# STORMWATER MANAGEMENT REPORT

**Prepared for:** 

# Elite Properties at Long Hill, LLC

Proposed Residential Development Block 10801, Lot 3 621 Valley Road (C.R. 512) Township of Long Hill Morris County, NJ

Prepared by:



245 Main Street, Suite 110 Chester, NJ 07930 (908) 879-9229

Joseph G. Jaworski, PE, CME, CFM

NJ Professional Engineer License #36618

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# I. <u>INTRODUCTION</u>

The intent of this study is to analyze the stormwater drainage conditions that will occur as a result of the proposed multi-family residential building, parking facilities, and associated site improvements for the site located at 621 Valley Road in the Township of Long Hill, Morris County, New Jersey and specifically identified as Block 10801, Lot 3 on the Township of Long Hill Tax Maps. The site is currently undeveloped and consists of primarily wooded areas.

Under proposed conditions, the site will be developed to contain one (1) apartment building with surface level parking and associated driveway, as shown on the accompanying engineering drawings. The southern and central portions of the lot, approximately 3.3 acres, is to remain undisturbed.

# II. EXISTING DRAINAGE CONDITIONS

The overall subject site consists of 5.07 acres and is currently undeveloped, consisting of primarily wooded areas, as well as wetlands located on the eastern and western sides of the property near the Valley Road frontage.

SOIL TYPE (SYMBOL)	SOIL TYPE (NAME)	HYDROLOGIC SOIL GROUP
WhpB	Whippany silt loam, 3 to 8 percent slopes	С
BhdAt	Biddeford silt loam, 0 to 2 percent slopes	D

Based on the Morris County Soil Survey, the soil types native to the site include:

The site has been evaluated using the TR-55 'Urban Hydrology for Small Watersheds' standards and with the following existing drainage sub-watershed areas as depicted on the Existing Drainage Area Map:

# EXISTING DRAINAGE AREA 1:

This study area includes the southern portion of the subject property, consisting primarily of undisturbed wooded areas. The stormwater runoff generated from this area flows in a southerly direction towards the Passaic River, to be identified as Point of Analysis 1 (POA #1). The Runoff Curve Numbers, included within the Appendix of this Report, were chosen to best reflect the existing site conditions as outlined in the USDA's "Urban Hydrology for Small Watersheds: TR-55," including the hydrologic soil groups C and D. Furthermore, this drainage area includes a subarea identified as EX-DA-1A described below:

*EX DA-1A:* This subarea contains the portion of Drainage Area 1 to remain undisturbed under proposed conditions and consists primarily of wooded areas. This subarea only includes areas to remain undisturbed, and is therefore exempt from the reduction criteria set forth by the Township of Long Hill and NJAC 7:8.

### **EXISTING DRAINAGE AREA 2:**

This area includes the eastern majority of the parcel consisting primarily wooded areas, and contains soils belonging to hydrologic group C. The stormwater runoff generated from this area flows in a northeasterly direction towards the existing stormwater conveyance system within the Valley Road right-of-way, identified as Point of Analysis 2 (POA #2). Runoff Curve Numbers, included within the Appendix of this Report, were chosen to best reflect the existing site conditions as outlined in the USDA's "Urban Hydrology for Small Watersheds: TR-55." This drainage area includes a subarea identified as EX-DA-2A described below.

*EX DA-2A:* This subarea consists of the eastern and western portions of Existing Drainage Area 2, which is comprised of primarily wooded and wetlands areas connected by an existing culvert. This subarea contains areas to remain undisturbed, and is therefore exempt from the reduction criteria set forth by the Township of Long Hill and NJAC 7:8.

### III. PROPOSED DRAINAGE CONDITIONS

Under proposed conditions, the site will be developed with a multifamily residential building, surface level parking and associated site improvements including stormwater management facilities to mitigate the increased stormwater runoff resulting from the additional impervious area and provide water quality measures. The proposed site improvements will result in an overall increase in impervious coverage of approximately 56,000 SF (1.29 acres). The proposed design serves to match the existing drainage patterns to the maximum extent practical. The site has been evaluated using the TR-55 'Urban Hydrology for Small Watersheds' standards and with the following proposed drainage sub-watershed areas as depicted on the Proposed Drainage Area Map:

### DRAINAGE AREA 1A:

This area includes the southern majority of the subject site, consisting of a wooded area which is to remain undisturbed. Soils within this study area belong to hydrologic group D. The stormwater generated from this area flows in a southerly direction towards the Passaic River and contributes to POA #1. This area is to remain undisturbed under proposed conditions and is therefore exempt from the reduction criteria set forth by the Township of Long Hill and NJAC 7:8. A time of concentration of 15 minutes has been calculated and utilized for this drainage area.

### DRAINAGE AREA 1B:

This area includes a portion of the open space located to the south of the proposed building. The stormwater runoff generated from this area flows in a southerly direction towards the Passaic River and contributes to Point of Analysis 1 (POA #1). Soils within this area primarily belong to hydrologic soil group C. The Runoff Curve Numbers, included within the Appendix of this Report, were chosen to best reflect the proposed site conditions as outlined in the USDA's "Urban Hydrology for Small Watersheds: TR-55." A time of concentration of 15 minutes has been calculated and utilized for this drainage area.

#### **DRAINAGE AREA 2**:

This study area consists of the proposed building roof area, southern portion of the driveway, and portions of the open space areas throughout the parking area. Stormwater runoff generated from this area is collected by proposed on-site inlets and is conveyed to a proposed underground basin (Basin A) located beneath the parking garage. Runoff within this area is conveyed through either the Contech Stormfilter water quality unit or the proposed rain garden before entering the underground basin. Ultimately, this runoff is discharged at a controlled rate to the south of the building, contributing to POA #1. Soils from this area belong to hydrologic soil group C, and the Runoff Curve Numbers, included within the Appendix of this Report, were chosen to best reflect the proposed site conditions as outlined in the USDA's "Urban Hydrology for Small Watersheds: TR-55." A time of concentration of 10 minutes has been utilized for this analysis.

#### **DRAINAGE AREA 3**:

This study area includes the northern parking area and northern portion of the driveway. Runoff generated from this area flows in a northerly direction towards proposed on-site inlets and is directed towards the aboveground basin (Basin B) located along the Passaic Valley Road frontage. Runoff is detained, treated, and released at a controlled rate to the existing stormwater conveyance system located within the Valley Road right-of-way, contributing to POA #1. Soils within this study area belong to hydrological group C, and a time of concentration of 10 minutes was utilized for this analysis. The Runoff Curve Numbers, included within the VaDA's "Urban Hydrology for Small Watersheds: TR-55."

#### DRAINAGE AREA 4A:

This study area includes the areas to the north of the proposed building on either side of the driveway, consisting primarily of wooded area and wetlands. Stormwater runoff generated from this area flows offsite in a northeasterly direction towards the existing conveyance system within the Valley Road right-of-way and contributes to POA #2. A time of concentration of 31.6 minutes has been calculated and used for this analysis. These areas are to remain undisturbed under proposed conditions and are therefore exempt from the reduction criteria set forth by the Township of Long Hill and NJAC 7:8.

### DRAINAGE AREA 4B:

This study area consists of open space areas located along the proposed retaining walls and building, within the limits of disturbance. Runoff generated by this area flows undetained towards the wooded areas described in Drainage Area 4A. These areas are within the limits of disturbance and are therefore subject to the reduction criteria set forth by the Township of Long Hill and NJAC 7:8. The Runoff Curve Numbers, included within the Appendix of this Report, were chosen to best reflect the existing site conditions as outlined in the USDA's "Urban Hydrology for Small Watersheds: TR-55," and a time of concentration of 31.6 minutes has been calculated and utilized for this drainage area. This area is to remain undisturbed under proposed conditions and is therefore exempt from the reduction criteria set forth by the Township of Long Hill and NJAC 7:8.

### IV. DESIGN METHODOLOGY

The primary design constraints for this project are based on requirements established in the Township of Long Hill Land Development Ordinance, New Jersey Soil Erosion and Sediment Control Standards, and NJAC 7:8. More specifically, the stormwater management design will serve to maintain existing drainage patterns to the maximum extent practical and reduce proposed runoff rates when compared to pre-development runoff rates for disturbed areas. The proposed project will disturb over 1 acre of land and impervious surface coverage will be increased by more than ¼ acre when compared to existing conditions. As a result, the project meets the definition of a "major development" as defined NJAC 7:8. Furthermore, the project has been designed to meet water quality standards, as well as the allowable post-development peak flow rates for the disturbed area of 50%, 75% and 80% for the 2-, 10- and 100- year storms set forth by the Township of Long Hill and NJAC 7:8.

In order to prepare the stormwater calculations for the project, extensive initial investigation of the property and topographic survey was performed. Control Point Associates, Inc. was contracted to prepare a Boundary and Topographic of the existing site. Based on a review of the existing site conditions and the Survey, the Drainage Area Maps for the existing and proposed site conditions as defined within this report were established. The grading plan within the accompanying engineering drawings was developed for the proposed site improvements with consideration to the existing drainage patterns.

The 2-, 10- and 100-year quantity design storms are based upon the New Jersey 24 Hour Rainfall Frequency Data for Morris County as published by the NOAA Atlas 14 Type D rainfall distribution. Curve number calculations have been included within the Appendix and are based upon HSG C and D. Pervious and impervious areas were modeled separately as suggested in the NJDEP Stormwater Management Best Management Practices (BMP) Manual.

2-year:	50% reduction (50% of Existing)
10-year:	25% reduction (75% of Existing)
100-year:	20% reduction (80% of Existing)

### V. <u>DETENTION BASIN A</u>

The stormwater runoff generated by DA2 is collected by various proposed inlets and conveyed to the underground detention basin located beneath the western portion of the proposed building. The runoff is detained and released at a controlled rate through the use of an internal outlet control structure, and discharges to the south towards the Passaic River, specifically POA #1. Associated calculations are included in the Appendix of this report and details have been provided on the accompanying engineering drawings.

The basin consists of Cupolex reinforced concrete slab, walls and foundation, with polypropylene plastic forms, approximately 48" in height. The system provides approximately 14,750 cubic feet of storage and has been designed in accordance with the New Jersey Stormwater Best Management Practices Manual (BMP). The basin includes a built-in outlet control structure and is water tight, as shown on the accompanying drawings.

### VI. <u>DETENTION BASIN B</u>

The stormwater runoff generated by DA3 is collected and conveyed to the proposed aboveground detention basin, Basin B, located in the northwestern corner of the subject property. The basin has been designed to accommodate the 100-year design storm, providing a maximum storage of approximately 3,300 cubic feet, and includes a sand filter to provide water quality treatment, designed in accordance with the New Jersey Stormwater Best Management Practices Manual (BMP). The runoff is detained and released at a controlled rate through the use of an outlet control structure and discharges into the existing conveyance system within the Valley Road right-of-way. Associated calculations are included in the Appendix of this report and details have been provided on the accompanying engineering drawings.

### VII. WATER QUANTITY

As required by the Township of Long Hill and NJAC 7:8, the runoff from the area of disturbance must meet the 50%, 75% and 80% reductions for the 2-, 10-, and 100-year storms. The three aforementioned points of analysis have been used to analyze and ensure reduction of peak flows discharging to each point. As such, the required reduction factors were applied to the peak discharge rates of the areas falling within the limits of

disturbance of the entire site, and allowable runoff rates were then calculated. The following demonstrates the results of these calculations:

NJDEP Flow Reductions - POA 1 (CFS)					
Design Storm	Existing Total	Within LOD	Outside of LOD	Allowable	Proposed
2-Year	2.81	0.60 x (0.50) = 0.30	2.21	2.51	2.48
10-Year	5.71	1.37 x (0.75) = 1.03	4.34	5.37	4.73
100-Year	11.45	2.97 x (0.80) = 2.38	8.48	10.86	10.00

NJDEP Flow Reductions - POA 2 (CFS)					
Design Storm	Existing Total	Within LOD	Outside of LOD	Allowable	Proposed
2-Year	1.66	0.80 x (0.50) = 0.40	0.86	1.26	1.13
10-Year	3.81	1.84 x (0.75) = 1.38	1.97	3.35	2.67
100-Year	8.30	4.02 x (0.80) = 3.22	4.29	7.51	5.69

As indicated above, the peak flows for each point of analysis have been reduced when compared to existing conditions. Additionally, the proposed runoff rates for the overall site meet the allowable runoff rates per the required reduction factors, thus meeting the requirements set forth in the Township ordinance and N.J.A.C. 7:8.

# VIII. WATER QUALITY

The development proposes more than one-quarter (1/4) acre of impervious coverage and is therefore required to meet the 80% TSS removal rate requirement set forth by the Township of Long Hill and NJAC 7:8. The proposed roof area is considered 'clean' runoff in accordance with the NJDEP BMP Manual; therefore, treatment of runoff generated by same prior to discharge to the underground basins and existing inlets is not required. Drainage areas DA-1A and DA4 are undisturbed areas, and DA-4B does not contain proposed impervious coverage, therefore, runoff generated from these areas is exempt from the water quality requirements.

As shown on the Inlet Area Map, a portion of the runoff generated by the proposed driveway will be collected by Inlet 113. This runoff is conveyed through a Contech Stormfilter Water Quality Unit, an approved NJDEP Stormwater Manufactured Treatment Device designed to provide a TSS removal rate of 80%. The Water Quality Unit is designed to treat the runoff volume generated by the water quality design storm and to allow larger storm events to bypass. Details associated with this device are included in the attached engineering drawings.

Runoff generated within Inlet Area 114 flows towards the proposed rain garden to the north of the proposed building. The raingarden has been designed to provide 80% TSS removal in accordance with the New Jersey BMP manual to accommodate the volume generated by this area. Treated runoff will be conveyed to the proposed conveyance system via an underdrain and overflow is collected by the proposed inlet 114. This treated runoff is conveyed to the proposed detention basin, Basin A and ultimately discharged to the south towards the Passaic River.

# IX. <u>GROUNDWATER RECHARGE</u>

As mentioned above, the project is considered a "major development" under the guidelines set forth by the Township of Long Hill and NJAC 7:8, and is therefore subject to groundwater recharge requirements set forth in same. However, upon field testing conducted by Dynamic Earth, LLC, there is a presence of rock throughout the site that presents unsuitable conditions for groundwater recharge under existing conditions. As such, the proposed underground basins do not allow for infiltration, and meeting the groundwater recharge requirements set forth by the Township and NJAC 7:8 is not feasible. A waiver from providing groundwater recharge BMP's on the developed site is warranted and justified.

# X. <u>CONCLUSION</u>

The proposed development has been designed with provisions for the safe and efficient control of stormwater runoff in a manner that will not adversely impact the existing drainage patterns, adjacent roadways, or adjacent parcels.

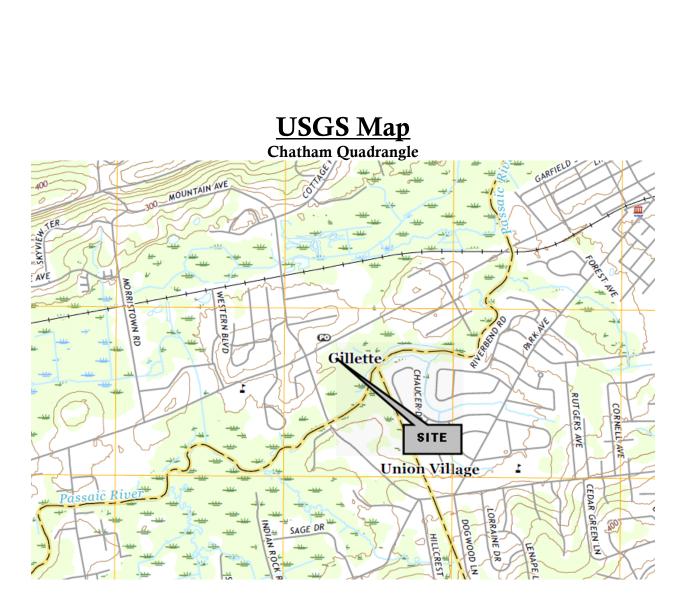
The stormwater management design reduces peak flow rates for the proposed development area and meets the minimum peak flow reduction for the 2, 10 and 100-year storm frequencies and/or reduces runoff to be under the curve of the existing hydrographs at all times as required by the Township of Long Hill and NJAC 7:8.

The water quality TSS removal requirements set forth by the Township of Long Hill and NJAC 7:8 have been satisfied by use of an NJDEP approved manufactured treatment device, to achieve the 80% TSS required removal rate for the development Ordinance and NJAC 7:8.

# APPENDIX

# **USGS MAP**





245 Main Street, Suite 110, Chester, NJ 07930 T. 908-879-9229

100 NE 5<sup>th</sup> Avenue, Suite B2, Delray Beach, FL 33483 T. 561-291-8570 14521 Old Katy Road, Suite 270, Houston, TX 77079 T. 281-789-6400 714 S. Greenville Avenue, Suite 100, Allen, TX 75002 T. 972-534-2100

# CONDUIT OUTLET PROTECTION CALCULATIONS



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Date:	7/7/2020	
Project:	Elite Long Hill	
Project No:	0555-99-010	

Calculated By: DRL Checked By: WB

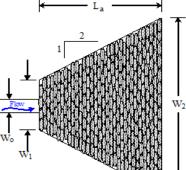
#### Conduit Outlet Protection Calculations Rip Rap Pad # 501

Design Parameters:		
Design Storm Flow for 25 Year, Q	1.19	cfs
Vertical Dimension of Outlet Pipe, <i>D</i> <sub>o</sub>	15	in
Horizontal Dimension of Outlet Pipe, $W_o$	15	in
Tailwater Depth, <i>TW</i> <sup>1</sup>	0.25	ft

#### Apron Dimension Calculations:

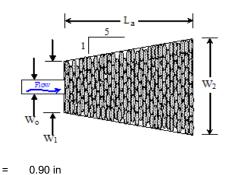
Unit Dicharge,  $q = Q/D_o = 0.95$  cfs per foot

• Case I:  $TW < 1/2 D_o$ Apron Length,  $L_a = \frac{1.8q}{D_o^{-1/2}} + 7D_o = 10.28 \text{ ft}$  or  $L_a = 11 \text{ ft}$ Width,  $W_1 = 3W_o = -3.75 \text{ ft}$  or  $W_1 = -4 \text{ ft}$ Width,  $W_2 = 3W_o + L_a = -14.03 \text{ ft}$  or  $W_2 = -15 \text{ ft}$ 



• Case II:  $TW \ge 1/2 D_o$ 

Apron Length, 
$$L_a = \frac{3q}{D_o^{1/2}} =$$
  
Width,  $W_1 = 3W_o =$   
Width,  $W_2 = 3W_o + 0.4L_a =$ 



#### **Rip Rap Stone Size Calculations**

Median Stone,  $d_{50} = \frac{0.02q^{1.33}}{TW}$ 

d 50 = 6 in

**W** 2

#### Notes:

- 1. Where there is a well-defined channel downstream of the apron, the bottom width of the apron shall be at least equal to the bottom width of the channel and the structural lining shall extend at least one foot above the tailwater elevation, but no lower than two-thirds of the vertical conduit dimension above the conduit invert.
- 2. The side slopes shall be 2:1 or flatter.
- 3. The bottom grade shall be 0.0% (level).
- 4. There shall be no overfall at the end of the apron or at the end of the culvert.
- 5. Fifty (50) percent by weight of the rip-rap mixture shall be smaller than the median size stone designated as d<sub>50</sub>. The largest stone size in the mixture shall be 1.5 times the d<sub>50</sub> size. The rip-rap shall be reasonably well graded.
- 6. The thickness of the rip-rap apron may be two (2) times the median stone diameter provided that the apron is constructed on a bedding of four (4) inches of 3/4 inch clean stone on approved filter fabric material.
- 7. Rip-rap and filter fabric shall meet the standards of the governing Soil Conservation District as well as the requirements of the local municipality.
- 8. No bends or curves at the intersection of the conduit and apron will be permitted.

#### Footnote:

- 1. Tailwater depth shall be the 2-year storm if discharging into a detention basin. For areas where tailwater cannot be computed, use  $TW = 0.2D_{o}$ .
- 2. For multiple pipes, increase rip-rap sizes by 25% when pipe spacing is greater than or equal to  $1/4W_{o}$ .



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Date:	7/7/2020	
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Calculated By: DRL Checked By: WB

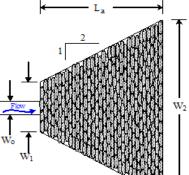
#### Conduit Outlet Protection Calculations Rip Rap Pad # 211

Design Parameters:		
Design Storm Flow for 25 Year, Q	0.51	cfs
Vertical Dimension of Outlet Pipe, <i>D</i> <sub>o</sub>	15	
Horizontal Dimension of Outlet Pipe, $W_o$	15	in
Tailwater Depth, <i>TW</i> <sup>1</sup>	0.25	ft

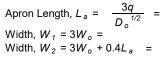
#### Apron Dimension Calculations:

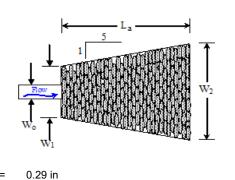
Unit Dicharge,  $q = Q/D_{o} = 0.41$  cfs per foot

• Case I:  $TW < 1/2 D_o$ Apron Length,  $L_a = \frac{1.8q}{D_o^{1/2}} + 7D_o = 9.41 \text{ ft}$  or  $L_a = 10 \text{ ft}$ Width,  $W_1 = 3W_o = 3.75 \text{ ft}$  or  $W_1 = 4 \text{ ft}$ Width,  $W_2 = 3W_o + L_a = 13.16 \text{ ft}$  or  $W_2 = 14 \text{ ft}$ 



• Case II: *TW* ≥ 1/2 *D* ₀





#### Rip Rap Stone Size Calculations:

Median Stone, $d_{50}$ =	0.02 <i>q</i> <sup>1.33</sup>

d 50 = 6 in

**W** 2

#### Notes:

- 1. Where there is a well-defined channel downstream of the apron, the bottom width of the apron shall be at least equal to the bottom width of the channel and the structural lining shall extend at least one foot above the tailwater elevation, but no lower than two-thirds of the vertical conduit dimension above the conduit invert.
- 2. The side slopes shall be 2:1 or flatter.
- 3. The bottom grade shall be 0.0% (level).
- 4. There shall be no overfall at the end of the apron or at the end of the culvert.
- 5. Fifty (50) percent by weight of the rip-rap mixture shall be smaller than the median size stone designated as d<sub>50</sub>. The largest stone size in the mixture shall be 1.5 times the d<sub>50</sub> size. The rip-rap shall be reasonably well graded.
- 6. The thickness of the rip-rap apron may be two (2) times the median stone diameter provided that the apron is constructed on a bedding of four (4) inches of 3/4 inch clean stone on approved filter fabric material.
- 7. Rip-rap and filter fabric shall meet the standards of the governing Soil Conservation District as well as the requirements of the local municipality.
- 8. No bends or curves at the intersection of the conduit and apron will be permitted.

#### Footnote:

- 1. Tailwater depth shall be the 2-year storm if discharging into a detention basin. For areas where tailwater cannot be computed, use  $TW = 0.2D_{o}$ .
- 2. For multiple pipes, increase rip-rap sizes by 25% when pipe spacing is greater than or equal to  $1/4W_{o}$ .



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Date:	7/7/2020	
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Calculated By: DRL Checked By: WB

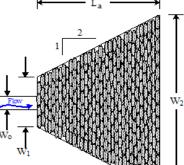
#### Conduit Outlet Protection Calculations Rip Rap Pad # 221

Design Parameters:		
Design Storm Flow for 25 Year, Q	0.47	cfs
Vertical Dimension of Outlet Pipe, D <sub>o</sub>	15	in
Horizontal Dimension of Outlet Pipe, $W_o$	15	in
Tailwater Depth, <i>TW</i> <sup>1</sup>	0.25	ft

#### Apron Dimension Calculations:

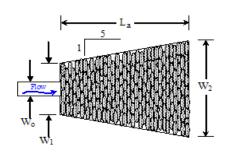
Unit Dicharge,  $q = Q/D_o = 0.38$  cfs per foot

• Case I:  $TW < 1/2 D_o$ Apron Length,  $L_a = \frac{1.8q}{D_o^{1/2}} + 7D_o = 9.36 \text{ ft}$  or  $L_a = 10 \text{ ft}$ Width,  $W_1 = 3W_o = 3.75 \text{ ft}$  or  $W_1 = 4 \text{ ft}$ Width,  $W_2 = 3W_o + L_a = 13.11 \text{ ft}$  or  $W_2 = 14 \text{ ft}$ 



• Case II:  $TW \ge 1/2 D_o$ 

Apron Length, 
$$L_a = \frac{3q}{D_o^{1/2}} =$$
  
Width,  $W_1 = 3W_o =$   
Width,  $W_2 = 3W_o + 0.4L_a =$ 



#### **Rip Rap Stone Size Calculations**

Median Stone,  $d_{50} = \frac{0.02q^{1.33}}{TW}$ 

*d* 50 = 6 in

**W**<sub>2</sub>

#### Notes:

- 1. Where there is a well-defined channel downstream of the apron, the bottom width of the apron shall be at least equal to the bottom width of the channel and the structural lining shall extend at least one foot above the tailwater elevation, but no lower than two-thirds of the vertical conduit dimension above the conduit invert.
- 2. The side slopes shall be 2:1 or flatter.
- 3. The bottom grade shall be 0.0% (level).
- 4. There shall be no overfall at the end of the apron or at the end of the culvert.

=

0.26 in

- 5. Fifty (50) percent by weight of the rip-rap mixture shall be smaller than the median size stone designated as d<sub>50</sub>. The largest stone size in the mixture shall be 1.5 times the d<sub>50</sub> size. The rip-rap shall be reasonably well graded.
- 6. The thickness of the rip-rap apron may be two (2) times the median stone diameter provided that the apron is constructed on a bedding of four (4) inches of 3/4 inch clean stone on approved filter fabric material.
- 7. Rip-rap and filter fabric shall meet the standards of the governing Soil Conservation District as well as the requirements of the local municipality.
- 8. No bends or curves at the intersection of the conduit and apron will be permitted.

#### Footnote:

- 1. Tailwater depth shall be the 2-year storm if discharging into a detention basin. For areas where tailwater cannot be computed, use  $TW = 0.2D_{o}$ .
- 2. For multiple pipes, increase rip-rap sizes by 25% when pipe spacing is greater than or equal to  $1/4W_{o}$ .

# SOIL SURVEY



National Cooperative Soil Survey

**Conservation Service** 

		MAP L	EGEND		MAP INFORMATION
А	Area of Int	erest (AOI)		Spoil Area	The soil surveys that comprise your AOI were mapped at
Soils	Area of Interest (AOI)	۵	Stony Spot	1:24,000.	
Soils Soil Map Unit Polygor		0	Very Stony Spot	Warning: Soil Map may not be valid at this scale.	
		\$2	Wet Spot	Enlargement of maps beyond the scale of mapping can cause	
		Δ	Other	misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of	
	Soil Map Unit Points		-	Special Line Features	contrasting soils that could have been shown at a more detailed
Special Point Features		Water Fea		scale.	
	<ul> <li>Blowout</li> <li>Borrow Pit</li> <li>Clay Spot</li> <li>Closed Depression</li> <li>Gravel Pit</li> </ul>		~	Streams and Canals	Please rely on the bar scale on each map sheet for map
			Transport	ation	measurements.
			+++	Rails	Source of Map: Natural Resources Conservation Service Web Soil Survey URL:
			~	Interstate Highways	Coordinate System: Web Mercator (EPSG:3857)
	Gravel Pit	~	US Routes	Maps from the Web Soil Survey are based on the Web Mercato	
	0 0 0	Gravelly Spot	~	Major Roads	projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as th
	Ø	Landfill	~	Local Roads	Albers equal-area conic projection, should be used if more
	A.	Lava Flow	Backgrou	nd Aerial Photography	accurate calculations of distance or area are required.
	عليه	Marsh or swamp	No.		This product is generated from the USDA-NRCS certified data of the version date(s) listed below.
	$\infty$	Mine or Quarry			Soil Survey Area: Morris County, New Jersey
	0	Miscellaneous Water			Survey Area Data: Version 14, Sep 16, 2019
	0	Perennial Water			Soil map units are labeled (as space allows) for map scales
	$\sim$	Rock Outcrop			1:50,000 or larger.
	+	Saline Spot			Date(s) aerial images were photographed: Jul 26, 2019—Jul 2019
		Sandy Spot			The orthophoto or other base map on which the soil lines were
	-	Severely Eroded Spot			compiled and digitized probably differs from the background
	<ul> <li>Severely Eroded Spot</li> <li>Sinkhole</li> </ul>				imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.
	ò	Slide or Slip			sinting of high and boundaries may be evident.
	ø	Sodic Spot			



# Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BhdAt	Biddeford silt loam, 0 to 2 percent slopes, frequently flooded	1.7	31.6%
PbpAt	Parsippany silt loam, 0 to 3 percent slopes, frequently flooded	0.7	13.4%
WhpB	Whippany silt loam, 3 to 8 percent slopes	3.0	55.0%
Totals for Area of Interest		5.4	100.0%



# RUNOFF CURVE NUMBER (CN) CALCULATIONS



# EXISTING DRAINAGE AREA SUMMARY AND AVERAGE CURVE NUMBER(CN) CALCULATIONS

Project: Job #: Location:	Elite 0555-99-01 Township o					Computed E Checked By Date:		DRL WB 6/25/2020					
Drainage Area	Impervious Area (acre)	Impervious Area (sf)	Curve Number (CN) Used	HSG C - Wooded Area (acre)		Curve Number (CN) Used	HSG D - Wooded Area (acre)	HSG D - Wooded Area (sf)	Curve Number (CN) Used	Avg. Perv. Curve Number	Total Pervious Area (acres)	Total Area (acres)	TC (Min.)
EX-DA-1	0.00	-	98	0.65	28,383	70	0.00	-	77	70	0.65	0.65	13
EX-DA1 UNDIST		-	98	0.00	-	70	1.60	69,487	77	77	1.60	1.60	13
EX-DA2		-	98	1.36	59,109	70	0.00	-	77	70	1.36	1.36	20
EX-DA2 UNDIST	0.00	-	98	1.45	63,010	70	0.00	-	77	70	1.45	1.45	20
Total	0.00	0.00		3.46	150502.00		1.60	69487.00			5.05	5.05	

Per County Soil Survey - Morris	WhpB	HSG	С	Soil	Whippany silt loam
Per County Soil Survey - Morris	BhdAt	HSG	D	Soil	Biddeford silt loam

Description	Runoff Curve Number (CN) (HSG D)	Runoff Curve Number (CN) (HSG D)
Impervious Surface	98	98
Brush (good)	65	73
Woods (good)	70	77



# PROPOSED DRAINAGE AREA SUMMARY AND AVERAGE CURVE NUMBER(CN) CALCULATIONS

Job #:	Elite 0555-99-010 Township of					Computed B Checked By Date:					DRL WB 6/24/2020								
Drainage Area	Impervious Area (acre)	Impervious Area (sf)	Curve Number (CN) Used	HSG C - Wooded Area (acre)		Curve Number (CN) Used	HSG C - Open Space (acre)	HSG C - Open Space (sf)		HSG D - Wooded Area (acre)	HSG D - Wooded Area (sf)	Curve Number (CN) Used	HSG D - Open Space (acre)	HSG D - Open Space(sf)	Curve Number (CN) Used	Avg. Perv. Curve Number	Total Pervious Area (acres)	Total Area (acres)	TC (Min.)
DA-1B	0.00		98	0.00		70	0.26	11,470	74	0.00	-	77	0.00	-	80	74	0.26	0.26	15
DA-1A	0.00		98	0.00		70	0.00		74	1.60	69,487	77	0.00	-	80	77	1.60	1.60	15
DA2-Roof	0.67	29,161	98	0.00		70	0.00		74	0.00	-	77	0.00	-	80	N/A	0.00	0.67	10
DA-2	0.41	17,813	99	0.00	-	70	0.02	785	74	0.00	-	77	0.00	-	80	74	0.02	0.43	10
DA-3 (detained)	0.24	10,408	100	0.00		70	0.12	5,031	74	0.00	-	77	0.00	-	80	74	0.12	0.35	10
DA-4 (undetained)	0.00	-	98	1.45	63,137	70	0.29	12,546	74	0.00	-	77	0.00	-	80	71	1.74	1.74	32
Total	1.32	57382.00		1.45	63137.00					1.60	69487.00						3.73	5.05	
Per County Soil Surve		WhpB	HSG	С		Whippany silt lo													
Per County Soil Surve	y - Morris	BhdAt	HSG	D	Soil	Biddeford silt lo	an												

Per County Soil Surve	y - Morris BhdAt	HSG	D	SOIL	Biddeford silt loa
Description	Runoff Curve Number (CN	) (HSG C)	Runoff Cu	rve Number	CN) (HSG D)
Impervious Surface	98			98	
Open Space	74			80	
Woods (good)	70			77	

PIPE SIZING CALCULATIONS



# **Stormwater Collection System Calculations**

Project: Elite Properties Job #: 0555-99-010 Location: Long Hill, NJ Design Storm: 25 Computed By: DRL Checked By: WB Date: 6/30/2020 Revised: NOTES:

1) Design method used is Rational Method

2) Refer to Weighted Runoff Coefficient table for calculation of incremental areas and C values

PIPE SE	CTION	SUBCATCH MENT AREA	INCR	REMENTAL	CUMULATIVE		TIME OF CONCENTRATION		Ι	PEAK RUNOFF		PIPING INPUT		UT	PIPING DATA			
FROM	ТО	Area (Acres)	"C"	A x C Ac	A x C (acres)	Te to Inlet (min)	Tc in Pipe (min.)	Final Tc (min)	(In/Hr)	Q to Inlet (CFS)	Q cum. for Pipe (CFS)	Dia. (In)	Length (Ft)	Man. "n"	Slope (ft/ft)	Pipe Capacity (cfs)	Full Pipe Velocity (fps)	Actual Pine
113	112	0.10	0.95	0.10	0.10	0.23	10.00	10.00	6.80	0.68	0.68	15.00	56.00	0.01	0.005	4.95	4.04	0.55
112	BASIN A	0.26	0.95	0.25	0.35	0.27	10.00	10.23	6.80	1.70	2.38	15.00	65.00	0.01	0.005	4.95	4.04	1.94
0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	0.00	0.00
212	BASIN B	0.10	0.95	0.10	0.10	0.08	10.00	10.00	6.80	0.68	0.68	15.00	20.00	0.01	0.005	4.95	4.04	0.55
0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	0.00	0.00
222	BASIN B	0.09	0.95	0.09	0.09	0.02	10.00	10.00	6.80	0.61	0.61	15.00	4.00	0.01	0.005	4.95	4.04	0.50

# TIME OF CONCENTRATION (Tc) CALCULATIONS

D DYNAMIC ENGINEERING			Date: Project: oject No:	Elite -	5/2020 Long Hill 5-99-010		
1904 Main Street, Lake Como, NJ 07719 (732) 974-0198		Calculated By: DRL Checked By: WB					
Worksheet 3: Time of Concentration (T <sub>c</sub> )	Calculations						
Land Condition: Existing							
Drainage Area: EX-DA1							
Sheet Flow :							
1. Surface Description	Woods, Light Underbrush						
2. Manning's Roughness Coefficient, $n$ 3. Flow Length, $L \{ total L \leq 100 \text{ ft} \}$	0.4 100.0 ft						
<ol> <li>Two-Year 24-hour Rainfall, p<sub>2</sub> for Warren County</li> <li>Land Slope, s (ft/ft)</li></ol>	. 3.34 in 0.085 ft/ft		3.34	in			
6. Travel Time, $T_t = \frac{0.007 (n L)^{0.8}}{p_2^{0.5} s^{0.4}}$	. 0.196 hr +	0.000 hr +	0.000 hr	=	0.196 hr		
Shallow Concentrated Flow :         7. Surface Description	Unpaved 204.0 ft 0.036 ft/ft 3.06 ft/s . 0.019 hr +	0.000 hr +	0.000 hr	=	0.019 hr		
Channel Flow :12. Pipe Diameter, D13. Cross-Sectional Flow Area, A14. Wetted Perimeter, $p_w$ 15. Hydraulic Radius, $r = A / p_w$ 16. Channel Slope, s17. Pipe Material18. Manning's Roughness Coefficient, n19. Velocity, $V = \frac{1.49 r^{2/3} s^{1/2}}{n}$ 20. Flow Length, L	170.0	175.0					
21. Travel Time, $T_t = \frac{L}{3600 V}$			0.000 hr	=	0.000 hr		
22. Watershed or subarea Time of Concentration, $T_c$ { add $T_t$ in steps 6, 11 a	nd 21 }	······			0.215 hr		
					12 9 min		



1904 Main Street, Lake Como, NJ 07719 (732) 974-0198

Date:	6/25/2020
Project:	Elite - Long Hill
Project No:	0555-99-010

20.3 min

Calculated By: DRL Checked By: WB

### Worksheet 3: Time of Concentration (T<sub>c</sub>) Calculations

Land Condition:	Existing
Drainage Area:	EX-DA-2

# • Sheet Flow :

Sheet Flow :	AB						
1. Surface Description	Woods, Light Underbrush						
2. Manning's Roughness Coefficient, <i>n</i>	0.4						
3. Flow Length, <i>L { total L</i> ≤ 100 <i>ft }</i>	100.0 ft						
4. Two-Year 24-hour Rainfall, $p_2$ for Warren County	3.38 in						
5. Land Slope, <i>s (ft/ft)</i>	0.040 ft/ft						_
6. Travel Time, $T_t = \frac{0.007 (n L)^{0.8}}{p_2^{0.5} s^{0.4}}$	0.264 hr +	⊦ 0.000 hr	+	0.000 hr	=	0.264 hr	

# • Shallow Concentrated Flow :

<ol> <li>Surface Description</li> <li>Flow Length, <i>L</i></li> <li>Watercourse Slope, <i>s</i></li> <li>Average velocity, <i>V { see</i></li> </ol>	 	
11 Travel Time. $T_{\star} =$		
• <u>Channel Flow</u> :		

	BC						
	Unpaved	-					
437.0 ft							
	0.010 ft/	′ft					
	1.61 ft/s						
	0.075 hr	+	0.000 hr	+	0.000 hr	Ш	0.075 hr

<u>Channel Flow</u> :							
12. Pipe Diameter, <i>D</i>							
13. Cross-Sectional Flow Area, A							
14. Wetted Perimeter, $p_w$							
15. Hydraulic Radius, <i>r</i> = <i>A</i> / <i>p</i> <sub>w</sub>							
16. Channel Slope, <i>s</i>							
17. Pipe Material							
18. Manning's Roughness Coefficient, <i>n</i>							
19. Velocity, V = $\frac{1.49 r^{2/3} s^{1/2}}{n}$							
20. Flow Length, <i>L</i>							
21. Travel Time, $T_t = \frac{L}{3600 V}$	0.000 hr	+	0.000 hr	+	0.000 hr	=	0.000 hr
22. Watershed or subarea Time of Concentration, $T_c$ { add $T_t$ in steps	s 6, 11 and	21	}				0.339 hr



1904 Main Street, Lake Como, NJ 07719 (732) 974-0198

Date:	6/25/2020				
Project:	Elite - Long Hill				
Project No:	0555-99-010				

0.068 hr

0.000 hr

0.527 hr 31.6 min

Calculated By: DRL Checked By: WB

#### Worksheet 3: Time of Concentration (T<sub>c</sub>) Calculations

Land Condition:	Existing
Drainage Area:	EX-DA-2 Undist

### • Sheet Flow :

						1	
1. Surface Description	Woods, Light Underbrush						
2. Manning's Roughness Coefficient, <i>n</i>	0.4						
3. Flow Length, <i>L</i> { total L ≤ 100 ft }	100.0 ft						
4. Two-Year 24-hour Rainfall, $p_2$ for Warren County	3.38 in						
5. Land Slope, <i>s (ft/ft)</i>	0.010 ft/ft						_
6. Travel Time, $T_t = \frac{0.007 (n L)^{0.8}}{p_2^{0.5} s^{0.4}}$	0.460 hr +	0.000 hr	+	0.000 hr	=	0.460 hr	

ΔR

+

0.000 hr

+

0.000 hr

=

#### • Shallow Concentrated Flow : BC 7. Surface Description ..... Unpaved 393.0 ft 9. Watercourse Slope, s..... 0.010 ft/ft 10. Average velocity, V { see Figure 3.1) ..... 1.61 ft/s 11. Travel Time, $T_t = \frac{L}{3600 V}$ 0.000 hr 0.068 hr 0.000 hr \_.... + = + • Channel Flow : 12. Pipe Diameter, *D* ..... 13. Cross-Sectional Flow Area, A ..... 14. Wetted Perimeter, $p_w$ ..... 15. Hydraulic Radius, $r = A / p_w$ ..... 17. Pipe Material ..... 18. Manning's Roughness Coefficient, n..... 1.49 $r^{2/3}$ s<sup>1/2</sup> 19. Velocity, V =-....

\_\_\_\_\_ 0.000 hr

22. Watershed or subarea Time of Concentration,  $T_c$  { add  $T_t$  in steps 6, 11 and 21 } ...

21. Travel Time,  $T_t = \frac{L}{3600 V}$ 



1904 Main Street, Lake Como, NJ 07719 (732) 974-0198

Date:	4/3/2020
Project:	Elite - Long Hill
Project No:	0555-99-010

Calculated By: DRL Checked By: WB

### Worksheet 3: Time of Concentration (T<sub>c</sub>) Calculations

Land Condition:	Proposed
Drainage Area:	DA-1

# • Sheet Flow :

	AD	Ъ		
1. Surface Description	Short Grass, Prairie	Woods, Light Underbrush		
2. Manning's Roughness Coefficient, <i>n</i>	0.15	0.4		
3. Flow Length, $L \{ total L \leq 100 ft \} \dots$	15.0 ft	85.0 ft		
4. Two-Year 24-hour Rainfall, $p_2$ for Warren County	3.38 in	3.38 in		
5. Land Slope, <i>s (ft/ft)</i>	0.200 ft/ft	0.047 ft/ft		
5. Land Slope, $s(\pi/\pi)$ 6. Travel Time, $T_t = \frac{0.007 (n L)^{0.8}}{p_2^{0.5} s^{0.4}}$	0.014 hr +	- 0.217 hr +	0.000 hr =	0.231 hr

ΔR

BC.

#### • Shallow Concentrated Flow :

7. Surface Description
8. Flow Length, <i>L</i>
9. Watercourse Slope, <i>s</i>
10. Average velocity, V { see Figure 3.1)
11. Travel Time, $T_t = \frac{L}{3600 V}$

	CD						
	Unpaved	-					
	165.0 f	t					
	0.024 ft/	′ft					
	2.50 ft/s	s					
•	0.018 hr	+	0.000 hr	+	0.000 hr	=	0.018 hr

#### • Channel Flow : 13. Cross-Sectional Flow Area, A ..... 14. Wetted Perimeter, $p_w$ ..... 15. Hydraulic Radius, $r = A / p_w$ .... 17. Pipe Material ..... 18. Manning's Roughness Coefficient, n..... $1.49 r^{2/3} s^{1/2}$ 19. Velocity, V =<del>-</del>..... n L ~ · T . --

21. Travel Time, $T_t = \frac{L}{3600 V}$	0.000 hr						
22. Watershed or subarea Time of Concentration, $T_c$ { add $T_t$ in steps 6, 11 and 21 }							
	15.0 min						

# HYDROGRAPH SUMMARY REPORTS – EXISTING & PROPOSED CONDITIONS 2-YR, 10-YR, & 100-YR

Ograph dio v 3.00.16 Hydrograph Type	Hydrograph by Return Period	Hydrograph Name
	Hydrograph	Hydrograph Type

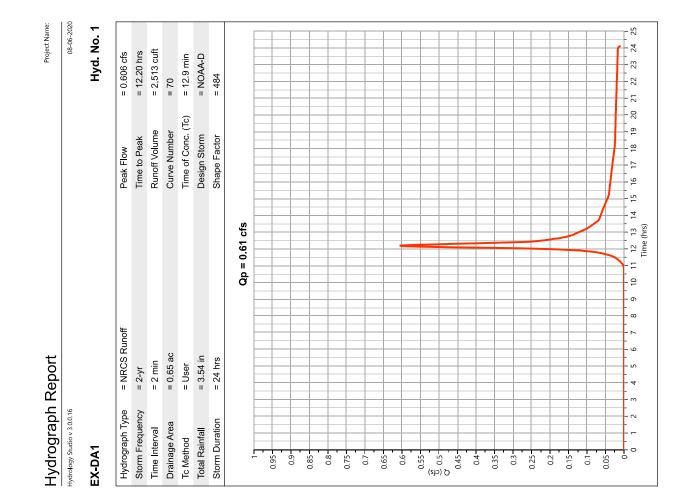
Name:	
Project I	

ydrology Stu	Iyui Uyi api i u <sup>dralogy Studio v 3.0.0.16</sup>									08-06-2020
	Hydrograph Type	Hydrograph Name	1-vr	2-vr	3-vr	Peak Outflow (cfs) 5-vr 10-vr	low (cfs) 10-vr	25-vr	50-vr	100-vr
	NRCS Runoff	EX-DA1		0.606			1.368	1.932		2.970
	NRCS Runoff	EX-DA1 UNDIST.		2.213			4.338	5.824		8.478
	Junction	EXIST POA 1		2.813			5.706	7.756		11.45
	NRCS Runoff	EX-DA2		0.804			1.843	2.607		4.019
	NRCS Runoff	EX-DA2 UNDIST.		0.857			1.965	2.780		4.285
	Junction	EXIST POA-2		1.660			3.807	5.387		8.303
	NRCS Runoff	DA-1B		0.281			0.585	0.802		1.193
	NRCS Runoff	DA-1A		1.956			3.836	5.151		7.501
_	Junction	DA-1		2.238			4.421	5.953		8.694
	NRCS Runoff	DA-2 Imperv.		3.017			4.492	5.470		7.180
_	NRCS Runoff	DA-2 Perv.		0.024			0.049	0.067		0.100
_	Junction	DA-2 - BASIN A		3.041			4.541	5.537		7.280
_	Pond Route	BASIN A		0.345			0.986	1.289		1.738
_										
	Junction	POA-1		2.509			4.972	6.897		10.09
	NRCS Runoff	DA-3 Imperv.		0.670			0.998	1.215		1.596
_	NRCS Runoff	DA-3 Perv.		0.142			0.294	0.403		0.600
_	Junction	BASIN B		0.812			1.292	1.618		2.195
	Pond Route	BASIN B		0.222			0.630	0.893		1.326
_										
	NRCS Runoff	DA-4		0.916			2.046	2.872		4.388
_										
	Junction	POA-2		1.129			2.668	3.746		5.687
	NRCS Runoff	222		0.251			0.374	0.456		0.598
	NRCS Runoff	211		0.279			0.416	0.506		0.665
_										

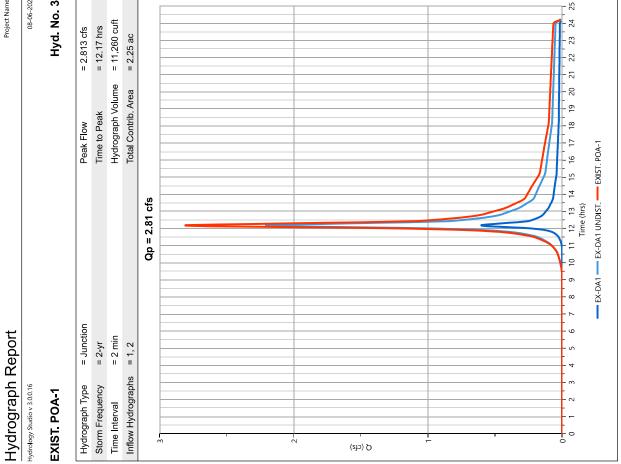
# ū C Т

Project Name: 08-06-2020	Maximum Storage (cuft)														5,925						1,863					
	Maximum Elevation (ft)														215.09						217.35					
	Inflow Hyd(s)	1	i	1, 2	ł	i	5, 6		I	i	12, 13	I	I	16, 17	18	14, 19		i	I	24, 25	26	ł	27, 29	I	i	
	Hydrograph Volume (cuft)	2,513	8,746	11,260	5,163	5,505	10,667		1,211	8,269	9,481	13,367	94.9	13,462	13,439	22,920		2,971	569	3,540	2,537	5,805	8,342	1,114	1 238	004
	Time to Peak (hrs)	12.20	12.17	12.17	12.40	12.40	12.40		12.20	12.20	12.20	12.17	12.20	12.17	13.17	12.20		12.17	12.20	12.17	12.53	12.40	12.40	12.17	1017	1.5
	Peak Flow (cfs)	0.606	2.213	2.813	0.804	0.857	1.660		0.281	1.956	2.238	3.017	0.024	3.041	0.345	2.509		0.670	0.142	0.812	0.222	0.916	1.129	0.251	0.97Q	0.7.0
Hydrograph 2-yr Summary	Hydrograph Name	EX-DA1	EX-DA1 UNDIST.	EXIST. POA-1	EX-DA2	EX-DA2 UNDIST	EXIST POA-2		DA-1B	DA-1A	DA-1	DA-2 Imperv.	DA-2 Perv.	DA-2 - BASIN A	BASIN A	POA-1		DA-3 Imperv.	DA-3 Perv.	BASIN B	BASIN B	DA-4	POA-2	222	211	
ograph 2	Hydrograph Type	NRCS Runoff	NRCS Runoff	Junction	NRCS Runoff	NRCS Runoff	Junction		NRCS Runoff	NRCS Runoff	Junction	NRCS Runoff	NRCS Runoff	Junction	Pond Route	Junction		NRCS Runoff	NRCS Runoff	Junction	Pond Route	NRCS Runoff	Junction	NRCS Runoff	NPCS Runoff	
Hydrodgy Studio v 3.0.0.16	Hyd. No	-	7	n	5	9	7		12	13	14	16	17	18	19	21		24	25	26	27	29	31	33	35	3

Jame:	08-06-2020	5									55	
Project Name:	08-06	Hyd. No. 2	s.	S	Ψ		c	0			7	
Pr		yd.	= 2.213 cfs	= 12.17 hrs	= 8,746 cuft		= 12.9 min	= NOAA-D	_		33	
		т	: 2.2	: 12.	: 8,7	= 77	: 12	NO NO	= 484		5	
			"	"			"	"			۵ <u>ــــــــــــــــــــــــــــــــــــ</u>	
							LC)				20	
				뚞	Ime	ber	) UC	E	ъ			
			No	Time to Peak	Runoff Volume	Curve Number	Time of Conc. (Tc)	Design Storm	Shape Factor		<u></u>	
			Peak Flow	ne to	Inoff	IVe	ne o	sign	ape		3	
			۱ª	Ē	Я	ರ	Ē	ď	ų		9	
										ß		_
										С С		Time (hrs)
										= 2.2		Ĕ
										Qp = 2.21 cfs	Ξ <sup>2</sup>	
										•	2	
			₩									
			= NRCS Runoff									
ы			CS	F	in	ac	er	4 in	hrs		۵	
de			RR I	= 2-yr	= 2 min	= 1.6 ac	= User	= 3.54 in	= 24 hrs		۵۰ – – – – – – – – – – – – – – – – – – –	
Ř		H.	"						"			
hh	.0.16	DIS	be	JCV		_			c		m	
Jra	o v 3.0	INN	h T	anba	va	Area	-	fall	ratio		N	
õ	r Studi	Ą	) ograf	ר Fre	nter	age	ethoc	Rain	Du			
Hydrograph Report	Hydrology Studio v 3.0.0.16	ex-da1 undist.	Hydrograph Type	Storm Frequency	Time Interval	Drainage Area	Tc Method	Total Rainfall	Storm Duration			
1	ΙÊ	ш										



2.3 EVC.02 EV	08-06-2020	Hydrology Studio v 3.0.0.16			08-06-2020
Hydrograph Type       = NRCS Runoff       Peak Flow       = 0.804 cls         Runn Frequency       2-yr       Time to Peak       = 12.40 hrs         Time Interval       = 2 min       Time to Peak       = 12.60 cl         Time Interval       = 2 min       Time to Peak       = 1.50 cl         Time Interval       = 2 min       Time to Peak       = 1.50 cl         Time Interval       = 2 min       Time of Cource, (Tr)       = 31.6 min         Total Rainfall       = 3.54 in       Single Factor       = 4.94         Storm Duration       = 24 hrs       Dape 0.00 cls       = 0.00 cls         0       0       0       0       = 0.00 cls         0       0       0       0       = 4.94         0.05       0       0       0       = 0.00 cls         0       0       0       0       0       = 0.00 cls         0       0       0       0       0       0       0         0.05       0       0       0       0       0       0         0.05       0       0       0       0       0       0         0.05       0       0       0       0       0       0	Hyd. No. 3	EX-DA2			Hyd. No. 5
17 his 28 currt 28 currt 19 currt 19 currt 19 currt 29 currt 10 currt	2.813 cfs	Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.804 cfs
The Interval = 2 min Runoff Volume = 5,163 cut Design Stant = 1.56 ac The Interval = 1.56 ac The Interval = 1.56 ac The Interval = 1.56 ac The Interval = 2.16 ac The In	12.17 hrs	Storm Frequency	= 2-yr	Time to Peak	= 12.40 hrs
$\label{eq:constraints} \qquad \label{eq:constraints} \qquad eq:constrain$	11,260 cuft	Time Interval	= 2 min	Runoff Volume	= 5,163 cuft
$\label{eq:constraint} \mbox{Television} $	2.25 ac	Drainage Area	= 1.36 ac	Curve Number	= 70
$\operatorname{Terla}_{25 \text{ loc}} = 3.64 \text{ in } \operatorname{Design Storm}_{20 \text{ loc}} = 100 \text{ to } \operatorname{Design Storm}_{20 \text{ loc}} = 100 \text{ to } \operatorname{Design Storm}_{20 \text{ loc}} = 100 \text{ to } \operatorname{Design Storm}_{20 \text{ loc}} = 100 \text{ to } \operatorname{Design Storm}_{20 \text{ loc}} = 100 \text{ to } \operatorname{Design Storm}_{20 \text{ loc}} = 0.00 \text{ to } \operatorname{Design Storm}_{20 \text{ loc}} = 0$		Tc Method	= User	Time of Conc. (Tc)	= 31.6 min
$\begin{array}{                                    $		Total Rainfall	= 3.54 in	Design Storm	= NOAA-D
CD-2000 CD-		Storm Duration	= 24 hrs	Shape Factor	= 484
			Qp = 0.80 cfs		
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23 24 25 005 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24		0.25			
23 24 25 005 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24		0.2			
23 24 25 005 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24		0.15			
23 24 25 0005 001 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24		011-			
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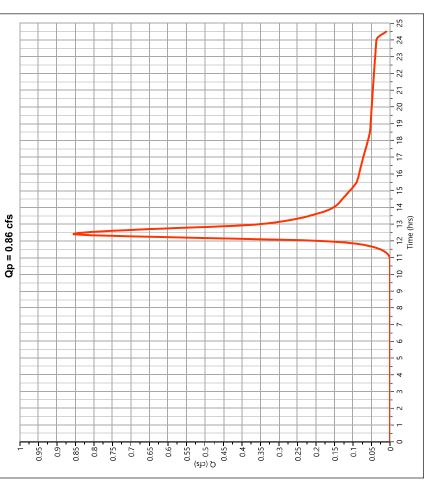
	нероп
والمتحسم ممادينا ا	Hydrograph

Hydrology Studio v 3.0.0.16

**EX-DA2 UNDIST.** 

08-06-2020 Hyd. No. 6

= 0.857 cfs	= 12.40 hrs	= 5,505 cuft	= 70	= 31.6 min	= NOAA-D	= 484
Peak Flow	Time to Peak	Runoff Volume	Curve Number	Time of Conc. (Tc)	Design Storm	Shape Factor
= NRCS Runoff			ac		.5	S
= NRC	= 2-yr	= 2 min	= 1.45 ac	= User	= 3.54 in	= 24 hrs
Hydrograph Type	Storm Frequency	Time Interval	Drainage Area	Tc Method	Total Rainfall	Storm Duration



# 12 13 14 15 16 17 18 19 20 21 22 23 24 25 Time (hrs) ----- EX-DA2 ----- EX-DA2 UNDIST. ----- EXIST. POA-2 10 11 თ ω ~ 9 Ś 4 m 1 2 +° 1.3 1.2-Q (cfs) -6.0 0.8-0.7----0.0 0.5-0.3-0.2-1.1-0.4-0.1-Tir St

Hydrograph Report

Project Name:

Hydrology Studio v 3.0.0.16

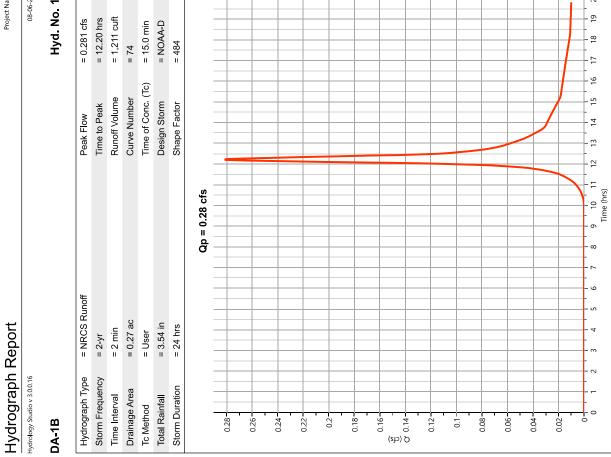
EXIST. POA-2

Hyd. No. 7

08-06-2020 Project Name:

icy       = 2-yr       Time to Peak       = 12.40 hrs         = 2 min       Hydrograph Volume       = 10,667 cuft         aphs       = 5,6       Total Contrib. Area       = 2.81 ac <b>Qp</b> = 1.66 cfs
Storm Frequency = 2-yr Time Interval = 2 min Inflow Hydrographs = 5, 6 1, 9 1, 7

	Project Name:	Hydrograph Report	Report		Project Name:
	08-06-2020	Hydrology Studio v 3.0.0.16			08-06-2020
	Hyd. No. 12	DA-1A			Hyd. No. 13
Peak Flow	= 0.281 cfs	Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.956 cfs
Time to Peak	= 12.20 hrs	Storm Frequency	= 2-yr	Time to Peak	= 12.20 hrs
Runoff Volume	= 1,211 cuft	Time Interval	= 2 min	Runoff Volume	= 8,269 cuft
Curve Number	= 74	Drainage Area	= 1.6 ac	Curve Number	= 77
Time of Conc. (Tc)	= 15.0 min	Tc Method	= User	Time of Conc. (Tc)	= 15.0 min
Design Storm	= NOAA-D	Total Rainfall	= 3.54 in	Design Storm	= NOAA-D
Shape Factor	= 484	Storm Duration	= 24 hrs	Shape Factor	= 484
			Qp = 1.96 cfs		
		2 -			
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Hydrograph Report		Project Name:	Hydrograph Report	Report		Project Name:
Hydrology Studio v 3.0.0.16		08-06-2020	Hydrology Studio v 3.0.0.16			08-06-2020
DA-1		Hyd. No. 14	DA-2 Imperv.			Hyd. No. 16
Hydrograph Type = Junction	Peak Flow	= 2.238 cfs	Hydrograph Type	= NRCS Runoff	Peak Flow	= 3.017 cfs
Storm Frequency = 2-yr	Time to Peak	= 12.20 hrs	Storm Frequency	= 2-yr	Time to Peak	= 12.17 hrs
Time Interval = 2 min	Hydrograph Volume	= 9,481 cuft	Time Interval	= 2 min	Runoff Volume	= 13,367 cuft
Inflow Hydrographs = 12, 13	Total Contrib. Area	= 1.87 ac	Drainage Area	= 1.08 ac	Curve Number	= 98
Qp = 2.24 cfs	ţ		Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
37			Total Rainfall	= 3.54 in	Design Storm	= NOAA-D
			Storm Duration	= 24 hrs	Shape Factor	= 484
				Qp = 3.02 cfs		
			α (th) β		Image: second	
0 1 2 3 4 5 6 7 8 9 10 11 12 13 Time (hrs)	14 15 16 17 18 19 20	21 22 23 24 25	0 0 0	- 7	15 16 17 18 19 20	21 22 23 24 25
	- 40			Time (hrs)		

ph Report	0.16 08-06-2020	N A Hyd. No. 18	pe = Junction Peak Flow = 3.041 cfs	icy = 2-yr Time to Peak = 12.17 hrs	= 2 min = 13,462 cuft	= 16, 17	On = 3.04 cfs													I         I           I         I												
Hydrograph Report	Hydrology Studio v 3.0.0.16	DA-2 - BASIN A	Hydrograph Type	Storm Frequency	Time Interval	Inflow Hydrographs		4			1			3-			T			(cts)	σ		1		7				1			
Project Name:	08-06-2020	Hyd. No. 17	= 0.024 cfs	= 12.20 hrs	= 94.9 cuft	= 74	= 10.0 min	= NOAA-D	= 484																							
			Peak Flow	Time to Peak	Runoff Volume	Curve Number	Time of Conc. (Tc)	Design Storm	Shape Factor																							
			Ĩf							Qp = 0.02 cfs																						
Report			= NRCS Runoff	= 2-yr	= 2 min	= 0.02 ac	= User	= 3.54 in	= 24 hrs																							
Hydrograph Report	Hydrology Studio v 3.0.0.16	DA-2 Perv.	Hydrograph Type	Storm Frequency	Time Interval	Drainage Area	Tc Method	Total Rainfall	Storm Duration		0.024	0.023	0.022	0.021	0.02	0.019	0.018	0.017	0.016	0.015	0.014	(s) (s)	or 0.012	0.01	 - 600.0	- 0000	- 900 0	0.005	0.004	0.003	0.002	0 001 -

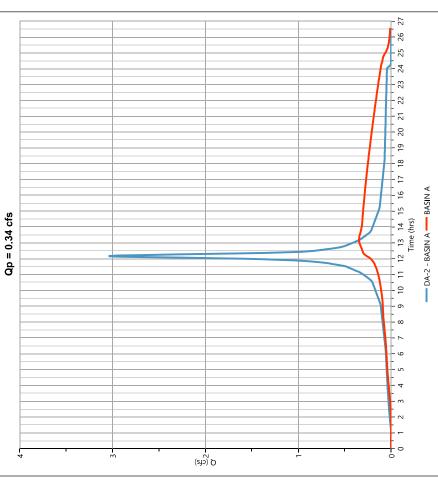
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**BASIN A** 

Hyd. No. 19

08-06-2020 Project Name:

Hydrograph Type	= Pond Route	Peak Flow	= 0.345 cfs
Storm Frequency	= 2-yr	Time to Peak	= 13.17 hrs
Time Interval	= 2 min	Hydrograph Volume = 13,439 cuft	= 13,439 cuft
Inflow Hydrograph	= 18 - DA-2 - BASIN A	Max. Elevation	= 215.09 ft
Pond Name	= BASIN A (Underground)	Max. Storage	= 5,925 cuft
Pond Routing by Storage Indication Method	dication Method	Center of mass	Center of mass detention time = 3.20 hrs



### Pond Report

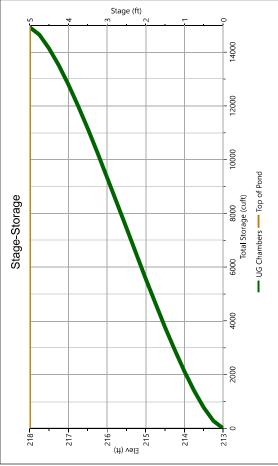
Hydrology Studio v 3.0.0.16

## **BASIN A (Underground)**

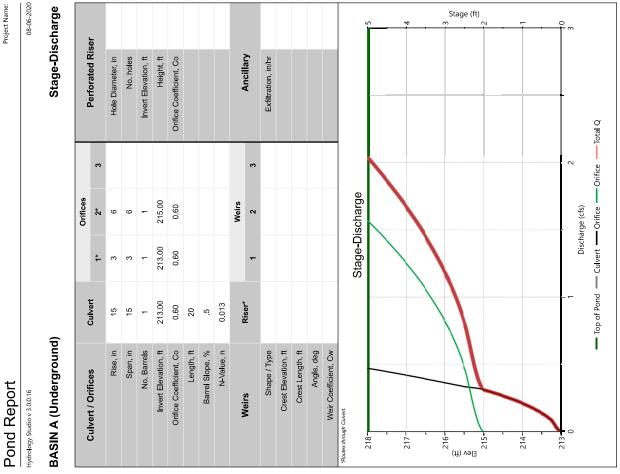
08-06-2020 Stage-Storage

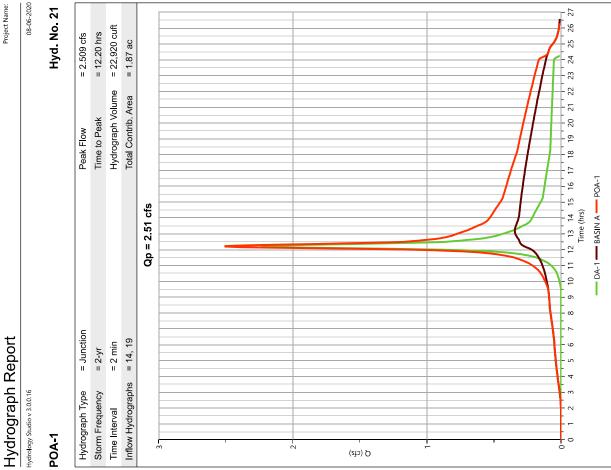
Project Name:

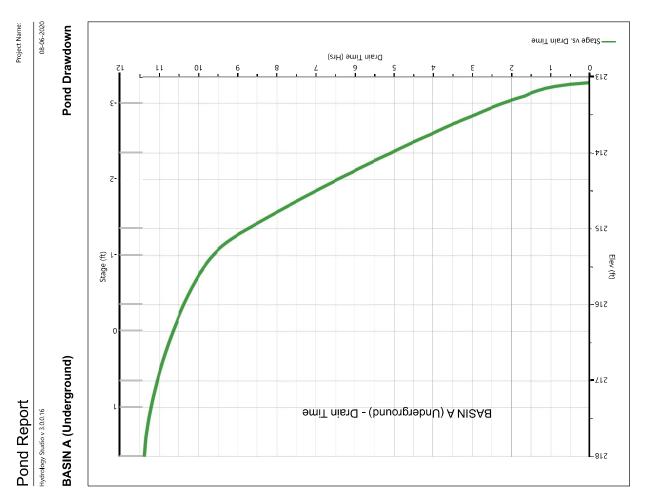
Description         Input         Stage         Elevation         Contour Area           Invert Elev Down, ft         213.00         (ft)         (ft)         (ft)         (ft)           Chamber Rise, ft         2.13.00         0.00         213.00         n/a           Chamber Rise, ft         5.00         0.25         213.25         n/a           Chamber Rise, ft         5.00         0.25         213.55         n/a           Chamber Shape         Circular         0.50         213.55         n/a           Chamber Shape         Circular         0.50         213.50         n/a           Off         0.75         213.50         n/a	Incr. Storage (cuft) 0.000 280 499 626 626	Total Storage           (cuft)           0.000           280           778           1,404           2,126           2,920           3,768
213.00 (100 213.00 (100 213.00 (100 213.00 (100 213.00 (100 213.00 (100 0.25 213.25 (100 0.50 213.56 (100 0.55 213.75 (100 0.55 (100 0.55 210 0.55 (100 0.55 (100 0.55 (100 0.55 (100 0.55 (100 0	0.000 0.000 499 626 722	0.000 0.000 778 1,404 2,126 2,126 2,920 3,768
5.00 0.25 213.25 Circular 0.50 213.35 0.75 213.75 0.75 213.75 0.75 213.75 1.00 1.00 214.00		280 778 1,404 2,126 2,920 3,768
Circular 0.50 213.50 0.75 213.75 5.00 1.00 214.00	499 626 722	778 1,404 2,126 2,920 3,768
5.00 1.00 213.75 5.00 214.00	626 722	1,404 2,126 2,920 3,768
5 00 1 00 214 00	722	2,126 2,920 3,768
		2,920 3,768
Barrel Lenoth. ft 760.00 1.25 214.25 n/a	794	3,768
ł	848	
No. Barrels 1 1.75 214.75 n/a	891	4,659
Barrel Slope. % 0.00 2.00 215.00 n/a	917	5,576
l	942	6,518
Headers, y/n No 2.50 215.50 n/a	947	7,465
Stone Encasement. v/n No 2.75 215.75 n/a	947	8,412
	942	9,354
Encasement Bottom Elevation, tt 213.00 3.25 216.25 n/a	917	10,270
Encasement Width per Chamber, ft 0.00 3.50 216.50 n/a	891	11,161
	847	12,008
Encasement Depth, ft 0.00 4.00 217.00 n/a	793	12,802
Encasement Voids, % 100.00 4.25 217.25 n/a	721	13,523
ł	627	14,150
4.75 217.75 n/a	497	14,647
5.00 218.00 n/a	278	14,926
Stage-Storage	-	
2187		2



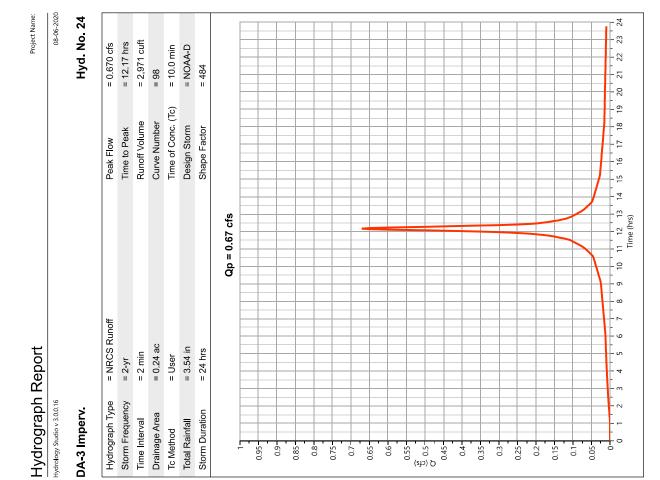
Stage         Elev.         Storage         Culvent           (tt)         (tt)         (cult)         (culvent           (tt)         (tt)         (cult)         (culvent           0.00         213.00         0.000         0.0031c           0.50         213.56         778         0.138 oc           0.50         213.56         778         0.117 oc           0.75         213.75         1.404         0.177 oc           1.00         2.14.26         2.920         0.239 oc           1.50         2.14.25         2.920         0.239 oc           1.50         214.56         3.768         0.256 oc           1.75         2.14.75         4.659         0.280 oc	ndergi storage (cuft) 0.000	round					ť	(		e-Dis(	Stage-Storage-Discharge Summary	Sum	
Elev. (ft) (ft) (ft) (ft) (ft) (ft) (ft) 213.25 213.25 213.55 213.75 213.75 214.25 214.50 214.50 214.75			~				5	age-5	torag	1			mary
(f) 213.00 213.50 213.55 213.55 213.55 214.00 214.25 214.50 214.55 214.55		Culvart	Ō	Orifices, cfs		Ricor		Weirs, cfs		Df Ricar		ltear	Total
213.00 213.25 213.50 213.50 213.50 214.00 214.50 214.50 214.50	000.0	(cfs)	-	2	e	(cfs)	-	5	e	(cfs)	(cfs)	(cfs)	(cfs)
213.25 213.50 213.75 213.75 214.00 214.50 214.50 214.75		0.000	0.000	0.000									0.000
213.50 213.75 214.00 214.50 214.50 214.50	280	0.083 ic	0.083	0.000									0.083
213.75 214.00 214.25 214.50 214.75	778	0.136 oc	0.136	0.000									0.136
214.00 214.25 214.50 214.75	1,404	0.177 oc	0.177	0.000									0.177
214.25 214.50 214.75	2,126	0.210 oc	0.210	0.000									0.210
214.50 214.75		0.239 oc	0.239	0.000									0.239
214.75	3,768	0.265 oc	0.265	0.000									0.265
	4,659	0.289 oc	0.289	0.000									0.289
2.00 215.00 5	5,576	0.311 oc	0.311	0.000									0.311
2.25 215.25 6	6,518	0.492 oc	0.325	0.167									0.492
2 50 215 50 7	7,465	0.807 oc	0.334	0.473									0.807
2 75 215 75 8	8,412	1.016 oc	0.348	0.668									1.016
3.00 216.00 9	9,354	1.181 oc	0.363	0.819									1.181
3.25 216.25 10	10,270	1.322 oc	0.377	0.945									1.322
3.50 216.50 1	11,161	1.448 oc	0.391	1.057									1.448
3.75 216.75 1	12,008	1.563 oc	0.405	1.158									1.563
217.00	_	1.670 oc	0.419	1.251									1.670
_	13,523	1.769 oc	0.433	1.337									1.769
4.50 217.50 14	14,150	1.864 oc	0.446	1.418									1.864
4 75 217 75 14	14,647	1.953 oc	0.458	1.495									1.953
5.00 218.00 14	14,926	2.038 oc	0.470	1.568									2.038
					-								







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DA-3 Perv.			Hyd. No. 25
Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.142 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.20 hrs
Time Interval	= 2 min	Runoff Volume	= 569 cuft
Drainage Area	= 0.12 ac	Curve Number	= 74
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
Total Rainfall	= 3.54 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484
	Qp = 0.14 cfs		
0.15			
0.14			
0.13-			
1			
0.12			
0.11-			
0.1			
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(cts)			
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0.06			
1			
0.04 -			
0.03			
0.02			
0.01			



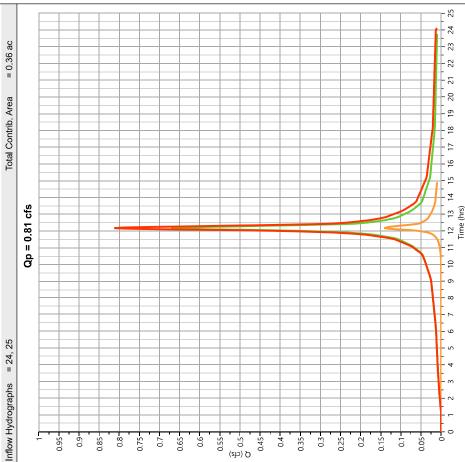
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#### **BASIN B**

Hyd. No. 26

08-06-2020 Project Name:

Hydrograph Type	= Junction	Peak Flow	= 0.812 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.17 hrs
Time Interval	= 2 min	Hydrograph Volume	= 3,540 cuft
Inflow Hydrographs = 24, 25	= 24, 25	Total Contrib. Area	= 0.36 ac
	Qp = 0.81 cfs		

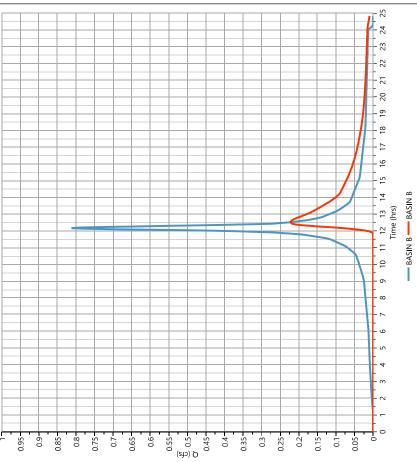


---- DA-3 Imperv. ---- DA-3 Perv. ---- BASIN B

### Hydrology Studio v 3.0.0.16 **BASIN B**

Hydrograph Report

		<u> </u>	
Hydrograph Type	= Pond Koute	Peak Flow	= 0.222 CTS
Storm Frequency	= 2-yr	Time to Peak	= 12.53 hrs
Time Interval	= 2 min	Hydrograph Volume	= 2,537 cuft
Inflow Hydrograph	= 26 - BASIN B	Max. Elevation	= 217.35 ft
Pond Name	= BASIN B (Aboveground)	Max. Storage	= 1,863 cuft
Pond Routing by Storage Indication Method	dication Method	Center of mass	Center of mass detention time = 2.92 hrs
	Qp = 0.22 cfs		



08-06-2020 Project Name:

Hyd. No. 27

Culvert / OrificesCulvertCulvert $\overline{1:5}$ $\overline{0:11}$ Rise, in15 $\overline{1:5}$ $\overline{3}$ $\overline{3}$ Rise, in15 $\overline{3}$ $\overline{3}$ $\overline{3}$ Span, in15 $\overline{3}$ $\overline{3}$ $\overline{3}$ No. Barrels11 $\overline{1}$ $\overline{2}$ $\overline{3}$ Invert Elevation, ft214.35 $\overline{2}$ $\overline{2}$ $\overline{3}$ No. Barrels11 $\overline{1}$ $\overline{1}$ $\overline{1}$ No. Barrels0.0160.6600.600 $0.600$ $\overline{1}$ No. Barrels $\overline{2}$ $\overline{2}$ $\overline{2}$ $\overline{2}$ No. Barrels $\overline{2}$ $\overline{2}$ $\overline{2}$ $\overline{2}$ No. Barrels $\overline{2}$ $\overline{2}$ $\overline{2}$ $\overline{2}$ No. Coefficient, Co $\overline{2}$ $\overline{2}$ <th>rt / Orifices       cutvert       <math>1^{+}</math> <math>\overline{}</math>         Rise, in       15       3       <math>\overline{}</math>         Rise, in       15       3       <math>\overline{}</math>         Rise, in       15       3       <math>\overline{}</math>         No. Barrels       1       1       1         Invert Elevation, ft       214.35       216.93       <math>\overline{}</math>         Invert Elevation, ft       214.35       216.93       <math>\overline{}</math>         Barrel Slope, %       .5       3       216.93       <math>\overline{}</math>         N-Value, n       0.013       216.93       <math>\overline{}</math> <math>\overline{}</math>         Barrel Slope, %       .5       N-Value, n       0.013       <math>\overline{}</math> <math>\overline{}</math>         Meirs       .5       .5       .5       .5       <math>\overline{}</math> <math>\overline{}</math> <math>\overline{}</math>         Meirs       .5       .5       .5       .5       .5       .5       .5         Meirs       .5       .5       .5       .5       .5       .5       .5         Angle, deg       .5       .5       .5       .5       .5       .5       .5         Angle, deg       .5       .5       .5       .5</th> <th></th> <th>Perforat</th> <th>i - :</th> <th>Hole Diamet</th> <th>No.</th> <th>Invert Elevati</th> <th>Hei</th> <th>Orifice Coefficier</th> <th></th> <th></th> <th></th> <th></th> <th>Anc</th> <th>Exfiltration,</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	rt / Orifices       cutvert $1^{+}$ $\overline{}$ Rise, in       15       3 $\overline{}$ Rise, in       15       3 $\overline{}$ Rise, in       15       3 $\overline{}$ No. Barrels       1       1       1         Invert Elevation, ft       214.35       216.93 $\overline{}$ Invert Elevation, ft       214.35       216.93 $\overline{}$ Barrel Slope, %       .5       3       216.93 $\overline{}$ N-Value, n       0.013       216.93 $\overline{}$ $\overline{}$ Barrel Slope, %       .5       N-Value, n       0.013 $\overline{}$ $\overline{}$ Meirs       .5       .5       .5       .5 $\overline{}$ $\overline{}$ $\overline{}$ Meirs       .5       .5       .5       .5       .5       .5       .5         Meirs       .5       .5       .5       .5       .5       .5       .5         Angle, deg       .5       .5       .5       .5       .5       .5       .5         Angle, deg       .5       .5       .5       .5		Perforat	i - :	Hole Diamet	No.	Invert Elevati	Hei	Orifice Coefficier					Anc	Exfiltration,							
OrtificesculvertRise, in15Rise, in15Span, in15No. Barrels1vert Elevation, ft214.35Scoefficient, Co0.60Length, ft18Barrel Slope, %5N-Value, n0.013Shape / Type5Shape / Type1Shape / Type1Crest Length, ftCrest Length, ftAngle, degCoefficient, Cw	Culvert / Orffices     Culvert       Culvert / Orffices     Culvert       Rise, in     15       Rise, in     15       Span, in     15       No. Barrels     1       Invert Elevation, ft     214.35       Orifice Coefficient, Co     0.60       Length, ft     18       Barrel Stope, %     5       N-value, n     0.013       Weirs     Riser*       Shape / Type     0.013       Crest Elevation, ft     Crest Elevation, ft       Crest Elevation, ft     217.9       Over     Shape / Type       217.9     Oritice Crest Elevation, ft       Crest Elevation, ft     217.9       217.9     Oritice Crest Elevation, ft       State     217.9       217.9     Oritice Crest Elevation, ft		d	m										3								
OrtificesculvertRise, in15Rise, in15Span, in15No. Barrels1vert Elevation, ft214.35Scoefficient, Co0.60Length, ft18Barrel Slope, %5N-Value, n0.013Shape / Type5Shape / Type1Shape / Type1Crest Length, ftCrest Length, ftAngle, degCoefficient, Cw	Culvert / Orffices     Culvert       Culvert / Orffices     Culvert       Rise, in     15       Rise, in     15       Span, in     15       No. Barrels     1       Invert Elevation, ft     214.35       Orifice Coefficient, Co     0.60       Length, ft     18       Barrel Stope, %     5       N-value, n     0.013       Weirs     Riser*       Shape / Type     0.013       Crest Elevation, ft     Crest Elevation, ft       Crest Elevation, ft     217.9       Over     Shape / Type       217.9     Oritice Crest Elevation, ft       Crest Elevation, ft     217.9       217.9     Oritice Crest Elevation, ft       State     217.9       217.9     Oritice Crest Elevation, ft	Orifices		2									Weirs	2							scharge	
Ortifices Rise, in Span, in No. Barrels vert Elevation, ft a Coefficient, Co Length, ft Barrel Slope, % N-Value, n iirs Shape / Type rest Elevation, ft Crest Length, ft Angle, deg Coefficient, Cw	Culvert / Orifices Rise, in Span, in No. Barrels Invert Elevation, ft Orifice Coefficient, Co Length, ft Barrel Slope, % N-Value, n Weirs Shape / Type Crest Elevation, ft Crest Length, ft Angle, deg Weir Coefficient, Cw		ť	<u>*</u> (	e	ო	÷	216.93	09.0					*	Rectangular	217.2	5		3.3		Stage-Dis	
<ul> <li>Orific</li> <li>Orific</li> <li>Orific</li> <li>Vert Elev</li> <li>Vert Elev</li> <li>N-</li> <li>N-</li></ul>	Cultvert / Orrifics Cultvert / Orrifics No. Invert Elev Orifice Coeffic Lu Barrel S Nap Crest Lu Ann Weirs Shap Crest Lu Ann Meirs 217,7 217,6 217,7 217,6 217,7 217,6 217,7 217,6 217,7 217,6 217,7 217,6 217,7 217,6 217,7 217,6 217,7 217,6 217,7 217,7 217,6 217,7 217,6 217,7 217,7 217,7 217,7 217,7 217,7 217,7 217,7 217,7 217,7 217,7 217,7 217,7 217,7 217,7 217,7 217,7 217,7 2		Culvert	ţ	15	15	-	214.35	09.0	18	'n	0.013	i	Riser*								
			Culvert / Orifices	č	Rise, in	Span, in	No. Barrels	Invert Elevation, ft	Orifice Coefficient, Co	Length, ft	Barrel Slope, %	N-Value, n		Weirs	Shape / Type	Crest Elevation, ft	Crest Length, ft	Angle, deg	Weir Coefficient, Cw	Routes through Culvert.	- 010	217.9 217.9 217.6 217.6 217.6 217.5 217.5 217.2 217.2 217.2 217.2

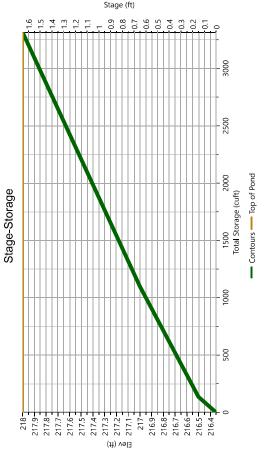
## 08-06-2020

Project Name:

**BASIN B** (Aboveground)

Pond Report Hydrology Studio v 3.0.0.16

User Defined Contours	LS			Stage / Storage Tab	ge Tabl
Description	Input	Stage	Elevation	Contour Area	Incr.
Bottom Elevation. ft	216.35	Ē	(II)	(sqrt)	(curt)
		0.00	216.35	-	0
Voids (%)	100.00	0.15	216.50	1,800	
Volume Calc	None	0.65	217.00	2,052	
		1.65	218.00	2,381	2

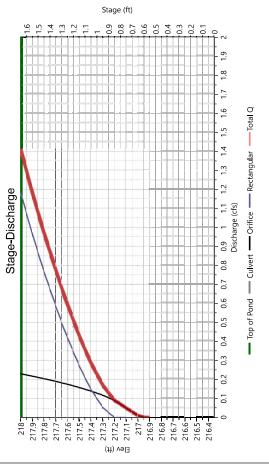


Pond Report Hydrology Studio v 3.0.0.16

## age-Discharge

08-06-2020 Project Name:

Cubicat / Originan			Orifices		Darfaratad Diana
CUINCES		*	2	e	
Rise, in	15	3			Hole Diameter, in
Span, in	15	3			No. holes
No. Barrels	٢	-			Invert Elevation, ft
Invert Elevation, ft	214.35	216.93			Height, ft
Orifice Coefficient, Co	0.60	09.0			Orifice Coefficient, Co
Length, ft	18				
Barrel Slope, %	2				
N-Value, n	0.013				
Moine			Weirs		Ancilland
Mells	LISSIN	*-	7	ę	Ancillary
Shape / Type		Rectangular			Exfiltration, in/hr
Crest Elevation, ft		217.2			
Crest Length, ft		5			
Angle, deg					
Weir Coefficient, Cw		3.3			
Routes through Cuivert.					
010		Stage-Discharge	scharge		
- 917					



### Pond Report

Hydrology Studio v 3.0.0.16

**BASIN B** (Aboveground)

## Stage-Storage-Discharge Summary

Total	(cfs)	0.000	0.000	0.010	1.410	
User	(cfs)					
Exfil	(cfs)					
Pf Riser	(cfs)					
	e					
Weirs, cfs	2					
	-	0.000	0.000	0.000	1.181	
Riser	(cfs)					
	e					
Orifices, cfs	2					
0	-	0.000	0.000	0.010	0.230	
Culvert	(cfs)	0.000	0.000 oc	0.010 oc	1.410 oc	
Storage	(cuft)	0.000			3,315	
Elev.		216.35	216.50	217.00	218.00	
Stage	(H)	0.00	0.15	0.65	1.65	

**1**812

Suffix key: ic = inlet control, oc = outlet control, s = submerged weir

#### 9.0 ۲.0 Stage (ft) 8.0 6.0 ۱.۲ S.r **BASIN B** (Aboveground) ٤.٢ ₽.ſ Hydrology Studio v 3.0.0.16 S.٢ 9.I

08-06-2020 Pond Drawdown əmiT nisrd .ev əpst2 Drain Time (Hrs) ء 0 ε 2 0 ₽.91S.4 ٢.0 -S.915 2.0 **-**9'9LZ 6.3 -7.915 Þ.0 -8.915 S.0 6<sup>.</sup>912 -712 **-**1.712 =1212 Eev =7217 (ft) -8.712 4.71S -2.712 -9.712 -7.71S Pond Report emiT nisıD - (bnuorgevodA) 8 NISA8 -8.712 6.712

Project Name:

08-06-2020

Project Name:

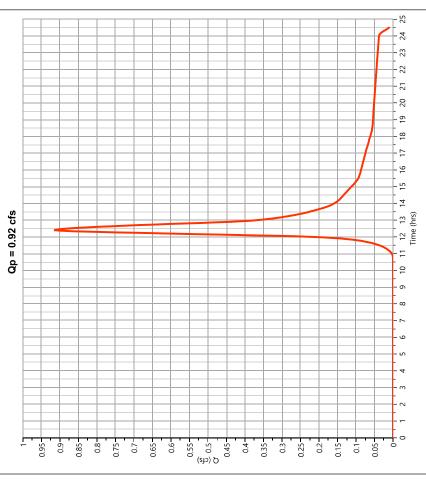
Hydrograph	Report	
Hydrog	raph	
Hydro	σ	:
Hyd	6	
ΞÌ	/qI	
:	-	
	<b>_</b>	

DA-4

Hyd. No. 29

08-06-2020 Project Name:

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.916 cfs
Storm Frequency	= 2-yr	Time to Peak	= 12.40 hrs
Time Interval	= 2 min	Runoff Volume	= 5,805 cuft
Drainage Area	= 1.45 ac	Curve Number	= 71
Tc Method	= User	Time of Conc. (Tc)	= 31.6 min
Total Rainfall	= 3.54 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



## Hydrograph Report

Hydrology Studio v 3.0.0.16

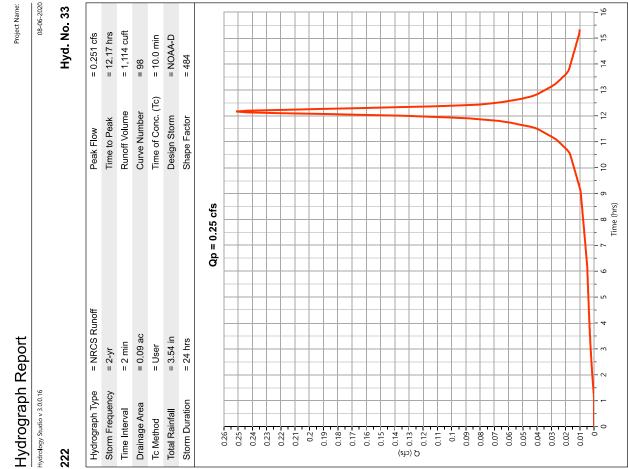
POA-2

Hyd. No. 31

Project Name: 08-06-2020

Storm Frequency = 2-yr Time Interval = 2 min Inflow Hydrographs = 27, 29									
						Time to Peak	eak	= 12	= 12.40 hrs
	in					Hydrogra	Hydrograph Volume		= 8,342 cuft
	29					Total Contrib. Area	trib. Area	= 1.4	= 1.45 ac
		U	Qp = 1.	1.13 cfs					
r									
1.6									
- 00									
				<					
0.7									
0.0									
				2					
+.0				$\leq$					
0.1									
		-	Y		-				
0 1 2 3 4	5678	6	10 11 11	12 13 1 Time (hrs)	14 15	16 17 7	18 19 20	) 21 22	23 24
	•	BASIN B		- DA-4	POA-2				

Hyd. P = NCS Runoff = NCS Runoff = -0.279 df = 2-yr Time to Peak Flow = -0.279 df = 2-yr Time to Peak = -1.238 cd = 0.1 ac Time to Peak = -1.28 cd				
Interval       = NRCS Runoff       Peak Flow         Im Frequency       = 2-yr       Time to Peak         Im Interval       = 2-yr       Time to Peak         Im Interval       = 2-yr       Runoff Volume         Image Area       = 0.1 ac       Curve Number         Image Area       = 0.1 ac       Time to Peak         Image Area       = 0.1 ac       Time to Peak         Image Area       = 0.1 ac       Time to Conc. (To)         Immunoff       = 3.5 in       Design Storm         Immunoff       = 3.4 in       Design Storm         Immunoff       = 3.4 in       Stape Factor         Immunoff       = 0.1 ac       Immunoff         Immunoff <td< td=""><td>Hydrology Studio v 3.0.0.16</td><td></td><td></td><td>08-06-2020</td></td<>	Hydrology Studio v 3.0.0.16			08-06-2020
= NrCS Runoff Peak Flow = 2-yr Time to Peak Flow = 2 min the to Peak Flow = 0.1 ac Time to Peak Time to Pe	211			Hyd. No. 35
= 2-yr = 2 min = 2 min = 0.1 ac =	Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.279 cfs
= 2 min = 0.1 ac = User = User = 3.54 in = 3.54 in = 3.54 in = 3.54 in = 2.4 hrs = 2.4	Storm Frequency	= 2-yr	Time to Peak	= 12.17 hrs
= 0.1 ac = User Time of Conc. (Tc) = 10.0 m = User Time of Conc. (Tc) = 10.0 m = 3.54 in Shape Factor = 434 = 24 hrs Shape Factor = 434 Qp = 0.28 cfs =	Time Interval	= 2 min	Runoff Volume	= 1,238 cuft
= User       = 10.0 m         = 3.54 in       = 3.54 in         = 3.54 in       = 3.54 in         = 24 hrs       Design Storm       = N0AA         = 24 hrs       Shape Factor       = 484         Qp = 0.28 cfs	Drainage Area	= 0.1 ac	Curve Number	= 98
= 3.54 in = 3.54 in = 0.054 = 24 hrs = 1.28 cfs = 484 = 24 hrs = 484 <b>GP = 0.28 cfs = 484</b> <b>GP = 0.28 cfs = 484</b>	Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
= 24 ltrs = 24 ltrs = 24 ltrs = 484	Total Rainfall	= 3.54 in	Design Storm	= NOAA-D
gb = 0.28 ciz       gb = 0.28 ciz         gb = 0.18 ciz       gb = 0.18 ciz         gb = 0.18 ciz	Storm Duration	= 24 hrs	Shape Factor	= 484
		Qp = 0	.28 cfs	
	0.28			
	0.26			
	1			
	0.24			
	0.2			
	•			
	0.18-			
	0.16			
	(sj)			
	<u>ז ז</u> ס(			
	0.12			
	1			
	0.1			
	0.08			
	1			
	0.06			
	0.04			
	1			
	0.02			/
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	-	-	-	-

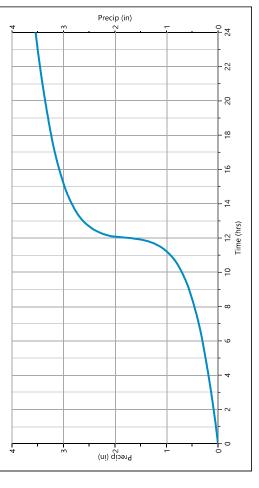


Report
Storm
Design

# Storm Distribution: Custom - NOAA-D

	100-yr	8.35	
	50-yr	0.00	
	25-yr	6.37	
Volume (in)	10-yr	5.24	
Total Rainfall Volume (in)	5-yr	0.00	
	3-yr	00.00	
	🖌 2-yr	3.54	
	1-yr	0.00	
Storm	Duration	24 hrs	

			Incre	mental Rainfa	Incremental Rainfall Distribution, 2-yr	. 2-yr			
Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)
11.10	0.011068	11.47	0.015859	11.83	0.042787	12.20	0.042787	12.57	0.015859
11.13	0.012260	11.50	0.015860	11.87	0.042786	12.23	0.030833	12,60	0.015859
11.17	0.012260	11.53	0.021358	11.90	0.042787	12.27	0.030833	12.63	0.014668
11.20	0.012261	11.57	0.021357	11.93	0.073809	12.30	0.030833	12.67	0.014668
11.23	0.013464	11.60	0.021358	11.97	0.073809	12.33	0.022479	12.70	0.014668
11.27	0.013464	11.63	0.022479	12.00	0.073809	12.37	0.022479	12.73	0.013464
11.30	0.013464	11.67	0.022479	12.03	0.123157	12.40	0.022479	12.77	0.013463
11.33	0.014667	11.70	0.022479	12.07	0.123157	12.43	0.021358	12.80	0.013464
11.37	0.014668	11.73	0.030833	12.10	0.123157	12.47	0.021358	12.83	0.012260
11.40	0.014667	11.77	0.030833	12.13	0.042787	12.50	0.021358	12.87	0.012260
11.43	0.015859	11.80	0.030834	12.17	0.042786	12.53	0.015859	12.90	0.012260



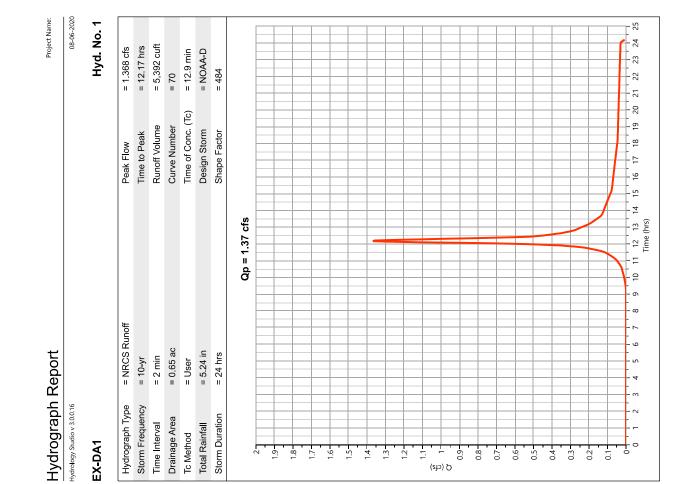
# Hvdrograph 10-vr Summarv

08-06-2020

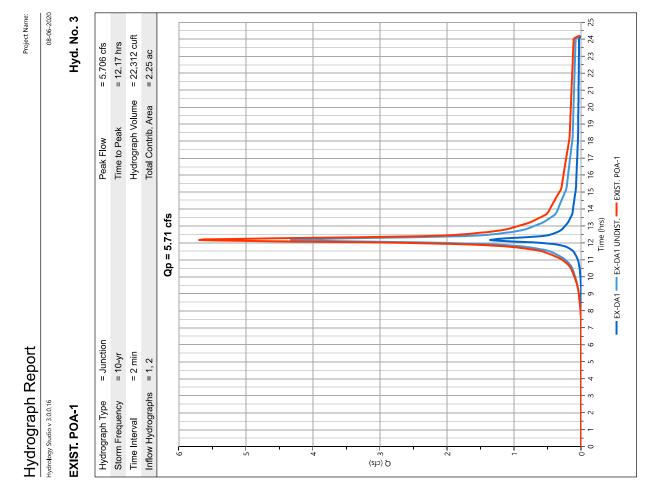
Custom Storm filename:

, dr	Hydrograph 1	Hydrograph 10-yr Summary						Project Name: 08-06-2020
	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
	NRCS Runoff	EX-DA1	1.368	12.17	5,392	i		
_	NRCS Runoff	EX-DA1 UNDIST.	4.338	12.17	16,920	i		
	Junction	EXIST POA-1	5.706	12.17	22,312	1, 2		
	NRCS Runoff	EX-DA2	1.843	12.40	11,077	I		
	NRCS Runoff	EX-DA2 UNDIST.	1.965	12.40	11,810	i		
	Junction	EXIST POA 2	3.807	12.40	22,886	5, 6		
12	NRCS Runoff	DA-1B	0.585	12.20	2,444	1		
13	NRCS Runoff	DA-1A	3.836	12.20	15,997	i		
14	Junction	DA-1	4.421	12.20	18,441	12, 13		
16	NRCS Runoff	DA-2 Imperv.	4.492	12.17	20,226	i		
17	NRCS Runoff	DA-2 Perv.	0.049	12.17	191	i		
18	Junction	DA-2 - BASIN A	4.541	12.17	20,417	16, 17		
19	Pond Route	BASIN A	0.986	12.63	20,395	18	215.71	8,258
21	Junction	POA-1	4.972	12.23	38,836	14, 19		
24	NRCS Runoff	DA-3 Imperv	0.998	12.17	4,495	i		
25	NRCS Runoff	DA-3 Perv.	0.294	12.17	1,149	ł		
26	Junction	BASIN B	1.292	12.17	5,643	24, 25		
27	Pond Route	BASIN B	0.630	12.37	4,641	26	217.62	2,474
29	NRCS Runoff	DA-4	2.046	12.40	12,255	I		
	Junction	POA-2	2.668	12.40	16,896	27, 29		
33	NRCS Runoff	222	0.374	12.17	1,685	I		
35	NRCS Runoff	211	0.416	12.17	1,873	I		

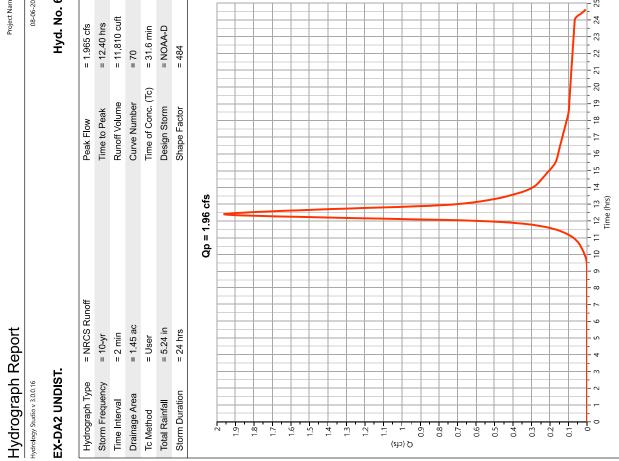
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	= NRCS Runoff = NRCS Runoff = 10-yr Time to Peak Flow = 10-yr Runoff Volume = 2 min = 2 min = 2 min e of Conc. (Tc) = 2 J hrs Shape Factor = 24 hrs Appel = 4.34 cfs Appel =	= NRCS Runoff = NRCS Runoff = 10-yr Time to Peak Flow = 10-yr Time to Peak = 2 min = 24 hrs Shape Factor = 24 hrs <b>Qp = 4.34 cfs</b>	= NRCS Runoff = NRCS Runoff = 10-yr Time to Peak Flow = 10-yr Runoff Volume = 2 min = 2 l hrs Shape Factor = 1.6 ac Time to Conc. (To ) = 5.2 l hrs Shape Factor = 2 l hrs Shape Fact	= NRCS Runoff     Peak Flow       = 10-yr     Time to Peak       = 2 min     Runoff Volume       = 2 min     Runoff Volume       = 1.6 ac     Ture Kumber       = 2.4 lns     Shape Factor	<ul> <li>- NRCS Runoff</li> <li>- INCS Runoff</li> <li>- 10-yr</li> <li>- 10-yr</li> <li>- 2 min</li> <li>- 2 min</li> <li>- 2 min</li> <li>- 2 min</li> <li>- 1.6 ac</li> <li>- 2 min</li> <li>- 2 moff Volume</li> <li>- 2 moff Volume</li></ul>	= NRCS Runoff       Peak Flow         = 10-yr       Time to Peak         = 2 min       Runoff Volume         = 2 min       Runoff Volume         = 1.6 ac       Ture to Peak         = 1.6 ac       Ture of the torus         = 2.4 in       Shape Factor	Hydrology Studio v 3.00.16 EX-DA1 UNDIST.	÷		Hyd. No. 2
= 10-yr       Time to Peak         = 2 min       Euroff Volume         = 1.6 ac       Luve Number         = User       Design Storm         = 524 in       Design Storm         = 24 hrs       Shape Factor	= 10-yr       Time to Peak         = 2 min       = 2 min         = 1.6 ac       Curve Number         = 1.6 ac       Time of Cons. (To)         = 524 in       Shape Factor         = 24 hrs       Shape Factor	= 10-yr = 2 min = 2 min = 2 min = 1.6 ac = 1.6 ac = 1.6 ac = 1.6 ac = 1.6 ac = 2.8 tin = 2.4 tin = 2	Frequency       = 10-yr       Time to Peak         Interval       = 2 min       Runoff Volume         age Area       = 16 ac       Curve Number         atind       = -15 ac       Time of Conc. (Tc)         Rinfall       = 524 in       Design Storm         10 Duration       = 24 hrs       Shape Factor         0       = 24 hrs       Shape Factor         0       = 1.34 cfs       Conc. (Tc)         1       1       2       3       4       5       6       7       8       9       10       1	= 10-yr $= 2 min$ $= 2 min$ $= 2 min$ $= 1.6 ac$ $= 0.5 c$ $= 0$	= 10-yr       Time to Peak         = 2 min       Runoff Volume         = 2 min       Time of Conc. (Tc)         = 0se       Time of Conc. (Tc)         = 5.24 in       Design Stom         = 2.24 hrs       Shape Factor	= 10-yr       Time to Peak         = 2 min       Runoff Volume         = 2 min       Euroff Volume         = 1.6 ac       Time of Conc. (To)         = 5.24 in       Design Stom         = 2.4 hrs       Shape Factor         _ 2.4 hrs       Conc. (To)         = 2.4 hrs       Conc. (To)         _ 2.4 hrs       Shape Factor         _ 2.4 hrs       Conc. (To)         _ 4 5 6 7 8 9 10 hr       11 12 13 14 15 16 17 18 19 20 21         _ Time (hrs)       _ 10 16 11 12 13 14 15 16 17 10 10 20 21	Hydrograph Type	= NRCS Runoff	Peak Flow	= 4.338 cfs
= 2 min = 1.6 ac = 1.6 ac = 0.6 curve Number = 5.24 in = 5.24 in = 2.4 hrs = 2.4	= 24 min       Runoff Volume         = 1.6 ac       - Urve Number         = User       - Urve Number         = 5.24 in       - Design Storm         = 24 hrs       - Shape Factor	= 2 min = 1.6 ac = User = User = User = S.24 in = 5.24 in = 2.4 hrs =	= 2 min       2 min       Runoff Volume         = 1.6 ac       Urve Number       Urve Number         = 5.24 in       Design Stom       Design Stom         = 5.24 in       Design Stom       Design Stom         = 24 hrs       Shape Factor       Runoff Volume         = 24 hrs       Shape Factor       Design Stom	= 2 min = 1.6 ac = User = User = User = User = S.24 in = 5.24 in = 5.24 in = 2.4 hrs = 2.	= 2 min       Runoff Volume         = 1.6 ac       Curve Number         = 1.6 ac       Design Storm         = 5.24 in       Design Storm         = 5.24 in       Design Storm         = 24 hrs       Shape Factor         (The of Conc. (To))       Shape Factor         (To)       Shape Factor	= 2  min  Runoff Volume $ = 1.6  ac  Curve Number $ $ = 1.6  ac  Curve Number $ $ = 1.6  ac  Curve Number $ $ = 5.24  in  Design Storm $ $ = 5.24  in  Shape Factor $ $ = 24  hrs  Shape Factor $ $ = 24  hrs  Curve Number $ $ = 24  hrs  Shape Factor $ $ = 24  hrs  Curve Number $ $ = 24  hrs  Hrs$	Storm Frequency	= 10-yr	Time to Peak	= 12 <u>.</u> 17 hrs
= 1.6 ac       Curve Number         = User       = User         = User       Estan         = 5.24 in       Design Storm         = 2.4 hs       Shape Factor         (c)       Control         = 0       Contro         = 0       Control <td>= 1.6 ac       Curve Number         = User       Under Number         = 5.24 in       Design Stom         = 2.4 hrs       Shape Factor         Qp = 4.34 cfs       And And And And And And And And And And</td> <td>= 1.6 ac     Curve Number     = 77       = User     Time of Conc. (Tc)     = 12.9 min       = 5.24 in     Design Storm     = NOAAD       = 24 his     Shape Factor     = 484   <b>Qp</b> = 4.34 cfs       <b>Qp</b> = 4.34 cfs</td> <td>= 1.6 ac       Curve Number       = 77         = User       Time of Conc. (Tc)       = 12.9 min         = 5.24 in       Shape Factor       = 484         = 24 his       Shape Factor       = 484         = 24 his       Design Storm       = 484         = 24 his       = 434 his       = 484         = 24 his       = 434 his       = 484         = 24 his       = 434 his       = 484         = 24 his       = 444 his       = 484         = 24 his       = 484 his       = 484 his</td> <td>= 1.6 ac     Curve Number     = 77       = User     Time of Conc. (Tc)     = 12.9 min       = UoArD     Shape Factor     = 484       = 24 hrs     Shape Factor     = 484   <b>Qp = 4.34 fs</b> </td> <td>= 1.6 ac       Curve Number       = 77         = User       Time of Conc. (Tc)       = 12.9 min         = UoAAD       Design Storm       = NOAAD         = 5.24 in       Design Storm       = NOAAD         = 24 hs      </td> <td>= 1.6 ac       Curve Number       = 77         = Uosr       Time of Conc. (Tc)       = 129 min         = 5.24 in       Design Storm       = NOAA-D         = 24 hrs       Shape Factor       = 484         = 24 hrs       Curve Number       = 484         = 24 hrs       Shape Factor       = 484         = 24 hrs       Curve Number       = 484         = 24 hrs       Shape Factor       = 484         = 24 hrs       Curve Number       = 124 str         = 24 hrs       Curve Number       = 124 str         = 24 hrs       Curve Number       = 1484</td> <td>Fime Interval</td> <td>= 2 min</td> <td>Runoff Volume</td> <td>= 16,920 cuft</td>	= 1.6 ac       Curve Number         = User       Under Number         = 5.24 in       Design Stom         = 2.4 hrs       Shape Factor         Qp = 4.34 cfs       And	= 1.6 ac     Curve Number     = 77       = User     Time of Conc. (Tc)     = 12.9 min       = 5.24 in     Design Storm     = NOAAD       = 24 his     Shape Factor     = 484 <b>Qp</b> = 4.34 cfs <b>Qp</b> = 4.34 cfs	= 1.6 ac       Curve Number       = 77         = User       Time of Conc. (Tc)       = 12.9 min         = 5.24 in       Shape Factor       = 484         = 24 his       Shape Factor       = 484         = 24 his       Design Storm       = 484         = 24 his       = 434 his       = 484         = 24 his       = 434 his       = 484         = 24 his       = 434 his       = 484         = 24 his       = 444 his       = 484         = 24 his       = 484 his       = 484 his	= 1.6 ac     Curve Number     = 77       = User     Time of Conc. (Tc)     = 12.9 min       = UoArD     Shape Factor     = 484       = 24 hrs     Shape Factor     = 484 <b>Qp = 4.34 fs</b>	= 1.6 ac       Curve Number       = 77         = User       Time of Conc. (Tc)       = 12.9 min         = UoAAD       Design Storm       = NOAAD         = 5.24 in       Design Storm       = NOAAD         = 24 hs	= 1.6 ac       Curve Number       = 77         = Uosr       Time of Conc. (Tc)       = 129 min         = 5.24 in       Design Storm       = NOAA-D         = 24 hrs       Shape Factor       = 484         = 24 hrs       Curve Number       = 484         = 24 hrs       Shape Factor       = 484         = 24 hrs       Curve Number       = 484         = 24 hrs       Shape Factor       = 484         = 24 hrs       Curve Number       = 124 str         = 24 hrs       Curve Number       = 124 str         = 24 hrs       Curve Number       = 1484	Fime Interval	= 2 min	Runoff Volume	= 16,920 cuft
= User = 5.24 in = 5.24 in = 5.24 in = 2.4 hrs = 2	= User = 5.24 in = 5.24 in = 2.4 hrs = 2	= User = 5.24 in = 5.24 in = 5.24 in = 2.4 hrs = 2.4 hrs = 2.4 hrs = 484 <b>Qp = 4.34 cfs</b> <b>Qp = 4.34 cfs</b> = 484 <b>Qp = 4.34 cfs = 484 <b>Qp = 4.34 cfs = 484 <b>Qp = 4.34 cfs = 484 <b>Qp </b></b></b></b>	=	=	$= \operatorname{User}$ $= \operatorname{User}$ $= \operatorname{User}$ $= \operatorname{Uodeline}$	= User       Time of Conc. (Tc)       = 12.9 min         = 5.24 in       Design Storm       = NOAA-D         = 24 his       Shape Factor       = 484         Pactor       Design Storm       = 434 Storm         Pactor       Design Storm       = 134 Storm         Pactor       Design Storm       = 128 Storm         Pactor       Pactor       = 148 Storm         <	Drainage Area	= 1.6 ac	Curve Number	= 77
= 5.24 in = 2.34 in = 2.34 in = 2.4 hrs = 2.4 hrs	= 5.24 in = 24 hrs = 24 hrs = 24 hrs Shape Factor	= 5.24 in = 6.24 in = 1.0AAD = 24 hrs = 24 hrs = 24 hrs Ap = 4.34 cfs = 484 = 4844 = 4844 = 4844 = 4844= 4844 = 4844 = 4844 = 4844 = 4844 = 48444= 4844 = 4844 = 4844444444	= 5.24 in     Design Storm     = NOAAD       = 24 hts     Shape Factor     = 484	= 5.24 in     besign Storm     = NOAAD       = 24 hrs     shape Factor     = 484       = 24 hrs     Appendix     = 434 cfs       Qp = 4.34 cfs     Appendix     = 484       Qp = 4.34 cfs     Appendix     = 484       Appendix     Appendix     = 484	$= 5.24 \text{ in} \qquad \text{Posign Storm} = NOAAD$ $= 24 \text{ hrs} \qquad \text{Shape Factor} = 484$ $Qp = 4.34 \text{ trs}$ $Qp = 4.34 \text{ trs}$ $Qr $	$= 5.24 \text{ in} \qquad = 0.0\text{AAD}$ $= 24 \text{ hrs} \qquad = 134 \text{ cm} \qquad = 484$ $= 24 \text{ hrs} \qquad = 134 \text{ cfs} \qquad = 484$ $Qp = 4.34 \text{ cfs} \qquad = 4.34  cfs$	fc Method	= User	Time of Conc. (Tc)	= 12.9 min
= 24 lts Shape Factor	= 24 lts	= 24 hrs = 2	=24 hts = 24 hts = 434 cts	=24 hts = 24 hts = 484 <b>Gp = 4.34 cfs</b> <b>Gp = 4.34 cfs</b>	=24 ths = 24 ths = 484 = 24 ths = 24 th	=24 ths     = 134 ths       = 24 ths     Shape Factor       Ap= 4.34 ths         Ap= 4.34 ths       Ap= 4.34 ths         Ap= 4.34 ths         Ap= 4.34 ths         Ap= 4.34 ths         Ap= 4.34 ths         Ap= 4.34 ths         Ap= 4.34 ths         Ap= 4.34 ths         Ap= 4.34 ths         Ap= 4.34 ths	otal Rainfall	= 5.24 in	Design Storm	= NOAA-D
		Cp = 4.34 cfs	Cp = 4.34 cfs	Op = 4.34 cfs       Op = 4.34 cfs              Op = 4.34 cfs        Op = 4.34 cfs        Op = 4.34 cfs        Op = 4.34 cfs        Op = 4.34 cfs        Op = 4.34 cfs        Op = 4.34 cfs        Op = 4.34 cfs        Op = 4.34 cfs        O	Op = 4.34 cfs       Op = 4.34 cfs	Op = 4.34 cfs         Op = 4.34 cfs         Op = 4.34 cfs         Op = 1.34 cfs         Op = 1.24 cfs	Storm Duration	= 24 hrs	Shape Factor	= 484
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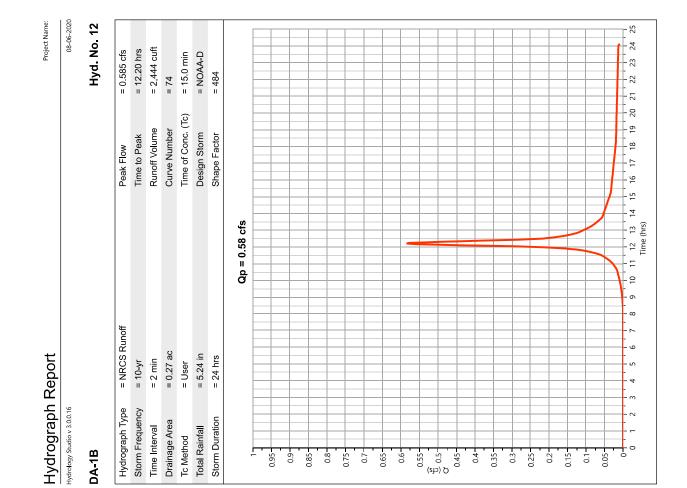


EX-DA2			Hyd. No.
Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.843 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.40 hrs
Time Interval	= 2 min	Runoff Volume	= 11,077 cuft
Drainage Area	= 1.36 ac	Curve Number	= 70
Tc Method	= User	Time of Conc. (Tc)	= 31.6 min
Total Rainfall	= 5.24 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484
	Qp = 1.8	1.84 cfs	
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Price States Sta				Veholt		
Hyd. No. 6       EXST: POA2         = 1966 ds       = 1966 ds         = 12-0 hs       = 1360 cutt         = 12-0 hs       = 140 cutt         = 1300 cutt       = 2 min         = 1300 cutt       = 2 min         = 100 m       = 2 min         = 100 m       = 2 min         = 100 m       = 2 min         (b) = 316 min       = 2 min         = 0.04.05       = 2 min         me Interval       = 2, 6         model		08-06-2020	Hydrology Studio v 3.0.0.16			08-06-2020
= 1365 cfs       = 1365 cfs       Fedurency       = 10-yr       Time to Peak Flow         = 12.40 hts       = 12.40 hts       = 12.40 hts       Time to Peak         = 1361 chrit       = 70       Time to Peak       Time to Peak         10       = 316 mh       = 2 min       Total Contrib. Acua         10       = 316 mh       = 484       Total Contrb. Acua         = 484       = -0       -0       = 3.81 cfs         = 484       -0       -0       = 3.81 cfs       -0         = 484       -0       -0       -0       = 3.81 cfs       -0         = 484       -0       -0       -0       -0       -0       -0         -0       = -0       -0       -0       -0       -0       -0       -0         -0       = -0       -0 <t< th=""><th></th><th>Hyd. No. 6</th><th>EXIST. POA-2</th><th></th><th></th><th>Hyd. No. 7</th></t<>		Hyd. No. 6	EXIST. POA-2			Hyd. No. 7
= 12.40 hs       = 12.40 hs       = 10.47       The to Peak         = 11.810 curft       = 11.810 curft       = 11.810 curft       Ine to Peak         = 11.810 curft       = 2 min	Flow	= 1.965 cfs	Hydrograph Type	= Junction	Peak Flow	= 3.807 cfs
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	to Peak	= 12.40 hrs	Storm Frequency	= 10-yr	Time to Peak	= 12.40 hrs
= 70       Tolal Contrib. Acta         10       = 31.6 min         = 10.0Acto       Total Contrib. Acta         = 10.0Acto       = 0         = 14.0       -         = 44.0       -         = 14.0       -	ff Volume	= 11,810 cuft	Time Interval	= 2 min	Hydrograph Vol	ume = 22,886 cuft
TD       =31.6 min         = 00AAD       = 00AAD         = 100AAD       = 100AAD         = 100AD       = 100AD	Number	= 70	Inflow Hydrographs	= 5, 6	Total Contrib. A	ea = 2.81 ac
	of Conc. (Tc)	= 31.6 min		Qp = 3.81 cf	Sts	
	in Storm	= NOAA-D	4			
	e Factor	= 484				
			•			
			3-			
$\left(\begin{array}{c} \left(\begin{array}{c} \left(\right)\right)}\right\right)\right\right)}\right)\right)\right)\right)}\right)\right)\right)}\right)\right)}\right)}\right)}\right$			1			
$\left(\begin{array}{c} (2)\\ (3)\\ (3)\\ (3)\\ (3)\\ (3)\\ (3)\\ (3)\\ (3$						
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18 19 20 21 22 23 24 25 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 						
18 19 20 21 22 23 24 25 E 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 						
18 19 20 21 22 23 24 25 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 13 14 15 16 17 18 19 20 21 22 13 24 25 10 21 22 10 20 21 22 10 20 21 22 10 20 21 22 10 20 20 21 22 10 20 20 20 20 20 20 20 20 20 20 20 20 20						
18 19 20 21 22 23 24 25 E 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 18 19 20 21 22 EX.DA2.INDIGT - EXCLAD.						
18     19     20     21     22     23     24     5     6     7     8     9     10     11     12     14     15     16     17     18     19     20     21     22       18     19     20     21     22     3     24     5     6     7     8     9     10     11     12     13     14     15     16     17     18     19     20     21     22       18     19     20     21     22     3     24     25     5     5     5     5     5     5     16     17     18     19     20     21     22       18     19     20     21     22     23     24     25     5     5     5     5     5     5     5     10     11     12     13     14     15     16     18     19     20     21     22     23     24     25     5     7     5     5     7     5     5     16     17     12     10     11     12     13     14     15     16     17     12     13     14     15     12     12     12     12						
18 19 20 21 22 23 24 2 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 18 19 20 21 22 23 24 25 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 18 19 20 21 22 23 24 25						
18 19 20 21 22 23 24 25			1 2	5 6 7 8 9 10	14 15 16 17 18	20 21 22
	18 19	21 22 23 24		EX-DA2 EX-DA2 UNDIST	T - EXIST POA-2	





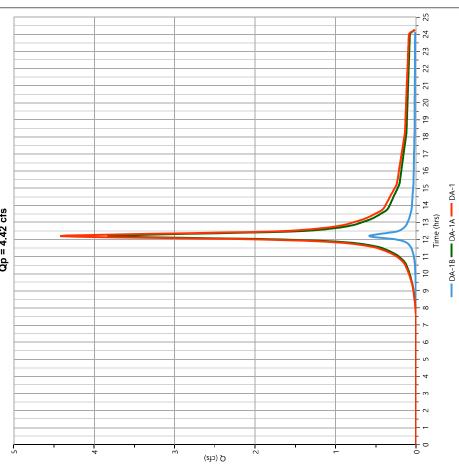
Report	-
Hydrograph	- >

DA-1

Hyd. No. 14

08-06-2020 Project Name:

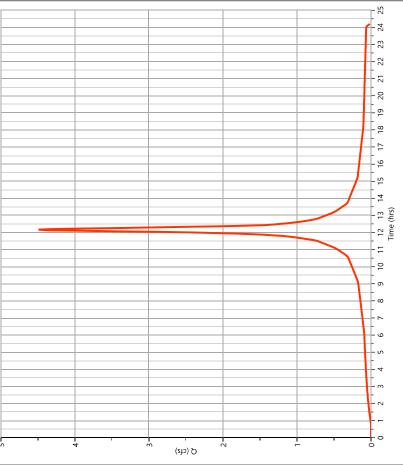
Hydrograph Type	= Junction	Peak Flow	= 4.421 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.20 hrs
Time Interval	= 2 min	Hydrograph Volume = 18,441 cuft	= 18,441 cuft
Inflow Hydrographs = 12, 13	= 12, 13	Total Contrib. Area = 1.87 ac	= 1.87 ac
L	Qp = 4.42 cfs		



08-06-2020 Project Name:

iyarology st

DA-2 Imperv.			Hyd. No. 16
Hydrograph Type	= NRCS Runoff	Peak Flow	= 4.492 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.17 hrs
Time Interval	= 2 min	Runoff Volume	= 20,226 cuft
Drainage Area	= 1.08 ac	Curve Number	= 98
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
Total Rainfall	= 5.24 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484
Ľ	Qp = 4.49 cfs		



Operating Surface       Specific Surface         Hydi. No. 17       Data         Hydi. No. 17       Data         Total Surface       Specific Surface         = 10.0 min       <	Constant       Pydrograph Type       = Junction         Pydrograph Type       = Junction         Stom Frequency       = 10-yr         Inflow Hydrographs       = 16, 17         Op       = 4.54 cts	08-06-2020	Hyd. No. 18	Peak Flow = 4.541 cfs	ak	Hydrograph Volume = 20,417 cuft	Total Contrib. Area = 1.1 ac																15 16 17 18 19 20 21 22 23 24 25	
08-66-2020 Hyd. No. 17 = 0.049 cfs = 1217 hrs = 124 =	08-66-2020 Hyd. No. 17 = 0.049 cfs = 12.17 hrs = 12.17			= Junction	= 10-yr	= 2 min		Qp = 4.54 cfs															5 6 7 8 9 10 1	Time (hrs)
Hyd. r = 0.049 cf = 12.17 h = 191 cuft = 10.0 mi = 191 cuft = 10.0 mi	Hyd. F = 0.049 cf = 12.17 h = 191 cuff = 10.0 mi = 484 = 484	Hydrology Studio v 3.0.0.16	DA-2 - BASIN A	Hydrograph Type	Storm Frequency	Time Interval	Inflow Hydrographs		2		1		4	ſ	ſ	 (s	ر (دا م (دا	2	1			•	~	
		08-06-2020	łyd. No. 17	049 cfs	2.17 hrs	91 cuft	.4	0.0 min	IOAA-D	84														
	Peak Flow Time to Peak Curve Number Curve Number Time of Conc. Design Storm Shape Factor		Ŧ	0 =	= 1:					= 4														
				۵.							Qp = 0.05 cfs													

= NRCS Runo = 0.02 ac = 5.24 in = 10-yr m = 2 min = User = 24 hrs ~~~ Hydrology Studio v 3.0.0.16 Hydrograph Type Storm Frequency <del>.</del> Storm Duration Drainage Area Time Interval Total Rainfall DA-2 Perv Tc Method <mark>.</mark>€∘ 0.05 Q (cfs) Q (0.026 0.042 0.044 0.04 0.038 0.036 0.034 0.032 0.03 0.028 0.022 0.02 0.014 0.012 0.01 0.006 0.016

Hydrograph Report

Report
graph
Hydroć

**BASIN A** 

Hyd. No. 19

08-06-2020

Project Name:

Hydrograph Report

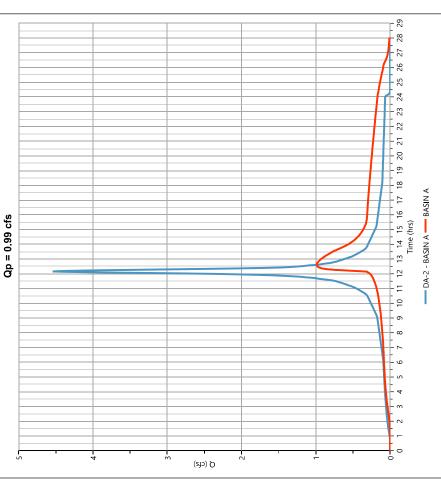
Hydrology Studio v 3.0.0.16

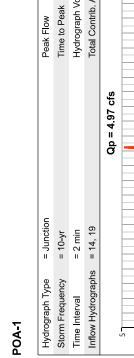
08-06-2020 Project Name:

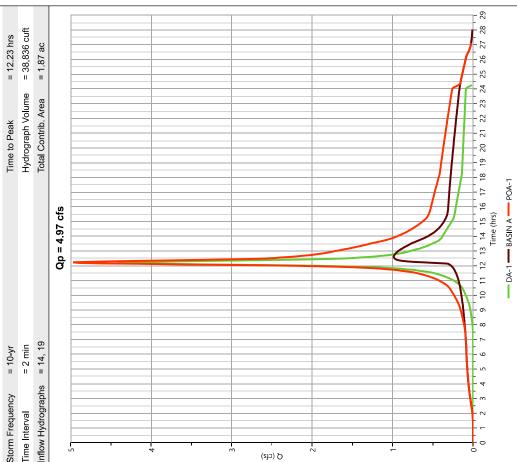
Hyd. No. 21

= 4.972 cfs

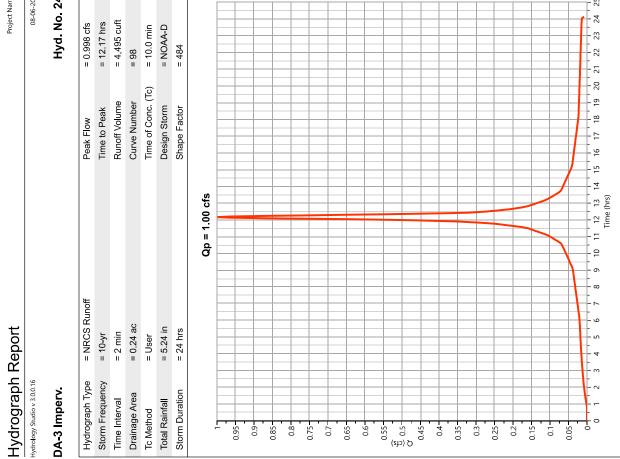
Hydrograph Type	= Pond Route	Peak Flow	= 0.986 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.63 hrs
Time Interval	= 2 min	Hydrograph Volume	= 20,395 cuft
Inflow Hydrograph	= 18 - DA-2 - BASIN A	Max. Elevation	= 215.71 ft
Pond Name	= BASIN A (Underground)	Max. Storage	= 8,258 cuft
Pond Routing by Storage Indication Method	dication Method	Center of mass	Center of mass detention time = 2.95 hrs







0 min	Hydrology Studio v 3.0.0.16			08-06-2020
yd. No. 24 998 cfs 998 cfs 998 cfs 17 hrs 17 hrs 14 14 20AA-D 20AA-D 20AA-D 20AA-D 20A-D 20A-D 20A-D				
998 cfs 2.17 hrs 495 cuft 3 00AA-D 04A-D 34	DA-3 Perv			Hyd. No. 25
95 cuft 0 min 0 A-D 4	Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.294 cfs
95 cuft 0 min 1 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Storm Frequency	= 10-yr	Time to Peak	= 12.17 hrs
0 min AA-D	Time Interval	= 2 min	Runoff Volume	= 1,149 cuft
0 min DAA-D	Drainage Area	= 0.12 ac	Curve Number	= 74
4 4	Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
	Total Rainfall	= 5.24 in	Design Storm	= NOAA-D
	Storm Duration	= 24 hrs	Shape Factor	= 484
		Qp = 0.29 cfs		
	0.3			
	0.28			
	- 36.0			
	- 07:0			
	0.24			
	0.22			
	0.2			
	0.18			
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	0.12			
	0.08			
	0.06			
	0.04			
	-			
	0.02			
1				
23 24 25		2 3 4 5 6 7 8 9 10	11 12 13 14	15 16 17 18
		Time (hrs)		



ydrograph Report	rdrology Studio v 3.0.0.16
Hydro	Hydrology Studi

### **BASIN B**

Hyd. No. 26

08-06-2020 Project Name:

Time to Peak = 12.17 hrs	Hydrograph Volume = 5,643 cuft	Total Contrib. Area = 0.36 ac	Qp = 1.29 cfs											10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 Ime(his)	
Storm Frequency = 10-yr	Time Interval = 2 min	Inflow Hydrographs = 24, 25										+			

### **BASIN B** Hyd Stol Tim Inflc Pond

Hydrograph Report

Hydrology Studio v 3.0.0.16

Hydrograph Type	= Pond Route	Peak Flow	= 0.630 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.37 hrs
Time Interval	= 2 min	Hydrograph Volume	= 4,641 cuft
Inflow Hydrograph	= 26 - BASIN B	Max. Elevation	= 217.62 ft
Pond Name	= BASIN B (Aboveground)	Max. Storage	= 2,474 cuft
Pond Routing by Storage Indication Method	Indication Method	Center of mass	Center of mass detention time = 2.18 hrs
	Qp = 0.63 cfs		
1.8-			
1.7			
- ·			
0.0 			
e O			
0.2			
0.1			
0 1 2	3 4 5 6 7 8 9 10 11 12 13 14 Timor Virov	15 16 17 18 19 20 21	22 23 24 25 26
		2	

08-06-2020 Project Name:

Hyd. No. 27

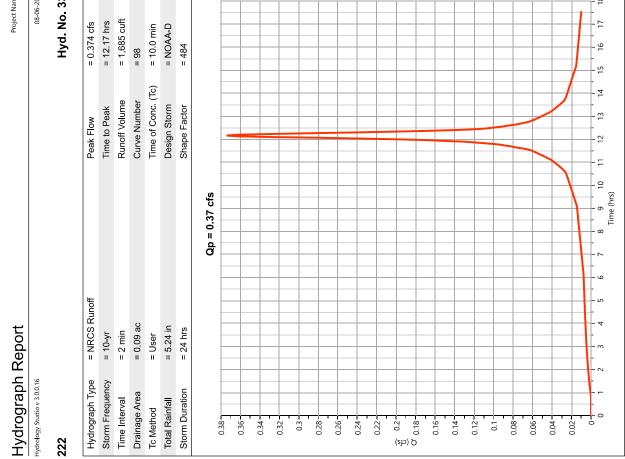
Hydrograph Report	Report		Project Name:	Hydrograph Report		Project Name:
Hydrology Studio v 3.0.0.16			08-06-2020	Hydrology Studio v 3.0.0.16		08-06-2020
DA-4			Hyd. No. 29	POA-2		Hyd. No. 31
Hydrograph Type	= NRCS Runoff	Peak Flow	= 2.046 cfs	Hydrograph Type = Junction P	Peak Flow	= 2.668 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.40 hrs	Storm Frequency = 10-yr	Time to Peak	= 12.40 hrs
Time Interval	= 2 min	Runoff Volume	= 12,255 cuft	= 2 min	Hydrograph Volume	= 16,896 cuft
Drainage Area	= 1.45 ac	Curve Number	= 71	Inflow Hydrographs = 27, 29 Tc	Total Contrib. Area	= 1.45 ac
Tc Method	= User	Time of Conc. (Tc)	= 31.6 min	Qn = 2.67 cfs		
Total Rainfall	= 5.24 in	Design Storm	= NOAA-D	3		
Storm Duration	= 24 hrs	Shape Factor	= 484			
	Qp = 2.05 cfs					
3						
5				(5)		
				- - - - - - - - - - - - - - - - - - -		
Q (cfs)						
						ſ
				0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	17 18 19 20 21	22 23 24 25 26
		1 10 10 30		Time (hrs)		

---- BASIN B ---- DA-4 ---- POA-2

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0 1 2

ct Name:	Hydrograph Report	Report		Project Name:
-06-2020	Hydrology Studio v 3.0.0.16			08-06-2020
. 33	211			Hyd. No. 35
	Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.416 cfs
	Storm Frequency	= 10-yr	Time to Peak	= 12.17 hrs
	Time Interval	= 2 min	Runoff Volume	= 1,873 cuft
	Drainage Area	= 0.1 ac	<b>Curve Number</b>	= 98
	Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
	Total Rainfall	= 5.24 in	Design Storm	= NOAA-D
	Storm Duration	= 24 hrs	Shape Factor	= 484
		Qp = 0.42 cfs		
	0.42			
	0.4			
	0.38			
	0.36			
	0.34			
	- 1030			
	- <u>- </u>			
	- 97.0			
	0.26			
	0.24			
	(cts) (cts)			
	0.2			
	0.18			
	0.16			
	0.14			
	0.12			
	0.1			
	0.08			
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	0.04		J	
1	- 0			
- 18	0 1 2	3 4 5 6 7 8	12 13 14 15	16 17 18 19
		lime (nrs)		

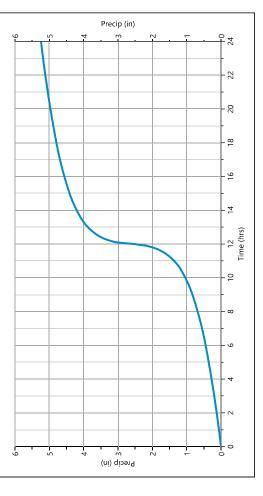


Report
Storm
Design

# Storm Distribution: Custom - NOAA-D

	yr	5	
	100-yr	8.35	
	50-yr	0.00	
	25-yr	6.37	
Total Rainfall Volume (in)	✔ 10-yr	5.24	
Total Rainfa	5-yr	00.00	
	3-yr	00.00	
	2-yr	3.54	
	1-yr	0.00	
Storm	Duration	24 hrs	

			Increr	nental Rainfa	Incremental Rainfall Distribution, 10-yr	10-yr			
Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)
11.10	0.016384	11.47	0.023475	11.83	0.063334	12.20	0.063334	12.57	0.023475
11.13	0.018148	11.50	0.023476	11.87	0.063333	12,23	0.045640	12,60	0.023475
11.17	0.018148	11.53	0.031615	11.90	0.063334	12.27	0.045640	12.63	0.021711
11.20	0.018148	11.57	0.031614	11.93	0.109254	12.30	0.045640	12.67	0.021711
11.23	0.019930	11.60	0.031615	11.97	0.109254	12.33	0.033274	12.70	0.021711
11.27	0.019929	11.63	0.033274	12.00	0.109253	12.37	0.033274	12.73	0.019930
11.30	0.019930	11.67	0.033274	12.03	0.182300	12.40	0.033274	12.77	0.019929
11.33	0.021711	11.70	0.033274	12.07	0.182300	12.43	0.031615	12.80	0.019929
11.37	0.021711	11.73	0.045641	12.10	0.182300	12.47	0.031614	12.83	0.018148
11.40	0.021711	11.77	0.045640	12.13	0.063334	12.50	0.031615	12.87	0.018148
11.43	0.023475	11.80	0.045642	12.17	0.063333	12.53	0.023475	12.90	0.018148



## Custom Storm filename:

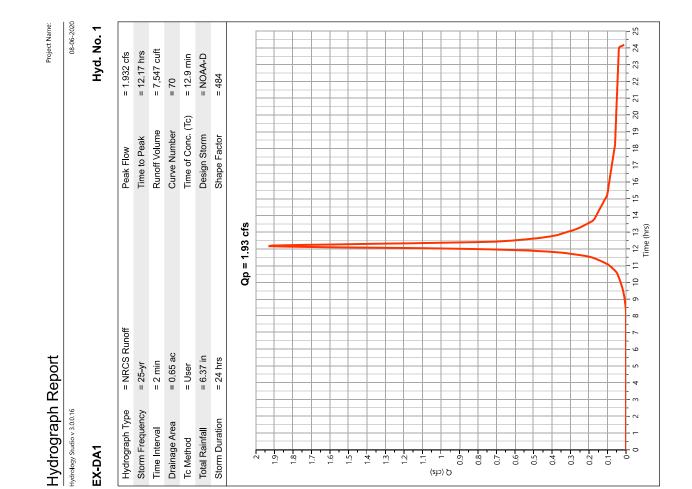
08-06-2020

# Hydrograph 25-yr Summary

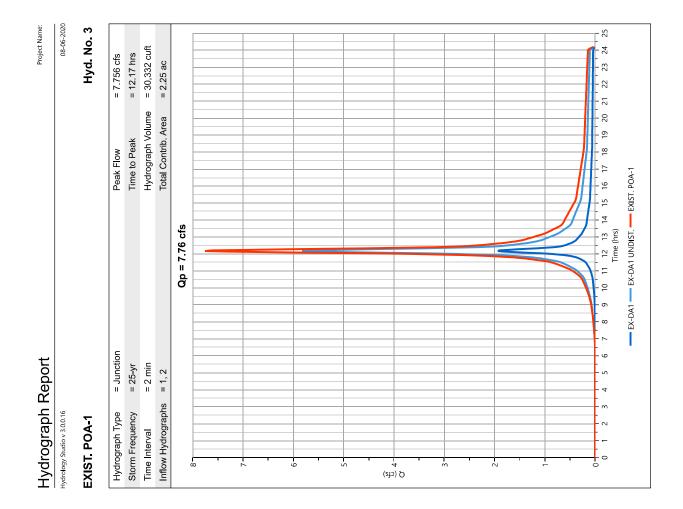
Hydrology Stu	Hydrology Studio v 3.0.0.16	ydrology studio v 3.0.0.16						08-06-2020
Hyd No	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
-	NRCS Runoff	EX-DA1	1.932	12.17	7,547	i		
2	NRCS Runoff	EX-DA1 UNDIST.	5.824	12.17	22,785	i		
е	Junction	EXIST POA-1	7.756	12.17	30,332	1, 2		
5	NRCS Runoff	EX-DA2	2.607	12.40	15,504	ł		
9	NRCS Runoff	EX-DA2 UNDIST.	2.780	12.40	16,530	i		
7	Junction	EXIST. POA-2	5.387	12.40	32,033	5, 6		
12	NRCS Runoff	DA-1B	0.802	12.20	3,343	ļ		
13	NRCS Runoff	DA-1A	5.151	12.20	21,542	i		
14	Junction	DA-1	5.953	12.20	24,885	12, 13		
16	NRCS Runoff	DA-2 Imperv.	5.470	12.17	24,789	i		
17	NRCS Runoff	DA-2 Perv.	0.067	12.17	262	I		
18	Junction	DA-2 - BASIN A	5.537	12.17	25,051	16, 17		
19	Pond Route	BASIN A	1.289	12.60	25,028	18	216.19	10,041
21	Junction	POA-1	6.897	12.20	49,913	14, 19		
24	NRCS Runoff	DA-3 Imperv.	1.215	12.17	5,509	i		
25	NRCS Runoff	DA-3 Perv.	0.403	12.17	1,572	1		
26	Junction	BASIN B	1.618	12.17	7,080	24, 25		
27	Pond Route	BASIN B	0.893	12.33	6,078	26	217.76	2,784
29	NRCS Runoff	DA-4	2.872	12.40	17,052	ł		
31	Junction	POA-2	3.746	12.37	23,129	27, 29		
ŝ	NRCS Runoff	222	0.456	12.17	2,066	i		
35	NRCS Runoff	211	0.506	12.17	2,295	ł		

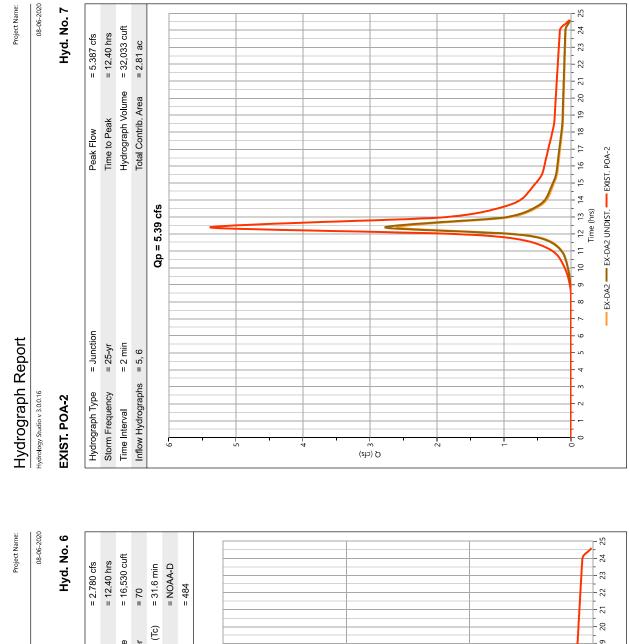
#### Project Name:

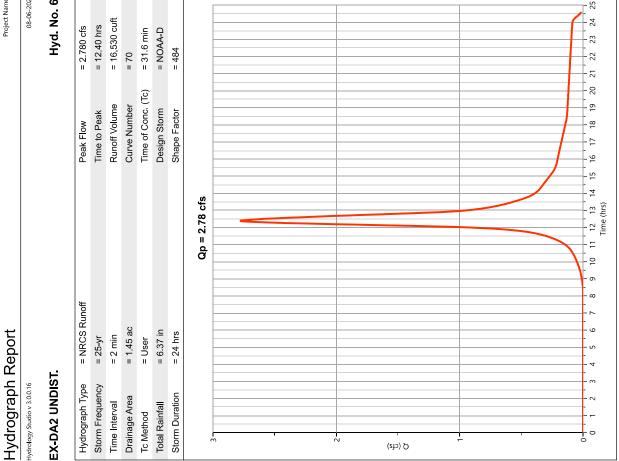
Hydrograph Type = NRCS Runoff Peak Flow = 5.824 cts Store frequency = 25-yr Trane to Peak Flow = 5.824 cts Trane frequency = 25-yr Trane to Peak Flow = 2.2785 cuth Trane of Conc. (Tc) = 12.9 min Datalage Area = 1.6 ac. Curve Number = 77 Trane of Conc. (Tc) = 12.9 min Datalage Area = 2.4 his Peak Flow = 2.4 his = 8.0 AAD Store Duration = 2.4 his = 6.37 m = 2.4 his = 8.0 AAD for Duration = 2.4 his = 2.4 his = 4.0 AAD for Duration = 2.4 his = 2.4	= NRCS Runoff = 5 = 25-yr Time to Peak Flow = 5 = 25-yr Time to Peak = 17 = 2 min = 1.6 ac Trime of Conc. (Tc) = 1 = 1.6 ac Trime of Conc. (Tc) = 1 = 1.6 ac Trime of Conc. (Tc) = 1 = 2.4 hrs = 2.4 hrs = 2.82 cfs = 44 = 2.4 hrs = 2.82 cfs = 2.82 cfs = 44 = 4 5 6 7 8 9 10 11 21 31 41 51 61 71 81 9 20 21 2	Hydrology Studio v 3.0.0.16	-		08-06-2020
= NRCS Runoff = 25-yr = 25 min = 2 min = 2 min = 2 min = 1.6 ac = 0.5 m = 0.	= NRCS Runoff = NRCS Runoff = 5824 cfs = 22.765 cuft = 22.765 cuft = 22.765 cuft = 1.6 min = 22.765 cuft = 2.9 min = 2.16 min = 2.775 cuft = 1.8 min = of Conc. (Tc) = 1.2 min = 1.0 min =	EX-DA1 UNDIST			Hyd. No. 2
= 25-yr       Time to Peak         = 2 min       = urve Number         = 1.6 ac       = urve Number         = 6.37 in       = besign Storm         = 24 hrs	= 25-yr       Time to Peak       = 12.17 hrs         = 22,785 cuft       = 22,785 cuft       = 77         = User       Curve Number       = 77         = User       Design Stom       = 12.9 min         = 6.37 in       Design Stom       = 12.9 min         = 5.37 in       Design Stom       = 13.9 min         = 2.4 hrs       Shape Factor       = 484	Hydrograph Type	= NRCS Runoff	Peak Flow	= 5.824 cfs
a = 2 min = User = User = User = User = S-37 in =	= 2,765 ouf       = 22,765 ouf       = 27,765 ouf         = 16 ac       Curve Number       = 77         = User       Time of Conc. (Tc)       = 12.9 min         = 6.37 m       Design Storm       = 104         = 6.37 m       Design Storm       = 144         = 1       Ape Factor       = 484         Ape factor       Shape Factor       = 484         Ape factor       = 484       = 484         App factor       = 484       = 484         App factor       = 484       = 484         App factor       = 484       = 484 </td <td>Storm Frequency</td> <td>= 25-yr</td> <td>Time to Peak</td> <td>= 12.17 hrs</td>	Storm Frequency	= 25-yr	Time to Peak	= 12.17 hrs
a = 1.6 ac = User = User = User = 0.37 in = 6.37 in = 2.4 Trme of Conc. (Tc) = 6.37 in = 2.4 Trme of Conc. (Tc) =	a = 1.6 ac = User = 77 = User = 129 min = 6.37 in = 24 ms = NOAA-D = 24 hrs = 24 hrs = 12.9 min = 24 hrs = 12.8 2 cfs = 24 hrs = 2.82 cfs = 24 state = 12.8 state = 12.	Time Interval	= 2 min	Runoff Volume	= 22,785 cuft
= User       Time of Conc. (Tc)         = 6.37 in       Design Storm         = 6.37 in       Design Storm         = 24 hrs       Shape Factor         O       = 24 hrs         Particular       Design Storm         O       = 24 hrs         D       = 10 hrs	= User = 1.2  min $= 6.37  in = 1.2  min$ $= 6.37  in = 1.0  min$ $= 6.37  in = 1.0  min$ $= 1.2  min = 1.2  min$	Drainage Area	= 1.6 ac	Curve Number	= 77
= 6.37 in       Design Stom         = 24 hrs       Shape Factor         Shape Factor       Shape Factor         And       Shape Factor	= 6.37 in     = NOAAD       = 24 hrs     Shape Factor     = 484	Tc Method	= User	Time of Conc. (Tc)	= 12.9 min
= 24 lbs	= 24 hrs = 134 = 484 - 24 hrs = 134 = 484 - 24 hrs = 134 + 15 + 15 + 15 + 15 + 15 + 15 + 15 + 1	Total Rainfall	= 6.37 in	Design Storm	= NOAA-D
	Qp = 5.82 cfs	Storm Duration	= 24 hrs	Shape Factor	= 484
			Qp = 5.82 cfs		
		9			
		2			
		4			
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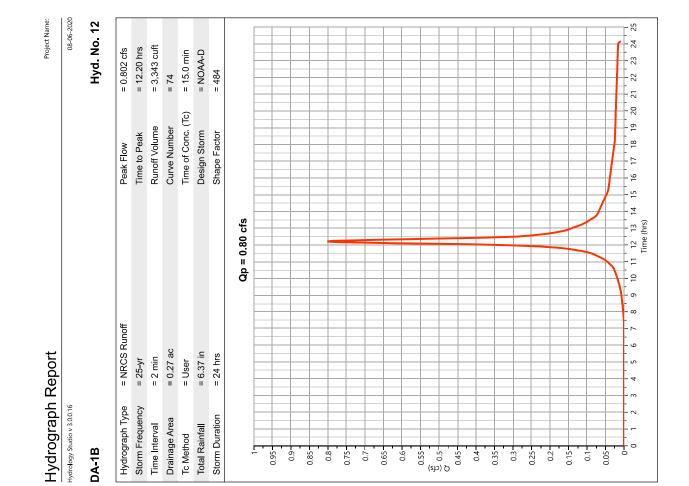
Project Name: 08-06-2020	Hyd. No. 5	Peak Flow Time to Peak Runoff Volume	Curve Number = 70 Time of Conc. (Tc) = 31.6 min		Shape Factor = 484	Qp = 2.61 cfs		
Report		= NRCS Runoff = 25-yr = 2 min	= 1.36 ac = User	= 6.37 in	= 24 hrs	Qp = 2.61 cfs		
Hydrograph Report	EX-DA2	Hydrograph Type Storm Frequency Time Interval	Drainage Area Tc Method	Total Rainfall	Storm Duration		ر (حاد) م	







DA-1A			Hyd. No. 13
Hydrograph Type	= NRCS Runoff	Peak Flow	= 5.151 cfs
Storm Frequency	= 25-yr	Time to Peak	= 12.20 hrs
Time Interval	= 2 min	Runoff Volume	= 21,542 cuft
Drainage Area	= 1.6 ac	Curve Number	= 77
Tc Method	= User	Time of Conc. (Tc)	= 15.0 min
Total Rainfall	= 6.37 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484
	Qp = 5.15 cfs		
9			
4			
(cts)			



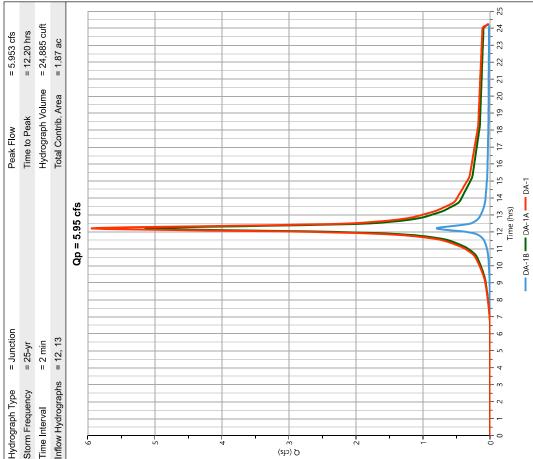
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DA-1

Hyd. No. 14

08-06-2020 Project Name:

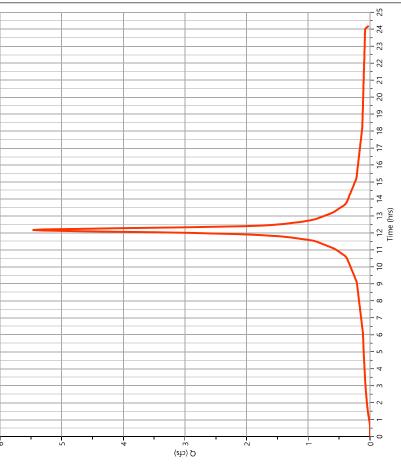
Hydrograph Type	= Junction	Peak Flow	= 5.953
Storm Frequency	= 25-yr	Time to Peak	= 12.20
Time Interval	= 2 min	Hydrograph Volume	= 24,88
Inflow Hydrographs = 12, 13	= 12, 13	Total Contrib. Area	= 1.87 <i>a</i>
ţ	Qp = 5.95 cfs		
0			



### Hydrograph Report Hydrology Studio v 3.0.0.16

Project Name: 08-06-2020

DA-2 Imperv.			Hyd. No. 16
Hydrograph Type	= NRCS Runoff	Peak Flow	= 5.470 cfs
Storm Frequency	= 25-yr	Time to Peak	= 12.17 hrs
Time Interval	= 2 min	Runoff Volume	= 24,789 cuft
Drainage Area	= 1.08 ac	Curve Number	= 98
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
Total Rainfall	= 6.37 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484
	Qp = 5.47 cfs		
4			



Hydrograph Report	Report		Project Name:	Hydrograph Report	Report		Project Name:
Hydrology Studio v 3.0.0.16			08-06-2020	Hydrology Studio v 3.0.0.16			08-06-2020
DA-2 Perv			Hyd. No. 17	DA-2 - BASIN A			Hyd. No. 18
Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.067 cfs	Hydrograph Type	= Junction	Peak Flow	= 5.537 cfs
Storm Frequency	= 25-yr	Time to Peak	= 12.17 hrs	Storm Frequency	= 25-yr	Time to Peak	= 12.17 hrs
Time Interval	= 2 min	Runoff Volume	= 262 cuft	Time Interval	= 2 min	Hydrograph Volume	= 25,051 cuft
Drainage Area	= 0.02 ac	Curve Number	= 74	Inflow Hydrographs	s = 16, 17	Total Contrib. Area	= 1.1 ac
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min		Q	Qp = 5.54 cfs	
Total Rainfall	= 6.37 in	Design Storm	= NOAA-D	<u> </u>			
Storm Duration	= 24 hrs	Shape Factor	= 484				
	Qp = 0.07 cfs			1			
0.068							
0.064							
•							
0.06							
0.056-							
0.052				4			
0.048 -				1			
0.044				(			
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(cfs) (cfs)				1			
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0.02 -							
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				0 1 2 3	4 5 6 7 8 9 10	11 12 13 14 15 16 17 18 19 20 Time (hrs)	21 22 23 24 25
			12 13 14		DA-2 Imperv	<b>—</b> DA-2 Imperv. <b>——</b> DA-2 Perv. <b>——</b> DA-2 - BASIN A	

Report	
Hydrograph	

**BASIN A** 

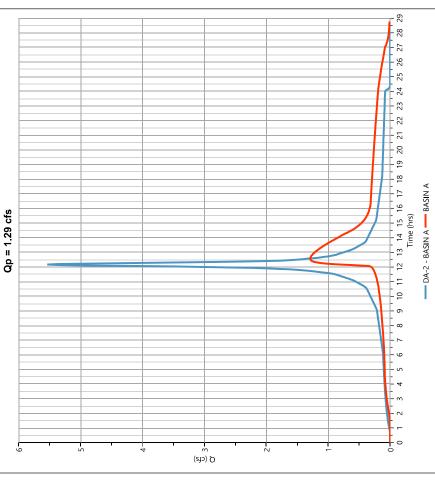
Hyd. No. 19

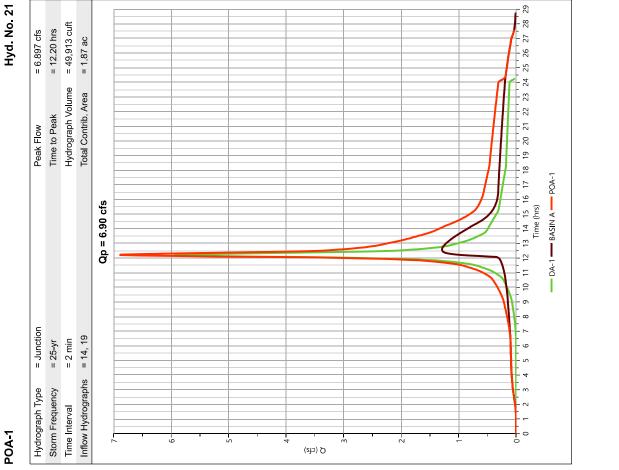
Hydrograph Report

Hydrology Studio v 3.0.0.16

08-06-2020 Project Name:

Hydrograph Type	= Pond Route	Peak Flow	= 1.289 cfs
Storm Frequency	= 25-yr	Time to Peak	= 12.60 hrs
Time Interval	= 2 min	Hydrograph Volume	= 25,028 cuft
Inflow Hydrograph	= 18 - DA-2 - BASIN A	Max. Elevation	= 216.19 ft
Pond Name	= BASIN A (Underground)	Max. Storage	= 10,041 cuft
Pond Routing by Storage Indication Method	dication Method	Center of mass	Center of mass detention time = 2.84 hrs





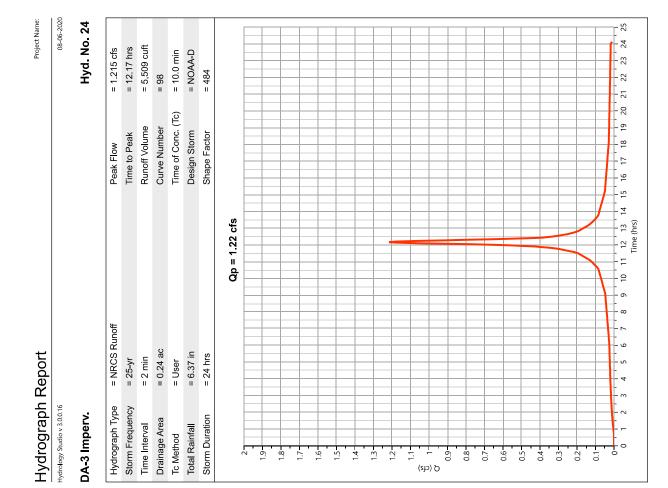
08-06-2020 Project Name:

Hyd. No. 21

= 49,913 cuft = 12.20 hrs = 6.897 cfs

= 1.87 ac

Type       = NRCS Runoff       Peak Flow         ency $= 25$ -yr       Time to Peak       =         ency $= 25$ -yr       Time to Peak       =         a $= 0.12$ ac       Curve Number       =       =         a $= 0.12$ ac       Diser       Curve Number       =       = $= 0.12$ ac $= 0.12$ ac       Diser       Curve Number       =       = $= 0.12$ ac $= 24$ hrs       Shape Factor       =       =       = $= 0.12$ ac $= 24$ hrs       Shape Factor       =       =       =       = $= 0.12$ ac $= 24$ hrs       Shape Factor       =	Hydrology Studio v 3.0.0.16			08-06-2020
Ype     = NRCS Runoff     Peak Flow       and     25-yr     Time to Peak       a     27 min     Runoff Volume       a     0.12 ac     Curve Number       a     0.12 ac     Curve Number       b     1     Design Storm       a     24 hrs     Shape Factor       a     24 hrs     Shape Factor	DA-3 Perv.			Hyd. No. 25
Image: S5-yr       Time to Peak         Image: S2-yr       Runoff Volume         Image: S2 min       Runoff Volume         Image: S2 min       Curve Number         Image: S2 min       Curve Numb	Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.403 cfs
= 2 min       = 2 min       Runoff Volume         = 0.12 ac       =	Storm Frequency	= 25-yr	Time to Peak	= 12.17 hrs
a = 0.12 ac = Urve Number = User = User = 6.37 in = 6.37 in = 2.4 hrs = 2.4 hrs	Time Interval	= 2 min	Runoff Volume	= 1,572 cuft
= User       Time of Conc. (Tc)         = 6.37 in       Design Storm         = 6.37 in       Design Storm         = 6.37 in       Design Storm         Diversity of the control of the contro of the control of the control of the contro of the control of the	Drainage Area	= 0.12 ac	Curve Number	= 74
= 6.37 in       Design Stom         = 24 hrs       Shape Factor         Shape Factor       Charles (Charles (	Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
= 24 hs = 2	Total Rainfall	= 6.37 in	Design Storm	= NOAA-D
	Storm Duration	= 24 hrs	Shape Factor	= 484
Q(th) Q(th)				
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Q(ds)	0.36			
Q (dt)	0.34			
Q(ds)				
Q(ds) Q(	200			
Q(tb) Q(	0.3			
Q(ds)	0.28 -			
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Q (ds) 02 0 0 12 0	0.24			
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	5 0			
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	0.02		/	



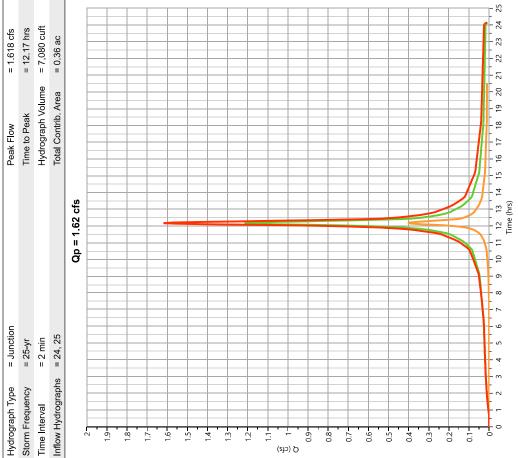
Report
rograph
Hydr

#### **BASIN B**

Hyd. No. 26

08-06-2020 Project Name:

Hydrograph Type	= Junction	Peak Flow	= 1.618 c
Storm Frequency	= 25-yr	Time to Peak	= 12.17 h
Time Interval	= 2 min	Hydrograph Volume	= 7,080 c
Inflow Hydrographs = 24, 25	= 24, 25	Total Contrib. Area	= 0.36 ac
ſ	Qp = 1.62 cfs		
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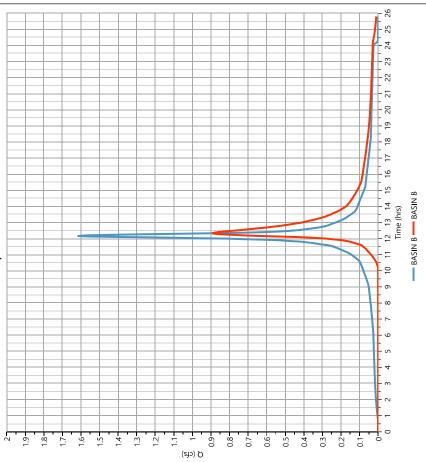


---- DA-3 Imperv. ---- DA-3 Perv. ---- BASIN B

### Hydrology Studio v 3.0.0.16 **BASIN B**

Hydrograph Report

Hydrograph Type	= Pond Route	Peak Flow	= 0.893 cfs
Storm Frequency	= 25-yr	Time to Peak	= 12.33 hrs
Time Interval	= 2 min	Hydrograph Volume	= 6,078 cuft
Inflow Hydrograph	= 26 - BASIN B	Max. Elevation	= 217.76 ft
Pond Name	= BASIN B (Aboveground)	Max. Storage	= 2,784 cuft
Pond Routing by Storage Indication Method	lication Method	Center of mass	Center of mass detention time = 1.93 hrs
	Qp = 0.89 cfs		
2			
1.7-			



08-06-2020 Project Name:

Hyd. No. 27

iph Report	
Hydrograg	

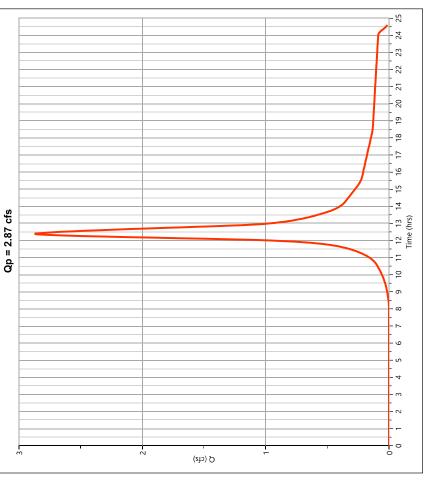
DA-4

Hyd. No. 29

08-06-2020

Project Name:

p >	off Peak Flow Time to Peak Runoff Volume Curve Number Time of Conc. (Tc) Design Storm	= 2.872 cfs = 12.40 hrs = 17,052 cuft = 71 = 31.6 min = NOAA-D
Storm Duration = 24 hrs	Shape Factor	= 484



Report	
Hydrograph	Hydrology Studio v 3.0.0.16

POA-2

08-06-2020

Project Name:

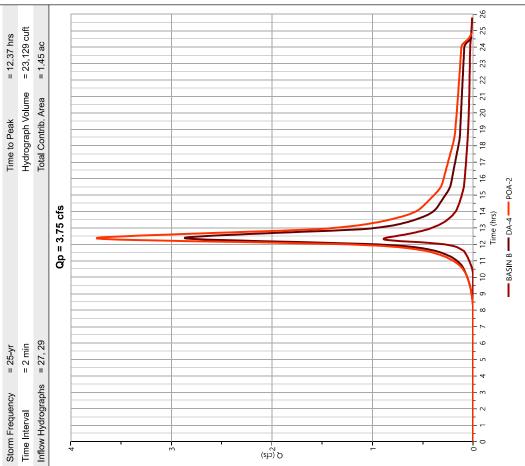
 Hyd. No. 31

 Peak Flow
 = 3.746 cfs

 Time to Peak
 = 12.37 hrs

= Junction

Hydrograph Type



Point No. 23 Point No. 33 Point No. 33 Point Notices = 2.056 cdt True to Peak in the	Image: series of the constraint of								
Hyt. No. 33 Hyt. No. 33 Time of Cancer Time to Peak Flow Time to Peak Flow Time to Cancer Rannon Frequency Come Number Rannon Frequency Rannon Frequency Come Number Rannon Frequency Come Number Rannon Frequency Rannon	Hydr. 0.33       Ltd. 1.32       Ltd. 1.32 <thld. 1.32<="" th=""> <thld. 1.32<="" th=""> <thld. 1.32<="" th=""></thld.></thld.></thld.>			08-06-2020	Hydrology Studio v 3.0.0.16			08-06-	
Feak Flow         = 0.456 ctb           Rundi Volume         = 2.066 ctb           Rundi Volume         = 2.066 ctb           Rundi Volume         = 2.066 ctb           Corre Number         = 8.0           Time o Foak         = 10.01 min           Corre Number         = 80           Time o Conc. (7b)         = 10.01 min           Time o Conc. (7b)         = 10.01 min           Time o Conc. (7b)         = 10.01 min           Time of Conc. (7b)         = 10.01 min           Stage Factor         = 484           Concent Name         = 6.37 min           Stage Factor         = 444           Concent Name         = 6.05 min           Stage Factor         = 444           Concent Name         = 6.05 min	Fask Flow         = 0.465 cts           Fask Flow         = 0.456 cts           Time to Peak         = 2.71 his           Rundin value         = 2.065 cut           Rundin value         = 2.065 cut         = 2.000 cut         = 2.370 cut         = 2.370 cut         = 2.365 cut           Rundin value         = 2.000 cut         = 0.1 ac         Rundin value         = 2.365 cut         = 2.370 cut         = 2.365 cut         = 2.370 cut         = 2.365 cut         = 2.366 cut         = 2.370 cut         = 2.366 cut			Hyd. No. 33	211			Hyd. No. (	
Time break         = 12.17 is a 2.066 cm         Time break         = 12.17 is a 2.066 cm         Time break         = 12.17 is a 2.066 cm         = 12.17 is a 2.066 cm         = 12.17 is a 2.060 cm         = 12.01 cm         = 2.266 cm         = 12.01 cm         = 2.266 cm         = 2.276 cm         = 2.266 cm         = 2.276 cm <th= 2.276="" cm<="" th="">         = 2.276 cm         <th 2.276="" =="" c<="" th=""><th>Time to Feak         = 13.17 fis           Rundf Vidume         = 2.06 c/f           Rundf Vidume         = 2.08 c/f           Curve Nimber         = 2.08 c/f           Curve Nimber         = 2.08 c/f           Time of Conc. (c)         = 10.0 min           Time of Conc. (c)         = 10.0 min           Time of Conc. (c)         = 10.0 min           Design Storm         = NOAAD           Stage Factor         = 44i           Concentration         = 0.37 min           Design Storm         = NOAAD           Stage Factor         = 24 min           Design Storm         = 20.0 min           Design Storm         = 20.0 min           Design Storm         = 20.0 min           Stage Factor         = 44i           Concentration         = 21.1 min           Design Storm         = 20.0 min           Design Storm</th><th></th><th>eak Flow</th><th>= 0.456 cfs</th><th>Hydrograph Type</th><th>= NRCS Runoff</th><th>Peak Flow</th><th>= 0.506 cfs</th></th></th=>	<th>Time to Feak         = 13.17 fis           Rundf Vidume         = 2.06 c/f           Rundf Vidume         = 2.08 c/f           Curve Nimber         = 2.08 c/f           Curve Nimber         = 2.08 c/f           Time of Conc. (c)         = 10.0 min           Time of Conc. (c)         = 10.0 min           Time of Conc. (c)         = 10.0 min           Design Storm         = NOAAD           Stage Factor         = 44i           Concentration         = 0.37 min           Design Storm         = NOAAD           Stage Factor         = 24 min           Design Storm         = 20.0 min           Design Storm         = 20.0 min           Design Storm         = 20.0 min           Stage Factor         = 44i           Concentration         = 21.1 min           Design Storm         = 20.0 min           Design Storm</th> <th></th> <th>eak Flow</th> <th>= 0.456 cfs</th> <th>Hydrograph Type</th> <th>= NRCS Runoff</th> <th>Peak Flow</th> <th>= 0.506 cfs</th>	Time to Feak         = 13.17 fis           Rundf Vidume         = 2.06 c/f           Rundf Vidume         = 2.08 c/f           Curve Nimber         = 2.08 c/f           Curve Nimber         = 2.08 c/f           Time of Conc. (c)         = 10.0 min           Time of Conc. (c)         = 10.0 min           Time of Conc. (c)         = 10.0 min           Design Storm         = NOAAD           Stage Factor         = 44i           Concentration         = 0.37 min           Design Storm         = NOAAD           Stage Factor         = 24 min           Design Storm         = 20.0 min           Design Storm         = 20.0 min           Design Storm         = 20.0 min           Stage Factor         = 44i           Concentration         = 21.1 min           Design Storm         = 20.0 min           Design Storm		eak Flow	= 0.456 cfs	Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.506 cfs
Funditivitie         = 2.06 cutt         Eurol Youne         = 2.265 cutt           True of Com. (To: = 10 m)         = 10 ming         = 0.1 ac         Curre Number         = 86           True of Com. (To: = 10 m)           Design Stom         = 44         Singe Factor         = 24 m         True of Com. (To: = 10 m)           Singe Factor         = 34         Singe Factor         = 44         Singe Factor         = 44           Com Duration         = 2.3 fins         Design Stom         = 0.1 ac         Design Stom         = 10.0 m)           Singe Factor         = 344         Singe Factor         = 24 m         Singe Factor         = 44           Singe Factor         = 2.4 m         Design Stom         = 0.1 ac         Design Stom         = 0.0 MOAD           Singe Factor         = 2.4 m         Design Stom         = 0.0 MOAD         Design Stom         = 44           Singe Factor         = 2.4 m         Design Stom         = 0.1 ac         Design Stom         = 44           Singe Factor         = 2.4 m         Design Stom         = 0.1 ac         Design Stom         = 44           Singe Factor         = 0.1 ac         Design Stom         = 0.1 a	$\label{eq:relation} = 2.06c \ cth \\ \mbox{Curve Number } = 2.06c \ cth \\ \mbox{Curve Number } = 30 \ cth \\ \mbox{Curve Number } = 31 \ cth \$	-	ime to Peak	= 12.17 hrs	Storm Frequency	= 25 <b>-</b> yr	Time to Peak	= 12.17 hrs	
Curve Number         = 88         Curve Number         = 88           Trans of Curve.         (5) = 100 min         Trans of Curve.         (5) = 100 min           Design Storm.         = 8.0A-U         Exerce         Trans of Curve.         (5) = 100 min           Design Storm.         = 8.0A-U         Exerce         Trans of Curve.         (5) = 100 min           Design Storm.         = 8.0A-U         Exerce         Trans of Curve.         (5) = 100 min           Design Storm.         = 4.0A-U         Exerce         Trans of Curve.         (5) = 100 min           Design Storm.         = 4.0A-U         Exerce         Exerce         Exerce         Exerce           Stage Factor         = 4.0A         Exerce         Exerce         Exerce         Exerce         Exerce         Exerce           Stage Factor         = 2.41 min         Exerce         Exerce         Exerce         Exerce         Exerce         Exerce           Stage Factor         = 2.41 min         Exerce         Exerce         Exerce         Exerce         Exerce         Exerce           Stage Factor         = 2.41 min         Exerce         Exerce         Exerce         Exerce         Exerce         Exerce           Stage Factor         = 2.41 min	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	÷	Runoff Volume	= 2,066 cuft	Time Interval	= 2 min	Runoff Volume	= 2,295 cuft	
Time of Conc. (Tb) = 100 min       Time of Conc. (Tb) = 100 min         Besign Storm = NOADD       Steps Factor = 44         Steps Factor = 44       Steps Factor = 44         Steps Factor = 44       Steps Factor = 44         Conc. (Tb) = 100 min       Steps Factor = 44         Steps Factor = 44       Steps Factor = 44         Conc. (Tb) = 100 min       Steps Factor = 44         Steps Factor = 44       Steps Factor = 44         Conc. (Tb) = 100 min       Steps Factor = 44         Conc. (Tb) = 100 min       Steps Factor = 44         Conc. (Tb) = 100 min       Steps Factor = 44         Conc. (Tb) = 100 min       Steps Factor = 44         Conc. (Tb) = 100 min       Steps Factor = 44         Conc. (Tb) = 100 min       Steps Factor = 44         Conc. (Tb) = 100 min       Steps Factor = 44         Conc. (Tb) = 100 min       Steps Factor = 44         Conc. (Tb) = 100 min       Steps Factor = 44         Conc. (Tb) = 100 min       Steps Factor = 44         Conc. (Tb) = 100 min       Steps Factor = 44         Conc. (Tb) = 100 min       Steps Factor = 44         Conc. (Tb) = 100 min       Steps Factor = 44         Conc. (Tb) = 100 min       Steps Factor = 44         Conc. (Tb) = 100 min       Steps Factor = 44	Time of Conc. (Tc) = 100 min  Besign Storm = 100 Min  Single Fedor = 44  Single F	0	Curve Number	= 98	Drainage Area	= 0.1 ac	Curve Number	= 98	
Design Storm = NOA4D Singer Fractor = 444 Some Frac	Design Storm = NOA4D Shoer Factor = 484 Shoer Facto		Time of Conc. (Tc)	= 10.0 min	Tc Method	= User	Time of Conc. (Tc		
Single Factor 144 Stepe	Single factor 144 State factor 144 Stat		Jesign Storm	= NOAA-D	Total Rainfall	= 6.37 in	Design Storm	= NOAA-D	
	Debition of the second		shape Factor	= 484	Storm Duration	= 24 hrs	Shape Factor	= 484	
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0.04 0.02

0.08

0.1

Hydrology Studio v 3.0.0.16 222

Hydrograph Report

= NRCS Runoff

Hydrograph Type Storm Frequency

= 25**-**yr

= 2 min

= 6.37 in

= 24 hrs

Total Rainfall Storm Duration

0.46

0.42

0.38 0.36

0.34

0.32 0.3 0.26 Q 0.24

0.2 0.16 0.14

= 0.09 ac

Drainage Area

Tc Method

Time Interval

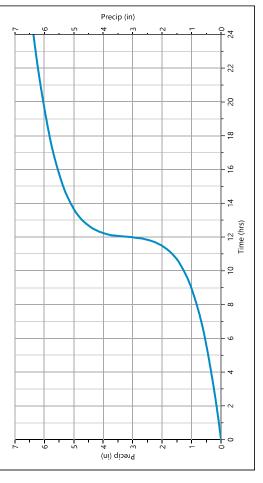
= User

Report
Storm
Design

# Storm Distribution: Custom - NOAA-D

Storm				Total Rainfal	Total Rainfall Volume (in)				
Duration	1-yr	2-yr	3-yr	5-yr	10-yr	🗸 25-yr	50-yr	100-yr	
24 hrs	0.00	3.54	00'0	00'0	5.24	6.37	0.00	8.35	

Increr	nei	ntal Rainfal	Incremental Rainfall Distribution, 25-yr	25-yr			
Precip (in)		Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)
0.028538		11.83	0.076992	12.20	0.076992	12.57	0.028537
0.028539		11.87	0.076990	12.23	0.055482	12,60	0.028538
0.038432		11.90	0.076992	12.27	0.055483	12.63	0.026393
0.038431		11.93	0.132814	12.30	0.055482	12.67	0.026393
0.038432		11.97	0.132815	12.33	0.040450	12.70	0.026393
0.040449		12.00	0.132814	12.37	0.040450	12.73	0.024228
0.040450		12.03	0.221613	12.40	0.040450	12.77	0.024226
0.040449		12.07	0.221613	12.43	0.038433	12.80	0.024227
0.055483		12.10	0.221613	12.47	0.038431	12.83	0.022062
0.055483		12.13	0.076992	12.50	0.038433	12.87	0.022061
0.055485		12.17	0.076990	12.53	0.028537	12.90	0.022061



# Hydrograph 100-yr Summary

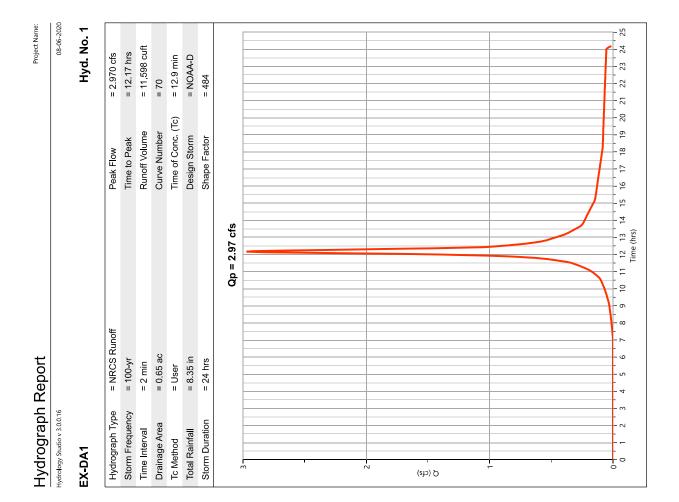
08-06-2020

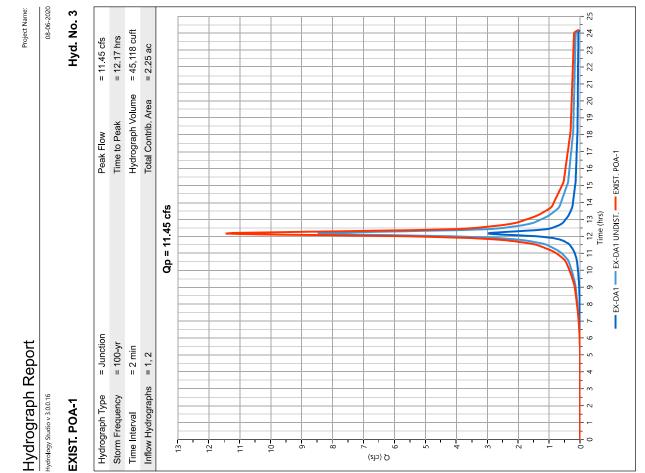
Custom Storm filename:

	Hydrograph 1 Hydrology Studio V 3.0.0.16	100-yr summary	<u>&gt;</u>					08-06-2020
Hyd No	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
-	NRCS Runoff	EX-DA1	2.970	12.17	11,598	ł		
2	NRCS Runoff	EX-DA1 UNDIST.	8.478	12.17	33,519	i		
e	Junction	EXIST. POA-1	11.45	12.17	45,118	1, 2		
5	NRCS Runoff	EX-DA2	4.019	12.40	23,826	1		
9	NRCS Runoff	EX-DA2 UNDIST.	4.285	12.40	25,402	i		
7	Junction	EXIST POA-2	8.303	12.40	49,228	5, 6		
12	NRCS Runoff	DA-1B	1.193	12.20	5,007	i		
13	NRCS Runoff	DA-1A	7.501	12.20	31,691	i		
14	Junction	DA-1	8.694	12.20	36,698	12, 13		
16	NRCS Runoff	DA-2 Imperv.	7.180	12.17	32,788	i		
17	NRCS Runoff	DA-2 Perv.	0.100	12.17	392	i		
18	Junction	DA-2 - BASIN A	7.280	12.17	33,180	16, 17		
19	Pond Route	BASIN A	1.738	12.57	33,157	18	217.17	13,292
21	Junction	POA-1	10.09	12.20	69,856	14, 19		
24	NRCS Runoff	DA-3 Imperv.	1.596	12.17	7,286	i		
25	NRCS Runoff	DA-3 Perv.	0.600	12.17	2,354	ł		
26	Junction	BASIN B	2.195	12.17	9,640	24, 25		
27	Pond Route	BASIN B	1.326	12.33	8,637	26	217.97	3,232
29	NRCS Runoff	DA-4	4.388	12.40	26,032	ł		
31	Junction	POA-2	5.687	12.37	34,669	27, 29		
33	NRCS Runoff	222	0.598	12.17	2,732	i		
r.	#d 0.00M		1000	14 04	500 0			
ŝ			000.0	/1.71	000'0	l		

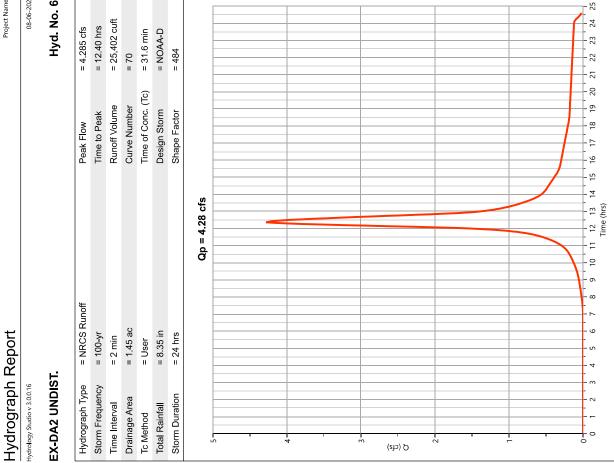
#### Project Name:

Hydrograph Type = NRCS Storm Frequency = 100-yr Time Interval = 2 min Drainane Area = 1.6 arc			Hyd. No. 2
	= NRCS Runoff	Peak Flow	= 8.478 cfs
	0-yr	Time to Peak	= 12.17 hrs
	nin	Runoff Volume	= 33,519 cuft
	= 1.6 ac	Curve Number	= 77
Tc Method = User	er	Time of Conc. (Tc)	= 12.9 min
Total Rainfall = 8.35 in	35 in	Design Storm	= NOAA-D
Storm Duration = 24 hrs	hrs	Shape Factor	= 484
	Qp = 8.48 cfs		
-6			
8			
(cts)			
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2			

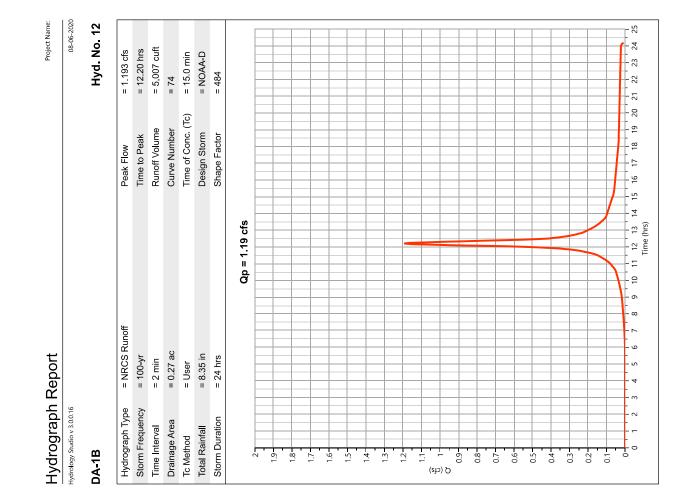




Ob = 8:30 cts
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Storm Frequency = 100-yr Time to Peak = 1220 this Time Interval = 2 min = 2	Hydrograph Report Hydrolegy Studio v 300.16 DA-1A Hydrograph Type = NRCS	Report = NRCS Runoff	Peak Flow	Project Name: 08-06-2020 <b>Hyd. No. 13</b> = 7.501 cfs
= 21.691 cuft = 16 ac = 1.6 ac = 1.6 ac = 1.6 ac = 1.6 ac = 1.6 ac = 1.6 ac = 1.5 min = 8.35 in = 8.35 in = 8.35 in = 8.0 Ac = 1.50 min = NOA-D = 1.50 min = NOA-D = 1.50 min = NOA-D = 1.50 min = NOA-D = 1.50 min = 1.50 m	Storm Frequency	= 100-yr	Time to Peak	= 12.20 hrs
= 1.6 ac       Curve Number       = 77         = User       Time of Conc. (Tc)       = 15.0 min         = UoAA-D       Design Storm       = NOAA-D         = 24 hrs       Shape Factor       = 484         = 24 hrs       Op = 7.50 cfs       = 484         = 24 hrs       Op = 7.50 cfs       = 484         = 24 hrs       Op = 7.50 cfs       = 484         = 24 hrs       Op = 7.50 cfs       = 484         = 24 hrs       Op = 7.50 cfs       = 484         = 10       Image: Ima	Time Interval	= 2 min	Runoff Volume	= 31,691 cuft
= User       Time of Conc. (Tc)       = 15.0 min         = 8.35 in       > NOAAD       = NOAAD         = 24 hrs       Shape Factor       = 484	Drainage Area	= 1.6 ac	Curve Number	= 77
= 8.35 in = NOAAD = 24 hrs = 150 cfs = 484 = 24 hrs = 150 cfs = 484	Tc Method	= User	Time of Conc. (Tc)	= 15.0 min
= 24 his = 2	Total Rainfall	= 8.35 in	Design Storm	= NOAA-D
Qp = 7.50 cts	Storm Duration	= 24 hrs	Shape Factor	= 484
		Qp = 7.50 cfs		
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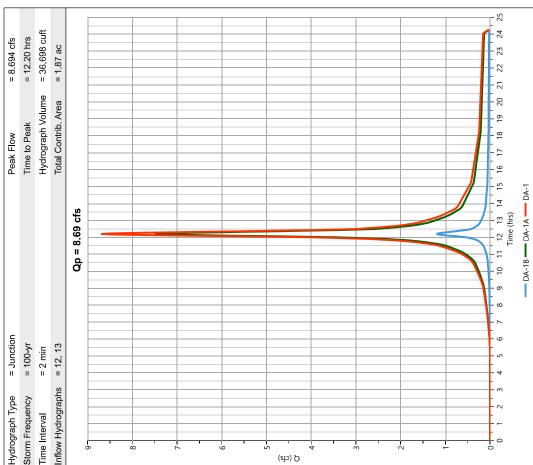


Report
Hydrograph

DA-1

Hyd. No. 14

Hydrograph Type	= Junction	Peak Flow	= 8.694 c
Storm Frequency	= 100-yr	Time to Peak	= 12.20 h
Time Interval	= 2 min	Hydrograph Volume	= 36,698
Inflow Hydrographs = 12, 13	= 12, 13	Total Contrib. Area	= 1.87 ac
	Qp = 8.69 cfs		



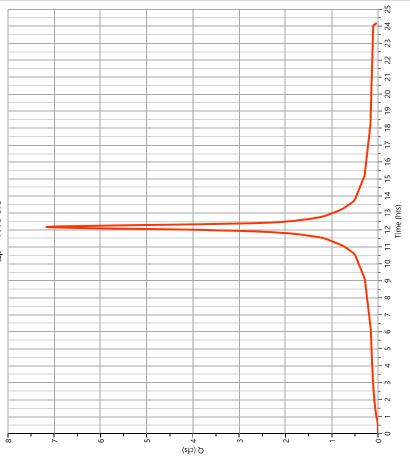
#### Hydrograph Report Hydrology Studio v 3.0.0.16

Project Name: 08-06-2020

Project Name: 08-06-2020

DA-2 Imperv.

ype incy			
	= NRCS Runoff	Peak Flow	= 7.180 cfs
	-yr	Time to Peak	= 12.17 hrs
Time Interval = 2 min		Runoff Volume	= 32,788 cuft
Drainage Area = 1.08 ac	3 ac	Curve Number	= 98
Tc Method = User		Time of Conc. (Tc)	= 10.0 min
Total Rainfall = 8.35 in	5 in	Design Storm	= NOAA-D
Storm Duration = 24 hrs	IIS	Shape Factor	= 484
	Qp = 7.18 cfs		
8			
•			



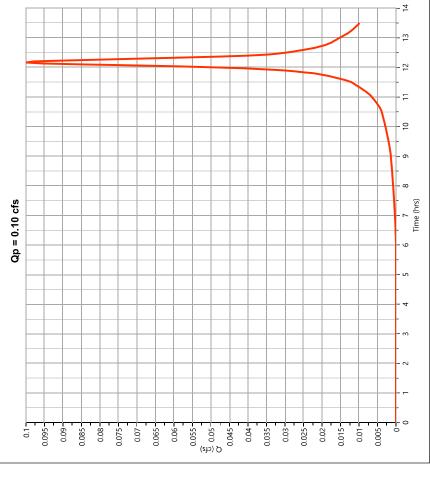
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DA-2 Perv

Hyd. No. 17

08-06-2020 Project Name:

= 0 100 cfs		= 12.17 hrs	= 392 cuft	= 74	= 10.0 min	= NOAA-D	= 484	
Peak Flow		Time to Peak	Runoff Volume	Curve Number	Time of Conc. (Tc)	Design Storm	Shape Factor	
= NRCS Runoff		= 100-yr	= 2 min	= 0.02 ac	= User	= 8.35 in	= 24 hrs	
Hvdrograph Type	2	Storm Frequency	Time Interval	Drainage Area	Tc Method	Total Rainfall	Storm Duration	



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				Qp = 7.28 cfs				
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Hydrograph Type	Storm Frequency	Time Interval	Inflow Hydrographs				ۍ درs) درs)	n (
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### Hydrograph Report

Hydrology Studio v 3.0.0.16

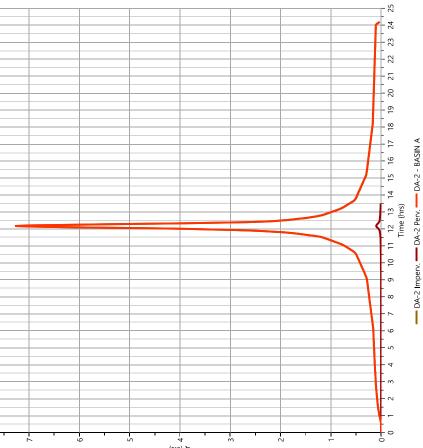
DA-2 - BASIN A

08-06-2020

Project Name:

Hyd. No. 18

= 7.280 cfs = 12.17 hrs = 33,180 cuft = 1.1 ac Hydrograph Volume Total Contrib. Area ime to Peak <sup>o</sup>eak Flow



Report	
Hydrograph	

**BASIN A** 

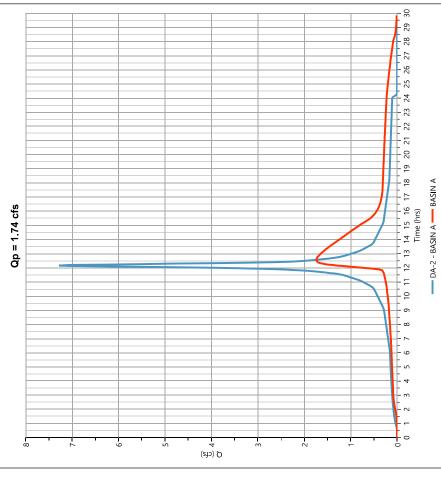
Hyd. No. 19

08-06-2020 Project Name:

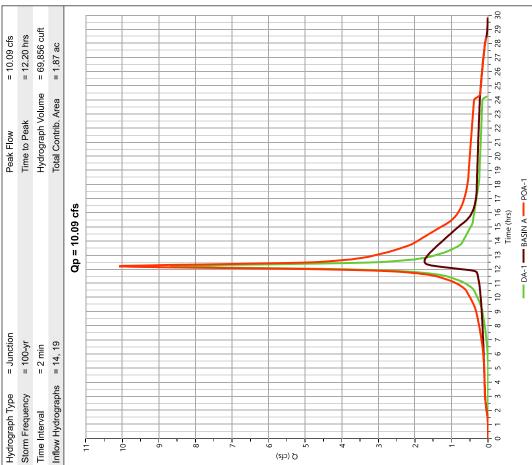
Hydrograph Report

Hydrology Studio v 3.0.0.16

Hydrograph Type	= Pond Route	Peak Flow	= 1.738 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.57 hrs
Time Interval	= 2 min	Hydrograph Volume	= 33,157 cuft
Inflow Hydrograph	= 18 - DA-2 - BASIN A	Max. Elevation	= 217.17 ft
Pond Name	= BASIN A (Underground)	Max. Storage	= 13,292 cuft
Pond Routing by Storage Indication Method	lication Method	Center of mass	Center of mass detention time = 2.75 hrs



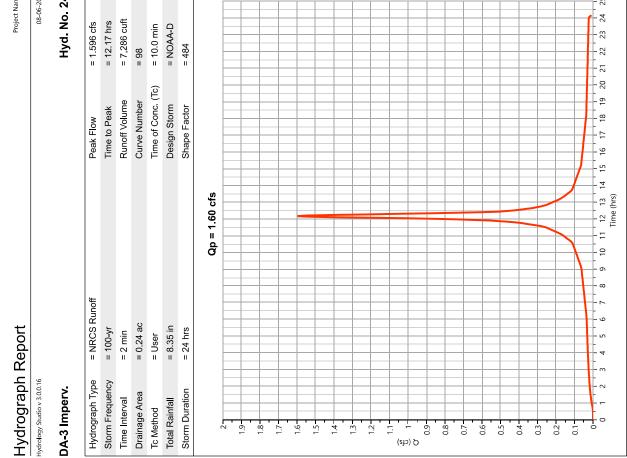


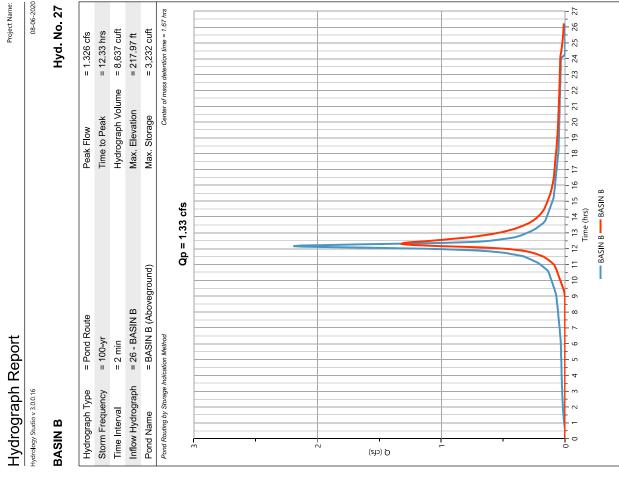


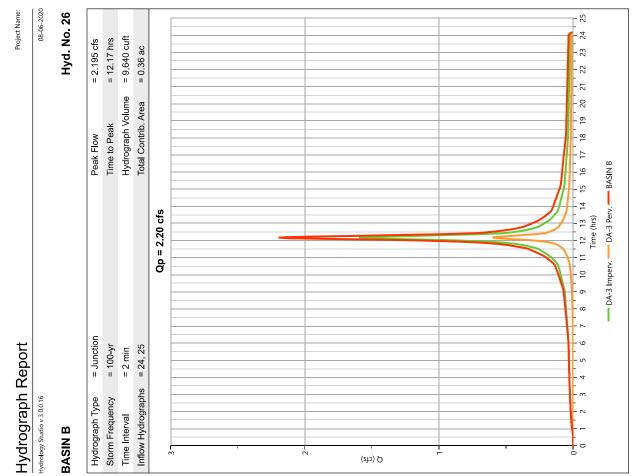
08-06-2020 Project Name:

Hyd. No. 21

Project Name:	Hydrograph Report	Report		Project Name:
08-06-2020	Hydrology Studio v 3.0.0.16			08-06-2020
/d. No. 24	DA-3 Perv.			Hyd. No. 25
96 cfs	Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.600 cfs
17 hrs	Storm Frequency	= 100-yr	Time to Peak	= 12.17 hrs
86 cuft	Time Interval	= 2 min	Runoff Volume	= 2,354 cuft
	Drainage Area	= 0.12 ac	Curve Number	= 74
0 min	Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
DAA-D	Total Rainfall	= 8.35 in	Design Storm	= NOAA-D
4	Storm Duration	= 24 hrs	Shape Factor	= 484
		Qp = 0.60 cfs		
	0.95 -			
	-6.0			
	0.85			
	0.8-			
	0.75			
	0.65			
	0.6			
	0.55			
	(cts)			
	ς α			
	0.4-			
	0.35 -			
	0.3			
	0.25			
	0.2			
	0.15			
	0.1			
	0.05			
	-			
23 24 25	1	3 4 5 6 7 8 9 10 11 12 13 14 1. Time (hrs)	15 16 17 18 19 20	21 22 23 24 25







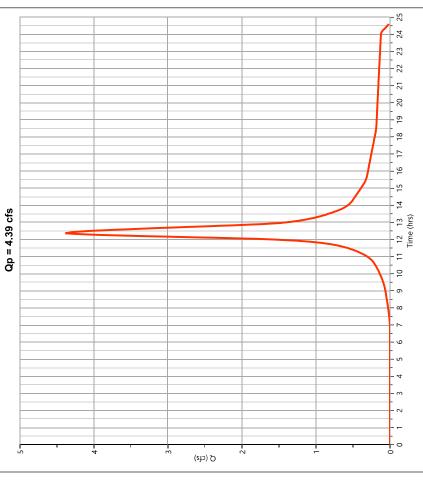
Report	
ograph	
Hydro	

DA-4

Hyd. No. 29

Project Name: 08-06-2020

Hydrograph Type	= NRCS Runoff	Peak Flow	= 4.388 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.40 hrs
Time Interval	= 2 min	Runoff Volume	= 26,032 cuft
Drainage Area	= 1.45 ac	<b>Curve Number</b>	= 71
Tc Method	= User	Time of Conc. (Tc)	= 31.6 min
Total Rainfall	= 8.35 in	Design Storm	= NOAA-D
Storm Duration	= 24 hrs	Shape Factor	= 484



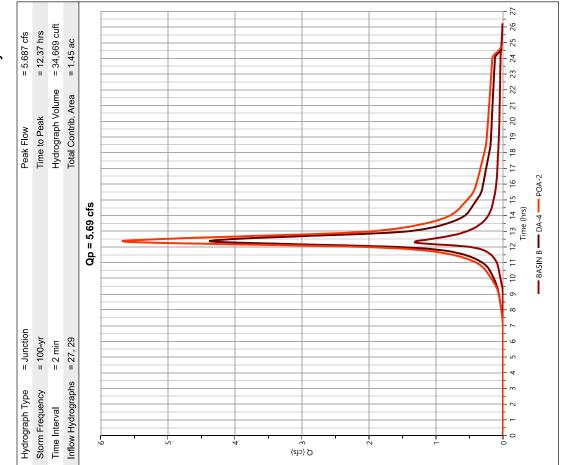
#### Hydrograph Report

Hydrology Studio v 3.0.0.16

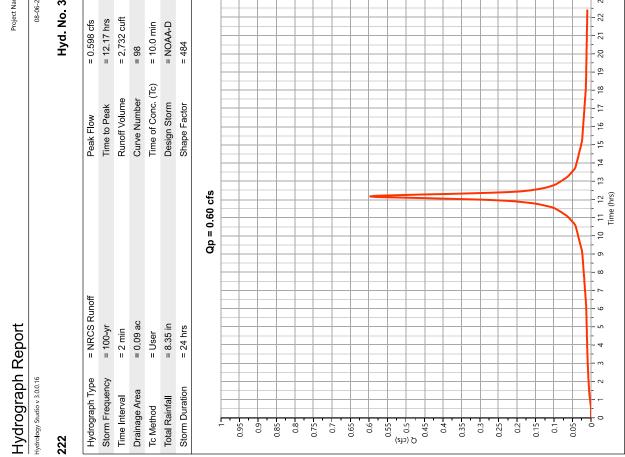
POA-2

Hyd. No. 31

Project Name: 08-06-2020



Project Name:	Hydrograph Report	Report		Project Name:
08-06-2020	Hydrology Studio v 3.0.0.16			08-06-2020
Hyd. No. 33	211			Hyd. No. 35
0.598 cfs	Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.665 cfs
12.17 hrs	Storm Frequency	= 100-yr	Time to Peak	= 12.17 hrs
2,732 cuft	Time Interval	= 2 min	Runoff Volume	= 3,036 cuft
98	Drainage Area	= 0.1 ac	<b>Curve Number</b>	= 98
10.0 min	Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
NOAA-D	Total Rainfall	= 8.35 in	Design Storm	= NOAA-D
484	Storm Duration	= 24 hrs	Shape Factor	= 484
		Qp = 0.66 cfs		
	0.95			
	-6.0			
	0.85			
	0.8			
	0.75			
	0.7			
	0.65			
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20 21 22 23	0	3 4 5 6 7 8 9 10 11 12 13 14	15 16 17 18 19 2	20 21 22 23 24
		Time (hrs)		



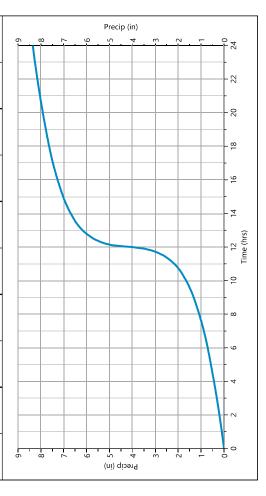
Design Storm Report

Hydrology Studio v 3.0.0.16

# Storm Distribution: Custom - NOAA-D

	🖌 100-yr	8.35	
	50-yr	0.00	
	25-yr	6.37	
Total Rainfall Volume (in)	10-yr	5.24	
Total Rainfa	5-yr	0.00	
	3-yr	00'0	
	2-yr	3.54	
	1-yr	0.00	
Storm	Duration	24 hrs	

			ncren	nental Rainfall	Incremental Rainfall Distribution, 100-yr	100-yr			
Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)
11.10	0.026107	11.47	0.037408	11.83	0.100924	12.20	0.100924	12.57	0.037408
11.13	0.028919	11.50	0.037409	11.87	0.100921	12,23	0.072728	12,60	0.037408
11.17	0.028919	11.53	0.050378	11.90	0.100924	12.27	0.072729	12.63	0.034597
11.20	0.028919	11.57	0.050377	11.93	0.174097	12.30	0.072728	12.67	0.034597
11.23	0.031758	11.60	0.050378	11.97	0.174098	12.33	0.053023	12.70	0.034597
11.27	0.031757	11.63	0.053022	12.00	0.174096	12.37	0.053023	12.73	0.031758
11.30	0.031758	11.67	0.053023	12.03	0.290497	12.40	0.053023	12.77	0.031757
11.33	0.034596	11.70	0.053022	12.07	0.290498	12.43	0.050379	12.80	0.031758
11.37	0.034597	11.73	0.072729	12.10	0.290497	12.47	0.050377	12.83	0.028919
11.40	0.034597	11.77	0.072729	12.13	0.100924	12.50	0.050379	12.87	0.028919
11.43	0.037408	11.80	0.072731	12.17	0.100921	12.53	0.037407	12.90	0.028918



#### Custom Storm filename:

08-06-2020

#### IDF Report Hydrology Studio v 3.00.16

08-06-2020 IDF filename: TRENTON.idf

Omtheme         1-yr         2-yr         3-yr         5-yr         3-yr         6-yr         1-yr	tion			5						
0000         0000 <th< th=""><th>cients</th><th></th><th>2-yr</th><th>3-yr</th><th>5-yr</th><th>10-yr</th><th>25-yr</th><th>50-yr</th><th>100-yr</th><th></th></th<>	cients		2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
0000         0000         0000         0000         0000         0000         0000         0000           0000         0.000         0.000         0.000         0.000         0.000         0.000         0.000           0000         0.000         0.000         0.000         0.000         0.000         0.000         0.000           1000         0.000         0.000         0.000         0.000         0.000         0.000         0.000           100         100         100         100         100         100         0.000         0.000           100         10	_	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.000	
0000         0000         0000         0000         0000         0000         0000           1         1         2         3         3         4         4           1         2         3         5         1         1         5         1           1         2         3         5         1         1         1         1         1           1         1         2         3         5         1		0.0000	0.0000	0.0000	0.0000	0.0000	0.000	0.000	0.000	
Intersity Alless (Intry Alles		0.0000	0.0000	0.0000	0.0000	0.0000	0 0000	0.0000	0.0000	
Itensity Atlane (in/h)         25-yr         Solv         So	Tc = 5 min	utes								
3.4.         5.4.         10.4.         25.4.         80.4.           100         1.00         1.00         1.00         1.00           0         0         0         0         0         1.00           0         0         0         0         0         0         0           0         0         0         0         0         0         0         0           0         0         0         0         0         0         0         0         0           0	.0				Intensity Va	alues (in/hr)				
	Ē	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
	+	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
0       0       0       0       0       0       0       0       0       0         0       0       0       0       0       0       0       0       0       0         0       0       0       0       0       0       0       0       0       0         0       0       0       0       0       0       0       0       0         0       0       0       0       0       0       0       0       0         0       0       0       0       0       0       0       0       0       0         0       0       0       0       0       0       0       0       0       0         0       0       0       0       0       0       0       0       0       0         0       0       0       0       0       0       0       0       0	10	0	0	0	0	0	0	0	0	
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	2	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	
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Precipitation filename: Hunterdon County.pcp

Hydrology Studio v 3.0.0.16 (Rair	(Rainfall totals in Inches)	nches)							08-06-2020
	Active	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Active			>			>	>		>
SCS Storms	<ul> <li>SCS Dir</li> </ul>	> SCS Dimensionless Storms	torms						
SCS 6hr		0	0	0	0	0	0	0	0
Type I, 24-hr		0	0	0	0	0	0	0	0
Type IA, 24-hr		0	0	0	0	0	0	0	0
Type II, 24-hr		0	0	0	0	0	0	0	0
Type II FL, 24-hr		0	0	0	0	0	0	0	0
Type III, 24-hr		2.80	3.38	0	4.26	5.00	6.09	7.02	8.03
Synthetic Storms	> IDF-Bas	> IDF-Based Synthetic Storms	Storms						
1-hr		0	0	0	0	0	0	0	0
2-hr		0	0	0	0	0	0	0	0
3-hr		0	0	0	0	0	0	0	0
6-hr		0	0	0	0	0	0	0	0
12-hr		0	0	0	0	0	0	0	0
24-hr		0	0	0	0	0	0	0	0
Huff Distribution	> 1st Qua	> 1st Quartile (0 to 6 hrs)	(1						
1-hr		0.76	0.98	0	1.33	1.61	2.01	2.34	2.69
2-hr		0.89	1.14	0	1.50	1.80	2.24	2.60	2.99
3-hr		0.98	1.24	0	1.59	1.90	2.33	2.68	3.07
6-hr		1.20	1.50	0	1.86	2.18	2.64	3.01	3.41
Huff Distribution	> 2nd Qua	> 2nd Quartile (>6 to 12 hrs)	hrs)						
8-hr		0	0	0	0	0	0	0	0
12-hr		0	0	0	0	0	0	0	0
Huff Distribution	> 3rd Qua	> 3rd Quartile (>12 to 24 hrs)	t hrs)						
18-hr		0	0	0	0	0	0	0	0
24-hr		0	0	0	0	0	0	0	0
Custom Storms	> Custom	> Custom Storm Distributions	utions						
My Custom Storm 1		1.25	0	0	0	0	0	0	0
My Custom Storm 2		0	0	0	0	0	0	0	0
My Custom Storm 3		0	0	0	0	0	0	0	0
My Custom Storm 4		0	0	0	0	0	0	0	0
My Custom Storm 5		0	0	0	0	0	0	0	0
My Custom Storm 6		0	0	0	0	0	0	0	0
My Custom Storm 7		0	0	0	0	0	0	0	0
My Custom Storm 8		0	0	0	0	0	0	0	0
My Custom Storm 9		0	0	0	0	0	0	0	0
My Custom Storm 10		0	0	0	0	0	0	0	0

## Precipitation Report Cont'd

Precipitation filename: Hunterdon County.pcp

Rainfall totals in Inches

08-06-2020 100-yr > 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 50-yr 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 25-yr > 0 0 0 0 . . . . 0 0 0 0 10-yr > 0 0 5-yr 0 0 3-yr 0 0 0 0 0 0 0 0 2-yr > 0 0 0 0 0 0 . . . . . . . . . 1-yr c c c c c > Indianapolis South Bend > Fort Wayne > Evansville Active Huff Indiana 24-hr Active Huff Indiana 1-hr 2-hr 3-hr 24-hr 2-hr 3-hr 3-hr 30-min 12-hr 24-hr 30-min 30-min 1-hr 6-hr 12-hr 24-hr Huff Indiana 30-min 1-hr 2-hr 6-hr 12-hr 1-hr 2-hr 3-hr 6-hr 6-hr 12-hr Huff Indiana

## Precipitation Report Cont'd

Precipitation filename: Hunterdon County.pcp

Rainfall totals in Inches			5						08-06-2020
	Active	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Active			>			>	>		>
NRCS Storms	> NRCS D	> NRCS Dimensionless Storms	Storms						
NRCS MSE1, 24-hr		0	0	0	0	0	0	0	0
NRCS MSE2, 24-hr		0	0	0	0	0	0	0	0
NRCS MSE3, 24-hr		0	0	0	0	0	0	0	0
NRCS MSE4, 24-hr		0	0	0	0	0	0	0	0
NRCS MSE5, 24-hr		0	0	0	0	0	0	0	0
NRCS MSE6, 24-hr		0	0	0	0	0	0	0	0
NOAA-A, 24-hr		0	0	0	0	0	0	0	0
NOAA-B, 24-hr		0	0	0	0	0	0	0	0
NOAA-C, 24-hr		0	0	0	0	0	0	0	0
NOAA-D, 24-hr	>	0	3.54	0	0	5.24	6.37	0	8.35
NRCC-A, 24-hr		0	0	0	0	0	0	0	0
NRCC-B, 24-hr		0	0	0	0	0	0	0	0
NRCC-C, 24-hr		0	0	0	0	0	0	0	0
NRCC-D, 24-hr		0	0	0	0	0	0	0	0
CA-1, 24-hr		0	0	0	0	0	0	0	0
CA-2, 24-hr		0	0	0	0	0	0	0	0
CA-3, 24-hr		0	0	0	0	0	0	0	0
CA-4, 24-hr		0	0	0	0	0	0	0	0
CA-5, 24-hr		0	0	0	0	0	0	0	0
CA-6, 24-hr		0	0	0	0	0	0	0	0

#### HYDROGRAPH SUMMARY REPORTS –WATER QUALITY DESIGN STORM

Equation			5	tensity = B / (1	Intensity = B / (Tc + D)^E (in/hr)	÷			
Coefficients	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
8	0.000	0.000	0.000	0.000	0.000	0.000	0.0000	00000	
D	0.000	0.000	0.000	0.000	0.000	0 0000	0.0000	00000	
ш	0.0000	0.000	0.0000	0.0000	0.000	0.000	00000	0.0000	
Minimum Tc = 5 minutes	utes								
5				Intensity Values (in/hr)	alues (in/hr)				
(min)	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
ct	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
ŝ	0	0	0	0	0	0	0	0	
10	0	0	0	0	0	0	0	0	
15	0	0	0	0	0	0	0	0	
20	0	0	0	0	0	0	0	0	
25	0	0	0	0	0	0	0	0	
30	0	0	0	0	0	0	0	0	
35	0	0	0	0	0	0	0	0	
40	0	0	0	0	0	0	0	0	
45	0	0	0	0	0	0	0	0	
50	0	0	0	0	0	0	0	0	
55	0	0	0	0	0	0	0	0	
60	0	0	0	0	0	0	0	0	
" (1//ni) ytiznətni 	ctor applied to Katio	C1 = Connecton Practor applied to Rational Method runoff conficient							

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Project Name: 08-06-2020	Maximum Storage (cuft)				963			
	Maximum Elevation (ft)				216.93			
	Inflow Hyd(s)	1	i	1, 2	ю	i	4,6	1
	Hydrograph Volume (cuft)	929	33.0	963	0.000	221	221	387
	Time to Peak (min)	68	78	70	0	108	108	8
	Peak Flow (cfs)	0.593	0.015	0.602	0.000	0.074	0.074	0.247
Hydrograph 1-yr Summary	Hydrograph Name	DA-3 Imperv.	DA-3 Perv.	BASIN B	BASIN B	DA-4	POA-2	IA 113
ograph 1	Hydrograph Type	NRCS Runoff	NRCS Runoff	Junction	Pond Route	NRCS Runoff	Junction	NRCS Runoff
Hydrogra Hydrolegy Studio v 3.0.0.16	Hyd. No	~	N	ю	4	9	œ	2

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Precipitation filename: Hunterdon County.pcp

Hydrology Studio v 3.0.0.16 (Rainfall totals in Inches)	nfall totals in l	nches)							08-06-2020
	Active	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Active		>							
SCS Storms	> SCS Din	> SCS Dimensionless Storms	storms						
SCS 6hr		0	0	0	0	0	0	0	0
Type I, 24-hr		0	0	0	0	0	0	0	0
Type IA, 24-hr		0	0	0	0	0	0	0	0
Type II, 24-hr		0	0	0	0	0	0	0	0
Type II FL, 24-hr		0	0	0	0	0	0	0	0
Type III, 24-hr		2.80	3.38	0	4.26	5.00	6.09	7.02	8.03
Synthetic Storms	> IDF-Bas	> IDF-Based Synthetic Storms	Storms						
1-hr		0	0	0	0	0	0	0	0
2-hr		0	0	0	0	0	0	0	0
3-hr		0	0	0	0	0	0	0	0
6-hr		0	0	0	0	0	0	0	0
12-hr		0	0	0	0	0	0	0	0
24-hr		0	0	0	0	0	0	0	0
Huff Distribution	> 1st Qua	> 1st Quartile (0 to 6 hrs)	s)						
1-hr		0.76	0.98	0	1.33	1.61	2.01	2.34	2.69
2-hr		0.89	1.14	0	1.50	1.80	2.24	2.60	2.99
3-hr		0.98	1.24	0	1.59	1.90	2.33	2.68	3.07
6-hr		1.20	1.50	0	1.86	2.18	2.64	3.01	3.41
Huff Distribution	> 2nd Qua	> 2nd Quartile (>6 to 12 hrs)	: hrs)						
8-hr		0	0	0	0	0	0	0	0
12-hr		0	0	0	0	0	0	0	0
Huff Distribution	> 3rd Qua	> 3rd Quartile (>12 to 24 hrs)	4 hrs)						
18-hr		0	0	0	0	0	0	0	0
24-hr		0	0	0	0	0	0	0	0
Custom Storms	> Custom	> Custom Storm Distributions	outions						
My Custom Storm 1		1.25	0	0	0	0	0	0	0
My Custom Storm 2		0	0	0	0	0	0	0	0
My Custom Storm 3		0	0	0	0	0	0	0	0
My Custom Storm 4		0	0	0	0	0	0	0	0
My Custom Storm 5		0	0	0	0	0	0	0	0
My Custom Storm 6		0	0	0	0	0	0	0	0
My Custom Storm 7		0	0	0	0	0	0	0	0
My Custom Storm 8		0	0	0	0	0	0	0	0
My Custom Storm 9		0	0	0	0	0	0	0	0
My Custom Storm 10		0	0	0	0	0	0	0	0

## Precipitation Report Cont'd

Rainfall totals in Inches

Precipitation filename: Hunterdon County.pcp

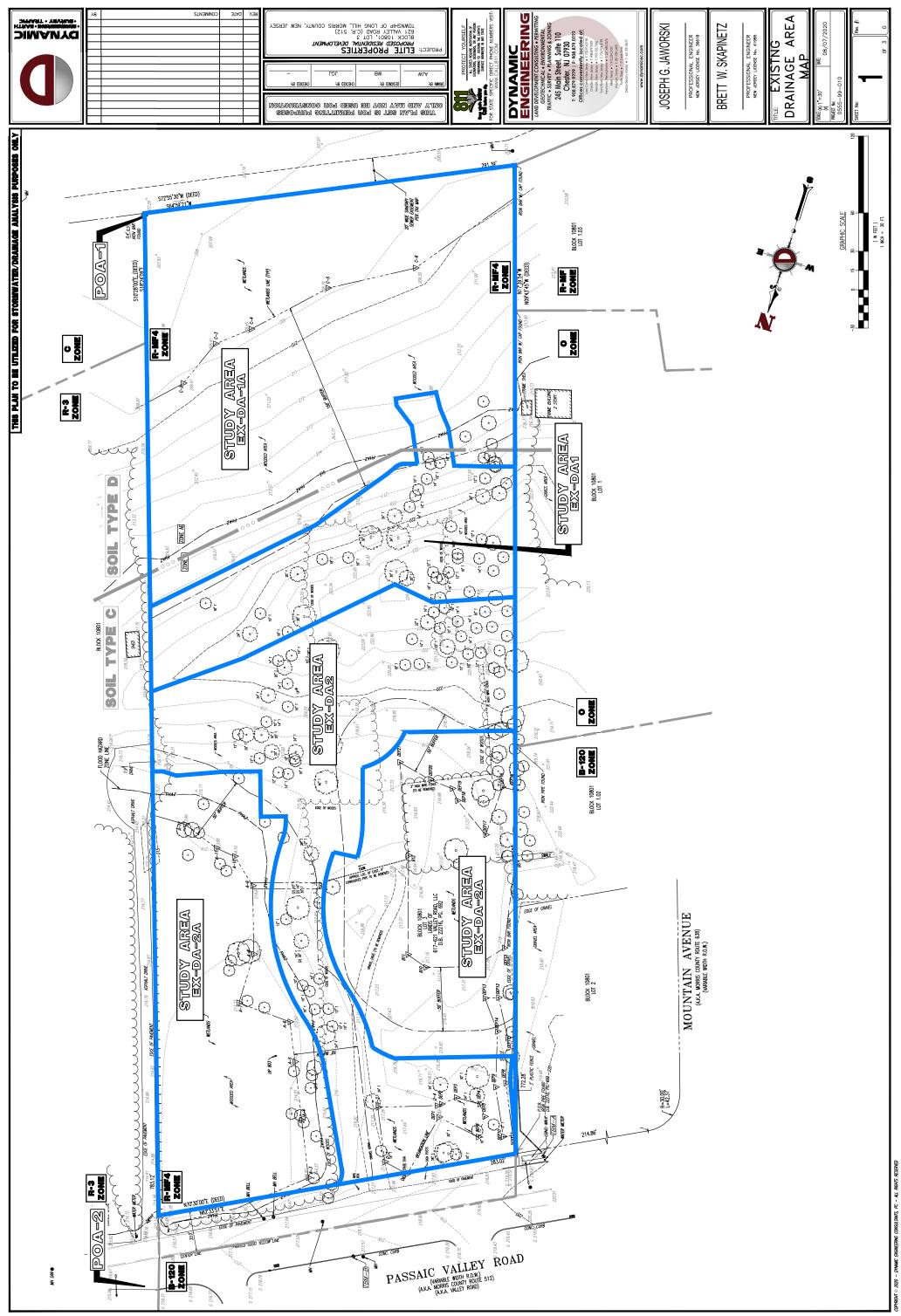
08-06-2020 100-yr 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 50-yr 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 25-yr 0 0 0 0 . . . . 0 0 10-yr 5-yr 0 0 3-yr 0 0 0 0 0 0 0 0 0 0 2-yr 0 0 0 0 0 0 0 0 . . . . . 0 0 . . . . . 1-yr > c c c c c > Indianapolis South Bend > Fort Wayne > Evansville Active Huff Indiana 24-hr Active Huff Indiana 1-hr 2-hr 3-hr 24-hr 2-hr 3-hr 3-hr 30-min 12-hr 24-hr 30-min 30-min 1-hr 6-hr 12-hr 24-hr Huff Indiana 30-min 1-hr 2-hr 6-hr 12-hr 1-hr 2-hr 3-hr 6-hr 6-hr 12-hr Huff Indiana

## Precipitation Report Cont'd

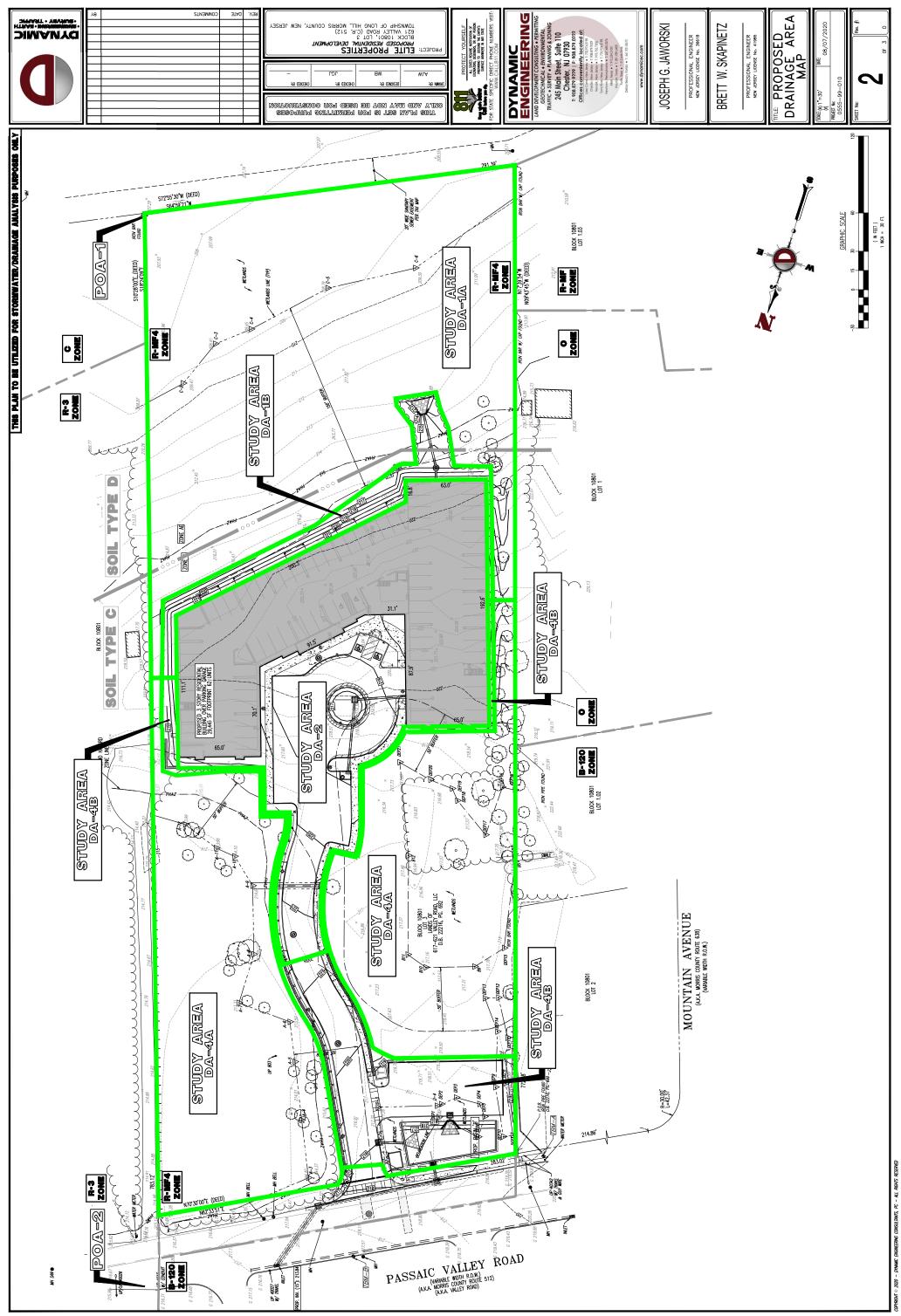
Precipitation filename: Hunterdon County.pcp

	000		5						0000 20 00
Kaintall totals in Inches									08-06-2020
	Active	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Active		>							
NRCS Storms	> NRCS D	> NRCS Dimensionless Storms	Storms						
NRCS MSE1, 24-hr		0	0	0	0	0	0	0	0
NRCS MSE2, 24-hr		0	0	0	0	0	0	0	0
NRCS MSE3, 24-hr		0	0	0	0	0	0	0	0
NRCS MSE4, 24-hr		0	0	0	0	0	0	0	0
NRCS MSE5, 24-hr		0	0	0	0	0	0	0	0
NRCS MSE6, 24-hr		0	0	0	0	0	0	0	0
NOAA-A, 24-hr		0	0	0	0	0	0	0	0
NOAA-B, 24-hr		0	0	0	0	0	0	0	0
NOAA-C, 24-hr		0	0	0	0	0	0	0	0
NOAA-D, 24-hr		0	3.54	0	0	5.24	0	0	8.35
NRCC-A, 24-hr		0	0	0	0	0	0	0	0
NRCC-B, 24-hr		0	0	0	0	0	0	0	0
NRCC-C, 24-hr		0	0	0	0	0	0	0	0
NRCC-D, 24-hr		0	0	0	0	0	0	0	0
CA-1, 24-hr		0	0	0	0	0	0	0	0
CA-2, 24-hr		0	0	0	0	0	0	0	0
CA-3, 24-hr		0	0	0	0	0	0	0	0
CA-4, 24-hr		0	0	0	0	0	0	0	0
CA-5, 24-hr		0	0	0	0	0	0	0	0
CA-6, 24-hr		0	0	0	0	0	0	0	0

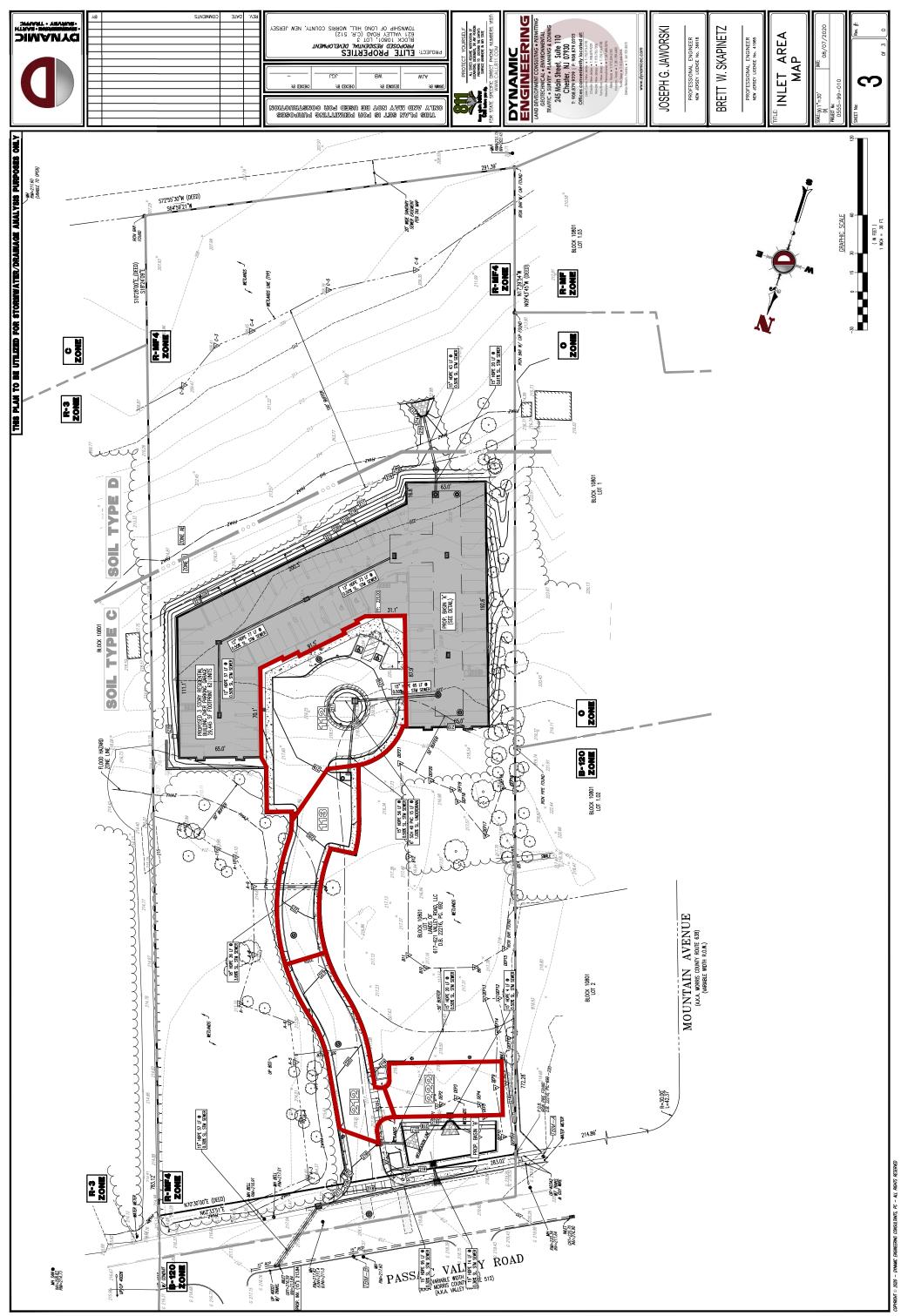
DRAINAGE AREA MAPS



Fiber (1) (deciciolers/OECPC PROJECTS/0555 Elike Properties/99-010 Long Hill/Dwg/D5 Maps/D55599010EDAM0.dwg, ---> 0 EXISTNG DRAINAGE AREA MAP



Plotted: 08/07/20 - 10:55 AM, By: ojwright Flie: //decpc.local/dacfolders/dato/DECPC PROJECTS/0555 Elite Properties/99-010 Long Hill/Dwg/DA Maps/D55599010PDAM0.dwg, ----> 02 PROPOSED DRAINAGE AREA MAP



Plotted: 08/07/20 - 10:55 AM, By: ajwright File: //decpci.local/decploters/data/DECPC PROJECTS/0555 Elite Properties/99-010 Long Hill/Dwg/DA Maps/D55599010MM0.dwg, ----> 03 INLET AREA MAP