



APPENDIX I

PRELIMINARY HYDROLOGY AND HYDRAULICS REPORT



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CREATIVITY BEYOND ENGINEERING

Conceptual Hydrology and Hydraulic Report for

Amazon Delivery Station, DLX7

**6400 Katella Avenue
City of Cypress, Orange County, California**

RASN Project No. 3190323

**Date: May 18, 2020
Rev. June 23, 2020
Rev. July 2, 2020
Rev. August 4, 2020
Rev. August 18, 2020**

Preliminary

Hydrology and Hydraulic Report

FOR

**Amazon Delivery Station, DLX7
6400 Katella Avenue
City of Cypress, Orange County, California**

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May 18, 2020

June 23, 2020

July 2, 2020

August 4, 2020

August 14, 2020

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Section II. Executive Summary

The proposed Amazon Delivery Station project is located on 23.31 acres at 6400 Katella Ave. in the City of Cypress. The project has been designed to be compliant with the City of Cypress Municipal Standards and the 2003 Orange County Drainage Area Management Plan. Filterra Bioscape Vaults and Bioretention with underdrains will be used to treat pollutants prior to discharge back into the existing storm drains. The central parking lot will include underground detention (600' of 48" Pipe) tied to the Filterra units for storage purposes. Only a portion of the site, 14.96 acres will be within the limits of construction and this study will only account for those areas. 5.50 acres of existing pavement within the project limits will be considered maintenance. These areas will be pulverized, regraded with stone, and overlaid with asphalt without any soil disturbance.

Section III. Site Description

The existing site has been used as the headquarters and design studio for the Mitsubishi Motor Company since it was constructed in 1988. There are multiple buildings, parking lots, a tennis court, sidewalks, and associated landscaping.

The proposed site will be used as an Amazon Warehouse and Delivery Station. Parking lots and traffic flow will be reconstructed to work more efficiently with this use. Sidewalks and landscaping will be modified as necessary. Additionally, Katella Ave will be widened about 5' to the south to accommodate another turn lane.

The site has high groundwater as referenced in the Geotechnical Report as well as the County Groundwater Maps. As a result, infiltration will not be feasible on this project.

Section IV. Existing Hydrology

The site is relatively flat, so runoff sheet flows to multiple inlet drains located throughout the site. This water is conveyed via storm drain to three distinct locations off the site. The largest area (DMA-A) drains to a 42" diameter existing storm drain located on the west side of the site that discharges directly to the Stanton Channel (C02S01). Two other much smaller basins (DMA-B and DMA-C) located on the east side of the site tie into the Holder St. storm drain which discharges to the Stanton Channel.

Ultimately, the channel continues to the Bolsa Chica Channel and discharges into the Anaheim Bay. See Attachment E for more detail.

Section V. Proposed Hydrology

The proposed site has been divided into 11 sub basins, all of which but one drain to a BMP. DMA 11 is the lone basin that drains directly to storm drain without being treated first. It is located within the project limits but is generally maintenance paving. DMA 10 drains to a bioretention basin with underdrain prior to being discharged back into the Holder Street storm drain. All other basins will be routed to the existing 42" storm drain on the west edge of the site. DMA's 1,3-6 will use Filterra Bioscape Vaults for stormwater treatment. DMA's 2, 7-10 will use Bioretention with underdrain for stormwater treatment and storage. Additionally, the central parking lot (DMA-1) will include underground detention (600' of 48" Pipe) tied to the Filterra units for storage purposes. See Attachment F for more detail.

After runoff is treated in the BMPs, it will be routed via newly constructed storm drain to existing drains. All proposed storm drain has been design to carry a 25 yr flows. Additionally, the capacity of the 42" storm drain has been analyzed to verify that it is of adequate size to handle the 25 yr flow from the site. See Attachment D for more detail.

In grading the proposed site, overland flow routes have been created to carry flow for storms greater than the 25 yr event. These routes have been directed to two locations. The north half of the site overflows to the NE driveway along Katella Ave. The south half of the site drains east to Holder St. The OC Hydrology Manual requires that all structures are protected from the 100 yr storm event and that all building pads are set a minimum of 1.0' above the 100 yr event. Based on FEMA mapping, there is no 100 yr flood elevation near the project. However, there may be some localized flooding that will require protection. Both localized overland routes have protection of over 1'. Please see the Precise Grading Plans for more detail.

Section VI. Methodology

The hydrologic analysis was performed in accordance with Technical Release 55 (TR-55) as allowed in the Orange County Technical Guidance Document. Table 1 shows the rainfall depth used for each storm event. Hydrologic analysis included in this report was performed using the HydroCAD hydrologic simulation computer model, version 10.00 by HydroCAD Software Solutions LLC. The discharges were generated using the SCS Dimensionless Unit Hydrograph Method for a 24-hour duration storm. Model parameters include drainage area, SCS runoff curve number, time of concentration and 24-hour precipitation with Type I rainfall distribution curve.

Table 1 – Design Storm Events for City of Cypress, Orange Co.
Per NOAA ATLA 14

Frequency (years)	Duration (hours)	Rainfall Depth (inches)
25	24	4.30

The runoff curve number is determined by the soils, vegetation cover, amount of impervious area, and surface storage to convert the mass of rainfall into the mass runoff in the SCS Method. Higher curve numbers mean more potential runoff. Composite curve numbers were determined from the existing and proposed land uses.

The hydraulic length is the distance from the most hydraulically remote point in the watershed to the outlet of that area. This parameter is used in computing the basin lag and the unit hydrograph.

The time of concentration is the time required for water to flow from the most remote part of the drainage area to the point of design. The water moves through the watershed or sub-basin as sheet flow, shallow concentrated flow, open channel flow, gutter flow, storm drain flow, culvert flow or any combination of these aforementioned items.

Section VII. Hydrology

The City of Cypress Master Drainage Plan allows 32.4 cfs to be discharged from the existing 42" pipe at the southwest corner of the parcel, Node 22.04. Additionally, the Master Drainage Plan allows for 174.6 cfs to be discharged from the Holder St storm drain, Node 21.08. The proportional areas of the project site in existing conditions were compared with the total flow of the watershed to determine an allowable flow for the entire project site in the proposed condition. See Attachment C for more detail on Master Drainage Plan.

Table 2 – Allowable Flow Rates
Per City of Cypress Master Plan of Drainage (24hr-25yr Storm)

Node	Tributary Area (Ac.)	Area of Project (Ac.)	Q25 at Node (cfs)	Allowable Q25 (cfs)
22.04	14.7	10.84	32.4	23.89
21.08	109.8	4.11	174.6	6.54
Total	-	-	-	30.43

Discharge points will also need to be compared such that pre developed drainage across property lines are not exceeded in the post developed condition.

Table 3 – Allowable Flow Rates
Per California Building Code J109.4 Requirements

Watershed	Area (Ac.)	CN	Tc (Min)	Allowable Q25 (cfs)
Ex DMA-A	10.84	85	5.0	24.76
TOTAL (42")	10.84	-	-	24.76
Ex DMA-B	1.96	82	5.0	4.00
Ex DMA-C	2.16	64	27.2	0.86
TOTAL (Holder St)	4.11	-	-	4.22

The more restrictive rates in table 3 will be used for the purpose of this study.

The post-developed site increases peak discharge rates due to the increased impervious area. Table 4 summarizes the post-developed site parameters and peak discharge rates generated by the 25-year storm prior to detention. Refer to the TR-55 model output in Attachment D for more detail.

Table 4 – Proposed Flow Rates W/O Detention

Watershed	Area (Ac.)	CN	Tc (Min)	Q25 (cfs)
DMA-1	6.06	86	5.0	14.34
DMA-2	1.11	85	5.0	2.54
DMA-3	0.44	82	5.0	0.90
DMA-4	0.27	94	5.0	0.80
DMA-5	0.42	94	5.0	1.25
DMA-6	0.30	94	5.0	0.89
DMA-7	0.28	66	5.0	0.24
DMA-8	2.72	89	5.0	7.10
DMA-9	1.11	79	5.0	2.00
DMA-11	1.74	86	5.0	4.12
TOTAL (42")	14.45	-	-	34.16
DMA-10	0.51	69	5.0	0.54
TOTAL (Holder St)	0.51	-	-	0.54

A reduction in peak discharge rates will be required in order to meet the allowable rates provided in Table 3. In order to achieve this reduced rate DMA-1 will be routed to an underground detention system in the middle of the parking lot. The system will consist of 600' of 48" diameter storm pipe for storage. Also, DMA's 2, and 7-10 will be routed to bioretention basins which provide additional storage. Table 4 summarizes the parameters and peak discharge rates generated by the 25-year storm after detention. Refer to the Post-Developed Hydrology Exhibit for more detail. Refer to the TR-55 model output in Attachment D for more detail.

Table 5 – Proposed Flow Rates After Detention

	25-year Peak Discharge (cfs)	Routed 25-yr Elevation	25-yr Storage (ft³)
BASIN			
DMA-1	11.11	39.52	7,405
DMA-2	0.82	37.01	1,809
DMA-7	0.16	35.29	73

DMA-8	0.86	38.37	9,167
DMA-9	0.64	38.45	1,431
DMA-10	0.22	38.29	279

A reduction in peak discharge rates will be required in order to meet the allowable rates provided in Table 3. In order to achieve this reduced rate DMA-1 will be routed to an underground detention system in the middle of the parking lot. The system will consist of 600' of 48" diameter storm pipe for storage. Also, DMA's 2, and 7-10 will be routed to bioretention basins which provide additional storage. Table 4 summarizes the parameters and peak discharge rates generated by the 25-year storm after detention. Refer to the Post-Developed Hydrology Exhibit for more detail. Refer to the TR-55 model output in Attachment D for more detail.

Table 6 – Summary of Proposed Flow Rates After Detention

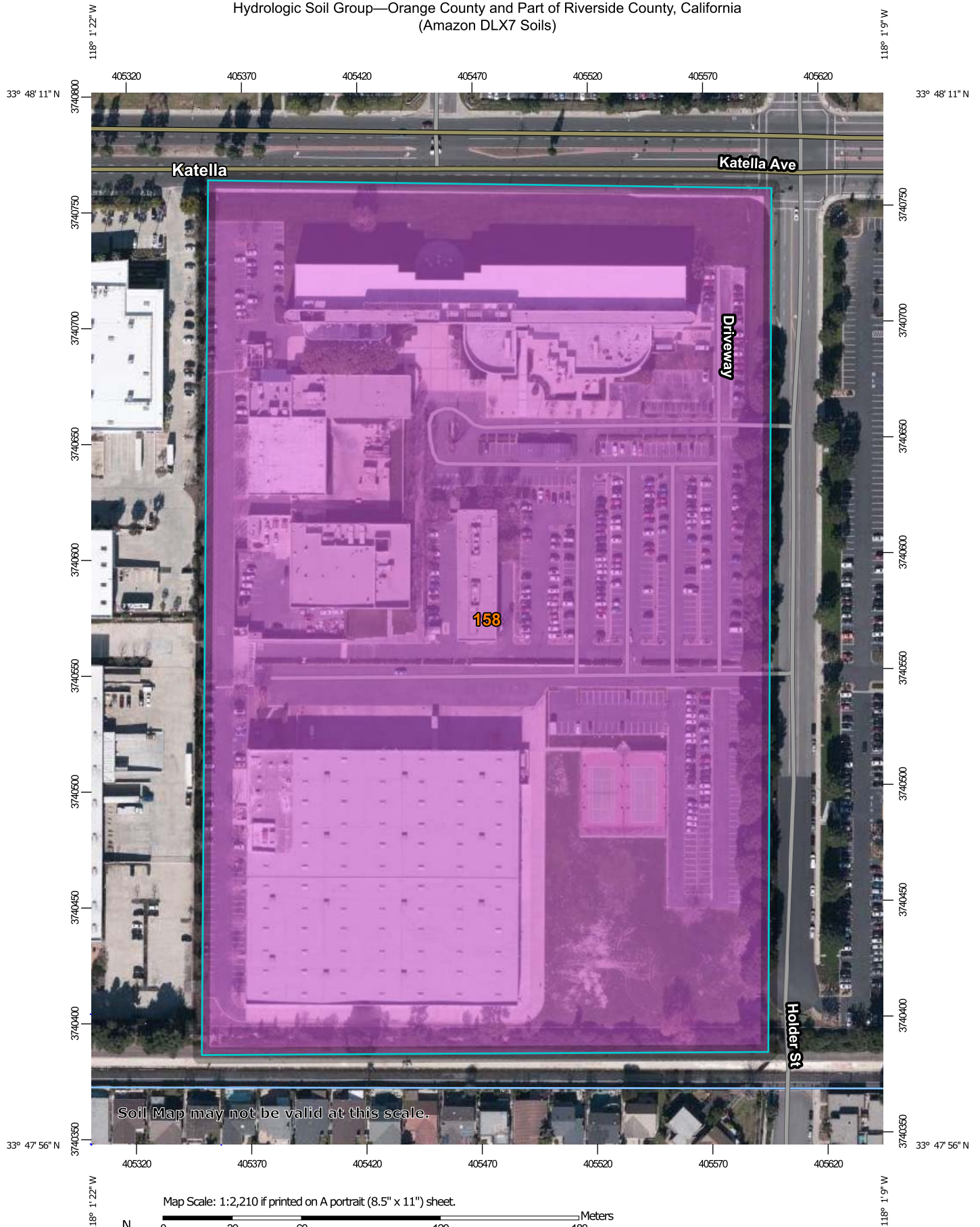
Watershed	Area (Ac.)	Q25 (cfs)
DMA-1	6.06	11.11
DMA-2	1.11	0.82
DMA-3	0.44	0.90
DMA-4	0.27	0.80
DMA-5	0.42	1.25
DMA-6	0.30	0.89
DMA-7	0.28	0.16
DMA-8	2.72	0.86
DMA-9	1.11	0.64
DMA-11	1.74	4.12
TOTAL (42")	14.45	20.38
DMA-10	0.51	0.22
TOTAL (Holder St)	0.51	0.22

Section VIII. Summary

With the use of the Filterra Bioscape Vaults, 600' of 48" Pipe used for Underground Detention and Bioretention with underdrains for water quality and quantity we will be able to meet the City and County requirements for Stormwater Management. 25 yr Peak flows from the sited are reduced from 24.76 cfs to 20.38 cfs at the 42" Stanton Channel Discharge. Additionally, 25 yr Peak flows from the sited are reduced from 4.22 cfs to 0.22 cfs at the Holder St. Discharge location.

Attachment A - USGS Soil Survey

Hydrologic Soil Group—Orange County and Part of Riverside County, California (Amazon DLX7 Soils)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Orange County and Part of Riverside County, California
Survey Area Data: Version 13, Sep 16, 2019

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

Date(s) aerial images were photographed: Apr 13, 2018—Jan 25, 2019

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
158	Hueneme fine sandy loam, drained	A	22.8	100.0%
Totals for Area of Interest			22.8	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

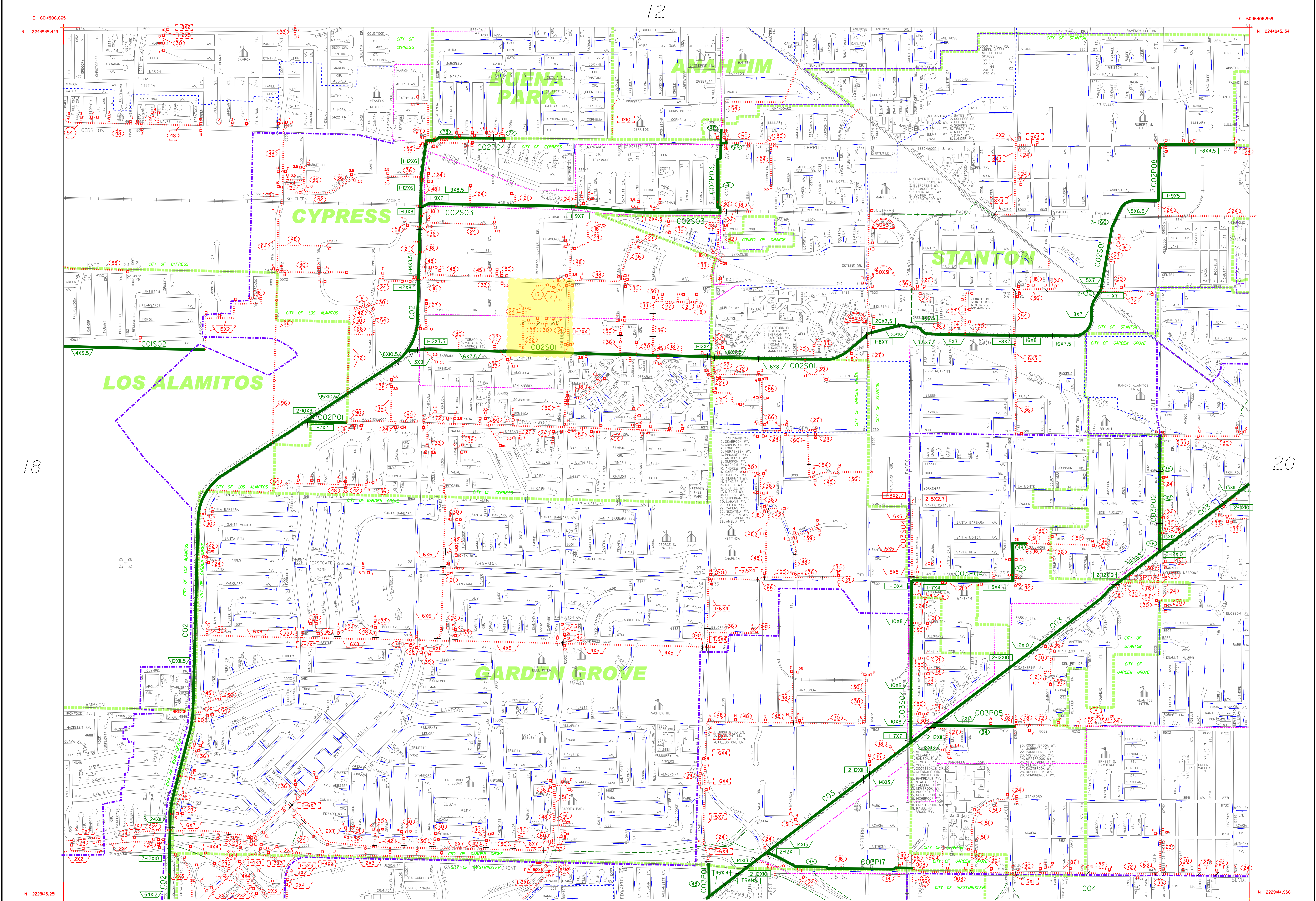
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Attachment B – Orange County Drainage Facilities Map



NOTICE

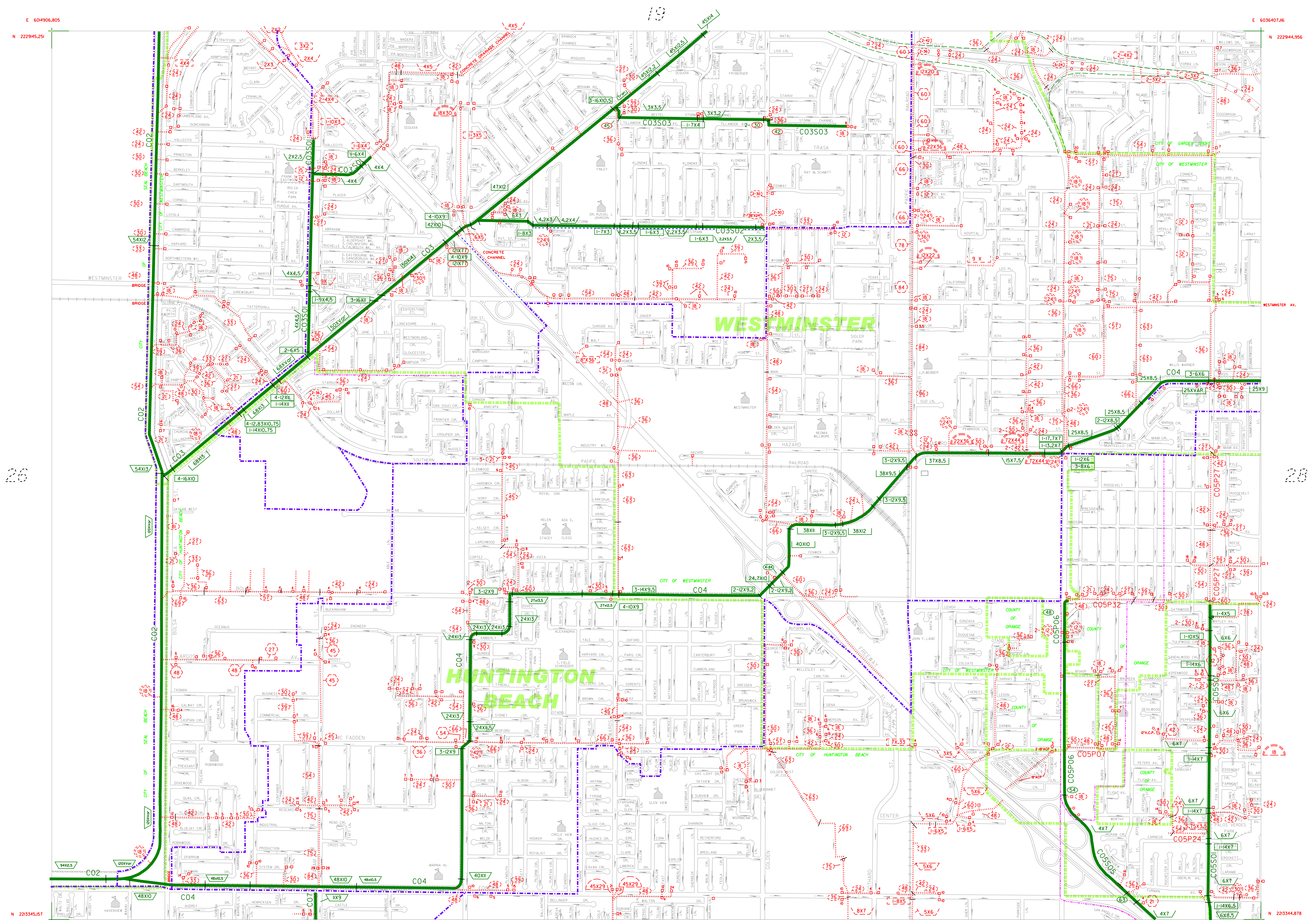
The drainage information has been prepared for information purposes only. The location, ownership, facility information and limits have been determined from available information provided by public agencies, but may not be exact, accurate, or up-to-date. The user of this information is responsible for verifying exact location, ownership, accuracy, and the regional versus local character of drainage facilities.

Additional information may be obtained from public plans and recorded deeds. Facility designations included with this information are for convenience only and are not controlling or intended to imply ownership by the County or the Orange County Flood Control District (OCFCD). The information is being provided as a courtesy and neither the County of Orange nor OCFCD assume any liabilities for inaccuracy of the information.

To notify OC Public Works Flood Control Section of additions or corrections, please contact Sal Gutierrez at (714) 647-3992 or by email at sal.gutierrez@ocpw.ocgov.com

ORANGE COUNTY FLOOD CONTROL DISTRICT			
BASE MAP OF DRAINAGE FACILITIES IN ORANGE COUNTY			
REVISION	DATE	SHEET NO.	DWG. NO.
S. GUTIERREZ	JAN 23, 2002	19	MAPS-113-3

EXISTING FACILITIES	
O.C.F.C.D.	LOCAL



NOTICE

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ORANGE COUNTY FLOOD CONTROL DISTRICT			
BASE MAP OF DRAINAGE FACILITIES IN ORANGE COUNTY			
REVISION	DATE	SHEET NO.	DWG. NO.
S. GUTIERREZ	JAN. 12/2000	27	MAPS-113-3

EXISTING FACILITIES	
O.C.F.C.D.	LOCAL
	Channel Drainage Area Boundary
	Major Sub-Area Drainage Boundary
	Minor Sub-Area Drainage Boundary
	Existing O.C.F.C.D. Facility
	Existing Local Facility
	Existing Retarding Basin or Reservoir
	Natural Watercourse
	City Limits
	Greenbelt
	Pump Station
	Catch Basin (length in feet)
	Drop Inlet or Other Entry
	OCFCD Basins or Reservoirs
	Earth Trapezoidal Channel (base width by height in feet)
	Reinforced Concrete Trapezoidal Channel (base width by height in feet)
	Reinforced Concrete Rectangular Channel (base width by height in feet)
	Reinforced Concrete Box (RCB) (number of barrels-span by height in feet)
	Reinforced Concrete Pipe (RCP) (diameter in inches)
	Metal Sheet Channel (MSC) (base width by pile height in feet, sheet pile total length)
	Corrugated Metal Pipe (CMP) (diameter in inches)
	Concrete Pipe (diameter in inches)
	Concrete Oval Pipe (width by height in inches)
	Steel Pipe (diameter in inches)
	Reinforced Concrete Arch (base span by height in inches)
	Corrugated Metal Arch (base span by height in inches)

26

35

26

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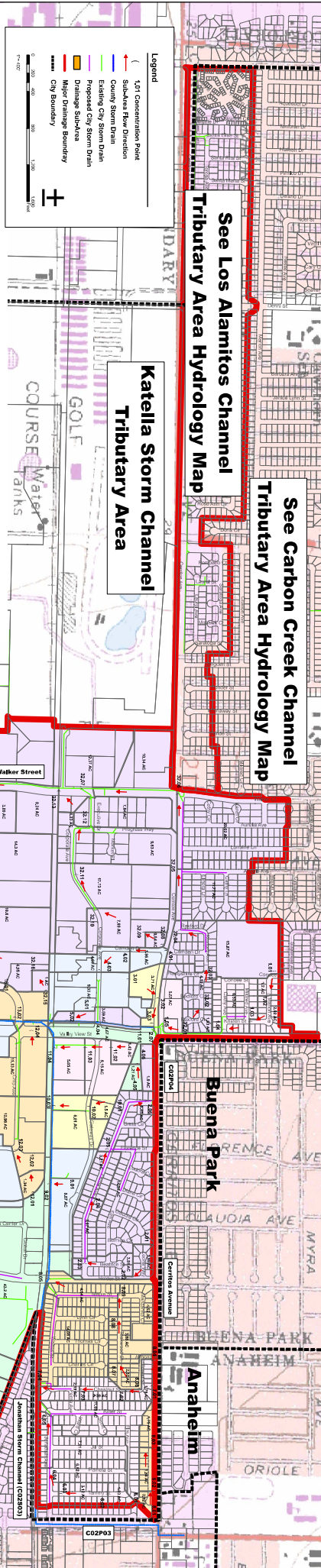
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To notify the Resources & Development Management Department (RDMD) of additions or corrections, please call (714) 948-3324 or e-mail rdm@ocfd.net.

REVISION	DATE	SHEET NO.	DWG. NO.
S. GUTIERREZ	MAR. 7, 2007	26	MAPS-113-3

- | Channel Drainage Area Boundary | | EXISTING FACILITIES | | |
|---------------------------------------|--|---|---|---|
| Major Sub-Area Drainage Boundary | | O.C.F.C.D. | LOCAL | |
| Minor Sub-Area Drainage Boundary | |  |  | Earth Trapezoidal Channel (base width by height in feet) |
| Existing O.C.F.C.D. Facility | |  |  | Reinforced Concrete Trapezoidal Channel (base width by height in feet) |
| Existing Local Facility | |  |  | Reinforced Concrete Rectangular Channel (base width by height in feet) |
| Existing Retaining Basin or Reservoir | |  |  | Reinforced Concrete Box (RCB) (number of barrels-span by height in feet) |
| Natural Watercourse | |  |  | Reinforced Concrete Pipe (RCP) (diameter in inches) |
| City Limits | |  |  | Corrugated Metal Channel (MSC) (Base width by pile height in feet, Sheet pile total length) |
| Greenbelt | |  |  | Sheet Metal Pipe (CMP) (diameter in inches) |
| Pump Station | |  |  | Concrete Pipe (diameter in inches) |
| Catch Basin (length in feet) | |  |  | Concrete Oval Pipe (width by height in inches) |
| Drop Inlet or Other Entry | |  |  | Steel Pipe (diameter in inches) |
| OCCFD Basins or Reservoirs | |  |  | Reinforced Concrete Arch (base span by height in inches) |
| | |  |  | Corrugated Metal Arch (base span by height in inches) |
- Ownership (H other than City or County): Private = **P** State = **S** Federal = **F**

Attachment C – City of Cypress, Master Plan of Drainage



Los Alamitos

Project Site

Knott Street

Stanton Street

Garden Grove

Node	Total Area (acres)	Q1 (cfs)	Q2 (cfs)	Q3 (cfs)
Node 1	1.2	1.2	1.2	1.2
Node 2	1.2	1.2	1.2	1.2
Node 3	1.2	1.2	1.2	1.2
Node 4	1.2	1.2	1.2	1.2
Node 5	1.2	1.2	1.2	1.2
Node 6	1.2	1.2	1.2	1.2
Node 7	1.2	1.2	1.2	1.2
Node 8	1.2	1.2	1.2	1.2
Node 9	1.2	1.2	1.2	1.2
Node 10	1.2	1.2	1.2	1.2
Node 11	1.2	1.2	1.2	1.2
Node 12	1.2	1.2	1.2	1.2
Node 13	1.2	1.2	1.2	1.2
Node 14	1.2	1.2	1.2	1.2
Node 15	1.2	1.2	1.2	1.2
Node 16	1.2	1.2	1.2	1.2
Node 17	1.2	1.2	1.2	1.2
Node 18	1.2	1.2	1.2	1.2
Node 19	1.2	1.2	1.2	1.2
Node 20	1.2	1.2	1.2	1.2
Node 21	1.2	1.2	1.2	1.2
Node 22	1.2	1.2	1.2	1.2
Node 23	1.2	1.2	1.2	1.2
Node 24	1.2	1.2	1.2	1.2
Node 25	1.2	1.2	1.2	1.2
Node 26	1.2	1.2	1.2	1.2
Node 27	1.2	1.2	1.2	1.2
Node 28	1.2	1.2	1.2	1.2
Node 29	1.2	1.2	1.2	1.2
Node 30	1.2	1.2	1.2	1.2
Node 31	1.2	1.2	1.2	1.2
Node 32	1.2	1.2	1.2	1.2
Node 33	1.2	1.2	1.2	1.2
Node 34	1.2	1.2	1.2	1.2
Node 35	1.2	1.2	1.2	1.2
Node 36	1.2	1.2	1.2	1.2
Node 37	1.2	1.2	1.2	1.2
Node 38	1.2	1.2	1.2	1.2
Node 39	1.2	1.2	1.2	1.2
Node 40	1.2	1.2	1.2	1.2
Node 41	1.2	1.2	1.2	1.2
Node 42	1.2	1.2	1.2	1.2
Node 43	1.2	1.2	1.2	1.2
Node 44	1.2	1.2	1.2	1.2
Node 45	1.2	1.2	1.2	1.2
Node 46	1.2	1.2	1.2	1.2
Node 47	1.2	1.2	1.2	1.2
Node 48	1.2	1.2	1.2	1.2
Node 49	1.2	1.2	1.2	1.2
Node 50	1.2	1.2	1.2	1.2
Node 51	1.2	1.2	1.2	1.2
Node 52	1.2	1.2	1.2	1.2
Node 53	1.2	1.2	1.2	1.2
Node 54	1.2	1.2	1.2	1.2
Node 55	1.2	1.2	1.2	1.2
Node 56	1.2	1.2	1.2	1.2
Node 57	1.2	1.2	1.2	1.2
Node 58	1.2	1.2	1.2	1.2
Node 59	1.2	1.2	1.2	1.2
Node 60	1.2	1.2	1.2	1.2
Node 61	1.2	1.2	1.2	1.2
Node 62	1.2	1.2	1.2	1.2
Node 63	1.2	1.2	1.2	1.2
Node 64	1.2	1.2	1.2	1.2
Node 65	1.2	1.2	1.2	1.2
Node 66	1.2	1.2	1.2	1.2
Node 67	1.2	1.2	1.2	1.2
Node 68	1.2	1.2	1.2	1.2
Node 69	1.2	1.2	1.2	1.2
Node 70	1.2	1.2	1.2	1.2
Node 71	1.2	1.2	1.2	1.2
Node 72	1.2	1.2	1.2	1.2
Node 73	1.2	1.2	1.2	1.2

Los Alamitos

Project Site

Knott Street

Stanton Street

Garden Grove

Node	Total Area (acres)	Q1 (cfs)	Q2 (cfs)	Q3 (cfs)
Node 1	1.2	1.2	1.2	1.2
Node 2	1.2	1.2	1.2	1.2
Node 3	1.2	1.2	1.2	1.2
Node 4	1.2	1.2	1.2	1.2
Node 5	1.2	1.2	1.2	1.2
Node 6	1.2	1.2	1.2	1.2
Node 7	1.2	1.2	1.2	1.2
Node 8	1.2	1.2	1.2	1.2
Node 9	1.2	1.2	1.2	1.2
Node 10	1.2	1.2	1.2	1.2
Node 11	1.2	1.2	1.2	1.2
Node 12	1.2	1.2	1.2	1.2
Node 13	1.2	1.2	1.2	1.2
Node 14	1.2	1.2	1.2	1.2
Node 15	1.2	1.2	1.2	1.2
Node 16	1.2	1.2	1.2	1.2
Node 17	1.2	1.2	1.2	1.2
Node 18	1.2	1.2	1.2	1.2
Node 19	1.2	1.2	1.2	1.2
Node 20	1.2	1.2	1.2	1.2
Node 21	1.2	1.2	1.2	1.2
Node 22	1.2	1.2	1.2	1.2
Node 23	1.2	1.2	1.2	1.2
Node 24	1.2	1.2	1.2	1.2
Node 25	1.2	1.2	1.2	1.2
Node 26	1.2	1.2	1.2	1.2
Node 27	1.2	1.2	1.2	1.2
Node 28	1.2	1.2	1.2	1.2
Node 29	1.2	1.2	1.2	1.2
Node 30	1.2	1.2	1.2	1.2
Node 31	1.2	1.2	1.2	1.2
Node 32	1.2	1.2	1.2	1.2
Node 33	1.2	1.2	1.2	1.2
Node 34	1.2	1.2	1.2	1.2
Node 35	1.2	1.2	1.2	1.2
Node 36	1.2	1.2	1.2	1.2
Node 37	1.2	1.2	1.2	1.2
Node 38	1.2	1.2	1.2	1.2
Node 39	1.2	1.2	1.2	1.2
Node 40	1.2	1.2	1.2	1.2
Node 41	1.2	1.2	1.2	1.2
Node 42	1.2	1.2	1.2	1.2
Node 43	1.2	1.2	1.2	1.2
Node 44	1.2	1.2	1.2	1.2
Node 45	1.2	1.2	1.2	1.2
Node 46	1.2	1.2	1.2	1.2
Node 47	1.2	1.2	1.2	1.2
Node 48	1.2	1.2	1.2	1.2
Node 49	1.2	1.2	1.2	1.2
Node 50	1.2	1.2	1.2	1.2
Node 51	1.2	1.2	1.2	1.2
Node 52	1.2	1.2	1.2	1.2
Node 53	1.2	1.2	1.2	1.2
Node 54	1.2	1.2	1.2	1.2
Node 55	1.2	1.2	1.2	1.2
Node 56	1.2	1.2	1.2	1.2
Node 57	1.2	1.2	1.2	1.2
Node 58	1.2	1.2	1.2	1.2
Node 59	1.2	1.2	1.2	1.2
Node 60	1.2	1.2	1.2	1.2
Node 61	1.2	1.2	1.2	1.2
Node 62	1.2	1.2	1.2	1.2
Node 63	1.2	1.2	1.2	1.2
Node 64	1.2	1.2	1.2	1.2
Node 65	1.2	1.2	1.2	1.2
Node 66	1.2	1.2	1.2	1.2
Node 67	1.2	1.2	1.2	1.2
Node 68	1.2	1.2	1.2	1.2
Node 69	1.2	1.2	1.2	1.2
Node 70	1.2	1.2	1.2	1.2
Node 71	1.2	1.2	1.2	1.2
Node 72	1.2	1.2	1.2	1.2
Node 73	1.2	1.2	1.2	1.2

Los Alamitos

Project Site

Knott Street

Stanton Street

Garden Grove

Node	Total Area (acres)	Q1 (cfs)	Q2 (cfs)	Q3 (cfs)
Node 1	1.2	1.2	1.2	1.2
Node 2	1.2	1.2	1.2	1.2
Node 3	1.2	1.2	1.2	1.2
Node 4	1.2	1.2	1.2	1.2
Node 5	1.2	1.2	1.2	1.2
Node 6	1.2	1.2	1.2	1.2
Node 7	1.2	1.2	1.2	1.2
Node 8	1.2	1.2	1.2	1.2
Node 9	1.2	1.2	1.2	1.2
Node 10	1.2	1.2	1.2	1.2
Node 11	1.2	1.2	1.2	1.2
Node 12	1.2	1.2	1.2	1.2
Node 13	1.2	1.2	1.2	1.2
Node 14	1.2	1.2	1.2	1.2
Node 15	1.2	1.2	1.2	1.2
Node 16	1.2	1.2	1.2	1.2
Node 17	1.2	1.2	1.2	1.2
Node 18	1.2	1.2	1.2	1.2
Node 19	1.2	1.2	1.2	1.2
Node 20	1.2	1.2	1.2	1.2
Node 21	1.2	1.2	1.2	1.2
Node 22	1.2	1.2	1.2	1.2
Node 23	1.2	1.2	1.2	1.2
Node 24	1.2	1.2	1.2	1.2
Node 25	1.2	1.2	1.2	1.2
Node 26	1.2	1.2	1.2	1.2
Node 27	1.2	1.2	1.2	1.2
Node 28	1.2	1.2	1.2	1.2
Node 29	1.2	1.2	1.2	1.2
Node 30	1.2	1.2	1.2	1.2
Node 31	1.2	1.2	1.2	1.2
Node 32	1.2	1.2	1.2	1.2
Node 33	1.2	1.2	1.2	1.2
Node 34	1.2	1.2	1.2	1.2
Node 35	1.2	1.2	1.2	1.2
Node 36	1.2	1.2	1.2	1.2
Node 37	1.2	1.2	1.2	1.2
Node 38	1.2	1.2	1.2	1.2
Node 39	1.2	1.2	1.2	1.2
Node 40	1.2	1.2	1.2	1.2
Node 41	1.2	1.2	1.2	1.2
Node 42	1.2	1.2	1.2	1.2
Node 43	1.2	1.2	1.2	1.2
Node 44	1.2	1.2	1.2	1.2
Node 45	1.2	1.2	1.2	1.2
Node 46	1.2	1.2	1.2	1.2
Node 47	1.2	1.2	1.2	1.2
Node 48	1.2	1.2	1.2	1.2
Node 49	1.2	1.2	1.2	1.2
Node 50	1.2	1.2	1.2	1.2
Node 51	1.2	1.2	1.2	1.2
Node 52	1.2	1.2	1.2	1.2
Node 53	1.2	1.2	1.2	1.2
Node 54	1.2	1.2	1.2	1.2
Node 55	1.2	1.2	1.2	1.2
Node 56	1.2	1.2	1.2	1.2
Node 57	1.2	1.2	1.2	1.2
Node 58	1.2	1.2	1.2	1.2
Node 59	1.2	1.2	1.2	1.2
Node 60	1.2	1.2	1.2	1.2
Node 61	1.2	1.2	1.2	1.2
Node 62	1.2	1.2	1.2	1.2
Node 63	1.2	1.2	1.2	1.2
Node 64	1.2	1.2	1.2	1.2
Node 65	1.2	1.2	1.2	1.2
Node 66	1.2	1.2	1.2	1.2
Node 67	1.2	1.2	1.2	1.2
Node 68	1.2	1.2	1.2	1.2
Node 69	1.2	1.2	1.2	1.2
Node 70	1.2	1.2	1.2	1.2
Node 71	1.2	1.2	1.2	1.2
Node 72	1.2	1.2	1.2	1.2
Node 73	1.2	1.2	1.2	1.2

Los Alamitos

Project Site

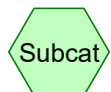
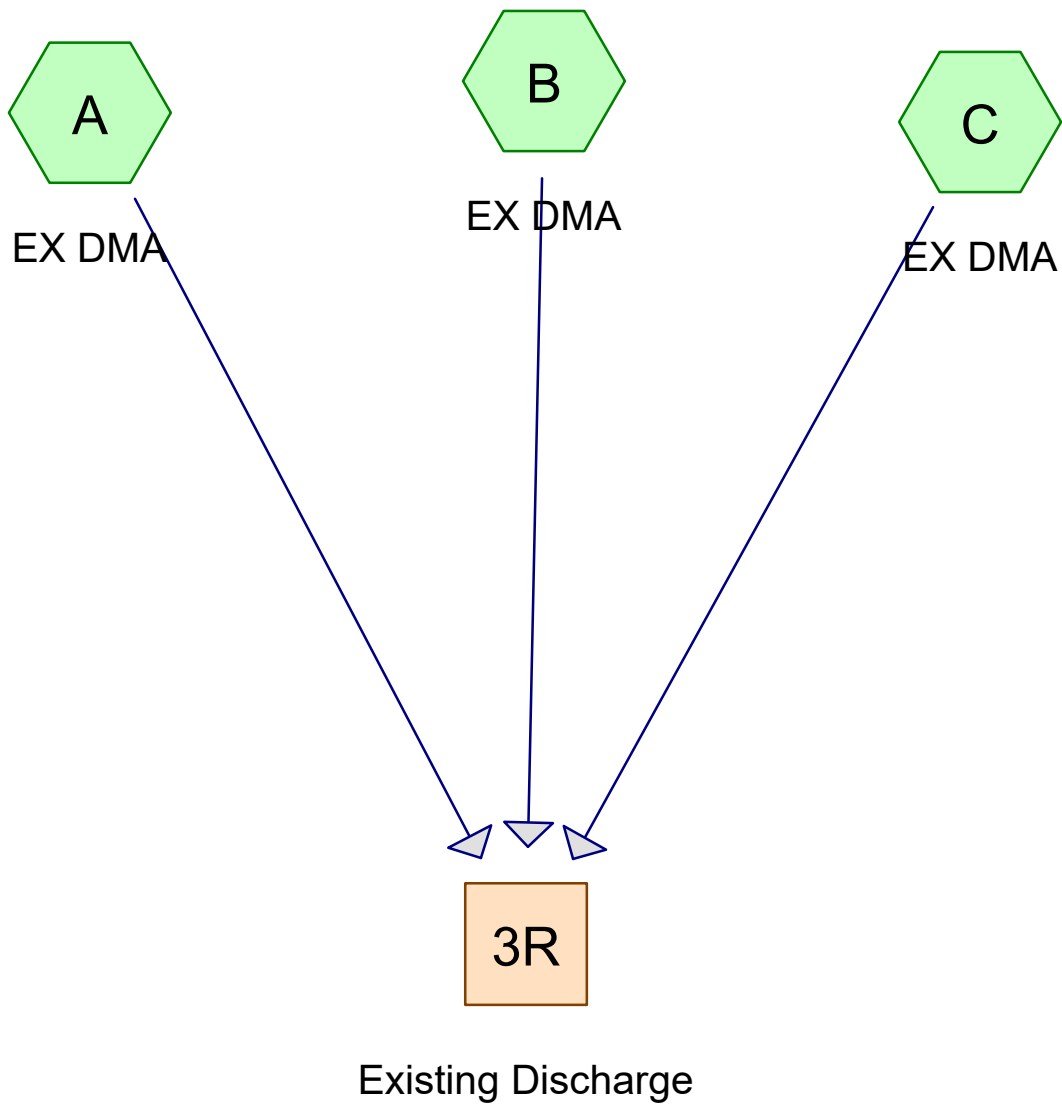
Knott Street

Stanton Street

Garden Grove

Node	Total Area (acres)	Q1 (cfs)	Q2 (cfs)	Q3 (cfs)
Node 1	1.2	1.2	1.2	1.2
Node 2	1.2	1.2	1.2	1.2
Node 3	1.2	1.2	1.2	1.2
Node 4	1.2	1.2	1.2	1.2
Node 5	1.2	1.2	1.2	1.2
Node 6	1.2	1.2	1.2	1.2
Node 7	1.2	1.2	1.2	1.2
Node 8	1.2	1.2	1.2	1.2
Node 9	1.2	1.2	1.2	1.2
Node 10	1.2	1.2	1.2	1.2
Node 11	1.2	1.2	1.2	1.2
Node 12	1.2	1.2	1.2	1.2
Node 13	1.2	1.2	1.2	1.2
Node 14	1.2	1.2	1.2	1.2
Node 15	1.2	1.2	1.2	1.2
Node 16	1.2	1.2	1.2	1.2
Node 17	1.2	1.2	1.2	1.2
Node 18	1.2	1.2	1.2	1.2
Node 19	1.2	1.2	1.2	1.2
Node 20	1.2	1.2	1.2	1.2
Node 21	1.2	1.2	1.2	1.2
Node 22	1.2	1.2	1.2	1.2
Node 23	1.2	1.2	1.2	1.2
Node 24	1.2	1.2	1.2	1.2
Node 25	1.2	1.2	1.2	1.2
Node 26	1.2	1.2	1.2	1.2
Node 27	1.2	1.2	1.2	1.2
Node 28	1.2	1.2	1.2	1.2
Node 29	1.2	1.2	1.2	1.2
Node 30	1.2	1.2	1.2	1.2
Node 31	1.2	1.2	1.2	1.2
Node 32	1.2	1.2	1.2	1.2
Node 33	1.2	1.2	1.2	1.2
Node 34	1.2	1.2	1.2	1.2
Node 35	1.2	1.2	1.2	1.2
Node 36	1.2	1.2	1.2	1.2
Node 37	1.2	1.2</		

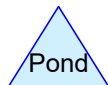
Attachment D – TR-55 Model Output



Subcat



Reach



Pond



Link

Routing Diagram for DLX7 - Cypress Amazon Delivery - EX
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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.120	39	>75% Grass cover, Good, HSG A (A, B, C)
10.840	98	Paved parking, HSG A (A, B, C)
14.960	82	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
14.960	HSG A	A, B, C
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
14.960		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
4.120	0.000	0.000	0.000	0.000	4.120	>75% Grass cover, Good	A, B, C
10.840	0.000	0.000	0.000	0.000	10.840	Paved parking	A, B, C
14.960	0.000	0.000	0.000	0.000	14.960	TOTAL AREA	

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Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentA: EX DMA

Runoff Area=10.840 ac 78.41% Impervious Runoff Depth>2.73"
Tc=5.0 min CN=85 Runoff=24.76 cfs 2.462 af

SubcatchmentB: EX DMA

Runoff Area=1.960 ac 72.96% Impervious Runoff Depth=2.46"
Tc=5.0 min CN=82 Runoff=4.00 cfs 0.402 af

SubcatchmentC: EX DMA

Runoff Area=2.160 ac 42.13% Impervious Runoff Depth=1.15"
Flow Length=235' Slope=0.0150 '/' Tc=27.2 min CN=64 Runoff=0.86 cfs 0.206 af

Reach 3R: Existing Discharge

Inflow=28.98 cfs 3.070 af
Outflow=28.98 cfs 3.070 af

Total Runoff Area = 14.960 ac Runoff Volume = 3.070 af Average Runoff Depth = 2.46"
27.54% Pervious = 4.120 ac 72.46% Impervious = 10.840 ac

DLX7 - Cypress Amazon Delivery - EX

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Type I 24-hr 25-yr Rainfall=4.30"

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Summary for Subcatchment A: EX DMA[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 24.76 cfs @ 9.95 hrs, Volume= 2.462 af, Depth> 2.73"

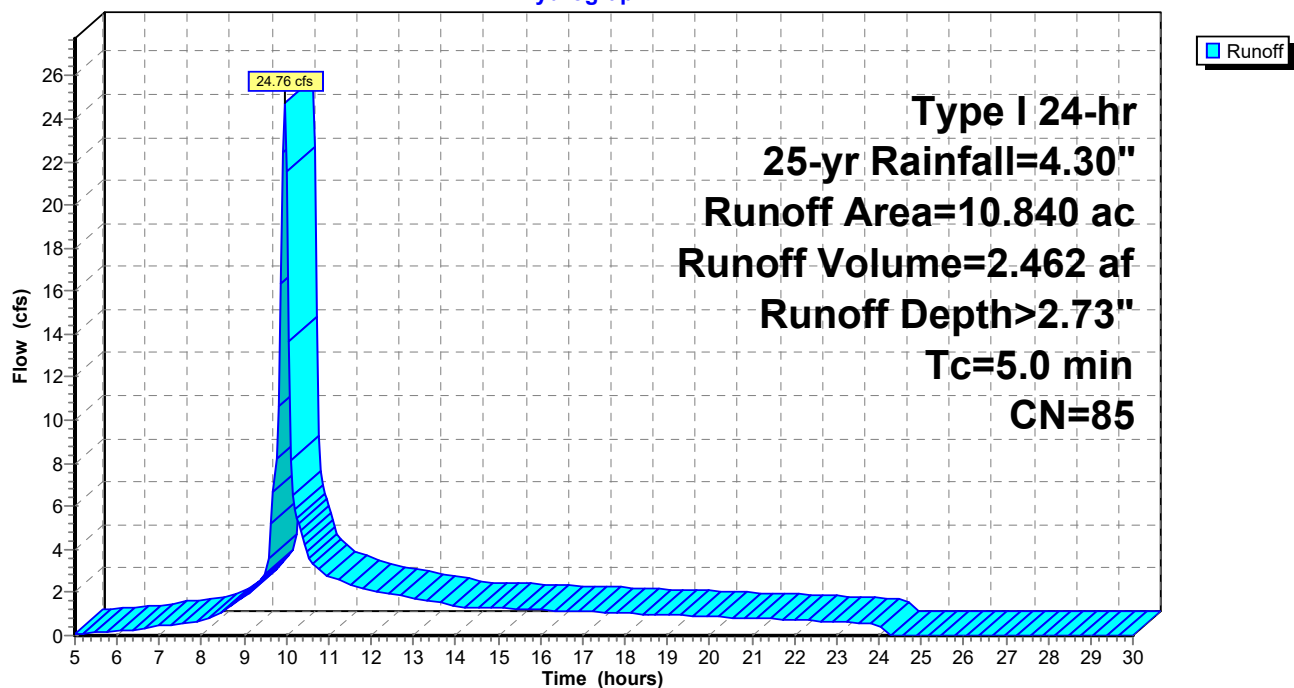
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, $dt=0.05$ hrs
Type I 24-hr 25-yr Rainfall=4.30"

Area (ac)	CN	Description
8.500	98	Paved parking, HSG A
2.340	39	>75% Grass cover, Good, HSG A
10.840	85	Weighted Average
2.340		21.59% Pervious Area
8.500		78.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment A: EX DMA

Hydrograph



DLX7 - Cypress Amazon Delivery - EX

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Type I 24-hr 25-yr Rainfall=4.30"

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Summary for Subcatchment B: EX DMA[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 4.00 cfs @ 9.95 hrs, Volume= 0.402 af, Depth= 2.46"

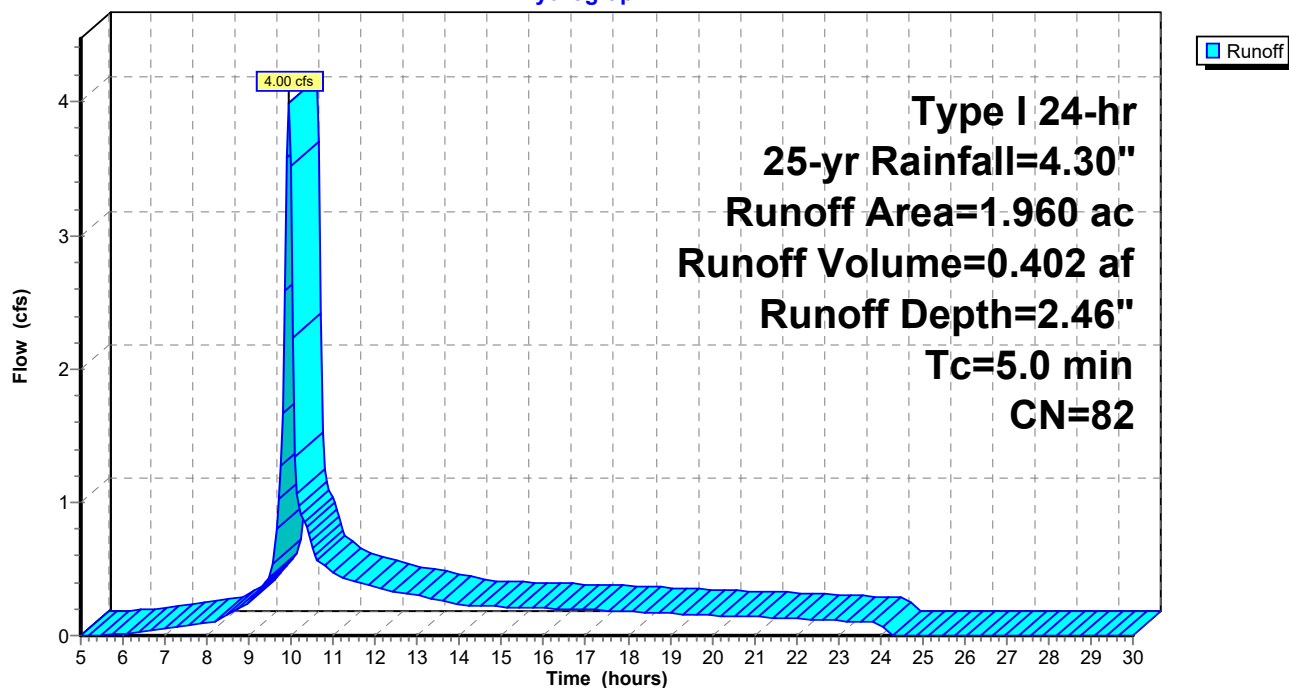
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, $dt=0.05$ hrs
Type I 24-hr 25-yr Rainfall=4.30"

Area (ac)	CN	Description
1.430	98	Paved parking, HSG A
0.530	39	>75% Grass cover, Good, HSG A
1.960	82	Weighted Average
0.530		27.04% Pervious Area
1.430		72.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment B: EX DMA

Hydrograph



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Type I 24-hr 25-yr Rainfall=4.30"

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Summary for Subcatchment C: EX DMA

Runoff = 0.86 cfs @ 10.25 hrs, Volume= 0.206 af, Depth= 1.15"

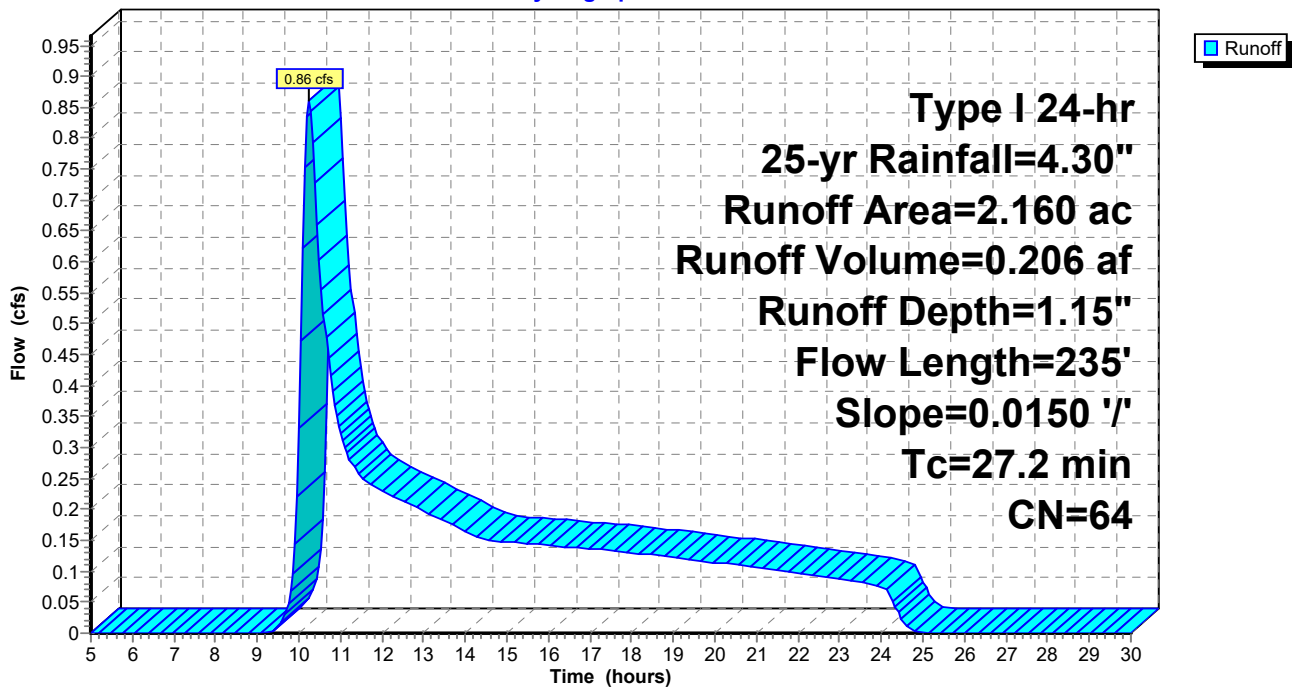
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type I 24-hr 25-yr Rainfall=4.30"

Area (ac)	CN	Description
0.910	98	Paved parking, HSG A
1.250	39	>75% Grass cover, Good, HSG A
2.160	64	Weighted Average
1.250		57.87% Pervious Area
0.910		42.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.2	235	0.0150	0.14		Sheet Flow, Sheet Flow
Grass: Short n= 0.150 P2= 2.05"					

Subcatchment C: EX DMA

Hydrograph



Summary for Reach 3R: Existing Discharge

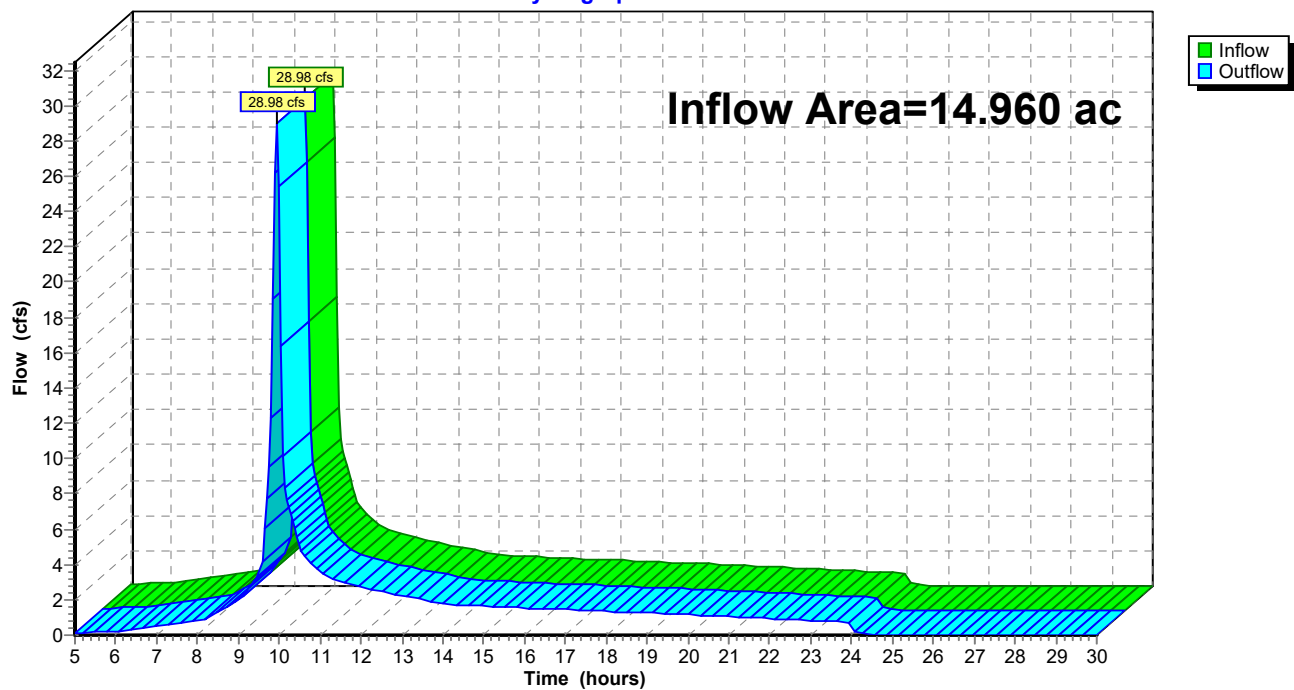
[40] Hint: Not Described (Outflow=Inflow)

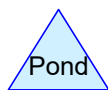
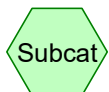
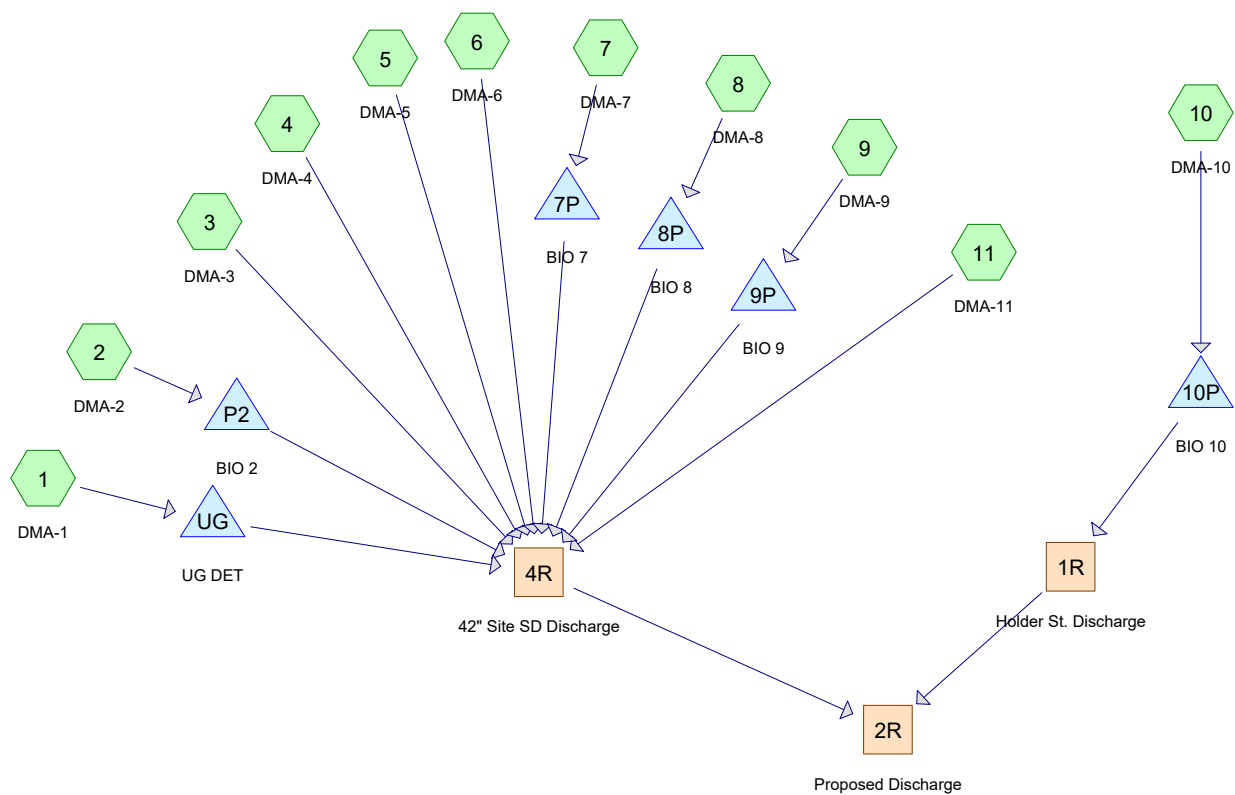
Inflow Area = 14.960 ac, 72.46% Impervious, Inflow Depth > 2.46" for 25-yr event
Inflow = 28.98 cfs @ 9.95 hrs, Volume= 3.070 af
Outflow = 28.98 cfs @ 9.95 hrs, Volume= 3.070 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Reach 3R: Existing Discharge

Hydrograph





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DLX7 - Cypress Amazon Delivery*Type I 24-hr 25-yr Rainfall=4.30"*

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Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: DMA-1	Runoff Area=6.060 ac 79.54% Impervious Runoff Depth>2.81" Tc=5.0 min CN=86 Runoff=14.34 cfs 1.421 af
Subcatchment2: DMA-2	Runoff Area=1.110 ac 77.48% Impervious Runoff Depth>2.73" Tc=5.0 min CN=85 Runoff=2.54 cfs 0.252 af
Subcatchment3: DMA-3	Runoff Area=0.440 ac 72.73% Impervious Runoff Depth=2.46" Tc=5.0 min CN=82 Runoff=0.90 cfs 0.090 af
Subcatchment4: DMA-4	Runoff Area=0.270 ac 92.59% Impervious Runoff Depth>3.53" Tc=5.0 min CN=94 Runoff=0.80 cfs 0.079 af
Subcatchment5: DMA-5	Runoff Area=0.420 ac 92.86% Impervious Runoff Depth>3.53" Tc=5.0 min CN=94 Runoff=1.25 cfs 0.123 af
Subcatchment6: DMA-6	Runoff Area=0.300 ac 93.33% Impervious Runoff Depth>3.53" Tc=5.0 min CN=94 Runoff=0.89 cfs 0.088 af
Subcatchment7: DMA-7	Runoff Area=0.280 ac 46.43% Impervious Runoff Depth=1.27" Tc=5.0 min CN=66 Runoff=0.24 cfs 0.030 af
Subcatchment8: DMA-8	Runoff Area=2.720 ac 85.29% Impervious Runoff Depth>3.08" Tc=5.0 min CN=89 Runoff=7.10 cfs 0.699 af
Subcatchment9: DMA-9	Runoff Area=1.110 ac 68.47% Impervious Runoff Depth=2.21" Tc=5.0 min CN=79 Runoff=2.00 cfs 0.204 af
Subcatchment10: DMA-10	Runoff Area=0.510 ac 50.98% Impervious Runoff Depth=1.47" Tc=5.0 min CN=69 Runoff=0.54 cfs 0.062 af
Subcatchment11: DMA-11	Runoff Area=1.740 ac 80.46% Impervious Runoff Depth>2.81" Tc=5.0 min CN=86 Runoff=4.12 cfs 0.408 af
Reach 1R: Holder St. Discharge	Inflow=0.22 cfs 0.062 af Outflow=0.22 cfs 0.062 af
Reach 2R: Proposed Discharge	Inflow=20.58 cfs 3.457 af Outflow=20.58 cfs 3.457 af
Reach 4R: 42" Site SD Discharge	Inflow=20.38 cfs 3.394 af Outflow=20.38 cfs 3.394 af
Pond 7P: BIO 7	Peak Elev=35.29' Storage=73 cf Inflow=0.24 cfs 0.030 af Outflow=0.16 cfs 0.030 af
Pond 8P: BIO 8	Peak Elev=38.37' Storage=9,167 cf Inflow=7.10 cfs 0.699 af Outflow=0.86 cfs 0.698 af

DLX7 - Cypress Amazon Delivery*Type I 24-hr 25-yr Rainfall=4.30"*

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Pond 9P: BIO 9Peak Elev=38.45' Storage=1,431 cf Inflow=2.00 cfs 0.204 af
Outflow=0.64 cfs 0.204 af**Pond 10P: BIO 10**Peak Elev=38.29' Storage=279 cf Inflow=0.54 cfs 0.062 af
Outflow=0.22 cfs 0.062 af**Pond P2: BIO 2**Peak Elev=37.01' Storage=1,809 cf Inflow=2.54 cfs 0.252 af
Outflow=0.82 cfs 0.252 af**Pond UG: UG DET**Peak Elev=39.52' Storage=0.170 af Inflow=14.34 cfs 1.421 af
Outflow=11.11 cfs 1.421 af**Total Runoff Area = 14.960 ac Runoff Volume = 3.458 af Average Runoff Depth = 2.77"**
21.19% Pervious = 3.170 ac 78.81% Impervious = 11.790 ac

DLX7 - Cypress Amazon Delivery

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Type I 24-hr 25-yr Rainfall=4.30"

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Page 4

Summary for Subcatchment 1: DMA-1[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 14.34 cfs @ 9.95 hrs, Volume= 1.421 af, Depth> 2.81"

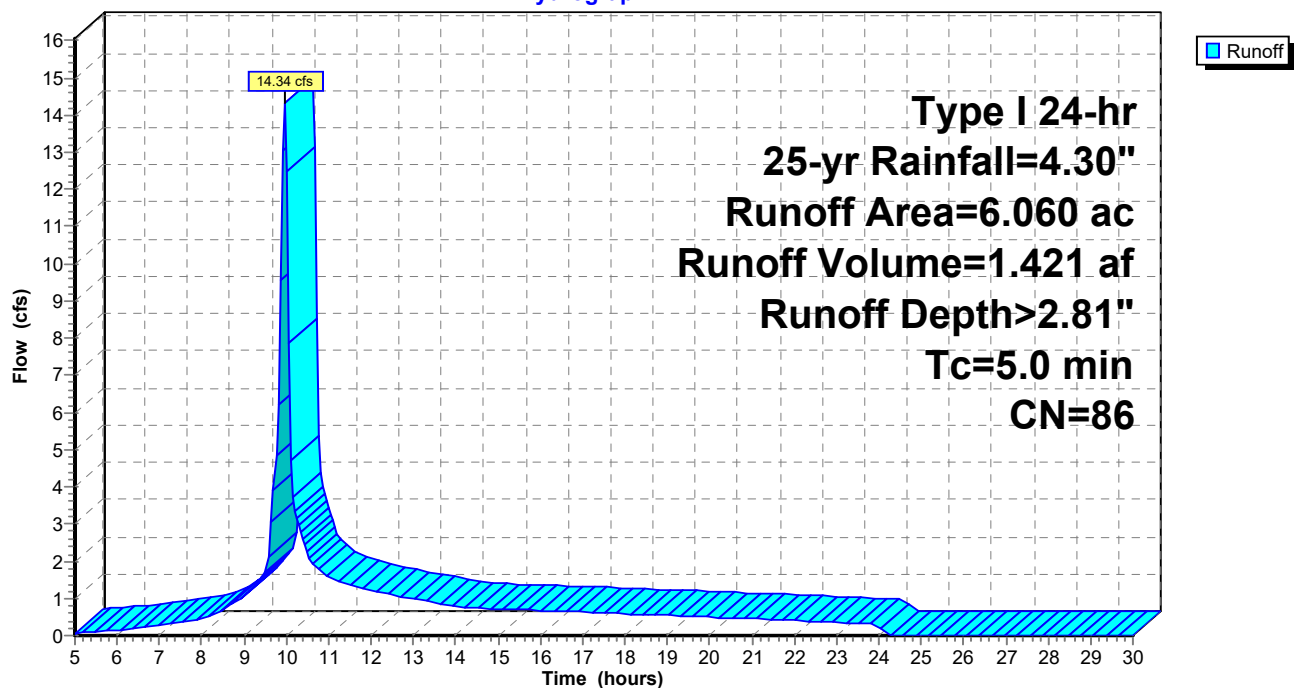
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, $dt=0.05$ hrs
Type I 24-hr 25-yr Rainfall=4.30"

Area (ac)	CN	Description
4.820	98	Paved parking, HSG A
1.240	39	>75% Grass cover, Good, HSG A
6.060	86	Weighted Average
1.240		20.46% Pervious Area
4.820		79.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 1: DMA-1

Hydrograph



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Type I 24-hr 25-yr Rainfall=4.30"

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Summary for Subcatchment 2: DMA-2[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 2.54 cfs @ 9.95 hrs, Volume= 0.252 af, Depth> 2.73"

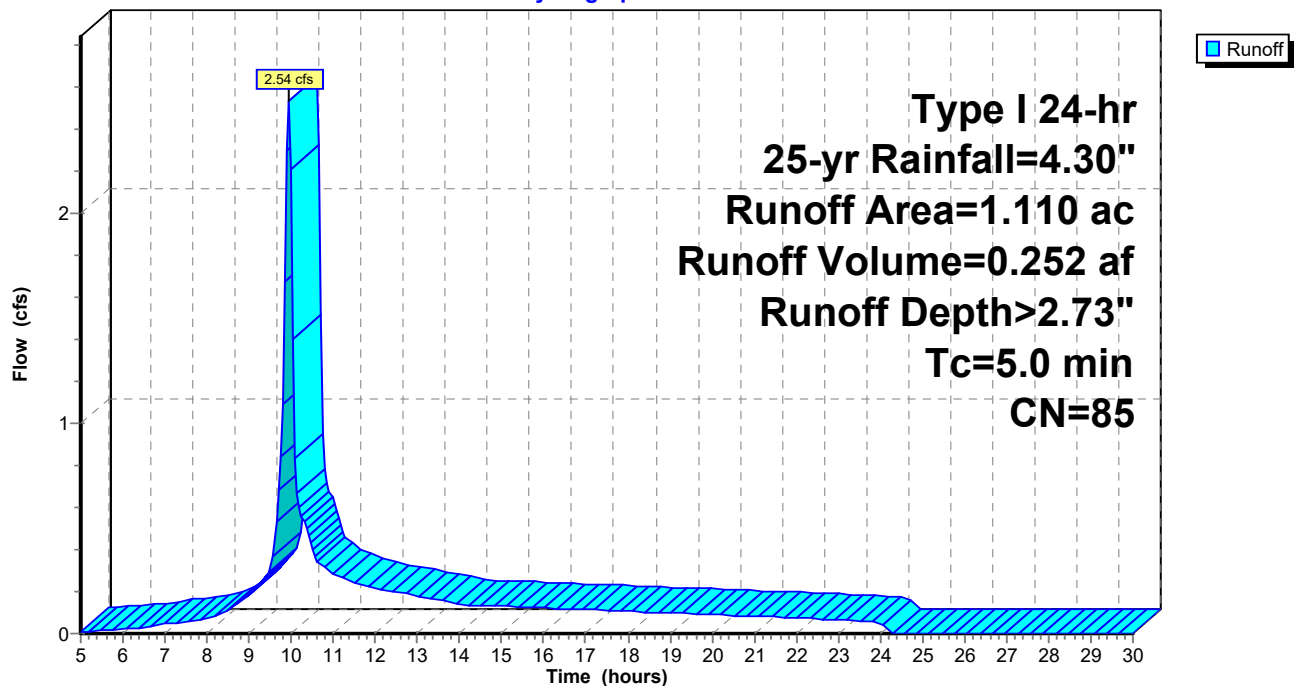
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, $dt=0.05$ hrs
Type I 24-hr 25-yr Rainfall=4.30"

Area (ac)	CN	Description
0.860	98	Paved parking, HSG A
0.250	39	>75% Grass cover, Good, HSG A
1.110	85	Weighted Average
0.250		22.52% Pervious Area
0.860		77.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 2: DMA-2

Hydrograph



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Type I 24-hr 25-yr Rainfall=4.30"

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Summary for Subcatchment 3: DMA-3[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 0.90 cfs @ 9.95 hrs, Volume= 0.090 af, Depth= 2.46"

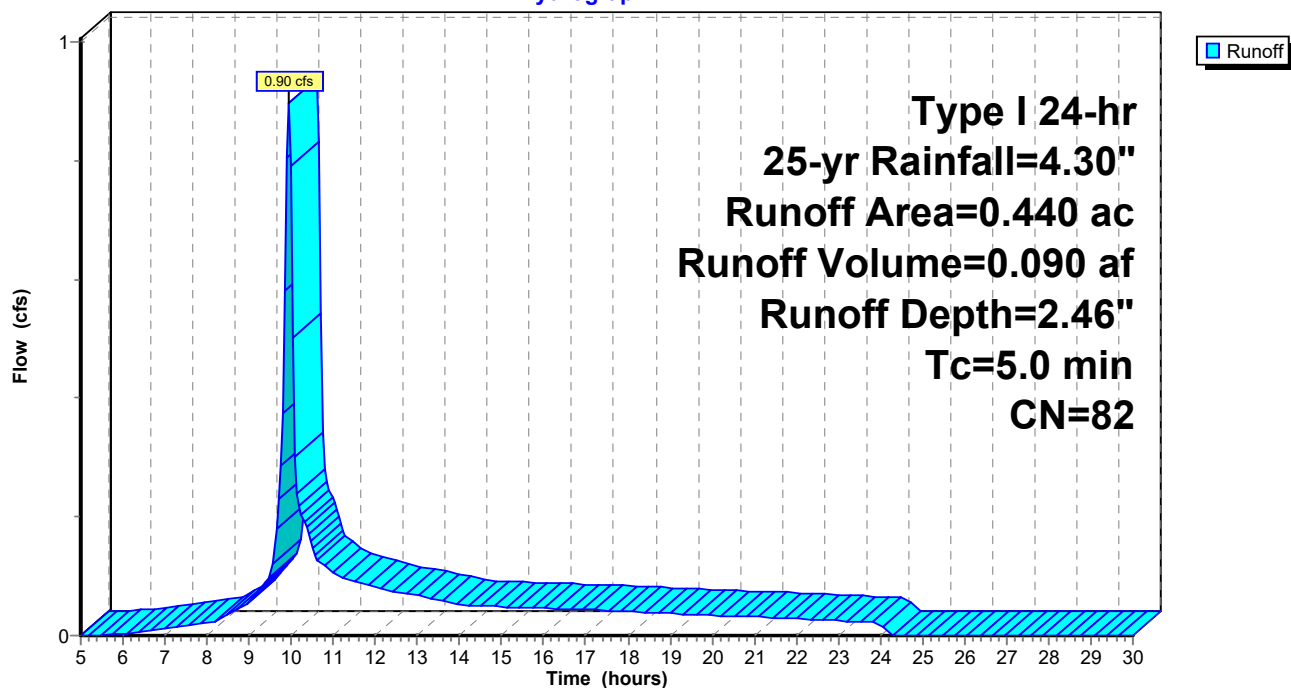
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, $dt=0.05$ hrs
Type I 24-hr 25-yr Rainfall=4.30"

Area (ac)	CN	Description
0.320	98	Paved parking, HSG A
0.120	39	>75% Grass cover, Good, HSG A
0.440	82	Weighted Average
0.120		27.27% Pervious Area
0.320		72.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 3: DMA-3

Hydrograph



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Type I 24-hr 25-yr Rainfall=4.30"

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Summary for Subcatchment 4: DMA-4[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 0.80 cfs @ 9.94 hrs, Volume= 0.079 af, Depth> 3.53"

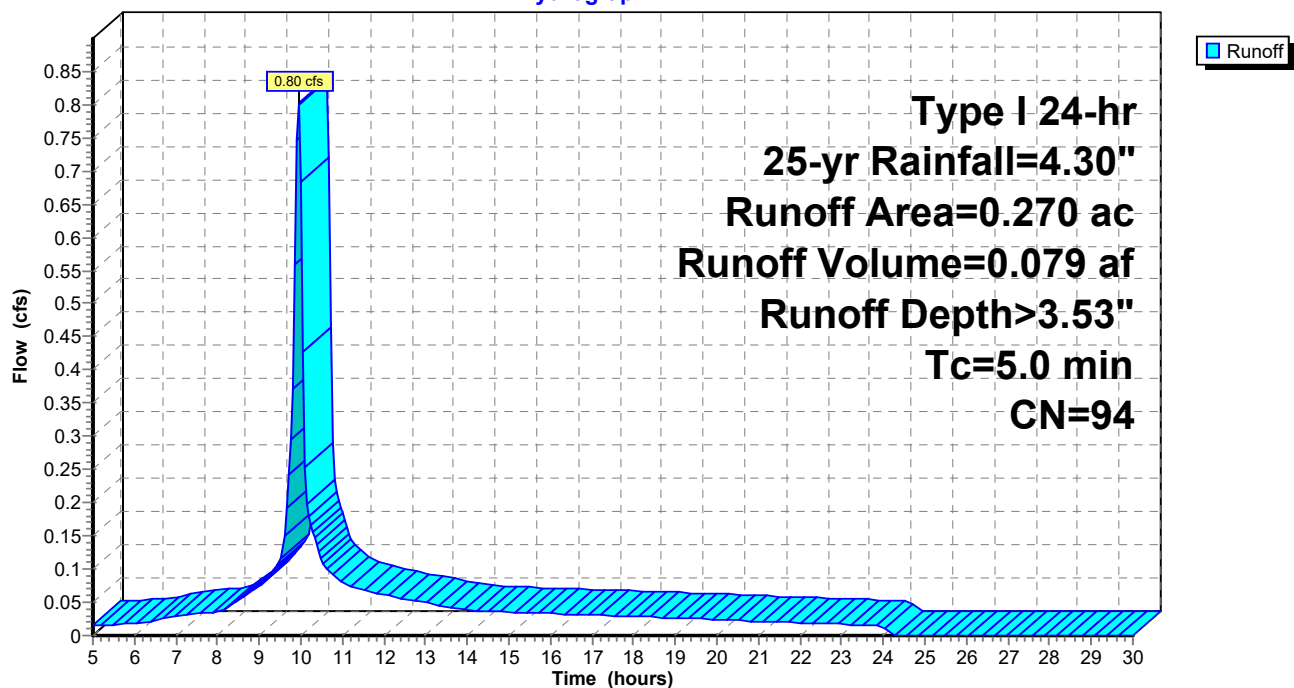
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, $dt=0.05$ hrs
Type I 24-hr 25-yr Rainfall=4.30"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG A
0.020	39	>75% Grass cover, Good, HSG A
0.270	94	Weighted Average
0.020		7.41% Pervious Area
0.250		92.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 4: DMA-4

Hydrograph



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Type I 24-hr 25-yr Rainfall=4.30"

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Summary for Subcatchment 5: DMA-5[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 1.25 cfs @ 9.94 hrs, Volume= 0.123 af, Depth> 3.53"

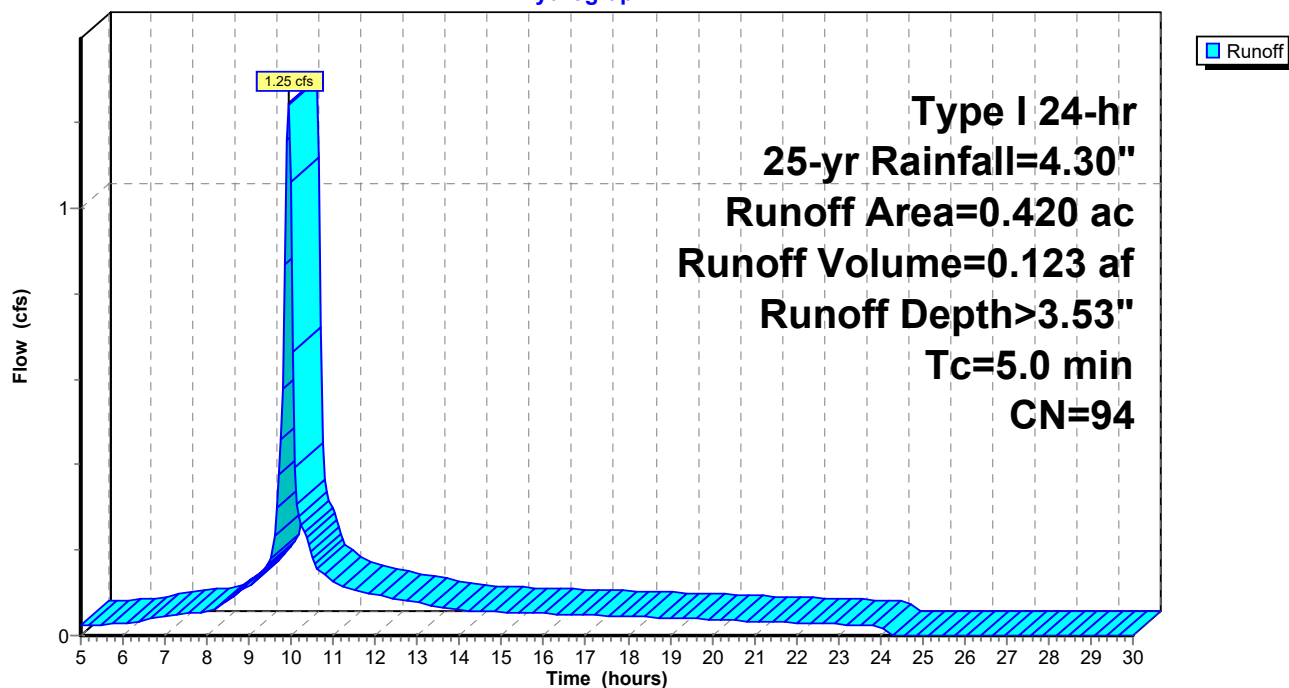
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, $dt=0.05$ hrs
Type I 24-hr 25-yr Rainfall=4.30"

Area (ac)	CN	Description
0.390	98	Paved parking, HSG A
0.030	39	>75% Grass cover, Good, HSG A
0.420	94	Weighted Average
0.030		7.14% Pervious Area
0.390		92.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 5: DMA-5

Hydrograph



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Summary for Subcatchment 6: DMA-6[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 0.89 cfs @ 9.94 hrs, Volume= 0.088 af, Depth> 3.53"

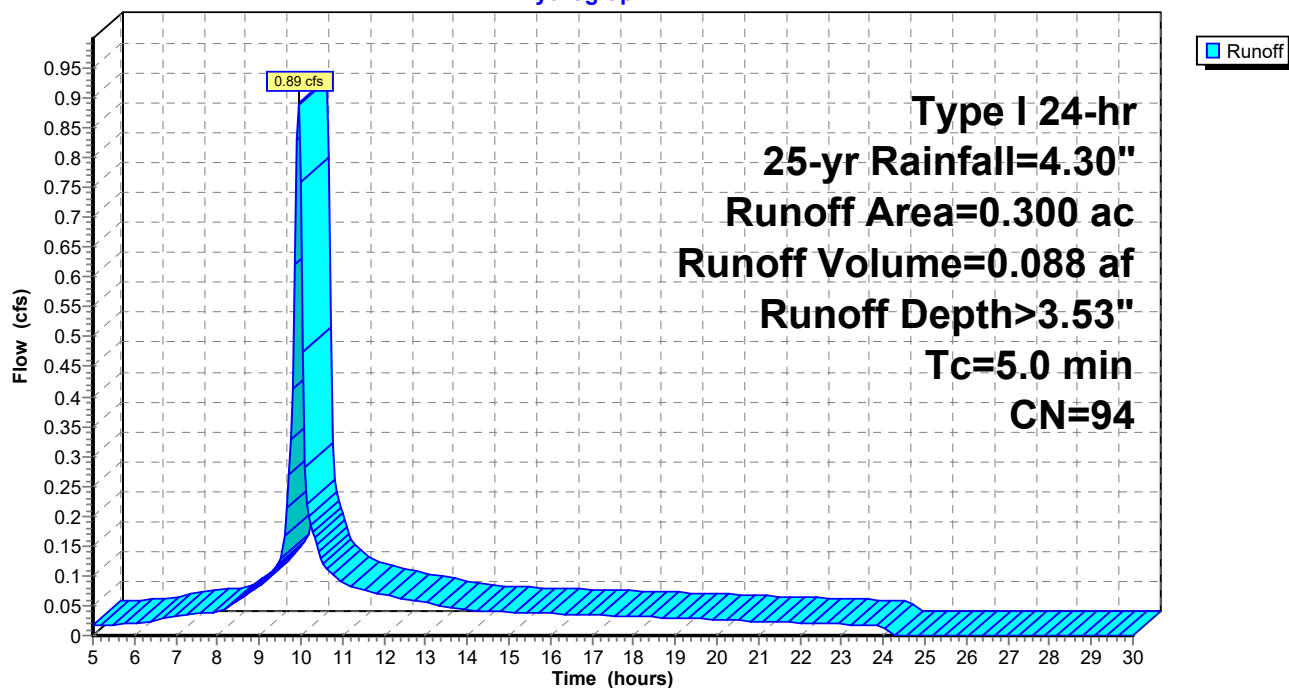
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, $dt=0.05$ hrs
Type I 24-hr 25-yr Rainfall=4.30"

Area (ac)	CN	Description
0.280	98	Paved parking, HSG A
0.020	39	>75% Grass cover, Good, HSG A
0.300	94	Weighted Average
0.020		6.67% Pervious Area
0.280		93.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 6: DMA-6

Hydrograph



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Type I 24-hr 25-yr Rainfall=4.30"

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Summary for Subcatchment 7: DMA-7[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 0.24 cfs @ 9.96 hrs, Volume= 0.030 af, Depth= 1.27"

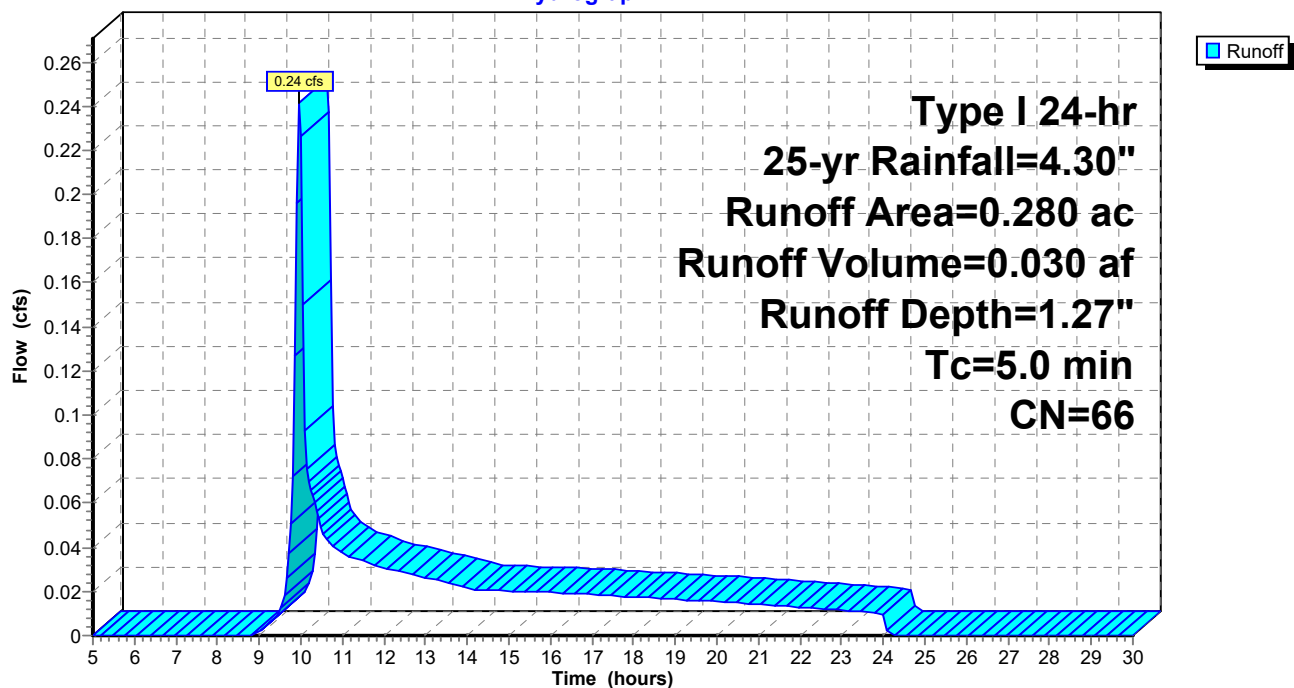
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, $dt=0.05$ hrs
Type I 24-hr 25-yr Rainfall=4.30"

Area (ac)	CN	Description
0.130	98	Paved parking, HSG A
0.150	39	>75% Grass cover, Good, HSG A
0.280	66	Weighted Average
0.150		53.57% Pervious Area
0.130		46.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 7: DMA-7

Hydrograph



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Type I 24-hr 25-yr Rainfall=4.30"

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Summary for Subcatchment 8: DMA-8[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 7.10 cfs @ 9.94 hrs, Volume= 0.699 af, Depth> 3.08"

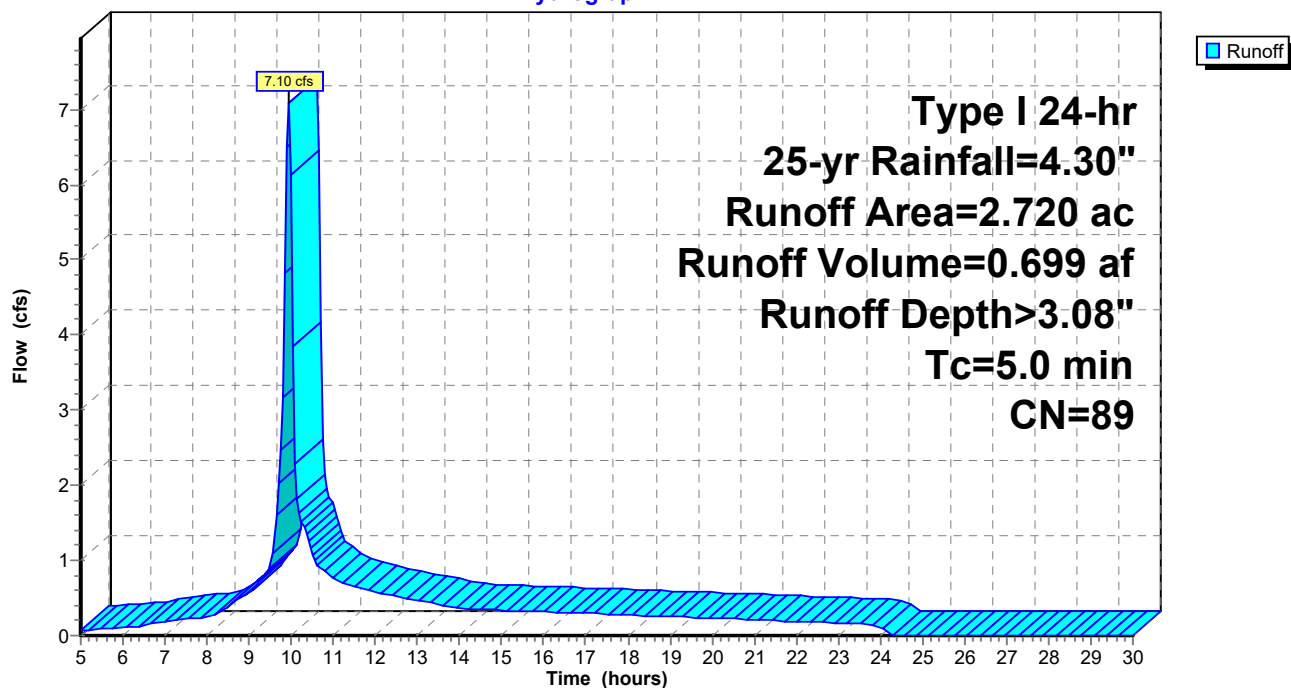
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, $dt=0.05$ hrs
Type I 24-hr 25-yr Rainfall=4.30"

Area (ac)	CN	Description
2.320	98	Paved parking, HSG A
0.400	39	>75% Grass cover, Good, HSG A
2.720	89	Weighted Average
0.400		14.71% Pervious Area
2.320		85.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 8: DMA-8

Hydrograph



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Type I 24-hr 25-yr Rainfall=4.30"

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Summary for Subcatchment 9: DMA-9[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 2.00 cfs @ 9.95 hrs, Volume= 0.204 af, Depth= 2.21"

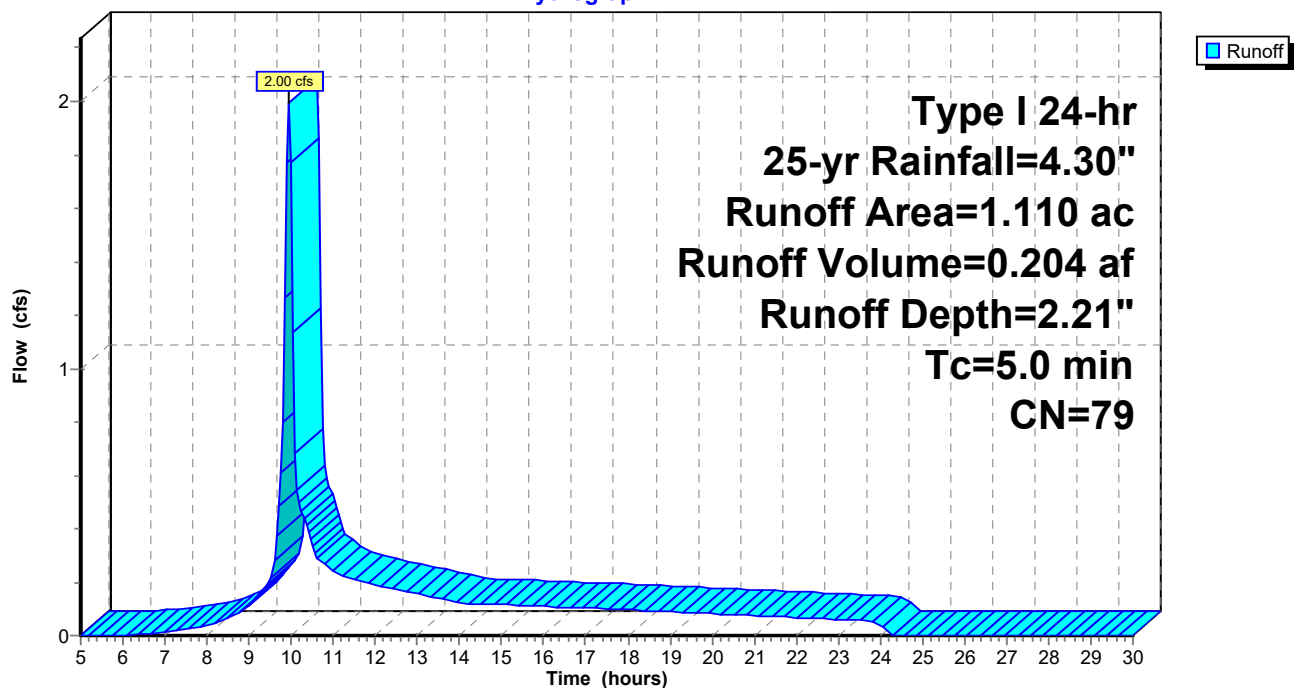
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, $dt=0.05$ hrs
Type I 24-hr 25-yr Rainfall=4.30"

Area (ac)	CN	Description
0.760	98	Paved parking, HSG A
0.350	39	>75% Grass cover, Good, HSG A
1.110	79	Weighted Average
0.350		31.53% Pervious Area
0.760		68.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 9: DMA-9

Hydrograph



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Type I 24-hr 25-yr Rainfall=4.30"

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Summary for Subcatchment 10: DMA-10[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 0.54 cfs @ 9.96 hrs, Volume= 0.062 af, Depth= 1.47"

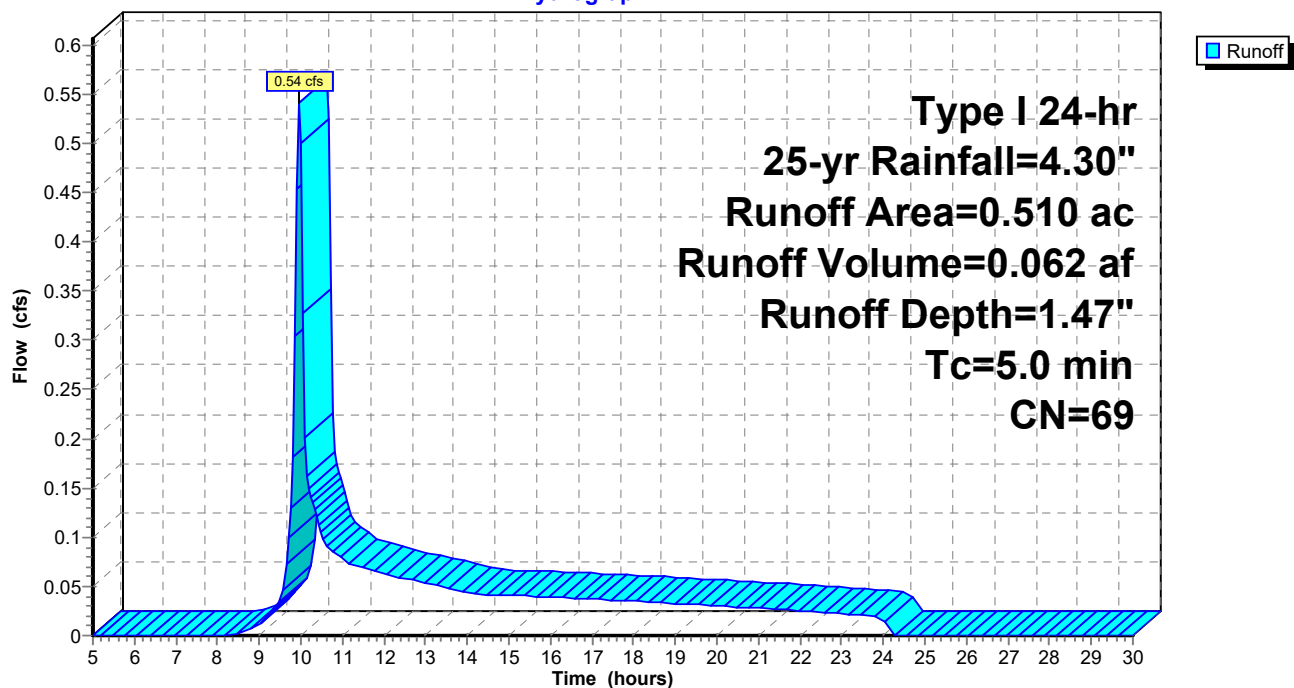
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, $dt=0.05$ hrs
Type I 24-hr 25-yr Rainfall=4.30"

Area (ac)	CN	Description
0.260	98	Paved parking, HSG A
0.250	39	>75% Grass cover, Good, HSG A
0.510	69	Weighted Average
0.250		49.02% Pervious Area
0.260		50.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 10: DMA-10

Hydrograph



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Type I 24-hr 25-yr Rainfall=4.30"

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Summary for Subcatchment 11: DMA-11[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 4.12 cfs @ 9.95 hrs, Volume= 0.408 af, Depth> 2.81"

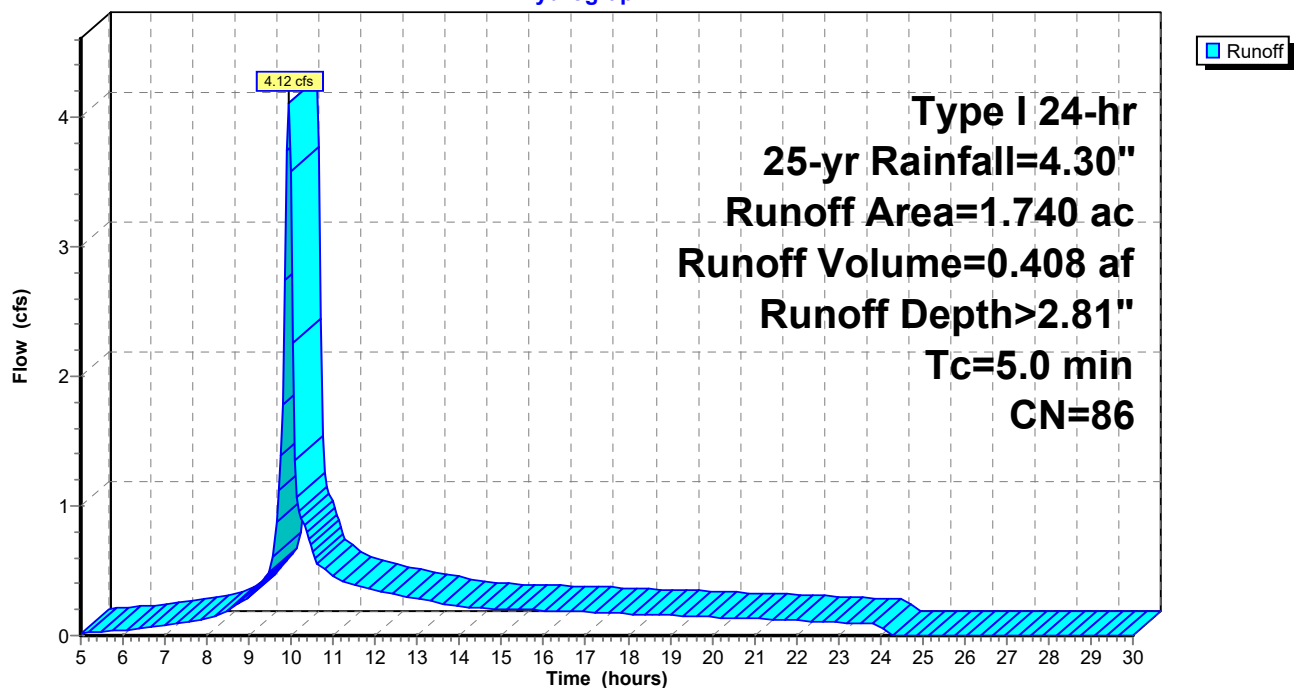
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, $dt=0.05$ hrs
Type I 24-hr 25-yr Rainfall=4.30"

Area (ac)	CN	Description
1.400	98	Paved parking, HSG A
0.340	39	>75% Grass cover, Good, HSG A
1.740	86	Weighted Average
0.340		19.54% Pervious Area
1.400		80.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 11: DMA-11

Hydrograph



Summary for Reach 1R: Holder St. Discharge

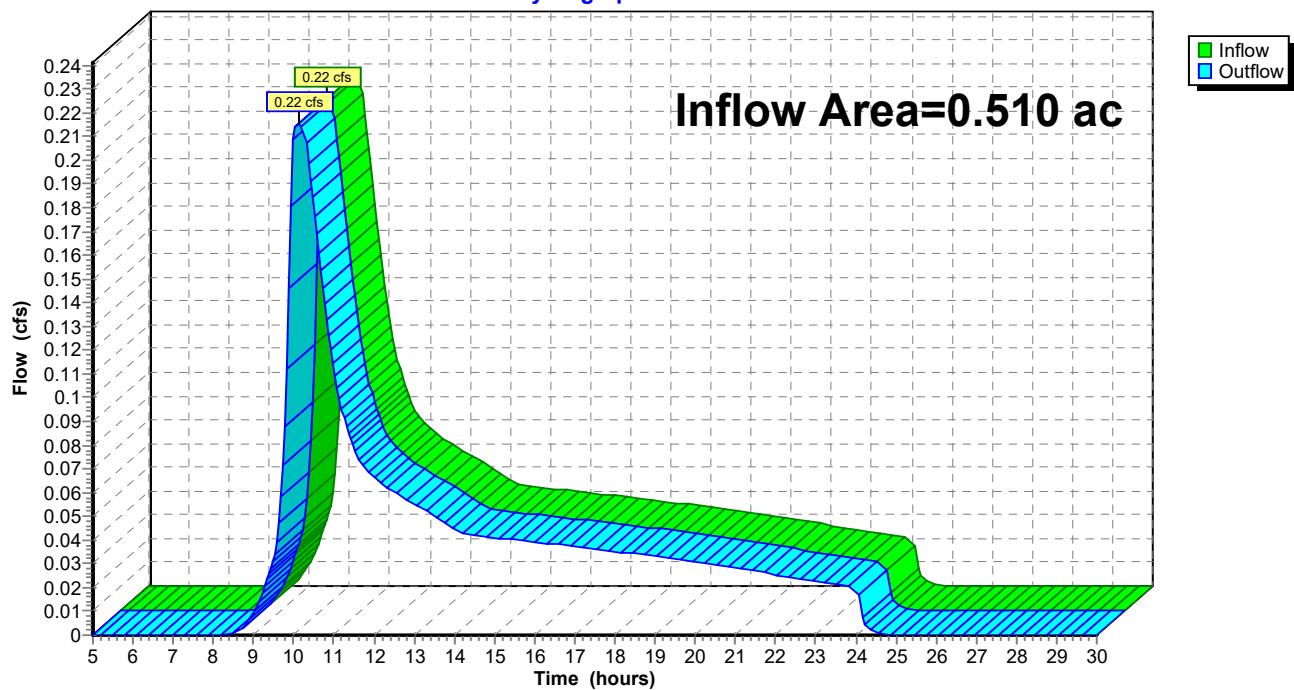
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.510 ac, 50.98% Impervious, Inflow Depth = 1.47" for 25-yr event
Inflow = 0.22 cfs @ 10.11 hrs, Volume= 0.062 af
Outflow = 0.22 cfs @ 10.11 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Reach 1R: Holder St. Discharge

Hydrograph

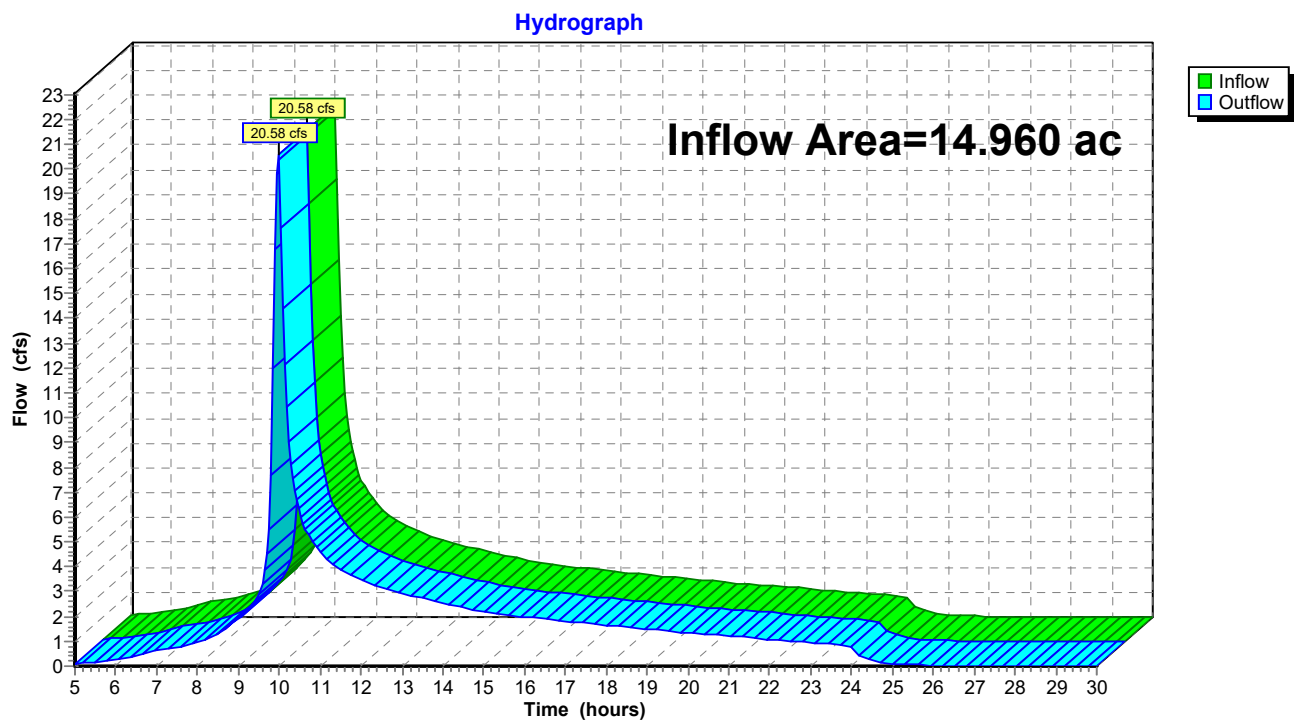


Summary for Reach 2R: Proposed Discharge

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 14.960 ac, 78.81% Impervious, Inflow Depth > 2.77" for 25-yr event
Inflow = 20.58 cfs @ 9.98 hrs, Volume= 3.457 af
Outflow = 20.58 cfs @ 9.98 hrs, Volume= 3.457 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Reach 2R: Proposed Discharge

Summary for Reach 4R: 42" Site SD Discharge

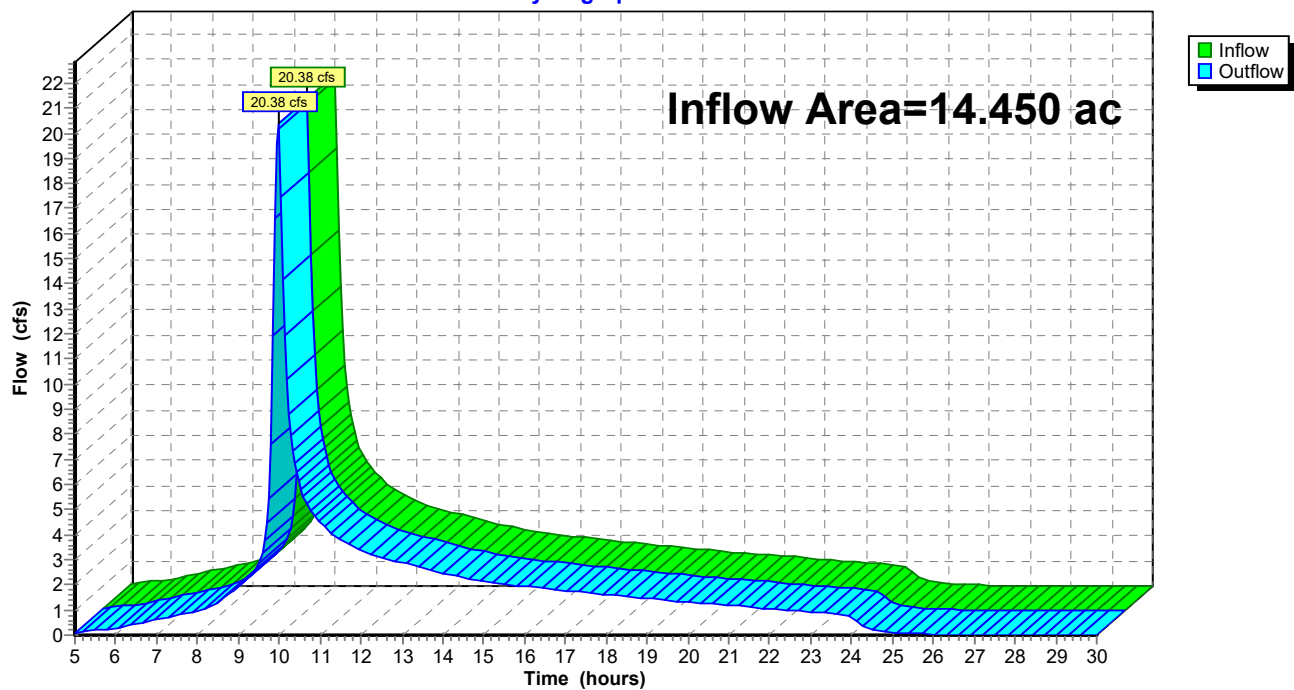
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 14.450 ac, 79.79% Impervious, Inflow Depth > 2.82" for 25-yr event
Inflow = 20.38 cfs @ 9.98 hrs, Volume= 3.394 af
Outflow = 20.38 cfs @ 9.98 hrs, Volume= 3.394 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Reach 4R: 42" Site SD Discharge

Hydrograph



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Summary for Pond 7P: BIO 7

Inflow Area = 0.280 ac, 46.43% Impervious, Inflow Depth = 1.27" for 25-yr event
 Inflow = 0.24 cfs @ 9.96 hrs, Volume= 0.030 af
 Outflow = 0.16 cfs @ 10.05 hrs, Volume= 0.030 af, Atten= 35%, Lag= 5.3 min
 Primary = 0.16 cfs @ 10.05 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 35.29' @ 10.05 hrs Surf.Area= 160 sf Storage= 73 cf

Plug-Flow detention time= 3.9 min calculated for 0.030 af (100% of inflow)
 Center-of-Mass det. time= 3.9 min (870.6 - 866.7)

Volume	Invert	Avail.Storage	Storage Description
#1	37.00'	484 cf	Open Storage (Prismatic) Listed below (Recalc)
#2	34.00'	96 cf	Soil (Prismatic) Listed below (Recalc)
			240 cf Overall x 40.0% Voids
#3	33.00'	32 cf	Stone (Prismatic) Listed below (Recalc)
			80 cf Overall x 40.0% Voids
612 cf			Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
37.00	80	0	0
38.00	224	152	152
39.00	440	332	484

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.00	80	0	0
35.00	80	80	80
36.00	80	80	160
37.00	80	80	240

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.00	80	0	0
34.00	80	80	80

Device	Routing	Invert	Outlet Devices
#1	Primary	33.00'	8.0" Round 8" Outlet L= 25.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 33.00' / 32.90' S= 0.0040 ' S= 0.0040 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	33.00'	2.0" Vert. 2" Drain Tile C= 0.600
#3	Device 1	38.50'	36.0" Horiz. Riser C= 0.600 Limited to weir flow at low heads
#4	Primary	39.00'	6.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

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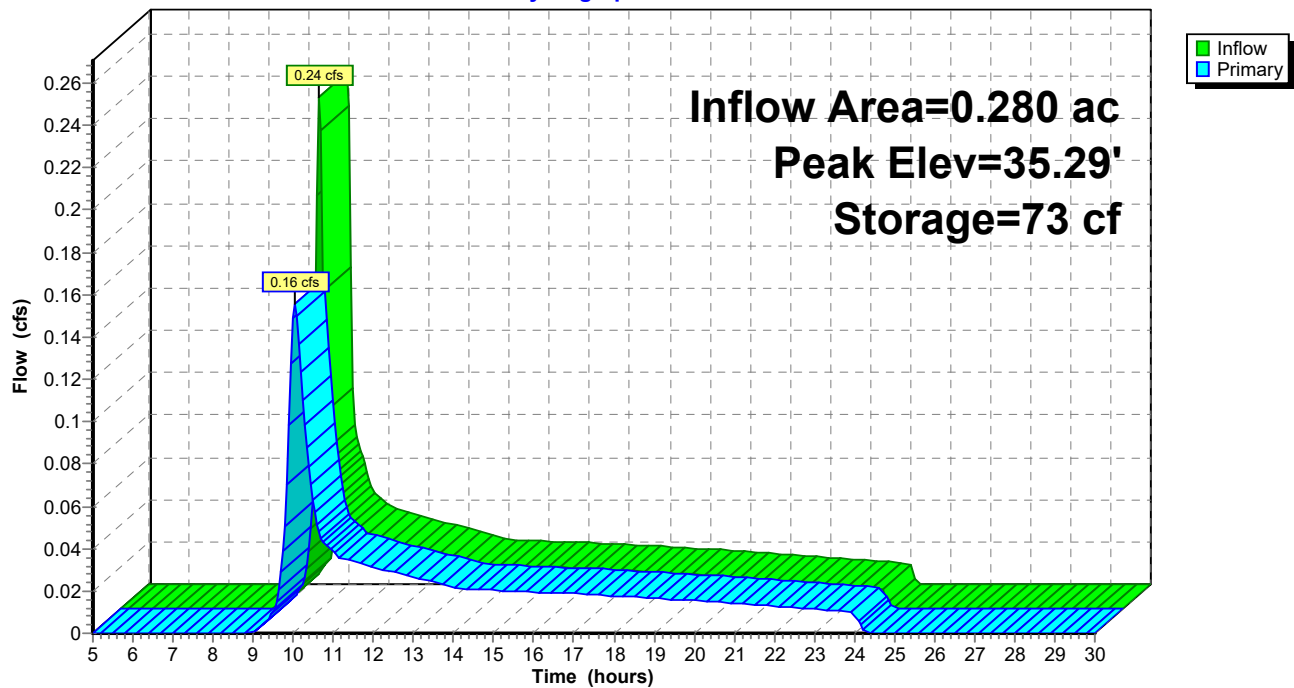
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Primary OutFlow Max=0.16 cfs @ 10.05 hrs HW=35.28' (Free Discharge)

- 1=8" Outlet (Passes 0.16 cfs of 2.18 cfs potential flow)
- 2=2" Drain Tile (Orifice Controls 0.16 cfs @ 7.14 fps)
- 3=Riser (Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 7P: BIO 7

Hydrograph



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Summary for Pond 8P: BIO 8

[82] Warning: Early inflow requires earlier time span

Inflow Area = 2.720 ac, 85.29% Impervious, Inflow Depth > 3.08" for 25-yr event
 Inflow = 7.10 cfs @ 9.94 hrs, Volume= 0.699 af
 Outflow = 0.86 cfs @ 10.76 hrs, Volume= 0.698 af, Atten= 88%, Lag= 48.9 min
 Primary = 0.86 cfs @ 10.76 hrs, Volume= 0.698 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 38.37' @ 10.76 hrs Surf.Area= 12,278 sf Storage= 9,167 cf

Plug-Flow detention time= 120.3 min calculated for 0.696 af (100% of inflow)
 Center-of-Mass det. time= 119.0 min (882.3 - 763.3)

Volume	Invert	Avail.Storage	Storage Description
#1	38.00'	12,388 cf	Open Storage (Prismatic) Listed below (Recalc)
#2	35.00'	5,700 cf	Soil (Prismatic) Listed below (Recalc)
			11,400 cf Overall x 50.0% Voids
#3	34.00'	1,900 cf	Stone (Prismatic) Listed below (Recalc)
			3,800 cf Overall x 50.0% Voids
		19,988 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
38.00	3,800	0	0
39.00	6,176	4,988	4,988
40.00	8,624	7,400	12,388

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
35.00	3,800	0	0
36.00	3,800	3,800	3,800
37.00	3,800	3,800	7,600
38.00	3,800	3,800	11,400

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.00	3,800	0	0
35.00	3,800	3,800	3,800

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	8.0" Round 8" Outlet L= 25.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 34.00' / 33.90' S= 0.0040 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	34.00'	4.0" Vert. 4" Drain Tile C= 0.600
#3	Device 1	39.50'	36.0" Horiz. Riser C= 0.600 Limited to weir flow at low heads
#4	Primary	39.90'	4.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50

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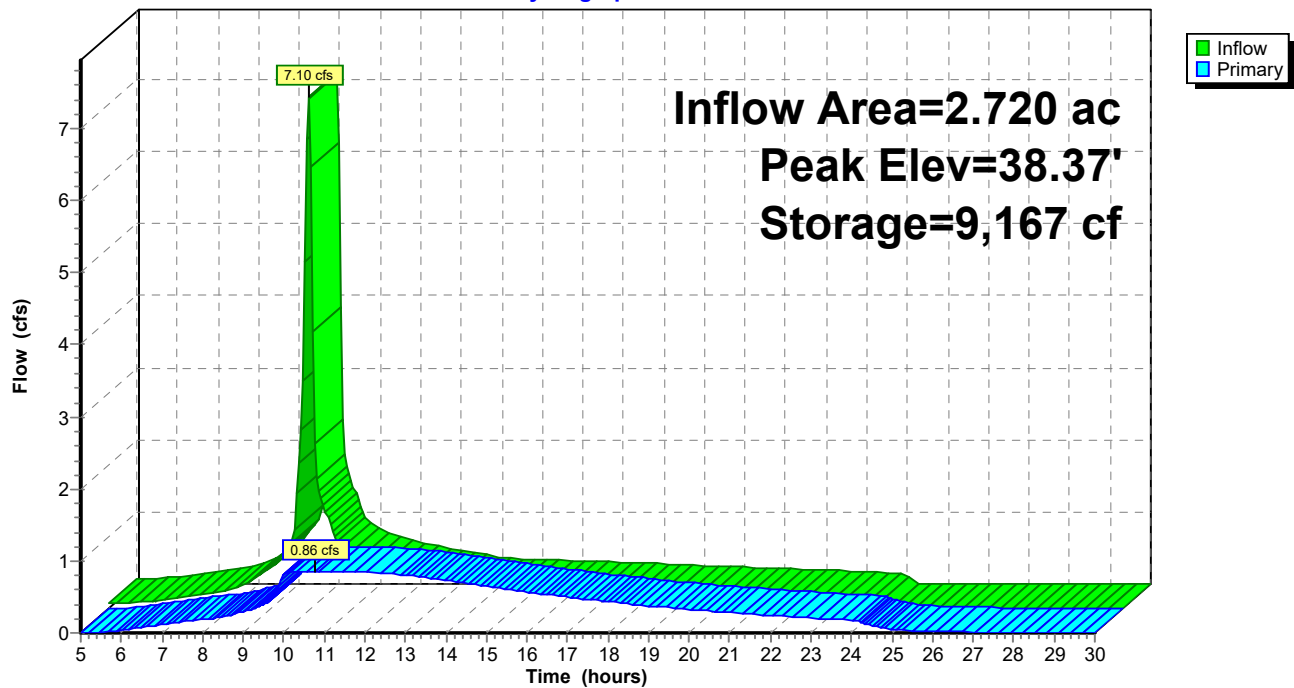
Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65
2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.86 cfs @ 10.76 hrs HW=38.37' (Free Discharge)

- 1=8" Outlet (Passes 0.86 cfs of 3.24 cfs potential flow)
- 2=4" Drain Tile (Orifice Controls 0.86 cfs @ 9.87 fps)
- 3=Riser (Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir(Controls 0.00 cfs)

Pond 8P: BIO 8

Hydrograph



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Summary for Pond 9P: BIO 9

Inflow Area = 1.110 ac, 68.47% Impervious, Inflow Depth = 2.21" for 25-yr event
 Inflow = 2.00 cfs @ 9.95 hrs, Volume= 0.204 af
 Outflow = 0.64 cfs @ 10.12 hrs, Volume= 0.204 af, Atten= 68%, Lag= 10.3 min
 Primary = 0.64 cfs @ 10.12 hrs, Volume= 0.204 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 38.45' @ 10.12 hrs Surf.Area= 2,920 sf Storage= 1,431 cf

Plug-Flow detention time= 25.8 min calculated for 0.204 af (100% of inflow)
 Center-of-Mass det. time= 25.7 min (833.4 - 807.7)

Volume	Invert	Avail.Storage	Storage Description
#1	40.00'	7,456 cf	Open Storage (Prismatic) Listed below (Recalc)
#2	37.00'	1,752 cf	Soil (Prismatic) Listed below (Recalc) 4,380 cf Overall x 40.0% Voids
#3	36.00'	584 cf	Stone (Prismatic) Listed below (Recalc) 1,460 cf Overall x 40.0% Voids
9,792 cf			Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
40.00	1,460	0	0
41.00	3,710	2,585	2,585
42.00	6,032	4,871	7,456

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
37.00	1,460	0	0
38.00	1,460	1,460	1,460
39.00	1,460	1,460	2,920
40.00	1,460	1,460	4,380

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.00	1,460	0	0
37.00	1,460	1,460	1,460

Device	Routing	Invert	Outlet Devices
#1	Primary	36.00'	8.0" Round 8" Outlet L= 25.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.00' / 35.90' S= 0.0040 ' S= 0.0040 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	36.00'	4.0" Vert. 4" Drain Tile C= 0.600
#3	Device 1	41.00'	36.0" Horiz. Riser C= 0.600 Limited to weir flow at low heads
#4	Primary	41.50'	6.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

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Primary OutFlow Max=0.63 cfs @ 10.12 hrs HW=38.44' (Free Discharge)

1=8" Outlet (Passes 0.63 cfs of 2.27 cfs potential flow)

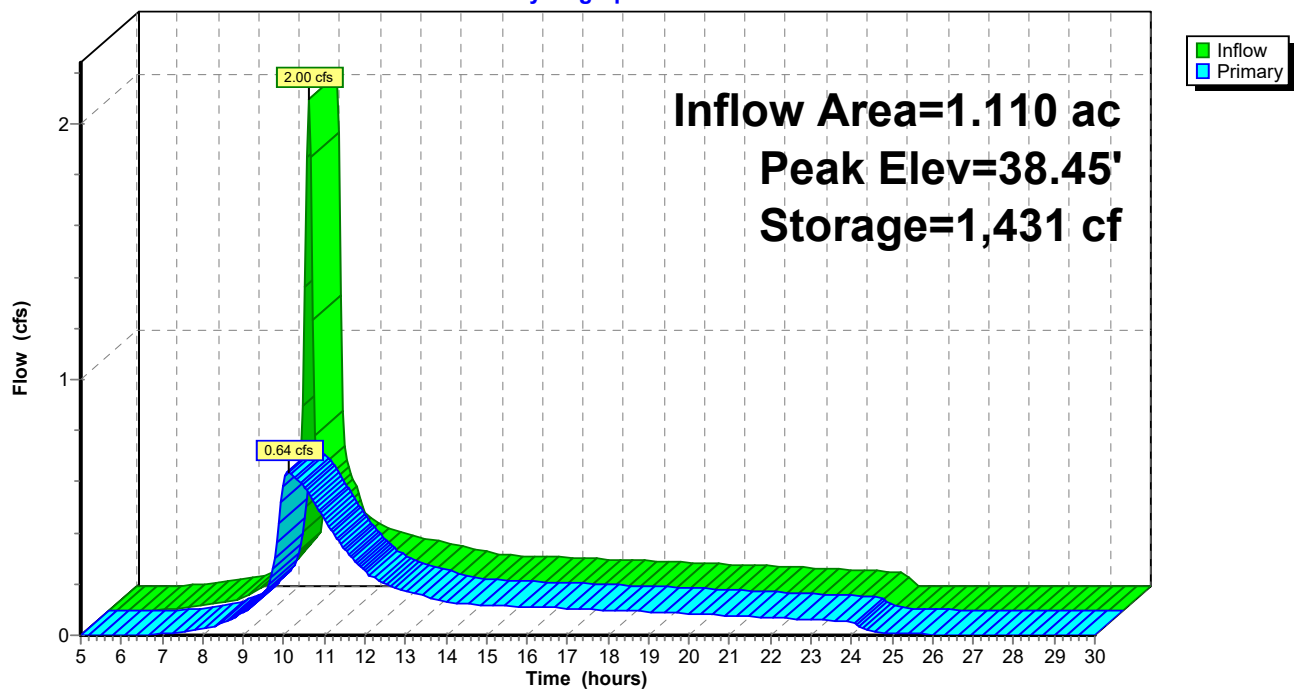
2=4" Drain Tile (Orifice Controls 0.63 cfs @ 7.26 fps)

3=Riser (Controls 0.00 cfs)

4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 9P: BIO 9

Hydrograph



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Summary for Pond 10P: BIO 10

Inflow Area = 0.510 ac, 50.98% Impervious, Inflow Depth = 1.47" for 25-yr event
 Inflow = 0.54 cfs @ 9.96 hrs, Volume= 0.062 af
 Outflow = 0.22 cfs @ 10.11 hrs, Volume= 0.062 af, Atten= 60%, Lag= 8.8 min
 Primary = 0.22 cfs @ 10.11 hrs, Volume= 0.062 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 38.29' @ 10.11 hrs Surf.Area= 484 sf Storage= 279 cf

Plug-Flow detention time= 9.0 min calculated for 0.062 af (100% of inflow)
 Center-of-Mass det. time= 9.0 min (861.2 - 852.2)

Volume	Invert	Avail.Storage	Storage Description
#1	38.00'	1,422 cf	Open Storage (Prismatic) Listed below (Recalc)
#2	35.00'	173 cf	Soil (Prismatic) Listed below (Recalc)
			432 cf Overall x 40.0% Voids
#3	34.00'	58 cf	Stone (Prismatic) Listed below (Recalc)
			144 cf Overall x 40.0% Voids
1,652 cf			Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
38.00	144	0	0
39.00	324	234	234
40.00	576	450	684
41.00	900	738	1,422

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
35.00	144	0	0
36.00	144	144	144
37.00	144	144	288
38.00	144	144	432

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.00	144	0	0
35.00	144	144	144

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	8.0" Round 8" Outlet L= 25.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 34.00' / 33.90' S= 0.0040 ' S= 0.0040 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	34.00'	2.0" Vert. 2" Drain Tile C= 0.600
#3	Device 1	39.50'	36.0" Horiz. Riser C= 0.600 Limited to weir flow at low heads
#4	Primary	40.00'	6.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65

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2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.22 cfs @ 10.11 hrs HW=38.28' (Free Discharge)

1=8" Outlet (Passes 0.22 cfs of 3.20 cfs potential flow)

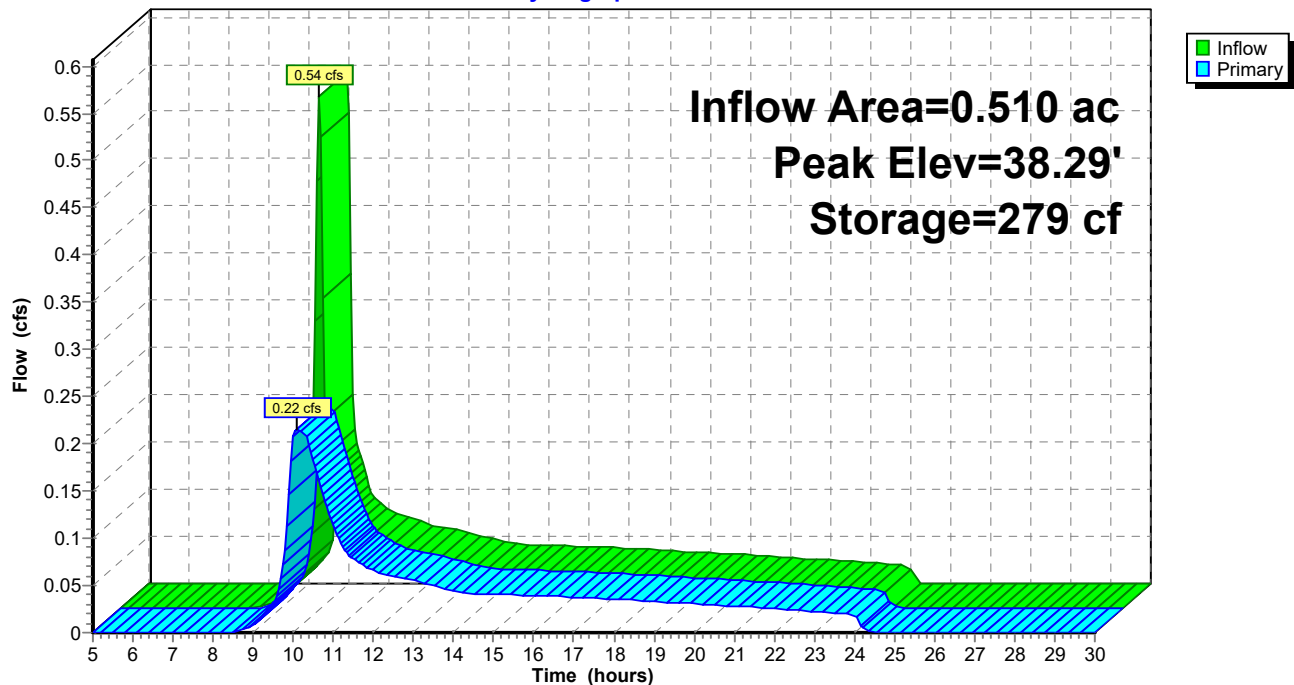
2=2" Drain Tile (Orifice Controls 0.22 cfs @ 9.87 fps)

3=Riser (Controls 0.00 cfs)

4=Broad-Crested Rectangular Weir(Controls 0.00 cfs)

Pond 10P: BIO 10

Hydrograph



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Summary for Pond P2: BIO 2

[82] Warning: Early inflow requires earlier time span

Inflow Area = 1.110 ac, 77.48% Impervious, Inflow Depth > 2.73" for 25-yr event
 Inflow = 2.54 cfs @ 9.95 hrs, Volume= 0.252 af
 Outflow = 0.82 cfs @ 10.12 hrs, Volume= 0.252 af, Atten= 68%, Lag= 10.2 min
 Primary = 0.82 cfs @ 10.12 hrs, Volume= 0.252 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 37.01' @ 10.12 hrs Surf.Area= 2,710 sf Storage= 1,809 cf

Plug-Flow detention time= 21.6 min calculated for 0.252 af (100% of inflow)
 Center-of-Mass det. time= 21.7 min (802.4 - 780.7)

Volume	Invert	Avail.Storage	Storage Description
#1	37.00'	3,875 cf	Open Storage (Prismatic) Listed below (Recalc)
#2	34.00'	1,350 cf	Soil (Prismatic) Listed below (Recalc) 2,700 cf Overall x 50.0% Voids
#3	33.00'	450 cf	Stone (Prismatic) Listed below (Recalc) 900 cf Overall x 50.0% Voids
5,675 cf			Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
37.00	900	0	0
38.00	1,925	1,413	1,413
39.00	3,000	2,463	3,875

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.00	900	0	0
35.00	900	900	900
36.00	900	900	1,800
37.00	900	900	2,700

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.00	900	0	0
34.00	900	900	900

Device	Routing	Invert	Outlet Devices
#1	Primary	33.00'	8.0" Round 8" Outlet L= 25.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 33.00' / 32.90' S= 0.0040 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	33.00'	4.0" Vert. 4" Drain Tile C= 0.600
#3	Device 1	37.50'	36.0" Horiz. Riser C= 0.600 Limited to weir flow at low heads
#4	Primary	38.00'	4.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50

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Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65
2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.82 cfs @ 10.12 hrs HW=36.99' (Free Discharge)

1=8" Outlet (Passes 0.82 cfs of 3.07 cfs potential flow)

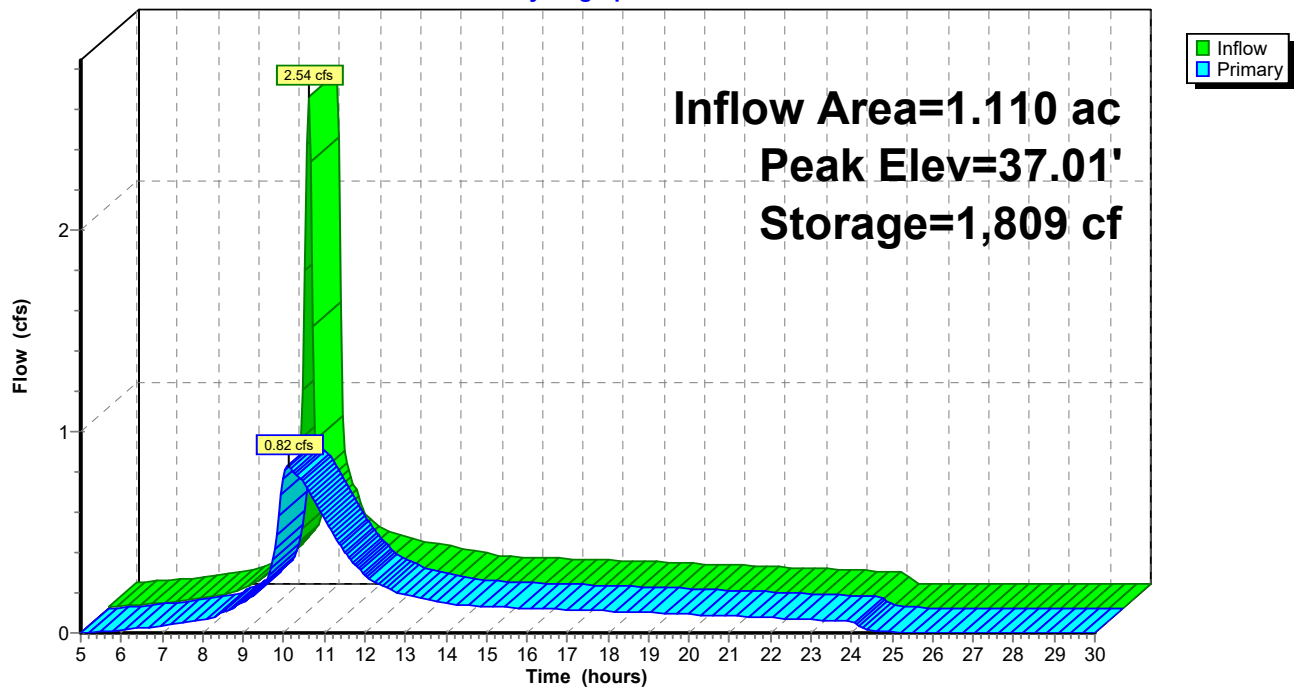
2=4" Drain Tile (Orifice Controls 0.82 cfs @ 9.42 fps)

3=Riser (Controls 0.00 cfs)

4=Broad-Crested Rectangular Weir(Controls 0.00 cfs)

Pond P2: BIO 2

Hydrograph



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Type I 24-hr 25-yr Rainfall=4.30"

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Summary for Pond UG: UG DET

[82] Warning: Early inflow requires earlier time span

Inflow Area = 6.060 ac, 79.54% Impervious, Inflow Depth > 2.81" for 25-yr event
 Inflow = 14.34 cfs @ 9.95 hrs, Volume= 1.421 af
 Outflow = 11.11 cfs @ 10.01 hrs, Volume= 1.421 af, Atten= 23%, Lag= 4.2 min
 Primary = 11.11 cfs @ 10.01 hrs, Volume= 1.421 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 39.52' @ 10.01 hrs Surf.Area= 0.023 ac Storage= 0.170 af

Plug-Flow detention time= 27.4 min calculated for 1.421 af (100% of inflow)
 Center-of-Mass det. time= 27.0 min (803.3 - 776.3)

Volume	Invert	Avail.Storage	Storage Description
#1	35.70'	0.173 af	48.0" Round Pipe Storage L= 600.0'

Device	Routing	Invert	Outlet Devices
#1	Primary	35.70'	18.0" Round Culvert L= 28.9' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.70' / 35.10' S= 0.0208 ' / Cc= 0.900 n= 0.011, Flow Area= 1.77 sf
#2	Device 1	35.70'	6.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	37.50'	12.0" Vert. Orifice/Grate X 2.00 C= 0.600

Primary OutFlow Max=10.93 cfs @ 10.01 hrs HW=39.47' (Free Discharge)

1=Culvert (Passes 10.93 cfs of 14.78 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 1.77 cfs @ 9.03 fps)
 3=Orifice/Grate (Orifice Controls 9.16 cfs @ 5.83 fps)

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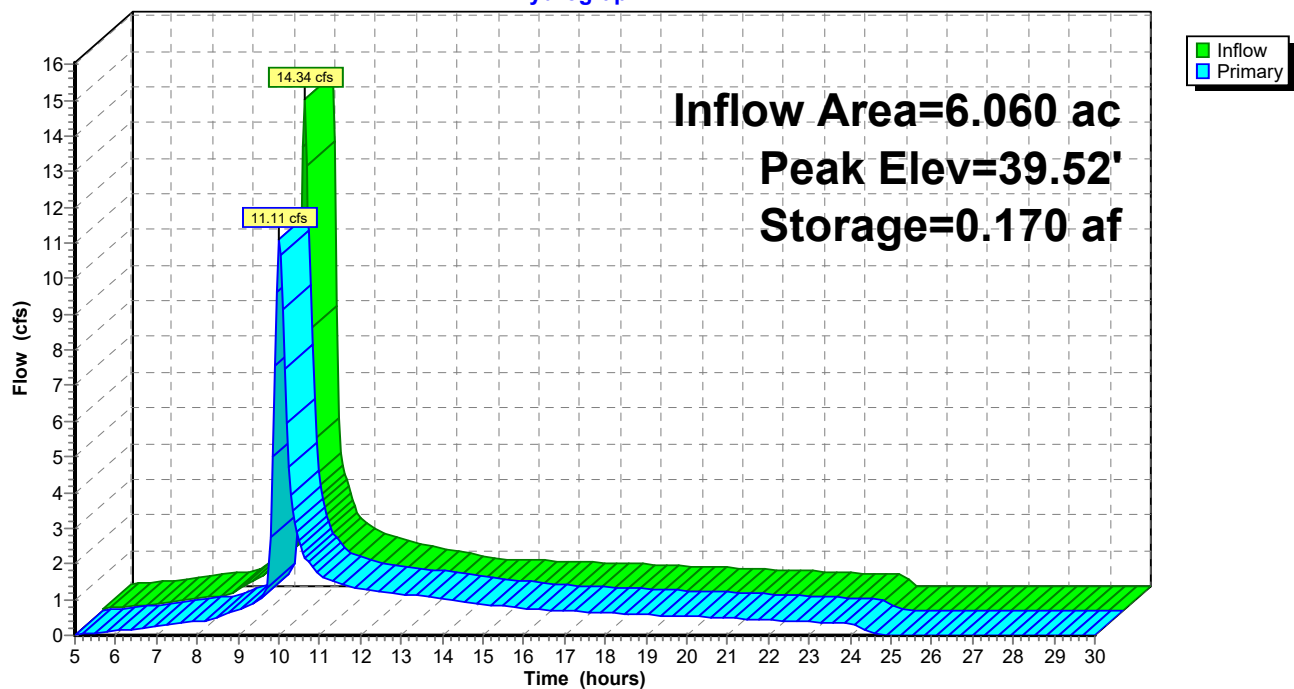
Type I 24-hr 25-yr Rainfall=4.30"

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Pond UG: UG DET

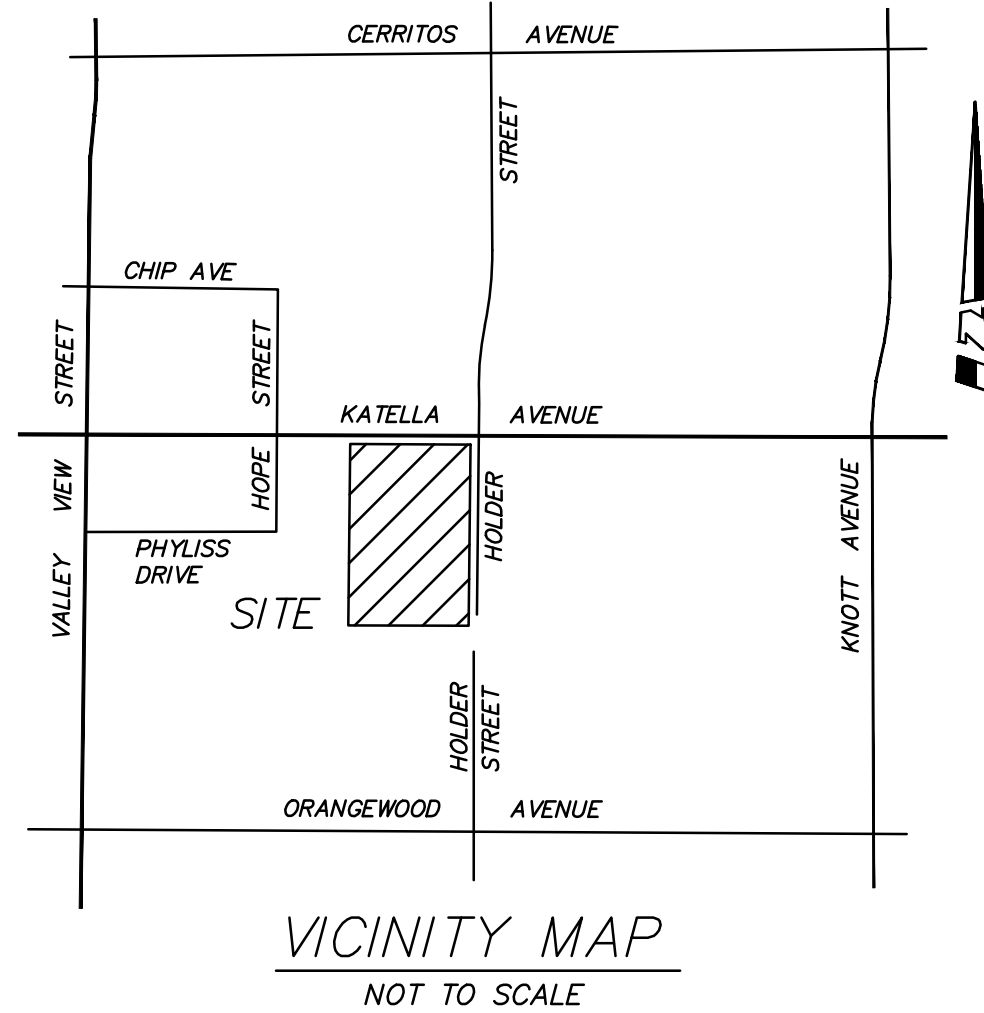
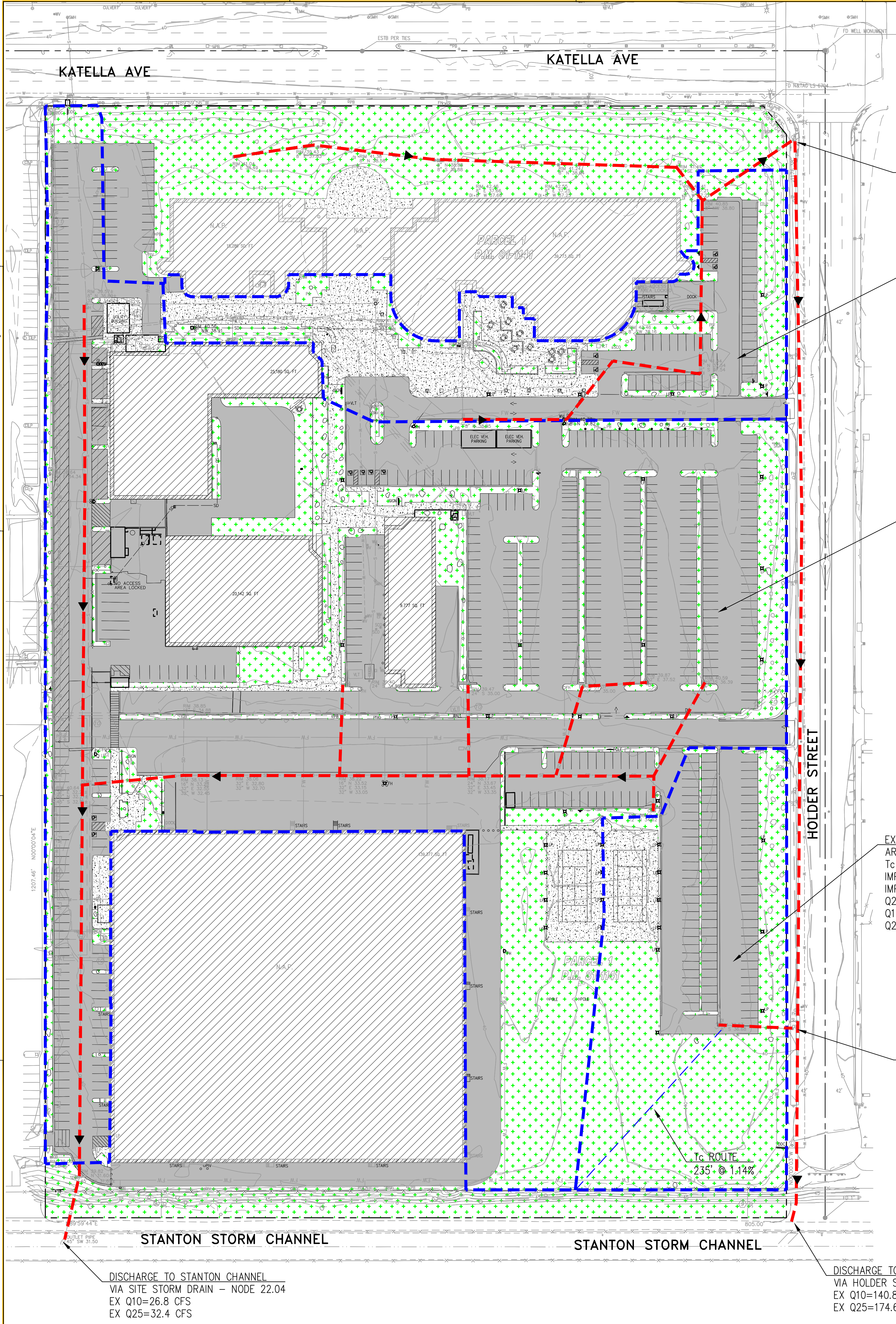
Hydrograph



Attachment E - Existing Conditions Exhibit

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Q:\190323\DWG\Sheet\190323-WQ1.dwg, W01 EXISTING WATER QUALITY EXHIBIT, 8/16/2020 7:54:16 PM, JY



File No.: NCS-979526-SA1

The Land referred to herein below is situated in the City of Cypress, County of Orange, State of California, and is described as follows:

PARCEL 1 OF PARCEL MAP NO. 81-1141, IN THE CITY OF CYPRESS, COUNTY OF RANGE, STATE OF CALIFORNIA, AS PER MAP FILED IN BOOK 167, PAGES 34-36 OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID

ALSO EXCEPT FROM THAT PORTION OF SAID LAND NOT INCLUDED WITHIN THE LINES OF PARCEL 1 SHOWN ON PARCEL MAP FILED IN BOOK 108, PAGES 10 AND 11 OF PARCEL MAPS, ALL COAL, CHEMICAL, PETROLEUM, OIL, GAS, ASPHALTUM AND OTHER HYDROCARBONS, AND ALL MINERALS, METALS AND MINERAL ORES, WHETHER SIMILAR TO THOSE HEREIN SPECIFIED OR NOT, OF EVERY KIND AND CHARACTER NOW KNOWN TO EXIST OR HEREFTER DISCOVERED UPON, WITHIN OR UNDERLYING SAID LAND, TOGETHER WITH THE EXCLUSIVE AND PERPETUAL RIGHT OF THE GRANTEE, ITS SUCCESSORS AND ASSIGNS, OF INGRESS AND EGRESS BENEATH THE SURFACE OF SAID LAND TO EXPLORE FOR, EXTRACT, MINE, AND REMOVE THE SAME AND TO MAKE SUCH USE OF SAID LAND BENEATH THE SURFACE AS IS NECESSARY OR USEFUL IN CONNECTION THEREWITH, WHICH USE MAY INCLUDE LATERAL OR SLANT DRILLING, DIGGING, BORING OR SINKING OF WELLS, SHAFTS, TUNNELS OR OTHER METHODS, TOGETHER WITH THE FURTHER EXCLUSIVE AND PERPETUAL RIGHT OF THE GRANTEE, ITS SUCCESSORS AND ASSIGNS, TO MAKE SUCH USE OF SAID LAND AS MAY BE NECESSARY TO STORE, KEEP, DEPOSIT, AND/OR REMOVE ALL COAL, CHEMICALS, PETROLEUM, OIL, GAS, ASPHALTUM AND OTHER HYDROCARBONS AND ALL MINERALS, METALS AND MINERAL ORES, WHETHER SIMILAR TO THOSE HEREIN SPECIFIED OR NOT, OF EVERY KIND AND CHARACTER NOW KNOWN TO EXIST OR HEREFTER DISCOVERED, PROVIDED, HOWEVER, THAT THE GRANTEE, ITS SUCCESSORS OR ASSIGNS, SHALL NOT USE THE SURFACE OF SAID LAND ABOVE A FIVE HUNDRED FOOT DEPTH IN THE EXERCISE OF ANY OF SAID RIGHTS, AS GRANTED TO CONSOLIDATED PACIFIC INVESTMENT COMPANY BY DEED RECORDED JANUARY 29, 1959 IN BOOK 4567, PAGE 496 OF OFFICIAL RECORDS.

For conveyancing purposes only: APN 224-261-04



04/23/20

raSmith
CREATIVITY BEYOND ENGINEERING

8881 Research Drive
Irvine, CA 92618-4236
(949) 872-2378
rasmith.com

DLX7 T.I.
6400 KATELLA AVE
CYPRESS, CALIFORNIA
90630

**EXISTING WATER
QUALITY EXHIBIT**

PROJECT:
DLX7 CALIFORNIA
CYPRESS
ADDRESS: 6400 KATELLA AVE, CA

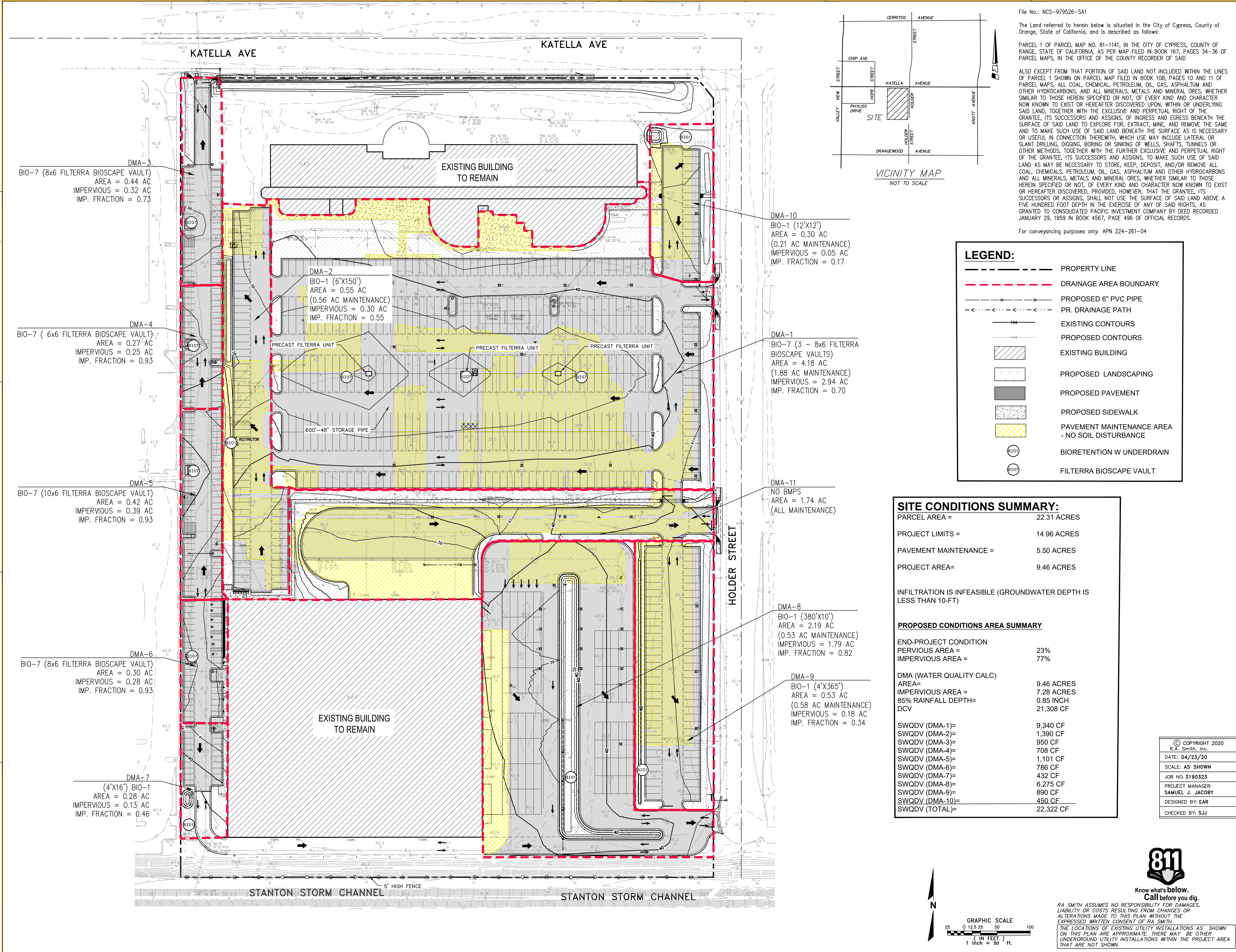
FOR:
GREENLAW PARTNERS
18301 VON KARMAN, STE 250
IRVINE CA 92612

Project Number: 2019-447
Plan Check Number: PC # 20000-000

REV 06/23/2020
REV 08/04/2020
REV 08/14/2020

WQ1

Attachment F - Proposed Conditions Exhibit



File No.: NCS-979526-SA1

The Land referred to herein below is situated in the City of Cypress, County of Orange, State of California, and is described as follows:

PARCEL 1 OF PARCEL MAP NO. 81-1141, IN THE CITY OF CYPRESS, COUNTY OF ORANGE, STATE OF CALIFORNIA, AS PER MAP FILED IN BOOK 167, PAGES 34-36 OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID

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DLX7 T.I.
6400 KATELLA AVE
CYPRESS, CALIFORNIA 90630
PROPOSED WATER QUALITY EXHIBIT

PROJECT: DLX7 CYPRESS CALIFORNIA
ADDRESS: 6400 KATELLA AVE, CA
FOR: GREENLAW PARTNERS
18301 VON KARMAN, STE 250
IRVINE CA 92612

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R.A. Smith, Inc.
DATE: 04/23/20
SCALE: AS SHOWN
JOB NO. 3190323
PROJECT MANAGER:
SAMUEL J. JACOBY
DESIGNED BY: EAR
CHECKED BY: SJJ

REV 06/23/2020
REV 07/02/2020
REV 08/04/2020
REV 08/14/2020

WQ2