Q       |         |    V    |
|
 13+35       0.0786      0.38  |Q        |         |     V   |
|
 13+40       0.0797      0.16  Q         |         |     V   |
|
 13+45       0.0805      0.11  Q         |         |     V   |
|
 13+50       0.0812      0.10  Q         |         |     V   |
|
 13+55       0.0819      0.10  Q         |         |      V  |
|
 14+ 0       0.0825      0.10  Q         |         |      V  |
|
 14+ 5       0.0835      0.15  Q         |         |      V  |
|
 14+10       0.0851      0.23  Q         |         |       V |
|
 14+15       0.0868      0.25  Q         |         |       V |
```

```
|
  14+20      0.0885     0.24  Q         |         |        V|
|
  14+25      0.0901     0.23  Q         |         |        V|
|
  14+30      0.0916     0.23  Q         |         |         V
|
  14+35      0.0932     0.23  Q         |         |         V
|
  14+40      0.0948     0.23  Q         |         |         |V
|
  14+45      0.0964     0.24  Q         |         |         |V
|
  14+50      0.0980     0.23  Q         |         |         | V
|
  14+55      0.0995     0.21  Q         |         |         | V
|
  15+ 0      0.1009     0.21  Q         |         |         |  V
|
  15+ 5      0.1023     0.20  Q         |         |         |  V
|
  15+10      0.1035     0.18  Q         |         |         |   V
|
  15+15      0.1048     0.18  Q         |         |         |   V
|
  15+20      0.1059     0.17  Q         |         |         |    V
|
  15+25      0.1070     0.15  Q         |         |         |    V
|
  15+30      0.1080     0.15  Q         |         |         |    V
|
  15+35      0.1089     0.13  Q         |         |         |     V
|
  15+40      0.1095     0.09  Q         |         |         |     V
|
  15+45      0.1101     0.08  Q         |         |         |     V
|
  15+50      0.1106     0.08  Q         |         |         |     V
|
  15+55      0.1112     0.08  Q         |         |         |     V
|
  16+ 0      0.1118     0.08  Q         |         |         |      V
|
  16+ 5      0.1122     0.06  Q         |         |         |      V
|
  16+10      0.1124     0.03  Q         |         |         |      V
|
  16+15      0.1125     0.02  Q         |         |         |      V
|
  16+20      0.1126     0.02  Q         |         |         |      V
|
  16+25      0.1127     0.02  Q         |         |         |      V
|
  16+30      0.1129     0.02  Q         |         |         |      V
|
  16+35      0.1130     0.02  Q         |         |         |      V
|
  16+40      0.1131     0.01  Q         |         |         |      V
|
  16+45      0.1132     0.01  Q         |         |         |      V
```

```
|
  16+50      0.1132     0.01  Q          |         |         |      V
|
  16+55      0.1133     0.01  Q          |         |         |      V
|
  17+ 0      0.1134     0.01  Q          |         |         |      V
|
  17+ 5      0.1135     0.02  Q          |         |         |      V
|
  17+10      0.1137     0.02  Q          |         |         |      V
|
  17+15      0.1138     0.02  Q          |         |         |      V
|
  17+20      0.1140     0.02  Q          |         |         |      V
|
  17+25      0.1141     0.02  Q          |         |         |      V
|
  17+30      0.1143     0.02  Q          |         |         |      V
|
  17+35      0.1144     0.02  Q          |         |         |      V
|
  17+40      0.1146     0.02  Q          |         |         |      V
|
  17+45      0.1147     0.02  Q          |         |         |      V
|
  17+50      0.1148     0.02  Q          |         |         |       V
|
  17+55      0.1150     0.02  Q          |         |         |       V
|
  18+ 0      0.1151     0.02  Q          |         |         |       V
|
  18+ 5      0.1152     0.02  Q          |         |         |       V
|
  18+10      0.1153     0.02  Q          |         |         |       V
|
  18+15      0.1154     0.02  Q          |         |         |       V
|
  18+20      0.1156     0.02  Q          |         |         |       V
|
  18+25      0.1157     0.02  Q          |         |         |       V
|
  18+30      0.1158     0.02  Q          |         |         |       V
|
  18+35      0.1159     0.02  Q          |         |         |       V
|
  18+40      0.1160     0.01  Q          |         |         |       V
|
  18+45      0.1161     0.01  Q          |         |         |       V
|
  18+50      0.1162     0.01  Q          |         |         |       V
|
  18+55      0.1162     0.01  Q          |         |         |       V
|
  19+ 0      0.1163     0.01  Q          |         |         |       V
|
  19+ 5      0.1164     0.01  Q          |         |         |       V
|
  19+10      0.1164     0.01  Q          |         |         |       V
|
  19+15      0.1165     0.01  Q          |         |         |       V
```

```
|
   19+20       0.1166      0.01  Q          |          |          |        V
|
   19+25       0.1167      0.02  Q          |          |          |        V
|
   19+30       0.1169      0.02  Q          |          |          |        V
|
   19+35       0.1170      0.02  Q          |          |          |        V
|
   19+40       0.1171      0.01  Q          |          |          |        V
|
   19+45       0.1172      0.01  Q          |          |          |        V
|
   19+50       0.1172      0.01  Q          |          |          |        V
|
   19+55       0.1173      0.01  Q          |          |          |        V
|
   20+ 0       0.1174      0.01  Q          |          |          |        V
|
   20+ 5       0.1174      0.01  Q          |          |          |        V
|
   20+10       0.1175      0.01  Q          |          |          |        V
|
   20+15       0.1176      0.01  Q          |          |          |        V
|
   20+20       0.1177      0.01  Q          |          |          |        V
|
   20+25       0.1178      0.01  Q          |          |          |
V|
   20+30       0.1179      0.01  Q          |          |          |
V|
   20+35       0.1180      0.01  Q          |          |          |
V|
   20+40       0.1180      0.01  Q          |          |          |
V|
   20+45       0.1181      0.01  Q          |          |          |
V|
   20+50       0.1182      0.01  Q          |          |          |
V|
   20+55       0.1183      0.01  Q          |          |          |
V|
   21+ 0       0.1183      0.01  Q          |          |          |
V|
   21+ 5       0.1184      0.01  Q          |          |          |
V|
   21+10       0.1185      0.01  Q          |          |          |
V|
   21+15       0.1186      0.01  Q          |          |          |
V|
   21+20       0.1187      0.01  Q          |          |          |
V|
   21+25       0.1187      0.01  Q          |          |          |
V|
   21+30       0.1188      0.01  Q          |          |          |
V|
   21+35       0.1188      0.01  Q          |          |          |
V|
   21+40       0.1189      0.01  Q          |          |          |
V|
   21+45       0.1190      0.01  Q          |          |          |
```

V|
21+50 0.1191 0.01 Q | | |
V|
21+55 0.1192 0.01 Q | | |
V|
22+ 0 0.1192 0.01 Q | | |
V|
22+ 5 0.1193 0.01 Q | | |
V|
22+10 0.1194 0.01 Q | | |
V|
22+15 0.1195 0.01 Q | | |
V|
22+20 0.1195 0.01 Q | | |
V|
22+25 0.1196 0.01 Q | | |
V|
22+30 0.1197 0.01 Q | | |
V|
22+35 0.1197 0.01 Q | | |
V|
22+40 0.1198 0.01 Q | | |
V|
22+45 0.1198 0.01 Q | | |
V|
22+50 0.1199 0.01 Q | | |
V|
22+55 0.1200 0.01 Q | | |
V|
23+ 0 0.1200 0.01 Q | | |
V|
23+ 5 0.1201 0.01 Q | | |
V|
23+10 0.1201 0.01 Q | | |
V|
23+15 0.1202 0.01 Q | | |
V|
23+20 0.1203 0.01 Q | | |
V|
23+25 0.1203 0.01 Q | | |
V|
23+30 0.1204 0.01 Q | | |
V|
23+35 0.1204 0.01 Q | | |
V|
23+40 0.1205 0.01 Q | | |
V|
23+45 0.1206 0.01 Q | | |
V|
23+50 0.1206 0.01 Q | | |
V|
23+55 0.1207 0.01 Q | | |
V|
24+ 0 0.1207 0.01 Q | | |
V|
24+ 5 0.1208 0.01 Q | | |
V|
24+10 0.1208 0.00 Q | | |
V|
24+15 0.1208 0.00 Q | | |

```
V|
   24+20        0.1208       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

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Study date 11/09/21 File: moval33post242.out

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

Program License Serial Number 6232

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

English Units used in output format

Gateway Heights
Proposed Condition
Unit Hydrograph
Area B

Drainage Area = 10.90(Ac.) = 0.017 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 10.90(Ac.) = 0.017 Sq. Mi.
Length along longest watercourse = 1380.00(Ft.)
Length along longest watercourse measured to centroid = 828.00 (Ft.)
Length along longest watercourse = 0.261 Mi.
Length along longest watercourse measured to centroid = 0.157 Mi.
Difference in elevation = 52.00(Ft.)
Slope along watercourse = 198.9565 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.039 Hr.
Lag time = 2.35 Min.
25% of lag time = 0.59 Min.
40% of lag time = 0.94 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]

10.90	1.93	21.04

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
10.90	4.64	50.58

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.930(In)
Area Averaged 100-Year Rainfall = 4.640(In)

Point rain (area averaged) = 1.930(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.930(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
10.900	69.00	0.650

Total Area Entered = 10.90(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.650	0.155	1.000	0.155

Sum (F) = 0.155

Area averaged mean soil loss (F) (In/Hr) = 0.155
Minimum soil loss rate ((In/Hr)) = 0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.380

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	213.048	44.793	4.921
2	0.167	426.095	48.755	5.356
3	0.250	639.143	5.617	0.617
4	0.333	852.190	0.835	0.092
			Sum = 100.000	Sum= 10.985

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	0.015	(0.274)	0.006	0.010
2	0.17	0.07	0.015	(0.273)	0.006	0.010
3	0.25	0.07	0.015	(0.272)	0.006	0.010
4	0.33	0.10	0.023	(0.271)	0.009	0.014
5	0.42	0.10	0.023	(0.270)	0.009	0.014
6	0.50	0.10	0.023	(0.269)	0.009	0.014
7	0.58	0.10	0.023	(0.268)	0.009	0.014
8	0.67	0.10	0.023	(0.267)	0.009	0.014
9	0.75	0.10	0.023	(0.266)	0.009	0.014
10	0.83	0.13	0.031	(0.265)	0.012	0.019
11	0.92	0.13	0.031	(0.264)	0.012	0.019
12	1.00	0.13	0.031	(0.263)	0.012	0.019
13	1.08	0.10	0.023	(0.262)	0.009	0.014
14	1.17	0.10	0.023	(0.261)	0.009	0.014
15	1.25	0.10	0.023	(0.260)	0.009	0.014
16	1.33	0.10	0.023	(0.259)	0.009	0.014
17	1.42	0.10	0.023	(0.258)	0.009	0.014
18	1.50	0.10	0.023	(0.257)	0.009	0.014
19	1.58	0.10	0.023	(0.255)	0.009	0.014
20	1.67	0.10	0.023	(0.254)	0.009	0.014
21	1.75	0.10	0.023	(0.253)	0.009	0.014
22	1.83	0.13	0.031	(0.252)	0.012	0.019
23	1.92	0.13	0.031	(0.251)	0.012	0.019
24	2.00	0.13	0.031	(0.250)	0.012	0.019
25	2.08	0.13	0.031	(0.249)	0.012	0.019
26	2.17	0.13	0.031	(0.248)	0.012	0.019
27	2.25	0.13	0.031	(0.247)	0.012	0.019
28	2.33	0.13	0.031	(0.246)	0.012	0.019
29	2.42	0.13	0.031	(0.245)	0.012	0.019
30	2.50	0.13	0.031	(0.244)	0.012	0.019
31	2.58	0.17	0.039	(0.243)	0.015	0.024
32	2.67	0.17	0.039	(0.242)	0.015	0.024
33	2.75	0.17	0.039	(0.241)	0.015	0.024
34	2.83	0.17	0.039	(0.240)	0.015	0.024
35	2.92	0.17	0.039	(0.239)	0.015	0.024
36	3.00	0.17	0.039	(0.238)	0.015	0.024
37	3.08	0.17	0.039	(0.237)	0.015	0.024
38	3.17	0.17	0.039	(0.236)	0.015	0.024
39	3.25	0.17	0.039	(0.235)	0.015	0.024
40	3.33	0.17	0.039	(0.234)	0.015	0.024
41	3.42	0.17	0.039	(0.233)	0.015	0.024
42	3.50	0.17	0.039	(0.232)	0.015	0.024
43	3.58	0.17	0.039	(0.232)	0.015	0.024
44	3.67	0.17	0.039	(0.231)	0.015	0.024
45	3.75	0.17	0.039	(0.230)	0.015	0.024
46	3.83	0.20	0.046	(0.229)	0.018	0.029
47	3.92	0.20	0.046	(0.228)	0.018	0.029
48	4.00	0.20	0.046	(0.227)	0.018	0.029
49	4.08	0.20	0.046	(0.226)	0.018	0.029
50	4.17	0.20	0.046	(0.225)	0.018	0.029
51	4.25	0.20	0.046	(0.224)	0.018	0.029
52	4.33	0.23	0.054	(0.223)	0.021	0.034
53	4.42	0.23	0.054	(0.222)	0.021	0.034
54	4.50	0.23	0.054	(0.221)	0.021	0.034
55	4.58	0.23	0.054	(0.220)	0.021	0.034
56	4.67	0.23	0.054	(0.219)	0.021	0.034
57	4.75	0.23	0.054	(0.218)	0.021	0.034
58	4.83	0.27	0.062	(0.217)	0.023	0.038

59	4.92	0.27	0.062	(0.216)	0.023	0.038
60	5.00	0.27	0.062	(0.215)	0.023	0.038
61	5.08	0.20	0.046	(0.214)	0.018	0.029
62	5.17	0.20	0.046	(0.213)	0.018	0.029
63	5.25	0.20	0.046	(0.212)	0.018	0.029
64	5.33	0.23	0.054	(0.212)	0.021	0.034
65	5.42	0.23	0.054	(0.211)	0.021	0.034
66	5.50	0.23	0.054	(0.210)	0.021	0.034
67	5.58	0.27	0.062	(0.209)	0.023	0.038
68	5.67	0.27	0.062	(0.208)	0.023	0.038
69	5.75	0.27	0.062	(0.207)	0.023	0.038
70	5.83	0.27	0.062	(0.206)	0.023	0.038
71	5.92	0.27	0.062	(0.205)	0.023	0.038
72	6.00	0.27	0.062	(0.204)	0.023	0.038
73	6.08	0.30	0.069	(0.203)	0.026	0.043
74	6.17	0.30	0.069	(0.202)	0.026	0.043
75	6.25	0.30	0.069	(0.202)	0.026	0.043
76	6.33	0.30	0.069	(0.201)	0.026	0.043
77	6.42	0.30	0.069	(0.200)	0.026	0.043
78	6.50	0.30	0.069	(0.199)	0.026	0.043
79	6.58	0.33	0.077	(0.198)	0.029	0.048
80	6.67	0.33	0.077	(0.197)	0.029	0.048
81	6.75	0.33	0.077	(0.196)	0.029	0.048
82	6.83	0.33	0.077	(0.195)	0.029	0.048
83	6.92	0.33	0.077	(0.194)	0.029	0.048
84	7.00	0.33	0.077	(0.193)	0.029	0.048
85	7.08	0.33	0.077	(0.193)	0.029	0.048
86	7.17	0.33	0.077	(0.192)	0.029	0.048
87	7.25	0.33	0.077	(0.191)	0.029	0.048
88	7.33	0.37	0.085	(0.190)	0.032	0.053
89	7.42	0.37	0.085	(0.189)	0.032	0.053
90	7.50	0.37	0.085	(0.188)	0.032	0.053
91	7.58	0.40	0.093	(0.187)	0.035	0.057
92	7.67	0.40	0.093	(0.187)	0.035	0.057
93	7.75	0.40	0.093	(0.186)	0.035	0.057
94	7.83	0.43	0.100	(0.185)	0.038	0.062
95	7.92	0.43	0.100	(0.184)	0.038	0.062
96	8.00	0.43	0.100	(0.183)	0.038	0.062
97	8.08	0.50	0.116	(0.182)	0.044	0.072
98	8.17	0.50	0.116	(0.181)	0.044	0.072
99	8.25	0.50	0.116	(0.181)	0.044	0.072
100	8.33	0.50	0.116	(0.180)	0.044	0.072
101	8.42	0.50	0.116	(0.179)	0.044	0.072
102	8.50	0.50	0.116	(0.178)	0.044	0.072
103	8.58	0.53	0.124	(0.177)	0.047	0.077
104	8.67	0.53	0.124	(0.176)	0.047	0.077
105	8.75	0.53	0.124	(0.176)	0.047	0.077
106	8.83	0.57	0.131	(0.175)	0.050	0.081
107	8.92	0.57	0.131	(0.174)	0.050	0.081
108	9.00	0.57	0.131	(0.173)	0.050	0.081
109	9.08	0.63	0.147	(0.172)	0.056	0.091
110	9.17	0.63	0.147	(0.171)	0.056	0.091
111	9.25	0.63	0.147	(0.171)	0.056	0.091
112	9.33	0.67	0.154	(0.170)	0.059	0.096
113	9.42	0.67	0.154	(0.169)	0.059	0.096
114	9.50	0.67	0.154	(0.168)	0.059	0.096
115	9.58	0.70	0.162	(0.167)	0.062	0.101
116	9.67	0.70	0.162	(0.167)	0.062	0.101
117	9.75	0.70	0.162	(0.166)	0.062	0.101
118	9.83	0.73	0.170	(0.165)	0.065	0.105

119	9.92	0.73	0.170	(0.164)	0.065	0.105
120	10.00	0.73	0.170	(0.163)	0.065	0.105
121	10.08	0.50	0.116	(0.163)	0.044	0.072
122	10.17	0.50	0.116	(0.162)	0.044	0.072
123	10.25	0.50	0.116	(0.161)	0.044	0.072
124	10.33	0.50	0.116	(0.160)	0.044	0.072
125	10.42	0.50	0.116	(0.159)	0.044	0.072
126	10.50	0.50	0.116	(0.159)	0.044	0.072
127	10.58	0.67	0.154	(0.158)	0.059	0.096
128	10.67	0.67	0.154	(0.157)	0.059	0.096
129	10.75	0.67	0.154	(0.156)	0.059	0.096
130	10.83	0.67	0.154	(0.156)	0.059	0.096
131	10.92	0.67	0.154	(0.155)	0.059	0.096
132	11.00	0.67	0.154	(0.154)	0.059	0.096
133	11.08	0.63	0.147	(0.153)	0.056	0.091
134	11.17	0.63	0.147	(0.153)	0.056	0.091
135	11.25	0.63	0.147	(0.152)	0.056	0.091
136	11.33	0.63	0.147	(0.151)	0.056	0.091
137	11.42	0.63	0.147	(0.150)	0.056	0.091
138	11.50	0.63	0.147	(0.150)	0.056	0.091
139	11.58	0.57	0.131	(0.149)	0.050	0.081
140	11.67	0.57	0.131	(0.148)	0.050	0.081
141	11.75	0.57	0.131	(0.147)	0.050	0.081
142	11.83	0.60	0.139	(0.147)	0.053	0.086
143	11.92	0.60	0.139	(0.146)	0.053	0.086
144	12.00	0.60	0.139	(0.145)	0.053	0.086
145	12.08	0.83	0.193	(0.144)	0.073	0.120
146	12.17	0.83	0.193	(0.144)	0.073	0.120
147	12.25	0.83	0.193	(0.143)	0.073	0.120
148	12.33	0.87	0.201	(0.142)	0.076	0.124
149	12.42	0.87	0.201	(0.142)	0.076	0.124
150	12.50	0.87	0.201	(0.141)	0.076	0.124
151	12.58	0.93	0.216	(0.140)	0.082	0.134
152	12.67	0.93	0.216	(0.139)	0.082	0.134
153	12.75	0.93	0.216	(0.139)	0.082	0.134
154	12.83	0.97	0.224	(0.138)	0.085	0.139
155	12.92	0.97	0.224	(0.137)	0.085	0.139
156	13.00	0.97	0.224	(0.137)	0.085	0.139
157	13.08	1.13	0.262	(0.136)	0.100	0.163
158	13.17	1.13	0.262	(0.135)	0.100	0.163
159	13.25	1.13	0.262	(0.135)	0.100	0.163
160	13.33	1.13	0.262	(0.134)	0.100	0.163
161	13.42	1.13	0.262	(0.133)	0.100	0.163
162	13.50	1.13	0.262	(0.133)	0.100	0.163
163	13.58	0.77	0.178	(0.132)	0.067	0.110
164	13.67	0.77	0.178	(0.131)	0.067	0.110
165	13.75	0.77	0.178	(0.130)	0.067	0.110
166	13.83	0.77	0.178	(0.130)	0.067	0.110
167	13.92	0.77	0.178	(0.129)	0.067	0.110
168	14.00	0.77	0.178	(0.129)	0.067	0.110
169	14.08	0.90	0.208	(0.128)	0.079	0.129
170	14.17	0.90	0.208	(0.127)	0.079	0.129
171	14.25	0.90	0.208	(0.127)	0.079	0.129
172	14.33	0.87	0.201	(0.126)	0.076	0.124
173	14.42	0.87	0.201	(0.125)	0.076	0.124
174	14.50	0.87	0.201	(0.125)	0.076	0.124
175	14.58	0.87	0.201	(0.124)	0.076	0.124
176	14.67	0.87	0.201	(0.123)	0.076	0.124
177	14.75	0.87	0.201	(0.123)	0.076	0.124
178	14.83	0.83	0.193	(0.122)	0.073	0.120

179	14.92	0.83	0.193	(0.121)	0.073	0.120
180	15.00	0.83	0.193	(0.121)	0.073	0.120
181	15.08	0.80	0.185	(0.120)	0.070	0.115
182	15.17	0.80	0.185	(0.120)	0.070	0.115
183	15.25	0.80	0.185	(0.119)	0.070	0.115
184	15.33	0.77	0.178	(0.118)	0.067	0.110
185	15.42	0.77	0.178	(0.118)	0.067	0.110
186	15.50	0.77	0.178	(0.117)	0.067	0.110
187	15.58	0.63	0.147	(0.117)	0.056	0.091
188	15.67	0.63	0.147	(0.116)	0.056	0.091
189	15.75	0.63	0.147	(0.115)	0.056	0.091
190	15.83	0.63	0.147	(0.115)	0.056	0.091
191	15.92	0.63	0.147	(0.114)	0.056	0.091
192	16.00	0.63	0.147	(0.114)	0.056	0.091
193	16.08	0.13	0.031	(0.113)	0.012	0.019
194	16.17	0.13	0.031	(0.112)	0.012	0.019
195	16.25	0.13	0.031	(0.112)	0.012	0.019
196	16.33	0.13	0.031	(0.111)	0.012	0.019
197	16.42	0.13	0.031	(0.111)	0.012	0.019
198	16.50	0.13	0.031	(0.110)	0.012	0.019
199	16.58	0.10	0.023	(0.110)	0.009	0.014
200	16.67	0.10	0.023	(0.109)	0.009	0.014
201	16.75	0.10	0.023	(0.109)	0.009	0.014
202	16.83	0.10	0.023	(0.108)	0.009	0.014
203	16.92	0.10	0.023	(0.107)	0.009	0.014
204	17.00	0.10	0.023	(0.107)	0.009	0.014
205	17.08	0.17	0.039	(0.106)	0.015	0.024
206	17.17	0.17	0.039	(0.106)	0.015	0.024
207	17.25	0.17	0.039	(0.105)	0.015	0.024
208	17.33	0.17	0.039	(0.105)	0.015	0.024
209	17.42	0.17	0.039	(0.104)	0.015	0.024
210	17.50	0.17	0.039	(0.104)	0.015	0.024
211	17.58	0.17	0.039	(0.103)	0.015	0.024
212	17.67	0.17	0.039	(0.103)	0.015	0.024
213	17.75	0.17	0.039	(0.102)	0.015	0.024
214	17.83	0.13	0.031	(0.102)	0.012	0.019
215	17.92	0.13	0.031	(0.101)	0.012	0.019
216	18.00	0.13	0.031	(0.101)	0.012	0.019
217	18.08	0.13	0.031	(0.100)	0.012	0.019
218	18.17	0.13	0.031	(0.100)	0.012	0.019
219	18.25	0.13	0.031	(0.099)	0.012	0.019
220	18.33	0.13	0.031	(0.099)	0.012	0.019
221	18.42	0.13	0.031	(0.098)	0.012	0.019
222	18.50	0.13	0.031	(0.098)	0.012	0.019
223	18.58	0.10	0.023	(0.097)	0.009	0.014
224	18.67	0.10	0.023	(0.097)	0.009	0.014
225	18.75	0.10	0.023	(0.096)	0.009	0.014
226	18.83	0.07	0.015	(0.096)	0.006	0.010
227	18.92	0.07	0.015	(0.095)	0.006	0.010
228	19.00	0.07	0.015	(0.095)	0.006	0.010
229	19.08	0.10	0.023	(0.094)	0.009	0.014
230	19.17	0.10	0.023	(0.094)	0.009	0.014
231	19.25	0.10	0.023	(0.094)	0.009	0.014
232	19.33	0.13	0.031	(0.093)	0.012	0.019
233	19.42	0.13	0.031	(0.093)	0.012	0.019
234	19.50	0.13	0.031	(0.092)	0.012	0.019
235	19.58	0.10	0.023	(0.092)	0.009	0.014
236	19.67	0.10	0.023	(0.091)	0.009	0.014
237	19.75	0.10	0.023	(0.091)	0.009	0.014
238	19.83	0.07	0.015	(0.091)	0.006	0.010

239	19.92	0.07	0.015	(0.090)	0.006	0.010
240	20.00	0.07	0.015	(0.090)	0.006	0.010
241	20.08	0.10	0.023	(0.089)	0.009	0.014
242	20.17	0.10	0.023	(0.089)	0.009	0.014
243	20.25	0.10	0.023	(0.089)	0.009	0.014
244	20.33	0.10	0.023	(0.088)	0.009	0.014
245	20.42	0.10	0.023	(0.088)	0.009	0.014
246	20.50	0.10	0.023	(0.088)	0.009	0.014
247	20.58	0.10	0.023	(0.087)	0.009	0.014
248	20.67	0.10	0.023	(0.087)	0.009	0.014
249	20.75	0.10	0.023	(0.086)	0.009	0.014
250	20.83	0.07	0.015	(0.086)	0.006	0.010
251	20.92	0.07	0.015	(0.086)	0.006	0.010
252	21.00	0.07	0.015	(0.085)	0.006	0.010
253	21.08	0.10	0.023	(0.085)	0.009	0.014
254	21.17	0.10	0.023	(0.085)	0.009	0.014
255	21.25	0.10	0.023	(0.084)	0.009	0.014
256	21.33	0.07	0.015	(0.084)	0.006	0.010
257	21.42	0.07	0.015	(0.084)	0.006	0.010
258	21.50	0.07	0.015	(0.083)	0.006	0.010
259	21.58	0.10	0.023	(0.083)	0.009	0.014
260	21.67	0.10	0.023	(0.083)	0.009	0.014
261	21.75	0.10	0.023	(0.083)	0.009	0.014
262	21.83	0.07	0.015	(0.082)	0.006	0.010
263	21.92	0.07	0.015	(0.082)	0.006	0.010
264	22.00	0.07	0.015	(0.082)	0.006	0.010
265	22.08	0.10	0.023	(0.081)	0.009	0.014
266	22.17	0.10	0.023	(0.081)	0.009	0.014
267	22.25	0.10	0.023	(0.081)	0.009	0.014
268	22.33	0.07	0.015	(0.081)	0.006	0.010
269	22.42	0.07	0.015	(0.080)	0.006	0.010
270	22.50	0.07	0.015	(0.080)	0.006	0.010
271	22.58	0.07	0.015	(0.080)	0.006	0.010
272	22.67	0.07	0.015	(0.080)	0.006	0.010
273	22.75	0.07	0.015	(0.079)	0.006	0.010
274	22.83	0.07	0.015	(0.079)	0.006	0.010
275	22.92	0.07	0.015	(0.079)	0.006	0.010
276	23.00	0.07	0.015	(0.079)	0.006	0.010
277	23.08	0.07	0.015	(0.079)	0.006	0.010
278	23.17	0.07	0.015	(0.079)	0.006	0.010
279	23.25	0.07	0.015	(0.078)	0.006	0.010
280	23.33	0.07	0.015	(0.078)	0.006	0.010
281	23.42	0.07	0.015	(0.078)	0.006	0.010
282	23.50	0.07	0.015	(0.078)	0.006	0.010
283	23.58	0.07	0.015	(0.078)	0.006	0.010
284	23.67	0.07	0.015	(0.078)	0.006	0.010
285	23.75	0.07	0.015	(0.078)	0.006	0.010
286	23.83	0.07	0.015	(0.077)	0.006	0.010
287	23.92	0.07	0.015	(0.077)	0.006	0.010
288	24.00	0.07	0.015	(0.077)	0.006	0.010

(Loss Rate Not Used)

Sum = 100.0 Sum = 14.4

Flood volume = Effective rainfall 1.20(In)
times area 10.9(Ac.)/[(In)/(Ft.)] = 1.1(Ac.Ft)
Total soil loss = 0.73(In)
Total soil loss = 0.666(Ac.Ft)
Total rainfall = 1.93(In)
Flood volume = 47344.9 Cubic Feet
Total soil loss = 29017.8 Cubic Feet

```
--
       Peak flow rate of this hydrograph =      1.789(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       0.0003      0.05  Q         |         |         |
|
    0+10       0.0010      0.10  Q         |         |         |
|
    0+15       0.0017      0.10  Q         |         |         |
|
    0+20       0.0026      0.13  Q         |         |         |
|
    0+25       0.0037      0.15  Q         |         |         |
|
    0+30       0.0048      0.16  Q         |         |         |
|
    0+35       0.0058      0.16  Q         |         |         |
|
    0+40       0.0069      0.16  Q         |         |         |
|
    0+45       0.0080      0.16  Q         |         |         |
|
    0+50       0.0093      0.18  Q         |         |         |
|
    0+55       0.0107      0.21  Q         |         |         |
|
    1+ 0       0.0121      0.21  Q         |         |         |
|
    1+ 5       0.0134      0.19  Q         |         |         |
|
    1+10       0.0145      0.16  Q         |         |         |
|
    1+15       0.0156      0.16  Q         |         |         |
|
    1+20       0.0167      0.16  Q         |         |         |
|
    1+25       0.0178      0.16  Q         |         |         |
|
    1+30       0.0189      0.16  Q         |         |         |
|
    1+35       0.0200      0.16  Q         |         |         |
|
    1+40       0.0211      0.16  Q         |         |         |
|
    1+45       0.0221      0.16  Q         |         |         |
|
```

```
      1+50       0.0234      0.18  Q         |         |         |
|
      1+55       0.0248      0.21  Q         |         |         |
|
      2+ 0       0.0263      0.21  Q         |         |         |
|
      2+ 5       0.0277      0.21  QV        |         |         |
|
      2+10       0.0292      0.21  QV        |         |         |
|
      2+15       0.0306      0.21  QV        |         |         |
|
      2+20       0.0321      0.21  QV        |         |         |
|
      2+25       0.0335      0.21  QV        |         |         |
|
      2+30       0.0350      0.21  QV        |         |         |
|
      2+35       0.0366      0.23  QV        |         |         |
|
      2+40       0.0384      0.26  |Q        |         |         |
|
      2+45       0.0402      0.26  |Q        |         |         |
|
      2+50       0.0420      0.26  |Q        |         |         |
|
      2+55       0.0438      0.26  |Q        |         |         |
|
      3+ 0       0.0456      0.26  |Q        |         |         |
|
      3+ 5       0.0474      0.26  |Q        |         |         |
|
      3+10       0.0492      0.26  |Q        |         |         |
|
      3+15       0.0510      0.26  |Q        |         |         |
|
      3+20       0.0529      0.26  |Q        |         |         |
|
      3+25       0.0547      0.26  |QV       |         |         |
|
      3+30       0.0565      0.26  |QV       |         |         |
|
      3+35       0.0583      0.26  |QV       |         |         |
|
      3+40       0.0601      0.26  |QV       |         |         |
|
      3+45       0.0619      0.26  |QV       |         |         |
|
      3+50       0.0639      0.29  |QV       |         |         |
|
      3+55       0.0660      0.31  |QV       |         |         |
|
      4+ 0       0.0682      0.32  |QV       |         |         |
|
      4+ 5       0.0704      0.32  |QV       |         |         |
|
      4+10       0.0725      0.32  |QV       |         |         |
|
      4+15       0.0747      0.32  |QV       |         |         |
|
```

```
    4+20       0.0771      0.34  |QV        |         |         |
|
    4+25       0.0796      0.36  |QV        |         |         |
|
    4+30       0.0821      0.37  |Q V       |         |         |
|
    4+35       0.0846      0.37  |Q V       |         |         |
|
    4+40       0.0872      0.37  |Q V       |         |         |
|
    4+45       0.0897      0.37  |Q V       |         |         |
|
    4+50       0.0924      0.39  |Q V       |         |         |
|
    4+55       0.0953      0.42  |Q V       |         |         |
|
    5+ 0       0.0982      0.42  |Q V       |         |         |
|
    5+ 5       0.1008      0.37  |Q V       |         |         |
|
    5+10       0.1030      0.32  |Q V       |         |         |
|
    5+15       0.1052      0.32  |Q V       |         |         |
|
    5+20       0.1075      0.34  |Q V       |         |         |
|
    5+25       0.1100      0.36  |Q  V      |         |         |
|
    5+30       0.1125      0.37  |Q  V      |         |         |
|
    5+35       0.1152      0.39  |Q  V      |         |         |
|
    5+40       0.1181      0.42  |Q  V      |         |         |
|
    5+45       0.1210      0.42  |Q  V      |         |         |
|
    5+50       0.1239      0.42  |Q  V      |         |         |
|
    5+55       0.1268      0.42  |Q  V      |         |         |
|
    6+ 0       0.1297      0.42  |Q  V      |         |         |
|
    6+ 5       0.1328      0.44  |Q  V      |         |         |
|
    6+10       0.1360      0.47  |Q   V     |         |         |
|
    6+15       0.1393      0.47  |Q   V     |         |         |
|
    6+20       0.1425      0.47  |Q   V     |         |         |
|
    6+25       0.1458      0.47  |Q   V     |         |         |
|
    6+30       0.1490      0.47  |Q   V     |         |         |
|
    6+35       0.1525      0.50  |Q   V     |         |         |
|
    6+40       0.1561      0.52  | Q  V     |         |         |
|
    6+45       0.1597      0.53  | Q  V     |         |         |
|
```

```
    6+50       0.1633      0.53  | Q   V   |         |         |
|
    6+55       0.1669      0.53  | Q   V   |         |         |
|
    7+ 0       0.1706      0.53  | Q   V   |         |         |
|
    7+ 5       0.1742      0.53  | Q   V   |         |         |
|
    7+10       0.1778      0.53  | Q   V   |         |         |
|
    7+15       0.1814      0.53  | Q   V   |         |         |
|
    7+20       0.1852      0.55  | Q   V   |         |         |
|
    7+25       0.1892      0.58  | Q   V   |         |         |
|
    7+30       0.1931      0.58  | Q    V  |         |         |
|
    7+35       0.1973      0.60  | Q    V  |         |         |
|
    7+40       0.2016      0.63  | Q    V  |         |         |
|
    7+45       0.2060      0.63  | Q    V  |         |         |
|
    7+50       0.2105      0.65  | Q    V  |         |         |
|
    7+55       0.2152      0.68  | Q    V  |         |         |
|
    8+ 0       0.2199      0.68  | Q     V |         |         |
|
    8+ 5       0.2249      0.73  | Q     V |         |         |
|
    8+10       0.2303      0.78  |  Q    V |         |         |
|
    8+15       0.2357      0.79  |  Q    V |         |         |
|
    8+20       0.2412      0.79  |  Q    V |         |         |
|
    8+25       0.2466      0.79  |  Q     V|         |         |
|
    8+30       0.2520      0.79  |  Q     V|         |         |
|
    8+35       0.2576      0.81  |  Q     V|         |         |
|
    8+40       0.2634      0.84  |  Q     V|         |         |
|
    8+45       0.2692      0.84  |  Q     V|         |         |
|
    8+50       0.2751      0.87  |  Q      V         |         |
|
    8+55       0.2813      0.89  |  Q      V         |         |
|
    9+ 0       0.2874      0.89  |  Q      V         |         |
|
    9+ 5       0.2939      0.94  |  Q      V         |         |
|
    9+10       0.3008      0.99  |  Q      |V        |         |
|
    9+15       0.3076      1.00  |  Q      |V        |         |
|
```

```
    9+20       0.3147      1.02  |   Q     |V        |         |
|
    9+25       0.3219      1.05  |   Q     |V        |         |
|
    9+30       0.3291      1.05  |   Q     | V       |         |
|
    9+35       0.3366      1.08  |   Q     | V       |         |
|
    9+40       0.3441      1.10  |   Q     | V       |         |
|
    9+45       0.3517      1.10  |   Q     | V       |         |
|
    9+50       0.3595      1.13  |   Q     |  V      |         |
|
    9+55       0.3675      1.15  |   Q     |  V      |         |
|
   10+ 0       0.3754      1.16  |   Q     |  V      |         |
|
   10+ 5       0.3823      0.99  |  Q      |   V     |         |
|
   10+10       0.3879      0.81  |  Q      |   V     |         |
|
   10+15       0.3933      0.79  |  Q      |   V     |         |
|
   10+20       0.3988      0.79  |  Q      |   V     |         |
|
   10+25       0.4042      0.79  |  Q      |   V     |         |
|
   10+30       0.4096      0.79  |  Q      |    V    |         |
|
   10+35       0.4159      0.91  |  Q      |    V    |         |
|
   10+40       0.4230      1.04  |   Q     |    V    |         |
|
   10+45       0.4302      1.05  |   Q     |    V    |         |
|
   10+50       0.4375      1.05  |   Q     |     V   |         |
|
   10+55       0.4447      1.05  |   Q     |     V   |         |
|
   11+ 0       0.4520      1.05  |   Q     |     V   |         |
|
   11+ 5       0.4590      1.03  |   Q     |     V   |         |
|
   11+10       0.4660      1.00  |   Q     |      V  |         |
|
   11+15       0.4728      1.00  |  Q      |      V  |         |
|
   11+20       0.4797      1.00  |  Q      |      V  |         |
|
   11+25       0.4866      1.00  |  Q      |      V  |         |
|
   11+30       0.4935      1.00  |  Q      |       V |         |
|
   11+35       0.5001      0.95  |  Q      |       V |         |
|
   11+40       0.5063      0.90  |  Q      |       V |         |
|
   11+45       0.5124      0.90  |  Q      |       V |         |
|
```

```
   11+50       0.5187      0.92  |  Q      |        V|         |
|
   11+55       0.5252      0.94  |  Q      |        V|         |
|
   12+ 0       0.5318      0.95  |  Q      |        V|         |
|
   12+ 5       0.5394      1.11  |   Q     |        V|         |
|
   12+10       0.5483      1.29  |    Q    |         V         |
|
   12+15       0.5573      1.31  |    Q    |         V         |
|
   12+20       0.5666      1.34  |    Q    |         V         |
|
   12+25       0.5760      1.36  |    Q    |         |V        |
|
   12+30       0.5854      1.37  |    Q    |         |V        |
|
   12+35       0.5951      1.41  |    Q    |         |V        |
|
   12+40       0.6052      1.47  |    Q    |         | V       |
|
   12+45       0.6154      1.47  |    Q    |         | V       |
|
   12+50       0.6257      1.50  |    Q    |         |  V      |
|
   12+55       0.6362      1.52  |     Q   |         |  V      |
|
   13+ 0       0.6467      1.53  |     Q   |         |  V      |
|
   13+ 5       0.6580      1.64  |     Q   |         |   V     |
|
   13+10       0.6702      1.77  |      Q  |         |   V     |
|
   13+15       0.6825      1.79  |      Q  |         |    V    |
|
   13+20       0.6948      1.79  |      Q  |         |    V    |
|
   13+25       0.7071      1.79  |      Q  |         |     V   |
|
   13+30       0.7194      1.79  |      Q  |         |     V   |
|
   13+35       0.7300      1.53  |     Q   |         |     V   |
|
   13+40       0.7386      1.25  |   Q     |         |      V  |
|
   13+45       0.7469      1.21  |   Q     |         |      V  |
|
   13+50       0.7553      1.21  |   Q     |         |      V  |
|
   13+55       0.7636      1.21  |   Q     |         |       V |
|
   14+ 0       0.7719      1.21  |   Q     |         |       V |
|
   14+ 5       0.7809      1.30  |    Q    |         |       V |
|
   14+10       0.7906      1.41  |    Q    |         |        V|
|
   14+15       0.8004      1.42  |    Q    |         |        V|
|
```

```
  14+20       0.8100      1.40  |    Q    |         |        V|
|
  14+25       0.8194      1.37  |    Q    |         |         V
|
  14+30       0.8288      1.37  |    Q    |         |         V
|
  14+35       0.8383      1.37  |    Q    |         |         V
|
  14+40       0.8477      1.37  |    Q    |         |         |V
|
  14+45       0.8571      1.37  |    Q    |         |         |V
|
  14+50       0.8664      1.34  |    Q    |         |         |V
|
  14+55       0.8754      1.32  |    Q    |         |         | V
|
  15+ 0       0.8845      1.32  |    Q    |         |         | V
|
  15+ 5       0.8934      1.29  |    Q    |         |         | V
|
  15+10       0.9021      1.27  |    Q    |         |         |  V
|
  15+15       0.9108      1.26  |    Q    |         |         |  V
|
  15+20       0.9193      1.24  |   Q     |         |         |  V
|
  15+25       0.9277      1.21  |   Q     |         |         |   V
|
  15+30       0.9360      1.21  |   Q     |         |         |   V
|
  15+35       0.9437      1.12  |   Q     |         |         |   V
|
  15+40       0.9507      1.01  |   Q     |         |         |   V
|
  15+45       0.9576      1.00  |   Q     |         |         |    V
|
  15+50       0.9645      1.00  |  Q      |         |         |    V
|
  15+55       0.9714      1.00  |  Q      |         |         |    V
|
  16+ 0       0.9782      1.00  |  Q      |         |         |     V
|
  16+ 5       0.9827      0.65  | Q       |         |         |     V
|
  16+10       0.9845      0.26  |Q        |         |         |     V
|
  16+15       0.9860      0.22  Q         |         |         |     V
|
  16+20       0.9874      0.21  Q         |         |         |     V
|
  16+25       0.9889      0.21  Q         |         |         |     V
|
  16+30       0.9903      0.21  Q         |         |         |     V
|
  16+35       0.9916      0.19  Q         |         |         |     V
|
  16+40       0.9927      0.16  Q         |         |         |     V
|
  16+45       0.9938      0.16  Q         |         |         |     V
|
```

```
     16+50       0.9949      0.16  Q          |          |          |     V
|
     16+55       0.9960      0.16  Q          |          |          |     V
|
     17+ 0       0.9971      0.16  Q          |          |          |     V
|
     17+ 5       0.9985      0.20  Q          |          |          |     V
|
     17+10       1.0003      0.26  |Q         |          |          |     V
|
     17+15       1.0021      0.26  |Q         |          |          |     V
|
     17+20       1.0039      0.26  |Q         |          |          |     V
|
     17+25       1.0057      0.26  |Q         |          |          |      V
|
     17+30       1.0075      0.26  |Q         |          |          |      V
|
     17+35       1.0093      0.26  |Q         |          |          |      V
|
     17+40       1.0111      0.26  |Q         |          |          |      V
|
     17+45       1.0129      0.26  |Q         |          |          |      V
|
     17+50       1.0146      0.24  Q          |          |          |      V
|
     17+55       1.0161      0.21  Q          |          |          |      V
|
     18+ 0       1.0175      0.21  Q          |          |          |      V
|
     18+ 5       1.0190      0.21  Q          |          |          |      V
|
     18+10       1.0204      0.21  Q          |          |          |      V
|
     18+15       1.0219      0.21  Q          |          |          |      V
|
     18+20       1.0233      0.21  Q          |          |          |      V
|
     18+25       1.0248      0.21  Q          |          |          |      V
|
     18+30       1.0262      0.21  Q          |          |          |      V
|
     18+35       1.0275      0.19  Q          |          |          |      V
|
     18+40       1.0286      0.16  Q          |          |          |      V
|
     18+45       1.0297      0.16  Q          |          |          |      V
|
     18+50       1.0306      0.13  Q          |          |          |      V
|
     18+55       1.0314      0.11  Q          |          |          |      V
|
     19+ 0       1.0321      0.11  Q          |          |          |      V
|
     19+ 5       1.0330      0.13  Q          |          |          |       V
|
     19+10       1.0340      0.15  Q          |          |          |       V
|
     19+15       1.0351      0.16  Q          |          |          |       V
|
```

19+20	1.0364	0.18	Q	|	|	|	V	|
19+25	1.0378	0.21	Q	|	|	|	V	|
19+30	1.0392	0.21	Q	|	|	|	V	|
19+35	1.0405	0.19	Q	|	|	|	V	|
19+40	1.0416	0.16	Q	|	|	|	V	|
19+45	1.0427	0.16	Q	|	|	|	V	|
19+50	1.0437	0.13	Q	|	|	|	V	|
19+55	1.0444	0.11	Q	|	|	|	V	|
20+ 0	1.0451	0.11	Q	|	|	|	V	|
20+ 5	1.0460	0.13	Q	|	|	|	V	|
20+10	1.0471	0.15	Q	|	|	|	V	|
20+15	1.0482	0.16	Q	|	|	|	V	|
20+20	1.0493	0.16	Q	|	|	|	V	|
20+25	1.0503	0.16	Q	|	|	|	V	|
20+30	1.0514	0.16	Q	|	|	|	V	|
20+35	1.0525	0.16	Q	|	|	|	V	|
20+40	1.0536	0.16	Q	|	|	|	V	|
20+45	1.0547	0.16	Q	|	|	|	V	|
20+50	1.0556	0.13	Q	|	|	|	V	|
20+55	1.0564	0.11	Q	|	|	|	V	|
21+ 0	1.0571	0.11	Q	|	|	|	V	|
21+ 5	1.0580	0.13	Q	|	|	|	V	|
21+10	1.0590	0.15	Q	|	|	|	V	|
21+15	1.0601	0.16	Q	|	|	|		V|
21+20	1.0610	0.13	Q	|	|	|		V|
21+25	1.0618	0.11	Q	|	|	|		V|
21+30	1.0625	0.11	Q	|	|	|		V|
21+35	1.0634	0.13	Q	|	|	|		V|
21+40	1.0645	0.15	Q	|	|	|		V|
21+45	1.0656	0.16	Q	|	|	|		V|

21+50	1.0665	0.13	Q	|	|	|	V|
21+55	1.0672	0.11	Q	|	|	|	V|
22+ 0	1.0680	0.11	Q	|	|	|	V|
22+ 5	1.0688	0.13	Q	|	|	|	V|
22+10	1.0699	0.15	Q	|	|	|	V|
22+15	1.0710	0.16	Q	|	|	|	V|
22+20	1.0719	0.13	Q	|	|	|	V|
22+25	1.0727	0.11	Q	|	|	|	V|
22+30	1.0734	0.11	Q	|	|	|	V|
22+35	1.0741	0.11	Q	|	|	|	V|
22+40	1.0748	0.11	Q	|	|	|	V|
22+45	1.0756	0.11	Q	|	|	|	V|
22+50	1.0763	0.11	Q	|	|	|	V|
22+55	1.0770	0.11	Q	|	|	|	V|
23+ 0	1.0777	0.11	Q	|	|	|	V|
23+ 5	1.0785	0.11	Q	|	|	|	V|
23+10	1.0792	0.11	Q	|	|	|	V|
23+15	1.0799	0.11	Q	|	|	|	V|
23+20	1.0806	0.11	Q	|	|	|	V|
23+25	1.0814	0.11	Q	|	|	|	V|
23+30	1.0821	0.11	Q	|	|	|	V|
23+35	1.0828	0.11	Q	|	|	|	V|
23+40	1.0835	0.11	Q	|	|	|	V|
23+45	1.0843	0.11	Q	|	|	|	V|
23+50	1.0850	0.11	Q	|	|	|	V|
23+55	1.0857	0.11	Q	|	|	|	V|
24+ 0	1.0864	0.11	Q	|	|	|	V|
24+ 5	1.0868	0.06	Q	|	|	|	V|
24+10	1.0869	0.01	Q	|	|	|	V|
24+15	1.0869	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

          Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version
8.2
                Study date  11/09/21 File: moval33post242.out


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


      Program License Serial Number 6232

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

       English Units used in output format



      -----------------------------------------------------------------
---
      Gateway Heights
      Proposed Condition
      Unit Hydrograph
      Area A
      -----------------------------------------------------------------
--
      Drainage Area =       4.00(Ac.)  =      0.006 Sq. Mi.
      Drainage Area for Depth-Area Areal Adjustment =       4.00(Ac.)  =
0.006 Sq. Mi.
      Length along longest watercourse =    1159.00(Ft.)
      Length along longest watercourse measured to centroid =     637.00
(Ft.)
      Length along longest watercourse =      0.220 Mi.
      Length along longest watercourse measured to centroid =      0.121
Mi.
      Difference in elevation =      70.00(Ft.)
      Slope along watercourse =    318.8956 Ft./Mi.
      Average Manning's 'N' = 0.015
      Lag time =    0.030 Hr.
      Lag time =     1.82 Min.
      25% of lag time =     0.45 Min.
      40% of lag time =     0.73 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]
```

```
         4.00              1.93                    7.72

 100 YEAR Area rainfall data:


 Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
         4.00              4.64                   18.56

 STORM EVENT (YEAR) =    2.00
 Area Averaged 2-Year Rainfall =    1.930(In)
 Area Averaged 100-Year Rainfall =    4.640(In)

 Point rain (area averaged) =    1.930(In)
 Areal adjustment factor =  100.00 %
 Adjusted average point rain =    1.930(In)

 Sub-Area Data:
 Area(Ac.)         Runoff Index   Impervious %
      4.000           69.00         0.650
  Total Area Entered =      4.00(Ac.)


 RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
 AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
 69.0  69.0      0.373     0.650        0.155       1.000
0.155
                                                         Sum (F) =
0.155
 Area averaged mean soil loss (F) (In/Hr) =  0.155
 Minimum soil loss rate ((In/Hr)) =  0.077
 (for 24 hour storm duration)
 Soil low loss rate (decimal) =   0.380
 ------------------------------------------------------------------
---

             U n i t  H y d r o g r a p h
                   FOOTHILL S-Curve
 ------------------------------------------------------------------
--
             Unit Hydrograph Data
 ------------------------------------------------------------------
---
 Unit time period   Time % of lag   Distribution   Unit Hydrograph
     (hrs)                            Graph %           (CFS)
 ------------------------------------------------------------------
---
     1   0.083        275.097         54.570             2.200
     2   0.167        550.195         42.583             1.717
     3   0.250        825.292          2.846             0.115
                                Sum = 100.000   Sum=       4.031
-----------------------------------------------------------------------


 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   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
```

	(Hr.)	Percent	(In/Hr)	Max |	Low	(In/Hr)
1	0.08	0.07	0.015	(0.274)	0.006	0.010
2	0.17	0.07	0.015	(0.273)	0.006	0.010
3	0.25	0.07	0.015	(0.272)	0.006	0.010
4	0.33	0.10	0.023	(0.271)	0.009	0.014
5	0.42	0.10	0.023	(0.270)	0.009	0.014
6	0.50	0.10	0.023	(0.269)	0.009	0.014
7	0.58	0.10	0.023	(0.268)	0.009	0.014
8	0.67	0.10	0.023	(0.267)	0.009	0.014
9	0.75	0.10	0.023	(0.266)	0.009	0.014
10	0.83	0.13	0.031	(0.265)	0.012	0.019
11	0.92	0.13	0.031	(0.264)	0.012	0.019
12	1.00	0.13	0.031	(0.263)	0.012	0.019
13	1.08	0.10	0.023	(0.262)	0.009	0.014
14	1.17	0.10	0.023	(0.261)	0.009	0.014
15	1.25	0.10	0.023	(0.260)	0.009	0.014
16	1.33	0.10	0.023	(0.259)	0.009	0.014
17	1.42	0.10	0.023	(0.258)	0.009	0.014
18	1.50	0.10	0.023	(0.257)	0.009	0.014
19	1.58	0.10	0.023	(0.255)	0.009	0.014
20	1.67	0.10	0.023	(0.254)	0.009	0.014
21	1.75	0.10	0.023	(0.253)	0.009	0.014
22	1.83	0.13	0.031	(0.252)	0.012	0.019
23	1.92	0.13	0.031	(0.251)	0.012	0.019
24	2.00	0.13	0.031	(0.250)	0.012	0.019
25	2.08	0.13	0.031	(0.249)	0.012	0.019
26	2.17	0.13	0.031	(0.248)	0.012	0.019
27	2.25	0.13	0.031	(0.247)	0.012	0.019
28	2.33	0.13	0.031	(0.246)	0.012	0.019
29	2.42	0.13	0.031	(0.245)	0.012	0.019
30	2.50	0.13	0.031	(0.244)	0.012	0.019
31	2.58	0.17	0.039	(0.243)	0.015	0.024
32	2.67	0.17	0.039	(0.242)	0.015	0.024
33	2.75	0.17	0.039	(0.241)	0.015	0.024
34	2.83	0.17	0.039	(0.240)	0.015	0.024
35	2.92	0.17	0.039	(0.239)	0.015	0.024
36	3.00	0.17	0.039	(0.238)	0.015	0.024
37	3.08	0.17	0.039	(0.237)	0.015	0.024
38	3.17	0.17	0.039	(0.236)	0.015	0.024
39	3.25	0.17	0.039	(0.235)	0.015	0.024
40	3.33	0.17	0.039	(0.234)	0.015	0.024
41	3.42	0.17	0.039	(0.233)	0.015	0.024
42	3.50	0.17	0.039	(0.232)	0.015	0.024
43	3.58	0.17	0.039	(0.232)	0.015	0.024
44	3.67	0.17	0.039	(0.231)	0.015	0.024
45	3.75	0.17	0.039	(0.230)	0.015	0.024
46	3.83	0.20	0.046	(0.229)	0.018	0.029
47	3.92	0.20	0.046	(0.228)	0.018	0.029
48	4.00	0.20	0.046	(0.227)	0.018	0.029
49	4.08	0.20	0.046	(0.226)	0.018	0.029
50	4.17	0.20	0.046	(0.225)	0.018	0.029
51	4.25	0.20	0.046	(0.224)	0.018	0.029
52	4.33	0.23	0.054	(0.223)	0.021	0.034
53	4.42	0.23	0.054	(0.222)	0.021	0.034
54	4.50	0.23	0.054	(0.221)	0.021	0.034
55	4.58	0.23	0.054	(0.220)	0.021	0.034
56	4.67	0.23	0.054	(0.219)	0.021	0.034
57	4.75	0.23	0.054	(0.218)	0.021	0.034
58	4.83	0.27	0.062	(0.217)	0.023	0.038
59	4.92	0.27	0.062	(0.216)	0.023	0.038

60	5.00	0.27	0.062	(0.215)	0.023	0.038
61	5.08	0.20	0.046	(0.214)	0.018	0.029
62	5.17	0.20	0.046	(0.213)	0.018	0.029
63	5.25	0.20	0.046	(0.212)	0.018	0.029
64	5.33	0.23	0.054	(0.212)	0.021	0.034
65	5.42	0.23	0.054	(0.211)	0.021	0.034
66	5.50	0.23	0.054	(0.210)	0.021	0.034
67	5.58	0.27	0.062	(0.209)	0.023	0.038
68	5.67	0.27	0.062	(0.208)	0.023	0.038
69	5.75	0.27	0.062	(0.207)	0.023	0.038
70	5.83	0.27	0.062	(0.206)	0.023	0.038
71	5.92	0.27	0.062	(0.205)	0.023	0.038
72	6.00	0.27	0.062	(0.204)	0.023	0.038
73	6.08	0.30	0.069	(0.203)	0.026	0.043
74	6.17	0.30	0.069	(0.202)	0.026	0.043
75	6.25	0.30	0.069	(0.202)	0.026	0.043
76	6.33	0.30	0.069	(0.201)	0.026	0.043
77	6.42	0.30	0.069	(0.200)	0.026	0.043
78	6.50	0.30	0.069	(0.199)	0.026	0.043
79	6.58	0.33	0.077	(0.198)	0.029	0.048
80	6.67	0.33	0.077	(0.197)	0.029	0.048
81	6.75	0.33	0.077	(0.196)	0.029	0.048
82	6.83	0.33	0.077	(0.195)	0.029	0.048
83	6.92	0.33	0.077	(0.194)	0.029	0.048
84	7.00	0.33	0.077	(0.193)	0.029	0.048
85	7.08	0.33	0.077	(0.193)	0.029	0.048
86	7.17	0.33	0.077	(0.192)	0.029	0.048
87	7.25	0.33	0.077	(0.191)	0.029	0.048
88	7.33	0.37	0.085	(0.190)	0.032	0.053
89	7.42	0.37	0.085	(0.189)	0.032	0.053
90	7.50	0.37	0.085	(0.188)	0.032	0.053
91	7.58	0.40	0.093	(0.187)	0.035	0.057
92	7.67	0.40	0.093	(0.187)	0.035	0.057
93	7.75	0.40	0.093	(0.186)	0.035	0.057
94	7.83	0.43	0.100	(0.185)	0.038	0.062
95	7.92	0.43	0.100	(0.184)	0.038	0.062
96	8.00	0.43	0.100	(0.183)	0.038	0.062
97	8.08	0.50	0.116	(0.182)	0.044	0.072
98	8.17	0.50	0.116	(0.181)	0.044	0.072
99	8.25	0.50	0.116	(0.181)	0.044	0.072
100	8.33	0.50	0.116	(0.180)	0.044	0.072
101	8.42	0.50	0.116	(0.179)	0.044	0.072
102	8.50	0.50	0.116	(0.178)	0.044	0.072
103	8.58	0.53	0.124	(0.177)	0.047	0.077
104	8.67	0.53	0.124	(0.176)	0.047	0.077
105	8.75	0.53	0.124	(0.176)	0.047	0.077
106	8.83	0.57	0.131	(0.175)	0.050	0.081
107	8.92	0.57	0.131	(0.174)	0.050	0.081
108	9.00	0.57	0.131	(0.173)	0.050	0.081
109	9.08	0.63	0.147	(0.172)	0.056	0.091
110	9.17	0.63	0.147	(0.171)	0.056	0.091
111	9.25	0.63	0.147	(0.171)	0.056	0.091
112	9.33	0.67	0.154	(0.170)	0.059	0.096
113	9.42	0.67	0.154	(0.169)	0.059	0.096
114	9.50	0.67	0.154	(0.168)	0.059	0.096
115	9.58	0.70	0.162	(0.167)	0.062	0.101
116	9.67	0.70	0.162	(0.167)	0.062	0.101
117	9.75	0.70	0.162	(0.166)	0.062	0.101
118	9.83	0.73	0.170	(0.165)	0.065	0.105
119	9.92	0.73	0.170	(0.164)	0.065	0.105

120	10.00	0.73	0.170	(0.163)	0.065	0.105
121	10.08	0.50	0.116	(0.163)	0.044	0.072
122	10.17	0.50	0.116	(0.162)	0.044	0.072
123	10.25	0.50	0.116	(0.161)	0.044	0.072
124	10.33	0.50	0.116	(0.160)	0.044	0.072
125	10.42	0.50	0.116	(0.159)	0.044	0.072
126	10.50	0.50	0.116	(0.159)	0.044	0.072
127	10.58	0.67	0.154	(0.158)	0.059	0.096
128	10.67	0.67	0.154	(0.157)	0.059	0.096
129	10.75	0.67	0.154	(0.156)	0.059	0.096
130	10.83	0.67	0.154	(0.156)	0.059	0.096
131	10.92	0.67	0.154	(0.155)	0.059	0.096
132	11.00	0.67	0.154	(0.154)	0.059	0.096
133	11.08	0.63	0.147	(0.153)	0.056	0.091
134	11.17	0.63	0.147	(0.153)	0.056	0.091
135	11.25	0.63	0.147	(0.152)	0.056	0.091
136	11.33	0.63	0.147	(0.151)	0.056	0.091
137	11.42	0.63	0.147	(0.150)	0.056	0.091
138	11.50	0.63	0.147	(0.150)	0.056	0.091
139	11.58	0.57	0.131	(0.149)	0.050	0.081
140	11.67	0.57	0.131	(0.148)	0.050	0.081
141	11.75	0.57	0.131	(0.147)	0.050	0.081
142	11.83	0.60	0.139	(0.147)	0.053	0.086
143	11.92	0.60	0.139	(0.146)	0.053	0.086
144	12.00	0.60	0.139	(0.145)	0.053	0.086
145	12.08	0.83	0.193	(0.144)	0.073	0.120
146	12.17	0.83	0.193	(0.144)	0.073	0.120
147	12.25	0.83	0.193	(0.143)	0.073	0.120
148	12.33	0.87	0.201	(0.142)	0.076	0.124
149	12.42	0.87	0.201	(0.142)	0.076	0.124
150	12.50	0.87	0.201	(0.141)	0.076	0.124
151	12.58	0.93	0.216	(0.140)	0.082	0.134
152	12.67	0.93	0.216	(0.139)	0.082	0.134
153	12.75	0.93	0.216	(0.139)	0.082	0.134
154	12.83	0.97	0.224	(0.138)	0.085	0.139
155	12.92	0.97	0.224	(0.137)	0.085	0.139
156	13.00	0.97	0.224	(0.137)	0.085	0.139
157	13.08	1.13	0.262	(0.136)	0.100	0.163
158	13.17	1.13	0.262	(0.135)	0.100	0.163
159	13.25	1.13	0.262	(0.135)	0.100	0.163
160	13.33	1.13	0.262	(0.134)	0.100	0.163
161	13.42	1.13	0.262	(0.133)	0.100	0.163
162	13.50	1.13	0.262	(0.133)	0.100	0.163
163	13.58	0.77	0.178	(0.132)	0.067	0.110
164	13.67	0.77	0.178	(0.131)	0.067	0.110
165	13.75	0.77	0.178	(0.130)	0.067	0.110
166	13.83	0.77	0.178	(0.130)	0.067	0.110
167	13.92	0.77	0.178	(0.129)	0.067	0.110
168	14.00	0.77	0.178	(0.129)	0.067	0.110
169	14.08	0.90	0.208	(0.128)	0.079	0.129
170	14.17	0.90	0.208	(0.127)	0.079	0.129
171	14.25	0.90	0.208	(0.127)	0.079	0.129
172	14.33	0.87	0.201	(0.126)	0.076	0.124
173	14.42	0.87	0.201	(0.125)	0.076	0.124
174	14.50	0.87	0.201	(0.125)	0.076	0.124
175	14.58	0.87	0.201	(0.124)	0.076	0.124
176	14.67	0.87	0.201	(0.123)	0.076	0.124
177	14.75	0.87	0.201	(0.123)	0.076	0.124
178	14.83	0.83	0.193	(0.122)	0.073	0.120
179	14.92	0.83	0.193	(0.121)	0.073	0.120

180	15.00	0.83	0.193	(0.121)	0.073	0.120
181	15.08	0.80	0.185	(0.120)	0.070	0.115
182	15.17	0.80	0.185	(0.120)	0.070	0.115
183	15.25	0.80	0.185	(0.119)	0.070	0.115
184	15.33	0.77	0.178	(0.118)	0.067	0.110
185	15.42	0.77	0.178	(0.118)	0.067	0.110
186	15.50	0.77	0.178	(0.117)	0.067	0.110
187	15.58	0.63	0.147	(0.117)	0.056	0.091
188	15.67	0.63	0.147	(0.116)	0.056	0.091
189	15.75	0.63	0.147	(0.115)	0.056	0.091
190	15.83	0.63	0.147	(0.115)	0.056	0.091
191	15.92	0.63	0.147	(0.114)	0.056	0.091
192	16.00	0.63	0.147	(0.114)	0.056	0.091
193	16.08	0.13	0.031	(0.113)	0.012	0.019
194	16.17	0.13	0.031	(0.112)	0.012	0.019
195	16.25	0.13	0.031	(0.112)	0.012	0.019
196	16.33	0.13	0.031	(0.111)	0.012	0.019
197	16.42	0.13	0.031	(0.111)	0.012	0.019
198	16.50	0.13	0.031	(0.110)	0.012	0.019
199	16.58	0.10	0.023	(0.110)	0.009	0.014
200	16.67	0.10	0.023	(0.109)	0.009	0.014
201	16.75	0.10	0.023	(0.109)	0.009	0.014
202	16.83	0.10	0.023	(0.108)	0.009	0.014
203	16.92	0.10	0.023	(0.107)	0.009	0.014
204	17.00	0.10	0.023	(0.107)	0.009	0.014
205	17.08	0.17	0.039	(0.106)	0.015	0.024
206	17.17	0.17	0.039	(0.106)	0.015	0.024
207	17.25	0.17	0.039	(0.105)	0.015	0.024
208	17.33	0.17	0.039	(0.105)	0.015	0.024
209	17.42	0.17	0.039	(0.104)	0.015	0.024
210	17.50	0.17	0.039	(0.104)	0.015	0.024
211	17.58	0.17	0.039	(0.103)	0.015	0.024
212	17.67	0.17	0.039	(0.103)	0.015	0.024
213	17.75	0.17	0.039	(0.102)	0.015	0.024
214	17.83	0.13	0.031	(0.102)	0.012	0.019
215	17.92	0.13	0.031	(0.101)	0.012	0.019
216	18.00	0.13	0.031	(0.101)	0.012	0.019
217	18.08	0.13	0.031	(0.100)	0.012	0.019
218	18.17	0.13	0.031	(0.100)	0.012	0.019
219	18.25	0.13	0.031	(0.099)	0.012	0.019
220	18.33	0.13	0.031	(0.099)	0.012	0.019
221	18.42	0.13	0.031	(0.098)	0.012	0.019
222	18.50	0.13	0.031	(0.098)	0.012	0.019
223	18.58	0.10	0.023	(0.097)	0.009	0.014
224	18.67	0.10	0.023	(0.097)	0.009	0.014
225	18.75	0.10	0.023	(0.096)	0.009	0.014
226	18.83	0.07	0.015	(0.096)	0.006	0.010
227	18.92	0.07	0.015	(0.095)	0.006	0.010
228	19.00	0.07	0.015	(0.095)	0.006	0.010
229	19.08	0.10	0.023	(0.094)	0.009	0.014
230	19.17	0.10	0.023	(0.094)	0.009	0.014
231	19.25	0.10	0.023	(0.094)	0.009	0.014
232	19.33	0.13	0.031	(0.093)	0.012	0.019
233	19.42	0.13	0.031	(0.093)	0.012	0.019
234	19.50	0.13	0.031	(0.092)	0.012	0.019
235	19.58	0.10	0.023	(0.092)	0.009	0.014
236	19.67	0.10	0.023	(0.091)	0.009	0.014
237	19.75	0.10	0.023	(0.091)	0.009	0.014
238	19.83	0.07	0.015	(0.091)	0.006	0.010
239	19.92	0.07	0.015	(0.090)	0.006	0.010

240	20.00	0.07	0.015	(0.090)	0.006	0.010
241	20.08	0.10	0.023	(0.089)	0.009	0.014
242	20.17	0.10	0.023	(0.089)	0.009	0.014
243	20.25	0.10	0.023	(0.089)	0.009	0.014
244	20.33	0.10	0.023	(0.088)	0.009	0.014
245	20.42	0.10	0.023	(0.088)	0.009	0.014
246	20.50	0.10	0.023	(0.088)	0.009	0.014
247	20.58	0.10	0.023	(0.087)	0.009	0.014
248	20.67	0.10	0.023	(0.087)	0.009	0.014
249	20.75	0.10	0.023	(0.086)	0.009	0.014
250	20.83	0.07	0.015	(0.086)	0.006	0.010
251	20.92	0.07	0.015	(0.086)	0.006	0.010
252	21.00	0.07	0.015	(0.085)	0.006	0.010
253	21.08	0.10	0.023	(0.085)	0.009	0.014
254	21.17	0.10	0.023	(0.085)	0.009	0.014
255	21.25	0.10	0.023	(0.084)	0.009	0.014
256	21.33	0.07	0.015	(0.084)	0.006	0.010
257	21.42	0.07	0.015	(0.084)	0.006	0.010
258	21.50	0.07	0.015	(0.083)	0.006	0.010
259	21.58	0.10	0.023	(0.083)	0.009	0.014
260	21.67	0.10	0.023	(0.083)	0.009	0.014
261	21.75	0.10	0.023	(0.083)	0.009	0.014
262	21.83	0.07	0.015	(0.082)	0.006	0.010
263	21.92	0.07	0.015	(0.082)	0.006	0.010
264	22.00	0.07	0.015	(0.082)	0.006	0.010
265	22.08	0.10	0.023	(0.081)	0.009	0.014
266	22.17	0.10	0.023	(0.081)	0.009	0.014
267	22.25	0.10	0.023	(0.081)	0.009	0.014
268	22.33	0.07	0.015	(0.081)	0.006	0.010
269	22.42	0.07	0.015	(0.080)	0.006	0.010
270	22.50	0.07	0.015	(0.080)	0.006	0.010
271	22.58	0.07	0.015	(0.080)	0.006	0.010
272	22.67	0.07	0.015	(0.080)	0.006	0.010
273	22.75	0.07	0.015	(0.079)	0.006	0.010
274	22.83	0.07	0.015	(0.079)	0.006	0.010
275	22.92	0.07	0.015	(0.079)	0.006	0.010
276	23.00	0.07	0.015	(0.079)	0.006	0.010
277	23.08	0.07	0.015	(0.079)	0.006	0.010
278	23.17	0.07	0.015	(0.079)	0.006	0.010
279	23.25	0.07	0.015	(0.078)	0.006	0.010
280	23.33	0.07	0.015	(0.078)	0.006	0.010
281	23.42	0.07	0.015	(0.078)	0.006	0.010
282	23.50	0.07	0.015	(0.078)	0.006	0.010
283	23.58	0.07	0.015	(0.078)	0.006	0.010
284	23.67	0.07	0.015	(0.078)	0.006	0.010
285	23.75	0.07	0.015	(0.078)	0.006	0.010
286	23.83	0.07	0.015	(0.077)	0.006	0.010
287	23.92	0.07	0.015	(0.077)	0.006	0.010
288	24.00	0.07	0.015	(0.077)	0.006	0.010

(Loss Rate Not Used)

Sum = 100.0 Sum = 14.4

Flood volume = Effective rainfall 1.20(In)
times area 4.0(Ac.)/[(In)/(Ft.)] = 0.4(Ac.Ft)
Total soil loss = 0.73(In)
Total soil loss = 0.244(Ac.Ft)
Total rainfall = 1.93(In)
Flood volume = 17374.5 Cubic Feet
Total soil loss = 10648.9 Cubic Feet

--

```
       Peak flow rate of this hydrograph =      0.656(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       0.0001      0.02  Q         |         |         |
|
    0+10       0.0004      0.04  Q         |         |         |
|
    0+15       0.0007      0.04  Q         |         |         |
|
    0+20       0.0010      0.05  Q         |         |         |
|
    0+25       0.0014      0.06  Q         |         |         |
|
    0+30       0.0018      0.06  Q         |         |         |
|
    0+35       0.0022      0.06  Q         |         |         |
|
    0+40       0.0026      0.06  Q         |         |         |
|
    0+45       0.0030      0.06  Q         |         |         |
|
    0+50       0.0035      0.07  Q         |         |         |
|
    0+55       0.0040      0.08  Q         |         |         |
|
    1+ 0       0.0045      0.08  Q         |         |         |
|
    1+ 5       0.0050      0.07  Q         |         |         |
|
    1+10       0.0054      0.06  Q         |         |         |
|
    1+15       0.0058      0.06  Q         |         |         |
|
    1+20       0.0062      0.06  Q         |         |         |
|
    1+25       0.0066      0.06  Q         |         |         |
|
    1+30       0.0070      0.06  Q         |         |         |
|
    1+35       0.0074      0.06  Q         |         |         |
|
    1+40       0.0078      0.06  Q         |         |         |
|
    1+45       0.0082      0.06  Q         |         |         |
|
    1+50       0.0087      0.07  Q         |         |         |
```

```
|
   1+55       0.0092      0.08  Q          |         |         |
|
   2+ 0       0.0097      0.08  Q          |         |         |
|
   2+ 5       0.0102      0.08  QV         |         |         |
|
   2+10       0.0108      0.08  QV         |         |         |
|
   2+15       0.0113      0.08  QV         |         |         |
|
   2+20       0.0118      0.08  QV         |         |         |
|
   2+25       0.0124      0.08  QV         |         |         |
|
   2+30       0.0129      0.08  QV         |         |         |
|
   2+35       0.0135      0.09  QV         |         |         |
|
   2+40       0.0142      0.10  QV         |         |         |
|
   2+45       0.0148      0.10  QV         |         |         |
|
   2+50       0.0155      0.10  QV         |         |         |
|
   2+55       0.0162      0.10  QV         |         |         |
|
   3+ 0       0.0168      0.10  QV         |         |         |
|
   3+ 5       0.0175      0.10  QV         |         |         |
|
   3+10       0.0182      0.10  QV         |         |         |
|
   3+15       0.0188      0.10  QV         |         |         |
|
   3+20       0.0195      0.10  QV         |         |         |
|
   3+25       0.0202      0.10  Q V        |         |         |
|
   3+30       0.0208      0.10  Q V        |         |         |
|
   3+35       0.0215      0.10  Q V        |         |         |
|
   3+40       0.0221      0.10  Q V        |         |         |
|
   3+45       0.0228      0.10  Q V        |         |         |
|
   3+50       0.0236      0.11  Q V        |         |         |
|
   3+55       0.0243      0.12  Q V        |         |         |
|
   4+ 0       0.0251      0.12  Q V        |         |         |
|
   4+ 5       0.0259      0.12  Q V        |         |         |
|
   4+10       0.0267      0.12  Q V        |         |         |
|
   4+15       0.0275      0.12  Q V        |         |         |
|
   4+20       0.0284      0.13  Q V        |         |         |
```

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|
   4+25       0.0293      0.13  Q V        |         |         |
|
   4+30       0.0303      0.14  Q  V       |         |         |
|
   4+35       0.0312      0.14  Q  V       |         |         |
|
   4+40       0.0321      0.14  Q  V       |         |         |
|
   4+45       0.0331      0.14  Q  V       |         |         |
|
   4+50       0.0341      0.15  Q  V       |         |         |
|
   4+55       0.0351      0.15  Q  V       |         |         |
|
   5+ 0       0.0362      0.15  Q  V       |         |         |
|
   5+ 5       0.0371      0.13  Q  V       |         |         |
|
   5+10       0.0379      0.12  Q  V       |         |         |
|
   5+15       0.0387      0.12  Q  V       |         |         |
|
   5+20       0.0396      0.13  Q  V       |         |         |
|
   5+25       0.0405      0.13  Q   V      |         |         |
|
   5+30       0.0414      0.14  Q   V      |         |         |
|
   5+35       0.0424      0.15  Q   V      |         |         |
|
   5+40       0.0435      0.15  Q   V      |         |         |
|
   5+45       0.0446      0.15  Q   V      |         |         |
|
   5+50       0.0456      0.15  Q   V      |         |         |
|
   5+55       0.0467      0.15  Q   V      |         |         |
|
   6+ 0       0.0477      0.15  Q   V      |         |         |
|
   6+ 5       0.0489      0.16  Q   V      |         |         |
|
   6+10       0.0501      0.17  Q    V     |         |         |
|
   6+15       0.0513      0.17  Q    V     |         |         |
|
   6+20       0.0525      0.17  Q    V     |         |         |
|
   6+25       0.0537      0.17  Q    V     |         |         |
|
   6+30       0.0549      0.17  Q    V     |         |         |
|
   6+35       0.0561      0.18  Q    V     |         |         |
|
   6+40       0.0575      0.19  Q    V     |         |         |
|
   6+45       0.0588      0.19  Q    V     |         |         |
|
   6+50       0.0601      0.19  Q     V    |         |         |
```

```
|
 6+55       0.0614      0.19  Q     V   |         |         |
|
 7+ 0       0.0628      0.19  Q     V   |         |         |
|
 7+ 5       0.0641      0.19  Q     V   |         |         |
|
 7+10       0.0654      0.19  Q     V   |         |         |
|
 7+15       0.0668      0.19  Q     V   |         |         |
|
 7+20       0.0682      0.20  Q     V   |         |         |
|
 7+25       0.0696      0.21  Q     V   |         |         |
|
 7+30       0.0711      0.21  Q      V  |         |         |
|
 7+35       0.0726      0.22  Q      V  |         |         |
|
 7+40       0.0742      0.23  Q      V  |         |         |
|
 7+45       0.0758      0.23  Q      V  |         |         |
|
 7+50       0.0775      0.24  Q      V  |         |         |
|
 7+55       0.0792      0.25  |Q     V  |         |         |
|
 8+ 0       0.0809      0.25  |Q      V |         |         |
|
 8+ 5       0.0828      0.27  |Q      V |         |         |
|
 8+10       0.0848      0.29  |Q      V |         |         |
|
 8+15       0.0868      0.29  |Q      V |         |         |
|
 8+20       0.0888      0.29  |Q      V |         |         |
|
 8+25       0.0908      0.29  |Q       V|         |         |
|
 8+30       0.0928      0.29  |Q       V|         |         |
|
 8+35       0.0948      0.30  |Q       V|         |         |
|
 8+40       0.0970      0.31  |Q       V|         |         |
|
 8+45       0.0991      0.31  |Q       V|         |         |
|
 8+50       0.1013      0.32  |Q        V         |         |
|
 8+55       0.1035      0.33  |Q        V         |         |
|
 9+ 0       0.1058      0.33  |Q        V         |         |
|
 9+ 5       0.1082      0.35  |Q        V         |         |
|
 9+10       0.1107      0.37  |Q        |V        |         |
|
 9+15       0.1133      0.37  |Q        |V        |         |
|
 9+20       0.1159      0.38  |Q        |V        |         |
```

```
|
 9+25       0.1185      0.39  |Q        |V        |         |
|
 9+30       0.1212      0.39  |Q        | V       |         |
|
 9+35       0.1239      0.40  |Q        | V       |         |
|
 9+40       0.1267      0.40  |Q        | V       |         |
|
 9+45       0.1295      0.41  |Q        | V       |         |
|
 9+50       0.1323      0.42  |Q        |  V      |         |
|
 9+55       0.1353      0.42  |Q        |  V      |         |
|
10+ 0       0.1382      0.42  |Q        |  V      |         |
|
10+ 5       0.1406      0.35  |Q        |   V     |         |
|
10+10       0.1426      0.29  |Q        |   V     |         |
|
10+15       0.1446      0.29  |Q        |   V     |         |
|
10+20       0.1466      0.29  |Q        |   V     |         |
|
10+25       0.1486      0.29  |Q        |   V     |         |
|
10+30       0.1506      0.29  |Q        |    V    |         |
|
10+35       0.1530      0.34  |Q        |    V    |         |
|
10+40       0.1556      0.38  |Q        |    V    |         |
|
10+45       0.1583      0.39  |Q        |    V    |         |
|
10+50       0.1609      0.39  |Q        |     V   |         |
|
10+55       0.1636      0.39  |Q        |     V   |         |
|
11+ 0       0.1662      0.39  |Q        |     V   |         |
|
11+ 5       0.1688      0.38  |Q        |     V   |         |
|
11+10       0.1714      0.37  |Q        |      V  |         |
|
11+15       0.1739      0.37  |Q        |      V  |         |
|
11+20       0.1764      0.37  |Q        |      V  |         |
|
11+25       0.1789      0.37  |Q        |      V  |         |
|
11+30       0.1815      0.37  |Q        |       V |         |
|
11+35       0.1838      0.35  |Q        |       V |         |
|
11+40       0.1861      0.33  |Q        |       V |         |
|
11+45       0.1884      0.33  |Q        |       V |         |
|
11+50       0.1907      0.34  |Q        |        V|         |
```

```
|
 11+55       0.1931      0.35  |Q        |        V|         |
|
 12+ 0       0.1955      0.35  |Q        |        V|         |
|
 12+ 5       0.1984      0.42  |Q        |        V|         |
|
 12+10       0.2017      0.48  |Q        |         V         |
|
 12+15       0.2050      0.48  |Q        |         V         |
|
 12+20       0.2084      0.49  |Q        |         V         |
|
 12+25       0.2119      0.50  | Q       |         |V        |
|
 12+30       0.2153      0.50  | Q       |         |V        |
|
 12+35       0.2189      0.52  | Q       |         |V        |
|
 12+40       0.2226      0.54  | Q       |         | V       |
|
 12+45       0.2264      0.54  | Q       |         | V       |
|
 12+50       0.2301      0.55  | Q       |         |  V      |
|
 12+55       0.2340      0.56  | Q       |         |  V      |
|
 13+ 0       0.2379      0.56  | Q       |         |  V      |
|
 13+ 5       0.2421      0.61  | Q       |         |   V     |
|
 13+10       0.2466      0.65  | Q       |         |   V     |
|
 13+15       0.2511      0.66  | Q       |         |    V    |
|
 13+20       0.2556      0.66  | Q       |         |    V    |
|
 13+25       0.2601      0.66  | Q       |         |     V   |
|
 13+30       0.2647      0.66  | Q       |         |     V   |
|
 13+35       0.2684      0.54  | Q       |         |     V   |
|
 13+40       0.2715      0.45  |Q        |         |      V  |
|
 13+45       0.2745      0.44  |Q        |         |      V  |
|
 13+50       0.2776      0.44  |Q        |         |      V  |
|
 13+55       0.2807      0.44  |Q        |         |       V |
|
 14+ 0       0.2837      0.44  |Q        |         |       V |
|
 14+ 5       0.2871      0.49  |Q        |         |       V |
|
 14+10       0.2906      0.52  | Q       |         |        V|
|
 14+15       0.2942      0.52  | Q       |         |        V|
|
 14+20       0.2977      0.51  | Q       |         |        V|
```

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|
  14+25       0.3012      0.50  | Q         |         |         V
|
  14+30       0.3047      0.50  | Q         |         |         V
|
  14+35       0.3081      0.50  | Q         |         |         V
|
  14+40       0.3116      0.50  | Q         |         |         |V
|
  14+45       0.3150      0.50  | Q         |         |         |V
|
  14+50       0.3184      0.49  |Q          |         |         |V
|
  14+55       0.3217      0.48  |Q          |         |         | V
|
  15+ 0       0.3251      0.48  |Q          |         |         | V
|
  15+ 5       0.3283      0.47  |Q          |         |         | V
|
  15+10       0.3315      0.46  |Q          |         |         |  V
|
  15+15       0.3347      0.46  |Q          |         |         |  V
|
  15+20       0.3378      0.45  |Q          |         |         |  V
|
  15+25       0.3409      0.44  |Q          |         |         |   V
|
  15+30       0.3439      0.44  |Q          |         |         |   V
|
  15+35       0.3467      0.40  |Q          |         |         |   V
|
  15+40       0.3492      0.37  |Q          |         |         |    V
|
  15+45       0.3518      0.37  |Q          |         |         |    V
|
  15+50       0.3543      0.37  |Q          |         |         |    V
|
  15+55       0.3568      0.37  |Q          |         |         |    V
|
  16+ 0       0.3594      0.37  |Q          |         |         |     V
|
  16+ 5       0.3608      0.21  Q           |         |         |     V
|
  16+10       0.3614      0.09  Q           |         |         |     V
|
  16+15       0.3619      0.08  Q           |         |         |     V
|
  16+20       0.3624      0.08  Q           |         |         |     V
|
  16+25       0.3630      0.08  Q           |         |         |     V
|
  16+30       0.3635      0.08  Q           |         |         |     V
|
  16+35       0.3640      0.07  Q           |         |         |     V
|
  16+40       0.3644      0.06  Q           |         |         |     V
|
  16+45       0.3648      0.06  Q           |         |         |     V
|
  16+50       0.3652      0.06  Q           |         |         |     V
```

16+55	0.3656	0.06	Q	|	|	|	V
17+ 0	0.3660	0.06	Q	|	|	|	V
17+ 5	0.3665	0.08	Q	|	|	|	V
17+10	0.3672	0.10	Q	|	|	|	V
17+15	0.3678	0.10	Q	|	|	|	V
17+20	0.3685	0.10	Q	|	|	|	V
17+25	0.3692	0.10	Q	|	|	|	V
17+30	0.3698	0.10	Q	|	|	|	V
17+35	0.3705	0.10	Q	|	|	|	V
17+40	0.3712	0.10	Q	|	|	|	V
17+45	0.3718	0.10	Q	|	|	|	V
17+50	0.3724	0.09	Q	|	|	|	V
17+55	0.3729	0.08	Q	|	|	|	V
18+ 0	0.3735	0.08	Q	|	|	|	V
18+ 5	0.3740	0.08	Q	|	|	|	V
18+10	0.3745	0.08	Q	|	|	|	V
18+15	0.3751	0.08	Q	|	|	|	V
18+20	0.3756	0.08	Q	|	|	|	V
18+25	0.3761	0.08	Q	|	|	|	V
18+30	0.3767	0.08	Q	|	|	|	V
18+35	0.3771	0.07	Q	|	|	|	V
18+40	0.3775	0.06	Q	|	|	|	V
18+45	0.3779	0.06	Q	|	|	|	V
18+50	0.3783	0.05	Q	|	|	|	V
18+55	0.3785	0.04	Q	|	|	|	V
19+ 0	0.3788	0.04	Q	|	|	|	V
19+ 5	0.3791	0.05	Q	|	|	|	V
19+10	0.3795	0.06	Q	|	|	|	V
19+15	0.3799	0.06	Q	|	|	|	V
19+20	0.3804	0.07	Q	|	|	|	V

```
|
   19+25       0.3809       0.08  Q          |         |         |        V
|
   19+30       0.3815       0.08  Q          |         |         |        V
|
   19+35       0.3819       0.07  Q          |         |         |        V
|
   19+40       0.3823       0.06  Q          |         |         |        V
|
   19+45       0.3827       0.06  Q          |         |         |        V
|
   19+50       0.3830       0.05  Q          |         |         |        V
|
   19+55       0.3833       0.04  Q          |         |         |        V
|
   20+ 0       0.3836       0.04  Q          |         |         |        V
|
   20+ 5       0.3839       0.05  Q          |         |         |        V
|
   20+10       0.3843       0.06  Q          |         |         |        V
|
   20+15       0.3847       0.06  Q          |         |         |        V
|
   20+20       0.3851       0.06  Q          |         |         |        V
|
   20+25       0.3855       0.06  Q          |         |         |        V
|
   20+30       0.3859       0.06  Q          |         |         |        V
|
   20+35       0.3863       0.06  Q          |         |         |        V
|
   20+40       0.3867       0.06  Q          |         |         |        V
|
   20+45       0.3871       0.06  Q          |         |         |        V
|
   20+50       0.3874       0.05  Q          |         |         |        V
|
   20+55       0.3877       0.04  Q          |         |         |        V
|
   21+ 0       0.3880       0.04  Q          |         |         |        V
|
   21+ 5       0.3883       0.05  Q          |         |         |        V
|
   21+10       0.3887       0.06  Q          |         |         |        V
|
   21+15       0.3891       0.06  Q          |         |         |
V|
   21+20       0.3894       0.05  Q          |         |         |
V|
   21+25       0.3897       0.04  Q          |         |         |
V|
   21+30       0.3900       0.04  Q          |         |         |
V|
   21+35       0.3903       0.05  Q          |         |         |
V|
   21+40       0.3907       0.06  Q          |         |         |
V|
   21+45       0.3911       0.06  Q          |         |         |
V|
   21+50       0.3914       0.05  Q          |         |         |
```

```
V|
   21+55       0.3917      0.04  Q         |         |         |
V|
   22+ 0       0.3920      0.04  Q         |         |         |
V|
   22+ 5       0.3923      0.05  Q         |         |         |
V|
   22+10       0.3927      0.06  Q         |         |         |
V|
   22+15       0.3931      0.06  Q         |         |         |
V|
   22+20       0.3934      0.05  Q         |         |         |
V|
   22+25       0.3937      0.04  Q         |         |         |
V|
   22+30       0.3939      0.04  Q         |         |         |
V|
   22+35       0.3942      0.04  Q         |         |         |
V|
   22+40       0.3945      0.04  Q         |         |         |
V|
   22+45       0.3947      0.04  Q         |         |         |
V|
   22+50       0.3950      0.04  Q         |         |         |
V|
   22+55       0.3953      0.04  Q         |         |         |
V|
   23+ 0       0.3955      0.04  Q         |         |         |
V|
   23+ 5       0.3958      0.04  Q         |         |         |
V|
   23+10       0.3961      0.04  Q         |         |         |
V|
   23+15       0.3963      0.04  Q         |         |         |
V|
   23+20       0.3966      0.04  Q         |         |         |
V|
   23+25       0.3969      0.04  Q         |         |         |
V|
   23+30       0.3971      0.04  Q         |         |         |
V|
   23+35       0.3974      0.04  Q         |         |         |
V|
   23+40       0.3977      0.04  Q         |         |         |
V|
   23+45       0.3979      0.04  Q         |         |         |
V|
   23+50       0.3982      0.04  Q         |         |         |
V|
   23+55       0.3985      0.04  Q         |         |         |
V|
   24+ 0       0.3987      0.04  Q         |         |         |
V|
   24+ 5       0.3989      0.02  Q         |         |         |
V|
   24+10       0.3989      0.00  Q         |         |         |
V
-----------------------------------------------------------------------
```

FLOOD HYDROGRAPH ROUTING PROGRAM

Study date: 11/09/21

Gateway Heights
Basin Routing
2 yr 24hr
Basin B

Program License Serial Number 6232

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

From study/file name: moval33post242.rte
***************************HYDROGRAPH DATA***************************
Number of intervals = 291
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 1.789 (CFS)
Total volume = 1.087 (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

****

++
Process from Point/Station 102.000 to Point/Station 103.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 291
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
1.000	0.060	0.700	0.058	0.062
2.000	0.120	0.700	0.118	0.122
3.000	0.320	0.700	0.318	0.322
4.000	0.560	0.700	0.558	0.562
5.000	0.820	24.000	0.737	0.903
6.000	1.100	24.000	1.017	1.183

Hydrograph Detention Basin Routing

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

```
 Time   Inflow  Outflow    Storage                                      Depth
(Hours)  (CFS)   (CFS)     (Ac.Ft) .0        0.4     0.89     1.34     1.79   (Ft.)
 0.083    0.05    0.00      0.000  O        |       |        |        |      0.00
 0.167    0.10    0.01      0.001  OI       |       |        |        |      0.01
 0.250    0.10    0.01      0.001  OI       |       |        |        |      0.02
 0.333    0.13    0.02      0.002  O I      |       |        |        |      0.03
 0.417    0.15    0.03      0.003  O I      |       |        |        |      0.05
 0.500    0.16    0.04      0.004  O I      |       |        |        |      0.06
 0.583    0.16    0.05      0.004  O I      |       |        |        |      0.07
 0.667    0.16    0.06      0.005  |OI      |       |        |        |      0.08
 0.750    0.16    0.07      0.006  |OI      |       |        |        |      0.09
 0.833    0.18    0.07      0.006  |O I     |       |        |        |      0.11
 0.917    0.21    0.08      0.007  |O I     |       |        |        |      0.12
 1.000    0.21    0.09      0.008  |O I     |       |        |        |      0.13
 1.083    0.19    0.10      0.009  |O I     |       |        |        |      0.14
 1.167    0.16    0.11      0.009  |OI      |       |        |        |
```

```
0.15
  1.250    0.16    0.11      0.010  |OI      |       |       |       |
0.16
  1.333    0.16    0.11      0.010  | O      |       |       |       |
0.16
  1.417    0.16    0.12      0.010  | O      |       |       |       |
0.17
  1.500    0.16    0.12      0.010  | O      |       |       |       |
0.17
  1.583    0.16    0.12      0.011  | O      |       |       |       |
0.18
  1.667    0.16    0.13      0.011  | O      |       |       |       |
0.18
  1.750    0.16    0.13      0.011  | O      |       |       |       |
0.18
  1.833    0.18    0.13      0.011  | OI     |       |       |       |
0.19
  1.917    0.21    0.14      0.012  | OI     |       |       |       |
0.20
  2.000    0.21    0.14      0.012  | OI     |       |       |       |
0.20
  2.083    0.21    0.15      0.013  | OI     |       |       |       |
0.21
  2.167    0.21    0.15      0.013  | OI     |       |       |       |
0.22
  2.250    0.21    0.16      0.013  | OI     |       |       |       |
0.22
  2.333    0.21    0.16      0.014  | OI     |       |       |       |
0.23
  2.417    0.21    0.16      0.014  | OI     |       |       |       |
0.24
  2.500    0.21    0.17      0.014  |  O     |       |       |       |
0.24
  2.583    0.23    0.17      0.015  |  OI    |       |       |       |
0.25
  2.667    0.26    0.18      0.015  |  OI    |       |       |       |
0.25
  2.750    0.26    0.18      0.016  |  OI    |       |       |       |
0.26
  2.833    0.26    0.19      0.016  |  OI    |       |       |       |
0.27
  2.917    0.26    0.20      0.017  |  OI    |       |       |       |
0.28
  3.000    0.26    0.20      0.017  |  OI    |       |       |       |
0.29
  3.083    0.26    0.21      0.018  |  OI    |       |       |       |
0.29
  3.167    0.26    0.21      0.018  |  OI    |       |       |       |
0.30
  3.250    0.26    0.21      0.018  |  OI    |       |       |       |
0.31
  3.333    0.26    0.22      0.019  |  OI    |       |       |       |
0.31
  3.417    0.26    0.22      0.019  |  OI    |       |       |       |
0.32
  3.500    0.26    0.23      0.019  |   O    |       |       |       |
0.32
  3.583    0.26    0.23      0.020  |   O    |       |       |       |
0.33
  3.667    0.26    0.23      0.020  |   O    |       |       |       |
```

```
0.33
  3.750    0.26    0.23      0.020  |   O    |        |        |        |
0.33
  3.833    0.29    0.24      0.020  |   OI   |        |        |        |
0.34
  3.917    0.31    0.24      0.021  |   OI   |        |        |        |
0.34
  4.000    0.32    0.25      0.021  |   OI   |        |        |        |
0.35
  4.083    0.32    0.25      0.022  |   OI   |        |        |        |
0.36
  4.167    0.32    0.26      0.022  |   OI   |        |        |        |
0.37
  4.250    0.32    0.26      0.022  |   OI   |        |        |        |
0.37
  4.333    0.34    0.27      0.023  |   O I  |        |        |        |
0.38
  4.417    0.36    0.27      0.023  |   O I  |        |        |        |
0.39
  4.500    0.37    0.28      0.024  |    OI  |        |        |        |
0.40
  4.583    0.37    0.29      0.025  |    OI  |        |        |        |
0.41
  4.667    0.37    0.29      0.025  |    OI  |        |        |        |
0.42
  4.750    0.37    0.30      0.026  |    OI  |        |        |        |
0.43
  4.833    0.39    0.31      0.026  |    O I|        |        |        |
0.44
  4.917    0.42    0.31      0.027  |    O I|        |        |        |
0.45
  5.000    0.42    0.32      0.028  |    O I|        |        |        |
0.46
  5.083    0.37    0.33      0.028  |    OI  |        |        |        |
0.47
  5.167    0.32    0.33      0.028  |    O   |        |        |        |
0.47
  5.250    0.32    0.33      0.028  |    O   |        |        |        |
0.47
  5.333    0.34    0.33      0.028  |    OI  |        |        |        |
0.47
  5.417    0.36    0.33      0.028  |    OI  |        |        |        |
0.47
  5.500    0.37    0.33      0.029  |    OI  |        |        |        |
0.48
  5.583    0.39    0.34      0.029  |     OI|        |        |        |
0.48
  5.667    0.42    0.34      0.029  |     OI|        |        |        |
0.49
  5.750    0.42    0.35      0.030  |     OI|        |        |        |
0.50
  5.833    0.42    0.35      0.030  |     OI|        |        |        |
0.50
  5.917    0.42    0.36      0.031  |     OI|        |        |        |
0.51
  6.000    0.42    0.36      0.031  |     OI|        |        |        |
0.52
  6.083    0.44    0.37      0.032  |     OI|        |        |        |
0.53
  6.167    0.47    0.38      0.032  |     O I        |        |        |
```

```
0.54
  6.250    0.47    0.38      0.033 |     O I       |       |       |
0.55
  6.333    0.47    0.39      0.033 |     O I       |       |       |
0.56
  6.417    0.47    0.40      0.034 |      OI       |       |       |
0.57
  6.500    0.47    0.40      0.034 |      OI       |       |       |
0.57
  6.583    0.50    0.41      0.035 |      OI       |       |       |
0.58
  6.667    0.52    0.42      0.036 |      O|I      |       |       |
0.60
  6.750    0.53    0.42      0.036 |      O|I      |       |       |
0.61
  6.833    0.53    0.43      0.037 |      O|I      |       |       |
0.62
  6.917    0.53    0.44      0.038 |      O|I      |       |       |
0.63
  7.000    0.53    0.45      0.038 |      O|I      |       |       |
0.64
  7.083    0.53    0.45      0.039 |       OI      |       |       |
0.65
  7.167    0.53    0.46      0.039 |       OI      |       |       |
0.65
  7.250    0.53    0.46      0.040 |       OI      |       |       |
0.66
  7.333    0.55    0.47      0.040 |       OI      |       |       |
0.67
  7.417    0.58    0.48      0.041 |       O I     |       |       |
0.68
  7.500    0.58    0.48      0.042 |       O I     |       |       |
0.69
  7.583    0.60    0.49      0.042 |       O I     |       |       |
0.70
  7.667    0.63    0.50      0.043 |       O  I    |       |       |
0.72
  7.750    0.63    0.51      0.044 |       |O I    |       |       |
0.73
  7.833    0.65    0.52      0.045 |       |O I    |       |       |
0.75
  7.917    0.68    0.53      0.046 |       |O  I   |       |       |
0.76
  8.000    0.68    0.54      0.047 |       |O  I   |       |       |
0.78
  8.083    0.73    0.56      0.048 |       |O   I  |       |       |
0.80
  8.167    0.78    0.57      0.049 |       | O  I  |       |       |
0.82
  8.250    0.79    0.59      0.050 |       | O   I |       |       |
0.84
  8.333    0.79    0.60      0.052 |       | O   I |       |       |
0.86
  8.417    0.79    0.62      0.053 |       |  O  I |       |       |
0.88
  8.500    0.79    0.63      0.054 |       |  O  I |       |       |
0.90
  8.583    0.81    0.64      0.055 |       |  O  I |       |       |
0.92
  8.667    0.84    0.66      0.056 |       |  O  I |       |       |
```

```
0.94
  8.750    0.84    0.67      0.058  |       |  O  I|        |       |
0.96
  8.833    0.87    0.69      0.059  |       |  O  I|        |       |
0.98
  8.917    0.89    0.70      0.060  |       |  O  I|        |       |
1.00
  9.000    0.89    0.70      0.061  |       |  O  I|        |       |
1.02
  9.083    0.94    0.70      0.063  |       |  O    I       |       |
1.05
  9.167    0.99    0.70      0.065  |       |  O    |I      |       |
1.08
  9.250    1.00    0.70      0.067  |       |  O    |I      |       |
1.11
  9.333    1.02    0.70      0.069  |       |  O    | I     |       |
1.15
  9.417    1.05    0.70      0.071  |       |  O    | I     |       |
1.19
  9.500    1.05    0.70      0.074  |       |  O    | I     |       |
1.23
  9.583    1.08    0.70      0.076  |       |  O    |  I    |       |
1.27
  9.667    1.10    0.70      0.079  |       |  O    |  I    |       |
1.31
  9.750    1.10    0.70      0.082  |       |  O    |  I    |       |
1.36
  9.833    1.13    0.70      0.085  |       |  O    |   I   |       |
1.41
  9.917    1.15    0.70      0.088  |       |  O    |   I   |       |
1.46
 10.000    1.16    0.70      0.091  |       |  O    |   I   |       |
1.51
 10.083    0.99    0.70      0.093  |       |  O    |I      |       |
1.55
 10.167    0.81    0.70      0.095  |       |  O I  |       |       |
1.58
 10.250    0.79    0.70      0.095  |       |  O I  |       |       |
1.59
 10.333    0.79    0.70      0.096  |       |  O I  |       |       |
1.60
 10.417    0.79    0.70      0.097  |       |  O I  |       |       |
1.61
 10.500    0.79    0.70      0.097  |       |  O I  |       |       |
1.62
 10.583    0.91    0.70      0.098  |       |  O    I       |       |
1.64
 10.667    1.04    0.70      0.100  |       |  O    | I     |       |
1.67
 10.750    1.05    0.70      0.102  |       |  O    | I     |       |
1.71
 10.833    1.05    0.70      0.105  |       |  O    | I     |       |
1.75
 10.917    1.05    0.70      0.107  |       |  O    | I     |       |
1.79
 11.000    1.05    0.70      0.110  |       |  O    | I     |       |
1.83
 11.083    1.03    0.70      0.112  |       |  O    | I     |       |
1.87
 11.167    1.00    0.70      0.114  |       |  O    |I      |       |
```

```
1.90
 11.250    1.00    0.70      0.116  |       |   O   |I      |       |
1.94
 11.333    1.00    0.70      0.118  |       |   O   |I      |       |
1.97
 11.417    1.00    0.70      0.120  |       |   O   |I      |       |
2.00
 11.500    1.00    0.70      0.123  |       |   O   |I      |       |
2.01
 11.583    0.95    0.70      0.124  |       |   O   |I      |       |
2.02
 11.667    0.90    0.70      0.126  |       |   O   I       |       |
2.03
 11.750    0.90    0.70      0.127  |       |   O   I       |       |
2.04
 11.833    0.92    0.70      0.129  |       |   O   I       |       |
2.04
 11.917    0.94    0.70      0.130  |       |   O   I       |       |
2.05
 12.000    0.95    0.70      0.132  |       |   O   I       |       |
2.06
 12.083    1.11    0.70      0.134  |       |   O   |  I    |       |
2.07
 12.167    1.29    0.70      0.138  |       |   O   |      I|       |
2.09
 12.250    1.31    0.70      0.142  |       |   O   |      I|       |
2.11
 12.333    1.34    0.70      0.146  |       |   O   |      I|       |
2.13
 12.417    1.36    0.70      0.151  |       |   O   |       I       |
2.15
 12.500    1.37    0.70      0.155  |       |   O   |       I       |
2.18
 12.583    1.41    0.70      0.160  |       |   O   |       |I      |
2.20
 12.667    1.47    0.70      0.165  |       |   O   |       | I     |
2.23
 12.750    1.47    0.70      0.170  |       |   O   |       | I     |
2.25
 12.833    1.50    0.70      0.176  |       |   O   |       | I     |
2.28
 12.917    1.52    0.70      0.181  |       |   O   |       |  I    |
2.31
 13.000    1.53    0.70      0.187  |       |   O   |       |  I    |
2.34
 13.083    1.64    0.70      0.193  |       |   O   |       |    I  |
2.37
 13.167    1.77    0.70      0.200  |       |   O   |       |      I|
2.40
 13.250    1.79    0.70      0.208  |       |   O   |       |      I|
2.44
 13.333    1.79    0.70      0.215  |       |   O   |       |      I|
2.48
 13.417    1.79    0.70      0.223  |       |   O   |       |      I|
2.51
 13.500    1.79    0.70      0.230  |       |   O   |       |      I|
2.55
 13.583    1.53    0.70      0.237  |       |   O   |       |  I    |
2.58
 13.667    1.25    0.70      0.241  |       |   O   |     I |       |
```

```
2.61
 13.750    1.21    0.70      0.245  |       |   O   |    I  |       |
2.63
 13.833    1.21    0.70      0.249  |       |   O   |    I  |       |
2.64
 13.917    1.21    0.70      0.252  |       |   O   |    I  |       |
2.66
 14.000    1.21    0.70      0.256  |       |   O   |    I  |       |
2.68
 14.083    1.30    0.70      0.259  |       |   O   |      I|       |
2.70
 14.167    1.41    0.70      0.264  |       |   O   |       |I      |
2.72
 14.250    1.42    0.70      0.269  |       |   O   |       |I      |
2.74
 14.333    1.40    0.70      0.274  |       |   O   |       I       |
2.77
 14.417    1.37    0.70      0.278  |       |   O   |       I       |
2.79
 14.500    1.37    0.70      0.283  |       |   O   |       I       |
2.82
 14.583    1.37    0.70      0.288  |       |   O   |       I       |
2.84
 14.667    1.37    0.70      0.292  |       |   O   |       I       |
2.86
 14.750    1.37    0.70      0.297  |       |   O   |       I       |
2.88
 14.833    1.34    0.70      0.301  |       |   O   |       I       |
2.91
 14.917    1.32    0.70      0.306  |       |   O   |      I|       |
2.93
 15.000    1.32    0.70      0.310  |       |   O   |      I|       |
2.95
 15.083    1.29    0.70      0.314  |       |   O   |      I|       |
2.97
 15.167    1.27    0.70      0.318  |       |   O   |     I |       |
2.99
 15.250    1.26    0.70      0.322  |       |   O   |     I |       |
3.01
 15.333    1.24    0.70      0.326  |       |   O   |     I |       |
3.02
 15.417    1.21    0.70      0.329  |       |   O   |    I  |       |
3.04
 15.500    1.21    0.70      0.333  |       |   O   |    I  |       |
3.05
 15.583    1.12    0.70      0.336  |       |   O   |  I    |       |
3.07
 15.667    1.01    0.70      0.339  |       |   O   | I     |       |
3.08
 15.750    1.00    0.70      0.341  |       |   O   |I      |       |
3.09
 15.833    1.00    0.70      0.343  |       |   O   |I      |       |
3.10
 15.917    1.00    0.70      0.345  |       |   O   |I      |       |
3.10
 16.000    1.00    0.70      0.347  |       |   O   |I      |       |
3.11
 16.083    0.65    0.70      0.348  |       |  IO   |       |       |
3.12
 16.167    0.26    0.70      0.346  |   I   |   O   |       |       |
```

```
3.11
 16.250    0.22    0.70      0.343  |  I    |   O   |       |       |
3.10
 16.333    0.21    0.70      0.340  |  I    |   O   |       |       |
3.08
 16.417    0.21    0.70      0.336  |  I    |   O   |       |       |
3.07
 16.500    0.21    0.70      0.333  |  I    |   O   |       |       |
3.05
 16.583    0.19    0.70      0.329  |  I    |   O   |       |       |
3.04
 16.667    0.16    0.70      0.326  | I     |   O   |       |       |
3.02
 16.750    0.16    0.70      0.322  | I     |   O   |       |       |
3.01
 16.833    0.16    0.70      0.318  | I     |   O   |       |       |
2.99
 16.917    0.16    0.70      0.315  | I     |   O   |       |       |
2.97
 17.000    0.16    0.70      0.311  | I     |   O   |       |       |
2.95
 17.083    0.20    0.70      0.307  |  I    |   O   |       |       |
2.94
 17.167    0.26    0.70      0.304  |   I   |   O   |       |       |
2.92
 17.250    0.26    0.70      0.301  |   I   |   O   |       |       |
2.90
 17.333    0.26    0.70      0.298  |   I   |   O   |       |       |
2.89
 17.417    0.26    0.70      0.295  |   I   |   O   |       |       |
2.87
 17.500    0.26    0.70      0.292  |   I   |   O   |       |       |
2.86
 17.583    0.26    0.70      0.289  |   I   |   O   |       |       |
2.84
 17.667    0.26    0.70      0.286  |   I   |   O   |       |       |
2.83
 17.750    0.26    0.70      0.283  |   I   |   O   |       |       |
2.81
 17.833    0.24    0.70      0.280  |   I   |   O   |       |       |
2.80
 17.917    0.21    0.70      0.277  |  I    |   O   |       |       |
2.78
 18.000    0.21    0.70      0.273  |  I    |   O   |       |       |
2.77
 18.083    0.21    0.70      0.270  |  I    |   O   |       |       |
2.75
 18.167    0.21    0.70      0.266  |  I    |   O   |       |       |
2.73
 18.250    0.21    0.70      0.263  |  I    |   O   |       |       |
2.72
 18.333    0.21    0.70      0.260  |  I    |   O   |       |       |
2.70
 18.417    0.21    0.70      0.256  |  I    |   O   |       |       |
2.68
 18.500    0.21    0.70      0.253  |  I    |   O   |       |       |
2.66
 18.583    0.19    0.70      0.250  |  I    |   O   |       |       |
2.65
 18.667    0.16    0.70      0.246  | I     |   O   |       |       |
```

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2.63
 18.750    0.16    0.70      0.242  | I      |   O   |       |       |
2.61
 18.833    0.13    0.70      0.238  | I      |   O   |       |       |
2.59
 18.917    0.11    0.70      0.234  |I       |   O   |       |       |
2.57
 19.000    0.11    0.70      0.230  |I       |   O   |       |       |
2.55
 19.083    0.13    0.70      0.226  | I      |   O   |       |       |
2.53
 19.167    0.15    0.70      0.222  | I      |   O   |       |       |
2.51
 19.250    0.16    0.70      0.219  | I      |   O   |       |       |
2.49
 19.333    0.18    0.70      0.215  |  I     |   O   |       |       |
2.48
 19.417    0.21    0.70      0.212  |  I     |   O   |       |       |
2.46
 19.500    0.21    0.70      0.208  |  I     |   O   |       |       |
2.44
 19.583    0.19    0.70      0.205  |  I     |   O   |       |       |
2.42
 19.667    0.16    0.70      0.201  | I      |   O   |       |       |
2.41
 19.750    0.16    0.70      0.197  | I      |   O   |       |       |
2.39
 19.833    0.13    0.70      0.194  | I      |   O   |       |       |
2.37
 19.917    0.11    0.70      0.190  |I       |   O   |       |       |
2.35
 20.000    0.11    0.70      0.186  |I       |   O   |       |       |
2.33
 20.083    0.13    0.70      0.181  | I      |   O   |       |       |
2.31
 20.167    0.15    0.70      0.178  | I      |   O   |       |       |
2.29
 20.250    0.16    0.70      0.174  | I      |   O   |       |       |
2.27
 20.333    0.16    0.70      0.170  | I      |   O   |       |       |
2.25
 20.417    0.16    0.70      0.166  | I      |   O   |       |       |
2.23
 20.500    0.16    0.70      0.163  | I      |   O   |       |       |
2.21
 20.583    0.16    0.70      0.159  | I      |   O   |       |       |
2.19
 20.667    0.16    0.70      0.155  | I      |   O   |       |       |
2.18
 20.750    0.16    0.70      0.151  | I      |   O   |       |       |
2.16
 20.833    0.13    0.70      0.148  | I      |   O   |       |       |
2.14
 20.917    0.11    0.70      0.144  |I       |   O   |       |       |
2.12
 21.000    0.11    0.70      0.140  |I       |   O   |       |       |
2.10
 21.083    0.13    0.70      0.136  | I      |   O   |       |       |
2.08
 21.167    0.15    0.70      0.132  | I      |   O   |       |       |
```

```
2.06
 21.250    0.16    0.70      0.128   | I     |   O   |       |       |
2.04
 21.333    0.13    0.70      0.124   | I     |   O   |       |       |
2.02
 21.417    0.11    0.70      0.120   |I      |   O   |       |       |
2.00
 21.500    0.11    0.70      0.116   |I      |   O   |       |       |
1.94
 21.583    0.13    0.70      0.112   | I     |   O   |       |       |
1.87
 21.667    0.15    0.70      0.108   | I     |   O   |       |       |
1.80
 21.750    0.16    0.70      0.105   | I     |   O   |       |       |
1.74
 21.833    0.13    0.70      0.101   | I     |   O   |       |       |
1.68
 21.917    0.11    0.70      0.097   |I      |   O   |       |       |
1.61
 22.000    0.11    0.70      0.093   |I      |   O   |       |       |
1.54
 22.083    0.13    0.70      0.089   | I     |   O   |       |       |
1.48
 22.167    0.15    0.70      0.085   | I     |   O   |       |       |
1.41
 22.250    0.16    0.70      0.081   | I     |   O   |       |       |
1.35
 22.333    0.13    0.70      0.077   | I     |   O   |       |       |
1.29
 22.417    0.11    0.70      0.073   |I      |   O   |       |       |
1.22
 22.500    0.11    0.70      0.069   |I      |   O   |       |       |
1.15
 22.583    0.11    0.70      0.065   |I      |   O   |       |       |
1.08
 22.667    0.11    0.70      0.061   |I      |   O   |       |       |
1.02
 22.750    0.11    0.66      0.057   |I      |  O    |       |       |
0.95
 22.833    0.11    0.62      0.053   |I      |  O    |       |       |
0.89
 22.917    0.11    0.58      0.050   |I      | O     |       |       |
0.83
 23.000    0.11    0.54      0.047   |I      |O      |       |       |
0.78
 23.083    0.11    0.51      0.044   |I      |O      |       |       |
0.73
 23.167    0.11    0.48      0.041   |I      O       |       |       |
0.69
 23.250    0.11    0.45      0.039   |I      O       |       |       |
0.64
 23.333    0.11    0.42      0.036   |I     O|       |       |       |
0.61
 23.417    0.11    0.40      0.034   |I     O|       |       |       |
0.57
 23.500    0.11    0.38      0.032   |I    O |       |       |       |
0.54
 23.583    0.11    0.36      0.030   |I    O |       |       |       |
0.51
 23.667    0.11    0.34      0.029   |I    O |       |       |       |
```

```
0.48
 23.750    0.11    0.32      0.027  |I   O  |       |       |       |
0.45
 23.833    0.11    0.30      0.026  |I   O  |       |       |       |
0.43
 23.917    0.11    0.29      0.025  |I   O  |       |       |       |
0.41
 24.000    0.11    0.27      0.023  |I  O   |       |       |       |
0.39
 24.083    0.06    0.26      0.022  |I  O   |       |       |       |
0.37
 24.167    0.01    0.24      0.021  I   O   |       |       |       |
0.34
 24.250    0.00    0.22      0.019  I  O    |       |       |       |
0.32
 24.333    0.00    0.21      0.018  I  O    |       |       |       |
0.29
 24.417    0.00    0.19      0.016  I  O    |       |       |       |
0.27
 24.500    0.00    0.17      0.015  I  O    |       |       |       |
0.25
 24.583    0.00    0.16      0.014  I O     |       |       |       |
0.23
 24.667    0.00    0.15      0.013  I O     |       |       |       |
0.21
 24.750    0.00    0.14      0.012  I O     |       |       |       |
0.20
 24.833    0.00    0.13      0.011  I O     |       |       |       |
0.18
 24.917    0.00    0.12      0.010  I O     |       |       |       |
0.17
 25.000    0.00    0.11      0.009  IO      |       |       |       |
0.15
 25.083    0.00    0.10      0.009  IO      |       |       |       |
0.14
 25.167    0.00    0.09      0.008  IO      |       |       |       |
0.13
 25.250    0.00    0.08      0.007  IO      |       |       |       |
0.12
 25.333    0.00    0.08      0.007  IO      |       |       |       |
0.11
 25.417    0.00    0.07      0.006  IO      |       |       |       |
0.10
 25.500    0.00    0.07      0.006  IO      |       |       |       |
0.10
 25.583    0.00    0.06      0.005  IO      |       |       |       |
0.09
 25.667    0.00    0.06      0.005  IO      |       |       |       |
0.08
 25.750    0.00    0.05      0.004  O       |       |       |       |
0.07
 25.833    0.00    0.05      0.004  O       |       |       |       |
0.07
 25.917    0.00    0.04      0.004  O       |       |       |       |
0.06
 26.000    0.00    0.04      0.004  O       |       |       |       |
0.06
 26.083    0.00    0.04      0.003  O       |       |       |       |
0.05
 26.167    0.00    0.03      0.003  O       |       |       |       |
```

```
0.05
 26.250    0.00    0.03      0.003  O        |        |        |        |
0.05
 26.333    0.00    0.03      0.003  O        |        |        |        |
0.04
 26.417    0.00    0.03      0.002  O        |        |        |        |
0.04
 26.500    0.00    0.03      0.002  O        |        |        |        |
0.04
 26.583    0.00    0.02      0.002  O        |        |        |        |
0.03
 26.667    0.00    0.02      0.002  O        |        |        |        |
0.03
 26.750    0.00    0.02      0.002  O        |        |        |        |
0.03
 26.833    0.00    0.02      0.002  O        |        |        |        |
0.03
 26.917    0.00    0.02      0.001  O        |        |        |        |
0.02
 27.000    0.00    0.02      0.001  O        |        |        |        |
0.02
 27.083    0.00    0.01      0.001  O        |        |        |        |
0.02
 27.167    0.00    0.01      0.001  O        |        |        |        |
0.02
 27.250    0.00    0.01      0.001  O        |        |        |        |
0.02
 27.333    0.00    0.01      0.001  O        |        |        |        |
0.02
 27.417    0.00    0.01      0.001  O        |        |        |        |
0.01
 27.500    0.00    0.01      0.001  O        |        |        |        |
0.01
 27.583    0.00    0.01      0.001  O        |        |        |        |
0.01
 27.667    0.00    0.01      0.001  O        |        |        |        |
0.01
 27.750    0.00    0.01      0.001  O        |        |        |        |
0.01
 27.833    0.00    0.01      0.001  O        |        |        |        |
0.01
 27.917    0.00    0.01      0.001  O        |        |        |        |
0.01
 28.000    0.00    0.01      0.001  O        |        |        |        |
0.01
 28.083    0.00    0.01      0.000  O        |        |        |        |
0.01
 28.167    0.00    0.01      0.000  O        |        |        |        |
0.01
 28.250    0.00    0.00      0.000  O        |        |        |        |
0.01
 28.333    0.00    0.00      0.000  O        |        |        |        |
0.01
 28.417    0.00    0.00      0.000  O        |        |        |        |
0.01
 28.500    0.00    0.00      0.000  O        |        |        |        |
0.01
 28.583    0.00    0.00      0.000  O        |        |        |        |
0.00
 28.667    0.00    0.00      0.000  O        |        |        |        |
```

```
0.00
 28.750    0.00    0.00      0.000  O       |       |       |       |
0.00
 28.833    0.00    0.00      0.000  O       |       |       |       |
0.00
 28.917    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.000    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.083    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.167    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.250    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.333    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.417    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.500    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.583    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.667    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.750    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.833    0.00    0.00      0.000  O       |       |       |       |
0.00
 29.917    0.00    0.00      0.000  O       |       |       |       |
0.00

      ****************************HYDROGRAPH
DATA****************************
                  Number of intervals =   359
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        0.700 (CFS)
                  Total volume =       1.087 (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: 11/11/21

Gateway Height
Basin Routing
Area A
2yr 24hr

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Program License Serial Number 6232

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

From study/file name: moval33post242.rte
****************************HYDROGRAPH
DATA****************************
Number of intervals = 290
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 0.656 (CFS)
Total volume = 0.399 (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

****
*****

++
++++
Process from Point/Station 202.000 to Point/Station
203.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

--
Total number of inflow hydrograph intervals = 290
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  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
           (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
      ------------------------------------------------------------------
---
          0.000      0.000      0.000      0.000        0.000
          1.000      0.016      0.500      0.014        0.018
          2.000      0.032      0.500      0.030        0.034
          3.000      0.097      0.500      0.095        0.099
          4.000      0.182      0.500      0.180        0.184
          5.000      0.292      0.500      0.290        0.294
          6.000      0.402      0.500      0.400        0.404
      ------------------------------------------------------------------
--
                  Hydrograph Detention Basin Routing
      ------------------------------------------------------------------
---

      Graph values: 'I'= unit inflow; 'O'=outflow at time shown
      ------------------------------------------------------------------
---
  Time   Inflow  Outflow    Storage
Depth
 (Hours)  (CFS)   (CFS)     (Ac.Ft) .0       0.2    0.33    0.49    0.66
(Ft.)
  0.083    0.02    0.00      0.000  OI      |       |       |       |
0.00
  0.167    0.04    0.01      0.000  OI      |       |       |       |
0.01
  0.250    0.04    0.01      0.000  OI      |       |       |       |
0.03
  0.333    0.05    0.02      0.001  O I     |       |       |       |
0.04
  0.417    0.06    0.03      0.001  |OI     |       |       |       |
0.05
  0.500    0.06    0.03      0.001  |OI     |       |       |       |
0.06
  0.583    0.06    0.04      0.001  |OI     |       |       |       |
0.07
  0.667    0.06    0.04      0.001  | O     |       |       |       |
0.08
  0.750    0.06    0.04      0.001  | O     |       |       |       |
0.09
  0.833    0.07    0.05      0.002  | OI    |       |       |       |
0.10
  0.917    0.08    0.05      0.002  | OI    |       |       |       |
0.11
  1.000    0.08    0.06      0.002  | OI    |       |       |       |
0.11
  1.083    0.07    0.06      0.002  | OI    |       |       |       |
0.12
  1.167    0.06    0.06      0.002  | O     |       |       |       |
```

```
0.12
  1.250    0.06    0.06      0.002  | O      |        |        |        |
0.12
  1.333    0.06    0.06      0.002  | O      |        |        |        |
0.12
  1.417    0.06    0.06      0.002  | O      |        |        |        |
0.12
  1.500    0.06    0.06      0.002  | O      |        |        |        |
0.12
  1.583    0.06    0.06      0.002  | O      |        |        |        |
0.12
  1.667    0.06    0.06      0.002  | O      |        |        |        |
0.12
  1.750    0.06    0.06      0.002  | O      |        |        |        |
0.12
  1.833    0.07    0.06      0.002  | OI     |        |        |        |
0.12
  1.917    0.08    0.06      0.002  |  O     |        |        |        |
0.12
  2.000    0.08    0.06      0.002  |  O     |        |        |        |
0.13
  2.083    0.08    0.07      0.002  |  O     |        |        |        |
0.13
  2.167    0.08    0.07      0.002  |  O     |        |        |        |
0.14
  2.250    0.08    0.07      0.002  |  O     |        |        |        |
0.14
  2.333    0.08    0.07      0.002  |  O     |        |        |        |
0.14
  2.417    0.08    0.07      0.002  |  O     |        |        |        |
0.15
  2.500    0.08    0.07      0.002  |  O     |        |        |        |
0.15
  2.583    0.09    0.08      0.002  |  OI    |        |        |        |
0.15
  2.667    0.10    0.08      0.003  |  OI    |        |        |        |
0.16
  2.750    0.10    0.08      0.003  |   O    |        |        |        |
0.16
  2.833    0.10    0.08      0.003  |   O    |        |        |        |
0.17
  2.917    0.10    0.09      0.003  |   O    |        |        |        |
0.17
  3.000    0.10    0.09      0.003  |   O    |        |        |        |
0.18
  3.083    0.10    0.09      0.003  |   O    |        |        |        |
0.18
  3.167    0.10    0.09      0.003  |   O    |        |        |        |
0.18
  3.250    0.10    0.09      0.003  |   O    |        |        |        |
0.19
  3.333    0.10    0.09      0.003  |   O    |        |        |        |
0.19
  3.417    0.10    0.09      0.003  |   O    |        |        |        |
0.19
  3.500    0.10    0.09      0.003  |   O    |        |        |        |
0.19
  3.583    0.10    0.09      0.003  |   O    |        |        |        |
0.19
  3.667    0.10    0.10      0.003  |   O    |        |        |        |
```

```
0.19
  3.750    0.10    0.10      0.003  |   O   |       |       |       |
0.19
  3.833    0.11    0.10      0.003  |   OI  |       |       |       |
0.19
  3.917    0.12    0.10      0.003  |   OI  |       |       |       |
0.20
  4.000    0.12    0.10      0.003  |    O  |       |       |       |
0.21
  4.083    0.12    0.11      0.003  |    O  |       |       |       |
0.21
  4.167    0.12    0.11      0.003  |    O  |       |       |       |
0.21
  4.250    0.12    0.11      0.003  |    O  |       |       |       |
0.22
  4.333    0.13    0.11      0.004  |    OI |       |       |       |
0.22
  4.417    0.13    0.12      0.004  |    OI |       |       |       |
0.23
  4.500    0.14    0.12      0.004  |    OI |       |       |       |
0.24
  4.583    0.14    0.12      0.004  |    OI |       |       |       |
0.24
  4.667    0.14    0.12      0.004  |     O |       |       |       |
0.25
  4.750    0.14    0.13      0.004  |     O |       |       |       |
0.25
  4.833    0.15    0.13      0.004  |     OI|       |       |       |
0.26
  4.917    0.15    0.13      0.004  |     OI|       |       |       |
0.27
  5.000    0.15    0.14      0.004  |     OI|       |       |       |
0.27
  5.083    0.13    0.14      0.004  |     O |       |       |       |
0.28
  5.167    0.12    0.14      0.004  |    IO |       |       |       |
0.27
  5.250    0.12    0.13      0.004  |    IO |       |       |       |
0.26
  5.333    0.13    0.13      0.004  |     O |       |       |       |
0.26
  5.417    0.13    0.13      0.004  |     O |       |       |       |
0.26
  5.500    0.14    0.13      0.004  |     O |       |       |       |
0.26
  5.583    0.15    0.13      0.004  |     OI|       |       |       |
0.27
  5.667    0.15    0.14      0.004  |     OI|       |       |       |
0.27
  5.750    0.15    0.14      0.004  |     OI|       |       |       |
0.28
  5.833    0.15    0.14      0.005  |     OI|       |       |       |
0.29
  5.917    0.15    0.14      0.005  |      O|       |       |       |
0.29
  6.000    0.15    0.15      0.005  |      O|       |       |       |
0.29
  6.083    0.16    0.15      0.005  |      OI       |       |       |
0.30
  6.167    0.17    0.15      0.005  |      OI       |       |       |
```

```
0.31
  6.250    0.17    0.16      0.005  |      OI       |       |       |
0.31
  6.333    0.17    0.16      0.005  |      OI       |       |       |
0.32
  6.417    0.17    0.16      0.005  |      OI       |       |       |
0.33
  6.500    0.17    0.17      0.005  |       O       |       |       |
0.33
  6.583    0.18    0.17      0.005  |       O       |       |       |
0.34
  6.667    0.19    0.17      0.005  |       OI      |       |       |
0.34
  6.750    0.19    0.18      0.006  |       OI      |       |       |
0.35
  6.833    0.19    0.18      0.006  |       OI      |       |       |
0.36
  6.917    0.19    0.18      0.006  |       OI      |       |       |
0.36
  7.000    0.19    0.18      0.006  |       OI      |       |       |
0.37
  7.083    0.19    0.19      0.006  |       |O      |       |       |
0.37
  7.167    0.19    0.19      0.006  |       |O      |       |       |
0.37
  7.250    0.19    0.19      0.006  |       |O      |       |       |
0.38
  7.333    0.20    0.19      0.006  |       |O      |       |       |
0.38
  7.417    0.21    0.19      0.006  |       |OI     |       |       |
0.39
  7.500    0.21    0.20      0.006  |       |OI     |       |       |
0.39
  7.583    0.22    0.20      0.006  |       |OI     |       |       |
0.40
  7.667    0.23    0.21      0.007  |       | OI    |       |       |
0.41
  7.750    0.23    0.21      0.007  |       | OI    |       |       |
0.42
  7.833    0.24    0.22      0.007  |       | OI    |       |       |
0.43
  7.917    0.25    0.22      0.007  |       | O I   |       |       |
0.44
  8.000    0.25    0.23      0.007  |       |  OI   |       |       |
0.46
  8.083    0.27    0.23      0.007  |       |  O I  |       |       |
0.47
  8.167    0.29    0.24      0.008  |       |  O  I |       |       |
0.49
  8.250    0.29    0.25      0.008  |       |   O I |       |       |
0.50
  8.333    0.29    0.26      0.008  |       |   O I |       |       |
0.52
  8.417    0.29    0.27      0.008  |       |   O I |       |       |
0.53
  8.500    0.29    0.27      0.009  |       |    OI |       |       |
0.54
  8.583    0.30    0.27      0.009  |       |    OI |       |       |
0.55
  8.667    0.31    0.28      0.009  |       |    O I|       |       |
```

```
0.56
  8.750    0.31    0.29      0.009  |        |    O I|       |        |
0.57
  8.833    0.32    0.29      0.009  |        |     OI|       |        |
0.58
  8.917    0.33    0.30      0.010  |        |     OI|       |        |
0.60
  9.000    0.33    0.30      0.010  |        |     O I       |        |
0.61
  9.083    0.35    0.31      0.010  |        |      O|I      |        |
0.62
  9.167    0.37    0.32      0.010  |        |      O|I      |        |
0.64
  9.250    0.37    0.33      0.011  |        |       OI      |        |
0.66
  9.333    0.38    0.34      0.011  |        |       O I     |        |
0.67
  9.417    0.39    0.35      0.011  |        |       O I     |        |
0.69
  9.500    0.39    0.35      0.011  |        |       |OI     |        |
0.71
  9.583    0.40    0.36      0.012  |        |       |O I    |        |
0.72
  9.667    0.40    0.37      0.012  |        |       |O I    |        |
0.74
  9.750    0.41    0.38      0.012  |        |       | OI    |        |
0.75
  9.833    0.42    0.38      0.012  |        |       | O I   |        |
0.76
  9.917    0.42    0.39      0.012  |        |       |  OI   |        |
0.78
 10.000    0.42    0.40      0.013  |        |       |  OI   |        |
0.79
 10.083    0.35    0.39      0.013  |        |       |I O    |        |
0.79
 10.167    0.29    0.38      0.012  |        |     I | O     |        |
0.76
 10.250    0.29    0.36      0.012  |        |     I |O      |        |
0.73
 10.333    0.29    0.35      0.011  |        |     I |O      |        |
0.70
 10.417    0.29    0.34      0.011  |        |     I O       |        |
0.67
 10.500    0.29    0.33      0.011  |        |     IO|       |        |
0.66
 10.583    0.34    0.33      0.010  |        |      OI       |        |
0.65
 10.667    0.38    0.33      0.011  |        |       O I     |        |
0.67
 10.750    0.39    0.34      0.011  |        |       O I     |        |
0.69
 10.833    0.39    0.35      0.011  |        |       |OI     |        |
0.70
 10.917    0.39    0.36      0.011  |        |       |OI     |        |
0.72
 11.000    0.39    0.36      0.012  |        |       |OI     |        |
0.73
 11.083    0.38    0.37      0.012  |        |       |OI     |        |
0.73
 11.167    0.37    0.37      0.012  |        |       |O      |        |
```

```
0.74
 11.250    0.37    0.37      0.012  |       |       |O      |       |
0.74
 11.333    0.37    0.37      0.012  |       |       |O      |       |
0.73
 11.417    0.37    0.37      0.012  |       |       |O      |       |
0.73
 11.500    0.37    0.37      0.012  |       |       |O      |       |
0.73
 11.583    0.35    0.37      0.012  |       |       IO      |       |
0.73
 11.667    0.33    0.36      0.012  |       |       IO      |       |
0.72
 11.750    0.33    0.35      0.011  |       |       IO      |       |
0.71
 11.833    0.34    0.35      0.011  |       |       IO      |       |
0.70
 11.917    0.35    0.35      0.011  |       |       O       |       |
0.70
 12.000    0.35    0.35      0.011  |       |       O       |       |
0.70
 12.083    0.42    0.36      0.011  |       |       |O  I   |       |
0.71
 12.167    0.48    0.37      0.012  |       |       | O    I|       |
0.75
 12.250    0.48    0.39      0.013  |       |       |  O   I|       |
0.79
 12.333    0.49    0.41      0.013  |       |       |   O   I       |
0.83
 12.417    0.50    0.43      0.014  |       |       |   O   I       |
0.86
 12.500    0.50    0.44      0.014  |       |       |    O  I       |
0.89
 12.583    0.52    0.46      0.015  |       |       |     O |I      |
0.91
 12.667    0.54    0.47      0.015  |       |       |     O | I     |
0.94
 12.750    0.54    0.48      0.016  |       |       |      O| I     |
0.97
 12.833    0.55    0.50      0.016  |       |       |       O I     |
0.99
 12.917    0.56    0.50      0.016  |       |       |       O  I    |
1.02
 13.000    0.56    0.50      0.017  |       |       |       O  I    |
1.04
 13.083    0.61    0.50      0.017  |       |       |       O    I  |
1.08
 13.167    0.65    0.50      0.018  |       |       |       O      I|
1.14
 13.250    0.66    0.50      0.019  |       |       |       O       I
1.20
 13.333    0.66    0.50      0.020  |       |       |       O       I
1.27
 13.417    0.66    0.50      0.021  |       |       |       O       I
1.34
 13.500    0.66    0.50      0.022  |       |       |       O       I
1.41
 13.583    0.54    0.50      0.023  |       |       |       O I     |
1.45
 13.667    0.45    0.50      0.023  |       |       |    I  O       |
```

```
1.45
 13.750    0.44    0.50      0.023  |       |       |    I  O       |
1.42
 13.833    0.44    0.50      0.022  |       |       |    I  O       |
1.40
 13.917    0.44    0.50      0.022  |       |       |    I  O       |
1.38
 14.000    0.44    0.50      0.022  |       |       |    I  O       |
1.35
 14.083    0.49    0.50      0.021  |       |       |      IO       |
1.34
 14.167    0.52    0.50      0.021  |       |       |       OI      |
1.34
 14.250    0.52    0.50      0.022  |       |       |       OI      |
1.35
 14.333    0.51    0.50      0.022  |       |       |       O       |
1.35
 14.417    0.50    0.50      0.022  |       |       |       O       |
1.36
 14.500    0.50    0.50      0.022  |       |       |       O       |
1.36
 14.583    0.50    0.50      0.022  |       |       |       O       |
1.36
 14.667    0.50    0.50      0.022  |       |       |       O       |
1.36
 14.750    0.50    0.50      0.022  |       |       |       O       |
1.36
 14.833    0.49    0.50      0.022  |       |       |      IO       |
1.36
 14.917    0.48    0.50      0.022  |       |       |      IO       |
1.35
 15.000    0.48    0.50      0.022  |       |       |      IO       |
1.34
 15.083    0.47    0.50      0.021  |       |       |      IO       |
1.34
 15.167    0.46    0.50      0.021  |       |       |     I O       |
1.32
 15.250    0.46    0.50      0.021  |       |       |     I O       |
1.31
 15.333    0.45    0.50      0.021  |       |       |     I O       |
1.29
 15.417    0.44    0.50      0.020  |       |       |    I  O       |
1.27
 15.500    0.44    0.50      0.020  |       |       |    I  O       |
1.24
 15.583    0.40    0.50      0.019  |       |       |  I    O       |
1.21
 15.667    0.37    0.50      0.019  |       |       |I      O       |
1.16
 15.750    0.37    0.50      0.018  |       |       |I      O       |
1.10
 15.833    0.37    0.50      0.017  |       |       |I      O       |
1.04
 15.917    0.37    0.49      0.016  |       |       |I      O       |
0.99
 16.000    0.37    0.47      0.015  |       |       |I    O |       |
0.94
 16.083    0.21    0.43      0.014  |       | I     |    O  |       |
0.87
 16.167    0.09    0.38      0.012  |   I   |       | O     |       |
```

```
0.76
 16.250    0.08    0.32      0.010  |  I    |      O|       |       |
0.64
 16.333    0.08    0.27      0.009  |  I    |    O  |       |       |
0.55
 16.417    0.08    0.24      0.008  |  I    |  O    |       |       |
0.47
 16.500    0.08    0.20      0.007  |  I    |O      |       |       |
0.41
 16.583    0.07    0.18      0.006  |  I    O       |       |       |
0.36
 16.667    0.06    0.16      0.005  | I    O|       |       |       |
0.31
 16.750    0.06    0.14      0.004  | I   O |       |       |       |
0.27
 16.833    0.06    0.12      0.004  | I  O  |       |       |       |
0.24
 16.917    0.06    0.11      0.003  | I  O  |       |       |       |
0.22
 17.000    0.06    0.10      0.003  | I O   |       |       |       |
0.20
 17.083    0.08    0.09      0.003  |  IO   |       |       |       |
0.19
 17.167    0.10    0.09      0.003  |   O   |       |       |       |
0.18
 17.250    0.10    0.09      0.003  |   O   |       |       |       |
0.19
 17.333    0.10    0.09      0.003  |   O   |       |       |       |
0.19
 17.417    0.10    0.09      0.003  |   O   |       |       |       |
0.19
 17.500    0.10    0.09      0.003  |   O   |       |       |       |
0.19
 17.583    0.10    0.09      0.003  |   O   |       |       |       |
0.19
 17.667    0.10    0.10      0.003  |   O   |       |       |       |
0.19
 17.750    0.10    0.10      0.003  |   O   |       |       |       |
0.19
 17.833    0.09    0.09      0.003  |   O   |       |       |       |
0.19
 17.917    0.08    0.09      0.003  |  IO   |       |       |       |
0.18
 18.000    0.08    0.09      0.003  |  IO   |       |       |       |
0.18
 18.083    0.08    0.09      0.003  |  IO   |       |       |       |
0.17
 18.167    0.08    0.09      0.003  |  IO   |       |       |       |
0.17
 18.250    0.08    0.08      0.003  |  IO   |       |       |       |
0.17
 18.333    0.08    0.08      0.003  |  IO   |       |       |       |
0.16
 18.417    0.08    0.08      0.003  |  O    |       |       |       |
0.16
 18.500    0.08    0.08      0.003  |  O    |       |       |       |
0.16
 18.583    0.07    0.08      0.003  |  O    |       |       |       |
0.16
 18.667    0.06    0.08      0.002  | IO    |       |       |       |
```

```
0.15
 18.750    0.06    0.07      0.002  | IO     |        |        |        |
0.14
 18.833    0.05    0.07      0.002  | IO     |        |        |        |
0.14
 18.917    0.04    0.06      0.002  |I O     |        |        |        |
0.13
 19.000    0.04    0.06      0.002  |IO      |        |        |        |
0.12
 19.083    0.05    0.06      0.002  | O      |        |        |        |
0.11
 19.167    0.06    0.06      0.002  | O      |        |        |        |
0.11
 19.250    0.06    0.06      0.002  | O      |        |        |        |
0.11
 19.333    0.07    0.06      0.002  | OI     |        |        |        |
0.11
 19.417    0.08    0.06      0.002  | OI     |        |        |        |
0.12
 19.500    0.08    0.06      0.002  |  O     |        |        |        |
0.13
 19.583    0.07    0.07      0.002  |  O     |        |        |        |
0.13
 19.667    0.06    0.06      0.002  | IO     |        |        |        |
0.13
 19.750    0.06    0.06      0.002  | IO     |        |        |        |
0.13
 19.833    0.05    0.06      0.002  | O      |        |        |        |
0.12
 19.917    0.04    0.06      0.002  |IO      |        |        |        |
0.12
 20.000    0.04    0.05      0.002  |IO      |        |        |        |
0.11
 20.083    0.05    0.05      0.002  | O      |        |        |        |
0.10
 20.167    0.06    0.05      0.002  | O      |        |        |        |
0.10
 20.250    0.06    0.05      0.002  | O      |        |        |        |
0.11
 20.333    0.06    0.05      0.002  | O      |        |        |        |
0.11
 20.417    0.06    0.05      0.002  | O      |        |        |        |
0.11
 20.500    0.06    0.06      0.002  | O      |        |        |        |
0.11
 20.583    0.06    0.06      0.002  | O      |        |        |        |
0.11
 20.667    0.06    0.06      0.002  | O      |        |        |        |
0.11
 20.750    0.06    0.06      0.002  | O      |        |        |        |
0.11
 20.833    0.05    0.06      0.002  | O      |        |        |        |
0.11
 20.917    0.04    0.05      0.002  |IO      |        |        |        |
0.11
 21.000    0.04    0.05      0.002  |IO      |        |        |        |
0.10
 21.083    0.05    0.05      0.002  | O      |        |        |        |
0.10
 21.167    0.06    0.05      0.002  | O      |        |        |        |
```

```
0.10
 21.250    0.06    0.05      0.002  | O      |       |       |       |
0.10
 21.333    0.05    0.05      0.002  | O      |       |       |       |
0.10
 21.417    0.04    0.05      0.002  |IO      |       |       |       |
0.10
 21.500    0.04    0.05      0.002  |IO      |       |       |       |
0.10
 21.583    0.05    0.05      0.002  | O      |       |       |       |
0.09
 21.667    0.06    0.05      0.002  | O      |       |       |       |
0.10
 21.750    0.06    0.05      0.002  | O      |       |       |       |
0.10
 21.833    0.05    0.05      0.002  | O      |       |       |       |
0.10
 21.917    0.04    0.05      0.002  |IO      |       |       |       |
0.10
 22.000    0.04    0.05      0.002  |IO      |       |       |       |
0.09
 22.083    0.05    0.05      0.001  | O      |       |       |       |
0.09
 22.167    0.06    0.05      0.002  | O      |       |       |       |
0.10
 22.250    0.06    0.05      0.002  | O      |       |       |       |
0.10
 22.333    0.05    0.05      0.002  | O      |       |       |       |
0.10
 22.417    0.04    0.05      0.002  |IO      |       |       |       |
0.10
 22.500    0.04    0.05      0.002  |IO      |       |       |       |
0.09
 22.583    0.04    0.05      0.001  |IO      |       |       |       |
0.09
 22.667    0.04    0.04      0.001  |IO      |       |       |       |
0.09
 22.750    0.04    0.04      0.001  |IO      |       |       |       |
0.09
 22.833    0.04    0.04      0.001  |IO      |       |       |       |
0.08
 22.917    0.04    0.04      0.001  |IO      |       |       |       |
0.08
 23.000    0.04    0.04      0.001  |O       |       |       |       |
0.08
 23.083    0.04    0.04      0.001  |O       |       |       |       |
0.08
 23.167    0.04    0.04      0.001  |O       |       |       |       |
0.08
 23.250    0.04    0.04      0.001  |O       |       |       |       |
0.08
 23.333    0.04    0.04      0.001  |O       |       |       |       |
0.08
 23.417    0.04    0.04      0.001  |O       |       |       |       |
0.08
 23.500    0.04    0.04      0.001  |O       |       |       |       |
0.08
 23.583    0.04    0.04      0.001  |O       |       |       |       |
0.08
 23.667    0.04    0.04      0.001  |O       |       |       |       |
```

```
0.08
 23.750    0.04    0.04      0.001  |O       |       |       |       |
0.08
 23.833    0.04    0.04      0.001  |O       |       |       |       |
0.08
 23.917    0.04    0.04      0.001  |O       |       |       |       |
0.08
 24.000    0.04    0.04      0.001  |O       |       |       |       |
0.08
 24.083    0.02    0.04      0.001  IO       |       |       |       |
0.07
 24.167    0.00    0.03      0.001  IO       |       |       |       |
0.06
 24.250    0.00    0.03      0.001  IO       |       |       |       |
0.05
 24.333    0.00    0.02      0.001  O        |       |       |       |
0.04
 24.417    0.00    0.02      0.001  O        |       |       |       |
0.03
 24.500    0.00    0.01      0.000  O        |       |       |       |
0.03
 24.583    0.00    0.01      0.000  O        |       |       |       |
0.02
 24.667    0.00    0.01      0.000  O        |       |       |       |
0.02
 24.750    0.00    0.01      0.000  O        |       |       |       |
0.01
 24.833    0.00    0.01      0.000  O        |       |       |       |
0.01
 24.917    0.00    0.00      0.000  O        |       |       |       |
0.01
 25.000    0.00    0.00      0.000  O        |       |       |       |
0.01
 25.083    0.00    0.00      0.000  O        |       |       |       |
0.01
 25.167    0.00    0.00      0.000  O        |       |       |       |
0.00
 25.250    0.00    0.00      0.000  O        |       |       |       |
0.00
 25.333    0.00    0.00      0.000  O        |       |       |       |
0.00
 25.417    0.00    0.00      0.000  O        |       |       |       |
0.00
 25.500    0.00    0.00      0.000  O        |       |       |       |
0.00

      ****************************HYDROGRAPH
DATA****************************
                  Number of intervals =   306
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        0.500 (CFS)
                  Total volume =       0.399 (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
      ******************************************************************
*****
```

Moreno Valley 33 - Area A Pre-Development								
	Storm Duration							
	1 hour		3 hour		6 hour		24 hour	
Frequency	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume
2 year	5.4	0.13	2.9	0.14	2.5	0.15	0.5	0.12
5 year	7.8	0.20	4.1	0.23	3.6	0.24	1.0	0.25
10 year	9.6	0.26	5.1	0.31	4.5	0.32	1.4	0.37
100 year	16.2	0.51	8.9	0.75	7.9	0.94	3.1	1.35

Moreno Valley 33 - Area A Post-Development								
	Storm Duration							
	1 hour		3 hour		6 hour		24 hour	
Frequency	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume
2 year	4.6	0.12	2.4	0.18	2.1	0.23	0.7	0.40
5 year	6.5	0.17	3.3	0.24	3.0	0.32	0.9	0.53
10 year	8.0	0.21	4.1	0.30	3.6	0.38	1.1	0.63
100 year	13.1	0.37	6.8	0.55	6.1	0.69	2.3	1.17

Moreno Valley 33 - Area A Post-Development Routed								
	Storm Duration							
	1 hour		3 hour		6 hour		24 hour	
Frequency	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume
2 year							0.5*	0.02
100 year	0.5	0.33	6.4	0.21	5.5	0.21	2.3	0.19

By orafice control or 6" underdrain slope

Moreno Valley 33 - Area B Pre-Development								
	Storm Duration							
	1 hour		3 hour		6 hour		24 hour	
Frequency	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume
2 year	8.2	0.18	4.1	0.20	3.5	0.21	0.7	0.18
5 year	11.8	0.29	6.0	0.33	5.1	0.35	1.4	0.37
10 year	14.5	0.38	7.4	0.45	6.3	0.47	2	0.54
100 year	24.4	0.74	12.9	1.09	11.2	1.37	4.5	1.96

Moreno Valley 33 - Area B Post-Development (Area B and C Pre-Development)								
	Storm Duration							
	1 hour		3 hour		6 hour		24 hour	
Frequency	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume
2 year	11.4	0.31	6.4	0.48	5.6	0.64	1.8	1.09
5 year	16.2	0.45	8.9	0.66	7.9	0.86	2.4	1.44
10 year	19.9	0.56	10.9	0.80	9.6	1.04	3.1	1.73
100 year	32.7	1.01	18.2	1.5	16.2	1.89	6.2	3.18

Moreno Valley 33 - Area B Post-Development Routed								
	Storm Duration							
	1 hour		3 hour		6 hour		24 hour	
Frequency	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume
2 year							0.7*	0.35
100 year	18.0	0.76	15.9	0.73	13.8	0.71	6.1	0.63

*By orafice control or 6" underdrain slope

Basin Stage-Storage-Outfall Chart					
	Depth [ft]	Area [sf]	Vol [acft]	Vol Total [acft]	Q out [cfs]*
Basin B	0	8356			
	1	8356	0.058	0.058	0.7
	2	8356	0.058	0.115	0.7
	3	9566	0.206	0.321	0.7
	4	10831	0.234	0.555	0.7
	5	12153	0.264	0.819	24.0
	6	13532	0.265	1.084	24.0

0.5 cfs limited by 6" underdrain or Orafice to match 2yr 24hr

Basin Stage-Storage-Outfall Chart					
	Depth [ft]	Area [sf]	Vol [acft]	Vol Total [acft]	Q out [cfs]*
Basin A	0	2355			
	1	2355	0.016	0.016	0.5
	2	2355	0.016	0.032	0.5
	3	3229	0.064	0.097	0.5
	4	4223	0.086	0.182	0.5
	5	5318	0.110	0.292	24.0
	6	6422	0.111	0.402	24.0

0.7 cfs limited by 6" underdrain or Orafice to match 2yr 24hr

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

How to use this worksheet (also see instructions in Section G of the WQMP Template):

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies.
2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your WQMP Exhibit.
3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in your WQMP. Use the format shown in Table G.1on page 23 of this WQMP Template. Describe your specific BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting BMPs or substituting alternative BMPs for those shown here.

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☒ **A.** On-site storm drain inlets	☒ Locations of inlets.	☒ Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.	☒ Maintain and periodically repaint or replace inlet markings. ☒ Provide stormwater pollution prevention information to new site owners, lessees, or operators. ☒ See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com ☒ Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."
☐ **B.** Interior floor drains and elevator shaft sump pumps		☐ State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	☐ Inspect and maintain drains to prevent blockages and overflow.
☐ **C.** Interior parking garages		☐ State that parking garage floor drains will be plumbed to the sanitary sewer.	☐ Inspect and maintain drains to prevent blockages and overflow.

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
❑ **D1.** Need for future indoor & structural pest control		❑ Note building design features that discourage entry of pests.	❑ Provide Integrated Pest Management information to owners, lessees, and operators.
☒ **D2.** Landscape/ Outdoor Pesticide Use	❑ Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained. ❑ Show self-retaining landscape areas, if any. ☒ Show stormwater treatment and hydrograph modification management BMPs. (See instructions in Chapter 3, Step 5 and guidance in Chapter 5.)	State that final landscape plans will accomplish all of the following. ❑ Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. ☒ Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. ☒ Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. ☒ Consider using pest-resistant plants, especially adjacent to hardscape. ☒ To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	☒ Maintain landscaping using minimum or no pesticides. ☒ See applicable operational BMPs in "What you should know for…..Landscape and Gardening" at http://rcflood.org/stormwater/**Error! Hyperlink reference not valid.** ☒ Provide IPM information to new owners, lessees and operators.

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☐ **E.** Pools, spas, ponds, decorative fountains, and other water features.	☐ Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.)	If the Co-Permittee requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.	☐ See applicable operational BMPs in "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at http://rcflood.org/stormwater/
☐ **F.** Food service	☐ For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment. ☐ On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.	☐ Describe the location and features of the designated cleaning area. ☐ Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.	☐ See the brochure, "The Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries" at http://rcflood.org/stormwater/ Provide this brochure to new site owners, lessees, and operators.
☐ **G.** Refuse areas	☐ Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas. ☐ If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area. ☐ Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.	☐ State how site refuse will be handled and provide supporting detail to what is shown on plans. ☐ State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	☐ State how the following will be implemented: Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
❑ **H.** Industrial processes.	❑ Show process area.	❑ If industrial processes are to be located on site, state: “All process activities to be performed indoors. No processes to drain to exterior or to storm drain system.”	❑ See Fact Sheet SC-10, “Non-Stormwater Discharges” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com See the brochure “Industrial & Commercial Facilities Best Management Practices for: Industrial, Commercial Facilities” at http://rcflood.org/stormwater/

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
❑ **I.** Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)	❑ Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area. ❑ Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. ❑ Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains. Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for: ▪ Hazardous Waste Generation ▪ Hazardous Materials Release Response and Inventory ▪ California Accidental Release (CalARP) ▪ Aboveground Storage Tank ▪ Uniform Fire Code Article 80 Section 103(b) & (c) 1991 ▪ Underground Storage Tank www.cchealth.org/groups/hazmat/	❑ See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	**2 Permanent Controls—Show on WQMP Drawings**	**3 Permanent Controls—List in WQMP Table and Narrative**	**4 Operational BMPs—Include in WQMP Table and Narrative**
☒ **J.** Vehicle and Equipment Cleaning	❑ Show on drawings as appropriate: **(1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses.** **(2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use).** **(3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.** **(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.**	☒ **If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced.**	**Describe operational measures to implement the following (if applicable):** ☒ **Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system.** Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/ ❑ **Car dealerships and similar may rinse cars with water only.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ **K.** Vehicle/Equipment Repair and Maintenance	❑ **Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater.** ❑ **Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas.** ❑ **Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.**	❑ **State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area.** ❑ **State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.** ❑ **State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.**	**In the Stormwater Control Plan, note that all of the following restrictions apply to use the site:** ❑ **No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains.** ❑ **No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately.** ❑ **No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.** Refer to "Automotive Maintenance & Car Care Best Management Practices for Auto Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations". Brochure can be found at http://rcflood.org/stormwater/ Refer to Outdoor Cleaning Activities and Professional Mobile Service Providers for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
❑ **L.** Fuel Dispensing Areas	❑ Fueling areas[6] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable. ❑ Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.		❑ The property owner shall dry sweep the fueling area routinely. ❑ See the Fact Sheet SD-30 , "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

[6] The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
❑ **M.** Loading Docks	❑ Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer. ❑ Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation. ❑ Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.		❑ Move loaded and unloaded items indoors as soon as possible. ❑ See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
❑ **N.** Fire Sprinkler Test Water		❑ Provide a means to drain fire sprinkler test water to the sanitary sewer.	❑ See the note in Fact Sheet SC-41, “Building and Grounds Maintenance,” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
O. Miscellaneous Drain or Wash Water or Other Sources ❑ Boiler drain lines ☒ Condensate drain lines ☒ Rooftop equipment ❑ Drainage sumps ☒ Roofing, gutters, and trim. ❑ Other sources		❑ Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. ☒ Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. ☒ Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment. ❑ Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water. ❑ Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff. ☒ Include controls for other sources as specified by local reviewer.	

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
❑ **P.** Plazas, sidewalks, and parking lots.			❑ Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

Operation & Maintenance responsibility for Treatment Control BMP's will be outlined in the CC&R's for the project and be enforced by the Home Owner's Association, or will be provided by an alternative method as approved by the County of Riverside. The final documents and methodology to be provided as part of the Final WQMP.

Appendix 10: Educational Materials
To be provided during final engineering

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

Maintenance Concerns, Objectives, and Goals

- Clogged Soil or Outlet Structures
- Invasive Species
- Vegetation/Landscape Maintenance
- Erosion
- Channelization of Flow
- Aesthetics

General Description

The bioretention best management practice (BMP) functions as a soil and plant-based filtration device that removes pollutants through a variety of physical, biological, and chemical treatment processes. These facilities normally consist of a grass buffer strip, sand bed, ponding area, organic layer or mulch layer, planting soil, and plants. The runoff's velocity is reduced by passing over or through a sand bed and is subsequently distributed evenly along a ponding area. Exfiltration of the stored water in the bioretention area planting soil into the underlying soils occurs over a period of days.

Inspection/Maintenance Considerations

Bioretention requires frequent landscaping maintenance, including measures to ensure that the area is functioning properly, as well as maintenance of the landscaping on the practice. In many cases, bioretention areas initially require intense maintenance, but less maintenance is needed over time. In many cases, maintenance tasks can be completed by a landscaping contractor, who may already be hired at the site. In cold climates the soil may freeze, preventing runoff from infiltrating into the planting soil.

Targeted Constituents

☑	Sediment	■
☑	Nutrients	▲
☑	Trash	■
☑	Metals	■
☑	Bacteria	■
☑	Oil and Grease	■
☑	Organics	■
☑	Oxygen Demanding	■

Legend *(Removal Effectiveness)*

● Low ■ High

▲ Medium

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

Inspection Activities	Suggested Frequency
■ Inspect soil and repair eroded areas.	Monthly
■ Inspect for erosion or damage to vegetation, preferably at the end of the wet season to schedule summer maintenance and before major fall runoff to be sure the strips are ready for winter. However, additional inspection after periods of heavy runoff is desirable.	Semi-annual inspection
■ Inspect to ensure grass is well established. If not, either prepare soil and reseed or replace with alternative species. Install erosion control blanket.	
■ Check for debris and litter, and areas of sediment accumulation.	
■ Inspect health of trees and shrubs.	

Maintenance Activities	Suggested Frequency
■ Water plants daily for 2 weeks.	At project completion
■ Remove litter and debris.	Monthly
■ Remove sediment.	As needed
■ Remulch void areas.	
■ Treat diseased trees and shrubs.	
■ Mow turf areas.	
■ Repair erosion at inflow points.	
■ Repair outflow structures.	
■ Unclog underdrain.	
■ Regulate soil pH regulation.	
■ Remove and replace dead and diseased vegetation.	Semi-annual
■ Add mulch.	Annual
■ Replace tree stakes and wires.	
■ Mulch should be replaced every 2 to 3 years or when bare spots appear. Remulch prior to the wet season.	Every 2-3 years, or as needed

Additional Information

Landscaping is critical to the function and aesthetic value of bioretention areas. It is preferable to plant the area with native vegetation, or plants that provide habitat value, where possible. Another important design feature is to select species that can withstand the hydrologic regime they will experience. At the bottom of the bioretention facility, plants that tolerate both wet and dry conditions are preferable. At the edges, which will remain primarily dry, upland species will be the most resilient. It is best to select a combination of trees, shrubs, and herbaceous materials.

References

Metropolitan Council, Urban Small Sites Best Management Practices Manual. Available at: http://www.metrocouncil.org/environment/Watershed/BMP/manual.htm

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July, 1998, revised February, 2002.

U.S. Environmental Protection Agency, Post-Construction Stormwater Management in New Development & Redevelopment BMP Factsheets. Available at: cfpub.epa.gov/npdes/stormwater/menuofbmps/bmp_files.cfm

Ventura Countywide Stormwater Quality Management Program, Technical Guidance Manual for Stormwater Quality Control Measures. July, 2002.

3.5 Bioretention Facility

Type of BMP	LID – Bioretention
Treatment Mechanisms	Infiltration, Evapotranspiration, Evaporation, Biofiltration
Maximum Drainage Area	This BMP is intended to be integrated into a project's landscaped area in a distributed manner. Typically, contributing drainage areas to Bioretention Facilities range from less than 1 acre to a maximum of around 10 acres.
Other Names	Rain Garden, Bioretention Cell, Bioretention Basin, Biofiltration Basin, Landscaped Filter Basin, Porous Landscape Detention

Description

Bioretention Facilities are shallow, vegetated basins underlain by an engineered soil media. Healthy plant and biological activity in the root zone maintain and renew the macro-pore space in the soil and maximize plant uptake of pollutants and runoff. This keeps the Best Management Practice (BMP) from becoming clogged and allows more of the soil column to function as both a sponge (retaining water) and a highly effective and self-maintaining biofilter. In most cases, the bottom of a Bioretention Facility is unlined, which also provides an opportunity for infiltration to the extent the underlying onsite soil can accommodate. When the infiltration rate of the underlying soil is exceeded, fully biotreated flows are discharged via underdrains. Bioretention Facilities therefore will inherently achieve the maximum feasible level of infiltration and evapotranspiration and achieve the minimum feasible (but highly biotreated) discharge to the storm drain system.

Siting Considerations

These facilities work best when they are designed in a relatively level area. Unlike other BMPs, Bioretention Facilities can be used in smaller landscaped spaces on the site, such as:

- ✓ Parking islands
- ✓ Medians
- ✓ Site entrances

Landscaped areas on the site (such as may otherwise be required through minimum landscaping ordinances), can often be designed as Bioretention Facilities. This can be accomplished by:

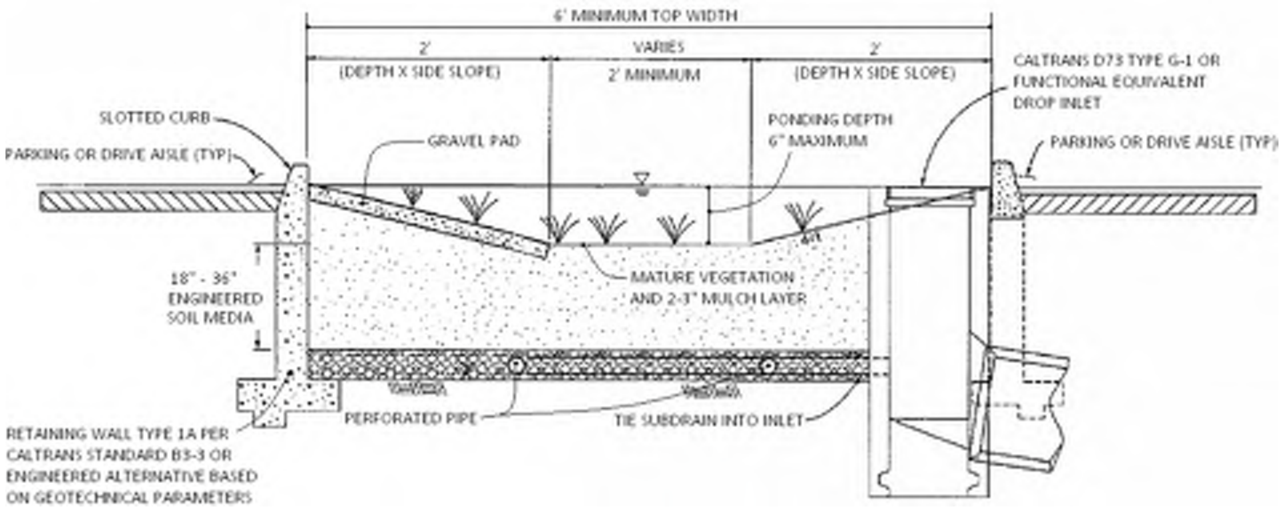
- *Depressing* landscaped areas below adjacent impervious surfaces, rather than elevating those areas
- Grading the site to direct runoff from those impervious surfaces *into* the Bioretention Facility, rather than away from the landscaping
- Sizing and designing the depressed landscaped area as a Bioretention Facility as described in this Fact Sheet

Bioretention Facilities should however not be used downstream of areas where large amounts of sediment can clog the system. Placing a Bioretention Facility at the toe of a steep slope should also be avoided due to the potential for clogging the engineered soil media with erosion from the slope, as well as the potential for damaging the vegetation.

Design and Sizing Criteria

The recommended cross section necessary for a Bioretention Facility includes:

- Vegetated area
- 18' minimum depth of engineered soil media
- 12' minimum gravel layer depth with 6' perforated pipes (added flow control features such as orifice plates may be required to mitigate for HCOC conditions)



While the 18-inch minimum engineered soil media depth can be used in some cases, it is recommended to use 24 inches or a preferred 36 inches to provide an adequate root zone for the chosen plant palate. Such a design also provides for improved removal effectiveness for nutrients. The recommended ponding depth inside of a Bioretention Facility is 6 inches; measured from the flat bottom surface to the top of the water surface as shown in Figure 1.

Because this BMP is filled with an engineered soil media, pore space in the soil and gravel layer is assumed to provide storage volume. However, several considerations must be noted:

- Surcharge storage above the soil surface (6 inches) is important to assure that design flows do not bypass the BMP when runoff exceeds the soil’s absorption rate.
- In cases where the Bioretention Facility contains engineered soil media deeper than 36 inches, the pore space within the engineered soil media can only be counted to the 36-inch depth.
- A maximum of 30 percent pore space can be used for the soil media whereas a maximum of 40 percent pore space can be use for the gravel layer.

Figure 1: Standard Layout for a Bioretention Facility

Engineered Soil Media Requirements

The engineered soil media shall be comprised of 85 percent mineral component and 15 percent organic component, by volume, drum mixed prior to placement. The mineral component shall be a Class A sandy loam topsoil that meets the range specified in Table 1 below. The organic component shall be nitrogen stabilized compost[1], such that nitrogen does not leach from the media.

Table 1: Mineral Component Range Requirements

Percent Range	Component
70-80	Sand
15-20	Silt
5-10	Clay

The trip ticket, or certificate of compliance, shall be made available to the inspector to prove the engineered mix meets this specification.

Vegetation Requirements

Vegetative cover is important to minimize erosion and ensure that treatment occurs in the Bioretention Facility. The area should be designed for at least 70 percent mature coverage throughout the Bioretention Facility. To prevent the BMP from being used as walkways, Bioretention Facilities shall be planted with a combination of small trees, densely planted shrubs, and natural grasses. Grasses shall be native or ornamental; preferably ones that do not need to be mowed. The application of fertilizers and pesticides should be minimal. To maintain oxygen levels for the vegetation and promote biodegradation, it is important that vegetation not be completely submerged for any extended period of time. Therefore, a maximum of 6 inches of ponded water shall be used in the design to ensure that plants within the Bioretention Facility remain healthy.

A 2 to 3-inch layer of standard shredded aged hardwood mulch shall be placed as the top layer inside the Bioretention Facility. The 6-inch ponding depth shown in Figure 1 above shall be measured from the top surface of the 2 to 3-inch mulch layer.

Curb Cuts

To allow water to flow into the Bioretention Facility, 1-foot-wide (minimum) curb cuts should be placed approximately every 10 feet around the perimeter of the Bioretention Facility. Figure 2 shows a curb cut in a Bioretention Facility. Curb cut flow lines must be at or above the V_{BMP} water surface level.

[1] For more information on compost, visit the US Composting Council website at: http://compostingcouncil.org/

Figure 2: Curb Cut located in a Bioretention Facility

To reduce erosion, a gravel pad shall be placed at each inlet point to the Bioretention Facility. The gravel should be 1- to 1.5-inch diameter in size. The gravel should overlap the curb cut opening a minimum of 6 inches. The gravel pad inside the Bioretention Facility should be flush with the finished surface at the curb cut and extend to the bottom of the slope.

In addition, place an apron of stone or concrete, a foot square or larger, inside each inlet to prevent vegetation from growing up and blocking the inlet. See Figure 3.

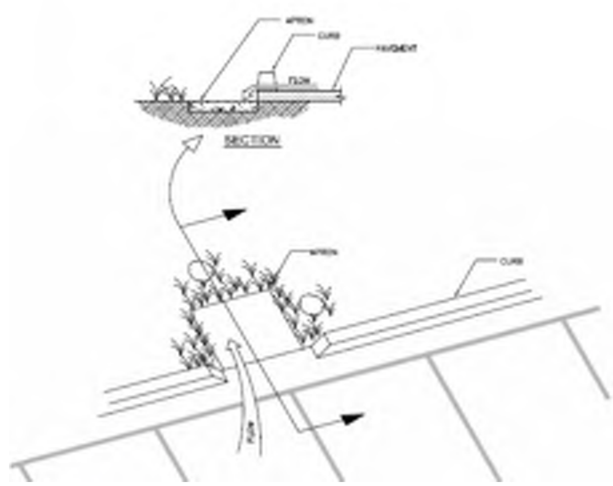


Figure 3: Apron located in a Bioretention Facility

Terracing the Landscaped Filter Basin

It is recommended that Bioretention Facilities be level. In the event the facility site slopes and lacks proper design, water would fill the lowest point of the BMP and then discharge from the basin without being treated. To ensure that the water will be held within the Bioretention Facility on sloped sites, the BMP must be terraced with nonporous check dams to provide the required storage and treatment capacity.

The terraced version of this BMP shall be used on non-flat sites with no more than a 3 percent slope. The surcharge depth cannot exceed 0.5 feet, and side slopes shall not exceed 4:1. Table 2 below shows the spacing of the check dams, and slopes shall be rounded up (i.e., 2.5 percent slope shall use 10' spacing for check dams).

Table 2: Check Dam Spacing

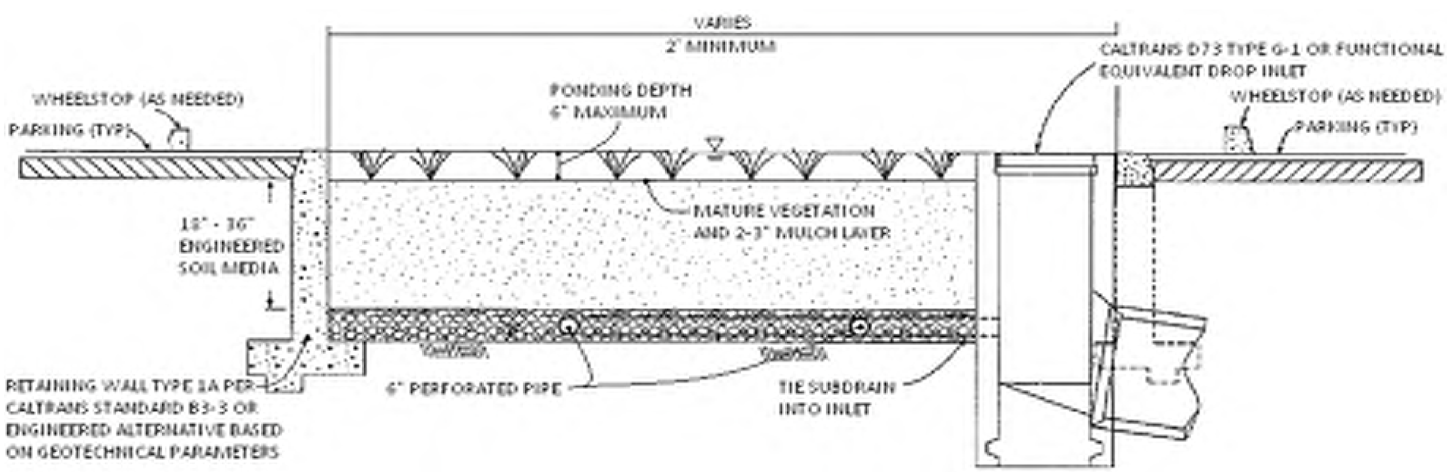
6" Check Dam Spacing	
Slope	**Spacing**
1%	*25'*
2%	*15'*
3%	*10'*

Roof Runoff
Roof downspouts may be directed towards Bioretention Facilities. However, the downspouts must discharge onto a concrete splash block to protect the Bioretention Facility from erosion.
Retaining Walls
It is recommended that Retaining Wall Type 1A, per Caltrans Standard B3-3 or equivalent, be constructed around the entire perimeter of the Bioretention Facility. This practice will protect the sides of the Bioretention Facility from collapsing during construction and maintenance or from high service loads adjacent to the BMP. Where such service loads would not exist adjacent to the BMP, an engineered alternative may be used if signed by a licensed civil engineer.

Side Slope Requirements

Bioretention Facilities Requiring Side Slopes
The design should assure that the Bioretention Facility does not present a tripping hazard. Bioretention Facilities proposed near pedestrian areas, such as areas parallel to parking spaces or along a walkway, must have a gentle slope to the bottom of the facility. Side slopes inside of a Bioretention Facility shall be 4:1. A typical cross section for the Bioretention Facility is shown in Figure 1.

Bioretention Facilities Not Requiring Side Slopes
Where cars park perpendicular to the Bioretention Facility, side slopes are not required. A 6-inch maximum drop may be used, and the Bioretention Facility must be planted with trees and shrubs to prevent pedestrian access. In this case, a curb is not placed around the Bioretention Facility,
but wheel stops shall be used to prevent vehicles from entering the Bioretention Facility, as shown in Figure 4.



Planter Boxes

Bioretention Facilities can also be placed above ground as planter boxes. Planter boxes must have a minimum width of 2 feet, a maximum surcharge depth of 6 inches, and no side slopes are necessary. Planter boxes must be constructed so as to ensure that the top surface of the engineered soil media will remain level. This option may be constructed of concrete, brick, stone or other stable materials that will not warp or bend. Chemically treated wood or galvanized steel, which has the ability to contaminate stormwater, should not be used. Planter boxes must be lined with an impermeable liner on all sides, including the bottom. Due to the impermeable liner, the inside bottom of the planter box shall be designed and constructed with a cross fall, directing treated flows within the subdrain layer toward the point where subdrain exits the planter box, and subdrains shall be oriented with drain holes oriented down. These provisions will help avoid excessive stagnant water within the gravel underdrain layer. Similar to the in-ground Bioretention Facility versions, this BMP benefits from healthy plants and biological activity in the root zone. Planter boxes should be planted with appropriately selected vegetation.

Figure 5: Planter Box
Source: LA Team Effort

Overflow

An overflow route is needed in the Bioretention Facility design to bypass stored runoff from storm events larger than V_{BMP} or in the event of facility or subdrain clogging. Overflow systems must connect to an acceptable discharge point, such as a downstream conveyance system as shown in Figure 1 and Figure 4. The inlet to the overflow structure shall be elevated inside the Bioretention Facility to be flush with the ponding surface for the design capture volume (V_{BMP}) as shown in Figure 4. This will allow the design capture volume to be fully treated by the Bioretention Facility, and for larger events to safely be conveyed to downstream systems. The overflow inlet shall **not** be located in the entrance of a Bioretention Facility, as shown in Figure 6.

Underdrain Gravel and Pipes
An underdrain gravel layer and pipes shall be provided in accordance with Appendix B – Underdrains.

Figure 6: Incorrect Placement of an Overflow Inlet.

Inspection and Maintenance Schedule

The Bioretention Facility area shall be inspected for erosion, dead vegetation, soggy soils, or standing water. The use of fertilizers and pesticides on the plants inside the Bioretention Facility should be minimized.

Schedule	Activity
Ongoing	• Keep adjacent landscape areas maintained. Remove clippings from landscape maintenance activities. • Remove trash and debris • Replace damaged grass and/or plants • Replace surface mulch layer as needed to maintain a 2-3 inch soil cover.
After storm events	• Inspect areas for ponding
Annually	• Inspect/clean inlets and outlets

Bioretention Facility Design Procedure

1) Enter the area tributary, A_T, to the Bioretention Facility.

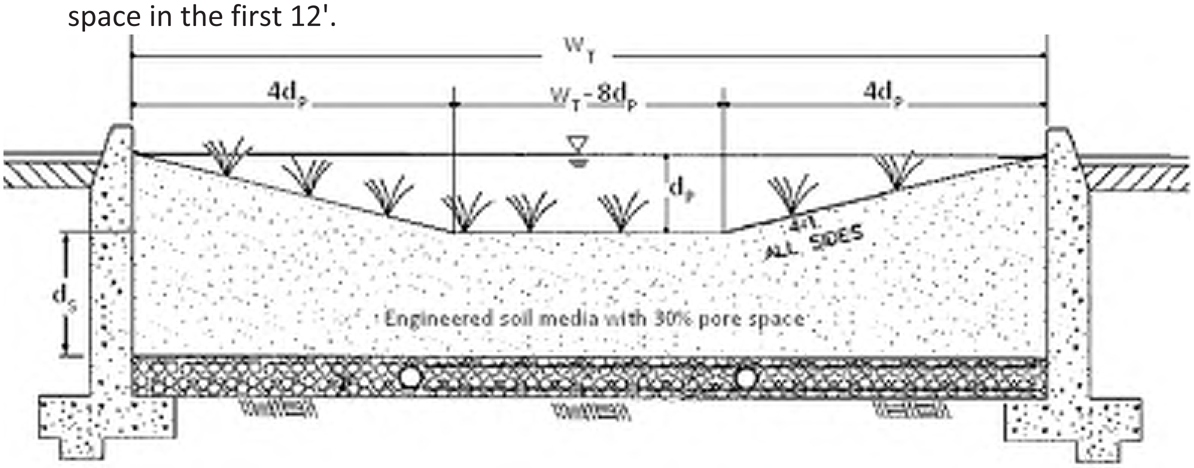
2) Enter the Design Volume, $V_{BMP,}$ determined from Section 2.1 of this Handbook.

3) Select the type of design used. There are two types of Bioretention Facility designs: the standard design used for most project sites that include side slopes, and the modified design used when the BMP is located perpendicular to the parking spaces or with planter boxes that do not use side slopes.

4) Enter the depth of the engineered soil media, d_S. The minimum depth for the engineered soil media can be 18' in limited cases, but it is recommended to use 24' or a preferred 36' to provide an adequate root zone for the chosen plant palette. Engineered soil media deeper than 36' will only get credit for the pore space in the first 36'.

5) Enter the top width of the Bioretention Facility.

6) Calculate the total effective depth, d_E, within the Bioretention Facility. The maximum allowable pore space of the soil media is 30% while the maximum allowable pore space for the gravel layer is 40%. Gravel layer deeper than 12' will only get credit for the pore space in the first 12'.



   a. For the design with side slopes the following equation shall be used to determine the total effective depth. Where, d_P is the depth of ponding within the basin.

$$d_E(\text{ft}) = \frac{0.3 \times \left[\left(w_T(\text{ft}) \times d_S(\text{ft})\right) + 4\left(d_P(\text{ft})\right)^2\right] + 0.4 \times 1(\text{ft}) + d_P(\text{ft})\left[4d_P(\text{ft}) + \left(w_T(\text{ft}) - 8d_P(\text{ft})\right)\right]}{w_T(\text{ft})}$$

   This above equation can be simplified if the maximum ponding depth of 0.5’ is used. The equation below is used on the worksheet to find the minimum area required for the Bioretention Facility:

$$d_E(\text{ft}) = (0.3 \times d_S(\text{ft}) + 0.4 \text{ x } 1(\text{ft})) - \left(\frac{0.7\ (\text{ft}^2)}{w_T(\text{ft})}\right) + 0.5(\text{ft})$$

b. For the design without side slopes the following equation shall be used to determine the total effective depth:

$$d_E(ft) = d_P(ft) + [(0.3) \times d_S(ft) + (0.4) \times 1(ft)]$$

The equation below, using the maximum ponding depth of 0.5', is used on the worksheet to find the minimum area required for the Bioretention Facility:

$$d_E(ft) = 0.5\ (ft) + [(0.3) \times d_S(ft) + (0.4) \times 1(ft)]$$

7) Calculate the minimum surface area, A_M, required for the Bioretention Facility. This does not include the curb surrounding the Bioretention Facility or side slopes.

$$A_M(ft^2) = \frac{V_{BMP}(ft^3)}{d_E\ (ft)}$$

8) Enter the proposed surface area. This area shall not be less than the minimum required surface area.

9) Verify that side slopes are no steeper than 4:1 in the standard design, and are not required in the modified design.

10) Provide the diameter, minimum 6 inches, of the perforated underdrain used in the Bioretention Facility. See Appendix B for specific information regarding perforated pipes.

11) Provide the slope of the site around the Bioretention Facility, if used. The maximum slope is 3 percent for a standard design.

12) Provide the check dam spacing, if the site around the Bioretention Facility is sloped.

13) Describe the vegetation used within the Bioretention Facility.

References Used to Develop this Fact Sheet

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Urbonas, Ben R. Stormwater Sand Filter Sizing and Design: A Unit Operations Approach. Denver: Urban Drainage and Flood Control District, 2002.

Appendix J

Planned Unit Development

UNITED ENGINEERING GROUP

Gateway Heights

Planned Unit Development

Moreno Valley, California

November 2022

Prepared for:

HengHou Group
177 E. Colorado Blvd.
Suite 200
Pasadena, CA 91105

8885 HAVEN AVENUE | STE 195 | RANCHO CUCAMONGA, CA 91730
909-466-9240

PLANNED UNIT DEVELOPMENT

FOR

Gateway Heights

November 2022

Submitted to

MORENO VALLEY
WHERE DREAMS SOAR

City of Moreno Valley
14177 Fredrick Street
Moreno Valley, CA 92552
(951) 413-3000

APPLICANT/PROPERTY OWNER(S)

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PROJECT MANAGER

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UEG Project No. 30182

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SITE PLAN

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1.0 PURPOSE

The purpose of this Planned Unit Development (PUD) is to describe the overall design concept for the Gateway Heights project and outline the design details that will be incorporated into the final design decisions. The Gateway Heights project presents innovative housing options within the City of Moreno Valley, while delivering a vast amount of recreational open space to the surrounding communities. This manual includes both design standards and guidelines. The guidelines in this document will lay out both functional and aesthetic design concepts as an overall strategy to be followed at the time of development. The primary objective is to establish a consistent theme throughout the project. This document will establish design standards, overall theme, wall and fence concepts, and pedestrian connectivity to be used in the future build out of this project. This Planned Unit Development (PUD) is being processed in conformance with City of Moreno Valley Municipal Code, Chapter 9.03.060.

2.0 PROJECT BACKGROUND & DESCRIPTION

Gateway Heights is located north of Jennings Court and east of Morton Road in the City of Moreno Valley (Refer to **Exhibit A – Vicinity Map**). The property contains 32.70 acres in the foothill of the Box Springs Mountain Reserve Park. The project proposes to develop approx. 16.59 acres of 32.56 acres into 108 detached condominium units with the dwelling units in an 8-unit “cluster” concept. (See **Exhibit B – Development Area**) The remaining 15.97 acres will be rezoned to Open Space (OS). It is anticipated that the open space area will be incorporated into the local trail system of hiking, trail running, and mountain biking trails, and the open space area will be available for recreational use by residents of Gateway Heights and the City of Moreno Valley. The project will also contain 3.1 acres of open space, trails and park area within the community providing residents with space to enjoy. The project proposal is consistent with the City of Moreno Valley’s Residential 10 (R10) District which allows for a maximum density of 10 dwelling units per net acre. In order to ensure the quality and cohesiveness of PUD projects, the City of Moreno Valley requires additional design details during planning stages. The requirement for these design standards and details helps ensure that City design objectives are met. By implementing the following design points, this project meets these City design objectives for PUDs:

- Provides innovation and diversity in housing choices that would not otherwise be possible according to the strict application of the site development regulations in this title because the detached condominium concept provides its residents with the benefits of single-family homeownership while also conferring on them the benefits of shared community living.
- Provides access to adjacent natural resources, open space, onsite recreational facilities through the dedication of nearly one-half of the property to open space that will interconnect with a regional trail system.
- Installation of storm water pollution control systems pursuant to the municipal storm water permit issued by the Regional Water Quality Control Board (RWQCB).

3.0 EXISTING CONDITIONS

The property is currently unimproved land bordered to the south by an existing single family residential development. The site lies just to the east of Interstate 215 and to the north of the US 60/I-215 interchange. The site had previously been entitled for a single-family residential development (Tract 33626) in 2007 but those entitlements expired.

The topography of this site has two naturally defined areas. The lower lying area, which generally contains slopes under 15% and the mountainous area which consists of slopes greater than 25%. The site generally slopes from northeast to southwest (See **Exhibit C – USGS Topographic Map**). The property is located within Flood Zone 'X' (areas determined to be outside of the 100-year and 500-year floodplain) Refer to **Exhibit D – FIRM Map** (Map No. 06065C0733G, dated August 28, 2008).

Per the General Plan, the property currently has land use designations of Residential Max 2DU/AC (R2) and Hillside Residential (HR). (Refer to **Exhibit E – General Plan Map** and **Exhibit F – Zoning Map**)

Transportation corridors and area circulation will be developed in conformance with the City of Moreno Valley's General Plan. Refer to **Exhibit G – Area Circulation Map** for a representation of the major roadways in the areas of the subject site.

4.0 RELATIONSHIP TO SURROUNDING PROPERTIES

The surrounding properties in the area include vacant land, existing single-family homes, and hillside. A majority of the vacant land adjacent to this project are contained within the Gateway Center Specific Plan, in the unincorporated area of Riverside County, to the west of the project. This Specific Plan contains densities from 5du/acre to 16du/acre as well as a school site bordering Morton Road to the west. (See **Exhibit H – Gateway Specific Plan**) To the north and east are areas zoned as Hillside Residential in the City of Moreno Valley and Conservation in the County of Riverside, to the east and south of the project there are eight existing single-family homes. (See **Exhibit I – Surrounding Jurisdictions**)

The surrounding General Plan land use designations are as follows:

North: Hillside Residential (HR) & Conservation (County of Riverside)
South: Residential Max. 5du/acre (R5)
East: Hillside Residential (HR)
West: Gateway Center Specific Plan (County of Riverside)

The surrounding existing land uses are as follows:

North: Vacant
South: Single Family Residences
East: Vacant
West: Vacant

5.0 PRELIMINARY DEVELOPMENT PLAN

The Gateway Heights development is intended as a planned residential community offering innovative cluster housing options in the lower lying portion of the site and open space on the remainder of the site. The development will include a community park, open space and a common community design identity. This development plan coupled with the unique location of this property will provide multiple housing alternatives for both entry-level buyers, young families, and retirees, as well as student and faculty for the University of California-Riverside.

As mentioned above, the R10 designated area of Gateway Heights will total 16.59 acres of the 32.56 acre property and will contain 108 units, with a density of 6.51 units per acre. This density is well within allowances of the proposed General Plan designation of R10 (10 units per net acre). The remaining 15.97 acres will be changed to Open Space (OS) and designated for conservation. In addition to the open space, the project will also provide a 0.89 acre community park located in the center of the development. (Refer to **Exhibit J – Open Space/Park Plan**)

The residential uses within the Gateway Heights development will consist of cluster units in varying sizes ranging from 4-unit to 10-unit clusters. This development will be subject to the requirements in Chapter 9.03.040 (Residential Site Development Standards) and 9.03.060 (Planned Unit Developments) of the City of Moreno Valley's municipal code.

5.1 Cluster Design

These units will contain 4-unit to 10-unit auto court product on pad sizes ranging from 7,674SF to 16,254SF. (Refer to **Exhibit K – Cluster Detail**) These cluster units are arranged with garages facing a common driveway as to enhance the aesthetic views of the project from the street and perimeter. The purpose of this design concept is to ensure architectural continuity and compatibility throughout the project utilizing the following design criteria:

- Provide front door access to open space/courtyard for inside units and street access for outside units.
- Provide garage access at common private street
- Use enhanced elevations for homes facing the public street.
- Provide patios or balconies to enhance architectural styles and increase private open space.
- Consider additional building articulation through recessed garage doors, recessing or cantilevering second stories and varying roof pitches.

(Refer to **A-1.3 thru A-3.4 – Conceptual Floor Plans/Elevations**)

5.2 Alternative Design Standards

This planned unit development for the Gateway Heights project contains various design alternatives that differ from the standard R10 design standards in order to promote the objectives stated above in Section 2. As allowed in the City of Moreno Valley's Municipal Code Section 9.03.060.G, planned unit developments may deviate from the site development standards set forth in the applicable zoning district regarding lot area, lot dimensions, lot coverage, setbacks and building height.

5.2.1 Lot Coverage

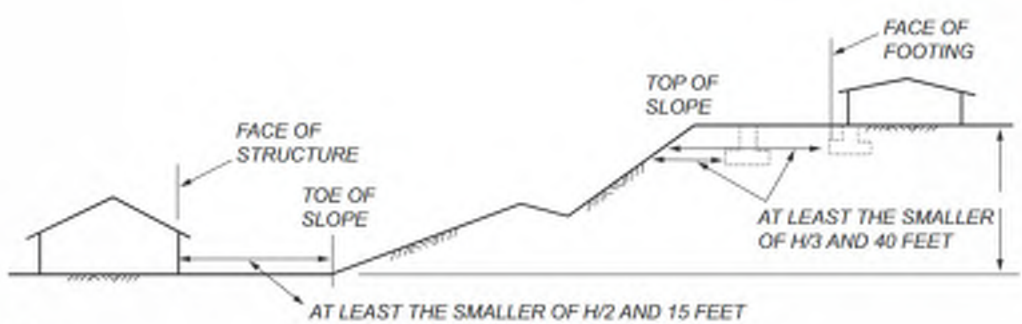
The Gateway Heights project contains 13 development pad areas varying in size from 7,674 to 16,254 square feet. The cluster development will be exclusively contained within these development pads and the pads will have a maximum building coverage of 65%. The remaining pad area shall contain driveways, sidewalks and landscaping.

5.2.2 Building Setbacks

Front/Street Side setback = 5' to ROW
Minimum building separation = 6'
Side setback to toe/top of slope = 5' Min*
Rear setback to toe/top of slope = 5' Min*

*-For buildings located at the top or toe of slope, the minimum building setback shall be determined by the California Building Code Section 1808.7 which states that buildings at the toe of slope shall be at least the smaller of H/2 or 15' from the toe of slope. Buildings at the top of slope shall be at least the smaller of H/3 or 40' from the top of slope.

Example: 20' Slope Height = 10' setback at toe of slope (20/2)
20' Slope Height = 7' setback at top of slope (20/3)



For SI: 1 foot = 304.8 mm.

FIGURE 1808.7.1
FOUNDATION CLEARANCES FROM SLOPES

5.2.3 Building Height

Building heights for the two story units will not exceed 30' in height.

5.2.4 Street Sections

The streets within the Gateway Heights PUD will be private streets maintained by the project's Homeowner Association. These streets will be constructed based on the City of Moreno Valley's Local Street section MVSI-107A-0. Street A and Street C will be constructed using a modified section which eliminates the sidewalk and landscape area along the project perimeter. The purpose for these modified sections is to preserve the natural landscape along the perimeter of the project. With the elimination of these sidewalks, a pedestrian crossing has been located at approximately mid-block of Street B to provide ADA access to the units on the north side of Street B. (Refer to **Exhibit L – Street Section Details**)

TABLE 1

GATEWAY HEIGHTS DEVELOPMENT STANDARDS	
Max Building Height	30'
Min Front/Street Setback	5'
Min Bldg seperation	6'
Min. Side setbacks	5'*
Min. Rear setbacks	5'*
Max Development Pad Coverage	65%

5.3 Fire Protection Plan

The Gateway Heights project has developed a Fire Protection Plan in conjunction with the development to increase safety measures and mitigate any fire hazards for the project. The mitigations include providing two 36'+ wide roadways at the entrance to minimize any potential traffic congestion during an emergency setting. One roadway would be used for ingress and the other for egress. The site also includes an internal looped road system allowing traffic circulation in either direction. Direct access shall be provided to all structures and no dead-end fire apparatus access roads are contained onsite. The project has also developed a Fuel Modification and Vegetation Management plan for the site which includes requirements for landscape materials to reduce non-fire-resistant vegetation.

5.4 Community Park & Landscape Buffers

This project will contain a community park space area, approximately 0.89 acres in size and with various elements for recreation. This community park will be located near the center to the subdivision allowing easy access to all residents and turf areas for additional gathering and activities. The park will be owned and maintained by the project's Homeowners Association. In addition to the community park, this project will also incorporate landscaped buffer areas throughout the project and along the project's perimeter. These landscape areas will also be maintained by the Homeowners Association.

5.4.1 General Guidelines

- All landscape shall conform to Ordinance No. 859.2 and County of Riverside Guide to California Friendly Landscaping.
- All planting areas shall be irrigated with an automatic irrigation system and an ET based controller, per Ordinance 859.2.
- All planting areas shall receive three inches (3") of shredded bark mulch and one and a half inches (1-1/2") on ground cover from flats.
- All trees within six feet (6') of any hardscape shall receive thirty-six inch (36") deep, by twenty inch (20") long linear root barrier.
- All slopes three feet (3') in vertical height or greater shall be planted with shrubs and trees and irrigated per the Riverside County requirements for slope erosion control landscaping. Slopes to meet building and safety requirements.
- Landscaping shall consist of a combination of trees, shrubs and groundcover as listed in the California Friendly Plant List provided by the County.

5.5 Entry Monuments, Walls & Project Theme

The primary entry for the community will be located at the intersection of "Street A" and Morton Road. The elevated topography of the Gateway Heights project will make it a predominant development near the I-215 freeway. As such, it is important to minimize the walls and fences that could impact the views from the street or surrounding areas. The Gateway Heights project will contain no walls on the interior of the project. The perimeter of the project will consist of decorative view walls and/ or tubular steel fencing. Perimeter wall and fence materials, designs, and colors will carry on the project's theme established by the project's monument signage and landscaping. Wall and fence heights will be limited to a maximum height of six (6) feet, except where necessary for noise attenuation or additional retaining wall. Decorative pillars and pedestals may extend up to an additional fourteen (14) inches above the maximum wall or fence heights. (Refer to **Exhibit M – Conceptual Wall & Fence Plan**) Materials, colors, and construction methods for theme, view and accent walls are subject to some variation, so long as the proposed character and theme of the walls is preserved and per the approval of the Planning Department.

While in some areas of the development, units may have retaining walls the majority of the development will not be separated by neighborhood walls at the rear or side yards.

5.5.1 General Guidelines

- All walls and fences should maintain a six foot (6') maximum height limit, except where larger walls are necessary for noise attenuation or retaining purposes.
- If walls or fences end in a pilaster, the design of the pilaster should reflect the shape of the supports used in the entry monuments and use similar materials.
- When changes in pad elevation occur, the wall or fence should be stepped in equal vertical intervals.
- Where gates are required, they shall be constructed of wrought iron, vinyl or tubular steel. Chain link fencing is not permitted. All construction must be of good quality and sufficient durability. (Applicants shall provide specifications which shall be approved by the Planning Department)
- All wall and fence plans and materials must conform to City of Moreno Valley guidelines.

5.6 Perimeter Yard Landscaping

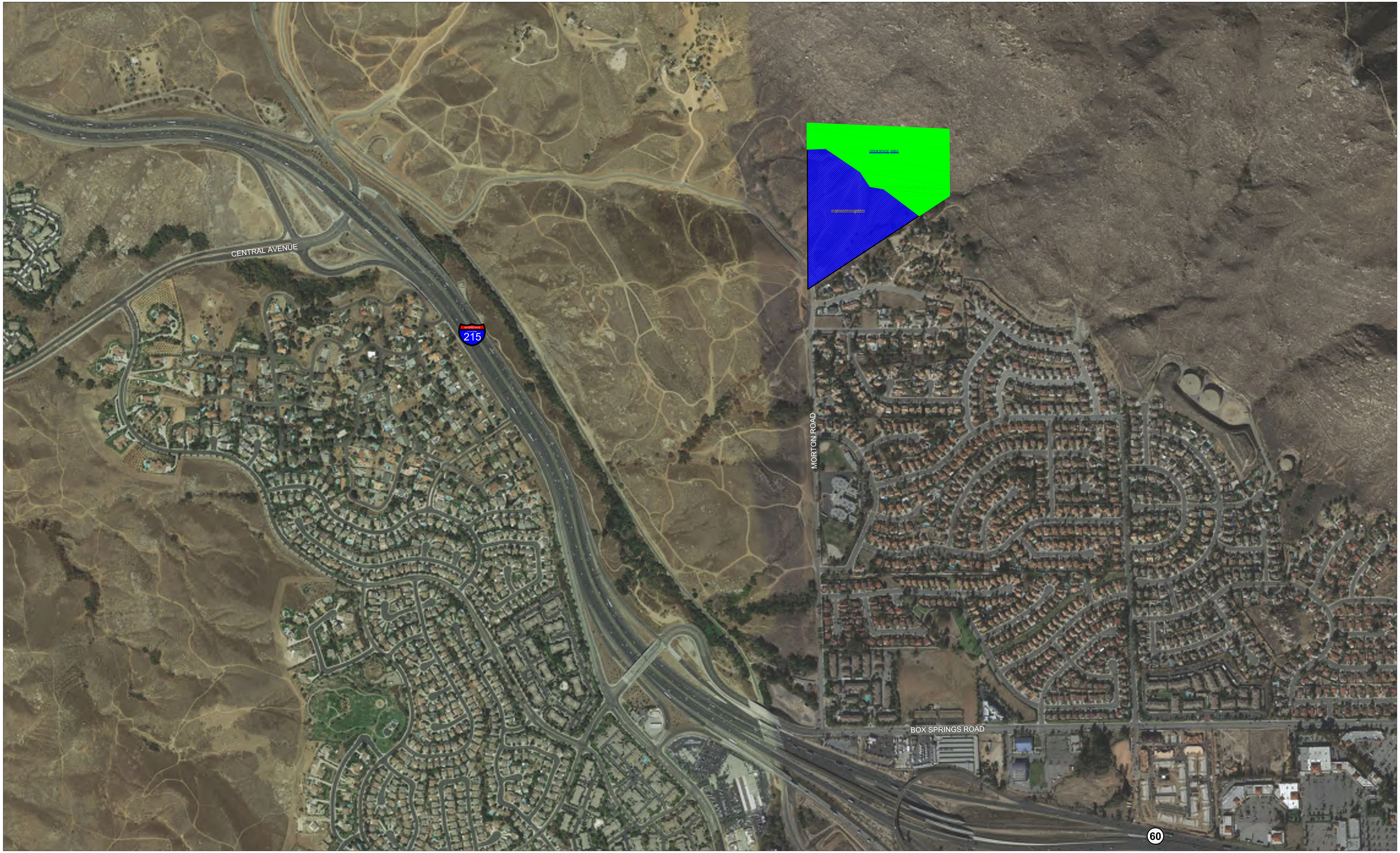
Perimeter yard landscaping is required around all cluster pads and unless approved by the Planning Department, will be provided by the developer/home builder. Perimeter yard landscaping provided by the developer/builder or their representative must be installed within one month of closing of the first unit. A variety of perimeter yard landscape packages with automatic irrigation systems shall be provided; landscaping designs with berming, river run features, courtyards, lighting, or other creative features shall be offered for standard landscape design.

5.7 Private Open Space

Figure 1 - Galvanized steel rock garden wall

Private Open Space may include land within each residential unit that is available for private use. This private open space is typically considered yard, patio or balcony area that is available for private recreation. It is recognized that while the community park provides an easily accessible active recreational opportunity for all residents of the development, each residence must have adequate private outdoor space that can be an effective extension of the indoor living space and be used for passive outdoor activities such as gardening, reading, eating and barbequing. Per Moreno Valley Municipal Code Section 9.03.040.G.8, each unit shall have at least one hundred and fifty (150) square feet of private open space. This open space may be achieved through the use of patio or balcony spaces. First floor patio space shall have a minimum dimension of 8’ and upstairs balconies must have a minimum dimension of 5’. Patio designs may include alternatives to traditional fencing, such as garden walls, small retaining walls or landscaping which delineates the space between units.

EXHIBITS



VICINITY MAP

NOT TO SCALE

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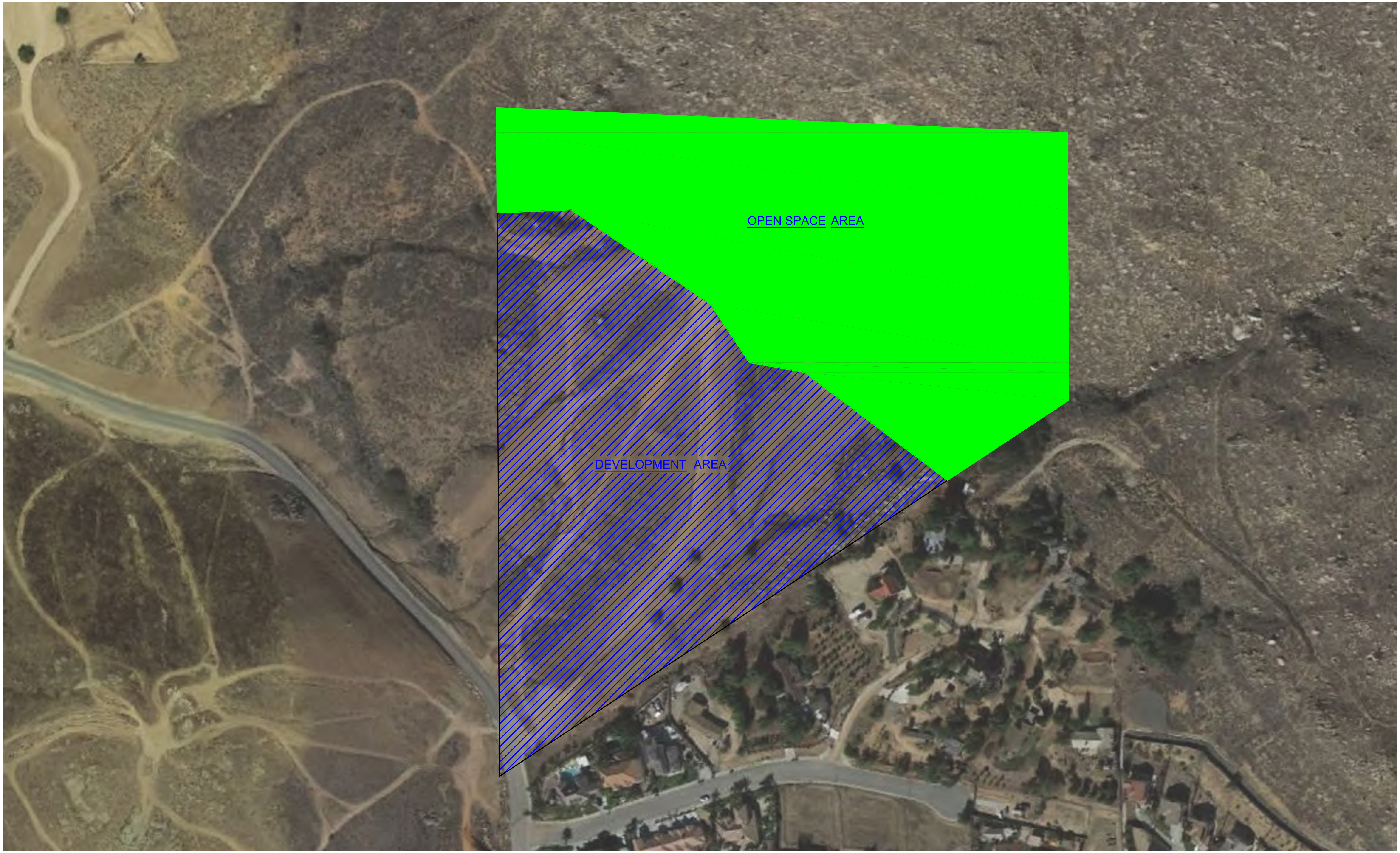
GATEWAY HEIGHTS

MORENO VALLEY, CALIFORNIA

EXHIBIT A



DEVELOPMENT AREA

NOT TO SCALE

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GATEWAY HEIGHTS

MORENO VALLEY, CALIFORNIA

EXHIBIT B

NOT TO SCALE

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USGS MAP

GATEWAY HEIGHTS

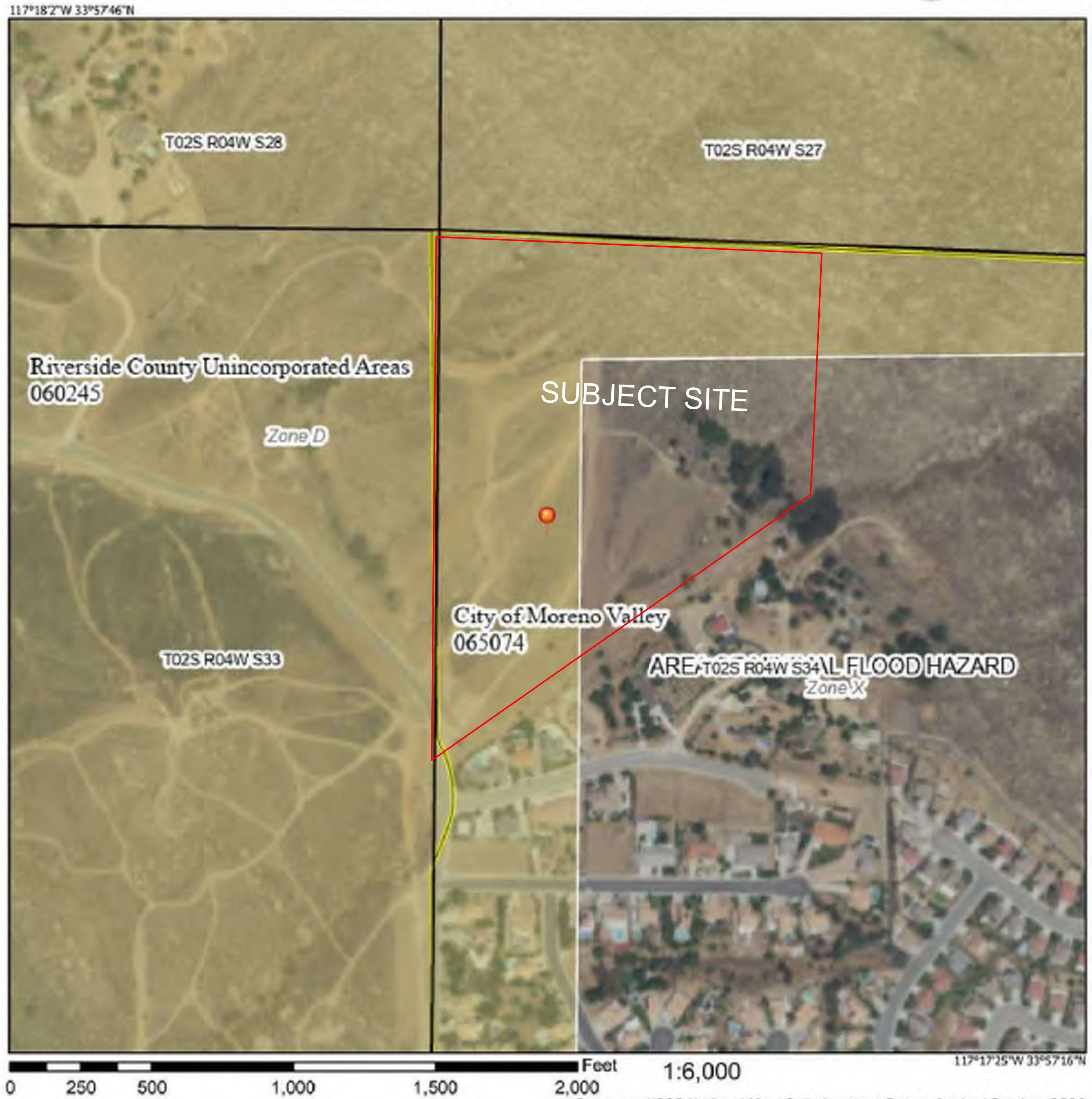
MORENO VALLEY, CALIFORNIA

EXHIBIT C

National Flood Hazard Layer FIRMette

FEMA

117°18'2"W 33°57'46"N



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/22/2021 at 11:51 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

FEMA MAP

NOT TO SCALE

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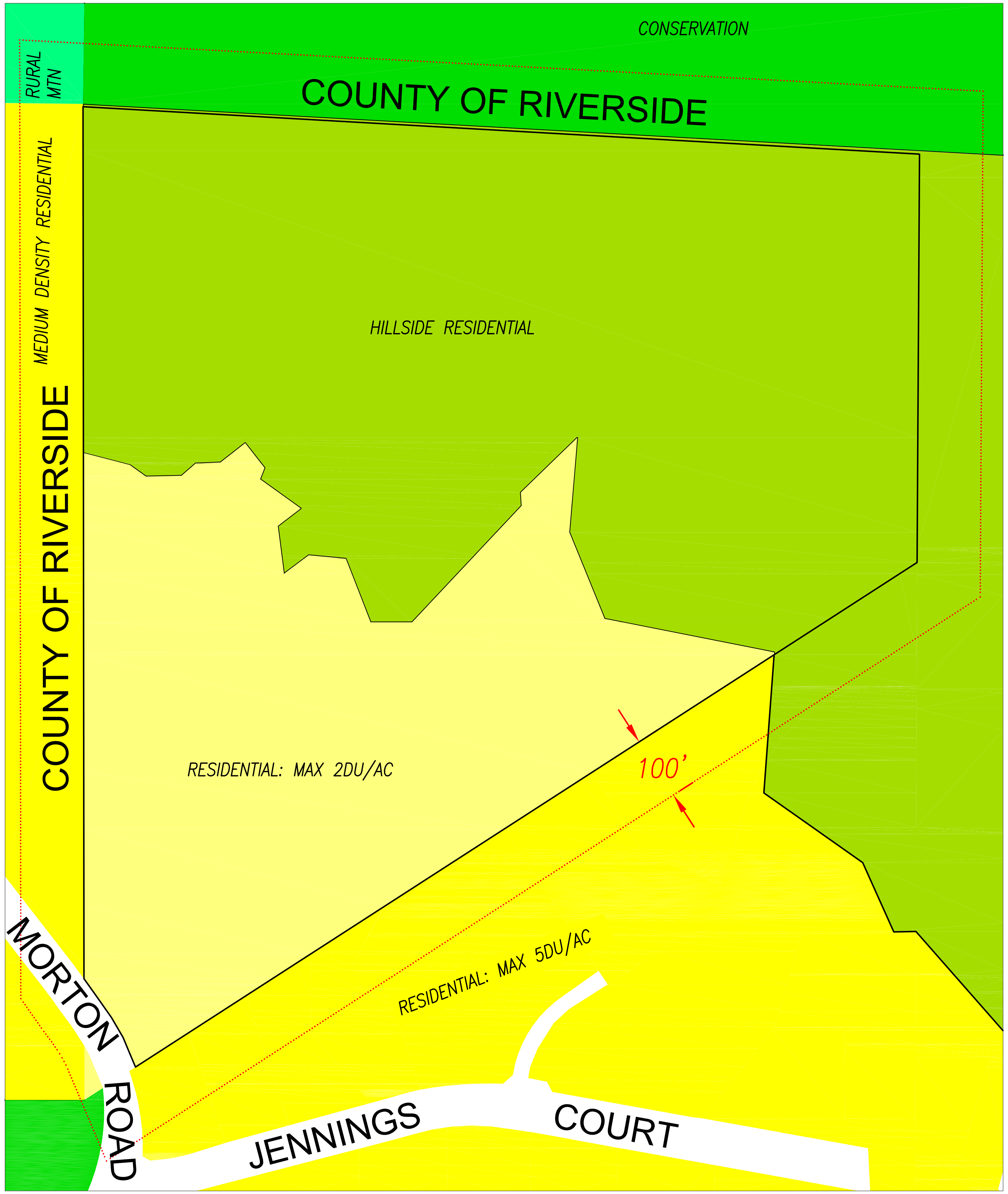
GATEWAY HEIGHTS

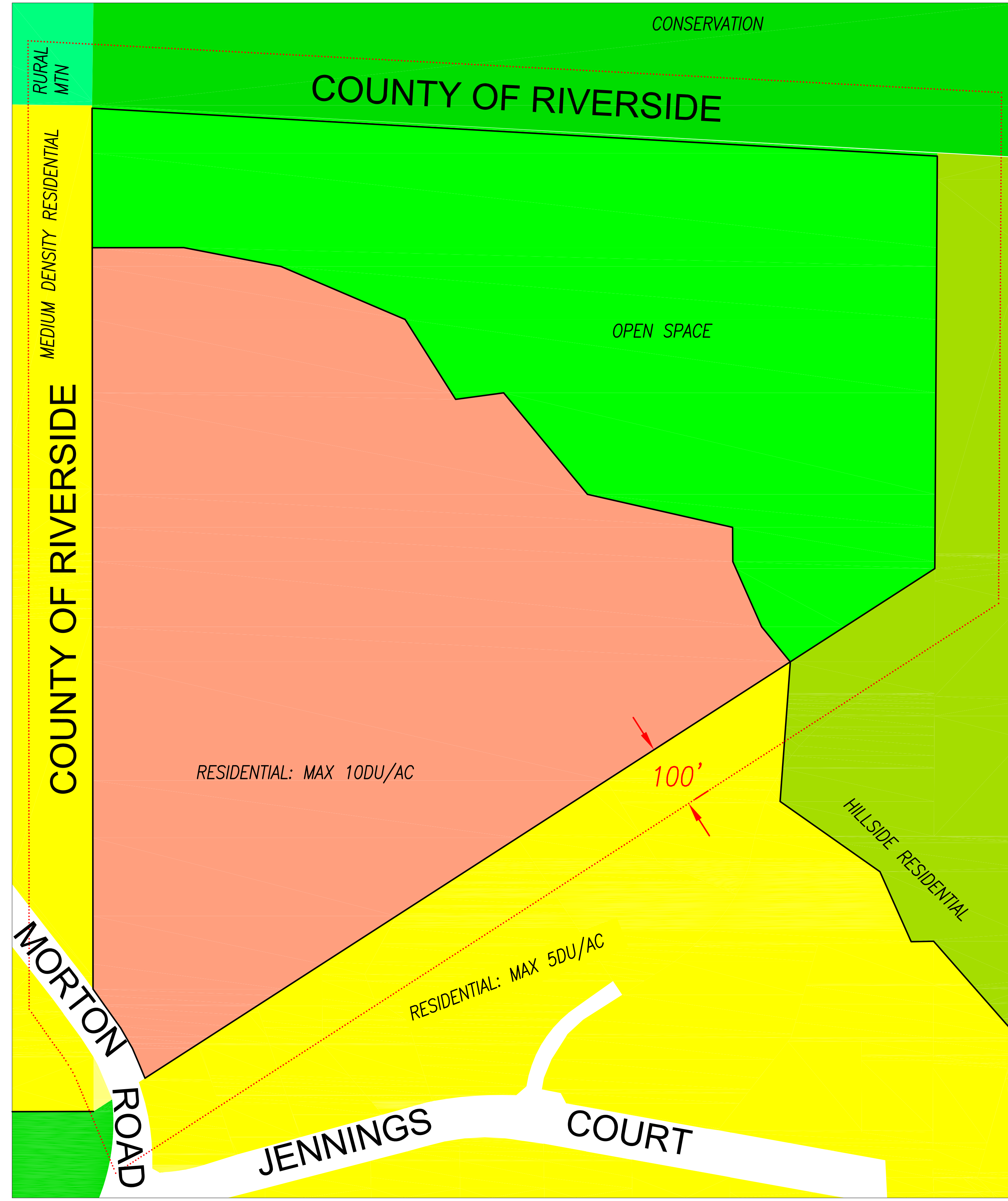
MORENO VALLEY, CALIFORNIA

EXHIBIT D

EXISTING GENERAL PLAN



PROPOSED GENERAL PLAN



GENERAL PLAN MAP

SCALE: 1" = 200'

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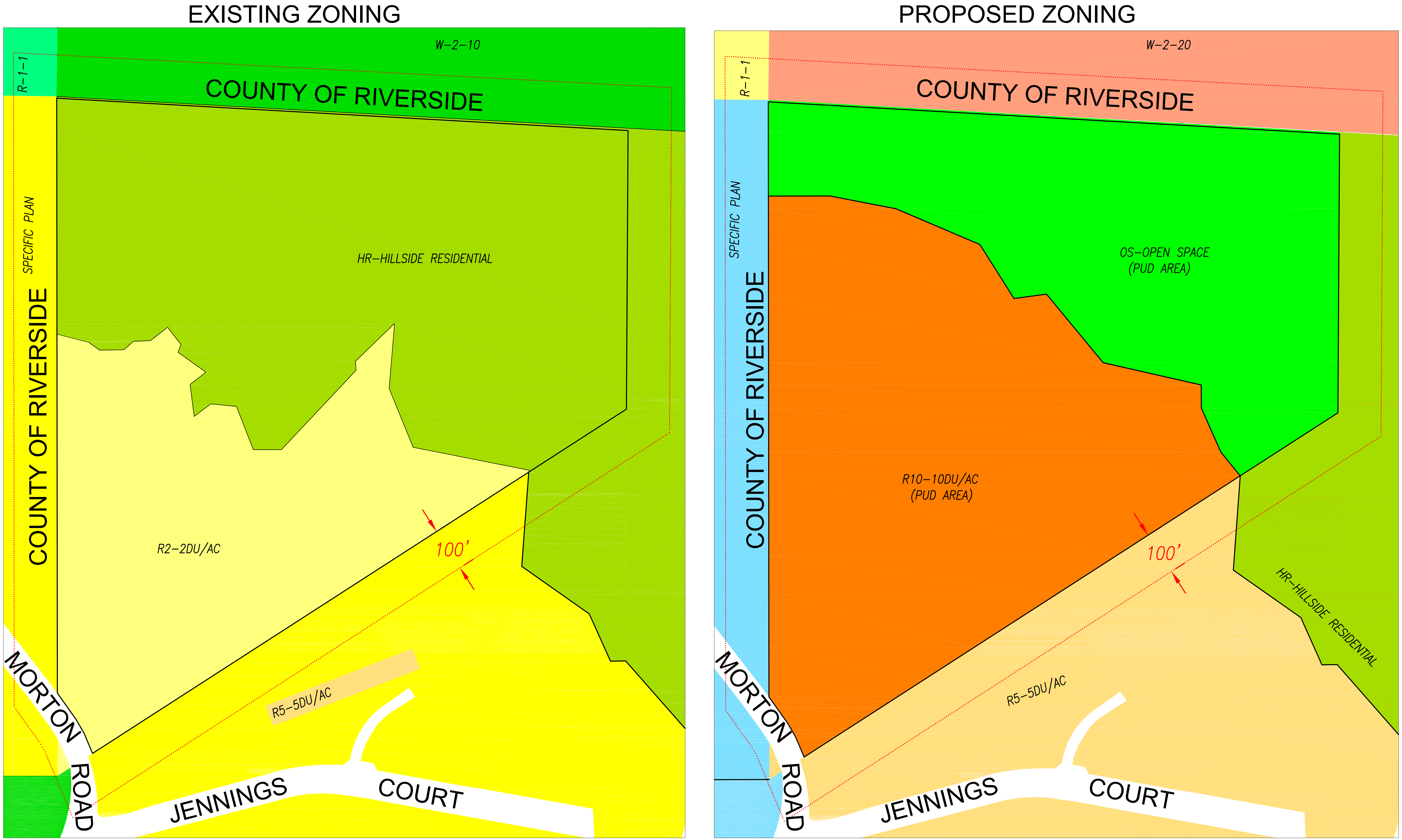
GATEWAY HEIGHTS

CITY OF MORENO VALLEY, CALIFORNIA

EXHIBIT E



ZONING MAP

SCALE: 1" = 200'

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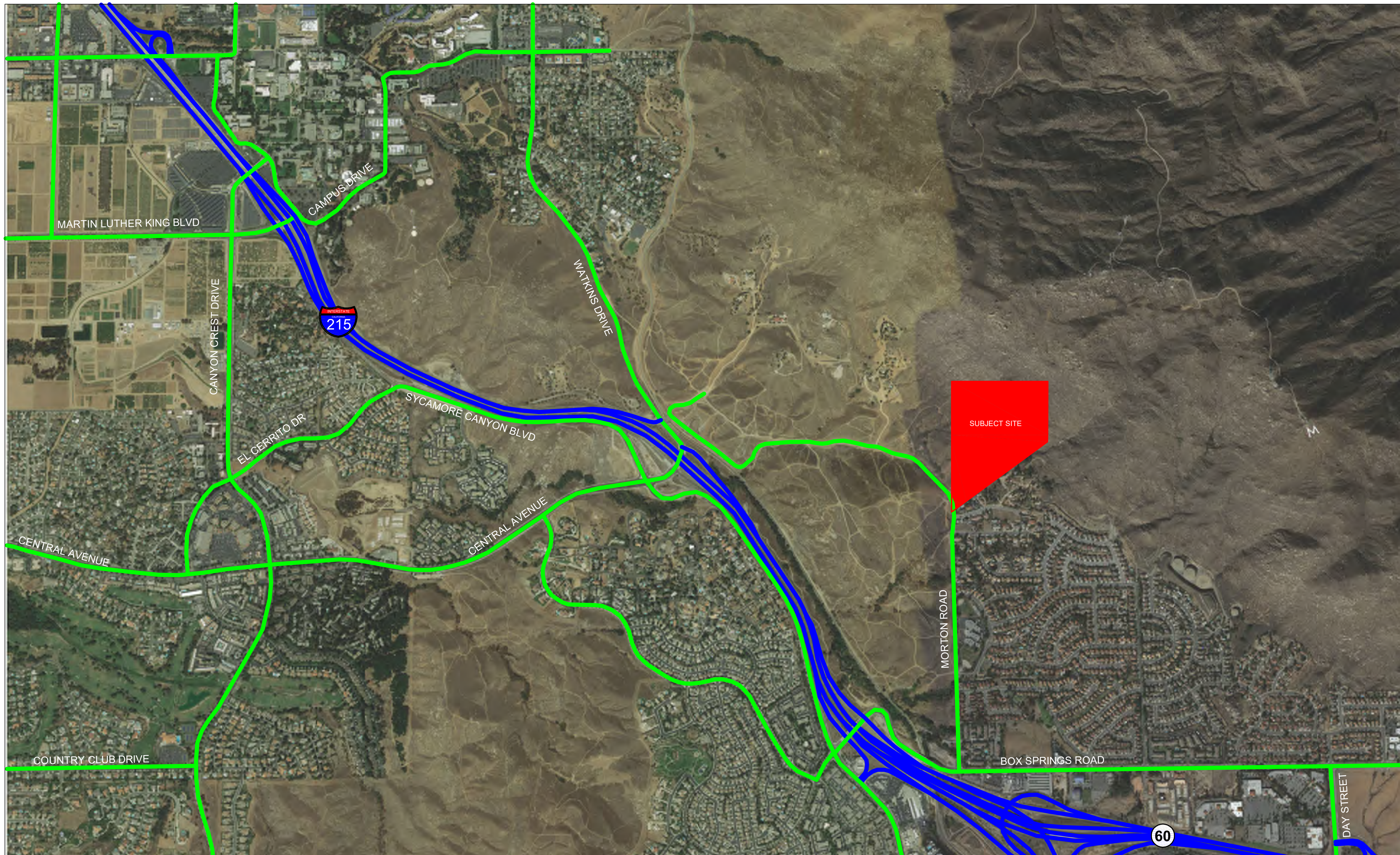
GATEWAY HEIGHTS

CITY OF MORENO VALLEY, CALIFORNIA

EXHIBIT F



CIRCULATION MAP

NOT TO SCALE

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GATEWAY HEIGHTS

MORENO VALLEY, CALIFORNIA

EXHIBIT G

GATEWAY CENTER SPECIFIC PLAN

NOT TO SCALE

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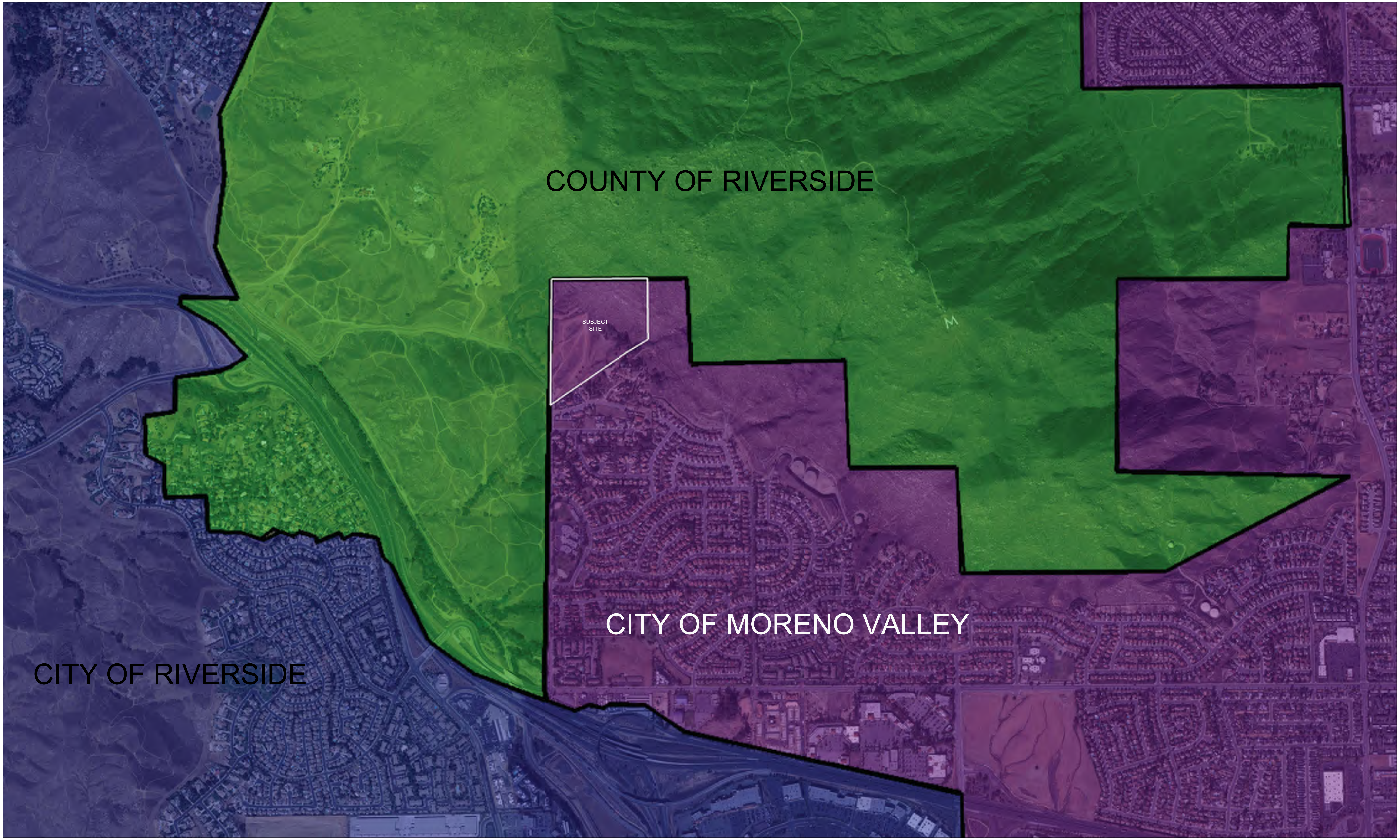
GATEWAY HEIGHTS

MORENO VALLEY, CALIFORNIA

EXHIBIT H



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SURROUNDING JURISDICTIONS

GATEWAY HEIGHTS

MORENO VALLEY, CALIFORNIA

EXHIBIT I

OPEN SPACE/PARK PLAN

NOT TO SCALE

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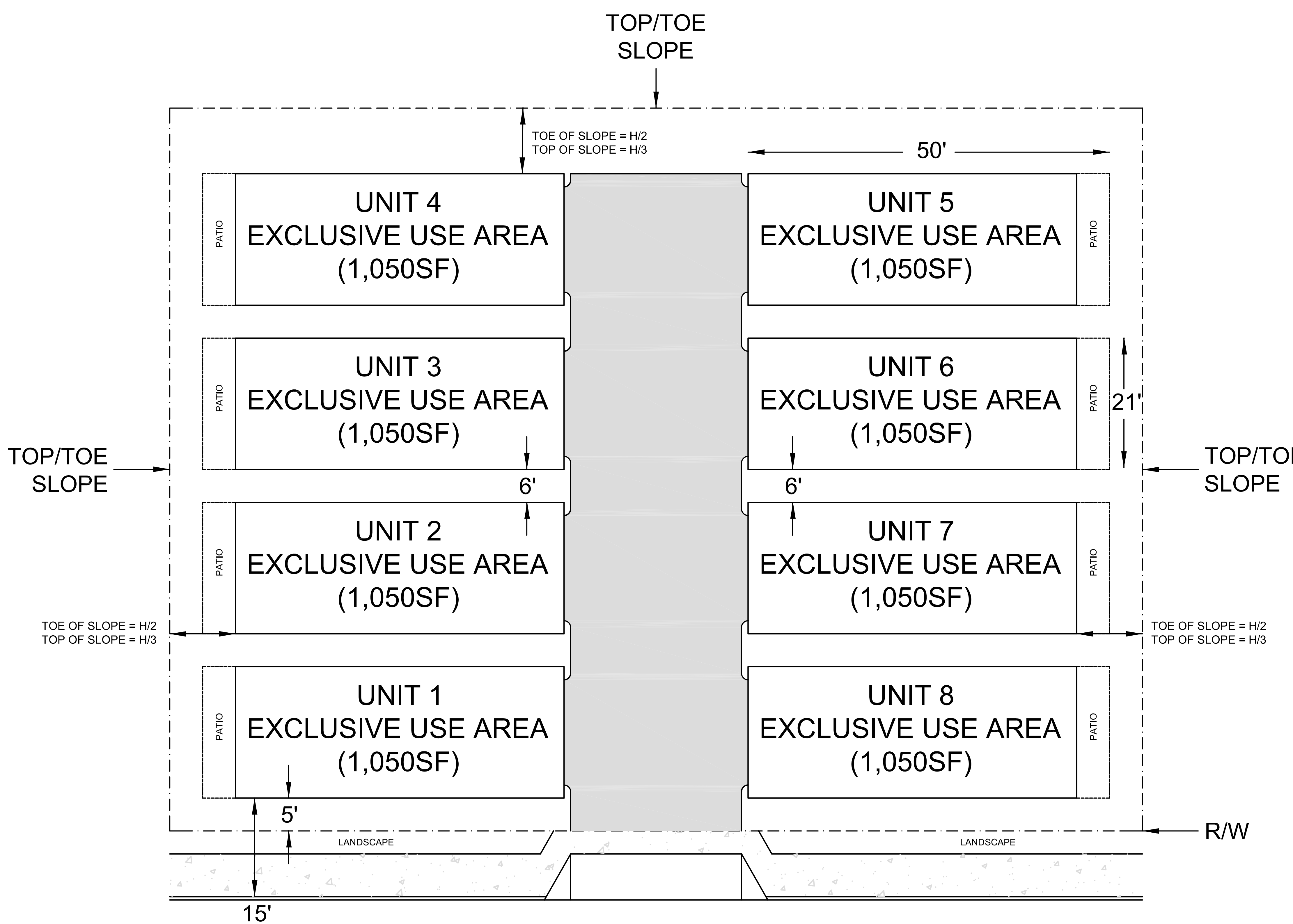
GATEWAY HEIGHTS

MORENO VALLEY, CALIFORNIA

EXHIBIT J

TYPICAL CLUSTER DETAIL



TYPICAL CLUSTER DETAIL

NOT TO SCALE

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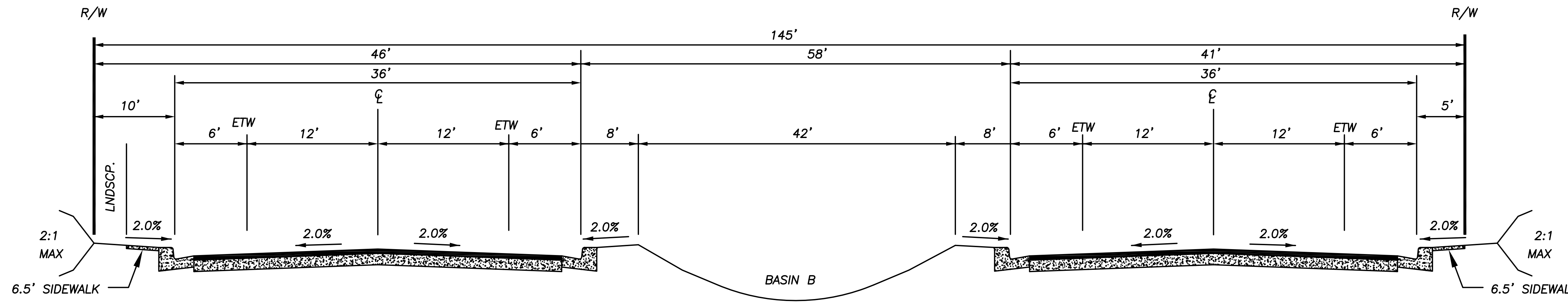
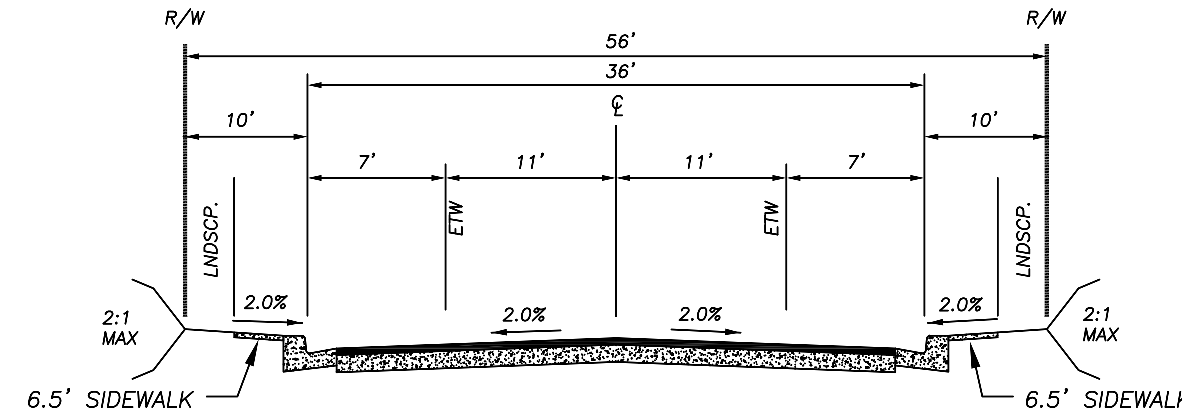
GATEWAY HEIGHTS

MORENO VALLEY, CALIFORNIA

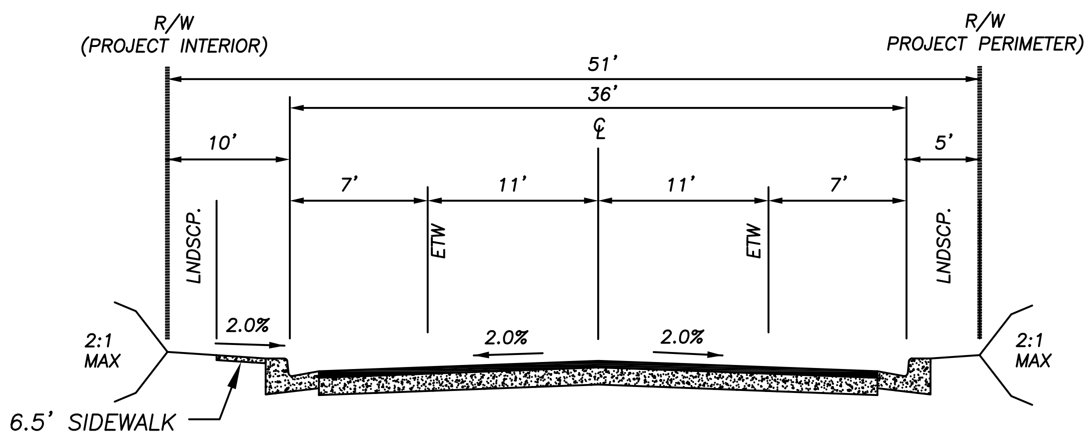
EXHIBIT K



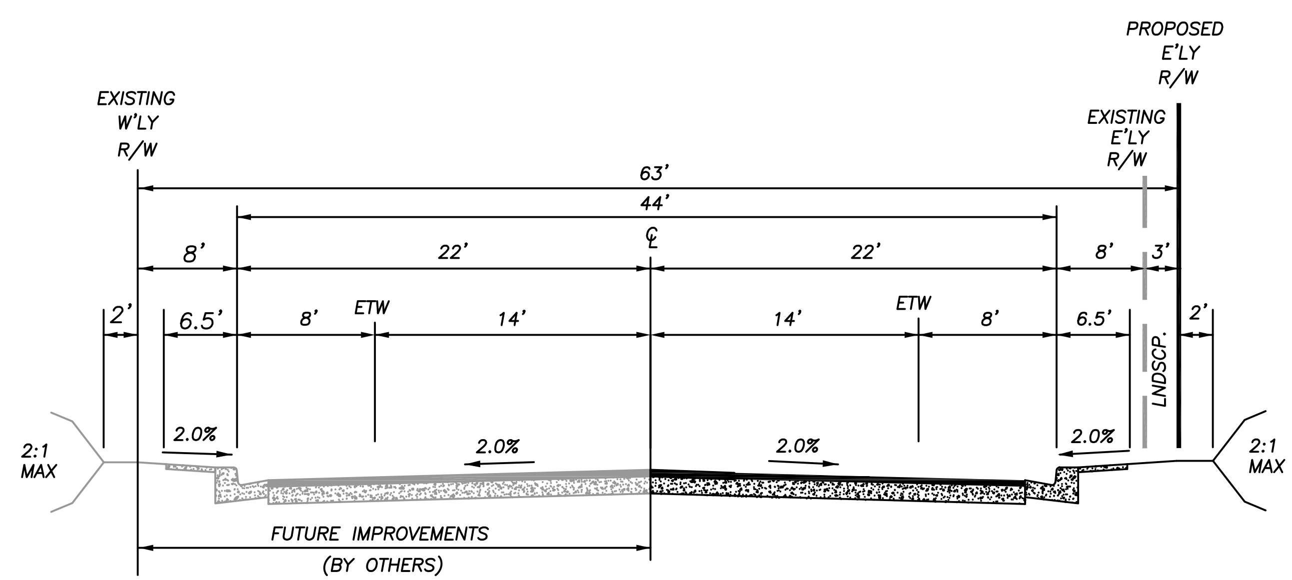
STREET A @ PROJECT ENTRANCE (LOOKING EAST)
N.T.S.



STREET B
CITY OF MORENO VALLEY STANDARD MVSI-107A-0
N.T.S.



STREET A & C
CITY OF MORENO VALLEY STANDARD MVSI-107A-0 (MODIFIED)
N.T.S.



MORTON ROAD
CITY OF MORENO VALLEY STANDARD MVSI-106B-0
N.T.S.

STREET SECTION DETAILS

NOT TO SCALE

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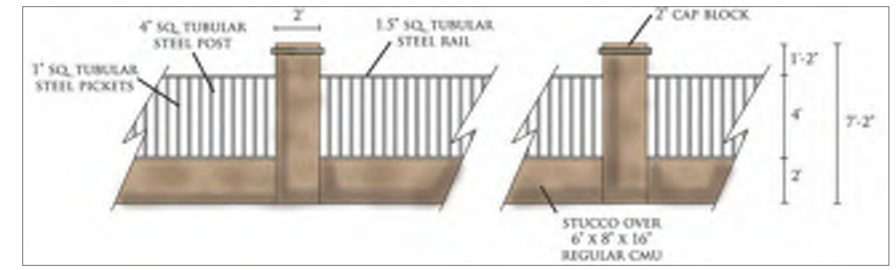
GATEWAY HEIGHTS

MORENO VALLEY, CALIFORNIA

EXHIBIT L



VIEW FENCE DETAIL

ENTRY FEATURE DETAIL

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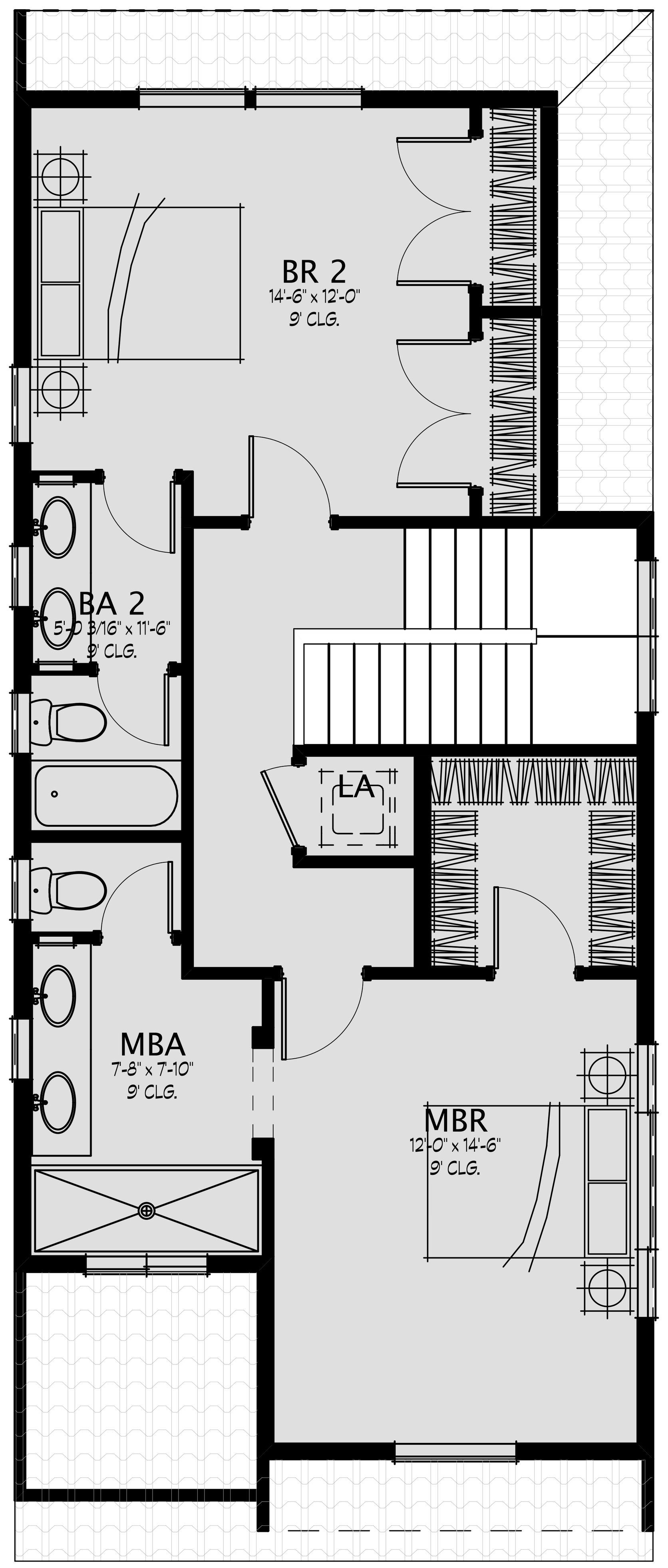
CONCEPTUAL WALL / FENCE PLAN

GATEWAY HEIGHTS

MORENO VALLEY, CALIFORNIA

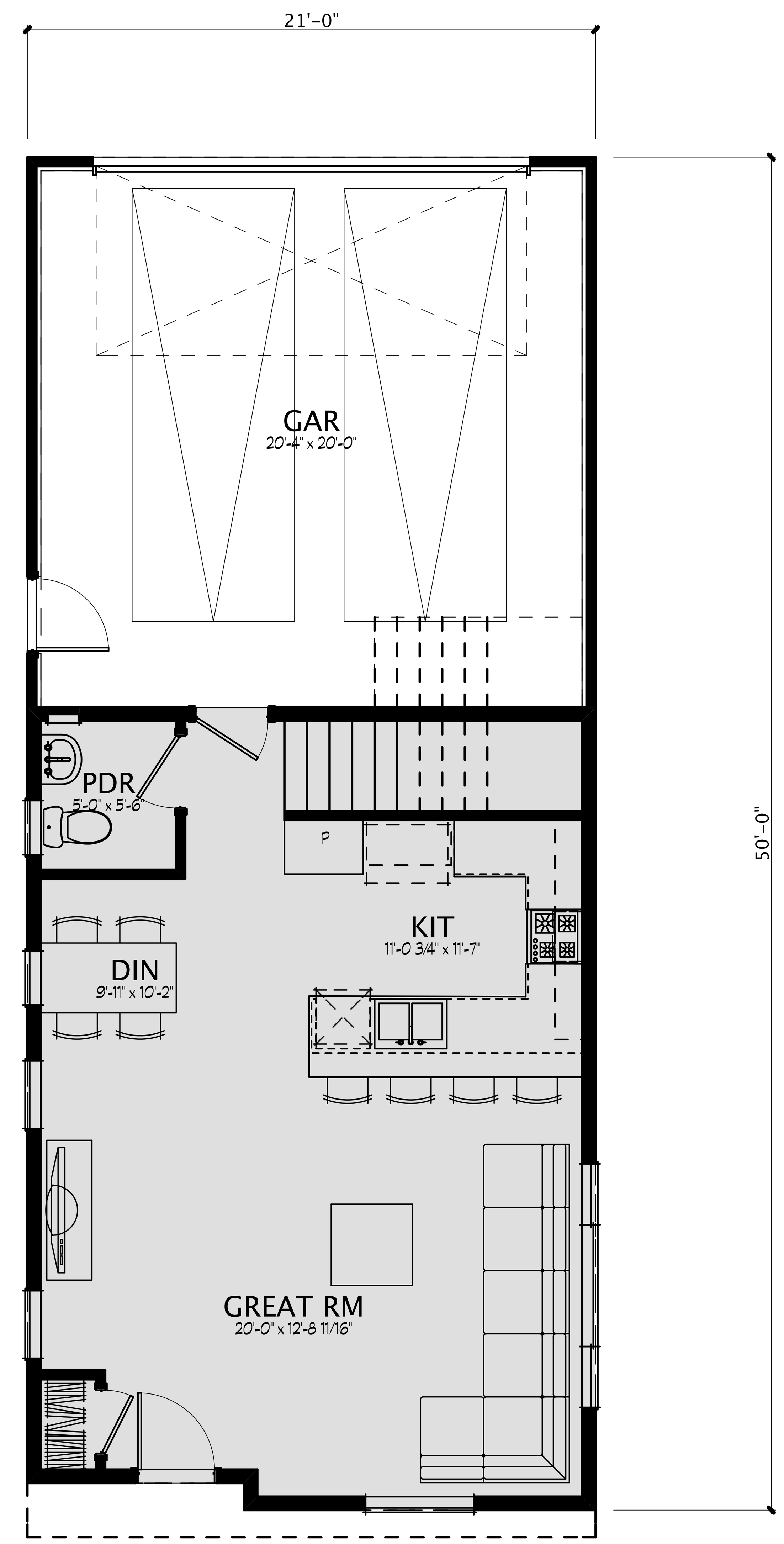
EXHIBIT M

FLOOR PLANS/ELEVATIONS



1 PLAN 1 SECOND FLOOR 785 sq ft

0 2' 4' 8'



FIRST FLOOR 615 sq ft

1 PLAN 1 TOTAL 1400 sq ft

2 BEDROOM, 2.5 BATHS

0 2' 4' 8'

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NO.	DATE	REVISION
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△		
△		
△		

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Gateway Heights
Moreno Valley, USA

PROJECT INFO

PROJECT NUMBER:	21019
PROJECT MANAGER:	MJK
DRAWN BY:	SJW
SHEET ISSUE DATE:	5/3/21

SHEET TITLE

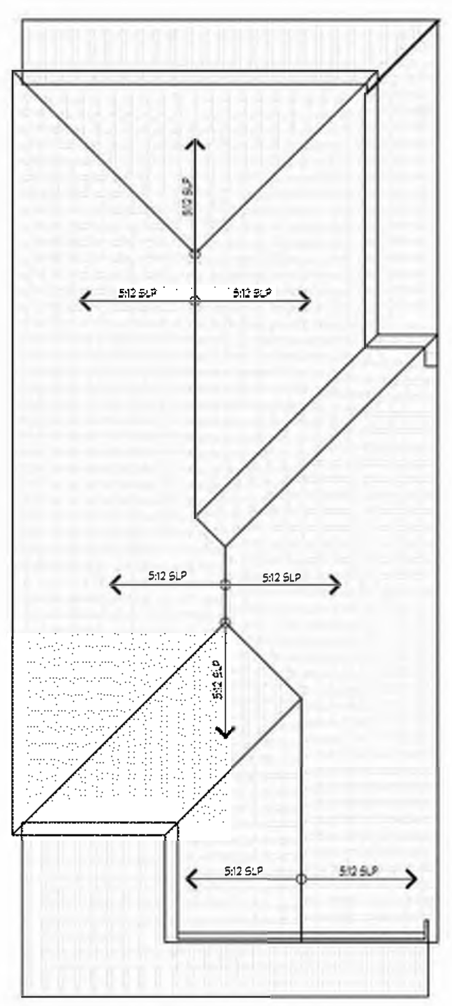
PLAN 1A
(PLAN 1B SIM)

SHEET NUMBER

A-1.1

1 PLAN 1A RIGHT ELEVATION

1 PLAN 1A REAR ELEVATION



1 ROOF PLAN 1 A

1 PLAN 1A LEFT ELEVATION

1 PLAN 1A FRONT ELEVATION

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NO.	DATE	REVISION

Henghou Group
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Pasadena, CA 91105

Gateway Heights
Moreno Valley, USA

PROJECT INFO

PROJECT NUMBER:	21019
PROJECT MANAGER:	MJK
DRAWN BY:	SJW
SHEET ISSUE DATE:	3/10/22

SHEET TITLE

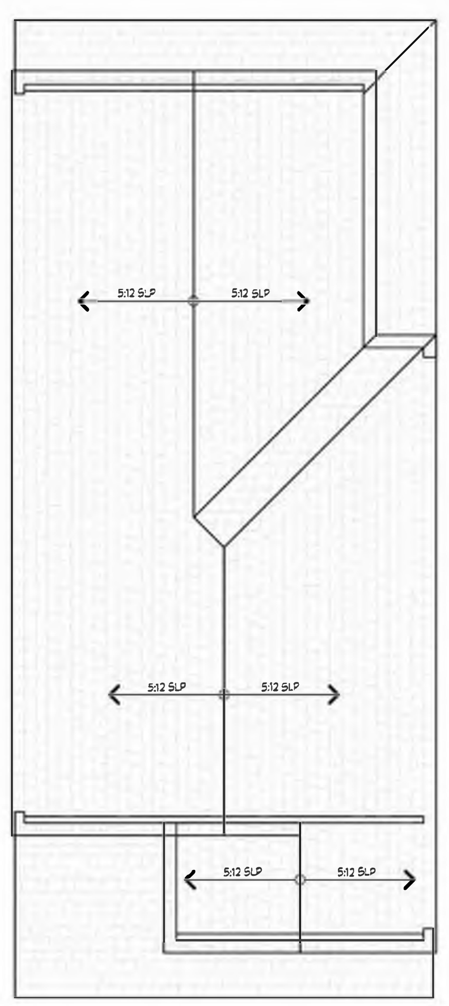
PLAN 1 EXTERIOR A

SHEET NUMBER

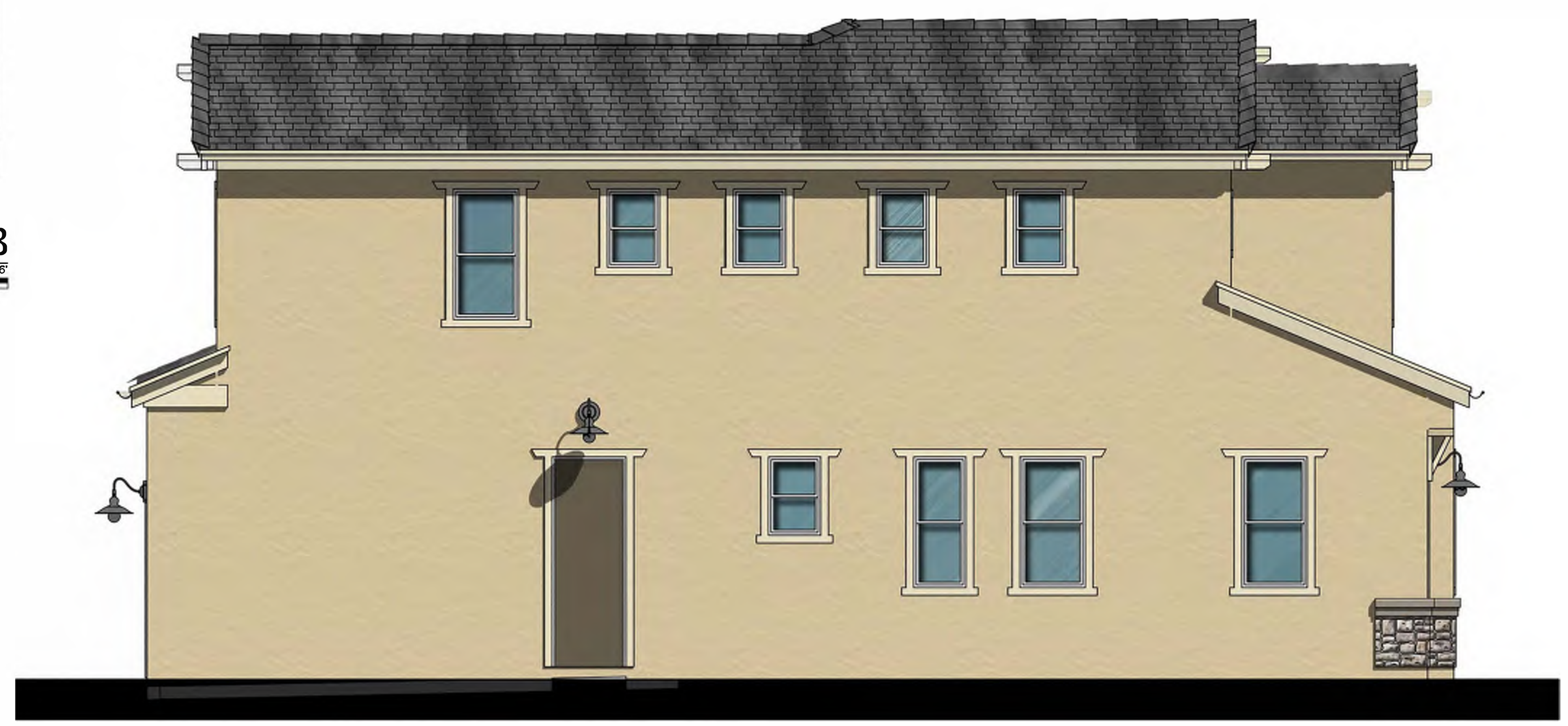
A-1.2

1 PLAN 1B RIGHT ELEVATION

1 PLAN 1B REAR ELEVATION



1 ROOF PLAN 1B



1 PLAN 1B LEFT ELEVATION

1 PLAN 1B FRONT ELEVATION

KPI
KNITTER PARTNERS INTERNATIONAL, INC.
architecture & planning
17752 MITCHELL NORTH, SUITE C
IRVINE, CALIFORNIA 92614-6802
949.752.1177 www.knitter.com

NO. DATE	REVISION

Henghou Group
177 E. Colorado BLVD, Ste. 200
Pasadena, CA 91105

Gateway Heights
Moreno Valley, USA

PROJECT INFO

PROJECT NUMBER:	21019
PROJECT MANAGER:	MJK
DRAWN BY:	SJW
SHEET ISSUE DATE:	3/10/22

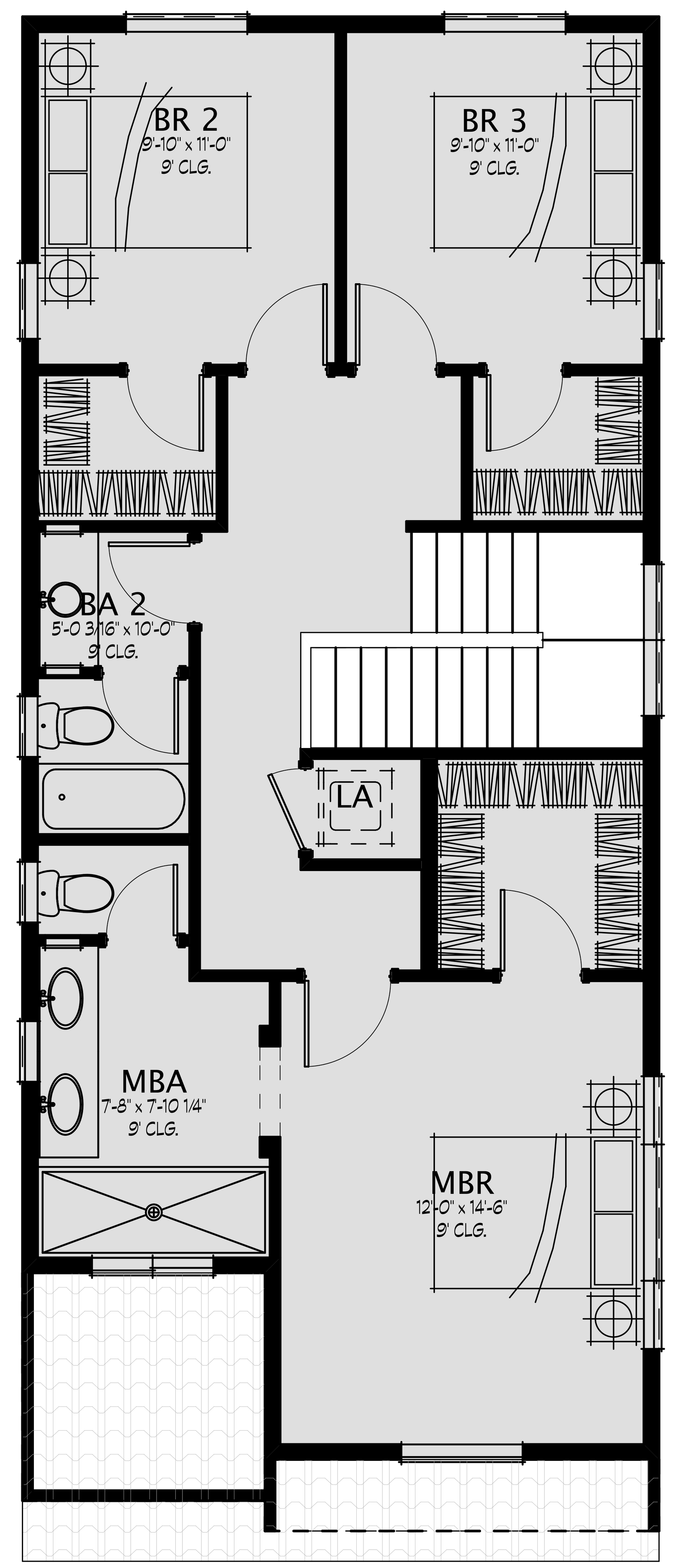
SHEET TITLE

PLAN 1 EXTERIOR B

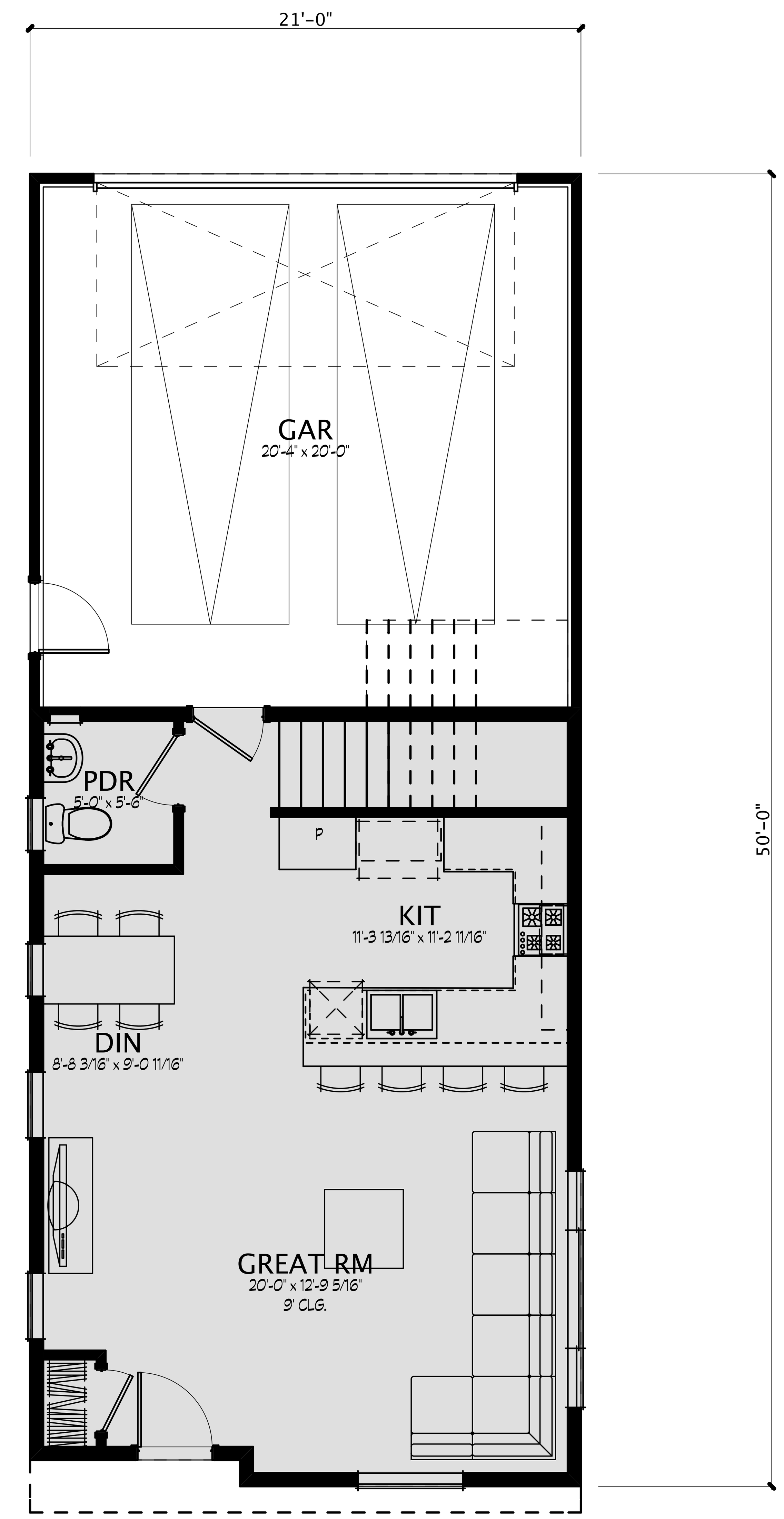
SHEET NUMBER

A-1.3

KPI Inc.
Knitter Partners International, Inc.
architecture & planning
17752 Mitchell North, Suite C
Irvine, California 92614-6802
949.752.1177 www.knitter.com



2 PLAN 2 SECOND FLOOR 885 sq ft



2 PLAN 2 FIRST FLOOR 615 sq ft
TOTAL 1500 sq ft
3 BEDROOM, 2.5 BATHS

NO.	DATE	REVISION

Henghou Group
177 E. Colorado BLVD Ste. 200
Pasadena, CA 91105

Gateway Heights
Moreno Valley, USA

PROJECT INFO

PROJECT NUMBER:	21019
PROJECT MANAGER:	MJK
DRAWN BY:	SJW
SHEET ISSUE DATE:	5/3/21

SHEET TITLE

PLAN 2A
(PLAN 2B SIM)

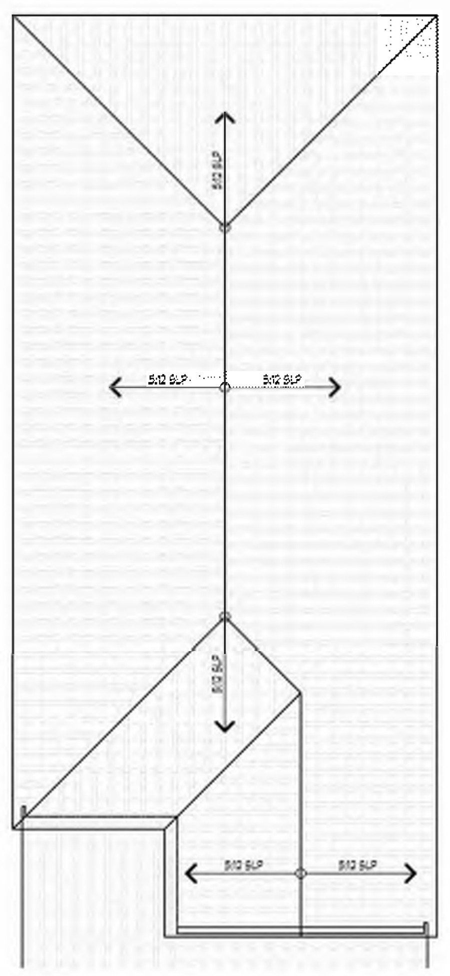
SHEET NUMBER
A-2.1

2 PLAN 2A RIGHT ELEVATION

0 2' 4' 8'

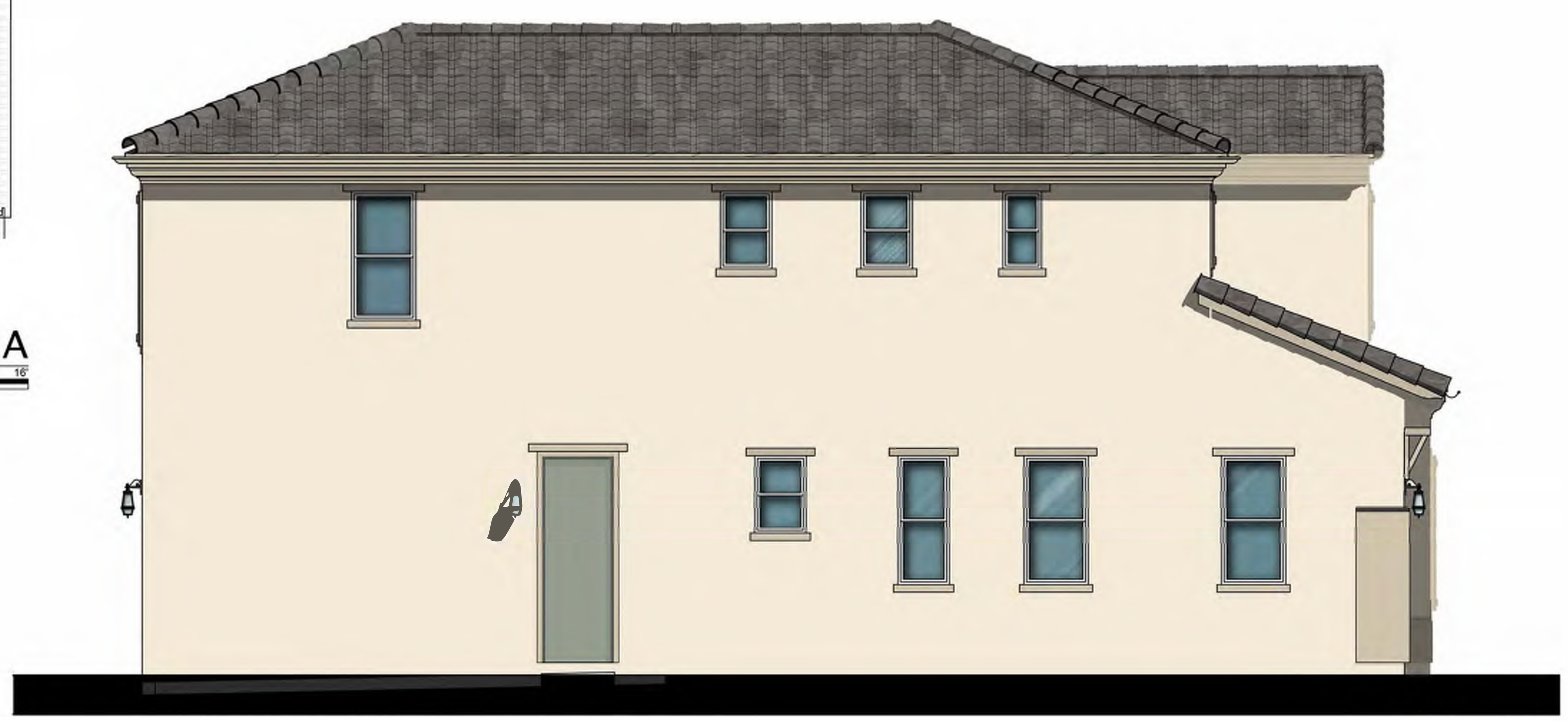
2 PLAN 2A REAR ELEVATION

0 2' 4' 8'



2 ROOF PLAN 2A

0 4' 8' 16'



2 PLAN 2A LEFT ELEVATION

0 2' 4' 8'

2 PLAN 2A FRONT ELEVATION

0 2' 4' 8'

KPI Inc.
Knitter Partners International, Inc.
architecture & planning
17752 Mitchell North, Suite C
Irvine, California 92614-6802
949.752.1177 www.knitter.com

NO.	DATE	REVISION
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Henghou Group
177 E. Colorado BLVD Ste. 200
Pasadena, CA 91105

Gateway Heights
Moreno Valley, USA

PROJECT INFO

PROJECT NUMBER:	2109
PROJECT MANAGER:	MJK
DRAWN BY:	SJW
SHEET ISSUE DATE:	3/10/22

SHEET TITLE

PLAN 2 EXTERIOR A

SHEET NUMBER

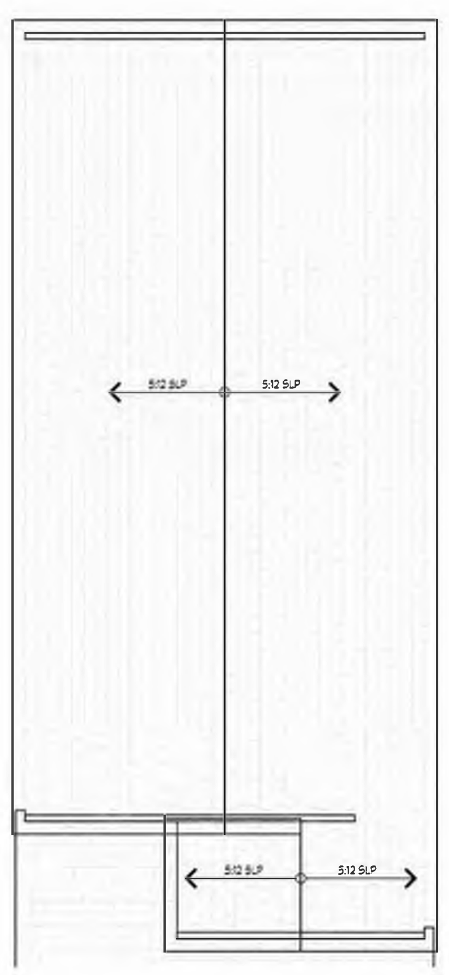
A-2.2

2 PLAN 2B RIGHT ELEVATION

0 2' 4' 8'

2 PLAN 2B REAR ELEVATION

0 2' 4' 8'



2 ROOF PLAN 2B

0 4' 8' 16'

2 PLAN 2B LEFT ELEVATION

0 2' 4' 8'

2 PLAN 2B FRONT ELEVATION

0 2' 4' 8'

KPI Inc.
Knitter Partners International, Inc.
architecture & planning
17752 Mitchell North, Suite C
Irvine, California 92614-6802
949.752.1177 www.knitter.com

NO.	DATE	REVISION
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Henghou Group
177 E. Colorado BLVD Ste. 200
Pasadena, CA 91105

Gateway Heights
Moreno Valley, USA

PROJECT INFO

PROJECT NUMBER:	21019
PROJECT MANAGER:	MJK
DRAWN BY:	SJW
SHEET ISSUE DATE:	3/10/22

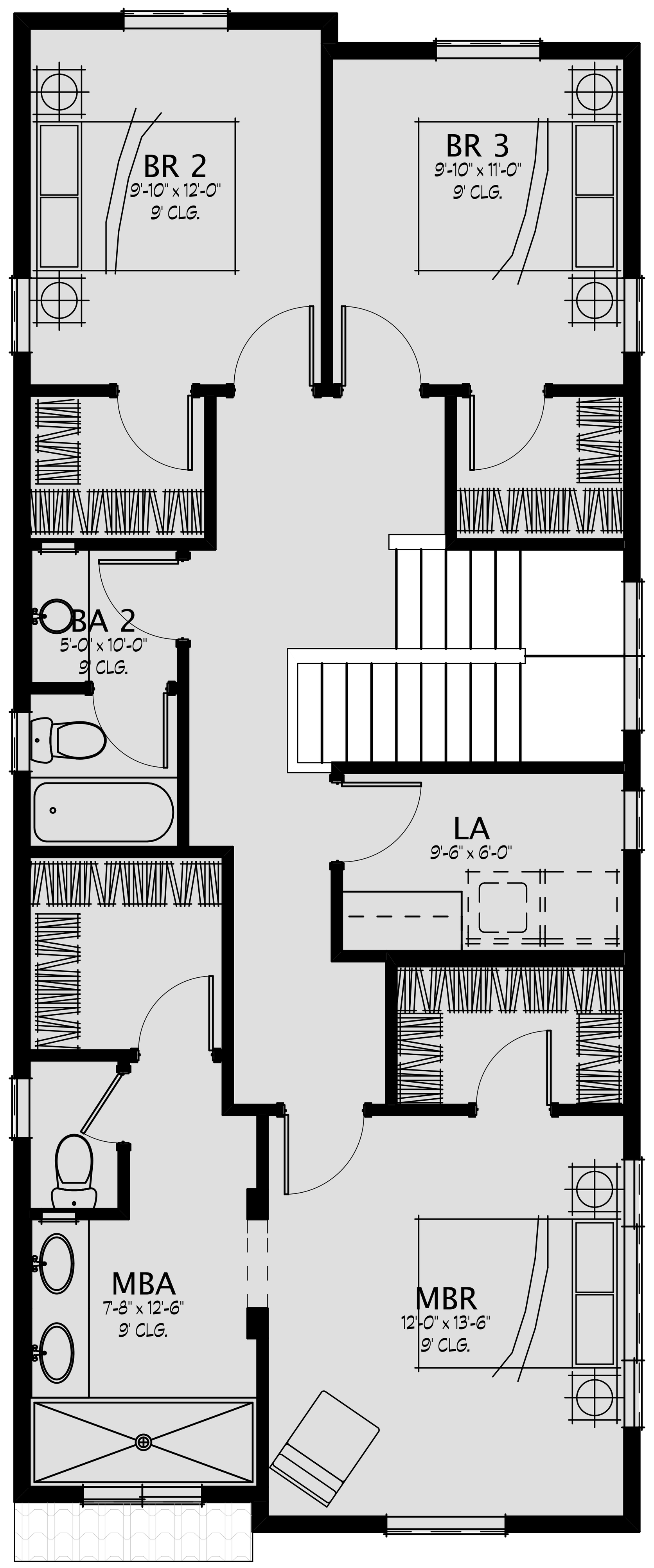
SHEET TITLE

PLAN 2 EXTERIOR B

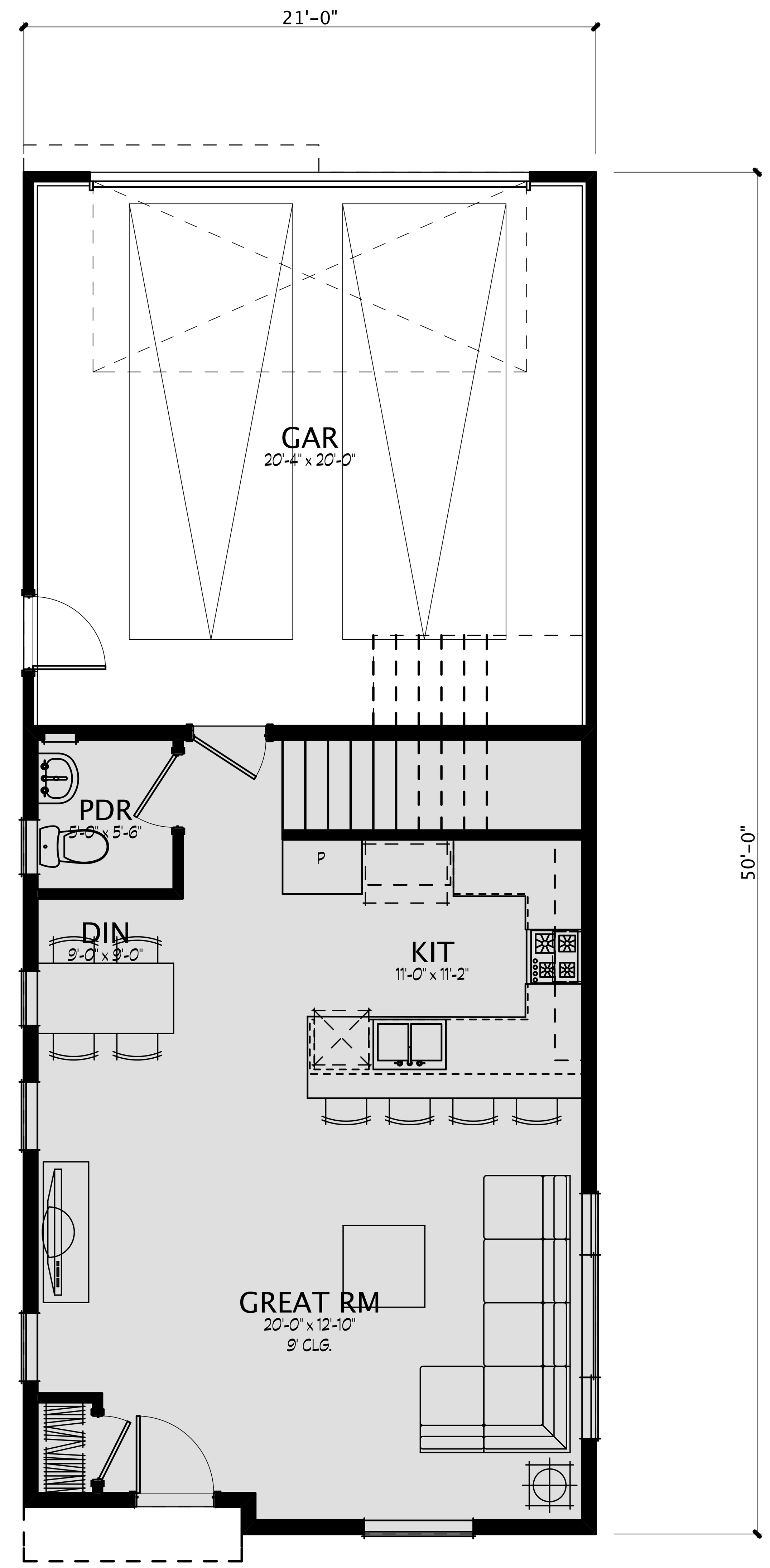
SHEET NUMBER

A-2.3

Thursday, March 10, 2022, 5:01 PM, g:2021:21019 - Henghou Group - Gateway Hts - Moreno Valley:ARCHICAD:21019 - Moreno Valley Plan 2.pln, mac



3 PLAN 3 SECOND FLOOR 987 sq ft



3 PLAN 3 FIRST FLOOR 615 sq ft
TOTAL 1602 sq ft
3 BEDROOM, 2.5 BATHS

NO. DATE	REVISION
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Henghou Group
177 E. Colorado BLVD, Ste. 200
Pasadena, CA 91105

Gateway Heights
Moreno Valley, USA

PROJECT INFO

PROJECT NUMBER:	21019
PROJECT MANAGER:	MJK
DRAWN BY:	SJW
SHEET ISSUE DATE:	5/3/21

SHEET TITLE

PLAN 3A
(PLAN 3B SIM)

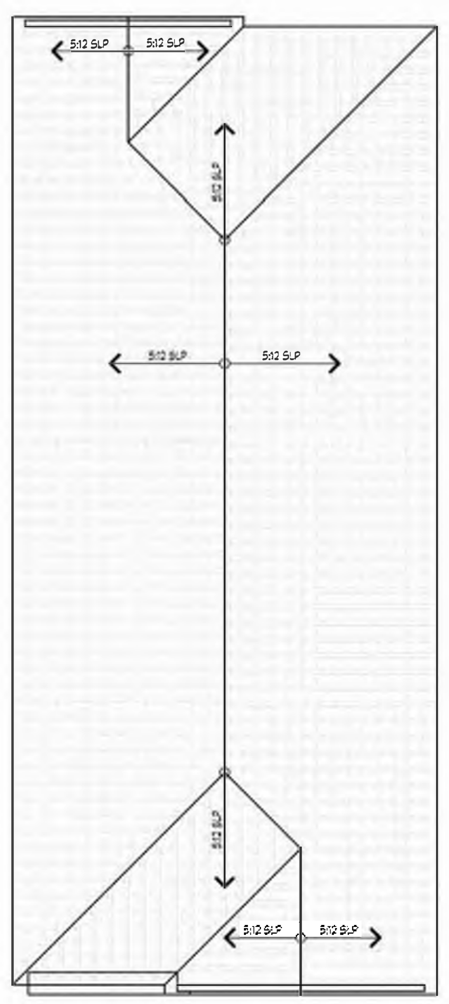
SHEET NUMBER
A-3.1

3 PLAN 3A RIGHT ELEVATION

0 2' 4' 8'

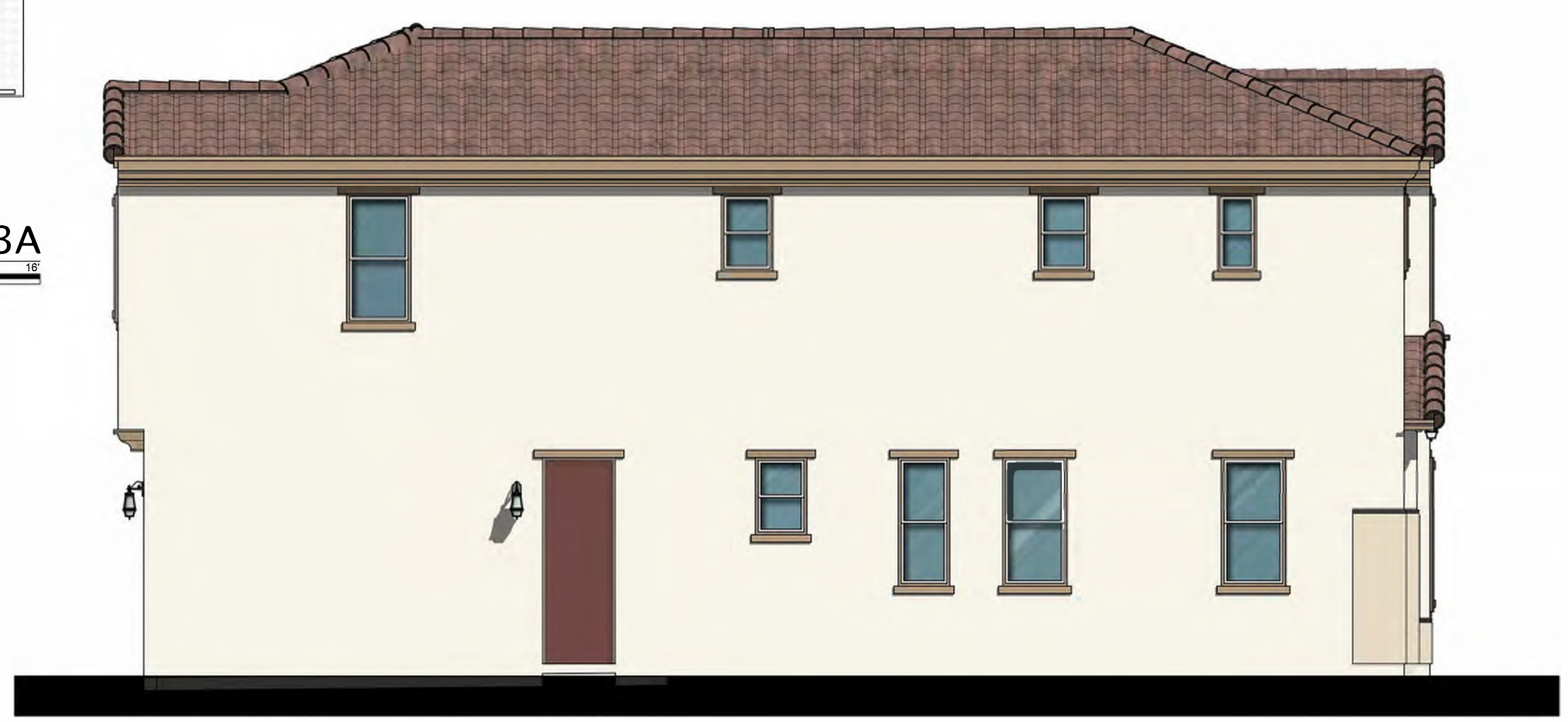
3 PLAN 3A REAR ELEVATION

0 2' 4' 8'



3 ROOF PLAN 3A

0 4' 8' 16'



4 PLAN 3A LEFT ELEVATION

0 2' 4' 8'

3 PLAN 3A FRONT ELEVATION

0 2' 4' 8'

NO.	DATE	REVISION

Henghou Group
177 E. Colorado BLVD, Ste. 200
Pasadena, CA 91105

Gateway Heights
Moreno Valley, USA

PROJECT INFO

PROJECT NUMBER:	21019
PROJECT MANAGER:	MJK
DRAWN BY:	SJW
SHEET ISSUE DATE:	3/10/22

SHEET TITLE

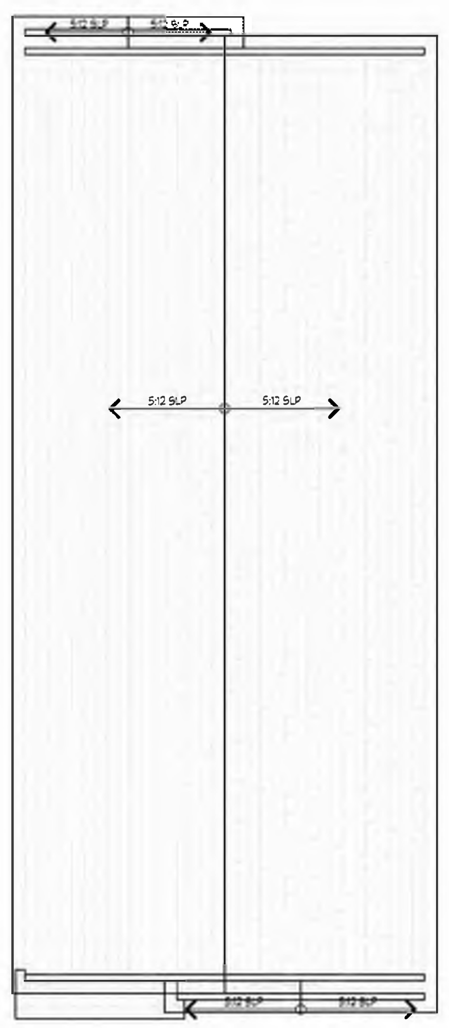
PLAN 3 EXTERIOR A

SHEET NUMBER

A-3.2

3 PLAN 3B RIGHT ELEVATION

3 PLAN 3B REAR ELEVATION



3 ROOF PLAN 3B

3 PLAN 3B LEFT ELEVATION

3 PLAN 3B FRONT ELEVATION

NO.	DATE	REVISION
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Henghou Group
177 E. Colorado BLVD, Ste. 200
Pasadena, CA 91105

Gateway Heights
Moreno Valley, USA

PROJECT INFO

PROJECT NUMBER:	21019
PROJECT MANAGER:	MJK
DRAWN BY:	SJW
SHEET ISSUE DATE:	3/10/22

SHEET TITLE

PLAN 3 EXTERIOR B

SHEET NUMBER
A-3.3

SITE PLAN

IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.

SITE PLAN (PEN21-0066)

BEING A PORTION OF SECTION 34, TOWNSHIP 2 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN

UNITED ENGINEERING GROUP CA., INC NOVEMBER 2022

LEGAL DESCRIPTION:

THAT PORTION OF SECTION 34, TOWNSHIP 2 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN, IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF SECTION 34, TOWNSHIP 2 SOUTH, RANGE 4 WEST, SAN BERNARDINO, AS SHOWN BY UNITED STATES GOVERNMENT SURVEY; THENCE RUNNING SOUTH ALONG THE WEST LINE OF SAID SECTION 34, 23.50 CHAINS TO THE CORNER MONUMENT MARKING THE NORTHWEST CORNER OF THE LAND CONVEYED TO CECIL R. G. WEBBE TO CHARLES M. DEXTER BY DEED RECORDED IN BOOK 141, PAGE 398, OF DEEDS, SAN BERNARDINO COUNTY RECORDS;
THENCE NORTH 56 DEGREES 31' EAST ALONG THE LINE OF LAND SO CONVEYED TO CHARLES M. DEXTER, 23.91 CHAINS TO THE NORTHEAST CORNER OF SAID LAND SO CONVEYED TO CHARLES M. DEXTER;
THENCE NORTH ALONG THE CENTER LINE OF THE NORTHWEST QUARTER OF SAID SECTION 34, 10.40 CHAINS TO THE NORTH LINE OF SAID SECTION 34; THENCE WEST ALONG THE NORTH LINE OF SAID SECTION, 20 CHAINS TO THE TRUE POINT OF BEGINNING.

EXCEPTING THEREFROM ANY INTEREST OF THE COUNTY OF RIVERSIDE IN AND TO THAT PORTION LYING WITHIN MORTON ROAD.

ALSO EXCEPTING THEREFROM THAT PORTION OF THE ABOVE DESCRIBED PARCEL LYING SOUTHWESTERLY OF SAID MORTON ROAD.

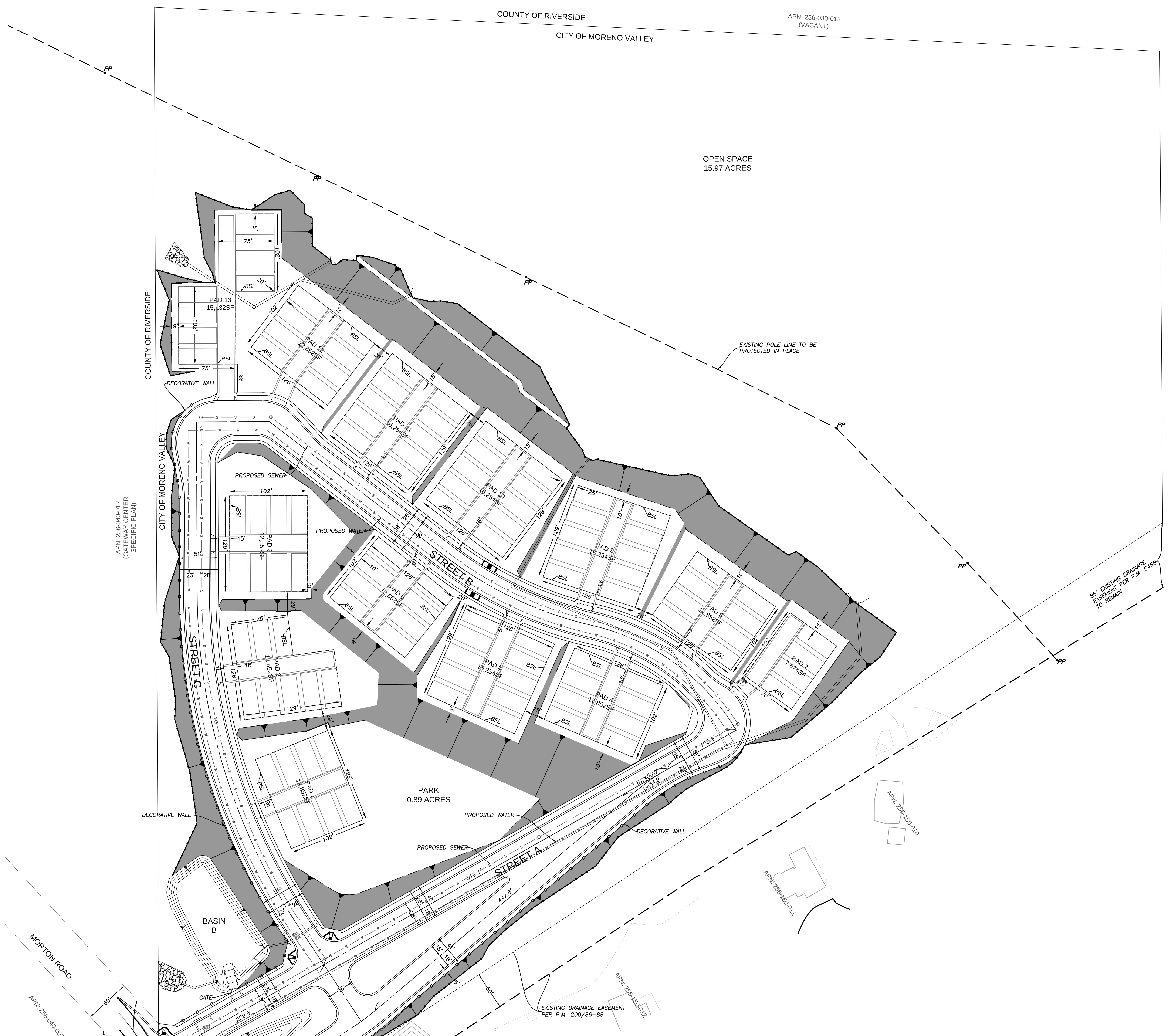
PARCEL NUMBER(S): 256–150–001

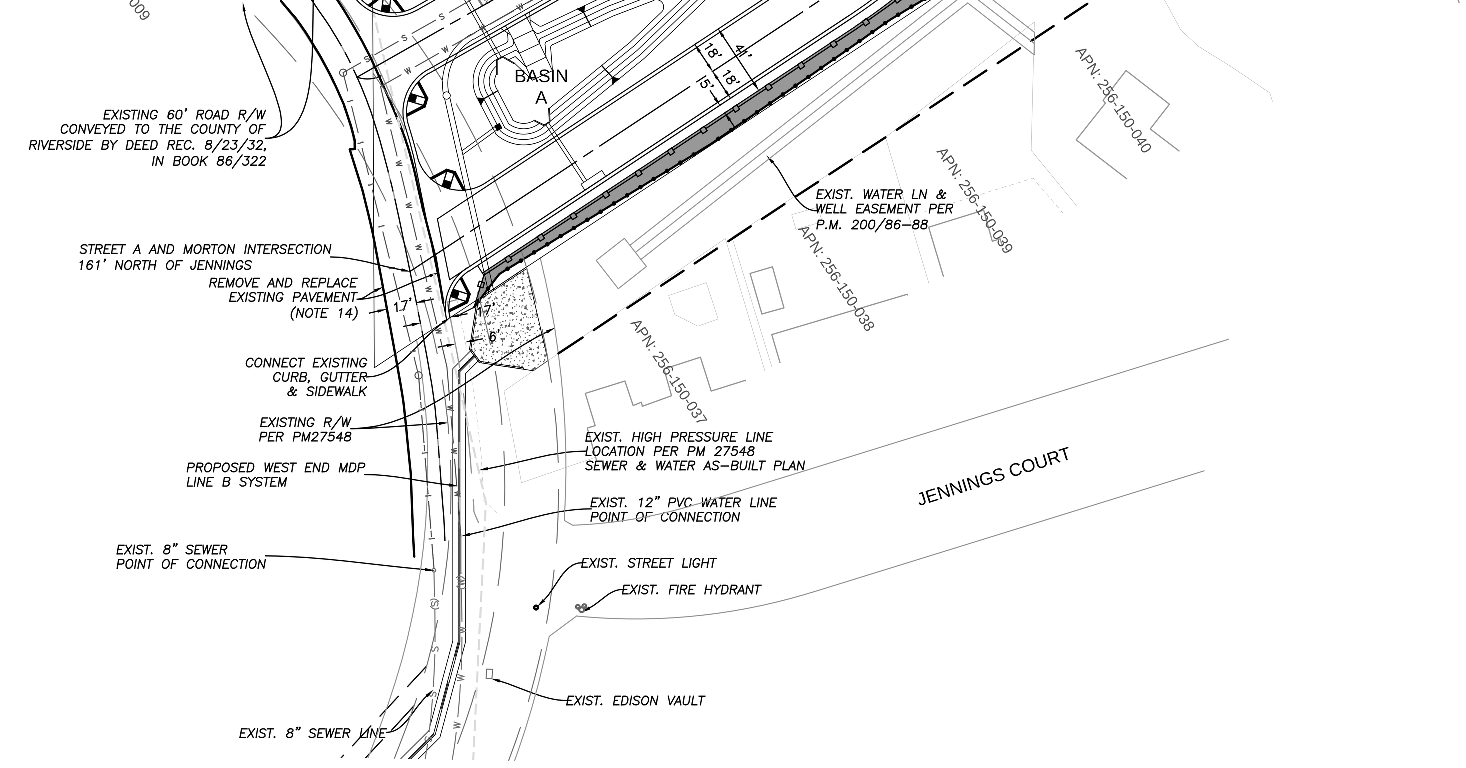
UTILITY PURVEYORS:

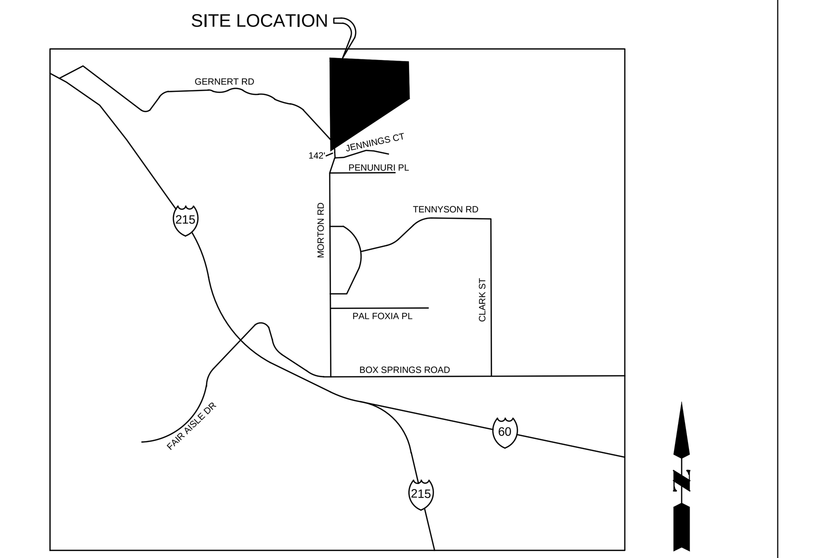
WATER	EASTERN MUNICIPAL WATER DISTRICT 2270 TRUMBLE ROAD PERRIS, CA. 92570 (951) 928–3777	ELECTRIC	SOUTHERN CALIFORNIA EDISON 2492 W. SAN BERNARDINO AVE REDLANDS, CA. 92374 (800) 655–4555
SEWER	EASTERN MUNICIPAL WATER DISTRICT 2270 TRUMBLE ROAD PERRIS, CA. 92570 (951) 928–3777	GAS	SOUTHERN CALIFORNIA GAS 4495 HOWARD AVE RIVERSIDE, CA. 92507 (213) 244–8344
TELEPHONE	SPECTRUM 12625 FREDERICK STREET SUITE F–10 MORENO VALLEY, CA 92553 (866) 874–2389	CABLE	SPECTRUM 12625 FREDERICK STREET SUITE F–10 MORENO VALLEY, CA 92553 (866) 874–2389
SCHOOL	MORENO VALLEY USD 25634 ALESSANDRO BLVD MORENO VALLEY, CA 92553 (951) 571–7500		

LEGEND

FF	FINISHED FLOOR
FL	FLOW LINE
R/W	RIGHT–OF–WAY
BSL	BUILDING SETBACK LINE
FSL	FIRE SEPERATION LINE
— S — S —	PROPOSED SEWER LINE
— W — W —	PROPOSED WATER LINE
—(S)—	EXISTING SEWER LINE
—(W)—	EXISTING WATER LINE
	DEVELOPMENT LIMITS
	PROJECT BOUNDARY
	CENTERLINE
	EXISTING DIRT ROAD
PP	POWER POLE
	OVERHEAD POWER LINE
	FUEL MODIFICATION ZONE
	DECORATIVE WALL







VICINITY MAP

N.T.S.

GENERAL NOTES:

1. APN: 256–150–001
2. TOPOGRAPHY SOURCE: CALVADA SURVEYING, INC. COMPILED 4–2018. CONTOUR INTERVAL–1FT.
3. THE LAND DOES NOT LIE WITHIN AN ALQUIST–PRIOLO EARTHQUAKE FAULT HAZARD ZONE AS DEFINED BY THE STATE OF CALIFORNIA IN THE ALQUIST–PRIOLO EARTHQUAKE FAULT HAZARD ZONE ACT OR A RIVERSIDE COUNTY FAULT HAZARD MAP , PER GEOTECHNICAL STUDY DATED 9–22–2018 PREPARED BY LGC GEO–ENVIRONMENTAL, INC.
4. THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) MAP FOR THIS SITE IS NO. 06071C5780H. THE SITE IS DESIGNATED AS OTHER FLOOD AREA–ZONE X.
5. THE LAND IS SUBJECT TO LOW LIQUEFACTION HAZARD.
6. THIS AREA IS NOT WITHIN FAULT ZONE.
7. BOUNDARY INFORMATION DISPLAYED ON THIS PLAN HAS BEEN COMPILED FROM RECORD INFORMATION AND IS NOT TO BE USED AS A BOUNDARY SURVEY.
8. PROJECT IS NOT WITHIN A COMMUNITY SERVICES DISTRICT.
9. HOMEOWNERS ASSOCIATION TO MAINTAIN SLOPES, DRAINAGE BASINS, DRAINAGE EASEMENTS, STREETS AND FUEL MODIFICATION AREAS.
10. PROJECT WILL COMPLY WITH WATER QUALITY TREATMENT REQUIRED IN THE PROJECT SPECIFIC WATER QUALITY MANAGEMENT PLAN.
11. ALL SLOPES ARE 2:1 UNLESS OTHERWISE NOTED.
12. TO THE BEST OF OUR KNOWLEDGE, MORTON ROAD NORTHERLY OF JENNINGS COURT HAS NOT BEEN VACATED FROM THE CURVE ALIGNMENT THAT IS RECORDED ON PM27548.
13. PROJECT IS WITHIN THE HIGH FIRE AREA. ALL BUILDINGS ARE TO BE CONSTRUCTED TO BE IN ACCORDANCE WITH 2019 CBC, CHAPTER 7A, FOR HIGH FIRE.
14. REMOVE AND REPLACE WITH TRANSITIONS TO BE DETERMINED AT FINAL STREET PLANS BASED ON CORINGS AND GEOTECHNICAL RECOMMENDATION AND PER CITY ENGINEER.

SITE DATA

TOTAL GROSS AREA.......................... 32.56 ACRES
TOTAL NET AREA............................... 32.56 ACRES
PROPOSED R10 ZONE....................16.59 ACRES
PROPOSED OPEN SPACE ZONE.........15.97 ACRES

DEVELOPMENT AREA..........................16.59 ACRES
UNITS 1 – 108................................2,100 S.F./EACH (ALL 2 STORY)
PARKING SPACES REQ'D....................216 (ENCLOSED GARAGE)
PROVIDED...................216 (ENCLOSED GARAGE)

PARK AREA.......................................0.89 ACRES
BASIN A..12,131.24 S.F.
BASIN B..13,852.37 S.F
STREET A, B, & C...........................2,447.60 L.F.

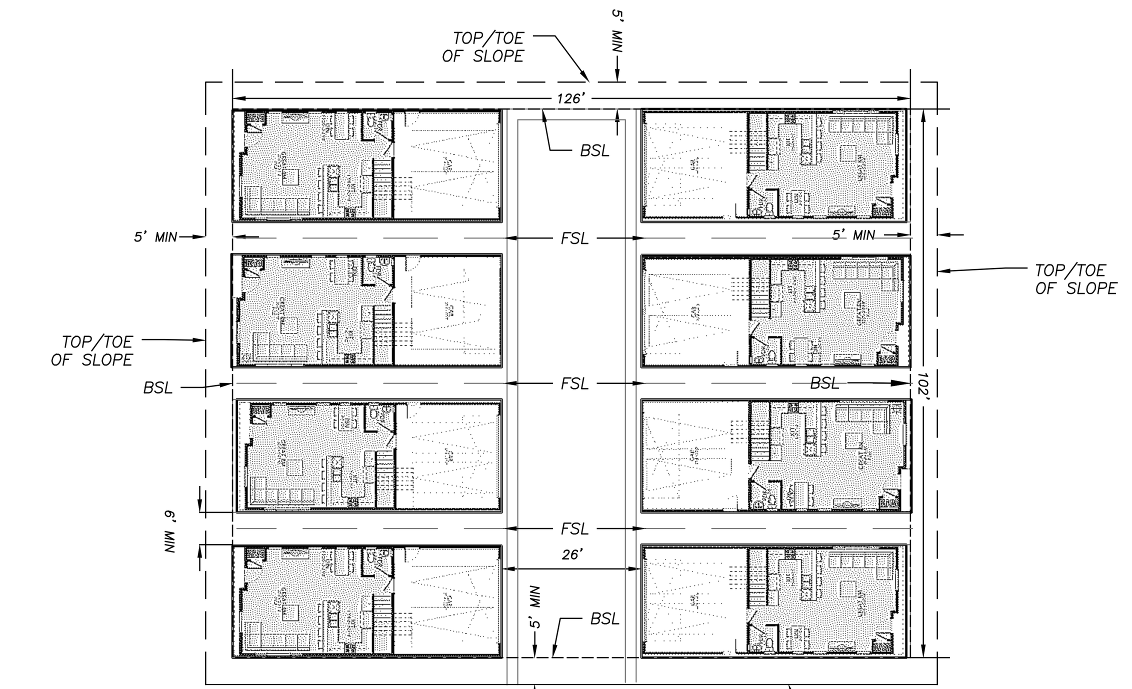
BUILDING SETBACKS
FRONT/STREET SIDE.........................5' TO RIGHT OF WAY
MIN. BUILDING SEPARATION..............6'
SIDE & REAR SETBACKS..................5' MINIMUM TO TOP/TOE OF SLOPE
(TOE OF SLOPE = H/2)
(TOP OF SLOPE = H/3)

PROJECT LAND USE

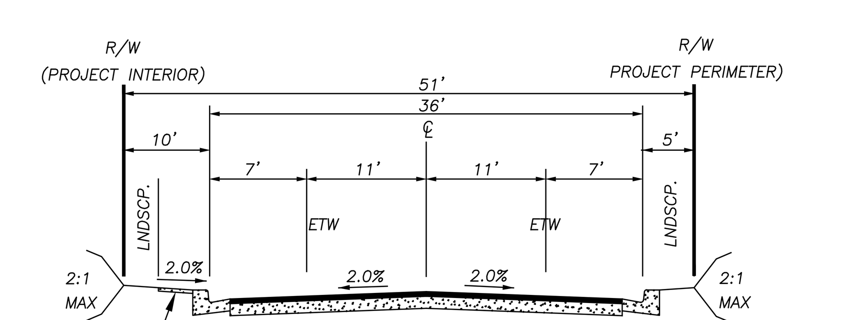
EXISTING LAND USE.................VACANT
PROPOSED LAND USE..............RESIDENTIAL
EXISTING ZONING......................R2 AND HR
PROPOSED ZONING..................R10 AND OS

SURROUNDING LAND USE

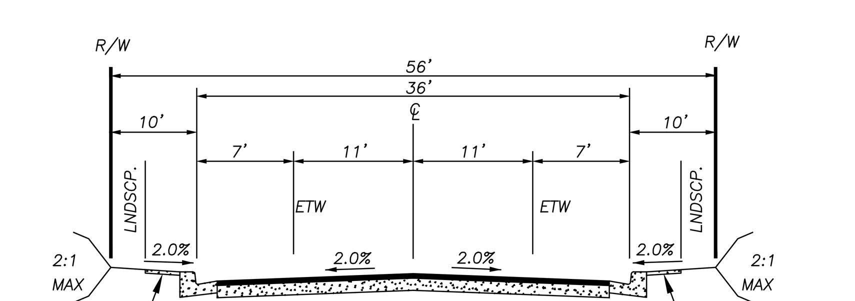
NORTH: HILLSIDE RESIDENTIAL (HR) & CONSERVATION (COUNTY OF RIVERSIDE)
SOUTH: RESIDENTIAL MAX 5DU/ACE (R5)
EAST: HILLSIDE RESIDENTIAL (HR)
WEST: GATEWAY CENTER SPECIFIC PLAN (COUNTY OF RIVERSIDE)



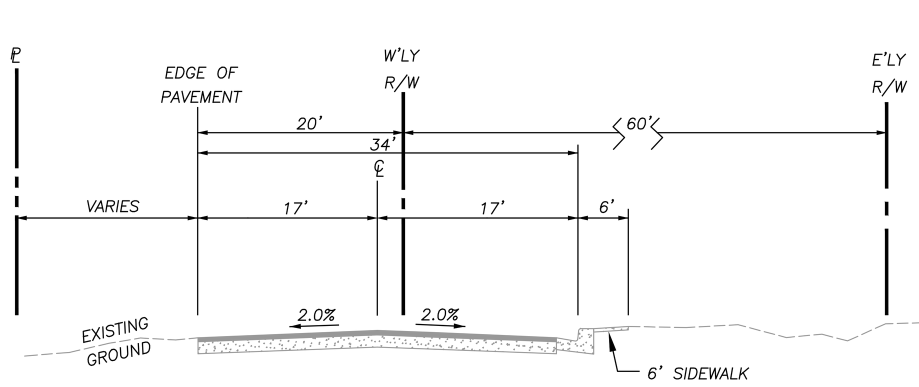
TYPICAL CLUSTER LAYOUT



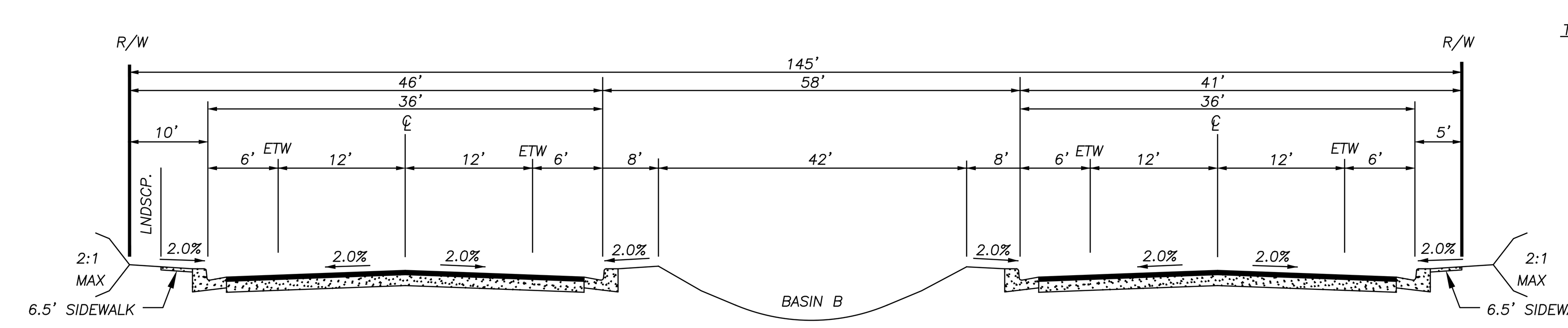
STREET A & C
CITY OF MORENO VALLEY STANDARD MVSI–107A–0 (MODIFIED)
N.T.S.



STREET B
CITY OF MORENO VALLEY STANDARD MVSI–107A–0
N.T.S.



EXISTING MORTON STREET SECTION @ SOUTH PROPERTY LINE
N.T.S.



STREET A @ PROJECT ENTRANCE (LOOKING EAST)
N.T.S.

DEVELOPER:

JASON ACKERMAN
3200 GUASTI ROAD #100
ONTARIO, CA 91761
(909) 456–1460 OFFICE
(909) 223–3302 MOBILE
jason.ackerman@ackermanlawpc.com

OWNER/APPLICANT:

SHIZAO ZHENG
1378 WEST ZHONGSHAN ROAD
NINGBO, CHINA 315–016
(626) 666–1470

ENGINEER/PLAN PREPARER

UNITED ENGINEERING GROUP CA, INC
8885 HAVEN AVENUE, SUITE 195
RANCHO CUCAMONGA, CA 91730
(909) 466–9240 x203 OFFICE
(909) 292–6677 MOBILE
bcooper@unitedeng.com

60' 30' 0' 60'
GRAPHIC SCALE: 1"=60'

SUBMITTALS:	

DESIGNED BY:
DRAWN BY:
CHECKED BY:

REVISIONS		
NO.	DESCRIPTION	DATE

REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER F. LENZ NO. 63001 EXP. 6/30/23 CIVIL STATE OF CALIFORNIA

CHRISTOPHER F. LENZ DATE
R.C.E. No. 63001

LICENSED LAND SURVEYOR DEAN C. PHILLIPS EXP. 9/30/21 NO. 6974 STATE OF CALIFORNIA

DEAN C. PHILLIPS DATE
L.S. No. 6974
dphillips@unitedeng.com

united engineering group
8885 Haven Avenue
Suite 195
Rancho Cucamonga, CA 91730
Phone: 909.466.9240
www.unitedeng.com

SITE PLAN

GATEWAY HEIGHTS
CONDITIONAL USE PERMIT
PEN21-0066

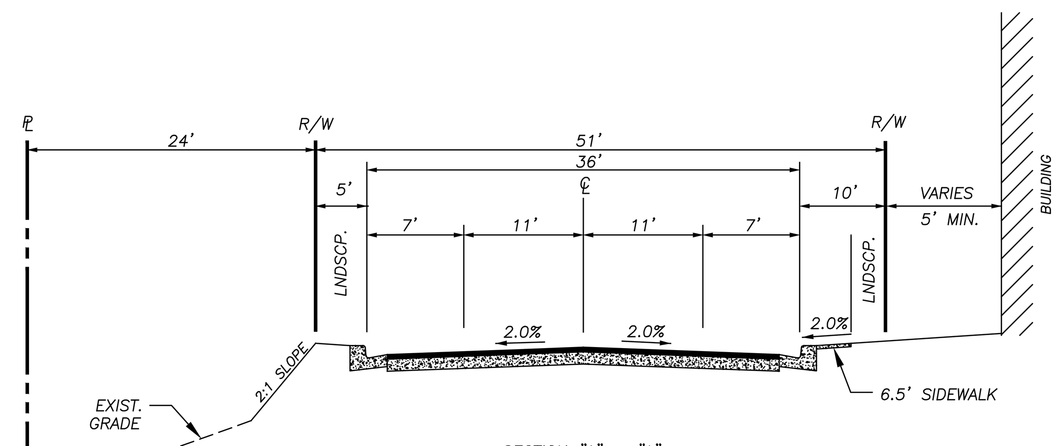
NOVEMBER 2022
SHEET 1 OF 1
PROJECT NUMBER
CA–30182

IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.

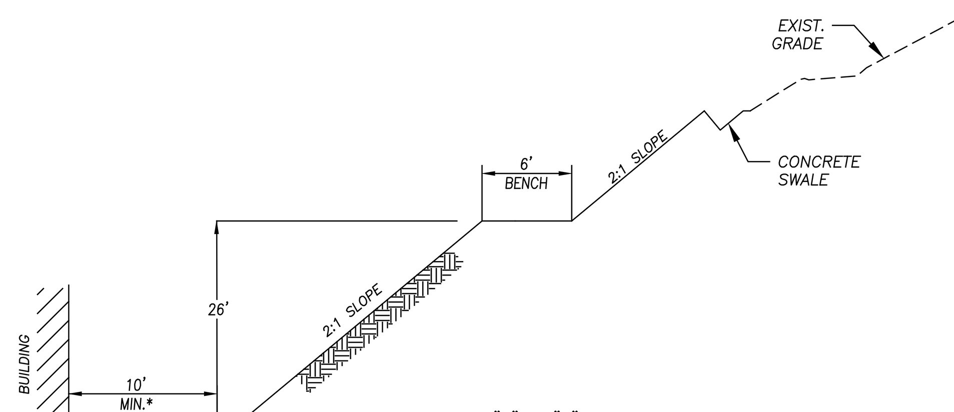
PRELIMINARY GRADING PLAN (PEN21-0066)

BEING A PORTION OF SECTION 34, TOWNSHIP 2 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN

UNITED ENGINEERING GROUP CA., INC NOVEMBER 2022

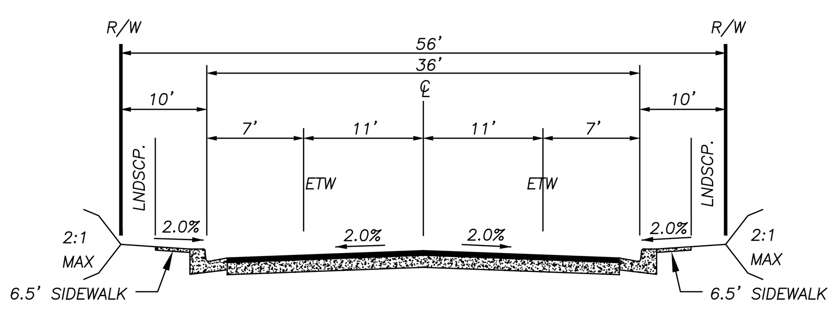


SECTION "A" – "A"
N.T.S.

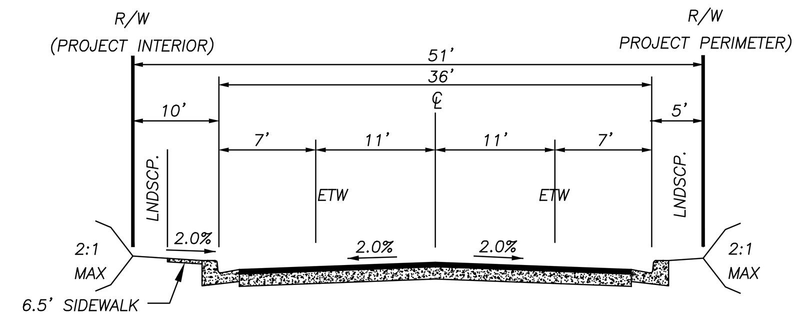


SECTION "B" – "B"
N.T.S.

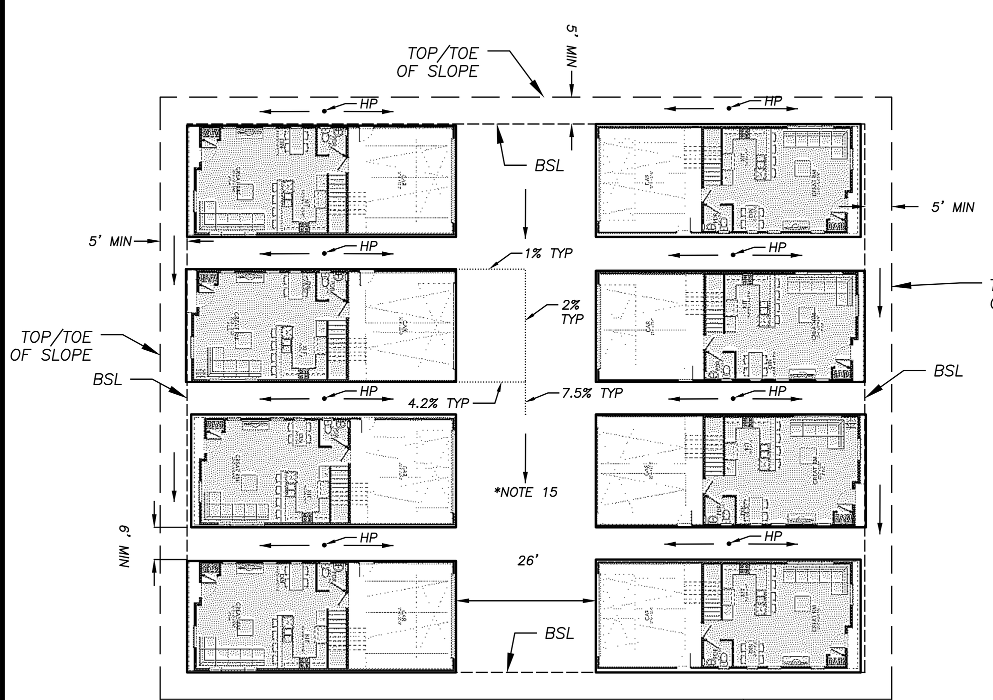
* MINIMUM SETBACKS PER CALIFORNIA BUILDING CODE 1808.7;
– TOE OF SLOPE = AT LEAST THE SMALLER OF H/2 OR 15'
– TOP OF SLOPE = AT LEAST THE SMALLER OF H/3 OR 40'



STREET B
CITY OF MORENO VALLEY STANDARD MVSI-107A-0
N.T.S.

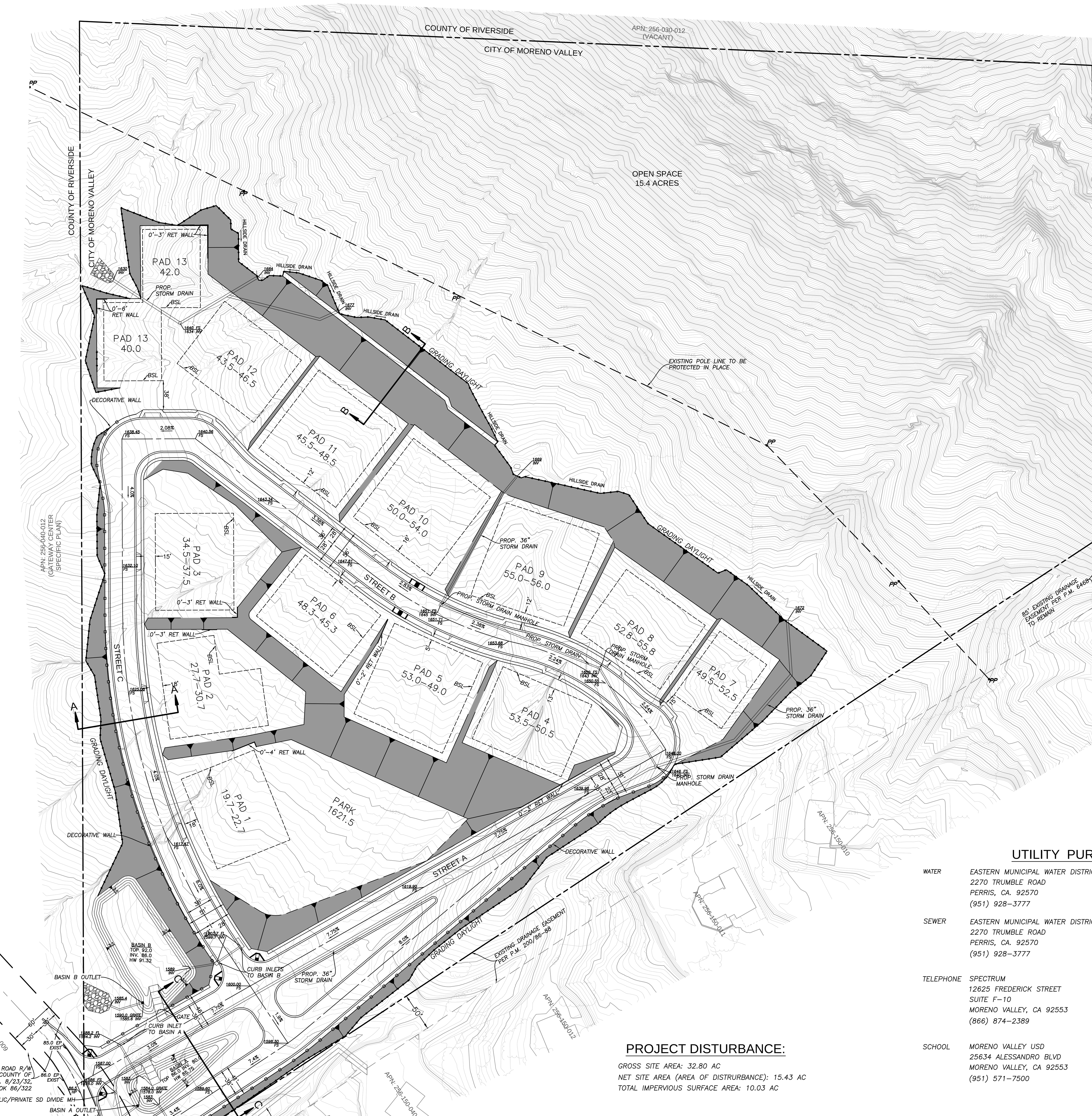


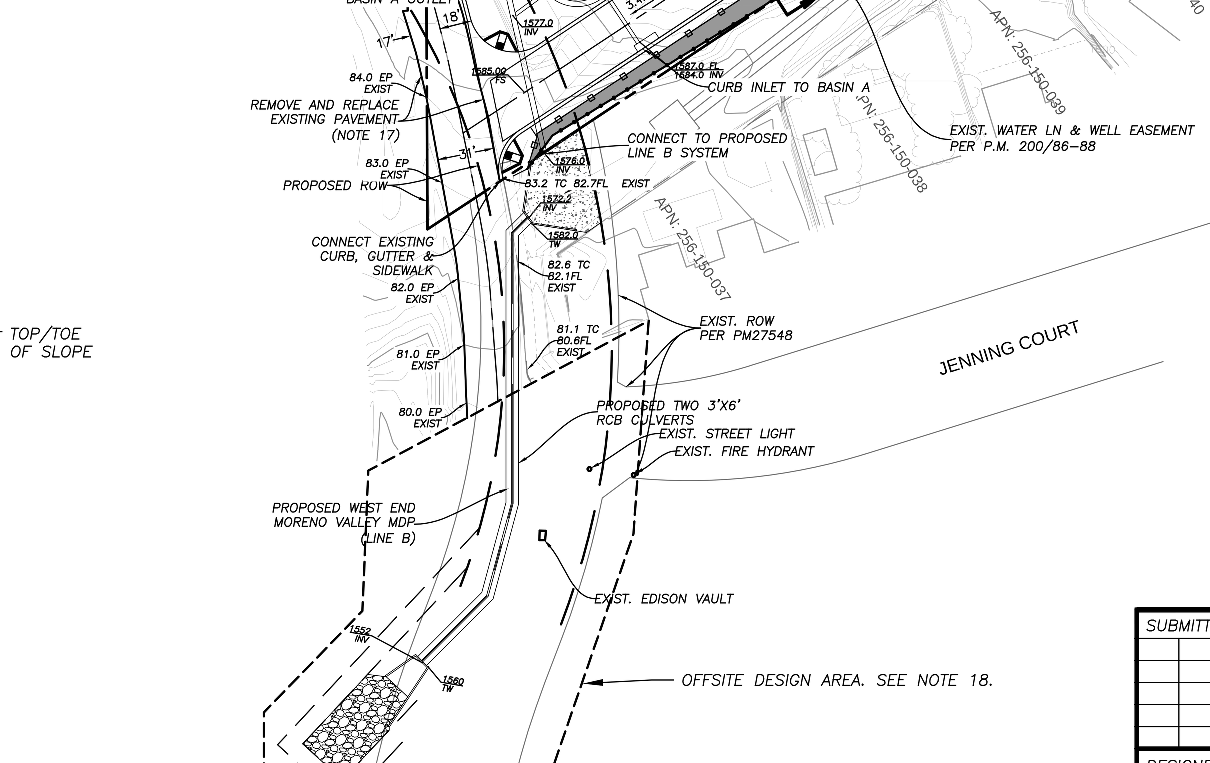
STREET A & C
CITY OF MORENO VALLEY STANDARD MVSI-107A-0
(MODIFIED)
N.T.S.

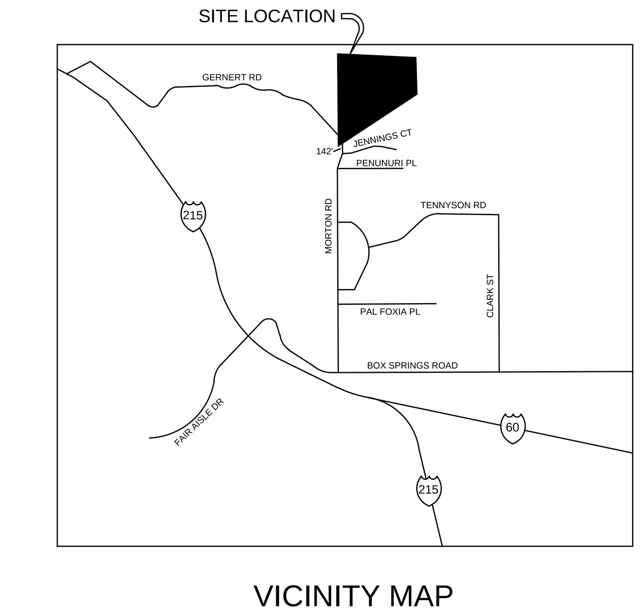


TYPICAL CLUSTER GRADING – OPTION 1

TYPICAL CLUSTER GRADING – OPTION 2







VICINITY MAP
N.T.S.

GENERAL NOTES:

1. APN: 256–150–001
2. TOPOGRAPHY SOURCE: CALVADA SURVEYING, INC. COMPILED 4–2018. CONTOUR INTERVAL–1FT.
3. THE LAND DOES NOT LIE WITHIN AN ALQUIST–PRIOLO EARTHQUAKE FAULT HAZARD ZONE AS DEFINED BY THE STATE OF CALIFORNIA IN THE ALQUIST–PRIOLO EARTHQUAKE FAULT HAZARD ZONE ACT OR A RIVERSIDE COUNTY FAULT HAZARD MAP , PER GEOTECHNICAL STUDY DATED 9–22–2018 PREPARED BY LGC GEO–ENVIRONMENTAL, INC.
4. THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) MAP FOR THIS SITE IS NO. 06071C5780H. THE SITE IS DESIGNATED AS OTHER FLOOD AREA–ZONE X.
5. THE LAND IS SUBJECT TO LOW LIQUEFACTION HAZARD.
6. THIS AREA IS NOT WITHIN FAULT ZONE.
7. BOUNDARY INFORMATION DISPLAYED ON THIS PLAN HAS BEEN COMPILED FROM RECORD INFORMATION AND IS NOT TO BE USED AS A BOUNDARY SURVEY.
8. PROJECT IS NOT WITHIN A COMMUNITY SERVICES DISTRICT.
9. HOMEOWNERS ASSOCIATION TO MAINTAIN SLOPES, DRAINAGE BASINS, DRAINAGE EASEMENTS, STREETS AND FUEL MODIFICATION AREAS.
10. PROJECT WILL COMPLY WITH WATER QUALITY TREATMENT REQUIRED IN THE PROJECT SPECIFIC WATER QUALITY MANAGEMENT PLAN.
11. ALL GRADING WORK SHOWN ON THIS PLAN SHALL BE DONE IN COMPLIANCE WITH CHAPTER 33 OF THE UNIFORM BUILDING CODE AND LOCAL ORDINANCE.
12. PRIOR TO ANY GRADING WORK, A GRADING PERMIT SHALL BE OBTAINED FROM THE CITY OF MORENO VALLEY BUILDING DEPARTMENT.
13. ALL GRADING SHALL CONFORM TO THE RECOMMENDATIONS AND REQUIREMENTS OF THE PRELIMINARY SOILS REPORT DATED SEPTEMBER 22, 2018 BY LGC GEO–ENVIRONMENTAL, INC.
14. ALL SLOPES ARE 2:1 UNLESS OTHERWISE NOTED
15. PADS 4, 5, AND 6 DEVIATE FROM THE STANDARD GRADING DETAILS TO DRAIN TOWARDS THE PARK, AWAY FROM THE STREET. AT FINAL DESIGN STORM DRAIN MAY BE REQUIRED TO COLLECT AND ROUTE FLOWS TO THE PARK AREA.
16. PROJECT IS WITHIN THE HIGH FIRE AREA. ALL BUILDINGS ARE TO BE CONSTRUCTED TO BE IN ACCORDANCE WITH 2019 CBC, CHAPTER 7A, FOR HIGH FIRE.
17. REMOVE AND REPLACE WITH TRANSITIONS TO BE DETERMINED AT FINAL STREET PLANS BASED ON CORINGS AND GEOTECHNICAL RECOMMENDATION AND PER CITY ENGINEER.
18. OFFSITE AREA OUTSIDE OF PROJECT TOPOGRAPHY LIMITS. AT FINAL DESIGN AND IN CONJUNCTION WITH LINE B DESIGN, ADDITIONAL DESIGN SURVEY WILL BE REQUIRED.
19. PROJECT STREET LIGHT DESIGN TO COMPLY WITH CITY STANDARDS. STREET LIGHT DESIGN PLANS TO BE PREPARED WITH FINAL DESIGN DRAWINGS.

LEGEND

FF	FINISHED FLOOR	FS	FINISHED SURFACE
FL	FLOW LINE	HW	HIGH WATER
R/W	RIGHT–OF–WAY	INV	INVERT
BSL	BUILDING SETBACK LINE	TC	TOP OF CURB
EP	EDGE OF PAVEMENT	HP	HIGH POINT

PROPOSED SEWER LINE
PROPOSED WATER LINE
EXISTING SEWER LINE
EXISTING WATER LINE
DEVELOPMENT LIMITS
PROJECT BOUNDARY
CENTERLINE
EXISTING DIRT ROAD
PP POWER POLE
OVERHEAD POWER LINE
FUEL MODIFICATION ZONE
2:1 SLOPE (UNLESS OTHERWISE NOTED)
DECORATIVE WALL

UTILITY PURVEYORS:

WATER	EASTERN MUNICIPAL WATER DISTRICT 2270 TRUMBLE ROAD PERRIS, CA. 92570 (951) 928–3777	ELECTRIC	SOUTHERN CALIFORNIA EDISON 2492 W. SAN BERNARDINO AVE REDLANDS, CA. 92374 (800) 655–4555
SEWER	EASTERN MUNICIPAL WATER DISTRICT 2270 TRUMBLE ROAD PERRIS, CA. 92570 (951) 928–3777	GAS	SOUTHERN CALIFORNIA GAS 4495 HOWARD AVE RIVERSIDE, CA. 92507 (213) 244–8344
TELEPHONE	SPECTRUM 12625 FREDERICK STREET SUITE F–10 MORENO VALLEY, CA 92553 (866) 874–2389	CABLE	SPECTRUM 12625 FREDERICK STREET SUITE F–10 MORENO VALLEY, CA 92553 (866) 874–2389
SCHOOL	MORENO VALLEY USD 25634 ALESSANDRO BLVD MORENO VALLEY, CA 92553 (951) 571–7500		

ESTIMATED EARTHWORK QUANTITIES (RAW)

CUT: 90,148 CU. YDS. FILL: 56,011 CU. YDS.

NOTE:
THE ABOVE QUANTITIES DO NOT REFLECT ANY SWELLING, SUBSIDENCE, OVER EXCATION, OR ANY SPECIAL CONDITIONS THAT MAY BE SPECIFIED IN THE PRELIMINARY SOILS REPORT AND ARE FOR REFERENCE AND FEE PURPOSES ONLY. SINCE THE ENGINEER CANNOT CONTROL THE EXACT METHOD OR MEANS USED BY THE CONTRACTOR DURING GRADING OPERATIONS, NOR CAN THE ENGINEER GUARANTEE THE EXACT SOIL CONDITION OVER THE ENTIRE SITE, THE ENGINEER ASSUME NO RESPONSIBILITY FOR THE FINAL EARTHWORK QUANTITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THEIR OWN EARTHWORK QUANTITIES FOR BIDDING, CONTRACT, AND CONSTRUCTION PURPOSES.

PROJECT DISTURBANCE:

GROSS SITE AREA: 32.80 AC
NET SITE AREA (AREA OF DISTRURBANCE): 15.43 AC
TOTAL IMPERVIOUS SURFACE AREA: 10.03 AC

DEVELOPER:

JASON ACKERMAN
3200 GUASTI ROAD #100
ONTARIO, CA 91761
(909) 456–1460 OFFICE
(909) 223–3302 MOBILE
jason.ackerman@ackermanlawpc.com

OWNER/APPLICANT:

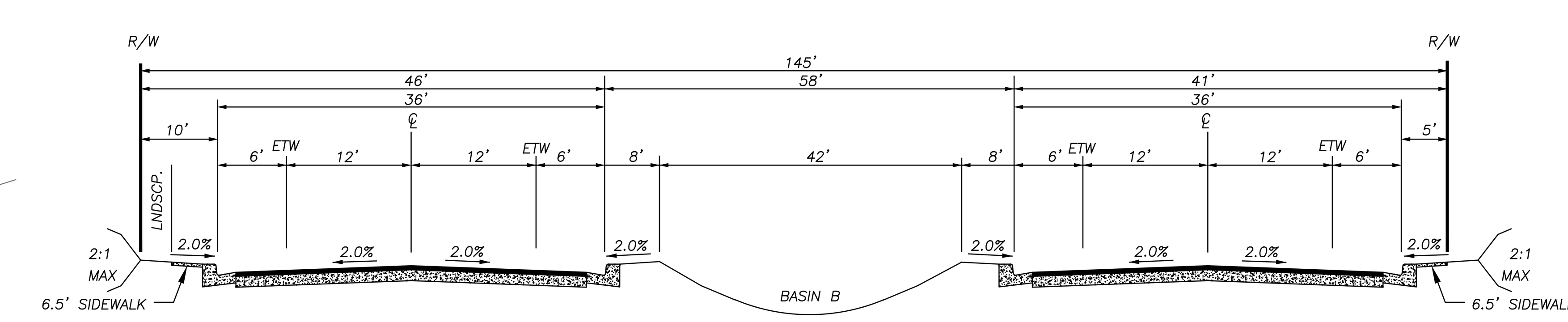
SHIZAO ZHENG
1378 WEST ZHONGSHAN ROAD
NINGBO, CHINA 315–016
(626) 666–1470

ENGINEER/PLAN PREPARER

UNITED ENGINEERING GROUP CA, INC
8885 HAVEN AVENUE, SUITE 195
RANCHO CUCAMONGA, CA 91730
(909) 466–9240 x203 OFFICE
(909) 292–6677 MOBILE
bcooper@unitedeng.com

GEOTECHNICAL ENGINEER

LGC GEO-ENVIRONMENTAL, INC.
27570 COMMERCE CENTER DRIVE
SUITE 128
TEMECULA, CA 92590
(951) 297–2450



SECTION C–C
PROJECT ENTRANCE
(LOOKING EAST)
N.T.S.

GRAPHIC SCALE: 1"=60'

SUBMITTALS:	REVISIONS		
	NO.	DESCRIPTION	DATE
DESIGNED BY:			
DRAWN BY:			
CHECKED BY:			

REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER F. LENZ NO. 63001 EXP. 6/30/23 CIVIL STATE OF CALIFORNIA

CHRISTOPHER F. LENZ DATE
R.C.E. No. 63001

united engineering group
8885 Haven Avenue
Suite 195
Rancho Cucamonga,
CA 91730
Phone: 909.466.9240
www.unitedeng.com

PRELIMINARY GRADING PLAN

GATEWAY HEIGHTS
CONDITIONAL USE PERMIT
PEN21-0066

NOVEMBER 2022
SHEET 1 OF 1
PROJECT NUMBER
CA–30182

6.0 ARCHITECTURE

The architectural guidelines in this manual have been developed to ensure architectural continuity and compatibility throughout the project; to promote a distinctive architectural theme; and to avoid a mundane repetition of too similar architectural design elements. These guidelines will provide a set of basic concepts for development but are not meant to limit future creativity in design.

These styles and concepts should be incorporated to provide a variety of quality housing types.

6.1 General Guidelines

The following general guidelines should be considered in the designing and layout of the project:

- A common set of design style and design elements should be included throughout the project.
- Long unarticulated building facades should be avoided
- Natural building materials should be varied throughout the project, avoiding long stretches of similar street scene
- Offset roof planes, columns, vertical and horizontal articulation or other projecting architectural features shall occur on those facades of the residence that are visible from the street or open space
- The visual impact of garages shall be reduced to the maximum extent practicable

6.2 Architectural styles

Two architectural styles have been set forth as examples in this document to begin to identify and illustrate the intent and objective of these design guidelines in terms of architectural style and variety. Santa Barbara and Modern Farmhouse architectural styles are discussed in the following pages and depicted in **Figures 1 & 2** to establish the types and level of architectural detail which will assist in achieving the project design objectives. Discussions of each of these styles as well as illustrations of typical elevations and features are located on the following pages.

6.2.1 Santa Barbara

Santa Barbara style is an architectural and interior design style derived from Mediterranean and Spanish-revival architecture, often characterized by deep red tones and polished wood textures that contrast with stark white walls.

Santa Barbara style architecture and interior design are characterized by white stucco walls, exposed beam ceilings, red-tile roofs and floors, arcades, and courtyards.

Figure 1 – Santa Barbara

Features typical of the Santa Barbara style include:

- White stucco walls
- Exposed beam ceilings
- Tile roofs
- Shutters
- Decorative Vents

6.2.2 Modern Farmhouse

The Modern farmhouse style combines practical elements (simple floor plan, white walls) with rustic materials (wood floors, hand-hewn beams, and wrought-iron hardware). And you'll see this style throughout the U.S., with regional variations. For example, you might spot a Dutch door or two in a New England farmhouse, or wraparound porches on homes in the Deep South

Features typical of the Modern Farmhouse style include:

- Reclaimed wood
- Barnboard details
- Wrought iron accents
- Wide plank floors
- Rafter Tails
- Stone Veneers

Figure 2 – Modern Farmhouse

7.0 UTILITIES

Currently the site is undeveloped and the site does contain some existing overhead electrical lines as well as water and sewer lines located in Morton Rd. All existing and new onsite utilities that will serve the subject site will be placed underground except as approved by Public Works. Operation and maintenance of all utilities and facilities will be managed by the appropriate operating entity upon approval and completion of construction. Sewer facilities, water facilities, streetlights, and fire hydrants will be provided according to the appropriate agency's guidelines, per the recommendations of Public Works and City of Moreno Valley Fire Departments and other governmental regulations applicable to the construction of various facilities.

Utility Providers

Services	**Provider**	**Location**
Electrical	Southern California Edison	At site
Telephone	Spectrum	TBD
Cable	Spectrum	TBD
Natural Gas	Southern California Gas Company	TBD
Water	Eastern Municipal Water District	At site
Sanitary Sewer	Eastern Municipal Water District	At site
Fire & Emergency	City of Moreno Valley Fire Dept	TBD

8.0 COVENANTS, CONDITIONS AND RESTRICTIONS (CC&R'S)

Table 8-1 below details the maintenance responsibilities for the various utilities and common areas within Gateway Heights. A majority of the common areas will be maintained by a Home Owners Association (HOA). The HOA will be established in conjunction with development of the project. CC&R's for Gateway Heights that include language for the establishment of a HOA and provisions for creation of liens in conjunction with the HOA, for maintenance funding, will be provided prior to recordation of the final map.

MAINTENANCE RESPONSIBILITY
Table 8-1

	Home Owners Association	City of Moreno Valley	Riverside County Flood Control	Eastern Municipal Water District
Onsite Storm Drain	X			
Basin A	X			
Basin B	X			
Line B (across Morton Rd)			X	
Headwalls			X	
Water	X			
Sewer				X
Streets	X			
Landscaping	X			
Entry Monuments	X			
Paseos & Parkways	X			
Park	X			

Appendix K

Traffic Impact Analysis

GATEWAY HIGHLANDS RESIDENTIAL

TRAFFIC IMPACT ANALYSIS

FEBRUARY 12, 2021

PREPARED FOR:

Ackerman Law PC
3200 E. Guasti Road, Suite 100
Ontario, California 91761

PREPARED BY:

translutions
the transportation solutions company...

translutions, inc.

17632 Irvine Boulevard, Suite 200
Tustin, California 92780
(949) 656-3131

TABLE OF CONTENTS

FIGURES AND TABLES

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1.0 INTRODUCTION

This report presents the methodology, findings and conclusions of the traffic impact analysis (TIA) prepared for the proposed Gateway Highlands Residential development project. The proposed project site is located on the eastside of Morton Road and north of Jennings Court, in the City of Moreno Valley (City). The project proposes the construction of 108 detached condominiums.

1.1 Purpose of the Traffic Study and Study Objectives

This report is intended to satisfy the requirements for a TIA established by the City of Moreno Valley *Transportation Impact Analysis Preparation Guide for Vehicles Miles Traveled and Level of Service Assessment*, (June 2020), as well as the requirements for the disclosure of potential impacts and mitigation measures per the California Environmental Quality Act (CEQA). The study area, analysis scenarios, and analysis methodologies are based on discussion with City staff and included in the approved Scoping Agreement. Appendix A includes the approved Scoping Agreement.

1.2 Project Location & Study Area

The project is located on the eastside of Morton Road and north of Jennings Court. The project proposes includes 108 detached condominiums. Figure 1 shows the regional location of the project. The project opening year is 2023.

Consistent with City Guidelines, this report analyzes intersections of "Collector" or higher classification, at which the project will add 50 or more peak hour trips. The following six intersections were evaluated for traffic operations:

Study Intersections

1. Sycamore Canyon Road and Fair Isle Drive (Riverside);
2. I-215 Northbound Ramps and Fair Isle Drive-Box Springs Road (Moreno Valley);
3. Morton Road and Project Driveway (Moreno Valley);
4. Morton Road and Woodsworth North (Moreno Valley);
5. Morton Road and Woodsworth South (Moreno Valley); and
6. Morton Road and Box Springs Road (Moreno Valley).

The study area intersections are shown in Figure 2.

This report analyzes weekday a.m. and p.m. peak hour conditions. The a.m. peak hour is defined as the one hour of highest traffic volumes occurring between 7:00 a.m. and 9:00 a.m. The p.m. peak hour is defined as the one hour of highest traffic volumes occurring between 4:00 and 6:00 p.m.

1.3 Analysis Scenarios

Based on the City of Moreno Valley Guidelines, this report analyzes traffic conditions for the following scenarios:

1. Existing Conditions;
2. Project Completion Without Project Conditions; and
3. Project Completion With Project Conditions.

Consistent with the CMP, this report analyzes weekday daily, a.m., and p.m. peak hour conditions. The a.m. peak hour is defined as the one hour of highest traffic volumes occurring between 7:00 a.m. and 9:00 a.m. The p.m. peak hour is defined as the one hour of highest traffic volumes occurring between 4:00 and 6:00 p.m.

2.0 PROJECT DESCRIPTION

The project proposes the construction of 108 detached condos. Access to the project will be provided by one full-access driveway on Morton Road. The site plan for the proposed project is illustrated in Figure 3.

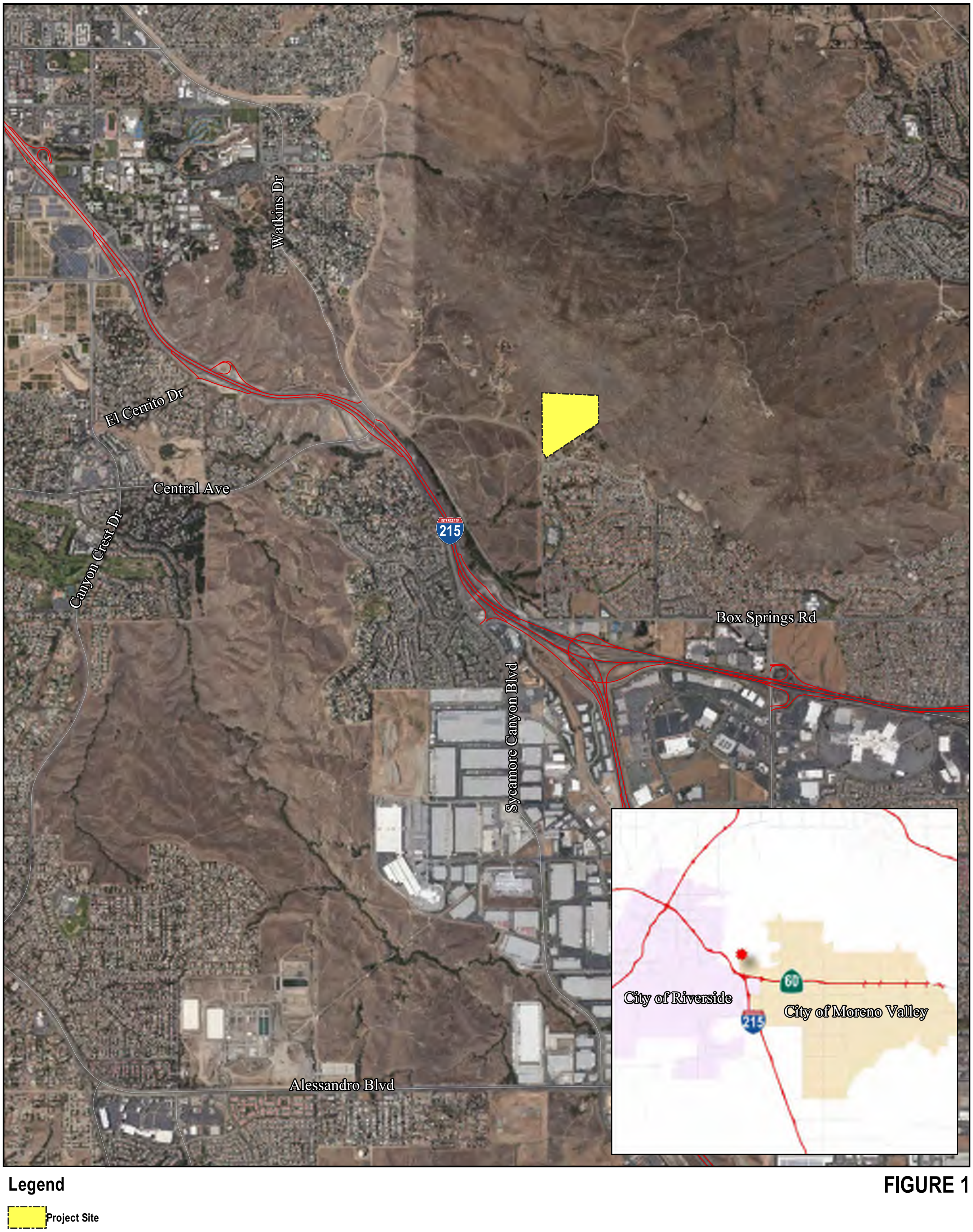

FIGURE 1

Gateway Highlands
Regional Project Location

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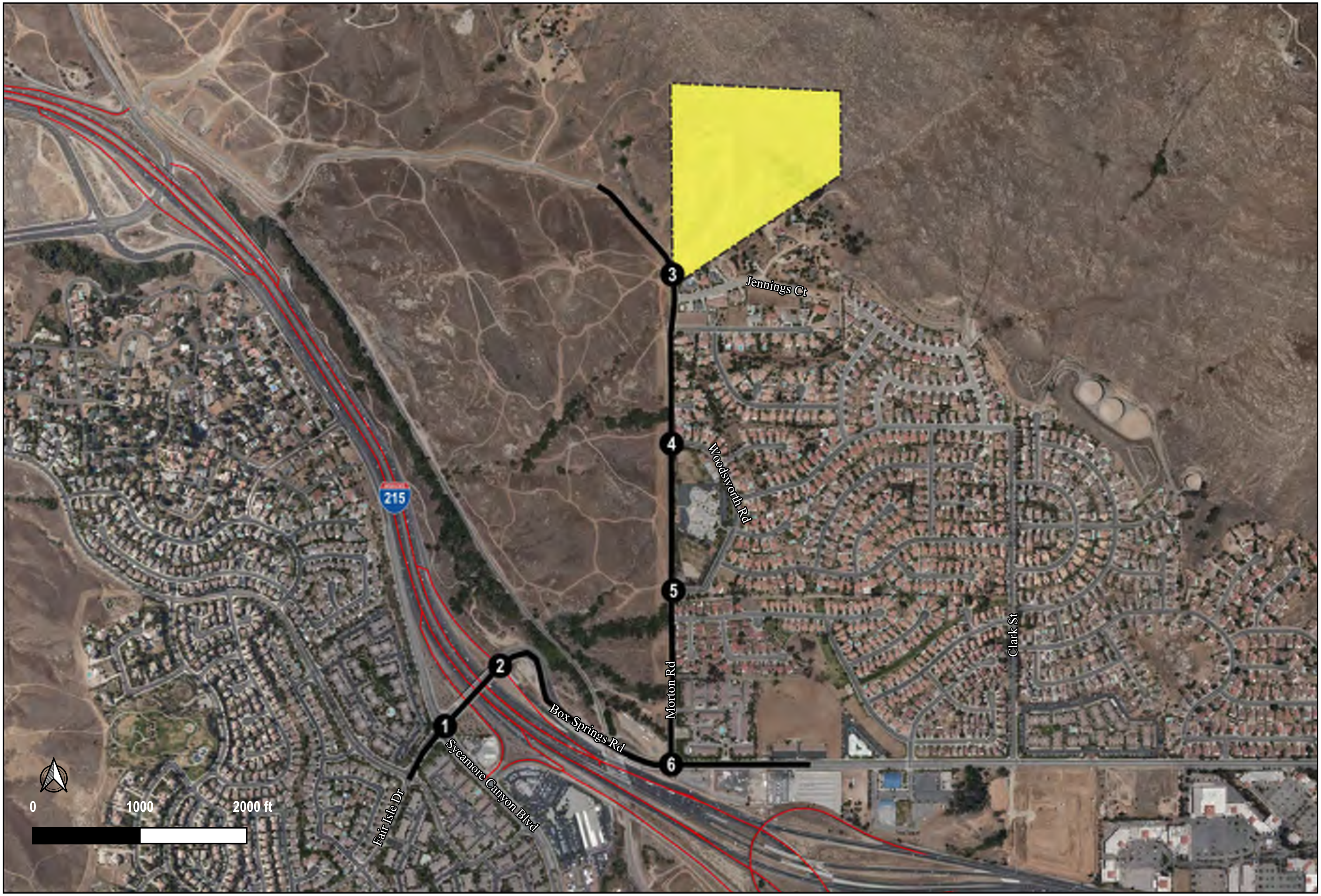

Legend

Project Site

Study Area Intersections

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FIGURE 2
Gateway Highlands
Study Area Intersections

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FIGURE 3

Gateway Highlands
Site Plan

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2.1 Project Trip Generation

The project includes 108 detached condominiums, however, to provide a conservative estimate of the trips generated by the project, the trip generation is based on rates from the Institute of Transportation Engineers' (ITE) *Trip Generation* (10th Edition) for Land Use 210 - "Single-Family Detached Housing". Table A shows the project trip generation for the a.m. peak hour, p.m. peak hour, and weekday. As shown in Table A, the project is forecast to generate 80 trips in the a.m. peak hour, 107 trips in the p.m. peak hour, and 1,020 daily trips.

2.2 Project Trip Distribution & Assignment

Trip distribution patterns for the proposed project were developed based on discussion with City staff and the location of local and regional destinations. It should be noted that Morton Road to the north of project has been closed off to through traffic since the opening of the Moreno Valley/March Field Station Metrolink, therefore, the project trips were routed to the south on Morton Road and distributed to Box Springs Road. Figure 4 illustrates the trip distribution for project trips at the study area intersections. The project trip generation was applied to the trip distribution patterns for the project to develop trip assignments for new project trips. Figure 5 illustrates the project trip assignment at the study intersections.

3.0 LOS DEFINITIONS, PROCEDURES, AND THRESHOLDS

Level of service (LOS) is a measure of the quality of operational conditions within a traffic stream, and is generally expressed in terms of such measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Levels range from A to F, with LOS A representing excellent (free-flow) conditions and LOS F representing extreme congestion. Consistent with City guidelines, the Highway Capacity Manual (HCM) procedures have been used to evaluate levels of service. This section discusses the LOS definitions, procedures, and thresholds used in this report.

3.1 Intersection Levels of Service

The analysis of traffic operations at intersections was conducted according to the Highway Capacity Manual 6th Edition (HCM) delay methodologies using Synchro 11 software, which is described in the Highway Capacity Manual (Transportation Research Board, Washington, D.C., November 2016). Under the HCM methodology, LOS for signalized intersections is based on the average delay experienced by vehicles traveling through an intersection, whereas for un-signalized intersections, the LOS is based on the worst approach where the minor leg has a shared lane and on the worst movement where the minor leg has dedicated turn lanes. Table B presents a brief description of each level of service letter grade, as well as the range of delays associated with each grade.

3.2 Levels of Service Standards

The City of Moreno Valley General Plan has established minimum Level of Service standards for its roadway network. LOS D is applicable to intersections that are adjacent to freeway on/off ramps and adjacent to employment generating lands uses. LOS C is applicable to all other intersections. For boundary intersections, LOS D is assumed to be acceptable. Further, the City of Moreno Valley identifies the following signalized intersection operating requirements:

- Any signalized study intersection operating at acceptable LOS without project traffic in which the addition of project traffic causes the intersection to degrade to unacceptable LOS shall identify improvements to provide acceptable LOS.
- Any signalized study intersection that is operating at unacceptable LOS without project traffic where the project increases delay by 5.0 or more seconds shall identify improvements to offset the increase in delay.

Table A - Project Trip Generation

Land Use	Units	A.M. Peak Hour In	A.M. Peak Hour Out	A.M. Peak Hour Total	P.M. Peak Hour In	P.M. Peak Hour Out	P.M. Peak Hour Total	Daily
Future Use								
Single-Family Residential								
Trip Generation Rates [1]		0.19	0.56	0.74	0.62	0.37	0.99	9.44
Trip Generation	108 DU	20	60	80	67	40	107	1,020
Total Trip Generation		**20**	**60**	**80**	**67**	**40**	**107**	**1,020**

Notes: DU = Dwelling Unit

[1] Trip generation based on rates for Land Use 210 - "Single-Family Detached Housing" from Institute of Transportation Engineers' (ITE) *Trip Generation* (10th Edition).

Project Trips\Trip Gen ITE

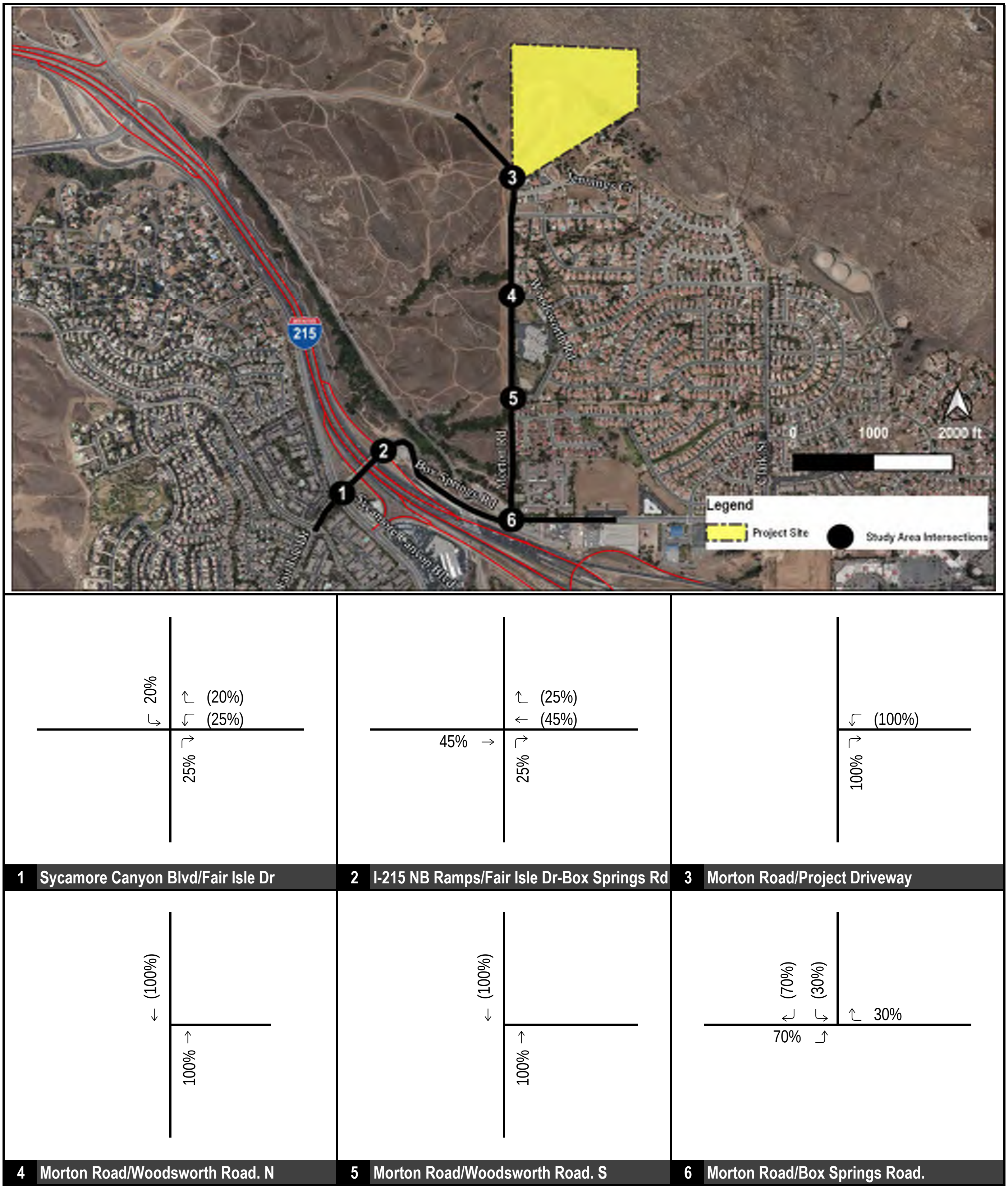

FIGURE 4

XXX%(YYY%) Inbound%(Outbound%) Percent

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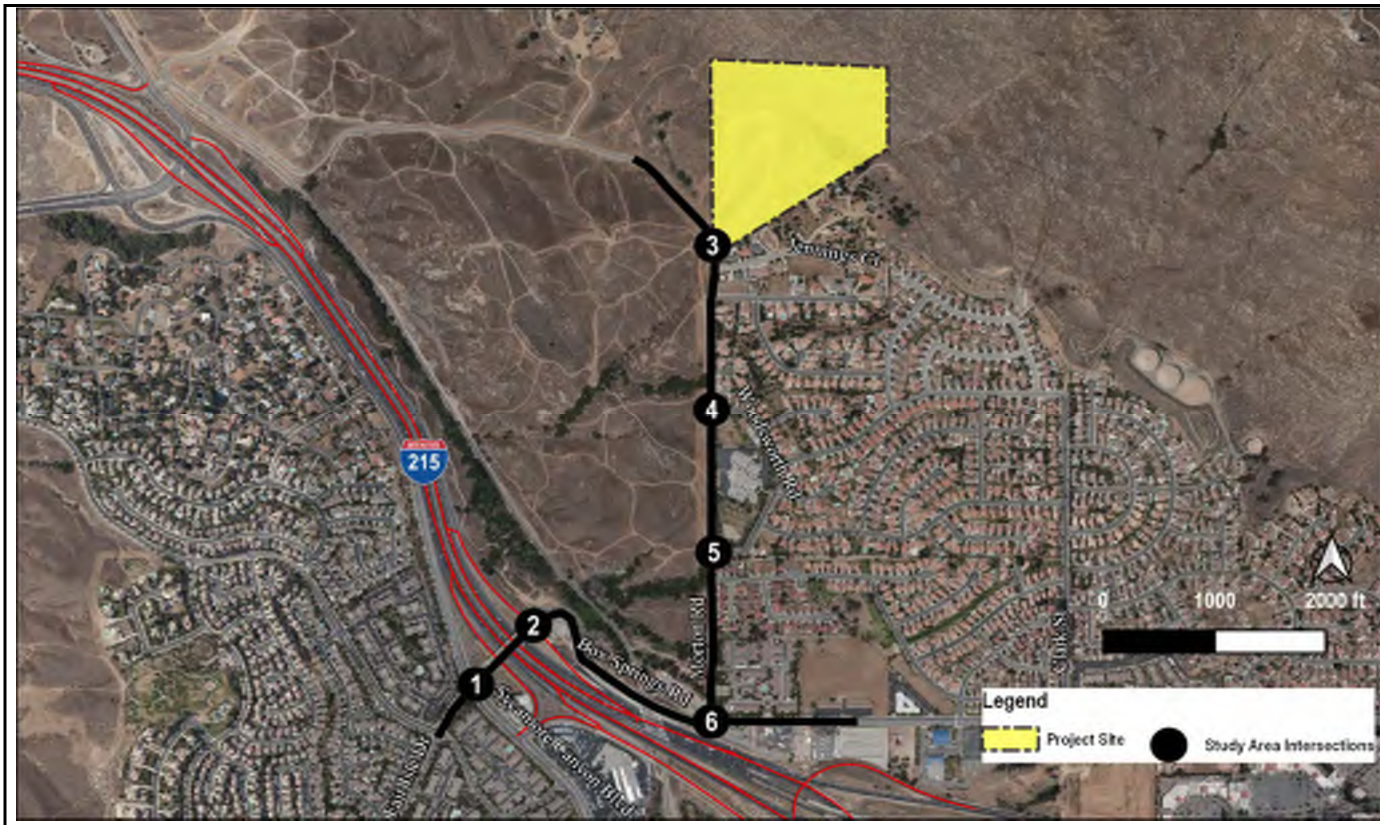
Gateway Highlands
Project Trip Distribution

D:\Projects\ALP - Moreno Valley Gateway Highlands\Analysis\Z Auto Dist 2/12/2021



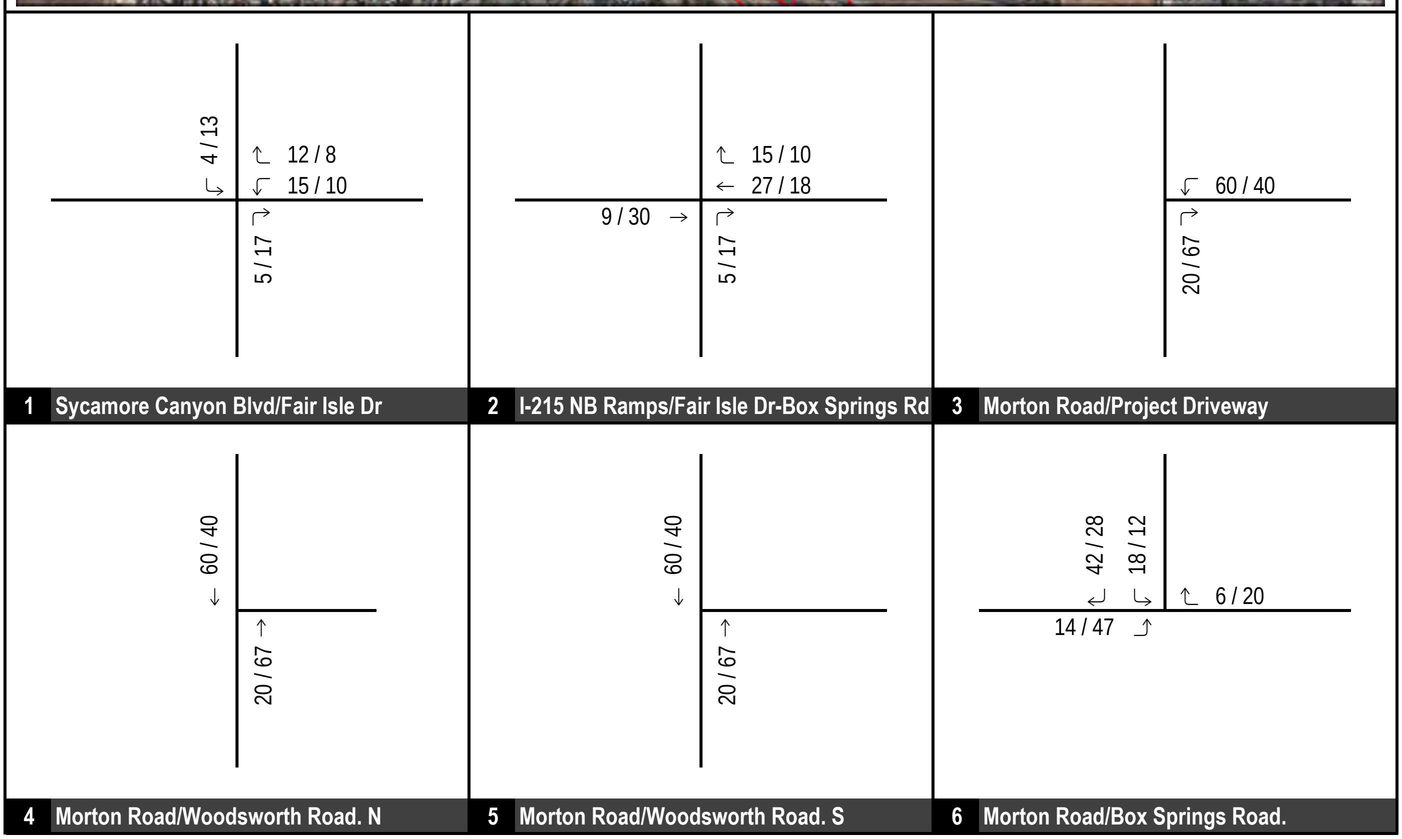


FIGURE 5

XXX / YYY AM / PM Peak Hour Trips

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Gateway Highlands
Project Trip Assignment

Table B: Level of Service Criteria

LOS	Description of Drivers' Perception and Traffic Operation	HCM (Delay in Seconds) Unsignalized	HCM (Delay in Seconds) Signalized
A	This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.	$\leq$ 10	$\leq$ 10
B	This level is assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.	> 10 and $\leq$ 15	> 10 and $\leq$ 20
C	This level is typically assigned when progression is favorable or the cycle length is moderate. Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.	> 15 and $\leq$ 25	> 20 and $\leq$ 35
D	This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.	> 25 and $\leq$ 35	> 35 and $\leq$ 55
E	This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.	> 35 and $\leq$ 50	> 55 and $\leq$ 80
F	This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.	> 50	> 80

Source: Highway Capacity Manual 6th Edition

For unsignalized intersections, the following criteria shall be used when identifying operational deficiencies. An operation improvement would be required if the study determines that either section a) or both sections b) and c) occur:

a) The addition of project traffic causes the intersection to degrade from an acceptable LOS to unacceptable LOS.

OR

b) The project adds 5.0 seconds or more of delay to an intersection that is already projected to operate without project at an acceptable LOS.

AND

c) The intersection meets the peak hour traffic signal warrant after the addition of project traffic.

The City of Riverside General Plan considers LOS D to be maintained at intersections of Collector or higher classification. Further, for projects that propose uses above that contained in the General Plan, operational improvements are required when the addition of project traffic causes either peak hour LOS to degrade from acceptable LOS (A through D) to unacceptable LOS (LOS E or F) or the peak hour delay to increase as follows:

- LOS A/B: By 10 seconds;
- LOS C: By 8 seconds;
- LOS D: By 5 seconds;
- LOS E: By 2 seconds;
- LOS F: By 1 second.

4.0 VOLUME DEVELOPMENT METHODOLOGY

Forecast traffic volumes at study intersections were developed consistent with the City's guidelines. This section discusses the volume development methodology used to forecast future traffic volumes.

4.1 Existing Without Project Traffic Volumes

Existing traffic volumes are based on peak hour intersection turn movement counts collected by Counts Unlimited Inc. in January 2021. Due to the Covid-19 pandemic, the peak hour traffic volumes at the study area intersections collected in January 2021 may be less than counts collected before the pandemic. A comparison of historic counts within the study area to current counts was conducted to determine which were higher. Counts collected in 2019 at the intersection of Day Street/Box Springs Road were found to be higher than the counts collected in 2021 at the same location. Therefore, the counts collected in 2019 were used to balance the counts collected in 2021. Count sheets are contained in Appendix B. Detailed volume development worksheets are included in Appendix C.

4.2 Project Completion Without Project Traffic Volumes

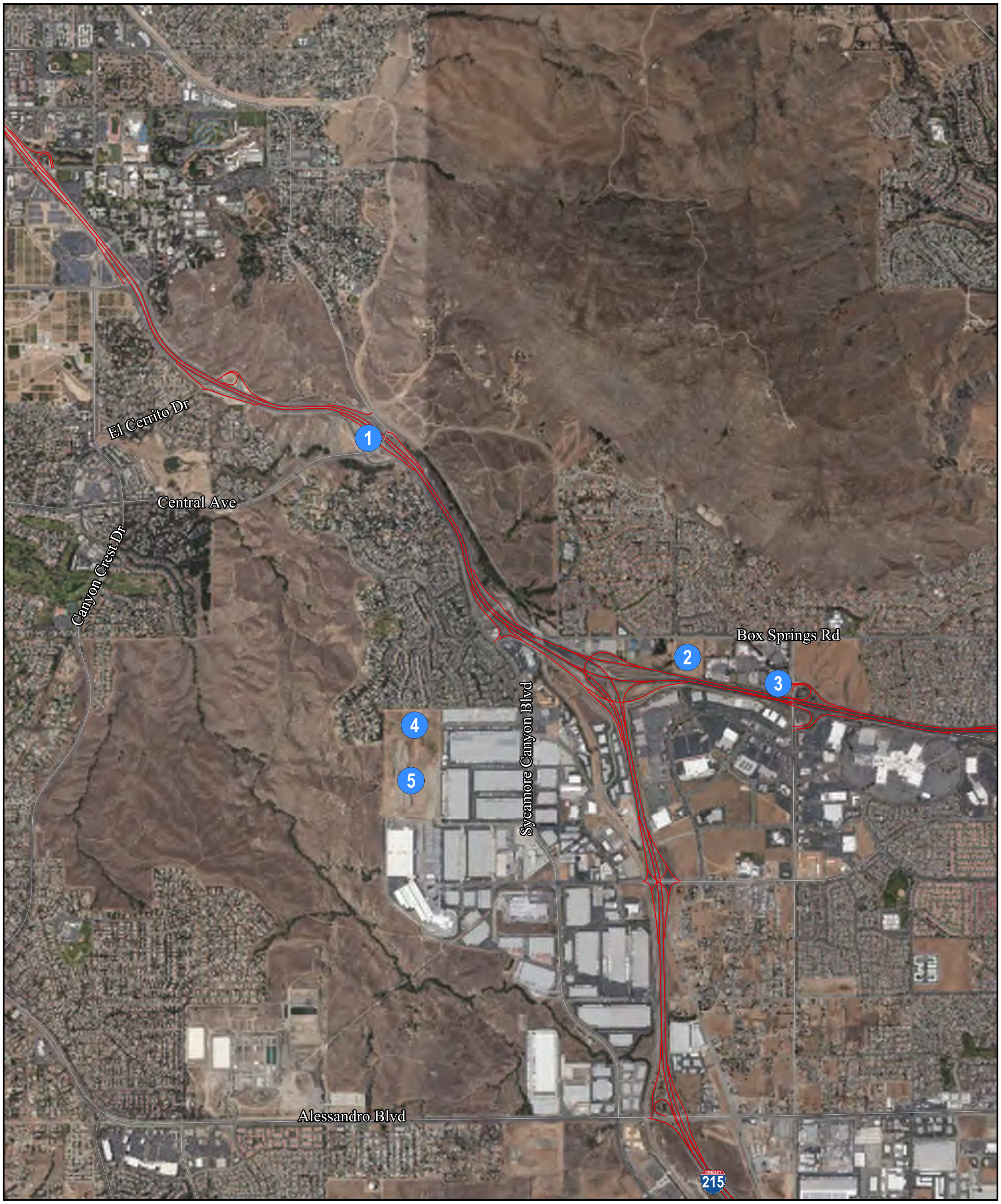
Project Completion without project peak hour traffic volumes were developed by applying an annual growth rate of 2 percent per year for 2 years to the existing volumes and adding cumulative project trips. The cumulative projects included in the analysis are illustrated in Figure 6. Table C lists the cumulative projects included in the analysis. The cumulative projects are anticipated to generate 504 a.m. peak hour PCE trips, 632 p.m. peak hour PCE trips, and 8,356 daily PCE trips.

4.3 With Project Traffic Volumes

Traffic volumes for existing, project completion with project conditions were developed by adding the trip assignment to the corresponding without project peak hour traffic volumes.

5.0 EXISTING CONDITIONS

This section discusses the existing transportation conditions in the study area.



Legend

Project Site

Cumulative Projects

FIGURE 6

Gateway Highlands
Cumulative Project Locations

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Table C: Cumulative Projects Trip Generation

Project Number	Land Use	Quantity	Units	A.M. Peak Hour In	A.M. Peak Hour Out	A.M. Peak Hour Total	P.M. Peak Hour In	P.M. Peak Hour Out	P.M. Peak Hour Total	Daily
1	Multifamily Residential [1]									
	Trip Generation Rates	237	DU	0.09	0.27	0.36	0.27	0.17	0.44	5.44
	Trip Generation			22	63	85	64	41	104	1,289
2	Multifamily Residential [1]									
	Trip Generation Rates	266	DU	0.09	0.27	0.36	0.27	0.17	0.44	5.44
	Trip Generation			25	71	96	71	46	117	1,447
3	Supermarket [2]									
	Trip Generation Rates	23	TSF	2.29	1.53	3.82	4.71	4.53	9.24	106.78
	Trip Generation			53	35	88	108	104	213	2,456
	Pass-By			0	0	0	(38)	(39)	(77)	(77)
	Net Trips			53	35	88	70	66	136	2,379
4	Warehouse [3]									
	Passenger Cars	361	TSF	30	9	39	12	31	43	390
	Truck PCEs			50	13	63	19	49	68	607
	Total PCE Trips			80	22	102	31	80	111	997
5	Warehouse [4]									
	Passenger Cars	1,013	TSF	39	12	51	18	45	63	878
	Truck PCEs			64	18	82	30	71	101	1,365
	Total PCE Trips			103	30	133	48	116	164	2,243
Total Trip Generation				**283**	**221**	**504**	**284**	**348**	**632**	**8,356**

[1] Rates based on Land Use 220 - "Multifamily (Mid-Rise)" from Institute of Transportation Engineers (ITE) Trip Generation (10th Ed.).

[2] Rates based on Land Use 850 - "Supermarket" from Institute of Transportation Engineers (ITE) Trip Generation (10th Ed.).

[3] Rates based on Land Use 150 "Warehousing" from Institute of Transportation Engineers (ITE) Trip Generation (10th Ed.).

[4] Rates based on Land Use 154 - "High-Cube Transload and Short-Term Storage Warehouse" from Institute of Transportation Engineers (ITE) Trip Generation (10th Ed.).

5.1 Existing Roadway Conditions

Regional access to the project site is provided by SR-60 to the north. Local access to the project will be provided by the following roadways:

- **Box Springs Road** is oriented in the east-west direction and is a 4-lane roadway within the project study area. The City's circulation plan designates Box Springs Road as a "Minor Arterial".
- **Sycamore Canyon Road** is oriented in the north-south direction and is a 4-lane roadway within the project study area. The City of Riverside's circulation plan designates Sycamore Canyon Road as a 4-lane "110-Foot Arterial" south of Fair Isle Drive and as a 4-lane "88-Foor Arterial" north of Fair Isle Drive.
- **Fair Isle Drive** is oriented in the east-west direction and is a 4-lane roadway within the project study area. The City of Riverside's circulation element designates Fair Isle Drive as a "66-Foot Collector".

5.2 Existing Transit Service

Public transportation services within the City of Moreno Valley includes bus transit service provided by the Riverside Transit Agency (RTA) and commuter rail transportation (Metrolink). These services are further described below.

Bus Service. Public transportation in the City of Moreno Valley is provided by RTA, which is the regional transit operator in Riverside County.

- **Route 16** provides service on Box Springs Road. Route 16 has major stops at the Moreno Valley Mall, UCE at Bannockburn, and University Avenue at University Village. Route 16 operates at 30-minute headways on weekdays and weekends.

Commuter Rail Service. Commuter rail service is provided by Metrolink, which is operated by the Southern California Regional Rail Authority (SCRRA). Metrolink train service is available between the counties of Ventura, Los Angeles, San Bernardino, Orange, Riverside, and north San Diego. The area is served by the Moreno Valley/March Field Metrolink Station. The Moreno Valley/March Field Station is the nearest Metrolink station to the project site and is approximately 3 miles south of the project site.

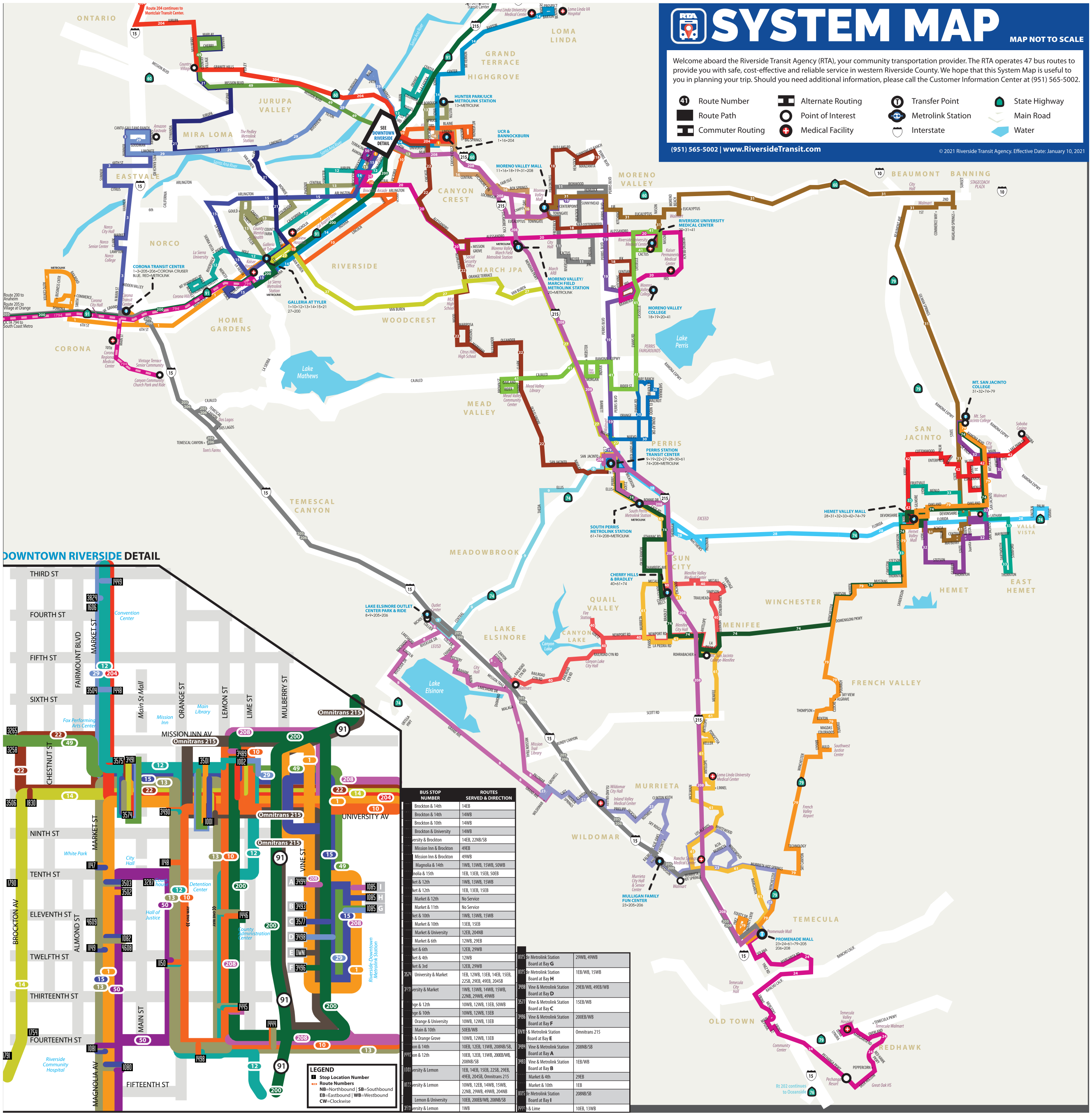
Figure 7 illustrates the existing transit services. As shown in Figure 7, the closest transit route to the project is located on Box Springs Road via Route 16.

5.3 Existing Pedestrian & Bicycle Facilities

The City's Bicycle Master Plan includes three types of facilities and are discussed below:

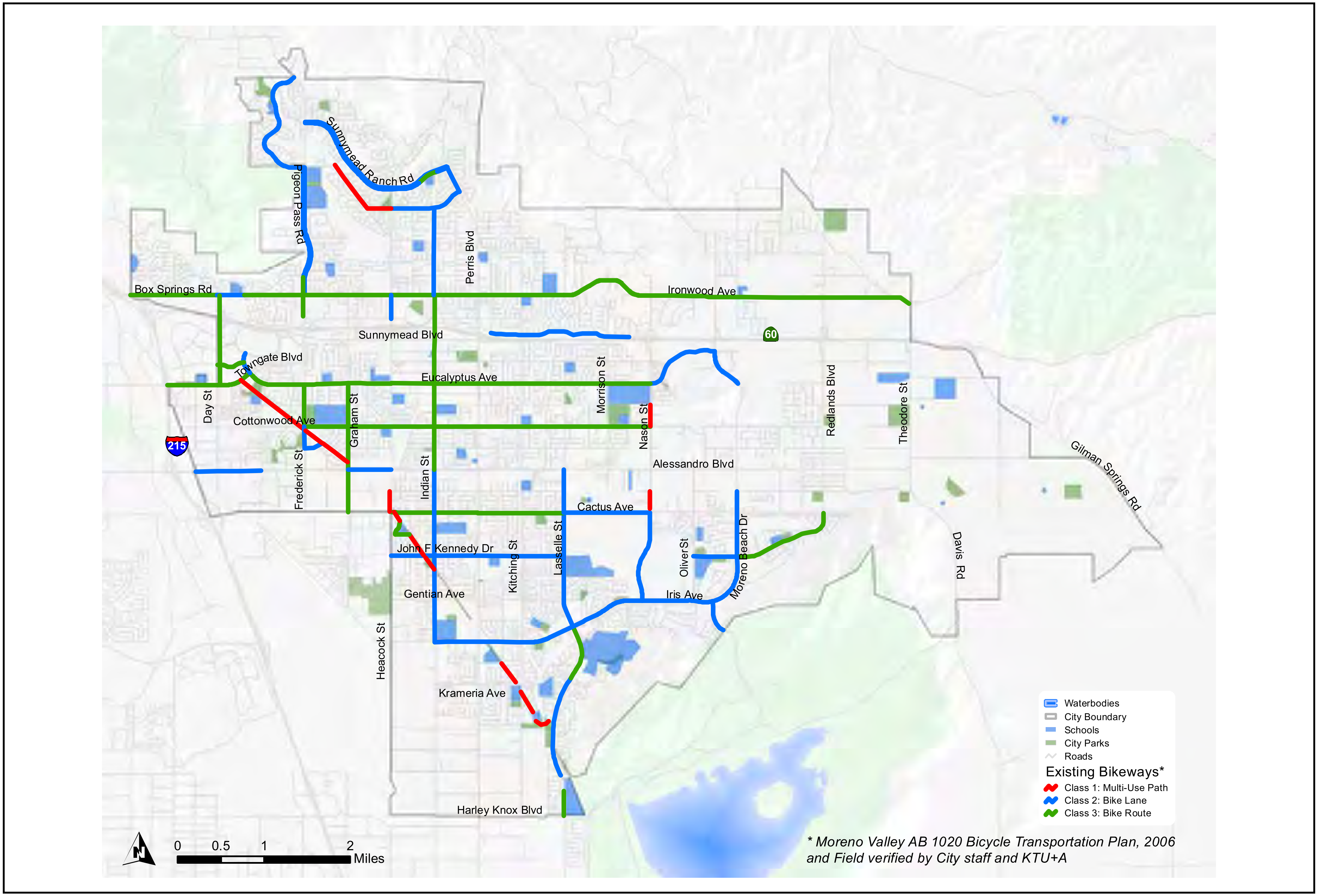
- **Class I Multi-use Paths** Class I facilities are physically separated from motor vehicle routes, with exclusive rights-of-way for non-motorized users like cyclists and pedestrians and with motor vehicle cross flows kept to a minimum. Class I facilities are often important commuter connections and any proposed paths must be designed for multipurpose use.
- **Class II Bicycle Lanes** Class II facilities provide an exclusive roadway space for cyclists, demarcated through pavement marking and signage. Bicycle lanes must be one-way facilities and carry bicycle traffic in the same direction as the adjacent motor vehicle traffic. They are typically located along the right side of the street, between the adjacent travel lane and curb, road edge or parking lane.
- **Class III Bicycle Routes** Class III facilities are suggested bicycle routes marked by signs designating a preferred route between destinations. They are recommended where traffic volumes and roadway speeds are fairly low.

Figure 8 illustrates the existing bicycle facilities within the City. As shown in Figure 8, there are existing Class III bike routes on Box Springs Road. Pedestrian circulation in Moreno Valley is primarily provided via trails and sidewalks. The existing pedestrian sidewalks adjacent to the project are illustrated in Figure 9. As illustrated in Figure 9, there are sidewalks on the east side of Morton Road from Jennings Court to Box Springs Road.



Source: RTA (January,2020)

FIGURE 7



Source: City of Moreno Valley Bicycle Master Plan

FIGURE 8

Gateway Highlands Residentail
Bike Lanes

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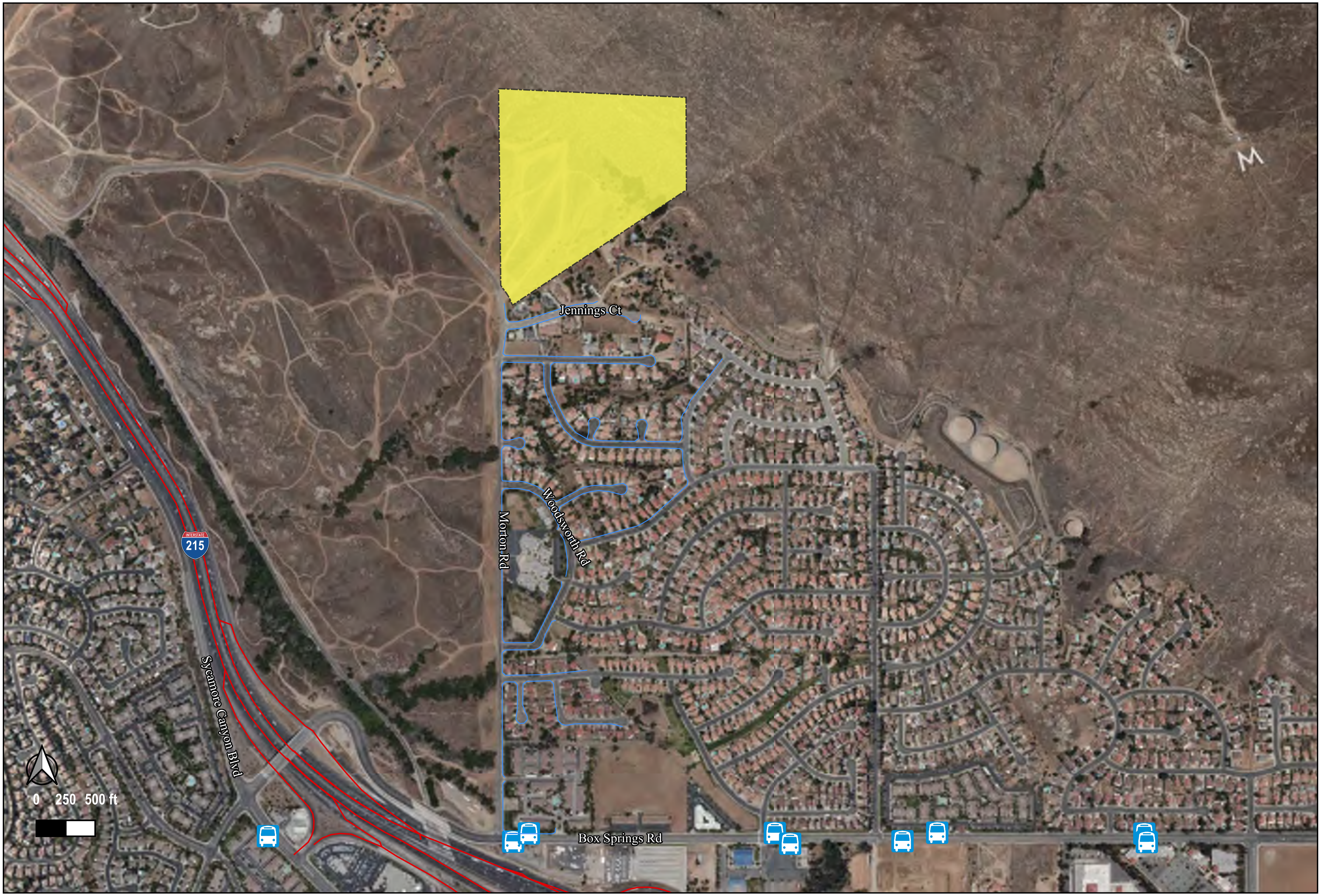

Legend

Project Site

Bus Stops

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FIGURE 9

Gateway Highlands Residential
Pedestrian Facilities

D:\GIS\Alp - Gateway Heights\Reports\Pedestrian Facilities.qgz (01-25-2021)

5.4 Existing Levels of Service

An intersection level of service analysis was conducted for existing conditions to determine current circulation system performance. Figure 10 shows the existing lane geometrics and stop controls at the study intersections. The existing traffic volumes at study intersections are illustrated in Figure 11. Detailed volume development worksheets are included in Appendix C. The existing levels of service for the study area intersections are summarized in Table D. Level of service calculation worksheets are contained in Appendix D. As shown in Table D, all study area intersections are currently operating at satisfactory levels of service with the exception of the following:

- Sycamore Canyon Road/Fair Isle Drive (a.m. peak hour).

6.0 PROJECT COMPLETION CONDITIONS

This section discusses project completion transportation conditions in the study area. It is anticipated that the project will open in 2023.

6.1 Project Completion Roadway Conditions

Project completion roadway conditions are assumed to be the same as those under existing conditions.

6.2 Project Completion Transit Service

Transit service under project completion conditions are anticipated to remain the same as under existing conditions.

6.3 Project Completion Pedestrian & Bicycle Facilities

Pedestrian and bicycle facilities under project completion conditions are anticipated to remain the same as under existing conditions, however, the City of Moreno Valley bicycle master plan is proposing a Class III Bike Route on Morton Road north of Box Springs Road and also converting the Class III Bike Route to a Class II Bike Lane on Box Springs Road. Figure 12 shows the City's bicycle master plan.

6.4 Project Completion Without Project Levels of Service

An intersection level of service analysis was conducted for project completion without project conditions to determine circulation system performance. Project completion without project traffic volumes at study intersections are shown in Figure 13. Project completion without project levels of service for the study area intersections are summarized in Table E. Detailed volume development worksheets are included in Appendix C. Level of service calculation worksheets are contained in Appendix D. As shown in Table E, all study area intersections are forecast to operate at satisfactory levels of service with the exception of the following:

- Sycamore Canyon Road/Fair Isle Drive (a.m. and p.m. peak hours).

6.5 Project Completion With Project Levels of Service

An intersection level of service analysis was conducted for project completion with project conditions to determine circulation system performance. Project completion with project traffic volumes at study intersections are shown in Figure 14. The project completion with project levels of service for the study area intersections are summarized in Table E. Detailed volume development worksheets are included in Appendix C. Level of service calculation worksheets are contained in Appendix D. As shown in Table E, all study intersections are forecast to operate at satisfactory levels of service with the exception of the following:

- Sycamore Canyon Road/Fair Isle Drive (a.m. and p.m. peak hours).

This intersection exceeds the peak hour delay increase for LOS E (2 seconds or more), when comparing the without project delay to the with project delay. Operational improvements to restore the LOS to pre-project conditions are included in the circulation improvements section.

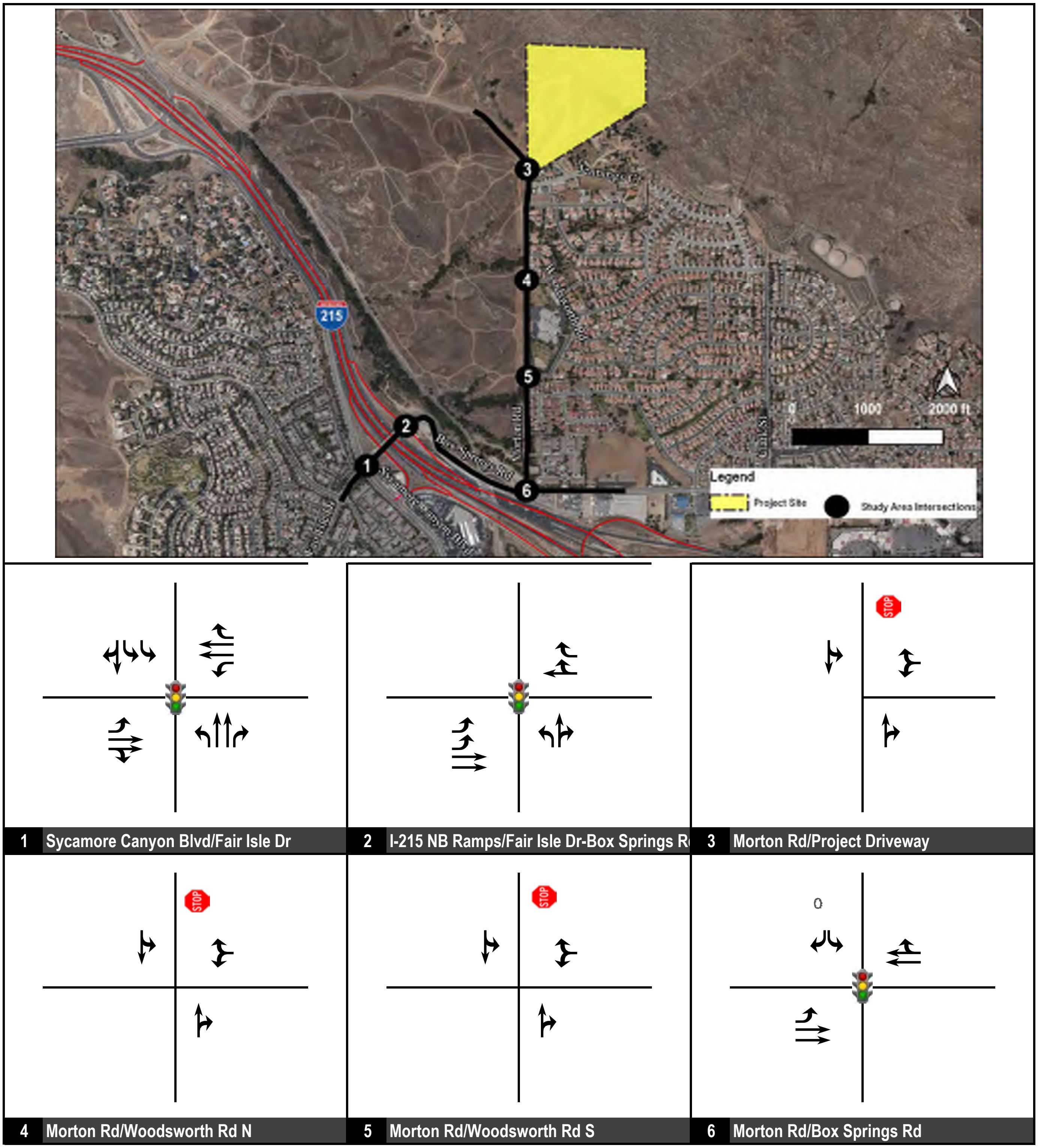

FIGURE 10

Legend

Signal

Stop Sign

Gateway Highlands Residential
Existing Intersection Lane Geometrics and Stop Control

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6 / 36 ↲ 208 / 469 ↓ 124 / 460 ↳

↰ 438 / 125
← 78 / 105
↲ 201 / 120

60 / 15 ↱
143 / 119 →
141 / 115 ↴

↰ 165 / 130 ↑ 1092 / 339 ↱ 662 / 662

1 Sycamore Canyon Blvd/Fair Isle Dr

↰ 985 / 299
← 589 / 238

608 / 426 ↱
321 / 816 →

↰ 128 / 113 ↑ 9 / 2 ↱ 6 / 9

2 I-215 NB Ramps/Fair Isle Dr-Box Springs Rd

Future Intersection

3 Morton Rd/Project Driveway

56 / 22 ↓

↰ 2 / 2
↲ 6 / 2

↑ 28 / 39 ↱ 11 / 15

4 Morton Rd/Woodsworth Rd N

51 / 31 ↓ 2 / 0 ↳

↰ 0 / 1
↲ 116 / 45

↑ 41 / 38 ↱ 26 / 48

5 Morton Rd/Woodsworth Rd S

174 / 48 ↲ 36 / 43 ↳

↰ 13 / 27
← 1400 / 489

66 / 100 ↱
261 / 725 →

6 Morton Rd/Box Springs Rd

FIGURE 11

XXX / YYY AM / PM Peak Hour Traffic Volumes

Gateway Highlands Residential
Existing Peak Hour Traffic Volumes

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Table D: Existing Levels of Service

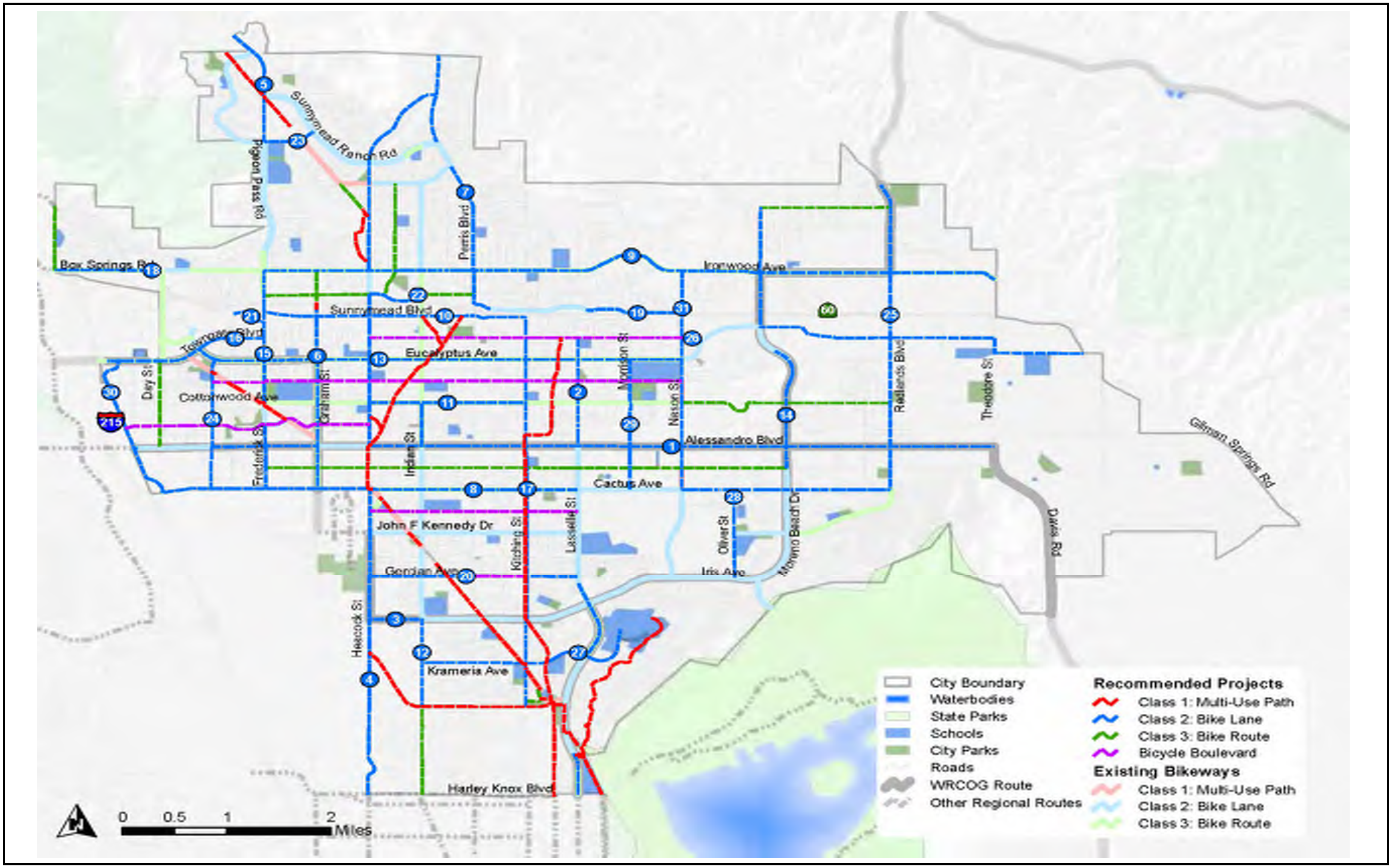
Intersection	LOS Std.	Jurisdiction	Control	Existing Conditions AM Peak Hour Delay	LOS		Existing Conditions PM Peak Hour Delay	LOS
1 . Sycamore Canyon Blvd/Fair Isle Dr	D	Riverside	Signal	58.2	E	*	33.3	C
2 . I-215 NB Ramps/Fair Isle Dr-Box Springs Rd	D	Caltrans	Signal	26	C		16.9	B
3 . Morton Rd/Project Driveway	C	Moreno Valley	TSWC	*Future Intersection*				
4 . Morton Rd/Woodsworth Rd N	C	Moreno Valley	TSWC	8.7	A		8.7	A
5 . Morton Rd/Woodsworth Rd S	C	Moreno Valley	TSWC	9	A		9.1	A
6 . Morton Rd/Box Springs Rd	D	Moreno Valley	Signal	13	B		12	B

Notes:

* Exceeds LOS Standard

TWSC = Two-Way Stop Control; For TWSC intersections, reported delay is for worst-case movement.

LOS = Level of Service



Source: City of Moreno Valley Bicycle Master Plan

FIGURE 12

Gateway Highlands Residential
City of Moreno Valley Bicycle Master Plan

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D:\Projects\ALP - Moreno Valley Gateway Highlands\Analysis\Z30 City Proposed Bike Lanes (2/12/2021)

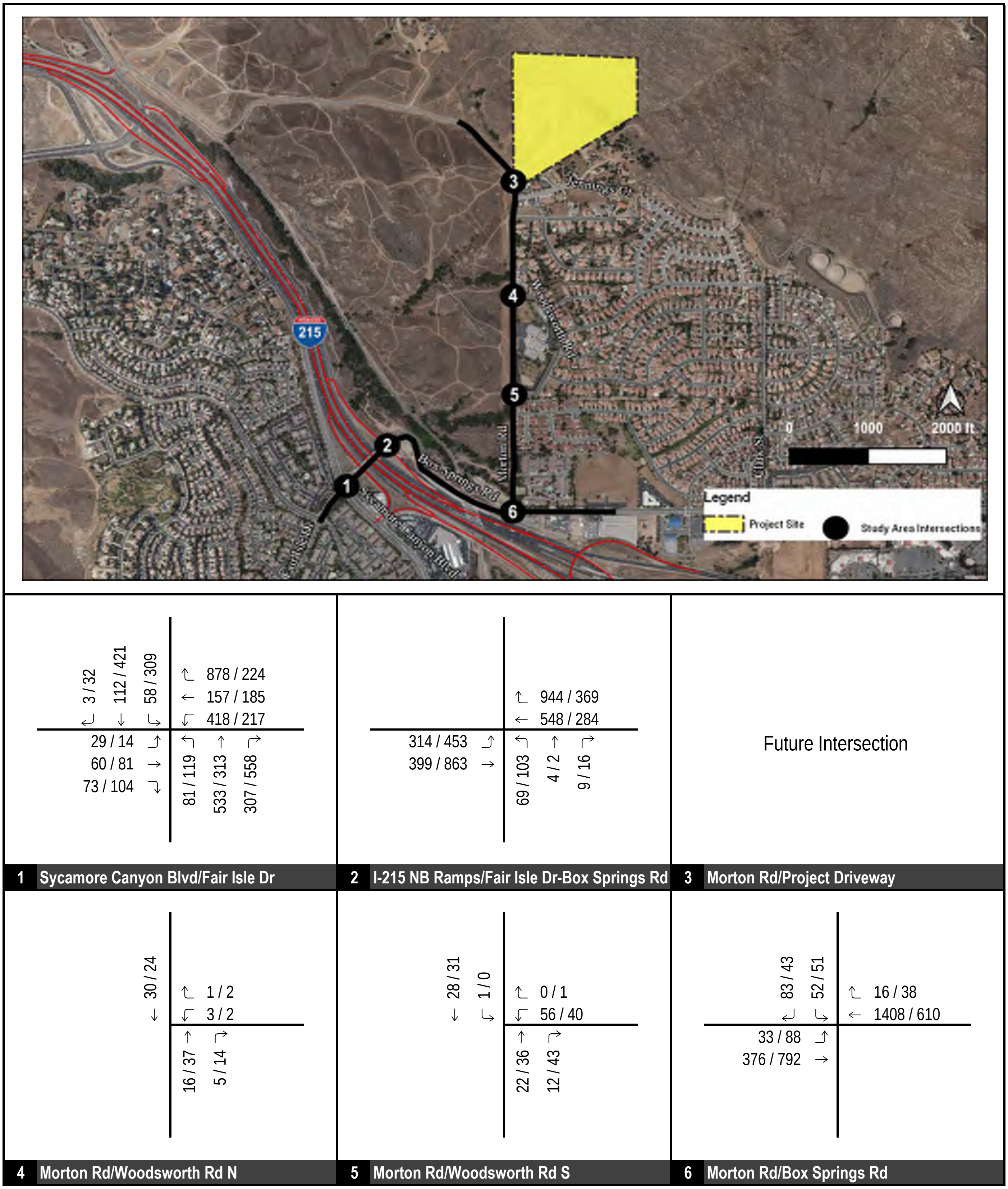

FIGURE 13

XXX / YYY AM / PM Peak Hour Traffic Volumes

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Gateway Highlands Residential
Project Completion Without Project Peak Hour Traffic Volumes

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Table E: Project Completion Levels of Service

Intersection	LOS Std.	Jurisdiction	Control	Without Project AM Peak Hour Delay	Without Project AM Peak Hour LOS		Without Project PM Peak Hour Delay	Without Project PM Peak Hour LOS		With Project AM Peak Hour Delay	With Project AM Peak Hour LOS		With Project PM Peak Hour Delay	With Project PM Peak Hour LOS	
1 . Sycamore Canyon Blvd/Fair Isle Dr	D	Riverside	Signal	69.3	E	*	56.3	E	*	72	E	*	60.5	E	*
2 . I-215 NB Ramps/Fair Isle Dr-Box Springs Rd	D	Caltrans	Signal	32.5	C		18.1	B		34.4	C		18.3	B	
3 . Morton Rd/Project Driveway	C	Moreno Valley	TSWC	*Future Intersection*						8.9	A		8.9	A	
4 . Morton Rd/Woodsworth Rd N	C	Moreno Valley	TSWC	8.7	A		8.8	A		9.1	A		9.4	A	
5 . Morton Rd/Woodsworth Rd S	C	Moreno Valley	TSWC	9	A		9.2	A		9.6	A		9.9	A	
6 . Morton Rd/Box Springs Rd	D	Moreno Valley	Signal	13.9	B		11.8	B		15.4	B		13.6	B	

Notes:

* Exceeds LOS Standard

TWSC = Two-Way Stop Control; For TWSC intersections, reported delay is for worst-case movement.

LOS = Level of Service

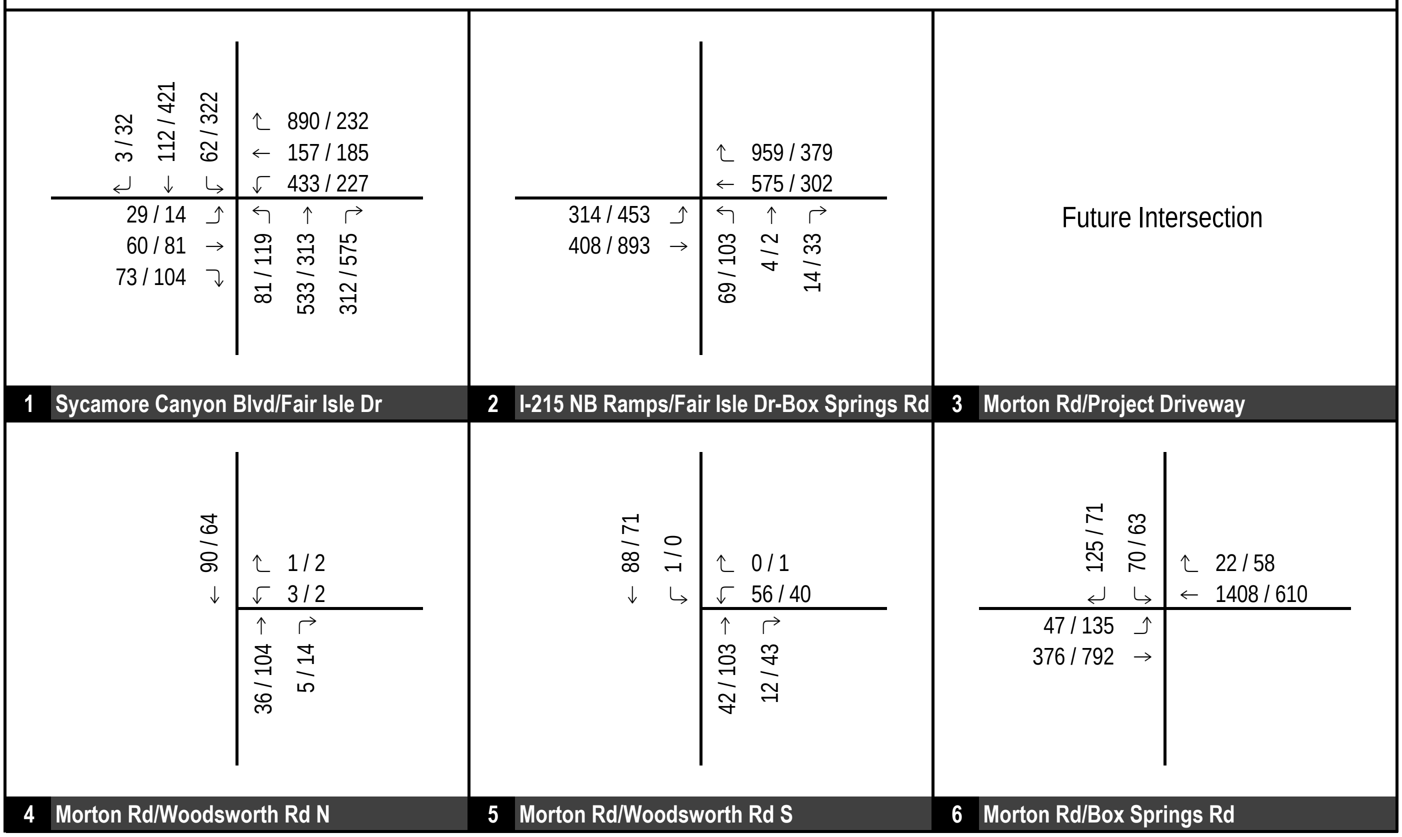

FIGURE 14

XXX / YYY AM / PM Peak Hour Traffic Volumes

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Gateway Highlands Residential
Project Completion With Project Peak Hour Traffic Volumes

7.0 CIRCULATION IMPROVEMENTS

Circulation improvements have been recommended at intersection where the project exceeds the appropriate jurisdictions operational requirements. These improvements can include conversion of stop control, signalization, changes to signal phasing, and/or addition of lanes as appropriate. The following improvements have been recommended:

7.1 Project Completion With Project Intersection Circulation Improvements

Under project completion with project conditions, the following modifications to intersection configurations are recommended as circulation improvements as follows:

- Sycamore Canyon Road/Fair Isle Drive: Add an overlap phase to the existing northbound right-turn lane.

Figure 15 illustrates the project completion with project with recommended improvements and Table F shows the resulting levels of service.

8.0 VEHICLE MILES TRAVELED (VMT) SCREENING ANALYSIS

Based on the City of Moreno Valley *Transportation Impact Analysis Preparation Guide for Vehicles Miles Traveled and Level of Service Assessment*, (June 2020), a project located in a low VMT area can be effectively screened out from a project-level VMT assessment. To identify if the project is in a low VMT-generating area, the WRCOG screening tool was applied using VMT per capita. Figure 16 shows the low VMT area screening for the project. As shown in Figure 16, the project TAZ based VMT per capita is 15.45 miles. The jurisdictional VMT per capita is 19.04 miles. Since the project TAZ VMT per capita is lower than the City's VMT per capita, the project is considered to be in a low VMT generating TAZ and presumed to have a less than significant impact on VMT.

9.0 IMPACT CRITERIA FOR CEQA DETERMINATION

This section evaluates the CEQA checklist for impact evaluation.

A. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

The project is consistent with the City's adopted plans and policies. With implementation of the recommended improvements, the project has less than significant impacts based on the City's impact criteria. The project would not conflict with adopted policies supporting alternative transportation modes. The project will not change roadway designations from those in the City's General Plan. The project will also not result in removal of any of the facilities listed above. Therefore, the project impact is considered less than significant.

B. Conflict or be inconsistent with CEQA Guidelines 15064.3, subdivision (b)?

Based on the City's Low VMT Screening Tool, the project will not require a full VMT analysis and will therefore have a less than significant impact under CEQA.

C. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The design of driveways and other project access locations will be based on City Code, which sets the standard for such design. It is not anticipated that traffic hazards will increase, therefore, the project impact is considered less than significant.

D. Result in inadequate emergency access?

The proposed driveways will be designed in accordance with all applicable design and safety standards required by adopted fire codes, safety codes, and building codes established by the City's Engineering and Fire Departments. The project will not increase delays on street segments substantially, therefore, the project will not result in inadequate emergency access, and the project impact is considered less than significant.

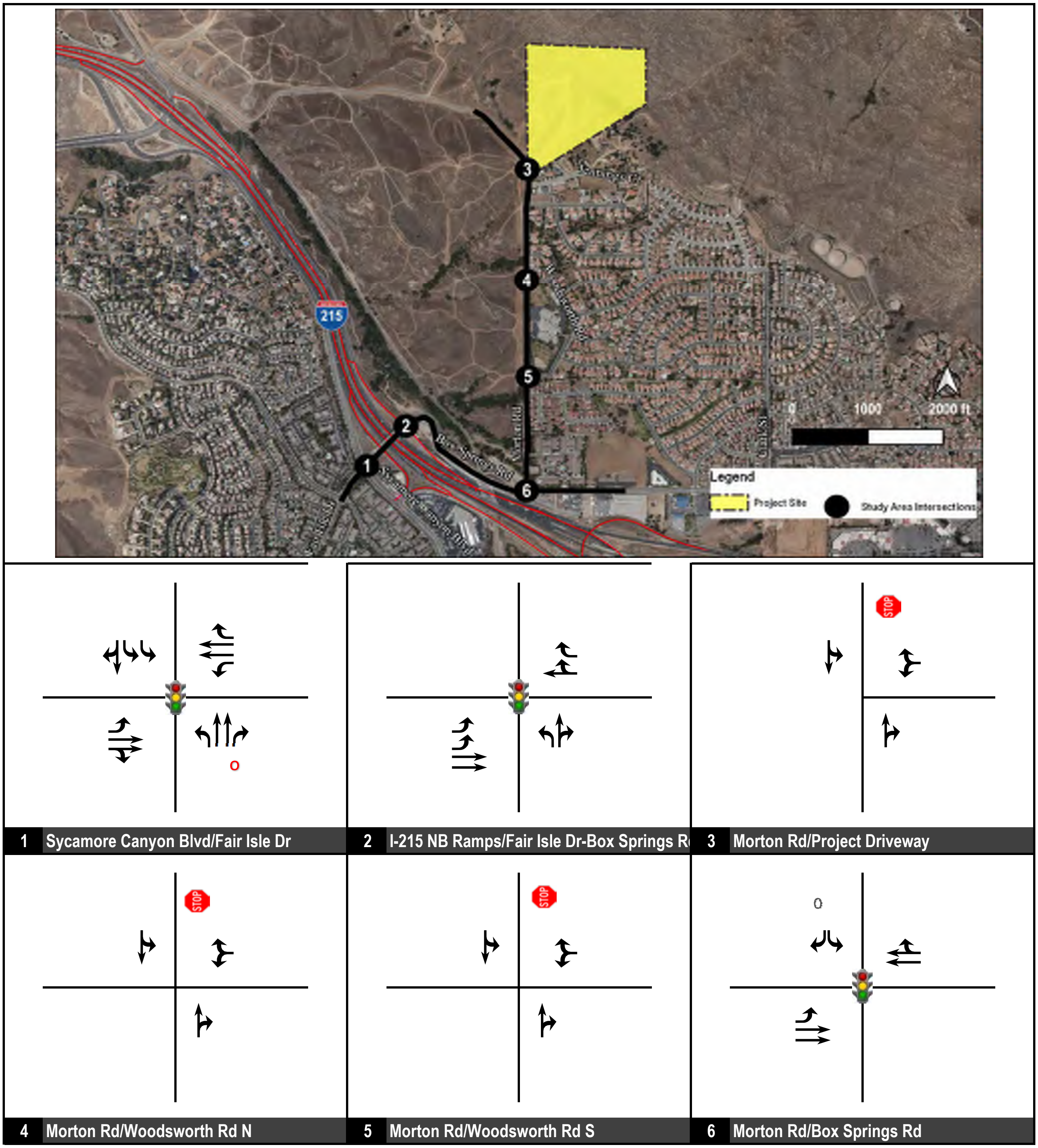

FIGURE 15

Legend

Signal

o Improvements

Stop Sign

Gateway Highlands Residential

Project Completion With Project With Improvements Intersection Lane Geometrics and Stop Control

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Table F: Project Completion With Project With Improvements Intersection Levels of Service

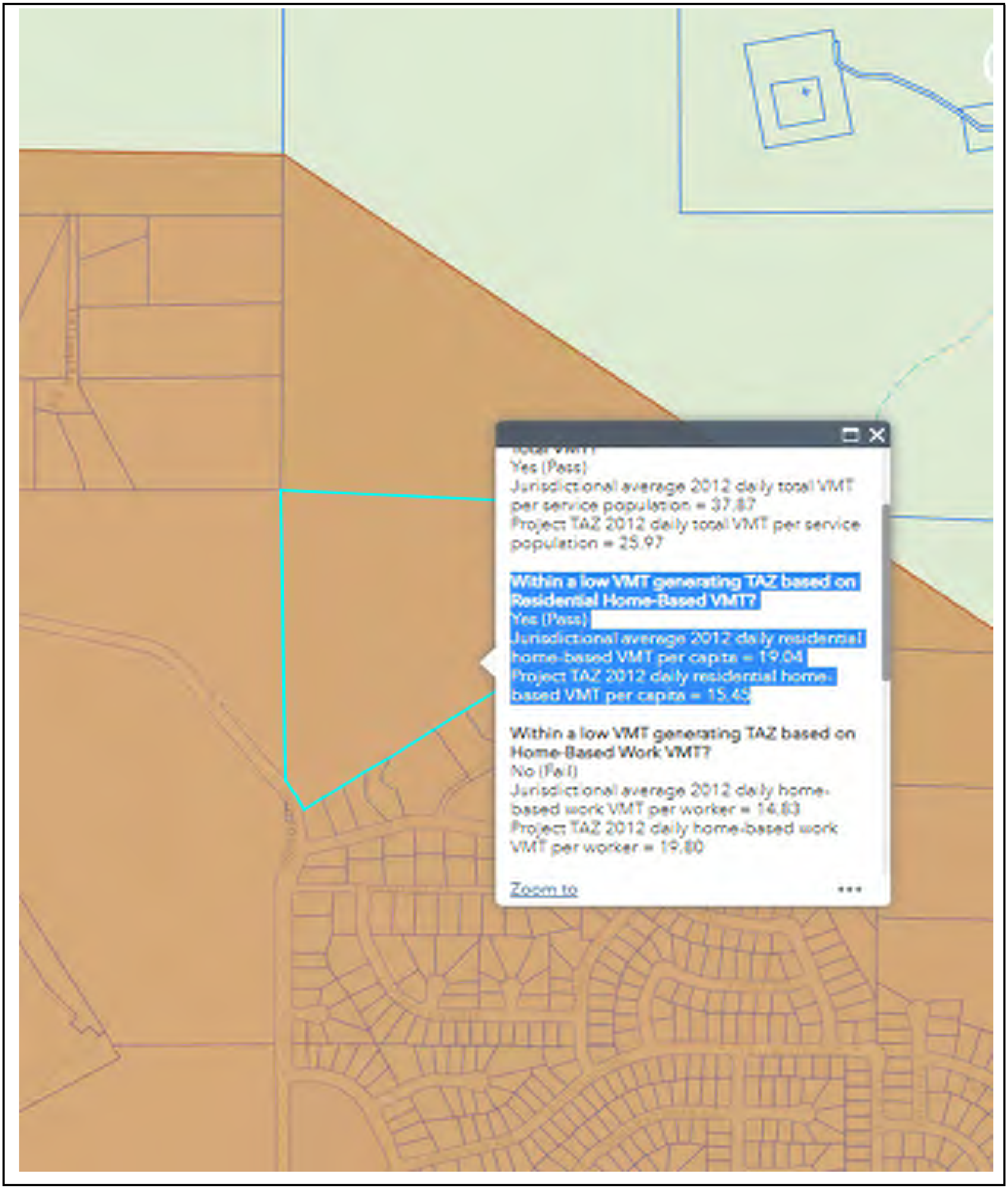
Intersection	LOS Std.	Jurisdiction	Control	With Project AM Peak Hour Delay	LOS		With Project PM Peak Hour Delay	LOS		WP With Improvements AM Peak Hour Delay	LOS	WP With Improvements PM Peak Hour Delay	LOS
1 . Sycamore Canyon Blvd/Fair Isle Dr	D	Riverside	Signal	72	E	*	60.5	E	*	52.2	D	29.6	C

Notes:

* Exceeds LOS Standard

TWSC = Two-Way Stop Control; For TWSC intersections, reported delay is for worst-case movement.

LOS = Level of Service



Source: WRCOG Screening Tool

FIGURE 16

Gateway Highlands
VMT Screening Map

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10.0 SUMMARY & CONCLUSIONS

The proposed project is forecast to generate 80 trips in the a.m. peak hour, 107 trips in the p.m. peak hour, and 1,020 daily trips. Based on the intersection LOS analysis, with the circulation improvements, the study intersections will operate at satisfactory LOS under existing and project completion. The project will not require a full VMT analysis based on the Low VMT screening tool and has a less than significant impact on VMT.

APPENDIX A:
SCOPING AGREEMENT

EXHIBIT A

Project Scoping Form

This scoping form shall be submitted to the Lead Agency to assist in identifying infrastructure improvements that may be required to support traffic from the proposed project.

Project Identification:

Approved 1/12/21

Case Number:	
Related Cases:	
SP No.	
EIR No.	
GPA No.	
CZ No.	
Project Name:	Gateway Highlands
Project Address:	East side of Morton Road north of Jennings Court
Project Opening Year:	2022
Project Description:	The project will include construction of 108 detached condos. Access will be Morton Road

	Consultant:	Developer:
Name:	Translutions, Inc.	Ackerman Law PC
Address:	17632 Irvine Blvd., #200	3200 E. Guasti Road, Ste. 100
	Tustin, CA 92780	Ontario, CA 91761
Telephone:	949-656-3131	(909) 456-1460
Email:	sandipan@translutions.com	jason.m.ackerman@gmail.com

Trip Generation Information:

Trip Generation Data Source: ITE Trip Generation, 10th Edition (Land Use 210 "Single-Family Detached Housing")

Current General Plan Land Use: Residential

Proposed General Plan Land Use: Residential

Current Zoning: Residential

Proposed Zoning: Residential

	Existing Trip Generation			Proposed Trip Generation		
	In	Out	Total	In	Out	Total
AM Trips				20	60	80
PM Trips				67	40	107

Trip Generation based on rates for Land Use 210 "Single-Family Detached Housing" from ITE *Trip Generation 10th Edition.*

Trip Internalization: ☐ Yes ☑ No (______% Trip Discount)

Pass-By Allowance: ☐ Yes ☑ No (______% Trip Discount)

Potential Screening Checks

Is your project screened from specific analyses (see Page 3 of the guidelines related to LOS assessment and Pages 22-23 for VMT screening criteria).

Is the project screened from LOS assessment? ☐ Yes ☑ No

LOS screening justification (see Page 3 of the guidelines):
Trip generation is greater than the threshold.

Is the project screened from VMT assessment? ☑ Yes ☐ No

VMT screening justification (see Pages 22-23 of the guidelines): The project is located in a low VMT area based on residential VMT. Please see attached screening map. Jurisdictional average 2012 daily residential home-based VMT per capita is 19.04 miles and that for Project TAZ is 15.45 miles.

Level of Service Scoping

- Proposed Trip Distribution (Attach Graphic for Detailed Distribution):

North	South	East	West
0 %	100 %	%	%

Link level of service and data collection:

____ will be required

X___ will not be required

- Attach list of study intersections (and roadway segments if applicable)
- Attach site plan
- Other specific items to be addressed:
  - ✓ Site access
  - On-site circulation
  - Parking
  - Consistency with Plans supporting Bikes/Peds/Transit
  - Other ____________________
- Date of Traffic Counts New counts will be conducted and adjusted for COVID.
- Attach proposed analysis scenarios (years plus proposed forecasting approach)
- Attach proposed phasing approach (if the project is phased)

VMT Scoping

For projects that are not screened, identify the following:

- Travel Demand Forecasting Model Used N/A
- Attach WRCOG Screening VMT Assessment output or describe why it is not appropriate for use
- Attach proposed Model Land Use Inputs and Assumed Conversion Factors (attach)

STUDY INTERSECTIONS:

1. Sycamore Canyon Boulevard/Fair Isle Drive
2. I-215 Northbound Ramps/Fair Isle Drive-Box Springs Road
3. Morton Road/Project Driveway
4. Morton Road/Woodsworth Road. N
5. Morton Road/Woodsworth Road. S
6. Morton Road/Box Springs Road.

SITE PLAN: Attached Figure 1

TRIP GENERATION: Attached Table A

TRIP DISTRIBUTION: Attached Figure 2

TRIP ASSIGNMENT: Attached Figure 3

VMT SCREENING MAP: Attached Figure 4

ANALYSIS SCENARIOS:

- Existing Conditions
- Project Completion without Project (existing plus ambient growth plus cumulative projects). Analysis year will be 2022, growth rate of 2% per annum.
- Project Completion with Project (Project Completion Without Project plus project)

FIGURE 1

Gateway Highlands
Site Plan

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Table A - Project Trip Generation

Land Use	Units	A.M. Peak Hour In	A.M. Peak Hour Out	A.M. Peak Hour Total	P.M. Peak Hour In	P.M. Peak Hour Out	P.M. Peak Hour Total	Daily
Future Use								
Single-Family Residential								
Trip Generation Rates [1]		0.19	0.56	0.74	0.62	0.37	0.99	9.44
Trip Generation	108 DU	20	60	80	67	40	107	1,020
Total Trip Generation		20	60	80	67	40	107	1,020

Notes: DU = Dwelling Unit

[1] Trip generation based on rates for Land Use 210 - "Single-Family Detached Housing" from Institute of Transportation Engineers' (ITE) *Trip Generation* (10th Edition).

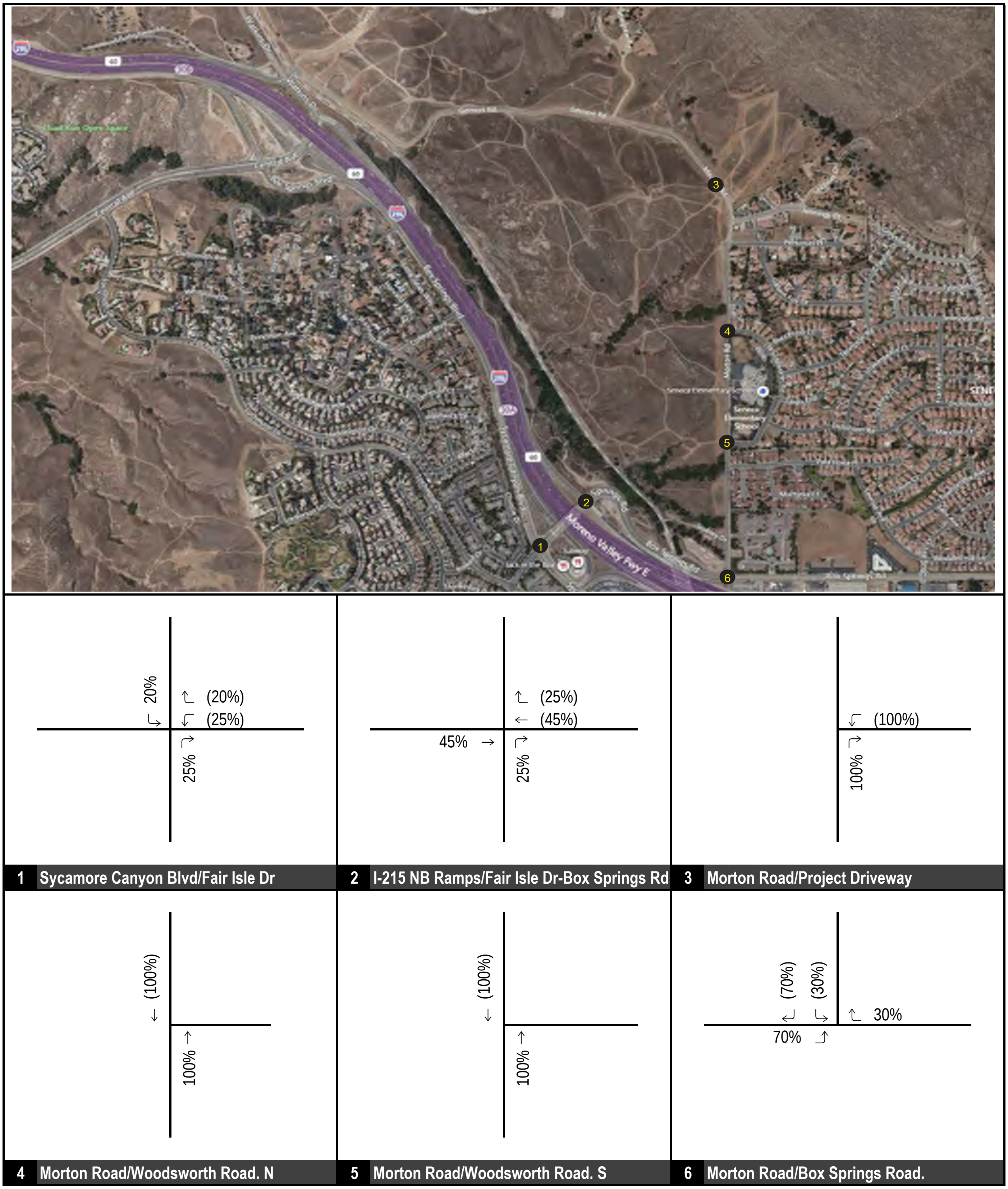

FIGURE 2

XXX%(YYY%) Inbound%(Outbound%) Percent

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Gateway Highlands
Project Trip Distribution

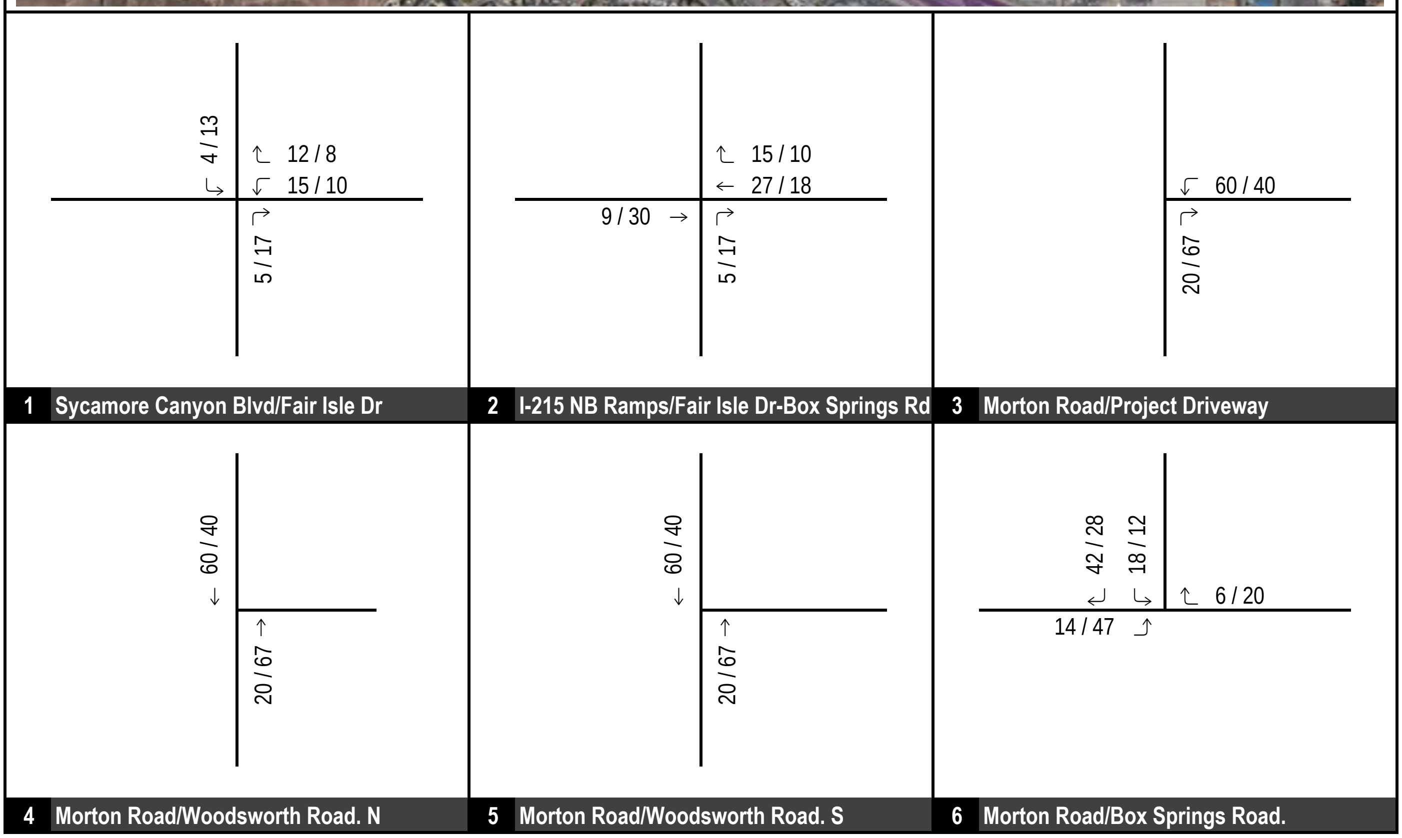

FIGURE 3

XXX / YYY AM / PM Peak Hour Trips

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Gateway Highlands
Project Trip Assignment

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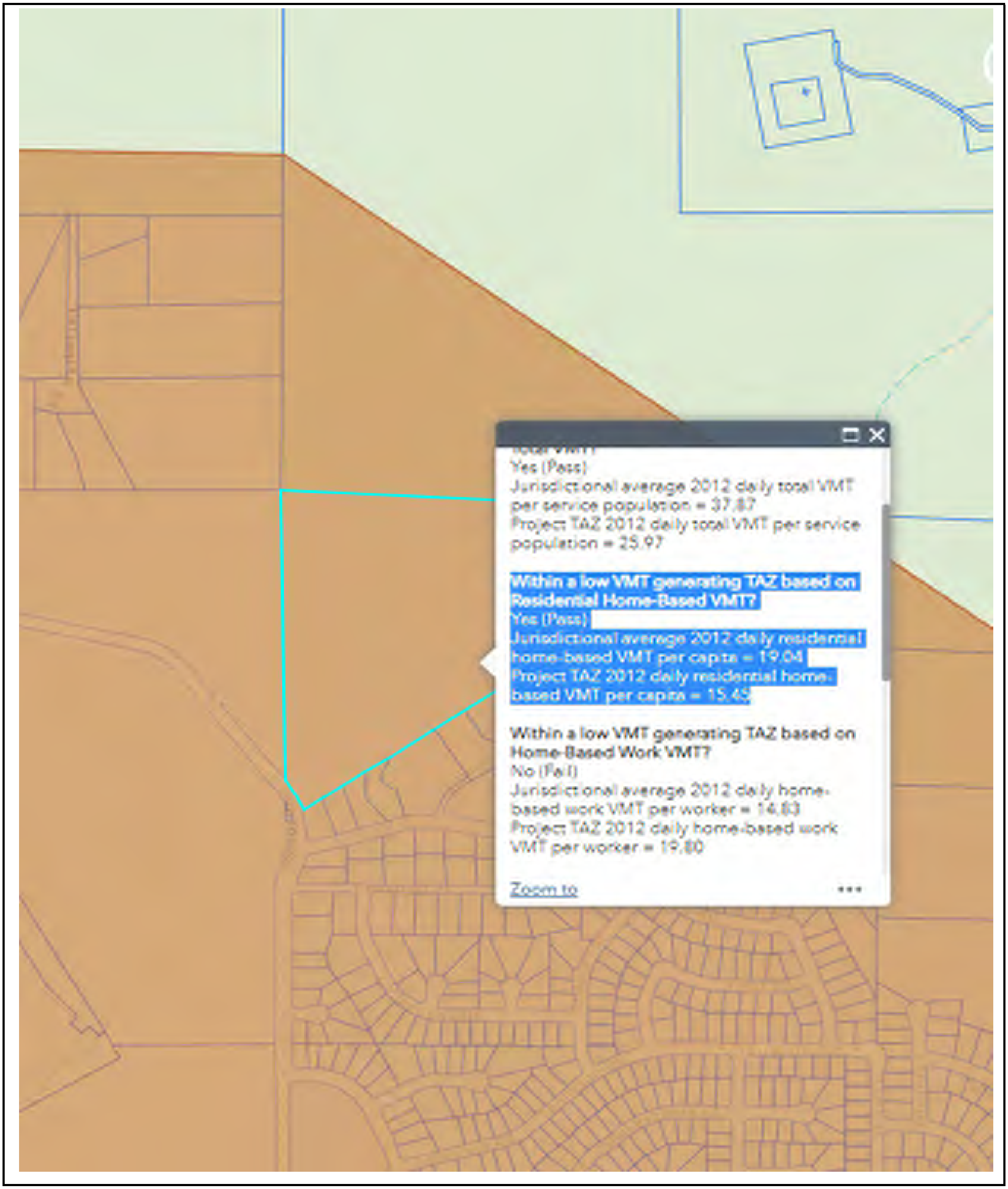

Source: WRCOG Screening Tool

FIGURE 5

Gateway Highlands
VMT Screening Map

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APPENDIX B:
TRAFFIC COUNTS

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

City of Riverside
N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Sycamore Canyon Boulevard Southbound				Fair Isle Drive Westbound				Sycamore Canyon Boulevard Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	10	15	1	26	16	8	34	58	12	142	52	206	4	11	10	25	315
07:15 AM	13	14	1	28	24	4	39	67	20	131	52	203	11	12	22	45	343
07:30 AM	16	23	1	40	23	8	45	76	17	155	61	233	6	16	13	35	384
07:45 AM	12	35	0	47	23	13	64	100	28	122	70	220	7	17	18	42	409
Total	51	87	3	141	86	33	182	301	77	550	235	862	28	56	63	147	1451
08:00 AM	18	23	1	42	15	9	42	66	11	96	65	172	2	21	13	36	316
08:15 AM	12	28	3	43	21	8	24	53	19	86	62	167	5	19	15	39	302
08:30 AM	17	22	2	41	32	5	27	64	26	67	69	162	2	13	13	28	295
08:45 AM	11	26	2	39	26	8	21	55	21	46	60	127	2	15	18	35	256
Total	58	99	8	165	94	30	114	238	77	295	256	628	11	68	59	138	1169
Grand Total	109	186	11	306	180	63	296	539	154	845	491	1490	39	124	122	285	2620
Apprch %	35.6	60.8	3.6		33.4	11.7	54.9		10.3	56.7	33		13.7	43.5	42.8		
Total %	4.2	7.1	0.4	11.7	6.9	2.4	11.3	20.6	5.9	32.3	18.7	56.9	1.5	4.7	4.7	10.9	
Passenger Vehicles	108	179	11	298	172	63	295	530	150	827	375	1352	34	119	121	274	2454
% Passenger Vehicles	99.1	96.2	100	97.4	95.6	100	99.7	98.3	97.4	97.9	76.4	90.7	87.2	96	99.2	96.1	93.7
Large 2 Axle Vehicles	1	7	0	8	8	0	1	9	4	12	35	51	5	4	1	10	78
% Large 2 Axle Vehicles	0.9	3.8	0	2.6	4.4	0	0.3	1.7	2.6	1.4	7.1	3.4	12.8	3.2	0.8	3.5	3
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	5	7	12	0	1	0	1	13
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0.6	1.4	0.8	0	0.8	0	0.4	0.5
4+ Axle Trucks	0	0	0	0	0	0	0	0	0	1	74	75	0	0	0	0	75
% 4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0.1	15.1	5	0	0	0	0	2.9

	Sycamore Canyon Boulevard Southbound				Fair Isle Drive Westbound				Sycamore Canyon Boulevard Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	13	14	**1**	28	**24**	4	39	67	20	131	52	203	**11**	12	**22**	**45**	343
07:30 AM	16	23	1	40	23	8	45	76	17	**155**	61	**233**	6	16	13	35	384
07:45 AM	12	**35**	0	**47**	23	**13**	**64**	**100**	**28**	122	**70**	220	7	17	18	42	**409**
08:00 AM	**18**	23	1	42	15	9	42	66	11	96	65	172	2	**21**	13	36	316
Total Volume	59	95	3	157	85	34	190	309	76	504	248	828	26	66	66	158	1452
% App. Total	37.6	60.5	1.9		27.5	11	61.5		9.2	60.9	30		16.5	41.8	41.8		
PHF	.819	.679	.750	.835	.885	.654	.742	.773	.679	.813	.886	.888	.591	.786	.750	.878	.888

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City of Riverside
N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle AM
Site Code : 99921033
Start Date : 1/26/2021
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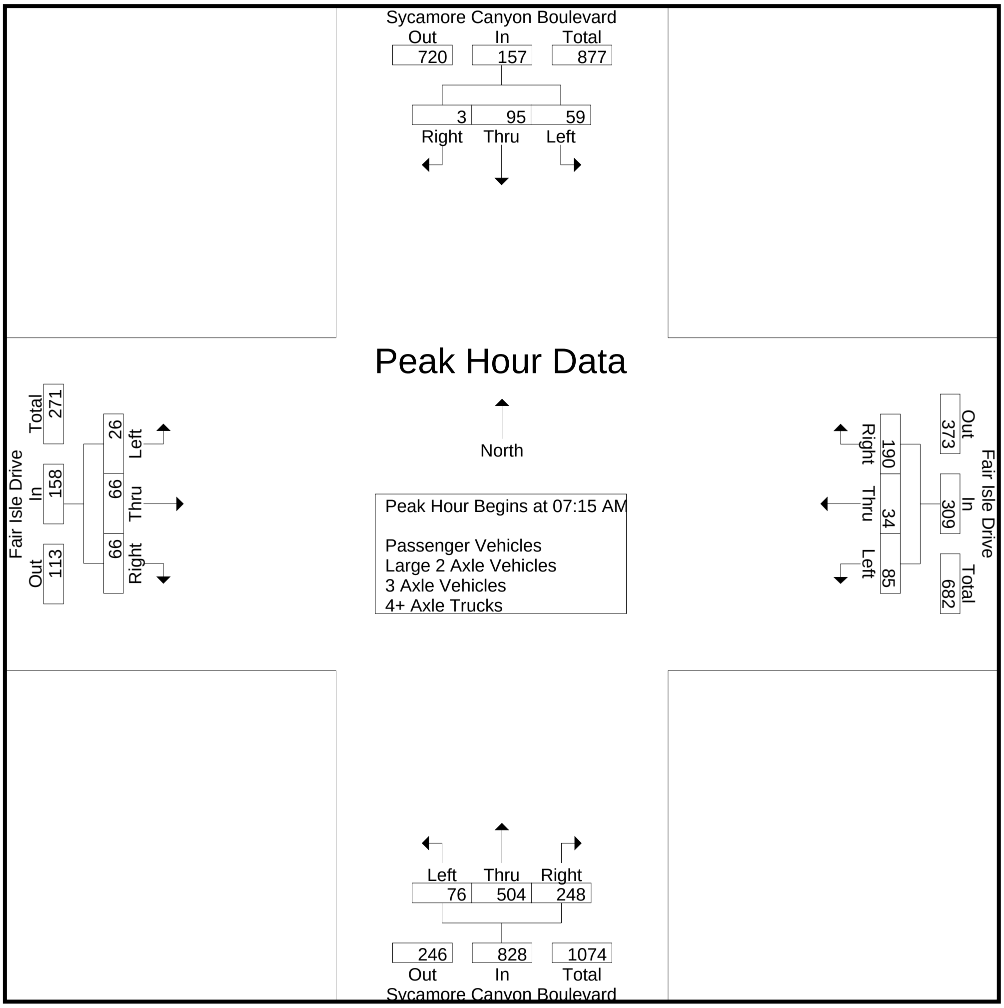

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:15 AM				07:00 AM				07:15 AM			
+0 mins.	12	**35**	0	**47**	**24**	4	39	67	12	142	52	206	**11**	12	**22**	**45**
+15 mins.	**18**	23	1	42	23	8	45	76	20	131	52	203	6	16	13	35
+30 mins.	12	28	**3**	43	23	**13**	**64**	**100**	17	**155**	61	**233**	7	17	18	42
+45 mins.	17	22	2	41	15	9	42	66	**28**	122	**70**	220	2	**21**	13	36
Total Volume	59	108	6	173	85	34	190	309	77	550	235	862	26	66	66	158
% App. Total	34.1	62.4	3.5		27.5	11	61.5		8.9	63.8	27.3		16.5	41.8	41.8	
PHF	.819	.771	.500	.920	.885	.654	.742	.773	.688	.887	.839	.925	.591	.786	.750	.878

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City of Riverside
N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Passenger Vehicles

	Sycamore Canyon Boulevard Southbound				Fair Isle Drive Westbound				Sycamore Canyon Boulevard Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	10	15	1	26	16	8	34	58	12	141	43	196	4	11	10	25	305
07:15 AM	13	13	1	27	21	4	39	64	20	130	44	194	9	12	22	43	328
07:30 AM	16	22	1	39	22	8	45	75	17	152	48	217	6	16	13	35	366
07:45 AM	12	34	0	46	23	13	63	99	27	117	52	196	7	14	18	39	380
Total	51	84	3	138	82	33	181	296	76	540	187	803	26	53	63	142	1379
08:00 AM	18	23	1	42	14	9	42	65	11	96	53	160	1	21	13	35	302
08:15 AM	11	25	3	39	21	8	24	53	18	81	43	142	5	18	14	37	271
08:30 AM	17	22	2	41	30	5	27	62	25	65	52	142	1	13	13	27	272
08:45 AM	11	25	2	38	25	8	21	54	20	45	40	105	1	14	18	33	230
Total	57	95	8	160	90	30	114	234	74	287	188	549	8	66	58	132	1075
Grand Total	108	179	11	298	172	63	295	530	150	827	375	1352	34	119	121	274	2454
Apprch %	36.2	60.1	3.7		32.5	11.9	55.7		11.1	61.2	27.7		12.4	43.4	44.2		
Total %	4.4	7.3	0.4	12.1	7	2.6	12	21.6	6.1	33.7	15.3	55.1	1.4	4.8	4.9	11.2	

	Sycamore Canyon Boulevard Southbound				Fair Isle Drive Westbound				Sycamore Canyon Boulevard Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	13	13	**1**	27	21	4	39	64	20	130	44	194	**9**	12	**22**	**43**	328
07:30 AM	16	22	1	39	22	8	45	75	17	**152**	48	**217**	6	16	13	35	366
07:45 AM	12	**34**	0	**46**	**23**	**13**	**63**	**99**	**27**	117	52	196	7	14	18	39	**380**
08:00 AM	**18**	23	1	42	14	9	42	65	11	96	**53**	160	1	**21**	13	35	302
Total Volume	59	92	3	154	80	34	189	303	75	495	197	767	23	63	66	152	1376
% App. Total	38.3	59.7	1.9		26.4	11.2	62.4		9.8	64.5	25.7		15.1	41.4	43.4		
PHF	.819	.676	.750	.837	.870	.654	.750	.765	.694	.814	.929	.884	.639	.750	.750	.884	.905

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City of Riverside
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Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle AM
Site Code : 99921033
Start Date : 1/26/2021
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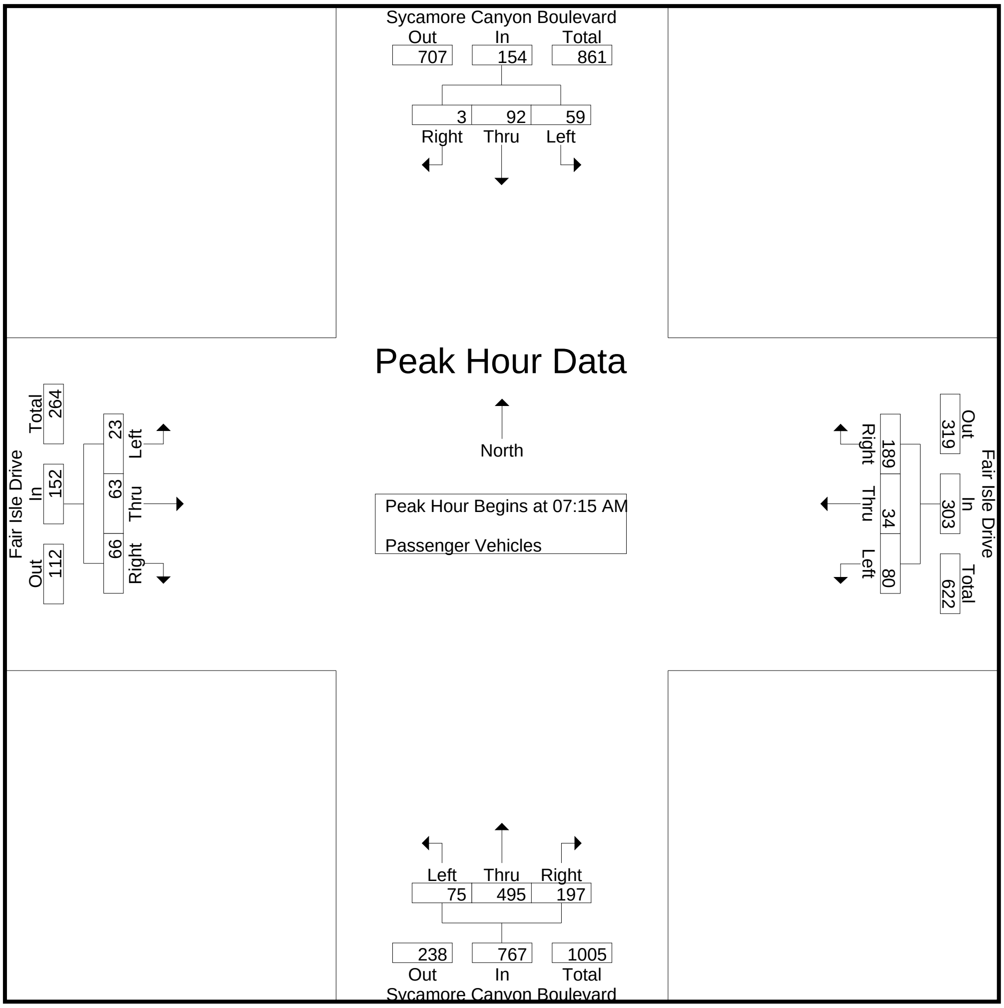

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	13	13	**1**	27	21	4	39	64	20	130	44	194	**9**	12	**22**	**43**
+15 mins.	16	22	1	39	22	8	45	75	17	**152**	48	**217**	6	16	13	35
+30 mins.	12	**34**	0	**46**	**23**	**13**	**63**	**99**	**27**	117	52	196	7	14	18	39
+45 mins.	**18**	23	1	42	14	9	42	65	11	96	**53**	160	1	**21**	13	35
Total Volume	59	92	3	154	80	34	189	303	75	495	197	767	23	63	66	152
% App. Total	38.3	59.7	1.9		26.4	11.2	62.4		9.8	64.5	25.7		15.1	41.4	43.4	
PHF	.819	.676	.750	.837	.870	.654	.750	.765	.694	.814	.929	.884	.639	.750	.750	.884

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City of Riverside
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E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle AM
Site Code : 99921033
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Groups Printed- Large 2 Axle Vehicles

	Sycamore Canyon Boulevard Southbound				Fair Isle Drive Westbound				Sycamore Canyon Boulevard Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	3
07:15 AM	0	1	0	1	3	0	0	3	0	1	2	3	2	0	0	2	9
07:30 AM	0	1	0	1	1	0	0	1	0	2	10	12	0	0	0	0	14
07:45 AM	0	1	0	1	0	0	1	1	1	3	6	10	0	3	0	3	15
Total	0	3	0	3	4	0	1	5	1	7	20	28	2	3	0	5	41
08:00 AM	0	0	0	0	1	0	0	1	0	0	5	5	1	0	0	1	7
08:15 AM	1	3	0	4	0	0	0	0	1	4	3	8	0	1	1	2	14
08:30 AM	0	0	0	0	2	0	0	2	1	1	2	4	1	0	0	1	7
08:45 AM	0	1	0	1	1	0	0	1	1	0	5	6	1	0	0	1	9
Total	1	4	0	5	4	0	0	4	3	5	15	23	3	1	1	5	37
Grand Total	1	7	0	8	8	0	1	9	4	12	35	51	5	4	1	10	78
Apprch %	12.5	87.5	0		88.9	0	11.1		7.8	23.5	68.6		50	40	10		
Total %	1.3	9	0	10.3	10.3	0	1.3	11.5	5.1	15.4	44.9	65.4	6.4	5.1	1.3	12.8	

	Sycamore Canyon Boulevard Southbound				Fair Isle Drive Westbound				Sycamore Canyon Boulevard Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	**1**	0	**1**	**3**	0	0	**3**	0	1	2	3	**2**	0	0	2	9
07:30 AM	0	1	0	1	1	0	0	1	0	2	**10**	**12**	0	0	0	0	14
07:45 AM	0	1	0	1	0	0	**1**	1	**1**	**3**	6	10	0	**3**	0	**3**	**15**
08:00 AM	0	0	0	0	1	0	0	1	0	0	5	5	1	0	0	1	7
Total Volume	0	3	0	3	5	0	1	6	1	6	23	30	3	3	0	6	45
% App. Total	0	100	0		83.3	0	16.7		3.3	20	76.7		50	50	0		
PHF	.000	.750	.000	.750	.417	.000	.250	.500	.250	.500	.575	.625	.375	.250	.000	.500	.750

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City of Riverside
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File Name : 01_RIV_Sycamore_Fair Isle AM
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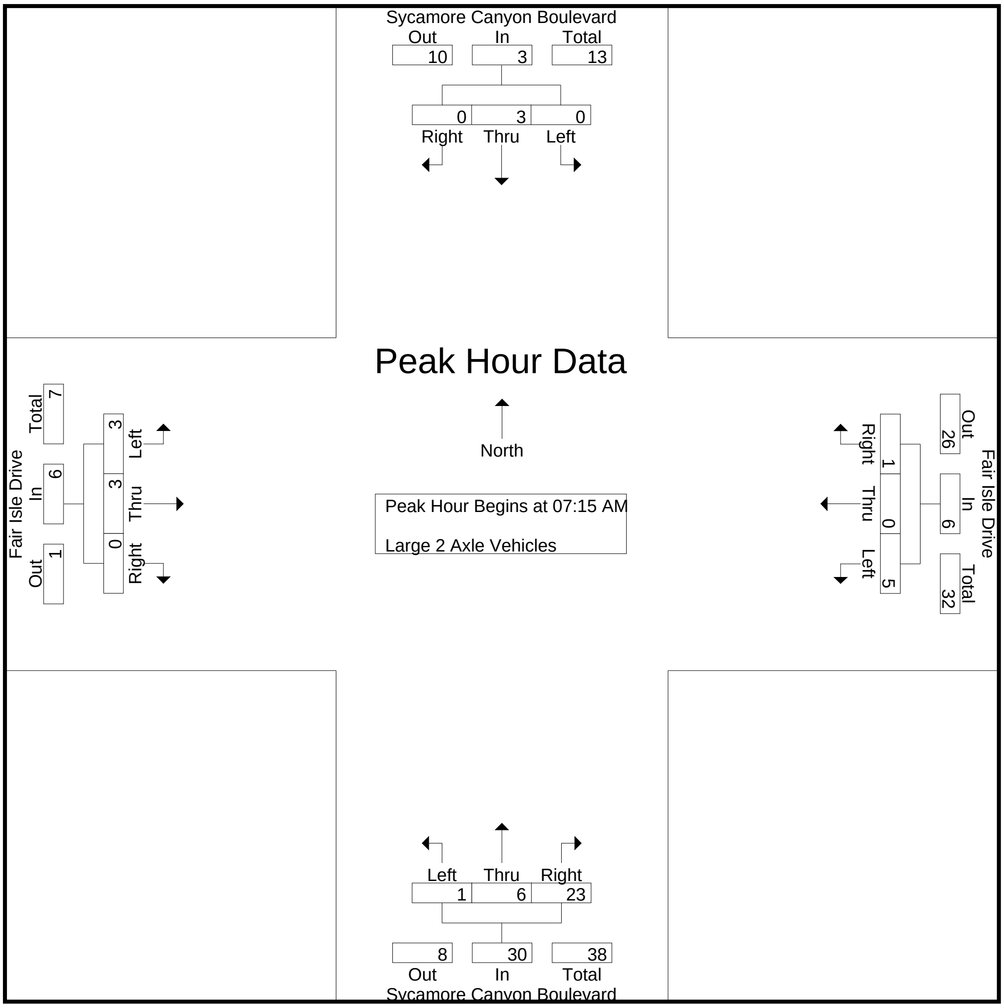

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	**1**	0	**1**	**3**	0	0	**3**	0	1	2	3	**2**	0	0	2
+15 mins.	0	1	0	1	1	0	0	1	0	2	**10**	**12**	0	0	0	0
+30 mins.	0	1	0	1	0	0	**1**	1	**1**	**3**	6	10	0	**3**	0	**3**
+45 mins.	0	0	0	0	1	0	0	1	0	0	5	5	1	0	0	1
Total Volume	0	3	0	3	5	0	1	6	1	6	23	30	3	3	0	6
% App. Total	0	100	0		83.3	0	16.7		3.3	20	76.7		50	50	0	
PHF	.000	.750	.000	.750	.417	.000	.250	.500	.250	.500	.575	.625	.375	.250	.000	.500

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Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle AM
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Groups Printed- 3 Axle Vehicles

	Sycamore Canyon Boulevard Southbound				Fair Isle Drive Westbound				Sycamore Canyon Boulevard Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	3
Total	0	0	0	0	0	0	0	0	0	3	2	5	0	0	0	0	5
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	2
08:45 AM	0	0	0	0	0	0	0	0	0	1	3	4	0	1	0	1	5
Total	0	0	0	0	0	0	0	0	0	2	5	7	0	1	0	1	8
Grand Total	0	0	0	0	0	0	0	0	0	5	7	12	0	1	0	1	13
Apprch %	0	0	0		0	0	0		0	41.7	58.3		0	100	0		
Total %	0	0	0	0	0	0	0	0	0	38.5	53.8	92.3	0	7.7	0	7.7	

	Sycamore Canyon Boulevard Southbound				Fair Isle Drive Westbound				Sycamore Canyon Boulevard Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	**2**	**1**	**3**	0	0	0	0	**3**
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	3	1	4	0	0	0	0	4
% App. Total	0	0	0		0	0	0		0	75	25		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.375	.250	.333	.000	.000	.000	.000	.333

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City of Riverside
N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
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File Name : 01_RIV_Sycamore_Fair Isle AM
Site Code : 99921033
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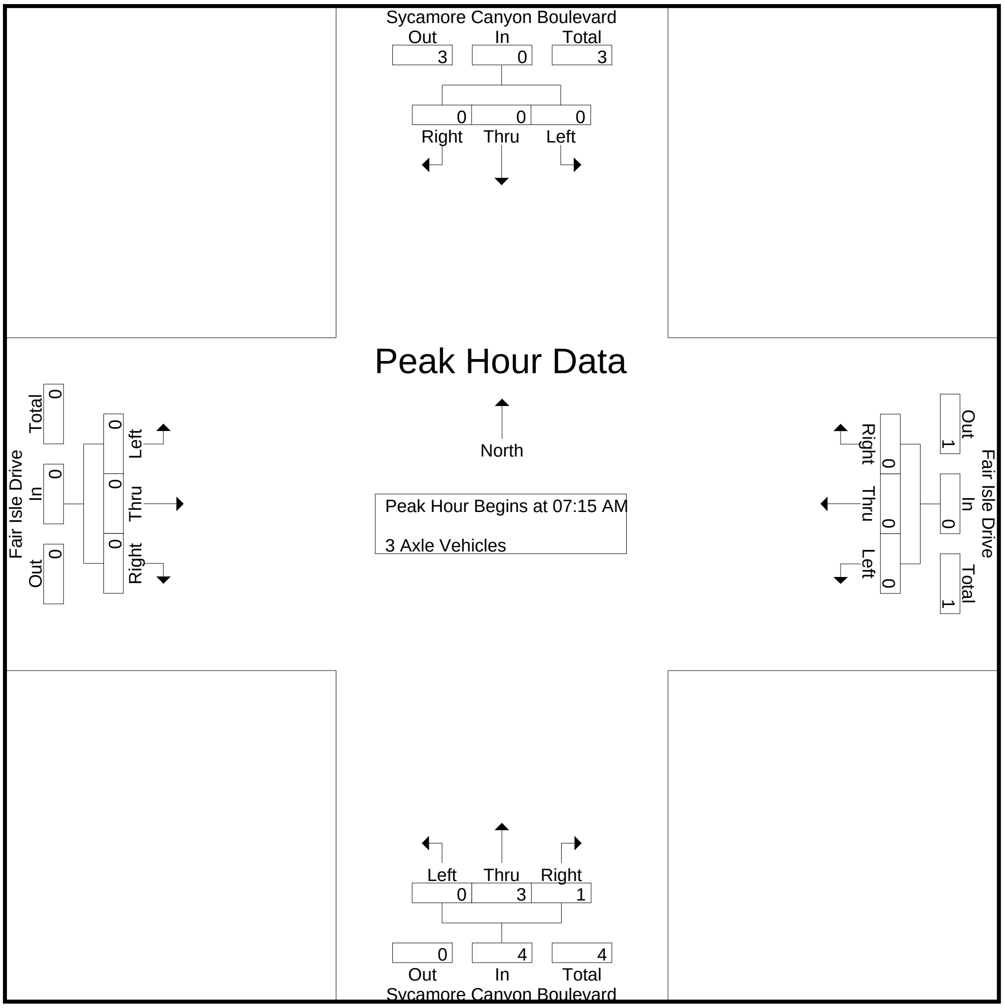

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	**2**	**1**	**3**	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	3	1	4	0	0	0	0
% App. Total	0	0	0		0	0	0		0	75	25		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.375	.250	.333	.000	.000	.000	.000

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City of Riverside
N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle AM
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Groups Printed- 4+ Axle Trucks

	Sycamore Canyon Boulevard Southbound				Fair Isle Drive Westbound				Sycamore Canyon Boulevard Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	6	6	0	0	0	0	6
07:15 AM	0	0	0	0	0	0	0	0	0	0	6	6	0	0	0	0	6
07:30 AM	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	3
07:45 AM	0	0	0	0	0	0	0	0	0	0	11	11	0	0	0	0	11
Total	0	0	0	0	0	0	0	0	0	0	26	26	0	0	0	0	26
08:00 AM	0	0	0	0	0	0	0	0	0	0	7	7	0	0	0	0	7
08:15 AM	0	0	0	0	0	0	0	0	0	0	16	16	0	0	0	0	16
08:30 AM	0	0	0	0	0	0	0	0	0	1	13	14	0	0	0	0	14
08:45 AM	0	0	0	0	0	0	0	0	0	0	12	12	0	0	0	0	12
Total	0	0	0	0	0	0	0	0	0	1	48	49	0	0	0	0	49
Grand Total	0	0	0	0	0	0	0	0	0	1	74	75	0	0	0	0	75
Apprch %	0	0	0		0	0	0		0	1.3	98.7		0	0	0		
Total %	0	0	0	0	0	0	0	0	0	1.3	98.7	100	0	0	0	0	

	Sycamore Canyon Boulevard Southbound				Fair Isle Drive Westbound				Sycamore Canyon Boulevard Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	0	0	0	0	0	6	6	0	0	0	0	6
07:30 AM	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	3
07:45 AM	0	0	0	0	0	0	0	0	0	0	**11**	**11**	0	0	0	0	**11**
08:00 AM	0	0	0	0	0	0	0	0	0	0	7	7	0	0	0	0	7
Total Volume	0	0	0	0	0	0	0	0	0	0	27	27	0	0	0	0	27
% App. Total	0	0	0		0	0	0		0	0	100		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.614	.614	.000	.000	.000	.000	.614

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E/W: Fair Isle Drive
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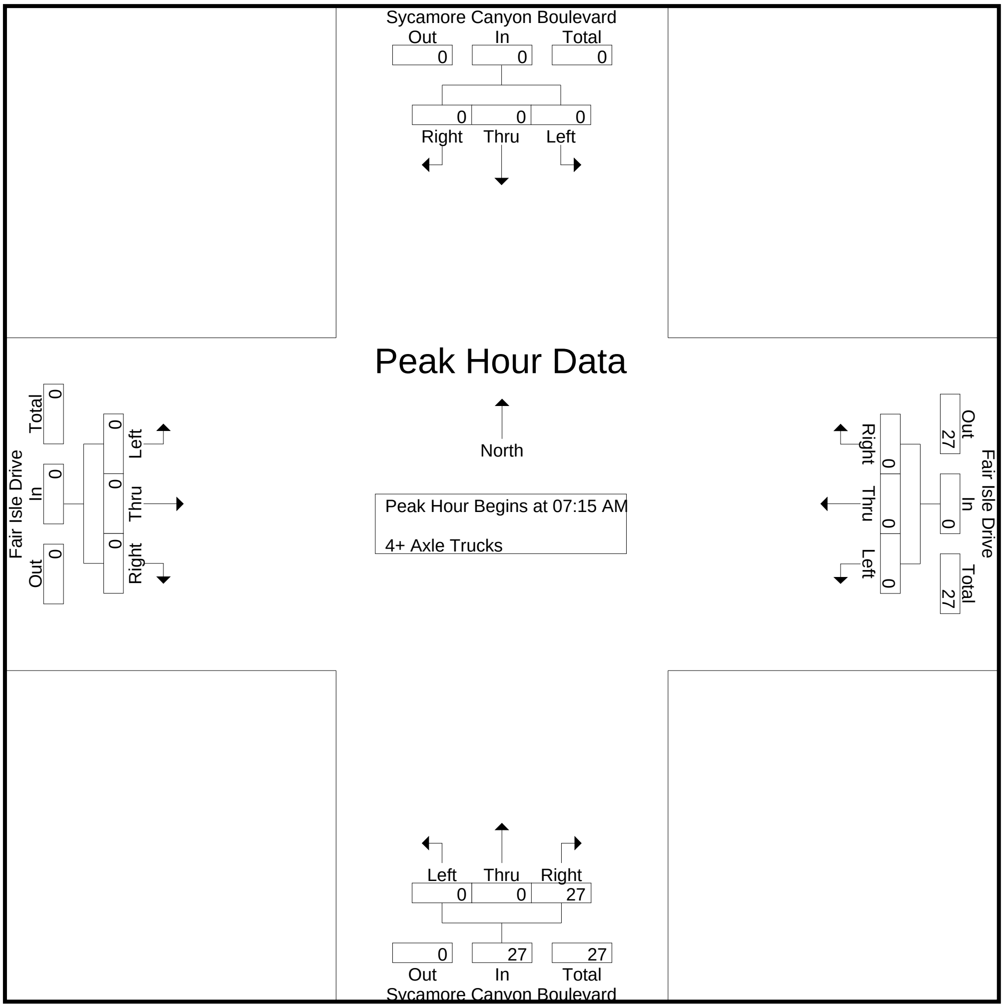

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	6	6	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	**11**	**11**	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	7	7	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	27	27	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	100		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.614	.614	.000	.000	.000	.000

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City of Riverside
N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle PM
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Sycamore Canyon Boulevard Southbound				Fair Isle Drive Westbound				Sycamore Canyon Boulevard Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	49	75	2	126	21	14	31	66	22	119	125	266	4	16	21	41	499
04:15 PM	74	81	4	159	22	18	29	69	53	82	122	257	3	17	19	39	524
04:30 PM	77	68	5	150	20	25	37	82	37	93	143	273	4	19	20	43	548
04:45 PM	73	88	7	168	24	21	18	63	36	71	113	220	1	16	25	42	493
Total	273	312	18	603	87	78	115	280	148	365	503	1016	12	68	85	165	2064
05:00 PM	101	99	10	210	24	18	26	68	31	74	121	226	2	25	19	46	550
05:15 PM	96	100	10	206	25	22	31	78	27	76	116	219	4	34	28	66	569
05:30 PM	91	110	6	207	26	25	23	74	28	87	127	242	3	23	23	49	572
05:45 PM	92	86	5	183	26	25	27	78	25	48	119	192	2	15	28	45	498
Total	380	395	31	806	101	90	107	298	111	285	483	879	11	97	98	206	2189
Grand Total	653	707	49	1409	188	168	222	578	259	650	986	1895	23	165	183	371	4253
Apprch %	46.3	50.2	3.5		32.5	29.1	38.4		13.7	34.3	52		6.2	44.5	49.3		
Total %	15.4	16.6	1.2	33.1	4.4	4	5.2	13.6	6.1	15.3	23.2	44.6	0.5	3.9	4.3	8.7	
Passenger Vehicles	652	693	49	1394	178	168	222	568	258	636	895	1789	15	158	181	354	4105
% Passenger Vehicles	99.8	98	100	98.9	94.7	100	100	98.3	99.6	97.8	90.8	94.4	65.2	95.8	98.9	95.4	96.5
Large 2 Axle Vehicles	1	13	0	14	10	0	0	10	1	10	23	34	8	7	2	17	75
% Large 2 Axle Vehicles	0.2	1.8	0	1	5.3	0	0	1.7	0.4	1.5	2.3	1.8	34.8	4.2	1.1	4.6	1.8
3 Axle Vehicles	0	1	0	1	0	0	0	0	0	4	12	16	0	0	0	0	17
% 3 Axle Vehicles	0	0.1	0	0.1	0	0	0	0	0	0.6	1.2	0.8	0	0	0	0	0.4
4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0	56	56	0	0	0	0	56
% 4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0	5.7	3	0	0	0	0	1.3

	Sycamore Canyon Boulevard Southbound				Fair Isle Drive Westbound				Sycamore Canyon Boulevard Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**101**	99	**10**	**210**	24	18	26	68	**31**	74	121	226	2	25	19	46	550
05:15 PM	96	100	10	206	25	22	**31**	**78**	27	76	116	219	**4**	**34**	**28**	**66**	569
05:30 PM	91	**110**	6	207	**26**	**25**	23	74	28	**87**	**127**	**242**	3	23	23	49	**572**
05:45 PM	92	86	5	183	26	25	27	78	25	48	119	192	2	15	28	45	498
Total Volume	380	395	31	806	101	90	107	298	111	285	483	879	11	97	98	206	2189
% App. Total	47.1	49	3.8		33.9	30.2	35.9		12.6	32.4	54.9		5.3	47.1	47.6		
PHF	.941	.898	.775	.960	.971	.900	.863	.955	.895	.819	.951	.908	.688	.713	.875	.780	.957

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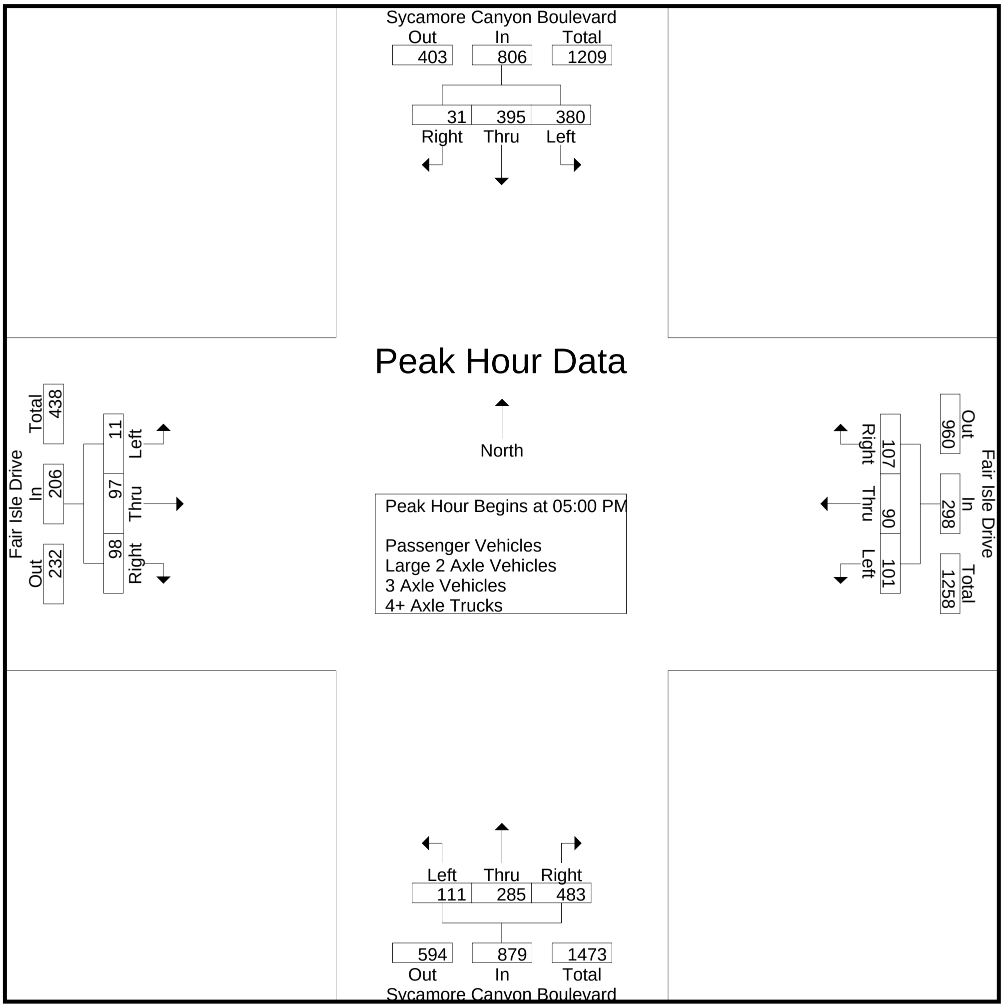
City of Riverside
N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				04:00 PM				05:00 PM			
+0 mins.	**101**	99	**10**	**210**	24	18	26	68	22	**119**	125	266	2	25	19	46
+15 mins.	96	100	10	206	25	22	**31**	**78**	**53**	82	122	257	**4**	**34**	**28**	**66**
+30 mins.	91	**110**	6	207	**26**	**25**	23	74	37	93	**143**	**273**	3	23	23	49
+45 mins.	92	86	5	183	26	25	27	78	36	71	113	220	2	15	28	45
Total Volume	380	395	31	806	101	90	107	298	148	365	503	1016	11	97	98	206
% App. Total	47.1	49	3.8		33.9	30.2	35.9		14.6	35.9	49.5		5.3	47.1	47.6	
PHF	.941	.898	.775	.960	.971	.900	.863	.955	.698	.767	.879	.930	.688	.713	.875	.780

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Site Code : 99921033
Start Date : 1/26/2021
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Groups Printed- Passenger Vehicles

	Sycamore Canyon Boulevard Southbound				Fair Isle Drive Westbound				Sycamore Canyon Boulevard Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	49	74	2	125	20	14	31	65	22	119	113	254	3	16	20	39	483
04:15 PM	74	80	4	158	20	18	29	67	53	78	104	235	2	16	19	37	497
04:30 PM	77	67	5	149	18	25	37	80	36	93	132	261	3	18	20	41	531
04:45 PM	73	86	7	166	23	21	18	62	36	68	102	206	0	15	24	39	473
Total	273	307	18	598	81	78	115	274	147	358	451	956	8	65	83	156	1984
05:00 PM	101	96	10	207	23	18	26	67	31	72	108	211	1	23	19	43	528
05:15 PM	96	99	10	205	24	22	31	77	27	76	105	208	3	34	28	65	555
05:30 PM	90	108	6	204	25	25	23	73	28	83	121	232	2	22	23	47	556
05:45 PM	92	83	5	180	25	25	27	77	25	47	110	182	1	14	28	43	482
Total	379	386	31	796	97	90	107	294	111	278	444	833	7	93	98	198	2121
Grand Total	652	693	49	1394	178	168	222	568	258	636	895	1789	15	158	181	354	4105
Apprch %	46.8	49.7	3.5		31.3	29.6	39.1		14.4	35.6	50		4.2	44.6	51.1		
Total %	15.9	16.9	1.2	34	4.3	4.1	5.4	13.8	6.3	15.5	21.8	43.6	0.4	3.8	4.4	8.6	

	Sycamore Canyon Boulevard Southbound				Fair Isle Drive Westbound				Sycamore Canyon Boulevard Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**101**	96	**10**	**207**	23	18	26	67	**31**	72	108	211	1	23	19	43	528
05:15 PM	96	99	10	205	24	22	**31**	**77**	27	76	105	208	**3**	**34**	**28**	**65**	555
05:30 PM	90	**108**	6	204	**25**	**25**	23	73	28	**83**	**121**	**232**	2	22	23	47	**556**
05:45 PM	92	83	5	180	25	25	27	77	25	47	110	182	1	14	28	43	482
Total Volume	379	386	31	796	97	90	107	294	111	278	444	833	7	93	98	198	2121
% App. Total	47.6	48.5	3.9		33	30.6	36.4		13.3	33.4	53.3		3.5	47	49.5		
PHF	.938	.894	.775	.961	.970	.900	.863	.955	.895	.837	.917	.898	.583	.684	.875	.762	.954

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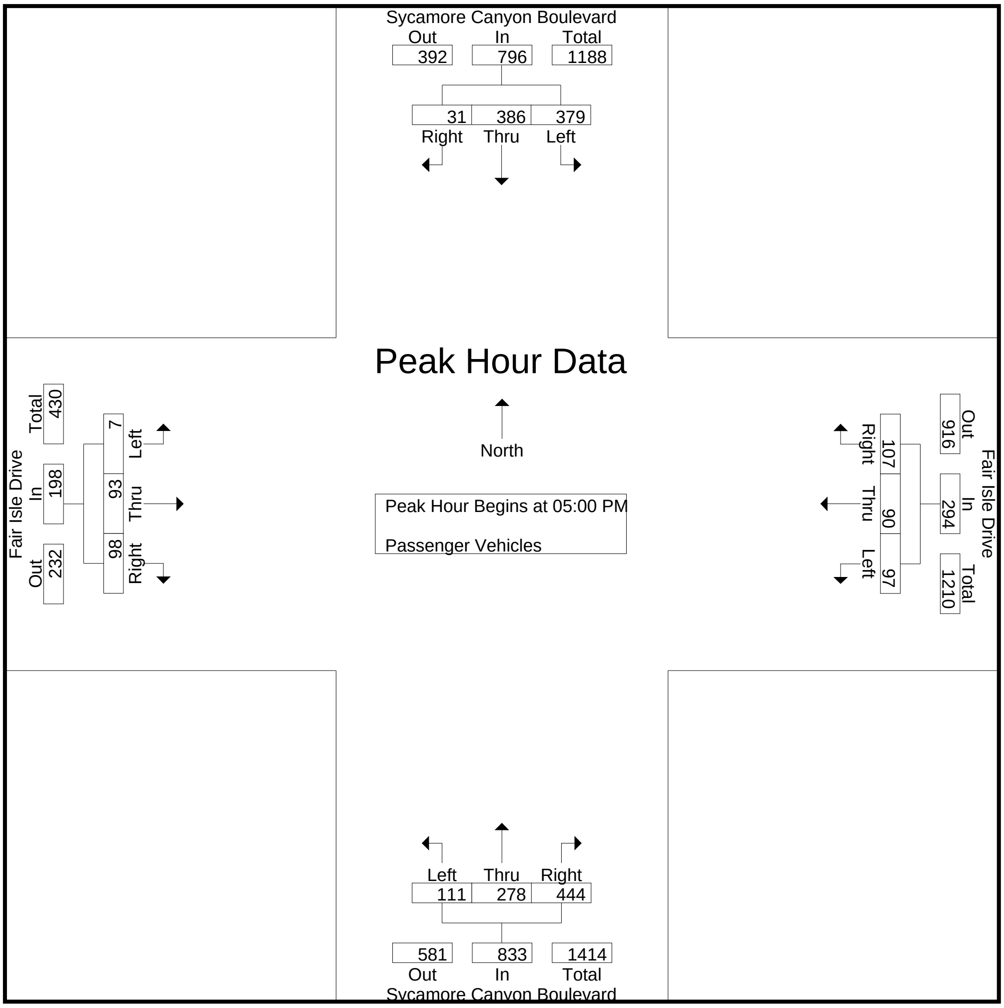

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	**101**	96	**10**	**207**	23	18	26	67	**31**	72	108	211	1	23	19	43
+15 mins.	96	99	10	205	24	22	**31**	**77**	27	76	105	208	**3**	**34**	**28**	**65**
+30 mins.	90	**108**	6	204	**25**	**25**	23	73	28	**83**	**121**	**232**	2	22	23	47
+45 mins.	92	83	5	180	25	25	27	77	25	47	110	182	1	14	28	43
Total Volume	379	386	31	796	97	90	107	294	111	278	444	833	7	93	98	198
% App. Total	47.6	48.5	3.9		33	30.6	36.4		13.3	33.4	53.3		3.5	47	49.5	
PHF	.938	.894	.775	.961	.970	.900	.863	.955	.895	.837	.917	.898	.583	.684	.875	.762

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Groups Printed- Large 2 Axle Vehicles

	Sycamore Canyon Boulevard Southbound				Fair Isle Drive Westbound				Sycamore Canyon Boulevard Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	1	0	1	1	0	0	1	0	0	4	4	1	0	1	2	8
04:15 PM	0	1	0	1	2	0	0	2	0	2	4	6	1	1	0	2	11
04:30 PM	0	1	0	1	2	0	0	2	1	0	5	6	1	1	0	2	11
04:45 PM	0	2	0	2	1	0	0	1	0	2	3	5	1	1	1	3	11
Total	0	5	0	5	6	0	0	6	1	4	16	21	4	3	2	9	41
05:00 PM	0	2	0	2	1	0	0	1	0	1	3	4	1	2	0	3	10
05:15 PM	0	1	0	1	1	0	0	1	0	0	3	3	1	0	0	1	6
05:30 PM	1	2	0	3	1	0	0	1	0	4	1	5	1	1	0	2	11
05:45 PM	0	3	0	3	1	0	0	1	0	1	0	1	1	1	0	2	7
Total	1	8	0	9	4	0	0	4	0	6	7	13	4	4	0	8	34
Grand Total	1	13	0	14	10	0	0	10	1	10	23	34	8	7	2	17	75
Apprch %	7.1	92.9	0		100	0	0		2.9	29.4	67.6		47.1	41.2	11.8		
Total %	1.3	17.3	0	18.7	13.3	0	0	13.3	1.3	13.3	30.7	45.3	10.7	9.3	2.7	22.7	

	Sycamore Canyon Boulevard Southbound				Fair Isle Drive Westbound				Sycamore Canyon Boulevard Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	2	0	2	**1**	0	0	**1**	0	1	**3**	4	**1**	**2**	0	**3**	10
05:15 PM	0	1	0	1	1	0	0	1	0	0	3	3	1	0	0	1	6
05:30 PM	**1**	2	0	**3**	1	0	0	1	0	**4**	1	**5**	1	1	0	2	**11**
05:45 PM	0	**3**	0	3	1	0	0	1	0	1	0	1	1	1	0	2	7
Total Volume	1	8	0	9	4	0	0	4	0	6	7	13	4	4	0	8	34
% App. Total	11.1	88.9	0		100	0	0		0	46.2	53.8		50	50	0		
PHF	.250	.667	.000	.750	1.00	.000	.000	1.00	.000	.375	.583	.650	1.00	.500	.000	.667	.773

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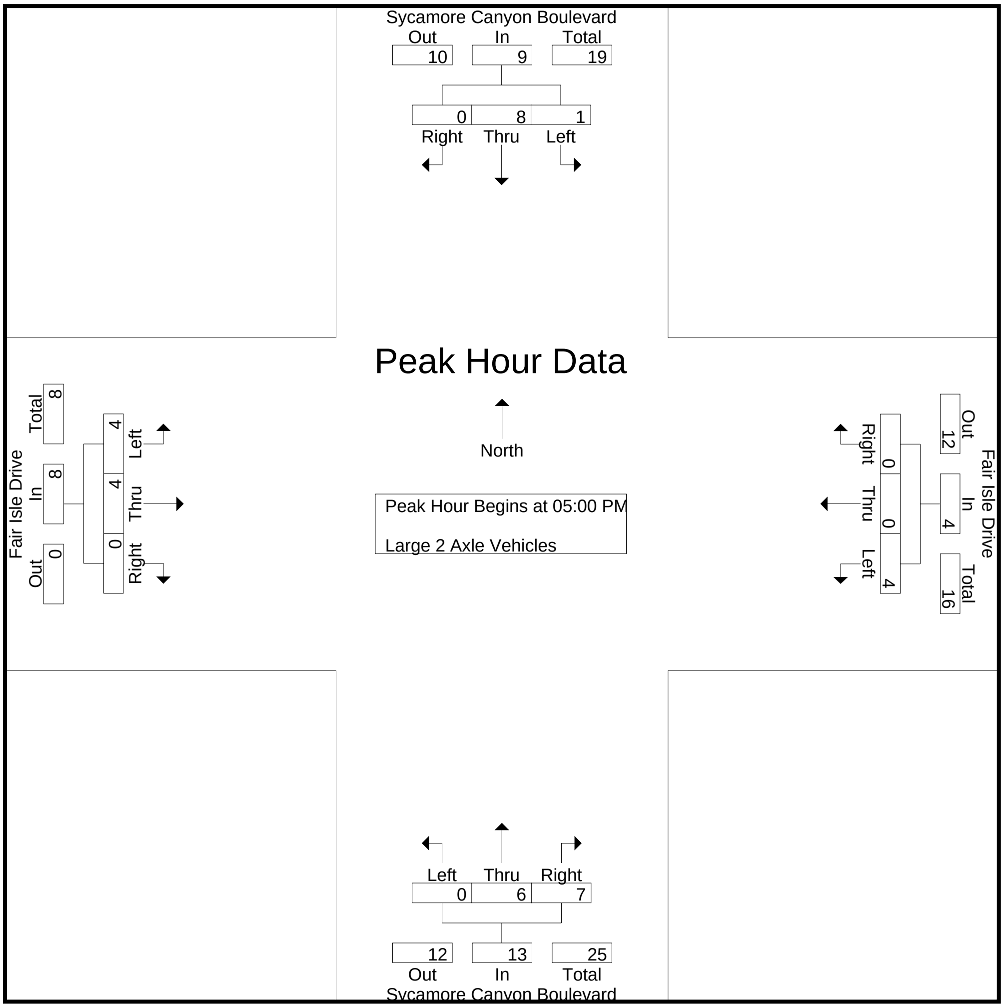

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	2	0	2	**1**	0	0	**1**	0	1	**3**	4	**1**	**2**	0	**3**
+15 mins.	0	1	0	1	1	0	0	1	0	0	3	3	1	0	0	1
+30 mins.	**1**	2	0	**3**	1	0	0	1	0	**4**	1	**5**	1	1	0	2
+45 mins.	0	**3**	0	3	1	0	0	1	0	1	0	1	1	1	0	2
Total Volume	1	8	0	9	4	0	0	4	0	6	7	13	4	4	0	8
% App. Total	11.1	88.9	0		100	0	0		0	46.2	53.8		50	50	0	
PHF	.250	.667	.000	.750	1.000	.000	.000	1.000	.000	.375	.583	.650	1.000	.500	.000	.667

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File Name : 01_RIV_Sycamore_Fair Isle PM
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Groups Printed- 3 Axle Vehicles

	Sycamore Canyon Boulevard Southbound				Fair Isle Drive Westbound				Sycamore Canyon Boulevard Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	2
04:15 PM	0	0	0	0	0	0	0	0	0	2	2	4	0	0	0	0	4
04:30 PM	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	3
04:45 PM	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	3
Total	0	0	0	0	0	0	0	0	0	3	9	12	0	0	0	0	12
05:00 PM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
05:15 PM	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	2
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
Total	0	1	0	1	0	0	0	0	0	1	3	4	0	0	0	0	5
Grand Total	0	1	0	1	0	0	0	0	0	4	12	16	0	0	0	0	17
Apprch %	0	100	0		0	0	0		0	25	75		0	0	0		
Total %	0	5.9	0	5.9	0	0	0	0	0	23.5	70.6	94.1	0	0	0	0	

	Sycamore Canyon Boulevard Southbound				Fair Isle Drive Westbound				Sycamore Canyon Boulevard Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	**1**	0	**1**	0	0	0	0	0	**1**	0	1	0	0	0	0	**2**
05:15 PM	0	0	0	0	0	0	0	0	0	0	**2**	**2**	0	0	0	0	2
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
Total Volume	0	1	0	1	0	0	0	0	0	1	3	4	0	0	0	0	5
% App. Total	0	100	0		0	0	0		0	25	75		0	0	0		
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.375	.500	.000	.000	.000	.000	.625

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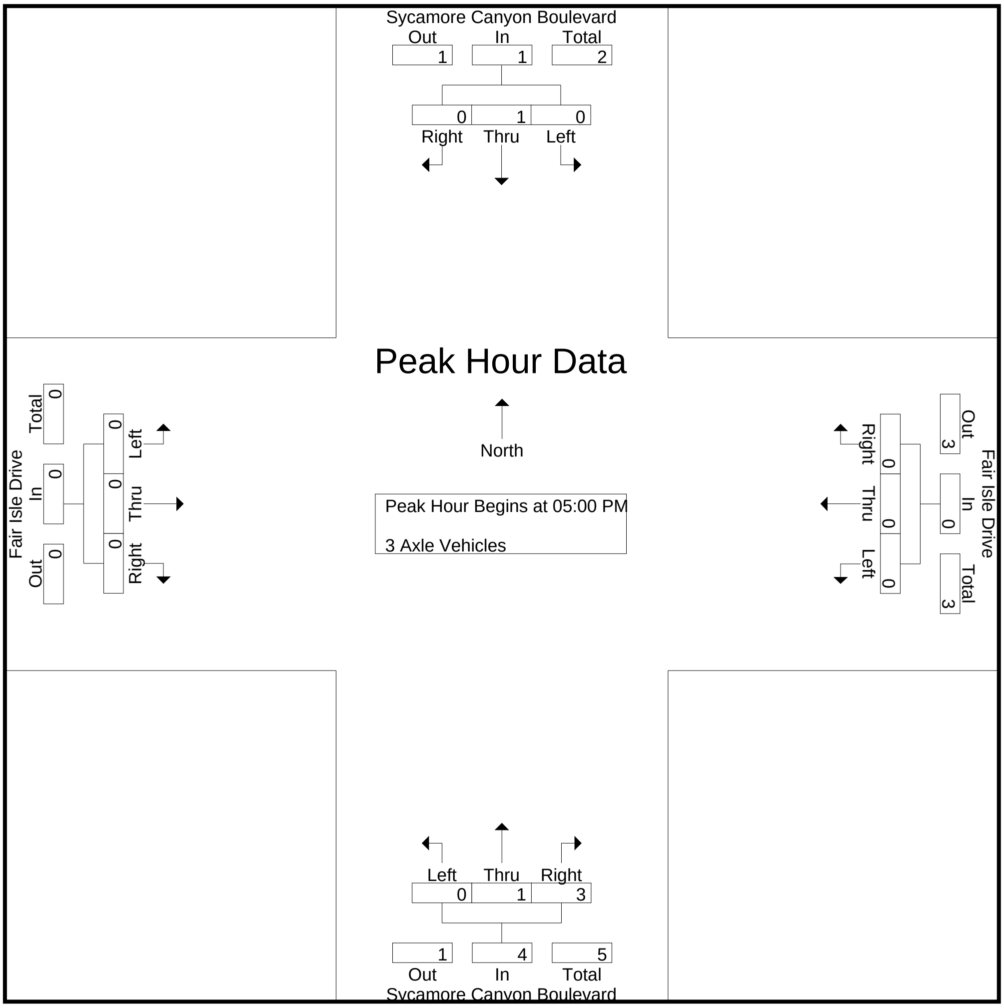

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	**1**	0	**1**	0	0	0	0	0	**1**	0	1	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	**2**	**2**	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
Total Volume	0	1	0	1	0	0	0	0	0	1	3	4	0	0	0	0
% App. Total	0	100	0		0	0	0		0	25	75		0	0	0	
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.375	.500	.000	.000	.000	.000

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Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle PM
Site Code : 99921033
Start Date : 1/26/2021

Groups Printed- 4+ Axle Trucks

	Sycamore Canyon Boulevard Southbound				Fair Isle Drive Westbound				Sycamore Canyon Boulevard Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	6	6	0	0	0	0	6
04:15 PM	0	0	0	0	0	0	0	0	0	0	12	12	0	0	0	0	12
04:30 PM	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	3
04:45 PM	0	0	0	0	0	0	0	0	0	0	6	6	0	0	0	0	6
Total	0	0	0	0	0	0	0	0	0	0	27	27	0	0	0	0	27
05:00 PM	0	0	0	0	0	0	0	0	0	0	10	10	0	0	0	0	10
05:15 PM	0	0	0	0	0	0	0	0	0	0	6	6	0	0	0	0	6
05:30 PM	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0	0	5
05:45 PM	0	0	0	0	0	0	0	0	0	0	8	8	0	0	0	0	8
Total	0	0	0	0	0	0	0	0	0	0	29	29	0	0	0	0	29
Grand Total	0	0	0	0	0	0	0	0	0	0	56	56	0	0	0	0	56
Apprch %	0	0	0		0	0	0		0	0	100		0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	100	100	0	0	0	0	

	Sycamore Canyon Boulevard Southbound				Fair Isle Drive Westbound				Sycamore Canyon Boulevard Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	0	0	0	0	0	**10**	**10**	0	0	0	0	**10**
05:15 PM	0	0	0	0	0	0	0	0	0	0	6	6	0	0	0	0	6
05:30 PM	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0	0	5
05:45 PM	0	0	0	0	0	0	0	0	0	0	8	8	0	0	0	0	8
Total Volume	0	0	0	0	0	0	0	0	0	0	29	29	0	0	0	0	29
% App. Total	0	0	0		0	0	0		0	0	100		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.725	.725	.000	.000	.000	.000	.725

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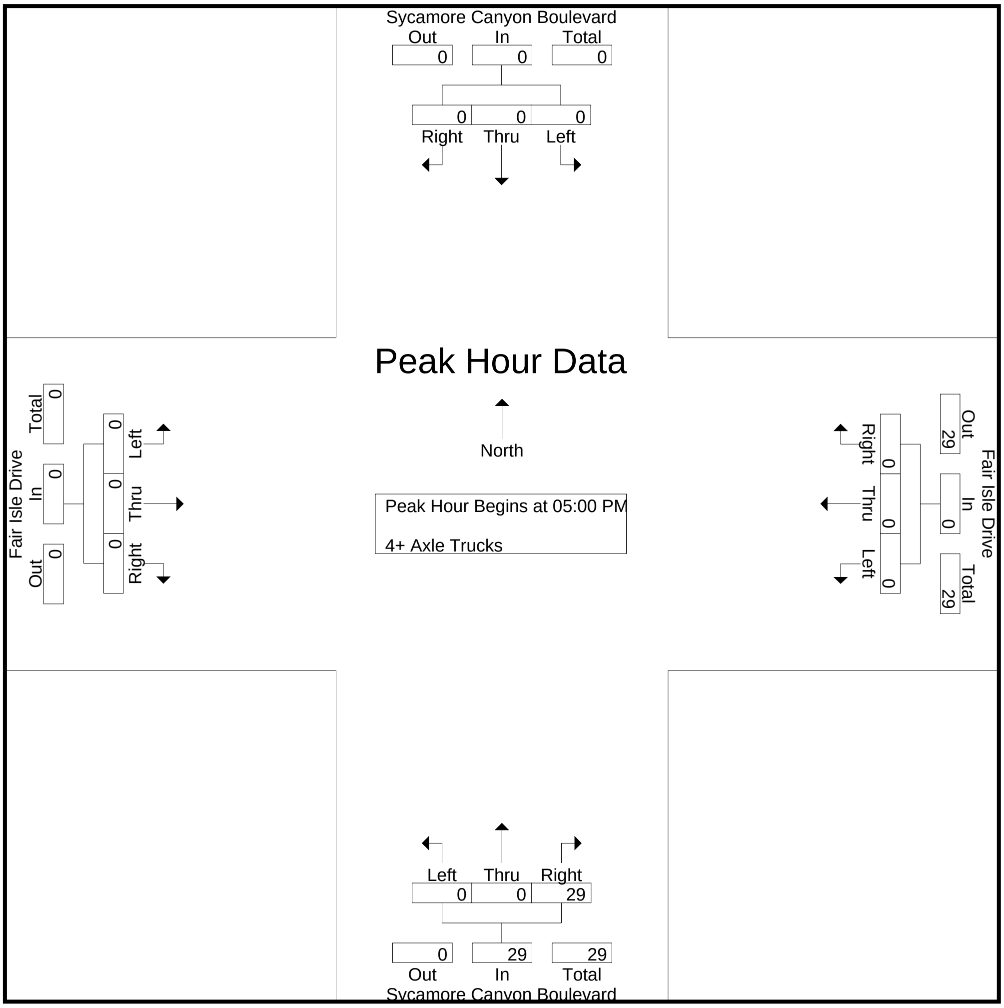
City of Riverside
N/S: Sycamore Canyon Boulevard
E/W: Fair Isle Drive
Weather: Clear

File Name : 01_RIV_Sycamore_Fair Isle PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	**10**	**10**	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	6	6	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	8	8	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	29	29	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	100		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.725	.725	.000	.000	.000	.000

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County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	I-215 Northbound On Ramp Southbound				Box Springs Road Westbound				I-215 Northbound Off Ramp Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	49	114	163	9	0	0	9	53	27	0	80	252
07:15 AM	0	0	0	0	0	54	116	170	11	1	1	13	47	21	0	68	251
07:30 AM	0	0	0	0	0	59	123	182	16	1	1	18	59	32	0	91	291
07:45 AM	0	0	0	0	0	88	126	214	21	0	0	21	57	39	0	96	331
Total	0	0	0	0	0	250	479	729	57	2	2	61	216	119	0	335	1125
08:00 AM	0	0	0	0	0	59	92	151	11	2	1	14	48	56	0	104	269
08:15 AM	0	0	0	0	0	46	75	121	8	0	1	9	45	38	0	83	213
08:30 AM	0	0	0	0	0	47	96	143	15	0	0	15	59	39	0	98	256
08:45 AM	0	0	0	0	0	36	67	103	17	1	1	19	55	28	0	83	205
Total	0	0	0	0	0	188	330	518	51	3	3	57	207	161	0	368	943
Grand Total	0	0	0	0	0	438	809	1247	108	5	5	118	423	280	0	703	2068
Apprch %	0	0	0		0	35.1	64.9		91.5	4.2	4.2		60.2	39.8	0		
Total %	0	0	0	0	0	21.2	39.1	60.3	5.2	0.2	0.2	5.7	20.5	13.5	0	34	
Passenger Vehicles	0	0	0	0	0	417	801	1218	107	5	5	117	304	273	0	577	1912
% Passenger Vehicles	0	0	0	0	0	95.2	99	97.7	99.1	100	100	99.2	71.9	97.5	0	82.1	92.5
Large 2 Axle Vehicles	0	0	0	0	0	6	7	13	1	0	0	1	31	6	0	37	51
% Large 2 Axle Vehicles	0	0	0	0	0	1.4	0.9	1	0.9	0	0	0.8	7.3	2.1	0	5.3	2.5
3 Axle Vehicles	0	0	0	0	0	15	1	16	0	0	0	0	8	1	0	9	25
% 3 Axle Vehicles	0	0	0	0	0	3.4	0.1	1.3	0	0	0	0	1.9	0.4	0	1.3	1.2
4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0	0	0	80	0	0	80	80
% 4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0	0	0	18.9	0	0	11.4	3.9

	I-215 Northbound On Ramp Southbound				Box Springs Road Westbound				I-215 Northbound Off Ramp Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	54	116	170	11	1	**1**	13	47	21	0	68	251
07:30 AM	0	0	0	0	0	59	123	182	16	1	1	18	**59**	32	0	91	291
07:45 AM	0	0	0	0	0	**88**	**126**	**214**	**21**	0	0	**21**	57	39	0	96	**331**
08:00 AM	0	0	0	0	0	59	92	151	11	**2**	1	14	48	**56**	0	**104**	269
Total Volume	0	0	0	0	0	260	457	717	59	4	3	66	211	148	0	359	1142
% App. Total	0	0	0		0	36.3	63.7		89.4	6.1	4.5		58.8	41.2	0		
PHF	.000	.000	.000	.000	.000	.739	.907	.838	.702	.500	.750	.786	.894	.661	.000	.863	.863

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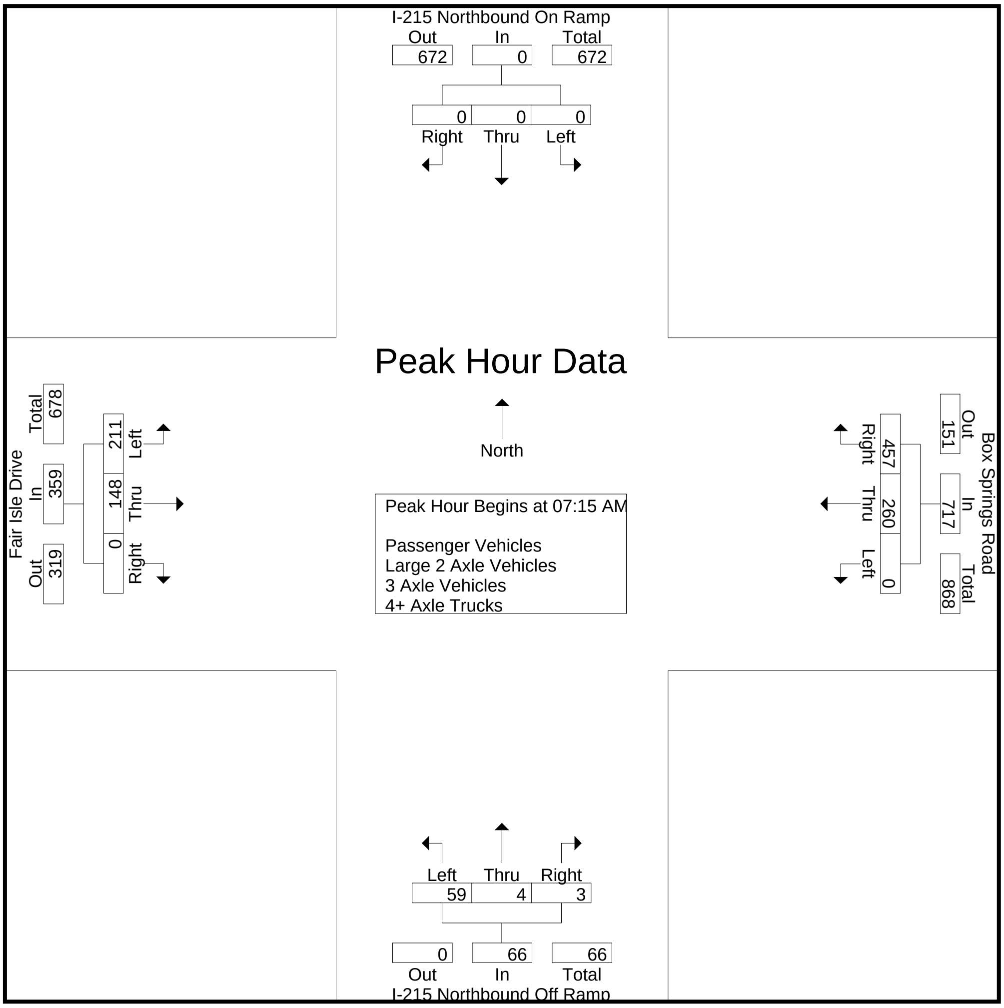
County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:15 AM				07:45 AM			
+0 mins.	0	0	0	0	0	49	114	163	11	1	**1**	13	57	39	0	96
+15 mins.	0	0	0	0	0	54	116	170	16	1	1	18	48	**56**	0	**104**
+30 mins.	0	0	0	0	0	59	123	182	**21**	0	0	**21**	45	38	0	83
+45 mins.	0	0	0	0	0	**88**	**126**	**214**	11	**2**	1	14	**59**	39	0	98
Total Volume	0	0	0	0	0	250	479	729	59	4	3	66	209	172	0	381
% App. Total	0	0	0		0	34.3	65.7		89.4	6.1	4.5		54.9	45.1	0	
PHF	.000	.000	.000	.000	.000	.710	.950	.852	.702	.500	.750	.786	.886	.768	.000	.916

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County of Riverside
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E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Passenger Vehicles

	I-215 Northbound On Ramp Southbound				Box Springs Road Westbound				I-215 Northbound Off Ramp Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	47	111	158	9	0	0	9	41	27	0	68	235
07:15 AM	0	0	0	0	0	53	114	167	11	1	1	13	39	21	0	60	240
07:30 AM	0	0	0	0	0	59	123	182	15	1	1	17	46	31	0	77	276
07:45 AM	0	0	0	0	0	77	124	201	21	0	0	21	39	37	0	76	298
Total	0	0	0	0	0	236	472	708	56	2	2	60	165	116	0	281	1049
08:00 AM	0	0	0	0	0	55	92	147	11	2	1	14	35	56	0	91	252
08:15 AM	0	0	0	0	0	46	75	121	8	0	1	9	29	36	0	65	195
08:30 AM	0	0	0	0	0	45	96	141	15	0	0	15	42	38	0	80	236
08:45 AM	0	0	0	0	0	35	66	101	17	1	1	19	33	27	0	60	180
Total	0	0	0	0	0	181	329	510	51	3	3	57	139	157	0	296	863
Grand Total	0	0	0	0	0	417	801	1218	107	5	5	117	304	273	0	577	1912
Apprch %	0	0	0		0	34.2	65.8		91.5	4.3	4.3		52.7	47.3	0		
Total %	0	0	0	0	0	21.8	41.9	63.7	5.6	0.3	0.3	6.1	15.9	14.3	0	30.2	

	I-215 Northbound On Ramp Southbound				Box Springs Road Westbound				I-215 Northbound Off Ramp Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	53	114	167	11	1	**1**	13	39	21	0	60	240
07:30 AM	0	0	0	0	0	59	123	182	15	1	1	17	**46**	31	0	77	276
07:45 AM	0	0	0	0	0	**77**	**124**	**201**	**21**	0	0	**21**	39	37	0	76	**298**
08:00 AM	0	0	0	0	0	55	92	147	11	**2**	1	14	35	**56**	0	**91**	252
Total Volume	0	0	0	0	0	244	453	697	58	4	3	65	159	145	0	304	1066
% App. Total	0	0	0		0	35	65		89.2	6.2	4.6		52.3	47.7	0		
PHF	.000	.000	.000	.000	.000	.792	.913	.867	.690	.500	.750	.774	.864	.647	.000	.835	.894

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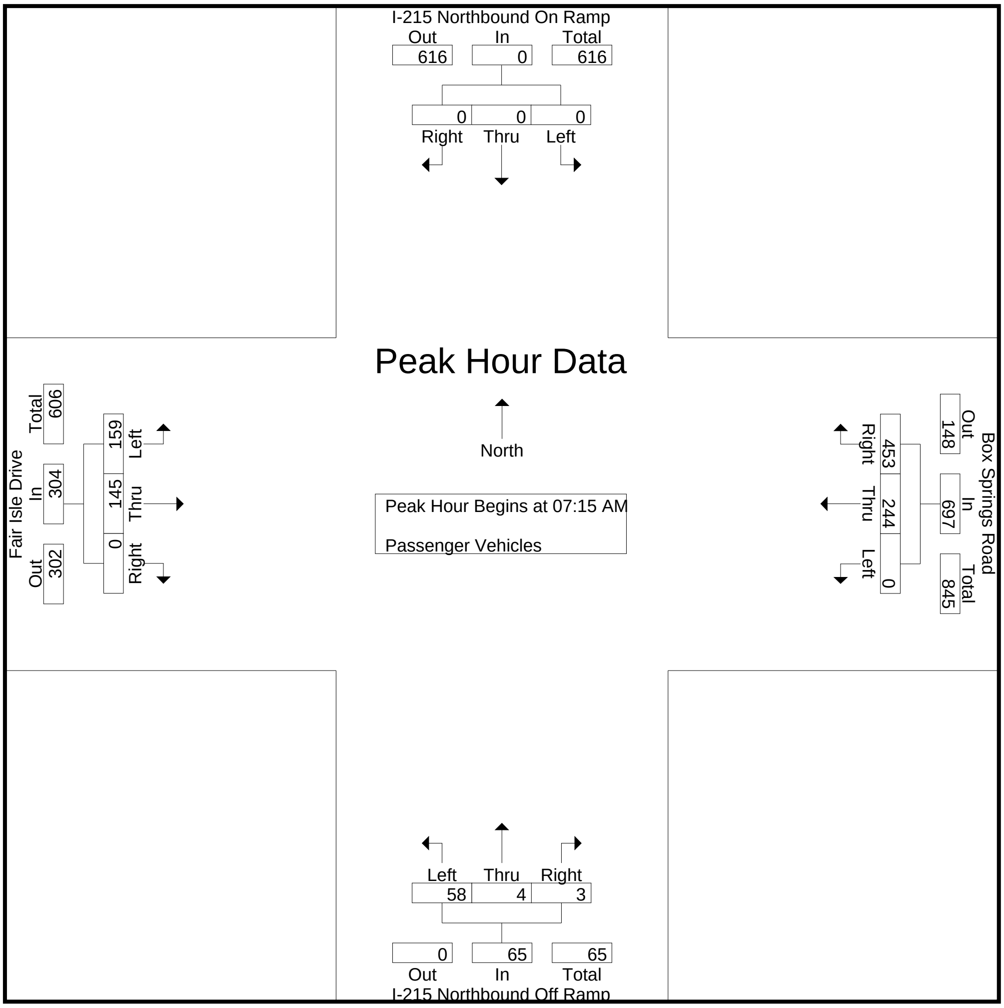
County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	0	0	0	53	114	167	11	1	**1**	13	39	21	0	60
+15 mins.	0	0	0	0	0	59	123	182	15	1	1	17	**46**	31	0	77
+30 mins.	0	0	0	0	0	**77**	**124**	**201**	**21**	0	0	**21**	39	37	0	76
+45 mins.	0	0	0	0	0	55	92	147	11	**2**	1	14	35	**56**	0	**91**
Total Volume	0	0	0	0	0	244	453	697	58	4	3	65	159	145	0	304
% App. Total	0	0	0		0	35	65		89.2	6.2	4.6		52.3	47.7	0	
PHF	.000	.000	.000	.000	.000	.792	.913	.867	.690	.500	.750	.774	.864	.647	.000	.835

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County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	I-215 Northbound On Ramp Southbound				Box Springs Road Westbound				I-215 Northbound Off Ramp Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	1	3	4	0	0	0	0	1	0	0	1	5
07:15 AM	0	0	0	0	0	1	2	3	0	0	0	0	1	0	0	1	4
07:30 AM	0	0	0	0	0	0	0	0	1	0	0	1	6	1	0	7	8
07:45 AM	0	0	0	0	0	0	1	1	0	0	0	0	5	2	0	7	8
Total	0	0	0	0	0	2	6	8	1	0	0	1	13	3	0	16	25
08:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	7	0	0	7	8
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	4	4
08:30 AM	0	0	0	0	0	2	0	2	0	0	0	0	2	0	0	2	4
08:45 AM	0	0	0	0	0	1	1	2	0	0	0	0	7	1	0	8	10
Total	0	0	0	0	0	4	1	5	0	0	0	0	18	3	0	21	26
Grand Total	0	0	0	0	0	6	7	13	1	0	0	1	31	6	0	37	51
Apprch %	0	0	0		0	46.2	53.8		100	0	0		83.8	16.2	0		
Total %	0	0	0	0	0	11.8	13.7	25.5	2	0	0	2	60.8	11.8	0	72.5	

	I-215 Northbound On Ramp Southbound				Box Springs Road Westbound				I-215 Northbound Off Ramp Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	**1**	**2**	**3**	0	0	0	0	1	0	0	1	4
07:30 AM	0	0	0	0	0	0	0	0	**1**	0	0	**1**	6	1	0	**7**	**8**
07:45 AM	0	0	0	0	0	0	1	1	0	0	0	0	5	**2**	0	7	8
08:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	**7**	0	0	7	8
Total Volume	0	0	0	0	0	2	3	5	1	0	0	1	19	3	0	22	28
% App. Total	0	0	0		0	40	60		100	0	0		86.4	13.6	0		
PHF	.000	.000	.000	.000	.000	.500	.375	.417	.250	.000	.000	.250	.679	.375	.000	.786	.875

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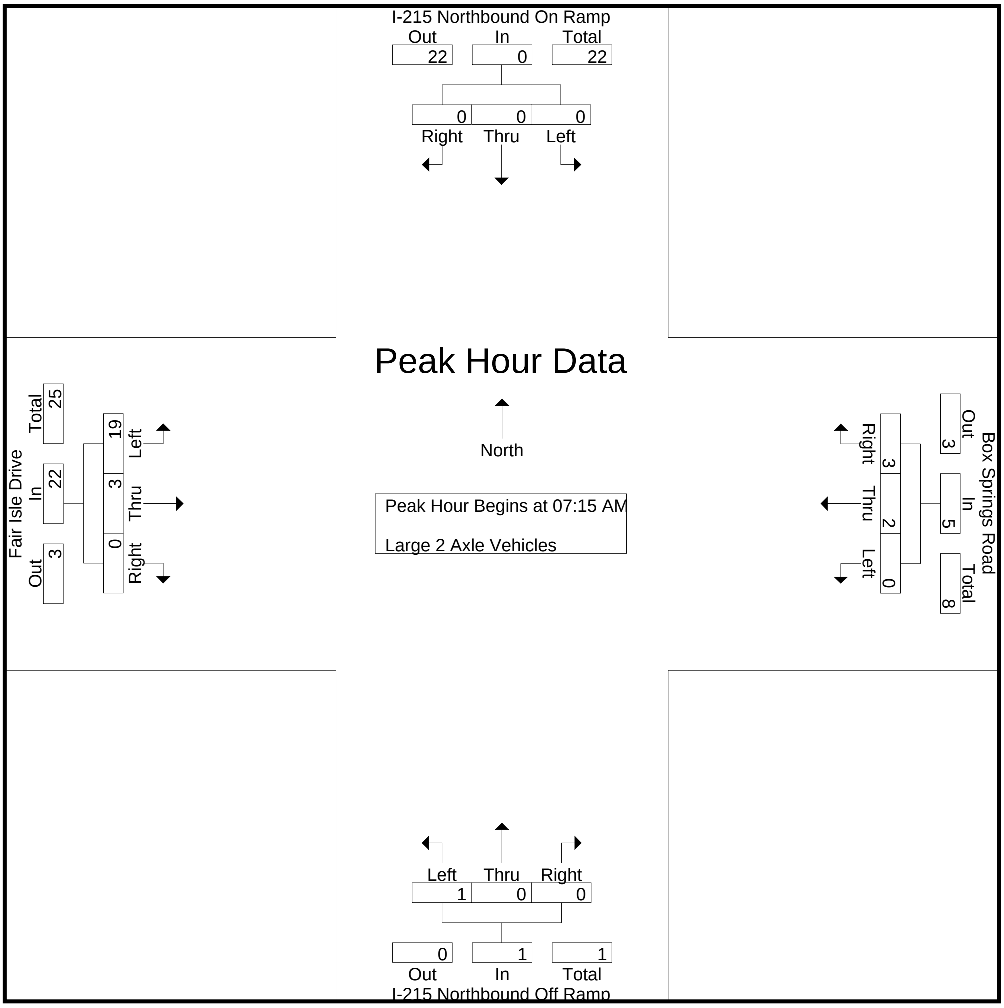
County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	0	0	0	**1**	**2**	**3**	0	0	0	0	1	0	0	1
+15 mins.	0	0	0	0	0	0	0	0	**1**	0	0	**1**	6	1	0	**7**
+30 mins.	0	0	0	0	0	0	1	1	0	0	0	0	5	**2**	0	7
+45 mins.	0	0	0	0	0	1	0	1	0	0	0	0	**7**	0	0	7
Total Volume	0	0	0	0	0	2	3	5	1	0	0	1	19	3	0	22
% App. Total	0	0	0		0	40	60		100	0	0		86.4	13.6	0	
PHF	.000	.000	.000	.000	.000	.500	.375	.417	.250	.000	.000	.250	.679	.375	.000	.786

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County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

	I-215 Northbound On Ramp Southbound				Box Springs Road Westbound				I-215 Northbound Off Ramp Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	2	0	0	2	3
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	11	1	12	0	0	0	0	3	0	0	3	15
Total	0	0	0	0	0	12	1	13	0	0	0	0	5	0	0	5	18
08:00 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
Total	0	0	0	0	0	3	0	3	0	0	0	0	3	1	0	4	7
Grand Total	0	0	0	0	0	15	1	16	0	0	0	0	8	1	0	9	25
Apprch %	0	0	0		0	93.8	6.2		0	0	0		88.9	11.1	0		
Total %	0	0	0	0	0	60	4	64	0	0	0	0	32	4	0	36	

	I-215 Northbound On Ramp Southbound				Box Springs Road Westbound				I-215 Northbound Off Ramp Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	**11**	**1**	**12**	0	0	0	0	**3**	0	0	**3**	**15**
08:00 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
Total Volume	0	0	0	0	0	14	1	15	0	0	0	0	3	0	0	3	18
% App. Total	0	0	0		0	93.3	6.7		0	0	0		100	0	0		
PHF	.000	.000	.000	.000	.000	.318	.250	.313	.000	.000	.000	.000	.250	.000	.000	.250	.300

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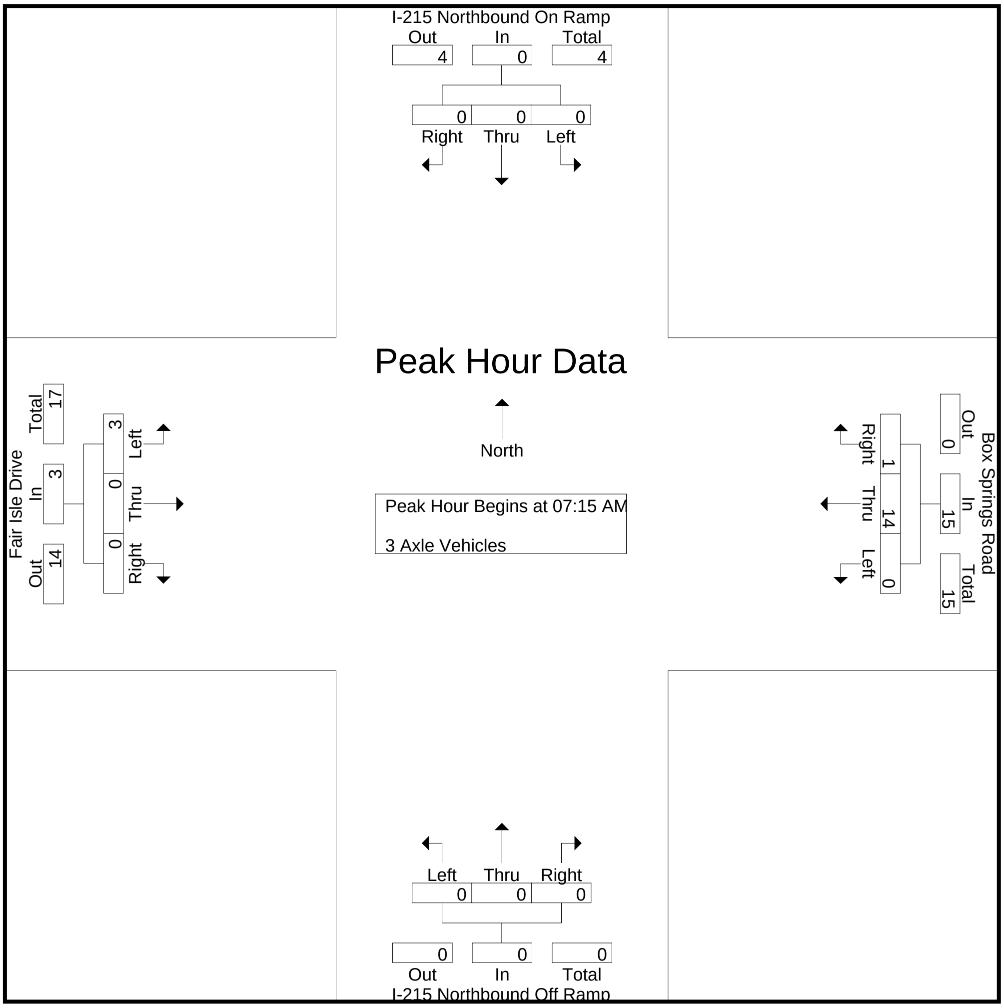
County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	**11**	**1**	**12**	0	0	0	0	**3**	0	0	**3**
+45 mins.	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	14	1	15	0	0	0	0	3	0	0	3
% App. Total	0	0	0		0	93.3	6.7		0	0	0		100	0	0	
PHF	.000	.000	.000	.000	.000	.318	.250	.313	.000	.000	.000	.000	.250	.000	.000	.250

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County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- 4+ Axle Trucks

	I-215 Northbound On Ramp Southbound				Box Springs Road Westbound				I-215 Northbound Off Ramp Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	9	9
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	7
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	7
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	10	10
Total	0	0	0	0	0	0	0	0	0	0	0	0	33	0	0	33	33
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	6
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	14	14
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	15	15
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	12	12
Total	0	0	0	0	0	0	0	0	0	0	0	0	47	0	0	47	47
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	80	0	0	80	80
Apprch %	0	0	0		0	0	0		0	0	0		100	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	100	

	I-215 Northbound On Ramp Southbound				Box Springs Road Westbound				I-215 Northbound Off Ramp Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	7
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	7
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**10**	0	0	**10**	**10**
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	6
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	30	0	0	30	30
% App. Total	0	0	0		0	0	0		0	0	0		100	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.750	.000	.000	.750	.750

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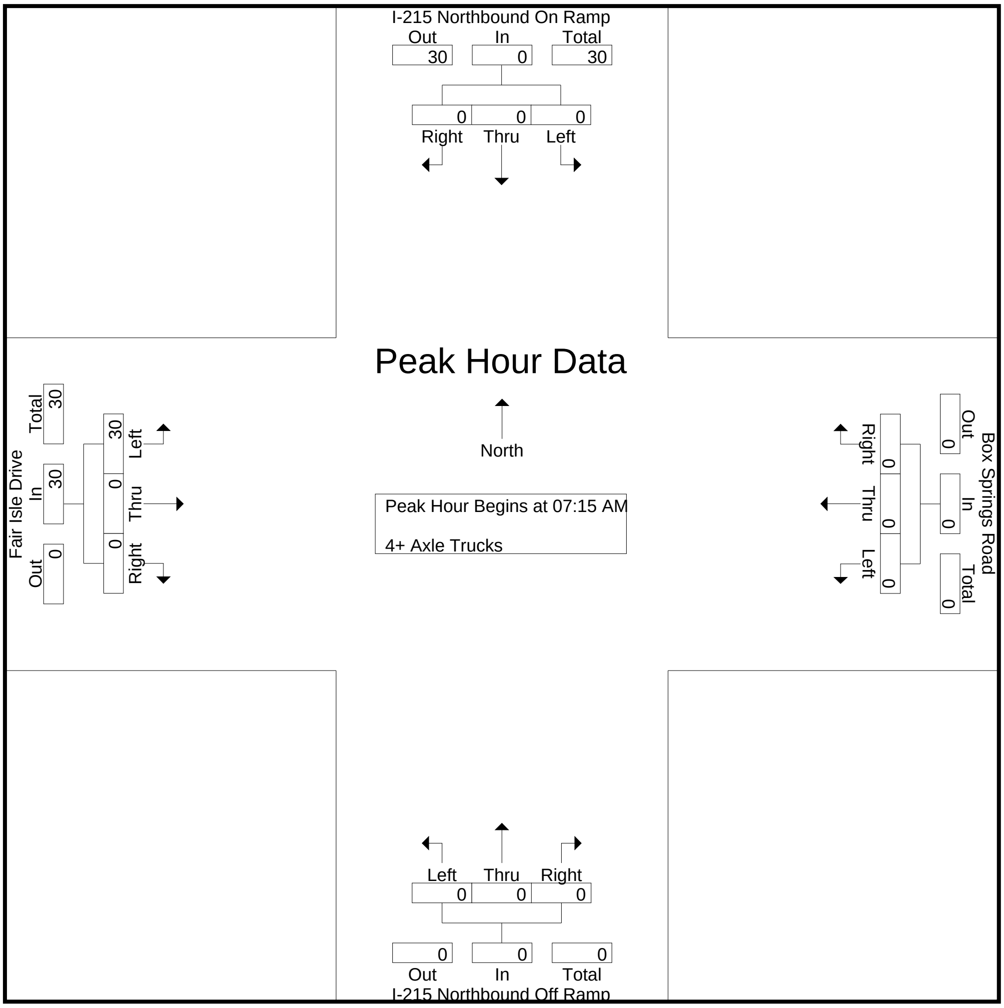
County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	**10**	0	0	**10**
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	30	0	0	30
% App. Total	0	0	0		0	0	0		0	0	0		100	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.750	.000	.000	.750

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County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	I-215 Northbound On Ramp Southbound				Box Springs Road Westbound				I-215 Northbound Off Ramp Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	56	72	128	12	0	0	12	89	96	0	185	325
04:15 PM	0	0	0	0	0	52	71	123	14	0	3	17	72	132	0	204	344
04:30 PM	0	0	0	0	0	55	63	118	31	0	0	31	89	148	0	237	386
04:45 PM	0	0	0	0	0	44	66	110	22	2	2	26	86	126	0	212	348
Total	0	0	0	0	0	207	272	479	79	2	5	86	336	502	0	838	1403
05:00 PM	0	0	0	0	0	43	57	100	20	1	1	22	85	159	0	244	366
05:15 PM	0	0	0	0	0	46	71	117	33	0	6	39	67	182	0	249	405
05:30 PM	0	0	0	0	0	51	69	120	21	1	1	23	77	159	0	236	379
05:45 PM	0	0	0	0	0	56	53	109	22	0	0	22	67	166	0	233	364
Total	0	0	0	0	0	196	250	446	96	2	8	106	296	666	0	962	1514
Grand Total	0	0	0	0	0	403	522	925	175	4	13	192	632	1168	0	1800	2917
Apprch %	0	0	0		0	43.6	56.4		91.1	2.1	6.8		35.1	64.9	0		
Total %	0	0	0	0	0	13.8	17.9	31.7	6	0.1	0.4	6.6	21.7	40	0	61.7	
Passenger Vehicles	0	0	0	0	0	391	520	911	175	4	13	192	546	1154	0	1700	2803
% Passenger Vehicles	0	0	0	0	0	97	99.6	98.5	100	100	100	100	86.4	98.8	0	94.4	96.1
Large 2 Axle Vehicles	0	0	0	0	0	9	2	11	0	0	0	0	16	14	0	30	41
% Large 2 Axle Vehicles	0	0	0	0	0	2.2	0.4	1.2	0	0	0	0	2.5	1.2	0	1.7	1.4
3 Axle Vehicles	0	0	0	0	0	3	0	3	0	0	0	0	10	0	0	10	13
% 3 Axle Vehicles	0	0	0	0	0	0.7	0	0.3	0	0	0	0	1.6	0	0	0.6	0.4
4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0	0	0	60	0	0	60	60
% 4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0	0	0	9.5	0	0	3.3	2.1

	I-215 Northbound On Ramp Southbound				Box Springs Road Westbound				I-215 Northbound Off Ramp Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	43	57	100	20	**1**	1	22	**85**	159	0	244	366
05:15 PM	0	0	0	0	0	46	**71**	117	**33**	0	**6**	**39**	67	**182**	0	**249**	**405**
05:30 PM	0	0	0	0	0	51	69	**120**	21	1	1	23	77	159	0	236	379
05:45 PM	0	0	0	0	0	**56**	53	109	22	0	0	22	67	166	0	233	364
Total Volume	0	0	0	0	0	196	250	446	96	2	8	106	296	666	0	962	1514
% App. Total	0	0	0		0	43.9	56.1		90.6	1.9	7.5		30.8	69.2	0		
PHF	.000	.000	.000	.000	.000	.875	.880	.929	.727	.500	.333	.679	.871	.915	.000	.966	.935

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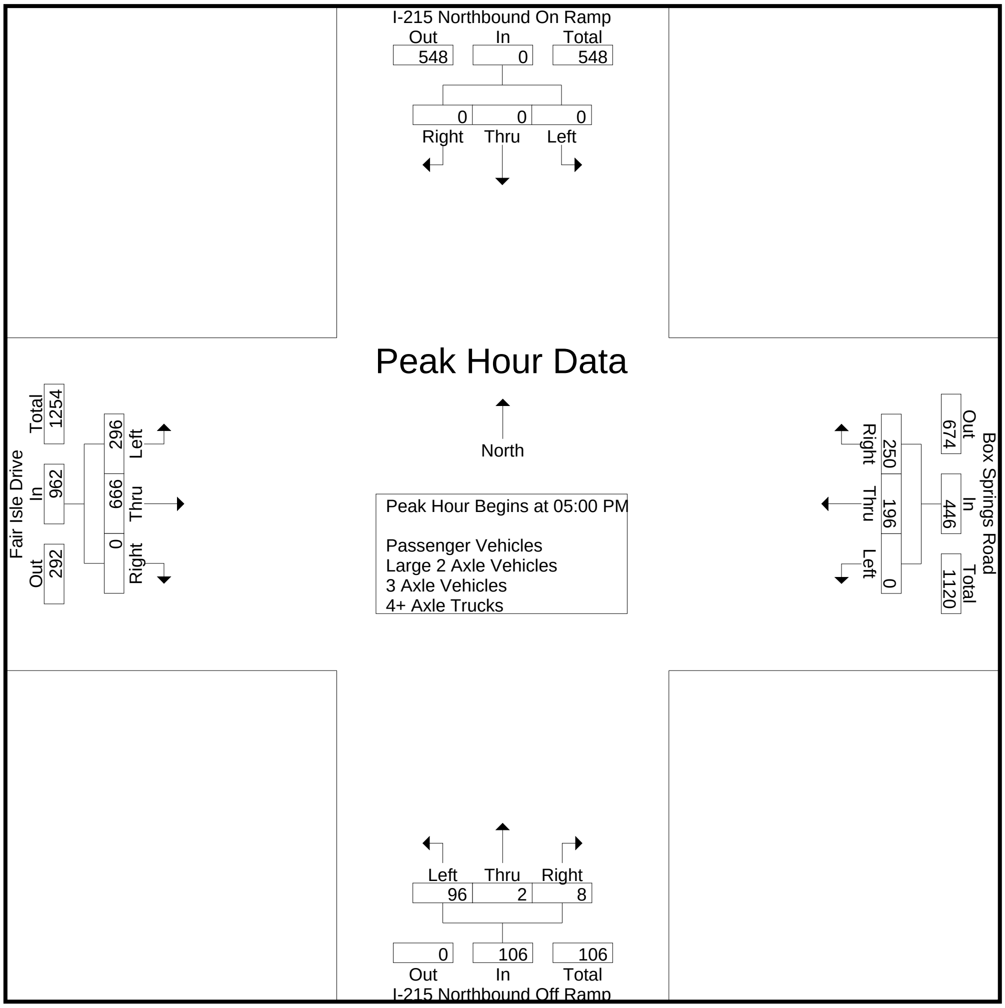
County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:30 PM				05:00 PM			
+0 mins.	0	0	0	0	0	**56**	**72**	**128**	31	0	0	31	**85**	159	0	244
+15 mins.	0	0	0	0	0	52	71	123	22	**2**	2	26	67	**182**	0	**249**
+30 mins.	0	0	0	0	0	55	63	118	20	1	1	22	77	159	0	236
+45 mins.	0	0	0	0	0	44	66	110	**33**	0	**6**	**39**	67	166	0	233
Total Volume	0	0	0	0	0	207	272	479	106	3	9	118	296	666	0	962
% App. Total	0	0	0		0	43.2	56.8		89.8	2.5	7.6		30.8	69.2	0	
PHF	.000	.000	.000	.000	.000	.924	.944	.936	.803	.375	.375	.756	.871	.915	.000	.966

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County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Passenger Vehicles

	I-215 Northbound On Ramp Southbound				Box Springs Road Westbound				I-215 Northbound Off Ramp Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	55	72	127	12	0	0	12	81	96	0	177	316
04:15 PM	0	0	0	0	0	51	70	121	14	0	3	17	54	131	0	185	323
04:30 PM	0	0	0	0	0	52	63	115	31	0	0	31	80	146	0	226	372
04:45 PM	0	0	0	0	0	43	66	109	22	2	2	26	73	124	0	197	332
Total	0	0	0	0	0	201	271	472	79	2	5	86	288	497	0	785	1343
05:00 PM	0	0	0	0	0	42	57	99	20	1	1	22	73	155	0	228	349
05:15 PM	0	0	0	0	0	45	71	116	33	0	6	39	57	181	0	238	393
05:30 PM	0	0	0	0	0	48	68	116	21	1	1	23	70	156	0	226	365
05:45 PM	0	0	0	0	0	55	53	108	22	0	0	22	58	165	0	223	353
Total	0	0	0	0	0	190	249	439	96	2	8	106	258	657	0	915	1460
Grand Total	0	0	0	0	0	391	520	911	175	4	13	192	546	1154	0	1700	2803
Apprch %	0	0	0		0	42.9	57.1		91.1	2.1	6.8		32.1	67.9	0		
Total %	0	0	0	0	0	13.9	18.6	32.5	6.2	0.1	0.5	6.8	19.5	41.2	0	60.6	

	I-215 Northbound On Ramp Southbound				Box Springs Road Westbound				I-215 Northbound Off Ramp Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	42	57	99	20	**1**	1	22	**73**	155	0	228	349
05:15 PM	0	0	0	0	0	45	**71**	**116**	**33**	0	**6**	**39**	57	**181**	0	**238**	**393**
05:30 PM	0	0	0	0	0	48	68	116	21	1	1	23	70	156	0	226	365
05:45 PM	0	0	0	0	0	**55**	53	108	22	0	0	22	58	165	0	223	353
Total Volume	0	0	0	0	0	190	249	439	96	2	8	106	258	657	0	915	1460
% App. Total	0	0	0		0	43.3	56.7		90.6	1.9	7.5		28.2	71.8	0		
PHF	.000	.000	.000	.000	.000	.864	.877	.946	.727	.500	.333	.679	.884	.907	.000	.961	.929

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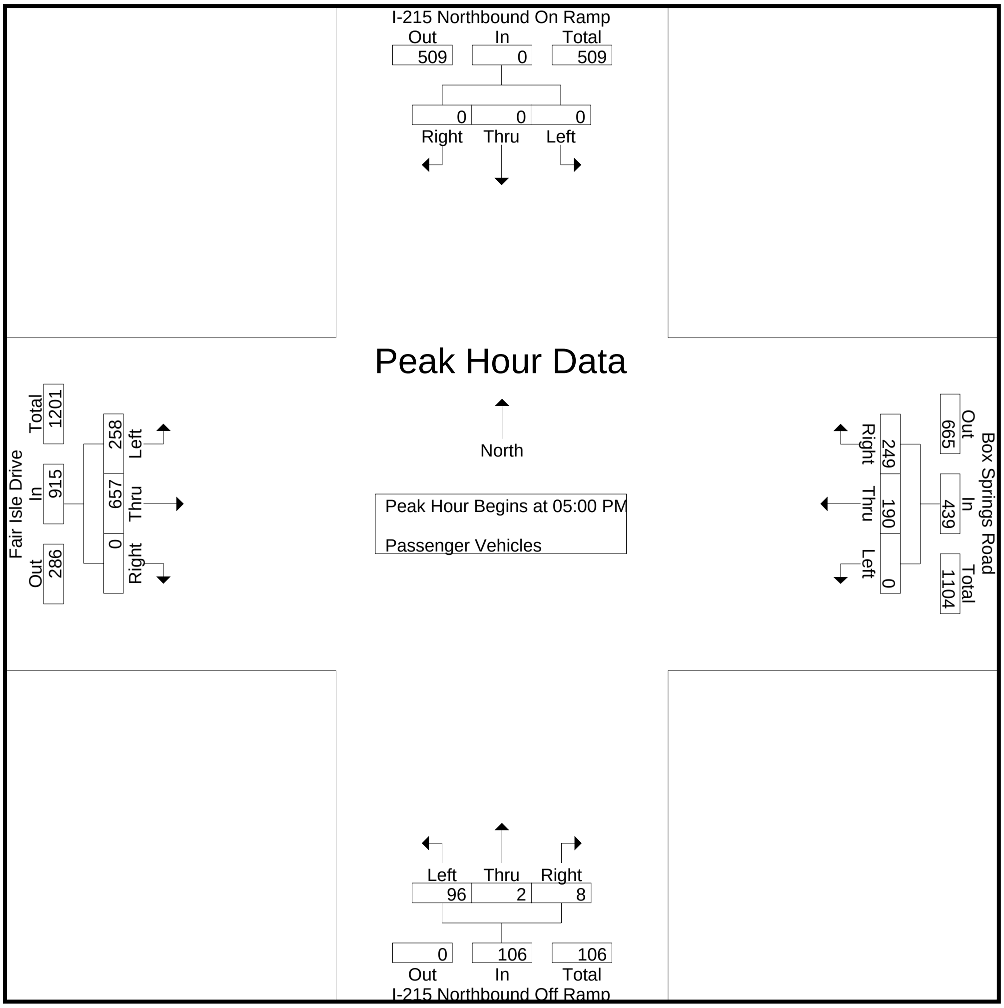
County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	0	0	0	0	42	57	99	20	**1**	1	22	**73**	155	0	228
+15 mins.	0	0	0	0	0	45	**71**	**116**	**33**	0	**6**	**39**	57	**181**	0	**238**
+30 mins.	0	0	0	0	0	48	68	116	21	1	1	23	70	156	0	226
+45 mins.	0	0	0	0	0	**55**	53	108	22	0	0	22	58	165	0	223
Total Volume	0	0	0	0	0	190	249	439	96	2	8	106	258	657	0	915
% App. Total	0	0	0		0	43.3	56.7		90.6	1.9	7.5		28.2	71.8	0	
PHF	.000	.000	.000	.000	.000	.864	.877	.946	.727	.500	.333	.679	.884	.907	.000	.961

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County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	I-215 Northbound On Ramp Southbound				Box Springs Road Westbound				I-215 Northbound Off Ramp Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	3	0	0	3	4
04:15 PM	0	0	0	0	0	1	1	2	0	0	0	0	3	1	0	4	6
04:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	2	2	0	4	6
04:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	4	2	0	6	7
Total	0	0	0	0	0	5	1	6	0	0	0	0	12	5	0	17	23
05:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	1	4	0	5	6
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	2	1	0	3	4
05:30 PM	0	0	0	0	0	1	1	2	0	0	0	0	1	3	0	4	6
05:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
Total	0	0	0	0	0	4	1	5	0	0	0	0	4	9	0	13	18
Grand Total	0	0	0	0	0	9	2	11	0	0	0	0	16	14	0	30	41
Apprch %	0	0	0		0	81.8	18.2		0	0	0		53.3	46.7	0		
Total %	0	0	0	0	0	22	4.9	26.8	0	0	0	0	39	34.1	0	73.2	

	I-215 Northbound On Ramp Southbound				Box Springs Road Westbound				I-215 Northbound Off Ramp Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	**1**	0	1	0	0	0	0	1	**4**	0	**5**	**6**
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	**2**	1	0	3	4
05:30 PM	0	0	0	0	0	1	**1**	**2**	0	0	0	0	1	3	0	4	6
05:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
Total Volume	0	0	0	0	0	4	1	5	0	0	0	0	4	9	0	13	18
% App. Total	0	0	0		0	80	20		0	0	0		30.8	69.2	0		
PHF	.000	.000	.000	.000	.000	1.00	.250	.625	.000	.000	.000	.000	.500	.563	.000	.650	.750

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County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
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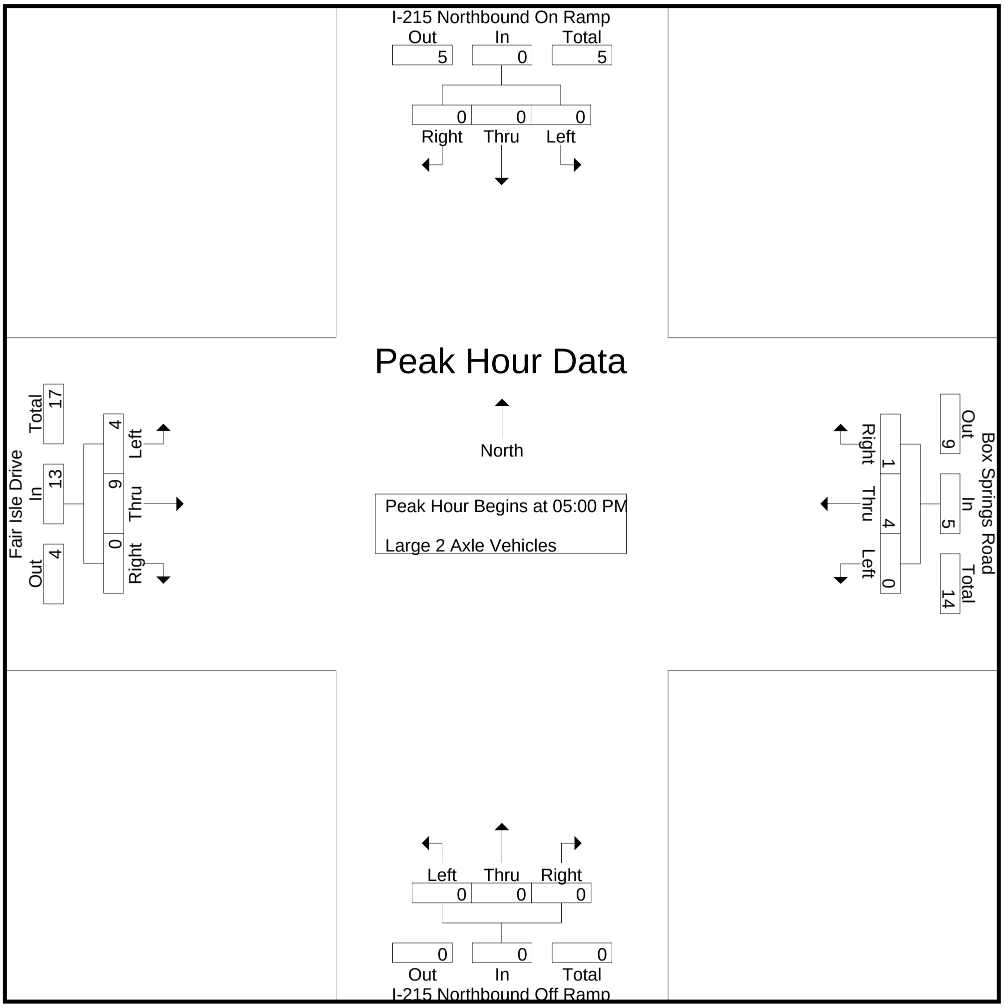

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	0	0	0	0	**1**	0	1	0	0	0	0	1	**4**	0	**5**
+15 mins.	0	0	0	0	0	1	0	1	0	0	0	0	**2**	1	0	3
+30 mins.	0	0	0	0	0	1	**1**	**2**	0	0	0	0	1	3	0	4
+45 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1
Total Volume	0	0	0	0	0	4	1	5	0	0	0	0	4	9	0	13
% App. Total	0	0	0		0	80	20		0	0	0		30.8	69.2	0	
PHF	.000	.000	.000	.000	.000	1.000	.250	.625	.000	.000	.000	.000	.500	.563	.000	.650

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County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

	I-215 Northbound On Ramp Southbound				Box Springs Road Westbound				I-215 Northbound Off Ramp Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	3	0	0	3	4
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
Total	0	0	0	0	0	1	0	1	0	0	0	0	7	0	0	7	8
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
05:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	0	0	0	2	0	2	0	0	0	0	3	0	0	3	5
Grand Total	0	0	0	0	0	3	0	3	0	0	0	0	10	0	0	10	13
Apprch %	0	0	0		0	100	0		0	0	0		100	0	0		
Total %	0	0	0	0	0	23.1	0	23.1	0	0	0	0	76.9	0	0	76.9	

	I-215 Northbound On Ramp Southbound				Box Springs Road Westbound				I-215 Northbound Off Ramp Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**2**	0	0	**2**	**2**
05:30 PM	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	0	0	0	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total Volume	0	0	0	0	0	2	0	2	0	0	0	0	3	0	0	3	5
% App. Total	0	0	0		0	100	0		0	0	0		100	0	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.375	.000	.000	.375	.625

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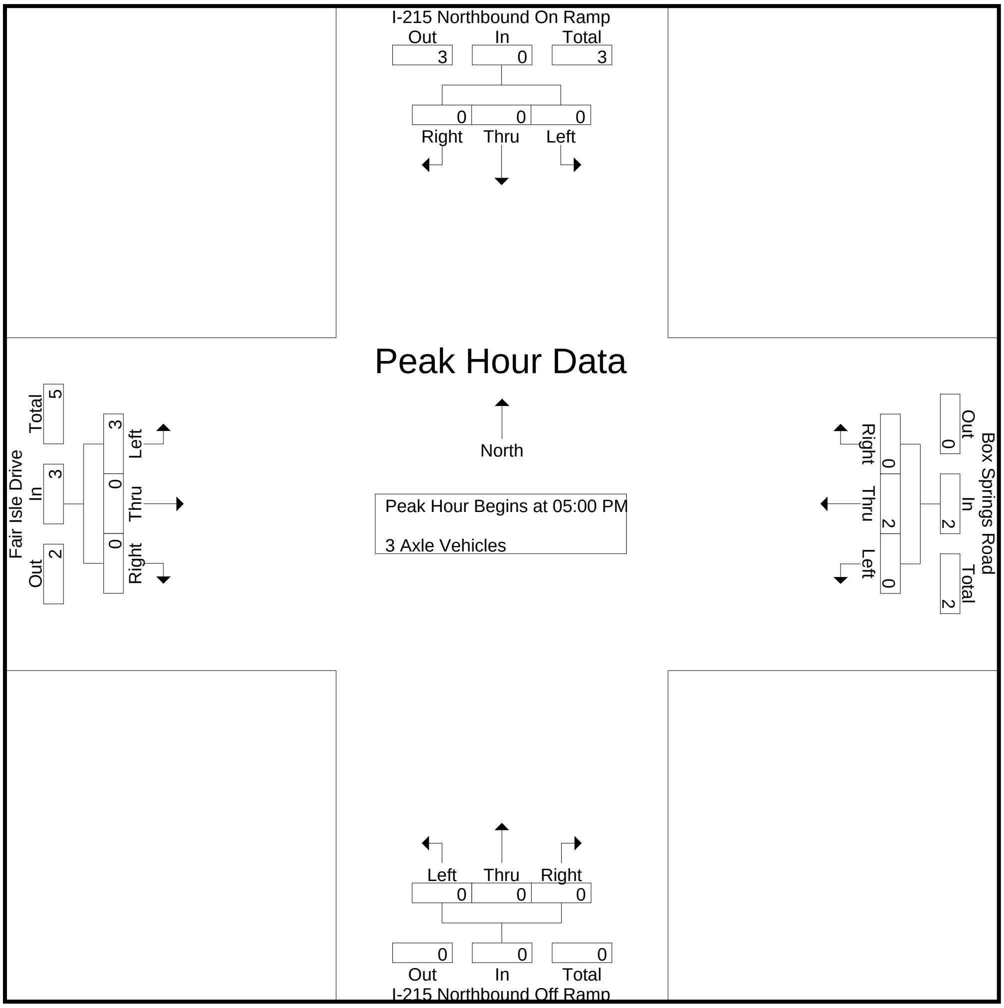
County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	**2**	0	0	**2**
+30 mins.	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Total Volume	0	0	0	0	0	2	0	2	0	0	0	0	3	0	0	3
% App. Total	0	0	0		0	100	0		0	0	0		100	0	0	
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.375	.000	.000	.375

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County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- 4+ Axle Trucks

	I-215 Northbound On Ramp Southbound				Box Springs Road Westbound				I-215 Northbound Off Ramp Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	4
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	15	15
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	4
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	6
Total	0	0	0	0	0	0	0	0	0	0	0	0	29	0	0	29	29
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	11	11
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	6
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	6
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	8	8
Total	0	0	0	0	0	0	0	0	0	0	0	0	31	0	0	31	31
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	60	0	0	60	60
Apprch %	0	0	0		0	0	0		0	0	0		100	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	100	

	I-215 Northbound On Ramp Southbound				Box Springs Road Westbound				I-215 Northbound Off Ramp Northbound				Fair Isle Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**11**	0	0	**11**	**11**
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	6
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	6
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	8	8
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	31	0	0	31	31
% App. Total	0	0	0		0	0	0		0	0	0		100	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.705	.000	.000	.705	.705

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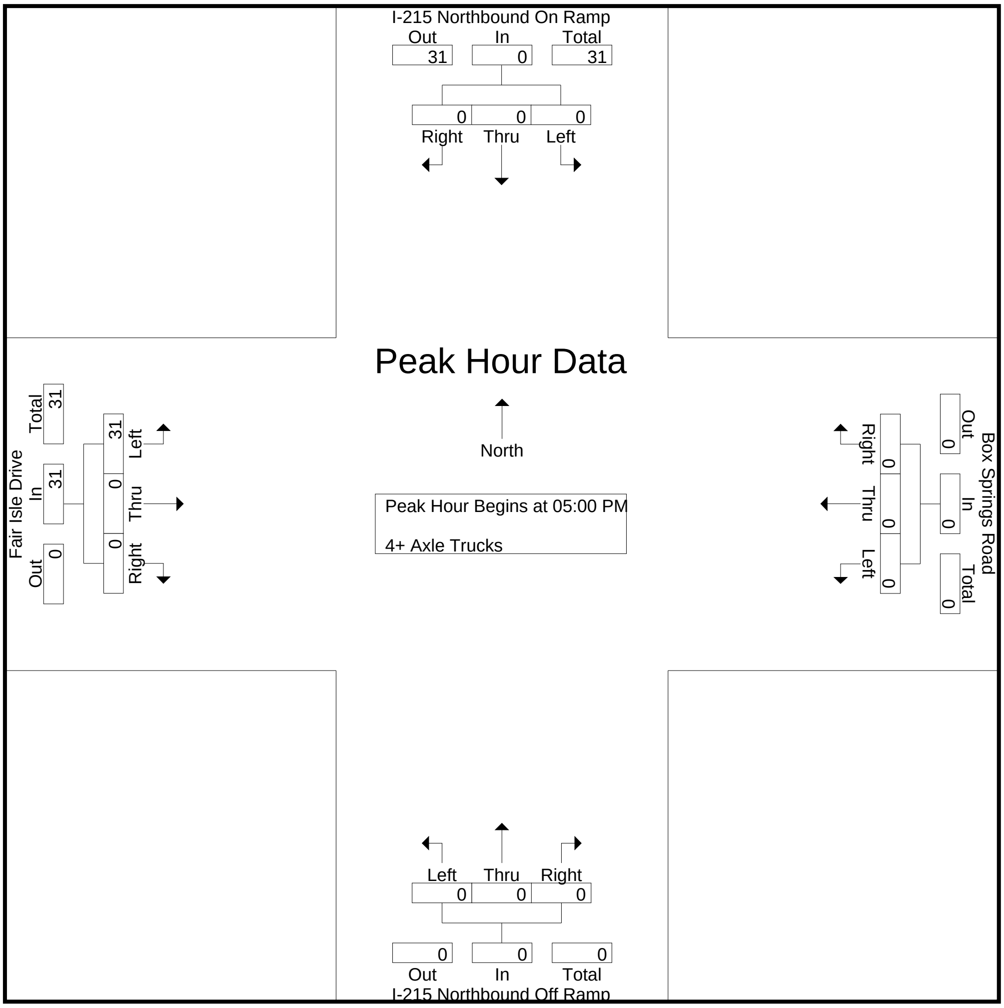
County of Riverside
N/S: I-215 Northbound Ramps
E/W: Fair Isle Drive/Box Springs Road
Weather: Clear

File Name : 02_CRV_215N_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	**11**	0	0	**11**
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	8
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	31	0	0	31
% App. Total	0	0	0		0	0	0		0	0	0		100	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.705	.000	.000	.705

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City of Moreno Valley
N/S: Morton Road
E/W: Wordsworth Road North
Weather: Clear

File Name : 03_MRV_Morton_Wordsworth N AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Total Volume

	Morton Road Southbound			Wordsworth Road North Westbound			Morton Road Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	3	3	1	0	1	0	0	0	4
07:15 AM	0	8	8	1	0	1	2	0	2	11
07:30 AM	0	5	5	0	1	1	4	1	5	11
07:45 AM	0	6	6	1	0	1	2	3	5	12
Total	0	22	22	3	1	4	8	4	12	38
08:00 AM	0	7	7	1	0	1	5	1	6	14
08:15 AM	0	2	2	2	0	2	0	1	1	5
08:30 AM	0	7	7	0	0	0	2	1	3	10
08:45 AM	1	2	3	0	0	0	2	0	2	5
Total	1	18	19	3	0	3	9	3	12	34
Grand Total	1	40	41	6	1	7	17	7	24	72
Apprch %	2.4	97.6		85.7	14.3		70.8	29.2		
Total %	1.4	55.6	56.9	8.3	1.4	9.7	23.6	9.7	33.3	

	Morton Road Southbound			Wordsworth Road North Westbound			Morton Road Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	**8**	**8**	**1**	0	**1**	2	0	2	11
07:30 AM	0	5	5	0	**1**	1	4	1	5	11
07:45 AM	0	6	6	1	0	1	2	**3**	5	12
08:00 AM	0	7	7	1	0	1	**5**	1	**6**	**14**
Total Volume	0	26	26	3	1	4	13	5	18	48
% App. Total	0	100		75	25		72.2	27.8		
PHF	.000	.813	.813	.750	.250	1.00	.650	.417	.750	.857

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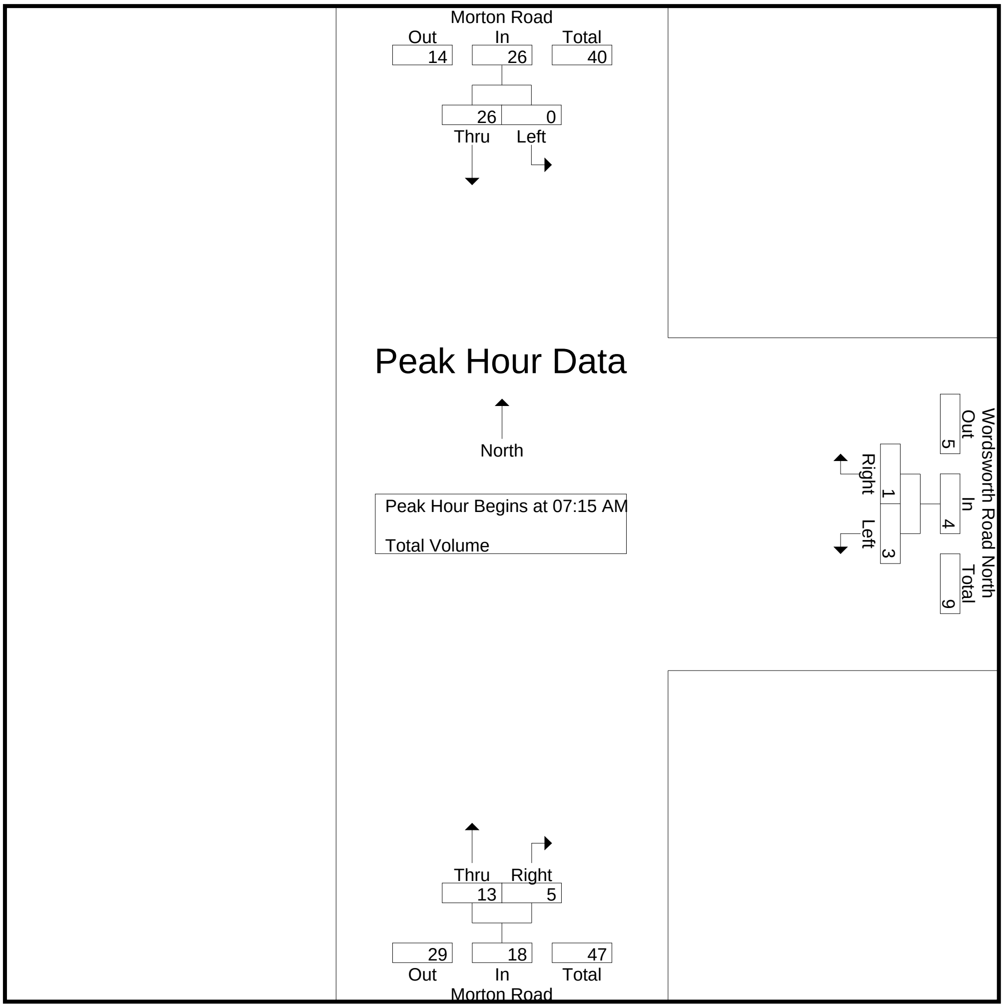
City of Moreno Valley
N/S: Morton Road
E/W: Wordsworth Road North
Weather: Clear

File Name : 03_MRV_Morton_Wordsworth N AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:30 AM			07:15 AM		
+0 mins.	0	**8**	**8**	0	**1**	1	2	0	2
+15 mins.	0	5	5	1	0	1	4	1	5
+30 mins.	0	6	6	1	0	1	2	**3**	5
+45 mins.	0	7	7	**2**	0	**2**	**5**	1	**6**
Total Volume	0	26	26	4	1	5	13	5	18
% App. Total	0	100		80	20		72.2	27.8	
PHF	.000	.813	.813	.500	.250	.625	.650	.417	.750

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City of Moreno Valley
N/S: Morton Road
E/W: Wordsworth Road North
Weather: Clear

File Name : 03_MRV_Morton_Wordsworth N PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Total Volume

	Morton Road Southbound			Wordsworth Road North Westbound			Morton Road Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	2	2	0	0	0	3	0	3	5
04:15 PM	0	11	11	1	0	1	5	3	8	20
04:30 PM	0	5	5	1	0	1	8	3	11	17
04:45 PM	0	7	7	0	2	2	7	3	10	19
Total	0	25	25	2	2	4	23	9	32	61
05:00 PM	0	4	4	0	0	0	5	1	6	10
05:15 PM	0	3	3	1	0	1	13	6	19	23
05:30 PM	1	7	8	1	0	1	7	1	8	17
05:45 PM	2	6	8	0	1	1	10	0	10	19
Total	3	20	23	2	1	3	35	8	43	69
Grand Total	3	45	48	4	3	7	58	17	75	130
Apprch %	6.2	93.8		57.1	42.9		77.3	22.7		
Total %	2.3	34.6	36.9	3.1	2.3	5.4	44.6	13.1	57.7	

	Morton Road Southbound			Wordsworth Road North Westbound			Morton Road Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	5	5	**1**	0	1	8	3	11	17
04:45 PM	0	**7**	**7**	0	**2**	**2**	7	3	10	19
05:00 PM	0	4	4	0	0	0	5	1	6	10
05:15 PM	0	3	3	1	0	1	**13**	**6**	**19**	**23**
Total Volume	0	19	19	2	2	4	33	13	46	69
% App. Total	0	100		50	50		71.7	28.3		
PHF	.000	.679	.679	.500	.250	.500	.635	.542	.605	.750

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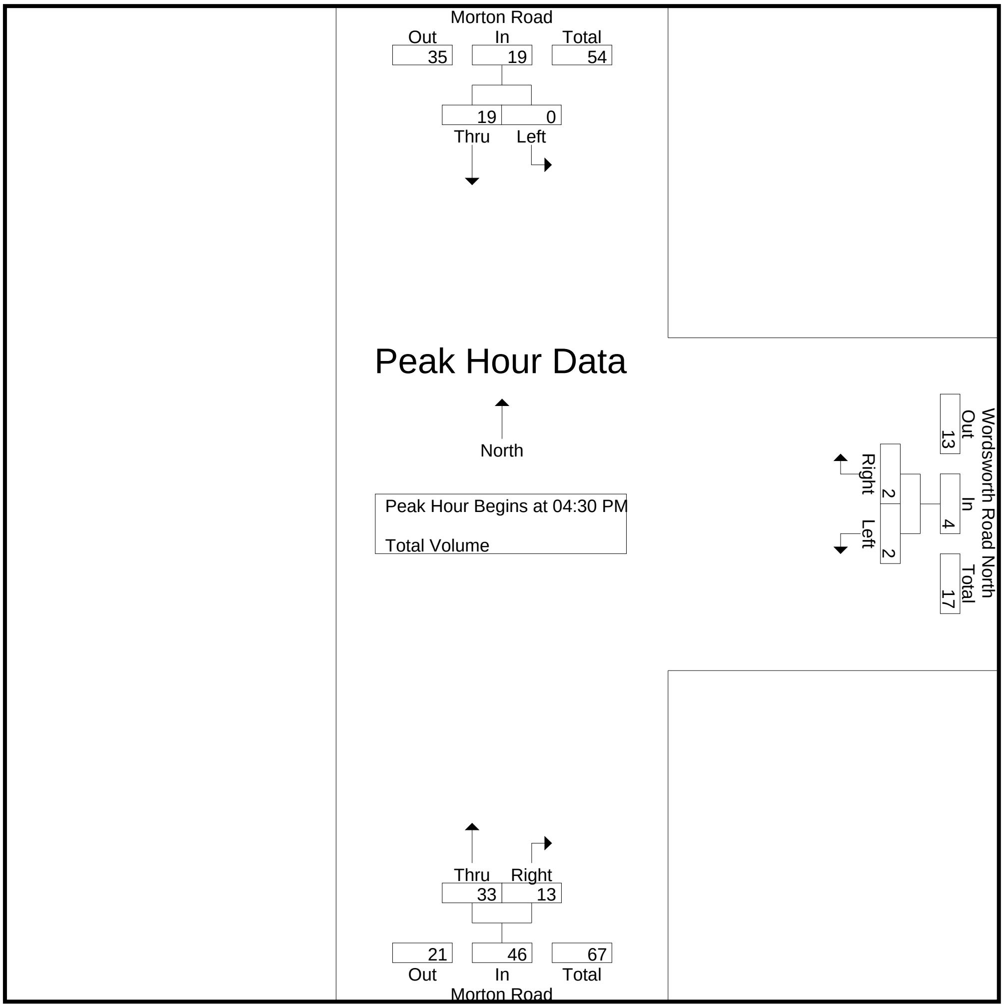
City of Moreno Valley
N/S: Morton Road
E/W: Wordsworth Road North
Weather: Clear

File Name : 03_MRV_Morton_Wordsworth N PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			04:00 PM			04:30 PM		
+0 mins.	0	**11**	**11**	0	0	0	8	3	11
+15 mins.	0	5	5	**1**	0	1	7	3	10
+30 mins.	0	7	7	1	0	1	5	1	6
+45 mins.	0	4	4	0	**2**	**2**	**13**	**6**	**19**
Total Volume	0	27	27	2	2	4	33	13	46
% App. Total	0	100		50	50		71.7	28.3	
PHF	.000	.614	.614	.500	.250	.500	.635	.542	.605

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City of Moreno Valley
N/S: Morton Road
E/W: Wordsworth Road South
Weather: Clear

File Name : 04_MRV_Morton_Wordsworth S AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Total Volume

	Morton Road Southbound			Wordsworth Road South Westbound			Morton Road Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	4	4	7	0	7	0	2	2	13
07:15 AM	0	8	8	3	0	3	2	2	4	15
07:30 AM	0	4	4	11	0	11	5	5	10	25
07:45 AM	1	5	6	15	0	15	5	1	6	27
Total	1	21	22	36	0	36	12	10	22	80
08:00 AM	0	7	7	8	0	8	6	3	9	24
08:15 AM	0	6	6	17	0	17	1	3	4	27
08:30 AM	0	7	7	10	0	10	3	2	5	22
08:45 AM	0	2	2	7	0	7	2	1	3	12
Total	0	22	22	42	0	42	12	9	21	85
Grand Total	1	43	44	78	0	78	24	19	43	165
Apprch %	2.3	97.7		100	0		55.8	44.2		
Total %	0.6	26.1	26.7	47.3	0	47.3	14.5	11.5	26.1	

	Morton Road Southbound			Wordsworth Road South Westbound			Morton Road Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	0	4	4	11	0	11	5	**5**	**10**	25
07:45 AM	**1**	5	6	15	0	15	5	1	6	**27**
08:00 AM	0	**7**	**7**	8	0	8	**6**	3	9	24
08:15 AM	0	6	6	**17**	0	**17**	1	3	4	27
Total Volume	1	22	23	51	0	51	17	12	29	103
% App. Total	4.3	95.7		100	0		58.6	41.4		
PHF	.250	.786	.821	.750	.000	.750	.708	.600	.725	.954

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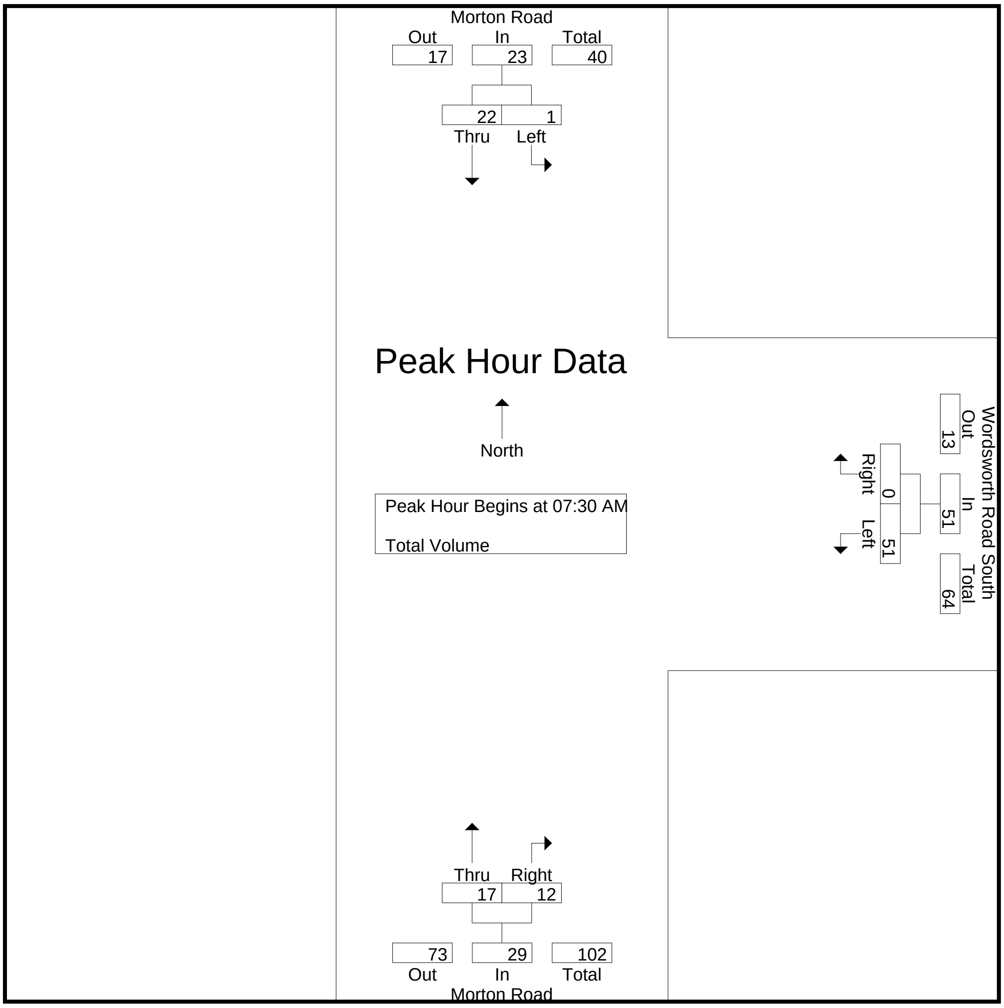
City of Moreno Valley
N/S: Morton Road
E/W: Wordsworth Road South
Weather: Clear

File Name : 04_MRV_Morton_Wordsworth S AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			07:30 AM			07:15 AM		
+0 mins.	**1**	5	6	11	0	11	2	2	4
+15 mins.	0	**7**	**7**	15	0	15	5	**5**	**10**
+30 mins.	0	6	6	8	0	8	5	1	6
+45 mins.	0	7	7	**17**	0	**17**	**6**	3	9
Total Volume	1	25	26	51	0	51	18	11	29
% App. Total	3.8	96.2		100	0		62.1	37.9	
PHF	.250	.893	.929	.750	.000	.750	.750	.550	.725

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City of Moreno Valley
N/S: Morton Road
E/W: Wordsworth Road South
Weather: Clear

File Name : 04_MRV_Morton_Wordsworth S PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Total Volume

	Morton Road Southbound			Wordsworth Road South Westbound			Morton Road Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	2	2	13	0	13	3	10	13	28
04:15 PM	0	11	11	10	0	10	8	10	18	39
04:30 PM	0	6	6	9	1	10	10	12	22	38
04:45 PM	0	7	7	6	0	6	11	9	20	33
Total	0	26	26	38	1	39	32	41	73	138
05:00 PM	0	4	4	7	0	7	5	7	12	23
05:15 PM	0	4	4	5	0	5	19	10	29	38
05:30 PM	0	7	7	7	0	7	8	11	19	33
05:45 PM	0	6	6	10	0	10	10	11	21	37
Total	0	21	21	29	0	29	42	39	81	131
Grand Total	0	47	47	67	1	68	74	80	154	269
Apprch %	0	100		98.5	1.5		48.1	51.9		
Total %	0	17.5	17.5	24.9	0.4	25.3	27.5	29.7	57.2	

	Morton Road Southbound			Wordsworth Road South Westbound			Morton Road Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	2	2	**13**	0	**13**	3	10	13	28
04:15 PM	0	**11**	**11**	10	0	10	8	10	18	**39**
04:30 PM	0	6	6	9	**1**	10	10	**12**	**22**	38
04:45 PM	0	7	7	6	0	6	**11**	9	20	33
Total Volume	0	26	26	38	1	39	32	41	73	138
% App. Total	0	100		97.4	2.6		43.8	56.2		
PHF	.000	.591	.591	.731	.250	.750	.727	.854	.830	.885

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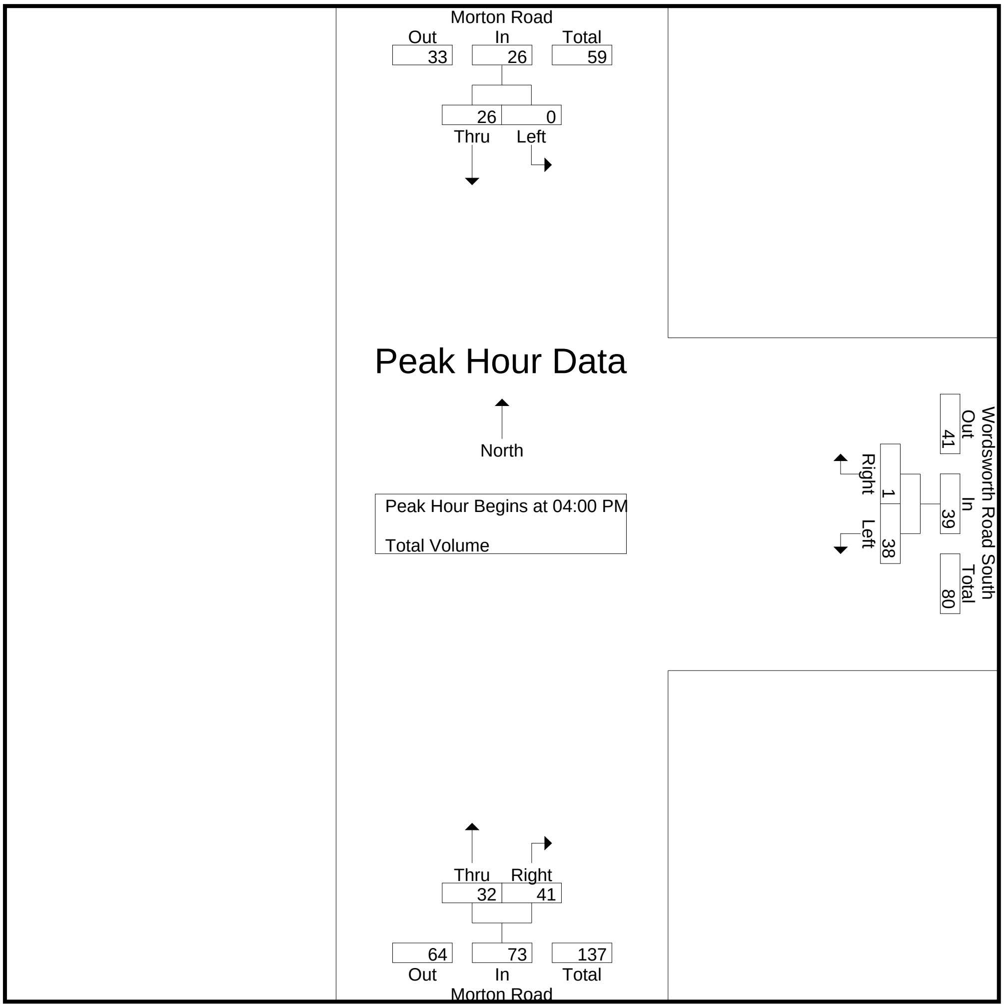
City of Moreno Valley
N/S: Morton Road
E/W: Wordsworth Road South
Weather: Clear

File Name : 04_MRV_Morton_Wordsworth S PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			04:00 PM			04:30 PM		
+0 mins.	0	**11**	**11**	**13**	0	**13**	10	**12**	22
+15 mins.	0	6	6	10	0	10	11	9	20
+30 mins.	0	7	7	9	**1**	10	5	7	12
+45 mins.	0	4	4	6	0	6	**19**	10	**29**
Total Volume	0	28	28	38	1	39	45	38	83
% App. Total	0	100		97.4	2.6		54.2	45.8	
PHF	.000	.636	.636	.731	.250	.750	.592	.792	.716

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City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs AM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Morton Road Southbound			Box Springs Road Westbound			Box Springs Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	2	24	26	143	0	143	2	20	22	191
07:15 AM	1	21	22	159	1	160	4	21	25	207
07:30 AM	4	22	26	169	1	170	10	24	34	230
07:45 AM	5	17	22	184	1	185	7	33	40	247
Total	12	84	96	655	3	658	23	98	121	875
08:00 AM	6	19	25	127	2	129	10	46	56	210
08:15 AM	3	26	29	111	2	113	2	39	41	183
08:30 AM	3	25	28	105	3	108	4	30	34	170
08:45 AM	4	13	17	91	3	94	3	27	30	141
Total	16	83	99	434	10	444	19	142	161	704
Grand Total	28	167	195	1089	13	1102	42	240	282	1579
Apprch %	14.4	85.6		98.8	1.2		14.9	85.1		
Total %	1.8	10.6	12.3	69	0.8	69.8	2.7	15.2	17.9	
Passenger Vehicles	27	166	193	1076	12	1088	41	235	276	1557
% Passenger Vehicles	96.4	99.4	99	98.8	92.3	98.7	97.6	97.9	97.9	98.6
Large 2 Axle Vehicles	1	1	2	11	1	12	1	5	6	20
% Large 2 Axle Vehicles	3.6	0.6	1	1	7.7	1.1	2.4	2.1	2.1	1.3
3 Axle Vehicles	0	0	0	1	0	1	0	0	0	1
% 3 Axle Vehicles	0	0	0	0.1	0	0.1	0	0	0	0.1
4+ Axle Trucks	0	0	0	1	0	1	0	0	0	1
% 4+ Axle Trucks	0	0	0	0.1	0	0.1	0	0	0	0.1

	Morton Road Southbound			Box Springs Road Westbound			Box Springs Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	1	21	22	159	1	160	4	21	25	207
07:30 AM	4	**22**	**26**	169	1	170	**10**	24	34	230
07:45 AM	5	17	22	**184**	1	**185**	7	33	40	**247**
08:00 AM	**6**	19	25	127	**2**	129	10	**46**	**56**	210
Total Volume	16	79	95	639	5	644	31	124	155	894
% App. Total	16.8	83.2		99.2	0.8		20	80		
PHF	.667	.898	.913	.868	.625	.870	.775	.674	.692	.905

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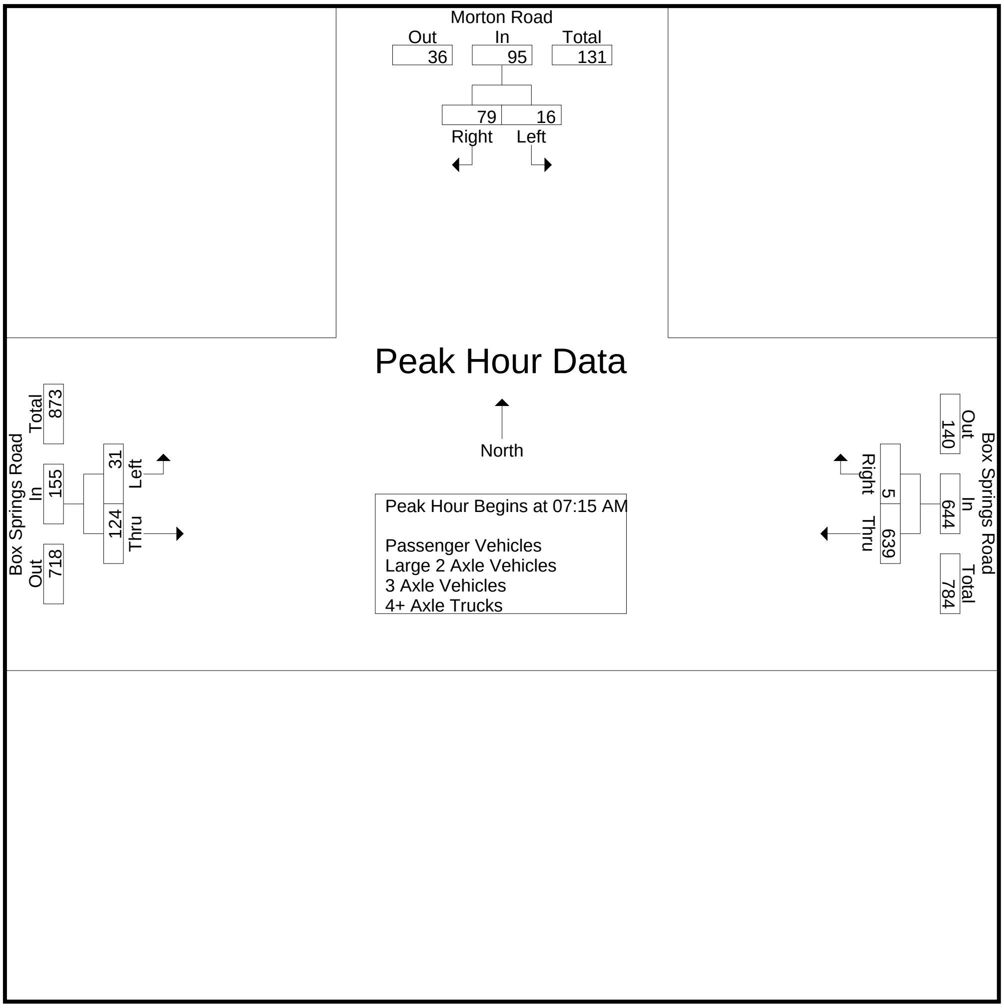

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			07:00 AM			07:30 AM		
+0 mins.	5	17	22	143	0	143	**10**	24	34
+15 mins.	**6**	19	25	159	**1**	160	7	33	40
+30 mins.	3	**26**	**29**	169	1	170	10	**46**	**56**
+45 mins.	3	25	28	**184**	1	**185**	2	39	41
Total Volume	17	87	104	655	3	658	29	142	171
% App. Total	16.3	83.7		99.5	0.5		17	83	
PHF	.708	.837	.897	.890	.750	.889	.725	.772	.763

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Groups Printed- Passenger Vehicles

	Morton Road Southbound			Box Springs Road Westbound			Box Springs Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	2	24	26	139	0	139	2	20	22	187
07:15 AM	1	20	21	159	1	160	4	21	25	206
07:30 AM	4	22	26	168	1	169	9	24	33	228
07:45 AM	4	17	21	181	0	181	7	31	38	240
Total	11	83	94	647	2	649	22	96	118	861
08:00 AM	6	19	25	126	2	128	10	46	56	209
08:15 AM	3	26	29	109	2	111	2	37	39	179
08:30 AM	3	25	28	105	3	108	4	30	34	170
08:45 AM	4	13	17	89	3	92	3	26	29	138
Total	16	83	99	429	10	439	19	139	158	696
Grand Total	27	166	193	1076	12	1088	41	235	276	1557
Apprch %	14	86		98.9	1.1		14.9	85.1		
Total %	1.7	10.7	12.4	69.1	0.8	69.9	2.6	15.1	17.7	

	Morton Road Southbound			Box Springs Road Westbound			Box Springs Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	1	20	21	159	1	160	4	21	25	206
07:30 AM	4	**22**	**26**	168	1	169	9	24	33	228
07:45 AM	4	17	21	**181**	0	**181**	7	31	38	**240**
08:00 AM	**6**	19	25	126	**2**	128	**10**	**46**	**56**	209
Total Volume	15	78	93	634	4	638	30	122	152	883
% App. Total	16.1	83.9		99.4	0.6		19.7	80.3		
PHF	.625	.886	.894	.876	.500	.881	.750	.663	.679	.920

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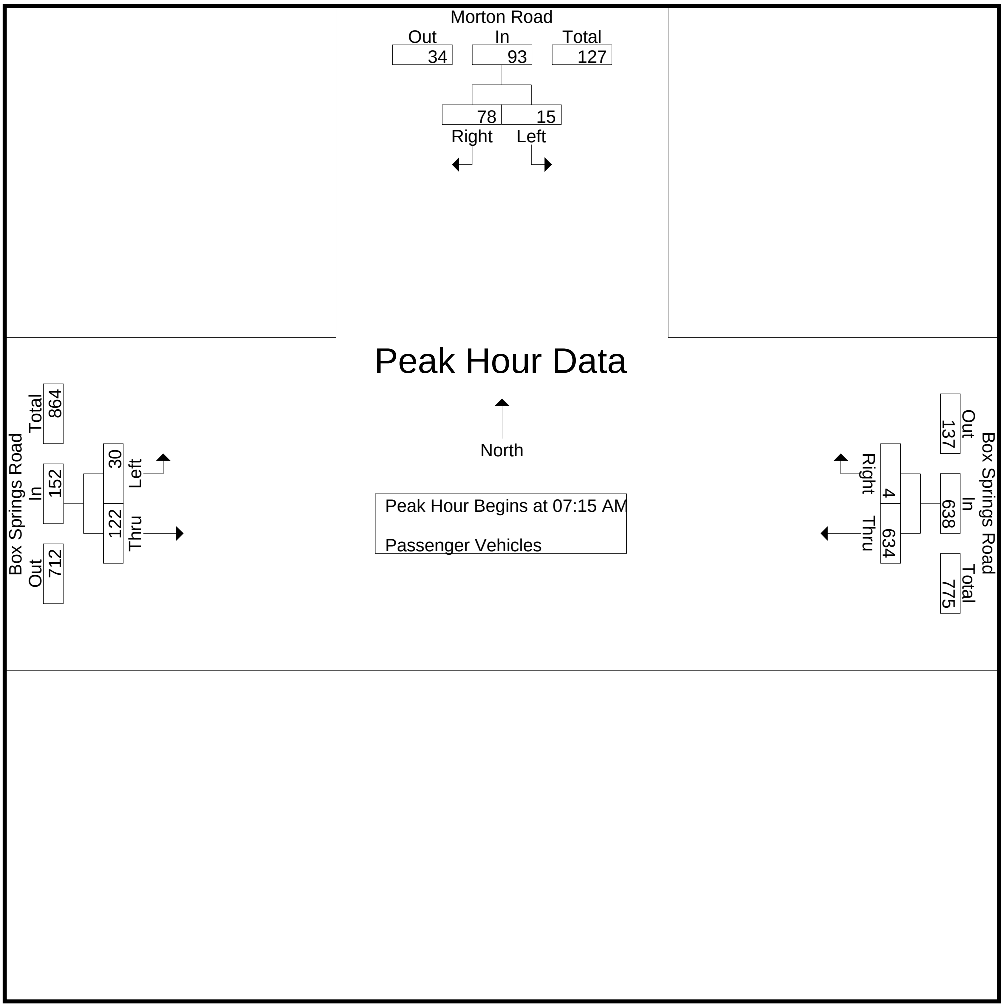

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	1	20	21	159	1	160	4	21	25
+15 mins.	4	**22**	**26**	168	1	169	9	24	33
+30 mins.	4	17	21	**181**	0	**181**	7	31	38
+45 mins.	**6**	19	25	126	**2**	128	**10**	**46**	**56**
Total Volume	15	78	93	634	4	638	30	122	152
% App. Total	16.1	83.9		99.4	0.6		19.7	80.3	
PHF	.625	.886	.894	.876	.500	.881	.750	.663	.679

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City of Moreno Valley
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Groups Printed- Large 2 Axle Vehicles

	Morton Road Southbound			Box Springs Road Westbound			Box Springs Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	0	0	0	4	0	4	0	0	0	4
07:15 AM	0	1	1	0	0	0	0	0	0	1
07:30 AM	0	0	0	1	0	1	1	0	1	2
07:45 AM	1	0	1	1	1	2	0	2	2	5
Total	1	1	2	6	1	7	1	2	3	12
08:00 AM	0	0	0	1	0	1	0	0	0	1
08:15 AM	0	0	0	2	0	2	0	2	2	4
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	2	0	2	0	1	1	3
Total	0	0	0	5	0	5	0	3	3	8
Grand Total	1	1	2	11	1	12	1	5	6	20
Apprch %	50	50		91.7	8.3		16.7	83.3		
Total %	5	5	10	55	5	60	5	25	30	

	Morton Road Southbound			Box Springs Road Westbound			Box Springs Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	**1**	**1**	0	0	0	0	0	0	1
07:30 AM	0	0	0	**1**	0	1	**1**	0	1	2
07:45 AM	**1**	0	1	1	**1**	**2**	0	**2**	**2**	**5**
08:00 AM	0	0	0	1	0	1	0	0	0	1
Total Volume	1	1	2	3	1	4	1	2	3	9
% App. Total	50	50		75	25		33.3	66.7		
PHF	.250	.250	.500	.750	.250	.500	.250	.250	.375	.450

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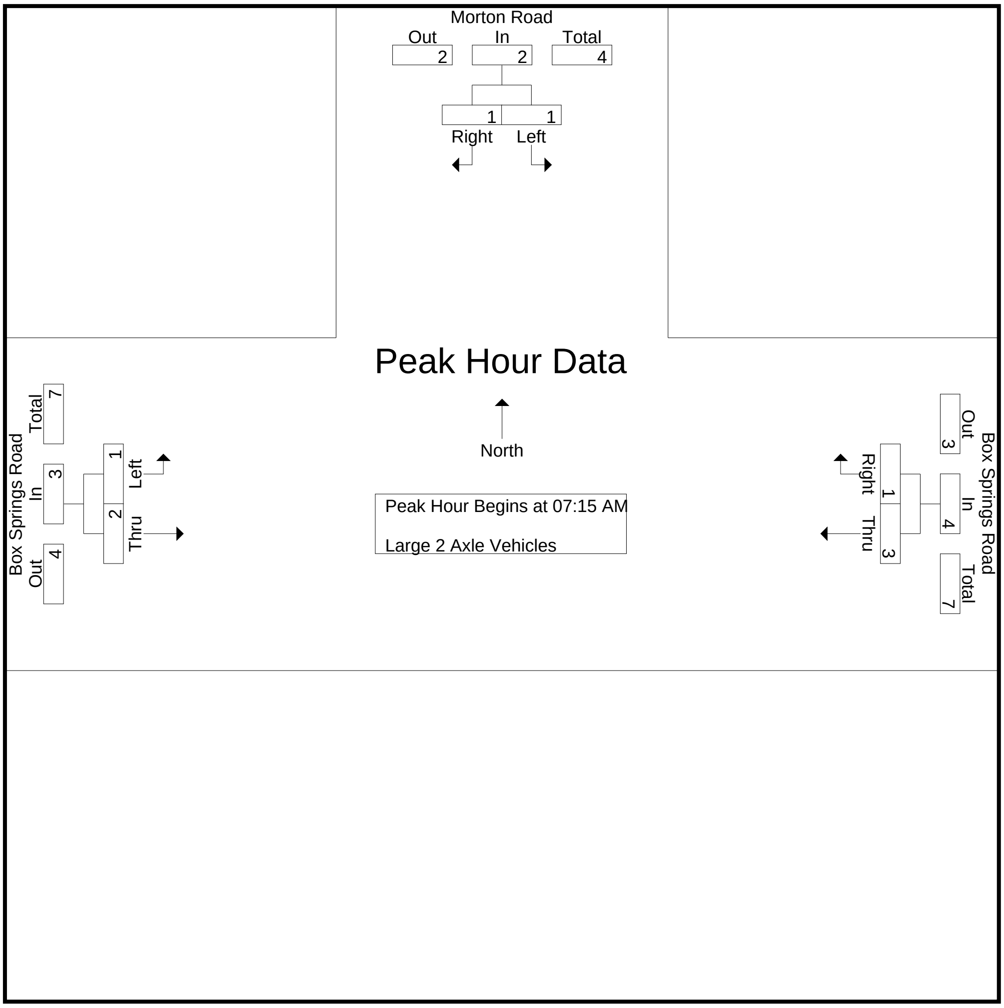

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	**1**	**1**	0	0	0	0	0	0
+15 mins.	0	0	0	**1**	0	1	**1**	0	1
+30 mins.	**1**	0	1	1	**1**	**2**	0	**2**	**2**
+45 mins.	0	0	0	1	0	1	0	0	0
Total Volume	1	1	2	3	1	4	1	2	3
% App. Total	50	50		75	25		33.3	66.7	
PHF	.250	.250	.500	.750	.250	.500	.250	.250	.375

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Site Code : 99921033
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Groups Printed- 3 Axle Vehicles

	Morton Road Southbound			Box Springs Road Westbound			Box Springs Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	1	0	1	0	0	0	1
Total	0	0	0	1	0	1	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	1	0	1	0	0	0	1
Apprch %	0	0		100	0		0	0		
Total %	0	0	0	100	0	100	0	0	0	

	Morton Road Southbound			Box Springs Road Westbound			Box Springs Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	**1**	0	**1**	0	0	0	**1**
08:00 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	1	0	1	0	0	0	1
% App. Total	0	0		100	0		0	0		
PHF	.000	.000	.000	.250	.000	.250	.000	.000	.000	.250

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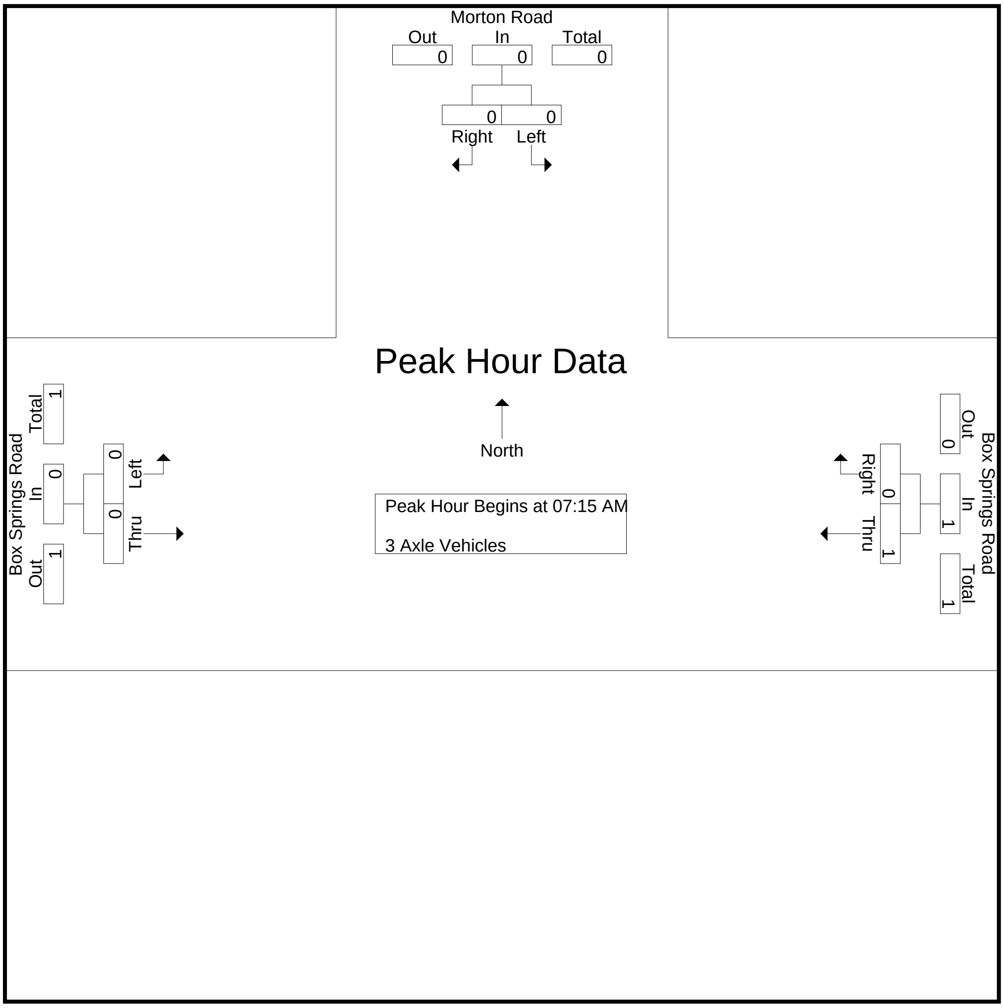

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	**1**	0	**1**	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	1	0	1	0	0	0
% App. Total	0	0		100	0		0	0	
PHF	.000	.000	.000	.250	.000	.250	.000	.000	.000

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Groups Printed- 4+ Axle Trucks

	Morton Road Southbound			Box Springs Road Westbound			Box Springs Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	1	0	1	0	0	0	1
Total	0	0	0	1	0	1	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	1	0	1	0	0	0	1
Apprch %	0	0		100	0		0	0		
Total %	0	0	0	100	0	100	0	0	0	

	Morton Road Southbound			Box Springs Road Westbound			Box Springs Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	**1**	0	**1**	0	0	0	**1**
08:00 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	1	0	1	0	0	0	1
% App. Total	0	0		100	0		0	0		
PHF	.000	.000	.000	.250	.000	.250	.000	.000	.000	.250

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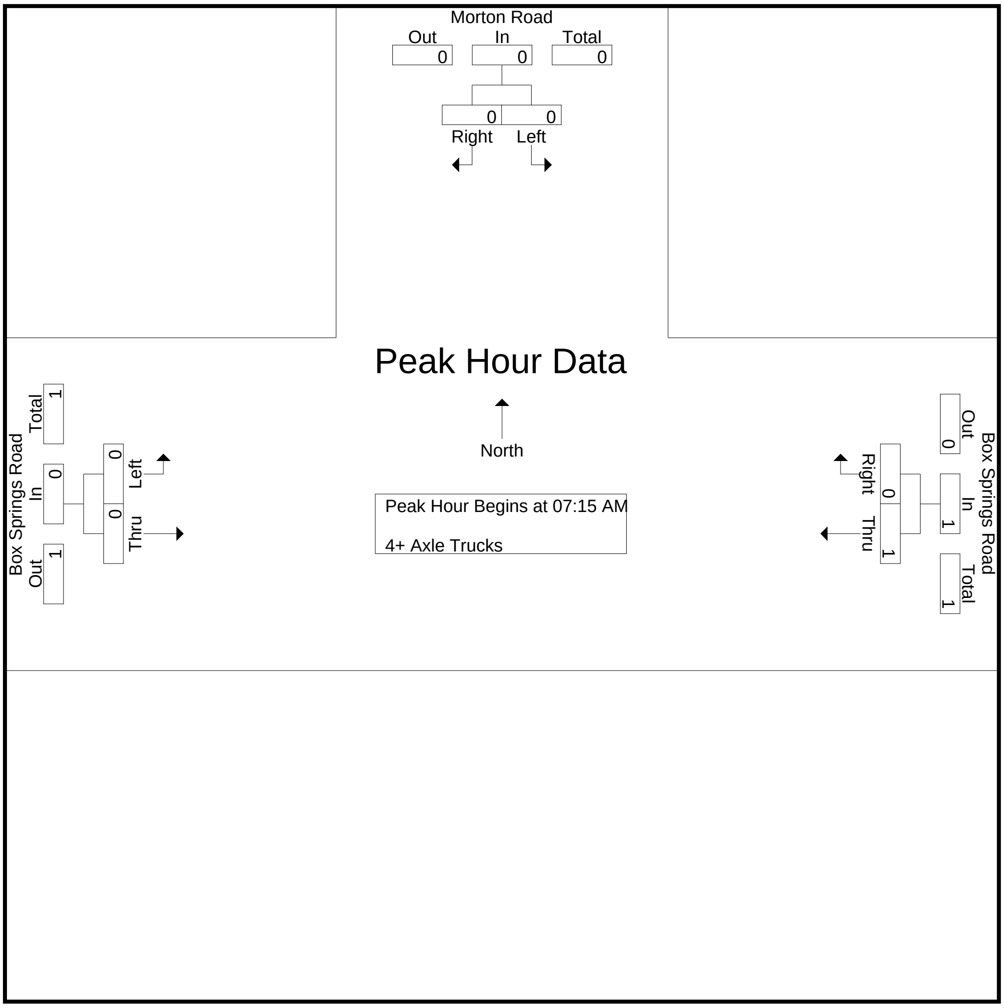

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	**1**	0	**1**	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	1	0	1	0	0	0
% App. Total	0	0		100	0		0	0	
PHF	.000	.000	.000	.250	.000	.250	.000	.000	.000

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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Morton Road Southbound			Box Springs Road Westbound			Box Springs Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	7	14	21	120	5	125	16	89	105	251
04:15 PM	2	23	25	102	6	108	20	124	144	277
04:30 PM	4	15	19	99	8	107	25	122	147	273
04:45 PM	9	14	23	94	9	103	19	100	119	245
Total	22	66	88	415	28	443	80	435	515	1046
05:00 PM	8	8	16	98	5	103	21	151	172	291
05:15 PM	5	8	13	105	7	112	24	159	183	308
05:30 PM	11	13	24	109	9	118	18	156	174	316
05:45 PM	12	12	24	102	2	104	21	148	169	297
Total	36	41	77	414	23	437	84	614	698	1212
Grand Total	58	107	165	829	51	880	164	1049	1213	2258
Apprch %	35.2	64.8		94.2	5.8		13.5	86.5		
Total %	2.6	4.7	7.3	36.7	2.3	39	7.3	46.5	53.7	
Passenger Vehicles	57	107	164	818	51	869	163	1036	1199	2232
% Passenger Vehicles	98.3	100	99.4	98.7	100	98.8	99.4	98.8	98.8	98.8
Large 2 Axle Vehicles	1	0	1	11	0	11	1	13	14	26
% Large 2 Axle Vehicles	1.7	0	0.6	1.3	0	1.2	0.6	1.2	1.2	1.2
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0
% 4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0

	Morton Road Southbound			Box Springs Road Westbound			Box Springs Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	8	8	16	98	5	103	21	151	172	291
05:15 PM	5	8	13	105	7	112	**24**	**159**	**183**	308
05:30 PM	11	**13**	**24**	**109**	**9**	**118**	18	156	174	**316**
05:45 PM	**12**	12	24	102	2	104	21	148	169	297
Total Volume	36	41	77	414	23	437	84	614	698	1212
% App. Total	46.8	53.2		94.7	5.3		12	88		
PHF	.750	.788	.802	.950	.639	.926	.875	.965	.954	.959

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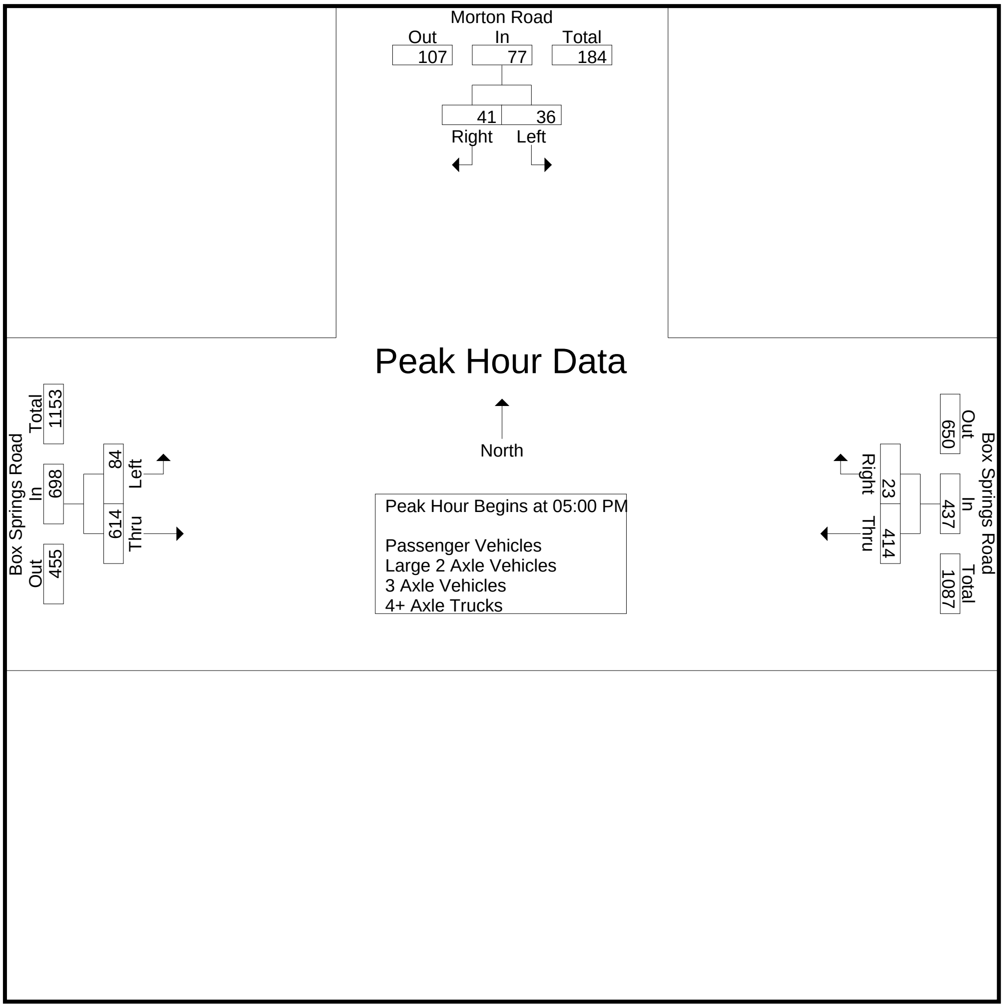

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			05:00 PM		
+0 mins.	7	14	21	**120**	5	**125**	21	151	172
+15 mins.	2	**23**	**25**	102	6	108	**24**	**159**	**183**
+30 mins.	4	15	19	99	8	107	18	156	174
+45 mins.	**9**	14	23	94	**9**	103	21	148	169
Total Volume	22	66	88	415	28	443	84	614	698
% App. Total	25	75		93.7	6.3		12	88	
PHF	.611	.717	.880	.865	.778	.886	.875	.965	.954

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City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Passenger Vehicles

	Morton Road Southbound			Box Springs Road Westbound			Box Springs Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	7	14	21	119	5	124	16	89	105	250
04:15 PM	2	23	25	100	6	106	20	123	143	274
04:30 PM	4	15	19	97	8	105	25	120	145	269
04:45 PM	9	14	23	93	9	102	19	98	117	242
Total	22	66	88	409	28	437	80	430	510	1035
05:00 PM	7	8	15	97	5	102	21	148	169	286
05:15 PM	5	8	13	104	7	111	24	158	182	306
05:30 PM	11	13	24	107	9	116	17	154	171	311
05:45 PM	12	12	24	101	2	103	21	146	167	294
Total	35	41	76	409	23	432	83	606	689	1197
Grand Total	57	107	164	818	51	869	163	1036	1199	2232
Apprch %	34.8	65.2		94.1	5.9		13.6	86.4		
Total %	2.6	4.8	7.3	36.6	2.3	38.9	7.3	46.4	53.7	

	Morton Road Southbound			Box Springs Road Westbound			Box Springs Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	7	8	15	97	5	102	21	148	169	286
05:15 PM	5	8	13	104	7	111	**24**	**158**	**182**	306
05:30 PM	11	**13**	**24**	**107**	**9**	**116**	17	154	171	**311**
05:45 PM	**12**	12	24	101	2	103	21	146	167	294
Total Volume	35	41	76	409	23	432	83	606	689	1197
% App. Total	46.1	53.9		94.7	5.3		12	88		
PHF	.729	.788	.792	.956	.639	.931	.865	.959	.946	.962

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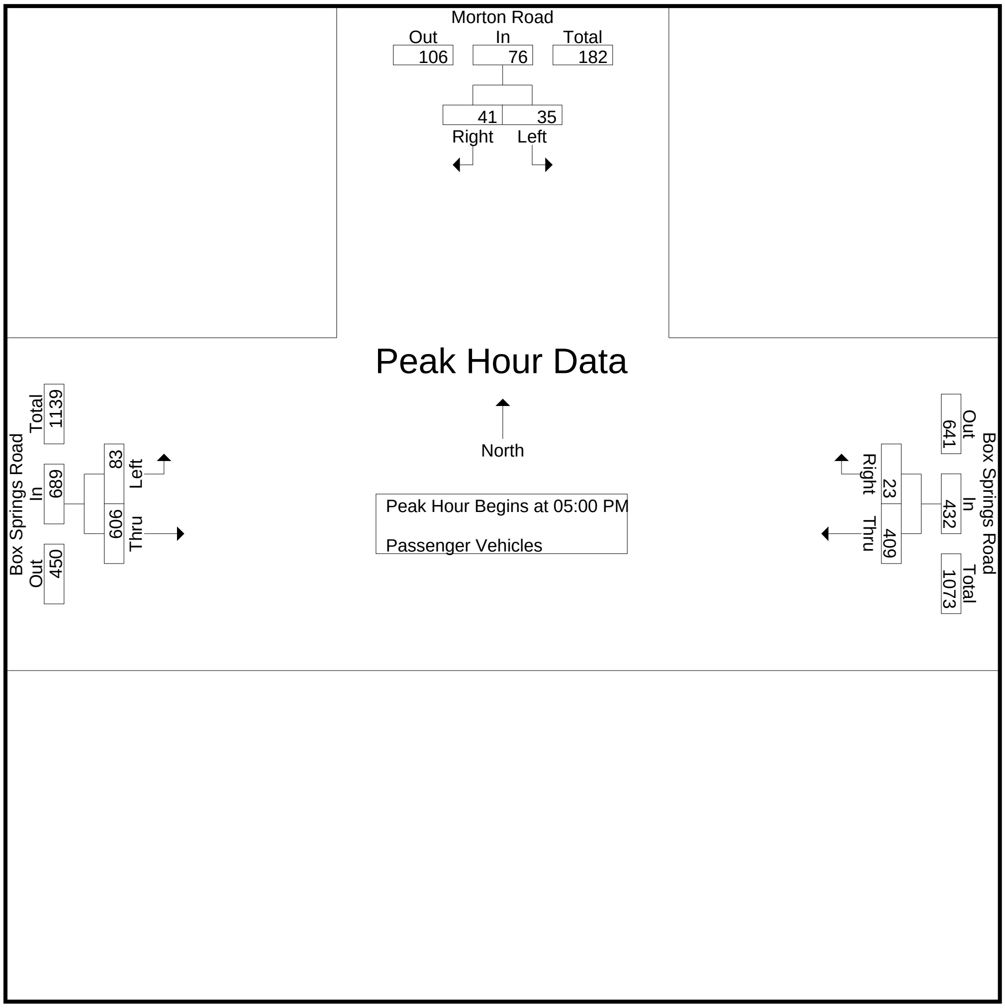
City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			05:00 PM		
+0 mins.	7	8	15	97	5	102	21	148	169
+15 mins.	5	8	13	104	7	111	**24**	**158**	**182**
+30 mins.	11	**13**	**24**	**107**	**9**	**116**	17	154	171
+45 mins.	**12**	12	24	101	2	103	21	146	167
Total Volume	35	41	76	409	23	432	83	606	689
% App. Total	46.1	53.9		94.7	5.3		12	88	
PHF	.729	.788	.792	.956	.639	.931	.865	.959	.946

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City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Morton Road Southbound			Box Springs Road Westbound			Box Springs Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	0	0	0	1	0	1	0	0	0	1
04:15 PM	0	0	0	2	0	2	0	1	1	3
04:30 PM	0	0	0	2	0	2	0	2	2	4
04:45 PM	0	0	0	1	0	1	0	2	2	3
Total	0	0	0	6	0	6	0	5	5	11
05:00 PM	1	0	1	1	0	1	0	3	3	5
05:15 PM	0	0	0	1	0	1	0	1	1	2
05:30 PM	0	0	0	2	0	2	1	2	3	5
05:45 PM	0	0	0	1	0	1	0	2	2	3
Total	1	0	1	5	0	5	1	8	9	15
Grand Total	1	0	1	11	0	11	1	13	14	26
Apprch %	100	0		100	0		7.1	92.9		
Total %	3.8	0	3.8	42.3	0	42.3	3.8	50	53.8	

	Morton Road Southbound			Box Springs Road Westbound			Box Springs Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	**1**	0	**1**	1	0	1	0	**3**	**3**	**5**
05:15 PM	0	0	0	1	0	1	0	1	1	2
05:30 PM	0	0	0	**2**	0	**2**	**1**	2	3	5
05:45 PM	0	0	0	1	0	1	0	2	2	3
Total Volume	1	0	1	5	0	5	1	8	9	15
% App. Total	100	0		100	0		11.1	88.9		
PHF	.250	.000	.250	.625	.000	.625	.250	.667	.750	.750

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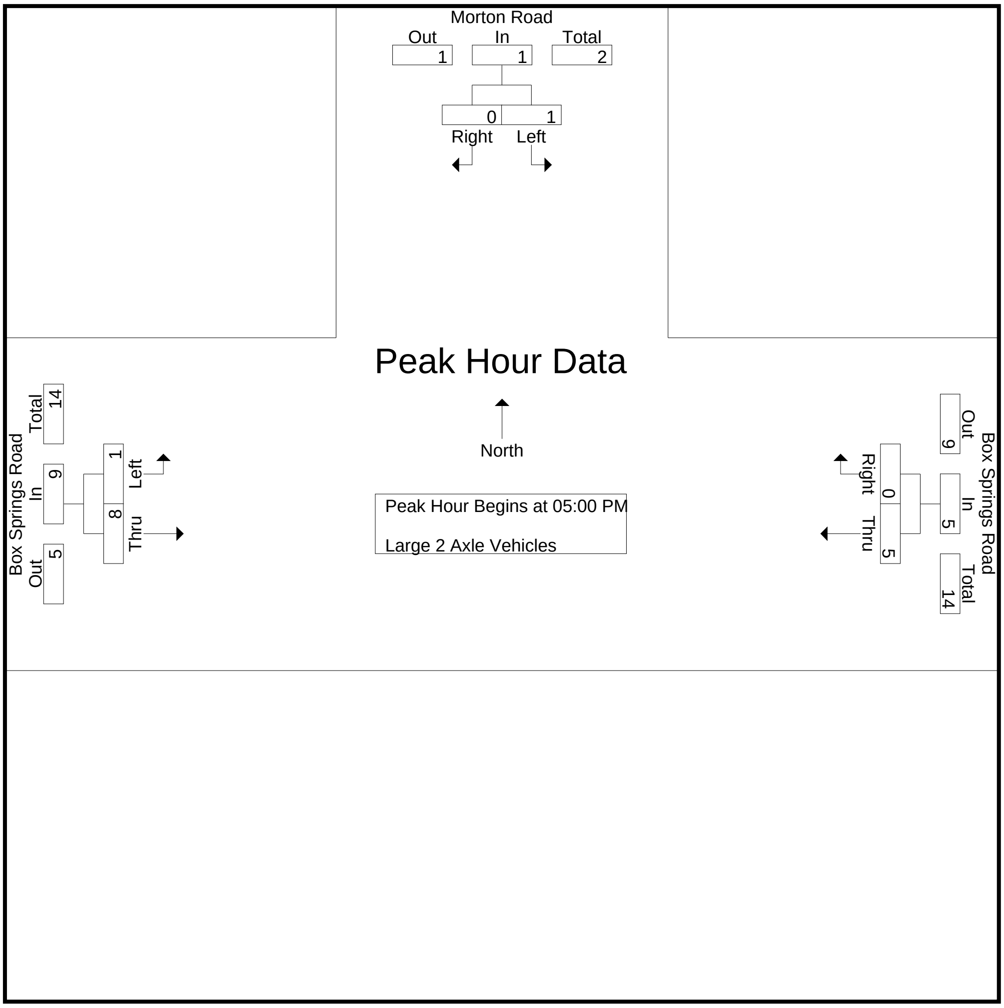
City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			05:00 PM		
+0 mins.	**1**	0	**1**	1	0	1	0	**3**	**3**
+15 mins.	0	0	0	1	0	1	0	1	1
+30 mins.	0	0	0	**2**	0	**2**	**1**	2	3
+45 mins.	0	0	0	1	0	1	0	2	2
Total Volume	1	0	1	5	0	5	1	8	9
% App. Total	100	0		100	0		11.1	88.9	
PHF	.250	.000	.250	.625	.000	.625	.250	.667	.750

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City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- 3 Axle Vehicles

	Morton Road Southbound			Box Springs Road Westbound			Box Springs Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0		
Total %										

	Morton Road Southbound			Box Springs Road Westbound			Box Springs Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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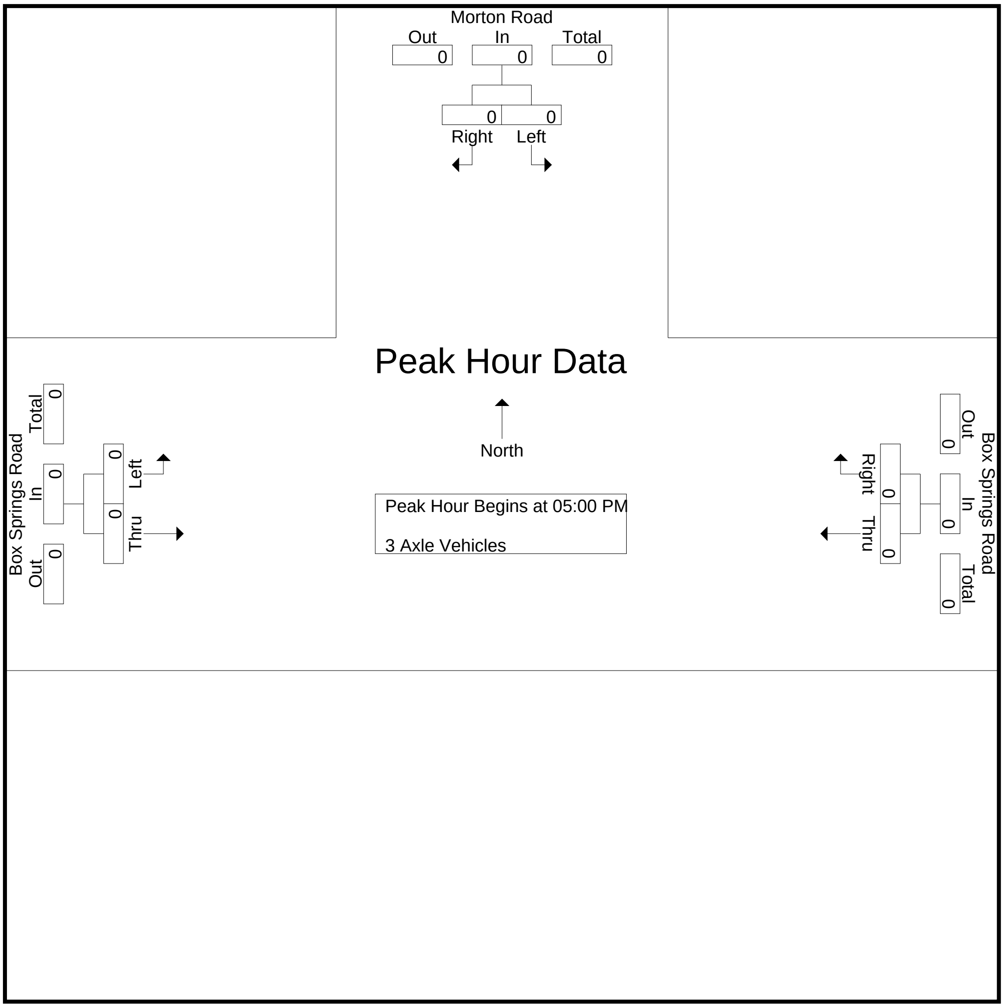
City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			05:00 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 1

Groups Printed- 4+ Axle Trucks

	Morton Road Southbound			Box Springs Road Westbound			Box Springs Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0		
Total %										

	Morton Road Southbound			Box Springs Road Westbound			Box Springs Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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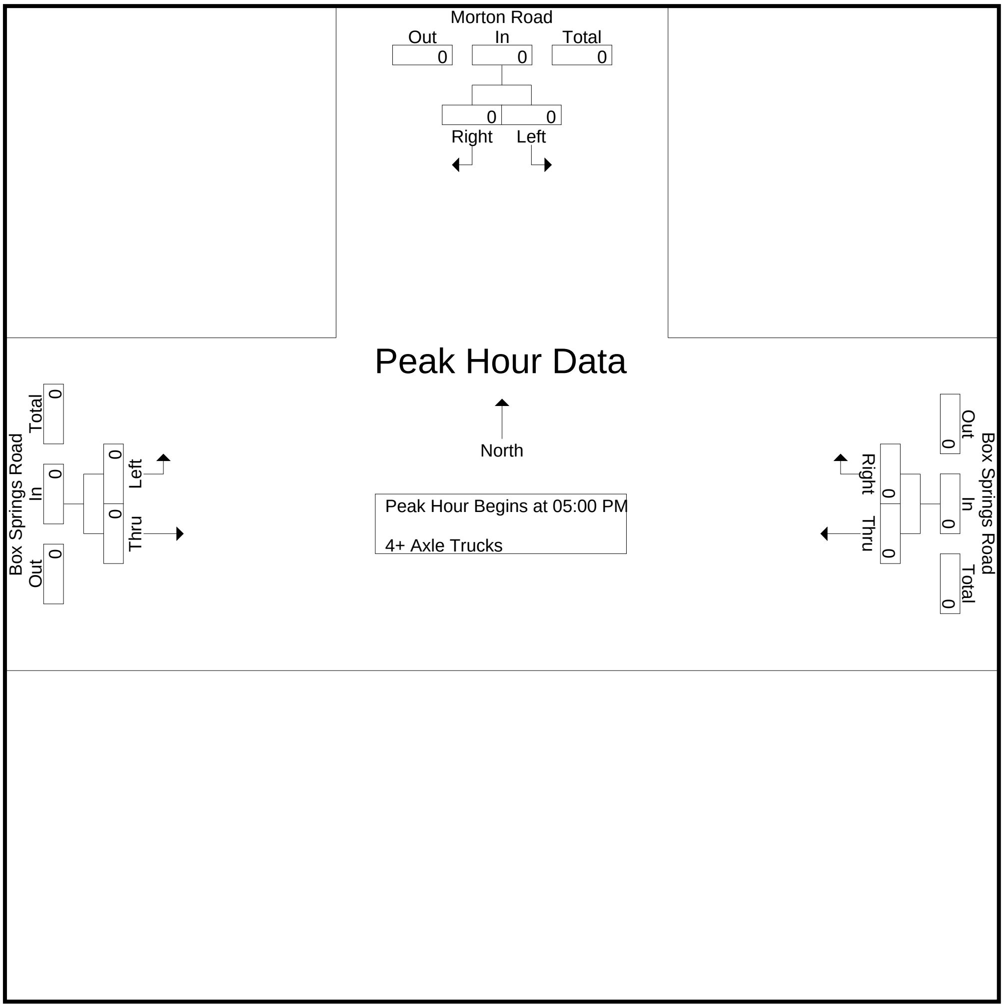
City of Moreno Valley
N/S: Morton Road
E/W: Box Springs Road
Weather: Clear

File Name : 05_MRV_Morton_Box Springs PM
Site Code : 99921033
Start Date : 1/26/2021
Page No : 2



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			05:00 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Moreno Valley
N/S: Day Street
E/W: Box Springs Rd/Ironwood Avenue
Weather: Clear

File Name : 01_MRV_Day_Ironwood AM
Site Code : 05119512
Start Date : 8/20/2019
Page No : 1

Groups Printed- Total Volume

	Day Street Southbound					Ironwood Avenue Westbound					Day Street Northbound					Box Springs Road Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	5	9	8	4	22	145	332	4	0	481	73	5	27	24	105	0	28	54	22	82	50	690	740
07:15 AM	8	18	2	1	28	169	235	6	1	410	69	6	36	34	111	0	52	65	36	117	72	666	738
07:30 AM	7	21	6	4	34	136	247	6	0	389	50	10	32	19	92	1	33	49	26	83	49	598	647
07:45 AM	7	19	8	1	34	147	215	5	0	367	66	9	31	16	106	1	49	48	28	98	45	605	650
Total	27	67	24	10	118	597	1029	21	1	1647	258	30	126	93	414	2	162	216	112	380	216	2559	2775
08:00 AM	3	17	3	1	23	130	283	2	0	415	76	8	35	22	119	1	45	64	27	110	50	667	717
08:15 AM	4	16	2	0	22	122	288	5	0	415	83	9	40	18	132	2	38	51	24	91	42	660	702
08:30 AM	5	14	2	1	21	97	255	4	1	356	73	16	33	25	122	1	36	68	36	105	63	604	667
08:45 AM	3	6	3	2	12	86	255	4	0	345	75	6	45	19	126	0	21	31	21	52	42	535	577
Total	15	53	10	4	78	435	1081	15	1	1531	307	39	153	84	499	4	140	214	108	358	197	2466	2663
Grand Total	42	120	34	14	196	1032	2110	36	2	3178	565	69	279	177	913	6	302	430	220	738	413	5025	5438
Apprch %	21.4	61.2	17.3			32.5	66.4	1.1			61.9	7.6	30.6			0.8	40.9	58.3					
Total %	0.8	2.4	0.7		3.9	20.5	42	0.7		63.2	11.2	1.4	5.6		18.2	0.1	6	8.6		14.7	7.6	92.4	

	Day Street Southbound				Ironwood Avenue Westbound				Day Street Northbound				Box Springs Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	5	9	**8**	22	145	**332**	4	**481**	**73**	5	27	105	0	28	54	82	**690**
07:15 AM	**8**	18	2	28	**169**	235	**6**	410	69	6	**36**	**111**	0	**52**	**65**	**117**	666
07:30 AM	7	**21**	6	**34**	136	247	6	389	50	**10**	32	92	**1**	33	49	83	598
07:45 AM	7	19	8	34	147	215	5	367	66	9	31	106	1	49	48	98	605
Total Volume	27	67	24	118	597	1029	21	1647	258	30	126	414	2	162	216	380	2559
% App. Total	22.9	56.8	20.3		36.2	62.5	1.3		62.3	7.2	30.4		0.5	42.6	56.8		
PHF	.844	.798	.750	.868	.883	.775	.875	.856	.884	.750	.875	.932	.500	.779	.831	.812	.927

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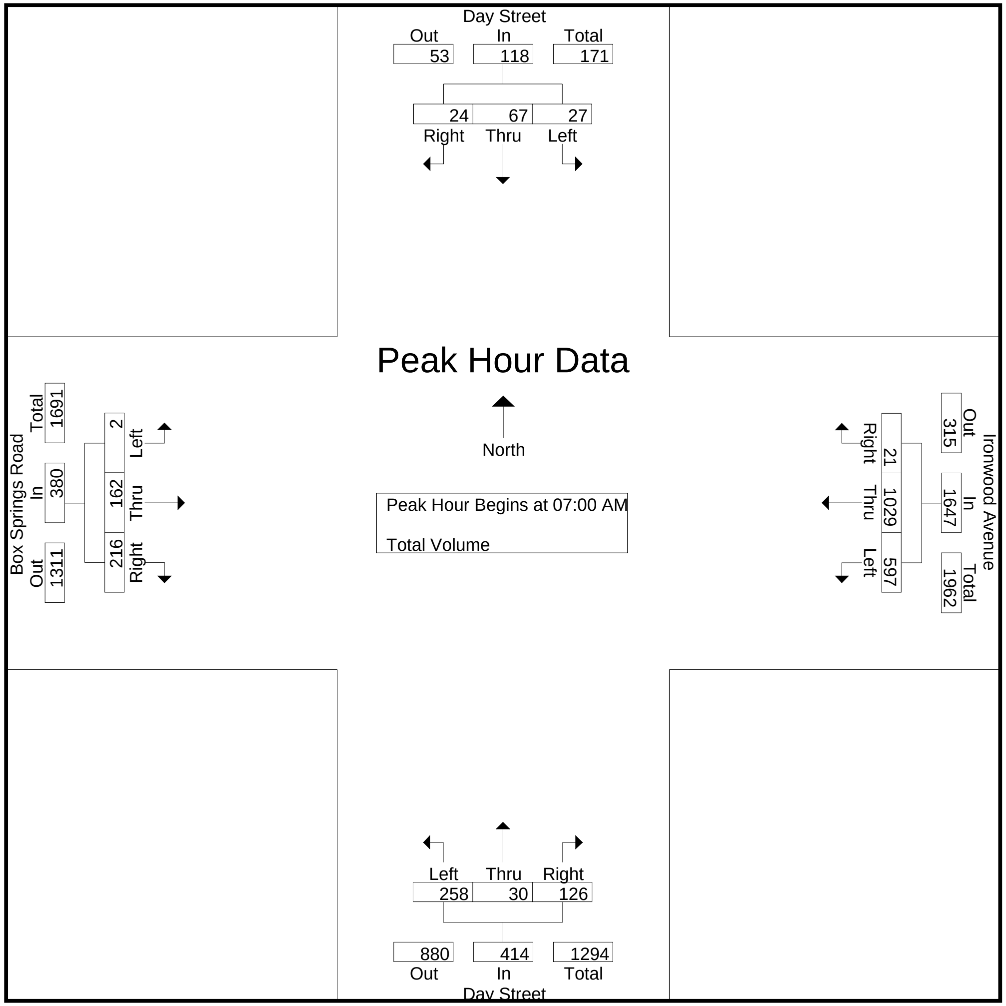
City of Moreno Valley
N/S: Day Street
E/W: Box Springs Rd/Ironwood Avenue
Weather: Clear

File Name : 01_MRV_Day_Ironwood AM
Site Code : 05119512
Start Date : 8/20/2019
Page No : 2



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City of Moreno Valley
N/S: Day Street
E/W: Box Springs Rd/Ironwood Avenue
Weather: Clear

File Name : 01_MRV_Day_Ironwood AM
Site Code : 05119512
Start Date : 8/20/2019
Page No : 3

	Day Street Southbound				Ironwood Avenue Westbound				Day Street Northbound				Box Springs Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:15 AM				07:00 AM				08:00 AM				07:15 AM				
+0 mins.	**8**	18	2	28	145	**332**	4	**481**	76	8	35	119	0	**52**	**65**	**117**	
+15 mins.	7	**21**	6	**34**	**169**	235	**6**	410	**83**	9	40	**132**	**1**	33	49	83	
+30 mins.	7	19	**8**	34	136	247	6	389	73	**16**	33	122	1	49	48	98	
+45 mins.	3	17	3	23	147	215	5	367	75	6	**45**	126	1	45	64	110	
Total Volume	25	75	19	119	597	1029	21	1647	307	39	153	499	3	179	226	408	
% App. Total	21	63	16		36.2	62.5	1.3		61.5	7.8	30.7		0.7	43.9	55.4		
PHF	.781	.893	.594	.875	.883	.775	.875	.856	.925	.609	.850	.945	.750	.861	.869	.872	

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City of Moreno Valley
N/S: Day Street
E/W: Box Springs Rd/Ironwood Avenue
Weather: Clear

File Name : 01_MRV_Day_Ironwood PM
Site Code : 05119512
Start Date : 8/20/2019
Page No : 1

Groups Printed- Total Volume

	Day Street Southbound					Ironwood Avenue Westbound					Day Street Northbound					Box Springs Road Eastbound							
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	4	3	2	2	9	74	90	8	1	172	75	9	106	49	190	3	102	49	19	154	71	525	596
04:15 PM	4	7	4	1	15	63	87	4	0	154	66	14	115	39	195	1	107	60	37	168	77	532	609
04:30 PM	2	7	1	0	10	52	66	1	0	119	67	15	137	50	219	5	106	49	25	160	75	508	583
04:45 PM	5	11	1	0	17	90	72	6	1	168	59	13	142	60	214	4	118	37	19	159	80	558	638
Total	15	28	8	3	51	279	315	19	2	613	267	51	500	198	818	13	433	195	100	641	303	2123	2426
05:00 PM	4	8	0	0	12	70	74	3	0	147	54	18	168	49	240	2	122	53	27	177	76	576	652
05:15 PM	6	8	0	0	14	69	81	5	2	155	64	27	192	61	283	0	118	56	45	174	108	626	734
05:30 PM	2	9	1	0	12	66	68	2	0	136	71	11	163	61	245	4	123	71	45	198	106	591	697
05:45 PM	6	15	1	1	22	95	84	2	0	181	77	15	148	65	240	3	131	61	33	195	99	638	737
Total	18	40	2	1	60	300	307	12	2	619	266	71	671	236	1008	9	494	241	150	744	389	2431	2820
Grand Total	33	68	10	4	111	579	622	31	4	1232	533	122	1171	434	1826	22	927	436	250	1385	692	4554	5246
Apprch %	29.7	61.3	9			47	50.5	2.5			29.2	6.7	64.1			1.6	66.9	31.5					
Total %	0.7	1.5	0.2		2.4	12.7	13.7	0.7		27.1	11.7	2.7	25.7		40.1	0.5	20.4	9.6		30.4	13.2	86.8	

	Day Street Southbound				Ironwood Avenue Westbound				Day Street Northbound				Box Springs Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	4	8	0	12	70	74	3	147	54	18	168	240	2	122	53	177	576
05:15 PM	**6**	8	0	14	69	81	**5**	155	64	**27**	**192**	**283**	0	118	56	174	626
05:30 PM	2	9	**1**	12	66	68	2	136	71	11	163	245	**4**	123	**71**	**198**	591
05:45 PM	6	**15**	1	**22**	**95**	**84**	2	**181**	**77**	15	148	240	3	**131**	61	195	**638**
Total Volume	18	40	2	60	300	307	12	619	266	71	671	1008	9	494	241	744	2431
% App. Total	30	66.7	3.3		48.5	49.6	1.9		26.4	7	66.6		1.2	66.4	32.4		
PHF	.750	.667	.500	.682	.789	.914	.600	.855	.864	.657	.874	.890	.563	.943	.849	.939	.953

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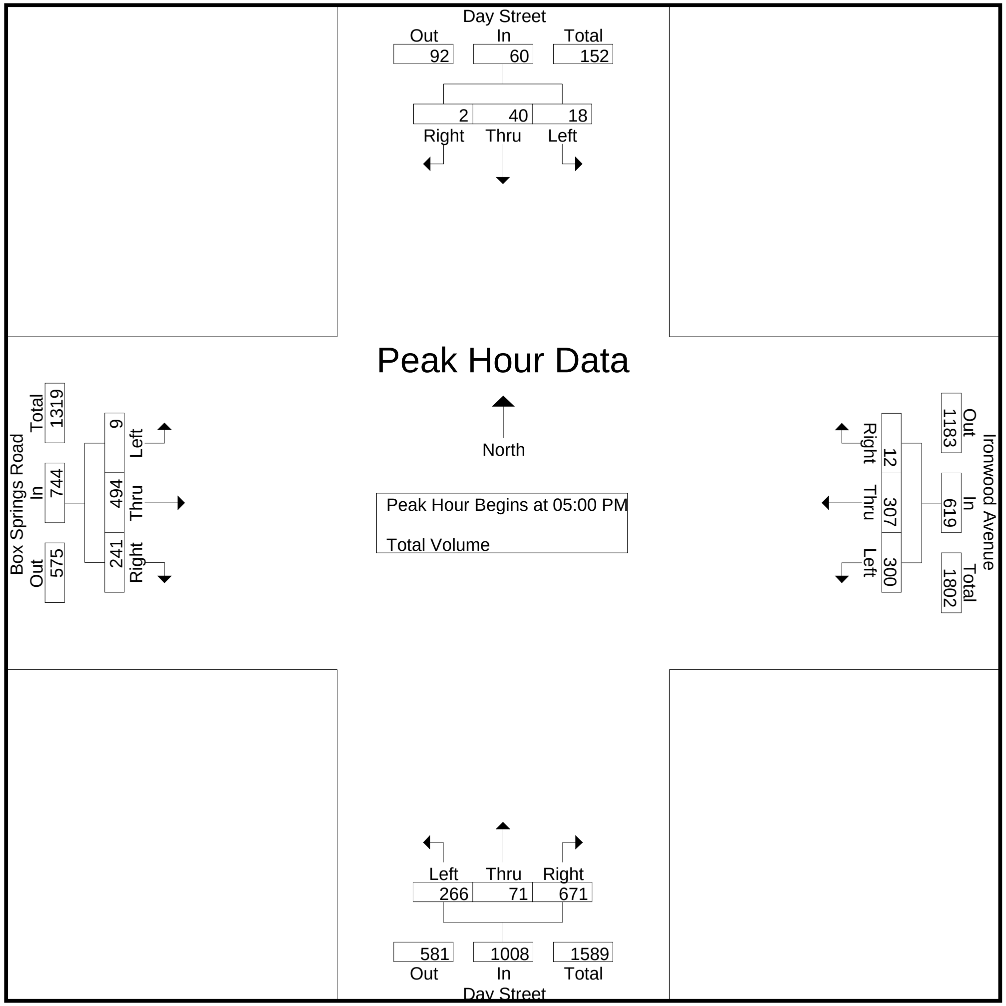
Site Code : 05119512
Start Date : 8/20/2019
Page No : 2



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City of Moreno Valley
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Weather: Clear

File Name : 01_MRV_Day_Ironwood PM
Site Code : 05119512
Start Date : 8/20/2019

	Day Street Southbound				Ironwood Avenue Westbound				Day Street Northbound				Box Springs Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	05:00 PM				05:00 PM				05:00 PM				05:00 PM				
+0 mins.	4	8	0	12	70	74	3	147	54	18	168	240	2	122	53	177	
+15 mins.	**6**	8	0	14	69	81	**5**	155	64	**27**	**192**	**283**	0	118	56	174	
+30 mins.	2	9	**1**	12	66	68	2	136	71	11	163	245	**4**	123	**71**	**198**	
+45 mins.	6	**15**	1	**22**	**95**	**84**	2	**181**	**77**	15	148	240	3	**131**	61	195	
Total Volume	18	40	2	60	300	307	12	619	266	71	671	1008	9	494	241	744	
% App. Total	30	66.7	3.3		48.5	49.6	1.9		26.4	7	66.6		1.2	66.4	32.4		
PHF	.750	.667	.500	.682	.789	.914	.600	.855	.864	.657	.874	.890	.563	.943	.849	.939	

Location: Moreno Valley
N/S: Day Street
E/W: Box Springs Rd/Ironwood Ave

Date: 8/20/2019
Day: Tuesday

PEDESTRIANS

	North Leg Day Street	East Leg Ironwood Avenue	South Leg Day Street	West Leg Box Springs Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	2	0	0	0	2
7:15 AM	0	0	0	0	0
7:30 AM	2	0	0	0	2
7:45 AM	3	0	0	0	3
8:00 AM	1	0	0	0	1
8:15 AM	1	0	0	0	1
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	9	0	0	0	9

	North Leg Day Street	East Leg Ironwood Avenue	South Leg Day Street	West Leg Box Springs Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	2	0	0	0	2
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	1	0	0	0	1
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	3	0	0	0	3

Location: Moreno Valley
N/S: Day Street
E/W: Box Springs Rd/Ironwood Ave

Date: 8/20/2019
Day: Tuesday

BICYCLES

	Southbound Day Street			Westbound Ironwood Avenue			Northbound Day Street			Eastbound Box Springs Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	1	0	0	0	0	0	0	1	0	2

	Southbound Day Street			Westbound Ironwood Avenue			Northbound Day Street			Eastbound Box Springs Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	2	0	0	0	0	0	0	0	2
TOTAL VOLUMES:	0	0	0	0	2	0	0	0	0	0	1	0	3

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City of Moreno Valley
N/S: Day Street
E/W: Box Springs Rd / Ironwood Ave
Weather: Clear

File Name : MRV_Day_Ironwood_AM
Site Code : 99921046
Start Date : 2/2/2021
Page No : 1

Groups Printed- Total Volume

	Day Street Southbound				Ironwood Avenue Westbound				Day Street Northbound				Box Springs Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	7	3	10	32	98	0	130	16	3	16	35	0	14	26	40	215
07:15 AM	1	8	1	10	30	110	2	142	28	3	15	46	2	15	24	41	239
07:30 AM	5	9	5	19	33	136	4	173	37	8	18	63	0	13	32	45	300
07:45 AM	4	13	3	20	43	115	4	162	39	11	29	79	0	17	37	54	315
Total	10	37	12	59	138	459	10	607	120	25	78	223	2	59	119	180	1069
08:00 AM	0	8	4	12	44	105	1	150	40	8	20	68	1	16	20	37	267
08:15 AM	0	12	1	13	38	85	2	125	34	4	16	54	0	25	25	50	242
08:30 AM	1	9	3	13	32	75	1	108	22	8	25	55	0	26	37	63	239
08:45 AM	0	4	1	5	48	61	0	109	34	4	34	72	0	19	42	61	247
Total	1	33	9	43	162	326	4	492	130	24	95	249	1	86	124	211	995
Grand Total	11	70	21	102	300	785	14	1099	250	49	173	472	3	145	243	391	2064
Apprch %	10.8	68.6	20.6		27.3	71.4	1.3		53	10.4	36.7		0.8	37.1	62.1		
Total %	0.5	3.4	1	4.9	14.5	38	0.7	53.2	12.1	2.4	8.4	22.9	0.1	7	11.8	18.9	

	Day Street Southbound				Ironwood Avenue Westbound				Day Street Northbound				Box Springs Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**5**	9	**5**	19	33	**136**	**4**	**173**	37	8	18	63	0	13	32	45	300
07:45 AM	4	**13**	3	**20**	43	115	4	162	39	**11**	**29**	**79**	0	17	**37**	**54**	**315**
08:00 AM	0	8	4	12	**44**	105	1	150	**40**	8	20	68	**1**	16	20	37	267
08:15 AM	0	12	1	13	38	85	2	125	34	4	16	54	0	**25**	25	50	242
Total Volume	9	42	13	64	158	441	11	610	150	31	83	264	1	71	114	186	1124
% App. Total	14.1	65.6	20.3		25.9	72.3	1.8		56.8	11.7	31.4		0.5	38.2	61.3		
PHF	.450	.808	.650	.800	.898	.811	.688	.882	.938	.705	.716	.835	.250	.710	.770	.861	.892

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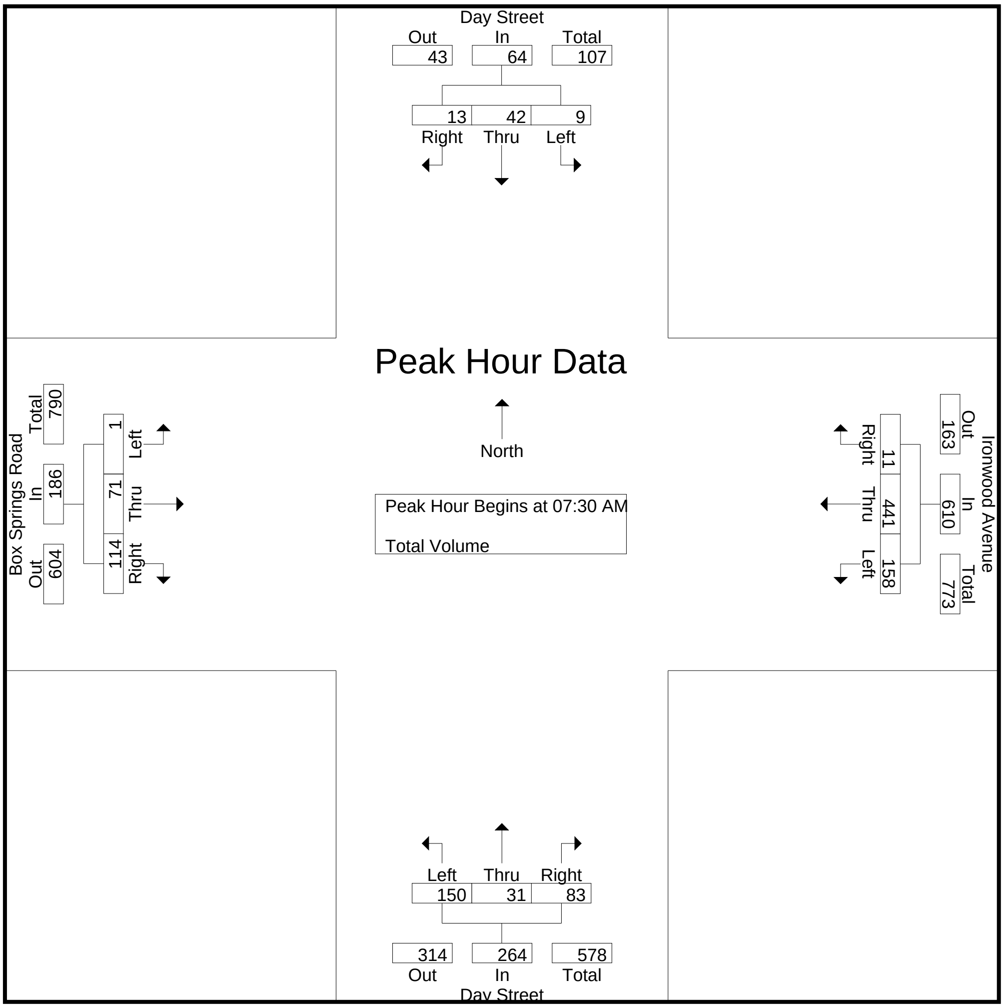

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:15 AM				07:30 AM				08:00 AM			
+0 mins.	**5**	9	**5**	19	30	110	2	142	37	8	18	63	**1**	16	20	37
+15 mins.	4	**13**	3	**20**	33	**136**	**4**	**173**	39	**11**	**29**	**79**	0	25	25	50
+30 mins.	0	8	4	12	43	115	4	162	**40**	8	20	68	0	**26**	37	**63**
+45 mins.	0	12	1	13	**44**	105	1	150	34	4	16	54	0	19	**42**	61
Total Volume	9	42	13	64	150	466	11	627	150	31	83	264	1	86	124	211
% App. Total	14.1	65.6	20.3		23.9	74.3	1.8		56.8	11.7	31.4		0.5	40.8	58.8	
PHF	.450	.808	.650	.800	.852	.857	.688	.906	.938	.705	.716	.835	.250	.827	.738	.837

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Weather: Clear

File Name : MRV_Day_Ironwood_PM
Site Code : 99921046
Start Date : 2/2/2021
Page No : 1

Groups Printed- Total Volume

	Day Street Southbound				Ironwood Avenue Westbound				Day Street Northbound				Box Springs Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	4	6	1	11	67	68	3	138	65	11	107	183	5	90	61	156	488
04:15 PM	2	8	2	12	65	69	0	134	68	14	107	189	3	104	56	163	498
04:30 PM	3	9	2	14	67	83	4	154	73	9	105	187	1	87	62	150	505
04:45 PM	3	5	0	8	78	85	4	167	70	15	115	200	0	90	48	138	513
Total	12	28	5	45	277	305	11	593	276	49	434	759	9	371	227	607	2004
05:00 PM	2	10	4	16	75	83	2	160	81	10	121	212	3	93	54	150	538
05:15 PM	5	11	1	17	59	62	3	124	58	26	122	206	1	96	52	149	496
05:30 PM	5	15	2	22	80	70	7	157	68	18	164	250	1	86	49	136	565
05:45 PM	9	11	3	23	93	58	4	155	80	25	164	269	2	71	46	119	566
Total	21	47	10	78	307	273	16	596	287	79	571	937	7	346	201	554	2165
Grand Total	33	75	15	123	584	578	27	1189	563	128	1005	1696	16	717	428	1161	4169
Apprch %	26.8	61	12.2		49.1	48.6	2.3		33.2	7.5	59.3		1.4	61.8	36.9		
Total %	0.8	1.8	0.4	3	14	13.9	0.6	28.5	13.5	3.1	24.1	40.7	0.4	17.2	10.3	27.8	

	Day Street Southbound				Ironwood Avenue Westbound				Day Street Northbound				Box Springs Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	2	10	**4**	16	75	**83**	2	**160**	**81**	10	121	212	**3**	93	**54**	**150**	538
05:15 PM	5	11	1	17	59	62	3	124	58	**26**	122	206	1	**96**	52	149	496
05:30 PM	5	**15**	2	22	80	70	**7**	157	68	18	**164**	250	1	86	49	136	565
05:45 PM	**9**	11	3	**23**	**93**	58	4	155	80	25	164	**269**	2	71	46	119	**566**
Total Volume	21	47	10	78	307	273	16	596	287	79	571	937	7	346	201	554	2165
% App. Total	26.9	60.3	12.8		51.5	45.8	2.7		30.6	8.4	60.9		1.3	62.5	36.3		
PHF	.583	.783	.625	.848	.825	.822	.571	.931	.886	.760	.870	.871	.583	.901	.931	.923	.956

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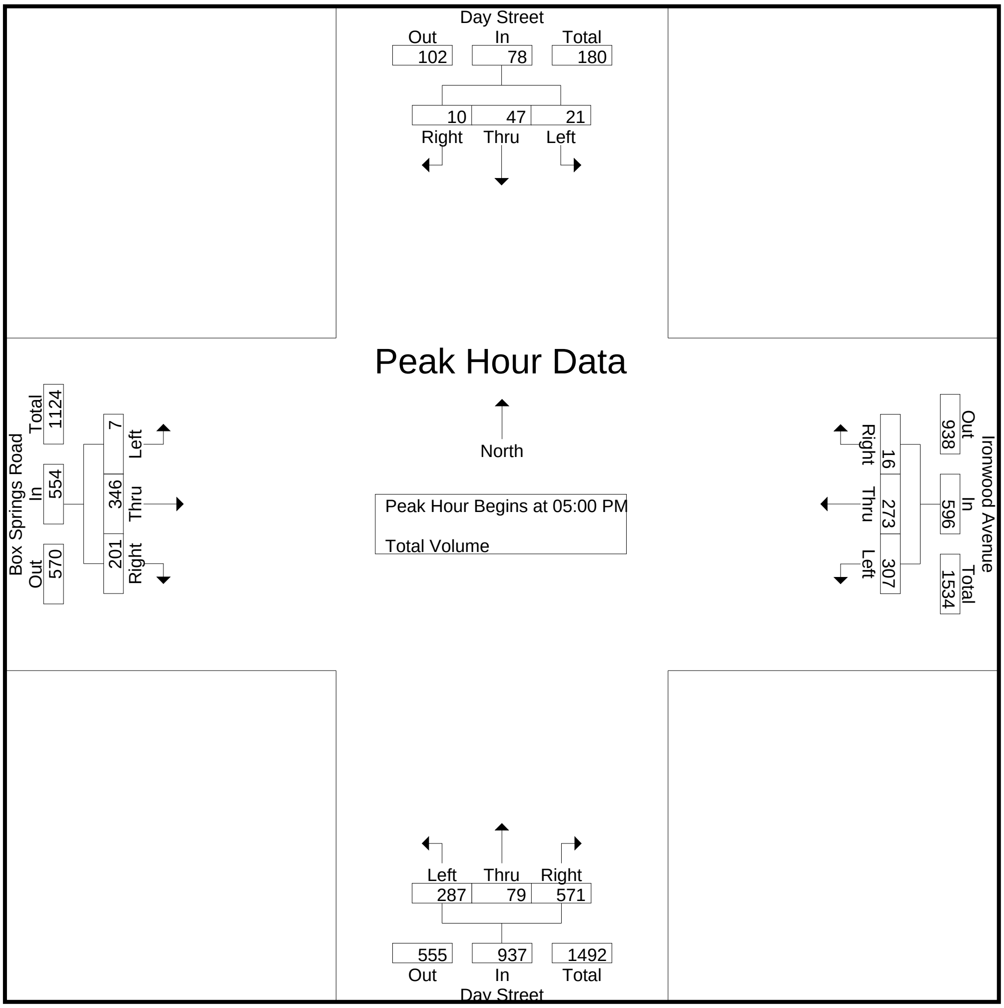

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:15 PM				05:00 PM				04:00 PM			
+0 mins.	2	10	**4**	16	65	69	0	134	**81**	10	121	212	**5**	90	61	156
+15 mins.	5	11	1	17	67	83	**4**	154	58	**26**	122	206	3	**104**	56	**163**
+30 mins.	5	**15**	2	22	**78**	**85**	4	**167**	68	18	**164**	250	1	87	**62**	150
+45 mins.	**9**	11	3	**23**	75	83	2	160	80	25	164	**269**	0	90	48	138
Total Volume	21	47	10	78	285	320	10	615	287	79	571	937	9	371	227	607
% App. Total	26.9	60.3	12.8		46.3	52	1.6		30.6	8.4	60.9		1.5	61.1	37.4	
PHF	.583	.783	.625	.848	.913	.941	.625	.921	.886	.760	.870	.871	.450	.892	.915	.931

APPENDIX C:
VOLUME DEVELOPMENT WORKSHEETS

Table C-1 - Existing Peak Hour Volumes
(Intersections With Classification Counts)

	AM Peak Hour						PM Peak Hour					
	Pass. Veh.	Trucks 2 Axle	Trucks 3 Axle	Trucks 4 Axle	Trucks PCE	Total PCE Volume	Pass. Veh.	Trucks 2 Axle	Trucks 3 Axle	Trucks 4 Axle	Trucks PCE	Total PCE Volume
1 . Sycamore Canyon Boulevard/Fair Isle Dr												
NBL	75	1	0	0	2	77	111	0	0	0	0	111
NBT	495	6	3	0	15	510	278	6	1	0	11	289
NBR	197	23	1	27	118	315	444	7	3	29	104	548
SBL	59	0	0	0	0	59	379	1	0	0	2	381
SBT	92	3	0	0	5	97	386	8	1	0	14	400
SBR	3	0	0	0	0	3	31	0	0	0	0	31
EBL	23	3	0	0	5	28	7	4	0	0	6	13
EBT	63	3	0	0	5	68	93	4	0	0	6	99
EBR	66	0	0	0	0	66	98	0	0	0	0	98
WBL	80	5	0	0	8	88	97	4	0	0	6	103
WBT	34	0	0	0	0	34	90	0	0	0	0	90
WBR	189	1	0	0	2	191	107	0	0	0	0	107
North Leg												
Approach	154	3	0	0	5	159	796	9	1	0	16	812
Departure	707	10	3	0	22	729	392	10	1	0	17	409
Total	861	13	3	0	27	888	1,188	19	2	0	33	1,221
South Leg												
Approach	767	30	4	27	135	902	833	13	4	29	115	948
Departure	238	8	0	0	13	251	581	12	1	0	20	601
Total	1,005	38	4	27	148	1,153	1,414	25	5	29	135	1,549
East Leg												
Approach	303	6	0	0	10	313	294	4	0	0	6	300
Departure	319	26	1	27	123	442	916	12	3	29	112	1,028
Total	622	32	1	27	133	755	1,210	16	3	29	118	1,328
West Leg												
Approach	152	6	0	0	10	162	198	8	0	0	12	210
Departure	112	1	0	0	2	114	232	0	0	0	0	232
Total	264	7	0	0	12	276	430	8	0	0	12	442
Total Approaches												
Approach	1,376	45	4	27	160	1,536	2,121	34	5	29	149	2,270
Departure	1,376	45	4	27	160	1,536	2,121	34	5	29	149	2,270
Total	2,752	90	8	54	320	3,072	4,242	68	10	58	298	4,540

Table C-1 - Existing Peak Hour Volumes
(Intersections With Classification Counts)

	AM Peak Hour						PM Peak Hour					
	Pass. Veh.	Trucks 2 Axle	Trucks 3 Axle	Trucks 4 Axle	Trucks PCE	Total PCE Volume	Pass. Veh.	Trucks 2 Axle	Trucks 3 Axle	Trucks 4 Axle	Trucks PCE	Total PCE Volume
2 . I-215 Northbound Ramps/Fair Isle Dr-Box Springs Road												
NBL	58	1	0	0	2	60	96	0	0	0	0	96
NBT	4	0	0	0	0	4	2	0	0	0	0	2
NBR	3	0	0	0	0	3	8	0	0	0	0	8
SBL	0	0	0	0	0	0	0	0	0	0	0	0
SBT	0	0	0	0	0	0	0	0	0	0	0	0
SBR	0	0	0	0	0	0	0	0	0	0	0	0
EBL	159	19	3	30	125	284	258	4	3	31	105	363
EBT	145	3	0	0	5	150	657	9	0	0	14	671
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	244	2	14	0	31	275	190	4	2	0	10	200
WBR	453	3	1	0	7	460	249	1	0	0	2	251
North Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	616	22	4	30	132	748	509	5	3	31	107	616
Total	616	22	4	30	132	748	509	5	3	31	107	616
South Leg												
Approach	65	1	0	0	2	67	106	0	0	0	0	106
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	65	1	0	0	2	67	106	0	0	0	0	106
East Leg												
Approach	697	5	15	0	38	735	439	5	2	0	12	451
Departure	148	3	0	0	5	153	665	9	0	0	14	679
Total	845	8	15	0	43	888	1,104	14	2	0	26	1,130
West Leg												
Approach	304	22	3	30	130	434	915	13	3	31	119	1,034
Departure	302	3	14	0	33	335	286	4	2	0	10	296
Total	606	25	17	30	163	769	1,201	17	5	31	129	1,330
Total Approaches												
Approach	1,066	28	18	30	170	1,236	1,460	18	5	31	131	1,591
Departure	1,066	28	18	30	170	1,236	1,460	18	5	31	131	1,591
Total	2,132	56	36	60	340	2,472	2,920	36	10	62	262	3,182

Table C-1 - Existing Peak Hour Volumes
(Intersections With Classification Counts)

	AM Peak Hour						PM Peak Hour					
	Pass. Veh.	Trucks 2 Axle	Trucks 3 Axle	Trucks 4 Axle	Trucks PCE	Total PCE Volume	Pass. Veh.	Trucks 2 Axle	Trucks 3 Axle	Trucks 4 Axle	Trucks PCE	Total PCE Volume

Table C-1 - Existing Peak Hour Volumes
(Intersections With Classification Counts)

AM Peak Hour						PM Peak Hour					
	Trucks				Total PCE		Trucks				Total PCE
Pass. Veh.	2 Axle	3 Axle	4 Axle	PCE	Volume	Pass. Veh.	2 Axle	3 Axle	4 Axle	PCE	Volume

Table C-1 - Existing Peak Hour Volumes
(Intersections With Classification Counts)

	AM Peak Hour						PM Peak Hour					
		Trucks				Total		Trucks				Total
	Pass.					PCE	Pass.					PCE
	Veh.	2 Axle	3 Axle	4 Axle	PCE	Volume	Veh.	2 Axle	3 Axle	4 Axle	PCE	Volume

Table C-1 - Existing Peak Hour Volumes
(Intersections With Classification Counts)

	AM Peak Hour						PM Peak Hour					
	Pass. Veh.	Trucks 2 Axle	Trucks 3 Axle	Trucks 4 Axle	Trucks PCE	Total PCE Volume	Pass. Veh.	Trucks 2 Axle	Trucks 3 Axle	Trucks 4 Axle	Trucks PCE	Total PCE Volume
6 . Morton Road/Box Springs Road												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0	0	0
SBL	15	1	0	0	2	17	35	1	0	0	2	37
SBT	0	0	0	0	0	0	0	0	0	0	0	0
SBR	78	1	0	0	2	80	41	0	0	0	0	41
EBL	30	1	0	0	2	32	83	1	0	0	2	85
EBT	122	2	0	0	3	125	606	8	0	0	12	618
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	634	3	1	1	10	644	409	5	0	0	8	417
WBR	4	1	0	0	2	6	23	0	0	0	0	23
North Leg												
Approach	93	2	0	0	4	97	76	1	0	0	2	78
Departure	34	2	0	0	4	38	106	1	0	0	2	108
Total	127	4	0	0	8	135	182	2	0	0	4	186
South Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
East Leg												
Approach	638	4	1	1	12	650	432	5	0	0	8	440
Departure	137	3	0	0	5	142	641	9	0	0	14	655
Total	775	7	1	1	17	792	1,073	14	0	0	22	1,095
West Leg												
Approach	152	3	0	0	5	157	689	9	0	0	14	703
Departure	712	4	1	1	12	724	450	5	0	0	8	458
Total	864	7	1	1	17	881	1,139	14	0	0	22	1,161
Total Approaches												
Approach	883	9	1	1	21	904	1,197	15	0	0	24	1,221
Departure	883	9	1	1	21	904	1,197	15	0	0	24	1,221
Total	1,766	18	2	2	42	1,808	2,394	30	0	0	48	2,442

Table C-2 - Existing Peak Hour Truck Percentages

	AM Peak Hour				PM Peak Hour			
	Passenger Vehicles	Total Trucks	Total Vehicle Volume	Truck %	Passenger Vehicles	Total Trucks	Total Vehicle Volume	Truck %
1 . Sycamore Canyon Boulevard/Fair Isle Dr								
NBL	75	1	76	1.32%	111	0	111	0.00%
NBT	495	9	504	1.79%	278	7	285	2.46%
NBR	197	51	248	20.56%	444	39	483	8.07%
SBL	59	0	59	0.00%	379	1	380	0.26%
SBT	92	3	95	3.16%	386	9	395	2.28%
SBR	3	0	3	0.00%	31	0	31	0.00%
EBL	23	3	26	11.54%	7	4	11	36.36%
EBT	63	3	66	4.55%	93	4	97	4.12%
EBR	66	0	66	0.00%	98	0	98	0.00%
WBL	80	5	85	5.88%	97	4	101	3.96%
WBT	34	0	34	0.00%	90	0	90	0.00%
WBR	189	1	190	0.53%	107	0	107	0.00%
North Leg								
Approach	154	3	157		796	10	806	1.2%
Departure	707	13	720		392	11	403	2.7%
Total	861	16	877	1.8%	1,188	21	1,209	1.7%
South Leg								
Approach	767	61	828		833	46	879	5.2%
Departure	238	8	246		581	13	594	2.2%
Total	1,005	69	1,074	6.4%	1,414	59	1,473	4.0%
East Leg								
Approach	303	6	309		294	4	298	1.3%
Departure	319	54	373		916	44	960	4.6%
Total	622	60	682	8.8%	1,210	48	1,258	3.8%
West Leg								
Approach	152	6	158		198	8	206	3.9%
Departure	112	1	113		232	0	232	0.0%
Total	264	7	271	2.6%	430	8	438	1.8%
Total Approaches								
Approach	1,376	76	1,452		2,121	68	2,189	
Departure	1,376	76	1,452		2,121	68	2,189	
Total	2,752	152	2,904	5.2%	4,242	136	4,378	3.1%

Table C-2 - Existing Peak Hour Truck Percentages

	AM Peak Hour				PM Peak Hour			
	Passenger Vehicles	Total Trucks	Total Vehicle Volume	Truck %	Passenger Vehicles	Total Trucks	Total Vehicle Volume	Truck %
2 . I-215 Northbound Ramps/Fair Isle Dr-Box Springs Road								
NBL	58	1	59	1.69%	96	0	96	0.00%
NBT	4	0	4	0.00%	2	0	2	0.00%
NBR	3	0	3	0.00%	8	0	8	0.00%
SBL	0	0	0	0.00%	0	0	0	0.00%
SBT	0	0	0	0.00%	0	0	0	0.00%
SBR	0	0	0	0.00%	0	0	0	0.00%
EBL	159	52	211	24.64%	258	38	296	12.84%
EBT	145	3	148	2.03%	657	9	666	1.35%
EBR	0	0	0	0.00%	0	0	0	0.00%
WBL	0	0	0	0.00%	0	0	0	0.00%
WBT	244	16	260	6.15%	190	6	196	3.06%
WBR	453	4	457	0.88%	249	1	250	0.40%
North Leg								
Approach	0	0	0		0	0	0	
Departure	616	56	672		509	39	548	
Total	616	56	672	8.3%	509	39	548	7.1%
South Leg								
Approach	65	1	66		106	0	106	
Departure	0	0	0		0	0	0	
Total	65	1	66	1.5%	106	0	106	0.0%
East Leg								
Approach	697	20	717		439	7	446	
Departure	148	3	151		665	9	674	
Total	845	23	868	2.6%	1,104	16	1,120	1.4%
West Leg								
Approach	304	55	359		915	47	962	
Departure	302	17	319		286	6	292	
Total	606	72	678	10.6%	1,201	53	1,254	4.2%
Total Approaches								
Approach	1,066	76	1,142		1,460	54	1,514	
Departure	1,066	76	1,142		1,460	54	1,514	
Total	2,132	152	2,284	6.7%	2,920	108	3,028	3.6%

Table C-2 - Existing Peak Hour Truck Percentages

AM Peak Hour				PM Peak Hour			
Passenger Vehicles	Total Trucks	Total Vehicle Volume	Truck %	Passenger Vehicles	Total Trucks	Total Vehicle Volume	Truck %

Table C-2 - Existing Peak Hour Truck Percentages

	AM Peak Hour				PM Peak Hour			
	Passenger Vehicles	Total Trucks	Total Vehicle Volume	Truck %	Passenger Vehicles	Total Trucks	Total Vehicle Volume	Truck %

Table C-2 - Existing Peak Hour Truck Percentages

	AM Peak Hour				PM Peak Hour			
	Passenger Vehicles	Total Trucks	Total Vehicle Volume	Truck %	Passenger Vehicles	Total Trucks	Total Vehicle Volume	Truck %

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Table C-2 - Existing Peak Hour Truck Percentages

	AM Peak Hour				PM Peak Hour			
	Passenger Vehicles	Total Trucks	Total Vehicle Volume	Truck %	Passenger Vehicles	Total Trucks	Total Vehicle Volume	Truck %
6 . Morton Road/Box Springs Road								
NBL	0	0	0	0.00%	0	0	0	0.00%
NBT	0	0	0	0.00%	0	0	0	0.00%
NBR	0	0	0	0.00%	0	0	0	0.00%
SBL	15	1	16	6.25%	35	1	36	2.78%
SBT	0	0	0	0.00%	0	0	0	0.00%
SBR	78	1	79	1.27%	41	0	41	0.00%
EBL	30	1	31	3.23%	83	1	84	1.19%
EBT	122	2	124	1.61%	606	8	614	1.30%
EBR	0	0	0	0.00%	0	0	0	0.00%
WBL	0	0	0	0.00%	0	0	0	0.00%
WBT	634	5	639	0.78%	409	5	414	1.21%
WBR	4	1	5	20.00%	23	0	23	0.00%
North Leg								
Approach	93	2	95		76	1	77	
Departure	34	2	36		106	1	107	
Total	127	4	131	3.1%	182	2	184	1.1%
South Leg								
Approach	0	0	0		0	0	0	
Departure	0	0	0		0	0	0	
Total	0	0	0	0.0%	0	0	0	0.0%
East Leg								
Approach	638	6	644		432	5	437	
Departure	137	3	140		641	9	650	
Total	775	9	784	1.1%	1,073	14	1,087	1.3%
West Leg								
Approach	152	3	155		689	9	698	
Departure	712	6	718		450	5	455	
Total	864	9	873	1.0%	1,139	14	1,153	1.2%
Total Approaches								
Approach	883	11	894		1,197	15	1,212	
Departure	883	11	894		1,197	15	1,212	
Total	1,766	22	1,788	1.2%	2,394	30	2,424	1.2%

Table C-3: Existing PCE Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Total Veh.	Truck %	Pass. Veh.	Truck	Truck PCE	Total PCE Vol	Total Veh.	Truck %	Pass. Veh.	Truck	Truck PCE	Total PCE Vol

Table C-3: Existing PCE Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Total Veh.	Truck %	Pass. Veh.	Truck	Truck PCE	Total PCE Vol	Total Veh.	Truck %	Pass. Veh.	Truck	Truck PCE	Total PCE Vol

Table C-3: Existing PCE Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Total Veh.	Truck %	Pass. Veh.	Truck	Truck PCE	Total PCE Vol	Total Veh.	Truck %	Pass. Veh.	Truck	Truck PCE	Total PCE Vol

Table C-3: Existing PCE Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Total Veh.	Truck %	Pass. Veh.	Truck	Truck PCE	Total PCE Vol	Total Veh.	Truck %	Pass. Veh.	Truck	Truck PCE	Total PCE Vol
4 . Morton Road/Woodsworth Road N												
NBL	0		0	0	0	0	0		0	0	0	0
NBT	13		13	0	0	13	33		33	0	0	33
NBR	5	3.1%	5	0	0	5	13	1.1%	13	0	0	13
SBL	0		0	0	0	0	0		0	0	0	0
SBT	26		26	0	0	26	19		19	0	0	19
SBR	0		0	0	0	0	0		0	0	0	0
EBL	0		0	0	0	0	0		0	0	0	0
EBT	0		0	0	0	0	0		0	0	0	0
EBR	0		0	0	0	0	0		0	0	0	0
WBL	3	3.1%	3	0	0	3	2	1.1%	2	0	0	2
WBT	0		0	0	0	0	0		0	0	0	0
WBR	1		1	0	0	1	2		2	0	0	2
North Leg												
Approach	26		26	0	0	26	19		19	0	0	19
Departure	14		14	0	0	14	35		35	0	0	35
Total	40		40	0	0	40	54		54	0	0	54
South Leg												
Approach	18		18	0	0	18	46		46	0	0	46
Departure	29		29	0	0	29	21		21	0	0	21
Total	47		47	0	0	47	67		67	0	0	67
East Leg												
Approach	4		4	0	0	4	4		4	0	0	4
Departure	5		5	0	0	5	13		13	0	0	13
Total	9		9	0	0	9	17		17	0	0	17
West Leg												
Approach	0		0	0	0	0	0		0	0	0	0
Departure	0		0	0	0	0	0		0	0	0	0
Total	0		0	0	0	0	0		0	0	0	0
Total Approaches												
Approach	48		48	0	0	48	69		69	0	0	69
Departure	48		48	0	0	48	69		69	0	0	69
Total	96		96	0	0	96	138		138	0	0	138

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Table C-3: Existing PCE Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Total Veh.	Truck %	Pass. Veh.	Truck	Truck PCE	Total PCE Vol	Total Veh.	Truck %	Pass. Veh.	Truck	Truck PCE	Total PCE Vol
5 . Morton Road/Woodsworth Road S												
NBL	0		0	0	0	0	0		0	0	0	0
NBT	17	3.1%	16	1	3	19	32	1.1%	32	0	0	32
NBR	12	3.1%	12	0	0	12	41	1.1%	41	0	0	41
SBL	1		1	0	0	1	0		0	0	0	0
SBT	22	3.1%	21	1	3	24	26	1.1%	26	0	0	26
SBR	0		0	0	0	0	0		0	0	0	0
EBL	0		0	0	0	0	0		0	0	0	0
EBT	0		0	0	0	0	0		0	0	0	0
EBR	0		0	0	0	0	0		0	0	0	0
WBL	51	3.1%	49	2	5	54	38	1.1%	38	0	0	38
WBT	0		0	0	0	0	0		0	0	0	0
WBR	0		0	0	0	0	1		1	0	0	1
North Leg												
Approach	23		22	1	3	25	26		26	0	0	26
Departure	17		16	1	3	19	33		33	0	0	33
Total	40		38	2	6	44	59		59	0	0	59
South Leg												
Approach	29		28	1	3	31	73		73	0	0	73
Departure	73		70	3	8	78	64		64	0	0	64
Total	102		98	4	11	109	137		137	0	0	137
East Leg												
Approach	51		49	2	5	54	39		39	0	0	39
Departure	13		13	0	0	13	41		41	0	0	41
Total	64		62	2	5	67	80		80	0	0	80
West Leg												
Approach	0		0	0	0	0	0		0	0	0	0
Departure	0		0	0	0	0	0		0	0	0	0
Total	0		0	0	0	0	0		0	0	0	0
Total Approaches												
Approach	103		99	4	11	110	138		138	0	0	138
Departure	103		99	4	11	110	138		138	0	0	138
Total	206		198	8	22	220	276		276	0	0	276

Table C-3: Existing PCE Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Total Veh.	Truck %	Pass. Veh.	Truck	Truck PCE	Total PCE Vol	Total Veh.	Truck %	Pass. Veh.	Truck	Truck PCE	Total PCE Vol

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Table C-4
Balance of Existing Peak Hour Volumes
To Maintain Consistent Flow of Vehicles

	A.M. Peak Hour Volumes			P.M. Peak Hour Volumes		
	PCE Volume	Adjust.	Balanced Volume	PCE Volume	Adjust.	Balanced Volume
6 Morton Road/Box Springs Road						
NBL	0		0	0		0
NBT	0		0	0		0
NBR	0		0	0		0
SBL	17	28	45	37	5	42
SBT	0		0	0		0
SBR	80		80	41		41
EBL	32		32	85		85
EBT	125	210	335	618	84	702
EBR	0		0	0		0
WBL	0		0	0		0
WBT	644	655	1,299	417	128	545
WBR	6	6	12	23	7	30
North Leg						
Approach	97	28	125	78	5	83
Departure	38	6	44	108	7	115
Total	135	34	169	186	12	198
South Leg						
Approach	0	0	0	0	0	0
Departure	0	0	0	0	0	0
Total	0	0	0	0	0	0
East Leg						
Approach	650	661	1,311	440	135	575
Departure	142	238	380	655	89	744
Total	792	899	1,691	1,095	224	1,319
West Leg						
Approach	157	210	367	703	84	787
Departure	724	655	1,379	458	128	586
Total	881	865	1,746	1,161	212	1,373
Total Approaches						
Approach	904	899	1,803	1,221	224	1,445
Departure	904	899	1,803	1,221	224	1,445
Total	1,808	1,798	3,606	2,442	448	2,890

Table C-4
Balance of Existing Peak Hour Volumes
To Maintain Consistent Flow of Vehicles

	A.M. Peak Hour Volumes			P.M. Peak Hour Volumes		
	PCE Volume	Adjust.	Balanced Volume	PCE Volume	Adjust.	Balanced Volume
7 Day St/Ironwood Ave-Box Springs Rd						
NBL	258		258	266		266
NBT	30		30	71		71
NBR	126		126	671		671
SBL	27		27	18		18
SBT	67		67	40		40
SBR	24		24	2		2
EBL	2		2	9		9
EBT	162		162	494		494
EBR	216		216	241		241
WBL	597		597	300		300
WBT	1,029		1,029	307		307
WBR	21		21	12		12
North Leg						
Approach	118	0	118	60	0	60
Departure	53	0	53	92	0	92
Total	171	0	171	152	0	152
South Leg						
Approach	414	0	414	1,008	0	1,008
Departure	880	0	880	581	0	581
Total	1,294	0	1,294	1,589	0	1,589
East Leg						
Approach	1,647	0	1,647	619	0	619
Departure	315	0	315	1,183	0	1,183
Total	1,962	0	1,962	1,802	0	1,802
West Leg						
Approach	380	0	380	744	0	744
Departure	1,311	0	1,311	575	0	575
Total	1,691	0	1,691	1,319	0	1,319
Total Approaches						
Approach	2,559	0	2,559	2,431	0	2,431
Departure	2,559	0	2,559	2,431	0	2,431
Total	5,118	0	5,118	4,862	0	4,862

Table C-4
Balance of Existing Peak Hour Volumes
To Maintain Consistent Flow of Vehicles

	A.M. Peak Hour Volumes			P.M. Peak Hour Volumes		
	PCE Volume	Adjust.	Balanced Volume	PCE Volume	Adjust.	Balanced Volume
2 I-215 Northbound Ramps/Fair Isle Dr-Box Springs Road						
NBL	60		60	96		96
NBT	4		4	2		2
NBR	3	4	7	8	1	9
SBL	0		0	0		0
SBT	0		0	0		0
SBR	0		0	0		0
EBL	284		284	363		363
EBT	150	210	360	671	107	778
EBR	0		0	0		0
WBL	0		0	0		0
WBT	275	241	516	200	60	260
WBR	460	403	863	251	75	326
North Leg						
Approach	0	0	0	0	0	0
Departure	748	403	1,151	616	75	691
Total	748	403	1,151	616	75	691
South Leg						
Approach	67	4	71	106	1	107
Departure	0	0	0	0	0	0
Total	67	4	71	106	1	107
East Leg						
Approach	735	644	1,379	451	135	586
Departure	153	214	367	679	108	787
Total	888	858	1,746	1,130	243	1,373
West Leg						
Approach	434	210	644	1,034	107	1,141
Departure	335	241	576	296	60	356
Total	769	451	1,220	1,330	167	1,497
Total Approaches						
Approach	1,236	858	2,094	1,591	243	1,834
Departure	1,236	858	2,094	1,591	243	1,834
Total	2,472	1,716	4,188	3,182	486	3,668

Table C-4
Balance of Existing Peak Hour Volumes
To Maintain Consistent Flow of Vehicles

		A.M. Peak Hour Volumes			P.M. Peak Hour Volumes		
		PCE Volume	Adjust.	Balanced Volume	PCE Volume	Adjust.	Balanced Volume
6	Morton Road/Box Springs Road						
NBL		0		0	0		0
NBT		0		0	0		0
NBR		0		0	0		0
SBL		45		45	42		42
SBT		0		0	0		0
SBR		80		80	41		41
EBL		32		32	85		85
EBT		335		335	702		702
EBR		0		0	0		0
WBL		0		0	0		0
WBT		1,299		1,299	545		545
WBR		12		12	30		30
North Leg							
	Approach	125	0	125	83	0	83
	Departure	44	0	44	115	0	115
	Total	169	0	169	198	0	198
South Leg							
	Approach	0	0	0	0	0	0
	Departure	0	0	0	0	0	0
	Total	0	0	0	0	0	0
East Leg							
	Approach	1,311	0	1,311	575	0	575
	Departure	380	0	380	744	0	744
	Total	1,691	0	1,691	1,319	0	1,319
West Leg							
	Approach	367	0	367	787	0	787
	Departure	1,379	0	1,379	586	0	586
	Total	1,746	0	1,746	1,373	0	1,373
Total Approaches							
	Approach	1,803	0	1,803	1,445	0	1,445
	Departure	1,803	0	1,803	1,445	0	1,445
	Total	3,606	0	3,606	2,890	0	2,890

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Table C-4
Balance of Existing Peak Hour Volumes
To Maintain Consistent Flow of Vehicles

	A.M. Peak Hour Volumes			P.M. Peak Hour Volumes		
	PCE Volume	Adjust.	Balanced Volume	PCE Volume	Adjust.	Balanced Volume
1 Sycamore Canyon Boulevard/Fair Isle Dr						
NBL	77		77	111		111
NBT	510		510	289		289
NBR	315	-53	262	548	-128	420
SBL	59	-10	49	381	-89	292
SBT	97		97	400		400
SBR	3		3	31		31
EBL	28		28	13		13
EBT	68	-12	56	99	-23	76
EBR	66		66	98		98
WBL	88	300	388	103	98	201
WBT	34	116	150	90	86	176
WBR	191	650	841	107	102	209
North Leg						
Approach	159	-10	149	812	-89	723
Departure	729	650	1,379	409	102	511
Total	888	640	1,528	1,221	13	1,234
South Leg						
Approach	902	-53	849	948	-128	820
Departure	251	300	551	601	98	699
Total	1,153	247	1,400	1,549	-30	1,519
East Leg						
Approach	313	1,066	1,379	300	286	586
Departure	442	-75	367	1,028	-240	788
Total	755	991	1,746	1,328	46	1,374
West Leg						
Approach	162	-12	150	210	-23	187
Departure	114	116	230	232	86	318
Total	276	104	380	442	63	505
Total Approaches						
Approach	1,536	991	2,527	2,270	46	2,316
Departure	1,536	991	2,527	2,270	46	2,316
Total	3,072	1,982	5,054	4,540	92	4,632

Table C-4
Balance of Existing Peak Hour Volumes
To Maintain Consistent Flow of Vehicles

	A.M. Peak Hour Volumes			P.M. Peak Hour Volumes		
	PCE Volume	Adjust.	Balanced Volume	PCE Volume	Adjust.	Balanced Volume
2 I-215 Northbound Ramps/Fair Isle Dr-Box Springs Road						
NBL	0		0	0		0
NBT	0		0	0		0
NBR	0		0	0		0
SBL	45		45	42		42
SBT	0		0	0		0
SBR	80		80	41		41
EBL	32		32	85		85
EBT	335		335	702		702
EBR	0		0	0		0
WBL	0		0	0		0
WBT	1,299		1,299	545		545
WBR	12		12	30		30
North Leg						
Approach	125	0	125	83	0	83
Departure	44	0	44	115	0	115
Total	169	0	169	198	0	198
South Leg						
Approach	0	0	0	0	0	0
Departure	0	0	0	0	0	0
Total	0	0	0	0	0	0
East Leg						
Approach	1,311	0	1,311	575	0	575
Departure	380	0	380	744	0	744
Total	1,691	0	1,691	1,319	0	1,319
West Leg						
Approach	367	0	367	787	0	787
Departure	1,379	0	1,379	586	0	586
Total	1,746	0	1,746	1,373	0	1,373
Total Approaches						
Approach	1,803	0	1,803	1,445	0	1,445
Departure	1,803	0	1,803	1,445	0	1,445
Total	3,606	0	3,606	2,890	0	2,890

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Table C-5: Existing With Project Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Exist PCE Volume	Project Trips	Exist WP	Exist PCE Volume	Project Trips	Exist WP
1 . Sycamore Canyon Boulevard/Fair Isle Dr						
NBL	77	0	77	111	0	111
NBT	510	0	510	289	0	289
NBR	262	5	267	420	17	437
SBL	49	4	53	292	13	305
SBT	97	0	97	400	0	400
SBR	3	0	3	31	0	31
EBL	28	0	28	13	0	13
EBT	56	0	56	76	0	76
EBR	66	0	66	98	0	98
WBL	388	15	403	201	10	211
WBT	150	0	150	176	0	176
WBR	841	12	853	209	8	217
North Leg						
Approach	149	4	153	723	13	736
Departure	1,379	12	1,391	511	8	519
Total	1,528	16	1,544	1,234	21	1,255
South Leg						
Approach	849	5	854	820	17	837
Departure	551	15	566	699	10	709
Total	1,400	20	1,420	1,519	27	1,546
East Leg						
Approach	1,379	27	1,406	586	18	604
Departure	367	9	376	788	30	818
Total	1,746	36	1,782	1,374	48	1,422
West Leg						
Approach	150	0	150	187	0	187
Departure	230	0	230	318	0	318
Total	380	0	380	505	0	505
Total Approaches						
Approach	2,527	36	2,563	2,316	48	2,364
Departure	2,527	36	2,563	2,316	48	2,364
Total	5,054	72	5,126	4,632	96	4,728

Table C-5: Existing With Project Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Exist PCE Volume	Project Trips	Exist WP	Exist PCE Volume	Project Trips	Exist WP
2 . I-215 Northbound Ramps/Fair Isle Dr-Box Springs Road						
NBL	60	0	60	96	0	96
NBT	4	0	4	2	0	2
NBR	7	5	12	9	17	26
SBL	0	0	0	0	0	0
SBT	0	0	0	0	0	0
SBR	0	0	0	0	0	0
EBL	284	0	284	363	0	363
EBT	360	9	369	778	30	808
EBR	0	0	0	0	0	0
WBL	0	0	0	0	0	0
WBT	516	27	543	260	18	278
WBR	863	15	878	326	10	336
North Leg						
Approach	0	0	0	0	0	0
Departure	1,151	15	1,166	691	10	701
Total	1,151	15	1,166	691	10	701
South Leg						
Approach	71	5	76	107	17	124
Departure	0	0	0	0	0	0
Total	71	5	76	107	17	124
East Leg						
Approach	1,379	42	1,421	586	28	614
Departure	367	14	381	787	47	834
Total	1,746	56	1,802	1,373	75	1,448
West Leg						
Approach	644	9	653	1,141	30	1,171
Departure	576	27	603	356	18	374
Total	1,220	36	1,256	1,497	48	1,545
Total Approaches						
Approach	2,094	56	2,150	1,834	75	1,909
Departure	2,094	56	2,150	1,834	75	1,909
Total	4,188	112	4,300	3,668	150	3,818

Table C-5: Existing With Project Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Exist PCE Volume	Project Trips	Exist WP	Exist PCE Volume	Project Trips	Exist WP
3 . Morton Road/Project Driveway						
NBL	0	0	0	0	0	0
NBT	4	0	4	9	0	9
NBR	0	20	20	0	67	67
SBL	0	0	0	0	0	0
SBT	7	0	7	5	0	5
SBR	0	0	0	0	0	0
EBL	0	0	0	0	0	0
EBT	0	0	0	0	0	0
EBR	0	0	0	0	0	0
WBL	0	60	60	0	40	40
WBT	0	0	0	0	0	0
WBR	0	0	0	0	0	0
North Leg						
Approach	7	0	7	5	0	5
Departure	4	0	4	9	0	9
Total	11	0	11	14	0	14
South Leg						
Approach	4	20	24	9	67	76
Departure	7	60	67	5	40	45
Total	11	80	91	14	107	121
East Leg						
Approach	0	60	60	0	40	40
Departure	0	20	20	0	67	67
Total	0	80	80	0	107	107
West Leg						
Approach	0	0	0	0	0	0
Departure	0	0	0	0	0	0
Total	0	0	0	0	0	0
Total Approaches						
Approach	11	80	91	14	107	121
Departure	11	80	91	14	107	121
Total	22	160	182	28	214	242

Table C-5: Existing With Project Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Exist PCE Volume	Project Trips	Exist WP	Exist PCE Volume	Project Trips	Exist WP
4 . Morton Road/Woodsworth Road N						
NBL	0	0	0	0	0	0
NBT	13	20	33	33	67	100
NBR	5	0	5	13	0	13
SBL	0	0	0	0	0	0
SBT	26	60	86	19	40	59
SBR	0	0	0	0	0	0
EBL	0	0	0	0	0	0
EBT	0	0	0	0	0	0
EBR	0	0	0	0	0	0
WBL	3	0	3	2	0	2
WBT	0	0	0	0	0	0
WBR	1	0	1	2	0	2
North Leg						
Approach	26	60	86	19	40	59
Departure	14	20	34	35	67	102
Total	40	80	120	54	107	161
South Leg						
Approach	18	20	38	46	67	113
Departure	29	60	89	21	40	61
Total	47	80	127	67	107	174
East Leg						
Approach	4	0	4	4	0	4
Departure	5	0	5	13	0	13
Total	9	0	9	17	0	17
West Leg						
Approach	0	0	0	0	0	0
Departure	0	0	0	0	0	0
Total	0	0	0	0	0	0
Total Approaches						
Approach	48	80	128	69	107	176
Departure	48	80	128	69	107	176
Total	96	160	256	138	214	352

Table C-5: Existing With Project Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Exist PCE Volume	Project Trips	Exist WP	Exist PCE Volume	Project Trips	Exist WP
5 . Morton Road/Woodsworth Road S						
NBL	0	0	0	0	0	0
NBT	19	20	39	32	67	99
NBR	12	0	12	41	0	41
SBL	1	0	1	0	0	0
SBT	24	60	84	26	40	66
SBR	0	0	0	0	0	0
EBL	0	0	0	0	0	0
EBT	0	0	0	0	0	0
EBR	0	0	0	0	0	0
WBL	54	0	54	38	0	38
WBT	0	0	0	0	0	0
WBR	0	0	0	1	0	1
North Leg						
Approach	25	60	85	26	40	66
Departure	19	20	39	33	67	100
Total	44	80	124	59	107	166
South Leg						
Approach	31	20	51	73	67	140
Departure	78	60	138	64	40	104
Total	109	80	189	137	107	244
East Leg						
Approach	54	0	54	39	0	39
Departure	13	0	13	41	0	41
Total	67	0	67	80	0	80
West Leg						
Approach	0	0	0	0	0	0
Departure	0	0	0	0	0	0
Total	0	0	0	0	0	0
Total Approaches						
Approach	110	80	190	138	107	245
Departure	110	80	190	138	107	245
Total	220	160	380	276	214	490

Table C-5: Existing With Project Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Exist PCE Volume	Project Trips	Exist WP	Exist PCE Volume	Project Trips	Exist WP
6 . Morton Road/Box Springs Road						
NBL	0	0	0	0	0	0
NBT	0	0	0	0	0	0
NBR	0	0	0	0	0	0
SBL	45	18	63	42	12	54
SBT	0	0	0	0	0	0
SBR	80	42	122	41	28	69
EBL	32	14	46	85	47	132
EBT	335	0	335	702	0	702
EBR	0	0	0	0	0	0
WBL	0	0	0	0	0	0
WBT	1,299	0	1,299	545	0	545
WBR	12	6	18	30	20	50
North Leg						
Approach	125	60	185	83	40	123
Departure	44	20	64	115	67	182
Total	169	80	249	198	107	305
South Leg						
Approach	0	0	0	0	0	0
Departure	0	0	0	0	0	0
Total	0	0	0	0	0	0
East Leg						
Approach	1,311	6	1,317	575	20	595
Departure	380	18	398	744	12	756
Total	1,691	24	1,715	1,319	32	1,351
West Leg						
Approach	367	14	381	787	47	834
Departure	1,379	42	1,421	586	28	614
Total	1,746	56	1,802	1,373	75	1,448
Total Approaches						
Approach	1,803	80	1,883	1,445	107	1,552
Departure	1,803	80	1,883	1,445	107	1,552
Total	3,606	160	3,766	2,890	214	3,104

Table C-6: Project Completion (2023) Peak Hour Volume Summary

	AM Peak Hour							PM Peak Hour						
	Existing 2,021 Total	Growth	Pr. Comp. Back.	Cumul. Pr.	Pr Comp. NP	Project Trips	Pr. Comp. WP	Existing 2,021 Total	Growth	Pr. Comp. Back.	Cumul. Pr.	Pr. Comp. NP	Project Trips	Pr. Comp. WP
1 . Sycamore Canyon Blvd/Fair Isle Dr														
NBL	77	3	80	1	81	0	81	111	4	115	4	119	0	119
NBT	510	20	530	3	533	0	533	289	12	301	12	313	0	313
NBR	262	10	272	35	307	5	312	420	17	437	121	558	17	575
SBL	49	2	51	7	58	4	62	292	12	304	5	309	13	322
SBT	97	4	101	11	112	0	112	400	16	416	5	421	0	421
SBR	3	0	3	0	3	0	3	31	1	32	0	32	0	32
EBL	28	1	29	0	29	0	29	13	1	14	0	14	0	14
EBT	56	2	58	2	60	0	60	76	3	79	2	81	0	81
EBR	66	3	69	4	73	0	73	98	4	102	2	104	0	104
WBL	388	16	404	14	418	15	433	201	8	209	8	217	10	227
WBT	150	6	156	1	157	0	157	176	7	183	2	185	0	185
WBR	841	34	875	3	878	12	890	209	8	217	7	224	8	232
North Leg														
Approach	149	6	155	18	173	4	177	723	29	752	10	762	13	775
Departure	1,379	55	1,434	6	1,440	12	1,452	511	21	532	19	551	8	559
Total	1,528	61	1,589	24	1,613	16	1,629	1,234	50	1,284	29	1,313	21	1,334
South Leg														
Approach	849	33	882	39	921	5	926	820	33	853	137	990	17	1,007
Departure	551	23	574	29	603	15	618	699	28	727	15	742	10	752
Total	1,400	56	1,456	68	1,524	20	1,544	1,519	61	1,580	152	1,732	27	1,759
East Leg														
Approach	1,379	56	1,435	18	1,453	27	1,480	586	23	609	17	626	18	644
Departure	367	14	381	44	425	9	434	788	32	820	128	948	30	978
Total	1,746	70	1,816	62	1,878	36	1,914	1,374	55	1,429	145	1,574	48	1,622
West Leg														
Approach	150	6	156	6	162	0	162	187	8	195	4	199	0	199
Departure	230	9	239	2	241	0	241	318	12	330	6	336	0	336
Total	380	15	395	8	403	0	403	505	20	525	10	535	0	535
Total Approaches														
Approach	2,527	101	2,628	81	2,709	36	2,745	2,316	93	2,409	168	2,577	48	2,625
Departure	2,527	101	2,628	81	2,709	36	2,745	2,316	93	2,409	168	2,577	48	2,625
Total	5,054	202	5,256	162	5,418	72	5,490	4,632	186	4,818	336	5,154	96	5,250

Table C-6: Project Completion (2023) Peak Hour Volume Summary

	AM Peak Hour							PM Peak Hour						
	Existing 2,021 Total	Growth	Pr. Comp. Back.	Cumul. Pr.	Pr Comp. NP	Project Trips	Pr. Comp. WP	Existing 2,021 Total	Growth	Pr. Comp. Back.	Cumul. Pr.	Pr. Comp. NP	Project Trips	Pr. Comp. WP
2 . I-215 NB Ramps/Fair Isle Dr-Box Springs Rd														
NBL	60	2	62	7	69	0	69	96	4	100	3	103	0	103
NBT	4	0	4	0	4	0	4	2	0	2	0	2	0	2
NBR	7	0	7	2	9	5	14	9	0	9	7	16	17	33
SBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBL	284	11	295	19	314	0	314	363	15	378	75	453	0	453
EBT	360	14	374	25	399	9	408	778	31	809	54	863	30	893
EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBT	516	21	537	11	548	27	575	260	10	270	14	284	18	302
WBR	863	35	898	46	944	15	959	326	13	339	30	369	10	379
North Leg														
Approach	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Departure	1,151	46	1,197	65	1,262	15	1,277	691	28	719	105	824	10	834
Total	1,151	46	1,197	65	1,262	15	1,277	691	28	719	105	824	10	834
South Leg														
Approach	71	2	73	9	82	5	87	107	4	111	10	121	17	138
Departure	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	71	2	73	9	82	5	87	107	4	111	10	121	17	138
East Leg														
Approach	1,379	56	1,435	57	1,492	42	1,534	586	23	609	44	653	28	681
Departure	367	14	381	27	408	14	422	787	31	818	61	879	47	926
Total	1,746	70	1,816	84	1,900	56	1,956	1,373	54	1,427	105	1,532	75	1,607
West Leg														
Approach	644	25	669	44	713	9	722	1,141	46	1,187	129	1,316	30	1,346
Departure	576	23	599	18	617	27	644	356	14	370	17	387	18	405
Total	1,220	48	1,268	62	1,330	36	1,366	1,497	60	1,557	146	1,703	48	1,751
Total Approaches														
Approach	2,094	83	2,177	110	2,287	56	2,343	1,834	73	1,907	183	2,090	75	2,165
Departure	2,094	83	2,177	110	2,287	56	2,343	1,834	73	1,907	183	2,090	75	2,165
Total	4,188	166	4,354	220	4,574	112	4,686	3,668	146	3,814	366	4,180	150	4,330

Table C-6: Project Completion (2023) Peak Hour Volume Summary

	AM Peak Hour							PM Peak Hour						
	Existing 2,021 Total	Growth	Pr. Comp. Back.	Cumul. Pr.	Pr Comp. NP	Project Trips	Pr. Comp. WP	Existing 2,021 Total	Growth	Pr. Comp. Back.	Cumul. Pr.	Pr. Comp. NP	Project Trips	Pr. Comp. WP
3 . Morton Rd/Project Driveway														
NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NBT	4	0	4	0	4	0	4	9	0	9	0	9	0	9
NBR	0	0	0	0	0	20	20	0	0	0	0	0	67	67
SBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SBT	7	0	7	0	7	0	7	5	0	5	0	5	0	5
SBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	60	60	0	0	0	0	0	40	40
WBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Leg														
Approach	7	0	7	0	7	0	7	5	0	5	0	5	0	5
Departure	4	0	4	0	4	0	4	9	0	9	0	9	0	9
Total	11	0	11	0	11	0	11	14	0	14	0	14	0	14
South Leg														
Approach	4	0	4	0	4	20	24	9	0	9	0	9	67	76
Departure	7	0	7	0	7	60	67	5	0	5	0	5	40	45
Total	11	0	11	0	11	80	91	14	0	14	0	14	107	121
East Leg														
Approach	0	0	0	0	0	60	60	0	0	0	0	0	40	40
Departure	0	0	0	0	0	20	20	0	0	0	0	0	67	67
Total	0	0	0	0	0	80	80	0	0	0	0	0	107	107
West Leg														
Approach	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Approaches														
Approach	11	0	11	0	11	80	91	14	0	14	0	14	107	121
Departure	11	0	11	0	11	80	91	14	0	14	0	14	107	121
Total	22	0	22	0	22	160	182	28	0	28	0	28	214	242

Table C-6: Project Completion (2023) Peak Hour Volume Summary

	AM Peak Hour							PM Peak Hour						
	Existing 2,021 Total	Growth	Pr. Comp. Back.	Cumul. Pr.	Pr Comp. NP	Project Trips	Pr. Comp. WP	Existing 2,021 Total	Growth	Pr. Comp. Back.	Cumul. Pr.	Pr. Comp. NP	Project Trips	Pr. Comp. WP
4 . Morton Rd/Woodsworth Rd N														
NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NBT	13	1	14	2	16	20	36	33	1	34	3	37	67	104
NBR	5	0	5	0	5	0	5	13	1	14	0	14	0	14
SBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SBT	26	1	27	3	30	60	90	19	1	20	4	24	40	64
SBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBL	3	0	3	0	3	0	3	2	0	2	0	2	0	2
WBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBR	1	0	1	0	1	0	1	2	0	2	0	2	0	2
North Leg														
Approach	26	1	27	3	30	60	90	19	1	20	4	24	40	64
Departure	14	1	15	2	17	20	37	35	1	36	3	39	67	106
Total	40	2	42	5	47	80	127	54	2	56	7	63	107	170
South Leg														
Approach	18	1	19	2	21	20	41	46	2	48	3	51	67	118
Departure	29	1	30	3	33	60	93	21	1	22	4	26	40	66
Total	47	2	49	5	54	80	134	67	3	70	7	77	107	184
East Leg														
Approach	4	0	4	0	4	0	4	4	0	4	0	4	0	4
Departure	5	0	5	0	5	0	5	13	1	14	0	14	0	14
Total	9	0	9	0	9	0	9	17	1	18	0	18	0	18
West Leg														
Approach	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Approaches														
Approach	48	2	50	5	55	80	135	69	3	72	7	79	107	186
Departure	48	2	50	5	55	80	135	69	3	72	7	79	107	186
Total	96	4	100	10	110	160	270	138	6	144	14	158	214	372

Table C-6: Project Completion (2023) Peak Hour Volume Summary

	AM Peak Hour							PM Peak Hour						
	Existing 2,021 Total	Growth	Pr. Comp. Back.	Cumul. Pr.	Pr Comp. NP	Project Trips	Pr. Comp. WP	Existing 2,021 Total	Growth	Pr. Comp. Back.	Cumul. Pr.	Pr. Comp. NP	Project Trips	Pr. Comp. WP
5 . Morton Rd/Woodsworth Rd S														
NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NBT	19	1	20	2	22	20	42	32	1	33	3	36	67	103
NBR	12	0	12	0	12	0	12	41	2	43	0	43	0	43
SBL	1	0	1	0	1	0	1	0	0	0	0	0	0	0
SBT	24	1	25	3	28	60	88	26	1	27	4	31	40	71
SBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBL	54	2	56	0	56	0	56	38	2	40	0	40	0	40
WBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBR	0	0	0	0	0	0	0	1	0	1	0	1	0	1
North Leg														
Approach	25	1	26	3	29	60	89	26	1	27	4	31	40	71
Departure	19	1	20	2	22	20	42	33	1	34	3	37	67	104
Total	44	2	46	5	51	80	131	59	2	61	7	68	107	175
South Leg														
Approach	31	1	32	2	34	20	54	73	3	76	3	79	67	146
Departure	78	3	81	3	84	60	144	64	3	67	4	71	40	111
Total	109	4	113	5	118	80	198	137	6	143	7	150	107	257
East Leg														
Approach	54	2	56	0	56	0	56	39	2	41	0	41	0	41
Departure	13	0	13	0	13	0	13	41	2	43	0	43	0	43
Total	67	2	69	0	69	0	69	80	4	84	0	84	0	84
West Leg														
Approach	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Approaches														
Approach	110	4	114	5	119	80	199	138	6	144	7	151	107	258
Departure	110	4	114	5	119	80	199	138	6	144	7	151	107	258
Total	220	8	228	10	238	160	398	276	12	288	14	302	214	516

Table C-6: Project Completion (2023) Peak Hour Volume Summary

	AM Peak Hour							PM Peak Hour						
	Existing 2,021 Total	Growth	Pr. Comp. Back.	Cumul. Pr.	Pr Comp. NP	Project Trips	Pr. Comp. WP	Existing 2,021 Total	Growth	Pr. Comp. Back.	Cumul. Pr.	Pr. Comp. NP	Project Trips	Pr. Comp. WP
6 . Morton Rd/Box Springs Rd														
NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SBL	45	2	47	5	52	18	70	42	2	44	7	51	12	63
SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SBR	80	3	83	0	83	42	125	41	2	43	0	43	28	71
EBL	32	1	33	0	33	14	47	85	3	88	0	88	47	135
EBT	335	13	348	28	376	0	376	702	28	730	62	792	0	792
EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBT	1,299	52	1,351	57	1,408	0	1,408	545	22	567	43	610	0	610
WBR	12	0	12	4	16	6	22	30	1	31	7	38	20	58
North Leg														
Approach	125	5	130	5	135	60	195	83	4	87	7	94	40	134
Departure	44	1	45	4	49	20	69	115	4	119	7	126	67	193
Total	169	6	175	9	184	80	264	198	8	206	14	220	107	327
South Leg														
Approach	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
East Leg														
Approach	1,311	52	1,363	61	1,424	6	1,430	575	23	598	50	648	20	668
Departure	380	15	395	33	428	18	446	744	30	774	69	843	12	855
Total	1,691	67	1,758	94	1,852	24	1,876	1,319	53	1,372	119	1,491	32	1,523
West Leg														
Approach	367	14	381	28	409	14	423	787	31	818	62	880	47	927
Departure	1,379	55	1,434	57	1,491	42	1,533	586	24	610	43	653	28	681
Total	1,746	69	1,815	85	1,900	56	1,956	1,373	55	1,428	105	1,533	75	1,608
Total Approaches														
Approach	1,803	71	1,874	94	1,968	80	2,048	1,445	58	1,503	119	1,622	107	1,729
Departure	1,803	71	1,874	94	1,968	80	2,048	1,445	58	1,503	119	1,622	107	1,729
Total	3,606	142	3,748	188	3,936	160	4,096	2,890	116	3,006	238	3,244	214	3,458

APPENDIX D:
LEVEL OF SERVICE WORKSHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	56	66	388	150	841	77	510	262	49	97	3
Future Volume (veh/h)	28	56	66	388	150	841	77	510	262	49	97	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	32	64	75	441	170	956	88	580	298	56	110	3
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	75	419	374	644	1974	881	116	710	317	194	346	9
Arrive On Green	0.04	0.23	0.23	0.12	0.18	0.18	0.06	0.20	0.20	0.06	0.19	0.19
Sat Flow, veh/h	1810	1805	1610	1810	3610	1610	1810	3610	1610	3510	1841	50
Grp Volume(v), veh/h	32	64	75	441	170	956	88	580	298	56	0	113
Grp Sat Flow(s),veh/h/ln	1810	1805	1610	1810	1805	1610	1810	1805	1610	1755	0	1891
Q Serve(g_s), s	1.7	2.8	3.8	23.4	3.9	54.7	4.8	15.4	8.3	1.5	0.0	5.2
Cycle Q Clear(g_c), s	1.7	2.8	3.8	23.4	3.9	54.7	4.8	15.4	8.3	1.5	0.0	5.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	75	419	374	644	1974	881	116	710	317	194	0	356
V/C Ratio(X)	0.43	0.15	0.20	0.68	0.09	1.09	0.76	0.82	0.94	0.29	0.00	0.32
Avail Cap(c_a), veh/h	127	419	374	644	1974	881	127	710	317	246	0	356
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.48	0.48	0.48	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.8	30.6	30.9	38.7	20.2	41.0	46.1	38.4	8.3	45.4	0.0	35.1
Incr Delay (d2), s/veh	3.9	0.8	1.2	1.5	0.0	48.5	21.5	10.1	37.5	0.8	0.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.3	1.6	11.6	1.6	35.3	2.8	7.7	6.0	0.7	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.6	31.3	32.1	40.2	20.2	89.4	67.6	48.5	45.8	46.2	0.0	37.4
LnGrp LOS	D	C	C	D	C	F	E	D	D	D	A	D
Approach Vol, veh/h		171			1567			966			169	
Approach Delay, s/veh		35.3			68.1			49.4			40.3	
Approach LOS		D			E			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	39.6	27.2	10.4	22.8	8.1	58.7	9.5	23.7				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	35.0	23.2	7.0	18.8	7.0	51.2	7.0	18.8				
Max Q Clear Time (g_c+I1), s	25.4	5.8	6.8	7.2	3.7	56.7	3.5	17.4				
Green Ext Time (p_c), s	1.0	0.6	0.0	0.4	0.0	0.0	0.0	0.7				
Intersection Summary												
HCM 6th Ctrl Delay			58.2									
HCM 6th LOS			E									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	284	360	0	0	516	863	60	4	7	0	0	0
Future Volume (veh/h)	284	360	0	0	516	863	60	4	7	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	330	419	0	0	902	802	81	0	0			
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	397	2650	0	0	1104	935	673	353	0			
Arrive On Green	0.11	0.73	0.00	0.00	0.58	0.58	0.19	0.00	0.00			
Sat Flow, veh/h	3510	3705	0	0	1900	1610	3619	1900	0			
Grp Volume(v), veh/h	330	419	0	0	902	802	81	0	0			
Grp Sat Flow(s),veh/h/ln	1755	1805	0	0	1900	1610	1810	1900	0			
Q Serve(g_s), s	9.2	3.5	0.0	0.0	37.9	41.6	1.9	0.0	0.0			
Cycle Q Clear(g_c), s	9.2	3.5	0.0	0.0	37.9	41.6	1.9	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		0.00			
Lane Grp Cap(c), veh/h	397	2650	0	0	1104	935	673	353	0			
V/C Ratio(X)	0.83	0.16	0.00	0.00	0.82	0.86	0.12	0.00	0.00			
Avail Cap(c_a), veh/h	421	2650	0	0	1104	935	673	353	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.93	0.93	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	43.4	4.0	0.0	0.0	16.7	17.5	33.9	0.0	0.0			
Incr Delay (d2), s/veh	11.9	0.1	0.0	0.0	6.7	10.0	0.4	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.6	1.1	0.0	0.0	17.1	16.6	0.9	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.3	4.1	0.0	0.0	23.5	27.5	34.3	0.0	0.0			
LnGrp LOS	E	A	A	A	C	C	C	A	A			
Approach Vol, veh/h		749			1704			81				
Approach Delay, s/veh		26.7			25.4			34.3				
Approach LOS		C			C			C				

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		77.4			15.3	62.1		22.6				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		73.4			12.0	57.4		18.6				
Max Q Clear Time (g_c+I1), s		5.5			11.2	43.6		3.9				
Green Ext Time (p_c), s		3.2			0.1	8.6		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	26.0
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	1	13	5	0	26
Future Vol, veh/h	3	1	13	5	0	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	1	15	6	0	30

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	48	18	0	0	21	0
Stage 1	18	-	-	-	-	-
Stage 2	30	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	967	1066	-	-	1608	-
Stage 1	1010	-	-	-	-	-
Stage 2	998	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	967	1066	-	-	1608	-
Mov Cap-2 Maneuver	967	-	-	-	-	-
Stage 1	1010	-	-	-	-	-
Stage 2	998	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	990	1608	-
HCM Lane V/C Ratio	-	-	0.005	-	-
HCM Control Delay (s)	-	-	8.7	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	4.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	54	0	19	12	1	24
Future Vol, veh/h	54	0	19	12	1	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	57	0	20	13	1	25

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	54	27	0	0	33	0
Stage 1	27	-	-	-	-	-
Stage 2	27	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	959	1054	-	-	1592	-
Stage 1	1001	-	-	-	-	-
Stage 2	1001	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	958	1054	-	-	1592	-
Mov Cap-2 Maneuver	958	-	-	-	-	-
Stage 1	1001	-	-	-	-	-
Stage 2	1000	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	0.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	958	1592	-
HCM Lane V/C Ratio	-	-	0.059	0.001	-
HCM Control Delay (s)	-	-	9	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	32	335	1299	12	45	80
Future Volume (veh/h)	32	335	1299	12	45	80
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	35	368	1427	13	49	88
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	79	2635	2370	22	344	376
Arrive On Green	0.04	0.73	0.65	0.65	0.19	0.19
Sat Flow, veh/h	1810	3705	3761	33	1810	1610
Grp Volume(v), veh/h	35	368	702	738	49	88
Grp Sat Flow(s),veh/h/ln	1810	1805	1805	1894	1810	1610
Q Serve(g_s), s	1.9	3.1	22.5	22.5	2.3	4.4
Cycle Q Clear(g_c), s	1.9	3.1	22.5	22.5	2.3	4.4
Prop In Lane	1.00			0.02	1.00	1.00
Lane Grp Cap(c), veh/h	79	2635	1167	1224	344	376
V/C Ratio(X)	0.44	0.14	0.60	0.60	0.14	0.23
Avail Cap(c_a), veh/h	127	2635	1167	1224	344	376
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.6	4.1	10.2	10.2	33.7	31.1
Incr Delay (d2), s/veh	3.9	0.1	2.3	2.2	0.9	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.0	8.7	9.1	1.1	4.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.5	4.2	12.5	12.4	34.6	32.5
LnGrp LOS	D	A	B	B	C	C
Approach Vol, veh/h		403	1440		137	
Approach Delay, s/veh		8.2	12.5		33.3	
Approach LOS		A	B		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		77.0		23.0	8.4	68.6
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		73.0		19.0	7.0	62.0
Max Q Clear Time (g_c+I1), s		5.1		6.4	3.9	24.5
Green Ext Time (p_c), s		2.7		0.3	0.0	14.1
Intersection Summary						
HCM 6th Ctrl Delay			13.0			
HCM 6th LOS			B			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	76	98	201	176	209	111	289	420	292	400	31
Future Volume (veh/h)	13	76	98	201	176	209	111	289	420	292	400	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	14	79	102	209	183	218	116	301	438	304	417	32
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	42	401	358	376	1470	655	147	1017	454	388	542	42
Arrive On Green	0.02	0.22	0.22	0.35	0.68	0.68	0.08	0.28	0.28	0.11	0.31	0.31
Sat Flow, veh/h	1810	1805	1610	1810	3610	1610	1810	3610	1610	3510	1742	134
Grp Volume(v), veh/h	14	79	102	209	183	218	116	301	438	304	0	449
Grp Sat Flow(s),veh/h/ln	1810	1805	1610	1810	1805	1610	1810	1805	1610	1755	0	1876
Q Serve(g_s), s	0.7	3.2	4.7	8.4	1.6	5.0	5.7	5.9	14.2	7.6	0.0	19.5
Cycle Q Clear(g_c), s	0.7	3.2	4.7	8.4	1.6	5.0	5.7	5.9	14.2	7.6	0.0	19.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	42	401	358	376	1470	655	147	1017	454	388	0	584
V/C Ratio(X)	0.34	0.20	0.29	0.56	0.12	0.33	0.79	0.30	0.97	0.78	0.00	0.77
Avail Cap(c_a), veh/h	141	401	358	376	1470	655	201	1017	454	507	0	584
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.3	28.5	29.1	26.0	8.8	9.3	40.6	25.3	11.0	39.0	0.0	28.1
Incr Delay (d2), s/veh	4.7	1.1	2.0	1.7	0.2	1.3	13.7	0.7	34.5	5.9	0.0	9.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.5	2.0	3.4	0.6	1.7	3.0	2.6	8.9	3.5	0.0	10.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.0	29.6	31.1	27.7	9.0	10.6	54.3	26.1	45.5	44.9	0.0	37.5
LnGrp LOS	D	C	C	C	A	B	D	C	D	D	A	D
Approach Vol, veh/h		195			610			855			753	
Approach Delay, s/veh		31.7			16.0			39.8			40.5	
Approach LOS		C			B			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.7	24.0	11.3	32.0	6.1	40.6	13.9	29.4				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	16.0	20.0	10.0	28.0	7.0	29.0	13.0	25.0				
Max Q Clear Time (g_c+I1), s	10.4	6.7	7.7	21.5	2.7	7.0	9.6	16.2				
Green Ext Time (p_c), s	0.3	0.8	0.1	1.5	0.0	1.8	0.4	2.5				
Intersection Summary												
HCM 6th Ctrl Delay			33.3									
HCM 6th LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	363	778	0	0	260	326	96	2	9	0	0	0
Future Volume (veh/h)	363	778	0	0	260	326	96	2	9	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	386	828	0	0	330	312	113	0	0			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	819	2487	0	0	781	662	804	422	0			
Arrive On Green	0.23	0.69	0.00	0.00	0.41	0.41	0.22	0.00	0.00			
Sat Flow, veh/h	3510	3705	0	0	1900	1610	3619	1900	0			
Grp Volume(v), veh/h	386	828	0	0	330	312	113	0	0			
Grp Sat Flow(s),veh/h/ln	1755	1805	0	0	1900	1610	1810	1900	0			
Q Serve(g_s), s	8.5	8.3	0.0	0.0	11.1	12.7	2.3	0.0	0.0			
Cycle Q Clear(g_c), s	8.5	8.3	0.0	0.0	11.1	12.7	2.3	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		0.00			
Lane Grp Cap(c), veh/h	819	2487	0	0	781	662	804	422	0			
V/C Ratio(X)	0.47	0.33	0.00	0.00	0.42	0.47	0.14	0.00	0.00			
Avail Cap(c_a), veh/h	819	2487	0	0	781	662	804	422	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.84	0.84	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	29.7	5.7	0.0	0.0	18.9	19.4	28.1	0.0	0.0			
Incr Delay (d2), s/veh	0.4	0.3	0.0	0.0	1.7	2.4	0.4	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	3.6	2.7	0.0	0.0	5.1	5.0	1.0	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.1	6.0	0.0	0.0	20.6	21.8	28.5	0.0	0.0			
LnGrp LOS	C	A	A	A	C	C	C	A	A			
Approach Vol, veh/h		1214			642			113				
Approach Delay, s/veh		13.6			21.1			28.5				
Approach LOS		B			C			C				

Timer - Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		66.0			25.0	41.0		24.0
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		62.0			21.0	37.0		20.0
Max Q Clear Time (g_c+I1), s		10.3			10.5	14.7		4.3
Green Ext Time (p_c), s		7.2			1.0	3.1		0.3

Intersection Summary	
HCM 6th Ctrl Delay	16.9
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	9	0	0	5
Future Vol, veh/h	0	0	9	0	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	10	0	0	5

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	15	10	0	0	10	0
Stage 1	10	-	-	-	-	-
Stage 2	5	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	1009	1077	-	-	1623	-
Stage 1	1018	-	-	-	-	-
Stage 2	1023	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	1009	1077	-	-	1623	-
Mov Cap-2 Maneuver	1009	-	-	-	-	-
Stage 1	1018	-	-	-	-	-
Stage 2	1023	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1623	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	2	33	13	0	19
Future Vol, veh/h	2	2	33	13	0	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	3	44	17	0	25

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	78	53	0	0	61	0
Stage 1	53	-	-	-	-	-
Stage 2	25	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	930	1020	-	-	1555	-
Stage 1	975	-	-	-	-	-
Stage 2	1003	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	930	1020	-	-	1555	-
Mov Cap-2 Maneuver	930	-	-	-	-	-
Stage 1	975	-	-	-	-	-
Stage 2	1003	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	973	1555	-
HCM Lane V/C Ratio	-	-	0.005	-	-
HCM Control Delay (s)	-	-	8.7	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection						
Int Delay, s/veh	2.6					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	38	1	32	41	0	26
Future Vol, veh/h	38	1	32	41	0	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	43	1	36	46	0	29

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	88	59	0	0	82	0
Stage 1	59	-	-	-	-	-
Stage 2	29	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	918	1012	-	-	1528	-
Stage 1	969	-	-	-	-	-
Stage 2	999	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	918	1012	-	-	1528	-
Mov Cap-2 Maneuver	918	-	-	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	999	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	920	1528	-
HCM Lane V/C Ratio	-	-	0.048	-	-
HCM Control Delay (s)	-	-	9.1	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	85	702	545	30	42	41
Future Volume (veh/h)	85	702	545	30	42	41
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	89	731	568	31	44	43
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	126	2407	1925	105	442	505
Arrive On Green	0.07	0.67	0.55	0.55	0.24	0.24
Sat Flow, veh/h	1810	3705	3576	190	1810	1610
Grp Volume(v), veh/h	89	731	294	305	44	43
Grp Sat Flow(s),veh/h/ln	1810	1805	1805	1866	1810	1610
Q Serve(g_s), s	4.3	7.6	7.8	7.9	1.7	1.7
Cycle Q Clear(g_c), s	4.3	7.6	7.8	7.9	1.7	1.7
Prop In Lane	1.00			0.10	1.00	1.00
Lane Grp Cap(c), veh/h	126	2407	998	1032	442	505
V/C Ratio(X)	0.71	0.30	0.29	0.30	0.10	0.09
Avail Cap(c_a), veh/h	342	2407	998	1032	442	505
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.0	6.3	10.7	10.8	26.3	21.8
Incr Delay (d2), s/veh	7.2	0.3	0.8	0.7	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	2.6	3.1	3.2	0.8	1.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	48.1	6.6	11.5	11.5	26.8	22.1
LnGrp LOS	D	A	B	B	C	C
Approach Vol, veh/h		820	599		87	
Approach Delay, s/veh		11.1	11.5		24.5	
Approach LOS		B	B		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		64.0		26.0	10.2	53.8
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		60.0		22.0	17.0	39.0
Max Q Clear Time (g_c+I1), s		9.6		3.7	6.3	9.9
Green Ext Time (p_c), s		6.1		0.2	0.1	3.9

Intersection Summary			
HCM 6th Ctrl Delay			12.0
HCM 6th LOS			B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	60	73	418	157	878	81	533	307	58	112	3
Future Volume (veh/h)	29	60	73	418	157	878	81	533	307	58	112	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	33	68	83	475	178	998	92	606	349	66	127	3
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	76	383	341	679	1969	878	117	679	303	227	348	8
Arrive On Green	0.04	0.21	0.21	0.12	0.18	0.18	0.06	0.19	0.19	0.06	0.19	0.19
Sat Flow, veh/h	1810	1805	1610	1810	3610	1610	1810	3610	1610	3510	1848	44
Grp Volume(v), veh/h	33	68	83	475	178	998	92	606	349	66	0	130
Grp Sat Flow(s),veh/h/ln	1810	1805	1610	1810	1805	1610	1810	1805	1610	1755	0	1892
Q Serve(g_s), s	1.8	3.1	4.3	25.2	4.1	37.2	5.0	16.4	18.8	1.8	0.0	6.0
Cycle Q Clear(g_c), s	1.8	3.1	4.3	25.2	4.1	37.2	5.0	16.4	18.8	1.8	0.0	6.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	76	383	341	679	1969	878	117	679	303	227	0	356
V/C Ratio(X)	0.43	0.18	0.24	0.70	0.09	1.14	0.79	0.89	1.15	0.29	0.00	0.37
Avail Cap(c_a), veh/h	127	383	341	679	1969	878	127	679	303	246	0	356
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.40	0.40	0.40	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.7	32.3	32.7	38.4	20.3	19.1	46.1	39.6	40.6	44.6	0.0	35.4
Incr Delay (d2), s/veh	3.9	1.0	1.7	1.3	0.0	67.7	25.5	16.5	99.7	0.7	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.4	1.8	12.4	1.7	32.1	3.1	8.7	15.7	0.8	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.6	33.3	34.4	39.7	20.4	86.7	71.6	56.1	140.3	45.3	0.0	38.3
LnGrp LOS	D	C	C	D	C	F	E	E	F	D	A	D
Approach Vol, veh/h		184			1651			1047			196	
Approach Delay, s/veh		36.9			66.0			85.5			40.6	
Approach LOS		D			E			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	41.5	25.2	10.5	22.8	8.2	58.5	10.5	22.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	37.0	21.2	7.0	18.8	7.0	51.2	7.0	18.8
Max Q Clear Time (g_c+I1), s	27.2	6.3	7.0	8.0	3.8	39.2	3.8	20.8
Green Ext Time (p_c), s	1.2	0.7	0.0	0.4	0.0	4.9	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	69.3
HCM 6th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	314	399	0	0	548	944	69	4	9	0	0	0
Future Volume (veh/h)	314	399	0	0	548	944	69	4	9	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	365	464	0	0	983	868	93	0	0			
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	386	2650	0	0	1110	940	673	353	0			
Arrive On Green	0.11	0.73	0.00	0.00	0.58	0.58	0.19	0.00	0.00			
Sat Flow, veh/h	3510	3705	0	0	1900	1610	3619	1900	0			
Grp Volume(v), veh/h	365	464	0	0	983	868	93	0	0			
Grp Sat Flow(s),veh/h/ln	1755	1805	0	0	1900	1610	1810	1900	0			
Q Serve(g_s), s	10.3	3.9	0.0	0.0	44.6	48.7	2.1	0.0	0.0			
Cycle Q Clear(g_c), s	10.3	3.9	0.0	0.0	44.6	48.7	2.1	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		0.00			
Lane Grp Cap(c), veh/h	386	2650	0	0	1110	940	673	353	0			
V/C Ratio(X)	0.95	0.18	0.00	0.00	0.89	0.92	0.14	0.00	0.00			
Avail Cap(c_a), veh/h	386	2650	0	0	1110	940	673	353	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.90	0.90	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	44.2	4.1	0.0	0.0	17.9	18.8	34.0	0.0	0.0			
Incr Delay (d2), s/veh	29.9	0.1	0.0	0.0	10.5	15.8	0.4	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	6.0	1.2	0.0	0.0	20.9	20.4	1.0	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.1	4.2	0.0	0.0	28.4	34.6	34.4	0.0	0.0			
LnGrp LOS	E	A	A	A	C	C	C	A	A			
Approach Vol, veh/h		829			1851			93				
Approach Delay, s/veh		35.0			31.3			34.4				
Approach LOS		C			C			C				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		77.4			15.0	62.4		22.6				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		73.4			11.0	58.4		18.6				
Max Q Clear Time (g_c+I1), s		5.9			12.3	50.7		4.1				
Green Ext Time (p_c), s		3.5			0.0	5.9		0.2				
Intersection Summary												
HCM 6th Ctrl Delay			32.5									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	1	16	5	0	30
Future Vol, veh/h	3	1	16	5	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	1	19	6	0	35

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	57	22	0	0	25	0
Stage 1	22	-	-	-	-	-
Stage 2	35	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	955	1061	-	-	1603	-
Stage 1	1006	-	-	-	-	-
Stage 2	993	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	955	1061	-	-	1603	-
Mov Cap-2 Maneuver	955	-	-	-	-	-
Stage 1	1006	-	-	-	-	-
Stage 2	993	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	979	1603	-
HCM Lane V/C Ratio	-	-	0.005	-	-
HCM Control Delay (s)	-	-	8.7	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	4.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	56	0	22	12	1	28
Future Vol, veh/h	56	0	22	12	1	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	59	0	23	13	1	29

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	61	30	0	0	36	0
Stage 1	30	-	-	-	-	-
Stage 2	31	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	950	1050	-	-	1588	-
Stage 1	998	-	-	-	-	-
Stage 2	997	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	949	1050	-	-	1588	-
Mov Cap-2 Maneuver	949	-	-	-	-	-
Stage 1	998	-	-	-	-	-
Stage 2	996	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	0.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	949	1588	-
HCM Lane V/C Ratio	-	-	0.062	0.001	-
HCM Control Delay (s)	-	-	9	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	376	1408	16	52	83
Future Volume (veh/h)	33	376	1408	16	52	83
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	36	413	1547	18	57	91
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	80	2635	2360	27	344	377
Arrive On Green	0.04	0.73	0.65	0.65	0.19	0.19
Sat Flow, veh/h	1810	3705	3750	42	1810	1610
Grp Volume(v), veh/h	36	413	763	802	57	91
Grp Sat Flow(s),veh/h/ln	1810	1805	1805	1892	1810	1610
Q Serve(g_s), s	1.9	3.5	26.0	26.0	2.6	4.6
Cycle Q Clear(g_c), s	1.9	3.5	26.0	26.0	2.6	4.6
Prop In Lane	1.00			0.02	1.00	1.00
Lane Grp Cap(c), veh/h	80	2635	1166	1222	344	377
V/C Ratio(X)	0.45	0.16	0.65	0.66	0.17	0.24
Avail Cap(c_a), veh/h	127	2635	1166	1222	344	377
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.6	4.1	10.9	10.9	33.9	31.1
Incr Delay (d2), s/veh	3.9	0.1	2.9	2.8	1.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.1	10.1	10.6	1.3	4.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.5	4.2	13.8	13.6	34.9	32.6
LnGrp LOS	D	A	B	B	C	C
Approach Vol, veh/h		449	1565		148	
Approach Delay, s/veh		8.0	13.7		33.5	
Approach LOS		A	B		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		77.0		23.0	8.4	68.6
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		73.0		19.0	7.0	62.0
Max Q Clear Time (g_c+I1), s		5.5		6.6	3.9	28.0
Green Ext Time (p_c), s		3.1		0.3	0.0	15.5

Intersection Summary			
HCM 6th Ctrl Delay			13.9
HCM 6th LOS			B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	81	104	217	185	224	119	313	558	309	421	32
Future Volume (veh/h)	14	81	104	217	185	224	119	313	558	309	421	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	15	84	108	226	193	233	124	326	581	322	439	33
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	44	441	394	318	1429	637	155	1043	465	397	552	41
Arrive On Green	0.02	0.24	0.24	0.29	0.66	0.66	0.09	0.29	0.29	0.11	0.32	0.32
Sat Flow, veh/h	1810	1805	1610	1810	3610	1610	1810	3610	1610	3510	1745	131
Grp Volume(v), veh/h	15	84	108	226	193	233	124	326	581	322	0	472
Grp Sat Flow(s),veh/h/ln	1810	1805	1610	1810	1805	1610	1810	1805	1610	1755	0	1876
Q Serve(g_s), s	0.7	3.3	4.9	10.0	1.8	5.8	6.1	6.4	16.3	8.1	0.0	20.7
Cycle Q Clear(g_c), s	0.7	3.3	4.9	10.0	1.8	5.8	6.1	6.4	16.3	8.1	0.0	20.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	44	441	394	318	1429	637	155	1043	465	397	0	593
V/C Ratio(X)	0.34	0.19	0.27	0.71	0.14	0.37	0.80	0.31	1.25	0.81	0.00	0.80
Avail Cap(c_a), veh/h	141	441	394	318	1429	637	181	1043	465	429	0	593
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.88	0.88	0.88	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.2	26.9	27.5	29.7	9.5	10.2	40.4	25.0	12.6	39.0	0.0	28.1
Incr Delay (d2), s/veh	4.5	1.0	1.7	6.4	0.2	1.4	19.3	0.8	128.9	10.5	0.0	10.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.5	2.0	4.4	0.7	2.0	3.5	2.8	22.1	4.0	0.0	10.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.7	27.9	29.3	36.1	9.7	11.6	59.7	25.8	141.5	49.5	0.0	38.7
LnGrp LOS	D	C	C	D	A	B	E	C	F	D	A	D
Approach Vol, veh/h		207			652			1031			794	
Approach Delay, s/veh		30.0			19.5			95.1			43.1	
Approach LOS		C			B			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.8	26.0	11.7	32.5	6.2	39.6	14.2	30.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	15.0	22.0	9.0	28.0	7.0	30.0	11.0	26.0
Max Q Clear Time (g_c+I1), s	12.0	6.9	8.1	22.7	2.7	7.8	10.1	18.3
Green Ext Time (p_c), s	0.2	0.9	0.0	1.4	0.0	2.0	0.1	2.8

Intersection Summary	
HCM 6th Ctrl Delay	56.3
HCM 6th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	453	863	0	0	284	369	103	2	16	0	0	0
Future Volume (veh/h)	453	863	0	0	284	369	103	2	16	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	482	918	0	0	370	348	127	0	0			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	858	2487	0	0	760	644	804	422	0			
Arrive On Green	0.24	0.69	0.00	0.00	0.40	0.40	0.22	0.00	0.00			
Sat Flow, veh/h	3510	3705	0	0	1900	1610	3619	1900	0			
Grp Volume(v), veh/h	482	918	0	0	370	348	127	0	0			
Grp Sat Flow(s),veh/h/ln	1755	1805	0	0	1900	1610	1810	1900	0			
Q Serve(g_s), s	10.8	9.5	0.0	0.0	13.1	14.9	2.5	0.0	0.0			
Cycle Q Clear(g_c), s	10.8	9.5	0.0	0.0	13.1	14.9	2.5	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		0.00			
Lane Grp Cap(c), veh/h	858	2487	0	0	760	644	804	422	0			
V/C Ratio(X)	0.56	0.37	0.00	0.00	0.49	0.54	0.16	0.00	0.00			
Avail Cap(c_a), veh/h	858	2487	0	0	760	644	804	422	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.76	0.76	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	29.8	5.8	0.0	0.0	20.1	20.7	28.2	0.0	0.0			
Incr Delay (d2), s/veh	0.6	0.3	0.0	0.0	2.2	3.2	0.4	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.5	3.1	0.0	0.0	6.0	6.0	1.1	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.4	6.2	0.0	0.0	22.3	23.9	28.6	0.0	0.0			
LnGrp LOS	C	A	A	A	C	C	C	A	A			
Approach Vol, veh/h		1400			718			127				
Approach Delay, s/veh		14.5			23.1			28.6				
Approach LOS		B			C			C				

Timer - Assigned Phs		2			5	6		8	
Phs Duration (G+Y+Rc), s		66.0			26.0	40.0		24.0	
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0	
Max Green Setting (Gmax), s		62.0			22.0	36.0		20.0	
Max Q Clear Time (g_c+I1), s		11.5			12.8	16.9		4.5	
Green Ext Time (p_c), s		8.3			1.3	3.4		0.3	

Intersection Summary	
HCM 6th Ctrl Delay	18.1
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	2	37	14	0	24
Future Vol, veh/h	2	2	37	14	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	3	49	19	0	32

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	91	59	0	0	68	0
Stage 1	59	-	-	-	-	-
Stage 2	32	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	914	1012	-	-	1546	-
Stage 1	969	-	-	-	-	-
Stage 2	996	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	914	1012	-	-	1546	-
Mov Cap-2 Maneuver	914	-	-	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	996	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	961	1546	-
HCM Lane V/C Ratio	-	-	0.006	-	-
HCM Control Delay (s)	-	-	8.8	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	1	36	43	0	31
Future Vol, veh/h	40	1	36	43	0	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	45	1	40	48	0	35

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	99	64	0	0	88	0
Stage 1	64	-	-	-	-	-
Stage 2	35	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	905	1006	-	-	1520	-
Stage 1	964	-	-	-	-	-
Stage 2	993	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	905	1006	-	-	1520	-
Mov Cap-2 Maneuver	905	-	-	-	-	-
Stage 1	964	-	-	-	-	-
Stage 2	993	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	907	1520	-
HCM Lane V/C Ratio	-	-	0.051	-	-
HCM Control Delay (s)	-	-	9.2	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	88	792	610	38	51	43
Future Volume (veh/h)	88	792	610	38	51	43
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	92	825	635	40	53	45
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	127	2447	1943	122	422	488
Arrive On Green	0.07	0.68	0.56	0.56	0.23	0.23
Sat Flow, veh/h	1810	3705	3544	217	1810	1610
Grp Volume(v), veh/h	92	825	332	343	53	45
Grp Sat Flow(s),veh/h/ln	1810	1805	1805	1861	1810	1610
Q Serve(g_s), s	4.5	8.6	8.9	8.9	2.1	1.8
Cycle Q Clear(g_c), s	4.5	8.6	8.9	8.9	2.1	1.8
Prop In Lane	1.00			0.12	1.00	1.00
Lane Grp Cap(c), veh/h	127	2447	1017	1048	422	488
V/C Ratio(X)	0.73	0.34	0.33	0.33	0.13	0.09
Avail Cap(c_a), veh/h	322	2447	1017	1048	422	488
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.0	6.1	10.5	10.5	27.2	22.5
Incr Delay (d2), s/veh	7.7	0.4	0.9	0.8	0.6	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	2.9	3.5	3.6	1.0	2.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	48.7	6.4	11.4	11.4	27.9	22.8
LnGrp LOS	D	A	B	B	C	C
Approach Vol, veh/h		917	675		98	
Approach Delay, s/veh		10.7	11.4		25.6	
Approach LOS		B	B		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		65.0		25.0	10.3	54.7
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		61.0		21.0	16.0	41.0
Max Q Clear Time (g_c+I1), s		10.6		4.1	6.5	10.9
Green Ext Time (p_c), s		7.1		0.2	0.1	4.6

Intersection Summary		
HCM 6th Ctrl Delay		11.8
HCM 6th LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	60	73	433	157	890	81	533	312	62	112	3
Future Volume (veh/h)	29	60	73	433	157	890	81	533	312	62	112	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	33	68	83	492	178	1011	92	606	355	70	127	3
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	76	383	341	679	1969	878	117	679	303	227	348	8
Arrive On Green	0.04	0.21	0.21	0.12	0.18	0.18	0.06	0.19	0.19	0.06	0.19	0.19
Sat Flow, veh/h	1810	1805	1610	1810	3610	1610	1810	3610	1610	3510	1848	44
Grp Volume(v), veh/h	33	68	83	492	178	1011	92	606	355	70	0	130
Grp Sat Flow(s),veh/h/ln	1810	1805	1610	1810	1805	1610	1810	1805	1610	1755	0	1892
Q Serve(g_s), s	1.8	3.1	4.3	26.2	4.1	37.2	5.0	16.4	18.8	1.9	0.0	6.0
Cycle Q Clear(g_c), s	1.8	3.1	4.3	26.2	4.1	37.2	5.0	16.4	18.8	1.9	0.0	6.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	76	383	341	679	1969	878	117	679	303	227	0	356
V/C Ratio(X)	0.43	0.18	0.24	0.72	0.09	1.15	0.79	0.89	1.17	0.31	0.00	0.37
Avail Cap(c_a), veh/h	127	383	341	679	1969	878	127	679	303	246	0	356
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.34	0.34	0.34	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.7	32.3	32.7	38.8	20.3	19.1	46.1	39.6	40.6	44.6	0.0	35.4
Incr Delay (d2), s/veh	3.9	1.0	1.7	1.3	0.0	73.1	25.5	16.5	107.0	0.8	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.4	1.8	12.9	1.7	33.4	3.1	8.7	16.3	0.8	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.6	33.3	34.4	40.2	20.4	92.1	71.6	56.1	147.6	45.4	0.0	38.3
LnGrp LOS	D	C	C	D	C	F	E	E	F	D	A	D
Approach Vol, veh/h		184			1681			1053			200	
Approach Delay, s/veh		36.9			69.3			88.3			40.8	
Approach LOS		D			E			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	41.5	25.2	10.5	22.8	8.2	58.5	10.5	22.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	37.0	21.2	7.0	18.8	7.0	51.2	7.0	18.8
Max Q Clear Time (g_c+I1), s	28.2	6.3	7.0	8.0	3.8	39.2	3.9	20.8
Green Ext Time (p_c), s	1.2	0.7	0.0	0.4	0.0	5.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	72.0
HCM 6th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	314	408	0	0	575	959	69	4	14	0	0	0
Future Volume (veh/h)	314	408	0	0	575	959	69	4	14	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	365	474	0	0	1004	892	50	46	16			
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	386	2650	0	0	1110	940	337	251	87			
Arrive On Green	0.11	0.73	0.00	0.00	0.58	0.58	0.19	0.19	0.19			
Sat Flow, veh/h	3510	3705	0	0	1900	1610	1810	1347	469			
Grp Volume(v), veh/h	365	474	0	0	1004	892	50	0	62			
Grp Sat Flow(s),veh/h/ln	1755	1805	0	0	1900	1610	1810	0	1816			
Q Serve(g_s), s	10.3	4.0	0.0	0.0	46.6	51.7	2.3	0.0	2.9			
Cycle Q Clear(g_c), s	10.3	4.0	0.0	0.0	46.6	51.7	2.3	0.0	2.9			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		0.26			
Lane Grp Cap(c), veh/h	386	2650	0	0	1110	940	337	0	338			
V/C Ratio(X)	0.95	0.18	0.00	0.00	0.90	0.95	0.15	0.00	0.18			
Avail Cap(c_a), veh/h	386	2650	0	0	1110	940	337	0	338			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.90	0.90	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	44.2	4.1	0.0	0.0	18.3	19.4	34.1	0.0	34.3			
Incr Delay (d2), s/veh	29.9	0.1	0.0	0.0	12.0	19.3	0.9	0.0	1.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	6.0	1.3	0.0	0.0	22.1	22.4	1.1	0.0	1.4			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.1	4.2	0.0	0.0	30.4	38.7	35.0	0.0	35.5			
LnGrp LOS	E	A	A	A	C	D	D	A	D			
Approach Vol, veh/h		839			1896			112				
Approach Delay, s/veh		34.6			34.3			35.3				
Approach LOS		C			C			D				

Timer - Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		77.4			15.0	62.4		22.6
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		73.4			11.0	58.4		18.6
Max Q Clear Time (g_c+I1), s		6.0			12.3	53.7		4.9
Green Ext Time (p_c), s		3.6			0.0	3.9		0.3

Intersection Summary	
HCM 6th Ctrl Delay	34.4
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	5.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	60	0	4	20	0	7
Future Vol, veh/h	60	0	4	20	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	65	0	4	22	0	8

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	23	15	0	0	26	0
Stage 1	15	-	-	-	-	-
Stage 2	8	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	998	1070	-	-	1601	-
Stage 1	1013	-	-	-	-	-
Stage 2	1020	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	998	1070	-	-	1601	-
Mov Cap-2 Maneuver	998	-	-	-	-	-
Stage 1	1013	-	-	-	-	-
Stage 2	1020	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	998	1601	-
HCM Lane V/C Ratio	-	-	0.065	-	-
HCM Control Delay (s)	-	-	8.9	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	1	36	5	0	90
Future Vol, veh/h	3	1	36	5	0	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	1	42	6	0	105

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	150	45	0	0	48	0
Stage 1	45	-	-	-	-	-
Stage 2	105	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	847	1031	-	-	1572	-
Stage 1	983	-	-	-	-	-
Stage 2	924	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	847	1031	-	-	1572	-
Mov Cap-2 Maneuver	847	-	-	-	-	-
Stage 1	983	-	-	-	-	-
Stage 2	924	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	887	1572	-
HCM Lane V/C Ratio	-	-	0.005	-	-
HCM Control Delay (s)	-	-	9.1	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	56	0	42	12	1	88
Future Vol, veh/h	56	0	42	12	1	88
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	59	0	44	13	1	93

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	146	51	0	0	57	0
Stage 1	51	-	-	-	-	-
Stage 2	95	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	851	1023	-	-	1560	-
Stage 1	977	-	-	-	-	-
Stage 2	934	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	850	1023	-	-	1560	-
Mov Cap-2 Maneuver	850	-	-	-	-	-
Stage 1	977	-	-	-	-	-
Stage 2	933	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	850	1560	-
HCM Lane V/C Ratio	-	-	0.069	0.001	-
HCM Control Delay (s)	-	-	9.6	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	47	376	1408	22	70	125
Future Volume (veh/h)	47	376	1408	22	70	125
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	52	413	1547	24	77	137
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	97	2635	2316	36	344	392
Arrive On Green	0.05	0.73	0.64	0.64	0.19	0.19
Sat Flow, veh/h	1810	3705	3733	56	1810	1610
Grp Volume(v), veh/h	52	413	767	804	77	137
Grp Sat Flow(s),veh/h/ln	1810	1805	1805	1890	1810	1610
Q Serve(g_s), s	2.8	3.5	26.8	26.9	3.6	7.0
Cycle Q Clear(g_c), s	2.8	3.5	26.8	26.9	3.6	7.0
Prop In Lane	1.00			0.03	1.00	1.00
Lane Grp Cap(c), veh/h	97	2635	1149	1203	344	392
V/C Ratio(X)	0.54	0.16	0.67	0.67	0.22	0.35
Avail Cap(c_a), veh/h	127	2635	1149	1203	344	392
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.1	4.1	11.5	11.5	34.3	31.3
Incr Delay (d2), s/veh	4.6	0.1	3.1	3.0	1.5	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.1	10.6	11.1	1.7	6.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.7	4.2	14.6	14.5	35.8	33.7
LnGrp LOS	D	A	B	B	D	C
Approach Vol, veh/h		465	1571		214	
Approach Delay, s/veh		9.4	14.5		34.5	
Approach LOS		A	B		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		77.0		23.0	9.3	67.7
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		73.0		19.0	7.0	62.0
Max Q Clear Time (g_c+I1), s		5.5		9.0	4.8	28.9
Green Ext Time (p_c), s		3.1		0.4	0.0	15.4
Intersection Summary						
HCM 6th Ctrl Delay			15.4			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary
1: Sycamore Canyon Blvd & Fair Isle Dr

02/11/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	81	104	227	185	232	119	313	575	322	421	32
Future Volume (veh/h)	14	81	104	227	185	232	119	313	575	322	421	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	15	84	108	236	193	242	124	326	599	335	439	33
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	44	441	394	312	1417	632	155	1043	465	408	558	42
Arrive On Green	0.02	0.24	0.24	0.29	0.66	0.66	0.09	0.29	0.29	0.12	0.32	0.32
Sat Flow, veh/h	1810	1805	1610	1810	3610	1610	1810	3610	1610	3510	1745	131
Grp Volume(v), veh/h	15	84	108	236	193	242	124	326	599	335	0	472
Grp Sat Flow(s),veh/h/ln	1810	1805	1610	1810	1805	1610	1810	1805	1610	1755	0	1876
Q Serve(g_s), s	0.7	3.3	4.9	10.7	1.8	6.2	6.1	6.4	16.4	8.4	0.0	20.6
Cycle Q Clear(g_c), s	0.7	3.3	4.9	10.7	1.8	6.2	6.1	6.4	16.4	8.4	0.0	20.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	44	441	394	312	1417	632	155	1043	465	408	0	600
V/C Ratio(X)	0.34	0.19	0.27	0.76	0.14	0.38	0.80	0.31	1.29	0.82	0.00	0.79
Avail Cap(c_a), veh/h	141	441	394	312	1417	632	181	1043	465	429	0	600
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.87	0.87	0.87	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.2	26.9	27.5	30.3	9.7	10.5	40.4	25.0	12.8	38.8	0.0	27.8
Incr Delay (d2), s/veh	4.5	1.0	1.7	8.9	0.2	1.5	19.3	0.8	144.9	11.5	0.0	10.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.5	2.0	4.8	0.7	2.1	3.5	2.8	24.2	4.2	0.0	10.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.7	27.9	29.3	39.2	9.9	12.0	59.7	25.8	157.7	50.4	0.0	37.9
LnGrp LOS	D	C	C	D	A	B	E	C	F	D	A	D
Approach Vol, veh/h		207			671			1049			807	
Approach Delay, s/veh		30.0			21.0			105.1			43.1	
Approach LOS		C			C			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.5	26.0	11.7	32.8	6.2	39.3	14.5	30.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	15.0	22.0	9.0	28.0	7.0	30.0	11.0	26.0
Max Q Clear Time (g_c+I1), s	12.7	6.9	8.1	22.6	2.7	8.2	10.4	18.4
Green Ext Time (p_c), s	0.2	0.9	0.0	1.4	0.0	2.0	0.1	2.8

Intersection Summary	
HCM 6th Ctrl Delay	60.5
HCM 6th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	453	893	0	0	302	379	103	2	33	0	0	0
Future Volume (veh/h)	453	893	0	0	302	379	103	2	33	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	482	950	0	0	382	362	74	53	35			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	858	2487	0	0	760	644	402	237	157			
Arrive On Green	0.24	0.69	0.00	0.00	0.40	0.40	0.22	0.22	0.22			
Sat Flow, veh/h	3510	3705	0	0	1900	1610	1810	1068	705			
Grp Volume(v), veh/h	482	950	0	0	382	362	74	0	88			
Grp Sat Flow(s),veh/h/ln	1755	1805	0	0	1900	1610	1810	0	1773			
Q Serve(g_s), s	10.8	10.0	0.0	0.0	13.6	15.7	3.0	0.0	3.7			
Cycle Q Clear(g_c), s	10.8	10.0	0.0	0.0	13.6	15.7	3.0	0.0	3.7			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		0.40			
Lane Grp Cap(c), veh/h	858	2487	0	0	760	644	402	0	394			
V/C Ratio(X)	0.56	0.38	0.00	0.00	0.50	0.56	0.18	0.00	0.22			
Avail Cap(c_a), veh/h	858	2487	0	0	760	644	402	0	394			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.74	0.74	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	29.8	5.9	0.0	0.0	20.3	20.9	28.4	0.0	28.6			
Incr Delay (d2), s/veh	0.6	0.3	0.0	0.0	2.4	3.5	1.0	0.0	1.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.5	3.3	0.0	0.0	6.3	6.3	1.4	0.0	1.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.4	6.2	0.0	0.0	22.6	24.4	29.4	0.0	30.0			
LnGrp LOS	C	A	A	A	C	C	C	A	C			
Approach Vol, veh/h		1432			744			162				
Approach Delay, s/veh		14.4			23.5			29.7				
Approach LOS		B			C			C				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		66.0			26.0	40.0		24.0				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		62.0			22.0	36.0		20.0				
Max Q Clear Time (g_c+I1), s		12.0			12.8	17.7		5.7				
Green Ext Time (p_c), s		8.7			1.3	3.5		0.5				

Intersection Summary		
HCM 6th Ctrl Delay		18.3
HCM 6th LOS		B

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	0	9	67	0	5
Future Vol, veh/h	40	0	9	67	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	43	0	10	73	0	5

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	52	47	0	0	83	0
Stage 1	47	-	-	-	-	-
Stage 2	5	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	962	1028	-	-	1527	-
Stage 1	981	-	-	-	-	-
Stage 2	1023	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	962	1028	-	-	1527	-
Mov Cap-2 Maneuver	962	-	-	-	-	-
Stage 1	981	-	-	-	-	-
Stage 2	1023	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	962	1527	-
HCM Lane V/C Ratio	-	-	0.045	-	-
HCM Control Delay (s)	-	-	8.9	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	2	104	14	0	64
Future Vol, veh/h	2	2	104	14	0	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	3	139	19	0	85

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	234	149	0	0	158	0
Stage 1	149	-	-	-	-	-
Stage 2	85	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	759	903	-	-	1434	-
Stage 1	884	-	-	-	-	-
Stage 2	943	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	759	903	-	-	1434	-
Mov Cap-2 Maneuver	759	-	-	-	-	-
Stage 1	884	-	-	-	-	-
Stage 2	943	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	825	1434	-
HCM Lane V/C Ratio	-	-	0.006	-	-
HCM Control Delay (s)	-	-	9.4	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection						
Int Delay, s/veh	1.6					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	1	103	43	0	71
Future Vol, veh/h	40	1	103	43	0	71
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	45	1	116	48	0	80

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	220	140	0	0	164	0
Stage 1	140	-	-	-	-	-
Stage 2	80	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	773	913	-	-	1427	-
Stage 1	892	-	-	-	-	-
Stage 2	948	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	773	913	-	-	1427	-
Mov Cap-2 Maneuver	773	-	-	-	-	-
Stage 1	892	-	-	-	-	-
Stage 2	948	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	776	1427	-
HCM Lane V/C Ratio	-	-	0.059	-	-
HCM Control Delay (s)	-	-	9.9	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	135	792	610	58	63	71
Future Volume (veh/h)	135	792	610	58	63	71
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	141	825	635	60	66	74
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	177	2447	1786	169	422	533
Arrive On Green	0.10	0.68	0.54	0.54	0.23	0.23
Sat Flow, veh/h	1810	3705	3429	315	1810	1610
Grp Volume(v), veh/h	141	825	343	352	66	74
Grp Sat Flow(s),veh/h/ln	1810	1805	1805	1843	1810	1610
Q Serve(g_s), s	6.9	8.6	9.8	9.8	2.6	2.9
Cycle Q Clear(g_c), s	6.9	8.6	9.8	9.8	2.6	2.9
Prop In Lane	1.00			0.17	1.00	1.00
Lane Grp Cap(c), veh/h	177	2447	967	988	422	533
V/C Ratio(X)	0.80	0.34	0.36	0.36	0.16	0.14
Avail Cap(c_a), veh/h	322	2447	967	988	422	533
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.7	6.1	12.0	12.0	27.5	21.1
Incr Delay (d2), s/veh	8.0	0.4	1.0	1.0	0.8	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	2.9	4.0	4.1	1.2	3.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	47.8	6.4	13.0	13.0	28.2	21.7
LnGrp LOS	D	A	B	B	C	C
Approach Vol, veh/h		966	695		140	
Approach Delay, s/veh		12.5	13.0		24.8	
Approach LOS		B	B		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		65.0		25.0	12.8	52.2
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		61.0		21.0	16.0	41.0
Max Q Clear Time (g_c+I1), s		10.6		4.9	8.9	11.8
Green Ext Time (p_c), s		7.1		0.3	0.2	4.7

Intersection Summary			
HCM 6th Ctrl Delay			13.6
HCM 6th LOS			B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	60	73	433	157	890	81	533	312	62	112	3
Future Volume (veh/h)	29	60	73	433	157	890	81	533	312	62	112	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	33	68	83	492	178	1011	92	606	355	70	127	3
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	76	437	390	625	1969	878	117	679	859	227	348	8
Arrive On Green	0.04	0.24	0.24	0.35	0.55	0.55	0.06	0.19	0.19	0.06	0.19	0.19
Sat Flow, veh/h	1810	1805	1610	1810	3610	1610	1810	3610	1610	3510	1848	44
Grp Volume(v), veh/h	33	68	83	492	178	1011	92	606	355	70	0	130
Grp Sat Flow(s),veh/h/ln	1810	1805	1610	1810	1805	1610	1810	1805	1610	1755	0	1892
Q Serve(g_s), s	1.8	3.0	4.1	24.4	2.4	37.2	5.0	16.4	0.0	1.9	0.0	6.0
Cycle Q Clear(g_c), s	1.8	3.0	4.1	24.4	2.4	37.2	5.0	16.4	0.0	1.9	0.0	6.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	76	437	390	625	1969	878	117	679	859	227	0	356
V/C Ratio(X)	0.43	0.16	0.21	0.79	0.09	1.15	0.79	0.89	0.41	0.31	0.00	0.37
Avail Cap(c_a), veh/h	127	437	390	625	1969	878	127	679	859	246	0	356
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.34	0.34	0.34	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.7	29.9	30.3	29.4	10.9	10.6	46.1	39.6	14.0	44.6	0.0	35.4
Incr Delay (d2), s/veh	3.9	0.8	1.2	2.4	0.0	73.1	25.5	16.5	1.5	0.8	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.4	1.7	10.7	0.9	28.9	3.1	8.7	4.9	0.8	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.6	30.6	31.5	31.8	10.9	83.6	71.6	56.1	15.4	45.4	0.0	38.3
LnGrp LOS	D	C	C	C	B	F	E	E	B	D	A	D
Approach Vol, veh/h		184			1681			1053			200	
Approach Delay, s/veh		34.6			60.8			43.7			40.8	
Approach LOS		C			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	38.5	28.2	10.5	22.8	8.2	58.5	10.5	22.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	34.0	24.2	7.0	18.8	7.0	51.2	7.0	18.8
Max Q Clear Time (g_c+I1), s	26.4	6.1	7.0	8.0	3.8	39.2	3.9	18.4
Green Ext Time (p_c), s	1.1	0.7	0.0	0.4	0.0	5.0	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	52.2
HCM 6th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	81	104	227	185	232	119	313	575	322	421	32
Future Volume (veh/h)	14	81	104	227	185	232	119	313	575	322	421	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	15	84	108	236	193	242	124	326	599	335	439	33
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	44	441	394	312	1417	632	155	1043	743	408	558	42
Arrive On Green	0.02	0.24	0.24	0.29	0.66	0.66	0.09	0.29	0.29	0.12	0.32	0.32
Sat Flow, veh/h	1810	1805	1610	1810	3610	1610	1810	3610	1610	3510	1745	131
Grp Volume(v), veh/h	15	84	108	236	193	242	124	326	599	335	0	472
Grp Sat Flow(s),veh/h/ln	1810	1805	1610	1810	1805	1610	1810	1805	1610	1755	0	1876
Q Serve(g_s), s	0.7	3.3	4.9	10.7	1.8	6.2	6.1	6.4	8.6	8.4	0.0	20.6
Cycle Q Clear(g_c), s	0.7	3.3	4.9	10.7	1.8	6.2	6.1	6.4	8.6	8.4	0.0	20.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	44	441	394	312	1417	632	155	1043	743	408	0	600
V/C Ratio(X)	0.34	0.19	0.27	0.76	0.14	0.38	0.80	0.31	0.81	0.82	0.00	0.79
Avail Cap(c_a), veh/h	141	441	394	312	1417	632	181	1043	743	429	0	600
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.87	0.87	0.87	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.2	26.9	27.5	30.3	9.7	10.5	40.4	25.0	7.8	38.8	0.0	27.8
Incr Delay (d2), s/veh	4.5	1.0	1.7	8.9	0.2	1.5	19.3	0.8	9.1	11.5	0.0	10.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.5	2.0	4.8	0.7	2.1	3.5	2.8	6.0	4.2	0.0	10.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.7	27.9	29.3	39.2	9.9	12.0	59.7	25.8	17.0	50.4	0.0	37.9
LnGrp LOS	D	C	C	D	A	B	E	C	B	D	A	D
Approach Vol, veh/h		207			671			1049			807	
Approach Delay, s/veh		30.0			21.0			24.8			43.1	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.5	26.0	11.7	32.8	6.2	39.3	14.5	30.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	15.0	22.0	9.0	28.0	7.0	30.0	11.0	26.0
Max Q Clear Time (g_c+I1), s	12.7	6.9	8.1	22.6	2.7	8.2	10.4	10.6
Green Ext Time (p_c), s	0.2	0.9	0.0	1.4	0.0	2.0	0.1	4.1

Intersection Summary			
HCM 6th Ctrl Delay			29.6
HCM 6th LOS			C

Appendix L

Fire Hazard Analysis and Approach Memorandum

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TECHNICAL FIRE PROTECTION MEMORANDUM

To:	Douglas Bloom, Fire Marshal, Moreno Valley Fire Department
From:	Dudek Fire Protection Planning Team, Michael Huff, Director
Subject:	Gateway Heights Project Fire Hazard Analysis and Approach
Date:	03/31/2022
cc:	Jason Ackerman, Esq., Ackerman Law
Attachment(s):	Figures 1-2 Attachment 1 – Site Aerial Photograph Attachment 2 – Fuel Modification Plan Attachment 3 – Site Plan with Revised Dual Project Access

This Technical Fire Protection Memorandum documents fire protection planning related to project constraints analysis for the subject project. The approach outlined herein responds to your recommended direction during our recent communications regarding emergency ingress/egress to/from the project site and access to defensible space areas.

Project description

The proposed Gateway Heights development is a 108 unit detached townhouse project on an approximately 33-acre site in the City of Moreno Valley.

- “Detached townhouses” (townhouses by CBC definition are attached; structures are likely to be considered SFDs per code)
- Structures are separated 10’ apart.
- Structures are two-story townhouses
- Proposed 16-acre open space lot north of the developed project site

Existing Site Observations

<u>Onsite</u>

- Attachment 1 provides a site aerial photograph.

- Vegetation is primarily scattered sage scrub, forbs, and scattered native shrubs and a few ornamental trees in the northeast corner;
- Unmaintained roads/trails traverse the property;
- Evidence of recent fuel reduction activities are present on site.

Topography

The project site is relatively flat, with a slight upslope gradient to the north; beyond the project to the north is a steep, rocky hillside with sparse scrub and forb vegetation. To the west and south the terrain has gently rolling hills with intermittent drainages. Along the eastern edge of the property is a drainage channel strewn with boulders. To the east of the project is a residential subdivision.

Vicinity

The project is located in the northeast area of the City of Moreno Valley. The western and northern property lines coincide with the city limits; the lands immediately to the west and north of the property are within unincorporated Riverside County.

- North: open space;
- East of northern open space lot: open space;
- Southeast of project site: residential development;
- West: open space.

Proposed site plan review / code compliance issues

<u>**Issues to address:**</u>

- Driveway lengths: proposed lengths range from 136 to 273 feet with 24’ width. The driveways for Pads 1, 3, 4, 6 and 8 are less than 150 feet long and would thereby qualify as fire apparatus access roads. The driveways for Pads 2, 5, 7 and 9 through 13 are greater than 150 feet long and would not qualify as fire apparatus access roads since no turnarounds are proposed.
- Fuel modification width: 100-foot FMZ can be provided for most units (Attachment 2). The western most units on Pad 13 (NW corner) are 30 feet from the property line; the units on Pad 7 are 69 feet from the property line; obtaining an off-site FMZ easement would be one approach to resolving this potential issue. However, if an off-site FMZ easement is not feasible due to an unwilling neighboring property owner; then onsite “hardening” features may be required as an alternative method of fire protection (i.e., firewalls on the property line).

Primary access

Primary access is proposed using Morton Road on the southern side of the project, which has access to Box Springs Road and the SR60/I-215 Freeway.

Secondary access

In reviewing the Moreno Valley Fire Code, there is no reference identified whereby a secondary access is required for the project. CFC 503.1.2 authorizes the fire code official to require more than one access road based on the potential for impairment of a single road, but it does not require that an additional access road must be provided.

The project design provides two 36' foot wide roadways at the entrance to minimize any potential traffic congestion during an emergency setting; one for ingress and one for egress (see Attachment 3). Each entrance roadway connects to separate "legs" of the internal circulation loop road allowing for approximately half of the occupants to exit in each of two distinct directions without conflict.

Internal circulation

- Loop road system;
- Direct access is provided to all structures;
- Unobstructed internal circulation loop roadway width of 24 feet;
- No dead-end fire apparatus access roads.

Fuel modification and Vegetation Management

A fuel modification landscape plan has been prepared and submitted for review and approval.

The two "legs" of the internal circulation loop road, along the eastern and western edges of the project, will be located between the property line and structures providing a paved, non-combustible, defensible space as part of the fuel modification zone.

The project will also comply with the following requirements related to fuel modification and vegetation management outlined in the 2022 California Fire Code. The Project-provided fuel modification landscape plan provides additional details on the Project's consistency with these requirements and has been submitted for review to Moreno Valley Fire Department.

4906.1 General

Planting of vegetation for new landscaping shall be selected to reduce non-fire-resistant vegetation in proximity to a structure and to maintain vegetation as it matures.

4906.2 Application

All new plantings of vegetation in State Responsibility Areas (SRA) and Local Responsibility Areas (LRA) designated as a Very High Fire Hazard Severity Zone shall comply with Sections 4906.3 through 4906.5.3.

4906.3 Landscape Plans

Landscape plans shall be provided when required by the enforcing agency. The landscape plan shall include development and maintenance requirements for the vegetation management zone adjacent to structures and roadways, and to provide significant fire hazard reduction benefits for public and firefighting safety.

4906.3.1 Contents

Landscape plans shall contain the following:

1. Delineation of the 30-foot (9144 mm) and 100-foot (30.5 m) fuel management zones from all structures.
2. Identification of existing vegetation to remain and proposed new vegetation.
3. Identification of irrigated areas.
4. A plant legend with both botanical and common names, and identification of all plant material symbols.
5. Identification of ground coverings within the 30-foot (9144 mm) zone.

4906.4 Vegetation

All new vegetation shall be fire-resistant vegetation in accordance with this section.
Exception: Trees classified as non-fire-resistant vegetation complying with Section 4906.4.2.1.
To be considered fire-resistant vegetation, it must meet at least one of the following:

1. Be identified as fire-resistant vegetation in an approved book, journal or listing from an approved organization.
2. Be identified as fire-resistant vegetation by a licensed landscape architect with supporting justification.
3. Plants considered fire-resistant vegetation and approved by the local enforcing agency.

4906.4.1 Shrubs

All new plantings of shrubs shall comply with the following:

1. Shrubs shall not exceed 6 feet (1829 mm) in height.
2. Groupings of shrubs are limited to a maximum aggregate diameter of 10 feet (3048 mm).
3. Shrub groupings shall be separated from other groupings a minimum of 15 feet (4572 mm).
4. Shrub groupings shall be separated from structures a minimum of 30 feet (9144 mm).
5. Where shrubs are located below or within a tree's drip line, the lowest tree branch shall be a minimum of three times the height of the understory shrubs or 10 feet (3048 mm), whichever is greater.

4906.4.2 Trees

Trees shall be managed as follows within the 30-foot (9144 mm) zone of a structure:

1. New trees shall be planted and maintained so that the tree's drip line at maturity is a minimum of 10 feet (3048 mm) from any combustible structure.
2. The horizontal distance between crowns of new trees and crowns of adjacent trees shall not be less than 10 feet (3048 mm).
3. Existing trees shall be trimmed to provide a minimum separation of 10 feet (3048 mm) away from chimney and stovepipe outlets per Title 14, Section 1299.03.

4906.4.2.1 Non-Fire-Resistant Vegetation

New trees not classified as fire-resistant vegetation, such as conifers, palms, pepper trees and eucalyptus species, shall be permitted provided the tree is planted and maintained so that the tree's drip line at maturity is a minimum 30 feet (9144 mm) from any combustible structure.

Defensible Space

The project will comply with the following defensible space requirements outlined in the 2022 California Fire Code.

4907.1 General

Hazardous vegetation and fuels shall be managed to reduce the severity of potential exterior wildfire exposure to buildings and to reduce the risk of fire spreading to buildings as required by applicable laws and regulations. Defensible space will be managed around all buildings and structures in State Responsibility Areas (SRA) as required in Public Resources Code 4291.

4907.2 Application

Buildings and structures located in the following areas shall maintain the required hazardous vegetation and fuel management:

1. All unincorporated lands designated by the State Board of Forestry and Fire Protection as a State Responsibility Area (SRA).
2. Land designated as a Very High Fire Hazard Severity Zone by the Director.
3. Land designated in ordinance by local agencies as a Very High Fire Hazard Severity Zone pursuant to Government Code Section 51179.

4907.3 Requirements

Hazardous vegetation and fuels around all buildings and structures shall be maintained in accordance with the following laws and regulations:

1. Public Resources Code, Section 4291.
2. California Code of Regulations, Title 14, Division 1.5, Chapter 7, Subchapter 3, Article 3, Section 1299.03.
3. California Government Code, Section 51182.
4. California Code of Regulations, Title 19, Division 1, Chapter 7, Subchapter 1, Section 3.07.

Relevant code sections:

California Residential Code R337. Materials and Construction Methods for Exterior Wildfire Exposure: minimum standards for a new building located in a WUI area to resist the intrusion of flame or burning embers projected by a vegetation fire.

California Fire Code 503.1.2 Additional access. Authorizes the fire code official to require more than one access road based on the potential for impairment of a single road, but it does not require that an additional access road must be provided.

Moreno Valley Fire Code Amendments

- 503.2.1 Fire apparatus access roads – 24 feet wide
- 903.2 Single Family Dwellings shall have automatic fire sprinkler systems
- 4906.4 Fuel Modification Requirements for New Construction. Must meet the criteria established by Riverside County Fire Department (Information Bulletin #08-05). Submit a Fuel Modification Plan; indicate setback, irrigated and thinning zones (30' Green Zone; 100' total defensible space).
- App B. Fire Flow and Hydrant Spacing

Fire environment assessment

The project site's fire environment assessment was performed by Dudek fire protection planners with extensive similar experience throughout California over the last 25 years.

- The site is located within a Very High Fire Hazard Severity Zone.
- No evidence of recent fire on site; fire history data indicates the site has had multiple fires within a five-mile radius and the site itself has burned four times since 1980.
- Vegetation on site and to the north, west and south is sparse and low growing, which would reduce the impacts from a wildland fire;
- Adjacent hillslopes to the north exist up and away from the project site. This reduces wildfire risks at the project site as wildfire is more likely to spread at slower rates when moving downslope compared to an upslope direction.
- The project may be subject to an approaching wildland fire from the northeast during Santa Ana wind conditions. While direct impacts from wildfire cannot be completely ruled out, structural ignition risks from ember cast are minimal given modern construction requirements in alignment with Chapter 7A of the California Building Code, per California Office of the State Fire Marshals Office data.

Fire Behavior assessment

- Selected fuel models Sh1 (low load, dry climate shrub) and Sh2 (moderate load, dry climate shrub) to represent the existing vegetative fuels. Site photographs provided in Attachment 4 depicts the fuels present on and adjacent to the project site.

- Selected wildland fire run scenarios from the NE and SW representing an offshore Santa Ana wind event and an onshore wind event. Santa Ana wind events represent "worst-case" conditions and represent the highest wind speeds and lowest fuel moistures likely to occur at the project site.

- Conducted fire behavior modeling using the BehavePlus 6 modeling system for existing conditions and post-development fuel modification (see results in Table 1). The location of model runs is provided in Figure 1.

Table 1. Fire Behavior Modeling Results

Fire Scenarios	Flame Length (feet)	Fireline Intensity (BTU/feet/second)	Spread Rate (mph)	Spotting Distance (miles)
Scenario 1*: 15% slope, 40 mph NE wind*				
Fuel Model Sh1 (scrub/mustard)	8.4	584	1.0	0.7
Fuel Model Sh2 (scrub/mustard)	14.1	1,781	0.8	0.9
Scenario 1 Fuel Mod*: 10% slope, 40 mph NE wind*				
Fuel Model 8 (irrigated landscaping)	2.6	46	0.1	0.3
Scenario 2*: 15% slope, 20 mph SW wind*				
Fuel Model Sh1 (scrub/mustard)	8.5	589	1.0	0.7
Fuel Model Sh2 (scrub/mustard)	14.1	1,796	0.8	0.9
Scenario 2 Fuel Mod*: 15% slope, 20 mph SW wind*				
Fuel Model 8 (irrigated landscaping)	2.6	46	0.1	0.3

- An additional assessment was conducted to determine fire behavior during a Santa Ana wind event (worst-case weather conditions) in areas adjacent to the project site using the FlamMap software package. Direct impacts from wildfire are not likely at the project site due to flame lengths less than 20 feet in adjacent lands and the planned Fuel Modification Zones.

  The following paragraphs provide descriptions of the inputs used in processing the FlamMap model. In addition, data sources are cited, and any assumptions made during the modeling process are described. A graphical representation of the model results is provided in Figure 2

Elevation

The elevation data file represents units of meters above mean sea level (AMSL). Elevations in the FlamMap analysis area range from 1,585 to 2,625 feet AMSL. Elevation data is a required input file for FlamMap runs and are necessary for adiabatic adjustment of temperature and humidity and for conversion of fire spread between horizontal and slope distances.

Slope

The slope data file represents values in degrees of inclination from horizontal. Slope values in the FlamMap analysis area range from 0–32 degrees. The slope input file is necessary for computing slope effects on fire spread and solar radiance.

Aspect

The aspect data file represents values in azimuth degrees. Aspect values are important in determining the solar exposure of grid cells.

Wind and Fuel Moisture

Wind speed and fuel moisture values for the FlamMap analysis utilized the same values as those used in the BehavePlus runs for Santa Ana weather scenarios. Fuel moisture data was collected from local RAWS stations. Wind alignment was set at 70 degrees, and wind speed was set to 40 mph.

Fuel Model

The fuel model data file was based on the 40 Scott and Burgan (2005) models and represents distinct distributions of fuel loading found among surface fuel components (live and dead), size classes, and fuel types.

Recommendations / AM&M Justification

The Project includes the need for alternative materials and methods for FMZ and dead-end road length. This Fire Protection Technical Report proposes the following approach (AM&Ms) and justification. The AM&M's are evaluated to provide at least equivalent protection based on the experience of the preparers of this report.

1. Site fire environment and fire behavior is not significant. The vegetation on site and on adjacent lands is sparse – dried mustard and scattered sage. The ridge behind the project site slopes up and away from project, is covered with sparse light vegetation and rocks, which is beneficial.

2. Structures must be constructed in accordance with CRC R337 building codes (within FHSZ) and will include features such as ember resistant vents (baffled not just mesh).

3. FMZ will be provided around entire perimeter of the project site (see Fuel Modification Plan – Attachment 2). (Where the FMZ and Jurisdictional Delineation area overlaps along the upper portion of the

southeastern property line, active fuel treatment will be conducted so as to avoid impacts. The channel is comprised of large boulders with limited vegetation and in its existing state acts as a fuel modification area.) The Project will be hardened throughout.

a. The Project shall attempt to obtain an interim off-site FMZ easement for Pads 7 and 13 so that a total of 100 feet of FMZ from the Project's structures can be achieved. The off-site FMZ would be limited to thinning/mowing of existing vegetation annually. Should the off-site easement be infeasible based on an unwilling neighbor, then alternative fire protection is proposed:

    i. Wherever less than 100 feet of FMZ (on and off site combined) is achievable, a 6 foot tall, masonry wall will be constructed at the property line in lieu of the additional FMZ.

    Wall Justification: When buildings are set back from slopes, and a wall is placed at the property line, flames and radiant heat are deflected vertically reducing the effects of heat on the structure. If a structure cannot be setback adequately, or where the slope is less than 30%, a noncombustible wall can help deflect the flames from the structure (NFPA 2005). The duration of radiant heat impact on the exposed side of the house is also reduced. The structure setback is important to avoid heat and/or flame intersection with the structure.

    Heat-deflecting landscape walls of masonry construction that are six feet in height will be incorporated at the edge of lots where FMZs are the most constrained (Pads 7 and 13). The landscape walls provide a vertical, non-combustible surface in the line of heat, fumes, and flame. Once these fire byproducts intersect the wall, they are deflected upward or, in the case where lighter fuels are encountered, they are quickly consumed, heat and flame are absorbed or deflected by the wall, and the fuels burn peaks out within a short (30 second–2 minute) time frame (Quarles and Beall 2002). Walls like these have been observed to deflect heat and airborne embers on numerous wildfires in San Diego, Orange, Los Angeles, Ventura, and Santa Barbara County.

    Rancho Santa Fe Fire Protection District, Laguna Beach Fire Department, Orange County Fire Authority, Murieta Fire Protection District, and others utilize these walls as alternative methods based on observed performance during wildfires. This has led to these agencies approving use of non-combustible landscape walls as mitigations for reduced fuel modification zones and reduced setbacks at top of slope. While fuel moistures vary slightly across these jurisdictions, Santa Ana wind events create similar fuel moistures across a broad geographical area due to intensive drying of fuels. Therefore, this mitigation is also justified within the Moreno Valley Fire Protection District. These walls are consistent with NFPA 1144 Standard for Reducing Structure Ignition Hazards from Wildland Fire – 2008 Edition, Section 5.1.3.3 and A.5.1.3.3 and International Urban Wildland Interface Code (ICC 2012). NFPA 1144, A.5.1.3.3 states: "Noncombustible walls and barriers are effective for deflecting radiant heat and windblown embers from structures." These walls and barriers are usually constructed of noncombustible materials (concrete block, bricks, stone, stucco) or earth where 30 feet (9 meters) of defensible space is not available.

4. Provide FMZ inspections annually. Inspections will be performed by RCFD or, at their preference, the Project would fund inspections by a 3rd party to their satisfaction. This measure will ensure that the FMZ is functioning as intended.

5. Identify and mark fire lane and/or no parking areas as required.

6. Provide enlarged turns at both internal loop roadway turns.

7. Dual pane (both panes) tempered glass for openings on exposed sides of the structures on Pads 7 and 13.

8. Loop internal road system with two 36-foot wide, multi-lane, physically-separated ingress/egress roadways.

9. Hardening at Project access point via pavement and landscaping.

10. Fire access points at the terminus of each driveway along the north side of Project for firefighting. Additionally, the area behind the northeast side of the project includes a 10-to-12-foot flat area that will be available to pedestrian firefighters via the provided accesses at the end of each driveway in that area.

Summary

The structures will be constructed following CRC R337 requirements to ensure reduced ignition potential. In addition, hardening of the structures including enhanced vents and enhanced glazing requirements will be included on selected units as noted above.

The internal circulation provides the necessary access to all structures with no dead-end fire apparatus access roads that require fire department turnarounds. The minimum roadway width of 36 feet meets the requirements for buildings less than 30 feet in height. Hydrants will need to be installed within the project site.

The primary access off Morton Road has been enhanced to include two 36' wide physically separated roadways for ingress and egress to reduce traffic congestion during emergencies, by providing dedicated ingress and egress routes.

Figures 1-2

Table 1. Fire Behavior Modeling Results

Fire Scenarios	Flame Length (feet)	Fireline Intensity (BTU/feet/second)	Spread Rate (mph)	Spotting Distance (miles)
***Scenario 1**: 15% slope, 40 mph NE wind*				
Fuel Model Sh1 (scrub/mustard)	8.4	584	1.0	0.7
Fuel Model Sh2 (scrub/mustard)	14.1	1,781	0.8	0.9
***Scenario 1 Fuel Mod**: 10% slope, 40 mph NE wind*				
Fuel Model 8 (irrigated landscaping)	2.6	46	0.1	0.3
***Scenario 2**: 15% slope, 20 mph SW wind*				
Fuel Model Sh1 (scrub/mustard)	8.5	589	1.0	0.7
Fuel Model Sh2 (scrub/mustard)	14.1	1,796	0.8	0.9
***Scenario 2 Fuel Mod**: 15% slope, 20 mph SW wind*				
Fuel Model 8 (irrigated landscaping)	2.6	46	0.1	0.3

Document Path: Z:\Projects\j14088001\MAPDOC\DOCUMENT\FPP\FIG 4 BehavePlusAnalysisMap.mxd

SOURCE: AERIAL- BING MAPPING SERVICE; DEVELOPMENT- EDWIN SAMLIN 2021

DUDEK

0 250 500 1,000 Feet

FIGURE 1
BehavePlus Analysis Map
Fire Protection Plan for the Gateway Heights Project

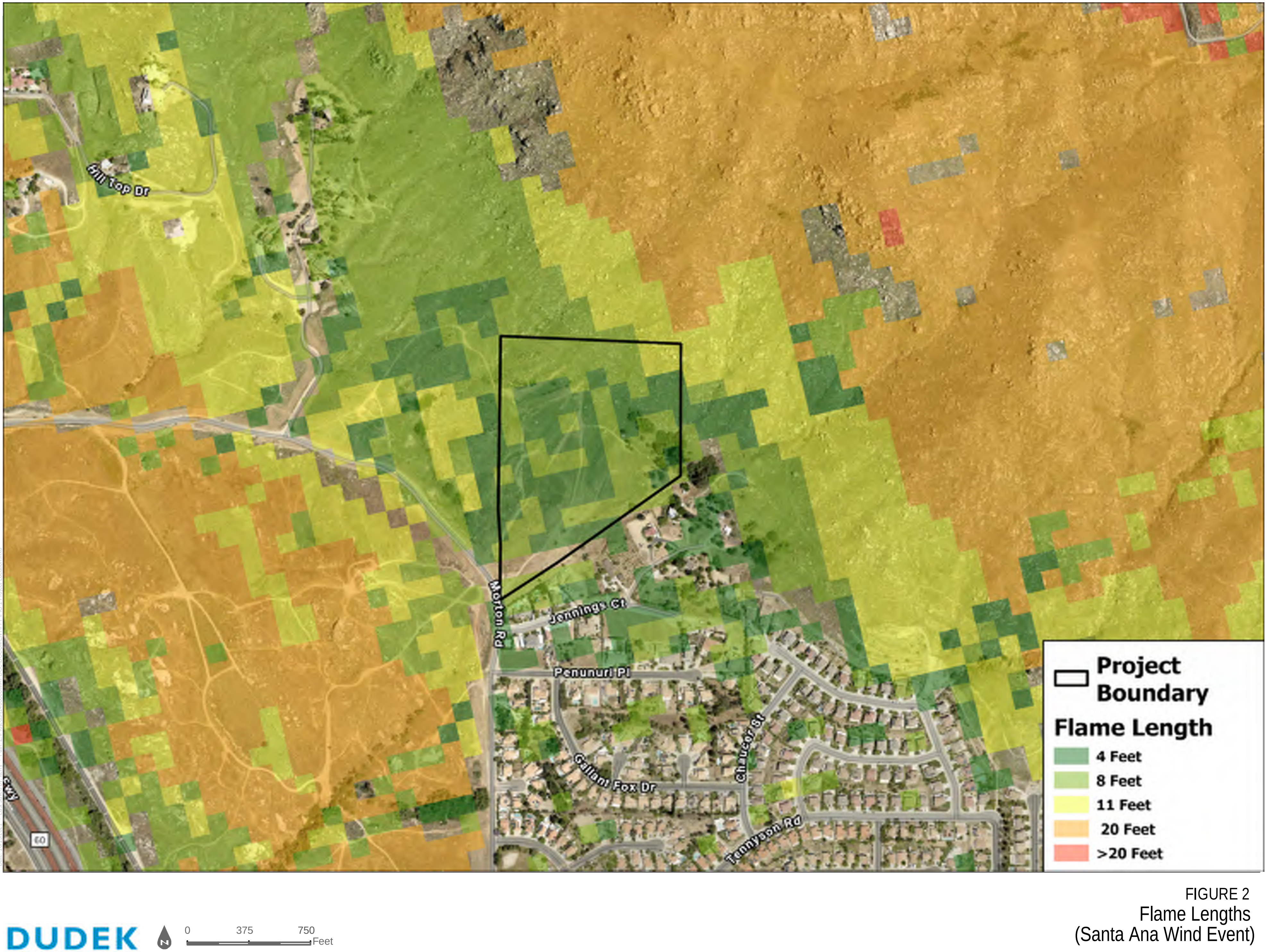


FIGURE 2
Flame Lengths
(Santa Ana Wind Event)

Attachment 1

Site Aerial Photograph

Aerial view of Project site. Land cover on site is disturbed, grassland, with minimal shrubs. Slopes to the north/northeast are sparsely vegetated with heavy rock outcrop ground cover. East/southeast includes large property single family homes. Land to the west is vacant and planned for development. Morton Road is directly to the west/southwest.

Attachment 2

Fuel Modification Plan

SOURCE: AERIAL- RIVERSIDE COUNTY 2019

DUDEK

0 100 200 Feet

Attachment 2

Proposed Project Fuel Modification Plan

Fire Protection Plan for the Gateway Heights Project

Attachment 3
Revised Site Plan Including Two Separate Ingress/Egress Roads

IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.

SITE PLAN

BEING A PORTION OF SECTION 34, TOWNSHIP 2 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN

UNITED ENGINEERING GROUP CA., INC NOVEMBER 2021

LEGAL DESCRIPTION:

THAT PORTION OF SECTION 34, TOWNSHIP 2 SOUTH, RANGE 4 WEST, SAN BERNARDINO MERIDIAN, IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF SECTION 34, TOWNSHIP 2 SOUTH, RANGE 4 WEST, SAN BERNARDINO, AS SHOWN BY UNITED STATES GOVERNMENT SURVEY; THENCE RUNNING SOUTH ALONG THE WEST LINE OF SAID SECTION 34, 23.50 CHAINS TO THE CORNER MONUMENT MARKING THE NORTHWEST CORNER OF THE LAND CONVEYED TO CECIL R. G. WEBBE TO CHARLES M. DEXTER BY DEED RECORDED IN BOOK 141, PAGE 398, OF DEEDS, SAN BERNARDINO COUNTY RECORDS;
THENCE NORTH 56 DEGREES 31' EAST ALONG THE LINE OF LAND SO CONVEYED TO CHARLES M. DEXTER, 23.91 CHAINS TO THE NORTHEAST CORNER OF SAID LAND SO CONVEYED TO CHARLES M. DEXTER;
THENCE NORTH ALONG THE CENTER LINE OF THE NORTHWEST QUARTER OF SAID SECTION 34, 10.40 CHAINS TO THE NORTH LINE OF SAID SECTION 34; THENCE WEST ALONG THE NORTH LINE OF SAID SECTION, 20 CHAINS TO THE TRUE POINT OF BEGINNING.

EXCEPTING THEREFROM ANY INTEREST OF THE COUNTY OF RIVERSIDE IN AND TO THAT PORTION LYING WITHIN MORTON ROAD.

ALSO EXCEPTING THEREFROM THAT PORTION OF THE ABOVE DESCRIBED PARCEL LYING SOUTHWESTERLY OF SAID MORTON ROAD.

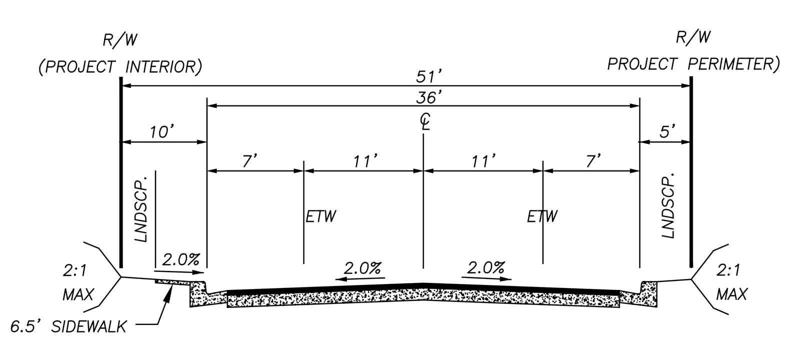
PARCEL NUMBER(S): 256-150-001

UTILITY PURVEYORS:

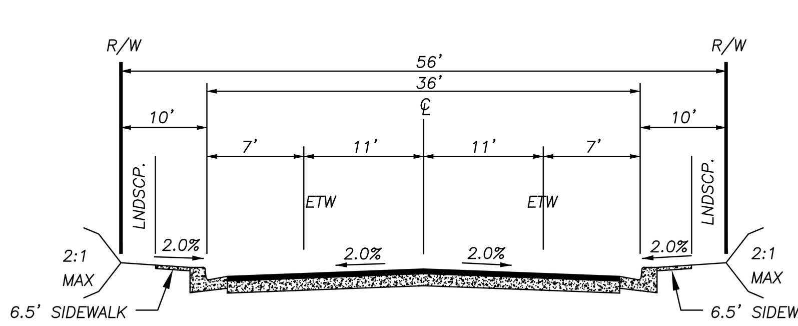
WATER	EASTERN MUNICIPAL WATER DISTRICT 2270 TRUMBLE ROAD PERRIS, CA. 92570 (951) 928-3777
SEWER	EASTERN MUNICIPAL WATER DISTRICT 2270 TRUMBLE ROAD PERRIS, CA. 92570 (951) 928-3777
ELECTRIC	SOUTHERN CALIFORNIA EDISON 2492 W. SAN BERNARDINO AVE REDLANDS, CA. 92374 (800) 655-4555
GAS	SOUTHERN CALIFORNIA GAS 4495 HOWARD AVE RIVERSIDE, CA. 92507 (213) 244-8344
TELEPHONE	SPECTRUM 12625 FREDERICK STREET SUITE F-10 MORENO VALLEY, CA 92553 (866) 874-2389
CABLE	SPECTRUM 12625 FREDERICK STREET SUITE F-10 MORENO VALLEY, CA 92553 (866) 874-2389

LEGEND

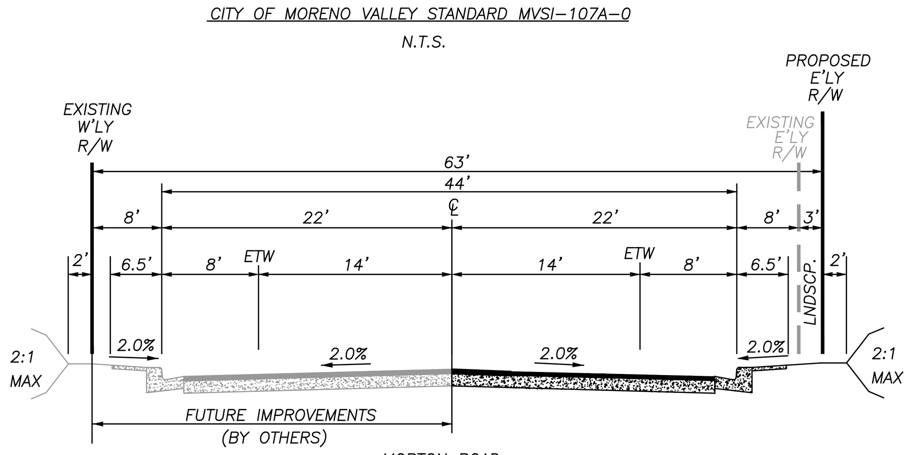
FF	FINISHED FLOOR
FL	FLOW LINE
R/W	RIGHT-OF-WAY
— S — S —	PROPOSED SEWER LINE
— W — W —	PROPOSED WATER LINE
—(S)—	EXISTING SEWER LINE
—(W)—	EXISTING WATER LINE
	DEVELOPMENT LIMITS
	PROJECT BOUNDARY
	CENTERLINE
	EXISTING DIRT ROAD
PP	POWER POLE
	OVERHEAD POWER LINE
	FUEL MODIFICATION ZONE



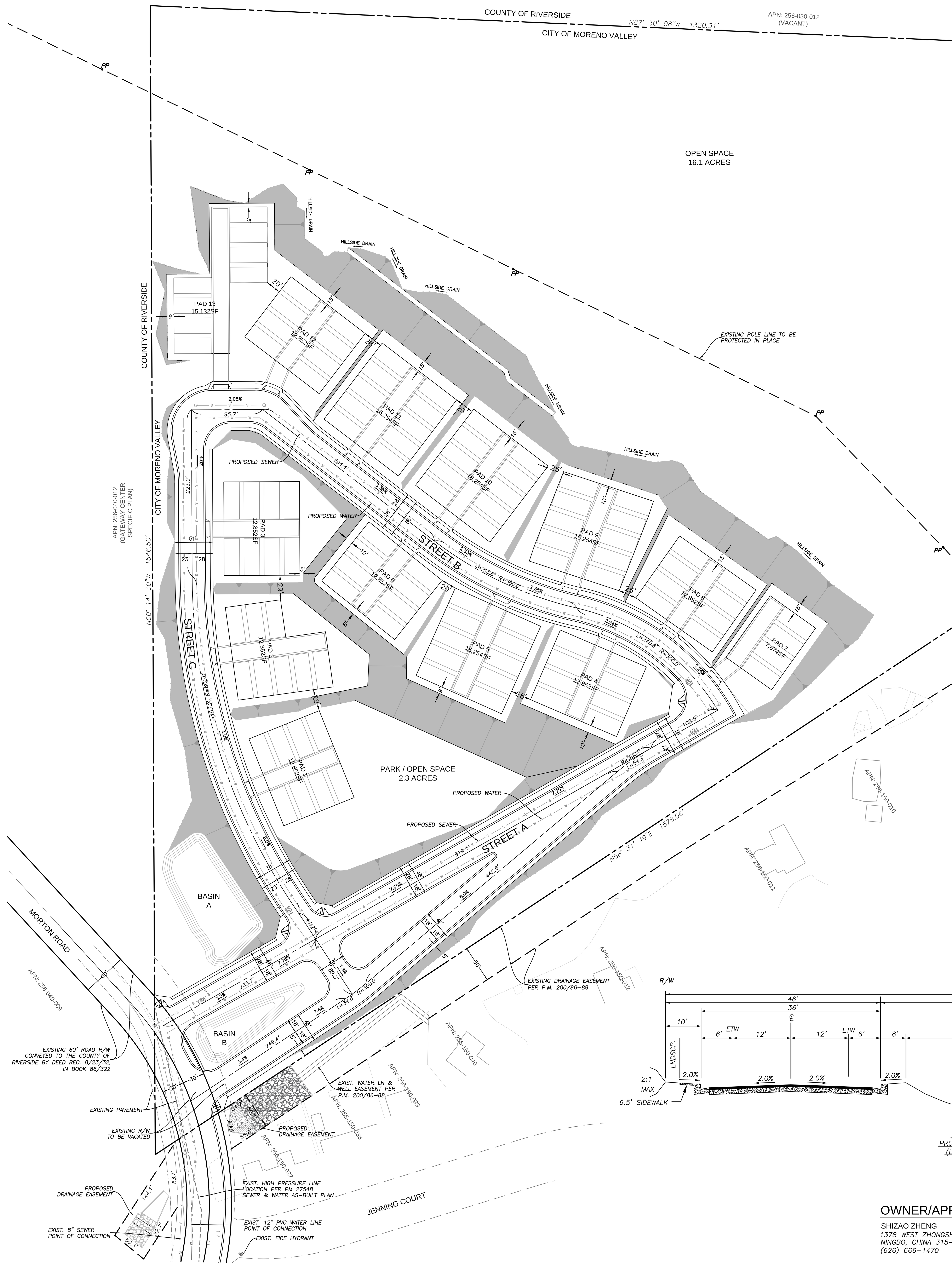
STREET A & C
CITY OF MORENO VALLEY STANDARD MVSI-107A-0 (MODIFIED)
N.T.S.

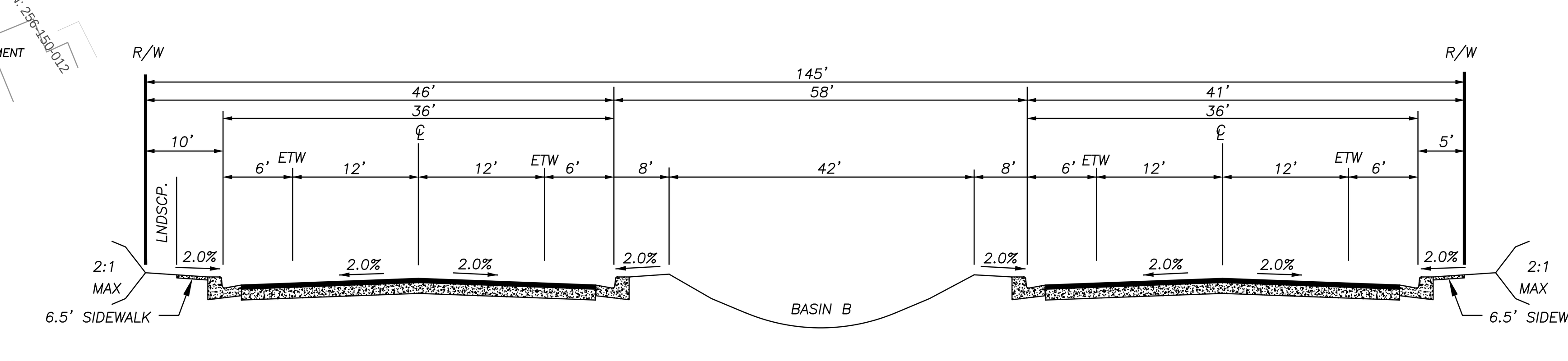


STREET B
CITY OF MORENO VALLEY STANDARD MVSI-107A-0
N.T.S.

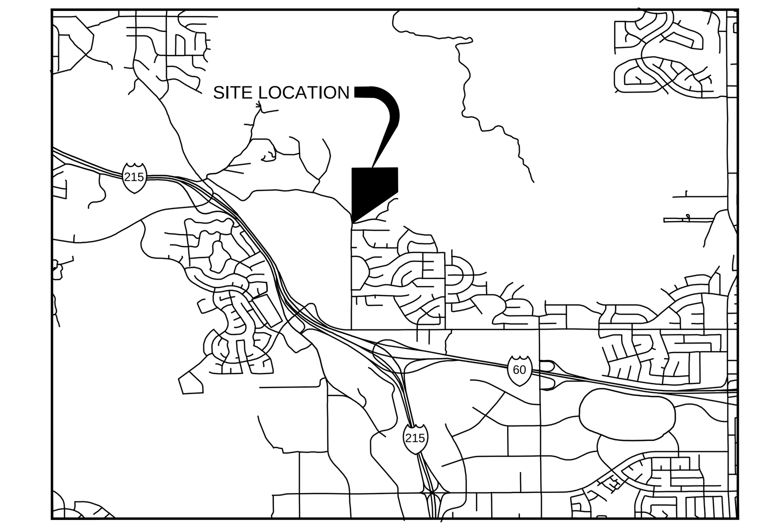


MORTON ROAD
CITY OF MORENO VALLEY STANDARD MVSI-106B-0
N.T.S.





STREET A @ PROJECT ENTRANCE (LOOKING EAST)
N.T.S.



VICINITY MAP
N.T.S.

GENERAL NOTES:

1. APN: 256-150-001
2. TOPOGRAPHY SOURCE: CALVADA SURVEYING, INC. COMPILED 4-2018. CONTOUR INTERVAL-1FT.
3. THE LAND DOES NOT LIE WITHIN AN ALQUIST-PRIOLO EARTHQUAKE FAULT HAZARD ZONE AS DEFINED BY THE STATE OF CALIFORNIA IN THE ALQUIST-PRIOLO EARTHQUAKE FAULT HAZARD ZONE ACT OR A RIVERSIDE COUNTY FAULT HAZARD MAP , PER GEOTECHNICAL STUDY DATED 9-22-2018 PREPARED BY LGC GEO-ENVIRONMENTAL, INC.
4. THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) MAP FOR THIS SITE IS NO. 06071C5780H. THE SITE IS DESIGNATED AS OTHER FLOOD AREA-ZONE X.
5. THE LAND IS SUBJECT TO LOW LIQUEFACTION HAZARD.
6. THIS AREA IS NOT WITHIN FAULT ZONE.
7. BOUNDARY INFORMATION DISPLAYED ON THIS PLAN HAS BEEN COMPILED FROM RECORD INFORMATION AND IS NOT TO BE USED AS A BOUNDARY SURVEY.
8. PROJECT IS NOT WITHIN A COMMUNITY SERVICES DISTRICT.
9. HOMEOWNERS ASSOCIATION TO MAINTAIN SLOPES, DRAINAGE BASINS, DRAINAGE EASEMENTS, AND FUEL MODIFICATION AREAS.
10. PROJECT WILL COMPLY WITH WATER QUALITY TREATMENT REQUIRED IN THE PROJECT SPECIFIC WATER QUALITY MANAGEMENT PLAN.
11. ALL SLOPES ARE 2:1 UNLESS OTHERWISE NOTED.
12. TO THE BEST OF OUR KNOWLEDGE, MORTON ROAD NORTHERLY OF JENNINGS COURT HAS NOT BEEN VACATED FROM THE CURVE ALIGNMENT THAT IS RECORDED ON PM27548.

SITE DATA

TOTAL GROSS AREA.......................... 32.70 ACRES
TOTAL NET AREA.............................. 32.70 ACRES
PROPOSED RS10 ZONE.....................16.60 ACRES
PROPOSED OPEN SPACE ZONE.........16.10 ACRES

DEVELOPMENT AREA..........................16.60 ACRES
UNITS 1 – 108................................2,100 S.F./EACH (ALL 2 STORY)
PARKING SPACES REQ'D...................216 (ENCLOSED GARAGE)
PROVIDED...................216 (ENCLOSED GARAGE)

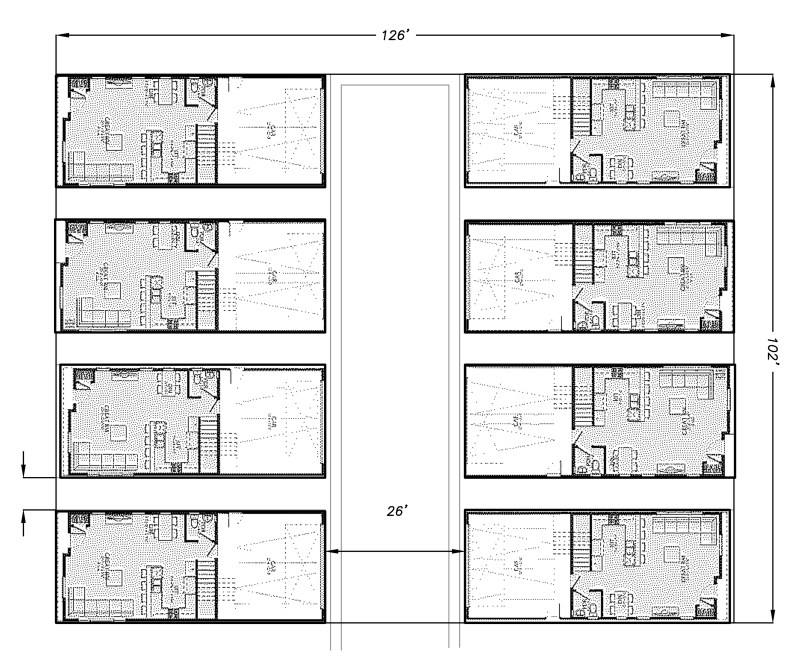
PARK AREA.......................................0.89 ACRES
BASIN A...13,852.37 S.F.
BASIN B...12,131.24 S.F
STREET A, B, & C............................2,447.60 L.F.

PROJECT LAND USE

EXISTING LAND USE..................VACANT
PROPOSED LAND USE...............RESIDENTIAL
EXISTING ZONING......................R2 AND HR
PROPOSED ZONING...................RS10 AND OS

SURROUNDING LAND USE

NORTH: HILLSIDE RESIDENTIAL (HR) & CONSERVATION (COUNTY OF RIVERSIDE)
SOUTH: RESIDENTIAL MAX 5DU/ACE (R5)
EAST: HILLSIDE RESIDENTIAL (HR)
WEST: GATEWAY CENTER SPECIFIC PLAN (COUNTY OF RIVERSIDE)



TYPICAL CLUSTER LAYOUT

SHEET INDEX:

SHEET 1...SITE PLAN
SHEET 2...CONCEPTUAL GRADING PLAN

GRAPHIC SCALE: 1"=60'

OWNER/APPLICANT:

SHIZAO ZHENG
1378 WEST ZHONGSHAN ROAD
NINGBO, CHINA 315-016
(626) 666-1470

ENGINEER

UNITED ENGINEERING GROUP CA, INC
8885 HAVEN AVENUE, SUITE 195
RANCHO CUCAMONGA, CA 91730
(909) 466-9240

SUBMITTALS:	REVISIONS		
	NO.	DESCRIPTION	DATE
DESIGNED BY:			
DRAWN BY:			
CHECKED BY:			

REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER F. LENZ NO. 63001 EXP. 6/30/23 CIVIL STATE OF CALIFORNIA

CHRISTOPHER F. LENZ DATE
R.C.E. No. 63001

LICENSED LAND SURVEYOR DEAN C. PHILLIPS EXP. 9/30/21 NO. 6974 STATE OF CALIFORNIA

DEAN C. PHILLIPS DATE
L.S. No. 6974
dphillips@unitedeng.com

united engineering group
8885 Haven Avenue
Suite 195
Rancho Cucamonga, CA 91730
Phone: 909.466.9240
www.unitedeng.com

SITE PLAN

GATEWAY HEIGHTS
CONDITIONAL USE PERMIT

NOVEMBER 2021

SHEET 1 OF 2

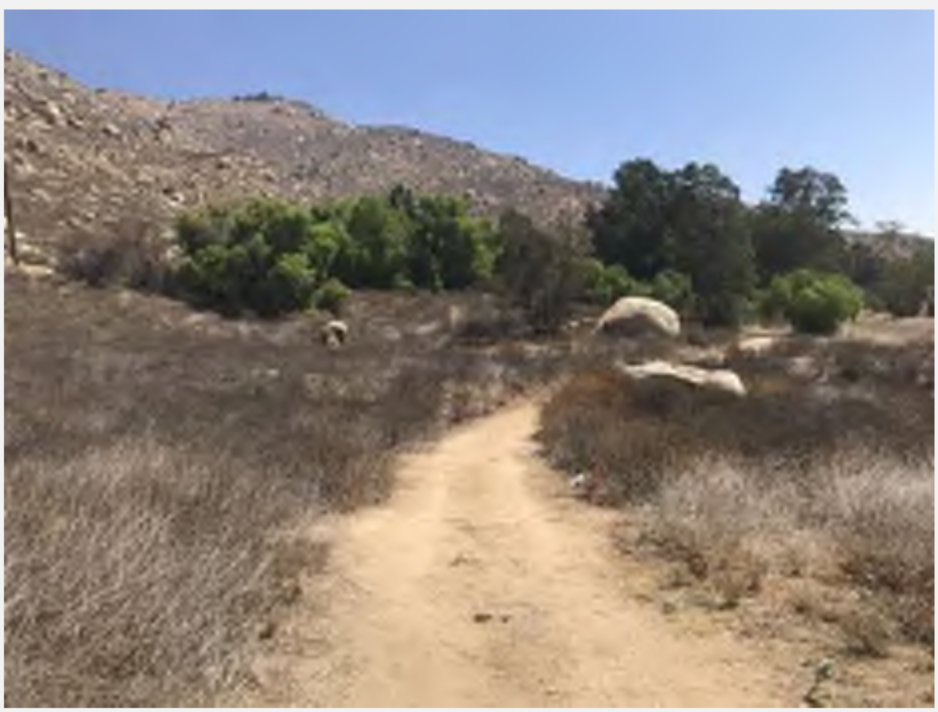
PROJECT NUMBER
CA-30182

Attachment 4
Site Photographs

Photograph 1: Photograph taken from Morton Road looking northeast at the project site showing on and off-site fuels and adjacent hillslopes that exists up and away from the project site. Rock outcroppings covering the hillslope reduce wildfire hazard by taking away burnable fuels.

Photograph 2: Photograph taken from the western edge of the project site looking east. On-site fuels are low load and comprised of short shrubs and annual grasses.

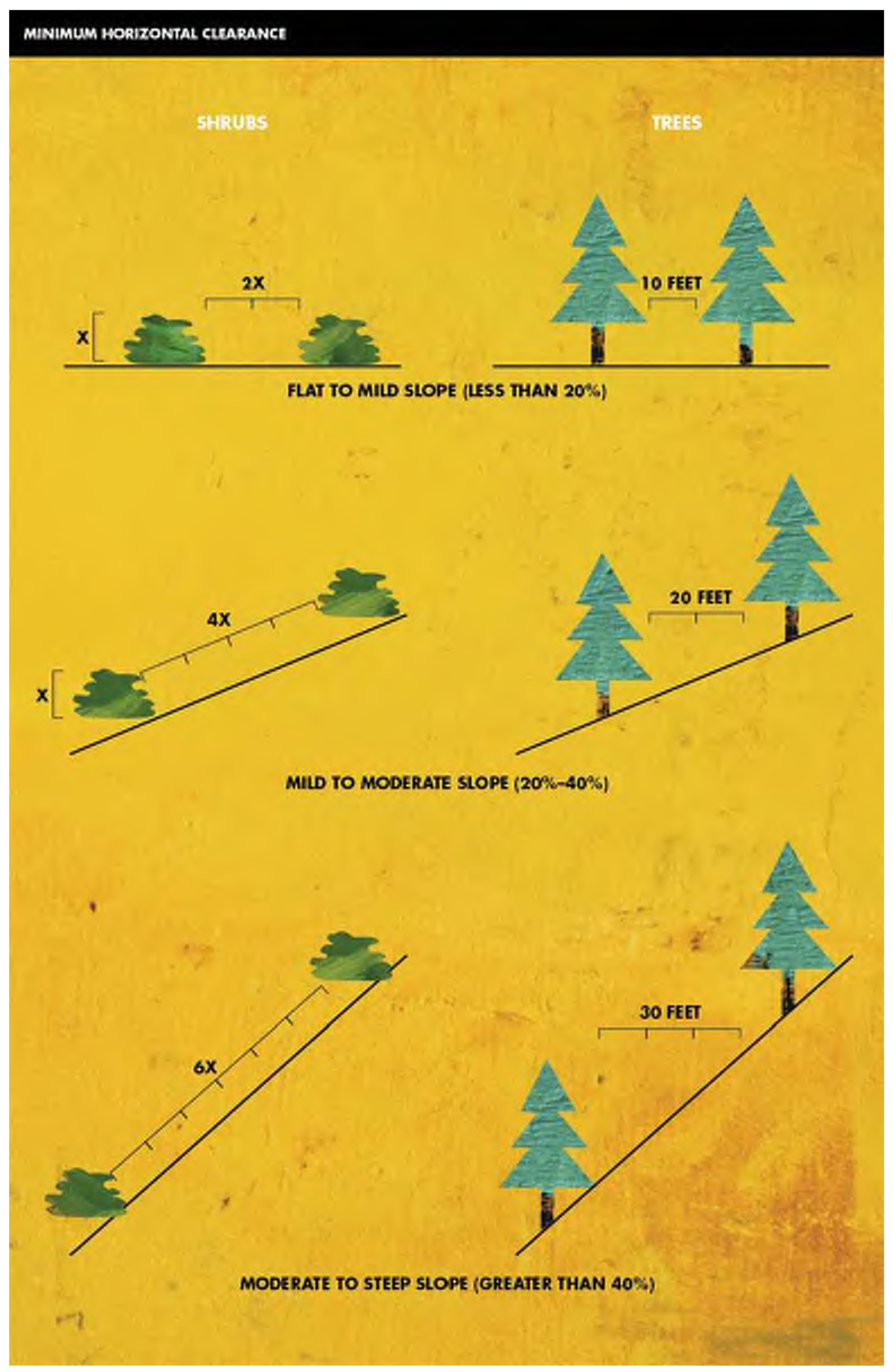
Photograph 3: Photograph taken from the northern boundary of the project site looking west picturing adjacent shrub and grass fuels and electrical transmission line. Spacing between vegetation decreases wildfire spread.

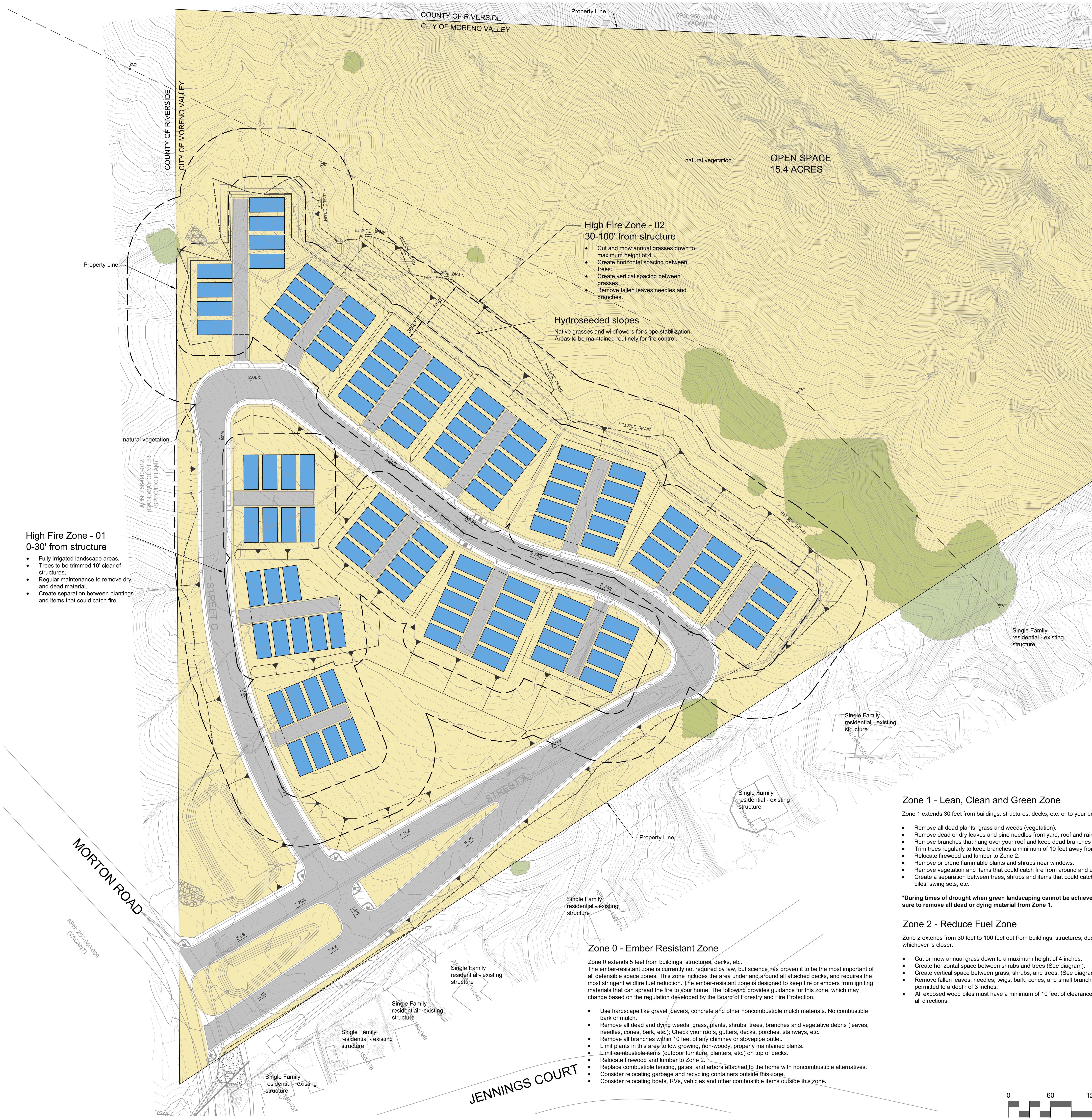


Photograph 4: Photograph taken from northeastern boundary of project site showing shrub and grass fuels in addition to adjacent trees and rock outcroppings. Fuel loads are highest along the project site's northern boundary.

TOTAL PROJECT AREA: 32.8 acres.

Plants to be chosen from County of Riverside California Friendly Plant List and approved by the Fire Department.





Zone 0 - Ember Resistant Zone

Zone 0 extends 5 feet from buildings, structures, decks, etc.
The ember-resistant zone is currently not required by law, but science has proven it to be the most important of all defensible space zones. This zone includes the area under and around all attached decks, and requires the most stringent wildfire fuel reduction. The ember-resistant zone is designed to keep fire or embers from igniting materials that can spread the fire to your home. The following provides guidance for this zone, which may change based on the regulation developed by the Board of Forestry and Fire Protection.

- Use hardscape like gravel, pavers, concrete and other noncombustible mulch materials. No combustible bark or mulch.
- Remove all dead and dying weeds, grass, plants, shrubs, trees, branches and vegetative debris (leaves, needles, cones, bark, etc.); Check your roofs, gutters, decks, porches, stairways, etc.
- Remove all branches within 10 feet of any chimney or stovepipe outlet.
- Limit plants in this area to low growing, non-woody, properly maintained plants.
- Limit combustible items (outdoor furniture, planters, etc.) on top of decks.
- Relocate firewood and lumber to Zone 2.
- Replace combustible fencing, gates, and arbors attached to the home with noncombustible alternatives.
- Consider relocating garbage and recycling containers outside this zone.
- Consider relocating boats, RVs, vehicles and other combustible items outside this zone.

Zone 1 - Lean, Clean and Green Zone

Zone 1 extends 30 feet from buildings, structures, decks, etc. or to your property line, whichever is closer.

- Remove all dead plants, grass and weeds (vegetation).
- Remove dead or dry leaves and pine needles from yard, roof and rain gutters.
- Remove branches that hang over your roof and keep dead branches 10 feet away from your chimney.
- Trim trees regularly to keep branches a minimum of 10 feet away from your chimney.
- Relocate firewood and lumber to Zone 2.
- Remove or prune flammable plants and shrubs near windows.
- Remove vegetation and items that could catch fire from around and under decks, balconies and stairs.
- Create a separation between trees, shrubs and items that could catch fire, such as patio furniture, wood piles, swing sets, etc.

***During times of drought when green landscaping cannot be achieved due to water restrictions be sure to remove all dead or dying material from Zone 1.**

Zone 2 - Reduce Fuel Zone

Zone 2 extends from 30 feet to 100 feet out from buildings, structures, decks, etc. or to your property line, whichever is closer.

- Cut or mow annual grass down to a maximum height of 4 inches.
- Create horizontal space between shrubs and trees (See diagram).
- Create vertical space between grass, shrubs, and trees. (See diagram).
- Remove fallen leaves, needles, twigs, bark, cones, and small branches. However, they may be permitted to a depth of 3 inches.
- All exposed wood piles must have a minimum of 10 feet of clearance, down to bare mineral soil, in all directions.

0 60 120 180 feet

1" = 60'

NORTH

PRELIMINARY FIRE PROTECTION PLAN

GATEWAY HEIGHTS

MORENO VALLEY, CA

WOOD ARCHITECTURE

Project: 22070_WA
Date: 11.07.2022
Scale: 1" = 60'

www.iwoodarchitecture.com

\\Mac\Home\Desktop\Wood Architecture\22\22070_WA_Gateway Heights-Fire Resistant Landscape Plan_Moreno Valley, CA (JA)\Land\Schematic\02\22070_WA-fire protection plan.dwg07.11.2022bykurtkoether

Irrigated Area

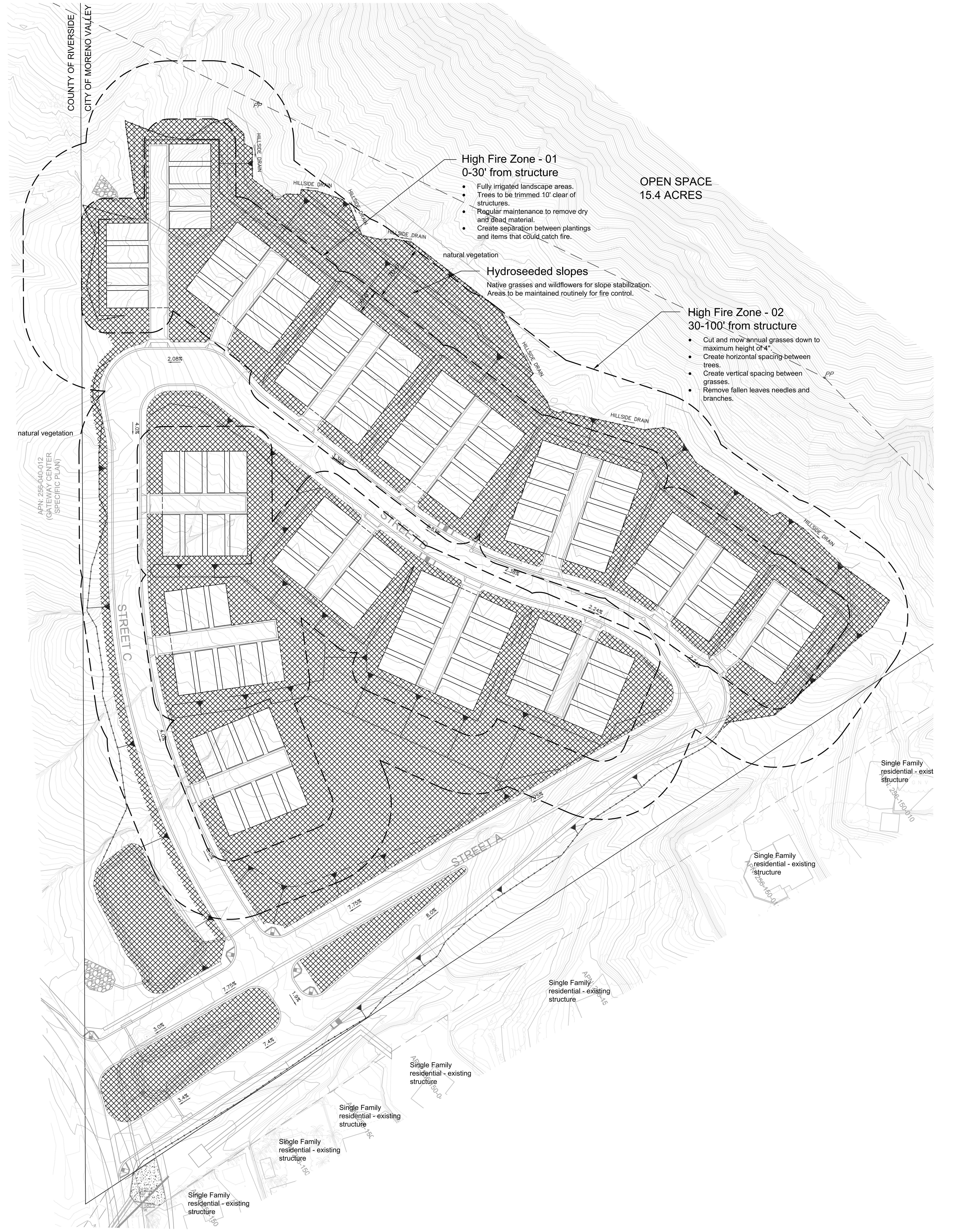
TOTAL PROJECT AREA: 32.8 acres.

Plants to be chosen from County of Riverside California Friendly Plant List and approved by the Fire Department.

COUNTY OF RIVERSIDE CALIFORNIA FRIENDLY PLANT LIST

Botanical	Common	Wucols Region 4	Sunset Zones	Mature Height (Feet)	Mature Width (Feet)	Erosion Control / Slope	Fuel Mod. (per F.D. approval)	MSHCP adjacent
TREES								
Arbutus unedo	Strawberry Tree	L	8-24	8'-35'	8'-35'	✓	✓	
*Brahea edulis	Guadalupe Palm	L	12-24	30'	15'	✓	✓	
Ceratonia siliqua	St. John's Bread, Carob Tree	L	9, 13-16, 18-24	20'	20'	✓	✓	
Cercis occidentalis	Western Redbud	L	2-24	10'-18'	10'-18'	✓	✓	
Erythrina american (E. coralloides)	Naked Coral Tree	L	12, 13, 19-24	30'	30'	✓	✓	
Erythrina X sykesii	Sykes Coral Tree	L	19-24	24'-30'	24'-30'	✓	✓	
Erythrina X bidwillii	Coral Tree	L	8, 9, 12-24	24'-30'	24'-30'	✓	✓	
Ginkgo biloba	Maidenhair Tree	M	A3, 1-10, 12, 14-24	35'-50'	15'-25'	✓	✓	
Gleditsia triacanthos	Honey Locust	L	1-16, 18-20	35'-70'	25'-35'	✓	✓	
Juglans californica	S. California Black Walnut	L	18-24	15'-30'	15'-30'	✓	✓	
Lagerstroemia indica	Crape Myrtle	M	7-10, 12-14, 18-21	25'	25'	✓	✓	
Liquidambar styraciflua (seedless var.)	Sweet Gum	M	3-9, 14-24	60'	20'-25'		✓	
Lyonothamnis floribundus	Catalina Ironwood	L	14-17, 19-24	20'-35'	15'	✓	✓	
Melaleuca linarifolia	Flax Leaf Paper Bark	L	9, 13-24	20'-30'	20'-25'	✓	✓	
Melaleuca quinquinervia (M. vir. Rubifolia)	Cajeput Tree	M	9, 12, 13, 15-17, 20-24	20'-40'	15'-25'	✓	✓	
Parkinsonia floridum (Cercidium floridum)	Blue Palo Verde	L	8-14, 18-20	35'	30'	✓	✓	
Pistacia chinensis	Chinese Pistache	M	4-16, 17, 18-23	30'-60'	30'-60'	✓	✓	
Pittosporum phyloraeoides	Willow Pittosporum	L	8, 9, 12-24	12'-20'	10'-15'	✓	✓	
Platanus acerifolia	London Plane Tree	M	2-24	40'-80'	30'-40'		✓	
Platanus racemosa	California Sycamore	M	4-24	30'-80'	20'-50'	✓	✓	
Populus fremontii	Fremont Cottonwood	M	1-12, 14-21	40'-60'	30'		✓	
Prunus caroliniana	Carolina Laurel Cherry	M	5-24	20'-30'	15'-25'	✓	✓	
Prunus ilicifolia	Hollyleaf Cherry	VL	5-9, 12-24	10'-25'	10'-25'	✓	✓	
Prunus ilicifolia lyonii	Catalina Cherry	L	5-9, 12-24	45'	30'	✓	✓	
Quercus agrifolia	Coast Live Oak	L	7-9, 14-24	20'-70'	20'-70'	✓	✓	
Quercus chrysolepis	Canyon Live Oak	L	3-11, 14-24	20'-60'	20'-60'	✓	✓	
Quercus engelmanii	Mesa Oak	L	7-9, 14-24	40'-50'	80'-100'	✓	✓	
Quercus ilex	Holly Oak	L	4-24	30'-60'	30'-60'	✓	✓	
Quercus kelloggii	California Black Oak	M	6-7, 9, 14-21	30'-80'	30'-80'		✓	
Quercus lobata	Valley Oak	M	3b-9, 11-24	70'	70'	✓	✓	
Quercus suber	Cork Oak	L	5-16, 18-24	30'-60'	30'-60	✓	✓	
Quercus virginiana	Southern Live Oak	M	4-24	40'-80'	80'-100'	✓	✓	
Quercus wislizeni	Inerior Live Oak	VL	7-9, 14-16, 18-21	30'-75'	30'-75'	✓	✓	
Rhus lancea	African Sumac	L	8, 9, 12-24	20'-30'	20'-35'	✓	✓	
SHRUBS								
Arctostaphylos densiflora	Sonoma Manzanita	L	7-9, 14-21	5'-6'	7'	✓	✓	
Arctostaphylos edmundsii	Little Sur Manzanita	L	6-9, 14-24	3'	12'	✓	✓	
Atriplex lentiformis	Quail Bush	VL	3, 7-14, 18, 19	3'-10'	6'-12'		✓	
Atriplex lentiformis breweri	Brewer Saltbush	VL	8, 9, 12-24	5'-7'	6'-8'	✓	✓	
Baccharis emoryi	Emory's Baccharis	M	4-9, 16-24, 26	6'-9'	3'-6'		✓	
Baccharis pilularis	Coyote Brush	L	5-11, 14-24	8"-24"	6'	✓	✓	
Baccharis salicifolia	Mulefat	M	1-10, 16-24, 26	20'-30'	20'-35'		✓	
*Bougainvillea spp.	Bougainvillea	L	5, 6, 12-17, 19, 21-24	3'-6'	3'-6'	✓	✓	
Calliandra california	Baja Fairy Duster	L	10-24	5'	5'-6'	✓	✓	
Calliandra eriophylla	Fairy Duster	L	10-24	3'	4'-5'	✓	✓	
Carissa macrocarpa	Natal Plum	M	22-24; H2	5'-7'	5'-7'	✓	✓	
Carpenteria californica	Bush Anemone	M	5-9, 14-24, 31	6'-8'	4'-5'	✓	✓	
Ceanothus spp.	California Wild Lilac	L	5-9, 14-24	3'-15'	3'-15'	✓	✓	
Cistus spp.	Rockrose	L	6-9, 14-24	3'-6'	3'-6'	✓	✓	
Fremontodendron spp.	Flannel Bush	L	4-24	20'	12'	✓	✓	
Galvezia speciosa	Island Bush Snapdragon	L	14-24	3'	5'	✓	✓	
Garrya elliptica	Coast Silk Tassel	M	4-9, 14-24	10'-20'	10'-20'	✓	✓	
Hakea laurina	Sea Urchin Tree	L	9, 12-17, 19-24	10'-25'	9'-30'	✓	✓	
Hakea suaveolens	Sweet Scented Hakea	L	9, 12-17, 19-24	10'-20'	10'-20'	✓	✓	
Heteromeles arbutifolia	Toyon	L	5-9, 14-24	6'-10'	6'-10'	✓	✓	
Lantana camara	Bush Lantana	L	8-10, 12-24	6'	6'	✓	✓	N
Lantana montevidensis (gold cultivars)	Trailing Lantana	L	8-10, 12-24	2'	6'	✓	✓	N
Larrea tridentata	Creosote Bush	L	7-14, 18-21	8'	8'	✓	✓	
Mahonia species	Oregon Grape	M	2-12, 14-24	5'-12'	5'-6'	✓	✓	
Malacothamnus fasciculatus	Mesa Bushmallow	L	7-24	4'-6'	4'-6'	✓	✓	
Melaleuca nesophila	Pink Melaleuca	L	13, 16-24	20'	20'	✓	✓	
Mimulus aurantiacus	Sticky Monkey Flower	L	7-9, 14-24	4 1/2'	4 1/2'	✓	✓	
Photinia serratifolia (P. serrulata)	Chinese Photinia	M	4-16, 18-22	30'	30'	✓	✓	
Photinia x fraseri	Fraser's Photinia	M	3b, 4-24	15'	15'	✓	✓	
Pittosporum tobira and hybrids	Tobira / Japanese Mock Orange	M	8-24	15'	15'	✓	✓	
Plumbago auriculata (campense)	Cape Plumbago	M	8, 9, 14-24	6'	10'	✓	✓	N
Prunus caroliniana	Laurel Cherry	M	5-24	10'-25'	8'-25'	✓	✓	
Prunus ilicifolia	Hollyleaf Cherry	VL	5-9, 12-24	10'-25'	10'-25'	✓	✓	
Punica granatum 'Nana'	Dwarf Pomegranate	M	5-24, H1	3'	6'	✓	✓	
Pyracanth species	Firethorn	M	4-24	4'-10'	4'-10'	✓	✓	
Rhamnus californica	Coffeeberry	L	3a-10, 14-24	15'	8'	✓	✓	
Rhaphiolepis indica	Indian Hawthorne	M	8-10, 12-24	5'	6'	✓	✓	
Rhus integrifolia	Lemonade Berry	L	8, 9, 14-17, 19-24	10'	10'	✓	✓	
Rhus laurina	Laurel Sumac	L	8, 9, 14-17, 19-25	15'	15'	✓	✓	
Rhus ovata	Sugar Bush	L	9-12, 14-24	10'	10'	✓	✓	
Rhus trilobata	Squawbush	L	1-12, 14-21	5'	5'	✓	✓	
Ribes aureum	Golden Currant	L	A2, A3, 1-12, 14-23	6'	6'		✓	
Ribes indecorum	White Flowering Currant	L	7-9, 11, 14-24	9'	6'	✓	✓	
Ribes malvaceum	Chaparral Currant	L	6-9, 14-24	5'	5'	✓	✓	
Ribes sanguineum	Red Flowering Cuurant	M	A3, 4-9, 14-24	12'	12'	✓	✓	
Ribes speciousum	Fuchsia Flowering Goosbery	M	7-9, 14-24	8'	10'	✓	✓	
Ribes viburnifolium	Evergreen Currant	M	5, 7-9, 13-17, 19-24	3'-6'	12'	✓	✓	
Romneya coulteri	Matilija Poppy	L	4-12, 14-24	6'-8'	6'-8'	✓	✓	
Rosa californica	California Wild Rose	L	4-24	7'	3'	✓	✓	
*Salvia argentea	Silver Sage	L	1-24	10"	2'	✓	✓	
*Salvia clevelandii & hybrids	Salvia	L	8, 9, 12-24	5'	8'	✓	✓	
*Salvia greggii & hybrids	Autumn Sage	L	8-24	4'	4'	✓	✓	
*Salvia leucantha	Mexican Bush Sage	L	12-24	4'	6'	✓	✓	
*Salvia leucophylla	Purple Sage	L	8, 9, 14-17, 19-24	5'	5'	✓	✓	
Simmondsia chinensis	Jojoba	VL	7-24	6'	6'	✓	✓	
Sphaeralacea ambigua	Desert Mallow	L	3, 7-24	4'	3'	✓	✓	
Teucrium fruticans	Bush Germander	L	4-24	8'	8'	✓	✓	
Xylosma congestum	Shiny Xylosma	M	8-24	10'	10'	✓	✓	
ACCENTS / GRASSES								
Agave species	Agave	L	10, 12-24 varies per species	1'-10'	1'-10'	✓	✓	
Aloe species	Aloe	L	8, 9, 12-24	1'-3'	1'-3'	✓	✓	
Asclepias subulata	Desert Mildweed	L	1-24	3'-6'	2'-3'	✓	✓	
Carnegiea gigantea	Saguaro	L	12, 13, 18-21	50'	18"-8'		✓	
Cephalocerus spp.	Old Man Cactus	L	13, 21-24	15'-45'	12"-5'	✓	✓	
Cereus peruvianus	Peruvian Apple Cactus	L	13, 16, 17, 21-24	10'	15'	✓	✓	
Dasylirion species	Desert Spoon	L	10-24	5'	5'	✓	✓	
Echinocactus grusonii	Golden Barrel Cactus	L	12-24	4'	2 1/2'	✓	✓	
Ephedra viridis	Morman Tea	L	1-3, 7-24	3'-4'	3'-4'	✓	✓	
Esposta lantana	Peruvian Old Man Cactus	L	12-24	8'	2'	✓	✓	
Euphorbia characias wulfenii	no common name	L	4-24	4'	4'	✓	✓	
Euphorbia ingens	Candelabra Tree	L	4-25	8'	4'	✓	✓	
Euphorbia milii	Crown of Thorns	L	13, 21-24	1'-4'	1 1/2'	✓	✓	
Euphorbia rigida	Euphorbia	L	4-24	2'	3'-5'	✓	✓	
Euphorbia tirucallii	Pencil Tree (milk bush)	/	13, 23, 24	20'	6'	✓	✓	
Ferocactus spp.	Barrel Cactus	L	8-24	8'-9'	3'	✓	✓	
Fouquieria splendens	Ocotillo	L	10-13, 18-20	5'-10'	8'-25'	✓	✓	
Hesperaloe funifera	Coahuilan Hesperaloe	L	12, 13	6'	6'-8'	✓	✓	
Hesperaloe parviflora	Red / Yellow Yucca	L	2b, 3, 7-16, 18-24	3'-4'	3'-4'	✓	✓	
Kniphofia triangularis (K. galpinii)	Coral Poker	L	2-9, 14-24	2'	2'	✓	✓	
Kniphofia uvaria	Red Hot Poker	L	2-9, 14-24	2'	2'	✓	✓	
Muhlenbergia capillaris	Pink Myuhly (Hairy awn muhly)	?	4-24	3'	6'	✓	✓	
Muhlenbergia emersleyi	Bull Grass	?	2-24	1 1/2'	3'-4'	✓	✓	
Muhlenbergia lindheimeri	Muhly Grass	M	6-24	4'-5'	4'-5'	✓	✓	
Muhlenbergia rigens	Deer Grass	M	4-24	4'	4'	✓	✓	
Nolina species	Grass Tree, Nolina	VL	varies per species	3'-25'	3'-12'	✓	✓	
Opuntia species	Prickly Pear, Cholla	L	varies per species	1'-15'	1'-15'	✓	✓	
Pachycerus marginatus	Mexican Fence	L	13, 16, 17, 21-24	25'	12'	✓	✓	
Penstemon parryi	Parry's Beardtongue	L	10-13	3'	2'	✓	✓	
Romneya coulteri	Matilija Poppy	L	4-12, 14-24	6'-8'	15'	✓	✓	
Sedum species	Various Sedum	L	8, 9, 12, 14-24 (per species	2"-18"	6"-24"	✓	✓	
Stenocerus thurberi (Lemaireocereus)	Organpipe Cactus	L	12-24	15'-20'	12'	✓	✓	
Yucca species	Yucca, Joshua Tree	L	varies per species	3'-30'	5'-30'	✓	✓	
GROUNDCOVER								
*Acacia redolens 'Desert Carpet'	Trailing Acacia	L	13, 18, 19, 23	24"	15'	✓	✓	N
Achillea tomentosa	Yarrow Woolly	L	A1-A3, 1-24	6"	18"	✓	✓	
Aptenia 'Red apple'	Red Apple	L	12, 13, 15-17, 21-24	6"	2'	✓	✓	N
Arctostaphylos 'Emerald Carpet'	Emerald Carpet Manzanita	L	6-9, 14-24	8"-14"	8"-14"	✓	✓	
Arctostaphylos hookeri	Monterey Manzanita	L	6-9, 14-24	4'	6'	✓	✓	
Arctostaphylos 'Pacific Mist'	Pacific Mist Manzanita	L	7-9, 14-24	2 1/2'	10'	✓	✓	
Artemisia arborescens 'Powis Castle'	Powis Castle Artemisia	L	7-9, 14-24	3'	6'	✓	✓	
Artemisia douglasiana	Mugwort	L	7-9, 14-24	2'	2'		✓	
Artemisia pycnocephala	Sandhill Sage	L	4, 5, 7-9, 14-17, 19-24	2'	3'	✓	✓	
Atriplex semibaccata	Creeping Salt Bush	VL	8-10, 12-24	1'	6'	✓	✓	N
Baccharis 'Centennial'	Centennial Baccharis	L	7-24	3'	4'-5'	✓	✓	
Baccharis pilularis	Dwarf Coyote Bush	L	5-11, 14-24	8"-36"	6'-9'	✓	✓	
Baileya multradiata	Desert Marigold	L	1-3, 7-23	1 1/2'	1 1/2'	✓	✓	
Ceanothus griseus var. horizontalis	Carmel Ceanothus	L	5-9, 14-24	.5'-2.5'	15'	✓	✓	
Coprosma x kirkii	Coprosma	M	14-24	1'-3'	4'-6'	✓	✓	
Coprosma petriei 'Verde Vista'	Verde Vista Coprosma	M	8, 9, 14-24	1'-3'	4'-6'	✓	✓	
Cotoneaster (compact varieties)	Cotoneaster	M	2-24 (varies per species)	1'-3'	6'-15'	✓	✓	N
Duchesnea indica	Indian Mock Strawberry	M	1-24	12"	3'	✓	✓	
Dyssodia pentachaeta	Golden Dyssodia	?	10-13	6"	1'	✓	✓	
Erigeron glaucus	Beach Aster	M	4-6, 15-17, 22-24	1'	1 1/2'	✓	✓	
Heuchera micrantha	Alum Root	M	1-10, 14-24	2'-3'	2'-3'		✓	
Lupinus species	Lupine	M	7-24	1 1/2'	1 1/2'		✓	
Mahonia repens	Creeping Mahonia	M	2b-9, 14-24	1'	3'	✓	✓	
Myoporum 'Pacificum'	Pacific Myoporum	M	16-24	2'	30'	✓	✓	N
Myoporum parvifolium	Prostrate Myoporum	L	8, 9, 12-24	3"-6"	9'		✓	
Pyracantha hybrids	Firethorn species	M	8, 9, 12-24	30"-36"	3'-10'	✓	✓	
Rosmarinus officinalis 'Prostratus'	Prostrate Rosemary	L	4-24	2'	8'	✓	✓	
Zauschneria californica (Epilobium calif.)	California Fuchsia	L	2-11, 14-24	6"	3'-4'		✓	

*Varieties have been found to vary in flammability than the species.



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0 60 120 180 feet

1" = 60'

NORTH

PRELIMINARY FIRE PROTECTION PLAN

GATEWAY HEIGHTS

MORENO VALLEY, CA

WOOD ARCHITECTURE

Project: 22070_WA
Date: 11.07.2022
Scale: 1" = 60'

www.iwoodarchitecture.com

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Sample Plant Palette

TREES	BOTANICAL NAME	COMMON NAME	SIZE	TYPE	USE	WUCOLS	STYLE	CA NATIVE
	Arbutus unedo	Strawberry Tree	15 gal	Evergreen	Accent Tree	Low	Standard	No
	Cercis occidentalis	Western Redbud Multi-trunk	15 gal	Deciduous	Accent Tree	Low	Standard	Yes
	Lagerstroemia indica x fauriei 'Natchez'	Natchez Crape Myrtle	15 gal	Deciduous	Accent Tree	Medium	Standard	No
	Quercus agrifolia	Coast Live Oak	15 gal	Evergreen	Screen Tree	Low	Standard	Yes
	Quercus wislizeni	Interior Live Oak	15 gal	Evergreen	Accent Tree	Low	Standard	Yes
	Rhus lancea	African Sumac	15 gal	Evergreen	Screen Tree			

Sample Plant Palette

SHRUBS	BOTANICAL NAME	COMMON NAME	SIZE	TYPE	WUCOLS	CA NATIVE
	Acacia redolens 'Desert Carpet'	Desert Carpet Bank Catclaw	5 gal	Evergreen	Low	No
	Agave species	Agave	5 gal	Evergreen	Low	No
	Baccharis pilularis 'Pigeon Point'	Pigeon Point Coyote Brush	5 gal	Evergreen	Low	Yes
	Ceanothus griseus horizontalis	Carmel Creeper	5 gal	Evergreen	Low	Yes
	Ceanothus maritimus 'Valley Violet'	Valley Violet Maritime Ceanothus	5 gal	Evergreen	Low	Yes
	Cistus x pulverulentus 'Sunset'	Sunset Rockrose	5 gal	Evergreen	Low	No
	Dasylirion wheeleri	Grey Desert Spoon	5 gal	Evergreen	Low	No
	Hesperaloe parviflora	Red Yucca	5 gal	Evergreen	Low	No
	Heteromeles arbutifolia	Toyon	5 gal	Evergreen	Low	Yes
	Kniphofia uvaria 'Shining Sceptre'	Shining Sceptre Red Hot Poker	5 gal	Evergreen	Low	No
	Mimulus aurantiacus	Sticky Monkeyflower	5 gal	Evergreen	Low	Yes
	Myoporum parvifolium	Trailing Myoporum	5 gal	Evergreen	Low	No
	Penstemon parryi	Parry's Beardtongue	1 gal	Evergreen	Low	No
	Rhamnus californica	California Coffeeberry	5 gal	Evergreen	Low	Yes
	Rosmarinus officinalis 'Prostratus'	Dwarf Rosemary	5 gal	Evergreen	Low	No
	Salvia clevelandii	Cleveland Sage	5 gal	Evergreen	Low	Yes
	Salvia greggii	Autumn Sage	5 gal	Evergreen	Low	Yes
	Salvia leucantha	Mexican Bush Sage	5 gal	Evergreen	Low	No
	Salvia leucophylla	Purple Sage	5 gal	Evergreen	Low	Yes
	Zauschneria californica	California Fuchsia	5 gal	Evergreen	Low	Yes

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0 30 60 90 feet

1" = 30'

NORTH

PRELIMINARY FIRE PROTECTION PLAN
GATEWAY HEIGHTS
MORENO VALLEY, CA

WOOD ARCHITECTURE
Project: 22070_WA
Date: 11.07.2022
Scale: 1" = 30'

www.iwoodarchitecture.com

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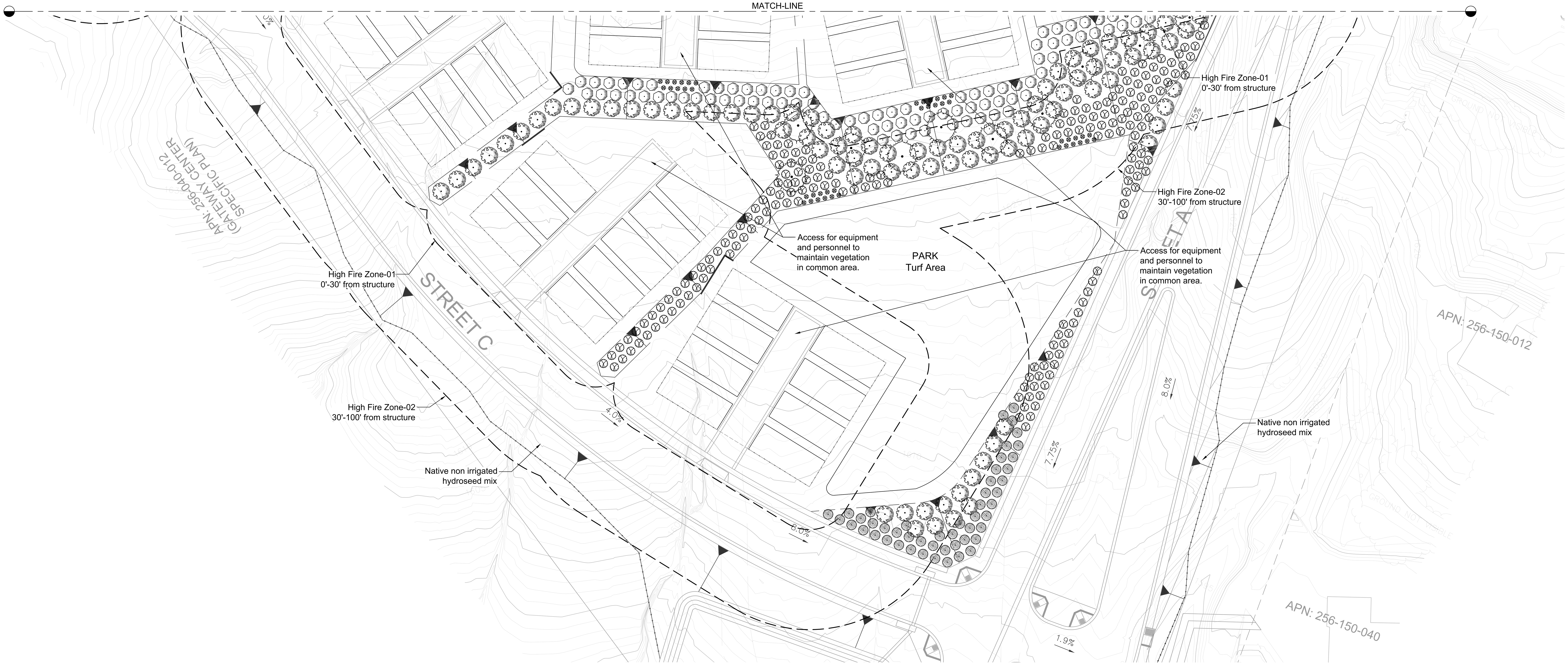

Sample Plant Palette

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	Cercis occidentalis	Western Redbud Multi-trunk	15 gal	Deciduous	Accent Tree	Low	Standard	Yes
	Lagerstroemia indica x fauriei 'Natchez'	Natchez Crape Myrtle	15 gal	Deciduous	Accent Tree	Medium	Standard	No
	Quercus agrifolia	Coast Live Oak	15 gal	Evergreen	Screen Tree	Low	Standard	Yes
	Quercus wislizeni	Interior Live Oak	15 gal	Evergreen	Accent Tree	Low	Standard	Yes
	Rhus lancea	African Sumac	15 gal	Evergreen	Screen Tree			

Sample Plant Palette

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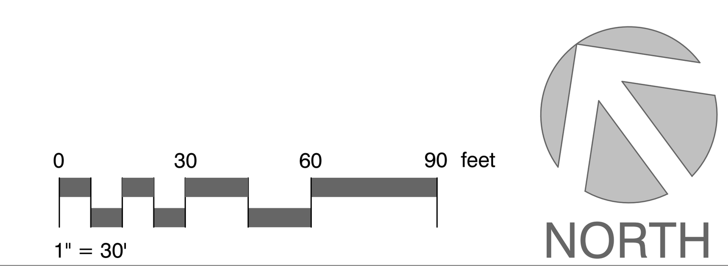
	Agave species	Agave	5 gal	Evergreen	Low	No
	Baccharis pilularis 'Pigeon Point'	Pigeon Point Coyote Brush	5 gal	Evergreen	Low	Yes
	Ceanothus griseus horizontalis	Carmel Creeper	5 gal	Evergreen	Low	Yes
	Ceanothus maritimus 'Valley Violet'	Valley Violet Maritime Ceanothus	5 gal	Evergreen	Low	Yes
	Cistus x pulverulentus 'Sunset'	Sunset Rockrose	5 gal	Evergreen	Low	No
	Dasylirion wheeleri	Grey Desert Spoon	5 gal	Evergreen	Low	No
	Hesperaloe parviflora	Red Yucca	5 gal	Evergreen	Low	No
	Heteromeles arbutifolia	Toyon	5 gal	Evergreen	Low	Yes
	Kniphofia uvaria 'Shining Sceptre'	Shining Sceptre Red Hot Poker	5 gal	Evergreen	Low	No
	Mimulus aurantiacus	Sticky Monkeyflower	5 gal	Evergreen	Low	Yes
	Myoporum parvifolium	Trailing Myoporum	5 gal	Evergreen	Low	No
	Penstemon parryi	Parry's Beardtongue	1 gal	Evergreen	Low	No
	Rhamnus californica	California Coffeeberry	5 gal	Evergreen	Low	Yes
	Rosmarinus officinalis 'Prostratus'	Dwarf Rosemary	5 gal	Evergreen	Low	No
	Salvia clevelandii	Cleveland Sage	5 gal	Evergreen	Low	Yes
	Salvia greggii	Autumn Sage	5 gal	Evergreen	Low	Yes
	Salvia leucantha	Mexican Bush Sage	5 gal	Evergreen	Low	No
	Salvia leucophylla	Purple Sage	5 gal	Evergreen	Low	Yes
	Zauschneria californica	California Fuchsia	5 gal	Evergreen	Low	Yes



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