PRELIMINARY HYDROLOGY STUDY

TTM NO. 39162
City of Moreno Valley, County of Riverside

Project Address:
28136 Brodiaea Avenue
Moreno Valley, CA 92555

Prepared For:

Warmington Residential
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Prepared: January 2025
Revised: May 2025

Preliminary Hydrology Study
For
Tentative Tract Map No. 39162

Acknowledgement and Signature Page

This Preliminary Hydrology Study was prepared by C&V Consulting, Inc. under the supervision of Dane P. McDougall, P.E.

_____ _____

Dane P. McDougall, P.E. 80705 Date
C&V Consulting, Inc.

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APPENDICES

I. Purpose

The purpose of this preliminary hydrology study is to provide quantitative information to verify the design of the storm drain infrastructure and hydrologic methodology of the proposed development. The values and statements within this report confirm the proposed development is designed and planned in accordance with the Riverside County Flood Control and Water Conservation District (RCFC&WCD) Hydrology Manual and the City of Moreno Valley drainage requirements.

II. Site Description

The proposed site is located at 28136 Brodiaea Avenue in the City of Moreno Valley, County of Riverside. The site is bordered by Brodiaea Avenue to the south, existing single-family residential to the north, and vacant landscaping to the east and west.

The development site has a gross area of 14.39 acres. A small portion of the site consists of a few buildings, and the remainder of the site remains vacant with grass covered landscaping. The northerly offsite residential areas upstream of the development will be diverted around the perimeter of the proposed project site that are not included as part of this preliminary hydrologic analysis for onsite mitigation due to perimeter controls. Impact to downstream receiving water is not anticipated as flow will following historical drainage pattern.

According to the USDA Natural Resources Conservation Service, the majority of the site in located in the hydrologic soil group “A”.

According to the Federal Emergency Management Agency (FEMA), FIRM rate map Number 06065C0770G, effective date August 28, 2008, the site is located within flood Zone X. Zone X is areas determined to be outside of the 0.2% annual chance floodplain. Refer to the FIRM rate map within Appendix D.

III. Existing Conditions Drainage

The current drainage conditions of the site sheet flow to the southerly boundary right of way onto Brodiaea Avenue. Runoff continues westerly along Brodiaea Avenue to enter the 33” storm drain at the intersection of Brodiaea Avenue and Moreno Beach Drive per masterplan drainage map.

The topographic survey was utilized to identify pre-development onsite high points and overall site conveyance of storm water runoff. All existing stormwater runoff ultimately reaches the outlet on Brodiaea Avenue, the onsite development area was analyzed as a single drainage management area used to approximately quantify the runoff based on the longest hydraulic path from the most remote high point to low outlet point.

Refer to Appendix A, Preliminary Existing Conditions Hydrology Map, for additional existing conditions information.

IV. Proposed Conditions Drainage

The proposed project site development consists of 134 residential lots over an approximate area of 14.39-acre site. The proposed development includes drive aisles, parking, landscaping, walkways, and common open space areas. The northerly offsite residential areas upstream of the development will be diverted around the perimeter of the proposed project site

Preliminary onsite grading proposes to collect runoff at multiple inlets spread throughout the site which routes runoff into to the retention basin system. The proposed development was analyzed as a single drainage management area as the entire site drains to a single outlet downstream at the retention system. Additional subareas may be analyzed for onsite flow-through inlets during final engineering. The retention basin is designed to meet mitigation requirements with a control pump station routing collected runoff to the parkway drain adjacent to Brodiaea Avenue. A weir channel from the basin to the back of the parkway drain is also provided to mitigate and control overflow. Emergency overflow is provided with site grading to the outlet preserving historical drainage patterns.

A portion of the upstream adjacent property drains onto the project site is intercepted via diversion gutter through the block wall omissions. The collected flow is routed to the outlet point onto Brodiaea Avenue following historical drainage pattern.

Refer to Appendix A, Preliminary Proposed Conditions Hydrology Map, for additional proposed conditions information.

V. Methodology

The existing and proposed drainage conditions were analyzed by utilizing the County of Riverside Flood and Water Conservation District (RCFC&WCD) Hydrology Manual. Civil Design Hydrology Program is used following the standard set per Hydrology Manual. Drainage management subareas were divided per site existing topography and proposed grading. Rational method is applied to the drainage areas to obtain the 10- and 100-year storm event peak runoff. The rational method utilizes hydrology manual's rainfall data. The results are utilized for onsite drainage system capacity sizing and to determine if additional outlet mitigation is required.

As proposed development conditions generate higher peak flowrates in comparison to existing conditions, synthetic unit hydrograph method is utilized to generate existing parameters and proposed development hydrograph for routing analysis. NOAA rainfall data were applied for the synthetic unit hydrograph method for site specific results. 1-, 3-, 6-, 24-hour durations of the 100-year storm were analyzed for the existing and proposed conditions runoff peak flow rates and volume.

The post-development conditions were compared to that of the pre-development conditions for mitigation and retention design. Federal Highway Administration's Hydraulic Toolbox was utilized to verify the retention system storage and determine the outflow hydrograph with post-development conditions hydrograph as inflow.

In this preliminary hydrology study, the overall drainage of the development is designed and planned in accordance with the Riverside County Flood Control and Water Conservation District.

Inlets capacity, pipe conveyance sizing and 100-year water surface elevation analysis will be provided during final engineering.

VI. Design Assumption

1. The property is located in the City of Moreno Valley, Riverside County rainfall region. Standard intensity-duration curves data (Plate D-4.1) for the "San Jacinto" area is used for Rational Method analysis.
2. NOAA rainfall data was utilized for Synthetic Unit Hydrograph Method analysis.
3. Existing conditions average runoff index determined to be 67 with a 100% pervious fraction based on existing conditions geospatial observations and conservative measures.
4. Proposed development average runoff index determined to be 32 with a 20% pervious fraction based on development type.
5. The site is located within Hydrologic Soil Type "A" per the USDA Web Soil Survey Data.
6. Preliminary pipe conveyance sizing assumed open channel flow with 4% slope to convey site 100-year storm peak flow. Manning's n established to be 0.013 per HDPE pipe material.
7. 100-year storm event flood level protection analysis required for habitable structures per County of Riverside requirements.
8. 10-year storm event analysis required for street conveyance per local drainage requirements.

VII. Hydrology Results

The results from this preliminary hydrology study utilizing the rational method provided by the City of Moreno Valley and the RCFC&WCD is summarized below:

Rational Method Summary

Existing Offsite Conditions Drainage Area	Area (ac)	Q_{100} (cfs)
DA-X1	2.45	5.222
DA-X1	2.55	5.451
Total	**5.00**	**10.673**

Existing Conditions Drainage Area	Area (ac)	Q_{10} (cfs)	Q_{100} (cfs)
DA-XA1	1.01	1.475	2.636
DA-XA2	13.39	15.292	28.973
Total	**14.39**	**16.767**	**31.609**

Proposed Conditions Drainage Area	Area (ac)	Q_{10} (cfs)	Q_{100} (cfs)
DA-A1	0.35	0.777	1.222
DA-A2	14.05	21.324	35.380
Total	**14.39**	**22.101**	**36.602**

Refer to Appendix B for additional computation information.

The results demonstrate that the post-development conditions storm water runoff peak flows are greater than the pre-development conditions peak flows; therefore, mitigation is required to preserve existing conditions. A retention basin with pump control and weir outflow is provided to meet mitigation requirement as determined per routing analysis.

Retention Sizing/ Routing Analysis

The Synthetic Unit Hydrograph Method per the Riverside County Flood Control and Water Conservation District Hydrology Manual was utilized through CivilDesign to generated proposed conditions hydrographs for the 1-, 3-, 6-, and 24-hour for 100-year storm event. Generated hydrograph is routed through the underground retention system storage capacity to verify the design is adequate.

	Q100-yr, 1-hr (cfs)	Q100-yr, 3-hr (cfs)	Q100-yr, 6-hr (cfs)	Q100-yr, 24-hr (cfs)
Existing Conditions Hydrograph Peak Runoff	39.175	23.460	20.971	7.585
Proposed Conditions Hydrograph Peak Runoff	42.146	25.677	23.377	8.276
Mitigated Peak Outflow	**18.849**	**16.545**	**15.931**	**5.700**

Mitigated Peak Outflow includes a reduction of infiltrated rate.

Emergency overflow during excessive storm events will overflow onto Brodiaea Avenue via onsite grading and continues downstream preserving historical drainage pattern. The development's proposed grading/ drainage design has been developed to limit the diversion of pre-development flow patterns and maintain the pre-development runoff conditions for overflow pathways to extend the feasibility for the developed site conditions. By implementing the total onsite retention for the post-development condition, no significant impact to the downstream water bodies is anticipated.

VIII. Hydraulics Anaylsis

Catch Basin Inlet Capacity Sizing

Catch basin capacity will be analyzed to intercept the 100-year storm event peak flow rate during final engineering. Private street runoff conveyance will be analyzed for the 10-year design storm event.

Pipe Conveyance Sizing

Pipe Sizing will be analyzed using WSPG software to verify hydraulic grade line (HGL) based on the required storm event peak flow rate during final engineering for post-development onsite conveyance pipe.

A preliminary pipe conveyance open channel analysis based on 100-year storm runoff is provided in Appendix E. Manning's n established to be 0.013 per HDPE pipe material.

100-Year Water Surface Elevation (WSE)

The elevation of the 100-year water surface will be analyzed during final engineering. Building finished floors will be set at a minimum of at least 1 foot above the 100-year WSE.

IX. Conclusion

The results from this preliminary hydrology study utilizing Riverside County Flood Control and Water Conservation District Hydrology Manual's rational method demonstrate that the proposed conditions stormwater peak flow from the subject site will increase compared to the existing conditions peak flow. Proper retention storage and mitigation is designed per County's synthetic hydrograph routing method to preserve existing drainage conditions and patterns to satisfy City of Moreno Valley and County of Riverside drainage requirements.

Emergency overflow during excessive storm events will overflow onto Brodiaea Avenue via onsite grading and continues downstream preserving historical drainage pattern. The development's proposed grading/ drainage design has been developed to limit the diversion of pre-development flow patterns and maintain the pre-development runoff conditions for overflow pathways to extend the feasibility for the developed site conditions. By implementing the total onsite retention for the post-development condition, no significant impact to the downstream water bodies is anticipated.

During final engineering, proposed development conditions will be analyzed in further based on the finalized grading and drainage plans. The development peak flow rates will be re-evaluated to reflect subareas that may be further delineated during final engineering. However, the overall drainage pattern depicted in this report will be preserved.

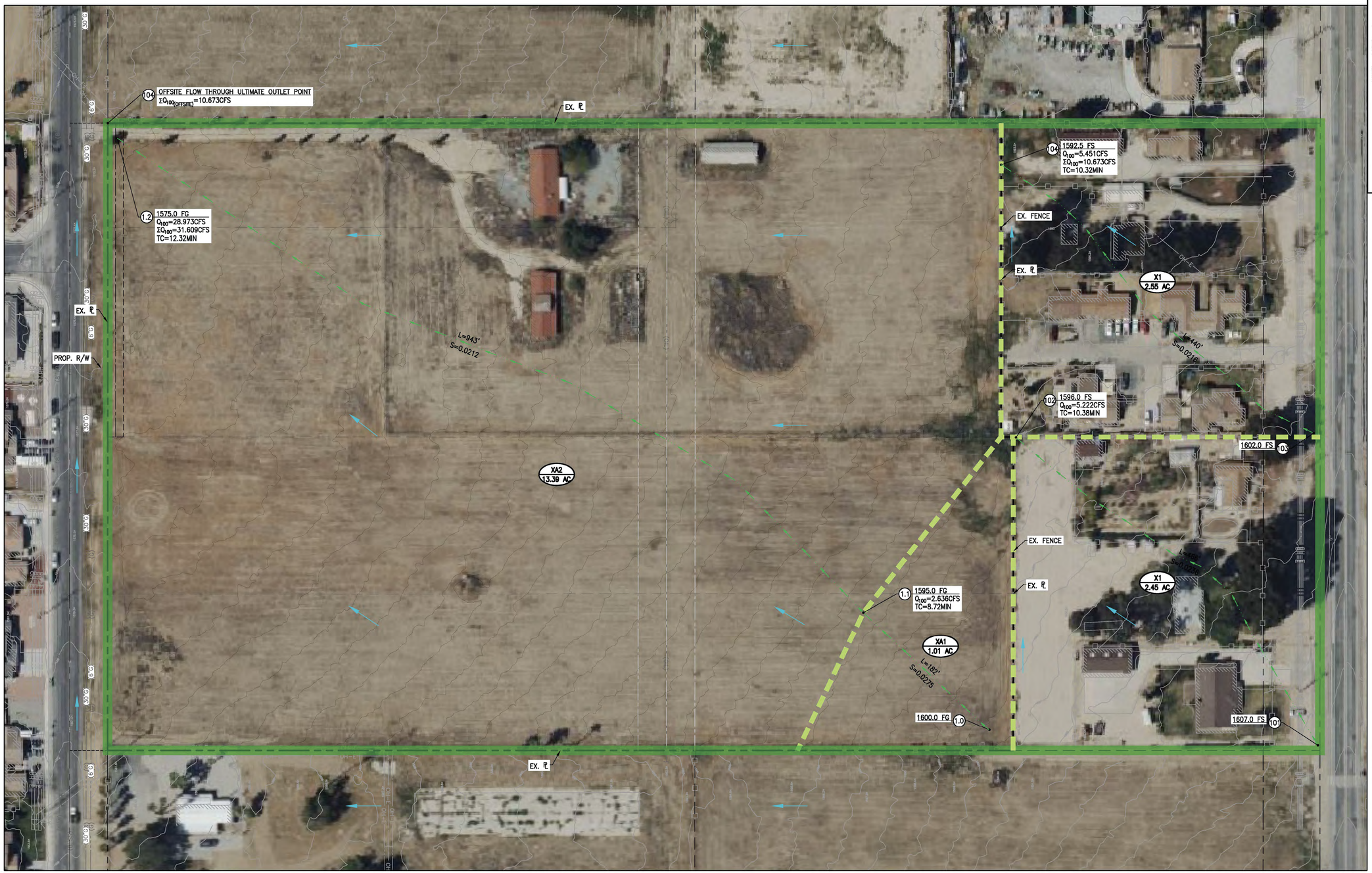
X. References

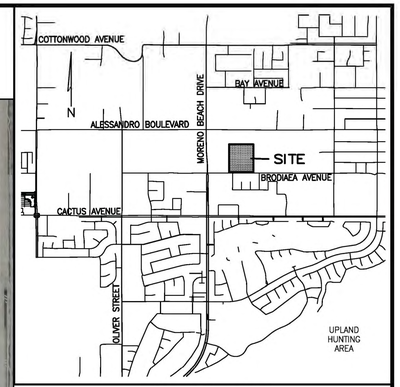
1. HydraFlow Express Extension. Autodesk Civil 3D
2. Hydraulic Toolbox 5.3.0.0 Federal Highway Administration. Building Date: 21 Jul 2023.
3. Hydrology Manual. Riverside County Flood Control and Water Conservation District. April 1978.
4. National Flood Hazard layer FIRMette. Federal Emergency Management Agency. Exported: 17 Sep 2024.
5. NOAA Atlas 14 Point Precipitation Frequency Estimates for California. NOAA. Exported: 3 January 2025.
6. Riverside County Rational Hydrology Program. CIVILCADD/CIVILDESIGN Engineering Software, 1989-2018 Version 9.0
7. Unit Hydrograph Analysis. CIVILCADD/CIVILDESIGN Engineering Software, 1989-2018 Version 9.0
8. United States Department of Agriculture Natural Resources Conservation Service Soil Map.

APPENDIX A

Hydrology Maps

Preliminary Existing Conditions Hydrology Map



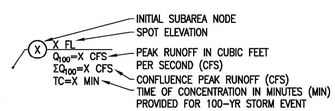


VICINITY MAP

N.T.S.

LEGEND:

- DRAINAGE MANAGEMENT AREA (DMA) BOUNDARY
- DMA SUBAREA BOUNDARY
- SITE BOUNDARY
- RIGHT OF WAY
- EXISTING LOT LINE
- EXISTING EASEMENT LINE
- SURFACE FLOW DIRECTION
- PIPE SLOPE DIRECTION
- SURFACE LONGEST FLOWPATH



SCALE: 1" = 50'

0 25 50 100

PRE-DEVELOPMENT ONSITE CONDITIONS HYDROGRAPH METHOD PEAK FLOW RATE SUMMARY					
	AREA (AC)	$Q_{100-YR,1-HR}$ (CFS)	$Q_{100-YR,3-HR}$ (CFS)	$Q_{100-YR,6-HR}$ (CFS)	$Q_{100-YR,24-HR}$ (CFS)
EXISTING CONDITIONS GENERATED PEAK FLOW RATE	14.39	39.175	23.460	20.971	7.585

NOTE: PEAK FLOW RATE DETERMINE PER SYNTHETIC UNIT HYDROGRAPH METHOD PER RIVERSIDE COUNTY HYDROLOGY MANUAL.

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CITY OF MORENO VALLEY
DEPARTMENT OF COMMUNITY DEVELOPMENT

VESTING TENTATIVE TRACT MAP NO. 39162
PRELIMINARY EXISTING CONDITIONS HYDROLOGY MAP
28136 BRODIAEA AVENUE
MORENO VALLEY, CA 92555

PROJECT NO. WARM-022

SHEET 1 OF 1

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DATE: 5/12/2025

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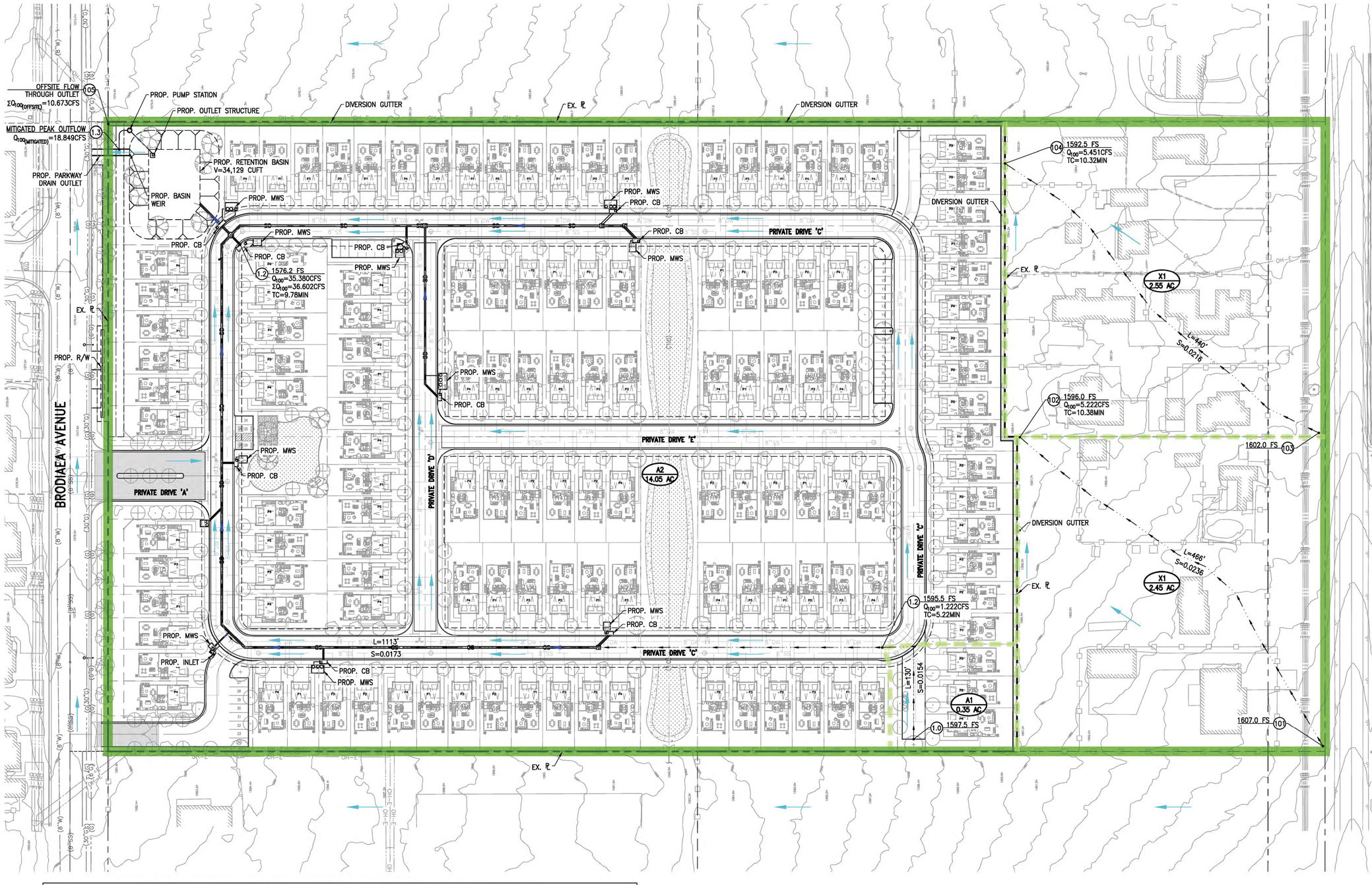
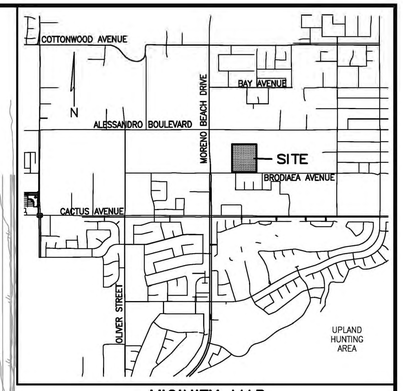
Preliminary Proposed Conditions Hydrology Map





VICINITY MAP

N.T.S.

LEGEND:

- DRAINAGE MANAGEMENT AREA (DMA) BOUNDARY
- DMA SUBAREA BOUNDARY
- SITE BOUNDARY
- RIGHT OF WAY
- EXISTING LOT LINE
- EXISTING EASEMENT LINE
- SURFACE FLOW DIRECTION
- PIPE SLOPE DIRECTION
- SURFACE LONGEST FLOWPATH

(X) X FL — INITIAL SUBAREA NODE; SPOT ELEVATION
Q_{100}=X CFS — PEAK RUNOFF IN CUBIC FEET PER SECOND (CFS)
ΣQ_{100}=X CFS — CONFLUENCE PEAK RUNOFF (CFS)
TC=X MIN — TIME OF CONCENTRATION IN MINUTES (MIN) PROVIDED FOR 100-YR STORM EVENT

SCALE: 1" = 50'

0 25 50 100

POST-DEVELOPMENT ONSITE CONDITIONS HYDROGRAPH METHOD PEAK FLOW RATE SUMMARY					
	AREA (AC)	$Q_{100-YR,1-HR}$ (CFS)	$Q_{100-YR,3-HR}$ (CFS)	$Q_{100-YR,6-HR}$ (CFS)	$Q_{100-YR,24-HR}$ (CFS)
EXISTING CONDITIONS GENERATED PEAK FLOW RATE	14.39	39.175	23.460	20.971	7.585
PROPOSED CONDITIONS GENERATED PEAK FLOW RATE	14.39	42.146	25.677	23.377	8.276
PROPOSED MITIGATED PEAK FLOW RATE	14.39	18.849	16.545	15.931	5.700

NOTE: PEAK FLOW RATE DETERMINE PER SYNTHETIC UNIT HYDROGRAPH METHOD PER RIVERSIDE COUNTY HYDROLOGY MANUAL.

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CITY OF MORENO VALLEY
DEPARTMENT OF COMMUNITY DEVELOPMENT

PROJECT NO. WARM-022

VESTING TENTATIVE TRACT MAP NO. 39162
PRELIMINARY PROPOSED CONDITIONS HYDROLOGY MAP

28136 BRODIAEA AVENUE
MORENO VALLEY, CA 92555

SHEET 1 OF 1

PLAN SEL: 39162
DATE: 2/27/2025

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Feb 26, 2025 - 8:46am

APPENDIX B

Hydrology Computations – Rational Method Analysis

Existing Conditions Rational Method Analysis

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 01/19/25 File:WA22X100.out

28136 BRODIAEA AVENUE
MORENO VALLEY, RIVERSIDE COUNTY
EXISTING CONDITIONS
100-YEAR STORM EVENT

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

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

Program License Serial Number 6677

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 [San Jacinto] area used.
10 year storm 10 minute intensity = 1.980(In/Hr)
10 year storm 60 minute intensity = 0.810(In/Hr)
100 year storm 10 minute intensity = 2.940(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 = 0.5000

++

Process from Point/Station 1.000 to Point/Station 1.100
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 182.000(Ft.)
Top (of initial area) elevation = 1600.000(Ft.)
Bottom (of initial area) elevation = 1595.000(Ft.)

```
Difference in elevation =     5.000(Ft.)
Slope =    0.02747  s(percent)=       2.75
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.720 min.
Rainfall intensity =      3.148(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.829
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  83.20
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      2.636(CFS)
Total initial stream area =        1.010(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.100 to Point/Station        1.200
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1595.000(Ft.)
End of natural channel elevation =   1575.000(Ft.)
Length of natural channel  =   943.000(Ft.)
Estimated mean flow rate at midpoint of channel =     20.108(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 =   4.37(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
        Normal channel slope =  0.0212
Corrected/adjusted channel slope =  0.0212
Travel time =    3.60 min.     TC =   12.32  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.817
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  83.20
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.649(In/Hr) for a   100.0 year storm
Subarea runoff =     28.973(CFS) for     13.390(Ac.)
```

Total runoff = 31.609(CFS) Total area = 14.400(Ac.)
End of computations, total study area = 14.40 (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 = 67.0

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 01/19/25 File:WA22X10.out

28136 BRODIAEA AVENUE
MORENO VALLEY, RIVERSIDE COUNTY
EXISTING CONDITIONS
10-YEAR STORM EVENT

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

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

Program License Serial Number 6677

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

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

Standard intensity-duration curves data (Plate D-4.1)
For the [San Jacinto] area used.
10 year storm 10 minute intensity = 1.980(In/Hr)
10 year storm 60 minute intensity = 0.810(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.810(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 1.000 to Point/Station 1.100
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 182.000(Ft.)
Top (of initial area) elevation = 1600.000(Ft.)
Bottom (of initial area) elevation = 1595.000(Ft.)

```
Difference in elevation =     5.000(Ft.)
Slope =    0.02747  s(percent)=       2.75
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.720 min.
Rainfall intensity =      2.125(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.688
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  67.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      1.475(CFS)
Total initial stream area =        1.010(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.100 to Point/Station        1.200
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   1595.000(Ft.)
End of natural channel elevation =   1575.000(Ft.)
Length of natural channel  =   943.000(Ft.)
Estimated mean flow rate at midpoint of channel =     11.255(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 =   3.75(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
        Normal channel slope =  0.0212
Corrected/adjusted channel slope =  0.0212
Travel time =    4.19 min.     TC =   12.91  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.654
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  67.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.746(In/Hr) for a    10.0 year storm
Subarea runoff =     15.292(CFS) for     13.390(Ac.)
```

Total runoff = 16.768(CFS) Total area = 14.400(Ac.)
End of computations, total study area = 14.40 (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 = 67.0

Proposed Conditions Rational Method Analysis

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 05/12/25 File:WA22P100.out

28136 BRODIAEA AVENUE
MORENO VALLEY, RIVERSIDE COUNTY
PROPOSED CONDITIONS
100-YEAR STORM EVENT

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

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

Program License Serial Number 6677

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 [San Jacinto] area used.
10 year storm 10 minute intensity = 1.980(In/Hr)
10 year storm 60 minute intensity = 0.810(In/Hr)
100 year storm 10 minute intensity = 2.940(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 = 0.5000

++
Process from Point/Station 101.000 to Point/Station 102.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 466.000(Ft.)
Top (of initial area) elevation = 1607.000(Ft.)
Bottom (of initial area) elevation = 1596.000(Ft.)

```
Difference in elevation =    11.000(Ft.)
Slope =    0.02361  s(percent)=       2.36
TC = k(0.420)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.375 min.
Rainfall intensity =      2.886(In/Hr) for a   100.0 year storm
SINGLE FAMILY (1/2 Acre Lot)
Runoff Coefficient = 0.739
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  52.00
Pervious area fraction =  0.600; Impervious fraction =  0.400
Initial subarea runoff =      5.222(CFS)
Total initial stream area =        2.450(Ac.)
Pervious area fraction = 0.600


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   440.000(Ft.)
Top (of initial area) elevation =  1602.000(Ft.)
Bottom (of initial area) elevation =  1592.500(Ft.)
Difference in elevation =     9.500(Ft.)
Slope =    0.02159  s(percent)=       2.16
TC = k(0.420)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.322 min.
Rainfall intensity =      2.893(In/Hr) for a   100.0 year storm
SINGLE FAMILY (1/2 Acre Lot)
Runoff Coefficient = 0.739
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  52.00
Pervious area fraction =  0.600; Impervious fraction =  0.400
Initial subarea runoff =      5.451(CFS)
Total initial stream area =        2.550(Ac.)
Pervious area fraction = 0.600


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.000 to Point/Station        1.100
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   130.000(Ft.)
Top (of initial area) elevation =  1597.500(Ft.)
Bottom (of initial area) elevation =  1595.500(Ft.)
```

```
Difference in elevation =     2.000(Ft.)
Slope =    0.01538  s(percent)=       1.54
TC = k(0.323)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.216 min.
Rainfall intensity =      4.070(In/Hr) for a   100.0 year storm
APARTMENT subarea type
Runoff Coefficient = 0.858
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  52.00
Pervious area fraction =  0.200; Impervious fraction =  0.800
Initial subarea runoff =      1.222(CFS)
Total initial stream area =        0.350(Ac.)
Pervious area fraction = 0.200


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.100 to Point/Station        1.200
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =  1595.500(Ft.)
End of street segment elevation =  1576.200(Ft.)
Length of street segment  =  1113.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  13.000(Ft.)
Distance from crown to crossfall grade break  =  11.500(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =   5.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   1.500(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     18.999(CFS)
Depth of flow =   0.439(Ft.), Average velocity =   4.063(Ft/s)
Note:  depth of flow exceeds top of street crown.
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  13.000(Ft.)
Flow velocity =   4.06(Ft/s)
Travel time =    4.57 min.     TC =    9.78  min.
 Adding area flow to street
APARTMENT subarea type
Runoff Coefficient = 0.847
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
```

```
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  52.00
Pervious area fraction =  0.200; Impervious fraction =  0.800
Rainfall intensity =      2.972(In/Hr) for a   100.0 year storm
Subarea runoff =     35.380(CFS) for     14.050(Ac.)
Total runoff =     36.602(CFS)  Total area =      14.400(Ac.)
Street flow at end of street =     36.602(CFS)
Half street flow at end of street =     18.301(CFS)
Depth of flow =   0.537(Ft.), Average velocity =   5.006(Ft/s)
Warning: depth of flow exceeds top of curb
Note:  depth of flow exceeds top of street crown.
Distance that curb overflow reaches into property =    1.87(Ft.)
Flow width (from curb towards crown)=  13.000(Ft.)
End of computations, total study area =           19.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.303
Area averaged RI index number =  32.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 01/18/25 File:WA22P10.out

28136 BRODIAEA AVENUE
MORENO VALLEY, RIVERSIDE COUNTY
PROPOSED CONDITIONS
10-YEAR STORM EVENT

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

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

Program License Serial Number 6677

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

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

Standard intensity-duration curves data (Plate D-4.1)
For the [San Jacinto] area used.
10 year storm 10 minute intensity = 1.980(In/Hr)
10 year storm 60 minute intensity = 0.810(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.810(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 1.000 to Point/Station 1.100
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 130.000(Ft.)
Top (of initial area) elevation = 1597.500(Ft.)
Bottom (of initial area) elevation = 1595.500(Ft.)

```
Difference in elevation =     2.000(Ft.)
Slope =    0.01538  s(percent)=       1.54
TC = k(0.323)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.216 min.
Rainfall intensity =      2.747(In/Hr) for a    10.0 year storm
APARTMENT subarea type
Runoff Coefficient = 0.809
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  32.00
Pervious area fraction =  0.200; Impervious fraction =  0.800
Initial subarea runoff =      0.777(CFS)
Total initial stream area =        0.350(Ac.)
Pervious area fraction = 0.200


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.100 to Point/Station        1.200
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =  1595.500(Ft.)
End of street segment elevation =  1576.200(Ft.)
Length of street segment  =  1113.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  13.000(Ft.)
Distance from crown to crossfall grade break  =  11.500(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =   5.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   1.500(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     11.496(CFS)
Depth of flow =   0.390(Ft.), Average velocity =   3.361(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  12.681(Ft.)
Flow velocity =   3.36(Ft/s)
Travel time =    5.52 min.     TC =   10.74  min.
 Adding area flow to street
APARTMENT subarea type
Runoff Coefficient = 0.793
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
```

Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 32.00
Pervious area fraction = 0.200; Impervious fraction = 0.800
Rainfall intensity = 1.915(In/Hr) for a 10.0 year storm
Subarea runoff = 21.324(CFS) for 14.050(Ac.)
Total runoff = 22.101(CFS) Total area = 14.400(Ac.)
Street flow at end of street = 22.101(CFS)
Half street flow at end of street = 11.051(CFS)
Depth of flow = 0.456(Ft.), Average velocity = 4.314(Ft/s)
Note: depth of flow exceeds top of street crown.
Flow width (from curb towards crown)= 13.000(Ft.)
End of computations, total study area = 14.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.200
Area averaged RI index number = 32.0

APPENDIX C

Synthetic Unit Hydrograph Analysis

Existing Conditions Unit Hydrographs

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

Study date 01/19/25 File: WA22XHYD24100.out

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

Program License Serial Number 6677

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

English Units used in output format

28136 BRODIAEA AVENUE
MORENO VALLEY, RIVERSIDE COUNTY
EXISTING CONDITONS HYDROGRAPH
100-YEAR STORM EVENT

Drainage Area = 14.39(Ac.) = 0.022 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 14.39(Ac.) = 0.022 Sq. Mi.
Length along longest watercourse = 1125.00(Ft.)
Length along longest watercourse measured to centroid = 562.50(Ft.)
Length along longest watercourse = 0.213 Mi.
Length along longest watercourse measured to centroid = 0.107 Mi.
Difference in elevation = 25.00(Ft.)
Slope along watercourse = 117.3333 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.069 Hr.
Lag time = 4.15 Min.
25% of lag time = 1.04 Min.
40% of lag time = 1.66 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]
       14.39            2.13                   30.65

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       14.39            5.17                   74.40

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    2.130(In)
Area Averaged 100-Year Rainfall =    5.170(In)

Point rain (area averaged) =    5.170(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    5.170(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    14.390           67.00         0.000
 Total Area Entered =     14.39(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
67.0  83.2      0.208     0.000        0.208       1.000      0.208
                                                 Sum (F) =   0.208
Area averaged mean soil loss (F) (In/Hr) =  0.208
Minimum soil loss rate ((In/Hr)) =  0.104
(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
                       VALLEY S-Curve
------------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
------------------------------------------------------------------------
    1   0.083        120.613         25.376              3.680
    2   0.167        241.226         48.700              7.063
    3   0.250        361.839         13.255              1.922
    4   0.333        482.451          5.996              0.870
    5   0.417        603.064          3.356              0.487
    6   0.500        723.677          1.914              0.278
    7   0.583        844.290          1.403              0.203
                              Sum = 100.000   Sum=      14.502
```

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	0.041	(0.368)	0.037	0.004
2	0.17	0.07	0.041	(0.366)	0.037	0.004
3	0.25	0.07	0.041	(0.365)	0.037	0.004
4	0.33	0.10	0.062	(0.364)	0.056	0.006
5	0.42	0.10	0.062	(0.362)	0.056	0.006
6	0.50	0.10	0.062	(0.361)	0.056	0.006
7	0.58	0.10	0.062	(0.359)	0.056	0.006
8	0.67	0.10	0.062	(0.358)	0.056	0.006
9	0.75	0.10	0.062	(0.357)	0.056	0.006
10	0.83	0.13	0.083	(0.355)	0.074	0.008
11	0.92	0.13	0.083	(0.354)	0.074	0.008
12	1.00	0.13	0.083	(0.352)	0.074	0.008
13	1.08	0.10	0.062	(0.351)	0.056	0.006
14	1.17	0.10	0.062	(0.350)	0.056	0.006
15	1.25	0.10	0.062	(0.348)	0.056	0.006
16	1.33	0.10	0.062	(0.347)	0.056	0.006
17	1.42	0.10	0.062	(0.345)	0.056	0.006
18	1.50	0.10	0.062	(0.344)	0.056	0.006
19	1.58	0.10	0.062	(0.343)	0.056	0.006
20	1.67	0.10	0.062	(0.341)	0.056	0.006
21	1.75	0.10	0.062	(0.340)	0.056	0.006
22	1.83	0.13	0.083	(0.339)	0.074	0.008
23	1.92	0.13	0.083	(0.337)	0.074	0.008
24	2.00	0.13	0.083	(0.336)	0.074	0.008
25	2.08	0.13	0.083	(0.334)	0.074	0.008
26	2.17	0.13	0.083	(0.333)	0.074	0.008
27	2.25	0.13	0.083	(0.332)	0.074	0.008
28	2.33	0.13	0.083	(0.330)	0.074	0.008
29	2.42	0.13	0.083	(0.329)	0.074	0.008
30	2.50	0.13	0.083	(0.328)	0.074	0.008
31	2.58	0.17	0.103	(0.326)	0.093	0.010
32	2.67	0.17	0.103	(0.325)	0.093	0.010
33	2.75	0.17	0.103	(0.324)	0.093	0.010
34	2.83	0.17	0.103	(0.322)	0.093	0.010
35	2.92	0.17	0.103	(0.321)	0.093	0.010
36	3.00	0.17	0.103	(0.320)	0.093	0.010
37	3.08	0.17	0.103	(0.318)	0.093	0.010
38	3.17	0.17	0.103	(0.317)	0.093	0.010
39	3.25	0.17	0.103	(0.316)	0.093	0.010
40	3.33	0.17	0.103	(0.314)	0.093	0.010
41	3.42	0.17	0.103	(0.313)	0.093	0.010
42	3.50	0.17	0.103	(0.312)	0.093	0.010

43	3.58	0.17	0.103	(0.311)	0.093	0.010
44	3.67	0.17	0.103	(0.309)	0.093	0.010
45	3.75	0.17	0.103	(0.308)	0.093	0.010
46	3.83	0.20	0.124	(0.307)	0.112	0.012
47	3.92	0.20	0.124	(0.305)	0.112	0.012
48	4.00	0.20	0.124	(0.304)	0.112	0.012
49	4.08	0.20	0.124	(0.303)	0.112	0.012
50	4.17	0.20	0.124	(0.301)	0.112	0.012
51	4.25	0.20	0.124	(0.300)	0.112	0.012
52	4.33	0.23	0.145	(0.299)	0.130	0.014
53	4.42	0.23	0.145	(0.298)	0.130	0.014
54	4.50	0.23	0.145	(0.296)	0.130	0.014
55	4.58	0.23	0.145	(0.295)	0.130	0.014
56	4.67	0.23	0.145	(0.294)	0.130	0.014
57	4.75	0.23	0.145	(0.293)	0.130	0.014
58	4.83	0.27	0.165	(0.291)	0.149	0.017
59	4.92	0.27	0.165	(0.290)	0.149	0.017
60	5.00	0.27	0.165	(0.289)	0.149	0.017
61	5.08	0.20	0.124	(0.288)	0.112	0.012
62	5.17	0.20	0.124	(0.286)	0.112	0.012
63	5.25	0.20	0.124	(0.285)	0.112	0.012
64	5.33	0.23	0.145	(0.284)	0.130	0.014
65	5.42	0.23	0.145	(0.283)	0.130	0.014
66	5.50	0.23	0.145	(0.281)	0.130	0.014
67	5.58	0.27	0.165	(0.280)	0.149	0.017
68	5.67	0.27	0.165	(0.279)	0.149	0.017
69	5.75	0.27	0.165	(0.278)	0.149	0.017
70	5.83	0.27	0.165	(0.276)	0.149	0.017
71	5.92	0.27	0.165	(0.275)	0.149	0.017
72	6.00	0.27	0.165	(0.274)	0.149	0.017
73	6.08	0.30	0.186	(0.273)	0.168	0.019
74	6.17	0.30	0.186	(0.271)	0.168	0.019
75	6.25	0.30	0.186	(0.270)	0.168	0.019
76	6.33	0.30	0.186	(0.269)	0.168	0.019
77	6.42	0.30	0.186	(0.268)	0.168	0.019
78	6.50	0.30	0.186	(0.267)	0.168	0.019
79	6.58	0.33	0.207	(0.265)	0.186	0.021
80	6.67	0.33	0.207	(0.264)	0.186	0.021
81	6.75	0.33	0.207	(0.263)	0.186	0.021
82	6.83	0.33	0.207	(0.262)	0.186	0.021
83	6.92	0.33	0.207	(0.261)	0.186	0.021
84	7.00	0.33	0.207	(0.260)	0.186	0.021
85	7.08	0.33	0.207	(0.258)	0.186	0.021
86	7.17	0.33	0.207	(0.257)	0.186	0.021
87	7.25	0.33	0.207	(0.256)	0.186	0.021
88	7.33	0.37	0.227	(0.255)	0.205	0.023
89	7.42	0.37	0.227	(0.254)	0.205	0.023
90	7.50	0.37	0.227	(0.253)	0.205	0.023
91	7.58	0.40	0.248	(0.251)	0.223	0.025
92	7.67	0.40	0.248	(0.250)	0.223	0.025

93	7.75	0.40	0.248	(	0.249)	0.223		0.025
94	7.83	0.43	0.269	(	0.248)	0.242		0.027
95	7.92	0.43	0.269	(	0.247)	0.242		0.027
96	8.00	0.43	0.269	(	0.246)	0.242		0.027
97	8.08	0.50	0.310		0.244	(0.279)		0.066
98	8.17	0.50	0.310		0.243	(0.279)		0.067
99	8.25	0.50	0.310		0.242	(0.279)		0.068
100	8.33	0.50	0.310		0.241	(0.279)		0.069
101	8.42	0.50	0.310		0.240	(0.279)		0.070
102	8.50	0.50	0.310		0.239	(0.279)		0.071
103	8.58	0.53	0.331		0.238	(0.298)		0.093
104	8.67	0.53	0.331		0.237	(0.298)		0.094
105	8.75	0.53	0.331		0.235	(0.298)		0.095
106	8.83	0.57	0.352		0.234	(0.316)		0.117
107	8.92	0.57	0.352		0.233	(0.316)		0.118
108	9.00	0.57	0.352		0.232	(0.316)		0.119
109	9.08	0.63	0.393		0.231	(0.354)		0.162
110	9.17	0.63	0.393		0.230	(0.354)		0.163
111	9.25	0.63	0.393		0.229	(0.354)		0.164
112	9.33	0.67	0.414		0.228	(0.372)		0.186
113	9.42	0.67	0.414		0.227	(0.372)		0.187
114	9.50	0.67	0.414		0.226	(0.372)		0.188
115	9.58	0.70	0.434		0.224	(0.391)		0.210
116	9.67	0.70	0.434		0.223	(0.391)		0.211
117	9.75	0.70	0.434		0.222	(0.391)		0.212
118	9.83	0.73	0.455		0.221	(0.409)		0.234
119	9.92	0.73	0.455		0.220	(0.409)		0.235
120	10.00	0.73	0.455		0.219	(0.409)		0.236
121	10.08	0.50	0.310		0.218	(0.279)		0.092
122	10.17	0.50	0.310		0.217	(0.279)		0.093
123	10.25	0.50	0.310		0.216	(0.279)		0.094
124	10.33	0.50	0.310		0.215	(0.279)		0.095
125	10.42	0.50	0.310		0.214	(0.279)		0.096
126	10.50	0.50	0.310		0.213	(0.279)		0.097
127	10.58	0.67	0.414		0.212	(0.372)		0.202
128	10.67	0.67	0.414		0.211	(0.372)		0.203
129	10.75	0.67	0.414		0.210	(0.372)		0.204
130	10.83	0.67	0.414		0.209	(0.372)		0.205
131	10.92	0.67	0.414		0.208	(0.372)		0.206
132	11.00	0.67	0.414		0.207	(0.372)		0.207
133	11.08	0.63	0.393		0.206	(0.354)		0.187
134	11.17	0.63	0.393		0.205	(0.354)		0.188
135	11.25	0.63	0.393		0.204	(0.354)		0.189
136	11.33	0.63	0.393		0.203	(0.354)		0.190
137	11.42	0.63	0.393		0.202	(0.354)		0.191
138	11.50	0.63	0.393		0.201	(0.354)		0.192
139	11.58	0.57	0.352		0.200	(0.316)		0.152
140	11.67	0.57	0.352		0.199	(0.316)		0.153
141	11.75	0.57	0.352		0.198	(0.316)		0.154
142	11.83	0.60	0.372		0.197	(0.335)		0.176

143	11.92	0.60	0.372	0.196	(	0.335)	0.177
144	12.00	0.60	0.372	0.195	(	0.335)	0.178
145	12.08	0.83	0.517	0.194	(	0.465)	0.323
146	12.17	0.83	0.517	0.193	(	0.465)	0.324
147	12.25	0.83	0.517	0.192	(	0.465)	0.325
148	12.33	0.87	0.538	0.191	(	0.484)	0.347
149	12.42	0.87	0.538	0.190	(	0.484)	0.348
150	12.50	0.87	0.538	0.189	(	0.484)	0.349
151	12.58	0.93	0.579	0.188	(	0.521)	0.391
152	12.67	0.93	0.579	0.187	(	0.521)	0.392
153	12.75	0.93	0.579	0.186	(	0.521)	0.393
154	12.83	0.97	0.600	0.185	(	0.540)	0.415
155	12.92	0.97	0.600	0.184	(	0.540)	0.416
156	13.00	0.97	0.600	0.183	(	0.540)	0.416
157	13.08	1.13	0.703	0.182	(	0.633)	0.521
158	13.17	1.13	0.703	0.181	(	0.633)	0.522
159	13.25	1.13	0.703	0.180	(	0.633)	0.523
160	13.33	1.13	0.703	0.180	(	0.633)	0.524
161	13.42	1.13	0.703	0.179	(	0.633)	0.524
162	13.50	1.13	0.703	0.178	(	0.633)	0.525
163	13.58	0.77	0.476	0.177	(	0.428)	0.299
164	13.67	0.77	0.476	0.176	(	0.428)	0.300
165	13.75	0.77	0.476	0.175	(	0.428)	0.301
166	13.83	0.77	0.476	0.174	(	0.428)	0.301
167	13.92	0.77	0.476	0.173	(	0.428)	0.302
168	14.00	0.77	0.476	0.172	(	0.428)	0.303
169	14.08	0.90	0.558	0.171	(	0.503)	0.387
170	14.17	0.90	0.558	0.171	(	0.503)	0.388
171	14.25	0.90	0.558	0.170	(	0.503)	0.389
172	14.33	0.87	0.538	0.169	(	0.484)	0.369
173	14.42	0.87	0.538	0.168	(	0.484)	0.370
174	14.50	0.87	0.538	0.167	(	0.484)	0.371
175	14.58	0.87	0.538	0.166	(	0.484)	0.371
176	14.67	0.87	0.538	0.165	(	0.484)	0.372
177	14.75	0.87	0.538	0.165	(	0.484)	0.373
178	14.83	0.83	0.517	0.164	(	0.465)	0.353
179	14.92	0.83	0.517	0.163	(	0.465)	0.354
180	15.00	0.83	0.517	0.162	(	0.465)	0.355
181	15.08	0.80	0.496	0.161	(	0.447)	0.335
182	15.17	0.80	0.496	0.160	(	0.447)	0.336
183	15.25	0.80	0.496	0.160	(	0.447)	0.337
184	15.33	0.77	0.476	0.159	(	0.428)	0.317
185	15.42	0.77	0.476	0.158	(	0.428)	0.318
186	15.50	0.77	0.476	0.157	(	0.428)	0.318
187	15.58	0.63	0.393	0.156	(	0.354)	0.237
188	15.67	0.63	0.393	0.156	(	0.354)	0.237
189	15.75	0.63	0.393	0.155	(	0.354)	0.238
190	15.83	0.63	0.393	0.154	(	0.354)	0.239
191	15.92	0.63	0.393	0.153	(	0.354)	0.240
192	16.00	0.63	0.393	0.152	(	0.354)	0.241

193	16.08	0.13	0.083	(0.152)	0.074	0.008
194	16.17	0.13	0.083	(0.151)	0.074	0.008
195	16.25	0.13	0.083	(0.150)	0.074	0.008
196	16.33	0.13	0.083	(0.149)	0.074	0.008
197	16.42	0.13	0.083	(0.149)	0.074	0.008
198	16.50	0.13	0.083	(0.148)	0.074	0.008
199	16.58	0.10	0.062	(0.147)	0.056	0.006
200	16.67	0.10	0.062	(0.146)	0.056	0.006
201	16.75	0.10	0.062	(0.146)	0.056	0.006
202	16.83	0.10	0.062	(0.145)	0.056	0.006
203	16.92	0.10	0.062	(0.144)	0.056	0.006
204	17.00	0.10	0.062	(0.143)	0.056	0.006
205	17.08	0.17	0.103	(0.143)	0.093	0.010
206	17.17	0.17	0.103	(0.142)	0.093	0.010
207	17.25	0.17	0.103	(0.141)	0.093	0.010
208	17.33	0.17	0.103	(0.140)	0.093	0.010
209	17.42	0.17	0.103	(0.140)	0.093	0.010
210	17.50	0.17	0.103	(0.139)	0.093	0.010
211	17.58	0.17	0.103	(0.138)	0.093	0.010
212	17.67	0.17	0.103	(0.138)	0.093	0.010
213	17.75	0.17	0.103	(0.137)	0.093	0.010
214	17.83	0.13	0.083	(0.136)	0.074	0.008
215	17.92	0.13	0.083	(0.136)	0.074	0.008
216	18.00	0.13	0.083	(0.135)	0.074	0.008
217	18.08	0.13	0.083	(0.134)	0.074	0.008
218	18.17	0.13	0.083	(0.134)	0.074	0.008
219	18.25	0.13	0.083	(0.133)	0.074	0.008
220	18.33	0.13	0.083	(0.132)	0.074	0.008
221	18.42	0.13	0.083	(0.132)	0.074	0.008
222	18.50	0.13	0.083	(0.131)	0.074	0.008
223	18.58	0.10	0.062	(0.130)	0.056	0.006
224	18.67	0.10	0.062	(0.130)	0.056	0.006
225	18.75	0.10	0.062	(0.129)	0.056	0.006
226	18.83	0.07	0.041	(0.129)	0.037	0.004
227	18.92	0.07	0.041	(0.128)	0.037	0.004
228	19.00	0.07	0.041	(0.127)	0.037	0.004
229	19.08	0.10	0.062	(0.127)	0.056	0.006
230	19.17	0.10	0.062	(0.126)	0.056	0.006
231	19.25	0.10	0.062	(0.126)	0.056	0.006
232	19.33	0.13	0.083	(0.125)	0.074	0.008
233	19.42	0.13	0.083	(0.124)	0.074	0.008
234	19.50	0.13	0.083	(0.124)	0.074	0.008
235	19.58	0.10	0.062	(0.123)	0.056	0.006
236	19.67	0.10	0.062	(0.123)	0.056	0.006
237	19.75	0.10	0.062	(0.122)	0.056	0.006
238	19.83	0.07	0.041	(0.122)	0.037	0.004
239	19.92	0.07	0.041	(0.121)	0.037	0.004
240	20.00	0.07	0.041	(0.121)	0.037	0.004
241	20.08	0.10	0.062	(0.120)	0.056	0.006
242	20.17	0.10	0.062	(0.119)	0.056	0.006

243	20.25	0.10	0.062	(0.119)	0.056	0.006
244	20.33	0.10	0.062	(0.118)	0.056	0.006
245	20.42	0.10	0.062	(0.118)	0.056	0.006
246	20.50	0.10	0.062	(0.117)	0.056	0.006
247	20.58	0.10	0.062	(0.117)	0.056	0.006
248	20.67	0.10	0.062	(0.116)	0.056	0.006
249	20.75	0.10	0.062	(0.116)	0.056	0.006
250	20.83	0.07	0.041	(0.115)	0.037	0.004
251	20.92	0.07	0.041	(0.115)	0.037	0.004
252	21.00	0.07	0.041	(0.115)	0.037	0.004
253	21.08	0.10	0.062	(0.114)	0.056	0.006
254	21.17	0.10	0.062	(0.114)	0.056	0.006
255	21.25	0.10	0.062	(0.113)	0.056	0.006
256	21.33	0.07	0.041	(0.113)	0.037	0.004
257	21.42	0.07	0.041	(0.112)	0.037	0.004
258	21.50	0.07	0.041	(0.112)	0.037	0.004
259	21.58	0.10	0.062	(0.112)	0.056	0.006
260	21.67	0.10	0.062	(0.111)	0.056	0.006
261	21.75	0.10	0.062	(0.111)	0.056	0.006
262	21.83	0.07	0.041	(0.110)	0.037	0.004
263	21.92	0.07	0.041	(0.110)	0.037	0.004
264	22.00	0.07	0.041	(0.110)	0.037	0.004
265	22.08	0.10	0.062	(0.109)	0.056	0.006
266	22.17	0.10	0.062	(0.109)	0.056	0.006
267	22.25	0.10	0.062	(0.109)	0.056	0.006
268	22.33	0.07	0.041	(0.108)	0.037	0.004
269	22.42	0.07	0.041	(0.108)	0.037	0.004
270	22.50	0.07	0.041	(0.108)	0.037	0.004
271	22.58	0.07	0.041	(0.107)	0.037	0.004
272	22.67	0.07	0.041	(0.107)	0.037	0.004
273	22.75	0.07	0.041	(0.107)	0.037	0.004
274	22.83	0.07	0.041	(0.106)	0.037	0.004
275	22.92	0.07	0.041	(0.106)	0.037	0.004
276	23.00	0.07	0.041	(0.106)	0.037	0.004
277	23.08	0.07	0.041	(0.106)	0.037	0.004
278	23.17	0.07	0.041	(0.105)	0.037	0.004
279	23.25	0.07	0.041	(0.105)	0.037	0.004
280	23.33	0.07	0.041	(0.105)	0.037	0.004
281	23.42	0.07	0.041	(0.105)	0.037	0.004
282	23.50	0.07	0.041	(0.105)	0.037	0.004
283	23.58	0.07	0.041	(0.104)	0.037	0.004
284	23.67	0.07	0.041	(0.104)	0.037	0.004
285	23.75	0.07	0.041	(0.104)	0.037	0.004
286	23.83	0.07	0.041	(0.104)	0.037	0.004
287	23.92	0.07	0.041	(0.104)	0.037	0.004
288	24.00	0.07	0.041	(0.104)	0.037	0.004

(Loss Rate Not Used)

Sum = 100.0 Sum = 26.5

Flood volume = Effective rainfall 2.20(In)

times area 14.4(Ac.)/[(In)/(Ft.)] = 2.6(Ac.Ft)

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      Total soil loss =      2.97(In)
      Total soil loss =     3.556(Ac.Ft)
      Total rainfall =      5.17(In)
      Flood volume =      115141.4 Cubic Feet
      Total soil loss =      154909.6 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      7.585(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       0.0008      0.05  Q         |         |         |         |
  0+20       0.0012      0.06  Q         |         |         |         |
  0+25       0.0018      0.08  Q         |         |         |         |
  0+30       0.0024      0.09  Q         |         |         |         |
  0+35       0.0030      0.09  Q         |         |         |         |
  0+40       0.0036      0.09  Q         |         |         |         |
  0+45       0.0042      0.09  Q         |         |         |         |
  0+50       0.0049      0.10  Q         |         |         |         |
  0+55       0.0056      0.11  Q         |         |         |         |
  1+ 0       0.0064      0.12  Q         |         |         |         |
  1+ 5       0.0072      0.11  Q         |         |         |         |
  1+10       0.0079      0.10  Q         |         |         |         |
  1+15       0.0085      0.09  Q         |         |         |         |
  1+20       0.0091      0.09  Q         |         |         |         |
  1+25       0.0098      0.09  Q         |         |         |         |
  1+30       0.0104      0.09  Q         |         |         |         |
  1+35       0.0110      0.09  Q         |         |         |         |
  1+40       0.0116      0.09  Q         |         |         |         |
  1+45       0.0122      0.09  Q         |         |         |         |
  1+50       0.0129      0.10  Q         |         |         |         |
  1+55       0.0137      0.11  Q         |         |         |         |
  2+ 0       0.0145      0.12  Q         |         |         |         |
  2+ 5       0.0153      0.12  Q         |         |         |         |
  2+10       0.0161      0.12  Q         |         |         |         |
  2+15       0.0169      0.12  Q         |         |         |         |
  2+20       0.0178      0.12  Q         |         |         |         |
  2+25       0.0186      0.12  Q         |         |         |         |
  2+30       0.0194      0.12  Q         |         |         |         |
  2+35       0.0203      0.13  Q         |         |         |         |
  2+40       0.0213      0.14  Q         |         |         |         |
  2+45       0.0223      0.15  Q         |         |         |         |
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2+50	0.0233	0.15	Q	|	|	|	|
2+55	0.0243	0.15	Q	|	|	|	|
3+ 0	0.0254	0.15	Q	|	|	|	|
3+ 5	0.0264	0.15	Q	|	|	|	|
3+10	0.0274	0.15	Q	|	|	|	|
3+15	0.0285	0.15	Q	|	|	|	|
3+20	0.0295	0.15	Q	|	|	|	|
3+25	0.0305	0.15	Q	|	|	|	|
3+30	0.0316	0.15	Q	|	|	|	|
3+35	0.0326	0.15	Q	|	|	|	|
3+40	0.0336	0.15	Q	|	|	|	|
3+45	0.0347	0.15	Q	|	|	|	|
3+50	0.0358	0.16	Q	|	|	|	|
3+55	0.0369	0.17	Q	|	|	|	|
4+ 0	0.0382	0.18	Q	|	|	|	|
4+ 5	0.0394	0.18	Q	|	|	|	|
4+10	0.0406	0.18	Q	|	|	|	|
4+15	0.0419	0.18	Q	|	|	|	|
4+20	0.0431	0.19	Q	|	|	|	|
4+25	0.0445	0.20	Q	|	|	|	|
4+30	0.0460	0.21	Q	|	|	|	|
4+35	0.0474	0.21	Q	|	|	|	|
4+40	0.0488	0.21	Q	|	|	|	|
4+45	0.0503	0.21	Q	|	|	|	|
4+50	0.0518	0.22	Q	|	|	|	|
4+55	0.0534	0.23	Q	|	|	|	|
5+ 0	0.0550	0.24	Q	|	|	|	|
5+ 5	0.0565	0.22	Q	|	|	|	|
5+10	0.0579	0.19	Q	|	|	|	|
5+15	0.0592	0.19	Q	|	|	|	|
5+20	0.0605	0.19	Q	|	|	|	|
5+25	0.0619	0.20	Q	|	|	|	|
5+30	0.0633	0.21	Q	|	|	|	|
5+35	0.0648	0.22	Q	|	|	|	|
5+40	0.0664	0.23	QV	|	|	|	|
5+45	0.0680	0.24	QV	|	|	|	|
5+50	0.0697	0.24	QV	|	|	|	|
5+55	0.0713	0.24	QV	|	|	|	|
6+ 0	0.0730	0.24	QV	|	|	|	|
6+ 5	0.0747	0.25	QV	|	|	|	|
6+10	0.0765	0.26	|Q	|	|	|	|
6+15	0.0783	0.27	|Q	|	|	|	|
6+20	0.0801	0.27	|Q	|	|	|	|
6+25	0.0820	0.27	|Q	|	|	|	|
6+30	0.0839	0.27	|Q	|	|	|	|
6+35	0.0858	0.28	|Q	|	|	|	|
6+40	0.0878	0.29	|Q	|	|	|	|
6+45	0.0898	0.30	|Q	|	|	|	|
6+50	0.0919	0.30	|Q	|	|	|	|
6+55	0.0939	0.30	|Q	|	|	|	|

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 7+ 0       0.0960      0.30  |Q        |         |         |         |
 7+ 5       0.0981      0.30  |Q        |         |         |         |
 7+10       0.1001      0.30  |Q        |         |         |         |
 7+15       0.1022      0.30  |Q        |         |         |         |
 7+20       0.1043      0.31  |Q        |         |         |         |
 7+25       0.1065      0.32  |Q        |         |         |         |
 7+30       0.1088      0.33  |Q        |         |         |         |
 7+35       0.1111      0.34  |Q        |         |         |         |
 7+40       0.1135      0.35  |Q        |         |         |         |
 7+45       0.1160      0.36  |Q        |         |         |         |
 7+50       0.1185      0.37  |Q        |         |         |         |
 7+55       0.1211      0.38  |Q        |         |         |         |
 8+ 0       0.1238      0.39  |Q        |         |         |         |
 8+ 5       0.1274      0.53  |VQ       |         |         |         |
 8+10       0.1330      0.81  | VQ      |         |         |         |
 8+15       0.1392      0.90  | VQ      |         |         |         |
 8+20       0.1457      0.95  | VQ      |         |         |         |
 8+25       0.1525      0.98  | VQ      |         |         |         |
 8+30       0.1594      1.01  | V Q     |         |         |         |
 8+35       0.1670      1.11  | V Q     |         |         |         |
 8+40       0.1758      1.27  | V  Q    |         |         |         |
 8+45       0.1849      1.33  | V  Q    |         |         |         |
 8+50       0.1948      1.44  | V  Q    |         |         |         |
 8+55       0.2059      1.61  |  V  Q   |         |         |         |
 9+ 0       0.2174      1.67  |  V  Q   |         |         |         |
 9+ 5       0.2302      1.86  |  V   Q  |         |         |         |
 9+10       0.2452      2.18  |  V    Q |         |         |         |
 9+15       0.2609      2.28  |  V     Q|         |         |         |
 9+20       0.2776      2.41  |   V    Q|         |         |         |
 9+25       0.2954      2.59  |   V     Q         |         |         |
 9+30       0.3138      2.66  |   V     Q         |         |         |
 9+35       0.3329      2.78  |    V    |Q        |         |         |
 9+40       0.3533      2.95  |    V    |Q        |         |         |
 9+45       0.3740      3.01  |    V    | Q       |         |         |
 9+50       0.3955      3.13  |    V    | Q       |         |         |
 9+55       0.4183      3.30  |     V   |  Q      |         |         |
10+ 0       0.4414      3.36  |     V   |  Q      |         |         |
10+ 5       0.4611      2.86  |     V   |Q        |         |         |
10+10       0.4740      1.87  |      Q  |         |         |         |
10+15       0.4851      1.61  |     QV  |         |         |         |
10+20       0.4954      1.50  |     QV  |         |         |         |
10+25       0.5054      1.45  |    Q V  |         |         |         |
10+30       0.5152      1.42  |    Q V  |         |         |         |
10+35       0.5275      1.79  |      Q  |         |         |         |
10+40       0.5450      2.54  |       V Q         |         |         |
10+45       0.5639      2.75  |       V Q         |         |         |
10+50       0.5836      2.85  |       V |Q        |         |         |
10+55       0.6037      2.92  |        V|Q        |         |         |
11+ 0       0.6241      2.96  |        V|Q        |         |         |
11+ 5       0.6442      2.92  |        V|Q        |         |         |
```

11+10	0.6635	2.79	VQ			
11+15	0.6825	2.77	VQ			
11+20	0.7015	2.76	VQ			
11+25	0.7206	2.77	VQ			
11+30	0.7397	2.78	|Q			
11+35	0.7579	2.63	QV			
11+40	0.7741	2.36	Q|V			
11+45	0.7899	2.29	Q|V			
11+50	0.8060	2.35	Q| V			
11+55	0.8232	2.49	Q| V			
12+ 0	0.8406	2.53	Q V			
12+ 5	0.8618	3.09	| QV			
12+10	0.8903	4.13	| V Q			
12+15	0.9208	4.43	| V Q			
12+20	0.9528	4.65	| V Q			
12+25	0.9864	4.88	| V Q|			
12+30	1.0207	4.98	| V Q|			
12+35	1.0565	5.19	| V Q			
12+40	1.0944	5.51	| V | Q			
12+45	1.1330	5.60	| V | Q			
12+50	1.1725	5.73	| V | Q			
12+55	1.2132	5.91	| V | Q			
13+ 0	1.2544	5.98	| V | Q			
13+ 5	1.2985	6.40	| V| Q			
13+10	1.3477	7.15	| V Q |			
13+15	1.3985	7.37	| |V Q|			
13+20	1.4500	7.48	| |V Q|			
13+25	1.5020	7.54	| V Q			
13+30	1.5542	7.59	| V Q			
13+35	1.6009	6.78	| V Q |			
13+40	1.6366	5.19	| Q V |			
13+45	1.6694	4.76	| Q| V |			
13+50	1.7010	4.58	| Q | V |			
13+55	1.7318	4.48	| Q | V |			
14+ 0	1.7623	4.43	| Q | V |			
14+ 5	1.7947	4.70	| Q | V |			
14+10	1.8312	5.30	| |Q V |			
14+15	1.8689	5.47	| |Q V |			
14+20	1.9066	5.48	| |Q V |			
14+25	1.9437	5.39	| |Q V|			
14+30	1.9808	5.38	| |Q V|			
14+35	2.0179	5.39	| |Q V			
14+40	2.0551	5.40	| |Q |V			
14+45	2.0923	5.40	| |Q |V			
14+50	2.1290	5.33	| |Q | V			
14+55	2.1648	5.20	| Q | V			
15+ 0	2.2005	5.17	| Q | V			
15+ 5	2.2355	5.09	| Q | V			
15+10	2.2696	4.95	| Q| | V			
15+15	2.3034	4.91	| Q| | V			

```
15+20       2.3367      4.83  |          |          Q|          |     V    |
15+25       2.3689      4.68  |          |         Q |          |     V    |
15+30       2.4009      4.65  |          |         Q |          |      V   |
15+35       2.4308      4.33  |          |        Q  |          |      V   |
15+40       2.4566      3.75  |          |     Q     |          |       V  |
15+45       2.4814      3.60  |          |   Q       |          |       V  |
15+50       2.5057      3.53  |          |   Q       |          |       V  |
15+55       2.5298      3.50  |          |   Q       |          |        V |
16+ 0       2.5539      3.49  |          |  Q        |          |        V |
16+ 5       2.5720      2.63  |          Q           |          |        V |
16+10       2.5788      0.99  |  Q       |           |          |         V|
16+15       2.5826      0.55  | Q        |           |          |         V|
16+20       2.5849      0.34  |Q         |           |          |         V|
16+25       2.5865      0.23  Q          |           |          |         V|
16+30       2.5877      0.17  Q          |           |          |         V|
16+35       2.5885      0.11  Q          |           |          |         V|
16+40       2.5891      0.10  Q          |           |          |         V|
16+45       2.5898      0.09  Q          |           |          |         V|
16+50       2.5904      0.09  Q          |           |          |         V|
16+55       2.5911      0.09  Q          |           |          |         V|
17+ 0       2.5917      0.09  Q          |           |          |         V|
17+ 5       2.5924      0.11  Q          |           |          |         V|
17+10       2.5933      0.13  Q          |           |          |         V|
17+15       2.5943      0.14  Q          |           |          |         V|
17+20       2.5953      0.15  Q          |           |          |         V|
17+25       2.5963      0.15  Q          |           |          |         V|
17+30       2.5974      0.15  Q          |           |          |         V|
17+35       2.5984      0.15  Q          |           |          |         V|
17+40       2.5994      0.15  Q          |           |          |         V|
17+45       2.6005      0.15  Q          |           |          |         V|
17+50       2.6014      0.14  Q          |           |          |         V|
17+55       2.6023      0.13  Q          |           |          |         V|
18+ 0       2.6032      0.12  Q          |           |          |         V|
18+ 5       2.6040      0.12  Q          |           |          |         V|
18+10       2.6048      0.12  Q          |           |          |         V|
18+15       2.6057      0.12  Q          |           |          |         V|
18+20       2.6065      0.12  Q          |           |          |         V|
18+25       2.6073      0.12  Q          |           |          |         V|
18+30       2.6082      0.12  Q          |           |          |         V|
18+35       2.6089      0.11  Q          |           |          |         V|
18+40       2.6096      0.10  Q          |           |          |         V|
18+45       2.6102      0.09  Q          |           |          |         V|
18+50       2.6108      0.08  Q          |           |          |         V|
18+55       2.6113      0.07  Q          |           |          |         V|
19+ 0       2.6117      0.06  Q          |           |          |         V|
19+ 5       2.6122      0.07  Q          |           |          |         V|
19+10       2.6128      0.08  Q          |           |          |         V|
19+15       2.6134      0.09  Q          |           |          |         V|
19+20       2.6141      0.10  Q          |           |          |         V|
19+25       2.6148      0.11  Q          |           |          |         V|
```

19+30	2.6156	0.12	Q	|	|	|	V|
19+35	2.6164	0.11	Q	|	|	|	V|
19+40	2.6170	0.10	Q	|	|	|	V|
19+45	2.6177	0.09	Q	|	|	|	V|
19+50	2.6183	0.08	Q	|	|	|	V|
19+55	2.6187	0.07	Q	|	|	|	V|
20+ 0	2.6192	0.06	Q	|	|	|	V|
20+ 5	2.6197	0.07	Q	|	|	|	V|
20+10	2.6202	0.08	Q	|	|	|	V|
20+15	2.6208	0.09	Q	|	|	|	V|
20+20	2.6214	0.09	Q	|	|	|	V|
20+25	2.6221	0.09	Q	|	|	|	V|
20+30	2.6227	0.09	Q	|	|	|	V|
20+35	2.6233	0.09	Q	|	|	|	V|
20+40	2.6239	0.09	Q	|	|	|	V|
20+45	2.6245	0.09	Q	|	|	|	V|
20+50	2.6251	0.08	Q	|	|	|	V|
20+55	2.6256	0.07	Q	|	|	|	V|
21+ 0	2.6260	0.06	Q	|	|	|	V|
21+ 5	2.6265	0.07	Q	|	|	|	V|
21+10	2.6271	0.08	Q	|	|	|	V|
21+15	2.6277	0.09	Q	|	|	|	V|
21+20	2.6282	0.08	Q	|	|	|	V|
21+25	2.6287	0.07	Q	|	|	|	V|
21+30	2.6291	0.06	Q	|	|	|	V|
21+35	2.6296	0.07	Q	|	|	|	V|
21+40	2.6302	0.08	Q	|	|	|	V|
21+45	2.6308	0.09	Q	|	|	|	V|
21+50	2.6313	0.08	Q	|	|	|	V|
21+55	2.6318	0.07	Q	|	|	|	V|
22+ 0	2.6322	0.06	Q	|	|	|	V|
22+ 5	2.6327	0.07	Q	|	|	|	V|
22+10	2.6333	0.08	Q	|	|	|	V|
22+15	2.6339	0.09	Q	|	|	|	V|
22+20	2.6344	0.08	Q	|	|	|	V|
22+25	2.6349	0.07	Q	|	|	|	V|
22+30	2.6353	0.06	Q	|	|	|	V|
22+35	2.6357	0.06	Q	|	|	|	V|
22+40	2.6362	0.06	Q	|	|	|	V|
22+45	2.6366	0.06	Q	|	|	|	V|
22+50	2.6370	0.06	Q	|	|	|	V|
22+55	2.6374	0.06	Q	|	|	|	V|
23+ 0	2.6378	0.06	Q	|	|	|	V|
23+ 5	2.6382	0.06	Q	|	|	|	V|
23+10	2.6386	0.06	Q	|	|	|	V|
23+15	2.6390	0.06	Q	|	|	|	V|
23+20	2.6395	0.06	Q	|	|	|	V|
23+25	2.6399	0.06	Q	|	|	|	V|
23+30	2.6403	0.06	Q	|	|	|	V|
23+35	2.6407	0.06	Q	|	|	|	V|

```
   23+40       2.6411      0.06  Q         |          |          |         V|
   23+45       2.6415      0.06  Q         |          |          |         V|
   23+50       2.6419      0.06  Q         |          |          |         V|
   23+55       2.6424      0.06  Q         |          |          |         V|
   24+ 0       2.6428      0.06  Q         |          |          |         V|
   24+ 5       2.6431      0.04  Q         |          |          |         V|
   24+10       2.6432      0.02  Q         |          |          |         V|
   24+15       2.6432      0.01  Q         |          |          |         V|
   24+20       2.6433      0.00  Q         |          |          |         V|
   24+25       2.6433      0.00  Q         |          |          |         V|
   24+30       2.6433      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 01/19/25 File: WA22XHYD6100.out

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

Program License Serial Number 6677

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

English Units used in output format

28136 BRODIAEA AVENUE
MORENO VALLEY, RIVERSIDE COUNTY
EXISTING CONDITONS HYDROGRAPH
100-YEAR STORM EVENT

Drainage Area = 14.39(Ac.) = 0.022 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 14.39(Ac.) = 0.022 Sq. Mi.
Length along longest watercourse = 1125.00(Ft.)
Length along longest watercourse measured to centroid = 562.50(Ft.)
Length along longest watercourse = 0.213 Mi.
Length along longest watercourse measured to centroid = 0.107 Mi.
Difference in elevation = 25.00(Ft.)
Slope along watercourse = 117.3333 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.069 Hr.
Lag time = 4.15 Min.
25% of lag time = 1.04 Min.
40% of lag time = 1.66 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]
       14.39            1.24                  17.84

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       14.39            2.92                  42.02

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    1.240(In)
Area Averaged 100-Year Rainfall =    2.920(In)

Point rain (area averaged) =    2.920(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    2.920(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    14.390           67.00         0.000
 Total Area Entered =     14.39(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
67.0  83.2      0.208     0.000        0.208       1.000      0.208
                                                 Sum (F) =   0.208
Area averaged mean soil loss (F) (In/Hr) =  0.208
Minimum soil loss rate ((In/Hr)) =  0.104
(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
                       VALLEY S-Curve
------------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
------------------------------------------------------------------------
    1   0.083        120.613         25.376              3.680
    2   0.167        241.226         48.700              7.063
    3   0.250        361.839         13.255              1.922
    4   0.333        482.451          5.996              0.870
    5   0.417        603.064          3.356              0.487
    6   0.500        723.677          1.914              0.278
    7   0.583        844.290          1.403              0.203
                              Sum = 100.000   Sum=      14.502
```

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	0.175	(0.208)	0.158	0.018
2	0.17	0.60	0.210	(0.208)	0.189	0.021
3	0.25	0.60	0.210	(0.208)	0.189	0.021
4	0.33	0.60	0.210	(0.208)	0.189	0.021
5	0.42	0.60	0.210	(0.208)	0.189	0.021
6	0.50	0.70	0.245	0.208	(0.221)	0.038
7	0.58	0.70	0.245	0.208	(0.221)	0.038
8	0.67	0.70	0.245	0.208	(0.221)	0.038
9	0.75	0.70	0.245	0.208	(0.221)	0.038
10	0.83	0.70	0.245	0.208	(0.221)	0.038
11	0.92	0.70	0.245	0.208	(0.221)	0.038
12	1.00	0.80	0.280	0.208	(0.252)	0.073
13	1.08	0.80	0.280	0.208	(0.252)	0.073
14	1.17	0.80	0.280	0.208	(0.252)	0.073
15	1.25	0.80	0.280	0.208	(0.252)	0.073
16	1.33	0.80	0.280	0.208	(0.252)	0.073
17	1.42	0.80	0.280	0.208	(0.252)	0.073
18	1.50	0.80	0.280	0.208	(0.252)	0.073
19	1.58	0.80	0.280	0.208	(0.252)	0.073
20	1.67	0.80	0.280	0.208	(0.252)	0.073
21	1.75	0.80	0.280	0.208	(0.252)	0.073
22	1.83	0.80	0.280	0.208	(0.252)	0.073
23	1.92	0.80	0.280	0.208	(0.252)	0.073
24	2.00	0.90	0.315	0.208	(0.284)	0.108
25	2.08	0.80	0.280	0.208	(0.252)	0.073
26	2.17	0.90	0.315	0.208	(0.284)	0.108
27	2.25	0.90	0.315	0.208	(0.284)	0.108
28	2.33	0.90	0.315	0.208	(0.284)	0.108
29	2.42	0.90	0.315	0.208	(0.284)	0.108
30	2.50	0.90	0.315	0.208	(0.284)	0.108
31	2.58	0.90	0.315	0.208	(0.284)	0.108
32	2.67	0.90	0.315	0.208	(0.284)	0.108
33	2.75	1.00	0.350	0.208	(0.315)	0.143
34	2.83	1.00	0.350	0.208	(0.315)	0.143
35	2.92	1.00	0.350	0.208	(0.315)	0.143
36	3.00	1.00	0.350	0.208	(0.315)	0.143
37	3.08	1.00	0.350	0.208	(0.315)	0.143
38	3.17	1.10	0.385	0.208	(0.347)	0.178
39	3.25	1.10	0.385	0.208	(0.347)	0.178
40	3.33	1.10	0.385	0.208	(0.347)	0.178
41	3.42	1.20	0.420	0.208	(0.378)	0.213
42	3.50	1.30	0.455	0.208	(0.410)	0.248

43	3.58	1.40	0.491	0.208	(0.441)	0.283	
44	3.67	1.40	0.491	0.208	(0.441)	0.283	
45	3.75	1.50	0.526	0.208	(0.473)	0.318	
46	3.83	1.50	0.526	0.208	(0.473)	0.318	
47	3.92	1.60	0.561	0.208	(0.505)	0.353	
48	4.00	1.60	0.561	0.208	(0.505)	0.353	
49	4.08	1.70	0.596	0.208	(0.536)	0.388	
50	4.17	1.80	0.631	0.208	(0.568)	0.423	
51	4.25	1.90	0.666	0.208	(0.599)	0.458	
52	4.33	2.00	0.701	0.208	(0.631)	0.493	
53	4.42	2.10	0.736	0.208	(0.662)	0.528	
54	4.50	2.10	0.736	0.208	(0.662)	0.528	
55	4.58	2.20	0.771	0.208	(0.694)	0.563	
56	4.67	2.30	0.806	0.208	(0.725)	0.598	
57	4.75	2.40	0.841	0.208	(0.757)	0.633	
58	4.83	2.40	0.841	0.208	(0.757)	0.633	
59	4.92	2.50	0.876	0.208	(0.788)	0.668	
60	5.00	2.60	0.911	0.208	(0.820)	0.703	
61	5.08	3.10	1.086	0.208	(0.978)	0.879	
62	5.17	3.60	1.261	0.208	(1.135)	1.054	
63	5.25	3.90	1.366	0.208	(1.230)	1.159	
64	5.33	4.20	1.472	0.208	(1.324)	1.264	
65	5.42	4.70	1.647	0.208	(1.482)	1.439	
66	5.50	5.60	1.962	0.208	(1.766)	1.755	
67	5.58	1.90	0.666	0.208	(0.599)	0.458	
68	5.67	0.90	0.315	0.208	(0.284)	0.108	
69	5.75	0.60	0.210	(0.208)	0.189	0.021	
70	5.83	0.50	0.175	(0.208)	0.158	0.018	
71	5.92	0.30	0.105	(0.208)	0.095	0.011	
72	6.00	0.20	0.070	(0.208)	0.063	0.007	

(Loss Rate Not Used)

Sum = 100.0 Sum = 20.5

Flood volume = Effective rainfall 1.71(In)
times area 14.4(Ac.)/[(In)/(Ft.)] = 2.1(Ac.Ft)
Total soil loss = 1.21(In)
Total soil loss = 1.448(Ac.Ft)
Total rainfall = 2.92(In)
Flood volume = 89433.9 Cubic Feet
Total soil loss = 63086.8 Cubic Feet

Peak flow rate of this hydrograph = 20.971(CFS)

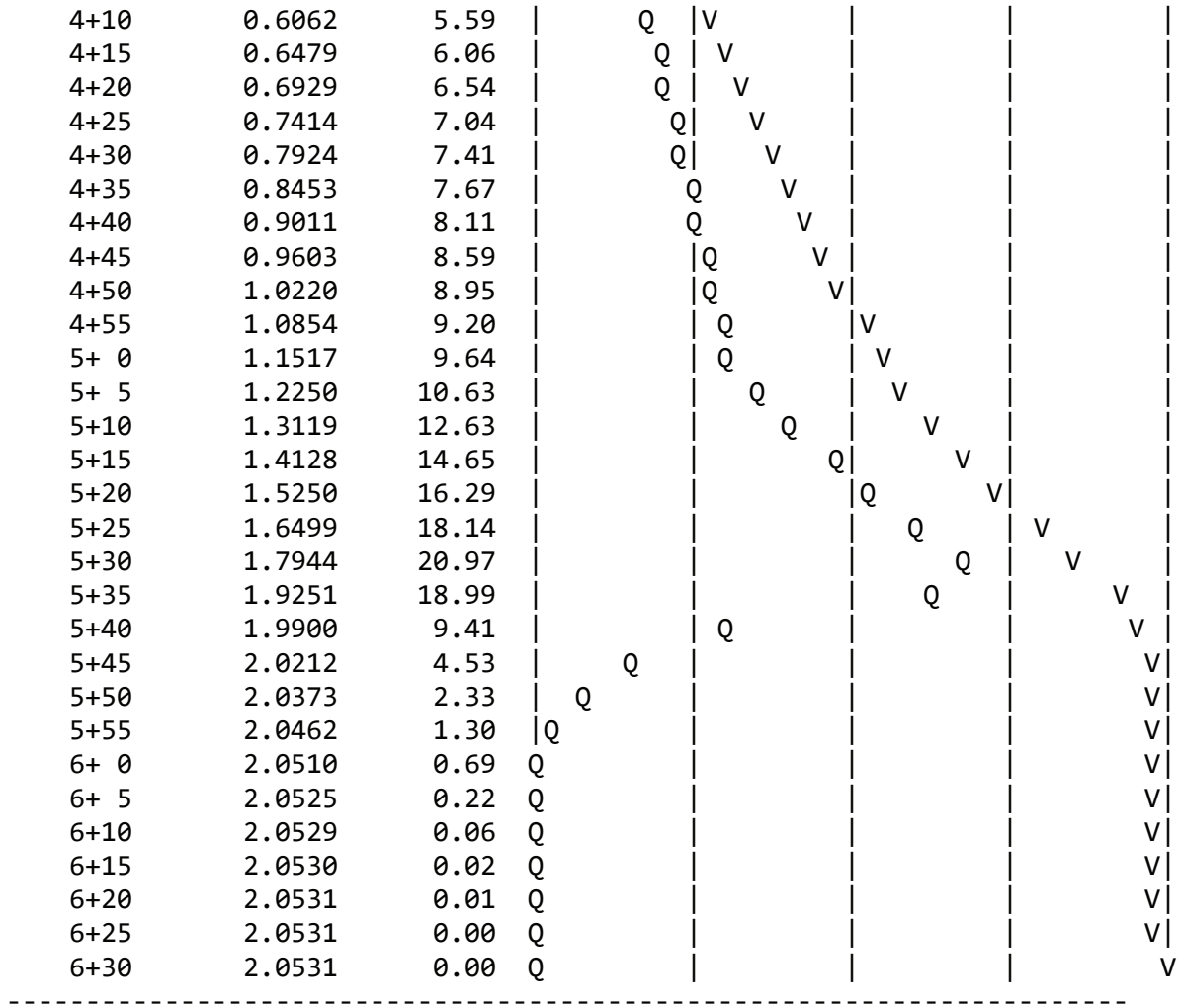
++

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 7.5 15.0 22.5 30.0

```
-------------------------------------------------------------------------
 0+ 5       0.0004      0.06  Q         |          |          |          |
 0+10       0.0018      0.20  Q         |          |          |          |
 0+15       0.0036      0.26  Q         |          |          |          |
 0+20       0.0056      0.28  Q         |          |          |          |
 0+25       0.0076      0.29  Q         |          |          |          |
 0+30       0.0101      0.36  Q         |          |          |          |
 0+35       0.0134      0.48  Q         |          |          |          |
 0+40       0.0170      0.52  Q         |          |          |          |
 0+45       0.0206      0.53  Q         |          |          |          |
 0+50       0.0243      0.54  Q         |          |          |          |
 0+55       0.0281      0.54  Q         |          |          |          |
 1+ 0       0.0327      0.68  Q         |          |          |          |
 1+ 5       0.0391      0.92  VQ        |          |          |          |
 1+10       0.0459      0.99  VQ        |          |          |          |
 1+15       0.0530      1.02  |Q        |          |          |          |
 1+20       0.0601      1.04  |Q        |          |          |          |
 1+25       0.0674      1.05  |Q        |          |          |          |
 1+30       0.0746      1.06  |Q        |          |          |          |
 1+35       0.0819      1.06  |Q        |          |          |          |
 1+40       0.0892      1.06  |Q        |          |          |          |
 1+45       0.0965      1.06  |Q        |          |          |          |
 1+50       0.1037      1.06  |QV       |          |          |          |
 1+55       0.1110      1.06  |QV       |          |          |          |
 2+ 0       0.1192      1.19  |QV       |          |          |          |
 2+ 5       0.1281      1.30  |QV       |          |          |          |
 2+10       0.1368      1.25  |QV       |          |          |          |
 2+15       0.1469      1.46  |QV       |          |          |          |
 2+20       0.1573      1.52  | QV      |          |          |          |
 2+25       0.1679      1.54  | QV      |          |          |          |
 2+30       0.1786      1.55  | QV      |          |          |          |
 2+35       0.1893      1.56  | QV      |          |          |          |
 2+40       0.2001      1.56  | QV      |          |          |          |
 2+45       0.2118      1.69  | Q V     |          |          |          |
 2+50       0.2251      1.94  | Q V     |          |          |          |
 2+55       0.2390      2.01  | Q V     |          |          |          |
 3+ 0       0.2530      2.04  | Q V     |          |          |          |
 3+ 5       0.2672      2.06  | Q  V    |          |          |          |
 3+10       0.2823      2.19  | Q  V    |          |          |          |
 3+15       0.2992      2.45  |  Q V    |          |          |          |
 3+20       0.3165      2.52  |  Q  V   |          |          |          |
 3+25       0.3349      2.68  |  Q  V   |          |          |          |
 3+30       0.3561      3.07  |   Q V   |          |          |          |
 3+35       0.3803      3.52  |   Q  V  |          |          |          |
 3+40       0.4070      3.88  |    Q V  |          |          |          |
 3+45       0.4354      4.12  |    Q  V |          |          |          |
 3+50       0.4659      4.43  |    Q   V|          |          |          |
 3+55       0.4980      4.66  |     Q  V|          |          |          |
 4+ 0       0.5321      4.95  |     Q   V          |          |          |
 4+ 5       0.5677      5.17  |     Q   |V         |          |          |
```


4+10 0.6062 5.59
4+15 0.6479 6.06
4+20 0.6929 6.54
4+25 0.7414 7.04
4+30 0.7924 7.41
4+35 0.8453 7.67
4+40 0.9011 8.11
4+45 0.9603 8.59
4+50 1.0220 8.95
4+55 1.0854 9.20
5+ 0 1.1517 9.64
5+ 5 1.2250 10.63
5+10 1.3119 12.63
5+15 1.4128 14.65
5+20 1.5250 16.29
5+25 1.6499 18.14
5+30 1.7944 20.97
5+35 1.9251 18.99
5+40 1.9900 9.41
5+45 2.0212 4.53
5+50 2.0373 2.33
5+55 2.0462 1.30
6+ 0 2.0510 0.69
6+ 5 2.0525 0.22
6+10 2.0529 0.06
6+15 2.0530 0.02
6+20 2.0531 0.01
6+25 2.0531 0.00
6+30 2.0531 0.00

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

Study date 01/19/25 File: WA22XHYD3100.out

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

Program License Serial Number 6677

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

English Units used in output format

28136 BRODIAEA AVENUE
MORENO VALLEY, RIVERSIDE COUNTY
EXISTING CONDITONS HYDROGRAPH
100-YEAR STORM EVENT

Drainage Area = 14.39(Ac.) = 0.022 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 14.39(Ac.) = 0.022 Sq. Mi.
Length along longest watercourse = 1125.00(Ft.)
Length along longest watercourse measured to centroid = 562.50(Ft.)
Length along longest watercourse = 0.213 Mi.
Length along longest watercourse measured to centroid = 0.107 Mi.
Difference in elevation = 25.00(Ft.)
Slope along watercourse = 117.3333 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.069 Hr.
Lag time = 4.15 Min.
25% of lag time = 1.04 Min.
40% of lag time = 1.66 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]
       14.39            0.89                  12.74

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       14.39            2.13                  30.65

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    0.885(In)
Area Averaged 100-Year Rainfall =    2.130(In)

Point rain (area averaged) =    2.130(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    2.130(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    14.390           67.00         0.000
 Total Area Entered =     14.39(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
67.0  83.2      0.208     0.000        0.208       1.000      0.208
                                                 Sum (F) =   0.208
Area averaged mean soil loss (F) (In/Hr) =  0.208
Minimum soil loss rate ((In/Hr)) =  0.104
(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
                       VALLEY S-Curve
------------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
------------------------------------------------------------------------
    1   0.083        120.613         25.376              3.680
    2   0.167        241.226         48.700              7.063
    3   0.250        361.839         13.255              1.922
    4   0.333        482.451          5.996              0.870
    5   0.417        603.064          3.356              0.487
    6   0.500        723.677          1.914              0.278
    7   0.583        844.290          1.403              0.203
                              Sum = 100.000   Sum=      14.502
```

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	0.332	0.208	(0.299)	0.125
2	0.17	1.30	0.332	0.208	(0.299)	0.125
3	0.25	1.10	0.281	0.208	(0.253)	0.074
4	0.33	1.50	0.383	0.208	(0.345)	0.176
5	0.42	1.50	0.383	0.208	(0.345)	0.176
6	0.50	1.80	0.460	0.208	(0.414)	0.253
7	0.58	1.50	0.383	0.208	(0.345)	0.176
8	0.67	1.80	0.460	0.208	(0.414)	0.253
9	0.75	1.80	0.460	0.208	(0.414)	0.253
10	0.83	1.50	0.383	0.208	(0.345)	0.176
11	0.92	1.60	0.409	0.208	(0.368)	0.201
12	1.00	1.80	0.460	0.208	(0.414)	0.253
13	1.08	2.20	0.562	0.208	(0.506)	0.355
14	1.17	2.20	0.562	0.208	(0.506)	0.355
15	1.25	2.20	0.562	0.208	(0.506)	0.355
16	1.33	2.00	0.511	0.208	(0.460)	0.304
17	1.42	2.60	0.665	0.208	(0.598)	0.457
18	1.50	2.70	0.690	0.208	(0.621)	0.483
19	1.58	2.40	0.613	0.208	(0.552)	0.406
20	1.67	2.70	0.690	0.208	(0.621)	0.483
21	1.75	3.30	0.843	0.208	(0.759)	0.636
22	1.83	3.10	0.792	0.208	(0.713)	0.585
23	1.92	2.90	0.741	0.208	(0.667)	0.534
24	2.00	3.00	0.767	0.208	(0.690)	0.559
25	2.08	3.10	0.792	0.208	(0.713)	0.585
26	2.17	4.20	1.073	0.208	(0.966)	0.866
27	2.25	5.00	1.278	0.208	(1.150)	1.070
28	2.33	3.50	0.895	0.208	(0.805)	0.687
29	2.42	6.80	1.738	0.208	(1.564)	1.530
30	2.50	7.30	1.866	0.208	(1.679)	1.658
31	2.58	8.20	2.096	0.208	(1.886)	1.888
32	2.67	5.90	1.508	0.208	(1.357)	1.300
33	2.75	2.00	0.511	0.208	(0.460)	0.304
34	2.83	1.80	0.460	0.208	(0.414)	0.253
35	2.92	1.80	0.460	0.208	(0.414)	0.253
36	3.00	0.60	0.153	(0.208)	0.138	0.015
		(Loss Rate Not Used)				
Sum =		100.0			Sum =	18.2

Flood volume = Effective rainfall 1.51(In)
times area 14.4(Ac.)/[(In)/(Ft.)] = 1.8(Ac.Ft)
Total soil loss = 0.62(In)
Total soil loss = 0.740(Ac.Ft)

Total rainfall = 2.13(In)
Flood volume = 79037.7 Cubic Feet
Total soil loss = 32217.3 Cubic Feet

Peak flow rate of this hydrograph = 23.460(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	7.5	15.0	22.5	30.0
0+ 5	0.0032	0.46	Q				
0+10	0.0124	1.34	VQ				
0+15	0.0220	1.39	VQ				
0+20	0.0324	1.52	V Q				
0+25	0.0476	2.20	VQ				
0+30	0.0660	2.67	V Q				
0+35	0.0868	3.02	V Q				
0+40	0.1070	2.94	VQ				
0+45	0.1306	3.42	V Q				
0+50	0.1532	3.28	VQ				
0+55	0.1730	2.88	Q				
1+ 0	0.1946	3.13	Q				
1+ 5	0.2212	3.86	VQ				
1+10	0.2534	4.68	VQ				
1+15	0.2873	4.91	Q				
1+20	0.3205	4.83	QV				
1+25	0.3557	5.10	QV				
1+30	0.3985	6.22	Q				
1+35	0.4425	6.39	QV				
1+40	0.4859	6.29	Q V				
1+45	0.5364	7.33	Q V				
1+50	0.5939	8.35	Q V				
1+55	0.6501	8.16	Q V				
2+ 0	0.7049	7.95	Q V				
2+ 5	0.7611	8.17	Q V				
2+10	0.8260	9.42	Q V				
2+15	0.9102	12.22	Q V				
2+20	0.9984	12.81	Q V				
2+25	1.0938	13.85	Q V				
2+30	1.2306	19.87	QV				
2+35	1.3897	23.09	Q				
2+40	1.5512	23.46	Q V				
2+45	1.6651	16.54	Q V				
2+50	1.7243	8.59	Q V				
2+55	1.7665	6.12	Q V				

```
    3+ 0       1.7946      4.09  |    Q    |         |         |        V|
    3+ 5       1.8063      1.71  | Q       |         |         |        V|
    3+10       1.8113      0.72  Q         |         |         |        V|
    3+15       1.8132      0.27  Q         |         |         |        V|
    3+20       1.8141      0.13  Q         |         |         |        V|
    3+25       1.8144      0.06  Q         |         |         |        V|
    3+30       1.8145      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 01/19/25 File: WA22XHYD1100.out

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

Program License Serial Number 6677

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

English Units used in output format

28136 BRODIAEA AVENUE
MORENO VALLEY, RIVERSIDE COUNTY
EXISTING CONDITONS HYDROGRAPH
100-YEAR STORM EVENT

Drainage Area = 14.39(Ac.) = 0.022 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 14.39(Ac.) = 0.022 Sq. Mi.
Length along longest watercourse = 1125.00(Ft.)
Length along longest watercourse measured to centroid = 562.50(Ft.)
Length along longest watercourse = 0.213 Mi.
Length along longest watercourse measured to centroid = 0.107 Mi.
Difference in elevation = 25.00(Ft.)
Slope along watercourse = 117.3333 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.069 Hr.
Lag time = 4.15 Min.
25% of lag time = 1.04 Min.
40% of lag time = 1.66 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]
       14.39            0.49                   7.11

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       14.39            1.31                  18.85

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    0.494(In)
Area Averaged 100-Year Rainfall =    1.310(In)

Point rain (area averaged) =    1.310(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    1.310(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    14.390           67.00         0.000
 Total Area Entered =     14.39(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
67.0  83.2      0.208     0.000        0.208       1.000      0.208
                                                 Sum (F) =   0.208
Area averaged mean soil loss (F) (In/Hr) =  0.208
Minimum soil loss rate ((In/Hr)) =  0.104
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.900
------------------------------------------------------------------------
Slope of intensity-duration curve for a 1 hour storm =0.5000
------------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                       VALLEY S-Curve
------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
------------------------------------------------------------------
    1   0.083        120.613         25.376              3.680
    2   0.167        241.226         48.700              7.063
    3   0.250        361.839         13.255              1.922
    4   0.333        482.451          5.996              0.870
    5   0.417        603.064          3.356              0.487
    6   0.500        723.677          1.914              0.278
```

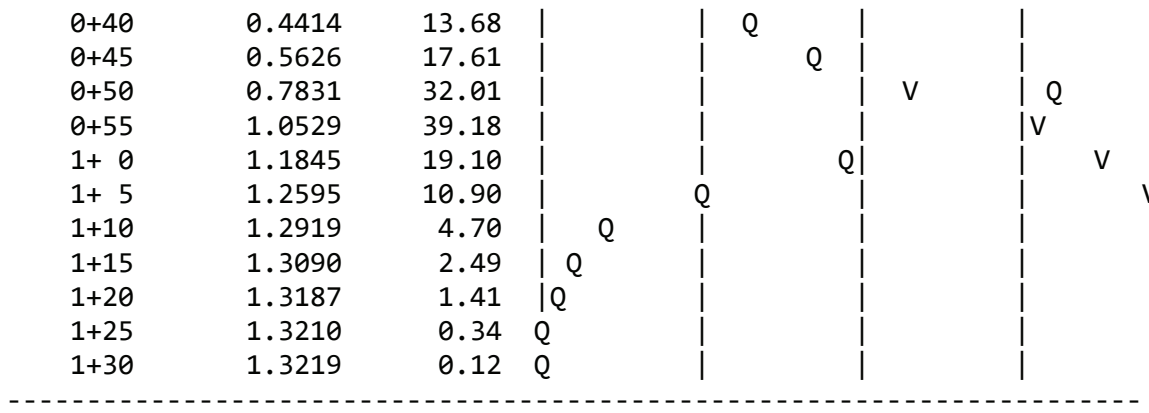
```
          7   0.583        844.290          1.403              0.203
                                      Sum = 100.000   Sum=      14.502
-----------------------------------------------------------------------
```

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	4.20	0.660	0.208	(0.594)	0.453
2	0.17	4.30	0.676	0.208	(0.608)	0.468
3	0.25	5.00	0.786	0.208	(0.707)	0.578
4	0.33	5.00	0.786	0.208	(0.707)	0.578
5	0.42	5.80	0.912	0.208	(0.820)	0.704
6	0.50	6.50	1.022	0.208	(0.920)	0.814
7	0.58	7.40	1.163	0.208	(1.047)	0.956
8	0.67	8.60	1.352	0.208	(1.217)	1.144
9	0.75	12.30	1.933	0.208	(1.740)	1.726
10	0.83	29.10	4.574	0.208	(4.117)	4.366
11	0.92	6.80	1.069	0.208	(0.962)	0.861
12	1.00	5.00	0.786	0.208	(0.707)	0.578
		(Loss Rate Not Used)				
Sum =		100.0			Sum =	13.2

```
   Flood volume = Effective rainfall      1.10(In)
    times area      14.4(Ac.)/[(In)/(Ft.)] =       1.3(Ac.Ft)
   Total soil loss =      0.21(In)
   Total soil loss =     0.249(Ac.Ft)
   Total rainfall =      1.31(In)
   Flood volume =       57579.9 Cubic Feet
   Total soil loss =       10840.0 Cubic Feet
   ---------------------------------------------------------------------
    Peak flow rate of this hydrograph =     39.175(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       0.0115      1.67  VQ        |         |         |         |
  0+10       0.0454      4.92  |V  Q     |         |         |         |
  0+15       0.0888      6.31  | V   Q   |         |         |         |
  0+20       0.1406      7.51  |   V  Q  |         |         |         |
  0+25       0.1986      8.42  |     V Q |         |         |         |
  0+30       0.2670      9.94  |       VQ|         |         |         |
  0+35       0.3471     11.63  |         VQ        |         |         |
```


0+40 0.4414 13.68
0+45 0.5626 17.61
0+50 0.7831 32.01
0+55 1.0529 39.18
1+ 0 1.1845 19.10
1+ 5 1.2595 10.90
1+10 1.2919 4.70
1+15 1.3090 2.49
1+20 1.3187 1.41
1+25 1.3210 0.34
1+30 1.3219 0.12

Proposed Conditions Unit Hydrographs

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

Study date 01/18/25 File: WA22PHYD24100.out

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

Program License Serial Number 6677

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

English Units used in output format

28136 BRODIAEA AVENUE
MORENO VALLEY, RIVERSIDE COUNTY
PROPOSED CONDITIONS HYDROGRAPH
100-YEAR STORM EVENT

Drainage Area = 14.39(Ac.) = 0.022 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 14.39(Ac.) = 0.022 Sq. Mi.
Length along longest watercourse = 1243.00(Ft.)
Length along longest watercourse measured to centroid = 621.50(Ft.)
Length along longest watercourse = 0.235 Mi.
Length along longest watercourse measured to centroid = 0.118 Mi.
Difference in elevation = 21.30(Ft.)
Slope along watercourse = 90.4779 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]
       14.39            2.13                  30.65

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       14.39            5.17                  74.40

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    2.130(In)
Area Averaged 100-Year Rainfall =    5.170(In)

Point rain (area averaged) =    5.170(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    5.170(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    14.390           32.00         0.800
 Total Area Entered =     14.39(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
32.0  52.0      0.552     0.800        0.154       1.000      0.154
                                                 Sum (F) =   0.154
Area averaged mean soil loss (F) (In/Hr) =  0.154
Minimum soil loss rate ((In/Hr)) =  0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.260
------------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                       VALLEY S-Curve
------------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
------------------------------------------------------------------------
    1   0.083        212.841         45.535              6.604
    2   0.167        425.681         42.481              6.161
    3   0.250        638.522          8.296              1.203
    4   0.333        851.362          3.688              0.535
                               Sum = 100.000   Sum=      14.502
------------------------------------------------------------------------
```

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	0.041	(0.274)	0.011	0.031
2	0.17	0.07	0.041	(0.273)	0.011	0.031
3	0.25	0.07	0.041	(0.272)	0.011	0.031
4	0.33	0.10	0.062	(0.271)	0.016	0.046
5	0.42	0.10	0.062	(0.270)	0.016	0.046
6	0.50	0.10	0.062	(0.269)	0.016	0.046
7	0.58	0.10	0.062	(0.267)	0.016	0.046
8	0.67	0.10	0.062	(0.266)	0.016	0.046
9	0.75	0.10	0.062	(0.265)	0.016	0.046
10	0.83	0.13	0.083	(0.264)	0.022	0.061
11	0.92	0.13	0.083	(0.263)	0.022	0.061
12	1.00	0.13	0.083	(0.262)	0.022	0.061
13	1.08	0.10	0.062	(0.261)	0.016	0.046
14	1.17	0.10	0.062	(0.260)	0.016	0.046
15	1.25	0.10	0.062	(0.259)	0.016	0.046
16	1.33	0.10	0.062	(0.258)	0.016	0.046
17	1.42	0.10	0.062	(0.257)	0.016	0.046
18	1.50	0.10	0.062	(0.256)	0.016	0.046
19	1.58	0.10	0.062	(0.255)	0.016	0.046
20	1.67	0.10	0.062	(0.254)	0.016	0.046
21	1.75	0.10	0.062	(0.253)	0.016	0.046
22	1.83	0.13	0.083	(0.252)	0.022	0.061
23	1.92	0.13	0.083	(0.251)	0.022	0.061
24	2.00	0.13	0.083	(0.250)	0.022	0.061
25	2.08	0.13	0.083	(0.249)	0.022	0.061
26	2.17	0.13	0.083	(0.248)	0.022	0.061
27	2.25	0.13	0.083	(0.247)	0.022	0.061
28	2.33	0.13	0.083	(0.246)	0.022	0.061
29	2.42	0.13	0.083	(0.245)	0.022	0.061
30	2.50	0.13	0.083	(0.244)	0.022	0.061
31	2.58	0.17	0.103	(0.243)	0.027	0.077
32	2.67	0.17	0.103	(0.242)	0.027	0.077
33	2.75	0.17	0.103	(0.241)	0.027	0.077
34	2.83	0.17	0.103	(0.240)	0.027	0.077
35	2.92	0.17	0.103	(0.239)	0.027	0.077
36	3.00	0.17	0.103	(0.238)	0.027	0.077
37	3.08	0.17	0.103	(0.237)	0.027	0.077
38	3.17	0.17	0.103	(0.236)	0.027	0.077
39	3.25	0.17	0.103	(0.235)	0.027	0.077
40	3.33	0.17	0.103	(0.234)	0.027	0.077
41	3.42	0.17	0.103	(0.233)	0.027	0.077
42	3.50	0.17	0.103	(0.232)	0.027	0.077
43	3.58	0.17	0.103	(0.231)	0.027	0.077
44	3.67	0.17	0.103	(0.230)	0.027	0.077
45	3.75	0.17	0.103	(0.229)	0.027	0.077

46	3.83	0.20	0.124	(0.228)	0.032	0.092
47	3.92	0.20	0.124	(0.227)	0.032	0.092
48	4.00	0.20	0.124	(0.226)	0.032	0.092
49	4.08	0.20	0.124	(0.225)	0.032	0.092
50	4.17	0.20	0.124	(0.224)	0.032	0.092
51	4.25	0.20	0.124	(0.223)	0.032	0.092
52	4.33	0.23	0.145	(0.222)	0.038	0.107
53	4.42	0.23	0.145	(0.222)	0.038	0.107
54	4.50	0.23	0.145	(0.221)	0.038	0.107
55	4.58	0.23	0.145	(0.220)	0.038	0.107
56	4.67	0.23	0.145	(0.219)	0.038	0.107
57	4.75	0.23	0.145	(0.218)	0.038	0.107
58	4.83	0.27	0.165	(0.217)	0.043	0.122
59	4.92	0.27	0.165	(0.216)	0.043	0.122
60	5.00	0.27	0.165	(0.215)	0.043	0.122
61	5.08	0.20	0.124	(0.214)	0.032	0.092
62	5.17	0.20	0.124	(0.213)	0.032	0.092
63	5.25	0.20	0.124	(0.212)	0.032	0.092
64	5.33	0.23	0.145	(0.211)	0.038	0.107
65	5.42	0.23	0.145	(0.210)	0.038	0.107
66	5.50	0.23	0.145	(0.209)	0.038	0.107
67	5.58	0.27	0.165	(0.208)	0.043	0.122
68	5.67	0.27	0.165	(0.208)	0.043	0.122
69	5.75	0.27	0.165	(0.207)	0.043	0.122
70	5.83	0.27	0.165	(0.206)	0.043	0.122
71	5.92	0.27	0.165	(0.205)	0.043	0.122
72	6.00	0.27	0.165	(0.204)	0.043	0.122
73	6.08	0.30	0.186	(0.203)	0.048	0.138
74	6.17	0.30	0.186	(0.202)	0.048	0.138
75	6.25	0.30	0.186	(0.201)	0.048	0.138
76	6.33	0.30	0.186	(0.200)	0.048	0.138
77	6.42	0.30	0.186	(0.199)	0.048	0.138
78	6.50	0.30	0.186	(0.198)	0.048	0.138
79	6.58	0.33	0.207	(0.198)	0.054	0.153
80	6.67	0.33	0.207	(0.197)	0.054	0.153
81	6.75	0.33	0.207	(0.196)	0.054	0.153
82	6.83	0.33	0.207	(0.195)	0.054	0.153
83	6.92	0.33	0.207	(0.194)	0.054	0.153
84	7.00	0.33	0.207	(0.193)	0.054	0.153
85	7.08	0.33	0.207	(0.192)	0.054	0.153
86	7.17	0.33	0.207	(0.191)	0.054	0.153
87	7.25	0.33	0.207	(0.191)	0.054	0.153
88	7.33	0.37	0.227	(0.190)	0.059	0.168
89	7.42	0.37	0.227	(0.189)	0.059	0.168
90	7.50	0.37	0.227	(0.188)	0.059	0.168
91	7.58	0.40	0.248	(0.187)	0.065	0.184
92	7.67	0.40	0.248	(0.186)	0.065	0.184
93	7.75	0.40	0.248	(0.185)	0.065	0.184
94	7.83	0.43	0.269	(0.184)	0.070	0.199
95	7.92	0.43	0.269	(0.184)	0.070	0.199

96	8.00	0.43	0.269	(0.183)	0.070	0.199
97	8.08	0.50	0.310	(0.182)	0.081	0.230
98	8.17	0.50	0.310	(0.181)	0.081	0.230
99	8.25	0.50	0.310	(0.180)	0.081	0.230
100	8.33	0.50	0.310	(0.179)	0.081	0.230
101	8.42	0.50	0.310	(0.179)	0.081	0.230
102	8.50	0.50	0.310	(0.178)	0.081	0.230
103	8.58	0.53	0.331	(0.177)	0.086	0.245
104	8.67	0.53	0.331	(0.176)	0.086	0.245
105	8.75	0.53	0.331	(0.175)	0.086	0.245
106	8.83	0.57	0.352	(0.174)	0.091	0.260
107	8.92	0.57	0.352	(0.174)	0.091	0.260
108	9.00	0.57	0.352	(0.173)	0.091	0.260
109	9.08	0.63	0.393	(0.172)	0.102	0.291
110	9.17	0.63	0.393	(0.171)	0.102	0.291
111	9.25	0.63	0.393	(0.170)	0.102	0.291
112	9.33	0.67	0.414	(0.169)	0.108	0.306
113	9.42	0.67	0.414	(0.169)	0.108	0.306
114	9.50	0.67	0.414	(0.168)	0.108	0.306
115	9.58	0.70	0.434	(0.167)	0.113	0.321
116	9.67	0.70	0.434	(0.166)	0.113	0.321
117	9.75	0.70	0.434	(0.165)	0.113	0.321
118	9.83	0.73	0.455	(0.165)	0.118	0.337
119	9.92	0.73	0.455	(0.164)	0.118	0.337
120	10.00	0.73	0.455	(0.163)	0.118	0.337
121	10.08	0.50	0.310	(0.162)	0.081	0.230
122	10.17	0.50	0.310	(0.162)	0.081	0.230
123	10.25	0.50	0.310	(0.161)	0.081	0.230
124	10.33	0.50	0.310	(0.160)	0.081	0.230
125	10.42	0.50	0.310	(0.159)	0.081	0.230
126	10.50	0.50	0.310	(0.158)	0.081	0.230
127	10.58	0.67	0.414	(0.158)	0.108	0.306
128	10.67	0.67	0.414	(0.157)	0.108	0.306
129	10.75	0.67	0.414	(0.156)	0.108	0.306
130	10.83	0.67	0.414	(0.155)	0.108	0.306
131	10.92	0.67	0.414	(0.155)	0.108	0.306
132	11.00	0.67	0.414	(0.154)	0.108	0.306
133	11.08	0.63	0.393	(0.153)	0.102	0.291
134	11.17	0.63	0.393	(0.152)	0.102	0.291
135	11.25	0.63	0.393	(0.152)	0.102	0.291
136	11.33	0.63	0.393	(0.151)	0.102	0.291
137	11.42	0.63	0.393	(0.150)	0.102	0.291
138	11.50	0.63	0.393	(0.149)	0.102	0.291
139	11.58	0.57	0.352	(0.149)	0.091	0.260
140	11.67	0.57	0.352	(0.148)	0.091	0.260
141	11.75	0.57	0.352	(0.147)	0.091	0.260
142	11.83	0.60	0.372	(0.146)	0.097	0.275
143	11.92	0.60	0.372	(0.146)	0.097	0.275
144	12.00	0.60	0.372	(0.145)	0.097	0.275
145	12.08	0.83	0.517	(0.144)	0.134	0.383

146	12.17	0.83	0.517	(0.143)	0.134	0.383
147	12.25	0.83	0.517	(0.143)	0.134	0.383
148	12.33	0.87	0.538	(0.142)	0.140	0.398
149	12.42	0.87	0.538	(0.141)	0.140	0.398
150	12.50	0.87	0.538	(0.141)	0.140	0.398
151	12.58	0.93	0.579	0.140	(0.151)	0.439
152	12.67	0.93	0.579	0.139	(0.151)	0.440
153	12.75	0.93	0.579	0.138	(0.151)	0.441
154	12.83	0.97	0.600	0.138	(0.156)	0.462
155	12.92	0.97	0.600	0.137	(0.156)	0.463
156	13.00	0.97	0.600	0.136	(0.156)	0.463
157	13.08	1.13	0.703	0.136	(0.183)	0.567
158	13.17	1.13	0.703	0.135	(0.183)	0.568
159	13.25	1.13	0.703	0.134	(0.183)	0.569
160	13.33	1.13	0.703	0.134	(0.183)	0.569
161	13.42	1.13	0.703	0.133	(0.183)	0.570
162	13.50	1.13	0.703	0.132	(0.183)	0.571
163	13.58	0.77	0.476	(0.132)	0.124	0.352
164	13.67	0.77	0.476	(0.131)	0.124	0.352
165	13.75	0.77	0.476	(0.130)	0.124	0.352
166	13.83	0.77	0.476	(0.130)	0.124	0.352
167	13.92	0.77	0.476	(0.129)	0.124	0.352
168	14.00	0.77	0.476	(0.128)	0.124	0.352
169	14.08	0.90	0.558	0.128	(0.145)	0.431
170	14.17	0.90	0.558	0.127	(0.145)	0.431
171	14.25	0.90	0.558	0.126	(0.145)	0.432
172	14.33	0.87	0.538	0.126	(0.140)	0.412
173	14.42	0.87	0.538	0.125	(0.140)	0.413
174	14.50	0.87	0.538	0.124	(0.140)	0.413
175	14.58	0.87	0.538	0.124	(0.140)	0.414
176	14.67	0.87	0.538	0.123	(0.140)	0.415
177	14.75	0.87	0.538	0.123	(0.140)	0.415
178	14.83	0.83	0.517	0.122	(0.134)	0.395
179	14.92	0.83	0.517	0.121	(0.134)	0.396
180	15.00	0.83	0.517	0.121	(0.134)	0.396
181	15.08	0.80	0.496	0.120	(0.129)	0.376
182	15.17	0.80	0.496	0.119	(0.129)	0.377
183	15.25	0.80	0.496	0.119	(0.129)	0.378
184	15.33	0.77	0.476	0.118	(0.124)	0.357
185	15.42	0.77	0.476	0.118	(0.124)	0.358
186	15.50	0.77	0.476	0.117	(0.124)	0.359
187	15.58	0.63	0.393	(0.116)	0.102	0.291
188	15.67	0.63	0.393	(0.116)	0.102	0.291
189	15.75	0.63	0.393	(0.115)	0.102	0.291
190	15.83	0.63	0.393	(0.115)	0.102	0.291
191	15.92	0.63	0.393	(0.114)	0.102	0.291
192	16.00	0.63	0.393	(0.113)	0.102	0.291
193	16.08	0.13	0.083	(0.113)	0.022	0.061
194	16.17	0.13	0.083	(0.112)	0.022	0.061
195	16.25	0.13	0.083	(0.112)	0.022	0.061

196	16.33	0.13	0.083	(0.111)	0.022	0.061
197	16.42	0.13	0.083	(0.111)	0.022	0.061
198	16.50	0.13	0.083	(0.110)	0.022	0.061
199	16.58	0.10	0.062	(0.109)	0.016	0.046
200	16.67	0.10	0.062	(0.109)	0.016	0.046
201	16.75	0.10	0.062	(0.108)	0.016	0.046
202	16.83	0.10	0.062	(0.108)	0.016	0.046
203	16.92	0.10	0.062	(0.107)	0.016	0.046
204	17.00	0.10	0.062	(0.107)	0.016	0.046
205	17.08	0.17	0.103	(0.106)	0.027	0.077
206	17.17	0.17	0.103	(0.106)	0.027	0.077
207	17.25	0.17	0.103	(0.105)	0.027	0.077
208	17.33	0.17	0.103	(0.105)	0.027	0.077
209	17.42	0.17	0.103	(0.104)	0.027	0.077
210	17.50	0.17	0.103	(0.104)	0.027	0.077
211	17.58	0.17	0.103	(0.103)	0.027	0.077
212	17.67	0.17	0.103	(0.102)	0.027	0.077
213	17.75	0.17	0.103	(0.102)	0.027	0.077
214	17.83	0.13	0.083	(0.101)	0.022	0.061
215	17.92	0.13	0.083	(0.101)	0.022	0.061
216	18.00	0.13	0.083	(0.100)	0.022	0.061
217	18.08	0.13	0.083	(0.100)	0.022	0.061
218	18.17	0.13	0.083	(0.099)	0.022	0.061
219	18.25	0.13	0.083	(0.099)	0.022	0.061
220	18.33	0.13	0.083	(0.099)	0.022	0.061
221	18.42	0.13	0.083	(0.098)	0.022	0.061
222	18.50	0.13	0.083	(0.098)	0.022	0.061
223	18.58	0.10	0.062	(0.097)	0.016	0.046
224	18.67	0.10	0.062	(0.097)	0.016	0.046
225	18.75	0.10	0.062	(0.096)	0.016	0.046
226	18.83	0.07	0.041	(0.096)	0.011	0.031
227	18.92	0.07	0.041	(0.095)	0.011	0.031
228	19.00	0.07	0.041	(0.095)	0.011	0.031
229	19.08	0.10	0.062	(0.094)	0.016	0.046
230	19.17	0.10	0.062	(0.094)	0.016	0.046
231	19.25	0.10	0.062	(0.093)	0.016	0.046
232	19.33	0.13	0.083	(0.093)	0.022	0.061
233	19.42	0.13	0.083	(0.093)	0.022	0.061
234	19.50	0.13	0.083	(0.092)	0.022	0.061
235	19.58	0.10	0.062	(0.092)	0.016	0.046
236	19.67	0.10	0.062	(0.091)	0.016	0.046
237	19.75	0.10	0.062	(0.091)	0.016	0.046
238	19.83	0.07	0.041	(0.090)	0.011	0.031
239	19.92	0.07	0.041	(0.090)	0.011	0.031
240	20.00	0.07	0.041	(0.090)	0.011	0.031
241	20.08	0.10	0.062	(0.089)	0.016	0.046
242	20.17	0.10	0.062	(0.089)	0.016	0.046
243	20.25	0.10	0.062	(0.089)	0.016	0.046
244	20.33	0.10	0.062	(0.088)	0.016	0.046
245	20.42	0.10	0.062	(0.088)	0.016	0.046

246	20.50	0.10	0.062	(0.087)	0.016	0.046
247	20.58	0.10	0.062	(0.087)	0.016	0.046
248	20.67	0.10	0.062	(0.087)	0.016	0.046
249	20.75	0.10	0.062	(0.086)	0.016	0.046
250	20.83	0.07	0.041	(0.086)	0.011	0.031
251	20.92	0.07	0.041	(0.086)	0.011	0.031
252	21.00	0.07	0.041	(0.085)	0.011	0.031
253	21.08	0.10	0.062	(0.085)	0.016	0.046
254	21.17	0.10	0.062	(0.085)	0.016	0.046
255	21.25	0.10	0.062	(0.084)	0.016	0.046
256	21.33	0.07	0.041	(0.084)	0.011	0.031
257	21.42	0.07	0.041	(0.084)	0.011	0.031
258	21.50	0.07	0.041	(0.083)	0.011	0.031
259	21.58	0.10	0.062	(0.083)	0.016	0.046
260	21.67	0.10	0.062	(0.083)	0.016	0.046
261	21.75	0.10	0.062	(0.082)	0.016	0.046
262	21.83	0.07	0.041	(0.082)	0.011	0.031
263	21.92	0.07	0.041	(0.082)	0.011	0.031
264	22.00	0.07	0.041	(0.082)	0.011	0.031
265	22.08	0.10	0.062	(0.081)	0.016	0.046
266	22.17	0.10	0.062	(0.081)	0.016	0.046
267	22.25	0.10	0.062	(0.081)	0.016	0.046
268	22.33	0.07	0.041	(0.081)	0.011	0.031
269	22.42	0.07	0.041	(0.080)	0.011	0.031
270	22.50	0.07	0.041	(0.080)	0.011	0.031
271	22.58	0.07	0.041	(0.080)	0.011	0.031
272	22.67	0.07	0.041	(0.080)	0.011	0.031
273	22.75	0.07	0.041	(0.079)	0.011	0.031
274	22.83	0.07	0.041	(0.079)	0.011	0.031
275	22.92	0.07	0.041	(0.079)	0.011	0.031
276	23.00	0.07	0.041	(0.079)	0.011	0.031
277	23.08	0.07	0.041	(0.079)	0.011	0.031
278	23.17	0.07	0.041	(0.078)	0.011	0.031
279	23.25	0.07	0.041	(0.078)	0.011	0.031
280	23.33	0.07	0.041	(0.078)	0.011	0.031
281	23.42	0.07	0.041	(0.078)	0.011	0.031
282	23.50	0.07	0.041	(0.078)	0.011	0.031
283	23.58	0.07	0.041	(0.078)	0.011	0.031
284	23.67	0.07	0.041	(0.078)	0.011	0.031
285	23.75	0.07	0.041	(0.077)	0.011	0.031
286	23.83	0.07	0.041	(0.077)	0.011	0.031
287	23.92	0.07	0.041	(0.077)	0.011	0.031
288	24.00	0.07	0.041	(0.077)	0.011	0.031

(Loss Rate Not Used)

Sum = 100.0 Sum = 46.5

Flood volume = Effective rainfall 3.88(In)
times area 14.4(Ac.)/[(In)/(Ft.)] = 4.6(Ac.Ft)
Total soil loss = 1.29(In)
Total soil loss = 1.550(Ac.Ft)
Total rainfall = 5.17(In)

Flood volume = 202532.1 Cubic Feet
Total soil loss = 67518.8 Cubic Feet

Peak flow rate of this hydrograph = 8.276(CFS)

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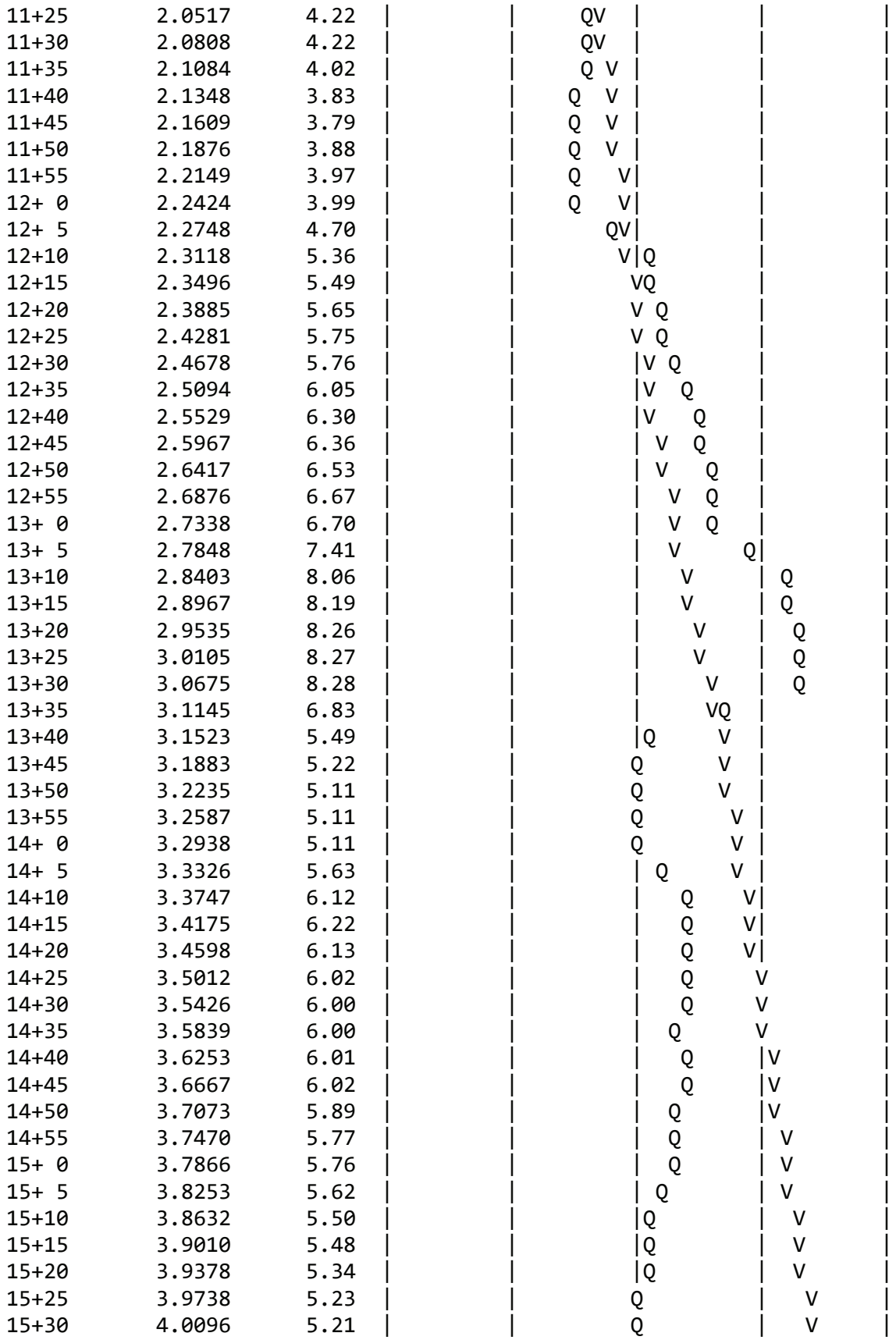
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

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	0.0014	0.20	Q				
0+10	0.0041	0.39	VQ				
0+15	0.0070	0.43	VQ				
0+20	0.0108	0.55	V Q				
0+25	0.0152	0.64	V Q				
0+30	0.0197	0.66	V Q				
0+35	0.0243	0.67	V Q				
0+40	0.0289	0.67	V Q				
0+45	0.0335	0.67	V Q				
0+50	0.0388	0.77	V Q				
0+55	0.0447	0.86	V Q				
1+ 0	0.0508	0.88	V Q				
1+ 5	0.0562	0.79	V Q				
1+10	0.0610	0.69	V Q				
1+15	0.0656	0.67	V Q				
1+20	0.0702	0.67	V Q				
1+25	0.0748	0.67	V Q				
1+30	0.0794	0.67	V Q				
1+35	0.0839	0.67	V Q				
1+40	0.0885	0.67	V Q				
1+45	0.0931	0.67	V Q				
1+50	0.0984	0.77	V Q				
1+55	0.1043	0.86	V Q				
2+ 0	0.1104	0.88	V Q				
2+ 5	0.1165	0.89	|V Q				
2+10	0.1226	0.89	|V Q				
2+15	0.1288	0.89	|V Q				
2+20	0.1349	0.89	|V Q				
2+25	0.1410	0.89	|V Q				
2+30	0.1471	0.89	|V Q				
2+35	0.1539	0.99	|V Q				
2+40	0.1614	1.08	|V Q				
2+45	0.1690	1.10	|V Q				
2+50	0.1766	1.11	|V Q				
2+55	0.1843	1.11	|V Q				
3+ 0	0.1919	1.11	|V Q				

```
3+ 5       0.1996      1.11  |V  Q     |          |          |          |
3+10       0.2072      1.11  |V  Q     |          |          |          |
3+15       0.2148      1.11  |V  Q     |          |          |          |
3+20       0.2225      1.11  |V  Q     |          |          |          |
3+25       0.2301      1.11  |V  Q     |          |          |          |
3+30       0.2378      1.11  | V Q     |          |          |          |
3+35       0.2454      1.11  | V Q     |          |          |          |
3+40       0.2531      1.11  | V Q     |          |          |          |
3+45       0.2607      1.11  | V Q     |          |          |          |
3+50       0.2691      1.21  | V Q     |          |          |          |
3+55       0.2781      1.31  | V  Q    |          |          |          |
4+ 0       0.2872      1.32  | V  Q    |          |          |          |
4+ 5       0.2963      1.33  | V  Q    |          |          |          |
4+10       0.3055      1.33  | V  Q    |          |          |          |
4+15       0.3147      1.33  | V  Q    |          |          |          |
4+20       0.3246      1.43  | V  Q    |          |          |          |
4+25       0.3351      1.53  | V   Q   |          |          |          |
4+30       0.3457      1.55  | V   Q   |          |          |          |
4+35       0.3564      1.55  |  V  Q   |          |          |          |
4+40       0.3671      1.55  |  V  Q   |          |          |          |
4+45       0.3779      1.55  |  V  Q   |          |          |          |
4+50       0.3893      1.66  |  V  Q   |          |          |          |
4+55       0.4013      1.75  |  V  Q   |          |          |          |
5+ 0       0.4135      1.77  |  V   Q  |          |          |          |
5+ 5       0.4243      1.57  |  V  Q   |          |          |          |
5+10       0.4339      1.39  |  V Q    |          |          |          |
5+15       0.4432      1.35  |  V Q    |          |          |          |
5+20       0.4530      1.43  |  V Q    |          |          |          |
5+25       0.4635      1.53  |  V  Q   |          |          |          |
5+30       0.4742      1.55  |   V Q   |          |          |          |
5+35       0.4856      1.66  |   V Q   |          |          |          |
5+40       0.4976      1.75  |   V Q   |          |          |          |
5+45       0.5098      1.77  |   V  Q  |          |          |          |
5+50       0.5221      1.78  |   V  Q  |          |          |          |
5+55       0.5343      1.78  |   V  Q  |          |          |          |
6+ 0       0.5465      1.78  |   V  Q  |          |          |          |
6+ 5       0.5595      1.88  |   V  Q  |          |          |          |
6+10       0.5730      1.97  |   V  Q  |          |          |          |
6+15       0.5867      1.99  |    V Q  |          |          |          |
6+20       0.6005      2.00  |    V Q  |          |          |          |
6+25       0.6143      2.00  |    V Q  |          |          |          |
6+30       0.6280      2.00  |    V Q  |          |          |          |
6+35       0.6425      2.10  |    V  Q |          |          |          |
6+40       0.6576      2.19  |    V  Q |          |          |          |
6+45       0.6728      2.21  |    V  Q |          |          |          |
6+50       0.6881      2.22  |    V  Q |          |          |          |
6+55       0.7034      2.22  |     V Q |          |          |          |
7+ 0       0.7187      2.22  |     V Q |          |          |          |
7+ 5       0.7340      2.22  |     V Q |          |          |          |
7+10       0.7493      2.22  |     V Q |          |          |          |
```

7+15	0.7646	2.22	V Q				
7+20	0.7806	2.32	V Q				
7+25	0.7972	2.42	V Q				
7+30	0.8140	2.43	V Q				
7+35	0.8315	2.54	V Q				
7+40	0.8497	2.64	V Q				
7+45	0.8680	2.66	V Q				
7+50	0.8870	2.77	V |Q				
7+55	0.9067	2.86	V |Q				
8+ 0	0.9265	2.88	V |Q				
8+ 5	0.9478	3.09	V | Q				
8+10	0.9704	3.28	V | Q				
8+15	0.9932	3.31	V | Q				
8+20	1.0161	3.33	V | Q				
8+25	1.0391	3.33	V | Q				
8+30	1.0620	3.33	V| Q				
8+35	1.0856	3.43	V| Q				
8+40	1.1099	3.53	V| Q				
8+45	1.1343	3.54	V| Q				
8+50	1.1595	3.65	V| Q				
8+55	1.1853	3.75	V Q				
9+ 0	1.2113	3.77	V Q				
9+ 5	1.2386	3.98	V Q				
9+10	1.2673	4.17	V Q				
9+15	1.2963	4.20	|V Q				
9+20	1.3260	4.32	|V Q				
9+25	1.3564	4.41	|V Q				
9+30	1.3870	4.43	|V Q				
9+35	1.4182	4.54	| V Q				
9+40	1.4502	4.64	| V Q				
9+45	1.4822	4.65	| V Q				
9+50	1.5150	4.76	| V Q|			
9+55	1.5485	4.86	| V Q|			
10+ 0	1.5821	4.88	| V Q|			
10+ 5	1.6108	4.18	| V Q				
10+10	1.6351	3.52	| Q				
10+15	1.6584	3.39	| QV				
10+20	1.6813	3.33	| QV				
10+25	1.7043	3.33	| QV				
10+30	1.7272	3.33	| QV				
10+35	1.7536	3.84	| Q				
10+40	1.7833	4.31	| V Q				
10+45	1.8136	4.40	| V Q				
10+50	1.8442	4.44	| V Q				
10+55	1.8748	4.44	| VQ				
11+ 0	1.9054	4.44	| VQ				
11+ 5	1.9352	4.34	| VQ				
11+10	1.9645	4.25	| Q				
11+15	1.9936	4.23	| QV				
11+20	2.0227	4.22	| QV				



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15+35       4.0424      4.75  |          |         Q|          |   V      |
15+40       4.0722      4.34  |          |       Q  |          |    V     |
15+45       4.1015      4.26  |          |       Q  |          |    V     |
15+50       4.1306      4.22  |          |     Q    |          |    V     |
15+55       4.1597      4.22  |          |     Q    |          |    V     |
16+ 0       4.1887      4.22  |          |     Q    |          |     V    |
16+ 5       4.2073      2.70  |         Q          |          |     V    |
16+10       4.2162      1.29  |    Q     |         |          |     V    |
16+15       4.2231      1.01  |   Q      |         |          |     V    |
16+20       4.2293      0.89  |  Q       |         |          |     V    |
16+25       4.2354      0.89  |  Q       |         |          |     V    |
16+30       4.2415      0.89  |  Q       |         |          |     V    |
16+35       4.2469      0.79  |  Q       |         |          |     V    |
16+40       4.2517      0.69  | Q        |         |          |     V    |
16+45       4.2563      0.67  | Q        |         |          |     V    |
16+50       4.2609      0.67  | Q        |         |          |     V    |
16+55       4.2655      0.67  | Q        |         |          |     V    |
17+ 0       4.2701      0.67  | Q        |         |          |     V    |
17+ 5       4.2761      0.87  |  Q       |         |          |     V    |
17+10       4.2834      1.06  |   Q      |         |          |     V    |
17+15       4.2909      1.09  |   Q      |         |          |     V    |
17+20       4.2985      1.11  |   Q      |         |          |     V    |
17+25       4.3062      1.11  |   Q      |         |          |      V   |
17+30       4.3138      1.11  |   Q      |         |          |      V   |
17+35       4.3215      1.11  |   Q      |         |          |      V   |
17+40       4.3291      1.11  |   Q      |         |          |      V   |
17+45       4.3368      1.11  |   Q      |         |          |      V   |
17+50       4.3437      1.01  |   Q      |         |          |      V   |
17+55       4.3500      0.91  |  Q       |         |          |      V   |
18+ 0       4.3562      0.90  |  Q       |         |          |      V   |
18+ 5       4.3623      0.89  |  Q       |         |          |      V   |
18+10       4.3684      0.89  |  Q       |         |          |      V   |
18+15       4.3745      0.89  |  Q       |         |          |      V   |
18+20       4.3807      0.89  |  Q       |         |          |      V   |
18+25       4.3868      0.89  |  Q       |         |          |      V   |
18+30       4.3929      0.89  |  Q       |         |          |      V   |
18+35       4.3983      0.79  |  Q       |         |          |      V   |
18+40       4.4031      0.69  | Q        |         |          |      V   |
18+45       4.4077      0.67  | Q        |         |          |      V   |
18+50       4.4116      0.57  | Q        |         |          |      V   |
18+55       4.4149      0.47  |Q         |         |          |      V   |
19+ 0       4.4180      0.45  |Q         |         |          |       V  |
19+ 5       4.4217      0.55  | Q        |         |          |       V  |
19+10       4.4261      0.64  | Q        |         |          |       V  |
19+15       4.4307      0.66  | Q        |         |          |       V  |
19+20       4.4359      0.77  |  Q       |         |          |       V  |
19+25       4.4419      0.86  |  Q       |         |          |       V  |
19+30       4.4479      0.88  |  Q       |         |          |       V  |
19+35       4.4534      0.79  |  Q       |         |          |       V  |
19+40       4.4581      0.69  | Q        |         |          |       V  |
```

19+45	4.4628	0.67	| Q	|	|	|	V |
19+50	4.4667	0.57	| Q	|	|	|	V |
19+55	4.4699	0.47	|Q	|	|	|	V |
20+ 0	4.4730	0.45	|Q	|	|	|	V |
20+ 5	4.4768	0.55	| Q	|	|	|	V |
20+10	4.4812	0.64	| Q	|	|	|	V |
20+15	4.4857	0.66	| Q	|	|	|	V |
20+20	4.4903	0.67	| Q	|	|	|	V |
20+25	4.4949	0.67	| Q	|	|	|	V |
20+30	4.4995	0.67	| Q	|	|	|	V |
20+35	4.5041	0.67	| Q	|	|	|	V |
20+40	4.5087	0.67	| Q	|	|	|	V |
20+45	4.5132	0.67	| Q	|	|	|	V |
20+50	4.5171	0.57	| Q	|	|	|	V |
20+55	4.5204	0.47	|Q	|	|	|	V |
21+ 0	4.5235	0.45	|Q	|	|	|	V |
21+ 5	4.5272	0.55	| Q	|	|	|	V |
21+10	4.5316	0.64	| Q	|	|	|	V |
21+15	4.5362	0.66	| Q	|	|	|	V|
21+20	4.5401	0.57	| Q	|	|	|	V|
21+25	4.5433	0.47	|Q	|	|	|	V|
21+30	4.5464	0.45	|Q	|	|	|	V|
21+35	4.5502	0.55	| Q	|	|	|	V|
21+40	4.5546	0.64	| Q	|	|	|	V|
21+45	4.5591	0.66	| Q	|	|	|	V|
21+50	4.5630	0.57	| Q	|	|	|	V|
21+55	4.5662	0.47	|Q	|	|	|	V|
22+ 0	4.5694	0.45	|Q	|	|	|	V|
22+ 5	4.5731	0.55	| Q	|	|	|	V|
22+10	4.5775	0.64	| Q	|	|	|	V|
22+15	4.5821	0.66	| Q	|	|	|	V|
22+20	4.5859	0.57	| Q	|	|	|	V|
22+25	4.5892	0.47	|Q	|	|	|	V|
22+30	4.5923	0.45	|Q	|	|	|	V|
22+35	4.5954	0.44	|Q	|	|	|	V|
22+40	4.5984	0.44	|Q	|	|	|	V|
22+45	4.6015	0.44	|Q	|	|	|	V|
22+50	4.6045	0.44	|Q	|	|	|	V|
22+55	4.6076	0.44	|Q	|	|	|	V|
23+ 0	4.6107	0.44	|Q	|	|	|	V|
23+ 5	4.6137	0.44	|Q	|	|	|	V|
23+10	4.6168	0.44	|Q	|	|	|	V|
23+15	4.6198	0.44	|Q	|	|	|	V|
23+20	4.6229	0.44	|Q	|	|	|	V|
23+25	4.6259	0.44	|Q	|	|	|	V|
23+30	4.6290	0.44	|Q	|	|	|	V|
23+35	4.6321	0.44	|Q	|	|	|	V|
23+40	4.6351	0.44	|Q	|	|	|	V|
23+45	4.6382	0.44	|Q	|	|	|	V|
23+50	4.6412	0.44	|Q	|	|	|	V|

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   23+55       4.6443      0.44  |Q        |         |         |        V|
   24+ 0       4.6474      0.44  |Q        |         |         |        V|
   24+ 5       4.6490      0.24  Q         |         |         |        V|
   24+10       4.6494      0.05  Q         |         |         |        V|
   24+15       4.6495      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 01/18/25 File: WA22PHYD6100.out

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

Program License Serial Number 6677

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

English Units used in output format

28136 BRODIAEA AVENUE
MORENO VALLEY, RIVERSIDE COUNTY
PROPOSED CONDITIONS HYDROGRAPH
100-YEAR STORM EVENT

Drainage Area = 14.39(Ac.) = 0.022 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 14.39(Ac.) = 0.022 Sq. Mi.
Length along longest watercourse = 1243.00(Ft.)
Length along longest watercourse measured to centroid = 621.50(Ft.)
Length along longest watercourse = 0.235 Mi.
Length along longest watercourse measured to centroid = 0.118 Mi.
Difference in elevation = 21.30(Ft.)
Slope along watercourse = 90.4779 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]
       14.39            1.24                  17.84

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       14.39            2.92                  42.02

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    1.240(In)
Area Averaged 100-Year Rainfall =    2.920(In)

Point rain (area averaged) =    2.920(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    2.920(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    14.390           32.00         0.800
 Total Area Entered =     14.39(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
32.0  52.0      0.552     0.800        0.154       1.000      0.154
                                                 Sum (F) =   0.154
Area averaged mean soil loss (F) (In/Hr) =  0.154
Minimum soil loss rate ((In/Hr)) =  0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.260
------------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                       VALLEY S-Curve
------------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
------------------------------------------------------------------------
    1   0.083        212.841         45.535              6.604
    2   0.167        425.681         42.481              6.161
    3   0.250        638.522          8.296              1.203
    4   0.333        851.362          3.688              0.535
                               Sum = 100.000   Sum=      14.502
------------------------------------------------------------------------
```

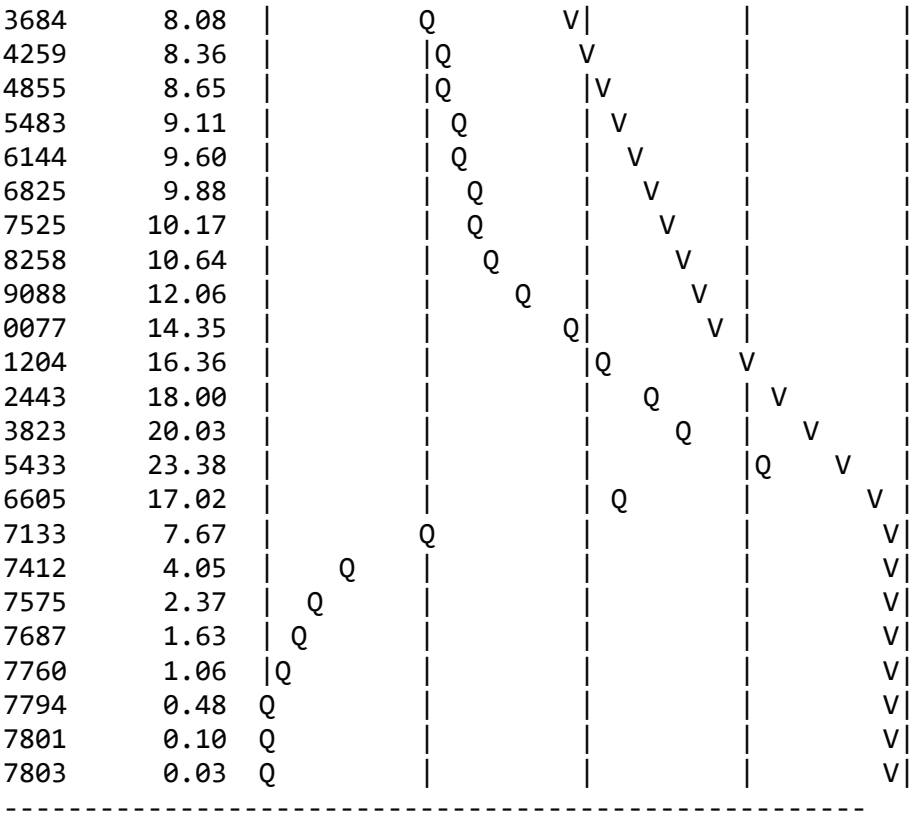
The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.175	(0.154)	0.046	0.130
2	0.17	0.60	0.210	(0.154)	0.055	0.156
3	0.25	0.60	0.210	(0.154)	0.055	0.156
4	0.33	0.60	0.210	(0.154)	0.055	0.156
5	0.42	0.60	0.210	(0.154)	0.055	0.156
6	0.50	0.70	0.245	(0.154)	0.064	0.181
7	0.58	0.70	0.245	(0.154)	0.064	0.181
8	0.67	0.70	0.245	(0.154)	0.064	0.181
9	0.75	0.70	0.245	(0.154)	0.064	0.181
10	0.83	0.70	0.245	(0.154)	0.064	0.181
11	0.92	0.70	0.245	(0.154)	0.064	0.181
12	1.00	0.80	0.280	(0.154)	0.073	0.207
13	1.08	0.80	0.280	(0.154)	0.073	0.207
14	1.17	0.80	0.280	(0.154)	0.073	0.207
15	1.25	0.80	0.280	(0.154)	0.073	0.207
16	1.33	0.80	0.280	(0.154)	0.073	0.207
17	1.42	0.80	0.280	(0.154)	0.073	0.207
18	1.50	0.80	0.280	(0.154)	0.073	0.207
19	1.58	0.80	0.280	(0.154)	0.073	0.207
20	1.67	0.80	0.280	(0.154)	0.073	0.207
21	1.75	0.80	0.280	(0.154)	0.073	0.207
22	1.83	0.80	0.280	(0.154)	0.073	0.207
23	1.92	0.80	0.280	(0.154)	0.073	0.207
24	2.00	0.90	0.315	(0.154)	0.082	0.233
25	2.08	0.80	0.280	(0.154)	0.073	0.207
26	2.17	0.90	0.315	(0.154)	0.082	0.233
27	2.25	0.90	0.315	(0.154)	0.082	0.233
28	2.33	0.90	0.315	(0.154)	0.082	0.233
29	2.42	0.90	0.315	(0.154)	0.082	0.233
30	2.50	0.90	0.315	(0.154)	0.082	0.233
31	2.58	0.90	0.315	(0.154)	0.082	0.233
32	2.67	0.90	0.315	(0.154)	0.082	0.233
33	2.75	1.00	0.350	(0.154)	0.091	0.259
34	2.83	1.00	0.350	(0.154)	0.091	0.259
35	2.92	1.00	0.350	(0.154)	0.091	0.259
36	3.00	1.00	0.350	(0.154)	0.091	0.259
37	3.08	1.00	0.350	(0.154)	0.091	0.259
38	3.17	1.10	0.385	(0.154)	0.100	0.285
39	3.25	1.10	0.385	(0.154)	0.100	0.285
40	3.33	1.10	0.385	(0.154)	0.100	0.285
41	3.42	1.20	0.420	(0.154)	0.109	0.311
42	3.50	1.30	0.455	(0.154)	0.118	0.337
43	3.58	1.40	0.491	(0.154)	0.128	0.363
44	3.67	1.40	0.491	(0.154)	0.128	0.363
45	3.75	1.50	0.526	(0.154)	0.137	0.389

```
46   3.83     1.50      0.526       (  0.154)       0.137        0.389
47   3.92     1.60      0.561       (  0.154)       0.146        0.415
48   4.00     1.60      0.561       (  0.154)       0.146        0.415
49   4.08     1.70      0.596          0.154    (  0.155)        0.441
50   4.17     1.80      0.631          0.154    (  0.164)        0.476
51   4.25     1.90      0.666          0.154    (  0.173)        0.511
52   4.33     2.00      0.701          0.154    (  0.182)        0.546
53   4.42     2.10      0.736          0.154    (  0.191)        0.581
54   4.50     2.10      0.736          0.154    (  0.191)        0.581
55   4.58     2.20      0.771          0.154    (  0.200)        0.616
56   4.67     2.30      0.806          0.154    (  0.210)        0.651
57   4.75     2.40      0.841          0.154    (  0.219)        0.686
58   4.83     2.40      0.841          0.154    (  0.219)        0.686
59   4.92     2.50      0.876          0.154    (  0.228)        0.722
60   5.00     2.60      0.911          0.154    (  0.237)        0.757
61   5.08     3.10      1.086          0.154    (  0.282)        0.932
62   5.17     3.60      1.261          0.154    (  0.328)        1.107
63   5.25     3.90      1.366          0.154    (  0.355)        1.212
64   5.33     4.20      1.472          0.154    (  0.383)        1.317
65   5.42     4.70      1.647          0.154    (  0.428)        1.492
66   5.50     5.60      1.962          0.154    (  0.510)        1.808
67   5.58     1.90      0.666          0.154    (  0.173)        0.511
68   5.67     0.90      0.315       (  0.154)       0.082        0.233
69   5.75     0.60      0.210       (  0.154)       0.055        0.156
70   5.83     0.50      0.175       (  0.154)       0.046        0.130
71   5.92     0.30      0.105       (  0.154)       0.027        0.078
72   6.00     0.20      0.070       (  0.154)       0.018        0.052
               (Loss Rate Not Used)
   Sum =     100.0                                    Sum =    27.8
      Flood volume = Effective rainfall      2.32(In)
       times area      14.4(Ac.)/[(In)/(Ft.)] =       2.8(Ac.Ft)
      Total soil loss =      0.60(In)
      Total soil loss =     0.721(Ac.Ft)
      Total rainfall =      2.92(In)
      Flood volume =      121108.8 Cubic Feet
      Total soil loss =       31411.9 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =     23.377(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        7.5      15.0      22.5      30.0
-------------------------------------------------------------------------
  0+ 5       0.0059      0.86  VQ        |         |         |         |
  0+10       0.0185      1.83  V Q       |         |         |         |
```

```
0+15       0.0332      2.14  V Q       |         |         |         |
0+20       0.0487      2.24  V Q       |         |         |         |
0+25       0.0642      2.26  V  Q      |         |         |         |
0+30       0.0810      2.43  |V Q      |         |         |         |
0+35       0.0988      2.59  |V Q      |         |         |         |
0+40       0.1168      2.62  |V Q      |         |         |         |
0+45       0.1350      2.63  |V Q      |         |         |         |
0+50       0.1531      2.63  | VQ      |         |         |         |
0+55       0.1712      2.63  | VQ      |         |         |         |
1+ 0       0.1906      2.80  | VQ      |         |         |         |
1+ 5       0.2110      2.96  |  Q      |         |         |         |
1+10       0.2316      3.00  |  Q      |         |         |         |
1+15       0.2523      3.01  |  VQ     |         |         |         |
1+20       0.2731      3.01  |  VQ     |         |         |         |
1+25       0.2938      3.01  |   Q     |         |         |         |
1+30       0.3145      3.01  |   Q     |         |         |         |
1+35       0.3353      3.01  |   Q     |         |         |         |
1+40       0.3560      3.01  |   QV    |         |         |         |
1+45       0.3767      3.01  |   QV    |         |         |         |
1+50       0.3974      3.01  |   QV    |         |         |         |
1+55       0.4182      3.01  |   Q V   |         |         |         |
2+ 0       0.4401      3.18  |   Q V   |         |         |         |
2+ 5       0.4619      3.17  |   Q V   |         |         |         |
2+10       0.4840      3.21  |   Q V   |         |         |         |
2+15       0.5071      3.35  |   Q  V  |         |         |         |
2+20       0.5304      3.37  |   Q  V  |         |         |         |
2+25       0.5537      3.39  |   Q  V  |         |         |         |
2+30       0.5770      3.39  |   Q   V |         |         |         |
2+35       0.6003      3.39  |   Q   V |         |         |         |
2+40       0.6236      3.39  |   Q   V |         |         |         |
2+45       0.6481      3.56  |   Q    V|         |         |         |
2+50       0.6737      3.72  |   Q    V|         |         |         |
2+55       0.6995      3.75  |   Q     V         |         |         |
3+ 0       0.7255      3.76  |    Q    V         |         |         |
3+ 5       0.7514      3.76  |    Q    V         |         |         |
3+10       0.7785      3.93  |    Q    |V        |         |         |
3+15       0.8066      4.09  |    Q    |V        |         |         |
3+20       0.8351      4.12  |    Q    | V       |         |         |
3+25       0.8647      4.31  |    Q    | V       |         |         |
3+30       0.8967      4.64  |     Q   | V       |         |         |
3+35       0.9312      5.00  |     Q   |  V      |         |         |
3+40       0.9670      5.21  |     Q   |  V      |         |         |
3+45       1.0044      5.42  |      Q  |   V     |         |         |
3+50       1.0429      5.60  |      Q  |    V    |         |         |
3+55       1.0829      5.80  |      Q  |    V    |         |         |
4+ 0       1.1240      5.97  |      Q  |     V   |         |         |
4+ 5       1.1666      6.18  |       Q |     V   |         |         |
4+10       1.2120      6.59  |       Q |      V  |         |         |
4+15       1.2606      7.07  |        Q|       V |         |         |
4+20       1.3128      7.57  |         Q       V |         |         |
```

4+25	1.3684	8.08	
4+30	1.4259	8.36	
4+35	1.4855	8.65	
4+40	1.5483	9.11	
4+45	1.6144	9.60	
4+50	1.6825	9.88	
4+55	1.7525	10.17	
5+ 0	1.8258	10.64	
5+ 5	1.9088	12.06	
5+10	2.0077	14.35	
5+15	2.1204	16.36	
5+20	2.2443	18.00	
5+25	2.3823	20.03	
5+30	2.5433	23.38	
5+35	2.6605	17.02	
5+40	2.7133	7.67	
5+45	2.7412	4.05	
5+50	2.7575	2.37	
5+55	2.7687	1.63	
6+ 0	2.7760	1.06	
6+ 5	2.7794	0.48	
6+10	2.7801	0.10	
6+15	2.7803	0.03	

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

Study date 01/18/25 File: WA22PHYD3100.out

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

Program License Serial Number 6677

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

English Units used in output format

28136 BRODIAEA AVENUE
MORENO VALLEY, RIVERSIDE COUNTY
PROPOSED CONDITIONS HYDROGRAPH
100-YEAR STORM EVENT

Drainage Area = 14.39(Ac.) = 0.022 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 14.39(Ac.) = 0.022 Sq. Mi.
Length along longest watercourse = 1243.00(Ft.)
Length along longest watercourse measured to centroid = 621.50(Ft.)
Length along longest watercourse = 0.235 Mi.
Length along longest watercourse measured to centroid = 0.118 Mi.
Difference in elevation = 21.30(Ft.)
Slope along watercourse = 90.4779 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]
       14.39            0.89                  12.74

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       14.39            2.13                  30.65

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    0.885(In)
Area Averaged 100-Year Rainfall =    2.130(In)

Point rain (area averaged) =    2.130(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    2.130(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    14.390           32.00         0.800
 Total Area Entered =     14.39(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
32.0  52.0      0.552     0.800        0.154       1.000      0.154
                                                 Sum (F) =   0.154
Area averaged mean soil loss (F) (In/Hr) =  0.154
Minimum soil loss rate ((In/Hr)) =  0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.260
------------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                       VALLEY S-Curve
------------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
------------------------------------------------------------------------
    1   0.083        212.841         45.535              6.604
    2   0.167        425.681         42.481              6.161
    3   0.250        638.522          8.296              1.203
    4   0.333        851.362          3.688              0.535
                              Sum = 100.000   Sum=      14.502
------------------------------------------------------------------------
```

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	0.332	(0.154)	0.086	0.246
2	0.17	1.30	0.332	(0.154)	0.086	0.246
3	0.25	1.10	0.281	(0.154)	0.073	0.208
4	0.33	1.50	0.383	(0.154)	0.100	0.284
5	0.42	1.50	0.383	(0.154)	0.100	0.284
6	0.50	1.80	0.460	(0.154)	0.120	0.340
7	0.58	1.50	0.383	(0.154)	0.100	0.284
8	0.67	1.80	0.460	(0.154)	0.120	0.340
9	0.75	1.80	0.460	(0.154)	0.120	0.340
10	0.83	1.50	0.383	(0.154)	0.100	0.284
11	0.92	1.60	0.409	(0.154)	0.106	0.303
12	1.00	1.80	0.460	(0.154)	0.120	0.340
13	1.08	2.20	0.562	(0.154)	0.146	0.416
14	1.17	2.20	0.562	(0.154)	0.146	0.416
15	1.25	2.20	0.562	(0.154)	0.146	0.416
16	1.33	2.00	0.511	(0.154)	0.133	0.378
17	1.42	2.60	0.665	0.154	(0.173)	0.510
18	1.50	2.70	0.690	0.154	(0.179)	0.536
19	1.58	2.40	0.613	0.154	(0.159)	0.459
20	1.67	2.70	0.690	0.154	(0.179)	0.536
21	1.75	3.30	0.843	0.154	(0.219)	0.689
22	1.83	3.10	0.792	0.154	(0.206)	0.638
23	1.92	2.90	0.741	0.154	(0.193)	0.587
24	2.00	3.00	0.767	0.154	(0.199)	0.612
25	2.08	3.10	0.792	0.154	(0.206)	0.638
26	2.17	4.20	1.073	0.154	(0.279)	0.919
27	2.25	5.00	1.278	0.154	(0.332)	1.123
28	2.33	3.50	0.895	0.154	(0.233)	0.740
29	2.42	6.80	1.738	0.154	(0.452)	1.584
30	2.50	7.30	1.866	0.154	(0.485)	1.711
31	2.58	8.20	2.096	0.154	(0.545)	1.941
32	2.67	5.90	1.508	0.154	(0.392)	1.353
33	2.75	2.00	0.511	(0.154)	0.133	0.378
34	2.83	1.80	0.460	(0.154)	0.120	0.340
35	2.92	1.80	0.460	(0.154)	0.120	0.340
36	3.00	0.60	0.153	(0.154)	0.040	0.113
		(Loss Rate Not Used)				
Sum =		100.0			Sum =	20.9

Flood volume = Effective rainfall 1.74(In)
times area 14.4(Ac.)/[(In)/(Ft.)] = 2.1(Ac.Ft)
Total soil loss = 0.39(In)
Total soil loss = 0.468(Ac.Ft)
Total rainfall = 2.13(In)
Flood volume = 90865.6 Cubic Feet
Total soil loss = 20389.4 Cubic Feet

Peak flow rate of this hydrograph = 25.677(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	7.5	15.0	22.5	30.0
0+ 5	0.0112	1.62	V Q				
0+10	0.0328	3.14	V Q				
0+15	0.0548	3.19	V Q				
0+20	0.0794	3.58	V Q				
0+25	0.1070	4.01	V Q				
0+30	0.1377	4.45	V Q				
0+35	0.1684	4.47	V Q				
0+40	0.1998	4.56	V Q				
0+45	0.2334	4.87	V Q				
0+50	0.2646	4.53	VQ				
0+55	0.2945	4.34	Q				
1+ 0	0.3265	4.64	Q				
1+ 5	0.3634	5.36	VQ				
1+10	0.4039	5.89	Q				
1+15	0.4452	6.00	QV				
1+20	0.4851	5.79	Q V				
1+25	0.5293	6.43	Q V				
1+30	0.5800	7.36	Q V				
1+35	0.6293	7.15	Q V				
1+40	0.6795	7.29	Q V				
1+45	0.7393	8.69	Q V				
1+50	0.8037	9.35	Q V				
1+55	0.8652	8.92	Q V				
2+ 0	0.9258	8.80	Q V				
2+ 5	0.9880	9.04	Q V				
2+10	1.0642	11.05	Q V				
2+15	1.1618	14.18	Q V				
2+20	1.2532	13.26	Q V				
2+25	1.3694	16.87	Q V				
2+30	1.5247	22.56	VQ				
2+35	1.7016	25.68	V Q				
2+40	1.8656	23.82	Q V				
2+45	1.9627	14.09	Q V				
2+50	2.0126	7.25	Q V				
2+55	2.0506	5.53	Q V				
3+ 0	2.0745	3.46	Q V				
3+ 5	2.0834	1.29	Q V				
3+10	2.0856	0.32	Q V				

3+15	2.0860	0.06	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 01/18/25 File: WA22PHYD1100.out

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

Program License Serial Number 6677

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

English Units used in output format

28136 BRODIAEA AVENUE
MORENO VALLEY, RIVERSIDE COUNTY
PROPOSED CONDITIONS HYDROGRAPH
100-YEAR STORM EVENT

Drainage Area = 14.39(Ac.) = 0.022 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 14.39(Ac.) = 0.022 Sq. Mi.
Length along longest watercourse = 1243.00(Ft.)
Length along longest watercourse measured to centroid = 621.50(Ft.)
Length along longest watercourse = 0.235 Mi.
Length along longest watercourse measured to centroid = 0.118 Mi.
Difference in elevation = 21.30(Ft.)
Slope along watercourse = 90.4779 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]
       14.39            0.49                  7.11

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       14.39            1.31                 18.85

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    0.494(In)
Area Averaged 100-Year Rainfall =    1.310(In)

Point rain (area averaged) =    1.310(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    1.310(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    14.390           32.00         0.800
 Total Area Entered =     14.39(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
32.0  52.0      0.552     0.800        0.154       1.000      0.154
                                                 Sum (F) =   0.154
Area averaged mean soil loss (F) (In/Hr) =  0.154
Minimum soil loss rate ((In/Hr)) =  0.077
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.260
------------------------------------------------------------------------
Slope of intensity-duration curve for a 1 hour storm =0.5000
------------------------------------------------------------------------

                U n i t  H y d r o g r a p h
                        VALLEY S-Curve
-----------------------------------------------------------------
                Unit Hydrograph Data
-----------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
-----------------------------------------------------------------
    1   0.083        212.841         45.535              6.604
    2   0.167        425.681         42.481              6.161
    3   0.250        638.522          8.296              1.203
    4   0.333        851.362          3.688              0.535
                              Sum = 100.000   Sum=      14.502
-----------------------------------------------------------------
```

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	4.20	0.660	0.154	(0.172)	0.506
2	0.17	4.30	0.676	0.154	(0.176)	0.521
3	0.25	5.00	0.786	0.154	(0.204)	0.631
4	0.33	5.00	0.786	0.154	(0.204)	0.631
5	0.42	5.80	0.912	0.154	(0.237)	0.757
6	0.50	6.50	1.022	0.154	(0.266)	0.867
7	0.58	7.40	1.163	0.154	(0.302)	1.009
8	0.67	8.60	1.352	0.154	(0.351)	1.197
9	0.75	12.30	1.933	0.154	(0.503)	1.779
10	0.83	29.10	4.574	0.154	(1.189)	4.419
11	0.92	6.80	1.069	0.154	(0.278)	0.914
12	1.00	5.00	0.786	0.154	(0.204)	0.631
		(Loss Rate Not Used)				
Sum =		100.0			Sum =	13.9

Flood volume = Effective rainfall 1.16(In)
times area 14.4(Ac.)/[(In)/(Ft.)] = 1.4(Ac.Ft)
Total soil loss = 0.15(In)
Total soil loss = 0.185(Ac.Ft)
Total rainfall = 1.31(In)
Flood volume = 60352.1 Cubic Feet
Total soil loss = 8067.7 Cubic Feet

Peak flow rate of this hydrograph = 42.146(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	12.5	25.0	37.5	50.0
0+ 5	0.0230	3.34	V Q	|	|	|	|
0+10	0.0682	6.56	|V Q	|	|	|	|
0+15	0.1233	7.99	| V Q	|	|	|	|
0+20	0.1850	8.96	| V Q	|	|	|	|
0+25	0.2534	9.93	| Q	|	|	|	|
0+30	0.3326	11.50	| Q|	|	|	|	|
0+35	0.4239	13.26	| Q V	|	|	|	|
0+40	0.5312	15.58	| | Q V	|	|	|	|
0+45	0.6745	20.81	| | Q V|	|	|	|	|
0+50	0.9648	42.15	| | |	V |	Q |	|	|

```
    0+55       1.2131     36.06  |         |         |       Q |    V    |
    1+ 0       1.3239     16.08  |         | Q       |         |       V |
    1+ 5       1.3746      7.36  |    Q    |         |         |        V|
    1+10       1.3832      1.25  Q         |         |         |        V|
    1+15       1.3855      0.34  Q         |         |         |         V
---------------------------------------------------------------------------
```

APPENDIX D

Hydrology Reference Data

NOAA Precipitation Data

NOAA Atlas 14, Volume 6, Version 2
Location name: Moreno Valley, California, USA*
Latitude: 33.917°, Longitude: -117.1703°
Elevation: 1603 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	0.093 (0.078-0.113)	0.127 (0.106-0.154)	0.172 (0.143-0.209)	0.209 (0.172-0.256)	0.259 (0.206-0.329)	0.298 (0.232-0.387)	0.338 (0.257-0.450)	0.379 (0.280-0.520)	0.436 (0.308-0.623)	0.480 (0.328-0.712)
10-min	0.134 (0.112-0.162)	0.183 (0.152-0.221)	0.247 (0.205-0.300)	0.299 (0.247-0.367)	0.372 (0.296-0.472)	0.427 (0.333-0.554)	0.485 (0.368-0.645)	0.544 (0.401-0.745)	0.625 (0.442-0.894)	0.689 (0.469-1.02)
15-min	0.162 (0.135-0.196)	0.221 (0.184-0.268)	0.298 (0.248-0.363)	0.362 (0.298-0.444)	0.449 (0.358-0.570)	0.517 (0.403-0.670)	0.586 (0.445-0.780)	0.658 (0.485-0.901)	0.756 (0.534-1.08)	0.833 (0.568-1.23)
30-min	0.250 (0.209-0.303)	0.342 (0.285-0.414)	0.462 (0.384-0.562)	0.561 (0.462-0.688)	0.696 (0.554-0.883)	0.801 (0.624-1.04)	0.908 (0.689-1.21)	1.02 (0.751-1.40)	1.17 (0.827-1.67)	1.29 (0.879-1.91)
60-min	0.362 (0.302-0.438)	0.494 (0.411-0.598)	0.667 (0.555-0.811)	0.810 (0.667-0.993)	1.00 (0.800-1.28)	1.16 (0.900-1.50)	1.31 (0.995-1.74)	1.47 (1.08-2.01)	1.69 (1.19-2.42)	1.86 (1.27-2.76)
2-hr	0.544 (0.454-0.658)	0.716 (0.597-0.868)	0.942 (0.783-1.14)	1.13 (0.929-1.38)	1.38 (1.10-1.75)	1.57 (1.22-2.04)	1.77 (1.34-2.35)	1.97 (1.46-2.70)	2.25 (1.59-3.22)	2.47 (1.68-3.65)
3-hr	0.681 (0.568-0.824)	0.885 (0.738-1.07)	1.15 (0.958-1.40)	1.37 (1.13-1.68)	1.67 (1.33-2.12)	1.90 (1.48-2.46)	2.13 (1.62-2.83)	2.37 (1.75-3.24)	2.69 (1.90-3.85)	2.94 (2.01-4.36)
6-hr	0.967 (0.807-1.17)	1.24 (1.04-1.51)	1.61 (1.34-1.95)	1.90 (1.57-2.33)	2.30 (1.83-2.92)	2.61 (2.03-3.38)	2.92 (2.22-3.88)	3.24 (2.39-4.43)	3.67 (2.59-5.24)	4.00 (2.73-5.93)
12-hr	1.26 (1.05-1.52)	1.62 (1.35-1.97)	2.11 (1.75-2.56)	2.50 (2.06-3.06)	3.03 (2.41-3.84)	3.43 (2.67-4.45)	3.84 (2.92-5.11)	4.26 (3.14-5.83)	4.82 (3.41-6.90)	5.26 (3.59-7.79)
24-hr	1.62 (1.43-1.86)	2.13 (1.88-2.46)	2.79 (2.46-3.23)	3.33 (2.91-3.89)	4.06 (3.44-4.89)	4.61 (3.83-5.67)	5.17 (4.19-6.52)	5.75 (4.53-7.44)	6.52 (4.94-8.79)	7.12 (5.21-9.92)
2-day	1.88 (1.66-2.16)	2.51 (2.22-2.90)	3.34 (2.94-3.86)	4.01 (3.51-4.68)	4.92 (4.17-5.93)	5.62 (4.66-6.91)	6.33 (5.13-7.97)	7.06 (5.57-9.14)	8.04 (6.09-10.8)	8.81 (6.45-12.3)
3-day	1.97 (1.74-2.27)	2.67 (2.36-3.08)	3.58 (3.16-4.14)	4.33 (3.79-5.05)	5.35 (4.53-6.44)	6.13 (5.09-7.54)	6.93 (5.62-8.73)	7.76 (6.12-10.0)	8.88 (6.72-12.0)	9.75 (7.14-13.6)
4-day	2.13 (1.88-2.46)	2.91 (2.57-3.36)	3.94 (3.47-4.56)	4.78 (4.18-5.57)	5.93 (5.02-7.14)	6.82 (5.66-8.39)	7.73 (6.26-9.74)	8.68 (6.84-11.2)	9.96 (7.54-13.4)	11.0 (8.03-15.3)
7-day	2.39 (2.12-2.76)	3.32 (2.94-3.84)	4.56 (4.02-5.28)	5.58 (4.88-6.51)	6.98 (5.91-8.41)	8.07 (6.70-9.93)	9.20 (7.45-11.6)	10.4 (8.17-13.4)	12.0 (9.07-16.1)	13.2 (9.69-18.4)
10-day	2.51 (2.22-2.89)	3.52 (3.11-4.06)	4.87 (4.29-5.64)	5.99 (5.24-6.99)	7.54 (6.39-9.09)	8.76 (7.26-10.8)	10.0 (8.11-12.6)	11.3 (8.92-14.6)	13.1 (9.94-17.7)	14.6 (10.7-20.3)
20-day	3.03 (2.68-3.50)	4.30 (3.80-4.96)	6.01 (5.30-6.96)	7.45 (6.52-8.69)	9.46 (8.01-11.4)	11.1 (9.18-13.6)	12.7 (10.3-16.0)	14.5 (11.4-18.8)	17.0 (12.8-22.9)	18.9 (13.9-26.4)
30-day	3.61 (3.19-4.16)	5.09 (4.50-5.87)	7.11 (6.27-8.23)	8.82 (7.71-10.3)	11.2 (9.52-13.5)	13.2 (10.9-16.2)	15.2 (12.3-19.2)	17.4 (13.7-22.5)	20.4 (15.5-27.5)	22.9 (16.8-31.9)
45-day	4.27 (3.78-4.92)	5.94 (5.25-6.86)	8.25 (7.27-9.55)	10.2 (8.94-11.9)	13.0 (11.0-15.7)	15.3 (12.7-18.8)	17.7 (14.4-22.3)	20.3 (16.0-26.3)	24.0 (18.2-32.4)	27.1 (19.8-37.7)
60-day	4.96 (4.39-5.72)	6.80 (6.01-7.84)	9.34 (8.23-10.8)	11.5 (10.1-13.4)	14.7 (12.4-17.7)	17.2 (14.3-21.2)	20.0 (16.2-25.2)	23.0 (18.1-29.7)	27.2 (20.6-36.7)	30.8 (22.5-42.9)

[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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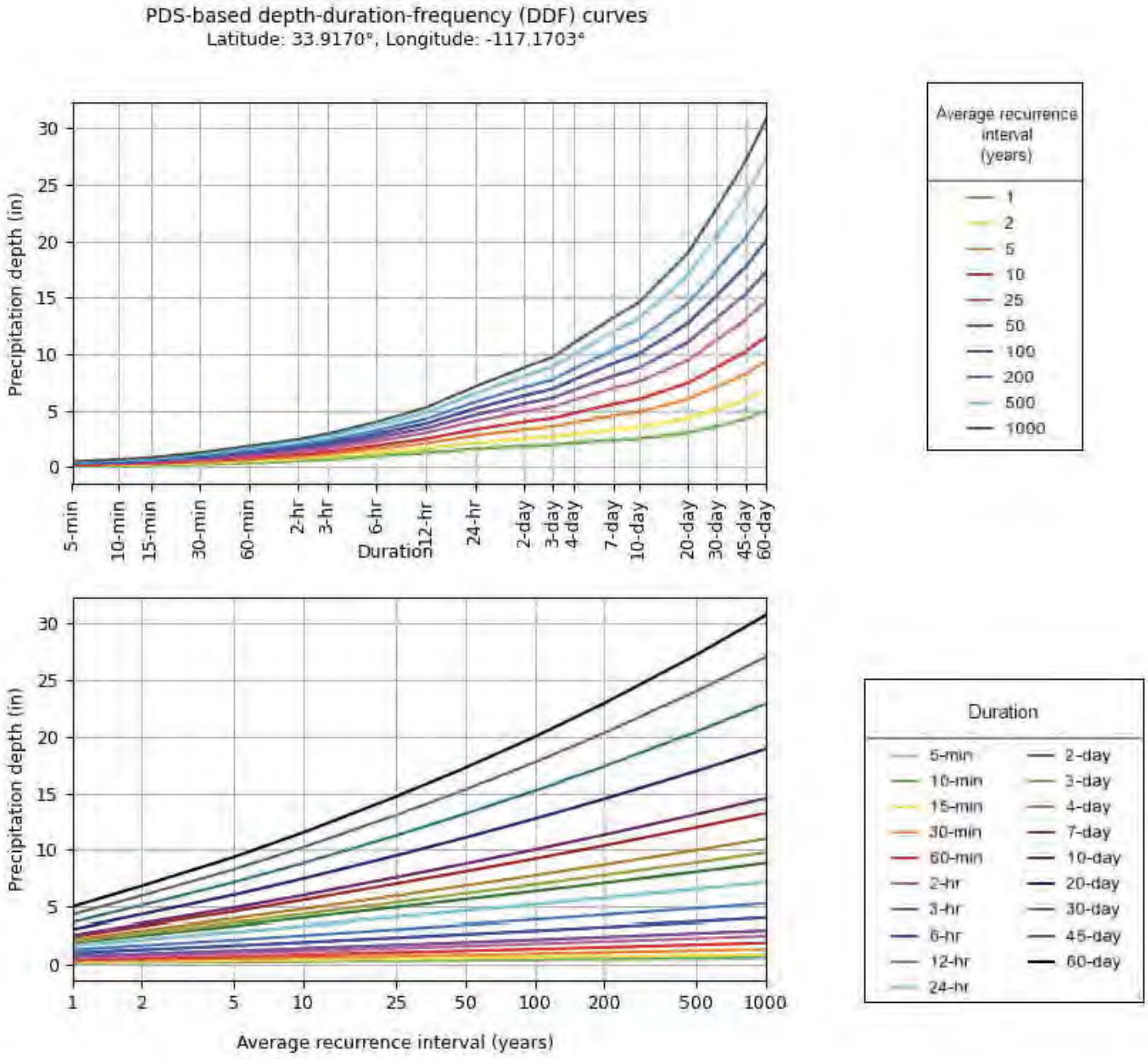
PF graphical



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Created (GMT): Fri Jan 3 23:26:59 2025

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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

USDA Soil Map

Map Scale: 1:2,080 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil 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.

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

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

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

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

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

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

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 17, Aug 30, 2024

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

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

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
SeC2	San Emigdio fine sandy loam, 2 to 8 percent slopes, eroded	1.5	7.0%
SgC	San Emigdio loam, 2 to 8 percent slopes	20.2	93.0%
Totals for Area of Interest		**21.7**	**100.0%**

Western Riverside Area, California

SgC—San Emigdio loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: hcyx
Elevation: 600 to 1,800 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 220 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

San emigdio and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Emigdio

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 40 inches: fine sandy loam
H3 - 40 to 60 inches: stratified sandy loam to silt loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A

Ecological site: R019XD029CA - LOAMY
Hydric soil rating: No

Minor Components

Metz
Percent of map unit: 10 percent
Hydric soil rating: No

San timoteo
Percent of map unit: 5 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 17, Aug 30, 2024

Western Riverside Area, California

SeC2—San Emigdio fine sandy loam, 2 to 8 percent slopes, eroded

Map Unit Setting

National map unit symbol: hcys
Elevation: 600 to 1,800 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 220 to 280 days
Farmland classification: Prime farmland if irrigated

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Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: A
Ecological site: R019XD029CA - LOAMY
Hydric soil rating: No

Minor Components

Metz
Percent of map unit: 10 percent
Hydric soil rating: No

San timoteo
Percent of map unit: 5 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 17, Aug 30, 2024

FEMA Flood Map

National Flood Hazard Layer FIRMette

FEMA

Basemap Imagery Source: USGS National Map 2023

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 9/17/2024 at 1:29 PM 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.

APPENDIX E

Retention Routing Analysis

Hydraulic Analysis Report

Project Data

Project Title: WARM-022 Basin Routing

Designer: C&V Consulting, Inc.

Project Date: Friday, January 31, 2025

Project Units: U.S. Customary Units

Notes: Federal Highway Administration. Hydraulic Toolbox 5.3.0.0.

Detention Basin Analysis: 100-YR, 24-HR STORM

Notes:

Storage Input Parameters

Storage Capacity: Retention Basin

Elevation ft	Volume acre-ft
0.00	0.00
1.00	0.10
2.00	0.23
3.00	0.38
4.00	0.57
5.00	0.78

Discharge Input Parameters

Weir: Weir 1

Weir Length: 12.0000 ft

Weir Coefficient: 3.1000

Height above base: 0.0000 ft

Base Elevation: 4.5000 ft

Known Discharge: Pump Control

Discharge cfs

0.00	0.00
1.00	5.70
2.00	5.70

3.00	5.70
4.00	5.70
5.00	5.70

Storage & Discharge Input Parameters

Elevation - Storage - Discharge

Elevation ft	Storage acre-ft	Discharge cfs
0.00	0.00	0.00
1.00	0.10	5.70
2.00	0.23	5.70
3.00	0.38	5.70
4.00	0.57	5.70
5.00	0.78	18.85

Detention Basin Input Parameters

Inflow Hydrograph

Peak Inflow Discharge: 8.280 cfs, Time to Peak: 810.00 (min), Total Inflow Volume: 202533.00 ft^3

Time (min)	Discharge cfs
5.00	0.20
10.00	0.39
15.00	0.43
20.00	0.55
25.00	0.64
30.00	0.66
35.00	0.67
40.00	0.67
45.00	0.67
50.00	0.77
55.00	0.86
60.00	0.88
65.00	0.79
70.00	0.69
75.00	0.67
80.00	0.67
85.00	0.67
90.00	0.67
95.00	0.67
100.00	0.67
105.00	0.67
110.00	0.77
115.00	0.86
120.00	0.88
125.00	0.89
130.00	0.89
135.00	0.89

140.00	0.89
145.00	0.89
150.00	0.89
155.00	0.99
160.00	1.08
165.00	1.10
170.00	1.11
175.00	1.11
180.00	1.11
185.00	1.11
190.00	1.11
195.00	1.11
200.00	1.11
205.00	1.11
210.00	1.11
215.00	1.11
220.00	1.11
225.00	1.11
230.00	1.21
235.00	1.31
240.00	1.32
245.00	1.33
250.00	1.33
255.00	1.33
260.00	1.43
265.00	1.53
270.00	1.55
275.00	1.55
280.00	1.55
285.00	1.55
290.00	1.66
295.00	1.75
300.00	1.77
305.00	1.57
310.00	1.39
315.00	1.35
320.00	1.43
325.00	1.53
330.00	1.55
335.00	1.66
340.00	1.75
345.00	1.77
350.00	1.78
355.00	1.78
360.00	1.78
365.00	1.88
370.00	1.97
375.00	1.99
380.00	2.00
385.00	2.00

390.00	2.00
395.00	2.10
400.00	2.19
405.00	2.21
410.00	2.22
415.00	2.22
420.00	2.22
425.00	2.22
430.00	2.22
435.00	2.22
440.00	2.32
445.00	2.42
450.00	2.43
455.00	2.54
460.00	2.64
465.00	2.66
470.00	2.77
475.00	2.86
480.00	2.88
485.00	3.09
490.00	3.28
495.00	3.31
500.00	3.33
505.00	3.33
510.00	3.33
515.00	3.43
520.00	3.53
525.00	3.54
530.00	3.65
535.00	3.75
540.00	3.77
545.00	3.98
550.00	4.17
555.00	4.20
560.00	4.32
565.00	4.41
570.00	4.43
575.00	4.54
580.00	4.64
585.00	4.65
590.00	4.76
595.00	4.86
600.00	4.88
605.00	4.18
610.00	3.52
615.00	3.39
620.00	3.33
625.00	3.33
630.00	3.33
635.00	3.84

640.00	4.31
645.00	4.40
650.00	4.44
655.00	4.44
660.00	4.44
665.00	4.34
670.00	4.25
675.00	4.23
680.00	4.22
685.00	4.22
690.00	4.22
695.00	4.02
700.00	3.83
705.00	3.79
710.00	3.88
715.00	3.97
720.00	3.99
725.00	4.70
730.00	5.36
735.00	5.49
740.00	5.65
745.00	5.75
750.00	5.76
755.00	6.05
760.00	6.30
765.00	6.36
770.00	6.53
775.00	6.67
780.00	6.70
785.00	7.41
790.00	8.06
795.00	8.19
800.00	8.26
805.00	8.27
810.00	8.28
815.00	6.83
820.00	5.49
825.00	5.22
830.00	5.11
835.00	5.11
840.00	5.11
845.00	5.63
850.00	6.12
855.00	6.22
860.00	6.13
865.00	6.02
870.00	6.00
875.00	6.00
880.00	6.01
885.00	6.02

890.00	5.89
895.00	5.77
900.00	5.76
905.00	5.62
910.00	5.50
915.00	5.48
920.00	5.34
925.00	5.23
930.00	5.21
935.00	4.75
940.00	4.34
945.00	4.26
950.00	4.22
955.00	4.22
960.00	4.22
965.00	2.70
970.00	1.29
975.00	1.01
980.00	0.89
985.00	0.89
990.00	0.89
995.00	0.79
1000.00	0.69
1005.00	0.67
1010.00	0.67
1015.00	0.67
1020.00	0.67
1025.00	0.87
1030.00	1.06
1035.00	1.09
1040.00	1.11
1045.00	1.11
1050.00	1.11
1055.00	1.11
1060.00	1.11
1065.00	1.11
1070.00	1.01
1075.00	0.91
1080.00	0.90
1085.00	0.89
1090.00	0.89
1095.00	0.89
1100.00	0.89
1105.00	0.89
1110.00	0.89
1115.00	0.79
1120.00	0.69
1125.00	0.67
1130.00	0.57
1135.00	0.47

1140.00	0.45
1145.00	0.55
1150.00	0.64
1155.00	0.66
1160.00	0.77
1165.00	0.86
1170.00	0.88
1175.00	0.79
1180.00	0.69
1185.00	0.67
1190.00	0.57
1195.00	0.47
1200.00	0.45
1205.00	0.55
1210.00	0.64
1215.00	0.66
1220.00	0.67
1225.00	0.67
1230.00	0.67
1235.00	0.67
1240.00	0.67
1245.00	0.67
1250.00	0.57
1255.00	0.47
1260.00	0.45
1265.00	0.55
1270.00	0.64
1275.00	0.66
1280.00	0.57
1285.00	0.47
1290.00	0.45
1295.00	0.55
1300.00	0.64
1305.00	0.66
1310.00	0.57
1315.00	0.47
1320.00	0.45
1325.00	0.55
1330.00	0.64
1335.00	0.66
1340.00	0.57
1345.00	0.47
1350.00	0.45
1355.00	0.44
1360.00	0.44
1365.00	0.44
1370.00	0.44
1375.00	0.44
1380.00	0.44
1385.00	0.44

1390.00	0.44
1395.00	0.44
1400.00	0.44
1405.00	0.44
1410.00	0.44
1415.00	0.44
1420.00	0.44
1425.00	0.44
1430.00	0.44
1435.00	0.44
1440.00	0.44
1445.00	0.24
1450.00	0.05
1455.00	0.02

Initial Storage = 0.0000 acre-ft

Detention Basin Result Parameters

Routed Hydrograph

Peak Outflow Discharge: 5.700 cfs, Time to Peak: 760.00 (min), Total Outflow Volume: 202547.85 ft^3

Time min	Discharge cfs	Storage acre-ft
0.00	0.00	0.000000
10.00	0.10	0.002029
15.00	0.20	0.003632
20.00	0.29	0.005409
25.00	0.39	0.007131
30.00	0.47	0.008459
35.00	0.54	0.009561
40.00	0.58	0.010336
45.00	0.61	0.010859
50.00	0.64	0.011722
55.00	0.70	0.012826
60.00	0.75	0.013688
65.00	0.78	0.013931
70.00	0.77	0.013695
75.00	0.74	0.013218
80.00	0.72	0.012896
85.00	0.70	0.012678
90.00	0.69	0.012530
95.00	0.68	0.012430
100.00	0.68	0.012363
105.00	0.68	0.012317
110.00	0.69	0.012863
115.00	0.73	0.013752
120.00	0.78	0.014469
125.00	0.81	0.015012
130.00	0.84	0.015379

135.00	0.85	0.015627
140.00	0.87	0.015795
145.00	0.87	0.015909
150.00	0.88	0.015986
155.00	0.90	0.016615
160.00	0.94	0.017560
165.00	0.99	0.018315
170.00	1.03	0.018884
175.00	1.05	0.019268
180.00	1.07	0.019528
185.00	1.08	0.019704
190.00	1.09	0.019823
195.00	1.10	0.019904
200.00	1.10	0.019958
205.00	1.10	0.019995
210.00	1.11	0.020020
215.00	1.11	0.020037
220.00	1.11	0.020048
225.00	1.11	0.020056
230.00	1.13	0.020638
235.00	1.17	0.021610
240.00	1.22	0.022324
245.00	1.25	0.022866
250.00	1.28	0.023232
255.00	1.29	0.023479
260.00	1.32	0.024224
265.00	1.37	0.025305
270.00	1.43	0.026152
275.00	1.47	0.026725
280.00	1.49	0.027112
285.00	1.51	0.027374
290.00	1.54	0.028187
295.00	1.59	0.029256
300.00	1.65	0.030094
305.00	1.66	0.029534
310.00	1.60	0.028522
315.00	1.52	0.027319
320.00	1.48	0.026968
325.00	1.48	0.027307
330.00	1.50	0.027652
335.00	1.53	0.028520
340.00	1.59	0.029627
345.00	1.64	0.030492
350.00	1.69	0.031134
355.00	1.72	0.031569
360.00	1.74	0.031863
365.00	1.77	0.032639
370.00	1.82	0.033683
375.00	1.87	0.034505
380.00	1.91	0.035119

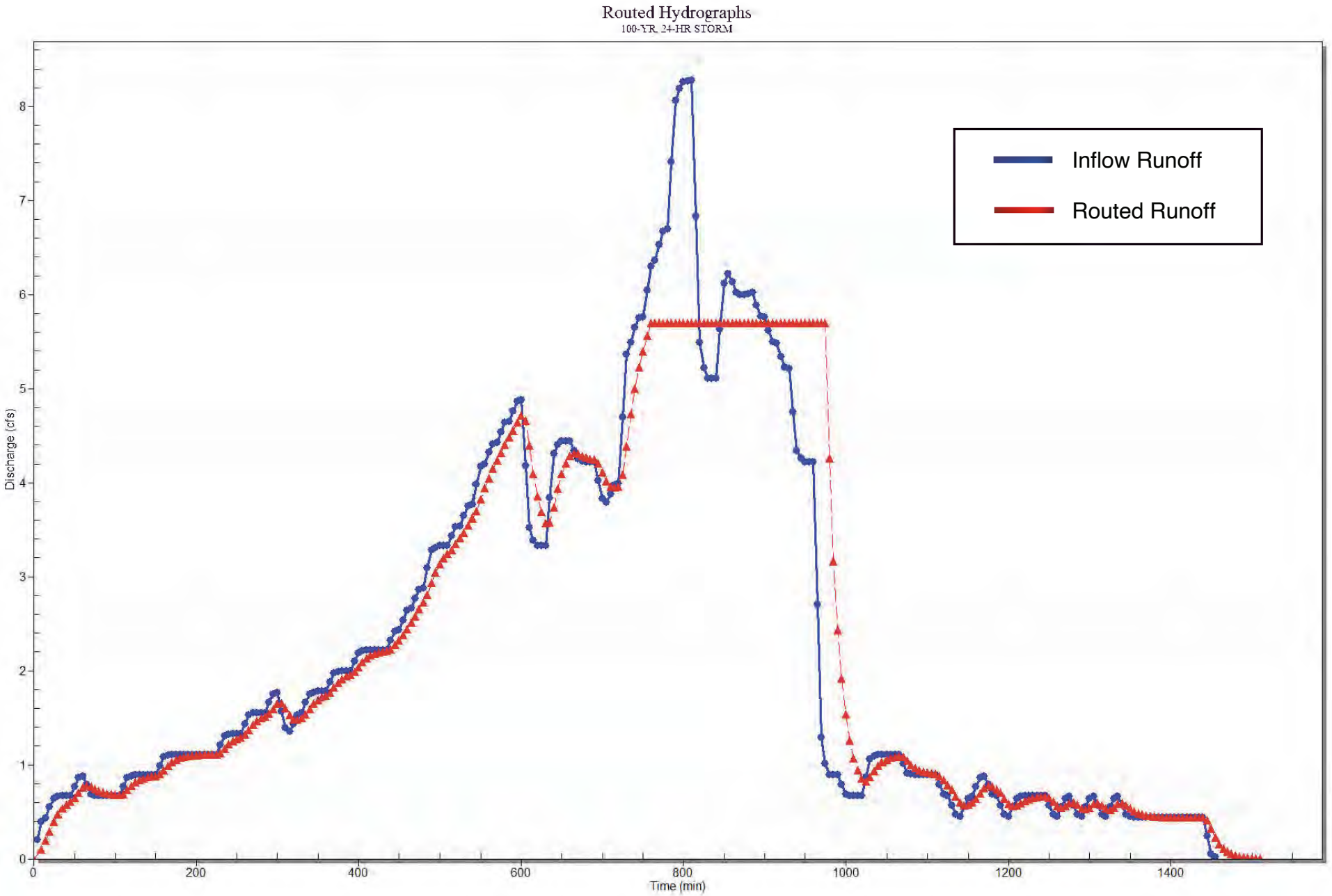
385.00	1.94	0.035534
390.00	1.96	0.035815
395.00	1.99	0.036582
400.00	2.04	0.037621
405.00	2.09	0.038439
410.00	2.13	0.039050
415.00	2.16	0.039463
420.00	2.18	0.039743
425.00	2.19	0.039932
430.00	2.20	0.040060
435.00	2.21	0.040147
440.00	2.23	0.040783
445.00	2.27	0.041790
450.00	2.32	0.042529
455.00	2.38	0.043664
460.00	2.44	0.045009
465.00	2.51	0.046035
470.00	2.58	0.047363
475.00	2.65	0.048781
480.00	2.72	0.049856
485.00	2.81	0.051796
490.00	2.93	0.054204
495.00	3.05	0.056007
500.00	3.14	0.057342
505.00	3.20	0.058245
510.00	3.24	0.058855
515.00	3.29	0.059846
520.00	3.35	0.061093
525.00	3.41	0.061995
530.00	3.47	0.063239
535.00	3.54	0.064659
540.00	3.61	0.065734
545.00	3.70	0.067674
550.00	3.82	0.070083
555.00	3.94	0.071886
560.00	4.04	0.073798
565.00	4.15	0.075611
570.00	4.24	0.076953
575.00	4.32	0.078496
580.00	4.40	0.080117
585.00	4.48	0.081271
590.00	4.55	0.082687
595.00	4.64	0.084222
600.00	4.71	0.085375
605.00	4.65	0.083027
610.00	4.39	0.078389
615.00	4.09	0.073569
620.00	3.85	0.069962
625.00	3.68	0.067523
630.00	3.57	0.065872

635.00	3.57	0.067700
640.00	3.74	0.071650
645.00	3.94	0.074841
650.00	4.09	0.077231
655.00	4.21	0.078847
660.00	4.28	0.079941
665.00	4.32	0.080103
670.00	4.31	0.079693
675.00	4.29	0.079301
680.00	4.27	0.078977
685.00	4.25	0.078759
690.00	4.24	0.078611
695.00	4.20	0.077356
700.00	4.11	0.075411
705.00	4.01	0.073864
710.00	3.96	0.073337
715.00	3.95	0.073500
720.00	3.96	0.073726
725.00	4.08	0.077977
730.00	4.39	0.084663
735.00	4.72	0.089936
740.00	5.00	0.094427
745.00	5.23	0.098042
750.00	5.40	0.100545
755.00	5.56	0.103913
760.00	5.70	0.108045
765.00	5.70	0.112590
770.00	5.70	0.118306
775.00	5.70	0.124987
780.00	5.70	0.131874
785.00	5.70	0.143651
790.00	5.70	0.159904
795.00	5.70	0.177053
800.00	5.70	0.194684
805.00	5.70	0.212383
810.00	5.70	0.230152
815.00	5.70	0.237934
820.00	5.70	0.236488
825.00	5.70	0.233182
830.00	5.70	0.229119
835.00	5.70	0.225055
840.00	5.70	0.220992
845.00	5.70	0.220510
850.00	5.70	0.223402
855.00	5.70	0.226984
860.00	5.70	0.229945
865.00	5.70	0.232149
870.00	5.70	0.234215
875.00	5.70	0.236281
880.00	5.70	0.238416

885.00	5.70	0.240620
890.00	5.70	0.241929
895.00	5.70	0.242411
900.00	5.70	0.242824
905.00	5.70	0.242273
910.00	5.70	0.240895
915.00	5.70	0.239380
920.00	5.70	0.236901
925.00	5.70	0.233664
930.00	5.70	0.230289
935.00	5.70	0.223747
940.00	5.70	0.214380
945.00	5.70	0.204463
950.00	5.70	0.194270
955.00	5.70	0.184078
960.00	5.70	0.173885
965.00	5.70	0.153224
970.00	5.70	0.122852
975.00	5.70	0.101700
980.00	4.26	0.078513
985.00	3.17	0.062828
990.00	2.43	0.052218
995.00	1.92	0.044463
1000.00	1.54	0.038641
1005.00	1.26	0.034586
1010.00	1.07	0.031844
1015.00	0.94	0.029989
1020.00	0.85	0.028734
1025.00	0.83	0.029040
1030.00	0.87	0.030343
1035.00	0.94	0.031398
1040.00	0.99	0.032227
1045.00	1.03	0.032788
1050.00	1.05	0.033168
1055.00	1.07	0.033424
1060.00	1.08	0.033598
1065.00	1.09	0.033715
1070.00	1.08	0.033218
1075.00	1.04	0.032303
1080.00	1.00	0.031627
1085.00	0.96	0.031112
1090.00	0.94	0.030764
1095.00	0.92	0.030528
1100.00	0.91	0.030369
1105.00	0.91	0.030261
1110.00	0.90	0.030188
1115.00	0.88	0.029561
1120.00	0.84	0.028560
1125.00	0.79	0.027768
1130.00	0.73	0.026654

1135.00	0.66	0.025324
1140.00	0.60	0.024308
1145.00	0.57	0.024198
1150.00	0.58	0.024644
1155.00	0.60	0.025061
1160.00	0.64	0.025978
1165.00	0.69	0.027117
1170.00	0.75	0.028004
1175.00	0.78	0.028084
1180.00	0.77	0.027561
1185.00	0.74	0.027092
1190.00	0.70	0.026197
1195.00	0.64	0.025014
1200.00	0.58	0.024099
1205.00	0.56	0.024057
1210.00	0.57	0.024548
1215.00	0.59	0.024996
1220.00	0.62	0.025356
1225.00	0.63	0.025600
1230.00	0.65	0.025765
1235.00	0.65	0.025877
1240.00	0.66	0.025952
1245.00	0.66	0.026004
1250.00	0.65	0.025461
1255.00	0.61	0.024516
1260.00	0.56	0.023762
1265.00	0.54	0.023829
1270.00	0.56	0.024394
1275.00	0.59	0.024892
1280.00	0.60	0.024709
1285.00	0.57	0.024008
1290.00	0.54	0.023418
1295.00	0.52	0.023596
1300.00	0.55	0.024237
1305.00	0.58	0.024785
1310.00	0.59	0.024637
1315.00	0.57	0.023959
1320.00	0.53	0.023385
1325.00	0.52	0.023574
1330.00	0.55	0.024221
1335.00	0.58	0.024775
1340.00	0.59	0.024630
1345.00	0.57	0.023954
1350.00	0.53	0.023382
1355.00	0.50	0.022937
1360.00	0.48	0.022636
1365.00	0.47	0.022432
1370.00	0.46	0.022295
1375.00	0.45	0.022201
1380.00	0.45	0.022138

1385.00	0.45	0.022096
1390.00	0.44	0.022067
1395.00	0.44	0.022047
1400.00	0.44	0.022034
1405.00	0.44	0.022025
1410.00	0.44	0.022019
1415.00	0.44	0.022015
1420.00	0.44	0.022012
1425.00	0.44	0.022011
1430.00	0.44	0.022009
1435.00	0.44	0.022008
1440.00	0.44	0.022008
1445.00	0.41	0.020853
1450.00	0.32	0.018975
1455.00	0.23	0.017531
1460.00	0.16	0.016439
1465.00	0.11	0.015700
1470.00	0.07	0.015201
1475.00	0.05	0.014863
1480.00	0.03	0.014634
1485.00	0.02	0.014479
1490.00	0.02	0.014375
1495.00	0.01	0.014304
1500.00	0.01	0.014256
1505.00	0.00	0.014224
1510.00	0.00	0.014202


Routed Hydrographs
100-YR, 24-HR STORM
Inflow Runoff
Routed Runoff
Discharge (cfs)
Time (min)
0
1
2
3
4
5
6
7
8
0
200
400
600
800
1000
1200
1400

Detention Basin Analysis: 100-YR, 6-HR STORM

Notes:

Storage Input Parameters

Storage Capacity: Retention Basin

Elevation ft	Volume acre-ft
0.00	0.00
1.00	0.10
2.00	0.23
3.00	0.38
4.00	0.57
5.00	0.78

Discharge Input Parameters

Weir: Weir 1

Weir Length: 12.0000 ft

Weir Coefficient: 3.1000

Height above base: 0.0000 ft

Base Elevation: 4.5000 ft

Known Discharge: Pump Control

Discharge cfs

0.00	0.00
1.00	5.70
2.00	5.70
3.00	5.70
4.00	5.70
5.00	5.70

Storage & Discharge Input Parameters

Elevation - Storage - Discharge

Elevation ft	Storage acre-ft	Discharge cfs
0.00	0.00	0.00
1.00	0.10	5.70
2.00	0.23	5.70
3.00	0.38	5.70
4.00	0.57	5.70
5.00	0.78	18.85

Detention Basin Input Parameters

Inflow Hydrograph

Peak Inflow Discharge: 23.380 cfs, Time to Peak: 330.00 (min), Total Inflow Volume: 120970.50 ft^3

Time (min)	Discharge cfs
5.00	0.86
10.00	1.83
15.00	2.14
20.00	2.24
25.00	2.26
30.00	2.43
35.00	2.59
40.00	2.62
45.00	2.63
50.00	2.63
55.00	2.63
60.00	2.80
65.00	2.96
70.00	3.00
75.00	3.01
80.00	3.01
85.00	3.01
90.00	3.01
95.00	3.01
100.00	3.01
105.00	3.01
110.00	3.01
115.00	3.01
120.00	3.18
125.00	3.17
130.00	3.21
135.00	3.35
140.00	3.37
145.00	3.39
150.00	3.39
155.00	3.39
160.00	3.39
165.00	3.56
170.00	3.72
175.00	3.75
180.00	3.76
185.00	3.76
190.00	3.93
195.00	4.09
200.00	4.12
205.00	4.31
210.00	4.64

215.00	5.00
220.00	5.21
225.00	5.42
230.00	5.60
235.00	5.80
240.00	5.97
245.00	6.18
250.00	6.59
255.00	7.07
260.00	7.57
265.00	8.08
270.00	8.36
275.00	8.65
280.00	9.11
285.00	9.60
290.00	9.88
295.00	10.17
300.00	10.64
305.00	12.06
310.00	14.35
315.00	16.36
320.00	18.00
325.00	20.03
330.00	23.38
335.00	17.02
340.00	7.67
345.00	4.05
350.00	2.37
355.00	1.63
360.00	1.06
365.00	0.48
370.00	0.10
375.00	0.03

Initial Storage = 0.0000 acre-ft

Detention Basin Result Parameters

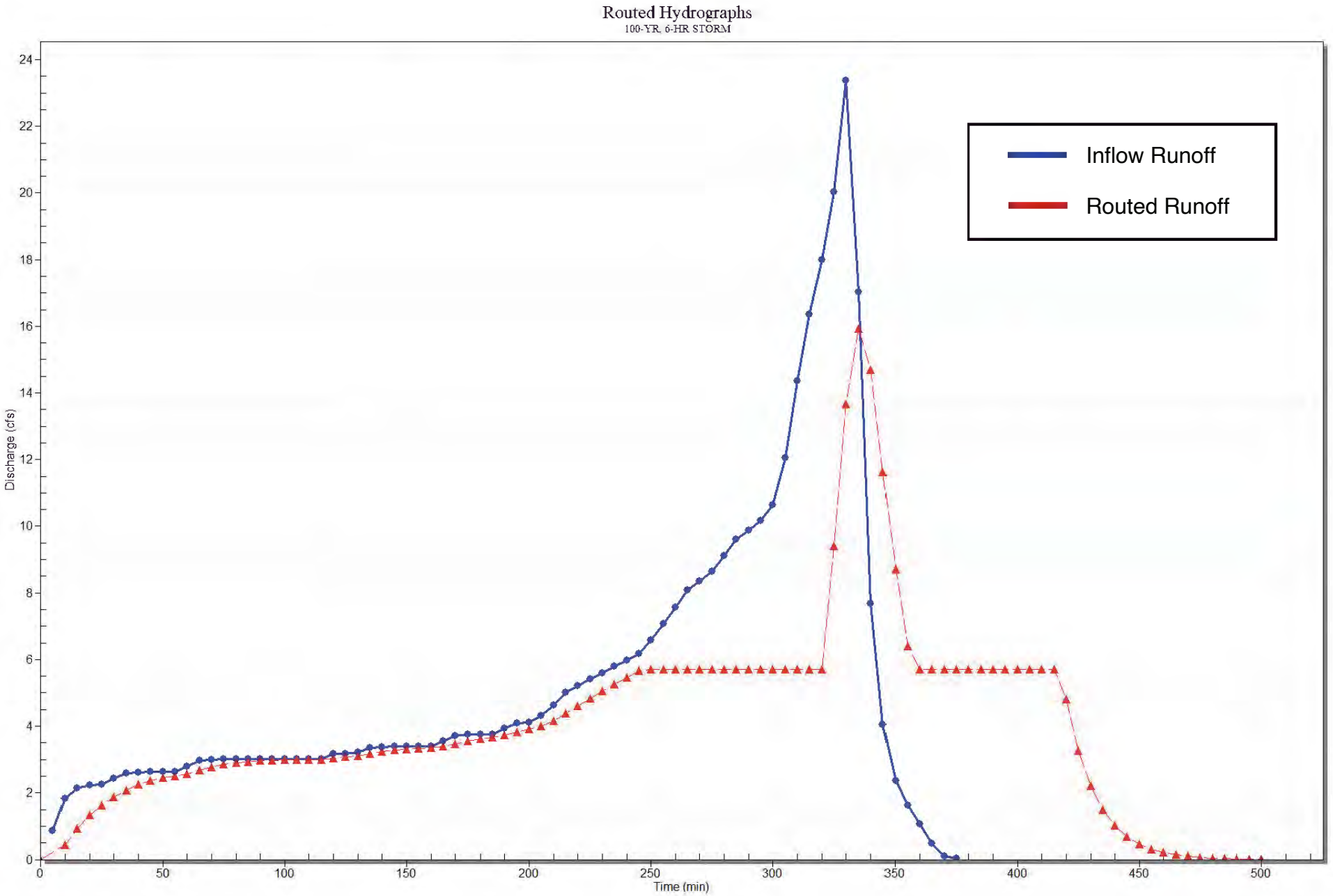
Routed Hydrograph

Peak Outflow Discharge: 15.931 cfs, Time to Peak: 335.00 (min), Total Outflow Volume: 121033.08 ft^3

Time min	Discharge cfs	Storage acre-ft
0.00	0.00	0.000000
10.00	0.44	0.009606
15.00	0.94	0.017894
20.00	1.34	0.024077
25.00	1.64	0.029188
30.00	1.87	0.033281
35.00	2.07	0.037003

40.00	2.25	0.040069
45.00	2.37	0.042258
50.00	2.45	0.043768
55.00	2.51	0.044789
60.00	2.58	0.046328
65.00	2.67	0.048293
70.00	2.77	0.049853
75.00	2.85	0.050966
80.00	2.90	0.051754
85.00	2.94	0.052385
90.00	2.96	0.052812
95.00	2.98	0.053101
100.00	2.99	0.053296
105.00	2.99	0.053428
110.00	3.00	0.053518
115.00	3.00	0.053578
120.00	3.03	0.054593
125.00	3.08	0.055221
130.00	3.11	0.055877
135.00	3.17	0.057129
140.00	3.23	0.058092
145.00	3.28	0.058858
150.00	3.31	0.059376
155.00	3.34	0.059727
160.00	3.36	0.059964
165.00	3.39	0.061106
170.00	3.47	0.062802
175.00	3.56	0.064123
180.00	3.62	0.065074
185.00	3.67	0.065717
190.00	3.72	0.067134
195.00	3.82	0.069015
200.00	3.91	0.070462
205.00	4.01	0.072537
210.00	4.16	0.075845
215.00	4.37	0.080162
220.00	4.61	0.084294
225.00	4.84	0.088301
230.00	5.06	0.092051
235.00	5.26	0.095743
240.00	5.46	0.099221
245.00	5.66	0.102786
250.00	5.70	0.108916
255.00	5.70	0.118351
260.00	5.70	0.131230
265.00	5.70	0.147621
270.00	5.70	0.165940
275.00	5.70	0.186257
280.00	5.70	0.209742
285.00	5.70	0.236601

290.00	5.70	0.265389
295.00	5.70	0.296174
300.00	5.70	0.330196
305.00	5.70	0.373997
310.00	5.70	0.433570
315.00	5.70	0.506986
320.00	5.70	0.591696
325.00	9.41	0.664810
330.00	13.67	0.731684
335.00	15.93	0.739184
340.00	14.69	0.715037
345.00	11.63	0.664758
350.00	8.72	0.621054
355.00	6.39	0.588270
360.00	5.70	0.556314
365.00	5.70	0.520364
370.00	5.70	0.481796
375.00	5.70	0.442747
380.00	5.70	0.403491
385.00	5.70	0.364235
390.00	5.70	0.324979
395.00	5.70	0.285723
400.00	5.70	0.246467
405.00	5.70	0.207211
410.00	5.70	0.167954
415.00	5.70	0.128698
420.00	4.82	0.095505
425.00	3.26	0.073052
430.00	2.21	0.057863
435.00	1.49	0.047589
440.00	1.01	0.040639
445.00	0.68	0.035938
450.00	0.46	0.032758
455.00	0.31	0.030606
460.00	0.21	0.029151
465.00	0.14	0.028167
470.00	0.10	0.027501
475.00	0.07	0.027050
480.00	0.04	0.026746
485.00	0.03	0.026540
490.00	0.02	0.026400
495.00	0.01	0.026306
500.00	0.01	0.026242


Routed Hydrographs
100-YR, 6-HR STORM
Inflow Runoff
Routed Runoff
Discharge (cfs)
Time (min)
0
2
4
6
8
10
12
14
16
18
20
22
24
0
50
100
150
200
250
300
350
400
450
500

Detention Basin Analysis: 100-YR, 3-HR STORM

Notes:

Storage Input Parameters

Storage Capacity: Retention Basin

Elevation ft	Volume acre-ft
0.00	0.00
1.00	0.10
2.00	0.23
3.00	0.38
4.00	0.57
5.00	0.78

Discharge Input Parameters

Weir: Weir 1

Weir Length: 12.0000 ft

Weir Coefficient: 3.1000

Height above base: 0.0000 ft

Base Elevation: 4.5000 ft

Known Discharge: Pump Control

Discharge cfs

0.00	0.00
1.00	5.70
2.00	5.70
3.00	5.70
4.00	5.70
5.00	5.70

Storage & Discharge Input Parameters

Elevation - Storage - Discharge

Elevation ft	Storage acre-ft	Discharge cfs
0.00	0.00	0.00
1.00	0.10	5.70
2.00	0.23	5.70
3.00	0.38	5.70
4.00	0.57	5.70
5.00	0.78	18.85

Detention Basin Input Parameters

Inflow Hydrograph

Peak Inflow Discharge: 25.680 cfs, Time to Peak: 155.00 (min), Total Inflow Volume: 90615.00 ft^3

Time (min)	Discharge cfs
5.00	1.62
10.00	3.14
15.00	3.19
20.00	3.58
25.00	4.01
30.00	4.45
35.00	4.47
40.00	4.56
45.00	4.87
50.00	4.53
55.00	4.34
60.00	4.64
65.00	5.36
70.00	5.89
75.00	6.00
80.00	5.79
85.00	6.43
90.00	7.36
95.00	7.15
100.00	7.29
105.00	8.69
110.00	9.35
115.00	8.92
120.00	8.80
125.00	9.04
130.00	11.05
135.00	14.18
140.00	13.26
145.00	16.87
150.00	22.56
155.00	25.68
160.00	23.82
165.00	14.09
170.00	7.25
175.00	5.53
180.00	3.46
185.00	1.29
190.00	0.32
195.00	0.06

Initial Storage = 0.0000 acre-ft

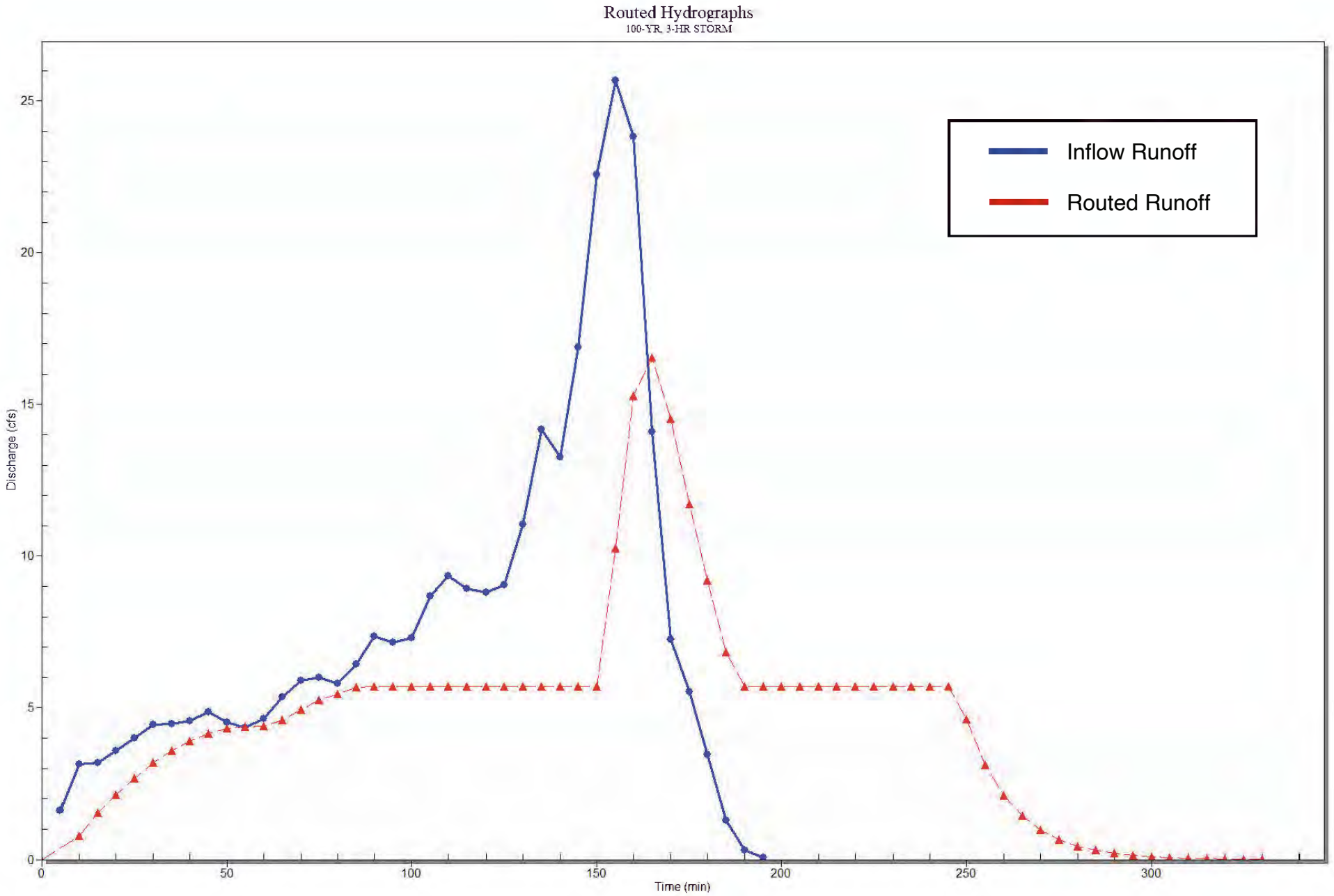
Detention Basin Result Parameters

Routed Hydrograph

Peak Outflow Discharge: 16.545 cfs, Time to Peak: 165.00 (min), Total Outflow Volume: 90732.60 ft^3

Time min	Discharge cfs	Storage acre-ft
0.00	0.00	0.000000
10.00	0.77	0.016322
15.00	1.54	0.027651
20.00	2.14	0.038187
25.00	2.68	0.047740
30.00	3.18	0.056713
35.00	3.59	0.064110
40.00	3.89	0.069432
45.00	4.16	0.074336
50.00	4.33	0.077315
55.00	4.37	0.077902
60.00	4.41	0.079512
65.00	4.60	0.084757
70.00	4.93	0.091365
75.00	5.26	0.096470
80.00	5.46	0.098711
85.00	5.67	0.103922
90.00	5.70	0.115354
95.00	5.70	0.125340
100.00	5.70	0.136291
105.00	5.70	0.156883
110.00	5.70	0.182020
115.00	5.70	0.204197
120.00	5.70	0.225546
125.00	5.70	0.248549
130.00	5.70	0.285395
135.00	5.70	0.343797
140.00	5.70	0.395863
145.00	5.70	0.472791
150.00	5.70	0.588906
155.00	10.25	0.695200
160.00	15.27	0.754097
165.00	16.54	0.745553
170.00	14.51	0.712098
175.00	11.70	0.669614
180.00	9.20	0.630053
185.00	6.84	0.591833
190.00	5.70	0.554781
195.00	5.70	0.515938
200.00	5.70	0.476682
205.00	5.70	0.437426
210.00	5.70	0.398170

215.00	5.70	0.358914
220.00	5.70	0.319658
225.00	5.70	0.280402
230.00	5.70	0.241146
235.00	5.70	0.201890
240.00	5.70	0.162634
245.00	5.70	0.123378
250.00	4.62	0.091548
255.00	3.13	0.070017
260.00	2.11	0.055452
265.00	1.43	0.045600
270.00	0.97	0.038935
275.00	0.65	0.034427
280.00	0.44	0.031378
285.00	0.30	0.029315
290.00	0.20	0.027919
295.00	0.14	0.026975
300.00	0.09	0.026337
305.00	0.06	0.025905
310.00	0.04	0.025613
315.00	0.03	0.025415
320.00	0.02	0.025281
325.00	0.01	0.025191
330.00	0.01	0.025130


Routed Hydrographs
100-YR, 3-HR STORM
Inflow Runoff
Routed Runoff
Discharge (cfs)
Time (min)
0
5
10
15
20
25
0
50
100
150
200
250
300

Detention Basin Analysis: 100-YR, 1-HR STORM

Notes:

Storage Input Parameters

Storage Capacity: Retention Basin

Elevation ft	Volume acre-ft
0.00	0.00
1.00	0.10
2.00	0.23
3.00	0.38
4.00	0.57
5.00	0.78

Discharge Input Parameters

Weir: Weir 1

Weir Length: 12.0000 ft

Weir Coefficient: 3.1000

Height above base: 0.0000 ft

Base Elevation: 4.5000 ft

Known Discharge: Pump Control

Discharge cfs

0.00	0.00
1.00	5.70
2.00	5.70
3.00	5.70
4.00	5.70
5.00	5.70

Storage & Discharge Input Parameters

Elevation - Storage - Discharge

Elevation ft	Storage acre-ft	Discharge cfs
0.00	0.00	0.00
1.00	0.10	5.70
2.00	0.23	5.70
3.00	0.38	5.70
4.00	0.57	5.70
5.00	0.78	18.85

Detention Basin Input Parameters

Inflow Hydrograph

Peak Inflow Discharge: 42.150 cfs, Time to Peak: 50.00 (min), Total Inflow Volume: 59799.00 ft^3

Time (min)	Discharge cfs
5.00	3.34
10.00	6.56
15.00	7.99
20.00	8.96
25.00	9.93
30.00	11.50
35.00	13.26
40.00	15.58
45.00	20.81
50.00	42.15
55.00	36.06
60.00	16.08
65.00	7.36
70.00	1.25
75.00	0.34

Initial Storage = 0.0000 acre-ft

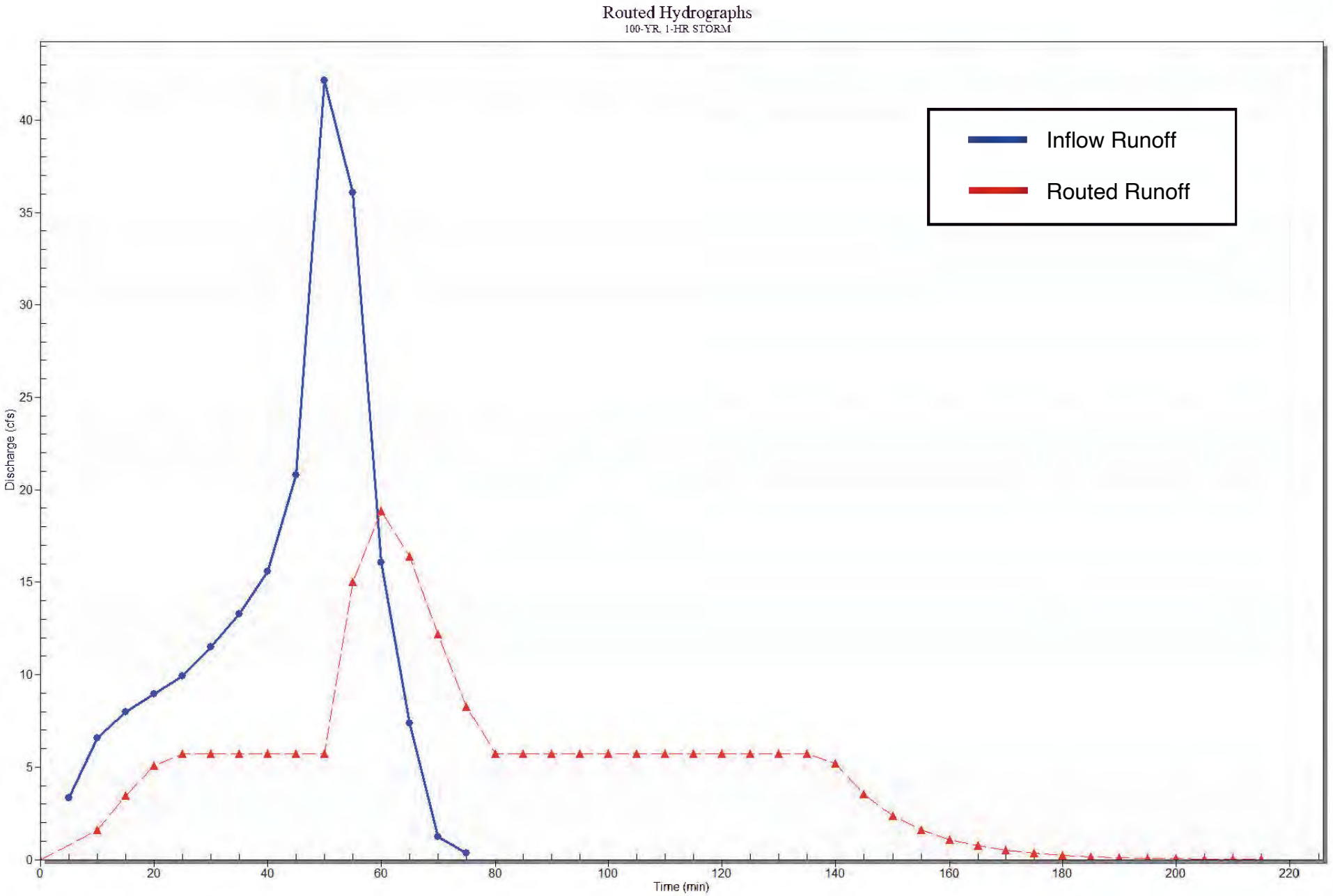
Detention Basin Result Parameters

Routed Hydrograph

Peak Outflow Discharge: 18.849 cfs, Time to Peak: 60.00 (min), Total Outflow Volume: 60078.74 ft^3

Time min	Discharge cfs	Storage acre-ft
0.00	0.00	0.000000
10.00	1.60	0.034149
15.00	3.44	0.065504
20.00	5.07	0.092313
25.00	5.70	0.121445
30.00	5.70	0.161390
35.00	5.70	0.213456
40.00	5.70	0.281500
45.00	5.70	0.385563
50.00	5.70	0.636595
55.00	15.02	0.781473
60.00	18.85	0.783441
65.00	16.38	0.742846
70.00	12.20	0.674082
75.00	8.25	0.619604
80.00	5.70	0.580348
85.00	5.70	0.541092

90.00	5.70	0.501836
95.00	5.70	0.462580
100.00	5.70	0.423324
105.00	5.70	0.384068
110.00	5.70	0.344812
115.00	5.70	0.305556
120.00	5.70	0.266300
125.00	5.70	0.227044
130.00	5.70	0.187788
135.00	5.70	0.148532
140.00	5.21	0.112673
145.00	3.52	0.088416
150.00	2.38	0.072008
155.00	1.61	0.060908
160.00	1.09	0.053400
165.00	0.74	0.048321
170.00	0.50	0.044886
175.00	0.34	0.042562
180.00	0.23	0.040990
185.00	0.15	0.039926
190.00	0.10	0.039207
195.00	0.07	0.038720
200.00	0.05	0.038391
205.00	0.03	0.038168
210.00	0.02	0.038018
215.00	0.01	0.037916


Routed Hydrographs
100-YR, 1-HR STORM
Inflow Runoff
Routed Runoff
Discharge (cfs)
Time (min)
0
5
10
15
20
25
30
35
40
0
20
40
60
80
100
120
140
160
180
200
220

APPENDIX F

Hydraulic Calculations

(To be provided during final engineering)

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jan 31 2025

Preliminary Pipe Conveyance - Q100

Circular

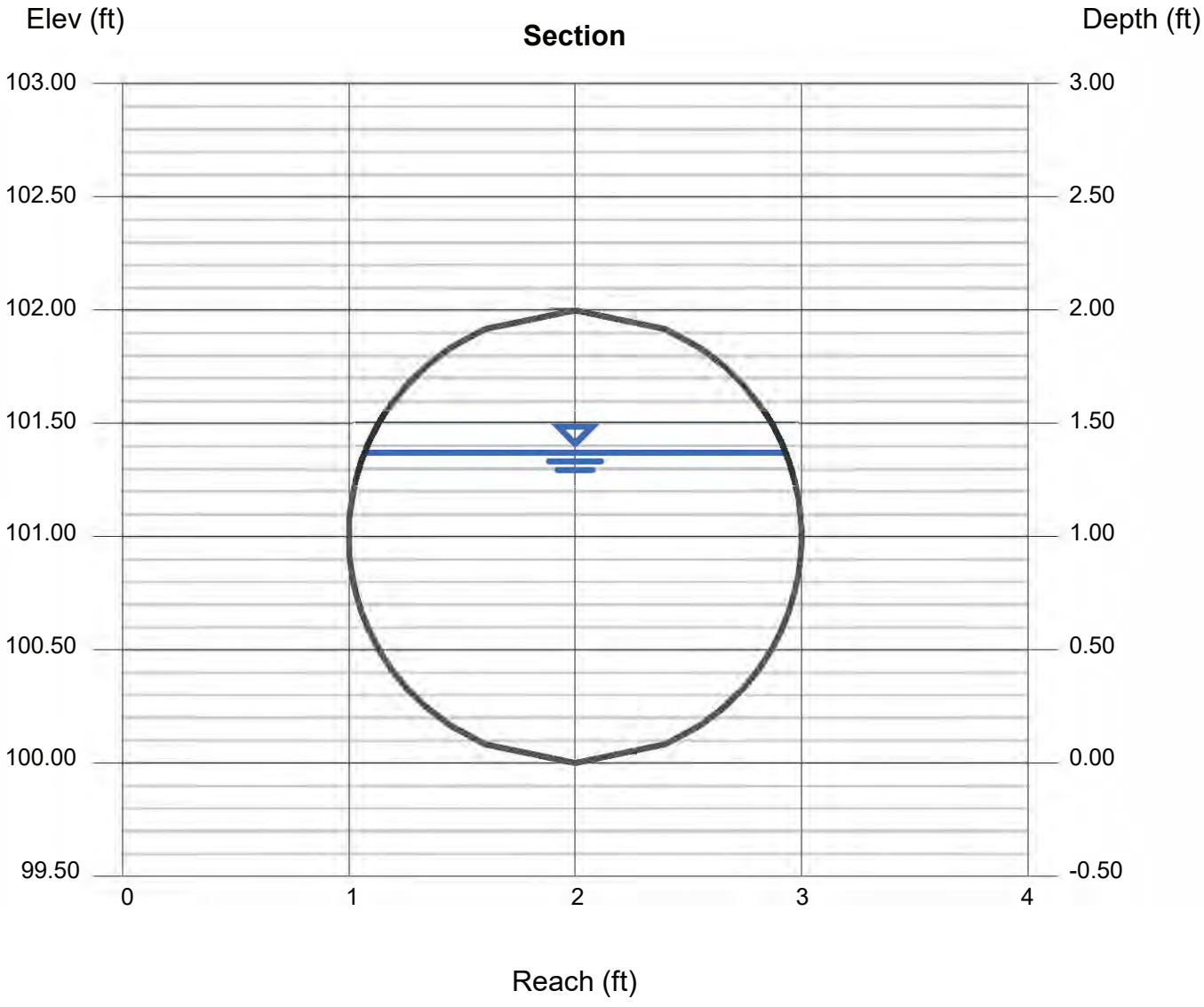
Diameter (ft)	= 2.00
Invert Elev (ft)	= 100.00
Slope (%)	= 4.00
N-Value	= 0.013

Calculations

Compute by:	Known Q
Known Q (cfs)	= 36.60

Highlighted

Depth (ft)	= 1.37
Q (cfs)	= 36.60
Area (sqft)	= 2.29
Velocity (ft/s)	= 15.96
Wetted Perim (ft)	= 3.90
Crit Depth, Yc (ft)	= 1.94
Top Width (ft)	= 1.86
EGL (ft)	= 5.33



Weir Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, May 12 2025

BLOCK OMISSION

Rectangular Weir

Crest	= Broad
Bottom Length (ft)	= 0.66
Total Depth (ft)	= 0.66

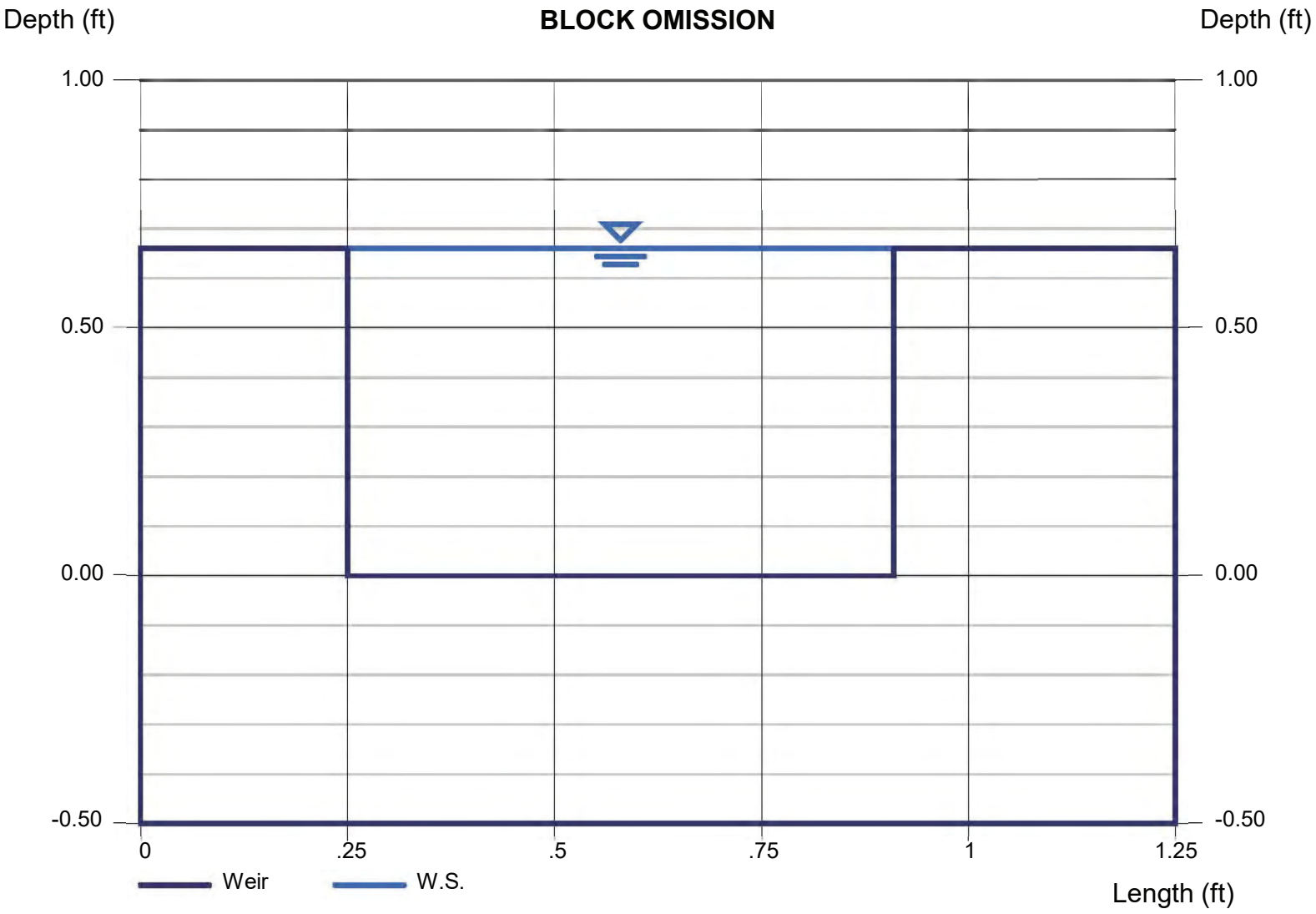
Calculations

Weir Coeff. Cw	= 2.60
Compute by:	Q vs Depth
No. Increments	= 1

Highlighted

Depth (ft)	= 0.66
Q (cfs)	= 0.920
Area (sqft)	= 0.44
Velocity (ft/s)	= 2.11
Top Width (ft)	= 0.66

OFFSITE RUNON Q100 = 10.673 CFS
MINIMUM OF 12 BLOCK OMISSION IS REQUIRED.



Channel Report

Diversion Gutter Capacity

Triangular

Side Slopes (z:1)	= 1.50, 1.50
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 100.00
Slope (%)	= 1.50
N-Value	= 0.013

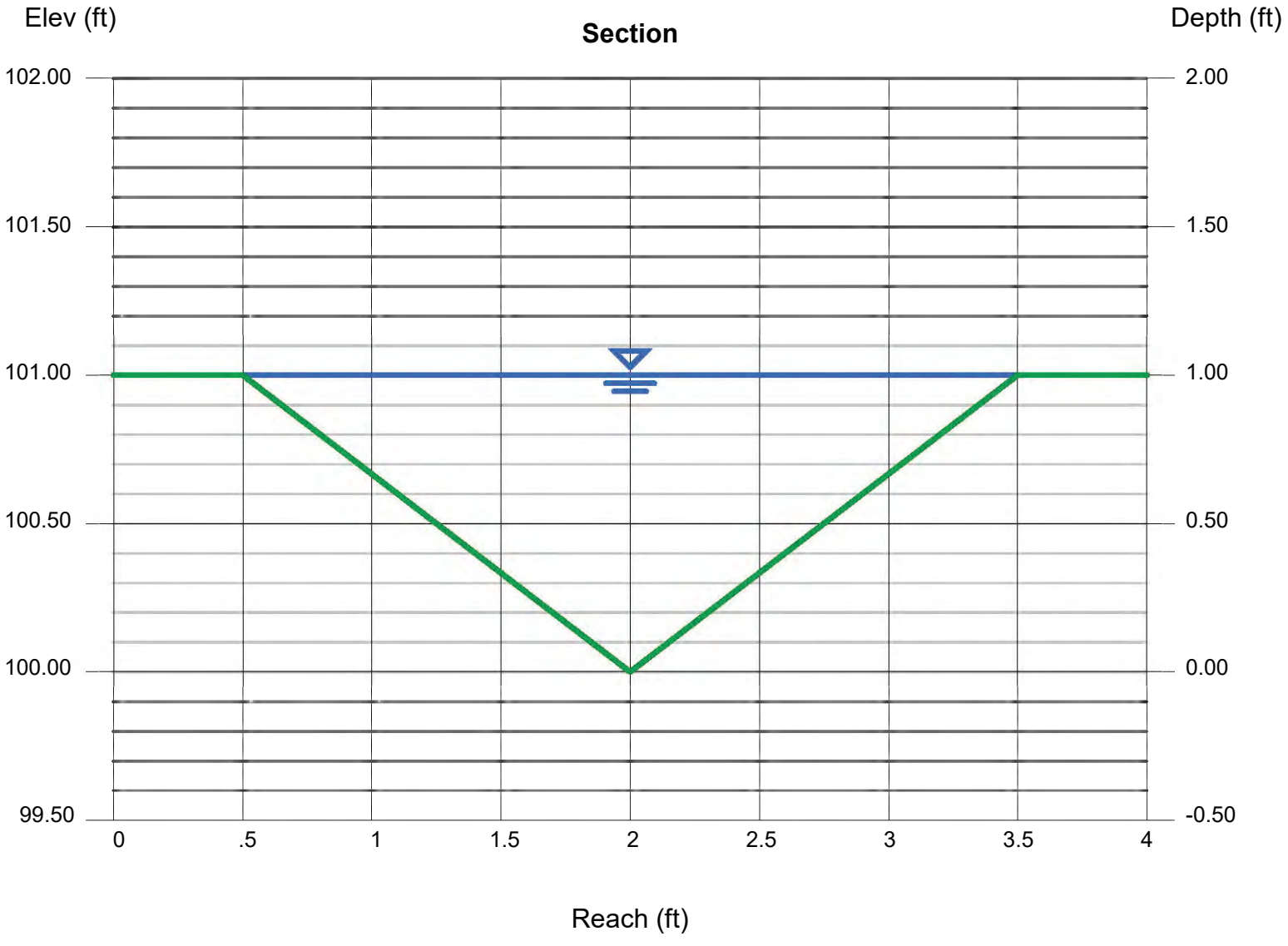
Calculations

Compute by:	Q vs Depth
No. Increments	= 1

Highlighted

Depth (ft)	= 1.00
Q (cfs)	= 11.70
Area (sqft)	= 1.50
Velocity (ft/s)	= 7.80
Wetted Perim (ft)	= 3.61
Crit Depth, Yc (ft)	= 1.00
Top Width (ft)	= 3.00
EGL (ft)	= 1.95

OFFSITE RUNON Q100 = 10.673 CFS
DIVERSION GUTTER CAPACITY IS SUFFICIENT.



APPENDIX G

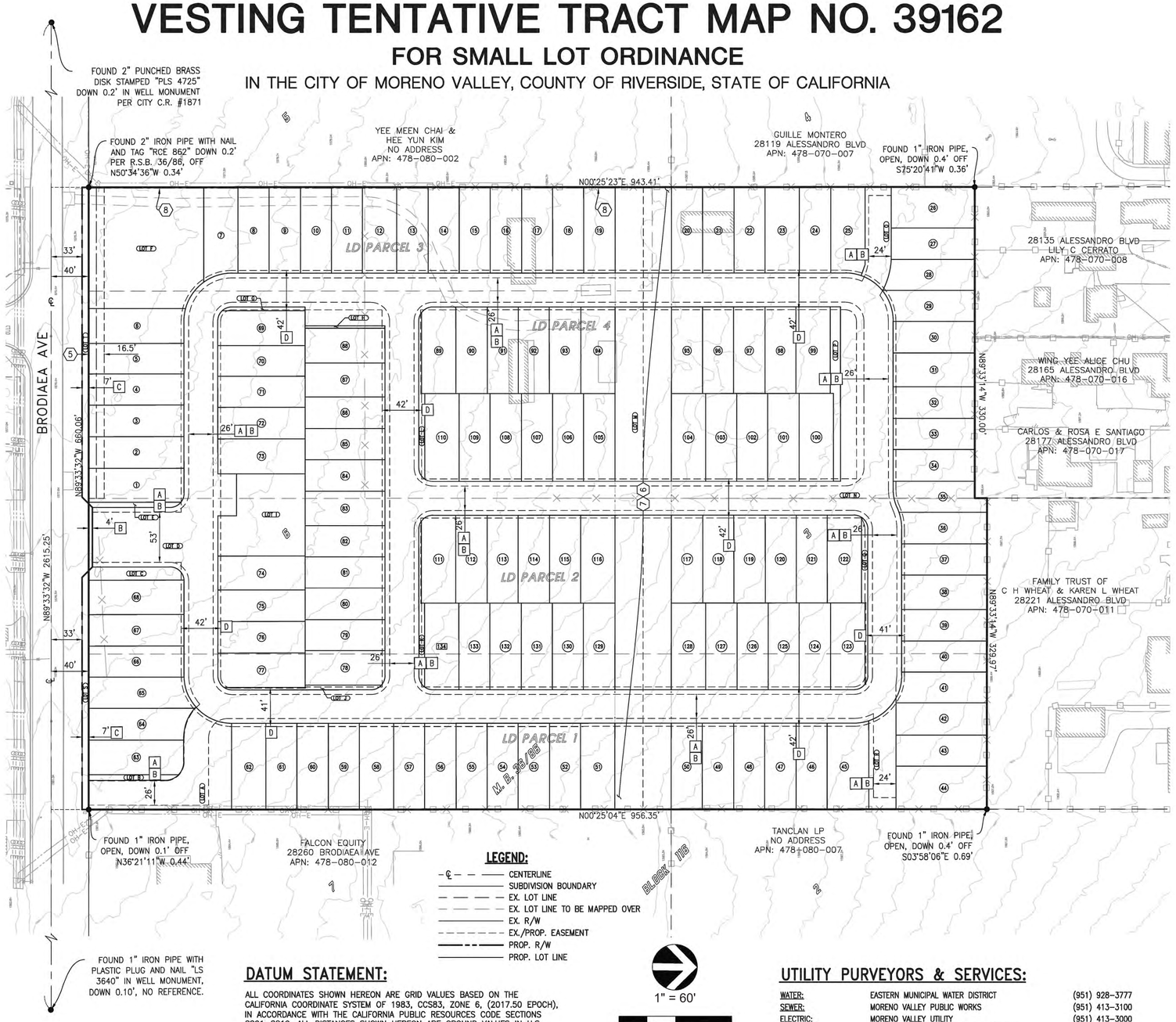
Reference Documents

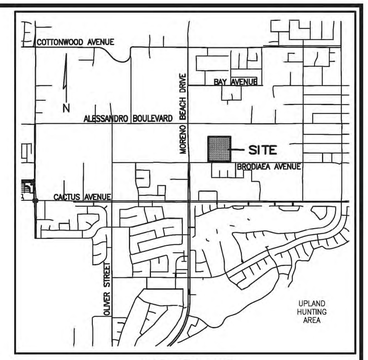
Tentative Tract Map No. 39162

VESTING TENTATIVE TRACT MAP NO. 39162

FOR SMALL LOT ORDINANCE

IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA





VICINITY MAP
N.T.S.

LEGAL DESCRIPTION:

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA AND IS DESCRIBED AS FOLLOWS:

LD PARCEL 1 (APN: 478-070-013 AND APN: 478-080-005):

THE EAST HALF OF THAT PORTION OF THE EAST ONE-HALF OF LOTS 3 AND 6, BLOCK 116 OF MAP NO. 1 OF BEAR VALLEY AND ALESSANDRO DEVELOPMENT COMPANY, IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 11, PAGE 10 OF MAPS, SAN BERNARDINO COUNTY RECORDS, DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF SAID LOT 3;

THENCE SOUTH ALONG THE EAST LINE OF SAID LOT 3, 264 FEET TO THE POINT OF BEGINNING THE LAND TO BE DESCRIBED;

THENCE CONTINUING SOUTH, ALONG THE EAST LINE OF SAID LOTS 3 AND 6, 956 FEET TO THE SOUTHEAST CORNER OF SAID LOT 6;

THENCE WEST, ALONG THE SOUTH LINE OF SAID LOT 6, 330 FEET TO THE WEST LINE OF THE EAST ONE-HALF OF SAID LOT 6;

THENCE NORTH, ALONG THE WEST LINE OF THE EAST ONE-HALF OF SAID LOT 3 AND 6, 956 FEET;

THENCE EAST, 330 FEET TO THE POINT OF BEGINNING.

SAID LAND IS ALSO SHOWN ON RECORD OF SURVEY ON FILE IN BOOK 36, PAGE 86 OF RECORDS OF SURVEY, RECORDS OF SAID COUNTY.

LD PARCEL 2 (APN: 478-070-014 AND APN: 478-080-004):

THE WEST HALF OF THAT PORTION OF THE EAST ONE HALF OF LOT(S) 3 AND 6, IN BLOCK 116 OF MAP NO. 1 OF BEAR VALLEY ALESSANDRO DEVELOPMENT COMPANY, IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 11, PAGE 10 OF MAPS, SAN BERNARDINO COUNTY RECORDS, DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF SAID LOT 3;

THENCE SOUTH ALONG THE EAST LINE OF SAID LOT 3, 264 FEET TO THE POINT OF BEGINNING OF THE LAND TO BE DESCRIBED;

THENCE CONTINUING SOUTH, ALONG THE EAST LINE OF SAID LOT(S) 3 AND 6, 956 FEET TO THE SOUTHEAST COMER OF SAID LOT 6;

THENCE WEST, ALONG THE SOUTH LINE OF SAID LOT 6, 330 FEET TO THE WEST LINE OF THE EAST ONE HALF OF SAID LOT 6;

THENCE NORTH, ALONG THE WEST LINE OF THE EAST ONE HALF OF SAID LOT(S) 3 AND 6, 956 FEET;
THENCE EAST, 330 FEET TO THE POINT OF BEGINNING.

SAID LAND IS ALSO SHOWN ON RECORD OF SURVEY ON FILE IN BOOK 36, PAGE 86 OF RECORDS OF SURVEY, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

APN: 478-070-013
APN: 478-070-014
APN: 478-080-004
APN: 478-080-005

LD PARCEL 3 (PORTION OF APN: 478-080-003)

THAT PORTION OF LOT 6 IN BLOCK 116 OF BEAR VALLEY AND ALESSANDRO DEVELOPMENT COMPANY, IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 11, PAGE 10, OF MAPS, SAN BERNARDINO COUNTY RECORDS, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWESTERLY CORNER OF LOT 6; THENCE NORTHERLY ALONG THE WESTERLY LINE OF SAID LOT 6, 600 FEET; THENCE EASTERLY AND PARALLEL WITH THE SOUTHERLY LINE OF SAID LOT, 110 FEET; THENCE SOUTHERLY PARALLEL WITH THE WESTERLY LINE OF SAID LOT, 600 FEET TO THE SOUTHERLY LINE THEREOF; THENCE WESTERLY ALONG SAID SOUTHERLY LINE, 110 FEET TO THE POINT OF BEGINNING.

LD PARCEL 4 (APN: 478-070-015 AND A PORTION OF APN: 478-080-003)

THE WEST HALF OF LOTS 3 AND 6 IN BLOCK 116 OF BEAR VALLEY AND ALESSANDRO DEVELOPMENT COMPANY, IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 11, PAGE 10, OF MAPS, SAN BERNARDINO COUNTY RECORDS. EXCEPTING FROM LOT 3 THE NORTHERLY 277 FEET THEREOF;

ALSO EXCEPTING FROM LOT 6 THAT PORTION DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWESTERLY CORNER OF LOT 6; THENCE NORTHERLY ALONG THE WESTERLY LINE OF SAID LOT 6, 600 FEET; THENCE EASTERLY AND PARALLEL WITH THE SOUTHERLY LINE OF SAID LOT, 110 FEET; THENCE SOUTHERLY PARALLEL WITH THE WESTERLY LINE OF SAID LOT, 600 FEET TO THE SOUTHERLY LINE THEREOF; THENCE WESTERLY ALONG SAID SOUTHERLY LINE, 110 FEET TO THE POINT OF BEGINNING.

VESTED OWNER:

EDM REALTY CORP., A CALIFORNIA CORPORATION

SITE ADDRESS:

28136 BRODIAEA AVENUE,
MORENO VALLEY, CA 92555

BASIS OF BEARINGS:

THE BEARINGS SHOWN HEREON ARE BASED ON THE BEARING S76°06'46"E BETWEEN CALIFORNIA SPATIAL REFERENCE CENTER, CSRC, CONTINUOUSLY OPERATING REFERENCE STATIONS, CORS, "RTHS" AND "CRFP".

BENCHMARK STATEMENT:

NATIONAL GEODETIC SURVEY BENCHMARK NO. DH7093 (PID)
ELEV: 1661.92 FT (NAVD88)

FLOOD NOTE:

THE SUBJECT PROPERTY FALLS WITHIN "ZONE X, AREA OF MINIMAL FLOOD HAZARD" PER FEMA MAP NO. 06065C0770G, A PRINTED PANEL, EFFECTIVE AUGUST 28, 2008 (TABLE A-3).

ENGINEER'S STATEMENT:

THIS VESTING TENTATIVE MAP WAS PREPARED BY ME, OR UNDER MY DIRECTION ON MAY 28, 2025.

DANE P. MCDOUGALL, R.C.E. 80705

SURVEYOR'S STATEMENT:

THE SURVEY ON WHICH THIS VESTING TENTATIVE MAP IS BASED WAS DONE BY ME, OR UNDER MY DIRECTION. FIELDWORK WAS COMPLETED ON SEPTEMBER 18, 2024.

PROFESSIONAL LAND SURVEYOR DANE P. MCDOUGALL L.S. 9297 STATE OF CALIFORNIA

DANE P. MCDOUGALL, L.S. 9297

DATUM STATEMENT:

ALL COORDINATES SHOWN HEREON ARE GRID VALUES BASED ON THE CALIFORNIA COORDINATE SYSTEM OF 1983, CCS83, ZONE 6, (2017.50 EPOCH), IN ACCORDANCE WITH THE CALIFORNIA PUBLIC RESOURCES CODE SECTIONS 8801-8819. ALL DISTANCES SHOWN HEREON ARE GROUND VALUES IN U.S. SURVEY FEET UNLESS OTHERWISE NOTED. A COMBINATION SCALE FACTOR OF 0.99993479 WAS USED FOR THIS PROJECT AT NORTHING 2277736.953, EASTING 6282328.548, TO OBTAIN GRID DISTANCES, MULTIPLY GROUND DISTANCES BY THE COMBINATION SCALE FACTOR.

NOTE:

1) PURSUANT TO SUBDIVISION MAP ACT SECTION 66456.1(a), MULTIPLE FINAL MAPS MAY BE FILED ON THIS TENTATIVE MAP.

LEGEND:

- CENTERLINE
- SUBDIVISION BOUNDARY
- EX. LOT LINE
- EX. LOT LINE TO BE MAPPED OVER
- EX. R/W
- EX./PROP. EASEMENT
- PROP. R/W
- PROP. LOT LINE

1" = 60'
0 30 60 120

LAND USE SUMMARY:

GROSS AREA: 14.392 AC
NET AREA: 14.480 AC (AFTER VACATION)
TOTAL PROPOSED NUMBERED LOTS: 134
TOTAL PROPOSED LETTERED LOTS: 20 (A-T)

UTILITY PURVEYORS & SERVICES:

WATER:	EASTERN MUNICIPAL WATER DISTRICT	(951) 928-3777
SEWER:	MORENO VALLEY PUBLIC WORKS	(951) 413-3100
ELECTRIC:	MORENO VALLEY UTILITY	(951) 413-3000
GAS:	THE SOUTHERN CALIFORNIA GAS COMPANY	(800) 427-2200
TELEPHONE:	VERIZON WIRELESS	(800) 922-0204
CABLE TV:	SPECTRUM	(855) 757-7328
SCHOOL DISTRICT:	MORENO VALLEY UNIFIED SCHOOL DISTRICT	(951) 571-7500
FIRE PROTECTION:	MORENO VALLEY FIRE DEPARTMENT	(951) 242-3101
WASTE:	WASTE MANAGEMENT	(951) 413-3109

CIVIL ENGINEER:

C&V CONSULTING, INC.
9830 IRVINE CENTER DRIVE
IRVINE, CA 92618
PHONE: (949) 445-1833

SUBDIVIDER:

WARMINGTON RESIDENTIAL
3090 PULLMAN STREET
COSTA MESA, CA 92626
PHONE: (714) 557-5511

SHEET INDEX:

EXISTING EASEMENTS:

3 A RESERVATION OF ONE-HALF OF ALL TREES NOW STANDING AND GROWING ON THE HEREIN DESCRIBED PROPERTY AS RESERVED BY THE GRANTORS IN THE DEED FROM JAMES E. BAKER AND WIFE TO CARLTON JACKSON, AS JOINT TENANTS, DATED JANUARY 9, 1937 AND RECORDED JANUARY 22, 1937 IN BOOK 309, PAGE 422, OF OFFICIAL RECORDS.

(INDETERMINATE FROM RECORD.)

4 EASEMENT FOR PUBLIC UTILITY AND INCIDENTAL PURPOSES GRANTED TO SOUTHERN CALIFORNIA GAS COMPANY AND SOUTHERN COUNTIES GAS COMPANY OF CALIFORNIA DOCUMENT RECORDED SEPTEMBER 21, 1946 AS INSTRUMENT NO. 3803, OFFICIAL RECORDS

(BLANKET IN NATURE. THE RIGHT TO PURCHASE AN EASEMENT FOR GAS PIPELINE.)

(5) EASEMENT FOR PUBLIC UTILITY AND INCIDENTAL PURPOSES GRANTED TO SOUTHERN CALIFORNIA GAS COMPANY AND SOUTHERN COUNTIES GAS COMPANY OF CALIFORNIA DOCUMENT RECORDED DECEMBER 23, 1947 AS INSTRUMENT NO. 3283, OFFICIAL RECORDS

(6) EASEMENT FOR PIPELINES AND INCIDENTAL PURPOSES GRANTED TO FOUR CORNERS PIPE LINE COMPANY DOCUMENT RECORDED SEPTEMBER 26, 1957 AS INSTRUMENT NO. 694444, OFFICIAL RECORDS

(APPROXIMATE LOCATION PLOTTED BASED ON IMPROVEMENTS. 60' RIGHT-OF-WAY AROUND OIL PIPELINE.)

(7) EASEMENT FOR PUBLIC UTILITY AND INCIDENTAL PURPOSES GRANTED TO FOUR CORNERS PIPE LINE COMPANY DOCUMENT RECORDED SEPTEMBER 26, 1957 AS INSTRUMENT NO. 69445, IN BOOK 2153, OFFICIAL RECORDS

(APPROXIMATE LOCATION PLOTTED BASED ON IMPROVEMENTS. 60' RIGHT-OF-WAY AROUND OIL PIPELINE.)

(8) EASEMENT FOR PUBLIC UTILITY AND INCIDENTAL PURPOSES GRANTED TO CALIFORNIA ELECTRIC POWER COMPANY DOCUMENT RECORDED MARCH 03, 1961 AS INSTRUMENT NO. 18720, OFFICIAL RECORDS

(CENTERLINE PLOTTED. EASEMENT HAS UNDEFINED WIDTH.)

PROPOSED EASEMENTS:

A INDICATES AN EASEMENT FOR INGRESS AND EGRESS FOR EMERGENCY AND PUBLIC SECURITY VEHICLE PURPOSES DEDICATED TO THE CITY OF MORENO VALLEY

B INDICATES AN EASEMENT FOR PUBLIC RIGHT-OF-WAY DEDICATION, UTILITY, AND PUBLIC STREET PURPOSES DEDICATED TO THE CITY OF MORENO VALLEY

C INDICATES A PORTION OF BRODIAEA AVENUE TO BE VACATED

D INDICATES AN EASEMENT FOR PUBLIC UTILITIES DEDICATED TO EASTERN MUNICIPAL WATER DISTRICT (EMWD)

PREPARED BY:

REGISTERED PROFESSIONAL ENGINEER DANE P. MCDOUGALL C 80705 CIVIL STATE OF CALIFORNIA

C&V CONSULTING, INC. CIVIL ENGINEERING LAND PLANNING & SURVEYING
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PREPARED FOR:

WARMINGTON RESIDENTIAL
3090 PULLMAN STREET
COSTA MESA, CA 92626
(714) 557-5511

CITY OF MORENO VALLEY
DEPARTMENT OF COMMUNITY DEVELOPMENT

VESTING TENTATIVE TRACT MAP NO. 39162

VESTING TENTATIVE TRACT MAP NO. 39162

28136 BRODIAEA AVENUE
MORENO VALLEY, CA 92555

PROJECT NO. WARM-022

SHEET 1 OF 8

P:\WARM-022\DWG\SHEETS\VTM\VTM-01-TITLE.DWG
PLAN SET 5/28/2025

NUMBER LOT SUMMARY TABLE			
LOT #	Area (SF)	Area (AC)	TYPE
1	3,694	0.08	SINGLE FAMILY RESIDENTIAL
2	3,349	0.08	SINGLE FAMILY RESIDENTIAL
3	3,399	0.08	SINGLE FAMILY RESIDENTIAL
4	3,348	0.08	SINGLE FAMILY RESIDENTIAL
5	3,348	0.08	SINGLE FAMILY RESIDENTIAL
6	3,710	0.09	SINGLE FAMILY RESIDENTIAL
7	3,414	0.08	SINGLE FAMILY RESIDENTIAL
8	3,003	0.07	SINGLE FAMILY RESIDENTIAL
9	3,048	0.07	SINGLE FAMILY RESIDENTIAL
10	3,003	0.07	SINGLE FAMILY RESIDENTIAL
11	3,003	0.07	SINGLE FAMILY RESIDENTIAL
12	3,321	0.08	SINGLE FAMILY RESIDENTIAL
13	3,048	0.07	SINGLE FAMILY RESIDENTIAL
14	3,003	0.07	SINGLE FAMILY RESIDENTIAL
15	3,003	0.07	SINGLE FAMILY RESIDENTIAL
16	3,048	0.07	SINGLE FAMILY RESIDENTIAL
17	3,003	0.07	SINGLE FAMILY RESIDENTIAL
18	3,003	0.07	SINGLE FAMILY RESIDENTIAL
19	3,053	0.07	SINGLE FAMILY RESIDENTIAL
20	3,007	0.07	SINGLE FAMILY RESIDENTIAL

NUMBER LOT SUMMARY TABLE			
LOT #	Area (SF)	Area (AC)	TYPE
21	3,048	0.07	SINGLE FAMILY RESIDENTIAL
22	3,003	0.07	SINGLE FAMILY RESIDENTIAL
23	3,321	0.08	SINGLE FAMILY RESIDENTIAL
24	3,048	0.07	SINGLE FAMILY RESIDENTIAL
25	3,325	0.08	SINGLE FAMILY RESIDENTIAL
26	3,825	0.09	SINGLE FAMILY RESIDENTIAL
27	2,936	0.07	SINGLE FAMILY RESIDENTIAL
28	3,088	0.07	SINGLE FAMILY RESIDENTIAL
29	2,990	0.07	SINGLE FAMILY RESIDENTIAL
30	2,869	0.07	SINGLE FAMILY RESIDENTIAL
31	3,173	0.07	SINGLE FAMILY RESIDENTIAL
32	2,912	0.07	SINGLE FAMILY RESIDENTIAL
33	2,868	0.07	SINGLE FAMILY RESIDENTIAL
34	2,911	0.07	SINGLE FAMILY RESIDENTIAL
35	3,011	0.07	SINGLE FAMILY RESIDENTIAL
36	3,061	0.07	SINGLE FAMILY RESIDENTIAL
37	2,998	0.07	SINGLE FAMILY RESIDENTIAL
38	3,316	0.08	SINGLE FAMILY RESIDENTIAL
39	3,043	0.07	SINGLE FAMILY RESIDENTIAL
40	2,997	0.07	SINGLE FAMILY RESIDENTIAL

NUMBER LOT SUMMARY TABLE			
LOT #	Area (SF)	Area (AC)	TYPE
41	3,076	0.07	SINGLE FAMILY RESIDENTIAL
42	3,242	0.07	SINGLE FAMILY RESIDENTIAL
43	3,194	0.07	SINGLE FAMILY RESIDENTIAL
44	4,450	0.10	SINGLE FAMILY RESIDENTIAL
45	4,053	0.09	SINGLE FAMILY RESIDENTIAL
46	3,003	0.07	SINGLE FAMILY RESIDENTIAL
47	3,048	0.07	SINGLE FAMILY RESIDENTIAL
48	3,003	0.07	SINGLE FAMILY RESIDENTIAL
49	3,048	0.07	SINGLE FAMILY RESIDENTIAL
50	3,007	0.07	SINGLE FAMILY RESIDENTIAL
51	3,318	0.08	SINGLE FAMILY RESIDENTIAL
52	3,003	0.07	SINGLE FAMILY RESIDENTIAL
53	3,049	0.07	SINGLE FAMILY RESIDENTIAL
54	3,004	0.07	SINGLE FAMILY RESIDENTIAL
55	3,004	0.07	SINGLE FAMILY RESIDENTIAL
56	3,049	0.07	SINGLE FAMILY RESIDENTIAL
57	3,004	0.07	SINGLE FAMILY RESIDENTIAL
58	3,323	0.08	SINGLE FAMILY RESIDENTIAL
59	3,004	0.07	SINGLE FAMILY RESIDENTIAL
60	3,050	0.07	SINGLE FAMILY RESIDENTIAL

NUMBER LOT SUMMARY TABLE			
LOT #	Area (SF)	Area (AC)	TYPE
61	3,004	0.07	SINGLE FAMILY RESIDENTIAL
62	3,323	0.08	SINGLE FAMILY RESIDENTIAL
63	3,669	0.08	SINGLE FAMILY RESIDENTIAL
64	3,454	0.08	SINGLE FAMILY RESIDENTIAL
65	3,553	0.08	SINGLE FAMILY RESIDENTIAL
66	3,351	0.08	SINGLE FAMILY RESIDENTIAL
67	3,401	0.08	SINGLE FAMILY RESIDENTIAL
68	3,705	0.09	SINGLE FAMILY RESIDENTIAL
69	3,378	0.08	SINGLE FAMILY RESIDENTIAL
70	3,069	0.07	SINGLE FAMILY RESIDENTIAL
71	3,069	0.07	SINGLE FAMILY RESIDENTIAL
72	3,116	0.07	SINGLE FAMILY RESIDENTIAL
73	3,394	0.08	SINGLE FAMILY RESIDENTIAL
74	3,394	0.08	SINGLE FAMILY RESIDENTIAL
75	3,069	0.07	SINGLE FAMILY RESIDENTIAL
76	3,116	0.07	SINGLE FAMILY RESIDENTIAL
77	3,370	0.08	SINGLE FAMILY RESIDENTIAL
78	3,090	0.07	SINGLE FAMILY RESIDENTIAL
79	2,805	0.06	SINGLE FAMILY RESIDENTIAL
80	2,848	0.07	SINGLE FAMILY RESIDENTIAL

NUMBER LOT SUMMARY TABLE			
LOT #	Area (SF)	Area (AC)	TYPE
81	2,805	0.06	SINGLE FAMILY RESIDENTIAL
82	2,805	0.06	SINGLE FAMILY RESIDENTIAL
83	3,102	0.07	SINGLE FAMILY RESIDENTIAL
84	2,848	0.07	SINGLE FAMILY RESIDENTIAL
85	2,805	0.06	SINGLE FAMILY RESIDENTIAL
86	2,847	0.07	SINGLE FAMILY RESIDENTIAL
87	3,103	0.07	SINGLE FAMILY RESIDENTIAL
88	3,102	0.07	SINGLE FAMILY RESIDENTIAL
89	3,336	0.08	SINGLE FAMILY RESIDENTIAL
90	3,082	0.07	SINGLE FAMILY RESIDENTIAL
91	3,036	0.07	SINGLE FAMILY RESIDENTIAL
92	3,036	0.07	SINGLE FAMILY RESIDENTIAL
93	3,082	0.07	SINGLE FAMILY RESIDENTIAL
94	3,362	0.08	SINGLE FAMILY RESIDENTIAL
95	3,040	0.07	SINGLE FAMILY RESIDENTIAL
96	3,036	0.07	SINGLE FAMILY RESIDENTIAL
97	3,082	0.07	SINGLE FAMILY RESIDENTIAL
98	3,036	0.07	SINGLE FAMILY RESIDENTIAL
99	3,358	0.08	SINGLE FAMILY RESIDENTIAL
100	3,394	0.08	SINGLE FAMILY RESIDENTIAL

NUMBER LOT SUMMARY TABLE			
LOT #	Area (SF)	Area (AC)	TYPE
101	3,115	0.07	SINGLE FAMILY RESIDENTIAL
102	3,069	0.07	SINGLE FAMILY RESIDENTIAL
103	3,069	0.07	SINGLE FAMILY RESIDENTIAL
104	3,399	0.08	SINGLE FAMILY RESIDENTIAL
105	3,119	0.07	SINGLE FAMILY RESIDENTIAL
106	3,069	0.07	SINGLE FAMILY RESIDENTIAL
107	3,069	0.07	SINGLE FAMILY RESIDENTIAL
108	3,116	0.07	SINGLE FAMILY RESIDENTIAL
109	3,069	0.07	SINGLE FAMILY RESIDENTIAL
110	3,387	0.08	SINGLE FAMILY RESIDENTIAL
111	3,372	0.08	SINGLE FAMILY RESIDENTIAL
112	3,115	0.07	SINGLE FAMILY RESIDENTIAL
113	3,069	0.07	SINGLE FAMILY RESIDENTIAL
114	3,116	0.07	SINGLE FAMILY RESIDENTIAL
115	3,069	0.07	SINGLE FAMILY RESIDENTIAL
116	3,398	0.08	SINGLE FAMILY RESIDENTIAL
117	3,120	0.07	SINGLE FAMILY RESIDENTIAL
118	3,069	0.07	SINGLE FAMILY RESIDENTIAL
119	3,116	0.07	SINGLE FAMILY RESIDENTIAL
120	3,069	0.07	SINGLE FAMILY RESIDENTIAL

NUMBER LOT SUMMARY TABLE			
LOT #	Area (SF)	Area (AC)	TYPE
121	3,069	0.07	SINGLE FAMILY RESIDENTIAL
122	3,388	0.08	SINGLE FAMILY RESIDENTIAL
123	3,337	0.08	SINGLE FAMILY RESIDENTIAL
124	3,082	0.07	SINGLE FAMILY RESIDENTIAL
125	3,036	0.07	SINGLE FAMILY RESIDENTIAL
126	3,036	0.07	SINGLE FAMILY RESIDENTIAL
127	3,082	0.07	SINGLE FAMILY RESIDENTIAL
128	3,371	0.08	SINGLE FAMILY RESIDENTIAL
129	3,094	0.07	SINGLE FAMILY RESIDENTIAL
130	3,036	0.07	SINGLE FAMILY RESIDENTIAL
131	3,036	0.07	SINGLE FAMILY RESIDENTIAL
132	3,082	0.07	SINGLE FAMILY RESIDENTIAL
133	3,036	0.07	SINGLE FAMILY RESIDENTIAL
134	3,350	0.08	SINGLE FAMILY RESIDENTIAL

TOTAL SITE SUMMARY TABLE			
LOT	Area (SF)	Area (AC)	TYPE
TOTAL SITE	626,667	14.39	

LETTER LOT SUMMARY TABLE			
LOT LETTER	Area (SF)	Area (AC)	TYPE
LOT A	8,215	0.19	PRIVATE STREET
LOT B	547	0.01	LANDSCAPE
LOT C	1,363	0.03	LANDSCAPE
LOT D	77,853	1.79	PRIVATE STREET
LOT E	514	0.01	LANDSCAPE
LOT F	15,418	0.35	WQ BASIN
LOT G	340	0.01	LANDSCAPE
LOT H	213	0.00	LANDSCAPE
LOT I	7,238	0.17	LANDSCAPE/PARK
LOT J	597	0.01	LANDSCAPE
LOT K	756	0.02	LANDSCAPE
LOT L	805	0.02	LANDSCAPE
LOT M	39,600	0.91	EXISTING OIL EASEMENT
LOT N	41,883	0.96	PRIVATE STREET
LOT O	2,820	0.06	SHARED PRIVATE DRIVEWAY
LOT P	1,703	0.04	LANDSCAPE
LOT Q	836	0.02	LANDSCAPE
LOT R	2,974	0.07	SHARED PRIVATE DRIVEWAY
LOT S	1,750	0.04	LANDSCAPE
LOT T	2,325	0.05	LANDSCAPE

NOTE:

1. ALL LETTERED LOTS WILL BE MAINTAINED BY A PRIVATE HOA.

PREPARED BY:

REGISTERED PROFESSIONAL ENGINEER — DANIEL P. MCDOUGALL — C 80705 — CIVIL — STATE OF CALIFORNIA

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PREPARED FOR:

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CITY OF MORENO VALLEY
DEPARTMENT OF COMMUNITY DEVELOPMENT

VESTING TENTATIVE TRACT MAP NO. 39162

LOT SUMMARIES

28136 BRODIAEA AVENUE
MORENO VALLEY, CA 92555

PROJECT NO. WARM-022

SHEET 2 OF 8

DRAWN: SEL 7/25/2025
DATE: 7/25/2025

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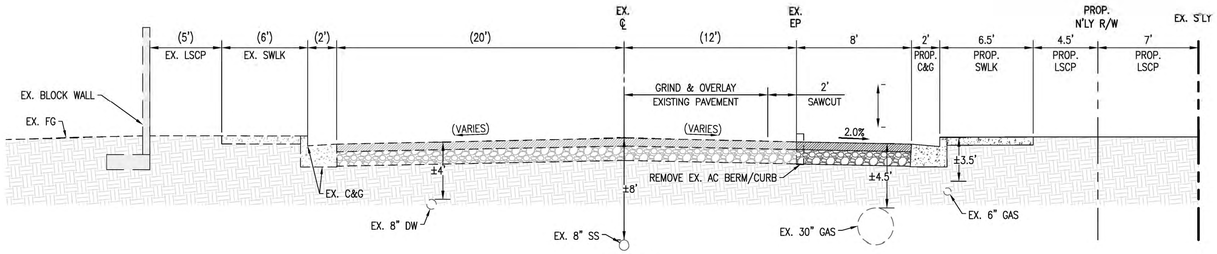
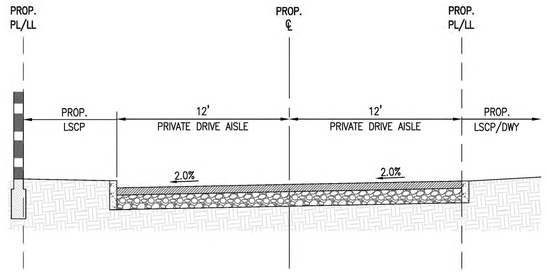
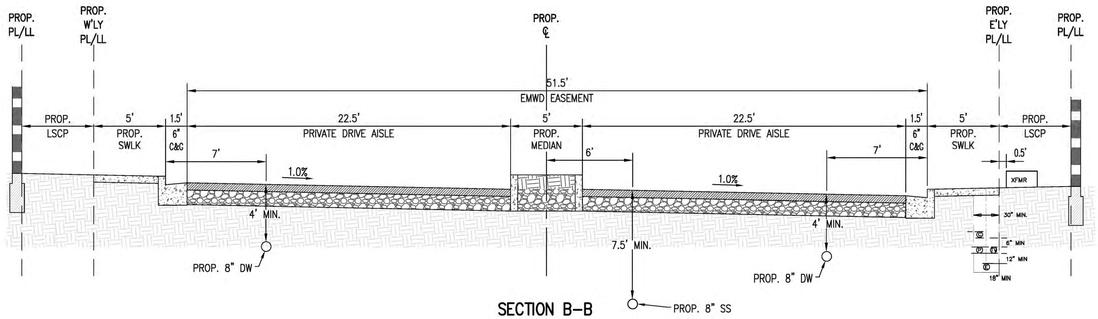


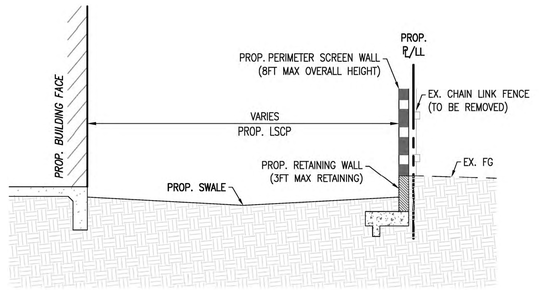
SECTION A–A
EXISTING BRODIAEA AVENUE
N.T.S.



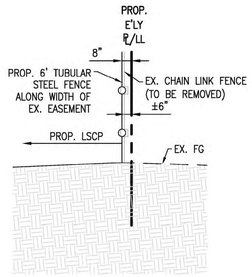
SECTION E–E
TYP. PRIVATE SHARED
DRIVEWAY SECTION
N.T.S.



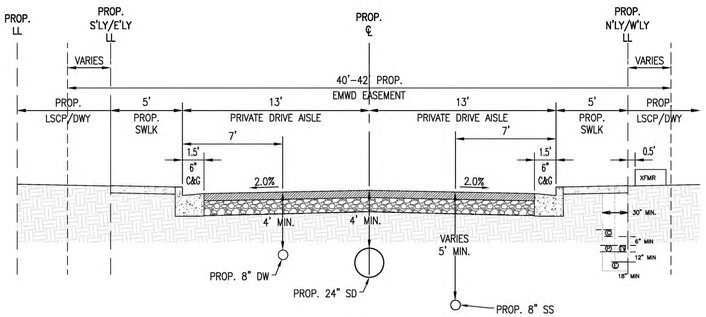
SECTION B–B
BRODIAEA AVENUE SITE ENTRANCE
N.T.S.



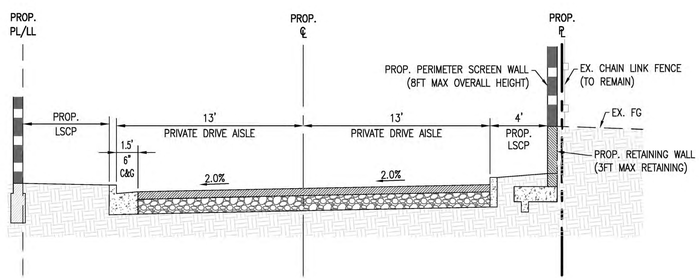
SECTION F–F
TYP. E'LY PERIMETER WALL
N.T.S.



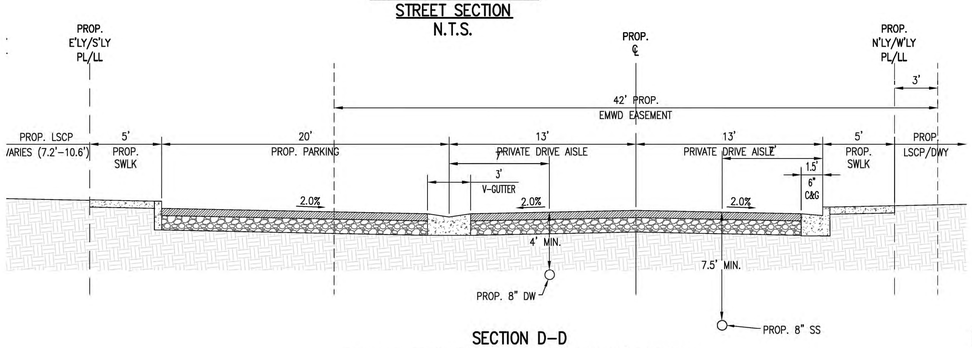
SECTION F1–F1
TYP. E'LY TUBULAR STEEL FENCE
N.T.S.



SECTION C–C
TYP. PRIVATE CROWNED
STREET SECTION
N.T.S.



SECTION G–G
EMERGENCY VEHICLE ACCESS STREET
N.T.S.



SECTION D–D
PRIVATE CROWNED STREET SECTION W/ PARKING
N.T.S.

PREPARED BY:

REGISTERED PROFESSIONAL ENGINEER
DANE P. McDOUGALL
C 80705
CIVIL
STATE OF CALIFORNIA

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CITY OF MORENO VALLEY
DEPARTMENT OF COMMUNITY DEVELOPMENT

VESTING TENTATIVE TRACT MAP NO. 39162

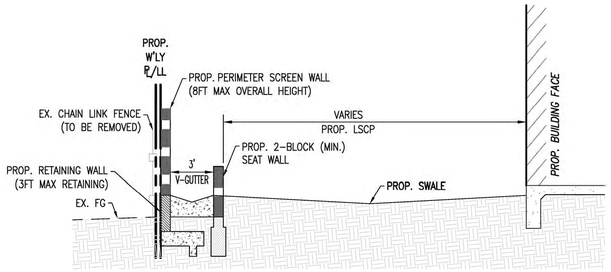
PRELIMINARY SECTIONS

28136 BRODIAEA AVENUE
MORENO VALLEY, CA 92555

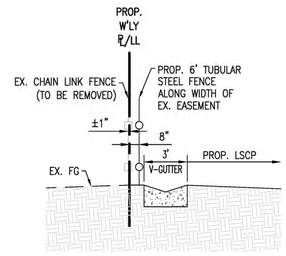
PROJECT NO. WARM-022

SHEET 3 OF 8

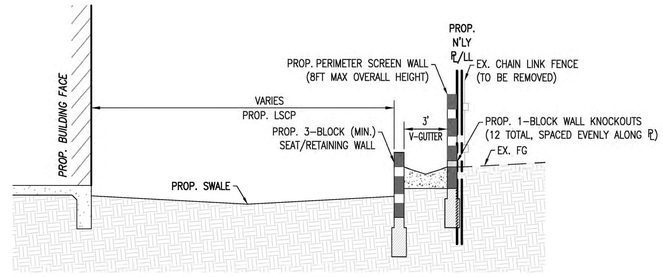
PSD2
P:\PROJECTS\WARMINGTON-RP-22-SEC39162\EXHIBITS\VTM\PRELIM-SECTIONS.DWG
BY: ALEX ARANDA
DATE: 5/28/2025



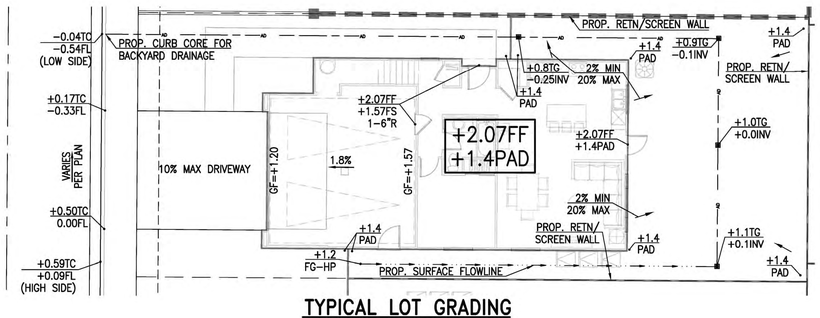
SECTION H-H
TYP. W'LY PERIMETER WALL
N.T.S.



SECTION H1-H1
TYP. W'LY TUBULAR STEEL FENCE
N.T.S.

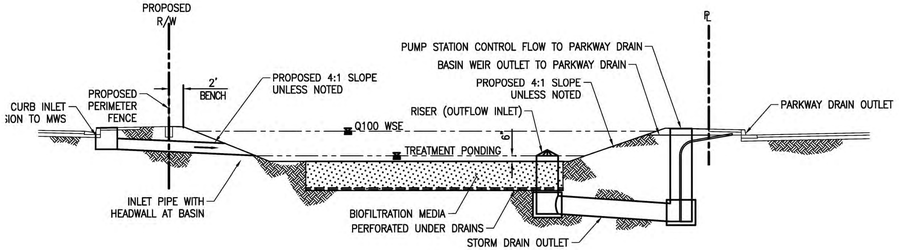


SECTION H2-H2
TYP. N'LY PERIMETER WALL
N.T.S.

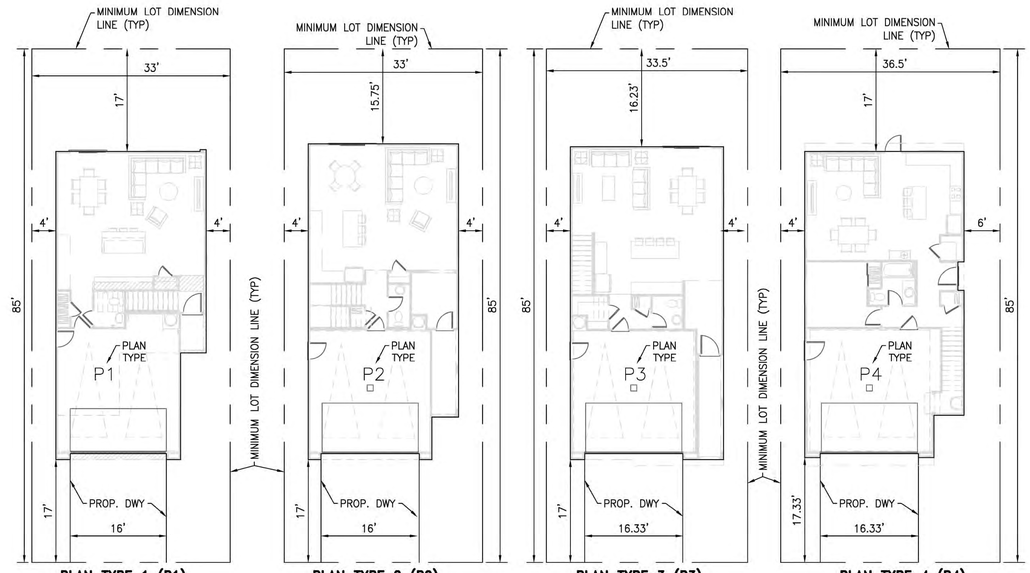


TYPICAL LOT GRADING
N.T.S.

NOTE:
1. RELATIVE ELEVATION VARY PER PROPOSED STREET SLOPE. RELATIVE ELEVATIONS SHOWN HERE ARE FOR STREETS SLOPES OF 2.0%



BIORETENTION BASIN
TYPICAL SECTION
SCALE: 1"=10'



PLAN TYPE 1 (P1)
MINIMUM LOT DIMENSIONS
N.T.S.

PLAN TYPE 2 (P2)
MINIMUM LOT DIMENSIONS
N.T.S.

PLAN TYPE 3 (P3)
MINIMUM LOT DIMENSIONS
N.T.S.

PLAN TYPE 4 (P4)
MINIMUM LOT DIMENSIONS
N.T.S.

PREPARED BY:

REGISTERED PROFESSIONAL ENGINEER DANE P. McDOUGALL C 80705 CIVIL STATE OF CALIFORNIA

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CITY OF MORENO VALLEY
DEPARTMENT OF COMMUNITY DEVELOPMENT

VESTING TENTATIVE TRACT MAP NO. 39162

PRELIMINARY SECTIONS

28136 BRODIAEA AVENUE
MORENO VALLEY, CA 92555

PROJECT NO. WARM-022

SHEET 4 OF 8

PLAN SET: PSD2
DATE: 5/29/2025

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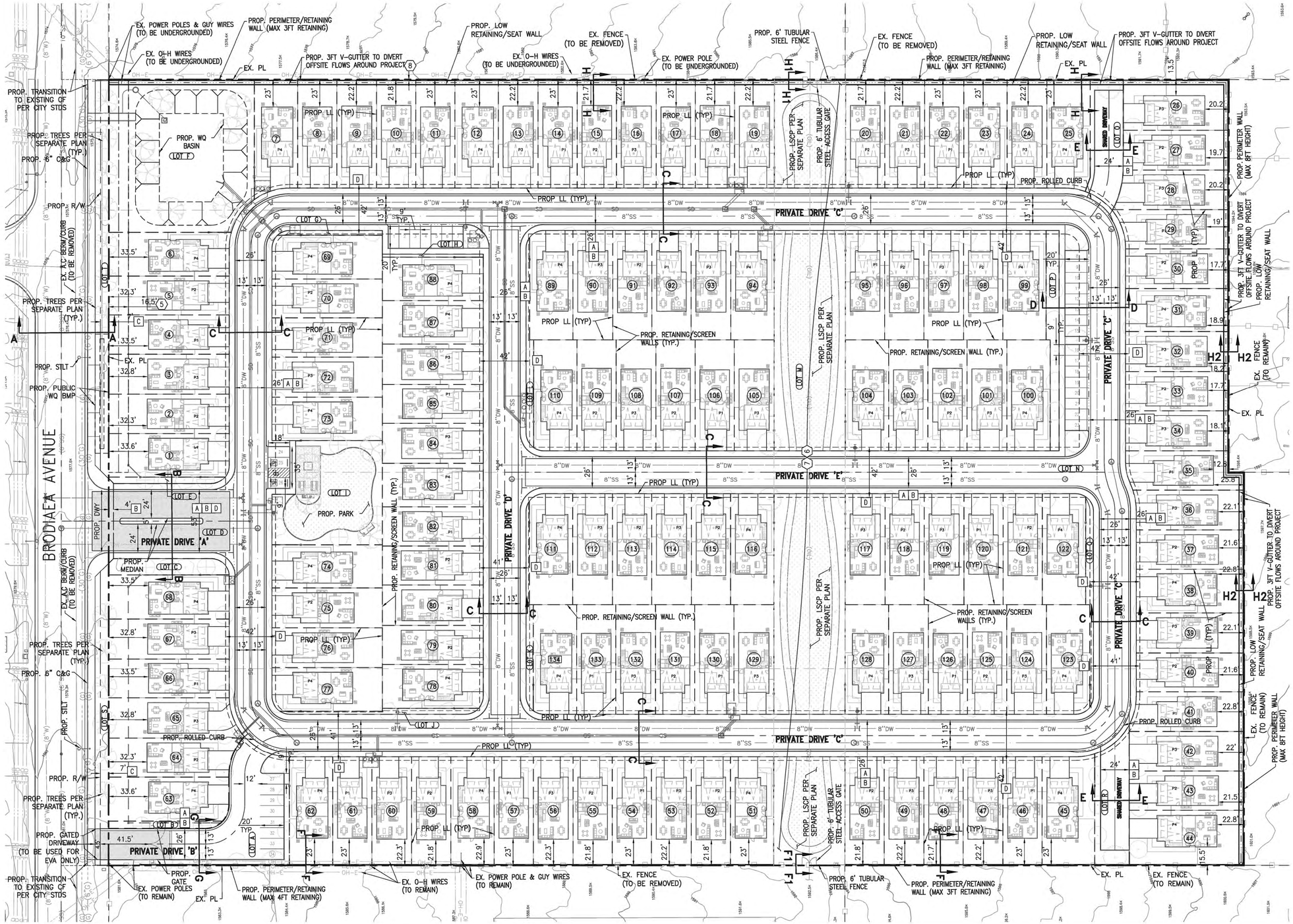

EXISTING EASEMENTS:

3 A RESERVATION OF ONE-HALF OF ALL TREES NOW STANDING AND GROWING ON THE HEREIN DESCRIBED PROPERTY AS RESERVED BY THE GRANTORS IN THE DEED FROM JAMES E. BAKER AND WIFE TO CARLTON JACKSON, AS JOINT TENANTS, DATED JANUARY 9, 1937 AND RECORDED JANUARY 22, 1937 IN BOOK 309, PAGE 422, OF OFFICIAL RECORDS.

(INDETERMINATE FROM RECORD.)

4 EASEMENT FOR PUBLIC UTILITY AND INCIDENTAL PURPOSES GRANTED TO SOUTHERN CALIFORNIA GAS COMPANY AND SOUTHERN COUNTIES GAS COMPANY OF CALIFORNIA DOCUMENT RECORDED SEPTEMBER 21, 1946 AS INSTRUMENT NO. 3803, OFFICIAL RECORDS

(BLANKET IN NATURE. THE RIGHT TO PURCHASE AN EASEMENT FOR GAS PIPELINE.)

(5) EASEMENT FOR PUBLIC UTILITY AND INCIDENTAL PURPOSES GRANTED TO SOUTHERN CALIFORNIA GAS COMPANY AND SOUTHERN COUNTIES GAS COMPANY OF CALIFORNIA DOCUMENT RECORDED DECEMBER 23, 1947 AS INSTRUMENT NO. 3283, OFFICIAL RECORDS

(6) EASEMENT FOR PIPELINES AND INCIDENTAL PURPOSES GRANTED TO FOUR CORNERS PIPE LINE COMPANY DOCUMENT RECORDED SEPTEMBER 26, 1957 AS INSTRUMENT NO. 694444, OFFICIAL RECORDS

(APPROXIMATE LOCATION PLOTTED BASED ON IMPROVEMENTS. 60' RIGHT-OF-WAY AROUND OIL PIPELINE.)

(7) EASEMENT FOR PUBLIC UTILITY AND INCIDENTAL PURPOSES GRANTED TO FOUR CORNERS PIPE LINE COMPANY DOCUMENT RECORDED SEPTEMBER 26, 1957 AS INSTRUMENT NO. 69445, IN BOOK 2153, OFFICIAL RECORDS

(APPROXIMATE LOCATION PLOTTED BASED ON IMPROVEMENTS. 60' RIGHT-OF-WAY AROUND OIL PIPELINE.)

(8) EASEMENT FOR PUBLIC UTILITY AND INCIDENTAL PURPOSES GRANTED TO CALIFORNIA ELECTRIC POWER COMPANY DOCUMENT RECORDED MARCH 03, 1961 AS INSTRUMENT NO. 18720, OFFICIAL RECORDS

(CENTERLINE PLOTTED. EASEMENT HAS UNDEFINED WIDTH.)

PROPOSED EASEMENTS:

[A] INDICATES AN EASEMENT FOR INGRESS AND EGRESS FOR EMERGENCY AND PUBLIC SECURITY VEHICLE PURPOSES DEDICATED TO THE CITY OF MORENO VALLEY

[B] INDICATES AN EASEMENT FOR PUBLIC RIGHT-OF-WAY DEDICATION, UTILITY, AND PUBLIC STREET PURPOSES DEDICATED TO THE CITY OF MORENO VALLEY

[C] INDICATES A PORTION OF BRODIAEA AVENUE TO BE VACATED

[D] INDICATES AN EASEMENT FOR PUBLIC UTILITIES DEDICATED TO EASTERN MUNICIPAL WATER DISTRICT (EMWD)

1" = 40'

0 20 40 80

ABBREVIATIONS:

BNDY	BOUNDARY
CB	CATCH BASIN
C&G	CURB & GUTTER
CLF	CHAIN LINK FENCE
CO	CLEANOUT
DCDA	DOUBLE CHECK DETECTOR ASSEMBLY
DU	DRY UTILITY
DI	DROP INLET
DW	DOMESTIC WATER
DWY	DRIVEWAY
ELEC	ELECTRIC
ESMT	EASEMENT
EX.	EXISTING
FH	FIRE HYDRANT
FW	FIRE WATER
JS	JUNCTION STRUCTURE
LL	LOT LINE
MH	MANHOLE
OH	OVERHEAD ELECTRICAL LINES
PKWY	PARKWAY
PL	PROPERTY LINE
PP	POWER POLE
POC	POINT OF CONNECTION
PROP	PROPOSED
RPPA	REDUCED PRESSURE PRINCIPLE ASSEMBLY
R/W	RIGHT OF WAY
SF	SQUARE FOOT
SD	STORM DRAIN
SS	SANITARY SEWER
ST	STALL
STLT	STREETLIGHT

LEGEND:

- CENTERLINE
- EXISTING R/W
- PROPOSED PROPERTY LINE
- PROP. LOTLINE
- EXISTING LOT LINE
- EXISTING WALL
- PROPOSED WALL

NOTE:

1. ALL ONSITE STREETS ARE PROPOSED TO BE PRIVATE.
2. PRIVATE DRIVES 'C', 'D', & 'E' WILL BE CROWN STREET SECTIONS WITH 6" C&G.
3. PRIVATE DRIVES 'A', 'B', & THE SHARED DRIVEWAYS WILL BE A PITCHED STREET SECTIONS WITH 6" C&G.
4. ALL ONSITE TREES WILL BE PER A SEPARATE LANDSCAPE PLAN.

PREPARED BY:

REGISTERED PROFESSIONAL ENGINEER — JANE P. MCDOUGALL — C 80705 — CIVIL — STATE OF CALIFORNIA

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CITY OF MORENO VALLEY
DEPARTMENT OF COMMUNITY DEVELOPMENT

VESTING TENTATIVE TRACT MAP NO. 39162

PRELIMINARY SITE PLAN

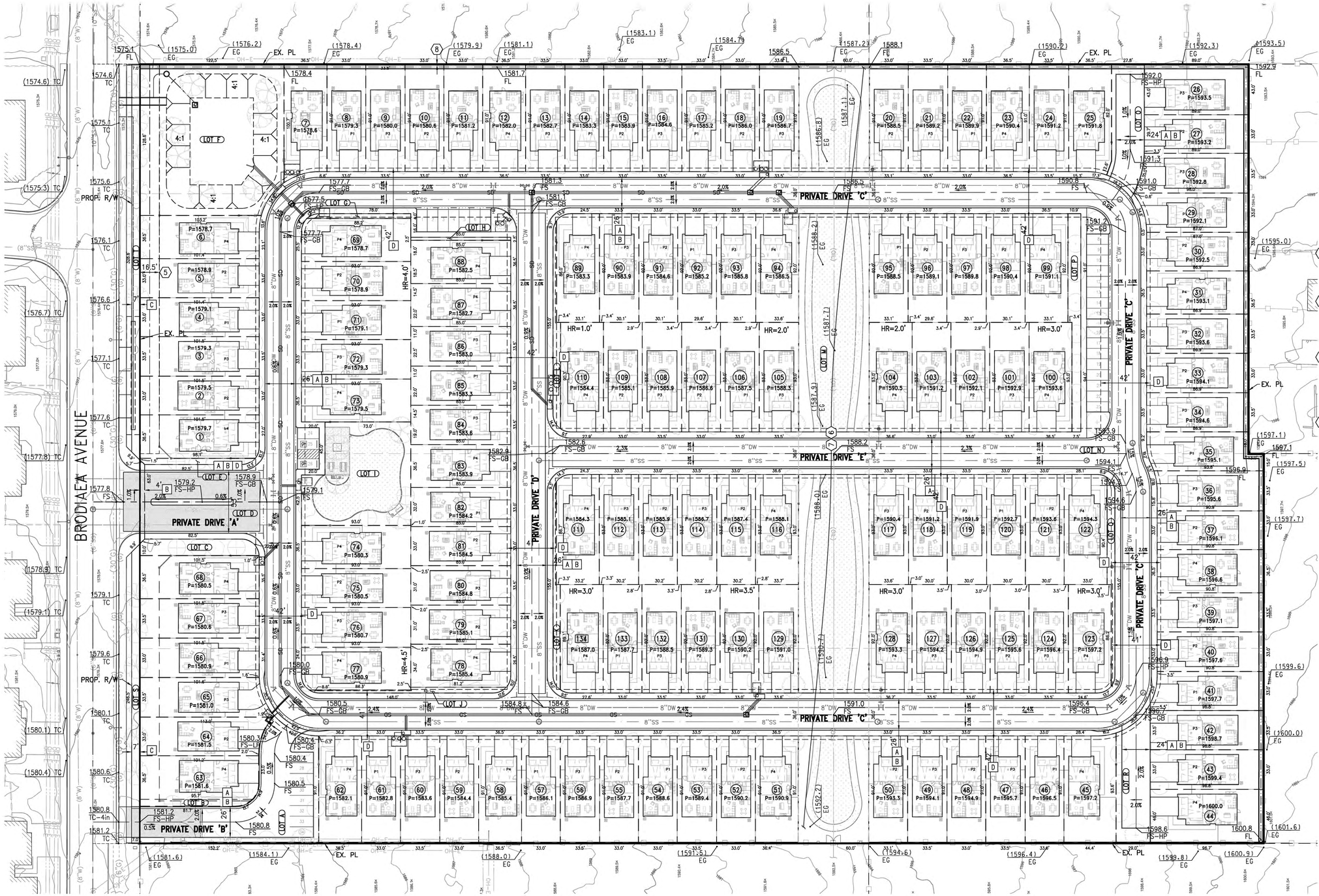
28136 BRODIAEA AVENUE
MORENO VALLEY, CA 92555

PROJECT NO. WARM-022

SHEET 5 OF 8

PLAN SET: PRELIM
DATE: 5/16/2025

P:\PLANS-CIVIL\WARM\SHEETS\VTM\VTM-PRELIM-SITE.DWG



EXISTING EASEMENTS:

3 A RESERVATION OF ONE-HALF OF ALL TREES NOW STANDING AND GROWING ON THE HEREIN DESCRIBED PROPERTY AS RESERVED BY THE GRANTORS IN THE DEED FROM JAMES E. BAKER AND WIFE TO CARLTON JACKSON, AS JOINT TENANTS, DATED JANUARY 9, 1937 AND RECORDED JANUARY 22, 1937 IN BOOK 309, PAGE 422, OF OFFICIAL RECORDS.

(INDETERMINATE FROM RECORD.)

4 EASEMENT FOR PUBLIC UTILITY AND INCIDENTAL PURPOSES GRANTED TO SOUTHERN CALIFORNIA GAS COMPANY AND SOUTHERN COUNTIES GAS COMPANY OF CALIFORNIA DOCUMENT RECORDED SEPTEMBER 21, 1946 AS INSTRUMENT NO. 3803, OFFICIAL RECORDS

(BLANKET IN NATURE. THE RIGHT TO PURCHASE AN EASEMENT FOR GAS PIPELINE.)

5 EASEMENT FOR PUBLIC UTILITY AND INCIDENTAL PURPOSES GRANTED TO SOUTHERN CALIFORNIA GAS COMPANY AND SOUTHERN COUNTIES GAS COMPANY OF CALIFORNIA DOCUMENT RECORDED DECEMBER 23, 1947 AS INSTRUMENT NO. 3283, OFFICIAL RECORDS

6 EASEMENT FOR PIPELINES AND INCIDENTAL PURPOSES GRANTED TO FOUR CORNERS PIPE LINE COMPANY DOCUMENT RECORDED SEPTEMBER 26, 1957 AS INSTRUMENT NO. 694444, OFFICIAL RECORDS

(APPROXIMATE LOCATION PLOTTED BASED ON IMPROVEMENTS. 60' RIGHT-OF-WAY AROUND OIL PIPELINE.)

7 EASEMENT FOR PUBLIC UTILITY AND INCIDENTAL PURPOSES GRANTED TO FOUR CORNERS PIPE LINE COMPANY DOCUMENT RECORDED SEPTEMBER 26, 1957 AS INSTRUMENT NO. 69445, IN BOOK 2153, OFFICIAL RECORDS

(APPROXIMATE LOCATION PLOTTED BASED ON IMPROVEMENTS. 60' RIGHT-OF-WAY AROUND OIL PIPELINE.)

8 EASEMENT FOR PUBLIC UTILTY AND INCIDENTAL PURPOSES GRANTED TO CALIFORNIA ELECTRIC POWER COMPANY DOCUMENT RECORDED MARCH 03, 1961 AS INSTRUMENT NO. 18720, OFFICIAL RECORDS

(CENTERLINE PLOTTED. EASEMENT HAS UNDEFINED WIDTH.)

PROPOSED EASEMENTS:

A INDICATES AN EASEMENT FOR INGRESS AND EGRESS FOR EMERGENCY AND PUBLIC SECURITY VEHICLE PURPOSES DEDICATED TO THE CITY OF MORENO VALLEY

B INDICATES AN EASEMENT FOR PUBLIC RIGHT-OF-WAY DEDICATION, UTILITY, AND PUBLIC STREET PURPOSES DEDICATED TO THE CITY OF MORENO VALLEY

C INDICATES A PORTION OF BRODIAEA AVENUE TO BE VACATED

D INDICATES AN EASEMENT FOR PUBLIC UTILITIES DEDICATED TO EASTERN MUNICIPAL WATER DISTRICT (EMWD)

PRELIMINARY EARTHWORK SUMMARY:

RAW CUT	8,712	CY
RAW FILL	23,672	CY
SHRINKAGE	16	%
2FT REMOVAL (OVERALL SITE)	7,429	CY
5FT REMOVAL (PADs)	8,030	CY
SUBSIDENCE	0	CY
WQ BASIN SPOILS	1,111	CY
TOTAL (FILL)	22,150	CY

ASSUMPTIONS:

1. EARTHWORK CALCULATIONS DO NOT INCLUDE BUILDING FOUNDATION, WALL FOOTINGS AND/ OR UTILITY SPOILS.
2. ASSUMPTIONS PER GEOTECHNICAL INVESTIGATION PREPARED BY ALTA CALIFORNIA GEOTECHNICAL, INC. DATED OCTOBER 14, 2024.
3. QUANTITIES DO NOT INCLUDE REMOVALS DUE TO CLEARING AND GRUBBING, TOP SOILS OR VEGETATION AND/OR EXISTING PAVEMENT/ BUILDING FOUNDATIONS.
4. PER THE GEOTECHNICAL INVESTIGATION PREPARED BY ALTA CALIFORNIA GEOTECHNICAL, INC., REMOVALS RANGE FROM 7FT-10FT FOR THE ENTIRE SITE. THE VALUE SHOWN ABOVE IS AN AVERAGE OF THESE NUMBERS.

LEGEND:

- CENTERLINE
- EXISTING R/W
- PROPOSED PROPERTY LINE
- SETBACK
- EXISTING LOT LINE
- EXISTING WALL
- PROPOSED WALL
- ADA PATH OF TRAVEL
- X / Y — UNIT NUMBER / UNIT TYPE

ABBREVIATIONS:

BNDY	BOUNDARY	EX.	EXISTING	R/W	RIGHT OF WAY
CB	CATCH BASIN	FH	FIRE HYDRANT	SF	SQUARE FOOT
C&G	CURB & GUTTER	FW	FIRE WATER	SD	STORM DRAIN
CLF	CHAIN LINK FENCE	JS	JUNCTION STRUCTURE	SS	SANITARY SEWER
CO	CLEANOUT	MH	MANHOLE	ST	STALL
DCDA	DOUBLE CHECK DETECTOR ASSEMBLY	OH	OVERHEAD ELECTRICAL LINES	STLT	STREETLIGHT
DU	DRY UTILITY	PKWY	PARKWAY		
DI	DROP INLET	PL	PROPERTY LINE		
DW	DOMESTIC WATER	PP	POWER POLE		
DWY	DRIVEWAY	POC	POINT OF CONNECTION		
ELEC	ELECTRIC	PROP	PROPOSED		
ESMT	EASEMENT	RPPA	REDUCED PRESSURE PRINCIPLE ASSEMBLY		

1" = 20'

0 10 20 40

PREPARED BY:

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CITY OF MORENO VALLEY
DEPARTMENT OF COMMUNITY DEVELOPMENT

VESTING TENTATIVE TRACT MAP NO. 39162

PRELIMINARY GRADING PLAN

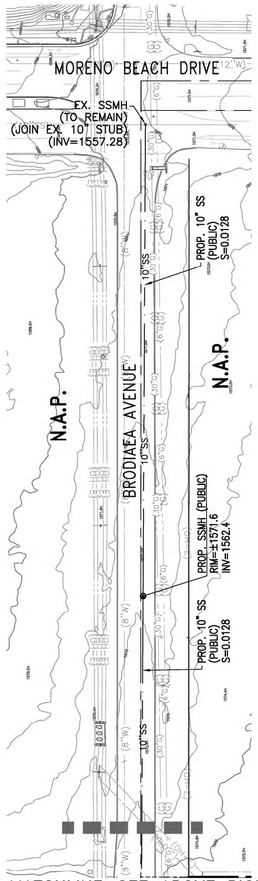
28136 BRODIAEA AVENUE
MORENO VALLEY, CA 92555

PROJECT NO. WARM-022

SHEET 6 OF 8

PLAN SET: PSD2
DATE: 5/29/2025
P:\PROJECTS\WARM-022\DWG\EXHIBITS\VTM\VTM-PR-06-HCLINE

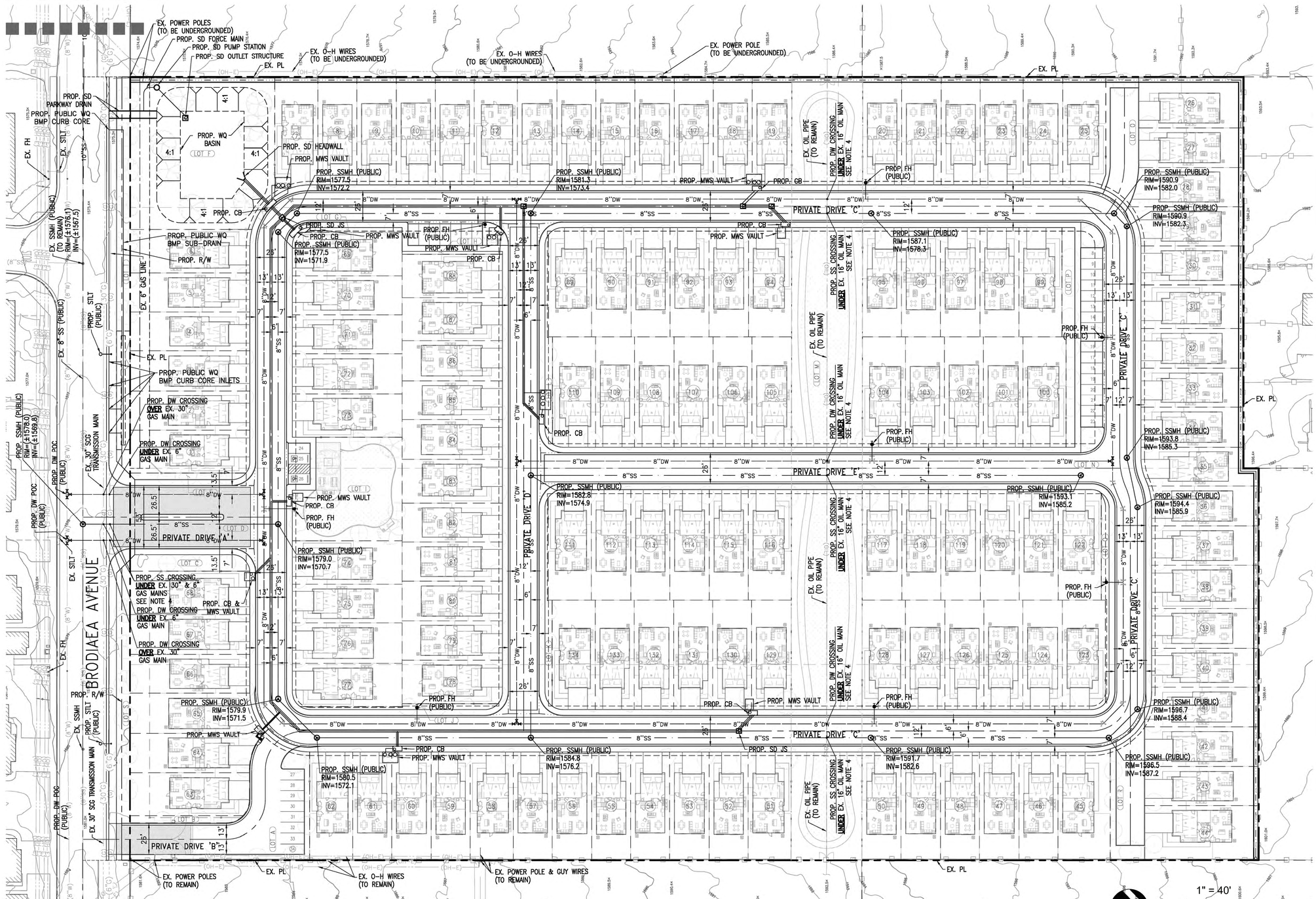
MATCHLINE–SEE BELOW LEFT



MATCHLINE–SEE ABOVE RIGHT

1" = 60'

0 30 60 120



1" = 40'

0 20 40 80

NOTE:

1. ONSITE DOMESTIC WATER WILL BE A PUBLIC SYSTEM
2. ONSITE SANITARY SEWER WILL BE A PUBLIC SYSTEM
3. ONSITE STORM DRAIN WILL BE A PRIVATE SYSTEM
4. PROPOSED UTILITIES (SEWER & WATER[AS NOTED]) WILL CROSS UNDERNEATH THE EXISTING GAS AND OIL MAINS AND WILL MAINTAIN 6" OF CLEARANCE. ADDITIONAL ENCASEMENT MAY BE REQUIRED (WHERE APPLICABLE).

LEGEND

8"DW	PROP. DOMESTIC WATER (PUBLIC)
8"SS	PROP. SANITARY SEWER (PUBLIC)
	PROP. STORM DRAIN (PRIVATE)
(8"SS)	EX. 8" SANITARY SEWER
(8"W)	EX. 8" DOMESTIC WATER
(G)	EX. GAS
(T)	EX. TELECOMMUNICATIONS
(OH–E)	EX. OVERHEAD ELECTRICAL

ABBREVIATIONS

BLDG	BUILDING	ESMT	EASEMENT	LSCP	LANDSCAPE	PP	POWER POLE	SWLK	SIDEWALK
BMP	BEST MANAGEMENT PRACTICES	EX	EXISTING	MAX	MAXIMUM	POC	POINT OF CONNECTION	TC	TOP OF CURB
		FDC	FIRE DEPARTMENT CONNECTION	MWS	MODULAR WETLANDS SYSTEM	PVMT	PAVEMENT	TB	THRUST BLOCK
BNCH	BENCH					RPPA	REDUCED PRESSURE PREVENTION ASSEMBLY	TS	TRAFFIC SIGNAL
CB	CATCH BASIN	FG	FINISHED GRADE	MH	MANHOLE			TELE	TELECOMMUNICATION
CO	CLEANOUT	FH	FIRE HYDRANT	MM	MASTER METER	R/W	RIGHT–OF–WAY	TYP	TYPICAL
COF	CITY OF FULLERTON	FL	FLOWLINE	POC	POINT OF CONNECTION	SDMH	STORM DRAIN MANHOLE	XFMR	TRANSFORMER
DCDA	DOUBLE CHECK DETECTOR ASSEMBLY	FR	FIRE RISER	PIV	POST INDICATOR VALVE	SD	STORM DRAIN		
		FS	FINISHED SURFACE	PROP	PROPOSED	SS	SANITARY SEWER		
DW	DOMESTIC WATER	FW	FIRE WATER	PL	PROPERTY LINE	STLT	STREET LIGHT		
DWY	DRIVEWAY	JS	JUNCTION STRUCTURE	PB	PULLBOX				

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CITY OF MORENO VALLEY
DEPARTMENT OF COMMUNITY DEVELOPMENT

VESTING TENTATIVE TRACT MAP NO. 39162

PRELIMINARY UTILITY PLAN

28136 BRODIAEA AVENUE
MORENO VALLEY, CA 92555

PROJECT NO. WARM-022

SHEET 7 OF 8

PLAN SET: PRELIM
DATE: 7/30/2025

P:\PROJECTS\WARM-022\DWG\SHEETS\VTM\VTM-PR-01-UTILITIES.DWG
BY: JOE ESPINOSA

LEGEND

- HOSE PULL LENGTH PER PLAN
- PROP. FIRE HYDRANT
- EX. FIRE HYDRANT
- FIRE ACCESS LANE
- FIRE TRUCK TURNING RADII (TYP. DIMENSIONS)
- EX. RIGHT-OF-WAY
- PROP. RIGHT-OF-WAY/EX. PROPERTY LINE
- FIRE TRUCK TURN TEMPLATE OUTLINE PER DETAIL (SEE BELOW LEFT)
- FIRE LANE-RED CURB SEE DETAIL HEREON.

1" = 40'

0 20 40 80

ABBREVIATIONS:

BLDG	BUILDING	FDC	FIRE DEPARTMENT CONNECTION
BNDY	BOUNDARY	PL	PROPERTY LINE
CV	CONTROL VALVE	PIV	POST INDICATOR VALVE
DCDA	DOUBLE CHECK DETECTOR ASSEMBLY	PROP	PROPOSED
		R	RADIUS
DR	DRIVE	R/W	RIGHT OF WAY
EX.	EXISTING	RPPA	REDUCED PRESSURE PREVENTION ASSEMBLY
FH	FIRE HYDRANT		
FR	FIRE RISER		
FW	FIRE WATER		

CONSTRUCTION NOTES:

1. FIRE LANE IDENTIFICATION-RED CURBS PER RIVERSIDE COUNTY FIRE DEPARTMENT ATTACHMENT 9.
2. PROPOSED PUBLIC FIRE HYDRANT
3. INSTALL "FIRE LANE" SIGN PER RIVERSIDE COUNTY FIRE DEPARTMENT ATTACHMENT 12.
4. INSTALL "FIRE LANE" ENTRANCE SIGN PER PER RIVERSIDE COUNTY FIRE DEPARTMENT ATTACHMENT 10.

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CITY OF MORENO VALLEY
DEPARTMENT OF COMMUNITY DEVELOPMENT

VESTING TENTATIVE TRACT MAP NO. 39162
PRELIMINARY FIRE ACCESS & HYDRANT LOCATION PLAN
28136 BRODIAEA AVENUE
MORENO VALLEY, CA 92555

PROJECT NO. WARM-022

SHEET 8 OF 8

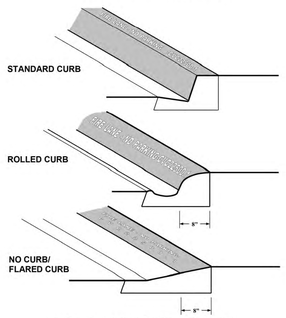
PLAN SET: PSFD
DATE: 5/28/2025

P:\PROJECTS\WARM-022\DWG\EXHIBITS\PRELIMINARY\WARM-022-PRELIM-FA-EXH.DWG
PLOTTED: 5/28/2025 BY: JOE ARMADA

Riverside County Fire Department Guideline CFM-01A
Fire Department Access Requirements for Commercial & Residential Development

ATTACHMENT 9

Fire Lane Identification – Red Curbs



1. Fire lane entrance sign(s) shall also be provided per Attachment 10 or 11.
2. Curbs shall be painted OSHA safety red.
3. "FIRE LANE – NO PARKING – CVC 22500.1" shall be painted on top of curb in 3" white lettering at a spacing of 30' on center or portion thereof.
4. Other uniquely shaped areas that are part of a fire lane, may be outlined using these same methods, and adding diagonal RED lines within the designated fire lane area.

Riverside County Fire Department Guideline CFM-01A
Fire Department Access Requirements for Commercial & Residential Development

ATTACHMENT 10

Specifications for Fire Lane Entrance Signs
To be used only at vehicle entry points to areas that contain "Fire Lane—No Parking" signs or red curbs

All sign and lettering dimensions shown are minimums. "Arial Narrow" font used is used in sample above though other legible sans-serif fonts may be acceptable.

This sign shall be posted at all vehicle entrances to areas marked with either red curbs or fire lane "No Parking" signs. Signs shall be securely mounted facing the direction of travel and clearly visible to oncoming traffic entering the designated area. Signs shall be made of durable material and installed per Attachments 13 and 14.

Towing company contact information is required for all properties with a standing written agreement for services with a towing company per the California Vehicle Code.

Riverside County Fire Department Guideline CFM-01A
Fire Department Access Requirements for Commercial & Residential Development

ATTACHMENT 12

Specifications for Fire Lane No Parking Signs

All sign and lettering dimensions shown are *minimums*. "Arial Narrow" font used is used in sample above though other legible sans-serif fonts may be acceptable.

Signs shall be securely mounted facing the direction of travel and clearly visible to oncoming traffic entering the designated area. Signs shall be made of durable material and installed per Attachments 13 and 14.

Master Plan Drainage Map

RECHE CANYON DEBRIS BASIN
APPROXIMATE R/W = 10.0 ac.
b=10' d=7' ss=1.5:1 Q=1560
RECHE CYN. RD.
CITY LIMITS
LOCUST AVE.
14'X7' RCB
K-4
K-3
K-2
K-1
LINE K
b=26' d=5' ss=2:1 Q=1730
OLIVER ST.
MORENO BEACH DR.
IRONWOOD AVE.
NASON ST.
HEMLOCK AVE.
NASON BASIN
U.S. HWY 60
FIR ST.
LASSELLE ST.
MORRISON ST.
EUCALYPTUS AVE.
LINE I
COLD CREEK COURT STORM DRAIN LINE A
DRACAEA AVE.
J-1
J-2
J-3
J-4
J-5
J-6
J-7
J-8
J-9
J-10
LINE J
COTTONWOOD AVE.
BAY AVE.
ALESSANDRO BLVD.
BRODIAEA AVE.
CACTUS AVE.
IRIS AVE.
F-14
F-8
F-6
LINE F
LINE H
H-11
H-4
H-2
H-3
H-1
H-1a
H-5
H-5a
H-6
H-7
H-8
H-9
H-10
8.25X5' RCB Q=275
DBL 8'X4' RCB Q=335
b=40' d=10' ss=1.5:1 Q=6800
F-5
F-7
F-13
F-4
LINE G
b=10' d=5' ss=2:1 Q=1340
MORENO BEACH DR.
JOHN F. KENNEDY DR.
QUINCY ST.
b=14' d=8' ss=2:1 Q=1165
b=14' d=8' ss=2:1 Q=1180
b=14' d=8' ss=2:1 Q=1270
b=16' d=8' ss=2:1 Q=1325
LINE A
A-1
A-2
A-3
A-6
A-7
A-8
K-4
K-3
K-2
K-1
42" Q=40
42" Q=125
42" Q=135
51" Q=200
33" Q=45
63" Q=360
63" Q=390
42" Q=95
36" Q=80
42" Q=130
42" Q=55
48" Q=180
42" Q=60
54" Q=105
78" Q=310
84" Q=335
7'X7' RCB Q=375
9'X7' RCB Q=1515
9'X7' RCB Q=1340
9'X7' RCB Q=1300
8'X7' RCB Q=1255
9'X7' RCB Q=1070
b=6' d=4.5' ss=1.5:1 Q=910
KALMIA AVE.
QUINCY BASIN
Qin = 1555 cfs
Qout = 280 cfs
STORAGE = 150 ac. ft.
R/W = 22.5 ac.
EX. 2- 5'x3' RCB
EX. 3- 60" CMP
b=10' d=6.5' RECT. Q=105
G-1
G-2
G-3
G-4
G-5
G-7
LINE A
D-1
D-2
D-3
D-4
D-5
D-6
D-7
D-8
D-9
F-15
F-16
F-17
F-12
F-11
F-18
F-19
F-2
F-9
72" Q=560
42" Q=85
42" Q=45
48" Q=80
48" Q=155
72" Q=670
42" Q=50
48" Q=85
60" Q=120
66" Q=155
78" Q=670
66" Q=300
66" Q=510
42" Q=70
66" Q=525
54" Q=215
36" Q=50
48" Q=85
60" Q=120
66" Q=155
90" Q=710
90" Q=755
36" Q=30
90" Q=775
42" Q=45
54" Q=100
90" Q=910
54" Q=215
EX. 3- 4'x2' RCB
EX. 2- 48" CMP
EX. 2- 72" CMP
EX. 60" RCP
66" Q=305
42" Q=65
48" Q=125
54" Q=180
72" Q=235
72" Q=290
72" Q=535
42" Q=45
48" Q=85
48" Q=125
54" Q=160
60" Q=200
78" Q=705
84" Q=775
42" Q=70
48" Q=70
60" Q=125
66" Q=160
48" Q=75
60" Q=155
54" Q=110
96" Q=950
108" Q=950
60" Q=120
108" Q=1005
Qin = 3020 cfs
Qout = 2115 cfs
STORAGE = 100 ac. ft.
R/W = 21.7 ac.
CACTUS BASIN
54" Q=100
48" Q=65
36" Q=35
LINE B
B-1
B-2
B-3
8'X8' RCB Q=1175
9'X8' RCB Q=1175
9'X7' RCB Q=1175
HIGHLAND BLVD.
REDLANDS BLVD.
IRONWOOD DEBRIS BASIN
APPROXIMATE R/W = 3.1 ac.
LINE C
10'X8' RCB Q=1920
78" Q=680
78" Q=315
66" Q=545
SINCLAIR BASIN
Qin = 2525cfs
Qout = 635cfs
STORAGE = 170 ac. ft.
R/W = 25 Acres
SINCLAIR ST.
LINE D
EUCALYPTUS AVE.
b=30' d=8' ss=2:1 Q=845
b=6' d=8' ss=2:1 Q=845
E-1
E-2
E-3
E-4
E-5
E-6
E-7
E-8
E-10
36" Q=60
54" Q=110
66" Q=160
66" Q=210
66" Q=190
60" Q=145
54 Q=95
36" Q=45
b=8' d=8 ss=2:1 Q=1020
b=12' d=8' ss=2:1 Q=1215
b=16' d=8' ss=2:1 Q=1410
b=20' d=8' ss=2:1 Q=1600
b=24' d=8' ss=2:1 Q=1600
42" Q=65
48" Q=120
66" Q=170
72" Q=220
66" Q=175
60" Q=135
48" Q=80
72" Q=215
54" Q=125
48" Q=70
66" Q=185
72" Q=225
66" Q=195
60" Q=140
48" Q=85
54" Q=120
66" Q=175
72" Q=225
66" Q=195
60" Q=140
48" Q=85
60" Q=130
48" Q=70
60" Q=145
54" Q=95
36" Q=45
84" Q=775
90" Q=845
96" Q=880
PROPOSED LINE F-2 TO REPLACE EXISTING LINE F-2
LINE F
b=38' d=8' ss=2:1 Q=1945
THEODORE ST.
DRAGAEA AVE.
DAVIS RD.
Project Site Location
CITY LIMITS
SCALE 1"=800'
1200 800 400 0 400 800 1200
N

LEGEND

- DRAINAGE BOUNDARY
- PROPOSED STORM DRAIN
- PROPOSED OPEN CHANNEL
- EXISTING FACILITY
- Q=10 — 10 YEAR FLOW IN CFS
- Q=100 — 100 YEAR FLOW IN CFS

NOTES

1. ADOPTED IN OCTOBER 1980
2. REVISION #1 IN APRIL 1991
3. REVISION #2 IN PROGRESS

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

MORENO

MASTER DRAINAGE PLAN

Riverside County Hydrology Manual Reference

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.

RCFC & WCD
HYDROLOGY MANUAL

IMPERVIOUS COVER FOR DEVELOPED AREAS

PLATE D-5.6

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

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PLATE E-6.1 (1 of 2)

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

Notes:

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

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

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

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

5. Reference Bibliography item 17.