Revised Draft SEIR Appendix 5.5b

VCC Hydrology and Drainage Concept

LAND DEVELOPMENT DIVISION
STORM DRAIN & HYDROLOGY UNIT

TO:	Hunsaker & Associates, Inc.	**DATE:** 03/20/2025
	26074 Avenue Hall, Unit 23	
	Valencia, CA 91355	
ATTN: Heidi Snider		

REVIEW OF HYDROLOGY STUDY

PM NO.	18108	**DATE OF REPORT**	12/16/2024
SUBMITTAL DATE	03/18/2025	**PLAN CHECK NO.**	9
		PLAN CASE NO.	ESTU2022000053

We have reviewed your Hydrology Study and LID Plan.

[X] The Hydrology Study has been approved.

[X] The LID Plan has been approved.

[X] Refer to comments below:

COMMENTS:

1. Infiltration rate for the project site has been assumed but must be approved by Geotechnical and Materials Engineering Division prior to the grading plans. Any changes to the assumed infiltration rate may require a revised Hydrology Study and/or Tentative Map.

2. Work within soft bottom drainage areas (which may include but is not limited to soft bottom basins, channels, watercourses, grade to drain) will require maintenance permits from Fish and Game, Army Corps of Engineers, and RWQCB prior to approval of the storm drain, and the permits must be still active prior to acceptance.

3. An Assessment District must be established prior to the recordation of the final map. This CFD will be to finance the future ongoing maintenance and capital replacement of all drainage devices/systems identified to be maintained by the Flood Control District.

4. An Assessment District must be established prior to the recordation of the final map. This CFD will be to finance the future ongoing maintenance and capital replacement of all water quality devices/systems identified to be maintained by the County of Los Angeles.

5. No other encroachment or vertical infrastructure more than what is shown on the hydrology study and grading plans is to be constructed within the FEMA Flood Zone and County Floodplain/Floodway without any additional analysis.

LAND DEVELOPMENT DIVISION
STORM DRAIN & HYDROLOGY UNIT

6. Prior to issuance of grading/building permit, FEMA CLOMR must be submitted to Los Angeles County Public Works for review and approval.

7. Prior to issuance of permit 'Finaled' status on EPIC-LA, County ML map revision must be submitted to Los Angeles County Public Works for review.

REVIEWED BY _____
Chung, Lonnie - (626) 458-7201

APPROVED BY: _____
Alex Mikhailpoor

HYDROLOGY STUDY
APPROVED

REVIEWED BY: _____ DATE 3/19/25

APPROVED BY: _____ DATE 03/20/25

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

Hydrology and Drainage Concept Report for Valencia Commerce Center (VTPM 18108)

ESTU2022000053

VOLUME 1

County of Los Angeles

Hunsaker Project No:
0015-043-020
December 16, 2024

Prepared for:

Newhall Land and Farming
25124 Springfield Court, Suite 300
Valencia, California 91355

Prepared by:

Arman Shirvanian
Hunsaker and Associates, LA Inc.
26074 Avenue Hall, Suite 23
Valencia, CA 91355
Telephone: (661) 294-2211 Fax: (661) 294-9890

Under the supervision of:

REGISTERED PROFESSIONAL ENGINEER
JASON H. FUKUMITSU
No. 40695
CIVIL
STATE OF CALIFORNIA

Jason H. Fukumitsu 01/15/25

Jason H. Fukumitsu Date

TABLE OF CONTENTS

Page

VOLUME I

1. INTRODUCTION.....1
   1.1 Report Summary 1
   1.2 Project Description.....1
2. METHODOLOGY.....2
3. DESIGN CRITERIA.....3
4. MODIFIED RATIONAL HYDROLOGY WATERSHEDS.....4
5. LOW IMPACT DEVELOPMENT (LID) ANALYSIS.....6
6. CONCLUSIONS & RECOMMENDATIONS.....7
7. REFERENCES.....9
8. APPENDICES

A. Calculations

1. Existing Hydrologic Analysis (50-YR)
2. Proposed Hydrologic Analysis (50-YR)
3. Existing Debris Production Calculation
4. Proposed Debris Production Calculation
5. Existing Bulk Flow Calculation
6. Proposed Bulk Flow Calculation
7. Existing Modified Rational Method Hydrology Clear Results (50-YR)
8. Existing Modified Rational Method Hydrology Burn Results (50-YR)
9. Proposed Modified Rational Method Hydrology Clear Results (50-YR)
10. Proposed Modified Rational Method Hydrology Burn Results (50-YR)
11. Existing Conditions Hydrologic Summary
12. Proposed Conditions Hydrologic Summary
13. Valencia Commerce Center Land Use
14. Conveyance Lengths Exhibit

B. Hydrology Exhibits

1. Existing Hydrology Map
2. Proposed Hydrology Map

C. Hydrologic References

1. 50-YR, 24 ISOHYET (LACDPW)
2. Runoff Coefficient Curves
3. Los Angeles County Proportion Impervious Data Table
4. L.A.C.D.P.W. As-Built Storm Drain Plans

VOLUME II:

1. Valencia Commerce Center VTPM 18108 – Evaluation of Conformance with LID and Hydromodification Performance Standards (Geosyntec Consultants –January 2025)

1.0 INTRODUCTION

1.1 REPORT SUMMARY

The purpose of this report is to present the Final Hydrology Design for Valencia Commerce Center (VCC) VTTM 18108. The report analyzes existing and proposed rough graded conditions for the 50 –year design storm, along with the LID requirements.

For the existing condition, a 24-Hour storm analysis based upon the Los Angeles County Modified Rational Methods of Hydrology is used for clear, burned, and bulked conditions for the watershed(s).
Volume 1 of this report is divided into several sections. Section 1 contains the introduction, and project description; Section 2 discusses the methodology used in the hydrologic analysis; Section 3 summarizes the design criteria used; Section 4 is a description of the hydrologic model, which includes brief descriptions of each watershed, and its land uses; Section 5 summarizes the analysis for LID treatment requirements; Section 6 includes the conclusions and recommendations of this report, and Section 7 includes a list of the references used in the preparation of this report; Section 8 includes the appendices for the report.

Volume 2 of this Drainage Concept Report includes the Valencia Commerce Center - Conformance with the Newhall LID Performance Standard Memorandum prepared by Geosyntec Consultants, dated August 2023.

1.2 PROJECT DESCRIPTION

The project is located in unincorporated Los Angeles County and is bounded roughly by the SR126 to the south, The Old Road to the east, Commerce Center Drive to the west, and existing improvements (PM17494).

The project site is approximately 189± acres in size, and its topography is mostly flat with a steep hillside on the Northwest of the site. The project site mostly drains south, and west to Castaic Creek. The pre-development and post-development are calculated to the limits of development.

Land use within the watershed will change over time. The ultimate development in Valencia Commerce Center will consist of industrial, commercial-business parks, and open space.

The proposed drainage system for each watershed follows the natural drainage courses. However, Post-development stormwater runoff will be larger compared to existing condition flows, for the Capital storm event. All the planning areas within the project will be exempt from hydromodification. The exemption criteria are presented in Volume 2 of this report.

2. METHODOLOGY

In the existing condition, the project site is divided into four (4) watersheds. For the proposed condition, the site is divided into four (4) separate watersheds, that cover a total of 189± acres.

Each watershed is delineated using the proposed site grading for developed areas and existing topography for undeveloped areas. The proposed drainage watersheds generally follow the natural drainage course which is described under existing conditions. Each of the main watersheds were delineated into subareas of less than 41 acres, for the hydrology analysis.

One hydrologic method is used for the drainage analysis: The Modified Rational Method is used to calculate the flow and time of concentration of each subarea. The Modified Ration Method is described in the Los Angeles County 2006 Hydrology Manual. Clear, burn, burn and bulk flow are calculated for each watershed as needed.

The time of concentration (T_c) for each subarea is computed using the Los Angeles County-approved Time of Concentration calculator (HydroCalc 1.0.3). The calculator evaluates several hydrologic parameters such as soil type, land use, imperviousness, storm frequency, length, and slope to the collection point for each subarea to calculate a time of concentration.

The undeveloped tributary areas are analyzed using a burned coefficient to calculate peak runoff rates. Unburned coefficients were used for all developed conditions, as well as undeveloped conditions for storms other than the 50-year Capital Storm event.

The project's land use, and imperviousness were determined from the Land Use and Imperviousness Table provided in the Los Angeles County Hydrology Manual. Soil types and rainfall corresponding to each subarea were obtained from the Hydrologic Maps in the Los Angeles County Hydrology Manual, Map: 1-H1-44.

3. DESIGN CRITERIA

Los Angeles County requires that several design criteria be followed when using the Rational and Modified Rational Method to determine capital flood flow.

The 50-year, and 24-hour rainfall isohyets used in the hydrologic calculations were obtained from the Los Angeles County Hydrology Manual's Hydrologic Maps. This is 5.8" for all drainage area. Other storm events were determined by factoring the 50-year isohyets.

The soil types within the project site were also determined from the hydrologic maps as 20, and 97.

For proposed conditions, 91% imperviousness is used for commercial-business park. The commercial-business park includes a mix of office, industrial, and retail. Undeveloped, open space, and bulked graded areas within the project are assumed to have around 1% and 2% imperviousness. Public streets within the project are assumed to have a 91% imperviousness.

The project falls in two main debris potential areas in the Santa Clara Basin, DPA-5 and DPA-9. The respective debris and bulking factors are: 82,000 cy / mi^2, 1.465 / mi^2; and 16,500 cy / mi^2, 1.270 / mi^2.

The design criteria used is summarized below:

Hydrology Method:	Los Angeles County Flood Control District Rational Method and Modified Rational Method.
Hydrology Modeling Software	HydroCalc 1.0.3, LAR04
Design Storm:	50-Year, 50-Year Capital (Burn and Bulk Included)
50-Year Isohyet:	5.8"
Soil Types:	20 and 97
Land Use and Imperviousness:	Undeveloped (1%) Rough graded pad (2%) Commercial-business park (91%) Open Space (2%) Public Street (91%)
Debris Potential Zone:	DPA-5 (82,000 cy / mi^2); area $\leq$ 0.1 mi^2 DPA-9 (16,500 cy / mi^2); area $\leq$ 0.1 mi^2
Peak Bulking Rate:	1.465 / mi^2; DPA-5 (area $\leq$ 0.1 mi^2) 1.270 / mi^2; DPA-9 (area $\leq$ 0.1 mi^2)

4. MODIFIED RATIONAL HYDROLOGY WATERSHEDS

The hydrology analysis was based on the Los Angeles design criteria for the Modified Rational Method. Utilizing the HydroCalc 1.0.3. to determine the Tc (Time of Concentration), and the LAR04 to compute and route the flows through the proposed storm drain system.

Drainage areas are determined, and the corresponding sub-areas delineated based on the existing topography and proposed grading for the project site.

Following is a brief description of the existing and proposed watersheds. The results of the hydrologic modeling can be found in this report on Appendix A and Appendix B.

Existing Condition

The project was delineated into four (4) existing watersheds as described below.

North of Valencia Commerce Center Watershed (Watershed 100)
Watershed 100 is a single subarea watershed located northeast of the Valencia Commerce Center. The watershed is draining southwesterly to the Castaic Creek.

South of Valencia Commerce Center Watershed (200)
Watershed 200 has 3 subareas located south of the Valencia Commerce Center. The watershed is draining northwesterly to Castaic Creek.

Middle of Valencia Commerce Center Watershed (300)
Watershed 300 has 7 subareas located at middle of the Valencia Commerce Center. The watershed is draining westerly to Hasley Creek then to Castaic Creek or directly to Castaic Creek.

West of Valencia Commerce Center Watershed (400)
Watershed 400 has 3 subareas located west of the Valencia Commerce Center. The watershed is draining easterly to Hasley Creek then to Castaic Creek. Currently there are two storm drain pipes pass through this watershed, a 48" RCP and a 102" RCP pipe recorded in PD 2298, with total flow of 1,408cfs.

Proposed Condition

In the proposed condition, the project is delineated into four (4) main watersheds:

North of Valencia Commerce Center Watershed (Watershed 100)
Similar to existing watershed 100, the proposed watershed 100 includes approximately 12-acres of industrial pads that will be draining toward to Castaic Creek. There is no offsite drainage to watershed 100.

South of Valencia Commerce Center Watershed (200)
Watershed 200 will have six tributary areas that are draining northwesterly to Castaic Creek. The western tributary area will be draining from east to west into a series of catch basins located south of the Valencia Commerce Center. The southern tributary areas will be drained by a privately maintained slope drain. There are additional four tributary areas that drain offsite. Proposed conditions for the offsite subareas can be found on the proposed drainage concept map.

Middle of Valencia Commerce Center Watershed (300)
Storm water from watershed 300 will be draining southerly and collected by catch basins to discharge to Castaic Creek directly.

West of Valencia Commerce Center Watershed (400)
The watershed 400 will be draining easterly to Hasley Creek and then to Castaic Creek. A storm drain system is proposed to collect the storm water and route the flows alongside the existing 48” RCP pipes and 102” RCP pipes and outlet into Hasley Creek.

5. LOW IMPACT DEVELOPMENT (LID) ANALYSIS

Low-impact development (LID) facilities will be designed in conformance with Los Angeles County Municipal Separate Storm Sewer System (MS4) Permit, Order No. R4-2021-0105, and Los Angeles County Department of Public Works (LACDWP) 2014 LID Ordinance. The Newhall Ranch Sub-Regional Stormwater Mitigation Plan is also used in the evaluation of this report. See attached Geosyntec LID Conformance Memo hereon in Volume II.

6. CONCLUSIONS & RECOMMENDATIONS

Based upon the hydrologic analysis performed, the developed project condition will not result in onsite or offsite impacts. There are increases in runoff, draining to Castaic Creek and Halsey Creek. The increases are mitigated by discharging to an engineered channel. The Q_{100} and Q_{CAP} values are provided for both Hasley Creek and Castaic Creek. Proposed bank lining improvements are done by Castaic Creek Bank Protection Drainage Concept Report Volume II of V (ESTU2001000012) and Revision for Hasley Creek (ESTU2023000298). Energy dissipation measures at storm drain outlets into both creeks will be implemented using grouted riprap aprons. According to these same reports, the proposed bank protection for Castaic Creek and Halsey Creek are above the capital floodplain or if need be it will be filled to be above. As stated by these reports, the adjacent sites will not be subject to flood hazards.

Privately maintained improvements are shown in appendix B (Proposed Drainage Concept Map), The LID elements for the water quality treatment will be discussed in Volume II Valencia Commerce Center VTPM 18108 Conformance.

See the summary of the results for runoff rates and debris volume in Table 1. Table 1 shows the 50-year clear runoff values and capital runoff values. Capital runoff values are either the clear, burn or burn/bulk values. For developed areas, the capital runoff is clear runoff. For natural areas without a debris basin or debris catchment area, the capital runoff is the burn/bulk runoff. For natural areas with a debris catchment area upstream of the proposed storm drain pipe, the capital runoff is the burn runoff. Detailed calculations and maps can be found in Appendix A. Watershed 100, 200, and 400 have an increase in capital flow rate compared to the existing conditions Watershed 300 has a decrease in capital flow compared to the existing conditions. Due to the increase in capital flow rate, mitigation will be done by PACE, per Castaic Creek Bank Protection Drainage Concept Report Volume II of V (ESTU2001000012) and Revision for Hasley Creek (ESTU2023000298). The mentioned bank protection improvements will be constructed prior to any developments.

Table 1- Runoff Summary

				50 year	Capital	50-year Clear Volume (ac-ft)	DV
WATERSHED 100	**Existing**		**Q (cfs)**	14.6	20.3	1.0	311.9
	Area (ac)	12.1	**q (cfs/ac)**	1.20	1.7	N/A	N/A
	Proposed		**Q (cfs)**	25.0	25.0	4.8	0
	Area (ac)	12.1	**q (cfs/ac)**	2.1	2.1	N/A	N/A
	Delta		**Q (cfs)**	10.4	4.7	3.8	311.9
	Area (ac)	0	**q (cfs/ac)**	0.9	0.4	N/A	N/A

WATERSHED 200 (ONSITE)				50 year	Capital	DV
	Existing		**Q (cfs)**	51.3	72.8	1366.2
	Area (ac)	53.0	**q (cfs/ac)**	1.0	1.4	N/A
	Proposed		**Q (cfs)**	87.9	87.9	0
	Area (ac)	49.2	**q (cfs/ac)**	1.8	1.8	N/A
	Delta		**Q (cfs)**	36.6	15.1	1366.2
	Area (ac)	3.8	**q (cfs/ac)**	0.8	0.4	N/A

WATERSHED 300				50 year	Capital	DV
	Existing		**Q (cfs)**	171.5	245.9	6984.0
	Area (ac)	92.7	**q (cfs/ac)**	1.9	2.7	N/A
	Proposed		**Q (cfs)**	178.8	187.6	1065.4
	Area (ac)	92.3	**q (cfs/ac)**	1.9	1.9	N/A
	Delta		**Q (cfs)**	7.3	58.3	5918.6
	Area (ac)	0.4	**q (cfs/ac)**	0	0.8	N/A

WATERSHED 400				50 year	Capital	DV
	Existing		**Q (cfs)**	35.1	49.4	773.9
	Area (ac)	30.0	**q (cfs/ac)**	1.2	1.6	N/A
	Proposed		**Q (cfs)**	55.7	55.7	0
	Area (ac)	30.8	**q (cfs/ac)**	1.8	1.8	N/A
	Delta		**Q (cfs)**	20.6	6.3	773.9
	Area (ac)	0.8	**q (cfs/ac)**	0.6	0.2	N/A

7. REFERENCES

i. Los Angeles County Department of Public Works Hydrology Manual, January 2006

ii. Los Angeles County Department of Public Works Sedimentation Manual, March 2006

iii. Sediment Basin design, CASQA, January 2011

iv. Approved Drainage Concept Report for Mission Village VTTM 061105, PSOMAS

APPENDIX A - Calculations

1. Existing Hydrologic Analysis (50-YR)

Peak Flow Hydrologic Analysis

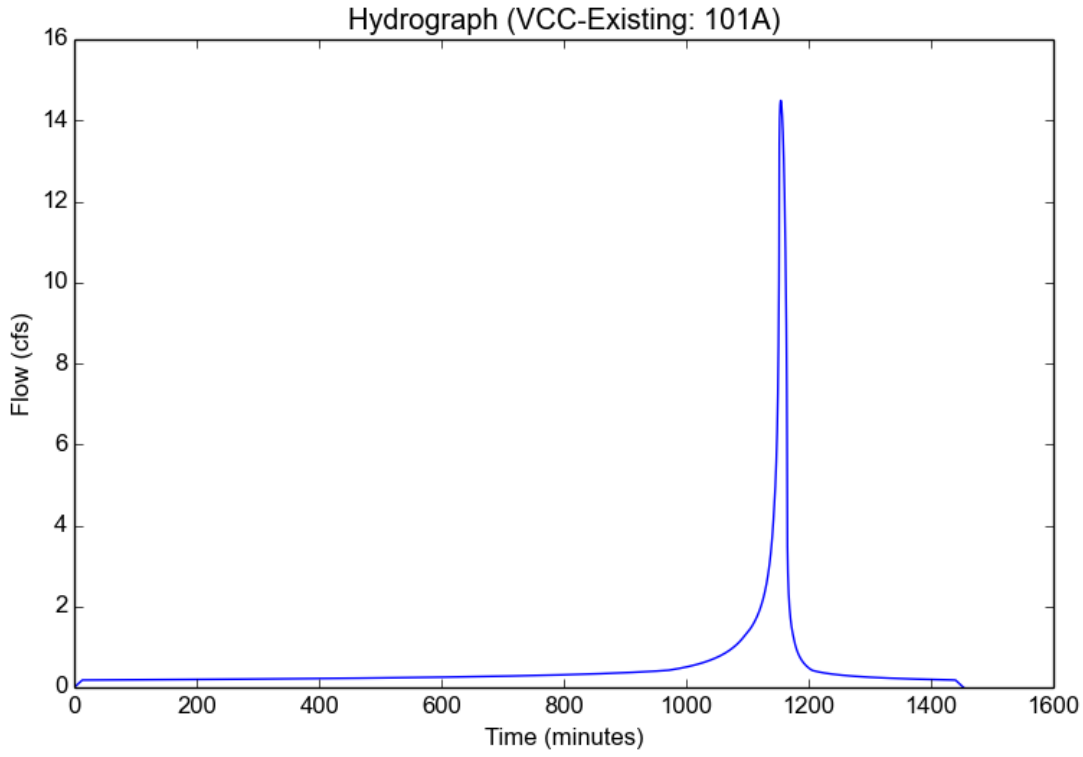
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Existing/VCC-Existing Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Existing
Subarea ID	101A
Area (ac)	12.1
Flow Path Length (ft)	991.0
Flow Path Slope (vft/hft)	0.03
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.02
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.2085
Undeveloped Runoff Coefficient (Cu)	0.535
Developed Runoff Coefficient (Cd)	0.5423
Time of Concentration (min)	13.0
Clear Peak Flow Rate (cfs)	14.4905
Burned Peak Flow Rate (cfs)	16.0524
24-Hr Clear Runoff Volume (ac-ft)	1.0312
24-Hr Clear Runoff Volume (cu-ft)	44918.0299



Peak Flow Hydrologic Analysis

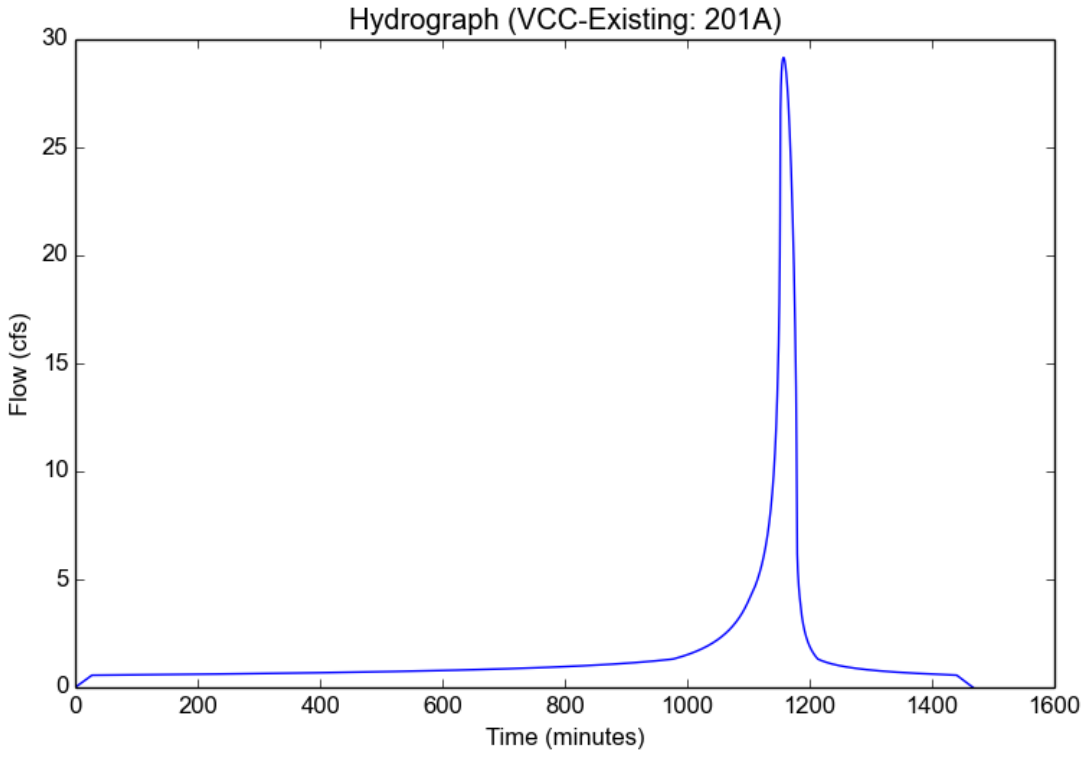
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Existing/VCC-Existing Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Existing
Subarea ID	201A
Area (ac)	40.5
Flow Path Length (ft)	2061.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.01
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	1.5664
Undeveloped Runoff Coefficient (Cu)	0.4552
Developed Runoff Coefficient (Cd)	0.4596
Time of Concentration (min)	27.0
Clear Peak Flow Rate (cfs)	29.1576
Burned Peak Flow Rate (cfs)	33.2756
24-Hr Clear Runoff Volume (ac-ft)	3.2495
24-Hr Clear Runoff Volume (cu-ft)	141546.0943



Peak Flow Hydrologic Analysis

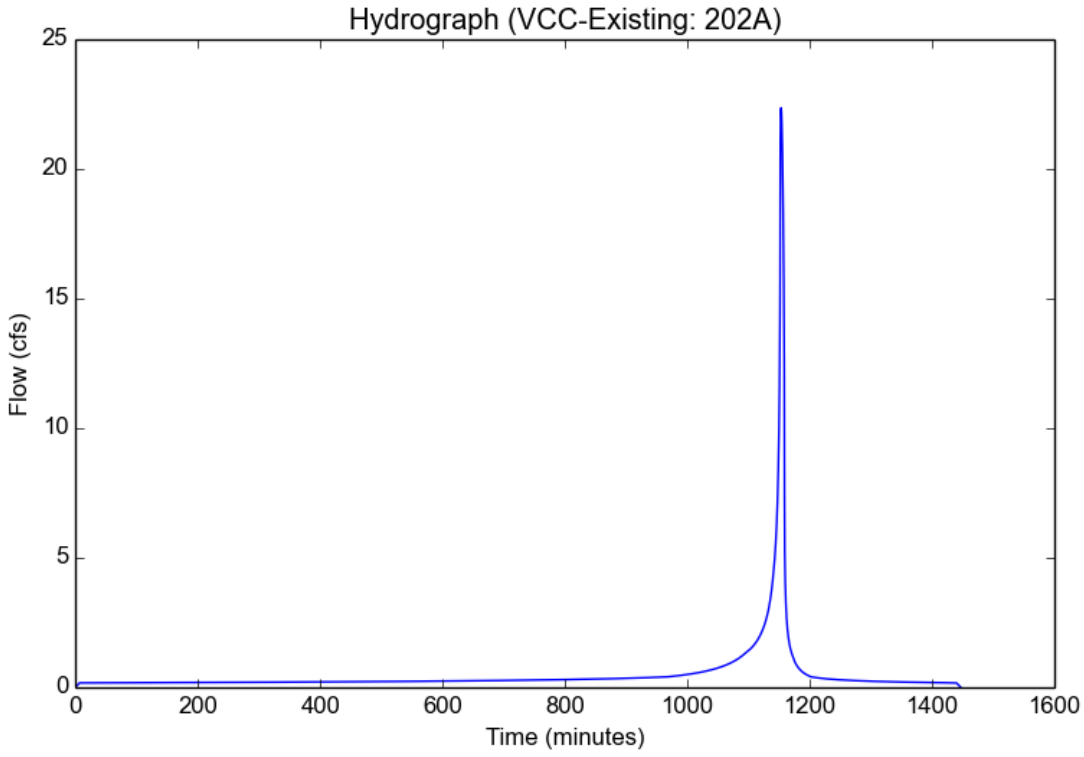
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Existing/VCC-Existing Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Existing
Subarea ID	202A
Area (ac)	12.5
Flow Path Length (ft)	503.0
Flow Path Slope (vft/hft)	0.05
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.01
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.9543
Undeveloped Runoff Coefficient (Cu)	0.6024
Developed Runoff Coefficient (Cd)	0.6054
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	22.3567
Burned Peak Flow Rate (cfs)	24.3078
24-Hr Clear Runoff Volume (ac-ft)	1.0302
24-Hr Clear Runoff Volume (cu-ft)	44877.3457



Peak Flow Hydrologic Analysis

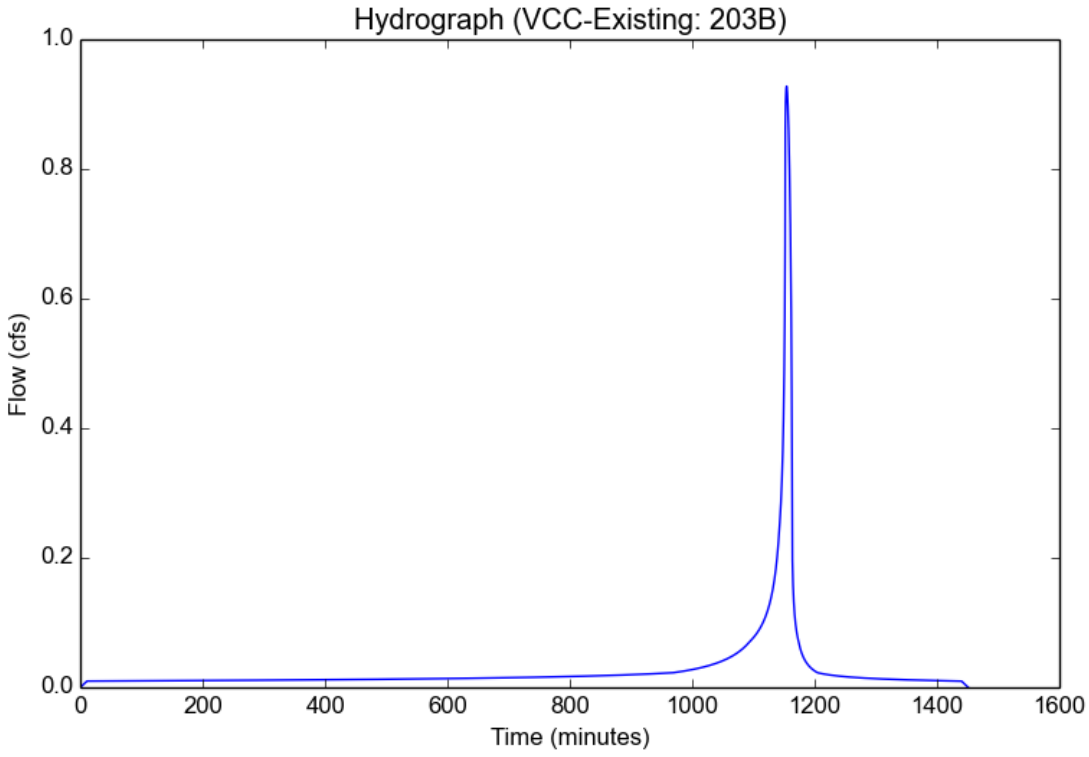
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Existing/VCC-Existing Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Existing
Subarea ID	203B
Area (ac)	0.7
Flow Path Length (ft)	694.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.01
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.3889
Undeveloped Runoff Coefficient (Cu)	0.5513
Developed Runoff Coefficient (Cd)	0.5548
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	0.9277
Burned Peak Flow Rate (cfs)	1.024
24-Hr Clear Runoff Volume (ac-ft)	0.0573
24-Hr Clear Runoff Volume (cu-ft)	2496.6929



Peak Flow Hydrologic Analysis

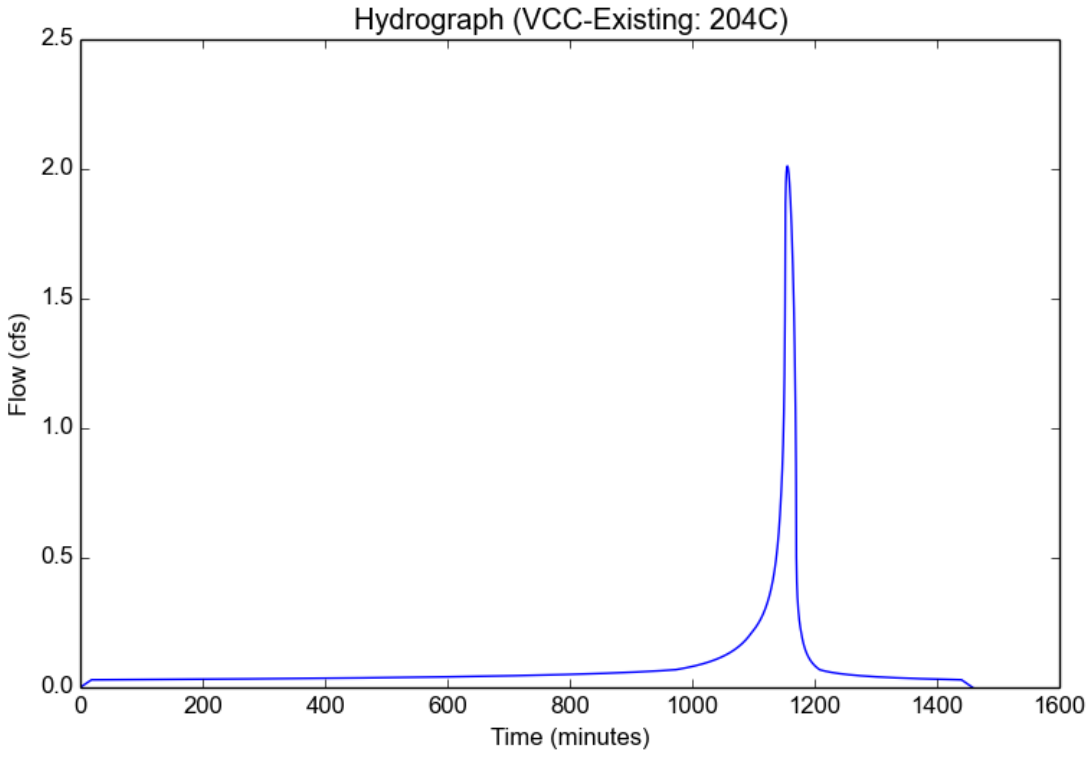
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Existing/VCC-Existing Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Existing
Subarea ID	204C
Area (ac)	2.1
Flow Path Length (ft)	753.0
Flow Path Slope (vft/hft)	0.002
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.01
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	1.8953
Undeveloped Runoff Coefficient (Cu)	0.5014
Developed Runoff Coefficient (Cd)	0.5054
Time of Concentration (min)	18.0
Clear Peak Flow Rate (cfs)	2.0114
Burned Peak Flow Rate (cfs)	2.2562
24-Hr Clear Runoff Volume (ac-ft)	0.1704
24-Hr Clear Runoff Volume (cu-ft)	7422.333



Peak Flow Hydrologic Analysis

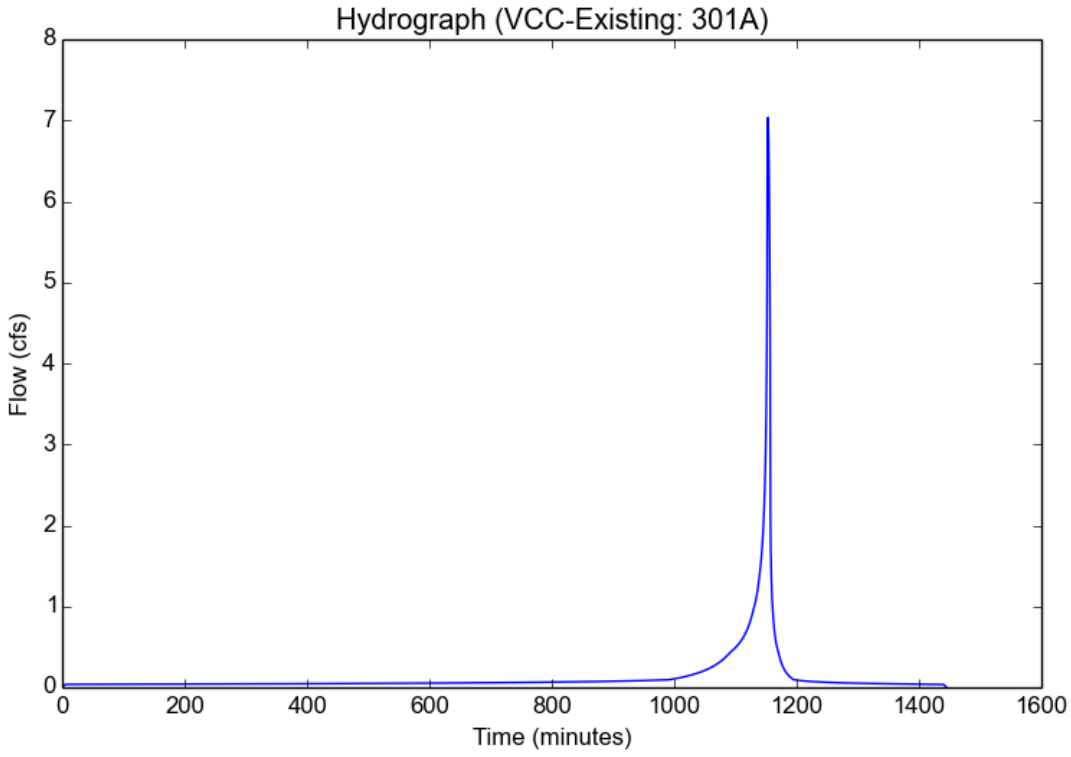
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Existing/VCC-Existing Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Existing
Subarea ID	301A
Area (ac)	2.7
Flow Path Length (ft)	556.0
Flow Path Slope (vft/hft)	0.25
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	3.4604
Undeveloped Runoff Coefficient (Cu)	0.7516
Developed Runoff Coefficient (Cd)	0.7531
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	7.0364
Burned Peak Flow Rate (cfs)	7.3529
24-Hr Clear Runoff Volume (ac-ft)	0.2723
24-Hr Clear Runoff Volume (cu-ft)	11859.8351



Peak Flow Hydrologic Analysis

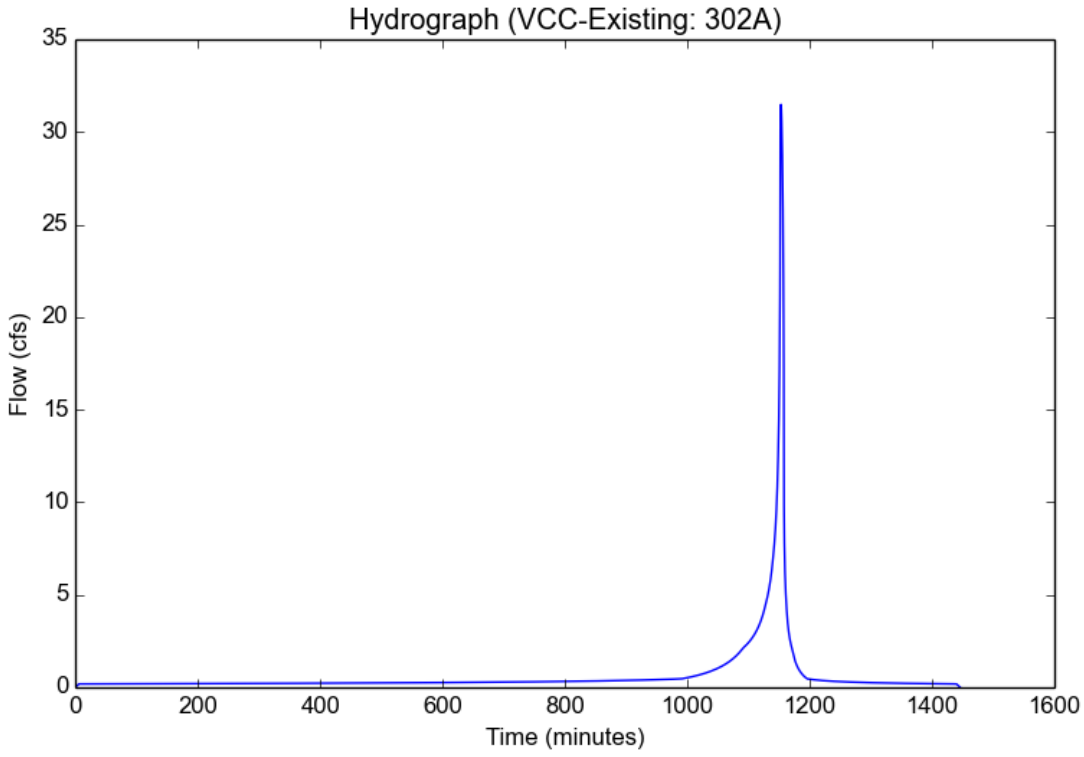
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Existing/VCC-Existing Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Existing
Subarea ID	302A
Area (ac)	13.4
Flow Path Length (ft)	794.0
Flow Path Slope (vft/hft)	0.23
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	3.1763
Undeveloped Runoff Coefficient (Cu)	0.7381
Developed Runoff Coefficient (Cd)	0.7397
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	31.4849
Burned Peak Flow Rate (cfs)	32.9849
24-Hr Clear Runoff Volume (ac-ft)	1.3502
24-Hr Clear Runoff Volume (cu-ft)	58815.3649



Peak Flow Hydrologic Analysis

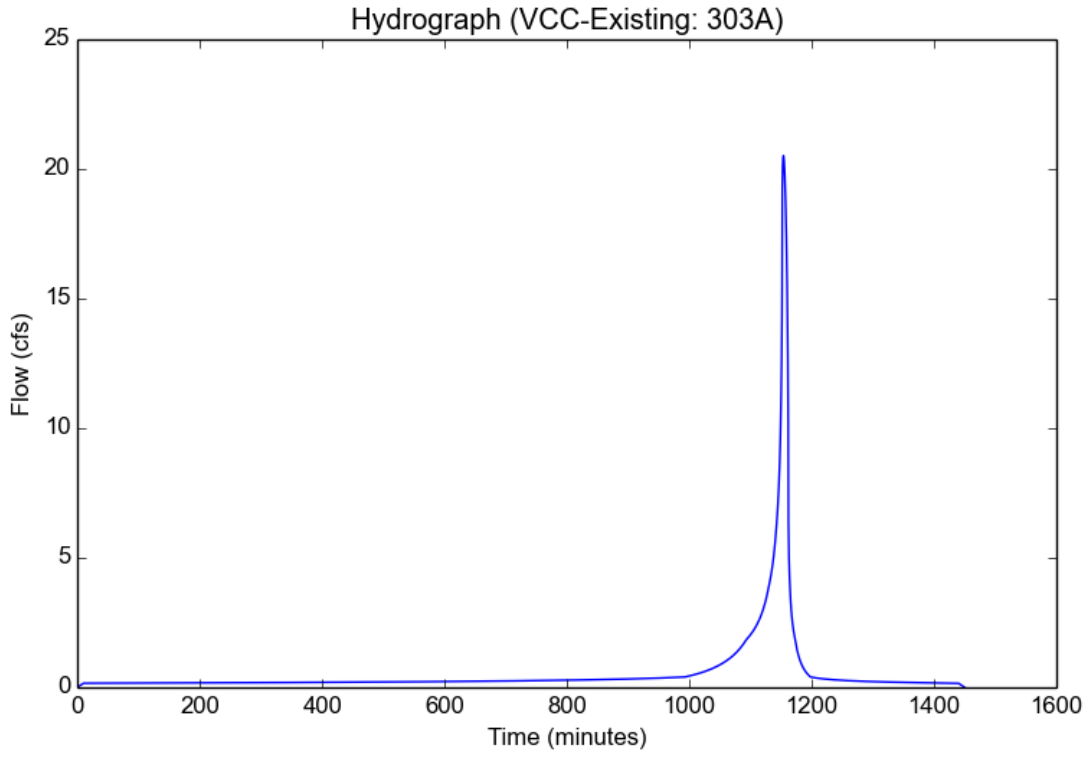
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Existing/VCC-Existing Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Existing
Subarea ID	303A
Area (ac)	11.6
Flow Path Length (ft)	1449.0
Flow Path Slope (vft/hft)	0.13
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.4983
Undeveloped Runoff Coefficient (Cu)	0.7059
Developed Runoff Coefficient (Cd)	0.7078
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	20.5132
Burned Peak Flow Rate (cfs)	21.6169
24-Hr Clear Runoff Volume (ac-ft)	1.1667
24-Hr Clear Runoff Volume (cu-ft)	50823.1746



Peak Flow Hydrologic Analysis

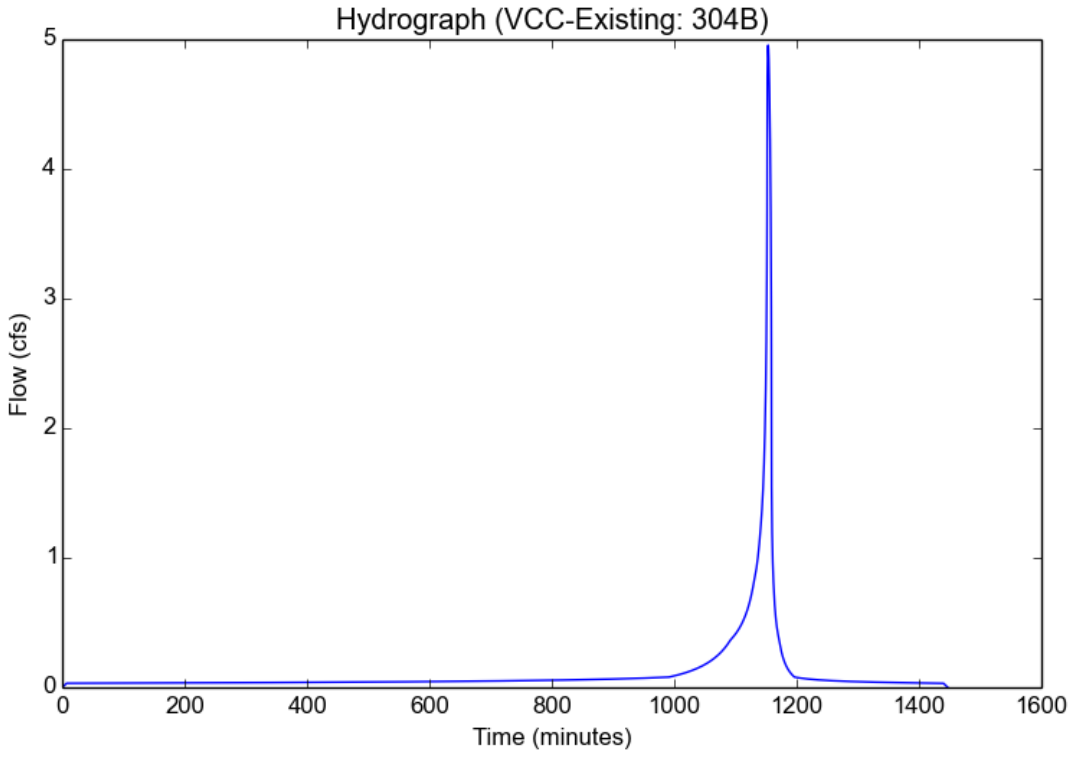
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Existing/VCC-Existing Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Existing
Subarea ID	304B
Area (ac)	2.3
Flow Path Length (ft)	692.0
Flow Path Slope (vft/hft)	0.06
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.9543
Undeveloped Runoff Coefficient (Cu)	0.7276
Developed Runoff Coefficient (Cd)	0.7293
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	4.9555
Burned Peak Flow Rate (cfs)	5.2018
24-Hr Clear Runoff Volume (ac-ft)	0.2316
24-Hr Clear Runoff Volume (cu-ft)	10089.5648



Peak Flow Hydrologic Analysis

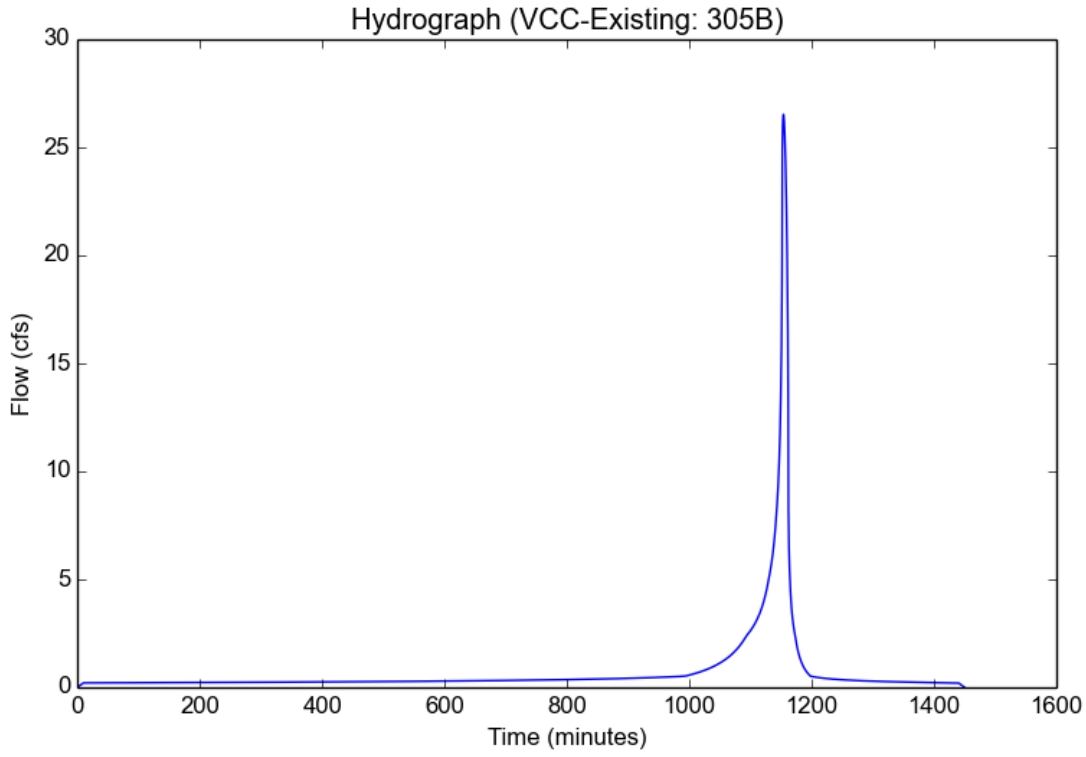
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Existing/VCC-Existing Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Existing
Subarea ID	305B
Area (ac)	15.0
Flow Path Length (ft)	1368.0
Flow Path Slope (vft/hft)	0.15
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.4983
Undeveloped Runoff Coefficient (Cu)	0.7059
Developed Runoff Coefficient (Cd)	0.7078
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	26.5257
Burned Peak Flow Rate (cfs)	27.9529
24-Hr Clear Runoff Volume (ac-ft)	1.5087
24-Hr Clear Runoff Volume (cu-ft)	65719.6223



Peak Flow Hydrologic Analysis

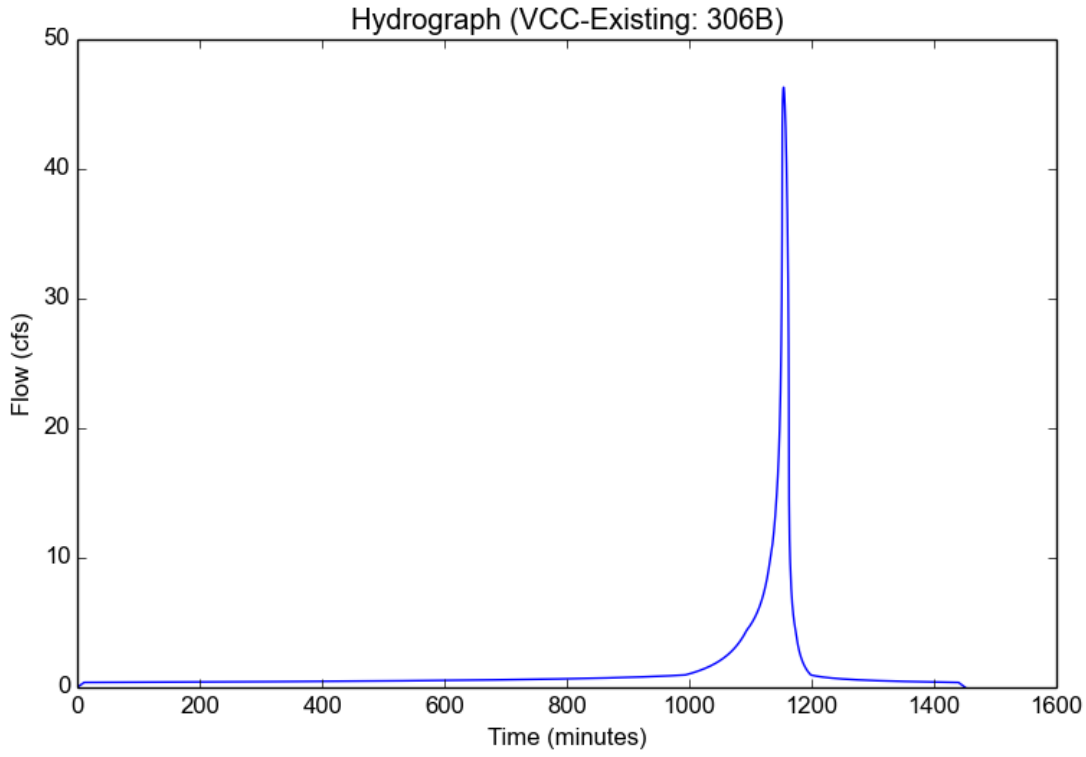
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Existing/VCC-Existing Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Existing
Subarea ID	306B
Area (ac)	27.7
Flow Path Length (ft)	1502.0
Flow Path Slope (vft/hft)	0.13
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.3889
Undeveloped Runoff Coefficient (Cu)	0.6977
Developed Runoff Coefficient (Cd)	0.6997
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	46.3011
Burned Peak Flow Rate (cfs)	48.872
24-Hr Clear Runoff Volume (ac-ft)	2.7841
24-Hr Clear Runoff Volume (cu-ft)	121277.3583



Peak Flow Hydrologic Analysis

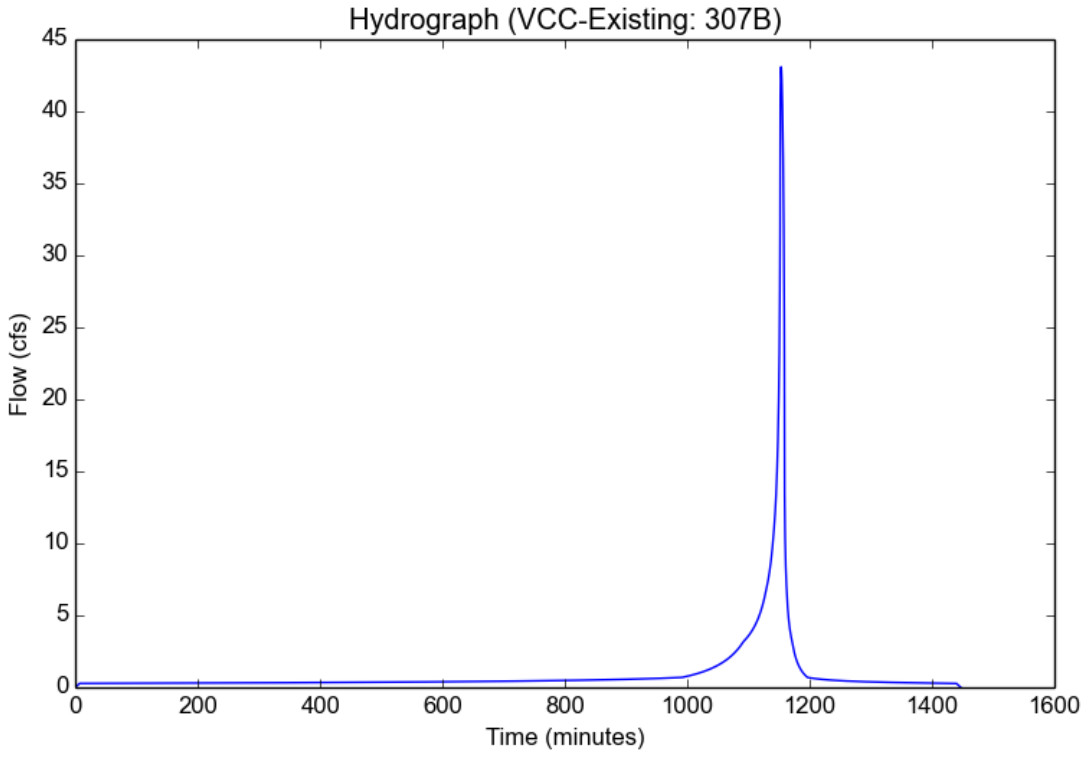
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Existing/VCC-Existing Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Existing
Subarea ID	307B
Area (ac)	20.0
Flow Path Length (ft)	705.0
Flow Path Slope (vft/hft)	0.06
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.9543
Undeveloped Runoff Coefficient (Cu)	0.7276
Developed Runoff Coefficient (Cd)	0.7293
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	43.0916
Burned Peak Flow Rate (cfs)	45.2332
24-Hr Clear Runoff Volume (ac-ft)	2.0141
24-Hr Clear Runoff Volume (cu-ft)	87735.3463



Peak Flow Hydrologic Analysis

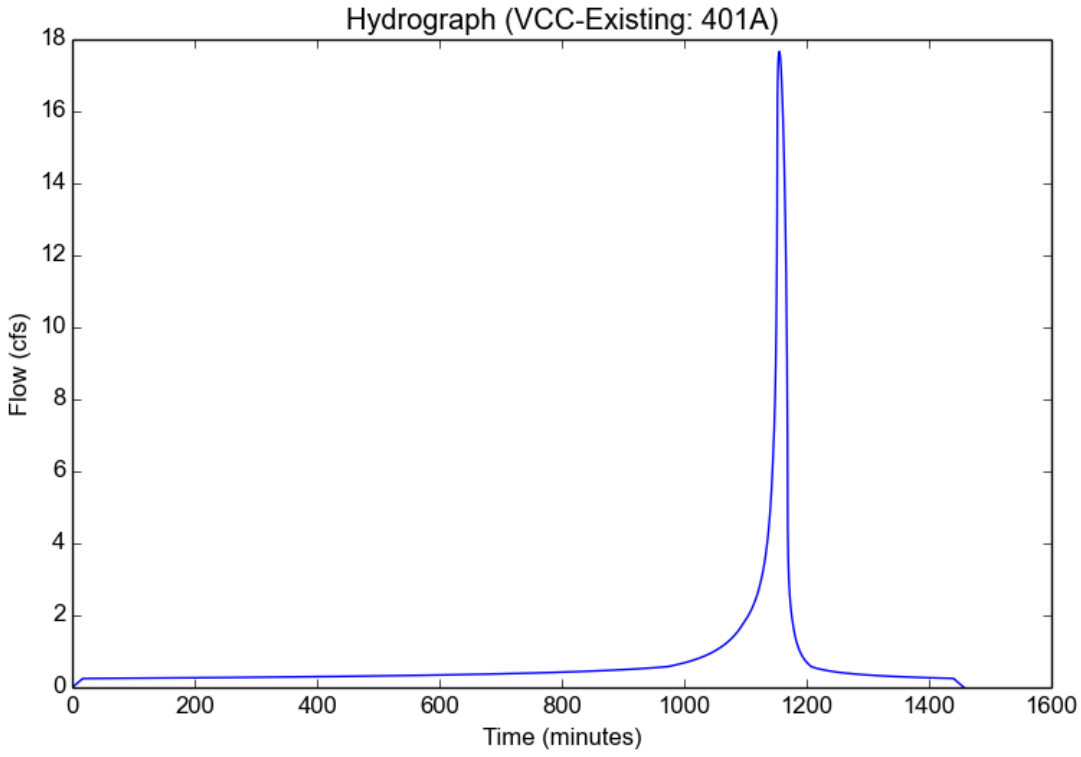
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Existing/VCC-Existing Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Existing
Subarea ID	401A
Area (ac)	17.7
Flow Path Length (ft)	1602.0
Flow Path Slope (vft/hft)	0.04
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.01
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	1.9469
Undeveloped Runoff Coefficient (Cu)	0.5086
Developed Runoff Coefficient (Cd)	0.5125
Time of Concentration (min)	17.0
Clear Peak Flow Rate (cfs)	17.6618
Burned Peak Flow Rate (cfs)	19.7606
24-Hr Clear Runoff Volume (ac-ft)	1.4384
24-Hr Clear Runoff Volume (cu-ft)	62655.4781



Peak Flow Hydrologic Analysis

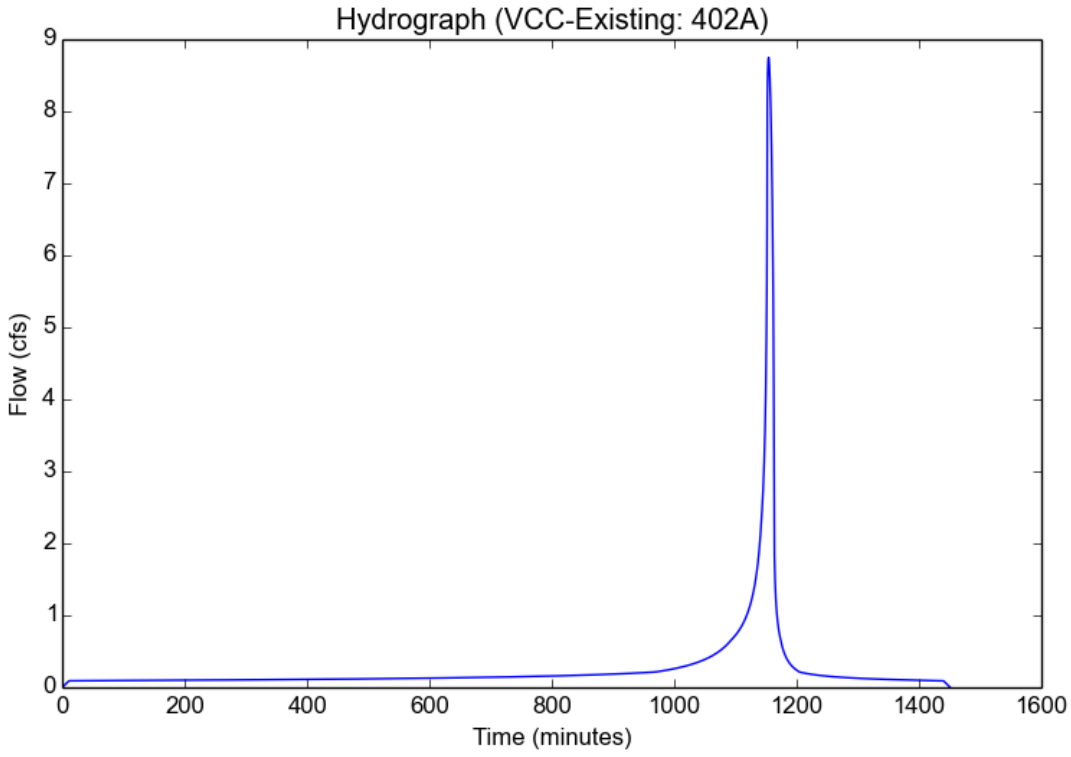
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Existing/VCC-Existing Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Existing
Subarea ID	402A
Area (ac)	6.6
Flow Path Length (ft)	882.0
Flow Path Slope (vft/hft)	0.04
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.01
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.3889
Undeveloped Runoff Coefficient (Cu)	0.5513
Developed Runoff Coefficient (Cd)	0.5548
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	8.7467
Burned Peak Flow Rate (cfs)	9.6549
24-Hr Clear Runoff Volume (ac-ft)	0.5404
24-Hr Clear Runoff Volume (cu-ft)	23540.2478



Peak Flow Hydrologic Analysis

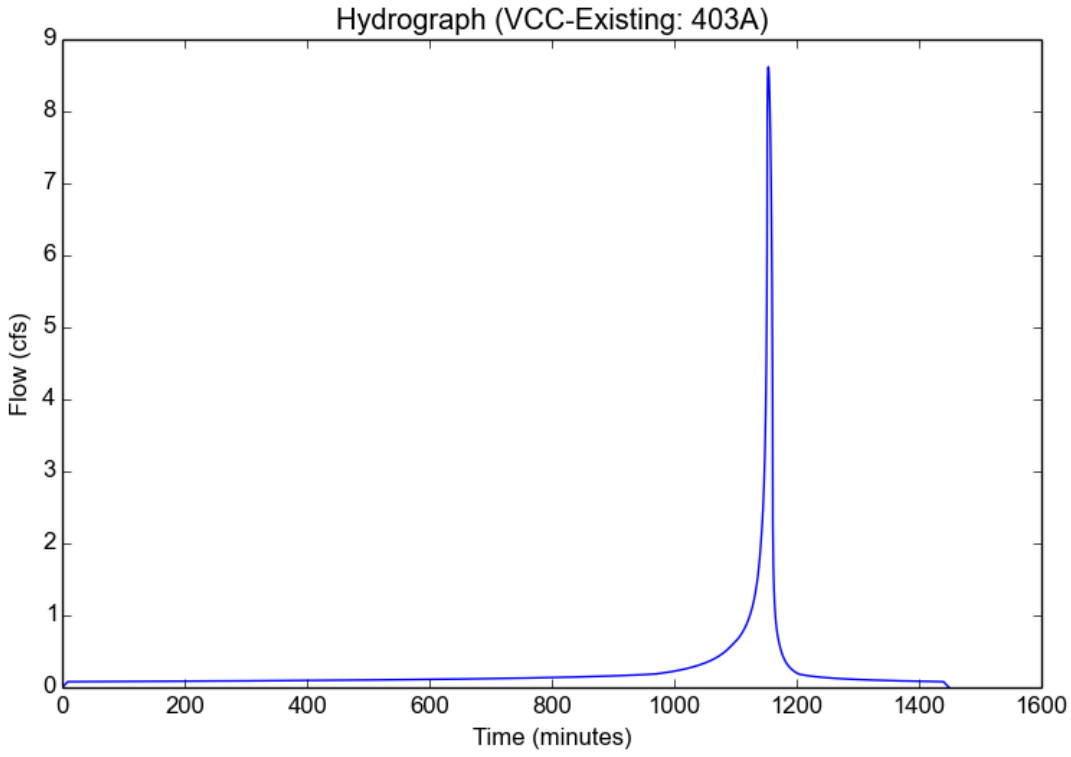
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Existing/VCC-Existing Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Existing
Subarea ID	403A
Area (ac)	5.7
Flow Path Length (ft)	727.0
Flow Path Slope (vft/hft)	0.05
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.01
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.6251
Undeveloped Runoff Coefficient (Cu)	0.5727
Developed Runoff Coefficient (Cd)	0.5759
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	8.6178
Burned Peak Flow Rate (cfs)	9.4516
24-Hr Clear Runoff Volume (ac-ft)	0.468
24-Hr Clear Runoff Volume (cu-ft)	20387.7691



2. Proposed Hydrologic Analysis (-YR)

Peak Flow Hydrologic Analysis

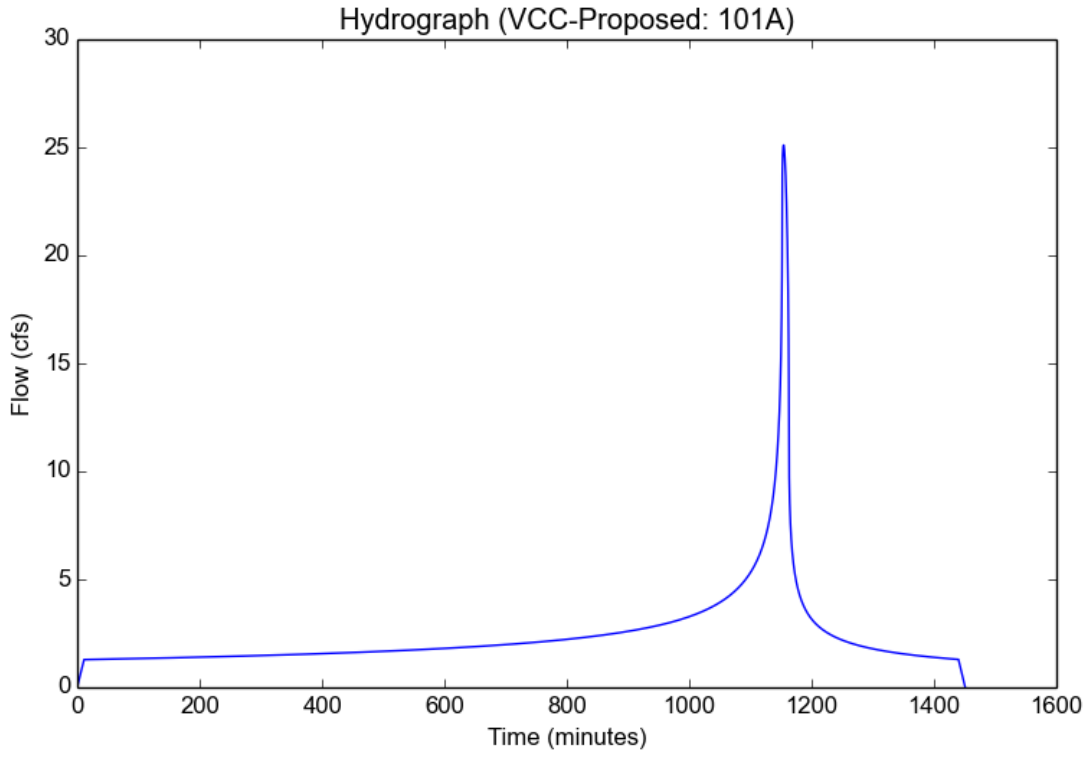
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	101A
Area (ac)	12.1
Flow Path Length (ft)	1110.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.91
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.3889
Undeveloped Runoff Coefficient (Cu)	0.5513
Developed Runoff Coefficient (Cd)	0.8686
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	25.1076
Burned Peak Flow Rate (cfs)	25.1076
24-Hr Clear Runoff Volume (ac-ft)	4.8355
24-Hr Clear Runoff Volume (cu-ft)	210635.6897



Peak Flow Hydrologic Analysis

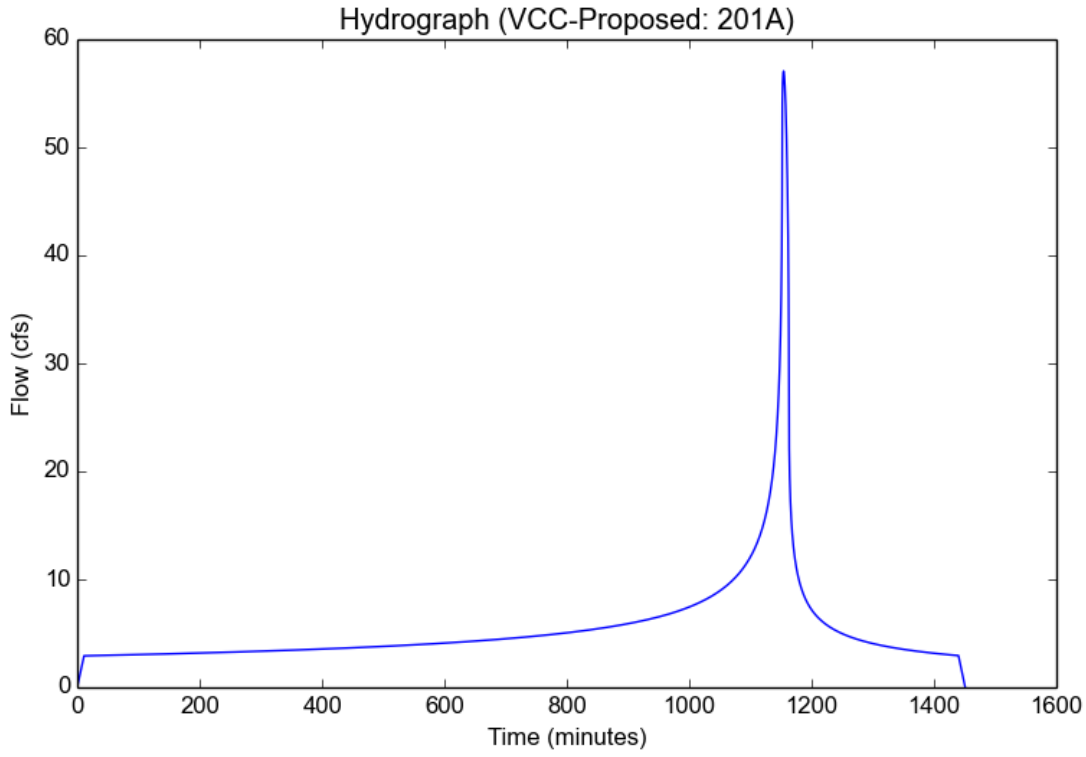
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	201A
Area (ac)	27.5
Flow Path Length (ft)	1200.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.91
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.3889
Undeveloped Runoff Coefficient (Cu)	0.5513
Developed Runoff Coefficient (Cd)	0.8686
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	57.0627
Burned Peak Flow Rate (cfs)	57.0627
24-Hr Clear Runoff Volume (ac-ft)	10.9898
24-Hr Clear Runoff Volume (cu-ft)	478717.4767



Peak Flow Hydrologic Analysis

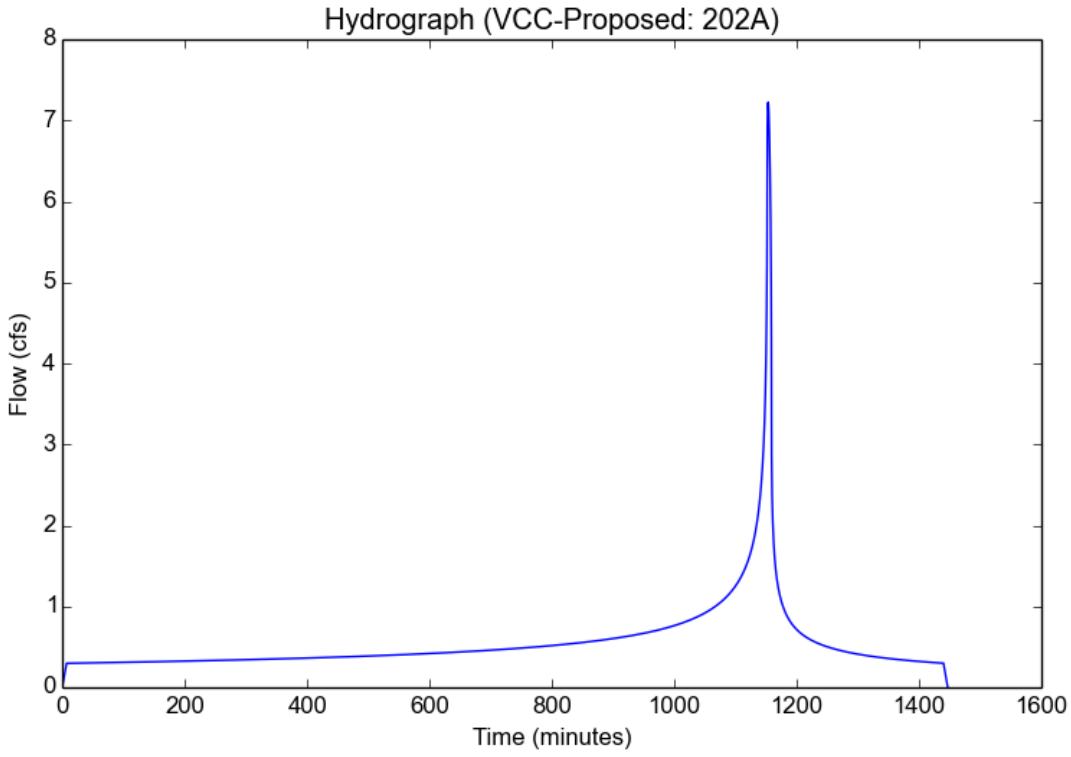
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	202A
Area (ac)	2.8
Flow Path Length (ft)	565.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.91
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.9543
Undeveloped Runoff Coefficient (Cu)	0.6024
Developed Runoff Coefficient (Cd)	0.8732
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	7.2232
Burned Peak Flow Rate (cfs)	7.2232
24-Hr Clear Runoff Volume (ac-ft)	1.1191
24-Hr Clear Runoff Volume (cu-ft)	48748.0772



Peak Flow Hydrologic Analysis

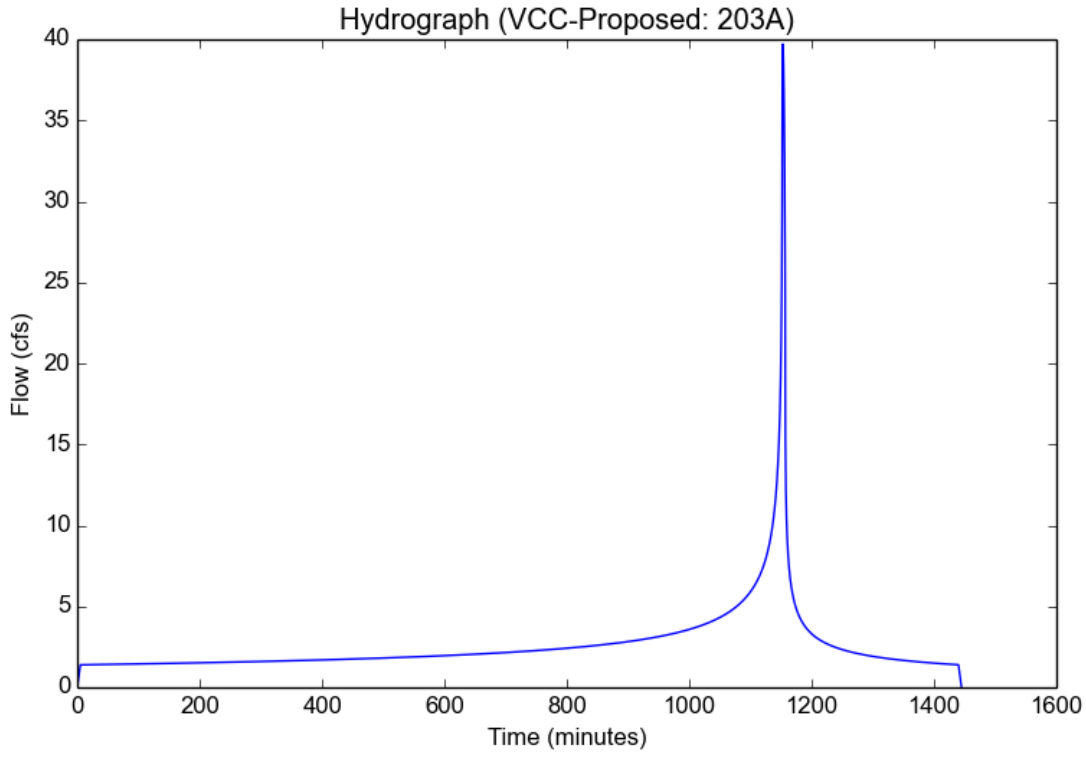
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	203A
Area (ac)	13.1
Flow Path Length (ft)	310.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.91
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	3.4604
Undeveloped Runoff Coefficient (Cu)	0.6321
Developed Runoff Coefficient (Cd)	0.8759
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	39.7055
Burned Peak Flow Rate (cfs)	39.7055
24-Hr Clear Runoff Volume (ac-ft)	5.2361
24-Hr Clear Runoff Volume (cu-ft)	228084.974



Peak Flow Hydrologic Analysis

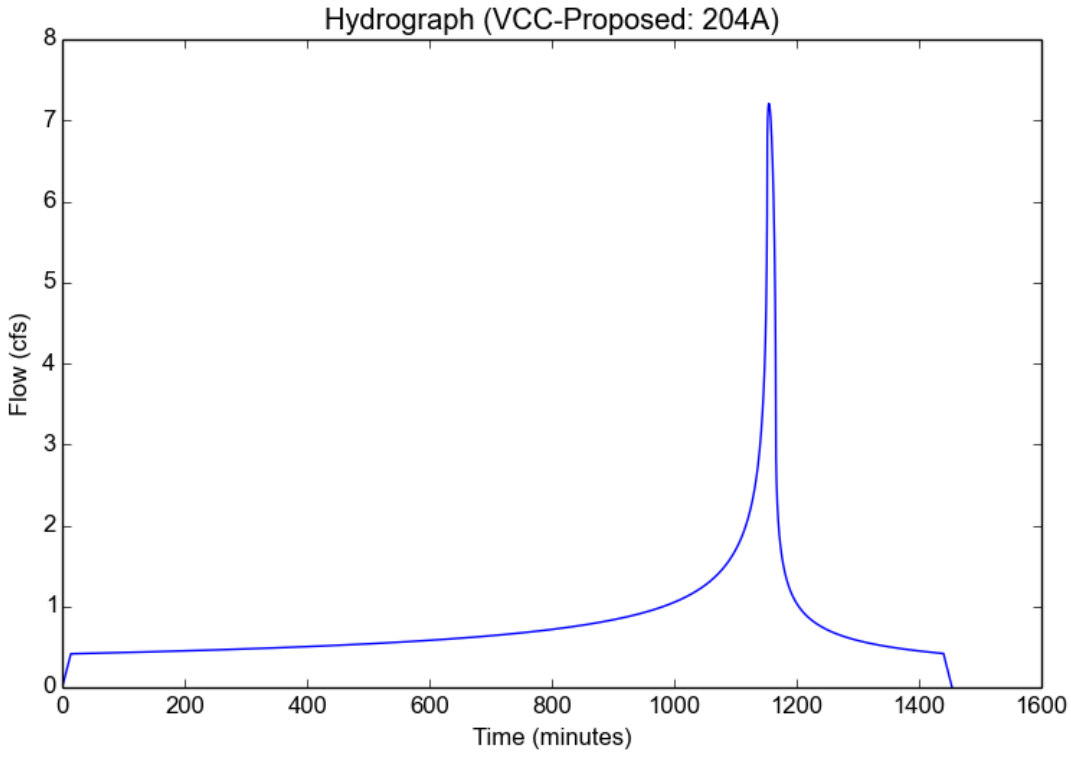
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	204A
Area (ac)	3.9
Flow Path Length (ft)	1392.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.91
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.1329
Undeveloped Runoff Coefficient (Cu)	0.5281
Developed Runoff Coefficient (Cd)	0.8665
Time of Concentration (min)	14.0
Clear Peak Flow Rate (cfs)	7.208
Burned Peak Flow Rate (cfs)	7.208
24-Hr Clear Runoff Volume (ac-ft)	1.5585
24-Hr Clear Runoff Volume (cu-ft)	67886.5463



Peak Flow Hydrologic Analysis

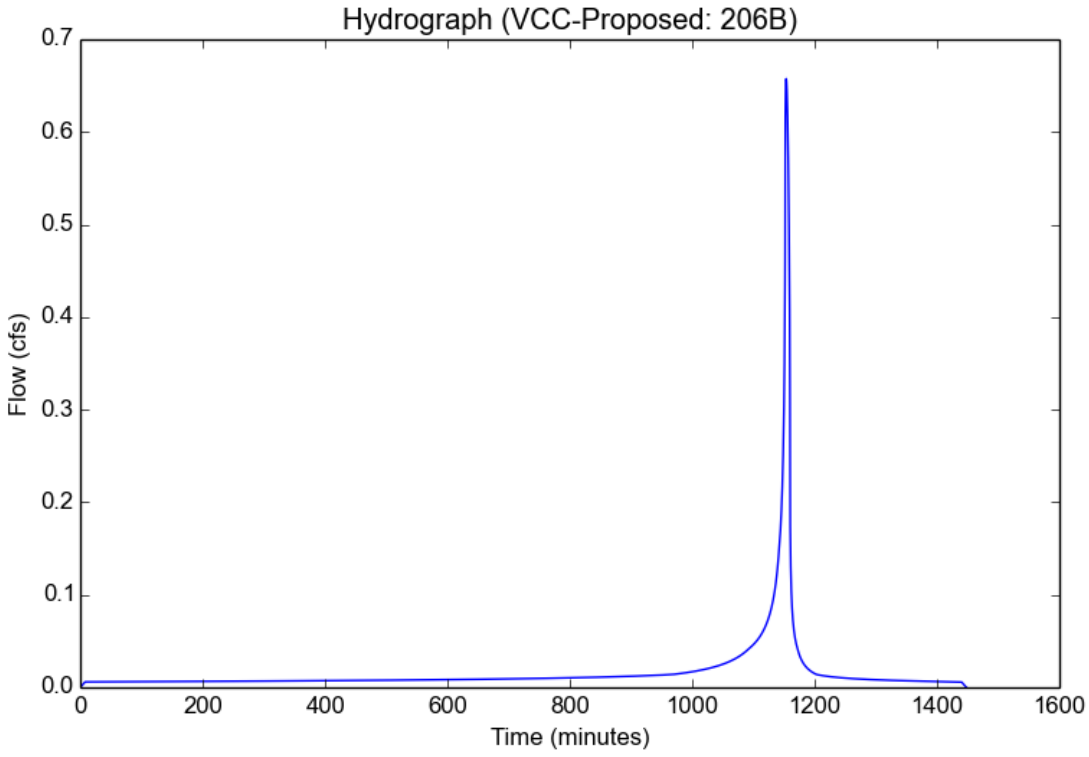
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	206B
Area (ac)	0.4
Flow Path Length (ft)	405.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.02
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.7746
Undeveloped Runoff Coefficient (Cu)	0.5862
Developed Runoff Coefficient (Cd)	0.5924
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	0.6575
Burned Peak Flow Rate (cfs)	0.6575
24-Hr Clear Runoff Volume (ac-ft)	0.0343
24-Hr Clear Runoff Volume (cu-ft)	1494.6233



Peak Flow Hydrologic Analysis

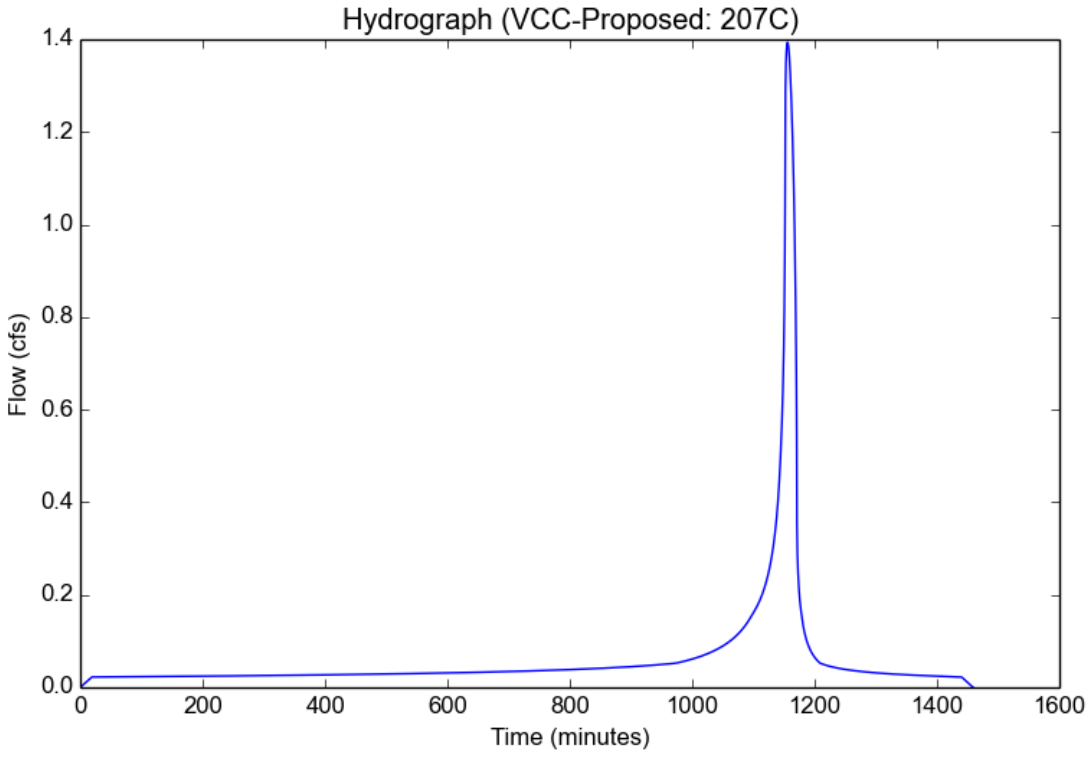
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	207C
Area (ac)	1.5
Flow Path Length (ft)	1281.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.02
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	1.8477
Undeveloped Runoff Coefficient (Cu)	0.4947
Developed Runoff Coefficient (Cd)	0.5028
Time of Concentration (min)	19.0
Clear Peak Flow Rate (cfs)	1.3935
Burned Peak Flow Rate (cfs)	1.3935
24-Hr Clear Runoff Volume (ac-ft)	0.1268
24-Hr Clear Runoff Volume (cu-ft)	5525.2624



Peak Flow Hydrologic Analysis

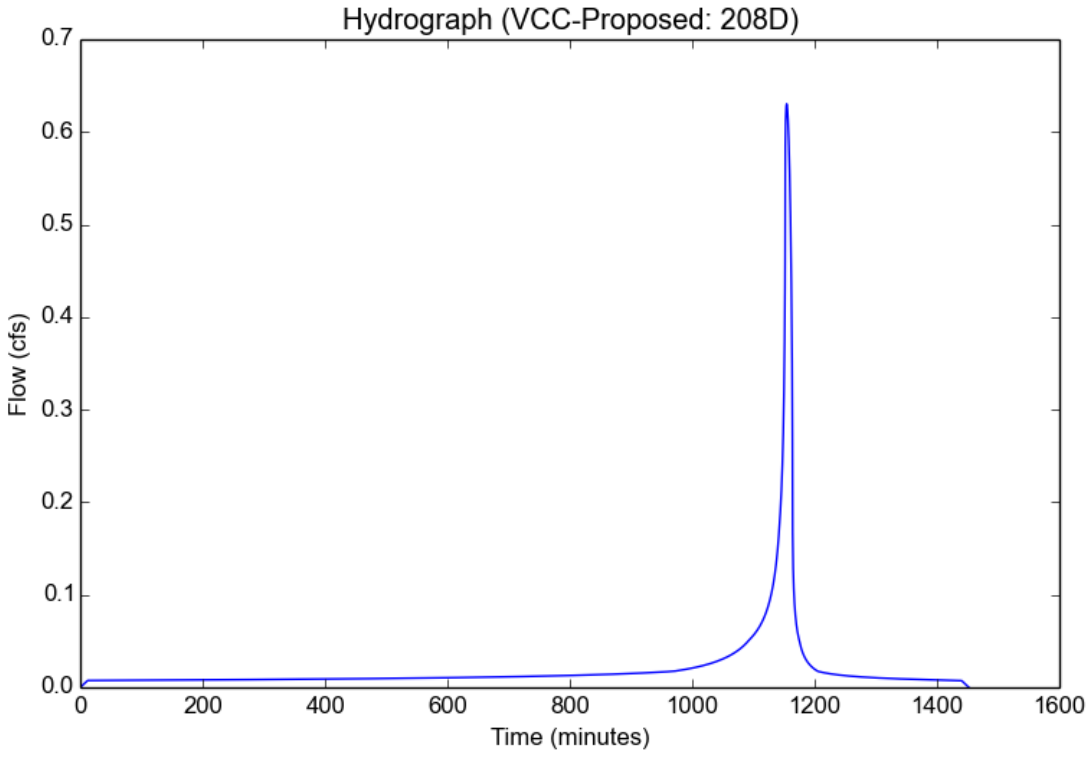
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	208D
Area (ac)	0.5
Flow Path Length (ft)	802.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.02
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.2931
Undeveloped Runoff Coefficient (Cu)	0.5426
Developed Runoff Coefficient (Cd)	0.5498
Time of Concentration (min)	12.0
Clear Peak Flow Rate (cfs)	0.6303
Burned Peak Flow Rate (cfs)	0.6303
24-Hr Clear Runoff Volume (ac-ft)	0.0427
24-Hr Clear Runoff Volume (cu-ft)	1858.1085



Peak Flow Hydrologic Analysis

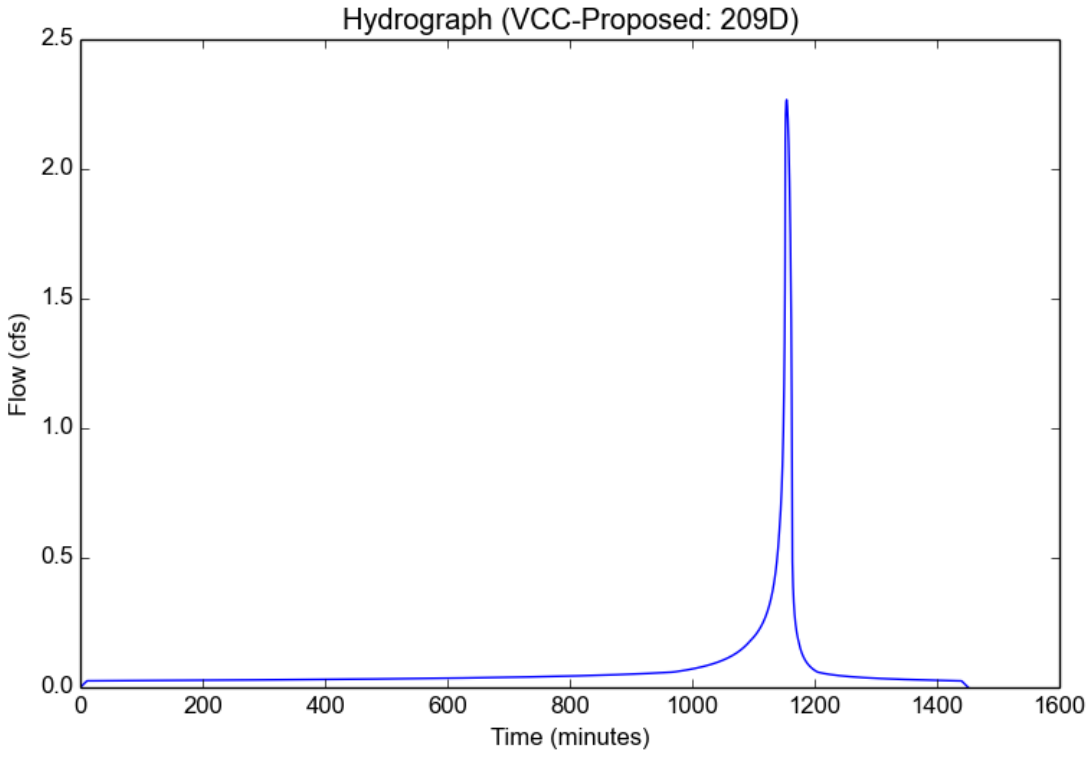
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	209D
Area (ac)	1.7
Flow Path Length (ft)	578.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.02
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.3889
Undeveloped Runoff Coefficient (Cu)	0.5513
Developed Runoff Coefficient (Cd)	0.5582
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	2.2671
Burned Peak Flow Rate (cfs)	2.4992
24-Hr Clear Runoff Volume (ac-ft)	0.1452
24-Hr Clear Runoff Volume (cu-ft)	6324.8421



Peak Flow Hydrologic Analysis

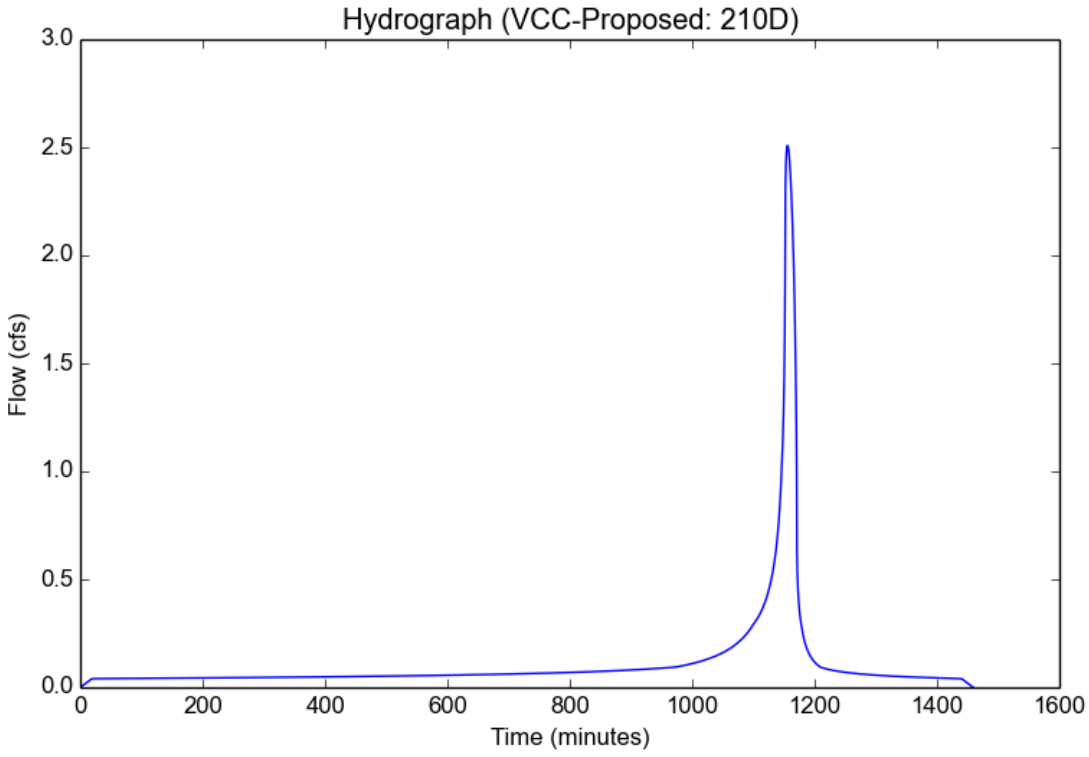
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	210D
Area (ac)	2.7
Flow Path Length (ft)	1279.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.02
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	1.8477
Undeveloped Runoff Coefficient (Cu)	0.4947
Developed Runoff Coefficient (Cd)	0.5028
Time of Concentration (min)	19.0
Clear Peak Flow Rate (cfs)	2.5084
Burned Peak Flow Rate (cfs)	2.5084
24-Hr Clear Runoff Volume (ac-ft)	0.2283
24-Hr Clear Runoff Volume (cu-ft)	9945.4723



Peak Flow Hydrologic Analysis

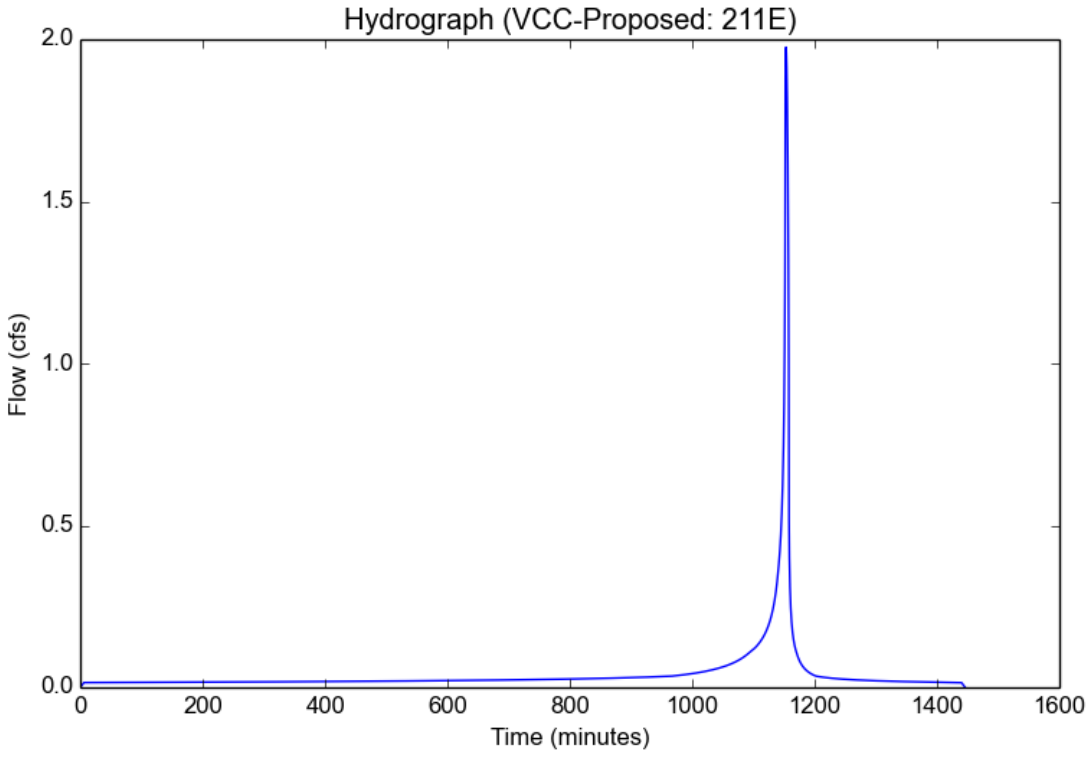
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	211E
Area (ac)	1.0
Flow Path Length (ft)	455.0
Flow Path Slope (vft/hft)	0.05
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.02
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	3.1763
Undeveloped Runoff Coefficient (Cu)	0.6163
Developed Runoff Coefficient (Cd)	0.622
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	1.9757
Burned Peak Flow Rate (cfs)	1.9757
24-Hr Clear Runoff Volume (ac-ft)	0.0861
24-Hr Clear Runoff Volume (cu-ft)	3750.0967



Peak Flow Hydrologic Analysis

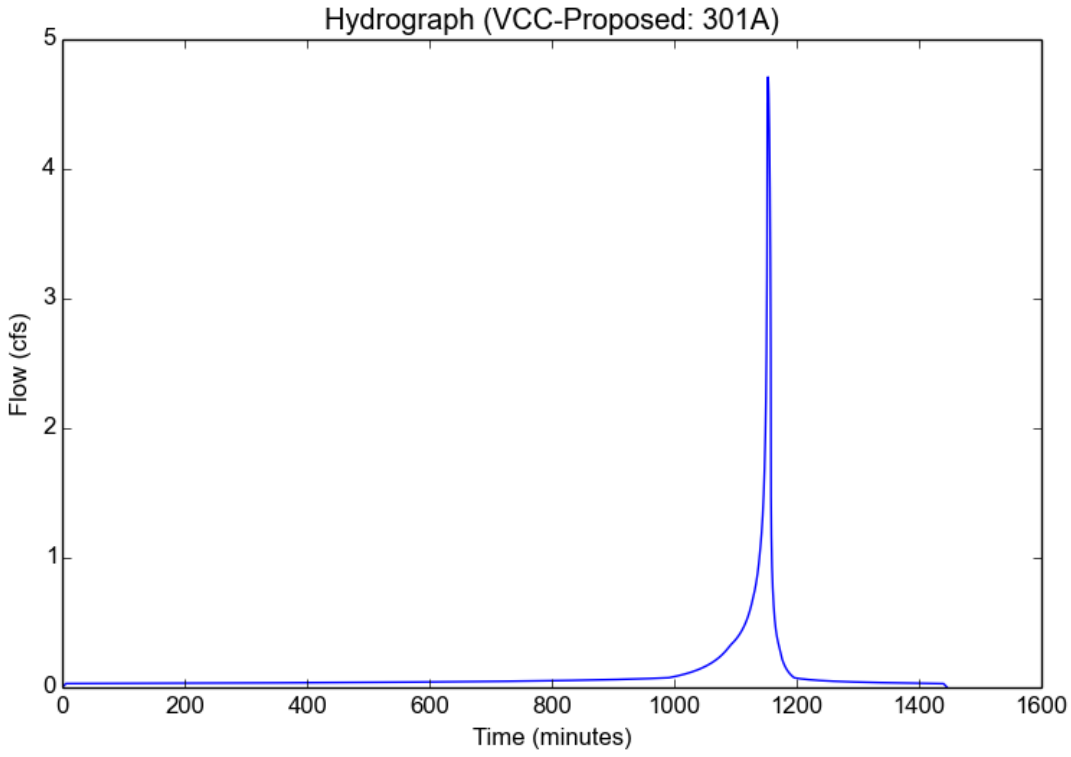
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	301A
Area (ac)	2.0
Flow Path Length (ft)	549.0
Flow Path Slope (vft/hft)	0.09
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.02
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	3.1763
Undeveloped Runoff Coefficient (Cu)	0.7381
Developed Runoff Coefficient (Cd)	0.7414
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	4.7095
Burned Peak Flow Rate (cfs)	4.7095
24-Hr Clear Runoff Volume (ac-ft)	0.2082
24-Hr Clear Runoff Volume (cu-ft)	9069.3784



Peak Flow Hydrologic Analysis

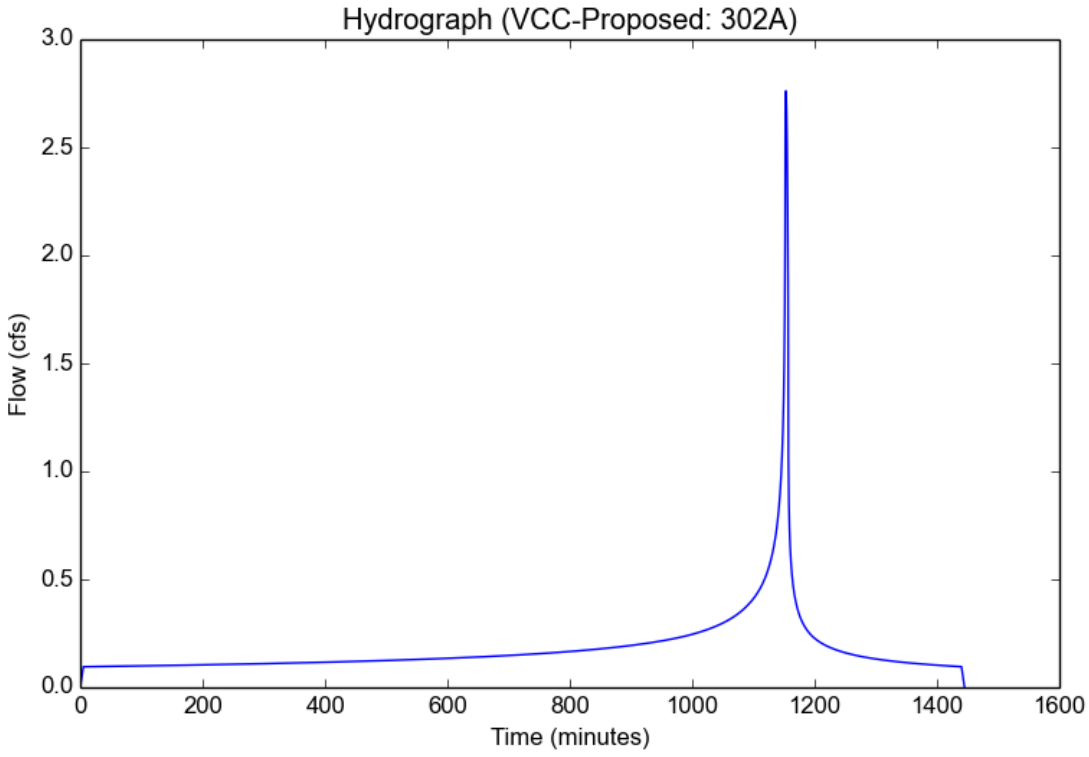
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	302A
Area (ac)	0.9
Flow Path Length (ft)	157.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.91
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	3.4604
Undeveloped Runoff Coefficient (Cu)	0.7516
Developed Runoff Coefficient (Cd)	0.8866
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.7614
Burned Peak Flow Rate (cfs)	2.7614
24-Hr Clear Runoff Volume (ac-ft)	0.3612
24-Hr Clear Runoff Volume (cu-ft)	15734.6665



Peak Flow Hydrologic Analysis

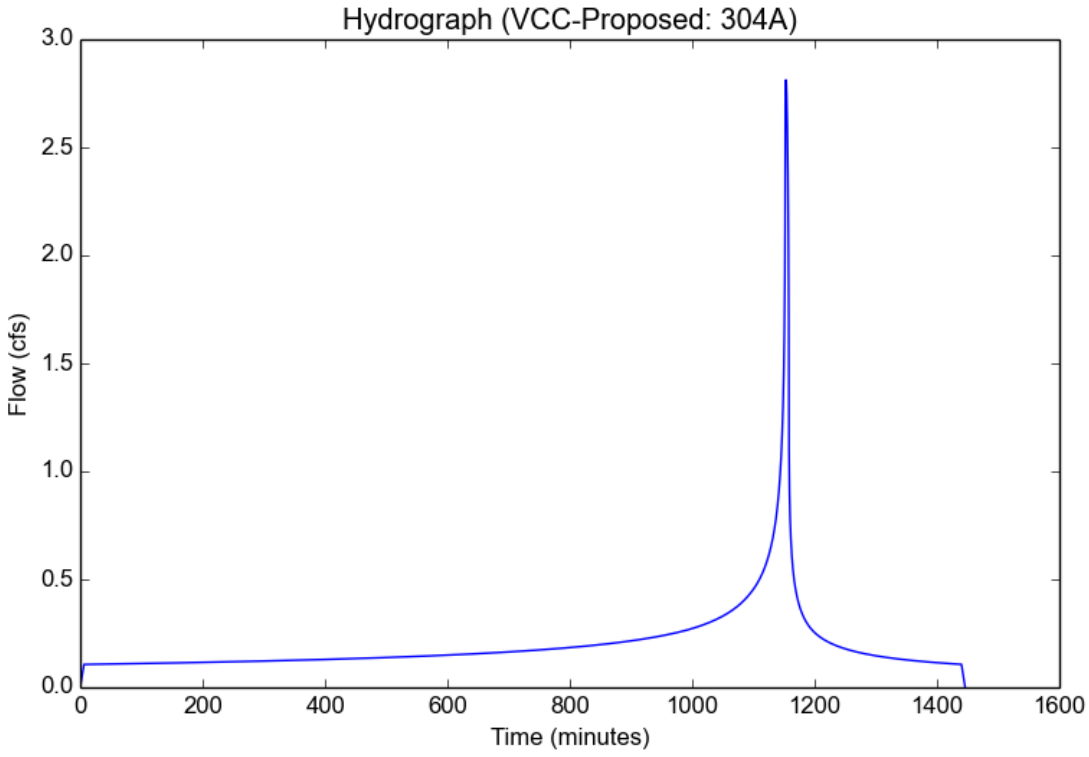
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	304A
Area (ac)	1.0
Flow Path Length (ft)	432.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.91
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	3.1763
Undeveloped Runoff Coefficient (Cu)	0.7381
Developed Runoff Coefficient (Cd)	0.8854
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	2.8124
Burned Peak Flow Rate (cfs)	2.8124
24-Hr Clear Runoff Volume (ac-ft)	0.4013
24-Hr Clear Runoff Volume (cu-ft)	17482.6628



Peak Flow Hydrologic Analysis

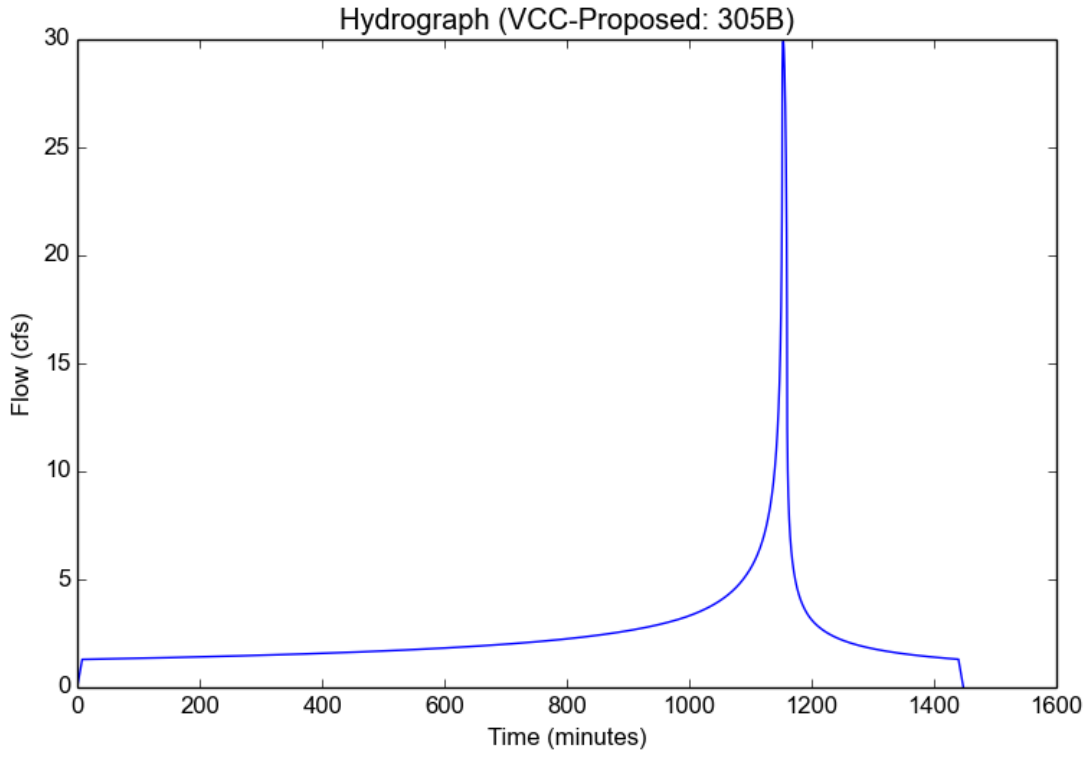
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	305B
Area (ac)	12.2
Flow Path Length (ft)	726.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.91
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.7746
Undeveloped Runoff Coefficient (Cu)	0.7191
Developed Runoff Coefficient (Cd)	0.8837
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	29.9135
Burned Peak Flow Rate (cfs)	29.9135
24-Hr Clear Runoff Volume (ac-ft)	4.8963
24-Hr Clear Runoff Volume (cu-ft)	213283.8966



Peak Flow Hydrologic Analysis

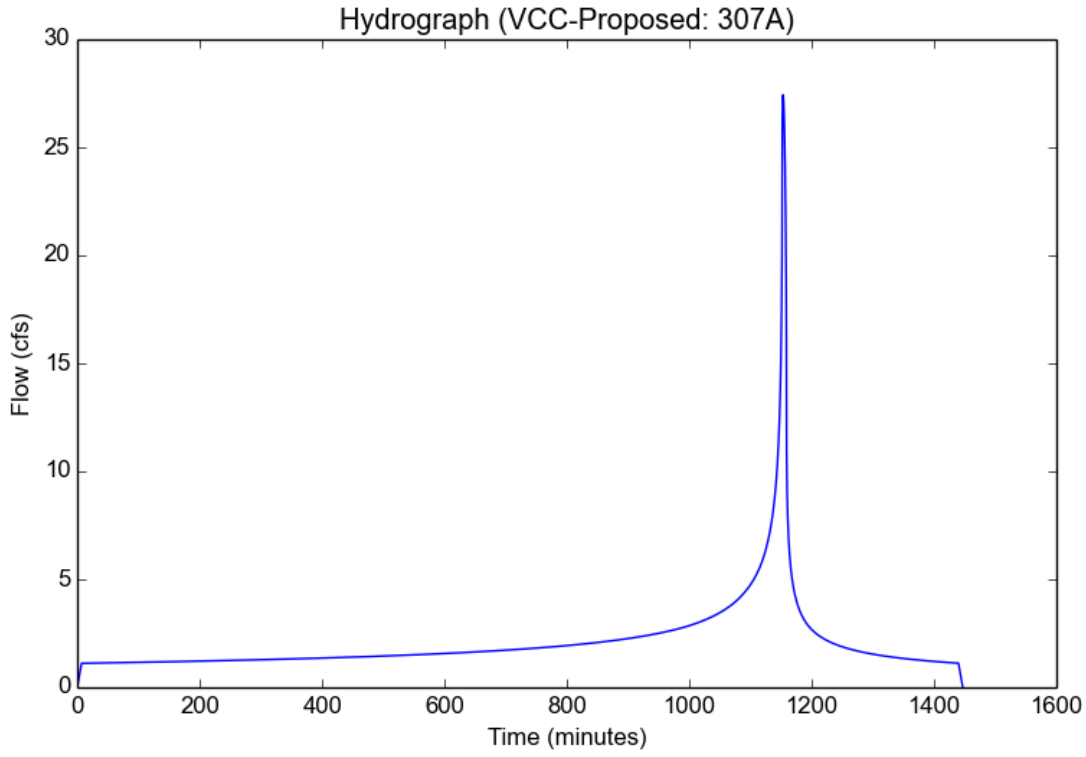
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	307A
Area (ac)	10.5
Flow Path Length (ft)	661.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.91
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.9543
Undeveloped Runoff Coefficient (Cu)	0.7276
Developed Runoff Coefficient (Cd)	0.8845
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	27.4366
Burned Peak Flow Rate (cfs)	27.4366
24-Hr Clear Runoff Volume (ac-ft)	4.2141
24-Hr Clear Runoff Volume (cu-ft)	183565.661



Peak Flow Hydrologic Analysis

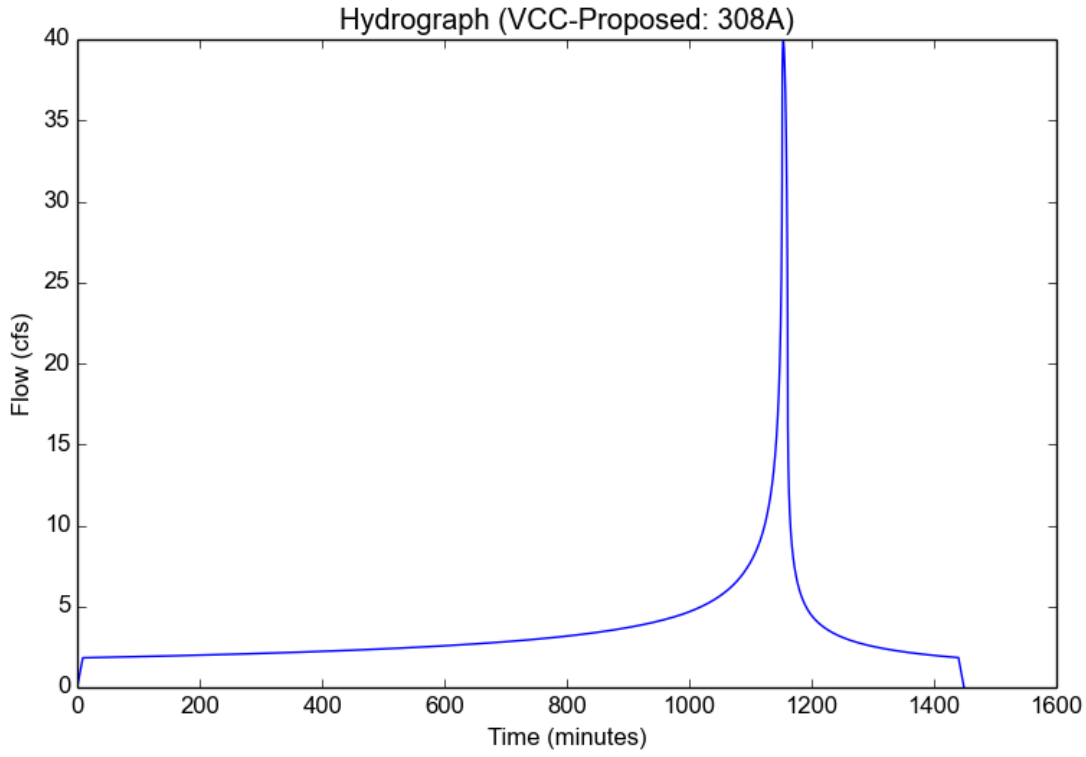
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	308A
Area (ac)	17.2
Flow Path Length (ft)	813.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.91
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.6251
Undeveloped Runoff Coefficient (Cu)	0.712
Developed Runoff Coefficient (Cd)	0.8831
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	39.8731
Burned Peak Flow Rate (cfs)	39.8731
24-Hr Clear Runoff Volume (ac-ft)	6.903
24-Hr Clear Runoff Volume (cu-ft)	300692.9023



Peak Flow Hydrologic Analysis

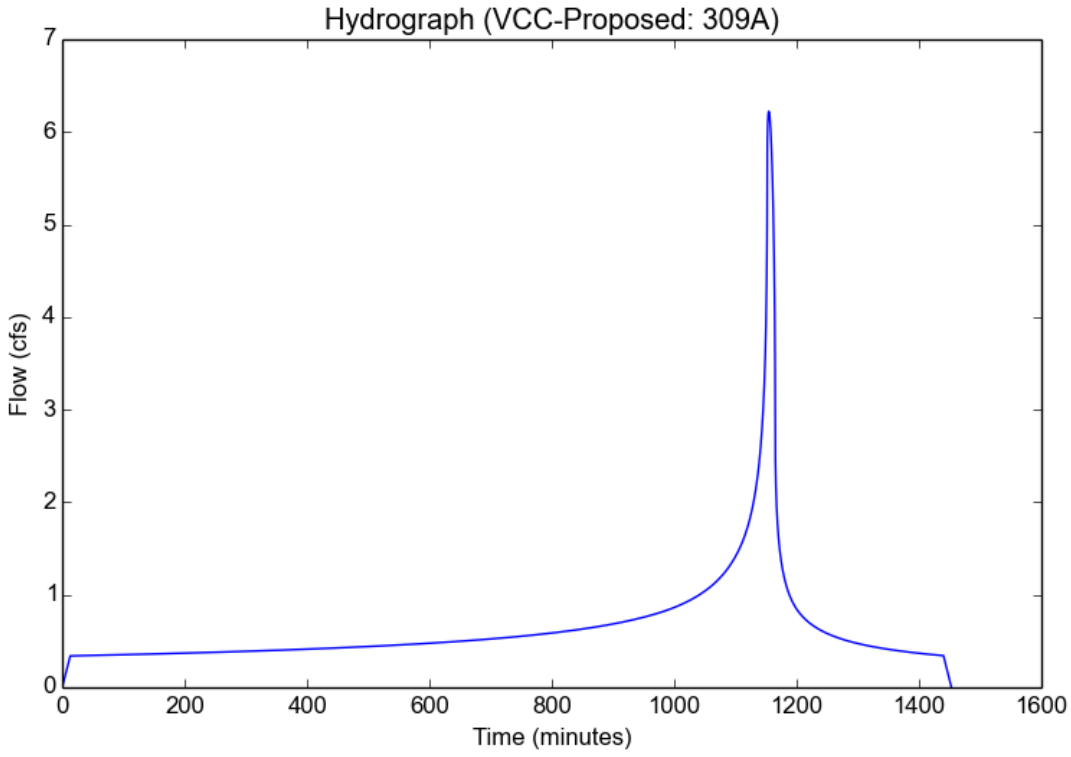
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	309A
Area (ac)	3.2
Flow Path Length (ft)	1301.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.91
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.2085
Undeveloped Runoff Coefficient (Cu)	0.6842
Developed Runoff Coefficient (Cd)	0.8806
Time of Concentration (min)	13.0
Clear Peak Flow Rate (cfs)	6.2232
Burned Peak Flow Rate (cfs)	6.2232
24-Hr Clear Runoff Volume (ac-ft)	1.2842
24-Hr Clear Runoff Volume (cu-ft)	55939.9826



Peak Flow Hydrologic Analysis

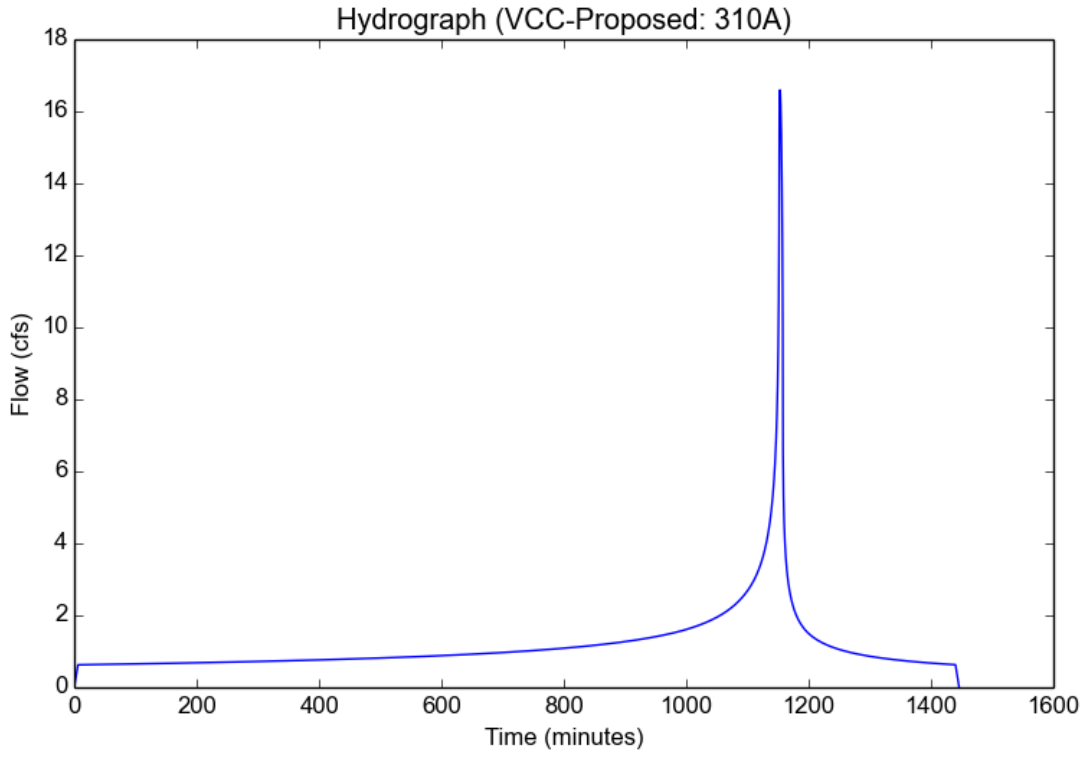
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	310A
Area (ac)	5.9
Flow Path Length (ft)	569.0
Flow Path Slope (vft/hft)	0.03
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.91
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	3.1763
Undeveloped Runoff Coefficient (Cu)	0.7381
Developed Runoff Coefficient (Cd)	0.8854
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	16.5929
Burned Peak Flow Rate (cfs)	16.5929
24-Hr Clear Runoff Volume (ac-ft)	2.3679
24-Hr Clear Runoff Volume (cu-ft)	103147.7107



Peak Flow Hydrologic Analysis

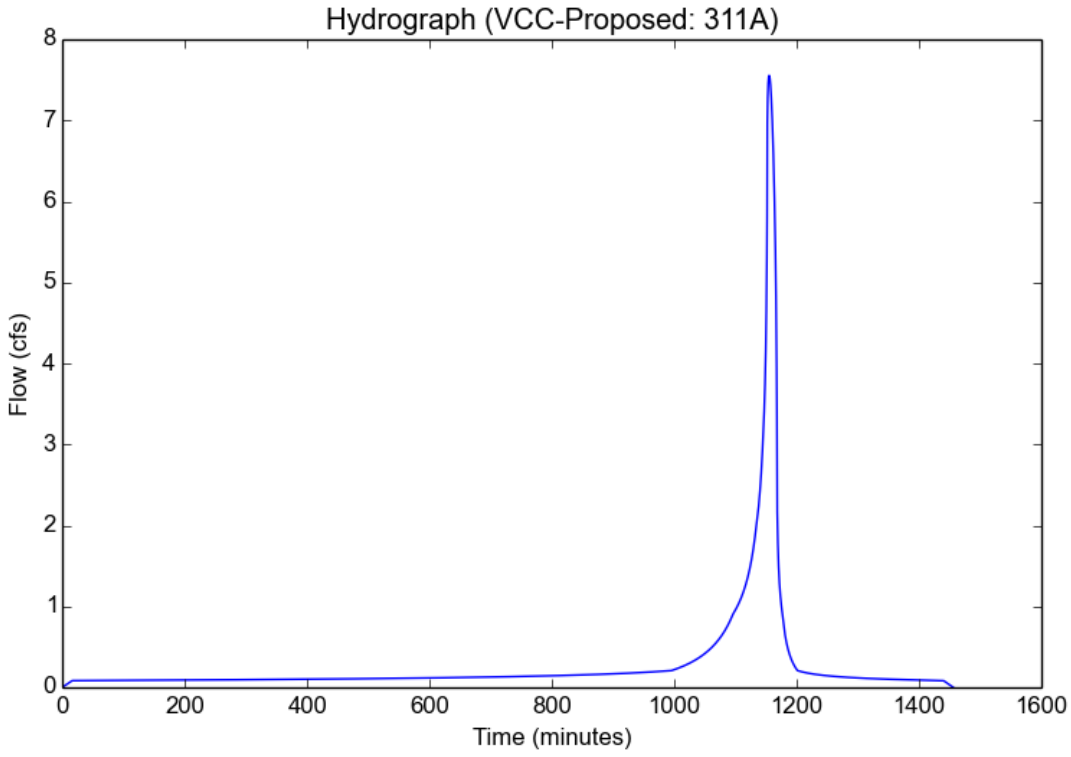
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	311A
Area (ac)	5.6
Flow Path Length (ft)	1957.0
Flow Path Slope (vft/hft)	0.04
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.02
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.0031
Undeveloped Runoff Coefficient (Cu)	0.6688
Developed Runoff Coefficient (Cd)	0.6734
Time of Concentration (min)	16.0
Clear Peak Flow Rate (cfs)	7.554
Burned Peak Flow Rate (cfs)	7.554
24-Hr Clear Runoff Volume (ac-ft)	0.5801
24-Hr Clear Runoff Volume (cu-ft)	25267.3241



Peak Flow Hydrologic Analysis

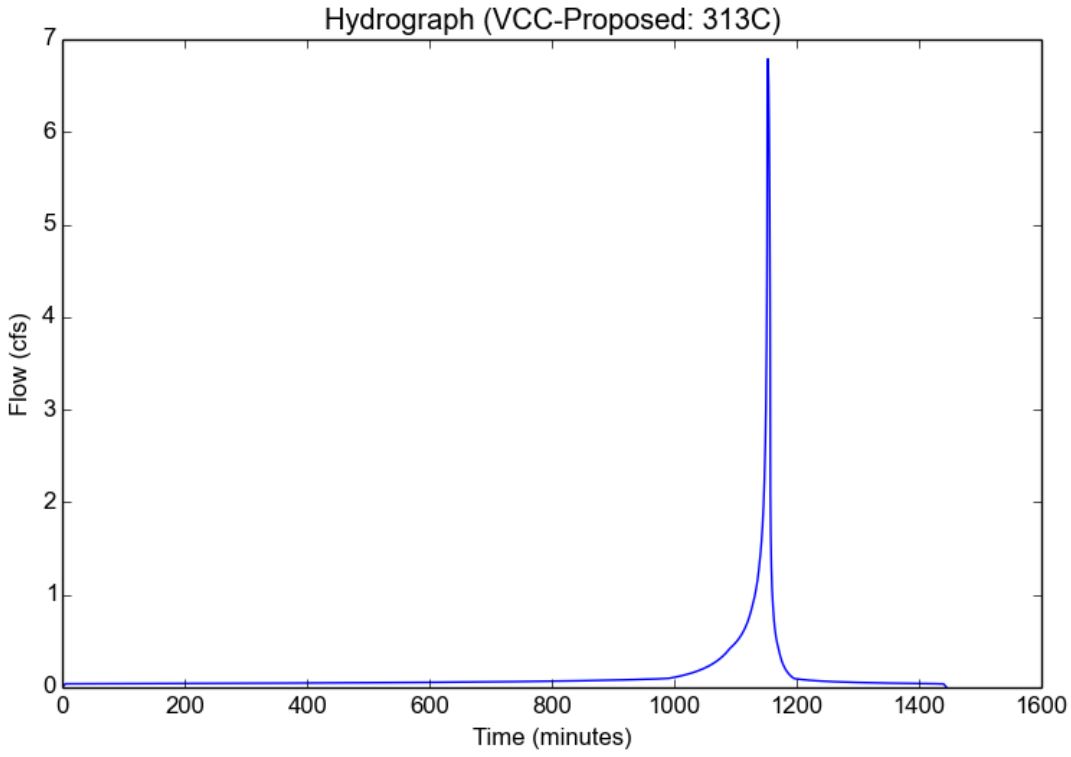
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	313C
Area (ac)	2.6
Flow Path Length (ft)	582.0
Flow Path Slope (vft/hft)	0.23
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.02
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	3.4604
Undeveloped Runoff Coefficient (Cu)	0.7516
Developed Runoff Coefficient (Cd)	0.7546
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	6.7891
Burned Peak Flow Rate (cfs)	6.7891
24-Hr Clear Runoff Volume (ac-ft)	0.2709
24-Hr Clear Runoff Volume (cu-ft)	11798.75



Peak Flow Hydrologic Analysis

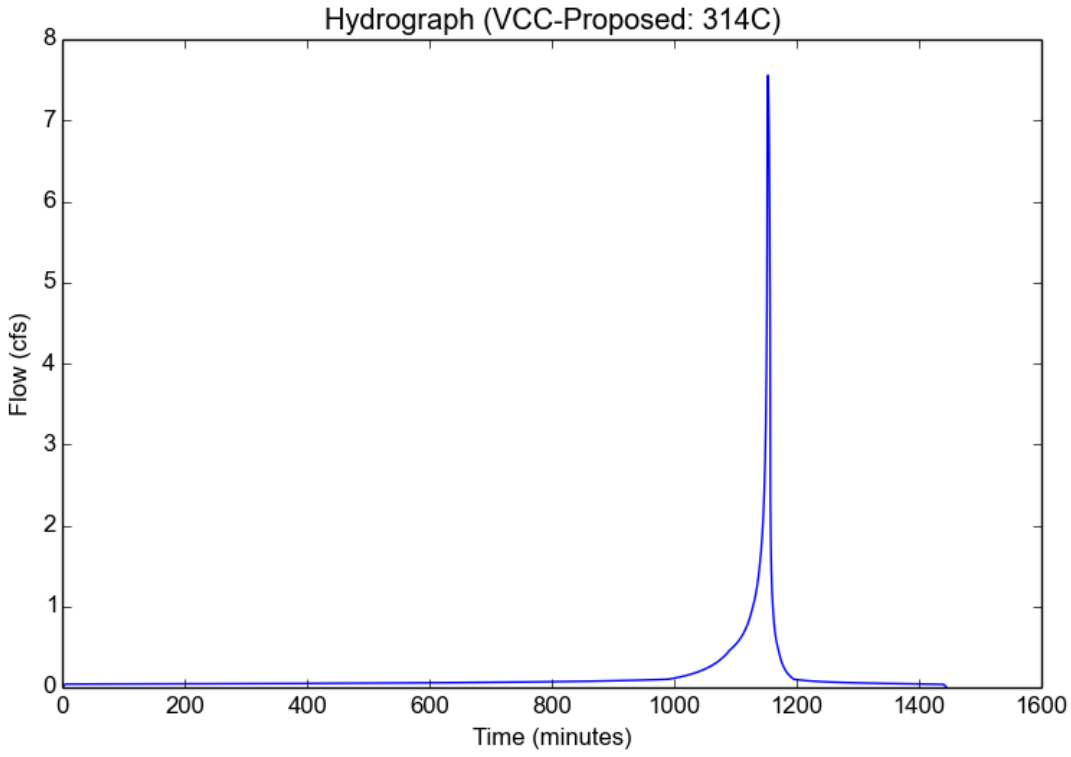
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	314C
Area (ac)	2.9
Flow Path Length (ft)	440.0
Flow Path Slope (vft/hft)	0.26
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	3.4604
Undeveloped Runoff Coefficient (Cu)	0.7516
Developed Runoff Coefficient (Cd)	0.7531
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	7.5576
Burned Peak Flow Rate (cfs)	7.8975
24-Hr Clear Runoff Volume (ac-ft)	0.2924
24-Hr Clear Runoff Volume (cu-ft)	12738.3414



Peak Flow Hydrologic Analysis

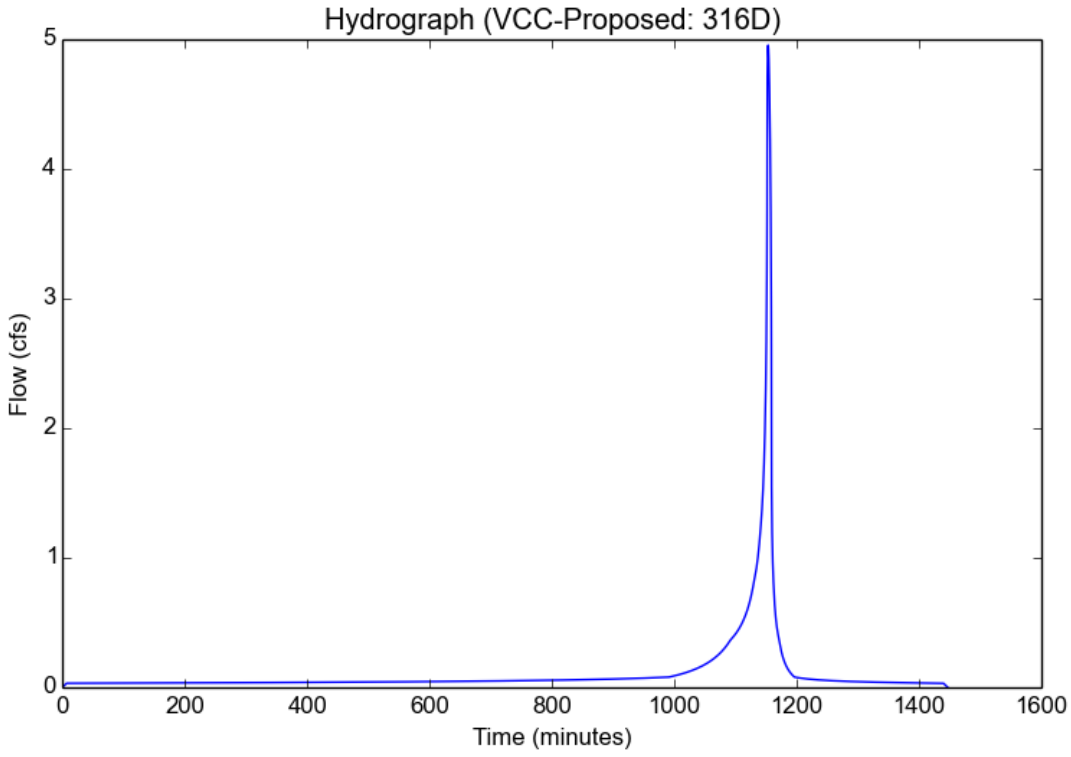
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	316D
Area (ac)	2.3
Flow Path Length (ft)	693.0
Flow Path Slope (vft/hft)	0.06
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.01
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.9543
Undeveloped Runoff Coefficient (Cu)	0.7276
Developed Runoff Coefficient (Cd)	0.7293
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	4.9555
Burned Peak Flow Rate (cfs)	5.2018
24-Hr Clear Runoff Volume (ac-ft)	0.2316
24-Hr Clear Runoff Volume (cu-ft)	10089.5648



Peak Flow Hydrologic Analysis

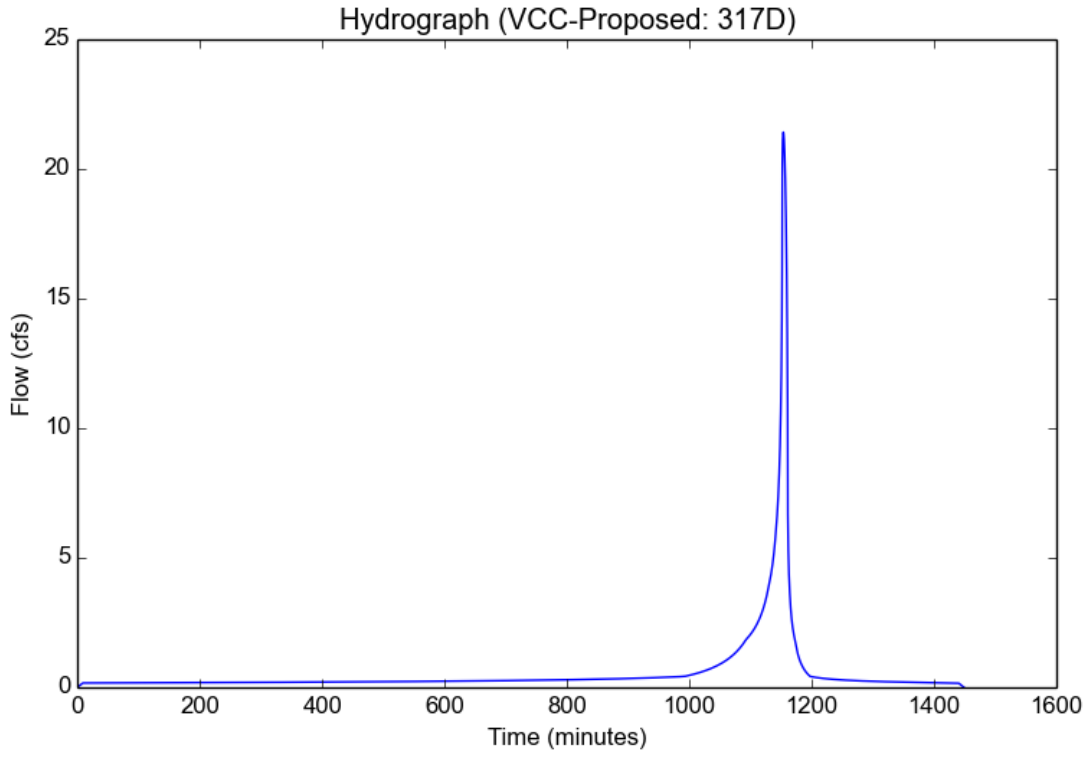
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	317D
Area (ac)	11.4
Flow Path Length (ft)	1206.0
Flow Path Slope (vft/hft)	0.17
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.02
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.6251
Undeveloped Runoff Coefficient (Cu)	0.712
Developed Runoff Coefficient (Cd)	0.7157
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	21.419
Burned Peak Flow Rate (cfs)	22.5369
24-Hr Clear Runoff Volume (ac-ft)	1.1853
24-Hr Clear Runoff Volume (cu-ft)	51630.034



Peak Flow Hydrologic Analysis

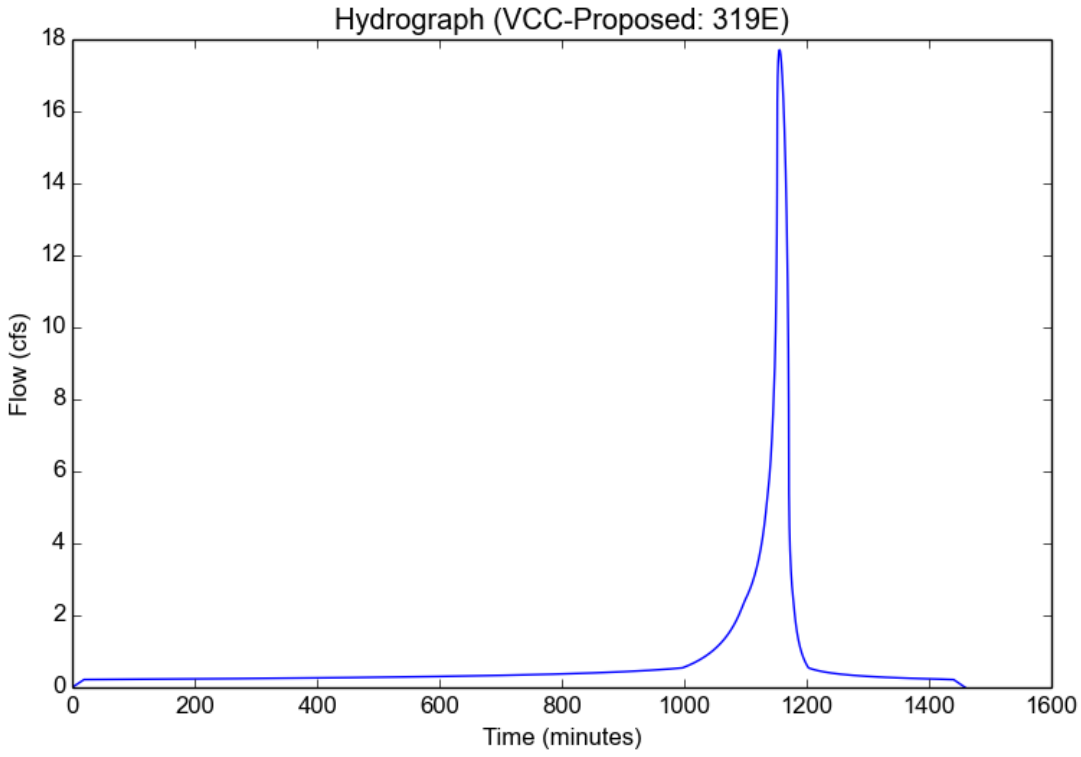
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	319E
Area (ac)	14.6
Flow Path Length (ft)	2050.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.02
Soil Type	97
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	1.8477
Undeveloped Runoff Coefficient (Cu)	0.6516
Developed Runoff Coefficient (Cd)	0.6565
Time of Concentration (min)	19.0
Clear Peak Flow Rate (cfs)	17.7112
Burned Peak Flow Rate (cfs)	17.7112
24-Hr Clear Runoff Volume (ac-ft)	1.5093
24-Hr Clear Runoff Volume (cu-ft)	65744.0791



Peak Flow Hydrologic Analysis

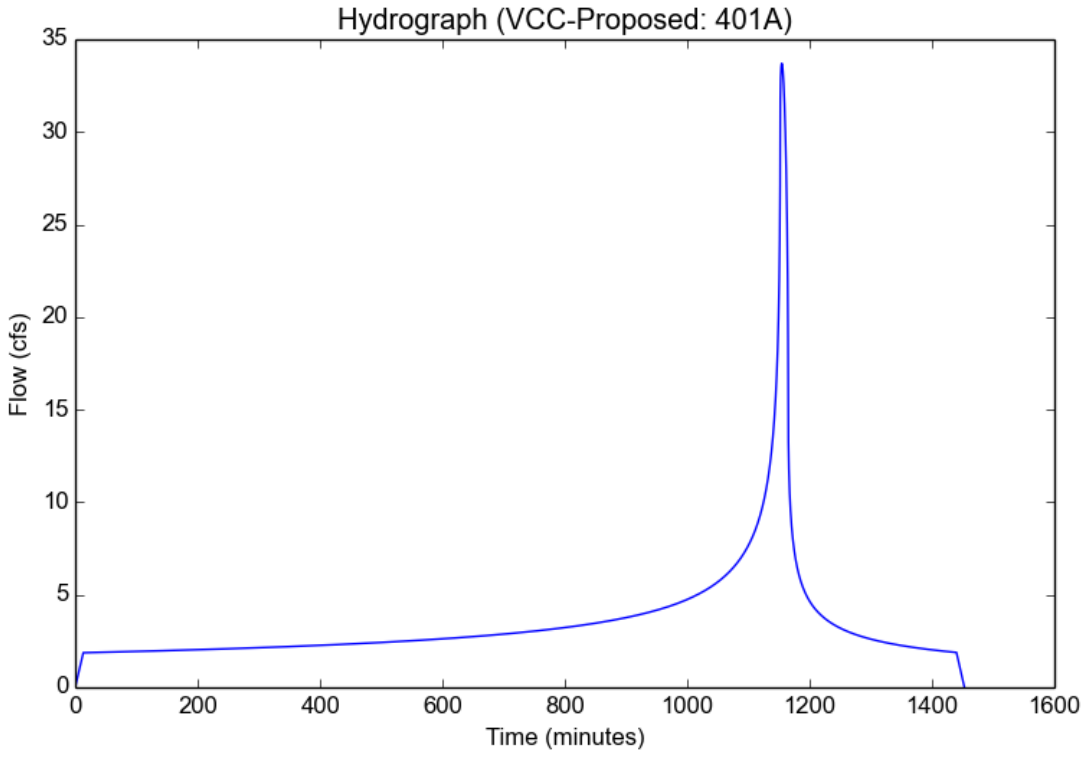
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	401A
Area (ac)	17.6
Flow Path Length (ft)	1780.0
Flow Path Slope (vft/hft)	0.03
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.91
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.2085
Undeveloped Runoff Coefficient (Cu)	0.535
Developed Runoff Coefficient (Cd)	0.8671
Time of Concentration (min)	13.0
Clear Peak Flow Rate (cfs)	33.7053
Burned Peak Flow Rate (cfs)	33.7053
24-Hr Clear Runoff Volume (ac-ft)	7.0332
24-Hr Clear Runoff Volume (cu-ft)	306366.0143



Peak Flow Hydrologic Analysis

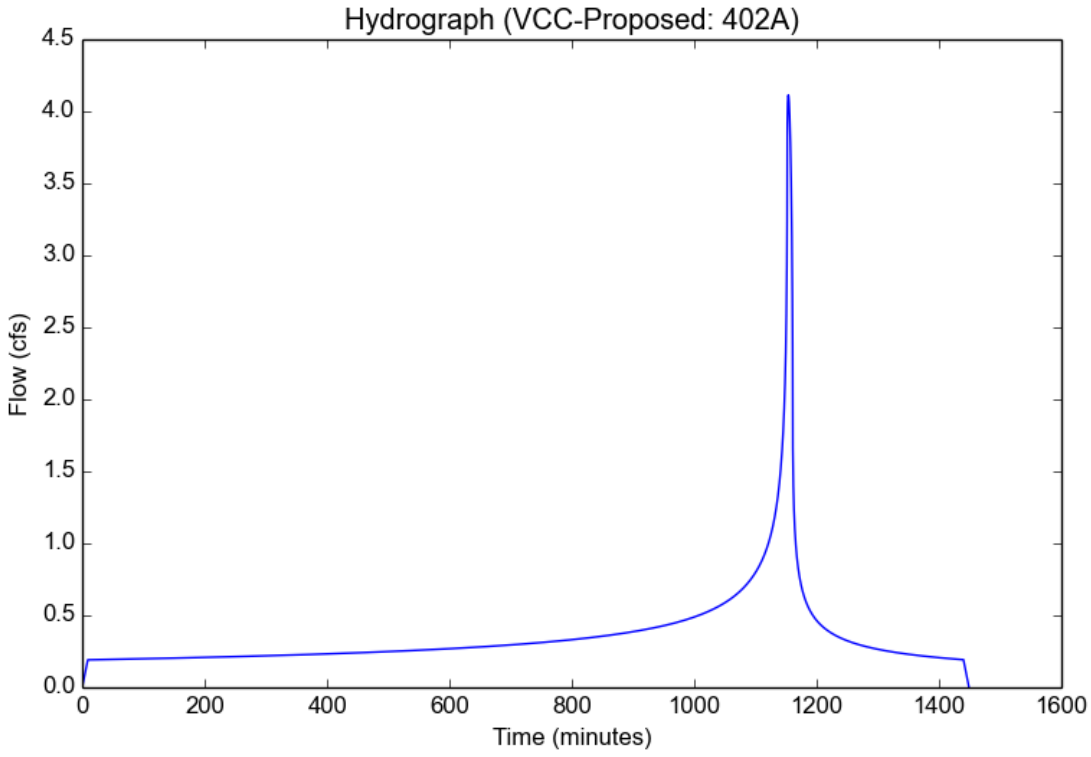
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	402A
Area (ac)	1.8
Flow Path Length (ft)	730.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.91
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.6251
Undeveloped Runoff Coefficient (Cu)	0.5727
Developed Runoff Coefficient (Cd)	0.8705
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	4.1135
Burned Peak Flow Rate (cfs)	4.1135
24-Hr Clear Runoff Volume (ac-ft)	0.7194
24-Hr Clear Runoff Volume (cu-ft)	31335.8716



Peak Flow Hydrologic Analysis

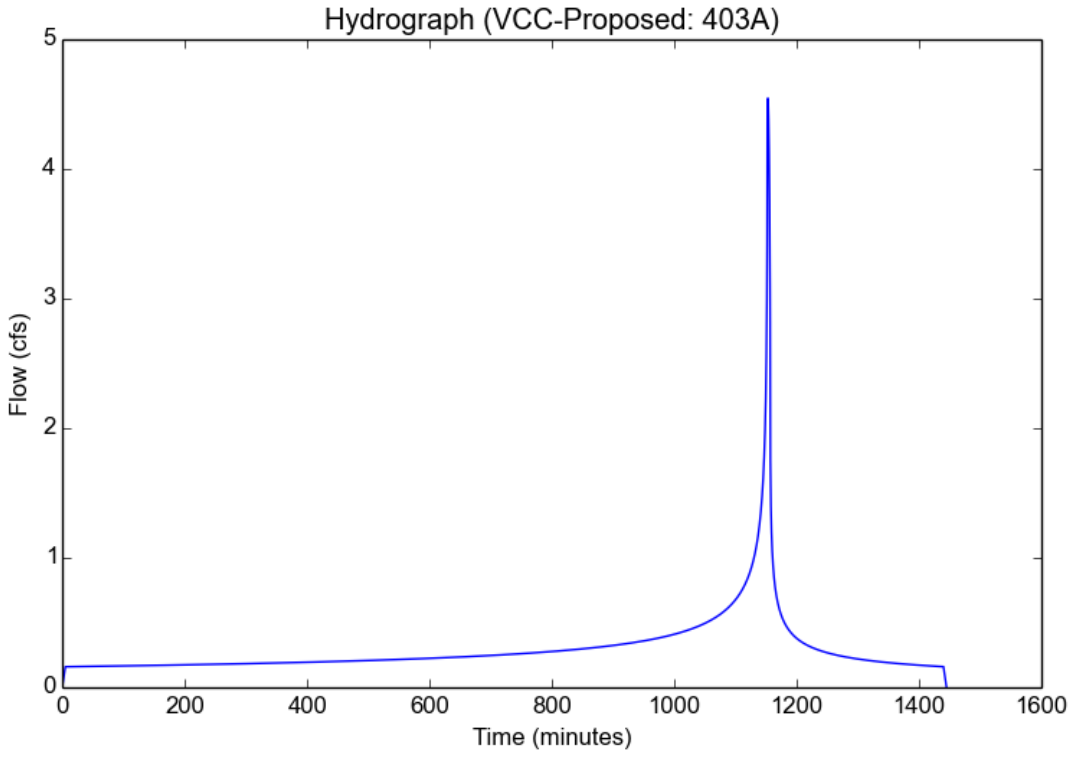
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	403A
Area (ac)	1.5
Flow Path Length (ft)	246.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.91
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	3.4604
Undeveloped Runoff Coefficient (Cu)	0.6321
Developed Runoff Coefficient (Cd)	0.8759
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	4.5464
Burned Peak Flow Rate (cfs)	4.5464
24-Hr Clear Runoff Volume (ac-ft)	0.5996
24-Hr Clear Runoff Volume (cu-ft)	26116.6001



Peak Flow Hydrologic Analysis

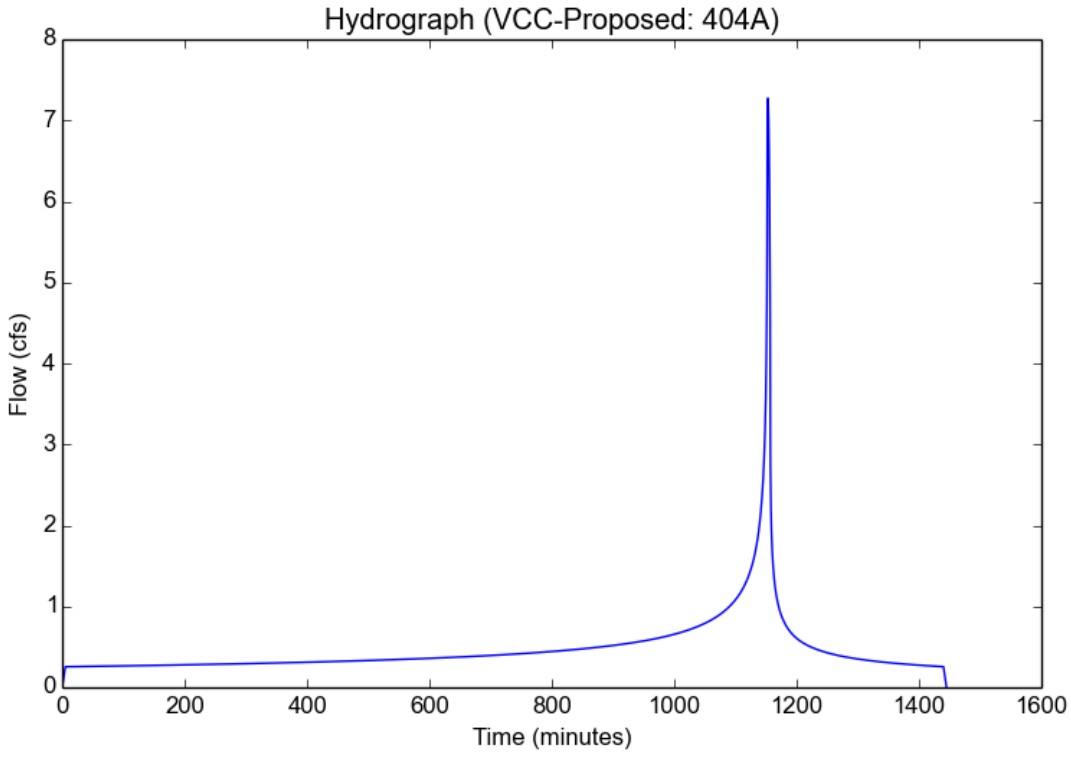
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	404A
Area (ac)	2.4
Flow Path Length (ft)	372.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.91
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	3.4604
Undeveloped Runoff Coefficient (Cu)	0.6321
Developed Runoff Coefficient (Cd)	0.8759
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	7.2743
Burned Peak Flow Rate (cfs)	7.2743
24-Hr Clear Runoff Volume (ac-ft)	0.9593
24-Hr Clear Runoff Volume (cu-ft)	41786.5601



Peak Flow Hydrologic Analysis

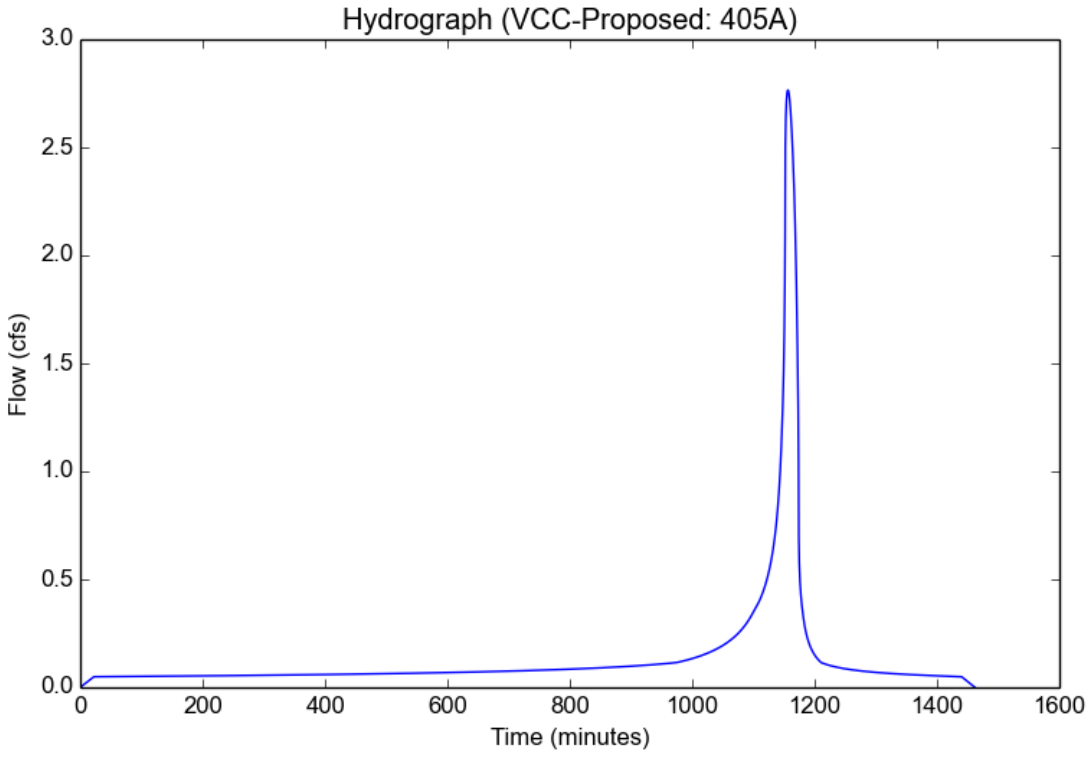
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	405A
Area (ac)	3.3
Flow Path Length (ft)	1874.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.02
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	1.7247
Undeveloped Runoff Coefficient (Cu)	0.4774
Developed Runoff Coefficient (Cd)	0.4859
Time of Concentration (min)	22.0
Clear Peak Flow Rate (cfs)	2.7652
Burned Peak Flow Rate (cfs)	2.7652
24-Hr Clear Runoff Volume (ac-ft)	0.278
24-Hr Clear Runoff Volume (cu-ft)	12110.265



Peak Flow Hydrologic Analysis

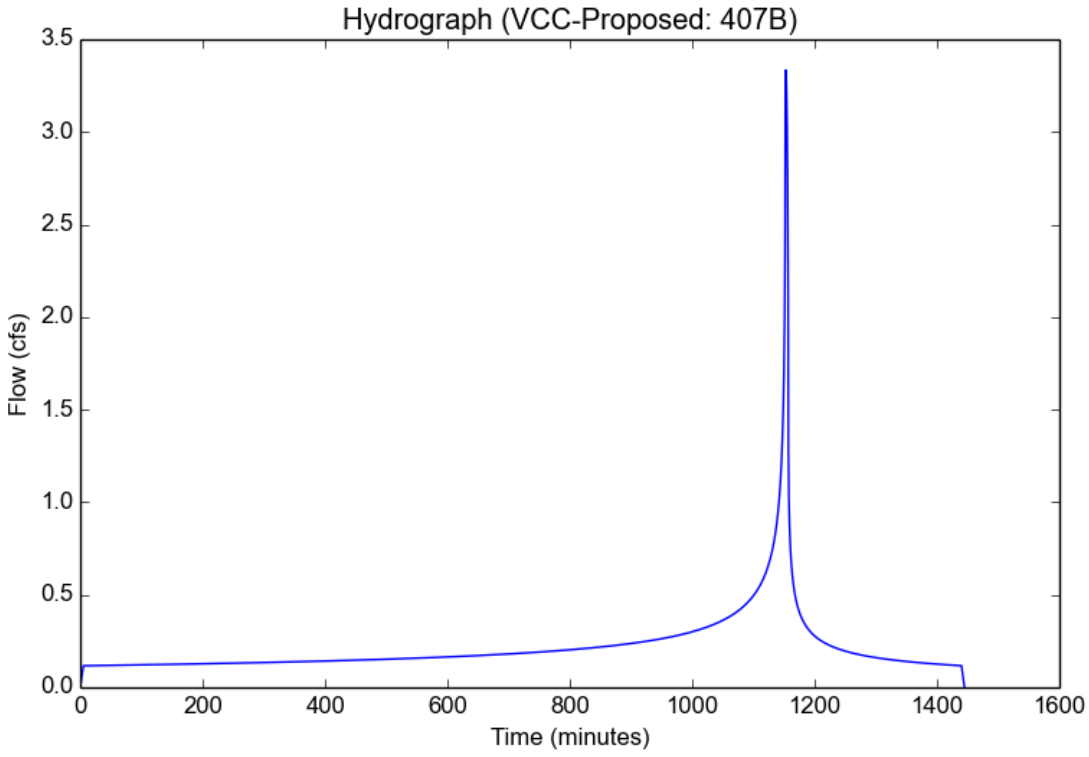
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	407B
Area (ac)	1.1
Flow Path Length (ft)	206.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.91
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	3.4604
Undeveloped Runoff Coefficient (Cu)	0.6321
Developed Runoff Coefficient (Cd)	0.8759
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.334
Burned Peak Flow Rate (cfs)	3.334
24-Hr Clear Runoff Volume (ac-ft)	0.4397
24-Hr Clear Runoff Volume (cu-ft)	19152.1734



Peak Flow Hydrologic Analysis

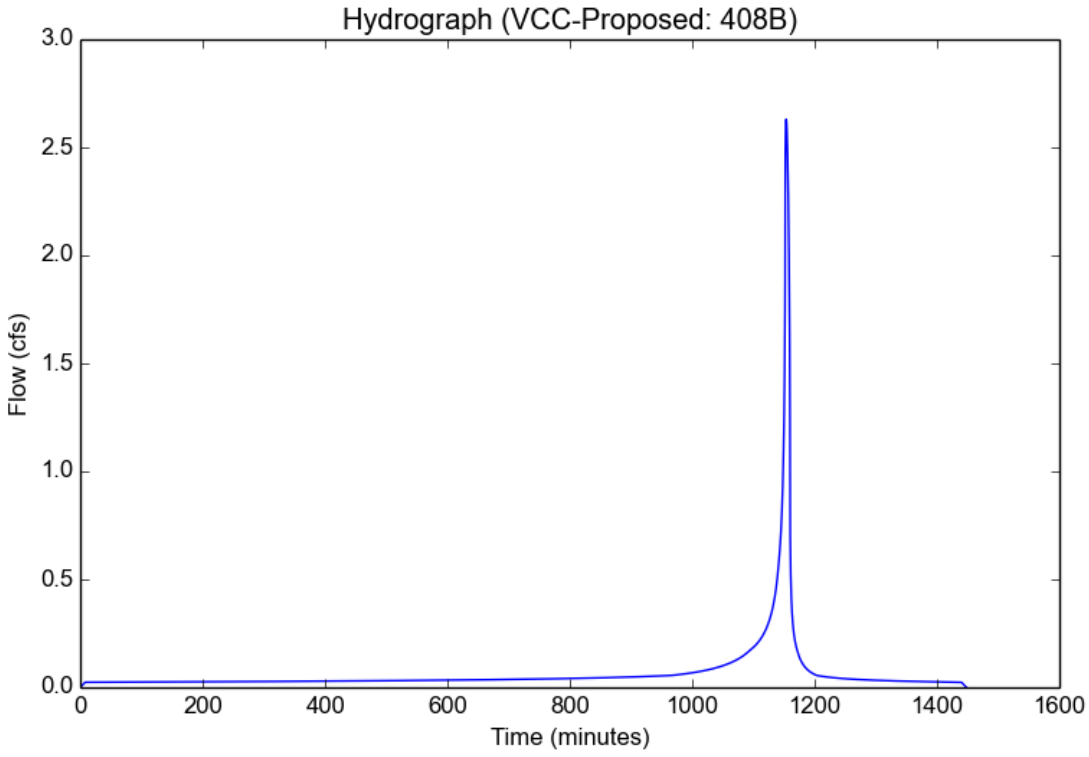
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	408B
Area (ac)	1.6
Flow Path Length (ft)	629.0
Flow Path Slope (vft/hft)	0.04
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.02
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	2.7746
Undeveloped Runoff Coefficient (Cu)	0.5862
Developed Runoff Coefficient (Cd)	0.5924
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	2.6301
Burned Peak Flow Rate (cfs)	2.6301
24-Hr Clear Runoff Volume (ac-ft)	0.1372
24-Hr Clear Runoff Volume (cu-ft)	5978.4931



Peak Flow Hydrologic Analysis

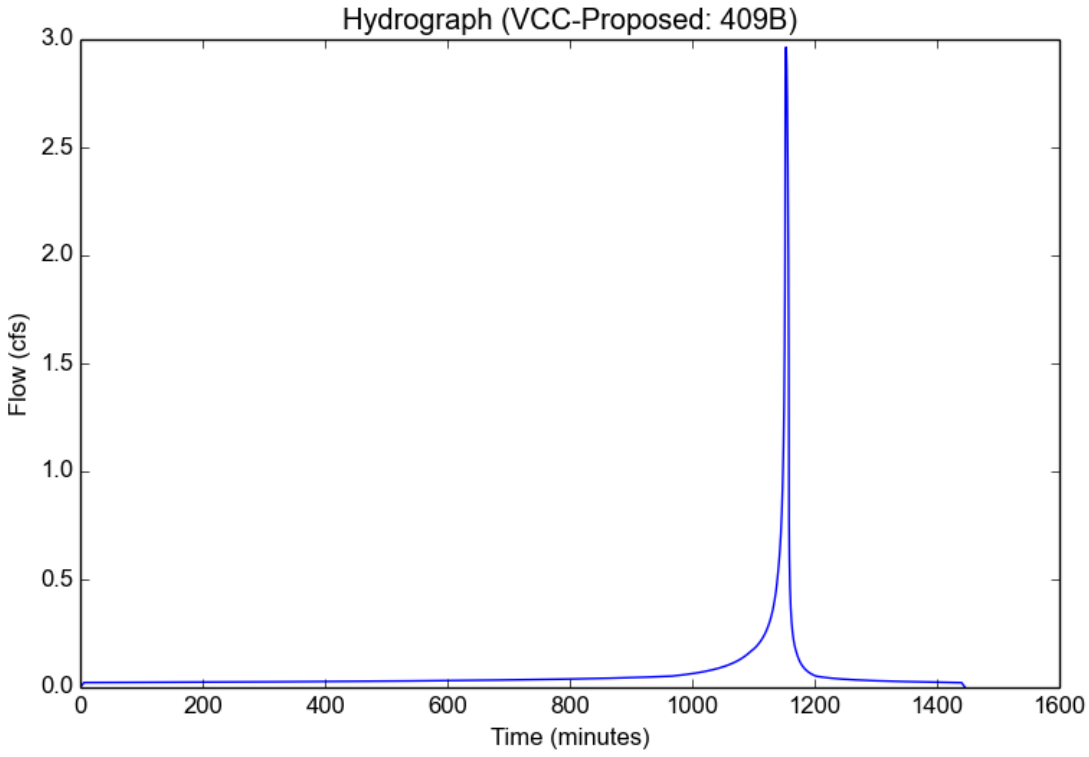
File location: G:/Newhall Ranch/18108 VCC/Storm/Hydrology/Calculations/HydroCalc/Proposed/VCC-Proposed Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC-Proposed
Subarea ID	409B
Area (ac)	1.5
Flow Path Length (ft)	342.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	5.8
Percent Impervious	0.02
Soil Type	20
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.8
Peak Intensity (in/hr)	3.1763
Undeveloped Runoff Coefficient (Cu)	0.6163
Developed Runoff Coefficient (Cd)	0.622
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	2.9635
Burned Peak Flow Rate (cfs)	2.9635
24-Hr Clear Runoff Volume (ac-ft)	0.1291
24-Hr Clear Runoff Volume (cu-ft)	5625.145



3. Existing Debris Production Calculation

EXISTING SUBAREA 101A

REFER TO EQUATION 3.3.1 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

Equation 3.3.1

$$DP = DPR_{(A)} \times A$$

Where: DP = Debris Production in yd^3

DPR = Debris Production Rate in yd^3/mi^2

AREA	0.0189	SQ MI	
$DPR_{(A)}$	16500	CU YD/SQ MI	DP FOR DPA 9 (Total Area)
DP=	311.85	CU YD	

EXISTING WATERSHED 200

EXISTING SUBAREA 201A

REFER TO EQUATION 3.3.1 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

$$DP = DPR_{(A)} \times A$$ **Equation 3.3.1**

Where: DP = Debris Production in yd^3

DPR = Debris Production Rate in yd^3/mi^2

AREA		0.0633	SQ MI	
$DPR_{(A)}$		16500	CU YD/SQ MI	DP FOR DPA 9 (Total Area)
	DP=	1044.45	CU YD	

EXISTING SUBAREA 202A

AREA		0.0195	SQ MI	
$DPR_{(A)}$		16500	CU YD/SQ MI	DP FOR DPA 9 (Total Area)
	DP=	321.75	CU YD	

EXISTING SUBAREA 203B

AREA		0.0011	SQ MI	
$DPR_{(A)}$		16500	CU YD/SQ MI	DP FOR DPA 9 (Total Area)
	DP=	18.15	CU YD	

EXISTING SUBAREA 204C

AREA		0.0033	SQ MI	
$DPR_{(A)}$		16500	CU YD/SQ MI	DP FOR DPA 9 (Total Area)
	DP=	54.45	CU YD	

EXISTING WATERSHED 300

EXISTING SUBAREA 301A

REFER TO EQUATION 3.3.1 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

Equation 3.3.1

$$DP = DPR_{(A)} \times A$$

Where: DP = Debris Production in yd^3

DPR = Debris Production Rate in yd^3/mi^2

AREA	0.0042	SQ MI	
$DPR_{(A)}$	16500	CU YD/SQ MI	DP FOR DPA 9 (Total Area)
DP=	69.30	CU YD	

EXISTING SUBAREA 302A

REFER TO EQUATION 3.3.4 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

Equation 3.3.4

$$DP = DPR_{1(A_1+A_2)} \times A_1\left(\frac{A_1}{A_1+A_2}\right) + DPR_{1(A_1)} \times A_1\left(\frac{A_2}{A_1+A_2}\right) + DPR_{2(A_1+A_2)} \times A_2\left(\frac{A_2}{A_1+A_2}\right) + DPR_{2(A_2)} \times A_2\left(\frac{A_1}{A_1+A_2}\right)$$

$DPR_{1(A1+A2)}$	16500	CU YD/SQ MI	DPR FOR DPA 9 (Total Area)
$DPR_{2(A1+A2)}$	82000	CU YD/SQ MI	DPR FOR DPA 5 (Total Area)
$DPR_{1(A1)}$	16500	CU YD/SQ MI	DPR FOR DPA 9
$DPR_{2(A2)}$	82000	CU YD/SQ MI	DPR FOR DPA 5
A_1	0.0202	SQ MI	Area for DPA 9
A_2	0.0007	SQ MI	Area for DPA 5
DP=	390.70	CU YD	

EXISTING SUBAREA 303A

REFER TO EQUATION 3.3.4 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

$DPR_{1(A1+A2)}$	16500	CU YD/SQ MI	DPR FOR DPA 9 (Total Area)
$DPR_{2(A1+A2)}$	82000	CU YD/SQ MI	DPR FOR DPA 5 (Total Area)
$DPR_{1(A1)}$	16500	CU YD/SQ MI	DPR FOR DPA 9
$DPR_{2(A2)}$	82000	CU YD/SQ MI	DPR FOR DPA 5
A_1	0.0116	SQ MI	Area for DPA 9
A_2	0.0065	SQ MI	Area for DPA 5
DP=	724.40	CU YD	

EXISTING SUBAREA 304B

REFER TO EQUATION 3.3.4 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

$DPR_{1(A1+A2)}$	16500	CU YD/SQ MI	DPR FOR DPA 9 (Total Area)
$DPR_{2(A1+A2)}$	82000	CU YD/SQ MI	DPR FOR DPA 5 (Total Area)
$DPR_{1(A1)}$	16500	CU YD/SQ MI	DPR FOR DPA 9
$DPR_{2(A2)}$	82000	CU YD/SQ MI	DPR FOR DPA 5
A_1	0.0030	SQ MI	Area for DPA 9
A_2	0.0006	SQ MI	Area for DPA 5
DP=	98.70	CU YD	

EXISTING SUBAREA 305B

REFER TO EQUATION 3.3.4 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

$DPR_{1(A1+A2)}$	16500	CU YD/SQ MI	DPR FOR DPA 9 (Total Area)
$DPR_{2(A1+A2)}$	82000	CU YD/SQ MI	DPR FOR DPA 5 (Total Area)
$DPR_{1(A1)}$	16500	CU YD/SQ MI	DPR FOR DPA 9
$DPR_{2(A2)}$	82000	CU YD/SQ MI	DPR FOR DPA 5
A_1	0.0049	SQ MI	Area for DPA 9
A_2	0.0180	SQ MI	Area for DPA 5
DP=	1556.85	CU YD	

EXISTING SUBAREA 306B

REFER TO EQUATION 3.3.4 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

$DPR_{1(A1+A2)}$	16500	CU YD/SQ MI	DPR FOR DPA 9 (Total Area)
$DPR_{2(A1+A2)}$	82000	CU YD/SQ MI	DPR FOR DPA 5 (Total Area)
$DPR_{1(A1)}$	16500	CU YD/SQ MI	DPR FOR DPA 9
$DPR_{2(A2)}$	82000	CU YD/SQ MI	DPR FOR DPA 5
A_1	0.0003	SQ MI	Area for DPA 9
A_2	0.0430	SQ MI	Area for DPA 5
DP=	3530.95	CU YD	

EXISTING SUBAREA 307B

REFER TO EQUATION 3.3.4 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

$DPR_{1(A1+A2)}$	16500	CU YD/SQ MI	DPR FOR DPA 9 (Total Area)
$DPR_{2(A1+A2)}$	82000	CU YD/SQ MI	DPR FOR DPA 5 (Total Area)
$DPR_{1(A1)}$	16500	CU YD/SQ MI	DPR FOR DPA 9
$DPR_{2(A2)}$	82000	CU YD/SQ MI	DPR FOR DPA 5
A_1	0.0297	SQ MI	Area for DPA 9
A_2	0.0015	SQ MI	Area for DPA 5
DP=	613.05	CU YD	

EXISTING WATERSHED 400

EXISTING SUBAREA 401A

REFER TO EQUATION 3.3.1 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

Equation 3.3.1

$$DP = DPR_{(A)} \times A$$

Where: DP = Debris Production in yd^3

DPR = Debris Production Rate in yd^3/mi^2

AREA		0.0277	SQ MI	
$DPR_{(A)}$		16500	CU YD/SQ MI	DP FOR DPA 9 (Total Area)
	DP=	457.05	CU YD	

EXISTING SUBAREA 402A

AREA		0.0103	SQ MI	
$DPR_{(A)}$		16500	CU YD/SQ MI	DP FOR DPA 9 (Total Area)
	DP=	169.95	CU YD	

EXISTING SUBAREA 403A

AREA		0.0089	SQ MI	
$DPR_{(A)}$		16500	CU YD/SQ MI	DP FOR DPA 9 (Total Area)
	DP=	146.85	CU YD	

4. Proposed Debris Production Calculation

PROPOSED SUBAREA 314C

Using eq 3.3.1 of sedimentation manual (March 2006)

$$DP = DPR_{(A)} \times A$$ **Equation 3.3.1**

DPR_A	16500	CU YD/SQ MI	DPR FOR DPA 9
A	0.0045	SQ MI	Area for DPA 9
DP=	74.25	CU YD	

PROPOSED SUBAREA 317D

Using eq 3.3.4 of sedimentation manual (March 2006)

$$DP = DPR_{1(A_1+A_2)} \times A_1\left(\frac{A_1}{A_1+A_2}\right) + DPR_{1(A_1)} \times A_1\left(\frac{A_2}{A_1+A_2}\right) + DPR_{2(A_1+A_2)} \times A_2\left(\frac{A_2}{A_1+A_2}\right) + DPR_{2(A_2)} \times A_2\left(\frac{A_1}{A_1+A_2}\right)$$ **Equation 3.3.4**

$DPR_{1(A1+A2)}$	16500	CU YD/SQ MI	DPR FOR DPA 9 (Total Area)
$DPR_{2(A1+A2)}$	82000	CU YD/SQ MI	DPR FOR DPA 5 (Total Area)
$DPR_{1(A1)}$	16500	CU YD/SQ MI	DPR FOR DPA 9
$DPR_{2(A2)}$	82000	CU YD/SQ MI	DPR FOR DPA 5
A_1	0.0030	SQ MI	Area for DPA 9
A_2	0.0006	SQ MI	Area for DPA 5
DP=	98.70	CU YD	

PROPOSED SUBAREA 318D

Using eq 3.3.5 of sedimentation manual (March 2006)

$$DP = DPR_{1(A_1+A_2)}\,(A_1 - A_{d_1})\left(\frac{A_1 - A_{d_1}}{A_1+A_2}\right) + DPR_{1(A_1-A_{d_1})}\,(A_1 - A_{d_1})\left(\frac{A_2 + A_{d_1}}{A_1+A_2}\right) + DPR_{2(A_1+A_2)}\,(A_2 - A_{d_2})\left(\frac{A_2 - A_{d_2}}{A_1+A_2}\right) + DPR_{2(A_2-A_{d_2})}\,(A_2 - A_{d_2})\left(\frac{A_1 + A_{d_2}}{A_1+A_2}\right)$$ **Equation 3.3.5**

$DPR_{1(A1+A2)}$	16500	CU YD/SQ MI	DPR FOR DPA 9 (Total Area)
$DPR_{2(A1+A2)}$	82000	CU YD/SQ MI	DPR FOR DPA 5 (Total Area)
$DPR_{1(A1-Ad1)}$	16500	CU YD/SQ MI	DPR FOR DPA 9 (Total Undeveloped Area)
$DPR_{2(A2-Ad2)}$	82000	CU YD/SQ MI	DPR FOR DPA 5 (Total Undeveloped Area)
A_1	0.0036	SQ MI	Area for DPA 9
A_2	0.0142	SQ MI	Area for DPA 5
A_{d1}	0.0012	SQ MI	Developed Area for DPA 9
A_{d2}	0.0038	SQ MI	Developed Area for DPA 5
DP=	892.40	CU YD	

5. Existing Bulk Flow Calculation

EXISTING SUBAREA 101A

REFER TO EQUATION 3.4.1 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

For single undeveloped watersheds (see Figure 3.3.1):

$$Q_B = BF_{(A)} \times Q_{(A)}$$ **Equation 3.4.1**

$Q_{(A)}$= Burned Discharge		16.01	CFS	
$BF_{(A)}$		1.270	unitless	BF FOR DPA 9 (Total Area)
	Q=	20.33	CFS	

EXISTING WATERSHED 200

REFER TO EQUATION 3.4.1 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

For single undeveloped watersheds (see Figure 3.3.1):

$$Q_B = BF_{(A)} \times Q_{(A)}$$ **Equation 3.4.1**

EXISTING SUBAREA 201A

$Q_{(A)}$= Burned Discharge 33.36 CFS

$BF_{(A)}$ 1.270 unitless BF FOR DPA 9 (Total Area)

Q= 42.37 CFS

EXISTING SUBAREA 202A

$Q_{(A)}$= Burned Discharge 23.95 CFS

$BF_{(A)}$ 1.270 unitless BF FOR DPA 9 (Total Area)

Q= 30.42 CFS

EXISTING SUBAREA 203B

$Q_{(A)}$= Burned Discharge 1.03 CFS

$BF_{(A)}$ 1.270 unitless BF FOR DPA 9 (Total Area)

Q= 1.31 CFS

EXISTING SUBAREA 204C

$Q_{(A)}$= Burned Discharge 2.26 CFS

$BF_{(A)}$ 1.270 unitless BF FOR DPA 9 (Total Area)

Q= 2.87 CFS

EXISTING WATERSHED 300

EXISTING SUBAREA 301A

REFER TO EQUATION 3.4.1 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

For single undeveloped watersheds (see Figure 3.3.1):

$$Q_B = BF_{(A)} \times Q_{(A)}$$ **Equation 3.4.1**

$Q_{(A)}$= Burned Discharge	7.37	CFS	
$BF_{(A)}$	1.270	unitless	BF FOR DPA 9 (Total Area)
Q=	9.36	CFS	

EXISTING SUBAREA 302A

REFER TO EQUATION 3.4.4 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

$$Q_B = BF_{1(A_1+A_2)} \times \left(\frac{Q\ A_1}{A_1+A_2}\right)\left(\frac{A_1}{A_1+A_2}\right) + BF_{1(A_1)} \times \left(\frac{Q\ A_1}{A_1+A_2}\right)\left(\frac{A_2}{A_1+A_2}\right) +$$
$$BF_{2(A_1+A_2)} \times \left(\frac{Q\ A_2}{A_1+A_2}\right)\left(\frac{A_2}{A_1+A_2}\right) + BF_{2(A_2)} \times \left(\frac{Q\ A_2}{A_1+A_2}\right)\left(\frac{A_1}{A_1+A_2}\right)$$ **Equation 3.4.4**

$$Q = Q_{A_1+A_2}$$

Q=Burned Discharge	32.65	CFS	
$BF_{1(A1)}$	1.270	unitless	BF FOR DPA 9
$BF_{2(A2)}$	1.456	unitless	BF FOR DPA 5
$BF_{1(A1+A2)}$	1.270	unitless	BF FOR DPA 9 (Total Area)
$BF_{2(A1+A2)}$	1.456	unitless	BF FOR DPA 5 (Total Area)
A_1	0.0202	SQ MI	Area for DPA 9
A_2	0.0007	SQ MI	Area for DPA 5
Q=	41.67	CFS	

EXISTING SUBAREA 303A

REFER TO EQUATION 3.4.4 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

Q=Burned Discharge	21.58	CFS	
$BF_{1(A1)}$	1.270	unitless	BF FOR DPA 9
$BF_{2(A2)}$	1.456	unitless	BF FOR DPA 5
$BF_{1(A1+A2)}$	1.270	unitless	BF FOR DPA 9 (Total Area)
$BF_{2(A1+A2)}$	1.456	unitless	BF FOR DPA 5 (Total Area)
A_1	0.0116	SQ MI	Area for DPA 9
A_2	0.0065	SQ MI	Area for DPA 5
Q=	28.85	CFS	

EXISTING SUBAREA 304B

REFER TO EQUATION 3.4.4 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

Q=Burned Discharge	5.14	CFS	
$BF_{1(A1)}$	1.270	unitless	BF FOR DPA 9
$BF_{2(A2)}$	1.456	unitless	BF FOR DPA 5
$BF_{1(A1+A2)}$	1.270	unitless	BF FOR DPA 9 (Total Area)
$BF_{2(A1+A2)}$	1.456	unitless	BF FOR DPA 5 (Total Area)
A_1	0.0030	SQ MI	Area for DPA 9
A_2	0.0006	SQ MI	Area for DPA 5
Q=	6.69	CFS	

EXISTING SUBAREA 305B

REFER TO EQUATION 3.4.4 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

Q=Burned Discharge	27.91	CFS	
$BF_{1(A1)}$	1.270	unitless	BF FOR DPA 9
$BF_{2(A2)}$	1.456	unitless	BF FOR DPA 5
$BF_{1(A1+A2)}$	1.270	unitless	BF FOR DPA 9 (Total Area)
$BF_{2(A1+A2)}$	1.456	unitless	BF FOR DPA 5 (Total Area)
A_1	0.0049	SQ MI	Area for DPA 9
A_2	0.0180	SQ MI	Area for DPA 5
Q=	39.53	CFS	

EXISTING SUBAREA 306B

REFER TO EQUATION 3.4.4 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

Q=Burned Discharge	48.67	CFS	
$BF_{1(A1)}$	1.270	unitless	BF FOR DPA 9
$BF_{2(A2)}$	1.456	unitless	BF FOR DPA 5
$BF_{1(A1+A2)}$	1.270	unitless	BF FOR DPA 9 (Total Area)
$BF_{2(A1+A2)}$	1.456	unitless	BF FOR DPA 5 (Total Area)
A_1	0.0003	SQ MI	Area for DPA 9
A_2	0.0430	SQ MI	Area for DPA 5
Q=	70.80	CFS	

EXISTING SUBAREA 307B

REFER TO EQUATION 3.4.4 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

Q=Burned Discharge	38.33	CFS	
$BF_{1(A1)}$	1.270	unitless	BF FOR DPA 9
$BF_{2(A2)}$	1.456	unitless	BF FOR DPA 5
$BF_{1(A1+A2)}$	1.270	unitless	BF FOR DPA 9 (Total Area)
$BF_{2(A1+A2)}$	1.456	unitless	BF FOR DPA 5 (Total Area)
A_1	0.0297	SQ MI	Area for DPA 9
A_2	0.0015	SQ MI	Area for DPA 5
Q=	49.02	CFS	

EXISTING WATERSHED 400

REFER TO EQUATION 3.4.1 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

For single undeveloped watersheds (see Figure 3.3.1):

$$Q_B = BF_{(A)} \times Q_{(A)}$$ **Equation 3.4.1**

EXISTING SUBAREA 401A

$Q_{(A)}$= Burned Discharge 19.70 CFS

$BF_{(A)}$ 1.270 unitless BF FOR DPA 9 (Total Area)

Q= 25.02 CFS

EXISTING SUBAREA 402A

$Q_{(A)}$= Burned Discharge 9.70 CFS

$BF_{(A)}$ 1.270 unitless BF FOR DPA 9 (Total Area)

Q= 12.32 CFS

EXISTING SUBAREA 403A

$Q_{(A)}$= Burned Discharge 9.50 CFS

$BF_{(A)}$ 1.270 unitless BF FOR DPA 9 (Total Area)

Q= 12.07 CFS

6. Proposed Bulk Flow Calculation

PROPOSED SUBAREA 314C

REFER TO EQUATION 3.4.1 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

For single undeveloped watersheds (see Figure 3.3.1):

$$Q_B = BF_{(A)} \times Q_{(A)}$$ **Equation 3.4.1**

Q=Burned Discharge	7.92 CFS		
BF_A	1.270 unitless	BF FOR DPA 9 (Total Area)	
Q=	10.06 CFS		

PROPOSED SUBAREA 317D

REFER TO EQUATION 3.4.4 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

For a watershed with multiple debris production zones (see Figure 3.3.4):

$$Q_B = BF_{1(A_1+A_2)} \times \left(\frac{Q \quad A_1}{A_1+A_2}\right)\left(\frac{A_1}{A_1+A_2}\right) + BF_{1(A_1)} \times \left(\frac{Q \quad A_1}{A_1+A_2}\right)\left(\frac{A_2}{A_1+A_2}\right) + BF_{2(A_1+A_2)} \times \left(\frac{Q \quad A_2}{A_1+A_2}\right)\left(\frac{A_2}{A_1+A_2}\right) + BF_{2(A_2)} \times \left(\frac{Q \quad A_2}{A_1+A_2}\right)\left(\frac{A_1}{A_1+A_2}\right)$$

Equation 3.4.4

$$Q = Q_{A_1+A_2}$$

Q=Burned Discharge	5.14	CFS	
$BF_{1(A1)}$	1.270	unitless	BF FOR DPA 9
$BF_{2(A2)}$	1.456	unitless	BF FOR DPA 5
$BF_{1(A1+A2)}$	1.270	unitless	BF FOR DPA 9 (Total Area)
$BF_{2(A1+A2)}$	1.456	unitless	BF FOR DPA 5 (Total Area)
A_1	0.0030	SQ MI	Area for DPA 9
A_2	0.0006	SQ MI	Area for DPA 5
Q=	6.68	CFS	

PROPOSED SUBAREA 318D

REFER TO EQUATION 3.4.5 IN SEDIMENTATION MANUAL-2nd EDITION MARCH 2006

For a partially developed watershed in multiple DPA zones (see Figure 3.3.5):

$$Q_B = BF_{1(A_1+A_2)}\left(\frac{Q\ (A_1 - A_{d1})}{A_1 + A_2}\right)\left(\frac{A_1 - A_{d1}}{A_1 + A_2}\right) +$$
$$BF_{1(A_1-A_{d1})}\left(\frac{Q\ (A_1 - A_{d1})}{A_1 + A_2}\right)\left(\frac{A_2 + A_{d1}}{A_1 + A_2}\right) + \left(\frac{Q\ (A_{d1})}{A_1 + A_2}\right) +$$
$$BF_{2(A_1+A_2)}\left(\frac{Q\ (A_2 - A_{d2})}{A_1 + A_2}\right)\left(\frac{A_2 - A_{d2}}{A_1 + A_2}\right) +$$
$$BF_{2(A_2-A_{d2})}\left(\frac{Q\ (A_2 - A_{d2})}{A_1 + A_2}\right)\left(\frac{(A_1 + A_{d2})}{A_1 + A_2}\right) + \left(\frac{Q\ (A_{d2})}{A_1 + A_2}\right)$$

Equation 3.4.5

Q=Burned Discharge	22.38	CFS	
$BF_{1(A1+A2)}$	1.270	unitless	BF FOR DPA 9 (Total Area)
$BF_{2(A1+A2)}$	1.456	unitless	BF FOR DPA 5 (Total Area)
$BF_{1(A1-Ad1)}$	1.270	unitless	BF FOR DPA 9 (Total Undeveloped Area)
$BF_{2(A2-Ad2)}$	1.456	unitless	BF FOR DPA 5 (Total Undeveloped Area)
A_1	0.0036	SQ MI	Area for DPA 9
A_2	0.0142	SQ MI	Area for DPA 5
A_{d1}	0.0012	SQ MI	Developed Area for DPA 9
A_{d2}	0.0038	SQ MI	Developed Area for DPA 5
Q=	29.16	CFS	

7. Existing Modified Rational Method Hydrology Clear Results (50-YR)

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\scr_soilx_34.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
101	1A	12.1	14.56	12.1	14.56	0	0.	.00000	.00	.00	0.	20	13	A29	.02
101	2A	.0	.00	12.1	14.56	0	0.	.00000	.00	.00	0.	20	99	A29	.00

CHANNEL CONVEYANCE TYPE DEFINITION FOR VALENCIA COMMERCE CENTER DCR	
Conv Type	Definition
2	Valley Channel
4	Circular Pipe
5	Rectangular

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\scr_soilx_34.dat

EXISTING CONDITION - DRAINAGE AREA 200 STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
201	1A	40.5	29.27	40.5	29.27	0	0.	.00000	.00	.00	0.	20	27	A29	.01
201	2A	12.5	22.03	12.5	22.03	0	0.	.00000	.00	.00	0.	20	7	A29	.01
201	3B	.7	.94	.7	.94	0	0.	.00000	.00	.00	0.	20	11	A29	.01
201	4C	2.1	2.02	2.1	2.02	0	0.	.00000	.00	.00	0.	20	18	A29	.01

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\scr_soilx_34.dat

EXISTING DRAINAGE CONDITION - AREA 300 STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
301	1A	2.7	7.05	2.7	7.05	0	0.	.00000	.00	.00	0.	97	5	A29	.01
301	2A	13.4	31.18	13.4	31.18	0	0.	.00000	.00	.00	0.	97	6	A29	.01
301	3A	11.6	20.49	11.6	20.49	0	0.	.00000	.00	.00	0.	97	10	A29	.01
301	4B	2.3	4.90	2.3	4.90	0	0.	.00000	.00	.00	0.	97	7	A29	.01
301	5B	15.0	26.50	15.0	26.50	0	0.	.00000	.00	.00	0.	97	10	A29	.01
301	6B	27.7	46.14	27.7	46.14	0	0.	.00000	.00	.00	0.	97	11	A29	.01
301	7B	20.0	35.24	20.0	35.24	0	0.	.00000	.00	.00	0.	20	7	A29	.01

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\scr_soilx_34.dat

EXISTING CONDITION FOR WATERSHED 400 STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
401	1A	17.7	17.64	17.7	17.64	0	0.	.00000	.00	.00	0.	20	17	A29	.01
401	2A	6.6	8.83	6.6	8.83	0	0.	.00000	.00	.00	0.	20	11	A29	.01
401	3A	5.7	8.66	5.7	8.66	0	0.	.00000	.00	.00	0.	20	9	A29	.01

8. Existing Modified Rational Method Hydrology Burn Results (50-YR)

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\scr_soilx_34.dat

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM DAY 4 RAIN ZONE	PCT IMPV
101	1A	12.1	16.09	12.1	16.09	0	0.	.00000	.00	.00	0.	220	13	A29	.02
101	2A	.0	.00	12.1	16.09	0	0.	.00000	.00	.00	0.	20	99	A29	.00

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\scr_soilx_34.dat

EXISTING CONDITION - DRAINAGE AREA 200 — STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
201	1A	40.5	33.36	40.5	33.36	0	0.	.00000	.00	.00	0.	220	27	A29	.01
201	2A	12.5	23.95	12.5	23.95	0	0.	.00000	.00	.00	0.	220	7	A29	.01
201	3B	.7	1.03	.7	1.03	0	0.	.00000	.00	.00	0.	220	11	A29	.01
201	4C	2.1	2.26	2.1	2.26	0	0.	.00000	.00	.00	0.	220	18	A29	.01

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\scr_soilx_34.dat

EXISTING DRAINAGE CONDITION - AREA 300 STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
301	1A	2.7	7.37	2.7	7.37	0	0.	.00000	.00	.00	0.	297	5	A29	.01
301	2A	13.4	32.65	13.4	32.65	0	0.	.00000	.00	.00	0.	297	6	A29	.01
301	3A	11.6	21.58	11.6	21.58	0	0.	.00000	.00	.00	0.	297	10	A29	.01
301	4B	2.3	5.14	2.3	5.14	0	0.	.00000	.00	.00	0.	297	7	A29	.01
301	5B	15.0	27.91	15.0	27.91	0	0.	.00000	.00	.00	0.	297	10	A29	.01
301	6B	27.7	48.67	27.7	48.67	0	0.	.00000	.00	.00	0.	297	11	A29	.01
301	7B	20.0	38.33	20.0	38.33	0	0.	.00000	.00	.00	0.	220	7	A29	.01

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\scr_soilx_34.dat

EXISTING CONDITION FOR WATERSHED 400 STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
401	1A	17.7	19.74	17.7	19.74	0	0.	.00000	.00	.00	0.	220	17	A29	.01
401	2A	6.6	9.72	6.6	9.72	0	0.	.00000	.00	.00	0.	220	11	A29	.01
401	3A	5.7	9.47	5.7	9.47	0	0.	.00000	.00	.00	0.	220	9	A29	.01

9. Proposed Modified Rational Method Hydrology Clear Results (50-YR)

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\scr_soilx_34.dat

PROPOSED CONDITION - WATERSHED "100" STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
100	1A	12.1	25.02	12.1	25.02	4	179.	.01000	3.00	.00	0.	20	11	A29	.91
100	2A	.0	.00	12.1	25.02	0	0.	.00000	.00	.00	0.	20	99	A29	.00

CHANNEL CONVEYANCE TYPE DEFINITION FOR VALENCIA COMMERCE CENTER DCR	
Conv Type	Definition
2	Valley Channel
4	Circular Pipe
5	Rectangular

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\scr_soilx_34.dat

PROPOSED CONDITION - WATERSHED 200 STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
200	1A	27.5	56.86	27.5	56.86	4	183.	.01000	3.50	.00	0.	20	11	A29	.91
200	2A	2.8	7.12	30.3	63.83	4	1730.	.01000	4.00	.00	0.	20	7	A29	.91
200	3A	13.1	39.81	43.4	79.25	4	620.	.01000	4.00	.00	0.	20	5	A29	.91
200	4A	3.9	7.19	47.3	86.05	4	206.	.01000	4.00	.00	0.	20	14	A29	.91
200	5A	.0	.00	47.3	85.86	0	0.	.00000	.00	.00	0.	20	99	A29	.00
200	6B	.4	.65	.4	.65	4	475.	.01000	2.00	.00	0.	20	8	A29	.02
200	7C	1.5	1.40	1.5	1.40	4	941.	.01000	2.00	.00	0.	20	19	A29	.02
200	8D	.5	.63	.5	.63	0	0.	.00000	.00	.00	0.	20	12	A29	.02
200	9D	1.7	2.29	1.7	2.29	2	578.	.01000	.00	.00	0.	20	11	A29	.02
200	10D	2.7	2.52	2.7	2.52	0	0.	.00000	.00	.00	0.	20	19	A29	.02
200	11E	1.0	1.95	1.0	1.95	0	0.	.00000	.00	.00	0.	20	6	A29	.02

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\scr_soilx_34.dat

PROPOSED CONDITIONS - WATERSHET 300 STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
300	1A	2.0	4.66	2.0	4.66	0	0.	.00000	.00	.00	0.	97	6	A29	.02
300	2A	.9	2.77	2.9	7.43	0	0.	.00000	.00	.00	0.	97	5	A29	.91
300	3A	.0	.00	2.9	7.43	4	407.	.01000	2.00	.00	0.	97	99	A29	.00
300	4A	1.0	2.78	3.9	9.58	4	67.	.01000	2.00	.00	0.	97	6	A29	.91
300	5B	12.2	29.60	12.2	29.60	4	166.	.01000	2.00	.00	0.	97	8	A29	.91
300	6AB	12.2	29.52	16.1	38.92	4	584.	.01000	3.00	.00	0.	97	0	A29	.00
300	7A	10.5	27.07	26.6	64.01	4	516.	.01000	3.00	.00	0.	97	7	A29	.91
300	8A	17.2	39.60	43.8	100.14	4	71.	.01000	4.00	.00	0.	97	9	A29	.91
300	9A	3.2	6.19	47.0	106.14	4	42.	.01000	4.00	.00	0.	97	13	A29	.91
300	10A	5.9	16.41	52.9	118.20	4	176.	.01000	4.00	.00	0.	97	6	A29	.91
300	11A	5.6	7.54	58.5	125.51	4	41.	.01000	4.00	.00	0.	97	16	A29	.02
300	12A	.0	.00	58.5	125.44	0	0.	.00000	.00	.00	0.	20	99	A29	.00
300	13C	2.6	6.81	2.6	6.81	0	0.	.00000	.00	.00	0.	97	5	A29	.02
300	14C	2.9	7.58	5.5	14.38	4	177.	.02000	2.00	.00	0.	97	5	A29	.01
300	15C	.0	.00	5.5	13.53	0	0.	.00000	.00	.00	0.	20	99	A29	.00
300	16AC	5.5	13.53	64.0	135.22	0	0.	.00000	.00	.00	0.	97	0	A29	.00
300	17D	2.3	4.90	2.3	4.90	0	0.	.00000	.00	.00	0.	97	7	A29	.01
300	18D	11.4	21.29	13.7	26.19	4	133.	.02000	2.00	.00	0.	97	9	A29	.02
300	19D	.0	.00	13.7	26.18	0	0.	.00000	.00	.00	0.	20	99	A29	.00
300	20E	14.6	17.76	14.6	17.76	0	0.	.00000	.00	.00	0.	97	19	A29	.02
300	21DE	14.6	17.76	28.3	43.75	0	0.	.00000	.00	.00	0.	20	0	A29	.00
300	22AD	28.3	43.75	92.3	178.84	0	0.	.00000	.00	.00	0.	20	0	A29	.00

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\scr_soilx_34.dat

VCC 400 WAHERSHED - PROPOSED CONDITION STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
401	1A	17.6	33.55	17.6	33.55	4	420.	.01000	3.00	.00	0.	20	13	A29	.91
401	2A	1.8	4.09	19.4	37.42	4	65.	.01000	8.50	.00	0.	20	9	A29	.91
401	3A	1.5	4.56	20.9	40.68	4	120.	.01000	8.50	.00	0.	20	5	A29	.91
401	4A	2.4	7.29	23.3	45.95	4	65.	.01000	8.50	.00	0.	20	5	A29	.91
401	5A	3.3	2.78	26.6	48.69	5	214.	.01000	20.00	.00	0.	20	22	A29	.02
401	6A	.0	.00	26.6	48.40	0	0.	.00000	.00	.00	0.	20	99	A29	.00
401	7B	1.1	3.34	1.1	3.34	4	84.	.01000	2.00	.00	0.	20	5	A29	.91
401	8B	1.6	2.62	2.7	5.81	0	0.	.00000	.00	.00	0.	20	8	A29	.02
401	9B	1.5	2.93	4.2	8.74	4	112.	.01000	2.00	.00	0.	20	6	A29	.02
401	10B	.0	.00	4.2	8.69	0	0.	.00000	.00	.00	0.	20	99	A29	.00
401	11AB	4.2	8.69	30.8	56.33	0	0.	.00000	.00	.00	0.	20	0	A29	.00

10. Proposed Modified Rational Method Hydrology Burn Results (50-YR)

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\scr_soilx_34.dat

PROPOSED CONDITION - WATERSHED 200 STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
200	1A	27.5	56.86	27.5	56.86	4	183.	.01000	3.50	.00	0.	20	11	A29	.91
200	2A	2.8	7.12	30.3	63.83	4	1730.	.01000	4.00	.00	0.	20	7	A29	.91
200	3A	13.1	39.81	43.4	79.25	4	620.	.01000	4.00	.00	0.	20	5	A29	.91
200	4A	3.9	7.19	47.3	86.05	4	206.	.01000	4.00	.00	0.	20	14	A29	.91
200	5A	.0	.00	47.3	85.86	0	0.	.00000	.00	.00	0.	20	99	A29	.00
200	6B	.4	.65	.4	.65	4	475.	.01000	2.00	.00	0.	20	8	A29	.02
200	7C	1.5	1.40	1.5	1.40	4	941.	.01000	2.00	.00	0.	20	19	A29	.02
200	8D	.5	.63	.5	.63	0	0.	.00000	.00	.00	0.	20	12	A29	.02
200	9D	1.7	2.52	1.7	2.52	2	578.	.01000	.00	.00	0.	220	11	A29	.02
200	10D	2.7	2.52	2.7	2.52	0	0.	.00000	.00	.00	0.	20	19	A29	.02
200	11E	1.0	1.95	1.0	1.95	0	0.	.00000	.00	.00	0.	20	6	A29	.02

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\civild\scr_soilx_34.dat

PROPOSED CONDITIONS - WATERSHET 300 STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
300	1A	2.0	4.66	2.0	4.66	0	0.	.00000	.00	.00	0.	97	6	A29	.02
300	2A	.9	2.77	2.9	7.43	0	0.	.00000	.00	.00	0.	97	5	A29	.91
300	3A	.0	.00	2.9	7.43	4	407.	.01000	2.00	.00	0.	97	99	A29	.00
300	4A	1.0	2.78	3.9	9.58	4	67.	.01000	2.00	.00	0.	97	6	A29	.91
300	5B	12.2	29.60	12.2	29.60	4	166.	.01000	2.00	.00	0.	97	8	A29	.91
300	6AB	12.2	29.52	16.1	38.92	4	584.	.01000	3.00	.00	0.	97	0	A29	.00
300	7A	10.5	27.07	26.6	64.01	4	516.	.01000	3.00	.00	0.	97	7	A29	.91
300	8A	17.2	39.60	43.8	100.14	4	71.	.01000	4.00	.00	0.	97	9	A29	.91
300	9A	3.2	6.19	47.0	106.14	4	42.	.01000	4.00	.00	0.	97	13	A29	.91
300	10A	5.9	16.41	52.9	118.20	4	176.	.01000	4.00	.00	0.	97	6	A29	.91
300	11A	5.6	7.54	58.5	125.51	4	41.	.01000	4.00	.00	0.	97	16	A29	.02
300	12A	.0	.00	58.5	125.44	0	0.	.00000	.00	.00	0.	20	99	A29	.00
300	13C	2.6	6.81	2.6	6.81	0	0.	.00000	.00	.00	0.	97	5	A29	.02
300	14C	2.9	7.92	5.5	14.72	4	177.	.02000	2.00	.00	0.	297	5	A29	.01
300	15C	.0	.00	5.5	13.86	0	0.	.00000	.00	.00	0.	20	99	A29	.00
300	16AC	5.5	13.86	64.0	135.51	0	0.	.00000	.00	.00	0.	97	0	A29	.00
300	17D	2.3	5.14	2.3	5.14	0	0.	.00000	.00	.00	0.	297	7	A29	.01
300	18D	11.4	22.38	13.7	27.52	4	133.	.02000	2.00	.00	0.	297	9	A29	.02
300	19D	.0	.00	13.7	27.51	0	0.	.00000	.00	.00	0.	20	99	A29	.00
300	20E	14.6	17.76	14.6	17.76	0	0.	.00000	.00	.00	0.	97	19	A29	.02
300	21DE	14.6	17.76	28.3	45.08	0	0.	.00000	.00	.00	0.	20	0	A29	.00
300	22AD	28.3	45.08	92.3	180.46	0	0.	.00000	.00	.00	0.	20	0	A29	.00

11. Existing Conditions Hydrologic Summary

VCC Existing Condition

Subarea	Soil Type	% Imp	DPA	Area (Ac)	ΣAREA (Ac)	50-Yr Isohyet (in)	50-Yr Tc (min)	50-Yr Flow (cfs)	ΣQ50 (cfs)	Qb (cfs)	ΣQb (cfs)	Q50bb (cfs)	DPV (cy)
101A	20	0.02	9	12.1	12.1	5.8	13	14.6	14.6	16.1	16.1	20.3	311.9
201A	20	0.01	9	40.5	40.5	5.8	27	29.3	29.3	33.4	33.4	42.4	1044.5
202A	20	0.01	9	12.5	12.5	5.8	7	22.0	22.0	24.0	24.0	30.4	321.8
203B	20	0.01	9	0.7	0.7	5.8	11	0.9	0.9	1.0	1.0	1.3	18.2
204C	20	0.01	9	2.1	2.1	5.8	18	2.0	2.0	2.3	2.3	2.9	54.5
301A	97	0.01	9	2.7	2.7	5.8	5	7.1	7.1	7.4	7.4	9.4	69.3
302A	97	0.01	5&9	13.4	13.4	5.8	6	31.2	31.2	32.7	32.7	41.7	390.7
303A	97	0.01	5&9	11.6	11.6	5.8	10	20.5	20.5	21.6	21.6	28.9	724.4
304B	97	0.01	5&9	2.3	2.3	5.8	7	4.9	4.9	5.1	5.1	6.7	98.7
305B	97	0.01	5&9	15	15	5.8	10	26.5	26.5	27.9	27.9	39.5	1556.9
306B	97	0.01	5&9	27.7	27.7	5.8	11	46.1	46.1	48.7	48.7	70.8	3531.0
307B	20	0.01	5&9	20	20	5.8	7	35.2	35.2	38.3	38.3	49.0	613.1
401A	20	0.01	9	17.7	17.7	5.8	17	17.6	17.6	19.7	19.7	25.0	457.1
402A	20	0.01	9	6.6	6.6	5.8	11	8.8	8.8	9.7	9.7	12.3	170.0
403A	20	0.01	9	5.7	5.7	5.8	9	8.7	8.7	9.5	9.5	12.1	146.9

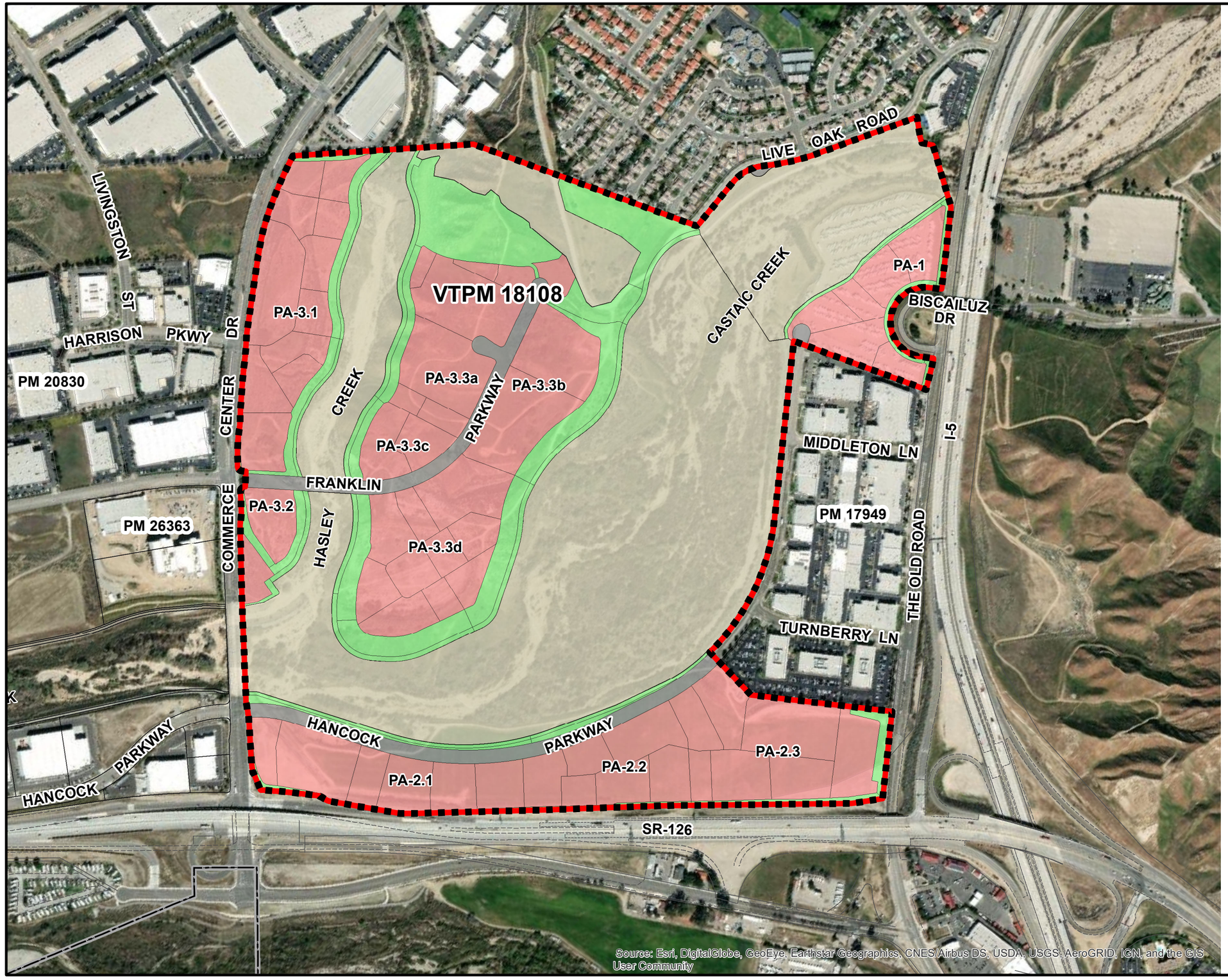
12. Proposed Conditions Hydrologic Summary

VCC Proposed Condition

Subarea	Node	Soil Type	% Imp	Area (Ac)	ΣAREA (Ac)	50-Yr Isohyet (in)	50-Yr Tc (min)	50-Yr Flow (cfs)	ΣQ50 (cfs)	Qb (cfs)	ΣQb(cfs)	Q50bb (cfs)	ΣDPV (cy)	Qcap (cfs)	ΣQcap (cfs)	Design ΣQcap (cfs)	Notes
101A		20	0.91	12.1	12.1	5.8	11	25.0	25.0					25.0	25.0		
	102A				12.1				25.0						25.0		
201A		20	0.91	27.5	27.5	5.8	11	56.9	56.9					56.9	56.9		
202A		20	0.91	2.8	30.3	5.8	7	7.1	63.8					7.1	63.8		
203A		20	0.91	13.1	43.4	5.8	5	39.8	79.3					39.8	79.3		
204A		20	0.91	3.9	47.3	5.8	14	7.2	86.1					7.2	86.1		
	205A				47.3				85.9						85.9		
206B		20	0.02	0.4	0.4	5.8	8	0.7	0.7					0.7	0.7		
207C		20	0.02	1.5	1.5	5.8	19	1.4	1.4					1.4	1.4		
208D		20	0.02	0.5	0.5	5.8	12	0.6	0.6					0.6	0.6		
209D		20	0.02	1.7	1.7	5.8	11	2.3	2.3	2.5	2.5			2.5	2.5		
210D		20	0.02	2.7	2.7	5.8	19	2.5	2.5					2.5	2.5		
211E		20	0.02	1.0	1.0	5.8	6	2.0	2.0					2.0	2.0		
301A		97	0.02	2.0	2.0	5.8	6	4.7	4.7					4.7	4.7		
302A		97	0.91	0.9	2.9	5.8	5	2.8	7.4					2.8	7.4		
	303A				2.9				7.4						7.4		
304A		97	0.91	1.0	3.9	5.8	6	2.8	9.6					2.8	9.6		
305B		97	0.91	12.2	12.2	5.8	8	29.6	29.6					29.6	29.6		
	306AB				16.1				38.9						38.9		
307A		97	0.91	10.5	26.6	5.8	7	27.1	64.0					27.1	64.0		
308A		97	0.91	17.2	43.8	5.8	9	39.6	100.1					39.6	100.1		
309A		97	0.91	3.2	47.0	5.8	13	6.2	106.1					6.2	106.1		
310A		97	0.91	5.9	52.9	5.8	6	16.4	118.2					16.4	118.2		
311A		97	0.02	5.6	58.5	5.8	16	7.5	125.5					7.5	125.7		
	312A				58.5				125.4						125.4		
313C		97	0.02	2.6	2.6	5.8	5	6.8	6.8					6.8	6.8		
314C		97	0.01	2.9	5.5	5.8	5	7.6	14.4	7.9	14.7	10.1	74.3	10.1	16.9		ΣQcap is the summation of 313C Qcap and 314C Qcap.
	315C				5.5				13.5		13.9	10.1	74.3		16.9		ΣQcap is the summation of 313C Qcap and 314C Qcap.
	316AC				64.0				135.2		135.5	10.1	74.3		142.3		ΣQcap is the summation of 312A Qcap and 315C Qcap.
317D		97	0.01	2.3	2.3	5.8	7	4.9	4.9	5.1	5.1	6.7	98.7	6.7	6.7		
318D		97	0.02	11.4	13.7	5.8	9	21.3	26.2	22.4	27.5	29.2	892.4	29.2	35.8		
	319D				13.7				26.2		27.5		991.1		27.5		ΣQcap is value of ΣQb due to the outlet being downstream of the debris catchment area.
320E		97	0.02	14.6	14.6	5.8	19	17.8	17.8					17.8	17.8		
	321DE				28.3				43.8		45.1		991.1		45.3		ΣQcap is the summation of 319D Qcap and 320E Qcap.
	322AD				92.3				178.8		180.5		1,065.4		187.6		ΣQcap is the summation of 316AC Qcap and 321DE Qcap.
400	A															1283.0	Design ΣQcap is per existing 102" Storm Drain Line "D" per PD 2298 Unit II (Qdesign= 1283.0 cfs)
401A		20	0.91	17.6	17.6	5.8	13	33.6	33.6					33.6	33.6	1316.6	Design ΣQcap is the summation of 401A ΣQcap and Node A Design ΣQcap
	B															125.0	Design ΣQcap is per existing 48" Storm Drain Line "C" per PD 2298 Unit II (Qdesign= 125.0 cfs)
402A		20	0.91	1.8	19.4	5.8	9	4.1	37.4					4.1	37.4	1445.4	Design ΣQcap is the summation of 402A ΣQcap and Design ΣQcap for Noda A and B
403A		20	0.91	1.5	20.9	5.8	5	4.6	40.7					4.6	40.7	1448.7	Design ΣQcap is the summation of 403A ΣQcap and Design ΣQcap for Noda A and B
404A		20	0.91	2.4	23.3	5.8	5	7.3	46.0					7.3	46.0	1454.0	Design ΣQcap is the summation of 404A ΣQcap and Design ΣQcap for Noda A and B
405A		20	0.02	3.3	26.6	5.8	22	2.8	48.7					2.8	48.7	1456.7	Design ΣQcap is the summation of 405A ΣQcap and Design ΣQcap for Noda A and B
	406A				26.6				48.4						48.4	1456.4	Design ΣQcap is the summation of 406A ΣQcap and Design ΣQcap for Noda A and B
407B		20	0.91	1.1	1.1	5.8	5	3.3	3.3					3.3	3.3		
408B		20	0.02	1.6	2.7	5.8	8	2.6	5.8					2.6	5.8		
409B		20	0.02	1.5	4.2	5.8	6	2.9	8.7					2.9	8.7		
	410B				4.2				8.7						8.7		
	411AB				30.8				56.3						56.3	1464.3	Design ΣQcap is the summation of 411AB ΣQcap and Design ΣQcap for Noda A and B

13. Valencia Commerce Center Land Use

VALENCIA COMMERCE CENTER VTPM 18108 Land Use



Legend

- PROJECT SITE
- VTPM 18108 BOUNDARY

Land Use

- COMMERCIAL BUSINESS PARK
- OPEN SPACE
- OPEN SPACE NATURAL
- PUBLIC ROAD

600 300 0 600 Feet

HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING ▪ ENGINEERING ▪ SURVEYING
26074 Avenue Hall, Suite 23 • Valencia, CA 91355 • PH: (661) 294-2211 • FX: (661) 294-9890

DATE: 04/06/2020
JOB#:0015-035-036

REVISED ON: 08/25/2022
SHEET 1 OF 1

FIVEPOINT

G:\Newhall Ranch\18108 VCCE\exh\HCC098_VTPM 18108 Land Use-Aerial.mxd

14. Conveyance Lengths Exhibit

PROJECT SITE

VICINITY MAP
NOT TO SCALE

LEGEND:

- BOUNDARY LINE
- PROPOSED WATERSHED AREA
- PROPOSED OFFSITE WATERSHED AREA
- PROPOSED SUBAREA BOUNDARY
- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- 1100 ROUGH GRADING CONTOUR
- EXISTING STORM DRAIN CATCH BASIN
- EXISTING STORM DRAIN OUTLET
- PROPOSED STORM DRAIN CATCH BASIN
- PROPOSED STORM DRAIN OUTLET
- 308B 13.2C Tc=9 — SUBAREA NODE / ACREAGE / TIME OF CONCENTRATION

LIME OAK ROAD
CASTAIC CREEK
BISCAILUZ DR (EXIST)
INTERSTATE 5
THE OLD ROAD (EXISTING)
MURFIELD LANE (EXISTING)
HANCOCK PARKWAY (EXISTING)
TURNBERRY LANE (EXISTING)
THE OLD ROAD (EXISTING)
HASLEY CREEK
FRANKLIN PKWY (EXIST)
COMMERCE CENTER DRIVE (EXISTING)
HARRISON PKWY (EXIST)
HANCOCK PARKWAY (PUBLIC)
SR-126

101A 12.1 AC Tc=11
316D 2.3 AC Tc=7
314C 2.9 AC Tc=5
317D 1.4 AC Tc=9
313C 2.6 AC Tc=5
302A 0.9 AC Tc=5
301A 2.0 AC Tc=6
304A 1.0 AC Tc=6
307A 10.5 AC Tc=7
319E 14.6 AC Tc=19
305B 12.2 AC Tc=8
309A 3.2 AC Tc=13
310A 5.9 AC Tc=6
308A 17.2 AC Tc=9
405A 3.3 AC Tc=22
311A 5.6 AC Tc=16
401A 17.6 AC Tc=13
404A 2.4 AC Tc=5
402A 1.8 AC Tc=9
403A 1.5 AC Tc=5
407B 1.1 AC Tc=5
408B 1.6 AC Tc=8
409B 1.5 AC Tc=6
211E 1.0 AC Tc=6
201A 27.5 AC Tc=11
207C 1.5 AC Tc=19
210D 2.7 AC Tc=19
202A 2.8 AC Tc=7
209D 1.7 AC Tc=11
206B 0.4 AC Tc=6
203A 13.1 AC Tc=5
204A 3.9 AC Tc=14
208D 0.5 AC Tc=12

SUBAREA 101A CONV LENGTH=179' CONV SLOPE=0.01
SUBAREA 316D CONV LENGTH=1,331' CONV SLOPE=0.05
SUBAREA 317D CONV LENGTH=133' CONV SLOPE=0.02
SUBAREA 314C CONV LENGTH=177' CONV SLOPE=0.02
SUBAREA 303A CONV LENGTH=407' CONV SLOPE=0.01
SUBAREA 304A CONV LENGTH=67' CONV SLOPE=0.01
SUBAREA 305A CONV LENGTH=166' CONV SLOPE=0.01
NODE 306AB CONV LENGTH=584' CONV SLOPE=0.01
SUBAREA 307A CONV LENGTH=516' CONV SLOPE=0.01
SUBAREA 309A CONV LENGTH=42' CONV SLOPE=0.01
SUBAREA 311A CONV LENGTH=41' CONV SLOPE=0.01
SUBAREA 308A CONV LENGTH=71' CONV SLOPE=0.01
SUBAREA 310A CONV LENGTH=176' CONV SLOPE=0.01
SUBAREA 404A CONV LENGTH=65' CONV SLOPE=0.01
SUBAREA 405A CONV LENGTH=214' CONV SLOPE=0.01
SUBAREA 401A CONV LENGTH=420' CONV SLOPE=0.01
SUBAREA 403A CONV LENGTH=120' CONV SLOPE=0.01
SUBAREA 402A CONV LENGTH=65' CONV SLOPE=0.01
SUBAREA 407B CONV LENGTH=84' CONV SLOPE=0.01
SUBAREA 409B CONV LENGTH=112' CONV SLOPE=0.01
SUBAREA 201A CONV LENGTH=183' CONV SLOPE=0.01
SUBAREA 207C CONV LENGTH=241' CONV SLOPE=0.01
SUBAREA 202A CONV LENGTH=1730' CONV SLOPE=0.01
SUBAREA 209D CONV LENGTH=578' CONV SLOPE=0.01
SUBAREA 206B CONV LENGTH=420' CONV SLOPE=0.01
SUBAREA 203A CONV LENGTH=823' CONV SLOPE=0.01
SUBAREA 204A CONV LENGTH=208' CONV SLOPE=0.01

EX. 42" RCP PER PD 1982 MAINTAINED BY LACFCD
EX. 36" RCP PER PD 2441 MAINTAINED BY LACFCD
EX. 84" RCP PER PD 2441 MAINTAINED BY LACFCD
EX. 102" RCP PER PD 2298 (II) Q=1283 cfs MAINTAINED BY LACFCD
EX. 48" RCP PER PD 2298 (II) MAINTAINED BY LACFCD
EX. 48" RCP PER PD 2298 (II)
EX. 24" RCP PER PD 2298 (III) MAINTAINED BY LACFCD

NORTH

FEET 100' 50' 0 100' 200'
INCHES 1 1/2 0 1 2

REGISTERED PROFESSIONAL ENGINEER JAMES R. HOSKINS No. 40695 CIVIL STATE OF CALIFORNIA
11/12/24

VALENCIA COMMERCE CENTER
CONVEYANCE LENGTHS

HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite #23 • Valencia, CA 91355
PH: (661) 294-9890 FX: (661) 294-2211

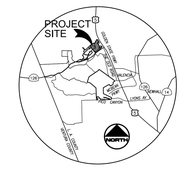
DATE: 05/04/2023 REV. DATE:
PROJECT NO: SHEET 1 OF 1

G:\Hansen\ Branch\ 18108 \PCC\Storm\Hydrology\Design Backup\VCC Conveyance Lengths.dwg Plotted on Nov 08, 2024 by simons

APPENDIX B – Hydrology Exhibits

1. Existing Hydrology Map

Subarea	Soil Type	% Imp	DPA	Area (Ac)	ΣAREA (Ac)	50-Yr Isohyet (in)	50-Yr Tc (min)	50-Yr Flow (cfs)	ΣQ50 (cfs)	Qb (cfs)	ΣQb (cfs)	Q50bb (cfs)	DPV (cy)
101A	20	0.02	9	12.1	12.1	5.8	13	14.6	14.6	16.1	16.1	20.3	311.9
201A	20	0.01	9	40.5	40.5	5.8	27	29.3	29.3	33.4	33.4	42.4	1044.5
202A	20	0.01	9	12.5	12.5	5.8	7	22.0	22.0	24.0	24.0	30.4	321.8
203B	20	0.01	9	0.7	0.7	5.8	11	0.9	0.9	1.0	1.0	1.3	18.2
204C	20	0.01	9	2.1	2.1	5.8	18	2.0	2.0	2.3	2.3	2.9	54.5
301A	97	0.01	9	2.7	2.7	5.8	5	7.1	7.1	7.4	7.4	9.4	69.3
302A	97	0.01	5&9	13.4	13.4	5.8	6	31.2	31.2	32.7	32.7	41.7	390.7
303A	97	0.01	5&9	11.6	11.6	5.8	10	20.5	20.5	21.6	21.6	28.9	724.4
304B	97	0.01	5&9	2.3	2.3	5.8	7	4.9	4.9	5.1	5.1	6.7	98.7
305B	97	0.01	5&9	15	15	5.8	10	26.5	26.5	27.9	27.9	39.5	1556.9
306B	97	0.01	5&9	27.7	27.7	5.8	11	46.1	46.1	48.7	48.7	70.8	3531.0
307B	20	0.01	5&9	20	20	5.8	7	35.2	35.2	38.3	38.3	49.0	613.1
401A	20	0.01	9	17.7	17.7	5.8	17	17.6	17.6	19.7	19.7	25.0	457.1
402A	20	0.01	9	6.6	6.6	5.8	11	8.8	8.8	9.7	9.7	12.3	170.0
403A	20	0.01	9	5.7	5.7	5.8	9	8.7	8.7	9.5	9.5	12.1	146.9



VICINITY MAP
NOT TO SCALE

LIVE OAK ROAD
CASTAIC CREEK
Q50=26,500 cfs
Q100=23,200 cfs
LIMITS OF EXISTING CONCRETE LINING PER PD 1982 MAINTAINED BY LACFCD
BOUNDARY LINE
EX. 42" RCP PER PD 1982 MAINTAINED BY LACFCD
BISCAILUZ DRIVE
THE OLD ROAD
INTERSTATE 5
MUIRFIELD LANE
HANCOCK PARKWAY
TURNBERRY LANE
EX. 36" RCP PER PD 2441 MAINTAINED BY LACFCD
EX. 84" RCP PER PD 2441 MAINTAINED BY LACFCD
LIMITS OF EXISTING RIP-RAP LINING PER PD 2441 (II) MAINTAINED BY LACFCD
EXISTING CONCRETE SLOPE LINING PER P.D. 2262
HASLEY CREEK
Q50=25,000 cfs
Q100=28,000 cfs
HARRISON PARKWAY
COMMERCE CENTER DRIVE
FRANKLIN PARKWAY
SR 126
EX. 102" RCP PER PD 2298 (II) Q=1283 cfs MAINTAINED BY LACFCD
EX. 48" RCP PER PD 2298 (II) MAINTAINED BY LACFCD
EX. 30" RCP PER PD 2563 MAINTAINED BY LACFCD
EX. 24" RCP PER PD 2298 (III) MAINTAINED BY LACFCD
EXISTING HASLEY CREEK CONCRETE/RIP-RAP LINING PER PD 2298 (III) MAINTAINED BY LACFCD
EXISTING FLOW DIVERSION BERM PER PD 2298 (III) MAINTAINED BY LACFCD
EXISTING CASTAIC CREEK SOIL CEMENT BANK PROTECTION PER PD 2563 MAINTAINED BY LACFCD
EXISTING CONCRETE/RIP-RAP LINING PER PD 2298 (III) MAINTAINED BY LACFCD
EXISTING SOIL CEMENT BANK PROTECTION PER PD 2563 MAINTAINED BY LACFCD

101A — 12.1 AC — Tc=13
A = 15.0 AC; Q50 = 26.5 cfs; Q50$_{10}$ = 27.9 cfs; Q50$_{100}$ = 39.5 cfs; DPV= 1556.9 cy
102A — 100 — ΣA = 12.1 AC; ΣQ50 = 14.6 cfs; ΣQ50$_{10}$ = 16.1 cfs; ΣQ50$_{100}$ = 20.3 cfs; ΣQ50$_{100}$ = 20.3 cfs; ΣDPV= 311.9 cy
304B — 2.3 AC — Tc=7
A = 2.3 AC; Q50 = 4.9 cfs; Q50$_{10}$ = 5.1 cfs; Q50$_{100}$ = 6.7 cfs; DPV= 98.7 cy
301A — 2.7 AC — Tc=5
A = 2.7 AC; Q50 = 7.1 cfs; Q50$_{10}$ = 7.4 cfs; Q50$_{100}$ = 9.4 cfs; DPV= 69.3 cy
305B — 15.0 AC — Tc=10
306B — 27.7 AC — Tc=11
A = 27.7 AC; Q50 = 46.1 cfs; Q50$_{10}$ = 48.7 cfs; Q50$_{100}$ = 70.8 cfs; DPV= 3531.0 cy
302A — 13.4 AC — Tc=6
A = 13.4 AC; Q50 = 31.2 cfs; Q50$_{10}$ = 32.7 cfs; Q50$_{100}$ = 41.7 cfs; DPV= 390.7 cy
303A — 11.6 AC — Tc=10
A = 11.6 AC; Q50 = 20.5 cfs; Q50$_{10}$ = 21.6 cfs; Q50$_{100}$ = 28.9 cfs; DPV= 724.4 cy
401A — 17.7 AC — Tc=17
A = 17.7 AC; Q50 = 17.6 cfs; Q50$_{10}$ = 19.7 cfs; Q50$_{100}$ = 38.6 cfs; DPV= 457.1 cy
402A — 6.6 AC — Tc=11
A = 6.6 AC; Q50 = 8.8 cfs; Q50$_{10}$ = 9.7 cfs; Q50$_{100}$ = 17.7 cfs; DPV= 170.0 cy
403A — 5.7 AC — Tc=9
A = 5.7 AC; Q50 = 8.7 cfs; Q50$_{10}$ = 9.5 cfs; Q50$_{100}$ = 12.1 cfs; DPV= 146.9 cy
400 — ΣA = 30.0 AC; ΣQ50 = 35.1 cfs; ΣQ50$_{10}$ = 38.9 cfs; ΣQ50$_{100}$ = 49.4 cfs; ΣQ50$_{CAP}$ = 49.4 cfs; ΣDPV=773.9 cy
300 — ΣA = 92.7 AC; ΣQ50 = 171.5 cfs; ΣQ50$_{10}$ = 181.7 cfs; ΣQ50$_{100}$ = 245.8 cfs; ΣQ50$_{CAP}$ = 245.9 cfs; ΣDPV= 6984.0 cy
200 — ΣA = 53.0 AC; ΣQ50 = 51-3 cfs; ΣQ50$_{10}$ = 57.3 cfs; ΣQ50$_{100}$ = 72.8 cfs; ΣQ50$_{CAP}$ = 72.8 cfs; ΣDPV= 1366.2 cy
A = 12.5 AC; Q50 = 22.0 cfs; Q50$_{10}$ = 24.0 cfs; Q50$_{100}$ = 30.4 cfs; DPV= 321.8 cy
307B — 20.0 AC — Tc=7
A = 20.0 AC; Q50 = 35.2 cfs; Q50$_{10}$ = 38.3 cfs; Q50$_{100}$ = 49.0 cfs; DPV= 613.1 cy
201A — 40.5 AC — Tc=27
A = 40.5 AC; Q50 = 29.3 cfs; Q50$_{10}$ = 33.4 cfs; Q50$_{100}$ = 42.4 cfs; DPV= 1044.5 cy
204C — 2.1 AC — Tc=8
A = 2.1 AC; Q50 = 2.0 cfs; Q50$_{10}$ = 2.3 cfs; Q50$_{100}$ = 2.9 cfs; DPV= 54.5 cy
202A — 12.5 AC — Tc=7
203B — .07 AC — Tc=6
A = 0.7 AC; Q50 = 0.9 cfs; Q50$_{10}$ = 1.0 cfs; Q50$_{100}$ = 1.3 cfs; DPV= 18.2 cy

LEGEND:

- PHASING LIMITS
- EXISTING WATERSHED AREA AT LIMITS OF IMPROVEMENT
- EXISTING SUBAREA BOUNDARY
- EXISTING STORM DRAIN
- DRAINAGE DIRECTION
- EXISTING FLOODPLAIN (FF GOP)
- EXISTING FLOODWAY (FW GOP)
- FEMA ZONE AE
- 5088 / 93.42 AC / Tc=5 — SUBAREA NODE; ACREAGE; TIME OF CONCENTRATION
- 1250 ELEV. — GROUND ELEVATION
- 020 / 097 — SOIL CLASSIFICATION AREA
- DPA9 / DPA5 — DEBRIS POTENTIAL AREA (DPA)
- 100 — WATERSHED SUMMARY NODE
- EXISTING STORM DRAIN CATCH BASIN
- EXISTING STORM DRAIN OUTLET

DRAINAGE DESIGN CRITERIA:

1. 50-YR, 24-HR ISOHYETS: 5.8
2. SOIL TYPES: 20, 97
3. DESIGN STORM: 50-YR, 24-HR
4. PERCENT IMPERVIOUS VALUES: UNDEVELOPED 1%
5. DPA = 5, 82,000 CY PER SQ MI BULK FACTOR= 1.456
6. DPA = 9, 16,500 CY PER SQ MI BULK FACTOR= 1.270

HYDROLOGY STUDY APPROVED
REVIEWED BY: DATE: 9/19/25
APPROVED BY: DATE: 9/22/25
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS LAND DEVELOPMENT DIVISION

NORTH
1" = 100' — 100' 50' 0 100' 200' FEET
1" = 1/2" 0 1" INCHES

DESIGNED:					
DRAFTED:					
CHECKED:					
	NO.	REVISIONS	DATE	BY	

OWNER/DEVELOPER: FIVEPOINT, 25124 SPRINGFIELD COURT SUITE 300, VALENCIA, CA 91355

PLANS PREPARED BY: HUNSAKER & ASSOCIATES IRVINE, INC. — PLANNING • ENGINEERING • SURVEYING; 3633 Inland Empire Blvd, Ste D, Ontario, CA 91764; Ph (909) 568-1255; Fx (909) 204-1260

JASON H. FUKUMOTO — 11/15/25 — DATE

COUNTY OF LOS ANGELES

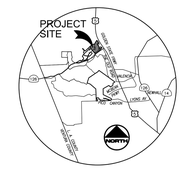
EXISTING HYDROLOGY MAP FOR VESTING TENTATIVE PARCEL MAP 18108 ESTU2022000053

IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

SCALE: AS SHOWN
DATE: 12/05/2022
JOB No. 0015-035-036
SHEET 1 OF 1 SHEETS

Copyright © 2025 Hunsaker & Associates Irvine, Inc. All rights reserved. Plotted: 20 Nov 25, 08:11 - 4:76pm by yvanna

2. Proposed Hydrology Map



VICINITY MAP
NOT TO SCALE

LEGEND:

- BOUNDARY LINE
- PROPOSED WATERSHED AREA TO LIMITS OF DEVELOPMENT
- PROPOSED OFFSITE WATERSHED AREA
- PROPOSED SUBAREA BOUNDARY
- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- DEBRIS LIMIT
- STORM DRAIN EASEMENT
- TIME OF CONCENTRATION PATH
- FEMA ZONE AE
- EXISTING FLOODPLAIN
- EXISTING FLOODWAY
- EXISTING ACOE JURISDICTION LINE (PER PACE-2006)
- EXISTING CDFG JURISDICTION LINE (PER PACE-2006)
- ROUGH GRADING CONTOUR
- LOT LINE
- SOIL CLASSIFICATION AREA
- DEBRIS PONTENTIAL AREA
- PROPOSED SOIL CEMENT BANK PROTECTION
- PROPOSED LAUNCH STONE
- ACCESS ROAD
- SUBAREA NODE
- ACREAGE
- TIME OF CONCENTRATION
- GROUND ELEVATION
- WATERSHED SUMMARY NODE
- EXISTING STORM DRAIN CATCH BASIN
- EXISTING STORM DRAIN OUTLET
- PROPOSED STORM DRAIN CATCH BASIN
- PROPOSED STORM DRAIN OUTLET

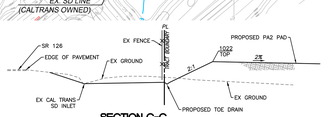
DRAINAGE DESIGN CRITERIA:

1. 50-YR, 24-HR ISOHYETS: 5.8
2. SOIL TYPES: 20, 97
3. DESIGN STORM: 50-YR, 24-HR
4. PERCENT IMPERVIOUS VALUES: UNDEVELOPED 1%
5. DPA = 5, 82,000 CY PER SQ MI
   BULK FACTOR= 1.456
6. DPA = 9, 16,500 CY PER SQ MI
   BULK FACTOR= 1.270

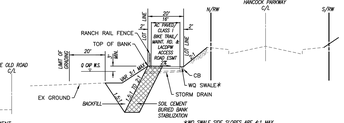
Subarea	Node	Soil Type	% Imp	Area (Ac)	ΣAREA (Ac)	50-Yr Isohyet (in)	50-Yr Tc (min)	50-Yr Flow (cfs)	ΣQ50 (cfs)	Qb (cfs)	ΣQb(cfs)	ΣQ50 (cfs)	ΣDPV (cy)	Qcap (cfs)	ΣQcap (cfs)	Design ΣQcap (cfs)	Notes
101A		20	0.91	12.1	12.1	5.8	11	25.0	25.0					25.0	25.0		
	102A				12.1				25.0						25.0		
201A		20	0.91	27.5	27.5	5.8	11	56.9	56.9					56.9	56.9		
205A		20	0.91	2.8	30.3	5.8	7	7.1	63.9					7.1	63.9		
203A		20	0.91	13.1	43.4	5.8	5	39.8	79.3					39.8	79.3		
204A		20	0.91	3.9	47.3	5.8	14	7.2	85.1					7.2	85.1		
	205A				47.3				85.9						85.9		
206B		20	0.02	0.4	0.4	5.8	8	0.7	0.7					0.7	0.7		
207C		20	0.02	1.5	1.5	5.8	19	1.4	1.4					1.4	1.4		
208D		20	0.02	0.5	0.5	5.8	12	0.6	0.6					0.6	0.6		
209D		20	0.02	1.7	1.7	5.8	11	2.3	2.3	2.5	2.5			2.5	2.5		
210D		20	0.02	2.7	2.7	5.8	19	2.5	2.5					2.5	2.5		
211E		20	0.02	1.0	1.0	5.8	6	2.0	2.0					2.0	2.0		
301A		97	0.02	2.0	2.0	5.8	6	4.7	4.7					4.7	4.7		
302A		97	0.91	0.9	2.9	5.8	5	2.8	7.4					2.8	7.4		
	303A				2.9				7.4						7.4		
304A		97	0.91	1.0	3.9	5.8	6	2.8	9.9					2.8	9.9		
305B		97	0.91	12.2	12.2	5.8	8	29.8	29.6					29.6	29.6		
	306AB				16.1				38.9						38.9		
307A		97	0.91	10.5	26.6	5.8	7	27.1	64.0					27.1	64.0		
308A		97	0.91	17.2	43.8	5.8	9	39.8	100.1					39.8	100.1		
309A		97	0.91	3.2	47.0	5.8	13	6.2	106.1					6.2	106.1		
310A		97	0.91	5.9	52.9	5.8	6	16.4	118.2					16.4	118.2		
311A		97	0.02	5.6	58.5	5.8	16	7.5	125.5					7.5	125.7		
	312A				58.5				125.4						125.4		
313C		97	0.02	2.6	2.6	5.8	5	6.8	6.8					6.8	6.8		
314C		97	0.01	2.9	5.5	5.8	5	7.6	14.4	7.9	14.7	10.1	74.3	10.1	16.9		ΣQcap is the summation of 313C Qcap and 314C Qcap.
	315C				5.5				13.5		13.9	10.1	74.3		16.9		ΣQcap is the summation of 315C Qcap and 314C Qcap.
	316AC				94.0				135.2		135.5	10.1	74.3		142.3		ΣQcap is the summation of 312A Qcap and 315C Qcap.
317D		97	0.01	2.3	2.3	5.8	7	4.9	4.9	5.1	5.1	6.7	56.7	6.7	6.7		
318D		97	0.02	11.4	13.7	5.8	9	21.3	26.2	22.4	27.5	29.2	892.4	29.2	35.8		ΣQcap is value of ΣQb due to the outlet being dow nstream of the debris catchment area.
	319D				13.7				26.2		27.5		991.1		27.5		Design ΣQcap is the summation of 319D Qcap and 320E Qcap.
320E		97	0.02	14.6	14.6	5.8	19	17.8	17.8					17.8	17.8		
	321DE				28.3				43.8		45.1		991.1		45.3		Design ΣQcap is the summation of 321DE Qcap and 322AD Qcap.
	322AD				92.3				178.8		180.5		1,065.4		187.6		ΣQcap is the summation of 316AC Qcap and 321DE Qcap.
400	A															1283.0	Design ΣQcap is per existing 102" Storm Drain Line "D" per PD 2298 Unit 6 (Design= 1283.0 cfs)
401A		20	0.91	17.6	17.6	5.8	13	33.6	33.6					33.6	33.6	1316.6	Design ΣQcap is the summation of 401A ΣQcap and Node A Design ΣQcap
	B															125.0	Design ΣQcap is per existing 48" Storm Drain Line "C" per PD 2298 Unit 6 (Design= 125.0 cfs)
402A		20	0.91	1.8	19.4	5.8	9	4.1	37.4					4.1	37.4	1445.4	Design ΣQcap is the summation of 402A ΣQcap and Design ΣQcap for Node A and B
403A		20	0.91	1.5	20.9	5.8	5	4.6	40.7					4.6	40.7	1448.7	Design ΣQcap is the summation of 403A ΣQcap and Design ΣQcap for Node A and B
404A		20	0.91	2.4	23.3	5.8	5	7.3	46.0					7.3	46.0	1454.0	Design ΣQcap is the summation of 404A ΣQcap and Design ΣQcap for Node A and B
405A		20	0.02	3.3	26.6	5.8	22	2.8	48.7					2.8	48.7	1456.7	Design ΣQcap is the summation of 405A ΣQcap and Design ΣQcap for Node A and B
	406A				26.6				48.4						48.4	1456.4	Design ΣQcap is the summation of 406A ΣQcap and Design ΣQcap for Node A and B
407B		20	0.91	1.1	1.1	5.8	5	3.3	3.3					3.3	3.3		
408B		20	0.02	1.6	2.7	5.8	8	2.8	5.8					2.8	5.8		
409B		20	0.02	1.5	4.2	5.8	6	2.9	8.7					2.9	8.7		
	410B				4.2				8.7								
	411AB				30.8				56.3						56.3	1464.3	Design ΣQcap is the summation of 411AB ΣQcap and Design ΣQcap for Node A and B


SECTION A-A
N.T.S.

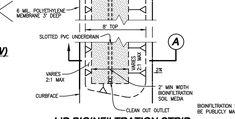

SECTION B-B
N.T.S.

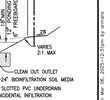

SECTION C-C
N.T.S.


SECTION D-D
N.T.S.


SECTION E-E
N.T.S.

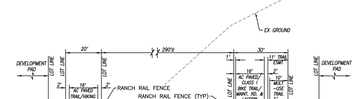

COMMERCIAL COLLECTOR (89' R/W)
(FRANKLIN PARKWAY, HANCOCK PARKWAY)


LID BIOINFILTRATION STRIP
N.T.S


BIOINFILTRATION SECTION "A"
N.T.S.

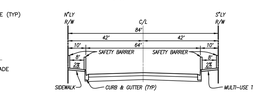

SECTION G-G
N.T.S.


SECTION H-H AT DEBRIS CATCHMENT AREA
N.T.S.


SECTION J-J
N.T.S.


BIOFILTRATION DETAIL
(THE OLD ROAD WLY CURB N/O SR 126)
N.T.S.


SECTION F-F
N.T.S.


COMMERCIAL COLLECTOR (84' R/W)
(FRANKLIN PARKWAY CROSSING OVER HASLEY CREEK)
N.T.S.

HYDROLOGY STUDY APPROVED
REVIEWED BY: _____ DATE: 3/18/25
APPROVED BY: _____ DATE: 03/20/25
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

DESIGNED:						
DRAFTED:						
CHECKED:						
	NO.	REVISIONS	DATE	BY		

OWNER/DEVELOPER:
FIVEPOINT
25124 SPRINGFIELD COURT SUITE 300
VALENCIA, CA 91355

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
IRVINE, SAN DIEGO, LOS ANGELES, SAN LUIS OBISPO
PLANNING • ENGINEERING • SURVEYING
9675 Jeronimo Road, Ste 125 • Irvine, CA 92618
Ph: (949) 583-1010 • Fax: (949) 583-1212
RCE NO. 62605 — EXPIRES 09/30/2025
JASON H. FORTUNATO — 03/06/25 — DATE

COUNTY OF LOS ANGELES

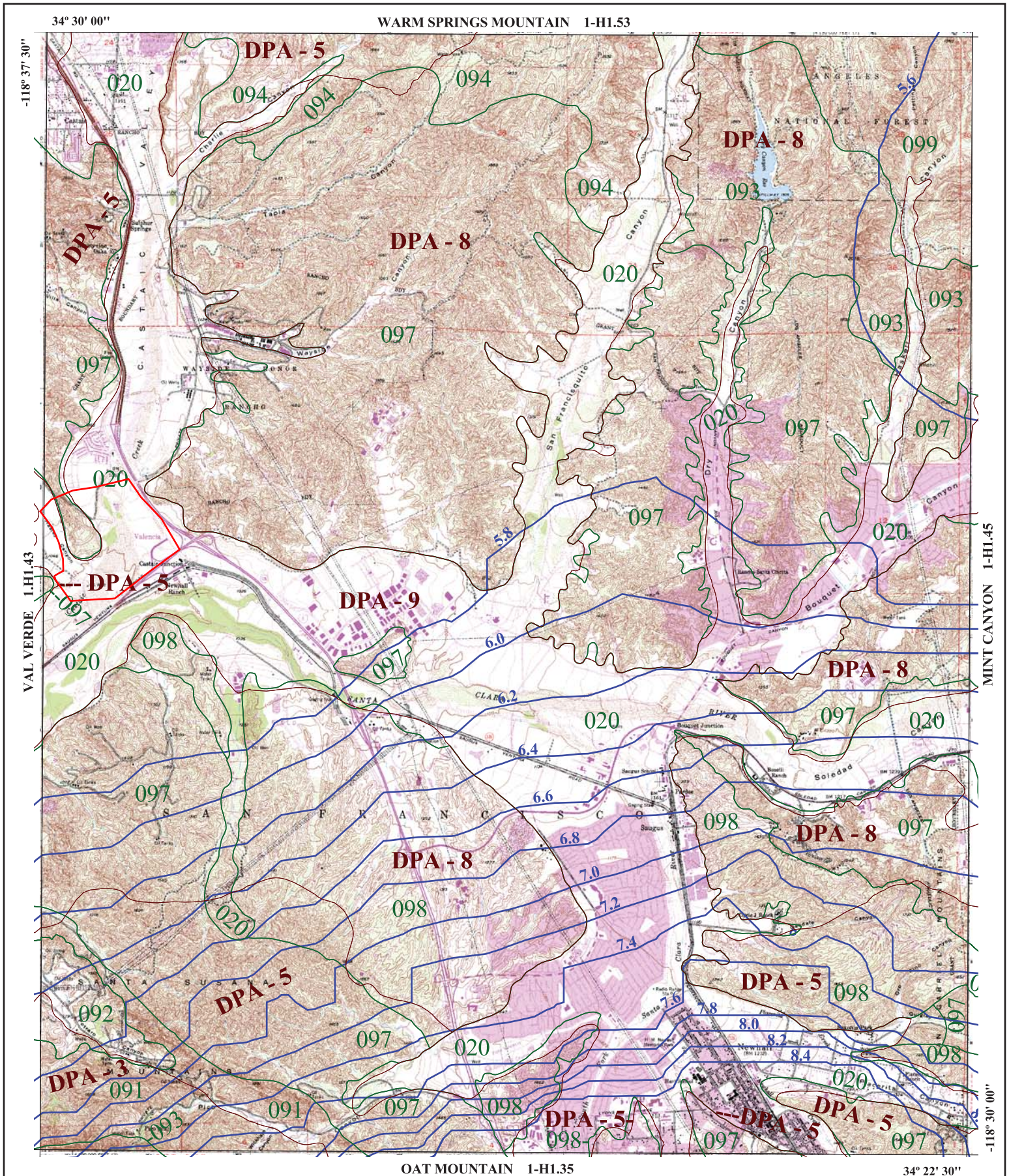
PROPOSED HYDROLOGY MAP FOR VESTING TENTATIVE PARCEL MAP 18108 ESTU2022000050

IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

SCALE: AS SHOWN
DATE: 11/06/2024
T.G. NO. (2015-042-120)
SHEET 1 OF 1 SHEETS

APPENDIX C – Hydrologic References

1. 50-YR, 24 ISOHYET (LACDPW)



25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

N E W H A L L
50-YEAR 24-HOUR ISOHYET

1-H1.44

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

Table 6.3.3
Design Fire Factors for Use with Burned Watershed Hydrology

Watershed	Fire Factor
Santa Clara River Watershed & Antelope Valley	0.34
Los Angeles River Watershed	0.71
San Gabriel River Watershed	0.71
Coastal Watershed	0.83

Only undeveloped subareas with 15% or less imperviousness require burn calculations. Equation 6.3.3 calculates the burned runoff coefficient.

$$C_{ba} = FF \times [(1-K) \times (1-C_u)] + C_u$$ **Equation 6.3.3**

Where:
- C_{ba} = Adjusted burned soil runoff coefficient, dimensionless
- FF = Fire Factor, the effectively burned percentage of watershed area, dimensionless
- K = Ratio of burned to unburned infiltration rates for I, $0.677 \times I^{-0.102}$, dimensionless
- I = Rainfall intensity in in/hr
- C_u = Undeveloped runoff coefficient, dimensionless

The K factor represents the ratio of burned to unburned infiltration rates. The ratio varies with the rainfall intensity. Equation 6.3.4 is useful for determining the burned peak flow when an unburned flow and intensity are known.

$$Q_{ba} = FF \times [(0.677 \times I^{-0.102} - 1) \times (Q_u - A \times I)] + Q_u$$ **Equation 6.3.4**

Where:
- Q_{ba} = Peak runoff from a burned area in cfs
- FF = Fire Factor, the effectively burned percentage of watershed area
- I = Rainfall intensity in in/hr
- A = Watershed area in acres
- Q_u = Peak runoff from an unburned area in cfs

Fires increase runoff and debris production. Higher runoff rates entrain more debris and burned watersheds have more debris available for entrainment. Debris production yields as much as 120,000 cubic yards/square mile of watershed for major storms. Boulders up to eight feet in diameter have been deposited in valley areas at considerable distances from their source. Debris quantities equal in volume to the storm runoff (100 percent bulking) have been recorded in major storms. The Flood Control District and the

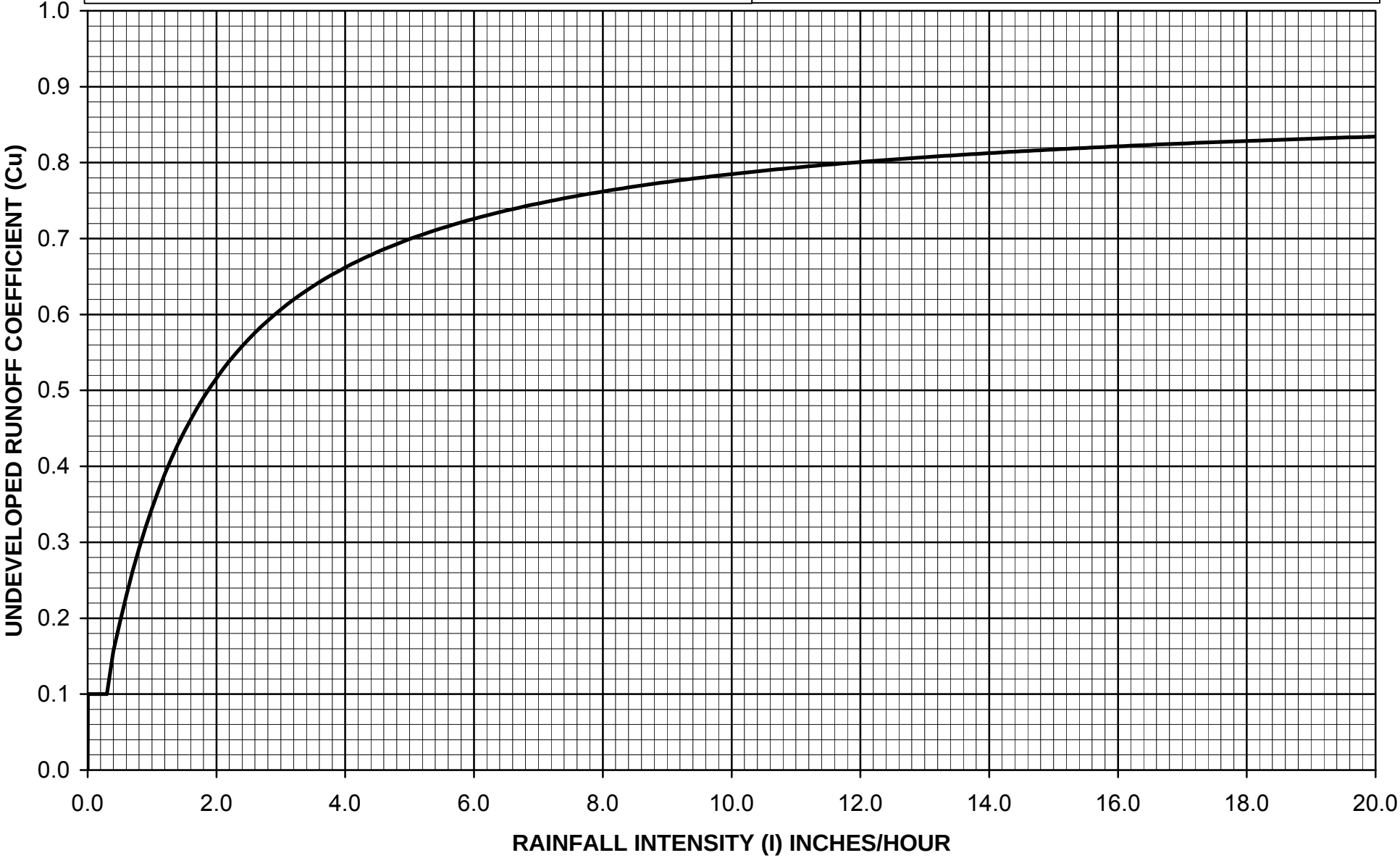
2. Runoff Coefficient Curves

$C_D = (0.9 * IMP) + (1.0 - IMP) * C_U$

Where: C_D = Developed Runoff Coefficient
IMP = Proportion Impervious
C_U = Undeveloped runoff coefficient

Los Angeles County Department of Public Works

RUNOFF COEFFICIENT CURVE
SOIL TYPE NO. 020

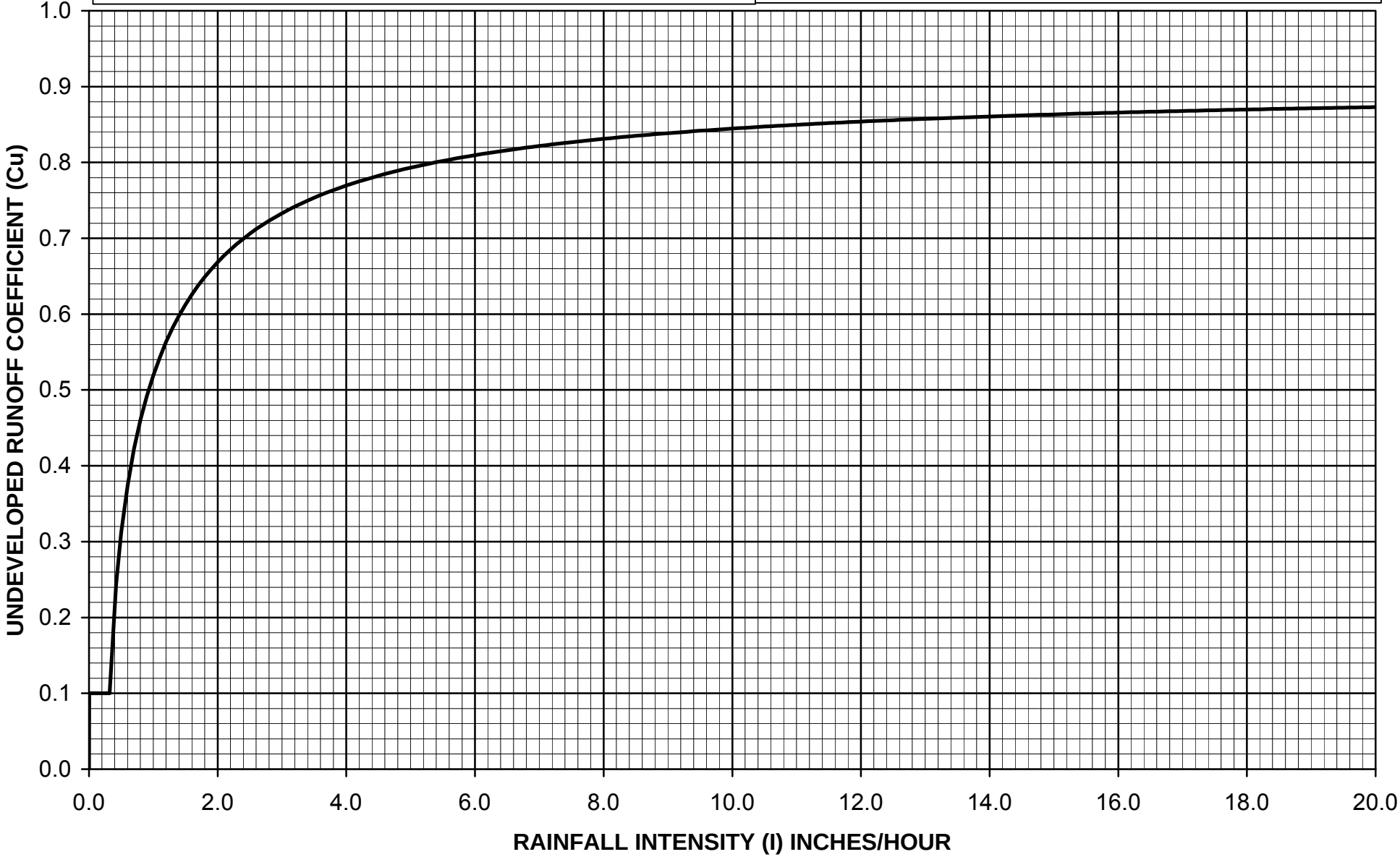


$C_D = (0.9 * IMP) + (1.0 - IMP) * C_U$

Where: C_D = Developed Runoff Coefficient
IMP = Proportion Impervious
C_U = Undeveloped runoff coefficient

Los Angeles County Department of Public Works

RUNOFF COEFFICIENT CURVE
SOIL TYPE NO. 097



3. Los Angeles County Proportion Impervious Data Table

Proportion Impervious Data

Code	Land Use Description	% Impervious
1111	High-Density Single Family Residential	42
1112	Low-Density Single Family Residential	21
1121	Mixed Multi-Family Residential	74
1122	Duplexes, Triplexes and 2-or 3-Unit Condominiums and Townhouses	55
1123	Low-Rise Apartments, Condominiums, and Townhouses	86
1124	Medium-Rise Apartments and Condominiums	86
1125	High-Rise Apartments and Condominiums	90
1131	Trailer Parks and Mobile Home Courts, High-Density	91
1132	Mobile Home Courts and Subdivisions, Low-Density	42
1140	Mixed Residential	59
1151	Rural Residential, High-Density	15
1152	Rural Residential, Low-Density	10
1211	Low- and Medium-Rise Major Office Use	91
1212	High-Rise Major Office Use	91
1213	Skyscrapers	91
1221	Regional Shopping Center	95
1222	Retail Centers (Non-Strip With Contiguous Interconnected Off-Street	96
1223	Modern Strip Development	96
1224	Older Strip Development	97
1231	Commercial Storage	90
1232	Commercial Recreation	90
1233	Hotels and Motels	96
1234	Attended Pay Public Parking Facilities	91
1241	Government Offices	91
1242	Police and Sheriff Stations	91
1243	Fire Stations	91
1244	Major Medical Health Care Facilities	74
1245	Religious Facilities	82
1246	Other Public Facilities	91
1247	Non-Attended Public Parking Facilities	91
1251	Correctional Facilities	91
1252	Special Care Facilities	74
1253	Other Special Use Facilities	86
1261	Pre-Schools/Day Care Centers	68
1262	Elementary Schools	82
1263	Junior or Intermediate High Schools	82
1264	Senior High Schools	82
1265	Colleges and Universities	47
1266	Trade Schools and Professional Training Facilities	91
1271	Base (Built-up Area)	65
1271.01	Base High-Density Single Family Residential	42
1271.02	Base Duplexes, Triplexes and 2-or 3-Unit Condominiums and T	55

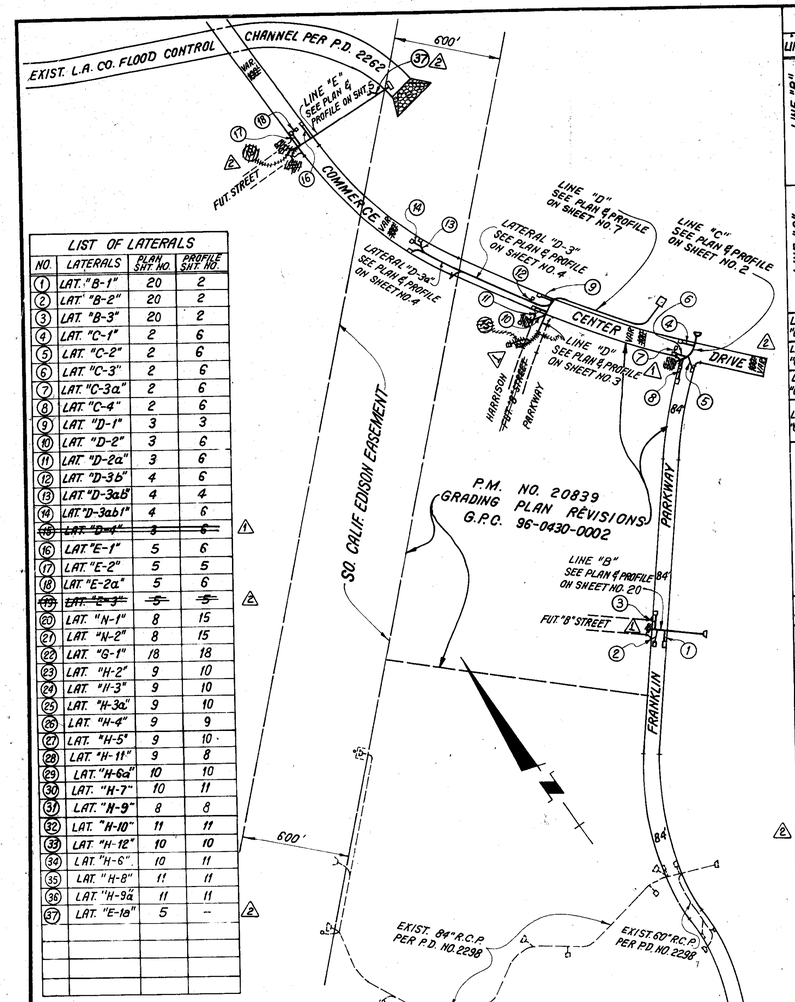
Code	Land Use Description	% Impervious
1271.03	Base Government Offices	91
1271.04	Base Fire Stations	91
1271.05	Base Non-Attended Public Parking Facilities	91
1271.06	Base Air Field	45
1271.07	Base Petroleum Refining and Processing	91
1271.08	Base Mineral Extraction - Oil and Gas	10
1271.09	Base Harbor Facilities	91
1271.10	Base Navigation Aids	47
1271.11	Base Developed Local Parks and Recreation	10
1271.12	Base Vacant Undifferentiated	1
1272	Vacant Area	2
1273	Air Field	45
1274	Former Base (Built-up Area)	65
1275	Former Base Vacant Area	2
1276	Former Base Air Field	91
1311	Manufacturing, Assembly, and Industrial Services	91
1312	Motion Picture and Television Studio Lots	82
1313	Packing Houses and Grain Elevators	96
1314	Research and Development	91
1321	Manufacturing	91
1322	Petroleum Refining and Processing	91
1323	Open Storage	66
1324	Major Metal Processing	91
1325	Chemical Processing	91
1331	Mineral Extraction - Other Than Oil and Gas	10
1332	Mineral Extraction - Oil and Gas	10
1340	Wholesaling and Warehousing	91
1411	Airports	91
1411.01	Airstrip	10
1412	Railroads	15
1412.01	Railroads-Attended Pay Public Parking Facilities	91
1412.02	Railroads-Non-Attended Public Parking Facilities	91
1412.03	Railroads-Manufacturing, Assembly, and Industrial Services	91
1412.04	Railroads-Petroleum Refining and Processing	91
1412.05	Railroads-Open Storage	66
1412.06	Railroads-Truck Terminals	91
1413	Freeways and Major Roads	91
1414	Park-and-Ride Lots	91
1415	Bus Terminals and Yards	91
1416	Truck Terminals	91
1417	Harbor Facilities	91
1418	Navigation Aids	47
1420	Communication Facilities	82
1420.01	Communication Facilities-Antenna	2

Code	Land Use Description	% Impervious
1431	Electrical Power Facilities	47
1431.01	Electrical Power Facilities-Powerlines (Urban)	2
1431.02	Electrical Power Facilities-Powerlines (Rural)	1
1432	Solid Waste Disposal Facilities	15
1433	Liquid Waste Disposal Facilities	96
1434	Water Storage Facilities	91
1435	Natural Gas and Petroleum Facilities	91
1435.01	Natural Gas and Petroleum Facilities-Manufacturing, Assembly, and In	91
1435.02	Natural Gas and Petroleum Facilities-Petroleum Refining and Processing	91
1435.03	Natural Gas and Petroleum Facilities-Mineral Extraction – Oil and Gas	10
1435.04	Natural Gas and Petroleum Facilities-Vacant Undifferentiated	1
1436	Water Transfer Facilities	96
1437	Improved Flood Waterways and Structures	100
1440	Maintenance Yards	91
1450	Mixed Transportation	90
1460	Mixed Transportation and Utility	91
1460.01	Mixed Utility and Transportation-Improved Flood Waterways and Structures	100
1460.02	Mixed Utility and Transportation-Railroads	15
1460.03	Mixed Utility and Transportation-Freeways and Major Roads	91
1500	Mixed Commercial and Industrial	91
1600	Mixed Urban	89
1700	Under Construction (Use appropriate value)	91
1810	Golf Courses	3
1821	Developed Local Parks and Recreation	10
1822	Undeveloped Local Parks and Recreation	2
1831	Developed Regional Parks and Recreation	2
1832	Undeveloped Regional Parks and Recreation	1
1840	Cemeteries	10
1850	Wildlife Preserves and Sanctuaries	2
1850.01	Wildlife-Commercial Recreation	90
1850.02	Wildlife-Other Special Use Facilities	86
1850.03	Wildlife-Developed Local Parks and Recreation	10
1860	Specimen Gardens and Arboreta	15
1870	Beach Parks	10
1880	Other Open Space and Recreation	10
2110	Irrigated Cropland and Improved Pasture Land	2
2120	Non-Irrigated Cropland and Improved Pasture Land	2
2200	Orchards and Vineyards	2
2300	Nurseries	15
2400	Dairy, Intensive Livestock, and Associated Facilities	42
2500	Poultry Operations	62
2600	Other Agriculture	42
2700	Horse Ranches	42

4. L.A.C.D.P.W. As-Built Storm Drain Plans

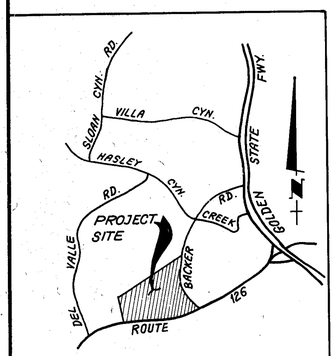
STORM DRAIN PLANS IN
P.M. NO. 22261 P.D. NO. 2298 (UNIT II)

RECEIVED
JUL 13 1999
PROCESSING CENTER
LAND DEVELOPMENT



LIST OF LATERALS			
NO.	LATERALS	PLAN SHT. NO.	PROFILE SHT. NO.
(1)	LAT. "B-1"	20	2
(2)	LAT. "B-2"	20	2
(3)	LAT. "B-3"	20	2
(4)	LAT. "C-1"	2	6
(5)	LAT. "C-2"	2	6
(6)	LAT. "C-3"	2	6
(7)	LAT. "C-3a"	2	6
(8)	LAT. "C-4"	2	6
(9)	LAT. "D-1"	3	3
(10)	LAT. "D-2"	3	6
(11)	LAT. "D-2a"	3	6
(12)	LAT. "D-3b"	4	6
(13)	LAT. "D-3a5"	4	4
(14)	LAT. "D-3ab1"	4	6
(15)	~~LAT. "D-4"~~	~~8~~	~~6~~
(16)	LAT. "E-1"	5	6
(17)	LAT. "E-2"	5	5
(18)	LAT. "E-2a"	5	6
(19)	~~LAT. "E-3"~~	~~5~~	~~5~~
(20)	LAT. "N-1"	8	15
(21)	LAT. "N-2"	8	15
(22)	LAT. "G-1"	18	18
(23)	LAT. "H-2"	9	10
(24)	LAT. "H-3"	9	10
(25)	LAT. "H-3a"	9	10
(26)	LAT. "H-4"	9	9
(27)	LAT. "H-5"	9	10
(28)	LAT. "H-11"	9	8
(29)	LAT. "H-6a"	10	10
(30)	LAT. "H-7"	10	11
(31)	LAT. "H-9"	8	8
(32)	LAT. "H-10"	11	11
(33)	LAT. "H-12"	10	10
(34)	LAT. "H-6"	10	11
(35)	LAT. "H-8"	11	11
(36)	LAT. "H-9a"	11	11
(37)	LAT. "E-1a"	5	--

KEY MAP
SCALE: 1"= 400'



VICINITY MAP
NOT TO SCALE
T.G. 123-D4

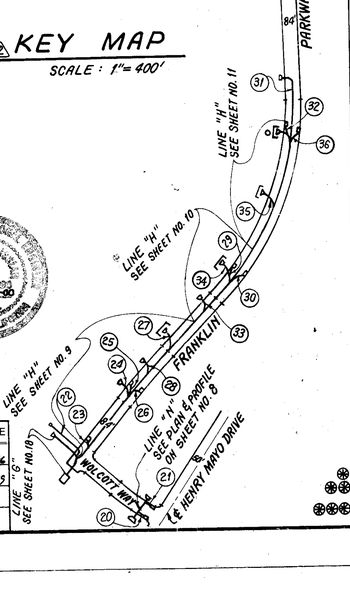
NO	REVISION	REV. R.C.E. NO.	APPROVED BY	DATE
1	DELETED DEBRIS BASIN @ END OF LINE "D"; LINE "C"; LAT. "D-2" INDEX MAP.	42890		11/4/96
2	REVISED KEY MAP; DELETED LAT. "E-3"; DELETED DEBRIS BASIN & END OF LINE "E"; ADDED LAT. "E-1a".	42890		7/1/97

HYDRAULIC ELEMENTS

LINE	STATION	Q IN C.F.S.	CONDUIT SIZE	S.F.	VELOCITY IN FT./SEC.	DEPTH
LINE "B"	5+75.00 TO 5+85.00	76.0	8'x6' R.C. BOX	0.1000	36.5	0.54
	5+85.00 TO 5+90.00	76.0	48" R.C.P.	0.1000	32 ❀❀❀	0.91'
	5+90.00 TO 7+10.00	76.0	48" R.C.P.	0.3097	37.0 ❀❀❀	0.88'
	7+10.00 TO 9+65.41	76.0	48" R.C.P.	0.0300	13.6 ❀	1.91'
	9+65.41 TO 10+18.50	73.0	48" R.C.P.	0.0300	13.7 ❀	2.59'
	10+18.50 TO 10+38.00	66.0	48" R.C.P.	0.0300	11.1 ❀	3.28'
	10+38.00 TO 10+43.00	66.0	T.S. NO. 1	0.0300	5.7	2.91'
	10+43.00 TO 10+48.00	66.0	45°x 8'W R.C. BOX	0.0300	6.2	2.68'
LINE "C"	9+37.00 TO 9+56.13	125.0	48" R.C.P.	0.0190	14.0	2.78'
	9+56.13 TO 10+21.00	121.0	48" R.C.P.	0.0190	14.4	3.31'
	10+21.00 TO 10+34.64	121.0	25°x 5'W R.C. BOX	0.0098	9.9	⊙
	10+34.64 TO 10+41.00	119.0	25°x 5'W R.C. BOX	0.0091	9.6	⊙
	10+42.00 TO 10+47.70	117.0	48" R.C.P.	0.0190	12.0	3.88'
	10+47.70 TO 10+57.70	114.0	48" R.C.P.	0.0190	12.6	2.82'
	10+57.70 TO 11+00.00	110.0	48" R.C.P.	0.0190	13.2	3.17'
LAT. "C-1"	1+02.01 TO 1+74.81	4.0	18" R.C.P.	0.1015	12.7	0.77'
LAT. "C-2"	1+02.57 TO 1+30.44	3.0	18" R.C.P.	0.0008	1.7	⊙
	1+30.44 TO 1+62.29	3.0	18" R.C.P.	0.0665	9.5	0.66'
LAT. "C-3"	1+03.15 TO 1+48.96	12.0	18" R.C.P.	0.1270	17.0	1.31'
LAT. "C-4"	1+04.00 TO 2+05.41	20.0	24" R.C.P.	0.0396	13.4	1.61'
LINE "D"	2+19.41 TO 2+33.87	16.0	24" R.C.P.	0.0173	5.1	⊙
	2+88.00 TO 3+01.50	1283.0	8'x 8'x 5' R.C. BOX	0.0115	25.9	5.85'
	3+01.50 TO 9+04.51	1283.0	102" R.C.P.	0.0115	28.0 ❀❀	7.25'
	9+04.51 TO 9+55.41	1283.0	102" R.C.P.	0.0217	29.4 ❀❀	6.15'
	9+55.41 TO 10+06.21	1278.0	102" R.C.P.	0.0217	30.0 ❀❀	5.99'
	10+06.21 TO 15+16.50	1193.0	102" R.C.P.	0.0217	35.9 ❀❀	5.26'
	15+16.50 TO 15+21.50	1193.0	T.S. NO. 1	0.0217	37.2	4.82'
	15+21.50 TO 15+30.00	1193.0	8'x 8'x 12'x 5' R.C. BOX	0.0217	37.4	3.78'
	15+30.00 TO 15+40.00	1193.0	SPECIAL CURVED SQUARE	0.0217	37.7	3.76'
	15+40.00 TO 16+05.00	1193.0	SPECIAL CURVED SQUARE	0.3545	37.5	3.54'
	16+05.00 TO 16+37.00	1193.0	SPECIAL CURVED SQUARE	0.0300	14.3	4.54'
LAT. "D-1"	1+04.25 TO 1+17.24	4.0	18" R.C.P.	0.0015	2.7	⊙
	1+17.24 TO 1+85.08	4.0	18" R.C.P.	0.1069	13.0	0.77'
LAT. "D-2"	1+08.00 TO 1+47.33	85.0	48" R.C.P.	0.0381	15.5	1.92'
	1+47.33 TO 1+92.00	80.0	48" R.C.P.	0.0381	14.5	2.71'
LAT. "D-2a"	1+03.32 TO 1+55.06	11.0	18" R.C.P.	0.1156	16.5	1.27'
LAT. "D-3"	1+08.00 TO 1+37.77	65.0	36" R.C.P.	0.0095	9.2	⊙
	1+37.77 TO 6+12.01	65.0	36" R.C.P.	0.0264	16.0	2.53'
	6+12.01 TO 6+72.36	58.0	36" R.C.P.	0.0264	11.8	2.47'
LAT. "D-3a"	1+03.00 TO 3+85.00	8.0	24" R.C.P.	0.0460	11.4	1.01'
	3+85.00 TO 4+41.00	4.0	24" R.C.P.	0.0460	9.2	0.70'
LAT. "D-3a5"	1+01.50 TO 1+84.54	4.0	18" R.C.P.	0.0397	9.1	1.39'
LINE "E"	4+39.00 TO 4+54.50	~~213.0~~ 203.0	7'W x 7'W R.C. BOX	0.0004	4.3	⊙
	4+54.50 TO 4+76.63	~~213.0~~ 203.0	84" R.C.P.	0.0004	5.5	⊙
	4+76.63 TO 5+03.06	~~213.0~~ 203.0	84" R.C.P.	0.0004	5.5	⊙
	5+03.06 TO 5+30.00	~~213.0~~ 203.0	84" R.C.P.	0.4366	29.6 ❀	2.08
	5+30.00 TO 9+56.50	174.0	84" R.C.P.	0.0200	19.4	2.22'
	9+56.50 TO 10+43.50	171.0	84" R.C.P.	0.0200	17.0	2.23'
	10+43.50 TO 10+60.00	168.0	84" R.C.P.	0.0200	16.6	2.18'
	10+60.00 TO 10+75.00	138.0	T.S. NO. 3	0.2200	14.2	2.90'
	10+75.00 TO 11+15.00	138.0	48" R.C.P.	0.0190	14.1	3.49'
LAT. "E-1"	1+03.50 TO 1+79.10	3.0	18" R.C.P.	0.1792	14.4	0.66'
LAT. "E-1a"	1+03.50 TO 1+78.00	3.0	18" R.C.P.	0.1584	13.8	0.66'
LAT. "E-2"	1+12.60 TO 1+54.00	33.0	36" R.C.P.	0.0208	10.7	1.87'
LINE "F"	7+90.00 TO 8+16.00	14.7	36" R.C.P.	0.1000	15.8 ❀	0.71'
	8+16.00 TO 9+50.00	14.7	36" R.C.P.	0.3265	22.2 ❀	0.66'
	9+50.00 TO 10+45.00	14.7	36" R.C.P.	0.0300	14.1 ❀	1.22'
LINE "G"	9+62.00 TO 10+11.00	355.4	60" R.C.P.	0.0160	24.9 ❀	3.49'
	10+11.00 TO 10+70.00	206.0	60" R.C.P.	0.0160	38.2 ❀❀	1.76'
	10+70.00 TO 11+89.00	206.0	60" R.C.P.	0.2400	39.9 ❀❀	2.68'
	11+89.00 TO 11+94.00	206.0	T.S. NO. 1	0.2400	17.2	2.40'
	11+94.00 TO 12+00.00	206.0	6'W x 5'W R.C. BOX	0.2400	16.9	3.75'
LINE "H"	9+63.00 TO 10+54.52	157.4	54" R.C.P.	0.0156	16.1	2.70'
	10+54.52 TO 14+38.64	154.4	54" R.C.P.	0.0156	16.3	2.59'
	14+38.64 TO 16+15.34	143.6	48" R.C.P.	0.0186	16.3	3.04'
	16+15.34 TO 17+71.59	135.3	48" R.C.P.	0.0186	15.8	3.47'
	17+71.59 TO 20+83.62	109.3	48" R.C.P.	0.0186	15.8	2.55
	20+83.62 TO 22+87.68	101.0	48" R.C.P.	0.0186	15.1	3.05'
	22+87.68 TO 23+02.04	74.0	48" R.C.P.	0.0025	5.9	⊙
	23+02.04 TO 25+00.00	73.0	48" R.C.P.	0.0210	19.6	1.56'
	25+00.00 TO 27+17.32	73.0	48" R.C.P.	0.0506	20.5 ❀	1.47
	27+17.92 TO 30+84.00	50.0	36" R.C.P.	0.0506	20.6 ❀	1.68
	30+40.00 TO 30+84.93	50.0	36" R.C.P.	0.0250	12.3	2.10
	30+84.93 TO 31+08.87	36.0	36" R.C.P.	0.0250	5.4	3.72
	31+08.87 TO 31+39.38	31.0	36" R.C.P.	0.0195	5.9	3.02
LAT. "H-2"	1+04.00 TO 1+29.09	5.0	18" R.C.P.	0.0023	2.8	⊙
	1+29.09 TO 1+58.49	5.0	18" R.C.P.	0.0657	10.4	0.86'
LAT. "H-3"	1+03.50 TO 1+62.89	25.0	36" R.C.P.	0.0212	10.4	1.61'
LAT. "H-9"	1+17.80 TO 1+20.36	15.0	36" R.C.P.	0.0050	2.1	⊙
	1+20.36 TO 1+30.78	15.0	36" R.C.P.	0.0863	12.9	2.72
	1+30.78 TO 1+60.00	12.0	36" R.C.P.	0.0863	13.7	2.12
	1+60.00 TO 3+97.67	12.0	36" R.C.P.	0.0282	10.4	0.86
	3+97.67 TO 6+80.00	12.0	36" R.C.P.	0.0100	7.2	1.10
LAT. "H-9a"	1+02.00 TO 1+49.07	4.0	18" R.C.P.	0.0779	11.0	0.77
LAT. "H-10"	1+03.00 TO 1+04.42	5.0	18" R.C.P.	0.0023	2.8	⊙
	1+04.42 TO 1+23.91	5.0	18" R.C.P.	0.2038	14.9	0.86'

HYDRAULIC ELEMENTS CONTINUED ON SHEET NO. 16

❀ THE MINIMUM CONCRETE COVER OVER THE STEEL IN THE INVERT = 1.25 INCHES.
❀❀ THE MINIMUM CONCRETE COVER OVER THE STEEL IN THE INVERT = 1.75 INCHES.
❀❀❀ THE MINIMUM CONCRETE COVER OVER THE STEEL IN THE INVERT = 2.25 INCHES.



BENCH MARK: CL 3976
LACRD BM
RDBM TAG IN C.B. 4 FT. N. B.C.R. 70 FT. N. AND 32 FT. E. C.L INT. OLD ROAD AND HASLEY CYN. ROAD OFF-RAMP
NEWHALL QUAD (1983) ELEV. 1065.685

GENERAL NOTES (Cont'd)

22. ALL BACKFILL AND FILLS WITHIN STREET RIGHT OF WAY SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 306-1.3.4 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED AND INSPECTED BY THE DEPARTMENT CONTRACTOR SHALL NOTIFY THE INSPECTOR AT LEAST 24 HOURS IN ADVANCE FOR SOIL TESTING AS REQUIRED BY THE INSPECTOR.

23. PIPE BEDDING SHALL BE IN ACCORDANCE WITH LOS ANGELES COUNTY ENGINEER CASE AD BEDDING PER STANDARD DRAWING D-54 UNLESS OTHERWISE NOTED. THE BEDDING MATERIAL PLACED FROM THE BOTTOM OF THE PIPE TO 1 FOOT OVER THE TOP OF THE PIPE SHALL BE SAND, CRUSHED AGGREGATE, OR NATIVE FREE-DRAINING GRANULAR MATERIAL AND SHALL HAVE A SAND EQUIVALENT OF 20 OR GREATER.

24. "UNLESS OTHERWISE SPECIFIED IN THE PROFILE ON THESE PLANS, THE PIPE SHALL BE MANUFACTURED WITH A MINIMUM CONCRETE COVER OVER THE STEEL IN THE INVERT OF 0.75 INCHES FOR R.C.P. UP TO 96-INCHES IN DIAMETER AND 1.25 INCHES FOR PIPE GREATER THAN 96 INCHES IN DIAMETER".

25. PIPE SHALL BE EMBEDDED 5 INCHES INTO ALL STRUCTURES INCLUDING INLET AND OUTLET HEADWALLS UNLESS OTHERWISE SPECIFIED.

26. ALL CATCH BASINS WITHIN THE DEDICATED STREET RIGHT-OF-WAY SHALL BE CONSTRUCTED AT THE STREET PLANS.

27. THE CONTRACTOR SHALL PROVIDE TO THE SATISFACTION OF THE DIRECTOR OF PUBLIC WORKS A SYSTEM FOR CONTRIBUTORY DRAINAGE TO BE OPERABLE AT ALL TIMES UNTIL THIS STORM DRAIN SYSTEM IS ACCEPTED FOR MAINTENANCE. THIS MAY HAVE TO BE DESIGNED BY A CIVIL ENGINEER.

28. ALL REFERENCES ON THIS PLAN TO THE COUNTY ENGINEER, ROAD DEPARTMENT, OR FLOOD CONTROL DISTRICT SHALL APPLY TO THE APPROPRIATE ELEMENTS OF THE DEPARTMENT OF PUBLIC WORKS.

29. EXISTING UTILITIES SHALL BE MAINTAINED IN PLACE BY THE CONTRACTOR, UNLESS OTHERWISE NOTED.

30. WHERE THE UTILITIES ARE INDICATED ON THE DRAWINGS TO BE SUPPORTED, SAID SUPPORTS SHALL BE IN ACCORDANCE WITH STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION NO. 224-0 UNLESS OTHERWISE INDICATED.

31. ALL OPENINGS RESULTING FROM THE CUTTING OR PARTIAL REMOVAL OF EXISTING CULVERTS, PIPES OR SIMILAR STRUCTURES SHALL BE SEALED WITH 8 INCHES OF BRICK AND MORTAR AND 6 INCHES OF CONCRETE, UNLESS OTHERWISE SHOWN.

32. MANHOLES NO. 1, 2, 3, AND 4 SHALL USE THE STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION **NO. 630** FOR THE "FRAME AND COVER" AND **NO. 635** OR THE "STANDARD DROP STEP".

33. THIS STORM DRAIN WILL NOT BE ACCEPTED FOR MAINTENANCE UNTIL THE STREETS HAVE BEEN PAVED, MANHOLES BROUGHT TO GRADE, AND THE SYSTEM CLEANED TO SATISFACTION OF THE DIRECTOR OF PUBLIC WORKS.

34. THE LATEST REVISED STANDARD PLAN OR DRAWING SHALL BE USED UNLESS OTHERWISE SPECIFICALLY NOTED.

35. A NPDES PERMIT FROM THE REGIONAL WATER QUALITY CONTROL BOARD IS REQUIRED BEFORE ANY DISHARGE OF NON-STORM WATER INTO THE STORM DRAIN IS ALLOWED.

LIST OF STANDARDS

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT — A.P.W.A.

1. M.H. NO. 1	PER	2-D102	PER (321-0)
2. M.H. NO. 2	"	2-D164	" (320-0)
3. M.H. NO. 4	"	2-D113	" (322-0)
4. J.S. NO. 2	"	2-D112	" (331-0)
5. J.S. NO. 4	"	2-D193	" (332-0)
6. T.S. NO. 1	"	2-D235	" 342-0)
7. T.S. NO. 3	"	2-D188	" (340-0)
8. M.H. SHAFT	"	2-D107	" (324-0)
9. J.S. NO. 1	"	2-D189	" (333-0)
10. REINFORCING BARS A.S.T.M. 615	"	2-D171	" (380-0)
11. CONCRETE COLLAR	"	2-0393	" (3089-0)
12. TRASH RACK	"	2-DTR 1.1 TO 1.2	" (3089-0)

AMERICAN PUBLIC WORKS ASSOCIATION

1. CURB OPENING CATCH BASIN	PER	300-0
2. CATCH BASIN FRAME & COVER	"	312-1
3. CATCH BASIN REINFORCEMENT	"	309-0
4. MONOLITHIC CATCH BASIN CONNECTION	"	308-0
5. CATCH BASIN FACE PLATE ASSEMBLY AND PROTECTION BAR	"	310-0
6. FRAME & GRATING FOR CATCH BASIN	"	311-0
7. LOCAL DEPRESSION AT CATCH BASIN	"	313-0 (CASE "E")
8. CHAIN LINK FENCE & GATE	"	600-0
9. HEADWALL FENCE	"	600-0
10. MANHOLE FRAME & COVER	"	630-1
11. STANDARD DROP STEP	"	635-0
12. COMMERCIAL DRIVEWAY	"	101-0 (110-0)
13. CONCRETE RETAINING WALL	"	615-0
14. CONCRETE STAIRWAY	"	640-0
15. HAND RAIL	"	606-0
16. REINFORCED CONCRETE RETAINING WALL, TYPE 4	"	613-0

LOS ANGELES COUNTY ENGINEER

1. PIPE BEDDING	PER	D-54	(3092-0)
2. SAFETY REQUIREMENTS	"	S-2	(6008-0)

LOS ANGELES COUNTY DEPT. OF PUBLIC WORKS

1. SLOPED PROTECTION BARRIER	PER	3060-0
2. ENERGY DISSIPATOR (IMPACT TYPE)	"	3097-0

PRIVATE DRAIN (PD'S) GENERAL NOTES:

THE FOLLOWING GENERAL NOTES ARE TO BE INCLUDED ON THE TITLE SHEET OF ALL P.D. PLANS.

1. A PERMIT SHALL BE OBTAINED AND A DEPOSIT PAID TO THE DEPARTMENT OF PUBLIC WORKS AT THE PERMIT COUNTER 900 SOUTH FREMONT AVENUE 8TH FLOOR, ALHAMBRA AT LEAST 72 HOURS PRIOR TO STARTING WORK UNDER THIS CONTRACT. COPIES OF ALL OTHER REQUIRED PERMITS, SUCH AS FLOOD CONTROL DISTRICT AND ROAD EXCAVATION, MUST BE FILED WITH THE PERMIT APPLICATION.
2. WHEN WORK IS WITHIN A CONTRACT CITY, THE CONTRACTOR MUST CONTACT THE DIRECTOR OF PUBLIC WORKS OF THAT CITY TO DETERMINE THE LOCATION TO PAY THE INSPECTION DEPOSIT.
3. THE CONTRACTOR SHALL CONTACT THE DISTRICT OFFICE LISTED ON THE "APPLICATION FOR STORM DRAIN CONSTRUCTION INSPECTION FORM I" TO ARRANGE FOR AN ACCEPTABLE CONSTRUCTION START DATE.
4. APPROVAL OF THIS PLAN BY THE COUNTY OF LOS ANGELES DOES NOT CONSTITUTE A REPRESENTATION TO THE ACCURACY OF THE LOCATION OR THE EXISTENCE OR NONEXISTENCE OF ANY UNDERGROUND UTILITY, PIPE OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THIS NOTE APPLIES TO ALL SHEETS.
5. ALL WORK SHALL BE IN ACCORDANCE WITH THE ***LATEST ADOPTED EDITION OF THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION", INCLUDING SUPPLEMENTS AND SHALL BE PROSECUTED ONLY IN THE PRESENCE OF THE DIRECTOR OF PUBLIC WORKS.***
6. THE CONTRACTOR'S ATTENTION IS DIRECTED TO SECTION 7-10.41 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION IN REGARD TO SAFETY ORDERS AND SHALL CONFORM TO THE "MINIMUM PUBLIC SAFETY REQUIREMENTS" AS SHOWN ON LOS ANGELES COUNTY ENGINEER STANDARD S-2 ***(SEE PAGES 36-49 FOR A COPY).***
7. ELEVATIONS ARE IN FEET ABOVE U.S.C. & G.S. MEAN SEA LEVEL DATUM OF 1929, UNLESS OTHERWISE NOTED.
8. NO CONCRETE SHALL BE PLACED UNTIL THE FORMS AND REINFORCING STEEL HAVE BEEN PLACED, INSPECTED AND APPROVED.
9. ALL STRUCTURAL CONCRETE SHALL BE PORTLAND CEMENT CONCRETE WITH AN ULTIMATE 28 DAY COMPRESSIVE STRENGTH OF 3250 P.S.I. ***(4000 P.S.I. REQUIRED FOR R.C. BOXES, INLETS & OUTLETS).***
10. TRANSVERSE REINFORCEMENT AND TRANSVERSE JOINTS SHALL BE PLACED AT RIGHT ANGLES (OR RADIAL) TO THE CONDUIT CENTER LINE EXCEPT AS OTHERWISE SHOWN ON THE DRAWINGS.
11. ALL STEEL ADJACENT TO FACE OF CONCRETE SHALL HAVE 2" "CLEARANCE UNLESS OTHERWISE SPECIFIED.
12. REINFORCEMENT SHALL BE DEFORMED BARS OF INTERMEDIATE GRADE STEEL, PER A.S.T.M. A-615-GRADE 60.
13. ALL BAR BENDS AND HOOKS SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE "MANUAL OF STANDARD PRACTICE".
14. DIMENSIONS FROM FACE OF CONCRETE TO STEEL ARE TO CENTER LINE OF STEEL UNLESS OTHERWISE NOTED.
15. ALL STEEL THAT IS TO BE CONTINUOUS SHALL HAVE A MINIMUM LAP OF 30 BAR DIAMETERS OR 18" WHICHEVER IS GREATER.
16. ALL CONSTRUCTION JOINTS IN THE FOOTING OF SLABS AND WALLS SHALL BE IN THE SAME PLANE. NO STAGGERING OF JOINTS WILL BE PERMITTED.
17. ALL EXPOSED EDGES SHALL BE FINISHED WITH A ¾" CHAMFER.
18. UNLESS OTHERWISE SHOWN, CONCRETE DIMENSIONS SHAL BE MEASURED VERTICALLY OR HORZONTALLY AND PARALLEL OR AT RIGHT ANGLES (OR RADIAL) TO THE CENTER LINE OF CONSTRUCTION.
19. **CONCRETE BACKFILL IS REQUIRED**
WHEN THE PIPE HAS LESS THAN ONE FOOT OF COVER, THE CONCRETE BACKFILL SHALL CONSIST OF 1:3:5 MIX PORTLAND CEMENT CONCRETE POURED FROM WALL TO WALL OF TRENCH AND FROM BOTTOM OF TRENCH TO A MINIMUM OF 4 INCHES OVER THE TOP OF THE PIPE.
20. ALL PIPES SHALL BE PLACED IN TRENCH IN NATURAL GROUND AND/OR COMPACTED FILL. THE GROUND LEVEL BEFORE THE TRENCHING SHALL BE AT LEAST 3 FEET ABOVE THE TOP OF THE PIPE ELEVATION, OR AT FINISH SURFACE ELEVATION, WHICHEVER IS LESS.
21. ALL BACKFILL AND FILLS OUTSIDE OF STREET RIGHT OF WAY SHALL BE COMPACTED TO 90% OF MAXIMUM DENSITY AS DETERMINED BY ASTM SOIL COMPACTION TEST D 1557-78 METHOD "D" UNLESS OTHERWISE SPECIFIED. THIS SHALL BE CERTIFIED BY A GEOTECHNICAL ENGINEER. THIS CERTIFICATION SHALL BE SUBMITTED TO THE DIRECTOR OF PUBLIC WORKS PRIOR TO ACCEPTANCE OF THE WORK BY THE COUNTY.

RIPRAP NOTES

1. ROCKS FOR GROUTED RIPRAP SHALL BE GOOD QUALITY RIVER RUN ROCK. THE SMALLEST DIMENSIONS SHALL EXCEED 3 INCHES AND THE LARGEST DIMENSION SHALL NOT EXCEED 18 INCHES. THE LARGEST DIMENSION SHALL NOT EXCEED 4 TIMES THE SMALLEST DIMENSION.
2. THERE SHALL BE A GROUT BED OF AT LEAST 2 INCHES BENEATH THE FIRST LAYER OF ROCK. ALL THE VOIDS BETWEEN THE ROCKS SHALL BE FILLED WITH GROUT. MAXIMUM SPACING BETWEEN ROCKS SHALL BE 2 INCHES.
3. SURFACE ROCKS SHALL BE IMBEDDED FROM 1/2 TO 2/3 OF THEIR MAXIMUM DIMENSION.

NOTE: CONCRETE MAY BE SUBSTITUTED FOR THE GROUT.

PRIVATE ENGINEERS NOTICE TO CONTRACTORS

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THIS MAP.

THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINES NOT OF RECORD OR NOT SHOWN ON THIS DRAWING.

Ronald R. Horn 16913 — REGISTERED CIVIL ENGINEER No
6-24-92 — DATE

PF520355

REVISION

935-749-1-20

PLANS PREPARED BY:
SIKAND ENGINEERING ASSOCIATES
15230 BURBANK BLVD. VAN NUYS, CALIF. 91411, TEL. (818) 787-8550
RONALD R. HORN
SIGNATURE: Ronald R. Horn, R.C.E. NO. 16913

REGISTERED PROFESSIONAL ENGINEER RONALD R. HORN No. 16913 Exp 6/30/93 CIVIL STATE OF CALIFORNIA

COUNTY OF LOS ANGELES, CALIFORNIA
HARRY W. STONE — DIRECTOR OF PUBLIC WORKS

LAND DEVELOPMENT DIVISION

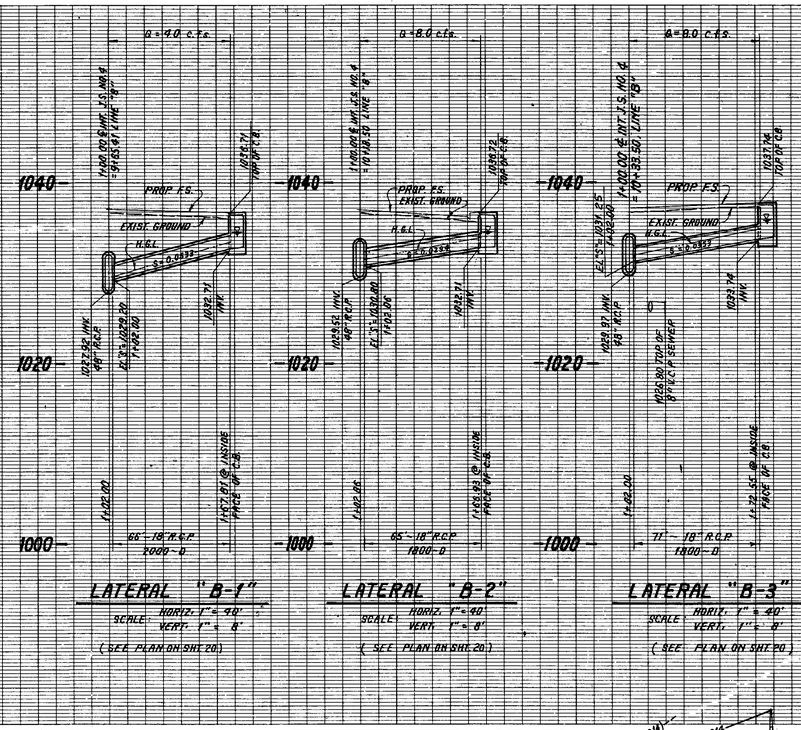
APPROVED BY: Tom Kemilliard — ASSISTANT DEPUTY DIRECTOR — DATE: 10/5/92

CHECKED BY: Ronald R. Horn — R.C.E. NO. 16913 — DATE: 10-5-92
OFFICE OF THE DIRECTOR OF PUBLIC WORKS

SHT. 1 OF 20 SHTS

W.O. 1020-252-01

STORM DRAIN PLANS IN
P.M. No. 22261 P.D. No. 2298 (UNIT II)



NO.	REVISION	REVISED BY	APPROVED BY	DATE
1	REVISED EASEMENT DATA.	42890	B. Hamamoto	7/22/94
2	ADDED 12" PIC CONNECTION TO SIDE OF C.B. LOCATED @ STA 11+58.00 WIDENED DEBRIS BASIN @ EAST SIDE & REVISED "B" & "D" OF LINE "C".	42890	B. Hamamoto	12/16/94
3	REVISED LINE "C", LAT. "C-1", "C-3", "C-4" & LAT. "C-4a".	42890	B. Hamamoto	7/1/99

(3)	14°04'10"	45.00'	11.05'	5.55'
(4)	01°03'04"	2526.00'	46.34'	23.17'
(5)	29°37'43"	22.50'	11.64'	5.95'
(6)	45°43'47"	22.50'	17.96'	9.49'
3 (7)	51°29'55"	22.50'	20.22'	10.85'

℄ STORM DRAIN CURVE DATA

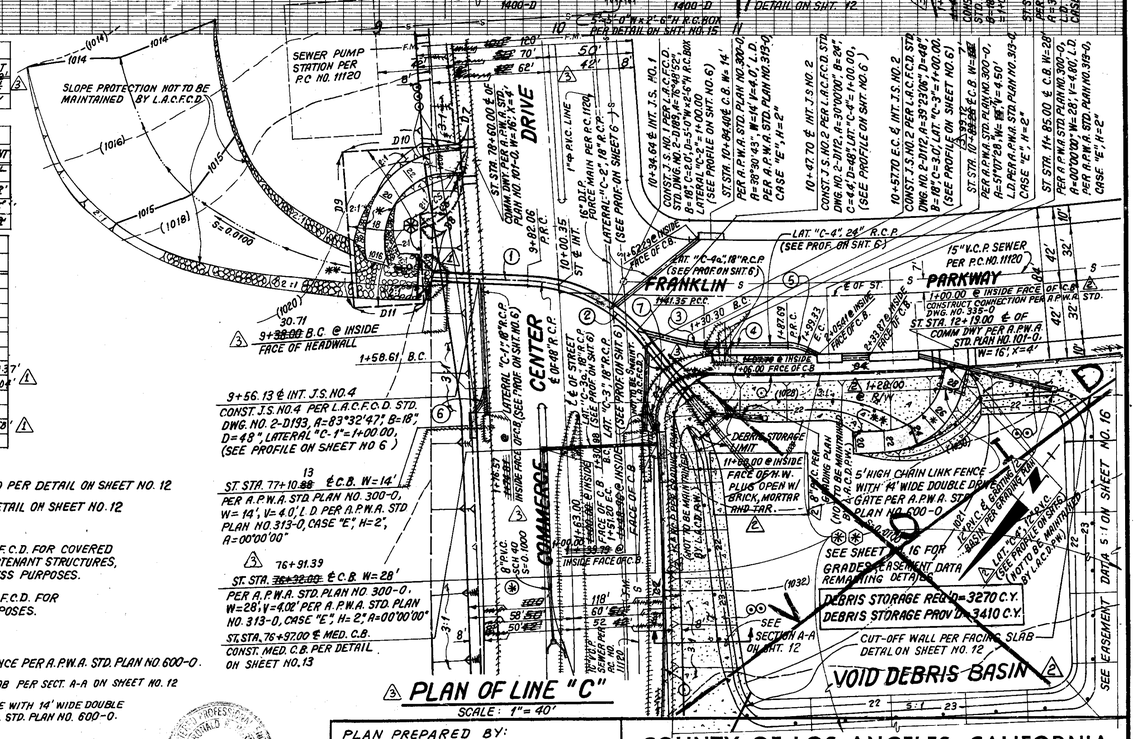
NO.	DELTA	RADIUS	LENGTH	TANGENT
~~(1)~~	~~01°02'02"~~	~~2494.00'~~	~~45.06'~~	~~22.53'~~
(2)	48°09'10"	90.00'	75.64'	40.21'

EASEMENT CURVE DATA

NO.	DELTA	RADIUS	LENGTH	TANGENT
~~C1~~	~~00°25'46"~~	~~4958.00'~~	~~37.00'~~	~~18.50'~~
~~C2~~	~~02°53'22"~~	~~5050.00'~~	~~240.01'~~	~~120.02'~~
~~C3~~	~~52°41'50"~~	~~27.00'~~	~~15.88'~~	~~8.80'~~
~~C4~~	~~05°36'06"~~	~~2562.00'~~	~~250.00'~~	~~125.10'~~
1 C5	~~90°25'25"~~ 95°21'00"	27.00'	~~42.64'~~ 44.96'	~~27.90'~~ 29.70'

EASEMENT DATA

NO.	BEARING	DISTANCE
	N36°07'45" W	
D7	N41°34'46"W	~~16.39'~~ 9.37'
D8	~~N41°34'46"W~~	~~42.64'~~ 50.0'
D9	N41°34'46"W	86.00'
D10	N 48°25'14"E	66.00'
D11	N 48°25'14"E	~~38.49'~~ 9.68'



* 12' WIDE ACCESS ROAD PER DETAIL ON SHEET NO. 12

** CUT-OFF WALL PER DETAIL ON SHEET NO. 12

Ⓐ EASEMENT TO L.A.C.F.C.D. FOR COVERED STORM DRAIN, APPURTENANT STRUCTURES, AND INGRESS & EGRESS PURPOSES.

ⒷⒷ EASEMENT TO L.A.C.F.C.D. FOR FLOOD CONTROL PURPOSES.

⊙ 5' HIGH CHAIN LINK FENCE PER A.P.W.A. STD. PLAN NO 600-0.

⊙⊙ CONCRETE FACING SLAB PER SECT. A-A ON SHEET NO. 12

⊙⊙⊙ 5' HIGH CHAIN LINK FENCE WITH 14' WIDE DOUBLE DRIVE GATE PER A.P.W.A. STD. PLAN NO. 600-0.

3 Ⓐ Ⓑ - NOT TO BE MAINTAINED BY L.A.C.F.C.D.

REGISTERED PROFESSIONAL ENGINEER — No. 42830 — Exp. 03-31-00 — CIVIL — STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — No. 16913 — CIVIL — STATE OF CALIFORNIA

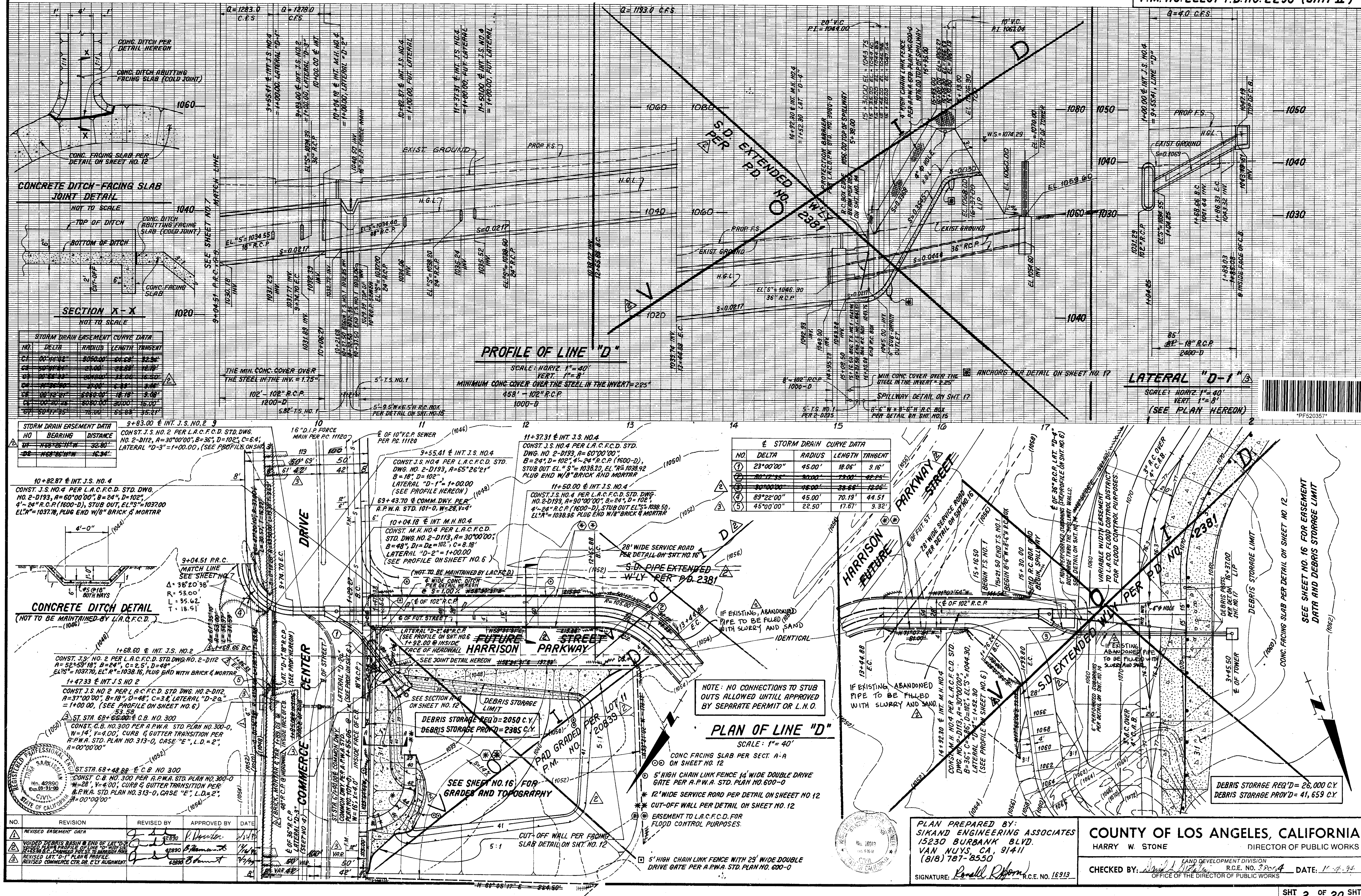
PLAN PREPARED BY:
SIKAND ENGINEERING ASSOCIATES
15230 BURBANK BLVD.
VAN NUYS, CA. 91411
(818) 787-8550
SIGNATURE: Ronald R. Sikand R.C.E. NO. 16913

COUNTY OF LOS ANGELES, CALIFORNIA
HARRY W. STONE DIRECTOR OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION
CHECKED BY: [illegible] R.C.E. NO. [illegible] DATE: 12-8-99
OFFICE OF THE DIRECTOR OF PUBLIC WORKS

SHT 2 OF 20 SHTS

1020-252-01

STORM DRAIN PLANS IN
P.M. NO. 22261 P.D. NO. 2298 (UNIT II)



STORM DRAIN EASEMENT CURVE DATA (all entries struck out)

NO.	DELTA	RADIUS	LENGTH	TANGENT
~~C1~~	~~00°44'02"~~	~~5050.00'~~	~~64.68'~~	~~32.34'~~
~~C2~~	~~50°01'04"~~	~~27.00'~~	~~23.89'~~	~~12.79'~~
~~C3~~	~~00°56'23"~~	~~2048.00'~~	~~33.00'~~	~~16.50'~~
~~C4~~	~~11°36'50"~~	~~37.00'~~	~~6.83'~~	~~3.46'~~
~~C5~~	~~00°12'21"~~	~~5050.00'~~	~~18.18'~~	~~9.08'~~
~~C6~~	~~00°20'25"~~	~~5050.00'~~	~~30.00'~~	~~15.00'~~
~~C7~~	~~50°17'35"~~	~~75.00'~~	~~65.83'~~	~~35.21'~~

STORM DRAIN EASEMENT DATA

NO	BEARING	DISTANCE
~~D1~~	~~N68°26'11"W~~	~~32.80'~~
~~D2~~	~~N68°26'11"W~~	~~16.34'~~

℄ STORM DRAIN CURVE DATA

NO.	DELTA	RADIUS	LENGTH	TANGENT
1	23°00'00"	45.00'	18.06'	9.16'
~~2~~	~~80°17'35"~~	~~30.00'~~	~~19.00'~~	~~42.25'~~
~~3~~	~~30°00'00"~~	~~45.00'~~	~~23.56'~~	~~12.06'~~
4	89°22'00"	45.00'	70.19'	44.51
5	45°00'00"	22.50'	17.67'	9.32'

NO.	REVISION	REVISED BY	APPROVED BY	DATE
1	REVISED EASEMENT DATA	42890	P. Dowden	3/21/96
2	VOIDED DEBRIS BASIN @ END OF LAT. "D-2". VOIDED PLAN & PROFILE OF LINE "D" W/OF STA. 12+65.88 B.C. CHANGED FUT. ST. TO HARRISON PKWY.	42890	B. Hamant	12/16/96
3	REVISED LAT. "D-1" PLAN & PROFILE. REVISED COMMERCE CTR. DR. E'LY ALIGNMENT.	42890	B. Hamant	2/7/97

PLAN PREPARED BY:
SIKAND ENGINEERING ASSOCIATES
15230 BURBANK BLVD.
VAN NUYS, CA, 91411
(818) 787-8550
SIGNATURE: Ronald R. Horn R.C.E. NO. 16913

COUNTY OF LOS ANGELES, CALIFORNIA
HARRY W. STONE DIRECTOR OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION
CHECKED BY: David L. Dieter R.C.E. NO. 38064 DATE: 10-4-94
OFFICE OF THE DIRECTOR OF PUBLIC WORKS

SHT 3 OF 20 SHTS

W.O. 1020-252-01

VALLEY BOY GRAPHICS 818-907-1290 P.D. SHEET NO. 2 DATE 6-85

HYDROLOGY STUDY
APPROVED

REVIEWED BY: _____ DATE 3/19/25

APPROVED BY: _____ DATE 03/20/25

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

Valencia Commerce Center VTPM 18108 -Evaluation of Conformance with LID and Hydromodification Performance Standards

Volume II

County of Los Angeles

Prepared for:

Newhall Land and Farming
25124 Springfield Court Suite 300
Valencia, CA 91355

Prepared by:

GEOSYNTEC CONSULTANTS

DATED:
December, 2024

Valencia Commerce Center Vesting Tentative Parcel Map No. 18108

Evaluation of Conformance with Project LID and Hydromodification Performance Standards

Geosyntec Consultants, January 2025



Limitations

The professional engineering seal affixed to this memorandum pertains specifically to the analysis presented in this memorandum. It does not pertain to the design of the storm drain system or the design of regional LID facilities. The analysis presented in this memorandum relies upon information provided by a third party. We have not independently confirmed the accuracy of this information.

Geosyntec consultants

1111 Broadway, 6th Floor
Oakland, California 94607
PH 510.836.3034
FAX 510.836.3036
www.geosyntec.com

Memorandum

Date:	December 2024
To:	Alex Herrell, Five Point
	Jason Fukumitsu, Hunsaker and Associates
From:	Leon Li, Austin Orr, Lindsey Spencer and Aaron Poresky, Geosyntec Consultants
Subject:	Valencia Commerce Center Vesting Tentative Parcel Map 18108 – Evaluation of Conformance with LID and Hydromodification Performance Standards

1. INTRODUCTION

The Valencia Commerce Center Vesting Tentative Parcel Map (VTPM) 18108 (Project) includes low impact development (LID) best management practices (BMPs) as shown in the *Proposed Condition Low Impact Development Exhibit* (LID Exhibit, included as Attachment A to this Memorandum) for the Project. The project boundary and land uses are illustrated in Figure 1.

The purpose of this memorandum is to verify that the BMPs proposed for the Project have been selected and sized in a manner consistent with the Project LID Performance Standard as defined by the Municipal Separate Storm Sewer System Discharges within the Coastal Watersheds of Los Angeles and Ventura Counties (MS4) Permit (Order No. R4-2021-0105) and the County of Los Angeles LID Standards Manual (LA County, 2014). The *Newhall Ranch Sub-Regional Stormwater Mitigation Plan (NRSSMP)* (Geosyntec, 2010) also serves as benchmarks for evaluating conformance. This memorandum also demonstrates that the entire Project is exempt from hydromodification standards.

The Project LID Performance Standard establishes three separate conformance metrics, including BMP selection, sizing of BMPs to provide adequate retention volume or equivalent biofiltration volume and sizing of BMPs to provide long-term storm water capture:

- **BMP selection.** LID BMPs have been selected in a manner consistent with the LID selection criteria (i.e., infiltration feasibility criteria) contained in the LID Performance Standard; and

- **LID design storm retention and biofiltration.** The proposed BMPs provide retention or equivalent biofiltration of the LID design storm consistent with the LID Performance Standard; and

- **BMP long-term capture.** The proposed BMPs provide capture and treatment of at least 80 percent of average annual runoff volume for each drainage area within the Project, consistent with the LID Performance Standard.

This memorandum demonstrates conformance with the first two conformance metrics (BMP selection and LID design storm retention and biofiltration). The Project's conformance to the 80 percent long-term capture metric is not documented in this memorandum as it is not a requirement of the MS4 Permit, or the LID Standards Manual and is not subject to review by LA County Public Works (LADPW).

Because the proposed Project disturbs greater than one acre of area and adds more than 10,000 square feet of impervious surface area, this Project is categorized as a Designated Project according to LA County's LID Standards Manual (LA County, 2014). This memorandum also explains why the stormwater management requirements for designated projects are met or exceeded when the Project's LID Performance Standard is met.

The Project is exempt from hydromodification (HM) requirements because stormwater from the Project discharges to engineered channel sections of Hasley Creek and Castaic Creek, which then discharge to watershed that have 100-year flows greater than 25,000 cfs (Castaic Creek, downstream of Hasley Creek and the Santa Clara River).

Section 2 describes the Project LID Performance Standard. Section 3 describes the overall approach for compliance with the Project LID Performance Standard, including the specific BMPs proposed as part of the Project and the conformance of the proposed BMPs to each of the conformance metrics identified above. Section 4 demonstrates that the Project's exemption from the HM requirements.

A list of figures and attachments are appended to the end of this memorandum, including:

Figure 1: Valencia Commerce Center Land Use
Figure 2: Valencia Commerce Center Drainage Areas and Treatment Categories
Attachment A: Valencia Commerce Center Low Impact Development Exhibit
Attachment B: Modeling Files

2. PROJECT LID PERFORMANCE STANDARD

The Project LID Performance Standard described in this section complies with the provisions of the 2021 MS4 Permit and the LID Standards Manual. As benchmarks, the LID Performance Standard and HM exemption is also consistent with the NRSSMP. The LID Performance Standard applies to each planning area.

The Project LID Performance Standard is based primarily on Section F.1.d and F.4 of the 2021 MS4 Permit. The Newhall NRSSMP influence the manner in which BMP strategies are applied and result in more stringent criteria in some respects. These additional benchmarks do not reduce the requirement to comply with Section F.1.d and F.4 of the 2021 MS4 Permit. The LID Performance Standard would be implemented as follows:

- Based on an assessment of feasibility[1], one of four BMP strategies shall be applied as follows. BMPs may be applied at the scale of individual parcels or at the scale of regional facilities treating multiple parcels.

    a. If it is feasible to infiltrate all of the runoff produced from the 1.1 inch storm event[2] (LID Design Volume) from the developed area (i.e., soil infiltration rates are at least 0.3 inches per hour, and no other technical infeasibility concerns exist), on-site infiltration BMPs [Category 1] shall be used. Harvest and reuse are not applicable to projects in the NRSSMP because non-potable water demands will be met with recycled water and there is no additional demand for harvested stormwater based on an assessment of harvest and reuse feasibility conducted as part of the overall NRSSMP (Geosyntec, 2010).

    b. If it has been demonstrated in the Project WQTR and Drainage Concept Report that the BMP strategy of subsection (a), of this condition is infeasible, and if the project has low soil infiltration rates (i.e., the soil infiltration rate is less than 0.3 inches per hour), but no other technical infeasibility concerns exist, bioinfiltration BMPs [Category 2] shall be used. Bioinfiltration facilities are similar to bioretention facilities with an underdrain, but they include storage below the underdrain to maximize the volume infiltrated. These facilities shall retain a portion of the runoff from the 1.1 inch design storm, then biofilter 1.5 times the remaining runoff from the 1.1 inch design storm.

[1] Feasibility shall be assessed per Section F.4.b.ii.
[2] The 85th percentile, 24-hour storm depth is equal to 1.1 inches as determined from the Los Angeles County 85th Percentile 24-hr Rainfall Isohyetal Map (February 2004).

c. If it has been demonstrated in the Project WQTR and Drainage Concept Report that the BMP strategies of subsections (a) and (b) above are infeasible, then biofiltration BMPs [Category 3] shall be used. These BMPs shall biofilter the runoff produced from the 1.5 times the 1.1 inch design storm.

d. If it has been demonstrated in the Project WQTR and Drainage Concept Report that the BMP strategies of subsections (a), (b) and (c) above are infeasible and this demonstration is accepted by the Los Angeles Regional Water Quality Control Board Executive Officer, then flow-based treatment control BMPs shall be used to filter or treat runoff. These BMPs must be sized and designed to: (1) filter or treat the maximum flow rate of runoff produced from a rainfall intensity of 0.3 inch of rainfall for each hour of a storm event and (2) be certified for "Enhanced Treatment" under the Washington State Department of Ecology's TAPE Program or an appropriate future BMP certification developed by the State of California.

- The BMPs shall also be demonstrated to provide treatment for at least 80 percent capture and treatment of the average annual runoff volume for the tributary area. This sizing criteria was established to be consistent with Newhall NRSSMP but not required by the MS4 Permit or the LID Standards Manual. Therefore, conformance to this requirement is excluded from this memorandum.

- Pretreatment must be provided for stormwater BMPs whose function may be adversely affected by sediment or other pollutants, as specified in Section 7.2 of the LID Manual (LA County, 2014).

- Source control measures, including structural and non-structural (good housekeeping, employee training etc.) measures, applicable to designated new development project should be implemented to the maximum extent practicable, as specified in Section 5.2 of the LID Manual (LA County, 2014).

The same standards shall apply to parcel-based and right-of-way LIDs. Demonstration of conformance to these standards shall be based on the overall system of BMPs proposed for the Project. This may include combinations of BMPs at multiple scales, collectively demonstrating conformance to this standard.

3. PROPOSED LID BMPS AND CONFORMANCE DEMONSTRATION

The sections below describe the LID BMPs that are proposed as part of the Project and demonstrate that these BMPs conform to the BMP selection and LID design storm retention and biofiltration requirement in the Project LID Performance Standard. Parcel-based and right-of-way LIDs are

proposed for the Project, as also illustrated in Attachment A (LID Exhibit) of this memorandum. Parcel-based LIDs will be maintained by property owner associations (POAs). Right-of-way LIDs will be maintained by LACPW with funding provided through a Community Facilities District (CFD).

3.1 Infiltration Feasibility Screening

Based on testing by Leighton (2016) and infiltration feasibility assessment by Engeo [3](2021) and approved by LADPW Geotechnical and Materials Division in November 2024, the site is underlain by alluvial soils with moderate permeability. However, after corrective grading, most of the Project will lie over 5 to 30 feet of certified engineered fill. Based on the very low expected infiltration rates of engineered fill, Category 2 (bioinfiltration) or Category 3 (biofiltration) parcel-based water quality treatment facilities are recommended (Engeo, 2021).

For areas identified as treated by parcel-based BMPs (Figure 2), LID BMPs shall be selected per the feasibility hierarchy described in Section 2.1 as part of final parcel improvement plans to the satisfaction of LADPW. Conformance shall be demonstrated as part of final parcel improvement plans. Additionally, the final selection of BMP categories will be informed by a parcel-scale assessment of infiltration feasibility to meet the BMP selection hierarchy of the LID Performance Standard. Therefore, the proposed application of parcel-based LID BMPs conforms to the BMP selection requirements of the LID Performance Standard.

For the segments of Franklin Parkway and Hancock Parkway located within the project boundary, stand-alone right-of-way (ROW) LID BMPs within the public roadways will be used to meet the full requirements of the LID Performance Standard. Based on the very low expected infiltration rates of engineered fill (Engeo, 2021) along the parkways, Category 2 (bioinfiltration) LID is preliminarily proposed to provide treatment for the parkways. If infiltration is deemed infeasible due to factors including but not limited to geotechnical risks, setbacks from slopes, utility alignment or depth to groundwater during the final design of the ROW LIDs, the proposed LID will be lined and converted to Category 3 (biofiltration).

Factors considered in selection and placement of LID BMPs as part of final parcel and street improvement plans shall include soil infiltration rates, geotechnical risks, setbacks from structures, slopes, and utility alignments, depth to groundwater, programmed density/uses of the parcel, and other factors deemed relevant as part of LADPW review of final parcel improvement plans. Areas that are suitable for infiltration shall be considered as part of site design and BMP placement within parcels.

[3] Plan Case Number: ESTU2022000055

Through the initial screening conducted and the commitment to perform detailed feasibility evaluation at the time of final parcel or street improvement plans, this memorandum demonstrates Project BMPs have been selected in a manner consistent with the LID selection hierarchy (i.e., infiltration feasibility criteria) contained in the Project LID Performance Standard.

3.2 Right-of-Way LID BMPs

Segments of Franklin Parkway and Hancock Parkway within the Project boundary are proposed to be treated by stand-alone ROW LIDs. These areas are categorized as "Right-of-way LID Treatment" in Figure 2. The ROW LIDs proposed for the parkways were proposed to be linear bioinfiltration strips located parallel to the roadway. The bioinfiltration LID occupies approximately 20% of the width of the parkways. Approximately 25% of the length of each bioinfiltration strip unit is proposed to be concrete pretreatment compartment with rocks at the bottom. The forebay receives runoff from the parkways via curb inlets, reduces the amount of trash, debris and sediment entering the biofiltration media, then discharges the pretreated stormwater into the biofiltration compartment via overflow weir and weep holes. A preliminary design of these linear biofiltration strips is provided in Attachment A of this memorandum.

The LID Performance Standard requires that ROW BMPs to be selected and sized to retain the volume of stormwater runoff produced from a 1.1-inch storm event (i.e., the LID Design Volume) for the Project site. Where it has been demonstrated that 100 percent of the LID Design Volume cannot be feasibly infiltrated, biofiltration shall be provided for 1.5 times the portion of the LID Design Volume that is not retained.

Table 3-1 summarizes the inputs and outputs in HydroCalc. Model files are provided in Attachment B.

Table 3-1 HydroCalc Inputs and Outputs for Drainage Areas Proposed to be Treated by ROW LID

	Franklin Parkway	Hancock Parkway
HydroCalc Inputs		
Area (acres)	5.7	6.6
Length (feet)	250	250
Slope	0.05	0.05
Depth (inches)	1.1	1.1
Imperviousness[1]	0.91	0.91
Soil Type	097	020
Storm Frequency	85th percentile storm	
HydroCalc Outputs		
Clear Peak Flow Rate (cfs)	2.2	2.5
24-hr Clear Runoff Volume (cubic feet)	18,643	21,570
Upsized Runoff Volume (150%) for Biofiltration Sizing (cubic feet)	27,965	32,356

In the preliminary design, the bioinfiltration strip is proposed to be 10-feet wide with 2-foot of media bed width. A total of 6,470 linear feet of bioinfiltration strip is proposed for Hancock Parkway and a total of 4,180 feet of bioinfiltration strip is proposed for Franklin Parkway. These bioinfiltration strips are proposed with 12 inches of ponding depth, 24 inches of media layer, a gravel layer underneath and perforated underdrains in the gravel layer to discharge the biofiltered runoff. This vertical profile provides an effective storage depth of 18 inches is provided, assuming 25 percent porosity for the media layer (Virginia Department of Conservation and Recreation, 2011).

Table 3-2 summarizes the dimensions of the bioinfiltration LIDs for both parkways based on the proposed design and how the LIDs meet the applicable sizing standards.

Table 3-2 Sizing Conformance Demonstration for ROW LID BMP

Drainage Area	**Required Biofiltration Volume (150% of the LID Design Volume) (cubic feet)**	**Provided Static Biofiltra-tion Volume (cubic feet)**	**Provided Biofiltra-tion Footprint (square feet)**	**Additional Volume Biofiltered During Storm Duration (cubic feet)**[1]	**Total Provided Biofiltration Volume (Static+ Routed Volume, cubic feet)**	**Drawdown Time to Media Surface hours**[2]
Franklin Pkwy.	27,965	18,808	12,538	31,346	50,154	2.4

Hancock Pkwy.	32,357	29,114	19,410	48,524	77,638	2.4

1 – Based on a conservative design storm routing time of 6 hours (reduced from HydroCalc duration of 24-hours) and media flowrate of 5 inches per hour over the footprint of the BMP.
2- Based on 12-inch ponding depth and 5 in/hr media flowrate.

As shown in Table 3-2, the total provided biofiltered volume for the ROW LIDs proposed for the two parkways is substantially more than 150% of runoff volume from the 1.1-inch 85th percentile storm while drawing down completely within 3 hours. Incidental infiltration is not considered in this analysis as a conservative assumption. The required biofiltration volumes for Franklin Parkway and Hancock Parkway are 27,965 cubic feet and 32,357 cubic feet, respectively, while the total provided biofiltration volumes are 50,154 cubic feet and 77,638 cubic feet, respectively. Therefore, the proposed biofiltration ROW LID fully complies with the requirement to retain or provide biofiltration 150% of runoff from the 85th percentile, 24-hour storm event. These ROW LID facilities are also sized to treat 80 percent of average annual runoff volume (not demonstrated in this memorandum), which is why they have excess capacity to treat the runoff from the 85th percentile storm event.

3.3 Parcel-Based LID BMPs

Parcel-based LID BMPs will be implemented as part of final parcel improvements for the commercial parcels and surrounding access roads (Figure 1) in the Project area. These areas are categorized as "Parcel-Based LID Treatment" in Figure 2 and will be owned and maintained by property owner associations (POAs). Parcel-based BMPs will be selected and sized per the LID Performance Standard in Section 2. Final sizing calculations will be prepared as part of final parcel improvement plans. Factors considered in selection and placement of parcel-based LID BMPs as part of final parcel improvement plans shall include soil infiltration rates, geotechnical risks, setbacks from structures, slopes, and utility alignments, depth to groundwater, programmed density/uses of the parcel, and other factors deemed relevant as part of LADPW review of final parcel improvement plans. Areas that are suitable for infiltration shall be considered as part of site design and BMP placement within parcels.

Infiltration parcel-based BMPs include bioretention without an underdrain (RET-1[4]), infiltration basins (RET-2[4]) or trenches (RET-3[4]), permeable pavement (RET-5[4]), or an equivalent infiltration BMPs. Bioinfiltration and biofiltration parcel-based BMPs are associated with BMP type BIO-1 under the LID Standards Manual. The design and maintenance of these parcel-based BMPs shall

[4] Equivalent BMP Type on the LID Standards Manual (LA County, 2014)

be consistent with the specifications detailed on the LID Standards Manual for the respective BMP type proposed for the Project (LA County, 2014).

Appropriate pretreatment, such as forebays, vegetated swales and filter strips will be designed as part of final parcel improvements and installed upstream of the parcel-based BMPs. These pretreatment devices capture sediment, trash, and debris and increases the longevity of the downstream BMPs. Inclusion of pretreatment for BMPs is consistent with the LID Standards Manual (LA County, 2014).

Parcel-based LIDs will be sized with a static volume equivalent to the 1.1-inch LID Design Volume for each parcel area. An underdrain will be used for Category 2 and 3. By following this sizing approach, we demonstrate that the sizing standard above is met regardless of the infiltration feasibility category that is determined.

HydroCalc was used to generate the 1.1" LID Design Volume assuming flow path width of 250 feet and catchment slope of 5%. The imperviousness of each parcel is based on land use and the dominant LA County soil types (020 or 097) underlay each planning area treated by parcel-based LID is used as soil type input. The HydroCalc inputs and outputs for each parcel are summarized in Table 3-3. Model files are provided in Attachment B.

Table 3-3 HydroCalc Inputs and Outputs for Parcels Treated by Parcel-based LID BMPs

Parcel ID	Area (ac)	Land Use	Imperv.	Soil Type	Length (ft.)	Slope	24-hr Clear Runoff Volume (cu. ft.)	Required Biofiltration Volume (150% of the LID Design Volume) (cubic feet)
1	9.5	Commercial	91%	020	250	0.05	31,100	46,650
2.1	13.0	Commercial	91%	020			42,800	64,200
2.2	10.4	Commercial	91%	020			34,014	51,021
2.3	18.4	Commercial	91%	020			60,254	90,381
3.1	19.2	Commercial	91%	020			62,950	94,425
3.2	3.8	Commercial	91%	020			12,600	18,900
3.3a	13.7	Commercial	91%	097			44,974	67,461
3.3b	11.2	Commercial	91%	097			36,716	55,073
3.3c	4.1	Commercial	91%	097			13,373	20,060
3.3d	16.8	Commercial	91%	020			55,073	82,609
Access Road	9.3	Commercial	91%	020			30450.8	45,676

If parcel-scale infiltration feasibility study shows that Category 1 (infiltration) BMP is feasible for any parcel proposed to be treated by parcel-based LID BMPs, infiltration BMPs already sized with the static volume equivalent to the LID Design Volume will be able to retain 100% of the LID Design Volume.

If parcel-scale infiltration feasibility study shows that Category 2 (bioinfiltration) or Category 3 (biofiltration) BMP is feasible for any parcel, LID BMPs sized with the static volume equivalent to the LID Design Volume still include an underdrain and media bed with adequate capacity to biofilter 150% of the LID Design Volume with reasonable BMP design assumptions including:

- 12 inches of ponding depth, 24 inches of media layer and a gravel layer underneath with perforated, resulting in 18 inches of effective depth with an assumed media porosity of 0.25 (neglecting the gravel storage);
- 5 inches per hour media filtration rate (the lower limit of the range of filtration rate recommended by the LID Standards Manual);
- 6 hours of routing period during the 24-hour design storm duration (conservative assumption);
- Incidental infiltration into the underlaying soils for Category 2 BMP is not considered (conservative assumption);

Because infiltration is not considered in this analysis, both Category 2 and Category 3 parcel-based LID designs provide an effective storage depth of 18 inches between the ponding and media layer and are identical for the purpose of the conformance analysis. Where some infiltration does occur, the resulting performance would be greater.

The total volume biofiltered is the sum of the static biofiltration volume and the additional volume routed during the storm event. This additional biofiltration volume was calculated by multiplying the media filtration rate (5 inches per hour) by routing time (6 hours) and the provided biofiltration footprint of each parcel. The total capacity of the parcel-based LID is calculated by adding the provided static biofiltration volume and the additional routed biofiltered volume. This sizing conformance demonstration calculation for each parcel is shown in Table 3-4.

Table 3-4 shows that providing a static LID volume equal to the runoff from the 1.1” storm results in conformance with sizing criteria regardless of the eventual infiltration feasibility category:

- Where parcels are Category 1, the static volume provided in the LID BMPs (Column D) is equal to the required volume (Column B) without considering any routing. The drawdown (Column H) is well within the 96-hour limit.

- Where parcels are Category 2 or 3, the total biofiltered volume (Column G) substantially exceeds the required biofiltration volume (Column C), even without considering any incidental infiltration and using a conservatively short routing time.

In summary, this sizing analysis demonstrates that parcel-based LIDs sized to the full LID Design Volume can achieve retention or equivalent biofiltration of the LID Design Volume regardless of feasibility conditions that may be encountered during the final parcel improvement phase of the Project.

Table 3-4 Sizing Conformance Demonstration for Parcel-Based LID BMPs in VCC

A	B	C	D	E	F	G	H	I
Parcel ID	**Required Infiltration Volume (if Category 1 Parcel) (cubic-feet)**	**Required Biofiltration Volume (150% of the LID Design Volume) (cubic feet) (if Category 2 or 3 Parcel)**	**Provided Static LID Volume (cubic feet)**	**Provided LID Footprint (square feet)**	**Additional Volume Biofiltered During Storm Duration from Category 2 or 3 BMPs (cubic feet)[1]**	**Total Biofiltration Volume in Category 2 or 3 BMPs (Static+ Routed Volume, cu-ft)**	**Drawdown of Stored Volume in Category 1 (hours)[2]**	**Drawdown to Media Surface in Category 2 or 3 (hours)[3]**
1	31,100	46,650	31,100	20,733	51,833	82,933	12 - 24	2.4
2.1	42,800	64,200	42,800	28,533	71,333	114,133	12 - 24	2.4
2.2	34,014	51,021	34,014	22,676	56,690	90,704	12 - 24	2.4
2.3	60,254	90,381	60,254	40,169	100,423	160,677	12 - 24	2.4
3.1	62,951	94,427	62,951	41,967	104,918	167,869	12 - 24	2.4
3.2	12,600	18,900	12,600	8,400	21,000	33,600	12 - 24	2.4
3.3a	44,974	67,461	44,974	29,983	74,957	119,931	12 - 24	2.4
3.3b	36,716	55,074	36,716	24,477	61,193	97,909	12 - 24	2.4
3.3c	13,373	20,060	13,373	8,915	22,288	35,661	12 - 24	2.4
3.3d	55,073	82,610	55,073	36,715	91,788	146,861	12 - 24	2.4
Access Road	30,451	45,677	30,451	20,301	50,752	81,203	12 - 24	2.4

1 – Based on a conservative design storm routing time of 6 hours (reduced from HydroCalc duration of 24-hours) and media flowrate of 5 inches per hour over the footprint of the BMP.
2 – Based on ponding depth of 12 inches and 1 to 2 in/hr infiltration rates, consistent with likely rates in Category 1 areas.
3 – Based on 12-inch ponding depth and 5 in/hr media flowrate.

3.4 Source Control BMPs

According to Section 5.2 of the LID Manual, source control measures applicable to designated project (new development) should be implemented for the Project (LA County, 2014). Table 5 summarizes the source control requirements of the LID Manual for designated project (new development) and the corresponding proposed source control BMPs that will be incorporated into the Project.

Table 5 Source Control Requirements and Corresponding Project Best Management Practices

Source Control Requirement	Criteria/ Description	Corresponding Project BMPs
S-1: Storm Drain Message and Signage	• All storm drain inlets and catch basins within the Project area must be marked with prohibitive language and/or graphical icons to discourage illegal dumping. • Signs and prohibitive language and/or graphical icons, which prohibit illegal dumping, must be posted at public access points along channels and creeks within the Project area. • Legibility of stencils and signs must be maintained.	• All storm drain inlets and water quality inlets will be stenciled or labeled. • Signs will be posted in areas where dumping could occur. • The Los Angeles County Department of Public Works and/or Homeowners Associations will maintain stencils and signs.
S-2: Outdoor Material Storage Areas	• Where proposed Project plans include outdoor areas for storage of materials that may contribute pollutants to the storm water conveyance system measures to mitigate impacts must be included.	• Pesticides, fertilizers, paints, and other high-risk materials used for maintenance of common areas, parks, commercial areas, and multifamily residential common areas will be kept in enclosed storage areas.
S-3: Outdoor Trash Storage and Waste Handling Areas	All trash containers must meet the following structural or treatment control BMP requirements: • Trash container areas must have drainage from adjoining roofs and pavement diverter around the areas. • Trash container areas must be screened or walled to prevent offsite transport of trash.	• All outdoor trash storage areas will be covered and isolated from stormwater runoff.

Source Control Requirement	Criteria/ Description	Corresponding Project BMPs
S.4: Outdoor Loading/ Unloading Dock Areas	• Cover loading dock areas or design drainage to minimize run-on and runoff of stormwater • Direct connections to storm drains from depressed loading docks (truck wells) are prohibited	• Loading dock areas will be covered or designed to preclude run-on and runoff. • Direct connections to storm drains from depressed loading docks (truck wells) will be prohibited. • Drains or direct drainage from hydraulically isolated loading dock areas will be connected to an approved sediment/oil/water separator system connected a discharge location as determined by LA County. A manual emergency spill diversion valve upstream of will be provided upstream of the separator.
S-5: Outdoor Vehicle/ Equipment Repair/ Maintenance Areas	• Repair/maintenance bays must be indoors or designed in such a way that does not allow stormwater run-on or contact with stormwater runoff. • Design a repair/maintenance bay drainage system to capture all wash water, leaks, and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/ maintenance bays to the storm drain system is prohibited. If required by local jurisdiction, obtain an Industrial Waste Discharge Permit.	• Repair/maintenance bays will comply with design requirements.
S6: Outdoor Vehicle/ Equipment/ Accessory Wash Areas	• Self-contained and /or covered, equipped with a clarifier, or other pretreatment facility, and properly connected to a sanitary sewer.	• Areas for washing/steam cleaning of vehicles will be self-contained or covered with a roof or overhang; will be equipped with a wash racks and with the prior approval of the sanitary sewer agency; will be equipped with a clarifier or other pretreatment facility; and will be properly connected to a sanitary sewer.

Source Control Requirement	Criteria/ Description	Corresponding Project BMPs
S7: Fuel and Maintenance Area	• The fuel dispensing area must be covered with an overhanging roof structure or canopy. The cover's minimum dimensions must be greater than the area within the grade break. The cover must not drain onto the fuel dispensing area and the downspouts must be routed to prevent drainage across the fueling area. • The fuel dispensing area must be paved with Portland cement concrete (or equivalent smooth impervious surface). The use of asphalt concrete shall be prohibited. • The fuel dispensing areas must have a 2% to 4% slope to prevent ponding and must be separated from the rest of the site by a grade break that prevents run-on of urban runoff. • At a minimum, the concrete fuel dispensing area must extend 6.5 feet from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot (0.3 meter), whichever is less.	• Fueling areas will comply with design requirements.
S-8: Landscape Irrigation Practices	• Do not allow irrigation runoff from the landscaped area to drain directly to storm drain system. • Minimize use of fertilizer, pesticides, and herbicides on landscaped areas. • Plan sites with sufficient landscaped area and dispersal capacity (e.g., ability to receive irrigation water without generating runoff). • Consult a landscape professional regarding appropriate plants, fertilizer, mulching applications, and irrigation requirements (if any) to ensure healthy vegetation growth.	• Native and/or non-native/non-invasive, climate appropriate vegetation will be utilized within the development. • Landscape watering in common areas, commercial areas, multiple family residential areas, and in parks will use efficient irrigation technology utilizing evapotranspiration sensors to minimize excess watering. • The use of the parcel-based LID BMPs and regional infiltration/ biofiltration facilities will prevent the discharge of dry weather urban runoff from the Modified Project. • Landscape and irrigation system design will comply with the design requirements or approved alternatives. • An Integrated Pest Management (IPM) Program will be implemented for common area landscaping in commercial areas and multi-family residential areas.

Source Control Requirement	Criteria/ Description	Corresponding Project BMPs
S-9: Building Materials Selection	• Wood that is pressure treated with arsenate, copper, and chromium compounds may be replaced with alternative building materials. • Minimize or avoid the use of copper and galvanized metals on buildings and in fencing. • Reduce the use of pesticides around foundations through the use of alternative barriers where feasible.	• Pressure treated wood that is treated with arsenate, copper, or chromium compounds may be replaced with alternative building materials. • The use of copper and galvanized metals on buildings and in fencing will be minimized or avoided. • The use of alternative barriers for termites will be considered.
S-10: Animal Care and Handling Facilities	• Site animal care and handling facilities away from the storm drain system and receiving waters. • Manage grazing to prevent impacts to receiving waters. • Manage horse access and horse waste to prevent pollutants from entering the storm drain system or receiving waters.	• The Modified Project does not include animal care facilities, grazing, or horse access.
S-11: Outdoor Horticultural Areas	• Do not allow wash water from horticulture areas to drain directly to the storm drain system or receiving waters.	• Wash water from horticultural areas will not drain directly to the storm drain system or to receiving waters.

4. HYDROMODIFICATION EXEMPTION DEMONSTRATION

Hydromodification exemptions are described in Section F.2.b of the MS4 Permit and in the LA County LID Standards Manual. The exemptions that apply to the Project are:

- *Projects that discharge directly or through a storm drain into concrete or otherwise engineered channel (i.e., channelized or armored with rip-rap, shotcrete), which, in turn, discharge into receiving water that is not susceptible to hydromodification impacts;*
- *Projects that have any increased discharge directly or via a storm drain to a sump, lake, are under tidal influence, into a waterway that has a 100-year peak flow (Q100) of 25,000 cfs or more, or other receiving water that is not susceptible to hydromodification impacts.*

All planning areas within the Project are exempt from HM requirements based on storm drain discharge locations shown on the *LID Exhibit* (Attachment A) and the HM susceptibility of the receiving waterbodies (Castaic Creek and Hasley Creek). HM exemption for planning areas proposed to be discharged into two receiving waterbodies are demonstrated below respectively:

- **Planning Areas (PAs) 1, 2.1, 2.2 and 2.3** drain into a reach of Castaic Creek between Commerce Center Drive and Old Road. The Project includes bank stabilization measures throughout this reach of the Castaic Creek. The bank stabilization measures include adding grade control structures which are intended to reduce erosion concerns after the project is completed (PACE, 2019). Additionally, downstream of the confluence with Hasley Creek, the clear 100-year flowrate is 28,000 cfs according to the Castaic Creek Special Study conducted by LA County (LA County, 2005), which is greater than 25,000 cfs.

- **PAs 3.1, 3.2 and 3.3** discharge into Hasley Creek. The Project includes engineering and stabilization of Hasley Creek based on a plan prepared by PACE Engineering (PACE, 2021). The proposed channel stabilization on Hasley Creek includes adding grade control structures and soil-cement bank stabilization, which are intended to reduce erosion potential of the channel up to the 100-year storm. This will modify the existing Hasley Creek channel into an engineered channel that is exempt from HM requirements. Water then discharges to the Castaic Creek, which has a 100-year flowrate greater than 25,000 cfs downstream of the confluence with Hasley Creek (LA County, 2005) and is also exempt from hydromodification per the previous bullet.

5. CONFORMANCE SUMMARY

In summary, this memorandum demonstrates that:

- Project BMPs have been selected in a manner consistent with the LID selection hierarchy (i.e., infiltration feasibility criteria) contained in the Project LID Performance Standard (Section 3.1), which is also consistent with the 2021 MS4 Permit;
- The BMPs proposed as part of the Project will infiltrate runoff from the 85th percentile, 24-hour (1.1-inch) design storm (LID Design Volume) to the extent feasible and provide biofiltration for 150 percent of the LID Design Volume that is not reliably retained (Section 3.2 and 3.3), which is also consistent with the 2021 MS4 Permit;
- Pretreatment and source control BMPs area proposed as part of the Entrada South Project in a manner consistent with the 2021 MS4 permit.
- All planning areas within the Project are exempt from the hydromodification controls requirement (Section 4)

For areas treated solely by parcel-based BMPs (Figure 2), the BMPs shall be selected and sized to the satisfaction of LA County as part of final parcel improvement plans. Based on the commitments described in Section 4.2, the application of parcel-based BMPs to these areas will satisfy the BMP selection and LID design storm retention and biofiltration requirement in the LID Performance

Standard. The basis for this finding is documented in Section 3.2, and the availability of space in typical parcel plans has been demonstrated.

6. REFERENCES

Geosyntec Consultants, 2010. Newhall Ranch Specific Plan Sub-Regional Stormwater Mitigation Plan. Prepared for Newhall Land by Geosyntec Consultants. April 2009, amended March 2010.

Leighton, 2016. Preliminary Geotechnical Investigation of Infiltration Feasibility for Low Impact Development (LID) Design Features, Vesting Tentative Parcel Map 18108, Valencia Commerce Center, Los Angeles County, California. Prepared for Newhall Land by Leighton and Associates, January 2016.

Los Angeles County, 2014. Low Impact Development Standards Manual.

Los Angeles County, 2005. Castaic Creek Special Study

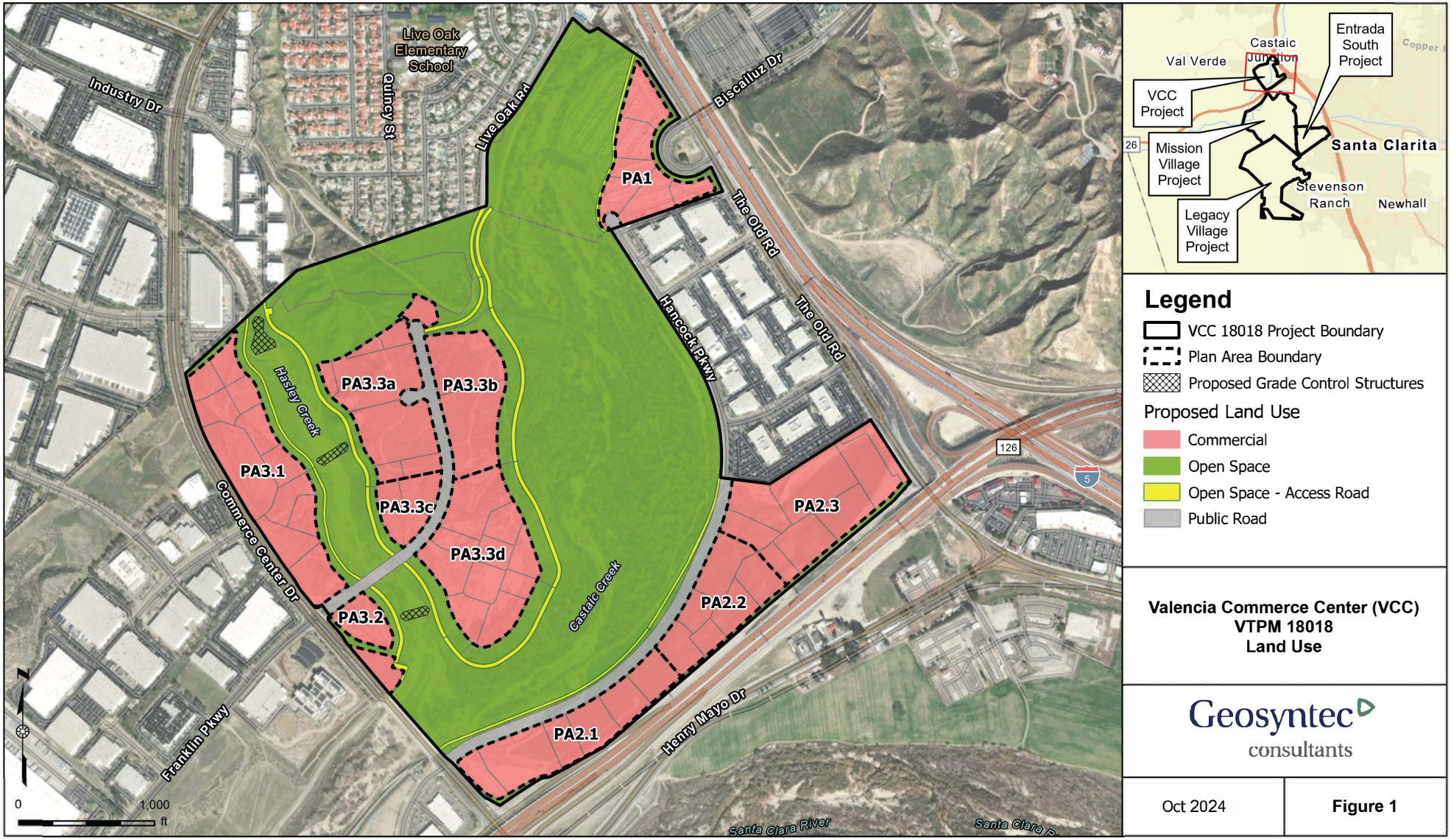
LARWQCB, 2021. Waste Discharge Requirements and National Pollutant Discharge Elimination System (NPDES) Permit for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles and Ventura Counties (Order No. R4-2021-0105).

PACE Advanced Civil Engineering, Inc. (PACE), 2021. Drainage Concept Report Volume III of V: Hasley Canyon Creek Bank Protection.

PACE Advanced Civil Engineering, Inc, 2019 Drainage Concept Report Volume II of V: Castaic Creek Bank Protection.

Virginia Department of Conservation and Recreation (VA DCR), 2011. Bioretention VDCR Stormwater Design Specification No. 9, Version 1.9.

Figures

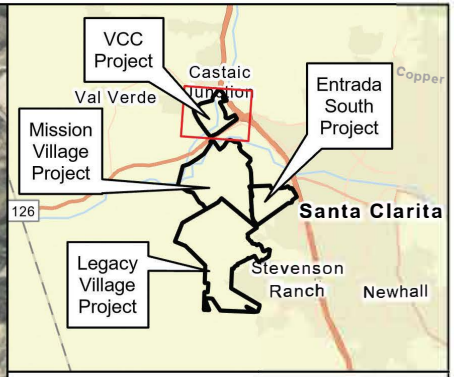


Valencia Commerce Center (VCC)
VTPM 18018
Land Use

Geosyntec consultants

Oct 2024	**Figure 1**





Legend

- VCC 18018 Project Boundary
- Plan Area Boundary
- Proposed Grade Control Structures

Proposed Treatment BMP Categories

- Debris-Producing Open Space Bypassing Treatment
- Parcel Based LID
- Right-of-Way LID

Valencia Commerce Center (VCC)
VTPM 18018
Drainage Area and Treatment Categories

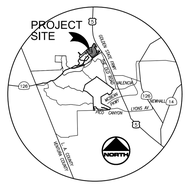
Geosyntec consultants

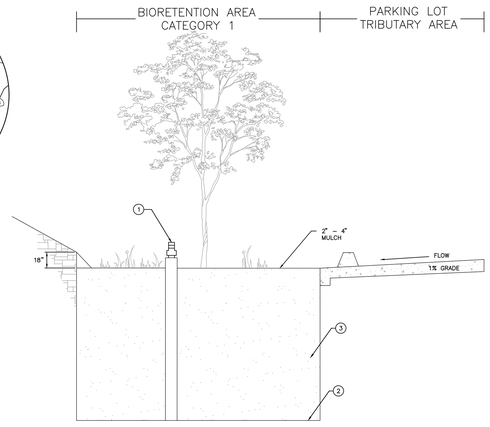
Oct 2024	**Figure 2**

Attachments

Attachment A

VCC LID Exhibit Map





NOTES

1. OVERFLOW DEVICE: VERTICAL RISER OR EQUIVALENT
2. OPTIONAL CHOKING GRAVEL LAYER
3. 2" MIN PLANTING MIX; 3" PREFERRED.

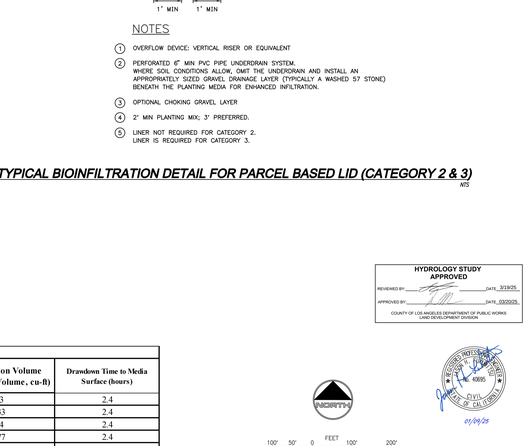
TYPICAL BIORETENTION DETAIL FOR PARCEL BASED LID (CATEGORY 1)
NTS

LEGEND:

- BOUNDARY LINE
- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- PARCEL BASED LID FOR PLANNING AREAS
- PARCEL BASED LID FOR ACCESS ROADS
- RIGHT–OF–WAY LID
- OPEN SPACE–BYPASSING TREATMENT
- AVAILABLE LID FOOTPRINT FOR PARCEL BASED LID
- AVAILABLE LID FOOTPRINT FOR RIGHT–OF–WAY LID

NOTE:

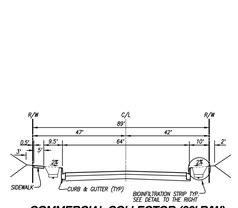
(A) ALL PROPOSED CATCH BASINS SHALL BE INSTALLED WITH ARS (AUTOMATIC RETRACTABLE SCREENS) AND CPS (CONNECTOR PIPE SCREEN).



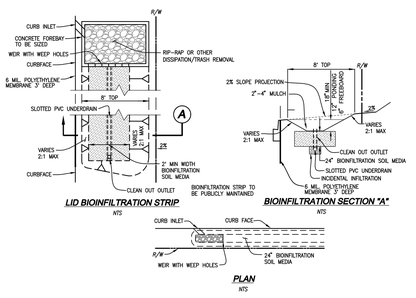
NOTES

1. OVERFLOW DEVICE: VERTICAL RISER OR EQUIVALENT
2. PERFORATED 6" MIN PVC PIPE UNDERDRAIN SYSTEM. WHERE SOIL CONDITIONS ALLOW, OMIT THE UNDERDRAIN AND INSTALL AN APPROPRIATELY SIZED GRAVEL DRAINAGE LAYER (TYPICALLY A WASHED 57 STONE) BENEATH THE PLANTING MEDIA FOR ENHANCED INFILTRATION.
3. OPTIONAL CHOKING GRAVEL LAYER
4. 2" MIN PLANTING MIX; 3" PREFERRED.
5. LINER NOT REQUIRED FOR CATEGORY 2. LINER IS REQUIRED FOR CATEGORY 3.

TYPICAL BIOINFILTRATION DETAIL FOR PARCEL BASED LID (CATEGORY 2 & 3)
NTS



COMMERCIAL COLLECTOR (89' R/W)
(FRANKLIN PARKWAY, HANCOCK PARKWAY)
NTS



LID BIOINFILTRATION STRIP NTS

BIOINFILTRATION SECTION "A" NTS

PLAN NTS

TYPICAL BIOINFILTRATION DETAIL FOR RIGHT-OF-WAY LID

ROW LID Drainage Area	Required Biofiltration Volume (150% of the LID Design Volume) (cubic feet)	Provided Static Biofiltration Volume (cubic feet)	Provided Biofiltration Footprint (square feet)	Additional Volume Biofiltered During Storm Duration (cubic feet)	Total Provided Biofiltration Volume (Static+ Routed Volume, cubic feet)	Drawdown Time to Media Surface (hours)
Franklin Parkway	27,965	18,808	12,538	31,346	50,154	2.4
Hancock Parkway	32,357	29,114	19,410	48,524	77,638	2.4

Parcel-Based LID Drainage Area	For Category 1 Parcel-based LIDs		For Category 2 and Category 3 Parcel-based LIDs				
	Required Infiltration Volume	Drawdown of Stored Volume in Category 1 (hours)	Required Biofiltration Volume (150% of the LID Design Volume) (cubic feet)	Provided Static LID Volume (cubic feet)	Provided LID Footprint (square feet)	Additional Volume Biofiltered During Storm Duration (cubic feet)	Total Biofiltration Volume (Static+ Routed Volume, cu-ft)	Drawdown Time to Media Surface (hours)
Planning Area 1	31,100	12 to 24	46,650	31,100	20,733	51,833	82,933	2.4
Planning Area 2.1	42,800	12 to 24	64,200	42,800	28,533	71,333	114,133	2.4
Planning Area 2.2	34,014	12 to 24	51,021	34,014	22,676	56,690	90,704	2.4
Planning Area 2.3	60,254	12 to 24	90,381	60,254	40,169	100,423	160,677	2.4
Planning Area 3.1	62,951	12 to 24	94,427	62,951	41,967	104,918	167,869	2.4
Planning Area 3.2	12,600	12 to 24	18,900	12,600	8,400	21,000	33,600	2.4
Planning Area 3.3a	44,974	12 to 24	67,461	44,974	29,983	74,957	119,931	2.4
Planning Area 3.3b	36,716	12 to 24	55,074	36,716	24,477	61,193	97,909	2.4
Planning Area 3.3c	13,373	12 to 24	20,060	13,373	8,915	22,288	35,661	2.4
Planning Area 3.3d	55,073	12 to 24	82,610	55,073	36,715	91,788	146,861	2.4
Open Space - Access Road	30,451	12 to 24	45,677	30,451	20,301	50,752	81,203	2.4

HYDROLOGY STUDY APPROVED
REVIEWED BY: _____ DATE: 3/19/25
APPROVED BY: _____ DATE: 03/20/25
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

NORTH

FEET 100' 50' 0 100' 200'
INCHES 1 1/2 0 1 2

07/09/25

PARCEL MAP NO. 18108
VALENCIA COMMERCE CENTER
LID EXHIBIT

HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite #23 • Valencia, CA 91355
FX: (661) 294-9890 • PH: (661) 294-2211

DATE: 01/17/2024 *REV. DATE: 01/15/2025*
PROJECT NO: *SHEET 1 OF 1*

HCC060-VCC LID Exhibit.dwg

G:\Revised Reports\18108 VCC\Dwg\Hydrology\HCC060-VCC LID Exhibit.dwg, Plotted on Jan 13, 2025 by jamesw

Attachment B

Model Files

engineers | scientists | innovators

Geosyntec consultants

ATTACHMENT B: HYDROCALC INPUTS AND OUTPUTS

HydroCalc Parcel-Based and Right-of-Way LIDs, Inputs Table

HydroCalc Parcel-Based and Right-of-Way LIDs, Output Files

HydroCalc Inputs – Parcel-Based and ROW LIDs						
Subarea ID	**PA-1**	**PA-2.1**	**PA-2.2**	**PA-2.3**	**PA-3.1**	**PA-3.2**
Area (ac)	9.5	13.0	10.4	18.4	19.2	3.8
Flow Path Length (ft)	250	250	250	250	250	250
Flow Path Slope (vft/hft)	0.05	0.05	0.05	0.05	0.05	0.05
85th Percentile Rainfall Depth (in)	1.1	1.1	1.1	1.1	1.1	1.1
Percent Impervious	0.91	0.91	0.91	0.91	0.91	0.91
Soil Type	20	20	20	20	20	20
Design Storm Frequency	85th percentile storm	85th percentile storm	85th percentile storm	85th percentile storm	85th percentile storm	85th percentile storm
Fire Factor	0	0	0	0	0	0

HydroCalc Inputs – Parcel-Based and ROW LIDs, Continued							
Subarea ID	**PA-3.3a**	**PA-3.3b**	**PA-3.3c**	**PA-3.3d**	**Franklin ROW**	**Hancock ROW**	**Access Road**
Area (ac)	13.7	11.2	4.1	16.8	5.7	6.6	9.3
Flow Path Length (ft)	250	250	250	250	250	250	250
Flow Path Slope (vft/hft)	0.05	0.05	0.05	0.05	0.05	0.05	0.05
85th Percentile Rainfall Depth (in)	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Percent Impervious	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Soil Type	97	97	97	20	97	20	20
Design Storm Frequency	85th percentile storm	85th percentile storm	85th percentile storm	85th percentile storm	85th percentile storm	85th percentile storm	85th percentile storm
Fire Factor	0	0	0	0	0	0	0

Peak Flow Hydrologic Analysis

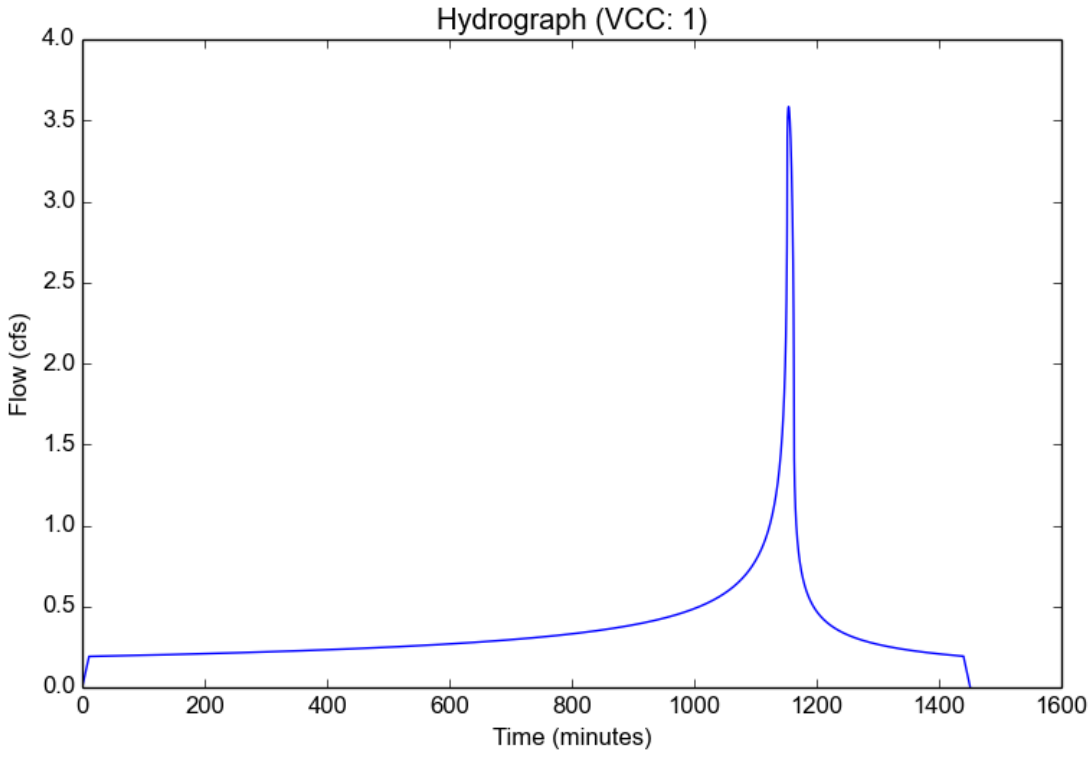
File location: P:/Clients/Newhall_Land/Projects/CWR0782_ES_VCC_Hydrology_2022/VCC/Conformance Memo/Round_5_RTC_Oct24/Updated Submitt
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC
Subarea ID	1
Area (ac)	9.481219
Flow Path Length (ft)	250.0
Flow Path Slope (vft/hft)	0.05
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.91
Soil Type	20
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.4531
Undeveloped Runoff Coefficient (Cu)	0.1723
Developed Runoff Coefficient (Cd)	0.8345
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	3.5847
Burned Peak Flow Rate (cfs)	3.5847
24-Hr Clear Runoff Volume (ac-ft)	0.714
24-Hr Clear Runoff Volume (cu-ft)	31100.4997



Peak Flow Hydrologic Analysis

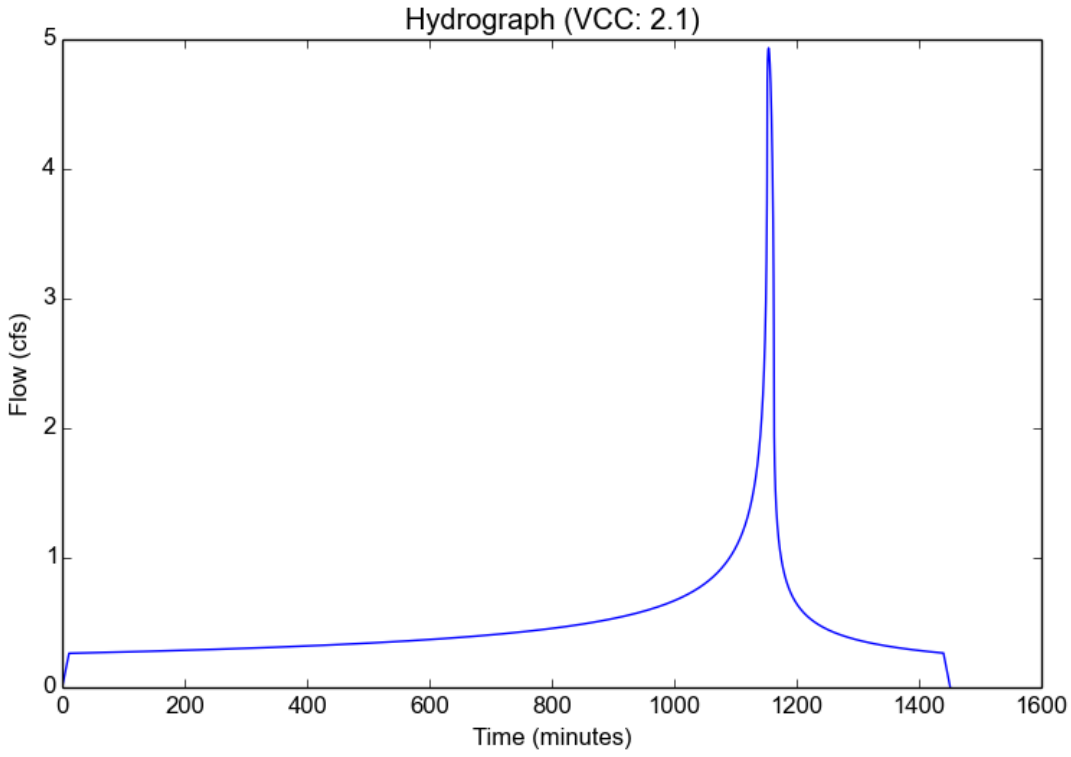
File location: P:/Clients/Newhall_Land/Projects/CWR0782_ES_VCC_Hydrology_2022/VCC/Conformance Memo/Round_5_RTC_Oct24/Updated Submitt
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC
Subarea ID	2.1
Area (ac)	13.04798
Flow Path Length (ft)	250.0
Flow Path Slope (vft/hft)	0.05
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.91
Soil Type	20
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.4531
Undeveloped Runoff Coefficient (Cu)	0.1723
Developed Runoff Coefficient (Cd)	0.8345
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	4.9332
Burned Peak Flow Rate (cfs)	4.9332
24-Hr Clear Runoff Volume (ac-ft)	0.9826
24-Hr Clear Runoff Volume (cu-ft)	42800.2663



Peak Flow Hydrologic Analysis

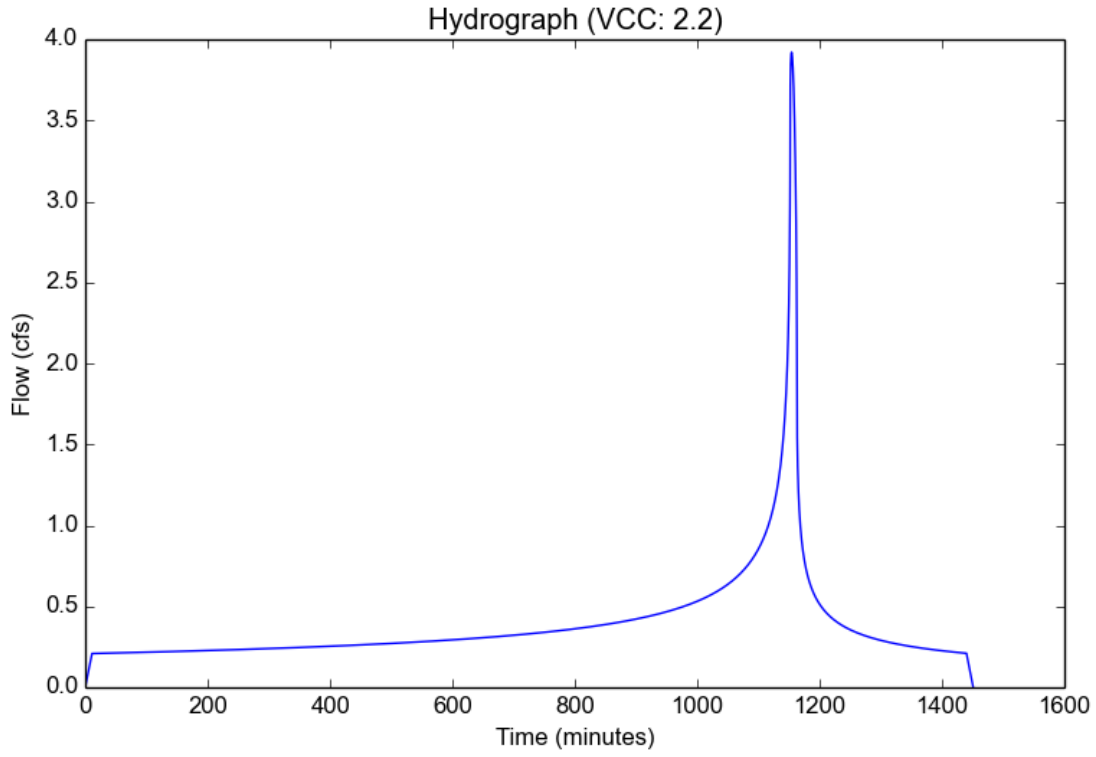
File location: P:/Clients/Newhall_Land/Projects/CWR0782_ES_VCC_Hydrology_2022/VCC/Conformance Memo/Round_5_RTC_Oct24/Updated Submitt
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC
Subarea ID	2.2
Area (ac)	10.369534
Flow Path Length (ft)	250.0
Flow Path Slope (vft/hft)	0.05
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.91
Soil Type	20
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.4531
Undeveloped Runoff Coefficient (Cu)	0.1723
Developed Runoff Coefficient (Cd)	0.8345
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	3.9206
Burned Peak Flow Rate (cfs)	3.9206
24-Hr Clear Runoff Volume (ac-ft)	0.7809
24-Hr Clear Runoff Volume (cu-ft)	34014.3698



Peak Flow Hydrologic Analysis

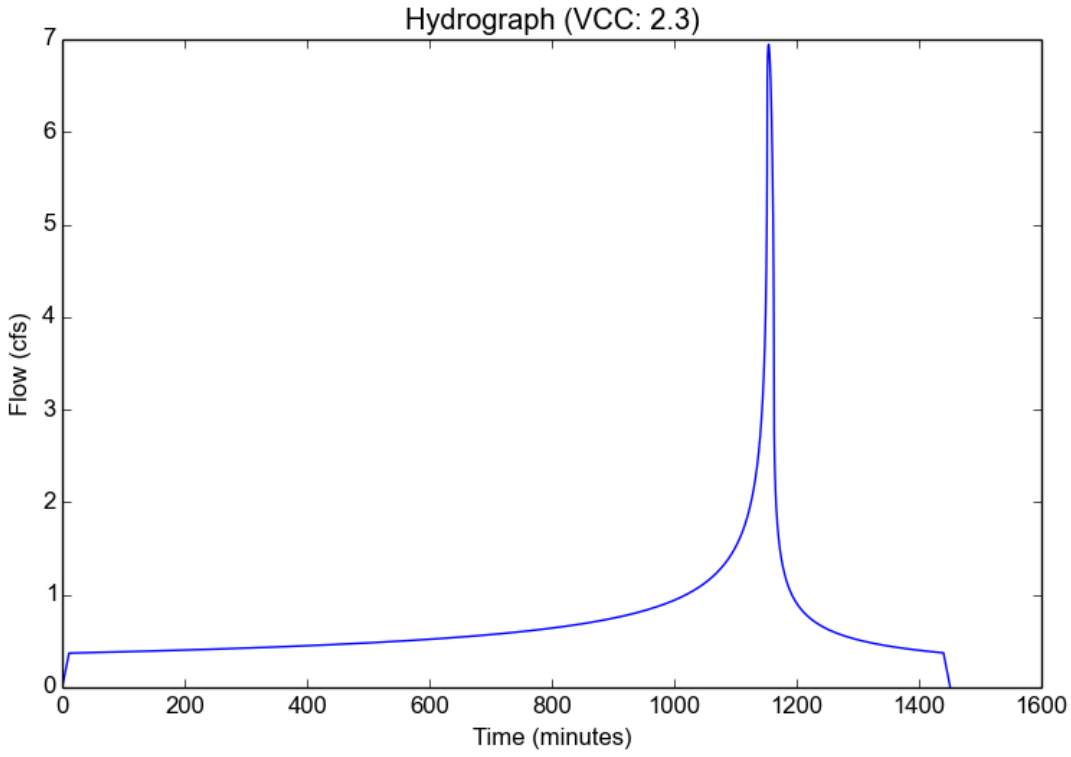
File location: P:/Clients/Newhall_Land/Projects/CWR0782_ES_VCC_Hydrology_2022/VCC/Conformance Memo/Round_5_RTC_Oct24/Updated Submitt
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC
Subarea ID	2.3
Area (ac)	18.368957
Flow Path Length (ft)	250.0
Flow Path Slope (vft/hft)	0.05
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.91
Soil Type	20
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.4531
Undeveloped Runoff Coefficient (Cu)	0.1723
Developed Runoff Coefficient (Cd)	0.8345
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	6.945
Burned Peak Flow Rate (cfs)	6.945
24-Hr Clear Runoff Volume (ac-ft)	1.3832
24-Hr Clear Runoff Volume (cu-ft)	60254.2501



Peak Flow Hydrologic Analysis

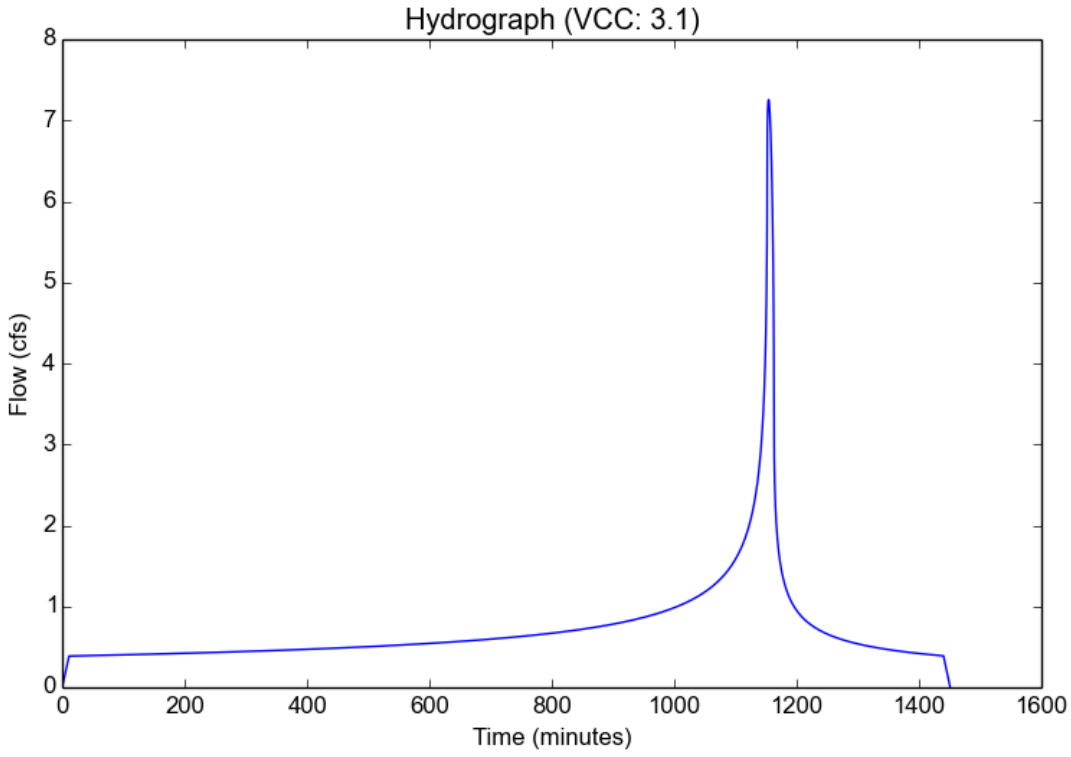
File location: P:/Clients/Newhall_Land/Projects/CWR0782_ES_VCC_Hydrology_2022/VCC/Conformance Memo/Round_5_RTC_Oct24/Updated Submitt
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC
Subarea ID	3.1
Area (ac)	19.190967
Flow Path Length (ft)	250.0
Flow Path Slope (vft/hft)	0.05
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.91
Soil Type	20
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.4531
Undeveloped Runoff Coefficient (Cu)	0.1723
Developed Runoff Coefficient (Cd)	0.8345
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	7.2558
Burned Peak Flow Rate (cfs)	7.2558
24-Hr Clear Runoff Volume (ac-ft)	1.4451
24-Hr Clear Runoff Volume (cu-ft)	62950.6251



Peak Flow Hydrologic Analysis

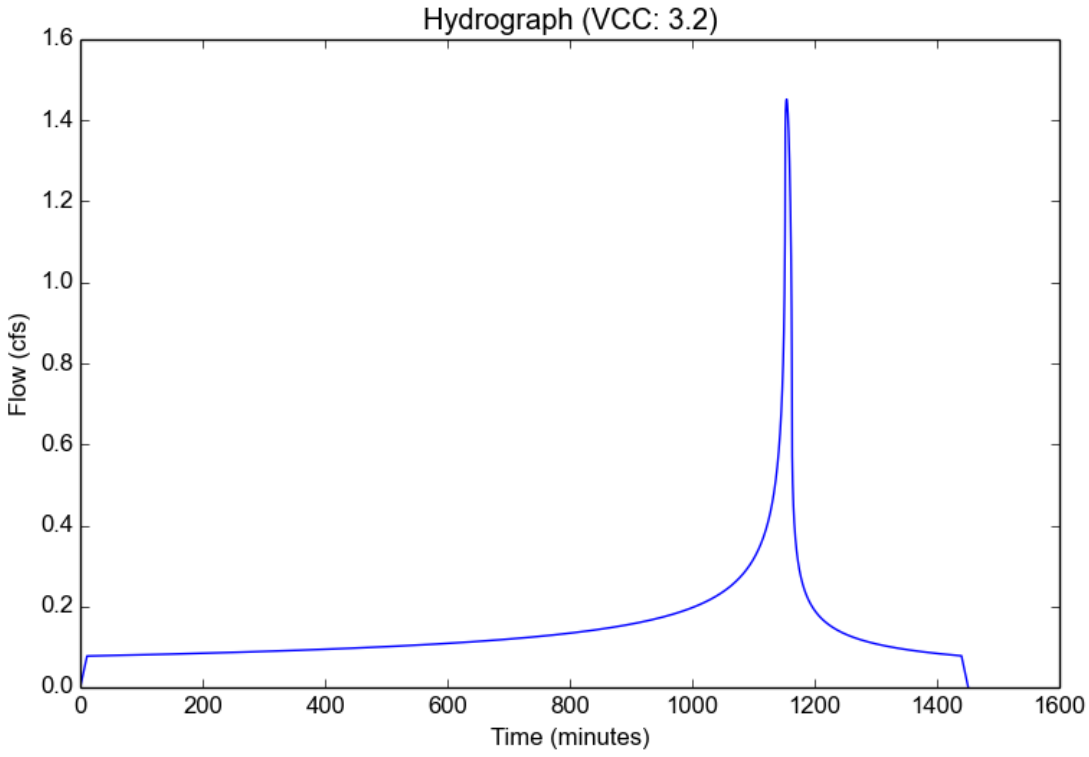
File location: P:/Clients/Newhall_Land/Projects/CWR0782_ES_VCC_Hydrology_2022/VCC/Conformance Memo/Round_5_RTC_Oct24/Updated Submitt
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC
Subarea ID	3.2
Area (ac)	3.841175
Flow Path Length (ft)	250.0
Flow Path Slope (vft/hft)	0.05
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.91
Soil Type	20
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.4531
Undeveloped Runoff Coefficient (Cu)	0.1723
Developed Runoff Coefficient (Cd)	0.8345
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	1.4523
Burned Peak Flow Rate (cfs)	1.4523
24-Hr Clear Runoff Volume (ac-ft)	0.2893
24-Hr Clear Runoff Volume (cu-ft)	12599.9053



Peak Flow Hydrologic Analysis

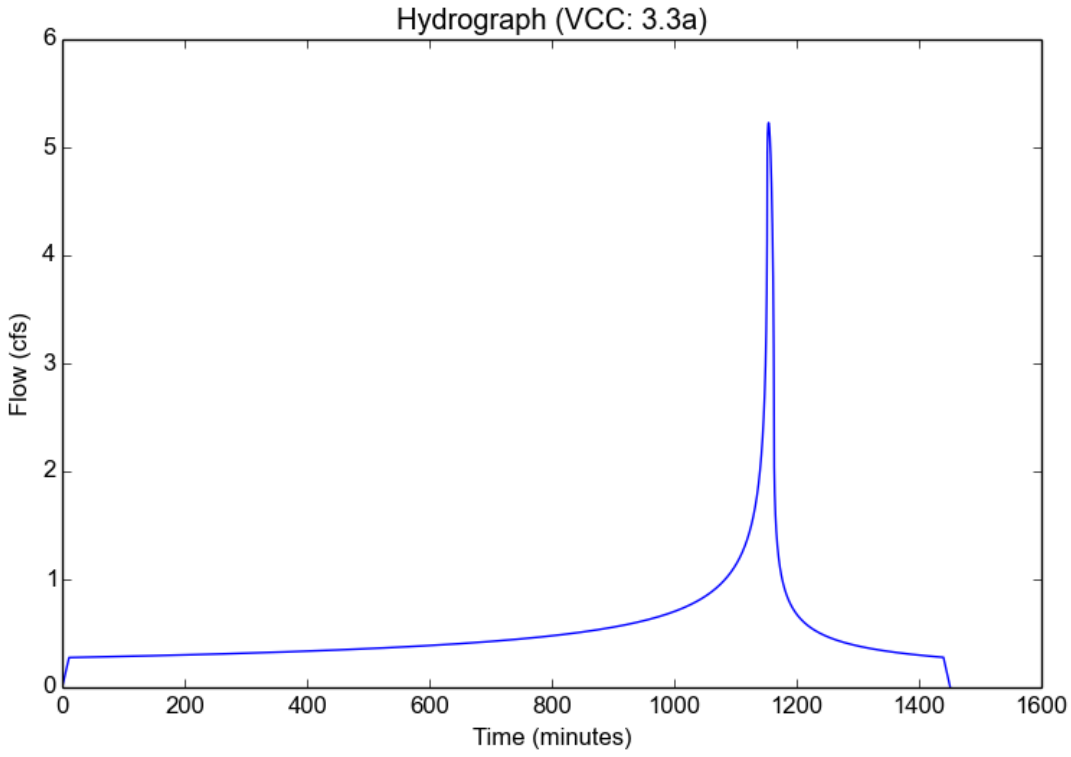
File location: P:/Clients/Newhall_Land/Projects/CWR0782_ES_VCC_Hydrology_2022/VCC/Conformance Memo/Round_5_RTC_Oct24/Updated Submitt
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC
Subarea ID	3.3a
Area (ac)	13.704784
Flow Path Length (ft)	250.0
Flow Path Slope (vft/hft)	0.05
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.91
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.4531
Undeveloped Runoff Coefficient (Cu)	0.257
Developed Runoff Coefficient (Cd)	0.8421
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	5.2289
Burned Peak Flow Rate (cfs)	5.2289
24-Hr Clear Runoff Volume (ac-ft)	1.0325
24-Hr Clear Runoff Volume (cu-ft)	44974.1299



Peak Flow Hydrologic Analysis

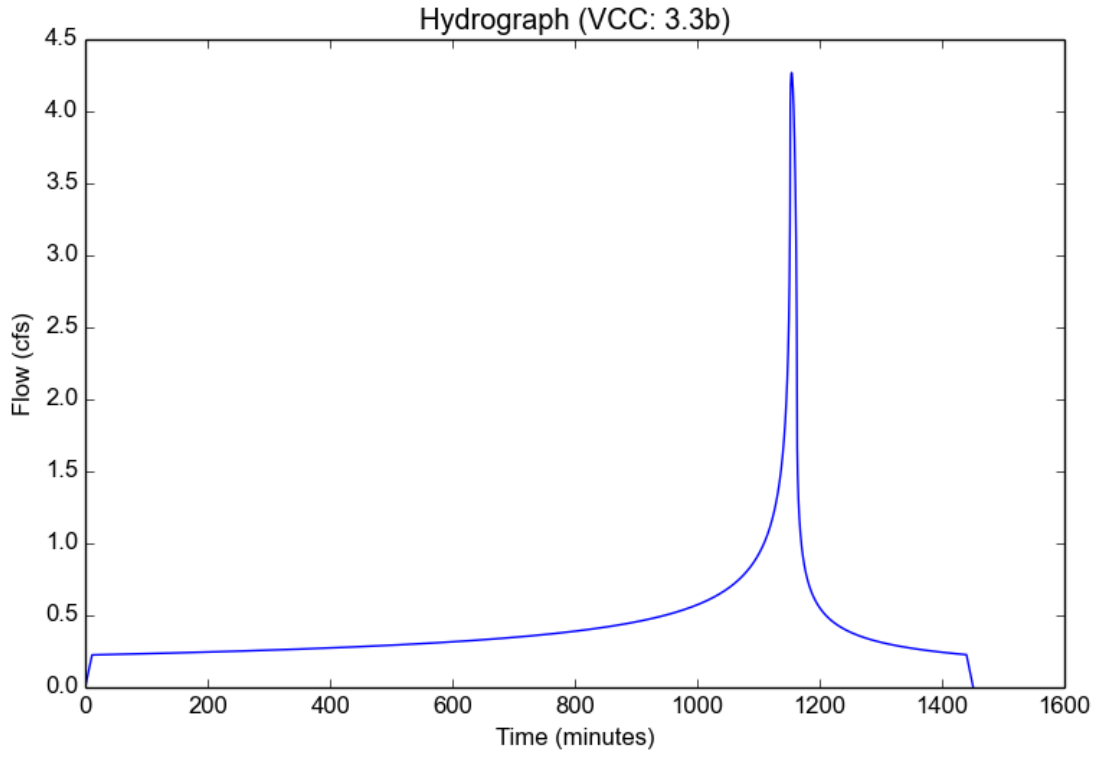
File location: P:/Clients/Newhall_Land/Projects/CWR0782_ES_VCC_Hydrology_2022/VCC/Conformance Memo/Round_5_RTC_Oct24/Updated Submitt
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC
Subarea ID	3.3b
Area (ac)	11.188287
Flow Path Length (ft)	250.0
Flow Path Slope (vft/hft)	0.05
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.91
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.4531
Undeveloped Runoff Coefficient (Cu)	0.257
Developed Runoff Coefficient (Cd)	0.8421
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	4.2687
Burned Peak Flow Rate (cfs)	4.2687
24-Hr Clear Runoff Volume (ac-ft)	0.8429
24-Hr Clear Runoff Volume (cu-ft)	36715.8996



Peak Flow Hydrologic Analysis

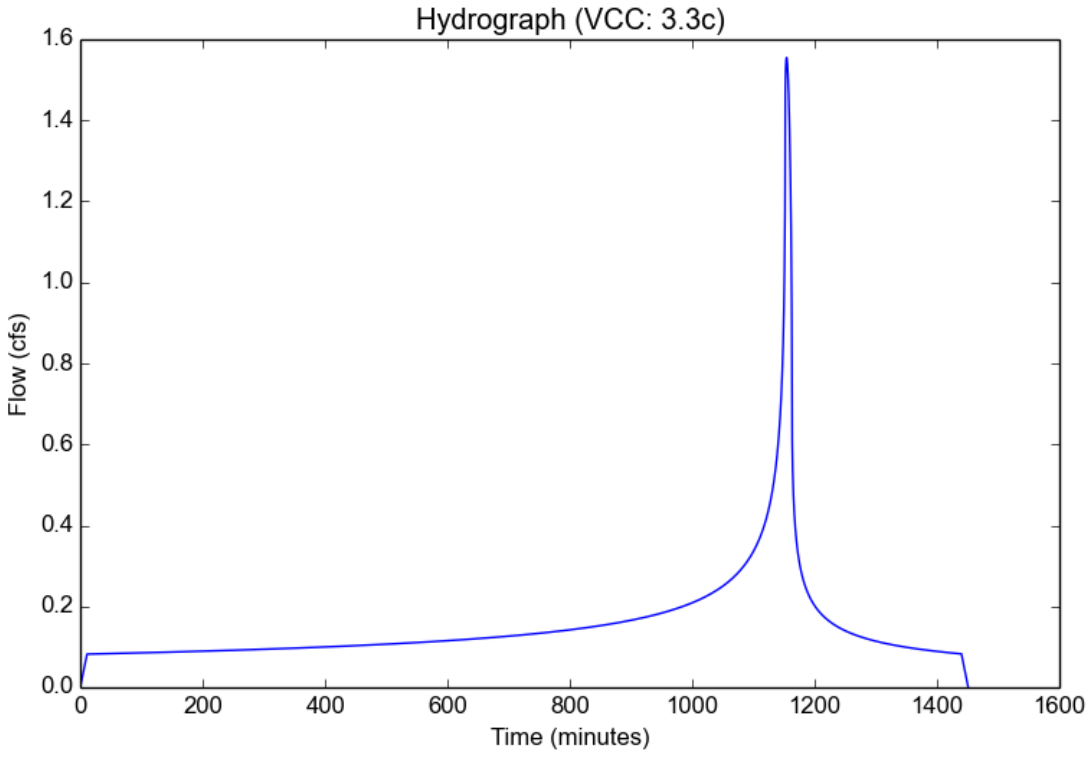
File location: P:/Clients/Newhall_Land/Projects/CWR0782_ES_VCC_Hydrology_2022/VCC/Conformance Memo/Round_5_RTC_Oct24/Updated Submitt
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC
Subarea ID	3.3c
Area (ac)	4.075121
Flow Path Length (ft)	250.0
Flow Path Slope (vft/hft)	0.05
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.91
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.4531
Undeveloped Runoff Coefficient (Cu)	0.257
Developed Runoff Coefficient (Cd)	0.8421
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	1.5548
Burned Peak Flow Rate (cfs)	1.5548
24-Hr Clear Runoff Volume (ac-ft)	0.307
24-Hr Clear Runoff Volume (cu-ft)	13373.0689



Peak Flow Hydrologic Analysis

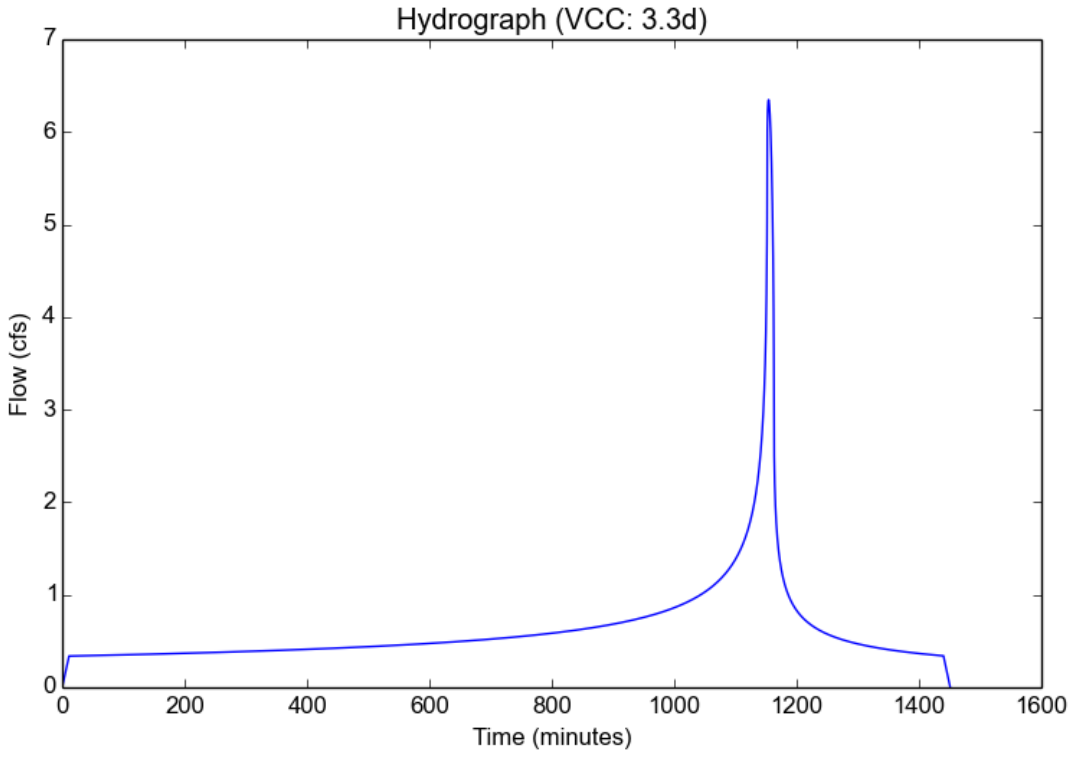
File location: P:/Clients/Newhall_Land/Projects/CWR0782_ES_VCC_Hydrology_2022/VCC/Conformance Memo/Round_5_RTC_Oct24/Updated Submitt
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC
Subarea ID	3.3d
Area (ac)	16.789351
Flow Path Length (ft)	250.0
Flow Path Slope (vft/hft)	0.05
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.91
Soil Type	20
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.4531
Undeveloped Runoff Coefficient (Cu)	0.1723
Developed Runoff Coefficient (Cd)	0.8345
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	6.3478
Burned Peak Flow Rate (cfs)	6.3478
24-Hr Clear Runoff Volume (ac-ft)	1.2643
24-Hr Clear Runoff Volume (cu-ft)	55072.7924



Peak Flow Hydrologic Analysis

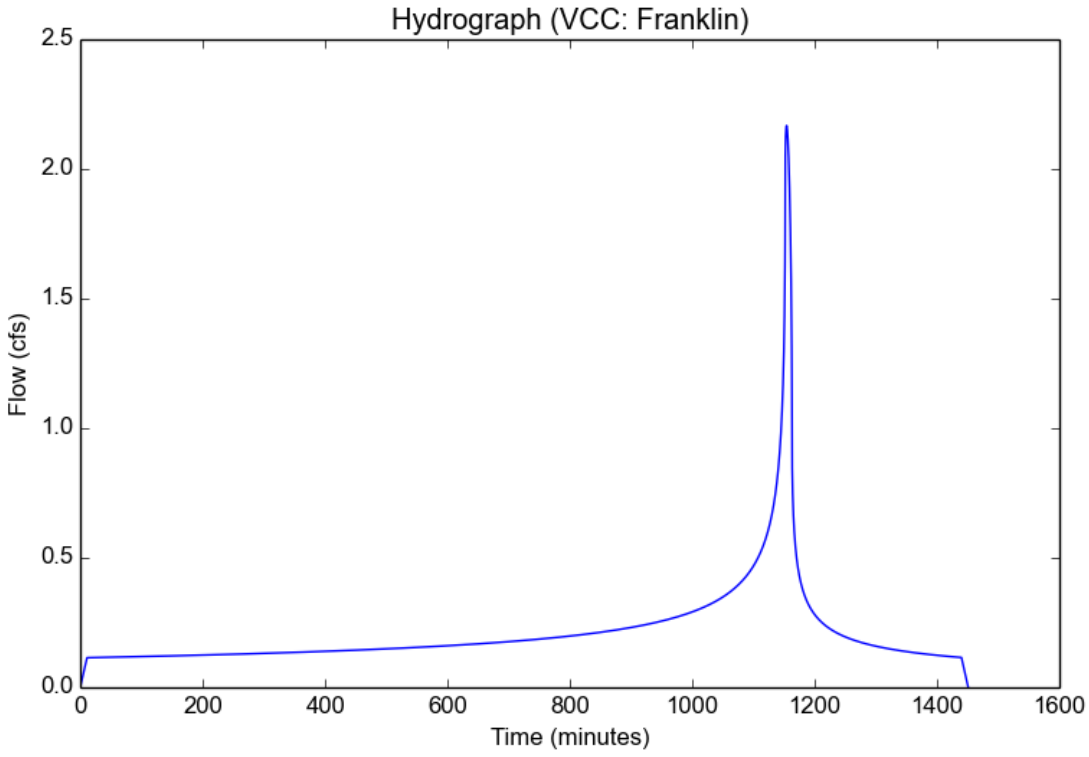
File location: P:/Clients/Newhall_Land/Projects/CWR0782_ES_VCC_Hydrology_2022/VCC/Conformance Memo/Round_5_RTC_Oct24/Updated Submitt
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC
Subarea ID	Franklin
Area (ac)	5.681071
Flow Path Length (ft)	250.0
Flow Path Slope (vft/hft)	0.05
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.91
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.4531
Undeveloped Runoff Coefficient (Cu)	0.257
Developed Runoff Coefficient (Cd)	0.8421
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	2.1675
Burned Peak Flow Rate (cfs)	2.1675
24-Hr Clear Runoff Volume (ac-ft)	0.428
24-Hr Clear Runoff Volume (cu-ft)	18643.2143



Peak Flow Hydrologic Analysis

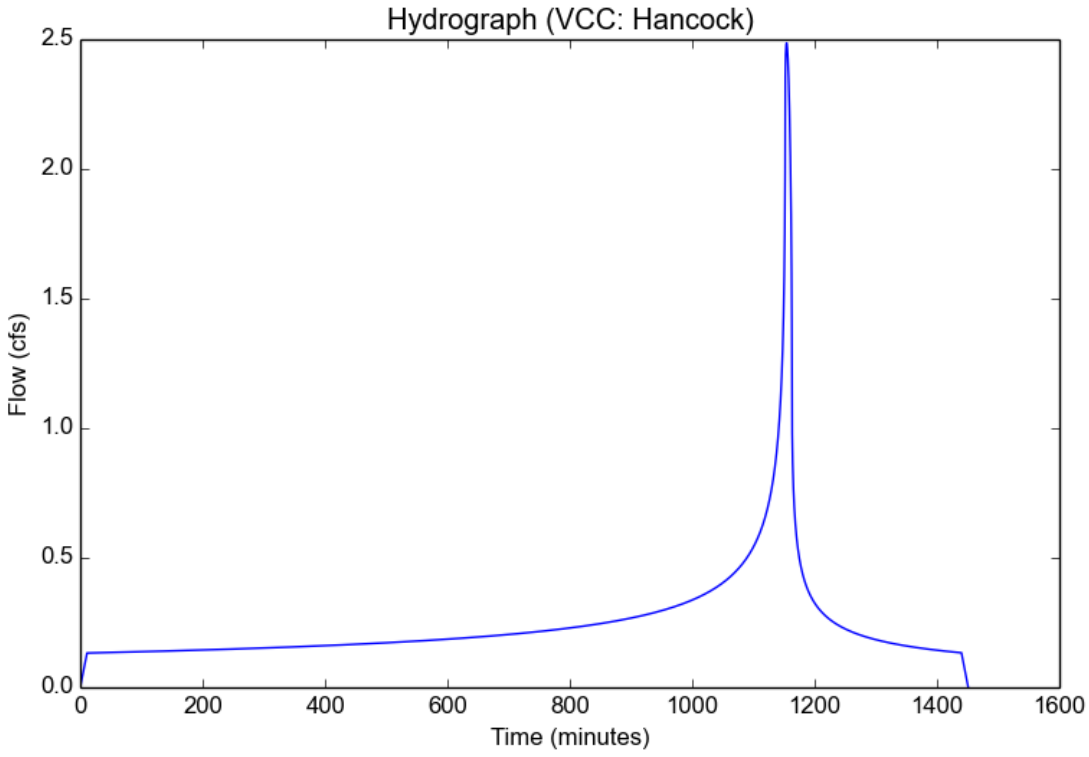
File location: P:/Clients/Newhall_Land/Projects/CWR0782_ES_VCC_Hydrology_2022/VCC/Conformance Memo/Round_5_RTC_Oct24/Updated Submitt
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC
Subarea ID	Hancock
Area (ac)	6.576019
Flow Path Length (ft)	250.0
Flow Path Slope (vft/hft)	0.05
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.91
Soil Type	20
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.4531
Undeveloped Runoff Coefficient (Cu)	0.1723
Developed Runoff Coefficient (Cd)	0.8345
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	2.4863
Burned Peak Flow Rate (cfs)	2.4863
24-Hr Clear Runoff Volume (ac-ft)	0.4952
24-Hr Clear Runoff Volume (cu-ft)	21570.7998



Peak Flow Hydrologic Analysis

File location: P:/Clients/Newhall_Land/Projects/CWR0782_ES_VCC_Hydrology_2022/VCC/Conformance Memo/Round_5_RTC_Oct24/Updated Submitt
Version: HydroCalc 1.0.3

Input Parameters

Project Name	VCC
Subarea ID	Open Space - Access Road
Area (ac)	9.283138
Flow Path Length (ft)	250.0
Flow Path Slope (vft/hft)	0.05
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.91
Soil Type	20
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.4531
Undeveloped Runoff Coefficient (Cu)	0.1723
Developed Runoff Coefficient (Cd)	0.8345
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	3.5098
Burned Peak Flow Rate (cfs)	3.5098
24-Hr Clear Runoff Volume (ac-ft)	0.6991
24-Hr Clear Runoff Volume (cu-ft)	30450.7501

