HASKELL
ARCHITECTS AND ENGINEERS, P.C.

STORMWATER MANAGEMENT PLAN

YELLIN TRAILER PARKING LOT

Haskell Project Number: 3401365

CIVIL PERMIT ISSUE 01-21-2021

Joshua Hough

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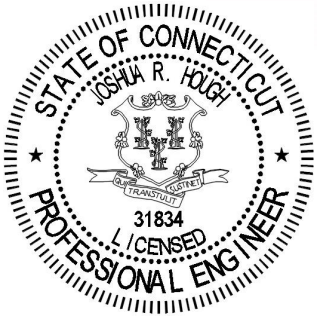

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ARCHITECTS AND ENGINEERS, P.C.

PROJECT NAME:	**YELLIN TRAILER PARKING LOT**
PROJECT ADDRESS:	**1886 UPPER MAPLE ST.** **DAYVILLE, CT 06241**
PROJECT COUNTY:	**DAYVILLE, WINDHAM COUNTY, CT.**
CLIENT:	**FRITO-LAY, INC.** **7701 LEGACY DR.** **PLANO, TEXAS 75024**
PREPARED BY:	**HASKELL ARCHITECTS AND ENGINEERS, P.C.** **111 RIVERSIDE AVENUE** **JACKSONVILLE, FLORIDA 32202** **(904) 791-4500**
	JOSHUA R. HOUGH, P.E. **GROUP LEAD ENGINEER - CIVIL** **CT P.E. # 31834**
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HASKELL PROJECT #:	**3401365**

STORMWATER MANAGEMENT PLAN

TABLE OF CONTENTS

SECTION 1 - PROJECT NARRATIVE / SITE CHARACTERISTICS

PROJECT NARRATIVE:

The Yellin Trailer Parking Lot site improvements include the construction of a 9.9 AC asphalt trailer parking lot for staging of Frito-Lay tractor trailers. The project will also include the construction of a new stormwater management pond in the southeast corner of the property that will accommodate discharge from the proposed lot as well as the volume compensation associated with the existing pond that is to be filled in as part of this permit.

Proposed stormwater facilities include the filling in of an existing retention pond and the creation of a new multi-system dry detention pond in the south east corner of the proposed Yellin lot. The proposed pond has been designed to meet pre/post discharge requirements while maintaining one foot of freeboard for the 100 year, 24 hour event. Two hydrodynamic seperators are being utilized in unison with a sediment forbay for pre-treatment upstream of the detention pond. Discharge out of the pond is conveyed via pipe to a swale that runs along the Five-Mile River.

SITE CHARACTERISTICS:

Wetland Impacts:	There are no wetlands on-site that are to be mitigated and/or restored.
Tax Map ID:	002335 (Yellin Property to be Developed)
Existing Land Use:	Tractor Trailer Parking
Proposed Land Use:	Tractor Trailer Parking
Zoning:	Industrial
Class:	Industrial
Flood Zone:	FEMA Zone X
Site Topography:	USGS Map – (Reference Appendix 1.6)
Geological:	NRCS Soils Maps are provided in the appendix (Reference Appendix 1.5)
Hydrological Soil Group:	Type A, B Soils (Reference Appendix 1.4)

Existing Stormwater System Narrative:

The existing site is primarily used for trailer storage for Frito-lay and has split coverage of gravel pavements and vegetated land. The existing site has two major drainage basins (herby referred to as EXDA-YELLEN, and EXDA-DEPRESSION, refer to sheet C-171 Pre-Development Drainage Map) that convey runoff from north to south and utlimatly discharge to Five-mile river. Runoff within EXDA-YELLEN flows via sheet flow and shallow concentrated flow from north to south until it is captured in a small grassed swale along the southern property boundary. The swale conveys flow from west to east until reaching the ultimate discharge location near Five-mile river. EXDA-DEPRESSION is a small upland depression that utilized surface storage for discharge from a heavily wooded area before overflowing into the southern swale during larger events.

The existing southern pond on the Frito-Lay property is to be filled in as part of this project. The pond captures runoff from primarily impervious areas to the south of the Frito-lay facility (EXDA-UPPER) and fully contains runoff, without a discharge point, for all storms. Two existing concrete oil-water separators are used as pre-treatment into the pond and will remain in place during the proposed project.

Off-site Drainage Conditions Narrative:
The existing site is bound by Five-mile River to the east, Upper Mapple St. to the west, The Frito-Lay facility to the north, and undeveloped private land to the south. No off-site flows enter the limits of the project's effective drainage area.

Receiving Stream / System: Five-Mile River

SECTION 2 – STORMWATER DESIGN APPROACH

Design Summary:

The design for the proposed site improvements is to utilize a multi-system dry-detention basin to control peak discharges and to provide the required water quality volume. The pond is designed to accommodate both the runoff associated with the Yellen improvements as well as a master planned basin on the "Upper Lot" for 11.24 AC of total area and 11.06 AC of future impervious area. A summary of the post development effective drainage areas can be found in the appendix and on the C-171 Post Development Drainage Area Map. The existing retention pond to the north of the Yellen lot is to be filled in under this document set, thus, this project includes the capture of all upstream stormwater piping that previously drained to the existing pond and conveyance to the proposed Yellen pond. Stormwater quantity and peak discharge control has been designed to meet the pre-develoment peak discharge rate for the 2, 10, 25, and 100 year, 24 hour events. Refer to the tables below for peak discharge summary. The pond fully contains the 100 year, 24 hour event while maintaining 1 foot of freeboard. An emergency overflow for larger events has been provided along the southern pond bank and proper erosion control devices such as a

concrete weir and rip-rap outlet protection have been provided. Peak discharge for the design events is controlled by means of a multi-stage concrete control structure that discharges through an 18" pipe to the point of connection downstream.

Pre-treatment into the pond is provided by several BMP's in series to create an effective BMP treatment train in addition to the required water quality volume supported within the multi-system pond. The upper lot impervious area maintains treatment through two concrete oil-water seperators. Runoff is then conveyed downstream to be treated once again by means of two Hydro-international Downstream Defender hydrodynamic seperators to capture sediment and oils/greases from pavements. All runoff is then discharged into a sediment forbay sized to accommodate 25% of the total water quality volume required for the effective drainage area. The forebay is designed with a low flow, perforated riser pipe and a concrete overflow weir to accommodate larger storms. The forebay also includes a 30 mil liner to prevent contaminants from infiltrating through the soil strata.

The multi-system pond includes 2.95 feet of water quality storage that is slowly infiltrated into the soil strata (type A,B soils). WQv recovery is achieved at 180 hours (7.5 days) which **Haskell will be requesting a variance for based on the 72 hour State of Connecticut requirement.** Effective infiltration rates were calculated based on several geotechnical borings and test pits in the exact location of the proposed pond, and determined to be 0.38 inches per hour. A factor of safety was then applied to this infiltration rate per the Connecticut Stormwater Manual for an effective rate of 0.19 inches per hour. Pond attenuation volume recovery occurs at 240 hours (10 days) based on infiltration practices through the soil strata. **Haskell will be requesting a variance for the recovery time for the pond based on required infiltration through the bottom of the pond.** The pond design fully contains the 100 year event with more than the required 1 foot of freeboard; however, due to the lack of a sufficient outfall point based on the pond bottom elevation, a low flow pipe is not able to be installed at pond bottom

All routing analysis was performed within Interconnected Pond and Channel Routing version 4 (ICPR 4).

PRE-DEVELOPMENT PEAK DISCHARGE							
POINT OF ANALYSIS	DISCHARGES TO	2 YR-24HR (CFS)	10YR-24HR (CFS)	25YR-24HR (CFS)	100YR-24HR (CFS)	-	-
1	Five-Mile River	4.69	14.41	19.40	30.18		

POST-DEVELOPMENT PEAK DISCHARGE							
POINT OF ANALYSIS	DISCHARGES TO	2 YR-24HR (CFS)	10YR-24HR (CFS)	25YR-24HR (CFS)	100YR-24HR (CFS)	-	-
1	Five-Mile River	4.24	13.94	15.31	17.57	-	-

SECTION 3 – STORMWATER POLLUTION PREVENTION PLAN

Included in the Civil Engineering Plans on the Erosion & Sediment Control Plans. Refer to the sheets that have been submitted in addition to this hydrology report.

SECTION 4 – STORMWATER OPERATIONS AND MAINTENANCE PLAN

Owner:

FRITO-LAY, INC.
7701 LEGACY DR.
PLANO, TEXAS 75024

Operations and Maintenance Entity:

Responsibility for operation and maintenance of the system, which is permitted by the Town of Killingly, shall be the perpetual obligation of a single entity, which wholly owns or controls the lands on which any component of the permitted system is located, and which has the fiscal legal and logistical capability to perform operation and maintenance in accordance with District rules and permit conditions.

The Maintenance Entity is **Frito-Lay, Inc.** details as follows:

Corporate Entity:	**Local Management:**
FRITO-LAY, LLC 7701 LEGACY DR. PLANO, TEXAS 75024	Not provided at this time
Design Engineer: Joshua R. Hough, P.E. Civil Engineer CT #31834 Haskell Architects & Engineers, P.C. 111 Riverside Ave. Jacksonville, FL 32202 (904) 791-4744	

Operations and Maintenance Requirements:

Operation and maintenance of the storm water management system is required to assure proper functioning of the system. The following procedures are necessary to sustain continual performance of the system:

GENERAL

1. All storm water management systems permitted by the Town of Killingly shall be operated and maintained in accordance with the designs, plans, calculations, and other specifications that are submitted with the application, approved by Hillsborough County, and incorporated by reference into any permit issued.

STORMWATER COLLECTION SYSTEM (STORM SEWERS)

1. Inspect and clean out all pipes, manholes, inlets, and other drainage structures. All systems shall be kept free of debris, trash, garbage, oils and greases, and other refuse through regular inspection and maintenance. Oils and greases removed from the systems shall be disposed of at a sanitary landfill or by other lawful means.

VEGATATED SWALES

1. Inspect the ditch bottoms and side slopes for erosion. Repairs eroded areas and stabilize with fabric, mats, or sod.
2. Remove silt and sediment accumulations. Sediment build up within the bottom of the channel shall be removed when 25% of the original WQ_v volume has been exceeded.
3. Mow periodically and remove weed and tree growths. Vegetation in dry swales shall be mowed as required during the growing season to maintain grass heights in the 4 to 6 inch range.
4. Inspect underdrain system every year. Identify any piping of surface water through the bottom surface to the underdrain pipe. Clear obstructions and repair collapsed or failed underdrain segments.

STORMWATER PONDS:

1. Remove silt and sediment accumulations from fore-bay areas of the ponds. Re-stack and replace rip-rap stones which have been shifted during heavy flow events.
2. Inspect the pond control structures to ensure reliable performance during rainfall events. Check the interior components. Check the weirs. Remove trash, debris or sediment that hinders flow or release. Remove vegetation or aquatic growth, which has the capacity to hinder flow through the device.
3. Inspect the pond side slopes, repair eroded areas, and re-grass where required. Mow and maintain all pond slopes in a neat and clean manner.
4. Sediment Sump Maintenance
    - During the inspections the forebay should be inspected for damage to the wier and overflow structure between the forebay and the main section of the pond.
    - Sediment should be monitored in the bottom of the forebay and excess should be removed to ensure that the overflow pipes are not blocked.
    - The rip-rap at the pipes entering the basin and on the overflow structure should be evaluated. Any areas of damage or erosion should be addressed and additional rip-rap added.

Inspection Inspections

The stormwater system shall be inspected bi-annually to ensure that proper operation of the system. Any deficiencies should be recorded and repaired.

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APPENDIX 4 – WATER QUALITY CALCULATIONS

APPENDIX 1
MAPS & SUPPORTING DOCUMENTS

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

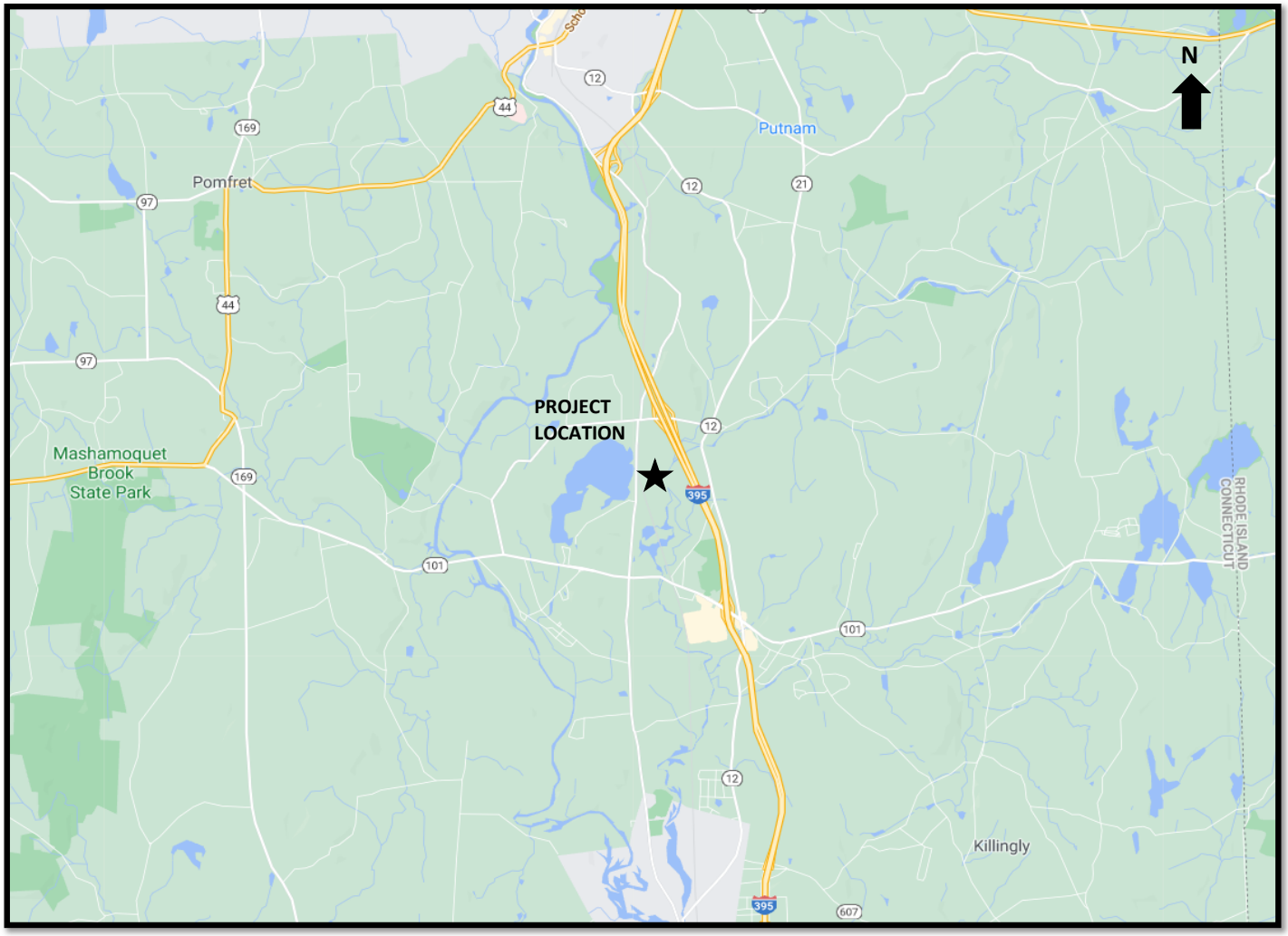
Client Name:	Frito-Lay		
Project Name:	Project Knight		
Location:	Killingly, CT	Project Num:	3401365
Prepared by:	SBC	Date:	1/21/2021

MAPS & SUPPORTING DOCUMENTS 1

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	Frito-Lay		
Project Name:	Project Knight		
Location:	Killingly, CT	Project Num:	3401365
Prepared by:	SBC	Date:	1/21/2021

VICINITY MAP 1.1



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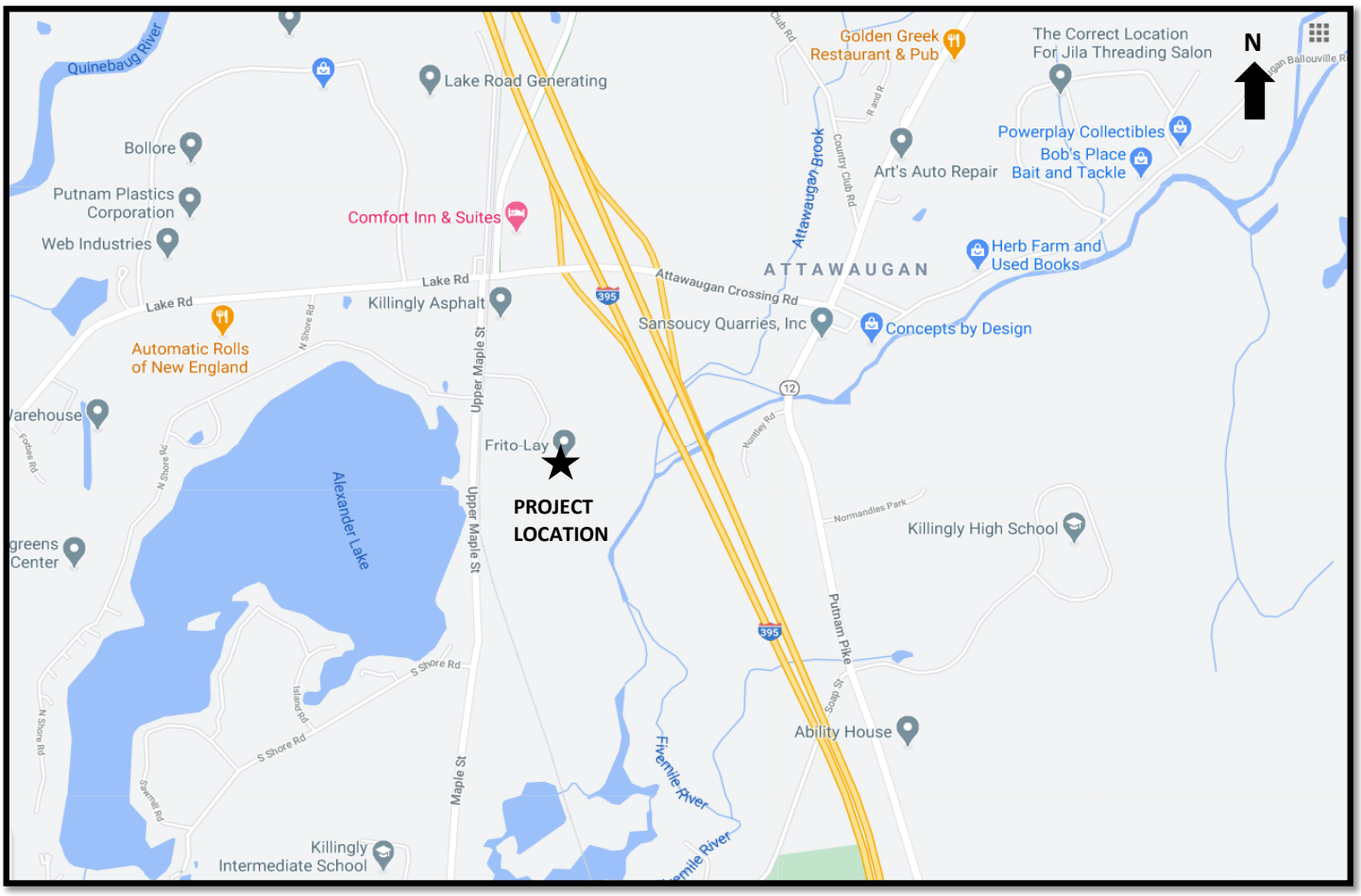
Client Name:	Frito-Lay		
Project Name:	Project Knight		
Location:	Killingly, CT	Project Num:	3401365
Prepared by:	SBC	Date:	1/21/2021

LOCATION MAP 1.2



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ARCHITECTS AND ENGINEERS, P.C.

Client Name:	Frito-Lay		
Project Name:	Project Knight		
Location:	Killingly, CT	Project Num:	3401365
Prepared by:	SBC	Date:	1/21/2021

AERIAL PHOTO 1.3

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ARCHITECTS AND ENGINEERS, P.C.

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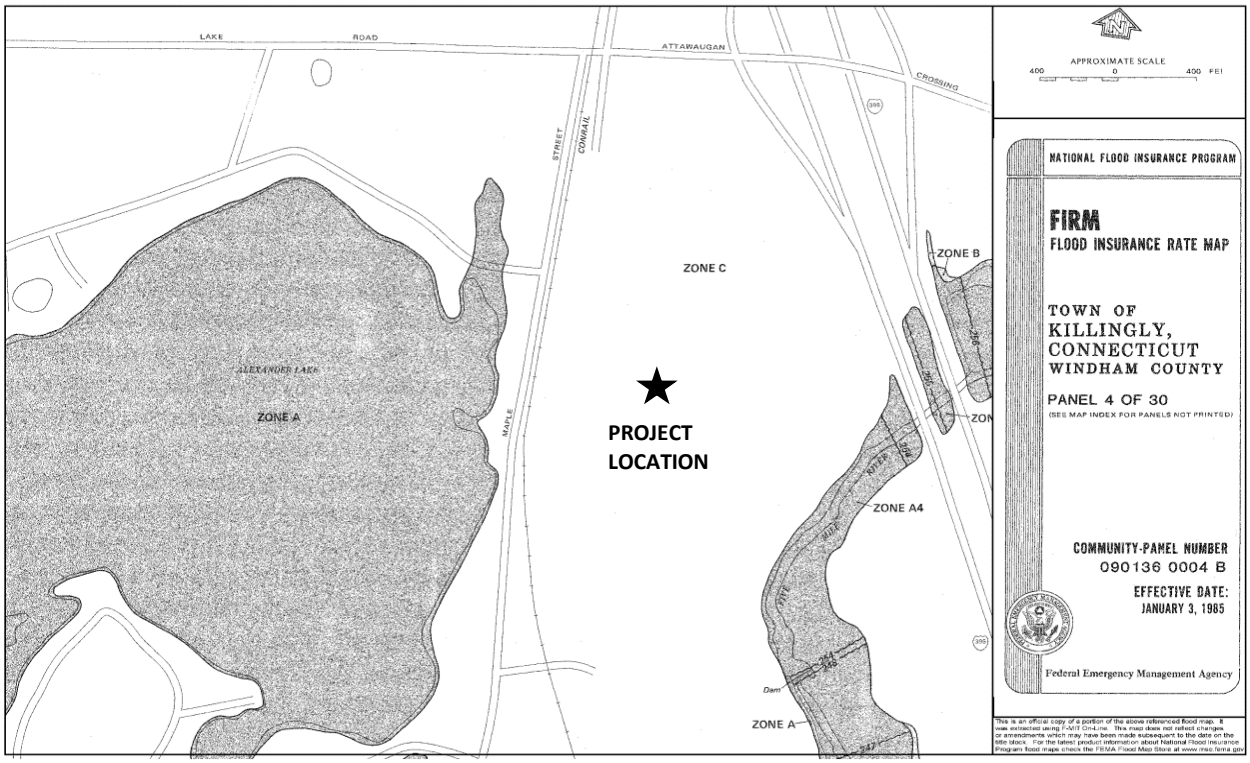
Location:	Killingly, CT	Project Num:	3401365
Prepared by:	SBC	Date:	1/21/2021

F.E.M.A. MAP

1.4



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Project Name:	Project Knight		
Location:	Killingly, CT	Project Num:	3401365
Prepared by:	SBC	Date:	1/21/2021

NRCS HYDROLOGIC SOILS GROUP MAP

1.5

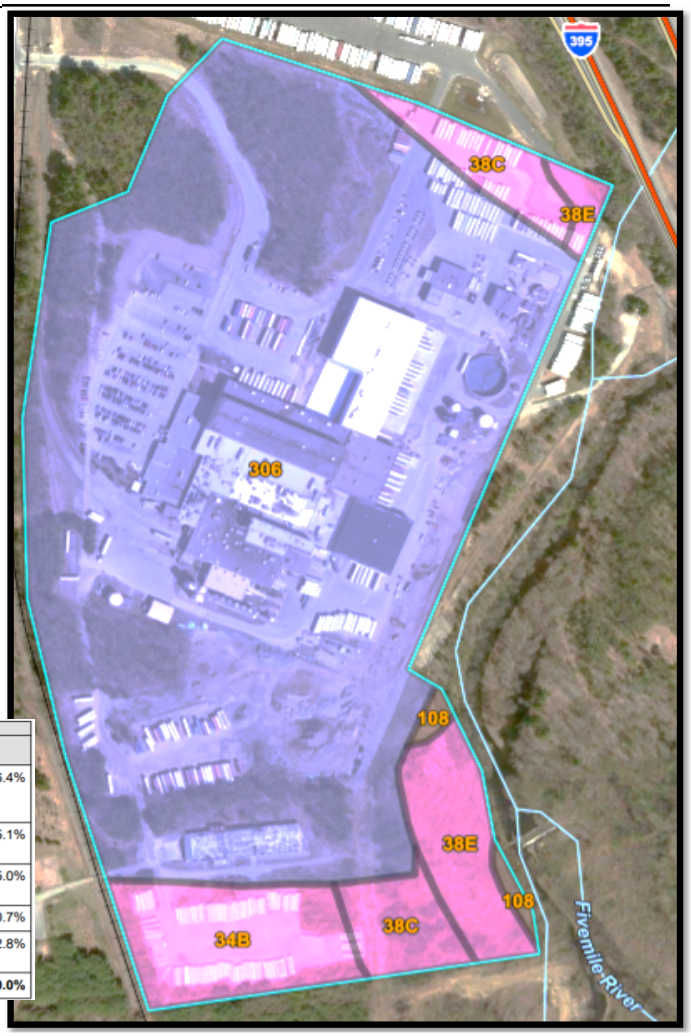
Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available



Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
34B	Merrimac fine sandy loam, 3 to 8 percent slopes	A	4.5	6.4%
38C	Hinckley loamy sand, 3 to 15 percent slopes	A	3.6	5.1%
38E	Hinckley loamy sand, 15 to 45 percent slopes	A	3.5	5.0%
108	Saco silt loam	B/D	0.5	0.7%
306	Udorthents-Urban land complex	B	58.6	82.8%
Totals for Area of Interest			**70.7**	**100.0%**

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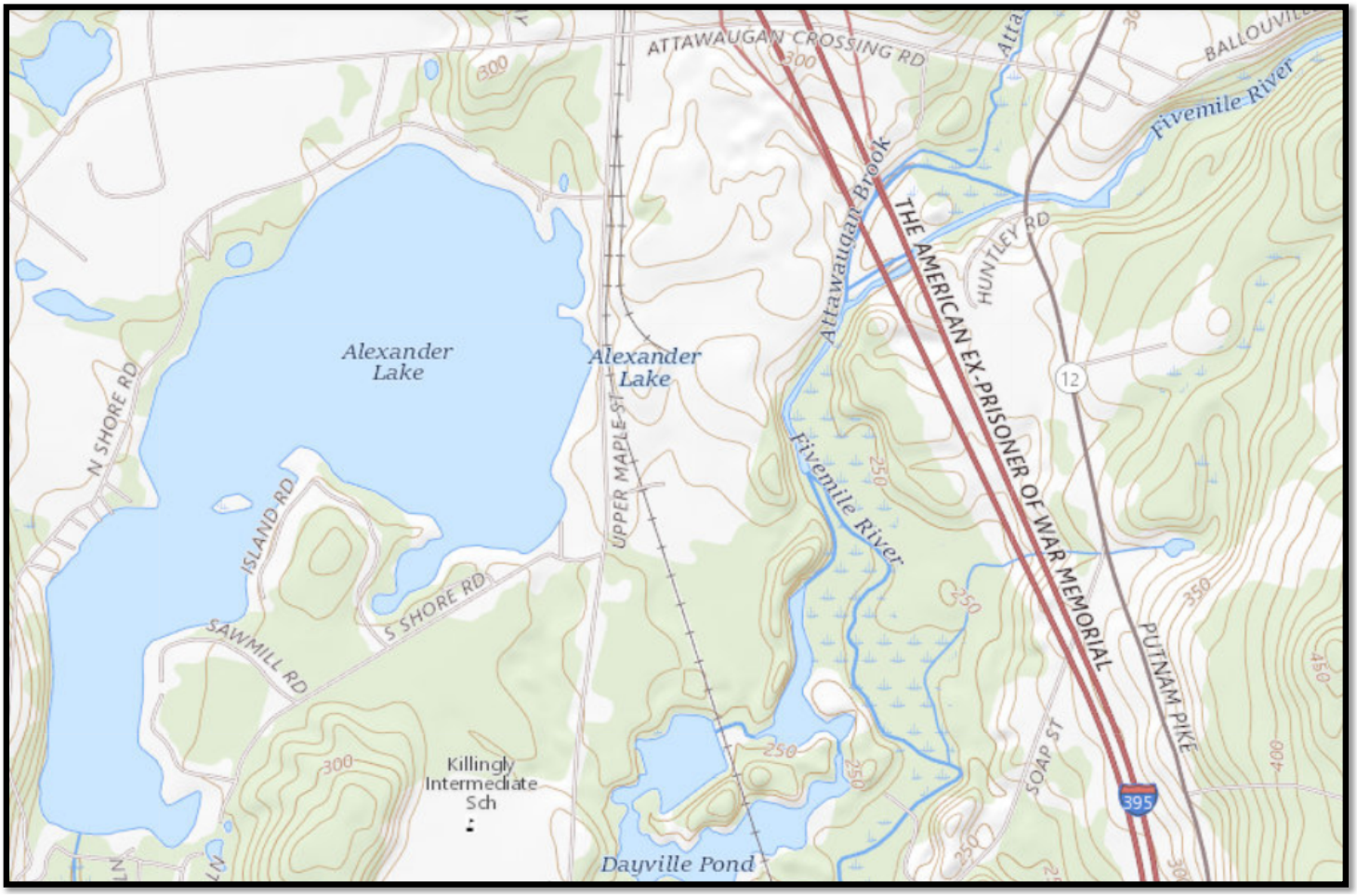
Project Name:	Project Knight		
Location:	Killingly, CT	Project Num:	3401365
Prepared by:	SBC	Date:	1/21/2021

USGS MAP 1.6



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Client Name:	Frito-Lay		
Project Name:	Project Knight		
Location:	Killingly, CT	Project Num:	3401365
Prepared by:	SBC	Date:	1/21/2021

NOAA RAINFALL DATA 1.7

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**3.98** (3.10-5.10)	**4.75** (3.68-6.07)	**5.99** (4.62-7.68)	**7.02** (5.39-9.06)	**8.42** (6.26-11.3)	**9.50** (6.91-13.0)	**10.6** (7.49-15.0)	**11.8** (7.96-17.1)	**13.5** (8.74-20.2)	**14.8** (9.37-22.6)
10-min	**2.83** (2.20-3.61)	**3.36** (2.60-4.30)	**4.24** (3.28-5.44)	**4.97** (3.82-6.41)	**5.97** (4.44-8.00)	**6.73** (4.90-9.20)	**7.51** (5.30-10.6)	**8.36** (5.63-12.1)	**9.55** (6.19-14.3)	**10.5** (6.64-16.0)
15-min	**2.22** (1.72-2.83)	**2.64** (2.04-3.38)	**3.32** (2.57-4.27)	**3.90** (2.99-5.02)	**4.68** (3.48-6.28)	**5.28** (3.84-7.22)	**5.89** (4.16-8.32)	**6.56** (4.42-9.50)	**7.49** (4.85-11.2)	**8.23** (5.21-12.5)
30-min	**1.55** (1.20-1.98)	**1.84** (1.43-2.36)	**2.32** (1.79-2.98)	**2.72** (2.09-3.51)	**3.27** (2.43-4.38)	**3.68** (2.68-5.03)	**4.11** (2.90-5.80)	**4.57** (3.08-6.62)	**5.22** (3.38-7.80)	**5.73** (3.63-8.74)
60-min	**0.996** (0.773-1.27)	**1.18** (0.917-1.51)	**1.49** (1.15-1.91)	**1.75** (1.34-2.25)	**2.10** (1.56-2.81)	**2.36** (1.72-3.23)	**2.64** (1.86-3.72)	**2.93** (1.97-4.25)	**3.35** (2.17-5.00)	**3.68** (2.33-5.60)
2-hr	**0.636** (0.497-0.809)	**0.754** (0.588-0.960)	**0.946** (0.736-1.21)	**1.11** (0.854-1.42)	**1.33** (0.994-1.77)	**1.49** (1.09-2.04)	**1.66** (1.19-2.36)	**1.87** (1.26-2.69)	**2.16** (1.41-3.22)	**2.41** (1.53-3.65)
3-hr	**0.489** (0.383-0.619)	**0.579** (0.453-0.734)	**0.726** (0.566-0.924)	**0.848** (0.657-1.09)	**1.02** (0.765-1.36)	**1.14** (0.842-1.56)	**1.28** (0.917-1.81)	**1.44** (0.971-2.06)	**1.68** (1.09-2.48)	**1.88** (1.20-2.84)
6-hr	**0.313** (0.246-0.394)	**0.371** (0.292-0.468)	**0.467** (0.366-0.591)	**0.546** (0.426-0.695)	**0.656** (0.496-0.871)	**0.736** (0.547-1.00)	**0.824** (0.596-1.16)	**0.930** (0.631-1.33)	**1.09** (0.712-1.61)	**1.23** (0.784-1.84)
12-hr	**0.196** (0.155-0.246)	**0.234** (0.185-0.294)	**0.296** (0.234-0.373)	**0.348** (0.273-0.440)	**0.419** (0.318-0.553)	**0.472** (0.352-0.636)	**0.528** (0.383-0.740)	**0.596** (0.406-0.845)	**0.698** (0.457-1.02)	**0.785** (0.502-1.17)
24-hr	**0.117** (0.093-0.146)	**0.141** (0.112-0.176)	**0.181** (0.143-0.226)	**0.213** (0.168-0.268)	**0.258** (0.197-0.339)	**0.291** (0.218-0.391)	**0.327** (0.238-0.455)	**0.370** (0.253-0.520)	**0.433** (0.285-0.630)	**0.487** (0.313-0.721)
2-day	**0.066** (0.053-0.082)	**0.080** (0.064-0.100)	**0.104** (0.083-0.129)	**0.123** (0.097-0.154)	**0.150** (0.115-0.196)	**0.170** (0.128-0.226)	**0.191** (0.140-0.264)	**0.216** (0.148-0.303)	**0.255** (0.168-0.368)	**0.288** (0.185-0.423)
3-day	**0.048** (0.038-0.059)	**0.058** (0.047-0.072)	**0.075** (0.060-0.093)	**0.089** (0.071-0.111)	**0.108** (0.083-0.141)	**0.123** (0.093-0.163)	**0.138** (0.102-0.191)	**0.157** (0.108-0.219)	**0.185** (0.122-0.266)	**0.209** (0.135-0.306)
4-day	**0.038** (0.031-0.047)	**0.047** (0.037-0.057)	**0.060** (0.048-0.074)	**0.071** (0.057-0.088)	**0.087** (0.067-0.112)	**0.098** (0.074-0.130)	**0.110** (0.081-0.152)	**0.125** (0.086-0.174)	**0.148** (0.098-0.212)	**0.167** (0.108-0.244)
7-day	**0.026** (0.021-0.032)	**0.031** (0.025-0.038)	**0.040** (0.032-0.049)	**0.047** (0.038-0.058)	**0.057** (0.044-0.074)	**0.064** (0.049-0.085)	**0.072** (0.053-0.099)	**0.082** (0.056-0.113)	**0.096** (0.064-0.137)	**0.109** (0.070-0.158)

APPENDIX 2 – EXISTING CONDITIONS ANALYSIS

- Pre-Development Drainage Map
- ICPR4 Nodal Diagram
- Basin Summary (TR-55 Worksheets)
- Basin Hydrographs
- ICPR Pond Rounting Analysis – Node Maximum Conditions Reports

APPENDIX 2
EXISTING CONDITIONS ANALYSIS

EXDA-YELLEN
13.10 AC
CN = 84
TC = 16.9 MIN.

EXDA-UPPER
9.32 AC
CN = 48
% DCIA = 94.12

EXDA-DEPRESSION
1.70 AC
CN = 35
TC = 16.9 MIN.

POINT OF DISCHARGE

EXIST. POND
NO INFILTRATION/
DISCHARGE

EXISTING
FRITO LAY FACILITY
FFE = 283.00

PRE-DEVELOPMENT PEAK DISCHARGE (SOUTH BASIN), CFS

2YR-24HR	10YR-24HR	25YR-24HR	100YR-24HR
4.69	14.41	19.40	30.18

PRE-DEVELOPED CONDITIONS

Catchment Area Name	Peaking Factor	Total Area (ac)	Impervious (ac)	Impervious % DCIA	CN	T_c (min)
EXDA-UPPER	484	9.32	8.8	94.12	48	10.00
EXDA-YELLEN	484	13.10	5.71	-	62.46	15.00
EXDA-DEPRESSION	484					
TOTAL		**22.42**	**14.48**			

0 60 120

JOSHUA R. HOUGH
CIVIL ENGINEER
REG. NO. 31834

HASKELL ARCHITECTS and ENGINEERS, P.C.
CONNECTICUT- Architecture and Engineering # 0000056

The Haskell Company
111 Riverside Avenue
Jacksonville, Florida 32202
Phone # (904) 791-4500

HASKELL

YELLIN TRAILER PARKING LOT

Frito Lay
Good fun!

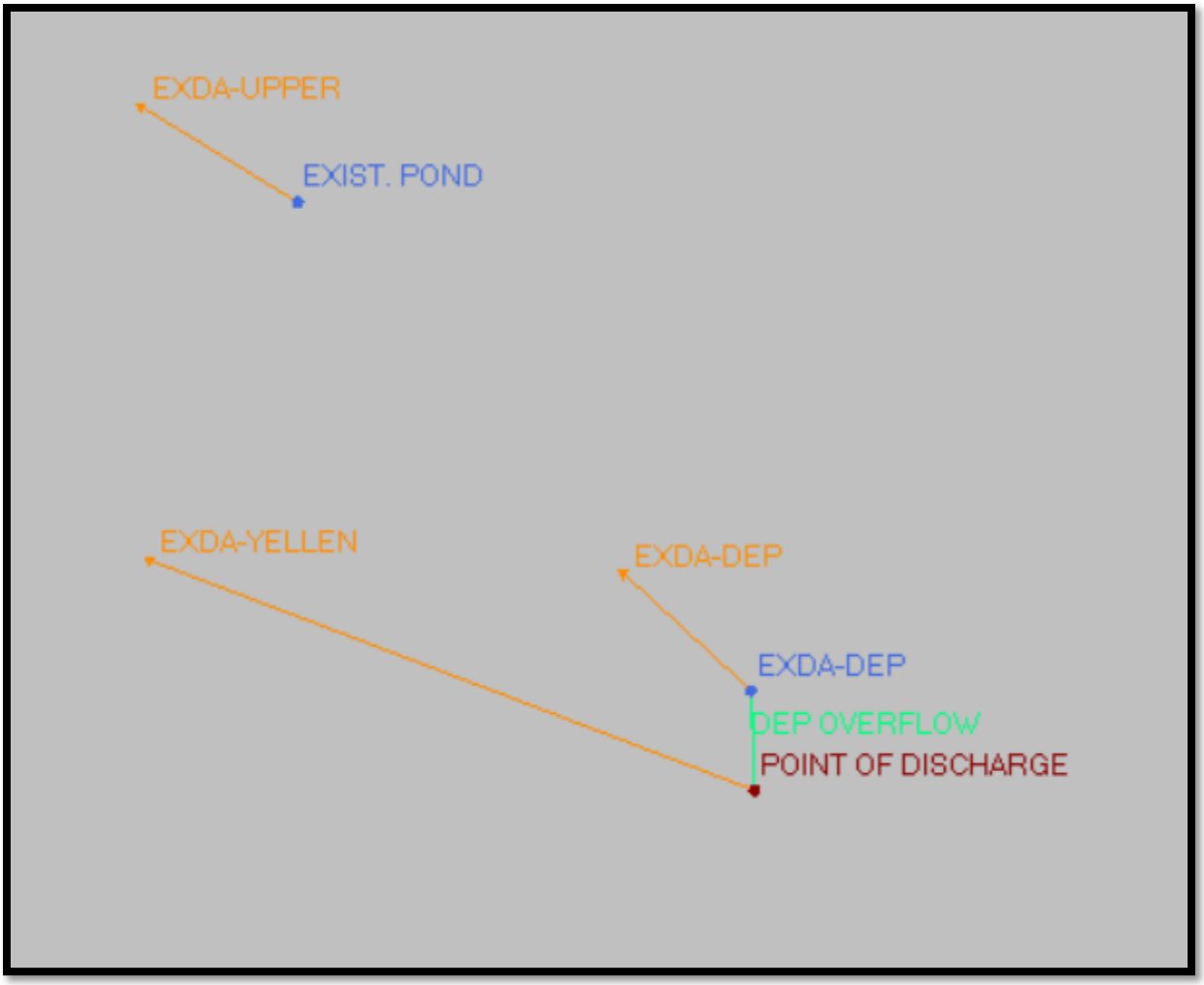
No	DESCRIPTION	DATE

DRAWN BY:	CHECKED BY:
SBC/MSL	JRH

AE JOB NUMBER
3401365

PRE DEVELOPMENT DRAINAGE MAP

1C-170
SHEET NUMBER



ICPR 4 NODAL DIAGRAM

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	Frito-Lay		
Project Name:	Project Knight		
Location:	Dayville, CT	Project Num:	3401365
Prepared by:	SBC	Date:	5/1/2020

CATCHMENT AREA DATA SUMMARY

PRE-DEVELOPED CONDITIONS

Catchment Area Name	Peaking Factor	Total Area (ac)	Impervious (ac)	Impervious % DCIA	CN	T_c (min)
EXDA-UPPER	484	9.32	8.8	94.12	48	10.00
EXDA-YELLEN	484	13.10	5.71	-	62.46	15.00
EXDA-DEPRESSION	484					
TOTAL		**22.42**	**14.48**			

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: EXDA-UPPER

Impervious Coverage:

8.77	ac.	Existing Impervious Area
	ac.	Proposed Impervious Area
-	ac.	Planned Future Impervious Area

8.77 ac. Total Impervious Area @ 100.00 % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

	ac.	Retention/Detention bottom @ Elev 58 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? No
If not included with DCIA, Retention/Detention CN = 39

Total DCIA = 8.77 ac

Peaking Factor =	484	
Total Catchment Area =	9.32	ac
Composite CN =	48.00	
% Impervious =	94.12	%
% Pervious =	5.88	%
% DCIA =	94.12	%
Tc =	10.0	minutes

Area (ac)	Surface Description	HSG	CN	A x CN
-	Impervious area not considered "Directly Connected"		-	-
0.55	Brush - Brush-Weed-Grass mixture with brush the major element, Poor Condition	A	48	26.30
			-	-
			-	-
			-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 10.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = 3.20 inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n	V (fps)	Time (min)
					-	-
-	-	-		-	-	-
-	-	-		-	-	-

SubTotal = -

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k	V (fps)	Time (min)
					-	-
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-

SubTotal = -

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

SubTotal = -

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-

SubTotal = -

STORAGE: BASIN-1

Stage (ft)	Surface Area (sf)	Surface Area (acres)	Cummulative Storage (cf)	Cummulative Storage (ac.ft.)
262.00	9,702	0.2227	-	-
263.00	10,667	0.2449	10,181	0.2337
265.00	12,714	0.2919	33,532	0.7698
266.00	13,783	0.3164	46,777	1.0738
267.00	14,884	0.3417	61,107	1.4028
268.00	17,160	0.3939	77,115	1.7703
269.00	18,330	0.4208	94,857	2.1776
270.00	19,510	0.4479	113,774	2.6119
271.00	20,712	0.4755	133,882	3.0735
272.00	21,926	0.5034	155,198	3.5629
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

GENERAL NOTES:

DRAINAGE AREA DRAINS TO EXISTING POND WITH NO DISCHARGE OFF SITE. EXISTING POND HAS LINER AND NO INFILTRATION

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: EXDA-YELLEN

Impervious Coverage:

5.71	ac.	Existing Impervious Area
	ac.	Proposed Impervious Area
-	ac.	Planned Future Impervious Area
5.71	ac.	Total Impervious Area @ - % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

-	ac.	Retention/Detention bottom @ Elev 58 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? No
If not included with DCIA, Retention/Detention CN = 39
Total DCIA = - ac

Peaking Factor =	484	
Total Catchment Area =	13.10	ac
Composite CN =	62.46	
% Impervious =	43.59	%
% Pervious =	56.41	%
% DCIA =	-	%
Tc =	15.0	minutes

Area (ac)	Surface Description		HSG	CN	A x CN
5.71	Impervious area not considered "Directly Connected"	(Included in Composite CN)		98	559.58
7.39	Brush - Brush-Weed-Grass mixture with brush the major element, Fair Condition		A	35	258.65
				-	-
				-	-
				-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 15.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = 3.20 inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n		V (fps)	Time (min)
				-		-	-
-	-	-		-		-	-
-	-	-		-		-	-

SubTotal = -

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k		V (fps)	Time (min)
-	-	-		-		-	-
-	-	-		-		-	-
-	-	-		-		-	-
-	-	-		-		-	-

SubTotal = -

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

SubTotal = -

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-

SubTotal = -

STORAGE: BASIN-1

Stage (ft)	Surface Area (sf)	(acres)	Cummulative Storage (cf)	(ac.ft.)
		-	-	-
		-	-	-
		-	-	-
		-	-	-
		-	-	-
		-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

GENERAL NOTES:

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: EXDA-DEPRESSION

Impervious Coverage:

-	ac.	Existing Impervious Area
	ac.	Proposed Impervious Area
-	ac.	Planned Future Impervious Area
-	ac.	Total Impervious Area @ 100.00 % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

-	ac.	Retention/Detention bottom @ Elev 58 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? No
If not included with DCIA, Retention/Detention CN = 39
Total DCIA = - ac

Peaking Factor =	484	
Total Catchment Area =	1.70	ac
Composite CN =	32.00	
% Impervious =	-	%
% Pervious =	100.00	%
% DCIA =	-	%
Tc =	10.0	minutes

Area (ac)	Surface Description	HSG	CN	A x CN
-	Impervious area not considered "Directly Connected"		-	-
1.70	Woods - grass combination (orchard or tree farm), Good Condition	A	32	54.40
			-	-
			-	-
			-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 10.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = 3.20 inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-

SubTotal = -

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-

SubTotal = -

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

SubTotal = -

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-

SubTotal = -

STORAGE: BASIN-1

Stage (ft)	Surface Area (sf)	Surface Area (acres)	Cummulative Storage (cf)	Cummulative Storage (ac.ft.)
250.00	928	0.0213	-	-
252.00	3,404	0.0781	4,073	0.0935
254.00	6,329	0.1453	13,655	0.3135
256.00	9,771	0.2243	29,630	0.6802
258.00	15,019	0.3448	54,233	1.2450
		-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

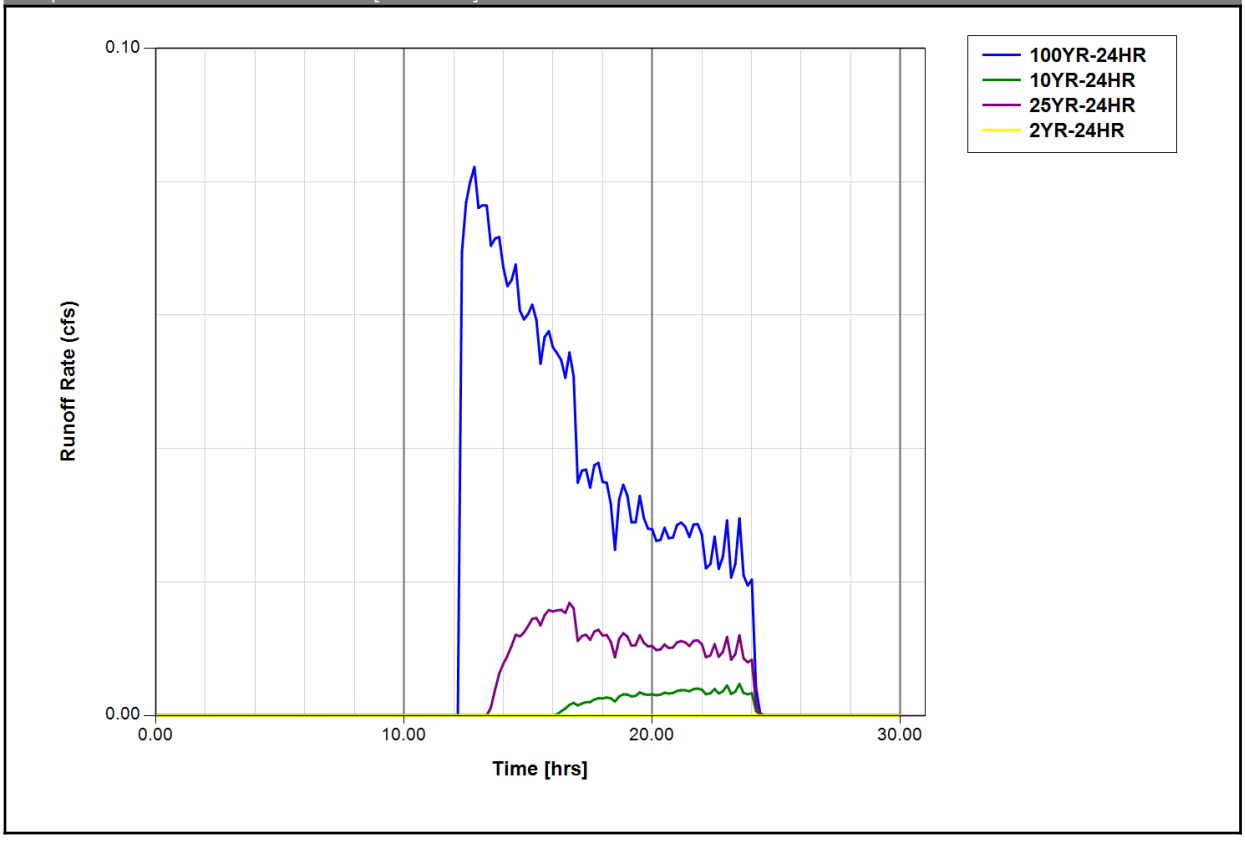
GENERAL NOTES:

Simple Basin: EXDA-DEP

Scenario:	Scenario1
Node:	EXDA-DEP
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	1.7000 ac
Curve Number:	32.0
% Impervious:	0.00
% DCIA:	0.00
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: EXDA-DEP [Scenario1]

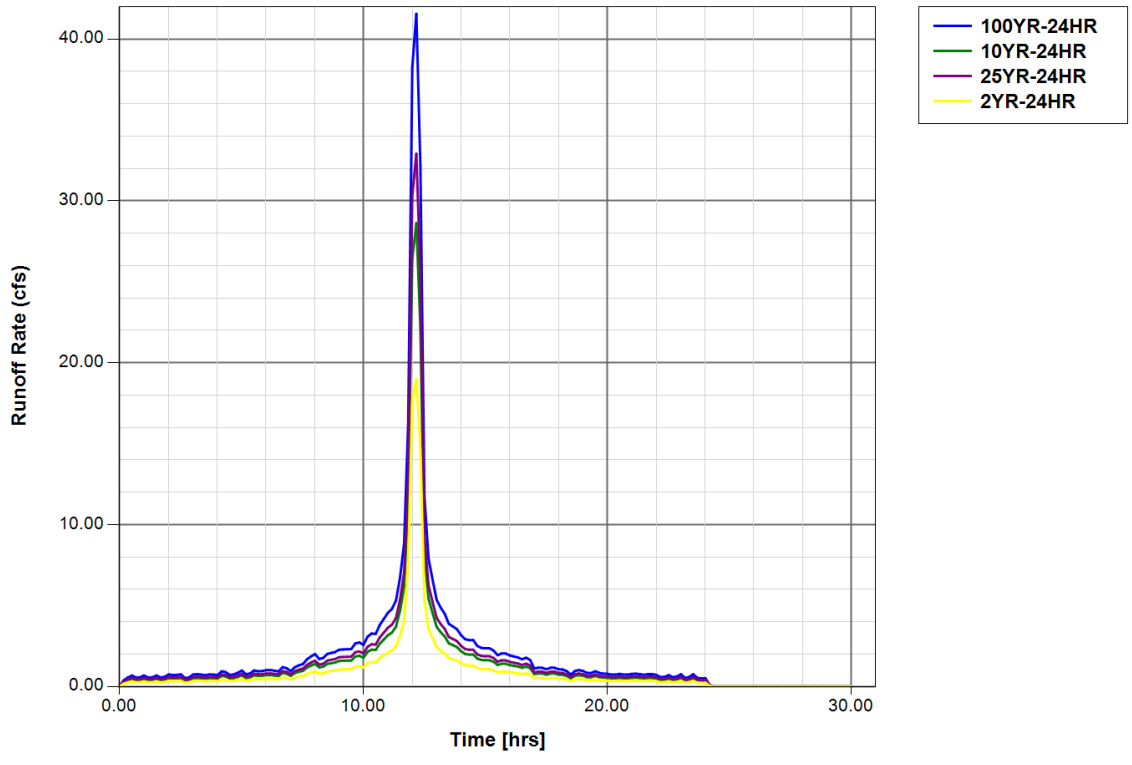


Simple Basin: EXDA-UPPER

Scenario:	Scenario1
Node:	EXIST. POND
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	9.3200 ac
Curve Number:	48.0
% Impervious:	94.12
% DCIA:	94.12
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: EXDA-UPPER [Scenario1]

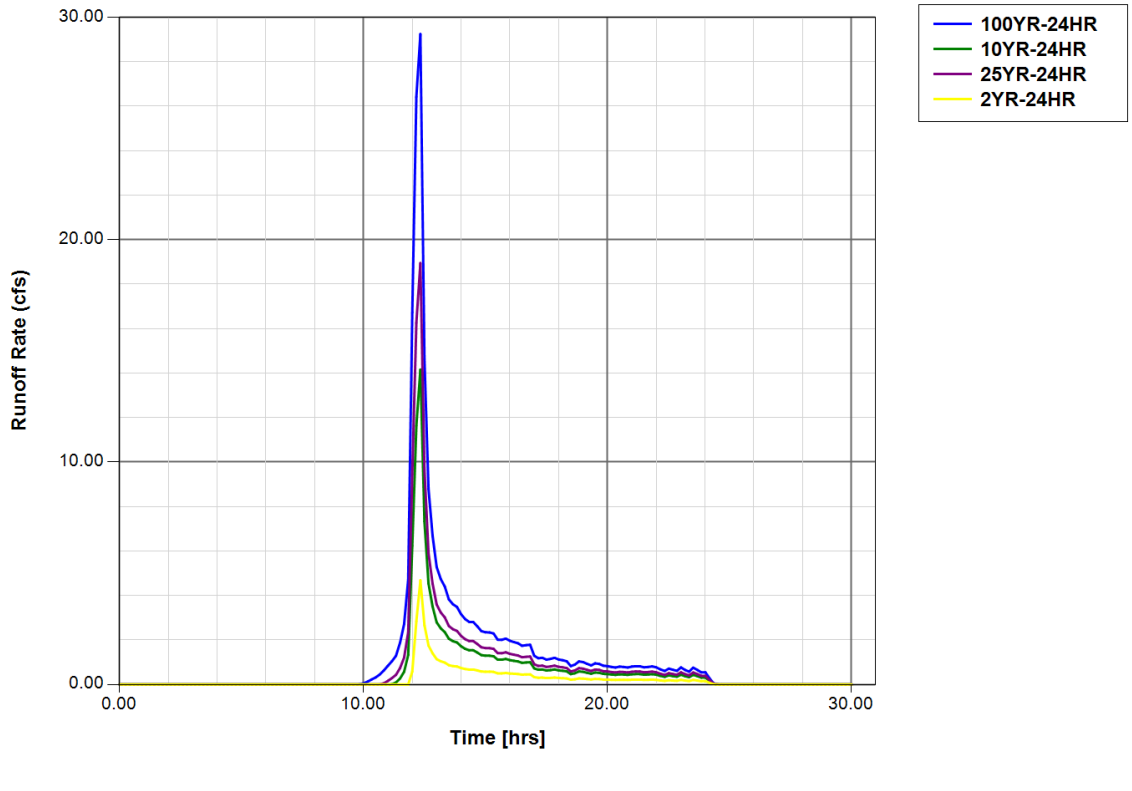


Simple Basin: EXDA-YELLEN

Scenario:	Scenario1
Node:	POINT OF DISCHARGE
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	15.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	13.1000 ac
Curve Number:	62.5
% Impervious:	0.00
% DCIA:	0.00
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: EXDA-YELLEN [Scenario1]



Node Max Conditions [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EXDA-DEP	100YR-24HR	258.00	251.14	0.0004	0.08	0.00	2313
EXDA-DEP	10YR-24HR	258.00	250.09	0.0001	0.00	0.00	988
EXDA-DEP	25YR-24HR	258.00	250.39	0.0003	0.02	0.00	1358
EXDA-DEP	2YR-24HR	258.00	250.00	0.0000	0.00	0.00	871

Node Max Conditions [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EXIST. POND	100YR-24HR	272.00	272.88	0.0010	41.62	0.00	21780
EXIST. POND	10YR-24HR	272.00	269.56	0.0010	28.67	0.00	18959
EXIST. POND	25YR-24HR	272.00	270.73	0.0010	32.97	0.00	20360
EXIST. POND	2YR-24HR	272.00	266.48	0.0010	19.03	0.00	14306

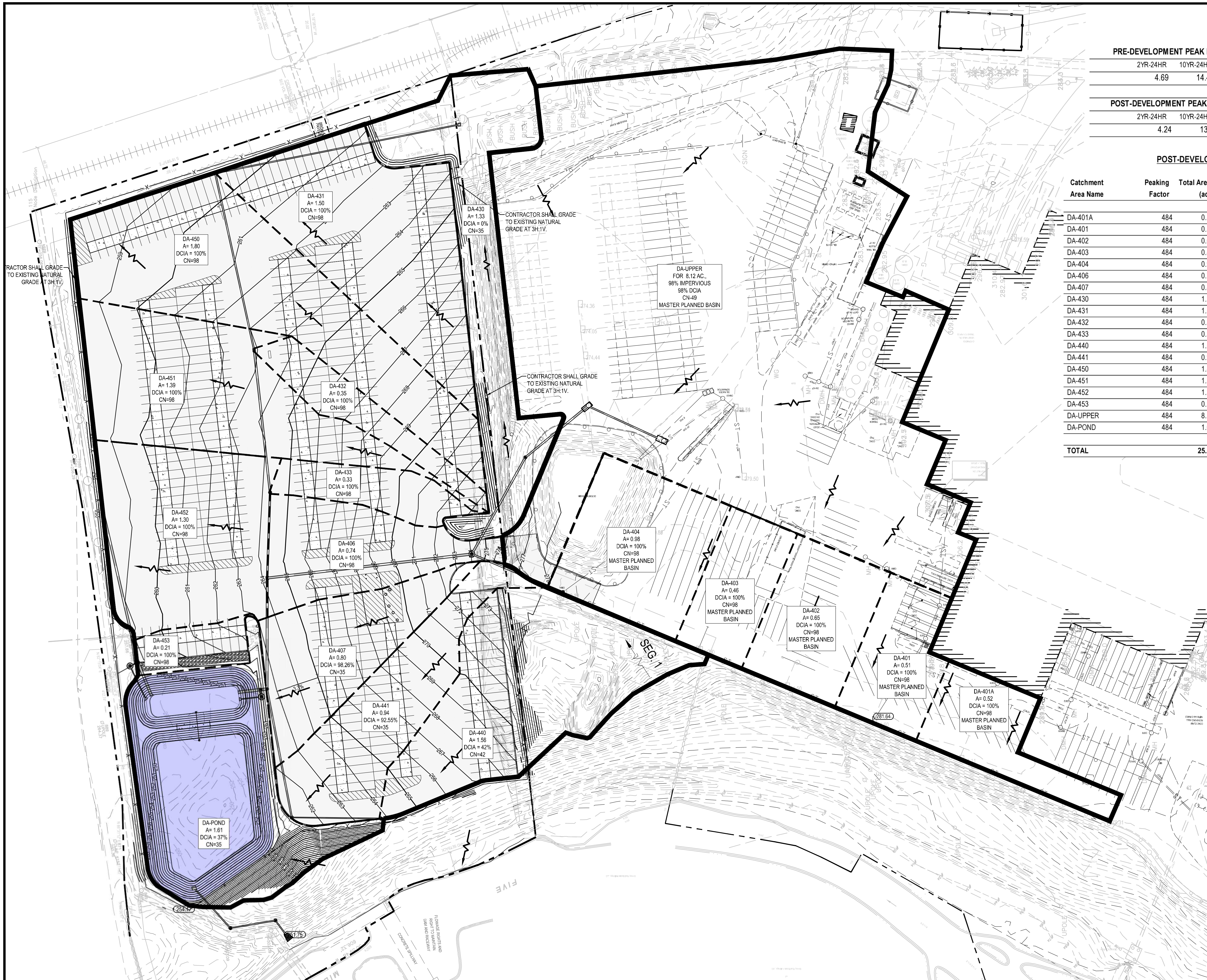
Node Max Conditions [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
POINT OF DISCHARGE	100YR-24HR	255.00	254.00	0.0000	30.18	0.00	0
POINT OF DISCHARGE	10YR-24HR	255.00	254.00	0.0000	14.41	0.00	0
POINT OF DISCHARGE	25YR-24HR	255.00	254.00	0.0000	19.40	0.00	0
POINT OF DISCHARGE	2YR-24HR	255.00	254.00	0.0000	4.69	0.00	0

APPENDIX 3 – POST-DEVELOPMENT CONDITIONS

- Post-Development Drainage Map
- ICPR4 Nodal Diagram
- Basin Summary (TR-55 Worksheets)
- Basin Hydrographs
- ICPR Pond Rounting Analysis – Node Maximum Conditions Reports
- Multi System Pond Cross Sections & Control Structure Details

APPENDIX 3
POST DEVELOPMENT CONDITIONS ANALYSIS



PRE-DEVELOPMENT PEAK DISCHARGE (SOUTH BASIN), CFS

2YR-24HR	10YR-24HR	25YR-24HR	100YR-24HR
4.69	14.41	19.40	30.18

POST-DEVELOPMENT PEAK DISCHARGE (SOUTH BASIN), CFS

2YR-24HR	10YR-24HR	25YR-24HR	100YR-24HR
4.24	13.94	15.31	17.57

POST-DEVELOPED CONDITIONS

Catchment Area Name	Peaking Factor	Total Area (ac)	Impervious (ac)	Impervious % DCIA	CN	T_C (min)
DA-401A	484	0.52	0.5	100.00	-	5.00
DA-401	484	0.51	0.51	100.00	-	5.00
DA-402	484	0.65	0.65	100.00	-	5.00
DA-403	484	0.46	0.46	100.00	-	5.00
DA-404	484	0.98	0.98	100.00	-	5.00
DA-406	484	0.74	0.74	100.00	-	5.00
DA-407	484	0.80	0.79	98.26	35	10.00
DA-430	484	1.33	-	-	49	5.00
DA-431	484	1.50	1.50	100.00	-	-
DA-432	484	0.35	0.35	100.00	-	5.00
DA-433	484	0.33	0.33	100.00	-	5.00
DA-440	484	1.56	0.75	42.31	42.00	15.00
DA-441	484	0.94	0.87	92.55	35.00	10.00
DA-450	484	1.80	1.80	100.00	-	5.00
DA-451	484	1.39	1.39	100.00	-	5.00
DA-452	484	1.30	1.30	100.00	-	5.00
DA-453	484	0.21	0.21	100.00	-	5.00
DA-UPPER	484	8.12	7.96	97.99	49.00	10.00
DA-POND	484	1.61	0.60	37.27	35.00	5.00
TOTAL		**25.10**	**21.71**			

JOSHUA R. HOUGH
CIVIL ENGINEER

REG. NO. 31834

HASKELL ARCHITECTS and ENGINEERS, P.C.
CONNECTICUT- Architecture and Engineering # 0000056
HASKELL
The Haskell Company
111 Riverside Avenue
Jacksonville, Florida 32202
Phone # (904) 791-4500

YELLIN TRAILER PARKING LOT

FritoLay Good fun!

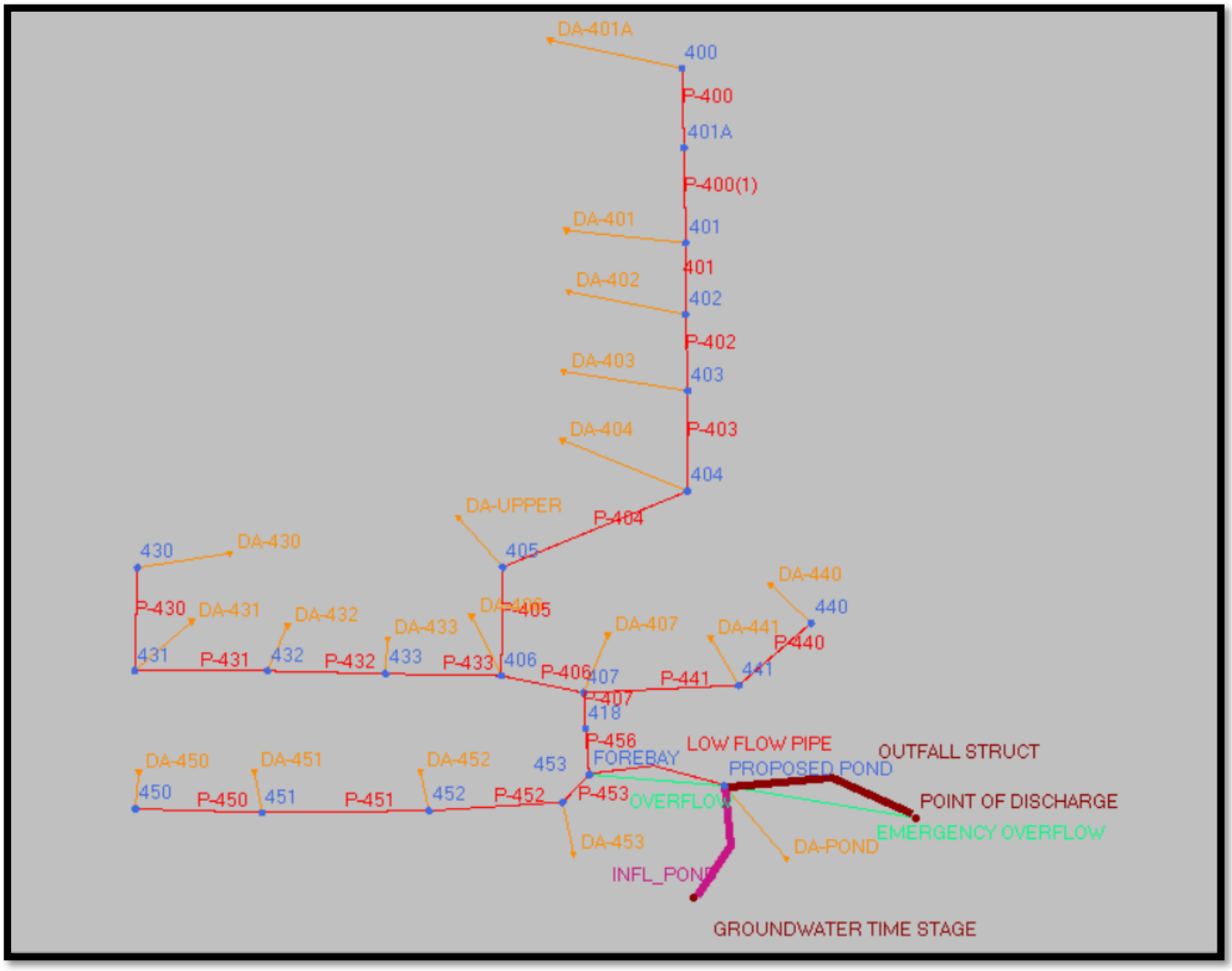
No	DESCRIPTION	DATE

DRAWN BY:	CHECKED BY:
SBC/MSL	JRH

AE JOB NUMBER
3401365

POST DEVELOPMENT DRAINAGE MAP

1C-171
SHEET NUMBER



ICPR 4 NODAL DIAGRAM

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	Frito-Lay		
Project Name:	Project Knight		
Location:	Dayville, CT	Project Num:	3401365
Prepared by:	SBC	Date:	5/1/2020

CATCHMENT AREA DATA SUMMARY

POST-DEVELOPED CONDITIONS

Catchment Area Name	Peaking Factor	Total Area (ac)	Impervious (ac)	Impervious % DCIA	CN	T_c (min)
DA-401A	484	0.52	0.5	100.00	-	5.00
DA-401	484	0.51	0.51	100.00	-	5.00
DA-402	484	0.65	0.65	100.00	-	5.00
DA-403	484	0.46	0.46	100.00	-	5.00
DA-404	484	0.98	0.98	100.00	-	5.00
DA-406	484	0.74	0.74	100.00	-	5.00
DA-407	484	0.80	0.79	98.26	35	10.00
DA-430	484	1.33	-	-	49	5.00
DA-431	484	1.50	1.50	100.00	-	-
DA-432	484	0.35	0.35	100.00	-	5.00
DA-433	484	0.33	0.33	100.00	-	5.00
DA-440	484	1.56	0.75	42.31	42.00	15.00
DA-441	484	0.94	0.87	92.55	35.00	10.00
DA-450	484	1.80	1.80	100.00	-	5.00
DA-451	484	1.39	1.39	100.00	-	5.00
DA-452	484	1.30	1.30	100.00	-	5.00
DA-453	484	0.21	0.21	100.00	-	5.00
DA-UPPER	484	8.12	7.96	97.99	49.00	10.00
DA-POND	484	1.61	0.60	37.27	35.00	5.00
TOTAL		**25.10**	**21.71**			

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: DA-401A

Impervious Coverage:

0.52	ac.	Existing Impervious Area
	ac.	Proposed Impervious Area
-	ac.	Planned Future Impervious Area
0.52	ac.	Total Impervious Area @ 100.00 % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

-	ac.	Retention/Detention bottom @ Elev 58 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? No
If not included with DCIA, Retention/Detention CN = 39

Total DCIA = 0.52 ac

Peaking Factor =	484	
Total Catchment Area =	0.52	ac
Composite CN =	-	
% Impervious =	100.00	%
% Pervious =	-	%
% DCIA =	100.00	%
Tc =	5.0	minutes

Area (ac)	Surface Description	HSG	CN	A x CN
-	Impervious area not considered "Directly Connected"		-	-
			-	-
			-	-
			-	-
			-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 5.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = 3.20 inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n		V (fps)	Time (min)
						-	-
-	-	-		-		-	-
-	-	-		-		-	-

SubTotal = -

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k		V (fps)	Time (min)
						-	-
-	-	-		-		-	-
-	-	-		-		-	-
-	-	-		-		-	-

SubTotal = -

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

SubTotal = -

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-

SubTotal = -

STORAGE: BASIN-1

Stage (ft)	Surface Area (sf)	Surface Area (acres)	Cummulative Storage (cf)	Cummulative Storage (ac.ft.)
		-	-	-
		-	-	-
		-	-	-
		-	-	-
		-	-	-
		-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

GENERAL NOTES:

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: DA-401

Impervious Coverage:

0.51	ac.	Existing Impervious Area
	ac.	Proposed Impervious Area
-	ac.	Planned Future Impervious Area
0.51	ac.	Total Impervious Area @ 100.00 % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

-	ac.	Retention/Detention bottom @ Elev 58 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? No
If not included with DCIA, Retention/Detention CN = 39
Total DCIA = 0.51 ac

Peaking Factor =	484	
Total Catchment Area =	0.51	ac
Composite CN =	-	
% Impervious =	100.00	%
% Pervious =	-	%
% DCIA =	100.00	%
Tc =	5.0	minutes

Area (ac)	Surface Description	HSG	CN	A x CN
-	Impervious area not considered "Directly Connected"		-	-
			-	-
			-	-
			-	-
			-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 5.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = 3.20 inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n		V (fps)	Time (min)
-	-	-		-		-	-
-	-	-		-		-	-
-	-	-		-		-	-
					SubTotal =		-

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k		V (fps)	Time (min)
-	-	-		-		-	-
-	-	-		-		-	-
-	-	-		-		-	-
-	-	-		-		-	-
					SubTotal =		-

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
										SubTotal =		-

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
								SubTotal =		-

STORAGE: BASIN-1

Stage (ft)	Surface Area (sf)	Surface Area (acres)	Cummulative Storage (cf)	Cummulative Storage (ac.ft.)
		-	-	-
		-	-	-
		-	-	-
		-	-	-
		-	-	-
		-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

GENERAL NOTES:

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: DA-402

Impervious Coverage:

0.65	ac.	Existing Impervious Area
	ac.	Proposed Impervious Area
-	ac.	Planned Future Impervious Area
0.65	ac.	Total Impervious Area @ 100.00 % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

-	ac.	Retention/Detention bottom @ Elev 56 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? No
If not included with DCIA, Retention/Detention CN = 39

Total DCIA = 0.65 ac

Peaking Factor =	484	
Total Catchment Area =	0.65	ac
Composite CN =	-	
% Impervious =	100.00	%
% Pervious =	-	%
% DCIA =	100.00	%
Tc =	5.0	minutes

Area (ac)	Surface Description	HSG	CN	A x CN
-	Impervious area not considered "Directly Connected"		-	-
			-	-
			-	-
			-	-
-			-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 5.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = - inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n		V (fps)	Time (min)
-	-	-		-		-	-
-	-	-		-		-	-
-	-	-		-		-	-
					SubTotal =		-

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k		V (fps)	Time (min)
-	-	-		-		-	-
-	-	-		-		-	-
-	-	-		-		-	-
-	-	-		-		-	-
					SubTotal =		-

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
										SubTotal =		-

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
								SubTotal =		-

STORAGE: -

Stage (ft)	Surface Area (sf)	Surface Area (acres)	Cummulative Storage (cf)	Cummulative Storage (ac.ft.)
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
		-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

GENERAL NOTES:

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: DA-403

Impervious Coverage:

0.46	ac.	Existing Impervious Area
	ac.	Proposed Impervious Area
-	ac.	Planned Future Impervious Area
0.46	ac.	Total Impervious Area @ 100.00 % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

-	ac.	Retention/Detention bottom @ Elev 56 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? No
If not included with DCIA, Retention/Detention CN = 39
Total DCIA = 0.46 ac

Peaking Factor =	484	
Total Catchment Area =	0.46	ac
Composite CN =	-	
% Impervious =	100.00	%
% Pervious =	-	%
% DCIA =	100.00	%
Tc =	5.0	minutes

Area (ac)	Surface Description	HSG	CN	A x CN
-	Impervious area not considered "Directly Connected"		-	-
			-	-
			-	-
			-	-
-			-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 5.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = - inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n		V (fps)	Time (min)
-	-	-		-		-	-
-	-	-		-		-	-
-	-	-		-		-	-
					SubTotal =		-

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k		V (fps)	Time (min)
-	-	-		-		-	-
-	-	-		-		-	-
-	-	-		-		-	-
-	-	-		-		-	-
					SubTotal =		-

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
										SubTotal =		-

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
								SubTotal =		-

STORAGE: -

Stage (ft)	Surface Area (sf)	Surface Area (acres)	Cummulative Storage (cf)	Cummulative Storage (ac.ft.)
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
		-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

GENERAL NOTES:

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: DA-404

Impervious Coverage:

0.98	ac.	Existing Impervious Area
	ac.	Proposed Impervious Area
-	ac.	Planned Future Impervious Area
0.98	ac.	Total Impervious Area @ 100.00 % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

-	ac.	Retention/Detention bottom @ Elev 56 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? No
If not included with DCIA, Retention/Detention CN = 39
Total DCIA = 0.98 ac

Peaking Factor =	484	
Total Catchment Area =	0.98	ac
Composite CN =	-	
% Impervious =	100.00	%
% Pervious =	-	%
% DCIA =	100.00	%
Tc =	5.0	minutes

Area (ac)	Surface Description	HSG	CN	A x CN
-	Impervious area not considered "Directly Connected"		-	-
			-	-
			-	-
			-	-
-			-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 5.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = - inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
				SubTotal =		-

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
				SubTotal =		-

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
										SubTotal =		-

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
								SubTotal =		-

STORAGE: -

Stage (ft)	Surface Area (sf)	Surface Area (acres)	Cummulative Storage (cf)	Cummulative Storage (ac.ft.)
			-	-
			-	-
			-	-
			-	-
			-	-
			-	-
		-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

GENERAL NOTES:

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: DA-406

Impervious Coverage:

	ac.	Existing Impervious Area
0.74	ac.	Proposed Impervious Area
-	ac.	Planned Future Impervious Area
0.74	ac.	Total Impervious Area @ 100.00 % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

-	ac.	Retention/Detention bottom @ Elev 56 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? No
If not included with DCIA, Retention/Detention CN = 39
Total DCIA = 0.74 ac

Peaking Factor =	484	
Total Catchment Area =	0.74	ac
Composite CN =	-	
% Impervious =	100.00	%
% Pervious =	-	%
% DCIA =	100.00	%
Tc =	5.0	minutes

Area (ac)	Surface Description	HSG	CN	A x CN
-	Impervious area not considered "Directly Connected"		-	-
			-	-
			-	-
			-	-
-			-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 5.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = - inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
				SubTotal =		-

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
				SubTotal =		-

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
										SubTotal =		-

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
					SubTotal =					-

STORAGE: -

Stage (ft)	Surface Area (sf)	Surface Area (acres)	Cummulative Storage (cf)	Cummulative Storage (ac.ft.)
		-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

GENERAL NOTES:

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: DA-407

Impervious Coverage:

	ac.	Existing Impervious Area
0.79	ac.	Proposed Impervious Area
-	ac.	Planned Future Impervious Area
0.79	ac.	Total Impervious Area @ 100.00 % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

-	ac.	Retention/Detention bottom @ Elev 56 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? No
If not included with DCIA, Retention/Detention CN = 39

Total DCIA = 0.79 ac

Peaking Factor =	484	
Total Catchment Area =	0.80	ac
Composite CN =	35.00	
% Impervious =	98.26	%
% Pervious =	1.74	%
% DCIA =	98.26	%
Tc =	10.0	minutes

Area (ac)	Surface Description	HSG	CN	A x CN
-	Impervious area not considered "Directly Connected"		-	-
0.01	Brush - Brush-Weed-Grass mixture with brush the major element, Fair Condition	A	35	0.35
			-	-
			-	-
-			-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 10.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = - inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-

SubTotal = -

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-

SubTotal = -

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

SubTotal = -

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-

SubTotal = -

STORAGE: -

Stage (ft)	Surface Area (sf)	Surface Area (acres)	Cummulative Storage (cf)	Cummulative Storage (ac.ft.)
		-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

GENERAL NOTES:

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: DA-430

Impervious Coverage:

	ac.	Existing Impervious Area
-	ac.	Proposed Impervious Area
-	ac.	Planned Future Impervious Area
-	ac. Total Impervious Area @	100.00 % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

-	ac.	Retention/Detention bottom @ Elev 56 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? No
If not included with DCIA, Retention/Detention CN = 39
Total DCIA = - ac

Peaking Factor =	484	
Total Catchment Area =	1.33	ac
Composite CN =	49.00	
% Impervious =	-	%
% Pervious =	100.00	%
% DCIA =	-	%
Tc =	5.0	minutes

Area (ac)	Surface Description	HSG	CN	A x CN
-	Impervious area not considered "Directly Connected"		-	-
1.33	Open Space: lawns, parks, golf courses, cemeteries, etc.; Fair Condition	A	49	65.17
			-	-
			-	-
-			-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 5.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = - inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
				SubTotal =		-

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
				SubTotal =		-

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
										SubTotal =		-

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
					SubTotal =					-

STORAGE: -

Stage (ft)	Surface Area (sf)	Surface Area (acres)	Cummulative Storage (cf)	Cummulative Storage (ac.ft.)
		-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

GENERAL NOTES:

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: DA-431

Impervious Coverage:

	ac.	Existing Impervious Area
1.50	ac.	Proposed Impervious Area
-	ac.	Planned Future Impervious Area
1.50	ac.	Total Impervious Area @ 100.00 % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

-	ac.	Retention/Detention bottom @ Elev 56 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? No
If not included with DCIA, Retention/Detention CN = 39
Total DCIA = 1.50 ac

Peaking Factor =	484	
Total Catchment Area =	1.50	ac
Composite CN =	-	
% Impervious =	100.00	%
% Pervious =	-	%
% DCIA =	100.00	%
Tc =	5.0	minutes

Area (ac)	Surface Description	HSG	CN	A x CN
-	Impervious area not considered "Directly Connected"		-	-
			-	-
			-	-
			-	-
-			-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 5.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = - inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
				SubTotal =		-

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
				SubTotal =		-

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
								SubTotal =				-

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
					SubTotal =					-

STORAGE: -

Stage (ft)	Surface Area (sf)	Surface Area (acres)	Cummulative Storage (cf)	Cummulative Storage (ac.ft.)
		-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

GENERAL NOTES:

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: DA-432

Impervious Coverage:

	ac.	Existing Impervious Area
0.35	ac.	Proposed Impervious Area
-	ac.	Planned Future Impervious Area

0.35 ac. Total Impervious Area @ 100.00 % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

- ac. Retention/Detention bottom @ Elev 56 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? No
If not included with DCIA, Retention/Detention CN = 39

Total DCIA = 0.35 ac

Peaking Factor =	484	
Total Catchment Area =	0.35	ac
Composite CN =	-	
% Impervious =	100.00	%
% Pervious =	-	%
% DCIA =	100.00	%
Tc =	5.0	minutes

Area (ac)	Surface Description	HSG	CN	A x CN
-	Impervious area not considered "Directly Connected"		-	-
			-	-
			-	-
			-	-
-			-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 5.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = - inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-

SubTotal = -

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-

SubTotal = -

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

SubTotal = -

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-

SubTotal = -

STORAGE: -

Stage (ft)	Surface Area (sf)	Surface Area (acres)	Cummulative Storage (cf)	Cummulative Storage (ac.ft.)
		-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

GENERAL NOTES:

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: DA-433

Impervious Coverage:

	ac.	Existing Impervious Area
0.33	ac.	Proposed Impervious Area
-	ac.	Planned Future Impervious Area
0.33	ac.	Total Impervious Area @ 100.00 % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

-	ac.	Retention/Detention bottom @ Elev 56 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? No
If not included with DCIA, Retention/Detention CN = 39
Total DCIA = 0.33 ac

Peaking Factor =	484	
Total Catchment Area =	0.33	ac
Composite CN =	-	
% Impervious =	100.00	%
% Pervious =	-	%
% DCIA =	100.00	%
Tc =	5.0	minutes

Area (ac)	Surface Description	HSG	CN	A x CN
-	Impervious area not considered "Directly Connected"		-	-
			-	-
			-	-
			-	-
-			-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 5.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = - inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
				SubTotal =		-

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
				SubTotal =		-

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
										SubTotal =		-

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
					SubTotal =					-

STORAGE: -

Stage (ft)	Surface Area (sf)	Surface Area (acres)	Cummulative Storage (cf)	Cummulative Storage (ac.ft.)
		-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

GENERAL NOTES:

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: DA-440

Impervious Coverage:

	ac.	Existing Impervious Area
0.75	ac.	Proposed Impervious Area
-	ac.	Planned Future Impervious Area
0.75	ac.	Total Impervious Area @ 88.00 % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

-	ac.	Retention/Detention bottom @ Elev 56 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? No
If not included with DCIA, Retention/Detention CN = 39
Total DCIA = 0.66 ac

Peaking Factor =	484	
Total Catchment Area =	1.56	ac
Composite CN =	42.00	
% Impervious =	48.08	%
% Pervious =	51.92	%
% DCIA =	42.31	%
Tc =	15.0	minutes

Area (ac)	Surface Description		HSG	CN	A x CN
0.09	Impervious area not considered "Directly Connected"	(Included in Composite CN)		98	8.82
0.72	Brush - Brush-Weed-Grass mixture with brush the major element, Fair Condition		A	35	25.20
				-	-
				-	-
-				-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 15.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = - inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-

SubTotal = -

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-

SubTotal = -

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

SubTotal = -

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-

SubTotal = -

STORAGE: -

Stage (ft)	Surface Area (sf)	Surface Area (acres)	Cummulative Storage (cf)	Cummulative Storage (ac.ft.)
		-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

GENERAL NOTES:

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: DA-441

Impervious Coverage:

	ac.	Existing Impervious Area
0.87	ac.	Proposed Impervious Area
-	ac.	Planned Future Impervious Area
0.87	ac.	Total Impervious Area @ 100.00 % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

-	ac.	Retention/Detention bottom @ Elev 56 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? No
If not included with DCIA, Retention/Detention CN = 39

Total DCIA = 0.87 ac

Peaking Factor =	484	
Total Catchment Area =	0.94	ac
Composite CN =	35.00	
% Impervious =	92.55	%
% Pervious =	7.45	%
% DCIA =	92.55	%
Tc =	10.0	minutes

Area (ac)	Surface Description	HSG	CN	A x CN
-	Impervious area not considered "Directly Connected"		-	-
0.07	Brush - Brush-Weed-Grass mixture with brush the major element, Fair Condition	A	35	2.45
			-	-
			-	-
-			-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 10.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = - inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-

SubTotal = -

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-

SubTotal = -

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

SubTotal = -

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-

SubTotal = -

STORAGE: -

Stage (ft)	Surface Area (sf)	Surface Area (acres)	Cummulative Storage (cf)	Cummulative Storage (ac.ft.)
		-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

GENERAL NOTES:

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: DA-450

Impervious Coverage:

	ac.	Existing Impervious Area
1.80	ac.	Proposed Impervious Area
-	ac.	Planned Future Impervious Area
1.80	ac.	Total Impervious Area @ 100.00 % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

-	ac.	Retention/Detention bottom @ Elev 56 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? No
If not included with DCIA, Retention/Detention CN = 39
Total DCIA = 1.80 ac

Peaking Factor =	484	
Total Catchment Area =	1.80	ac
Composite CN =	-	
% Impervious =	100.00	%
% Pervious =	-	%
% DCIA =	100.00	%
Tc =	5.0	minutes

Area (ac)	Surface Description	HSG	CN	A x CN
-	Impervious area not considered "Directly Connected"		-	-
			-	-
			-	-
			-	-
-			-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 5.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = - inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
				SubTotal =		-

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
				SubTotal =		-

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
										SubTotal =		-

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
					SubTotal =					-

STORAGE: -

Stage (ft)	Surface Area (sf)	Surface Area (acres)	Cummulative Storage (cf)	Cummulative Storage (ac.ft.)
		-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

GENERAL NOTES:

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: DA-451

Impervious Coverage:

	ac.	Existing Impervious Area
1.39	ac.	Proposed Impervious Area
-	ac.	Planned Future Impervious Area
1.39	ac.	Total Impervious Area @ 100.00 % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

-	ac.	Retention/Detention bottom @ Elev 56 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? No
If not included with DCIA, Retention/Detention CN = 39
Total DCIA = 1.39 ac

Peaking Factor =	484	
Total Catchment Area =	1.39	ac
Composite CN =	-	
% Impervious =	100.00	%
% Pervious =	-	%
% DCIA =	100.00	%
Tc =	5.0	minutes

Area (ac)	Surface Description	HSG	CN	A x CN
-	Impervious area not considered "Directly Connected"		-	-
			-	-
			-	-
			-	-
-			-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 5.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = - inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
				SubTotal =		-

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
				SubTotal =		-

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
										SubTotal =		-

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
					SubTotal =					-

STORAGE: -

Stage (ft)	Surface Area (sf)	Surface Area (acres)	Cummulative Storage (cf)	Cummulative Storage (ac.ft.)
		-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

GENERAL NOTES:

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: DA-452

Impervious Coverage:

	ac.	Existing Impervious Area
1.30	ac.	Proposed Impervious Area
	ac.	Planned Future Impervious Area
1.30	ac.	Total Impervious Area @ 100.00 % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

-	ac.	Retention/Detention bottom @ Elev 56 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? No
If not included with DCIA, Retention/Detention CN = 39
Total DCIA = 1.30 ac

Peaking Factor =	484	
Total Catchment Area =	1.30	ac
Composite CN =	-	
% Impervious =	100.00	%
% Pervious =	-	%
% DCIA =	100.00	%
Tc =	5.0	minutes

Area (ac)	Surface Description	HSG	CN	A x CN
-	Impervious area not considered "Directly Connected"		-	-
			-	-
			-	-
			-	-
-			-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 5.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = - inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
				SubTotal =		-

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
				SubTotal =		-

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
										SubTotal =		-

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
					SubTotal =					-

STORAGE: -

Stage (ft)	Surface Area (sf)	Surface Area (acres)	Cummulative Storage (cf)	Cummulative Storage (ac.ft.)
		-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

GENERAL NOTES:

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: DA-453

Impervious Coverage:

	ac.	Existing Impervious Area
0.21	ac.	Proposed Impervious Area
	ac.	Planned Future Impervious Area
0.21	ac.	Total Impervious Area @ 100.00 % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

-	ac.	Retention/Detention bottom @ Elev 56 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? No
If not included with DCIA, Retention/Detention CN = 39

Total DCIA = 0.21 ac

Peaking Factor =	484	
Total Catchment Area =	0.21	ac
Composite CN =	-	
% Impervious =	100.00	%
% Pervious =	-	%
% DCIA =	100.00	%
Tc =	5.0	minutes

Area (ac)	Surface Description	HSG	CN	A x CN
-	Impervious area not considered "Directly Connected"		-	-
			-	-
			-	-
			-	-
-			-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 5.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = - inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
				SubTotal =		-

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
				SubTotal =		-

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
										SubTotal =		-

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
					SubTotal =					-

STORAGE: -

Stage (ft)	Surface Area (sf)	Surface Area (acres)	Cummulative Storage (cf)	Cummulative Storage (ac.ft.)
		-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

GENERAL NOTES:

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: DA-UPPER

Impervious Coverage:

	ac.	Existing Impervious Area
7.96	ac.	Proposed Impervious Area
	ac.	Planned Future Impervious Area
7.96	ac.	Total Impervious Area @ 100.00 % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

-	ac.	Retention/Detention bottom @ Elev 56 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? No
If not included with DCIA, Retention/Detention CN = 39

Total DCIA = 7.96 ac

Peaking Factor =	484	
Total Catchment Area =	8.12	ac
Composite CN =	49.00	
% Impervious =	97.99	%
% Pervious =	2.01	%
% DCIA =	97.99	%
Tc =	10.0	minutes

Area (ac)	Surface Description	HSG	CN	A x CN
-	Impervious area not considered "Directly Connected"		-	-
0.16	Open Space: lawns, parks, golf courses, cemeteries, etc.; Fair Condition	A	49	7.94
			-	-
			-	-
-			-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 10.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = - inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
				SubTotal =		-

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
				SubTotal =		-

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
										SubTotal =		-

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
					SubTotal =					-

STORAGE: -

Stage (ft)	Surface Area (sf)	Surface Area (acres)	Cummulative Storage (cf)	Cummulative Storage (ac.ft.)
		-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

GENERAL NOTES:

HASKELL
ARCHITECTS AND ENGINEERS, P.C.

Client Name:	#REF!		
Project Name:	#REF!		
Location:	#REF!	Project Num:	#REF!
Prepared by:	#REF!	Date:	#REF!

PROPOSED CONDITIONS — CATCHMENT NAME: DA-POND

Impervious Coverage:

	ac.	Existing Impervious Area
0.60	ac.	Proposed Impervious Area
	ac.	Planned Future Impervious Area
0.60	ac.	Total Impervious Area @ 100.00 % Directly Connected to Drainage System (DCIA)

Retention/Detention Coverage:

-	ac.	Retention/Detention bottom @ Elev 56 (modeled separately as "Direct" rainfall input)

Include Retention/Detention Surface Area with DCIA? Yes
If not included with DCIA, Retention/Detention CN = 39
Total DCIA = 0.60 ac

Peaking Factor =	484	
Total Catchment Area =	1.61	ac
Composite CN =	35.00	
% Impervious =	37.27	%
% Pervious =	62.73	%
% DCIA =	37.27	%

(%DCIA Includes Retention/Detention Surface Area)

Tc = 5.0 minutes

Area (ac)	Surface Description	HSG	CN	A x CN
-	Impervious area not considered "Directly Connected"		-	-
1.01	Brush - Brush-Weed-Grass mixture with brush the major element, Fair Condition	A	35	35.35
			-	-
			-	-
-			-	-

TIME OF CONCENTRATION:

User known or specified minimum Tc = 5.00 min.
Calculated Sum of Tc's Below: #REF! min.

OVERLAND SHEET FLOW:

2-yr, 24-hr Rainfall = - inches

Seg No.	L (ft)	Slope (%)	Surface Description:	n	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-

SubTotal = -

SHALLOW CONCENTRATED FLOW:

Seg No.	L (ft)	Slope (%)	Surface Description:	k	V (fps)	Time (min)
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-

SubTotal = -

OPEN CHANNEL FLOW:

Seg No.	L (ft)	Slope (%)	Width (ft)	Lt. S.S. (H:1)	Rt. S.S. (H:1)	d_{FLOW} (ft)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

SubTotal = -

PIPE FLOW:

Seg No.	L (ft)	Slope (%)	Pipe Material	Size (inches)	n	A_{XS} (sf)	WP (ft)	R (ft)	V (fps)	Time (min)
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-
-	-	-			-	-	-	-	-	-

SubTotal = -

STORAGE: -

Stage (ft)	Surface Area (sf)	Surface Area (acres)	Cummulative Storage (cf)	Cummulative Storage (ac.ft.)
		-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

V = h/3 x [A1 + A2 + Sqrt (A1 x A2)]

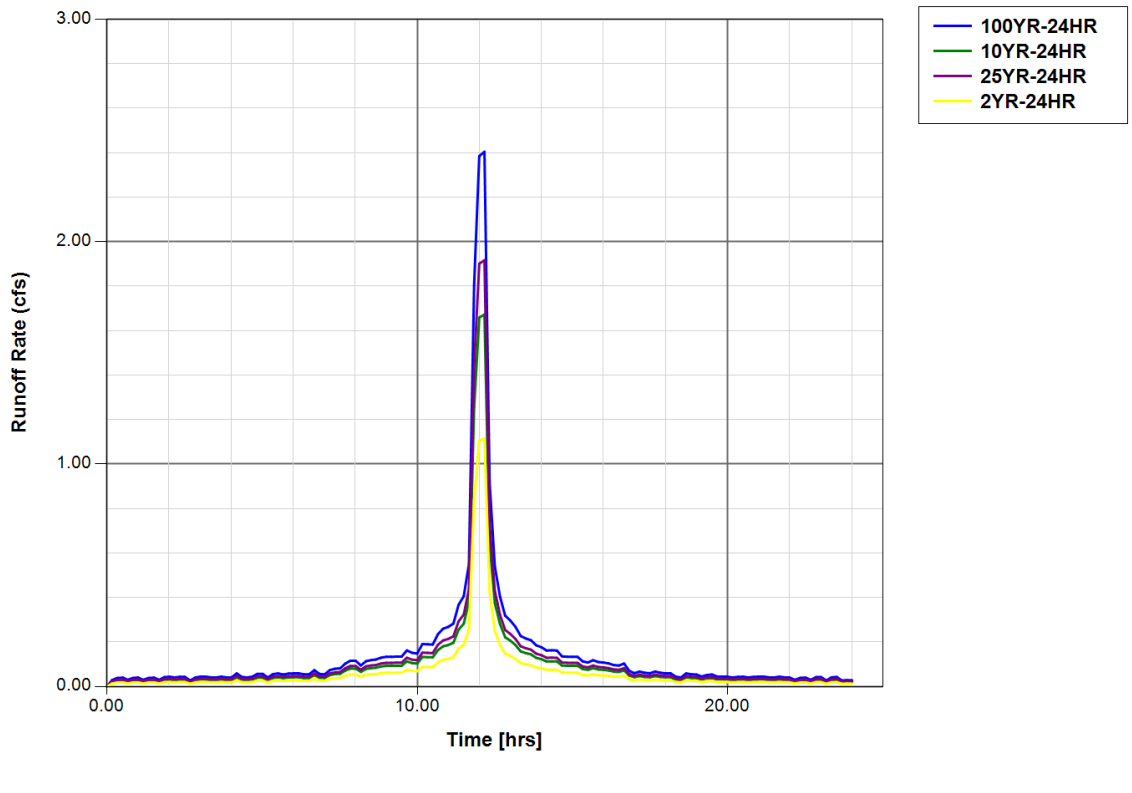
GENERAL NOTES:

Simple Basin: DA-401

Scenario:	Scenario1
Node:	401
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	5.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	0.5100 ac
Curve Number:	98.0
% Impervious:	100.00
% DCIA:	100.00
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: DA-401 [Scenario1]

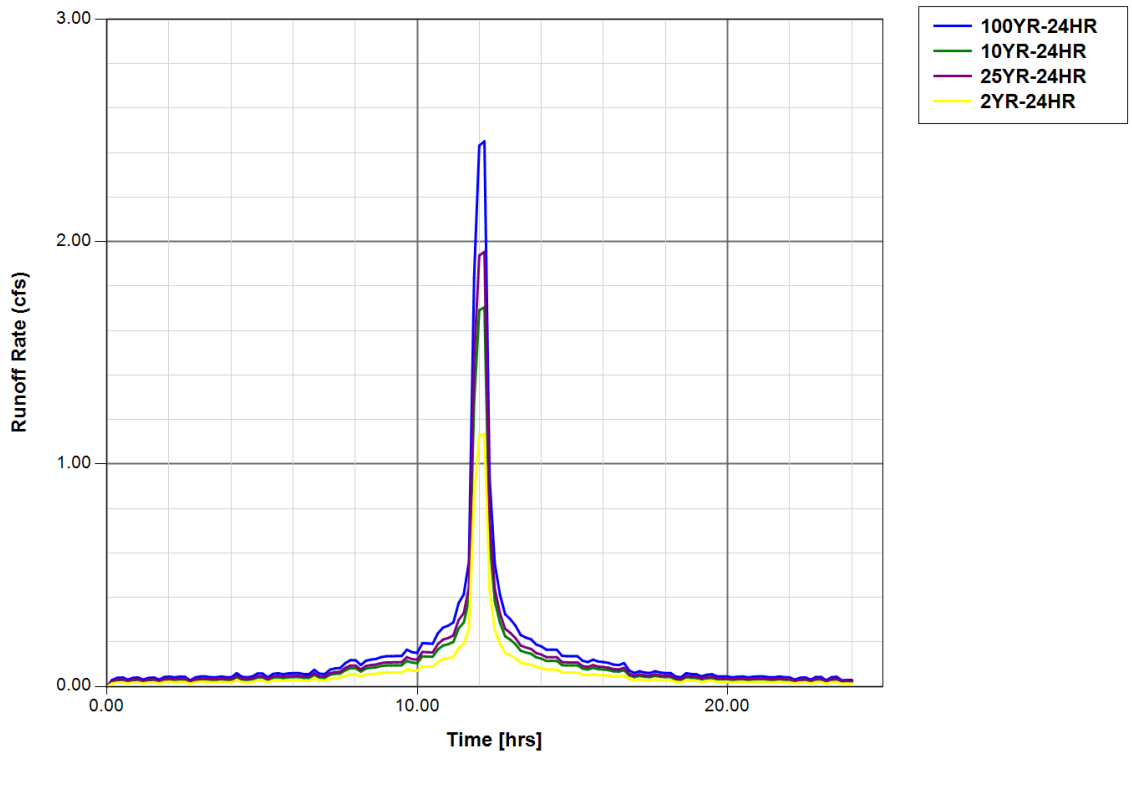


Simple Basin: DA-401A

Scenario:	Scenario1
Node:	400
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	5.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	0.5200 ac
Curve Number:	98.0
% Impervious:	100.00
% DCIA:	100.00
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: DA-401A [Scenario1]

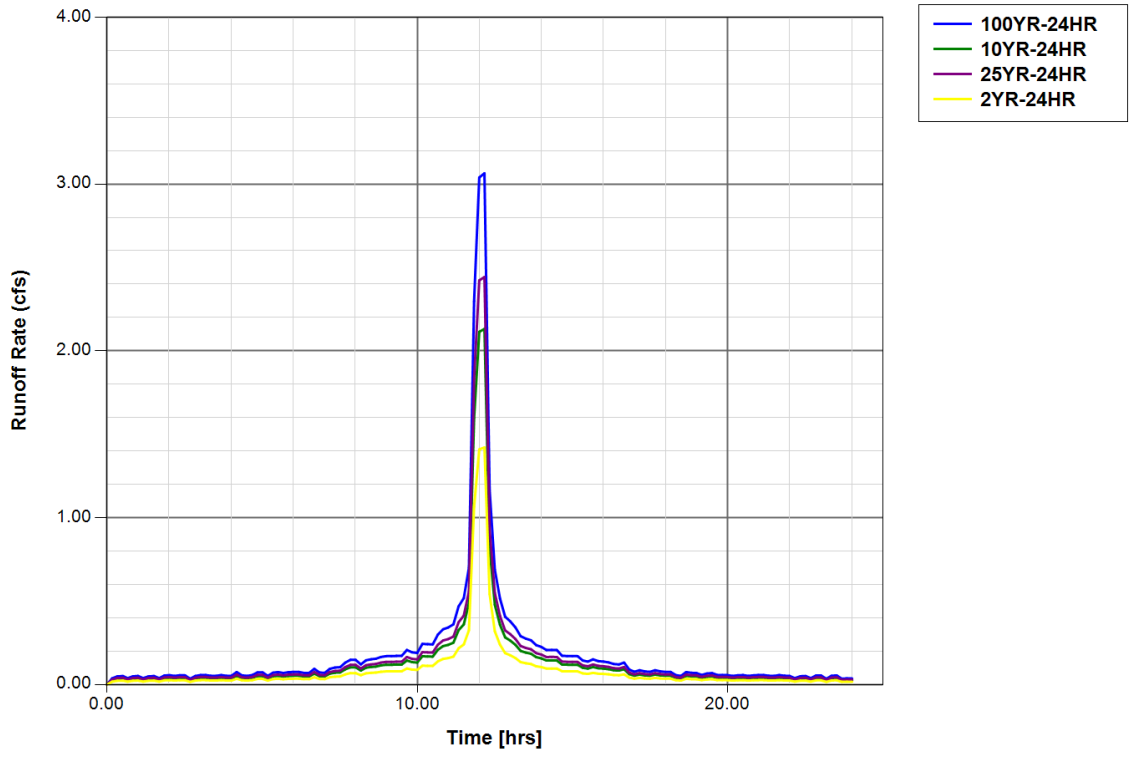


Simple Basin: DA-402

Scenario:	Scenario1
Node:	402
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	5.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	0.6500 ac
Curve Number:	98.0
% Impervious:	100.00
% DCIA:	100.00
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: DA-402 [Scenario1]

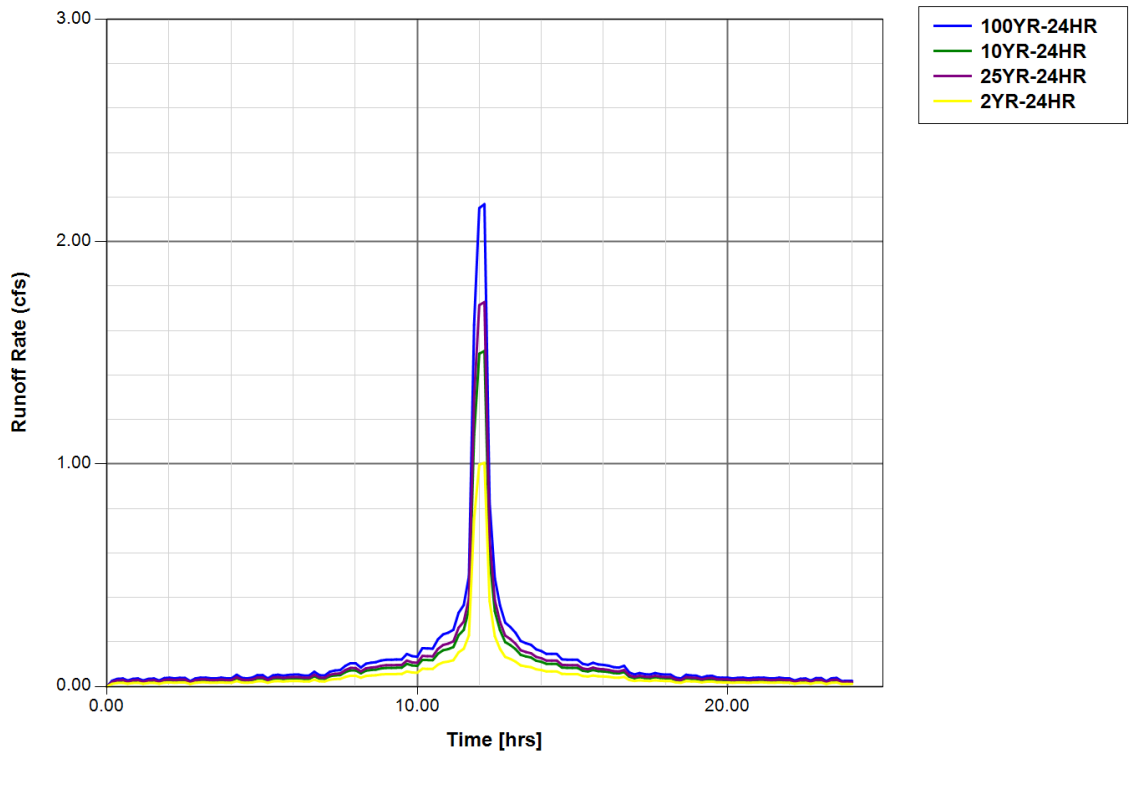


Simple Basin: DA-403

Scenario:	Scenario1
Node:	403
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	5.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	0.4600 ac
Curve Number:	98.0
% Impervious:	100.00
% DCIA:	100.00
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: DA-403 [Scenario1]

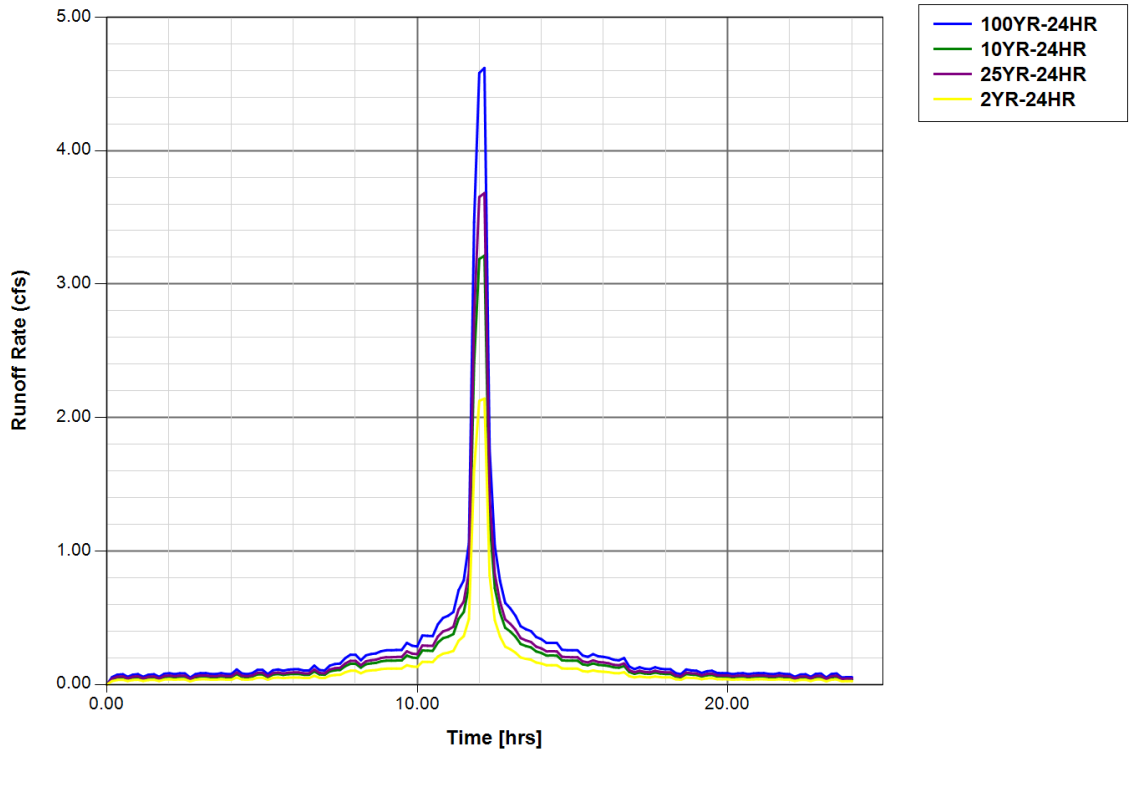


Simple Basin: DA-404

Scenario:	Scenario1
Node:	404
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	5.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	0.9800 ac
Curve Number:	98.0
% Impervious:	100.00
% DCIA:	100.00
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: DA-404 [Scenario1]

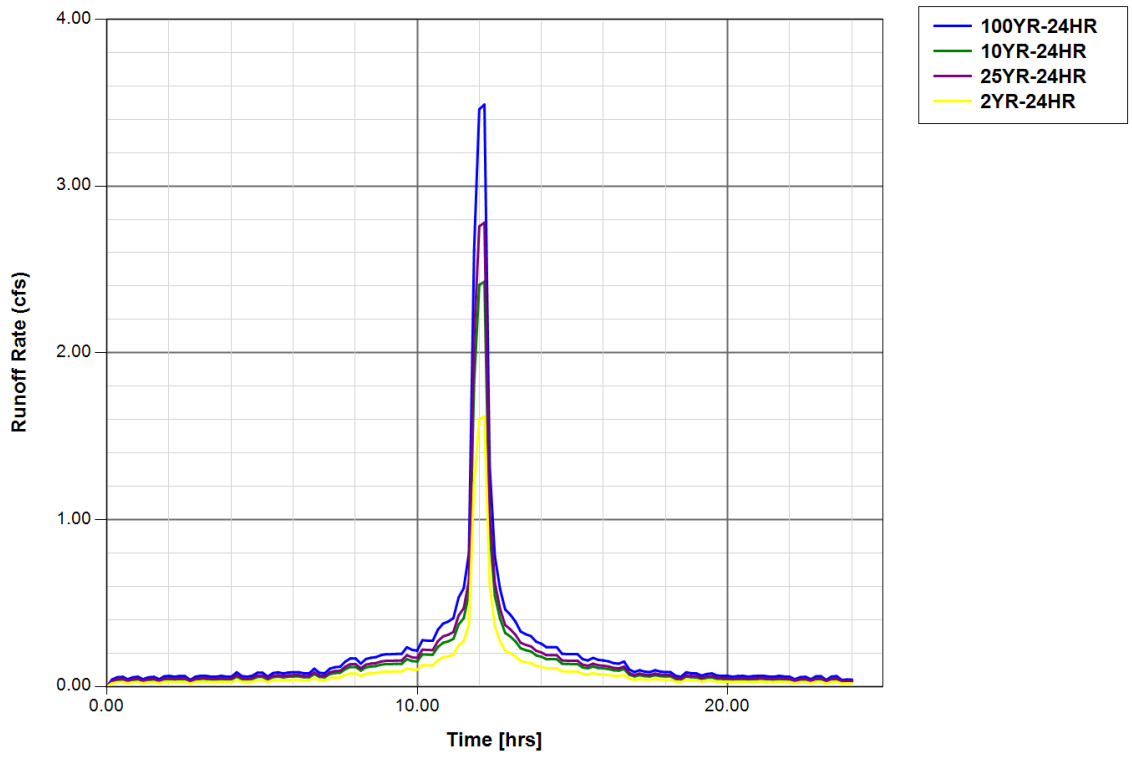


Simple Basin: DA-406

Scenario:	Scenario1
Node:	406
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	5.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	0.7400 ac
Curve Number:	98.0
% Impervious:	100.00
% DCIA:	100.00
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: DA-406 [Scenario1]

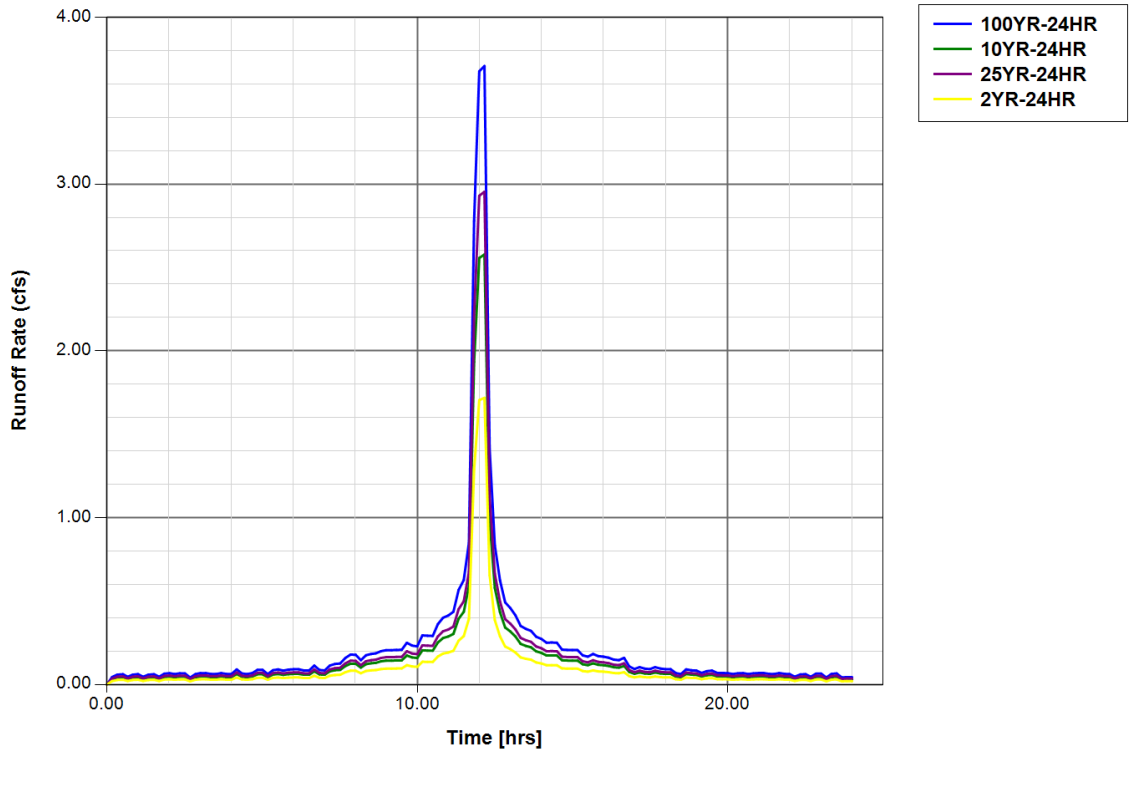


Simple Basin: DA-407

Scenario:	Scenario1
Node:	407
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	5.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	0.8000 ac
Curve Number:	35.0
% Impervious:	98.26
% DCIA:	98.26
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: DA-407 [Scenario1]

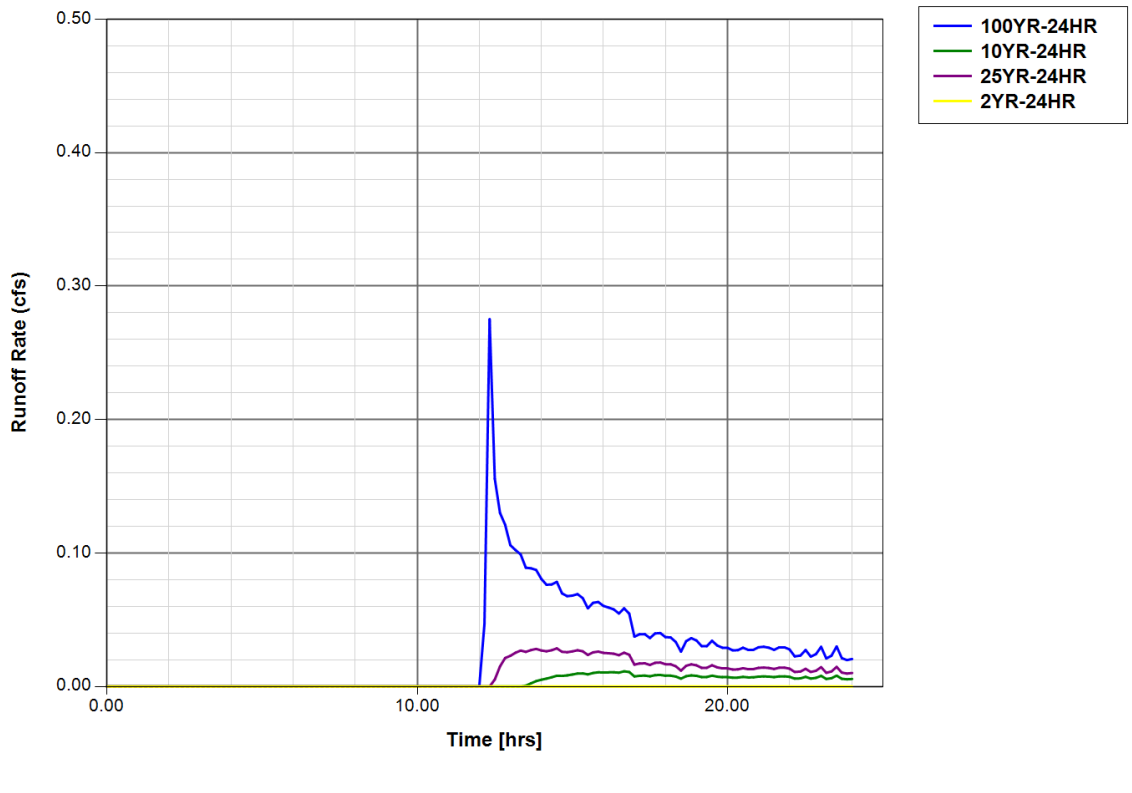


Simple Basin: DA-430

Scenario:	Scenario1
Node:	430
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	1.3300 ac
Curve Number:	35.0
% Impervious:	0.00
% DCIA:	0.00
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: DA-430 [Scenario1]

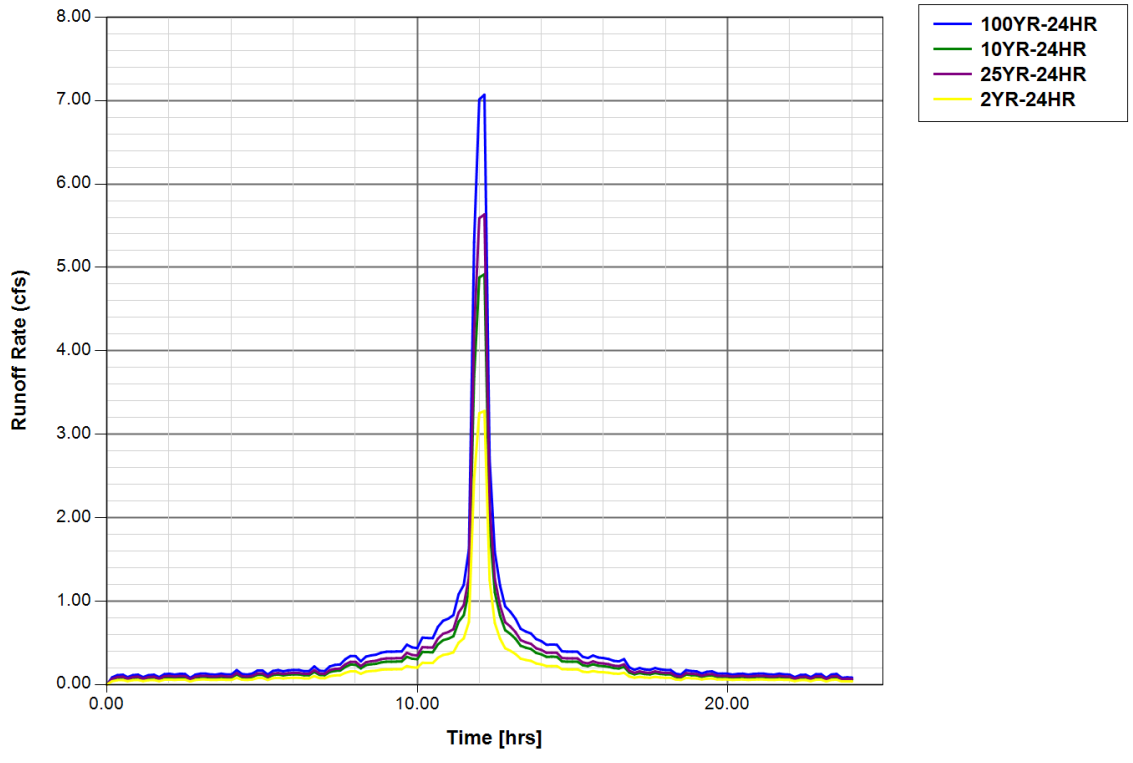


Simple Basin: DA-431

Scenario:	Scenario1
Node:	431
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	5.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	1.5000 ac
Curve Number:	98.0
% Impervious:	100.00
% DCIA:	100.00
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: DA-431 [Scenario1]

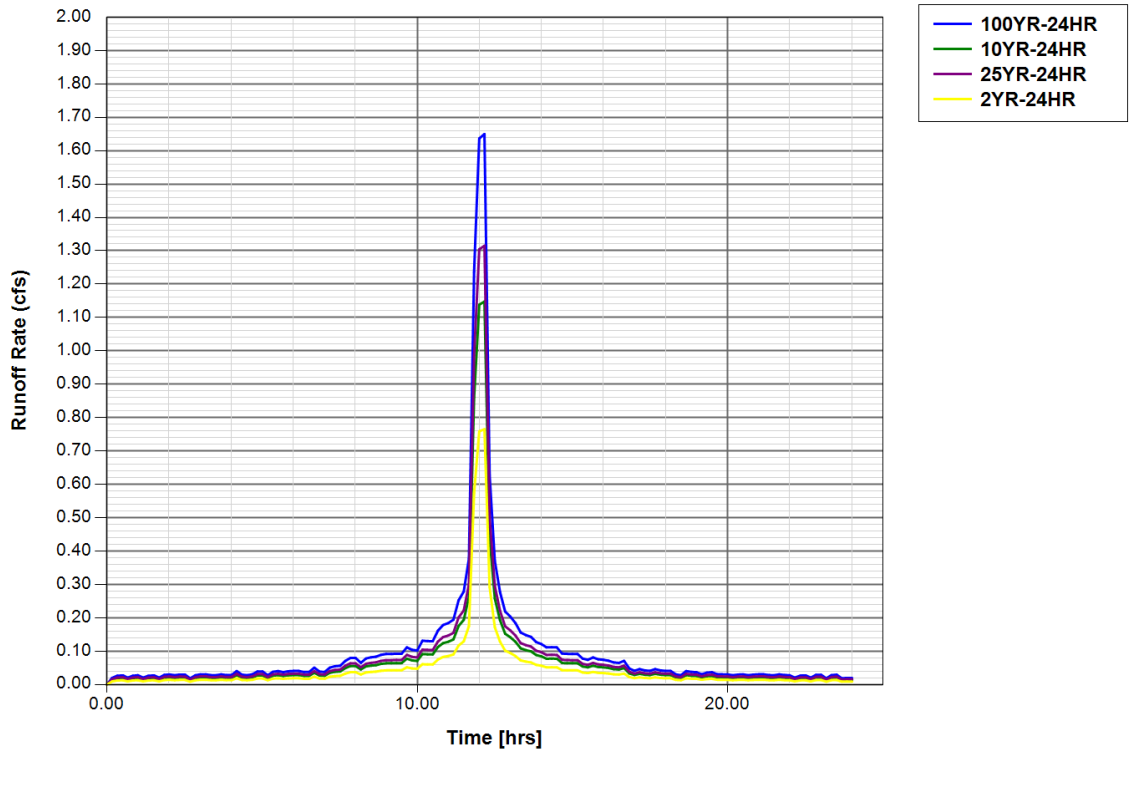


Simple Basin: DA-432

Scenario:	Scenario1
Node:	432
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	5.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	0.3500 ac
Curve Number:	98.0
% Impervious:	100.00
% DCIA:	100.00
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: DA-432 [Scenario1]

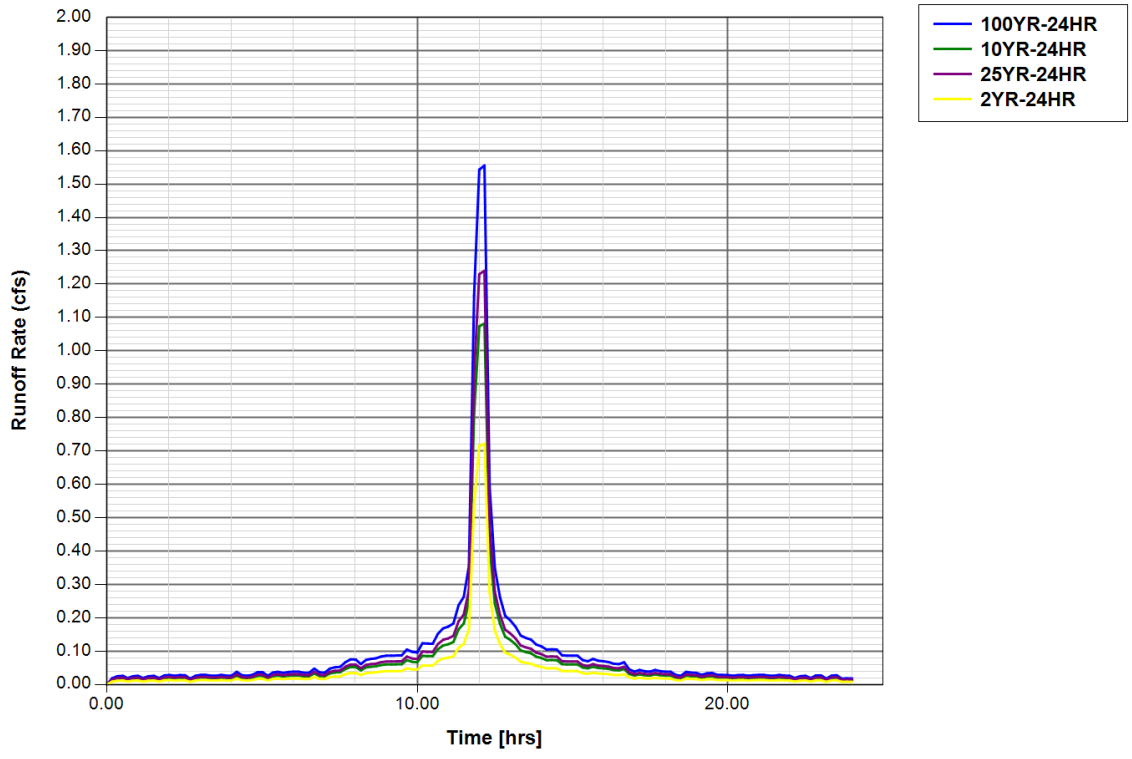


Simple Basin: DA-433

Scenario:	Scenario1
Node:	433
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	5.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	0.3300 ac
Curve Number:	98.0
% Impervious:	100.00
% DCIA:	100.00
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: DA-433 [Scenario1]

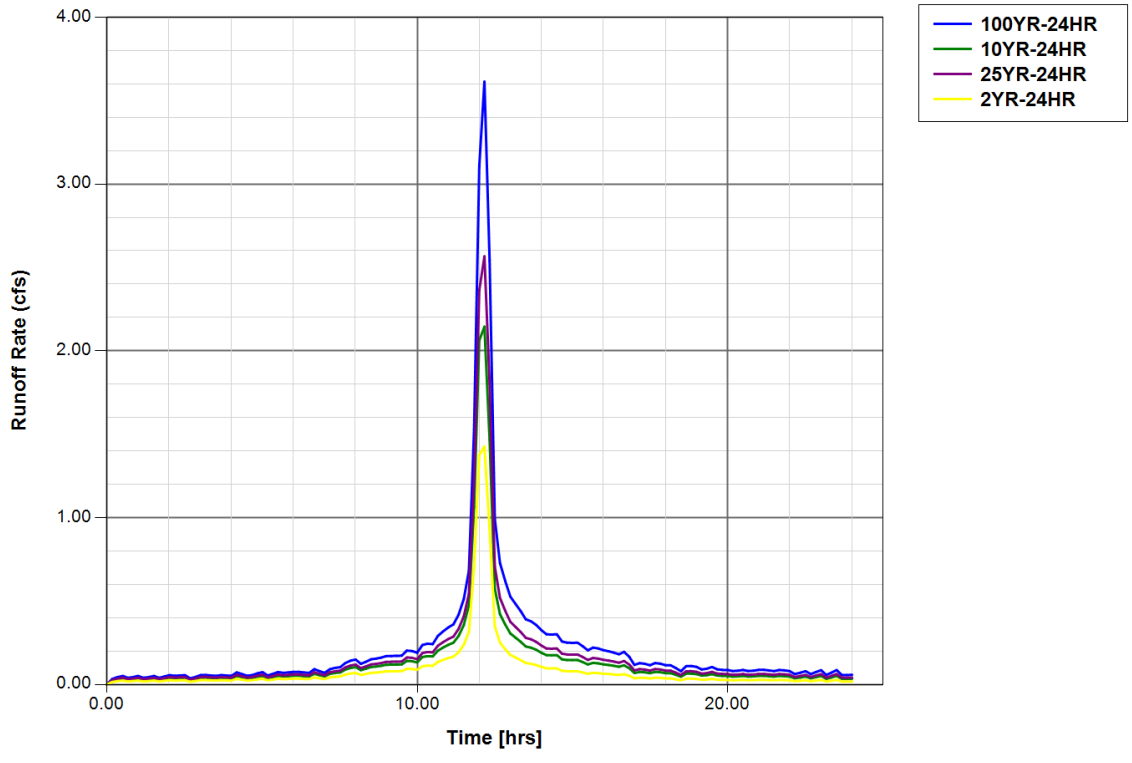


Simple Basin: DA-440

Scenario:	Scenario1
Node:	440
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	8.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	1.5600 ac
Curve Number:	42.0
% Impervious:	42.00
% DCIA:	42.00
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: DA-440 [Scenario1]

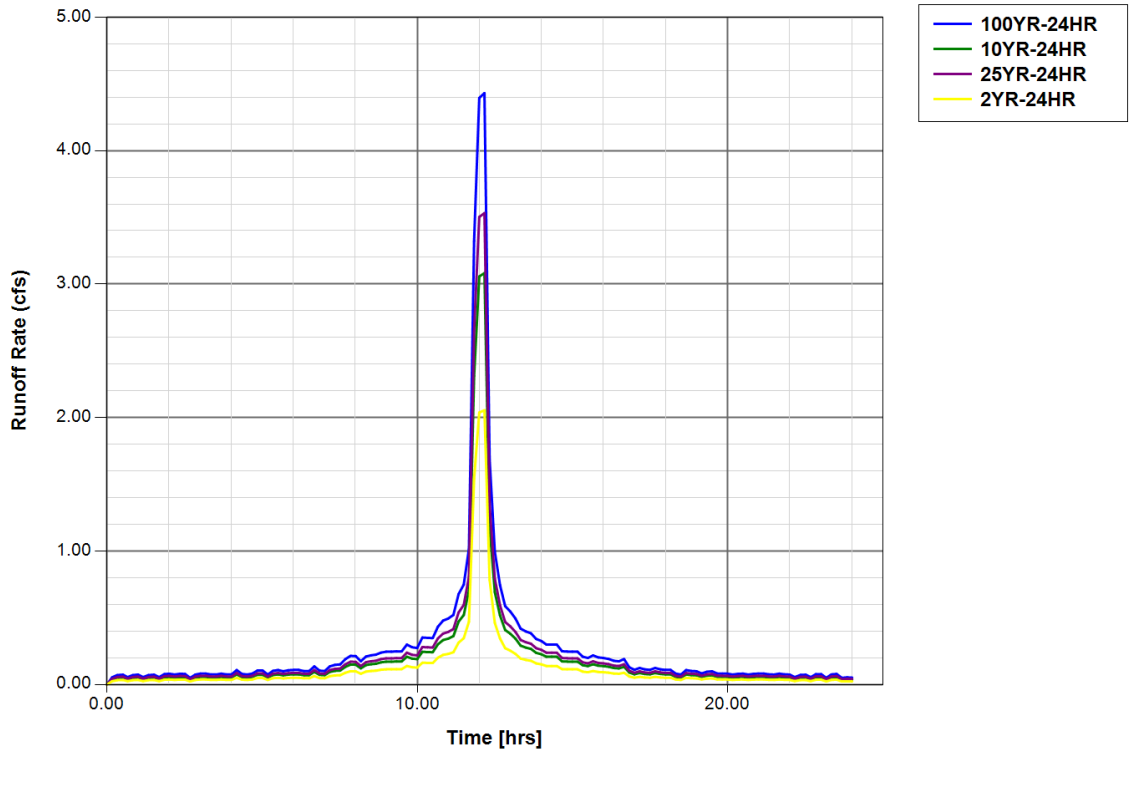


Simple Basin: DA-441

Scenario:	Scenario1
Node:	441
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	5.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	0.9400 ac
Curve Number:	98.0
% Impervious:	100.00
% DCIA:	100.00
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: DA-441 [Scenario1]

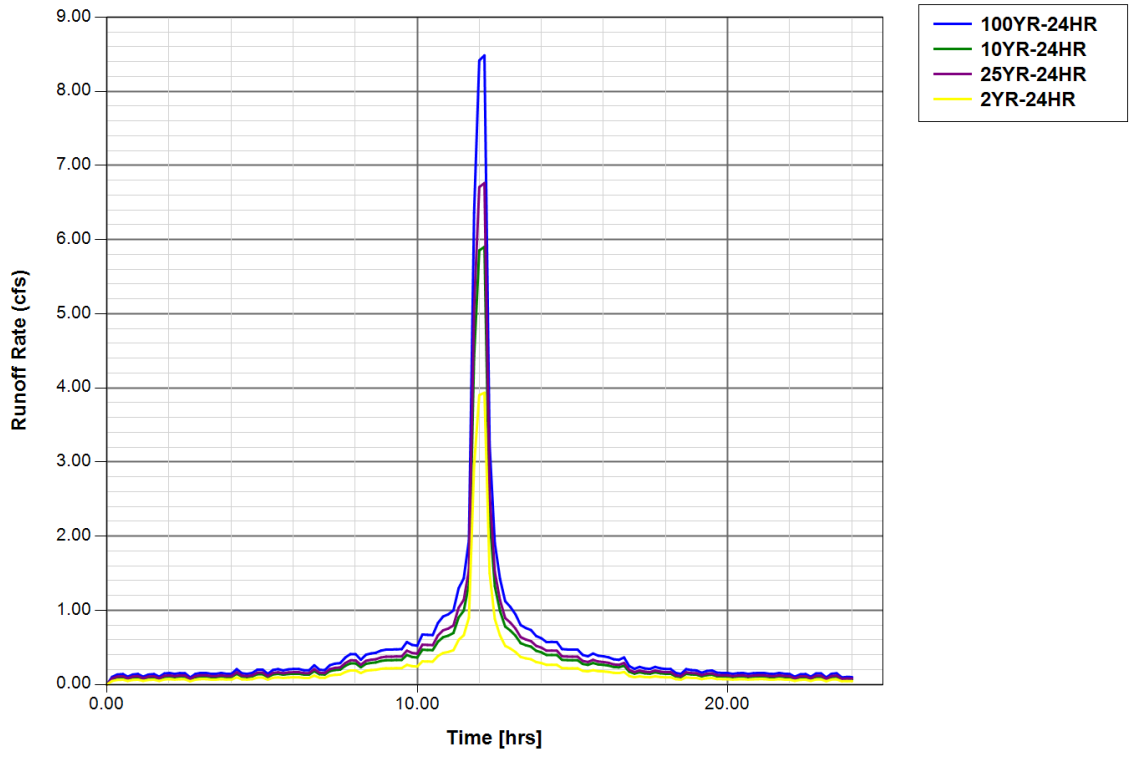


Simple Basin: DA-450

Scenario:	Scenario1
Node:	450
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	5.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	1.8000 ac
Curve Number:	98.0
% Impervious:	100.00
% DCIA:	100.00
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: DA-450 [Scenario1]

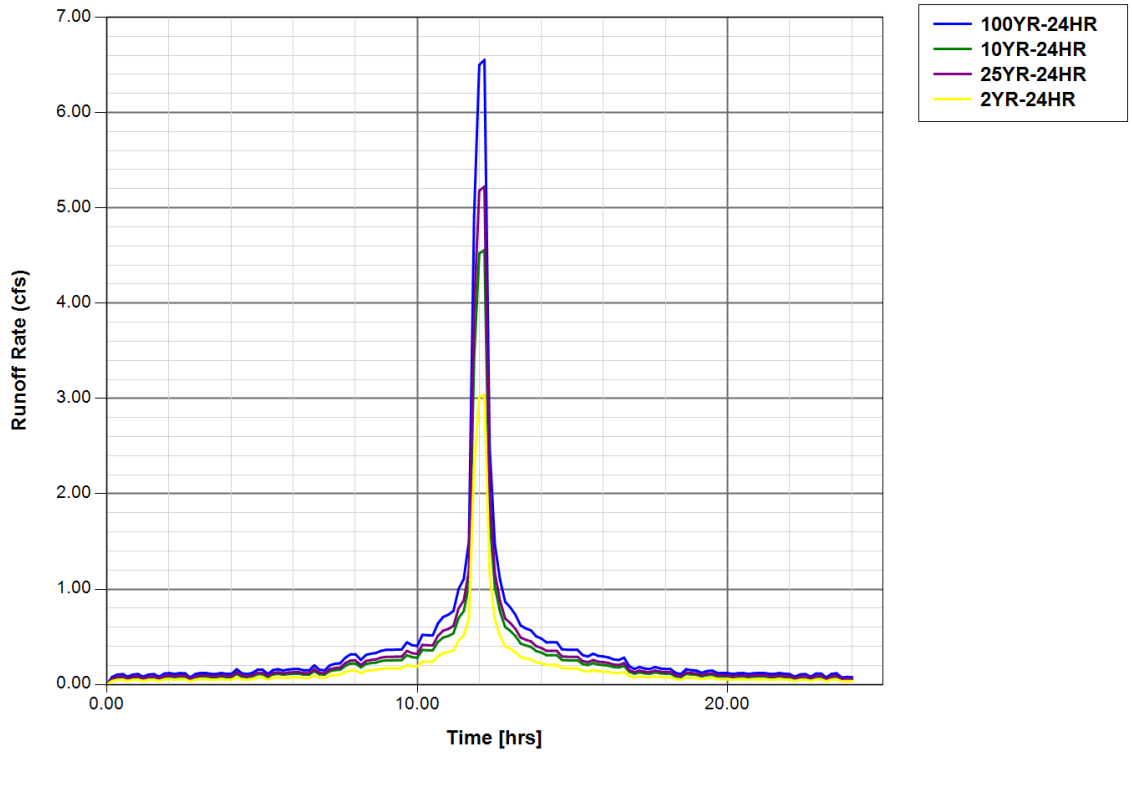


Simple Basin: DA-451

Scenario:	Scenario1
Node:	451
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	5.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	1.3900 ac
Curve Number:	98.0
% Impervious:	100.00
% DCIA:	100.00
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: DA-451 [Scenario1]

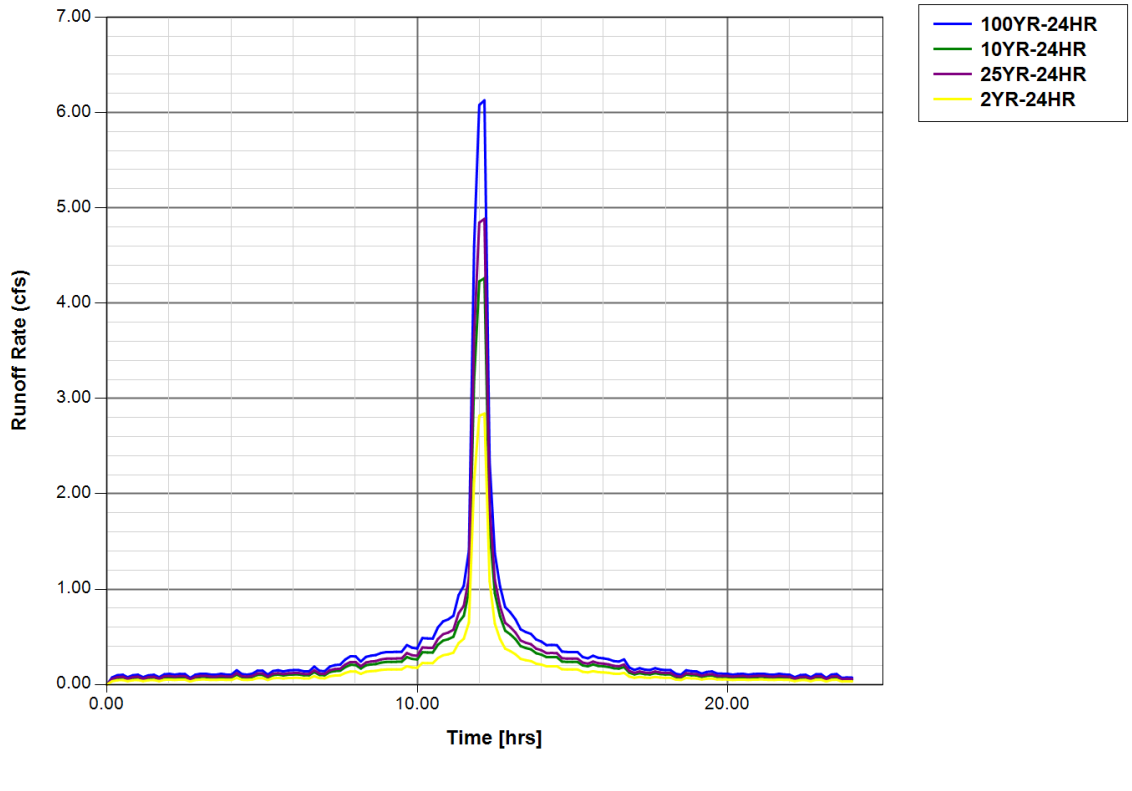


Simple Basin: DA-452

Scenario:	Scenario1
Node:	452
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	5.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	1.3000 ac
Curve Number:	98.0
% Impervious:	100.00
% DCIA:	100.00
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: DA-452 [Scenario1]

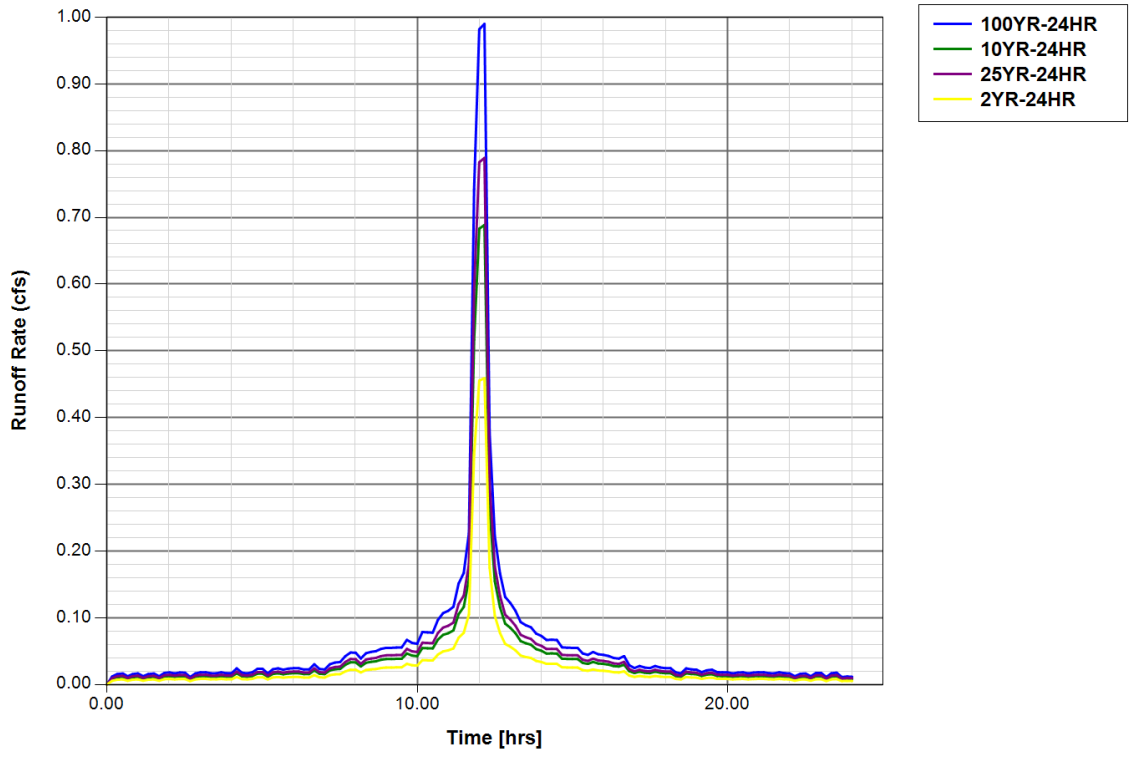


Simple Basin: DA-453

Scenario:	Scenario1
Node:	453
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	5.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	0.2100 ac
Curve Number:	98.0
% Impervious:	100.00
% DCIA:	100.00
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: DA-453 [Scenario1]

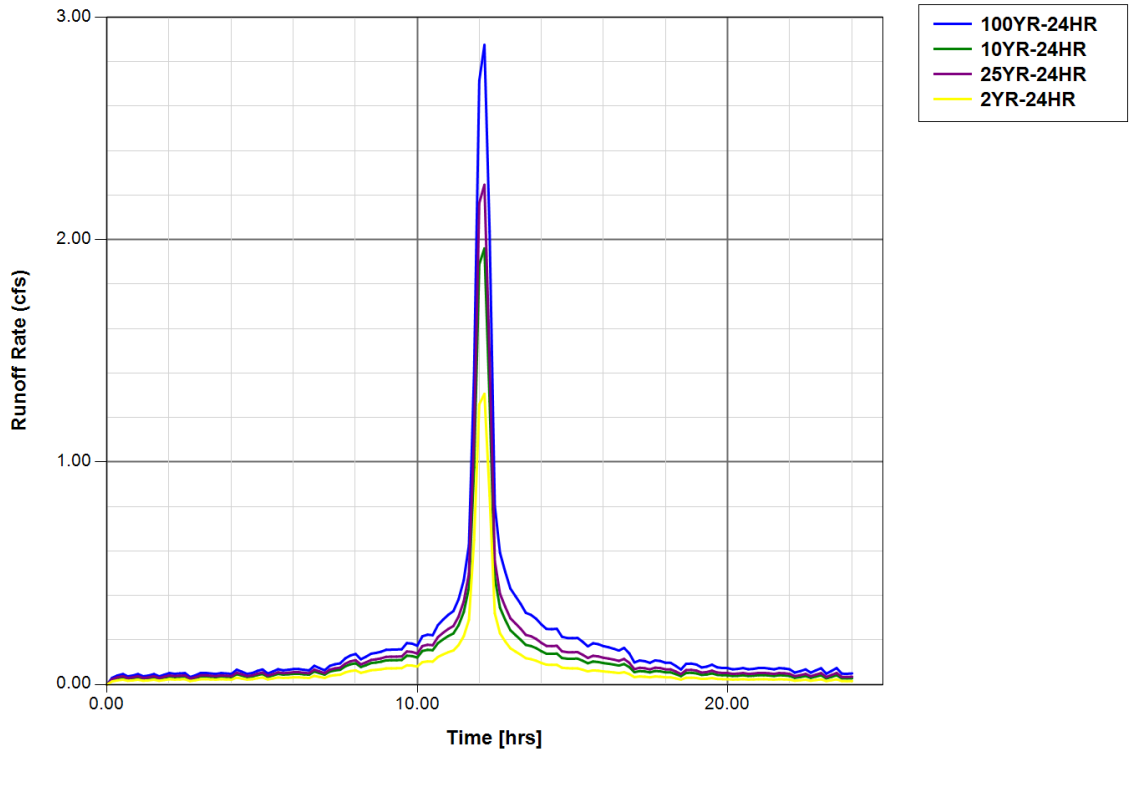


Simple Basin: DA-POND

Scenario:	Scenario1
Node:	PROPOSED POND
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	8.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	1.6100 ac
Curve Number:	35.0
% Impervious:	37.27
% DCIA:	37.27
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: DA-POND [Scenario1]

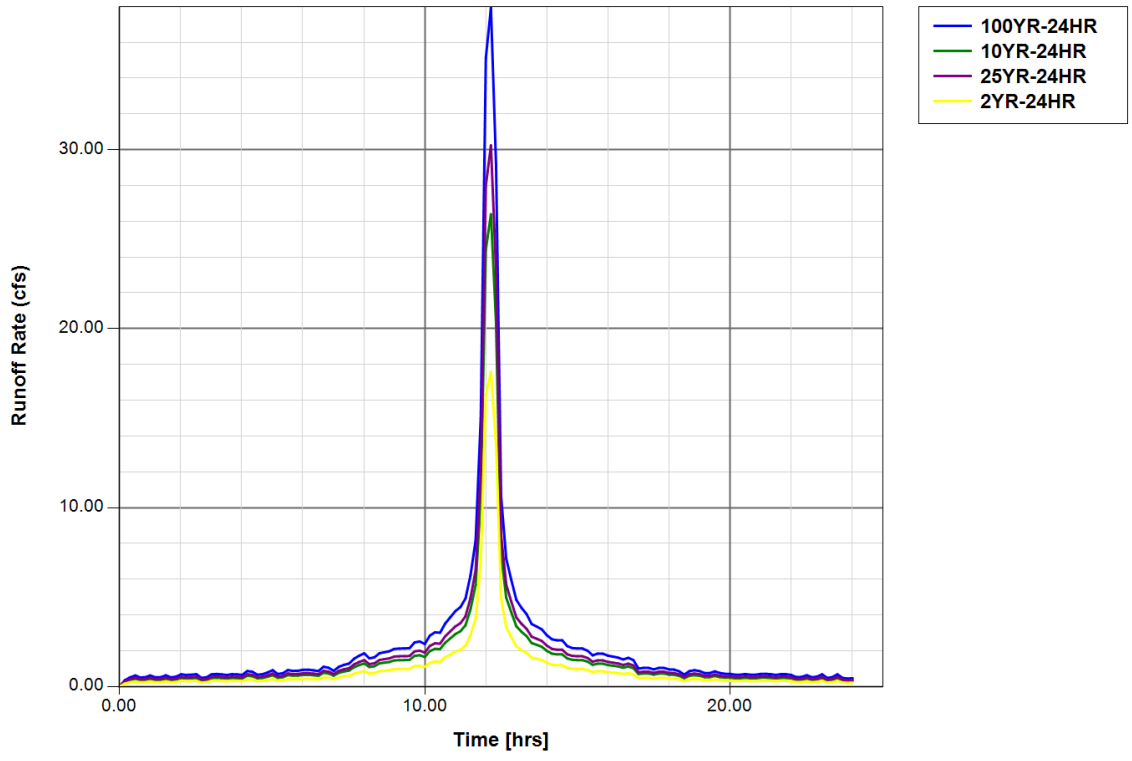


Simple Basin: DA-UPPER

Scenario:	Scenario1
Node:	405
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	8.1200 ac
Curve Number:	98.0
% Impervious:	98.00
% DCIA:	98.00
% Direct:	0.00
Rainfall Name:	~SCSIII-24

Comment:

Simple Basin Runoff Rate: DA-UPPER [Scenario1]



Node: FOREBAY

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 250.25 ft
Warning Stage: 258.00 ft

Stage [ft]	Area [ac]	Area [ft2]
250.25	0.0900	3920
251.00	0.1190	5184
252.00	0.1400	6098
253.00	0.1670	7275
254.00	0.1930	8407
255.00	0.2500	10890

Comment:

Node Max Conditions [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
FOREBAY	100YR-24HR	258.00	257.58	0.0010	88.66	72.77	10893
FOREBAY	10YR-24HR	258.00	255.98	0.0010	67.49	63.88	10893
FOREBAY	25YR-24HR	258.00	256.53	0.0010	76.87	67.37	10893
FOREBAY	2YR-24HR	258.00	254.87	0.0010	46.22	46.10	10568

Node: GROUNDWATER TIME STAGE

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 242.00 ft
Warning Stage: 248.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	242.00
0	0	0	12.0000	244.00
0	0	0	24.0000	246.00
0	0	0	30.0000	248.00
0	0	0	72.0000	246.00
0	0	0	96.0000	242.00

Comment:

Node Max Conditions [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
GROUNDWATER TIME STAGE	100YR-24HR	248.00	246.00	0.0003	0.22	0.00	0
GROUNDWATER TIME STAGE	10YR-24HR	248.00	246.00	0.0004	0.20	0.00	0
GROUNDWATER TIME STAGE	25YR-24HR	248.00	246.00	0.0004	0.20	0.00	0
GROUNDWATER TIME STAGE	2YR-24HR	248.00	246.00	0.0006	0.18	0.00	0

Node: POINT OF DISCHARGE

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 251.75 ft
Warning Stage: 256.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	251.75
0	0	0	12.0000	251.75
0	0	0	30.0000	251.75

Comment:

Node Max Conditions [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
POINT OF DISCHARGE	100YR-24HR	256.00	251.75	0.0000	17.57	0.00	0
POINT OF DISCHARGE	10YR-24HR	256.00	251.75	0.0000	13.94	0.00	0
POINT OF DISCHARGE	25YR-24HR	256.00	251.75	0.0000	15.31	0.00	0
POINT OF DISCHARGE	2YR-24HR	256.00	251.75	0.0000	4.08	0.00	0

Node: PROPOSED POND

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 250.00 ft
Warning Stage: 259.00 ft

Stage [ft]	Area [ac]	Area [ft2]
250.00	0.5100	22216
251.00	0.5500	23958
252.00	0.6000	26136
253.00	0.6400	27878
254.00	0.6900	30056
255.00	0.9500	41382
256.00	1.0330	44997
257.00	1.0917	47555
258.00	1.1512	50146
259.00	1.2121	52799

Comment:

Node Max Conditions [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
PROPOSED POND	100YR-24HR	259.00	257.57	0.0010	75.50	17.78	49023
PROPOSED POND	10YR-24HR	259.00	255.98	0.0010	65.82	14.14	44908
PROPOSED POND	25YR-24HR	259.00	256.52	0.0010	69.56	15.51	46334
PROPOSED POND	2YR-24HR	259.00	254.86	0.0010	47.41	4.25	39850

A-A
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

B-B
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

0 20 40

JOSHUA R. HOUGH
CIVIL ENGINEER
REG. NO. 31834

HASKELL ARCHITECTS and ENGINEERS, P.C.
CONNECTICUT- Architecture and Engineering # 0000056

The Haskell Company
111 Riverside Avenue
Jacksonville, Florida 32202
Phone # (904) 791-4500

HASKELL

YELLIN TRAILER PARKING LOT

Frito Lay Good fun!

No	DESCRIPTION	DATE

DRAWN BY:	CHECKED BY:
SBC/MSL	JRH

AE JOB NUMBER
3401365

ENLARGED GRADING AND DRAINAGE PLAN

1C-440
SHEET NUMBER

APPENDIX 4 – WATER QUALITY CALCULATIONS

- Water Quality Calculations and Connecticut Worksheet
- Multi System Pond Cross Sections & Control Structure Details
- BMP Drainage Area Map
- Downstream Defender Hydrodynamic Seperator Summary

APPENDIX 4
WATER QUALITY CALCULATIONS

Stormwater Quality Worksheet

This worksheet is to be used in conjunction with the Connecticut Stormwater Quality Manual for any new land development. It is designed to help the regulated community and regulatory agencies work through the recommendations provided in the 2004 Connecticut Stormwater Quality Manual. It is not currently required to be submitted with any permit applications submitted to the Connecticut Department of Environmental Protection (DEP).

Part I: General Information

1. List applicant information.

   Name: **Ryan Cuevas**

   Address: **2591 Dallas Parkway #405**

   City/Town: **Dallas** State: **TX** Zip Code: **75034**

   Phone: **817-291-4393** ext. Fax:

   E-mail: **Ryan.Cuevas@Haskell.com**

   Contact Person: Title:

2. List site information.

   Site Name: **Yellin Lot Trailer Parking**

   Address: **1886 Upper Maple St.**

   City/Town: **Dayville** State: **CT** Zip Code: **06241**

3. Proposed Stormwater Management Practices (STP) (check all that apply):

   ☐ Site Planning and Design ☒ Stormwater Treatment Practices

4. Critical Resources (check all that apply):

   On-site

   ☐ Wells, aquifers
   ☒ Wetlands, streams, ponds
   ☐ Public drinking water supplies
   ☐ Other: (please describe)

   Off-site

   ☐ Neighboring land uses
   ☐ Wells, aquifers
   ☐ Wetlands, streams, ponds
   ☐ Public drinking water supplies
   ☐ Other: (please describe)

Part I: General Information (continued)

5. List any plans and/or reports that may be referenced in this worksheet. In addition to the name of each plan or report, label each consecutively starting with the number 1 (e.g., Report 1: *name of report*, etc.) Use the plan or report identifier number where necessary in this worksheet.

   Plan #1; Civil Engineering Plans

   Report #1; Stormwater Hydrology and Hydraulic Calculations

   Report #2; Stormwater Pollution Prevention Plan

   Report #3; Geotechnical Investigation

6a. Provide the location of the following information. Use the identifier numbers provided in Part I: item 5 of this worksheet for consistency.	**Plan #**	**Plan sheet #**	**Report #**	**Report page #**
Site Description				
i. Natural and manmade features at the site	**1**	**1C-100**		
ii. Site topography, drainage patterns, flow paths, and ground cover	**1**	**1C-100**		
iii. Impervious area and runoff coefficient			**1**	**24**
iv. Site soils as defined by USDA			**1**	**17**
v. Stormwater discharge from site and known sources of pollutants and sediment loading	**1**	**1C-140**	**2**	**4**
vi. Critical areas, buffers, and setbacks established by authorities	**1**	**1C-120**		
vii. Water quality classification of on-site and adjacent water bodies			**1**	**1C-170**
viii. Identity of any on-site or adjacent waterbodies included on *CT 303(d)* list of impaired waters	**1**	**1C-100**		
6b. Potential Stormwater Impacts				
i. Potential pollutant sources	**1**	**1C-160**		
ii. Type of anticipated stormwater pollutants and relative/calculated load of each pollutant			**N/A**	
iii. Summary of calculated pre- and post-development peak flows			**1**	**6**
iv. Summary of calculated pre- and post-development groundwater recharge			**N/A**	

Part II: Site Planning and Design

See Chapter 4 of the Stormwater Quality Manual for complete descriptions of concepts listed in this Part.

A. Site Planning and Design Concepts

Indicate Yes or No for each item listed below and provide a brief explanation in the space provided.

1. Has the development been designed to fit the terrain? ☒ Yes ☐ No

   Existing topographic information obtained for purposes of site grading.

2. Has the development been designed to limit land disturbance? ☒ Yes ☐ No

   Areas outside of construction limits shall remain undisturbed.

Part II: Site Planning and Design (continued)

3. Have impervious areas been reduced or disconnected where possible? ☒ Yes ☐ No

(Where Alternative Site Design techniques have been utilized, describe in Part II. B of this worksheet)

Vehicle drive aisles and parking spaces limited to only what is needed.

4. Has the development been designed to preserve and utilize natural drainage system? ☒ Yes ☐ No

Existing overland flow patterns have been utilized in final site grading.

5. Have setbacks and vegetated buffers been provided? ☒ Yes ☐ No

100' riparian rights setback from Five Mile River provided.

6. Has the creation of steep slopes been minimized? ☒ Yes ☐ No

Pond slopes have been designed to 3H:1V maximum.

7. Has pre-development vegetation been maintained? ☒ Yes ☐ No

Areas outside of construction limits will remain in their natural condition.

8. Briefly describe post-construction landscaping practices used including attention to native/non-invasive planting.

Native evergreen trees to be planted on the west side of project development for screening and buffering.

B. Alternative Site Design

Check all aspects included in the development design.

☐ Reduced street widths	☐ Reduced street lengths
☐ Alternative cul-de-sac design	☒ Reduced use of storm sewers
☐ Reduced parking lot size	☐ Using permeable paving material
☐ Removal of curbing and addition of slotted curb stops	☐ Incorporation of bioretention into parking lot islands
☐ Alternative lot development	☐ Incorporation of rain gardens on house lots

For all aspects checked, provide a detailed explanation:

Overland sheet flow paths have been maximized where possible to reduce the number of storm sewer inlets and pipes required.

Part III: Stormwater Treatment Practices

Complete Sections A through E for all developments. Complete and include appropriate sheets from Part IV for each practice checked in this Part.

A. Practices Used

Check all practices used in development.

Primary Treatment Practices	Secondary Treatment Practices
☒ Stormwater Pond (P1)	*Conventional*
☐ micropool extended detention pond	☒ Dry detention pond (S1)
☐ wet pond	☐ Underground detention facilities (S2)
☐ wet extended detention pond	☐ Deep sump catch basins (S3)
☒ multiple pond system	☐ Oil/particle separators (S4)
☐ pocket pond	☐ Dry wells (S5)
☐ Stormwater Wetlands (P2)	☐ Permeable pavement (S6)
☐ shallow wetland	☐ Vegetated filter strips (S7)
☐ extended detention wetland	☐ Grass drainage channels (S8)
☐ pond/wetland system	*Innovative/ Emerging Technologies*
☒ Infiltration Practices (P3)	☐ Catch basin inserts (S9)
☐ infiltration Trench	☒ Hydrodynamic separators (S10)
☒ infiltration Basin	☐ Media filters (S11)
☐ Filtering Practices (P4)	☐ Underground infiltration systems (S12)
☐ surface sand filter	☐ Alum injections (S13)
☐ underground sand filter	
☐ perimeter sand filter	
☐ organic filter	
☐ bioretention	
☐ Water Quality Swales (P5)	
☐ dry swales	
☐ wet swales	

1. If there is no primary treatment practice used, explain why.

2. Are other innovative emerging technologies proposed that are not listed? ☐ Yes ☒ No

   If yes, please describe technologies.

3. Provide a diagram of the treatment train showing the practices used, their locations, and how they are connected. *Attach and label a separate sheet to this sheet.* **See page 76 of Report #1.**

Part III: Stormwater Treatment Practices (continued)

B. Stormwater Quality Management Objectives

Check all that apply

☐ Groundwater Recharge	Pollutants expected from development
☐ Runoff Volume Reduction	☒ Sediment
☒ Stream Channel Protection	☐ Phosphorus
☒ Peak Flow Control	☐ Nitrogen
	☐ Metals
	☐ Hydro-Carbons
	☐ Bacteria

C. Downstream Resources: *List each stormwater treatment practice (STP) which may affect a downstream resource. Check each downstream resource affected for each STP listed. In the space below each listed practice describe how the STP is designed to reduce impacts to the affected downstream resources.*

See Section 8.4 of the Stormwater Quality Manual for additional guidance

Stormwater Treatment Practice	Sensitive Watercourses	Water Supply Aquifers	Lakes and Ponds	Surface Water Drinking Supplies	Estuary/ Coastal
	☐	☐	☐	☐	☐
Description:					
	☐	☐	☐	☐	☐
Description:					
	☐	☐	☐	☐	☐
Description:					
	☐	☐	☐	☐	☐
Description:					

Part III: Stormwater Treatment Practices (continued)

D. Has the STP been designed to minimize the potential for nuisance insects and vectors?

See Section 8.7 of the Stormwater Quality Manual for guidance

☒ Yes ☐ No

Provide brief explanation: **The proposed dry detention pond is designed to recover stormwater within 5 days of the rainfall event. Also catch basins and inlets have been designed without sumps.**

E. Has the STP been designed to reduce the impact on natural wetlands and vernal pools?

See Section 8.8 of the Stormwater Quality Manual for guidance

☐ Yes ☒ No

Provide brief explanation: **No natural wetlands or vernal pools exist on the subject property.**

Part IV: Stormwater Treatment Practice (STP) Design Worksheets

A. Stormwater Ponds (P1) *(See Chapter 11-P1 of the Stormwater Quality Manual for guidance)*

1. Type: *(check one) (Reproduce this sheet for each type used.)*

☐ Wet Pond ☐ Wet Extended Detention Pond

☐ Micropool Extended Detention Pond ☒ Multiple Pond System

2. Provide the location of the following information. Use the report and/or plan identifier numbers provided in Part I: item 5 of this worksheet for consistency.

Parameter	Design Criteria	Provide report and/or plan page or sheet number showing aspect or calculation
Setback	*50 feet from on-site sewage disposal systems*	**Plan #1; Page 1C-140**
	50 feet from private wells	**Plan #1; Page 1C-140**
	10 feet from any property line	**Plan #1; Page 1C-140**
	20 feet from any structure	**Plan #1; Page 1C-140**
	50 feet from any steep slope	**Plan #1; Page 1C-140**
	750 feet from any vernal pool	**No Vernal Pools**
Preferred Shape	*Curvilinear*	
Side Slopes	*3:1 or maximum*	**Plan #1; Page 1C-140**
	Terminate at safety benches	**Plan #1; Page 1C-140**
Length to Width Ratio	*3:1 minimum along the flow path between the inlet and outlet at mid-depth*	**Plan #1; Page 1C-140**
Pretreatment Volume	*10% of WQV*	**Report #1; Page 78, Appendix 4**
	100% of WQV for higher pollutant loading (see Chapter 7)	
Pond Volume	*Equal or exceeding WQV*	**Report #1; Page 78., Appendix 4**
Drainage Area		
Wet ponds	*Minimum contributing drainage area 25 acres*	**N/A**
Extended Detention	*Minimum contributing drainage area 10 acres*	**N/A**
Pocket Ponds	*Minimum contributing drainage area 1-5 acres*	**N/A**
Underlying Soils	*Low permeability unless groundwater intercepted*	**N/A**
Capacity	*Minimum ratio of pool volume to WQV between 2:1 and 4:1*	**Report #1; Page 78., Appendix 4**
Depth		
Pool	*3-6 feet, not greater than 8 feet*	**Report #1; Page 78., Appendix 4**
Aquatic bench	*12-18 inches*	**N/A**
Low Flow Orifice	*Protected from clogging*	**Report #1; Page 78., Appendix 4**
Pond Drain	*Present*	
Principle Spillway	*Inaccessible to children*	**Plan #1; 1C-120**
Warning Signs	*Posted against swimming/skating*	
Maintenance Access	*Extending to public road*	**N/A**
Cross Sections		**Report #1; Page 78**
Describe Cold Climate Design Features:		
Other Design Features:		

Part IV: Stormwater Treatment Practice (STP) Design Worksheets (continued)

B. Stormwater Wetlands (P2) *(See Chapter 11-P2 of the Stormwater Quality Manual for guidance)*

1. Type: *(check one) (Reproduce and complete this sheet for each type used.)*

☐ Shallow Wetland ☐ Pond/Wetland System

☐ Extended Detention Wetland

2. Provide the location of the following information. Use the report and/or plan identifier numbers provided in Part I: item 5 of this worksheet for consistency.

Parameter	Design Criteria	Provide report and/or plan page or sheet number showing aspect or calculation
Setback	*50 feet from on-site sewage disposal systems*	
	50 feet from private wells	
	10 feet from any property line	
	20 feet from any structure	
	50 feet from any steep slope	
	750 feet from any vernal pool	
Preferred Shape	*Curvilinear*	
Side Slopes	*3:1 or maximum*	
	Terminate at safety benches	
Length to Width Ratio	*3:1 minimum along the flow path between the inlet and outlet at mid-depth*	
Pretreatment Volume	*10% of WQV*	
	100% of WQV for higher pollutant loading (see Chapter 7)	
Drainage Area	*Minimum contributing drainage area 25 acres*	
	Surface area of wetland 1 to 1.5% of contributing drainage area	
Underlying Soils	*Low permeability unless groundwater intercepted*	
Size	*Based on calculations on page 11-P2-7 and 8. Approximate guidelines: ratio of wetland to drainage area 0.2 for shallow marshes and 0.1 for extended detention shallow wetland systems*	
Depth		
Marsh/Wetland	*0.5 to 1.5 feet*	
Forebays/Micropools	*4-6 feet*	
Low Flow Orifice	*Protected from clogging*	
Wetland Drain	*Present*	
Principle Spillway	*Inaccessible to children*	
Warning Signs	*Posted against swimming/skating*	
Maintenance Access	*Extending to public road*	
Cross Sections		
Describe Cold Climate Design Features:		
Other Design Features:		

Part IV: Stormwater Treatment Practice (STP) Design Worksheets (continued)

C. Infiltration Practices (P3) *(See Chapter 11-P3 of the Stormwater Quality Manual for guidance)*

1. Type: *(check one) (Reproduce and complete this sheet for each type used.)*

☐ Trench ☒ Basin

2. Provide the location of the following information. Use the report and/or plan identifier numbers provided in Part I: item 5 of this worksheet for consistency.

Parameter	Design Criteria	Provide report and/or plan page or sheet number showing aspect or calculation
Design Volume	*Entire water quality volume (WQV)*	**Report #2; Page 78., Appendix 4**
Pretreatment Volume	*25% of WQV*	**Report #2; Page 78., Appendix 4**
Maximum Draining Time	*48 to 72 hours after storm event (entire WQV)*	**Report #2; Page 6**
Minimum Draining Time	*12 hours (for adequate pollutant removal)*	**Report #2; Page 6**
Maximum Contributing Drainage		
Trench	*5 acres*	**N/A**
Basin	*25 acres*	**Report #2; Page 32**
Minimum Infiltration Rate	*0.3 in/hr (as measured in field*	**Report #2; Page 6**
Maximum Infiltration Rate	*5.0 in/hr (as measured in field)*	**N/A**
Depth		
Trench	*2 to 10 feet (trench depth)*	**N/A**
Basin	*3 feet (pondering depth) recommended*	**Report #2; Page 78., Appendix 4**
Vegetated Buffers	*Around Trench*	**N/A**
Cross Sections		**Report #2; Page 78., Appendix 4**
Describe Cold Climate Design Features:		
Other Design Features:		

Part IV: Stormwater Treatment Practice (STP) Design Worksheets (continued)

D. Filtering Practices (P4) *(See Chapter 11-P4 of the Stormwater Quality Manual for guidance)*

1. Type: *(check one) (Reproduce and complete this sheet for each type used.)*

☐ Surface Filters ☐ Underground Filters

2. Provide the location of the following information. Use the report and/or plan identifier numbers provided in Part I: item 5 of this worksheet for consistency.

Parameter	Design Criteria	Provide report and/or plan page or sheet number showing aspect or calculation
Maximum Drainage Area	*5 to 10 acres*	
Bio-retention	*Less then 5 acres*	
Slope	*6% or less*	
Head Difference	*5 to 7 feet*	
Underlying Soils	*Highly impervious*	
Distance to Water Table	*At least 3 feet separation*	
Pretreatment Volume	*at least 25% WQV*	
Length to Width Ratio	*1.5:1 to 3:1*	
Design Volume	*At least 75% WQV*	
Draining Time	*Designed to Drain within 24 hours*	
Cross Sections		
Describe Cold Climate Design Features:		
Other Design Features:		

Part IV: Stormwater Treatment Practice (STP) Design Worksheets (continued)

E. Water Quality Swales (P5) *(See Chapter 11-P5 of the Stormwater Quality Manual for guidance)*

1. Type: *(check one) (Reproduce and complete this sheet for each type used.)*

☐ Dry Swale ☐ Wet Swale

2. Provide the location of the following information. Use the report and/or plan identifier numbers provided in Part I: item 5 of this worksheet for consistency.

Parameter	Design Criteria	Provide report and/or plan page or sheet number showing aspect or calculation
Pretreatment Volume	*25% of the water quality volume (WQV)*	
Preferred Shape	*Trapezoidal and parabolic*	
Bottom Width	*4 feet minimum recommended for maintenance, 8 feet maximum, widths up to 16 feet are allowable if a dividing berm or structure is used*	
Side Slopes	*3(h): 1(v) maximum, 4:1 or flatter recommended for maintenance (where space permits)*	
Longitudinal Slope	*1% to 2% without check dams, up to 5% with check dams*	
Drainage Area	*No more than 5 acres*	
Sizing Criteria	*Length, width, depth and slope needed to provide surface storage for the WQV.*	
Dry Swale	*Maximum ponding time of 24 hours*	
Wet Swale	*retains the WQV for 24 hours; ponding may continue longer (5 days recommended maximum duration to avoid potential for mosquito breeding*	
Underlying Soil Bed	*Equal to Swale width*	
Dry Swale	*Moderately permeable soils (USCS ML, SM, or SC), 30 inches deep with gravel/pipe underdrain system*	
Wet Swale	*Undisturbed soils, no underdrain system*	
Depth and Capacity	*Surface storage of WQV with maximum ponding depth of 18 inches for water quality treatment*	
	Safely convey 2-year storm with non-erosive velocity	
	Adequate capacity for 10-year storm with 6 inches of freeboard	
Cross Sections		
Describe Cold Climate Design Features:		
Other Design Features:		

Part IV: Stormwater Treatment Practice (STP) Design Worksheets (continued)

F. Secondary Treatment Practices (S1-S13)

Provide location of explanatory narrative, computations and plan/detail for each numbered item consistent with "Design Consideration" for each measure. Use the report and/or plan identifier numbers provided in Part I: item 5 of this worksheet for consistency.

S1: Dry Detention Ponds

Explain why this practice is suitable for this site (see pp 11-S1-1 to 2):
Dry detention is a suitable design due to the presence of granular, non-plastic, non-expansive soils as well as the groundwater not being encountered during onsite geotechnical investigation. See Report #3, Geotechnical Investigation

Item:	Provide report and/or plan page or sheet #:
1. Sediment Forebay with Deep Permanent Pool	**Plan #1; Page 1C-140**
2. Extended Detention Storage Design (no longer than 5 days)	**Report #1; Page 6**
3. Outlet Wet Pool	**Report #1; Page 75.**
4. Pond Configuration	**Plan #1; Page 1C-140**
5. Low Flow Channels	**N/A**
6. Dam Safety Section of CTDEP IWRD consulted regarding State jurisdiction?	

S2: Underground Detention Facilities

Explain why this practice is suitable for this site (see pp 11-S2-1 to 3):

Item:	Provide report and/or plan page or sheet #:
1. Siting	
2. Pretreatment	
3. Inlets, Outlets, and Overflows	

S3: Deep Sump Catch Basins

Explain why this practice is suitable for this site (see pp 11-S3-1 to 3):

Item:	Provide report and/or plan page or sheet #:
1. Drainage Area	
2. Design	
3. Maintenance	
4. Sediment Disposal	

S4: Oil/Particle Separators

Explain why this practice is suitable for this site (see pp 11-S4-1 to 6):

Item:	Provide report and/or plan page or sheet #:
1. Drainage Area	
2. Sizing/Design	
3. Maintenance	

Part IV: Stormwater Treatment Practice (STP) Design Worksheets (continued)

F. Secondary Treatment Practices (S1-S13)

S5: Dry Wells

Explain why this practice is suitable for this site (see pp 11-S5-1 to 4):

Item:	Provide report and/or plan page or sheet #:
1. Soils	
2. Land Use	
3. Drainage Area	
4. Water Table/ Bedrock	
5. Size/Depth	
6. Miscellaneous	
7. Construction	
8. Operation and Maintenance	

S6: Permeable Pavement

Explain why this practice is suitable for this site (see pp 11-S6-1 to 4):

Item:	Provide report and/or plan page or sheet #:
1. Soils	
2. Land Use	
3. Slope	
4. Water Table/ Bedrock	
5. Construction (Site Preparation and Planting)	
6. Operation and Maintenance	

S7: Vegetated Filter Strips and Level Spreaders

Explain why this practice is suitable for this site (see pp 11-S7-1 to 6):

Item:	Provide report and/or plan page or sheet #:
1. Slope	
2. Soils	
3. Drainage Area	
4. Water Table/ Bedrock	
5. Size	
6. Vegetation	
7. Level Spreader	
8. Construction	
9. Operation and Maintenance	

Part IV: Stormwater Treatment Practice (STP) Design Worksheets (continued)

F. Secondary Treatment Practices (S1-S13)

S8: Grass Drainage Channels	
Explain why this practice is suitable for this site (see pp 11-S8-1 to 3):	
Item:	**Provide report and/or plan page or sheet #:**
1. Provides sufficient channel length	
2. Provides non-erosive velocities	
3. Sufficient capacity and conveyance for 10-year frequency storm event.	

S9: Catch Basin Inserts	
Explain why this practice is suitable for this site (see pp 11-S9-1 to 3):	
Item:	**Provide report and/or plan page or sheet #:**
1. High Flow Bypass	
2. Maintenance	

S10: Hydrodynamic Separators	
Explain why this practice is suitable for this site (see pp 11-S10-1 to 3): **To provide pre-treatment of stormwater runoff prior to entering proposed forebay.**	
Item:	**Provide report and/or plan page or sheet #:**
1. Drainage Area	**Report #1; Page 79.**
2. Sizing/Design	**Report #1; Page 79.**
3. Performance	**Report #1; Page 80-81.**
4. Maintenance	**Report #1; Page 80-81.**
5. Sediment Disposal	**Report #1; Page 80-81.**

S11: Media Filter	
Explain why this practice is suitable for this site (see pp 11-S11-1 to 3):	
Item:	**Provide report and/or plan page or sheet #:**
1. Sizing/ Design	
2. Maintenance	
3. Sediment Disposal	

Part IV: Stormwater Treatment Practice (STP) Design Worksheets (continued)

F. Secondary Treatment Practices (S1-S13)

S12: Underground Infiltration Systems	
Explain why this practice is suitable for this site (see pp 11-S12-1 to 3):	
Item:	**Provide report and/or plan page or sheet #:**
1. Siting	
2. Pretreatment	
3. Design Volume	
4. Draining Time	
5. Infiltration Rate	
S13: Alum Injection	
Explain why this practice is suitable for this site (see pp 11-S13-1 to 2):	
Item:	**Provide report and/or plan page or sheet #:**
1. Design	
2. Operation and Maintenance	

Part V: Calculations Worksheet

For each STP used, provide calculations for each item listed. Use separate sheet for each STP.

Name of STP for which the following calculations are provided:

- **Multiple Pond System**
- **Hydro Dynamic Separators 1 & 2**

1. Compute Water Quality Volume (WQV):

   Total WQV was determined using 2004 CT. Stormwater Quality Manual, Chapter 7. WQV storage provided at pond stage elevation 252.95.

WQV = 1.72 **(ac-ft)**

2. Compute Water Quality Flow (WQF):

   To determine WQF for the Hydro Dynamic separators 1 & 2, a routing analysis was performed using Adlcpr for 1" or rainfall. Hydro Dynamic units were sized based upon manufacturers technical information for the calculated WQF. Downstream Defender 1; 2.56 cfs. Downstream Defender 2; 3.65 cfs.

WQF = 6.21 Total **(cfs)**

3. Compute Groundwater Recharge Volume (GRV):

   N/A

GRV = **(ac-ft)**

4. Compute Runoff Capture Volume (RCV):

RCV = **(ac-ft)**

5. Provide Peak Discharge Rates for the following storm events:

Storm Event	Pre-Development (cfs)	Post-Development (cfs)	Change (+/- cfs)
24 hr			
2-year	**4.69**	**4.24**	**-0.45**
10-year	**14.41**	**13.94**	**-0.47**
25-year	**19.40**	**15.31**	**-4.09**
100-year	**30.18**	**17.51**	**-12.67**
500-year	**N/A**	**N/A**	**N/A**

HASKELL
ARCHITECTS AND ENGINEERS, P.A.

Client Name:	Frito-Lay		
Project Name:	Project Knight		
Location:	Killingly, CT	Project Num:	3401365
Prepared by:	SBC	Date:	5/1/2020

WATER QUALITY VOLUME (WQV)

WATER QUALITY VOLUME (WQV) REQUIREMENTS TAKEN FROM:
2004 CONNECTICUT STORMWATER QUALITY MANUAL; CHAPTER 7.

WQV=((1")(R)(A))/12

WHERE:

I=	PERCENT IMPERVIOUS COVER	
R=	VOLUMETRIC RUNOFF COEFFICIENT; 0.05+0.009(I)	
A=	25.1	ACRES

I=	86	%
R	0.824	
A=	25.1	ACRES
WQV=	1.72	AC-FT
	75,077	CU.FT

75,100 CU FT. OF STORAGE PROVIDED AT POND STAGE ELEVATION 252.95.

A-A
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

B-B
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

0 20 40

JOSHUA R. HOUGH
CIVIL ENGINEER
REG. NO. 31834

HASKELL ARCHITECTS and ENGINEERS, P.C.
CONNECTICUT- Architecture and Engineering # 0000056

The Haskell Company
111 Riverside Avenue
Jacksonville, Florida 32202
Phone # (904) 791-4500

HASKELL

YELLIN TRAILER PARKING LOT

Frito Lay Good fun!

No	DESCRIPTION	DATE

DRAWN BY:	CHECKED BY:
SBC/MSL	JRH

AE JOB NUMBER
3401365

ENLARGED GRADING AND DRAINAGE PLAN

1C-440
SHEET NUMBER

Table 1. Downstream Defender® Design Chart.

Model Number and Diameter		Peak Treatment Flow Rate		Maximum Pipe Diameter		Oil Storage Capacity		Sediment Storage Capacity		Minimum Distance from Outlet Invert to Top of Rim		Standard Height from Outlet Invert to Sump Floor	
(ft)	(m)	(cfs)	(L/s)	(in)	(mm)	(gal)	(L)	(yd^3)	(m^3)	(ft)	(m)	(ft)	(m)
4	1.2	3.0	85	12	300	70	265	0.70	0.53	2.8	0.85	4.1	1.25
6	1.8	8.0	227	18	450	216	818	2.10	1.61	3.2	0.98	5.9	1.80
8	2.4	15.0	425	24	600	540	2,044	4.65	3.56	4.2	1.28	7.7	2.35
10	3.0	25.0	708	30	750	1,050	3,975	8.70	6.65	5.0	1.52	9.4	2.85
12*	3.7	38.0	1,076	36	900	1,770	6,700	14.70	11.24	5.6	1.71	11.2	3.41

*Not available in all areas. Contact Hydro International for details.

Hydro International, 94 Hutchins Drive, Portland, ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212
Email: stormwaterinquiry@hydro-int.com Web: www.hydro-int.com

Stormwater Solutions
hydro-int.com/dsdefender
DDSS1604

WATER QUALITY VOLUME
IMPERVIOUS AREA=21.5 AC

WQV TO DD - 2
AREA = 5.79 AC.
WQ PROVIDED = 3.65 CFS

DOWNSTREAM
DEFENDER DD - 1

WQV TO DD - 1
AREA = 4.07 AC.
WQ PROVIDED = 2.56 CFS

DOWNSTREAM
DEFENDER DD - 1

EXISTING
FRITO LAY FACILITY
FFE = 283.00

SEG. 1

LEGEND

- EFFECTIVE WATER QUALITY VOLUME AREA
- WATER QUALITY VOLUME AREA TO DOWN STREAM DEFENDER #1
- WATER QUALITY VOLUME AREA TO DOWN STREAM DEFENDER #2

0 60 120

JOSHUA R. HOUGH
CIVIL ENGINEER
REG. NO. 31934

HASKELL ARCHITECTS and ENGINEERS, P.C.
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111 Riverside Avenue
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Phone # (904) 791-4500

HASKELL

YELLIN TRAILER PARKING LOT

Frito Lay Good fun!

No	DESCRIPTION	DATE

DRAWN BY:	CHECKED BY:
SBC/MSL	JRH

AE JOB NUMBER
3401365

BMP DRAINAGE AREA MAP

1C-172
SHEET NUMBER

Downstream Defender®

High-Level Treatment in a Small Footprint

Product Profile

The Downstream Defender® is an advanced vortex separator used to treat stormwater runoff in pretreatment or stand-alone applications. Its unique flow-modifying internal components distinguish the Downstream Defender® from conventional and simple swirl separators that typically bypass untreated peak flows to prevent washout of captured pollutants. Its wide treatment flow range, low headloss, small footprint and low-profile make it a compact and economical solution for capturing nonpoint source pollution.

Components

1. Inlet to Precast Vortex Chamber
2. Cylindrical Baffle
3. Center Shaft
4. Outlet Pipe
5. Sediment Storage Sump
6. Access Lid

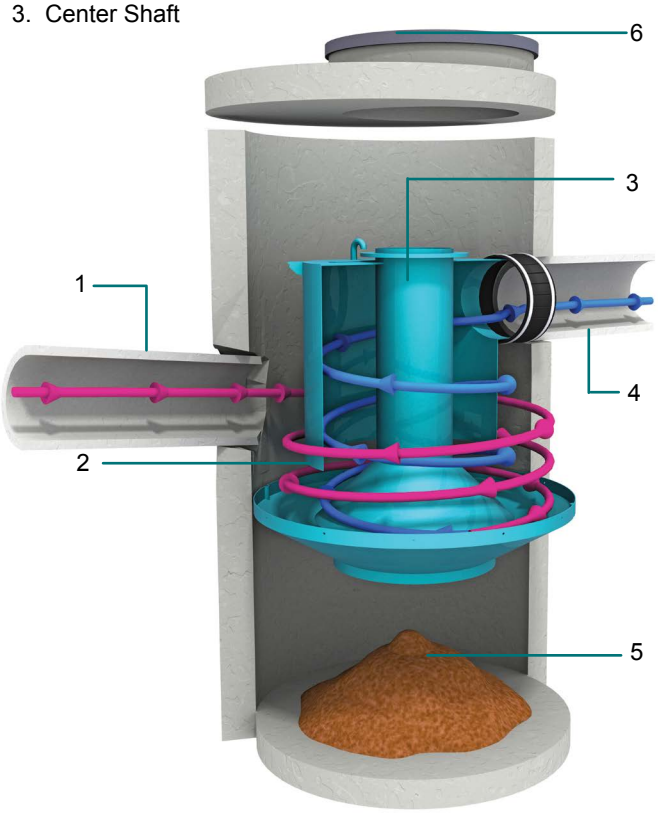

Fig.1 The Downstream Defender® has internal components designed to maximize pollutant capture and minimize pollutant washout.

Applications

- Removal of total suspended solids (TSS), floatable trash and petroleum products from stormwater runoff
- New construction or redevelopment of commercial and residential sites
- Pollutant hotspots such as maintenance yards, parking lots, gas stations, streets, highways, airports and transportation hubs
- Site constrained LID or green infrastructure based developments
- LEED® development projects

Advantages

- Special internal components maximize pollutant capture and minimize footprint, headloss and washout
- Captures and retains a wide range of TSS particles
- High peak treatment flow rates
- Treats the entire storm with no washout or untreated bypass flows
- Low maintenance requirements - no dredging required, and no screens or media to block
- Variable inlet/outlet angles for ease of site layout

How it Works

Advanced hydrodynamic vortex separation is a complex hydraulic process that augments gravity separation with low-energy rotary forces. The flow modifying internal components used in the Downstream Defender® harness the energy from vortex flow and maximize the time for separation to occur while deflecting high scour velocities (**Fig.1**).

Polluted stormwater is introduced tangentially into the side of the precast vortex chamber to establish rotational flow. A cylindrical baffle with an inner center shaft creates an outer (magenta arrow) and inner (blue arrow) spiraling column of flow and ensures maximum residence time for pollutant travel between the inlet and outlet.

Oil, trash and other floating pollutants are captured and stored on the surface of the outer spiraling column. Low energy vortex motion directs sediment into the protected sump region. Only after following a long three-dimensional flow path is the treated stormwater discharged from the outlet pipe. Maintenance ports at ground level provide access for easy inspection and clean-out.

Downstream Defender®

Drainage Profile

The Downstream Defender® is designed with a submerged tangential inlet to minimize turbulence within the device. Turbulence increases system headlosses and reduces performance by keeping pollutant particles in suspension.

The inlet elevation of the Downstream Defender® is located one inlet pipe diameter lower than the elevation of the outlet invert (**Fig.2**). This arrangement ensures that influent flows are introduced to the treatment chamber quiescently below the water surface elevation, minimizing turbulence.

The unique flow-modifying internal components also minimize hydraulic losses. There are no internal weirs or orifices; large clear openings ensure low headloss at peak flow rates with little risk of blockages that cause upstream flooding.

Sizing & Design

Inspections, Repairs and Clean-out

Nobody maintains our systems better than we do. To ensure optimal, ongoing device performance, be sure to recommend Hydro International as a preferred service and maintenance provider to your clients.

Call **1 (800) 848-2706** to schedule an inspection and clean-out or learn more at **hydro-int.com/service**

The Downstream Defender® can be used to meet a wide range of stormwater treatment objectives. It is available in 5 precast models that fit easily into the drainage network (**Table 1)**. Selection and layout of the appropriate Downstream Defender® model depends on site hydraulics, site constraints and local regulations. Both online (**Fig.3a)** and offline (**Fig.3b**) configurations are common.

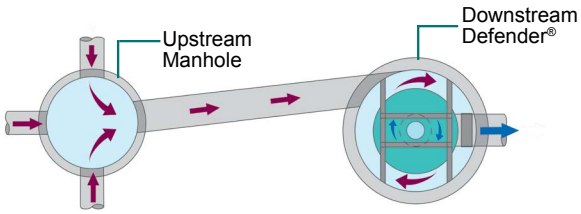

Fig.3a The Downstream Defender® in an online configuration.

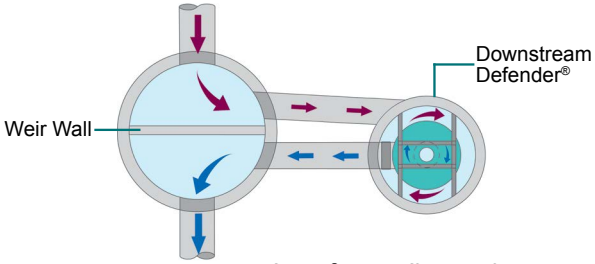

Fig.3b The Downstream Defender® in an offline configuration.

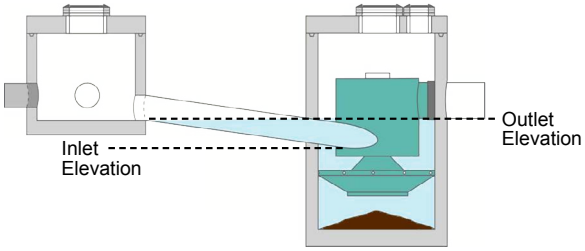

Fig.2 The Downstream Defender® has a submerged inlet that reduces headloss and improves efficiency of pollutant capture.

Free *Stormwater Sizing Tool*

This simple online tool will recommend the best separator, model size and online/offline arrangement based on site-specific data entered by the user.

Go to hydro-int.com/sizing to access the tool.

Table 1. Downstream Defender® Design Chart.

Model Number and Diameter		Peak Treatment Flow Rate		Maximum Pipe Diameter		Oil Storage Capacity		Sediment Storage Capacity		Minimum Distance from Outlet Invert to Top of Rim		Standard Height from Outlet Invert to Sump Floor	
(ft)	(m)	(cfs)	(L/s)	(in)	(mm)	(gal)	(L)	(yd^3)	(m^3)	(ft)	(m)	(ft)	(m)
4	1.2	3.0	85	12	300	70	265	0.70	0.53	2.8	0.85	4.1	1.25
6	1.8	8.0	227	18	450	216	818	2.10	1.61	3.2	0.98	5.9	1.80
8	2.4	15.0	425	24	600	540	2,044	4.65	3.56	4.2	1.28	7.7	2.35
10	3.0	25.0	708	30	750	1,050	3,975	8.70	6.65	5.0	1.52	9.4	2.85
12*	3.7	38.0	1,076	36	900	1,770	6,700	14.70	11.24	5.6	1.71	11.2	3.41

*Not available in all areas. Contact Hydro International for details.

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