Appendix G1: Preliminary Hydrology Report

Appendices

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Sep 2021

PRELIMINARY HYDROLOGY REPORT

For

Tentative Tract No. 83121

City of Claremont

County of Los Angeles

Prepared For:

TRUMARKHOMES

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WO#: 3916-46X-PHydrlgyRprt-TT83121

HYDROLOGY REPORT

FOR

"LA PUERTA" -

TENTATIVE TRACT MAP NO. 83121

2475 FORBES AVENUE

CITY OF CLAREMONT

COUNTY OF LOS ANGELES

Prepared Date: 09/09/2021

PREPARED UNDER THE SUPERVISION OF:

9/09/2021

Jianhua "Gary" Guan, R.C.E. 64519, Exp. 06/30/23 Date:

TABLE OF CONTENTS

SECTION 1

INTRODUCTION & DISCUSSION

A. **INTRODUCTION**

The proposed residential development for La Puerta – Tentative Tract Map (TTM) No. 83121 is located at 2475 Forbes, southeast of the intersection of N. Forbes Avenue and E. Miramar Avenue in the City of Claremont, County of Los Angeles. The site is bounded to the north and south by residential homes, to the east by N. Forbes Avenue, and to the west by the La Puerta Sports Park. The general location can be found from the vicinity map attached.

The site is presently a decommissioned elementary school that consists of classroom buildings, surface parking, playground and playfields. The overall development area including La Puerta Sport Park is approximately +/-18.8 gross acres and is generally a Trapezoid-shaped parcel. The school site is vacated and not in use. The proposed project would demolish all asphalt and paved areas, existing buildings and school related structures, and landscaping.

Surrounding land uses include primarily residential land uses on all sides, including northerly and southerly property boundaries, Forbes Avenue to the east. The existing La Puerta Sports Park which is located to the west of the elementary school is not part of the re-developments.

TRUMARK proposes Tentative Tract Map No. 83121 for the development of 56 single-family detached residential lots, parkways, on-street parking, private drives, curb, gutter, sidewalk and storm drain improvements, retaining walls, wet and dry utilities and related infrastructure improvements.

B. DRAINAGE PATTERNS

The overall development area is approximately +/-9.6 acres in size.

Existing school site:

School buildings were generally located at the northern half of the site, and the southern portion of the site was utilized as sports fields and remained vacant/undeveloped. The vacant areas appear to have been mowed or tilled over time and are currently covered with low grass and some minor amounts of vegetation within the drainage pathways across the field to the southwestern corner of the site. An existing v-ditch collects the surface drainage off the school site and discharges into N. Indian Hills Blvd via parkway culvert.

Buildings and scattered trees near buildings were observed on site through 2018, however demolition of structures was performed prior to the subsurface investigation herein. It is our understanding that imported materials have been stockpiled over time within the southwest quadrant of the site. Stockpiled materials were observed to consist of sand, gravels and cobbles, and scattered boulders.

Existing La Puerta Sports Park site:

Majority of the sports park sheet flows to the existing parking lot parallel to N. Indian Hill Blvd from north/northeast to south/southwest direction. The runoffs discharge into N. Indian Hill Blvd at the parking lot entrance. South portion of the sports park sheet flows into the existing concrete v-ditch located at the southerly boundary of the sports park and then to N. Indian Hill Blvd.

Existing Forbes Avenue:

There are existing storm drains (per Drawing No. SD-7820) along Forbes Avenue with catch basins at the intersection of N. Forbes Avenue and E. Miramar Avenue. There is an existing 21-ft catch basin just 100-ft downstream of the property. The as-built storm drain plans cannot be obtained.

During the proposed condition, the majority of the project site will be proposed to follow the existing condition drainage pattern – discharging N. Indian Hills Blvd via concrete V-ditch and driveway. The eastern portion of the project will be proposed to discharge on Forbes Avenue where a single row of proposed residential lots front. The proposed low flow diversion structure, low flow catch basins, and perforated underground infiltration pipes are proposed for intercept and treatment of the water quality flows.

C. STUDY PURPOSE

The purpose of this study is to analyze pre-project and post-project hydrology of the project site to determine the peak flow rates of storm runoff and analyze the negative impacts, if any, due to the project developments.

D. HYDROLOGIC INFORMATION

25-year storm was analyzed for the project site. The project site encompasses the No. 7 soil group. The 50-year 24-hour isohyet is approximately 7.7 inches. The project falls into DPA zone 7. The 85th Percentile, 24-hr Rainfall is approximately 0.8 inches. The reference Los Angeles County Hydrology Map GIS information can be found in this Section.

The area weighted average of 20.5% of impervious percentage was applied for the existing condition Drainage Area A, 18.1% of impervious percentage was applied for the existing condition Drainage Area B and 86% of impervious percentage was applied for the existing condition Drainage Area C; refer to existing condition hydrology map for details.

The area weighted average of 48.6% of impervious percentage was applied for the proposed condition Drainage Area A, 18.1% of impervious percentage was applied for the proposed condition Drainage Area B and 55% of impervious percentage was applied for the proposed condition Drainage Area C; refer to proposed condition hydrology map for details.

E. METHODOLOGY

The methodology described in the Los Angeles County Department of Public Works (LACDPW) Hydrology Manual dated January 2006, was used to compute storm run-off from the project site. The LACDPW HydroCalc computer program was used to compute subarea time of concentration (TC), Peak Flow Rates and Runoff Volume. The hydrology calculations are included in Section 2 for existing (pre-project) and Section 3 proposed (post-project) conditions of this report.

F. HYDROLOGY CALCULATION RESULTS

The overall area studied (Drainage Areas A, B and C) including the off-site areas are approximately 19.65 acres in size.

Hydrology Summary Table
LA Puerta - VTTM 83121
City of Covina, County Of Los Angeles

Drainage Area	Existing Condition (1)		Proposed Condition (2)		Differences (3)=(2)-(1)	
	Area	25-yr Storm	Area	25-yr Storm	Area	25-yr Storm
	(acre)	(cfs)	(acre)	(cfs)	(acre)	(cfs)
1A	11.00	18.20	9.56	17.09	-1.44	-1.11
2B	7.80	16.95	7.81	15.87	0.01	-1.08
subtotal	18.80	35.15	17.37	32.96	-1.43	-2.19
3C	0.85	2.39	2.28	5.55	1.43	3.16
Total	19.65	37.54	19.65	38.51	0.00	0.97

Please note Drainage Area A and B are discharging onto Indian Hill Blvd and are considered as one discharge location for comparison purposes. As indicated from the summary table, the overall peak flow rates slightly increase due to the project developments. The overall peak flow rate total difference increase is 0.97 cfs for 25-year storm with 2.19 cfs less for the flows discharging onto Indian Hill Blvd and 3.16 cfs additional flows to the storm drain systems along Forbes Avenue.

G. LID/WATER QUALITY

Due to existing soil conditions, percolation BMPs are considered. The project will be required to comply with the newly adopted MS4 Permit. The design storm is determined using the 0.75 inch storm or the 85th percentile storm, whichever is greater. The 85th Percentile, 24-hr Rainfall is approximately 0.8 inches per Los Angeles County Hydrology Map GIS information. By applying the LACDPW HydroCalc computer program the results of the 85th percentile storm calculations can be found in Section 4.

There is one underground vault system (upsized 765-ft 60" pipe) proposed to contain the water quality volumes and drywells at the southwest corner for infiltration for the water quality treatment. Along Forbes Avenue (public) roadway frontier, the low flow lines are provided to collect the water quality flows from the project site and send to the proposed underground vault system and then to the drywells for treatments. The high flows will continue along Forbes Avenue to the existing 21-ft catch basin.

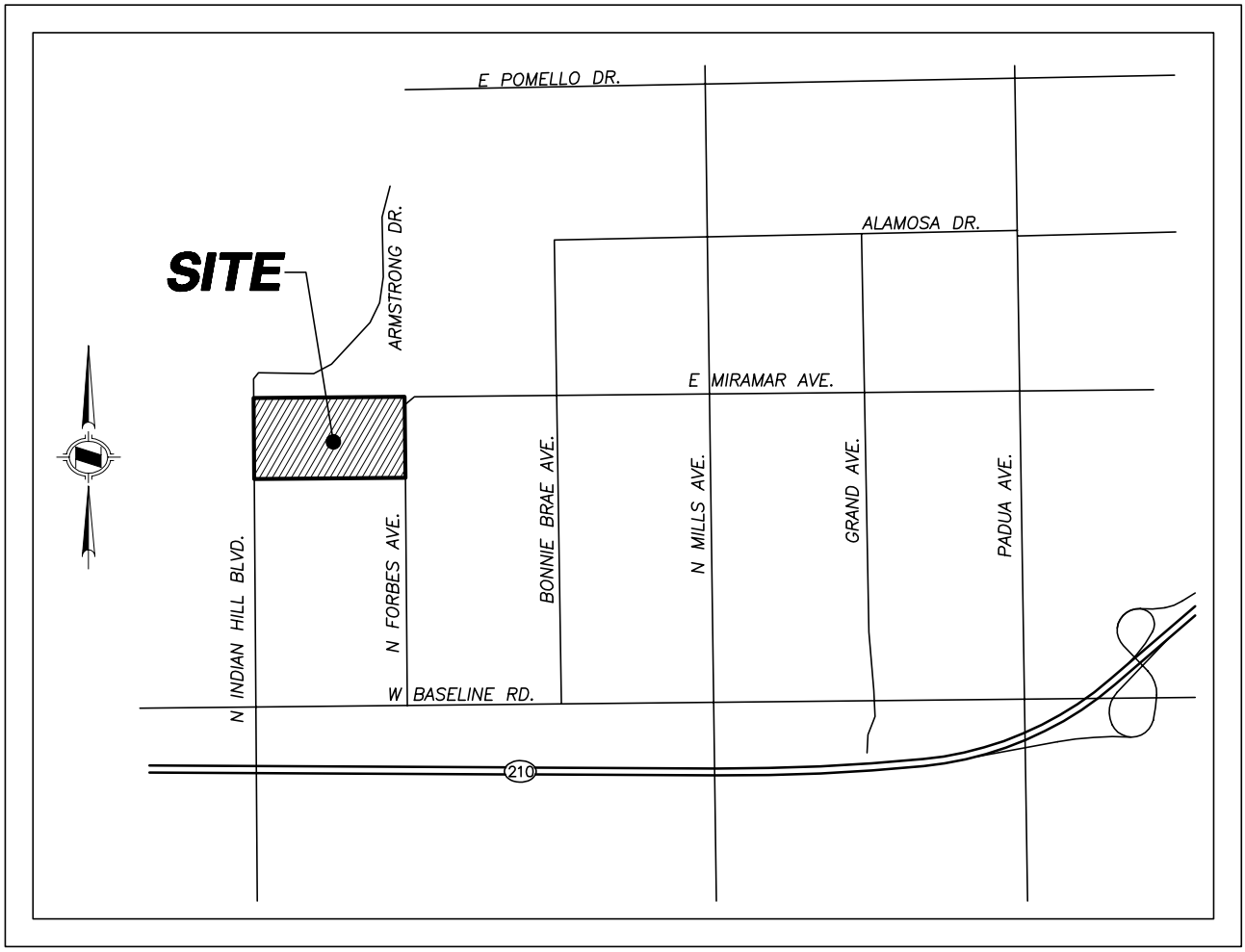
The detailed Low Impact Development (LID) can be found from the separate LID report provide as part of the initial submittal package and preliminary sizing for the BMP systems can be found in Section 4.

F. CATCH BASIN AND STREET CAPACITY CALC'S

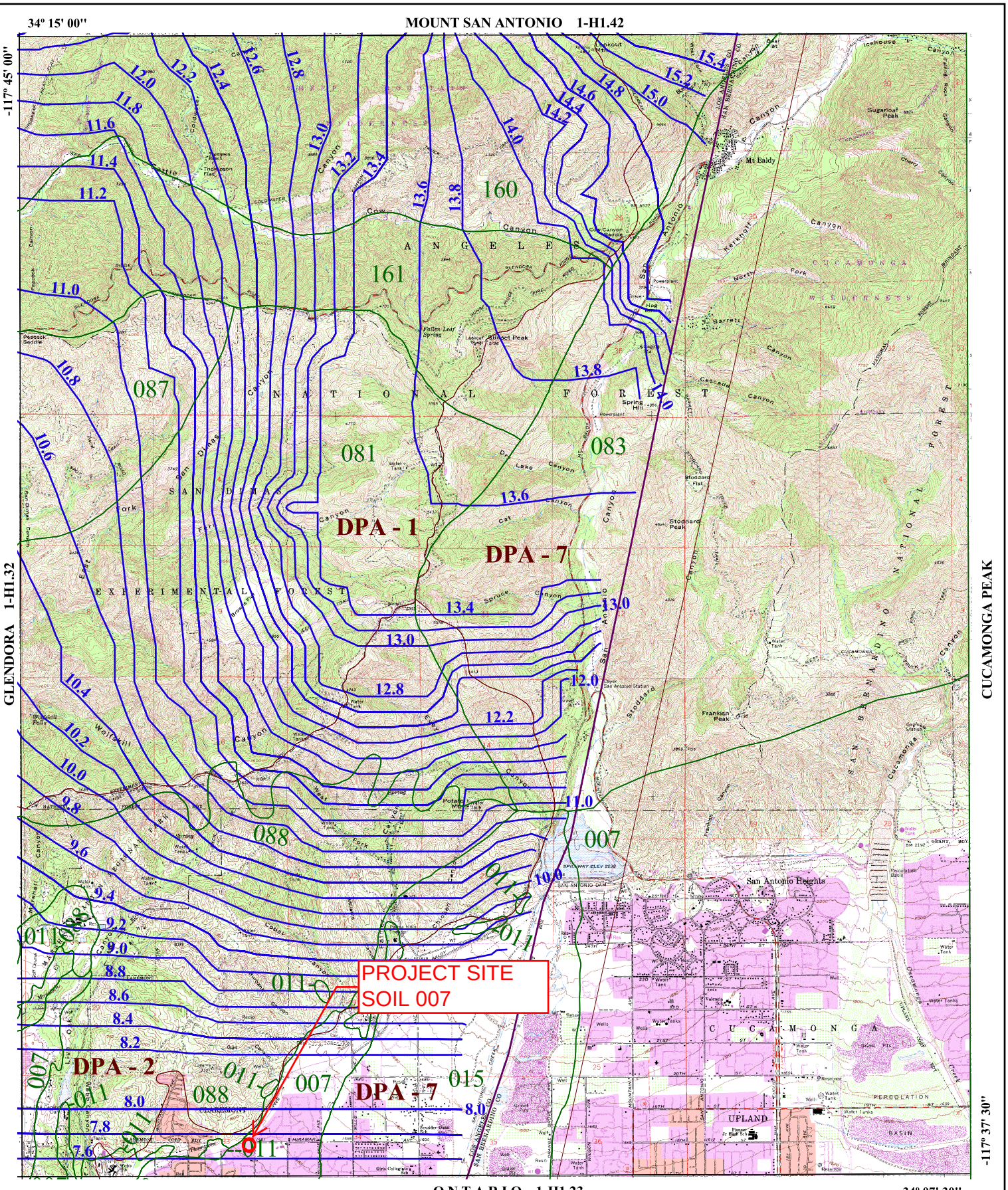
Due to the project development and as shown from the hydrology summary table, the proposed condition flow rates along Forbes Avenue (Drainage Area "C") are larger than the existing conditions

The street capacities along Forbes Avenue were performed by applying the FlowMaster program. The catch basin sizing calculations were also performed for the existing catch basins (one 21-ft curb opening) which is located along Forbes Avenue 100-ft downstream of the property. The calculation results indicated that the street and catch basins have enough capacity to convey the proposed flows.

Overall, it is concluded that there will have no adverse impacts to the existing drainage systems due to the project developments.



VICINITY MAP



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

N W E S

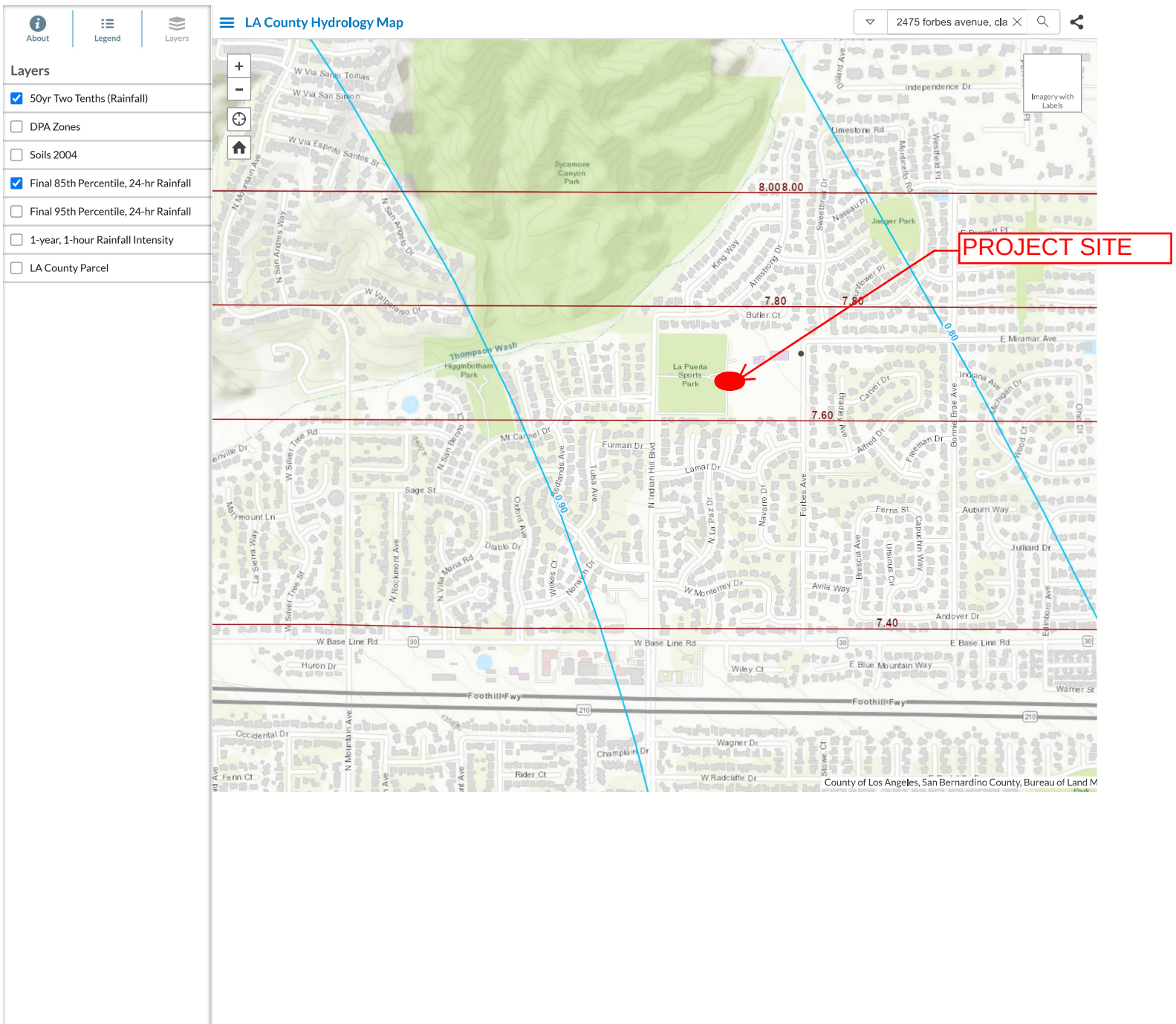
1 0 1 2 Miles

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

MOUNT BALDY
50-YEAR 24-HOUR ISOHYET

1-H1.33

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works


About
Legend
Layers
Layers
50yr Two Tenths (Rainfall)
DPA Zones
Soils 2004
Final 85th Percentile, 24-hr Rainfall
Final 95th Percentile, 24-hr Rainfall
1-year, 1-hour Rainfall Intensity
LA County Parcel
LA County Hydrology Map
2475 forbes avenue, cla
Imagery with Labels
PROJECT SITE
8.00
8.00
7.80
7.80
7.60
7.40
0.80
0.90
Sycamore Canyon Park
Thompson Wash
Higginbotham Park
La Puerta Sports Park
Jaeger Park
Limestone Rd
Independence Dr
Butler Ct
E Miramar Ave
Mt Carmel Dr
Furman Dr
Lamar Dr
Sage St
Ferns St
Auburn Way
Julliard Dr
Andover Dr
Avila Way
W Monterrey Dr
Diablo Dr
Huron Dr
W Base Line Rd
E Base Line Rd
E Blue Mountain Way
Wiley Ct
Foothill Fwy
Wagner Dr
Champlain Dr
Rider Ct
W Radcliffe Dr
Occidental Dr
Fenn Ct
Warner St
210
30
County of Los Angeles, San Bernardino County, Bureau of Land M

SECTION 2

EXISTING CONDITION
HYDROLOGY CALCULATIONS AND MAP

Peak Flow Hydrologic Analysis

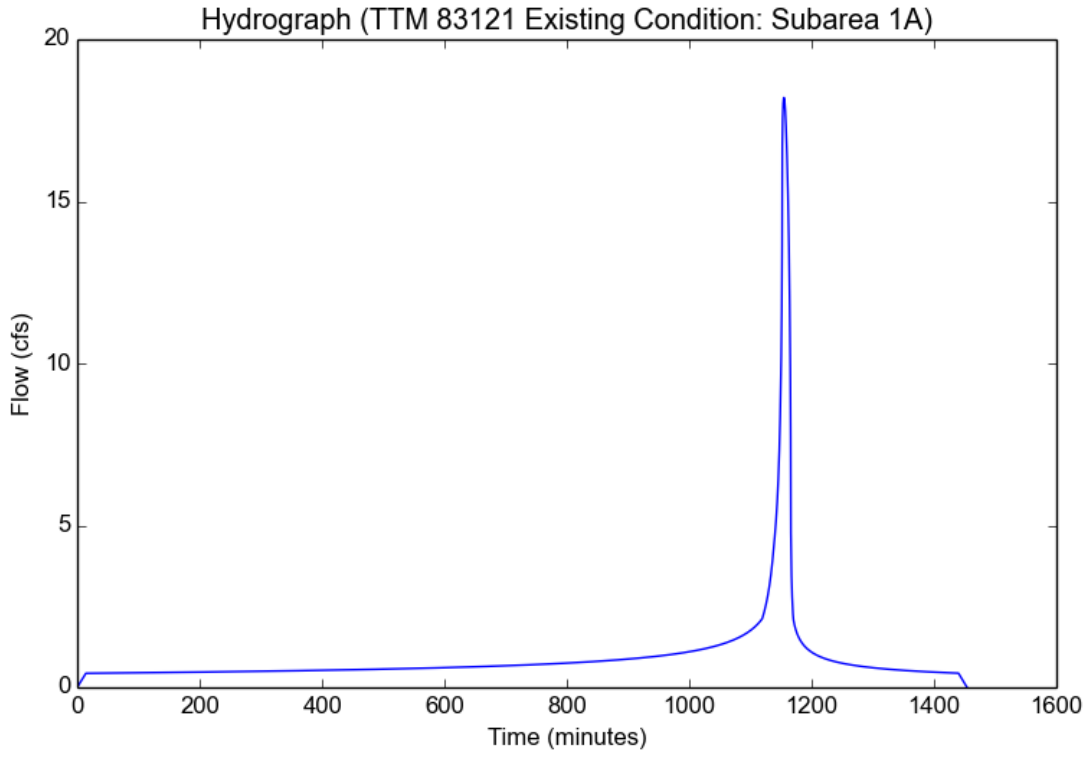
File location: C:/SD/Claremont/TTM 83121 Existing Condition - Subarea 1A.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	TTM 83121 Existing Condition
Subarea ID	Subarea 1A
Area (ac)	11.0
Flow Path Length (ft)	1635.0
Flow Path Slope (vft/hft)	0.025
50-yr Rainfall Depth (in)	7.7
Percent Impervious	0.205
Soil Type	7
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.7606
Peak Intensity (in/hr)	2.4861
Undeveloped Runoff Coefficient (Cu)	0.6052
Developed Runoff Coefficient (Cd)	0.6657
Time of Concentration (min)	14.0
Clear Peak Flow Rate (cfs)	18.204
Burned Peak Flow Rate (cfs)	18.204
24-Hr Clear Runoff Volume (ac-ft)	1.8774
24-Hr Clear Runoff Volume (cu-ft)	81777.6397



Peak Flow Hydrologic Analysis

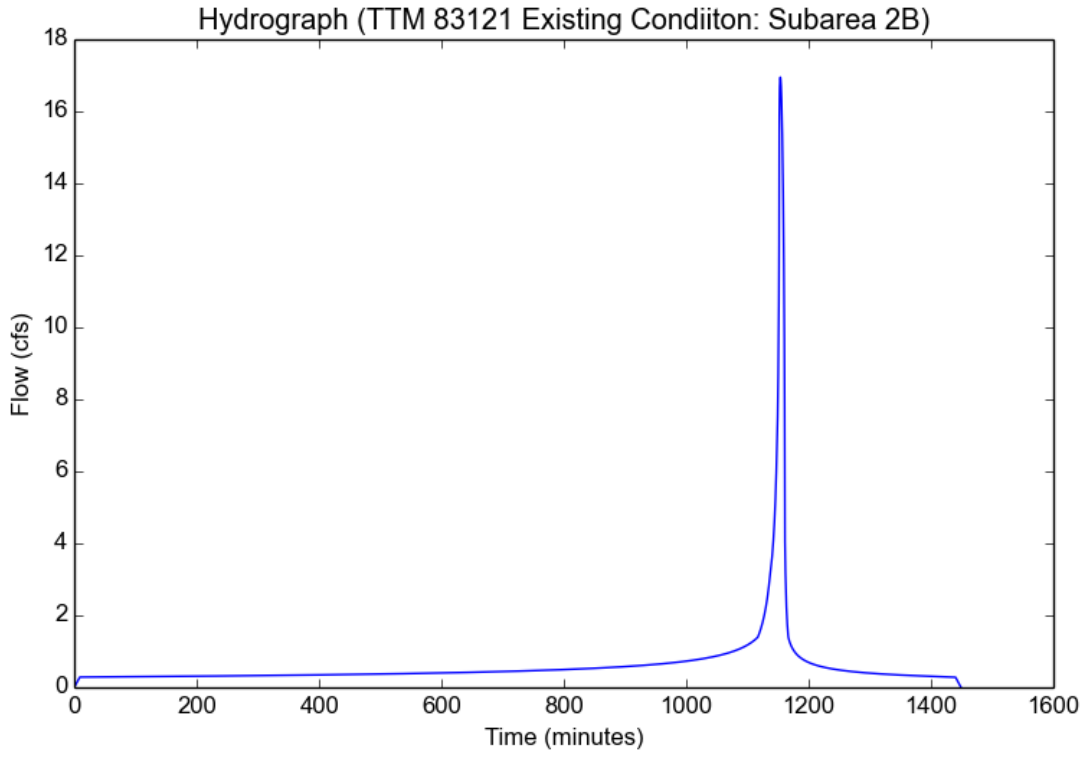
File location: C:/SD/Claremont/TTM 83121 Existing Condiiton - Subarea 2B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	TTM 83121 Existing Condiiton
Subarea ID	Subarea 2B
Area (ac)	7.8
Flow Path Length (ft)	930.0
Flow Path Slope (vft/hft)	0.027
50-yr Rainfall Depth (in)	7.7
Percent Impervious	0.181
Soil Type	7
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.7606
Peak Intensity (in/hr)	3.0599
Undeveloped Runoff Coefficient (Cu)	0.6681
Developed Runoff Coefficient (Cd)	0.7101
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	16.948
Burned Peak Flow Rate (cfs)	16.948
24-Hr Clear Runoff Volume (ac-ft)	1.2582
24-Hr Clear Runoff Volume (cu-ft)	54808.7589



Peak Flow Hydrologic Analysis

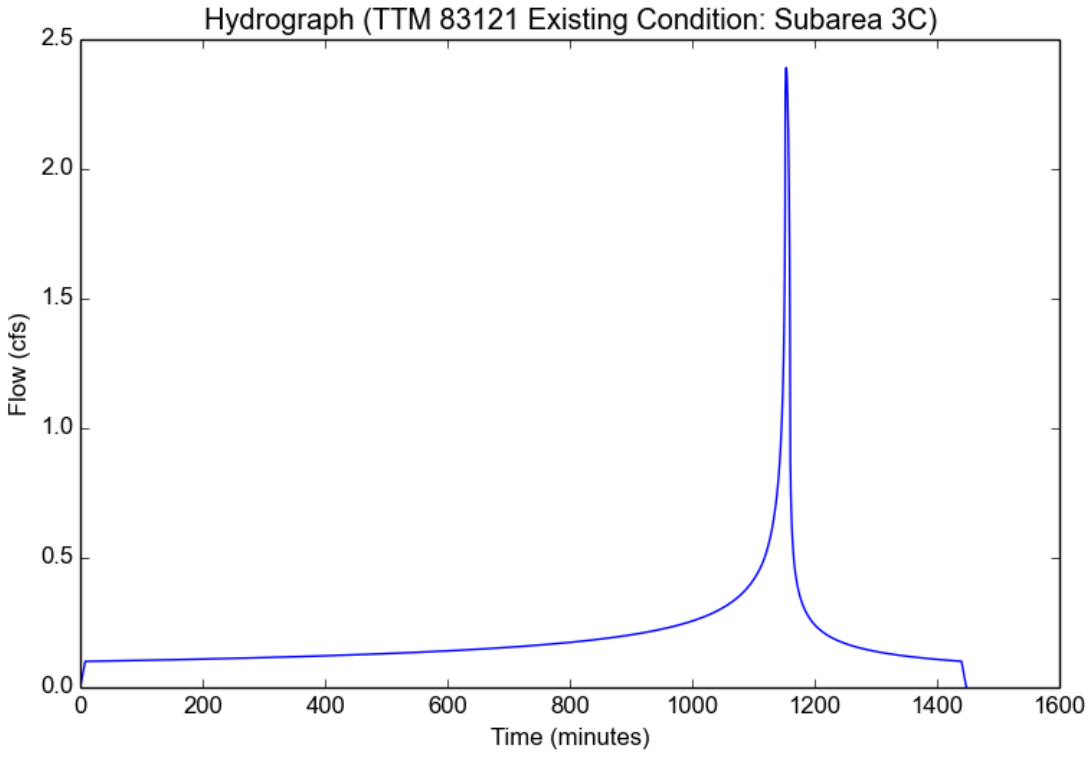
File location: C:/SD/Claremont/TTM 83121 Existing Condition - Subarea 3C.pdf
Version: HydroCalc 1.0.3

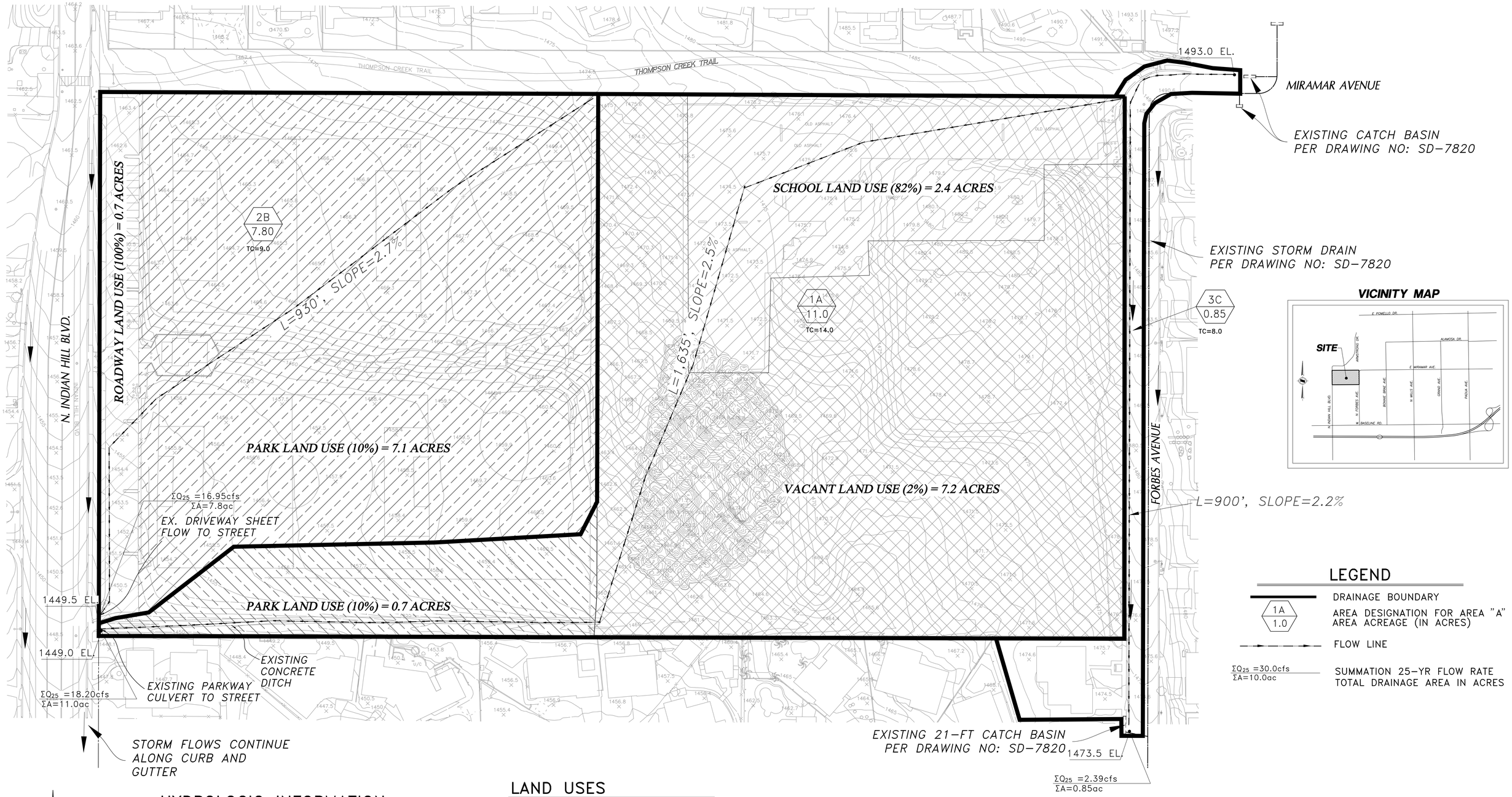
Input Parameters

Project Name	TTM 83121 Existing Condition
Subarea ID	Subarea 3C
Area (ac)	0.85
Flow Path Length (ft)	900.0
Flow Path Slope (vft/hft)	0.022
50-yr Rainfall Depth (in)	7.7
Percent Impervious	0.86
Soil Type	7
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.7606
Peak Intensity (in/hr)	3.2341
Undeveloped Runoff Coefficient (Cu)	0.6825
Developed Runoff Coefficient (Cd)	0.8696
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	2.3904
Burned Peak Flow Rate (cfs)	2.3904
24-Hr Clear Runoff Volume (ac-ft)	0.3778
24-Hr Clear Runoff Volume (cu-ft)	16457.7956





VICINITY MAP

LEGEND

- DRAINAGE BOUNDARY
- 1A / 1.0 — AREA DESIGNATION FOR AREA "A" AREA ACREAGE (IN ACRES)
- FLOW LINE
- ΣQ25 =30.0cfs / ΣA=10.0ac — SUMMATION 25-YR FLOW RATE TOTAL DRAINAGE AREA IN ACRES

SCALE: 1"=40'

0 20 40 80 120 160
SCALE: 1" = 40'

HYDROLOGIC INFORMATION

7	DPA ZONE
007	SOIL GROUP
7.7"	50-YEAR 24-HOUR ISOHYET
1	BURN FACTOR
1	BULKING FACTOR
14	TIME OF CONCENTRATION (TC) IN MINUTE
0.85"	85TH PERCENTILE STORM
PROJECT DESIGN STORM	85TH PERCENTILE STORM

LAND USES

1A

VACANT (AREA=7.2 ACRES, 2% IMPERVIOUSNESS)

SCHOOL LAND USE (AREA=2.4 ACRES, 82% IMPERVIOUSNESS)

PARK LAND USE (AREA=1.4 ACRES, 10% IMPERVIOUSNESS)

THE AREA WEIGHTED AVERAGE IMPERVIOUS PERCENTAGE=
(7.2X2+2.4X82+1.4X10)/11.0=20.5%

2B

PARK LAND USE (AREA=7.1 ACRES, 10% IMPERVIOUSNESS)

ROADWAY LAND USE (AREA=0.70 ACRES, 100% IMPERVIOUSNESS)

THE AREA WEIGHTED AVERAGE IMPERVIOUS PERCENTAGE=
(7.1X10+0.7X100/7.8=18.1%

3C

RESIDENTIAL LAND USE WITH 86% OF IMPERIVOUS

PREPARED FOR:
TRUMARK HOMES
450 NEWPORT CENTER DRIVE
SUITE 300
NEWPORT BEACH, CA 92660
TEL. (949) 999-9820

PREPARED BY:
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PLANNING • ENGINEERING • SURVEYING
Three Hughes • Irvine, CA 92618 • PH (949) 583-1010 • FX (949) 583-0759

EXHIBIT 1
EXISTING CONDITION HYDROLOGY MAP
TTM 83121 - LA PUERTA - CLAREMONT
2475 FORBES AVENUE, CLAREMONT, CA 91711

W.O. 3916-40X LA PUERTA - CLAREMONT - EXISTING HYDROLOGY MAP

PLOTTED BY: Gary Guan DATE: Feb. 02, 2021 01:39:06 PM FILE: F:\1118\Engineering\SY_Hydrology\Ex Hydrology Map.dwg

SECTION 3

PROPOSED CONDITION
HYDROLOGY CALCULATIONS AND MAP

Peak Flow Hydrologic Analysis

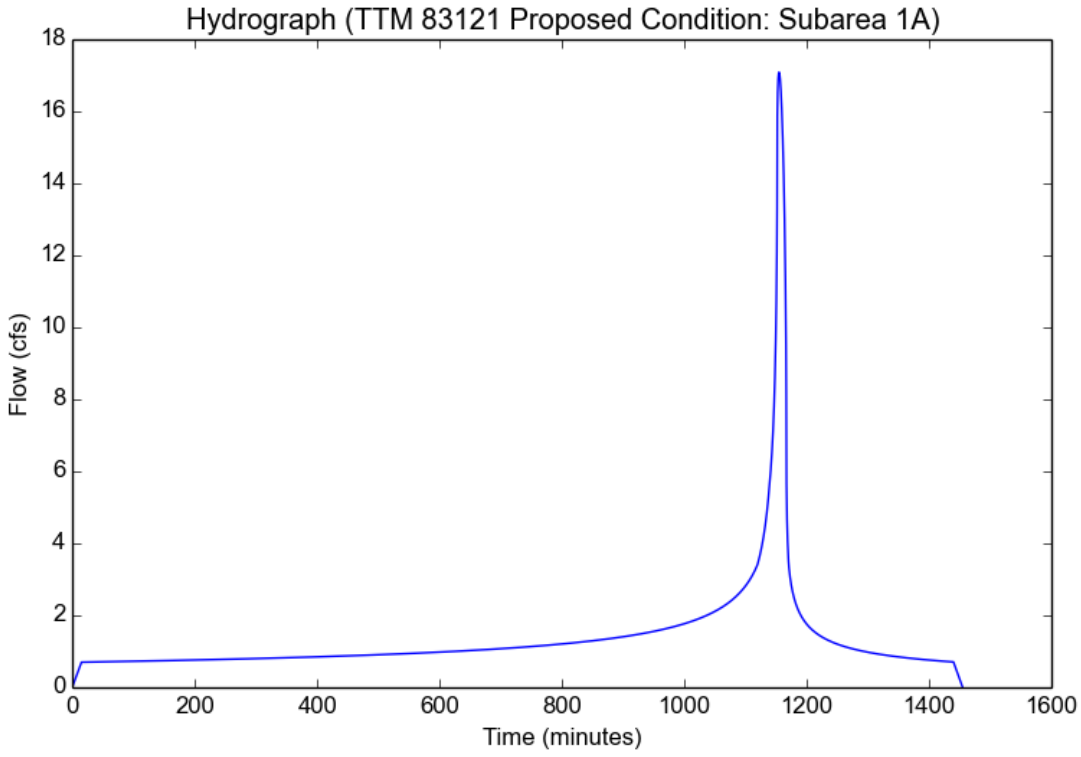
File location: C:/SD/La Puerta - Claremont/Revision/1A.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	TTM 83121 Proposed Condition
Subarea ID	Subarea 1A
Area (ac)	9.56
Flow Path Length (ft)	1820.0
Flow Path Slope (vft/hft)	0.016
50-yr Rainfall Depth (in)	7.7
Percent Impervious	0.486
Soil Type	7
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.7606
Peak Intensity (in/hr)	2.4068
Undeveloped Runoff Coefficient (Cu)	0.594
Developed Runoff Coefficient (Cd)	0.7427
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	17.0889
Burned Peak Flow Rate (cfs)	17.0889
24-Hr Clear Runoff Volume (ac-ft)	2.7532
24-Hr Clear Runoff Volume (cu-ft)	119931.0774



Peak Flow Hydrologic Analysis

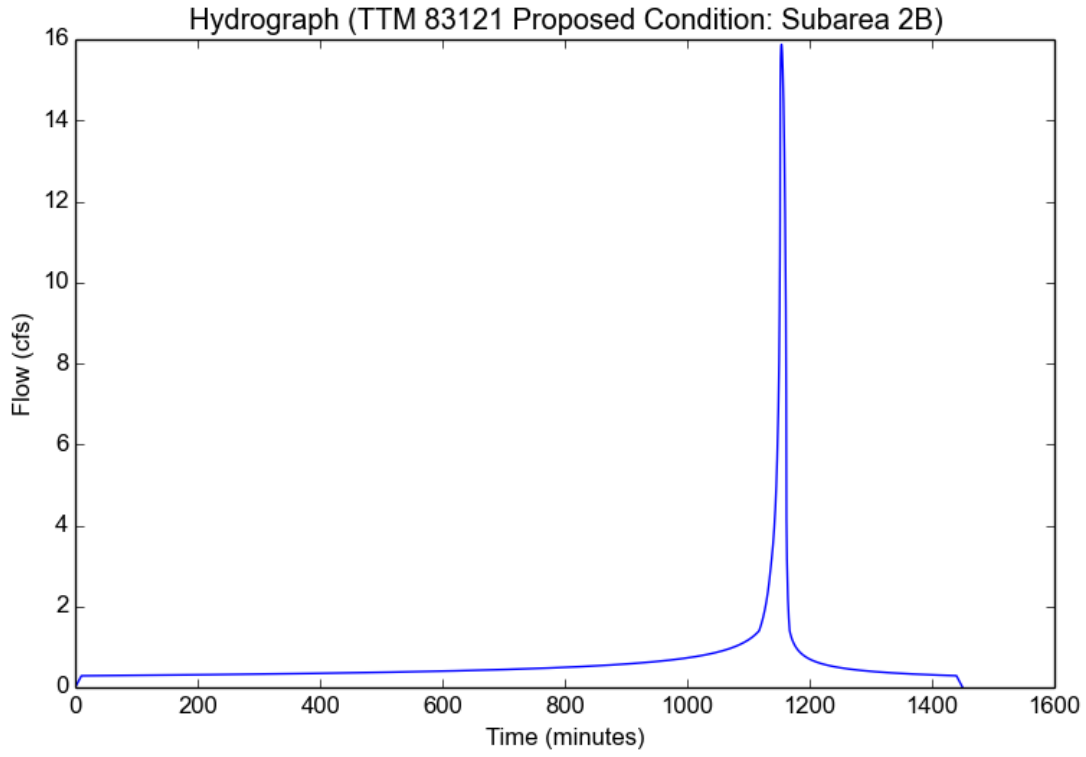
File location: C:/SD/La Puerta - Claremont/Revision/TTM 83121 Proposed Condition - Subarea 2B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	TTM 83121 Proposed Condition
Subarea ID	Subarea 2B
Area (ac)	7.81
Flow Path Length (ft)	1010.0
Flow Path Slope (vft/hft)	0.025
50-yr Rainfall Depth (in)	7.7
Percent Impervious	0.181
Soil Type	7
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.7606
Peak Intensity (in/hr)	2.9121
Undeveloped Runoff Coefficient (Cu)	0.6533
Developed Runoff Coefficient (Cd)	0.698
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	15.8743
Burned Peak Flow Rate (cfs)	15.8743
24-Hr Clear Runoff Volume (ac-ft)	1.2587
24-Hr Clear Runoff Volume (cu-ft)	54827.8635



Peak Flow Hydrologic Analysis

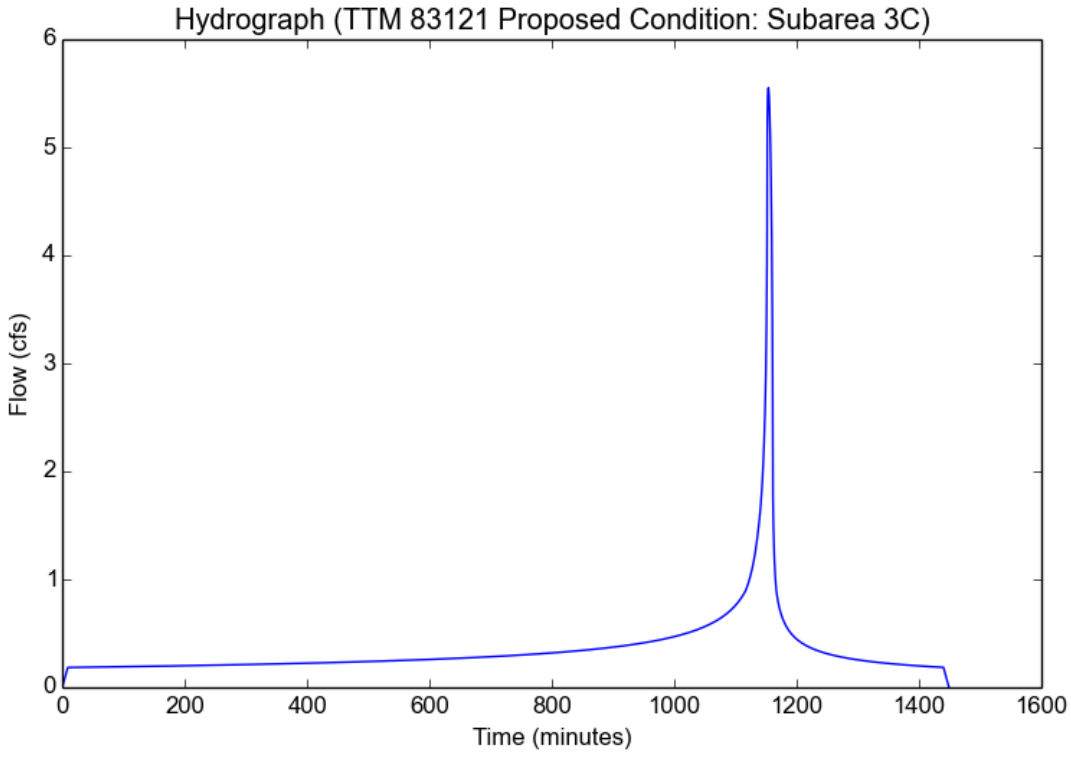
File location: C:/SD/La Puerta - Claremont/Revision/TTM 83121 Proposed Condition - Subarea 3C.pdf
Version: HydroCalc 1.0.3

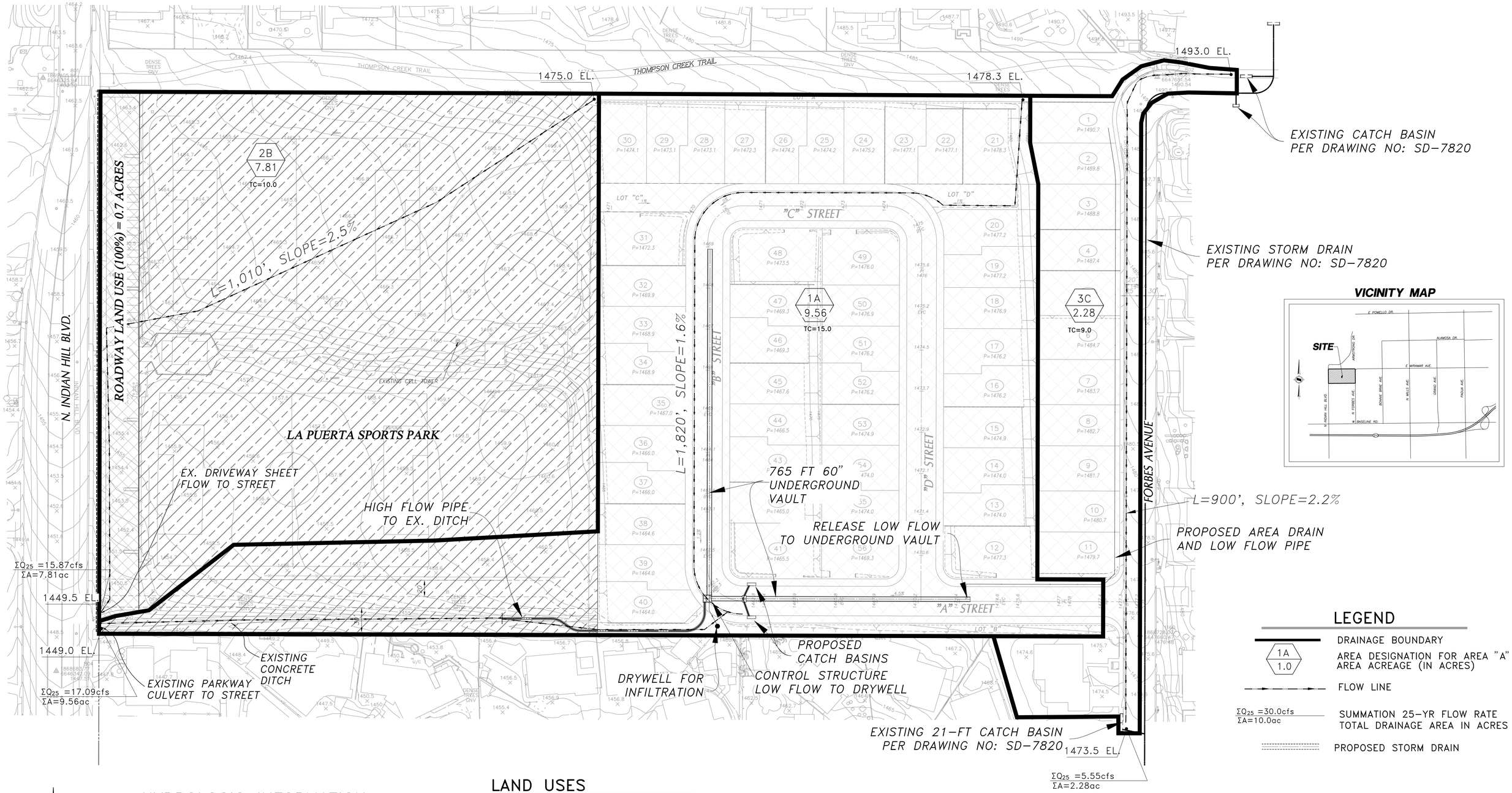
Input Parameters

Project Name	TTM 83121 Proposed Condition
Subarea ID	Subarea 3C
Area (ac)	2.28
Flow Path Length (ft)	900.0
Flow Path Slope (vft/hft)	0.022
50-yr Rainfall Depth (in)	7.7
Percent Impervious	0.55
Soil Type	7
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.7606
Peak Intensity (in/hr)	3.0599
Undeveloped Runoff Coefficient (Cu)	0.6681
Developed Runoff Coefficient (Cd)	0.7957
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	5.551
Burned Peak Flow Rate (cfs)	5.551
24-Hr Clear Runoff Volume (ac-ft)	0.7186
24-Hr Clear Runoff Volume (cu-ft)	31304.0797





LEGEND

- DRAINAGE BOUNDARY
- 1A / 1.0 — AREA DESIGNATION FOR AREA "A" / AREA ACREAGE (IN ACRES)
- FLOW LINE
- ΣQ25 =30.0cfs / ΣA=10.0ac — SUMMATION 25-YR FLOW RATE / TOTAL DRAINAGE AREA IN ACRES
- PROPOSED STORM DRAIN

SCALE: 1"=40'

0 20 40 80 120 160

SCALE: 1" = 40'

HYDROLOGIC INFORMATION

7	DPA ZONE
007	SOIL GROUP
7.7"	50-YEAR 24-HOUR ISOHYET
1	BURN FACTOR
1	BULKING FACTOR
14	TIME OF CONCENTRATION (TC) IN MINUTE
0.8"	85TH PERCENTILE STORM
PROJECT DESIGN STORM	85TH PERCENTILE STORM

LAND USES

1A

RESIDENTIAL LAND USE (AREA=8.19 ACRES, 55% IMPERVIOUSNESS)

PARK LAND USE (AREA=1.37 ACRES, 10% IMPERVIOUSNESS)

THE AREA WEIGHTED AVERAGE IMPERVIOUS PERCENTAGE=
(8.19X55+1.37X10)/9.56=48.6%

2B

PARK LAND USE (AREA=7.11 ACRES, 10% IMPERVIOUSNESS)

ROADWAY LAND USE (AREA=0.70 ACRES, 100% IMPERVIOUSNESS)

THE AREA WEIGHTED AVERAGE IMPERVIOUS PERCENTAGE=
(7.11X10+0.70X100)/7.81=18.1%

3C

RESIDENTIAL LAND USE WITH 55% OF IMPERIVOUS (2.28 ACRES)

PREPARED FOR:
TRUMARK HOMES
450 NEWPORT CENTER DRIVE
SUITE 300
NEWPORT BEACH, CA 92660
TEL. (949) 999-9820

PREPARED BY:
HUNSAKER & ASSOCIATES
IRVINE, INC
PLANNING • ENGINEERING • SURVEYING
Three Hughes • Irvine, CA 92618 • PH (949) 583-1010 • FX (949) 583-0759

EXHIBIT 2
PROPOSED CONDITION HYDROLOGY MAP
TTM 83121 - LA PUERTA - CLAREMONT
2475 FORBES AVENUE, CLAREMONT, CA 91711

PLOTTED BY: Gary Guan DATE: Sep. 07, 2021 02:36:42 PM FILE: F:\1118\Engineering\SY_Hydrology\Proposed Hydrology Map.dwg

W.O. 3916-46X LA PUERTA - CLAREMONT - PROPOSED HYDROLOGY MAP

SECTION 4

LID AND BMP SIZING CALCUALTIONS

There is one underground vault system (upsized 765-ft 60” pipe) proposed to contain the water quality volumes and drywells at the southwest corner for infiltration for the water quality treatment. Per the water quality volume calculations in this Section:

For the underground infiltration chamber, the required water quality volume is calculated to be 14,930 ft^3. A 86-ft long 60” pipe was proposed to contain the water quality volume and the provide volume is about 15,020 ft^3.

Peak Flow Hydrologic Analysis

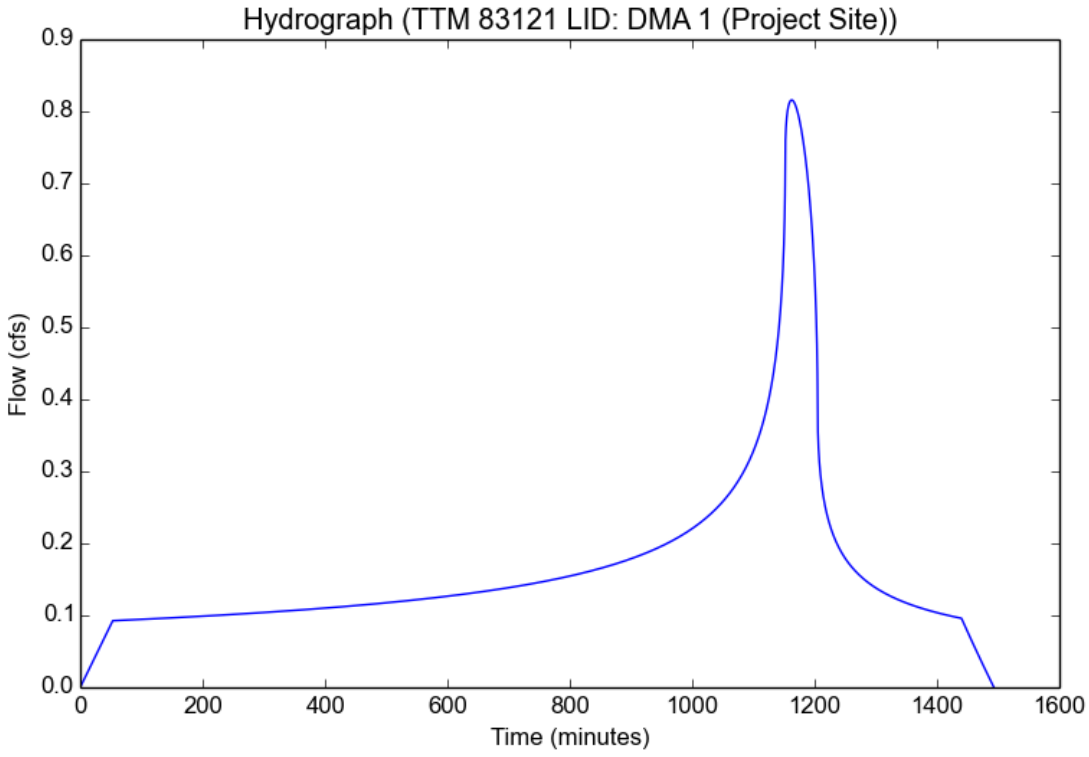
File location: C:/SD/La Puerta - Claremont/Revision/TTM 83121 LID - DMA 1 (Project Site).pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	TTM 83121 LID
Subarea ID	DMA 1 (Project Site)
Area (ac)	9.6
Flow Path Length (ft)	1090.0
Flow Path Slope (vft/hft)	0.027
85th Percentile Rainfall Depth (in)	0.8
Percent Impervious	0.55
Soil Type	7
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.8
Peak Intensity (in/hr)	0.1574
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.54
Time of Concentration (min)	53.0
Clear Peak Flow Rate (cfs)	0.8158
Burned Peak Flow Rate (cfs)	0.8158
24-Hr Clear Runoff Volume (ac-ft)	0.3428
24-Hr Clear Runoff Volume (cu-ft)	14930.4632



N. INDIAN HILL BLVD.

ROADWAY LAND USE (100%) = 0.7 ACRES

THOMPSON CREEK TRAIL

"A" STREET

"B" STREET

"C" STREET

"D" STREET

FORBES AVENUE

LOT "A"

LOT "B"

LOT "C"

LOT "D"

DMA-1
9.60
TC=53.0

1490.7 EL.

1461.4 EL.

765 FT 60" UNDERGROUND VAULT

L=1,090', SLOPE=2.7%

EXISTING CATCH BASIN PER DRAWING NO: SD-7820

EXISTING STORM DRAIN PER DRAWING NO: SD-7820

PROPOSED AREA DRAIN AND LOW FLOW PIPE (SEE DETAILS BELOW)

HIGH FLOW PIPE TO EX. DITCH

RELEASE LOW FLOW TO UNDERGROUND VAULT

EXISTING PARKWAY CULVERT TO STREET

EXISTING CONCRETE DITCH

DRYWELL FOR INFILTRATION

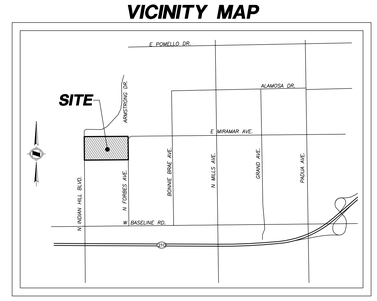
PROPOSED CATCH BASINS

CONTROL STRUCTURE LOW FLOW TO DRYWELL

EXISTING 21-FT CATCH BASIN PER DRAWING NO: SD-7820

STORM FLOWS CONTINUE ALONG CURB AND GUTTER

VICINITY MAP



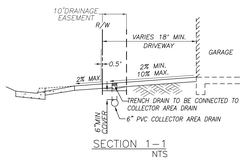
HYDROLOGIC INFORMATION

7	DPA ZONE
007	SOIL GROUP
7.7"	50-YEAR 24-HOUR ISOHYET
1	BURN FACTOR
1	BULKING FACTOR
53	TIME OF CONCENTRATION (TC) IN MINUTE
0.8"	85TH PERCENTILE STORM
PROJECT DESIGN STORM	85TH PERCENTILE STORM
55%	THE AREA WEIGHTED AVERAGE IMPERVIOUS PERCENTAGE

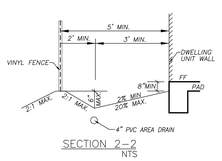
SCALE: 1"=40'

0 20 40 80 120 160

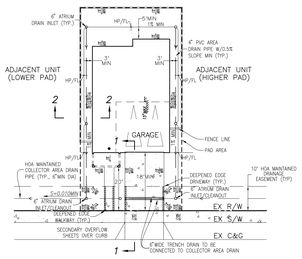
SCALE: 1" = 40'



SECTION 1-1
NTS



SECTION 2-2
NTS



TYPICAL LOT DRAINAGE DETAIL NTS
W/ AREA DRAIN SYSTEM WITHIN PRIVATE SPACE
FORBES AVENUE

LOT 1 TO LOT 12

LEGEND

- DRAINAGE BOUNDARY
- 1A / 1.0 — AREA DESIGNATION FOR AREA "A" AREA ACREAGE (IN ACRES)
- FLOW LINE
- PROPOSED STORM DRAIN
- RESIDENTIAL LAND USE (AREA=10.80 ACRES, 55% IMPERVIOUSNESS)

PREPARED FOR:
TRUMARK HOMES
450 NEWPORT CENTER DRIVE
SUITE 300
NEWPORT BEACH, CA 92660
TEL. (949) 999-9820

PREPARED BY:
HUNSAKER & ASSOCIATES IRVINE, INC.
PLANNING • ENGINEERING • SURVEYING
Three Hughes • Irvine, CA 92618 • PH (949) 583-1010 • FX (949) 583-0759

No. 64578
PROFESSIONAL ENGINEER
CIVIL
REGISTERED

WATER QUALITY RATES PER DMA AREA

DMA	AREA (ACRES)	WQ FLOW VOLUME (CU FT)	WQ FLOW RATE (CFS)	BMP SIZES	BMP CAPACITY (CU FT)
1	9.60	14,930	0.82	765-FT LONG 60" DIAMETER UNDERGROUND PIPE TO CONTAIN THE VOLUME AND DRYWELL TO INFILTRATE	15,020

EXHIBIT 3
WATER QUALITY DMA MAP FOR
TTM 83121 - LA PUERTA - CLAREMONT
2475 FORBES AVENUE, CLAREMONT, CA 91711

W.O. 3916-48X LA PUERTA - CLAREMONT - WQ MAP

PLOTTED BY: Gary Guan DATE: Sep. 07, 2021 02:32:07 PM FILE: F:\1118\Engineering\SY_Hydrology\WQ Map.dwg

SECTION 5

CATCH BASIN AND STREET CAPACITY CALCULATIONS

Forbes Avenue - Street Capacity

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.02200	ft/ft
Discharge	5.55	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	100.67
0+00	100.00
0+02	100.13
0+20	100.45

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 100.67)	(0+20, 100.45)	0.015

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.32	ft
Elevation Range	100.00 to 100.67 ft	
Flow Area	1.56	ft²
Wetted Perimeter	13.09	ft
Hydraulic Radius	0.12	ft
Top Width	12.76	ft
Normal Depth	0.32	ft
Critical Depth	0.38	ft
Critical Slope	0.00633	ft/ft

Forbes Avenue - Street Capacity

Results

Velocity		3.56	ft/s
Velocity Head		0.20	ft
Specific Energy		0.52	ft
Froude Number		1.79	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.32	ft
Critical Depth	0.38	ft
Channel Slope	0.02200	ft/ft
Critical Slope	0.00633	ft/ft

Cross Section for Forbes - 20' Halfwidth

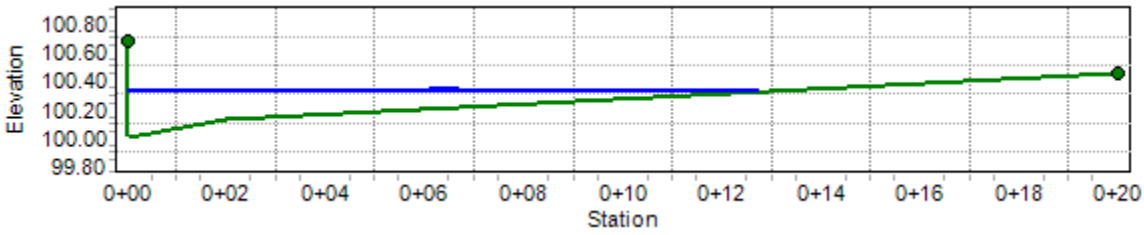
Project Description

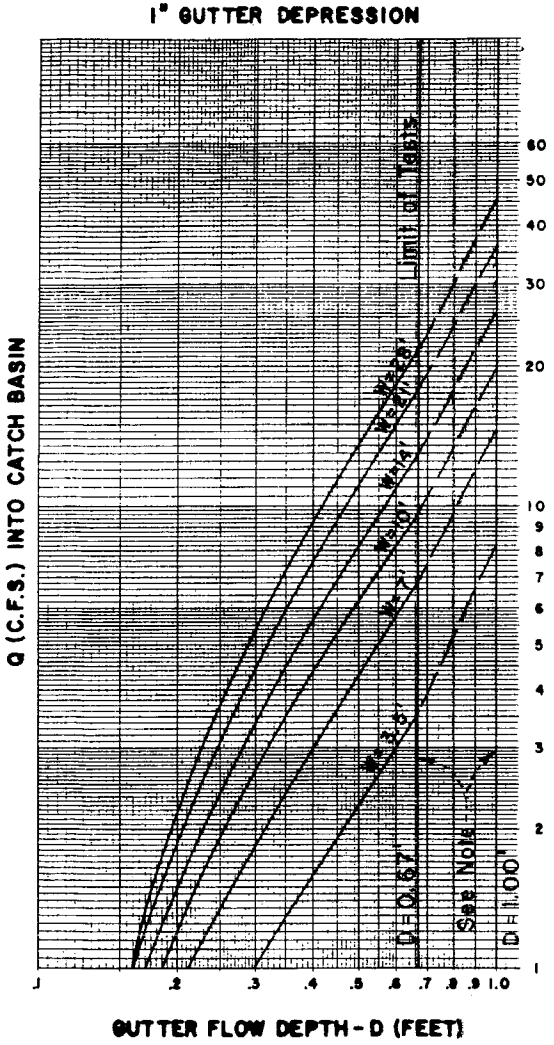
Friction Method	Manning Formula
Solve For	Normal Depth

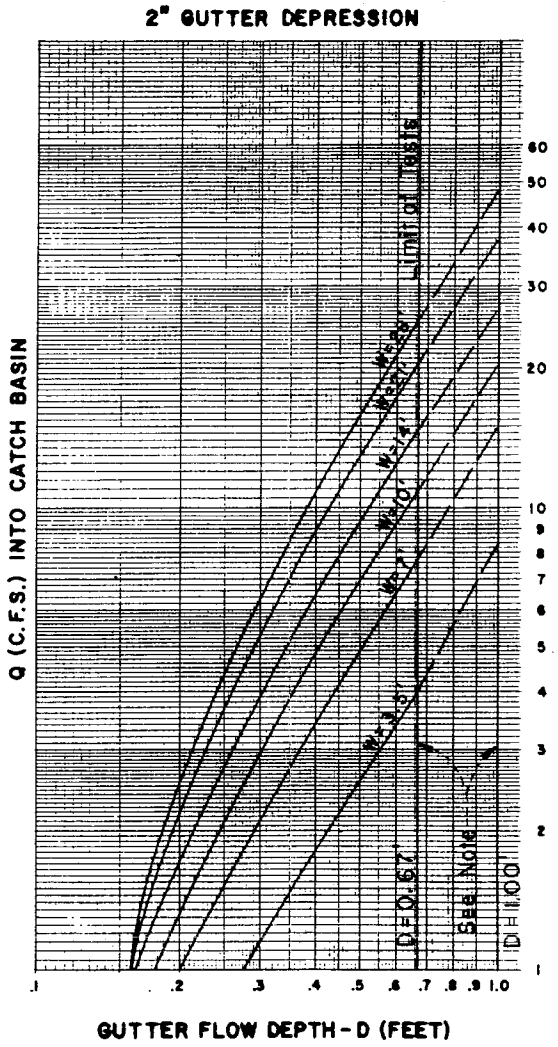
Input Data

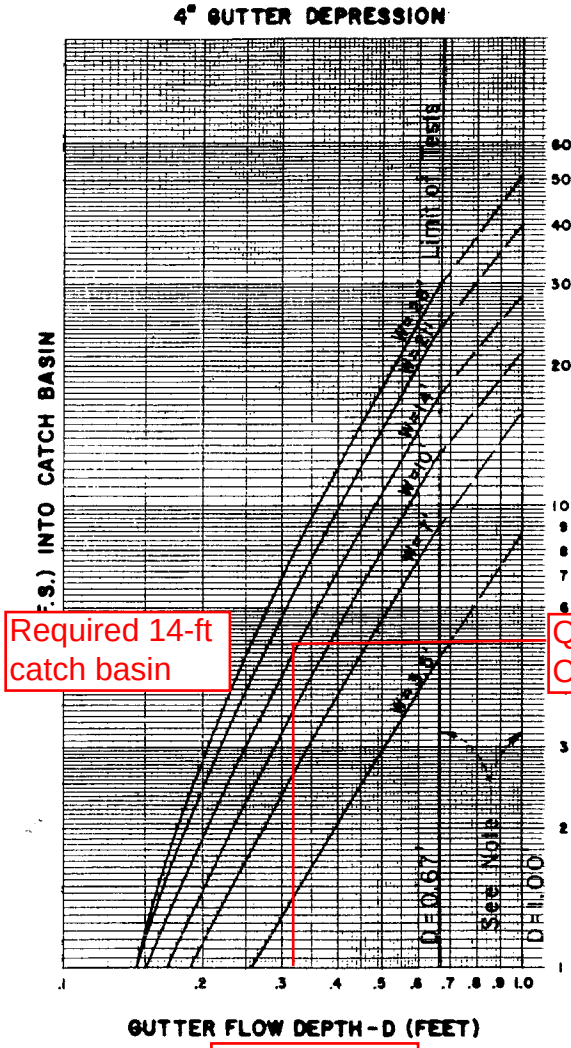
Channel Slope	0.02200	ft/ft
Normal Depth	0.32	ft
Discharge	5.55	ft³/s

Cross Section Image









NOTE: Curves between D=0.67' and 1.0' are not from model test data and will be revised in the future when additional model test data are available.

Required 14-ft catch basin

Q=5.36 CFS

Depth=0.32'

Catch Basin with the Size of 21-ft

CURB OPENING CATCH BASIN CAPACITIES

STREET SLOPE = .01

D - 10B

Catch Basin along Forbes Avenue

Los Angeles County Flood Control District

Sep2021

PRELIMINARY HYDROLOGY REPORT

For

Tentative Tract No. 83121

City of Claremont

County of Los Angeles

HUNSAKER & ASSOCIATES IRVINE, INC.