STORMWATER MANAGEMENT, GROUNDWATER RECHARGE AND WATER QUALITY ANALYSIS

For

RPM Development, LLC

Proposed Residential Development

2495 Brunswick Pike (AKA Alt. Route 1)
Block 2001, Lots 2.01 & 2.02
Township of Lawrence
Mercer County, New Jersey

Prepared by:

DYNAMIC ENGINEERING

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April 2020
Last Revised December 2022
DEC# 1279-99-010

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APPENDIX

I. SITE DESCRIPTION

The project area is comprised of Block 2001, Lots 2.01 & 2.02 in the Township of Lawrence, Mercer County, New Jersey. The property is located at 2495 Brunswick Pike (AKA Alt. Route 1). The proposed development consists of redeveloping the northern portion of the site which is currently mostly open space in order to construct a residential development consisting of two (2) multi-family three-story buildings and six (6) two-story duplexes for a total gross floor area of 70,863 SF with 110 parking spaces and associated driveways, landscaped areas, stormwater management facilities, and accompanying site amenities.

The southern portion of the lot is currently developed with the Lawrence Shopping Center and associated loading and parking areas. The northern portion of the lot was historically developed with a parking area and a man-made drainage ditch, and currently consists of mostly open space. There are wetlands along the northwestern property line, adjacent to Foch Avenue. Furthermore, the site is also located within a Flood Hazard Area and within the Delaware and Raritan Canal Review Zone B.

The property is bordered to the north by Texas Avenue with residential uses beyond, to the east and south by commercial uses with Brunswick Pike beyond, and to the west by wetlands with residential uses beyond.

The existing conditions of the tract have been verified by the Boundary and Partial Topographic Survey as prepared by Dynamic Survey, LLC, dated 06/06/2019, last revised 09/08/2022.

II. DESIGN OVERVIEW

This report has been prepared to define and analyze the stormwater drainage conditions that would occur as a result of the development of Block 2001, Lots 2.01 & 2.02 in the Township of Lawrence, Mercer County, New Jersey.

The proposed development consists of redeveloping the northern portion of the site which is currently mostly open space in order to construct a residential development consisting of two (2) multi-family three-story buildings and six (6) two-story duplexes for a total floor area of 70,863 SF with 110 parking spaces with associated driveways, landscaped areas, stormwater management facilities, and accompanying site amenities.

Based upon the scope of the project, the development is classified as a major development as it disturbs more than one (1) acre of land and increases the amount of impervious coverage onsite by more than ¼ acre; therefore, the project has been designed to meet the groundwater recharge, stormwater runoff quantity and quality standards set forth under N.J.A.C. 7:8. Accordingly, the following items are addressed within this report:

- Green infrastructure standards (7:8-5.3)

- Groundwater recharge standards (7:8-5.4)
- Stormwater runoff quality standards (7:8-5.5)
- Stormwater runoff quantity standards (7:8-5.6)
- Calculation of stormwater runoff and groundwater recharge (7:8-5.7)

The proposed development is exempt from the groundwater recharge requirements set forth by N.J.A.C. 7:8 due to the fact that the project is located within an "urban redevelopment area" as it is a previously developed portion of the Metropolitan Planning Area as delineated on the State Plan Policy Map (SPPM).

A hydrological evaluation is provided for the NJDEP Water Quality, 2, 10, and 100 year storm events utilizing the Urban Hydrology for Small Watershed TR55 method.

The Township of Lawrence and NJDEP peak flow reduction requirements are as follows:

2-year:	50% reduction
10-year:	25% reduction
25-year	Not to exceed predevelopment peak flow
100-year:	20% reduction

It is the intention of the design of this facility to comply with the Stormwater Management Best Management Practices.

III. EXISTING DRAINAGE CONDITIONS

The tract has been evaluated with the following existing drainage sub-watershed areas as depicted on the Existing Drainage Area Map:

Existing Drainage Area South: This area of the tract consists of the southern portion of the development area. Runoff from the open space area and asphalt areas flow via overland flow and is ultimately tributary to the adjacent development on the southern side of the proposed development.

Existing Drainage Area Texas Avenue: This area of the tract consists of the northern portion of the development area adjacent to Texas Avenue, which includes an existing sidewalk. Runoff from the open space area and sidewalk areas flow via overland flow and is ultimately tributary to Texas Avenue.

Based on Mercer County soils survey information, the soil types native to the site include:

MERCER COUNTY SOIL SURVEY INFORMATION		
SOIL TYPE (SYMBOL)	**SOIL TYPE (NAME)**	**HYDROLOGIC SOIL GROUP (HSG)**
UdstB	Udorthents, stratified substratum, 0 to 8 percent slopes	D

IV. PROPOSED DRAINAGE CONDITIONS

The tract has been evaluated with the following drainage sub-watershed areas as depicted on the Proposed Drainage Area Map:

Proposed Drainage Area South (Pervious Pavement): This area of the tract consists of a majority of the proposed parking areas in the middle of the site and a portion of the proposed multifamily buildings. Stormwater runoff from the parking areas flows overland towards and is collected by the pervious pavement system with underdrains. Stormwater runoff from the multifamily buildings is routed directly to the stone storage beneath the pervious pavement. Stormwater runoff from the pervious pavement system is routed through an outlet control structure and is tributary to the proposed headwall and rip rap located on the eastern portion of the property and is ultimately tributary to the existing man-made drainage ditch on-site, which flows off-site towards the adjacent existing development on the southern side of the proposed development.

Proposed Drainage Area South (Bioretention Basin): This area of the tract consists of the majority of the multifamily buildings, the duplexes, a portion of the driveway along Texas Avenue and landscaped areas between the duplexes and Texas Avenue. Stormwater runoff from these areas flows overland to the proposed stormwater conveyance system onsite and is routed to the aboveground bioretention basin. The stormwater is then routed through an outlet control structure and is tributary to the proposed headwall and rip rap located on the eastern portion of the property and is ultimately tributary to the existing man-made drainage ditch on-site, which flows off-site towards the adjacent existing development on the southern side of the proposed development.

Proposed Drainage Area South Undetained: This area of the tract consists of proposed parking, sidewalk, and landscaped areas on the southern portion of the development area which are not collected by the proposed onsite stormwater conveyance system. Stormwater runoff from the proposed motor vehicle surfaces is routes to Contech Filterra Green Infrastructure Manufactured Treatment Devices located along the southerly curb line adjacent to the Lawrence Shopping Center property and is ultimately routed to the existing stormwater conveyance system located within the Lawrence Shopping Center property, similar to existing conditions.

Stormwater runoff from the remaining portion of the study area flows overland and is ultimately tributary to the adjacent existing development on the southern side of the proposed development, similar to existing conditions.

Proposed Drainage Area Texas Avenue: This area of the tract consists of open space and asphalt areas on the northern portion of the site. Runoff from this area is not collected by the onsite stormwater conveyance system and will sheet flow directly to the existing stormwater conveyance system located on Texas Avenue, similar to existing conditions.

V. DESIGN METHODOLOGY

The intention of the proposed stormwater design is to provide measures as required to address applicable aspects of the Township of Lawrence Land Use Ordinance and N.J.A.C. 7:8. In order to prepare the stormwater calculations for the subject project, extensive initial investigation of the property and topography was performed. On-site review of the tract was performed by Dynamic Engineering Consultants, PC to verify existing site conditions and land cover characteristics. Dynamic Survey, LLC, was contracted to prepare the Boundary and Partial Topographic Survey for the existing site. Furthermore, Dynamic Earth, LLC performed test pits within the site to establish the seasonal high water table.

Based on our review of the existing site conditions and the Boundary and Partial Topographic Survey, the Drainage Area Maps for the existing and proposed site conditions as defined within this report were established. A grading plan was developed for the proposed site improvements with the existing drainage patterns in mind. The plan was designed to ensure runoff from the proposed development could be directed to stormwater management facilities in order to address the applicable sections of the Township of Lawrence Land Use Ordinance and N.J.A.C. 7:8.

Stormwater runoff from the majority of the proposed development is collected by the on-site stormwater collection system or conveyed by overland flow to the aboveground bioretention basin or pervious pavement system. All stormwater tributary to the proposed aboveground bioretention basin and pervious pavement system will be routed through outlet control structures, which discharge runoff at a controlled rate in order to satisfy the stormwater quantity requirements set forth by the Township Lawrence Land Use Ordinance and N.J.A.C. 7:8.

In addition, the design of the bioretention basin and pervious pavement system complies with the standards set forth by the NJ Stormwater Best Management Practices Manual, thereby providing a TSS Removal Rate of 80%. Moreover, Contech Filterra Green Infrastructure Manufactured Treatment Devices have been provided to collect stormwater runoff from the remainder of the proposed motor vehicle surfaces in order to provide a TSS Removal Rate of 80%. As a result of the proposed water quality BMPs, the proposed development satisfies the water quality aspect of N.J.A.C. 7:8.

The proposed development is exempt from the groundwater recharge requirements set forth by N.J.A.C. 7:8 due to the fact that the project is located within and "urban redevelopment area" as it is a previously developed portion of the Metropolitan Planning Area as delineated on the State Plan Policy Map (SPPM).

The overall stormwater management report for the subject tract has been evaluated by Dynamic Engineering Consultants to ensure that the overall development satisfies the stormwater criteria set forth in the N.J.A.C. 7:8 and Township of Lawrence Land Use Ordinance.

VI. RUNOFF RATE REDUCTION PERFORMANCE

Pre-Development and Post-Development Peak Runoff Results
Summary for Point Of Analysis Northwest (Study Area South)

	EXISTING RUNOFF RATE (CFS)	PROPOSED RUNOFF RATE (CFS)	PROPOSED RUNOFF RATE REDUCTION (CFS)
2 Year	7.304	3.488	-3.816
10 Year	12.25	7.125	-5.125
100 Year	21.81	15.69	-6.120

Pre-Development and Post-Development Peak Runoff Results
Summary for Point Of Analysis North (Study Area Texas Avenue)

	EXISTING RUNOFF RATE (CFS)	PROPOSED RUNOFF RATE (CFS)	PROPOSED RUNOFF RATE REDUCTION (CFS)
2 Year	0.630	0.386	-0.244
10 Year	1.015	0.680	-0.335
100 Year	1.761	1.271	-0.490

Pre-development and Post Development Peak Runoff Results
Summary for Total Site

	EXISTING RUNOFF RATE (CFS)	REDUCTION REQUIREMENT	ALLOWABLE RUNOFF RATE (CFS)	PROPOSED RUNOFF RATE (CFS)
2 Year	7.934	50%	3.967	3.874
10 Year	13.27	25%	9.95	7.709
25 Year	16.95	Not to Exceed Existing	16.95	11.34
100 Year	23.57	20%	18.85	16.96

VII. ABOVEGROUND BIORETENTION BASIN DESIGN

As previously stated within this report, the stormwater management design utilizes an aboveground stormwater bioretention basin, pervious pavement system and green infrastructure manufactured treatment devices to satisfy the stormwater quantity and quality regulations set forth by the Township of Millstone Land Use Ordinance and N.J.A.C 7:8.

The bioretention basin has been designed as an on-line system with underdrains, which provides treatment for the Water Quality Design Storm, and store and attenuate the larger storm events and provide runoff quantity control for the same.

The bottom of the gravel storage bed for the bioretention basin is at elevation 59.1 FT, which is at least 1 foot above the seasonal high water table (seasonal high groundwater encountered at 58.10). As noted in the hydrograph summary reports included within the appendix, the volume of the water quality design storm for the area tributary to the bioretention system is equal to 2,424 CF which equates to an elevation of 63.34 FT within the basin. The lowest quantity control orifice in the outlet control structure is proposed at elevation 63.40 FT, to filtrate the entirety of the Water Quality Design Storm through the proposed soil bed and sand layer. Overflow of stormwater runoff from the bioretention system in the event of larger storms will be discharged through an outlet control structure which discharges to the proposed stormwater conveyance system located on site, which is tributary to the proposed headwall and rip rap located on the eastern portion of the property and is ultimately tributary to the existing man-made drainage ditch on-site, which flows off-site towards the adjacent existing development on the southern side of the proposed development.

In accordance with the New Jersey Stormwater Best Management Practices Manual, the following design considerations have been satisfied:

- Maximum contributory drainage area: 2.5 acres
- Filter fabric is required along the sides and the bottom of the system to prevent migration of fines from the surrounding soil.
- The underdrain component consists of three parts – the sand layer, the gravel layer and the network of pipes that collect runoff and transport it to the outflow section of the system.
- The capacity of the underdrain must be sufficient to allow the system to drain within 72 hours.
- The seasonal high water table (SHWT) or bedrock must be at least 1 foot below the bottom of the storage bed.

- At least one inspection port, with a removable cap, must be provided in the storage bed with its location denoted in the maintenance plan. The inspection port must be placed at least 3 feet from any edge.
- All points of access must also be covered in such a way as to prevent sediment or other material from entering the system and to prevent the accumulation of standing water, which could lead to mosquito breeding.

VIII. POROUS PAVEMENT SYSTEM DESIGN

As previously stated within this report, the stormwater management design utilizes an aboveground stormwater bioretention basin, pervious pavement system and green infrastructure manufactured treatment devices to satisfy the stormwater quantity and quality regulations set forth by the Township of Millstone Land Use Ordinance and N.J.A.C 7:8.

Stormwater runoff tributary to the pervious pavement will infiltrate through void space in the pavement to the stone storage section where the stormwater runoff will be detained. The bottom of the stone storage bed is located at least one foot above the seasonal high water table in each location. The underdrain is proposed at elevation 60.25 FT, to discharge storms larger than the water quality storm and to provide at least 3 inches of stone underneath the underdrain as outlined in Chapter 9.5 of the New Jersey Stormwater Best Management Practices Manual. The 100-year stormwater runoff tributary to the pervious pavement system with calculations for the stone section (0.40 void ratio) is located in the Hydrograph Summary Reports: Proposed Conditions section within the Appendix of this Report. Overflow of stormwater runoff from the paver system in the event of larger storms will be discharged through an outlet control structure which discharges to the proposed stormwater conveyance system located on site, which is ultimately tributary to the existing ditch on the eastern portion of the site.

In accordance with the New Jersey Stormwater Best Management Practices Manual, the following design considerations have been satisfied:

- Filter fabric is required along the sides and the bottom of the system to prevent migration of fines from the surrounding soil.
- The seasonal high water table (SHWT) or bedrock must be at least 1 foot below the bottom of the storage bed.
- The capacity of the underdrain must be sufficient to allow the system to drain within 72 hours.
- At least one inspection port, with a removable cap, must be provided in the storage bed with its location denoted in the maintenance plan. The inspection port must be placed at least 3 feet from any edge.

IX. WATER QUALITY

The TSS removal rate requirement set forth by the Township of Lawrence Ordinance and N.J.A.C. 7:8 is 80% for the newly proposed impervious coverage. The stormwater management design for the project satisfies this requirement by utilizing one (1) small scale bioretention basin, one (1) pervious pavement system and four (4) Contech Filterra Green Infrastructure Manufactured Treatment Device certified by the NJDEP to provide a TSS removal rate of 80%. Therefore, the stormwater management facilities provide a TSS removal rate of 80% for the subject project, thereby, satisfying the water quality aspect of the Township of Lawrence Land Use Ordinance and N.J.A.C. 7:8.

X. GROUNDWATER RECHARGE

As was mentioned previously, the proposed development is exempt from the groundwater recharge requirements set forth by N.J.A.C 7:8 due to the fact that the project is located within and "urban redevelopment area" as it is a previously developed portion of the Metropolitan Planning Area as delineated on the State Plan Policy Map (SPPM). Therefore, no groundwater recharge measures are required as part of the proposed development.

XI. CONCLUSION

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 proposed stormwater management design incorporates a StormFilter Manufactured Treatment Device capable of 80% total suspended solid (TSS) removal as stated within the New Jersey Stormwater Best Management Practices Manual thereby satisfying NJAC 7:8 Water Quality Standards.

The proposed development is exempt from the groundwater recharge requirements set forth by N.J.A.C 7:8 due to the fact that the project is located within and "urban redevelopment area" as it is a previously developed portion of the Metropolitan Planning Area as delineated on the State Plan Policy Map (SPPM).

Furthermore, the stormwater management design shall reduce peak flow rates for the proposed development area and meets the minimum peak flow reduction for the 2, 10 and 100-year storm as dictated by N.J.A.C. 7:8. With this stated, it is evident that the proposed development will not have a negative impact on the existing stormwater management system, water quality or groundwater recharge on site or within the vicinity of the subject parcel.

APPENDIX

RUNOFF COEFFICIENT (CN) CALCULATIONS – EXISTING

DYNAMIC ENGINEERING

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

Project: Proposed Residential Development
Job #: 1279-99-010
Location: Lawrence, NJ

Computed By: TAZ
Checked By: LPG
Date: 10/25/2022

Drainage Area	Impervious Area (acre)	Impervious Area (sf)	Curve Number (CN) Used	HSG D - Gravel Area (acre)	HSG D - Gravel Area (sf)	Curve Number (CN) Used	HSG D - Open Space Area (acre)	HSG D - Open Space Area (sf)	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)	Total Area (sf)	TC (Min.)
Ex. DA South	0.27	11,620	98	0.20	8,720	91	2.99	130,126	89	0.08	3,626	77	89	3.27	3.54	154,092	10
Ex. DA Texas Ave	0.12	5,256	98	0.00		91	0.16	6,899	89	0.00		77	89	0.16	0.28	12,155	10
Total	**0.39**	**16,876**		**0.20**	**8,720**		**3.15**	**137,025**		**0.08**	**3,626**			**3.43**	**3.82**	**166,247**	

Per County Soil Survey -	UdstB	HSG	D	Soil	Udorthents, stratified substratum 0 to 8 percent slopes

Description	Runoff Curve Number (CN) (HSG A)	Runoff Curve Number (CN) (HSG B)	Runoff Curve Number (CN) (HSG C)	Runoff Curve Number (CN) (HSG D)
Impervious Surface	98	98	98	98
Open Space (lawn) (poor)	68	79	86	89
Woods (good)	30	55	70	77

RUNOFF COEFFICIENT (CN) CALCULATIONS – PROPOSED

DYNAMIC ENGINEERING

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

Project:	Proposed Residential Development	Computed By:	EDB
Job #:	1279-99-010	Checked By:	TAZ
Location:	Lawrence, NJ	Date:	11/7/2022

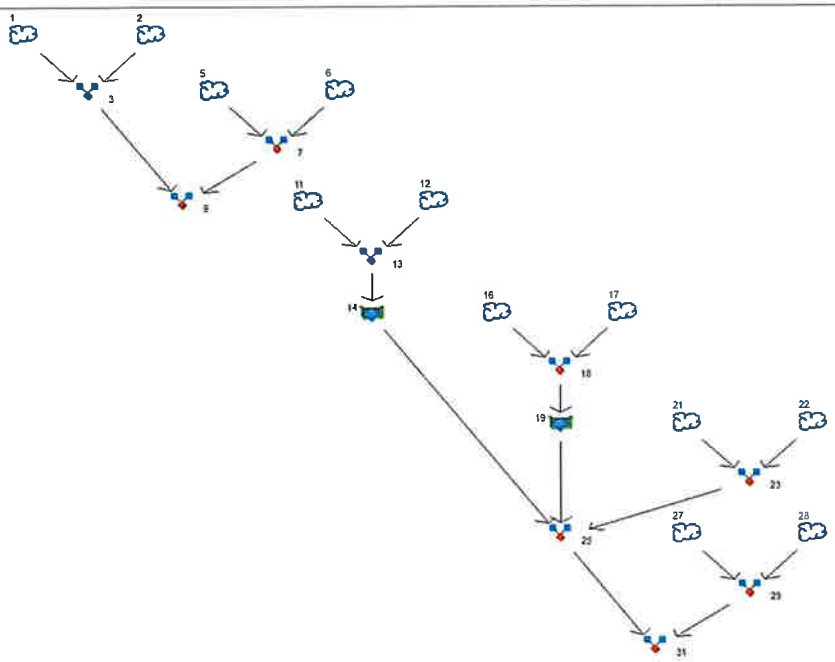
Drainage Area	Impervious Area (acre)	Impervious Area (sf)	Curve Number (CN) Used	HSG D - Open Space Area (acre)	HSG D - Open Space Area (sf)	Curve Number (CN) Used	Avg. Perv. Curve Number	Total Pervious Area (acres)	Total Area (acres)	Total Area (sf)	TC (Min.)
Prop. DA South (Perv Pavement)	0.97	42,260	98	0.25	10,800	80	80	0.25	1.22	53,060.00	10
Prop. DA South (Bioretention)	0.59	25,601	98	0.21	9,132	80	80	0.21	0.80	34,733.00	10
Prop. DA South (Undetained)	0.67	29,009	98	0.91	39,651	80	80	0.91	1.58	68,660.00	10
Texas Ave	0.07	3,122	98	0.15	6,672	80	80	0.15	0.22	9,794.00	10
Total	**2.30**	**99,992**		**1.52**	**66,255**			**1.52**	**3.82**	**166,247**	

Per County Soil Survey -	OthA	HSG	C/D	Soil	Othello silt loams, 0 to 2 percent slopes, northern coastal plain
Per County Soil Survey -	UdstB	HSG	D	Soil	Udorthents, stratified substratum 0 to 8 percent slopes

Description	Runoff Curve Number (CN) (HSG A)	Runoff Curve Number (CN) (HSG B)	Runoff Curve Number (CN) (HSG C)	Runoff Curve Number (CN) (HSG D)
Impervious Surface	98	98	98	98
Open Space (lawn) (good)	39	61	74	80
Woods (good)	30	55	70	77

HYDROGRAPH SUMMARY REPORTS – EXISTING AND PROPOSED CONDITIONS
2 YR. 10 YR. 25 YR. & 100 YR.

Watershed Model Schematic



Legend

Hyd.	Origin	Description
1	SCS Runoff	Ex, Study Area South (Imp.)
2	SCS Runoff	Ex. Study Area Soouth (Perv.)
3	Combine	Ex. Study Area South Total
5	SCS Runoff	Ex. Study Area Texas Ave (Imp.)
6	SCS Runoff	Ex, Study Area Texas Ave (Perv.)
7	Combine	Ex. Study Area Texas Ave Total
9	Combine	Ex. Site Total
11	SCS Runoff	Prop DA Perv Pvmt (Imp)
12	SCS Runoff	Prop DA Perv Pvmt (Perv)
13	Combine	Prop DA Perv Pvmt Total
14	Reservoir	Post Rte Perv Pvmt
16	SCS Runoff	Prop. DA Biore (Imp)
17	SCS Runoff	Prop. DA Biore (Perv)
18	Combine	Prop. DA Biore (Total)
19	Reservoir	Post Route Biore
21	SCS Runoff	Prop DA South Undetained (Imp)
22	SCS Runoff	Prop DA South Undetained (Perv)
23	Combine	Prop DA South Undetained Total
25	Combine	Prop DA South Total
27	SCS Runoff	Prop DA Texas Ave (Imp)
28	SCS Runoff	Prop DA Texas Ave (Perv)
29	Combine	Prop DA Texas Ave Total
31	Combine	Prop Site Total

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2022-11-08 2.10.100yr.gpw

Hydraflow Hydrographs by Intelisolve v9.1

Wednesday, Nov 9, 2022

25 - Year

100 - Year

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs) 1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	Hydrograph description
1	SCS Runoff	----	----	0.689	----	----	1.051	1.301	----	1.753	Ex, Study Area South (Imp.)
2	SCS Runoff	----	----	6.615	----	----	11.20	14.37	----	20.06	Ex. Study Area Soouth (Perv.)
3	Combine	1, 2	----	7.304	----	----	12.25	15.67	----	21.81	Ex. Study Area South Total
5	SCS Runoff	----	----	0.306	----	----	0.467	0.578	----	0.779	Ex. Study Area Texas Ave (Imp.)
6	SCS Runoff	----	----	0.324	----	----	0.548	0.703	----	0.981	Ex, Study Area Texas Ave (Perv.)
7	Combine	5, 6	----	0.630	----	----	1.015	1.281	----	1.761	Ex. Study Area Texas Ave Total
9	Combine	3, 7,	----	7.934	----	----	13.27	16.95	----	23.57	Ex. Site Total
11	SCS Runoff	----	----	2.477	----	----	3.775	4.673	----	6.299	Prop DA Perv Pvmt (Imp)
12	SCS Runoff	----	----	0.346	----	----	0.679	0.919	----	1.360	Prop DA Perv Pvmt (Perv)
13	Combine	11, 12	----	2.823	----	----	4.453	5.592	----	7.659	Prop DA Perv Pvmt Total
14	Reservoir	13	----	0.554	----	----	1.522	2.024	----	3.306	Post Rte Perv Pvmt
16	SCS Runoff	----	----	1.507	----	----	2.296	2.842	----	3.832	Prop. DA Biore (Imp)
17	SCS Runoff	----	----	0.290	----	----	0.570	0.772	----	1.143	Prop. DA Biore (Perv)
18	Combine	16, 17	----	1.797	----	----	2.866	3.614	----	4.974	Prop. DA Biore (Total)
19	Reservoir	18	----	0.204	----	----	1.978	3.201	----	4.554	Post Route Biore
21	SCS Runoff	----	----	1.711	----	----	2.607	3.228	----	4.351	Prop DA South Undetained (Imp)
22	SCS Runoff	----	----	1.259	----	----	2.470	3.346	----	4.951	Prop DA South Undetained (Perv)
23	Combine	21, 22	----	2.970	----	----	5.078	6.573	----	9.302	Prop DA South Undetained Total
25	Combine	14, 19, 23	----	3.488	----	----	7.125	10.55	----	15.69	Prop DA South Total
27	SCS Runoff	----	----	0.179	----	----	0.272	0.337	----	0.455	Prop DA Texas Ave (Imp)
28	SCS Runoff	----	----	0.207	----	----	0.407	0.551	----	0.816	Prop DA Texas Ave (Perv)
29	Combine	27, 28	----	0.386	----	----	0.680	0.889	----	1.271	Prop DA Texas Ave Total
31	Combine	25, 29,	----	3.874	----	----	7.709	11.34	----	16.96	Prop Site Total

Proj. file: 2022-11-08 2.10.100yr.gpw | Wednesday, Nov 9, 2022

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.689	5	730	2,827	----	----	----	Ex, Study Area South (Imp.)
2	SCS Runoff	6.615	5	730	24,284	----	----	----	Ex. Study Area Soouth (Perv.)
3	Combine	7.304	5	730	27,111	1, 2	----	----	Ex. Study Area South Total
5	SCS Runoff	0.306	5	730	1,257	----	----	----	Ex. Study Area Texas Ave (Imp.)
6	SCS Runoff	0.324	5	730	1,188	----	----	----	Ex, Study Area Texas Ave (Perv.)
7	Combine	0.630	5	730	2,445	5, 6	----	----	Ex. Study Area Texas Ave Total
9	Combine	7.934	5	730	29,556	3, 7,	----	----	Ex. Site Total
11	SCS Runoff	2.477	5	730	10,158	----	----	----	Prop DA Perv Pvmt (Imp)
12	SCS Runoff	0.346	5	730	1,265	----	----	----	Prop DA Perv Pvmt (Perv)
13	Combine	2.823	5	730	11,423	11, 12	----	----	Prop DA Perv Pvmt Total
14	Reservoir	0.554	5	760	11,372	13	61.04	5,038	Post Rte Perv Pvmt
16	SCS Runoff	1.507	5	730	6,178	----	----	----	Prop. DA Biore (Imp)
17	SCS Runoff	0.290	5	730	1,063	----	----	----	Prop. DA Biore (Perv)
18	Combine	1.797	5	730	7,241	16, 17	----	----	Prop. DA Biore (Total)
19	Reservoir	0.204	5	785	4,670	18	64.27	4,553	Post Route Biore
21	SCS Runoff	1.711	5	730	7,016	----	----	----	Prop DA South Undetained (Imp)
22	SCS Runoff	1.259	5	730	4,605	----	----	----	Prop DA South Undetained (Perv)
23	Combine	2.970	5	730	11,621	21, 22	----	----	Prop DA South Undetained Total
25	Combine	3.488	5	730	27,663	14, 19, 23,	----	----	Prop DA South Total
27	SCS Runoff	0.179	5	730	733	----	----	----	Prop DA Texas Ave (Imp)
28	SCS Runoff	0.207	5	730	759	----	----	----	Prop DA Texas Ave (Perv)
29	Combine	0.386	5	730	1,492	27, 28	----	----	Prop DA Texas Ave Total
31	Combine	3.874	5	730	29,155	25, 29,	----	----	Prop Site Total

2022-11-08 2.10.100yr.gpw | Return Period: 2 Year | Wednesday, Nov 9, 2022

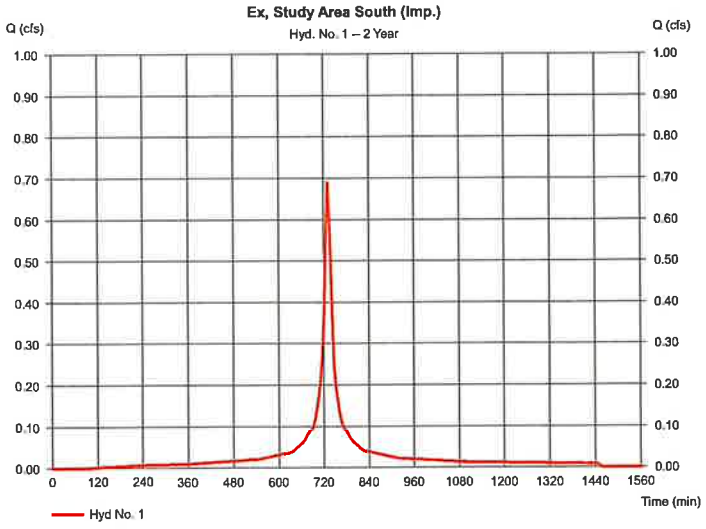
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 | Wednesday, Nov 9, 2022

Hyd. No. 1

Ex, Study Area South (Imp.)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.689 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,827 cuft
Drainage area	= 0.270 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.31 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484



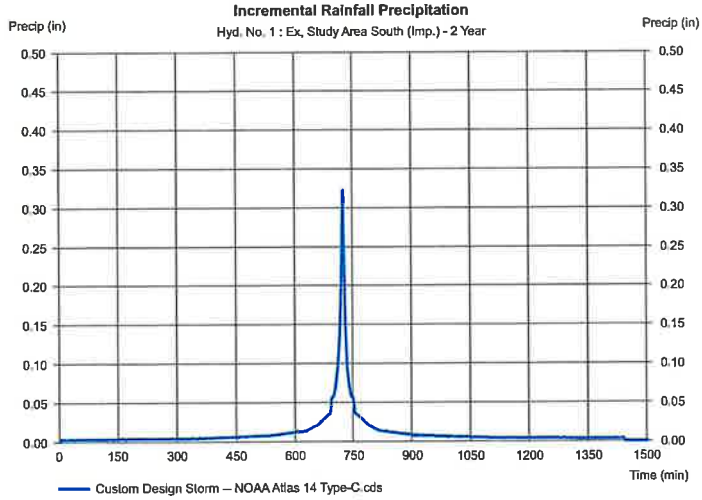
Precipitation Report

Hydraflow Hydrographs by Intelisolve v9.1 | Wednesday, Nov 9, 2022

Hyd. No. 1

Ex, Study Area South (Imp.)

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

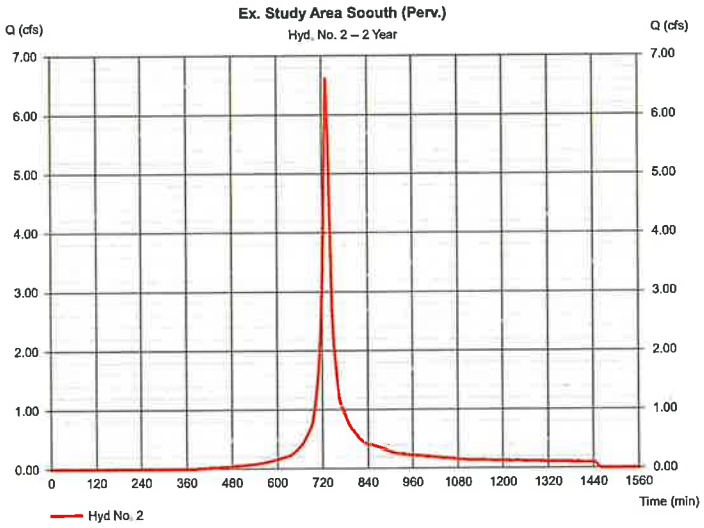


Hydrograph Report

Hyd. No. 2

Ex. Study Area Soouth (Perv.)

Hydrograph type	= SCS Runoff	Peak discharge	= 6.615 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 24,284 cuft
Drainage area	= 3.270 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.31 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

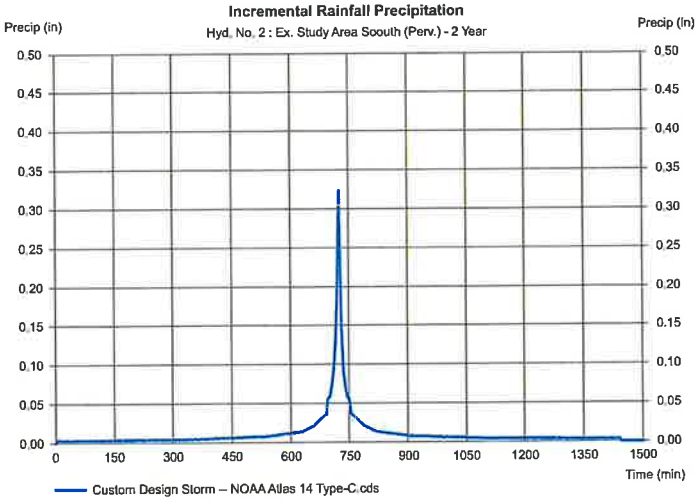


Precipitation Report

Hyd. No. 2

Ex. Study Area Soouth (Perv.)

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

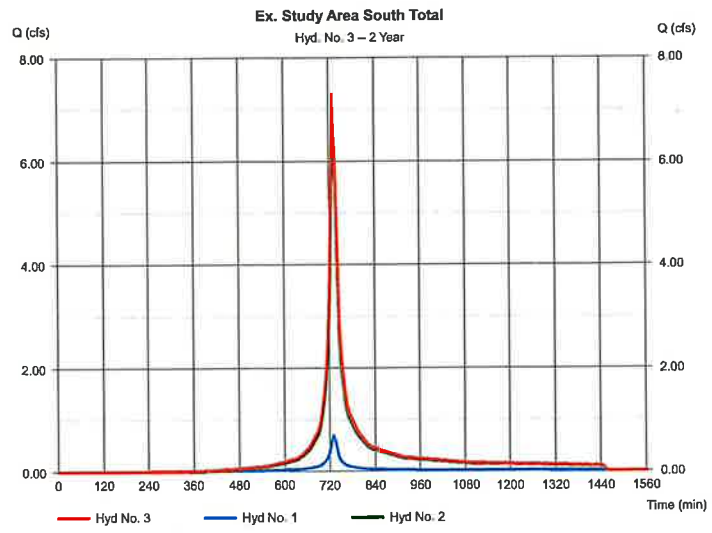


Hydrograph Report

Hyd. No. 3

Ex. Study Area South Total

Hydrograph type	= Combine	Peak discharge	= 7.304 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 27,111 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 3.540 ac

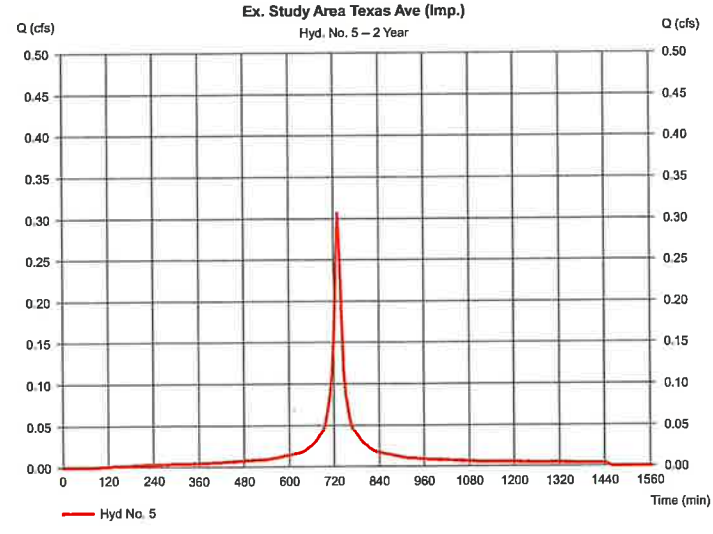


Hydrograph Report

Hyd. No. 5

Ex. Study Area Texas Ave (Imp.)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.306 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,257 cuft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.31 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484



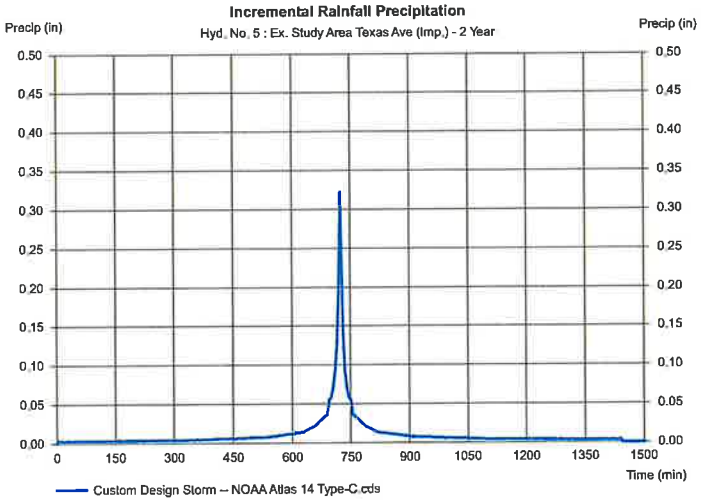
Precipitation Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 5

Ex. Study Area Texas Ave (Imp.)

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		



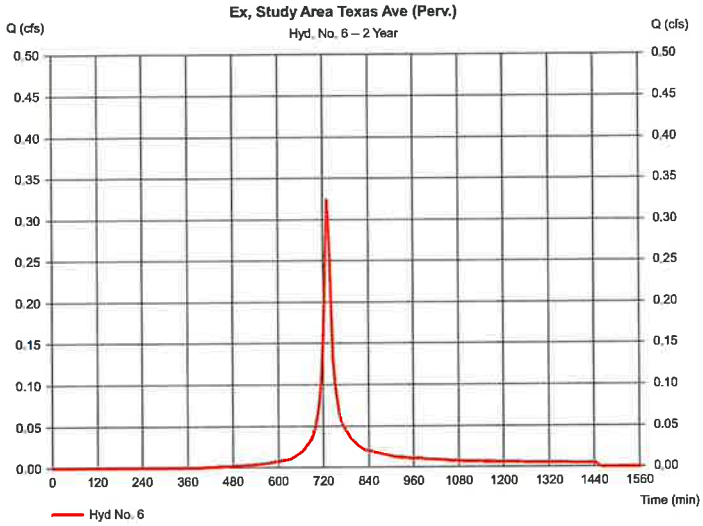
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 6

Ex, Study Area Texas Ave (Perv.)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.324 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,188 cuft
Drainage area	= 0.160 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.31 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484



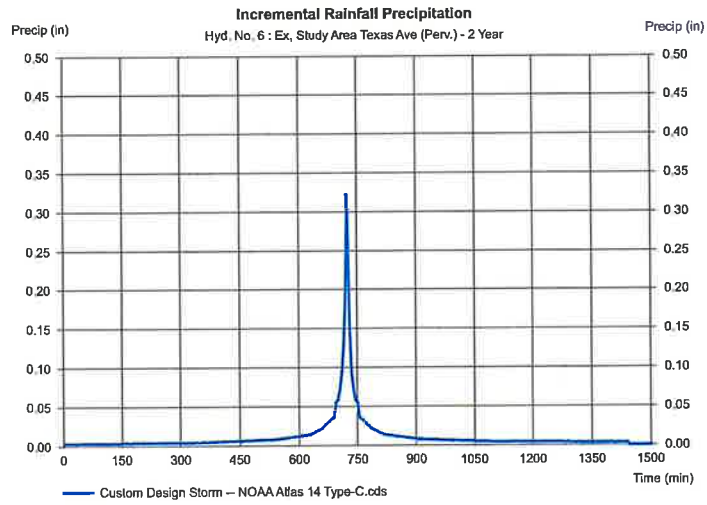
Precipitation Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 6

Ex, Study Area Texas Ave (Perv.)

Storm Frequency	= 2 yrs	Time Interval	= 5 min
Total precip.	= 3.3100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		



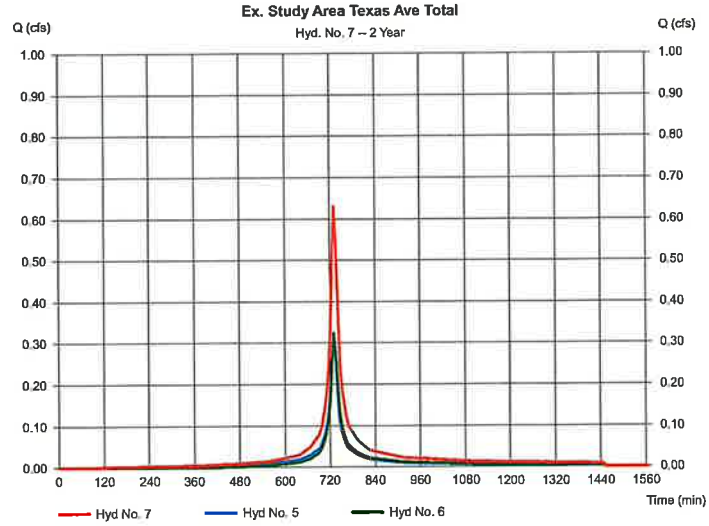
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 7

Ex. Study Area Texas Ave Total

Hydrograph type	= Combine	Peak discharge	= 0.630 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,445 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 0.280 ac

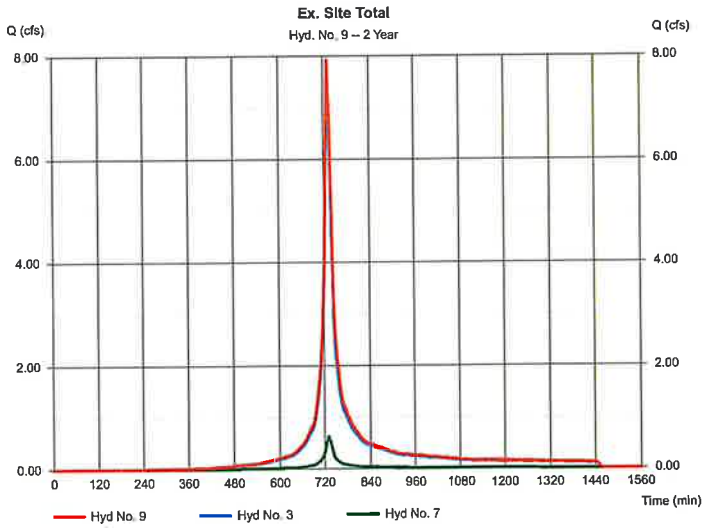


Hydrograph Report

Hyd. No. 9

Ex. Site Total

Hydrograph type	= Combine	Peak discharge	= 7.934 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 29,556 cuft
Inflow hyds.	= 3, 7	Contrib. drain. area	= 0.000 ac

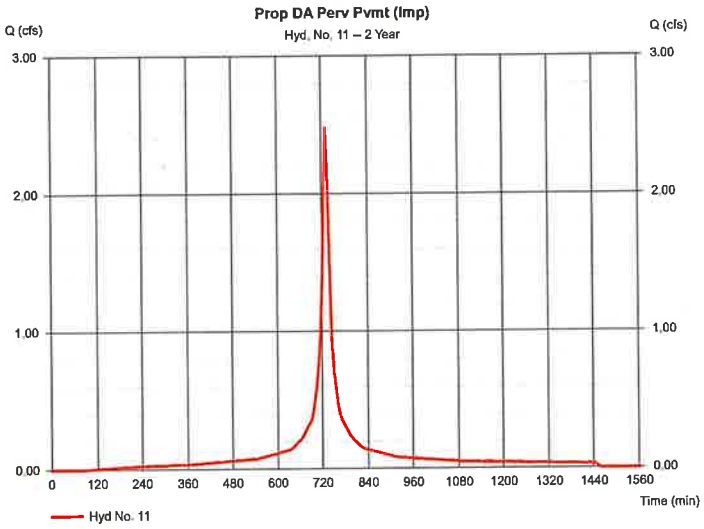


Hydrograph Report

Hyd. No. 11

Prop DA Perv Pvmt (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.477 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 10,158 cuft
Drainage area	= 0.970 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.31 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

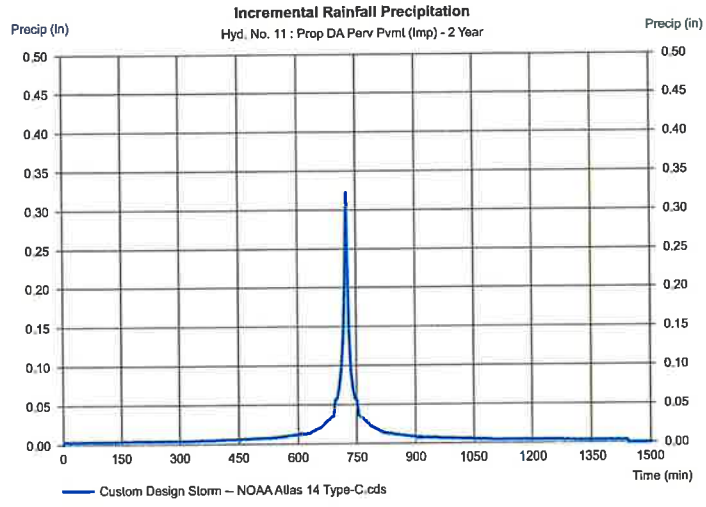


Precipitation Report

Hyd. No. 11

Prop DA Perv Pvmt (Imp)

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

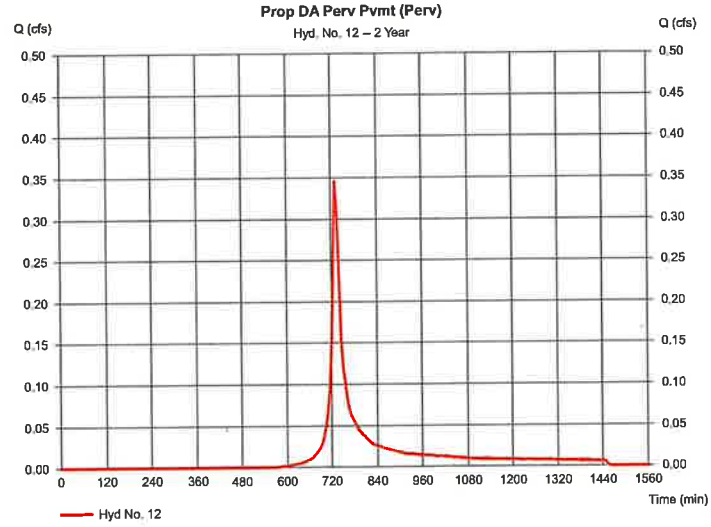


Hydrograph Report

Hyd. No. 12

Prop DA Perv Pvmt (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.346 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,265 cuft
Drainage area	= 0.250 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.31 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

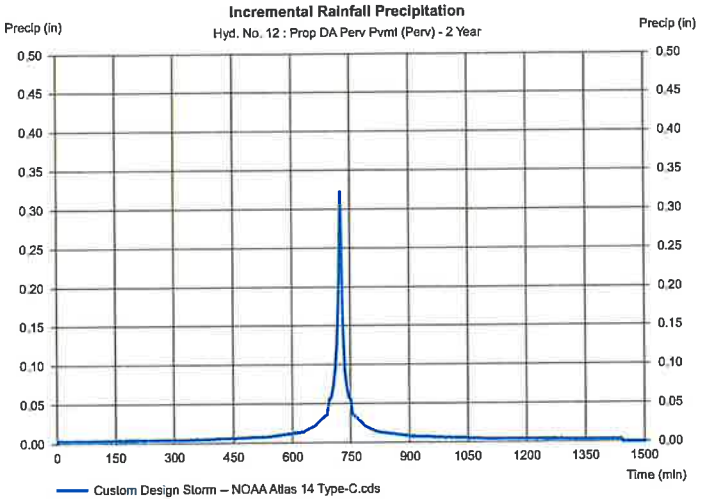


Precipitation Report

Hyd. No. 12

Prop DA Perv Pvmt (Perv)

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

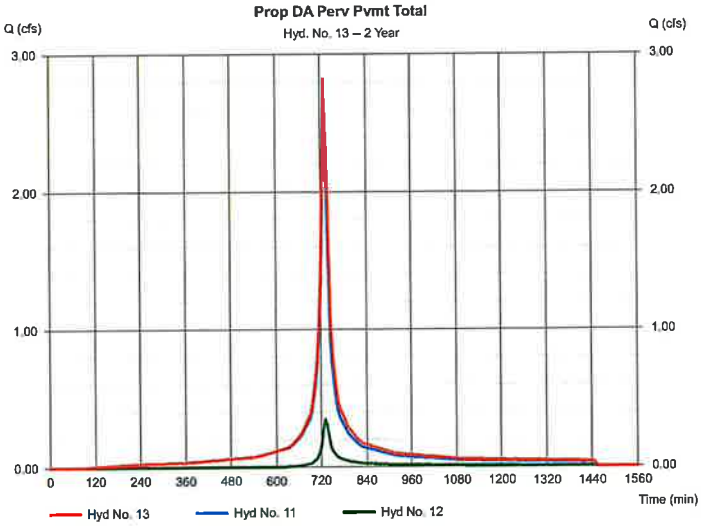


Hydrograph Report

Hyd. No. 13

Prop DA Perv Pvmt Total

Hydrograph type	= Combine	Peak discharge	= 2.823 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 11,423 cuft
Inflow hyds.	= 11, 12	Contrib. drain. area	= 1.220 ac



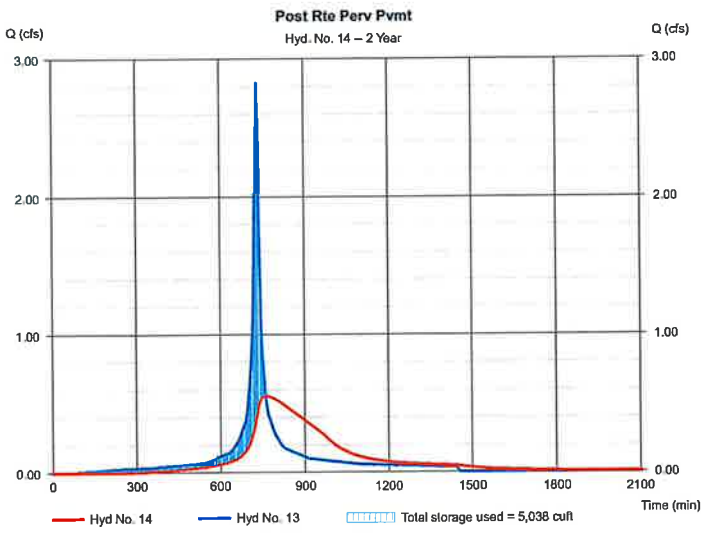
Hydrograph Report

Hyd. No. 14

Post Rte Perv Pvmt

Hydrograph type	= Reservoir	Peak discharge	= 0.554 cfs
Storm frequency	= 2 yrs	Time to peak	= 760 min
Time interval	= 5 min	Hyd. volume	= 11,372 cuft
Inflow hyd. No.	= 13 - Prop DA Perv Pvmt Total	Max. Elevation	= 61.04 ft
Reservoir name	= Perv Pavement	Max. Storage	= 5,038 cuft

Storage Indication method used.



Pond Report

Pond No. 1 - Perv Pavement

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 60.00 ft. Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	60.00	12,132	0	0
0.50	60.50	12,133	2,426	2,426
1.00	61.00	12,134	2,426	4,853
1.50	61.50	12,135	2,427	7,279
2.00	62.00	12,136	2,427	9,706
2.50	62.50	12,137	2,427	12,133
2.90	62.90	12,138	1,942	14,075

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	5.00	3.00	0.00
Span (in)	= 18.00	5.00	18.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 60.00	60.01	61.10	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 1.00	0.00	0.00	0.00
Crest El. (ft)	= 61.95	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir flows checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	60.00	0.00	0.00	0.00	---	0.00	---	---	---	---	---	0.00
0.05	243	60.05	0.00 ic	0.00 ic	0.00	---	0.00	---	---	---	---	---	0.00
0.10	485	60.10	0.02 ic	0.02 ic	0.00	---	0.00	---	---	---	---	---	0.02
0.15	728	60.15	0.05 ic	0.05 ic	0.00	---	0.00	---	---	---	---	---	0.05
0.20	971	60.20	0.08 ic	0.08 ic	0.00	---	0.00	---	---	---	---	---	0.08
0.25	1,213	60.25	0.13 ic	0.12 ic	0.00	---	0.00	---	---	---	---	---	0.12
0.30	1,456	60.30	0.17 ic	0.17 ic	0.00	---	0.00	---	---	---	---	---	0.17
0.35	1,698	60.35	0.23 ic	0.22 ic	0.00	---	0.00	---	---	---	---	---	0.22
0.40	1,941	60.40	0.27 ic	0.27 ic	0.00	---	0.00	---	---	---	---	---	0.27
0.45	2,184	60.45	0.31 ic	0.30 ic	0.00	---	0.00	---	---	---	---	---	0.30
0.50	2,426	60.50	0.33 ic	0.33 ic	0.00	---	0.00	---	---	---	---	---	0.33
0.55	2,669	60.55	0.36 ic	0.36 ic	0.00	---	0.00	---	---	---	---	---	0.36
0.60	2,912	60.60	0.38 ic	0.38 ic	0.00	---	0.00	---	---	---	---	---	0.38
0.65	3,154	60.65	0.41 ic	0.40 ic	0.00	---	0.00	---	---	---	---	---	0.40
0.70	3,397	60.70	0.43 ic	0.42 ic	0.00	---	0.00	---	---	---	---	---	0.42
0.75	3,639	60.75	0.46 ic	0.45 ic	0.00	---	0.00	---	---	---	---	---	0.45
0.80	3,882	60.80	0.47 ic	0.47 ic	0.00	---	0.00	---	---	---	---	---	0.47
0.85	4,125	60.85	0.49 ic	0.49 ic	0.00	---	0.00	---	---	---	---	---	0.49
0.90	4,367	60.90	0.52 ic	0.50 ic	0.00	---	0.00	---	---	---	---	---	0.50
0.95	4,610	60.95	0.52 ic	0.52 ic	0.00	---	0.00	---	---	---	---	---	0.52
1.00	4,853	61.00	0.55 ic	0.54 ic	0.00	---	0.00	---	---	---	---	---	0.54
1.05	5,095	61.05	0.56 ic	0.56 ic	0.00	---	0.00	---	---	---	---	---	0.56
1.10	5,338	61.10	0.58 ic	0.58 ic	0.00	---	0.00	---	---	---	---	---	0.58
1.15	5,581	61.15	0.65 ic	0.59 ic	0.06 ic	---	0.00	---	---	---	---	---	0.64
1.20	5,823	61.20	0.76 ic	0.59 ic	0.16 ic	---	0.00	---	---	---	---	---	0.76
1.25	6,066	61.25	0.93 ic	0.60 ic	0.30 ic	---	0.00	---	---	---	---	---	0.89
1.30	6,309	61.30	1.06 ic	0.60 ic	0.46 ic	---	0.00	---	---	---	---	---	1.06
1.35	6,551	61.35	1.26 oc	0.61 ic	0.64 ic	---	0.00	---	---	---	---	---	1.25
1.40	6,794	61.40	1.39 oc	0.61 ic	0.78 ic	---	0.00	---	---	---	---	---	1.37
1.45	7,037	61.45	1.48 oc	0.62 ic	0.86 ic	---	0.00	---	---	---	---	---	1.48
1.50	7,279	61.50	1.56 oc	0.63 ic	0.95 ic	---	0.00	---	---	---	---	---	1.58
1.55	7,522	61.55	1.68 oc	0.64 ic	1.03 ic	---	0.00	---	---	---	---	---	1.67
1.60	7,765	61.60	1.78 oc	0.65 ic	1.11 ic	---	0.00	---	---	---	---	---	1.76
1.65	8,007	61.65	1.88 oc	0.66 ic	1.18 ic	---	0.00	---	---	---	---	---	1.84
1.70	8,250	61.70	1.93 oc	0.67 ic	1.24 ic	---	0.00	---	---	---	---	---	1.92
1.75	8,493	61.75	2.03 oc	0.68 ic	1.31 ic	---	0.00	---	---	---	---	---	1.99
1.80	8,735	61.80	2.08 oc	0.69 ic	1.37 ic	---	0.00	---	---	---	---	---	2.06

Continues on next page...

Perv Pavement

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
1.85	8,978	61.85	2.13 oc	0.70 ic	1.43 ic	—	0.00	—	—	—	—	—	2.13
1.90	9,221	61.90	2.24 oc	0.71 ic	1.48 ic	—	0.00	—	—	—	—	—	2.19
1.95	9,464	61.95	2.29 oc	0.72 ic	1.54 ic	—	0.00	—	—	—	—	—	2.26
2.00	9,706	62.00	2.39 oc	0.73 ic	1.59 ic	—	0.04	—	—	—	—	—	2.36
2.05	9,949	62.05	2.49 oc	0.74 ic	1.64 ic	—	0.11	—	—	—	—	—	2.48
2.10	10,192	62.10	2.65 oc	0.74 ic	1.69 ic	—	0.19	—	—	—	—	—	2.62
2.15	10,434	62.15	2.80 oc	0.75 ic	1.74 ic	—	0.30	—	—	—	—	—	2.78
2.20	10,677	62.20	2.95 oc	0.75 ic	1.78 ic	—	0.42	—	—	—	—	—	2.95
2.25	10,920	62.25	3.14 oc	0.75 ic	1.83 ic	—	0.55	—	—	—	—	—	3.13
2.30	11,162	62.30	3.33 oc	0.75 ic	1.87 ic	—	0.69	—	—	—	—	—	3.32
2.35	11,405	62.35	3.55 oc	0.75 ic	1.92 ic	—	0.84	—	—	—	—	—	3.51
2.40	11,648	62.40	3.71 oc	0.75 ic	1.96 ic	—	1.01	—	—	—	—	—	3.71
2.45	11,891	62.45	3.94 oc	0.75 ic	2.00 ic	—	1.18	—	—	—	—	—	3.93
2.50	12,133	62.50	4.16 oc	0.75 ic	2.04 ic	—	1.35	—	—	—	—	—	4.14
2.54	12,327	62.54	4.30 oc	0.74 ic	2.05 ic	—	1.51	—	—	—	—	—	4.30
2.58	12,522	62.58	4.45 oc	0.74 ic	2.03 ic	—	1.67	—	—	—	—	—	4.44
2.62	12,716	62.62	4.58 oc	0.73 ic	2.01 ic	—	1.83	—	—	—	—	—	4.57
2.66	12,910	62.66	4.64 oc	0.70 ic	1.94 ic	—	1.99	—	—	—	—	—	4.64
2.70	13,104	62.70	4.83 oc	0.71 ic	1.95 ic	—	2.16	—	—	—	—	—	4.83
2.74	13,298	62.74	5.02 oc	0.72 ic	1.97 ic	—	2.34	—	—	—	—	—	5.02
2.78	13,493	62.78	5.22 oc	0.72 ic	1.98 ic	—	2.52	—	—	—	—	—	5.22
2.82	13,687	62.82	5.42 oc	0.72 ic	1.99 ic	—	2.70	—	—	—	—	—	5.42
2.86	13,881	62.86	5.62 oc	0.73 ic	2.00 ic	—	2.89	—	—	—	—	—	5.62
2.90	14,075	62.90	5.83 oc	0.73 ic	2.01 ic	—	3.08	—	—	—	—	—	5.83

...End

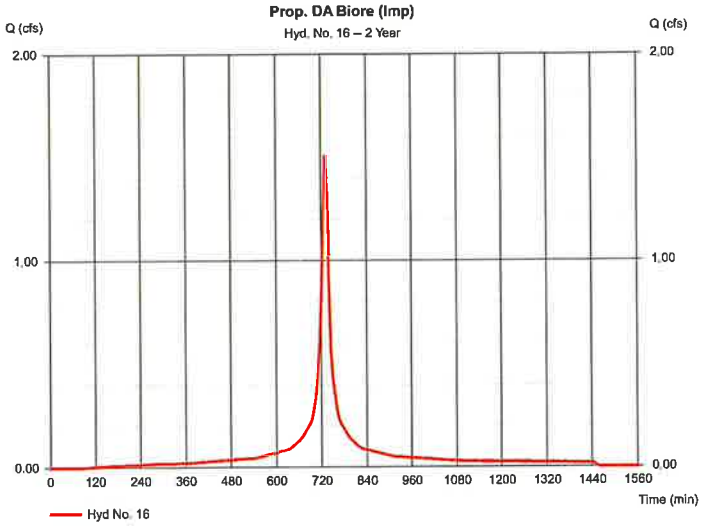
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 16

Prop. DA Biore (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.507 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 6,178 cuft
Drainage area	= 0.590 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.31 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484



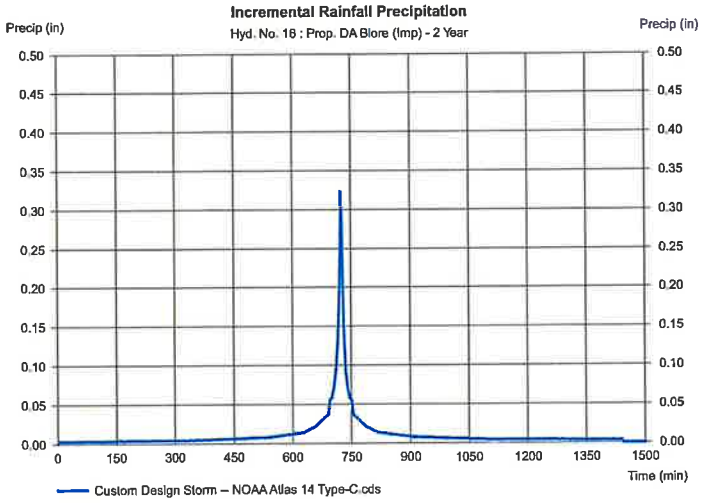
Precipitation Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 16

Prop. DA Biore (Imp)

Storm Frequency	= 2 yrs	Time Interval	= 5 min
Total precip.	= 3.3100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		



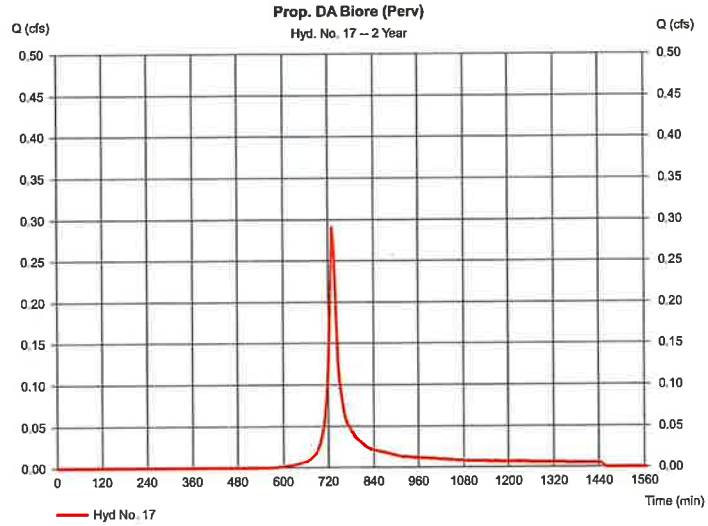
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 17

Prop. DA Biore (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.290 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,063 cuft
Drainage area	= 0.210 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.31 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

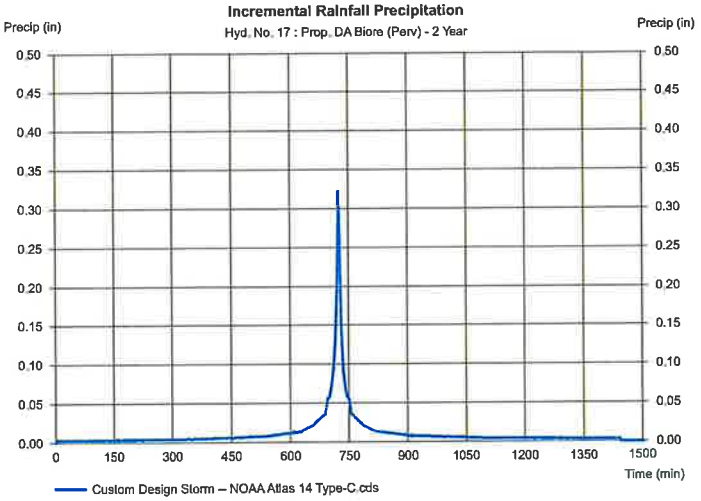


Precipitation Report

Hyd. No. 17

Prop. DA Biore (Perv)

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

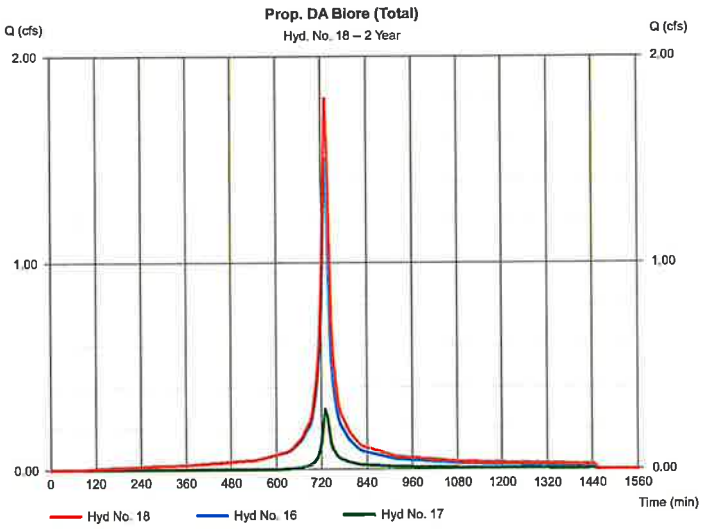


Hydrograph Report

Hyd. No. 18

Prop. DA Biore (Total)

Hydrograph type	= Combine	Peak discharge	= 1.797 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 7,241 cuft
Inflow hyds.	= 16, 17	Contrib. drain. area	= 0.800 ac



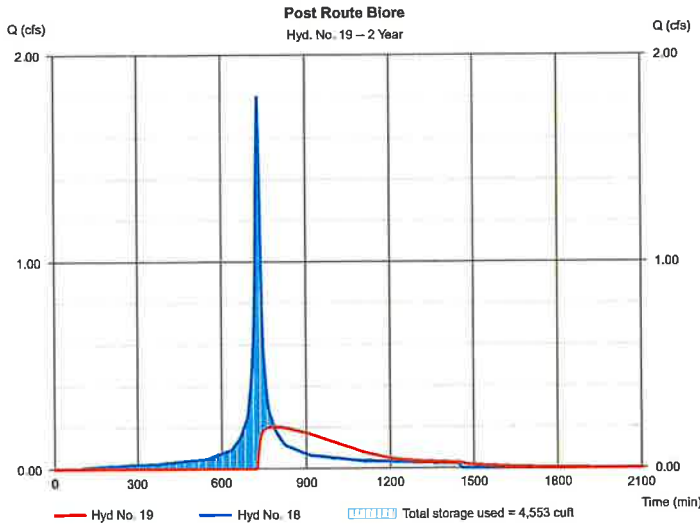
Hydrograph Report

Hyd. No. 19

Post Route Biore

Hydrograph type	= Reservoir	Peak discharge	= 0.204 cfs
Storm frequency	= 2 yrs	Time to peak	= 785 min
Time interval	= 5 min	Hyd. volume	= 4,670 cuft
Inflow hyd. No.	= 18 - Prop. DA Biore (Total)	Max. Elevation	= 64.27 ft
Reservoir name	= Bioret Basin	Max. Storage	= 4,553 cuft

Storage Indication method used.



Pond Report

Pond No. 2 - Bioret Basin

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 62.10 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	62.10	1,800	0	0
0.90	63.00	1,970	1,696	1,696
1.80	64.00	2,380	2,162	3,858
2.90	65.00	2,800	2,577	6,434
3.40	65.50	3,500	1,572	8,006

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	3.00	0.00	0.00
Span (in)	= 18.00	3.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 62.10	63.40	0.00	0.00
Length (ft)	= 15.00	0.00	0.00	0.00
Slope (%)	= 2.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 4.00	0.00	0.00	0.00
Crest El. (ft)	= 64.40	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outlets are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	62.10	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
0.09	170	62.19	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
0.18	339	62.28	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
0.27	509	62.37	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
0.36	678	62.46	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
0.45	848	62.55	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
0.54	1,017	62.64	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
0.63	1,187	62.73	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
0.72	1,357	62.82	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
0.81	1,526	62.91	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
0.90	1,696	63.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
1.00	1,912	63.10	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
1.10	2,128	63.20	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
1.20	2,344	63.30	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
1.30	2,560	63.40	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
1.40	2,777	63.50	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.02
1.50	2,993	63.60	0.06 ic	0.06 ic	---	---	0.00	---	---	---	---	---	0.06
1.60	3,209	63.70	0.10 ic	0.10 ic	---	---	0.00	---	---	---	---	---	0.10
1.70	3,425	63.80	0.13 ic	0.12 ic	---	---	0.00	---	---	---	---	---	0.12
1.80	3,641	63.90	0.14 ic	0.14 ic	---	---	0.00	---	---	---	---	---	0.14
1.90	3,858	64.00	0.17 ic	0.16 ic	---	---	0.00	---	---	---	---	---	0.16
2.00	4,115	64.10	0.18 ic	0.18 ic	---	---	0.00	---	---	---	---	---	0.18
2.10	4,373	64.20	0.20 ic	0.19 ic	---	---	0.00	---	---	---	---	---	0.19
2.20	4,631	64.30	0.22 ic	0.21 ic	---	---	0.00	---	---	---	---	---	0.21
2.30	4,888	64.40	0.23 ic	0.22 ic	---	---	0.00	---	---	---	---	---	0.22
2.40	5,146	64.50	0.85 ic	0.23 ic	---	---	0.42	---	---	---	---	---	0.65
2.50	5,404	64.60	1.44 ic	0.25 ic	---	---	1.19	---	---	---	---	---	1.44
2.60	5,661	64.70	2.44 ic	0.26 ic	---	---	2.19	---	---	---	---	---	2.44
2.70	5,919	64.80	3.64 ic	0.27 ic	---	---	3.37	---	---	---	---	---	3.64
2.80	6,177	64.90	5.02 oc	0.28 ic	---	---	4.71	---	---	---	---	---	4.99
2.90	6,434	65.00	6.46 oc	0.27 ic	---	---	6.19	---	---	---	---	---	5.46
2.95	6,591	65.05	7.25 oc	0.27 ic	---	---	6.98	---	---	---	---	---	7.25
3.00	6,749	65.10	8.06 oc	0.26 ic	---	---	7.80	---	---	---	---	---	8.06
3.05	5,906	65.15	8.91 oc	0.25 ic	---	---	8.65	---	---	---	---	---	8.91
3.10	7,063	65.20	9.77 ic	0.24 ic	---	---	9.53	---	---	---	---	---	9.77
3.15	7,220	65.25	10.64 ic	0.22 ic	---	---	10.43 s	---	---	---	---	---	10.64
3.20	7,377	65.30	11.18 ic	0.20 ic	---	---	10.98 s	---	---	---	---	---	11.18
3.25	7,534	65.35	11.59 ic	0.19 ic	---	---	11.41 s	---	---	---	---	---	11.59
3.30	7,691	65.40	11.95 ic	0.18 ic	---	---	11.77 s	---	---	---	---	---	11.95

Continues on next page...

Bioret Basin

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Ctv A cfs	Ctv B cfs	Ctv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.35	7,849	65.45	12.26 ic	0.17 ic	--	--	12.09 s	--	--	--	--	--	12.26
3.40	8,006	65.50	12.55 ic	0.16 ic	--	--	12.39 s	--	--	--	--	--	12.55

...End

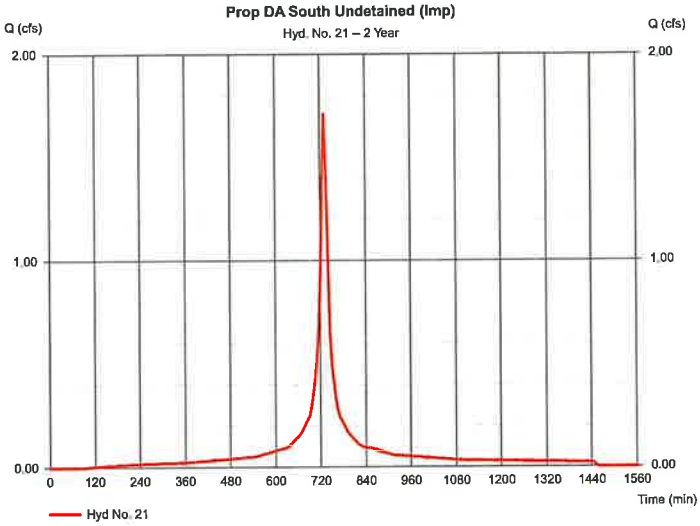
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 21

Prop DA South Undetained (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.711 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 7,016 cuft
Drainage area	= 0.670 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.31 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484



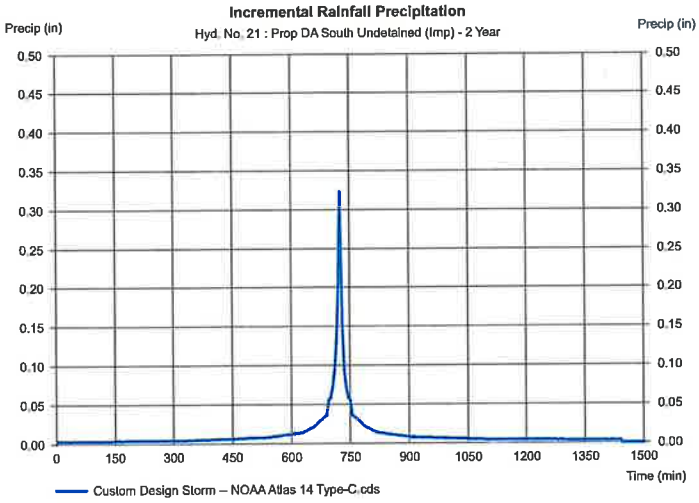
Precipitation Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 21

Prop DA South Undetained (Imp)

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		



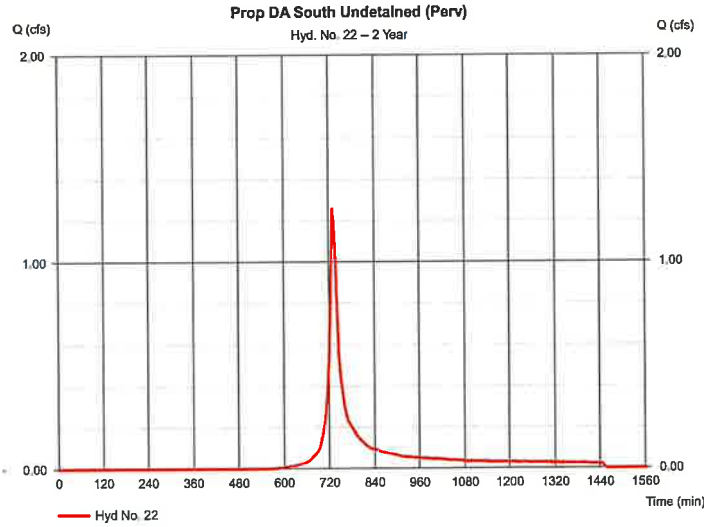
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 22

Prop DA South Undetained (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.259 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,605 cuft
Drainage area	= 0.910 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.31 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

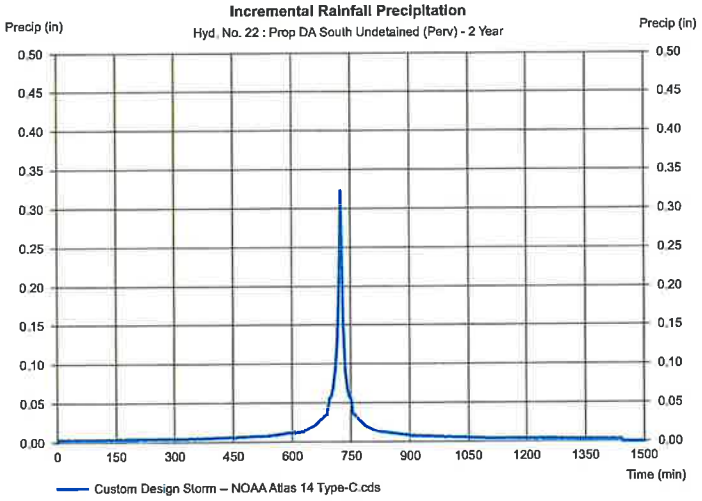


Precipitation Report

Hyd. No. 22

Prop DA South Undetained (Perv)

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

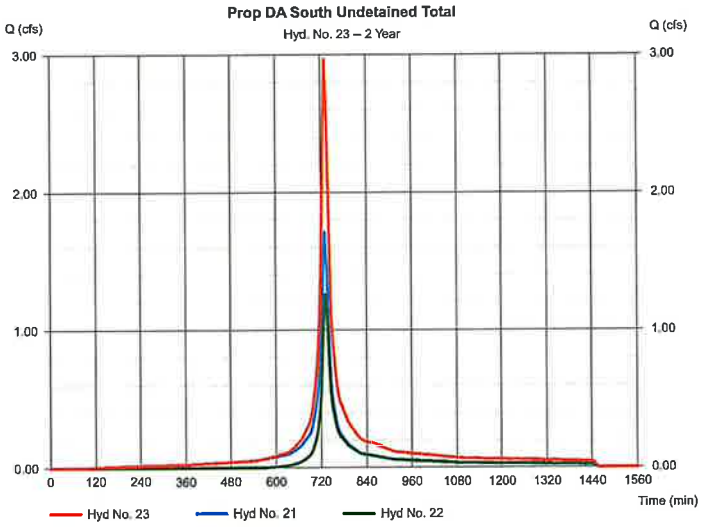


Hydrograph Report

Hyd. No. 23

Prop DA South Undetained Total

Hydrograph type	= Combine	Peak discharge	= 2.970 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 11,621 cuft
Inflow hyds.	= 21, 22	Contrib. drain. area	= 1.580 ac

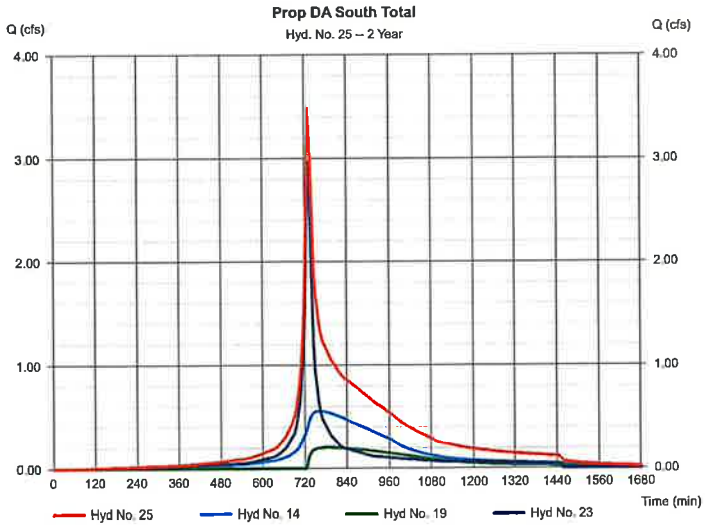


Hydrograph Report

Hyd. No. 25

Prop DA South Total

Hydrograph type	= Combine	Peak discharge	= 3.488 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 27,663 cuft
Inflow hyds.	= 14, 19, 23	Contrib. drain. area	= 0.000 ac

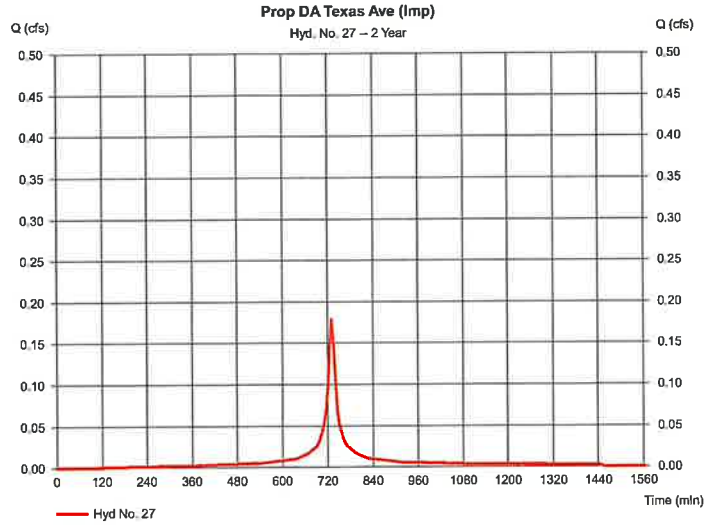


Hydrograph Report

Hyd. No. 27

Prop DA Texas Ave (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.179 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 733 cuft
Drainage area	= 0.070 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.31 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

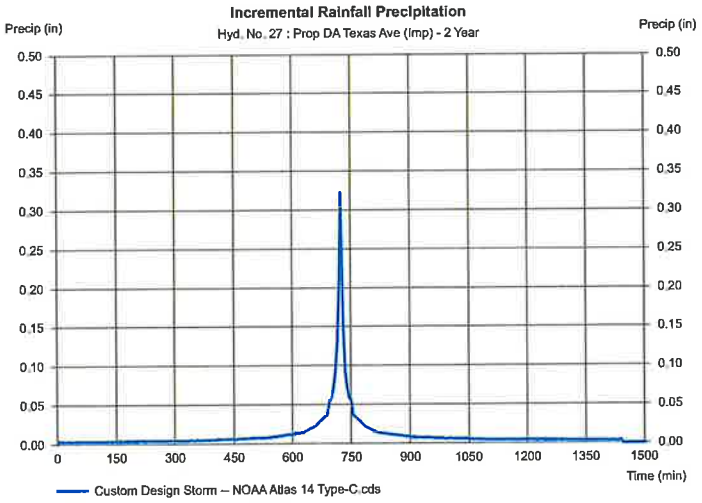


Precipitation Report

Hyd. No. 27

Prop DA Texas Ave (Imp)

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

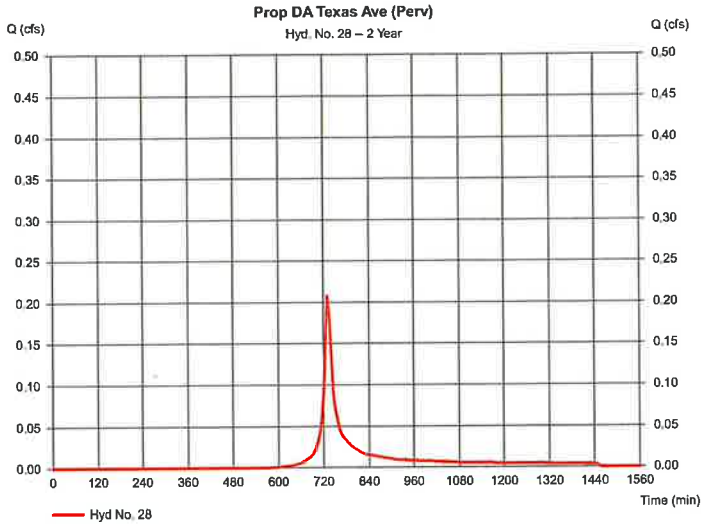


Hydrograph Report

Hyd. No. 28

Prop DA Texas Ave (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.207 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 759 cuft
Drainage area	= 0.150 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.31 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

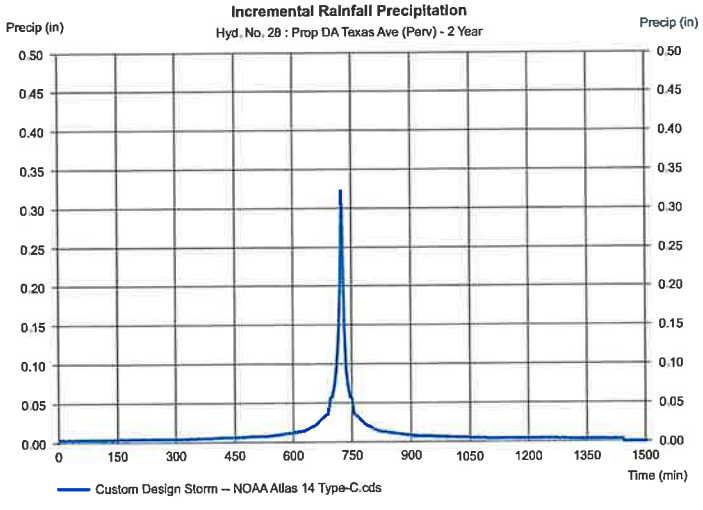


Precipitation Report

Hyd. No. 28

Prop DA Texas Ave (Perv)

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

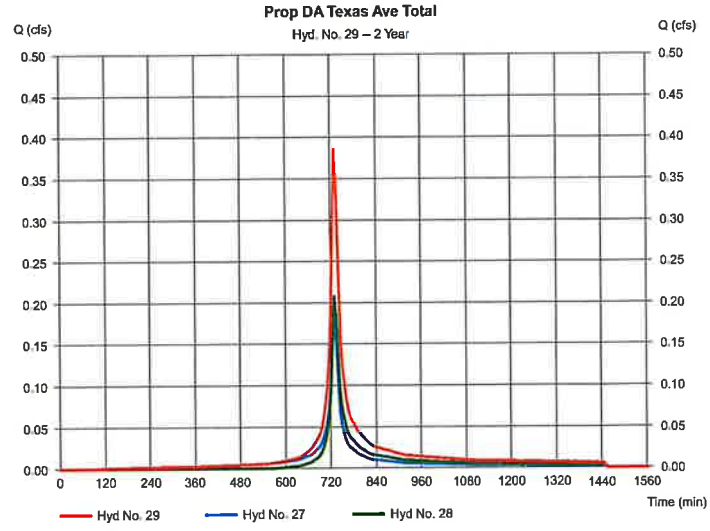


Hydrograph Report

Hyd. No. 29

Prop DA Texas Ave Total

Hydrograph type	= Combine	Peak discharge	= 0.386 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,492 cuft
Inflow hyds.	= 27, 28	Contrib. drain. area	= 0.220 ac



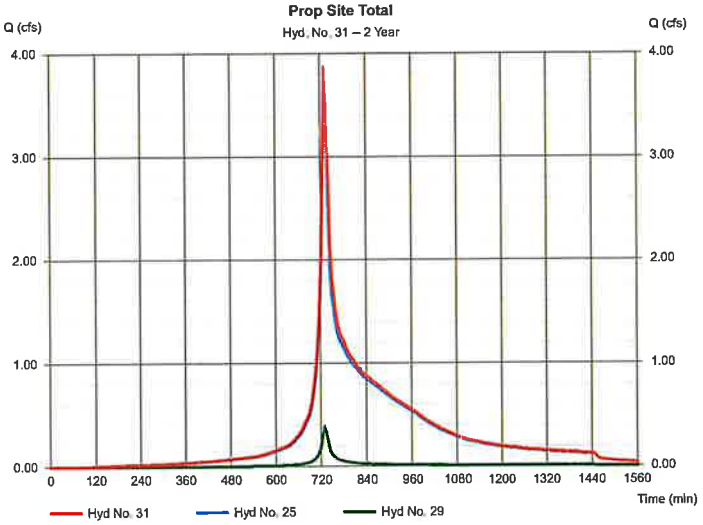
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 31

Prop Site Total

Hydrograph type	= Combine	Peak discharge	= 3.874 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 29,155 cuft
Inflow hyds.	= 25, 29	Contrib. drain. area	= 0.000 ac



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	1.051	5	730	4,386	—	—	—	Ex, Study Area South (Imp.)
2	SCS Runoff	11.20	5	730	42,081	—	—	—	Ex. Study Area Soouth (Perv.)
3	Combine	12.25	5	730	46,467	1, 2	—	—	Ex. Study Area South Total
5	SCS Runoff	0.467	5	730	1,949	—	—	—	Ex. Study Area Texas Ave (Imp.)
6	SCS Runoff	0.548	5	730	2,059	—	—	—	Ex, Study Area Texas Ave (Perv.)
7	Combine	1.015	5	730	4,008	5, 6	—	—	Ex. Study Area Texas Ave Total
9	Combine	13.27	5	730	50,475	3, 7,	—	—	Ex. Site Total
11	SCS Runoff	3.775	5	730	15,756	—	—	—	Prop DA Perv Pvmt (Imp)
12	SCS Runoff	0.679	5	730	2,469	—	—	—	Prop DA Perv Pvmt (Perv)
13	Combine	4.453	5	730	18,225	11, 12	—	—	Prop DA Perv Pvmt Total
14	Reservoir	1.522	5	745	18,175	13	81.46	7,143	Post Rte Perv Pvmt
16	SCS Runoff	2.296	5	730	9,584	—	—	—	Prop. DA Biore (Imp)
17	SCS Runoff	0.570	5	730	2,074	—	—	—	Prop. DA Biore (Perv)
18	Combine	2.866	5	730	11,557	16, 17	—	—	Prop. DA Biore (Total)
19	Reservoir	1.979	5	740	9,086	18	84.67	5,542	Post Route Biore
21	SCS Runoff	2.607	5	730	10,883	—	—	—	Prop DA South Undetained (Imp)
22	SCS Runoff	2.470	5	730	8,986	—	—	—	Prop DA South Undetained (Perv)
23	Combine	5.078	5	730	19,869	21, 22	—	—	Prop DA South Undetained Total
25	Combine	7.125	5	735	47,130	14, 19, 23,	—	—	Prop DA South Total
27	SCS Runoff	0.272	5	730	1,137	—	—	—	Prop DA Texas Ave (Imp)
28	SCS Runoff	0.407	5	730	1,481	—	—	—	Prop DA Texas Ave (Perv)
29	Combine	0.680	5	730	2,618	27, 28	—	—	Prop DA Texas Ave Total
31	Combine	7.709	5	735	49,748	25, 29,	—	—	Prop Site Total

2022-11-08 2.10.100yr.gpw — Return Period: 10 Year — Wednesday, Nov 9, 2022

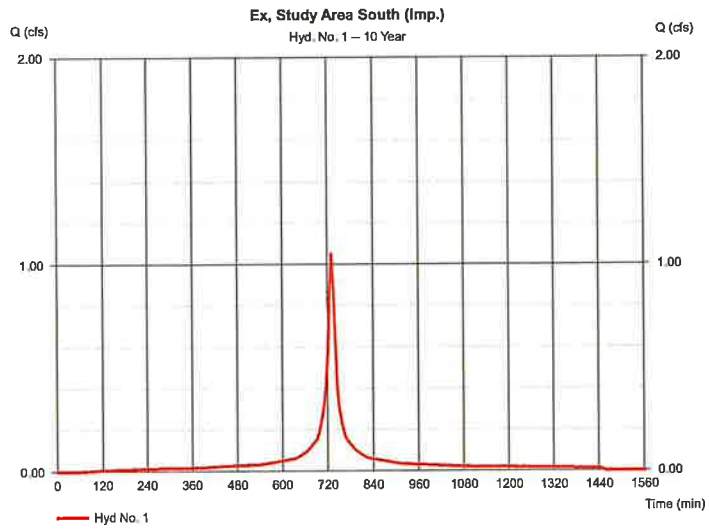
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 1

Ex, Study Area South (Imp.)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.051 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,386 cuft
Drainage area	= 0.270 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.01 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484



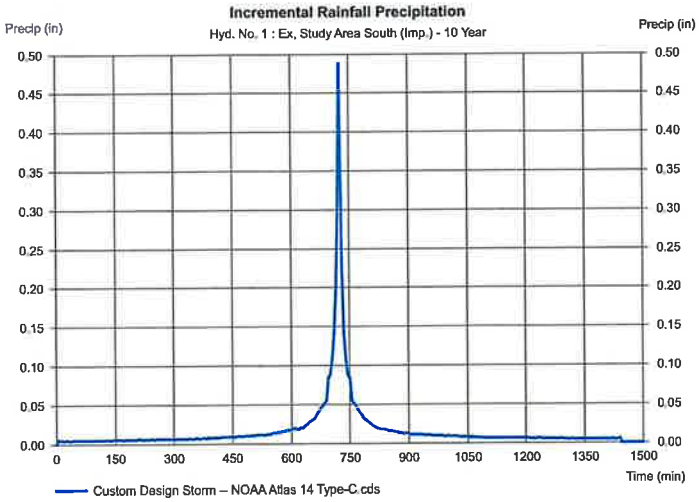
Precipitation Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 1

Ex, Study Area South (Imp.)

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

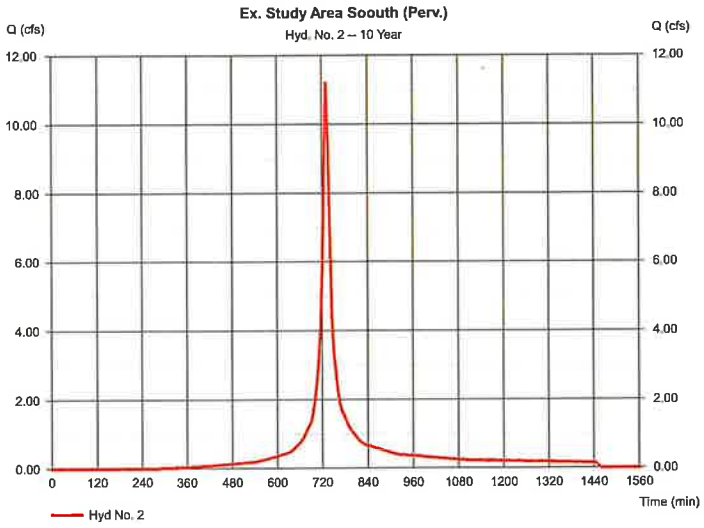


Hydrograph Report

Hyd. No. 2

Ex. Study Area Soouth (Perv.)

Hydrograph type	= SCS Runoff	Peak discharge	= 11.20 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 42,081 cuft
Drainage area	= 3.270 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.01 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

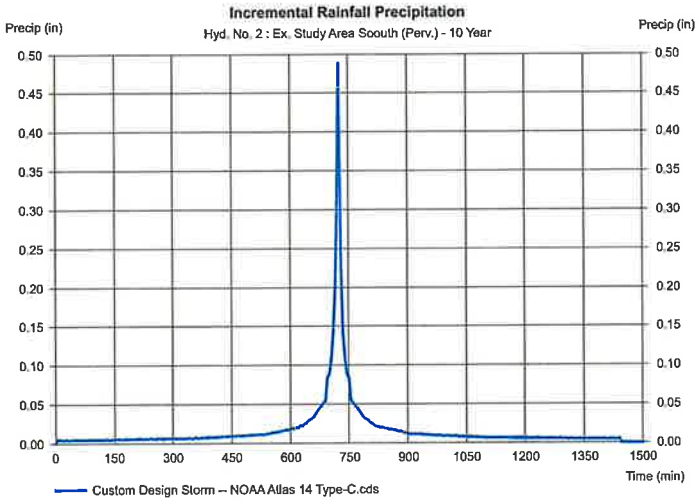


Precipitation Report

Hyd. No. 2

Ex. Study Area Soouth (Perv.)

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

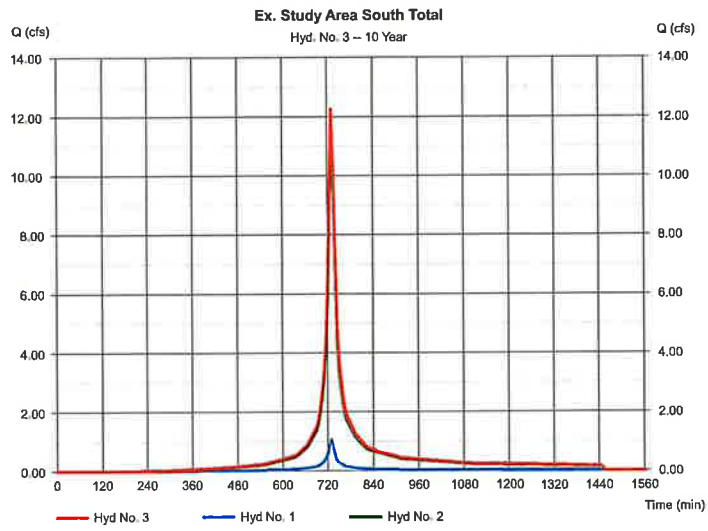


Hydrograph Report

Hyd. No. 3

Ex. Study Area South Total

Hydrograph type	= Combine	Peak discharge	= 12.25 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 46,467 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 3.540 ac

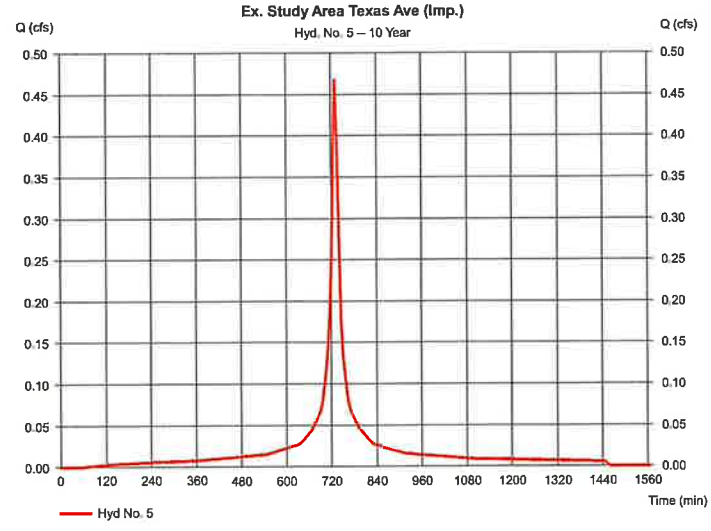


Hydrograph Report

Hyd. No. 5

Ex. Study Area Texas Ave (Imp.)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.467 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,949 cuft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.01 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

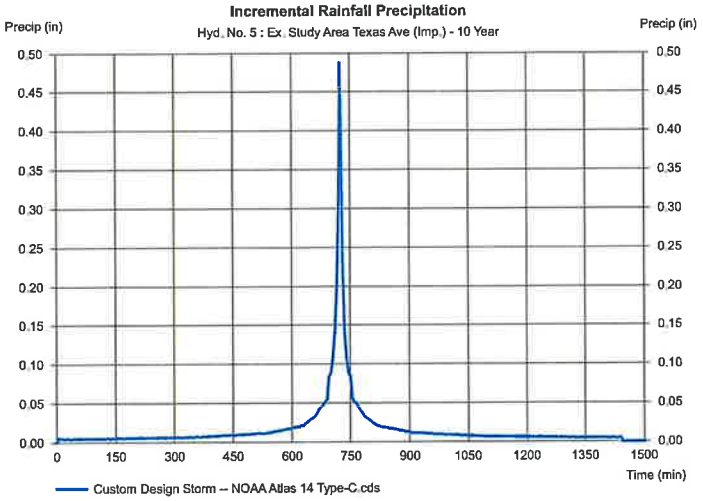


Precipitation Report

Hyd. No. 5

Ex. Study Area Texas Ave (Imp.)

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

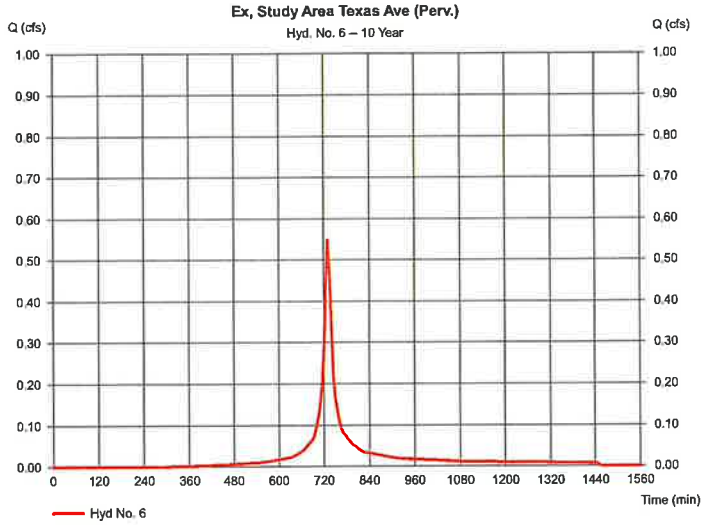


Hydrograph Report

Hyd. No. 6

Ex, Study Area Texas Ave (Perv.)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.548 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,059 cuft
Drainage area	= 0.160 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.01 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

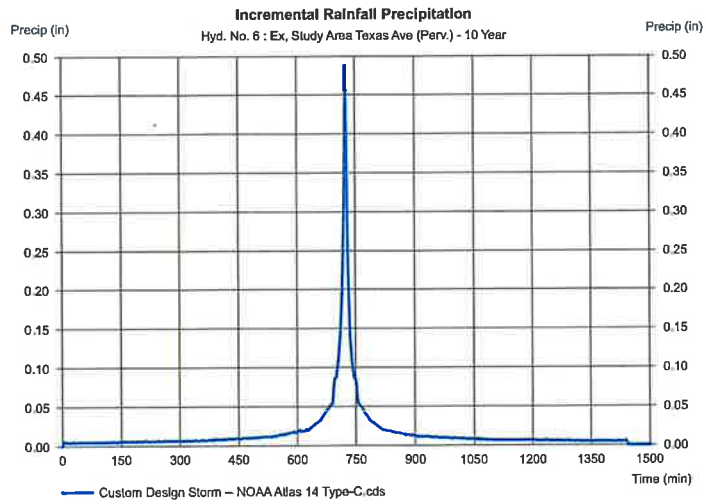


Precipitation Report

Hyd. No. 6

Ex, Study Area Texas Ave (Perv.)

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

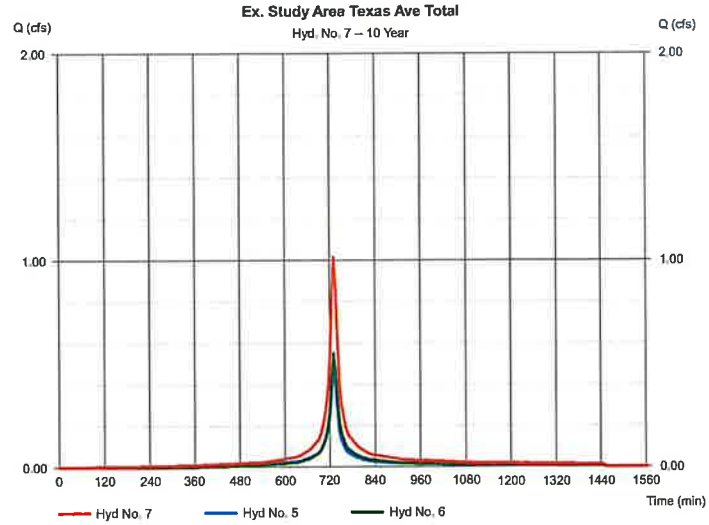


Hydrograph Report

Hyd. No. 7

Ex. Study Area Texas Ave Total

Hydrograph type	= Combine	Peak discharge	= 1.015 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,008 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 0.280 ac

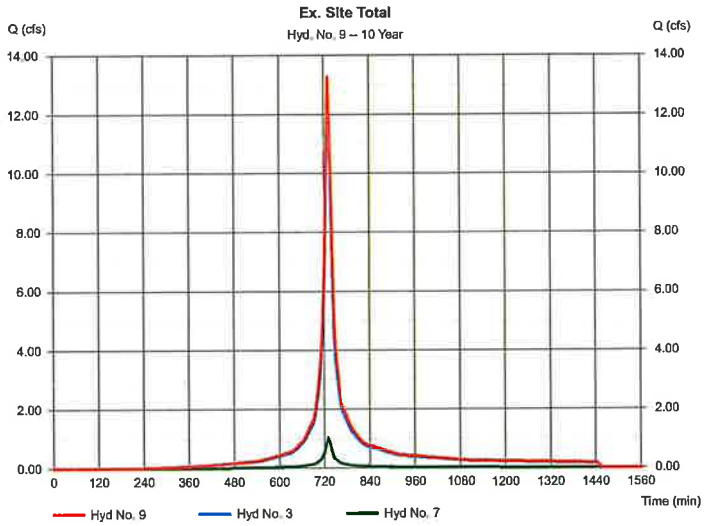


Hydrograph Report

Hyd. No. 9

Ex. Site Total

Hydrograph type	= Combine	Peak discharge	= 13.27 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 50,475 cuft
Inflow hyds.	= 3, 7	Contrib. drain. area	= 0.000 ac

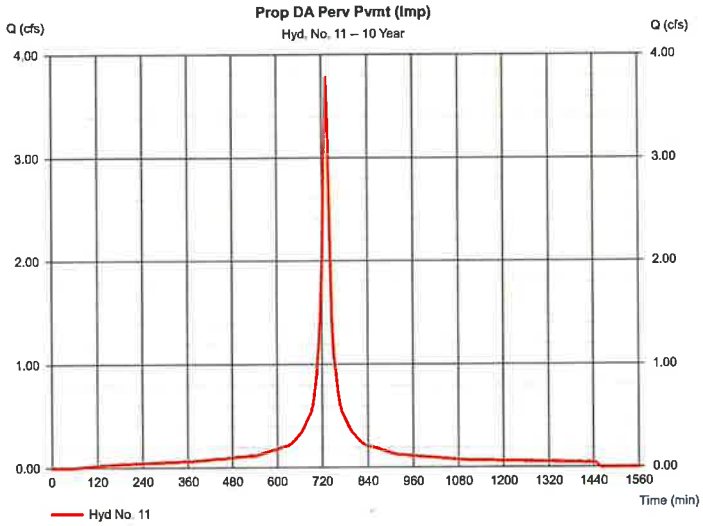


Hydrograph Report

Hyd. No. 11

Prop DA Perv Pvmt (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 3.775 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 15,756 cuft
Drainage area	= 0.970 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.01 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

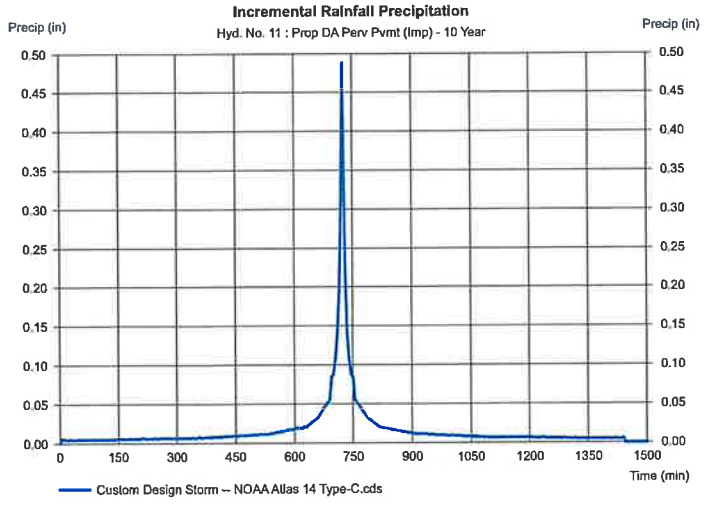


Precipitation Report

Hyd. No. 11

Prop DA Perv Pvmt (Imp)

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

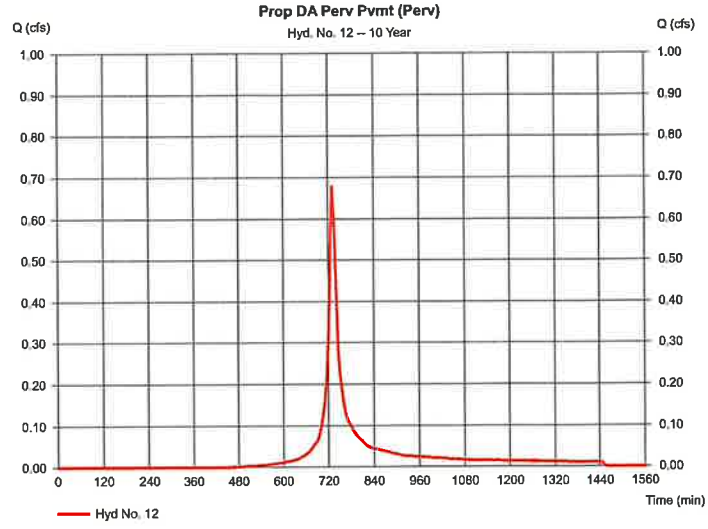


Hydrograph Report

Hyd. No. 12

Prop DA Perv Pvmt (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.679 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,469 cuft
Drainage area	= 0.250 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.01 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

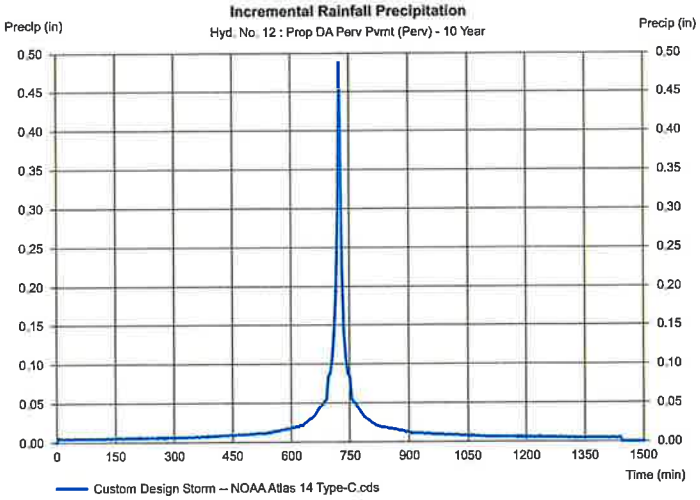


Precipitation Report

Hyd. No. 12

Prop DA Perv Pvmt (Perv)

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

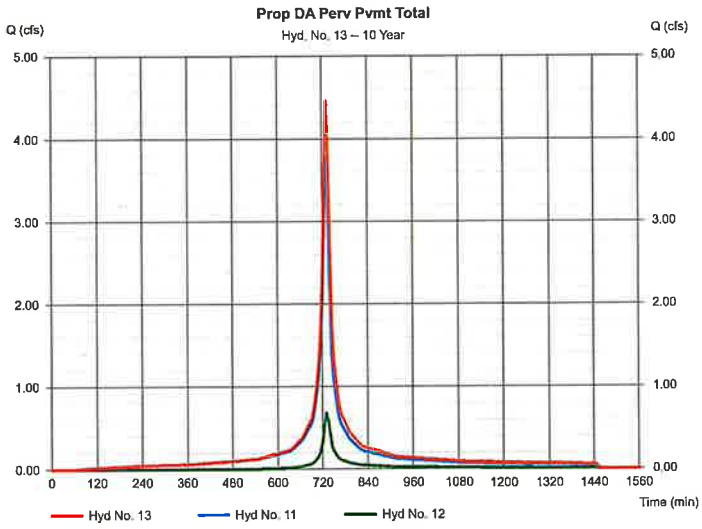


Hydrograph Report

Hyd. No. 13

Prop DA Perv Pvmt Total

Hydrograph type	= Combine	Peak discharge	= 4.453 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 18,225 cuft
Inflow hyds.	= 11, 12	Contrib. drain. area	= 1.220 ac



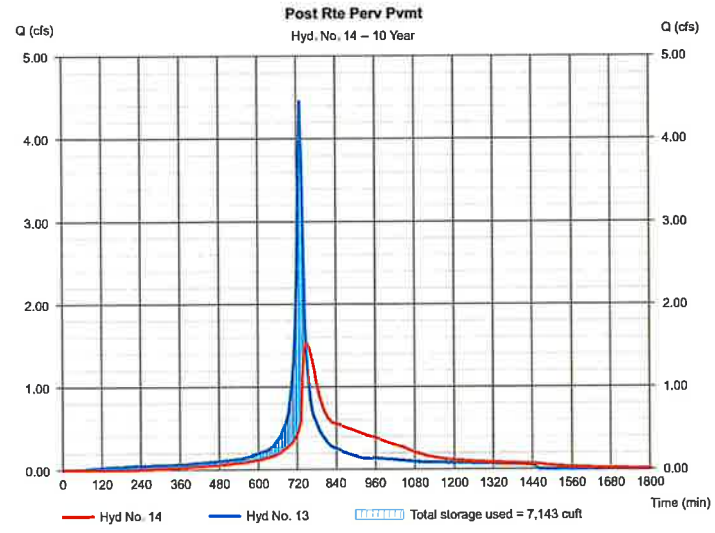
Hydrograph Report

Hyd. No. 14

Post Rte Perv Pvmt

Hydrograph type	= Reservoir	Peak discharge	= 1.522 cfs
Storm frequency	= 10 yrs	Time to peak	= 745 min
Time interval	= 5 min	Hyd. volume	= 18,175 cuft
Inflow hyd. No.	= 13 - Prop DA Perv Pvmt Total	Max. Elevation	= 61.48 ft
Reservoir name	= Perv Pavement	Max. Storage	= 7,143 cuft

Storage Indication method used.

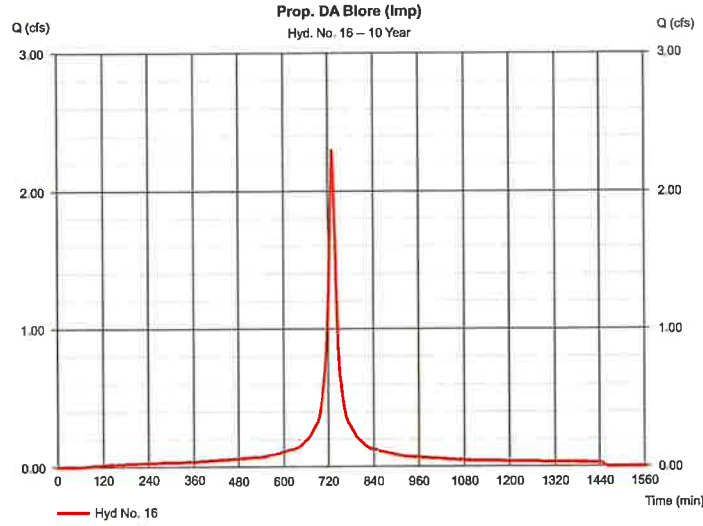


Hydrograph Report

Hyd. No. 16

Prop. DA Biore (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.296 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 9,584 cuft
Drainage area	= 0.590 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.01 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484



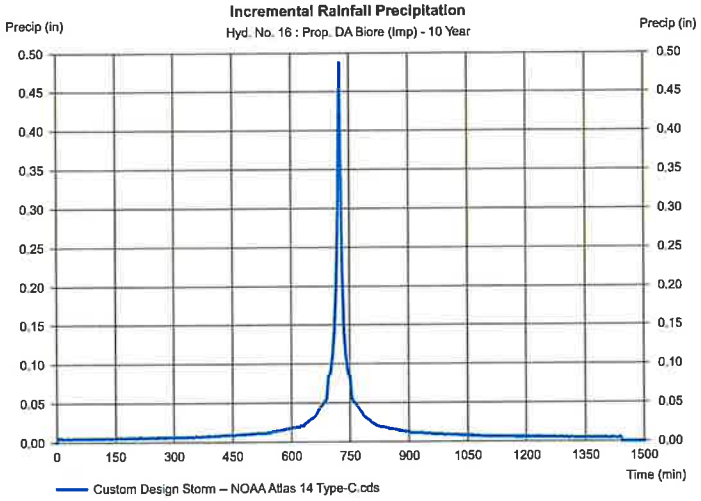
Precipitation Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 16

Prop. DA Biore (Imp)

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		



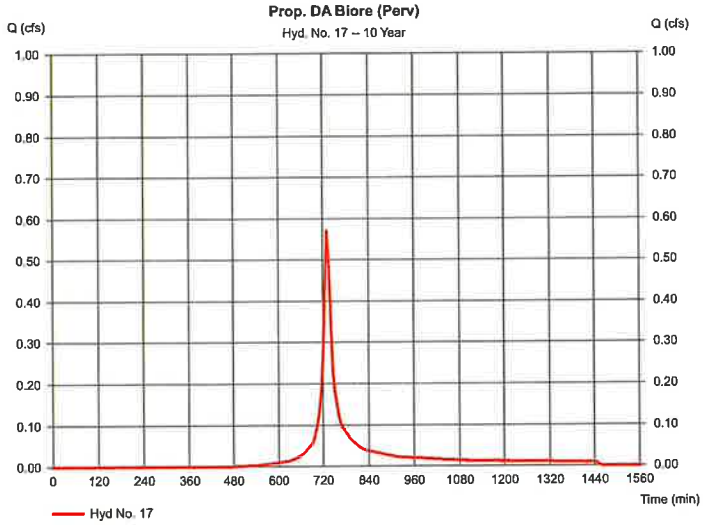
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 17

Prop. DA Biore (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.570 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,074 cuft
Drainage area	= 0.210 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.01 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484



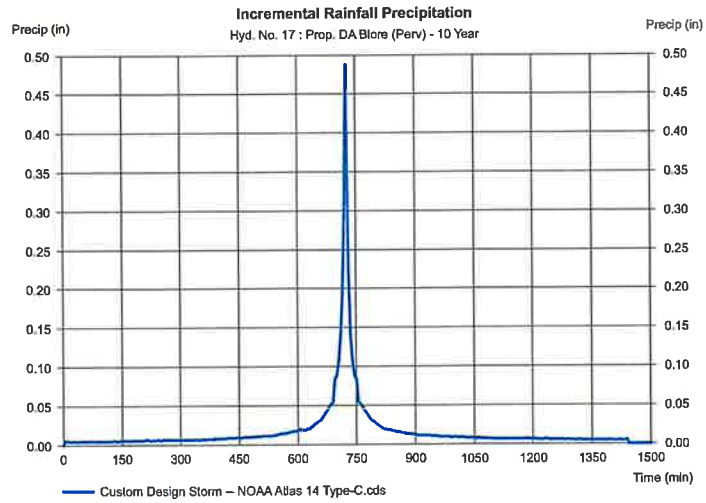
Precipitation Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 17

Prop. DA Biore (Perv)

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		



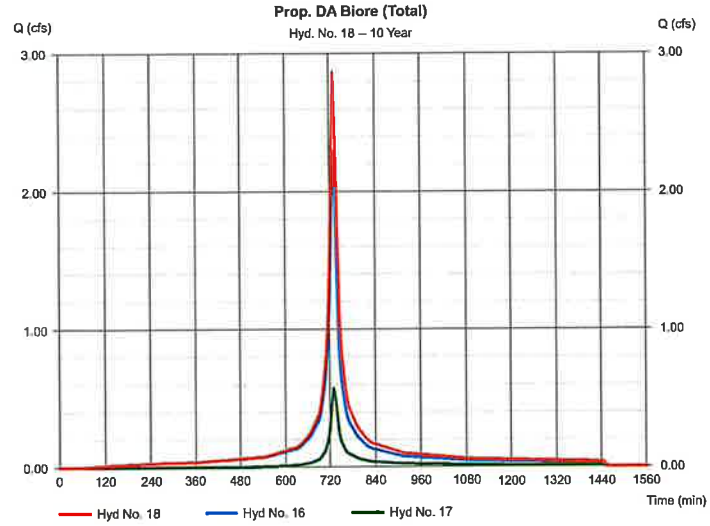
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 18

Prop. DA Biore (Total)

Hydrograph type	= Combine	Peak discharge	= 2.866 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 11,657 cuft
Inflow hyds.	= 16, 17	Contrib. drain. area	= 0.800 ac



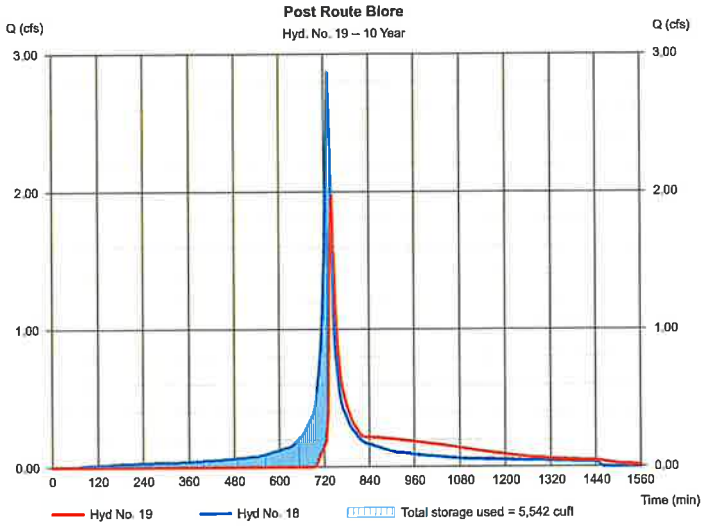
Hydrograph Report

Hyd. No. 19

Post Route Biore

Hydrograph type	= Reservoir	Peak discharge	= 1.979 cfs
Storm frequency	= 10 yrs	Time to peak	= 740 min
Time interval	= 5 min	Hyd. volume	= 9,086 cuft
Inflow hyd. No.	= 18 - Prop. DA Biore (Total)	Max. Elevation	= 64.67 ft
Reservoir name	= Bioret Basin	Max. Storage	= 5,542 cuft

Storage indication method used.

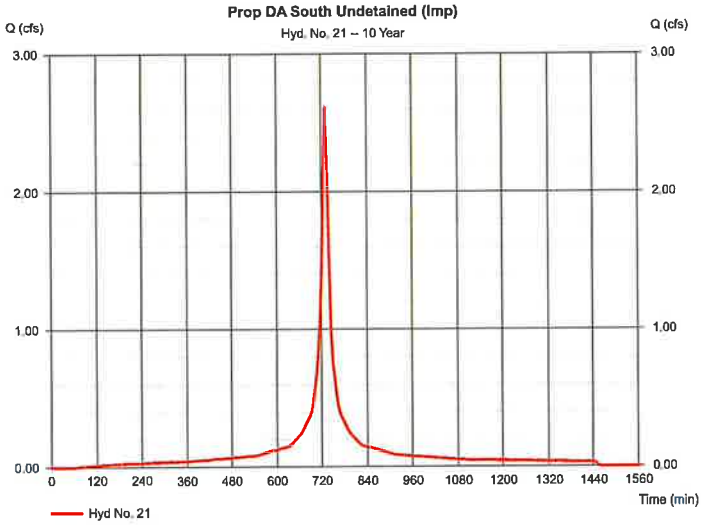


Hydrograph Report

Hyd. No. 21

Prop DA South Undetained (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.607 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 10,883 cuft
Drainage area	= 0.670 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.01 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

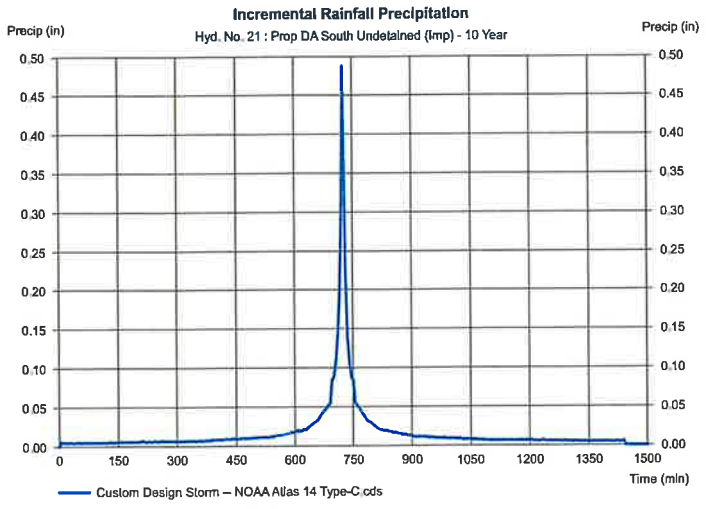


Precipitation Report

Hyd. No. 21

Prop DA South Undetained (Imp)

Storm Frequency	= 10 yrs	Time Interval	= 5 min
Total precip.	= 5.0100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

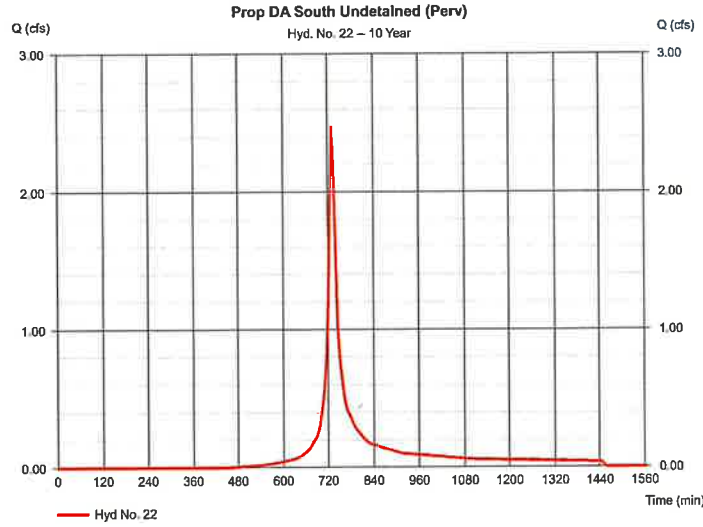


Hydrograph Report

Hyd. No. 22

Prop DA South Undetained (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.470 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 8,986 cuft
Drainage area	= 0.910 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.01 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

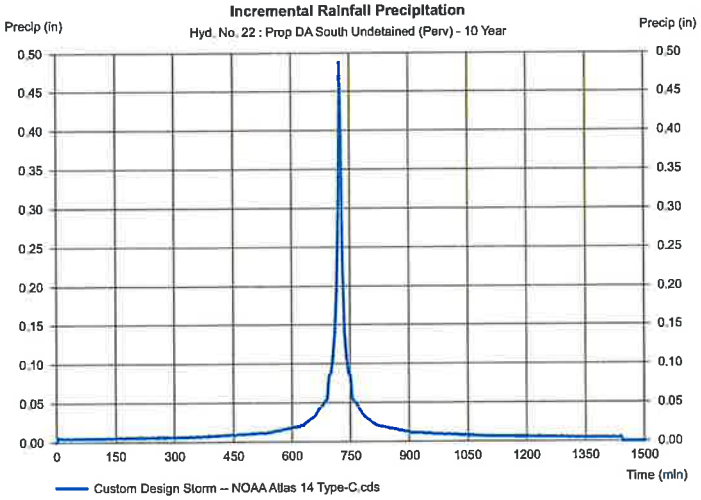


Precipitation Report

Hyd. No. 22

Prop DA South Undetained (Perv)

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

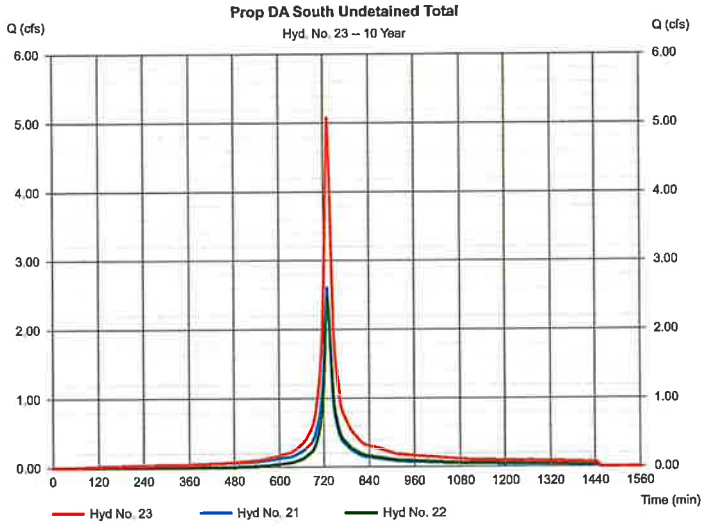


Hydrograph Report

Hyd. No. 23

Prop DA South Undetained Total

Hydrograph type	= Combine	Peak discharge	= 5.078 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 19,869 cuft
Inflow hyds.	= 21, 22	Contrib. drain. area	= 1.580 ac

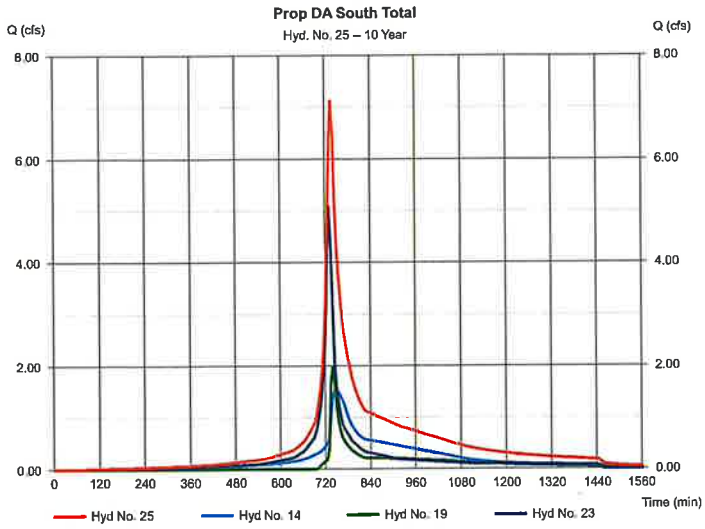


Hydrograph Report

Hyd. No. 25

Prop DA South Total

Hydrograph type	= Combine	Peak discharge	= 7.125 cfs
Storm frequency	= 10 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 47,130 cuft
Inflow hyds.	= 14, 19, 23	Contrib. drain. area	= 0.000 ac

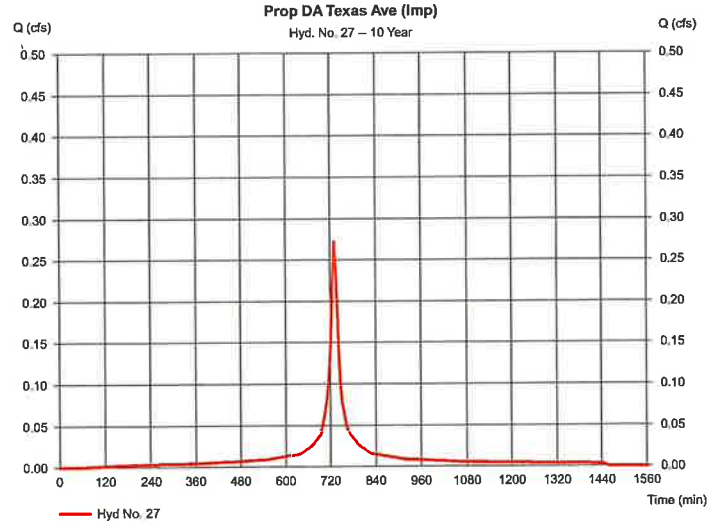


Hydrograph Report

Hyd. No. 27

Prop DA Texas Ave (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.272 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,137 cuft
Drainage area	= 0.070 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.01 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

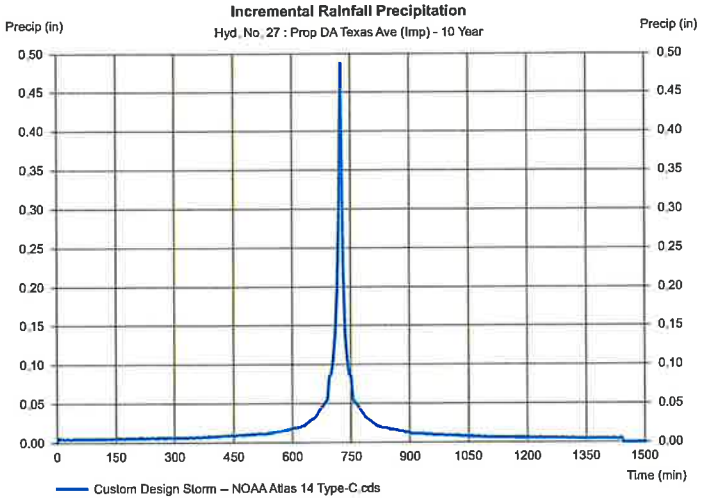


Precipitation Report

Hyd. No. 27

Prop DA Texas Ave (Imp)

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

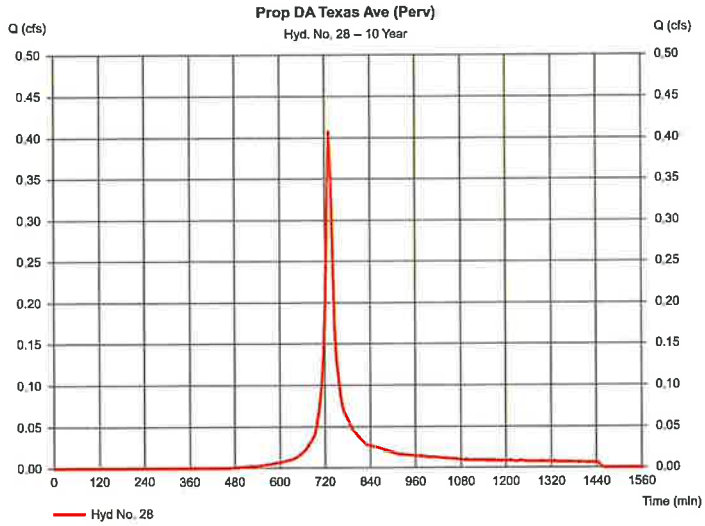


Hydrograph Report

Hyd. No. 28

Prop DA Texas Ave (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.407 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,481 cuft
Drainage area	= 0.150 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.01 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

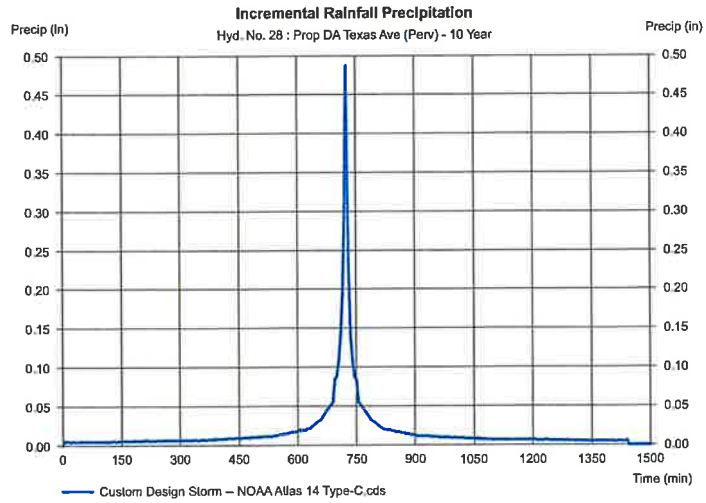


Precipitation Report

Hyd. No. 28

Prop DA Texas Ave (Perv)

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

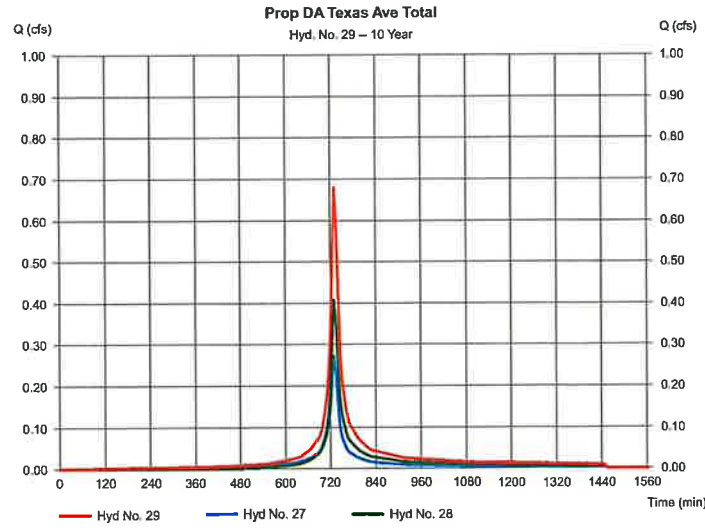


Hydrograph Report

Hyd. No. 29

Prop DA Texas Ave Total

Hydrograph type	= Combine	Peak discharge	= 0.680 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,618 cuft
Inflow hyds.	= 27, 28	Contrib. drain. area	= 0.220 ac

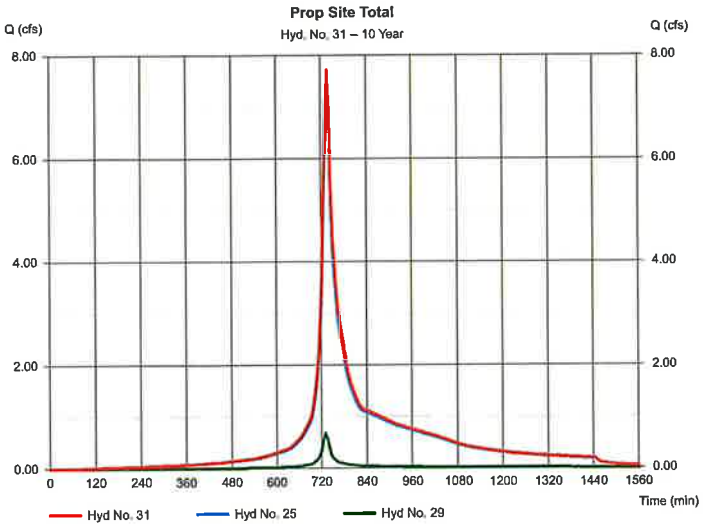


Hydrograph Report

Hyd. No. 31

Prop Site Total

Hydrograph type	= Combine	Peak discharge	= 7.709 cfs
Storm frequency	= 10 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 49,748 cuft
Inflow hyds.	= 25, 29	Contrib. drain. area	= 0.000 ac



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	1.301	5	730	5,469	—	—	—	Ex, Study Area South (Imp.)
2	SCS Runoff	14.37	5	730	54,747	—	—	—	Ex. Study Area Scouth (Perv.)
3	Combine	15.67	5	730	60,216	1, 2	—	—	Ex. Study Area South Total
5	SCS Runoff	0.578	5	730	2,431	—	—	—	Ex. Study Area Texas Ave (Imp.)
6	SCS Runoff	0.703	5	730	2,679	—	—	—	Ex. Study Area Texas Ave (Perv.)
7	Combine	1.281	5	730	5,109	5, 6	—	—	Ex. Study Area Texas Ave Total
9	Combine	16.95	5	730	65,325	3, 7,	—	—	Ex. Site Total
11	SCS Runoff	4.873	5	730	19,647	—	—	—	Prop DA Perv Pvmt (Imp)
12	SCS Runoff	0.919	5	730	3,363	—	—	—	Prop DA Perv Pvmt (Perv)
13	Combine	5.592	5	730	23,010	11, 12	—	—	Prop DA Perv Pvmt Total
14	Reservoir	2.024	5	745	22,960	13	61.78	8,614	Post Rte Perv Pvmt
16	SCS Runoff	2.842	5	730	11,950	—	—	—	Prop. DA Biore (Imp)
17	SCS Runoff	0.772	5	730	2,825	—	—	—	Prop. DA Biore (Perv)
18	Combine	3.614	5	730	14,775	16, 17	—	—	Prop. DA Biore (Total)
19	Reservoir	3.201	5	735	12,204	18	64.77	5,825	Post Route Biore
21	SCS Runoff	3.228	5	730	13,570	—	—	—	Prop DA South Undetained (Imp)
22	SCS Runoff	3.346	5	730	12,242	—	—	—	Prop DA South Undetained (Perv)
23	Combine	6.573	5	730	25,813	21, 22	—	—	Prop DA South Undetained Total
25	Combine	10.55	5	735	60,976	14, 19, 23,	—	—	Prop DA South Total
27	SCS Runoff	0.337	5	730	1,418	—	—	—	Prop DA Texas Ave (Imp)
28	SCS Runoff	0.551	5	730	2,018	—	—	—	Prop DA Texas Ave (Perv)
29	Combine	0.889	5	730	3,436	27, 28	—	—	Prop DA Texas Ave Total
31	Combine	11.34	5	730	64,412	25, 29,	—	—	Prop Site Total

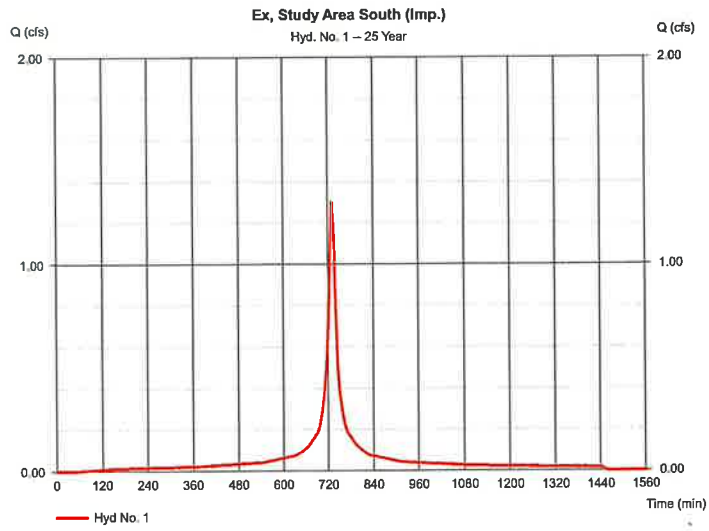
2022-11-08 2.10.100yr.gpw | Return Period: 25 Year | Wednesday, Nov 9, 2022

Hydrograph Report

Hyd. No. 1

Ex, Study Area South (Imp.)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.301 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,469 cuft
Drainage area	= 0.270 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.19 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

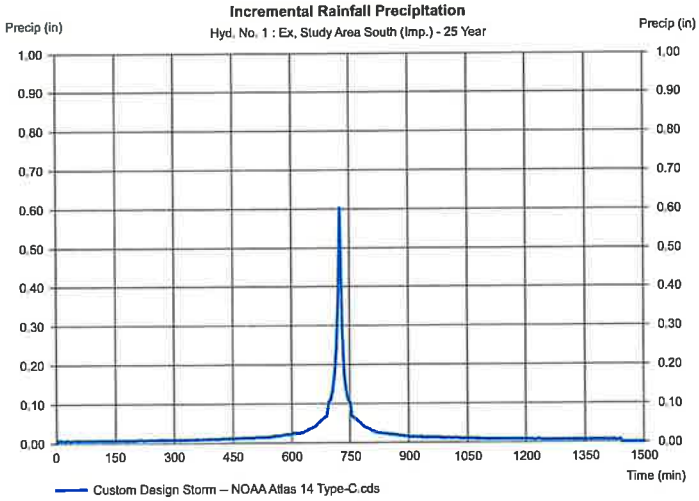


Precipitation Report

Hyd. No. 1

Ex, Study Area South (Imp.)

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.1900 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

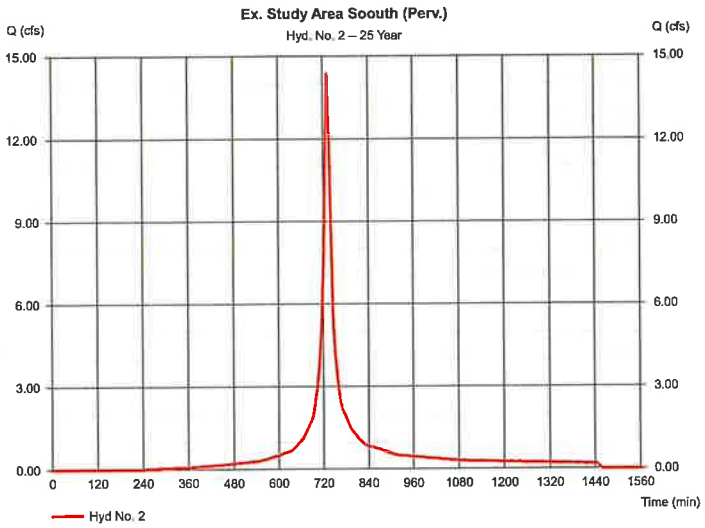


Hydrograph Report

Hyd. No. 2

Ex. Study Area Soouth (Perv.)

Hydrograph type	= SCS Runoff	Peak discharge	= 14.37 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 54,747 cuft
Drainage area	= 3.270 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.19 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

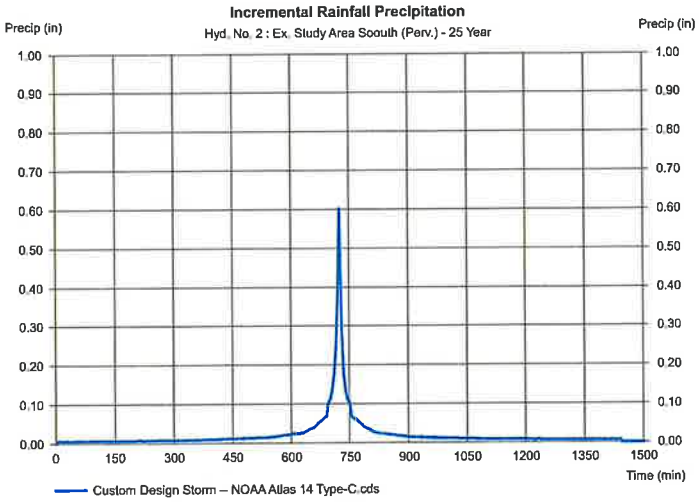


Precipitation Report

Hyd. No. 2

Ex. Study Area Soouth (Perv.)

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.1900 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

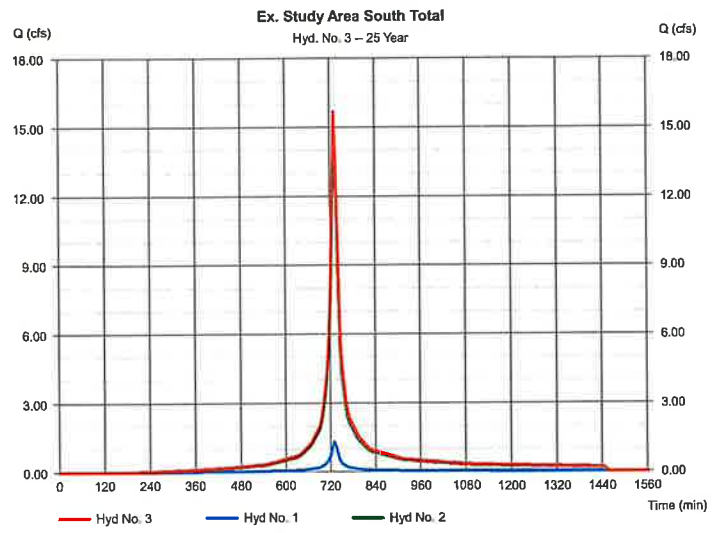


Hydrograph Report

Hyd. No. 3

Ex. Study Area South Total

Hydrograph type	= Combine	Peak discharge	= 15.67 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 60,216 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 3.540 ac

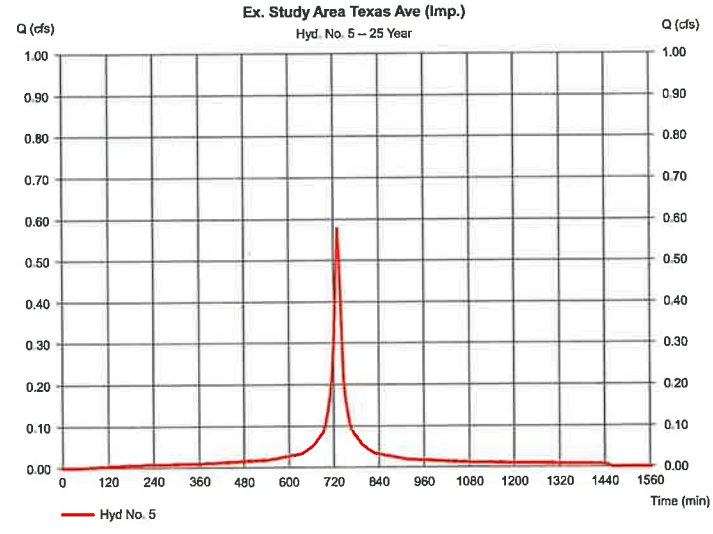


Hydrograph Report

Hyd. No. 5

Ex. Study Area Texas Ave (Imp.)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.578 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,431 cuft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.19 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

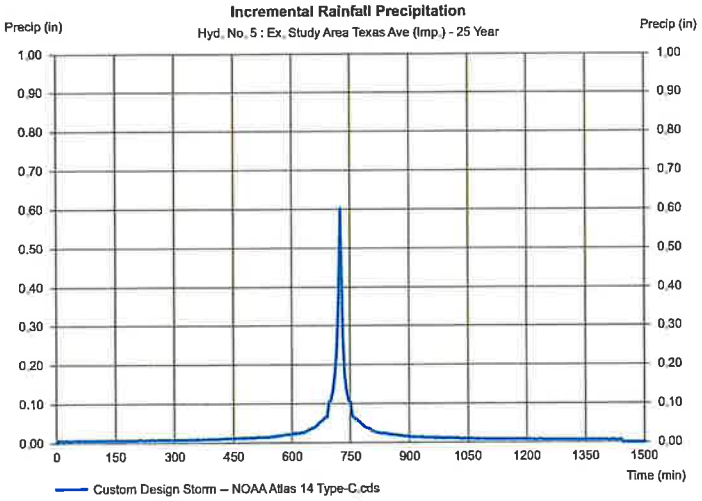


Precipitation Report

Hyd. No. 5

Ex. Study Area Texas Ave (Imp.)

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.1900 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

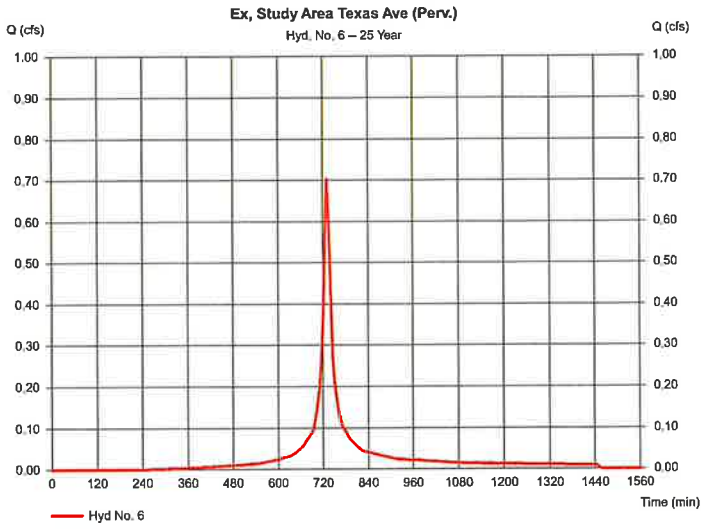


Hydrograph Report

Hyd. No. 6

Ex, Study Area Texas Ave (Perv.)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.703 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,679 cuft
Drainage area	= 0.160 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.19 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

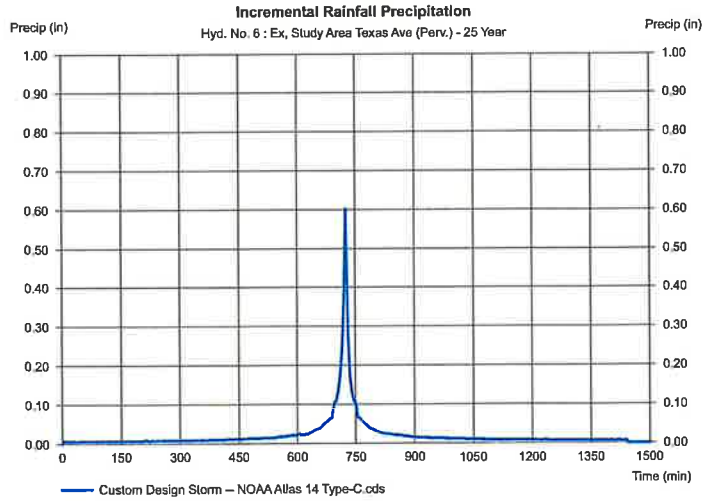


Precipitation Report

Hyd. No. 6

Ex, Study Area Texas Ave (Perv.)

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.1900 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

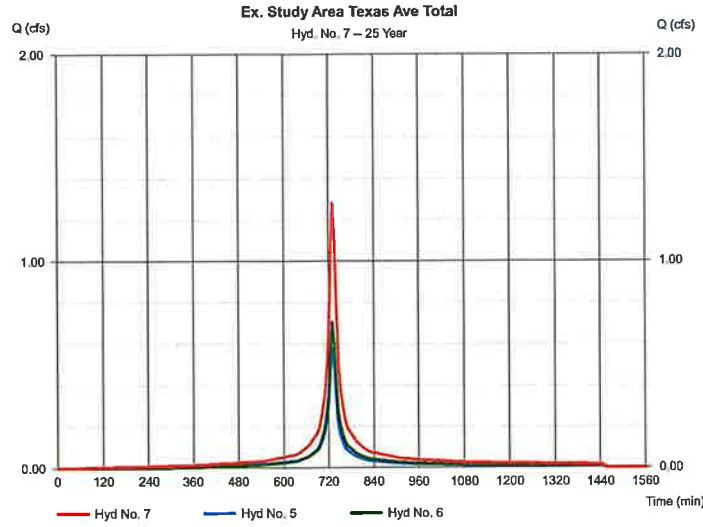


Hydrograph Report

Hyd. No. 7

Ex. Study Area Texas Ave Total

Hydrograph type	= Combine	Peak discharge	= 1.281 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,109 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 0.280 ac

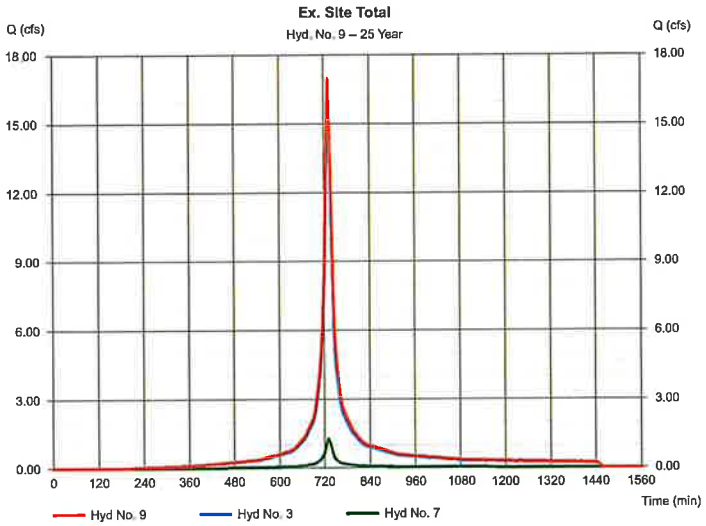


Hydrograph Report

Hyd. No. 9

Ex. Site Total

Hydrograph type	= Combine	Peak discharge	= 16.95 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 65,325 cuft
Inflow hyds.	= 3, 7	Contrib. drain. area	= 0.000 ac

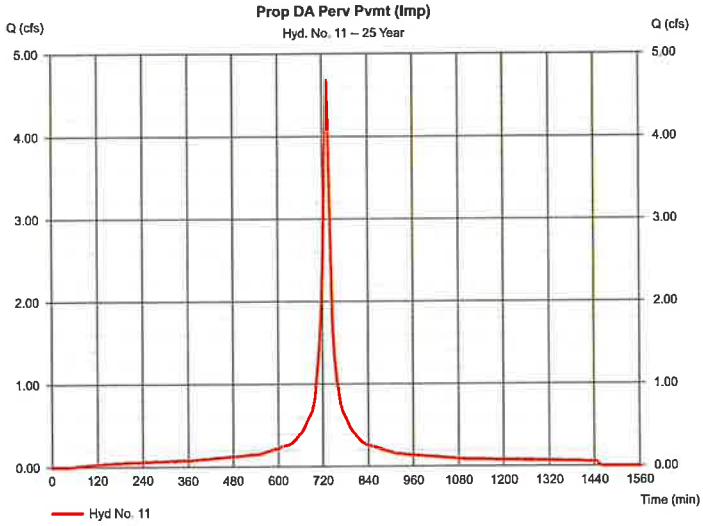


Hydrograph Report

Hyd. No. 11

Prop DA Perv Pvmt (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 4.673 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 19,647 cuft
Drainage area	= 0.970 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.19 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

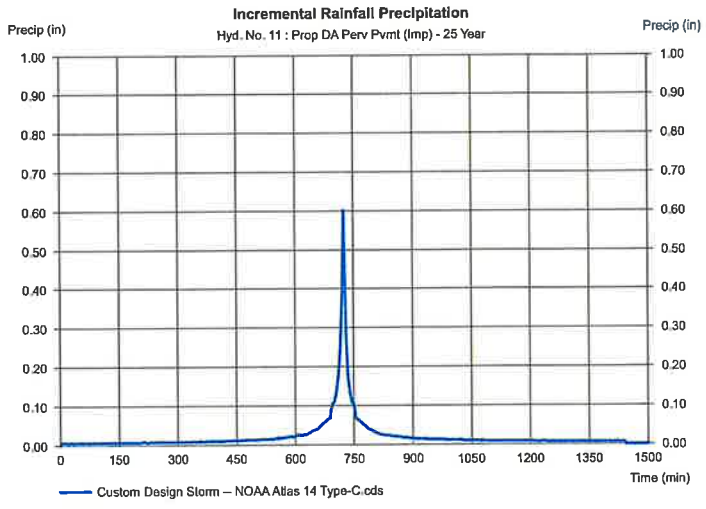


Precipitation Report

Hyd. No. 11

Prop DA Perv Pvmt (Imp)

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.1900 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

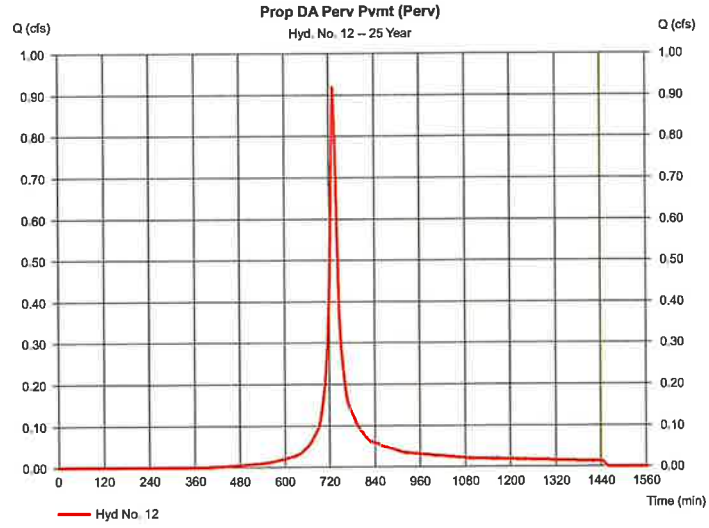


Hydrograph Report

Hyd. No. 12

Prop DA Perv Pvmt (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.919 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,363 cuft
Drainage area	= 0.250 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.19 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

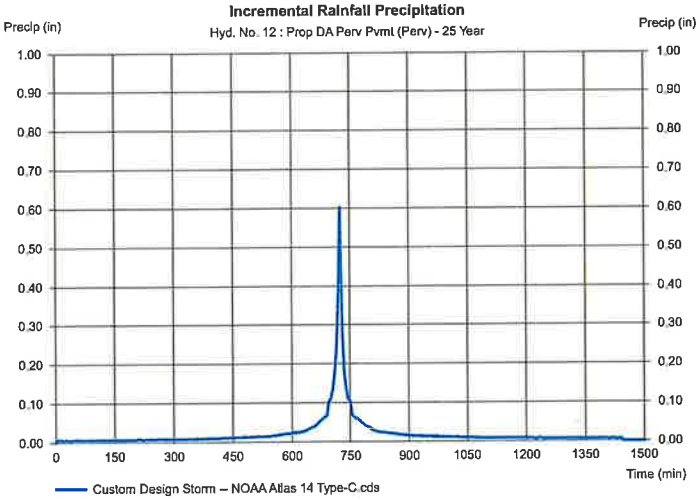


Precipitation Report

Hyd. No. 12

Prop DA Perv Pvmt (Perv)

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.1900 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

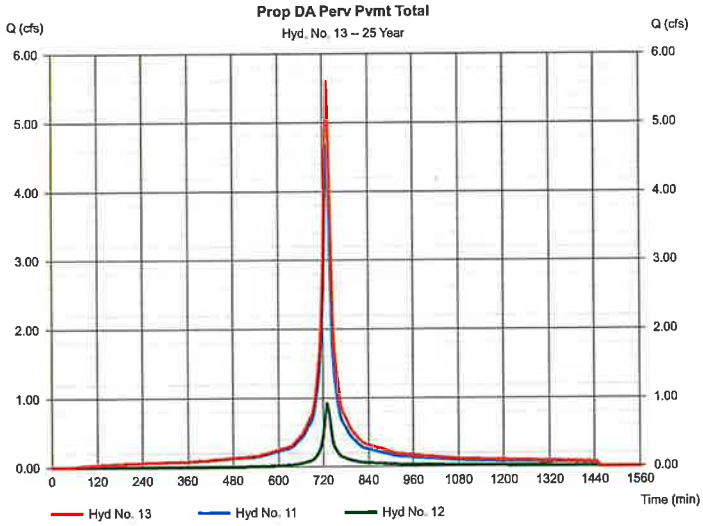


Hydrograph Report

Hyd. No. 13

Prop DA Perv Pvmt Total

Hydrograph type	= Combine	Peak discharge	= 5.592 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 23,010 cuft
Inflow hyds.	= 11, 12	Contrib. drain. area	= 1.220 ac



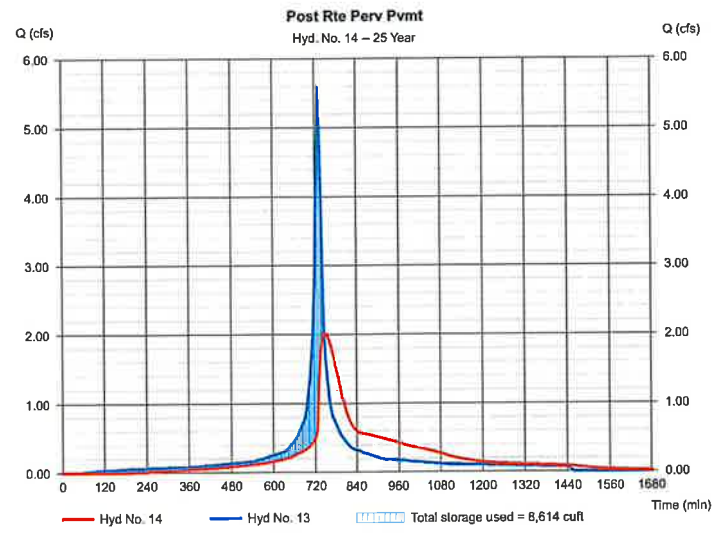
Hydrograph Report

Hyd. No. 14

Post Rte Perv Pvmt

Hydrograph type	= Reservoir	Peak discharge	= 2.024 cfs
Storm frequency	= 25 yrs	Time to peak	= 745 min
Time interval	= 5 min	Hyd. volume	= 22,960 cuft
Inflow hyd. No.	= 13 - Prop DA Perv Pvmt Total	Max. Elevation	= 61.78 ft
Reservoir name	= Perv Pavement	Max. Storage	= 8,614 cuft

Storage Indication method used.

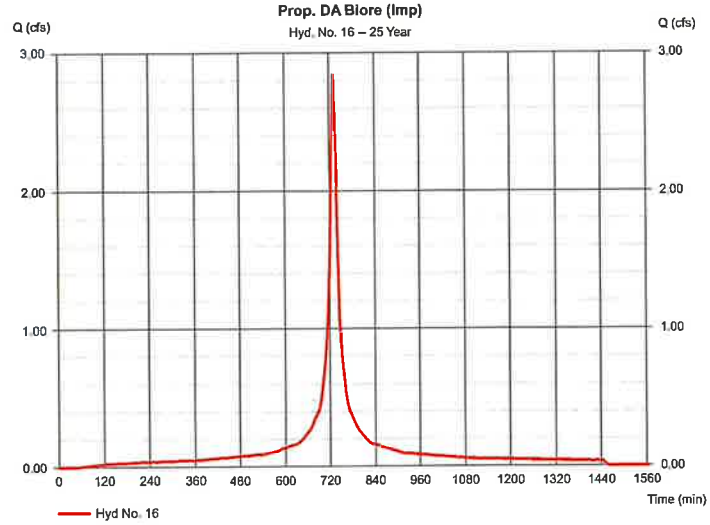


Hydrograph Report

Hyd. No. 16

Prop. DA Biore (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.842 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 11,950 cuft
Drainage area	= 0.590 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.19 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

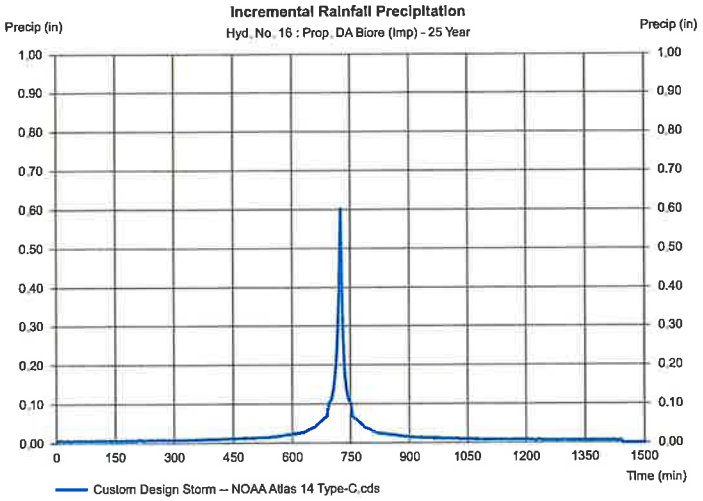


Precipitation Report

Hyd. No. 16

Prop. DA Biore (Imp)

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.1900 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

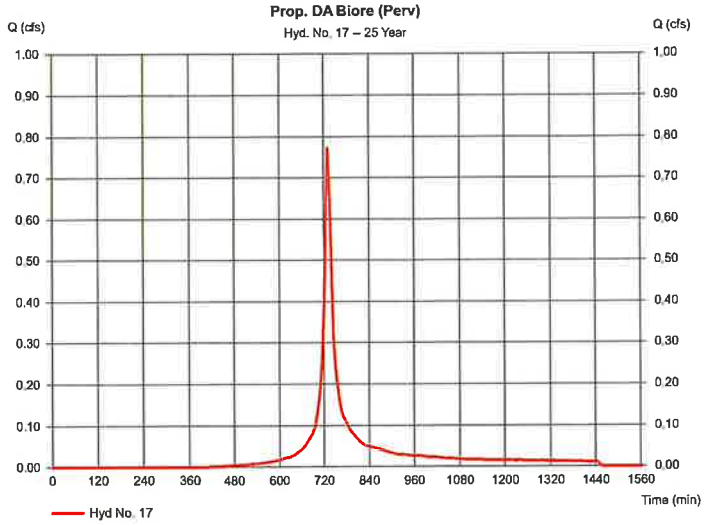


Hydrograph Report

Hyd. No. 17

Prop. DA Biore (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.772 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,825 cuft
Drainage area	= 0.210 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.19 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

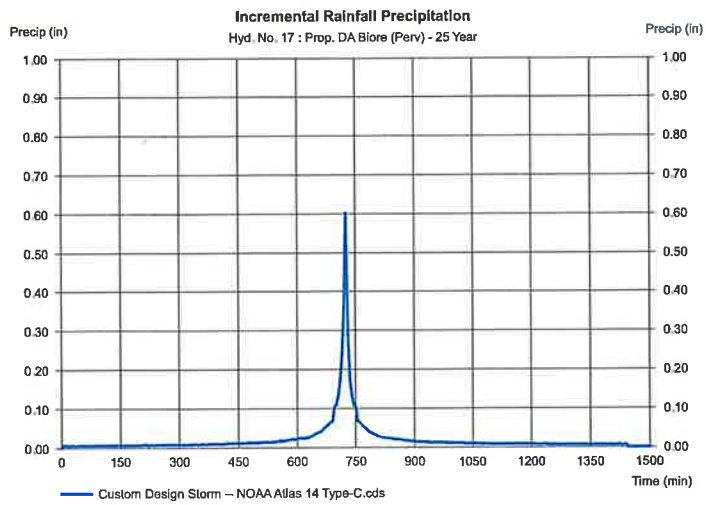


Precipitation Report

Hyd. No. 17

Prop. DA Biore (Perv)

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.1900 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

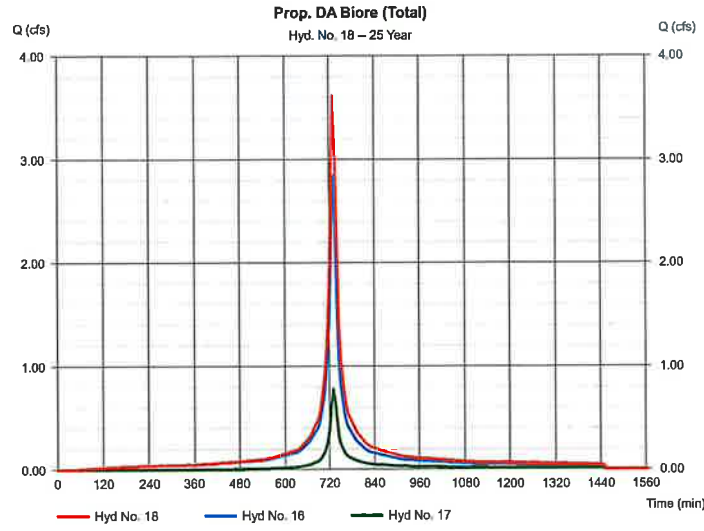


Hydrograph Report

Hyd. No. 18

Prop. DA Biore (Total)

Hydrograph type	= Combine	Peak discharge	= 3.614 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 14,775 cuft
Inflow hyds.	= 16, 17	Contrib. drain. area	= 0.800 ac



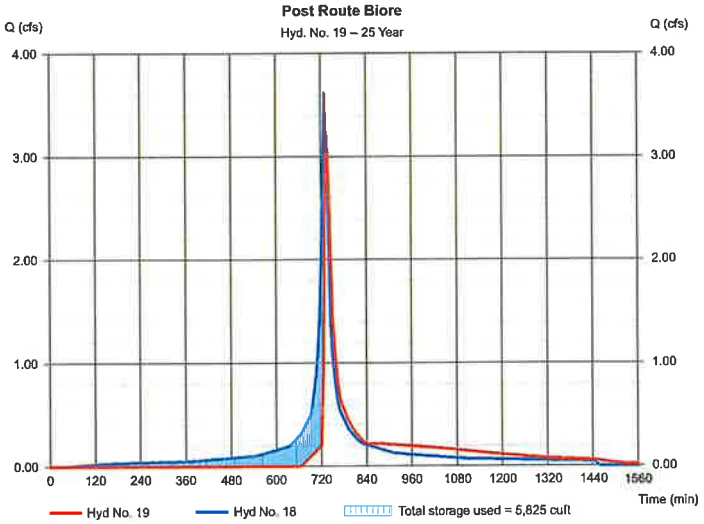
Hydrograph Report

Hyd. No. 19

Post Route Biore

Hydrograph type	= Reservoir	Peak discharge	= 3.201 cfs
Storm frequency	= 25 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 12,204 cuft
Inflow hyd. No.	= 18 - Prop. DA Biore (Total)	Max. Elevation	= 64.77 ft
Reservoir name	= Bioret Basin	Max. Storage	= 5,825 cuft

Storage Indication method used.

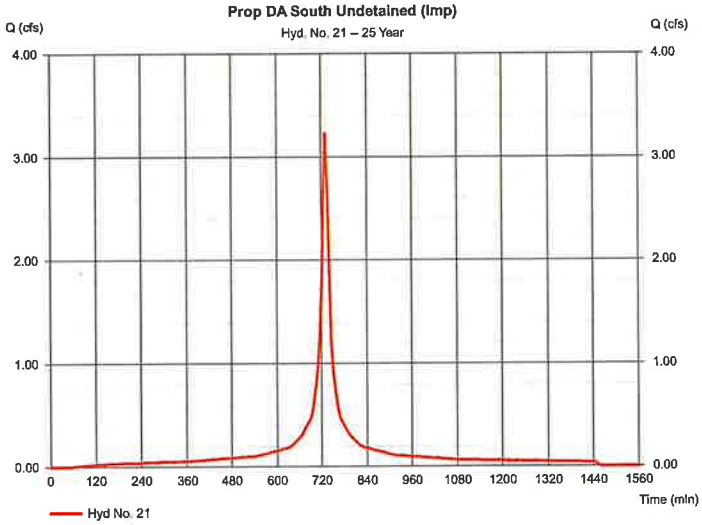


Hydrograph Report

Hyd. No. 21

Prop DA South Undetained (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 3.228 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 13,570 cuft
Drainage area	= 0.670 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.19 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

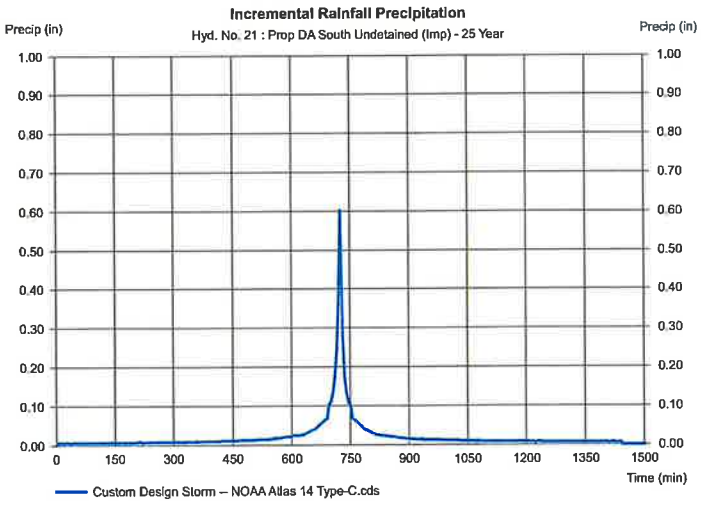


Precipitation Report

Hyd. No. 21

Prop DA South Undetained (Imp)

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.1900 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

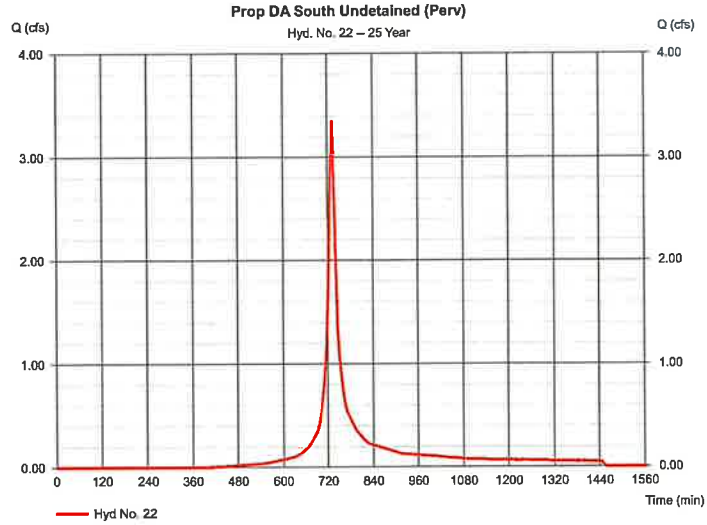


Hydrograph Report

Hyd. No. 22

Prop DA South Undetained (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 3.346 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 12,242 cuft
Drainage area	= 0.910 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.19 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

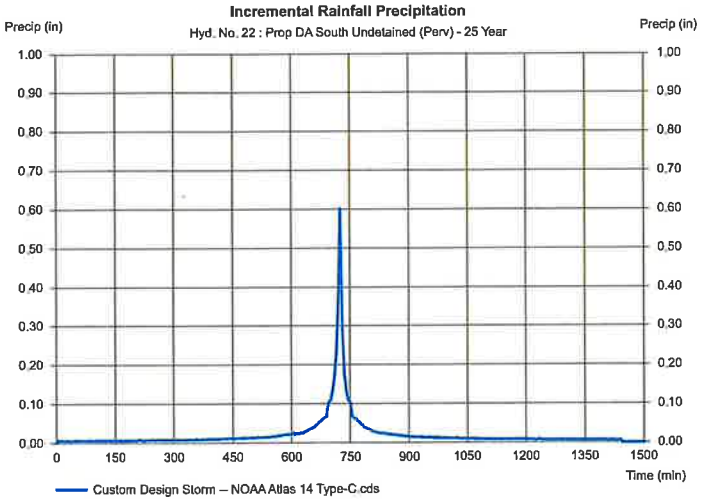


Precipitation Report

Hyd. No. 22

Prop DA South Undetained (Perv)

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.1900 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

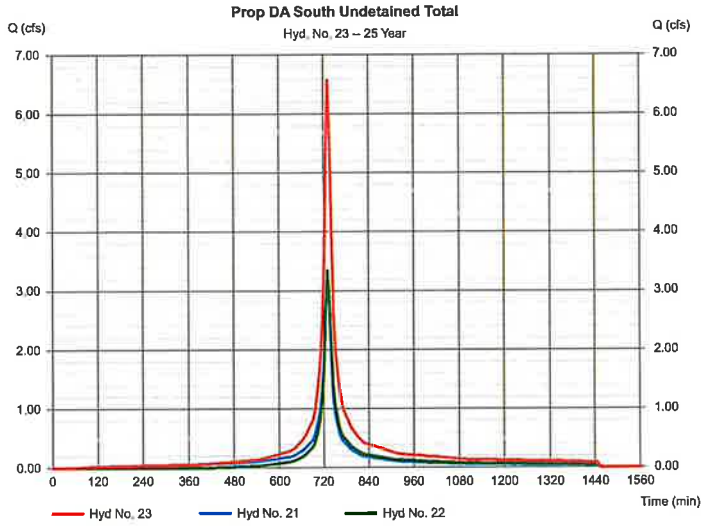


Hydrograph Report

Hyd. No. 23

Prop DA South Undetained Total

Hydrograph type	= Combine	Peak discharge	= 6.573 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 25,813 cuft
Inflow hyds.	= 21, 22	Contrib. drain. area	= 1.580 ac

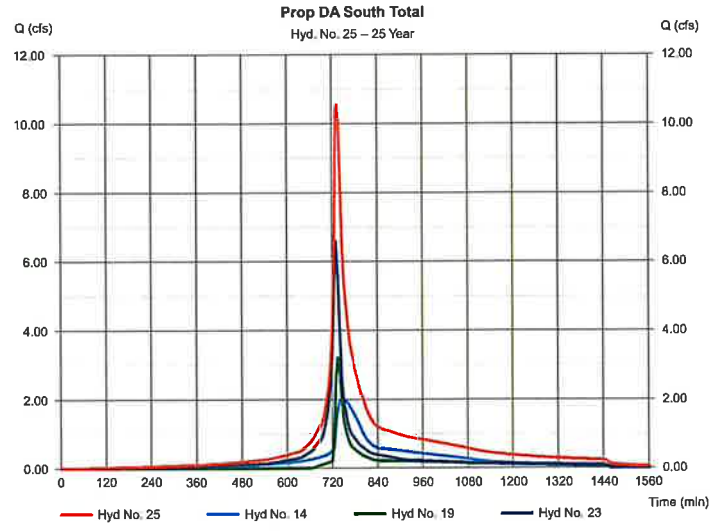


Hydrograph Report

Hyd. No. 25

Prop DA South Total

Hydrograph type	= Combine	Peak discharge	= 10.55 cfs
Storm frequency	= 25 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 60,976 cuft
Inflow hyds.	= 14, 19, 23	Contrib. drain. area	= 0.000 ac

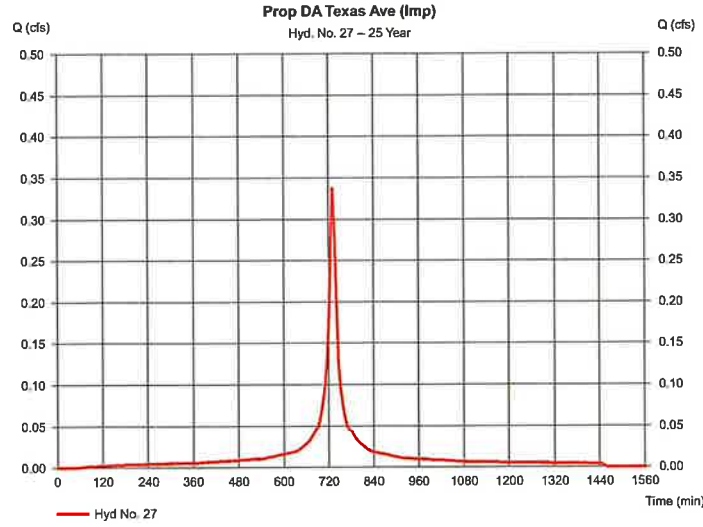


Hydrograph Report

Hyd. No. 27

Prop DA Texas Ave (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.337 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,418 cuft
Drainage area	= 0.070 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.19 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

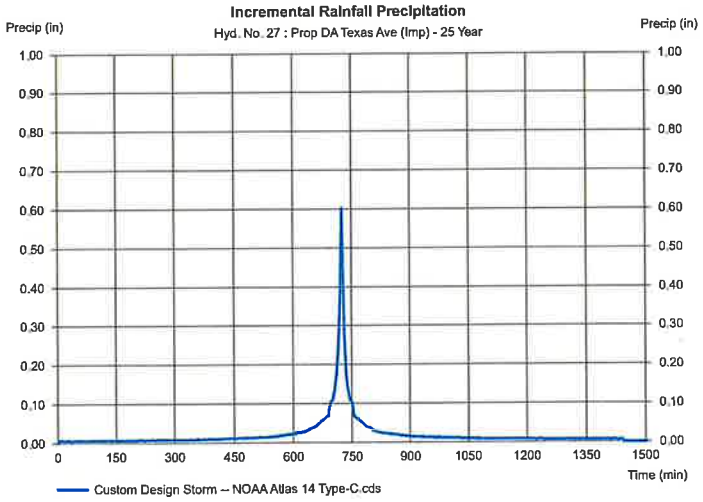


Precipitation Report

Hyd. No. 27

Prop DA Texas Ave (Imp)

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.1900 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

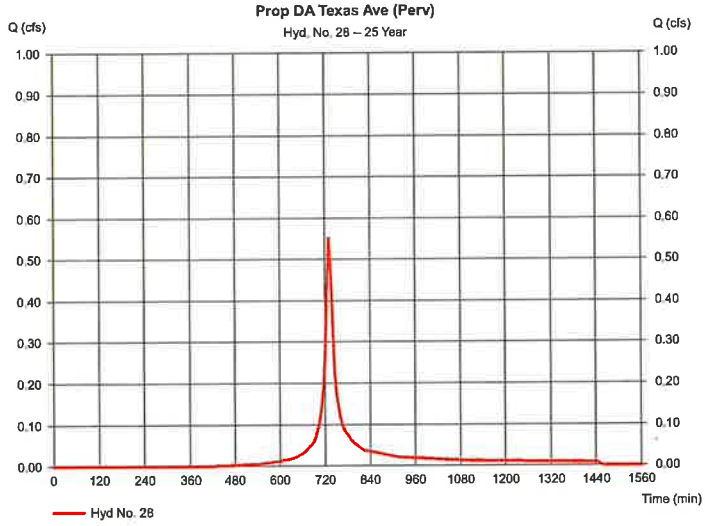


Hydrograph Report

Hyd. No. 28

Prop DA Texas Ave (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.551 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 2,018 cuft
Drainage area	= 0.150 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 6.19 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

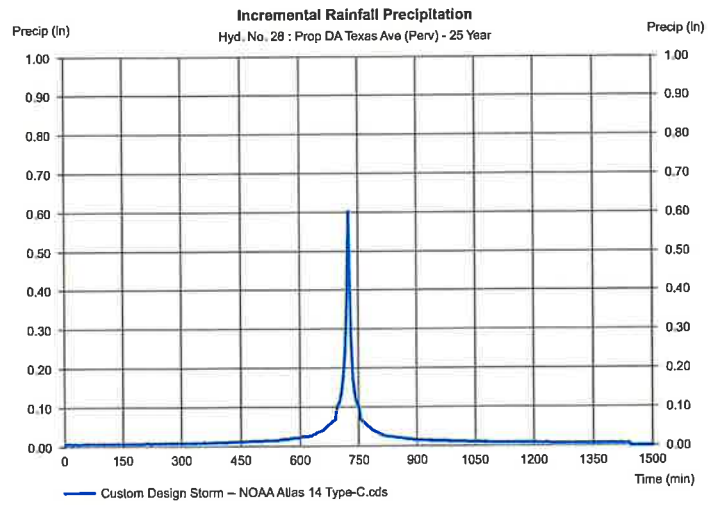


Precipitation Report

Hyd. No. 28

Prop DA Texas Ave (Perv)

Storm Frequency	= 25 yrs	Time interval	= 5 min
Total precip.	= 6.1900 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

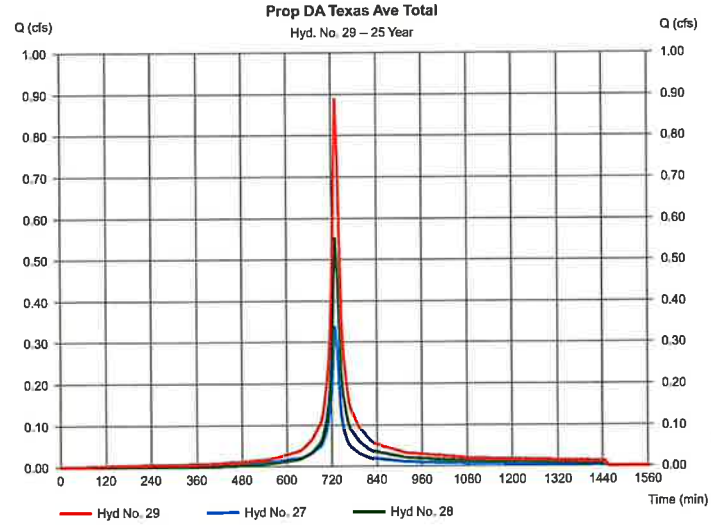


Hydrograph Report

Hyd. No. 29

Prop DA Texas Ave Total

Hydrograph type	= Combine	Peak discharge	= 0.889 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,436 cuft
Inflow hyds.	= 27, 28	Contrib. drain. area	= 0.220 ac



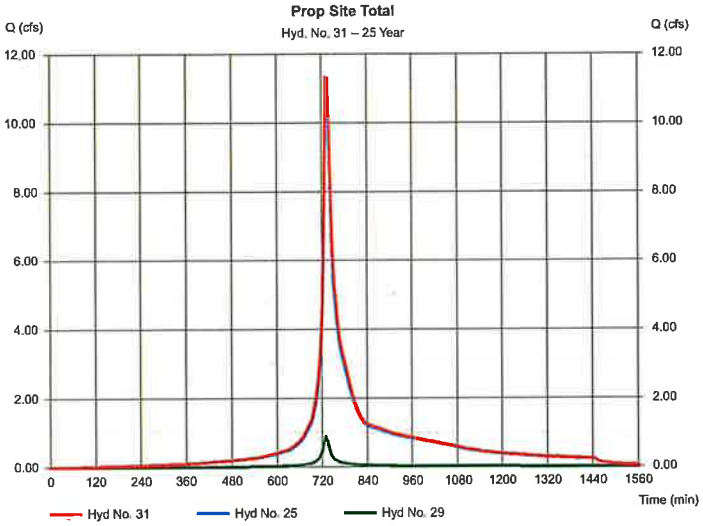
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 31

Prop Site Total

Hydrograph type	= Combine	Peak discharge	= 11.34 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 64,412 cuft
Inflow hyds.	= 25, 29	Contrib. drain. area	= 0.000 ac



Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	1.753	5	730	7,433	—	—	—	Ex, Study Area South (Imp.)
2	SCS Runoff	20.06	5	730	78,017	—	—	—	Ex, Study Area South (Perv.)
3	Combine	21.81	5	730	85,451	1, 2	—	—	Ex, Study Area South Total
5	SCS Runoff	0.779	5	730	3,304	—	—	—	Ex, Study Area Texas Ave (Imp.)
6	SCS Runoff	0.981	5	730	3,817	—	—	—	Ex, Study Area Texas Ave (Perv.)
7	Combine	1.761	5	730	7,121	5, 6	—	—	Ex, Study Area Texas Ave Total
9	Combine	23.57	5	730	92,572	3, 7,	—	—	Ex, Site Total
11	SCS Runoff	6.299	5	730	26,705	—	—	—	Prop DA Perv Pvmt (Imp)
12	SCS Runoff	1.360	5	730	5,049	—	—	—	Prop DA Perv Pvmt (Perv)
13	Combine	7.659	5	730	31,755	11, 12	—	—	Prop DA Perv Pvmt Total
14	Reservoir	3.306	5	745	31,705	13	62.31	11,151	Post Rte Perv Pvmt
16	SCS Runoff	3.632	5	730	16,243	—	—	—	Prop. DA Biore (Imp)
17	SCS Runoff	1.143	5	730	4,242	—	—	—	Prop. DA Biore (Perv)
18	Combine	4.974	5	730	20,485	16, 17	—	—	Prop. DA Biore (Total)
19	Reservoir	4.554	5	735	17,914	18	64.89	6,094	Post Route Biore
21	SCS Runoff	4.351	5	730	18,446	—	—	—	Prop DA South Undetained (Imp)
22	SCS Runoff	4.951	5	730	18,380	—	—	—	Prop DA South Undetained (Perv)
23	Combine	9.302	5	730	36,826	21, 22	—	—	Prop DA South Undetained Total
25	Combine	15.69	5	730	86,444	14, 19, 23,	—	—	Prop DA South Total
27	SCS Runoff	0.455	5	730	1,927	—	—	—	Prop DA Texas Ave (Imp)
28	SCS Runoff	0.816	5	730	3,030	—	—	—	Prop DA Texas Ave (Perv)
29	Combine	1.271	5	730	4,957	27, 28	—	—	Prop DA Texas Ave Total
31	Combine	16.96	5	730	91,401	25, 29,	—	—	Prop Site Total

2022-11-08 2,10,100yr.gpw | Return Period: 100 Year | Wednesday, Nov 9, 2022

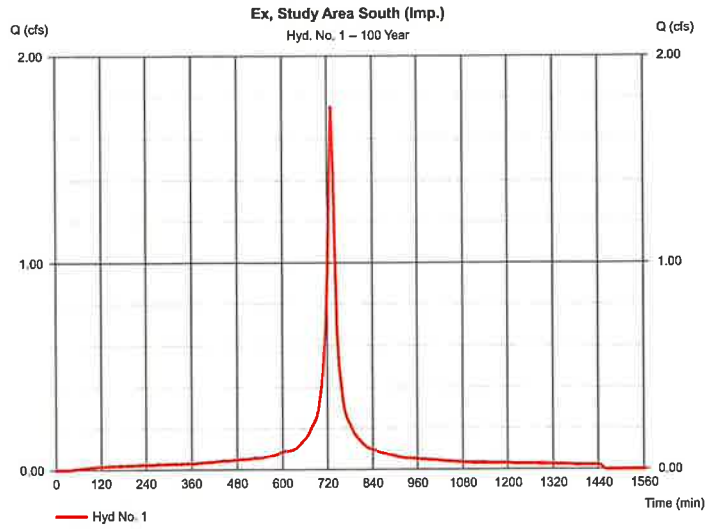
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 1

Ex, Study Area South (Imp.)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.753 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 7,433 cuft
Drainage area	= 0.270 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.33 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484



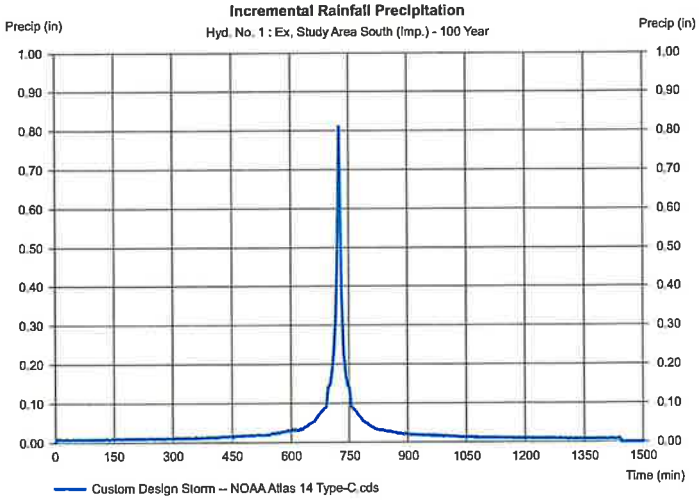
Precipitation Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 1

Ex, Study Area South (Imp.)

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.3300 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

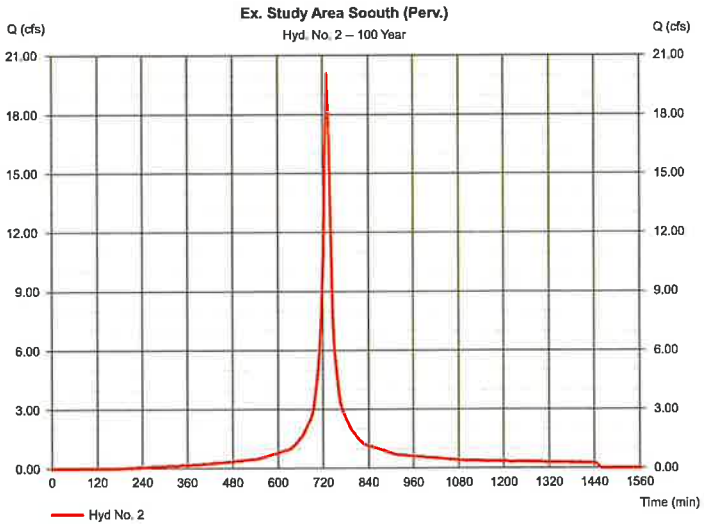


Hydrograph Report

Hyd. No. 2

Ex. Study Area Soouth (Perv.)

Hydrograph type	= SCS Runoff	Peak discharge	= 20.06 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 78,017 cuft
Drainage area	= 3.270 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.33 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

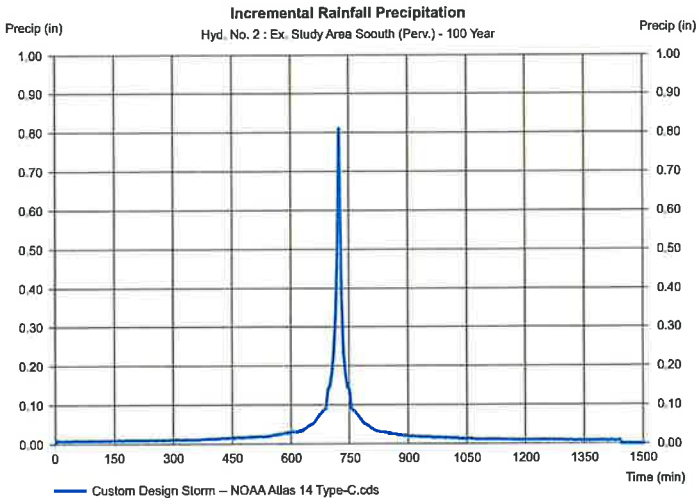


Precipitation Report

Hyd. No. 2

Ex. Study Area Soouth (Perv.)

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.3300 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

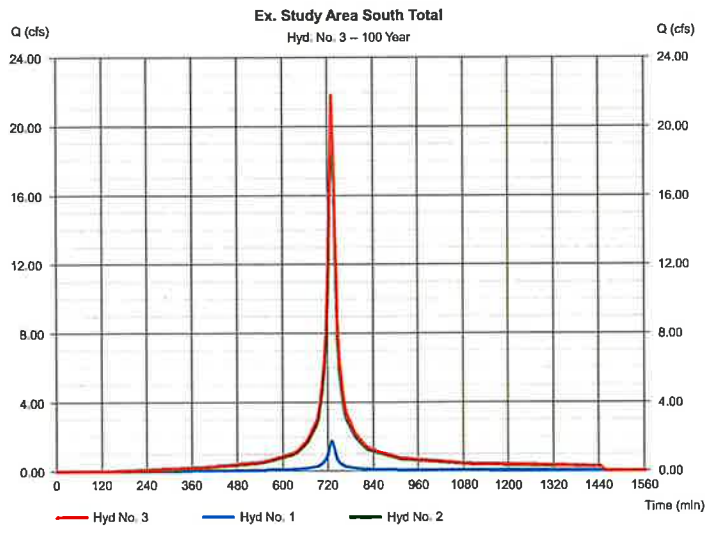


Hydrograph Report

Hyd. No. 3

Ex. Study Area South Total

Hydrograph type	= Combine	Peak discharge	= 21.81 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 85,451 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 3.540 ac

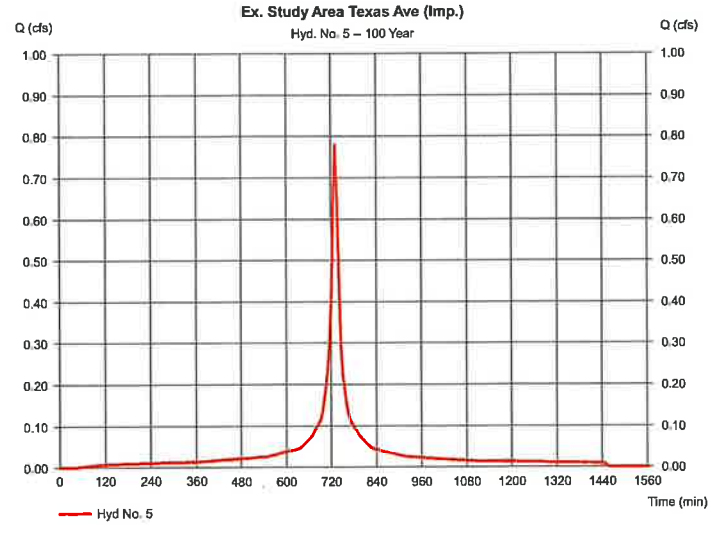


Hydrograph Report

Hyd. No. 5

Ex. Study Area Texas Ave (Imp.)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.779 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,304 cuft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.33 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484



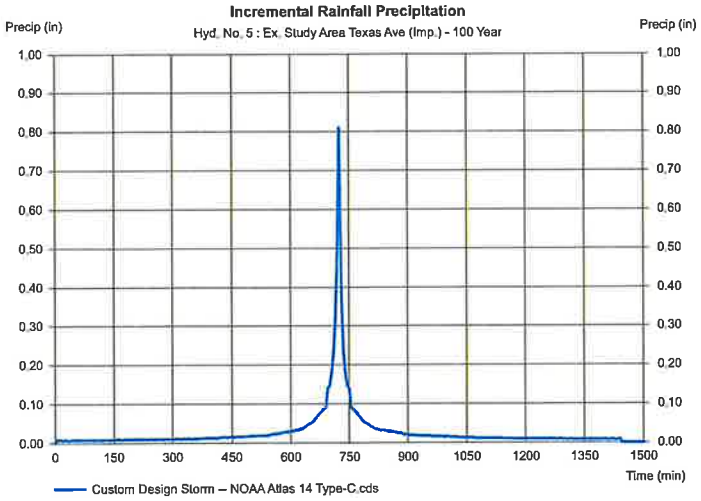
Precipitation Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 5

Ex. Study Area Texas Ave (Imp.)

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.3300 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		



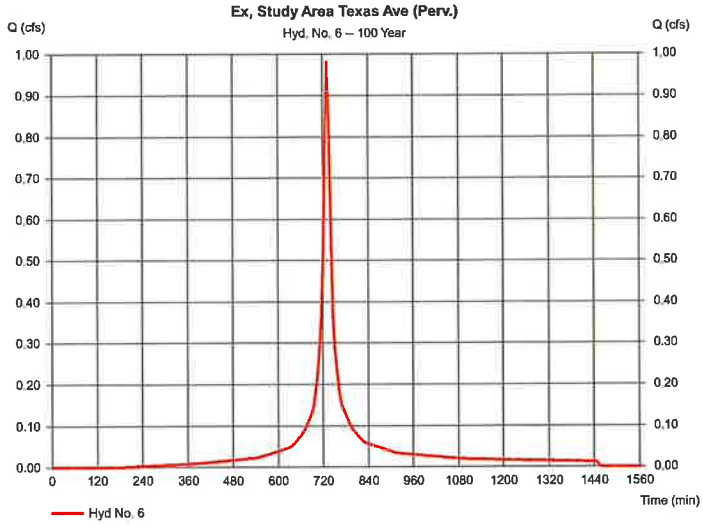
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 6

Ex, Study Area Texas Ave (Perv.)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.981 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,817 cuft
Drainage area	= 0.160 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.33 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484



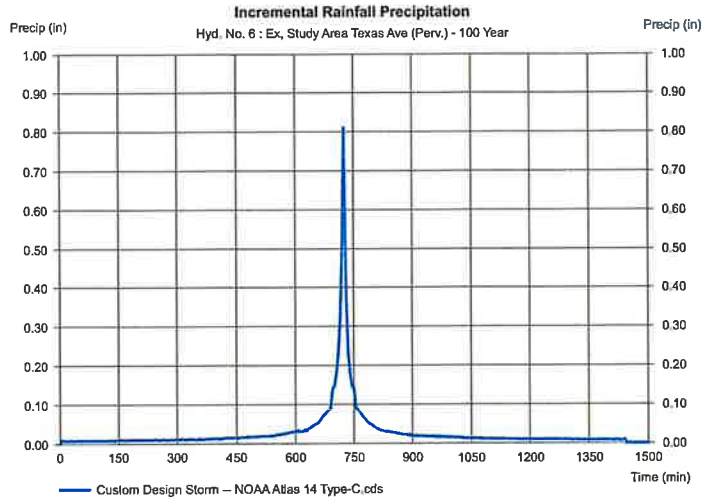
Precipitation Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 6

Ex, Study Area Texas Ave (Perv.)

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.3300 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		



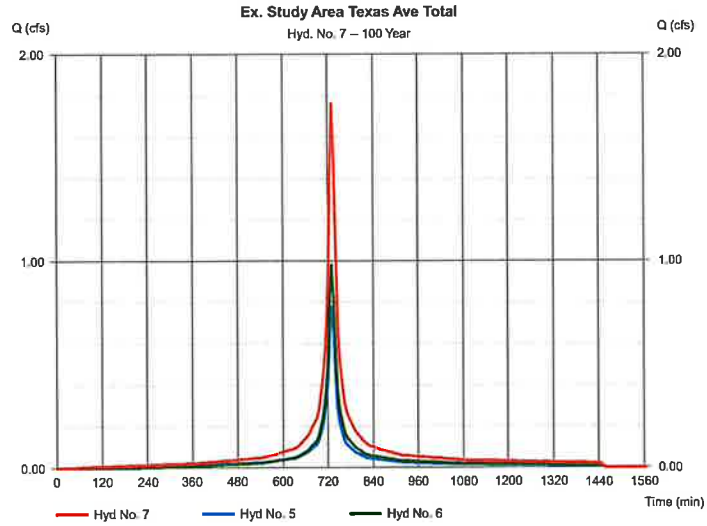
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 7

Ex. Study Area Texas Ave Total

Hydrograph type	= Combine	Peak discharge	= 1.761 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 7,121 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 0.280 ac

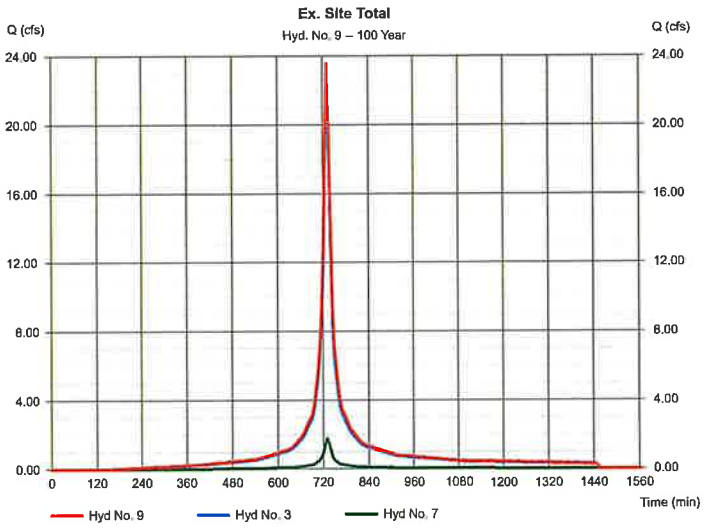


Hydrograph Report

Hyd. No. 9

Ex. Site Total

Hydrograph type	= Combine	Peak discharge	= 23.57 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 92,572 cuft
Inflow hyds.	= 3, 7	Contrib. drain. area	= 0.000 ac

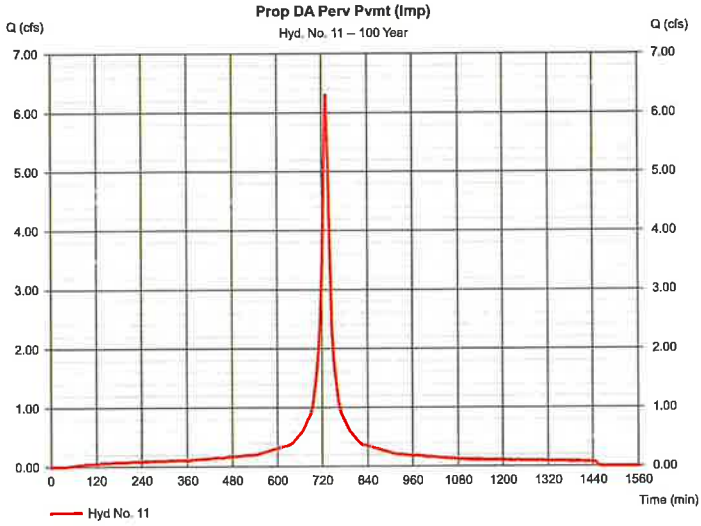


Hydrograph Report

Hyd. No. 11

Prop DA Perv Pvmt (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 6.299 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 26,705 cuft
Drainage area	= 0.970 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.33 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

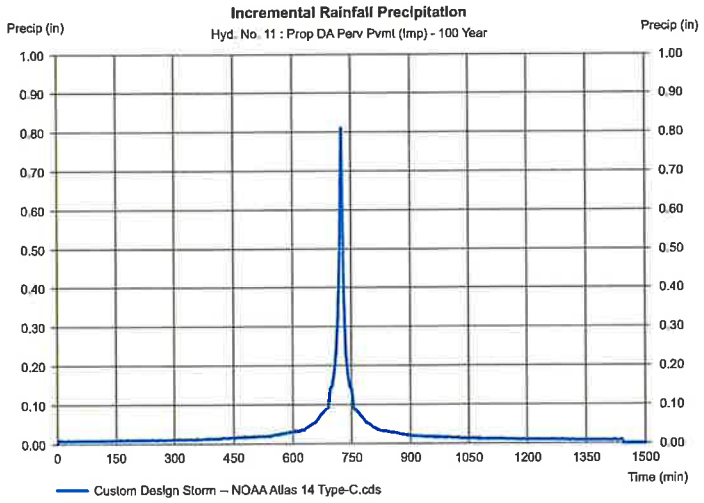


Precipitation Report

Hyd. No. 11

Prop DA Perv Pvmt (Imp)

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.3300 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

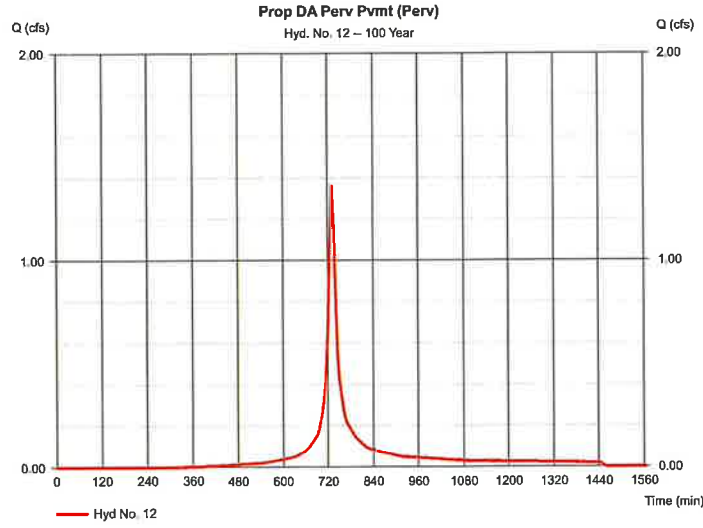


Hydrograph Report

Hyd. No. 12

Prop DA Perv Pvmt (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.360 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 5,049 cuft
Drainage area	= 0.250 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.33 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

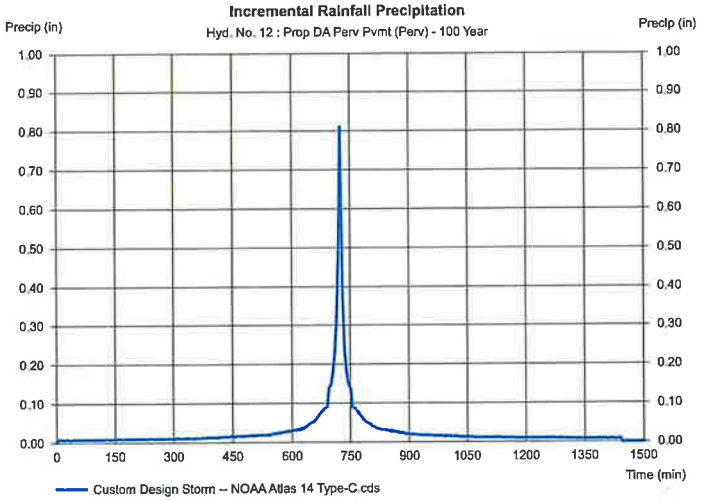


Precipitation Report

Hyd. No. 12

Prop DA Perv Pvmt (Perv)

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.3300 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

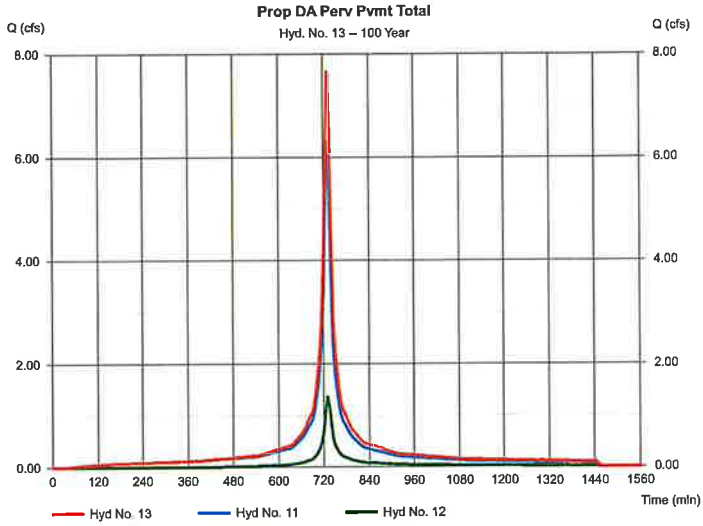


Hydrograph Report

Hyd. No. 13

Prop DA Perv Pvmt Total

Hydrograph type	= Combine	Peak discharge	= 7.659 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 31,755 cuft
Inflow hyds.	= 11, 12	Contrib. drain. area	= 1.220 ac



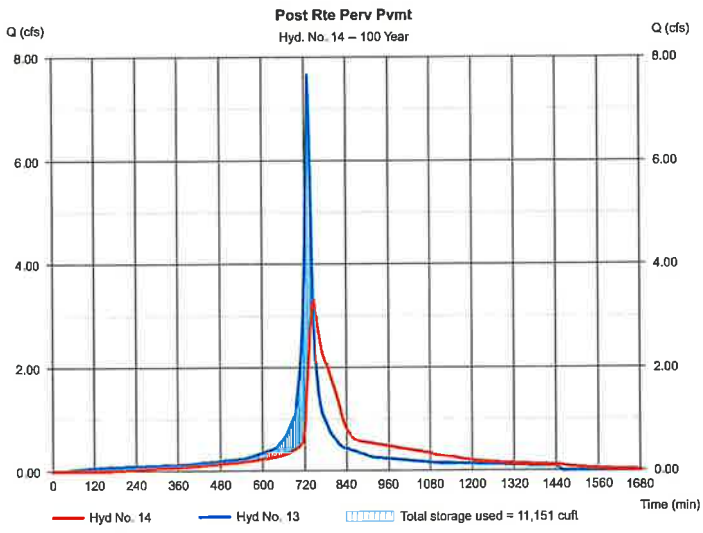
Hydrograph Report

Hyd. No. 14

Post Rte Perv Pvmt

Hydrograph type	= Reservoir	Peak discharge	= 3.306 cfs
Storm frequency	= 100 yrs	Time to peak	= 745 min
Time interval	= 5 min	Hyd. volume	= 31,705 cuft
Inflow hyd. No.	= 13 - Prop DA Perv Pvmt Total	Max. Elevation	= 62.31 ft
Reservoir name	= Perv Pavement	Max. Storage	= 11,151 cuft

Storage Indication method used.

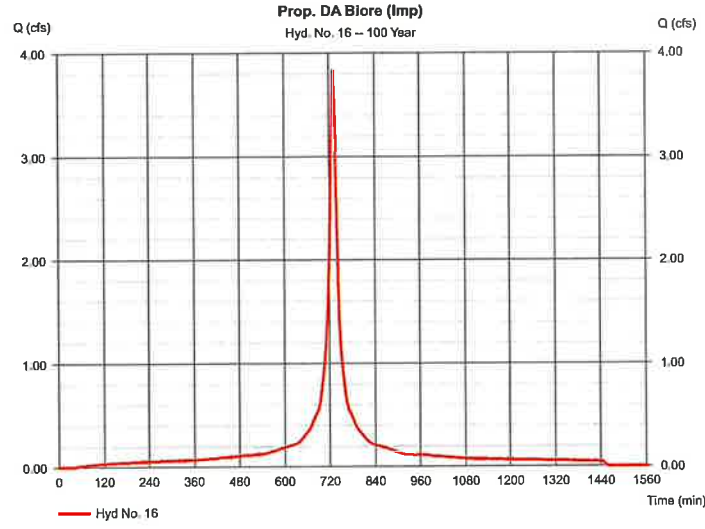


Hydrograph Report

Hyd. No. 16

Prop. DA Biore (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 3.832 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 16,243 cuft
Drainage area	= 0.590 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.33 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484



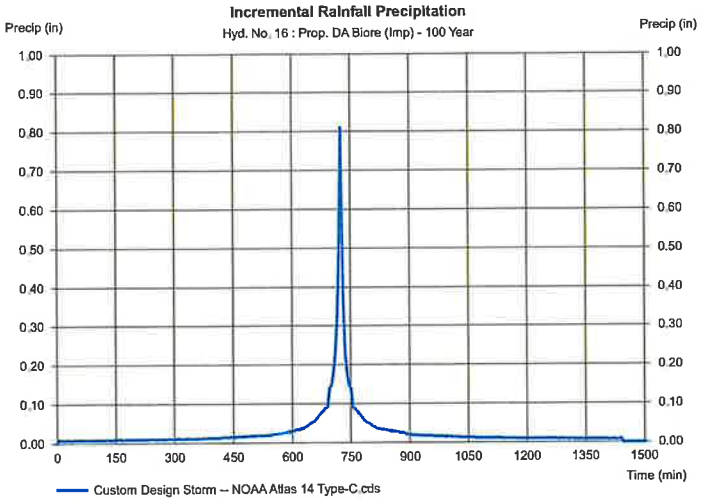
Precipitation Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 16

Prop. DA Biore (Imp)

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.3300 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		



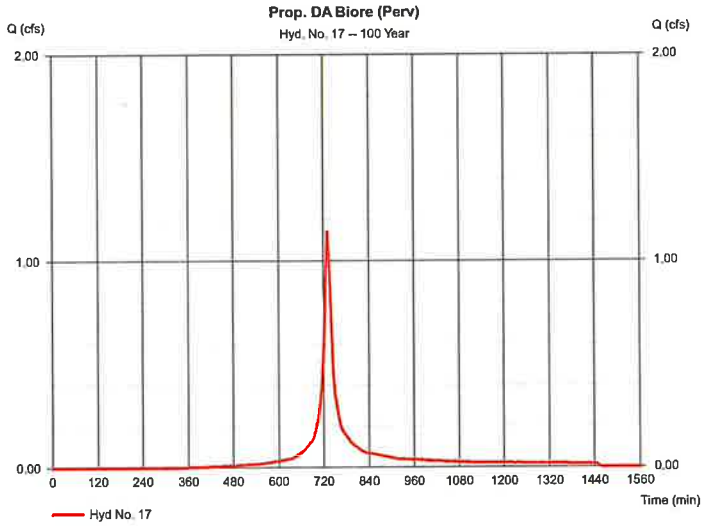
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 17

Prop. DA Biore (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.143 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,242 cuft
Drainage area	= 0.210 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.33 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484



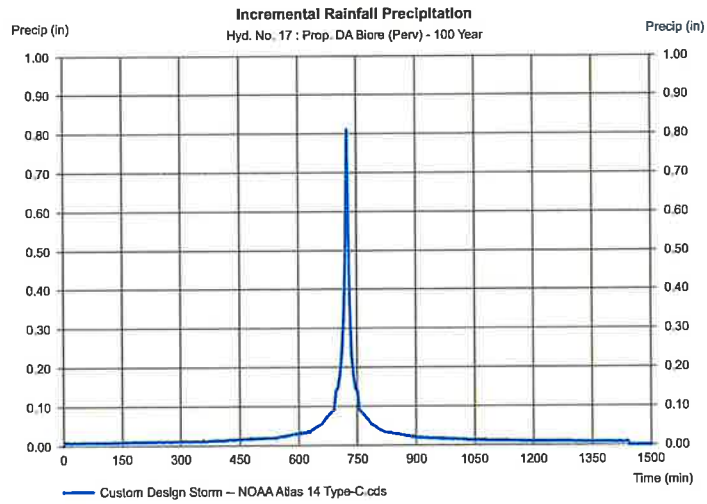
Precipitation Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 17

Prop. DA Biore (Perv)

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.3300 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		



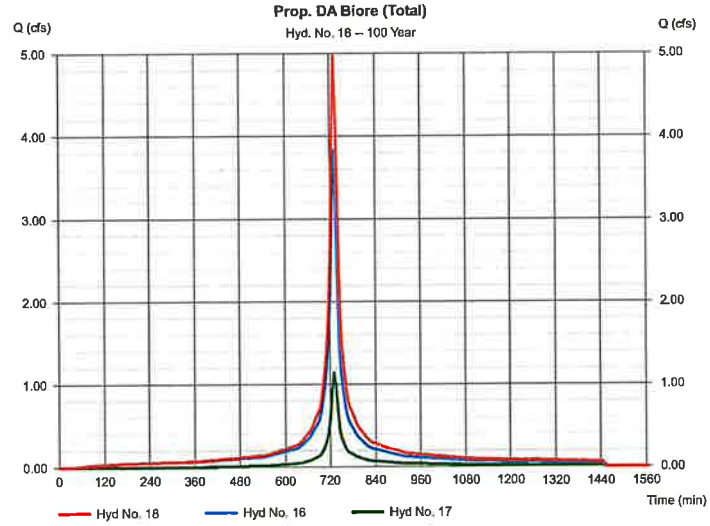
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 18

Prop. DA Biore (Total)

Hydrograph type	= Combine	Peak discharge	= 4.974 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 20,485 cuft
Inflow hyds.	= 16, 17	Contrib. drain. area	= 0.800 ac



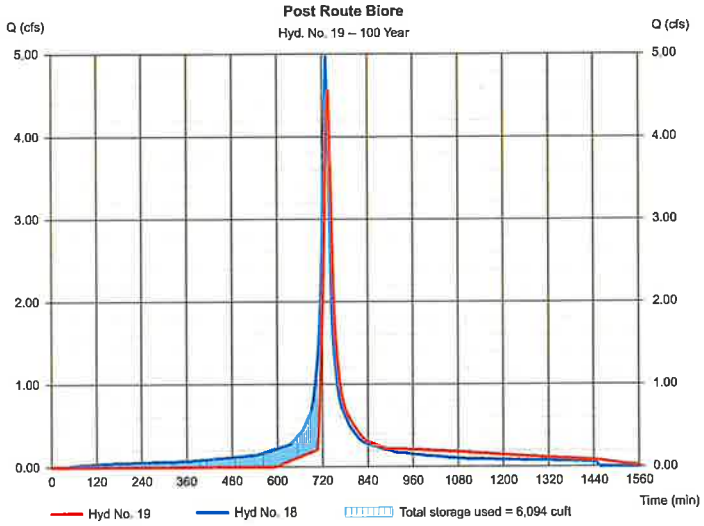
Hydrograph Report

Hyd. No. 19

Post Route Biore

Hydrograph type	= Reservoir	Peak discharge	= 4.554 cfs
Storm frequency	= 100 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 17,914 cuft
Inflow hyd. No.	= 18 - Prop. DA Biore (Total)	Max. Elevation	= 64.89 ft
Reservoir name	= Bioret Basin	Max. Storage	= 6,094 cuft

Storage indication method used.

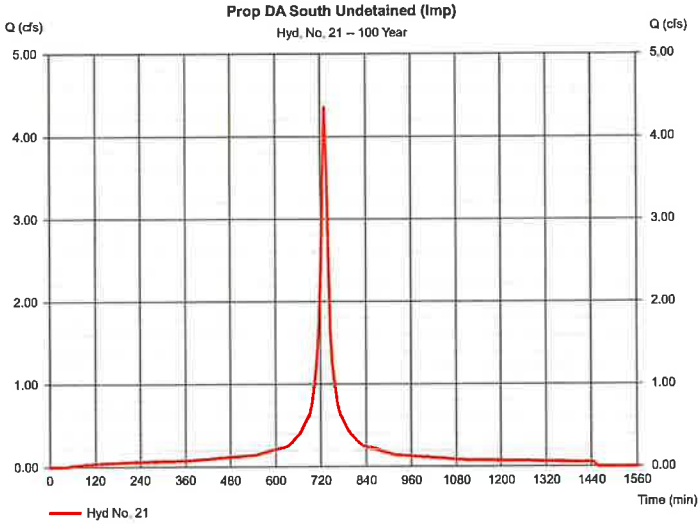


Hydrograph Report

Hyd. No. 21

Prop DA South Undetained (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 4.351 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 18,446 cuft
Drainage area	= 0.670 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.33 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

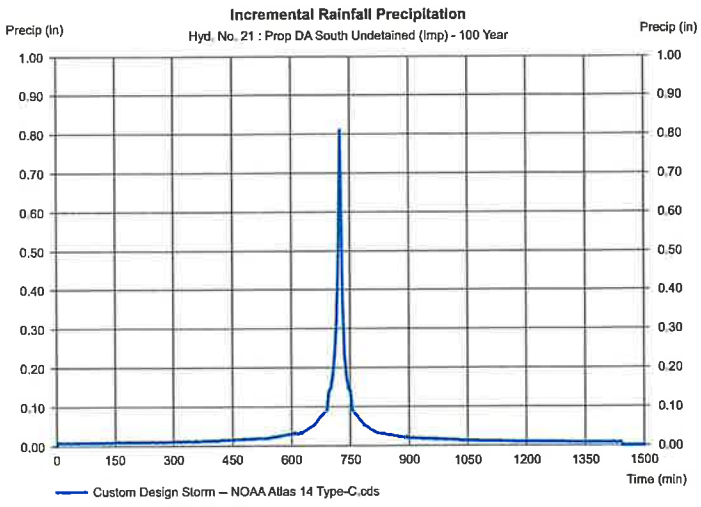


Precipitation Report

Hyd. No. 21

Prop DA South Undetained (Imp)

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.3300 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

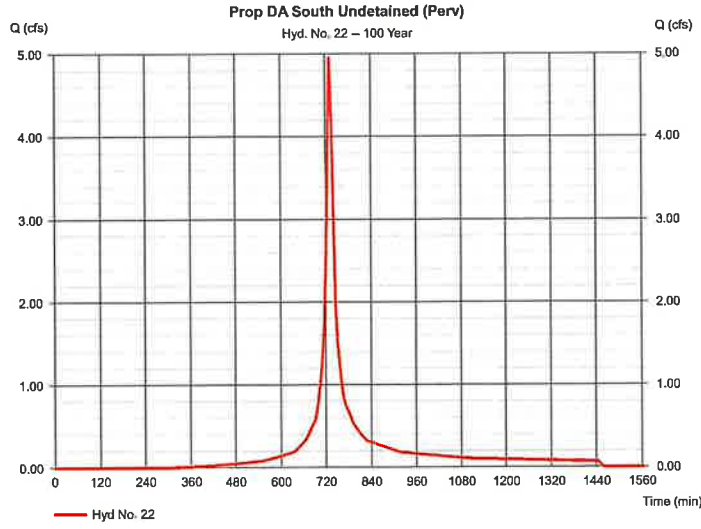


Hydrograph Report

Hyd. No. 22

Prop DA South Undetained (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 4.951 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 18,380 cuft
Drainage area	= 0.910 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.33 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

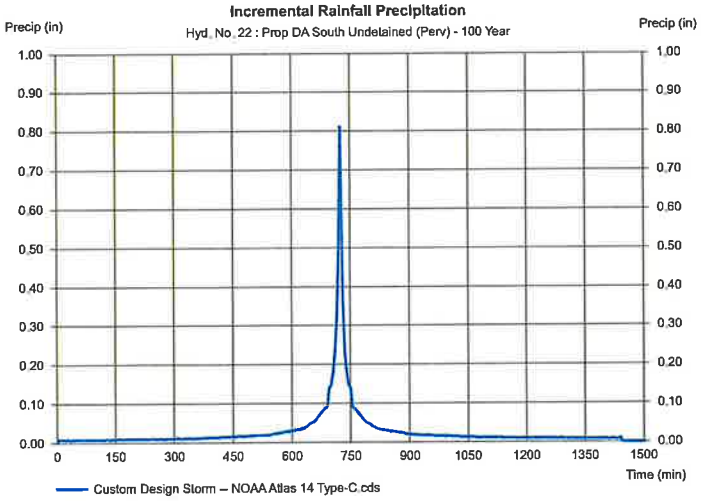


Precipitation Report

Hyd. No. 22

Prop DA South Undetained (Perv)

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.3300 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

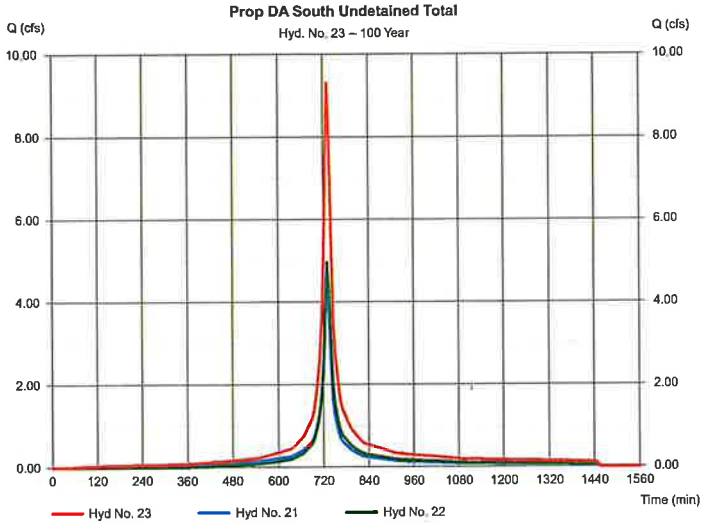


Hydrograph Report

Hyd. No. 23

Prop DA South Undetained Total

Hydrograph type	= Combine	Peak discharge	= 9.302 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 36,826 cuft
Inflow hyds.	= 21, 22	Contrib. drain. area	= 1.580 ac

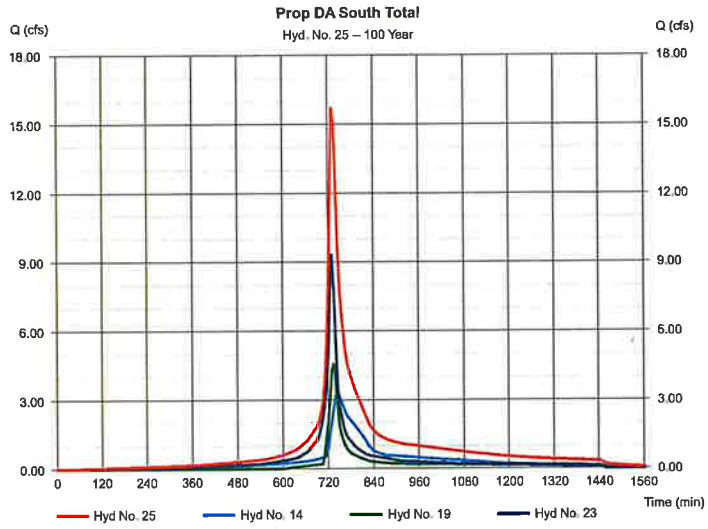


Hydrograph Report

Hyd. No. 25

Prop DA South Total

Hydrograph type	= Combine	Peak discharge	= 15.69 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 86,444 cuft
Inflow hyds.	= 14, 19, 23	Contrib. drain. area	= 0.000 ac

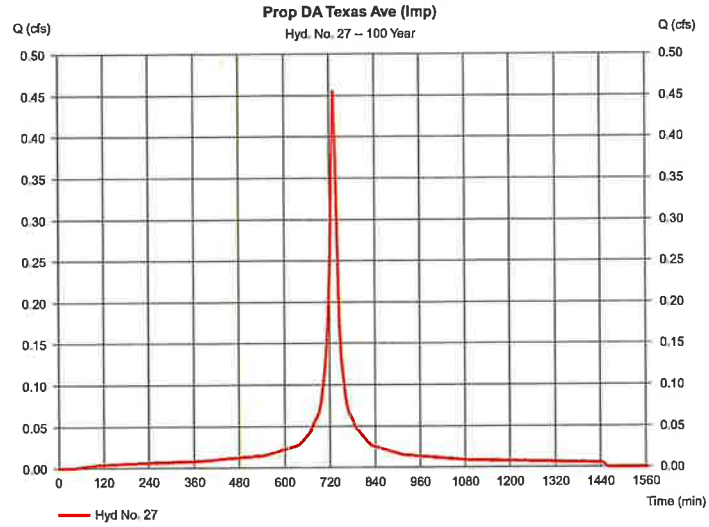


Hydrograph Report

Hyd. No. 27

Prop DA Texas Ave (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.455 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,927 cuft
Drainage area	= 0.070 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.33 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

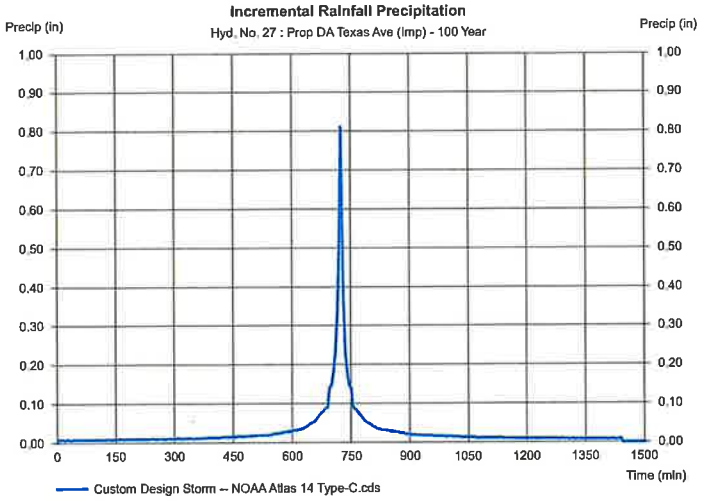


Precipitation Report

Hyd. No. 27

Prop DA Texas Ave (Imp)

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.3300 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

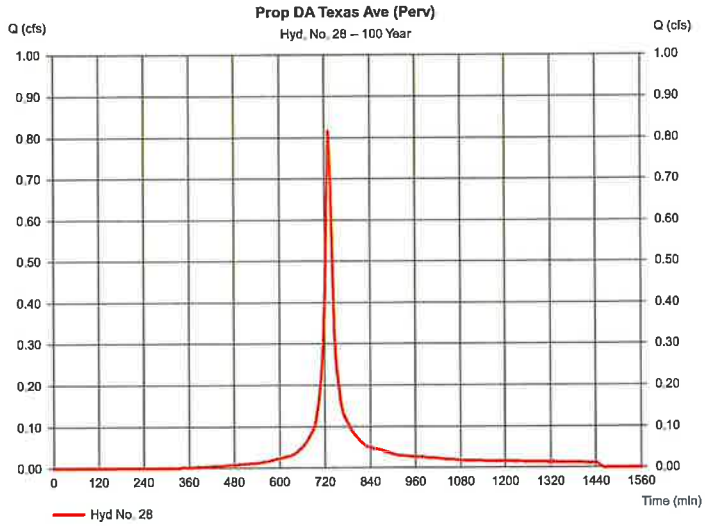


Hydrograph Report

Hyd. No. 28

Prop DA Texas Ave (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.816 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 3,030 cuft
Drainage area	= 0.150 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.33 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

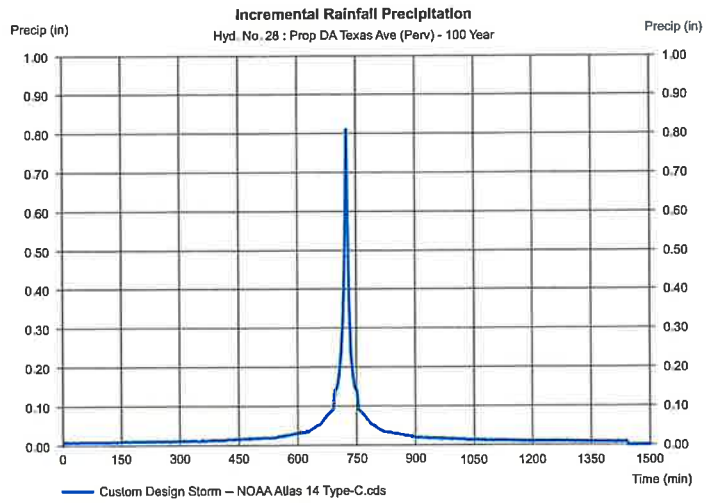


Precipitation Report

Hyd. No. 28

Prop DA Texas Ave (Perv)

Storm Frequency	= 100 yrs	Time interval	= 5 min
Total precip.	= 8.3300 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

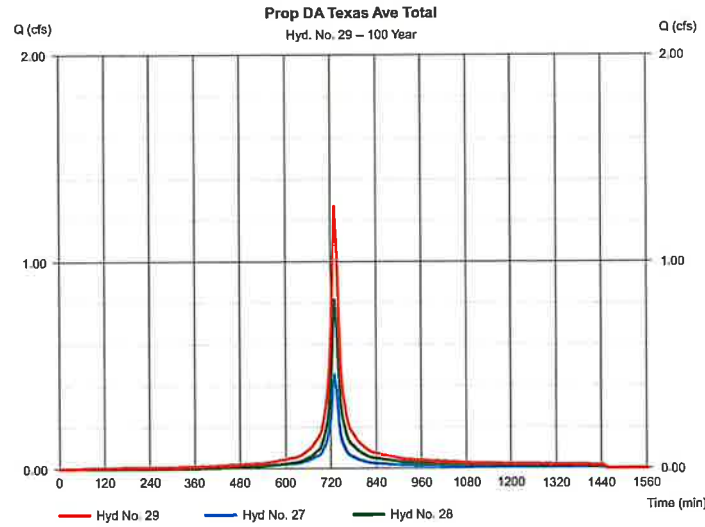


Hydrograph Report

Hyd. No. 29

Prop DA Texas Ave Total

Hydrograph type	= Combine	Peak discharge	= 1.271 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 4,957 cuft
Inflow hyds.	= 27, 28	Contrib. drain. area	= 0.220 ac

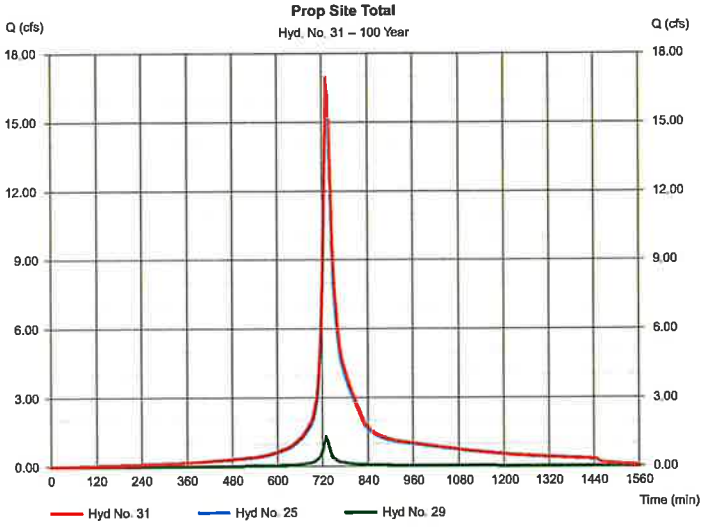


Hydrograph Report

Hyd. No. 31

Prop Site Total

Hydrograph type	= Combine	Peak discharge	= 16.96 cfs
Storm frequency	= 100 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 91,401 cuft
Inflow hyds.	= 25, 29	Contrib. drain. area	= 0.000 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	39.0824	9.5000	0.8528	----
2	45.6943	10.7000	0.8185	----
3	0.0000	0.0000	0.0000	----
5	99.7081	14.8000	0.9304	----
10	249.7597	21.8001	1.0961	----
25	115.7547	14.9000	0.8980	----
50	7.3699	0.1000	0.2544	----
100	403.8513	25.1001	1.1108	----

File name: TRENTON.idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	4.00	3.10	2.55	2.16	1.91	1.70	1.54	1.40	1.29	1.20	1.12	1.05
2	4.80	3.83	3.21	2.77	2.45	2.20	2.00	1.84	1.70	1.59	1.49	1.40
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.20	5.03	4.24	3.67	3.24	2.90	2.63	2.40	2.22	2.06	1.92	1.80
10	6.80	5.63	4.80	4.17	3.69	3.30	2.98	2.72	2.50	2.31	2.14	2.00
25	7.89	6.45	5.47	4.76	4.23	3.80	3.46	3.17	2.93	2.73	2.55	2.40
50	4.87	4.09	3.69	3.44	3.25	3.10	2.98	2.88	2.80	2.72	2.66	2.60
100	9.20	7.76	6.69	5.87	5.22	4.70	4.27	3.91	3.60	3.33	3.10	2.90

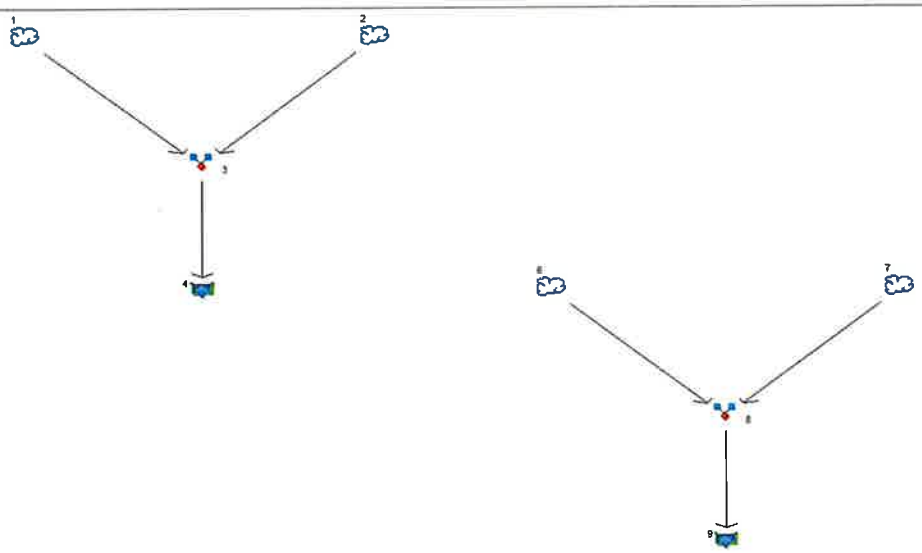
Tc = time in minutes. Values may exceed 60.

Precip. file name: Mercer County.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	3.31	0.00	0.00	5.01	6.19	0.00	8.33
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	1.25	3.31	0.00	0.00	5.01	6.19	0.00	8.33

HYDROGRAPH SUMMARY REPORTS – WATER QUALITY STORM

Watershed Model Schematic



Legend

Hyd.	Origin	Description
1	SCS Runoff	Prop. DA Perv Pav (Imp)
2	SCS Runoff	Prop. DA Perv Pav (Perv)
3	Combine	Prop. DA Perv Pav (Total)
4	Reservoir	Post Route Perv Pav
6	SCS Runoff	Prop. DA Biore (Imp)
7	SCS Runoff	Prop. DA Biore (Perv)
8	Combine	Prop. DA Biore (Total)
9	Reservoir	Post Route Biore

Hydraflow Table of Contents

2022-11-08 WQ.gpw

Hydraflow Hydrographs by Intelisolve v9.1

Wednesday, Nov 9, 2022

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs) 1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	Hydrograph description
1	SCS Runoff	----	2.150	----	----	----	----	----	----	----	Prop. DA Perv Pav (Imp)
2	SCS Runoff	----	0.078	----	----	----	----	----	----	----	Prop. DA Perv Pav (Perv)
3	Combine	1, 2	2.219	----	----	----	----	----	----	----	Prop. DA Perv Pav (Total)
4	Reservoir	3	0.347	----	----	----	----	----	----	----	Post Route Perv Pav
6	SCS Runoff	----	1.308	----	----	----	----	----	----	----	Prop. DA Biore (Imp)
7	SCS Runoff	----	0.065	----	----	----	----	----	----	----	Prop. DA Biore (Perv)
8	Combine	6, 7	1.366	----	----	----	----	----	----	----	Prop. DA Biore (Total)
9	Reservoir	8	0.000	----	----	----	----	----	----	----	Post Route Biore

Proj. file: 2022-11-08 WQ.gpw | Wednesday, Nov 9, 2022

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	2.150	5	70	3,414	----	----	----	Prop. DA Perv Pav (Imp)
2	SCS Runoff	0.078	5	75	142	----	----	----	Prop. DA Perv Pav (Perv)
3	Combine	2.219	5	70	3,556	1, 2	----	----	Prop. DA Perv Pav (Total)
4	Reservoir	0.347	5	100	3,506	3	60.53	2,572	Post Route Perv Pav
6	SCS Runoff	1.308	5	70	2,076	----	----	----	Prop. DA Biore (Imp)
7	SCS Runoff	0.065	5	75	119	----	----	----	Prop. DA Biore (Perv)
8	Combine	1.366	5	70	2,196	6, 7	----	----	Prop. DA Biore (Total)
9	Reservoir	0.000	5	n/a	0	8	63.23	2,196	Post Route Biore

2022-11-08 WQ.gpw | Return Period: 1 Year | Wednesday, Nov 9, 2022

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 1

Prop. DA Perv Pav (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.150 cfs
Storm frequency	= 1 yrs	Time to peak	= 70 min
Time interval	= 5 min	Hyd. volume	= 3,414 cuft
Drainage area	= 0.970 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.0 min
Total precip.	= 1.25 in	Distribution	= Custom
Storm duration	= Water Quality Storm.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp.)

Time -- Outflow (min	cfs)
30	0.038
35	0.089
40	0.146
45	0.186
50	0.265
55	0.454
60	1.041
65	1.913
70	2.150 <<
75	1.645
80	0.977
85	0.524
90	0.392
95	0.338
100	0.303
105	0.280
110	0.233
115	0.162
120	0.114
125	0.072
130	0.036

...End

Precipitation Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 1

Prop. DA Perv Pav (Imp)

Storm Frequency	= 1 yrs	Time interval	= 5 min
Total precip.	= 1.2500 in	Distribution	= Custom
Storm duration	= Water Quality Storm.cds		

Rainfall Distribution Table

Time -- (min	Precip. in)
0	0.0000
5	0.0083
10	0.0084
15	0.0084
20	0.0250
25	0.0250
30	0.0250
35	0.0375
40	0.0288
45	0.0337
50	0.0583
55	0.1000
60	0.2668
65	0.2668
70	0.1000
75	0.0582
80	0.0340
85	0.0330
90	0.0330
95	0.0250
100	0.0250
105	0.0250
110	0.0084
115	0.0084
120	0.0082
125	0.0000

...End

Hydrograph Report

Hyd. No. 2

Prop. DA Perv Pav (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.078 cfs
Storm frequency	= 1 yrs	Time to peak	= 75 min
Time interval	= 5 min	Hyd. volume	= 142 cuft
Drainage area	= 0.250 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.0 min
Total precip.	= 1.25 in	Distribution	= Custom
Storm duration	= Water Quality Storm.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp)

Time -- (min)	Outflow cfs)
65	0.027
70	0.069
75	0.078 <<
80	0.066
85	0.044
90	0.035
95	0.032
100	0.030
105	0.028
110	0.024
115	0.017
120	0.012
125	0.008
130	0.004
135	0.001

...End

Precipitation Report

Hyd. No. 2

Prop. DA Perv Pav (Perv)

Storm Frequency	= 1 yrs	Time interval	= 5 min
Total precip.	= 1.2500 in	Distribution	= Custom
Storm duration	= Water Quality Storm.cds		

Rainfall Distribution Table

Time -- (min	Precip. in)
0	0.0000
5	0.0083
10	0.0084
15	0.0084
20	0.0250
25	0.0250
30	0.0250
35	0.0375
40	0.0288
45	0.0337
50	0.0583
55	0.1000
60	0.2668
65	0.2668
70	0.1000
75	0.0582
80	0.0340
85	0.0330
90	0.0330
95	0.0250
100	0.0250
105	0.0250
110	0.0084
115	0.0084
120	0.0082
125	0.0000

...End

Hydrograph Report

Hyd. No. 3

Prop. DA Perv Pav (Total)

Hydrograph type	= Combine	Peak discharge	= 2.219 cfs
Storm frequency	= 1 yrs	Time to peak	= 70 min
Time interval	= 5 min	Hyd. volume	= 3,556 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 1.220 ac

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp)

Time (min)	Hyd. 1 + (cfs)	Hyd. 2 = (cfs)	Outflow (cfs)
30	0.038	0.000	0.038
35	0.089	0.000	0.089
40	0.146	0.000	0.146
45	0.186	0.000	0.186
50	0.265	0.000	0.265
55	0.454	0.000	0.454
60	1.041	0.000	1.041
65	1.913	0.027	1.940
70	2.150 <<	0.069	2.219 <<
75	1.645	0.078 <<	1.722
80	0.977	0.066	1.043
85	0.524	0.044	0.568
90	0.392	0.035	0.428
95	0.338	0.032	0.370
100	0.303	0.030	0.332
105	0.280	0.028	0.308
110	0.233	0.024	0.257
115	0.162	0.017	0.179
120	0.114	0.012	0.126
125	0.072	0.008	0.079
130	0.036	0.004	0.040

...End

Hydrograph Report

Hyd. No. 4

Post Route Perv Pav

Hydrograph type	= Reservoir	Peak discharge	= 0.347 cfs
Storm frequency	= 1 yrs	Time to peak	= 100 min
Time interval	= 5 min	Hyd. volume	= 3,506 cuft
Inflow hyd. No.	= 3 - Prop. DA Perv Pav (Total)	Reservoir name	= Perv Pavement
Max. Elevation	= 60.53 ft	Max. Storage	= 2,572 cuft

Storage Indication method used.

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp)

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
50	0.265	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
55	0.454	60.06	0.008	0.008	----	----	----	----	----	----	----	0.008
60	1.041	60.10	0.023	0.023	----	----	----	----	----	----	----	0.023
65	1.940	60.19	0.077	0.077	----	----	----	----	----	----	----	0.077
70	2.219 <<	60.31	0.188	0.185	----	----	----	----	----	----	----	0.185
75	1.722	60.42	0.288	0.284	----	----	----	----	----	----	----	0.284
80	1.043	60.49	0.329	0.324	----	----	----	----	----	----	----	0.324
85	0.568	60.52	0.342	0.340	----	----	----	----	----	----	----	0.340
90	0.428	60.53	0.346	0.345	----	----	----	----	----	----	----	0.345
95	0.370	60.53	0.348	0.347	----	----	----	----	----	----	----	0.347
100	0.332	60.53 <<	0.348	0.347	----	----	----	----	----	----	----	0.347 <<
105	0.308	60.53	0.347	0.346	----	----	----	----	----	----	----	0.346
110	0.257	60.52	0.345	0.344	----	----	----	----	----	----	----	0.344
115	0.179	60.52	0.342	0.340	----	----	----	----	----	----	----	0.340
120	0.126	60.51	0.337	0.334	----	----	----	----	----	----	----	0.334
125	0.079	60.49	0.330	0.326	----	----	----	----	----	----	----	0.326
130	0.040	60.48	0.323	0.317	----	----	----	----	----	----	----	0.317
135	0.013	60.46	0.315	0.307	----	----	----	----	----	----	----	0.307
140	0.000	60.44	0.303	0.296	----	----	----	----	----	----	----	0.296
145	0.000	60.42	0.288	0.285	----	----	----	----	----	----	----	0.285
150	0.000	60.40	0.274	0.274	----	----	----	----	----	----	----	0.274
155	0.000	60.39	0.262	0.258	----	----	----	----	----	----	----	0.258
160	0.000	60.37	0.250	0.243	----	----	----	----	----	----	----	0.243
165	0.000	60.36	0.239	0.228	----	----	----	----	----	----	----	0.228
170	0.000	60.34	0.225	0.214	----	----	----	----	----	----	----	0.214
175	0.000	60.33	0.210	0.202	----	----	----	----	----	----	----	0.202
180	0.000	60.32	0.195	0.190	----	----	----	----	----	----	----	0.190
185	0.000	60.31	0.181	0.179	----	----	----	----	----	----	----	0.179
190	0.000	60.30	0.169	0.168	----	----	----	----	----	----	----	0.169
195	0.000	60.29	0.161	0.159	----	----	----	----	----	----	----	0.159
200	0.000	60.28	0.153	0.150	----	----	----	----	----	----	----	0.150
205	0.000	60.27	0.145	0.141	----	----	----	----	----	----	----	0.141
210	0.000	60.26	0.138	0.133	----	----	----	----	----	----	----	0.133
215	0.000	60.25	0.132	0.126	----	----	----	----	----	----	----	0.126
220	0.000	60.24	0.124	0.119	----	----	----	----	----	----	----	0.119
225	0.000	60.24	0.118	0.113	----	----	----	----	----	----	----	0.113
230	0.000	60.23	0.111	0.107	----	----	----	----	----	----	----	0.107
235	0.000	60.22	0.105	0.102	----	----	----	----	----	----	----	0.102
240	0.000	60.22	0.099	0.097	----	----	----	----	----	----	----	0.097
245	0.000	60.21	0.093	0.092	----	----	----	----	----	----	----	0.092
250	0.000	60.21	0.088	0.087	----	----	----	----	----	----	----	0.087
255	0.000	60.20	0.083	0.083	----	----	----	----	----	----	----	0.083

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Post Route Perv Pav

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
260	0.000	60.20	0.079	0.079	----	----	----	----	----	----	----	0.079
265	0.000	60.19	0.076	0.076	----	----	----	----	----	----	----	0.076
270	0.000	60.19	0.073	0.072	----	----	----	----	----	----	----	0.072
275	0.000	60.18	0.069	0.069	----	----	----	----	----	----	----	0.069
280	0.000	60.18	0.066	0.066	----	----	----	----	----	----	----	0.066
285	0.000	60.17	0.064	0.064	----	----	----	----	----	----	----	0.064
290	0.000	60.17	0.061	0.061	----	----	----	----	----	----	----	0.061
295	0.000	60.17	0.058	0.058	----	----	----	----	----	----	----	0.058
300	0.000	60.16	0.056	0.056	----	----	----	----	----	----	----	0.056
305	0.000	60.16	0.053	0.053	----	----	----	----	----	----	----	0.053
310	0.000	60.16	0.051	0.051	----	----	----	----	----	----	----	0.051
315	0.000	60.15	0.049	0.049	----	----	----	----	----	----	----	0.049
320	0.000	60.15	0.047	0.047	----	----	----	----	----	----	----	0.047
325	0.000	60.15	0.045	0.045	----	----	----	----	----	----	----	0.045
330	0.000	60.14	0.044	0.044	----	----	----	----	----	----	----	0.044
335	0.000	60.14	0.043	0.043	----	----	----	----	----	----	----	0.043
340	0.000	60.14	0.041	0.041	----	----	----	----	----	----	----	0.041
345	0.000	60.14	0.040	0.040	----	----	----	----	----	----	----	0.040
350	0.000	60.13	0.039	0.039	----	----	----	----	----	----	----	0.039
355	0.000	60.13	0.037	0.037	----	----	----	----	----	----	----	0.037
360	0.000	60.13	0.036	0.036	----	----	----	----	----	----	----	0.036
365	0.000	60.13	0.035	0.035	----	----	----	----	----	----	----	0.035
370	0.000	60.13	0.034	0.034	----	----	----	----	----	----	----	0.034
375	0.000	60.12	0.033	0.033	----	----	----	----	----	----	----	0.033
380	0.000	60.12	0.032	0.032	----	----	----	----	----	----	----	0.032
385	0.000	60.12	0.031	0.031	----	----	----	----	----	----	----	0.031
390	0.000	60.12	0.030	0.030	----	----	----	----	----	----	----	0.030
395	0.000	60.12	0.029	0.029	----	----	----	----	----	----	----	0.029
400	0.000	60.11	0.028	0.028	----	----	----	----	----	----	----	0.028
405	0.000	60.11	0.027	0.027	----	----	----	----	----	----	----	0.027
410	0.000	60.11	0.026	0.026	----	----	----	----	----	----	----	0.026
415	0.000	60.11	0.025	0.025	----	----	----	----	----	----	----	0.025
420	0.000	60.11	0.025	0.025	----	----	----	----	----	----	----	0.025
425	0.000	60.11	0.024	0.024	----	----	----	----	----	----	----	0.024
430	0.000	60.10	0.023	0.023	----	----	----	----	----	----	----	0.023
435	0.000	60.10	0.022	0.022	----	----	----	----	----	----	----	0.022
440	0.000	60.10	0.022	0.022	----	----	----	----	----	----	----	0.022
445	0.000	60.10	0.021	0.021	----	----	----	----	----	----	----	0.021
450	0.000	60.10	0.021	0.021	----	----	----	----	----	----	----	0.021
455	0.000	60.10	0.020	0.020	----	----	----	----	----	----	----	0.020
460	0.000	60.10	0.020	0.020	----	----	----	----	----	----	----	0.020
465	0.000	60.10	0.019	0.019	----	----	----	----	----	----	----	0.019
470	0.000	60.09	0.019	0.019	----	----	----	----	----	----	----	0.019
475	0.000	60.09	0.019	0.019	----	----	----	----	----	----	----	0.019
480	0.000	60.09	0.018	0.018	----	----	----	----	----	----	----	0.018
485	0.000	60.09	0.018	0.018	----	----	----	----	----	----	----	0.018
490	0.000	60.09	0.018	0.018	----	----	----	----	----	----	----	0.018
495	0.000	60.09	0.017	0.017	----	----	----	----	----	----	----	0.017
500	0.000	60.09	0.017	0.017	----	----	----	----	----	----	----	0.017
505	0.000	60.09	0.017	0.017	----	----	----	----	----	----	----	0.017
510	0.000	60.09	0.016	0.016	----	----	----	----	----	----	----	0.016
515	0.000	60.08	0.016	0.016	----	----	----	----	----	----	----	0.016
520	0.000	60.08	0.016	0.016	----	----	----	----	----	----	----	0.016
525	0.000	60.08	0.015	0.015	----	----	----	----	----	----	----	0.015
530	0.000	60.08	0.015	0.015	----	----	----	----	----	----	----	0.015
535	0.000	60.08	0.015	0.015	----	----	----	----	----	----	----	0.015

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Post Route Perv Pav

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
540	0.000	60.08	0.014	0.014	----	----	----	----	----	----	----	0.014
545	0.000	60.08	0.014	0.014	----	----	----	----	----	----	----	0.014
550	0.000	60.08	0.014	0.014	----	----	----	----	----	----	----	0.014
555	0.000	60.08	0.014	0.014	----	----	----	----	----	----	----	0.014
560	0.000	60.08	0.013	0.013	----	----	----	----	----	----	----	0.013
565	0.000	60.08	0.013	0.013	----	----	----	----	----	----	----	0.013
570	0.000	60.07	0.013	0.013	----	----	----	----	----	----	----	0.013
575	0.000	60.07	0.013	0.013	----	----	----	----	----	----	----	0.013
580	0.000	60.07	0.012	0.012	----	----	----	----	----	----	----	0.012
585	0.000	60.07	0.012	0.012	----	----	----	----	----	----	----	0.012
590	0.000	60.07	0.012	0.012	----	----	----	----	----	----	----	0.012
595	0.000	60.07	0.012	0.012	----	----	----	----	----	----	----	0.012
600	0.000	60.07	0.011	0.011	----	----	----	----	----	----	----	0.011
605	0.000	60.07	0.011	0.011	----	----	----	----	----	----	----	0.011
610	0.000	60.07	0.011	0.011	----	----	----	----	----	----	----	0.011
615	0.000	60.07	0.011	0.011	----	----	----	----	----	----	----	0.011
620	0.000	60.07	0.010	0.010	----	----	----	----	----	----	----	0.010
625	0.000	60.07	0.010	0.010	----	----	----	----	----	----	----	0.010
630	0.000	60.07	0.010	0.010	----	----	----	----	----	----	----	0.010
635	0.000	60.07	0.010	0.010	----	----	----	----	----	----	----	0.010
640	0.000	60.07	0.010	0.010	----	----	----	----	----	----	----	0.010
645	0.000	60.06	0.009	0.009	----	----	----	----	----	----	----	0.009
650	0.000	60.06	0.009	0.009	----	----	----	----	----	----	----	0.009
655	0.000	60.06	0.009	0.009	----	----	----	----	----	----	----	0.009
660	0.000	60.06	0.009	0.009	----	----	----	----	----	----	----	0.009
665	0.000	60.06	0.009	0.009	----	----	----	----	----	----	----	0.009
670	0.000	60.06	0.009	0.009	----	----	----	----	----	----	----	0.009
675	0.000	60.06	0.008	0.008	----	----	----	----	----	----	----	0.008
680	0.000	60.06	0.008	0.008	----	----	----	----	----	----	----	0.008
685	0.000	60.06	0.008	0.008	----	----	----	----	----	----	----	0.008
690	0.000	60.06	0.008	0.008	----	----	----	----	----	----	----	0.008
695	0.000	60.06	0.008	0.008	----	----	----	----	----	----	----	0.008
700	0.000	60.06	0.008	0.008	----	----	----	----	----	----	----	0.008
705	0.000	60.06	0.007	0.007	----	----	----	----	----	----	----	0.007
710	0.000	60.06	0.007	0.007	----	----	----	----	----	----	----	0.007
715	0.000	60.06	0.007	0.007	----	----	----	----	----	----	----	0.007
720	0.000	60.06	0.007	0.007	----	----	----	----	----	----	----	0.007
725	0.000	60.06	0.007	0.007	----	----	----	----	----	----	----	0.007
730	0.000	60.06	0.007	0.007	----	----	----	----	----	----	----	0.007
735	0.000	60.06	0.007	0.007	----	----	----	----	----	----	----	0.007
740	0.000	60.06	0.007	0.007	----	----	----	----	----	----	----	0.007
745	0.000	60.05	0.006	0.006	----	----	----	----	----	----	----	0.006
750	0.000	60.05	0.006	0.006	----	----	----	----	----	----	----	0.006
755	0.000	60.05	0.006	0.006	----	----	----	----	----	----	----	0.006
760	0.000	60.05	0.006	0.006	----	----	----	----	----	----	----	0.006
765	0.000	60.05	0.006	0.006	----	----	----	----	----	----	----	0.006
770	0.000	60.05	0.006	0.006	----	----	----	----	----	----	----	0.006
775	0.000	60.05	0.006	0.006	----	----	----	----	----	----	----	0.006
780	0.000	60.05	0.006	0.006	----	----	----	----	----	----	----	0.006
785	0.000	60.05	0.005	0.005	----	----	----	----	----	----	----	0.005
790	0.000	60.05	0.005	0.005	----	----	----	----	----	----	----	0.005
795	0.000	60.05	0.005	0.005	----	----	----	----	----	----	----	0.005
800	0.000	60.05	0.005	0.005	----	----	----	----	----	----	----	0.005
805	0.000	60.05	0.005	0.005	----	----	----	----	----	----	----	0.005
810	0.000	60.05	0.005	0.005	----	----	----	----	----	----	----	0.005
815	0.000	60.05	0.005	0.005	----	----	----	----	----	----	----	0.005

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Post Route Perv Pav

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
820	0.000	60.05	0.005	0.005	----	----	----	----	----	----	----	0.005
825	0.000	60.05	0.005	0.005	----	----	----	----	----	----	----	0.005
830	0.000	60.05	0.005	0.005	----	----	----	----	----	----	----	0.005
835	0.000	60.05	0.005	0.005	----	----	----	----	----	----	----	0.005
840	0.000	60.05	0.005	0.005	----	----	----	----	----	----	----	0.005
845	0.000	60.05	0.005	0.005	----	----	----	----	----	----	----	0.005
850	0.000	60.05	0.005	0.005	----	----	----	----	----	----	----	0.005
855	0.000	60.05	0.005	0.005	----	----	----	----	----	----	----	0.005
860	0.000	60.05	0.005	0.005	----	----	----	----	----	----	----	0.005
865	0.000	60.05	0.005	0.005	----	----	----	----	----	----	----	0.005
870	0.000	60.05	0.005	0.005	----	----	----	----	----	----	----	0.005
875	0.000	60.05	0.005	0.005	----	----	----	----	----	----	----	0.005
880	0.000	60.05	0.004	0.004	----	----	----	----	----	----	----	0.004
885	0.000	60.05	0.004	0.004	----	----	----	----	----	----	----	0.004
890	0.000	60.05	0.004	0.004	----	----	----	----	----	----	----	0.004
895	0.000	60.05	0.004	0.004	----	----	----	----	----	----	----	0.004
900	0.000	60.05	0.004	0.004	----	----	----	----	----	----	----	0.004
905	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
910	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
915	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
920	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
925	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
930	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
935	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
940	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
945	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
950	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
955	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
960	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
965	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
970	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
975	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
980	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
985	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
990	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
995	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
1000	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
1005	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
1010	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
1015	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
1020	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
1025	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
1030	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
1035	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
1040	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
1045	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
1050	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
1055	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
1060	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
1065	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
1070	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
1075	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
1080	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
1085	0.000	60.04	0.004	0.004	----	----	----	----	----	----	----	0.004
1090	0.000	60.04	0.003	0.003	----	----	----	----	----	----	----	0.003

...End

Pond Report

Hydraflow Hydrographs by Intelisolve v9.1

Wednesday, Nov 9, 2022

Pond No. 1 - Perv Pavement

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 60.00 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	60.00	12,132	0	0
0.50	60.50	12,133	2,426	2,426
1.00	61.00	12,134	2,426	4,853
1.50	61.50	12,135	2,427	7,279
2.00	62.00	12,136	2,427	9,706
2.50	62.50	12,137	2,427	12,133
2.90	62.90	12,138	1,942	14,075

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	5.00	3.00	0.00
Span (in)	= 18.00	5.00	18.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 60.00	60.01	61.10	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 1.00	0.00	0.00	0.00
Crest El. (ft)	= 61.85	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil (in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir flows checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	60.00	0.00	0.00	0.00	---	0.00	---	---	---	---	---	0.00
0.05	243	60.05	0.00 ic	0.00 ic	0.00	---	0.00	---	---	---	---	---	0.00
0.10	485	60.10	0.02 ic	0.02 ic	0.00	---	0.00	---	---	---	---	---	0.02
0.15	728	60.15	0.05 ic	0.05 ic	0.00	---	0.00	---	---	---	---	---	0.05
0.20	971	60.20	0.09 ic	0.08 ic	0.00	---	0.00	---	---	---	---	---	0.08
0.25	1,213	60.25	0.13 ic	0.12 ic	0.00	---	0.00	---	---	---	---	---	0.12
0.30	1,456	60.30	0.17 ic	0.17 ic	0.00	---	0.00	---	---	---	---	---	0.17
0.35	1,698	60.35	0.23 ic	0.22 ic	0.00	---	0.00	---	---	---	---	---	0.22
0.40	1,941	60.40	0.27 ic	0.27 ic	0.00	---	0.00	---	---	---	---	---	0.27
0.45	2,184	60.45	0.31 ic	0.30 ic	0.00	---	0.00	---	---	---	---	---	0.30
0.50	2,426	60.50	0.33 ic	0.33 ic	0.00	---	0.00	---	---	---	---	---	0.33
0.55	2,669	60.55	0.36 ic	0.36 ic	0.00	---	0.00	---	---	---	---	---	0.36
0.60	2,912	60.60	0.38 ic	0.38 ic	0.00	---	0.00	---	---	---	---	---	0.38
0.65	3,154	60.65	0.41 ic	0.40 ic	0.00	---	0.00	---	---	---	---	---	0.40
0.70	3,397	60.70	0.43 ic	0.42 ic	0.00	---	0.00	---	---	---	---	---	0.42
0.75	3,639	60.75	0.46 ic	0.45 ic	0.00	---	0.00	---	---	---	---	---	0.45
0.80	3,882	60.80	0.47 ic	0.47 ic	0.00	---	0.00	---	---	---	---	---	0.47
0.85	4,125	60.85	0.49 ic	0.49 ic	0.00	---	0.00	---	---	---	---	---	0.49
0.90	4,367	60.90	0.52 ic	0.50 ic	0.00	---	0.00	---	---	---	---	---	0.50
0.95	4,610	60.95	0.52 ic	0.52 ic	0.00	---	0.00	---	---	---	---	---	0.52
1.00	4,853	61.00	0.55 ic	0.54 ic	0.00	---	0.00	---	---	---	---	---	0.54
1.05	5,095	61.05	0.56 ic	0.56 ic	0.00	---	0.00	---	---	---	---	---	0.56
1.10	5,338	61.10	0.58 ic	0.58 ic	0.00	---	0.00	---	---	---	---	---	0.58
1.15	5,581	61.15	0.65 ic	0.59 ic	0.06 ic	---	0.00	---	---	---	---	---	0.64
1.20	5,823	61.20	0.76 ic	0.59 ic	0.16 ic	---	0.00	---	---	---	---	---	0.76
1.25	6,066	61.25	0.93 ic	0.60 ic	0.30 ic	---	0.00	---	---	---	---	---	0.89
1.30	6,309	61.30	1.06 ic	0.60 ic	0.46 ic	---	0.00	---	---	---	---	---	1.06
1.35	6,551	61.35	1.26 oc	0.61 ic	0.64 ic	---	0.00	---	---	---	---	---	1.25
1.40	6,794	61.40	1.39 oc	0.61 ic	0.78 ic	---	0.00	---	---	---	---	---	1.37
1.45	7,037	61.45	1.49 oc	0.62 ic	0.86 ic	---	0.00	---	---	---	---	---	1.48
1.50	7,279	61.50	1.58 oc	0.63 ic	0.95 ic	---	0.00	---	---	---	---	---	1.56
1.55	7,522	61.55	1.68 oc	0.64 ic	1.03 ic	---	0.00	---	---	---	---	---	1.67
1.60	7,765	61.60	1.78 oc	0.65 ic	1.11 ic	---	0.00	---	---	---	---	---	1.76
1.65	8,007	61.65	1.88 oc	0.66 ic	1.18 ic	---	0.00	---	---	---	---	---	1.84
1.70	8,250	61.70	1.93 oc	0.67 ic	1.24 ic	---	0.00	---	---	---	---	---	1.92
1.75	8,493	61.75	2.03 oc	0.68 ic	1.31 ic	---	0.00	---	---	---	---	---	1.99
1.80	8,735	61.80	2.08 oc	0.69 ic	1.37 ic	---	0.00	---	---	---	---	---	2.06

Continues on next page...

Perv Pavement

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
1.85	8,978	61.85	2.13 oc	0.70 ic	1.43 ic	---	0.00	---	---	---	---	---	2.13
1.90	9,221	61.90	2.24 oc	0.71 ic	1.48 ic	---	0.00	---	---	---	---	---	2.19
1.95	9,464	61.95	2.29 oc	0.72 ic	1.54 ic	---	0.00	---	---	---	---	---	2.26
2.00	9,706	62.00	2.39 oc	0.73 ic	1.59 ic	---	0.04	---	---	---	---	---	2.36
2.05	9,949	62.05	2.49 oc	0.74 ic	1.64 ic	---	0.11	---	---	---	---	---	2.48
2.10	10,192	62.10	2.65 oc	0.74 ic	1.69 ic	---	0.19	---	---	---	---	---	2.62
2.15	10,434	62.15	2.80 oc	0.75 ic	1.74 ic	---	0.30	---	---	---	---	---	2.78
2.20	10,677	62.20	2.95 oc	0.75 ic	1.78 ic	---	0.42	---	---	---	---	---	2.95
2.25	10,920	62.25	3.14 oc	0.75 ic	1.83 ic	---	0.55	---	---	---	---	---	3.13
2.30	11,162	62.30	3.33 oc	0.75 ic	1.87 ic	---	0.69	---	---	---	---	---	3.32
2.35	11,405	62.35	3.55 oc	0.75 ic	1.92 ic	---	0.84	---	---	---	---	---	3.51
2.40	11,648	62.40	3.71 oc	0.75 ic	1.96 ic	---	1.01	---	---	---	---	---	3.71
2.45	11,891	62.45	3.94 oc	0.75 ic	2.00 ic	---	1.18	---	---	---	---	---	3.93
2.50	12,133	62.50	4.16 oc	0.75 ic	2.04 ic	---	1.36	---	---	---	---	---	4.14
2.54	12,327	62.54	4.30 oc	0.74 ic	2.05 ic	---	1.51	---	---	---	---	---	4.30
2.58	12,522	62.58	4.45 oc	0.74 ic	2.03 ic	---	1.67	---	---	---	---	---	4.44
2.62	12,716	62.62	4.58 oc	0.73 ic	2.01 ic	---	1.83	---	---	---	---	---	4.57
2.66	12,910	62.66	4.64 oc	0.70 ic	1.94 ic	---	1.99	---	---	---	---	---	4.64
2.70	13,104	62.70	4.83 oc	0.71 ic	1.95 ic	---	2.16	---	---	---	---	---	4.83
2.74	13,298	62.74	5.02 oc	0.72 ic	1.97 ic	---	2.34	---	---	---	---	---	5.02
2.78	13,493	62.78	5.22 oc	0.72 ic	1.96 ic	---	2.52	---	---	---	---	---	5.22
2.82	13,687	62.82	5.42 oc	0.72 ic	1.99 ic	---	2.70	---	---	---	---	---	5.42
2.86	13,881	62.86	5.62 oc	0.73 ic	2.00 ic	---	2.89	---	---	---	---	---	5.62
2.90	14,075	62.90	5.83 oc	0.73 ic	2.01 ic	---	3.08	---	---	---	---	---	5.83

...End

Hydrograph Report

Hydraflow Hydrographs by Intellsolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 6

Prop. DA Biore (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.308 cfs
Storm frequency	= 1 yrs	Time to peak	= 70 min
Time interval	= 5 min	Hyd. volume	= 2,076 cuft
Drainage area	= 0.590 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.0 min
Total precip.	= 1.25 In	Distribution	= Custom
Storm duration	= Water Quality Storm.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp)

Time -- Outflow (min	cfs)
30	0.023
35	0.054
40	0.089
45	0.113
50	0.161
55	0.276
60	0.633
65	1.163
70	1.308 <<
75	1.000
80	0.594
85	0.319
90	0.239
95	0.206
100	0.184
105	0.170
110	0.142
115	0.098
120	0.069
125	0.044
130	0.022

...End

Precipitation Report

Hydraflow Hydrographs by Intellsolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 6

Prop. DA Biore (Imp)

Storm Frequency	= 1 yrs	Time interval	= 5 min
Total precip.	= 1.2500 in	Distribution	= Custom
Storm duration	= Water Quality Storm.cds		

Rainfall Distribution Table

Time -- Precip. (min	In)
0	0.0000
5	0.0083
10	0.0084
15	0.0084
20	0.0250
25	0.0250
30	0.0250
35	0.0375
40	0.0286
45	0.0337
50	0.0583
55	0.1000
60	0.2668
65	0.2668
70	0.1000
75	0.0582
80	0.0340
85	0.0330
90	0.0330
95	0.0250
100	0.0250
105	0.0250
110	0.0084
115	0.0084
120	0.0082
125	0.0000

...End

Hydrograph Report

Hydraflow Hydrographs by Intellsolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 7

Prop. DA Biore (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.065 cfs
Storm frequency	= 1 yrs	Time to peak	= 75 min
Time interval	= 5 min	Hyd. volume	= 119 cuft
Drainage area	= 0.210 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.0 min
Total precip.	= 1.25 in	Distribution	= Custom
Storm duration	= Water Quality Storm.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp)

Time -- Outflow (min	cfs)
65	0.022
70	0.058
75	0.065 <<
80	0.056
85	0.037
90	0.030
95	0.027
100	0.025
105	0.024
110	0.020
115	0.014
120	0.010
125	0.006
130	0.003
135	0.001

...End

Precipitation Report

Hyd. No. 7

Prop. DA Biore (Perv)

Storm Frequency	= 1 yrs	Time interval	= 5 min
Total precip.	= 1.2500 in	Distribution	= Custom
Storm duration	= Water Quality Storm.cds		

Rainfall Distribution Table

Time (min)	Precip. in)
0	0.0000
5	0.0083
10	0.0084
15	0.0084
20	0.0250
25	0.0250
30	0.0250
35	0.0375
40	0.0288
45	0.0337
50	0.0583
55	0.1000
60	0.2688
65	0.2688
70	0.1000
75	0.0582
80	0.0340
85	0.0330
90	0.0330
95	0.0250
100	0.0250
105	0.0250
110	0.0084
115	0.0084
120	0.0082
125	0.0000

...End

Hydrograph Report

Hyd. No. 8

Prop. DA Biore (Total)

Hydrograph type	= Combine	Peak discharge	= 1.366 cfs
Storm frequency	= 1 yrs	Time to peak	= 70 min
Time interval	= 5 min	Hyd. volume	= 2,196 cuft
Inflow hyds.	= 6, 7	Contrib. drain. area	= 0.800 ac

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp.)

Time (min)	Hyd. 6 + (cfs)	Hyd. 7 = (cfs)	Outflow (cfs)
30	0.023	0.000	0.023
35	0.054	0.000	0.054
40	0.089	0.000	0.089
45	0.113	0.000	0.113
50	0.161	0.000	0.161
55	0.276	0.000	0.276
60	0.633	0.000	0.633
65	1.163	0.022	1.186
70	1.308 <<	0.058	1.366 <<
75	1.000	0.065 <<	1.066
80	0.594	0.056	0.650
85	0.319	0.037	0.355
90	0.239	0.030	0.268
95	0.206	0.027	0.233
100	0.184	0.025	0.209
105	0.170	0.024	0.194
110	0.142	0.020	0.162
115	0.098	0.014	0.112
120	0.069	0.010	0.079
125	0.044	0.006	0.050
130	0.022	0.003	0.025

...End

Hydrograph Report

Hyd. No. 9

Post Route Biore

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= n/a
Time interval	= 5 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 8 - Prop. DA Biore (Total)	Reservoir name	= Bioret Basin
Max. Elevation	= 63.23 ft	Max. Storage	= 2,196 cuft

Storage Indication method used.

...End

Pond Report

Pond No. 2 - Bioret Basin

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 62.10 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	62.10	1,800	0	0
0.90	63.00	1,970	1,696	1,696
1.80	64.00	2,360	2,162	3,858
2.90	65.00	2,800	2,577	6,434
3.40	65.50	3,500	1,572	8,006

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	3.00	0.00	0.00
Span (in)	= 18.00	3.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 62.10	63.40	0.00	0.00
Length (ft)	= 50.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 4.00	0.00	0.00	0.00
Crest El. (ft)	= 64.40	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir flows checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	62.10	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
0.09	170	62.19	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
0.18	339	62.28	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
0.27	509	62.37	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
0.36	678	62.46	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
0.45	848	62.55	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
0.54	1,017	62.64	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
0.63	1,187	62.73	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
0.72	1,357	62.82	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
0.81	1,526	62.91	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
0.90	1,696	63.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
1.00	1,912	63.10	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
1.10	2,128	63.20	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
1.20	2,344	63.30	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
1.30	2,560	63.40	0.00	0.00	---	---	0.00	---	---	---	---	---	0.00
1.40	2,777	63.50	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.02
1.50	2,993	63.60	0.06 ic	0.06 ic	---	---	0.00	---	---	---	---	---	0.06
1.60	3,209	63.70	0.10 ic	0.10 ic	---	---	0.00	---	---	---	---	---	0.10
1.70	3,425	63.80	0.13 ic	0.12 ic	---	---	0.00	---	---	---	---	---	0.12
1.80	3,641	63.90	0.14 ic	0.14 ic	---	---	0.00	---	---	---	---	---	0.14
1.90	3,858	64.00	0.17 ic	0.16 ic	---	---	0.00	---	---	---	---	---	0.16
2.00	4,115	64.10	0.18 ic	0.18 ic	---	---	0.00	---	---	---	---	---	0.18
2.10	4,373	64.20	0.20 ic	0.19 ic	---	---	0.00	---	---	---	---	---	0.19
2.20	4,631	64.30	0.22 ic	0.21 ic	---	---	0.00	---	---	---	---	---	0.21
2.30	4,888	64.40	0.23 ic	0.22 ic	---	---	0.00	---	---	---	---	---	0.22
2.40	5,146	64.50	0.65 ic	0.23 ic	---	---	0.42	---	---	---	---	---	0.85
2.50	5,404	64.60	1.44 oc	0.25 ic	---	---	1.19	---	---	---	---	---	1.44
2.60	5,661	64.70	2.49 oc	0.26 ic	---	---	2.19	---	---	---	---	---	2.44
2.70	5,919	64.80	3.67 oc	0.27 ic	---	---	3.37	---	---	---	---	---	3.64
2.80	6,177	64.90	4.97 oc	0.28 ic	---	---	4.71	---	---	---	---	---	4.97
2.90	6,434	65.00	6.44 oc	0.25 ic	---	---	6.19	---	---	---	---	---	6.44
2.95	6,591	65.05	7.23 oc	0.25 ic	---	---	6.88	---	---	---	---	---	7.23
3.00	6,749	65.10	8.04 oc	0.23 ic	---	---	7.80	---	---	---	---	---	8.03
3.05	6,906	65.15	8.87 oc	0.22 ic	---	---	8.65	---	---	---	---	---	8.87
3.10	7,063	65.20	9.65 oc	0.20 ic	---	---	9.45 s	---	---	---	---	---	9.65
3.15	7,220	65.25	10.19 oc	0.19 ic	---	---	10.00 s	---	---	---	---	---	10.19
3.20	7,377	65.30	10.64 oc	0.18 ic	---	---	10.46 s	---	---	---	---	---	10.64
3.25	7,534	65.35	11.04 oc	0.17 ic	---	---	10.87 s	---	---	---	---	---	11.04
3.30	7,691	65.40	11.40 oc	0.17 ic	---	---	11.23 s	---	---	---	---	---	11.40

Continues on next page...

Bioret Basin

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.35	7,849	65.45	11.73 oc	0.18 ic	—	—	11.57 s	—	—	—	—	—	11.73
3.40	8,006	65.50	12.03 oc	0.15 ic	—	—	11.88 s	—	—	—	—	—	12.03

End

Hydraflow Rainfall Report

Hydraflow Hydrographs by Intelisolve v9.1

Wednesday, Nov 9, 2022

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	39.0824	9.5000	0.8528	——
2	45.6943	10.7000	0.8185	——
3	0.0000	0.0000	0.0000	——
5	99.7061	14.6000	0.9304	——
10	249.7597	21.8001	1.0961	——
25	115.7547	14.9000	0.8960	——
50	7.3699	0.1000	0.2544	——
100	403.8513	25.1001	1.1108	——

File name: TRENTON.idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	4.00	3.10	2.55	2.18	1.91	1.70	1.54	1.40	1.29	1.20	1.12	1.05
2	4.80	3.83	3.21	2.77	2.45	2.20	2.00	1.84	1.70	1.59	1.49	1.40
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.20	5.03	4.24	3.67	3.24	2.90	2.63	2.40	2.22	2.06	1.92	1.80
10	6.80	5.63	4.80	4.17	3.69	3.30	2.98	2.72	2.50	2.31	2.14	2.00
25	7.89	6.45	5.47	4.76	4.23	3.80	3.46	3.17	2.93	2.73	2.55	2.40
50	4.87	4.09	3.69	3.44	3.25	3.10	2.98	2.88	2.80	2.72	2.66	2.60
100	9.20	7.76	6.69	5.87	5.22	4.70	4.27	3.91	3.60	3.33	3.10	2.90

Tc = time in minutes. Values may exceed 60

Precip. file name: Mercer County.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	3.31	0.00	0.00	5.01	6.19	0.00	8.33
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	1.25	3.31	0.00	0.00	5.01	6.19	0.00	8.33

OVERFLOW SPILLWAY CALCULATIONS

DYNAMIC ENGINEERING

Overflow Spillway Calculations

Project:	**Proposed Residential Development**
Job #:	1279-99-010
Location:	2495 Brunswick Pike
Computed By:	TAZ
Checked By:	LPG
Date:	10/25/2022

Bioretention Basin

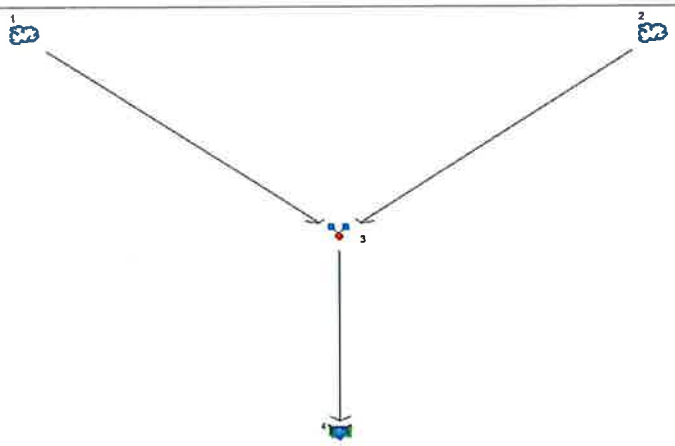
To Size Spillway:

- Assume complete blockage of the outlet control structure and no infiltration
- Route 2 & 10 year storm through basin assuming that the basin is filled with water up to the Emergency Spillway Elevation

	2 Year	10 Year
Spillway Width (ft.)	15.00	15.00
Spillway Elevation (ft.)	65.25	65.25
Flow through Spillway (Q) (cfs)	1.658	2.648
Water Surface Elevation (ft)	65.38	65.43
Depth of Flow (ft)	**0.13**	**0.18**
Area of Flow (A) (sf)*	**1.97**	**2.73**
Velocity (V) = Q / A (ft/sec)	**0.84**	**0.97**

⁂ V = < 2.0 FPS ⁂ Stability Achieved

Watershed Model Schematic



Legend

Hyd.	Origin	Description
1	SCS Runoff	Prop. DA Biore (Imp)
2	SCS Runoff	Prop. DA Biore (Perv)
3	Combine	Prop. DA Biore (Total)
4	Reservoir	Post Route Biore

Hydraflow Table of Contents

2022-11-08 ES.gpw

Hydraflow Hydrographs by Intelisolve v9.1

Wednesday, Nov 9, 2022

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No.	Hydrograph type (origin)	Inflow Hyd(s)	Peak Outflow (cfs)							Hydrograph description
			1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	
1	SCS Runoff	----	----	1.507	----	----	2.296	----	----	----	Prop. DA Biore (Imp)
2	SCS Runoff	----	----	0.290	----	----	0.570	----	----	----	Prop. DA Biore (Perv)
3	Combine	1, 2	----	1.797	----	----	2.866	----	----	----	Prop. DA Biore (Total)
4	Reservoir	3	----	1.658	----	----	2.548	----	----	----	Post Route Biore

Proj. file: 2022-11-08 ES.gpw | Wednesday, Nov 9, 2022

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	1.507	5	730	6,178	---	---	---	Prop. DA Biore (Imp)
2	SCS Runoff	0.290	5	730	1,063	---	---	---	Prop. DA Biore (Perv)
3	Combine	1.797	5	730	7,241	1, 2	---	---	Prop. DA Biore (Total)
4	Reservoir	1.658	5	735	7,240	3	85.38	404	Post Route Biore

2022-11-08 ES.gpw | Return Period: 2 Year | Wednesday, Nov 9, 2022

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 1

Prop. DA Biore (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.507 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 6,178 cuft
Drainage area	= 0.590 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.0 min
Total precip.	= 3.31 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp)

Time -- Outflow (min	cfs)	Time -- Outflow (min	cfs)	Time -- Outflow (min	cfs)	Time -- Outflow (min	cfs)
245	0.016	440	0.032	635	0.089	830	0.089
250	0.016	445	0.033	640	0.095	835	0.086
255	0.016	450	0.034	645	0.103	840	0.085
260	0.016	455	0.034	650	0.112	845	0.083
265	0.017	460	0.034	655	0.120	850	0.080
270	0.018	465	0.035	660	0.129	855	0.077
275	0.018	470	0.036	665	0.138	860	0.075
280	0.018	475	0.037	670	0.153	865	0.073
285	0.018	480	0.038	675	0.169	870	0.071
290	0.019	485	0.038	680	0.185	875	0.069
295	0.019	490	0.039	685	0.201	880	0.066
300	0.019	495	0.039	690	0.215	885	0.064
305	0.019	500	0.040	695	0.251	890	0.062
310	0.020	505	0.041	700	0.311	895	0.059
315	0.020	510	0.041	705	0.372	900	0.057
320	0.020	515	0.043	710	0.458	905	0.055
325	0.020	520	0.044	715	0.587	910	0.053
330	0.021	525	0.044	720	0.815	915	0.051
335	0.021	530	0.044	725	1.239	920	0.050
340	0.022	535	0.044	730	1.507 <<	925	0.050
345	0.022	540	0.046	735	1.268	930	0.050
350	0.022	545	0.047	740	0.898	935	0.049
355	0.022	550	0.048	745	0.569	940	0.048
360	0.022	555	0.051	750	0.438	945	0.047
365	0.023	560	0.053	755	0.363	950	0.047
370	0.023	565	0.055	760	0.291	955	0.046
375	0.024	570	0.057	765	0.247	960	0.046
380	0.025	575	0.059	770	0.217	965	0.045
385	0.025	580	0.062	775	0.202	970	0.044
390	0.026	585	0.064	780	0.186	975	0.044
395	0.027	590	0.067	785	0.169	980	0.044
400	0.027	595	0.068	790	0.154	985	0.043
405	0.028	600	0.070	795	0.141	990	0.042
410	0.028	605	0.073	800	0.132	995	0.041
415	0.029	610	0.076	805	0.123	1000	0.040
420	0.029	615	0.078	810	0.114	1005	0.041
425	0.031	620	0.080	815	0.106	1010	0.040
430	0.032	625	0.082	820	0.098	1015	0.039
435	0.032	630	0.085	825	0.093	1020	0.039

Continues on next page...

Prop. DA Biore (Imp)

Hydrograph Discharge Table

Time -- Outflow (min	cfs)	Time -- Outflow (min	cfs)
1025	0.038	1300	0.023
1030	0.037	1305	0.023
1035	0.036	1310	0.023
1040	0.036	1315	0.023
1045	0.035	1320	0.023
1050	0.035	1325	0.023
1055	0.034	1330	0.022
1060	0.033	1335	0.022
1065	0.033	1340	0.022
1070	0.033	1345	0.022
1075	0.032	1350	0.022
1080	0.031	1355	0.022
1085	0.030	1360	0.021
1090	0.030	1365	0.021
1095	0.030	1370	0.021
1100	0.029	1375	0.021
1105	0.029	1380	0.021
1110	0.029	1385	0.021
1115	0.029	1390	0.020
1120	0.029	1395	0.021
1125	0.029	1400	0.021
1130	0.029	1405	0.020
1135	0.029	1410	0.020
1140	0.028	1415	0.019
1145	0.028	1420	0.019
1150	0.028	1425	0.020
1155	0.028	1430	0.019
1160	0.028	1435	0.019
1165	0.028	1440	0.020
1170	0.028	1445	0.017
1175	0.027		
1180	0.027		
1185	0.026		
1190	0.026		
1195	0.026		
1200	0.026		
1205	0.026		
1210	0.026		
1215	0.026		
1220	0.025		
1225	0.025		
1230	0.025		
1235	0.026		
1240	0.026		
1245	0.025		
1250	0.025		
1255	0.024		
1260	0.024		
1265	0.024		
1270	0.024		
1275	0.024		
1280	0.024		
1285	0.023		
1290	0.024		
1295	0.024		

...End

Precipitation Report

Hyd. No. 1

Prop. DA Biore (Imp)

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

Rainfall Distribution Table

Time -- Precip. (min	in)	Time -- Precip. (min	in)	Time -- Precip. (min	in)	Time -- Precip. (min	in)
0	0.0000	220	0.0036	440	0.0056	660	0.0218
5	0.0036	225	0.0036	445	0.0063	665	0.0245
10	0.0030	230	0.0040	450	0.0060	670	0.0275
15	0.0030	235	0.0036	455	0.0060	675	0.0298
20	0.0026	240	0.0040	460	0.0063	680	0.0318
25	0.0030	245	0.0043	465	0.0066	685	0.0344
30	0.0030	250	0.0036	470	0.0063	690	0.0357
35	0.0026	255	0.0040	475	0.0066	695	0.0556
40	0.0030	260	0.0040	480	0.0066	700	0.0583
45	0.0033	265	0.0043	485	0.0070	705	0.0718
50	0.0030	270	0.0040	490	0.0066	710	0.0930
55	0.0030	275	0.0040	495	0.0070	715	0.1281
60	0.0030	280	0.0040	500	0.0070	720	0.1926
65	0.0033	285	0.0043	505	0.0070	725	0.3221
70	0.0030	290	0.0040	510	0.0073	730	0.1536
75	0.0033	295	0.0043	515	0.0076	735	0.0930
80	0.0030	300	0.0040	520	0.0073	740	0.0718
85	0.0033	305	0.0043	525	0.0076	745	0.0583
90	0.0033	310	0.0043	530	0.0073	750	0.0556
95	0.0030	315	0.0043	535	0.0076	755	0.0361
100	0.0033	320	0.0040	540	0.0079	760	0.0341
105	0.0033	325	0.0043	545	0.0079	765	0.0321
110	0.0033	330	0.0043	550	0.0086	770	0.0295
115	0.0033	335	0.0043	555	0.0089	775	0.0271
120	0.0033	340	0.0046	560	0.0089	780	0.0248
125	0.0033	345	0.0043	565	0.0096	785	0.0218
130	0.0036	350	0.0040	570	0.0096	790	0.0205
135	0.0033	355	0.0046	575	0.0103	795	0.0195
140	0.0033	360	0.0046	580	0.0106	800	0.0182
145	0.0036	365	0.0043	585	0.0109	805	0.0166
150	0.0033	370	0.0046	590	0.0113	810	0.0156
155	0.0036	375	0.0050	595	0.0113	815	0.0142
160	0.0036	380	0.0046	600	0.0119	820	0.0136
165	0.0036	385	0.0050	605	0.0126	825	0.0132
170	0.0033	390	0.0050	610	0.0126	830	0.0126
175	0.0036	395	0.0053	615	0.0129	835	0.0129
180	0.0036	400	0.0050	620	0.0129	840	0.0122
185	0.0036	405	0.0053	625	0.0139	845	0.0119
190	0.0036	410	0.0053	630	0.0139	850	0.0113
195	0.0036	415	0.0053	635	0.0156	855	0.0113
200	0.0036	420	0.0056	640	0.0166	860	0.0109
205	0.0036	425	0.0060	645	0.0182	865	0.0106
210	0.0040	430	0.0056	650	0.0195	870	0.0103
215	0.0040	435	0.0060	655	0.0205	875	0.0098

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Rainfall Distribution Table

Time -- Precip. (min	in)	Time -- Precip. (min	in)	Time -- Precip. (min	in)
880	0.0096	1155	0.0043	1430	0.0026
885	0.0093	1160	0.0040	1435	0.0030
890	0.0086	1165	0.0043	1440	0.0036
895	0.0086	1170	0.0040	1445	0.0000
900	0.0083	1175	0.0040		
905	0.0076	1180	0.0040		
910	0.0076	1185	0.0040		
915	0.0076	1190	0.0040		
920	0.0073	1195	0.0040		
925	0.0076	1200	0.0040		
930	0.0073	1205	0.0040		
935	0.0073	1210	0.0036		
940	0.0070	1215	0.0040		
945	0.0070	1220	0.0036		
950	0.0070	1225	0.0036		
955	0.0070	1230	0.0040		
960	0.0066	1235	0.0040		
965	0.0066	1240	0.0036		
970	0.0066	1245	0.0036		
975	0.0066	1250	0.0036		
980	0.0063	1255	0.0036		
985	0.0063	1260	0.0036		
990	0.0060	1265	0.0036		
995	0.0060	1270	0.0036		
1000	0.0063	1275	0.0036		
1005	0.0060	1280	0.0033		
1010	0.0056	1285	0.0036		
1015	0.0060	1290	0.0036		
1020	0.0056	1295	0.0033		
1025	0.0056	1300	0.0036		
1030	0.0053	1305	0.0033		
1035	0.0053	1310	0.0033		
1040	0.0053	1315	0.0036		
1045	0.0053	1320	0.0033		
1050	0.0050	1325	0.0033		
1055	0.0050	1330	0.0033		
1060	0.0050	1335	0.0033		
1065	0.0050	1340	0.0033		
1070	0.0046	1345	0.0033		
1075	0.0046	1350	0.0033		
1080	0.0046	1355	0.0030		
1085	0.0043	1360	0.0033		
1090	0.0046	1365	0.0033		
1095	0.0043	1370	0.0030		
1100	0.0043	1375	0.0030		
1105	0.0043	1380	0.0033		
1110	0.0043	1385	0.0030		
1115	0.0043	1390	0.0030		
1120	0.0043	1395	0.0033		
1125	0.0043	1400	0.0030		
1130	0.0043	1405	0.0030		
1135	0.0043	1410	0.0026		
1140	0.0040	1415	0.0030		
1145	0.0043	1420	0.0030		
1150	0.0040	1425	0.0030		

...End

Hydrograph Report

Hyd. No. 2

Prop. DA Biore (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.290 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,063 cuft
Drainage area	= 0.210 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.0 min
Total precip.	= 3.31 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp)

Time -- Outflow (min	cfs)	Time -- Outflow (min	cfs)	Time -- Outflow (min	cfs)	Time -- Outflow (min	cfs)
620	0.003	815	0.027	1010	0.011	1205	0.007
625	0.003	820	0.025	1015	0.010	1210	0.007
630	0.004	825	0.024	1020	0.010	1215	0.007
635	0.004	830	0.023	1025	0.010	1220	0.007
640	0.005	835	0.022	1030	0.010	1225	0.007
645	0.006	840	0.022	1035	0.010	1230	0.007
650	0.007	845	0.021	1040	0.010	1235	0.007
655	0.008	850	0.021	1045	0.009	1240	0.007
660	0.009	855	0.020	1050	0.009	1245	0.007
665	0.010	860	0.019	1055	0.009	1250	0.007
670	0.012	865	0.019	1060	0.009	1255	0.007
675	0.014	870	0.018	1065	0.009	1260	0.007
680	0.016	875	0.018	1070	0.009	1265	0.007
685	0.018	880	0.017	1075	0.009	1270	0.007
690	0.021	885	0.017	1080	0.008	1275	0.007
695	0.026	890	0.016	1085	0.008	1280	0.007
700	0.035	895	0.015	1090	0.008	1285	0.006
705	0.045	900	0.015	1095	0.008	1290	0.007
710	0.060	905	0.014	1100	0.008	1295	0.006
715	0.084	910	0.014	1105	0.008	1300	0.006
720	0.129	915	0.013	1110	0.008	1305	0.006
725	0.220	920	0.013	1115	0.008	1310	0.006
730	0.290 <<	925	0.013	1120	0.008	1315	0.006
735	0.259	930	0.013	1125	0.008	1320	0.006
740	0.193	935	0.013	1130	0.008	1325	0.006
745	0.129	940	0.013	1135	0.008	1330	0.006
750	0.102	945	0.012	1140	0.008	1335	0.006
755	0.085	950	0.012	1145	0.008	1340	0.006
760	0.069	955	0.012	1150	0.008	1345	0.006
765	0.059	960	0.012	1155	0.007	1350	0.006
770	0.053	965	0.012	1160	0.008	1355	0.006
775	0.049	970	0.012	1165	0.007	1360	0.006
780	0.046	975	0.012	1170	0.008	1365	0.006
785	0.042	980	0.012	1175	0.007	1370	0.006
790	0.038	985	0.011	1180	0.007	1375	0.006
795	0.035	990	0.011	1185	0.007	1380	0.006
800	0.033	995	0.011	1190	0.007	1385	0.006
805	0.031	1000	0.011	1195	0.007	1390	0.006
810	0.029	1005	0.011	1200	0.007	1395	0.006

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Hydrograph Discharge Table

Time -- Outflow (min	cfs)
1400	0.006
1405	0.006
1410	0.005
1415	0.005
1420	0.005
1425	0.005
1430	0.005
1435	0.005
1440	0.006
1445	0.005

...End

Precipitation Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 2

Prop. DA Biore (Perv)

Storm Frequency	= 2 yrs	Time interval	= 5 min
Total precip.	= 3.3100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

Rainfall Distribution Table

Time (min)	Precip. in)	Time (min	Precip. in)	Time (min	Precip. in)	Time (min	Precip. in)
0	0.0000	220	0.0036	440	0.0056	660	0.0218
5	0.0036	225	0.0036	445	0.0063	665	0.0245
10	0.0030	230	0.0040	450	0.0060	670	0.0275
15	0.0030	235	0.0036	455	0.0060	675	0.0298
20	0.0026	240	0.0040	460	0.0063	680	0.0318
25	0.0030	245	0.0043	465	0.0066	685	0.0344
30	0.0030	250	0.0036	470	0.0063	690	0.0357
35	0.0026	255	0.0040	475	0.0066	695	0.0556
40	0.0030	260	0.0040	480	0.0066	700	0.0583
45	0.0033	265	0.0043	485	0.0070	705	0.0718
50	0.0030	270	0.0040	490	0.0066	710	0.0930
55	0.0030	275	0.0040	495	0.0070	715	0.1281
60	0.0030	280	0.0040	500	0.0070	720	0.1926
65	0.0033	285	0.0043	505	0.0070	725	0.3221
70	0.0030	290	0.0040	510	0.0073	730	0.1536
75	0.0033	295	0.0043	515	0.0076	735	0.0930
80	0.0030	300	0.0040	520	0.0073	740	0.0718
85	0.0033	305	0.0043	525	0.0076	745	0.0583
90	0.0033	310	0.0043	530	0.0073	750	0.0556
95	0.0030	315	0.0043	535	0.0076	755	0.0361
100	0.0033	320	0.0040	540	0.0079	760	0.0341
105	0.0033	325	0.0043	545	0.0079	765	0.0321
110	0.0033	330	0.0043	550	0.0086	770	0.0295
115	0.0033	335	0.0043	555	0.0089	775	0.0271
120	0.0033	340	0.0046	560	0.0089	780	0.0248
125	0.0033	345	0.0043	565	0.0096	785	0.0218
130	0.0036	350	0.0040	570	0.0096	790	0.0205
135	0.0033	355	0.0046	575	0.0103	795	0.0195
140	0.0033	360	0.0046	580	0.0106	800	0.0182
145	0.0036	365	0.0043	585	0.0109	805	0.0166
150	0.0033	370	0.0046	590	0.0113	810	0.0156
155	0.0036	375	0.0050	595	0.0113	815	0.0142
160	0.0036	380	0.0046	600	0.0119	820	0.0136
165	0.0036	385	0.0050	605	0.0126	825	0.0132
170	0.0033	390	0.0050	610	0.0126	830	0.0126
175	0.0036	395	0.0053	615	0.0129	835	0.0129
180	0.0036	400	0.0050	620	0.0129	840	0.0122
185	0.0036	405	0.0053	625	0.0139	845	0.0119
190	0.0036	410	0.0053	630	0.0139	850	0.0113
195	0.0036	415	0.0053	635	0.0156	855	0.0113
200	0.0036	420	0.0056	640	0.0166	860	0.0109
205	0.0036	425	0.0060	645	0.0182	865	0.0106
210	0.0040	430	0.0056	650	0.0195	870	0.0103
215	0.0040	435	0.0060	655	0.0205	875	0.0096

Continues on next page...

Prop. DA Biore (Perv)

Rainfall Distribution Table

Time (min	Precip. in)	Time (min	Precip. in)	Time (min	Precip. in)
880	0.0096	1155	0.0043	1430	0.0026
885	0.0093	1160	0.0040	1435	0.0030
890	0.0086	1165	0.0043	1440	0.0036
895	0.0086	1170	0.0040	1445	0.0000
900	0.0083	1175	0.0040		
905	0.0076	1180	0.0040	*...End*	
910	0.0076	1185	0.0040		
915	0.0076	1190	0.0040		
920	0.0073	1195	0.0040		
925	0.0076	1200	0.0040		
930	0.0073	1205	0.0040		
935	0.0073	1210	0.0036		
940	0.0070	1215	0.0040		
945	0.0070	1220	0.0036		
950	0.0070	1225	0.0036		
955	0.0070	1230	0.0040		
960	0.0066	1235	0.0040		
965	0.0066	1240	0.0036		
970	0.0066	1245	0.0036		
975	0.0066	1250	0.0036		
980	0.0063	1255	0.0036		
985	0.0063	1260	0.0036		
990	0.0060	1265	0.0036		
995	0.0060	1270	0.0036		
1000	0.0063	1275	0.0036		
1005	0.0060	1280	0.0033		
1010	0.0056	1285	0.0036		
1015	0.0060	1290	0.0036		
1020	0.0056	1295	0.0033		
1025	0.0056	1300	0.0036		
1030	0.0053	1305	0.0033		
1035	0.0053	1310	0.0033		
1040	0.0053	1315	0.0036		
1045	0.0053	1320	0.0033		
1050	0.0050	1325	0.0033		
1055	0.0050	1330	0.0033		
1060	0.0050	1335	0.0033		
1065	0.0050	1340	0.0033		
1070	0.0046	1345	0.0033		
1075	0.0046	1350	0.0033		
1080	0.0046	1355	0.0030		
1085	0.0043	1360	0.0033		
1090	0.0046	1365	0.0033		
1095	0.0043	1370	0.0030		
1100	0.0043	1375	0.0030		
1105	0.0043	1380	0.0033		
1110	0.0043	1385	0.0030		
1115	0.0043	1390	0.0030		
1120	0.0043	1395	0.0033		
1125	0.0043	1400	0.0030		
1130	0.0043	1405	0.0030		
1135	0.0043	1410	0.0026		
1140	0.0040	1415	0.0030		
1145	0.0043	1420	0.0030		
1150	0.0040	1425	0.0030		

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 3

Prop. DA Biore (Total)

Hydrograph type	= Combine	Peak discharge	= 1.797 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 7,241 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 0.800 ac

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp)

Time (min)	Hyd. 1 + (cfs)	Hyd. 2 = (cfs)	Outflow (cfs)
285	0.018	0.000	0.018
290	0.019	0.000	0.019
295	0.019	0.000	0.019
300	0.019	0.000	0.019
305	0.019	0.000	0.019
310	0.020	0.000	0.020
315	0.020	0.000	0.020
320	0.020	0.000	0.020
325	0.020	0.000	0.020
330	0.021	0.000	0.021
335	0.021	0.000	0.021
340	0.022	0.000	0.022
345	0.022	0.000	0.022
350	0.022	0.000	0.022
355	0.022	0.000	0.022
360	0.022	0.000	0.022
365	0.023	0.000	0.023
370	0.023	0.000	0.023
375	0.024	0.000	0.024
380	0.025	0.000	0.025
385	0.025	0.000	0.025
390	0.026	0.000	0.026
395	0.027	0.000	0.027
400	0.027	0.000	0.027
405	0.028	0.000	0.028
410	0.028	0.000	0.028
415	0.029	0.000	0.029
420	0.029	0.000	0.029
425	0.031	0.000	0.031
430	0.032	0.000	0.032
435	0.032	0.000	0.032
440	0.032	0.000	0.032
445	0.033	0.000	0.033
450	0.034	0.000	0.034
455	0.034	0.000	0.034
460	0.034	0.000	0.034
465	0.035	0.000	0.035
470	0.036	0.000	0.036
475	0.037	0.000	0.037
480	0.038	0.000	0.038
485	0.038	0.000	0.038
490	0.039	0.000	0.039
495	0.039	0.000	0.039
500	0.040	0.000	0.040

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Prop. DA Biore (Total)

Hydrograph Discharge Table

Time (min)	Hyd. 1 + (cfs)	Hyd. 2 = (cfs)	Outflow (cfs)
505	0.041	0.000	0.041
510	0.041	0.000	0.041
515	0.043	0.000	0.043
520	0.044	0.000	0.044
525	0.044	0.000	0.044
530	0.044	0.000	0.044
535	0.044	0.000	0.044
540	0.046	0.000	0.046
545	0.047	0.000	0.047
550	0.048	0.000	0.048
555	0.051	0.000	0.051
560	0.053	0.000	0.053
565	0.055	0.000	0.055
570	0.057	0.000	0.057
575	0.059	0.001	0.059
580	0.062	0.001	0.062
585	0.064	0.001	0.065
590	0.067	0.001	0.068
595	0.068	0.001	0.070
600	0.070	0.002	0.072
605	0.073	0.002	0.075
610	0.076	0.002	0.078
615	0.078	0.003	0.081
620	0.080	0.003	0.083
625	0.082	0.003	0.085
630	0.085	0.004	0.088
635	0.089	0.004	0.093
640	0.095	0.005	0.100
645	0.103	0.006	0.108
650	0.112	0.007	0.118
655	0.120	0.008	0.128
660	0.129	0.009	0.137
665	0.138	0.010	0.148
670	0.153	0.012	0.164
675	0.169	0.014	0.183
680	0.185	0.016	0.201
685	0.201	0.018	0.219
690	0.215	0.021	0.236
695	0.251	0.026	0.278
700	0.311	0.035	0.347
705	0.372	0.045	0.417
710	0.458	0.060	0.518
715	0.587	0.084	0.671
720	0.815	0.129	0.944
725	1.239	0.220	1.460
730	1.507 <<	0.290 <<	1.797 <<
735	1.268	0.259	1.527
740	0.898	0.193	1.091
745	0.569	0.129	0.697
750	0.438	0.102	0.540
755	0.363	0.085	0.448
760	0.291	0.069	0.361
765	0.247	0.059	0.306
770	0.217	0.053	0.270
775	0.202	0.049	0.251
780	0.186	0.046	0.232

Continues on next page...

Prop. DA Biore (Total)

Hydrograph Discharge Table

Time (min)	Hyd. 1 + (cfs)	Hyd. 2 = (cfs)	Outflow (cfs)
785	0.169	0.042	0.211
790	0.154	0.038	0.192
795	0.141	0.035	0.177
800	0.132	0.033	0.165
805	0.123	0.031	0.154
810	0.114	0.029	0.143
815	0.106	0.027	0.133
820	0.098	0.025	0.123
825	0.093	0.024	0.116
830	0.089	0.023	0.111
835	0.086	0.022	0.108
840	0.085	0.022	0.106
845	0.083	0.021	0.104
850	0.080	0.021	0.100
855	0.077	0.020	0.097
860	0.075	0.019	0.094
865	0.073	0.019	0.092
870	0.071	0.018	0.090
875	0.069	0.018	0.086
880	0.066	0.017	0.083
885	0.064	0.017	0.081
890	0.062	0.016	0.078
895	0.059	0.015	0.075
900	0.057	0.015	0.072
905	0.055	0.014	0.070
910	0.053	0.014	0.067
915	0.051	0.013	0.065
920	0.050	0.013	0.063
925	0.050	0.013	0.063
930	0.050	0.013	0.063
935	0.049	0.013	0.062
940	0.048	0.013	0.061
945	0.047	0.012	0.060
950	0.047	0.012	0.059
955	0.046	0.012	0.059
960	0.046	0.012	0.058
965	0.045	0.012	0.057
970	0.044	0.012	0.056
975	0.044	0.012	0.056
980	0.044	0.012	0.055
985	0.043	0.011	0.054
990	0.042	0.011	0.053
995	0.041	0.011	0.051
1000	0.040	0.011	0.051
1005	0.041	0.011	0.051
1010	0.040	0.011	0.050
1015	0.039	0.010	0.050
1020	0.039	0.010	0.049
1025	0.038	0.010	0.048
1030	0.037	0.010	0.047
1035	0.036	0.010	0.046
1040	0.036	0.010	0.045
1045	0.035	0.009	0.045
1050	0.035	0.009	0.044
1055	0.034	0.009	0.043
1060	0.033	0.009	0.042

Continues on next page...

Prop. DA Biore (Total)

Hydrograph Discharge Table

Time (min)	Hyd. 1 + (cfs)	Hyd. 2 = (cfs)	Outflow (cfs)
1065	0.033	0.009	0.042
1070	0.033	0.009	0.041
1075	0.032	0.009	0.040
1080	0.031	0.008	0.040
1085	0.030	0.008	0.039
1090	0.030	0.008	0.038
1095	0.030	0.008	0.038
1100	0.029	0.008	0.037
1105	0.029	0.008	0.037
1110	0.029	0.008	0.036
1115	0.029	0.008	0.036
1120	0.029	0.008	0.036
1125	0.029	0.008	0.036
1130	0.029	0.008	0.036
1135	0.029	0.008	0.036
1140	0.028	0.008	0.036
1145	0.028	0.008	0.035
1150	0.028	0.008	0.035
1155	0.028	0.007	0.035
1160	0.028	0.008	0.035
1165	0.028	0.007	0.035
1170	0.028	0.008	0.035
1175	0.027	0.007	0.034
1180	0.027	0.007	0.034
1185	0.026	0.007	0.034
1190	0.026	0.007	0.034
1195	0.026	0.007	0.034
1200	0.026	0.007	0.034
1205	0.026	0.007	0.034
1210	0.026	0.007	0.033
1215	0.026	0.007	0.033
1220	0.025	0.007	0.032
1225	0.025	0.007	0.032
1230	0.025	0.007	0.032
1235	0.026	0.007	0.033
1240	0.026	0.007	0.033
1245	0.025	0.007	0.032
1250	0.025	0.007	0.031
1255	0.024	0.007	0.031
1260	0.024	0.007	0.031
1265	0.024	0.007	0.031
1270	0.024	0.007	0.031
1275	0.024	0.007	0.031
1280	0.024	0.007	0.030
1285	0.023	0.006	0.030
1290	0.024	0.007	0.030
1295	0.024	0.006	0.030
1300	0.023	0.006	0.030
1305	0.023	0.006	0.030
1310	0.023	0.006	0.029
1315	0.023	0.006	0.029
1320	0.023	0.006	0.029
1325	0.023	0.006	0.029
1330	0.022	0.006	0.029
1335	0.022	0.006	0.028
1340	0.022	0.006	0.028

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Prop. DA Biore (Total)

Hydrograph Discharge Table

Time (min)	Hyd. 1 + (cfs)	Hyd. 2 = (cfs)	Outflow (cfs)
1345	0.022	0.006	0.028
1350	0.022	0.006	0.028
1355	0.022	0.006	0.028
1360	0.021	0.006	0.027
1365	0.021	0.006	0.027
1370	0.021	0.006	0.027
1375	0.021	0.006	0.026
1380	0.021	0.006	0.026
1385	0.021	0.006	0.026
1390	0.020	0.006	0.026
1395	0.021	0.006	0.026
1400	0.021	0.006	0.027
1405	0.020	0.006	0.026
1410	0.020	0.005	0.025
1415	0.019	0.005	0.024
1420	0.019	0.005	0.025
1425	0.020	0.005	0.025
1430	0.019	0.005	0.025
1435	0.019	0.005	0.024
1440	0.020	0.006	0.026
1445	0.017	0.005	0.022

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 4

Post Route Biore

Hydrograph type	= Reservoir	Peak discharge	= 1.658 cfs
Storm frequency	= 2 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 7,240 cuft
Inflow hyd. No.	= 3 - Prop. DA Biore (Total)	Reservoir name	= Bioret Basin
Max. Elevation	= 65.38 ft	Max. Storage	= 404 cuft

Storage Indication method used.

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp)

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
270	0.018	65.25	----	----	----	----	0.017	----	----	----	----	0.017
275	0.018	65.25	----	----	----	----	0.017	----	----	----	----	0.017
280	0.018	65.25	----	----	----	----	0.017	----	----	----	----	0.017
285	0.018	65.25	----	----	----	----	0.018	----	----	----	----	0.018
290	0.019	65.25	----	----	----	----	0.018	----	----	----	----	0.018
295	0.019	65.25	----	----	----	----	0.018	----	----	----	----	0.018
300	0.019	65.25	----	----	----	----	0.019	----	----	----	----	0.019
305	0.019	65.25	----	----	----	----	0.019	----	----	----	----	0.019
310	0.020	65.25	----	----	----	----	0.019	----	----	----	----	0.019
315	0.020	65.25	----	----	----	----	0.020	----	----	----	----	0.020
320	0.020	65.25	----	----	----	----	0.020	----	----	----	----	0.020
325	0.020	65.25	----	----	----	----	0.020	----	----	----	----	0.020
330	0.021	65.25	----	----	----	----	0.020	----	----	----	----	0.020
335	0.021	65.25	----	----	----	----	0.020	----	----	----	----	0.020
340	0.022	65.25	----	----	----	----	0.021	----	----	----	----	0.021
345	0.022	65.25	----	----	----	----	0.021	----	----	----	----	0.021
350	0.022	65.25	----	----	----	----	0.022	----	----	----	----	0.022
355	0.022	65.25	----	----	----	----	0.022	----	----	----	----	0.022
360	0.022	65.25	----	----	----	----	0.022	----	----	----	----	0.022
365	0.023	65.25	----	----	----	----	0.022	----	----	----	----	0.022
370	0.023	65.25	----	----	----	----	0.023	----	----	----	----	0.023
375	0.024	65.25	----	----	----	----	0.023	----	----	----	----	0.023
380	0.025	65.25	----	----	----	----	0.024	----	----	----	----	0.024
385	0.025	65.25	----	----	----	----	0.024	----	----	----	----	0.024
390	0.026	65.25	----	----	----	----	0.025	----	----	----	----	0.025
395	0.027	65.25	----	----	----	----	0.025	----	----	----	----	0.025
400	0.027	65.25	----	----	----	----	0.026	----	----	----	----	0.026
405	0.028	65.25	----	----	----	----	0.027	----	----	----	----	0.027
410	0.028	65.25	----	----	----	----	0.027	----	----	----	----	0.027
415	0.029	65.25	----	----	----	----	0.028	----	----	----	----	0.028
420	0.029	65.25	----	----	----	----	0.028	----	----	----	----	0.028
425	0.031	65.25	----	----	----	----	0.029	----	----	----	----	0.029
430	0.032	65.25	----	----	----	----	0.030	----	----	----	----	0.030
435	0.032	65.25	----	----	----	----	0.031	----	----	----	----	0.031
440	0.032	65.26	----	----	----	----	0.031	----	----	----	----	0.031
445	0.033	65.26	----	----	----	----	0.032	----	----	----	----	0.032
450	0.034	65.26	----	----	----	----	0.032	----	----	----	----	0.032
455	0.034	65.26	----	----	----	----	0.033	----	----	----	----	0.033
460	0.034	65.26	----	----	----	----	0.034	----	----	----	----	0.034
465	0.035	65.26	----	----	----	----	0.034	----	----	----	----	0.034
470	0.036	65.26	----	----	----	----	0.035	----	----	----	----	0.035
475	0.037	65.26	----	----	----	----	0.036	----	----	----	----	0.036

Continues on next page...

Post Route Biore

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
480	0.038	65.26					0.036					0.036
485	0.038	65.26					0.037					0.037
490	0.039	65.26					0.038					0.038
495	0.039	65.26					0.038					0.039
500	0.040	65.26					0.039					0.039
505	0.041	65.26					0.040					0.040
510	0.041	65.26					0.040					0.040
515	0.043	65.26					0.041					0.041
520	0.044	65.26					0.042					0.042
525	0.044	65.26					0.043					0.043
530	0.044	65.26					0.043					0.043
535	0.044	65.26					0.044					0.044
540	0.046	65.26					0.044					0.044
545	0.047	65.26					0.045					0.045
550	0.048	65.26					0.046					0.046
555	0.051	65.26					0.048					0.048
560	0.053	65.26					0.050					0.050
565	0.055	65.26					0.051					0.051
570	0.057	65.26					0.053					0.054
575	0.059	65.26					0.056					0.056
580	0.062	65.26					0.058					0.058
585	0.065	65.26					0.060					0.060
590	0.068	65.26					0.063					0.063
595	0.070	65.26					0.066					0.066
600	0.072	65.26					0.068					0.068
605	0.075	65.26					0.070					0.070
610	0.078	65.26					0.073					0.073
615	0.081	65.26					0.076					0.076
620	0.083	65.26					0.079					0.079
625	0.085	65.26					0.081					0.081
630	0.088	65.26					0.083					0.083
635	0.093	65.26					0.087					0.087
640	0.100	65.26					0.091					0.091
645	0.108	65.27					0.097					0.097
650	0.118	65.27					0.104					0.104
655	0.128	65.27					0.112					0.112
660	0.137	65.27					0.121					0.121
665	0.146	65.27					0.131					0.131
670	0.164	65.27					0.142					0.142
675	0.183	65.28					0.156					0.156
680	0.201	65.28					0.180					0.180
685	0.219	65.28					0.201					0.201
690	0.236	65.28					0.219					0.219
695	0.278	65.28					0.245					0.245
700	0.347	65.29					0.290					0.290
705	0.417	65.29					0.352					0.352
710	0.518	65.30					0.430					0.430
715	0.671	65.31					0.560					0.560
720	0.944	65.32					0.757					0.757
725	1.460	65.34					1.142					1.142
730	1.797 <<	65.37					1.592					1.592
735	1.527	65.37 <<					1.658					1.658 <<
740	1.091	65.35					1.331					1.330
745	0.697	65 33					0.941					0.942
750	0.540	65 32					0.672					0.672
755	0.448	65.31					0.531					0.531

Continues on next page...

Post Route Biore

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
760	0.361	65.30					0.431					0.431
765	0.306	65.29					0.365					0.365
770	0.270	65.29					0.313					0.313
775	0.251	65.29					0.278					0.278
780	0.232	65.28					0.253					0.253
785	0.211	65.28					0.232					0.232
790	0.192	65.28					0.211					0.211
795	0.177	65.28					0.193					0.193
800	0.165	65.28					0.178					0.178
805	0.154	65.28					0.166					0.166
810	0.143	65.28					0.154					0.154
815	0.133	65.27					0.147					0.147
820	0.123	65.27					0.139					0.139
825	0.116	65.27					0.131					0.131
830	0.111	65.27					0.123					0.123
835	0.108	65.27					0.117					0.117
840	0.106	65.27					0.113					0.113
845	0.104	65.27					0.110					0.110
850	0.100	65.27					0.106					0.106
855	0.097	65.27					0.103					0.103
860	0.094	65.27					0.100					0.100
865	0.092	65.27					0.097					0.097
870	0.090	65.27					0.094					0.094
875	0.086	65.26					0.092					0.092
880	0.083	65.26					0.089					0.089
885	0.081	65.26					0.086					0.086
890	0.078	65.26					0.083					0.083
895	0.075	65.26					0.080					0.080
900	0.072	65.26					0.077					0.077
905	0.070	65.26					0.075					0.075
910	0.067	65.26					0.072					0.072
915	0.065	65.26					0.069					0.069
920	0.063	65.26					0.067					0.067
925	0.063	65.26					0.065					0.065
930	0.063	65.26					0.064					0.064
935	0.062	65.26					0.063					0.063
940	0.061	65.26					0.063					0.063
945	0.060	65.26					0.062					0.062
950	0.059	65.26					0.061					0.061
955	0.059	65.26					0.060					0.060
960	0.058	65.26					0.059					0.059
965	0.057	65.26					0.058					0.058
970	0.056	65.26					0.058					0.058
975	0.056	65.26					0.057					0.057
980	0.055	65.26					0.056					0.056
985	0.054	65.26					0.056					0.056
990	0.053	65.26					0.055					0.055
995	0.051	65.26					0.054					0.054
1000	0.051	65.26					0.053					0.053
1005	0.051	65.26					0.052					0.052
1010	0.050	65.26					0.052					0.052
1015	0.050	65.26					0.051					0.051
1020	0.049	65.26					0.050					0.050
1025	0.048	65.26					0.050					0.050
1030	0.047	65.26					0.049					0.049
1035	0.046	65.26					0.048					0.048

Continues on next page...

Post Route Biore

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
1040	0.045	65.26					0.047					0.047
1045	0.045	65.26					0.046					0.046
1050	0.044	65.26					0.045					0.045
1055	0.043	65.26					0.045					0.045
1060	0.042	65.26					0.044					0.044
1065	0.042	65.26					0.043					0.043
1070	0.041	65.26					0.042					0.042
1075	0.040	65.26					0.042					0.042
1080	0.040	65.26					0.041					0.041
1085	0.039	65.26					0.040					0.040
1090	0.038	65.26					0.039					0.039
1095	0.038	65.26					0.039					0.039
1100	0.037	65.26					0.038					0.038
1105	0.037	65.26					0.038					0.038
1110	0.036	65.26					0.037					0.037
1115	0.036	65.26					0.037					0.037
1120	0.036	65.26					0.037					0.037
1125	0.036	65.26					0.037					0.037
1130	0.036	65.26					0.037					0.037
1135	0.036	65.26					0.037					0.036
1140	0.036	65.26					0.036					0.036
1145	0.035	65.26					0.036					0.036
1150	0.035	65.26					0.036					0.036
1155	0.035	65.26					0.035					0.035
1160	0.035	65.26					0.035					0.035
1165	0.035	65.26					0.035					0.035
1170	0.035	65.26					0.035					0.035
1175	0.034	65.26					0.035					0.035
1180	0.034	65.26					0.035					0.035
1185	0.034	65.26					0.034					0.034
1190	0.034	65.26					0.034					0.034
1195	0.034	65.26					0.034					0.034
1200	0.034	65.26					0.034					0.034
1205	0.034	65.26					0.034					0.034
1210	0.033	65.26					0.034					0.034
1215	0.033	65.26					0.033					0.033
1220	0.032	65.26					0.033					0.033
1225	0.032	65.26					0.033					0.033
1230	0.032	65.26					0.032					0.032
1235	0.033	65.26					0.032					0.032
1240	0.033	65.26					0.032					0.032
1245	0.032	65.26					0.032					0.032
1250	0.031	65.26					0.032					0.032
1255	0.031	65.26					0.032					0.032
1260	0.031	65.26					0.031					0.031
1265	0.031	65.26					0.031					0.031
1270	0.031	65.26					0.031					0.031
1275	0.031	65.26					0.031					0.031
1280	0.030	65.26					0.031					0.031
1285	0.030	65.25					0.031					0.031
1290	0.030	65.25					0.030					0.030
1295	0.030	65.25					0.030					0.030
1300	0.030	65.25					0.030					0.030
1305	0.030	65.25					0.030					0.030
1310	0.029	65.25					0.030					0.030
1315	0.029	65.25					0.029					0.029

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Post Route Biore

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
1320	0.029	65.25					0.029					0.029
1325	0.029	65.25					0.029					0.029
1330	0.029	65.25					0.029					0.029
1335	0.028	65.25					0.029					0.029
1340	0.028	65.25					0.028					0.028
1345	0.028	65.25					0.028					0.028
1350	0.028	65.25					0.028					0.028
1355	0.028	65.25					0.028					0.028
1360	0.027	65.25					0.028					0.028
1365	0.027	65.25					0.028					0.028
1370	0.027	65.25					0.027					0.027
1375	0.026	65.25					0.027					0.027
1380	0.026	65.25					0.027					0.027
1385	0.026	65.25					0.027					0.027
1390	0.026	65.25					0.026					0.027
1395	0.026	65.25					0.026					0.026
1400	0.027	65.25					0.026					0.026
1405	0.026	65.25					0.026					0.026
1410	0.025	65.25					0.026					0.026
1415	0.024	65.25					0.025					0.025
1420	0.025	65.25					0.025					0.025
1425	0.025	65.25					0.025					0.025
1430	0.025	65.25					0.025					0.025
1435	0.024	65.25					0.025					0.025
1440	0.026	65.25					0.025					0.025
1445	0.022	65.25					0.024					0.024
1450	0.012	65.25					0.021					0.021

...End

Pond Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Pond No. 2 - Bioret Basin

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 65.25 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	65.25	3,150	0	0
0.25	65.50	3,500	831	831

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 15.00	0.00	0.00	0.00
Crest El. (ft)	= 65.25	0.00	0.00	0.00
Weir Coeff.	= 2.60	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= No	No	No	No

Exfil (in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir flows checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	65.25	---	---	---	---	0.00	---	---	---	---	---	0.00
0.03	83	65.28	---	---	---	---	0.15	---	---	---	---	---	0.15
0.05	166	65.30	---	---	---	---	0.44	---	---	---	---	---	0.44
0.08	249	65.33	---	---	---	---	0.80	---	---	---	---	---	0.80
0.10	332	65.35	---	---	---	---	1.23	---	---	---	---	---	1.23
0.13	415	65.38	---	---	---	---	1.72	---	---	---	---	---	1.72
0.15	498	65.40	---	---	---	---	2.27	---	---	---	---	---	2.27
0.18	582	65.43	---	---	---	---	2.86	---	---	---	---	---	2.86
0.20	665	65.45	---	---	---	---	3.49	---	---	---	---	---	3.49
0.23	748	65.48	---	---	---	---	4.16	---	---	---	---	---	4.16
0.25	831	65.50	---	---	---	---	4.86	---	---	---	---	---	4.86

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.1

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	2.296	5	730	9,584	---	---	---	Prop. DA Biore (Imp)
2	SCS Runoff	0.570	5	730	2,074	---	---	---	Prop. DA Biore (Perv)
3	Combine	2.866	5	730	11,657	1, 2	---	---	Prop. DA Biore (Total)
4	Reservoir	2.648	5	735	11,657	3	65.43	552	Post Route Biore

2022-11-08 ES.gpw | Return Period: 10 Year | Wednesday, Nov 9, 2022

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1 — Wednesday, Nov 9, 2022

Hyd. No. 1

Prop. DA Biore (Imp)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.296 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 6,178 cuft
Drainage area	= 0.590 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.0 min
Total precip.	= 5.01 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp)

Time -- Outflow (min	cfs)	Time -- Outflow (min	cfs)	Time -- Outflow (min	cfs)	Time -- Outflow (min	cfs)
190	0.024	385	0.043	580	0.098	775	0.306
195	0.024	390	0.043	585	0.101	780	0.282
200	0.024	395	0.045	590	0.105	785	0.257
205	0.025	400	0.046	595	0.108	790	0.233
210	0.026	405	0.046	600	0.111	795	0.215
215	0.027	410	0.047	605	0.115	800	0.200
220	0.028	415	0.048	610	0.119	805	0.187
225	0.027	420	0.049	615	0.123	810	0.174
230	0.027	425	0.051	620	0.125	815	0.161
235	0.028	430	0.052	625	0.128	820	0.149
240	0.028	435	0.053	630	0.133	825	0.141
245	0.030	440	0.053	635	0.139	830	0.135
250	0.030	445	0.054	640	0.148	835	0.131
255	0.030	450	0.055	645	0.160	840	0.129
260	0.030	455	0.056	650	0.174	845	0.125
265	0.031	460	0.056	655	0.187	850	0.121
270	0.032	465	0.058	660	0.200	855	0.117
275	0.032	470	0.059	665	0.215	860	0.114
280	0.032	475	0.060	670	0.236	865	0.111
285	0.033	480	0.061	675	0.262	870	0.108
290	0.033	485	0.062	680	0.287	875	0.104
295	0.034	490	0.064	685	0.310	880	0.100
300	0.034	495	0.064	690	0.332	885	0.097
305	0.034	500	0.065	695	0.387	890	0.094
310	0.035	505	0.065	700	0.479	895	0.090
315	0.036	510	0.067	705	0.572	900	0.087
320	0.036	515	0.069	710	0.703	905	0.084
325	0.035	520	0.070	715	0.900	910	0.080
330	0.036	525	0.071	720	1.246	915	0.078
335	0.036	530	0.071	725	1.891	920	0.076
340	0.037	535	0.071	730	2.296 <<	925	0.076
345	0.038	540	0.073	735	1.931	930	0.075
350	0.037	545	0.075	740	1.366	935	0.075
355	0.037	550	0.077	745	0.865	940	0.073
360	0.039	555	0.081	750	0.666	945	0.072
365	0.039	560	0.084	755	0.551	950	0.071
370	0.040	565	0.087	760	0.443	955	0.070
375	0.041	570	0.090	765	0.375	960	0.070
380	0.042	575	0.093	770	0.330	965	0.068

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Prop. DA Biore (Imp)

Hydrograph Discharge Table

Time -- Outflow (min	cfs)	Time -- Outflow (min	cfs)
970	0.067	1245	0.038
975	0.067	1250	0.037
980	0.066	1255	0.037
985	0.065	1260	0.037
990	0.063	1265	0.037
995	0.062	1270	0.037
1000	0.061	1275	0.037
1005	0.062	1280	0.036
1010	0.060	1285	0.035
1015	0.059	1290	0.036
1020	0.059	1295	0.036
1025	0.058	1300	0.035
1030	0.057	1305	0.035
1035	0.055	1310	0.034
1040	0.054	1315	0.035
1045	0.054	1320	0.035
1050	0.053	1325	0.034
1055	0.052	1330	0.034
1060	0.051	1335	0.033
1065	0.050	1340	0.033
1070	0.050	1345	0.033
1075	0.048	1350	0.033
1080	0.047	1355	0.033
1085	0.046	1360	0.032
1090	0.046	1365	0.033
1095	0.045	1370	0.032
1100	0.044	1375	0.031
1105	0.044	1380	0.031
1110	0.044	1385	0.031
1115	0.044	1390	0.031
1120	0.044	1395	0.031
1125	0.044	1400	0.031
1130	0.044	1405	0.031
1135	0.044	1410	0.030
1140	0.043	1415	0.029
1145	0.042	1420	0.029
1150	0.042	1425	0.030
1155	0.042	1430	0.029
1160	0.042	1435	0.029
1165	0.042	1440	0.031
1170	0.042	1445	0.026
1175	0.041		
1180	0.041	*...End*	
1185	0.040		
1190	0.040		
1195	0.040		
1200	0.040		
1205	0.040		
1210	0.039		
1215	0.039		
1220	0.039		
1225	0.038		
1230	0.038		
1235	0.039		
1240	0.039		

Precipitation Report

Hyd. No. 1

Prop. DA Biore (Imp)

Storm Frequency	= 10 yrs	Time interval	= 5 min
Total precip.	= 5.0100 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds		

Rainfall Distribution Table

Time -- Precip. (min	in)	Time -- Precip. (min	in)	Time -- Precip. (min	in)	Time -- Precip. (min	in)
0	0.0000	220	0.0055	440	0.0085	660	0.0331
5	0.0055	225	0.0055	445	0.0095	665	0.0371
10	0.0045	230	0.0060	450	0.0090	670	0.0416
15	0.0045	235	0.0055	455	0.0090	675	0.0451
20	0.0040	240	0.0060	460	0.0095	680	0.0481
25	0.0045	245	0.0065	465	0.0100	685	0.0521
30	0.0045	250	0.0055	470	0.0095	690	0.0541
35	0.0040	255	0.0060	475	0.0100	695	0.0842
40	0.0045	260	0.0060	480	0.0100	700	0.0882
45	0.0050	265	0.0065	485	0.0105	705	0.1087
50	0.0045	270	0.0060	490	0.0100	710	0.1408
55	0.0045	275	0.0060	495	0.0105	715	0.1939
60	0.0045	280	0.0060	500	0.0105	720	0.2916
65	0.0050	285	0.0065	505	0.0105	725	0.4875
70	0.0045	290	0.0060	510	0.0110	730	0.2325
75	0.0050	295	0.0065	515	0.0115	735	0.1408
80	0.0045	300	0.0060	520	0.0110	740	0.1087
85	0.0050	305	0.0065	525	0.0115	745	0.0882
90	0.0050	310	0.0065	530	0.0110	750	0.0842
95	0.0045	315	0.0065	535	0.0115	755	0.0546
100	0.0050	320	0.0060	540	0.0120	760	0.0516
105	0.0050	325	0.0065	545	0.0120	765	0.0486
110	0.0050	330	0.0065	550	0.0130	770	0.0446
115	0.0050	335	0.0065	555	0.0135	775	0.0411
120	0.0050	340	0.0070	560	0.0135	780	0.0376
125	0.0050	345	0.0065	565	0.0145	785	0.0331
130	0.0055	350	0.0060	570	0.0145	790	0.0311
135	0.0050	355	0.0070	575	0.0155	795	0.0296
140	0.0050	360	0.0070	580	0.0160	800	0.0276
145	0.0055	365	0.0065	585	0.0165	805	0.0250
150	0.0050	370	0.0070	590	0.0170	810	0.0235
155	0.0055	375	0.0075	595	0.0170	815	0.0215
160	0.0055	380	0.0070	600	0.0180	820	0.0205
165	0.0055	385	0.0075	605	0.0190	825	0.0200
170	0.0050	390	0.0075	610	0.0190	830	0.0190
175	0.0055	395	0.0080	615	0.0195	835	0.0195
180	0.0055	400	0.0075	620	0.0195	840	0.0185
185	0.0055	405	0.0080	625	0.0210	845	0.0180
190	0.0055	410	0.0080	630	0.0210	850	0.0170
195	0.0055	415	0.0080	635	0.0235	855	0.0170
200	0.0055	420	0.0085	640	0.0250	860	0.0165
205	0.0055	425	0.0090	645	0.0276	865	0.0160
210	0.0060	430	0.0085	650	0.0296	870	0.0155
215	0.0060	435	0.0090	655	0.0311	875	0.0145

Continues on next page...

Prop. DA Biore (Imp)

Rainfall Distribution Table

Time -- Precip. (min	in)	Time -- Precip. (min	in)	Time -- Precip. (min	in)
880	0.0145	1155	0.0065	1430	0.0040
885	0.0140	1160	0.0060	1435	0.0045
890	0.0130	1165	0.0065	1440	0.0055
895	0.0130	1170	0.0060	1445	0.0000
900	0.0125	1175	0.0060		
905	0.0115	1180	0.0060		
910	0.0115	1185	0.0060		
915	0.0115	1190	0.0060		
920	0.0110	1195	0.0060		
925	0.0115	1200	0.0060		
930	0.0110	1205	0.0060		
935	0.0110	1210	0.0055		
940	0.0105	1215	0.0060		
945	0.0105	1220	0.0055		
950	0.0105	1225	0.0055		
955	0.0105	1230	0.0060		
960	0.0100	1235	0.0060		
965	0.0100	1240	0.0055		
970	0.0100	1245	0.0055		
975	0.0100	1250	0.0055		
980	0.0095	1255	0.0055		
985	0.0095	1260	0.0055		
990	0.0090	1265	0.0055		
995	0.0090	1270	0.0055		
1000	0.0095	1275	0.0055		
1005	0.0090	1280	0.0050		
1010	0.0085	1285	0.0055		
1015	0.0090	1290	0.0055		
1020	0.0085	1295	0.0050		
1025	0.0085	1300	0.0055		
1030	0.0080	1305	0.0050		
1035	0.0080	1310	0.0050		
1040	0.0080	1315	0.0055		
1045	0.0080	1320	0.0050		
1050	0.0075	1325	0.0050		
1055	0.0075	1330	0.0050		
1060	0.0075	1335	0.0050		
1065	0.0075	1340	0.0050		
1070	0.0070	1345	0.0050		
1075	0.0070	1350	0.0050		
1080	0.0070	1355	0.0045		
1085	0.0065	1360	0.0050		
1090	0.0070	1365	0.0050		
1095	0.0065	1370	0.0045		
1100	0.0065	1375	0.0045		
1105	0.0065	1380	0.0050		
1110	0.0065	1385	0.0045		
1115	0.0065	1390	0.0045		
1120	0.0065	1395	0.0050		
1125	0.0065	1400	0.0045		
1130	0.0065	1405	0.0045		
1135	0.0065	1410	0.0040		
1140	0.0060	1415	0.0045		
1145	0.0065	1420	0.0045		
1150	0.0060	1425	0.0045		

...End

Hydrograph Report

Hyd. No. 2

Prop. DA Biore (Perv)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.570 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 5 min	Hyd. volume	= 1,063 cuft
Drainage area	= 0.210 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= USER	Time of conc. (Tc)	= 10.0 min
Total precip.	= 5.01 in	Distribution	= Custom
Storm duration	= NOAA Atlas 14 Type-C.cds	Shape factor	= 484

Hydrograph Discharge Table

(Printed values = 1.00% of Qp.)

Time -- Outflow (min	cfs)	Time -- Outflow (min	cfs)	Time -- Outflow (min	cfs)	Time -- Outflow (min	cfs)
565	0.006	760	0.126	955	0.021	1150	0.013
570	0.007	765	0.107	960	0.021	1155	0.013
575	0.007	770	0.095	965	0.021	1160	0.013
580	0.008	775	0.088	970	0.020	1165	0.013
585	0.008	780	0.082	975	0.020	1170	0.013
590	0.009	785	0.075	980	0.020	1175	0.013
595	0.010	790	0.068	985	0.020	1180	0.012
600	0.010	795	0.063	990	0.019	1185	0.012
605	0.011	800	0.059	995	0.019	1190	0.012
610	0.012	805	0.055	1000	0.019	1195	0.012
615	0.012	810	0.051	1005	0.019	1200	0.012
620	0.013	815	0.047	1010	0.018	1205	0.012
625	0.014	820	0.044	1015	0.018	1210	0.012
630	0.015	825	0.042	1020	0.018	1215	0.012
635	0.016	830	0.040	1025	0.018	1220	0.012
640	0.018	835	0.039	1030	0.017	1225	0.012
645	0.020	840	0.038	1035	0.017	1230	0.012
650	0.022	845	0.037	1040	0.016	1235	0.012
655	0.024	850	0.036	1045	0.016	1240	0.012
660	0.027	855	0.035	1050	0.016	1245	0.012
665	0.030	860	0.034	1055	0.016	1250	0.011
670	0.034	865	0.033	1060	0.015	1255	0.011
675	0.039	870	0.032	1065	0.015	1260	0.011
680	0.044	875	0.031	1070	0.015	1265	0.011
685	0.049	880	0.030	1075	0.015	1270	0.011
690	0.055	885	0.029	1080	0.014	1275	0.011
695	0.066	890	0.028	1085	0.014	1280	0.011
700	0.086	895	0.027	1090	0.014	1285	0.011
705	0.107	900	0.026	1095	0.014	1290	0.011
710	0.137	905	0.025	1100	0.014	1295	0.011
715	0.185	910	0.024	1105	0.013	1300	0.011
720	0.273	915	0.023	1110	0.013	1305	0.011
725	0.446	920	0.023	1115	0.013	1310	0.011
730	0.570 <<	925	0.023	1120	0.013	1315	0.011
735	0.497	930	0.023	1125	0.013	1320	0.011
740	0.363	935	0.022	1130	0.013	1325	0.011
745	0.237	940	0.022	1135	0.013	1330	0.011
750	0.186	945	0.022	1140	0.013	1335	0.010
755	0.155	950	0.021	1145	0.013	1340	0.010

Continues on next page...

Prop. DA Biore (Perv)

Hydrograph Discharge Table

Time -- Outflow (min	cfs)
1345	0.010
1350	0.010
1355	0.010
1360	0.010
1365	0.010
1370	0.010
1375	0.010
1380	0.010
1385	0.010
1390	0.010
1395	0.010
1400	0.010
1405	0.010
1410	0.009
1415	0.009
1420	0.009
1425	0.009
1430	0.009
1435	0.009
1440	0.010
1445	0.008

...End

Precipitation Report

Hyd. No. 2

Prop. DA Biore (Perv)

Storm Frequency = 10 yrs
Total precip. = 5.0100 in
Storm duration = NOAA Atlas 14 Type-C.cds

Time interval = 5 min
Distribution = Custom

Rainfall Distribution Table

Time (min)	Precip. in	Time (min)	Precip. in	Time (min)	Precip. in	Time (min)	Precip. in
0	0.0000	220	0.0055	440	0.0085	660	0.0331
5	0.0055	225	0.0055	445	0.0095	665	0.0371
10	0.0045	230	0.0060	450	0.0090	670	0.0416
15	0.0045	235	0.0055	455	0.0090	675	0.0451
20	0.0040	240	0.0060	460	0.0095	680	0.0481
25	0.0045	245	0.0065	465	0.0100	685	0.0521
30	0.0045	250	0.0055	470	0.0095	690	0.0541
35	0.0040	255	0.0060	475	0.0100	695	0.0842
40	0.0045	260	0.0060	480	0.0100	700	0.0882
45	0.0050	265	0.0065	485	0.0105	705	0.1087
50	0.0045	270	0.0060	490	0.0100	710	0.1408
55	0.0045	275	0.0060	495	0.0105	715	0.1939
60	0.0045	280	0.0060	500	0.0105	720	0.2916
65	0.0050	285	0.0065	505	0.0105	725	0.4875
70	0.0045	290	0.0060	510	0.0110	730	0.2325
75	0.0050	295	0.0065	515	0.0115	735	0.1408
80	0.0045	300	0.0060	520	0.0110	740	0.1087
85	0.0050	305	0.0065	525	0.0115	745	0.0882
90	0.0050	310	0.0065	530	0.0110	750	0.0842
95	0.0045	315	0.0065	535	0.0115	755	0.0546
100	0.0050	320	0.0060	540	0.0120	760	0.0516
105	0.0050	325	0.0065	545	0.0120	765	0.0486
110	0.0050	330	0.0065	550	0.0130	770	0.0446
115	0.0050	335	0.0065	555	0.0135	775	0.0411
120	0.0050	340	0.0070	560	0.0135	780	0.0376
125	0.0050	345	0.0065	565	0.0145	785	0.0331
130	0.0055	350	0.0060	570	0.0145	790	0.0311
135	0.0050	355	0.0070	575	0.0155	795	0.0296
140	0.0050	360	0.0070	580	0.0160	800	0.0276
145	0.0055	365	0.0065	585	0.0165	805	0.0250
150	0.0050	370	0.0070	590	0.0170	810	0.0235
155	0.0055	375	0.0075	595	0.0170	815	0.0215
160	0.0055	380	0.0070	600	0.0180	820	0.0205
165	0.0055	385	0.0075	605	0.0190	825	0.0200
170	0.0050	390	0.0075	610	0.0190	830	0.0190
175	0.0055	395	0.0080	615	0.0195	835	0.0195
180	0.0055	400	0.0075	620	0.0195	840	0.0185
185	0.0055	405	0.0080	625	0.0210	845	0.0180
190	0.0055	410	0.0080	630	0.0210	850	0.0170
195	0.0055	415	0.0080	635	0.0235	855	0.0170
200	0.0055	420	0.0085	640	0.0250	860	0.0165
205	0.0055	425	0.0090	645	0.0276	865	0.0160
210	0.0060	430	0.0085	650	0.0296	870	0.0155
215	0.0060	435	0.0090	655	0.0311	875	0.0145

Continues on next page...

Prop. DA Biore (Perv)

Rainfall Distribution Table

Time (min)	Precip. in	Time (min)	Precip. in	Time (min)	Precip. in
880	0.0145	1155	0.0065	1430	0.0040
885	0.0140	1160	0.0060	1435	0.0045
890	0.0130	1165	0.0065	1440	0.0055
895	0.0130	1170	0.0060	1445	0.0000
900	0.0125	1175	0.0060		
905	0.0115	1180	0.0060	*...End*	
910	0.0115	1185	0.0060		
915	0.0115	1190	0.0060		
920	0.0110	1195	0.0060		
925	0.0115	1200	0.0060		
930	0.0110	1205	0.0060		
935	0.0110	1210	0.0055		
940	0.0105	1215	0.0060		
945	0.0105	1220	0.0055		
950	0.0105	1225	0.0055		
955	0.0105	1230	0.0060		
960	0.0100	1235	0.0060		
965	0.0100	1240	0.0055		
970	0.0100	1245	0.0055		
975	0.0100	1250	0.0055		
980	0.0095	1255	0.0055		
985	0.0095	1260	0.0055		
990	0.0090	1265	0.0055		
995	0.0090	1270	0.0055		
1000	0.0095	1275	0.0055		
1005	0.0090	1280	0.0050		
1010	0.0085	1285	0.0055		
1015	0.0090	1290	0.0055		
1020	0.0085	1295	0.0050		
1025	0.0085	1300	0.0055		
1030	0.0080	1305	0.0050		
1035	0.0080	1310	0.0050		
1040	0.0080	1315	0.0055		
1045	0.0080	1320	0.0050		
1050	0.0075	1325	0.0050		
1055	0.0075	1330	0.0050		
1060	0.0075	1335	0.0050		
1065	0.0075	1340	0.0050		
1070	0.0070	1345	0.0050		
1075	0.0070	1350	0.0050		
1080	0.0070	1355	0.0045		
1085	0.0065	1360	0.0050		
1090	0.0070	1365	0.0050		
1095	0.0065	1370	0.0045		
1100	0.0065	1375	0.0045		
1105	0.0065	1380	0.0050		
1110	0.0065	1385	0.0045		
1115	0.0065	1390	0.0045		
1120	0.0065	1395	0.0050		
1125	0.0065	1400	0.0045		
1130	0.0065	1405	0.0045		
1135	0.0065	1410	0.0040		
1140	0.0060	1415	0.0045		
1145	0.0065	1420	0.0045		
1150	0.0060	1425	0.0045		

Hydrograph Report

Hyd. No. 3

Prop. DA Biore (Total)

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 5 min
Inflow hyds. = 1, 2

Peak discharge = 2.866 cfs
Time to peak = 730 min
Hyd. volume = 7,241 cuft
Contrib. drain. area = 0.800 ac

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp)

Time (min)	Hyd. 1 + (cfs)	Hyd. 2 = (cfs)	Outflow (cfs)
245	0.030	0.000	0.030
250	0.030	0.000	0.030
255	0.030	0.000	0.030
260	0.030	0.000	0.030
265	0.031	0.000	0.031
270	0.032	0.000	0.032
275	0.032	0.000	0.032
280	0.032	0.000	0.032
285	0.033	0.000	0.033
290	0.033	0.000	0.033
295	0.034	0.000	0.034
300	0.034	0.000	0.034
305	0.034	0.000	0.034
310	0.035	0.000	0.035
315	0.036	0.000	0.036
320	0.036	0.000	0.036
325	0.035	0.000	0.035
330	0.036	0.000	0.036
335	0.036	0.000	0.036
340	0.037	0.000	0.037
345	0.038	0.000	0.038
350	0.037	0.000	0.037
355	0.037	0.000	0.037
360	0.039	0.000	0.039
365	0.039	0.000	0.039
370	0.040	0.000	0.040
375	0.041	0.000	0.041
380	0.042	0.000	0.042
385	0.043	0.000	0.043
390	0.043	0.000	0.043
395	0.045	0.000	0.045
400	0.046	0.000	0.046
405	0.046	0.000	0.046
410	0.047	0.000	0.047
415	0.048	0.000	0.048
420	0.049	0.000	0.049
425	0.051	0.000	0.051
430	0.052	0.000	0.052
435	0.053	0.000	0.053
440	0.053	0.000	0.053
445	0.054	0.000	0.054
450	0.055	0.000	0.056
455	0.056	0.001	0.056
460	0.056	0.001	0.057

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Prop. DA Biore (Total)

Hydrograph Discharge Table

Time (min)	Hyd. 1 + (cfs)	Hyd. 2 = (cfs)	Outflow (cfs)
465	0.058	0.001	0.059
470	0.059	0.001	0.061
475	0.060	0.001	0.062
480	0.061	0.001	0.063
485	0.062	0.002	0.064
490	0.064	0.002	0.065
495	0.064	0.002	0.066
500	0.065	0.002	0.067
505	0.065	0.002	0.068
510	0.067	0.003	0.069
515	0.069	0.003	0.071
520	0.070	0.003	0.073
525	0.071	0.003	0.074
530	0.071	0.004	0.075
535	0.071	0.004	0.075
540	0.073	0.004	0.077
545	0.075	0.004	0.079
550	0.077	0.005	0.082
555	0.081	0.005	0.086
560	0.084	0.006	0.090
565	0.087	0.006	0.093
570	0.090	0.007	0.097
575	0.093	0.007	0.100
580	0.098	0.008	0.105
585	0.101	0.008	0.110
590	0.105	0.009	0.114
595	0.108	0.010	0.117
600	0.111	0.010	0.121
605	0.115	0.011	0.126
610	0.119	0.012	0.131
615	0.123	0.012	0.135
620	0.125	0.013	0.138
625	0.128	0.014	0.142
630	0.133	0.015	0.147
635	0.139	0.016	0.154
640	0.148	0.018	0.166
645	0.160	0.020	0.180
650	0.174	0.022	0.196
655	0.187	0.024	0.212
660	0.200	0.027	0.227
665	0.215	0.030	0.245
670	0.236	0.034	0.270
675	0.262	0.039	0.301
680	0.287	0.044	0.331
685	0.310	0.049	0.360
690	0.332	0.055	0.387
695	0.387	0.066	0.454
700	0.479	0.086	0.565
705	0.572	0.107	0.679
710	0.703	0.137	0.841
715	0.900	0.185	1.085
720	1.246	0.273	1.520
725	1.891	0.446	2.338
730	2.296 <<	0.570 <<	2.866 <<
735	1.931	0.497	2.428
740	1.366	0.363	1.730

Continues on next page...

Prop. DA Biore (Total)

Hydrograph Discharge Table

Time (min)	Hyd. 1 + (cfs)	Hyd. 2 = (cfs)	Outflow (cfs)
745	0.865	0.237	1.102
750	0.666	0.186	0.852
755	0.551	0.155	0.706
760	0.443	0.126	0.568
765	0.375	0.107	0.482
770	0.330	0.095	0.424
775	0.306	0.088	0.394
780	0.282	0.082	0.364
785	0.257	0.075	0.332
790	0.233	0.068	0.301
795	0.215	0.063	0.277
800	0.200	0.059	0.259
805	0.187	0.055	0.242
810	0.174	0.051	0.225
815	0.161	0.047	0.208
820	0.149	0.044	0.193
825	0.141	0.042	0.182
830	0.135	0.040	0.174
835	0.131	0.039	0.170
840	0.129	0.038	0.167
845	0.125	0.037	0.162
850	0.121	0.036	0.157
855	0.117	0.035	0.152
860	0.114	0.034	0.148
865	0.111	0.033	0.144
870	0.108	0.032	0.140
875	0.104	0.031	0.135
880	0.100	0.030	0.130
885	0.097	0.029	0.126
890	0.094	0.028	0.122
895	0.090	0.027	0.117
900	0.087	0.026	0.113
905	0.084	0.025	0.109
910	0.080	0.024	0.104
915	0.078	0.023	0.101
920	0.076	0.023	0.099
925	0.076	0.023	0.098
930	0.075	0.023	0.098
935	0.075	0.022	0.097
940	0.073	0.022	0.096
945	0.072	0.022	0.093
950	0.071	0.021	0.092
955	0.070	0.021	0.091
960	0.070	0.021	0.091
965	0.068	0.021	0.089
970	0.067	0.020	0.088
975	0.067	0.020	0.087
980	0.066	0.020	0.086
985	0.065	0.020	0.085
990	0.063	0.019	0.083
995	0.062	0.019	0.080
1000	0.061	0.019	0.080
1005	0.062	0.019	0.080
1010	0.060	0.018	0.079
1015	0.059	0.018	0.077
1020	0.059	0.018	0.077

Continues on next page...

Prop. DA Biore (Total)

Hydrograph Discharge Table

Time (min)	Hyd. 1 + (cfs)	Hyd. 2 = (cfs)	Outflow (cfs)
1025	0.058	0.018	0.075
1030	0.057	0.017	0.074
1035	0.055	0.017	0.072
1040	0.054	0.016	0.070
1045	0.054	0.016	0.070
1050	0.053	0.016	0.069
1055	0.052	0.016	0.067
1060	0.051	0.015	0.066
1065	0.050	0.015	0.066
1070	0.050	0.015	0.065
1075	0.048	0.015	0.063
1080	0.047	0.014	0.062
1085	0.046	0.014	0.060
1090	0.046	0.014	0.059
1095	0.045	0.014	0.059
1100	0.044	0.014	0.058
1105	0.044	0.013	0.057
1110	0.044	0.013	0.057
1115	0.044	0.013	0.057
1120	0.044	0.013	0.057
1125	0.044	0.013	0.057
1130	0.044	0.013	0.057
1135	0.044	0.013	0.057
1140	0.043	0.013	0.056
1145	0.042	0.013	0.055
1150	0.042	0.013	0.055
1155	0.042	0.013	0.055
1160	0.042	0.013	0.055
1165	0.042	0.013	0.055
1170	0.042	0.013	0.055
1175	0.041	0.013	0.054
1180	0.041	0.012	0.053
1185	0.040	0.012	0.053
1190	0.040	0.012	0.053
1195	0.040	0.012	0.053
1200	0.040	0.012	0.053
1205	0.040	0.012	0.053
1210	0.039	0.012	0.052
1215	0.039	0.012	0.051
1220	0.039	0.012	0.050
1225	0.038	0.012	0.049
1230	0.038	0.012	0.050
1235	0.039	0.012	0.051
1240	0.039	0.012	0.051
1245	0.038	0.012	0.050
1250	0.037	0.011	0.049
1255	0.037	0.011	0.048
1260	0.037	0.011	0.048
1265	0.037	0.011	0.048
1270	0.037	0.011	0.048
1275	0.037	0.011	0.048
1280	0.036	0.011	0.047
1285	0.035	0.011	0.046
1290	0.036	0.011	0.047
1295	0.036	0.011	0.047
1300	0.035	0.011	0.046

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Prop. DA Biore (Total)

Hydrograph Discharge Table

Time (min)	Hyd. 1 + (cfs)	Hyd. 2 = (cfs)	Outflow (cfs)
1305	0.035	0.011	0.046
1310	0.034	0.011	0.045
1315	0.035	0.011	0.045
1320	0.035	0.011	0.046
1325	0.034	0.011	0.045
1330	0.034	0.011	0.044
1335	0.033	0.010	0.044
1340	0.033	0.010	0.044
1345	0.033	0.010	0.044
1350	0.033	0.010	0.044
1355	0.033	0.010	0.043
1360	0.032	0.010	0.042
1365	0.033	0.010	0.043
1370	0.032	0.010	0.042
1375	0.031	0.010	0.041
1380	0.031	0.010	0.041
1385	0.031	0.010	0.041
1390	0.031	0.010	0.041
1395	0.031	0.010	0.041
1400	0.031	0.010	0.041
1405	0.031	0.010	0.041
1410	0.030	0.009	0.039
1415	0.029	0.009	0.038
1420	0.029	0.009	0.038
1425	0.030	0.009	0.039
1430	0.029	0.009	0.039
1435	0.029	0.009	0.038
1440	0.031	0.010	0.040
1445	0.026	0.008	0.035

...End

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.1

Wednesday, Nov 9, 2022

Hyd. No. 4

Post Route Biore

Hydrograph type	= Reservoir	Peak discharge	= 2.648 cfs
Storm frequency	= 10 yrs	Time to peak	= 735 min
Time interval	= 5 min	Hyd. volume	= 7,240 cuft
Inflow hyd. No.	= 3 - Prop. DA Biore (Total)	Reservoir name	= Bioret Basin
Max. Elevation	= 65.43 ft	Max. Storage	= 552 cuft

Storage Indication method used.

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp)

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
225	0.027	65.25	----	----	----	----	0.027	----	----	----	----	0.027
230	0.027	65.25	----	----	----	----	0.027	----	----	----	----	0.027
235	0.028	65.25	----	----	----	----	0.027	----	----	----	----	0.027
240	0.028	65.25	----	----	----	----	0.028	----	----	----	----	0.028
245	0.030	65.25	----	----	----	----	0.028	----	----	----	----	0.028
250	0.030	65.25	----	----	----	----	0.029	----	----	----	----	0.029
255	0.030	65.25	----	----	----	----	0.030	----	----	----	----	0.030
260	0.030	65.25	----	----	----	----	0.030	----	----	----	----	0.030
265	0.031	65.25	----	----	----	----	0.030	----	----	----	----	0.030
270	0.032	65.26	----	----	----	----	0.031	----	----	----	----	0.031
275	0.032	65.26	----	----	----	----	0.032	----	----	----	----	0.032
280	0.032	65.26	----	----	----	----	0.032	----	----	----	----	0.032
285	0.033	65.26	----	----	----	----	0.032	----	----	----	----	0.032
290	0.033	65.26	----	----	----	----	0.032	----	----	----	----	0.032
295	0.034	65.26	----	----	----	----	0.033	----	----	----	----	0.033
300	0.034	65.26	----	----	----	----	0.033	----	----	----	----	0.033
305	0.034	65.26	----	----	----	----	0.034	----	----	----	----	0.034
310	0.035	65.26	----	----	----	----	0.034	----	----	----	----	0.034
315	0.036	65.26	----	----	----	----	0.035	----	----	----	----	0.035
320	0.036	65.26	----	----	----	----	0.035	----	----	----	----	0.035
325	0.035	65.26	----	----	----	----	0.035	----	----	----	----	0.035
330	0.036	65.26	----	----	----	----	0.035	----	----	----	----	0.035
335	0.036	65.26	----	----	----	----	0.036	----	----	----	----	0.036
340	0.037	65.26	----	----	----	----	0.036	----	----	----	----	0.036
345	0.038	65.26	----	----	----	----	0.037	----	----	----	----	0.037
350	0.037	65.26	----	----	----	----	0.037	----	----	----	----	0.037
355	0.037	65.26	----	----	----	----	0.037	----	----	----	----	0.037
360	0.039	65.26	----	----	----	----	0.038	----	----	----	----	0.038
365	0.039	65.26	----	----	----	----	0.038	----	----	----	----	0.038
370	0.040	65.26	----	----	----	----	0.039	----	----	----	----	0.039
375	0.041	65.26	----	----	----	----	0.039	----	----	----	----	0.039
380	0.042	65.26	----	----	----	----	0.040	----	----	----	----	0.040
385	0.043	65.26	----	----	----	----	0.041	----	----	----	----	0.041
390	0.043	65.26	----	----	----	----	0.042	----	----	----	----	0.042
395	0.045	65.26	----	----	----	----	0.043	----	----	----	----	0.043
400	0.046	65.26	----	----	----	----	0.044	----	----	----	----	0.044
405	0.046	65.26	----	----	----	----	0.045	----	----	----	----	0.045
410	0.047	65.26	----	----	----	----	0.046	----	----	----	----	0.046
415	0.048	65.26	----	----	----	----	0.046	----	----	----	----	0.046
420	0.049	65.26	----	----	----	----	0.047	----	----	----	----	0.047
425	0.051	65.26	----	----	----	----	0.048	----	----	----	----	0.048
430	0.052	65.26	----	----	----	----	0.050	----	----	----	----	0.050

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Post Route Biore

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
435	0.053	65.26	---	---	---	---	0.051	---	---	---	---	0.051
440	0.053	65.26	---	---	---	---	0.052	---	---	---	---	0.052
445	0.054	65.26	---	---	---	---	0.053	---	---	---	---	0.053
450	0.056	65.26	---	---	---	---	0.054	---	---	---	---	0.054
455	0.056	65.26	---	---	---	---	0.055	---	---	---	---	0.055
460	0.057	65.26	---	---	---	---	0.056	---	---	---	---	0.056
465	0.059	65.26	---	---	---	---	0.057	---	---	---	---	0.057
470	0.061	65.26	---	---	---	---	0.058	---	---	---	---	0.058
475	0.062	65.26	---	---	---	---	0.059	---	---	---	---	0.059
480	0.063	65.26	---	---	---	---	0.061	---	---	---	---	0.061
485	0.064	65.26	---	---	---	---	0.062	---	---	---	---	0.062
490	0.065	65.26	---	---	---	---	0.063	---	---	---	---	0.063
495	0.066	65.26	---	---	---	---	0.064	---	---	---	---	0.064
500	0.067	65.26	---	---	---	---	0.065	---	---	---	---	0.065
505	0.068	65.26	---	---	---	---	0.066	---	---	---	---	0.066
510	0.069	65.26	---	---	---	---	0.067	---	---	---	---	0.067
515	0.071	65.26	---	---	---	---	0.069	---	---	---	---	0.069
520	0.073	65.26	---	---	---	---	0.070	---	---	---	---	0.070
525	0.074	65.26	---	---	---	---	0.072	---	---	---	---	0.072
530	0.075	65.26	---	---	---	---	0.073	---	---	---	---	0.073
535	0.075	65.26	---	---	---	---	0.074	---	---	---	---	0.074
540	0.077	65.26	---	---	---	---	0.075	---	---	---	---	0.075
545	0.079	65.26	---	---	---	---	0.076	---	---	---	---	0.076
550	0.082	65.26	---	---	---	---	0.078	---	---	---	---	0.078
555	0.086	65.26	---	---	---	---	0.081	---	---	---	---	0.081
560	0.090	65.26	---	---	---	---	0.084	---	---	---	---	0.084
565	0.093	65.26	---	---	---	---	0.087	---	---	---	---	0.087
570	0.097	65.26	---	---	---	---	0.091	---	---	---	---	0.091
575	0.100	65.27	---	---	---	---	0.094	---	---	---	---	0.094
580	0.105	65.27	---	---	---	---	0.098	---	---	---	---	0.098
585	0.110	65.27	---	---	---	---	0.102	---	---	---	---	0.102
590	0.114	65.27	---	---	---	---	0.106	---	---	---	---	0.106
595	0.117	65.27	---	---	---	---	0.110	---	---	---	---	0.110
600	0.121	65.27	---	---	---	---	0.114	---	---	---	---	0.114
605	0.126	65.27	---	---	---	---	0.118	---	---	---	---	0.118
610	0.131	65.27	---	---	---	---	0.123	---	---	---	---	0.123
615	0.135	65.27	---	---	---	---	0.127	---	---	---	---	0.127
620	0.138	65.27	---	---	---	---	0.131	---	---	---	---	0.131
625	0.142	65.27	---	---	---	---	0.135	---	---	---	---	0.135
630	0.147	65.27	---	---	---	---	0.139	---	---	---	---	0.139
635	0.154	65.27	---	---	---	---	0.144	---	---	---	---	0.144
640	0.166	65.27	---	---	---	---	0.151	---	---	---	---	0.151
645	0.180	65.28	---	---	---	---	0.164	---	---	---	---	0.164
650	0.196	65.28	---	---	---	---	0.180	---	---	---	---	0.180
655	0.212	65.28	---	---	---	---	0.196	---	---	---	---	0.196
660	0.227	65.28	---	---	---	---	0.212	---	---	---	---	0.212
665	0.245	65.28	---	---	---	---	0.228	---	---	---	---	0.228
670	0.270	65.28	---	---	---	---	0.248	---	---	---	---	0.248
675	0.301	65.29	---	---	---	---	0.273	---	---	---	---	0.273
680	0.331	65.29	---	---	---	---	0.302	---	---	---	---	0.302
685	0.360	65.29	---	---	---	---	0.331	---	---	---	---	0.331
690	0.387	65.29	---	---	---	---	0.360	---	---	---	---	0.360
695	0.454	65.30	---	---	---	---	0.400	---	---	---	---	0.400
700	0.565	65.30	---	---	---	---	0.481	---	---	---	---	0.480
705	0.679	65.31	---	---	---	---	0.593	---	---	---	---	0.593
710	0.841	65.32	---	---	---	---	0.725	---	---	---	---	0.725

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Post Route Biore

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
715	1.085	65.33	---	---	---	---	0.926	---	---	---	---	0.926
720	1.520	65.35	---	---	---	---	1.258	---	---	---	---	1.258
725	2.338	65.38	---	---	---	---	1.896	---	---	---	---	1.896
730	2.866 <<	65.41	---	---	---	---	2.608	---	---	---	---	2.608
735	2.428	65.42 <<	---	---	---	---	2.648	---	---	---	---	2.648 <<
740	1.730	65.39	---	---	---	---	2.070	---	---	---	---	2.069
745	1.102	65.36	---	---	---	---	1.438	---	---	---	---	1.438
750	0.852	65.34	---	---	---	---	1.020	---	---	---	---	1.020
755	0.706	65.33	---	---	---	---	0.809	---	---	---	---	0.809
760	0.568	65.32	---	---	---	---	0.672	---	---	---	---	0.672
765	0.482	65.31	---	---	---	---	0.555	---	---	---	---	0.555
770	0.424	65.30	---	---	---	---	0.474	---	---	---	---	0.474
775	0.394	65.30	---	---	---	---	0.425	---	---	---	---	0.425
780	0.364	65.30	---	---	---	---	0.394	---	---	---	---	0.394
785	0.332	65.29	---	---	---	---	0.363	---	---	---	---	0.363
790	0.301	65.29	---	---	---	---	0.332	---	---	---	---	0.332
795	0.277	65.29	---	---	---	---	0.303	---	---	---	---	0.303
800	0.259	65.29	---	---	---	---	0.280	---	---	---	---	0.279
805	0.242	65.28	---	---	---	---	0.260	---	---	---	---	0.260
810	0.225	65.28	---	---	---	---	0.242	---	---	---	---	0.242
815	0.208	65.28	---	---	---	---	0.225	---	---	---	---	0.225
820	0.193	65.28	---	---	---	---	0.208	---	---	---	---	0.208
825	0.182	65.28	---	---	---	---	0.195	---	---	---	---	0.195
830	0.174	65.28	---	---	---	---	0.184	---	---	---	---	0.184
835	0.170	65.28	---	---	---	---	0.176	---	---	---	---	0.176
840	0.167	65.28	---	---	---	---	0.171	---	---	---	---	0.171
845	0.162	65.28	---	---	---	---	0.167	---	---	---	---	0.167
850	0.157	65.28	---	---	---	---	0.162	---	---	---	---	0.162
855	0.152	65.28	---	---	---	---	0.157	---	---	---	---	0.157
860	0.148	65.27	---	---	---	---	0.153	---	---	---	---	0.153
865	0.144	65.27	---	---	---	---	0.150	---	---	---	---	0.150
870	0.140	65.27	---	---	---	---	0.147	---	---	---	---	0.147
875	0.135	65.27	---	---	---	---	0.143	---	---	---	---	0.143
880	0.130	65.27	---	---	---	---	0.138	---	---	---	---	0.138
885	0.126	65.27	---	---	---	---	0.134	---	---	---	---	0.134
890	0.122	65.27	---	---	---	---	0.130	---	---	---	---	0.130
895	0.117	65.27	---	---	---	---	0.125	---	---	---	---	0.125
900	0.113	65.27	---	---	---	---	0.121	---	---	---	---	0.121
905	0.109	65.27	---	---	---	---	0.117	---	---	---	---	0.117
910	0.104	65.27	---	---	---	---	0.112	---	---	---	---	0.112
915	0.101	65.27	---	---	---	---	0.108	---	---	---	---	0.108
920	0.099	65.27	---	---	---	---	0.105	---	---	---	---	0.105
925	0.098	65.27	---	---	---	---	0.102	---	---	---	---	0.102
930	0.098	65.27	---	---	---	---	0.100	---	---	---	---	0.100
935	0.097	65.27	---	---	---	---	0.099	---	---	---	---	0.099
940	0.096	65.27	---	---	---	---	0.098	---	---	---	---	0.098
945	0.093	65.27	---	---	---	---	0.096	---	---	---	---	0.096
950	0.092	65.27	---	---	---	---	0.095	---	---	---	---	0.095
955	0.091	65.27	---	---	---	---	0.093	---	---	---	---	0.093
960	0.091	65.26	---	---	---	---	0.092	---	---	---	---	0.092
965	0.089	65.26	---	---	---	---	0.091	---	---	---	---	0.091
970	0.088	65.26	---	---	---	---	0.090	---	---	---	---	0.090
975	0.087	65.26	---	---	---	---	0.089	---	---	---	---	0.089
980	0.086	65.26	---	---	---	---	0.088	---	---	---	---	0.088
985	0.085	65.26	---	---	---	---	0.087	---	---	---	---	0.087
990	0.083	65.26	---	---	---	---	0.085	---	---	---	---	0.085

Continues on next page...

Post Route Biore

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
995	0.080	65.26	---	---	---	---	0.084	---	---	---	---	0.084
1000	0.080	65.26	---	---	---	---	0.082	---	---	---	---	0.082
1005	0.080	65.26	---	---	---	---	0.081	---	---	---	---	0.081
1010	0.079	65.26	---	---	---	---	0.080	---	---	---	---	0.081
1015	0.077	65.26	---	---	---	---	0.079	---	---	---	---	0.079
1020	0.077	65.26	---	---	---	---	0.078	---	---	---	---	0.078
1025	0.075	65.26	---	---	---	---	0.077	---	---	---	---	0.077
1030	0.074	65.26	---	---	---	---	0.076	---	---	---	---	0.076
1035	0.072	65.26	---	---	---	---	0.075	---	---	---	---	0.075
1040	0.070	65.26	---	---	---	---	0.073	---	---	---	---	0.073
1045	0.070	65.26	---	---	---	---	0.072	---	---	---	---	0.072
1050	0.069	65.26	---	---	---	---	0.071	---	---	---	---	0.071
1055	0.067	65.26	---	---	---	---	0.070	---	---	---	---	0.070
1060	0.066	65.26	---	---	---	---	0.068	---	---	---	---	0.068
1065	0.066	65.26	---	---	---	---	0.067	---	---	---	---	0.067
1070	0.065	65.26	---	---	---	---	0.066	---	---	---	---	0.066
1075	0.063	65.26	---	---	---	---	0.065	---	---	---	---	0.065
1080	0.062	65.26	---	---	---	---	0.064	---	---	---	---	0.064
1085	0.060	65.26	---	---	---	---	0.063	---	---	---	---	0.063
1090	0.059	65.26	---	---	---	---	0.061	---	---	---	---	0.061
1095	0.059	65.26	---	---	---	---	0.061	---	---	---	---	0.061
1100	0.058	65.26	---	---	---	---	0.060	---	---	---	---	0.060
1105	0.057	65.26	---	---	---	---	0.059	---	---	---	---	0.059
1110	0.057	65.26	---	---	---	---	0.058	---	---	---	---	0.058
1115	0.057	65.26	---	---	---	---	0.058	---	---	---	---	0.058
1120	0.057	65.26	---	---	---	---	0.057	---	---	---	---	0.057
1125	0.057	65.26	---	---	---	---	0.057	---	---	---	---	0.057
1130	0.057	65.26	---	---	---	---	0.057	---	---	---	---	0.057
1135	0.057	65.26	---	---	---	---	0.057	---	---	---	---	0.057
1140	0.056	65.26	---	---	---	---	0.057	---	---	---	---	0.057
1145	0.055	65.26	---	---	---	---	0.056	---	---	---	---	0.056
1150	0.055	65.26	---	---	---	---	0.056	---	---	---	---	0.056
1155	0.055	65.26	---	---	---	---	0.055	---	---	---	---	0.055
1160	0.055	65.26	---	---	---	---	0.055	---	---	---	---	0.055
1165	0.055	65.26	---	---	---	---	0.055	---	---	---	---	0.055
1170	0.055	65.26	---	---	---	---	0.055	---	---	---	---	0.055
1175	0.054	65.26	---	---	---	---	0.054	---	---	---	---	0.054
1180	0.053	65.26	---	---	---	---	0.053	---	---	---	---	0.054
1185	0.053	65.26	---	---	---	---	0.053	---	---	---	---	0.053
1190	0.053	65.26	---	---	---	---	0.053	---	---	---	---	0.053
1195	0.053	65.26	---	---	---	---	0.053	---	---	---	---	0.053
1200	0.053	65.26	---	---	---	---	0.053	---	---	---	---	0.053
1205	0.053	65.26	---	---	---	---	0.052	---	---	---	---	0.052
1210	0.052	65.26	---	---	---	---	0.052	---	---	---	---	0.052
1215	0.051	65.26	---	---	---	---	0.051	---	---	---	---	0.051
1220	0.050	65.26	---	---	---	---	0.051	---	---	---	---	0.051
1225	0.049	65.26	---	---	---	---	0.050	---	---	---	---	0.050
1230	0.050	65.26	---	---	---	---	0.050	---	---	---	---	0.050
1235	0.051	65.26	---	---	---	---	0.051	---	---	---	---	0.051
1240	0.051	65.26	---	---	---	---	0.051	---	---	---	---	0.051
1245	0.050	65.26	---	---	---	---	0.050	---	---	---	---	0.049
1250	0.049	65.26	---	---	---	---	0.049	---	---	---	---	0.049
1255	0.048	65.26	---	---	---	---	0.049	---	---	---	---	0.049
1260	0.048	65.26	---	---	---	---	0.049	---	---	---	---	0.049
1265	0.048	65.26	---	---	---	---	0.048	---	---	---	---	0.048

Continues on next page...

Post Route Biore

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
1275	0.048	65.26	---	---	---	---	0.048	---	---	---	---	0.048
1280	0.047	65.26	---	---	---	---	0.048	---	---	---	---	0.048
1285	0.046	65.26	---	---	---	---	0.048	---	---	---	---	0.048
1290	0.047	65.26	---	---	---	---	0.047	---	---	---	---	0.047
1295	0.047	65.26	---	---	---	---	0.047	---	---	---	---	0.047
1300	0.046	65.26	---	---	---	---	0.047	---	---	---	---	0.047
1305	0.046	65.26	---	---	---	---	0.047	---	---	---	---	0.047
1310	0.045	65.26	---	---	---	---	0.046	---	---	---	---	0.046
1315	0.045	65.26	---	---	---	---	0.046	---	---	---	---	0.046
1320	0.046	65.26	---	---	---	---	0.046	---	---	---	---	0.046
1325	0.045	65.26	---	---	---	---	0.045	---	---	---	---	0.045
1330	0.044	65.26	---	---	---	---	0.045	---	---	---	---	0.045
1335	0.044	65.26	---	---	---	---	0.045	---	---	---	---	0.045
1340	0.044	65.26	---	---	---	---	0.044	---	---	---	---	0.044
1345	0.044	65.26	---	---	---	---	0.044	---	---	---	---	0.044
1350	0.044	65.26	---	---	---	---	0.044	---	---	---	---	0.044
1355	0.043	65.26	---	---	---	---	0.044	---	---	---	---	0.044
1360	0.042	65.26	---	---	---	---	0.043	---	---	---	---	0.043
1365	0.043	65.26	---	---	---	---	0.043	---	---	---	---	0.043
1370	0.042	65.26	---	---	---	---	0.043	---	---	---	---	0.043
1375	0.041	65.26	---	---	---	---	0.042	---	---	---	---	0.042
1380	0.041	65.26	---	---	---	---	0.042	---	---	---	---	0.042
1385	0.041	65.26	---	---	---	---	0.041	---	---	---	---	0.041
1390	0.041	65.26	---	---	---	---	0.041	---	---	---	---	0.041
1395	0.041	65.26	---	---	---	---	0.041	---	---	---	---	0.041
1400	0.041	65.26	---	---	---	---	0.041	---	---	---	---	0.041
1405	0.041	65.26	---	---	---	---	0.041	---	---	---	---	0.041
1410	0.039	65.26	---	---	---	---	0.041	---	---	---	---	0.041
1415	0.038	65.26	---	---	---	---	0.040	---	---	---	---	0.040
1420	0.038	65.26	---	---	---	---	0.039	---	---	---	---	0.039
1425	0.039	65.26	---	---	---	---	0.039	---	---	---	---	0.039
1430	0.039	65.26	---	---	---	---	0.039	---	---	---	---	0.039
1435	0.038	65.26	---	---	---	---	0.039	---	---	---	---	0.039
1440	0.040	65.26	---	---	---	---	0.039	---	---	---	---	0.039
1445	0.035	65.26	---	---	---	---	0.038	---	---	---	---	0.038
1450	0.018	65.26	---	---	---	---	0.033	---	---	---	---	0.033

...End

Hydraflow Rainfall Report

Hydraflow Hydrographs by Intelisolve v9.1

Wednesday, Nov 9, 2022

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	39.0824	9.5000	0.8528	----
2	45.6943	10.7000	0.8185	----
3	0.0000	0.0000	0.0000	----
5	99.7061	14.8000	0.9304	----
10	249.7597	21.8001	1.0961	----
25	115.7547	14.9000	0.8980	----
50	7.3699	0.1000	0.2544	----
100	403.8513	25.1001	1.1108	----

File name: TRENTON.idf

Intensity = B / (Tc + D)^E

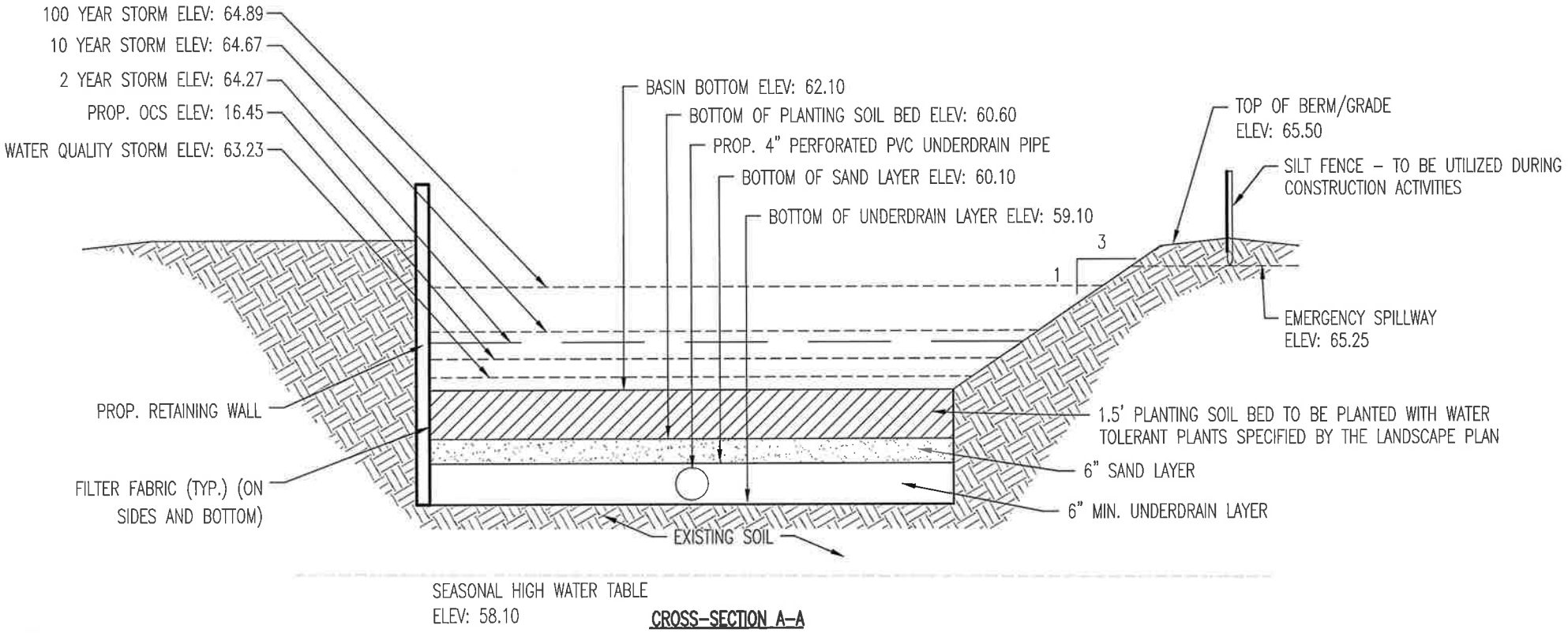
Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	4.00	3.10	2.55	2.18	1.91	1.70	1.54	1.40	1.29	1.20	1.12	1.05
2	4.60	3.83	3.21	2.77	2.45	2.20	2.00	1.84	1.70	1.59	1.49	1.40
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.20	5.03	4.24	3.67	3.24	2.90	2.63	2.40	2.22	2.06	1.92	1.80
10	8.60	6.63	4.80	4.17	3.69	3.30	2.98	2.72	2.50	2.31	2.14	2.00
25	7.89	6.45	5.47	4.76	4.23	3.80	3.46	3.17	2.93	2.73	2.55	2.40
50	4.87	4.09	3.69	3.44	3.25	3.10	2.98	2.88	2.80	2.72	2.68	2.60
100	9.20	7.76	6.69	5.87	5.22	4.70	4.27	3.91	3.60	3.33	3.10	2.90

Tc = time in minutes. Values may exceed 60

Precip. file name: Mercer County.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	3.31	0.00	0.00	5.01	6.19	0.00	8.33
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	1.25	3.31	0.00	0.00	5.01	6.19	0.00	8.33

ABOVEGROUND BIORETENTION BASIN DETAILS



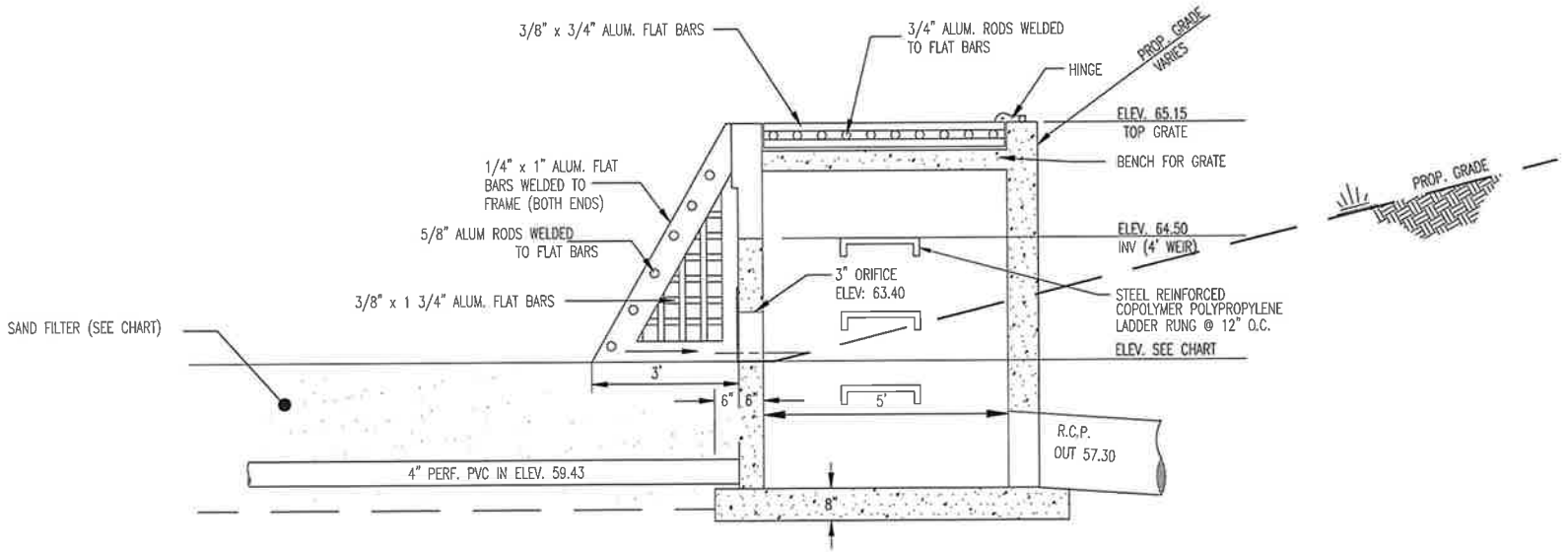
CROSS-SECTION A-A

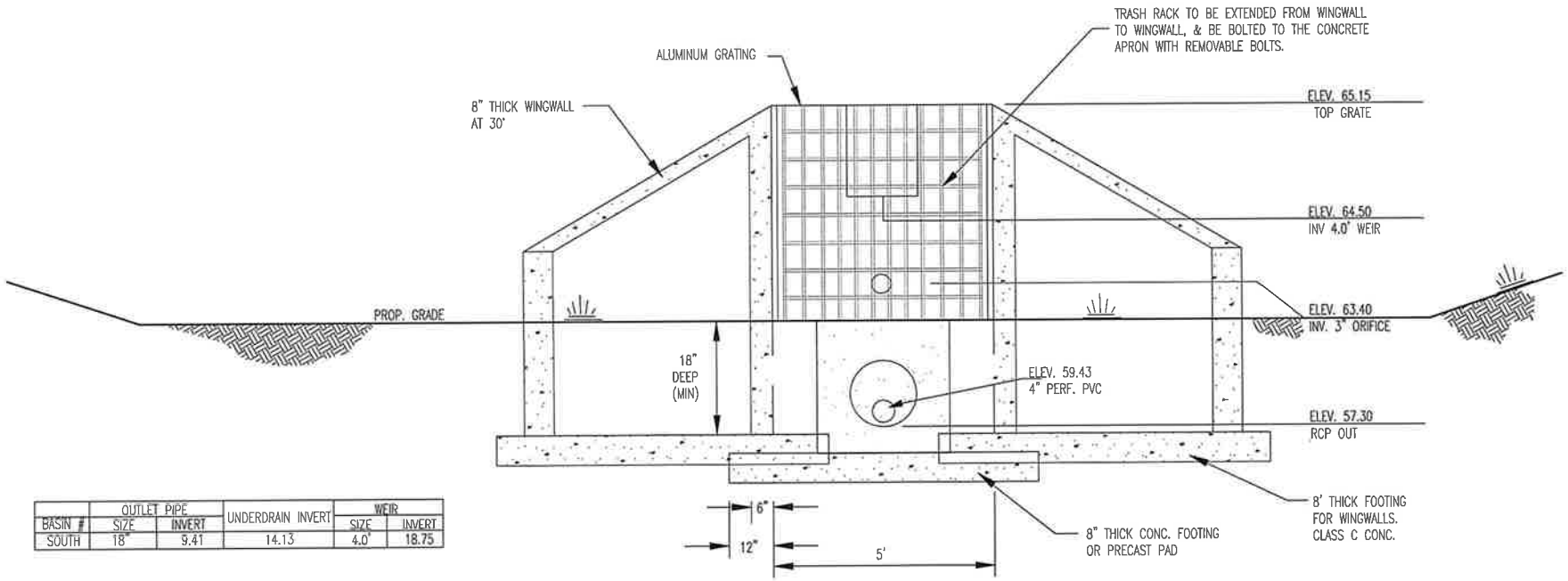
NOTES:

1. THE SOIL BED MATERIAL MUST CONSIST OF THE FOLLOWING MIX, BY VOLUME: 85 TO 95% SAND, WITH NO MORE THAN 25% OF THE SAND AS FINE OR VERY FINE SANDS; NO MORE THAN 15% SILT AND CLAY WITH 2% TO 5% CLAY CONTENT. THE ENTIRE MIX MUST THEN BE AMENDED WITH 3 TO 7% ORGANICS, BY WEIGHT. PRE-MIXED SOIL MUST BE CERTIFIED TO BE CONSISTENT WITH THE REQUIREMENT ABOVE BY EITHER THE VENDOR OR BY A PROFESSIONAL ENGINEER LICENSED BY THE STATE OF NEW JERSEY. THE CONTENT OF ANY SOIL MIXED ON-SITE MUST BE CERTIFIED BY A PROFESSIONAL ENGINEER LICENSED BY THE STATE OF NEW JERSEY; IN ADDITION, THE ENGINEER MUST BE PRESENT WHILE THE SOIL IS MIXED. THE PH OF THE SOIL BED MATERIAL IS RECOMMENDED TO RANGE FROM 5.5 TO 6.5. THE SOIL BED MUST BE A MINIMUM OF 18 – 24 INCHES IN DEPTH. THE SOIL BED MATERIAL MUST BE PLACED IN LIFTS NOT TO EXCEED 6 INCHES. ADDITIONAL MATERIALS MAY BE NECESSARY TO ACCOUNT FOR SETTLING OVER TIME.
2. BASIN CONSTRUCTION MUST NOT COMPACT SOILS BELOW BASIN BOTTOM.
3. CONTRACTOR OR OWNER TO ENGAGE QUALIFIED GEOTECHNICAL ENGINEER TO TEST SOIL PERMEABILITY AND PROVIDE CONSTRUCTION PHASE INSPECTIONS OF THE BASIN BOTTOM SOILS AND FILL MATERIALS WITHIN ANY PROPOSED INFILTRATION OR RETENTION BASIN TO COMPARE RESULTS TO DESIGN CRITERIA.
4. TOPSOIL AND UNSUITABLE MATERIALS ARE TO BE STRIPPED FROM BASIN BOTTOM AREA AND REPLACED WITH SUITABLE MATERIAL PROVIDING PERMEABILITY RATES CONSISTENT WITH THAT OF THE SUBSURFACE SOILS ZONE OF INFILTRATION. CONTRACTOR SHALL PROVIDE A RECORD OF THE REPLACEMENT MATERIAL USED AND ITS CORRESPONDING PERMEABILITY RATE. REFER TO THE TEST PIT AND/OR SOIL BORING RECORDS AND STORMWATER MANAGEMENT REPORT TO CONFIRM THE DEPTH OF THE ZONE OF INFILTRATION.
5. BASIN CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE NEW JERSEY STORMWATER BEST MANAGEMENT PRACTICES MANUAL, CHAPTER 9.7– SMALL-SCALE BIORETENTION SYSTEMS (MARCH 2021)
6. SAND LAYER SHALL CONSIST OF CLEAN MEDIUM AGGREGATE CONCRETE SAND (AASHTO M-6/ASTM C-33)
7. THE GRAVEL LAYER MUST HAVE SUFFICIENT DEPTH TO PROVIDE AT LEAST 3 INCHES OF GRAVEL BOTH ABOVE AND BELOW THE PIPE NETWORK AND MUST CONSIST OF 0.5 TO 1.5 INCH CLEAN, BROKEN STONE OR PEA GRAVEL (AASHTO M-43).

BIORETENTION BASIN DETAIL A

NOT TO SCALE





BASIN #	OUTLET PIPE SIZE	OUTLET PIPE INVERT	UNDERDRAIN INVERT	WEIR SIZE	WEIR INVERT
SOUTH	18"	9.41	14.13	4.0'	18.75

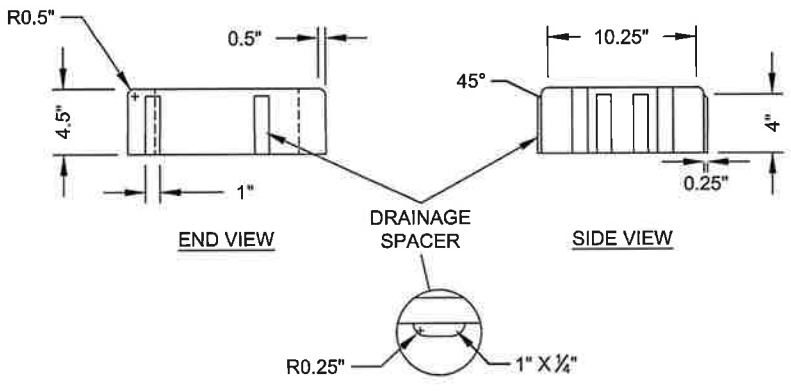
TRASH RACK & GRATE TO BE GAL-100 ALUMINUM GRATING, AS MANUFACTURED BY McNICHOLS, INC., OR EQUIVALENT.

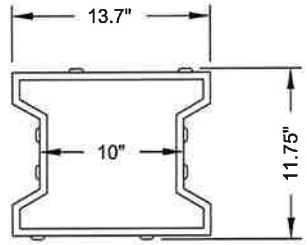
THE OUTLET STRUCTURE SHALL BE PRE-CAST. SHOP DRAWING TO BE PROVIDED AT THE TIME OF CONSTUCTION.

ABOVEGROUND OUTLET CONTROL STRUCTURE DETAIL

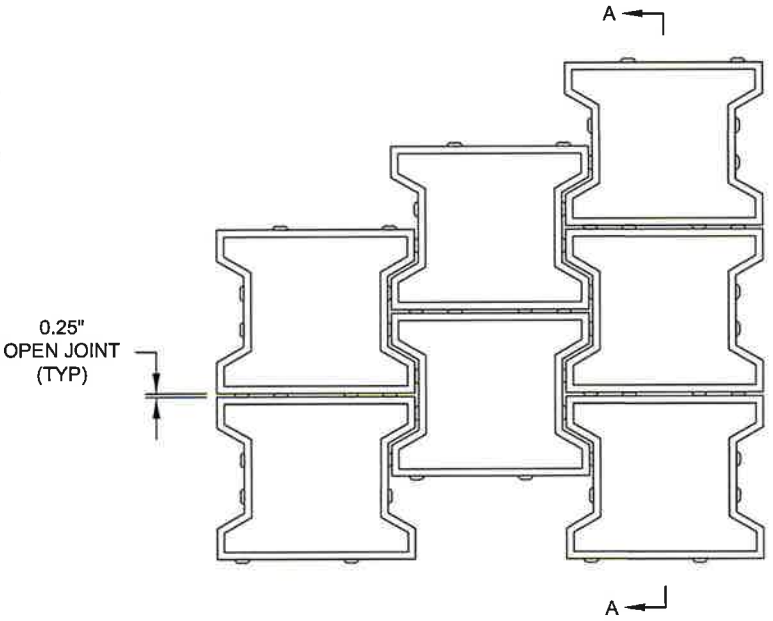
NOT TO SCALE

PERVIOUS PAVEMENT SYSTEM DETAILS





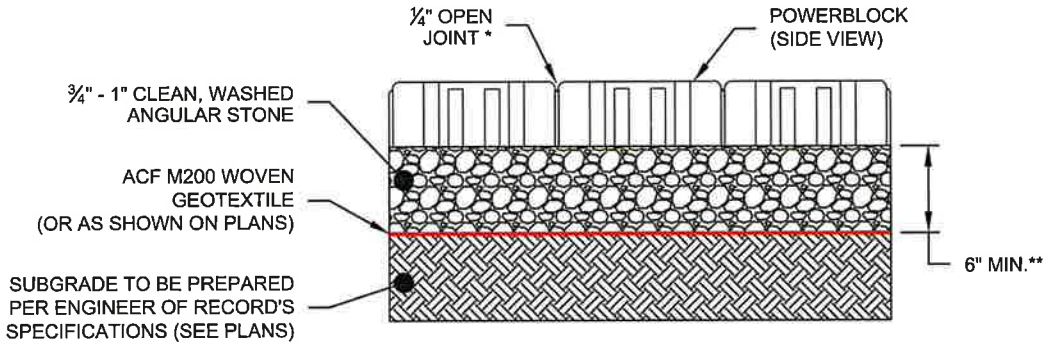
TOP VIEW



TOP VIEW
INTERCONNECTED BLOCKS

* ¼" OPEN JOINTS SHALL BE UNFILLED AND FREE OF STONE/SAND BACKFILL.

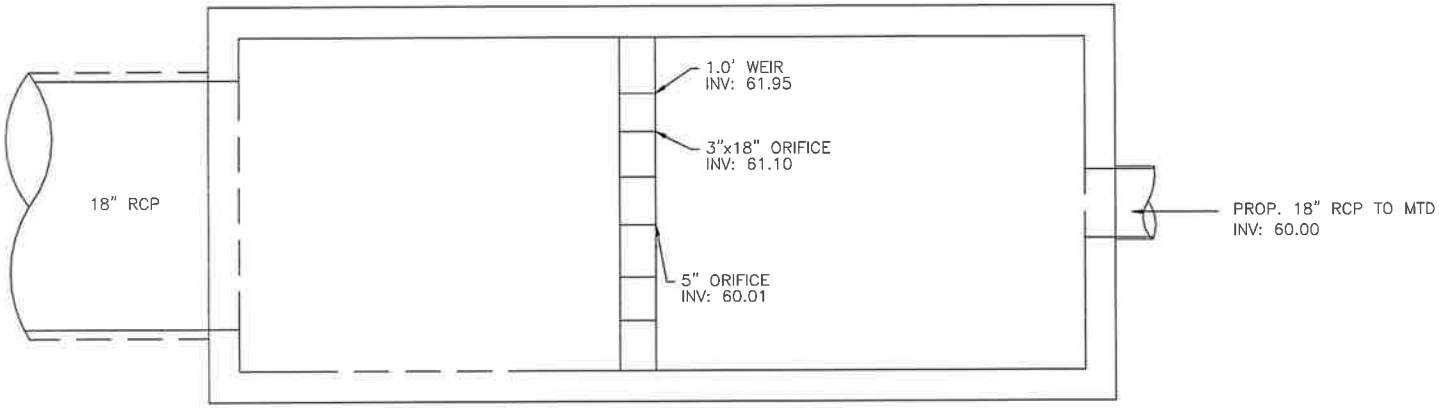
** RECOMMENDED STONE BASE DEPTHS	
DEPTHS LISTED BELOW ARE SUBJECT TO CBR TESTS AND THE DESIGN ENGINEER'S SUBGRADE SUPPORT CALCULATIONS.	
PEDESTRIAN TRAFFIC	6"-8" MIN.
PASSENGER VEHICLE TRAFFIC	12" MIN.
INDUSTRIAL TRAFFIC	18" MIN.



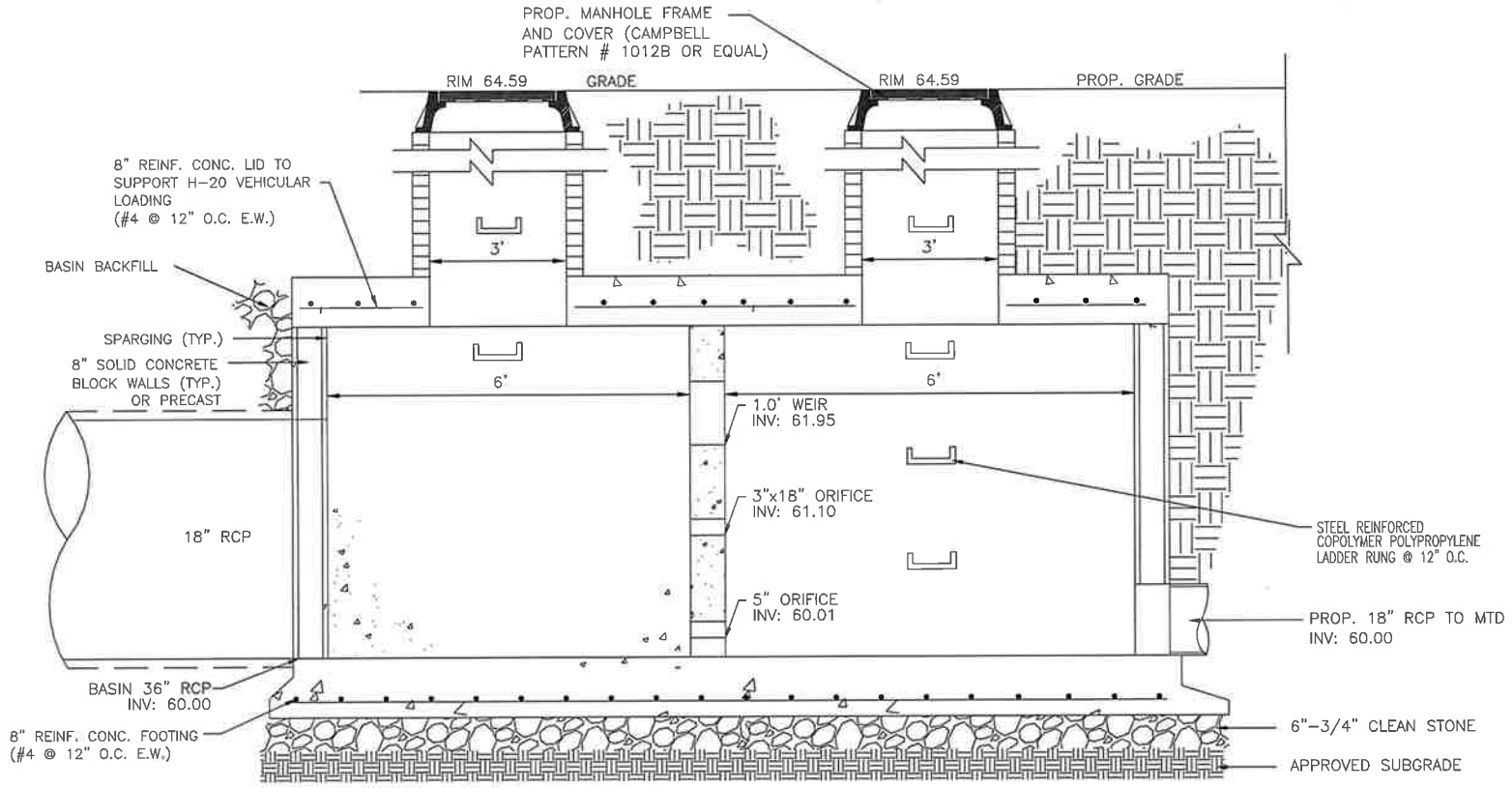
SECTION A-A VIEW

PAVEDRAIN DETAIL

NOT TO SCALE



NOTE: A SUB BASE OF FOUR-INCH (4") DENSE GRADED AGGREGATE IS REQUIRED UNDER ALL DRAINAGE STRUCTURES

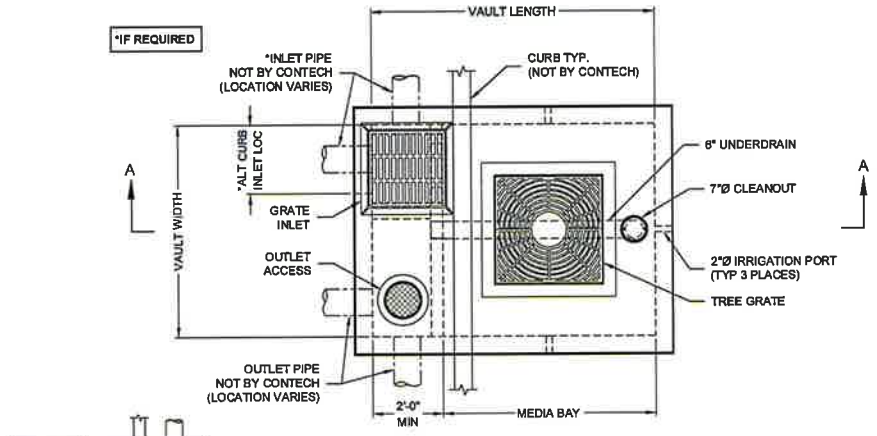


7/8/15 - EB/ACS

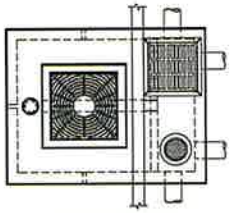
UNDERGROUND OUTLET STRUCTURE DETAIL

NOT TO SCALE

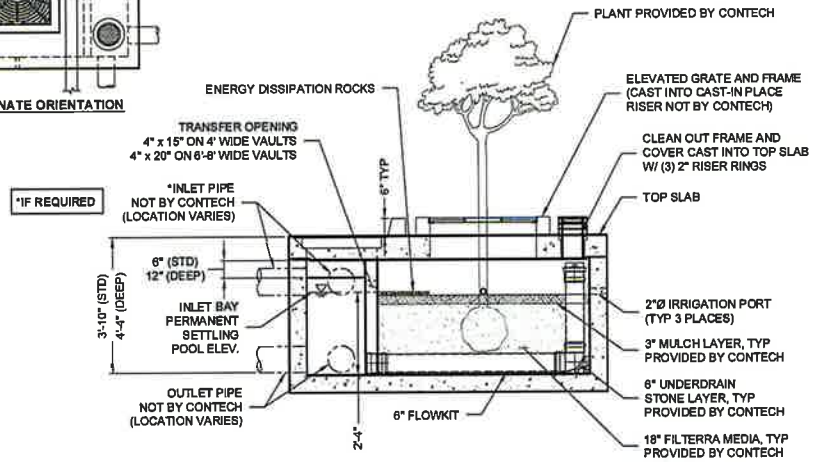
CONTECH FILTERRA NJDEP CERTIFICATION



PLAN VIEW



ALTERNATE ORIENTATION



SECTION A-A
(STANDARD DEPTH SHOWN)

INTERNAL PIPE CONFIGURATION MAY VARY
DEPENDING UPON OUTLET LOCATION.

FTPD-G-HC STANDARD HEIGHT CONFIGURATION

DESIGNATION (OPTIONS: -P)	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (W x L)	WEIR LENGTH/ MAX CURB OPENING	*MAX BYPASS FLOW (CFS)	GRATE INLET/ OUTLET ACCESS SIZE	TREE GRATE QTY & SIZE
FTPD0404-G-HC	N/A CA	4 x 4	4 x 6	1'-8"	1.4	12"SQ/12"Ø	(1) 2.5' x 2.5'
FTPD04045-G-HC	CA ONLY	4 x 4.5	4 x 6.5	1'-8"	1.4	12"SQ/12"Ø	(1) 2.5' x 2.5'
FTPD0406-G-HC	N/A DE, MD, NJ, PA, VA, WV	4 x 6	4 x 8	1'-8"	1.4	12"SQ/12"Ø	(1) 3' x 3'
FTPD045058-G-HC	DE, MD, NJ, PA, VA, WV ONLY	4.5 x 5.83	4.5 x 7.83	1'-8"	1.4	12"SQ/12"Ø	(1) 3' x 3'
FTPD0604-G-HC	ALL	6 x 4	6 x 6	1'-8"	1.4	24"SQ/12"Ø	(1) 2.5' x 2.5'
FTPD0606-G-HC	ALL	6 x 6	6 x 8	1'-8"	1.4	24"SQ/12"Ø	(1) 3' x 3'
FTPD0608-G-HC	ALL	6 x 8	6 x 10	1'-8"	1.4	24"SQ/12"Ø	(1) 4' x 4'
FTPD0610-G-HC	ALL	6 x 10	6 x 12	1'-8"	1.4	24"SQ/12"Ø	(1) 4' x 4'
FTPD0710-G-HC	ALL	7 x 10	7 x 13	2'-6"	2.1	24"SQ/24"Ø	(1) 4' x 4'
FTPD08105-G-HC	ALL	8 x 10.5	8 x 14	3'-0"	2.5	24"SQ/24"Ø	(1) 4' x 4'
FTPD08125-G-HC	N/A OR, WA	8 x 12.5	8 x 16	3'-0"	2.5	24"SQ/24"Ø	(2) 4' x 4'
FTPD09115-G-HC	OR, WA ONLY	9 x 11.5	9 x 15	3'-0"	2.5	24"SQ/24"Ø	(2) 4' x 4'

N/A = NOT AVAILABLE

FTPD-GD-HC DEEP OPTION CONFIGURATION

DESIGNATION (OPTIONS: -P)	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (W x L)	WEIR LENGTH/ MAX CURB OPENING	*MAX BYPASS FLOW (CFS)	GRATE INLET/ OUTLET ACCESS SIZE	TREE GRATE QTY & SIZE
FTPD0404-GD-HC	N/A CA	4 x 4	4 x 6	1'-8"	4.6	12"SQ/12"Ø	(1) 2.5' x 2.5'
FTPD04045-GD-HC	CA ONLY	4 x 4.5	4 x 6.5	1'-8"	4.6	12"SQ/12"Ø	(1) 2.5' x 2.5'
FTPD0406-GD-HC	N/A DE, MD, NJ, PA, VA, WV	4 x 6	4 x 8	1'-8"	4.6	12"SQ/12"Ø	(1) 3' x 3'
FTPD045058-GD-HC	DE, MD, NJ, PA, VA, WV ONLY	4.5 x 5.83	4.5 x 7.83	1'-8"	4.6	12"SQ/12"Ø	(1) 3' x 3'
FTPD0604-GD-HC	ALL	6 x 4	6 x 6	1'-8"	4.6	24"SQ/12"Ø	(1) 2.5' x 2.5'
FTPD0606-GD-HC	ALL	6 x 6	6 x 8	1'-8"	4.6	24"SQ/12"Ø	(1) 3' x 3'
FTPD0608-GD-HC	ALL	6 x 8	6 x 10	1'-8"	4.6	24"SQ/12"Ø	(1) 4' x 4'
FTPD0610-GD-HC	ALL	6 x 10	6 x 12	1'-8"	4.6	24"SQ/12"Ø	(1) 4' x 4'
FTPD0710-GD-HC	ALL	7 x 10	7 x 13	2'-6"	6.8	24"SQ/24"Ø	(1) 4' x 4'
FTPD08105-GD-HC	ALL	8 x 10.5	8 x 14	3'-0"	8.2	24"SQ/24"Ø	(1) 4' x 4'
FTPD08125-GD-HC	N/A OR, WA	8 x 12.5	8 x 16	3'-0"	8.2	24"SQ/24"Ø	(2) 4' x 4'
FTPD09115-GD-HC	OR,WA ONLY	9 x 11.5	9 x 15	3'-0"	8.2	24"SQ/24"Ø	(2) 4' x 4'

N/A = NOT AVAILABLE

*MAX BYPASS FLOW IS INTERNAL WEIR FLOW . SITE SPECIFIC ANALYSIS IS REQUIRED TO DETERMINE GRATE INLET FLOW CAPACITY

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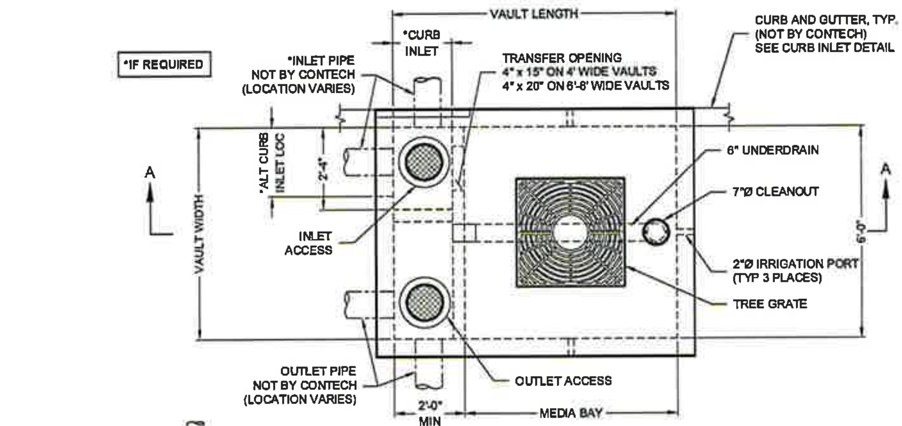
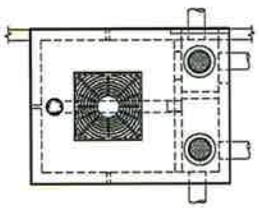
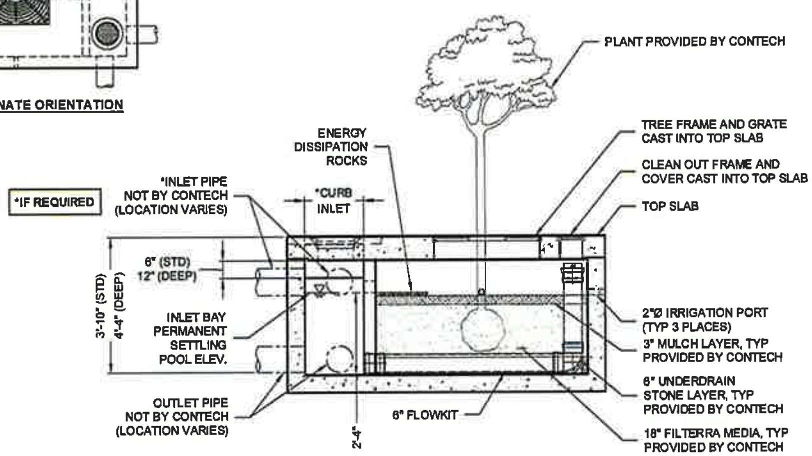
FILTERRA HC PEAK DIVERSION - GRATE (FTPD-G-HC)
CONFIGURATION DETAIL



PLAN VIEW



ALTERNATE ORIENTATION



SECTION A-A
(STANDARD DEPTH SHOWN)

INTERNAL PIPE CONFIGURATION MAY VARY DEPENDING UPON OUTLET LOCATION.

FTPD-HC STANDARD HEIGHT CONFIGURATION

DESIGNATION (OPTIONS: -P, -T, -PT)	DESIGNATION (OPTIONS: -P, -T, -PT)	MEDIA BAY SIZE	VAULT SIZE (W x L)	WEIR LENGTH/ MAX CURB OPENING	*MAX BYPASS FLOW (CFS)	INLET/ OUTLET ACCESS DIA	TREE GRATE QTY & SIZE
FTPD0404-HC	N/A CA	4 x 4	4 x 6	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD04045-HC	CA ONLY	4 x 4.5	4 x 6.5	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD0406-HC	N/A DE, MD, NJ, PA, VA, WV	4 x 6	4 x 8	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD045058-HC	DE, MD, NJ, PA, VA, WV ONLY	4.5 x 5.83	4.5 x 7.83	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD0604-HC	ALL	6 x 4	6 x 6	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD0606-HC	ALL	6 x 6	6 x 8	1'-8"	1.4	12"/12"	(1) 3' x 3'
FTPD0608-HC	ALL	6 x 8	6 x 10	1'-8"	1.4	12"/12"	(1) 4' x 4'
FTPD0610-HC	ALL	6 x 10	6 x 12	1'-8"	1.4	12"/12"	(1) 4' x 4'
FTPD0710-HC	ALL	7 x 10	7 x 13	2'-6"	2.1	24"/24"	(1) 4' x 4'
FTPD08105-HC	ALL	8 x 10.5	8 x 14	3'-0"	2.5	24"/24"	(1) 4' x 4'
FTPD08125-HC	N/A OR, WA	8 x 12.5	8 x 16	3'-0"	2.5	24"/24"	(2) 4' x 4'
FTPD09115-HC	OR, WA ONLY	9 x 11.5	9 x 15	3'-0"	2.5	24"/24"	(2) 4' x 4'

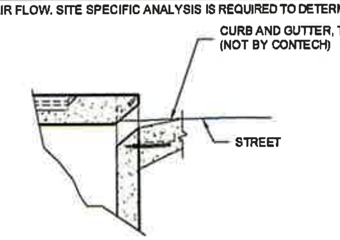
N/A = NOT AVAILABLE

FTPD-D-HC DEEP OPTION CONFIGURATION

DESIGNATION (OPTIONS: -P, -T, -PT)	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (W x L)	WEIR LENGTH/ MAX CURB OPENING	*MAX BYPASS FLOW (CFS)	INLET/ OUTLET ACCESS DIA	TREE GRATE QTY & SIZE
FTPD0404-D-HC	N/A CA	4 x 4	4 x 6	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD04045-D-HC	CA ONLY	4 x 4.5	4 x 6.5	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD0406-D-HC	N/A DE, MD, NJ, PA, VA, WV	4 x 6	4 x 8	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD045058-D-HC	DE, MD, NJ, PA, VA, WV ONLY	4.5 x 5.83	4.5 x 7.83	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD0604-D-HC	ALL	6 x 4	6 x 6	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD0606-D-HC	ALL	6 x 6	6 x 8	1'-8"	4.6	12"/12"	(1) 3' x 3'
FTPD0608-D-HC	ALL	6 x 8	6 x 10	1'-8"	4.6	12"/12"	(1) 4' x 4'
FTPD0610-D-HC	ALL	6 x 10	6 x 12	1'-8"	4.6	12"/12"	(1) 4' x 4'
FTPD0710-D-HC	ALL	7 x 10	7 x 13	2'-6"	6.8	24"/24"	(1) 4' x 4'
FTPD08105-D-HC	ALL	8 x 10.5	8 x 14	3'-0"	8.2	24"/24"	(1) 4' x 4'
FTPD08125-D-HC	N/A OR, WA	8 x 12.5	8 x 16	3'-0"	8.2	24"/24"	(2) 4' x 4'
FTPD09115-D-HC	OR, WA ONLY	9 x 11.5	9 x 15	3'-0"	2.5	24"/24"	(2) 4' x 4'

N/A = NOT AVAILABLE

*MAX BYPASS FLOW IS INTERNAL WEIR FLOW. SITE SPECIFIC ANALYSIS IS REQUIRED TO DETERMINE CURB INLET FLOW CAPACITY



CURB INLET DETAIL

filterra

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FILTERRA HC PEAK DIVERSION (FTPD-HC)
CONFIGURATION DETAIL

I:\COMMON\CAD\CAD STANDARDS\CADPROGRAMS\DEVELOPMENTS\STORMWATER\FILTERRA\NJ HC STANDARD CONFIG DETAILS\FTPD-HC - FILTERRA PEAK DIVERSION CONFIG DTL.DWG 4/6/2021 11:28 AM

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER QUALITY
Bureau of Stormwater Permitting
401 East State Street
P.O. Box 420 Mail Code 401-02B
Trenton, NJ 08625-0420
Tel. (609) 633-7021 • Fax (609) 777-0432
www.nj.gov/dep/dwq/bnpc_home.htm

PHILIP D. MURPHY
Governor

SHEILA Y. OLIVER
Lt. Governor

SHAWN M. LATOURETTE
Acting Commissioner

February 12, 2021

Derek M. Berg
Director – Stormwater Regulatory Management - East
Contech Engineered Solutions LLC
71 US Route 1, Suite F
Scarborough, ME 04074

Re: MTD Lab Certification
Filterra® HC Bioretention System
Off-line Installation Approved

TSS Removal Rate 80%

Dear Mr. Berg:

The Stormwater Management rules under N.J.A.C. 7:8-5.5(b) and 5.7(c) allow the use of manufactured treatment devices (MTDs) for compliance with the design and performance standards at N.J.A.C. 7:8-5 if the pollutant removal rates have been verified by the New Jersey Corporation for Advanced Technology (NJCAT) and have been certified by the New Jersey Department of Environmental Protection (NJDEP). Contech Engineered Solutions LLC has requested a Laboratory Certification for the Filterra® HC Bioretention System (Filterra® HC.)

The project falls under the "Procedure for Obtaining Verification of a Stormwater Manufactured Treatment Device from New Jersey Corporation for Advance Technology" dated January 25, 2013. The applicable protocol is the "New Jersey Department of Environmental Protection Laboratory Protocol to Assess Total Suspended Solids Removal by a Filtration Manufactured Treatment Device" dated January 25, 2013.

NJCAT verification documents submitted to the NJDEP indicate that the requirements of the aforementioned protocol have been met or exceeded. The NJCAT letter also included a recommended certification TSS removal rate and the required maintenance plan. The NJCAT Verification Report with the Verification Appendix (dated January 2021) for this device is published online at http://www.njcat.org/uploads/newDocs/NJCATFilterraTechnologyVerificationReportFinal._.pdf.

The NJDEP certifies the use of the Filterra® HC stormwater treatment unit by Contech Engineered Solutions LLC at a TSS removal rate of 80% when designed, operated, and maintained in accordance with the information provided in the Verification Appendix and the following conditions:

1. The maximum treatment flow rate (MTFR) for the manufactured treatment device (MTD) is calculated using the New Jersey Water Quality Design Storm (1.25 inches in 2 hrs) in N.J.A.C. 7:8-5.5. The MTFR is calculated based on a verified loading rate of 3.12 gpm/ft^2 of effective filtration treatment area.

2. The Filterra® HC stormwater treatment unit shall be installed using the same configuration reviewed by NJCAT, and sized in accordance with the criteria specified in item 7 below.

3. This device cannot be used in series with another MTD or a media filter (such as a sand filter) to achieve an enhanced removal rate for total suspended solids (TSS) removal under N.J.A.C. 7:8-5.5.

4. Additional design criteria for MTDs can be found in the New Jersey Stormwater Best Management Practices (NJ Stormwater BMP) Manual, which can be found online at www.njstormwater.org.

5. The maintenance plan for a site using this device shall incorporate, at a minimum, the maintenance requirements for the Filterra® HC. A copy of the maintenance plan is attached to this certification. However, it is recommended to review the maintenance website at https://www.conteches.com/Portals/0/Documents/Maintenance%20Guides/Filterra%20HC%20OM%20Packet.pdf for any changes to the maintenance requirements.

6. For an MTD to be considered "green infrastructure" (GI) in accordance with the March 2, 2020 amendments to the Stormwater Management rules at N.J.A.C. 7:8, the MTD must meet the GI definition noted at amended N.J.A.C. 7:8-1.2. Specifically, the MTD shall (1) treat stormwater runoff through infiltration into subsoil; and/or (2) treat stormwater runoff through filtration by vegetation or soil; or (3) store stormwater runoff for reuse.

   The Filterra® HC filters stormwater runoff through an engineered biofiltration soil media and, thus, meets the definition of GI. Filterra® HC can be configured with or without a precast vault. Installations that will not include a precast vault will additionally need to comply the NJDEP Stormwater BMP Manual conditions regarding separation from the seasonal high water table and, if infiltration is proposed as an outlet, minimum vertical saturated hydraulic conductivity of the subsoil. Installations without a precast vault that do not rely on infiltration are required to maintain at least a one-foot separation from the seasonal high water table measured from the lowest point of the system. Installations without a precast vault that utilize infiltration are required to have the most hydraulically restrictive soil layer below the MTD meet the minimum tested vertical saturated hydraulic conductivity of one inch per hour and have at least two feet of separation from the seasonal high water table measured from the lowest point of the system.

7. Sizing Requirement:

The example below demonstrates the sizing procedure for the Filterra® HC:

Example: A 0.25-acre impervious site is to be treated to 80% TSS removal using the Filterra® HC. The impervious site runoff (Q) based on the New Jersey Water Quality Design Storm was determined to be 0.79 cfs.

The selection of the appropriate model of Filterra® HC is based upon both the maximum inflow drainage area and the MTFR. It is necessary to calculate the required model using both methods and to use the largest model determined by the two methods.

Inflow Drainage Area Evaluation:

The drainage area to the Filterra® HC in this example is 0.25 acres. Included in Table 1 below, all of the Filterra® HC models are designed with a maximum allowable drainage area greater than 0.25 acres. Specifically, the Filterra® HC with a 4'x4' media bay and a maximum allowable drainage area of 0.40 acres would be the smallest model able to treat runoff without exceeding the maximum allowable drainage area.

Maximum Treatment Flow Rate (MTFR) Evaluation:

The site runoff (Q) was based on the following:
time of concentration = 10 minutes
i = 3.2 in/hr (page 5-8, Fig. 5-3 of the NJ Stormwater BMP Manual)
c = 0.99 (runoff coefficient for impervious)
$Q = ciA = 0.99 \times 3.2 \times 0.25 = 0.79$ cfs

Given the site runoff is 0.79 cfs and based on the MTFR's listed in Table 1 below, the Filterra® HC with a 16'x8' media bay and an MTFR of 0.889 cfs would be the smallest model that could be used to treat the impervious area without exceeding the MTFR. If using more than one unit for treating runoff, the units should be configured such that the flowrate to each unit does not exceed the design MTFR for each unit and ensuring the entire 0.25 acre area is treated.

The MTFR evaluation results will be used since that method results in the highest minimum configuration determined by the two methods.

The sizing table corresponding to the available system models is noted below:

Table 1. Filterra® HC MTFRs and Maximum Allowable Drainage Areas

	Available Filterra® Media Bay Sizes (feet)	Effective Filtration Treatment Area (ft^2)	Treatment Flow Rate (cfs)	Maximum Allowable Drainage Area (ac)
Standard Configuration Filterra and Filterra Bioscape Vaults	4x4	16	0.111	0.40
	4x6 or 6x4	24	0.167	0.60
	4.5x7.83 or 7.83x4.5 (Nominal 4x8/8x4)	35.24	0.245	0.89
	6x6	36	0.250	0.91
	6x8 or 8x6	48	0.333	1.21
	6x10 or 10x6	60	0.417	1.51
	6x12 or 12x6	72	0.500	1.81
	7x13 or 13x7	91	0.632	2.29
	14x8	112	0.778	2.82
	16x8	128	0.889	3.22
	18x8	144	1.000	3.62
	20x8	160	1.111	4.03
	22x8	176	1.222	4.43
Peak Diversion Filterra Vaults	4x4	16	0.111	0.40
	4.5x5.83 (Nominal 4x6)	26.24	0.182	0.66
	6x4	24	0.167	0.60
	6x6	36	0.250	0.91
	6x8	48	0.333	1.21
	6x10 or 10x6	60	0.417	1.51
	7x10	70	0.486	1.76
	8x10.5	84	0.583	2.11
	8x12.5	100	0.694	2.52
	Custom and/or Filterra Bioscape	Media Area in ft^2	0.00694 * (Media Area in ft^2)	0.0252 * (Media Area in ft^2)

Be advised a detailed maintenance plan is mandatory for any project with a Stormwater BMP subject to the Stormwater Management rules, N.J.A.C. 7:8. The plan must include all of the items identified in the Stormwater Management rules, N.J.A.C. 7:8-5.8. Such items include, but are not limited to, the list of inspection and maintenance equipment and tools, specific corrective and preventative maintenance tasks, indication of problems in the system, and training of maintenance personnel. Additional information can be found in Chapter 8: Maintenance and Retrofit of Stormwater Management Measures.

If you have any questions regarding the above information, please contact me at (609) 633-7021.

Sincerely,

Gabriel Mahon

Gabriel Mahon, Chief
Bureau of Stormwater Permitting

Attachment: Maintenance Plan
cc: Chron File
Richard Magee, NJCAT
Vince Mazzei, NJDEP – Water & Land Management
Nancy Kempel, NJDEP– BSTP
Keith Stampfel, NJDEP – DLRP
Dennis Contois, NJDEP – DLRP

Filterra HC
Owner's Manual

CONTECH®
ENGINEERED SOLUTIONS

filterra®
Bioretention Systems

Table of Contents

CONTECH®
ENGINEERED SOLUTIONS

Introduction

Thank you for your purchase of the Filterra® HC Bioretention System. Filterra HC is a specially engineered stormwater treatment system incorporating high performance biofiltration media to remove pollutants from stormwater runoff. All components of the system work together to provide a sustainable long-term solution for treating stormwater runoff.

The Filterra HC system has been delivered to you with protection in place to resist intrusion of construction related sediment which can contaminate the biofiltration media and result in inadequate system performance. These protection devices are intended as a best practice and cannot fully prevent contamination. It is the purchaser's responsibility to provide adequate measures to prevent construction related runoff from entering the Filterra HC system.

Included with your purchase is Activation of the Filterra HC system by the manufacturer as well as a 1-year warranty from delivery of the system and 1-year of routine maintenance (mulch replacement, debris removal, and pruning of vegetation) up to twice during the first year after activation.

Design and Installation

Each project presents different scopes for the use of Filterra HC systems. Information and help may be provided to the design engineer during the planning process. Correct Filterra HC box sizing (per local regulations) is essential to predict pollutant removal rates for a given area. The engineer shall submit calculations for approval by the local jurisdiction. The contractor is responsible for the correct installation of Filterra HC units as shown in approved plans. A comprehensive installation manual covering all Filterra configurations is available at www.ContechES.com.

Activation Overview

Activation of the Filterra HC system is a procedure completed by the manufacturer to place the system into working condition. This involves the following items:

- Removal of construction runoff protection devices
- Planting of the system's vegetation
- Placement of pretreatment mulch layer using mulch certified for use in Filterra HC systems.

Activation MUST be provided by the manufacturer to ensure proper site conditions are met for Activation, proper installation of the vegetation, and use of pretreatment mulch certified for use in Filterra HC systems.

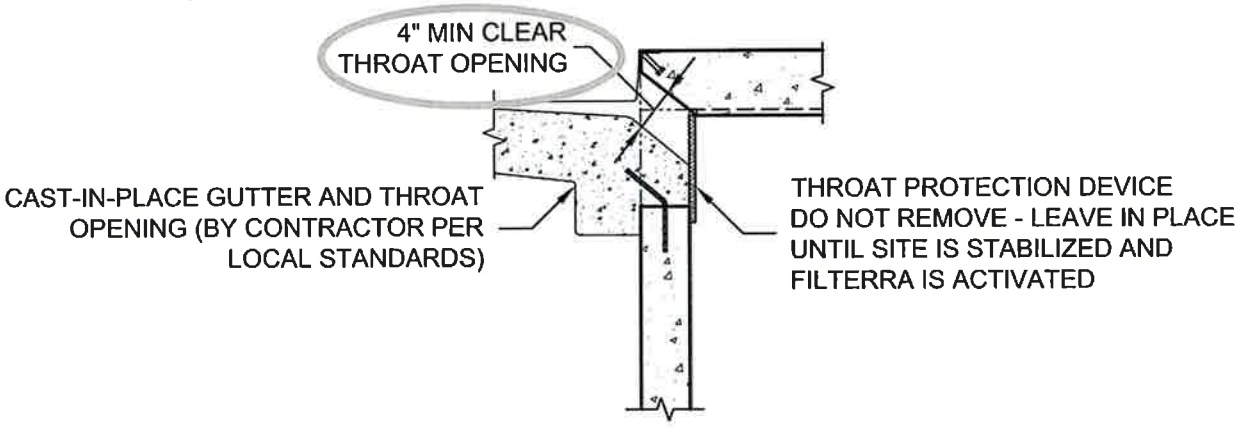
Minimum Requirements

The minimum requirements for Filterra HC Activation are as follows:

1. The site landscaping must be fully stabilized, i.e. full landscaping installed and some grass cover (not just straw and seed) is required to reduce sediment transport. Construction debris and materials should be removed from surrounding area.

2. Final paving must be completed. Final paving ensures that paving materials will not enter and contaminate the Filterra HC system during the paving process, and that the plant will receive runoff from the drainage area, assisting with plant survival for the Filterra HC system.

3. Filterra HC throat opening (if applicable) should be at least 4" in order to ensure adequate capacity for inflow and debris.



An Activation Checklist is included on page 12 to ensure proper conditions are met for Contech to perform the Activation services. A charge of $500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation.

Filterra HC Plant Selection Overview

Plant Lists are available on the Contech website highlighting recommended plants for Filterra systems in your area. Keep in mind that plants are subject to availability due to seasonality and required minimum size for the Filterra HC system. Plants installed in the Filterra HC system are container plants (max 15 gallon) from nursery stock and will be immature in height and spread at Activation.

It is the responsibility of the owner to provide adequate irrigation when necessary to the plant of the Filterra HC system.

The "Planting Requirements for Filterra HC Systems" document is included as an appendix and discusses proper selection and care of the plants within Filterra HC systems.

Warranty Overview

Refer to the Contech Engineered Solutions LLC Stormwater Treatment System LIMITED WARRANTY for further information. The following conditions may void the Filterra HC system's warranty and waive the manufacturer provided Activation and Maintenance services:

- Unauthorized activation or performance of any of the items listed in the activation overview
- Any tampering, modifications or damage to the Filterra HC system or runoff protection devices
- Removal of any Filterra HC system components
- Failure to prevent construction related runoff from entering the Filterra HC system
- Failure to properly store and protect any Filterra HC components (including media and underdrain stone) that may be shipped separately from the vault

Routine Maintenance Guidelines

Routine maintenance is included by the manufacturer on all Filterra HC systems for the first year after activation. This includes a maximum of 2 visits to remove debris, replace pretreatment mulch, and prune the vegetation. More information is provided in the Operations and Maintenance Guidelines. Some Filterra HC systems also contain diversion bypass or outlet bays. Depending on site pollutant loading, these bays may require periodic removal of debris, however this is not included in the first year of maintenance and would likely not be required within the first year of operation.

These services, as well as routine maintenance outside of the included first year, can be provided by certified maintenance providers listed on the Contech website. Training can also be provided to other stormwater maintenance or landscape providers.

Why Maintain?

All stormwater treatment systems require maintenance for effective operation. This necessity is often incorporated in your property's permitting process as a legally binding BMP maintenance agreement. Other reasons to maintain are:

- Avoiding legal challenges from your jurisdiction's maintenance enforcement program.
- Prolonging the expected lifespan the media in the Filterra HC system.
- Avoiding more costly media replacement.
- Helping reduce pollutant loads leaving your property.

Simple maintenance of the Filterra HC is required to continue effective pollutant removal from stormwater runoff before discharge into downstream waters. This procedure will also extend the longevity of the living biofilter system. The Filterra HC system is also subjected to various materials entering the inlet, including trash, silt, leaves, etc. which will be contained above the mulch layer. Too much silt may inhibit the Filterra HC system flow rate, which is the reason for site stabilization before activation. Regular replacement of the mulch stops accumulation of such sediment.

If the system is not maintained on regular intervals, is subject to a catastrophic spill or other event, or subject to unusual pollutant loading, full media bed replacement could be required. Please contact Contech for further evaluation if you feel this may be necessary.

When to Maintain?

Contech includes a 1-year maintenance plan with each system purchase. Annual included maintenance consists of a maximum of two (2) scheduled visits. Additional maintenance may be necessary depending on sediment and trash loading (by Owner or at additional cost). The start of the maintenance plan begins when the system is activated.

Maintenance visits are scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands while the fall visit helps the system by removing excessive leaf litter.

It has been found that in regions which receive between 30-50 inches of annual rainfall, (2) two visits are generally required; regions with less rainfall often only require (1) one visit per annum. Varying land uses can affect maintenance frequency;

e.g. some fast food restaurants require more frequent trash removal. Contributing drainage areas which are subject to new development wherein the recommended erosion and sediment control measures have not been implemented may require additional maintenance visits.

Some sites may be subjected to extreme sediment or trash loads, requiring more frequent maintenance visits. This is the reason for detailed notes of maintenance actions per unit, helping the Supplier and Owner predict future maintenance frequencies, reflecting individual site conditions.

Owners must promptly notify the (maintenance) Supplier of any damage to the plant(s), which constitute(s) an integral part of the bioretention technology. Owners should also advise other landscape or maintenance contractors to leave all maintenance to the Supplier (i.e. no pruning or fertilizing) during the first year.

Exclusion of Services

Clean up due to major contamination such as oils, chemicals, toxic spills, etc. will result in additional costs and are not covered under the Supplier maintenance contract. Should a major contamination event occur the Owner must block off the outlet pipe of the Filterra HC (where the cleaned runoff drains to, such as drop inlet) and block off the inlet of the Filterra HC. The Supplier should be informed immediately.

Maintenance Visit Summary

Each maintenance visit consists of the following simple tasks (detailed instructions below).

1. Inspection of Filterra HC and surrounding area
2. Removal of tree grate and erosion control stones
3. Removal of debris, trash and mulch
4. Mulch replacement
5. Plant health evaluation & pruning or replacement as necessary
6. Clean area around Filterra HC
7. Complete paperwork

Maintenance Tools, Safety Equipment and Supplies

Ideal tools include camera, bucket, shovel, broom, pruners, hoe/rake, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local or company procedures. This may include impervious gloves where the type of trash is unknown, high visibility clothing and barricades when working near traffic and also safety hats and shoes. A T-Bar or crowbar should be used for moving the tree grates (up to 170 lbs ea.). Most visits require minor trash removal and a full replacement of mulch. See below for actual number of bagged mulch that is required in each media bay size. Mulch should be a double shredded, hardwood variety. Some visits may require additional Filterra engineered soil media for the Filterra HC system, available from the Supplier.

	Available Filterra® HC Media Bay Sizes (feet)	Filter Surface Area (ft^2)	Mulch Volume at 3" Depth (ft^2)	# of 2 ft^2 Mulch Bags
Standard Configuration Filterra and Filterra Biosape Vaults	4x4	16	4	2
	4x6 or 6x4	24	6	3
	4.5x7.83 or 7.83x4.5 (Nominal 4x8/8x4)	35.24	9	5
	6x6	36	9	5
	6x8 or 8x6	48	12	6
	6x10 or 10x6	60	15	8
	6x12 or 12x6	72	18	9
	7x13 or 13x7	91	23	12
	14x8	112	28	14
	16x8	128	32	16
	18x8	144	36	18
	20x8	160	40	20
	22x8	176	44	22
Peak Diversion Filterra Vaults	4x4	16	4	2
	4.5x5.83 or 5.83x4.5 (Nominal 4x6/6x4)	26.24	7	4
	6x6	36	9	5
	6x8	48	12	6
	6x10 or 10x6	60	15	8
	7x10	70	18	9
	8x10.5	84	21	11
	8x12.5	100	25	13
	Custom and/or Filterra Bioscape	Media Area in ft^2	0.25 x (Media Area in ft^2)	0.125 x (Media Area in ft^2)

Maintenance Visit Procedure

Keep sufficient documentation of maintenance actions to predict location specific maintenance frequencies and needs. An example Maintenance Report is included in this manual.

1. Inspection of Filterra HC and surrounding area

- Record individual unit before maintenance with photograph (numbered). Record on Maintenance Report (see example in this document) the following:

Record on Maintenance Report the following:

Standing Water	yes | no
Damage to Box Structure	yes | no
Damage to Grate	yes | no
Is Bypass Clear	yes | no

If yes answered to any of these observations, record with close-up photograph (numbered).

2. Removal of tree grate and erosion control stones

- Remove cast iron grates for access into Filterra HC box.
- Dig out silt (if any) and mulch and remove trash & foreign items.

3. Removal of debris, trash and mulch

Record on Maintenance Report the following:

Silt/Clay	yes | no
Cups/ Bags	yes | no
Leaves	yes | no
Buckets Removed	_____

- After removal of mulch and debris, measure distance from the top of the Filterra engineered media soil to the top of the top slab. Compare the measured distance to the distance shown on the approved Contract Drawings for the system. Add Filterra media (not top soil or other) to bring media up as needed to distance indicated on drawings.

Record on Maintenance Report the following:

Distance to Top of Top Slab (inches)	_____
Inches of Media Added	_____

4. Mulch replacement

- Add double shredded mulch evenly across the entire unit to a depth of 3".
- Refer to Filterra Mulch Specifications for information on acceptable sources.
- Ensure correct repositioning of erosion control stones by the Filterra HC inlet to allow for entry of trash during a storm event.
- Replace Filterra HC grates correctly using appropriate lifting or moving tools, taking care not to damage the plant.

5. Plant health evaluation and pruning or replacement as necessary

- Examine the plant's health and replace if necessary.
- Prune as necessary to encourage growth in the correct directions

Record on Maintenance Report the following:

Height above Grate	_____ (ft)
Width at Widest Point	_____ (ft)
Health	healthy | unhealthy
Damage to Plant	yes | no
Plant Replaced	yes | no

6. Clean area around Filterra HC

- Clean area around unit and remove all refuse to be disposed of appropriately.

7. Complete paperwork

- Deliver Maintenance Report and photographs to appropriate location (normally Contech during maintenance contract period).
- Some jurisdictions may require submission of maintenance reports in accordance with approvals. It is the responsibility of the Owner to comply with local regulations.

Maintenance Checklist

Drainage System Failure	Problem	Conditions to Check	Condition that Should Exist	Actions
Inlet	Excessive sediment or trash accumulation.	Accumulated sediments or trash impair free flow of water into Filterra HC.	Inlet should be free of obstructions allowing free distributed flow of water into Filterra HC HC.	Sediments and/or trash should be removed.
Mulch Cover	Trash and floatable debris accumulation.	Excessive trash and/or debris accumulation.	Minimal trash or other debris on mulch cover.	Trash and debris should be removed and mulch cover raked level. Ensure bark nugget mulch is not used.
Mulch Cover	"Ponding" of water on mulch cover.	"Ponding" in unit could be indicative of clogging due to excessive fine sediment accumulation or spill of petroleum oils.	Stormwater should drain freely and evenly through mulch cover.	Recommend contact manufacturer and replace mulch as a minimum.
Vegetation	Plants not growing or in poor condition.	Soil/mulch too wet, evidence of spill. Incorrect plant selection. Pest infestation. Vandalism to plants.	Plants should be healthy and pest free.	Contact manufacturer for advice.
Vegetation	Plant growth excessive.	Plants should be appropriate to the species and location of Filterra HC.		Trim/prune plants in accordance with typical landscaping and safety needs.
Structure	Structure has visible cracks.	Cracks wider than 1/2 inch or evidence of soil particles entering the structure through the cracks.		Vault should be repaired.
Maintenance is ideally to be performed twice annually.				

Filterra HC Inspection & Maintenance Log

Filterra HC System Size/Model: _____ **Location:** _____

Date	Mulch & Debris Removed	Depth of Mulch Added	Mulch Brand	Height of Vegetation Above Grate	Vegetation Species	Issues with System	Comments
1/1/17	*5 – 5 gal Buckets*	*3"*	*Lowe's Premium Brown Mulch*	*4'*	*Galaxy Magnolia*	*- Standing water in downstream structure*	*- Removed blockage in downstream structure*

Appendix 1 – Filterra® Activation Checklist

CONTECH® ENGINEERED SOLUTIONS

Project Name:________________________ Company:________________________

Site Contact Name: ________________________ Site Contact Phone/Email: ________________________

Site Owner/End User Name:________________________ Site Owner/End User Phone/Email: ________________________

Preferred Activation Date: ________________________ (provide 2 weeks minimum from date this form is submitted)

Site Designation	System Size	Final Pavement / Top Coat Complete	Landscaping Complete / Grass Emerging	Construction materials / Piles / Debris Removed	Throat Opening Measures 4" Min. Height	Plant Species Requested
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	

Attach additional sheets as necessary.

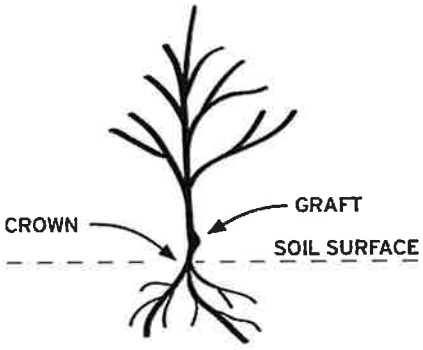
NOTE: A charge of $500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation. ONLY Contech authorized representatives can perform Activation of Filterra HC systems; unauthorized Activations will void the system warranty and waive manufacturer supplied Activation and 1st Year Maintenance.

________________________ Signature

________________________ Date

Appendix 2 – Planting Requirements for Filterra® HC Systems

Plant Material Selection



- Select plant(s) as specified in the engineering plans and specifications.
- Select plant(s) with full root development but not to the point where root bound.
- Use local nursery container plants only. Ball and burlapped plants are not permitted.
- For precast Filterra HC systems with a tree grate, plant(s) must not have scaffold limbs at least 14 inches from the crown due to spacing between the top of the mulch and the tree grate. Lower branches can be pruned away provided there are sufficient scaffold branches for tree or shrub development.
- For precast Filterra HC systems with a tree grate, at the time of installation, it is required that plant(s) must be at least 6" above the tree grate opening at installation for all Filterra configurations. This DOES NOT apply to Full Grate Cover designs.
- Plant(s) shall not have a mature height greater than 25-30 feet.
- A 7-15 gallon container size shall be used.
- For precast Filterra HC systems, plant(s) should have a single trunk at installation, and pruning may be necessary at activation and maintenance for some of the faster growing species, or species known to produce basal sprouts

Plant Installation

- During transport protect the plant leaves from wind and excessive jostling.
- Prior to removing the plant(s) from the container, ensure the soil moisture is sufficient to maintain the integrity of the root ball. If needed, pre-wet the container plant.
- Cut away any roots which are growing out of the container drain holes. Plants with excessive root growth from the drain holes should be rejected.
- Plant(s) should be carefully removed from the pot by gently pounding on the sides of the container with the fist to loosen root ball. Then carefully slide out. Do not lift plant(s) by trunk as this can break roots and cause soil to fall off. Extract the root ball in a horizontal position and support it to prevent it from breaking apart. Alternatively, the pot can be cut away to minimize root ball disturbance.
- Remove any excess soil from above the root flare after removing plant(s) from container.
- Excavate a hole with a diameter 4" greater than the root ball, gently place the plant(s).
- If plant(s) have any circling roots from being pot bound, gently tease them loose without breaking them.
- If root ball has a root mat on the bottom, it should be shaved off with a knife just above the mat line.
- Plant the tree/shrub/grass with the top of the root ball 1" above surrounding media to allow for settling.
- All plants should have the main stem centered in the tree grate (where applicable) upon completion of installation.
- With all trees/shrubs, remove dead, diseased, crossed/rubbing, sharply crotched branches or branches growing excessively long or in wrong direction compared to majority of branches.
- To prevent transplant shock (especially if planting takes place in the hot season), it may be necessary to prune some of the foliage to compensate for reduced root uptake capacity. This is accomplished by pruning away some of the smaller secondary branches or a main scaffold branch if there are too many. Too much foliage relative to the root ball can dehydrate and damage the plant.
- Plant staking may be required.

Mulch Installation

- Only mulch that has been meeting Contech Engineered Solutions' mulch specifications can be used in the Filterra HC system.
- Mulch must be applied to a depth of 3" evenly over the surface of the media.

Irrigation Requirements

- Each Filterra HC system must receive adequate irrigation to ensure survival of the living system during periods of drier weather.
- Irrigation sources include rainfall runoff from downspouts and/or gutter flow, applied water through the tree grate or in some cases from an irrigation system with emitters installed during construction.
- At Activation: Apply about one (cool climates) to two (warm climates) gallons of water per inch of trunk diameter over the root ball.
- During Establishment: In common with all plants, each Filterra HC plant will require more frequent watering during the establishment period. One inch of applied water per week for the first three months is recommended for cooler climates (2 to 3 inches for warmer climates). If the system is receiving rainfall runoff from the drainage area, then irrigation may not be needed. Inspection of the soil moisture content can be evaluated by gently brushing aside the mulch layer and feeling the soil. Be sure to replace the mulch when the assessment is complete. Irrigate as needed**.
- Established Plants: Established plants have fully developed root systems and can access the entire water column in the media. Therefore, irrigation is less frequent but requires more applied water when performed. For a mature system assume 3.5 inches of available water within the media matrix. Irrigation demand can be estimated as 1" of irrigation demand per week. Therefore, if dry periods exceed 3 weeks, irrigation may be required. It is also important to recognize that plants which are exposed to windy areas and reflected heat from paved surfaces may need more frequent irrigation. Long term care should develop a history which is more site specific.

** Five gallons per square yard approximates 1 inch of water. Therefore, for a 6' by 6' Filterra HC approximately 20-60 gallons of water is needed. To ensure even distribution of water it needs to be evenly sprinkled over the entire surface of the filter bed, with special attention to make sure the root ball is completely wetted. NOTE: if needed, measure the time it takes to fill a five-gallon bucket to estimate the applied water flow rate then calculate the time needed to irrigate the Filterra HC system. For example, if the flow rate of the sprinkler is 5 gallons/minute then it would take 12 minutes to irrigate a 6' by 6' filter.

Notes

filterra®
Bioretention Systems

CONTECH®
ENGINEERED SOLUTIONS

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West Chester, OH 45069
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www.ContechES.com

PDF 1/21

STORMWATER COLLECTION SYSTEM CALCULATIONS (PIPE SIZING)

DYNAMIC ENGINEERING

Inlet Area Summary and Average Coefficient (C) Calculations

Project: Proposed Residential Development
Job #: 1279-99-010
Location: Township of Lawrence

Computed By: MDC
Checked By: TAZ
Date: 10/25/2022

Drainage Area	Impervious Area (sf)	Coefficient (C) Used	Open Space (SF)	Coefficient (C) Used	Average Coefficient (C) Used	Total Area (SF)	Total Area (acres)
IA 1	5229	0.95	292	0.35	0.92	5521	0.13
IA 2	6872	0.95	3106	0.35	0.76	9978	0.23
IA 3	5418	0.95	1847	0.35	0.80	7265	0.17
IA 4	9823	0.95	2725	0.35	0.82	12548	0.29
IA 11	7200	0.95	1101	0.35	0.87	8301	0.19
IA 32	2487	0.95		0.35	0.95	2487	0.06
IA 33	896	0.95	4330	0.35	0.45	5226	0.12
IA 34	1453	0.95		0.35	0.95	1453	0.03
IA 51	9383	0.95		0.35	0.95	9383	0.22
IA 61	3795	0.95		0.35	0.95	3795	0.09
IA 71	4337	0.95		0.35	0.95	4337	0.10
IA 81	3655	0.95		0.35	0.95	3655	0.08
Roof 1	2885	0.95		0.35	0.95	2885	0.07
Roof 2	4209	0.95		0.35	0.95	4209	0.10
Roof 3	2926	0.95		0.35	0.95	2926	0.07
Roof 4	3830	0.95		0.35	0.95	3830	0.09
Roof 5	3549	0.95		0.35	0.95	3549	0.08
Roof 6	2365	0.95		0.35	0.95	2365	0.05
Duplex A-F	6042	0.95		0.35	0.95	6042	0.14
Duplex G-L	2514	0.95		0.35	0.95	2514	0.06

DYNAMIC ENGINEERING

Stormwater Collection System Calculations

Project: Proposed Residential Development
Job #: 1279-99-010
Location: Township of Lawrence
Design Storm: 25 Yr

Computed By: TAZ
Checked By: LPG
Date: 10/25/2022

NOTES:
1) Design method used is Rational Method, unless otherwise noted
2) Refer to Weighted Runoff Coefficient table for calculation of incremental areas and C values

PIPE SECTION		SUBCATCHMENT AREA	INCREMENTAL		CUMULATIVE	TIME OF CONCENTRATION			I	PEAK RUNOFF		PIPING INPUT			PIPING DATA		
FROM	TO	Area (Acres)	"C"	A x C Ac	A x C (acres)	Tc 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)	Pipe Velocity (fps)
ROOF 1	IA1	0.07	0.95	0.07	0.07	10.00	0.04	10.00	6.80	0.48	0.48	15	10.0	0.013	0.0050	4.57	3.73
IA1	IA2	0.13	0.92	0.12	0.19	10.00	0.44	10.04	6.80	0.82	1.29	15	99.0	0.013	0.0050	4.57	3.73
ROOF 3	IA2	0.07	0.86	0.06	0.06	10.00	0.04	10.00	6.80	0.41	0.41	15	10.0	0.013	0.0050	4.57	3.73
IA2	IA3	0.23	0.76	0.17	0.42	10.00	0.35	10.48	6.80	1.16	2.86	15	78.0	0.013	0.0050	4.57	3.73
IA3	IA4	0.17	0.80	0.14	0.56	10.00	0.48	10.83	6.68	0.94	3.74	15	107.0	0.013	0.0050	4.57	3.73
IA11	IA4	0.19	0.87	0.17	0.17	10.00	1.03	10.00	6.80	1.16	1.16	15	230.0	0.013	0.0050	4.57	3.73
IA4	OCS 5 IN	0.29	0.82	0.24	0.97	10.00	0.36	11.31	6.56	1.57	6.36	18	91.0	0.013	0.0050	7.43	4.21
OCS 5 OUT	MH6	0.32	0.95	0.30	0.30	10.00	0.25	10.00	6.80	2.04	2.04	18	63.0	0.013	0.0050	7.43	4.21
IA32	IA33	0.06	0.95	0.06	0.06	10.00	0.09	10.00	6.80	0.41	0.41	15	20.0	0.013	0.0050	4.57	3.73
DUPLEX G-L	IA33	0.06	0.95	0.06	0.06	10.00	1.53	10.00	6.80	0.41	0.41	12	320.0	0.012	0.0050	2.73	3.48
IA33	IA34	0.12	0.45	0.05	0.17	10.00	0.23	11.53	6.44	0.32	1.09	15	51.0	0.013	0.0050	4.57	3.73
IA34	MH25	0.03	0.95	0.03	0.20	10.00	0.13	11.76	6.44	0.19	1.29	15	28.0	0.013	0.0050	4.57	3.73
DUPLEX A-F	MH25	0.14	0.95	0.13	0.13	10.00	1.53	10.00	6.80	0.88	0.88	12	320.0	0.012	0.0050	2.73	3.48
MH25	AG BASIN	0.00	0.95	0.00	0.33	10.00	0.08	11.89	6.44	0.00	2.13	18	19.0	0.013	0.0050	7.43	4.21
MH27	MH6	4.48	0.95	4.26	4.26	10.00	1.16	10.00	6.80	28.97	28.97	30	413.0	0.013	0.0050	29.00	5.91
MH6	MH7	0.00	0.95	0.00	4.56	10.00	0.06	11.16	6.56	0.00	29.91	36	26.0	0.013	0.0050	47.16	6.68
AG BASIN OUT	MH7	0.57	0.95	0.54	0.54	10.00	0.02	10.00	6.80	3.67	3.67	18	12.0	0.013	0.0200	14.85	8.41
MH7	HEADWALL 8	0.00	0.95	0.00	5.10	10.00	0.03	11.22	6.56	0.00	33.46	36	12.0	0.013	0.0050	47.16	6.68
IA51	MH53	0.22	0.95	0.21	0.21	10.00	0.38	10.00	6.80	1.43	1.43	15	84.0	0.013	0.0050	4.57	3.73
IA61	MH53	0.09	0.95	0.09	0.09	10.00	0.02	10.00	6.80	0.61	0.61	15	5.0	0.013	0.0050	4.57	3.73
MH53	MH54	0.00	0.95	0.00	0.30	10.00	0.38	10.38	6.80	0.00	2.04	15	186.0	0.013	0.0050	4.57	3.73
IA71	MH54	0.10	0.95	0.10	0.10	10.00	0.02	10.00	6.80	0.68	0.68	15	5.0	0.013	0.0050	4.57	3.73
MH54	MH55	0.00	0.95	0.00	0.40	10.00	0.58	10.76	6.68	0.00	2.67	15	130.0	0.013	0.0050	4.57	3.73
IA81	MH55	0.08	0.95	0.08	0.08	10.00	0.02	10.00	6.80	0.54	0.54	15	5.0	0.013	0.0050	4.57	3.73
MH55	MH56	0.00	0.95	0.00	0.48	10.00	0.17	11.34	6.56	0.00	3.15	15	38.0	0.013	0.0050	4.57	3.73

CAPACITY OF CIRCULAR PIPE FLOWING FULL

DYNAMIC ENGINEERING

Capacity of Circular Pipe Flowing Full

Project: Proposed Residential Development
Job #: 1279-99-010
Location: Lawrence, Mercer County, NJ

Computed By: LPG
Checked By: TJM
Date: 10/26/2022

PIPE DESCRIPTION	SLOPE (%)	SIZE (IN)	MANNING'S COEFFICIENT (n)	VELOCITY (FT/S)	CAPACITY (CFS)	CAPACITY (GPD)	CAPACITY (MGD)
Existing 30" RCP	0.500%	30	0.013	5.92	29.08	18,795,904	18.80

Variables Defined
Q=Capacity of Pipe (CFS)
V=Velocity in Pipe Section (FT/S)
R=Hydraulic Radius of Pipe Section
S=Slope of Pipe Section (FT/FT)
D=Diameter of Pipe (FT)
d=Depth of Flow in Pipe (FT)
n=Manning's Coefficient
Wp=Wetted Perimeter (FT)

Typical Values for Manning's Coefficient (n)

n(RCP)=	0.013	
n(HDPE-Smooth Interior)=	0.012	*Varies with Manufacturer
n(DIP)=	0.013	
n(PVC)=	0.010	
n(CMP)=	0.024	

Equations used:
Q=VA
V=(1.49/n)*R^(2/3)*S^(1/2)
Q=(1.49/n)*R^(2/3)*S^(1/2)*A

Utilizing Appendix 16.A from the Civil Engineering Reference Manual-Seventh Edition, by Micheal Lindeburg, Copyright 1999
The following equations were utilized to calculate the Hydraulic Radius and Area of a Circular Pipe Section flowing full
A=(π*D^2/4)*0.5=0.7854*D^2
R=A/Wp=0.7854*D^2/(2*π*D/2)=0.25*D

Therefore:
Q=(1.49/n)*(0.25*D)^(2/3)*S^(1/2)*(0.7854*D^2)
V=(1.49/n)*(0.25*D)^(2/3)*S^(1/2)

Unit Conversion Equations
1 Cubic Foot=7.4805 Gallons
1 Day = 86,400 Seconds
Therefore:

$$\frac{\text{Cubic Foot}}{\text{Second}} \times \frac{86{,}400 \text{ Seconds}}{1 \text{ Day}} \times \frac{7.4805 \text{ Gallons}}{1 \text{ Cubic Foot}} = \frac{\text{Gallon}}{\text{Day}}$$

$$\frac{\text{Gallon}}{\text{Day}} \times \frac{1 \text{ Million Gallons}}{1{,}000{,}000 \text{ Gallons}} = \frac{\text{Million Gallons}}{\text{Day}}$$

CONDUIT OUTLET PROTECTION CALCULATIONS

DYNAMIC ENGINEERING

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

Date: 10/26/2022
Project: Residential Dev
Project No: 1279-99-010

Calculated By: TAZ
Checked By: LPG

Conduit Outlet Protection Calculations

Rip Rap Pad # 1

Design Parameters:

Design Storm Flow for 25 Year, Q	33.46	cfs
Vertical Dimension of Outlet Pipe, D_o	36	in
Horizontal Dimension of Outlet Pipe, W_o	36	in
Tailwater Depth, TW[1]	1.46	ft

Apron Dimension Calculations:

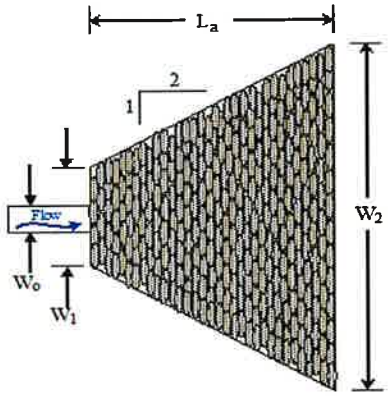
Unit Dicharge, $q = Q/D_o$ = 11.15 cfs per foot

- **Case I: $TW < 1/2\ D_o$**

Apron Length, $L_a = \frac{1.8q}{D_o^{1/2}} + 7D_o$ = 32.59 ft or L_a = **33 ft**

Width, $W_1 = 3W_o$ = 9. ft or W_1 = **9 ft**

Width, $W_2 = 3W_o + L_a$ = 41.59 ft or W_2 = **42 ft**

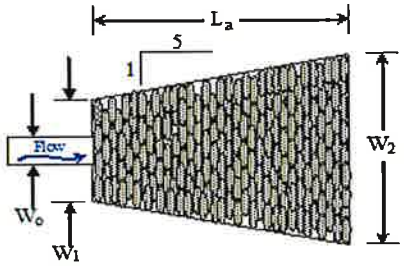


- **Case II: $TW \geq 1/2\ D_o$**

Apron Length, $L_a = \frac{3q}{D_o^{1/2}}$ = L_a =

Width, $W_1 = 3W_o$ = W_1 =

Width, $W_2 = 3W_o + 0.4L_a$ = W_2 =



Rip Rap Stone Size Calculations:

Median Stone, $d_{50} = \frac{0.02q^{1.33}}{TW}$ = 4.06 in d_{50} = **6 in**

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_{50}. The largest stone size in the mixture shall be 1.5 times the d_{50} 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 $1/4W_o$.

SCOUR HOLE CALCULATIONS

DYNAMIC ENGINEERING

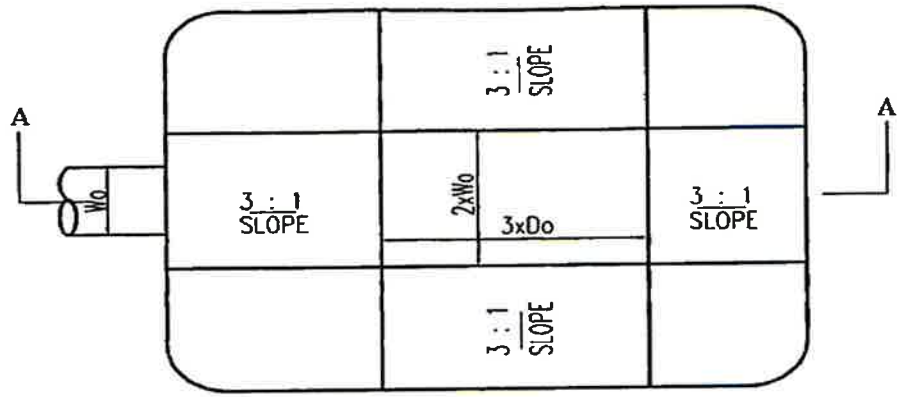
SCOUR HOLE DESIGN

Project:	Proposed Residential Development
Job #:	1279-99-010
Location:	2495 Brunswick Pike, Lawrence, NJ
Design Storm:	25 Yr
Computed By:	TAZ
Checked By:	LPG
Date:	10/25/2022

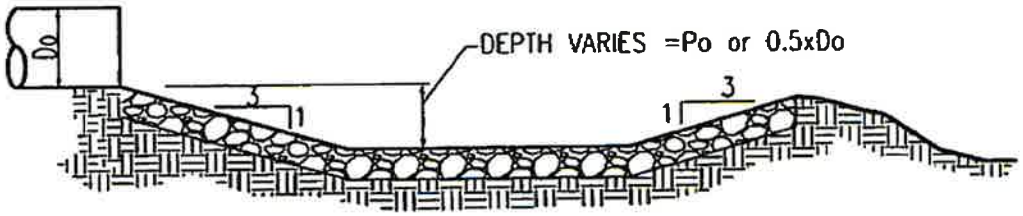
Discharge in Basin, Therefore Tailwater is greater than 0.5 x Do

Discharge Point	Headwall 26
Q (25-yr storm cfs)	2.13
Inside Height of Outlet Culvert, Do (in)	1.5
Inside Height of Outlet Culvert, Do (ft)	0.1
Tailwater (ft), Tw	2.130
Length of Apron, L (ft)	0.38
Width of Culvert, Wo(in)	1.5
Width of Culvert, Wo(ft)	0.1
Width of Apron, W(ft)	0.25
Where Y = 1/2 Do, Y(ft)	0.063
Median Stone Diameter, D50 (ft)	0.25
Where Y = Do, Y(ft)	0.125
Median Stone Diameter, D50 (ft)	0.17

Note: Use D50 of 6 inches minimum



PLAN



SECTION A–A

Equations used:
L=3*Do
W=2*Wo
Where Y=1/2 Do
D50=(0.0125/Tw)*(q^1.33)
Where Y=Do
D50=(0.0082/Tw)*(q^1.33)

Peak Water Surface Elevation for 2 Yr. Storm is 64.43 FES Invert: 62.10 therefore Tailwater: 2.33

Notes:
1. The use of scour holes shall comply with county or local ordinances which would restrict the use of such devices due to the possible problems with mosquito breeding.
2. No bends or curves at the intersection of the conduit and apron or scour hole will be permitted.
3. There shall be no over fall from the end of the apron to the receiving material.
4. The thickness of the riprap lining, filter, and quality shall meet the requirements in the Riprap Standard Section of the Standards for Soil Erosion Control in New Jersey.

STORMWATER BASIN AREA INVESTIGATION REPORT, PREPARED BY DYNAMIC EARTH, LLC

STORMWATER BASIN AREA INVESTIGATION REPORT

PROPOSED SITE DEVELOPMENT
2495 Brunswick Pike
Block 2001, Lots 2, 3, 4, 5 & 68
Lawrence Township, Mercer County, New Jersey

Prepared for:

RPM DEVELOPMENT GROUP
77 Park Street
Montclair, New Jersey 07042

Prepared by:

DYNAMIC EARTH

245 Main Street, Suite 110
Chester, New Jersey 07930

Peter H. Howell, P.E.
Principal
NJ PE License No. 24GE04728700

Patrick J. Granitzki, PE
Principal
NJ PE License No. 24GE05355900

Project #1279-99-010E
March 6, 2020

STORMWATER BASIN AREA INVESTIGATION REPORT

Proposed Site Development
2495 Brunswick Pike
Block 2001, Lots 2, 3, 4, 5 & 68
Lawrence Township, Mercer County, New Jersey

TABLE OF CONTENTS

APPENDICES

Test Location Plan
Records of Subsurface Exploration

1.0 LOCATION AND DESCRIPTION

Dynamic Earth, LLC (Dynamic Earth) has completed an exploration and evaluation for the proposed stormwater management facility for the site development to be located at 2495 Brunswick Pike in Lawrence Township, Mercer County, New Jersey. The site is identified as Block 2001, Lots 2, 3, 4, 5 and 68. The subject site is shown on the *Test Location Plan* attached within the appendix of this report.

At the time of Dynamic Earth's investigation, the area of the proposed stormwater management facility was grass covered. The subject site is bound to the north by Texas Avenue and residential property beyond; to the east by the existing shopping center with Brunswick Pike beyond; to the south by the existing shopping center; and to the west by the residential property.

At the time of Dynamic Earth's investigation conceptual site plans were not developed; however, we understand that the proposed site development will be located within the northern portion of the site near Texas Avenue. Proposed site development plans are expected to include the construction of a Multi-Family Development with associated stormwater management facilities.

Topographic information was provided on a June 6, 2019 *Topographic Survey* prepared by Dynamic Survey, LLC. Existing site grades range between approximately 69 feet within the norther portion of the site and 57 feet within the southern portion of the site.

2.0 SCOPE OF SERVICES

Dynamic Earth's scope of services pertaining to this report included evaluating the subsurface conditions at soil profile pit locations to estimate the apparent seasonal high groundwater level and collecting samples for laboratory permeability testing. Eight soil profile pits (identified as SPP-1 through SPP-8) were performed as part of our investigation.

The test locations were excavated with a rubber-tire backhoe within the area of anticipated stormwater management facilities. The test locations were backfilled to the surface with excavated soils at. The test locations are shown on the attached *Supplemental Soil Profile Pit Location Plan.*

The soils encountered were classified in general conformance with the Field Book for Describing and Sampling Soils (Version 3), published by the National Soil Survey Center, Natural Resources Conservation Service, U.S. Department of Agriculture (USDA). Observations were made for groundwater and/or redoximorphic features indicative of zones of saturation or seasonal high groundwater. Soil logs are included in the Appendix of this report.

Undisturbed tube permeability tests were collected in general accordance with New Jersey Department of Environmental Protection (N.J.D.E.P.) *Stormwater Best Practices Manual – Appendix E* test methods on representative samples obtained from anticipated stormwater management facility infiltration depths.

3.0 UNITED STATES DEPARTMENT OF AGRICULTURE (USDA) SOIL SURVEY

Based on a review of the United States Department of Agriculture – Natural Resources Conservation Services (USDA-NRCS) soil survey the following soil resources are mapped underlying the site within the area of the proposed site improvements and are described below:

Udorthents, stratified substratum, zero to eight percent slopes (UdstB): Udorthents stratified substratum with zero to eight percent slopes is mapped within the majority of the proposed stormwater management facility. The typical soil profile of this series soil (as reported in the soil survey) consists of sand to a depth of 10 inches underlain by gravelly coarse sand to a depth of 72 inches below the natural ground surface (limit of report). The depth to the water table is reported to be more than 80 inches below the natural ground surface.

Othello silt loams, zero to two percent slopes, northern coastal plain (OthA): Orthello silt loams with zero to two percent slopes is mapped within the southwestern portion of the proposed stormwater management facility. The typical soil profile of this series soil (as reported in the soil survey) consists of silt loam to a depth of 29 inches, with a sandy loam to a depth of 34 inches, underlain by loamy sand to a depth of 80 inches below the natural ground surface (limit of report). The depth to the water table is reported to be more between 10 and 20 inches below the natural ground surface.

4.0 RESULTS

Detailed descriptions of the subsurface conditions encountered are presented on the *Records of Subsurface Investigation* included herein. The subsurface conditions encountered in the soil profile pits consisted of the following generalized strata in order of increasing depth and were generally consistent with the USDA soil series detailed above.

4.1 Subsurface Soil Profile

The soil profile pits were performed within existing grass areas and encountered between approximately three inches and 24 inches of topsoil fill at the surface. Debris encountered within the topsoil layer included porcelain tile fragments. Beneath the surficial cover, natural residual soils were encountered that consisted of sand, sandy loam, loamy sand, silt loam, silt, silty clay, and silty clay loam with variable amounts of gravel. The natural soils were encountered to termination/refusal depths ranging between approximately four feet and 11.3 feet below the

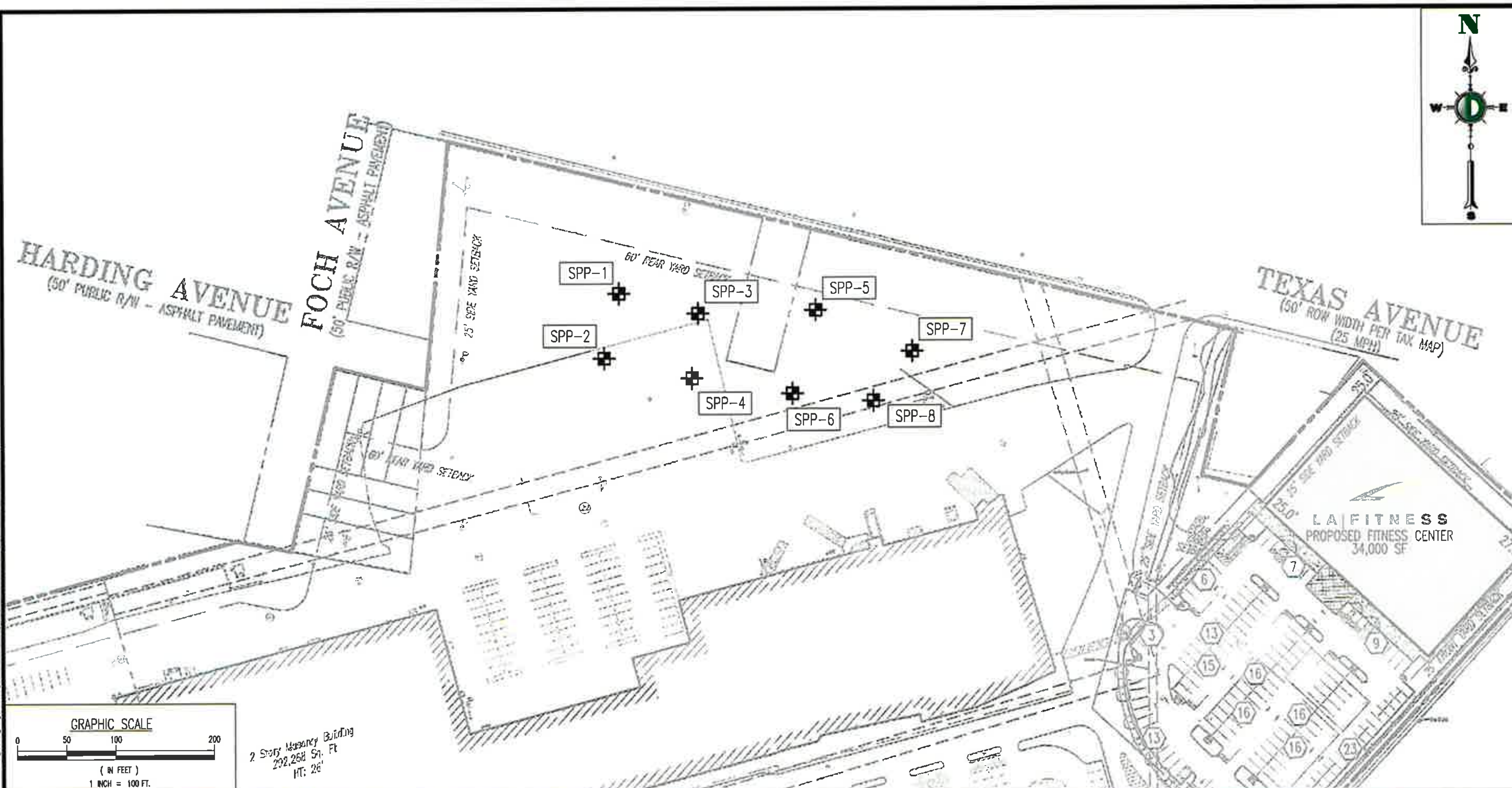
ground surface; corresponding to elevations ranging between 53.4 feet and 57.9 feet.

4.2 Seasonal High Groundwater and Permeability Testing

Groundwater or evidence of seasonal high groundwater was encountered within planned stormwater management locations at depths ranging from 0.4 feet and five feet below the ground surface; corresponding to elevations ranging between 58.1 feet and 54.6 feet. Groundwater levels are expected to fluctuate seasonally and following significant periods of precipitation. Permeability testing was not requested as part of this investigation. A summary of the seasonal high groundwater levels and permeability test results is presented in the following table:

SEASONAL HIGH GROUNDWATER AND PERMEABILITY TEST SUMMARY			
Location	Surface Elevation (mse)	Estimated Seasonal High Groundwater	
		Depth (Feet)	Elevation (Feet)
SPP-1	60.1	5.0	55.1
SPP-2	60.1	2.9	57.2
SPP-3	59.2	3.3	55.9
SPP-4	58.4	3.2	55.2
SPP-5	58.5	0.4	58.1
SPP-6	56.6	2.0	54.6
SPP-7	57.1	0.8	56.3
SPP-8	57.4	2.7	54.7

Test Location Plan



SCALE: (H) 1"=100 (V)	JOB No: 1279-99-010E	TITLE: **TEST LOCAION PLAN**	**LEGEND:**
SHEET No: 1 OF 1	DRAWN BY: KFG DESIGNED BY: DR CHECKED BY: PG	PROJECT: **RPM DEVELOPMENT** ***PROPOSED MULTIFAMILY DEVELOPMENT*** BLOCK 2001, LOTS 3, 60-66 & 68 2495 BRUNSWICK PIKE TOWNSHIP OF LAWRENCE, MERCER COUNTY, NEW JERSEY	SPP-X — APPROXIMATE SOIL PROFILE PIT LOCATION
	DATE: 05/09/19	Rev. # 0 — DEC Client Code: 1279	

NOTES:
1. THIS PLAN HAS BEEN PREPARED BASED ON A OVERALL SITE PLAN EXHIBIT PREPARED ON 06/20/18, LAST REVISED 12/17/18 BY DYNAMIC ENGINEERING, LLC.
2. THIS PLAN IS NOT FOR CONSTRUCTION AND WAS PREPARED TO ILLUSTRATE TEST LOCATIONS ONLY, AND MAY NOT REFLECT THE MOST CURRENT REVISION OF THE BASE PLAN.

DYNAMIC EARTH, LLC
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Records of Subsurface Exploration

DYNAMIC EARTH

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP- 1

Project: Proposed Multifamily Development
Location: 2493 Brunswick Pike, Township of Lawrence, Mercer County, New Jersey
Project No.: 1279-99-010E
Client: RPM Development

Surface Elevation (ft):
Termination Depth (ft): 11.0
Proposed Location: BWM
Excavation / Test Method: Visual Observation
Date Started: 5/6/19
Date Completed: 5/6/19
Logged by: D. Richardson
Contractor: Pennywaight
Rig Type: Case 510L

Groundwater Data	Depth (ft)	El. (msl)
Seepage	8.3	-8.3
Groundwater	8.0	-8.0
Seasonal High Groundwater	5.0	-5.0

Groundwater Comments: Iron accumulation approximately five feet below the ground surface.

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
							Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (ft)	No.	
0 - 22	FILL Strong Brown (7.5YR 5/8)	SILT LOAM	GRAVEL 15	COBBLES 5	STONES	BOULDERS	MASSIVE	STRUCTURELESS		WET	SOFT	SLIGHTLY STICKY	SLIGHTLY PLASTIC	ABRUPT <1"	WAVY	COMN (20% MAX)	FINE	NONE			BAG	5	S-1	
22 - 60	Brown (7.5YR 5/3)	LOAMY SAND	GRAVEL 5	COBBLES	STONES	BOULDERS	SINGLE GRAIN	STRUCTURELESS		MOIST	LOOSE	SLIGHTLY STICKY	NONPLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	NONE			BAG TUBE	35	S-2 T-1	
60 - 72	Brown (7.5YR 5/3)	LOAMY SAND	GRAVEL 5	COBBLES	STONES	BOULDERS	SINGLE GRAIN	STRUCTURELESS		MOIST	LOOSE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	COMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	60	S-3	
72- 103	Light Brownish Gray (10YR 6/2)	LOAMY SAND	GRAVEL 5	COBBLES	STONES	BOULDERS	SINGLE GRAIN	STRUCTURELESS		WET	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC	CLEAR <2.5"	WAVY	NONE		COMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	103	S-4	
103 - 132	Brown (7.5YR 5/3)	LOAMY SAND	GRAVEL 10	COBBLES <5	STONES	BOULDERS	SINGLE GRAIN	STRUCTURELESS		WET	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC			NONE		COMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	132	S-5	

Additional Remarks: S-1 encountered debris at the surface. Debris included porcelain tile and polyvinyl chloride. SPP-1 was terminated approximately at 11.3 feet below the ground surface. SPP-1 encountered wet-cave-in to a depth of 8.3 feet below the ground surface.

DYNAMIC EARTH

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP- 2

Project: Proposed Multifamily Development
Location: 2468 Brunswick Pike, Township of Lawrence, Mercer County, New Jersey
Project No.: 1279-99-010E
Client: RPM Development

Surface Elevation (ft): 11.3
Termination Depth (ft): 5WM
Proposed Location: Excavation
Method: Visual Observation
Date Started: 5/6/19
Date Completed: 5/6/19
Logged by: D. Richardson
Contractor: Pennyweight
Rig Type: Case 610L

Groundwater Data	Depth (ft)	EL (msl)
Seepage	10.3	+10.3
Groundwater	4.4	+4.4
Nearest Utah Groundwater	2.9	-2.9

Groundwater Comments: Iron accumulation approximately 2.9 feet below the ground surface.

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
							Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (in)	No.	
0 - 9	FILL Strong Brown (7.5YR 5/8)	SILT LOAM	GRAVEL 15	COBBLES 5	STONES	BOULDERS	MASSIVE	STRUCTURELESS		WET	SOFT	SLIGHTLY STICKY	SLIGHTLY PLASTIC	ABRUPT <1"	WAVY	CMN (20% MAX)	FINE	NONE			BAG	5	S-1	
9 - 35	Reddish Brown (5YR 4/3)	SILTY CLAY LOAM	GRAVEL 5	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	NONE			BAG TUBE	30	S-2 T-1	
35 - 53	Reddish Brown (5YR 4/3)	SILT LOAM	GRAVEL 5	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	CMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	53	S-3	
53 - 128	Reddish Brown (5YR 4/3)	SANDY LOAM	GRAVEL 10	COBBLES <5	STONES	BOULDERS	SUBANGULAR BLOCKY	MODERATE	MEDIUM	WET	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC	CLEAR <2.5"	WAVY	NONE		CMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	98	S-4	
128 - 135	Reddish Brown (5YR 4/3)	LOAMY SAND	GRAVEL 15	COBBLES 5	STONES	BOULDERS	SINGLE GRAIN	STRUCTURELESS		WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		CMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	135	S-5	

Additional Remarks: S-1 encountered debris at the surface. Debris included porcelain tile and polyvinyl chloride. SPP-2 was terminated approximately at 11.3 feet below the ground surface.

DYNAMIC EARTH

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP-3

Project: Proposed Multifamily Development

Project No.: 1279-99-010E

Location: 2465 Brunswick Pike, Township of Lawrence, Mercer County, New Jersey

Client: RPM Development

Surface Elevation (ft):		Date Started:	5/6/19	Groundwater Data	
Termination Depth (ft):	11.3	Date Completed:	5/6/19		
Proposed Location:	SWM	Logged by:	D. Richardson		
Excavation / Test Method:	Visual Observation	Contractor:	Pennyweight		
		Rig Type:	Case 510L		

Groundwater Data	Depth (ft)	EL (msl)	Groundwater Comments
Seepage	NE	#VALUE!	
Groundwater	4.0	-4.0	Iron accumulation approximately 3.25 feet below the ground surface.
Seasonal High Groundwater	3.3	-3.3	

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
			GRAVEL	COBBLES	STONES	BOULDERS	Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (in)	No.	
0 - 6	FILL Strong Brown (7.5YR 5/8)	SILT LOAM	15	5			MASSIVE	STRUCTURELESS		WET	SOFT	SLIGHTLY STICKY	SLIGHTLY PLASTIC	ABRUPT <1"	WAVY	CMN (20% MAX)	FINE	NONE			BAG	2	S-1	
6 - 39	Reddish Brown (5YR 4/3)	SILTY CLAY LOAM	5				SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	NONE			BAG TUBE	26	S-2 T-1	
39 - 48	Reddish Brown (5YR 4/3)	SILT LOAM	5				SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC	CLEAR <2.5"	WAVY	NONE	FINE	CMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	48	S-3	
48 - 126	Reddish Brown (5YR 4/3)	SANDY LOAM	10	<5			SUBANGULAR BLOCKY	WEAK	FINE	WET	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC			NONE		CMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	96	S-4	

Additional Remarks: S-1 encountered debris at the surface. Debris included porcelain tile and polyvinyl chloride. SPP-3 encountered refusal approximately at 10.5 feet below the ground surface.

DYNAMIC EARTH

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP- 4

Project: Proposed Multifamily Development
Location: 2484 Brunswick Pike, Township of Lawrence, Mercer County, New Jersey
Project No.: 1270-00-010E
Client: RPM Development

Surface Elevation (ft): 5.4
Termination Depth (ft): 5WM
Proposed Location: Excavation
Excavation / Test Method: Visual Observation
Date Started: 5/6/19
Date Completed: 5/6/19
Logged by: D. Richardson
Contractor: Pennyweight
Rig Type: Case 510L

Groundwater Data	Depth (ft)	El. (msl)
Termination	5.0	#VALUE!
Groundwater	4.2	+1.3
Seasonal High Groundwater	3.2	+2.2

Groundwater Comments: Iron accumulation approximately 2.9 feet below the ground surface.

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
							Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (ft)	No.	
0 - 8	FILL Strong Brown (7.5YR 5/8)	SILT LOAM	GRAVEL 15	COBBLES 5	STONES	BOULDERS	MASSIVE	STRUCTURELESS		WET	SOFT	SLIGHTLY STICKY	SLIGHTLY PLASTIC	ABRUPT <1"	WAVY	CMN (20% MAX)	FINE	NONE			BAG	2	S -1	
8 - 38	Reddish Brown (5YR 4/3)	SILTY CLAY LOAM	GRAVEL 5	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	NONE			BAG TUBE	30	S-2 T-1	
38 - 51	Reddish Brown (5YR 4/3)	SILT LOAM	GRAVEL 5	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	CMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	40	S-3	
51 - 60	Brown (7.5YR 5/3)	SILTY CLAY	GRAVEL 10	COBBLES <5	STONES	BOULDERS	SUBANGULAR BLOCKY	MODERATE	FINE	WET	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC	CLEAR <2.5"	WAVY	NONE		CMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	55	S-4	
60 - 65	Brown (7.5YR 5/3)	SILT LOAM	GRAVEL 15	COBBLES 5	STONES	BOULDERS	PLATY	MODERATE	FINE	WET	HARD	NONSTICKY	NONPLASTIC			NONE		CMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	65	S-5	

Additional Remarks: S-1 encountered debris at the surface. Debris included porcelain tile and polyvinyl chloride. SPP-3 encountered refusal approximately at 5.4 feet below the ground surface.

DYNAMIC EARTH

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP- 5

Project: Proposed Multifamily Development
Location: 2495 Brunswick Pike, Township of Lawrence, Mercer County, New Jersey
Project No.: 1279-99-010E
Client: RPM Development

Surface Elevation (ft):
Termination Depth (ft): 4.7
Proposed Location: SWM
Excavation / Test Method: Visual Observation

Date Started: 5/6/19
Date Completed: 5/6/19
Logged by: D. Richardson
Contractor: Pennyweight
Rig Type: Case 510L

Groundwater Data	Depth (ft)	EL (msl)
Seepage	4.0	-4.0
Groundwater	3.0	-3.0
Seasonal High Groundwater	0.4	-0.4

Groundwater Comments: Iron accumulation approximately 0.5 feet below the ground surface.

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
							Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (in)	No.	
0 - 3	TOPSOIL Dark Brown (7.5YR 3/3)	SILT LOAM	GRAVEL 15	COBBLES 5	STONES	BOULDERS	MASSIVE	STRUCTURELESS		WET	SOFT	SLIGHTLY STICKY	SLIGHTLY PLASTIC	ABRUPT <1"	WAVY	CMN (20% MAX)	FINE	NONE			BAG	1	S -1	
3 - 9	Reddish Brown (5YR 4/3)	SILTY CLAY LOAM	GRAVEL 5	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	NONE			BAG TUBE	5	S-2 T-1	
9 - 23	Reddish Brown (5YR 4/3)	SILT LOAM	GRAVEL 5	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	CMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	23	S-3	
23 - 36	Light Brownish Gray (10YR 6/2)	SILT LOAM	GRAVEL 5	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	CMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	36	S-4	
36 - 42	Brown (7.5YR 5/3)	SILT LOAM	GRAVEL 5	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	FINE	WET	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	CMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	42	S-5	
42 - 56	Brown (7.5YR 5/2)	LOAMY SAND	GRAVEL 15	COBBLES 5	STONES	BOULDERS	SINGLE GRAIN	STRUCTURELESS		WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		CMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	56	S-6	

Additional Remarks: SPP-5 was terminated approximately at 4.7 feet below the ground surface.

DYNAMIC EARTH

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP- 6

Project: Proposed Multifamily Development
Location: 2455 Brunswick Pike, Township of Lawrence, Mercer County, New Jersey
Project No.: 1279-99-010E
Client: RPM Development

Surface Elevation (ft):
Termination Depth (ft): 5.5
Proposed Location: SWM
Excavation / Test Method: Visual Observation
Date Started: 5/6/19
Date Completed: 5/6/19
Logged by: D. Richardson
Contractor: Pennyweight
Rig Type: Case 510L

Groundwater Data	Depth (ft)	EL (msl)
Seepage	3.0	-1.0
Groundwater	4.0	-2.0
Seasonal High Groundwater	3.0	-2.0

Groundwater Comments: Iron accumulation approximately two feet below the ground surface.

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
							Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (in)	No.	
0 - 9	FILL Strong Brown (7.5YR 5/8)	SILT LOAM	GRAVEL 15	COBBLES 5	STONES	BOULDERS	MASSIVE	STRUCTURELESS		WET	SOFT	SLIGHTLY STICKY	SLIGHTLY PLASTIC	ABRUPT <1"	WAVY	CMN (20% MAX)	FINE	NONE			BAG	1	S -1	
9 - 24	Brown (7.5YR 5/3)	SILT LOAM	GRAVEL 5	COBBLES 5	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	NONE			BAG TUBE	20	S-2 T-1	
24 - 39	Brown (7.5YR 5/3)	SILT LOAM	GRAVEL 5	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	CMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	30	S-3	
39 - 48	Brown (7.5YR 5/3)	SILT	GRAVEL 10	COBBLES <5	STONES	BOULDERS	SUBANGULAR BLOCKY	MODERATE	FINE	MOIST	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC	CLEAR <2.5"	WAVY	NONE		CMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	40	S-4	
48 - 66	Brown (7.5YR 5/3)	SANDY LOAM	GRAVEL 15	COBBLES 5	STONES	BOULDERS	PLATY	MODERATE	FINE	WET	HARD	NONSTICKY	NONPLASTIC			NONE		CMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	60	S-5	

Additional Remarks: S-1 encountered debris at the surface. Debris included porcelain tile and polyvinyl chloride. SPP-6 encountered refusal approximately at 5.5 feet below the ground surface.

DYNAMIC EARTH

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP-7

Project: Proposed Multifamily Development
Location: 2495 Brunswick Pike, Township of Lawrence, Mercer County, New Jersey
Project No.: 1279.99-010E
Client: RPM Development

Surface Elevation (ft):
Termination Depth (ft): 4.3
Proposed Location: SWM
Excavation / Test Method: Visual Observation

Date Started: 5/6/19
Date Completed: 5/6/19
Logged by: D. Richardson
Contractor: Pennyweight
Rig Type: Case 510L

Groundwater Data	Depth (ft)	EL (msl)
Surface	0.0	+4.0
Groundwater	3.0	+1.0
Seasonal High Groundwater	0.8	+3.2

Groundwater Comments: Iron accumulation approximately 0.83 feet below the ground surface.

DEPTH (IN.)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
							Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (ft)	No.	
0 - 6	TOPSOIL Dark Brown (7.5YR 3/3)	SILT LOAM	GRAVEL 10	COBBLES 5	STONES	BOULDERS	MASSIVE	STRUCTURELESS		MOIST	SOFT	SLIGHTLY STICKY	SLIGHTLY PLASTIC	ABRUPT <1"	WAVY	CMN (20% MAX)	FINE	NONE			BAG	2	S-1	
6 - 10	Brown (7.5YR 5/3)	LOAM	GRAVEL 5	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	MODERATE	FINE	MOIST	LOOSE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	NONE			BAG TUBE	7	S-2 T-1	
10 - 36	Brown (7.5YR 5/3)	LOAM	GRAVEL 5	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	MODERATE	FINE	MOIST	LOOSE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	CMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	10	S-3	
36 - 52	Brown (7.5YR 5/3)	LOAMY SAND	GRAVEL 5	COBBLES	STONES	BOULDERS	SINGLE GRAIN	STRUCTURELESS		WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		CMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	48	S-4	

Additional Remarks: SPP-1 was terminated approximately at 4.3 feet below the ground surface.

DYNAMIC EARTH

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP- 8

Project: Proposed Multifamily Development — Project No.: 1279-89-010E

Location: 2495 Brunswick Pike, Township of Lawrence, Mercer County, New Jersey — Client: RPM Development

Surface Elevation (ft): — Date Started: 5/6/19

Termination Depth (ft): 4.0 — Date Completed: 5/6/19

Proposed Location: SWM — Logged by: D. Richardson

Excavation / Test Method: Visual Observation — Contractor: Pennyweight

File Type: Case 610L

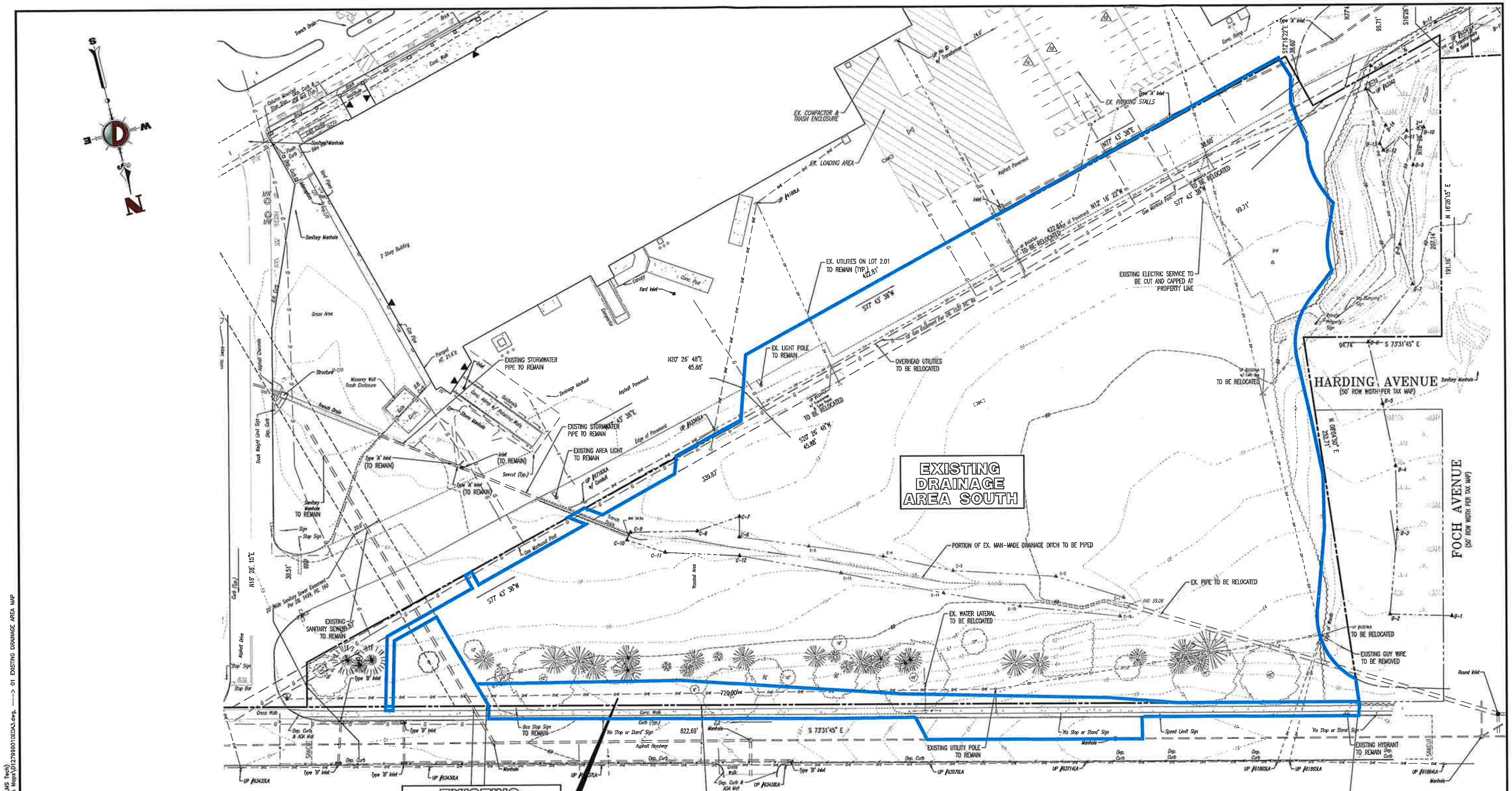
Groundwater Data	Depth (ft)	El. (msl)
Termite	3.3	-3.3
Groundwater	3.3	-3.3
Seasonal High Groundwater	2.7	-2.7

Groundwater Comments: Iron accumulation approximately 2.7 feet below the ground surface.

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
							Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (in)	No.	
0 - 24	TOPSOIL Dark Brown (7.5YR 3/3)	SILT LOAM	GRAVEL 15	COBBLES 5	STONES	BOULDERS	MASSIVE	STRUCTURELESS		MOIST	SOFT	SLIGHTLY STICKY	SLIGHTLY PLASTIC	ABRUPT <1"	WAVY	CMN (20% MAX)	FINE	NONE			BAG	2	S-1	
24 - 32	Brown (7.5YR 5/3)	SAND	GRAVEL 5	COBBLES	STONES	BOULDERS	SINGLE GRAIN	STRUCTURELESS		MOIST	LOOSE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	NONE			BAG TUBE	28	S-2 T-1	
32 - 39	Brown (7.5YR 5/3)	SAND	GRAVEL 5	COBBLES	STONES	BOULDERS	SINGLE GRAIN	STRUCTURELESS		MOIST	LOOSE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	CMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	32	S-3	
39 - 48	Brown (7.5YR 5/3)	SAND	GRAVEL 5	COBBLES	STONES	BOULDERS	SINGLE GRAIN	STRUCTURELESS		WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		CMN 2%-20%	MEDIUM 5MM-15MM	PROMINENT	BAG	48	S-4	

Additional Remarks: SPP-1 was terminated approximately at four feet below the ground surface.

DRAINAGE AREA MAPS



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TITLE: EXISTING DRAINAGE AREA MAP

PROJECT: RPM DEVELOPMENT, LLC
PROPOSED RESIDENTIAL DEVELOPMENT
BLOCK 2001, LOTS 3, 60–66, & 68
2495 BRUNSWICK PIKE (A.K.A. ALT ROUTE 1)
TOWNSHIP OF LAWRENCE, MERCER COUNTY, NEW JERSEY

JOB No:	1279-99-010
DATE:	03/31/2020
DRAWN BY:	GMC
DESIGNED BY:	LPG
CHECKED BY:	TJM
CHECKED BY:	–
SCALE: (H)	1"=30'
SHEET No:	1 OF 3
Rev.	3

JOHN A. PALUS
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 41975

THOMAS J. MULLER
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 52179

Rev.	Date	Comments	By
3	11/04/22	REV. PER TOWNSHIP COMMENTS	KNG
2	11/16/20	REV. PER TOWNSHIP COMMENTS	GMC
1	10/09/20	REV. PER TOWNSHIP COMMENTS	GMC

Plotted: 11/28/22 – 10:36 AM, By: mdelvecchio. – Product Ver: 24.1s (LMS Tech)
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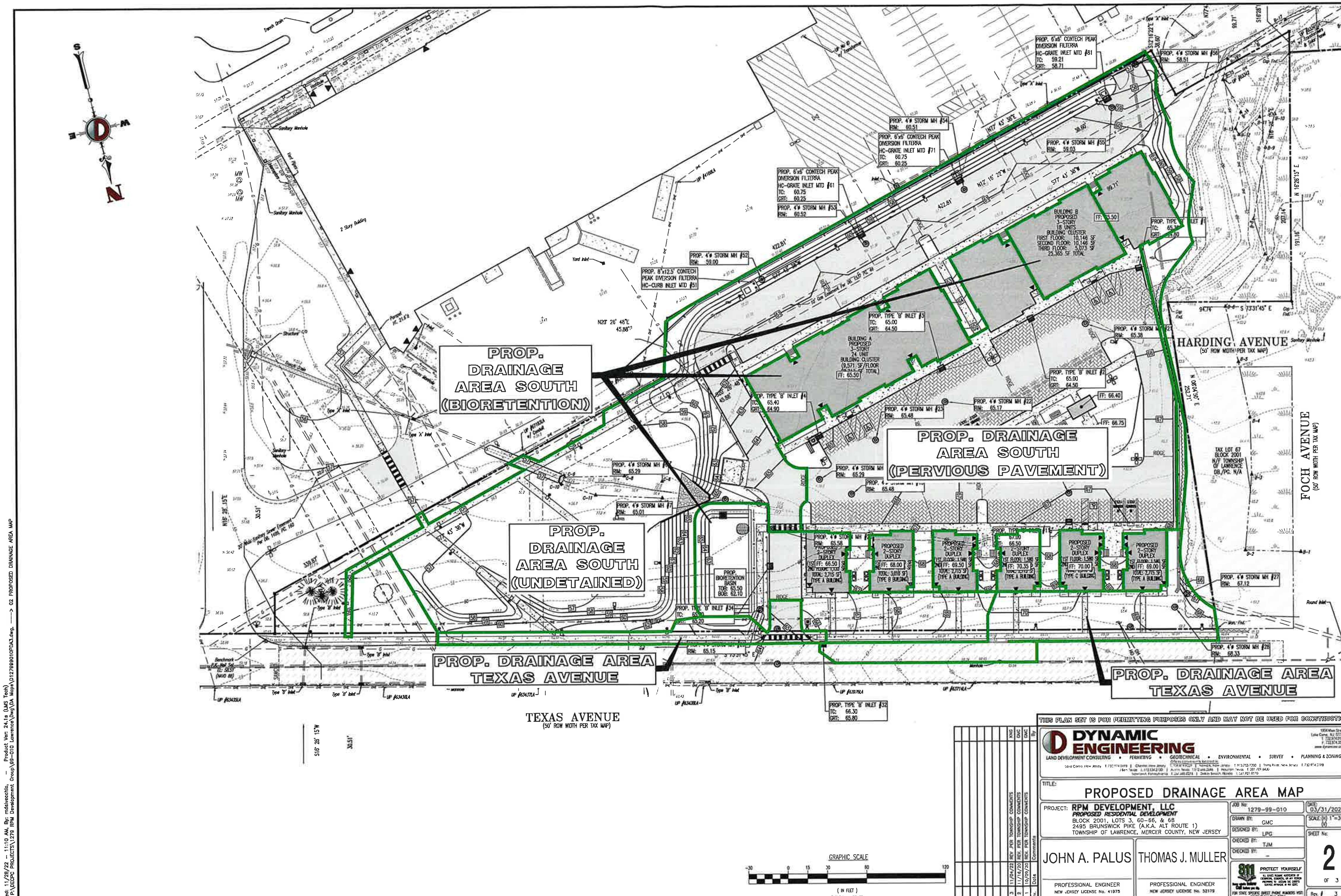

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Rev.	Date	Comments	By
3	11/04/22	REV. PER TOWNSHIP COMMENTS	XNG
2	11/16/20	REV. PER TOWNSHIP COMMENTS	GMC
1	10/09/20	REV. PER TOWNSHIP COMMENTS	GMC

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DATE:	03/31/2020
DRAWN BY:	GMC
DESIGNED BY:	LPG
CHECKED BY:	TJM
CHECKED BY:	-
SCALE:	(H) 1"=30' (V)
SHEET No:	2 OF 3
Rev.	3

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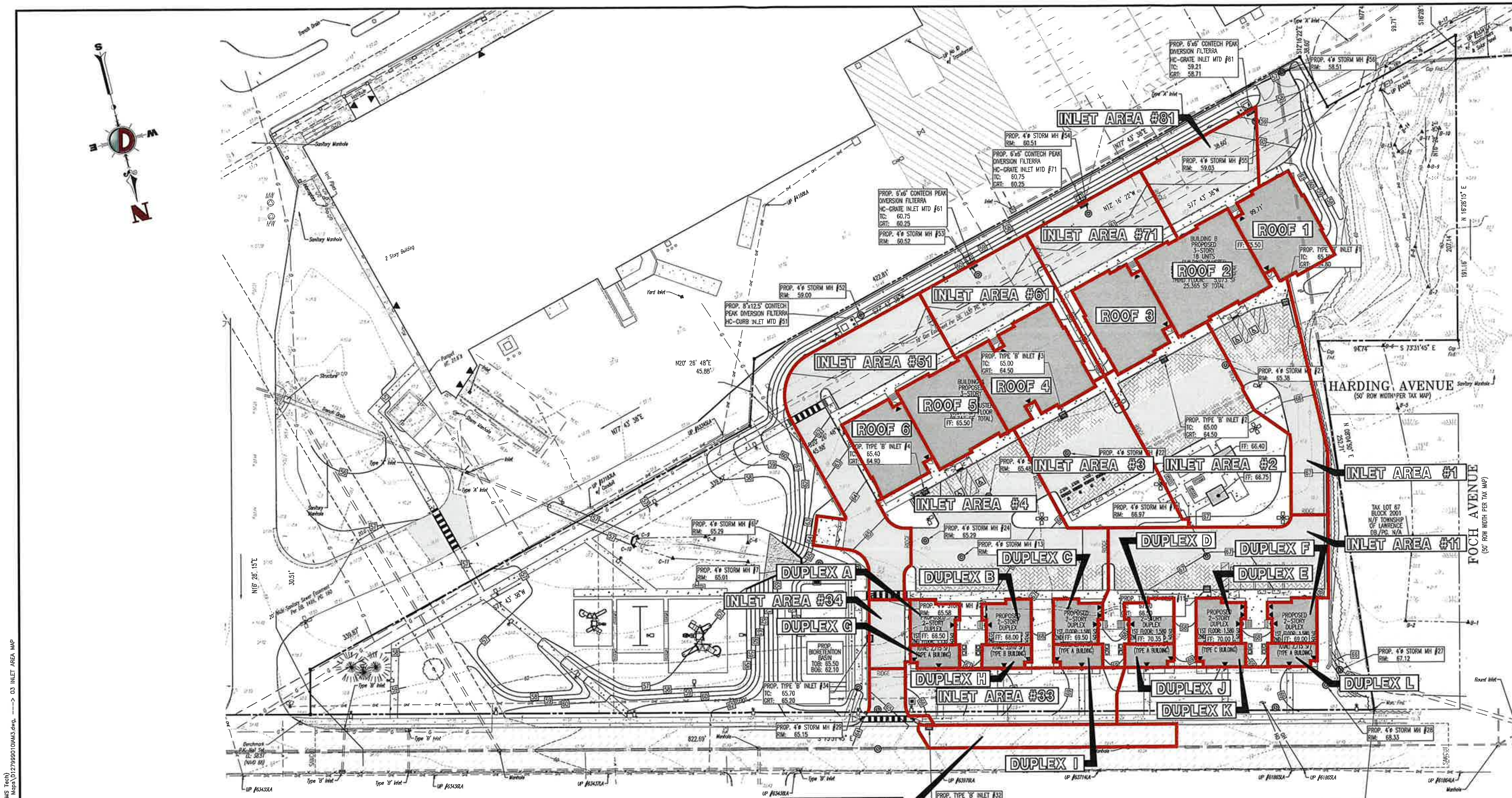

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GRAPHIC SCALE

-30 0 15 30 60 120

(IN FEET)
1 INCH = 30 FT.

Rev.	Date	Comments	By
1	10/09/20	REV. PER TOWNSHIP COMMENTS	GMC
2	11/16/20	REV. PER TOWNSHIP COMMENTS	GMC
3	11/04/22	REV. PER TOWNSHIP COMMENTS	KNC

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CHECKED BY: –
SHEET No: 3 OF 3
Rev. # 3

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