
August, 2019
2018-349

Greenleaf Industrial

Greenleaf Avenue and Los Nietos Rd
City of Santa Fe Springs, CA

Preliminary LID Report

Prepared For:

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1. INTRODUCTION

Santa Fe Springs-Center Point is an existing industrial site that includes a facility and undeveloped land. A development project is proposed to construct an office building and parking area. This project is classified as a "Designated Project", specifically as a development project equal to one acre or greater of disturbed area and adding more than 10,000 square feet of impervious surface area. The project site will utilize flow-through planters to retain the SWQDv (Stormwater Quality Design Volume) calculated for the project site. It should be noted that based on geotechnical analyses the project would not be allowed to use infiltration based BMPs due to the fact that the in-situ soil is contaminated. Therefore, the use of infiltration type BMPs is not recommended for this project site. The project will be creating new impervious area for the entire project site. This will result in an LID Plan that must demonstrate that the entire project must be treated for water quality purposes.

2. PURPOSE & SCOPE

The purpose of the study is to determine the necessary drainage improvements and increased runoff mitigation improvements required for the project site. The project is proposing an industrial site that is located within the County of Los Angeles in the City of Santa Fe Springs. The project measures approximately 25 acres. The proposed project will consist of developing/re-developing a site that will consist of a new building and site plan.

The scope of the study includes the following;

1. Determination of flow concentrations and watershed subareas.
2. Determination of 25-year storm event flow rates proposed within the project area.
3. Determination of peak storm flows and hydrographs
4. Determine the limits if the storm drain required to flood protect the project site, and meet the City of Santa Fe Springs per Ordinance 653 and the LACDPW requirements for the 25-year storm events.
5. Determine the allowable flow rate for the project site that may be discharged into the existing storm drain system that is located within Greenleaf Ave. The allowable flow rate shall be requested from LACDPW.

3. PROJECT SITE AND DRAINAGE OVERVIEW

The project site is primarily vacant and the portion that is occupied will be redeveloped. 2.5 of the 25 acres is currently developed and will be redeveloped. The project site is bounded by Greenleaf Ave and Los Nietos as well as Santa Fe Springs Rd that runs parallel to Greenleaf Ave. The project site will consist of storm drains, Filterra Catch Basin inlets, Flow Planters, and Filterra Units for water quality and to intercept surface runoff, landscaped areas, and drive aisles. Based on the aerial image and site reconnaissance, the portion of the site that is not vacant is used as an industrial/fabrication site which would be redeveloped into new structure for industrial use. The current drainage condition displays a mild slope across the terrain that ranges from 0.5-2.0% at the towards the center of the site and increases around the edge to due the steep slopes around the surrounding properties. Terrain that slopes southwest of the site towards Greenleaf will demonstrate sheet flow that is directed into catch basins along the street. Currently, there have not been any

storm drains located on the site. Therefore, flows emanating from the project sheet flows into onto the street into a public storm drain maintained by the city which then is conveyed to a public storm drain maintained by LACFCD. The redevelopment of the site will implement the existing terrain to maximum extent practicable in order to perpetuate the drainage patterns that currently exists. Moreover, the project will implement flow planters in order to provide storage volume that will mitigate the post-project peak flow rates acceptable for LACDPW due to the connection that will discharge flows into an existing storm drain system. The major obstacle will be limiting the discharge into the public storm drain system. LACDPW has determined an allowable flow rate of 1.67 cfs/acre for subareas No 2, 2.72 cfs/acre for subareas No 2, and 1.33 cfs/acre for subareas No 3. The design solution incorporated for the project must provide a solution that will provide flood protection for the site and will not adversely impact the adjacent property owners.

4. HYDROLOGY

LACDDPW

LACDPW has determined the allowable discharge flow rate to be as follows:

- Areas within Subarea No. 2 Allowable Discharge Flow $Q=1.67$ cfs/acre
- Areas within Subarea No. 3 Allowable Discharge Flow $Q=2.72$ cfs/acre
- Areas within Subarea No. 4 Allowable Discharge Flow $Q=1.33$ cfs/acre

The allowable discharge rates listed above can be viewed in Appendix J as well as the subareas to determine the allowable discharge. After applying the discharge flow rates and applying the subareas, it was determined that the allowable discharge rate would be approximately 50 ft³/s.

Pre-Project Hydrology

A pre-project analysis was performed to evaluate the site to mitigate the increase in flow rate. LACDPW performs a runoff assessment of areas that drain into the storm drain infrastructure that is owned and operated by LACDPW. Based on the LACDPW assessment the project has yielded an approximate value of 2.18 ft³/s per acre of area. Refer to Appendix D for subarea assessment.

Post-Project Hydrology

Exhibit A in identifies the tributary areas for post project conditions. The exhibit establishes the drainage areas and the demonstrates the LID used for each area as well as how the flows well be conveyed throughout the system. A drainage was determined to display the proposed BMP's via catch basin inlet, flow planters, Filterra Units and storm drain systems. The proposed flow planters were essentially designed to capture and mitigate the project flow rates that would prevent the flow rate from exceeding the LACDPW Allowable Flow Rate. The BMP systems in place will serve as the following functions:

1. To treat the runoff for water quality purposes before discharging the flows into the proposed storm drain systems.
2. The catch basin inlets and flow planters will intercept the 25-year flow rate from the project site in order to provide adequate flood protection for the proposed building.

After a project assessment had been completed, it was determined that the total flow rate that would emanate from the from the project site would be approximately 60 ft³/s (Calculations in Appendix G). However, LACDPW has established an Allowable Flow Rate of 50 ft³/s to be

discharged into the existing storm drain system. Therefore, the project site will need to mitigate the excess onsite runoff and will provide more information during Final Engineering. The table below provides a summary of values:

Subarea	Drainage Area (acres)	Impervious Percentage (%)	25-Year Flow Rate (ft ³ /s)	Total Flow Rate (cfs)	Allowable Flow Rate (cfs)
A	5.67	86	13.69	59.44	50.63
B	16.71	97	40.35		
C	1.33	83	3.76		
D	0.63	41	1.64		

LACDPW has established an allowable flow rate of approximately 50.64 ft³/s that would be discharged into the existing public storm drain system. The project site would be responsible in mitigating the excess 10 ft³/s runoff via flow planters. The system would ensure that the flow rate not exceed the allowable flow rate to be discharged in order to prevent a potential impact on the storm drain system.

5. INFILTRATION FEASIBILITY

Based upon the geotechnical report included in Appendix A, the in-situ soil is contaminated. As a result, percolation/infiltration testing was not performed for the project since infiltration type BMPs would not be allowed for the project.

6. SOURCE CONTROL MEASURES

Source Control measures for the project site will be implemented. Per the Source Control Measures Selection Matrix for Development ≥ 1 acre and $\geq 10,000$ ft² new impervious area, the following source control measures are required:

Source Control Measure	Implemented?	If No, State Reason
Storm Drain Message and Signage (S-1)	Yes	
Outdoor Material Storage Area (S-2)	No	Project is not storing materials outside
Outdoor Trash Storage/Waste Handling Areas (S-3)	Yes	
Outdoor Loading/Unloading Dock Area (S-4)	Yes	
Outdoor Vehicle/Equipment Repair/Maintenance Area (S-5)	No	Project does not incorporate outdoor vehicle/equipment repair/maintenance areas

Outdoor Vehicle/Equipment Accessory Wash Area (S-6)	No	Project does not incorporate vehicle/equipment accessory wash areas
Fuel & Maintenance (S-7)	No	Project does not incorporate fuel or maintenance areas of any kind
Landscape Irrigation Practices (S-8)	Yes	
Building Materials (S-9)	No	Project does not incorporate building materials
Animal Care and Handling Facilities (S-10)	No	Project does not incorporate animal care and handling facilities
Outdoor Horticulture Area (S-11)	No	Project does not include Horticulture Areas

The project site will incorporate signage on the proposed planter inlets and trash receptacle areas stating "no dumping of hazardous waste" or similar. The landscaped areas will incorporate drip irrigation or similar to prevent excess runoff.

7. PROJECT SITE AND DRAINAGE AREA OVERVIEW

The project site is approximately 25.13 acres and 2.4 acres will be redeveloped due to the existing developed property. Filterra Catch Basins

8. CALCULATION OF THE SWQDV

The Stormwater Quality Design Volume (SWQDV) was calculated using the 85th Percentile, 24-hour rain event as determined by the Los Angeles County 85th percentile precipitation isohyetal map since this value is 0.97 inch, as compared to 0.75 inch. The Low Impact Development Standards Manual states that the larger value of 0.75 inch or the 85th percentile, 24-hour rain event value shall be utilized. Therefore, the 0.97 inch rainfall value was utilized in the HydroCalc program to determine a flow rate and volume. The parameters required to assess the project flow rate have been identified on Exhibit B and Exhibit D and are as follows:

- Longest flow path
- Slope of the flow path based on design grades
- Soil Classification of 013 which was obtained from the Los Angeles County Hydrology Manual (see Appendix B)
- 85th Percentile, 24-Hour Rainfall of 0.97 inch, obtained from the Hydrology GIS (see Appendix C)
- Impervious fraction of the drainage areas tributary to each flow-through planter.
- The drainage area of each sub-watershed for the project site.

The improvements consist of the construction of a building approximately 213,956 ft², asphalt and concrete drive aisle, and landscaped area that is approximately 84,583 ft². The overall impervious percentage of the project is 92%. Accounting for the land cover area where done on Exhibit A by measuring the impervious and pervious surfaces. The table below provides a breakdown of the impervious and pervious percentage of the proposed surface areas per subarea:

Table 1 – Land Cover Map for Plant Basin Inlet

Subarea	Drainage Area (Ft ²)	Drainage Area (AC)	Required Mitigated Volume (Ft ³)	Impervious Percentage	Pervious Percentage	85% Flow Rate (ft ³ /s)
A	246,797	5.67	71,212	86%	14%	1.19
B	727,856	16.71		97%	3%	4.05
C	57,890	1.33		83%	17%	0.34
D	27,283	0.63		41%	59%	0.02

Note: Impervious surface include building rooftop, AC pavement, concrete pavement, concrete sidewalk, and other hardscape surfaces

The HydroCalc Rational Method was used to compute a flow rate which has been provided in Table 1. Additionally, the total Stormwater Quality Volume for the 24.3-acre area resulted in a 24-hour Runoff Volume of **71,212 ft³ (1.6349 ac-ft)** and has been included in Appendix E. This value is utilized for the Stormwater Quality Design Volume.

9. HARVEST AND USE FEASIBILITY

The project site is a redevelopment of an existing site, therefore, implementing harvest and use for the project is not feasible.

10. STORMWATER QUALITY CONTROL MEASURES

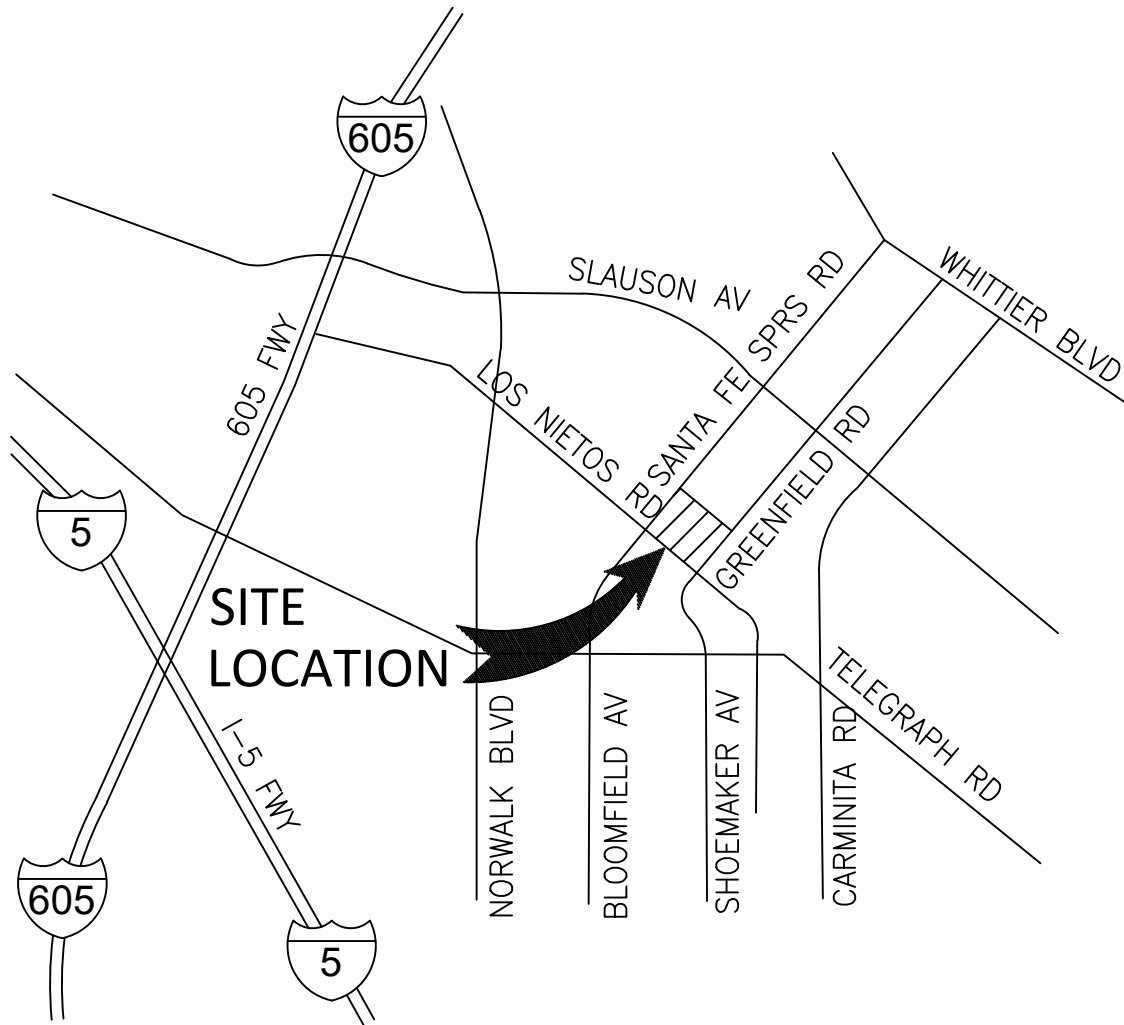
The project site will use flow-through planters to provide a bio-filtration treatment and a subsurface system to store and mitigate the Stormwater Quality volume in a similar fashion as an extended detention basin. Filterra Units will also be implemented on both the north and south end of the building to treat water low flow or treatment flow prior to the public storm drain. A total of Runoff Volume of 72,212 ft³ must be treated. Due to the constraints associated with the in-situ soil the proposed design will implement a design that would function similar to the Storm Water Quality Control Measure shown on Table 7-1 of the Low Impact Development Standards Manual by implementing the use of flow-through planters (VEG-1 & T-6) and a subsurface basin that will store the SWQDv of 85,362 ft³ that will also function as an extended detention basin (T-3). Infiltration type Storm Water Quality Control Measure could not be used due to the soil contamination that exist on-site.

11. PROPOSED MAINTENANCE PLAN

A maintenance plan will be prepared during final engineering.

FIGURES

FIGURE 1: VICINITY MAP



VICINITY MAP

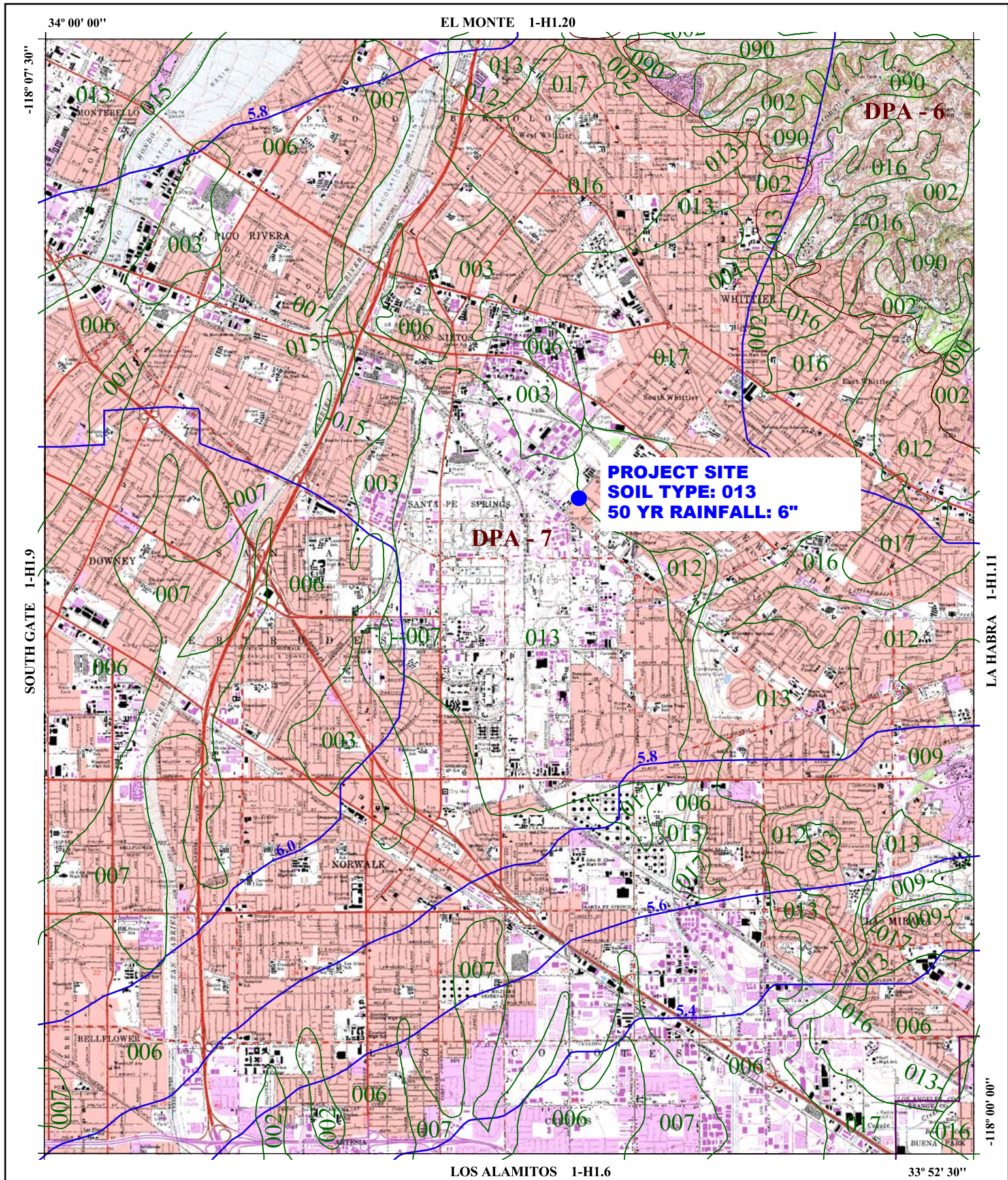
APPENDICES

APPENDIX A

GEOTECHNICAL REPORT

APPENDIX B

50 YEAR RAINFALL MAP AND SOIL CLASSIFICATION



016 SOIL CLASSIFICATION AREA
7.2 INCHES OF RAINFALL
DPA - 6 DEBRIS POTENTIAL AREA

1 0 1 2 Miles
25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

WHITTIER 50-YEAR 24-HOUR ISOHYET

1-H1.10



APPENDIX C

85TH PERCENTILE, 24-HOUR RAINFALL

APPENDIX D

85TH PERCENTILE (PRE)

*CALCULATIONS FOR REFERENCE ONLY

Peak Flow Hydrologic Analysis

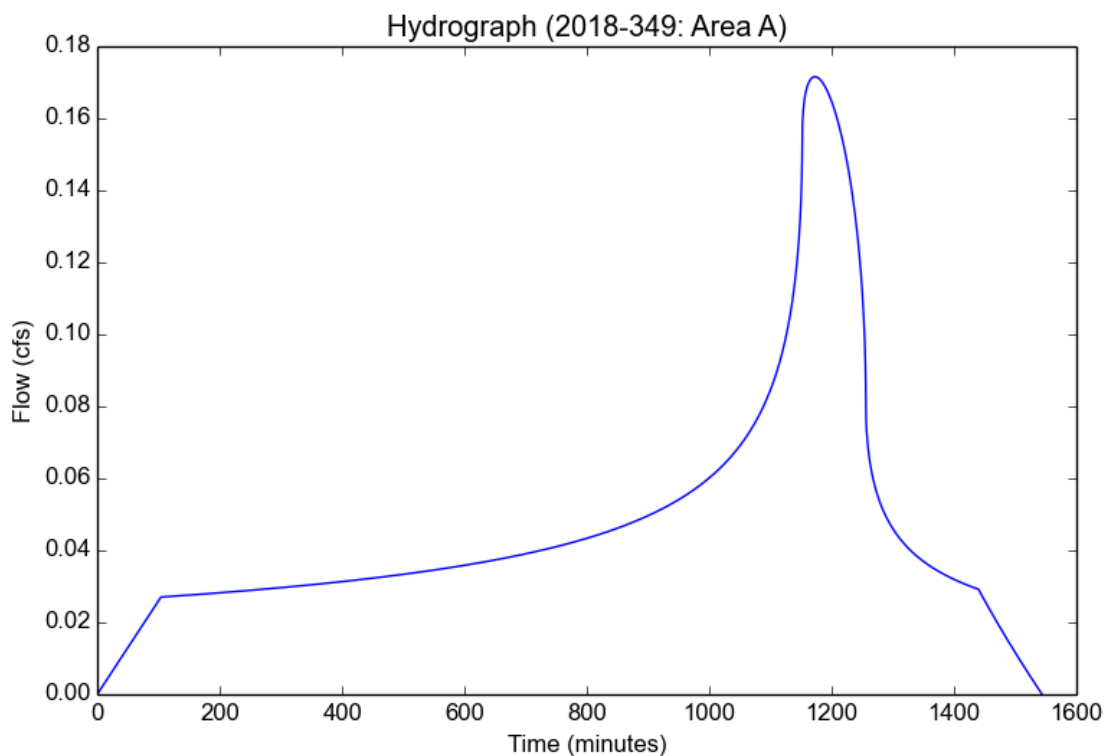
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	2018-349
Subarea ID	Area A
Area (ac)	11.43
Flow Path Length (ft)	633.0
Flow Path Slope (vft/hft)	0.021327
85th Percentile Rainfall Depth (in)	0.97
Percent Impervious	0.01
Soil Type	13
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.97
Peak Intensity (in/hr)	0.139
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	104.0
Clear Peak Flow Rate (cfs)	0.1716
Burned Peak Flow Rate (cfs)	0.1716
24-Hr Clear Runoff Volume (ac-ft)	0.099
24-Hr Clear Runoff Volume (cu-ft)	4311.2894



Peak Flow Hydrologic Analysis

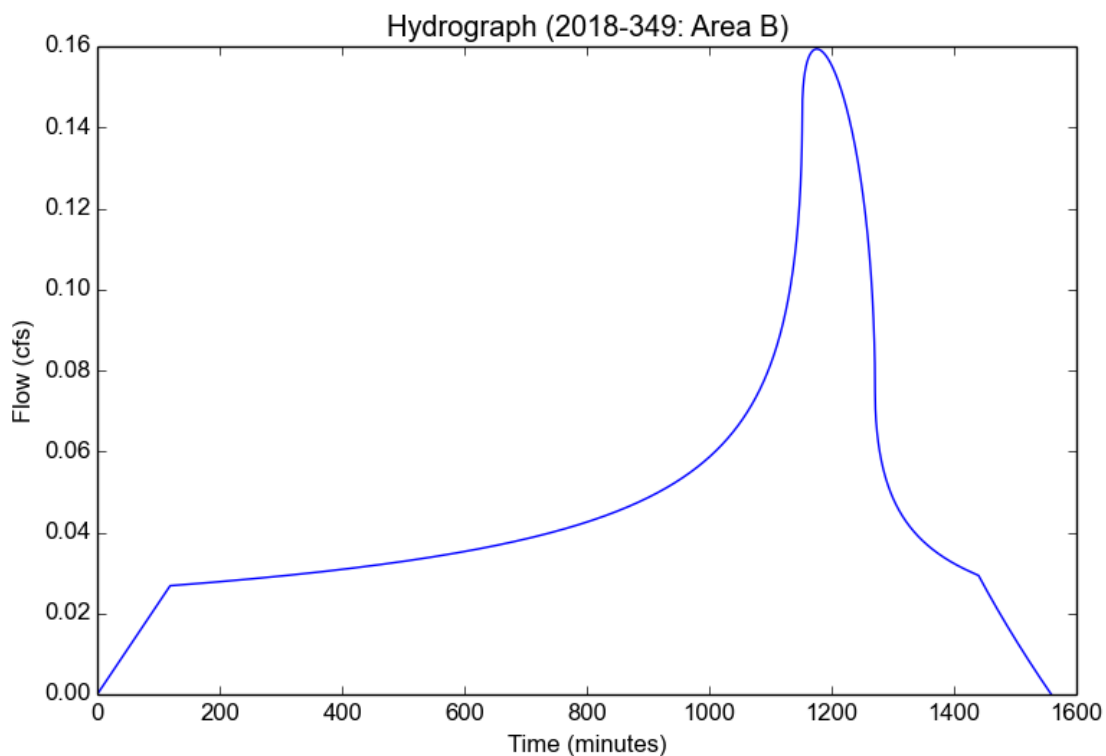
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	2018-349
Subarea ID	Area B
Area (ac)	11.31
Flow Path Length (ft)	770.0
Flow Path Slope (vft/hft)	0.020286
85th Percentile Rainfall Depth (in)	0.97
Percent Impervious	0.01
Soil Type	13
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.97
Peak Intensity (in/hr)	0.1305
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	119.0
Clear Peak Flow Rate (cfs)	0.1594
Burned Peak Flow Rate (cfs)	0.1594
24-Hr Clear Runoff Volume (ac-ft)	0.0979
24-Hr Clear Runoff Volume (cu-ft)	4266.2262



Peak Flow Hydrologic Analysis

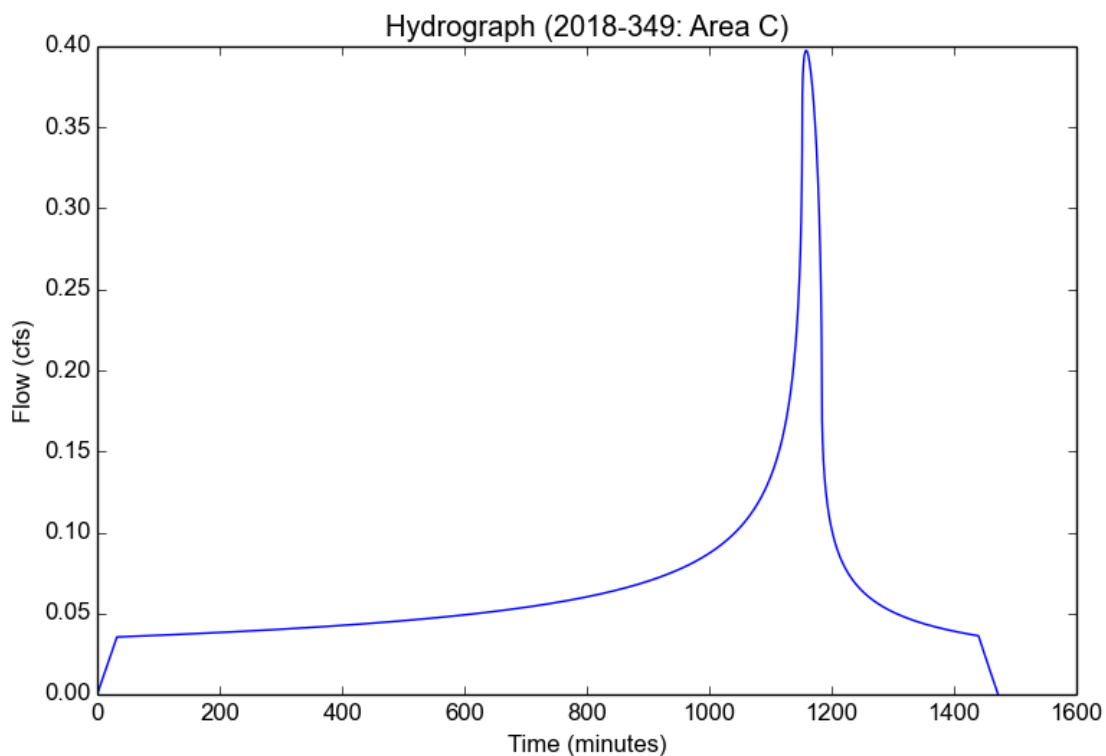
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	2018-349
Subarea ID	Area C
Area (ac)	2.46
Flow Path Length (ft)	606.0
Flow Path Slope (vft/hft)	0.012474
85th Percentile Rainfall Depth (in)	0.97
Percent Impervious	0.71
Soil Type	13
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.97
Peak Intensity (in/hr)	0.2419
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.668
Time of Concentration (min)	32.0
Clear Peak Flow Rate (cfs)	0.3974
Burned Peak Flow Rate (cfs)	0.3974
24-Hr Clear Runoff Volume (ac-ft)	0.1317
24-Hr Clear Runoff Volume (cu-ft)	5738.4088



APPENDIX E

85TH PERCENTILE (POST)

*CALCULATIONS FOR REFERENCE ONLY

Peak Flow Hydrologic Analysis

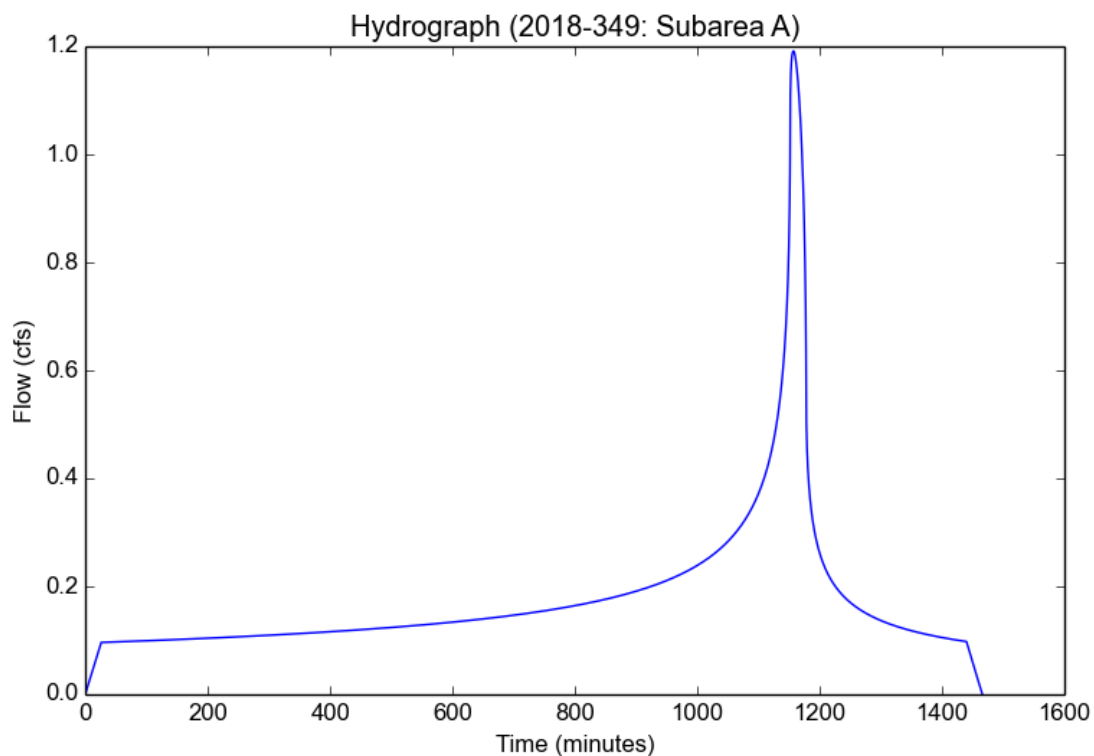
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	2018-349
Subarea ID	Subarea A
Area (ac)	5.67
Flow Path Length (ft)	577.0
Flow Path Slope (vft/hft)	0.0169
85th Percentile Rainfall Depth (in)	0.97
Percent Impervious	0.86
Soil Type	13
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.97
Peak Intensity (in/hr)	0.2667
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.788
Time of Concentration (min)	26.0
Clear Peak Flow Rate (cfs)	1.1914
Burned Peak Flow Rate (cfs)	1.1914
24-Hr Clear Runoff Volume (ac-ft)	0.3582
24-Hr Clear Runoff Volume (cu-ft)	15602.2505



Peak Flow Hydrologic Analysis

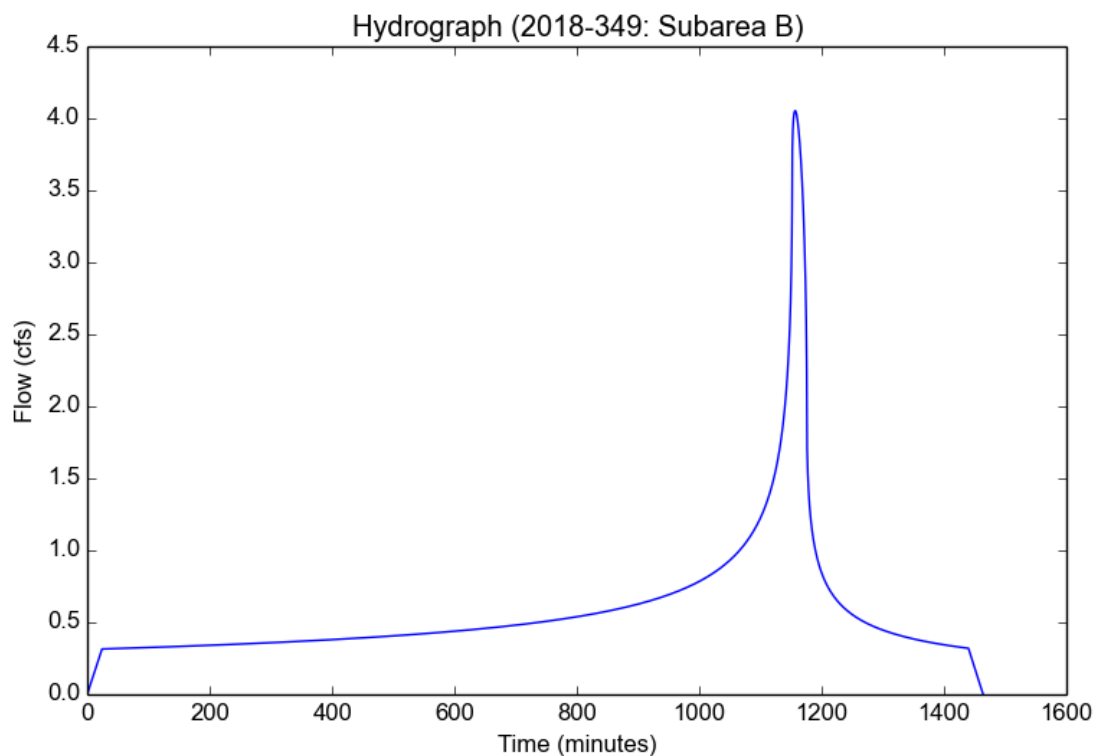
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	2018-349
Subarea ID	Subarea B
Area (ac)	16.71
Flow Path Length (ft)	881.0
Flow Path Slope (vft/hft)	0.086
85th Percentile Rainfall Depth (in)	0.97
Percent Impervious	0.97
Soil Type	13
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.97
Peak Intensity (in/hr)	0.2769
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.876
Time of Concentration (min)	24.0
Clear Peak Flow Rate (cfs)	4.053
Burned Peak Flow Rate (cfs)	4.053
24-Hr Clear Runoff Volume (ac-ft)	1.1735
24-Hr Clear Runoff Volume (cu-ft)	51116.1305



Peak Flow Hydrologic Analysis

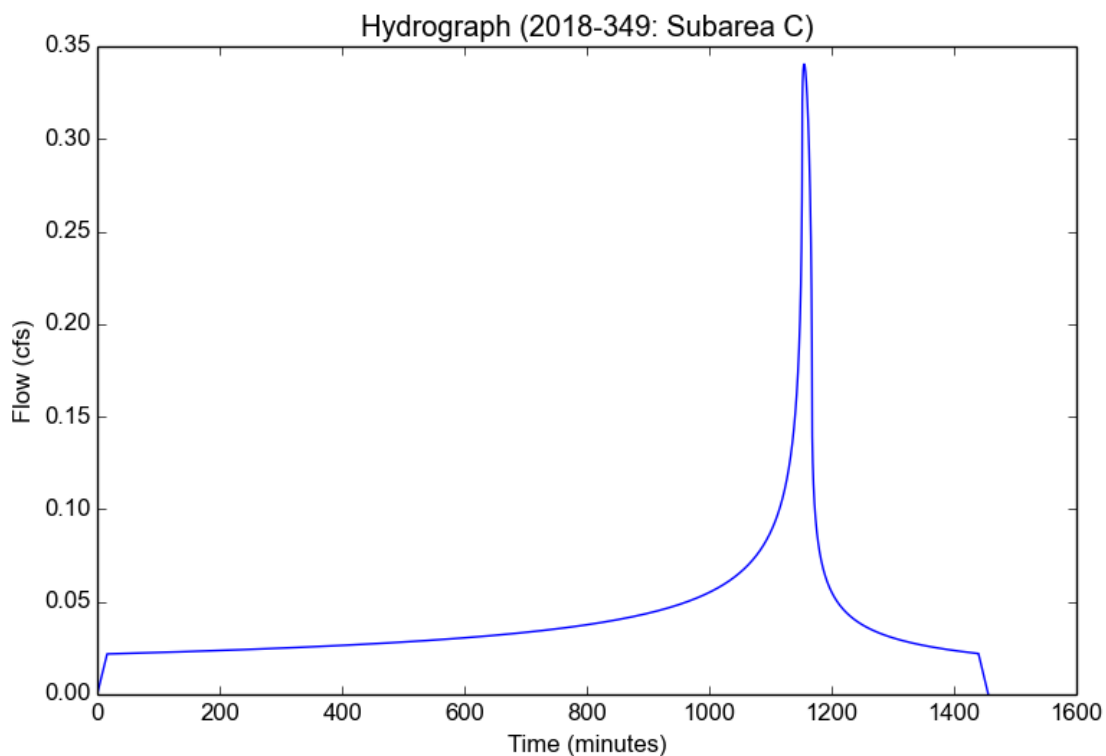
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	2018-349
Subarea ID	Subarea C
Area (ac)	1.33
Flow Path Length (ft)	312.0
Flow Path Slope (vft/hft)	0.0339
85th Percentile Rainfall Depth (in)	0.97
Percent Impervious	0.83
Soil Type	13
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.97
Peak Intensity (in/hr)	0.335
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.764
Time of Concentration (min)	16.0
Clear Peak Flow Rate (cfs)	0.3404
Burned Peak Flow Rate (cfs)	0.3404
24-Hr Clear Runoff Volume (ac-ft)	0.0815
24-Hr Clear Runoff Volume (cu-ft)	3548.3025



Peak Flow Hydrologic Analysis

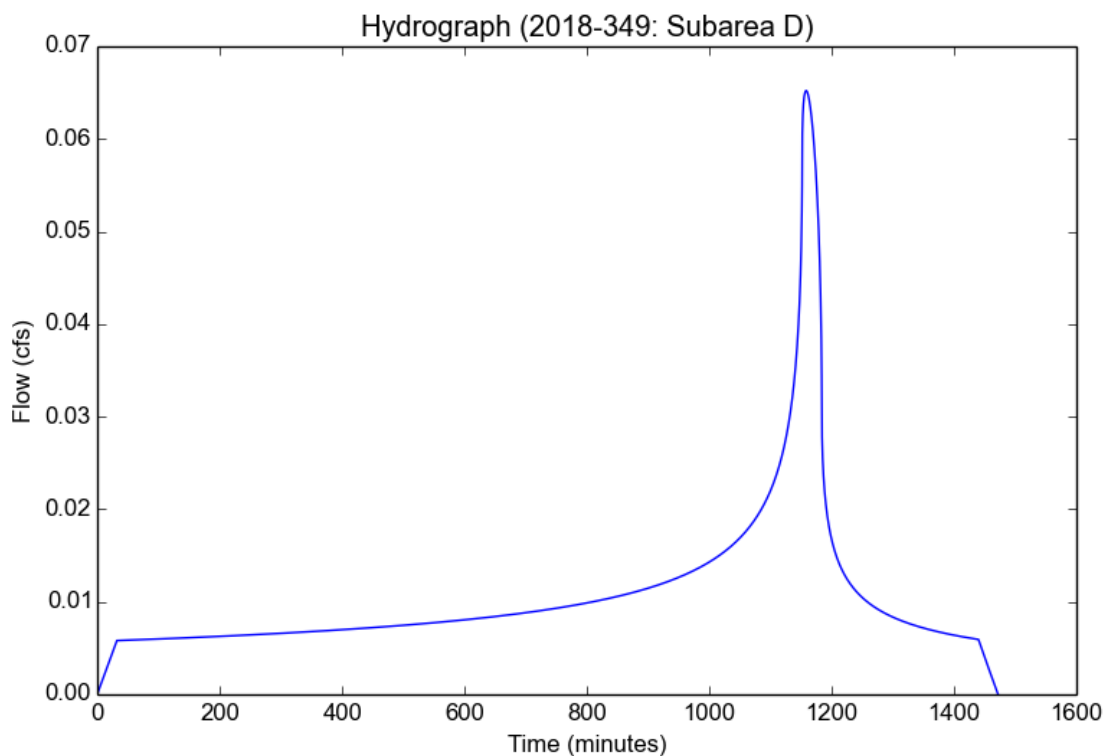
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	2018-349
Subarea ID	Subarea D
Area (ac)	0.63
Flow Path Length (ft)	398.0
Flow Path Slope (vft/hft)	0.0142
85th Percentile Rainfall Depth (in)	0.97
Percent Impervious	0.41
Soil Type	13
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.97
Peak Intensity (in/hr)	0.2419
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.428
Time of Concentration (min)	32.0
Clear Peak Flow Rate (cfs)	0.0652
Burned Peak Flow Rate (cfs)	0.0652
24-Hr Clear Runoff Volume (ac-ft)	0.0216
24-Hr Clear Runoff Volume (cu-ft)	941.5952



APPENDIX F
25 YEAR STORM EVENT (PRE)
*CALCULATIONS FOR REFERENCE ONLY

Peak Flow Hydrologic Analysis

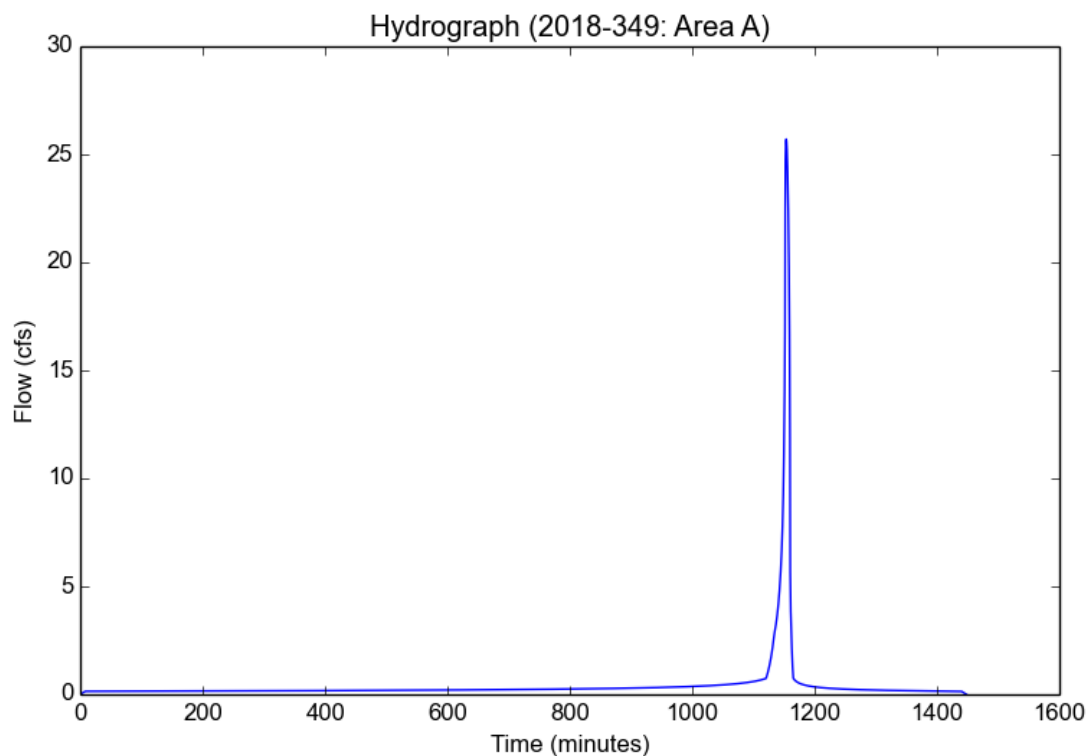
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	2018-349
Subarea ID	Area A
Area (ac)	11.43
Flow Path Length (ft)	633.0
Flow Path Slope (vft/hft)	0.021327
50-yr Rainfall Depth (in)	6.0
Percent Impervious	0.01
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.268
Peak Intensity (in/hr)	2.5201
Undeveloped Runoff Coefficient (Cu)	0.8923
Developed Runoff Coefficient (Cd)	0.8924
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	25.7057
Burned Peak Flow Rate (cfs)	25.7057
24-Hr Clear Runoff Volume (ac-ft)	0.9003
24-Hr Clear Runoff Volume (cu-ft)	39217.4293



Peak Flow Hydrologic Analysis

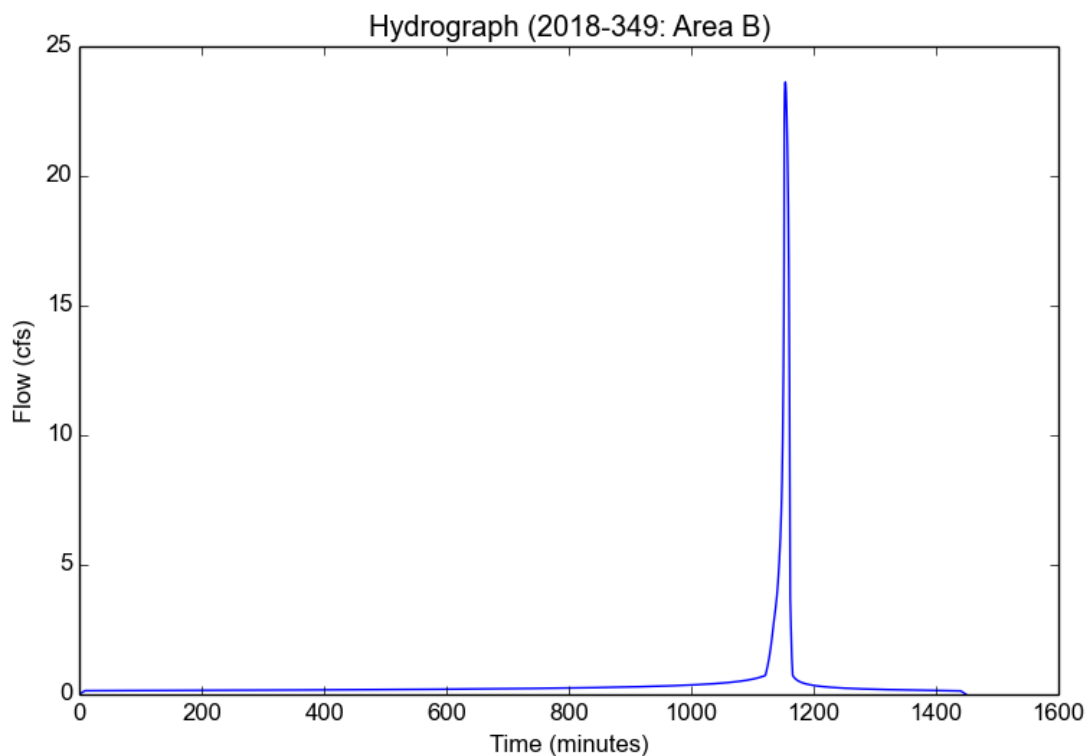
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	2018-349
Subarea ID	Area B
Area (ac)	11.31
Flow Path Length (ft)	770.0
Flow Path Slope (vft/hft)	0.020286
50-yr Rainfall Depth (in)	6.0
Percent Impervious	0.01
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.268
Peak Intensity (in/hr)	2.3844
Undeveloped Runoff Coefficient (Cu)	0.8757
Developed Runoff Coefficient (Cd)	0.876
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	23.6222
Burned Peak Flow Rate (cfs)	23.6222
24-Hr Clear Runoff Volume (ac-ft)	0.89
24-Hr Clear Runoff Volume (cu-ft)	38767.1904



Peak Flow Hydrologic Analysis

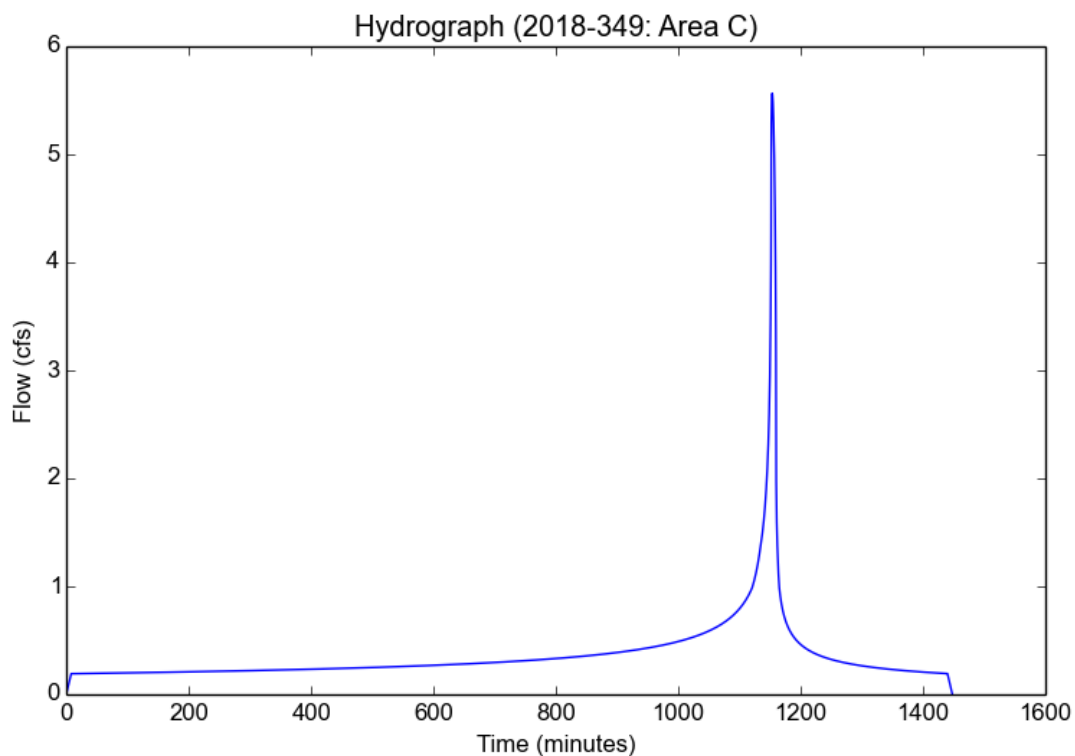
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	2018-349
Subarea ID	Area C
Area (ac)	2.46
Flow Path Length (ft)	606.0
Flow Path Slope (vft/hft)	0.012474
50-yr Rainfall Depth (in)	6.0
Percent Impervious	0.71
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.268
Peak Intensity (in/hr)	2.5201
Undeveloped Runoff Coefficient (Cu)	0.8923
Developed Runoff Coefficient (Cd)	0.8978
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	5.5657
Burned Peak Flow Rate (cfs)	5.5657
24-Hr Clear Runoff Volume (ac-ft)	0.7383
24-Hr Clear Runoff Volume (cu-ft)	32161.0249



APPENDIX G
25 YEAR STORM EVENT (POST)
*CALCULATIONS FOR REFERENCE ONLY

Peak Flow Hydrologic Analysis

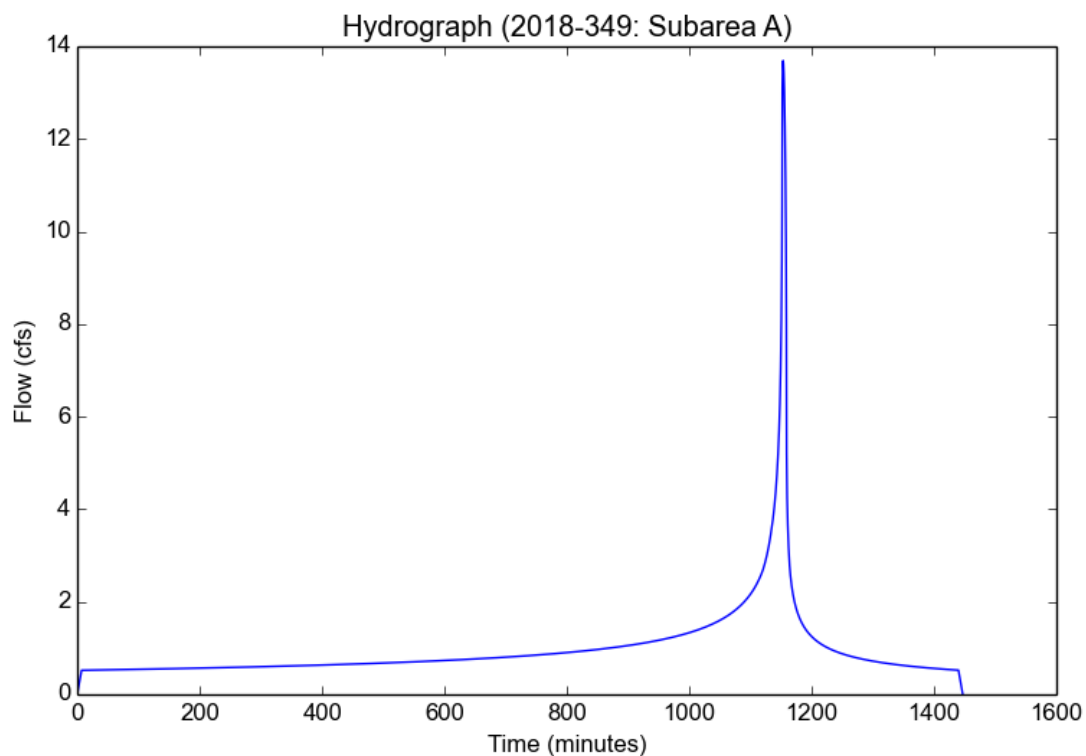
File location: P:\Year_2018\2018-349 Santa Fe Springs Entitlements-Prelim Engineering-CenterPoint-John Lass\05 Engineering\Reports\HYDROLOGY\
Version: HydroCalc 1.0.3

Input Parameters

Project Name	2018-349
Subarea ID	Subarea A
Area (ac)	5.67
Flow Path Length (ft)	577.0
Flow Path Slope (vft/hft)	0.0169
50-yr Rainfall Depth (in)	6.0
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)	5.268
Peak Intensity (in/hr)	2.6833
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	13.6929
Burned Peak Flow Rate (cfs)	13.6929
24-Hr Clear Runoff Volume (ac-ft)	1.9707
24-Hr Clear Runoff Volume (cu-ft)	85842.1254



Peak Flow Hydrologic Analysis

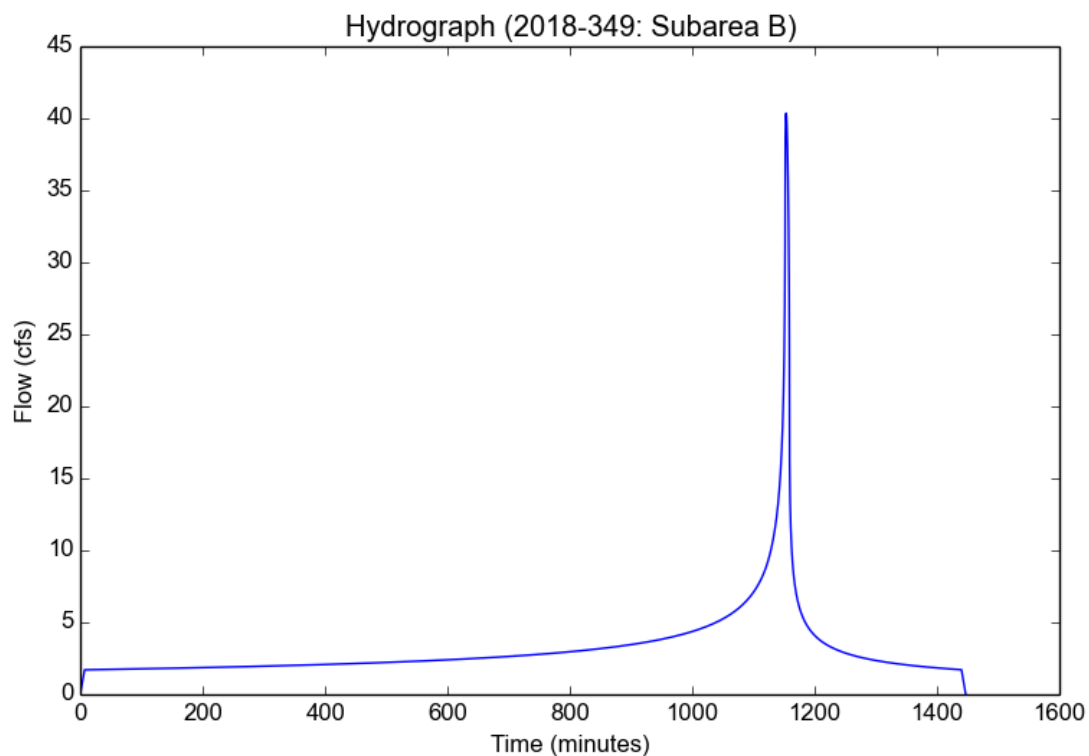
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	2018-349
Subarea ID	Subarea B
Area (ac)	16.71
Flow Path Length (ft)	881.0
Flow Path Slope (vft/hft)	0.086
50-yr Rainfall Depth (in)	6.0
Percent Impervious	0.97
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.268
Peak Intensity (in/hr)	2.6833
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	40.3541
Burned Peak Flow Rate (cfs)	40.3541
24-Hr Clear Runoff Volume (ac-ft)	6.389
24-Hr Clear Runoff Volume (cu-ft)	278305.9446



Peak Flow Hydrologic Analysis

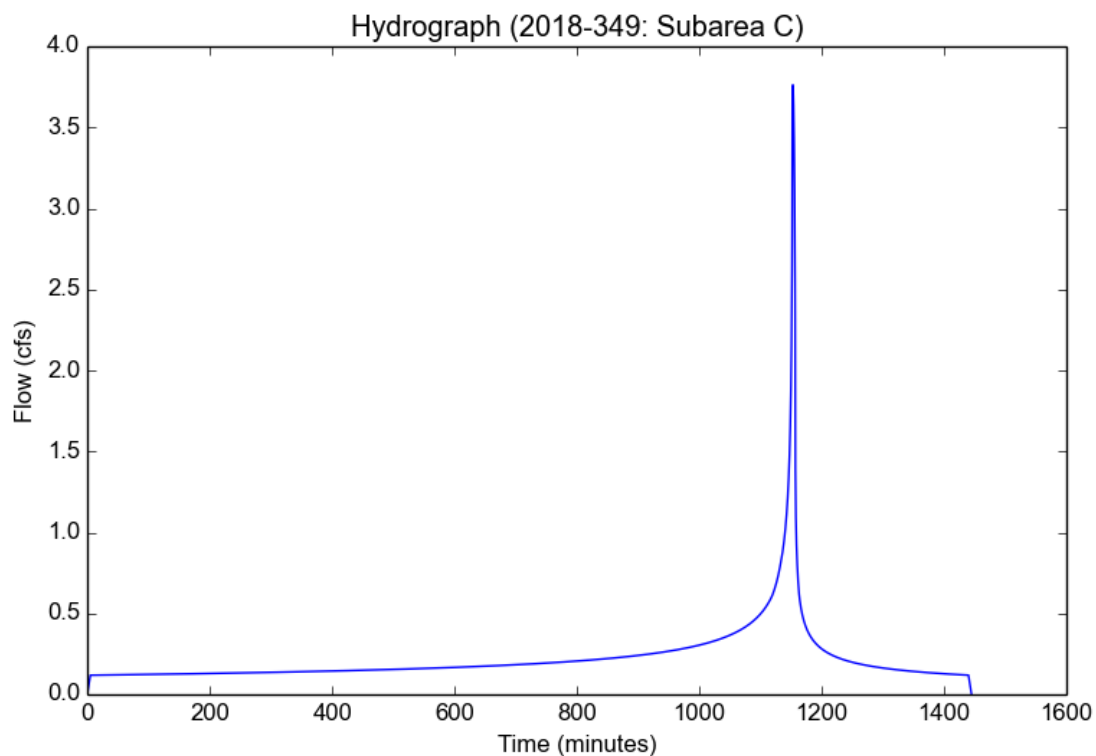
File location: P:\Year_2018\2018-349 Santa Fe Springs Entitlements-Prelim Engineering-CenterPoint-John Lass\05 Engineering\Reports\HYDROLOGY\
Version: HydroCalc 1.0.3

Input Parameters

Project Name	2018-349
Subarea ID	Subarea C
Area (ac)	1.33
Flow Path Length (ft)	312.0
Flow Path Slope (vft/hft)	0.0339
50-yr Rainfall Depth (in)	6.0
Percent Impervious	0.83
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.268
Peak Intensity (in/hr)	3.143
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.7622
Burned Peak Flow Rate (cfs)	3.7622
24-Hr Clear Runoff Volume (ac-ft)	0.4495
24-Hr Clear Runoff Volume (cu-ft)	19581.9619



Peak Flow Hydrologic Analysis

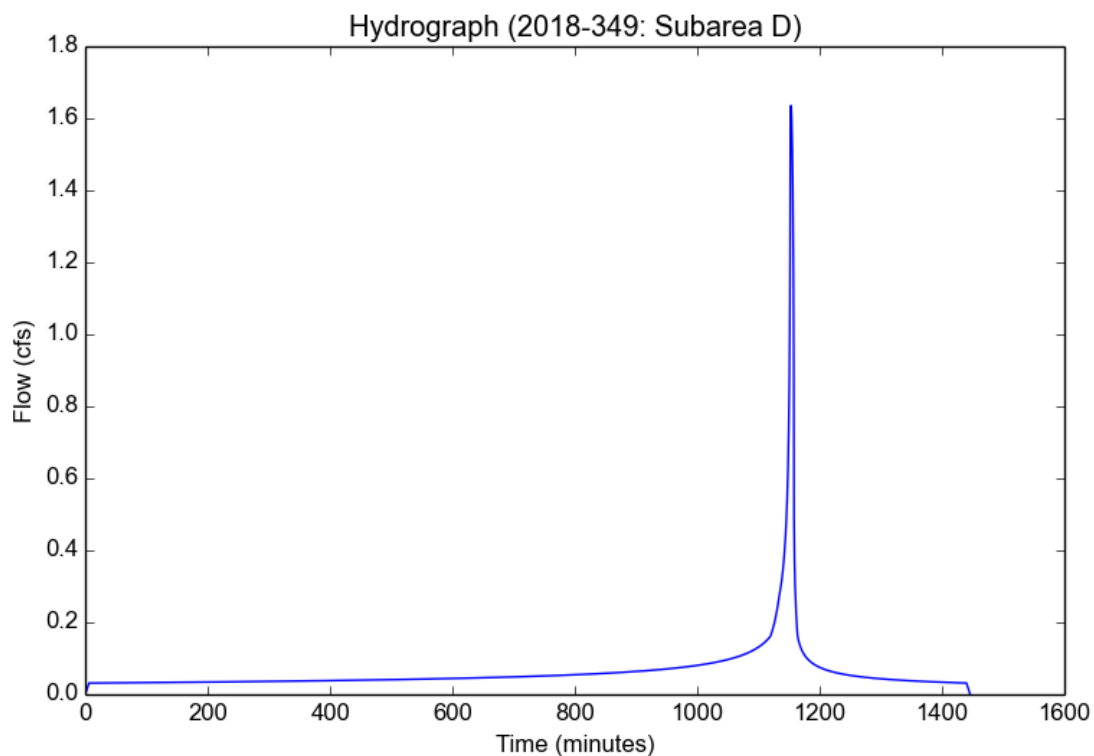
File location: P:\Year_2018\2018-349 Santa Fe Springs Entitlements-Prelim Engineering-CenterPoint-John Lass\05 Engineering\Reports\HYDROLOGY/
Version: HydroCalc 1.0.3

Input Parameters

Project Name	2018-349
Subarea ID	Subarea D
Area (ac)	0.63
Flow Path Length (ft)	398.0
Flow Path Slope (vft/hft)	0.0142
50-yr Rainfall Depth (in)	6.0
Percent Impervious	0.41
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.268
Peak Intensity (in/hr)	2.8849
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	1.6357
Burned Peak Flow Rate (cfs)	1.6357
24-Hr Clear Runoff Volume (ac-ft)	0.1292
24-Hr Clear Runoff Volume (cu-ft)	5629.6587



APPENDIX H

HYDROMODIFICATION CALCULATION
(TO BE PREPARED DURING FINAL ENGINEERING)

APPENDIX I
MAINTENANCE PLAN
(TO BE PREPARED DURING FINAL ENGINEERING)

APPENDIX J

REFERENCE DOCUMENTS

* FOR REFERENCE ONLY



LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS
DESIGN DIVISION – HYDRAULIC ANALYSIS UNIT

Office Use Only
☐ Sent Initials: _____
☐ Fax ☒ Email ☐ Other: _____
Date: _____ Time: _____

INFORMATION REQUEST SUMMARY

INFORMATION REQUESTED BY

*Requester's Name: Jorge Garcia
Company: WestLAND Group, Inc
*Phone Number: 909-989-9789 Ext. 299 Fax Number: _____
*Email: JGarcia@westlandgroup.net

Method of Contact: ☐ Walk-in ☐ Phone ☐ Fax ☒ Email ☐ Prelim. Mtg. Date: 6/24/19

Intended Use: For design and consideration purposes

Proposed Project Type: Redevelopment Project/Industrial Acreage Involved: 25.13

*Will information be used in any litigation? ☐ YES ☒ NO
Case Info. Name: _____ No: _____ Location: _____

INFORMATION REQUESTED (Attach Assessor Map)

LACFCD Facility: Name: BI 9008 - Santa Fe Springs
Unit: 1 Line: BI 9008 Station: 40+00 - 49+00
City: Santa Fe Springs
*Street/Cross-street: Los Nietos Road and Greenleaf Avenue
*Thomas Guide: Page: 707 Grid: A3, A4, B3 ☒ Site Map/Plans Submitted
Info. Requested: Requesting design flow rates and allowable flow rate for project

*Required Information. See Page 2 of 2 for Instructions.

BELOW SECTION TO BE COMPLETED BY THE HYDRAULIC ANALYSIS UNIT

INFORMATION PROVIDED:

Hydrology Data, Hydraulic Calculation, As Built Drawings, and Allowable Discharge Flows

LOCATION MAP.

REFERENCES SEARCHED:

Project No. 9008 Files and Drawing No. 470-9008-D3.1 to D3.8

COMMENTS, ETC:

- 1- Areas within Subarea No. 2 Allowable Discharge Flow $Q=60/36=1.67\text{cfs/acre}$.
- 2- Areas within Subarea No. 3 Allowable Discharge Flow $Q=30/11=2.72\text{cfs/acre}$.
- 3- Areas within Subarea No. 4 Allowable Discharge Flow $Q=40/30=1.33\text{cfs/acre}$.
- 4- To obtain Hydraulic Grade Line Elevation see attached Hydraulic Calculation Sheet.

5- See attached Location Map to obtain Subarea boundary.

INFORMATION PROVIDED BY: George K Aintablian

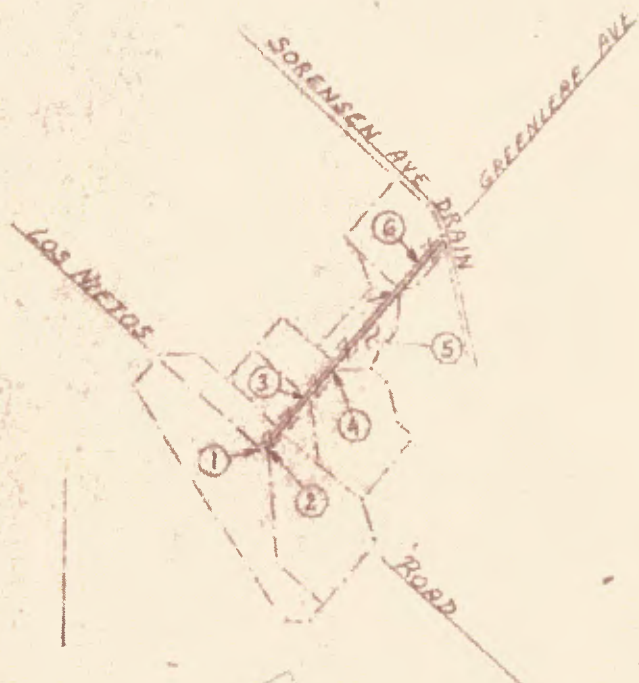
Date: 07/10/2019

INFORMATION REVIEWED BY:

Date:

Print

Save a Copy



REACH	Q IN CFS
1-2	130
2-3	150
3-4	200
4-5	200
5-6	230
6 - Jct with SORENSON DR	230
SORENSON AVE DRAIN	230

COUNTY OF LOS ANGELES
 DEPARTMENT OF PUBLIC WORKS
 DESIGN DIVISION
 Hydraulic Analysis Unit
 OFFICIAL
 RECORD DOCUMENT
 Issued By: *George Ambler*
 Date: *7/10/2019*
 Public Service That Works

LEGEND
 ○ → SUBAREA AND CONCENTRATION PT
 ——— PROJECT DRAIN
 - - - WATERSHED BOUNDARY

WHITTIER QUAD

PREPARED GVO-C	LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
DATE 12-22-70	1970 BOND ISSUE PROJECT 9008
SCALE 1" = 2000'	10 YEAR Q

Channel Design Data

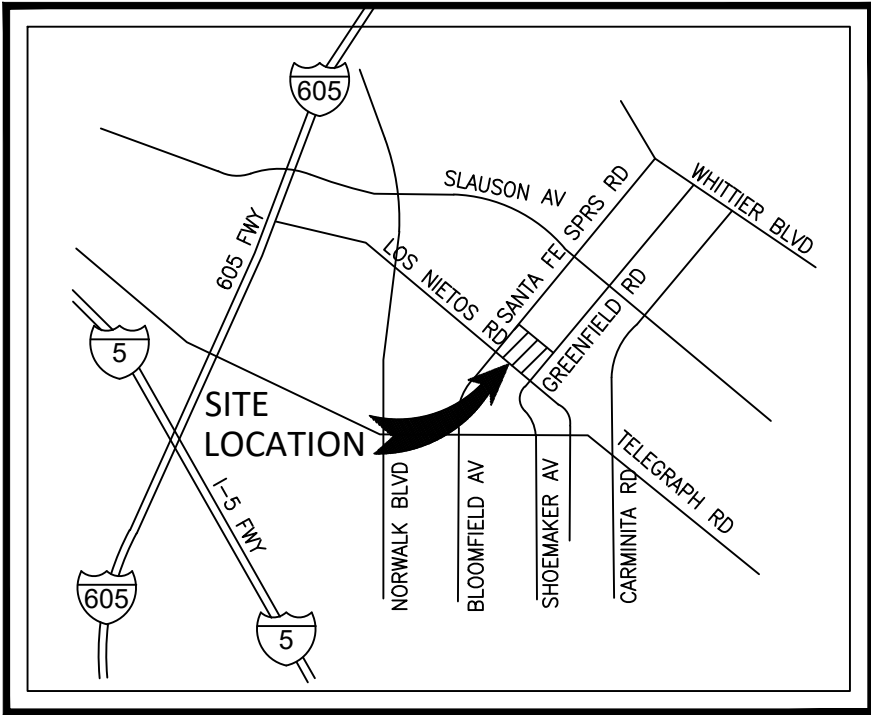
Date December 30, 1970

[illegible]

EXHIBITS

EXHIBIT A
LID SITE PLAN AND DRAINAGE FACILITIES MAP

CITY OF SANTA FE SPRINGS
LID SITE PLAN AND DRAINAGE FACILITES MAP
INUSTRIAL- CENTERPOINT
POST-DEVELOPED CONDITION



VICINITY MAP

LEGEND:

- DRAINAGE AREA BOUNDARY (DMA A)
- SUB-DRAINAGE AREA BOUNDARY
- 100 YEAR FEMA FLOODPLAIN BOUNDARY
- STORM DRAIN
- STORM DRAIN FLOW PATH
- BUILDING
- LANDSCAPE AREA
- FLOW PLANTER AREA
- PROPOSED FLOW DIRECTION ARROW
- A X-XXX DRAINAGE SUB AREA DESIGNATION AREA (AC)
- 3 STREAM #
- HP, LP HIGH POINT, LOW POINT

HYDROLOGY INFORMATION

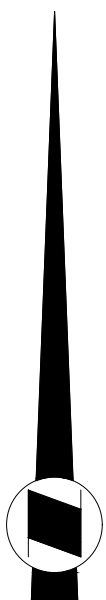
SITE AREA:	25.19 ACRES
SOIL TYPE:	013
85TH PERCENTILE RAINFALL:	0.97 INCH
50 YR RAINFALL:	6 INCH

DRAINAGE NOTES:

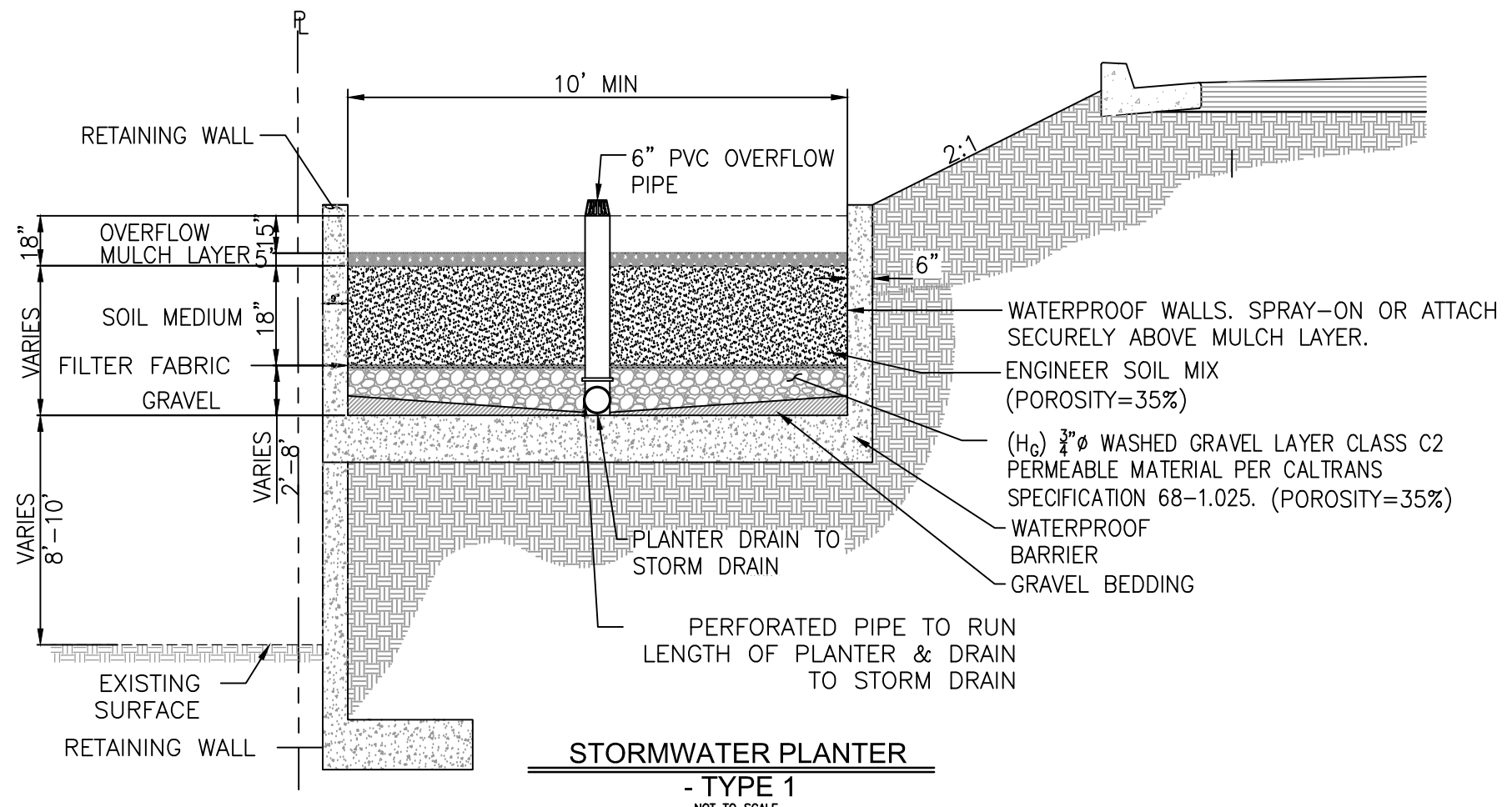
1	PROPOSED CATCH BASING WITH FILTER INSERT
2	PROPOSED STORM DRAIN PIPE PRIVATE MAINTAINED
3	PROPOSED LID BMP- STORM WATER PLANTER
4	PROPOSED LID BMP- FILTERRA BIORETENTION

NOTE:

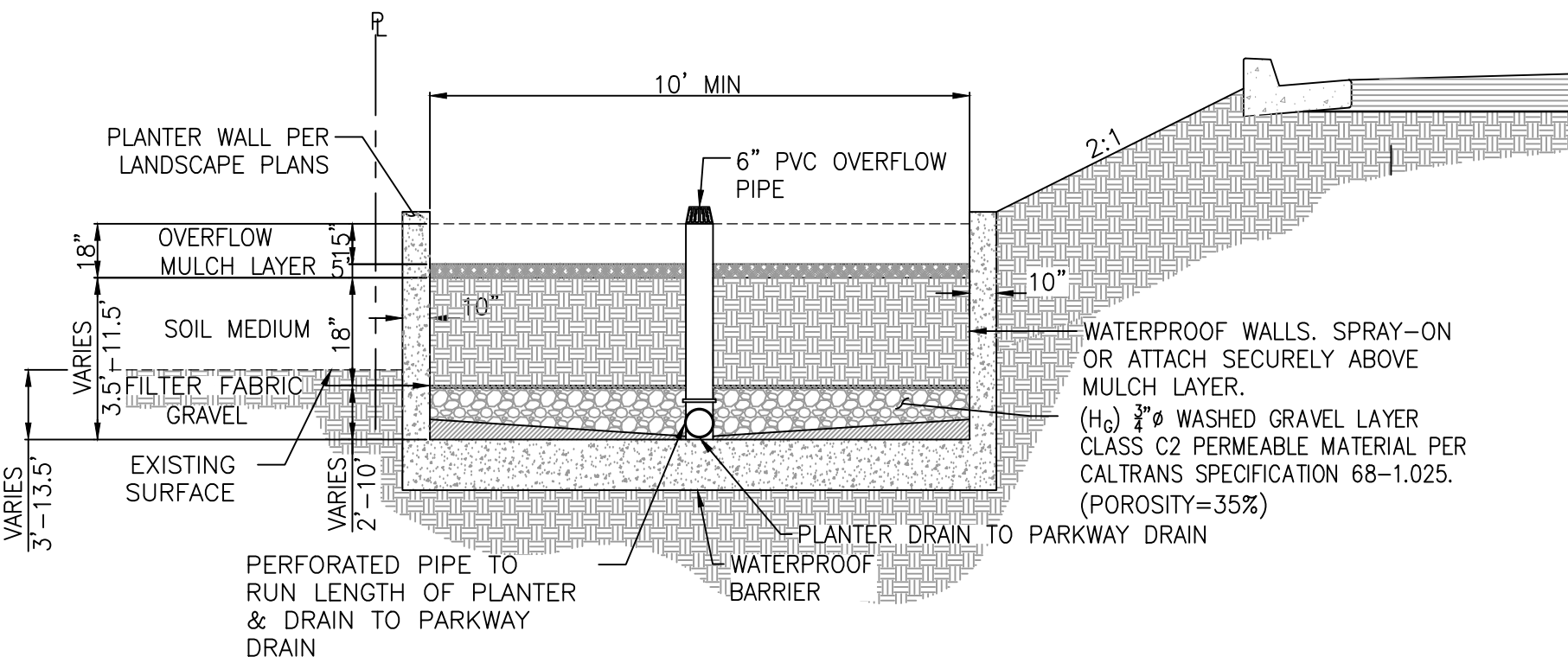
- ALL ON-SITE STORM DRAINS ARE PRIVATE STORM DRAIN SYSTEMS, NOT TO BE MAINTAINED BY THE CITY OF ONTARIO.
- ALL ON-SITE BMP'S & UNDERGROUND INFILTRATION SYSTEMS TO BE MAINTAINED BY OWNER.
- CONTRACTOR SHALL VERIFY INFILTRATION RATES WITH SOILS ENGINEERS AFTER GRADING OPERATIONS AND PRIOR TO INSTALLATION OF UNDERGROUND INFILTRATION SYSTEM.



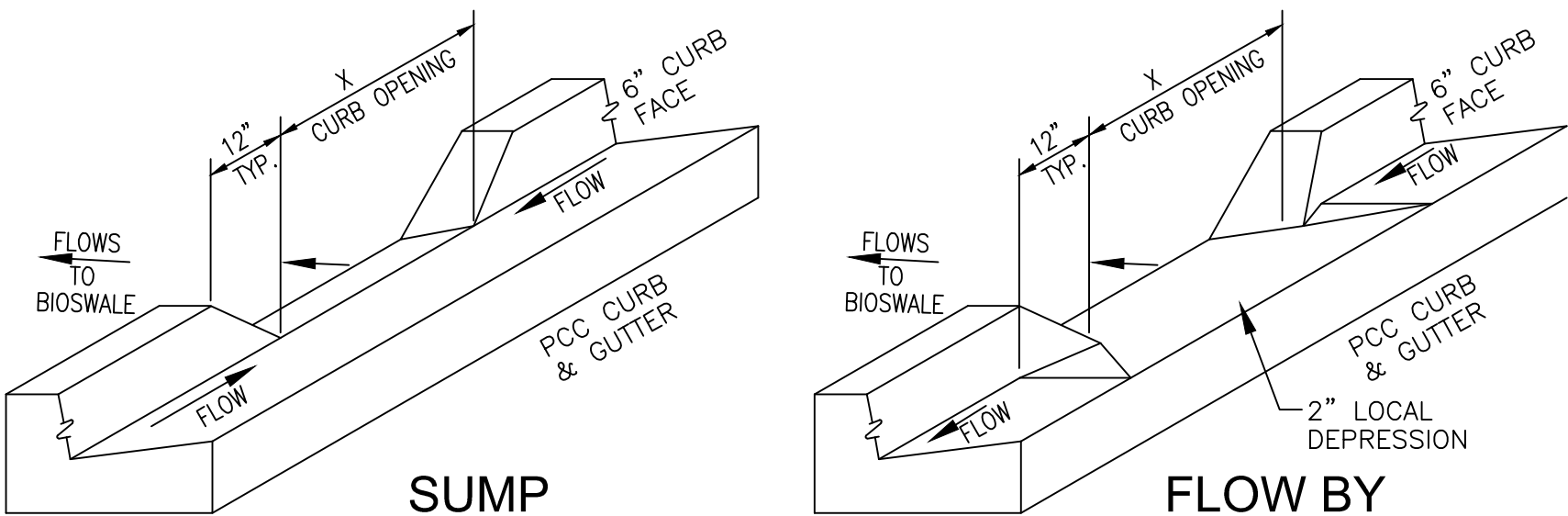
80 0 80 160
scale 1" = 80' feet



STORMWATER PLANTER
- TYPE 1
NOT TO SCALE



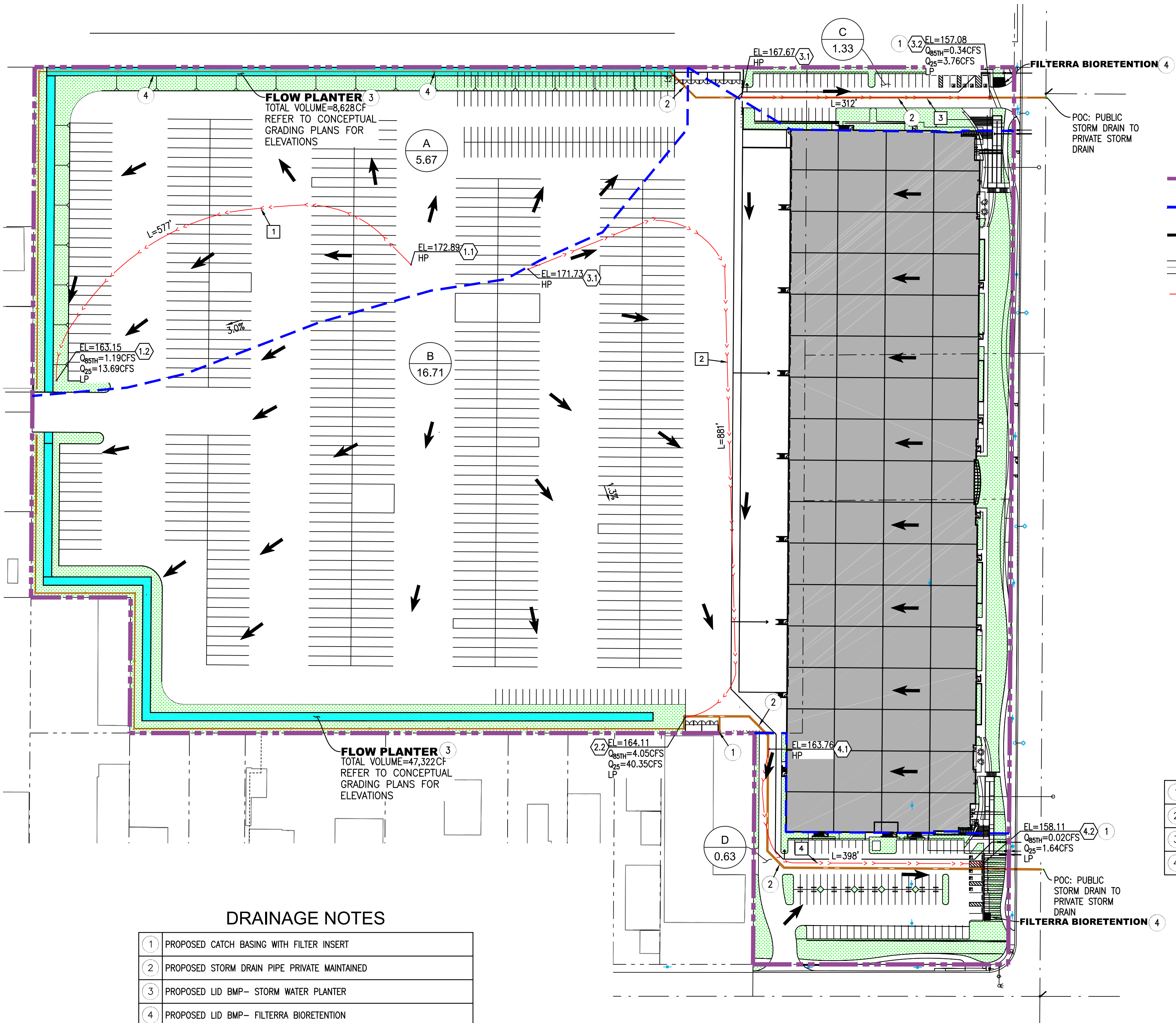
STORMWATER PLANTER
- TYPE 2
NOT TO SCALE



CURB OPENING DETAIL
NOT TO SCALE

DRAINAGE NOTES

1	PROPOSED CATCH BASING WITH FILTER INSERT
2	PROPOSED STORM DRAIN PIPE PRIVATE MAINTAINED
3	PROPOSED LID BMP- STORM WATER PLANTER
4	PROPOSED LID BMP- FILTERRA BIORETENTION



HYDROLOGY SUMMARY

DRAINAGE AREA No.	DRAINAGE SUB-AREA	BMP TYPE	TRIBUTARY AREA (SF)	TRIBUTARY AREA (AC)	IMPERVIOUS RATIO	85TH PERCENTILE (CFS)	REQUIRED DESIGN CAPTURE VOLUME (CF)	PROVIDED (CF)
DA1 DMA A	A	FLOW PLANTERS & FILTERRA UNITS	246,797	5.67	0.86	1.19	71,212	85,362
	B		727,856	16.71	0.97	4.05		
	C		57,890	1.33	0.83	0.34		
	D		27,283	0.63	0.41	0.07		

PREPARED BY:

WestLAND
Group, Inc. Land Surveyors • Civil Engineers • GIS

4150 CONCOURS, ONTARIO, CA 91764
PHONE: (909) 989-9789 FAX: (909) 989-9660

JOB NO: 2018-131

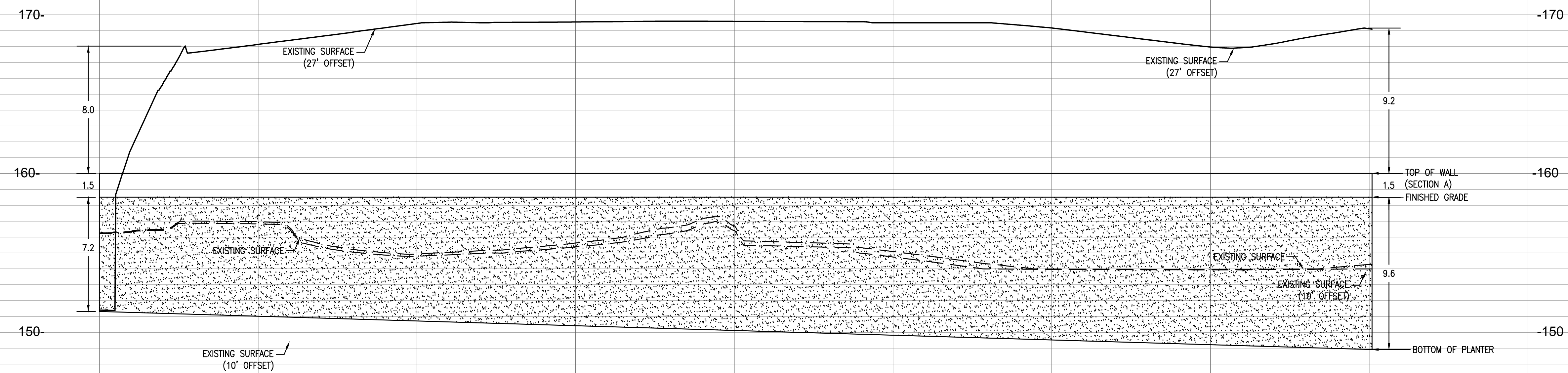
LID SITE PLAN AND DRAINAGE
FACILITES MAP
GREENLEAF AVENUE

CITY OF SANTA FE SPRINGS

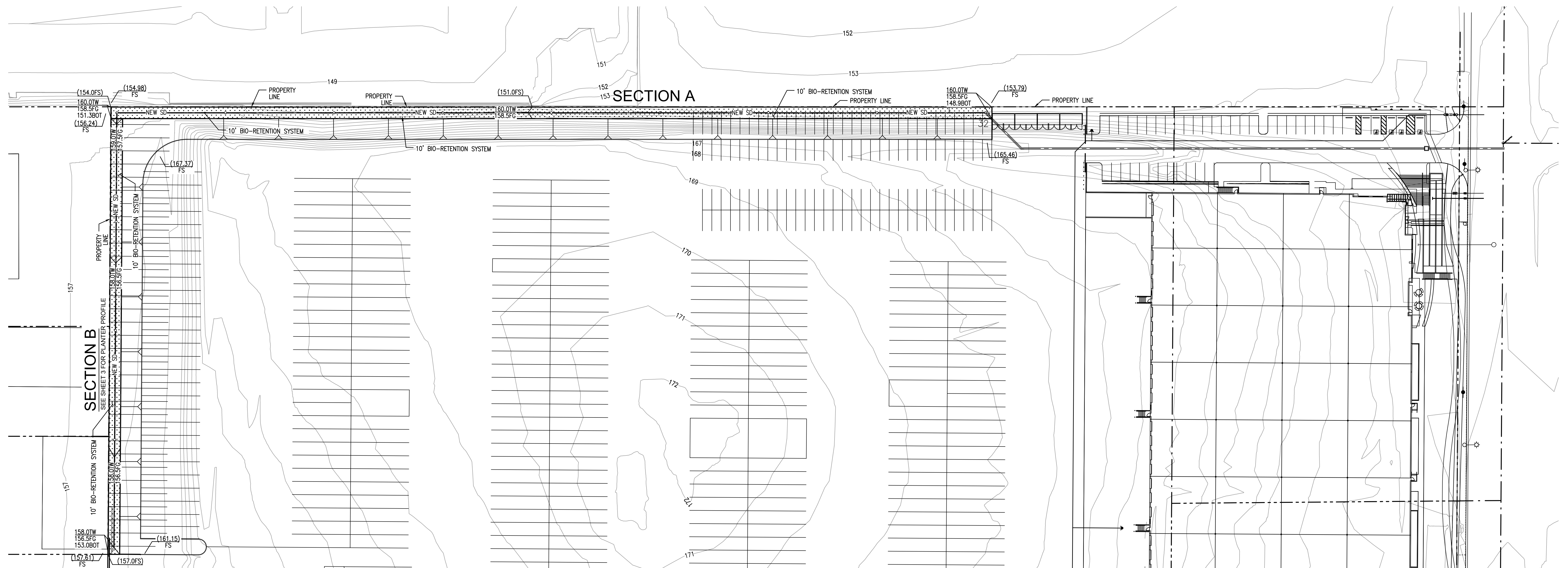
DATE: JUL 2019
EXHBIT

A

EXHIBIT B
FLOW PLANTER PLAN AND PROFILE



SECTION A



SECTION A

SECTION B

