Appendix F1
Preliminary Hydrology Study

PRELIMINARY HYDROLOGY STUDY
TTM 82390
1515 WEST 178TH STREET
GARDENA, CA

Project Address:

1515 West 178TH Street
Gardena, CA 90248

Prepared For:

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November 2018
Revised May 2019

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Preliminary Hydrology Study
for
TTM 82390, Gardena

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

_____ _____

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

1.0 SITE DESCRIPTION:

The proposed site is located at 1515 West 178TH Street, in the City of Gardena, County of Los Angeles. The site is bordered by West 178TH Street to the south, existing commercial to the east, existing mobile home facility to the west, and existing vacant dirt lot & horse stables to the north. The existing site is approximately 5.63 acres and currently being utilized as a commercial facility that provides freight shipping services.

2.0 PURPOSE OF STUDY:

The preliminary hydrology study will determine the amount of stormwater runoff generated from the project site in the existing and proposed conditions. This study will anticipate whether detention basin will be required or not by comparing the proposed and existing condition peak flow rate for the 2, 25, 50 and 100-year peak storm events.

3.0 EXISTING CONDITIONS:

In the current condition, the northerly half of the site generally sheet flows over land towards the northwest corner of the site. Stormwater runoff enters an existing onsite storm drain inlet. The southerly half of the site generally sheet flows over land towards southwesterly corner of the site towards West 178th Street. Stormwater runoff tirubary to West 178th Street is conveyed as street flow within the existing curb/ gutter in the westerly direction and enters an existing LACFCD catch basin located about 120 feet west of the site. Stormwater runoff enters this existing catch basin, continues within an existing LACFCD 48" Reinforced Concrete Pipe (RCP) BI 0432 – Line C, and ultimately discharges into the existing Dominguez Channel (Refer to the As-built Drawing in the Appendix E for reference). Stormwater runoff tributary to the existing onsite storm drain inlet directly connects the existing LACFCD 48" storm drain system and discharges to the Dominguez Channel.

The easterly adjacent property, Subarea X3 currently sheet flows over land in the northwesterly direction to an existing storm drain inlet. There is an existing, non-operational stormwater sump pump located on the adjacent property that is intended to convey stormwater runoff to the Dominguez Channel. It is anticipated that due to the existing sump pump operational status, that stormwater eventually ponds and overflows onto the project site, near the northeast corner.

Refer to the Existing Conditions Hydrology Map located within Appendix A of this report for additional information.

4.0 PROPOSED CONDITIONS:

The proposed project consists 120 townhome units and a recreational area over approximately 5.63 acres. The proposed development include drive aisles, parking, landscaping, walkways and common open space areas. The site will be graded to collect runoff at various low points throughout the site in order to control the amount of imported fill during grading and the overall height of existing perimeter retaining walls. Stormwater runoff generated by the entire site will be directed towards the southwest and northwest corners of the site. The proposed development will utilize catch basins and an onsite area drain system to collect and convey to a proposed underground storm drain system. The stormwater runoff will be conveyed offsite via a proposed LACFCD connection to the existing 48" RCP storm drain system within West 178TH Street and ultimately discharging the Dominguez

Channel. Redirecting historic drainage patterns is not anticipated to cause any downstream capacity concerns since the stormwater runoff for both proposed and existing conditions ultimately discharge to the Dominguez Channel.

Each catch basin inlet will be equipped with Dvert System that will divert low flows to proposed Modular Wetlands System (MWS) Biofiltration Vaults for water quality treatment. Refer to the separate prepared Preliminary Low Impact Development (LID) Plan for reference.

It is anticipated that the City will reach out to the adjacent property owner, Subarea X3 and request the existing, non-operational stormwater sump pump be maintained/ repaired to prevent cross lot drainage. However, to support the proposed development and prevent potential run-on, a 24" storm drain pipe and catch basin is proposed along the northerly property line to provide conveyance of offsite storm water run-on from the easterly property, Subarea X3. Offsite stormwater runoff from the adjacent property will not be treated, only conveyed through the site.

For preliminary hydrologic purposes, initial subareas were determined based on the proposed preliminary grading and drainage design. Recommended impervious area ratio values from Los Angeles County Hydrology Manual 2006 – Appendix D were used in this study. During final engineering, impervious area will be calculated in more details to reflect more accurate peak flow value based on individual subareas.

Refer to the Proposed Conditions Hydrology Map located within Appendix A of the report.

5.0 METHODOLOGY:

The site was analyzed using the Los Angeles Hydrology Manual 2006 and HydroCalc Calculator Software. The initial subareas were analyzed for acreage, land-use, soil type, peak flow rate and time of concentration according to the Rational Method. The site was graded to allow for low points throughout the site to direct stormwater runoff to several areas equipped with curb inlet catch basins.

In this preliminary hydrology study, the recommended values per Los Angeles County Manual 1986 (Appendix D) were used for the percentage of impervious area for the existing and the proposed condition. In accordance with the Los Angeles County Hydrology Manual all habitable structures must have a finished floor elevation to allow 1 ft of freeboard during the 100-year storm event and the drop inlet catch basin and onsite conveyance storm drain pipes will be sized to convey runoff from the 25-year storm event. Catch basin & pipe sizing and 100-year water surface elevation calculations will be provided during final engineering.

Based on the allowable Q discharge rate provided LACFCD, onsite detention and a restriction orifice may be required in order to mitigate the increased post-developed peak flow rate and volume.

6.0 RESULTS:

Hydrology Summary

Offsite Tributary Flow:
Site 2-year peak storm flow = 2.82 cubic feet per second (cfs)
Site 25-year peak storm flow = 9.06 cfs
Site 50-year peak storm flow = 10.86 cfs
Site 100-year peak storm flow = 12.81 cfs
Tc = 9.00 min

Onsite Existing Conditions
Existing Conditions tributary to Northwest Corner:
Site 2-year peak storm flow = 2.92 cfs
Site 25-year peak storm flow = 8.09 cfs
Site 50-year peak storm flow = 9.22 cfs
Site 100-year peak storm flow = 10.34 cfs
Time of Concertation (Tc) = 5.00 minute (min)

Existing Conditions tributary to Southwest Corner:
Site 2-year peak storm flow = 3.24 cfs
Site 25-year peak storm flow = 7.57 cfs
Site 50-year peak storm flow = 8.62 cfs
Site 100-year peak storm flow = 9.67 cfs
Tc = 5.00 min

Existing Conditions (Total Onsite):
Total site 2-year peak storm flow = 6.16 cfs
Total site 25-year peak storm flow = 15.66 cfs
Total site 50-year peak storm flow = 17.84 cfs
Total site 100-year peak storm flow = 20.01 cfs

Onsite Proposed Conditions
Proposed Condition tributary to A1:
Site 2-year peak storm flow = **0.43 cfs**
Site 25-year peak storm flow = **1.22 cfs**
Site 50-year peak storm flow = **1.39 cfs**
Site 100-year peak storm flow = **1.56 cfs**
Tc = 5.00 min

Proposed Condition tributary to A2:
Site 2-year peak storm flow = **0.79 cfs**
Site 25-year peak storm flow = **2.39 cfs**
Site 50-year peak storm flow = **2.73 cfs**
Site 100-year peak storm flow = **3.06 cfs**
Tc = 5.00 min

Proposed Condition tributary to A3:
Site 2-year peak storm flow = **1.03 cfs**
Site 25-year peak storm flow = **3.31 cfs**
Site 50-year peak storm flow = **3.77 cfs**
Site 100-year peak storm flow = **4.23 cfs**
Tc = 5.00 min

Proposed Condition tributary to A4:
Site 2-year peak storm flow = **0.50 cfs**
Site 25-year peak storm flow = **1.42 cfs**
Site 50-year peak storm flow = **1.62 cfs**
Site 100-year peak storm flow = **1.81 cfs**
Tc = 5.00 min

Proposed Condition tributary to A5:
Site 2-year peak storm flow = **0.80 cfs**
Site 25-year peak storm flow = **2.71 cfs**
Site 50-year peak storm flow = **3.08 cfs**
Site 100-year peak storm flow = **3.77 cfs**
Tc = 5.00 min

Proposed Condition tributary to A6:
Site 2-year peak storm flow = **1.09 cfs**
Site 25-year peak storm flow = **3.73 cfs**
Site 50-year peak storm flow = **4.25 cfs**
Site 100-year peak storm flow = **5.12 cfs**
Tc = 6.00 min

Proposed Conditions (Total Onsite):
Total site 2-year peak storm flow = **4.64 cfs**
Total site 25-year peak storm flow = **14.78 cfs**
Total site 50-year peak storm flow = **16.84 cfs**
Total site 100-year peak storm flow = **19.55 cfs**

Percent Difference:
ΔTotal site 2-year peak storm flow = 4.64/6.16 = -29.9%
ΔTotal site 25-year peak storm flow = 14.78/15.66 = -5.6%
ΔTotal site 50-year peak storm flow = 16.84/17.84 = -5.6%
ΔTotal site 100-year peak storm flow = 19.55/20.01 = -2.3%

Note: All time of concentrations indicated above refer to 100-year storm event.

Catch Basin Sizing
Catch basin Sizing will be analyzed for the 25-year storm event peak flow rates and will be provided during final engineering.

Pipe Sizing

Pipe Sizing will be analyzed using WSPG software for the 25-year storm event peak flow rates and will be provided during final engineering.

100-Year Water Surface Elevations

Water surface elevations for the 100-year storm event peak flow rates will verify that the proposed finish floor elevations are set at least 1' above the water surface elevation and will be calculated during final engineering.

7.0 CONCLUSION:

The results from this preliminary hydrology study utilizing HydroCalc software provided by Los Angeles County Department of Public Works demonstrate that the proposed stormwater peak flow from the subject site will be generally lower than the existing condition peak flow as indicated in the hydrology summary results in Section 6 of this report. Proposed peak flow being lower has mainly to do with the fact that the existing site is being proposed for a zone change from commercial to residential land use. For this reason, this would lower the impervious area of the land which causes lower runoff flow rate and higher time of concentration. During final engineering, the impervious area calculation will be finetuned for both proposed and existing condition to reflect more accurate peak flow values based on individual subareas.

Since the stormwater runoff generated by the entire project site is being proposed to be conveyed to the existing LACFCD 48" RCP BI 0432 – Line C ultimately discharging into the Dominguez Channel, the proposed peak flow rate compared to the allowable Q discharge rate will need to be verified with LACFCD for compliance.

During a heavy rainfall, the site was graded to allow for multiple low points equipped with curb inlet catch basins throughout the entire site to accommodate smaller drainage area to mitigate stormwater ponding in one spot. In an event of overflowing, the proposed grading will facilitate the overflow by draining half of the project site to northwest corner, matching the historic drainage condition, and providing wall knockouts for emergency overflow. The proposed catch basins will also be equipped with Dvert System to divert low flows to proposed Modular Wetlands System (MWS) Biofiltration vaults for water quality treatment which will be provided as a separate LID plan and internal bypass systems to convey larger storm event overflow conditions. Detention is anticipated as not required since the peak flow runoff from the proposed preliminary condition is lower than that of the existing condition. However, the peak flow runoff will need to be re-evaluated based on the LACFCD Allowable Q Discharge Rate.

8.0 DESIGN ASSUMPTIONS:

1. The property is located in the City of Gardena, Los Angeles County rainfall region.

2. 100-year storm event flood level protection analysis required for habitable structures per the requirements of the Los Angeles Hydrology Manual.

3. 25-year storm event flood level protection analysis required for storm drain system per the requirements of the Los Angeles County Hydrology Manual.

4. Detention maybe required for the storm drain system to mitigate existing and proposed conditions peak flow rate and time of concertation per the requirements Los Angeles County Hydrology Manual based on the LACFCD Allowable Q Discharge Rate.

5. Site located within Soil Type "13" per the LACDPW Hydrology Map GIS Viewer. (See Appendix C of this report for reference)

6. 50-year storm event 24-hr rainfall depth = 5.9 per the LACDPW Hydrology Map GIS Viewer. (Refer to Appendix C of this report for reference)

7. Assumed Townhouses Land Use for proposed conditions and Commercial Storage Land Use for existing conditions. The values for impervious area were then selected from the recommended values in Los Angeles County Hydrology Manual 2006 – Appendix D.

8. Peak flow rates and time of concentrations were calculated using the HydroCalc Software provided by the Los Angeles County Department of Public Works.

9.0 REFERENCES:

1. Los Angeles County Hydrology Manual 2006

2. HydroCalc Software provided by LACDPW

3. Tentative Tract Maps prepared by C&V Consulting, Inc. dated November 2018

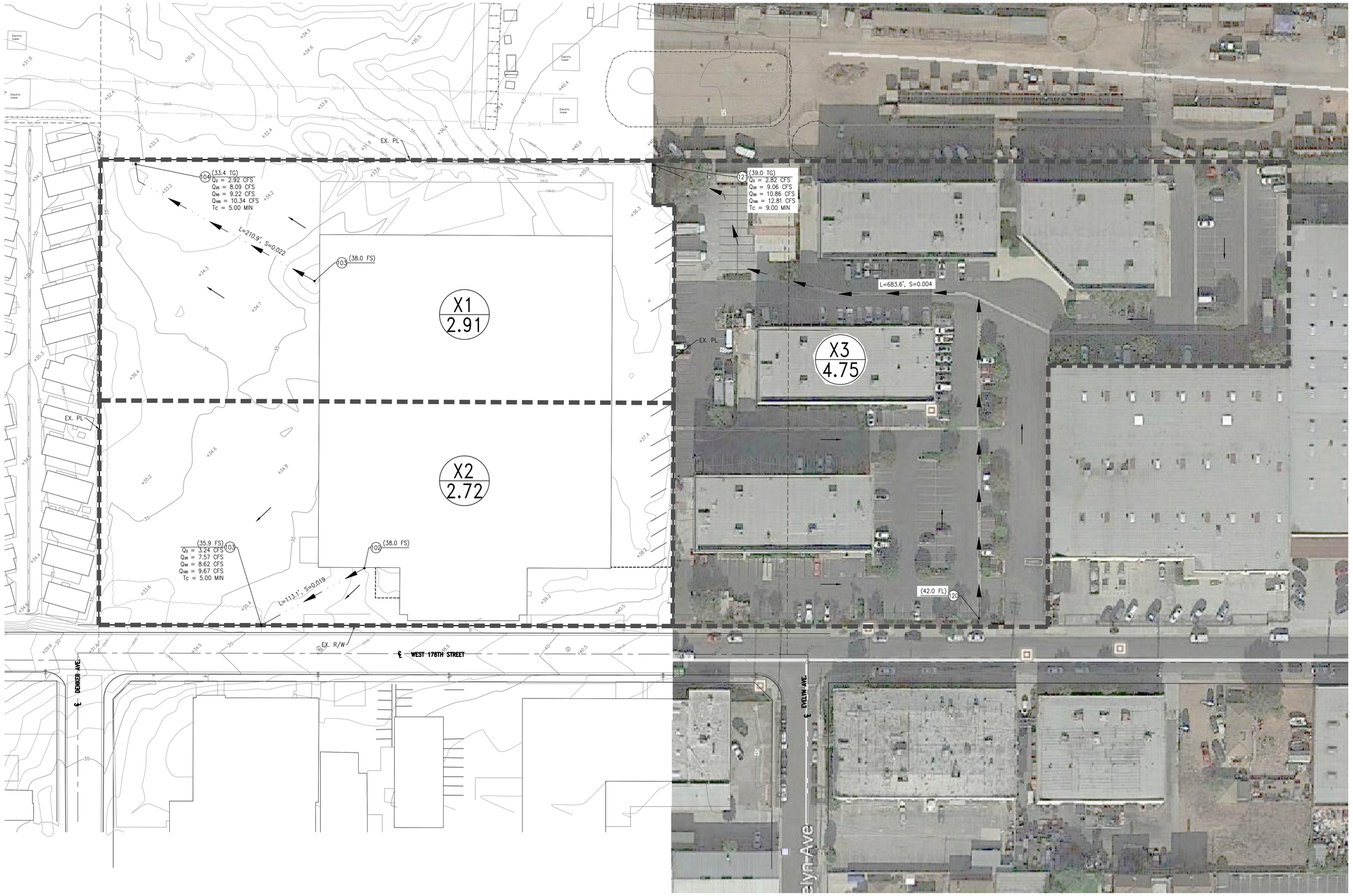
4. LACDPW Hydrology Map GIS Viewer.

5. LACFCD 48" RCP BI 0432 – Line C Storm Drain As-built Plan

APPENDIX A
HYDROLOGY MAPS

Existing Conditions Hydrology Map

EXISTING CONDITIONS PRELIMINARY HYDROLOGY MAP
FOR TENTATIVE TRACT NO. 82390
CITY OF GARDENA COUNTY OF LOS ANGELES, STATE OF CALIFORNIA



LEGEND

- DRAINAGE AREA BOUNDARY
- XX / X.XX — DRAINAGE MANAGEMENT AREA (DMA) NUMBER; DMA AREA IN ACRE
- FLOW DIRECTION
- 1 — INITIAL SUBAREA NODE; 00.00 SPOT ELEVATION; Q_{100}=X.XX CFS PEAK RUNOFF IN CUBIC FEET PER SECOND (CFS); Tc=X.X MIN TIME OF CONCENTRATION IN MINUTES (MIN) PROVIDED FOR 100-YR STORM EVENT
- L=999' FLOW PATH LENGTH

NOTE: ASSUME ALL SOIL TYPE 13

1" = 40'

0 20 40 80

REVISIONS					
NO	DATE	INITIAL	DESCRIPTION	APP	DATE

OWNER/DEVELOPER

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TTM – 82390
1515 WEST 178TH STREET
GARDENA, CALIFORNIA

SHEET 1 OF 1

SCALE: AS SHOWN | DRAWN BY: LB | CHECKED BY: JH

CITY OF GARDENA

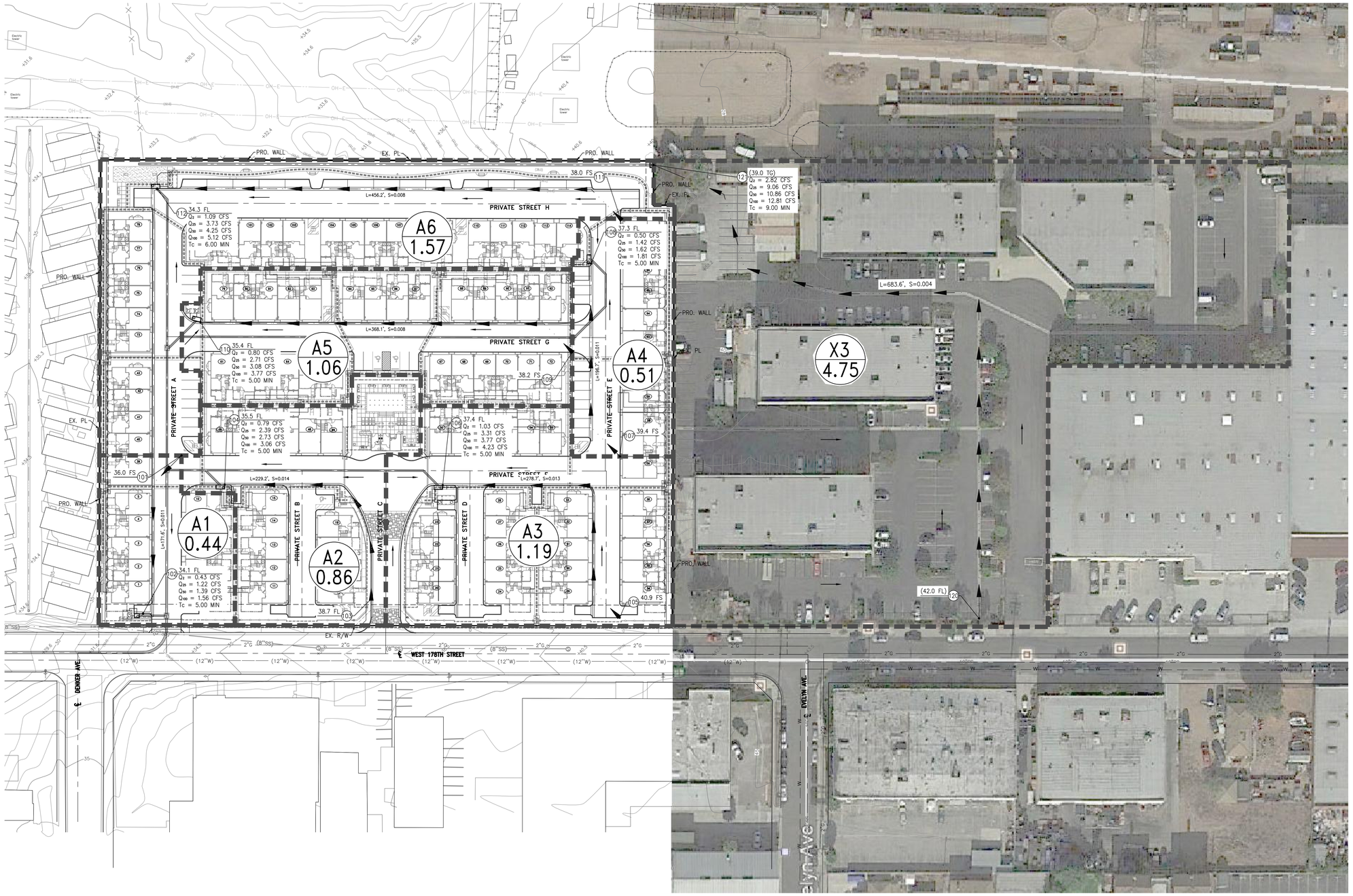
PLAN SET: PSD
DATE: 11/05/18

PROJ: MELIA-02E

DWG: P:\MELIA-02E\dwg\Sheet\EXISTING EXHYDRO1.dwg, BY: Mon Nov 13, 2018 - 11:15:32am

Proposed Conditions Preliminary Hydrology Map

PROPOSED CONDITIONS PRELIMINARY HYDROLOGY MAP
FOR TENTATIVE TRACT NO. 82390
CITY OF GARDENA COUNTY OF LOS ANGELES, STATE OF CALIFORNIA



LEGEND

- DRAINAGE AREA BOUNDARY
- XX / X.XX — DRAINAGE MANAGEMENT AREA (DMA) NUMBER; DMA AREA IN ACRE
- FLOW DIRECTION
- 1 — INITIAL SUBAREA NODE
- 00.00 — SPOT ELEVATION
- Q100=X.XX CFS — PEAK RUNOFF IN CUBIC FEET PER SECOND (CFS)
- Tc=X.X MIN — TIME OF CONCENTRATION IN MINUTES (MIN) PROVIDED FOR 100-YR STORM EVENT
- L=999' — FLOW PATH LENGTH

NOTE: ASSUME ALL SOIL TYPE 13

1" = 40'
0 20 40 80

REVISIONS					
NO	DATE	INITIAL	DESCRIPTION	APP	DATE

OWNER/DEVELOPER
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TTM – 82390
1515 WEST 178TH STREET
GARDENA, CALIFORNIA

SHEET 1 OF 1
SCALE: AS SHOWN | DRAWN BY: LB | CHECKED BY: JH
CITY OF GARDENA

PLAN SET: PDH
DATE: 11/05/18
PROJ: MELIA-002

APPENDIX B
HYDROLOGY CALCULATIONS

Area X1 - Existing Conditions Hydrology Calculations (2, 25, 50, 100-year Storm Event)

Peak Flow Hydrologic Analysis

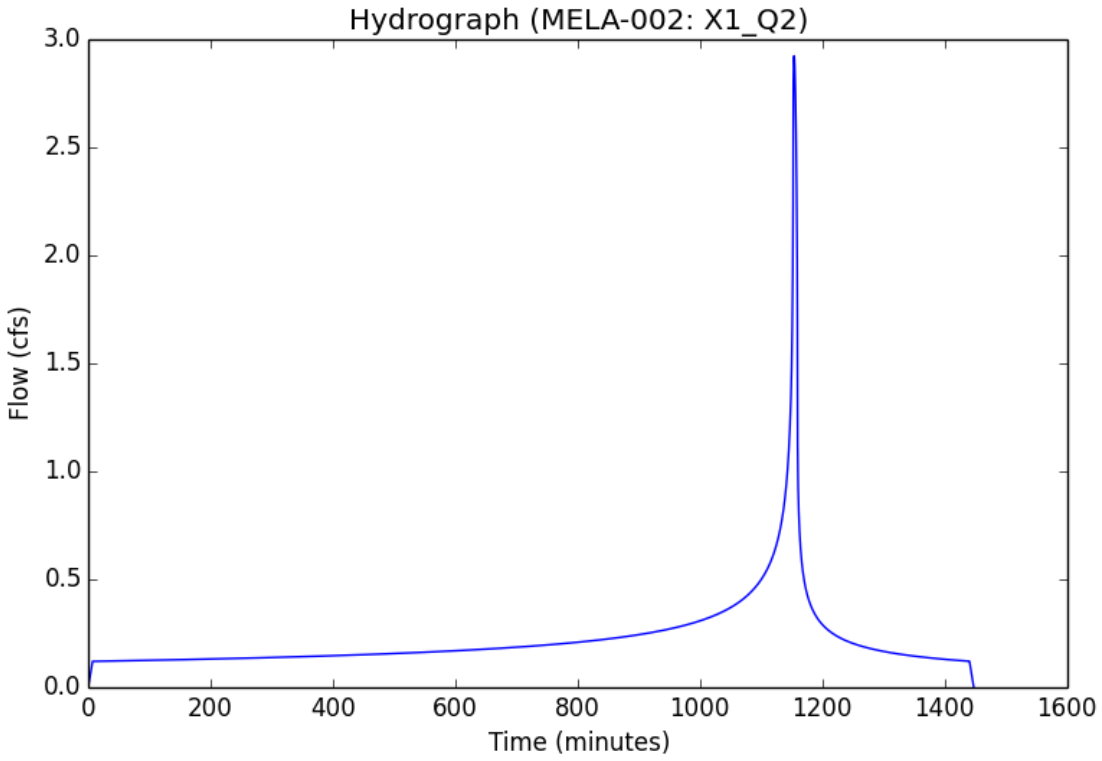
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - X1_Q2.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	MELA-002
Subarea ID	X1_Q2
Area (ac)	2.91
Flow Path Length (ft)	210.9
Flow Path Slope (vft/hft)	0.022
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	13
Design Storm Frequency	2-yr
Fire Factor	0
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	2.2833
Peak Intensity (in/hr)	1.163
Undeveloped Runoff Coefficient (Cu)	0.5394
Developed Runoff Coefficient (Cd)	0.8639
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	2.9239
Burned Peak Flow Rate (cfs)	2.9239
24-Hr Clear Runoff Volume (ac-ft)	0.4516
24-Hr Clear Runoff Volume (cu-ft)	19669.5705



Peak Flow Hydrologic Analysis

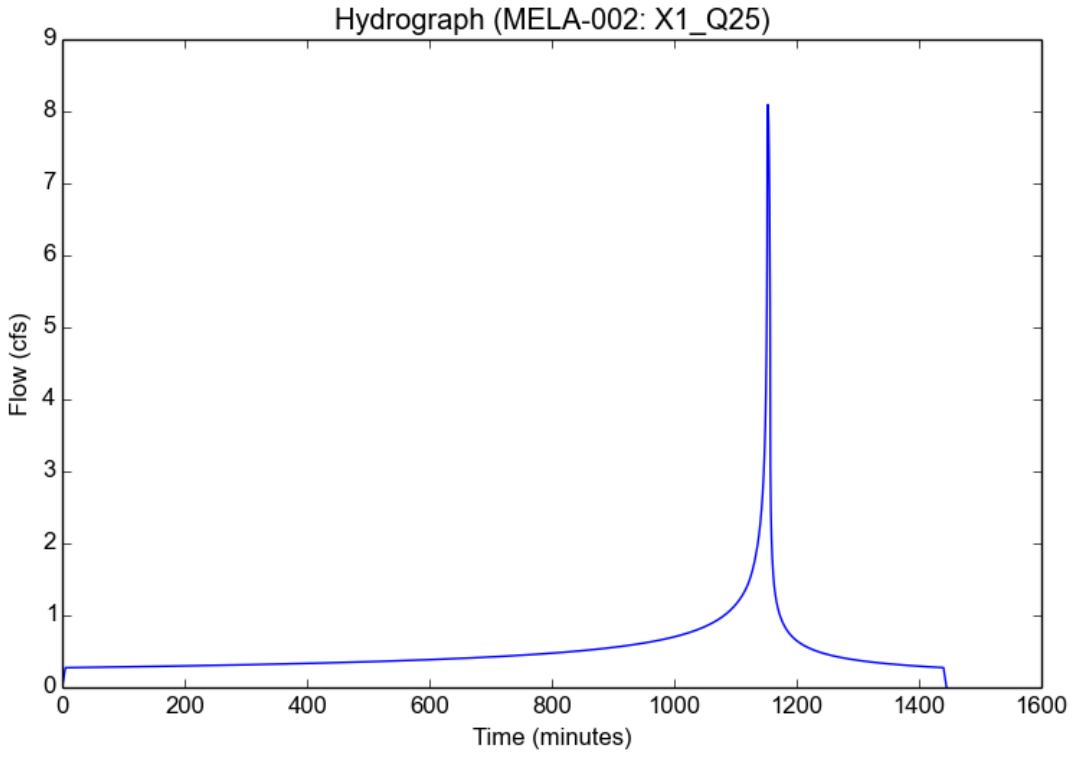
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - X1_Q25.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	X1_Q25
Area (ac)	2.91
Flow Path Length (ft)	210.9
Flow Path Slope (vft/hft)	0.022
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.1802
Peak Intensity (in/hr)	3.0906
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	8.0944
Burned Peak Flow Rate (cfs)	8.0944
24-Hr Clear Runoff Volume (ac-ft)	1.0305
24-Hr Clear Runoff Volume (cu-ft)	44886.9155



Peak Flow Hydrologic Analysis

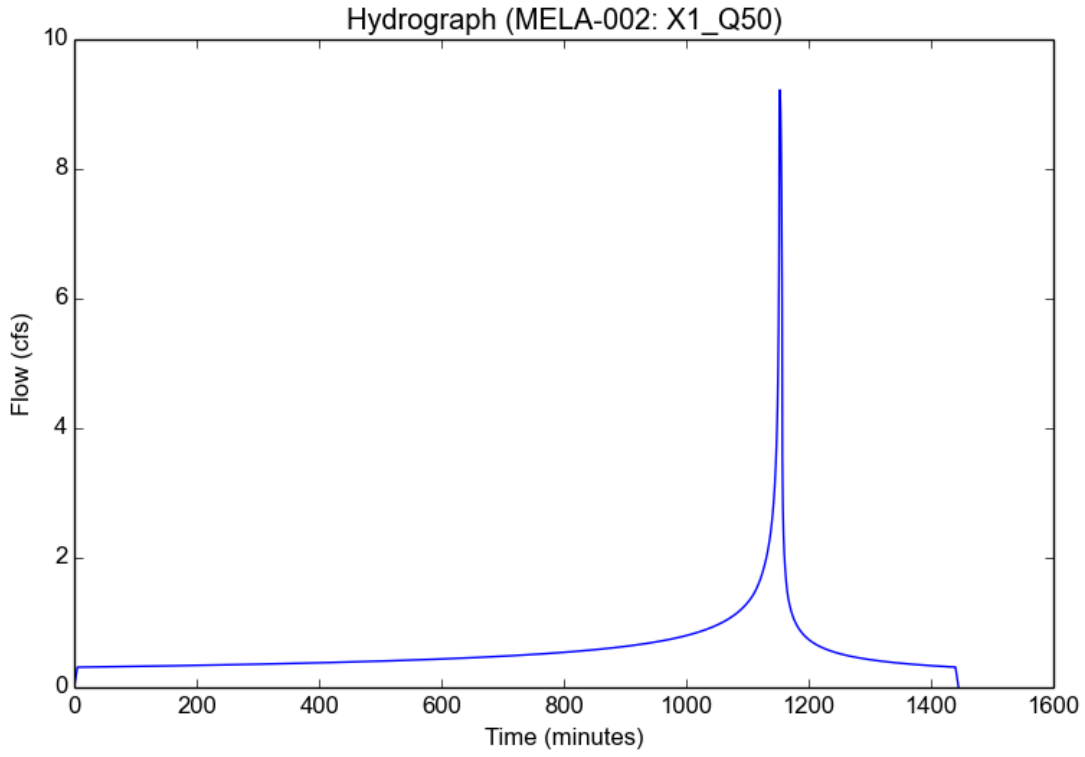
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - X1_Q50.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	X1_Q50
Area (ac)	2.91
Flow Path Length (ft)	210.9
Flow Path Slope (vft/hft)	0.022
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.5201
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	9.2191
Burned Peak Flow Rate (cfs)	9.2191
24-Hr Clear Runoff Volume (ac-ft)	1.1751
24-Hr Clear Runoff Volume (cu-ft)	51188.1621



Peak Flow Hydrologic Analysis

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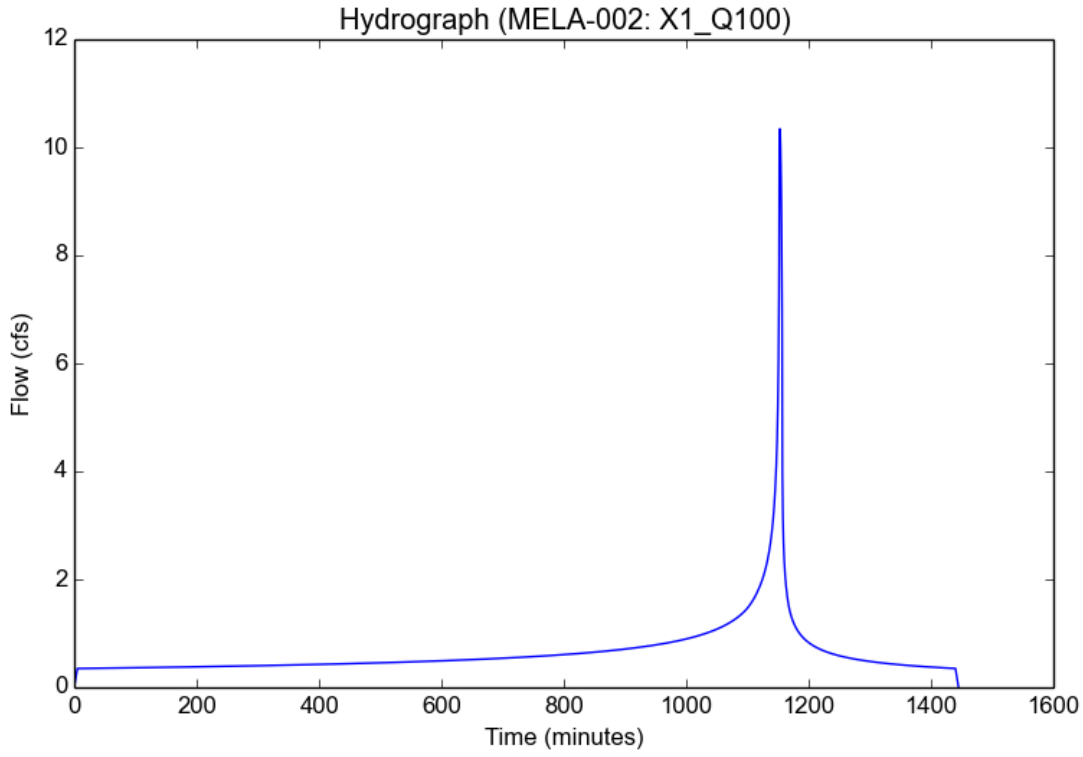
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	X1_Q100
Area (ac)	2.91
Flow Path Length (ft)	210.9
Flow Path Slope (vft/hft)	0.022
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	13
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	6.6198
Peak Intensity (in/hr)	3.9496
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	10.3439
Burned Peak Flow Rate (cfs)	10.3439
24-Hr Clear Runoff Volume (ac-ft)	1.3202
24-Hr Clear Runoff Volume (cu-ft)	57506.8047



Area X2 - Existing Conditions Hydrology Calculations (2, 25, 50, 100-year Storm Event)

Peak Flow Hydrologic Analysis

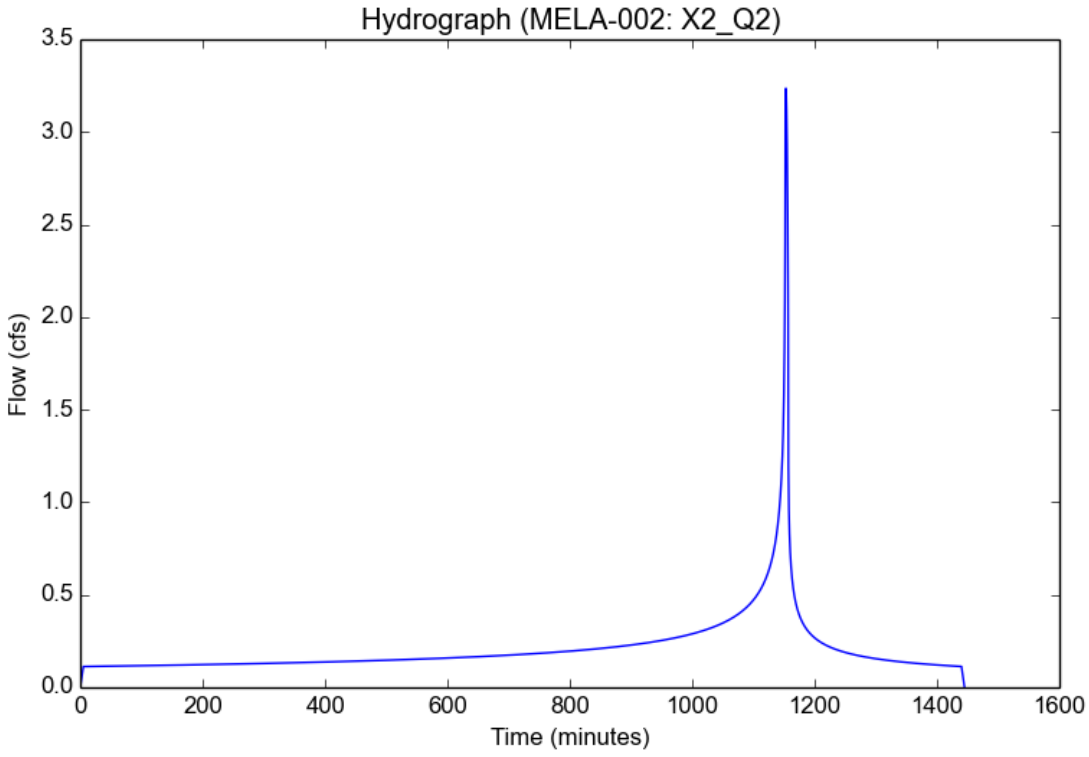
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - X2_Q2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	X2_Q2
Area (ac)	2.72
Flow Path Length (ft)	113.1
Flow Path Slope (vft/hft)	0.019
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	13
Design Storm Frequency	2-yr
Fire Factor	0
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	2.2833
Peak Intensity (in/hr)	1.3623
Undeveloped Runoff Coefficient (Cu)	0.6332
Developed Runoff Coefficient (Cd)	0.8733
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.236
Burned Peak Flow Rate (cfs)	3.236
24-Hr Clear Runoff Volume (ac-ft)	0.4222
24-Hr Clear Runoff Volume (cu-ft)	18390.1096



Peak Flow Hydrologic Analysis

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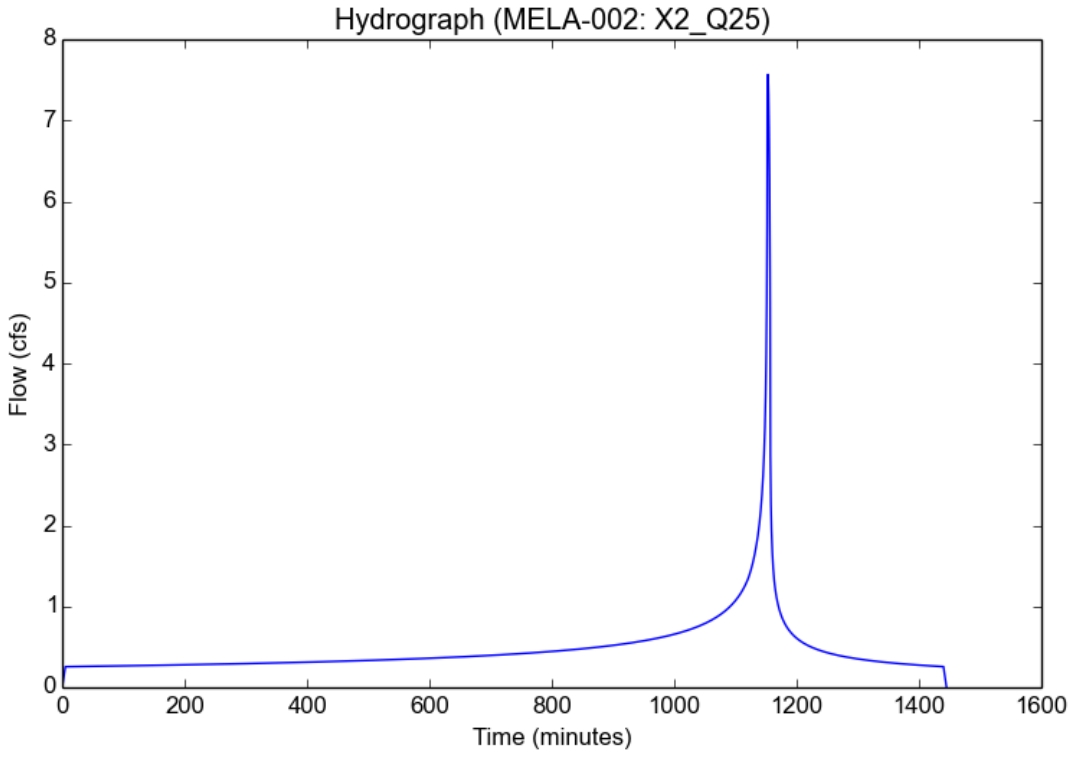
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	X2_Q25
Area (ac)	2.72
Flow Path Length (ft)	113.1
Flow Path Slope (vft/hft)	0.019
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.1802
Peak Intensity (in/hr)	3.0906
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	7.5659
Burned Peak Flow Rate (cfs)	7.5659
24-Hr Clear Runoff Volume (ac-ft)	0.9632
24-Hr Clear Runoff Volume (cu-ft)	41956.1547



Peak Flow Hydrologic Analysis

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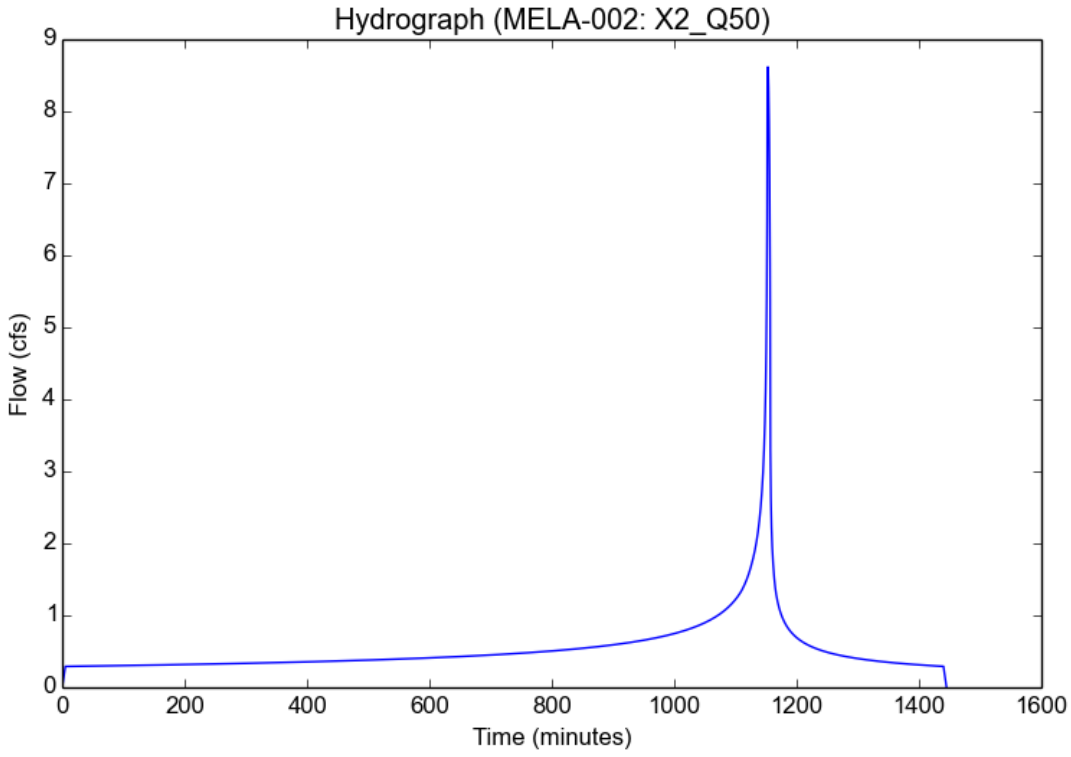
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	X2_Q50
Area (ac)	2.72
Flow Path Length (ft)	113.1
Flow Path Slope (vft/hft)	0.019
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.5201
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	8.6172
Burned Peak Flow Rate (cfs)	8.6172
24-Hr Clear Runoff Volume (ac-ft)	1.0984
24-Hr Clear Runoff Volume (cu-ft)	47845.9797



Peak Flow Hydrologic Analysis

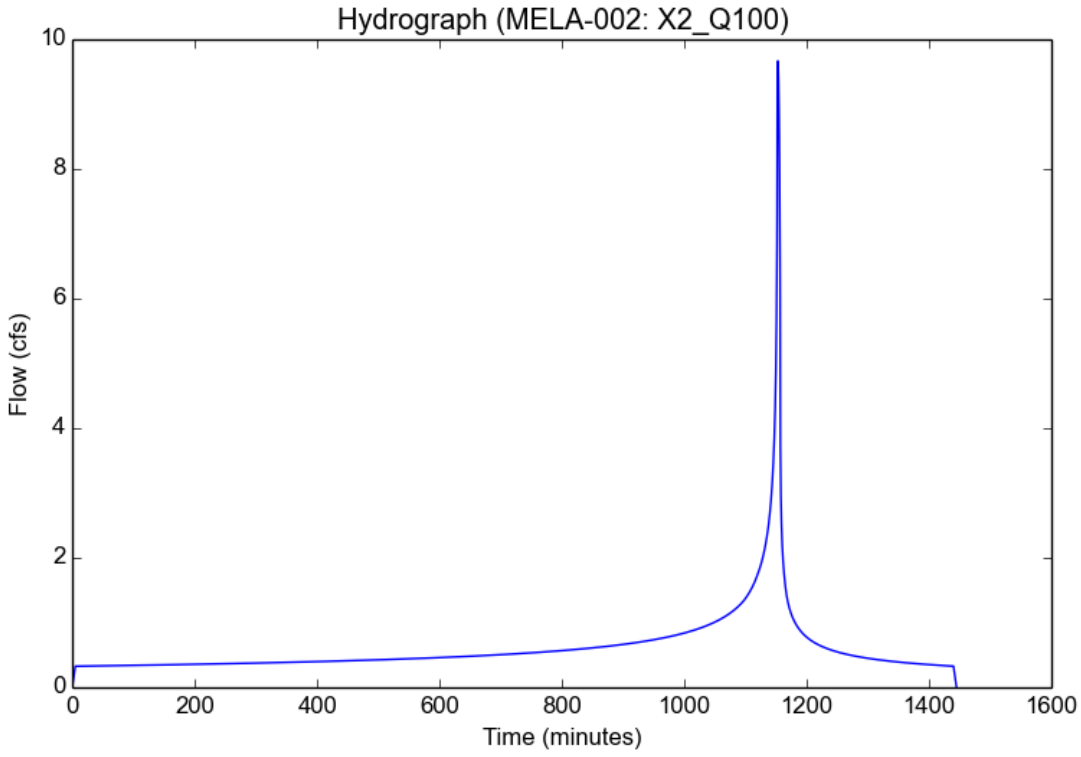
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - X2_Q100.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	X2_Q100
Area (ac)	2.72
Flow Path Length (ft)	113.1
Flow Path Slope (vft/hft)	0.019
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	13
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	6.6198
Peak Intensity (in/hr)	3.9496
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	9.6685
Burned Peak Flow Rate (cfs)	9.6685
24-Hr Clear Runoff Volume (ac-ft)	1.234
24-Hr Clear Runoff Volume (cu-ft)	53752.0649



Area X3 - Existing Conditions Hydrology Calculations (2, 25, 50, 100-year Storm Event)

Peak Flow Hydrologic Analysis

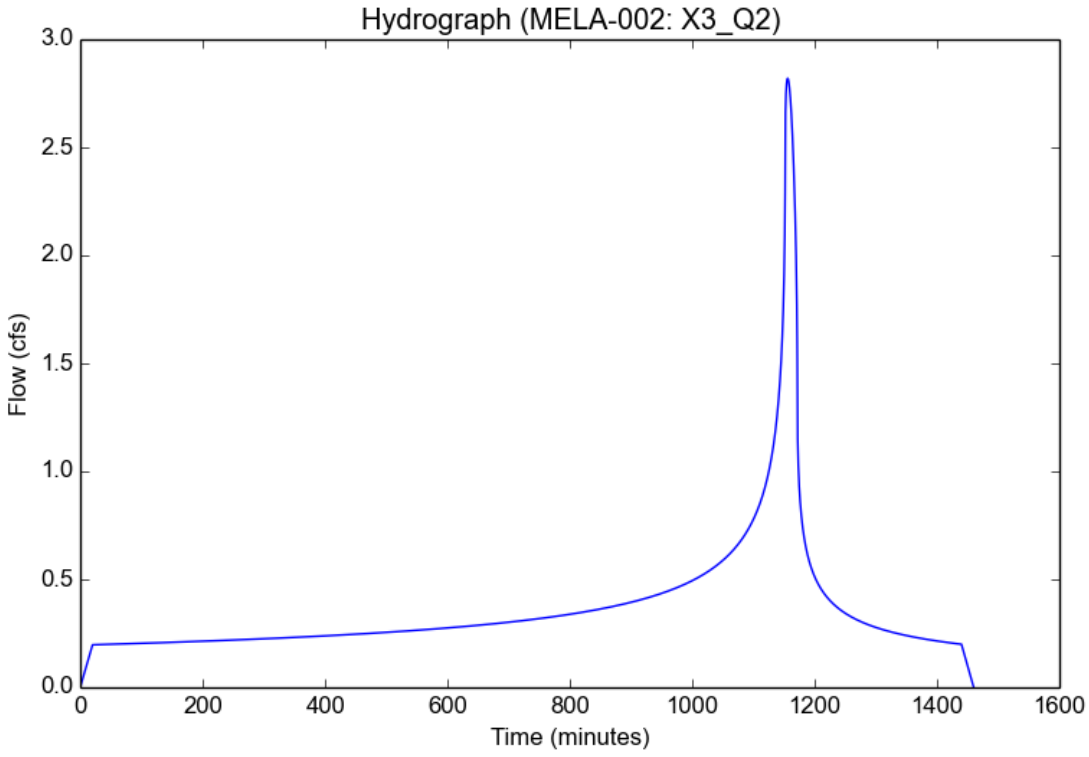
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - X3_Q2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	X3_Q2
Area (ac)	4.75
Flow Path Length (ft)	683.6
Flow Path Slope (vft/hft)	0.004
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	13
Design Storm Frequency	2-yr
Fire Factor	0
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	2.2833
Peak Intensity (in/hr)	0.7101
Undeveloped Runoff Coefficient (Cu)	0.2596
Developed Runoff Coefficient (Cd)	0.836
Time of Concentration (min)	20.0
Clear Peak Flow Rate (cfs)	2.8195
Burned Peak Flow Rate (cfs)	2.8195
24-Hr Clear Runoff Volume (ac-ft)	0.7358
24-Hr Clear Runoff Volume (cu-ft)	32049.8588



Peak Flow Hydrologic Analysis

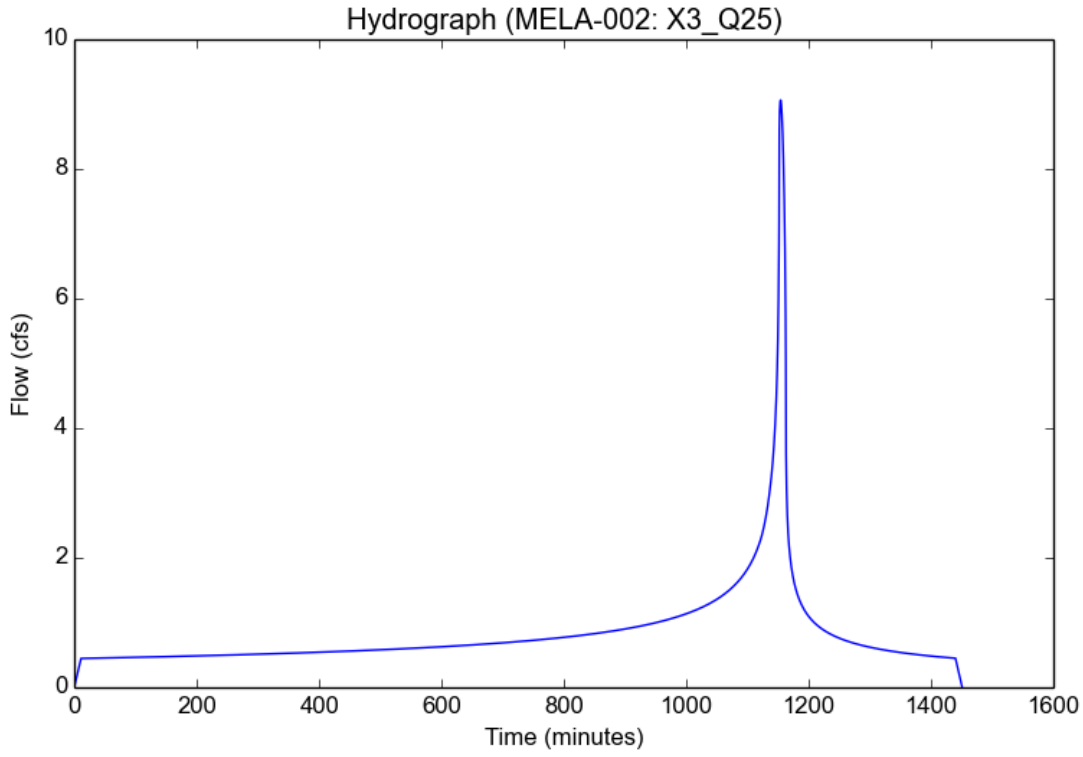
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - X3_Q25.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	X3_Q25
Area (ac)	4.75
Flow Path Length (ft)	683.6
Flow Path Slope (vft/hft)	0.004
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.1802
Peak Intensity (in/hr)	2.1336
Undeveloped Runoff Coefficient (Cu)	0.8428
Developed Runoff Coefficient (Cd)	0.8943
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	9.0631
Burned Peak Flow Rate (cfs)	9.0631
24-Hr Clear Runoff Volume (ac-ft)	1.6821
24-Hr Clear Runoff Volume (cu-ft)	73272.0858



Peak Flow Hydrologic Analysis

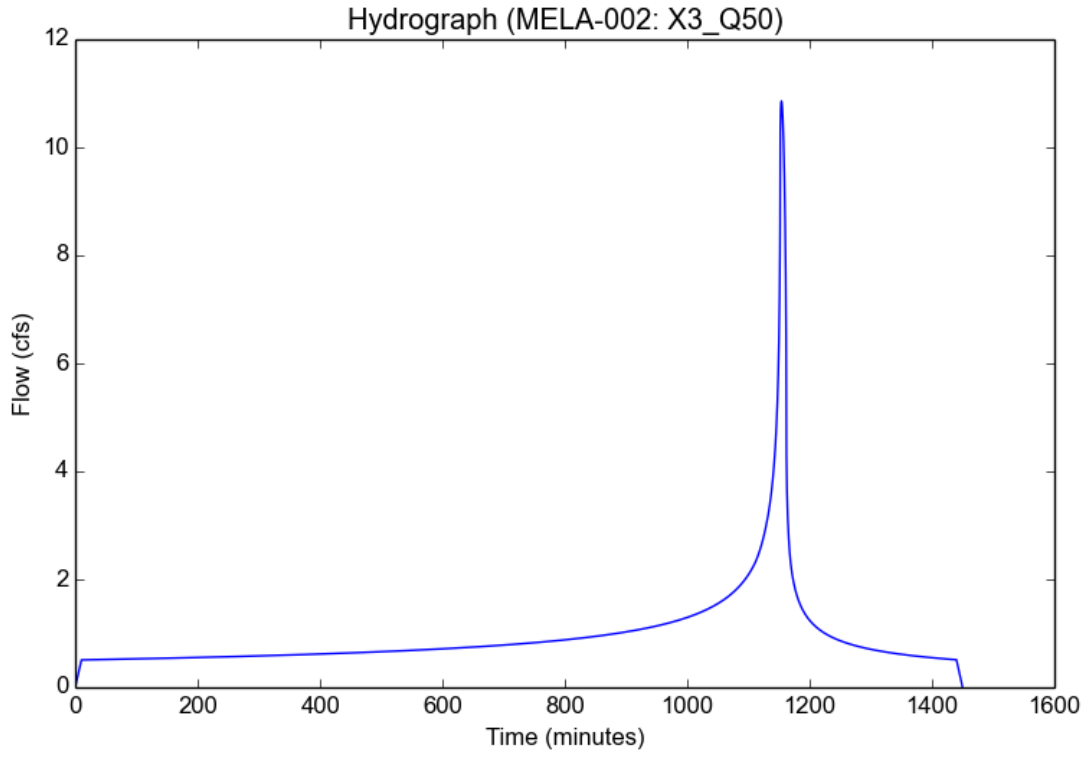
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - X3_Q50.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	X3_Q50
Area (ac)	4.75
Flow Path Length (ft)	683.6
Flow Path Slope (vft/hft)	0.004
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	2.5414
Undeveloped Runoff Coefficient (Cu)	0.8939
Developed Runoff Coefficient (Cd)	0.8994
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	10.857
Burned Peak Flow Rate (cfs)	10.857
24-Hr Clear Runoff Volume (ac-ft)	1.9186
24-Hr Clear Runoff Volume (cu-ft)	83574.4143



Peak Flow Hydrologic Analysis

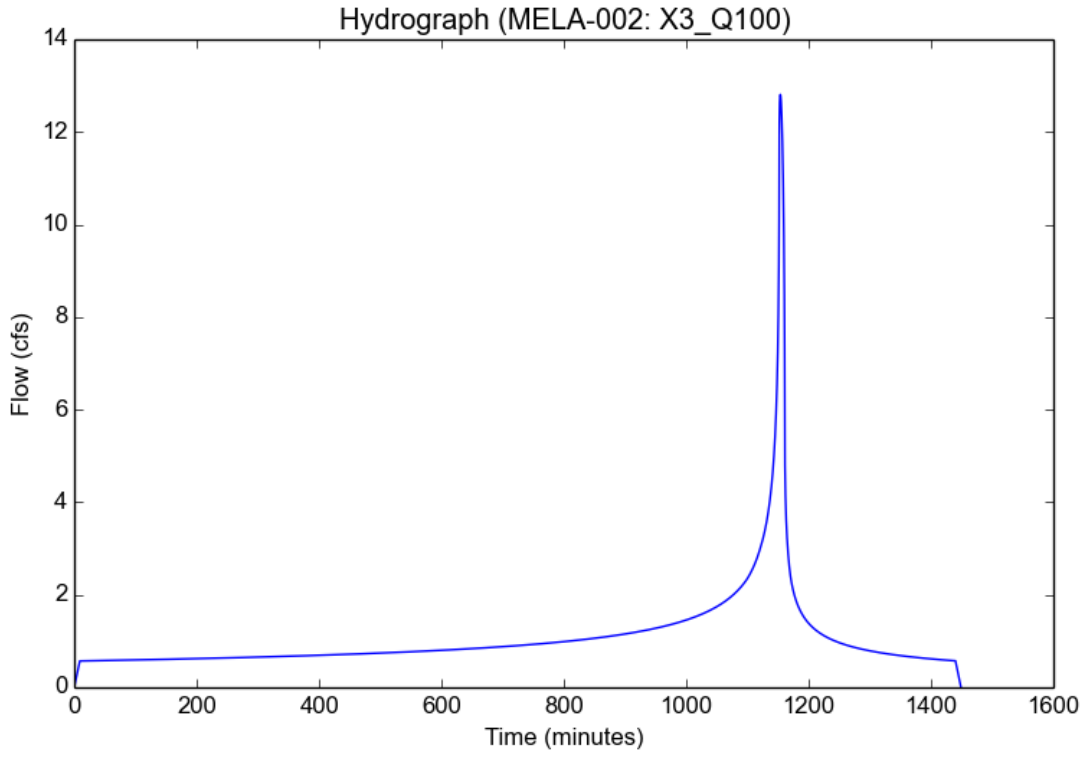
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - X3_Q100.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	X3_Q100
Area (ac)	4.75
Flow Path Length (ft)	683.6
Flow Path Slope (vft/hft)	0.004
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	13
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	6.6198
Peak Intensity (in/hr)	2.9962
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	12.8087
Burned Peak Flow Rate (cfs)	12.8087
24-Hr Clear Runoff Volume (ac-ft)	2.1554
24-Hr Clear Runoff Volume (cu-ft)	93891.2774



Area A1 - Proposed Conditions Hydrology Calculations (2, 25, 50, 100-year Storm Event)

Peak Flow Hydrologic Analysis

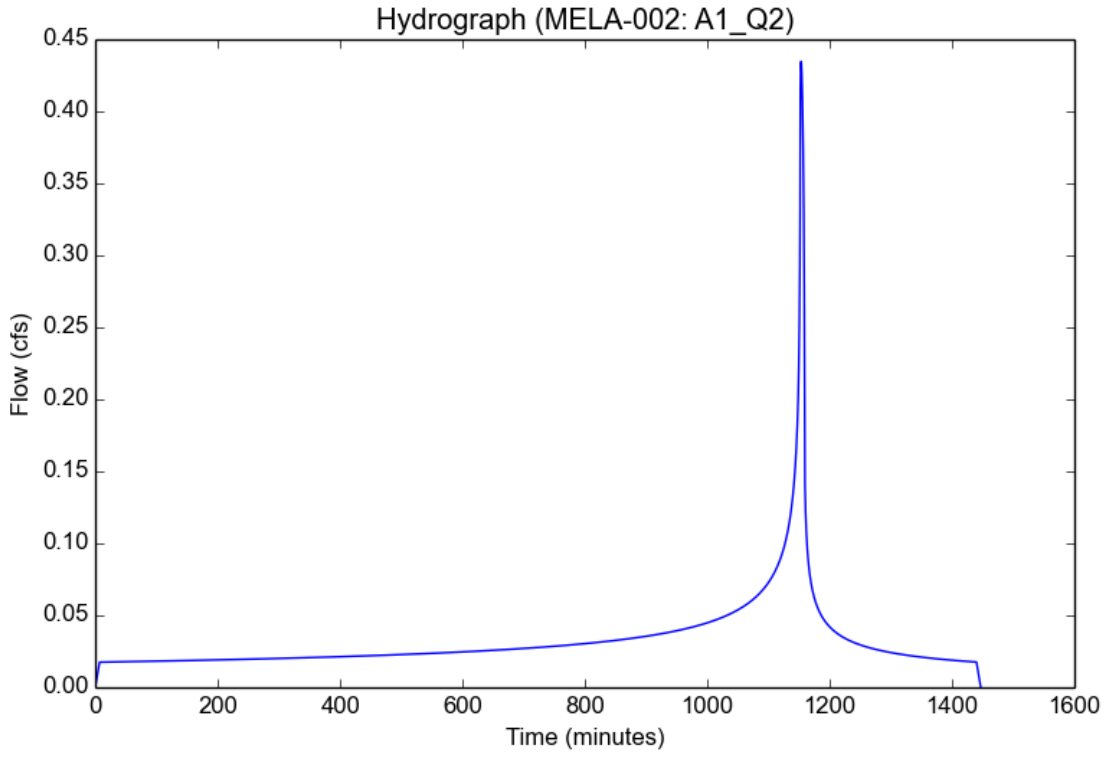
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A1_Q2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A1_Q2
Area (ac)	0.44
Flow Path Length (ft)	171.6
Flow Path Slope (vft/hft)	0.011
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	2-yr
Fire Factor	0
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	2.2833
Peak Intensity (in/hr)	1.163
Undeveloped Runoff Coefficient (Cu)	0.5394
Developed Runoff Coefficient (Cd)	0.8495
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	0.4347
Burned Peak Flow Rate (cfs)	0.4347
24-Hr Clear Runoff Volume (ac-ft)	0.0657
24-Hr Clear Runoff Volume (cu-ft)	2861.7006



Peak Flow Hydrologic Analysis

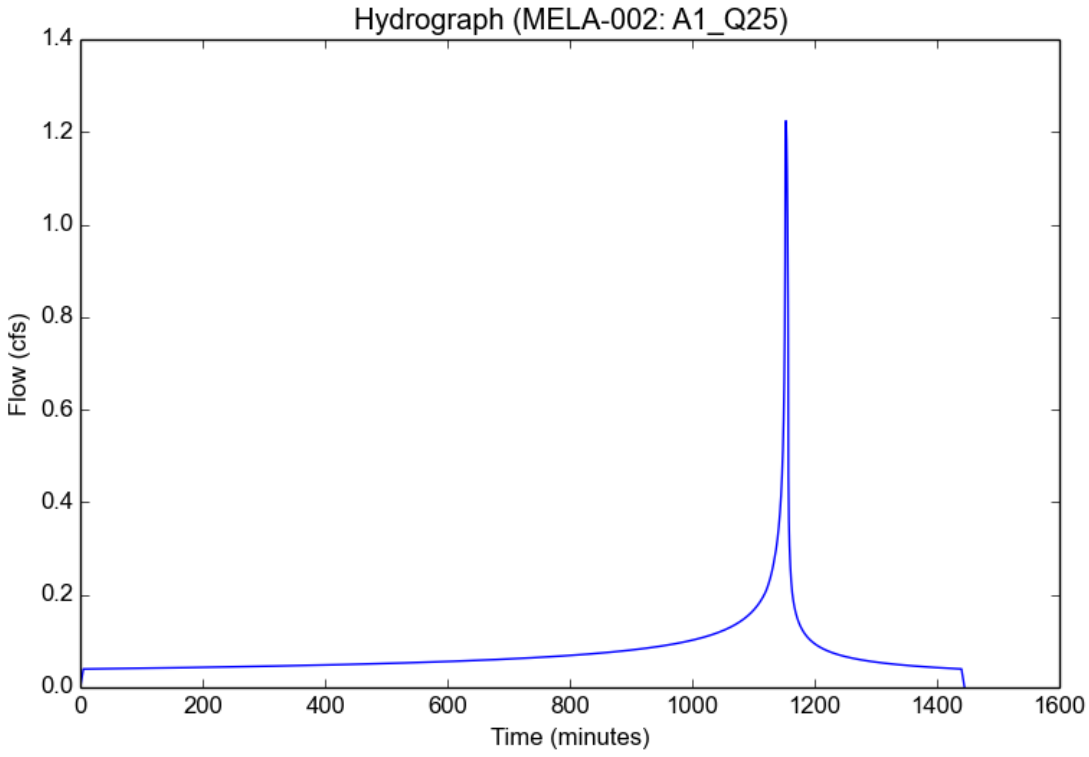
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A1_Q25.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A1_Q25
Area (ac)	0.44
Flow Path Length (ft)	171.6
Flow Path Slope (vft/hft)	0.011
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.1802
Peak Intensity (in/hr)	3.0906
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.2239
Burned Peak Flow Rate (cfs)	1.2239
24-Hr Clear Runoff Volume (ac-ft)	0.1503
24-Hr Clear Runoff Volume (cu-ft)	6547.8769



Peak Flow Hydrologic Analysis

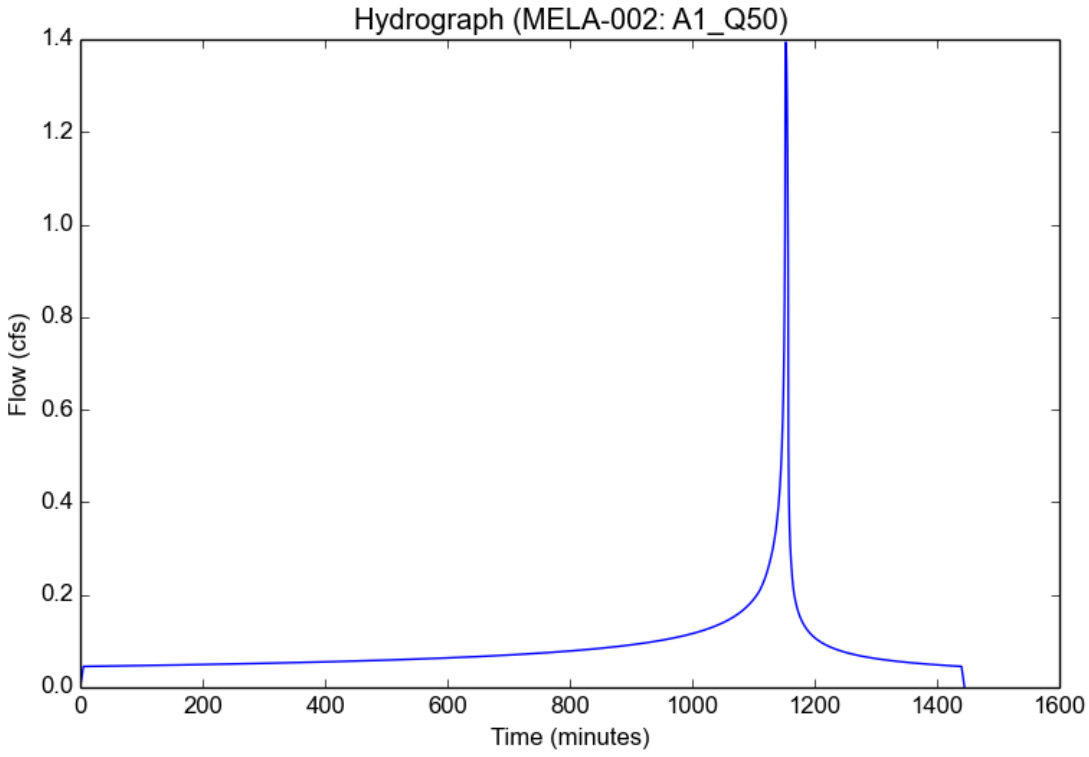
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A1_Q50.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A1_Q50
Area (ac)	0.44
Flow Path Length (ft)	171.6
Flow Path Slope (vft/hft)	0.011
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.5201
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.394
Burned Peak Flow Rate (cfs)	1.394
24-Hr Clear Runoff Volume (ac-ft)	0.1715
24-Hr Clear Runoff Volume (cu-ft)	7471.2901



Peak Flow Hydrologic Analysis

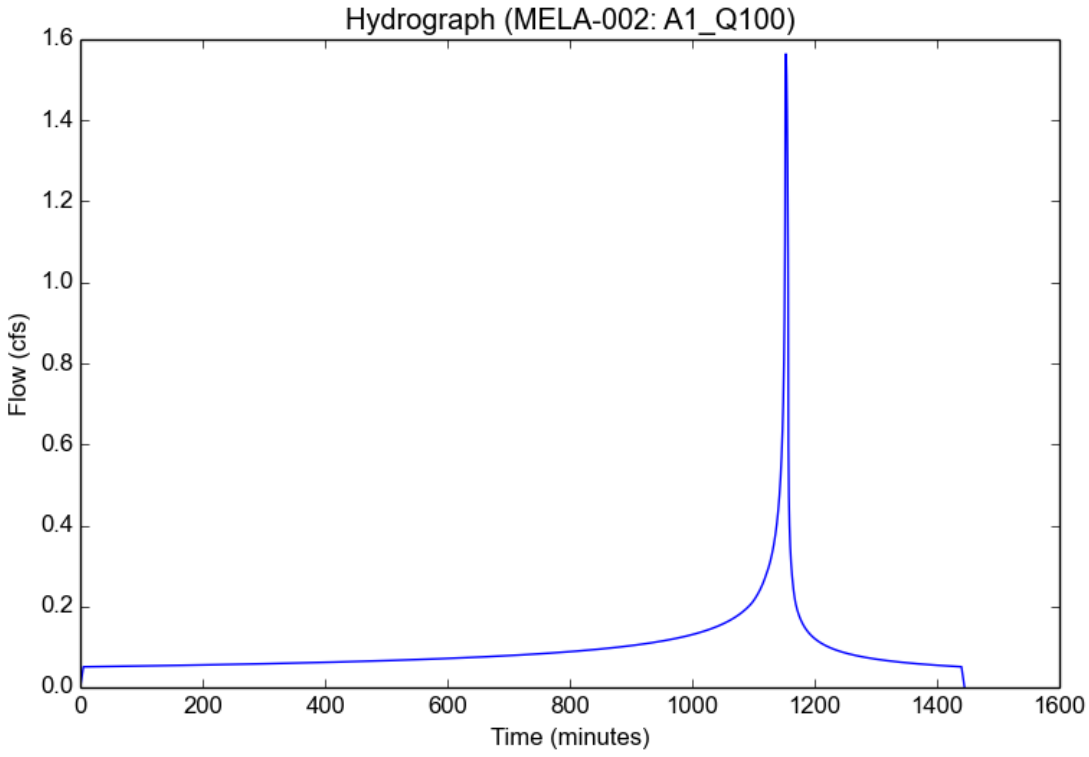
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A1_Q100.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A1_Q100
Area (ac)	0.44
Flow Path Length (ft)	171.6
Flow Path Slope (vft/hft)	0.011
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	6.6198
Peak Intensity (in/hr)	3.9496
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.564
Burned Peak Flow Rate (cfs)	1.564
24-Hr Clear Runoff Volume (ac-ft)	0.1928
24-Hr Clear Runoff Volume (cu-ft)	8398.3858



Area A2 - Proposed Conditions Hydrology Calculations (2, 25, 50, 100-year Storm Event)

Peak Flow Hydrologic Analysis

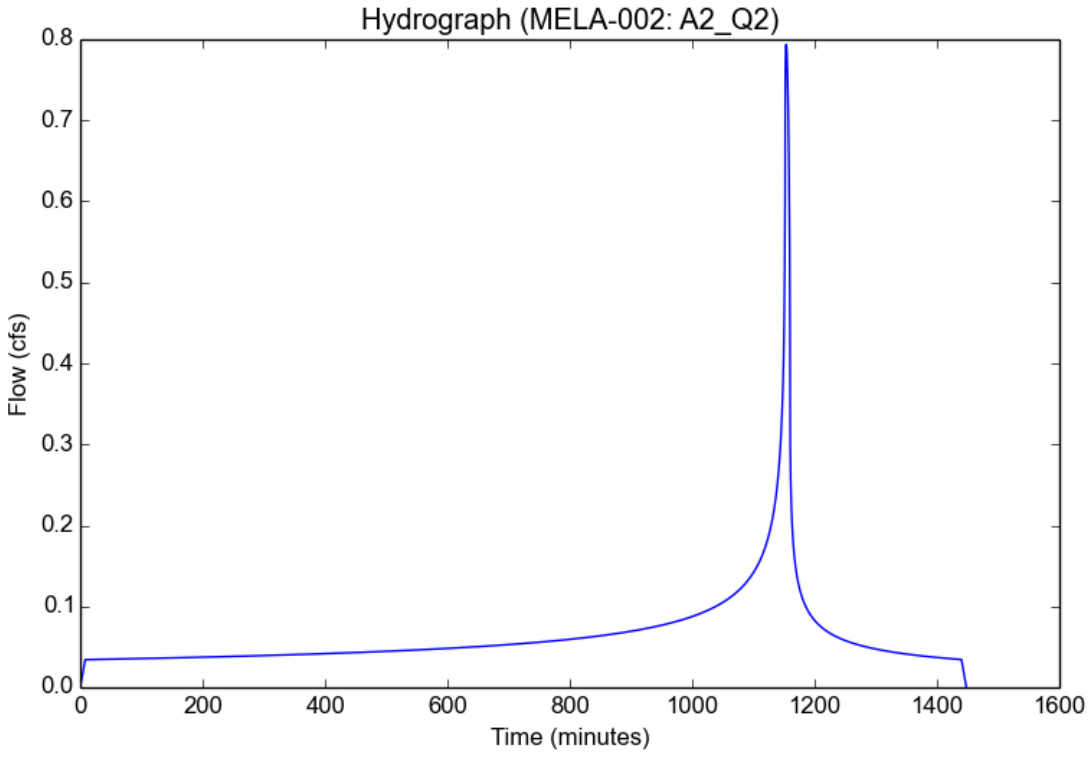
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A2_Q2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A2_Q2
Area (ac)	0.86
Flow Path Length (ft)	229.2
Flow Path Slope (vft/hft)	0.014
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	2-yr
Fire Factor	0
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	2.2833
Peak Intensity (in/hr)	1.0923
Undeveloped Runoff Coefficient (Cu)	0.5061
Developed Runoff Coefficient (Cd)	0.8449
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	0.7936
Burned Peak Flow Rate (cfs)	0.7936
24-Hr Clear Runoff Volume (ac-ft)	0.1284
24-Hr Clear Runoff Volume (cu-ft)	5592.3764



Peak Flow Hydrologic Analysis

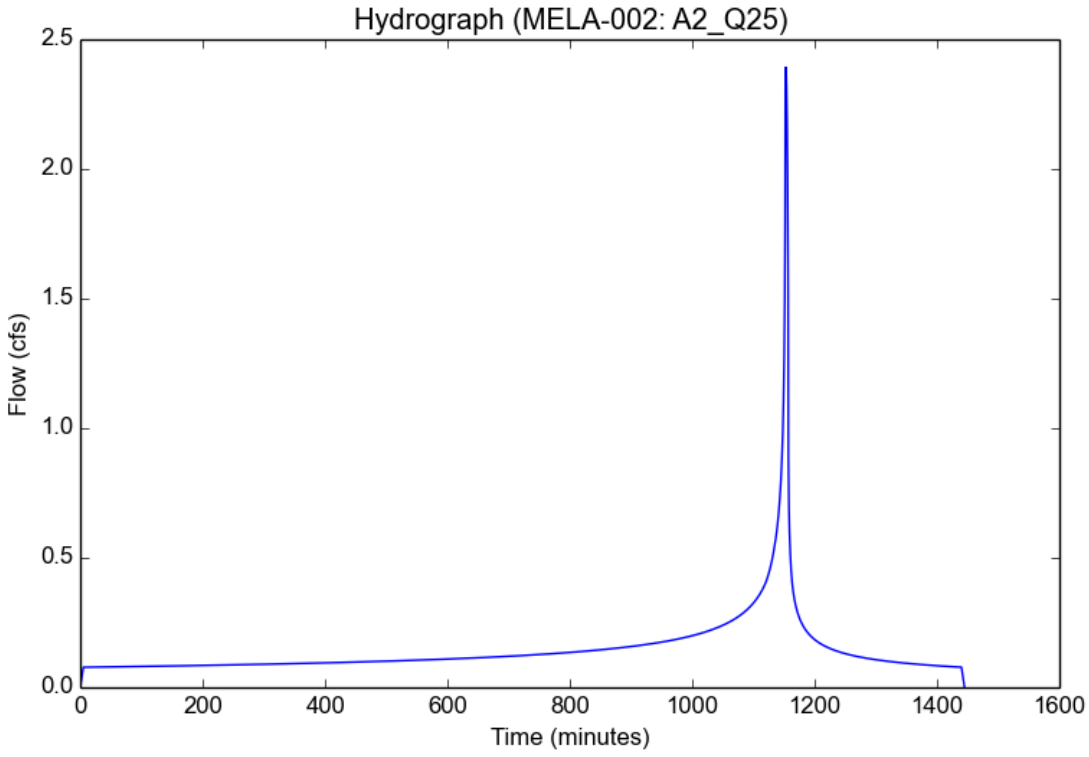
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A2_Q25.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A2_Q25
Area (ac)	0.86
Flow Path Length (ft)	229.2
Flow Path Slope (vft/hft)	0.014
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.1802
Peak Intensity (in/hr)	3.0906
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.3922
Burned Peak Flow Rate (cfs)	2.3922
24-Hr Clear Runoff Volume (ac-ft)	0.2938
24-Hr Clear Runoff Volume (cu-ft)	12798.123



Peak Flow Hydrologic Analysis

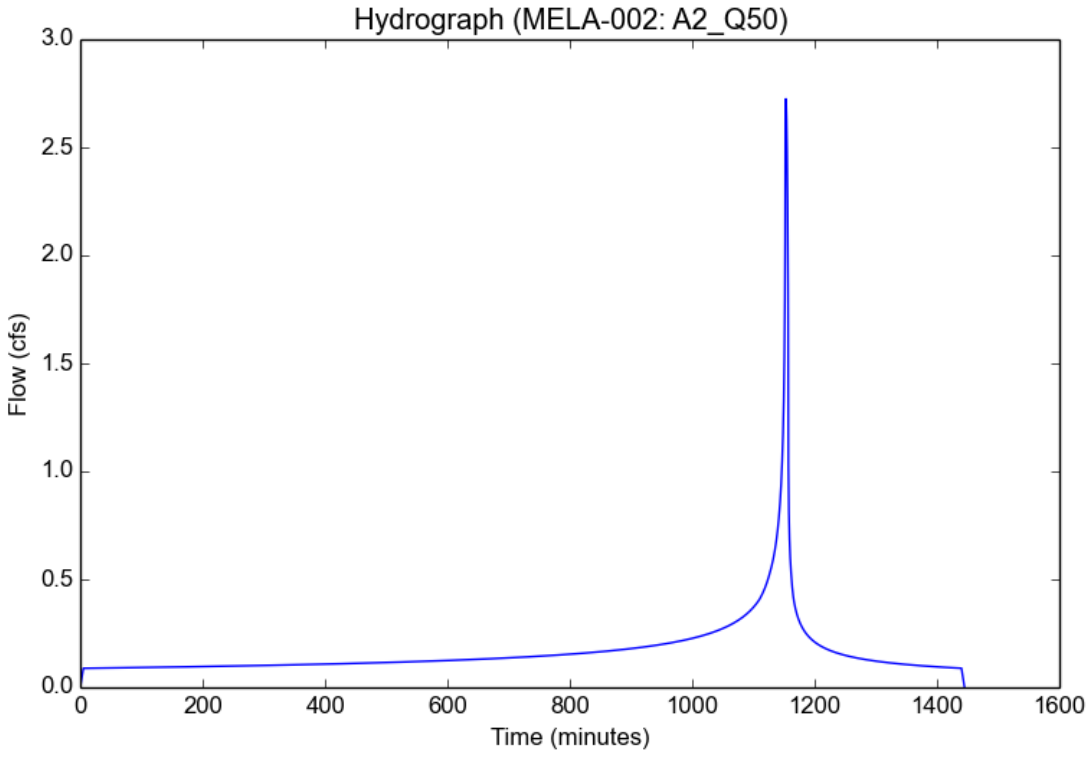
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A2_Q50.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A2_Q50
Area (ac)	0.86
Flow Path Length (ft)	229.2
Flow Path Slope (vft/hft)	0.014
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.5201
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.7246
Burned Peak Flow Rate (cfs)	2.7246
24-Hr Clear Runoff Volume (ac-ft)	0.3352
24-Hr Clear Runoff Volume (cu-ft)	14602.9761



Peak Flow Hydrologic Analysis

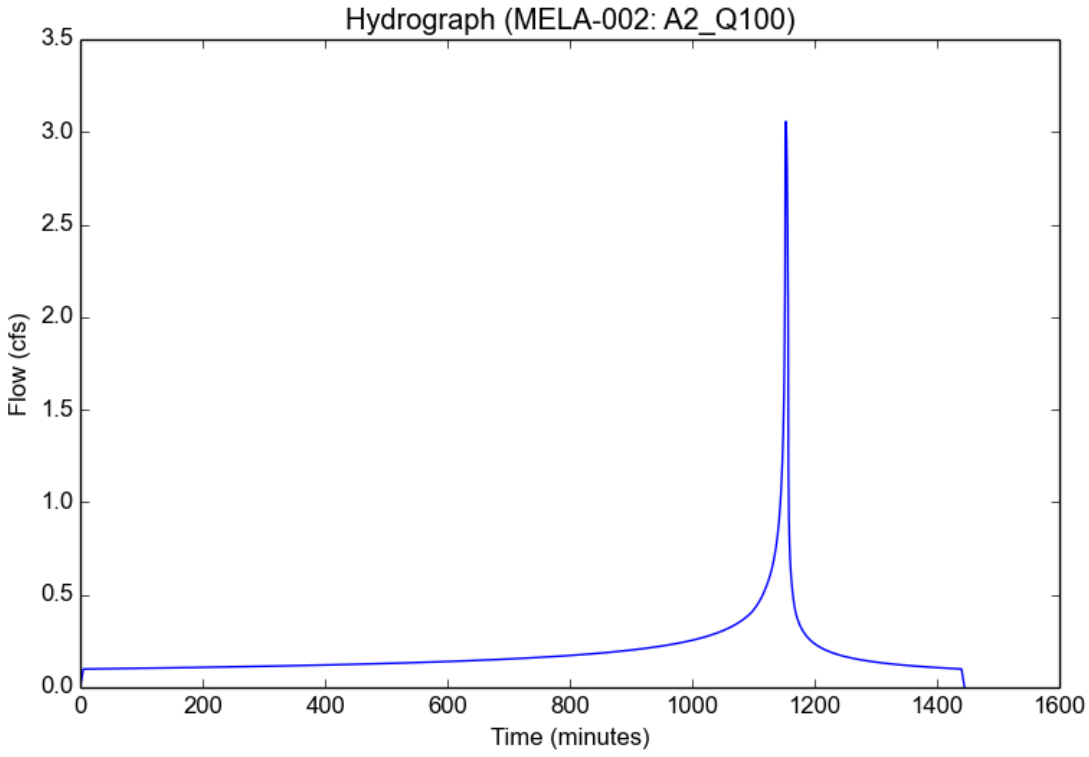
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A2_Q100.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A2_Q100
Area (ac)	0.86
Flow Path Length (ft)	229.2
Flow Path Slope (vft/hft)	0.014
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	6.6198
Peak Intensity (in/hr)	3.9496
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.057
Burned Peak Flow Rate (cfs)	3.057
24-Hr Clear Runoff Volume (ac-ft)	0.3768
24-Hr Clear Runoff Volume (cu-ft)	16415.0268



Area A3 - Proposed Conditions Hydrology Calculations (2, 25, 50, 100-year Storm Event)

Peak Flow Hydrologic Analysis

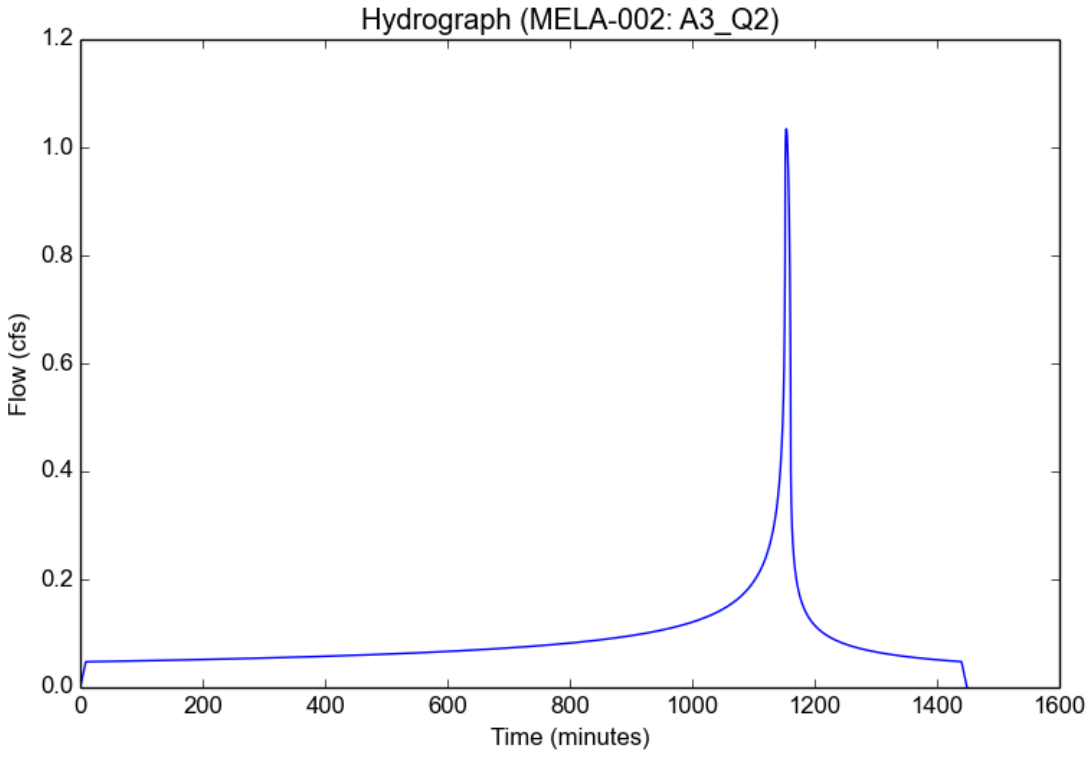
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A3_Q2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A3_Q2
Area (ac)	1.19
Flow Path Length (ft)	278.7
Flow Path Slope (vft/hft)	0.013
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	2-yr
Fire Factor	0
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	2.2833
Peak Intensity (in/hr)	1.0334
Undeveloped Runoff Coefficient (Cu)	0.4784
Developed Runoff Coefficient (Cd)	0.841
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	1.0342
Burned Peak Flow Rate (cfs)	1.0342
24-Hr Clear Runoff Volume (ac-ft)	0.1776
24-Hr Clear Runoff Volume (cu-ft)	7736.985



Peak Flow Hydrologic Analysis

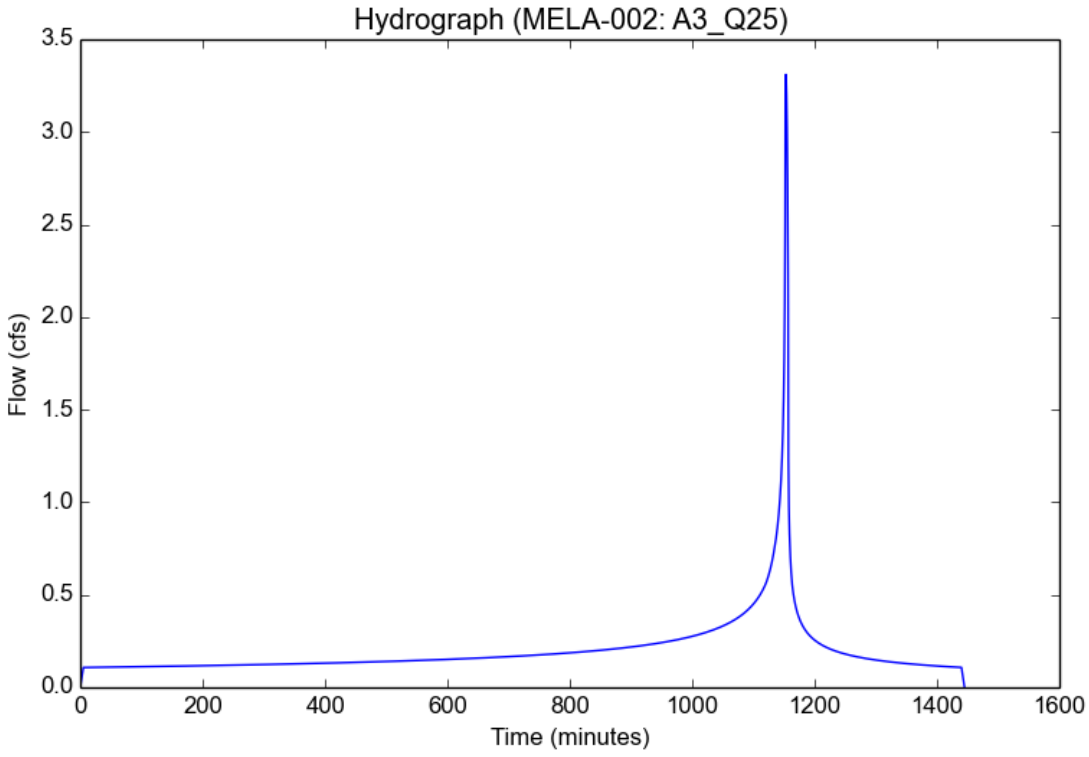
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A3_Q25.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A3_Q25
Area (ac)	1.19
Flow Path Length (ft)	278.7
Flow Path Slope (vft/hft)	0.013
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.1802
Peak Intensity (in/hr)	3.0906
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.3101
Burned Peak Flow Rate (cfs)	3.3101
24-Hr Clear Runoff Volume (ac-ft)	0.4065
24-Hr Clear Runoff Volume (cu-ft)	17709.0306



Peak Flow Hydrologic Analysis

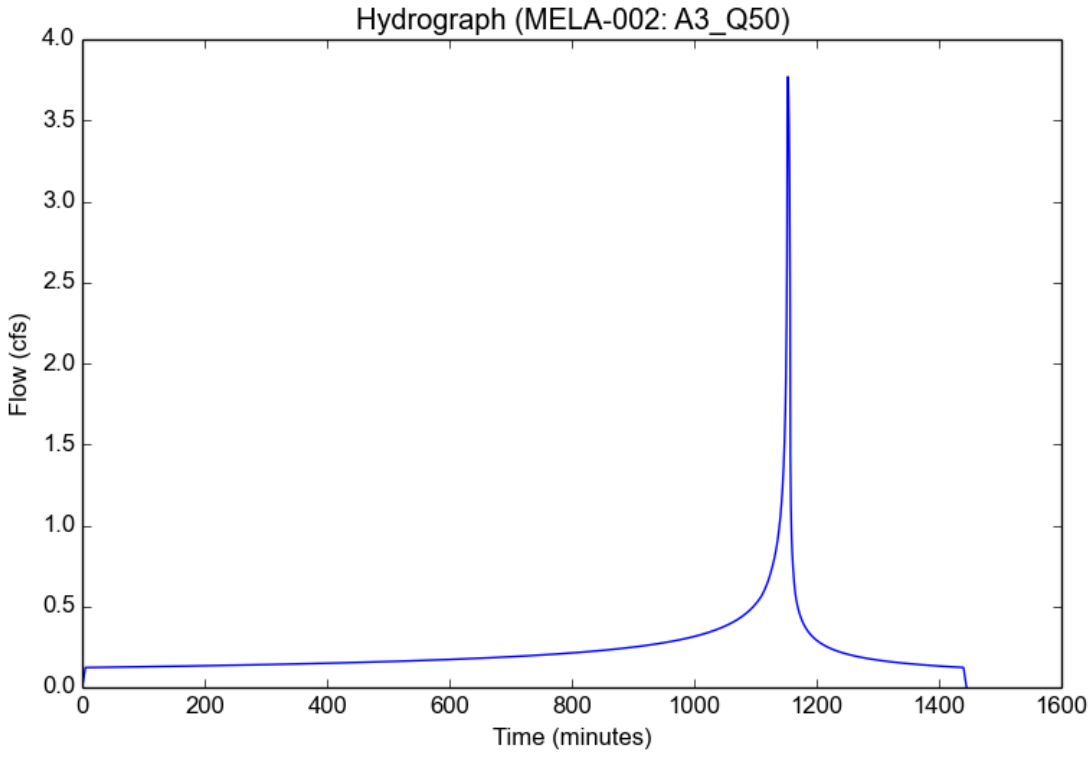
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A3_Q50.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A3_Q50
Area (ac)	1.19
Flow Path Length (ft)	278.7
Flow Path Slope (vft/hft)	0.013
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.5201
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.77
Burned Peak Flow Rate (cfs)	3.77
24-Hr Clear Runoff Volume (ac-ft)	0.4639
24-Hr Clear Runoff Volume (cu-ft)	20206.4437



Peak Flow Hydrologic Analysis

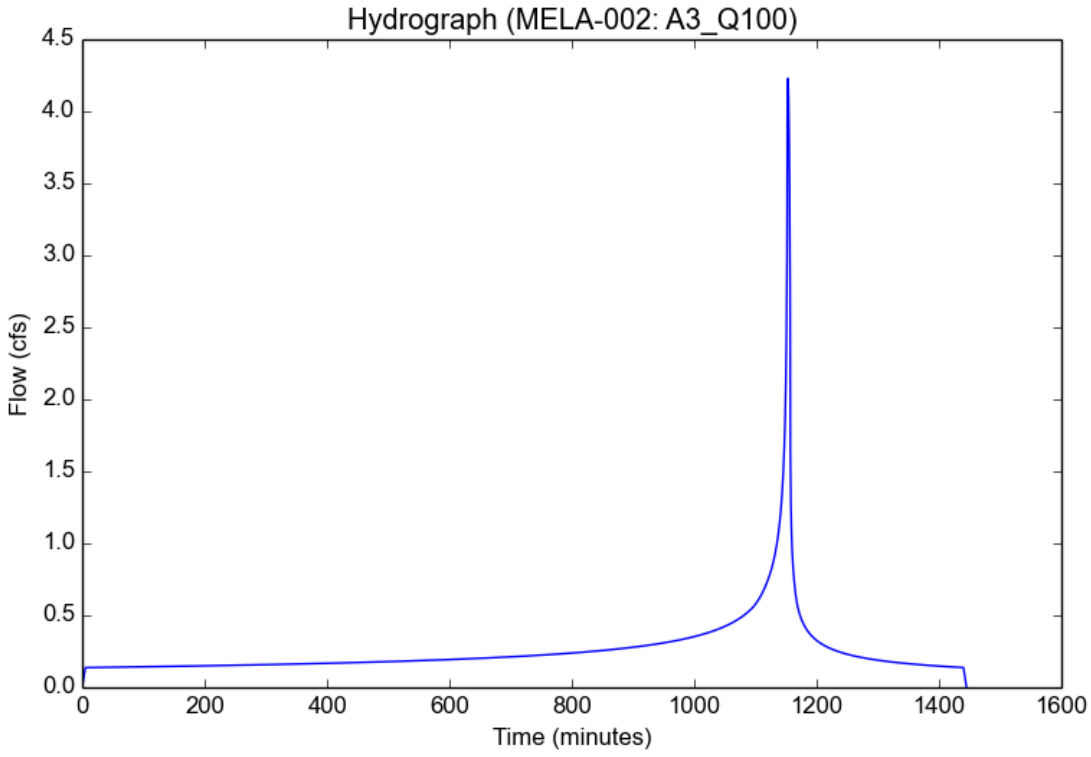
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A3_Q100.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A3_Q100
Area (ac)	1.19
Flow Path Length (ft)	278.7
Flow Path Slope (vft/hft)	0.013
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	6.6198
Peak Intensity (in/hr)	3.9496
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	4.23
Burned Peak Flow Rate (cfs)	4.23
24-Hr Clear Runoff Volume (ac-ft)	0.5214
24-Hr Clear Runoff Volume (cu-ft)	22713.8162



Area A4 - Proposed Conditions Hydrology Calculations (2, 25, 50, 100-year Storm Event)

Peak Flow Hydrologic Analysis

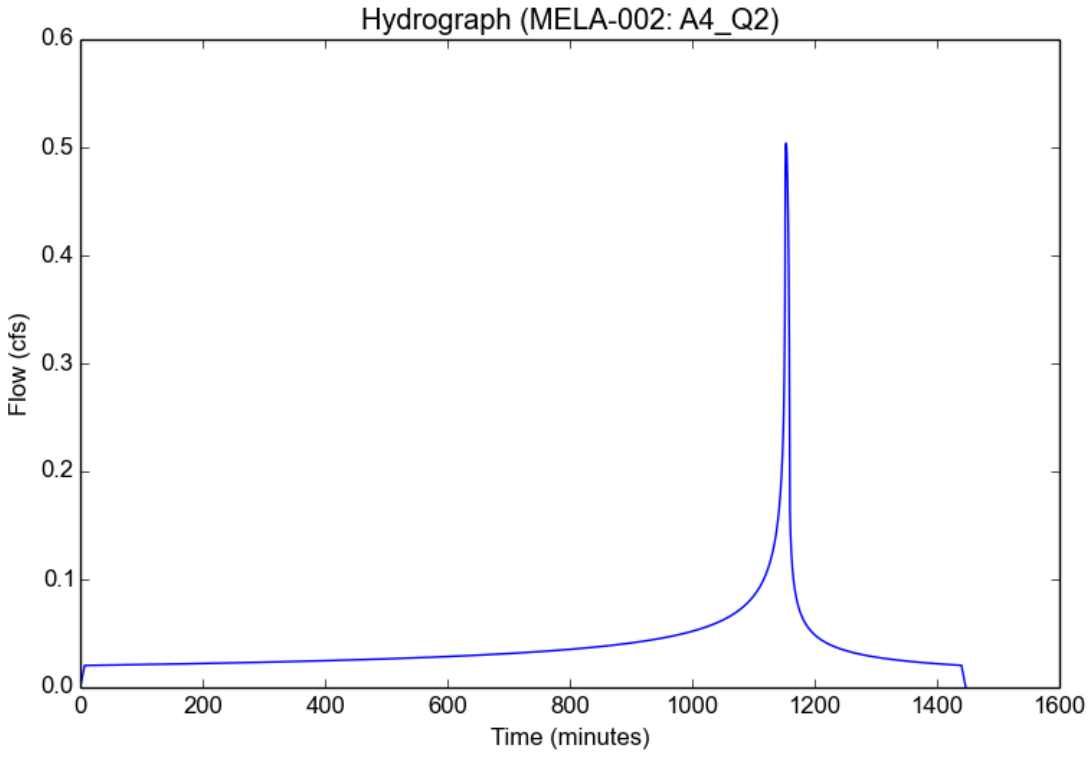
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A4_Q2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A4_Q2
Area (ac)	0.51
Flow Path Length (ft)	196.7
Flow Path Slope (vft/hft)	0.011
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	2-yr
Fire Factor	0
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	2.2833
Peak Intensity (in/hr)	1.163
Undeveloped Runoff Coefficient (Cu)	0.5394
Developed Runoff Coefficient (Cd)	0.8495
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	0.5039
Burned Peak Flow Rate (cfs)	0.5039
24-Hr Clear Runoff Volume (ac-ft)	0.0761
24-Hr Clear Runoff Volume (cu-ft)	3316.9712



Peak Flow Hydrologic Analysis

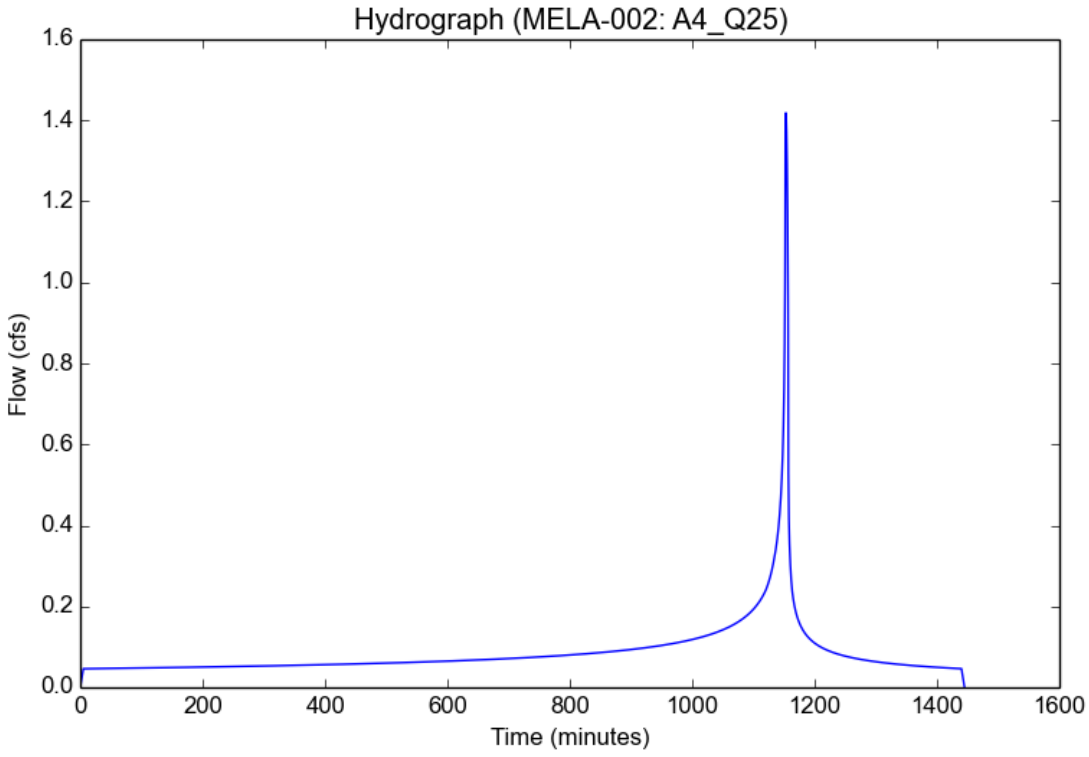
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A4_Q25.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A4_Q25
Area (ac)	0.51
Flow Path Length (ft)	196.7
Flow Path Slope (vft/hft)	0.011
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.1802
Peak Intensity (in/hr)	3.0906
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.4186
Burned Peak Flow Rate (cfs)	1.4186
24-Hr Clear Runoff Volume (ac-ft)	0.1742
24-Hr Clear Runoff Volume (cu-ft)	7589.5845



Peak Flow Hydrologic Analysis

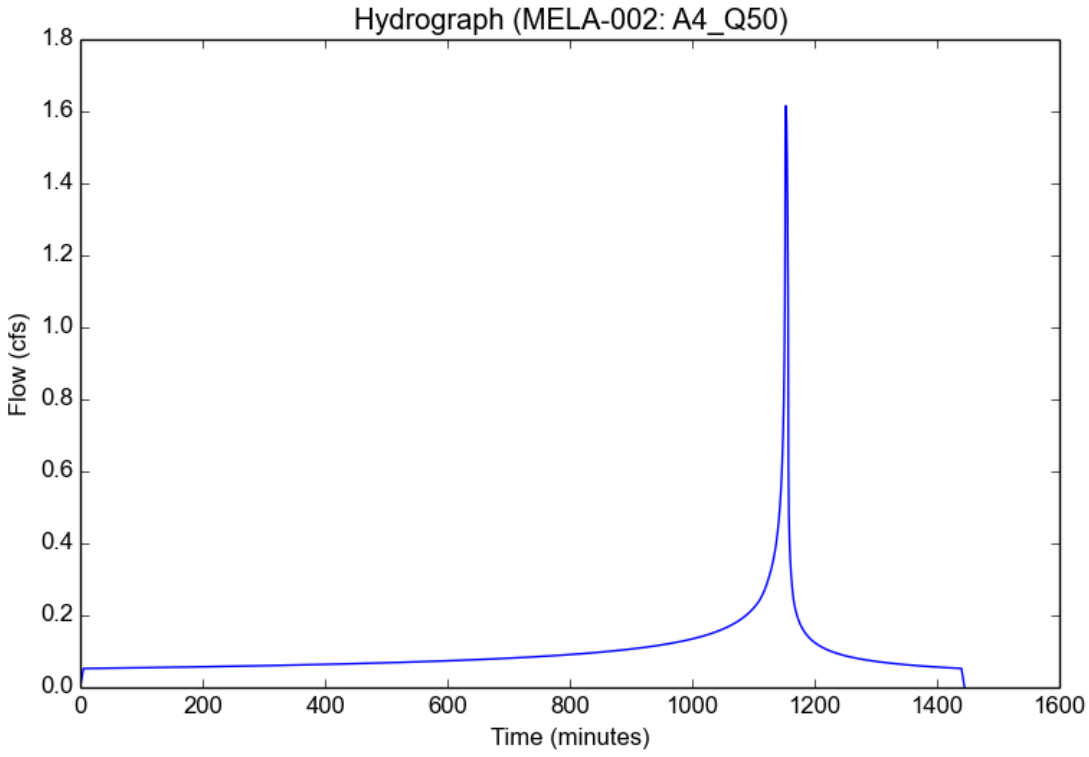
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A4_Q50.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A4_Q50
Area (ac)	0.51
Flow Path Length (ft)	196.7
Flow Path Slope (vft/hft)	0.011
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.5201
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.6157
Burned Peak Flow Rate (cfs)	1.6157
24-Hr Clear Runoff Volume (ac-ft)	0.1988
24-Hr Clear Runoff Volume (cu-ft)	8659.9044



Peak Flow Hydrologic Analysis

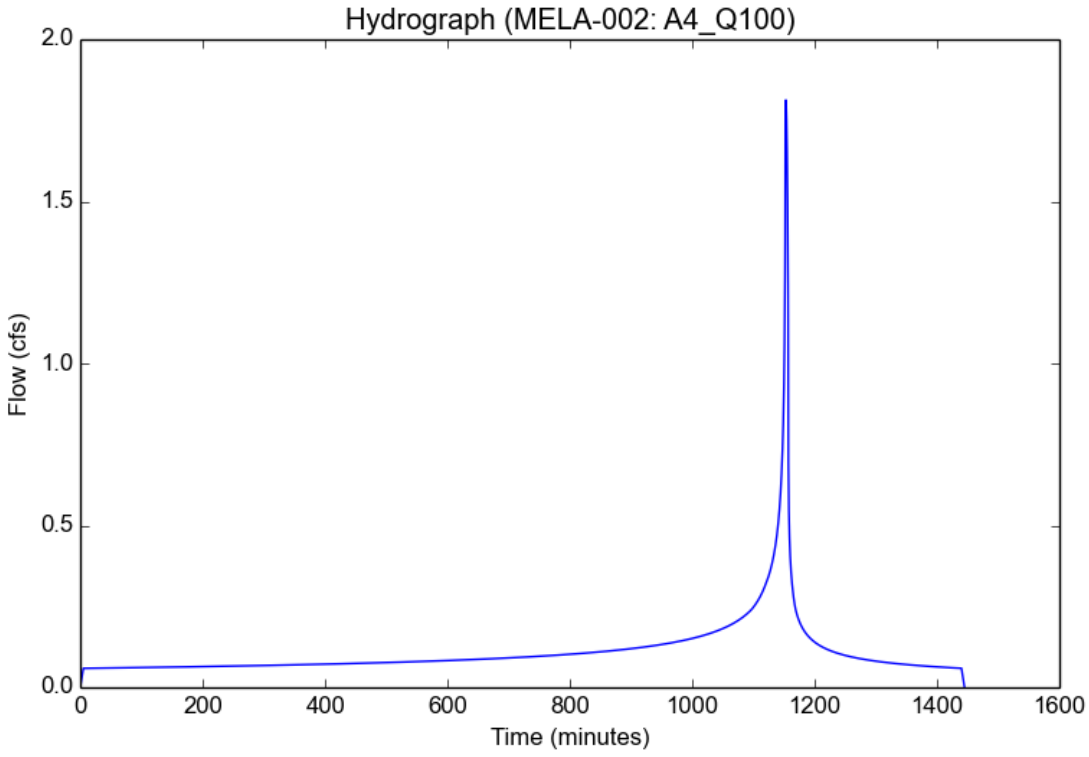
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A4_Q100.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A4_Q100
Area (ac)	0.51
Flow Path Length (ft)	196.7
Flow Path Slope (vft/hft)	0.011
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	6.6198
Peak Intensity (in/hr)	3.9496
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.8128
Burned Peak Flow Rate (cfs)	1.8128
24-Hr Clear Runoff Volume (ac-ft)	0.2235
24-Hr Clear Runoff Volume (cu-ft)	9734.4926



Area A5 - Proposed Conditions Hydrology Calculations (2, 25, 50, 100-year Storm Event)

Peak Flow Hydrologic Analysis

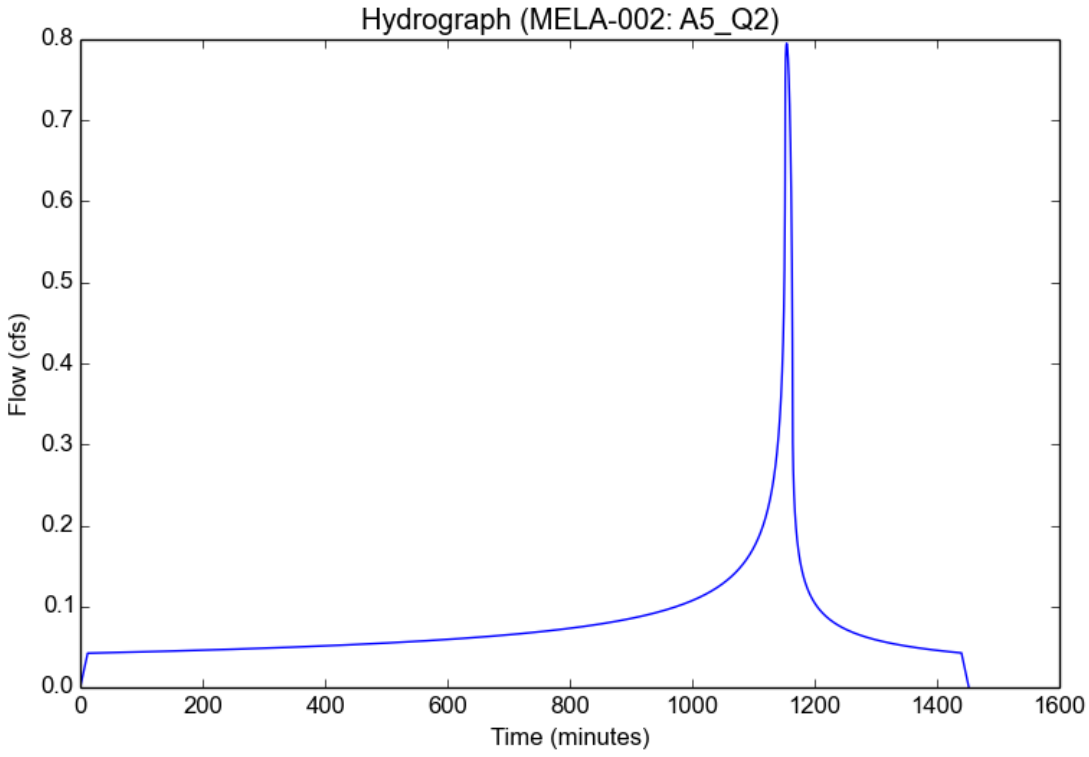
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A5_Q2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A5_Q2
Area (ac)	1.06
Flow Path Length (ft)	368.1
Flow Path Slope (vft/hft)	0.008
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	2-yr
Fire Factor	0
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	2.2833
Peak Intensity (in/hr)	0.9027
Undeveloped Runoff Coefficient (Cu)	0.4062
Developed Runoff Coefficient (Cd)	0.8309
Time of Concentration (min)	12.0
Clear Peak Flow Rate (cfs)	0.7951
Burned Peak Flow Rate (cfs)	0.7951
24-Hr Clear Runoff Volume (ac-ft)	0.1581
24-Hr Clear Runoff Volume (cu-ft)	6888.0825



Peak Flow Hydrologic Analysis

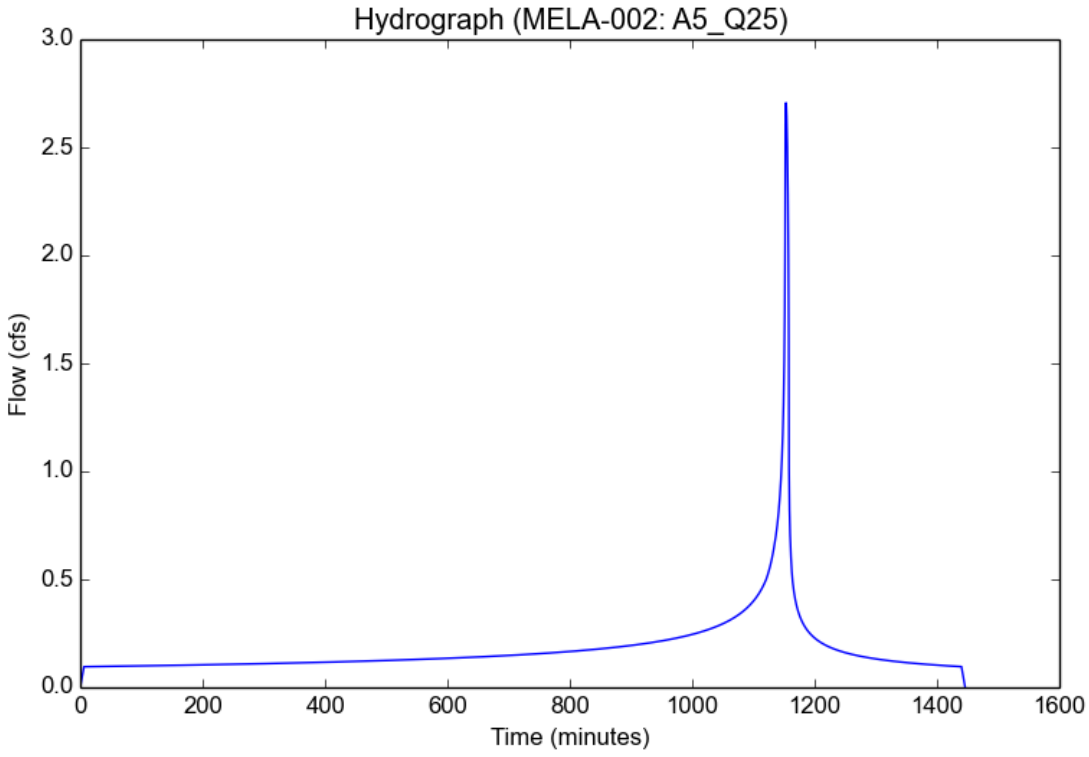
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A5_Q25.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A5_Q25
Area (ac)	1.06
Flow Path Length (ft)	368.1
Flow Path Slope (vft/hft)	0.008
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.1802
Peak Intensity (in/hr)	2.8368
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	2.7063
Burned Peak Flow Rate (cfs)	2.7063
24-Hr Clear Runoff Volume (ac-ft)	0.3622
24-Hr Clear Runoff Volume (cu-ft)	15775.9739



Peak Flow Hydrologic Analysis

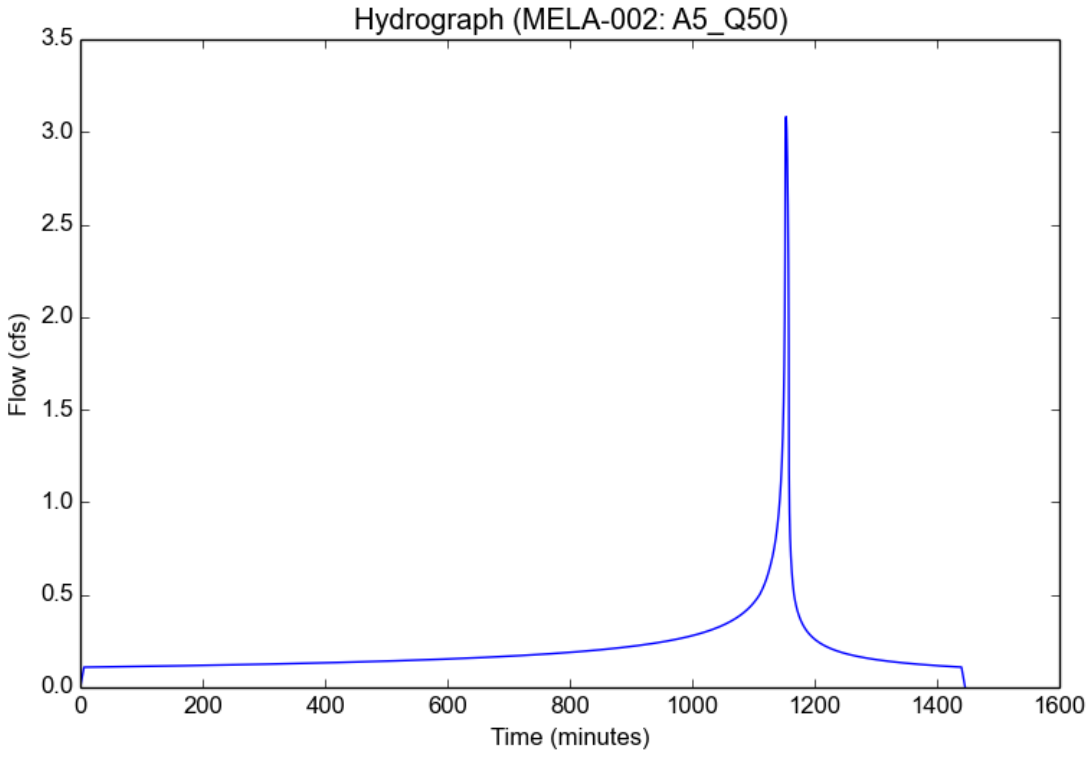
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A5_Q50.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A5_Q50
Area (ac)	1.06
Flow Path Length (ft)	368.1
Flow Path Slope (vft/hft)	0.008
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.231
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	3.0824
Burned Peak Flow Rate (cfs)	3.0824
24-Hr Clear Runoff Volume (ac-ft)	0.4132
24-Hr Clear Runoff Volume (cu-ft)	18000.8631



Peak Flow Hydrologic Analysis

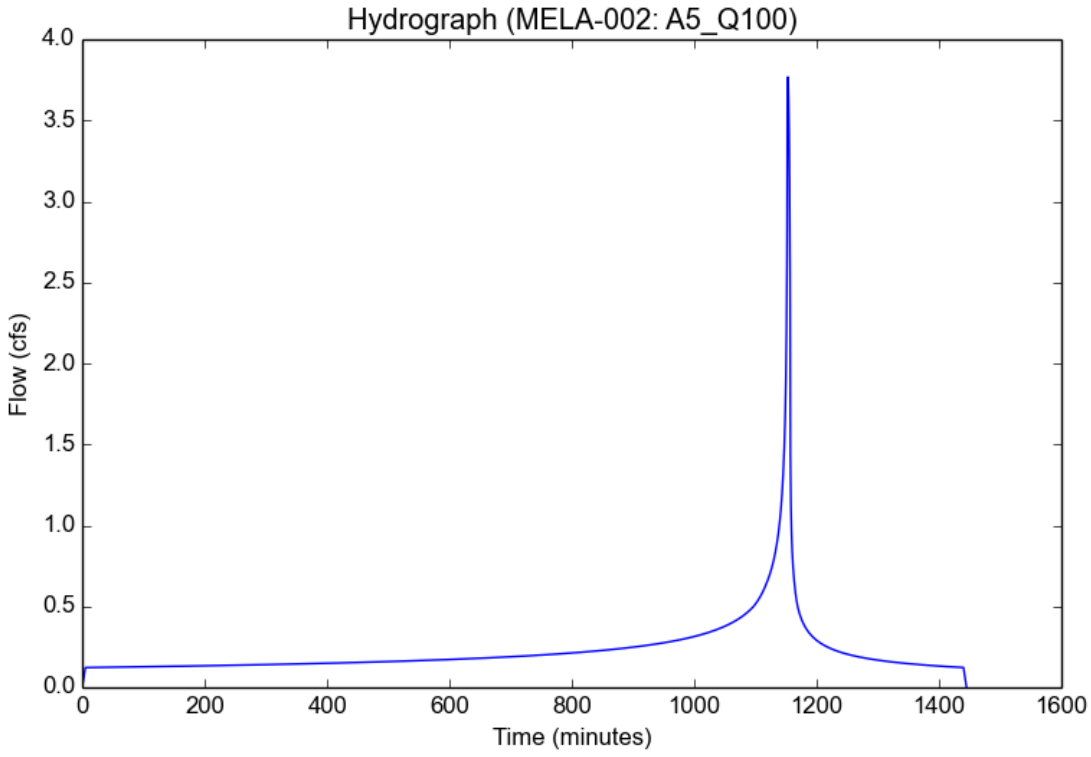
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A5_Q100.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A5_Q100
Area (ac)	1.06
Flow Path Length (ft)	368.1
Flow Path Slope (vft/hft)	0.008
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	6.6198
Peak Intensity (in/hr)	3.9496
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.7679
Burned Peak Flow Rate (cfs)	3.7679
24-Hr Clear Runoff Volume (ac-ft)	0.4645
24-Hr Clear Runoff Volume (cu-ft)	20232.4749



Area A6 - Proposed Conditions Hydrology Calculations (2, 25, 50, 100-year Storm Event)

Peak Flow Hydrologic Analysis

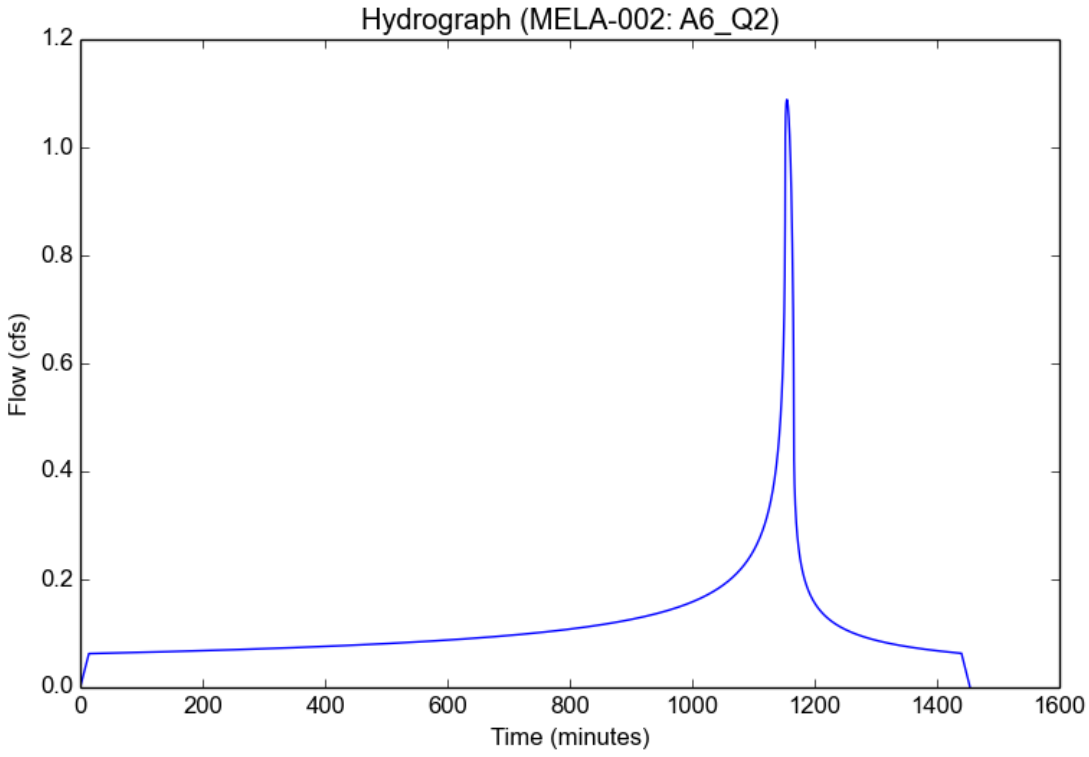
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A6_Q2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A6_Q2
Area (ac)	1.57
Flow Path Length (ft)	456.2
Flow Path Slope (vft/hft)	0.008
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	2-yr
Fire Factor	0
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	2.2833
Peak Intensity (in/hr)	0.8397
Undeveloped Runoff Coefficient (Cu)	0.3696
Developed Runoff Coefficient (Cd)	0.8257
Time of Concentration (min)	14.0
Clear Peak Flow Rate (cfs)	1.0885
Burned Peak Flow Rate (cfs)	1.0885
24-Hr Clear Runoff Volume (ac-ft)	0.2341
24-Hr Clear Runoff Volume (cu-ft)	10198.6782



Peak Flow Hydrologic Analysis

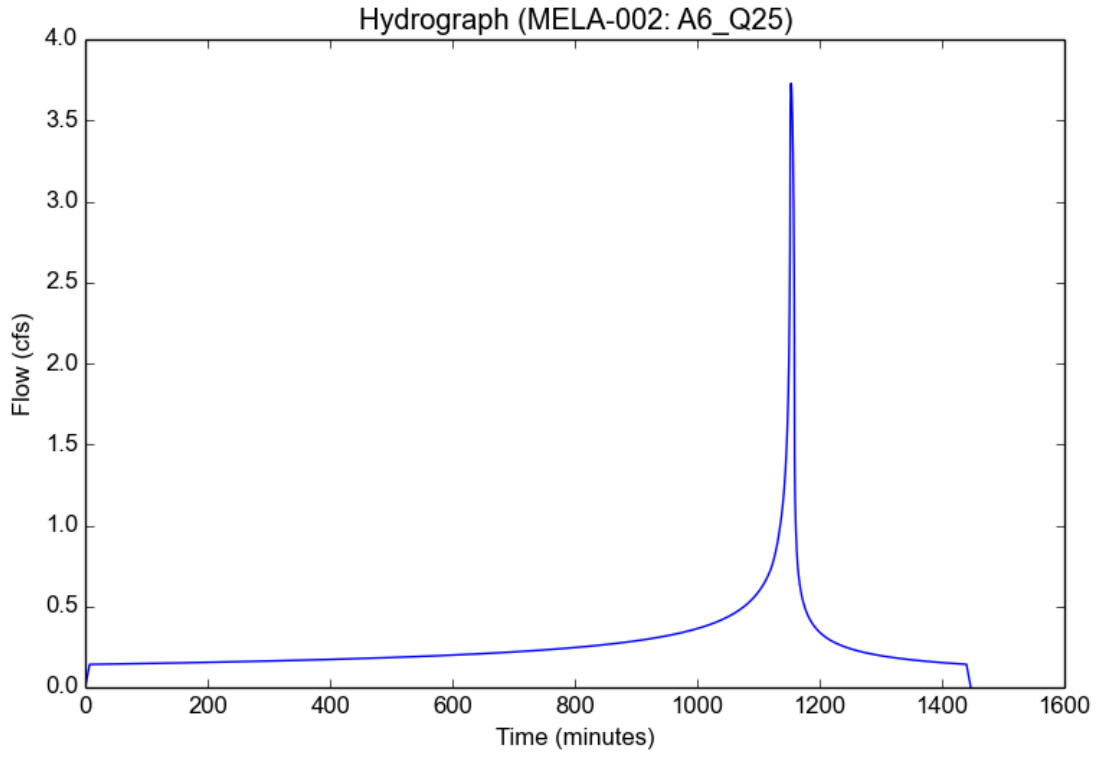
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A6_Q25.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A6_Q25
Area (ac)	1.57
Flow Path Length (ft)	456.2
Flow Path Slope (vft/hft)	0.008
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.1802
Peak Intensity (in/hr)	2.6386
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	3.7283
Burned Peak Flow Rate (cfs)	3.7283
24-Hr Clear Runoff Volume (ac-ft)	0.5364
24-Hr Clear Runoff Volume (cu-ft)	23367.7408



Peak Flow Hydrologic Analysis

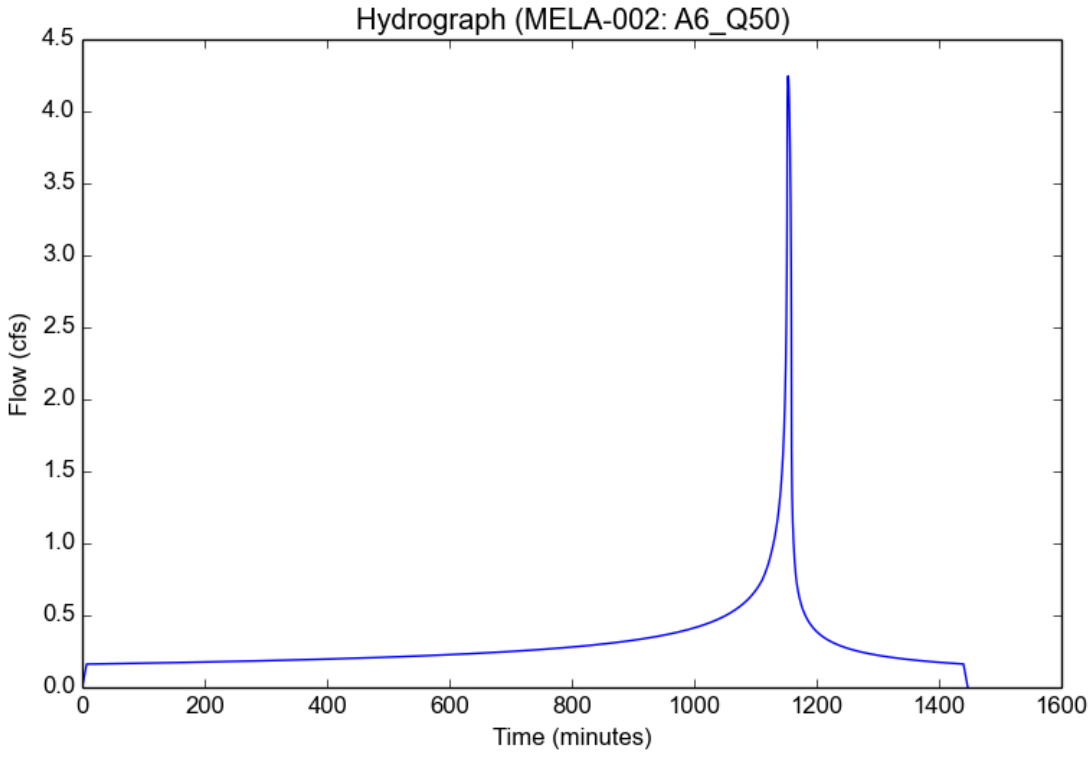
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A6_Q50.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A6_Q50
Area (ac)	1.57
Flow Path Length (ft)	456.2
Flow Path Slope (vft/hft)	0.008
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.0052
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	4.2464
Burned Peak Flow Rate (cfs)	4.2464
24-Hr Clear Runoff Volume (ac-ft)	0.6121
24-Hr Clear Runoff Volume (cu-ft)	26664.1551



Peak Flow Hydrologic Analysis

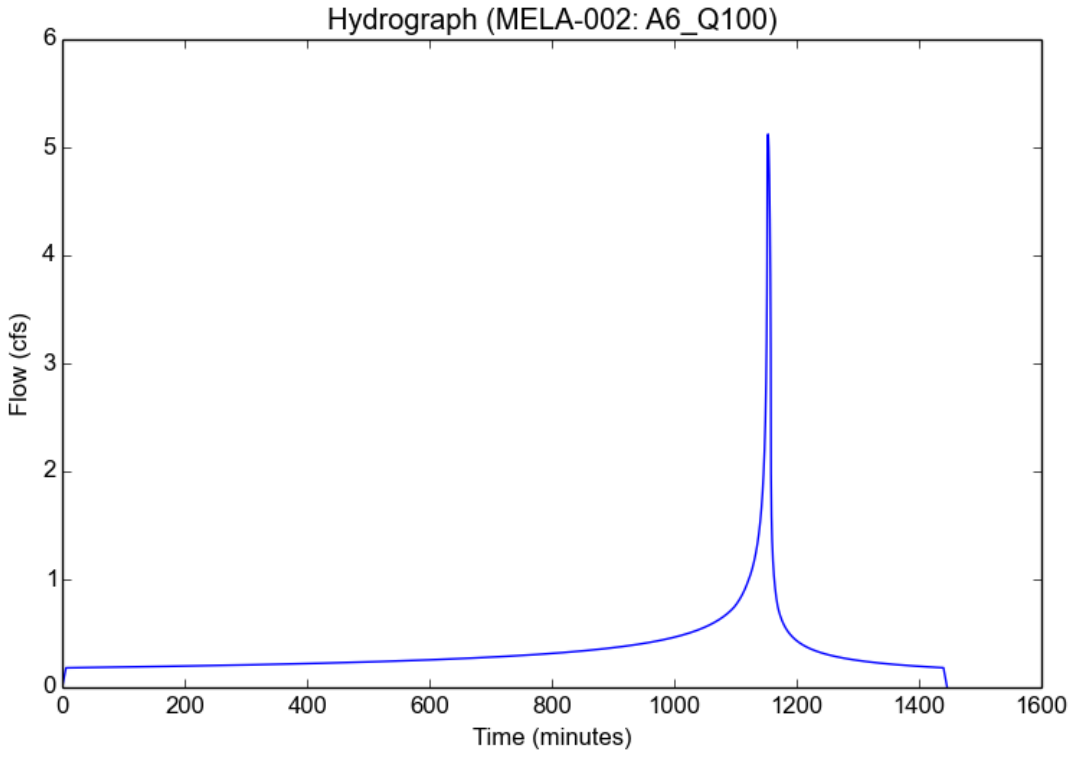
File location: P:/M/MELA-002/Admin/Reports/Hydrology/Preliminary/HydroCalc/MELA-002 - A6_Q100.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MELA-002
Subarea ID	A6_Q100
Area (ac)	1.57
Flow Path Length (ft)	456.2
Flow Path Slope (vft/hft)	0.008
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	6.6198
Peak Intensity (in/hr)	3.6252
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	5.1224
Burned Peak Flow Rate (cfs)	5.1224
24-Hr Clear Runoff Volume (ac-ft)	0.688
24-Hr Clear Runoff Volume (cu-ft)	29969.6331



APPENDIX C
REFERENCES

50-Year 24 Hr Rainfall Depth

search our site..

Hydrology Map A GIS viewer application to view the data for the hydrology manual.

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

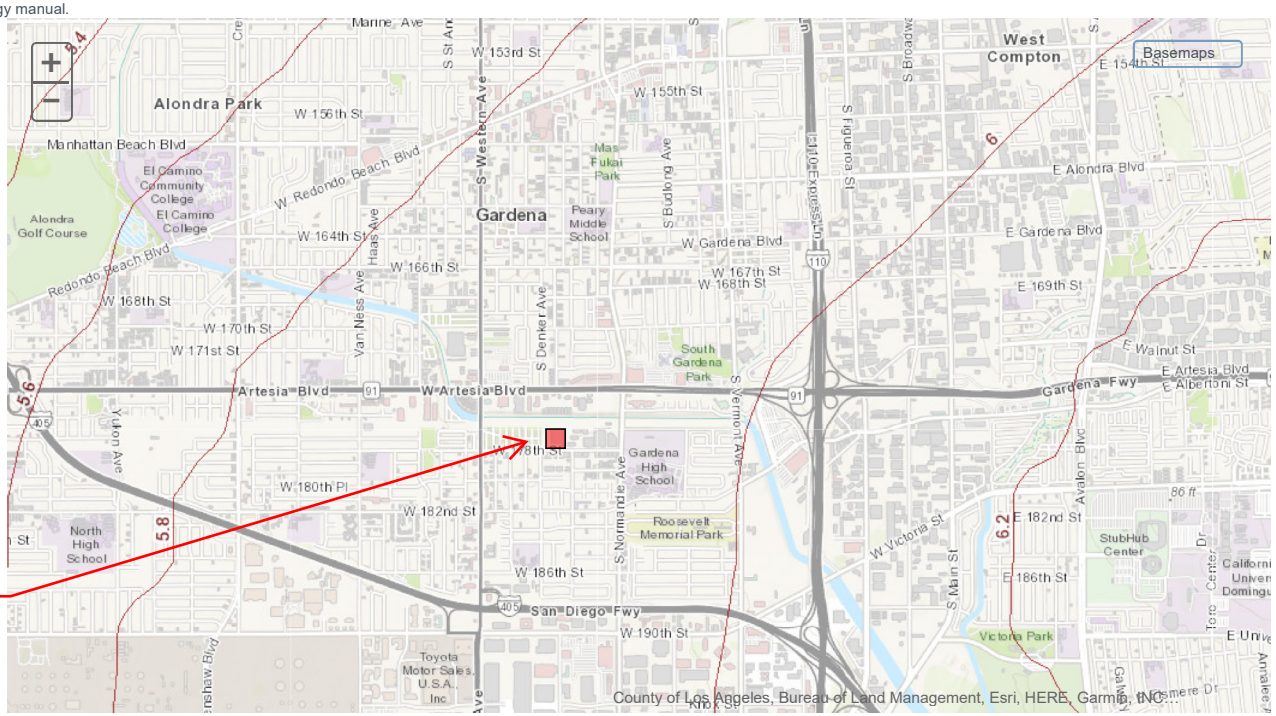
SEARCH

Enter Address, Cross Street, or Parcel No.:
(ex: 900 S. Fremont Ave., Fremont@Valley, 5342005904)

1515 w 178th street Search

Address Search Results:
1515 w 178th street

PROJECT LOCATION



Map Tips

SOIL TYPE

search our site..

Hydrology Map A GIS viewer application to view the data for the hydrology manual.

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

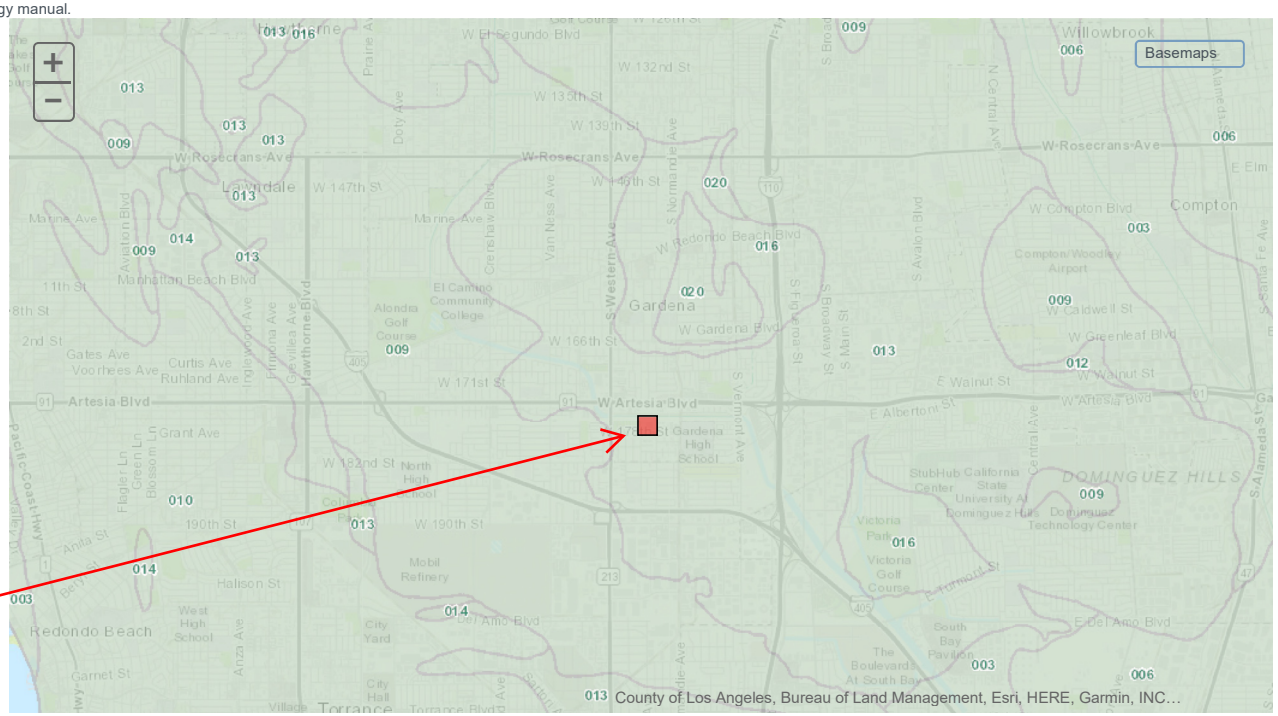
SEARCH

Enter Address, Cross Street, or Parcel No.:
(ex: 900 S. Fremont Ave., Fremont@Valley, 5342005904)

1515 w 178th street Search

Address Search Results:
1515 w 178th street

PROJECT LOCATION



APPENDIX D

Proportion Impervious Data

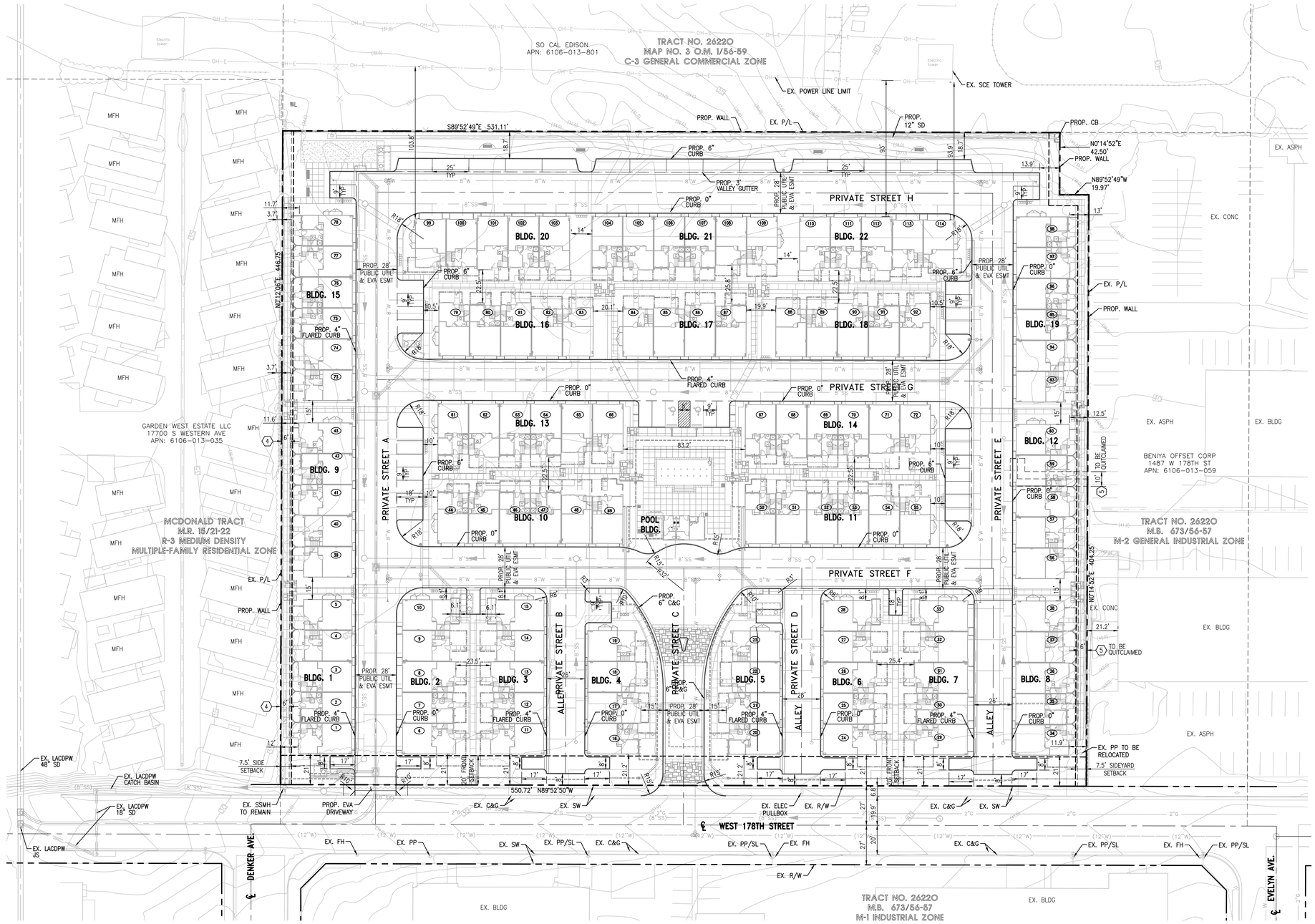
Proportion Impervious Data

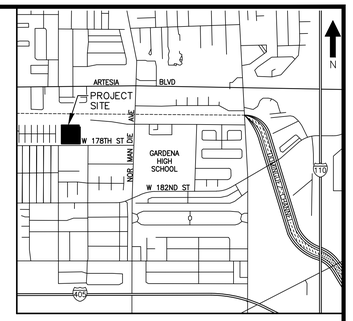
Code	Land Use Description	% Impervious
1111	High-Density Single Family Residential	42
1112	Low-Density Single Family Residential	21
1121	Mixed Multi-Family Residential	74
1122	Duplexes, Triplexes and 2-or 3-Unit Condominiums and Townhouses	55
1123	Low-Rise Apartments, Condominiums, and Townhouses	86
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

APPENDIX D
TENTATIVE TRACT MAPS

TENTATIVE TRACT NO. 82390

1515 WEST 178th STREET
FOR CONDOMINIUM PURPOSES
CITY OF GARDENA, COUNTY OF LOS ANGELES
STATE OF CALIFORNIA





VICINITY MAP
NOT TO SCALE

LEGEND:

- CENTERLINE
- PROPERTY LINE
- EASEMENT LINE
- SETBACK LINE
- (8" SS) EXISTING SEWER
- W EXISTING WATER
- 2"G EXISTING GAS
- PROPOSED WALL
- EXISTING WALL
- (36) EXISTING CONTOUR
- FIRE HYDRANT
- STREET LIGHT
- GUY WIRE
- POWER POLE

ABBREVIATIONS:

PCC	PORTLAND CONC CEMENT
MH	MAN HOLE
LP	LIGHT POLE
CB	CATCH BASIN
ST	STREET LIGHT
TE	TRASH ENCLOSURE
TR	ELECTRICAL TRANSFORMER
EP	EDGE OF PAVEMENT
FS	FINISHED SURFACE
FF	FINISHED FLOOR
NG	NATURAL GROUND
TC	TOP OF CURB
FL	FLOW LINE
TG	TOP OF GRATE
GB	GRADE BREAK
DDC	DOUBLE DETECTER CHECK VALVE
SP	SIGN POST
CB	CATCH BASIN
PIV	POST INDICATOR VALVE
PROP.	PROPOSED
BLDG	BUILDING
PP	POWER POLE
BW	BACK OF WALK
TW	TOP OF WALL
AC	ASPHALT PAVEMENT
MFH	MULTI FAMILY HOME
℄	CENTERLINE
C&G	CURB AND GUTTER
P/L	PROPERTY LINE
R/W	RIGHT OF WAY
INV	INVERT
FF	FINISHED FLOOR
IRR	IRRIGATION
PA	PLANTER
PB	PULL BOX
ICV	IRRIGATION CONTROL VALVE
ARV	AIR RELEASE VALVE
EX.	EXISTING
UTIL	UTILITY
EVA	EMERGENCY VEHICLE ACCESS
ESMT	EASEMENT
JS	JUNCTION STRUCTURE

OWNER/DEVELOPER:

MELIA HOMES
8951 RESEARCH DRIVE, #100
IRVINE, CA 92618
T (949) 759-4367
CHAD BROWN, VICE PRESIDENT OF PLANNING & DEVELOPMENT

CIVIL ENGINEER:

C&V CONSULTING, INC.
6 ORCHARD, SUITE 200
LAKE FOREST, CA 92630
T (949) 916-3800
DANE MCDOUGALL, P.E., PRINCIPAL

SITE ADDRESS:

1515 W. 178TH STREET
GARDENA, CA 90249

ARCHITECT:

SUMMA ARCHITECTURE
5256 S. MISSION ROAD, SUITE 404
BONSALL, CA 92003
T (760) 724-1198

LAND AREA:

NET: 245,264 SF (5.630 AC)
GROSS: 245,264 SF (5.630 AC)

PROPOSED LAND USE:

R-4: HIGH DENSITY MULTIPLE FAMILY RESIDENTIAL

EXISTING LAND USE:

M-2: GENERAL INDUSTRIAL
MUO: MIXED USE OVERLAY ZONE

LEGAL DESCRIPTION:

REAL PROPERTY IN THE CITY OF GARDENA, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

LOTS 8 TO 12 INCLUSIVE OF TRACT NO. 26220 IN THE CITY OF GARDENA COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 673 PAGES 56 AND 57 OF MAPS, RECORDS OF SAID COUNTY.

EXCEPTING THEREFROM, AS TO THE WESTERLY 109.40 FEET OF SAID LOT 10, AND ALL OF SAID LOT 11, AN UNDIVIDED ONE-HALF INTEREST IN AND TO ALL OIL, GAS, PETROLEUM AND OTHER MINERALS AND HYDROCARBON SUBSTANCES IN AND UNDER THE LAND DESCRIBED ABOVE, AS SET OUT IN THAT CERTAIN DOCUMENT RECORDED IN BOOK 19829, PAGE 264 OF OFFICIAL RECORDS OF SAID COUNTY.

APN: 6106-013-040

VESTED OWNER:

OPFINITI, LLC, A CALIFORNIA LIMITED LIABILITY COMPANY

BASIS OF BEARINGS:

THE BEARINGS SHOWN HEREON ARE BASED ON THE STATE PLANE COORDINATE SYSTEM, ZONE 5, NAD 83, AS DETERMINED LOCALLY BY THE LINE BETWEEN CSRC CORS STATIONS "CSDH" AND "TORP," BOTH AS PUBLISHED BY THE CSRC, BEING N44°14'44"E (2017.50 EPOCH).

DATUM STATEMENT:

ALL DISTANCES SHOWN ARE GROUND UNLESS OTHERWISE NOTED. TO OBTAIN GRID DISTANCE, MULTIPLY GROUND DISTANCE BY 1.0000430259

BENCHMARK STATEMENT:

CITY OF LOS ANGELES BENCHMARK NO. 21-02460

ELEV: 42.242' (NAVD88 LEVELED 2014)

DESCRIBED AS: "WIRE SPIKE IN EAST CURB OF NORMANDIE AVE. LOCATED ON THE SOUTH CURB LINE PROD. OF 179TH ST."

FLOOD NOTE:

THE SUBJECT PROPERTY FALLS WITHIN "ZONE X – AREAS DETERMINE TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN." PER FEMA MAP NO. 06037C1935F. A PRINTED PANEL, EFFECTIVE SEPTEMBER 26, 2008

TOPOGRAPHY NOTE:

TOPOGRAPHY AND CONTOURS SHOWN HEREON ARE BASED ON 1' CONTOUR INTERVALS FROM AERIAL PHOTOGRAMMETRY.

UTILITY PURVEYORS:

CABLE:
AT&T UVERSE
PHONE: (800) 288-2020

DIRECT TV
PHONE: (855) 802-3473

DISH NETWORK
PHONE: (888) 656-3109

TIME WARNER CABLE
PHONE: (800) 892-2253

WATER:
GOLDEN STATE WATER COMPANY
PHONE: (800) 999-4033

SEWER:
CITY OF GARDENA (OWNER/MAINTAINED)
PHONE: (310) 217-9500

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY
PHONE: (562) 699-7411

ELECTRICITY:
SOUTHERN CALIFORNIA EDISON
PHONE: (909) 592-3737

TITLE INFORMATION:

THE FOLLOWING TITLE INFORMATION WAS DERIVED FROM A PRELIMINARY TITLE REPORT ISSUED BY FIRST AMERICAN TITLE COMPANY, ORDER NO.: OSA-5570229 (TC) DATED JULY 18, 2018 AT 7:30 A.M.

(#) DENOTES PLOTTED ITEM.

1-3 TAX ITEMS

(4) AN EASEMENT FOR SANITARY SEWER AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED AUGUST 16, 1961 AS BOOK D1323, PAGE 938 OF OFFICIAL RECORDS.

(5) AN EASEMENT FOR POLES AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED FEBRUARY 20, 1962 AS BOOK D1518, PAGE 542 OF OFFICIAL RECORDS.

NOTES:

1. EXISTING ONSITE REMOVALS ARE SHOWN PER SEPARATE FUTURE ONSITE DEMOLITION PLAN.

1" = 30'
0 15 30 60

REVISIONS

NO	DATE	INITIAL	DESCRIPTION	APP	DATE

OWNER/DEVELOPER
MELIA HOMES
MELIA HOMES
8951 RESEARCH DR. #100
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PREPARED BY :
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LAND PLANNING & SURVEYING
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T. 949.916.3800
F. 949.916.3808
CVC-INC.NET

REGISTERED PROFESSIONAL ENGINEER
DANE P. MCDOUGALL
C 80705
Exp. 3/31/19
CIVIL
STATE OF CALIFORNIA

TENTATIVE TRACT NO. 82390

1515 WEST 178TH STREET
GARDENA, CALIFORNIA

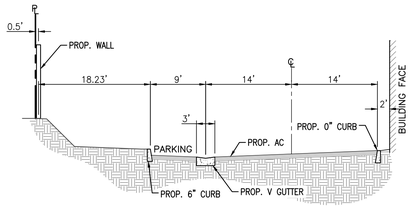
SHEET 1 OF 4

SCALE: AS SHOWN | DRAWN BY: CK | CHECKED BY: MO

CITY OF GARDENA

PROJ. MELIA002
PLAN SET: PSD
DATE: 11/21/18

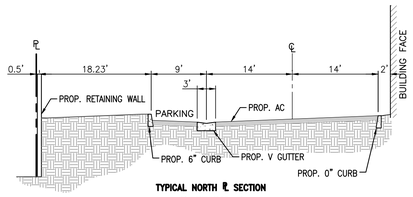
DWG: P:\MELIA\002\dwg\Design\TENTATIVE\TENTATIVE1.dwg BY: jhendricks Nov 21, 2018 - 2:47:59pm



TYPICAL NORTH ℄ SECTION

SECTION A

NTS



TYPICAL NORTH ℄ SECTION

SECTION B

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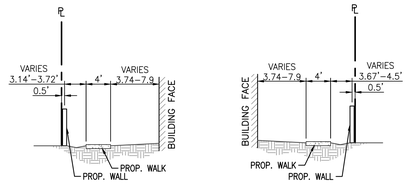


TYPICAL WEST ℄ SECTION

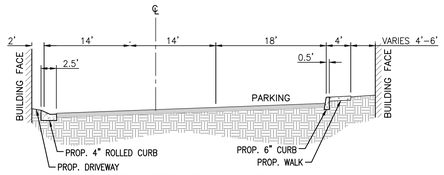
SECTION C

NTS

TYPICAL EAST ℄ SECTION

SECTION D

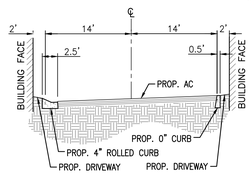
NTS



TYPICAL STREET WITH PARKING SECTION

SECTION E

NTS



TYPICAL STREET SECTION

SECTION F

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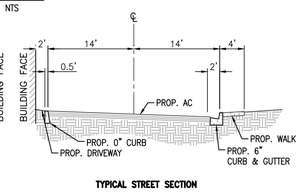

TYPICAL STREET SECTION

SECTION G

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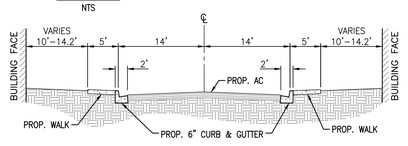
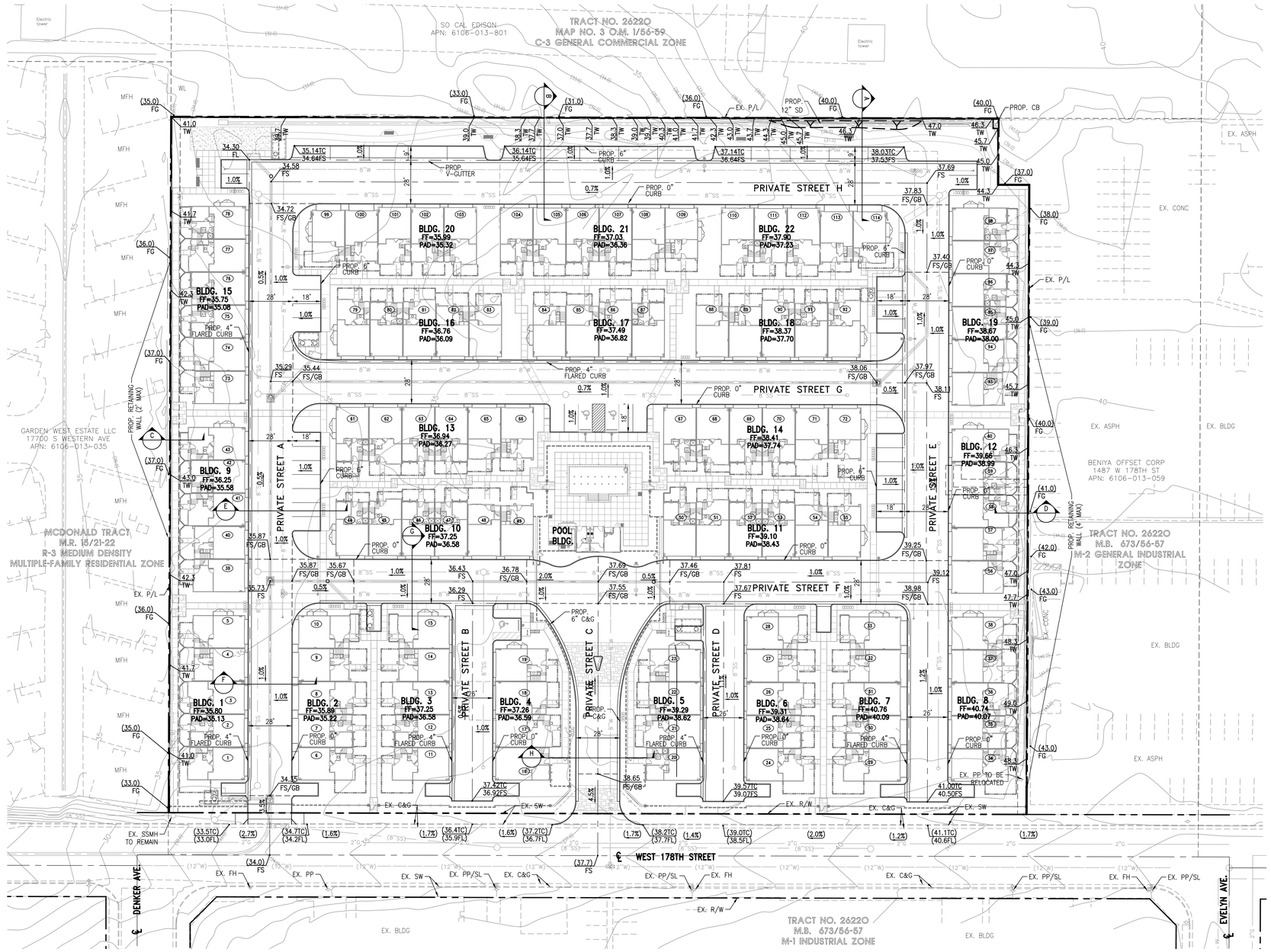


ENTRY SECTION

SECTION H

NTS



1" = 30'

0 15 30 60

REVISIONS

NO	DATE	INITIAL	DESCRIPTION	APP	DATE

OWNER/DEVELOPER

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CVC-INC.NET

REGISTERED PROFESSIONAL ENGINEER
DALE P. MCDOUGALL
C 80705
Exp. 3/31/19
CIVIL
STATE OF CALIFORNIA

TENTATIVE TRACT NO. 82390
PRELIMINARY GRADING PLAN

1515 WEST 178TH STREET
GARDENA, CALIFORNIA

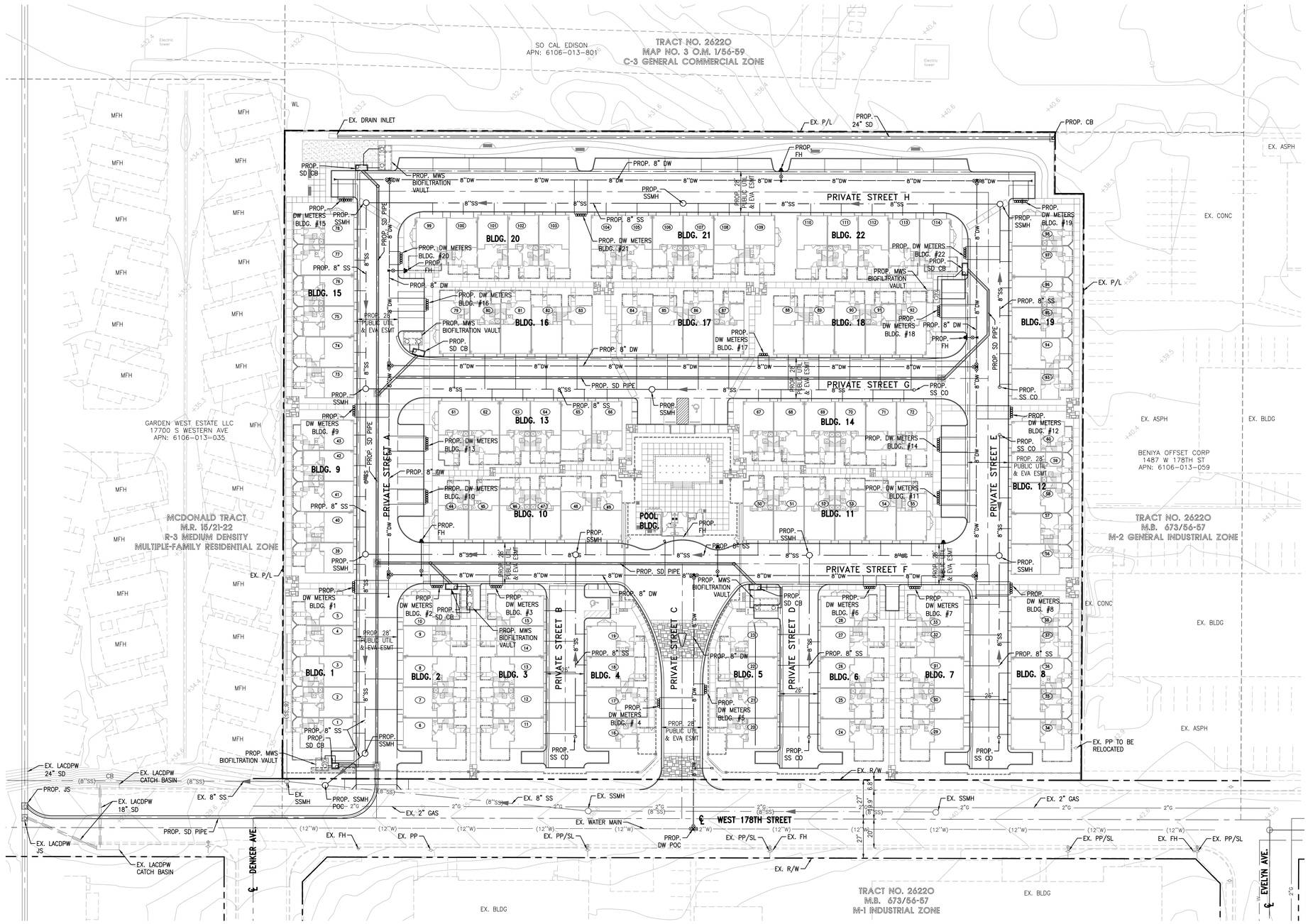
SHEET 2 OF 4

SCALE: AS SHOWN | DRAWN BY: CK | CHECKED BY: MO

CITY OF GARDENA

PLAN SET: PSD | PROJ. MELIA002
DATE: 11/21/18

DWG: P:\MELIA\002\dwg\Sheets\TRACT\TM82390-GRADE.dwg BY: jhendricks Nov 21, 2018 - 2:47:19pm



1" = 30'

0 15 30 60

REVISIONS					
NO	DATE	INITIAL	DESCRIPTION	APP	DATE

OWNER/DEVELOPER

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REGISTERED PROFESSIONAL ENGINEER
DIANE P. McDOUGALL
C 80705
Exp. 3/31/19
CIVIL
STATE OF CALIFORNIA

TENTATIVE TRACT NO. 82390
PRELIMINARY UTILITY PLAN

1515 WEST 178TH STREET
GARDENA, CALIFORNIA

SHEET 3 OF 4

SCALE: AS SHOWN | DRAWN BY: CK | CHECKED BY: MO

CITY OF GARDENA

PLAN SET: PSD | PROJ. MELIA-002 | DATE: 11/21/18

FIRE ACCESS PLAN
FOR TENTATIVE TRACT NO. 82390

NOTES:

1. FIRE DEPARTMENT VEHICULAR ACCESS ROADS SHALL HARDSCAPE ALL WEATHER ACCESS IN ACCORDANCE WITH THE DEPARTMENT'S ALL WEATHER ACCESS REQUIREMENTS. FIRE CODE 503.2.3
2. FIRE DEPARTMENT VEHICULAR ACCESS ROADS MUST BE INSTALLED AND MAINTAINED IN A SERVICEABLE MANNER PRIOR TO AND DURING THE TIME OF CONSTRUCTION. FIRE CODE 501.4
3. APPROVED BUILDING ADDRESS NUMBERS, BUILDING NUMBERS OR APPROVED BUILDING IDENTIFICATION SHALL BE PROVIDED AND MAINTAINED SO AS TO BE PLAINLY VISIBLE AND LEGIBLE FROM THE STREET FRONTING THE PROPERTY. THE NUMBERS SHALL CONTRAST WITH THEIR BACKGROUND, BE ARABIC NUMERALS OR ALPHABET LETTERS, AND BE A MINIMUM OF 4 INCHES HIGH WITH A MINIMUM STROKE WIDTH OF 0.5 INCH. FIRE CODE 505.1
4. THE REQUIRED FIRE FLOW FOR FIRE HYDRANTS AT THIS LOCATION IS 2000 GPM, AT 20 PSI RESIDUAL PRESSURE, FOR A DURATION OF 2 HOURS OVER AND ABOVE MAXIMUM DAILY DOMESTIC DEMAND. FIRE CODE 507.3
5. ALL FIRE HYDRANTS SHALL MEASURE 6"X4"X2-1/2", BRASS OR BRONZE, CONFORMING TO AMERICAN WATER WORKS ASSOCIATION STANDARD C503, OR APPROVED EQUAL, AND SHALL BE INSTALLED IN COMPLIANCE WITH FIRE CODE 507.5.
6. ALL REQUIRED PUBLIC FIRE HYDRANTS SHALL BE INSTALLED, TESTED AND ACCEPTED PRIOR TO BEGINNING CONSTRUCTION. FIRE CODE 501.4.
7. THE REQUIRED FIRE FLOW FOR A SINGLE PRIVATE ON-SITE FIRE HYDRANT AT THIS LOCATION IS 1,250 GPM AT 20 PSI RESIDUAL PRESSURE. IF MORE THAN ONE ON-SITE FIRE HYDRANT IS REQUIRED, THE ON-SITE FIRE FLOW SHALL BE THE SAME AS REQUIRED FOR PUBLIC HYDRANTS IN ACCORDANCE WITH APPENDIX TABLE B1-5.1. FIRE CODE C106.
8. ALL ON-SITE FIRE HYDRANT SHALL BE INSTALLED, TESTED AND APPROVED PRIOR TO BUILDING OCCUPANCY. FIRE CODE 901.5.1

PROJECT GENERAL NOTES:

1. ALL FIRE ACCESS LANES MEET LACFD MINIMUM REQUIREMENTS 19' & 45' RADII.
2. THIS PROJECT DOES NOT HAVE ANY FUEL MODIFICATION OR WILD LAND EXPOSURES AND IS NOT IN A "VERY HIGH FIRE HAZARD" ZONE.
3. THIS PROJECT IS DESIGNED IN CONFORMANCE WITH THE CBC, 2015 EDITION.
4. ALL FIRE ACCESS ROADS SHALL BE ALL WEATHER, MEET THE CRITERIA OF AN ALL WEATHER DRIVING SURFACE AND COMPLY WITH LACFD GUIDELINE FOR FIRE APPARATUS ROADS.
5. LARGEST BUILDING FOOTPRINT SQ. FOOTAGE =10,798 SF
6. BUILDINGS ARE DESIGNATED TYPE-VB
7. BUILDING OCCUPANCY IS DESIGNATED AS R2-TOWNHOMES.
8. ALL BUILDINGS ON THE SITE WILL BE SPRINKLERED PER NFPA 13D.

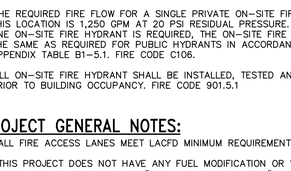
**ALL BUILDING INFORMATION AND SITE PLAN TO BE CONFIRMED WITH ARCHITECTURAL LAYOUT

ABBREVIATIONS:

PCC	PORTLAND CONC CEMENT	PP	POWER POLE
MH	MAN HOLE	BW	BACK OF WALK
LP	LIGHT POLE	TW	TOP OF WALL
CB	CATCH BASIN	AC	ASPHALT PAVEMENT
ST	STREET LIGHT	MFH	MULTI FAMILY HOME
TE	TRASH ENCLOSURE	℄	CENTERLINE
TR	ELECTRICAL TRANSFORMER	C&G	CURB AND GUTTER
EP	EDGE OF PAVEMENT	P/L	PROPERTY LINE
FS	FINISHED SURFACE	R/W	RIGHT OF WAY
FF	FINISHED FLOOR	INV	INVERT
NG	NATURAL GROUND	FF	FINISHED FLOOR
TC	TOP OF CURB	IRR	IRRIGATION
FL	FLOW LINE	PA	PLANTER
TG	TOP OF GRATE	PB	PULL BOX
GB	GRADE BREAK	ICV	IRRIGATION CONTROL VALVE
DDC	DOUBLE DETECTER CHECK VALVE	ARV	AIR RELEASE VALVE
SP	SIGN POST	EX.	EXISTING
CB	CATCH BASIN	UTIL	UTILITY
PIV	POST INDICATOR VALVE	EVA	EMERGENCY VEHICLE ACCESS
PROP.	PROPOSED	ESMT	EASEMENT
BLDG	BUILDING		

LEGEND:

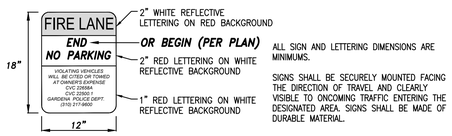
- CENTERLINE
- PROPERTY LINE
- EASEMENT LINE
- (8" SS) EXISTING SEWER
- W EXISTING WATER
- 2"G EXISTING GAS
- PROPOSED WALL
- EXISTING WALL
- (36) EXISTING CONTOUR
- FIRE HYDRANT
- STREET LIGHT
- GUY WIRE
- POWER POLE
- EXISTING FIRE HYDRANT
- FIRE LANE



TYPICAL STREET SECTION

FIRE LANE

NTS

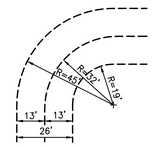


ALL SIGN AND LETTERING DIMENSIONS ARE MINIMUMS.

SIGNS SHALL BE SECURELY MOUNTED FACING THE DIRECTION OF TRAVEL AND CLEARLY VISIBLE TO ONCOMING TRAFFIC ENTERING THE DESIGNATED AREA. SIGNS SHALL BE MADE OF DURABLE MATERIAL.

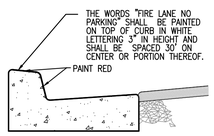
BEGIN & END NO PARKING SIGN

NOT TO SCALE



FIRE LANE TURNING RADIUS TYPICAL DETAIL

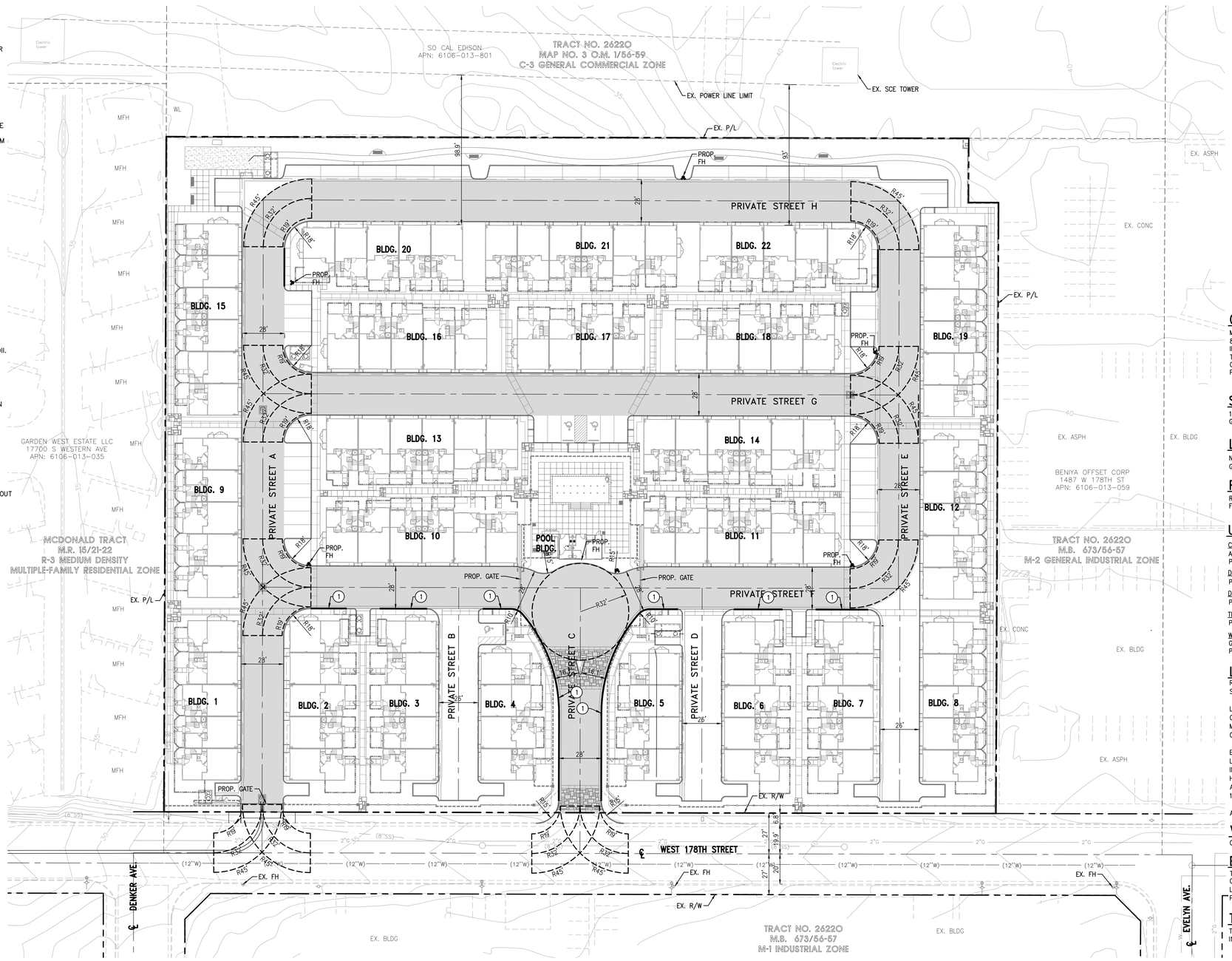
NOT TO SCALE

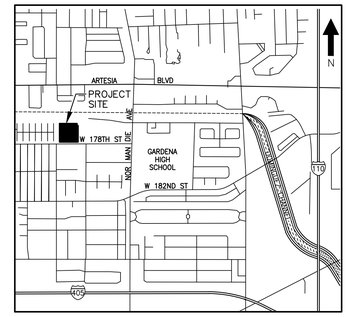


CURB & GUTTER

1 RED CURB PAVEMENT MARKING

NOT TO SCALE





VICINITY MAP

NOT TO SCALE

OWNER/DEVELOPER:

MELIA HOMES
8951 RESEARCH DRIVE, #100
IRVINE, CA 92618
T (949) 759-4367
CHAD BROWN, VICE PRESIDENT OF PLANNING & DEVELOPMENT

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ARCHITECT:

SUMMA ARCHITECTURE
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LAND AREA:

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GROSS: 245,264 SF (5.630 AC)

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R-4: HIGH DENSITY MULTIPLE FAMILY RESIDENTIAL

EXISTING LAND USE:

M-2: GENERAL INDUSTRIAL
MUO: MIXED USE OVERLAY ZONE

UTILITY PURVEYORS:

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COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY
PHONE: (562) 699-7411

ELECTRICITY:
SOUTHERN CALIFORNIA EDISON
PHONE: (909) 592-3737

LEGAL DESCRIPTION:

REAL PROPERTY IN THE CITY OF GARDENA, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

LOTS 8 TO 12 INCLUSIVE OF TRACT NO. 26220 IN THE CITY OF GARDENA COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 673 PAGES 56 AND 57 OF MAPS, RECORDS OF SAID COUNTY.

EXCEPTING THEREFROM, AS TO THE WESTERLY 109.40 FEET OF SAID LOT 10, AND ALL OF SAID LOT 11, AN UNDIVIDED ONE-HALF INTEREST IN AND TO ALL OIL, GAS, PETROLEUM AND OTHER MINERALS AND HYDROCARBON SUBSTANCES IN AND UNDER THE LAND DESCRIBED ABOVE, AS SET OUT IN THAT CERTAIN DOCUMENT RECORDED IN BOOK 19829, PAGE 264 OF OFFICIAL RECORDS OF SAID COUNTY.

APN: 6106-013-040

VESTED OWNER:

OPFINITI, LLC, A CALIFORNIA LIMITED LIABILITY COMPANY

BASIS OF BEARINGS:

THE BEARINGS SHOWN HEREON ARE BASED ON THE STATE PLAN COORDINATE SYSTEM, ZONE 5, NAD 83, AS DETERMINED LOCALLY BY THE LINE BETWEEN CSRC CORS STATIONS "CSDH" AND "TORP," BOTH AS PUBLISHED BY THE CSRC, BEING N44°14'44"E (2017.50 EPOCH).

TOPOGRAPHY NOTE:

TOPOGRAPHY AND CONTOURS SHOWN HEREON ARE BASED ON 1' CONTOUR INTERVALS FROM AERIAL PHOTOGRAM

1" = 30'

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NO	DATE	INITIAL	DESCRIPTION	APP	DATE

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CVC-INC.NET

REGISTERED PROFESSIONAL ENGINEER
DANE P. MCDOUGALL
C 80705
Exp. 3/31/19
CIVIL
STATE OF CALIFORNIA

TENTATIVE TRACT NO. 82390
FIRE ACCESS PLAN
1515 WEST 178TH STREET
GARDENA, CALIFORNIA

SHEET 4 OF 4

SCALE: AS SHOWN | DRAWN BY: CK | CHECKED BY: MO

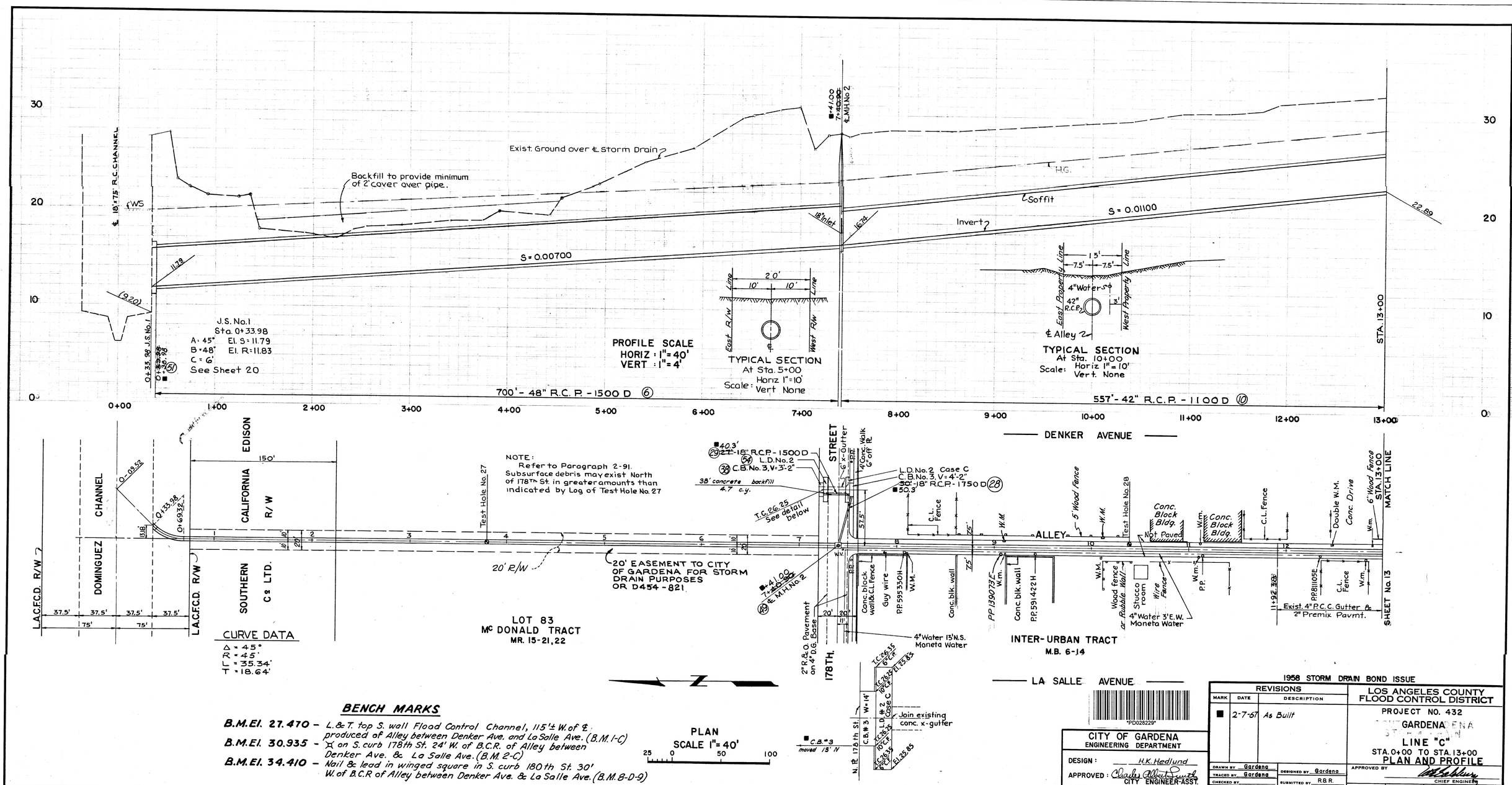
CITY OF GARDENA

PROJ. MELA002

PLAN SET: FDSI
DATE: 11/21/18

DWG: P:\MELA\002\dwg\sheet\TRACT\FA11.dwg By: jhendricks Nov 21, 2018 - 2:47:44pm

APPENDIX E
AS-BUILT



BENCH MARKS

B.M.El. 27.470 – L. & T. top S. wall Flood Control Channel, 115'± W. of ℄ produced of Alley between Denker Ave. and La Salle Ave. (B.M. 1-C)

B.M.El. 30.935 – ☒ on S. curb 178th St. 24' W. of B.C.R. of Alley between Denker Ave. & La Salle Ave. (B.M. 2-C)

B.M.El. 34.410 – Nail & lead in winged square in S. curb 180th St. 30' W. of B.C.R of Alley between Denker Ave. & La Salle Ave. (B.M. 8-D-9)

1958 STORM DRAIN BOND ISSUE

REVISIONS		
MARK	DATE	DESCRIPTION
■	2-7-61	As Built

PD028229

CITY OF GARDENA
ENGINEERING DEPARTMENT

DESIGN : H.K. Hedlund
APPROVED : Charles Albert Smith CITY ENGINEER-ASST.
DATE : April, 1960

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

PROJECT NO. 432
GARDENA
LINE "C"
STA. 0+00 TO STA. 13+00
PLAN AND PROFILE

DRAWN BY Gardena | DESIGNED BY Gardena | APPROVED BY
TRACED BY Gardena | SUBMITTED BY R.B.R. | CHIEF ENGINEER
CHECKED BY | DIVISION ENGINEER (Design) | RECOMMENDED BY
SCALE AS SHOWN | DATE SEPT. '60 | NO. 275-432-D1.12
SHEET 12 OF 23

"AS BUILT" DRAWING

DIETZGEN 274PR IMPERIAL