

## Drainage Summary Report

12 Godfrey Place

### Prepared by

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Stamford, CT  
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### Issued on:


September 30, 2022

### Revised on:

February 28, 2023

### Issued for:

Site Plan Approval

  
\_\_\_\_\_  
Craig J. Flaherty, P.E.  
CT Lic. No. 21149

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## Drainage Summary Narrative

Greenwich Realty Development LLC, the owner of 12 Godfrey Place, is proposing to replace the existing office building with a five-story residential building consisting of 42 apartments. The property is 0.625 acres and lies in the Wilton Center District. The property is located northeast of the intersection of Godfrey Place and Hubbard Road. It is bordered to its east by multi-family housing owned by the Wilton Library Association and to the north by a commercial property owned by the Town of Wilton and developed with multiple storefronts.

The site is located within Zone X as depicted on the Federal Emergency Management Agency – Flood Insurance Map Community No. 090020 Panel 383 Suffix F, effective date June 18, 2010. The site is served by public water and sanitary sewer service.

### Existing Conditions

The site is currently developed with a three-story office building situated on the southern half of the site. Two parking lots are located in the northern half of the property. Impervious surfaces cover 18,653 square feet (68.5%) of the site.

The site lies in the Norwalk River Watershed. Runoff from the site drains overland to the north into Hubbard Road and to the southwest into Godfrey Place. Catch basins in Hubbard Road drain north then east through the Town of Wilton property, across Old Ridgefield Road and into the Norwalk River. Stormwater in Godfrey Place is captured and conveyed through the Stop & Shop property before crossing Old Ridgefield Road and discharging into the Norwalk River. Study points were established along both Hubbard and Godfrey.

The site currently has dry wells located in each of the parking lot. Both drywells are designed without outlet. The north lot dry well captures runoff from the surrounding pavement and theoretically overtops in the 25-year storm via the curb cut into Hubbard Road. The south lot dry well captures runoff from the surrounding pavement and building and theoretically overtops in the 10-year storm. Both drywells were factored in the existing conditions analysis with below and above-grade storage modeled. An exfiltration rate of 1.02 inches per hour was modeled, reflecting the Default (Rawls) infiltration rate for HSG B Sandy Loam soils consistent with those found on-site.

### Proposed Conditions

The proposed work includes the demolition of the existing office and parking and construction of the new four-story residential building. Parking is provided on-grade, under the second story of the building. The improvements result in 20,353 (74.7%) of impervious coverage, an increase of 1,700 square feet. Atlas-14 rainfall rates were used in the drainage analysis.

The impacts resulting from the increase in impervious coverage and removal of the existing drywells are mitigated using an infiltration system consisting of (18) 5'-tall Retain-It units. The infiltration system is located within the footprint of the building, below the on-grade parking. The entire building, in addition to the area north and east of the building, is directed to the system. Water

Quality treatment is provided to the tributary area via infiltration (Appendix 2). The infiltration system is sized to fully infiltrate runoff through the 25-year storm. In the 50 & 100-year storm, stormwater will discharge via a 6” pipe connected to the catch basin in Hubbard Road. Area Drain #4, located along the east side of the building, serves as the high overflow for the system in the event of an anomaly or greater than 100-year storm. It is not designed to discharge through the 100-year storm and is intended as a precaution for more severe rain events.

The remainder of the site bypasses the infiltration system and flows into Godfrey and Hubbard. These areas consist of the landscaping, walks and driveway which pitch away from the building and towards the back of curb. Given that the existing site only discharges to Hubbard when the north lot drywell overtops, the Hubbard Study Point does witness a minor increase in peak flows. The tables below compare existing and proposed conditions for both study points:

Peak Flow (cfs)						
Return Period (yrs)	Godfrey Place			Hubbard Road		
	Ex	Pr	Change	Ex	Pr	Change
10	0.30	0.23	-0.07	0.00	0.17	0.17
25	0.42	0.33	-0.09	0.05	0.22	0.17

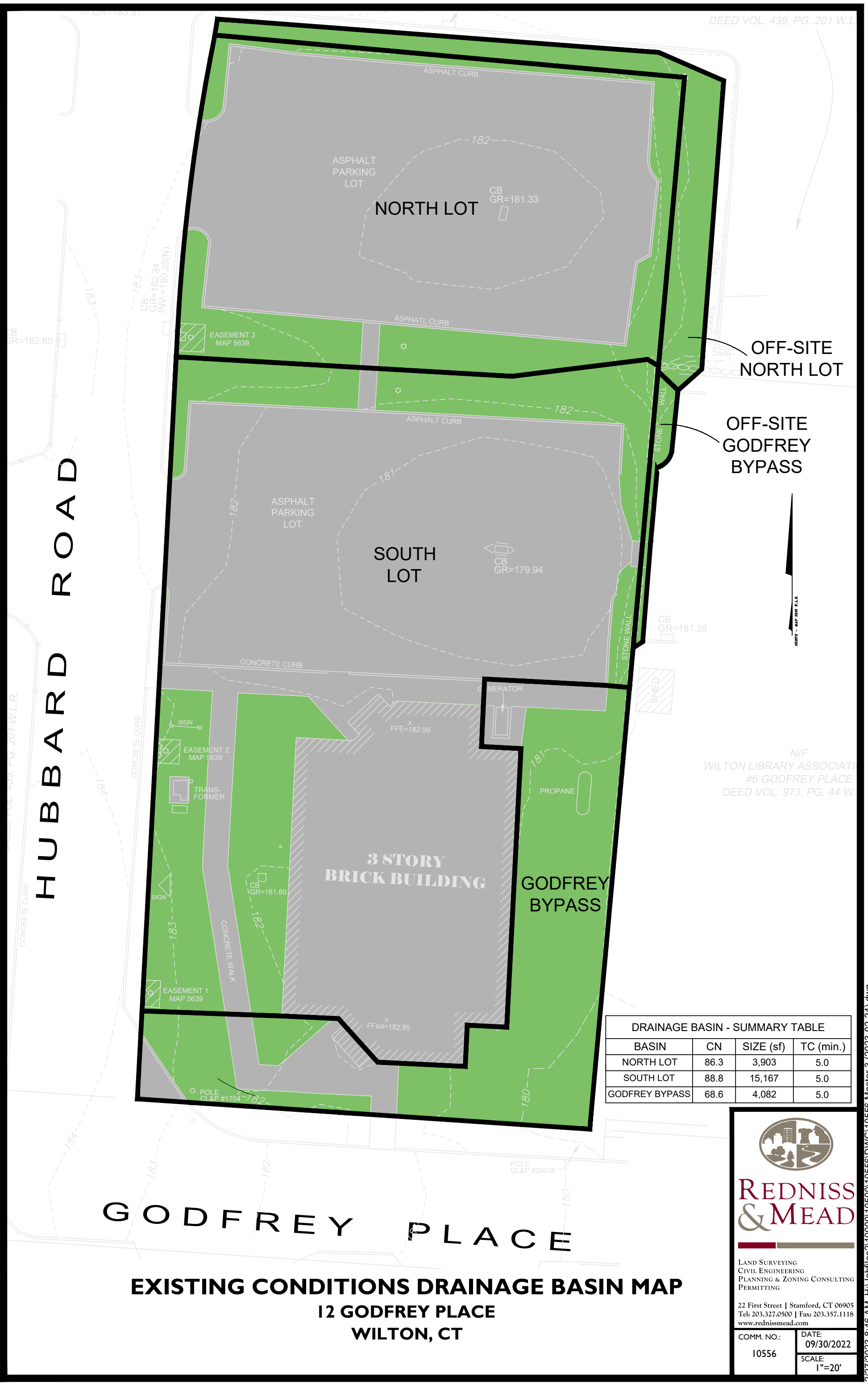
\*Runoff values taken from the HydroCAD Report found in Appendix 3

**Summary**

The proposed stormwater system is designed to capture and treat runoff originating from 80% of the site. The system is sized to infiltrate all tributary runoff through the 25-year storm. Minor areas of landscaping, walks, and drive discharge to the gutters along Hubbard Road and Godfrey place. It is our belief that the proposed drainage improvements are robustly designed and will not negatively impact downstream properties.

## Appendix 1

### Drainage Basin Maps



HUBBARD ROAD

GODFREY PLACE

**EXISTING CONDITIONS DRAINAGE BASIN MAP**  
**12 GODFREY PLACE**  
**WILTON, CT**

OFF-SITE NORTH LOT

OFF-SITE GODFREY BYPASS

N/F  
 WILTON LIBRARY ASSOCIATION  
 #6 GODFREY PLACE  
 DEED VOL. 973, PG. 44 W.L.R.

DRAINAGE BASIN - SUMMARY TABLE			
BASIN	CN	SIZE (sf)	TC (min.)
NORTH LOT	86.3	3,903	5.0
SOUTH LOT	88.8	15,167	5.0
GODFREY BYPASS	68.6	4,082	5.0



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COMM. NO.:	DATE:
10556	09/30/2022
	SCALE:
	1"=20'

HUBBARD  
BYPASS

OFFSITE  
INF#1

HUBBARD ROAD

GODFREY  
BYPASS

3 STORY  
BRICK BUILDING

N/F  
WILTON LIBRARY ASSOCIATION  
#6 GODFREY PLACE  
DEED VOL. 973, PG. 44 W.L.R.

DRAINAGE BASIN - SUMMARY TABLE			
BASIN	CN	SIZE (sf)	TC (min.)
INFIL#1	90.6	23,198	5.0
HUBBARD BYPASS	79.9	1,858	5.0
GODFREY BYPASS	70.1	3,557	5.0

GODFREY PLACE

**PROPOSED CONDITIONS DRAINAGE BASIN MAP**  
12 GODFREY PLACE  
WILTON, CT



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COMM. NO.:	DATE:
10556	02/28/2023
	SCALE:
	1"=20'

## Appendix 2

### Water Quality Volume Calculations 72-Hour Drawdown Calculations



## Water Quality Volume Calculations

**Project:** 12 Godfrey Place

**Project #:** 10556

**Date:** 2/28/2023

**Location:** Wilton, CT

**By:** PBS

**Checked:** CJF

### Infil#1 Basin

#### Infil#1 Basin

Area=	0.533	acres
Impervious Area=	0.425	acres
I=	0.799	<sup>a</sup>
R=	0.769	<sup>b</sup>
WQV=	0.034	ac. ft. <sup>c</sup>

<b>WQV=</b>	<b>1,486.6 ft.<sup>3</sup><sup>d</sup></b>
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<sup>a</sup> I=Percent Impervious Coverage

<sup>b</sup> R=0.05+0.009(I); Volumetric runoff Coefficient, Equation taken from 2004 Connecticut Stormwater Quality Manual section 7.4.1

<sup>c</sup> WQV=(1"xRxA)/12; Water Quality Volume, Equation taken from 2004 Connecticut Stormwater Quality Manual section 7.4.1

<sup>d</sup> Infil #1 provides 5,842 ft.<sup>3</sup> of storage below the outlet at elevation 181.50

## 72-Hour Draw Down Calculations

**Project:** 12 Godfrey Place

**Project #:** 10556

**Date:** 9/30/2022

**Location:** Wilton, CT

**By:** PBS

**Checked:** CJF

### Inf#1

Surface Area of Infiltration System (SA)	1,776	ft <sup>2</sup>
Volume of Storage of Infiltration System (VS)	4,623	ft <sup>3</sup>
Infiltration Rate (IR)	2.20	in/hr <sup>c</sup>
Theoretical Water Column Height	31.24	in <sup>a</sup>
<b>Time of Draw Down</b>	<b>14.20</b>	<b>hr<sup>b</sup></b>

Note: The surface area reflects the footprint of the cultecs and perimeter stone. The volume of water is the storage in the system below the outlet.

<sup>a</sup> Theoretical Water Column Height (WCH) = VS/SA\*12

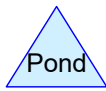
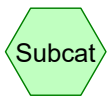
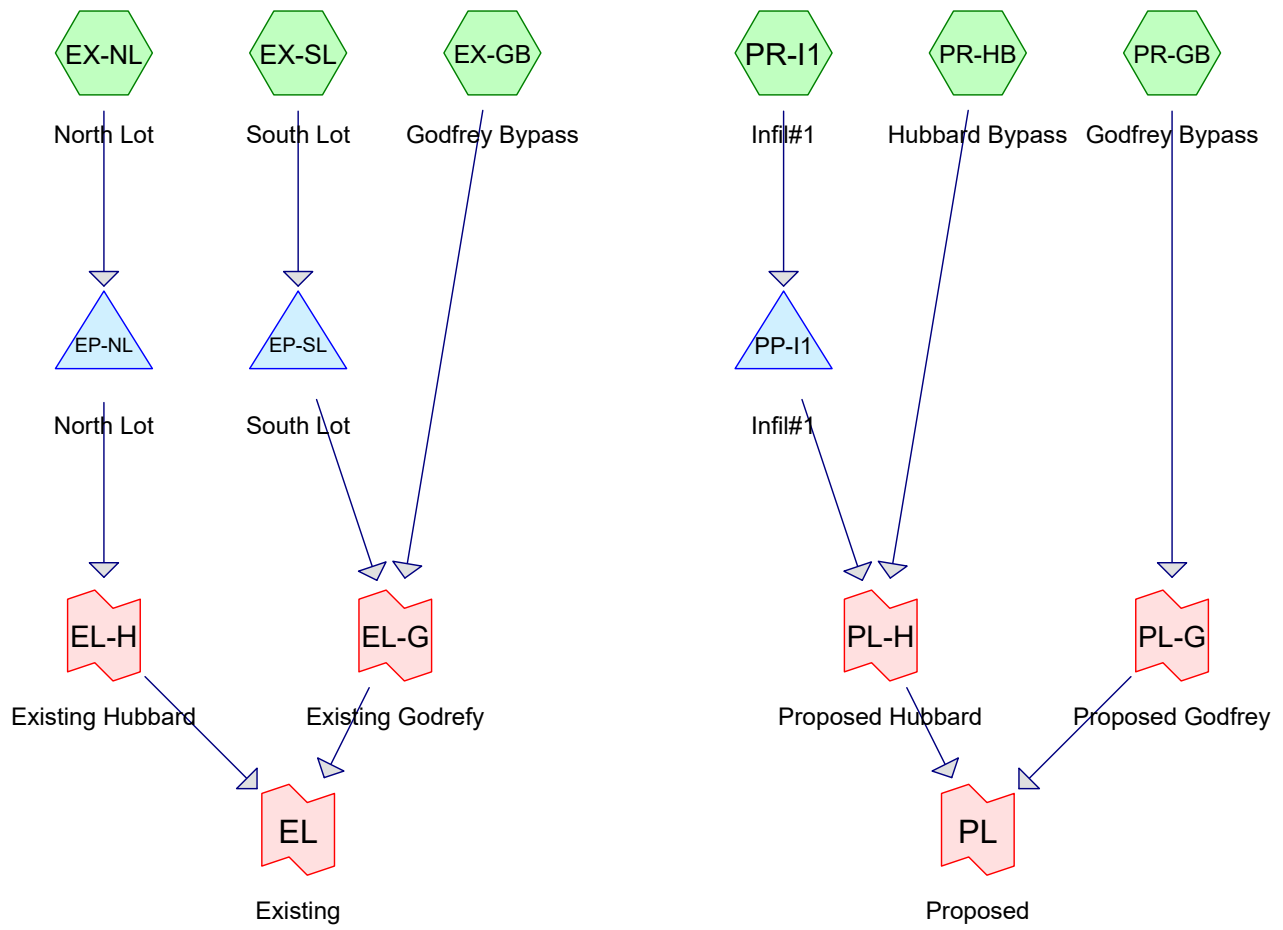
<sup>b</sup> Time of Draw Down = WCH/IR

<sup>c</sup> Infiltration Rate (IR) taken from PH#1 with FOS of 2 applied (1" in 13.33 min x 2)

Appendix 3  
HydroCAD Report

Existing

Proposed



**Routing Diagram for 10556 HydroCAD (2022-09-07)**  
Prepared by HP Inc., Printed 2/27/2023  
HydroCAD® 10.10-6a s/n 08721 © 2020 HydroCAD Software Solutions LLC

**10556 HydroCAD (2022-09-07)**

Prepared by HP Inc.

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Printed 2/27/2023

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**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	10-Year	Type III 24-hr		Default	24.00	1	5.42	2
2	25-Year	Type III 24-hr		Default	24.00	1	6.59	2

Time span=0.00-24.00 hrs, dt=0.0100 hrs, 2401 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>Subcatchment EX-GB: Godfrey Bypass</b>	Runoff Area=4,082 sf 20.63% Impervious Runoff Depth>2.23" Tc=0.0 min CN=68.6 Runoff=0.30 cfs 760 cf
<b>Subcatchment EX-NL: North Lot</b>	Runoff Area=9,364 sf 68.38% Impervious Runoff Depth>3.89" Tc=5.0 min CN=86.3 Runoff=1.00 cfs 3,034 cf
<b>Subcatchment EX-SL: South Lot</b>	Runoff Area=15,167 sf 75.22% Impervious Runoff Depth>4.15" Tc=5.0 min CN=88.8 Runoff=1.70 cfs 5,246 cf
<b>Subcatchment PR-GB: Godfrey Bypass</b>	Runoff Area=3,557 sf 24.52% Impervious Runoff Depth>2.36" Tc=5.0 min CN=70.1 Runoff=0.23 cfs 699 cf
<b>Subcatchment PR-HB: Hubbard Bypass</b>	Runoff Area=1,858 sf 51.02% Impervious Runoff Depth>3.25" Tc=5.0 min CN=79.9 Runoff=0.17 cfs 503 cf
<b>Subcatchment PR-I1: Infil#1</b>	Runoff Area=23,198 sf 79.89% Impervious Runoff Depth>4.34" Tc=5.0 min CN=90.6 Runoff=2.69 cfs 8,398 cf
<b>Pond EP-NL: North Lot</b>	Peak Elev=182.59' Storage=2,474 cf Inflow=1.00 cfs 3,034 cf Discarded=0.01 cfs 561 cf Primary=0.00 cfs 0 cf Outflow=0.01 cfs 561 cf
<b>Pond EP-SL: South Lot</b>	Peak Elev=181.65' Storage=4,193 cf Inflow=1.70 cfs 5,246 cf Discarded=0.01 cfs 629 cf Primary=0.03 cfs 447 cf Outflow=0.04 cfs 1,077 cf
<b>Pond PP-I1: Infil#1</b>	Peak Elev=180.15' Storage=4,196 cf Inflow=2.69 cfs 8,398 cf Discarded=0.20 cfs 7,315 cf Primary=0.00 cfs 0 cf Outflow=0.20 cfs 7,315 cf
<b>Link EL: Existing</b>	Inflow=0.30 cfs 1,207 cf Primary=0.30 cfs 1,207 cf
<b>Link EL-G: Existing Godrefy</b>	Inflow=0.30 cfs 1,207 cf Primary=0.30 cfs 1,207 cf
<b>Link EL-H: Existing Hubbard</b>	Inflow=0.00 cfs 0 cf Primary=0.00 cfs 0 cf
<b>Link PL: Proposed</b>	Inflow=0.40 cfs 1,202 cf Primary=0.40 cfs 1,202 cf
<b>Link PL-G: Proposed Godfrey</b>	Inflow=0.23 cfs 699 cf Primary=0.23 cfs 699 cf
<b>Link PL-H: Proposed Hubbard</b>	Inflow=0.17 cfs 503 cf Primary=0.17 cfs 503 cf

**Total Runoff Area = 57,226 sf Runoff Volume = 18,640 cf Average Runoff Depth = 3.91"**  
**31.84% Pervious = 18,221 sf 68.16% Impervious = 39,005 sf**

Time span=0.00-24.00 hrs, dt=0.0100 hrs, 2401 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>Subcatchment EX-GB: Godfrey Bypass</b>	Runoff Area=4,082 sf 20.63% Impervious Runoff Depth>3.14" Tc=0.0 min CN=68.6 Runoff=0.42 cfs 1,068 cf
<b>Subcatchment EX-NL: North Lot</b>	Runoff Area=9,364 sf 68.38% Impervious Runoff Depth>5.00" Tc=5.0 min CN=86.3 Runoff=1.27 cfs 3,903 cf
<b>Subcatchment EX-SL: South Lot</b>	Runoff Area=15,167 sf 75.22% Impervious Runoff Depth>5.28" Tc=5.0 min CN=88.8 Runoff=2.14 cfs 6,676 cf
<b>Subcatchment PR-GB: Godfrey Bypass</b>	Runoff Area=3,557 sf 24.52% Impervious Runoff Depth>3.29" Tc=5.0 min CN=70.1 Runoff=0.33 cfs 974 cf
<b>Subcatchment PR-HB: Hubbard Bypass</b>	Runoff Area=1,858 sf 51.02% Impervious Runoff Depth>4.30" Tc=5.0 min CN=79.9 Runoff=0.22 cfs 666 cf
<b>Subcatchment PR-I1: Infil#1</b>	Runoff Area=23,198 sf 79.89% Impervious Runoff Depth>5.49" Tc=5.0 min CN=90.6 Runoff=3.35 cfs 10,605 cf
<b>Pond EP-NL: North Lot</b>	Peak Elev=182.65' Storage=2,731 cf Inflow=1.27 cfs 3,903 cf Discarded=0.01 cfs 592 cf Primary=0.05 cfs 724 cf Outflow=0.06 cfs 1,316 cf
<b>Pond EP-SL: South Lot</b>	Peak Elev=181.67' Storage=4,297 cf Inflow=2.14 cfs 6,676 cf Discarded=0.01 cfs 661 cf Primary=0.15 cfs 1,842 cf Outflow=0.16 cfs 2,503 cf
<b>Pond PP-I1: Infil#1</b>	Peak Elev=181.17' Storage=5,442 cf Inflow=3.35 cfs 10,605 cf Discarded=0.24 cfs 8,953 cf Primary=0.00 cfs 0 cf Outflow=0.24 cfs 8,953 cf
<b>Link EL: Existing</b>	Inflow=0.42 cfs 3,634 cf Primary=0.42 cfs 3,634 cf
<b>Link EL-G: Existing Godrefy</b>	Inflow=0.42 cfs 2,911 cf Primary=0.42 cfs 2,911 cf
<b>Link EL-H: Existing Hubbard</b>	Inflow=0.05 cfs 724 cf Primary=0.05 cfs 724 cf
<b>Link PL: Proposed</b>	Inflow=0.55 cfs 1,641 cf Primary=0.55 cfs 1,641 cf
<b>Link PL-G: Proposed Godfrey</b>	Inflow=0.33 cfs 974 cf Primary=0.33 cfs 974 cf
<b>Link PL-H: Proposed Hubbard</b>	Inflow=0.22 cfs 666 cf Primary=0.22 cfs 666 cf

**Total Runoff Area = 57,226 sf Runoff Volume = 23,893 cf Average Runoff Depth = 5.01"**  
**31.84% Pervious = 18,221 sf 68.16% Impervious = 39,005 sf**

### Summary for Subcatchment EX-GB: Godfrey Bypass

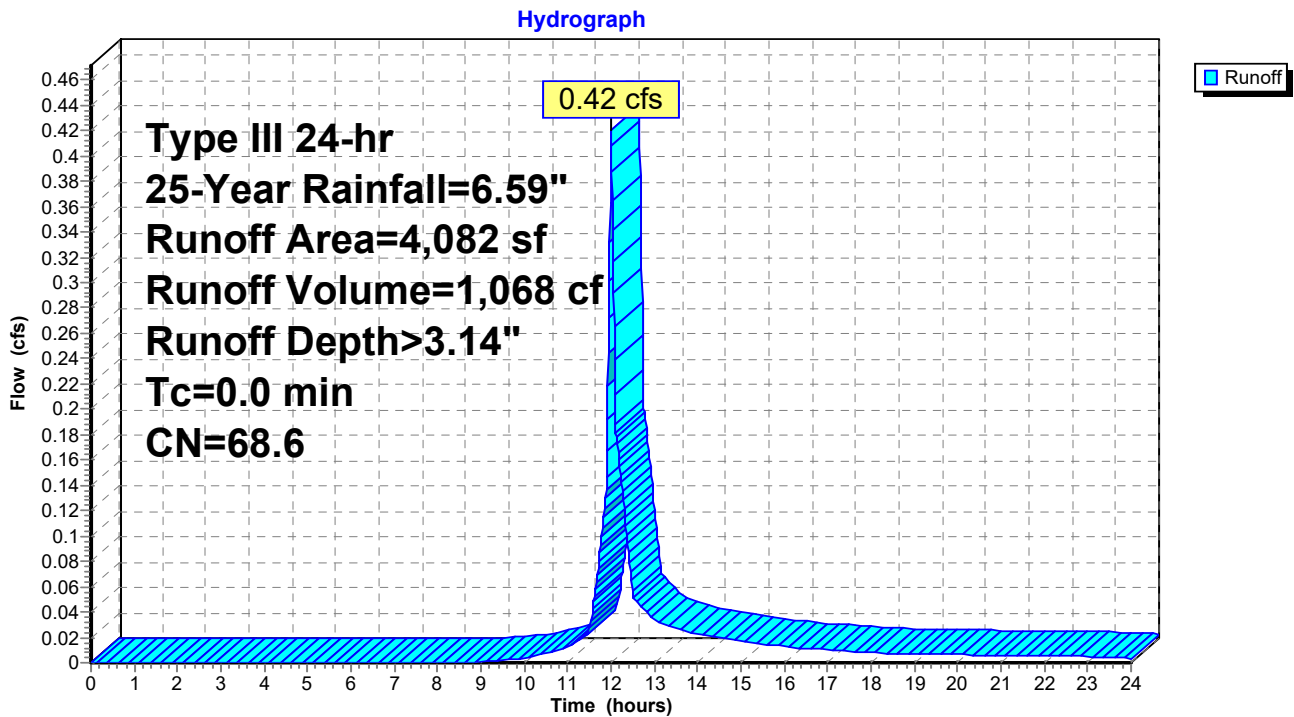
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.42 cfs @ 12.00 hrs, Volume= 1,068 cf, Depth> 3.14"  
 Routed to Link EL-G : Existing Godfrey

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.0100 hrs  
 Type III 24-hr 25-Year Rainfall=6.59"

	Area (sf)	CN	Description
*	842	98.0	Impervious
*	3,240	61.0	On-Site Lawn, HSG B
	4,082	68.6	Weighted Average
	3,240		79.37% Pervious Area
	842		20.63% Impervious Area

### Subcatchment EX-GB: Godfrey Bypass





**Summary for Subcatchment EX-NL: North Lot**

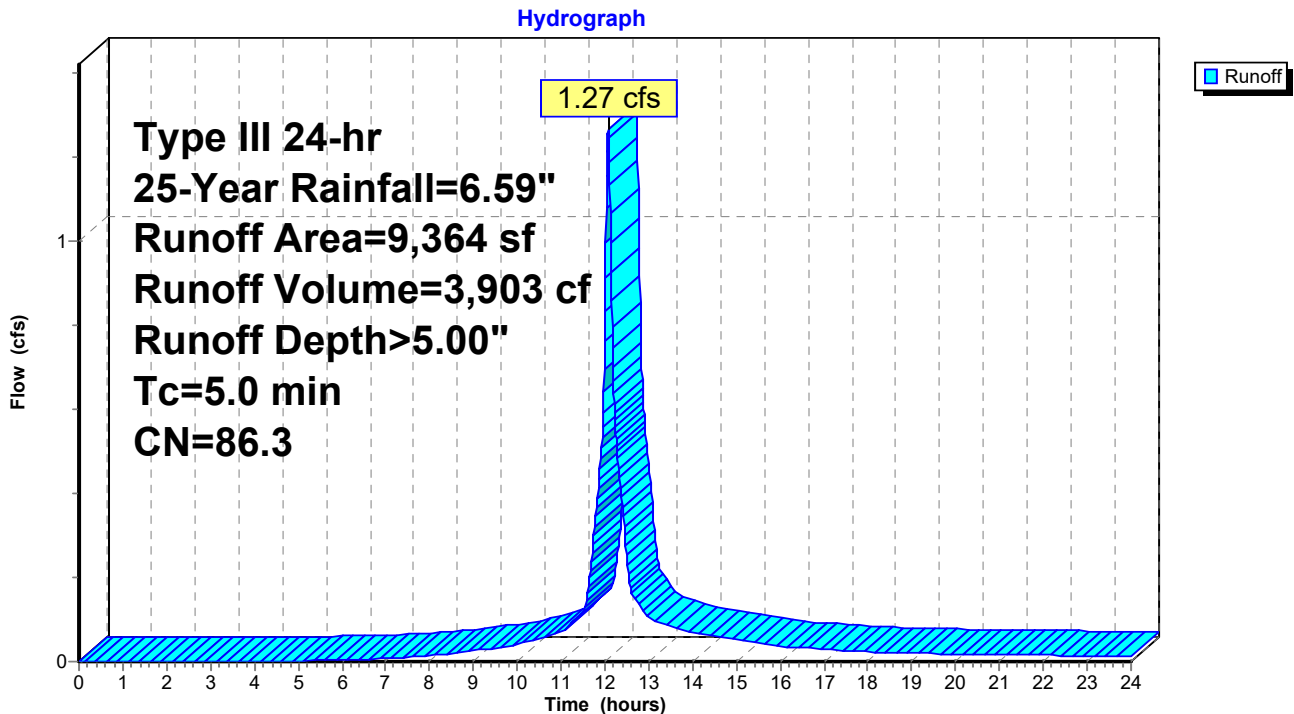
Runoff = 1.27 cfs @ 12.07 hrs, Volume= 3,903 cf, Depth> 5.00"  
 Routed to Pond EP-NL : North Lot

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.0100 hrs  
 Type III 24-hr 25-Year Rainfall=6.59"

	Area (sf)	CN	Description
*	6,403	98.0	Impervious
*	1,771	61.0	On-Site Lawn, HSG B
*	1,190	61.0	Off-Site Lawn, HSG B
	9,364	86.3	Weighted Average
	2,961		31.62% Pervious Area
	6,403		68.38% Impervious Area

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

**Subcatchment EX-NL: North Lot**



**Summary for Subcatchment EX-SL: South Lot**

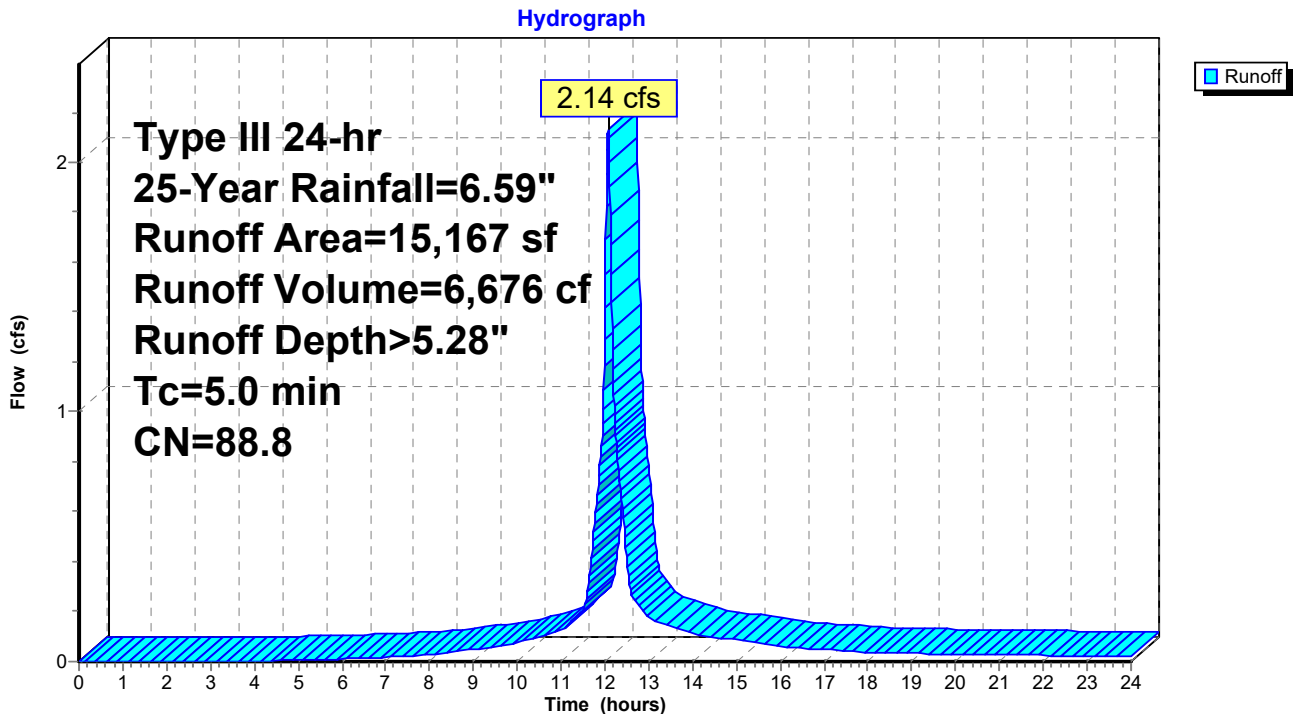
Runoff = 2.14 cfs @ 12.07 hrs, Volume= 6,676 cf, Depth> 5.28"  
 Routed to Pond EP-SL : South Lot

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.0100 hrs  
 Type III 24-hr 25-Year Rainfall=6.59"

	Area (sf)	CN	Description
*	11,408	98.0	Impervious
*	3,582	61.0	On-Site Lawn, HSG B
*	177	61.0	Off-Site Lawn, HSG B
	15,167	88.8	Weighted Average
	3,759		24.78% Pervious Area
	11,408		75.22% Impervious Area

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

**Subcatchment EX-SL: South Lot**



**Summary for Subcatchment PR-GB: Godfrey Bypass**

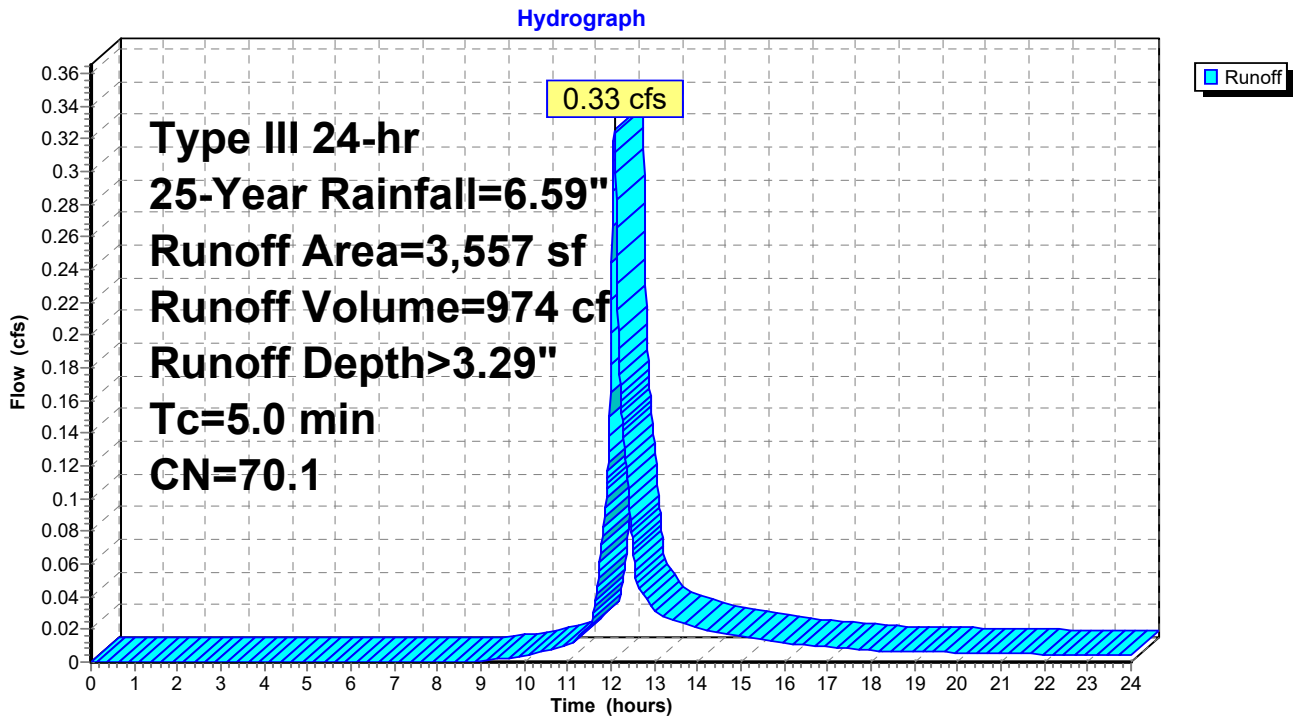
Runoff = 0.33 cfs @ 12.08 hrs, Volume= 974 cf, Depth> 3.29"  
 Routed to Link PL-G : Proposed Godfrey

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.0100 hrs  
 Type III 24-hr 25-Year Rainfall=6.59"

	Area (sf)	CN	Description
*	872	98.0	Impervious
*	2,685	61.0	On-Site Lawn, HSG B
	3,557	70.1	Weighted Average
	2,685		75.48% Pervious Area
	872		24.52% Impervious Area

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

**Subcatchment PR-GB: Godfrey Bypass**



**Summary for Subcatchment PR-HB: Hubbard Bypass**

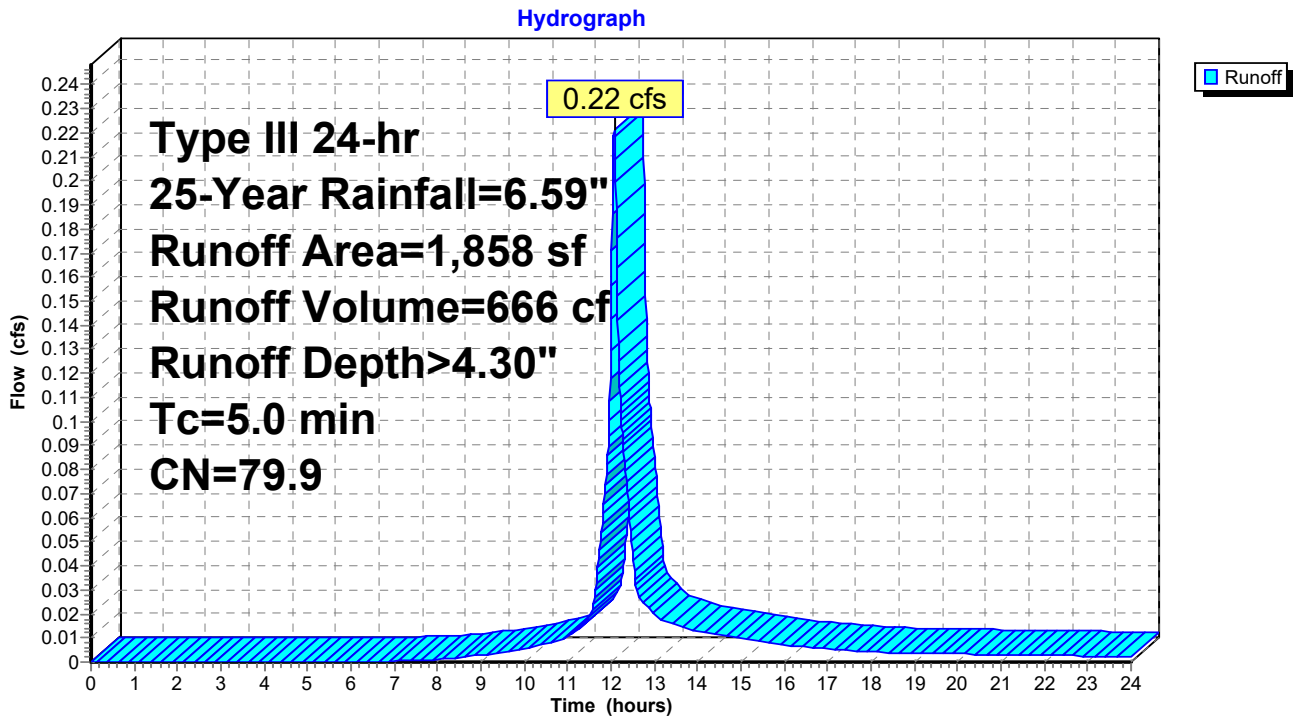
Runoff = 0.22 cfs @ 12.07 hrs, Volume= 666 cf, Depth> 4.30"  
 Routed to Link PL-H : Proposed Hubbard

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.0100 hrs  
 Type III 24-hr 25-Year Rainfall=6.59"

	Area (sf)	CN	Description
*	948	98.0	Impervious
*	910	61.0	On-Site Lawn, HSG B
	1,858	79.9	Weighted Average
	910		48.98% Pervious Area
	948		51.02% Impervious Area

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

**Subcatchment PR-HB: Hubbard Bypass**



**Summary for Subcatchment PR-I1: Infil#1**

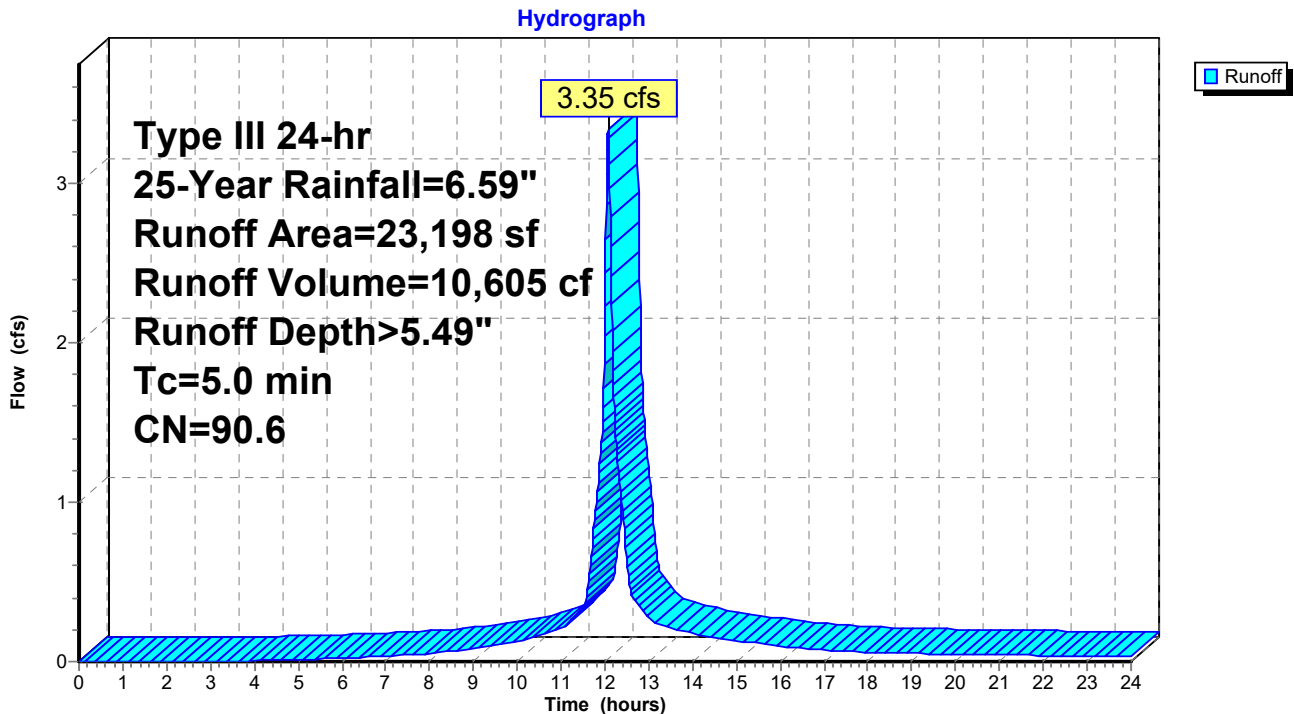
Runoff = 3.35 cfs @ 12.07 hrs, Volume= 10,605 cf, Depth> 5.49"  
 Routed to Pond PP-I1 : Infil#1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.0100 hrs  
 Type III 24-hr 25-Year Rainfall=6.59"

	Area (sf)	CN	Description
*	18,532	98.0	Impervious
*	3,299	61.0	On-Site Lawn, HSG B
*	1,367	61.0	Off-Site Lawn, HSG B
	23,198	90.6	Weighted Average
	4,666		20.11% Pervious Area
	18,532		79.89% Impervious Area

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

**Subcatchment PR-I1: Infil#1**



**Summary for Pond EP-NL: North Lot**

Inflow Area = 9,364 sf, 68.38% Impervious, Inflow Depth > 5.00" for 25-Year event  
 Inflow = 1.27 cfs @ 12.07 hrs, Volume= 3,903 cf  
 Outflow = 0.06 cfs @ 14.48 hrs, Volume= 1,316 cf, Atten= 95%, Lag= 144.6 min  
 Discarded = 0.01 cfs @ 14.48 hrs, Volume= 592 cf  
 Primary = 0.05 cfs @ 14.48 hrs, Volume= 724 cf  
 Routed to Link EL-H : Existing Hubbard

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.0100 hrs  
 Peak Elev= 182.65' @ 14.48 hrs Surf.Area= 4,718 sf Storage= 2,731 cf

Plug-Flow detention time= 345.2 min calculated for 1,315 cf (34% of inflow)  
 Center-of-Mass det. time= 210.1 min ( 1,002.1 - 792.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	174.40'	50 cf	<b>Dry Well Stone (Prismatic)</b> Listed below (Recalc) 300 cf Overall - 174 cf Embedded = 126 cf x 40.0% Voids
#2	174.40'	174 cf	<b>Concrete Dry Well (Prismatic)</b> Listed below (Recalc) Inside #1
#3	181.33'	4,421 cf	<b>On-Grade Storage (Prismatic)</b> Listed below (Recalc)
#4	180.40'	6 cf	<b>CB from DW to Grade (Prismatic)</b> Listed below (Recalc)
		4,651 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
174.40	50	0	0
180.40	50	300	300

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
174.40	29	0	0
180.40	29	174	174

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
181.33	0	0	0
182.00	1,486	498	498
183.00	6,361	3,924	4,421

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
180.40	6	0	0
181.33	6	6	6

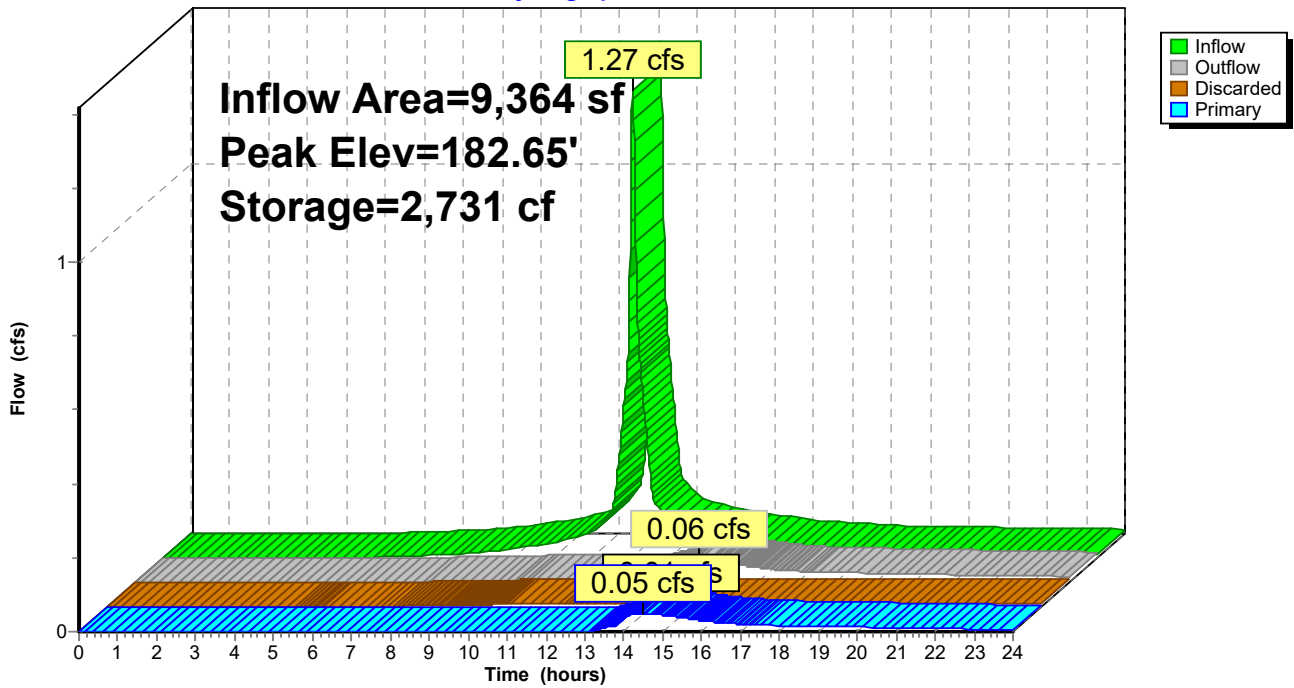
Device	Routing	Invert	Outlet Devices
#1	Primary	182.61'	<b>Driveway Opening to Hubbard, C= 3.27</b> Offset (feet) 0.00 0.01 25.44 25.45 Height (feet) 0.85 0.00 0.43 0.85
#2	Discarded	174.40'	<b>1.020 in/hr Sandy Loam (HSG B) Exfiltration over Surface area below 174.41'</b> Conductivity to Groundwater Elevation = 173.40' Phase-In= 0.01'

Discarded OutFlow Max=0.01 cfs @ 14.48 hrs HW=182.65' (Free Discharge)  
↳2=Sandy Loam (HSG B) Exfiltration ( Controls 0.01 cfs)

Primary OutFlow Max=0.03 cfs @ 14.48 hrs HW=182.65' (Free Discharge)  
↳1=Driveway Opening to Hubbard (Weir Controls 0.03 cfs @ 0.27 fps)

### Pond EP-NL: North Lot

Hydrograph



**Stage-Area-Storage for Pond EP-NL: North Lot**

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
174.40	50	0	179.70	50	198
174.50	50	4	179.80	50	202
174.60	50	7	179.90	50	206
174.70	50	11	180.00	50	209
174.80	50	15	180.10	50	213
174.90	50	19	180.20	50	217
175.00	50	22	180.30	50	221
175.10	50	26	180.40	56	224
175.20	50	30	180.50	56	225
175.30	50	34	180.60	56	226
175.40	50	37	180.70	56	226
175.50	50	41	180.80	56	227
175.60	50	45	180.90	56	227
175.70	50	49	181.00	56	228
175.80	50	52	181.10	56	229
175.90	50	56	181.20	56	229
176.00	50	60	181.30	56	230
176.10	50	64	181.40	211	235
176.20	50	67	181.50	433	262
176.30	50	71	181.60	655	311
176.40	50	75	181.70	877	382
176.50	50	79	181.80	1,098	475
176.60	50	82	181.90	1,320	590
176.70	50	86	182.00	1,542	728
176.80	50	90	182.10	2,029	901
176.90	50	94	182.20	2,517	1,122
177.00	50	97	182.30	3,005	1,393
177.10	50	101	182.40	3,492	1,712
177.20	50	105	182.50	3,980	2,080
177.30	50	108	182.60	4,467	2,497
177.40	50	112	182.70	4,955	2,962
177.50	50	116	182.80	5,442	3,477
177.60	50	120	182.90	5,930	4,040
177.70	50	123	183.00	<b>6,417</b>	<b>4,651</b>
177.80	50	127	183.10	6,417	4,651
177.90	50	131	183.20	6,417	4,651
178.00	50	135	183.30	6,417	4,651
178.10	50	138	183.40	6,417	4,651
178.20	50	142			
178.30	50	146			
178.40	50	150			
178.50	50	153			
178.60	50	157			
178.70	50	161			
178.80	50	165			
178.90	50	168			
179.00	50	172			
179.10	50	176			
179.20	50	180			
179.30	50	183			
179.40	50	187			
179.50	50	191			
179.60	50	194			



**Summary for Pond EP-SL: South Lot**

Inflow Area = 15,167 sf, 75.22% Impervious, Inflow Depth > 5.28" for 25-Year event  
 Inflow = 2.14 cfs @ 12.07 hrs, Volume= 6,676 cf  
 Outflow = 0.16 cfs @ 13.12 hrs, Volume= 2,503 cf, Atten= 93%, Lag= 62.8 min  
 Discarded = 0.01 cfs @ 13.12 hrs, Volume= 661 cf  
 Primary = 0.15 cfs @ 13.12 hrs, Volume= 1,842 cf  
 Routed to Link EL-G : Existing Godrefy

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.0100 hrs  
 Peak Elev= 181.67' @ 13.12 hrs Surf.Area= 4,989 sf Storage= 4,297 cf

Plug-Flow detention time= 295.4 min calculated for 2,503 cf (37% of inflow)  
 Center-of-Mass det. time= 163.0 min ( 947.3 - 784.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	173.00'	50 cf	<b>Dry Well Stone (Prismatic)</b> Listed below (Recalc) 300 cf Overall - 174 cf Embedded = 126 cf x 40.0% Voids
#2	173.00'	174 cf	<b>Concrete Dry Well (Prismatic)</b> Listed below (Recalc) Inside #1
#3	179.94'	5,887 cf	<b>On-Grade Storage (Prismatic)</b> Listed below (Recalc)
#4	179.00'	6 cf	<b>CB from DW to Grade (Prismatic)</b> Listed below (Recalc)
		6,117 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
173.00	50	0	0
179.00	50	300	300

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
173.00	29	0	0
179.00	29	174	174

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
179.94	0	0	0
181.00	2,805	1,487	1,487
182.00	5,995	4,400	5,887

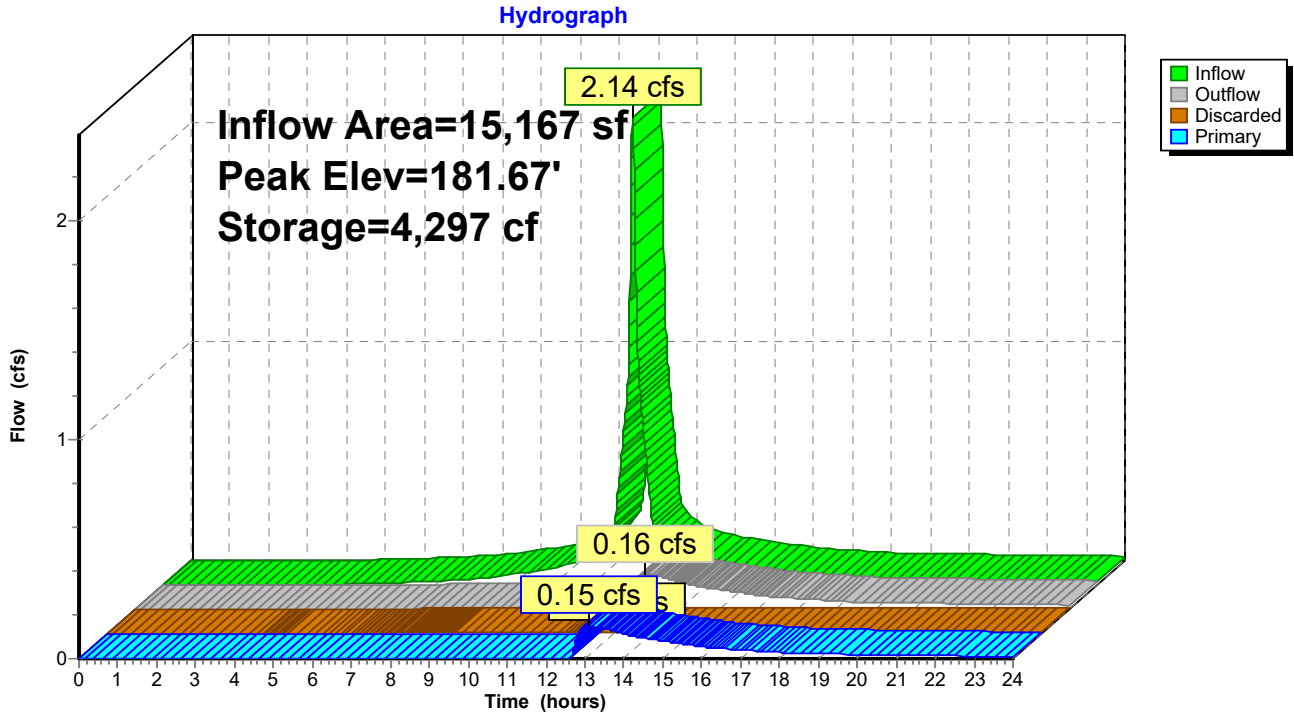
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
179.00	6	0	0
179.94	6	6	6

Device	Routing	Invert	Outlet Devices
#1	Primary	181.64'	<b>Southeast Sidewalk Overflow, C= 3.27</b> Offset (feet) 0.00 0.01 18.86 18.87 Height (feet) 0.50 0.00 0.04 0.50
#2	Discarded	173.00'	<b>1.020 in/hr Sandy Loam (HSG B) Exfiltration over Surface area below 173.01'</b> Conductivity to Groundwater Elevation = 172.00' Phase-In= 0.01'

Discarded OutFlow Max=0.01 cfs @ 13.12 hrs HW=181.67' (Free Discharge)  
↳2=Sandy Loam (HSG B) Exfiltration ( Controls 0.01 cfs)

Primary OutFlow Max=0.07 cfs @ 13.12 hrs HW=181.67' (Free Discharge)  
↳1=Southeast Sidewalk Overflow (Weir Controls 0.07 cfs @ 0.22 fps)

### Pond EP-SL: South Lot



**Stage-Area-Storage for Pond EP-SL: South Lot**

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
173.00	50	0	178.30	50	198
173.10	50	4	178.40	50	202
173.20	50	7	178.50	50	206
173.30	50	11	178.60	50	209
173.40	50	15	178.70	50	213
173.50	50	19	178.80	50	217
173.60	50	22	178.90	50	221
173.70	50	26	179.00	56	224
173.80	50	30	179.10	56	225
173.90	50	34	179.20	56	226
174.00	50	37	179.30	56	226
174.10	50	41	179.40	56	227
174.20	50	45	179.50	56	227
174.30	50	49	179.60	56	228
174.40	50	52	179.70	56	229
174.50	50	56	179.80	56	229
174.60	50	60	179.90	56	230
174.70	50	64	180.00	215	235
174.80	50	67	180.10	479	264
174.90	50	71	180.20	744	319
175.00	50	75	180.30	1,009	402
175.10	50	79	180.40	1,273	510
175.20	50	82	180.50	1,538	645
175.30	50	86	180.60	1,803	806
175.40	50	90	180.70	2,067	994
175.50	50	94	180.80	2,332	1,209
175.60	50	97	180.90	2,596	1,449
175.70	50	101	181.00	2,861	1,717
175.80	50	105	181.10	3,180	2,013
175.90	50	108	181.20	3,499	2,341
176.00	50	112	181.30	3,818	2,702
176.10	50	116	181.40	4,137	3,094
176.20	50	120	181.50	4,456	3,518
176.30	50	123	181.60	4,775	3,974
176.40	50	127	181.70	5,094	4,462
176.50	50	131	181.80	5,413	4,981
176.60	50	135	181.90	5,732	5,533
176.70	50	138	182.00	<b>6,051</b>	<b>6,117</b>
176.80	50	142	182.10	6,051	6,117
176.90	50	146			
177.00	50	150			
177.10	50	153			
177.20	50	157			
177.30	50	161			
177.40	50	165			
177.50	50	168			
177.60	50	172			
177.70	50	176			
177.80	50	180			
177.90	50	183			
178.00	50	187			
178.10	50	191			
178.20	50	194			

**Summary for Pond PP-I1: Infil#1**

Inflow Area = 23,198 sf, 79.89% Impervious, Inflow Depth > 5.49" for 25-Year event  
 Inflow = 3.35 cfs @ 12.07 hrs, Volume= 10,605 cf  
 Outflow = 0.24 cfs @ 13.23 hrs, Volume= 8,953 cf, Atten= 93%, Lag= 69.4 min  
 Discarded = 0.24 cfs @ 13.23 hrs, Volume= 8,953 cf  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
 Routed to Link PL-H : Proposed Hubbard

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.0100 hrs / 2  
 Peak Elev= 181.17' @ 13.23 hrs Surf.Area= 1,776 sf Storage= 5,442 cf

Plug-Flow detention time= 255.5 min calculated for 8,949 cf (84% of inflow)  
 Center-of-Mass det. time= 190.6 min ( 968.9 - 778.2 )

Volume	Invert	Avail.Storage	Storage Description
#1A	176.50'	1,770 cf	<b>12.00'W x 148.00'L x 6.17'H Field A</b> 10,952 cf Overall - 6,528 cf Embedded = 4,424 cf x 40.0% Voids
#2A	177.00'	4,848 cf	<b>retain_it retain_it 5.0'</b> x 18 Inside #1 Inside= 84.0"W x 60.0"H => 36.41 sf x 8.00'L = 291.3 cf Outside= 96.0"W x 68.0"H => 45.33 sf x 8.00'L = 362.7 cf 1 Rows adjusted for 394.8 cf perimeter wall
		6,618 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	180.70'	<b>6.0" Round JB#2 to EX.CB</b> L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 180.70' / 180.35' S= 0.0318 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#2	Device 1	181.25'	<b>6.0" Round JB#1 to JB#2</b> L= 15.0' Ke= 0.500 Inlet / Outlet Invert= 181.25' / 180.80' S= 0.0300 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#3	Device 2	180.50'	<b>6.0" Round Infil#1 to JB#1</b> L= 52.0' Ke= 0.500 Inlet / Outlet Invert= 179.70' / 180.50' S= -0.0154 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#4	Primary	182.00'	<b>4.0' long x 0.5' breadth AD#4 - HIGH OVERFLOW</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#5	Device 4	179.50'	<b>6.0" Round Infil#1 to AD#4</b> L= 29.0' Ke= 0.500 Inlet / Outlet Invert= 178.90' / 179.50' S= -0.0207 '/' Cc= 0.900 n= 0.010, Flow Area= 0.20 sf
#6	Discarded	176.50'	<b>1.020 in/hr Sandy Loam (HSG B) Exfiltration over Surface area below 176.51'</b> Conductivity to Groundwater Elevation = 175.50' Phase-In= 0.01'

Discarded OutFlow Max=0.24 cfs @ 13.23 hrs HW=181.17' (Free Discharge)

↑6=Sandy Loam (HSG B) Exfiltration ( Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=176.50' (Free Discharge)

↑1=JB#2 to EX.CB ( Controls 0.00 cfs)

↑2=JB#1 to JB#2 ( Controls 0.00 cfs)

↑3=Infil#1 to JB#1 ( Controls 0.00 cfs)

↑4=AD#4 - HIGH OVERFLOW ( Controls 0.00 cfs)

↑5=Infil#1 to AD#4 ( Controls 0.00 cfs)

**Pond PP-I1: Infil#1 - Chamber Wizard Field A**

**Chamber Model = retain\_it retain\_it 5.0' (retain-it®)**

Inside= 84.0"W x 60.0"H => 36.41 sf x 8.00'L = 291.3 cf

Outside= 96.0"W x 68.0"H => 45.33 sf x 8.00'L = 362.7 cf

1 Rows adjusted for 394.8 cf perimeter wall

18 Chambers/Row x 8.00' Long = 144.00' Row Length +24.0" End Stone x 2 = 148.00' Base Length

1 Rows x 96.0" Wide + 24.0" Side Stone x 2 = 12.00' Base Width

6.0" Stone Base + 68.0" Chamber Height = 6.17' Field Height

10.4 cf Sidewall x 18 x 2 + 10.4 cf Endwall x 1 x 2 = 394.8 cf Perimeter Wall

18 Chambers x 291.3 cf - 394.8 cf Perimeter wall = 4,848.2 cf Chamber Storage

18 Chambers x 362.7 cf = 6,528.0 cf Displacement

10,952.0 cf Field - 6,528.0 cf Chambers = 4,424.0 cf Stone x 40.0% Voids = 1,769.6 cf Stone Storage

Chamber Storage + Stone Storage = 6,617.8 cf = 0.152 af

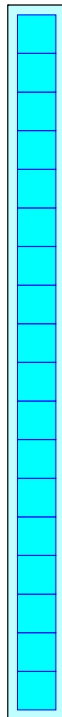
Overall Storage Efficiency = 60.4%

Overall System Size = 148.00' x 12.00' x 6.17'

18 Chambers

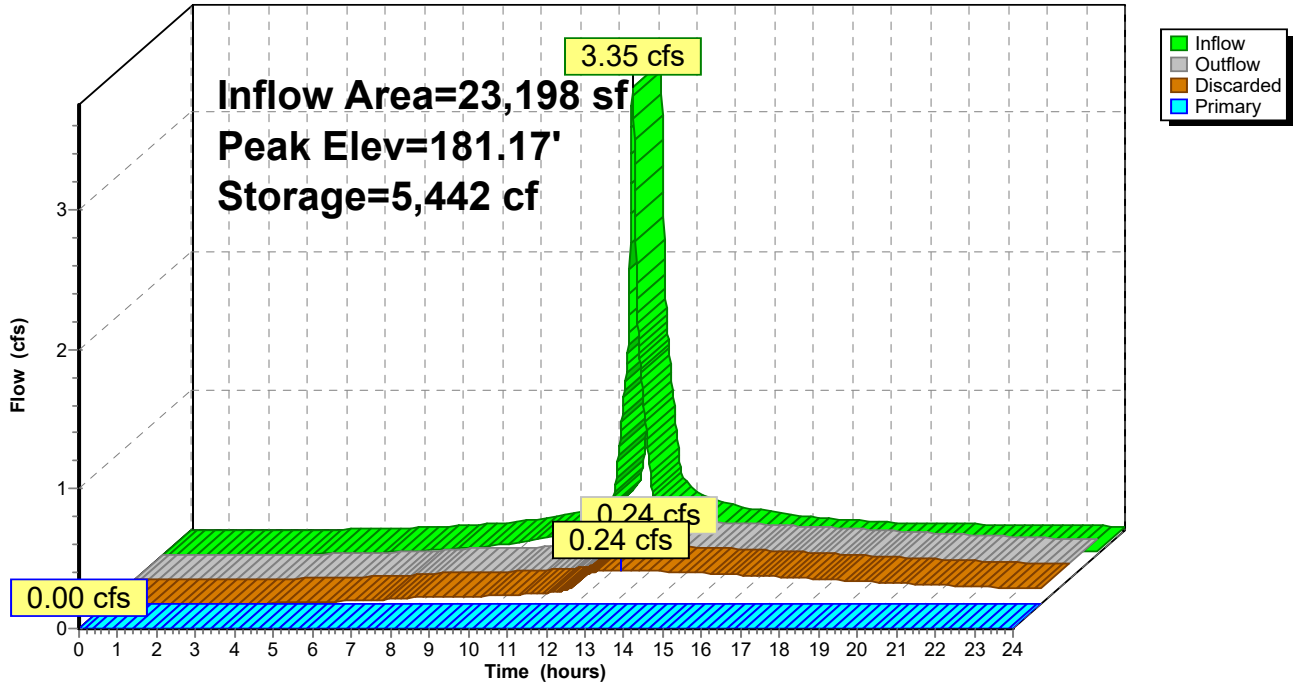
405.6 cy Field

163.9 cy Stone



### Pond PP-I1: Infil#1

Hydrograph



**Stage-Area-Storage for Pond PP-I1: Infil#1**

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
176.50	1,776	0	181.80	1,776	6,208
176.60	1,776	71	181.90	1,776	6,329
176.70	1,776	142	182.00	1,776	6,451
176.80	1,776	213	182.10	1,776	6,476
176.90	1,776	284	182.20	1,776	6,501
177.00	1,776	355	182.30	1,776	6,526
177.10	1,776	427	182.40	1,776	6,551
177.20	1,776	499	182.50	1,776	6,576
177.30	1,776	571	182.60	1,776	<b>6,601</b>
177.40	1,776	643			
177.50	1,776	715			
177.60	1,776	787			
177.70	1,776	859			
177.80	1,776	931			
177.90	1,776	1,003			
178.00	1,776	1,075			
178.10	1,776	1,147			
178.20	1,776	1,219			
178.30	1,776	1,291			
178.40	1,776	1,363			
178.50	1,776	1,435			
178.60	1,776	1,507			
178.70	1,776	1,579			
178.80	1,776	1,651			
178.90	1,776	1,723			
179.00	1,776	1,795			
179.10	1,776	1,867			
179.20	1,776	1,939			
179.30	1,776	2,011			
179.40	1,776	2,083			
179.50	1,776	2,155			
179.60	1,776	2,227			
179.70	1,776	2,299			
179.80	1,776	2,371			
179.90	1,776	2,443			
180.00	1,776	2,515			
180.10	1,776	2,587			
180.20	1,776	2,659			
180.30	1,776	2,731			
180.40	1,776	2,803			
180.50	1,776	2,875			
180.60	1,776	2,947			
180.70	1,776	3,019			
180.80	1,776	3,091			
180.90	1,776	3,163			
181.00	1,776	3,235			
181.10	1,776	3,307			
181.20	1,776	3,379			
181.30	1,776	3,451			
181.40	1,776	3,523			
181.50	1,776	3,595			
181.60	1,776	3,667			
181.70	1,776	3,739			



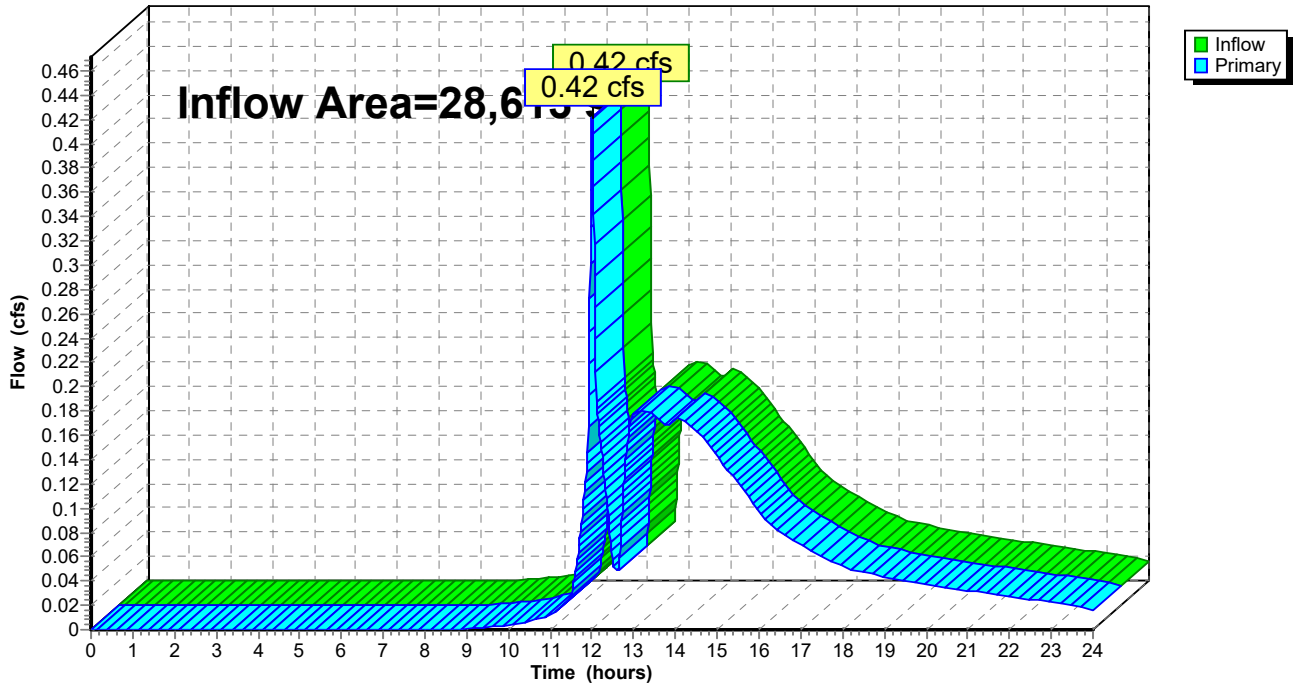
### Summary for Link EL: Existing

Inflow Area = 28,613 sf, 65.19% Impervious, Inflow Depth > 1.52" for 25-Year event  
Inflow = 0.42 cfs @ 12.00 hrs, Volume= 3,634 cf  
Primary = 0.42 cfs @ 12.00 hrs, Volume= 3,634 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.0100 hrs

### Link EL: Existing

Hydrograph



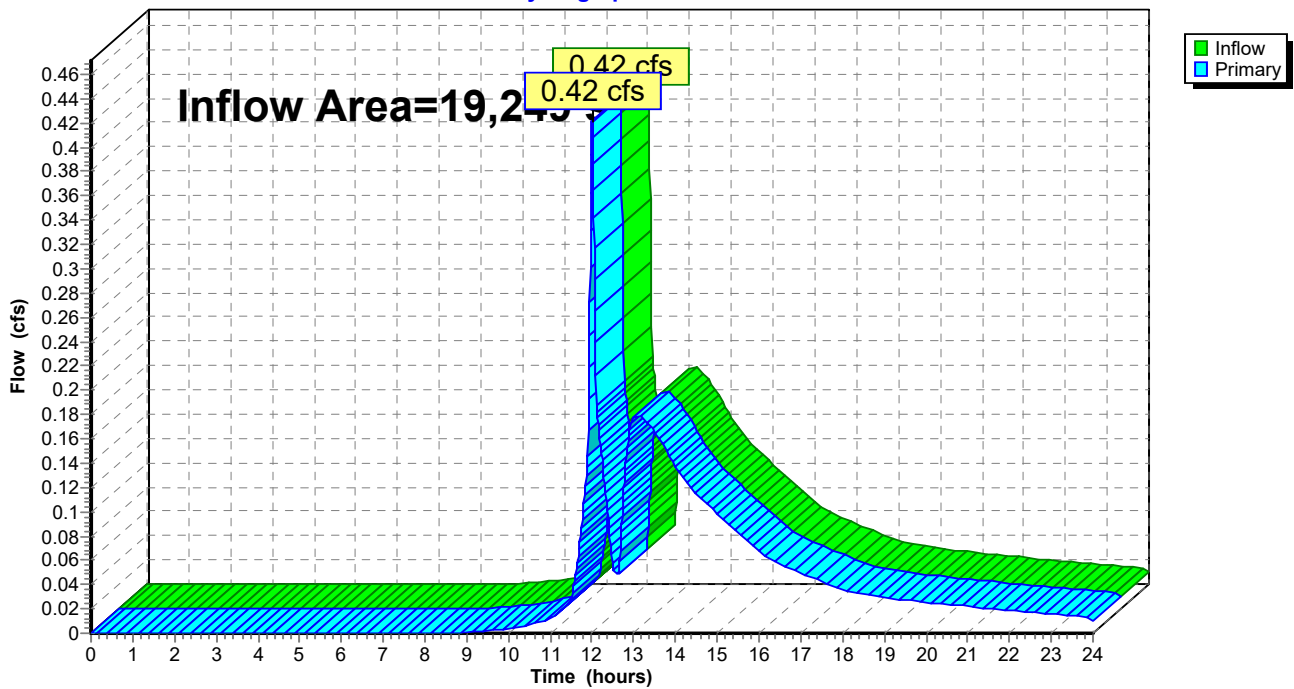
### Summary for Link EL-G: Existing Godrefy

Inflow Area = 19,249 sf, 63.64% Impervious, Inflow Depth > 1.81" for 25-Year event  
Inflow = 0.42 cfs @ 12.00 hrs, Volume= 2,911 cf  
Primary = 0.42 cfs @ 12.00 hrs, Volume= 2,911 cf, Atten= 0%, Lag= 0.0 min  
Routed to Link EL : Existing

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.0100 hrs

### Link EL-G: Existing Godrefy

Hydrograph



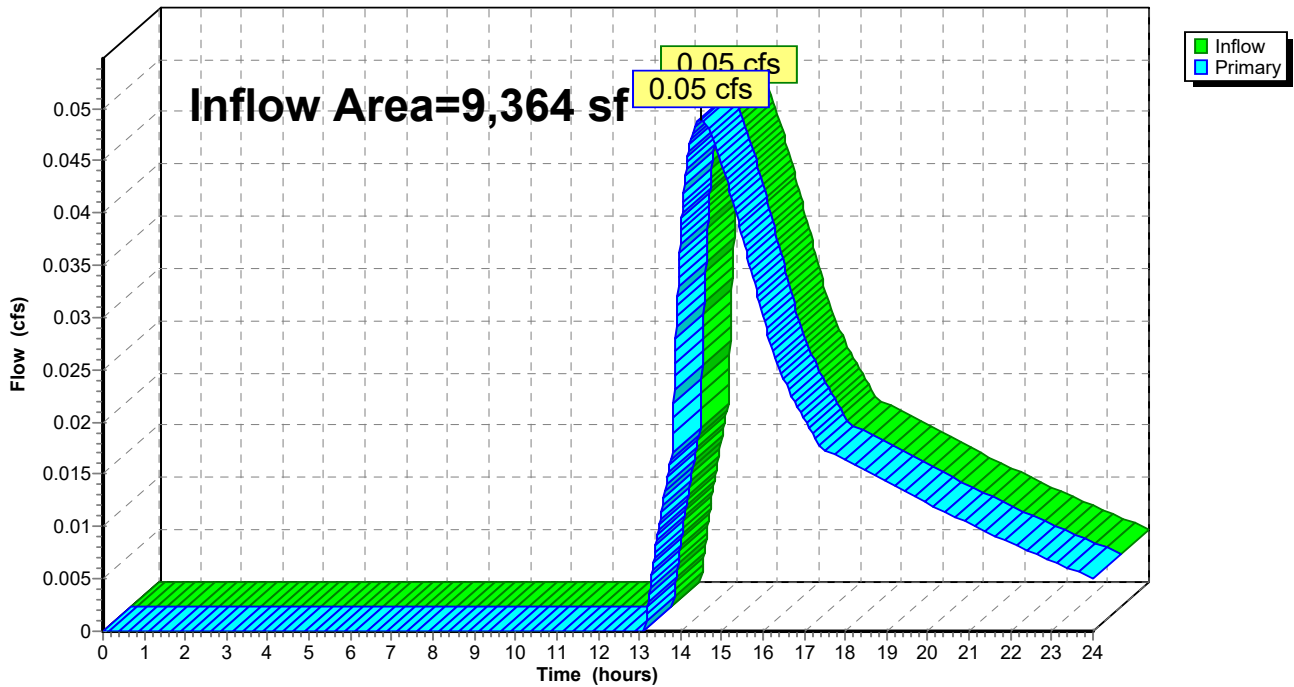
### Summary for Link EL-H: Existing Hubbard

Inflow Area = 9,364 sf, 68.38% Impervious, Inflow Depth > 0.93" for 25-Year event  
Inflow = 0.05 cfs @ 14.48 hrs, Volume= 724 cf  
Primary = 0.05 cfs @ 14.48 hrs, Volume= 724 cf, Atten= 0%, Lag= 0.0 min  
Routed to Link EL : Existing

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.0100 hrs

### Link EL-H: Existing Hubbard

Hydrograph



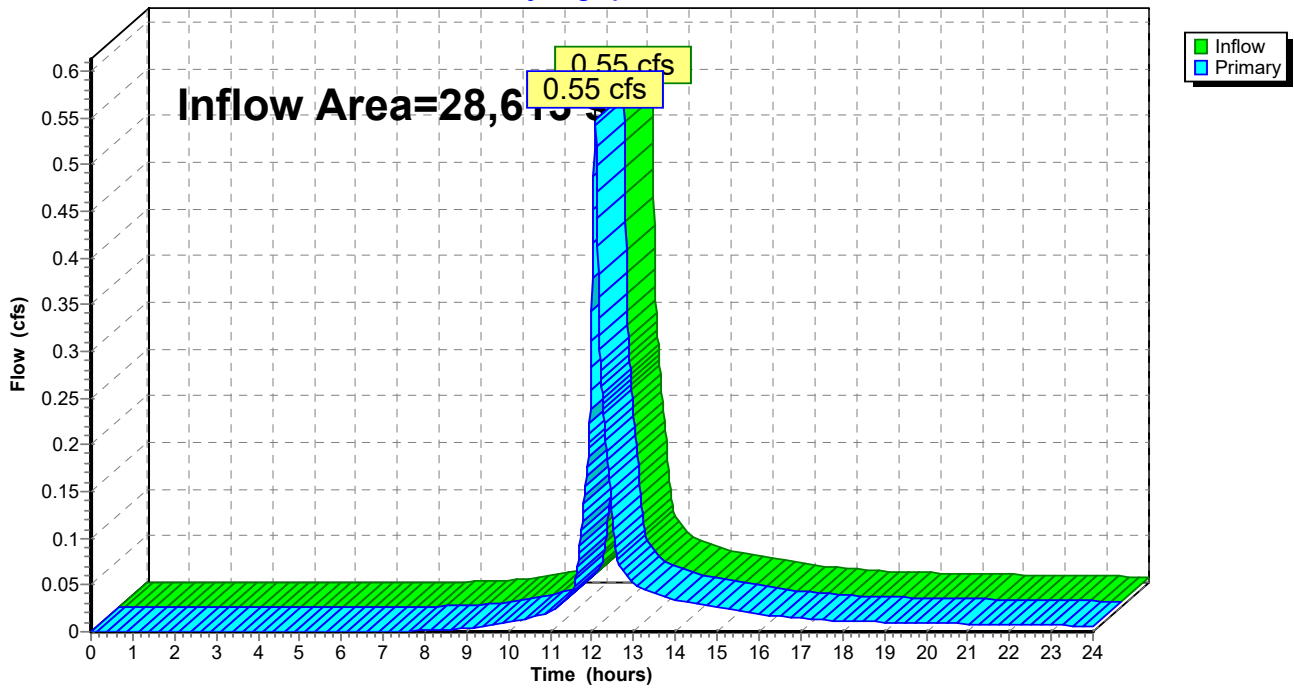
### Summary for Link PL: Proposed

Inflow Area = 28,613 sf, 71.13% Impervious, Inflow Depth > 0.69" for 25-Year event  
Inflow = 0.55 cfs @ 12.07 hrs, Volume= 1,641 cf  
Primary = 0.55 cfs @ 12.07 hrs, Volume= 1,641 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.0100 hrs

### Link PL: Proposed

Hydrograph



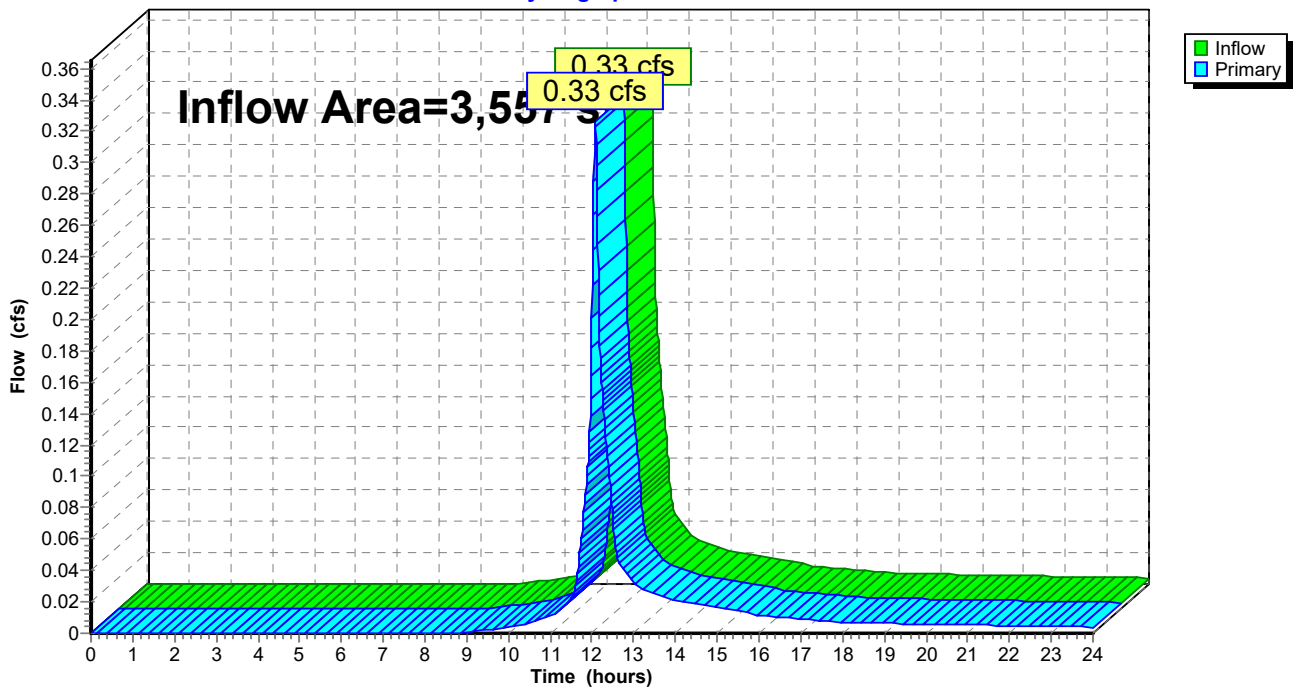
### Summary for Link PL-G: Proposed Godfrey

Inflow Area = 3,557 sf, 24.52% Impervious, Inflow Depth > 3.29" for 25-Year event  
Inflow = 0.33 cfs @ 12.08 hrs, Volume= 974 cf  
Primary = 0.33 cfs @ 12.08 hrs, Volume= 974 cf, Atten= 0%, Lag= 0.0 min  
Routed to Link PL : Proposed

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.0100 hrs

### Link PL-G: Proposed Godfrey

Hydrograph



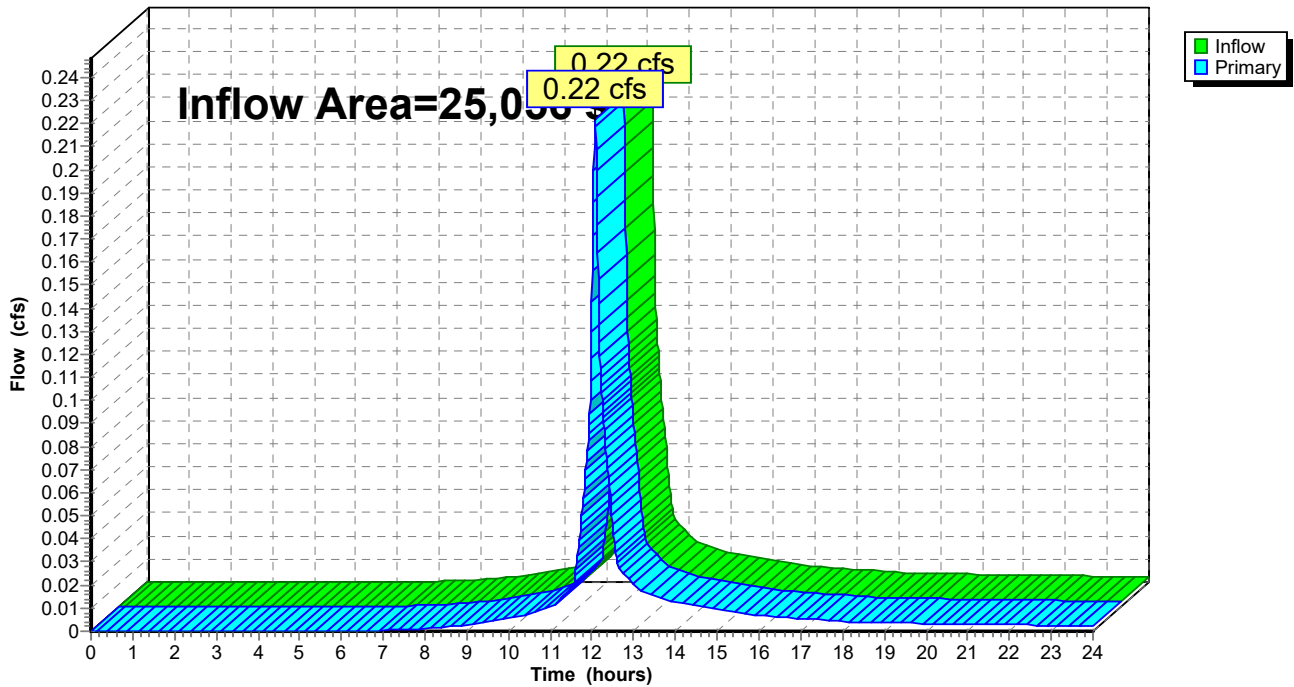
### Summary for Link PL-H: Proposed Hubbard

Inflow Area = 25,056 sf, 77.75% Impervious, Inflow Depth > 0.32" for 25-Year event  
Inflow = 0.22 cfs @ 12.07 hrs, Volume= 666 cf  
Primary = 0.22 cfs @ 12.07 hrs, Volume= 666 cf, Atten= 0%, Lag= 0.0 min  
Routed to Link PL : Proposed

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.0100 hrs

### Link PL-H: Proposed Hubbard

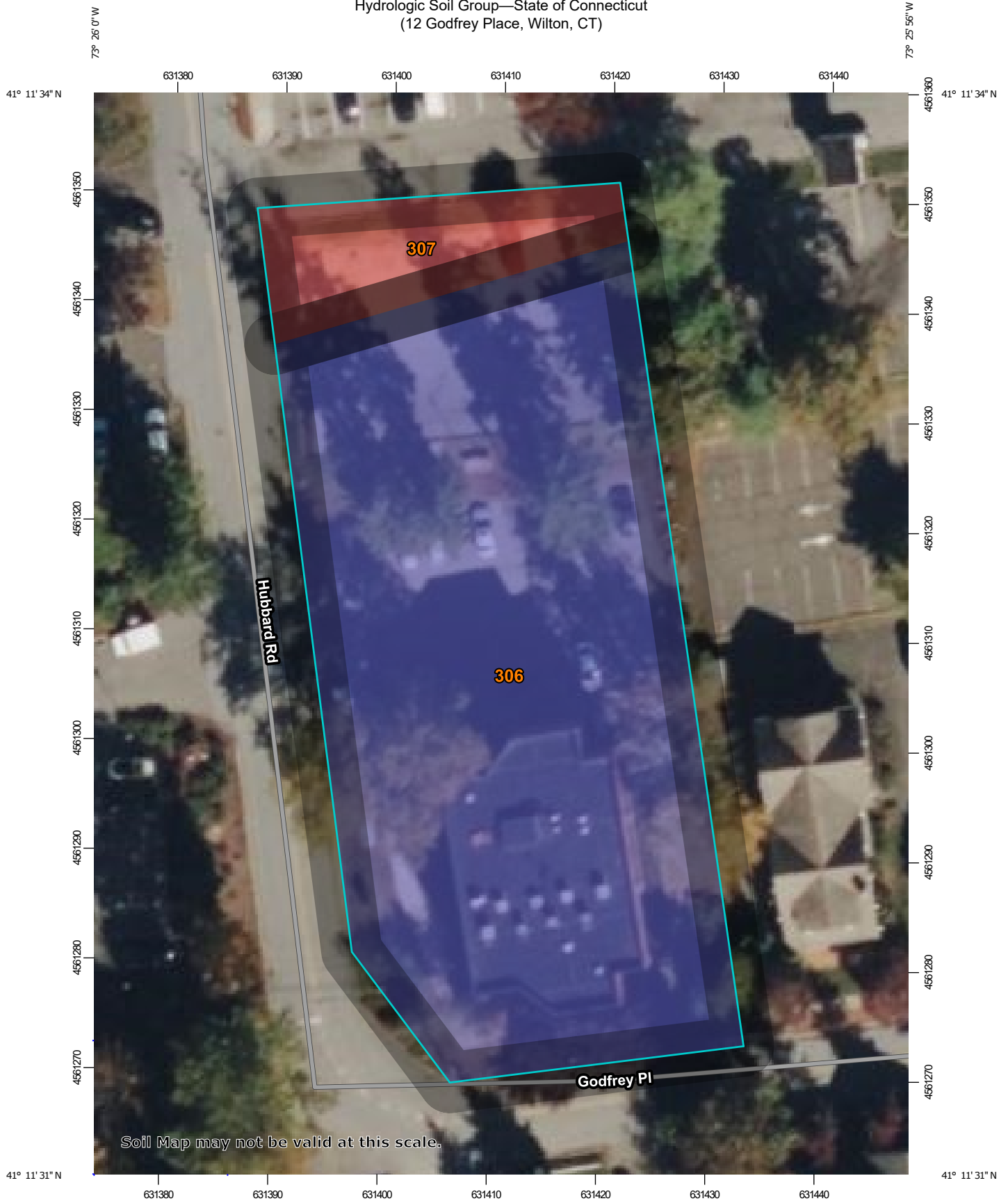
Hydrograph



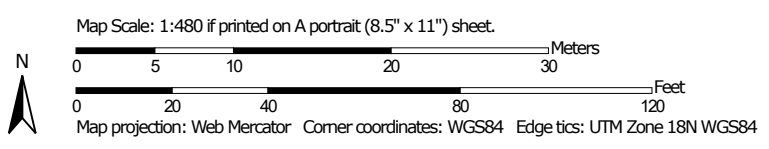
## Appendix 6

### NRCS Soil Information

Hydrologic Soil Group—State of Connecticut  
(12 Godfrey Place, Wilton, CT)




Soil Map may not be valid at this scale.





## 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

#### 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


### Water Features

 Streams and Canals

### Transportation

 Rails  
 Interstate Highways  
 US Routes  
 Major Roads  
 Local Roads

### Background

 Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

**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: State of Connecticut  
 Survey Area Data: Version 21, Sep 7, 2021

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

Date(s) aerial images were photographed: Oct 8, 2020—Oct 14, 2020

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
306	Udorthents-Urban land complex	B	0.6	88.9%
307	Urban land	D	0.1	11.1%
<b>Totals for Area of Interest</b>			<b>0.7</b>	<b>100.0%</b>

### 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*

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## SANITARY SEWER REPORT

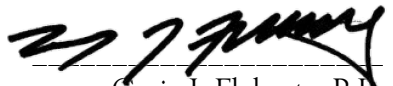
12 Godfrey Place

Prepared by

Redniss & Mead, Inc.  
22 First Street  
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(203) 327-0500

Issued on:  
September 30, 2022

Revised on:  
February 28, 2022

  
Craig J. Flaherty, P.E.  
CT Lic. No. 21149

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Sanitary Flow Calculations .....Appendix 1  
Godfrey Place Sewershed Map.....Appendix 2  
Study Pont #1 Capacity Calculation .....Appendix 3

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### Sanitary Sewer Narrative

The proposed redevelopment of the site includes the demolition of the existing office building and construction of the new four-story residential building with ground level parking. The apartment building will consist of 13 one-bedroom, 19 two-bedroom, and 10 three-bedroom apartments. The proposed change in use for the building is estimated to generate an average daily flow of 12,150 gallons per day, representing an increase of 11,063 gallons per day over existing conditions (Appendix 1-Sanitary Flow Calculations). A new lateral connection is proposed south of the building, connecting to the 8" ductile iron pipe in Godfrey Place via a chimney connection. The existing office building previously discharged via a sanitary lateral connecting to the main in Hubbard Road.

Effluent from the site is tributary to an 8" main that runs east to west in Godfrey Place before ultimately reaching the 24" main in Old Ridgefield Road (Appendix 2 - Godfrey Place Sewershed Map). An analysis along the final length of 8" main in Godfrey Place (Study Point #1) was done to confirm the existing infrastructure has the capacity to accommodate the proposed flows. This length of pipe receives the most effluent and maintains a slope very similar to the rest of the main (0.7%). The area tributary to Study Point #1 consists of the site and residential and commercial properties fronting on Old Ridgefield Road, Hubbard Road and Godfrey Place. Refer to the Offsite Properties sheet found in Appendix 1 for more information. Using Manning's Equation, the calculated capacity of the pipe is 1.008 cfs (Appendix 3). The proposed flow is 0.280 cfs (Appendix 1), accounting for 27.8% of the pipe's capacity, an increase of 6.8% over existing conditions.

Based on the narrative above supported by the calculations provided herewith, it is our opinion that the receiving municipal sewers have the capacity to accommodate flow from the redevelopment of the subject parcel and future development within the sewershed.



## Appendix 1

### Sanitary Flow Calculations

## Onsite Sanitary Sewer Flow Estimates (Study Point 1)

<b>Project:</b> 12 Godfrey Place	<b>Project #:</b> 10556	<b>Date:</b> 2/28/2023
<b>Location:</b> Wilton, CT	<b>By:</b> PBS	<b>Checked:</b> CJF

The flows listed below represent the on-site building tributary to the sanitary main in Godfrey Place. Other of-site connections to the main are not shown.

### Existing On-Site Flow

Location	Building Use	Floor Area (SF)	Design Flow (GPD/SF)*	Total Flow
12 Godfrey Place	Office	10,871	0.100	1,087

Existing Sanitary Flow (GPD)	1,087
Peak Rate (CFS)	0.002
Peaking Factor	4
<b>Total Existing Peak Flow (CFS)</b>	<b>0.007</b>

### Potential Proposed On-Site Flow

Location	Building Use	# of Bedrooms	Design Flow (GPD /)	Total Flow
12 Godfrey Place	Residential	81	150	12,150

Proposed Sanitary Flow (GPD)	12,150
Peak Rate (CFS)	0.019
Peaking Factor	4
<b>Total Proposed Peak Flow (CFS)</b>	<b>0.075</b>

\*Per State of CT Public Health Code



## Offsite Sanitary Sewer Flow Estimates

<b>Project:</b> <i>12 Godfrey Place</i>	<b>Project #:</b> <i>10556</i>	<b>Date:</b> <i>9/30/2022</i>
<b>Location:</b> <i>Wilton, CT</i>	<b>By:</b> <i>PBS</i>	<b>Checked:</b> <i>9/30/2022</i>

Note: The flows listed below represent all of the offsite buildings tributary to the sewer main in Godfrey Place connecting to EX.SMH#5.

### Existing Offsite Flow:

Type	Unit	GPD / Unit*	Flow (GPD)
Bedrooms	18	150	2,700
Retail (sf)	66,170	0.10	6,617
Office (sf)	17,678	0.10	1,768
Restaurant (est. seats)**	8,488	1.00	8,488
Medical Office	6,102	0.200	1,220
Day Care***	8,828	0.15	1,324
Sub-Total Flow (GPD)			22,117
Factor of Safety			1.5
Total Flow (GPD)			33,176
Flow Rate (CFS)			0.051
Peaking Factor			4
<b>Peak Flow Rate (CFS)</b>			<b>0.205</b>

\*Per State of CT Public Health Code

\*\*30 GPD per seat. Assumed 50% of sf is "active" and 1 seat per 15 sf of "active" floor area  
 Group Child Care Homes Regulation there is a minimum of 35 square feet of total indoor usable program space per child. Assumed that 50% of sf is "usable program space".

## Offsite Properties List

<b>Project:</b> 12 Godfrey Place	<b>Project #:</b> 10556	<b>Date:</b> 9/30/2022
<b>Location</b> Wilton, CT	<b>By:</b> PBS	<b>Checked:</b> CJF

Offsite Properties Tributary to Study Point #1			
	Address	Use Type	Building SF/BDRM
1	101 Old Ridgefield Road Building #1*	Restaurant	1,601
		Medical Office	4,003
		Office	10,406
2	101 Old Ridgefield Road Building #2*	Restaurant	6,887
		Bank	2,296
3	15 Hubbard Road	Retail (Post Office)	11,309
4	23 Hubbard Road**	Office	6,297
		Medical Office	2,099
		Residential	4
5	21 Hubbard Road	Residential	5
6	13 Godfrey Place	Office	975
7	11 Godfrey Place	Residential	3
8	7 Godfrey Place	Daycare	8,828
9	6 Godfrey Place	Apartment	6
10	3 Godfrey Place	Retail (Pet Store)	5,702
11	137 Old Ridgefield Road	Retail (Library)	46,863

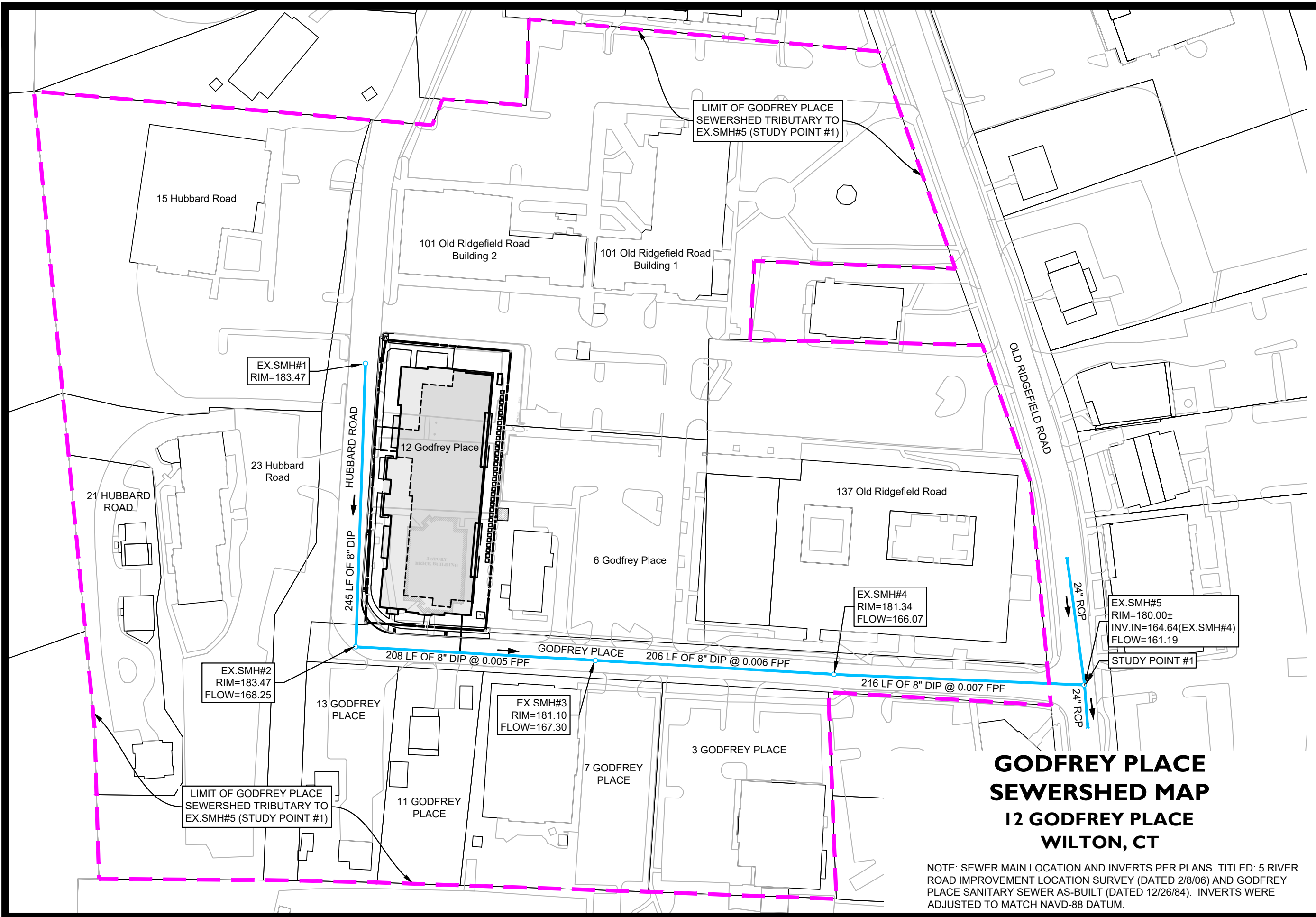
\*Use type break down approximated based off of Town Green at Wilton Center Leasing Package

\*\*Use type break down approximated assuming that the four tenants equally split leasable area

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## Appendix 2

### Godfrey Place Sewershed Map



## GODFREY PLACE SEWERSHED MAP 12 GODFREY PLACE WILTON, CT

NOTE: SEWER MAIN LOCATION AND INVERTS PER PLANS TITLED: 5 RIVER ROAD IMPROVEMENT LOCATION SURVEY (DATED 2/8/06) AND GODFREY PLACE SANITARY SEWER AS-BUILT (DATED 12/26/84). INVERTS WERE ADJUSTED TO MATCH NAVD-88 DATUM.



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COMM. NO.: 10556	DATE: 09/30/2022
SCALE: 1"=80'	

10/3/2022 11:05 AM H:\jobfiles\210000\10556\DWG\10556 Master 1 (2022-06-29).dwg

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## Appendix 3

### Study Point #1 Capacity Calculation

## Manning's Equation - Circular Pipe

<b>Project:</b> 12 Godfrey Place	<b>Project #:</b> 10556	
<b>Location:</b> Wilton, CT	<b>By:</b> PBS	<b>Date:</b> 2/28/2023
<b>Description:</b> 8" Sanitary Main in Godfrey Place	<b>Checked:</b> CJF	<b>Date:</b> 2/28/2023

### Study Point #1 - 8" in Godfrey Place

Calculate the flow capacity using Manning's equation.

Pipe material	<input type="text" value="Cast Iron Pipe (CIP)"/>	▼	
Manning's n	0.013		
Pipe diameter, D	0.666 ft		
Area, $A_{full}$	0.35 ft <sup>2</sup>		$A = \frac{\pi}{4} D^2$
Wetted perimeter, $P_{full}$	2.09 ft		$P = \pi D$
Hydraulic radius, $R_h$	0.17 ft		$R_h = \frac{A}{P}$
Slope, S	0.0070 ft/ft		
<b>Existing Pipe Capacity Flow, <math>Q_{full}</math></b>	<b>1.008 cfs</b>		$Q = \frac{1.486}{n} AR_h^{2/3} S^{1/2}$
Existing Peak Flow	0.212 cfs		
% of Pipe Capacity	21.0%		
Proposed	0.280 cfs		
% of Pipe Capacity	27.8%		



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February 28, 2023

Mr. Jay Ross  
Greenwich Realty Development, LLC  
32 Field Point Road  
Greenwich, Connecticut 06830

Subject           **Traffic Evaluation – Proposed Residential Development – 12 Godfrey Place, Wilton, Connecticut (F5805.00)**

Dear Mr. Ross:

As requested, we have conducted an evaluation of a proposed demolition of an existing office building located at 12 Godfrey Place and construction of a new residential building. The current office building of 10,871 square feet will be demolished and replaced with 42 residential units. The site driveways to Hubbard Road will be reduced from two to one, with the proposed driveway located between the two existing driveways. This Traffic Evaluation is suitable for submission to the Town and provides a description and better understanding of potential traffic-related impacts to adjacent roadways, if any, with the reuse of the Subject Property.

## **Roadways**

The site is located on the northeast corner of Godfrey Place at Hubbard Road. The following is a brief description of nearby and adjacent roadways:

- Godfrey Place – This is an east-west, two-lane, two-way, Town-maintained roadway. It begins to the east at the STOP sign controlled intersection of Old Ridgefield Road and continues west before turning 90-degrees to the north and continuing as Hubbard Road. This roadway provides a double yellow centerline, curbing and sidewalks along both sides of the roadway. NO PARKING ANYTIME signs are posted on both sides of the roadway. The roadway width is generally 21 feet. Land use is generally commercial and the Wilton Library.
- Hubbard Road – This is a north-south, two-lane, two-way, Town-maintained roadway. It begins to the north at the STOP sign controlled intersection of Old Ridgefield Road and continues south before turning 90-degrees to the east and continuing as Godfrey Place. This roadway provides a double yellow centerline and curbing along both sides of the roadway. To the north of the site, a sidewalk is provided along the easterly side of the roadway. The roadway width is generally 24 feet. Land use is generally commercial.

Figure 1 illustrates the site location and surrounding roadways.



**SITE LOCATION MAP**

**OFFICE TO RESIDENTIAL CONVERSION**  
12 Godfrey Place  
Wilton, Connecticut



**1**

Not to Scale

7/8/22



### **Site Traffic Generation Comparison**

The proposal is to demolish the current office building of 10,871 square feet and replace it with 42 residential units. Based on trip rates provided in the "Trip Generation Manual," 11<sup>th</sup> Edition, published by the Institute of Transportation Engineers (ITE) in 2021, site traffic estimates were determined for both the existing office building, as well as the proposed residential development. Note that the Connecticut Department of Transportation (CTDOT) approves and requires the use of the ITE trip rates for residential and office developments.

The proposed residential development is estimated to generate a total of 16 and 17 vehicle trip ends during the weekday morning and weekday afternoon peak hours, respectively. It is also estimated, based on ITE trip rates for general office buildings, that the existing office building would generate a total of 17 and 16 vehicle trip ends during the weekday morning and weekday afternoon peak hours, respectively. When compared to the existing office building, the proposed residential development will generate a total of 1 less vehicle trip end during the weekday morning peak hour and one additional vehicle trip end during weekday afternoon peak hour. Table 1 provides more details of the site traffic generation comparison discussed above.

It is assumed that residential site traffic patterns will generally be similar to the existing office building traffic and use the same intersections to arrive and depart from the site. Although the majority of residential trips exit in the morning and enter during the afternoon/evening peak, while office trips peak in the opposite direction, entering in the morning and exiting in the afternoon/evening.

### **Site Access Considerations**

As noted above, the site driveways to Hubbard Road will be reduced from two to one. The proposed site driveway to the residential development will be located between the two existing driveways. Sight lines at the proposed driveway will be an improvement from the existing southerly driveway location, as it will be further away from the Godfrey Place/Hubbard Road intersection. The proposed driveway should provide a STOP sign and STOP bar.

### **Potential Traffic Impact**

The results of the site traffic generation comparison indicated that there is a reduction in total site traffic of 1 less vehicle trip end during the weekday morning peak hour and one additional vehicle trip end during the weekday afternoon peak hour. In addition, the site driveways to Hubbard Road will be reduced from two to one. Surrounding roadways and intersections will continue to operate similar to the existing condition with the office building.

### **Findings**

The proposal to demolish the current office building of 10,871 square feet and replaced with 42 residential units will result in an insignificant, if any, impact to the adjacent and surrounding roadways during the weekday morning and weekday afternoon peak hours. The results of the site traffic generation comparison indicate that there is a reduction in total site traffic of 1 vehicle trip end during the weekday morning peak

Table 1  
 SITE TRAFFIC GENERATION – PEAK HOURS  
 Office to Residential Conversion  
 12 Godfrey Place  
 Wilton, Connecticut

LAND USE	SIZE	TRAFFIC DIRECTION	VEHICLE TRIP ENDS	
			Weekday Morning	Weekday Afternoon
1) Existing General Office Building	10,871 S.F.	Enter	15	3
		Exit	<u>2</u>	<u>13</u>
		Total	17	16
2) Proposed Multifamily Housing (Low-Rise)	42 Dwelling Units	Enter	4	10
		Exit	<u>12</u>	<u>7</u>
		Total	16	17
Net Difference Site Traffic (2-1)		Enter	-11	7
		Exit	<u>10</u>	<u>-6</u>
		Total	-1	1

Source: "Trip Generation," 11<sup>th</sup> Edition, published by the Institute of Transportation Engineers (ITE) in 2021 using

- 1) General Office Building, Code #710 average rates.
- 2) Multifamily Housing (Mid-Rise), Code #221 average rates for the weekday morning peak hour and fitted curve equation for the weekday afternoon peak hour.

Hardesty & Hanover, LLC

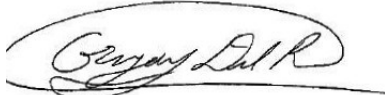
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 2/27/2023

Mr. Jay Ross  
Page 3  
February 28, 2023

hour and one additional vehicle trip end during the weekday afternoon peak hour. The peak periods of the roadways are generally between 7:00 to 9:00 A.M. and 4:00 to 6:00 P.M.

In addition, site driveways to Hubbard Road will be reduced from two to one. Surrounding roadways and intersections will continue to operate the similar to the existing condition with the office building. There are no recommended improvements needed for the proposed development.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Greg Del Rio", is written over a horizontal line.

**Greg Del Rio, PE**  
**Principal Transportation Engineer**  
**Hardesty & Hanover, LLC**