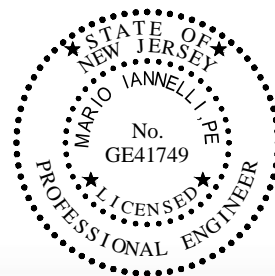


Stormwater Management Report

Carrier Clinic – Adolescent Patient Unit

Block 2001; 1001, Lots 2; 14.02
252 County Road 601
Township of Montgomery
Somerset County, NJ 08502

September 8, 2023



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Township of Montgomery, Somerset County, NJ 08502

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1.0 PROJECT SUMMARY & BACKGROUND

The subject property is located at 252 County Road 601 in the Township of Montgomery, Somerset County, New Jersey, also known as Blocks 2001; 1001 – Lots 2; 14.02 as shown on the Township's Tax Map sheet 1 (State Plane Coord. (X)- 441,086, (Y)- 595,152). The subject property is approximately 86.65± acre and is bordered by E Mountain Road and Belle Mead-Blawenburg Road (County Road 601) to the south, by a solar farm to the north, and by undeveloped land to the west and east. The property is located in the Township of Montgomery's MR ("Mountain Residential" Zone) zoning district, the New Jersey Rural Planning Area (PA 4), and the DRCC Review Zone B.

The site is currently occupied by the Hackensack Meridian Health Carrier Clinic campus with 297 licensed beds. The primary goal of the proposed project will be to separate the adolescent and adult patients and relocate administrative services. Some of the key elements of the proposed project that are planned to facilitate these goals are as follows:

- The relocation of adolescent beds into a newly construction building addition;
- Relocation of the adult beds to a portion of the existing building, adjacent to the proposed addition;
- Executive Office Building will be demolished, and administrative services relocated into the existing building;
- Small Addition on to the Ancillary Service Building and internal renovations to consolidate services;
- While the proposed improvements will not increase the number of licensed beds, there will be a slight increase the number of employees (approximately 9 employees).

Refer to the associated "Preliminary & Final Major Site Plan for Carrier Clinic Adolescent Patient Unit" for more details on this project. All elevations herein are based on the North American Vertical Datum of 1988 (NAVD 88) unless otherwise noted.

2.0 DESIGN OVERVIEW

Dewberry has prepared this Stormwater Management Report in accordance with the requirements of the New Jersey Department of Environmental Protection (NJDEP) N.J.A.C. 7:8 for Stormwater Management, the NJDEP Stormwater Best Management Practices (BMP) Manual, Delaware and Raritan Canal Commission (DRCC) N.J.A.C. 7:45, the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) National Engineering Handbook Part 630 for Hydrology (NEH630), the Township of Montgomery's Municipal Code § 16-5.26 for Stormwater Management and Grading, and the Standards for Soil Erosion and Sediment Control (SE&SC) in New Jersey (7th Edition, revised July 2017).

The scope of this study includes an analysis of the proposed redevelopment and its effects on existing stormwater drainage patterns. Grading and utility plans have been developed for the proposed site improvements with consideration to match the existing drainage patterns to the maximum extent practicable. “Nonstructural stormwater management strategies” are considered when designing this site in order to minimize the effects on stormwater runoff flows and volumes.

This project is classified as a “major development” since the proposed improvements will disturb more than one acre of land and will create more than one-quarter acre of regulated impervious surfaces since February 2, 2004 [N.J.A.C. 7:8-1.2]. This project is also classified as a “major project” since the site is within DRCC Zone B and shall disturb more than one acre of land and will create more than one-quarter acre of impervious surfaces since January 11, 1980 [N.J.A.C. 7:45-1.3]. The stormwater management measures for this project are designed to provide erosion control, groundwater recharge, stormwater runoff quantity control, and stormwater runoff quality treatment, which are addressed through the following:

- Demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, post-construction (proposed) runoff hydrographs for the 2-, 10-, and 100-year storm events do not exceed, at any point in time, the pre-construction (existing) runoff hydrographs for the same storm events [N.J.A.C. 7:8-5.6(b)1.; N.J.A.C. 7:45-8.6(a)2.];
- Design stormwater management measures so that the post-construction peak runoff rates for the two-, 10-, and 100-year storm events are 50, 75, and 80 percent, respectively, of the pre-construction peak runoff rates [N.J.A.C. 7:8-5.6(b)3.; N.J.A.C. 7:45-8.6(a)1.]
- Stormwater runoff quality measures are designed to reduce the post-construction (proposed) load of total suspended solids (TSS) in stormwater runoff generated from the water quality design storm by 80 percent of the anticipated load from the developed (proposed) site [N.J.A.C. 7:8-5.5(b)1.; N.J.A.C. 7:45-8.7(a)];
- A waiver is being requested for groundwater recharge requirements due to site constraints;
- Design and performance standards for erosion control per the Soil Erosion and Sediment Control Act [N.J.S.A. 4:24-39 et seq.].

These improvements will increase total impervious surfaces by 0.84± acres but will decrease motor vehicle surfaces by 0.17± acres, as compared from existing to proposed conditions. The scope of this stormwater study does not include the entire 86.65± acre subject property; it consists an area of study (AOS) of 24.44± acres that encompasses the proposed site improvements. The AOS is divided into five drainage areas that ultimately convey to four (4) points of study (POS).

3.0 EXISTING CONDITIONS

3.1 Land Cover

The AOS is currently developed with buildings, vehicular surfaces, stormwater collection systems, utility structures, and recreational facilities. Under existing conditions there are 5.54± acres of vehicular impervious cover, 3.84± acres of non-vehicular impervious cover, and 15.06± acres of open space grass/landscaping. Refer to the Existing Drainage Area Map in Appendix IV for more information.

3.2 Hydrologic Conditions

The existing AOS has been analyzed as the following five (5) drainage areas:

- 'DA-1A' – This area consists of a small portion of the main building, a trailer on a concrete slab, vehicular impervious areas, and open space grass/landscaping. The stormwater runoff generated by this area flows overland to the southwest before being collected by a ditch running adjacent to East Mountain Road. The ditch flows to the west towards POS-1A. Impervious coverage has an area of 0.78± acres, a weighted CN of 98.0, and a calculated ToC of 0.225± hours; pervious coverage has an area of 3.69± acres, a weighted CN of 74.0, and a calculated ToC of 0.261± hours.
- 'DA-1B' – This area consists of portions of the main building, a satellite building, vehicular impervious areas, concrete walkways, and open space grass/landscaping. The stormwater runoff generated by this area flows both overland and through a stormwater collection system before being collected by a ditch running adjacent to East Mountain Road. The ditch flows to the northwest towards POS-1B. Impervious coverage has an area of 1.89± acres, a weighted CN of 98.0, and a calculated ToC of 0.245± hours; pervious coverage has an area of 1.78± acres, a weighted CN of 74.0, and a calculated ToC of 0.318± hours.
- 'DA-2' – This area consists of portions of the main building, vehicular impervious areas, concrete walkways, utility enclosures, a stormwater management basin, and open space grass/landscaping. The stormwater runoff generated by this area flows both overland and through a stormwater collection system before discharging into the basin near the western property boundary, POS-2. Impervious coverage has an area of 3.84± acres, a weighted CN of 98.0, and a calculated ToC of 0.237± hours; pervious coverage has an area of 5.39± acres, a weighted CN of 74.0, and a calculated ToC of 0.296± hours.
- 'DA-3' – This area consists of a satellite building, vehicular impervious areas, concrete walkways, a utility enclosure, and open space grass/landscaping. The stormwater runoff generated by this area flows both overland and through a stormwater collection system before being collected by a ditch running adjacent to East Mountain Road. The ditch flows to the southeast towards POS-3. Impervious coverage has an area of 1.57± acres, a weighted CN

of 98.0, and a calculated ToC of 0.355± hours; pervious coverage has an area of 2.92± acres, a weighted CN of 75.1, and a calculated ToC of 0.387± hours.

- 'DA-4' – This area consists of vehicular impervious areas, concrete walkways, a tennis court, and open space grass/landscaping. The stormwater runoff generated by this area flows both overland and through a stormwater collection system towards an existing inlet, POS-4. Impervious coverage has an area of 1.30± acres, a weighted CN of 98.0, and a calculated ToC of 0.325± hours; pervious coverage has an area of 1.29± acres, a weighted CN of 77.1, and a calculated ToC of 0.319± hours.

3.3 Upland Drainage Patterns

Pursuant the grading and drainage patterns shown on the survey and through aeriels, there is no offsite stormwater runoff conveying through the AOS.

4.0 **PROPOSED CONDITIONS**

4.1 Land Cover

The project plan is to demolish a satellite building, a trailer on a concrete slab, vehicular impervious surfaces, portions of existing drainage and utility systems, a tennis court, and associated non-vehicular impervious surfaces. Majority of the site will remain undisturbed. Construction includes a 43,970± SF footprint building addition, a 410± SF footprint building addition, a 900± SF greenhouse, parking areas, drive aisles, and associated stormwater systems, utilities, and landscaping. Under proposed conditions there are 5.37± acres of vehicular impervious cover, 4.85± acres of non-vehicular impervious cover, 1.07± acres of meadow, and 13.15± acres of open space grass/landscaping. Proposed land cover and runoff flow paths have been designed to match the existing land cover and runoff flow paths to the greatest extent practicable. Refer to the Proposed Drainage Area Map in Appendix IV for more information.

4.2 Hydrologic Conditions

The proposed AOS has continued to be analyzed as the following five (5) drainage areas:

- 'DA-1A' – This area consists of the main building addition, a small portion of the existing building, new and existing vehicular impervious areas, new pervious paving systems, a new stormwater management basin, landscaping meadow mix, and open space grass/landscaping. The stormwater runoff generated by this area flows both overland to the southwest and through a stormwater collection system before being collected by a ditch running adjacent to East Mountain Road. The ditch flows to the west towards POS-1A. Impervious coverage has an area of 2.02± acres, a weighted CN of 98.0, and a calculated ToC of 0.076± hours; pervious

coverage has an area of 2.75± acres, a weighted CN of 72.8, and a calculated ToC of 0.188± hours.

- This drainage area includes 4 sub-drainage areas; DA-1A-1, DA-1A-2, DA-1A-3, and DA-1A-4 that are conveying to their respective BMPs prior to discharging towards POS-1A. Refer to table 5.5.1 for the BMP and contributory drainage areas.
- 'DA-1B' – This area consists of portions of the main building, a small building addition, new and existing vehicular impervious areas, new and existing concrete walkways, and open space grass/landscaping. The stormwater runoff generated by this area flows both overland and through a stormwater collection system before being collected by a ditch running adjacent to East Mountain Road. The ditch flows to the northwest towards POS-1B. Impervious coverage has an area of 1.80± acres, a weighted CN of 98.0, and a calculated ToC of 0.245± hours; pervious coverage has an area of 1.87± acres, a weighted CN of 74.0, and a calculated ToC of 0.318± hours.
- 'DA-2' – This area consists of portions of the main building, a new fenced enclosure adjacent to the existing building, new and existing vehicular impervious areas, new and existing concrete walkways, existing utility enclosures, an existing stormwater management basin, and open space grass/landscaping. The stormwater runoff generated by this area flows both overland and through a stormwater collection system before discharging into the basin near the western property boundary, POS-2. Impervious coverage has an area of 3.83± acres, a weighted CN of 98.0, and a calculated ToC of 0.237± hours; pervious coverage has an area of 5.10± acres, a weighted CN of 74.0, and a calculated ToC of 0.296± hours.
- 'DA-3' – This area consists of an existing satellite building, new and existing vehicular impervious areas, new and existing concrete walkways, an existing utility enclosure, and open space grass/landscaping. The stormwater runoff generated by this area flows both overland and through a stormwater collection system before being collected by a ditch running adjacent to East Mountain Road. The ditch flows to the southeast towards POS-3. Impervious coverage has an area of 1.44± acres, a weighted CN of 98.0, and a calculated ToC of 0.355± hours; pervious coverage has an area of 3.03± acres, a weighted CN of 75.2, and a calculated ToC of 0.387± hours.
- 'DA-4' – This area consists of a new greenhouse building, new and existing vehicular impervious areas, new and existing concrete walkways, and open space grass/landscaping. The stormwater runoff generated by this area flows both overland and through a stormwater collection system towards an existing inlet, POS-4. Impervious coverage has an area of 1.13± acres, a weighted CN of 98.0, and a calculated ToC of 0.325± hours; pervious coverage has an area of 1.47± acres, a weighted CN of 76.8, and a calculated ToC of 0.319± hours.

4.3 Upland Drainage Patterns

Pursuant the grading and drainage patterns shown on the survey and proposed grading plans, there continues to be no offsite stormwater runoff conveying through the AOS.

5.0 **DESIGN METHODOLOGY**

5.1 Calculation Methods

Hydrologic scenarios are modeled via Bentley PondPack computer software utilizing NRCS (Unit Hydrograph) methodology. The 2-, 10-, and 100-year storm events are based upon NOAA 24-hour rainfall frequency data for Somerset County, NJ utilizing the NOAA Region C rainfall distribution, noted as 3.34, 5.01, and 8.21 inches/24 hours, respectively [BMP Table 5-1]. Runoff hydrographs have been generated using the SCS Dimensionless Unit Hydrograph and pervious and impervious catchment areas have been modeled separately [N.J.A.C. 7:8-5.7(a)4.]. Pursuant the pre-application meeting with our office and the DRCC on July 10, 2023, the DRCC will not require the project to meet the July 17, 2023 rule amendments to N.J.A.C. 7:8. This project does not require any additional NJDEP permits and is not a residential project subject to N.J.A.C. 5:21 (RSIS). Pursuant the pre-application meeting with our office and the Township on July 21, 2023, the Township will not update their local ordinances to include the N.J.A.C. 7:8 rule amendments prior to this project's submission. Therefore, this stormwater analysis has been designed and analyzed pursuant N.J.A.C. 7:8 dated March 2, 2020.

Hydraulic calculations for the stormwater pipe networks are modeled via Bentley SewerGEMS computer software and are designed for the 100-year storm event based upon NOAA 24-hour rainfall frequency data for Somerset County, NJ. Calculation for conduit outlet protection have been performed based on the standards outlined in Chapter 12 of the Standards for Soil Erosion and Sediment Control In New Jersey.

5.2 Soils and Curve Number Values

Soil classifications for use in establishing runoff curve numbers (CN) for each drainage area are determined based on the NRCS Soil Survey.

Table 5.2.1: Hydrologic Soil Groups

Soil Type	Soil Type Name	HSG
KkoC	Klinesville channery loam, 6 to 12% slopes	D
PeoB	Penn channery silt loam, 2 to 6% slopes	C
RehA	Reaville silt loam, 0 to 2% slopes	C
RehB	Reaville silt loam, 2 to 6% slopes	C

Runoff CN values for developing Unit Hydrographs, per NEH630 Chapter 9, and in good conditions, are as follows:

Ground Cover	CN
Buildings/Paved Areas	98
Pervious Paving Surfaces	98
Open Space / Landscaping – C Soils	74
Open Space / Landscaping – D Soils	80
Meadow	71

Subsurface investigations were conducted in June and July of 2023 in the area of the main building addition, which included ten (10) test pits, four (4) basin flood tests, and one (1) double ring infiltrometer. Shallow shale bedrock is present approximately 1.5-4' below grade but was found to be rippable down to approximately 4.5-9' below grade. Permeability tests were attempted in the surficial soils as well as the weathered bedrock. The basin flood and double ring infiltrometer tests all failed the initial pre-soak phase; therefore, the subsoils and bedrock are not permeable.

The field investigations were not conducted during the 'wet' months of January to April and no signs of mottling were found, so the seasonal high water table (SHWT) has been determined from NRCS Web Soil Survey data and confirmed during the subsurface investigations. Pursuant the pre-application meeting with our office and the Department on July 10, 2023, the Department confirmed that we can use NRCS data for the depth of groundwater as long as we use the shallower depth between NRCS and field investigations. The test pits conducted in the field demonstrated that the field conditions encountered are consistent with the NRCS. Based on NRCS data for the PeoB Hydraulic Soil Group, groundwater is at least 200 centimeters, or 6.5 feet, below grade. The field investigation found groundwater between 6 to 9 feet below grade, but two of the test pits terminated at depths 4.5 to 5.5 feet below grade due to non-rippable bedrock. Therefore, the groundwater in the area of the BMPs is approximately 4.5 to 6.5 feet below grade.

5.3 Stormwater Conveyance

The underground stormwater conveyance system consists of various inlets, manholes, junctions, and conduits. Roof drains will collect runoff from the building and discharge directly into the underground conveyance system. The proposed system will re-use as much of the existing system as practicable. The proposed conveyance system sections within drainage areas DA-1B and DA-2 are closely matching the existing conveyance sections being replaced; since impervious cover is being reduced in these drainage areas, these pipes have not been modeled in SewerGEMs. The outfall pipe and headwall within DA-1A will remain and is being utilized as the outfall for the pervious paving systems' bypass and overflow networks. Due to site constraints, a 20-foot section of the 27-inch RCP discharging from the existing basin needs to be replaced with 3x 18-inch HDPE pipes in order to cross with a proposed pipe. Overland flow has been considered during the design of the grades and conduit systems

with the goal to match the existing overland runoff areas as closely as practicable. Two riprap aprons will be installed along any outfall that discharge directly to the ground surface.

Manning's Equation has been used to study the existing and proposed pipe capacities and discharges based on the 100-year storm events for Somerset County. Inlet drainage areas for overland runoff have been identified for each sub-catchment area and include the total catchment areas, impervious percentages, and CN values. Time-flow and time-elevation curves for the BMPs have been calculated in the PondPack analysis and incorporated into their corresponding outlet structures and outfalls in SewerGEMS to model basin flows and outfall tailwater conditions. The existing 27-inch RCP conveying to existing manhole #101 is assumed to be flowing at full capacity (using Manning's Equation) for conservative calculations.

Refer to the associated Site Plans and Appendix IV for drainage patterns and the Proposed Inlet Area Map. Refer to Appendix III for conduit outlet protection calculations.

5.4 Time of Concentrations

The time of concentrations (ToC) to the POS have been calculated for all pervious and impervious catchment areas under existing and proposed conditions. Equations and assumptions are in accordance with NEH630 Chapter 15 and the BMP Manual Chapter 5. The maximum Manning's Roughness Coefficient (n) for sheet flow does not exceed 0.40 and the maximum sheet flow length does not exceed 100 feet [BMP Chapter 5]. Refer to Appendix II for ToC calculations.

Sheet Flow Surface	'n' Value
Buildings/Paved Areas	0.011
Grass	0.150
Meadow	0.240

Channel Flow Surface	'n' Value
Concrete Pipe	0.013
HDPE Pipe	0.012
PVC Pipe	0.010
Grass Ditch	0.030

5.5 Stormwater Infrastructure Designs

Three (3) pervious paving systems are proposed near the main building addition that are designed in accordance with BMP Chapter 9.6, shall provide 80% TSS removal, and will reduce peak runoff flows. The systems have been designed to have a maximum ratio of additional inflow area of 3:1, a maximum surface slope of 5%, a void ratio of 40% in the stone storage bed, and a drain down time of less than 72 hours. Since the soils do not meet the minimum hydraulic conductivity for infiltration BMPs, each system is designed with an underdrain and outlet control structure. Each system is designed to be at least 1-foot above the SHWT.

Each pervious paving system is being constructed within new pavement sections as to avoid modifying existing pavement areas. All three systems are receiving vehicular impervious coverage via overland flow and systems 1A-1 and 1A-3 are receiving roof runoff via roof leader pipes. The runoff is then detained in the stone storage beds before being picked up by the perforated underdrain and discharged into the outlet control structures. The lowest quantity control orifice elevations are set less than 1-inch above the water quality storm maximum water elevations. In the event of primary outlet failures, stormwater can surcharge out of the pavement and runoff down the driveways towards the existing ditch with minimal impact to surrounding structures.

Table 5.5.1: Pervious Paving Systems

System	Porous Area (ac)	Additional Inflow Area (ac)	Drainage Area Ratio	Max Surface Slope
1A-1	0.155	0.453	2.92:1	3.3%
1A-2	0.042	0.126	3.00:1	1.3%
1A-3	0.065	0.165	2.53:1	1.1%

The project also proposes an extended detention basin in the open space to the west of the main building addition that is designed in accordance with BMP Chapter 11.2 and will reduce peak runoff flows. Since this is a non-GI BMP, our office is requesting a waiver as to allow the extended detention basin to meet water quantity requirements. During the initial stormwater planning phase, all BMPs in CMP Chapters 9 and 10 were considered before ones in Chapter 11. However, due to various site constraints such as low permeability rates, shallow groundwater and bedrock, the presence of many existing utilities and structures, and avoiding prohibitively high costs, an extended detention basin is the most practicable BMP available. Some of other BMPs that were considered to avoid the need for the waiver required were not feasible due to the lack of infiltration and the need for an underdrain system. The shallow bed rock and groundwater would preclude the use of a surface basin with an underdrainage system.

The basin shall receive runoff only from clean roof, patio, and pervious areas and is not designed to meet any stormwater quality or groundwater recharge standards; it is modeled without infiltration. The design includes a riprap low-flow channel, outlet control structure, maximum side slopes of 3:1, and a contoured bed graded towards the outlet. An emergency spillway (ESW) is included, which is designed in accordance with the SE&SC standards and has been calculated in PondPack with the primary outlet turned off. Runoff from the spillway will discharge directly towards POS-1A and away from any buildings, structures, and parking areas in the event of a failure with the primary outlet. The 100-year maximum water elevation through OCS-1A-4 is below the ESW elevation, and the 100-year maximum water elevation when modeling only the ESW is more than 1 foot below the top-of-berm.

Refer to Appendix II and IV for additional information on these BMPs.

Table 5.5.2: Outlet Control Structures

OCS	Element	Size	Elevation
1A-1	Orifice	2.5" dia.	109.90
	Orifice	2.5" dia.	110.50
	Weir	4' long	111.00
1A-2	Orifice	2.5" dia.	109.55
	Orifice	2.5" dia.	110.05
	Weir	4' long	110.50
1A-3	Orifice	2.5" dia.	113.25
	Orifice	2.5" dia.	113.70
	Weir	4' long	114.20
1A-4	Orifice	2.5" dia.	109.85
	Weir	4' long	111.00
	ESW	70' long	111.50

Table 5.5.3: Basin Elevations

BMP	Element	Elevation
1A-1	WQ Storm	110.48
	100-Year Storm	111.33
	Min. Top of Stone	111.45
1A-2	WQ Storm	109.98
	100-Year Storm	110.57
	Min. Top of Stone	111.10
1A-3	WQ Storm	113.65
	100-Year Storm	114.31
	Min. Top of Stone	114.80
1A-4	100-Year Storm, OCS	111.33
	100-Year Storm, ESW	111.53
	Min. Top of Berm	112.75

5.6 Runoff Quantity Requirements

Hydrological evaluations for existing and proposed conditions have been calculated for the 2-, 10-, and 100-year storm events for Somerset County. The site's stormwater quantity control standards have been addressed for each drainage area to their respective points of study. Drainage area DA-1A is addressed by demonstrating that the post-construction (proposed) peak runoff rates for the 2-, 10- and 100-year storm events are 50, 75 and 80 percent, respectively, of the pre-construction (existing) peak runoff rates [N.J.A.C. 7:8-5.6(b)3.; N.J.A.C. 7:45-8.6(a)1.]. Drainage areas DA-1B, DA-2, DA-3, and DA-4 are addressed by demonstrating through hydrologic and hydraulic analysis that for stormwater leaving the site, post-construction (proposed) runoff hydrographs for the 2-, 10-, and 100-year storm events do not exceed, at any point in time, the pre-construction (existing) runoff hydrographs for the same storm events [N.J.A.C. 7:8-5.6(b)1.; N.J.A.C. 7:45-8.6(a)2.].

The runoff quantity requirements for DA-1A are achieved by incorporating pervious paving systems and a detention basin; the basin is designed to capture only pervious and clean impervious areas, whereas the pervious paving systems capture vehicular impervious and clean roof areas. Additionally, the open spaces around the proposed detention basin is being planted with meadow mix to reduce the drainage area's CN value. The runoff quantity requirements for the other drainage areas are achieved by reducing the overall impervious coverage and by matching the runoff timing as closely as practicable. Refer to Appendix II for the PondPack modeling summaries, runoff hydrographs in graphical and numerical form, and master network summary.

Table 5.6.1: Peak Runoff Rates to POS-1A

POS	Storm Event	Existing Peak Runoff Rate (cfs)	Reduction (%)	Allowable Peak Runoff Rate (cfs)	Proposed Peak Runoff Rate (cfs)	Difference (Prop – Allow) (cfs)
1A	2-year	5.54	50	2.77	2.70	-0.07
	10-year	10.71	75	8.03	5.36	-2.67
	100-year	21.42	80	17.14	14.50	-2.64

Table 5.6.2: Peak Runoff Rates to Remaining POS

POS	Storm Event	Existing Peak Runoff Rate (cfs)	Proposed Peak Runoff Rate (cfs)	Difference (Prop – Exist) (cfs)
1B	2-year	6.22	6.09	-0.13
	10-year	10.50	10.36	-0.14
	100-year	19.11	18.97	-0.14
2	2-year	14.37	14.07	-0.30
	10-year	25.10	24.45	-0.65
	100-year	46.86	45.50	-1.36
3	2-year	6.08	5.91	-0.17
	10-year	10.84	10.64	-0.20
	100-year	20.56	20.31	-0.25
4	2-year	4.49	4.27	-0.22
	10-year	7.54	7.32	-0.22
	100-year	13.59	13.41	-0.18

Table 5.6.3: Runoff Volumes to each POS

POS	Storm Event	Existing Volume (ac-ft)	Proposed Volume (ac-ft)	Difference (Prop – Exist) (cfs)
1A	2-year	0.547	0.646	0.099
	10-year	1.036	1.126	0.090
	100-year	2.083	2.199	0.116
1B	2-year	0.655	0.640	-0.015
	10-year	1.100	1.083	-0.017
	100-year	2.009	1.987	-0.022
2	2-year	1.496	1.466	-0.030
	10-year	2.583	2.522	-0.061
	100-year	4.831	4.701	-0.130
3	2-year	0.695	0.675	-0.020
	10-year	1.220	1.195	-0.025
	100-year	2.311	2.278	-0.033
4	2-year	0.478	0.452	-0.027
	10-year	0.800	0.769	-0.031
	100-year	1.451	1.417	-0.034

5.7 Water Quality Requirements

While overall project will decrease motor vehicle surfaces by 0.17± acres, the project is a major development that increases “new” regulated motor vehicle surfaces by more than one-quarter acre; therefore, stormwater runoff quality measures are designed to reduce the post-construction (proposed) load of total suspended solids (TSS) in stormwater runoff generated from the water quality design storm by 80 percent of the anticipated load from the developed (proposed) site [N.J.A.C. 7:8-5.5(b)1.; N.J.A.C. 7:45-8.7(a)]. The water quality design storm, 1.25 inches of rainfall in two hours, is included in the PondPack analysis.

Pursuant the pre-application meeting with our office and the DRCC on July 10, 2023, the Department clarified the following:

- a. Water quality requirements do not apply to reconstructed vehicular pavement areas that are being replaced for sole purpose of installing or relocating utilities;
- b. The average TSS removal rates are applied to each individual drainage area or group of drainage areas that convey to same water feature (wetlands, stream, etc.);
- c. Water quality requirements can be waived if the amount of new vehicular surfaces within an area (as outlined in point b.) is at least two times (2x) less than the amount of existing vehicular surface areas being removed;
- d. Pervious paving is the optimal choice for TSS removal based on site constraints, but manufactured treatment devices may be used if needed.

The five drainage areas are discharging stormwater runoff to four distinct water features. ‘DA-1A’ and ‘DA-1B’ are discharging into the existing stormwater ditch running adjacent to East Mountain Road, ‘DA-2’ is discharging into the existing onsite basin to the west, ‘DA-3’ is discharging into an offsite forested area directly south of the East Mountain Road per NJ-GeoWeb, and ‘DA-4’ is discharging into an onsite wetlands area to the northeast. ‘DA-1A’ and ‘DA-1B’ have been averaged together since they are both conveying to the same water feature, whereas the other drainage areas have been averaged separately. Vehicular impervious areas being added or replaced are at least 2x less than the vehicular impervious areas being removed in drainage areas ‘DA-2’, ‘DA-3’, and ‘DA-4,’ so water quality requirements in these areas are exempt. Water quality treatment requirements for ‘DA-1A’ and ‘DA-1B’ are met by using three (3) pervious paving systems that provide 80% TSS removal, which are designed in accordance with the BMP Manual Chapter 9.6. Refer to Appendix IV for additional information.

Table 5.7.1: Water Quality Treatment – Required Areas

Drainage Area	New Vehicular Surface Area (ac)	Removed Vehicular Surface Area (ac)	Reduction Factor	Water Quality Required?	Required TSS Removal (%)
DA-1A & DA-1B	0.383	0.224	0.59	Yes	80
DA-2	0.034	0.124	3.67	No	0
DA-3	0.068	0.139	2.04	No	0
DA-4	0.008	0.057	7.42	No	0

Table 5.7.2: Water Quality Treatment – Provided Areas

Drainage Area	New Vehicular Surface Area (ac)	Weighted Area Requiring Treatment (ac) [A]	Vehicular Surface Area Captured (ac)	Weighted Area Treated (ac) [B]	Difference [B] – [A]
DA-1A & DA-1B	0.383	0.306	0.409	0.327	0.021

5.8 Groundwater Recharge Requirements

The site is not located within an “urban redevelopment area” nor does it contain high pollutant loading or industrial “source material.” However, pursuant section 5.2 herein, the site consists of highly restrictive soils and shallow bedrock that prevent the use of infiltration BMPs. Basin flood tests were conducted during the subsurface investigations, but they all failed during the pre-soak stage. Due to these site constraints, our office is requesting a waiver for groundwater recharge requirements.

5.9 Nonstructural Stormwater Management Strategies

Since this project is a major development, it has been designed to incorporate nonstructural stormwater management strategies to the maximum extent practicable.

1. Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss.

The proposed improvements are being installed predominately in previously disturbed areas, and the area where the proposed basin is being placed is also being planted with meadow mix. Stormwater runoff will discharge to areas currently receiving runoff.

2. Minimize impervious surface and break up or disconnect the flow of runoff over impervious surface.

The site's overall impervious coverage is approximately 25%, which is well below the municipal ordinance maximum of 45%. Where possible, existing and proposed impervious surfaces are disconnected and discharge runoff through pervious areas prior to being captured or leaving the site.

3. Maximize the protection of natural drainage features and vegetation.
The project will not remove natural drainage features. There is a small vegetated area to the south of the proposed basin that is not being developed on and additional open lawn area is being planted with meadow mix.
4. Minimize the decrease in the “time of concentration” from pre-construction to post-construction. “Time of concentration” is defined as the time it takes for runoff to travel from the hydraulically most distant point of the drainage area to the point of interest within a watershed.
The proposed time of concentrations for each drainage area meeting the hydrograph reduction method are consistent with the existing time of concentrations. The time of concentrations for the drainage area meeting the hydrograph method are being reduced due to the nature and placement of the proposed improvements. However, most of the new impervious surfaces within this drainage area are being detained, which will increase the runoff timing prior to leaving the site.
5. Minimize land disturbance including clearing and grading.
The proposed project is predominantly within previously disturbed areas. Proposed grades are matching existing grades where practicable.
6. Minimize soil compaction.
Much of the proposed development is taking place near existing paved areas that will be used as transport routes for heavy machinery. Additionally, based on the subsoil investigation, the soils have very low permeability and shale bedrock is very shallow throughout the site.
7. Provide low-maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers and pesticides.
A comprehensive landscape plan has been incorporated into the design of the proposed improvements which includes low maintenance landscaping. Proposed lawn areas are minimized where applicable and a large portion of existing open space is being planted with native meadow mix.
8. Provide vegetated open-channel conveyance systems discharging into and through stable vegetated areas.
The drainage design includes open channel flow paths that shall be planted. Conduit outlet protection is proposed for any pipes discharging to the surface. Existing open channel flow areas are being maintained.
9. Provide other source controls to prevent or minimize the use or exposure of pollutants at the site in order to prevent or minimize the release of those pollutants into stormwater runoff.
These source controls include, but are not limited to:

- i. Site design features that help to prevent accumulation of trash and debris in drainage systems;
- ii. Site design features that help to prevent discharge of trash and debris from drainage systems;
- iii. Site design features that help to prevent and/or contain spills or other harmful accumulations of pollutants at industrial or commercial developments; and
- iv. When establishing vegetation after land disturbance, applying fertilizer in accordance with the requirements established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq., and implementing rules.

Inlet grates and trash racks are being installed for the stormwater conveyance systems. The proposed use does not include any industrial waste. The contractor shall apply fertilizers sparingly and in accordance with N.J.S.A. 4:24-39 et seq.

6.0 CONCLUSION

The stormwater management system is designed in accordance with applicable state and local regulations. The proposed development has been designed with provisions for the safe and efficient control of stormwater runoff in a manner that will maintain the existing drainage patterns and limit adverse effects on adjacent roadways, properties, or natural habitats. This project aims to meet stormwater quantity and quality requirements through land cover management, multiple pervious paving systems, and a detention basin.

APPENDIX I:

DRCC Pre-Application Meeting Minutes

FIG-01 USGS Map

FIG-02 2022 Aerial Imagery

FIG-03 2001 Aerial Imagery

FIG-04 DRCC Review Zone

FIG-05 Soil Map, HSG, and Groundwater Depths

FIG-06 State Planning Area

FIG-07 Hydrologic Unit Code 14

FIG-08 County Rainfall Data

Petrucci, Christopher

From: Iannelli, Mario
Sent: Thursday, July 27, 2023 8:37 AM
To: Hutchison, John [DEP]; Friebe, Damian [DEP]
Cc: Ince, Michael; Finch, Steven; Petrucci, Christopher; Vavrence, Erica [DEP]; Baldwin, Christopher; Heck, Donald
Subject: Pre-Application Meeting - Follow up
Attachments: Adolescent Building Site Plan colored reduced.pdf

John/Damian – Please review the email below summarizing the discussion during our Pre-application meeting on 7/10/23 for the proposed project at the Carrier Clinic. We had a follow up meeting with the Township Engineer and Planning Board Engineer on Friday 7/21/23 to review the Stormwater Approach in detail. We held off on sending the notes below from our call in the event the Township professionals had a questions or comment. In general, they agreed with the key items discussed below:

1. General:
 - a. The Department will not require the project to meet the July 17 rule amendments with respect to stormwater, but we need to review with the Township. On our call with the Township, we indicated that we will using the pre-July 17 stormwater standards since we plan on submitting in August which will be before the update to the local ordinances. Please note that this project does not require any additional NJDEP permits and is not subject to RSIS.
2. Stormwater runoff quality:
 - a. Requirements do not apply to reconstructed vehicular pavement areas that are being replaced for sole purpose of installing or relocating utilities.
 - b. Average TSS removal rates are applied to each individual drainage area or group of drainage areas that convey to same water features (wetlands, stream, etc.)
 - c. Requirements can be waived if the amount of new vehicular surface in individual area is at least two times (2x) less than the amount of existing vehicular surface areas being removed (conveying to the same water feature per 1.b.)
 - d. Use permeable pavement in the new paved areas will be optimized.
3. Stormwater runoff Quantity
 - a. The goal of the design will be to management the site using land cover management, porous pavement and a surface basin. We agreed that the Hydrograph method may be used to individual points of study that convey to same water features (wetlands, stream, etc.). We anticipated the area of the new additional will be subject to reductions factors.
 - b. We performed a basin flood test in the area of the surface basin, and it failed. Additional basin flood tests in the area of the permeable pavements will also be included. Since the ripple rock within about 8' of the surface, the site will not infiltrate. Based on these findings, infiltration will not be an option of the BMPs
4. Groundwater recharge:
 - a. As previously mentioned, we performed a basin flood test and assuming that they all provide the similar results, we will be requesting a waiver from the recharge requirements.
5. Water table and Soils Test Pits:
 - a. Upper limit can be estimated between available NRCS data and field investigations, whichever results in the highest elevation. Need to include soil summary that shows the soil are consistent with NRCA. Based on the test pits performed to date, the soil conditions are consistent with NRCS
 - b. No infiltration tests will be performed based on the results of the basin flood test
6. Green infrastructure:
 - a. May include the use of MTDs for water quality treatment.
 - b. Intend to focus on the use of permeable pavement.

The goal of the design will be to management the site using land cover management, porous pavement and a surface basin. With respect to the surface basin, we will evaluate the field conditions to see which BMP would work with the sallow rock and failure of the basin flood test (no infiltration). The conditions on the site may limit the types of basins we can utilize.

Thank you again for taking the time to review this project. Please let me know if we missed anything above.

Thanks again and have a great day

Mario Iannelli, PE

Associate Vice President, Department Manager
600 Parsippany Road, Suite 301
Parsippany, NJ 07054-3715
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.....



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Petrucci, Christopher

From: Iannelli, Mario
Sent: Thursday, July 27, 2023 9:01 AM
To: Mark Herrmann; Rakesh Darji
Cc: Mary Beth Straguzzi; Petrucci, Christopher; Ince, Michael; Sebastian Soler; Justin Fleckser
Subject: FW: Pre-Application Meeting - Follow up
Attachments: Adolescent Building Site Plan colored reduced.pdf

Mark/Rakesh - Just to keep everyone in the loop, please find the email below to the DRCC summarizing the design team's call with them on July 10th.

We will keep you posted if there are any updates

Mario Iannelli, PE

Associate Vice President, Department Manager
600 Parsippany Road, Suite 301
Parsippany, NJ 07054-3715
D 973.576.9675 C 201-787-9151



   
www.dewberry.com

From: Iannelli, Mario
Sent: Thursday, July 27, 2023 8:37 AM
To: Hutchison, John [DEP] <John.Hutchison@dep.nj.gov>; Friebe, Damian [DEP] <Damian.Friebe@dep.nj.gov>
Cc: Ince, Michael <mince@dewberry.com>; Finch, Steven <sfinch@dewberry.com>; Petrucci, Christopher <cpetrucci@dewberry.com>; Vavrence, Erica [DEP] <Erica.Vavrence@dep.nj.gov>; Baldwin, Christopher <cbaldwin@dewberry.com>; Heck, Donald <dheck@dewberry.com>
Subject: Pre-Application Meeting - Follow up

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The goal of the design will be to management the site using land cover management, porous pavement and a surface basin. With respect to the surface basin, we will evaluate the field conditions to see which BMP would work with the shallow rock and failure of the basin flood test (no infiltration). The conditions on the site may limit the types of basins we can utilize.

Thank you again for taking the time to review this project. Please let me know if we missed anything above.

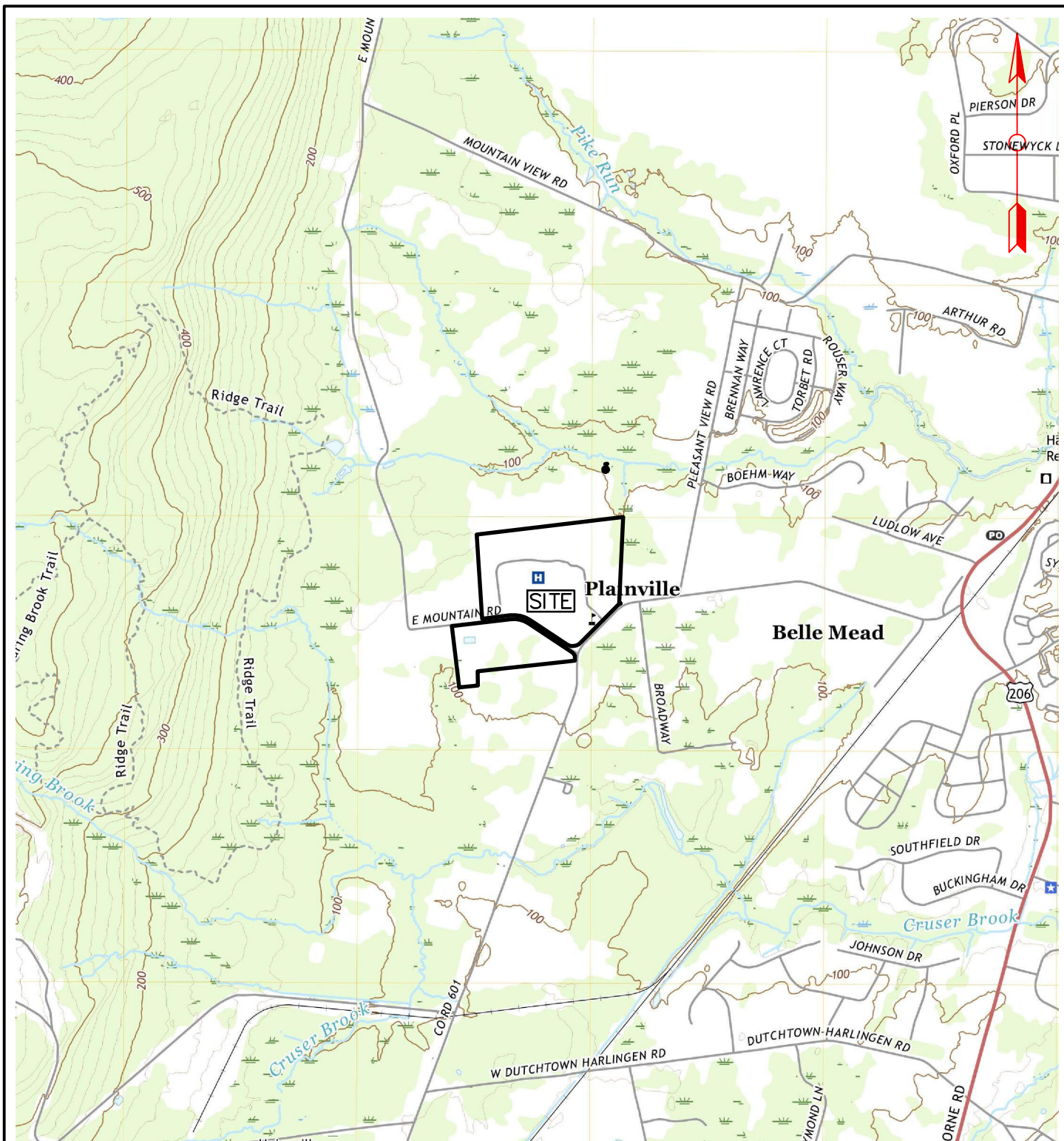
Thanks again and have a great day

Mario Iannelli, PE

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USGS TOPO QUADRANGLE REFERENCED
FROM ROCKY HILL, NJ 2019

GRAPHIC SCALE
1 INCH = 2000 FEET



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TITLE
USGS MAP

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DATE
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SHEET NO.

FIG-01



GRAPHIC SCALE
1 INCH = 300 FEET

AERIAL IMAGE IS FROM 06/05/2022



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TITLE
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PROJ. NO.
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SHEET NO.

FIG-02



GRAPHIC SCALE
1 INCH = 300 FEET

AERIAL IMAGE IS FROM 12/31/2021



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2001 AERIAL IMAGERY

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SHEET NO.

FIG-03

Delaware and Raritan Canal Commission Review
Zones

- Zone A
- Zone B
- Canal

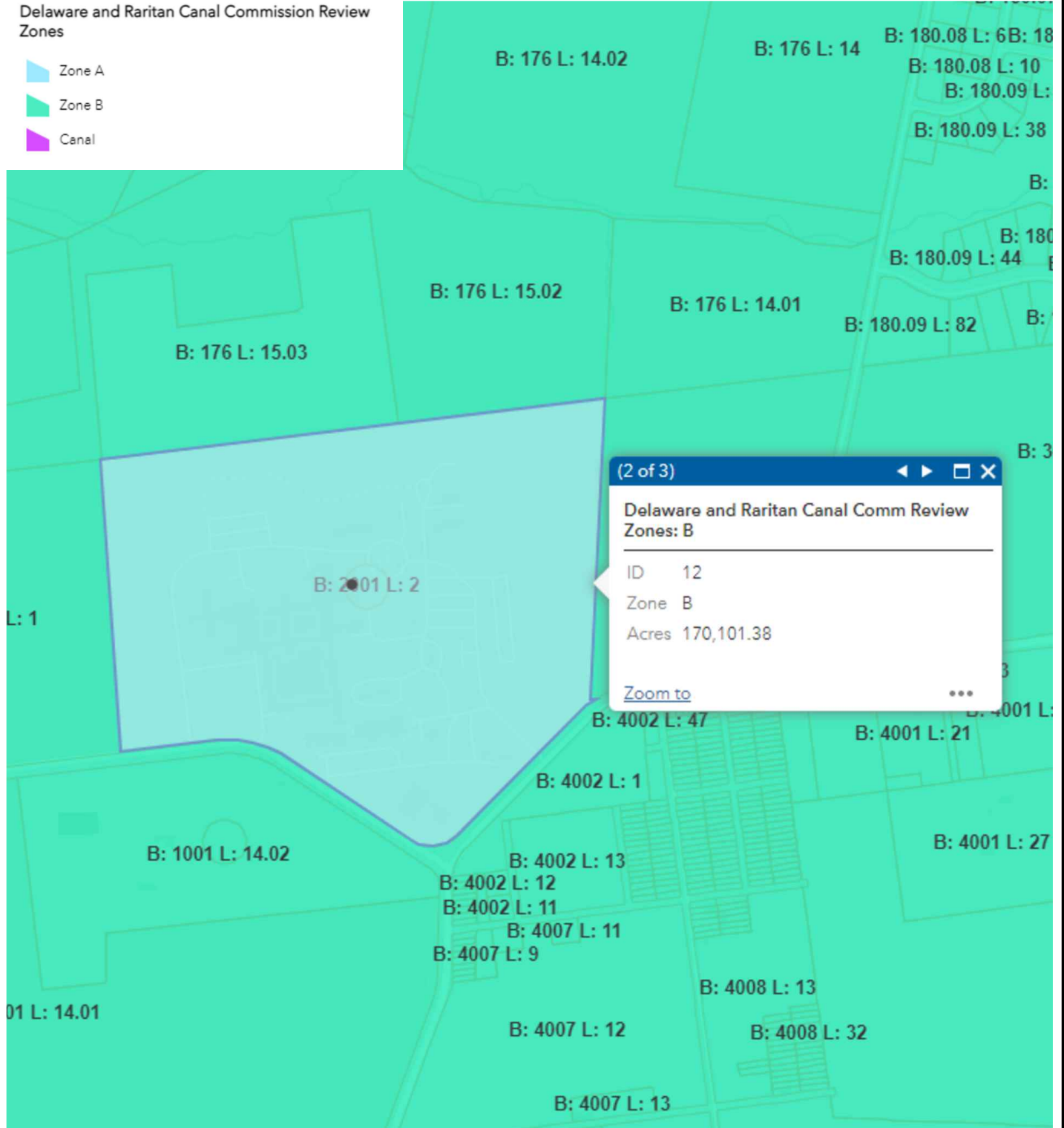


IMAGE IS REFERENCED FROM NJ-GEOWEB



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TITLE
DRCC REVIEW ZONE

PROJECT
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DATE
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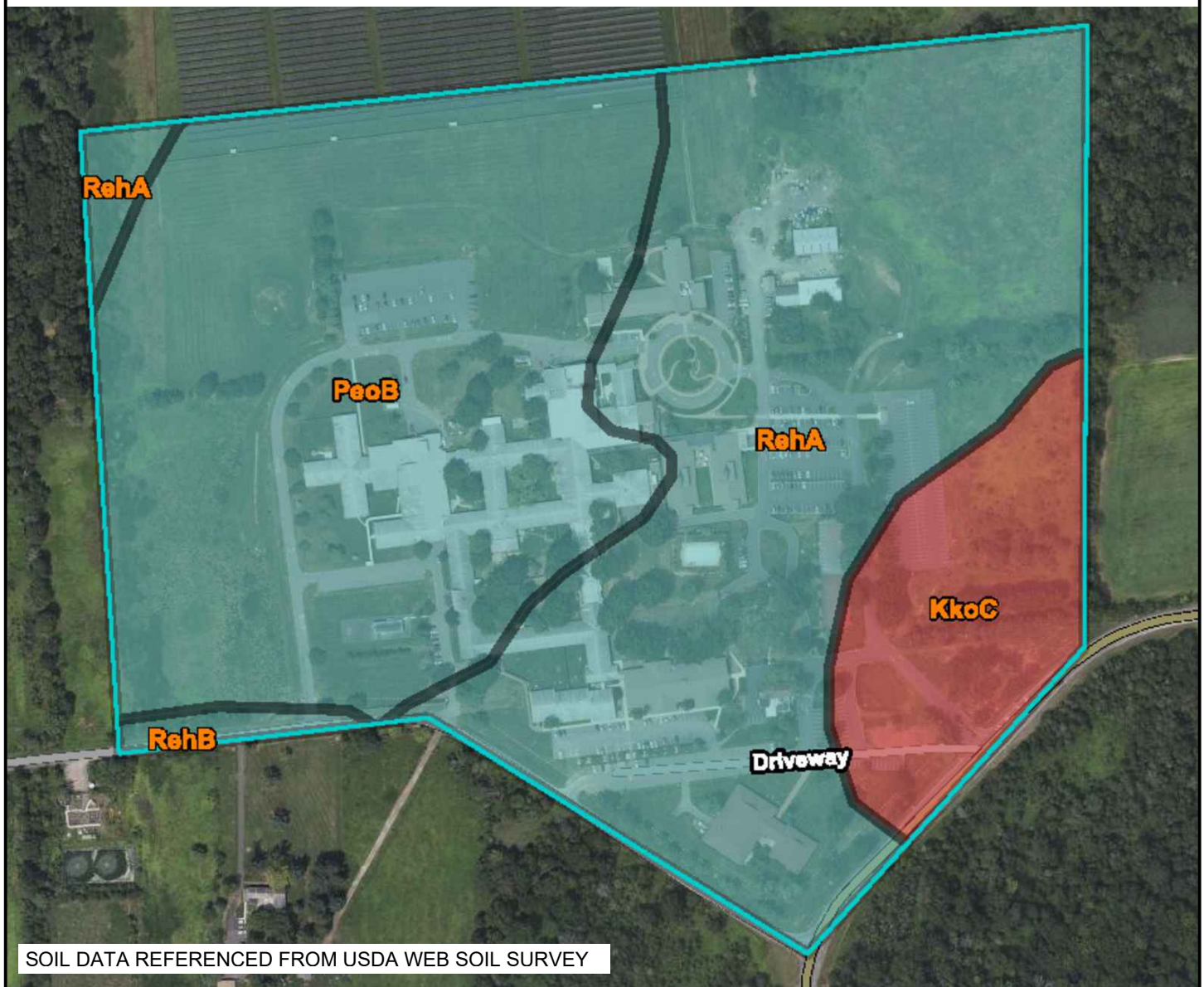
PROJ. NO.
50164256


SHEET NO.

FIG-04

Map unit symbol	Map unit name	Rating	Rating (centimeters) *
KkoC	Klinesville channery loam, 6 to 12 percent slopes	D	>200
PeoB	Penn channery silt loam, 2 to 6 percent slopes	C	>200
RehA	Reaville silt loam, 0 to 2 percent slopes	C	46
RehB	Reaville silt loam, 2 to 6 percent slopes	C	46

*DEPTH OF GROUNDWATER

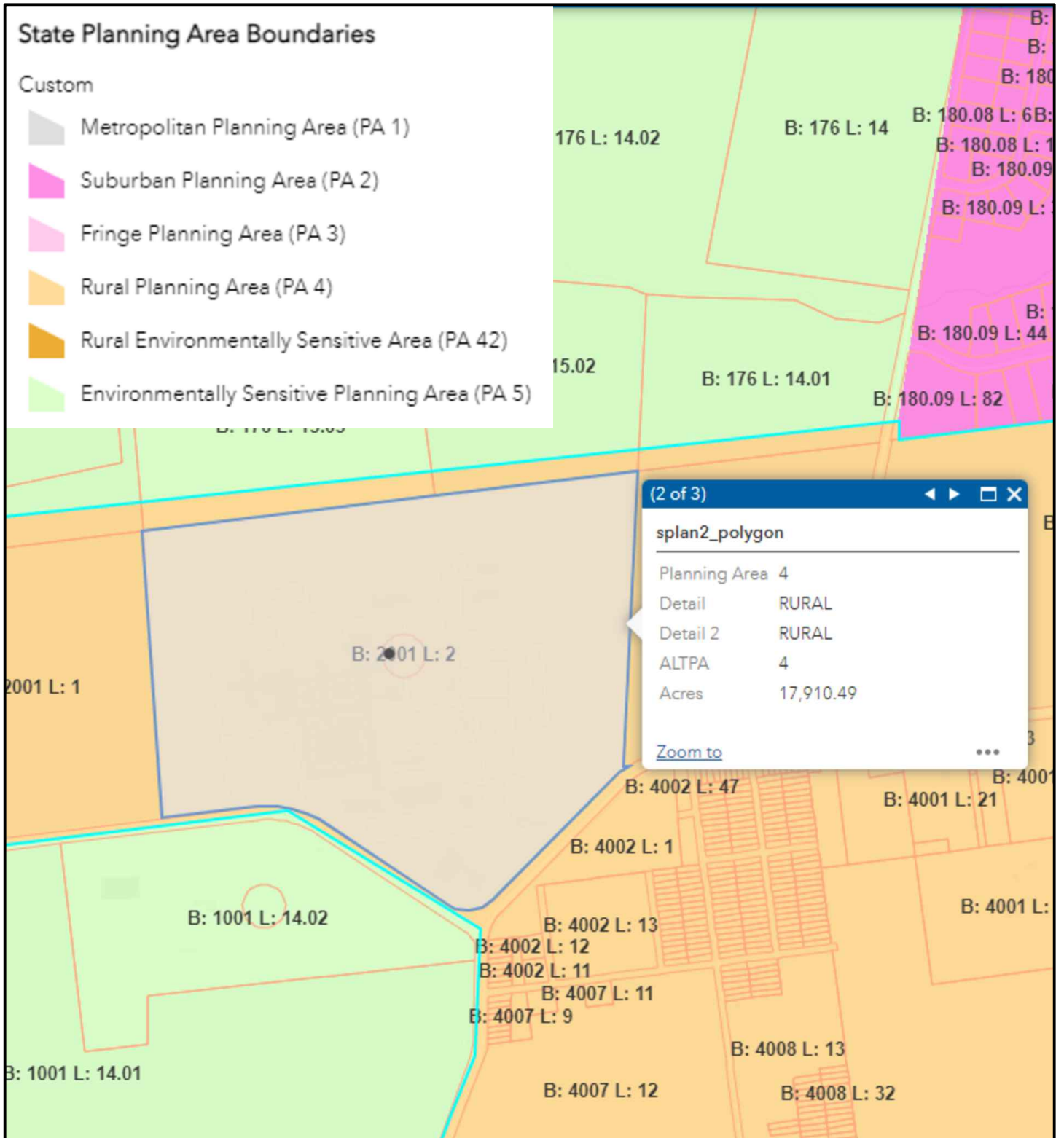


 Dewberry Dewberry Engineers Inc. 600 PARSIPPANY ROAD SUITE 301 PARSIPPANY, NJ 07054 973.739.9400 Phone 973.739.9710 Fax Certificate of Authorization #24GA28047600	TITLE SOIL MAP, HSG, AND GROUNDWATER DEPTHS	DATE (REFER TO REPORT COVER)	SHEET NO. FIG-05
	PROJECT CARRIER CLINIC ADOLESCENT PATIENT UNIT	PROJ. NO. 50164256	

State Planning Area Boundaries

Custom

-  Metropolitan Planning Area (PA 1)
-  Suburban Planning Area (PA 2)
-  Fringe Planning Area (PA 3)
-  Rural Planning Area (PA 4)
-  Rural Environmentally Sensitive Area (PA 42)
-  Environmentally Sensitive Planning Area (PA 5)



(2 of 3)

splan2_polygon

Planning Area 4

Detail RURAL

Detail 2 RURAL

ALTPA 4

Acres 17,910.49

[Zoom to](#)

...

IMAGE IS REFERENCED FROM NJ-GEOWEB



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TITLE
STATE PLANNING AREA

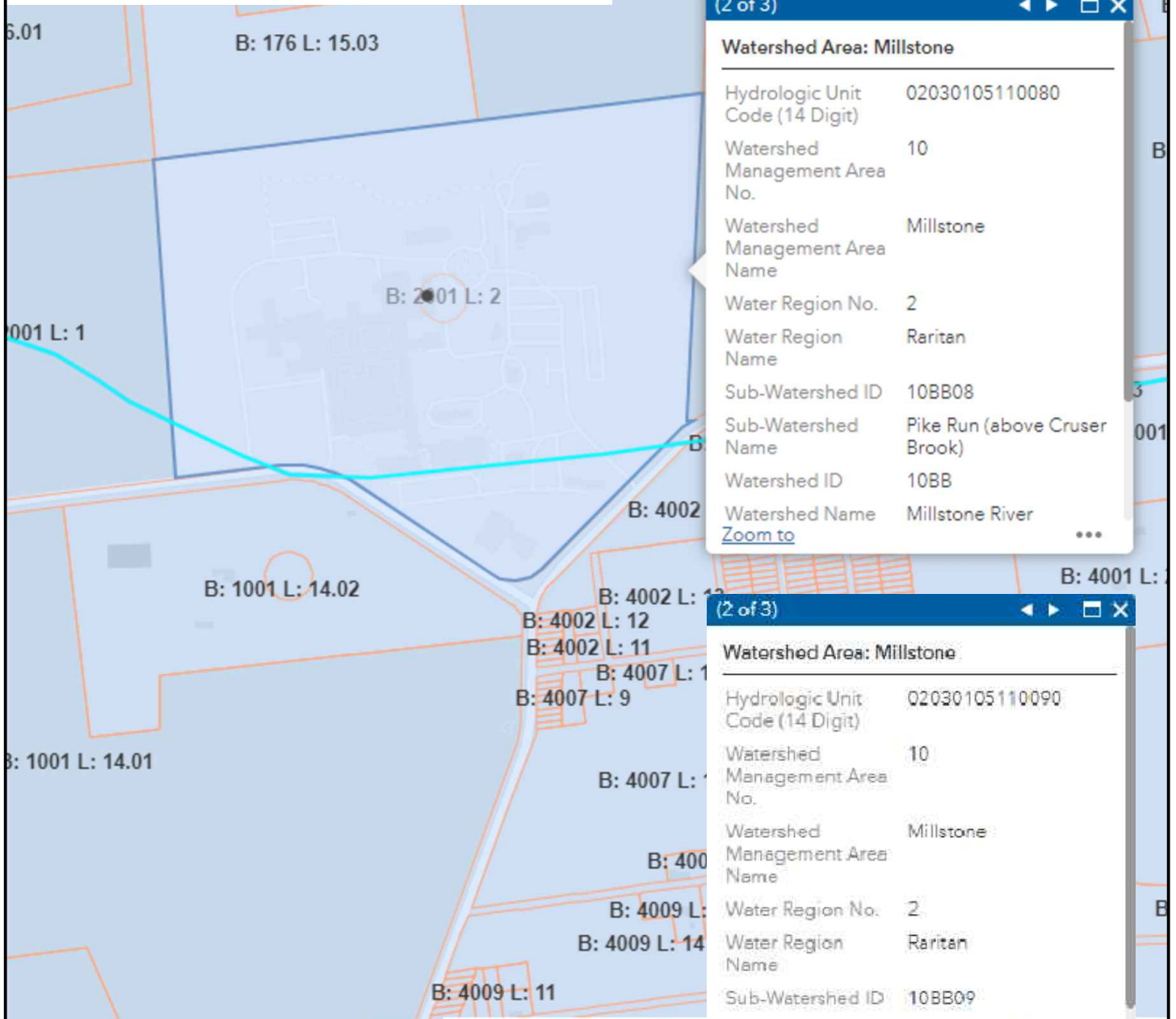
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FIG-06



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FIG-07

Table 5-1: County-Specific, New Jersey 24-Hour Rainfall Frequency Data**NEW JERSEY 24 HOUR RAINFALL FREQUENCY DATA**

County	Rainfall amounts in Inches						
	1 year	2 year	5 year	10 year	25 year	50 year	100 year
Atlantic	2.72	3.31	4.30	5.16	6.46	7.61	8.90
Bergen	2.75	3.34	4.27	5.07	6.28	7.32	8.47
Burlington	2.77	3.36	4.34	5.18	6.45	7.56	8.81
Camden	2.73	3.31	4.25	5.06	6.28	7.34	8.52
Cape May	2.67	3.25	4.22	5.07	6.34	7.47	8.73
Cumberland	2.69	3.27	4.25	5.09	6.37	7.49	8.76
Essex	2.85	3.44	4.40	5.22	6.44	7.49	8.66
Gloucester	2.71	3.29	4.24	5.05	6.29	7.36	8.55
Hudson	2.73	3.31	4.23	5.02	6.19	7.20	8.31
Hunterdon	2.80	3.38	4.26	5.00	6.09	7.02	8.03
Mercer	2.74	3.31	4.23	5.01	6.19	7.20	8.33
Middlesex	2.76	3.35	4.30	5.12	6.36	7.43	8.63
Monmouth	2.79	3.38	4.38	5.23	6.53	7.66	8.94
Morris	2.94	3.54	4.47	5.24	6.37	7.32	8.35
Ocean	2.81	3.42	4.45	5.33	6.68	7.87	9.20
Passaic	2.87	3.47	4.42	5.23	6.43	7.47	8.62
Salem	2.69	3.26	4.20	5.00	6.22	7.28	8.45
Somerset	2.76	3.34	4.25	5.01	6.15	7.13	8.21
Sussex	2.68	3.22	4.02	4.70	5.72	6.60	7.58
Union	2.80	3.39	4.35	5.17	6.42	7.49	8.69
Warren	2.78	3.34	4.18	4.89	5.93	6.83	7.82

Notes: The average point rainfall amounts listed above were developed from data contained in NOAA Atlas 14 Volume 2.

Point rainfall estimates for specific locations may be obtained from the Precipitation Frequency Data Server located at <http://www.nws.noaa.gov/ohd/hdsc/>

For most hydrologic design procedures, the rainfall amounts listed above may be rounded to the nearest tenth of an inch.

TABLE 5-1 REFERENCED FROM NJDEP
STORMWATER BMP MANUAL CHAPTER 5



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TITLE
SOMERSET COUNTY
RAINFALL DATA

PROJECT
CARRIER CLINIC
ADOLESCENT PATIENT UNIT

DATE
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PROJ. NO.
50164256

SHEET NO.

FIG-08

APPENDIX II:

PondPack: Master Summary Report

PondPack: Graphical & Numerical Hydrograph Comparisons

PondPack: Routing Diagrams

Time of Concentration Calculations

PondPack: Catchment Summaries

PondPack: Basin Emergency Spillway Summary

PondPack: Rainfall Report

PondPack: Unit Hydrographs

Project Summary	
Title	Carrier Clinic - Adolescent Patient Unit
Engineer	Mario Iannelli, PE; Chris Petrucci, PE
Company	Dewberry Engineers Inc
Date	9/12/2023
Notes	

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
DA-1A-UND IMP	Proposed WQ	1	0.032	1.000	0.88
DA-1A-UND IMP	Existing 2-Year	2	0.200	12.250	1.84
DA-1A-UND IMP	Proposed 2-Year	2	0.087	12.000	0.77
DA-1A-UND IMP	Existing 10-Year	10	0.308	12.250	2.78
DA-1A-UND IMP	Proposed 10-Year	10	0.134	12.000	1.17
DA-1A-UND IMP	Existing 100-Year	100	0.514	12.250	4.57
DA-1A-UND IMP	Proposed 100-Year	100	0.223	12.000	1.92
DA-1A-UND PER	Proposed WQ	1	0.010	1.250	0.18
DA-1A-UND PER	Existing 2-Year	2	0.347	12.250	3.70
DA-1A-UND PER	Proposed 2-Year	2	0.174	12.250	1.78
DA-1A-UND PER	Existing 10-Year	10	0.728	12.250	7.92
DA-1A-UND PER	Proposed 10-Year	10	0.372	12.250	3.83
DA-1A-UND PER	Existing 100-Year	100	1.569	12.250	16.85
DA-1A-UND PER	Proposed 100-Year	100	0.815	12.250	8.17
DA-2 IMP	Proposed WQ	1	0.320	1.250	7.08
DA-2 IMP	Existing 2-Year	2	0.989	12.250	9.19
DA-2 IMP	Proposed 2-Year	2	0.986	12.250	9.16
DA-2 IMP	Existing 10-Year	10	1.519	12.250	13.86
DA-2 IMP	Proposed 10-Year	10	1.515	12.250	13.82
DA-2 IMP	Existing 100-Year	100	2.537	12.250	22.79
DA-2 IMP	Proposed 100-Year	100	2.531	12.250	22.73
DA-2 PER	Proposed WQ	1	0.032	1.500	0.46
DA-2 PER	Existing 2-Year	2	0.507	12.250	5.19
DA-2 PER	Proposed 2-Year	2	0.479	12.250	4.91
DA-2 PER	Existing 10-Year	10	1.063	12.250	11.23
DA-2 PER	Proposed 10-Year	10	1.006	12.250	10.63
DA-2 PER	Existing 100-Year	100	2.293	12.250	24.07
DA-2 PER	Proposed 100-Year	100	2.170	12.250	22.77
DA-3 IMP	Proposed WQ	1	0.124	1.250	2.64
DA-3 IMP	Existing 2-Year	2	0.406	12.250	3.56
DA-3 IMP	Proposed 2-Year	2	0.372	12.250	3.26
DA-3 IMP	Existing 10-Year	10	0.623	12.250	5.38
DA-3 IMP	Proposed 10-Year	10	0.572	12.250	4.93
DA-3 IMP	Existing 100-Year	100	1.041	12.250	8.84
DA-3 IMP	Proposed 100-Year	100	0.955	12.250	8.11
DA-3 PER	Proposed WQ	1	0.023	1.500	0.34
DA-3 PER	Existing 2-Year	2	0.289	12.250	2.53
DA-3 PER	Proposed 2-Year	2	0.302	12.250	2.65
DA-3 PER	Existing 10-Year	10	0.596	12.250	5.47
DA-3 PER	Proposed 10-Year	10	0.623	12.250	5.71
DA-3 PER	Existing 100-Year	100	1.270	12.250	11.71
DA-3 PER	Proposed 100-Year	100	1.323	12.250	12.20
DA-4 IMP	Proposed WQ	1	0.097	1.250	2.15
DA-4 IMP	Existing 2-Year	2	0.336	12.250	3.05
DA-4 IMP	Proposed 2-Year	2	0.292	12.250	2.65

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
DA-4 IMP	Existing 10-Year	10	0.516	12.250	4.60
DA-4 IMP	Proposed 10-Year	10	0.449	12.250	4.00
DA-4 IMP	Existing 100-Year	100	0.862	12.250	7.57
DA-4 IMP	Proposed 100-Year	100	0.750	12.250	6.58
DA-4 PER	Proposed WQ	1	0.014	1.250	0.22
DA-4 PER	Existing 2-Year	2	0.142	12.250	1.44
DA-4 PER	Proposed 2-Year	2	0.159	12.250	1.62
DA-4 PER	Existing 10-Year	10	0.284	12.250	2.94
DA-4 PER	Proposed 10-Year	10	0.321	12.250	3.32
DA-4 PER	Existing 100-Year	100	0.589	12.250	6.02
DA-4 PER	Proposed 100-Year	100	0.667	12.250	6.83
DA-1A-1 IMP	Proposed WQ	1	0.061	1.000	1.80
DA-1A-1 IMP	Proposed 2-Year	2	0.152	12.000	1.42
DA-1A-1 IMP	Proposed 10-Year	10	0.233	12.000	2.14
DA-1A-1 IMP	Proposed 100-Year	100	0.389	12.000	3.52
DA-1A-2 IMP	Proposed WQ	1	0.017	1.000	0.50
DA-1A-2 IMP	Proposed 2-Year	2	0.042	12.000	0.39
DA-1A-2 IMP	Proposed 10-Year	10	0.065	12.000	0.60
DA-1A-2 IMP	Proposed 100-Year	100	0.109	12.000	0.98
DA-1A-3 IMP	Proposed WQ	1	0.023	1.000	0.68
DA-1A-3 IMP	Proposed 2-Year	2	0.057	12.000	0.53
DA-1A-3 IMP	Proposed 10-Year	10	0.088	12.000	0.81
DA-1A-3 IMP	Proposed 100-Year	100	0.147	12.000	1.33
DA-1A-4 IMP	Proposed WQ	1	0.065	1.000	1.92
DA-1A-4 IMP	Proposed 2-Year	2	0.164	12.000	1.53
DA-1A-4 IMP	Proposed 10-Year	10	0.252	12.000	2.31
DA-1A-4 IMP	Proposed 100-Year	100	0.421	12.000	3.80
DA-1A-4 PER	Proposed WQ	1	0.004	1.250	0.08
DA-1A-4 PER	Proposed 2-Year	2	0.063	12.250	0.57
DA-1A-4 PER	Proposed 10-Year	10	0.135	12.250	1.18
DA-1A-4 PER	Proposed 100-Year	100	0.293	12.250	2.47
DA-1B IMP	Proposed WQ	1	0.151	1.250	3.36
DA-1B IMP	Existing 2-Year	2	0.488	12.250	4.56
DA-1B IMP	Proposed 2-Year	2	0.464	12.250	4.34
DA-1B IMP	Existing 10-Year	10	0.749	12.250	6.88
DA-1B IMP	Proposed 10-Year	10	0.713	12.250	6.55
DA-1B IMP	Existing 100-Year	100	1.251	12.250	11.31
DA-1B IMP	Proposed 100-Year	100	1.191	12.250	10.77
DA-1B PER	Proposed WQ	1	0.012	1.500	0.17
DA-1B PER	Existing 2-Year	2	0.167	12.250	1.66
DA-1B PER	Proposed 2-Year	2	0.176	12.250	1.75
DA-1B PER	Existing 10-Year	10	0.351	12.250	3.62
DA-1B PER	Proposed 10-Year	10	0.369	12.250	3.81
DA-1B PER	Existing 100-Year	100	0.758	12.250	7.80
DA-1B PER	Proposed 100-Year	100	0.796	12.250	8.19

Subsection: Master Network Summary

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
POS-1A	Proposed WQ	1	0.186	1.000	0.90
POS-1A	Existing 2-Year	2	0.547	12.250	5.54
POS-1A	Proposed 2-Year	2	0.646	12.250	2.70
POS-1A	Existing 10-Year	10	1.036	12.250	10.71
POS-1A	Proposed 10-Year	10	1.126	12.250	5.36
POS-1A	Existing 100-Year	100	2.083	12.250	21.42
POS-1A	Proposed 100-Year	100	2.199	12.250	14.50
POS-2	Proposed WQ	1	0.351	1.250	7.49
POS-2	Existing 2-Year	2	1.496	12.250	14.37
POS-2	Proposed 2-Year	2	1.466	12.250	14.07
POS-2	Existing 10-Year	10	2.583	12.250	25.10
POS-2	Proposed 10-Year	10	2.522	12.250	24.45
POS-2	Existing 100-Year	100	4.831	12.250	46.86
POS-2	Proposed 100-Year	100	4.701	12.250	45.50
POS-3	Proposed WQ	1	0.147	1.250	2.87
POS-3	Existing 2-Year	2	0.695	12.250	6.08
POS-3	Proposed 2-Year	2	0.675	12.250	5.91
POS-3	Existing 10-Year	10	1.220	12.250	10.84
POS-3	Proposed 10-Year	10	1.195	12.250	10.64
POS-3	Existing 100-Year	100	2.311	12.250	20.56
POS-3	Proposed 100-Year	100	2.278	12.250	20.31
POS-4	Proposed WQ	1	0.111	1.250	2.37
POS-4	Existing 2-Year	2	0.478	12.250	4.49
POS-4	Proposed 2-Year	2	0.452	12.250	4.27
POS-4	Existing 10-Year	10	0.800	12.250	7.54
POS-4	Proposed 10-Year	10	0.769	12.250	7.32
POS-4	Existing 100-Year	100	1.451	12.250	13.59
POS-4	Proposed 100-Year	100	1.417	12.250	13.41
J-1	Proposed WQ	1	0.045	2.000	0.11
J-1	Proposed 2-Year	2	0.126	12.750	0.26
J-1	Proposed 10-Year	10	0.203	12.250	1.56
J-1	Proposed 100-Year	100	0.350	12.000	2.80
J-2	Proposed WQ	1	0.013	1.500	0.09
J-2	Proposed 2-Year	2	0.038	12.250	0.17
J-2	Proposed 10-Year	10	0.060	12.250	0.30
J-2	Proposed 100-Year	100	0.103	12.250	0.73
J-3	Proposed WQ	1	0.016	1.500	0.09
J-3	Proposed 2-Year	2	0.050	12.500	0.18
J-3	Proposed 10-Year	10	0.080	12.250	0.40
J-3	Proposed 100-Year	100	0.138	12.250	0.99
J-4	Proposed WQ	1	0.069	2.000	0.13
J-4	Proposed 2-Year	2	0.175	14.000	0.16
J-4	Proposed 10-Year	10	0.282	12.750	0.72
J-4	Proposed 100-Year	100	0.576	12.500	2.55
POS-1B	Proposed WQ	1	0.162	1.250	3.50

Subsection: Master Network Summary

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
POS-1B	Existing 2-Year	2	0.655	12.250	6.22
POS-1B	Proposed 2-Year	2	0.640	12.250	6.09
POS-1B	Existing 10-Year	10	1.100	12.250	10.50
POS-1B	Proposed 10-Year	10	1.083	12.250	10.36
POS-1B	Existing 100-Year	100	2.009	12.250	19.11
POS-1B	Proposed 100-Year	100	1.987	12.250	18.97

Pond Summary

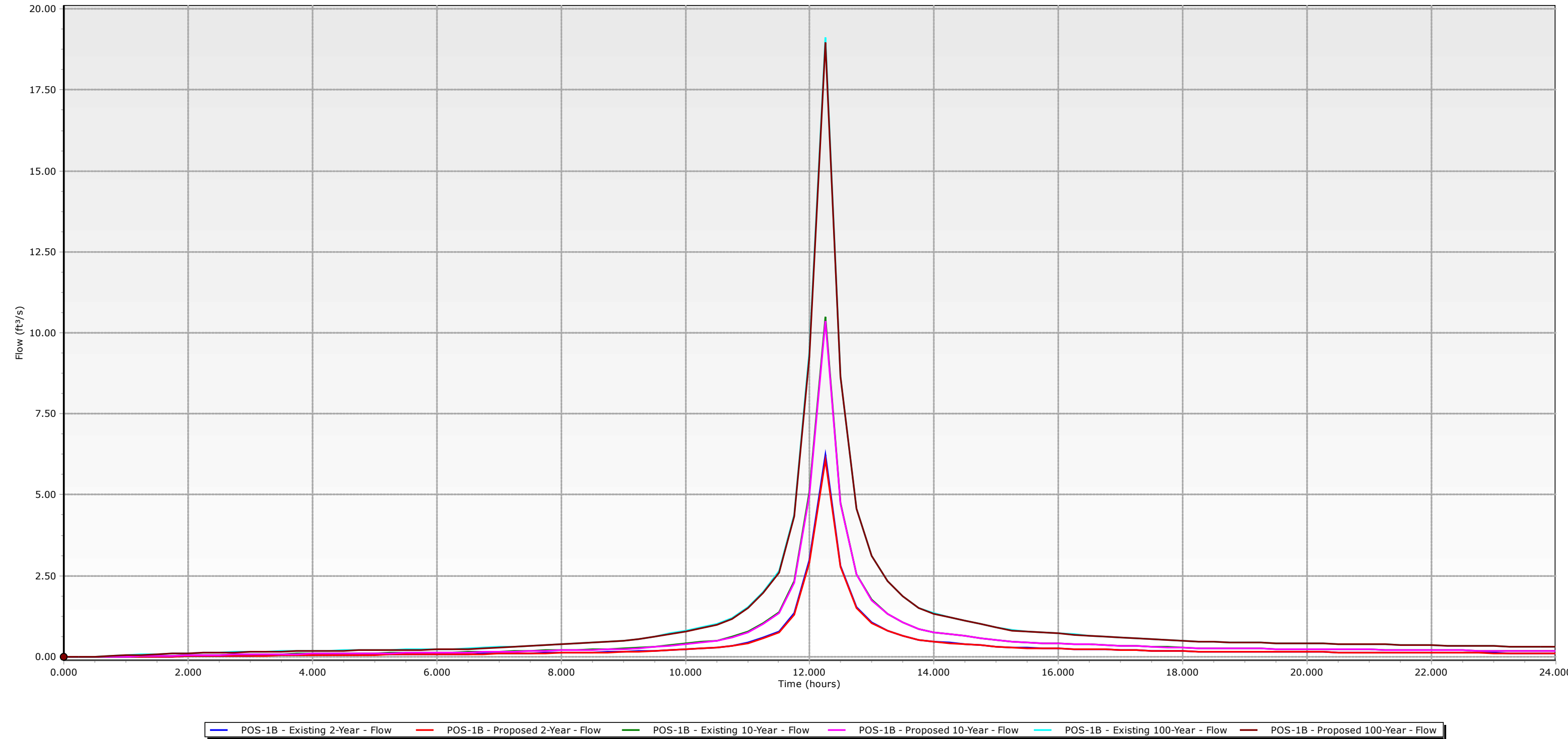
Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Por. Pave 1A -1 (IN)	Proposed WQ	1	0.061	1.000	1.80	(N/A)	(N/A)
Por. Pave 1A -1 (OUT)	Proposed WQ	1	0.045	2.000	0.11	110.48	0.052
Por. Pave 1A -1 (IN)	Proposed 2-Year	2	0.152	12.000	1.42	(N/A)	(N/A)
Por. Pave 1A -1 (OUT)	Proposed 2-Year	2	0.126	12.750	0.26	110.98	0.082
Por. Pave 1A -1 (IN)	Proposed 10-Year	10	0.233	12.000	2.14	(N/A)	(N/A)
Por. Pave 1A -1 (OUT)	Proposed 10-Year	10	0.203	12.250	1.56	111.21	0.097
Por. Pave 1A -1 (IN)	Proposed 100-Year	100	0.389	12.000	3.52	(N/A)	(N/A)
Por. Pave 1A -1 (OUT)	Proposed 100-Year	100	0.350	12.000	2.80	111.33	0.104
Por. Pave 1A -2 (IN)	Proposed WQ	1	0.017	1.000	0.50	(N/A)	(N/A)
Por. Pave 1A -2 (OUT)	Proposed WQ	1	0.013	1.500	0.09	109.98	0.011
Por. Pave 1A -2 (IN)	Proposed 2-Year	2	0.042	12.000	0.39	(N/A)	(N/A)
Por. Pave 1A -2 (OUT)	Proposed 2-Year	2	0.038	12.250	0.17	110.22	0.015
Por. Pave 1A -2 (IN)	Proposed 10-Year	10	0.065	12.000	0.60	(N/A)	(N/A)
Por. Pave 1A -2 (OUT)	Proposed 10-Year	10	0.060	12.250	0.30	110.51	0.020
Por. Pave 1A -2 (IN)	Proposed 100-Year	100	0.109	12.000	0.98	(N/A)	(N/A)
Por. Pave 1A -2 (OUT)	Proposed 100-Year	100	0.103	12.250	0.73	110.57	0.021

Subsection: Master Network Summary

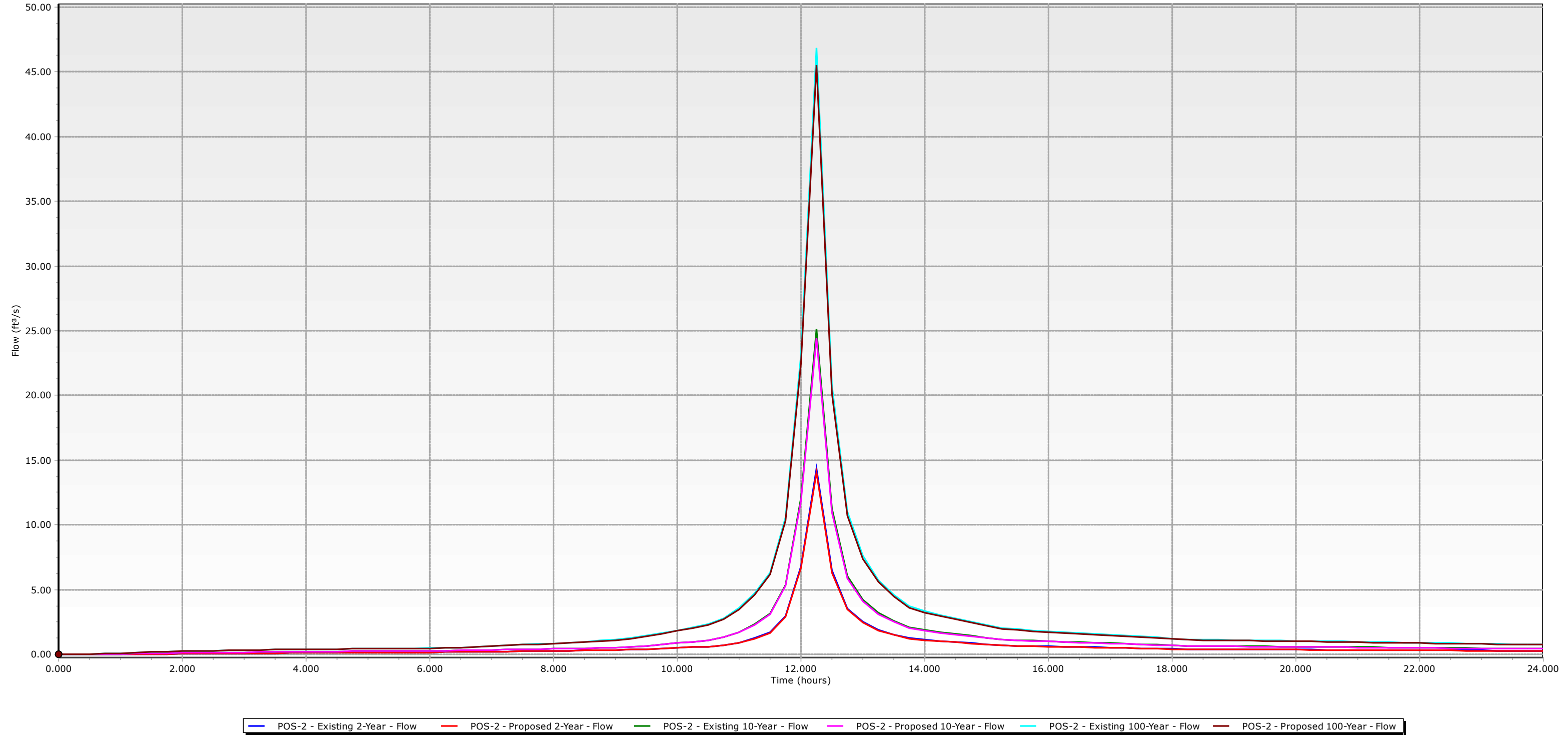
Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Por. Pave 1A -3 (IN)	Proposed WQ	1	0.023	1.000	0.68	(N/A)	(N/A)
Por. Pave 1A -3 (OUT)	Proposed WQ	1	0.016	1.500	0.09	113.65	0.017
Por. Pave 1A -3 (IN)	Proposed 2-Year	2	0.057	12.000	0.53	(N/A)	(N/A)
Por. Pave 1A -3 (OUT)	Proposed 2-Year	2	0.050	12.500	0.18	113.94	0.025
Por. Pave 1A -3 (IN)	Proposed 10-Year	10	0.088	12.000	0.81	(N/A)	(N/A)
Por. Pave 1A -3 (OUT)	Proposed 10-Year	10	0.080	12.250	0.40	114.22	0.032
Por. Pave 1A -3 (IN)	Proposed 100-Year	100	0.147	12.000	1.33	(N/A)	(N/A)
Por. Pave 1A -3 (OUT)	Proposed 100-Year	100	0.138	12.250	0.99	114.31	0.034
Det. Basin 1A-4 (IN)	Proposed WQ	1	0.069	1.000	1.92	(N/A)	(N/A)
Det. Basin 1A-4 (OUT)	Proposed WQ	1	0.069	2.000	0.13	110.59	0.043
Det. Basin 1A-4 (IN)	Proposed 2-Year	2	0.227	12.000	1.90	(N/A)	(N/A)
Det. Basin 1A-4 (OUT)	Proposed 2-Year	2	0.175	14.000	0.16	110.89	0.114
Det. Basin 1A-4 (IN)	Proposed 10-Year	10	0.387	12.000	3.25	(N/A)	(N/A)
Det. Basin 1A-4 (OUT)	Proposed 10-Year	10	0.282	12.750	0.72	111.08	0.180
Det. Basin 1A-4 (IN)	Proposed 100-Year	100	0.715	12.000	5.99	(N/A)	(N/A)
Det. Basin 1A-4 (OUT)	Proposed 100-Year	100	0.576	12.500	2.55	111.33	0.279

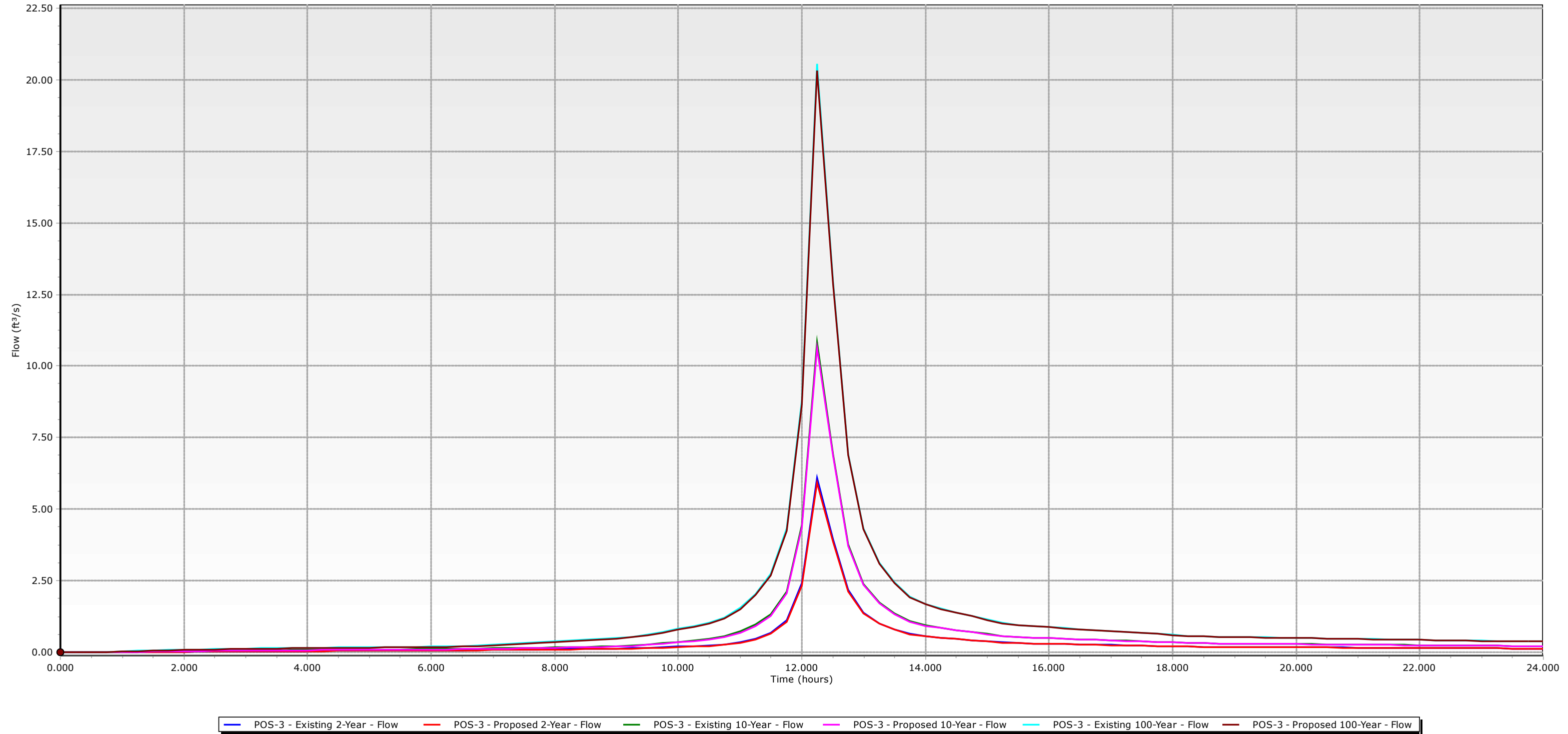
Existing vs Proposed Runoff Hydrographs to POS-1B



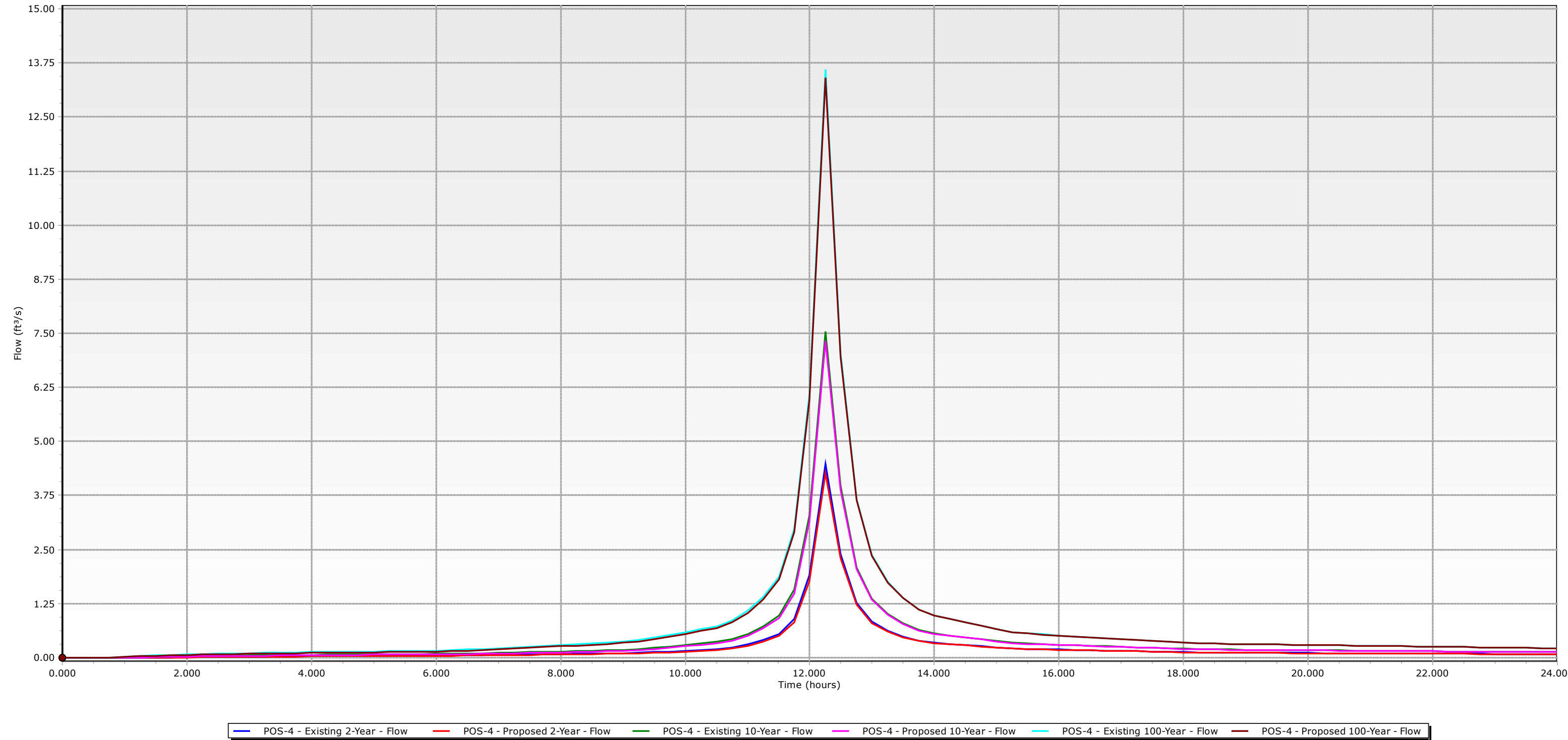
Existing vs Proposed Runoff Hydrographs to POS-2



Existing vs Proposed Runoff Hydrographs to POS-3



Existing vs Proposed Runoff Hydrographs to POS-4



POS-1B									
PRE- VS POST- HYDROGRAPH FLOW RATE COMPARISONS									
	2-Year Storm Event			10-Year Storm Event			100-Year Storm Event		
Time (Hours)	Pre-Dev Flow (CFS)	Post-Dev Flow (CFS)	Reduction (CFS)	Pre-Dev Flow (CFS)	Post-Dev Flow (CFS)	Reduction (CFS)	Pre-Dev Flow (CFS)	Post-Dev Flow (CFS)	Reduction (CFS)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.01
1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.00
1.25	0.00	0.00	0.00	0.02	0.02	0.00	0.07	0.06	0.01
1.50	0.01	0.00	0.01	0.03	0.03	0.00	0.08	0.08	0.00
1.75	0.01	0.01	0.00	0.04	0.04	0.00	0.10	0.10	0.00
2.00	0.02	0.02	0.00	0.05	0.04	0.01	0.12	0.11	0.01
2.25	0.02	0.02	0.00	0.05	0.05	0.00	0.13	0.12	0.01
2.50	0.03	0.03	0.00	0.06	0.06	0.00	0.14	0.13	0.01
2.75	0.03	0.03	0.00	0.07	0.07	0.00	0.15	0.14	0.01
3.00	0.04	0.03	0.01	0.08	0.07	0.01	0.16	0.15	0.01
3.25	0.04	0.04	0.00	0.08	0.08	0.00	0.17	0.16	0.01
3.50	0.04	0.04	0.00	0.09	0.08	0.01	0.17	0.17	0.00
3.75	0.05	0.05	0.00	0.09	0.09	0.00	0.18	0.17	0.01
4.00	0.05	0.05	0.00	0.10	0.09	0.01	0.19	0.18	0.01
4.25	0.06	0.05	0.01	0.10	0.10	0.00	0.19	0.18	0.01
4.50	0.06	0.06	0.00	0.11	0.10	0.01	0.20	0.19	0.01
4.75	0.06	0.06	0.00	0.11	0.11	0.00	0.21	0.20	0.01
5.00	0.07	0.06	0.01	0.12	0.11	0.01	0.21	0.20	0.01
5.25	0.07	0.07	0.00	0.12	0.11	0.01	0.22	0.21	0.01
5.50	0.07	0.07	0.00	0.12	0.12	0.00	0.22	0.21	0.01
5.75	0.07	0.07	0.00	0.13	0.12	0.01	0.23	0.22	0.01
6.00	0.08	0.07	0.01	0.13	0.12	0.01	0.23	0.22	0.01
6.25	0.08	0.08	0.00	0.14	0.13	0.01	0.24	0.23	0.01
6.50	0.09	0.08	0.01	0.15	0.14	0.01	0.26	0.25	0.01
6.75	0.09	0.09	0.00	0.16	0.15	0.01	0.28	0.27	0.01
7.00	0.10	0.10	0.00	0.17	0.16	0.01	0.30	0.29	0.01
7.25	0.11	0.10	0.01	0.18	0.17	0.01	0.32	0.31	0.01
7.50	0.11	0.11	0.00	0.19	0.18	0.01	0.35	0.33	0.02
7.75	0.12	0.12	0.00	0.20	0.19	0.01	0.37	0.36	0.01
8.00	0.13	0.12	0.01	0.21	0.20	0.01	0.40	0.38	0.02
8.25	0.14	0.13	0.01	0.22	0.21	0.01	0.42	0.41	0.01
8.50	0.14	0.14	0.00	0.23	0.22	0.01	0.45	0.43	0.02
8.75	0.15	0.14	0.01	0.24	0.23	0.01	0.48	0.46	0.02
9.00	0.16	0.15	0.01	0.25	0.24	0.01	0.50	0.49	0.01
9.25	0.17	0.16	0.01	0.27	0.26	0.01	0.56	0.54	0.02
9.50	0.19	0.18	0.01	0.31	0.30	0.01	0.63	0.62	0.01
9.75	0.22	0.21	0.01	0.36	0.34	0.02	0.72	0.70	0.02
10.00	0.24	0.23	0.01	0.41	0.39	0.02	0.81	0.79	0.02
10.25	0.26	0.25	0.01	0.45	0.44	0.01	0.90	0.88	0.02
10.50	0.29	0.28	0.01	0.51	0.49	0.02	1.00	0.98	0.02
10.75	0.34	0.33	0.01	0.61	0.59	0.02	1.20	1.18	0.02
11.00	0.44	0.42	0.02	0.78	0.76	0.02	1.53	1.49	0.04
11.25	0.59	0.56	0.03	1.04	1.01	0.03	2.00	1.97	0.03
11.50	0.78	0.75	0.03	1.38	1.34	0.04	2.65	2.61	0.04
11.75	1.34	1.30	0.04	2.33	2.27	0.06	4.40	4.33	0.07
12.00	3.00	2.91	0.09	5.10	4.99	0.11	9.42	9.28	0.14
12.25	6.22	6.09	0.13	10.50	10.36	0.14	19.11	18.97	0.14
12.50	2.81	2.78	0.03	4.76	4.73	0.03	8.65	8.64	0.01
12.75	1.52	1.50	0.02	2.55	2.54	0.01	4.57	4.57	0.00
13.00	1.06	1.05	0.01	1.76	1.75	0.01	3.12	3.12	0.00
13.25	0.81	0.80	0.01	1.33	1.32	0.01	2.35	2.34	0.01
13.50	0.65	0.64	0.01	1.06	1.06	0.00	1.87	1.87	0.00
13.75	0.52	0.52	0.00	0.86	0.85	0.01	1.51	1.50	0.01
14.00	0.47	0.46	0.01	0.76	0.76	0.00	1.34	1.34	0.00
14.25	0.43	0.42	0.01	0.70	0.70	0.00	1.23	1.23	0.00
14.50	0.39	0.39	0.00	0.64	0.64	0.00	1.12	1.12	0.00
14.75	0.36	0.35	0.01	0.58	0.58	0.00	1.02	1.02	0.00
15.00	0.32	0.32	0.00	0.52	0.52	0.00	0.91	0.91	0.00
15.25	0.29	0.28	0.01	0.47	0.47	0.00	0.82	0.82	0.00
15.50	0.27	0.27	0.00	0.44	0.44	0.00	0.78	0.77	0.01
15.75	0.26	0.26	0.00	0.43	0.42	0.01	0.75	0.74	0.01
16.00	0.25	0.25	0.00	0.41	0.41	0.00	0.72	0.72	0.00

16.25	0.24	0.24	0.00	0.40	0.39	0.01	0.69	0.69	0.00
16.50	0.23	0.23	0.00	0.38	0.38	0.00	0.66	0.66	0.00
16.75	0.22	0.22	0.00	0.36	0.36	0.00	0.63	0.63	0.00
17.00	0.21	0.21	0.00	0.35	0.35	0.00	0.61	0.60	0.01
17.25	0.20	0.20	0.00	0.33	0.33	0.00	0.58	0.58	0.00
17.50	0.19	0.19	0.00	0.32	0.31	0.01	0.55	0.55	0.00
17.75	0.18	0.18	0.00	0.30	0.30	0.00	0.52	0.52	0.00
18.00	0.17	0.17	0.00	0.28	0.28	0.00	0.49	0.49	0.00
18.25	0.17	0.16	0.01	0.27	0.27	0.00	0.47	0.47	0.00
18.50	0.16	0.16	0.00	0.26	0.26	0.00	0.46	0.45	0.01
18.75	0.16	0.16	0.00	0.26	0.26	0.00	0.45	0.45	0.00
19.00	0.16	0.16	0.00	0.25	0.25	0.00	0.44	0.44	0.00
19.25	0.15	0.15	0.00	0.25	0.25	0.00	0.43	0.43	0.00
19.50	0.15	0.15	0.00	0.25	0.24	0.01	0.43	0.43	0.00
19.75	0.15	0.15	0.00	0.24	0.24	0.00	0.42	0.42	0.00
20.00	0.15	0.15	0.00	0.24	0.24	0.00	0.41	0.41	0.00
20.25	0.15	0.14	0.01	0.23	0.23	0.00	0.41	0.41	0.00
20.50	0.14	0.14	0.00	0.23	0.23	0.00	0.40	0.40	0.00
20.75	0.14	0.14	0.00	0.23	0.23	0.00	0.39	0.39	0.00
21.00	0.14	0.14	0.00	0.22	0.22	0.00	0.39	0.38	0.01
21.25	0.14	0.13	0.01	0.22	0.22	0.00	0.38	0.38	0.00
21.50	0.13	0.13	0.00	0.21	0.21	0.00	0.37	0.37	0.00
21.75	0.13	0.13	0.00	0.21	0.21	0.00	0.36	0.36	0.00
22.00	0.13	0.13	0.00	0.21	0.21	0.00	0.36	0.36	0.00
22.25	0.13	0.12	0.01	0.20	0.20	0.00	0.35	0.35	0.00
22.50	0.12	0.12	0.00	0.20	0.20	0.00	0.34	0.34	0.00
22.75	0.12	0.12	0.00	0.19	0.19	0.00	0.34	0.34	0.00
23.00	0.12	0.12	0.00	0.19	0.19	0.00	0.33	0.33	0.00
23.25	0.12	0.11	0.01	0.19	0.18	0.01	0.32	0.32	0.00
23.50	0.11	0.11	0.00	0.18	0.18	0.00	0.31	0.31	0.00
23.75	0.11	0.11	0.00	0.18	0.18	0.00	0.31	0.31	0.00
24.00	0.11	0.11	0.00	0.18	0.18	0.00	0.31	0.31	0.00

POS-2									
PRE- VS POST- HYDROGRAPH FLOW RATE COMPARISONS									
	2-Year Storm Event			10-Year Storm Event			100-Year Storm Event		
Time (Hours)	Pre-Dev Flow (CFS)	Post-Dev Flow (CFS)	Reduction (CFS)	Pre-Dev Flow (CFS)	Post-Dev Flow (CFS)	Reduction (CFS)	Pre-Dev Flow (CFS)	Post-Dev Flow (CFS)	Reduction (CFS)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.00
1.00	0.00	0.00	0.00	0.01	0.01	0.00	0.09	0.09	0.00
1.25	0.00	0.00	0.00	0.03	0.03	0.00	0.13	0.13	0.00
1.50	0.01	0.01	0.00	0.06	0.06	0.00	0.17	0.17	0.00
1.75	0.02	0.02	0.00	0.08	0.08	0.00	0.21	0.21	0.00
2.00	0.03	0.03	0.00	0.09	0.09	0.00	0.24	0.23	0.01
2.25	0.04	0.04	0.00	0.11	0.11	0.00	0.26	0.26	0.00
2.50	0.06	0.06	0.00	0.13	0.13	0.00	0.28	0.28	0.00
2.75	0.06	0.06	0.00	0.14	0.14	0.00	0.30	0.30	0.00
3.00	0.07	0.07	0.00	0.15	0.15	0.00	0.32	0.32	0.00
3.25	0.08	0.08	0.00	0.17	0.17	0.00	0.34	0.34	0.00
3.50	0.09	0.09	0.00	0.18	0.18	0.00	0.35	0.35	0.00
3.75	0.10	0.10	0.00	0.19	0.19	0.00	0.37	0.37	0.00
4.00	0.11	0.11	0.00	0.20	0.20	0.00	0.38	0.38	0.00
4.25	0.11	0.11	0.00	0.21	0.21	0.00	0.39	0.39	0.00
4.50	0.12	0.12	0.00	0.22	0.22	0.00	0.41	0.41	0.00
4.75	0.13	0.13	0.00	0.23	0.23	0.00	0.42	0.42	0.00
5.00	0.13	0.13	0.00	0.23	0.23	0.00	0.43	0.43	0.00
5.25	0.14	0.14	0.00	0.24	0.24	0.00	0.44	0.44	0.00
5.50	0.15	0.15	0.00	0.25	0.25	0.00	0.45	0.45	0.00
5.75	0.15	0.15	0.00	0.26	0.26	0.00	0.46	0.46	0.00
6.00	0.16	0.16	0.00	0.27	0.27	0.00	0.47	0.47	0.00
6.25	0.17	0.17	0.00	0.28	0.28	0.00	0.49	0.49	0.00
6.50	0.18	0.18	0.00	0.30	0.30	0.00	0.53	0.53	0.00
6.75	0.19	0.19	0.00	0.32	0.32	0.00	0.57	0.57	0.00
7.00	0.21	0.21	0.00	0.34	0.34	0.00	0.62	0.62	0.00
7.25	0.22	0.22	0.00	0.36	0.36	0.00	0.67	0.67	0.00
7.50	0.23	0.23	0.00	0.38	0.38	0.00	0.73	0.72	0.01
7.75	0.25	0.25	0.00	0.40	0.40	0.00	0.79	0.78	0.01
8.00	0.26	0.26	0.00	0.42	0.42	0.00	0.85	0.84	0.01
8.25	0.28	0.28	0.00	0.44	0.44	0.00	0.91	0.90	0.01
8.50	0.29	0.29	0.00	0.46	0.46	0.00	0.97	0.96	0.01
8.75	0.30	0.30	0.00	0.48	0.48	0.00	1.04	1.03	0.01
9.00	0.32	0.32	0.00	0.51	0.50	0.01	1.11	1.09	0.02
9.25	0.35	0.35	0.00	0.56	0.56	0.00	1.23	1.22	0.01
9.50	0.39	0.39	0.00	0.65	0.65	0.00	1.42	1.40	0.02
9.75	0.44	0.44	0.00	0.75	0.75	0.00	1.62	1.60	0.02
10.00	0.49	0.49	0.00	0.86	0.85	0.01	1.84	1.81	0.03
10.25	0.54	0.54	0.00	0.97	0.96	0.01	2.06	2.02	0.04
10.50	0.59	0.59	0.00	1.09	1.08	0.01	2.30	2.25	0.05
10.75	0.70	0.70	0.00	1.34	1.32	0.02	2.78	2.73	0.05
11.00	0.91	0.90	0.01	1.73	1.70	0.03	3.56	3.48	0.08
11.25	1.23	1.23	0.00	2.32	2.28	0.04	4.72	4.62	0.10
11.50	1.68	1.66	0.02	3.12	3.07	0.05	6.29	6.15	0.14
11.75	2.95	2.91	0.04	5.38	5.28	0.10	10.60	10.35	0.25
12.00	6.80	6.70	0.10	12.08	11.83	0.25	23.09	22.53	0.56
12.25	14.37	14.08	0.29	25.10	24.48	0.62	46.86	45.55	1.31
12.50	6.48	6.32	0.16	11.25	10.94	0.31	20.81	20.17	0.64
12.75	3.54	3.45	0.09	6.06	5.88	0.18	11.04	10.70	0.34
13.00	2.50	2.44	0.06	4.23	4.11	0.12	7.62	7.39	0.23
13.25	1.91	1.86	0.05	3.21	3.12	0.09	5.76	5.59	0.17
13.50	1.53	1.49	0.04	2.57	2.50	0.07	4.61	4.47	0.14
13.75	1.24	1.21	0.03	2.08	2.02	0.06	3.71	3.60	0.11
14.00	1.11	1.09	0.02	1.86	1.81	0.05	3.31	3.22	0.09
14.25	1.02	1.00	0.02	1.71	1.66	0.05	3.04	2.95	0.09
14.50	0.94	0.92	0.02	1.56	1.52	0.04	2.78	2.70	0.08
14.75	0.85	0.83	0.02	1.42	1.38	0.04	2.52	2.44	0.08
15.00	0.77	0.75	0.02	1.27	1.24	0.03	2.26	2.19	0.07
15.25	0.69	0.67	0.02	1.14	1.11	0.03	2.03	1.96	0.07
15.50	0.65	0.64	0.01	1.08	1.05	0.03	1.92	1.86	0.06
15.75	0.63	0.61	0.02	1.04	1.02	0.02	1.85	1.79	0.06
16.00	0.61	0.59	0.02	1.01	0.98	0.03	1.78	1.73	0.05

16.25	0.58	0.57	0.01	0.97	0.94	0.03	1.71	1.66	0.05
16.50	0.56	0.55	0.01	0.93	0.90	0.03	1.64	1.59	0.05
16.75	0.54	0.52	0.02	0.89	0.87	0.02	1.57	1.52	0.05
17.00	0.51	0.50	0.01	0.85	0.83	0.02	1.50	1.46	0.04
17.25	0.49	0.48	0.01	0.81	0.79	0.02	1.43	1.39	0.04
17.50	0.47	0.46	0.01	0.77	0.75	0.02	1.36	1.32	0.04
17.75	0.44	0.43	0.01	0.73	0.71	0.02	1.29	1.25	0.04
18.00	0.42	0.41	0.01	0.69	0.67	0.02	1.22	1.19	0.03
18.25	0.40	0.39	0.01	0.66	0.64	0.02	1.16	1.12	0.04
18.50	0.39	0.38	0.01	0.64	0.63	0.01	1.13	1.10	0.03
18.75	0.38	0.37	0.01	0.63	0.62	0.01	1.11	1.08	0.03
19.00	0.38	0.37	0.01	0.62	0.61	0.01	1.10	1.06	0.04
19.25	0.37	0.36	0.01	0.61	0.60	0.01	1.08	1.05	0.03
19.50	0.37	0.36	0.01	0.60	0.59	0.01	1.06	1.03	0.03
19.75	0.36	0.35	0.01	0.59	0.58	0.01	1.04	1.01	0.03
20.00	0.36	0.35	0.01	0.59	0.57	0.02	1.03	1.00	0.03
20.25	0.35	0.34	0.01	0.58	0.56	0.02	1.01	0.98	0.03
20.50	0.34	0.33	0.01	0.57	0.55	0.02	0.99	0.96	0.03
20.75	0.34	0.33	0.01	0.56	0.54	0.02	0.98	0.95	0.03
21.00	0.33	0.32	0.01	0.55	0.53	0.02	0.96	0.93	0.03
21.25	0.33	0.32	0.01	0.54	0.52	0.02	0.94	0.91	0.03
21.50	0.32	0.31	0.01	0.53	0.51	0.02	0.92	0.90	0.02
21.75	0.31	0.31	0.00	0.52	0.50	0.02	0.90	0.88	0.02
22.00	0.31	0.30	0.01	0.51	0.49	0.02	0.89	0.86	0.03
22.25	0.30	0.30	0.00	0.50	0.48	0.02	0.87	0.84	0.03
22.50	0.30	0.29	0.01	0.49	0.47	0.02	0.85	0.83	0.02
22.75	0.29	0.28	0.01	0.48	0.46	0.02	0.84	0.81	0.03
23.00	0.28	0.28	0.00	0.47	0.45	0.02	0.82	0.79	0.03
23.25	0.28	0.27	0.01	0.46	0.44	0.02	0.80	0.78	0.02
23.50	0.27	0.27	0.00	0.45	0.43	0.02	0.78	0.76	0.02
23.75	0.27	0.26	0.01	0.44	0.42	0.02	0.76	0.74	0.02
24.00	0.27	0.26	0.01	0.44	0.43	0.01	0.77	0.75	0.02

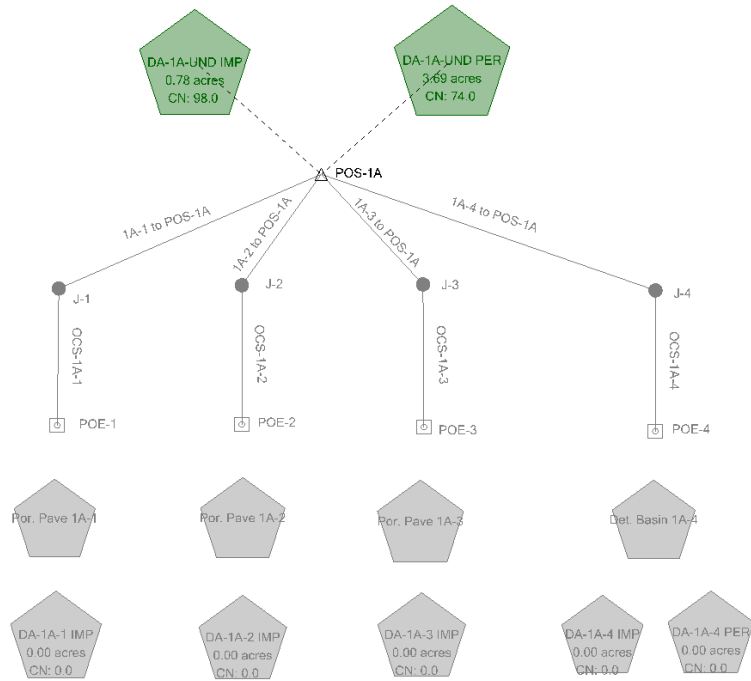
POS-3									
PRE- VS POST- HYDROGRAPH FLOW RATE COMPARISONS									
	2-Year Storm Event			10-Year Storm Event			100-Year Storm Event		
Time (Hours)	Pre-Dev Flow (CFS)	Post-Dev Flow (CFS)	Reduction (CFS)	Pre-Dev Flow (CFS)	Post-Dev Flow (CFS)	Reduction (CFS)	Pre-Dev Flow (CFS)	Post-Dev Flow (CFS)	Reduction (CFS)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00
1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.00
1.25	0.00	0.00	0.00	0.01	0.01	0.00	0.05	0.04	0.01
1.50	0.00	0.00	0.00	0.02	0.02	0.00	0.06	0.06	0.00
1.75	0.01	0.01	0.00	0.03	0.03	0.00	0.08	0.07	0.01
2.00	0.01	0.01	0.00	0.04	0.03	0.01	0.09	0.08	0.01
2.25	0.02	0.02	0.00	0.04	0.04	0.00	0.10	0.09	0.01
2.50	0.02	0.02	0.00	0.05	0.05	0.00	0.11	0.10	0.01
2.75	0.03	0.02	0.01	0.06	0.05	0.01	0.12	0.11	0.01
3.00	0.03	0.03	0.00	0.06	0.06	0.00	0.13	0.12	0.01
3.25	0.03	0.03	0.00	0.07	0.06	0.01	0.14	0.12	0.02
3.50	0.04	0.03	0.01	0.07	0.07	0.00	0.14	0.13	0.01
3.75	0.04	0.04	0.00	0.08	0.07	0.01	0.15	0.14	0.01
4.00	0.04	0.04	0.00	0.08	0.07	0.01	0.15	0.14	0.01
4.25	0.05	0.04	0.01	0.08	0.08	0.00	0.16	0.15	0.01
4.50	0.05	0.04	0.01	0.09	0.08	0.01	0.16	0.15	0.01
4.75	0.05	0.05	0.00	0.09	0.08	0.01	0.17	0.16	0.01
5.00	0.05	0.05	0.00	0.09	0.09	0.00	0.17	0.16	0.01
5.25	0.06	0.05	0.01	0.10	0.09	0.01	0.18	0.16	0.02
5.50	0.06	0.05	0.01	0.10	0.09	0.01	0.18	0.17	0.01
5.75	0.06	0.06	0.00	0.10	0.10	0.00	0.19	0.17	0.02
6.00	0.06	0.06	0.00	0.11	0.10	0.01	0.19	0.18	0.01
6.25	0.07	0.06	0.01	0.11	0.10	0.01	0.20	0.18	0.02
6.50	0.07	0.07	0.00	0.12	0.11	0.01	0.22	0.20	0.02
6.75	0.08	0.07	0.01	0.13	0.12	0.01	0.24	0.22	0.02
7.00	0.08	0.08	0.00	0.14	0.12	0.02	0.26	0.24	0.02
7.25	0.09	0.08	0.01	0.14	0.13	0.01	0.29	0.27	0.02
7.50	0.09	0.09	0.00	0.15	0.14	0.01	0.31	0.29	0.02
7.75	0.10	0.09	0.01	0.16	0.15	0.01	0.34	0.32	0.02
8.00	0.10	0.10	0.00	0.17	0.16	0.01	0.37	0.35	0.02
8.25	0.11	0.10	0.01	0.18	0.16	0.02	0.40	0.38	0.02
8.50	0.12	0.11	0.01	0.19	0.17	0.02	0.43	0.41	0.02
8.75	0.12	0.11	0.01	0.20	0.18	0.02	0.46	0.44	0.02
9.00	0.13	0.12	0.01	0.21	0.19	0.02	0.49	0.47	0.02
9.25	0.14	0.13	0.01	0.23	0.22	0.01	0.54	0.52	0.02
9.50	0.15	0.14	0.01	0.27	0.25	0.02	0.62	0.60	0.02
9.75	0.17	0.16	0.01	0.31	0.29	0.02	0.72	0.69	0.03
10.00	0.19	0.18	0.01	0.36	0.34	0.02	0.82	0.79	0.03
10.25	0.21	0.20	0.01	0.41	0.39	0.02	0.92	0.90	0.02
10.50	0.23	0.21	0.02	0.47	0.45	0.02	1.04	1.01	0.03
10.75	0.28	0.25	0.03	0.56	0.53	0.03	1.22	1.19	0.03
11.00	0.36	0.33	0.03	0.72	0.69	0.03	1.55	1.52	0.03
11.25	0.48	0.45	0.03	0.96	0.92	0.04	2.03	1.99	0.04
11.50	0.67	0.64	0.03	1.31	1.27	0.04	2.74	2.68	0.06
11.75	1.11	1.06	0.05	2.12	2.06	0.06	4.32	4.24	0.08
12.00	2.41	2.32	0.09	4.46	4.35	0.11	8.80	8.67	0.13
12.25	6.08	5.91	0.17	10.84	10.64	0.20	20.56	20.31	0.25
12.50	3.94	3.86	0.08	6.93	6.85	0.08	12.95	12.86	0.09
12.75	2.17	2.13	0.04	3.76	3.72	0.04	6.92	6.88	0.04
13.00	1.39	1.37	0.02	2.38	2.36	0.02	4.34	4.31	0.03
13.25	1.02	1.00	0.02	1.73	1.71	0.02	3.12	3.10	0.02
13.50	0.80	0.79	0.01	1.35	1.34	0.01	2.43	2.42	0.01
13.75	0.64	0.63	0.01	1.08	1.07	0.01	1.94	1.93	0.01
14.00	0.55	0.55	0.00	0.94	0.93	0.01	1.68	1.66	0.02
14.25	0.51	0.50	0.01	0.85	0.84	0.01	1.52	1.51	0.01
14.50	0.46	0.46	0.00	0.78	0.77	0.01	1.39	1.38	0.01
14.75	0.42	0.42	0.00	0.71	0.70	0.01	1.27	1.26	0.01
15.00	0.38	0.38	0.00	0.64	0.63	0.01	1.14	1.13	0.01
15.25	0.34	0.34	0.00	0.57	0.57	0.00	1.02	1.01	0.01
15.50	0.32	0.31	0.01	0.53	0.53	0.00	0.95	0.94	0.01
15.75	0.31	0.30	0.01	0.51	0.51	0.00	0.91	0.90	0.01
16.00	0.30	0.29	0.01	0.49	0.49	0.00	0.87	0.87	0.00

16.25	0.28	0.28	0.00	0.47	0.47	0.00	0.84	0.84	0.00
16.50	0.27	0.27	0.00	0.46	0.45	0.01	0.81	0.80	0.01
16.75	0.26	0.26	0.00	0.44	0.43	0.01	0.77	0.77	0.00
17.00	0.25	0.25	0.00	0.42	0.41	0.01	0.74	0.74	0.00
17.25	0.24	0.24	0.00	0.40	0.40	0.00	0.71	0.70	0.01
17.50	0.23	0.23	0.00	0.38	0.38	0.00	0.67	0.67	0.00
17.75	0.22	0.21	0.01	0.36	0.36	0.00	0.64	0.63	0.01
18.00	0.21	0.20	0.01	0.34	0.34	0.00	0.60	0.60	0.00
18.25	0.20	0.19	0.01	0.32	0.32	0.00	0.57	0.57	0.00
18.50	0.19	0.19	0.00	0.31	0.31	0.00	0.55	0.55	0.00
18.75	0.19	0.18	0.01	0.31	0.31	0.00	0.54	0.54	0.00
19.00	0.18	0.18	0.00	0.30	0.30	0.00	0.54	0.53	0.01
19.25	0.18	0.18	0.00	0.30	0.30	0.00	0.53	0.52	0.01
19.50	0.18	0.18	0.00	0.29	0.29	0.00	0.52	0.52	0.00
19.75	0.17	0.17	0.00	0.29	0.29	0.00	0.51	0.51	0.00
20.00	0.17	0.17	0.00	0.29	0.28	0.01	0.50	0.50	0.00
20.25	0.17	0.17	0.00	0.28	0.28	0.00	0.49	0.49	0.00
20.50	0.17	0.16	0.01	0.28	0.27	0.01	0.48	0.48	0.00
20.75	0.16	0.16	0.00	0.27	0.27	0.00	0.48	0.47	0.01
21.00	0.16	0.16	0.00	0.27	0.26	0.01	0.47	0.46	0.01
21.25	0.16	0.16	0.00	0.26	0.26	0.00	0.46	0.46	0.00
21.50	0.16	0.15	0.01	0.26	0.25	0.01	0.45	0.45	0.00
21.75	0.15	0.15	0.00	0.25	0.25	0.00	0.44	0.44	0.00
22.00	0.15	0.15	0.00	0.25	0.24	0.01	0.43	0.43	0.00
22.25	0.15	0.14	0.01	0.24	0.24	0.00	0.43	0.42	0.01
22.50	0.14	0.14	0.00	0.24	0.24	0.00	0.42	0.41	0.01
22.75	0.14	0.14	0.00	0.23	0.23	0.00	0.41	0.41	0.00
23.00	0.14	0.14	0.00	0.23	0.23	0.00	0.40	0.40	0.00
23.25	0.14	0.13	0.01	0.22	0.22	0.00	0.39	0.39	0.00
23.50	0.13	0.13	0.00	0.22	0.22	0.00	0.38	0.38	0.00
23.75	0.13	0.13	0.00	0.21	0.21	0.00	0.37	0.37	0.00
24.00	0.13	0.13	0.00	0.21	0.21	0.00	0.37	0.37	0.00

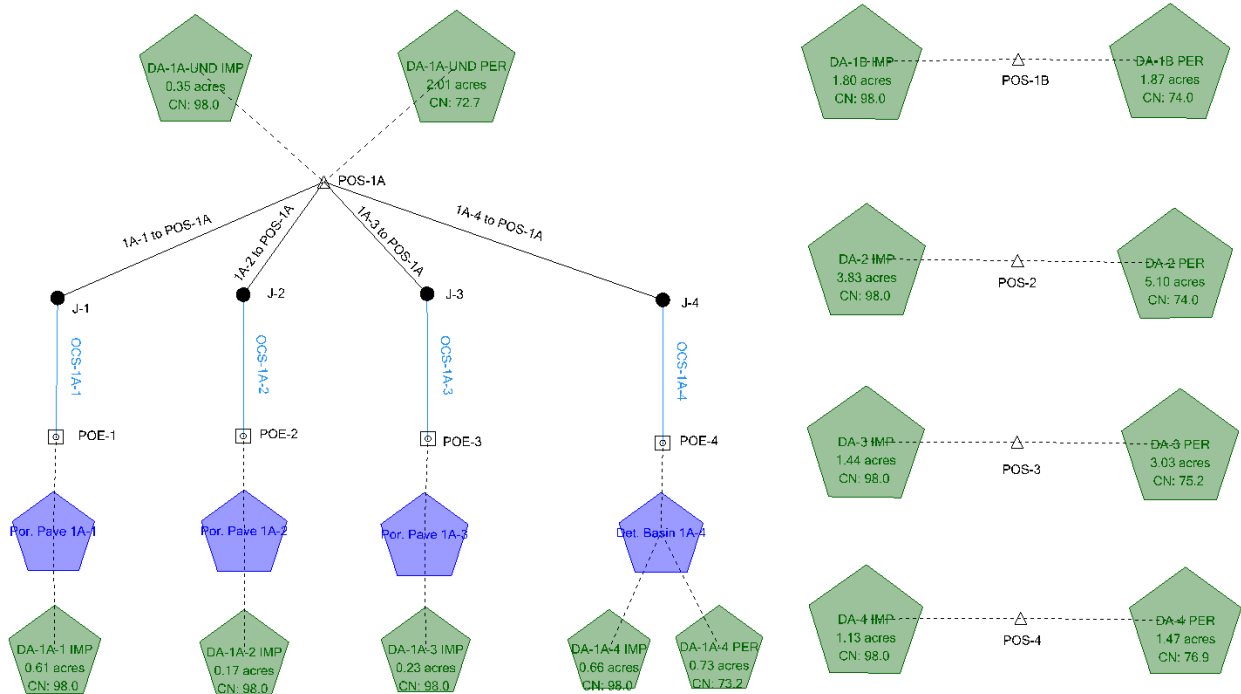
POS-4									
PRE- VS POST- HYDROGRAPH FLOW RATE COMPARISONS									
	2-Year Storm Event			10-Year Storm Event			100-Year Storm Event		
Time (Hours)	Pre-Dev Flow (CFS)	Post-Dev Flow (CFS)	Reduction (CFS)	Pre-Dev Flow (CFS)	Post-Dev Flow (CFS)	Reduction (CFS)	Pre-Dev Flow (CFS)	Post-Dev Flow (CFS)	Reduction (CFS)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00
1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00
1.25	0.00	0.00	0.00	0.01	0.01	0.00	0.04	0.04	0.00
1.50	0.00	0.00	0.00	0.02	0.01	0.01	0.05	0.05	0.00
1.75	0.01	0.01	0.00	0.02	0.02	0.00	0.07	0.06	0.01
2.00	0.01	0.01	0.00	0.03	0.03	0.00	0.08	0.07	0.01
2.25	0.01	0.01	0.00	0.04	0.03	0.01	0.09	0.07	0.02
2.50	0.02	0.02	0.00	0.04	0.04	0.00	0.09	0.08	0.01
2.75	0.02	0.02	0.00	0.05	0.04	0.01	0.10	0.09	0.01
3.00	0.02	0.02	0.00	0.05	0.04	0.01	0.11	0.09	0.02
3.25	0.03	0.02	0.01	0.06	0.05	0.01	0.11	0.10	0.01
3.50	0.03	0.03	0.00	0.06	0.05	0.01	0.12	0.10	0.02
3.75	0.03	0.03	0.00	0.06	0.05	0.01	0.12	0.11	0.01
4.00	0.04	0.03	0.01	0.07	0.06	0.01	0.13	0.11	0.02
4.25	0.04	0.03	0.01	0.07	0.06	0.01	0.13	0.11	0.02
4.50	0.04	0.03	0.01	0.07	0.06	0.01	0.14	0.12	0.02
4.75	0.04	0.04	0.00	0.08	0.07	0.01	0.14	0.12	0.02
5.00	0.04	0.04	0.00	0.08	0.07	0.01	0.14	0.13	0.01
5.25	0.05	0.04	0.01	0.08	0.07	0.01	0.15	0.13	0.02
5.50	0.05	0.04	0.01	0.08	0.07	0.01	0.15	0.13	0.02
5.75	0.05	0.04	0.01	0.09	0.08	0.01	0.16	0.14	0.02
6.00	0.05	0.05	0.00	0.09	0.08	0.01	0.16	0.14	0.02
6.25	0.06	0.05	0.01	0.09	0.08	0.01	0.17	0.15	0.02
6.50	0.06	0.05	0.01	0.10	0.09	0.01	0.19	0.16	0.03
6.75	0.06	0.06	0.00	0.11	0.09	0.02	0.20	0.18	0.02
7.00	0.07	0.06	0.01	0.11	0.10	0.01	0.22	0.19	0.03
7.25	0.07	0.06	0.01	0.12	0.10	0.02	0.24	0.21	0.03
7.50	0.08	0.07	0.01	0.13	0.11	0.02	0.25	0.23	0.02
7.75	0.08	0.07	0.01	0.13	0.12	0.01	0.27	0.25	0.02
8.00	0.09	0.08	0.01	0.14	0.12	0.02	0.29	0.26	0.03
8.25	0.09	0.08	0.01	0.15	0.13	0.02	0.31	0.28	0.03
8.50	0.10	0.08	0.02	0.16	0.14	0.02	0.33	0.30	0.03
8.75	0.10	0.09	0.01	0.17	0.15	0.02	0.35	0.32	0.03
9.00	0.11	0.09	0.02	0.18	0.16	0.02	0.37	0.34	0.03
9.25	0.11	0.10	0.01	0.20	0.17	0.03	0.40	0.37	0.03
9.50	0.13	0.11	0.02	0.23	0.20	0.03	0.46	0.43	0.03
9.75	0.15	0.13	0.02	0.26	0.23	0.03	0.52	0.49	0.03
10.00	0.16	0.14	0.02	0.29	0.26	0.03	0.59	0.55	0.04
10.25	0.18	0.16	0.02	0.33	0.30	0.03	0.66	0.62	0.04
10.50	0.20	0.18	0.02	0.37	0.33	0.04	0.73	0.69	0.04
10.75	0.24	0.21	0.03	0.43	0.40	0.03	0.85	0.81	0.04
11.00	0.31	0.27	0.04	0.55	0.51	0.04	1.08	1.03	0.05
11.25	0.41	0.36	0.05	0.73	0.68	0.05	1.41	1.35	0.06
11.50	0.55	0.50	0.05	0.98	0.91	0.07	1.87	1.80	0.07
11.75	0.90	0.82	0.08	1.58	1.49	0.09	2.98	2.89	0.09
12.00	1.91	1.78	0.13	3.29	3.15	0.14	6.10	5.97	0.13
12.25	4.49	4.27	0.22	7.54	7.32	0.22	13.59	13.41	0.18
12.50	2.40	2.30	0.10	3.97	3.87	0.10	7.05	6.96	0.09
12.75	1.27	1.23	0.04	2.09	2.04	0.05	3.67	3.64	0.03
13.00	0.83	0.81	0.02	1.36	1.34	0.02	2.38	2.36	0.02
13.25	0.62	0.60	0.02	1.01	0.99	0.02	1.76	1.74	0.02
13.50	0.49	0.48	0.01	0.80	0.78	0.02	1.39	1.38	0.01
13.75	0.39	0.38	0.01	0.64	0.63	0.01	1.11	1.10	0.01
14.00	0.35	0.34	0.01	0.56	0.55	0.01	0.98	0.97	0.01
14.25	0.32	0.31	0.01	0.51	0.51	0.00	0.89	0.89	0.00
14.50	0.29	0.28	0.01	0.47	0.46	0.01	0.81	0.81	0.00
14.75	0.26	0.26	0.00	0.43	0.42	0.01	0.74	0.74	0.00
15.00	0.24	0.23	0.01	0.38	0.38	0.00	0.66	0.66	0.00
15.25	0.21	0.21	0.00	0.34	0.34	0.00	0.59	0.59	0.00
15.50	0.20	0.20	0.00	0.32	0.32	0.00	0.56	0.56	0.00
15.75	0.19	0.19	0.00	0.31	0.31	0.00	0.54	0.53	0.01
16.00	0.19	0.18	0.01	0.30	0.29	0.01	0.52	0.51	0.01

16.25	0.18	0.17	0.01	0.29	0.28	0.01	0.50	0.49	0.01
16.50	0.17	0.17	0.00	0.28	0.27	0.01	0.48	0.47	0.01
16.75	0.16	0.16	0.00	0.26	0.26	0.00	0.46	0.45	0.01
17.00	0.16	0.15	0.01	0.25	0.25	0.00	0.44	0.43	0.01
17.25	0.15	0.15	0.00	0.24	0.24	0.00	0.42	0.41	0.01
17.50	0.14	0.14	0.00	0.23	0.23	0.00	0.39	0.39	0.00
17.75	0.14	0.13	0.01	0.22	0.22	0.00	0.37	0.37	0.00
18.00	0.13	0.13	0.00	0.21	0.20	0.01	0.35	0.35	0.00
18.25	0.12	0.12	0.00	0.20	0.19	0.01	0.34	0.33	0.01
18.50	0.12	0.12	0.00	0.19	0.19	0.00	0.33	0.33	0.00
18.75	0.12	0.11	0.01	0.19	0.18	0.01	0.32	0.32	0.00
19.00	0.11	0.11	0.00	0.18	0.18	0.00	0.32	0.31	0.01
19.25	0.11	0.11	0.00	0.18	0.18	0.00	0.31	0.31	0.00
19.50	0.11	0.11	0.00	0.18	0.18	0.00	0.31	0.30	0.01
19.75	0.11	0.11	0.00	0.17	0.17	0.00	0.30	0.30	0.00
20.00	0.11	0.11	0.00	0.17	0.17	0.00	0.30	0.30	0.00
20.25	0.11	0.10	0.01	0.17	0.17	0.00	0.29	0.29	0.00
20.50	0.10	0.10	0.00	0.17	0.16	0.01	0.29	0.28	0.01
20.75	0.10	0.10	0.00	0.16	0.16	0.00	0.28	0.28	0.00
21.00	0.10	0.10	0.00	0.16	0.16	0.00	0.28	0.27	0.01
21.25	0.10	0.10	0.00	0.16	0.16	0.00	0.27	0.27	0.00
21.50	0.10	0.09	0.01	0.15	0.15	0.00	0.27	0.27	0.00
21.75	0.09	0.09	0.00	0.15	0.15	0.00	0.26	0.26	0.00
22.00	0.09	0.09	0.00	0.15	0.15	0.00	0.26	0.25	0.01
22.25	0.09	0.09	0.00	0.15	0.14	0.01	0.25	0.25	0.00
22.50	0.09	0.09	0.00	0.14	0.14	0.00	0.25	0.24	0.01
22.75	0.09	0.09	0.00	0.14	0.14	0.00	0.24	0.24	0.00
23.00	0.09	0.08	0.01	0.14	0.14	0.00	0.24	0.23	0.01
23.25	0.08	0.08	0.00	0.13	0.13	0.00	0.23	0.23	0.00
23.50	0.08	0.08	0.00	0.13	0.13	0.00	0.23	0.22	0.01
23.75	0.08	0.08	0.00	0.13	0.13	0.00	0.22	0.22	0.00
24.00	0.08	0.08	0.00	0.13	0.13	0.00	0.22	0.22	0.00

Existing Routing Diagram



Proposed Routing Diagram



Project HMH CC Redevelopment By CMP Date 9/12/2022
 Location Montgomery, Somerset County, NJ Checked MI Date _____

Circle One: Present Developed

Circle One: T_c T_t through subarea

DA-1A Impervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, P₂
5. Land slope, s

$$6. T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$$

Compute T_t

Segment ID

1	2
Imp	Grass
0.011	0.15
37	63
3.34	3.34
0.020	0.010
0.009	0.146

hr **0.009** + **0.146** = **0.155**

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)

$$11. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID

Grass	Pave
135	0
0.015	0.030
2.0	3.5
0.019	0.000

hr **0.019** + **0.000** = **0.019**

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r
15. Channel slope, s
16. Manning's roughness coeff., n

$$17. V = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute V

Segment ID

swale	
6.1	
9.3	
0.7	
0.005	
0.030	
2.65	
488	
0.051	

hr **0.051** + = **0.051**

18. Flow length, L

$$19. T_t = \frac{L}{3600 V}$$

Compute T_t

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

hr **0.225**

Project HMH CC Redevelopment By CMP Date 9/12/2022
 Location Montgomery, Somerset County, NJ Checked MI Date _____

Circle One: Present Developed

Circle One: T_c T_t through subarea

DA-1A Pervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, P₂
5. Land slope, s

$$6. T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$$

Compute T_t

Segment ID

1	
Grass	
0.15	
100	
3.34	
0.015	
0.179	+

$$= 0.179$$

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)

$$11. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID

Grass	Pave
335	37
0.017	0.025
2.1	3.2
0.044	+

$$= 0.047$$

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r
15. Channel slope, s
16. Manning's roughness coeff., n

$$17. V = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute V

Segment ID

swale	
6.1	
9.3	
0.7	
0.005	
0.030	
2.65	
323	
0.034	+

$$= 0.034$$

18. Flow length, L

$$19. T_t = \frac{L}{3600 V}$$

Compute T_t

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

$$hr 0.261$$

Project HMH CC Redevelopment By CMP Date 9/12/2022
 Location Montgomery, Somerset County, NJ Checked MI Date _____
 Circle One: Present Developed
 Circle One: T_c T_t through subarea _____ DA-1B Impervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, P₂
5. Land slope, s
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$ Compute T_t

Segment ID	1	2
	Imp	Grass
	0.011	0.15
ft	25	40
in	3.34	3.34
ft/ft	0.030	0.030
hr	0.006	0.065
	+ = 0.071	

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)
11. $T_t = \frac{L}{3600 V}$ Compute T_t

Segment ID		
	Grass	
ft	94	
ft/ft	0.003	
ft/s	0.9	
hr	0.030	0.030
	+ = 0.030	

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r $r = \frac{a}{p_w}$ Compute r
15. Channel slope, s
16. Manning's roughness coeff., n
17. $V = \frac{1.49 r^{2/3} s^{1/2}}{n}$ Compute V
18. Flow length, L
19. $T_t = \frac{L}{3600 V}$ Compute T_t
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

Segment ID	8" CIP	15" RCP	25x16" CMP	swale
ft ²	0.20	0.79	2.73	0.20
ft	1.57	3.14	5.90	1.57
ft	0.13	0.25	0.46	0.13
ft/ft	0.003	0.005	0.004	0.007
	0.012	0.013	0.024	0.030
ft/s	1.70	3.12	2.29	1.02
ft	134	467	120	247
hr	0.022	0.042	0.015	0.067
	+ = 0.145			
	+ = 0.245			

Project HMH CC Redevelopment By CMP Date 9/12/2022
 Location Montgomery, Somerset County, NJ Checked MI Date _____
 Circle One: Present Developed
 Circle One: T_c T_t through subarea _____ DA-1B Pervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, P₂
5. Land slope, s
6. $T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} s^{0.4}}$ Compute T_t

Segment ID	1	2
	Grass	Imp
	0.15	0.011
ft	88	12
in	3.34	3.34
ft/ft	0.030	0.030
hr	0.123	0.003
	+ = 0.126	

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)
11. $T_t = \frac{L}{3600 V}$ Compute T_t

Segment ID		
	Grass	Pave
ft	335	37
ft/ft	0.017	0.025
ft/s	2.1	3.2
hr	0.044	0.003
	+ = 0.047	

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r $r = \frac{a}{p_w}$ Compute r
15. Channel slope, s
16. Manning's roughness coeff., n
17. $V = \frac{1.49 r^{2/3} s^{1/2}}{n}$ Compute V
18. Flow length, L
19. $T_t = \frac{L}{3600 V}$ Compute T_t
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

Segment ID	8" CIP	15" RCP	25x16" CMP	swale
ft ²	0.20	0.79	2.73	0.20
ft	1.57	3.14	5.90	1.57
ft	0.13	0.25	0.46	0.13
ft/ft	0.003	0.005	0.004	0.007
	0.012	0.013	0.024	0.030
ft/s	1.70	3.12	2.29	1.02
ft	134	467	120	247
hr	0.022	0.042	0.015	0.067
	+ = 0.145			
	hr 0.318			

Project HMH CC Redevelopment By CMP Date 9/12/2022
 Location Montgomery, Somerset County, NJ Checked MI Date _____

Circle One: Present Developed

Circle One: T_c T_t through subarea

DA-2 Impervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, P₂
5. Land slope, s

$$6. T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$$

Compute T_t

Segment ID

1	2
Imp	Grass
0.011	0.15
68	19
3.34	3.34
0.005	0.003
0.025	0.090

ft

in

ft/ft

hr

+

=

0.116

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)

$$11. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID

3	
Grass	
423	
0.005	
1.1	
0.103	

ft

ft/ft

ft/s

hr

+

=

0.103

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r
15. Channel slope, s
16. Manning's roughness coeff., n

$$17. V = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute V

Segment ID

swale	
43.0	
25.7	
1.7	
0.005	
0.030	
4.95	
323	
0.018	

ft²

ft

ft

ft/ft

ft/s

ft

hr

+

=

0.018

18. Flow length, L

$$19. T_t = \frac{L}{3600 V}$$

Compute T_t

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

hr

0.237

Project HMH CC Redevelopment By CMP Date 9/12/2022
 Location Montgomery, Somerset County, NJ Checked MI Date _____

Circle One: Present Developed

Circle One: T_c T_t through subarea

DA-2 Pervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, P₂
5. Land slope, s

$$6. T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$$

Compute T_t

Segment ID

1	
Grass	
0.15	
56	
3.34	
0.005	
0.175	+

ft

in

ft/ft

hr

$$= \boxed{0.175}$$

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)

$$11. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID

3	
Grass	
423	
0.005	
1.1	
0.103	+

ft

ft/ft

ft/s

hr

$$= \boxed{0.103}$$

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r
15. Channel slope, s
16. Manning's roughness coeff., n

$$17. V = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute V

Segment ID

swale	
43.0	
25.7	
1.7	
0.005	
0.030	
4.95	
323	
0.018	+

ft²

ft

ft

ft/ft

ft/s

ft

hr

$$= \boxed{0.018}$$

18. Flow length, L

$$19. T_t = \frac{L}{3600 V}$$

Compute T_t

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

$$\text{hr} \quad \boxed{0.296}$$

Project HMH CC Redevelopment By CMP Date 9/12/2022
 Location Montgomery, Somerset County, NJ Checked MI Date _____

Circle One: Present Developed

Circle One: T_c T_t through subarea

DA-3 Impervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, P₂
5. Land slope, s

$$6. T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$$

Compute T_t

Segment ID

1	2
Imp	Grass
0.011	0.15
18	82
3.34	3.34
0.005	0.005
0.009	0.237

ft

in

ft/ft

hr

+

=

0.246

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)

$$11. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID

3	
Grass	
400	
0.004	
1.0	
0.109	

ft

ft/ft

ft/s

hr

+

=

0.109

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r
15. Channel slope, s
16. Manning's roughness coeff., n

$$17. V = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute V

Segment ID

ft²

ft

ft

ft/ft

ft/s

ft

hr

+

=

0.000

18. Flow length, L

$$19. T_t = \frac{L}{3600 V}$$

Compute T_t

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

hr

0.355

Project HMH CC Redevelopment By CMP Date 9/12/2022
 Location Montgomery, Somerset County, NJ Checked MI Date _____

Circle One: Present Developed

Circle One: T_c T_t through subarea

DA-3 Pervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, P₂
5. Land slope, s

$$6. T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$$

Compute T_t

Segment ID

1	
Grass	
0.15	
100	
3.34	
0.005	
0.278	+

ft

in

ft/ft

hr

= **0.278**

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)

$$11. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID

2	
Grass	
400	
0.004	
1.0	
0.109	+

ft

ft/ft

ft/s

hr

= **0.109**

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r
15. Channel slope, s
16. Manning's roughness coeff., n

$$17. V = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute V

Segment ID

ft²

ft

ft

ft/ft

ft/s

ft

hr

= **0.000**

18. Flow length, L

$$19. T_t = \frac{L}{3600 V}$$

Compute T_t

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

hr **0.387**

Project HMH CC Redevelopment By CMP Date 9/12/2022
 Location Montgomery, Somerset County, NJ Checked MI Date _____
 Circle One: Present Developed _____
 Circle One: T_c T_t through subarea _____ **DA-4 Impervious**

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, P₂
5. Land slope, s

$$6. T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$$

Compute T_t

Segment ID

1	2
Imp	Grass
0.011	0.15
20	80
3.34	3.34
0.024	0.005
0.005	0.233

$$+ = 0.238$$

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)

$$11. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID

3	4
Grass	Pave
270	50
0.005	0.010
1.1	2.0
0.066	0.007

$$+ = 0.073$$

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r
15. Channel slope, s
16. Manning's roughness coeff., n

$$17. V = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute V

Segment ID

5	
1.23	
3.93	
0.31	
0.003	
0.013	
3.08	
156	
0.014	

$$+ = 0.014$$

18. Flow length, L

$$19. T_t = \frac{L}{3600 V}$$

Compute T_t

hr

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

$$hr 0.325$$

Project HMH CC Redevelopment By CMP Date 9/12/2022
 Location Montgomery, Somerset County, NJ Checked MI Date _____

Circle One: Present Developed

Circle One: T_c T_t through subarea

DA-4 Pervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, P₂
5. Land slope, s

$$6. T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$$

Compute T_t

Segment ID

1	
Grass	
0.15	
80	
3.34	
0.005	
0.233	+

ft

in

ft/ft

hr

$$= \boxed{0.233}$$

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)

$$11. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID

2	3
Grass	Pave
270	50
0.005	0.010
1.1	2.0
0.066	+

ft

ft/ft

ft/s

hr

$$= \boxed{0.073}$$

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r
15. Channel slope, s
16. Manning's roughness coeff., n

$$17. V = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute V

Segment ID

4	
1.23	
3.93	
0.31	
0.003	
0.013	
3.08	
156	
0.014	+

ft²

ft

ft

ft/ft

ft/s

ft

hr

$$= \boxed{0.014}$$

18. Flow length, L

$$19. T_t = \frac{L}{3600 V}$$

Compute T_t

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

$$\text{hr} \quad \boxed{0.319}$$

Project Carrier Clinic - Adolescent Patient Unit By CMP Date 9/12/2023

Location Montgomery, Somerset County, NJ Checked _____ Date _____

Circle One: Present Developed

Circle One T_c T_t through subarea

DA-1A Impervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, P₂
5. Land slope, s

$$6. T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$$

Compute T_t

Segment ID

1	
Imp	
0.011	
24	
3.34	
0.015	
0.007	+

= **0.007**

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)

$$11. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID

Pave	
56	
0.015	
2.5	
0.006	+

= **0.006**

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r
15. Channel slope, s
16. Manning's roughness coeff., n

$$17. V = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute V

Segment ID

Pipes	Swale
1.26	6.1
3.96	9.3
0.32	0.7
0.008	0.005
0.012	0.030
5.17	2.65
595	293
0.032	+
0.031	

= **0.063**

18. Flow length, L

$$19. T_t = \frac{L}{3600 V}$$

Compute T_t

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

hr **0.076**

Project Carrier Clinic - Adolescent Patient Unit By CMP Date 9/12/2023
 Location Montgomery, Somerset County, NJ Checked _____ Date _____
 Circle One: Present Developed
 Circle One T_c T_t through subarea DA-1A Pervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, P₂
5. Land slope, s

$$6. T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$$

Compute T_t

Segment ID

1	
Grass	
0.15	
22	
3.34	
0.018	
0.049	+

$$= 0.049$$

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)

$$11. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID

Grass	
360	
0.018	
0.9	
0.106	+

$$= 0.106$$

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r
15. Channel slope, s
16. Manning's roughness coeff., n

$$17. V = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute V

Segment ID

swale	
6.1	
9.3	
0.7	
0.005	
0.030	
2.65	
310	
0.032	+

$$= 0.032$$

18. Flow length, L

$$19. T_t = \frac{L}{3600 V}$$

Compute T_t

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

$$hr 0.188$$

Project Carrier Clinic - Adolescent Patient Unit By CMP Date 9/12/2023
 Location Montgomery, Somerset County, NJ Checked _____ Date _____
 Circle One: Present Developed
 Circle One: T_c T_t through subarea DA-1B Impervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, P₂
5. Land slope, s

$$6. T_t = \frac{0.007(nL)^{0.8}}{P_2^{0.5} S^{0.4}}$$

Compute T_t

Segment ID

1	2
Imp	Grass
0.011	0.15
25	40
3.34	3.34
0.030	0.030
0.006	0.065

$$+ = 0.071$$

4.251

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)

$$11. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID

Grass	
94	
0.003	
0.9	
0.030	

$$+ = 0.030$$

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r
15. Channel slope, s
16. Manning's roughness coeff., n

$$17. V = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute V

18. Flow length, L

$$19. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID

8" CIP	15" RCP	25x16" CMP	swale
0.20	0.79	2.73	0.20
1.57	3.14	5.90	1.57
0.13	0.25	0.46	0.13
0.003	0.005	0.004	0.007
0.012	0.013	0.024	0.030
1.70	3.12	2.29	1.02
134	467	120	247
0.022	0.042	0.015	0.067

$$+ = 0.145$$

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

hr 0.245

Project Carrier Clinic - Adolescent Patient Unit By CMP Date 9/12/2023

Location Montgomery, Somerset County, NJ Checked _____ Date _____

Circle One: Present Developed

Circle One: T_c T_t through subarea DA-1B Pervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, P₂
5. Land slope, s

$$6. T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} S^{0.4}}$$

Compute T_t

Segment ID

1	2
Grass	Imp
0.15	0.011
88	12
3.34	3.34
0.030	0.030
0.123	0.003

$$= 0.126$$

7.547

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)

$$11. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID

Grass	Pave
335	37
0.017	0.025
2.1	3.2
0.044	0.003

$$= 0.047$$

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r
15. Channel slope, s
16. Manning's roughness coeff., n

$$17. V = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute V

18. Flow length, L

$$19. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID

8" CIP	15" RCP	25x16" CMP	swale
0.20	0.79	2.73	0.20
1.57	3.14	5.90	1.57
0.13	0.25	0.46	0.13
0.003	0.005	0.004	0.007
0.012	0.013	0.024	0.030
1.70	3.12	2.29	1.02
134	467	120	247
0.022	0.042	0.015	0.067

$$= 0.145$$

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

$$= 0.318$$

Project Carrier Clinic - Adolescent Patient Unit By CMP Date 9/12/2023

Location Montgomery, Somerset County, NJ Checked _____ Date _____

Circle One: Present Developed

Circle One T_c T_t through subarea

DA-2 Impervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, P₂
5. Land slope, s

$$6. T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$$

Compute T_t

Segment ID

1	2
Imp	Grass
0.011	0.15
68	19
3.34	3.34
0.005	0.003
0.025	0.090

ft

in

ft/ft

hr

$$+ = 0.116$$

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)

$$11. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID

3	
Grass	
423	
0.005	
1.1	
0.103	

ft

ft/ft

ft/s

hr

$$+ = 0.103$$

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r
15. Channel slope, s
16. Manning's roughness coeff., n

$$17. V = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute V

Segment ID

swale	
43.0	
25.7	
1.7	
0.005	
0.030	
4.95	
323	
0.018	

ft²

ft

ft

ft/ft

ft/s

ft

hr

$$+ = 0.018$$

18. Flow length, L

$$19. T_t = \frac{L}{3600 V}$$

Compute T_t

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

$$hr 0.237$$

Project Carrier Clinic - Adolescent Patient Unit By CMP Date 9/12/2023
 Location Montgomery, Somerset County, NJ Checked _____ Date _____
 Circle One: Present Developed
 Circle One: T_c T_t through subarea DA-2 Pervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, P₂
5. Land slope, s

$$6. T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$$

Compute T_t

Segment ID

1	
Grass	
0.15	
56	
3.34	
0.005	
0.175	+

$$= 0.175$$

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)

$$11. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID

3	
Grass	
423	
0.005	
1.1	
0.103	+

$$= 0.103$$

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r
15. Channel slope, s
16. Manning's roughness coeff., n

$$17. V = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute V

Segment ID

swale	
43.0	
25.7	
1.7	
0.005	
0.030	
4.95	
323	
0.018	+

$$= 0.018$$

18. Flow length, L

$$19. T_t = \frac{L}{3600 V}$$

Compute T_t

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

$$hr 0.296$$

Segment ID			
ft ²			
ft			
ft			
ft/ft			
ft/s			
ft			
hr		+	
			=
			0.000
1, 19)		hr	0.355

Project Carrier Clinic - Adolescent Patient Unit By CMP Date 9/12/2023

Location Montgomery, Somerset County, NJ Checked _____ Date _____

Circle One: Present Developed

Circle One T_c T_t through subarea

DA-3 Pervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, P₂
5. Land slope, s

$$6. T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$$

Compute T_t

Segment ID

1	
Grass	
0.15	
100	
3.34	
0.005	
0.278	+

ft

in

ft/ft

hr

$$= \boxed{0.278}$$

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)

$$11. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID

2	
Grass	
400	
0.004	
1.0	
0.109	+

ft

ft/ft

ft/s

hr

$$= \boxed{0.109}$$

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r
15. Channel slope, s
16. Manning's roughness coeff., n

$$17. V = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute V

Segment ID

ft²

ft

ft

ft/ft

ft/s

ft

hr

$$= \boxed{0.000}$$

18. Flow length, L

$$19. T_t = \frac{L}{3600 V}$$

Compute T_t

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

$$\text{hr} \quad \boxed{0.387}$$

Project Carrier Clinic - Adolescent Patient Unit By CMP Date 9/12/2023
 Location Montgomery, Somerset County, NJ Checked _____ Date _____
 Circle One: Present Developed
 Circle One: T_c T_t through subarea DA-4 Impervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, P₂
5. Land slope, s

$$6. T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$$

Compute T_t

Segment ID

1	2
Imp	Grass
0.011	0.15
20	80
3.34	3.34
0.024	0.005
0.005	0.233

$$+ = 0.238$$

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)

$$11. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID

3	4
Grass	Pave
270	50
0.005	0.010
1.1	2.0
0.066	0.007

$$+ = 0.073$$

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r
15. Channel slope, s
16. Manning's roughness coeff., n

$$17. V = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute V

Segment ID

5	
1.23	
3.93	
0.31	
0.003	
0.013	
3.08	
156	
0.014	

$$+ = 0.014$$

18. Flow length, L

$$19. T_t = \frac{L}{3600 V}$$

Compute T_t

hr

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

$$hr 0.325$$

Project Carrier Clinic - Adolescent Patient Unit By CMP Date 9/12/2023
 Location Montgomery, Somerset County, NJ Checked _____ Date _____
 Circle One: Present Developed
 Circle One: T_c T_t through subarea Porous Pavement 1A-1, Impervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, R₂
5. Land slope, s

$$6. T_c = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} S^{0.4}}$$

Compute T_t

Segment ID	1	
	Imp	
	0.011	
ft	76	
in	3.34	
ft/ft	0.083	
hr	0.009	+
		= 0.009

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)

$$11. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID		
ft		
ft/ft		
ft/s		
hr		+
		= 0.000

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r
15. Channel slope, s
16. Manning's roughness coeff., n

$$r = \frac{a}{p_w}$$

Compute r

$$17. V = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute V

18. Flow length, L

$$19. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID	2	Outlet	
ft ²	0.35	1.28	6.1
ft	2.09	3.91	9.3
ft	0.17	0.33	0.7
ft/ft	0.020	0.007	0.005
	0.01	0.011	0.030
ft/s	6.38	5.20	2.65
ft	136	134	290
hr	0.006	0.007	+
			= 0.030

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

hr **0.015**

Project Carrier Clinic - Adolescent Patient Unit By CMP Date 9/12/2023
 Location Montgomery, Somerset County, NJ Checked _____ Date _____

Circle One: Present Developed

Circle One T_c T_t through subarea

Porous Pavement 1A-2, Impervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, P₂
5. Land slope, s

$$6. T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$$

Compute T_t

Segment ID

1	
Imp	
0.011	
34	
3.34	
0.019	
0.009	+

$$= 0.009$$

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)

$$11. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID

2	
Pave	
123	
0.007	
1.7	
0.020	+

$$= 0.020$$

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r
15. Channel slope, s
16. Manning's roughness coeff., n

$$17. V = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute V

Segment ID

Outlet		
1.39	6.1	
4.11	9.3	
0.34	0.7	
0.006	0.005	
0.011	0.030	
5.11	2.65	
121	290	
0.007	+	0.030

$$0.000$$

$$0.029$$

18. Flow length, L

$$19. T_t = \frac{L}{3600 V}$$

Compute T_t

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

hr

Project Carrier Clinic - Adolescent Patient Unit By CMP Date 9/12/2023
 Location Montgomery, Somerset County, NJ Checked _____ Date _____
 Circle One: Present Developed
 Circle One: T_c T_t through subarea Porous Pavement 1A-3, Impervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, R₂
5. Land slope, s

$$6. T_c = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} S^{0.4}}$$

Compute T_t

Segment ID	1	
	Imp	
	0.011	
ft	48	
in	3.34	
ft/ft	0.020	
hr	0.011	+
		= 0.011

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)

$$11. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID		
ft		
ft/ft		
ft/s		
hr		+
		= 0.000

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r
15. Channel slope, s
16. Manning's roughness coeff., n

$$r = \frac{a}{p_w}$$

Compute r

$$17. V = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute V

18. Flow length, L

$$19. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID	2	Outlet	
ft ²	0.35	1.02	6.1
ft	2.09	3.52	9.3
ft	0.17	0.29	0.7
ft/ft	0.020	0.006	0.005
	0.01	0.011	0.030
ft/s	6.38	4.86	2.65
ft	80	414	290
hr	0.003	0.024	+
			= 0.003
			= 0.014

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

Project Carrier Clinic - Adolescent Patient Unit By CMP Date 9/12/2023
 Location Montgomery, Somerset County, NJ Checked _____ Date _____
 Circle One: Present Developed
 Circle One: T_c T_t through subarea Basin 1A-4, Impervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, R₂
5. Land slope, s

$$6. T_c = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} S^{0.4}}$$

Compute T_t

Segment ID

1	
Imp	
0.011	
ft	97
in	3.34
ft/ft	0.083
hr	0.011 + = 0.011

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)

$$11. T_c = \frac{L}{3600 V}$$

Compute T_t

Segment ID

ft	
ft/ft	
ft/s	
hr	+ = 0.000

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, P_w
14. Hydraulic radius, r
15. Channel slope, s
16. Manning's roughness coeff., n

$$17. V = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute V

18. Flow length, L

$$19. T_c = \frac{L}{3600 V}$$

Compute T_t

Segment ID

	Pipes	Outlet	
ft ²	0.66	1.23	6.1
ft	2.71	3.93	9.3
ft	0.24	0.31	0.7
ft/ft	0.007	0.005	0.005
	0.010	0.012	0.030
ft/s	4.79	4.04	2.65
ft	498	62	326
hr	0.029 +	0.004 +	0.034 = 0.029
			0.040

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

hr

Project Carrier Clinic - Adolescent Patient Unit By CMP Date 9/12/2023

Location Montgomery, Somerset County, NJ Checked _____ Date _____

Circle One: Present Developed

Circle One T_c T_t through subarea

Basin 1A-4, Pervious

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to T_c Only)

1. Surface description (table 3-1)
2. Manning's roughness coeff., n (Table 15-1)
3. Flow Length, L (total L ≤ 100 ft)
4. Two-yr 24-hr rainfall, P₂
5. Land slope, s

$$6. T_t = \frac{0.007 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$$

Compute T_t

Segment ID

1	
Grass	
0.24	
72	
3.34	
0.038	
0.138	+

$$= 0.138$$

Shallow concentrated flow

7. Surface description (paved or unpaved)
8. Flow length, L
9. Watercourse slope, s
10. Average velocity, V (Figure 15-4)

$$11. T_t = \frac{L}{3600 V}$$

Compute T_t

Segment ID

	+

$$= 0.000$$

Channel flow

12. Cross sectional flow area, a
13. Wetted perimeter, p_w
14. Hydraulic radius, r
15. Channel slope, s
16. Manning's roughness coeff., n

$$17. V = \frac{1.49 r^{2/3} s^{1/2}}{n}$$

Compute V

Segment ID

Outlet	
1.23	6.1
3.93	9.3
0.31	0.7
0.005	0.005
0.012	0.030
4.04	2.65
62	326
0.004	+
0.034	

$$= 0.000$$

18. Flow length, L

$$19. T_t = \frac{L}{3600 V}$$

Compute T_t

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, 19)

$$hr 0.138$$

Multiple Element Report

Catchment Detailed Report: DA-1A-UND IMP

<General>			
ID	46	Notes	
Label	DA-1A-UND IMP	Hyperlinks	<Collection: 0 items>
GIS-IDs			
GIS-ID			
Geometry			
	X (ft)	Y (ft)	
	-108.57	101.07	
	-131.67	84.29	
	-122.85	57.14	
	-94.30	57.14	
	-85.47	84.29	
Active Topology			
Is Active?	True		
Catchment			
Outflow Node	POS-1A		
Rainfall			
Use Local Rainfall?	False		
Runoff			
Runoff Method	Unit Hydrograph	SCS CN	98.0
Loss Method	SCS CN	Unit Hydrograph Method	SCS Unit Hydrograph
Use Scaled Area?	False	Tc Input Type	User Defined Tc
Area (User Defined)	0.35 acres	Time of Concentration	0.076 hours
CN Input Type	Simple CN	Time of Concentration (Composite)	0.076 hours
Unit Hydrograph (Advanced)			
SCS Unit Hydrograph Method	Default Curvilinear	Use Directly Connected Impervious Area	False
Flow (Base)	0.00 ft³/s	Calculation Increment (Catchment)	0.000 hours
Results (Computed)			

Multiple Element Report

Results (Computed)			
Computational Time Increment	0.010 hours	Time to Peak (Computed)	12.109 hours
Flow (Peak, Computed)	1.30 ft ³ /s		
Results (Interpolated)			
Flow (Peak Interpolated Output)	0.77 ft ³ /s	Time to Flow (Peak Interpolated Output)	12.000 hours
Volume	0.087 ac-ft		
Results (Modified Rational Method)			
Frequency	(N/A) years	Area (Modified Rational, Composite)	(N/A) acres
C Adjustment Factor	(N/A)	C Coefficient (Modified Rational, Weighted)	(N/A)
Flow (Modified Rational, Allowable)	(N/A) ft ³ /s	C Coefficient (Modified Rational, Adjusted)	(N/A)
Storage (Modified Rational, Estimated)	(N/A) ac-ft	Second Outflow Breakpoint (Modified Rational)	(N/A) hours
Time of Duration (Modified Rational, Critical)	(N/A) hours	First Outflow Breakpoint (Modified Rational, Method T)	(N/A) hours
Time of Concentration (Modified Rational, Composite)	(N/A) hours	Intensity (Modified Rational, Critical)	(N/A) in/h
Intensity (Modified Rational, Peak)	(N/A) in/h	Flow (Modified Rational, Critical)	(N/A) ft ³ /s
Flow (Modified Rational, Peak)	(N/A) ft ³ /s		
Results (SCS Unit Hydrograph)			
Unit Hydrograph Shape Factor	483.4	Unit peak time, Tp	0.051 hours
K Factor	0.7	Unit receding limb, Tr	0.203 hours
Receding/Rising, Tr/Tp	1.670	Total unit time, Tb	0.253 hours
Unit peak, qp	5.22 ft ³ /s	Percent Volume under Rising Limb	37.5 %
Results			
Flow (Total)	0.00 ft ³ /s	Flow (Peak) + Flow (Base)	1.30 ft ³ /s
Cumulative Runoff Depth (Pervious)	3.11 in	Maximum Retention (Pervious)	0.20 in
Runoff Volume (Impervious)	0.000 ac-ft	Maximum Retention (Pervious, 20 percent)	0.04 in
Runoff Volume (Pervious)	0.091 ac-ft	Maximum Retention (Impervious)	(N/A) in
Cumulative Runoff Depth (Impervious)	0.00 in	Maximum Retention (Impervious, 20 percent)	(N/A) in

Multiple Element Report

Catchment Detailed Report: DA-1A-UND PER

<General>			
ID	48	Notes	
Label	DA-1A-UND PER	Hyperlinks	<Collection: 0 items>
GIS-IDs			
GIS-ID			
Geometry			
	X (ft)	Y (ft)	
	-1.07	102.86	
	-25.19	85.34	
	-15.98	56.99	
	13.83	56.99	
	23.04	85.34	
Active Topology			
Is Active?	True		
Catchment			
Outflow Node	POS-1A		
Rainfall			
Use Local Rainfall?	False		
Runoff			
Runoff Method	Unit Hydrograph	SCS CN	72.7
Loss Method	SCS CN	Unit Hydrograph Method	SCS Unit Hydrograph
Use Scaled Area?	False	Tc Input Type	User Defined Tc
Area (User Defined)	2.01 acres	Time of Concentration	0.188 hours
CN Input Type	Simple CN	Time of Concentration (Composite)	0.188 hours
Unit Hydrograph (Advanced)			
SCS Unit Hydrograph Method	Default Curvilinear	Use Directly Connected Impervious Area	False
Flow (Base)	0.00 ft³/s	Calculation Increment (Catchment)	0.000 hours
Results (Computed)			

Multiple Element Report

Results (Computed)			
Computational Time Increment	0.025 hours	Time to Peak (Computed)	12.182 hours
Flow (Peak, Computed)	2.19 ft ³ /s		
Results (Interpolated)			
Flow (Peak Interpolated Output)	1.78 ft ³ /s	Time to Flow (Peak Interpolated Output)	12.250 hours
Volume	0.174 ac-ft		
Results (Modified Rational Method)			
Frequency	(N/A) years	Area (Modified Rational, Composite)	(N/A) acres
C Adjustment Factor	(N/A)	C Coefficient (Modified Rational, Weighted)	(N/A)
Flow (Modified Rational, Allowable)	(N/A) ft ³ /s	C Coefficient (Modified Rational, Adjusted)	(N/A)
Storage (Modified Rational, Estimated)	(N/A) ac-ft	Second Outflow Breakpoint (Modified Rational)	(N/A) hours
Time of Duration (Modified Rational, Critical)	(N/A) hours	First Outflow Breakpoint (Modified Rational, Method T)	(N/A) hours
Time of Concentration (Modified Rational, Composite)	(N/A) hours	Intensity (Modified Rational, Critical)	(N/A) in/h
Intensity (Modified Rational, Peak)	(N/A) in/h	Flow (Modified Rational, Critical)	(N/A) ft ³ /s
Flow (Modified Rational, Peak)	(N/A) ft ³ /s		
Results (SCS Unit Hydrograph)			
Unit Hydrograph Shape Factor	483.4	Unit peak time, Tp	0.125 hours
K Factor	0.7	Unit receding limb, Tr	0.501 hours
Receding/Rising, Tr/Tp	1.670	Total unit time, Tb	0.627 hours
Unit peak, qp	12.11 ft ³ /s	Percent Volume under Rising Limb	37.5 %
Results			
Flow (Total)	0.00 ft ³ /s	Flow (Peak) + Flow (Base)	2.19 ft ³ /s
Cumulative Runoff Depth (Pervious)	1.06 in	Maximum Retention (Pervious)	3.75 in
Runoff Volume (Impervious)	0.000 ac-ft	Maximum Retention (Pervious, 20 percent)	0.75 in
Runoff Volume (Pervious)	0.177 ac-ft	Maximum Retention (Impervious)	(N/A) in
Cumulative Runoff Depth (Impervious)	0.00 in	Maximum Retention (Impervious, 20 percent)	(N/A) in

Multiple Element Report

Catchment Detailed Report: DA-1A-1 IMP

<General>			
ID	56	Notes	
Label	DA-1A-1 IMP	Hyperlinks	<Collection: 0 items>
GIS-IDs			
GIS-ID			
Geometry			
X (ft)		Y (ft)	
	-166.60		-142.17
	-185.62		-155.99
	-178.36		-178.35
	-154.84		-178.35
	-147.58		-155.99
Active Topology			
Is Active?	True		
Catchment			
Outflow Node	Por. Pave 1A- 1		
Rainfall			
Use Local Rainfall?	False		
Runoff			
Runoff Method	Unit Hydrograph	SCS CN	98.0
Loss Method	SCS CN	Unit Hydrograph Method	SCS Unit Hydrograph
Use Scaled Area?	False	Tc Input Type	User Defined Tc
Area (User Defined)	0.61 acres	Time of Concentration	0.015 hours
CN Input Type	Simple CN	Time of Concentration (Composite)	0.030 hours
Unit Hydrograph (Advanced)			
SCS Unit Hydrograph Method	Default Curvilinear	Use Directly Connected Impervious Area	False
Flow (Base)	0.00 ft ³ /s	Calculation Increment (Catchment)	0.000 hours
Results (Computed)			

Multiple Element Report

Results (Computed)			
Computational Time Increment	0.004 hours	Time to Peak (Computed)	12.100 hours
Flow (Peak, Computed)	2.37 ft ³ /s		
Results (Interpolated)			
Flow (Peak Interpolated Output)	1.42 ft ³ /s	Time to Flow (Peak Interpolated Output)	12.000 hours
Volume	0.152 ac-ft		
Results (Modified Rational Method)			
Frequency	(N/A) years	Area (Modified Rational, Composite)	(N/A) acres
C Adjustment Factor	(N/A)	C Coefficient (Modified Rational, Weighted)	(N/A)
Flow (Modified Rational, Allowable)	(N/A) ft ³ /s	C Coefficient (Modified Rational, Adjusted)	(N/A)
Storage (Modified Rational, Estimated)	(N/A) ac-ft	Second Outflow Breakpoint (Modified Rational)	(N/A) hours
Time of Duration (Modified Rational, Critical)	(N/A) hours	First Outflow Breakpoint (Modified Rational, Method T)	(N/A) hours
Time of Concentration (Modified Rational, Composite)	(N/A) hours	Intensity (Modified Rational, Critical)	(N/A) in/h
Intensity (Modified Rational, Peak)	(N/A) in/h	Flow (Modified Rational, Critical)	(N/A) ft ³ /s
Flow (Modified Rational, Peak)	(N/A) ft ³ /s		
Results (SCS Unit Hydrograph)			
Unit Hydrograph Shape Factor	483.4	Unit peak time, Tp	0.020 hours
K Factor	0.7	Unit receding limb, Tr	0.080 hours
Receding/Rising, Tr/Tp	1.670	Total unit time, Tb	0.100 hours
Unit peak, qp	23.04 ft ³ /s	Percent Volume under Rising Limb	37.5 %
Results			
Flow (Total)	0.00 ft ³ /s	Flow (Peak) + Flow (Base)	2.37 ft ³ /s
Cumulative Runoff Depth (Pervious)	3.11 in	Maximum Retention (Pervious)	0.20 in
Runoff Volume (Impervious)	0.000 ac-ft	Maximum Retention (Pervious, 20 percent)	0.04 in
Runoff Volume (Pervious)	0.158 ac-ft	Maximum Retention (Impervious)	(N/A) in
Cumulative Runoff Depth (Impervious)	0.00 in	Maximum Retention (Impervious, 20 percent)	(N/A) in

Multiple Element Report

Catchment Detailed Report: DA-1A-2 IMP

<General>			
ID	57	Notes	
Label	DA-1A-2 IMP	Hyperlinks	<Collection: 0 items>
GIS-IDs			
GIS-ID			
Geometry			
X (ft)		Y (ft)	
	-88.56		-143.93
	-106.90		-157.26
	-99.90		-178.82
	-77.22		-178.82
	-70.22		-157.26
Active Topology			
Is Active?	True		
Catchment			
Outflow Node	Por. Pave 1A- 2		
Rainfall			
Use Local Rainfall?	False		
Runoff			
Runoff Method	Unit Hydrograph	SCS CN	98.0
Loss Method	SCS CN	Unit Hydrograph Method	SCS Unit Hydrograph
Use Scaled Area?	False	Tc Input Type	User Defined Tc
Area (User Defined)	0.17 acres	Time of Concentration	0.029 hours
CN Input Type	Simple CN	Time of Concentration (Composite)	0.030 hours
Unit Hydrograph (Advanced)			
SCS Unit Hydrograph Method	Default Curvilinear	Use Directly Connected Impervious Area	False
Flow (Base)	0.00 ft ³ /s	Calculation Increment (Catchment)	0.000 hours
Results (Computed)			

Multiple Element Report

Results (Computed)			
Computational Time Increment	0.004 hours	Time to Peak (Computed)	12.100 hours
Flow (Peak, Computed)	0.66 ft ³ /s		
Results (Interpolated)			
Flow (Peak Interpolated Output)	0.39 ft ³ /s	Time to Flow (Peak Interpolated Output)	12.000 hours
Volume	0.042 ac-ft		
Results (Modified Rational Method)			
Frequency	(N/A) years	Area (Modified Rational, Composite)	(N/A) acres
C Adjustment Factor	(N/A)	C Coefficient (Modified Rational, Weighted)	(N/A)
Flow (Modified Rational, Allowable)	(N/A) ft ³ /s	C Coefficient (Modified Rational, Adjusted)	(N/A)
Storage (Modified Rational, Estimated)	(N/A) ac-ft	Second Outflow Breakpoint (Modified Rational)	(N/A) hours
Time of Duration (Modified Rational, Critical)	(N/A) hours	First Outflow Breakpoint (Modified Rational, Method T)	(N/A) hours
Time of Concentration (Modified Rational, Composite)	(N/A) hours	Intensity (Modified Rational, Critical)	(N/A) in/h
Intensity (Modified Rational, Peak)	(N/A) in/h	Flow (Modified Rational, Critical)	(N/A) ft ³ /s
Flow (Modified Rational, Peak)	(N/A) ft ³ /s		
Results (SCS Unit Hydrograph)			
Unit Hydrograph Shape Factor	483.4	Unit peak time, Tp	0.020 hours
K Factor	0.7	Unit receding limb, Tr	0.080 hours
Receding/Rising, Tr/Tp	1.670	Total unit time, Tb	0.100 hours
Unit peak, qp	6.42 ft ³ /s	Percent Volume under Rising Limb	37.5 %
Results			
Flow (Total)	0.00 ft ³ /s	Flow (Peak) + Flow (Base)	0.66 ft ³ /s
Cumulative Runoff Depth (Pervious)	3.11 in	Maximum Retention (Pervious)	0.20 in
Runoff Volume (Impervious)	0.000 ac-ft	Maximum Retention (Pervious, 20 percent)	0.04 in
Runoff Volume (Pervious)	0.044 ac-ft	Maximum Retention (Impervious)	(N/A) in
Cumulative Runoff Depth (Impervious)	0.00 in	Maximum Retention (Impervious, 20 percent)	(N/A) in

Multiple Element Report

Catchment Detailed Report: DA-1A-3 IMP

<General>			
ID	58	Notes	
Label	DA-1A-3 IMP	Hyperlinks	<Collection: 0 items>
GIS-IDs			
GIS-ID			
Geometry			
X (ft)		Y (ft)	
	-13.74		-142.83
	-32.08		-156.15
	-25.08		-177.72
	-2.40		-177.72
	4.60		-156.15
Active Topology			
Is Active?	True		
Catchment			
Outflow Node	Por. Pave 1A-3		
Rainfall			
Use Local Rainfall?	False		
Runoff			
Runoff Method	Unit Hydrograph	SCS CN	98.0
Loss Method	SCS CN	Unit Hydrograph Method	SCS Unit Hydrograph
Use Scaled Area?	False	Tc Input Type	User Defined Tc
Area (User Defined)	0.23 acres	Time of Concentration	0.014 hours
CN Input Type	Simple CN	Time of Concentration (Composite)	0.030 hours
Unit Hydrograph (Advanced)			
SCS Unit Hydrograph Method	Default Curvilinear	Use Directly Connected Impervious Area	False
Flow (Base)	0.00 ft ³ /s	Calculation Increment (Catchment)	0.000 hours
Results (Computed)			

Multiple Element Report

Results (Computed)			
Computational Time Increment	0.004 hours	Time to Peak (Computed)	12.100 hours
Flow (Peak, Computed)	0.90 ft ³ /s		
Results (Interpolated)			
Flow (Peak Interpolated Output)	0.53 ft ³ /s	Time to Flow (Peak Interpolated Output)	12.000 hours
Volume	0.057 ac-ft		
Results (Modified Rational Method)			
Frequency	(N/A) years	Area (Modified Rational, Composite)	(N/A) acres
C Adjustment Factor	(N/A)	C Coefficient (Modified Rational, Weighted)	(N/A)
Flow (Modified Rational, Allowable)	(N/A) ft ³ /s	C Coefficient (Modified Rational, Adjusted)	(N/A)
Storage (Modified Rational, Estimated)	(N/A) ac-ft	Second Outflow Breakpoint (Modified Rational)	(N/A) hours
Time of Duration (Modified Rational, Critical)	(N/A) hours	First Outflow Breakpoint (Modified Rational, Method T)	(N/A) hours
Time of Concentration (Modified Rational, Composite)	(N/A) hours	Intensity (Modified Rational, Critical)	(N/A) in/h
Intensity (Modified Rational, Peak)	(N/A) in/h	Flow (Modified Rational, Critical)	(N/A) ft ³ /s
Flow (Modified Rational, Peak)	(N/A) ft ³ /s		
Results (SCS Unit Hydrograph)			
Unit Hydrograph Shape Factor	483.4	Unit peak time, Tp	0.020 hours
K Factor	0.7	Unit receding limb, Tr	0.080 hours
Receding/Rising, Tr/Tp	1.670	Total unit time, Tb	0.100 hours
Unit peak, qp	8.69 ft ³ /s	Percent Volume under Rising Limb	37.5 %
Results			
Flow (Total)	0.00 ft ³ /s	Flow (Peak) + Flow (Base)	0.90 ft ³ /s
Cumulative Runoff Depth (Pervious)	3.11 in	Maximum Retention (Pervious)	0.20 in
Runoff Volume (Impervious)	0.000 ac-ft	Maximum Retention (Pervious, 20 percent)	0.04 in
Runoff Volume (Pervious)	0.060 ac-ft	Maximum Retention (Impervious)	(N/A) in
Cumulative Runoff Depth (Impervious)	0.00 in	Maximum Retention (Impervious, 20 percent)	(N/A) in

Multiple Element Report

Catchment Detailed Report: DA-1A-4 IMP

<General>			
ID	60	Notes	
Label	DA-1A-4 IMP	Hyperlinks	<Collection: 0 items>
GIS-IDs			
GIS-ID			
Geometry			
X (ft)	Y (ft)		
61.79	-143.93		
44.81	-156.27		
51.30	-176.23		
72.29	-176.23		
78.78	-156.27		
Active Topology			
Is Active?	True		
Catchment			
Outflow Node	Det. Basin 1A -4		
Rainfall			
Use Local Rainfall?	False		
Runoff			
Runoff Method	Unit Hydrograph	SCS CN	98.0
Loss Method	SCS CN	Unit Hydrograph Method	SCS Unit Hydrograph
Use Scaled Area?	False	Tc Input Type	User Defined Tc
Area (User Defined)	0.66 acres	Time of Concentration	0.040 hours
CN Input Type	Simple CN	Time of Concentration (Composite)	0.040 hours
Unit Hydrograph (Advanced)			
SCS Unit Hydrograph Method	Default Curvilinear	Use Directly Connected Impervious Area	False
Flow (Base)	0.00 ft ³ /s	Calculation Increment (Catchment)	0.000 hours
Results (Computed)			

Multiple Element Report

Results (Computed)			
Computational Time Increment	0.005 hours	Time to Peak (Computed)	12.096 hours
Flow (Peak, Computed)	2.56 ft ³ /s		
Results (Interpolated)			
Flow (Peak Interpolated Output)	1.53 ft ³ /s	Time to Flow (Peak Interpolated Output)	12.000 hours
Volume	0.164 ac-ft		
Results (Modified Rational Method)			
Frequency	(N/A) years	Area (Modified Rational, Composite)	(N/A) acres
C Adjustment Factor	(N/A)	C Coefficient (Modified Rational, Weighted)	(N/A)
Flow (Modified Rational, Allowable)	(N/A) ft ³ /s	C Coefficient (Modified Rational, Adjusted)	(N/A)
Storage (Modified Rational, Estimated)	(N/A) ac-ft	Second Outflow Breakpoint (Modified Rational)	(N/A) hours
Time of Duration (Modified Rational, Critical)	(N/A) hours	First Outflow Breakpoint (Modified Rational, Method T)	(N/A) hours
Time of Concentration (Modified Rational, Composite)	(N/A) hours	Intensity (Modified Rational, Critical)	(N/A) in/h
Intensity (Modified Rational, Peak)	(N/A) in/h	Flow (Modified Rational, Critical)	(N/A) ft ³ /s
Flow (Modified Rational, Peak)	(N/A) ft ³ /s		
Results (SCS Unit Hydrograph)			
Unit Hydrograph Shape Factor	483.4	Unit peak time, Tp	0.027 hours
K Factor	0.7	Unit receding limb, Tr	0.107 hours
Receding/Rising, Tr/Tp	1.670	Total unit time, Tb	0.133 hours
Unit peak, qp	18.70 ft ³ /s	Percent Volume under Rising Limb	37.5 %
Results			
Flow (Total)	0.00 ft ³ /s	Flow (Peak) + Flow (Base)	2.56 ft ³ /s
Cumulative Runoff Depth (Pervious)	3.11 in	Maximum Retention (Pervious)	0.20 in
Runoff Volume (Impervious)	0.000 ac-ft	Maximum Retention (Pervious, 20 percent)	0.04 in
Runoff Volume (Pervious)	0.171 ac-ft	Maximum Retention (Impervious)	(N/A) in
Cumulative Runoff Depth (Impervious)	0.00 in	Maximum Retention (Impervious, 20 percent)	(N/A) in

Multiple Element Report

Catchment Detailed Report: DA-1A-4 PER

<General>			
ID	61	Notes	
Label	DA-1A-4 PER	Hyperlinks	<Collection: 0 items>
GIS-IDs			
GIS-ID			
Geometry			
X (ft)		Y (ft)	
	107.15		-142.14
	89.15		-155.22
	96.02		-176.38
	118.28		-176.38
	125.15		-155.22
Active Topology			
Is Active?	True		
Catchment			
Outflow Node	Det. Basin 1A -4		
Rainfall			
Use Local Rainfall?	False		
Runoff			
Runoff Method	Unit Hydrograph	SCS CN	73.2
Loss Method	SCS CN	Unit Hydrograph Method	SCS Unit Hydrograph
Use Scaled Area?	False	Tc Input Type	User Defined Tc
Area (User Defined)	0.73 acres	Time of Concentration	0.138 hours
CN Input Type	Simple CN	Time of Concentration (Composite)	0.138 hours
Unit Hydrograph (Advanced)			
SCS Unit Hydrograph Method	Default Curvilinear	Use Directly Connected Impervious Area	False
Flow (Base)	0.00 ft ³ /s	Calculation Increment (Catchment)	0.000 hours
Results (Computed)			

Multiple Element Report

Results (Computed)			
Computational Time Increment	0.018 hours	Time to Peak (Computed)	12.144 hours
Flow (Peak, Computed)	0.93 ft ³ /s		
Results (Interpolated)			
Flow (Peak Interpolated Output)	0.57 ft ³ /s	Time to Flow (Peak Interpolated Output)	12.250 hours
Volume	0.063 ac-ft		
Results (Modified Rational Method)			
Frequency	(N/A) years	Area (Modified Rational, Composite)	(N/A) acres
C Adjustment Factor	(N/A)	C Coefficient (Modified Rational, Weighted)	(N/A)
Flow (Modified Rational, Allowable)	(N/A) ft ³ /s	C Coefficient (Modified Rational, Adjusted)	(N/A)
Storage (Modified Rational, Estimated)	(N/A) ac-ft	Second Outflow Breakpoint (Modified Rational)	(N/A) hours
Time of Duration (Modified Rational, Critical)	(N/A) hours	First Outflow Breakpoint (Modified Rational, Method T)	(N/A) hours
Time of Concentration (Modified Rational, Composite)	(N/A) hours	Intensity (Modified Rational, Critical)	(N/A) in/h
Intensity (Modified Rational, Peak)	(N/A) in/h	Flow (Modified Rational, Critical)	(N/A) ft ³ /s
Flow (Modified Rational, Peak)	(N/A) ft ³ /s		
Results (SCS Unit Hydrograph)			
Unit Hydrograph Shape Factor	483.4	Unit peak time, Tp	0.092 hours
K Factor	0.7	Unit receding limb, Tr	0.368 hours
Receding/Rising, Tr/Tp	1.670	Total unit time, Tb	0.460 hours
Unit peak, qp	5.99 ft ³ /s	Percent Volume under Rising Limb	37.5 %
Results			
Flow (Total)	0.00 ft ³ /s	Flow (Peak) + Flow (Base)	0.93 ft ³ /s
Cumulative Runoff Depth (Pervious)	1.08 in	Maximum Retention (Pervious)	3.67 in
Runoff Volume (Impervious)	0.000 ac-ft	Maximum Retention (Pervious, 20 percent)	0.73 in
Runoff Volume (Pervious)	0.066 ac-ft	Maximum Retention (Impervious)	(N/A) in
Cumulative Runoff Depth (Impervious)	0.00 in	Maximum Retention (Impervious, 20 percent)	(N/A) in

Multiple Element Report

Catchment Detailed Report: DA-1B IMP

<General>			
ID	82	Notes	
Label	DA-1B IMP	Hyperlinks	<Collection: 0 items>
GIS-IDs			
GIS-ID			
Geometry			
	X (ft)	Y (ft)	
	166.19	105.30	
	141.15	87.65	
	150.20	58.39	
	180.83	57.94	
	190.71	86.93	
Active Topology			
Is Active?	True		
Catchment			
Outflow Node	POS-1B		
Rainfall			
Use Local Rainfall?	False		
Runoff			
Runoff Method	Unit Hydrograph	SCS CN	98.0
Loss Method	SCS CN	Unit Hydrograph Method	SCS Unit Hydrograph
Use Scaled Area?	False	Tc Input Type	User Defined Tc
Area (User Defined)	1.80 acres	Time of Concentration	0.245 hours
CN Input Type	Simple CN	Time of Concentration (Composite)	0.245 hours
Unit Hydrograph (Advanced)			
SCS Unit Hydrograph Method	Default Curvilinear	Use Directly Connected Impervious Area	False
Flow (Base)	0.00 ft³/s	Calculation Increment (Catchment)	0.000 hours
Results (Computed)			

Multiple Element Report

Results (Computed)			
Computational Time Increment	0.033 hours	Time to Peak (Computed)	12.185 hours
Flow (Peak, Computed)	4.80 ft ³ /s		
Results (Interpolated)			
Flow (Peak Interpolated Output)	4.34 ft ³ /s	Time to Flow (Peak Interpolated Output)	12.250 hours
Volume	0.464 ac-ft		
Results (Modified Rational Method)			
Frequency	(N/A) years	Area (Modified Rational, Composite)	(N/A) acres
C Adjustment Factor	(N/A)	C Coefficient (Modified Rational, Weighted)	(N/A)
Flow (Modified Rational, Allowable)	(N/A) ft ³ /s	C Coefficient (Modified Rational, Adjusted)	(N/A)
Storage (Modified Rational, Estimated)	(N/A) ac-ft	Second Outflow Breakpoint (Modified Rational)	(N/A) hours
Time of Duration (Modified Rational, Critical)	(N/A) hours	First Outflow Breakpoint (Modified Rational, Method T)	(N/A) hours
Time of Concentration (Modified Rational, Composite)	(N/A) hours	Intensity (Modified Rational, Critical)	(N/A) in/h
Intensity (Modified Rational, Peak)	(N/A) in/h	Flow (Modified Rational, Critical)	(N/A) ft ³ /s
Flow (Modified Rational, Peak)	(N/A) ft ³ /s		
Results (SCS Unit Hydrograph)			
Unit Hydrograph Shape Factor	483.4	Unit peak time, Tp	0.163 hours
K Factor	0.7	Unit receding limb, Tr	0.653 hours
Receding/Rising, Tr/Tp	1.670	Total unit time, Tb	0.817 hours
Unit peak, qp	8.32 ft ³ /s	Percent Volume under Rising Limb	37.5 %
Results			
Flow (Total)	0.00 ft ³ /s	Flow (Peak) + Flow (Base)	4.80 ft ³ /s
Cumulative Runoff Depth (Pervious)	3.11 in	Maximum Retention (Pervious)	0.20 in
Runoff Volume (Impervious)	0.000 ac-ft	Maximum Retention (Pervious, 20 percent)	0.04 in
Runoff Volume (Pervious)	0.466 ac-ft	Maximum Retention (Impervious)	(N/A) in
Cumulative Runoff Depth (Impervious)	0.00 in	Maximum Retention (Impervious, 20 percent)	(N/A) in

Multiple Element Report

Catchment Detailed Report: DA-1B PER

<General>			
ID	83	Notes	
Label	DA-1B PER	Hyperlinks	<Collection: 0 items>
GIS-IDs			
GIS-ID			
Geometry			
	X (ft)	Y (ft)	
	293.07	105.67	
	268.03	88.03	
	277.07	58.76	
	307.70	58.32	
	317.58	87.31	
Active Topology			
Is Active?	True		
Catchment			
Outflow Node	POS-1B		
Rainfall			
Use Local Rainfall?	False		
Runoff			
Runoff Method	Unit Hydrograph	SCS CN	74.0
Loss Method	SCS CN	Unit Hydrograph Method	SCS Unit Hydrograph
Use Scaled Area?	False	Tc Input Type	User Defined Tc
Area (User Defined)	1.87 acres	Time of Concentration	0.318 hours
CN Input Type	Simple CN	Time of Concentration (Composite)	0.318 hours
Unit Hydrograph (Advanced)			
SCS Unit Hydrograph Method	Default Curvilinear	Use Directly Connected Impervious Area	False
Flow (Base)	0.00 ft³/s	Calculation Increment (Catchment)	0.000 hours
Results (Computed)			

Multiple Element Report

Results (Computed)			
Computational Time Increment	0.042 hours	Time to Peak (Computed)	12.254 hours
Flow (Peak, Computed)	1.75 ft ³ /s		
Results (Interpolated)			
Flow (Peak Interpolated Output)	1.75 ft ³ /s	Time to Flow (Peak Interpolated Output)	12.250 hours
Volume	0.176 ac-ft		
Results (Modified Rational Method)			
Frequency	(N/A) years	Area (Modified Rational, Composite)	(N/A) acres
C Adjustment Factor	(N/A)	C Coefficient (Modified Rational, Weighted)	(N/A)
Flow (Modified Rational, Allowable)	(N/A) ft ³ /s	C Coefficient (Modified Rational, Adjusted)	(N/A)
Storage (Modified Rational, Estimated)	(N/A) ac-ft	Second Outflow Breakpoint (Modified Rational)	(N/A) hours
Time of Duration (Modified Rational, Critical)	(N/A) hours	First Outflow Breakpoint (Modified Rational, Method T)	(N/A) hours
Time of Concentration (Modified Rational, Composite)	(N/A) hours	Intensity (Modified Rational, Critical)	(N/A) in/h
Intensity (Modified Rational, Peak)	(N/A) in/h	Flow (Modified Rational, Critical)	(N/A) ft ³ /s
Flow (Modified Rational, Peak)	(N/A) ft ³ /s		
Results (SCS Unit Hydrograph)			
Unit Hydrograph Shape Factor	483.4	Unit peak time, Tp	0.212 hours
K Factor	0.7	Unit receding limb, Tr	0.848 hours
Receding/Rising, Tr/Tp	1.670	Total unit time, Tb	1.060 hours
Unit peak, qp	6.66 ft ³ /s	Percent Volume under Rising Limb	37.5 %
Results			
Flow (Total)	0.00 ft ³ /s	Flow (Peak) + Flow (Base)	1.75 ft ³ /s
Cumulative Runoff Depth (Pervious)	1.13 in	Maximum Retention (Pervious)	3.51 in
Runoff Volume (Impervious)	0.000 ac-ft	Maximum Retention (Pervious, 20 percent)	0.70 in
Runoff Volume (Pervious)	0.176 ac-ft	Maximum Retention (Impervious)	(N/A) in
Cumulative Runoff Depth (Impervious)	0.00 in	Maximum Retention (Impervious, 20 percent)	(N/A) in

Multiple Element Report

Catchment Detailed Report: DA-2 IMP

<General>			
ID	49	Notes	
Label	DA-2 IMP	Hyperlinks	<Collection: 0 items>
GIS-IDs			
GIS-ID			
Geometry			
X (ft)		Y (ft)	
	167.98		23.35
	143.86		5.83
	153.08		-22.52
	182.88		-22.52
	192.10		5.83
Active Topology			
Is Active?	True		
Catchment			
Outflow Node	POS-2		
Rainfall			
Use Local Rainfall?	False		
Runoff			
Runoff Method	Unit Hydrograph	SCS CN	98.0
Loss Method	SCS CN	Unit Hydrograph Method	SCS Unit Hydrograph
Use Scaled Area?	False	Tc Input Type	User Defined Tc
Area (User Defined)	3.83 acres	Time of Concentration	0.237 hours
CN Input Type	Simple CN	Time of Concentration (Composite)	0.237 hours
Unit Hydrograph (Advanced)			
SCS Unit Hydrograph Method	Default Curvilinear	Use Directly Connected Impervious Area	False
Flow (Base)	0.00 ft ³ /s	Calculation Increment (Catchment)	0.000 hours
Results (Computed)			

Multiple Element Report

Results (Computed)			
Computational Time Increment	0.032 hours	Time to Peak (Computed)	12.198 hours
Flow (Peak, Computed)	10.33 ft ³ /s		
Results (Interpolated)			
Flow (Peak Interpolated Output)	9.16 ft ³ /s	Time to Flow (Peak Interpolated Output)	12.250 hours
Volume	0.986 ac-ft		
Results (Modified Rational Method)			
Frequency	(N/A) years	Area (Modified Rational, Composite)	(N/A) acres
C Adjustment Factor	(N/A)	C Coefficient (Modified Rational, Weighted)	(N/A)
Flow (Modified Rational, Allowable)	(N/A) ft ³ /s	C Coefficient (Modified Rational, Adjusted)	(N/A)
Storage (Modified Rational, Estimated)	(N/A) ac-ft	Second Outflow Breakpoint (Modified Rational)	(N/A) hours
Time of Duration (Modified Rational, Critical)	(N/A) hours	First Outflow Breakpoint (Modified Rational, Method T)	(N/A) hours
Time of Concentration (Modified Rational, Composite)	(N/A) hours	Intensity (Modified Rational, Critical)	(N/A) in/h
Intensity (Modified Rational, Peak)	(N/A) in/h	Flow (Modified Rational, Critical)	(N/A) ft ³ /s
Flow (Modified Rational, Peak)	(N/A) ft ³ /s		
Results (SCS Unit Hydrograph)			
Unit Hydrograph Shape Factor	483.4	Unit peak time, Tp	0.158 hours
K Factor	0.7	Unit receding limb, Tr	0.632 hours
Receding/Rising, Tr/Tp	1.670	Total unit time, Tb	0.790 hours
Unit peak, qp	18.31 ft ³ /s	Percent Volume under Rising Limb	37.5 %
Results			
Flow (Total)	0.00 ft ³ /s	Flow (Peak) + Flow (Base)	10.33 ft ³ /s
Cumulative Runoff Depth (Pervious)	3.11 in	Maximum Retention (Pervious)	0.20 in
Runoff Volume (Impervious)	0.000 ac-ft	Maximum Retention (Pervious, 20 percent)	0.04 in
Runoff Volume (Pervious)	0.992 ac-ft	Maximum Retention (Impervious)	(N/A) in
Cumulative Runoff Depth (Impervious)	0.00 in	Maximum Retention (Impervious, 20 percent)	(N/A) in

Multiple Element Report

Catchment Detailed Report: DA-2 PER

<General>			
ID	50	Notes	
Label	DA-2 PER	Hyperlinks	<Collection: 0 items>
GIS-IDs			
GIS-ID			
Geometry			
X (ft)		Y (ft)	
	294.72		21.44
	271.20		3.83
	280.68		-23.99
	310.07		-23.57
	318.75		4.51
Active Topology			
Is Active?	True		
Catchment			
Outflow Node	POS-2		
Rainfall			
Use Local Rainfall?	False		
Runoff			
Runoff Method	Unit Hydrograph	SCS CN	74.0
Loss Method	SCS CN	Unit Hydrograph Method	SCS Unit Hydrograph
Use Scaled Area?	False	Tc Input Type	User Defined Tc
Area (User Defined)	5.10 acres	Time of Concentration	0.296 hours
CN Input Type	Simple CN	Time of Concentration (Composite)	0.296 hours
Unit Hydrograph (Advanced)			
SCS Unit Hydrograph Method	Default Curvilinear	Use Directly Connected Impervious Area	False
Flow (Base)	0.00 ft ³ /s	Calculation Increment (Catchment)	0.000 hours
Results (Computed)			

Multiple Element Report

Results (Computed)			
Computational Time Increment	0.039 hours	Time to Peak (Computed)	12.235 hours
Flow (Peak, Computed)	4.94 ft ³ /s		
Results (Interpolated)			
Flow (Peak Interpolated Output)	4.91 ft ³ /s	Time to Flow (Peak Interpolated Output)	12.250 hours
Volume	0.479 ac-ft		
Results (Modified Rational Method)			
Frequency	(N/A) years	Area (Modified Rational, Composite)	(N/A) acres
C Adjustment Factor	(N/A)	C Coefficient (Modified Rational, Weighted)	(N/A)
Flow (Modified Rational, Allowable)	(N/A) ft ³ /s	C Coefficient (Modified Rational, Adjusted)	(N/A)
Storage (Modified Rational, Estimated)	(N/A) ac-ft	Second Outflow Breakpoint (Modified Rational)	(N/A) hours
Time of Duration (Modified Rational, Critical)	(N/A) hours	First Outflow Breakpoint (Modified Rational, Method T)	(N/A) hours
Time of Concentration (Modified Rational, Composite)	(N/A) hours	Intensity (Modified Rational, Critical)	(N/A) in/h
Intensity (Modified Rational, Peak)	(N/A) in/h	Flow (Modified Rational, Critical)	(N/A) ft ³ /s
Flow (Modified Rational, Peak)	(N/A) ft ³ /s		
Results (SCS Unit Hydrograph)			
Unit Hydrograph Shape Factor	483.4	Unit peak time, Tp	0.197 hours
K Factor	0.7	Unit receding limb, Tr	0.789 hours
Receding/Rising, Tr/Tp	1.670	Total unit time, Tb	0.987 hours
Unit peak, qp	19.52 ft ³ /s	Percent Volume under Rising Limb	37.5 %
Results			
Flow (Total)	0.00 ft ³ /s	Flow (Peak) + Flow (Base)	4.94 ft ³ /s
Cumulative Runoff Depth (Pervious)	1.13 in	Maximum Retention (Pervious)	3.51 in
Runoff Volume (Impervious)	0.000 ac-ft	Maximum Retention (Pervious, 20 percent)	0.70 in
Runoff Volume (Pervious)	0.481 ac-ft	Maximum Retention (Impervious)	(N/A) in
Cumulative Runoff Depth (Impervious)	0.00 in	Maximum Retention (Impervious, 20 percent)	(N/A) in

Multiple Element Report

Catchment Detailed Report: DA-3 IMP

<General>			
ID	51	Notes	
Label	DA-3 IMP	Hyperlinks	<Collection: 0 items>
GIS-IDs			
GIS-ID			
Geometry			
X (ft)		Y (ft)	
	167.86		-51.78
	143.49		-68.96
	152.31		-97.44
	182.12		-97.86
	191.73		-69.64
Active Topology			
Is Active?	True		
Catchment			
Outflow Node	POS-3		
Rainfall			
Use Local Rainfall?	False		
Runoff			
Runoff Method	Unit Hydrograph	SCS CN	98.0
Loss Method	SCS CN	Unit Hydrograph Method	SCS Unit Hydrograph
Use Scaled Area?	False	Tc Input Type	User Defined Tc
Area (User Defined)	1.44 acres	Time of Concentration	0.355 hours
CN Input Type	Simple CN	Time of Concentration (Composite)	0.355 hours
Unit Hydrograph (Advanced)			
SCS Unit Hydrograph Method	Default Curvilinear	Use Directly Connected Impervious Area	False
Flow (Base)	0.00 ft ³ /s	Calculation Increment (Catchment)	0.000 hours
Results (Computed)			

Multiple Element Report

Results (Computed)			
Computational Time Increment	0.047 hours	Time to Peak (Computed)	12.259 hours
Flow (Peak, Computed)	3.28 ft ³ /s		
Results (Interpolated)			
Flow (Peak Interpolated Output)	3.26 ft ³ /s	Time to Flow (Peak Interpolated Output)	12.250 hours
Volume	0.372 ac-ft		
Results (Modified Rational Method)			
Frequency	(N/A) years	Area (Modified Rational, Composite)	(N/A) acres
C Adjustment Factor	(N/A)	C Coefficient (Modified Rational, Weighted)	(N/A)
Flow (Modified Rational, Allowable)	(N/A) ft ³ /s	C Coefficient (Modified Rational, Adjusted)	(N/A)
Storage (Modified Rational, Estimated)	(N/A) ac-ft	Second Outflow Breakpoint (Modified Rational)	(N/A) hours
Time of Duration (Modified Rational, Critical)	(N/A) hours	First Outflow Breakpoint (Modified Rational, Method T)	(N/A) hours
Time of Concentration (Modified Rational, Composite)	(N/A) hours	Intensity (Modified Rational, Critical)	(N/A) in/h
Intensity (Modified Rational, Peak)	(N/A) in/h	Flow (Modified Rational, Critical)	(N/A) ft ³ /s
Flow (Modified Rational, Peak)	(N/A) ft ³ /s		
Results (SCS Unit Hydrograph)			
Unit Hydrograph Shape Factor	483.4	Unit peak time, Tp	0.237 hours
K Factor	0.7	Unit receding limb, Tr	0.947 hours
Receding/Rising, Tr/Tp	1.670	Total unit time, Tb	1.183 hours
Unit peak, qp	4.60 ft ³ /s	Percent Volume under Rising Limb	37.5 %
Results			
Flow (Total)	0.00 ft ³ /s	Flow (Peak) + Flow (Base)	3.28 ft ³ /s
Cumulative Runoff Depth (Pervious)	3.11 in	Maximum Retention (Pervious)	0.20 in
Runoff Volume (Impervious)	0.000 ac-ft	Maximum Retention (Pervious, 20 percent)	0.04 in
Runoff Volume (Pervious)	0.373 ac-ft	Maximum Retention (Impervious)	(N/A) in
Cumulative Runoff Depth (Impervious)	0.00 in	Maximum Retention (Impervious, 20 percent)	(N/A) in

Multiple Element Report

Catchment Detailed Report: DA-3 PER

<General>			
ID	52	Notes	
Label	DA-3 PER	Hyperlinks	<Collection: 0 items>
GIS-IDs			
GIS-ID			
Geometry			
	X (ft)	Y (ft)	
	297.14	-52.87	
	273.03	-70.39	
	282.24	-98.74	
	312.05	-98.74	
	321.26	-70.39	
Active Topology			
Is Active?	True		
Catchment			
Outflow Node	POS-3		
Rainfall			
Use Local Rainfall?	False		
Runoff			
Runoff Method	Unit Hydrograph	SCS CN	75.2
Loss Method	SCS CN	Unit Hydrograph Method	SCS Unit Hydrograph
Use Scaled Area?	False	Tc Input Type	User Defined Tc
Area (User Defined)	3.03 acres	Time of Concentration	0.387 hours
CN Input Type	Simple CN	Time of Concentration (Composite)	0.387 hours
Unit Hydrograph (Advanced)			
SCS Unit Hydrograph Method	Default Curvilinear	Use Directly Connected Impervious Area	False
Flow (Base)	0.00 ft³/s	Calculation Increment (Catchment)	0.000 hours
Results (Computed)			

Multiple Element Report

Results (Computed)			
Computational Time Increment	0.052 hours	Time to Peak (Computed)	12.281 hours
Flow (Peak, Computed)	2.76 ft ³ /s		
Results (Interpolated)			
Flow (Peak Interpolated Output)	2.65 ft ³ /s	Time to Flow (Peak Interpolated Output)	12.250 hours
Volume	0.302 ac-ft		
Results (Modified Rational Method)			
Frequency	(N/A) years	Area (Modified Rational, Composite)	(N/A) acres
C Adjustment Factor	(N/A)	C Coefficient (Modified Rational, Weighted)	(N/A)
Flow (Modified Rational, Allowable)	(N/A) ft ³ /s	C Coefficient (Modified Rational, Adjusted)	(N/A)
Storage (Modified Rational, Estimated)	(N/A) ac-ft	Second Outflow Breakpoint (Modified Rational)	(N/A) hours
Time of Duration (Modified Rational, Critical)	(N/A) hours	First Outflow Breakpoint (Modified Rational, Method T)	(N/A) hours
Time of Concentration (Modified Rational, Composite)	(N/A) hours	Intensity (Modified Rational, Critical)	(N/A) in/h
Intensity (Modified Rational, Peak)	(N/A) in/h	Flow (Modified Rational, Critical)	(N/A) ft ³ /s
Flow (Modified Rational, Peak)	(N/A) ft ³ /s		
Results (SCS Unit Hydrograph)			
Unit Hydrograph Shape Factor	483.4	Unit peak time, Tp	0.258 hours
K Factor	0.7	Unit receding limb, Tr	1.032 hours
Receding/Rising, Tr/Tp	1.670	Total unit time, Tb	1.290 hours
Unit peak, qp	8.87 ft ³ /s	Percent Volume under Rising Limb	37.5 %
Results			
Flow (Total)	0.00 ft ³ /s	Flow (Peak) + Flow (Base)	2.76 ft ³ /s
Cumulative Runoff Depth (Pervious)	1.20 in	Maximum Retention (Pervious)	3.29 in
Runoff Volume (Impervious)	0.000 ac-ft	Maximum Retention (Pervious, 20 percent)	0.66 in
Runoff Volume (Pervious)	0.304 ac-ft	Maximum Retention (Impervious)	(N/A) in
Cumulative Runoff Depth (Impervious)	0.00 in	Maximum Retention (Impervious, 20 percent)	(N/A) in

Multiple Element Report

Catchment Detailed Report: DA-4 IMP

<General>			
ID	53	Notes	
Label	DA-4 IMP	Hyperlinks	<Collection: 0 items>
GIS-IDs			
GIS-ID			
Geometry			
X (ft)		Y (ft)	
	167.86		-125.42
	144.17		-142.11
	152.73		-169.79
	181.70		-170.21
	191.05		-142.79
Active Topology			
Is Active?	True		
Catchment			
Outflow Node	POS-4		
Rainfall			
Use Local Rainfall?	False		
Runoff			
Runoff Method	Unit Hydrograph	SCS CN	98.0
Loss Method	SCS CN	Unit Hydrograph Method	SCS Unit Hydrograph
Use Scaled Area?	False	Tc Input Type	User Defined Tc
Area (User Defined)	1.13 acres	Time of Concentration	0.325 hours
CN Input Type	Simple CN	Time of Concentration (Composite)	0.325 hours
Unit Hydrograph (Advanced)			
SCS Unit Hydrograph Method	Default Curvilinear	Use Directly Connected Impervious Area	False
Flow (Base)	0.00 ft ³ /s	Calculation Increment (Catchment)	0.000 hours
Results (Computed)			

Multiple Element Report

Results (Computed)			
Computational Time Increment	0.043 hours	Time to Peak (Computed)	12.220 hours
Flow (Peak, Computed)	2.68 ft ³ /s		
Results (Interpolated)			
Flow (Peak Interpolated Output)	2.65 ft ³ /s	Time to Flow (Peak Interpolated Output)	12.250 hours
Volume	0.292 ac-ft		
Results (Modified Rational Method)			
Frequency	(N/A) years	Area (Modified Rational, Composite)	(N/A) acres
C Adjustment Factor	(N/A)	C Coefficient (Modified Rational, Weighted)	(N/A)
Flow (Modified Rational, Allowable)	(N/A) ft ³ /s	C Coefficient (Modified Rational, Adjusted)	(N/A)
Storage (Modified Rational, Estimated)	(N/A) ac-ft	Second Outflow Breakpoint (Modified Rational)	(N/A) hours
Time of Duration (Modified Rational, Critical)	(N/A) hours	First Outflow Breakpoint (Modified Rational, Method T)	(N/A) hours
Time of Concentration (Modified Rational, Composite)	(N/A) hours	Intensity (Modified Rational, Critical)	(N/A) in/h
Intensity (Modified Rational, Peak)	(N/A) in/h	Flow (Modified Rational, Critical)	(N/A) ft ³ /s
Flow (Modified Rational, Peak)	(N/A) ft ³ /s		
Results (SCS Unit Hydrograph)			
Unit Hydrograph Shape Factor	483.4	Unit peak time, Tp	0.217 hours
K Factor	0.7	Unit receding limb, Tr	0.867 hours
Receding/Rising, Tr/Tp	1.670	Total unit time, Tb	1.083 hours
Unit peak, qp	3.94 ft ³ /s	Percent Volume under Rising Limb	37.5 %
Results			
Flow (Total)	0.00 ft ³ /s	Flow (Peak) + Flow (Base)	2.68 ft ³ /s
Cumulative Runoff Depth (Pervious)	3.11 in	Maximum Retention (Pervious)	0.20 in
Runoff Volume (Impervious)	0.000 ac-ft	Maximum Retention (Pervious, 20 percent)	0.04 in
Runoff Volume (Pervious)	0.293 ac-ft	Maximum Retention (Impervious)	(N/A) in
Cumulative Runoff Depth (Impervious)	0.00 in	Maximum Retention (Impervious, 20 percent)	(N/A) in

Multiple Element Report

Catchment Detailed Report: DA-4 PER

<General>			
ID	54	Notes	
Label	DA-4 PER	Hyperlinks	<Collection: 0 items>
GIS-IDs			
GIS-ID			
Geometry			
X (ft)		Y (ft)	
	299.29		-126.43
	276.19		-143.21
	285.01		-170.36
	313.56		-170.36
	322.38		-143.21
Active Topology			
Is Active?	True		
Catchment			
Outflow Node	POS-4		
Rainfall			
Use Local Rainfall?	False		
Runoff			
Runoff Method	Unit Hydrograph	SCS CN	76.9
Loss Method	SCS CN	Unit Hydrograph Method	SCS Unit Hydrograph
Use Scaled Area?	False	Tc Input Type	User Defined Tc
Area (User Defined)	1.47 acres	Time of Concentration	0.319 hours
CN Input Type	Simple CN	Time of Concentration (Composite)	0.319 hours
Unit Hydrograph (Advanced)			
SCS Unit Hydrograph Method	Default Curvilinear	Use Directly Connected Impervious Area	False
Flow (Base)	0.00 ft ³ /s	Calculation Increment (Catchment)	0.000 hours
Results (Computed)			

Multiple Element Report

Results (Computed)			
Computational Time Increment	0.043 hours	Time to Peak (Computed)	12.250 hours
Flow (Peak, Computed)	1.62 ft ³ /s		
Results (Interpolated)			
Flow (Peak Interpolated Output)	1.62 ft ³ /s	Time to Flow (Peak Interpolated Output)	12.250 hours
Volume	0.159 ac-ft		
Results (Modified Rational Method)			
Frequency	(N/A) years	Area (Modified Rational, Composite)	(N/A) acres
C Adjustment Factor	(N/A)	C Coefficient (Modified Rational, Weighted)	(N/A)
Flow (Modified Rational, Allowable)	(N/A) ft ³ /s	C Coefficient (Modified Rational, Adjusted)	(N/A)
Storage (Modified Rational, Estimated)	(N/A) ac-ft	Second Outflow Breakpoint (Modified Rational)	(N/A) hours
Time of Duration (Modified Rational, Critical)	(N/A) hours	First Outflow Breakpoint (Modified Rational, Method T)	(N/A) hours
Time of Concentration (Modified Rational, Composite)	(N/A) hours	Intensity (Modified Rational, Critical)	(N/A) in/h
Intensity (Modified Rational, Peak)	(N/A) in/h	Flow (Modified Rational, Critical)	(N/A) ft ³ /s
Flow (Modified Rational, Peak)	(N/A) ft ³ /s		
Results (SCS Unit Hydrograph)			
Unit Hydrograph Shape Factor	483.4	Unit peak time, Tp	0.213 hours
K Factor	0.7	Unit receding limb, Tr	0.851 hours
Receding/Rising, Tr/Tp	1.670	Total unit time, Tb	1.063 hours
Unit peak, qp	5.22 ft ³ /s	Percent Volume under Rising Limb	37.5 %
Results			
Flow (Total)	0.00 ft ³ /s	Flow (Peak) + Flow (Base)	1.62 ft ³ /s
Cumulative Runoff Depth (Pervious)	1.30 in	Maximum Retention (Pervious)	3.01 in
Runoff Volume (Impervious)	0.000 ac-ft	Maximum Retention (Pervious, 20 percent)	0.60 in
Runoff Volume (Pervious)	0.160 ac-ft	Maximum Retention (Impervious)	(N/A) in
Cumulative Runoff Depth (Impervious)	0.00 in	Maximum Retention (Impervious, 20 percent)	(N/A) in

Subsection: Emergency Spillway Summary

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Det. Basin 1A-4 (IN)	Proposed 100-Year	100	0.715	12.000	5.99	(N/A)	(N/A)
Det. Basin 1A-4 (OUT)	Proposed 100-Year	100	0.369	12.500	3.78	111.53	0.359

Composite Outlet Structure Detailed Report: Emergency Spillway-4

Element Details			
Label	Emergency Spillway-4	Notes	
Headwater Range			
Headwater Type	Use Pond for Headwater Range	Maximum (Headwater)	112.75 ft
Pond	Det. Basin 1A -4	Increment (Headwater)	0.50 ft
Minimum (Headwater)	109.85 ft		
SpotElevation (ft)			
Tailwater Setup			
Tailwater Type	Free Outfall		
Tailwater Tolerances			
Maximum Iterations	30	Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft	Flow Tolerance (Minimum)	0.001 ft³/s
Headwater Tolerance (Maximum)	0.50 ft	Flow Tolerance (Maximum)	10.000 ft³/s
Tailwater Tolerance (Minimum)	0.01 ft		
Outlet Structure			
Outlet Structure Type	Weir		
Outlet Structure (IDs and Direction)			
Outlet ID	Weir - 1	Downstream ID	Tailwater
Flow Direction	Forward and Reverse Flow	Notes	
Outlet Structure (Advanced)			
Elevation (On)	0.00 ft	Elevation (Off)	0.00 ft
Outlet Structure (Weir)			
Weir	Rectangular Weir	Rectangular Weir	Suppressed
Vary Coefficient with Depth	False	Weir Length	70.00 ft
Weir Coefficient	3.00 (ft^0.5)/s		
Outlet Structure (Common)			
Elevation	111.50 ft		

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NOAA Region C Rainfall

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Subsection: Time-Depth Curve
 Label: NOAA Region C Rainfall
 Scenario: Existing 100-Year

Return Event: 100 years
 Storm Event: 100-Year

Time-Depth Curve: 100-Year

Label	100-Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	100 years

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.00	0.01	0.02	0.03	0.04
0.500	0.04	0.05	0.06	0.07	0.08
1.000	0.09	0.10	0.11	0.12	0.13
1.500	0.14	0.15	0.16	0.17	0.18
2.000	0.19	0.20	0.21	0.22	0.23
2.500	0.24	0.25	0.26	0.27	0.28
3.000	0.29	0.30	0.31	0.32	0.33
3.500	0.34	0.36	0.37	0.38	0.39
4.000	0.40	0.41	0.43	0.44	0.45
4.500	0.46	0.47	0.49	0.50	0.51
5.000	0.52	0.53	0.55	0.56	0.57
5.500	0.59	0.60	0.61	0.62	0.64
6.000	0.65	0.66	0.68	0.69	0.71
6.500	0.72	0.74	0.75	0.77	0.78
7.000	0.80	0.82	0.83	0.85	0.87
7.500	0.89	0.91	0.93	0.94	0.96
8.000	0.98	1.00	1.02	1.04	1.07
8.500	1.09	1.11	1.13	1.15	1.18
9.000	1.20	1.22	1.25	1.28	1.30
9.500	1.33	1.36	1.39	1.43	1.46
10.000	1.50	1.53	1.57	1.61	1.65
10.500	1.69	1.74	1.79	1.84	1.91
11.000	1.97	2.04	2.13	2.22	2.32
11.500	2.43	2.59	2.77	3.01	3.34
12.000	3.91	4.87	5.20	5.44	5.62
12.500	5.78	5.89	5.99	6.08	6.17
13.000	6.24	6.30	6.37	6.42	6.47
13.500	6.52	6.56	6.60	6.64	6.68
14.000	6.71	6.75	6.78	6.82	6.85
14.500	6.88	6.91	6.93	6.96	6.99
15.000	7.01	7.03	7.06	7.08	7.10
15.500	7.12	7.14	7.17	7.19	7.21
16.000	7.23	7.25	7.27	7.28	7.30
16.500	7.32	7.34	7.36	7.38	7.39
17.000	7.41	7.43	7.44	7.46	7.47

Subsection: Time-Depth Curve
 Label: NOAA Region C Rainfall
 Scenario: Existing 100-Year

Return Event: 100 years
 Storm Event: 100-Year

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	7.49	7.50	7.52	7.53	7.55
18.000	7.56	7.57	7.59	7.60	7.61
18.500	7.62	7.64	7.65	7.66	7.68
19.000	7.69	7.70	7.71	7.72	7.74
19.500	7.75	7.76	7.77	7.78	7.80
20.000	7.81	7.82	7.83	7.84	7.85
20.500	7.87	7.88	7.89	7.90	7.91
21.000	7.92	7.93	7.94	7.95	7.96
21.500	7.97	7.98	7.99	8.00	8.01
22.000	8.02	8.03	8.04	8.05	8.06
22.500	8.07	8.08	8.09	8.10	8.11
23.000	8.12	8.13	8.14	8.15	8.16
23.500	8.17	8.17	8.18	8.19	8.20
24.000	8.21	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time-Depth Curve
 Label: NOAA Region C Rainfall
 Scenario: Proposed 100-Year

Return Event: 100 years
 Storm Event: 100-Year

Time-Depth Curve: 100-Year

Label	100-Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	100 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.00	0.01	0.02	0.03	0.04
0.500	0.04	0.05	0.06	0.07	0.08
1.000	0.09	0.10	0.11	0.12	0.13
1.500	0.14	0.15	0.16	0.17	0.18
2.000	0.19	0.20	0.21	0.22	0.23
2.500	0.24	0.25	0.26	0.27	0.28
3.000	0.29	0.30	0.31	0.32	0.33
3.500	0.34	0.36	0.37	0.38	0.39
4.000	0.40	0.41	0.43	0.44	0.45
4.500	0.46	0.47	0.49	0.50	0.51
5.000	0.52	0.53	0.55	0.56	0.57

Subsection: Time-Depth Curve
 Label: NOAA Region C Rainfall
 Scenario: Proposed 100-Year

Return Event: 100 years
 Storm Event: 100-Year

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
5.500	0.59	0.60	0.61	0.62	0.64
6.000	0.65	0.66	0.68	0.69	0.71
6.500	0.72	0.74	0.75	0.77	0.78
7.000	0.80	0.82	0.83	0.85	0.87
7.500	0.89	0.91	0.93	0.94	0.96
8.000	0.98	1.00	1.02	1.04	1.07
8.500	1.09	1.11	1.13	1.15	1.18
9.000	1.20	1.22	1.25	1.28	1.30
9.500	1.33	1.36	1.39	1.43	1.46
10.000	1.50	1.53	1.57	1.61	1.65
10.500	1.69	1.74	1.79	1.84	1.91
11.000	1.97	2.04	2.13	2.22	2.32
11.500	2.43	2.59	2.77	3.01	3.34
12.000	3.91	4.87	5.20	5.44	5.62
12.500	5.78	5.89	5.99	6.08	6.17
13.000	6.24	6.30	6.37	6.42	6.47
13.500	6.52	6.56	6.60	6.64	6.68
14.000	6.71	6.75	6.78	6.82	6.85
14.500	6.88	6.91	6.93	6.96	6.99
15.000	7.01	7.03	7.06	7.08	7.10
15.500	7.12	7.14	7.17	7.19	7.21
16.000	7.23	7.25	7.27	7.28	7.30
16.500	7.32	7.34	7.36	7.38	7.39
17.000	7.41	7.43	7.44	7.46	7.47
17.500	7.49	7.50	7.52	7.53	7.55
18.000	7.56	7.57	7.59	7.60	7.61
18.500	7.62	7.64	7.65	7.66	7.68
19.000	7.69	7.70	7.71	7.72	7.74
19.500	7.75	7.76	7.77	7.78	7.80
20.000	7.81	7.82	7.83	7.84	7.85
20.500	7.87	7.88	7.89	7.90	7.91
21.000	7.92	7.93	7.94	7.95	7.96
21.500	7.97	7.98	7.99	8.00	8.01
22.000	8.02	8.03	8.04	8.05	8.06
22.500	8.07	8.08	8.09	8.10	8.11
23.000	8.12	8.13	8.14	8.15	8.16
23.500	8.17	8.17	8.18	8.19	8.20
24.000	8.21	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time-Depth Curve
 Label: NOAA Region C Rainfall
 Scenario: Existing 10-Year

Return Event: 10 years
 Storm Event: 10-Year

Subsection: Time-Depth Curve
 Label: NOAA Region C Rainfall
 Scenario: Existing 10-Year

Return Event: 10 years
 Storm Event: 10-Year

Time-Depth Curve: 10-Year

Label	10-Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	10 years

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.00	0.01	0.01	0.02	0.02
0.500	0.03	0.03	0.04	0.04	0.05
1.000	0.05	0.06	0.07	0.07	0.08
1.500	0.08	0.09	0.10	0.10	0.11
2.000	0.11	0.12	0.13	0.13	0.14
2.500	0.14	0.15	0.16	0.16	0.17
3.000	0.18	0.18	0.19	0.20	0.20
3.500	0.21	0.22	0.22	0.23	0.24
4.000	0.25	0.25	0.26	0.27	0.27
4.500	0.28	0.29	0.30	0.30	0.31
5.000	0.32	0.33	0.33	0.34	0.35
5.500	0.36	0.37	0.37	0.38	0.39
6.000	0.40	0.41	0.41	0.42	0.43
6.500	0.44	0.45	0.46	0.47	0.48
7.000	0.49	0.50	0.51	0.52	0.53
7.500	0.54	0.55	0.56	0.58	0.59
8.000	0.60	0.61	0.62	0.64	0.65
8.500	0.66	0.68	0.69	0.70	0.72
9.000	0.73	0.75	0.76	0.78	0.80
9.500	0.81	0.83	0.85	0.87	0.89
10.000	0.91	0.94	0.96	0.98	1.01
10.500	1.03	1.06	1.09	1.13	1.16
11.000	1.20	1.25	1.30	1.35	1.42
11.500	1.48	1.58	1.69	1.83	2.04
12.000	2.39	2.97	3.18	3.32	3.43
12.500	3.53	3.59	3.66	3.71	3.76
13.000	3.81	3.85	3.88	3.92	3.95
13.500	3.98	4.00	4.03	4.05	4.07
14.000	4.10	4.12	4.14	4.16	4.18
14.500	4.20	4.21	4.23	4.25	4.26
15.000	4.28	4.29	4.31	4.32	4.33
15.500	4.35	4.36	4.37	4.39	4.40
16.000	4.41	4.42	4.43	4.45	4.46
16.500	4.47	4.48	4.49	4.50	4.51
17.000	4.52	4.53	4.54	4.55	4.56

Subsection: Time-Depth Curve
 Label: NOAA Region C Rainfall
 Scenario: Existing 10-Year

Return Event: 10 years
 Storm Event: 10-Year

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	4.57	4.58	4.59	4.60	4.60
18.000	4.61	4.62	4.63	4.64	4.64
18.500	4.65	4.66	4.67	4.68	4.68
19.000	4.69	4.70	4.71	4.71	4.72
19.500	4.73	4.74	4.74	4.75	4.76
20.000	4.76	4.77	4.78	4.79	4.79
20.500	4.80	4.81	4.81	4.82	4.83
21.000	4.83	4.84	4.85	4.85	4.86
21.500	4.87	4.87	4.88	4.88	4.89
22.000	4.90	4.90	4.91	4.91	4.92
22.500	4.93	4.93	4.94	4.94	4.95
23.000	4.96	4.96	4.97	4.97	4.98
23.500	4.98	4.99	4.99	5.00	5.00
24.000	5.01	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time-Depth Curve
 Label: NOAA Region C Rainfall
 Scenario: Proposed 10-Year

Return Event: 10 years
 Storm Event: 10-Year

Time-Depth Curve: 10-Year

Label	10-Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	10 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.00	0.01	0.01	0.02	0.02
0.500	0.03	0.03	0.04	0.04	0.05
1.000	0.05	0.06	0.07	0.07	0.08
1.500	0.08	0.09	0.10	0.10	0.11
2.000	0.11	0.12	0.13	0.13	0.14
2.500	0.14	0.15	0.16	0.16	0.17
3.000	0.18	0.18	0.19	0.20	0.20
3.500	0.21	0.22	0.22	0.23	0.24
4.000	0.25	0.25	0.26	0.27	0.27
4.500	0.28	0.29	0.30	0.30	0.31
5.000	0.32	0.33	0.33	0.34	0.35

Subsection: Time-Depth Curve
 Label: NOAA Region C Rainfall
 Scenario: Proposed 10-Year

Return Event: 10 years
 Storm Event: 10-Year

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
5.500	0.36	0.37	0.37	0.38	0.39
6.000	0.40	0.41	0.41	0.42	0.43
6.500	0.44	0.45	0.46	0.47	0.48
7.000	0.49	0.50	0.51	0.52	0.53
7.500	0.54	0.55	0.56	0.58	0.59
8.000	0.60	0.61	0.62	0.64	0.65
8.500	0.66	0.68	0.69	0.70	0.72
9.000	0.73	0.75	0.76	0.78	0.80
9.500	0.81	0.83	0.85	0.87	0.89
10.000	0.91	0.94	0.96	0.98	1.01
10.500	1.03	1.06	1.09	1.13	1.16
11.000	1.20	1.25	1.30	1.35	1.42
11.500	1.48	1.58	1.69	1.83	2.04
12.000	2.39	2.97	3.18	3.32	3.43
12.500	3.53	3.59	3.66	3.71	3.76
13.000	3.81	3.85	3.88	3.92	3.95
13.500	3.98	4.00	4.03	4.05	4.07
14.000	4.10	4.12	4.14	4.16	4.18
14.500	4.20	4.21	4.23	4.25	4.26
15.000	4.28	4.29	4.31	4.32	4.33
15.500	4.35	4.36	4.37	4.39	4.40
16.000	4.41	4.42	4.43	4.45	4.46
16.500	4.47	4.48	4.49	4.50	4.51
17.000	4.52	4.53	4.54	4.55	4.56
17.500	4.57	4.58	4.59	4.60	4.60
18.000	4.61	4.62	4.63	4.64	4.64
18.500	4.65	4.66	4.67	4.68	4.68
19.000	4.69	4.70	4.71	4.71	4.72
19.500	4.73	4.74	4.74	4.75	4.76
20.000	4.76	4.77	4.78	4.79	4.79
20.500	4.80	4.81	4.81	4.82	4.83
21.000	4.83	4.84	4.85	4.85	4.86
21.500	4.87	4.87	4.88	4.88	4.89
22.000	4.90	4.90	4.91	4.91	4.92
22.500	4.93	4.93	4.94	4.94	4.95
23.000	4.96	4.96	4.97	4.97	4.98
23.500	4.98	4.99	4.99	5.00	5.00
24.000	5.01	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time-Depth Curve
 Label: NOAA Region C Rainfall
 Scenario: Existing 2-Year

Return Event: 2 years
 Storm Event: 2-Year

Subsection: Time-Depth Curve
 Label: NOAA Region C Rainfall
 Scenario: Existing 2-Year

Return Event: 2 years
 Storm Event: 2-Year

Time-Depth Curve: 2-Year

Label	2-Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	2 years

CUMULATIVE RAINFALL (in)

Output Time Increment = 0.100 hours

Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.00	0.00	0.01	0.01	0.01
0.500	0.02	0.02	0.03	0.03	0.03
1.000	0.04	0.04	0.04	0.05	0.05
1.500	0.06	0.06	0.06	0.07	0.07
2.000	0.08	0.08	0.08	0.09	0.09
2.500	0.10	0.10	0.10	0.11	0.11
3.000	0.12	0.12	0.13	0.13	0.14
3.500	0.14	0.14	0.15	0.15	0.16
4.000	0.16	0.17	0.17	0.18	0.18
4.500	0.19	0.19	0.20	0.20	0.21
5.000	0.21	0.22	0.22	0.23	0.23
5.500	0.24	0.24	0.25	0.25	0.26
6.000	0.26	0.27	0.28	0.28	0.29
6.500	0.29	0.30	0.31	0.31	0.32
7.000	0.33	0.33	0.34	0.35	0.35
7.500	0.36	0.37	0.38	0.38	0.39
8.000	0.40	0.41	0.42	0.43	0.43
8.500	0.44	0.45	0.46	0.47	0.48
9.000	0.49	0.50	0.51	0.52	0.53
9.500	0.54	0.55	0.57	0.58	0.59
10.000	0.61	0.62	0.64	0.66	0.67
10.500	0.69	0.71	0.73	0.75	0.78
11.000	0.80	0.83	0.87	0.90	0.94
11.500	0.99	1.05	1.13	1.22	1.36
12.000	1.59	1.98	2.12	2.21	2.29
12.500	2.35	2.40	2.44	2.47	2.51
13.000	2.54	2.56	2.59	2.61	2.63
13.500	2.65	2.67	2.68	2.70	2.72
14.000	2.73	2.75	2.76	2.77	2.79
14.500	2.80	2.81	2.82	2.83	2.84
15.000	2.85	2.86	2.87	2.88	2.89
15.500	2.90	2.91	2.91	2.92	2.93
16.000	2.94	2.95	2.96	2.96	2.97
16.500	2.98	2.99	2.99	3.00	3.01
17.000	3.01	3.02	3.03	3.03	3.04

Subsection: Time-Depth Curve
 Label: NOAA Region C Rainfall
 Scenario: Existing 2-Year

Return Event: 2 years
 Storm Event: 2-Year

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.500	3.05	3.05	3.06	3.06	3.07
18.000	3.08	3.08	3.09	3.09	3.10
18.500	3.10	3.11	3.11	3.12	3.12
19.000	3.13	3.13	3.14	3.14	3.15
19.500	3.15	3.16	3.16	3.17	3.17
20.000	3.18	3.18	3.19	3.19	3.20
20.500	3.20	3.20	3.21	3.21	3.22
21.000	3.22	3.23	3.23	3.24	3.24
21.500	3.24	3.25	3.25	3.26	3.26
22.000	3.26	3.27	3.27	3.28	3.28
22.500	3.28	3.29	3.29	3.30	3.30
23.000	3.30	3.31	3.31	3.31	3.32
23.500	3.32	3.33	3.33	3.33	3.34
24.000	3.34	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time-Depth Curve
 Label: NOAA Region C Rainfall
 Scenario: Proposed 2-Year

Return Event: 2 years
 Storm Event: 2-Year

Time-Depth Curve: 2-Year

Label	2-Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	2 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.00	0.00	0.01	0.01	0.01
0.500	0.02	0.02	0.03	0.03	0.03
1.000	0.04	0.04	0.04	0.05	0.05
1.500	0.06	0.06	0.06	0.07	0.07
2.000	0.08	0.08	0.08	0.09	0.09
2.500	0.10	0.10	0.10	0.11	0.11
3.000	0.12	0.12	0.13	0.13	0.14
3.500	0.14	0.14	0.15	0.15	0.16
4.000	0.16	0.17	0.17	0.18	0.18
4.500	0.19	0.19	0.20	0.20	0.21
5.000	0.21	0.22	0.22	0.23	0.23

Subsection: Time-Depth Curve
 Label: NOAA Region C Rainfall
 Scenario: Proposed 2-Year

Return Event: 2 years
 Storm Event: 2-Year

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
5.500	0.24	0.24	0.25	0.25	0.26
6.000	0.26	0.27	0.28	0.28	0.29
6.500	0.29	0.30	0.31	0.31	0.32
7.000	0.33	0.33	0.34	0.35	0.35
7.500	0.36	0.37	0.38	0.38	0.39
8.000	0.40	0.41	0.42	0.43	0.43
8.500	0.44	0.45	0.46	0.47	0.48
9.000	0.49	0.50	0.51	0.52	0.53
9.500	0.54	0.55	0.57	0.58	0.59
10.000	0.61	0.62	0.64	0.66	0.67
10.500	0.69	0.71	0.73	0.75	0.78
11.000	0.80	0.83	0.87	0.90	0.94
11.500	0.99	1.05	1.13	1.22	1.36
12.000	1.59	1.98	2.12	2.21	2.29
12.500	2.35	2.40	2.44	2.47	2.51
13.000	2.54	2.56	2.59	2.61	2.63
13.500	2.65	2.67	2.68	2.70	2.72
14.000	2.73	2.75	2.76	2.77	2.79
14.500	2.80	2.81	2.82	2.83	2.84
15.000	2.85	2.86	2.87	2.88	2.89
15.500	2.90	2.91	2.91	2.92	2.93
16.000	2.94	2.95	2.96	2.96	2.97
16.500	2.98	2.99	2.99	3.00	3.01
17.000	3.01	3.02	3.03	3.03	3.04
17.500	3.05	3.05	3.06	3.06	3.07
18.000	3.08	3.08	3.09	3.09	3.10
18.500	3.10	3.11	3.11	3.12	3.12
19.000	3.13	3.13	3.14	3.14	3.15
19.500	3.15	3.16	3.16	3.17	3.17
20.000	3.18	3.18	3.19	3.19	3.20
20.500	3.20	3.20	3.21	3.21	3.22
21.000	3.22	3.23	3.23	3.24	3.24
21.500	3.24	3.25	3.25	3.26	3.26
22.000	3.26	3.27	3.27	3.28	3.28
22.500	3.28	3.29	3.29	3.30	3.30
23.000	3.30	3.31	3.31	3.31	3.32
23.500	3.32	3.33	3.33	3.33	3.34
24.000	3.34	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time-Depth Curve
 Label: NJDEP Water Quality
 Scenario: Proposed WQ

Return Event: 1 years
 Storm Event: WQ

Subsection: Time-Depth Curve
 Label: NJDEP Water Quality
 Scenario: Proposed WQ

Return Event: 1 years
 Storm Event: WQ

Time-Depth Curve: WQ

Label	WQ
Start Time	0.000 hours
Increment	0.017 hours
End Time	2.000 hours
Return Event	1 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.017 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.00	0.00	0.00	0.00	0.01
0.083	0.01	0.01	0.01	0.01	0.01
0.167	0.02	0.02	0.02	0.02	0.02
0.250	0.03	0.03	0.04	0.04	0.05
0.333	0.05	0.06	0.06	0.07	0.07
0.417	0.08	0.08	0.09	0.09	0.10
0.500	0.10	0.11	0.11	0.12	0.13
0.583	0.13	0.14	0.15	0.15	0.16
0.667	0.17	0.17	0.18	0.19	0.19
0.750	0.20	0.21	0.22	0.23	0.25
0.833	0.26	0.28	0.30	0.32	0.34
0.917	0.36	0.41	0.46	0.52	0.57
1.000	0.63	0.68	0.73	0.79	0.84
1.083	0.89	0.91	0.93	0.95	0.97
1.167	0.99	1.00	1.02	1.03	1.04
1.250	1.05	1.06	1.06	1.07	1.08
1.333	1.08	1.09	1.10	1.10	1.11
1.417	1.12	1.12	1.13	1.14	1.14
1.500	1.15	1.16	1.16	1.17	1.17
1.583	1.18	1.18	1.19	1.19	1.20
1.667	1.20	1.21	1.21	1.22	1.22
1.750	1.23	1.23	1.23	1.23	1.23
1.833	1.23	1.24	1.24	1.24	1.24
1.917	1.24	1.24	1.25	1.25	1.25
2.000	1.25	(N/A)	(N/A)	(N/A)	(N/A)

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Unit Hydrograph Method (Computational Notes)

Definition of Terms

At	Total area (acres): $A_t = A_i + A_p$
Ai	Impervious area (acres)
Ap	Pervious area (acres)
CNi	Runoff curve number for impervious area
CNp	Runoff curve number for pervious area
fLoss	f loss constant infiltration (depth/time)
gKs	Saturated Hydraulic Conductivity (depth/time)
Md	Volumetric Moisture Deficit
Psi	Capillary Suction (length)
hK	Horton Infiltration Decay Rate (time^{-1})
fo	Initial Infiltration Rate (depth/time)
fc	Ultimate(capacity)Infiltration Rate (depth/time)
Ia	Initial Abstraction (length)
dt	Computational increment (duration of unit excess rainfall) Default dt is smallest value of $0.1333T_c$, r_{tm} , and t_h (Smallest dt is then adjusted to match up with T_p)
UDdt	User specified override computational main time increment (only used if UDdt is $\Rightarrow .1333T_c$)
D(t)	Point on distribution curve (fraction of P) for time step t
K	$2 / (1 + (T_r/T_p))$: default K = 0.75: (for $T_r/T_p = 1.67$)
Ks	Hydrograph shape factor = Unit Conversions * K: $= ((1\text{hr}/3600\text{sec}) * (1\text{ft}/12\text{in}) * ((5280\text{ft})^2/\text{sq.mi})) * K$ Default Ks = $645.333 * 0.75 = 484$
Lag	Lag time from center of excess runoff (dt) to T_p : $\text{Lag} = 0.6T_c$
P	Total precipitation depth, inches
Pa(t)	Accumulated rainfall at time step t
Pi(t)	Incremental rainfall at time step t
qp	Peak discharge (cfs) for 1in. runoff, for 1hr, for 1 sq.mi. = $(K_s * A * Q) / T_p$ (where Q = 1in. runoff, A=sq.mi.)
Qu(t)	Unit hydrograph ordinate (cfs) at time step t
Q(t)	Final hydrograph ordinate (cfs) at time step t
Rai(t)	Accumulated runoff (inches) at time step t for impervious area
Rap(t)	Accumulated runoff (inches) at time step t for pervious area
Rii(t)	Incremental runoff (inches) at time step t for impervious area
Rip(t)	Incremental runoff (inches) at time step t for pervious area
R(t)	Incremental weighted total runoff (inches)
Rtm	Time increment for rainfall table
Si	S for impervious area: $S_i = (1000/CN_i) - 10$
Sp	S for pervious area: $S_p = (1000/CN_p) - 10$
t	Time step (row) number
Tc	Time of concentration
Tb	Time (hrs) of entire unit hydrograph: $T_b = T_p + T_r$
Tp	Time (hrs) to peak of a unit hydrograph: $T_p = (dt/2) + \text{Lag}$
Tr	Time (hrs) of receding limb of unit hydrograph: $T_r = \text{ratio of } T_p$

Unit Hydrograph Method

Computational Notes

Precipitation

Column (1)	Time for time step t
Column (2)	$D(t)$ = Point on distribution curve for time step t
Column (3)	$P_i(t) = P_a(t) - P_a(t-1)$: Col.(4) - Preceding Col.(4)
Column (4)	$P_a(t) = D(t) \times P$: Col.(2) x P

Pervious Area Runoff (using SCS Runoff CN Method)

Column (5)	$Rap(t)$ = Accumulated pervious runoff for time step t If $(P_a(t) \leq 0.2Sp)$ then use: $Rap(t) = 0.0$ If $(P_a(t) > 0.2Sp)$ then use: $Rap(t) = (Col.(4) - 0.2Sp)^2 / (Col.(4) + 0.8Sp)$
Column (6)	$Rip(t)$ = Incremental pervious runoff for time step t $Rip(t) = Rap(t) - Rap(t-1)$ $Rip(t) = Col.(5)$ for current row - $Col.(5)$ for preceding row.

Impervious Area Runoff

Column (7 & 8)...	Did not specify to use impervious areas.
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Incremental Weighted Runoff

Column (9)	$R(t) = (A_p/A_t) \times Rip(t) + (A_i/A_t) \times R_{ii}(t)$ $R(t) = (A_p/A_t) \times Col.(6) + (A_i/A_t) \times Col.(8)$
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SCS Unit Hydrograph Method

Column (10)	$Q(t)$ is computed with the SCS unit hydrograph method using $R(t)$ and $Qu(t)$.
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Subsection: Unit Hydrograph Summary

Label: DA-1A-1 IMP

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.61 acres
Computational Time Increment	0.004 hours
Time to Peak (Computed)	1.080 hours
Flow (Peak, Computed)	1.88 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	1.000 hours
Flow (Peak Interpolated Output)	1.80 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.61 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.03 in
Runoff Volume (Pervious)	0.053 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.061 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	23.04 ft ³ /s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.100 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-1 IMP

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.61 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.250	0.00	0.07	0.17	1.80	0.42
1.500	0.24	0.18	0.06	0.00	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-1 IMP

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.61 acres
Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.100 hours
Flow (Peak, Computed)	2.37 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	1.42 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.61 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.11 in
Runoff Volume (Pervious)	0.158 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.152 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	23.04 ft ³ /s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.100 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-1 IMP

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.61 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
1.250	0.00	0.00	0.00	0.01	0.01
2.500	0.01	0.01	0.01	0.01	0.02
3.750	0.02	0.02	0.02	0.02	0.02
5.000	0.02	0.02	0.02	0.02	0.03
6.250	0.03	0.03	0.03	0.03	0.04
7.500	0.04	0.04	0.04	0.05	0.05
8.750	0.05	0.05	0.06	0.07	0.08
10.000	0.08	0.09	0.10	0.13	0.16
11.250	0.22	0.26	0.58	1.42	0.61
12.500	0.41	0.23	0.18	0.14	0.12
13.750	0.10	0.09	0.08	0.08	0.07
15.000	0.06	0.06	0.05	0.05	0.05
16.250	0.05	0.05	0.04	0.04	0.04
17.500	0.04	0.04	0.03	0.03	0.03
18.750	0.03	0.03	0.03	0.03	0.03
20.000	0.03	0.03	0.03	0.03	0.03
21.250	0.03	0.03	0.03	0.02	0.02
22.500	0.02	0.02	0.02	0.02	0.02
23.750	0.02	0.03	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-1 IMP

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.61 acres
Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.100 hours
Flow (Peak, Computed)	3.58 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	2.14 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.61 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.77 in
Runoff Volume (Pervious)	0.243 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.233 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	23.04 ft ³ /s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.100 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-1 IMP

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.61 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.750	0.00	0.00	0.01	0.01	0.01
2.000	0.02	0.02	0.02	0.02	0.03
3.250	0.03	0.03	0.03	0.03	0.03
4.500	0.04	0.04	0.04	0.04	0.04
5.750	0.04	0.04	0.05	0.05	0.05
7.000	0.06	0.06	0.06	0.07	0.07
8.250	0.07	0.08	0.08	0.08	0.10
9.500	0.10	0.12	0.13	0.14	0.15
10.750	0.20	0.24	0.34	0.40	0.88
12.000	2.14	0.91	0.62	0.34	0.28
13.250	0.21	0.17	0.15	0.14	0.12
14.500	0.11	0.10	0.09	0.08	0.08
15.750	0.08	0.08	0.07	0.07	0.07
17.000	0.06	0.06	0.06	0.05	0.05
18.250	0.05	0.05	0.05	0.05	0.05
19.500	0.05	0.04	0.04	0.04	0.04
20.750	0.04	0.04	0.04	0.04	0.04
22.000	0.04	0.04	0.04	0.04	0.03
23.250	0.03	0.03	0.03	0.04	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-1 IMP

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.61 acres
Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.100 hours
Flow (Peak, Computed)	5.88 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	3.52 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.61 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.97 in
Runoff Volume (Pervious)	0.405 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.389 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	23.04 ft ³ /s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.100 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-1 IMP

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.61 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.250	0.00	0.00	0.01	0.02	0.03
1.500	0.03	0.04	0.04	0.04	0.05
2.750	0.05	0.05	0.06	0.06	0.06
4.000	0.06	0.06	0.07	0.07	0.07
5.250	0.07	0.07	0.07	0.08	0.08
6.500	0.09	0.09	0.10	0.10	0.11
7.750	0.11	0.12	0.12	0.13	0.13
9.000	0.14	0.16	0.18	0.20	0.21
10.250	0.24	0.25	0.34	0.40	0.56
11.500	0.65	1.45	3.52	1.50	1.02
12.750	0.57	0.45	0.34	0.28	0.24
14.000	0.22	0.20	0.19	0.16	0.15
15.250	0.14	0.13	0.13	0.12	0.12
16.500	0.11	0.11	0.10	0.10	0.09
17.750	0.09	0.08	0.08	0.08	0.08
19.000	0.08	0.08	0.07	0.07	0.07
20.250	0.07	0.07	0.07	0.07	0.07
21.500	0.06	0.06	0.06	0.06	0.06
22.750	0.06	0.06	0.06	0.05	0.05
24.000	0.06	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-2 IMP

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.17 acres
Computational Time Increment	0.004 hours
Time to Peak (Computed)	1.080 hours
Flow (Peak, Computed)	0.52 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	1.000 hours
Flow (Peak Interpolated Output)	0.50 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.17 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.03 in
Runoff Volume (Pervious)	0.015 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.017 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.42 ft ³ /s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.100 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-2 IMP

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.17 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.250	0.00	0.02	0.05	0.50	0.12
1.500	0.07	0.05	0.02	0.00	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-2 IMP

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.17 acres
Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.100 hours
Flow (Peak, Computed)	0.66 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	0.39 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.17 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.11 in
Runoff Volume (Pervious)	0.044 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.042 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.42 ft ³ /s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.100 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-2 IMP

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.17 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
1.500	0.00	0.00	0.00	0.00	0.00
2.750	0.00	0.00	0.00	0.00	0.00
4.000	0.00	0.01	0.01	0.01	0.01
5.250	0.01	0.01	0.01	0.01	0.01
6.500	0.01	0.01	0.01	0.01	0.01
7.750	0.01	0.01	0.01	0.01	0.01
9.000	0.01	0.02	0.02	0.02	0.02
10.250	0.03	0.03	0.04	0.04	0.06
11.500	0.07	0.16	0.39	0.17	0.11
12.750	0.06	0.05	0.04	0.03	0.03
14.000	0.03	0.02	0.02	0.02	0.02
15.250	0.02	0.02	0.01	0.01	0.01
16.500	0.01	0.01	0.01	0.01	0.01
17.750	0.01	0.01	0.01	0.01	0.01
19.000	0.01	0.01	0.01	0.01	0.01
20.250	0.01	0.01	0.01	0.01	0.01
21.500	0.01	0.01	0.01	0.01	0.01
22.750	0.01	0.01	0.01	0.01	0.01
24.000	0.01	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-2 IMP

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.17 acres
Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.100 hours
Flow (Peak, Computed)	1.00 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	0.60 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.17 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.77 in
Runoff Volume (Pervious)	0.068 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.065 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.42 ft ³ /s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.100 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-2 IMP

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.17 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.750	0.00	0.00	0.00	0.00	0.00
2.000	0.00	0.01	0.01	0.01	0.01
3.250	0.01	0.01	0.01	0.01	0.01
4.500	0.01	0.01	0.01	0.01	0.01
5.750	0.01	0.01	0.01	0.01	0.01
7.000	0.02	0.02	0.02	0.02	0.02
8.250	0.02	0.02	0.02	0.02	0.03
9.500	0.03	0.03	0.04	0.04	0.04
10.750	0.06	0.07	0.09	0.11	0.24
12.000	0.60	0.25	0.17	0.10	0.08
13.250	0.06	0.05	0.04	0.04	0.03
14.500	0.03	0.03	0.03	0.02	0.02
15.750	0.02	0.02	0.02	0.02	0.02
17.000	0.02	0.02	0.02	0.01	0.01
18.250	0.01	0.01	0.01	0.01	0.01
19.500	0.01	0.01	0.01	0.01	0.01
20.750	0.01	0.01	0.01	0.01	0.01
22.000	0.01	0.01	0.01	0.01	0.01
23.250	0.01	0.01	0.01	0.01	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-2 IMP

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.17 acres
Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.100 hours
Flow (Peak, Computed)	1.64 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	0.98 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.17 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.97 in
Runoff Volume (Pervious)	0.113 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.109 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.42 ft ³ /s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.100 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-2 IMP

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.17 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.500	0.00	0.00	0.01	0.01	0.01
1.750	0.01	0.01	0.01	0.01	0.01
3.000	0.01	0.02	0.02	0.02	0.02
4.250	0.02	0.02	0.02	0.02	0.02
5.500	0.02	0.02	0.02	0.02	0.02
6.750	0.03	0.03	0.03	0.03	0.03
8.000	0.03	0.03	0.04	0.04	0.04
9.250	0.04	0.05	0.06	0.06	0.07
10.500	0.07	0.09	0.11	0.15	0.18
11.750	0.40	0.98	0.42	0.28	0.16
13.000	0.13	0.10	0.08	0.07	0.06
14.250	0.06	0.05	0.05	0.04	0.04
15.500	0.04	0.04	0.03	0.03	0.03
16.750	0.03	0.03	0.03	0.03	0.02
18.000	0.02	0.02	0.02	0.02	0.02
19.250	0.02	0.02	0.02	0.02	0.02
20.500	0.02	0.02	0.02	0.02	0.02
21.750	0.02	0.02	0.02	0.02	0.02
23.000	0.02	0.02	0.02	0.01	0.02

Subsection: Unit Hydrograph Summary

Label: DA-1A-3 IMP

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.23 acres
Computational Time Increment	0.004 hours
Time to Peak (Computed)	1.080 hours
Flow (Peak, Computed)	0.71 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	1.000 hours
Flow (Peak Interpolated Output)	0.68 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.23 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.03 in
Runoff Volume (Pervious)	0.020 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.023 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.69 ft ³ /s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.100 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-3 IMP

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.23 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.250	0.00	0.03	0.06	0.68	0.16
1.500	0.09	0.07	0.02	0.00	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-3 IMP

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.23 acres
Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.100 hours
Flow (Peak, Computed)	0.90 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	0.53 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.23 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.11 in
Runoff Volume (Pervious)	0.060 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.057 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.69 ft ³ /s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.100 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-3 IMP

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.23 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
1.250	0.00	0.00	0.00	0.00	0.00
2.500	0.00	0.00	0.00	0.01	0.01
3.750	0.01	0.01	0.01	0.01	0.01
5.000	0.01	0.01	0.01	0.01	0.01
6.250	0.01	0.01	0.01	0.01	0.01
7.500	0.01	0.02	0.02	0.02	0.02
8.750	0.02	0.02	0.02	0.03	0.03
10.000	0.03	0.03	0.04	0.05	0.06
11.250	0.08	0.10	0.22	0.53	0.23
12.500	0.16	0.09	0.07	0.05	0.04
13.750	0.04	0.03	0.03	0.03	0.03
15.000	0.02	0.02	0.02	0.02	0.02
16.250	0.02	0.02	0.02	0.02	0.01
17.500	0.01	0.01	0.01	0.01	0.01
18.750	0.01	0.01	0.01	0.01	0.01
20.000	0.01	0.01	0.01	0.01	0.01
21.250	0.01	0.01	0.01	0.01	0.01
22.500	0.01	0.01	0.01	0.01	0.01
23.750	0.01	0.01	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-3 IMP

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.23 acres
Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.100 hours
Flow (Peak, Computed)	1.35 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	0.81 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.23 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.77 in
Runoff Volume (Pervious)	0.091 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.088 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.69 ft ³ /s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.100 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-3 IMP

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.23 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.750	0.00	0.00	0.00	0.00	0.01
2.000	0.01	0.01	0.01	0.01	0.01
3.250	0.01	0.01	0.01	0.01	0.01
4.500	0.01	0.01	0.01	0.01	0.02
5.750	0.02	0.02	0.02	0.02	0.02
7.000	0.02	0.02	0.02	0.02	0.03
8.250	0.03	0.03	0.03	0.03	0.04
9.500	0.04	0.04	0.05	0.05	0.06
10.750	0.08	0.09	0.13	0.15	0.33
12.000	0.81	0.34	0.23	0.13	0.10
13.250	0.08	0.07	0.06	0.05	0.05
14.500	0.04	0.04	0.03	0.03	0.03
15.750	0.03	0.03	0.03	0.03	0.02
17.000	0.02	0.02	0.02	0.02	0.02
18.250	0.02	0.02	0.02	0.02	0.02
19.500	0.02	0.02	0.02	0.02	0.02
20.750	0.02	0.02	0.02	0.01	0.01
22.000	0.01	0.01	0.01	0.01	0.01
23.250	0.01	0.01	0.01	0.01	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-3 IMP

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.23 acres
Computational Time Increment	0.004 hours
Time to Peak (Computed)	12.100 hours
Flow (Peak, Computed)	2.22 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	1.33 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.23 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.97 in
Runoff Volume (Pervious)	0.153 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.147 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.030 hours
Computational Time Increment	0.004 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.69 ft ³ /s
Unit peak time, Tp	0.020 hours
Unit receding limb, Tr	0.080 hours
Total unit time, Tb	0.100 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-3 IMP

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.030 hours
Area (User Defined)	0.23 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.500	0.00	0.00	0.01	0.01	0.01
1.750	0.01	0.02	0.02	0.02	0.02
3.000	0.02	0.02	0.02	0.02	0.02
4.250	0.02	0.02	0.03	0.03	0.03
5.500	0.03	0.03	0.03	0.03	0.03
6.750	0.03	0.04	0.04	0.04	0.04
8.000	0.04	0.05	0.05	0.05	0.05
9.250	0.06	0.07	0.07	0.08	0.09
10.500	0.10	0.13	0.15	0.21	0.25
11.750	0.55	1.33	0.57	0.38	0.21
13.000	0.17	0.13	0.11	0.09	0.08
14.250	0.08	0.07	0.06	0.06	0.05
15.500	0.05	0.05	0.05	0.04	0.04
16.750	0.04	0.04	0.04	0.04	0.03
18.000	0.03	0.03	0.03	0.03	0.03
19.250	0.03	0.03	0.03	0.03	0.03
20.500	0.03	0.03	0.03	0.02	0.02
21.750	0.02	0.02	0.02	0.02	0.02
23.000	0.02	0.02	0.02	0.02	0.02

Subsection: Unit Hydrograph Summary

Label: DA-1A-4 IMP

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.040 hours
Area (User Defined)	0.66 acres
Computational Time Increment	0.005 hours
Time to Peak (Computed)	1.083 hours
Flow (Peak, Computed)	2.03 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	1.000 hours
Flow (Peak Interpolated Output)	1.92 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.66 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.03 in
Runoff Volume (Pervious)	0.057 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.065 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.040 hours
Computational Time Increment	0.005 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	18.70 ft ³ /s
Unit peak time, Tp	0.027 hours
Unit receding limb, Tr	0.107 hours
Total unit time, Tb	0.133 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-4 IMP

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.040 hours
Area (User Defined)	0.66 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.250	0.00	0.07	0.18	1.92	0.46
1.500	0.26	0.20	0.06	0.00	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-4 IMP

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.040 hours
Area (User Defined)	0.66 acres
Computational Time Increment	0.005 hours
Time to Peak (Computed)	12.096 hours
Flow (Peak, Computed)	2.56 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	1.53 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.66 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.11 in
Runoff Volume (Pervious)	0.171 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.164 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.040 hours
Computational Time Increment	0.005 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	18.70 ft ³ /s
Unit peak time, Tp	0.027 hours
Unit receding limb, Tr	0.107 hours
Total unit time, Tb	0.133 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-4 IMP

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.040 hours
Area (User Defined)	0.66 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
1.250	0.00	0.00	0.01	0.01	0.01
2.500	0.01	0.01	0.01	0.02	0.02
3.750	0.02	0.02	0.02	0.02	0.02
5.000	0.02	0.02	0.03	0.03	0.03
6.250	0.03	0.03	0.03	0.04	0.04
7.500	0.04	0.04	0.05	0.05	0.05
8.750	0.05	0.06	0.07	0.07	0.08
10.000	0.09	0.10	0.11	0.14	0.17
11.250	0.24	0.28	0.61	1.53	0.68
12.500	0.45	0.25	0.20	0.15	0.12
13.750	0.11	0.10	0.09	0.08	0.07
15.000	0.07	0.06	0.06	0.06	0.05
16.250	0.05	0.05	0.05	0.05	0.04
17.500	0.04	0.04	0.04	0.04	0.03
18.750	0.03	0.03	0.03	0.03	0.03
20.000	0.03	0.03	0.03	0.03	0.03
21.250	0.03	0.03	0.03	0.03	0.03
22.500	0.03	0.03	0.03	0.02	0.02
23.750	0.02	0.03	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-4 IMP

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.040 hours
Area (User Defined)	0.66 acres
Computational Time Increment	0.005 hours
Time to Peak (Computed)	12.096 hours
Flow (Peak, Computed)	3.86 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	2.31 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.66 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.77 in
Runoff Volume (Pervious)	0.263 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.252 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.040 hours
Computational Time Increment	0.005 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	18.70 ft ³ /s
Unit peak time, Tp	0.027 hours
Unit receding limb, Tr	0.107 hours
Total unit time, Tb	0.133 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-4 IMP

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.040 hours
Area (User Defined)	0.66 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.750	0.00	0.00	0.01	0.01	0.02
2.000	0.02	0.02	0.02	0.03	0.03
3.250	0.03	0.03	0.03	0.04	0.04
4.500	0.04	0.04	0.04	0.04	0.04
5.750	0.05	0.05	0.05	0.05	0.06
7.000	0.06	0.06	0.07	0.07	0.07
8.250	0.08	0.08	0.09	0.09	0.10
9.500	0.11	0.13	0.14	0.15	0.16
10.750	0.22	0.26	0.36	0.43	0.93
12.000	2.31	1.02	0.67	0.38	0.30
13.250	0.23	0.19	0.16	0.15	0.13
14.500	0.12	0.11	0.10	0.09	0.09
15.750	0.08	0.08	0.08	0.07	0.07
17.000	0.07	0.06	0.06	0.06	0.05
18.250	0.05	0.05	0.05	0.05	0.05
19.500	0.05	0.05	0.05	0.05	0.05
20.750	0.04	0.04	0.04	0.04	0.04
22.000	0.04	0.04	0.04	0.04	0.04
23.250	0.04	0.04	0.03	0.04	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-4 IMP

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.040 hours
Area (User Defined)	0.66 acres
Computational Time Increment	0.005 hours
Time to Peak (Computed)	12.096 hours
Flow (Peak, Computed)	6.35 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	3.80 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.66 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.97 in
Runoff Volume (Pervious)	0.438 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.421 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.040 hours
Computational Time Increment	0.005 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	18.70 ft ³ /s
Unit peak time, Tp	0.027 hours
Unit receding limb, Tr	0.107 hours
Total unit time, Tb	0.133 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-4 IMP

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.040 hours
Area (User Defined)	0.66 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.500	0.00	0.01	0.02	0.03	0.03
1.750	0.04	0.04	0.05	0.05	0.05
3.000	0.06	0.06	0.06	0.06	0.07
4.250	0.07	0.07	0.07	0.08	0.08
5.500	0.08	0.08	0.08	0.09	0.09
6.750	0.10	0.10	0.11	0.12	0.12
8.000	0.13	0.13	0.14	0.14	0.15
9.250	0.17	0.19	0.21	0.23	0.25
10.500	0.27	0.36	0.43	0.60	0.71
11.750	1.53	3.80	1.68	1.10	0.62
13.000	0.49	0.37	0.31	0.26	0.24
14.250	0.22	0.20	0.18	0.16	0.15
15.500	0.14	0.14	0.13	0.13	0.12
16.750	0.12	0.11	0.11	0.10	0.09
18.000	0.09	0.09	0.09	0.08	0.08
19.250	0.08	0.08	0.08	0.08	0.08
20.500	0.07	0.07	0.07	0.07	0.07
21.750	0.07	0.07	0.07	0.06	0.06
23.000	0.06	0.06	0.06	0.06	0.07

Subsection: Unit Hydrograph Summary

Label: DA-1A-4 PER

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.138 hours
Area (User Defined)	0.73 acres
Computational Time Increment	0.018 hours
Time to Peak (Computed)	1.233 hours
Flow (Peak, Computed)	0.08 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	1.250 hours
Flow (Peak Interpolated Output)	0.08 ft ³ /s
Drainage Area	
SCS CN (Composite)	73.2
Area (User Defined)	0.73 acres
Maximum Retention (Pervious)	3.67 in
Maximum Retention (Pervious, 20 percent)	0.73 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.06 in
Runoff Volume (Pervious)	0.004 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.004 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.138 hours
Computational Time Increment	0.018 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.99 ft ³ /s
Unit peak time, Tp	0.092 hours
Unit receding limb, Tr	0.368 hours
Total unit time, Tb	0.460 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-4 PER

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.138 hours
Area (User Defined)	0.73 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
1.000	0.00	0.08	0.05	0.05	0.02
2.250	0.00	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-4 PER

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.138 hours
Area (User Defined)	0.73 acres
Computational Time Increment	0.018 hours
Time to Peak (Computed)	12.144 hours
Flow (Peak, Computed)	0.93 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	0.57 ft ³ /s
Drainage Area	
SCS CN (Composite)	73.2
Area (User Defined)	0.73 acres
Maximum Retention (Pervious)	3.67 in
Maximum Retention (Pervious, 20 percent)	0.73 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.08 in
Runoff Volume (Pervious)	0.066 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.063 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.138 hours
Computational Time Increment	0.018 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.99 ft ³ /s
Unit peak time, Tp	0.092 hours
Unit receding limb, Tr	0.368 hours
Total unit time, Tb	0.460 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-4 PER

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.138 hours
Area (User Defined)	0.73 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
10.750	0.00	0.00	0.01	0.03	0.09
12.000	0.38	0.57	0.27	0.16	0.13
13.250	0.10	0.08	0.07	0.06	0.06
14.500	0.05	0.05	0.04	0.04	0.04
15.750	0.04	0.04	0.04	0.03	0.03
17.000	0.03	0.03	0.03	0.03	0.03
18.250	0.02	0.02	0.02	0.02	0.02
19.500	0.02	0.02	0.02	0.02	0.02
20.750	0.02	0.02	0.02	0.02	0.02
22.000	0.02	0.02	0.02	0.02	0.02
23.250	0.02	0.02	0.02	0.02	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-4 PER

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.138 hours
Area (User Defined)	0.73 acres
Computational Time Increment	0.018 hours
Time to Peak (Computed)	12.144 hours
Flow (Peak, Computed)	2.03 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	1.18 ft ³ /s
Drainage Area	
SCS CN (Composite)	73.2
Area (User Defined)	0.73 acres
Maximum Retention (Pervious)	3.67 in
Maximum Retention (Pervious, 20 percent)	0.73 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.30 in
Runoff Volume (Pervious)	0.140 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.135 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.138 hours
Computational Time Increment	0.018 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.99 ft ³ /s
Unit peak time, Tp	0.092 hours
Unit receding limb, Tr	0.368 hours
Total unit time, Tb	0.460 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-4 PER

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.138 hours
Area (User Defined)	0.73 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
9.000	0.00	0.00	0.00	0.01	0.01
10.250	0.02	0.02	0.04	0.06	0.09
11.500	0.13	0.29	0.94	1.18	0.53
12.750	0.32	0.25	0.19	0.16	0.13
14.000	0.12	0.11	0.10	0.09	0.08
15.250	0.08	0.07	0.07	0.07	0.07
16.500	0.06	0.06	0.06	0.06	0.05
17.750	0.05	0.05	0.05	0.04	0.04
19.000	0.04	0.04	0.04	0.04	0.04
20.250	0.04	0.04	0.04	0.04	0.04
21.500	0.04	0.04	0.04	0.03	0.03
22.750	0.03	0.03	0.03	0.03	0.03
24.000	0.03	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-4 PER

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.138 hours
Area (User Defined)	0.73 acres
Computational Time Increment	0.018 hours
Time to Peak (Computed)	12.144 hours
Flow (Peak, Computed)	4.37 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	2.47 ft ³ /s
Drainage Area	
SCS CN (Composite)	73.2
Area (User Defined)	0.73 acres
Maximum Retention (Pervious)	3.67 in
Maximum Retention (Pervious, 20 percent)	0.73 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.02 in
Runoff Volume (Pervious)	0.305 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.293 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.138 hours
Computational Time Increment	0.018 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.99 ft ³ /s
Unit peak time, Tp	0.092 hours
Unit receding limb, Tr	0.368 hours
Total unit time, Tb	0.460 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-4 PER

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.138 hours
Area (User Defined)	0.73 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
6.750	0.00	0.00	0.01	0.01	0.01
8.000	0.02	0.02	0.02	0.03	0.03
9.250	0.04	0.05	0.06	0.08	0.09
10.500	0.11	0.14	0.20	0.28	0.39
11.750	0.76	2.19	2.47	1.06	0.63
13.000	0.49	0.38	0.31	0.25	0.23
14.250	0.22	0.20	0.18	0.16	0.14
15.500	0.14	0.13	0.13	0.12	0.12
16.750	0.11	0.11	0.10	0.10	0.09
18.000	0.09	0.09	0.08	0.08	0.08
19.250	0.08	0.08	0.08	0.08	0.07
20.500	0.07	0.07	0.07	0.07	0.07
21.750	0.07	0.07	0.06	0.06	0.06
23.000	0.06	0.06	0.06	0.06	0.06

Subsection: Unit Hydrograph Summary

Label: DA-1A-UND IMP

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.076 hours
Area (User Defined)	0.35 acres
Computational Time Increment	0.010 hours
Time to Peak (Computed)	1.084 hours
Flow (Peak, Computed)	1.05 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	1.000 hours
Flow (Peak Interpolated Output)	0.88 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.35 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.03 in
Runoff Volume (Pervious)	0.030 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.032 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.076 hours
Computational Time Increment	0.010 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.22 ft ³ /s
Unit peak time, Tp	0.051 hours
Unit receding limb, Tr	0.203 hours
Total unit time, Tb	0.253 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-UND IMP

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.076 hours
Area (User Defined)	0.35 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.250	0.00	0.03	0.09	0.88	0.28
1.500	0.14	0.10	0.03	0.00	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-UND IMP

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.225 hours
Area (User Defined)	0.78 acres
Computational Time Increment	0.030 hours
Time to Peak (Computed)	12.180 hours
Flow (Peak, Computed)	2.16 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	1.84 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.78 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.11 in
Runoff Volume (Pervious)	0.202 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.200 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.225 hours
Computational Time Increment	0.030 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	3.93 ft ³ /s
Unit peak time, Tp	0.150 hours
Unit receding limb, Tr	0.600 hours
Total unit time, Tb	0.750 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-UND IMP

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.225 hours
Area (User Defined)	0.78 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
1.250	0.00	0.00	0.00	0.01	0.01
2.500	0.01	0.01	0.02	0.02	0.02
3.750	0.02	0.02	0.02	0.02	0.03
5.000	0.03	0.03	0.03	0.03	0.03
6.250	0.03	0.04	0.04	0.04	0.04
7.500	0.05	0.05	0.05	0.06	0.06
8.750	0.06	0.06	0.07	0.08	0.09
10.000	0.10	0.11	0.12	0.14	0.18
11.250	0.23	0.30	0.50	1.08	1.84
12.500	0.71	0.38	0.27	0.21	0.17
13.750	0.13	0.12	0.11	0.10	0.09
15.000	0.08	0.07	0.07	0.07	0.07
16.250	0.06	0.06	0.06	0.05	0.05
17.500	0.05	0.05	0.04	0.04	0.04
18.750	0.04	0.04	0.04	0.04	0.04
20.000	0.04	0.04	0.04	0.04	0.03
21.250	0.03	0.03	0.03	0.03	0.03
22.500	0.03	0.03	0.03	0.03	0.03
23.750	0.03	0.03	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-UND IMP

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.076 hours
Area (User Defined)	0.35 acres
Computational Time Increment	0.010 hours
Time to Peak (Computed)	12.109 hours
Flow (Peak, Computed)	1.30 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	0.77 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.35 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.11 in
Runoff Volume (Pervious)	0.091 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.087 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.076 hours
Computational Time Increment	0.010 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.22 ft ³ /s
Unit peak time, Tp	0.051 hours
Unit receding limb, Tr	0.203 hours
Total unit time, Tb	0.253 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-UND IMP

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.076 hours
Area (User Defined)	0.35 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
1.250	0.00	0.00	0.00	0.00	0.00
2.500	0.01	0.01	0.01	0.01	0.01
3.750	0.01	0.01	0.01	0.01	0.01
5.000	0.01	0.01	0.01	0.01	0.01
6.250	0.02	0.02	0.02	0.02	0.02
7.500	0.02	0.02	0.02	0.03	0.03
8.750	0.03	0.03	0.03	0.04	0.04
10.000	0.05	0.05	0.06	0.07	0.09
11.250	0.12	0.15	0.28	0.77	0.43
12.500	0.24	0.14	0.11	0.08	0.07
13.750	0.06	0.05	0.05	0.04	0.04
15.000	0.03	0.03	0.03	0.03	0.03
16.250	0.03	0.03	0.03	0.02	0.02
17.500	0.02	0.02	0.02	0.02	0.02
18.750	0.02	0.02	0.02	0.02	0.02
20.000	0.02	0.02	0.02	0.02	0.02
21.250	0.02	0.01	0.01	0.01	0.01
22.500	0.01	0.01	0.01	0.01	0.01
23.750	0.01	0.01	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-UND IMP

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.225 hours
Area (User Defined)	0.78 acres
Computational Time Increment	0.030 hours
Time to Peak (Computed)	12.180 hours
Flow (Peak, Computed)	3.26 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	2.78 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.78 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.77 in
Runoff Volume (Pervious)	0.310 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.308 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.225 hours
Computational Time Increment	0.030 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	3.93 ft ³ /s
Unit peak time, Tp	0.150 hours
Unit receding limb, Tr	0.600 hours
Total unit time, Tb	0.750 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-UND IMP

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.225 hours
Area (User Defined)	0.78 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.750	0.00	0.00	0.01	0.01	0.02
2.000	0.02	0.02	0.03	0.03	0.03
3.250	0.03	0.04	0.04	0.04	0.04
4.500	0.04	0.05	0.05	0.05	0.05
5.750	0.05	0.05	0.06	0.06	0.07
7.000	0.07	0.07	0.08	0.08	0.09
8.250	0.09	0.09	0.10	0.10	0.11
9.500	0.13	0.14	0.16	0.17	0.19
10.750	0.22	0.28	0.36	0.46	0.76
12.000	1.63	2.78	1.06	0.57	0.41
13.250	0.31	0.25	0.20	0.18	0.17
14.500	0.15	0.14	0.12	0.11	0.11
15.750	0.10	0.10	0.09	0.09	0.09
17.000	0.08	0.08	0.07	0.07	0.07
18.250	0.06	0.06	0.06	0.06	0.06
19.500	0.06	0.06	0.06	0.06	0.05
20.750	0.05	0.05	0.05	0.05	0.05
22.000	0.05	0.05	0.05	0.05	0.04
23.250	0.04	0.04	0.04	0.04	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-UND IMP

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.076 hours
Area (User Defined)	0.35 acres
Computational Time Increment	0.010 hours
Time to Peak (Computed)	12.109 hours
Flow (Peak, Computed)	1.96 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	1.17 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.35 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.77 in
Runoff Volume (Pervious)	0.139 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.134 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.076 hours
Computational Time Increment	0.010 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.22 ft ³ /s
Unit peak time, Tp	0.051 hours
Unit receding limb, Tr	0.203 hours
Total unit time, Tb	0.253 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-UND IMP

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.076 hours
Area (User Defined)	0.35 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.750	0.00	0.00	0.00	0.01	0.01
2.000	0.01	0.01	0.01	0.01	0.01
3.250	0.02	0.02	0.02	0.02	0.02
4.500	0.02	0.02	0.02	0.02	0.02
5.750	0.02	0.02	0.03	0.03	0.03
7.000	0.03	0.03	0.04	0.04	0.04
8.250	0.04	0.04	0.05	0.05	0.05
9.500	0.06	0.07	0.07	0.08	0.09
10.750	0.11	0.14	0.18	0.23	0.43
12.000	1.17	0.66	0.36	0.21	0.16
13.250	0.13	0.10	0.09	0.08	0.07
14.500	0.07	0.06	0.05	0.05	0.05
15.750	0.04	0.04	0.04	0.04	0.04
17.000	0.04	0.03	0.03	0.03	0.03
18.250	0.03	0.03	0.03	0.03	0.03
19.500	0.03	0.03	0.03	0.02	0.02
20.750	0.02	0.02	0.02	0.02	0.02
22.000	0.02	0.02	0.02	0.02	0.02
23.250	0.02	0.02	0.02	0.02	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-UND IMP

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.225 hours
Area (User Defined)	0.78 acres
Computational Time Increment	0.030 hours
Time to Peak (Computed)	12.180 hours
Flow (Peak, Computed)	5.35 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	4.57 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.78 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.97 in
Runoff Volume (Pervious)	0.518 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.514 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.225 hours
Computational Time Increment	0.030 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	3.93 ft ³ /s
Unit peak time, Tp	0.150 hours
Unit receding limb, Tr	0.600 hours
Total unit time, Tb	0.750 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-UND IMP

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.225 hours
Area (User Defined)	0.78 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.500	0.00	0.01	0.02	0.03	0.04
1.750	0.04	0.05	0.05	0.06	0.06
3.000	0.07	0.07	0.07	0.07	0.08
4.250	0.08	0.08	0.09	0.09	0.09
5.500	0.09	0.09	0.10	0.10	0.11
6.750	0.11	0.12	0.13	0.13	0.14
8.000	0.15	0.15	0.16	0.17	0.17
9.250	0.19	0.21	0.24	0.26	0.29
10.500	0.31	0.37	0.46	0.59	0.76
11.750	1.26	2.69	4.57	1.75	0.93
13.000	0.67	0.51	0.41	0.33	0.30
14.250	0.28	0.25	0.23	0.20	0.18
15.500	0.17	0.17	0.16	0.15	0.15
16.750	0.14	0.14	0.13	0.12	0.12
18.000	0.11	0.10	0.10	0.10	0.10
19.250	0.10	0.10	0.09	0.09	0.09
20.500	0.09	0.09	0.09	0.08	0.08
21.750	0.08	0.08	0.08	0.08	0.07
23.000	0.07	0.07	0.07	0.07	0.07

Subsection: Unit Hydrograph Summary

Label: DA-1A-UND IMP

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.076 hours
Area (User Defined)	0.35 acres
Computational Time Increment	0.010 hours
Time to Peak (Computed)	12.109 hours
Flow (Peak, Computed)	3.23 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.000 hours
Flow (Peak Interpolated Output)	1.92 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	0.35 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.97 in
Runoff Volume (Pervious)	0.232 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.223 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.076 hours
Computational Time Increment	0.010 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.22 ft ³ /s
Unit peak time, Tp	0.051 hours
Unit receding limb, Tr	0.203 hours
Total unit time, Tb	0.253 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-UND IMP

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.076 hours
Area (User Defined)	0.35 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.500	0.00	0.01	0.01	0.01	0.02
1.750	0.02	0.02	0.02	0.03	0.03
3.000	0.03	0.03	0.03	0.03	0.04
4.250	0.04	0.04	0.04	0.04	0.04
5.500	0.04	0.04	0.04	0.05	0.05
6.750	0.05	0.06	0.06	0.06	0.06
8.000	0.07	0.07	0.07	0.08	0.08
9.250	0.09	0.10	0.11	0.12	0.13
10.500	0.14	0.18	0.23	0.30	0.37
11.750	0.71	1.92	1.08	0.59	0.34
13.000	0.26	0.21	0.16	0.14	0.13
14.250	0.12	0.11	0.10	0.09	0.08
15.500	0.08	0.07	0.07	0.07	0.07
16.750	0.06	0.06	0.06	0.05	0.05
18.000	0.05	0.05	0.05	0.04	0.04
19.250	0.04	0.04	0.04	0.04	0.04
20.500	0.04	0.04	0.04	0.04	0.04
21.750	0.04	0.04	0.03	0.03	0.03
23.000	0.03	0.03	0.03	0.03	0.04

Subsection: Unit Hydrograph Summary

Label: DA-1A-UND PER

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.188 hours
Area (User Defined)	2.01 acres
Computational Time Increment	0.025 hours
Time to Peak (Computed)	1.278 hours
Flow (Peak, Computed)	0.19 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	1.250 hours
Flow (Peak Interpolated Output)	0.18 ft ³ /s
Drainage Area	
SCS CN (Composite)	72.7
Area (User Defined)	2.01 acres
Maximum Retention (Pervious)	3.75 in
Maximum Retention (Pervious, 20 percent)	0.75 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.06 in
Runoff Volume (Pervious)	0.010 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.010 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.188 hours
Computational Time Increment	0.025 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	12.11 ft ³ /s
Unit peak time, Tp	0.125 hours
Unit receding limb, Tr	0.501 hours
Total unit time, Tb	0.627 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-UND PER

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.188 hours
Area (User Defined)	2.01 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
1.000	0.00	0.18	0.14	0.12	0.05
2.250	0.01	0.00	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-UND PER

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.261 hours
Area (User Defined)	3.69 acres
Computational Time Increment	0.035 hours
Time to Peak (Computed)	12.215 hours
Flow (Peak, Computed)	3.79 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	3.70 ft ³ /s
Drainage Area	
SCS CN (Composite)	74.0
Area (User Defined)	3.69 acres
Maximum Retention (Pervious)	3.51 in
Maximum Retention (Pervious, 20 percent)	0.70 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.13 in
Runoff Volume (Pervious)	0.348 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.347 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.261 hours
Computational Time Increment	0.035 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	16.02 ft ³ /s
Unit peak time, Tp	0.174 hours
Unit receding limb, Tr	0.696 hours
Total unit time, Tb	0.870 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-UND PER

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.261 hours
Area (User Defined)	3.69 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
10.500	0.00	0.00	0.02	0.07	0.15
11.750	0.39	1.25	3.70	1.82	1.04
13.000	0.75	0.58	0.47	0.38	0.35
14.250	0.32	0.30	0.27	0.24	0.22
15.500	0.21	0.20	0.19	0.19	0.18
16.750	0.17	0.17	0.16	0.15	0.14
18.000	0.14	0.13	0.13	0.13	0.12
19.250	0.12	0.12	0.12	0.12	0.12
20.500	0.11	0.11	0.11	0.11	0.11
21.750	0.10	0.10	0.10	0.10	0.10
23.000	0.09	0.09	0.09	0.09	0.09

Subsection: Unit Hydrograph Summary

Label: DA-1A-UND PER

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.188 hours
Area (User Defined)	2.01 acres
Computational Time Increment	0.025 hours
Time to Peak (Computed)	12.182 hours
Flow (Peak, Computed)	2.19 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	1.78 ft ³ /s
Drainage Area	
SCS CN (Composite)	72.7
Area (User Defined)	2.01 acres
Maximum Retention (Pervious)	3.75 in
Maximum Retention (Pervious, 20 percent)	0.75 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.06 in
Runoff Volume (Pervious)	0.177 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.174 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.188 hours
Computational Time Increment	0.025 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	12.11 ft ³ /s
Unit peak time, Tp	0.125 hours
Unit receding limb, Tr	0.501 hours
Total unit time, Tb	0.627 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-UND PER

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.188 hours
Area (User Defined)	2.01 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
10.750	0.00	0.00	0.03	0.07	0.21
12.000	0.80	1.78	0.79	0.47	0.36
13.250	0.28	0.23	0.19	0.18	0.16
14.500	0.15	0.14	0.12	0.11	0.11
15.750	0.10	0.10	0.10	0.09	0.09
17.000	0.09	0.08	0.08	0.07	0.07
18.250	0.07	0.07	0.07	0.06	0.06
19.500	0.06	0.06	0.06	0.06	0.06
20.750	0.06	0.06	0.06	0.06	0.05
22.000	0.05	0.05	0.05	0.05	0.05
23.250	0.05	0.05	0.05	0.05	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-UND PER

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.261 hours
Area (User Defined)	3.69 acres
Computational Time Increment	0.035 hours
Time to Peak (Computed)	12.215 hours
Flow (Peak, Computed)	8.24 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	7.92 ft ³ /s
Drainage Area	
SCS CN (Composite)	74.0
Area (User Defined)	3.69 acres
Maximum Retention (Pervious)	3.51 in
Maximum Retention (Pervious, 20 percent)	0.70 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.37 in
Runoff Volume (Pervious)	0.729 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.728 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.261 hours
Computational Time Increment	0.035 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	16.02 ft ³ /s
Unit peak time, Tp	0.174 hours
Unit receding limb, Tr	0.696 hours
Total unit time, Tb	0.870 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-UND PER

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.261 hours
Area (User Defined)	3.69 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
8.750	0.00	0.00	0.01	0.03	0.04
10.000	0.07	0.10	0.13	0.18	0.27
11.250	0.41	0.63	1.23	3.20	7.92
12.500	3.66	2.02	1.43	1.10	0.89
13.750	0.72	0.65	0.60	0.55	0.50
15.000	0.45	0.40	0.38	0.37	0.36
16.250	0.34	0.33	0.32	0.30	0.29
17.500	0.27	0.26	0.25	0.24	0.23
18.750	0.23	0.22	0.22	0.22	0.21
20.000	0.21	0.21	0.20	0.20	0.20
21.250	0.19	0.19	0.19	0.18	0.18
22.500	0.18	0.17	0.17	0.16	0.16
23.750	0.16	0.16	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-UND PER

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.188 hours
Area (User Defined)	2.01 acres
Computational Time Increment	0.025 hours
Time to Peak (Computed)	12.157 hours
Flow (Peak, Computed)	4.88 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	3.83 ft ³ /s
Drainage Area	
SCS CN (Composite)	72.7
Area (User Defined)	2.01 acres
Maximum Retention (Pervious)	3.75 in
Maximum Retention (Pervious, 20 percent)	0.75 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.26 in
Runoff Volume (Pervious)	0.379 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.372 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.188 hours
Computational Time Increment	0.025 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	12.11 ft ³ /s
Unit peak time, Tp	0.125 hours
Unit receding limb, Tr	0.501 hours
Total unit time, Tb	0.627 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-UND PER

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.188 hours
Area (User Defined)	2.01 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
9.250	0.00	0.01	0.02	0.03	0.04
10.500	0.06	0.09	0.14	0.22	0.33
11.750	0.70	2.07	3.83	1.59	0.92
13.000	0.71	0.55	0.44	0.36	0.34
14.250	0.31	0.28	0.26	0.23	0.21
15.500	0.20	0.19	0.19	0.18	0.17
16.750	0.17	0.16	0.15	0.14	0.14
18.000	0.13	0.12	0.12	0.12	0.12
19.250	0.12	0.11	0.11	0.11	0.11
20.500	0.11	0.11	0.10	0.10	0.10
21.750	0.10	0.10	0.10	0.09	0.09
23.000	0.09	0.09	0.09	0.08	0.09

Subsection: Unit Hydrograph Summary

Label: DA-1A-UND PER

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.261 hours
Area (User Defined)	3.69 acres
Computational Time Increment	0.035 hours
Time to Peak (Computed)	12.215 hours
Flow (Peak, Computed)	17.69 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	16.85 ft ³ /s
Drainage Area	
SCS CN (Composite)	74.0
Area (User Defined)	3.69 acres
Maximum Retention (Pervious)	3.51 in
Maximum Retention (Pervious, 20 percent)	0.70 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.11 in
Runoff Volume (Pervious)	1.573 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.569 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.261 hours
Computational Time Increment	0.035 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	16.02 ft ³ /s
Unit peak time, Tp	0.174 hours
Unit receding limb, Tr	0.696 hours
Total unit time, Tb	0.870 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-UND PER

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.261 hours
Area (User Defined)	3.69 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
6.500	0.00	0.01	0.02	0.04	0.05
7.750	0.07	0.09	0.11	0.13	0.15
9.000	0.18	0.21	0.26	0.32	0.39
10.250	0.46	0.54	0.69	0.93	1.29
11.500	1.82	3.25	7.63	16.85	7.42
12.750	3.98	2.79	2.13	1.71	1.38
14.000	1.24	1.14	1.04	0.95	0.85
15.250	0.76	0.72	0.70	0.67	0.65
16.500	0.62	0.59	0.57	0.54	0.52
17.750	0.49	0.46	0.44	0.43	0.42
19.000	0.42	0.41	0.40	0.40	0.39
20.250	0.38	0.38	0.37	0.36	0.36
21.500	0.35	0.34	0.34	0.33	0.32
22.750	0.32	0.31	0.30	0.30	0.29
24.000	0.29	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1A-UND PER

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.188 hours
Area (User Defined)	2.01 acres
Computational Time Increment	0.025 hours
Time to Peak (Computed)	12.157 hours
Flow (Peak, Computed)	10.71 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	8.17 ft ³ /s
Drainage Area	
SCS CN (Composite)	72.7
Area (User Defined)	2.01 acres
Maximum Retention (Pervious)	3.75 in
Maximum Retention (Pervious, 20 percent)	0.75 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.96 in
Runoff Volume (Pervious)	0.831 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.815 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.188 hours
Computational Time Increment	0.025 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	12.11 ft ³ /s
Unit peak time, Tp	0.125 hours
Unit receding limb, Tr	0.501 hours
Total unit time, Tb	0.627 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1A-UND PER

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.188 hours
Area (User Defined)	2.01 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
6.750	0.00	0.00	0.01	0.02	0.03
8.000	0.04	0.05	0.06	0.07	0.09
9.250	0.11	0.13	0.16	0.20	0.24
10.500	0.28	0.37	0.50	0.71	1.00
11.750	1.89	4.99	8.17	3.24	1.83
13.000	1.39	1.07	0.87	0.71	0.65
14.250	0.60	0.55	0.50	0.44	0.40
15.500	0.38	0.37	0.36	0.34	0.33
16.750	0.32	0.30	0.29	0.27	0.26
18.000	0.25	0.23	0.23	0.23	0.22
19.250	0.22	0.22	0.21	0.21	0.21
20.500	0.20	0.20	0.20	0.19	0.19
21.750	0.18	0.18	0.18	0.17	0.17
23.000	0.17	0.16	0.16	0.16	0.16

Subsection: Unit Hydrograph Summary

Label: DA-1B IMP

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.245 hours
Area (User Defined)	1.80 acres
Computational Time Increment	0.033 hours
Time to Peak (Computed)	1.176 hours
Flow (Peak, Computed)	4.04 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	1.250 hours
Flow (Peak Interpolated Output)	3.36 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	1.80 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.03 in
Runoff Volume (Pervious)	0.155 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.151 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.245 hours
Computational Time Increment	0.033 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.32 ft ³ /s
Unit peak time, Tp	0.163 hours
Unit receding limb, Tr	0.653 hours
Total unit time, Tb	0.817 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1B IMP

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.245 hours
Area (User Defined)	1.80 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.250	0.00	0.06	0.33	1.59	3.36
1.500	1.04	0.60	0.27	0.05	0.00
2.750	0.00	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1B IMP

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.245 hours
Area (User Defined)	1.89 acres
Computational Time Increment	0.033 hours
Time to Peak (Computed)	12.185 hours
Flow (Peak, Computed)	5.04 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	4.56 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	1.89 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.11 in
Runoff Volume (Pervious)	0.489 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.488 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.245 hours
Computational Time Increment	0.033 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.74 ft ³ /s
Unit peak time, Tp	0.163 hours
Unit receding limb, Tr	0.653 hours
Total unit time, Tb	0.817 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1B IMP

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.245 hours
Area (User Defined)	1.89 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
1.250	0.00	0.01	0.01	0.02	0.02
2.500	0.03	0.03	0.04	0.04	0.04
3.750	0.05	0.05	0.06	0.06	0.06
5.000	0.07	0.07	0.07	0.07	0.08
6.250	0.08	0.09	0.09	0.10	0.11
7.500	0.11	0.12	0.13	0.14	0.14
8.750	0.15	0.16	0.17	0.19	0.22
10.000	0.24	0.26	0.29	0.34	0.43
11.250	0.56	0.72	1.18	2.49	4.56
12.500	1.82	0.96	0.68	0.51	0.41
13.750	0.33	0.30	0.27	0.25	0.22
15.000	0.20	0.18	0.17	0.16	0.16
16.250	0.15	0.15	0.14	0.13	0.13
17.500	0.12	0.11	0.11	0.10	0.10
18.750	0.10	0.10	0.10	0.09	0.09
20.000	0.09	0.09	0.09	0.09	0.08
21.250	0.08	0.08	0.08	0.08	0.08
22.500	0.08	0.07	0.07	0.07	0.07
23.750	0.07	0.07	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1B IMP

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.245 hours
Area (User Defined)	1.80 acres
Computational Time Increment	0.033 hours
Time to Peak (Computed)	12.185 hours
Flow (Peak, Computed)	4.80 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	4.34 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	1.80 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.11 in
Runoff Volume (Pervious)	0.466 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.464 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.245 hours
Computational Time Increment	0.033 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.32 ft ³ /s
Unit peak time, Tp	0.163 hours
Unit receding limb, Tr	0.653 hours
Total unit time, Tb	0.817 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1B IMP

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.245 hours
Area (User Defined)	1.80 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
1.250	0.00	0.00	0.01	0.02	0.02
2.500	0.03	0.03	0.03	0.04	0.04
3.750	0.05	0.05	0.05	0.06	0.06
5.000	0.06	0.07	0.07	0.07	0.07
6.250	0.08	0.08	0.09	0.10	0.10
7.500	0.11	0.12	0.12	0.13	0.14
8.750	0.14	0.15	0.16	0.18	0.21
10.000	0.23	0.25	0.28	0.33	0.41
11.250	0.53	0.68	1.13	2.38	4.34
12.500	1.74	0.91	0.64	0.49	0.39
13.750	0.31	0.28	0.26	0.24	0.21
15.000	0.19	0.17	0.16	0.16	0.15
16.250	0.15	0.14	0.13	0.13	0.12
17.500	0.12	0.11	0.10	0.10	0.10
18.750	0.09	0.09	0.09	0.09	0.09
20.000	0.09	0.09	0.08	0.08	0.08
21.250	0.08	0.08	0.08	0.07	0.07
22.500	0.07	0.07	0.07	0.07	0.07
23.750	0.06	0.07	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1B IMP

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.245 hours
Area (User Defined)	1.89 acres
Computational Time Increment	0.033 hours
Time to Peak (Computed)	12.185 hours
Flow (Peak, Computed)	7.62 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	6.88 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	1.89 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.77 in
Runoff Volume (Pervious)	0.752 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.749 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.245 hours
Computational Time Increment	0.033 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.74 ft ³ /s
Unit peak time, Tp	0.163 hours
Unit receding limb, Tr	0.653 hours
Total unit time, Tb	0.817 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1B IMP

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.245 hours
Area (User Defined)	1.89 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.750	0.00	0.00	0.02	0.03	0.04
2.000	0.05	0.05	0.06	0.07	0.08
3.250	0.08	0.09	0.09	0.10	0.10
4.500	0.11	0.11	0.12	0.12	0.12
5.750	0.13	0.13	0.14	0.15	0.16
7.000	0.17	0.18	0.19	0.20	0.21
8.250	0.22	0.23	0.24	0.25	0.27
9.500	0.30	0.34	0.38	0.41	0.45
10.750	0.53	0.66	0.85	1.10	1.80
12.000	3.78	6.88	2.74	1.44	1.02
13.250	0.77	0.62	0.50	0.45	0.41
14.500	0.37	0.34	0.30	0.27	0.26
15.750	0.25	0.24	0.23	0.22	0.21
17.000	0.20	0.19	0.18	0.17	0.16
18.250	0.15	0.15	0.15	0.15	0.14
19.500	0.14	0.14	0.14	0.13	0.13
20.750	0.13	0.13	0.12	0.12	0.12
22.000	0.12	0.12	0.11	0.11	0.11
23.250	0.11	0.10	0.10	0.10	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1B IMP

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.245 hours
Area (User Defined)	1.80 acres
Computational Time Increment	0.033 hours
Time to Peak (Computed)	12.185 hours
Flow (Peak, Computed)	7.25 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	6.55 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	1.80 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.77 in
Runoff Volume (Pervious)	0.716 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.713 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.245 hours
Computational Time Increment	0.033 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.32 ft ³ /s
Unit peak time, Tp	0.163 hours
Unit receding limb, Tr	0.653 hours
Total unit time, Tb	0.817 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1B IMP

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.245 hours
Area (User Defined)	1.80 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.750	0.00	0.00	0.02	0.03	0.04
2.000	0.04	0.05	0.06	0.07	0.07
3.250	0.08	0.08	0.09	0.09	0.10
4.500	0.10	0.11	0.11	0.11	0.12
5.750	0.12	0.12	0.13	0.14	0.15
7.000	0.16	0.17	0.18	0.19	0.20
8.250	0.21	0.22	0.23	0.24	0.26
9.500	0.29	0.32	0.36	0.39	0.43
10.750	0.51	0.63	0.81	1.05	1.71
12.000	3.60	6.55	2.61	1.37	0.97
13.250	0.73	0.59	0.47	0.42	0.39
14.500	0.36	0.32	0.29	0.26	0.25
15.750	0.24	0.23	0.22	0.21	0.20
17.000	0.19	0.18	0.17	0.16	0.16
18.250	0.15	0.14	0.14	0.14	0.14
19.500	0.13	0.13	0.13	0.13	0.13
20.750	0.12	0.12	0.12	0.12	0.11
22.000	0.11	0.11	0.11	0.11	0.10
23.250	0.10	0.10	0.10	0.10	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1B IMP

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.245 hours
Area (User Defined)	1.89 acres
Computational Time Increment	0.033 hours
Time to Peak (Computed)	12.185 hours
Flow (Peak, Computed)	12.53 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	11.31 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	1.89 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.97 in
Runoff Volume (Pervious)	1.255 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.251 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.245 hours
Computational Time Increment	0.033 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.74 ft ³ /s
Unit peak time, Tp	0.163 hours
Unit receding limb, Tr	0.653 hours
Total unit time, Tb	0.817 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1B IMP

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.245 hours
Area (User Defined)	1.89 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.500	0.00	0.02	0.04	0.07	0.08
1.750	0.10	0.12	0.13	0.14	0.15
3.000	0.16	0.17	0.17	0.18	0.19
4.250	0.19	0.20	0.21	0.21	0.22
5.500	0.22	0.23	0.23	0.24	0.26
6.750	0.27	0.29	0.31	0.32	0.34
8.000	0.36	0.37	0.39	0.40	0.42
9.250	0.46	0.51	0.57	0.63	0.69
10.500	0.75	0.88	1.10	1.42	1.82
11.750	2.97	6.23	11.31	4.51	2.36
13.000	1.67	1.26	1.01	0.81	0.73
14.250	0.67	0.61	0.55	0.50	0.44
15.500	0.42	0.41	0.39	0.38	0.36
16.750	0.34	0.33	0.31	0.30	0.28
18.000	0.27	0.25	0.25	0.24	0.24
19.250	0.24	0.23	0.23	0.22	0.22
20.500	0.22	0.21	0.21	0.20	0.20
21.750	0.20	0.19	0.19	0.19	0.18
23.000	0.18	0.17	0.17	0.17	0.17

Subsection: Unit Hydrograph Summary

Label: DA-1B IMP

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.245 hours
Area (User Defined)	1.80 acres
Computational Time Increment	0.033 hours
Time to Peak (Computed)	12.185 hours
Flow (Peak, Computed)	11.93 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	10.77 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	1.80 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.97 in
Runoff Volume (Pervious)	1.196 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.191 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.245 hours
Computational Time Increment	0.033 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.32 ft ³ /s
Unit peak time, Tp	0.163 hours
Unit receding limb, Tr	0.653 hours
Total unit time, Tb	0.817 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1B IMP

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.245 hours
Area (User Defined)	1.80 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.500	0.00	0.01	0.04	0.06	0.08
1.750	0.10	0.11	0.12	0.13	0.14
3.000	0.15	0.16	0.17	0.17	0.18
4.250	0.18	0.19	0.20	0.20	0.21
5.500	0.21	0.22	0.22	0.23	0.25
6.750	0.26	0.28	0.29	0.31	0.32
8.000	0.34	0.35	0.37	0.38	0.40
9.250	0.43	0.49	0.54	0.60	0.66
10.500	0.71	0.84	1.05	1.35	1.73
11.750	2.83	5.94	10.77	4.29	2.25
13.000	1.59	1.20	0.96	0.77	0.70
14.250	0.64	0.58	0.53	0.47	0.42
15.500	0.40	0.39	0.37	0.36	0.34
16.750	0.33	0.31	0.30	0.28	0.27
18.000	0.25	0.24	0.24	0.23	0.23
19.250	0.22	0.22	0.22	0.21	0.21
20.500	0.21	0.20	0.20	0.20	0.19
21.750	0.19	0.18	0.18	0.18	0.17
23.000	0.17	0.17	0.16	0.16	0.16

Subsection: Unit Hydrograph Summary

Label: DA-1B PER

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.318 hours
Area (User Defined)	1.87 acres
Computational Time Increment	0.042 hours
Time to Peak (Computed)	1.357 hours
Flow (Peak, Computed)	0.19 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	1.500 hours
Flow (Peak Interpolated Output)	0.17 ft ³ /s
Drainage Area	
SCS CN (Composite)	74.0
Area (User Defined)	1.87 acres
Maximum Retention (Pervious)	3.51 in
Maximum Retention (Pervious, 20 percent)	0.70 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.07 in
Runoff Volume (Pervious)	0.011 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.012 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.318 hours
Computational Time Increment	0.042 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.66 ft ³ /s
Unit peak time, Tp	0.212 hours
Unit receding limb, Tr	0.848 hours
Total unit time, Tb	1.060 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1B PER

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.318 hours
Area (User Defined)	1.87 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
1.000	0.00	0.14	0.17	0.14	0.08
2.250	0.03	0.00	0.00	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1B PER

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.318 hours
Area (User Defined)	1.78 acres
Computational Time Increment	0.042 hours
Time to Peak (Computed)	12.254 hours
Flow (Peak, Computed)	1.67 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	1.66 ft ³ /s
Drainage Area	
SCS CN (Composite)	74.0
Area (User Defined)	1.78 acres
Maximum Retention (Pervious)	3.51 in
Maximum Retention (Pervious, 20 percent)	0.70 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.13 in
Runoff Volume (Pervious)	0.168 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.167 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.318 hours
Computational Time Increment	0.042 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.34 ft ³ /s
Unit peak time, Tp	0.212 hours
Unit receding limb, Tr	0.848 hours
Total unit time, Tb	1.060 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1B PER

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.318 hours
Area (User Defined)	1.78 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
10.750	0.00	0.01	0.03	0.07	0.16
12.000	0.50	1.66	0.99	0.57	0.39
13.250	0.29	0.24	0.19	0.17	0.16
14.500	0.14	0.13	0.12	0.11	0.10
15.750	0.10	0.09	0.09	0.09	0.08
17.000	0.08	0.08	0.07	0.07	0.07
18.250	0.06	0.06	0.06	0.06	0.06
19.500	0.06	0.06	0.06	0.06	0.05
20.750	0.05	0.05	0.05	0.05	0.05
22.000	0.05	0.05	0.05	0.05	0.05
23.250	0.04	0.04	0.04	0.04	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1B PER

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.318 hours
Area (User Defined)	1.87 acres
Computational Time Increment	0.042 hours
Time to Peak (Computed)	12.254 hours
Flow (Peak, Computed)	1.75 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	1.75 ft ³ /s
Drainage Area	
SCS CN (Composite)	74.0
Area (User Defined)	1.87 acres
Maximum Retention (Pervious)	3.51 in
Maximum Retention (Pervious, 20 percent)	0.70 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.13 in
Runoff Volume (Pervious)	0.176 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.176 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.318 hours
Computational Time Increment	0.042 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.66 ft ³ /s
Unit peak time, Tp	0.212 hours
Unit receding limb, Tr	0.848 hours
Total unit time, Tb	1.060 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1B PER

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.318 hours
Area (User Defined)	1.87 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
10.750	0.00	0.01	0.03	0.07	0.17
12.000	0.53	1.75	1.04	0.59	0.41
13.250	0.31	0.25	0.20	0.18	0.17
14.500	0.15	0.14	0.13	0.11	0.11
15.750	0.10	0.10	0.10	0.09	0.09
17.000	0.08	0.08	0.08	0.07	0.07
18.250	0.07	0.06	0.06	0.06	0.06
19.500	0.06	0.06	0.06	0.06	0.06
20.750	0.06	0.06	0.05	0.05	0.05
22.000	0.05	0.05	0.05	0.05	0.05
23.250	0.05	0.05	0.05	0.05	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1B PER

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.318 hours
Area (User Defined)	1.78 acres
Computational Time Increment	0.042 hours
Time to Peak (Computed)	12.254 hours
Flow (Peak, Computed)	3.63 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	3.62 ft ³ /s
Drainage Area	
SCS CN (Composite)	74.0
Area (User Defined)	1.78 acres
Maximum Retention (Pervious)	3.51 in
Maximum Retention (Pervious, 20 percent)	0.70 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.37 in
Runoff Volume (Pervious)	0.352 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.351 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.318 hours
Computational Time Increment	0.042 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.34 ft ³ /s
Unit peak time, Tp	0.212 hours
Unit receding limb, Tr	0.848 hours
Total unit time, Tb	1.060 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1B PER

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.318 hours
Area (User Defined)	1.78 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
9.000	0.00	0.00	0.01	0.02	0.03
10.250	0.04	0.06	0.08	0.12	0.18
11.500	0.28	0.53	1.32	3.62	2.02
12.750	1.11	0.74	0.56	0.45	0.36
14.000	0.32	0.29	0.27	0.24	0.22
15.250	0.20	0.19	0.18	0.17	0.17
16.500	0.16	0.15	0.15	0.14	0.13
17.750	0.13	0.12	0.11	0.11	0.11
19.000	0.11	0.11	0.10	0.10	0.10
20.250	0.10	0.10	0.10	0.09	0.09
21.500	0.09	0.09	0.09	0.09	0.08
22.750	0.08	0.08	0.08	0.08	0.08
24.000	0.08	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1B PER

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.318 hours
Area (User Defined)	1.87 acres
Computational Time Increment	0.042 hours
Time to Peak (Computed)	12.254 hours
Flow (Peak, Computed)	3.81 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	3.81 ft ³ /s
Drainage Area	
SCS CN (Composite)	74.0
Area (User Defined)	1.87 acres
Maximum Retention (Pervious)	3.51 in
Maximum Retention (Pervious, 20 percent)	0.70 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.37 in
Runoff Volume (Pervious)	0.370 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.369 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.318 hours
Computational Time Increment	0.042 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.66 ft ³ /s
Unit peak time, Tp	0.212 hours
Unit receding limb, Tr	0.848 hours
Total unit time, Tb	1.060 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1B PER

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.318 hours
Area (User Defined)	1.87 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
9.000	0.00	0.00	0.01	0.02	0.03
10.250	0.05	0.06	0.09	0.13	0.19
11.500	0.30	0.56	1.39	3.81	2.12
12.750	1.16	0.78	0.59	0.47	0.38
14.000	0.33	0.31	0.28	0.26	0.23
15.250	0.21	0.20	0.19	0.18	0.18
16.500	0.17	0.16	0.15	0.15	0.14
17.750	0.13	0.13	0.12	0.12	0.12
19.000	0.11	0.11	0.11	0.11	0.11
20.250	0.10	0.10	0.10	0.10	0.10
21.500	0.10	0.09	0.09	0.09	0.09
22.750	0.09	0.09	0.08	0.08	0.08
24.000	0.08	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1B PER

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.318 hours
Area (User Defined)	1.78 acres
Computational Time Increment	0.042 hours
Time to Peak (Computed)	12.254 hours
Flow (Peak, Computed)	7.80 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	7.80 ft ³ /s
Drainage Area	
SCS CN (Composite)	74.0
Area (User Defined)	1.78 acres
Maximum Retention (Pervious)	3.51 in
Maximum Retention (Pervious, 20 percent)	0.70 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.11 in
Runoff Volume (Pervious)	0.759 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.758 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.318 hours
Computational Time Increment	0.042 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.34 ft ³ /s
Unit peak time, Tp	0.212 hours
Unit receding limb, Tr	0.848 hours
Total unit time, Tb	1.060 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1B PER

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.318 hours
Area (User Defined)	1.78 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
6.500	0.00	0.00	0.01	0.02	0.02
7.750	0.03	0.04	0.05	0.06	0.07
9.000	0.08	0.10	0.12	0.15	0.18
10.250	0.22	0.25	0.32	0.43	0.59
11.500	0.83	1.43	3.19	7.80	4.14
12.750	2.21	1.46	1.08	0.86	0.69
14.000	0.61	0.56	0.51	0.46	0.42
15.250	0.37	0.35	0.34	0.33	0.31
16.500	0.30	0.29	0.28	0.26	0.25
17.750	0.24	0.23	0.21	0.21	0.20
19.000	0.20	0.20	0.20	0.19	0.19
20.250	0.19	0.18	0.18	0.18	0.17
21.500	0.17	0.17	0.16	0.16	0.16
22.750	0.15	0.15	0.15	0.14	0.14
24.000	0.14	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-1B PER

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.318 hours
Area (User Defined)	1.87 acres
Computational Time Increment	0.042 hours
Time to Peak (Computed)	12.254 hours
Flow (Peak, Computed)	8.20 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	8.19 ft ³ /s
Drainage Area	
SCS CN (Composite)	74.0
Area (User Defined)	1.87 acres
Maximum Retention (Pervious)	3.51 in
Maximum Retention (Pervious, 20 percent)	0.70 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.11 in
Runoff Volume (Pervious)	0.797 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.796 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.318 hours
Computational Time Increment	0.042 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	6.66 ft ³ /s
Unit peak time, Tp	0.212 hours
Unit receding limb, Tr	0.848 hours
Total unit time, Tb	1.060 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-1B PER

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.318 hours
Area (User Defined)	1.87 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
6.500	0.00	0.00	0.01	0.02	0.02
7.750	0.03	0.04	0.05	0.06	0.08
9.000	0.09	0.10	0.13	0.16	0.19
10.250	0.23	0.27	0.33	0.45	0.62
11.500	0.87	1.50	3.35	8.19	4.35
12.750	2.32	1.53	1.14	0.90	0.73
14.000	0.64	0.59	0.54	0.49	0.44
15.250	0.39	0.37	0.36	0.34	0.33
16.500	0.32	0.30	0.29	0.28	0.26
17.750	0.25	0.24	0.22	0.22	0.21
19.000	0.21	0.21	0.21	0.20	0.20
20.250	0.20	0.19	0.19	0.19	0.18
21.500	0.18	0.18	0.17	0.17	0.17
22.750	0.16	0.16	0.16	0.15	0.15
24.000	0.15	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-2 IMP

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.237 hours
Area (User Defined)	3.83 acres
Computational Time Increment	0.032 hours
Time to Peak (Computed)	1.169 hours
Flow (Peak, Computed)	8.73 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	1.250 hours
Flow (Peak Interpolated Output)	7.08 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	3.83 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.03 in
Runoff Volume (Pervious)	0.330 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.320 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.237 hours
Computational Time Increment	0.032 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	18.31 ft ³ /s
Unit peak time, Tp	0.158 hours
Unit receding limb, Tr	0.632 hours
Total unit time, Tb	0.790 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-2 IMP

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.237 hours
Area (User Defined)	3.83 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.250	0.00	0.13	0.72	3.50	7.08
1.500	2.15	1.25	0.55	0.10	0.01
2.750	0.00	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-2 IMP

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.237 hours
Area (User Defined)	3.84 acres
Computational Time Increment	0.032 hours
Time to Peak (Computed)	12.198 hours
Flow (Peak, Computed)	10.36 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	9.19 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	3.84 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.11 in
Runoff Volume (Pervious)	0.994 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.989 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.237 hours
Computational Time Increment	0.032 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	18.36 ft ³ /s
Unit peak time, Tp	0.158 hours
Unit receding limb, Tr	0.632 hours
Total unit time, Tb	0.790 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-2 IMP

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.237 hours
Area (User Defined)	3.84 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
1.250	0.00	0.01	0.02	0.03	0.04
2.500	0.06	0.06	0.07	0.08	0.09
3.750	0.10	0.11	0.11	0.12	0.13
5.000	0.13	0.14	0.15	0.15	0.16
6.250	0.17	0.18	0.19	0.21	0.22
7.500	0.23	0.25	0.26	0.28	0.29
8.750	0.30	0.32	0.35	0.39	0.44
10.000	0.49	0.54	0.59	0.70	0.88
11.250	1.14	1.47	2.43	5.17	9.19
12.500	3.61	1.91	1.36	1.03	0.83
13.750	0.67	0.60	0.55	0.50	0.45
15.000	0.41	0.37	0.35	0.33	0.32
16.250	0.31	0.30	0.28	0.27	0.26
17.500	0.25	0.23	0.22	0.21	0.20
18.750	0.20	0.20	0.19	0.19	0.19
20.000	0.19	0.18	0.18	0.18	0.17
21.250	0.17	0.17	0.16	0.16	0.16
22.500	0.15	0.15	0.15	0.14	0.14
23.750	0.14	0.14	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-2 IMP

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.237 hours
Area (User Defined)	3.83 acres
Computational Time Increment	0.032 hours
Time to Peak (Computed)	12.198 hours
Flow (Peak, Computed)	10.33 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	9.16 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	3.83 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.11 in
Runoff Volume (Pervious)	0.992 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.986 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.237 hours
Computational Time Increment	0.032 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	18.31 ft ³ /s
Unit peak time, Tp	0.158 hours
Unit receding limb, Tr	0.632 hours
Total unit time, Tb	0.790 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-2 IMP

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.237 hours
Area (User Defined)	3.83 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
1.250	0.00	0.01	0.02	0.03	0.04
2.500	0.06	0.06	0.07	0.08	0.09
3.750	0.10	0.11	0.11	0.12	0.13
5.000	0.13	0.14	0.15	0.15	0.16
6.250	0.17	0.18	0.19	0.21	0.22
7.500	0.23	0.25	0.26	0.28	0.29
8.750	0.30	0.32	0.35	0.39	0.44
10.000	0.49	0.54	0.59	0.70	0.87
11.250	1.13	1.46	2.42	5.15	9.16
12.500	3.60	1.90	1.36	1.03	0.83
13.750	0.66	0.60	0.55	0.50	0.45
15.000	0.41	0.36	0.35	0.33	0.32
16.250	0.31	0.30	0.28	0.27	0.26
17.500	0.24	0.23	0.22	0.21	0.20
18.750	0.20	0.20	0.19	0.19	0.19
20.000	0.18	0.18	0.18	0.18	0.17
21.250	0.17	0.17	0.16	0.16	0.16
22.500	0.15	0.15	0.15	0.14	0.14
23.750	0.14	0.14	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-2 IMP

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.237 hours
Area (User Defined)	3.84 acres
Computational Time Increment	0.032 hours
Time to Peak (Computed)	12.198 hours
Flow (Peak, Computed)	15.64 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	13.86 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	3.84 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.77 in
Runoff Volume (Pervious)	1.527 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.519 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.237 hours
Computational Time Increment	0.032 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	18.36 ft ³ /s
Unit peak time, Tp	0.158 hours
Unit receding limb, Tr	0.632 hours
Total unit time, Tb	0.790 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-2 IMP

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.237 hours
Area (User Defined)	3.84 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.750	0.00	0.01	0.03	0.06	0.08
2.000	0.09	0.11	0.13	0.14	0.15
3.250	0.17	0.18	0.19	0.20	0.21
4.500	0.22	0.23	0.23	0.24	0.25
5.750	0.26	0.27	0.28	0.30	0.32
7.000	0.34	0.36	0.38	0.40	0.42
8.250	0.44	0.46	0.48	0.50	0.55
9.500	0.62	0.69	0.76	0.84	0.91
10.750	1.08	1.35	1.75	2.24	3.70
12.000	7.83	13.86	5.43	2.87	2.05
13.250	1.55	1.24	1.00	0.90	0.83
14.500	0.76	0.68	0.61	0.55	0.52
15.750	0.50	0.48	0.47	0.45	0.43
17.000	0.41	0.39	0.37	0.35	0.33
18.250	0.31	0.31	0.30	0.30	0.29
19.500	0.29	0.28	0.28	0.27	0.27
20.750	0.26	0.26	0.25	0.25	0.24
22.000	0.24	0.23	0.23	0.23	0.22
23.250	0.22	0.21	0.21	0.21	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-2 IMP

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.237 hours
Area (User Defined)	3.83 acres
Computational Time Increment	0.032 hours
Time to Peak (Computed)	12.198 hours
Flow (Peak, Computed)	15.60 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	13.82 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	3.83 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.77 in
Runoff Volume (Pervious)	1.523 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.515 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.237 hours
Computational Time Increment	0.032 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	18.31 ft ³ /s
Unit peak time, Tp	0.158 hours
Unit receding limb, Tr	0.632 hours
Total unit time, Tb	0.790 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-2 IMP

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.237 hours
Area (User Defined)	3.83 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.750	0.00	0.01	0.03	0.06	0.08
2.000	0.09	0.11	0.13	0.14	0.15
3.250	0.17	0.18	0.19	0.20	0.21
4.500	0.22	0.23	0.23	0.24	0.25
5.750	0.26	0.27	0.28	0.30	0.32
7.000	0.34	0.36	0.38	0.40	0.42
8.250	0.44	0.46	0.48	0.50	0.55
9.500	0.62	0.69	0.76	0.83	0.91
10.750	1.08	1.35	1.74	2.24	3.69
12.000	7.81	13.82	5.42	2.86	2.04
13.250	1.55	1.24	1.00	0.90	0.83
14.500	0.75	0.68	0.61	0.55	0.52
15.750	0.50	0.48	0.46	0.44	0.43
17.000	0.41	0.39	0.37	0.35	0.33
18.250	0.31	0.31	0.30	0.30	0.29
19.500	0.29	0.28	0.28	0.27	0.27
20.750	0.26	0.26	0.25	0.25	0.24
22.000	0.24	0.23	0.23	0.22	0.22
23.250	0.21	0.21	0.21	0.21	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-2 IMP

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.237 hours
Area (User Defined)	3.84 acres
Computational Time Increment	0.032 hours
Time to Peak (Computed)	12.198 hours
Flow (Peak, Computed)	25.72 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	22.79 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	3.84 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.97 in
Runoff Volume (Pervious)	2.550 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	2.537 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.237 hours
Computational Time Increment	0.032 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	18.36 ft ³ /s
Unit peak time, Tp	0.158 hours
Unit receding limb, Tr	0.632 hours
Total unit time, Tb	0.790 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-2 IMP

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.237 hours
Area (User Defined)	3.84 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.500	0.00	0.03	0.09	0.13	0.17
1.750	0.21	0.24	0.26	0.28	0.30
3.000	0.32	0.34	0.35	0.37	0.38
4.250	0.39	0.41	0.42	0.43	0.44
5.500	0.45	0.46	0.47	0.49	0.53
6.750	0.56	0.59	0.62	0.66	0.69
8.000	0.72	0.75	0.79	0.82	0.85
9.250	0.93	1.04	1.16	1.28	1.40
10.500	1.52	1.81	2.24	2.90	3.72
11.750	6.11	12.91	22.79	8.92	4.71
13.000	3.36	2.55	2.04	1.64	1.48
14.250	1.36	1.24	1.12	1.00	0.90
15.500	0.86	0.83	0.79	0.76	0.73
16.750	0.70	0.67	0.64	0.60	0.57
18.000	0.54	0.51	0.50	0.50	0.49
19.250	0.48	0.47	0.46	0.46	0.45
20.500	0.44	0.43	0.42	0.42	0.41
21.750	0.40	0.39	0.39	0.38	0.37
23.000	0.36	0.35	0.35	0.34	0.34

Subsection: Unit Hydrograph Summary

Label: DA-2 IMP

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.237 hours
Area (User Defined)	3.83 acres
Computational Time Increment	0.032 hours
Time to Peak (Computed)	12.198 hours
Flow (Peak, Computed)	25.66 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	22.73 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	3.83 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.97 in
Runoff Volume (Pervious)	2.544 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	2.531 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.237 hours
Computational Time Increment	0.032 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	18.31 ft ³ /s
Unit peak time, Tp	0.158 hours
Unit receding limb, Tr	0.632 hours
Total unit time, Tb	0.790 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-2 IMP

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.237 hours
Area (User Defined)	3.83 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.500	0.00	0.03	0.09	0.13	0.17
1.750	0.21	0.23	0.26	0.28	0.30
3.000	0.32	0.34	0.35	0.37	0.38
4.250	0.39	0.41	0.42	0.43	0.44
5.500	0.45	0.46	0.47	0.49	0.52
6.750	0.56	0.59	0.62	0.65	0.69
8.000	0.72	0.75	0.78	0.82	0.85
9.250	0.92	1.04	1.16	1.28	1.40
10.500	1.52	1.80	2.24	2.89	3.71
11.750	6.09	12.88	22.73	8.90	4.70
13.000	3.35	2.54	2.04	1.64	1.48
14.250	1.36	1.24	1.12	1.00	0.90
15.500	0.86	0.82	0.79	0.76	0.73
16.750	0.70	0.67	0.64	0.60	0.57
18.000	0.54	0.51	0.50	0.49	0.49
19.250	0.48	0.47	0.46	0.46	0.45
20.500	0.44	0.43	0.42	0.41	0.41
21.750	0.40	0.39	0.38	0.38	0.37
23.000	0.36	0.35	0.34	0.34	0.34

Subsection: Unit Hydrograph Summary

Label: DA-2 PER

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.296 hours
Area (User Defined)	5.10 acres
Computational Time Increment	0.039 hours
Time to Peak (Computed)	1.342 hours
Flow (Peak, Computed)	0.54 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	1.500 hours
Flow (Peak Interpolated Output)	0.46 ft ³ /s
Drainage Area	
SCS CN (Composite)	74.0
Area (User Defined)	5.10 acres
Maximum Retention (Pervious)	3.51 in
Maximum Retention (Pervious, 20 percent)	0.70 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.07 in
Runoff Volume (Pervious)	0.031 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.032 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.296 hours
Computational Time Increment	0.039 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	19.52 ft ³ /s
Unit peak time, Tp	0.197 hours
Unit receding limb, Tr	0.789 hours
Total unit time, Tb	0.987 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-2 PER

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.296 hours
Area (User Defined)	5.10 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
1.000	0.00	0.42	0.46	0.38	0.22
2.250	0.06	0.01	0.00	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-2 PER

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.296 hours
Area (User Defined)	5.39 acres
Computational Time Increment	0.039 hours
Time to Peak (Computed)	12.235 hours
Flow (Peak, Computed)	5.22 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	5.19 ft ³ /s
Drainage Area	
SCS CN (Composite)	74.0
Area (User Defined)	5.39 acres
Maximum Retention (Pervious)	3.51 in
Maximum Retention (Pervious, 20 percent)	0.70 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.13 in
Runoff Volume (Pervious)	0.508 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.507 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.296 hours
Computational Time Increment	0.039 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	20.63 ft ³ /s
Unit peak time, Tp	0.197 hours
Unit receding limb, Tr	0.789 hours
Total unit time, Tb	0.987 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-2 PER

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.296 hours
Area (User Defined)	5.39 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
10.500	0.00	0.00	0.03	0.10	0.21
11.750	0.52	1.63	5.19	2.87	1.63
13.000	1.14	0.87	0.71	0.57	0.51
14.250	0.47	0.44	0.40	0.36	0.32
15.500	0.31	0.30	0.29	0.28	0.26
16.750	0.25	0.24	0.23	0.22	0.21
18.000	0.20	0.19	0.19	0.18	0.18
19.250	0.18	0.18	0.17	0.17	0.17
20.500	0.17	0.16	0.16	0.16	0.16
21.750	0.15	0.15	0.15	0.14	0.14
23.000	0.14	0.14	0.13	0.13	0.13

Subsection: Unit Hydrograph Summary

Label: DA-2 PER

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.296 hours
Area (User Defined)	5.10 acres
Computational Time Increment	0.039 hours
Time to Peak (Computed)	12.235 hours
Flow (Peak, Computed)	4.94 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	4.91 ft ³ /s
Drainage Area	
SCS CN (Composite)	74.0
Area (User Defined)	5.10 acres
Maximum Retention (Pervious)	3.51 in
Maximum Retention (Pervious, 20 percent)	0.70 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.13 in
Runoff Volume (Pervious)	0.481 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.479 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.296 hours
Computational Time Increment	0.039 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	19.52 ft ³ /s
Unit peak time, Tp	0.197 hours
Unit receding limb, Tr	0.789 hours
Total unit time, Tb	0.987 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-2 PER

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.296 hours
Area (User Defined)	5.10 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
10.500	0.00	0.00	0.03	0.09	0.20
11.750	0.49	1.55	4.91	2.72	1.54
13.000	1.08	0.83	0.67	0.54	0.48
14.250	0.45	0.41	0.38	0.34	0.31
15.500	0.29	0.28	0.27	0.26	0.25
16.750	0.24	0.23	0.22	0.21	0.20
18.000	0.19	0.18	0.18	0.17	0.17
19.250	0.17	0.17	0.16	0.16	0.16
20.500	0.16	0.15	0.15	0.15	0.15
21.750	0.14	0.14	0.14	0.14	0.13
23.000	0.13	0.13	0.13	0.12	0.12

Subsection: Unit Hydrograph Summary

Label: DA-2 PER

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.296 hours
Area (User Defined)	5.39 acres
Computational Time Increment	0.039 hours
Time to Peak (Computed)	12.235 hours
Flow (Peak, Computed)	11.38 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	11.23 ft ³ /s
Drainage Area	
SCS CN (Composite)	74.0
Area (User Defined)	5.39 acres
Maximum Retention (Pervious)	3.51 in
Maximum Retention (Pervious, 20 percent)	0.70 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.37 in
Runoff Volume (Pervious)	1.066 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.063 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.296 hours
Computational Time Increment	0.039 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	20.63 ft ³ /s
Unit peak time, Tp	0.197 hours
Unit receding limb, Tr	0.789 hours
Total unit time, Tb	0.987 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-2 PER

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.296 hours
Area (User Defined)	5.39 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
8.750	0.00	0.00	0.01	0.04	0.06
10.000	0.10	0.13	0.18	0.25	0.38
11.250	0.57	0.88	1.68	4.24	11.23
12.500	5.82	3.19	2.18	1.66	1.33
13.750	1.07	0.96	0.88	0.81	0.73
15.000	0.66	0.59	0.56	0.54	0.52
16.250	0.50	0.48	0.46	0.44	0.42
17.500	0.40	0.38	0.36	0.35	0.34
18.750	0.33	0.33	0.32	0.32	0.31
20.000	0.31	0.30	0.30	0.29	0.29
21.250	0.28	0.28	0.27	0.27	0.26
22.500	0.26	0.25	0.25	0.24	0.24
23.750	0.23	0.23	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-2 PER

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.296 hours
Area (User Defined)	5.10 acres
Computational Time Increment	0.039 hours
Time to Peak (Computed)	12.235 hours
Flow (Peak, Computed)	10.77 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	10.63 ft ³ /s
Drainage Area	
SCS CN (Composite)	74.0
Area (User Defined)	5.10 acres
Maximum Retention (Pervious)	3.51 in
Maximum Retention (Pervious, 20 percent)	0.70 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.37 in
Runoff Volume (Pervious)	1.008 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.006 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.296 hours
Computational Time Increment	0.039 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	19.52 ft ³ /s
Unit peak time, Tp	0.197 hours
Unit receding limb, Tr	0.789 hours
Total unit time, Tb	0.987 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-2 PER

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.296 hours
Area (User Defined)	5.10 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
8.750	0.00	0.00	0.01	0.03	0.06
10.000	0.09	0.13	0.17	0.24	0.36
11.250	0.54	0.83	1.59	4.01	10.63
12.500	5.51	3.02	2.06	1.57	1.26
13.750	1.02	0.90	0.83	0.76	0.70
15.000	0.63	0.56	0.53	0.51	0.49
16.250	0.48	0.46	0.44	0.42	0.40
17.500	0.38	0.36	0.34	0.33	0.32
18.750	0.31	0.31	0.30	0.30	0.30
20.000	0.29	0.29	0.28	0.28	0.27
21.250	0.27	0.26	0.26	0.25	0.25
22.500	0.24	0.24	0.23	0.23	0.22
23.750	0.22	0.22	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-2 PER

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.296 hours
Area (User Defined)	5.39 acres
Computational Time Increment	0.039 hours
Time to Peak (Computed)	12.235 hours
Flow (Peak, Computed)	24.47 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	24.07 ft ³ /s
Drainage Area	
SCS CN (Composite)	74.0
Area (User Defined)	5.39 acres
Maximum Retention (Pervious)	3.51 in
Maximum Retention (Pervious, 20 percent)	0.70 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.11 in
Runoff Volume (Pervious)	2.297 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	2.293 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.296 hours
Computational Time Increment	0.039 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	20.63 ft ³ /s
Unit peak time, Tp	0.197 hours
Unit receding limb, Tr	0.789 hours
Total unit time, Tb	0.987 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-2 PER

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.296 hours
Area (User Defined)	5.39 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
6.500	0.00	0.01	0.03	0.05	0.07
7.750	0.10	0.13	0.16	0.19	0.22
9.000	0.26	0.31	0.38	0.46	0.56
10.250	0.66	0.78	0.98	1.31	1.82
11.500	2.57	4.49	10.18	24.07	11.89
12.750	6.33	4.26	3.21	2.56	2.06
14.000	1.83	1.68	1.54	1.40	1.25
15.250	1.12	1.06	1.02	0.98	0.95
16.500	0.91	0.87	0.83	0.80	0.76
17.750	0.72	0.68	0.65	0.63	0.62
19.000	0.61	0.60	0.59	0.58	0.57
20.250	0.56	0.55	0.54	0.53	0.52
21.500	0.51	0.50	0.50	0.49	0.48
22.750	0.47	0.46	0.45	0.44	0.43
24.000	0.43	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-2 PER

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.296 hours
Area (User Defined)	5.10 acres
Computational Time Increment	0.039 hours
Time to Peak (Computed)	12.235 hours
Flow (Peak, Computed)	23.16 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	22.77 ft ³ /s
Drainage Area	
SCS CN (Composite)	74.0
Area (User Defined)	5.10 acres
Maximum Retention (Pervious)	3.51 in
Maximum Retention (Pervious, 20 percent)	0.70 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.11 in
Runoff Volume (Pervious)	2.173 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	2.170 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.296 hours
Computational Time Increment	0.039 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	19.52 ft ³ /s
Unit peak time, Tp	0.197 hours
Unit receding limb, Tr	0.789 hours
Total unit time, Tb	0.987 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-2 PER

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.296 hours
Area (User Defined)	5.10 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
6.500	0.00	0.01	0.03	0.05	0.07
7.750	0.09	0.12	0.15	0.18	0.21
9.000	0.24	0.29	0.36	0.44	0.53
10.250	0.63	0.74	0.93	1.24	1.72
11.500	2.43	4.25	9.64	22.77	11.25
12.750	5.99	4.03	3.04	2.43	1.95
14.000	1.73	1.59	1.46	1.32	1.19
15.250	1.06	1.01	0.97	0.93	0.90
16.500	0.86	0.83	0.79	0.75	0.72
17.750	0.68	0.64	0.61	0.60	0.59
19.000	0.58	0.57	0.56	0.55	0.54
20.250	0.53	0.52	0.51	0.50	0.50
21.500	0.49	0.48	0.47	0.46	0.45
22.750	0.44	0.43	0.42	0.41	0.40
24.000	0.41	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-3 IMP

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.355 hours
Area (User Defined)	1.44 acres
Computational Time Increment	0.047 hours
Time to Peak (Computed)	1.231 hours
Flow (Peak, Computed)	2.68 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	1.250 hours
Flow (Peak Interpolated Output)	2.64 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	1.44 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.03 in
Runoff Volume (Pervious)	0.124 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.124 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.355 hours
Computational Time Increment	0.047 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.60 ft ³ /s
Unit peak time, Tp	0.237 hours
Unit receding limb, Tr	0.947 hours
Total unit time, Tb	1.183 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-3 IMP

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.355 hours
Area (User Defined)	1.44 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.250	0.00	0.02	0.19	0.82	2.64
1.500	1.25	0.62	0.32	0.10	0.02
2.750	0.00	0.00	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-3 IMP

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.355 hours
Area (User Defined)	1.57 acres
Computational Time Increment	0.047 hours
Time to Peak (Computed)	12.259 hours
Flow (Peak, Computed)	3.57 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	3.56 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	1.57 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.11 in
Runoff Volume (Pervious)	0.406 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.406 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.355 hours
Computational Time Increment	0.047 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.01 ft ³ /s
Unit peak time, Tp	0.237 hours
Unit receding limb, Tr	0.947 hours
Total unit time, Tb	1.183 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-3 IMP

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.355 hours
Area (User Defined)	1.57 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
1.250	0.00	0.00	0.01	0.01	0.02
2.500	0.02	0.03	0.03	0.03	0.04
3.750	0.04	0.04	0.05	0.05	0.05
5.000	0.05	0.06	0.06	0.06	0.06
6.250	0.07	0.07	0.08	0.08	0.09
7.500	0.09	0.10	0.10	0.11	0.12
8.750	0.12	0.13	0.14	0.15	0.17
10.000	0.19	0.21	0.23	0.27	0.33
11.250	0.42	0.55	0.84	1.64	3.56
12.500	2.03	1.05	0.66	0.47	0.37
13.750	0.30	0.26	0.23	0.21	0.19
15.000	0.17	0.16	0.15	0.14	0.13
16.250	0.13	0.12	0.12	0.11	0.11
17.500	0.10	0.10	0.09	0.09	0.08
18.750	0.08	0.08	0.08	0.08	0.08
20.000	0.08	0.07	0.07	0.07	0.07
21.250	0.07	0.07	0.07	0.07	0.06
22.500	0.06	0.06	0.06	0.06	0.06
23.750	0.06	0.06	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-3 IMP

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.355 hours
Area (User Defined)	1.44 acres
Computational Time Increment	0.047 hours
Time to Peak (Computed)	12.259 hours
Flow (Peak, Computed)	3.28 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	3.26 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	1.44 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.11 in
Runoff Volume (Pervious)	0.373 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.372 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.355 hours
Computational Time Increment	0.047 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.60 ft ³ /s
Unit peak time, Tp	0.237 hours
Unit receding limb, Tr	0.947 hours
Total unit time, Tb	1.183 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-3 IMP

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.355 hours
Area (User Defined)	1.44 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
1.250	0.00	0.00	0.01	0.01	0.02
2.500	0.02	0.02	0.03	0.03	0.03
3.750	0.04	0.04	0.04	0.04	0.05
5.000	0.05	0.05	0.05	0.06	0.06
6.250	0.06	0.07	0.07	0.08	0.08
7.500	0.09	0.09	0.10	0.10	0.11
8.750	0.11	0.12	0.13	0.14	0.16
10.000	0.18	0.20	0.21	0.25	0.31
11.250	0.39	0.51	0.77	1.50	3.26
12.500	1.86	0.96	0.60	0.44	0.34
13.750	0.27	0.24	0.21	0.20	0.18
15.000	0.16	0.14	0.13	0.13	0.12
16.250	0.12	0.11	0.11	0.10	0.10
17.500	0.09	0.09	0.08	0.08	0.08
18.750	0.08	0.07	0.07	0.07	0.07
20.000	0.07	0.07	0.07	0.07	0.06
21.250	0.06	0.06	0.06	0.06	0.06
22.500	0.06	0.06	0.06	0.05	0.05
23.750	0.05	0.05	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-3 IMP

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.355 hours
Area (User Defined)	1.57 acres
Computational Time Increment	0.047 hours
Time to Peak (Computed)	12.259 hours
Flow (Peak, Computed)	5.40 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	5.38 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	1.57 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.77 in
Runoff Volume (Pervious)	0.624 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.623 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.355 hours
Computational Time Increment	0.047 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.01 ft ³ /s
Unit peak time, Tp	0.237 hours
Unit receding limb, Tr	0.947 hours
Total unit time, Tb	1.183 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-3 IMP

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.355 hours
Area (User Defined)	1.57 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.750	0.00	0.00	0.01	0.02	0.03
2.000	0.04	0.04	0.05	0.06	0.06
3.250	0.07	0.07	0.08	0.08	0.08
4.500	0.09	0.09	0.09	0.10	0.10
5.750	0.10	0.11	0.11	0.12	0.13
7.000	0.14	0.14	0.15	0.16	0.17
8.250	0.18	0.19	0.19	0.20	0.22
9.500	0.24	0.27	0.30	0.33	0.36
10.750	0.41	0.51	0.65	0.84	1.28
12.000	2.49	5.38	3.05	1.58	0.99
13.250	0.71	0.56	0.45	0.39	0.35
14.500	0.32	0.29	0.26	0.23	0.22
15.750	0.21	0.20	0.19	0.19	0.18
17.000	0.17	0.16	0.15	0.15	0.14
18.250	0.13	0.13	0.12	0.12	0.12
19.500	0.12	0.12	0.11	0.11	0.11
20.750	0.11	0.11	0.10	0.10	0.10
22.000	0.10	0.10	0.09	0.09	0.09
23.250	0.09	0.09	0.08	0.08	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-3 IMP

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.355 hours
Area (User Defined)	1.44 acres
Computational Time Increment	0.047 hours
Time to Peak (Computed)	12.259 hours
Flow (Peak, Computed)	4.95 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	4.93 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	1.44 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.77 in
Runoff Volume (Pervious)	0.573 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.572 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.355 hours
Computational Time Increment	0.047 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.60 ft ³ /s
Unit peak time, Tp	0.237 hours
Unit receding limb, Tr	0.947 hours
Total unit time, Tb	1.183 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-3 IMP

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.355 hours
Area (User Defined)	1.44 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.750	0.00	0.00	0.01	0.02	0.03
2.000	0.03	0.04	0.05	0.05	0.06
3.250	0.06	0.07	0.07	0.07	0.08
4.500	0.08	0.08	0.09	0.09	0.09
5.750	0.10	0.10	0.10	0.11	0.12
7.000	0.12	0.13	0.14	0.15	0.16
8.250	0.16	0.17	0.18	0.19	0.20
9.500	0.22	0.25	0.28	0.30	0.33
10.750	0.38	0.47	0.60	0.77	1.18
12.000	2.28	4.93	2.80	1.45	0.91
13.250	0.65	0.51	0.41	0.35	0.32
14.500	0.29	0.27	0.24	0.21	0.20
15.750	0.19	0.18	0.18	0.17	0.16
17.000	0.16	0.15	0.14	0.13	0.13
18.250	0.12	0.12	0.11	0.11	0.11
19.500	0.11	0.11	0.11	0.10	0.10
20.750	0.10	0.10	0.10	0.09	0.09
22.000	0.09	0.09	0.09	0.09	0.08
23.250	0.08	0.08	0.08	0.08	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-3 IMP

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.355 hours
Area (User Defined)	1.57 acres
Computational Time Increment	0.047 hours
Time to Peak (Computed)	12.259 hours
Flow (Peak, Computed)	8.88 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	8.84 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	1.57 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.97 in
Runoff Volume (Pervious)	1.043 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.041 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.355 hours
Computational Time Increment	0.047 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.01 ft ³ /s
Unit peak time, Tp	0.237 hours
Unit receding limb, Tr	0.947 hours
Total unit time, Tb	1.183 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-3 IMP

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.355 hours
Area (User Defined)	1.57 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.500	0.00	0.01	0.03	0.05	0.06
1.750	0.08	0.09	0.10	0.11	0.12
3.000	0.13	0.14	0.14	0.15	0.15
4.250	0.16	0.16	0.17	0.17	0.18
5.500	0.18	0.19	0.19	0.20	0.21
6.750	0.22	0.24	0.25	0.26	0.28
8.000	0.29	0.30	0.32	0.33	0.34
9.250	0.37	0.41	0.46	0.51	0.55
10.500	0.60	0.69	0.85	1.08	1.40
11.750	2.12	4.10	8.84	5.02	2.60
13.000	1.63	1.17	0.92	0.73	0.63
14.250	0.58	0.53	0.48	0.43	0.38
15.500	0.36	0.34	0.33	0.32	0.30
16.750	0.29	0.28	0.27	0.25	0.24
18.000	0.23	0.21	0.21	0.20	0.20
19.250	0.20	0.19	0.19	0.19	0.18
20.500	0.18	0.18	0.17	0.17	0.17
21.750	0.16	0.16	0.16	0.16	0.15
23.000	0.15	0.15	0.14	0.14	0.14

Subsection: Unit Hydrograph Summary

Label: DA-3 IMP

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.355 hours
Area (User Defined)	1.44 acres
Computational Time Increment	0.047 hours
Time to Peak (Computed)	12.259 hours
Flow (Peak, Computed)	8.15 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	8.11 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	1.44 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.97 in
Runoff Volume (Pervious)	0.956 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.955 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.355 hours
Computational Time Increment	0.047 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.60 ft ³ /s
Unit peak time, Tp	0.237 hours
Unit receding limb, Tr	0.947 hours
Total unit time, Tb	1.183 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-3 IMP

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.355 hours
Area (User Defined)	1.44 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.500	0.00	0.01	0.03	0.04	0.06
1.750	0.07	0.08	0.09	0.10	0.11
3.000	0.12	0.12	0.13	0.14	0.14
4.250	0.15	0.15	0.16	0.16	0.16
5.500	0.17	0.17	0.18	0.18	0.19
6.750	0.21	0.22	0.23	0.24	0.25
8.000	0.27	0.28	0.29	0.30	0.32
9.250	0.34	0.38	0.42	0.46	0.51
10.500	0.55	0.63	0.78	0.99	1.28
11.750	1.95	3.76	8.11	4.60	2.39
13.000	1.49	1.08	0.84	0.67	0.58
14.250	0.53	0.48	0.44	0.39	0.35
15.500	0.33	0.31	0.30	0.29	0.28
16.750	0.27	0.25	0.24	0.23	0.22
18.000	0.21	0.20	0.19	0.19	0.18
19.250	0.18	0.18	0.17	0.17	0.17
20.500	0.17	0.16	0.16	0.16	0.15
21.750	0.15	0.15	0.15	0.14	0.14
23.000	0.14	0.13	0.13	0.13	0.13

Subsection: Unit Hydrograph Summary

Label: DA-3 PER

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.387 hours
Area (User Defined)	3.03 acres
Computational Time Increment	0.052 hours
Time to Peak (Computed)	1.393 hours
Flow (Peak, Computed)	0.36 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	1.500 hours
Flow (Peak Interpolated Output)	0.34 ft ³ /s
Drainage Area	
SCS CN (Composite)	75.2
Area (User Defined)	3.03 acres
Maximum Retention (Pervious)	3.29 in
Maximum Retention (Pervious, 20 percent)	0.66 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.09 in
Runoff Volume (Pervious)	0.023 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.023 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.387 hours
Computational Time Increment	0.052 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.87 ft ³ /s
Unit peak time, Tp	0.258 hours
Unit receding limb, Tr	1.032 hours
Total unit time, Tb	1.290 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-3 PER

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.387 hours
Area (User Defined)	3.03 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
1.000	0.00	0.23	0.34	0.27	0.18
2.250	0.07	0.01	0.00	0.00	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-3 PER

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.387 hours
Area (User Defined)	2.92 acres
Computational Time Increment	0.052 hours
Time to Peak (Computed)	12.281 hours
Flow (Peak, Computed)	2.63 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	2.53 ft ³ /s
Drainage Area	
SCS CN (Composite)	75.1
Area (User Defined)	2.92 acres
Maximum Retention (Pervious)	3.32 in
Maximum Retention (Pervious, 20 percent)	0.66 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.19 in
Runoff Volume (Pervious)	0.291 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.289 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.387 hours
Computational Time Increment	0.052 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.55 ft ³ /s
Unit peak time, Tp	0.258 hours
Unit receding limb, Tr	1.032 hours
Total unit time, Tb	1.290 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-3 PER

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.387 hours
Area (User Defined)	2.92 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
10.500	0.00	0.01	0.03	0.06	0.12
11.750	0.27	0.77	2.53	1.91	1.11
13.000	0.73	0.54	0.43	0.34	0.30
14.250	0.27	0.25	0.23	0.21	0.19
15.500	0.17	0.17	0.16	0.16	0.15
16.750	0.14	0.14	0.13	0.13	0.12
18.000	0.11	0.11	0.10	0.10	0.10
19.250	0.10	0.10	0.10	0.10	0.09
20.500	0.09	0.09	0.09	0.09	0.09
21.750	0.09	0.08	0.08	0.08	0.08
23.000	0.08	0.08	0.07	0.07	0.07

Subsection: Unit Hydrograph Summary

Label: DA-3 PER

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.387 hours
Area (User Defined)	3.03 acres
Computational Time Increment	0.052 hours
Time to Peak (Computed)	12.281 hours
Flow (Peak, Computed)	2.76 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	2.65 ft ³ /s
Drainage Area	
SCS CN (Composite)	75.2
Area (User Defined)	3.03 acres
Maximum Retention (Pervious)	3.29 in
Maximum Retention (Pervious, 20 percent)	0.66 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.20 in
Runoff Volume (Pervious)	0.304 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.302 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.387 hours
Computational Time Increment	0.052 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.87 ft ³ /s
Unit peak time, Tp	0.258 hours
Unit receding limb, Tr	1.032 hours
Total unit time, Tb	1.290 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-3 PER

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.387 hours
Area (User Defined)	3.03 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
10.500	0.00	0.01	0.03	0.07	0.13
11.750	0.28	0.81	2.65	2.00	1.17
13.000	0.76	0.56	0.44	0.36	0.31
14.250	0.28	0.26	0.24	0.22	0.19
15.500	0.18	0.17	0.17	0.16	0.16
16.750	0.15	0.14	0.14	0.13	0.13
18.000	0.12	0.11	0.11	0.11	0.11
19.250	0.10	0.10	0.10	0.10	0.10
20.500	0.10	0.10	0.09	0.09	0.09
21.750	0.09	0.09	0.09	0.08	0.08
23.000	0.08	0.08	0.08	0.08	0.08

Subsection: Unit Hydrograph Summary

Label: DA-3 PER

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.387 hours
Area (User Defined)	2.92 acres
Computational Time Increment	0.052 hours
Time to Peak (Computed)	12.281 hours
Flow (Peak, Computed)	5.64 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	5.47 ft ³ /s
Drainage Area	
SCS CN (Composite)	75.1
Area (User Defined)	2.92 acres
Maximum Retention (Pervious)	3.32 in
Maximum Retention (Pervious, 20 percent)	0.66 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.46 in
Runoff Volume (Pervious)	0.599 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.596 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.387 hours
Computational Time Increment	0.052 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.55 ft ³ /s
Unit peak time, Tp	0.258 hours
Unit receding limb, Tr	1.032 hours
Total unit time, Tb	1.290 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-3 PER

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.387 hours
Area (User Defined)	2.92 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
8.500	0.00	0.00	0.01	0.02	0.03
9.750	0.04	0.06	0.08	0.11	0.15
11.000	0.21	0.31	0.47	0.84	1.97
12.250	5.47	3.88	2.18	1.39	1.01
13.500	0.79	0.64	0.55	0.50	0.46
14.750	0.42	0.38	0.34	0.32	0.30
16.000	0.29	0.28	0.27	0.26	0.25
17.250	0.24	0.23	0.22	0.20	0.19
18.500	0.19	0.18	0.18	0.18	0.18
19.750	0.17	0.17	0.17	0.16	0.16
21.000	0.16	0.16	0.15	0.15	0.15
22.250	0.15	0.14	0.14	0.14	0.13
23.500	0.13	0.13	0.13	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-3 PER

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.387 hours
Area (User Defined)	3.03 acres
Computational Time Increment	0.052 hours
Time to Peak (Computed)	12.281 hours
Flow (Peak, Computed)	5.89 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	5.71 ft ³ /s
Drainage Area	
SCS CN (Composite)	75.2
Area (User Defined)	3.03 acres
Maximum Retention (Pervious)	3.29 in
Maximum Retention (Pervious, 20 percent)	0.66 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.48 in
Runoff Volume (Pervious)	0.626 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.623 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.387 hours
Computational Time Increment	0.052 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.87 ft ³ /s
Unit peak time, Tp	0.258 hours
Unit receding limb, Tr	1.032 hours
Total unit time, Tb	1.290 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-3 PER

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.387 hours
Area (User Defined)	3.03 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
8.500	0.00	0.00	0.01	0.02	0.03
9.750	0.05	0.07	0.09	0.12	0.15
11.000	0.22	0.33	0.49	0.88	2.07
12.250	5.71	4.05	2.27	1.45	1.06
13.500	0.83	0.66	0.57	0.52	0.48
14.750	0.44	0.39	0.35	0.33	0.32
16.000	0.30	0.29	0.28	0.27	0.26
17.250	0.25	0.24	0.22	0.21	0.20
18.500	0.20	0.19	0.19	0.19	0.18
19.750	0.18	0.18	0.17	0.17	0.17
21.000	0.17	0.16	0.16	0.16	0.15
22.250	0.15	0.15	0.15	0.14	0.14
23.500	0.14	0.13	0.13	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-3 PER

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.387 hours
Area (User Defined)	2.92 acres
Computational Time Increment	0.052 hours
Time to Peak (Computed)	12.281 hours
Flow (Peak, Computed)	11.98 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	11.71 ft ³ /s
Drainage Area	
SCS CN (Composite)	75.1
Area (User Defined)	2.92 acres
Maximum Retention (Pervious)	3.32 in
Maximum Retention (Pervious, 20 percent)	0.66 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.24 in
Runoff Volume (Pervious)	1.275 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.270 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.387 hours
Computational Time Increment	0.052 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.55 ft ³ /s
Unit peak time, Tp	0.258 hours
Unit receding limb, Tr	1.032 hours
Total unit time, Tb	1.290 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-3 PER

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.387 hours
Area (User Defined)	2.92 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
6.250	0.00	0.00	0.01	0.02	0.04
7.500	0.05	0.06	0.08	0.09	0.11
8.750	0.13	0.15	0.18	0.21	0.26
10.000	0.31	0.37	0.43	0.53	0.70
11.250	0.95	1.34	2.20	4.70	11.71
12.500	7.93	4.32	2.71	1.95	1.51
13.750	1.21	1.04	0.95	0.87	0.79
15.000	0.71	0.64	0.59	0.57	0.55
16.250	0.52	0.50	0.48	0.46	0.44
17.500	0.42	0.40	0.38	0.36	0.35
18.750	0.34	0.33	0.33	0.32	0.32
20.000	0.31	0.31	0.30	0.30	0.29
21.250	0.29	0.28	0.28	0.27	0.27
22.500	0.26	0.26	0.25	0.25	0.24
23.750	0.24	0.23	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-3 PER

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.387 hours
Area (User Defined)	3.03 acres
Computational Time Increment	0.052 hours
Time to Peak (Computed)	12.281 hours
Flow (Peak, Computed)	12.48 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	12.20 ft ³ /s
Drainage Area	
SCS CN (Composite)	75.2
Area (User Defined)	3.03 acres
Maximum Retention (Pervious)	3.29 in
Maximum Retention (Pervious, 20 percent)	0.66 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.26 in
Runoff Volume (Pervious)	1.328 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.323 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.387 hours
Computational Time Increment	0.052 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	8.87 ft ³ /s
Unit peak time, Tp	0.258 hours
Unit receding limb, Tr	1.032 hours
Total unit time, Tb	1.290 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-3 PER

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.387 hours
Area (User Defined)	3.03 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
6.250	0.00	0.01	0.02	0.03	0.04
7.500	0.05	0.07	0.08	0.10	0.12
8.750	0.14	0.16	0.19	0.23	0.27
10.000	0.33	0.39	0.45	0.55	0.73
11.250	1.00	1.40	2.29	4.90	12.20
12.500	8.25	4.49	2.82	2.03	1.57
13.750	1.26	1.08	0.98	0.90	0.82
15.000	0.74	0.66	0.62	0.59	0.57
16.250	0.55	0.52	0.50	0.48	0.46
17.500	0.44	0.42	0.39	0.37	0.36
18.750	0.35	0.35	0.34	0.34	0.33
20.000	0.33	0.32	0.32	0.31	0.30
21.250	0.30	0.29	0.29	0.28	0.28
22.500	0.27	0.27	0.26	0.26	0.25
23.750	0.24	0.24	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-4 IMP

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.325 hours
Area (User Defined)	1.13 acres
Computational Time Increment	0.043 hours
Time to Peak (Computed)	1.213 hours
Flow (Peak, Computed)	2.22 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	1.250 hours
Flow (Peak Interpolated Output)	2.15 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	1.13 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.03 in
Runoff Volume (Pervious)	0.097 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.097 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.325 hours
Computational Time Increment	0.043 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	3.94 ft ³ /s
Unit peak time, Tp	0.217 hours
Unit receding limb, Tr	0.867 hours
Total unit time, Tb	1.083 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-4 IMP

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.325 hours
Area (User Defined)	1.13 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.250	0.00	0.02	0.17	0.71	2.15
1.500	0.89	0.45	0.23	0.07	0.01
2.750	0.00	0.00	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-4 IMP

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.325 hours
Area (User Defined)	1.30 acres
Computational Time Increment	0.043 hours
Time to Peak (Computed)	12.220 hours
Flow (Peak, Computed)	3.08 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	3.05 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	1.30 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.11 in
Runoff Volume (Pervious)	0.337 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.336 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.325 hours
Computational Time Increment	0.043 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.53 ft ³ /s
Unit peak time, Tp	0.217 hours
Unit receding limb, Tr	0.867 hours
Total unit time, Tb	1.083 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-4 IMP

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.325 hours
Area (User Defined)	1.30 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
1.250	0.00	0.00	0.01	0.01	0.01
2.500	0.02	0.02	0.02	0.03	0.03
3.750	0.03	0.04	0.04	0.04	0.04
5.000	0.04	0.05	0.05	0.05	0.05
6.250	0.06	0.06	0.06	0.07	0.07
7.500	0.08	0.08	0.09	0.09	0.10
8.750	0.10	0.11	0.11	0.13	0.15
10.000	0.16	0.18	0.19	0.23	0.28
11.250	0.36	0.47	0.73	1.43	3.05
12.500	1.57	0.81	0.52	0.38	0.30
13.750	0.24	0.21	0.19	0.17	0.16
15.000	0.14	0.13	0.12	0.11	0.11
16.250	0.11	0.10	0.10	0.09	0.09
17.500	0.08	0.08	0.08	0.07	0.07
18.750	0.07	0.07	0.07	0.07	0.06
20.000	0.06	0.06	0.06	0.06	0.06
21.250	0.06	0.06	0.06	0.05	0.05
22.500	0.05	0.05	0.05	0.05	0.05
23.750	0.05	0.05	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-4 IMP

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.325 hours
Area (User Defined)	1.13 acres
Computational Time Increment	0.043 hours
Time to Peak (Computed)	12.220 hours
Flow (Peak, Computed)	2.68 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	2.65 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	1.13 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.11 in
Runoff Volume (Pervious)	0.293 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.292 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.325 hours
Computational Time Increment	0.043 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	3.94 ft ³ /s
Unit peak time, Tp	0.217 hours
Unit receding limb, Tr	0.867 hours
Total unit time, Tb	1.083 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-4 IMP

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.325 hours
Area (User Defined)	1.13 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
1.250	0.00	0.00	0.01	0.01	0.01
2.500	0.02	0.02	0.02	0.02	0.03
3.750	0.03	0.03	0.03	0.03	0.04
5.000	0.04	0.04	0.04	0.04	0.05
6.250	0.05	0.05	0.06	0.06	0.06
7.500	0.07	0.07	0.08	0.08	0.08
8.750	0.09	0.09	0.10	0.11	0.13
10.000	0.14	0.15	0.17	0.20	0.24
11.250	0.31	0.41	0.63	1.24	2.65
12.500	1.36	0.70	0.45	0.33	0.26
13.750	0.21	0.18	0.17	0.15	0.14
15.000	0.12	0.11	0.10	0.10	0.10
16.250	0.09	0.09	0.08	0.08	0.08
17.500	0.07	0.07	0.07	0.06	0.06
18.750	0.06	0.06	0.06	0.06	0.06
20.000	0.05	0.05	0.05	0.05	0.05
21.250	0.05	0.05	0.05	0.05	0.05
22.500	0.05	0.04	0.04	0.04	0.04
23.750	0.04	0.04	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-4 IMP

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.325 hours
Area (User Defined)	1.30 acres
Computational Time Increment	0.043 hours
Time to Peak (Computed)	12.220 hours
Flow (Peak, Computed)	4.65 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	4.60 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	1.30 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.77 in
Runoff Volume (Pervious)	0.517 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.516 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.325 hours
Computational Time Increment	0.043 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.53 ft ³ /s
Unit peak time, Tp	0.217 hours
Unit receding limb, Tr	0.867 hours
Total unit time, Tb	1.083 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-4 IMP

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.325 hours
Area (User Defined)	1.30 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.750	0.00	0.00	0.01	0.02	0.02
2.000	0.03	0.04	0.04	0.05	0.05
3.250	0.06	0.06	0.06	0.07	0.07
4.500	0.07	0.08	0.08	0.08	0.08
5.750	0.09	0.09	0.09	0.10	0.11
7.000	0.11	0.12	0.13	0.13	0.14
8.250	0.15	0.15	0.16	0.17	0.18
9.500	0.20	0.23	0.25	0.28	0.30
10.750	0.35	0.43	0.55	0.71	1.11
12.000	2.17	4.60	2.37	1.22	0.78
13.250	0.57	0.45	0.36	0.32	0.29
14.500	0.26	0.24	0.21	0.19	0.18
15.750	0.17	0.17	0.16	0.15	0.15
17.000	0.14	0.13	0.13	0.12	0.11
18.250	0.11	0.10	0.10	0.10	0.10
19.500	0.10	0.10	0.09	0.09	0.09
20.750	0.09	0.09	0.09	0.08	0.08
22.000	0.08	0.08	0.08	0.08	0.07
23.250	0.07	0.07	0.07	0.07	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-4 IMP

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.325 hours
Area (User Defined)	1.13 acres
Computational Time Increment	0.043 hours
Time to Peak (Computed)	12.220 hours
Flow (Peak, Computed)	4.04 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	4.00 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	1.13 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.77 in
Runoff Volume (Pervious)	0.449 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.449 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.325 hours
Computational Time Increment	0.043 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	3.94 ft ³ /s
Unit peak time, Tp	0.217 hours
Unit receding limb, Tr	0.867 hours
Total unit time, Tb	1.083 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-4 IMP

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.325 hours
Area (User Defined)	1.13 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.750	0.00	0.00	0.01	0.01	0.02
2.000	0.03	0.03	0.04	0.04	0.04
3.250	0.05	0.05	0.05	0.06	0.06
4.500	0.06	0.07	0.07	0.07	0.07
5.750	0.08	0.08	0.08	0.09	0.09
7.000	0.10	0.10	0.11	0.12	0.12
8.250	0.13	0.13	0.14	0.15	0.16
9.500	0.18	0.20	0.22	0.24	0.26
10.750	0.30	0.38	0.48	0.62	0.96
12.000	1.89	4.00	2.06	1.06	0.68
13.250	0.50	0.39	0.31	0.27	0.25
14.500	0.23	0.21	0.19	0.17	0.16
15.750	0.15	0.14	0.14	0.13	0.13
17.000	0.12	0.12	0.11	0.10	0.10
18.250	0.09	0.09	0.09	0.09	0.09
19.500	0.08	0.08	0.08	0.08	0.08
20.750	0.08	0.08	0.08	0.07	0.07
22.000	0.07	0.07	0.07	0.07	0.07
23.250	0.06	0.06	0.06	0.06	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-4 IMP

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.325 hours
Area (User Defined)	1.30 acres
Computational Time Increment	0.043 hours
Time to Peak (Computed)	12.220 hours
Flow (Peak, Computed)	7.65 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	7.57 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	1.30 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.97 in
Runoff Volume (Pervious)	0.863 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.862 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.325 hours
Computational Time Increment	0.043 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.53 ft ³ /s
Unit peak time, Tp	0.217 hours
Unit receding limb, Tr	0.867 hours
Total unit time, Tb	1.083 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-4 IMP

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.325 hours
Area (User Defined)	1.30 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.500	0.00	0.01	0.02	0.04	0.05
1.750	0.07	0.08	0.09	0.09	0.10
3.000	0.11	0.11	0.12	0.12	0.13
4.250	0.13	0.14	0.14	0.14	0.15
5.500	0.15	0.16	0.16	0.17	0.18
6.750	0.19	0.20	0.21	0.22	0.23
8.000	0.24	0.25	0.26	0.27	0.29
9.250	0.31	0.34	0.38	0.42	0.46
10.500	0.50	0.58	0.72	0.91	1.18
11.750	1.83	3.58	7.57	3.89	2.00
13.000	1.28	0.94	0.74	0.59	0.52
14.250	0.47	0.43	0.39	0.35	0.31
15.500	0.29	0.28	0.27	0.26	0.25
16.750	0.24	0.23	0.22	0.21	0.20
18.000	0.19	0.18	0.17	0.17	0.17
19.250	0.16	0.16	0.16	0.16	0.15
20.500	0.15	0.15	0.14	0.14	0.14
21.750	0.14	0.13	0.13	0.13	0.13
23.000	0.12	0.12	0.12	0.11	0.11

Subsection: Unit Hydrograph Summary

Label: DA-4 IMP

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.325 hours
Area (User Defined)	1.13 acres
Computational Time Increment	0.043 hours
Time to Peak (Computed)	12.220 hours
Flow (Peak, Computed)	6.65 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	6.58 ft ³ /s
Drainage Area	
SCS CN (Composite)	98.0
Area (User Defined)	1.13 acres
Maximum Retention (Pervious)	0.20 in
Maximum Retention (Pervious, 20 percent)	0.04 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.97 in
Runoff Volume (Pervious)	0.751 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.750 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.325 hours
Computational Time Increment	0.043 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	3.94 ft ³ /s
Unit peak time, Tp	0.217 hours
Unit receding limb, Tr	0.867 hours
Total unit time, Tb	1.083 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-4 IMP

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.325 hours
Area (User Defined)	1.13 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
0.500	0.00	0.01	0.02	0.04	0.05
1.750	0.06	0.07	0.07	0.08	0.09
3.000	0.09	0.10	0.10	0.11	0.11
4.250	0.11	0.12	0.12	0.13	0.13
5.500	0.13	0.14	0.14	0.14	0.15
6.750	0.16	0.17	0.18	0.19	0.20
8.000	0.21	0.22	0.23	0.24	0.25
9.250	0.27	0.30	0.33	0.37	0.40
10.500	0.44	0.50	0.63	0.80	1.03
11.750	1.59	3.11	6.58	3.38	1.74
13.000	1.11	0.82	0.64	0.51	0.45
14.250	0.41	0.38	0.34	0.31	0.27
15.500	0.26	0.25	0.24	0.23	0.22
16.750	0.21	0.20	0.19	0.18	0.17
18.000	0.16	0.15	0.15	0.15	0.14
19.250	0.14	0.14	0.14	0.13	0.13
20.500	0.13	0.13	0.13	0.12	0.12
21.750	0.12	0.12	0.11	0.11	0.11
23.000	0.11	0.10	0.10	0.10	0.10

Subsection: Unit Hydrograph Summary

Label: DA-4 PER

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.319 hours
Area (User Defined)	1.47 acres
Computational Time Increment	0.043 hours
Time to Peak (Computed)	1.319 hours
Flow (Peak, Computed)	0.26 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	1.250 hours
Flow (Peak Interpolated Output)	0.22 ft ³ /s
Drainage Area	
SCS CN (Composite)	76.9
Area (User Defined)	1.47 acres
Maximum Retention (Pervious)	3.01 in
Maximum Retention (Pervious, 20 percent)	0.60 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	0.11 in
Runoff Volume (Pervious)	0.014 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.014 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.319 hours
Computational Time Increment	0.043 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.22 ft ³ /s
Unit peak time, Tp	0.213 hours
Unit receding limb, Tr	0.851 hours
Total unit time, Tb	1.063 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-4 PER

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Storm Event	WQ
Return Event	1 years
Duration	24.000 hours
Depth	1.25 in
Time of Concentration (Composite)	0.319 hours
Area (User Defined)	1.47 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
1.000	0.00	0.22	0.20	0.15	0.09
2.250	0.03	0.00	0.00	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-4 PER

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.319 hours
Area (User Defined)	1.29 acres
Computational Time Increment	0.043 hours
Time to Peak (Computed)	12.250 hours
Flow (Peak, Computed)	1.44 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	1.44 ft ³ /s
Drainage Area	
SCS CN (Composite)	77.1
Area (User Defined)	1.29 acres
Maximum Retention (Pervious)	2.97 in
Maximum Retention (Pervious, 20 percent)	0.59 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.32 in
Runoff Volume (Pervious)	0.142 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.142 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.319 hours
Computational Time Increment	0.043 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.58 ft ³ /s
Unit peak time, Tp	0.213 hours
Unit receding limb, Tr	0.851 hours
Total unit time, Tb	1.063 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-4 PER

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.319 hours
Area (User Defined)	1.29 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
10.000	0.00	0.00	0.01	0.01	0.03
11.250	0.05	0.08	0.17	0.48	1.44
12.500	0.83	0.47	0.32	0.24	0.19
13.750	0.15	0.14	0.13	0.12	0.11
15.000	0.10	0.09	0.08	0.08	0.08
16.250	0.07	0.07	0.07	0.06	0.06
17.500	0.06	0.06	0.05	0.05	0.05
18.750	0.05	0.05	0.05	0.05	0.05
20.000	0.04	0.04	0.04	0.04	0.04
21.250	0.04	0.04	0.04	0.04	0.04
22.500	0.04	0.04	0.04	0.04	0.03
23.750	0.03	0.03	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-4 PER

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.319 hours
Area (User Defined)	1.47 acres
Computational Time Increment	0.043 hours
Time to Peak (Computed)	12.250 hours
Flow (Peak, Computed)	1.62 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	1.62 ft ³ /s
Drainage Area	
SCS CN (Composite)	76.9
Area (User Defined)	1.47 acres
Maximum Retention (Pervious)	3.01 in
Maximum Retention (Pervious, 20 percent)	0.60 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.30 in
Runoff Volume (Pervious)	0.160 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.159 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.319 hours
Computational Time Increment	0.043 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.22 ft ³ /s
Unit peak time, Tp	0.213 hours
Unit receding limb, Tr	0.851 hours
Total unit time, Tb	1.063 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-4 PER

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Storm Event	2-Year
Return Event	2 years
Duration	24.000 hours
Depth	3.34 in
Time of Concentration (Composite)	0.319 hours
Area (User Defined)	1.47 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
10.000	0.00	0.00	0.01	0.02	0.03
11.250	0.05	0.09	0.19	0.54	1.62
12.500	0.94	0.53	0.36	0.27	0.22
13.750	0.17	0.15	0.14	0.13	0.12
15.000	0.11	0.10	0.09	0.09	0.09
16.250	0.08	0.08	0.08	0.07	0.07
17.500	0.07	0.06	0.06	0.06	0.06
18.750	0.05	0.05	0.05	0.05	0.05
20.000	0.05	0.05	0.05	0.05	0.05
21.250	0.05	0.05	0.04	0.04	0.04
22.500	0.04	0.04	0.04	0.04	0.04
23.750	0.04	0.04	(N/A)	(N/A)	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-4 PER

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.319 hours
Area (User Defined)	1.29 acres
Computational Time Increment	0.043 hours
Time to Peak (Computed)	12.250 hours
Flow (Peak, Computed)	2.94 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	2.94 ft ³ /s
Drainage Area	
SCS CN (Composite)	77.1
Area (User Defined)	1.29 acres
Maximum Retention (Pervious)	2.97 in
Maximum Retention (Pervious, 20 percent)	0.59 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.64 in
Runoff Volume (Pervious)	0.284 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.284 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.319 hours
Computational Time Increment	0.043 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.58 ft ³ /s
Unit peak time, Tp	0.213 hours
Unit receding limb, Tr	0.851 hours
Total unit time, Tb	1.063 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-4 PER

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.319 hours
Area (User Defined)	1.29 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
8.000	0.00	0.00	0.00	0.01	0.01
9.250	0.02	0.02	0.03	0.04	0.05
10.500	0.07	0.09	0.12	0.18	0.26
11.750	0.47	1.12	2.94	1.60	0.87
13.000	0.58	0.43	0.35	0.28	0.25
14.250	0.23	0.21	0.19	0.17	0.15
15.500	0.14	0.14	0.13	0.13	0.12
16.750	0.12	0.11	0.11	0.10	0.10
18.000	0.09	0.09	0.09	0.08	0.08
19.250	0.08	0.08	0.08	0.08	0.08
20.500	0.08	0.07	0.07	0.07	0.07
21.750	0.07	0.07	0.07	0.06	0.06
23.000	0.06	0.06	0.06	0.06	0.06

Subsection: Unit Hydrograph Summary

Label: DA-4 PER

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.319 hours
Area (User Defined)	1.47 acres
Computational Time Increment	0.043 hours
Time to Peak (Computed)	12.250 hours
Flow (Peak, Computed)	3.32 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	3.32 ft ³ /s
Drainage Area	
SCS CN (Composite)	76.9
Area (User Defined)	1.47 acres
Maximum Retention (Pervious)	3.01 in
Maximum Retention (Pervious, 20 percent)	0.60 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.62 in
Runoff Volume (Pervious)	0.321 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.321 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.319 hours
Computational Time Increment	0.043 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.22 ft ³ /s
Unit peak time, Tp	0.213 hours
Unit receding limb, Tr	0.851 hours
Total unit time, Tb	1.063 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-4 PER

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Storm Event	10-Year
Return Event	10 years
Duration	24.000 hours
Depth	5.01 in
Time of Concentration (Composite)	0.319 hours
Area (User Defined)	1.47 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
8.250	0.00	0.00	0.01	0.01	0.02
9.500	0.03	0.03	0.05	0.06	0.07
10.750	0.10	0.14	0.20	0.29	0.53
12.000	1.26	3.32	1.82	0.99	0.66
13.250	0.49	0.39	0.32	0.28	0.26
14.500	0.23	0.21	0.19	0.17	0.16
15.750	0.16	0.15	0.15	0.14	0.13
17.000	0.13	0.12	0.12	0.11	0.10
18.250	0.10	0.10	0.10	0.09	0.09
19.500	0.09	0.09	0.09	0.09	0.09
20.750	0.08	0.08	0.08	0.08	0.08
22.000	0.08	0.08	0.07	0.07	0.07
23.250	0.07	0.07	0.07	0.07	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-4 PER

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.319 hours
Area (User Defined)	1.29 acres
Computational Time Increment	0.043 hours
Time to Peak (Computed)	12.250 hours
Flow (Peak, Computed)	6.02 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	6.02 ft ³ /s
Drainage Area	
SCS CN (Composite)	77.1
Area (User Defined)	1.29 acres
Maximum Retention (Pervious)	2.97 in
Maximum Retention (Pervious, 20 percent)	0.59 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.48 in
Runoff Volume (Pervious)	0.589 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.589 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.319 hours
Computational Time Increment	0.043 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	4.58 ft ³ /s
Unit peak time, Tp	0.213 hours
Unit receding limb, Tr	0.851 hours
Total unit time, Tb	1.063 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-4 PER

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.319 hours
Area (User Defined)	1.29 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
5.750	0.00	0.00	0.01	0.01	0.02
7.000	0.02	0.03	0.03	0.04	0.05
8.250	0.06	0.07	0.07	0.08	0.10
9.500	0.12	0.14	0.16	0.19	0.22
10.750	0.27	0.36	0.49	0.69	1.16
12.000	2.53	6.02	3.16	1.67	1.10
13.250	0.82	0.65	0.52	0.46	0.42
14.500	0.38	0.35	0.31	0.28	0.26
15.750	0.25	0.24	0.23	0.22	0.22
17.000	0.21	0.20	0.19	0.18	0.17
18.250	0.16	0.16	0.15	0.15	0.15
19.500	0.15	0.14	0.14	0.14	0.14
20.750	0.13	0.13	0.13	0.13	0.12
22.000	0.12	0.12	0.12	0.11	0.11
23.250	0.11	0.11	0.11	0.10	(N/A)

Subsection: Unit Hydrograph Summary

Label: DA-4 PER

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.319 hours
Area (User Defined)	1.47 acres
Computational Time Increment	0.043 hours
Time to Peak (Computed)	12.250 hours
Flow (Peak, Computed)	6.83 ft ³ /s
Output Increment	0.250 hours
Time to Flow (Peak Interpolated Output)	12.250 hours
Flow (Peak Interpolated Output)	6.83 ft ³ /s
Drainage Area	
SCS CN (Composite)	76.9
Area (User Defined)	1.47 acres
Maximum Retention (Pervious)	3.01 in
Maximum Retention (Pervious, 20 percent)	0.60 in
Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.45 in
Runoff Volume (Pervious)	0.668 ac-ft
Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.667 ac-ft
SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.319 hours
Computational Time Increment	0.043 hours
Unit Hydrograph Shape Factor	483.4
K Factor	0.7
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	5.22 ft ³ /s
Unit peak time, Tp	0.213 hours
Unit receding limb, Tr	0.851 hours
Total unit time, Tb	1.063 hours

Subsection: Unit Hydrograph (Hydrograph Table)

Label: DA-4 PER

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Storm Event	100-Year
Return Event	100 years
Duration	24.000 hours
Depth	8.21 in
Time of Concentration (Composite)	0.319 hours
Area (User Defined)	1.47 acres

HYDROGRAPH ORDINATES (ft³/s)

Output Time Increment = 0.250 hours

Time on left represents time for first value in each row.

Time (hours)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)	Flow (ft ³ /s)
5.750	0.00	0.00	0.01	0.01	0.02
7.000	0.02	0.03	0.04	0.04	0.05
8.250	0.06	0.07	0.08	0.09	0.11
9.500	0.13	0.16	0.18	0.22	0.25
10.750	0.31	0.41	0.56	0.77	1.31
12.000	2.86	6.83	3.59	1.90	1.25
13.250	0.93	0.74	0.59	0.52	0.48
14.500	0.44	0.40	0.36	0.32	0.30
15.750	0.29	0.28	0.27	0.26	0.25
17.000	0.23	0.22	0.21	0.20	0.19
18.250	0.18	0.18	0.17	0.17	0.17
19.500	0.17	0.16	0.16	0.16	0.15
20.750	0.15	0.15	0.15	0.14	0.14
22.000	0.14	0.14	0.13	0.13	0.13
23.250	0.12	0.12	0.12	0.12	(N/A)

Subsection: Addition Summary

Label: J-1

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Summary for Hydrograph Addition at 'J-1'

Upstream Link	Upstream Node
OCS-1A-1	Por. Pave 1A-1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	OCS-1A-1	0.045	2.000	0.11
Flow (In)	J-1	0.045	2.000	0.11

Subsection: Addition Summary

Label: J-1

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Summary for Hydrograph Addition at 'J-1'

Upstream Link	Upstream Node
OCS-1A-1	Por. Pave 1A-1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	OCS-1A-1	0.126	12.750	0.26
Flow (In)	J-1	0.126	12.750	0.26

Subsection: Addition Summary

Label: J-1

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Summary for Hydrograph Addition at 'J-1'

Upstream Link	Upstream Node
OCS-1A-1	Por. Pave 1A-1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	OCS-1A-1	0.203	12.250	1.56
Flow (In)	J-1	0.203	12.250	1.56

Subsection: Addition Summary

Label: J-1

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Summary for Hydrograph Addition at 'J-1'

Upstream Link	Upstream Node
OCS-1A-1	Por. Pave 1A-1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	OCS-1A-1	0.350	12.000	2.80
Flow (In)	J-1	0.350	12.000	2.80

Subsection: Addition Summary

Label: J-2

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Summary for Hydrograph Addition at 'J-2'

Upstream Link	Upstream Node
OCS-1A-2	Por. Pave 1A-2

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	OCS-1A-2	0.013	1.500	0.09
Flow (In)	J-2	0.013	1.500	0.09

Subsection: Addition Summary

Label: J-2

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Summary for Hydrograph Addition at 'J-2'

Upstream Link	Upstream Node
OCS-1A-2	Por. Pave 1A-2

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	OCS-1A-2	0.038	12.250	0.17
Flow (In)	J-2	0.038	12.250	0.17

Subsection: Addition Summary

Label: J-2

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Summary for Hydrograph Addition at 'J-2'

Upstream Link	Upstream Node
OCS-1A-2	Por. Pave 1A-2

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	OCS-1A-2	0.060	12.250	0.30
Flow (In)	J-2	0.060	12.250	0.30

Subsection: Addition Summary

Label: J-2

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Summary for Hydrograph Addition at 'J-2'

Upstream Link	Upstream Node
OCS-1A-2	Por. Pave 1A-2

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	OCS-1A-2	0.103	12.250	0.73
Flow (In)	J-2	0.103	12.250	0.73

Subsection: Addition Summary

Label: J-3

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Summary for Hydrograph Addition at 'J-3'

Upstream Link	Upstream Node
OCS-1A-3	Por. Pav 1A-3

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	OCS-1A-3	0.016	1.500	0.09
Flow (In)	J-3	0.016	1.500	0.09

Subsection: Addition Summary

Label: J-3

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Summary for Hydrograph Addition at 'J-3'

Upstream Link	Upstream Node
OCS-1A-3	Por. Pave 1A-3

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	OCS-1A-3	0.050	12.500	0.18
Flow (In)	J-3	0.050	12.500	0.18

Subsection: Addition Summary

Label: J-3

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Summary for Hydrograph Addition at 'J-3'

Upstream Link	Upstream Node
OCS-1A-3	Por. Pave 1A-3

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	OCS-1A-3	0.080	12.250	0.40
Flow (In)	J-3	0.080	12.250	0.40

Subsection: Addition Summary

Label: J-3

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Summary for Hydrograph Addition at 'J-3'

Upstream Link	Upstream Node
OCS-1A-3	Por. Pave 1A-3

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	OCS-1A-3	0.138	12.250	0.99
Flow (In)	J-3	0.138	12.250	0.99

Subsection: Addition Summary

Label: J-4

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Summary for Hydrograph Addition at 'J-4'

Upstream Link	Upstream Node
OCS-1A-4	Det. Basin 1A-4

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	OCS-1A-4	0.069	2.000	0.13
Flow (In)	J-4	0.069	2.000	0.13

Subsection: Addition Summary

Label: J-4

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Summary for Hydrograph Addition at 'J-4'

Upstream Link	Upstream Node
OCS-1A-4	Det. Basin 1A-4

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	OCS-1A-4	0.175	14.000	0.16
Flow (In)	J-4	0.175	14.000	0.16

Subsection: Addition Summary

Label: J-4

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Summary for Hydrograph Addition at 'J-4'

Upstream Link	Upstream Node
OCS-1A-4	Det. Basin 1A-4

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	OCS-1A-4	0.282	12.750	0.72
Flow (In)	J-4	0.282	12.750	0.72

Subsection: Addition Summary

Label: J-4

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Summary for Hydrograph Addition at 'J-4'

Upstream Link	Upstream Node
OCS-1A-4	Det. Basin 1A-4

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	OCS-1A-4	0.576	12.500	2.55
Flow (In)	J-4	0.576	12.500	2.55

Subsection: Addition Summary

Label: POS-1A

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Summary for Hydrograph Addition at 'POS-1A'

Upstream Link	Upstream Node
1A-3 to POS-1A	J-3
1A-4 to POS-1A	J-4
<Catchment to Outflow Node>	DA-1A-UND PER
1A-2 to POS-1A	J-2
<Catchment to Outflow Node>	DA-1A-UND IMP
1A-1 to POS-1A	J-1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	1A-3 to POS-1A	0.016	1.750	0.09
Flow (From)	1A-4 to POS-1A	0.069	2.250	0.13
Flow (From)	DA-1A-UND PER	0.010	1.250	0.18
Flow (From)	1A-2 to POS-1A	0.013	1.750	0.09
Flow (From)	DA-1A-UND IMP	0.032	1.000	0.88
Flow (From)	1A-1 to POS-1A	0.045	2.250	0.11
Flow (In)	POS-1A	0.186	1.000	0.90

Subsection: Addition Summary

Label: POS-1A

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Summary for Hydrograph Addition at 'POS-1A'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1A-UND IMP
<Catchment to Outflow Node>	DA-1A-UND PER

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-1A-UND IMP	0.200	12.250	1.84
Flow (From)	DA-1A-UND PER	0.347	12.250	3.70
Flow (In)	POS-1A	0.547	12.250	5.54

Subsection: Addition Summary

Label: POS-1A

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Summary for Hydrograph Addition at 'POS-1A'

Upstream Link	Upstream Node
1A-3 to POS-1A	J-3
1A-4 to POS-1A	J-4
<Catchment to Outflow Node>	DA-1A-UND PER
1A-2 to POS-1A	J-2
<Catchment to Outflow Node>	DA-1A-UND IMP
1A-1 to POS-1A	J-1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	1A-3 to POS-1A	0.050	12.750	0.18
Flow (From)	1A-4 to POS-1A	0.175	14.250	0.16
Flow (From)	DA-1A-UND PER	0.174	12.250	1.78
Flow (From)	1A-2 to POS-1A	0.038	12.500	0.17
Flow (From)	DA-1A-UND IMP	0.087	12.000	0.77
Flow (From)	1A-1 to POS-1A	0.126	13.000	0.26
Flow (In)	POS-1A	0.646	12.250	2.70

Subsection: Addition Summary

Label: POS-1A

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Summary for Hydrograph Addition at 'POS-1A'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1A-UND IMP
<Catchment to Outflow Node>	DA-1A-UND PER

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-1A-UND IMP	0.308	12.250	2.78
Flow (From)	DA-1A-UND PER	0.728	12.250	7.92
Flow (In)	POS-1A	1.036	12.250	10.71

Subsection: Addition Summary

Label: POS-1A

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Summary for Hydrograph Addition at 'POS-1A'

Upstream Link	Upstream Node
1A-3 to POS-1A	J-3
1A-4 to POS-1A	J-4
<Catchment to Outflow Node>	DA-1A-UND PER
1A-2 to POS-1A	J-2
<Catchment to Outflow Node>	DA-1A-UND IMP
1A-1 to POS-1A	J-1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	1A-3 to POS-1A	0.080	12.500	0.40
Flow (From)	1A-4 to POS-1A	0.282	13.000	0.72
Flow (From)	DA-1A-UND PER	0.372	12.250	3.83
Flow (From)	1A-2 to POS-1A	0.060	12.500	0.30
Flow (From)	DA-1A-UND IMP	0.134	12.000	1.17
Flow (From)	1A-1 to POS-1A	0.203	12.500	1.56
Flow (In)	POS-1A	1.126	12.250	5.36

Subsection: Addition Summary

Label: POS-1A

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Summary for Hydrograph Addition at 'POS-1A'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1A-UND IMP
<Catchment to Outflow Node>	DA-1A-UND PER

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-1A-UND IMP	0.514	12.250	4.57
Flow (From)	DA-1A-UND PER	1.569	12.250	16.85
Flow (In)	POS-1A	2.083	12.250	21.42

Subsection: Addition Summary

Label: POS-1A

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Summary for Hydrograph Addition at 'POS-1A'

Upstream Link	Upstream Node
1A-3 to POS-1A	J-3
1A-4 to POS-1A	J-4
<Catchment to Outflow Node>	DA-1A-UND PER
1A-2 to POS-1A	J-2
<Catchment to Outflow Node>	DA-1A-UND IMP
1A-1 to POS-1A	J-1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	1A-3 to POS-1A	0.138	12.500	0.99
Flow (From)	1A-4 to POS-1A	0.576	12.750	2.55
Flow (From)	DA-1A-UND PER	0.815	12.250	8.17
Flow (From)	1A-2 to POS-1A	0.103	12.500	0.73
Flow (From)	DA-1A-UND IMP	0.223	12.000	1.92
Flow (From)	1A-1 to POS-1A	0.350	12.250	2.80
Flow (In)	POS-1A	2.199	12.250	14.50

Subsection: Addition Summary

Label: POS-1B

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Summary for Hydrograph Addition at 'POS-1B'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1B IMP
<Catchment to Outflow Node>	DA-1B PER

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-1B IMP	0.151	1.250	3.36
Flow (From)	DA-1B PER	0.012	1.500	0.17
Flow (In)	POS-1B	0.162	1.250	3.50

Subsection: Addition Summary

Label: POS-1B

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Summary for Hydrograph Addition at 'POS-1B'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1B IMP
<Catchment to Outflow Node>	DA-1B PER

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-1B IMP	0.488	12.250	4.56
Flow (From)	DA-1B PER	0.167	12.250	1.66
Flow (In)	POS-1B	0.655	12.250	6.22

Subsection: Addition Summary

Label: POS-1B

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Summary for Hydrograph Addition at 'POS-1B'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1B IMP
<Catchment to Outflow Node>	DA-1B PER

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-1B IMP	0.464	12.250	4.34
Flow (From)	DA-1B PER	0.176	12.250	1.75
Flow (In)	POS-1B	0.640	12.250	6.09

Subsection: Addition Summary

Label: POS-1B

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Summary for Hydrograph Addition at 'POS-1B'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1B IMP
<Catchment to Outflow Node>	DA-1B PER

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-1B IMP	0.749	12.250	6.88
Flow (From)	DA-1B PER	0.351	12.250	3.62
Flow (In)	POS-1B	1.100	12.250	10.50

Subsection: Addition Summary

Label: POS-1B

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Summary for Hydrograph Addition at 'POS-1B'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1B IMP
<Catchment to Outflow Node>	DA-1B PER

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-1B IMP	0.714	12.250	6.55
Flow (From)	DA-1B PER	0.369	12.250	3.81
Flow (In)	POS-1B	1.083	12.250	10.36

Subsection: Addition Summary

Label: POS-1B

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Summary for Hydrograph Addition at 'POS-1B'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1B IMP
<Catchment to Outflow Node>	DA-1B PER

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-1B IMP	1.251	12.250	11.31
Flow (From)	DA-1B PER	0.758	12.250	7.80
Flow (In)	POS-1B	2.009	12.250	19.11

Subsection: Addition Summary

Label: POS-1B

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Summary for Hydrograph Addition at 'POS-1B'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-1B IMP
<Catchment to Outflow Node>	DA-1B PER

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-1B IMP	1.191	12.250	10.77
Flow (From)	DA-1B PER	0.796	12.250	8.19
Flow (In)	POS-1B	1.987	12.250	18.97

Subsection: Addition Summary

Label: POS-2

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Summary for Hydrograph Addition at 'POS-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-2 PER
<Catchment to Outflow Node>	DA-2 IMP

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-2 PER	0.032	1.500	0.46
Flow (From)	DA-2 IMP	0.320	1.250	7.08
Flow (In)	POS-2	0.351	1.250	7.49

Subsection: Addition Summary

Label: POS-2

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Summary for Hydrograph Addition at 'POS-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-2 IMP
<Catchment to Outflow Node>	DA-2 PER

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-2 IMP	0.989	12.250	9.19
Flow (From)	DA-2 PER	0.507	12.250	5.19
Flow (In)	POS-2	1.496	12.250	14.37

Subsection: Addition Summary

Label: POS-2

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Summary for Hydrograph Addition at 'POS-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-2 PER
<Catchment to Outflow Node>	DA-2 IMP

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-2 PER	0.479	12.250	4.91
Flow (From)	DA-2 IMP	0.986	12.250	9.16
Flow (In)	POS-2	1.466	12.250	14.07

Subsection: Addition Summary

Label: POS-2

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Summary for Hydrograph Addition at 'POS-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-2 IMP
<Catchment to Outflow Node>	DA-2 PER

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-2 IMP	1.519	12.250	13.86
Flow (From)	DA-2 PER	1.063	12.250	11.23
Flow (In)	POS-2	2.583	12.250	25.10

Subsection: Addition Summary

Label: POS-2

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Summary for Hydrograph Addition at 'POS-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-2 PER
<Catchment to Outflow Node>	DA-2 IMP

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-2 PER	1.006	12.250	10.63
Flow (From)	DA-2 IMP	1.515	12.250	13.82
Flow (In)	POS-2	2.522	12.250	24.45

Subsection: Addition Summary

Label: POS-2

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Summary for Hydrograph Addition at 'POS-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-2 IMP
<Catchment to Outflow Node>	DA-2 PER

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-2 IMP	2.537	12.250	22.79
Flow (From)	DA-2 PER	2.293	12.250	24.07
Flow (In)	POS-2	4.831	12.250	46.86

Subsection: Addition Summary

Label: POS-2

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Summary for Hydrograph Addition at 'POS-2'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-2 PER
<Catchment to Outflow Node>	DA-2 IMP

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-2 PER	2.170	12.250	22.77
Flow (From)	DA-2 IMP	2.531	12.250	22.73
Flow (In)	POS-2	4.701	12.250	45.50

Subsection: Addition Summary

Label: POS-3

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Summary for Hydrograph Addition at 'POS-3'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-3 PER
<Catchment to Outflow Node>	DA-3 IMP

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-3 PER	0.023	1.500	0.34
Flow (From)	DA-3 IMP	0.124	1.250	2.64
Flow (In)	POS-3	0.147	1.250	2.87

Subsection: Addition Summary

Label: POS-3

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Summary for Hydrograph Addition at 'POS-3'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-3 IMP
<Catchment to Outflow Node>	DA-3 PER

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-3 IMP	0.406	12.250	3.56
Flow (From)	DA-3 PER	0.289	12.250	2.53
Flow (In)	POS-3	0.695	12.250	6.08

Subsection: Addition Summary

Label: POS-3

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Summary for Hydrograph Addition at 'POS-3'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-3 PER
<Catchment to Outflow Node>	DA-3 IMP

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-3 PER	0.302	12.250	2.65
Flow (From)	DA-3 IMP	0.372	12.250	3.26
Flow (In)	POS-3	0.675	12.250	5.91

Subsection: Addition Summary

Label: POS-3

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Summary for Hydrograph Addition at 'POS-3'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-3 IMP
<Catchment to Outflow Node>	DA-3 PER

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-3 IMP	0.623	12.250	5.38
Flow (From)	DA-3 PER	0.596	12.250	5.47
Flow (In)	POS-3	1.220	12.250	10.84

Subsection: Addition Summary

Label: POS-3

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Summary for Hydrograph Addition at 'POS-3'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-3 PER
<Catchment to Outflow Node>	DA-3 IMP

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-3 PER	0.623	12.250	5.71
Flow (From)	DA-3 IMP	0.572	12.250	4.93
Flow (In)	POS-3	1.195	12.250	10.64

Subsection: Addition Summary

Label: POS-3

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Summary for Hydrograph Addition at 'POS-3'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-3 IMP
<Catchment to Outflow Node>	DA-3 PER

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-3 IMP	1.041	12.250	8.84
Flow (From)	DA-3 PER	1.270	12.250	11.71
Flow (In)	POS-3	2.311	12.250	20.56

Subsection: Addition Summary

Label: POS-3

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Summary for Hydrograph Addition at 'POS-3'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-3 PER
<Catchment to Outflow Node>	DA-3 IMP

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-3 PER	1.323	12.250	12.20
Flow (From)	DA-3 IMP	0.955	12.250	8.11
Flow (In)	POS-3	2.278	12.250	20.31

Subsection: Addition Summary

Label: POS-4

Scenario: Proposed WQ

Return Event: 1 years

Storm Event: WQ

Summary for Hydrograph Addition at 'POS-4'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-4 PER
<Catchment to Outflow Node>	DA-4 IMP

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-4 PER	0.014	1.250	0.22
Flow (From)	DA-4 IMP	0.097	1.250	2.15
Flow (In)	POS-4	0.111	1.250	2.37

Subsection: Addition Summary

Label: POS-4

Scenario: Existing 2-Year

Return Event: 2 years

Storm Event: 2-Year

Summary for Hydrograph Addition at 'POS-4'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-4 IMP
<Catchment to Outflow Node>	DA-4 PER

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-4 IMP	0.336	12.250	3.05
Flow (From)	DA-4 PER	0.142	12.250	1.44
Flow (In)	POS-4	0.478	12.250	4.49

Subsection: Addition Summary

Label: POS-4

Scenario: Proposed 2-Year

Return Event: 2 years

Storm Event: 2-Year

Summary for Hydrograph Addition at 'POS-4'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-4 PER
<Catchment to Outflow Node>	DA-4 IMP

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-4 PER	0.159	12.250	1.62
Flow (From)	DA-4 IMP	0.292	12.250	2.65
Flow (In)	POS-4	0.452	12.250	4.27

Subsection: Addition Summary

Label: POS-4

Scenario: Existing 10-Year

Return Event: 10 years

Storm Event: 10-Year

Summary for Hydrograph Addition at 'POS-4'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-4 IMP
<Catchment to Outflow Node>	DA-4 PER

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-4 IMP	0.516	12.250	4.60
Flow (From)	DA-4 PER	0.284	12.250	2.94
Flow (In)	POS-4	0.800	12.250	7.54

Subsection: Addition Summary

Label: POS-4

Scenario: Proposed 10-Year

Return Event: 10 years

Storm Event: 10-Year

Summary for Hydrograph Addition at 'POS-4'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-4 PER
<Catchment to Outflow Node>	DA-4 IMP

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-4 PER	0.320	12.250	3.32
Flow (From)	DA-4 IMP	0.449	12.250	4.00
Flow (In)	POS-4	0.769	12.250	7.32

Subsection: Addition Summary

Label: POS-4

Scenario: Existing 100-Year

Return Event: 100 years

Storm Event: 100-Year

Summary for Hydrograph Addition at 'POS-4'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-4 IMP
<Catchment to Outflow Node>	DA-4 PER

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-4 IMP	0.862	12.250	7.57
Flow (From)	DA-4 PER	0.589	12.250	6.02
Flow (In)	POS-4	1.451	12.250	13.59

Subsection: Addition Summary

Label: POS-4

Scenario: Proposed 100-Year

Return Event: 100 years

Storm Event: 100-Year

Summary for Hydrograph Addition at 'POS-4'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	DA-4 PER
<Catchment to Outflow Node>	DA-4 IMP

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft ³ /s)
Flow (From)	DA-4 PER	0.667	12.250	6.83
Flow (From)	DA-4 IMP	0.750	12.250	6.58
Flow (In)	POS-4	1.417	12.250	13.41

APPENDIX III:
SewerGEMS FlexTables
SewerGEMS Pipe Profiles
Conduit Outlet Protection Calculations

Hackensack Meridian Health - Carrier Clinic - Adolescent Care Unit
Catch Basin Table - Time: 12.10 hours

Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Is Ever Surcharged?	Is Ever Overflowing?
INL #117	113.60	110.82	False	False
INL #121	115.50	112.93	False	False
INL #109	112.30	108.88	False	False
INL #110	113.05	109.20	False	False
INL #111	113.85	109.58	False	False
INL #112	115.00	110.11	False	False
INL #113	115.10	111.50	False	False
INL #206	116.75	113.00	False	False
INL #205	116.75	113.00	False	False
INL #115	114.50	110.05	False	False
INL #116	115.00	110.39	False	False
INL #120	115.50	112.45	False	False
TD #203	116.25	113.21	False	False

Manhole Table - Time: 12.10 hours

Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Is Ever Surcharged?	Is Ever Overflowing?
EX MH #101	111.71	107.71	False	False
MH #106	110.70	108.09	False	False
OCS 1A-2	112.15	109.25	False	False
MH #107	112.00	108.48	False	False
MH #114	114.75	109.45	False	False
MH #118	113.80	111.10	False	False
MH #119	115.70	112.32	False	False
OCS 1A-3	115.90	113.05	False	False
MH #201	114.15	110.73	False	False
C.O.	115.75	113.52	False	False
MH #204	116.95	112.76	False	False
OCS 1A-1	112.50	109.60	False	False
MH #108	111.50	109.47	False	False
EX OCS	114.13	108.53	False	False
C.O.	116.35	113.85	False	False
C.O.	116.45	112.94	False	False
C.O.	116.45	111.69	False	False
C.O.	117.10	114.83	False	False
C.O.	116.50	114.76	False	False
OCS 1A-4	112.75	109.80	False	False
MH #301	112.75	109.55	False	False
C.O.	115.90	111.62	False	False
DH Junction #103	113.75	108.26	False	False
DH Junction #102	113.50	108.21	False	False
MH #105	111.70	107.81	False	False
MH #202	116.50	111.58	False	False

Hackensack Meridian Health - Carrier Clinic - Adolescent Care Unit

Conduit Table - Time: 12.10 hours

Label	Start Node	Stop Node	Diameter (in)	Slope (Calculated) (ft/ft)	Manning's n	Flow (Maximum) (cfs)	Capacity (Full Flow) (cfs)
27" RCP (EX)	EX MH #101	EX HW #100	27.0	0.013	0.013	22.85	35.76
15" HDPE	OCS 1A-2	MH #106	15.0	0.010	0.012	0.92	7.00
2x 10" PVC	MH #107	MH #106	10.0	0.013	0.010	6.94	6.61
15" HDPE	MH #114	MH #107	15.0	0.008	0.012	2.27	6.27
15" HDPE	INL #117	MH #114	15.0	0.008	0.012	2.01	6.25
15" RCP	MH #118	INL #117	15.0	0.008	0.013	0.88	5.84
15" RCP	MH #119	MH #118	15.0	0.008	0.013	0.89	5.78
15" RCP	INL #121	INL #120	15.0	0.008	0.013	0.75	5.78
12" PVC	INL #112	INL #111	12.0	0.007	0.010	1.76	3.87
12" PVC	INL #111	INL #110	12.0	0.007	0.010	1.85	3.89
15" HDPE	INL #110	INL #109	15.0	0.005	0.012	1.93	4.95
15" HDPE	INL #109	MH #107	15.0	0.005	0.012	1.98	4.95
12" PVC	OCS 1A-3	INL #113	12.0	0.007	0.010	1.24	3.89
12" PVC	INL #113	INL #112	12.0	0.007	0.010	1.72	3.91
2x 10" PVC	MH #202	MH #201	10.0	0.010	0.010	3.81	5.70
16" PVC	MH #201	HW #200 (1A-4)	16.0	0.004	0.010	4.48	6.32
8" PVC	C.O.	MH #201	8.0	0.008	0.010	0.67	1.41
15" HDPE	INL #205	MH #204	15.0	0.010	0.012	1.14	7.00
15" HDPE	MH #204	MH #202	15.0	0.010	0.012	2.07	7.00
15" HDPE	INL #206	MH #204	15.0	0.010	0.012	0.95	7.00
15" HDPE	OCS 1A-1	MH #108	15.0	0.010	0.012	2.81	7.00
15" HDPE	MH #108	MH #107	15.0	0.010	0.012	2.81	7.00
15" HDPE	INL #116	INL #115	15.0	0.008	0.012	0.21	6.30
15" HDPE	INL #115	MH #114	15.0	0.008	0.012	0.25	6.39
15" RCP	INL #120	MH #119	15.0	0.006	0.013	0.89	5.00
8" PVC	C.O.	1A-1 (3)	8.0	0.020	0.010	1.10	2.22
8" PVC	C.O.	1A-1 (2)	8.0	0.020	0.010	0.70	2.22
8" PVC	C.O.	1A-1 (1)	8.0	0.020	0.010	0.79	2.22
8" PVC	C.O.	1A-3 (2)	8.0	0.020	0.010	0.51	2.22
8" PVC	C.O.	1A-3 (1)	8.0	0.020	0.010	0.46	2.22
15" HDPE	OCS 1A-4	MH #301	15.0	0.005	0.012	2.54	4.76
15" HDPE	MH #301	HW #300	15.0	0.005	0.012	2.53	4.95
8" PVC	C.O.	1A-1 (4)	8.0	0.015	0.010	0.38	1.92

Outfall Table - Time: 12.10 hours

Label	Elevation (Invert) (ft)	Time to Maximum Outflow (hours)	Flow (Total In Maximum) (cfs)
EX HW #100	107.63	12.100	22.85
HW #200 (1A-4)	110.14	12.100	4.47
1A-3 (2)	113.75	12.050	0.51
1A-1 (1)	110.75	12.050	0.79
1A-1 (2)	112.00	12.050	0.70
1A-1 (3)	111.75	12.050	1.10

Hackensack Meridian Health - Carrier Clinic - Adolescent Care Unit
Outfall Table - Time: 12.10 hours

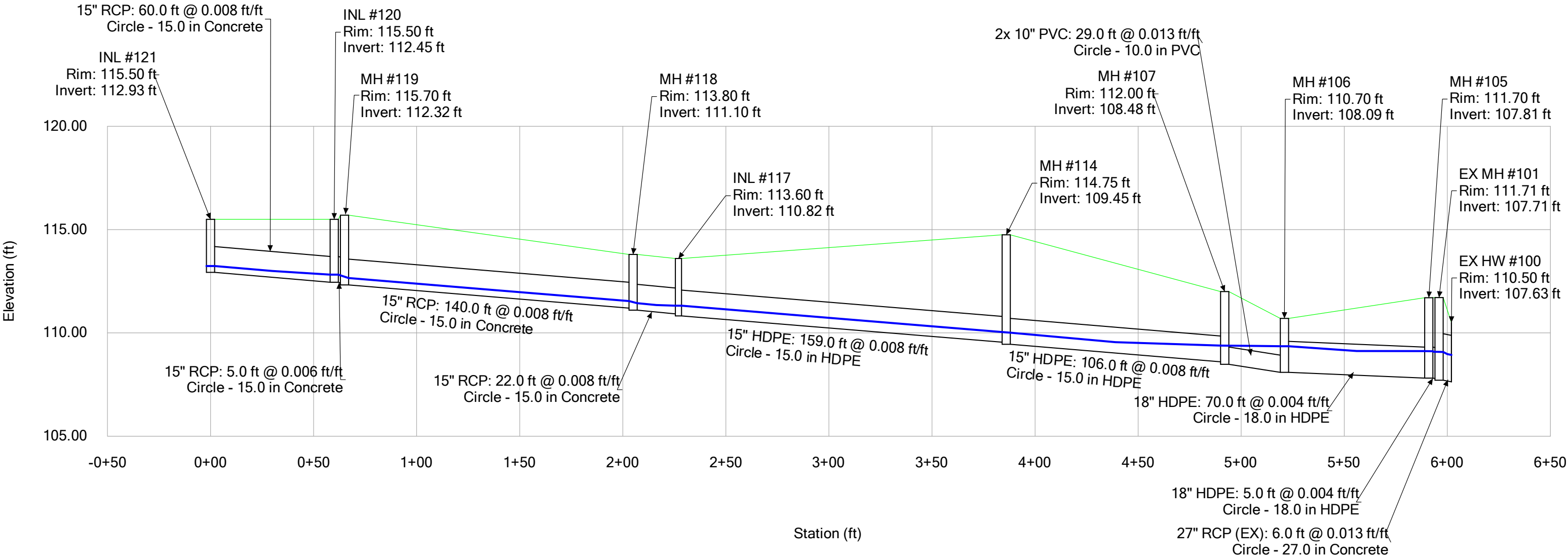
Label	Elevation (Invert) (ft)	Time to Maximum Outflow (hours)	Flow (Total In Maximum) (cfs)
1A-3 (1)	113.50	12.050	0.46
HW #300	109.48	12.500	2.53
1A-1 (4)	110.75	12.050	0.38

Catchment Table - Time: 12.10 hours

Label	Outflow Element	Area (User Defined) (acres)	Percent Impervious (%)	SCS CN	Flow (Maximum) (cfs)	Volume (Total Runoff) (ac-ft)
011	INL #109	0.009	34.1	82.2	0.05	0.005
012	INL #110	0.018	8.8	76.1	0.10	0.008
013	INL #111	0.018	15.1	77.6	0.10	0.008
014	INL #112	0.011	0.0	74.0	0.06	0.005
015	INL #113	0.103	0.0	74.0	0.54	0.044
021	INL #115	0.007	0.0	74.0	0.04	0.003
022	INL #116	0.042	0.0	74.0	0.22	0.018
023	INL #117	0.223	0.0	74.0	1.15	0.095
024	INL #120	0.021	100.0	98.0	0.15	0.014
025	INL #121	0.117	60.0	88.4	0.76	0.066
111	C.O.	0.115	100.0	98.0	0.80	0.076
121	C.O.	0.103	100.0	98.0	0.71	0.068
131	C.O.	0.161	100.0	98.0	1.11	0.107
141	C.O.	0.055	100.0	98.0	0.38	0.037
311	C.O.	0.068	100.0	98.0	0.47	0.045
321	C.O.	0.075	100.0	98.0	0.52	0.050
431	MH #202	0.086	100.0	98.0	0.59	0.057
433	INL #205	0.166	100.0	98.0	1.15	0.110
434	INL #206	0.139	100.0	98.0	0.96	0.092
435	C.O.	0.098	100.0	98.0	0.68	0.065

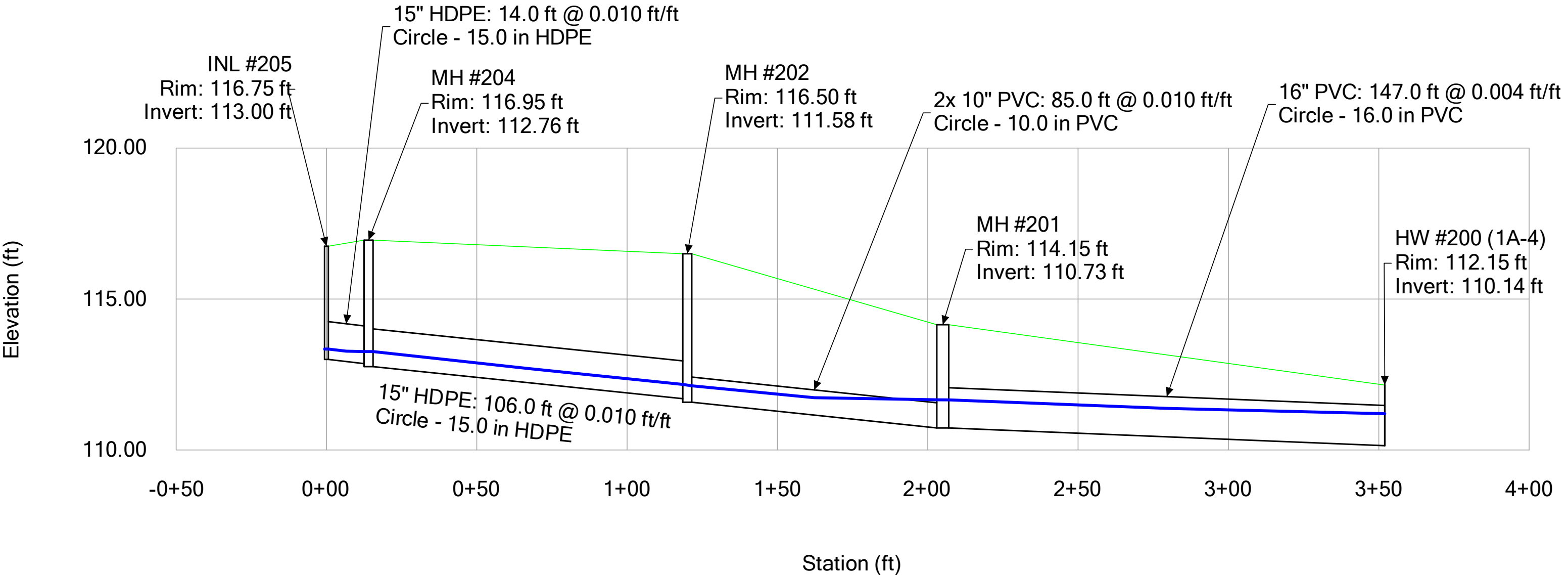
Hackensack Meridian Health - Carrier Clinic - Adolescent Care Unit

INL #121 to EX HW #100

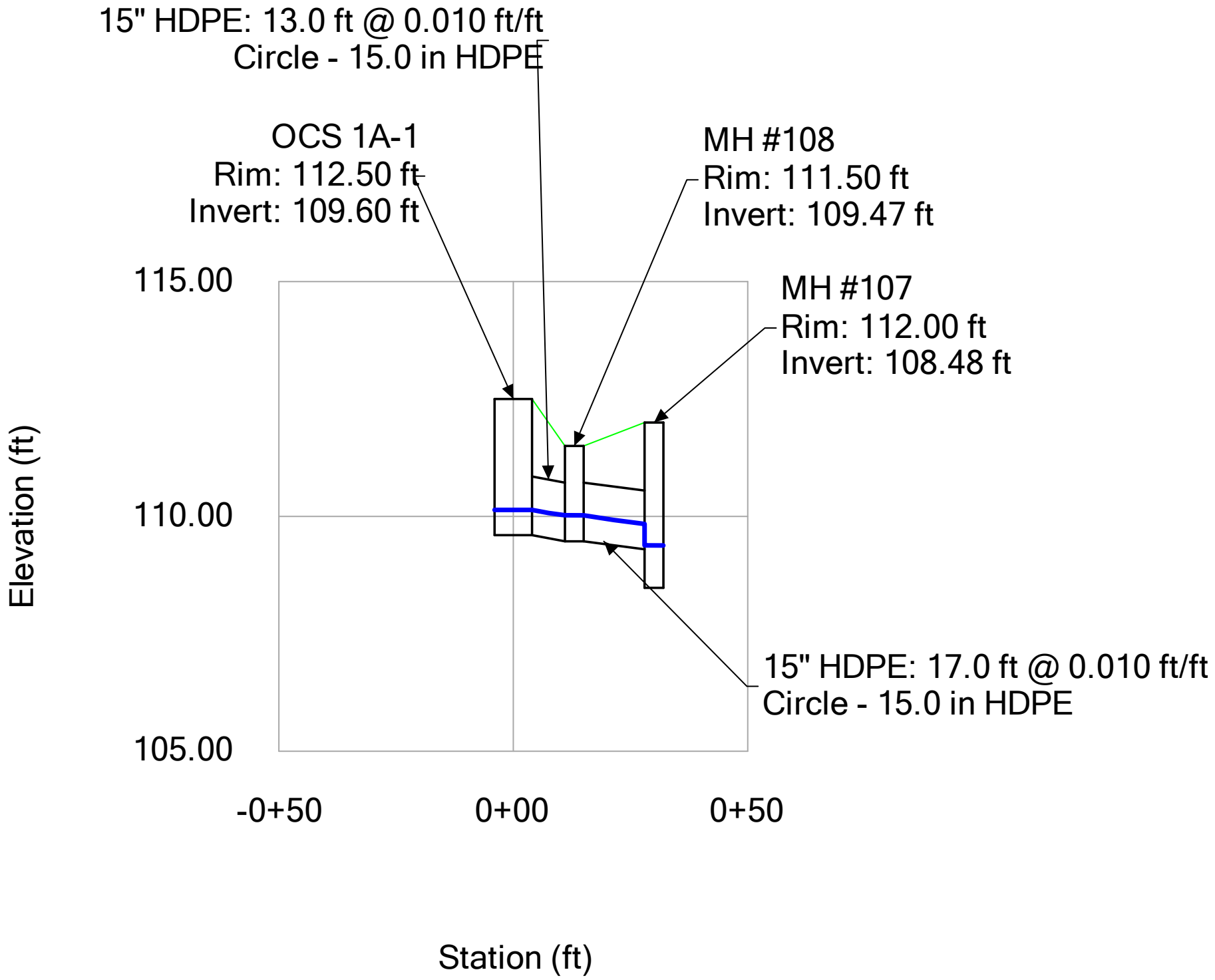


Hackensack Meridian Health - Carrier Clinic - Adolescent Care Unit

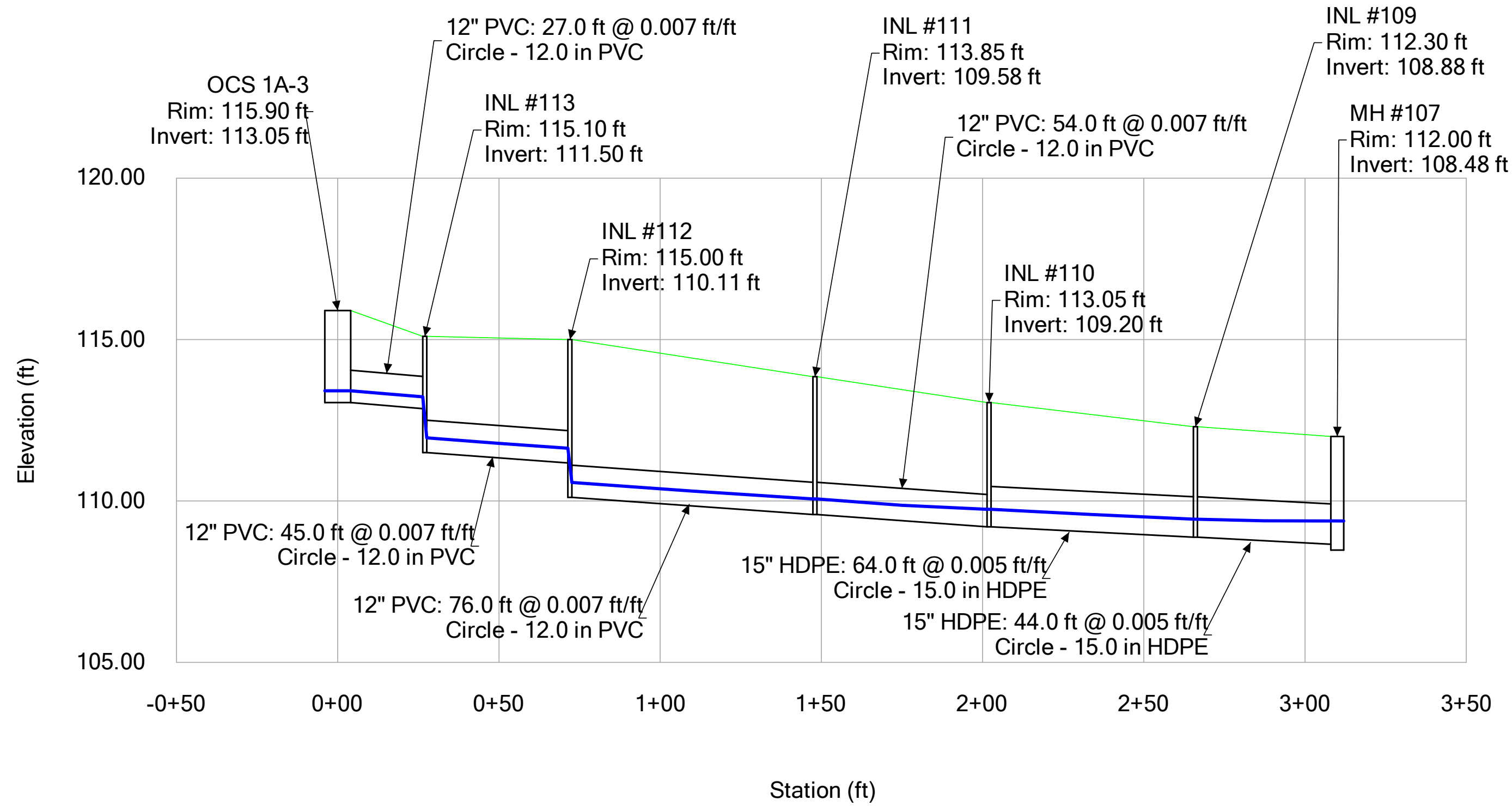
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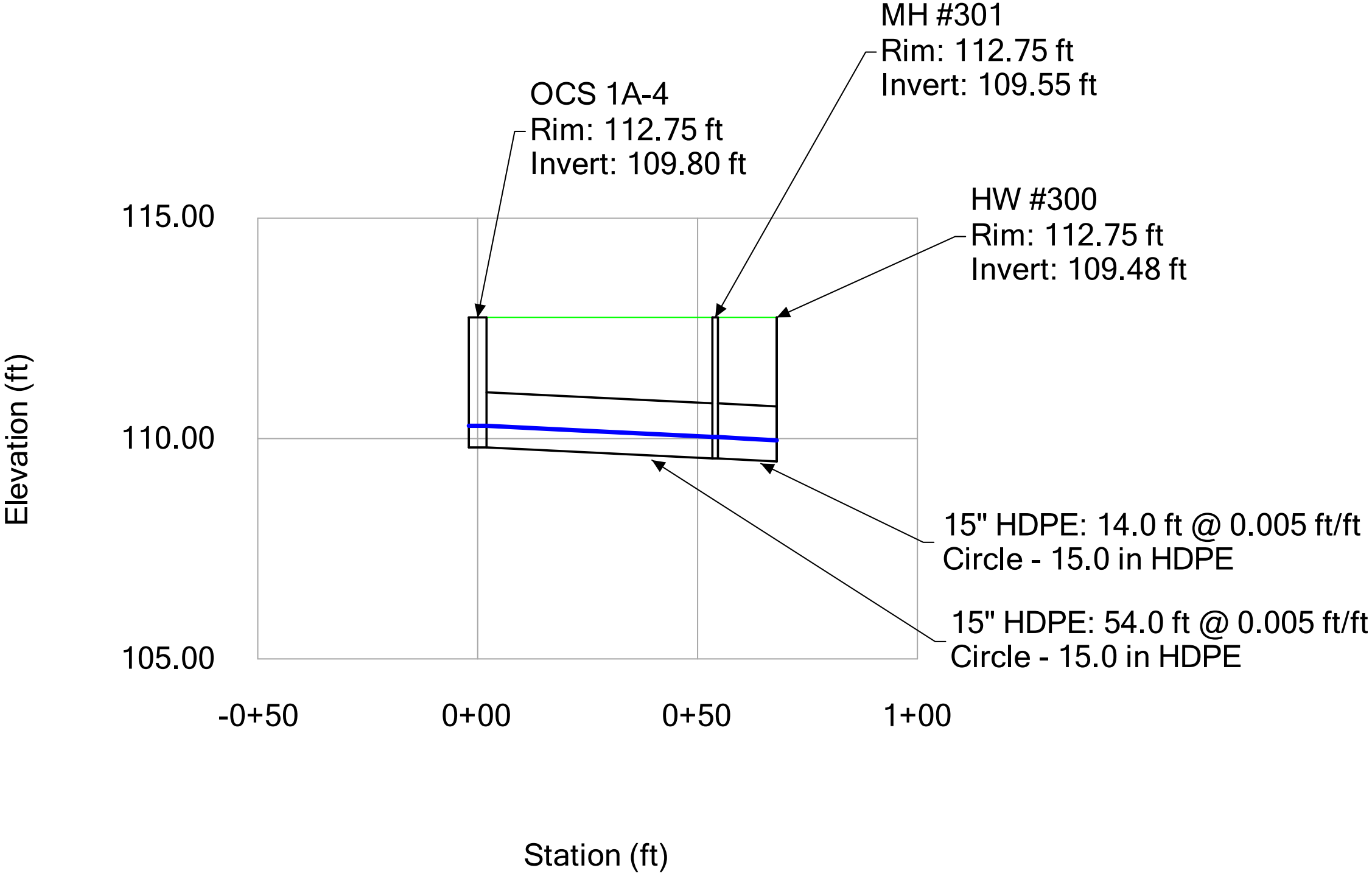
Hackensack Meridian Health - Carrier Clinic - Adolescent Care Unit
OCS 1A-1 to MH #107



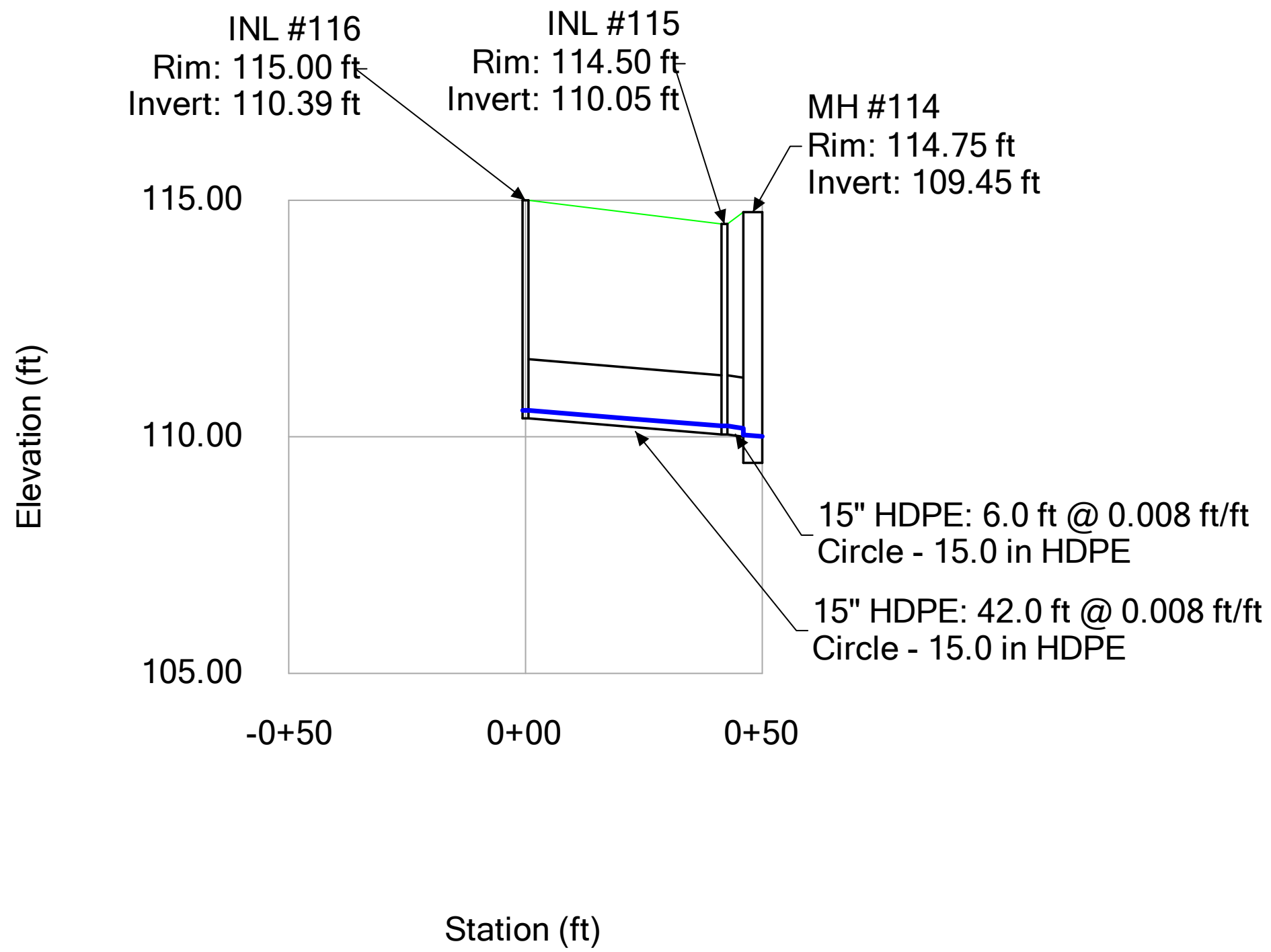
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OCS 1A-3 to MH #107



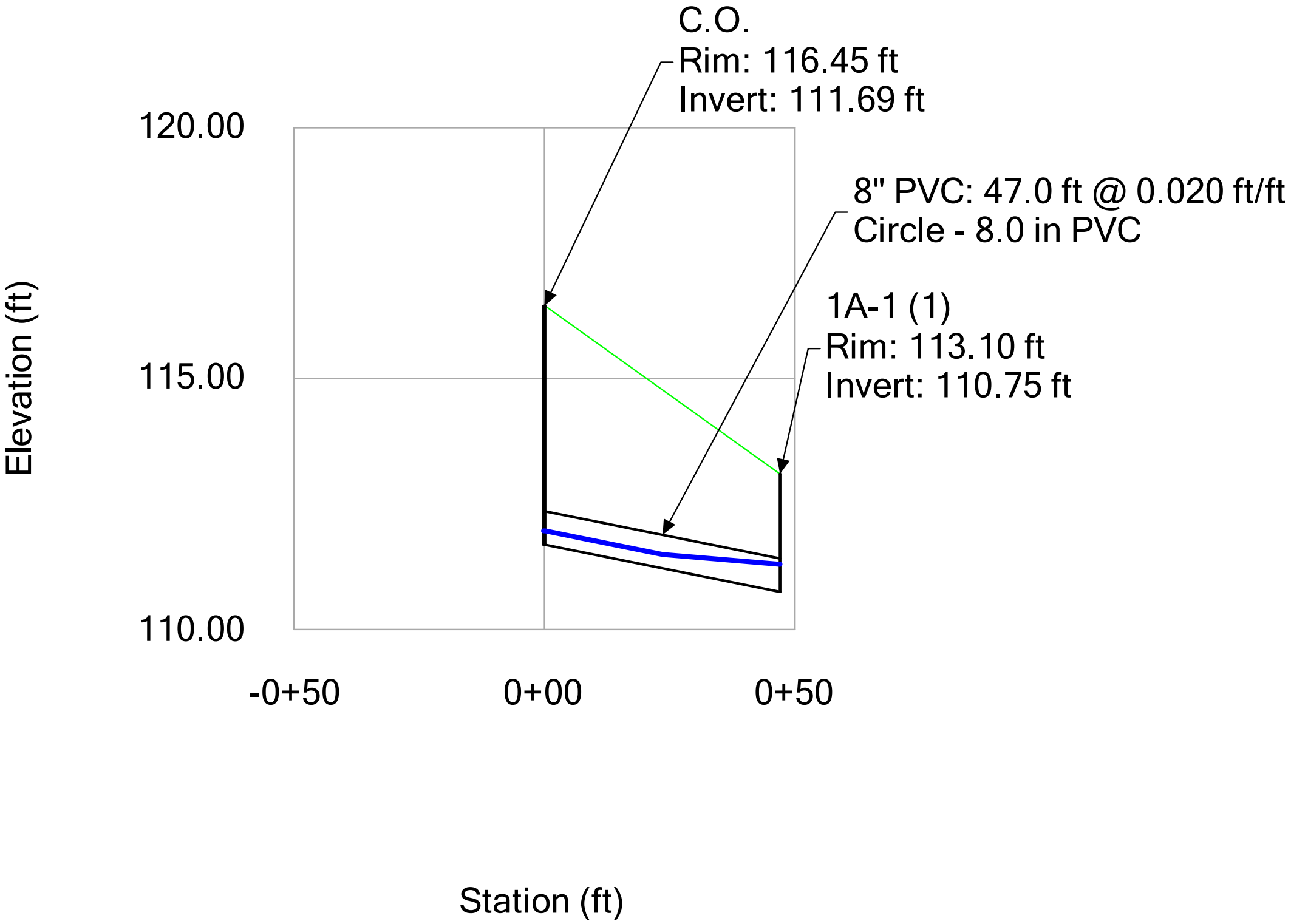
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OCS 1A-4 to HW #300



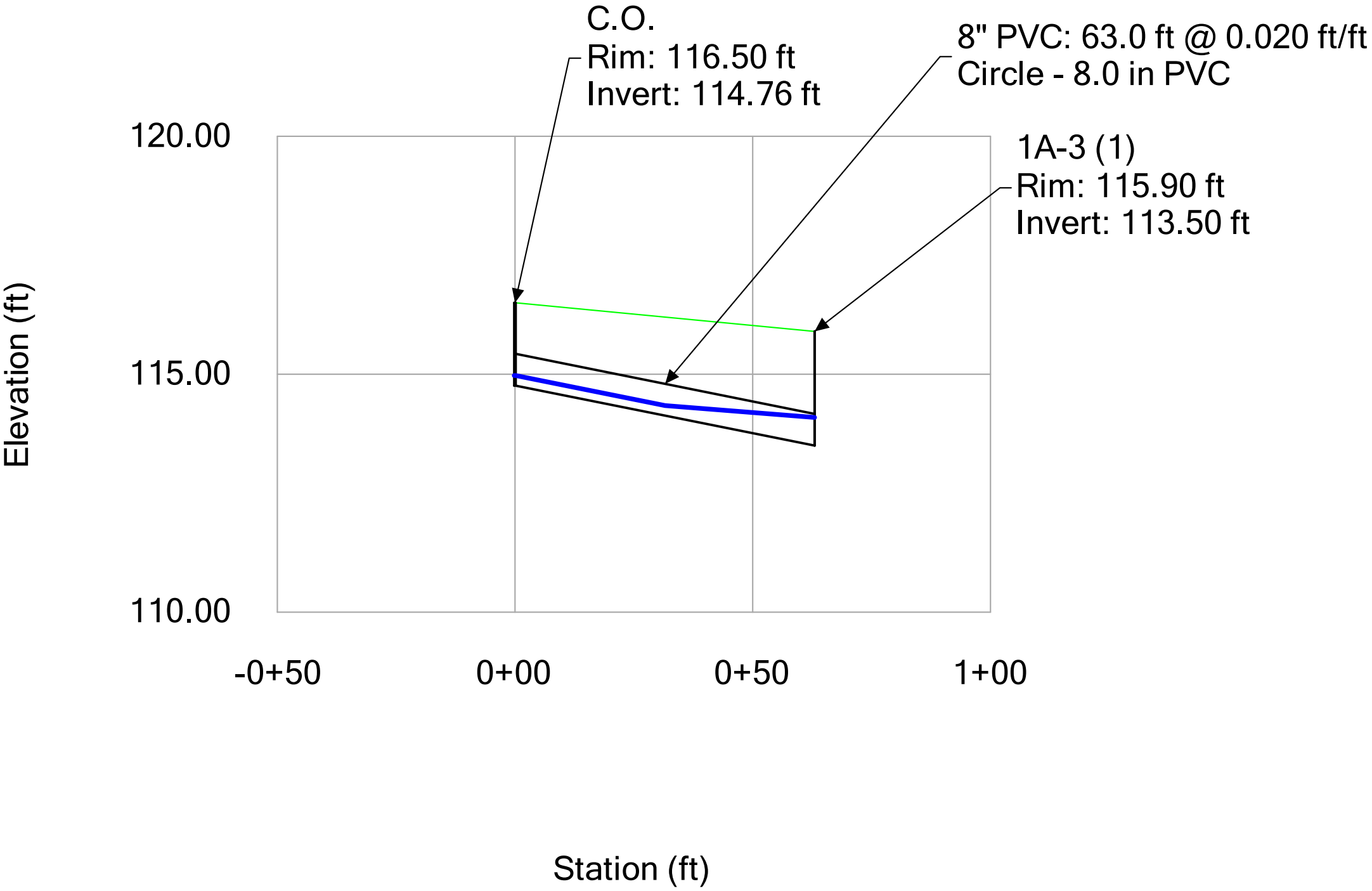
Hackensack Meridian Health - Carrier Clinic - Adolescent Care Unit
INL #116 to MH #114



Hackensack Meridian Health - Carrier Clinic - Adolescent Care Unit
RL to 1A-1

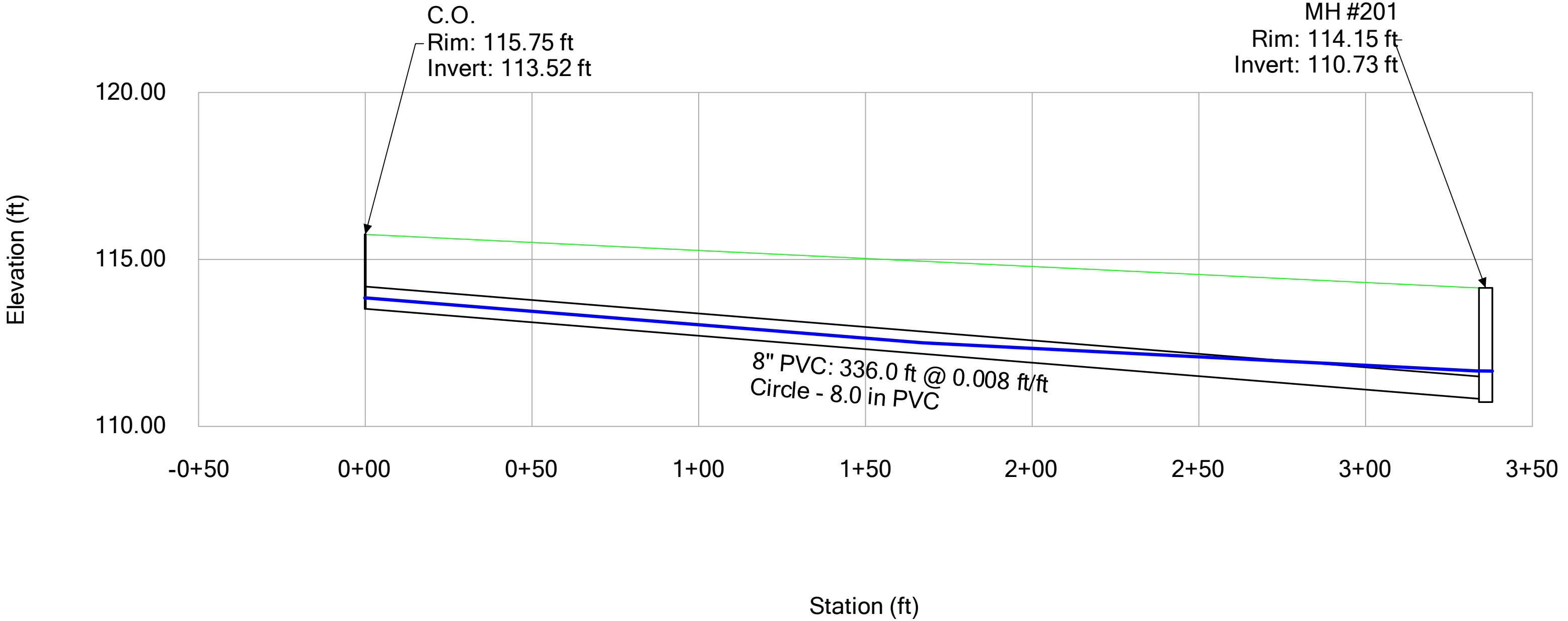


Hackensack Meridian Health - Carrier Clinic - Adolescent Care Unit
RL to 1A-3



Hackensack Meridian Health - Carrier Clinic - Adolescent Care Unit

RL to MH #201



RIPRAP CALCULATIONS**TW < 0.5 Do**

NJ Standards for SESC, Chapter 12

Job # 50164256

Job Name: Carrier Clinic

Designed by: CMP

Checked by: MI/MI

Structure: #2**Select TW Conditions:** ☐ TW = 0.2 Do ☒ TW < 0.5 Do ☐ TW > 0.5 Do**DEWBERRY**Q = **2.21** C.F.S.Do = **1.25** FT.Wo = **1.25** FT.q = Q/Wo = **1.77** C.F.S.TW = **0.20** FT.**Length of apron (La)**

$$La = \frac{1.8q + 7Do}{D_o^{1/2}} = 11.6 \text{ L.F.} \quad \mathbf{12 \text{ L.F. PROVIDED}}$$

Width of apron (W1)**(downstream end)**

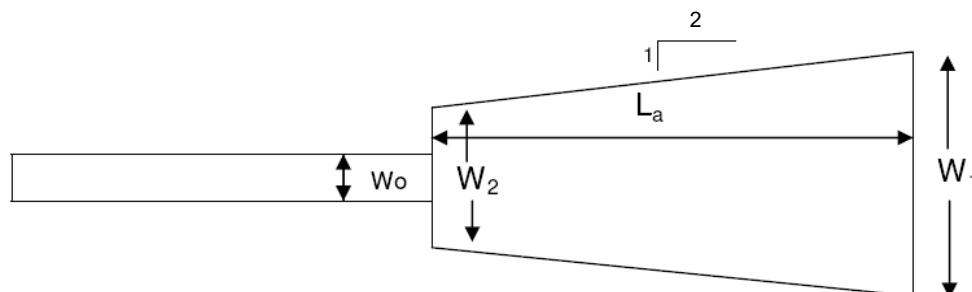
$$W1 = 3Wo + La = 15.3 \text{ L.F.} \quad \mathbf{16 \text{ L.F. PROVIDED}}$$

Width of apron (W2)**(outlet end)**

$$W2 = 3Wo = 3.8 \text{ L.F.} \quad \mathbf{4 \text{ L.F. PROVIDED}}$$

d50 Stone size

$$d_{50} = \frac{0.016 * q^{1.33}}{TW} = 0.17 \text{ F.T.} \quad \mathbf{3 \text{ " STONE CALCULATED}}$$

3 " STONE USED**Apron Thickness (T)**T = d₅₀ Stone size x 2 if filter fabric is used **6 " THICK**T = d₅₀ Stone size x 3 if *no* filter fabric is used **9 " THICK**☒ Use filter fabric ☐ No filter fabric**USE T = 6 " THICK WITH FILTER**

RIPRAP CALCULATIONS**TW < 0.5 Do**

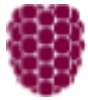
NJ Standards for SESC, Chapter 12

Job # 50164256

Job Name: Carrier Clinic

Designed by: CMP

Checked by: MI/MI

Structure: #3**Select TW Conditions:** ☐ TW = 0.2 Do ☒ TW < 0.5 Do ☐ TW > 0.5 Do**DEWBERRY**Q = **3.87** C.F.S.Do = **1.33** FT.Wo = **1.33** FT.q = Q/Wo = **2.91** C.F.S.TW = **0.20** FT.**Length of apron (La)**

$$La = \frac{1.8q + 7Do}{D_o^{1/2}} = 13.9 \text{ L.F.} \quad \mathbf{14 \text{ L.F. PROVIDED}}$$

Width of apron (W1)**(downstream end)**

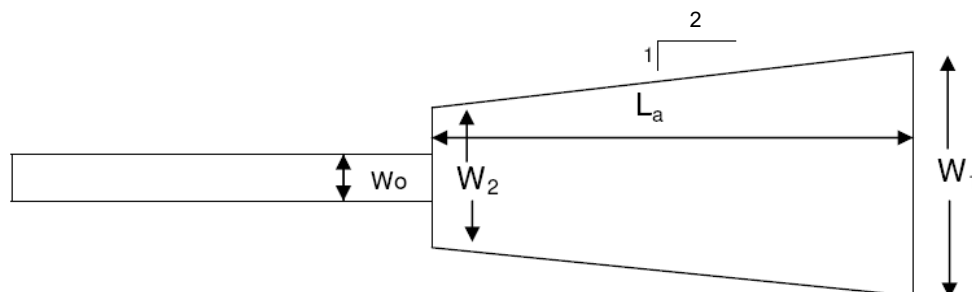
$$W1 = 3Wo + La = 17.8 \text{ L.F.} \quad \mathbf{18 \text{ L.F. PROVIDED}}$$

Width of apron (W2)**(outlet end)**

$$W2 = 3Wo = 4.0 \text{ L.F.} \quad \mathbf{4 \text{ L.F. PROVIDED}}$$

d50 Stone size

$$d_{50} = \frac{0.016 * q^{1.33}}{TW} = 0.33 \text{ F.T.} \quad \mathbf{4 \text{ " STONE CALCULATED}}$$

4 " STONE USED**Apron Thickness (T)**T = d₅₀ Stone size x 2 if filter fabric is used**8 " THICK**T = d₅₀ Stone size x 3 if *no* filter fabric is used**12 " THICK**☒ Use filter fabric☐ No filter fabric**USE T = 8 " THICK WITH FILTER**

APPENDIX IV:

DA-1 Existing Drainage Area Map

DA-2 Proposed Drainage Area Map

DA-3 Existing Inlet Area Map

DA-4 Proposed Inlet Area Map


DRAINAGE MAPS
FOR
CARRIER CLINIC ADOLESCENT PATIENT UNIT

TOWNSHIP OF MONTGOMERY SOMERSET COUNTY NEW JERSEY

SEAL

Mario Iannelli, P.E.
New Jersey Professional Engineer
License No. 24GE04174900

SCALE



SCALE: 1" = 100'

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No.	DATE	BY	Description
REVISIONS			

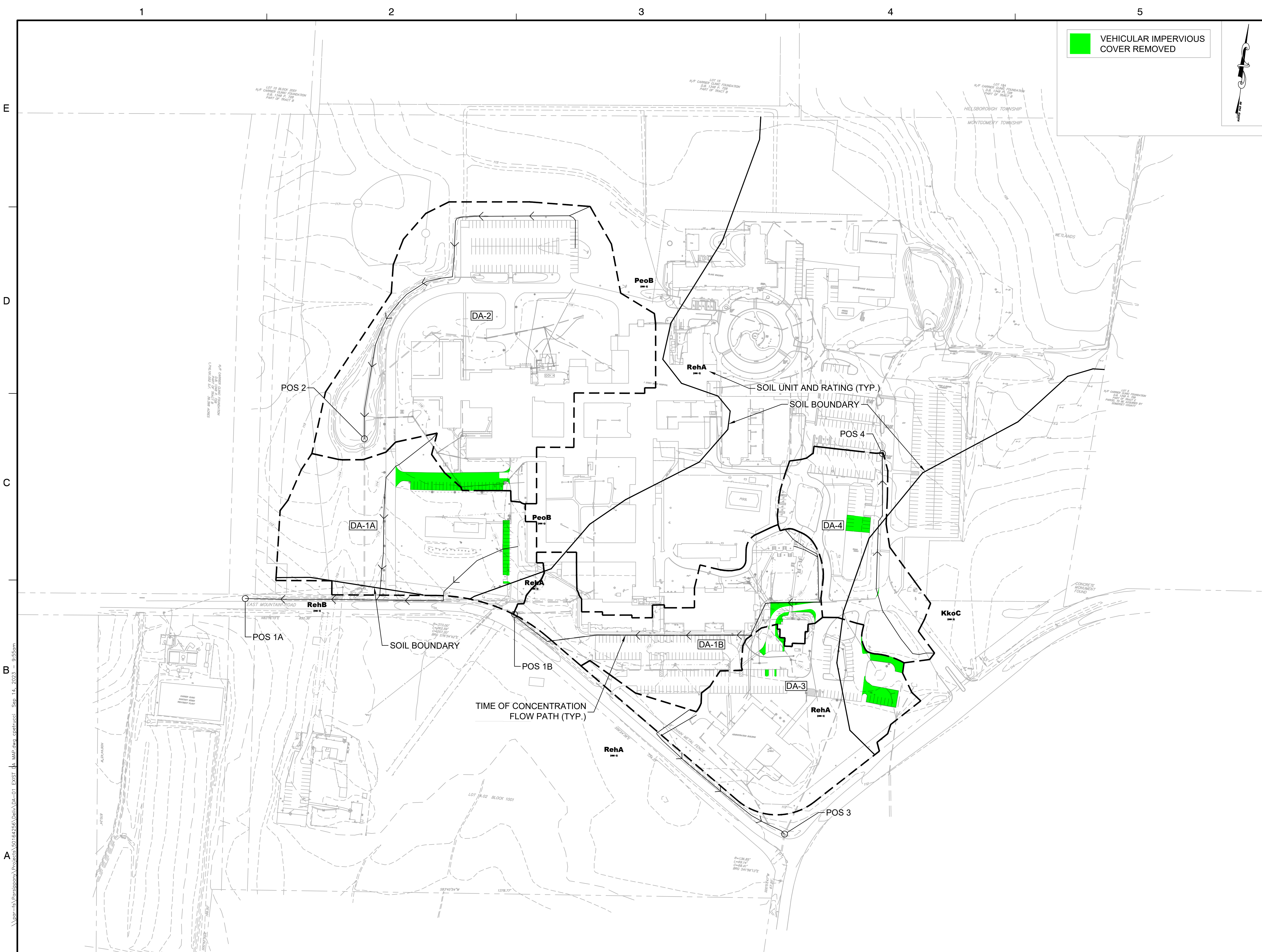
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APPROVED BY	<u>MI</u>
CHECKED BY	<u>MI/CMP</u>
DATE	<u>09/08/2023</u>

TITLE

EXISTING
DRAINAGE AREAS
MAP

PROJECT NO. 50164256

DA-01



DRAINAGE MAPS
FOR
CARRIER CLINIC ADOLESCENT PATIENT UNIT

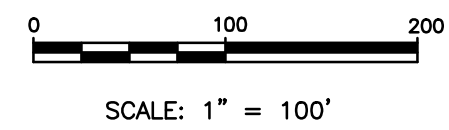
252 COUNTY ROAD 601
BLOCK 2001, LOTS 2 & 14.02

TOWNSHIP OF MONTGOMERY SOMERSET COUNTY NEW JERSEY

SEAL

Mario Iannelli, P.E.
New Jersey Professional Engineer
License No. 24GE04174900

SCA

[illegible]

No.	DATE	BY	Description
REVISIONS			

DRAWN BY CMP

APPROVED BY MI

CHECKED BY MI/CMP

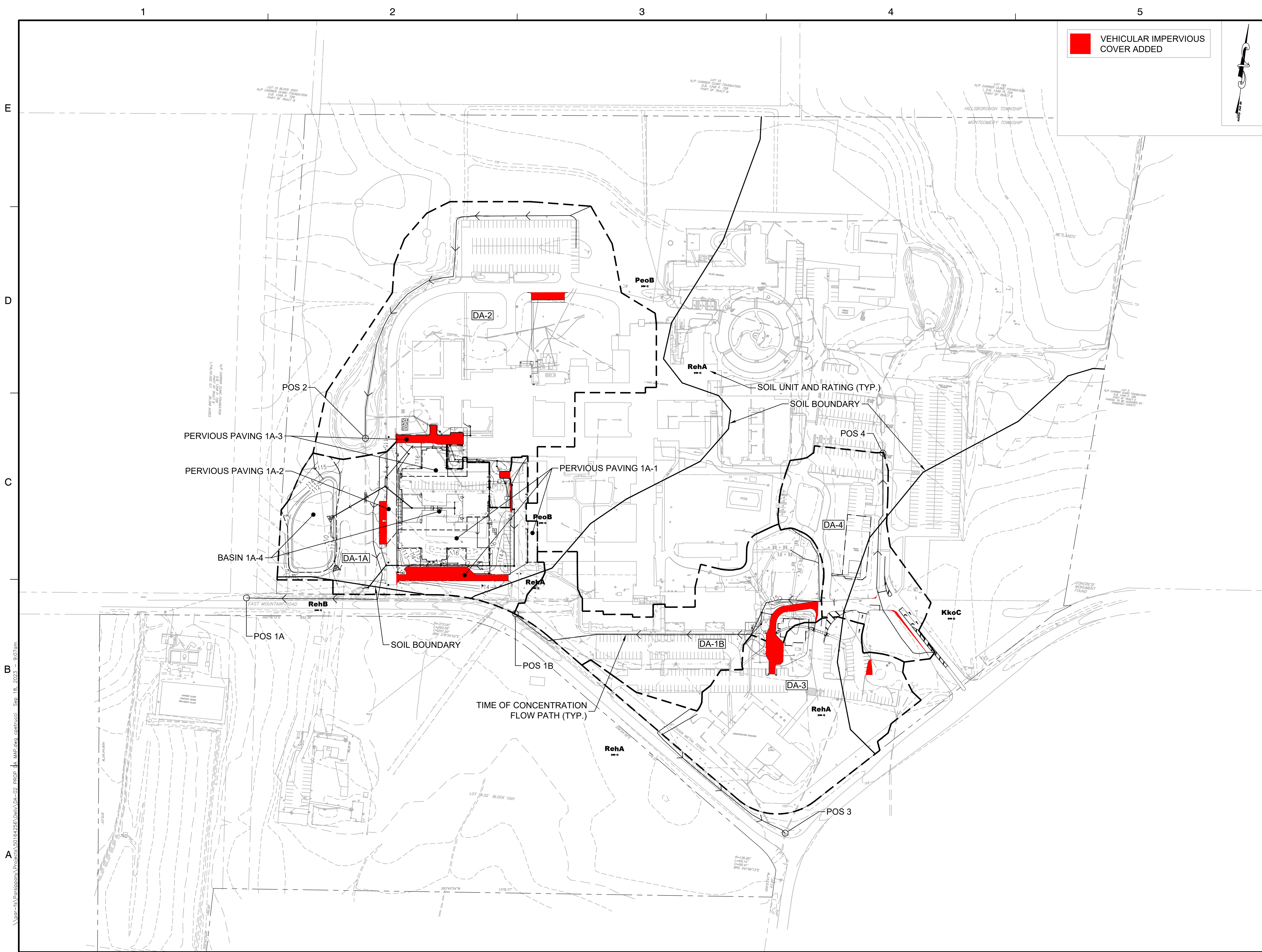
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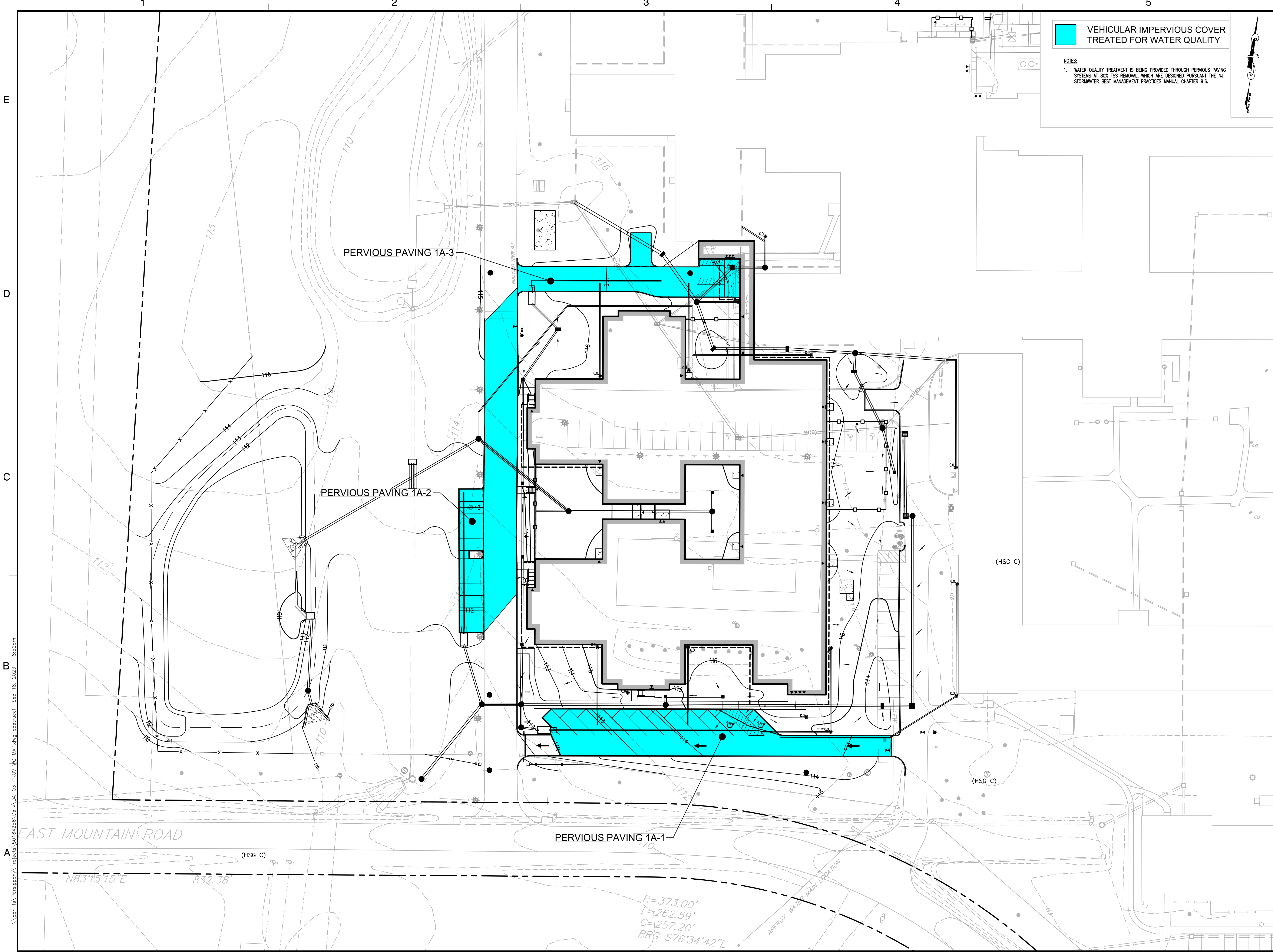
TITLE

PROPOSED
DRAINAGE AREAS
MAP

PROJECT NO. 50164256

DA-02





VEHICULAR IMPERVIOUS COVER
TREATED FOR WATER QUALITY

NOTES:
1. WATER QUALITY TREATMENT IS BEING PROVIDED THROUGH PERVIOUS PAVING
SYSTEMS AT 80% TSS REMOVAL, WHICH ARE DESIGNED PURSUANT THE NJ
STORMWATER BEST MANAGEMENT PRACTICES MANUAL CHAPTER 9.6.



Dewberry Engineers Inc.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
973.739.9400 Phone
973.739.9710 Fax
Certificate of Authorization #24GA28047600

DRAINAGE MAPS
FOR
CARRIER CLINIC ADOLESCENT PATIENT UNIT
252 COUNTY ROAD 601
BLOCK 2001, LOTS 2 & 14.02
TOWNSHIP OF MONTGOMERY SOMERSET COUNTY NEW JERSEY

SEAL

Mario Iannelli, P.E.
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License No. 24GE04174900

SCALE
0 30 60
SCALE: 1" = 30'

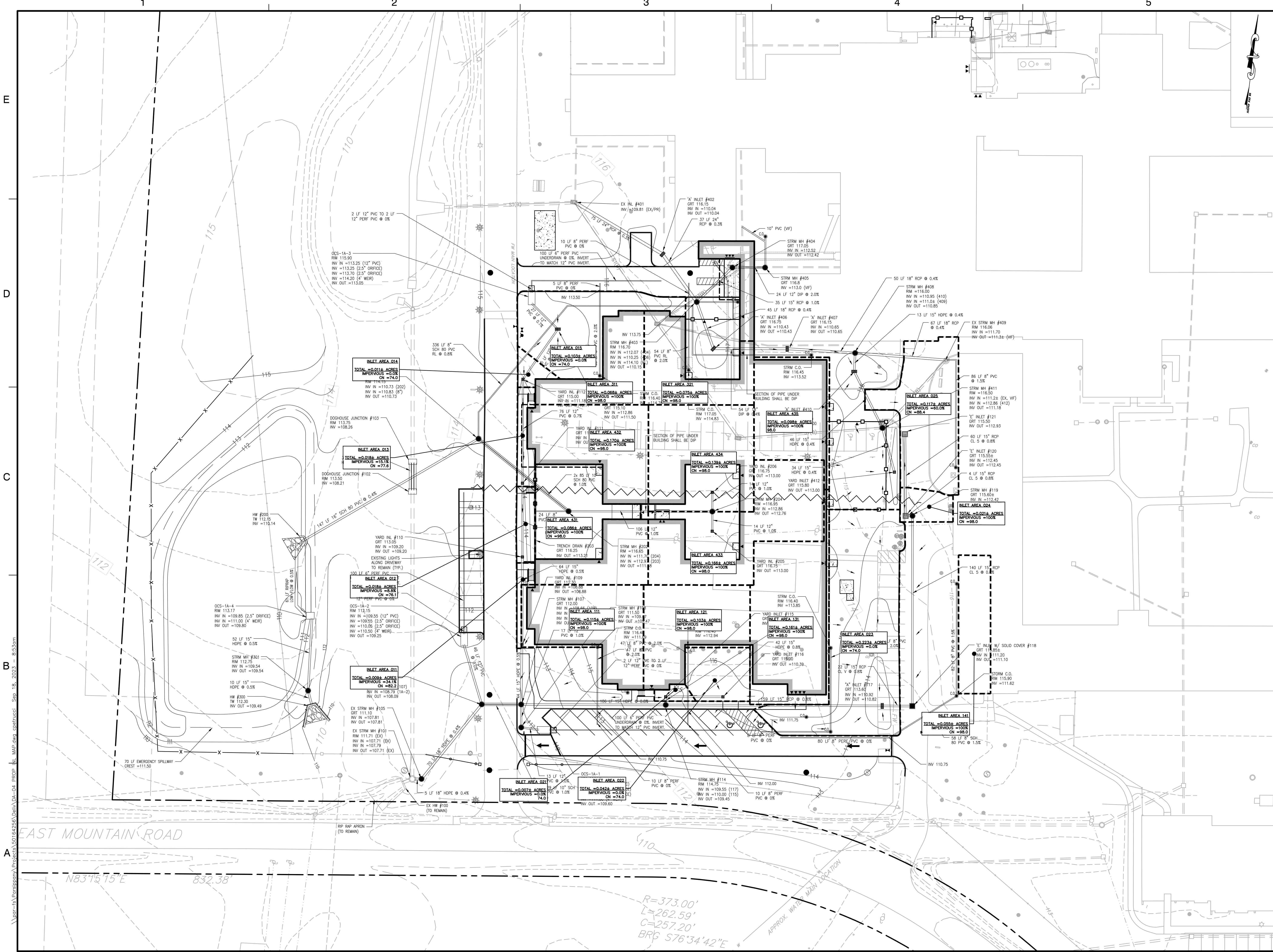
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REVISIONS			

DRAWN BY: CMP
APPROVED BY: MI
CHECKED BY: MI/CMP
DATE: 09/08/2023

TITLE
PROPOSED
WATER QUALITY
AREAS PROVIDED
MAP

PROJECT NO. 50164256

DA-03



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DRAINAGE MAPS
FOR

CARRIER CLINIC ADOLESCENT PATIENT UNIT
252 COUNTY ROAD 601
BLOCK 2001, LOTS 2 & 14.02

TOWNSHIP OF MONTGOMERY SOMERSET COUNTY NEW JERSEY

SEAL

Mario Iannelli, P.E.
New Jersey Professional Engineer
License No. 24GE04174900

SCALE
0 30 60
SCALE: 1" = 30'

No.	DATE	BY	Description
REVISIONS			
DRAWN BY: CMP			
APPROVED BY: MI			
CHECKED BY: MI/CMP			
DATE: 09/08/2023			
TITLE: PROPOSED INLET AREAS MAP			
PROJECT NO. 50164256			

DA-04

APPENDIX V:
Operations & Maintenance Manual for Stormwater Management Facilities

Operations & Maintenance Manual for Stormwater Management Facilities

Carrier Clinic – Adolescent Patient Unit

Block 2001; 1001, Lots 2; 14.02
252 County Road 601
Township of Montgomery
Somerset County, NJ 08502

September 2023

Prepared for:
Carrier Clinic, Inc.
252 County Route 601
Belle Mead, NJ 08502
(908) 281-1000

Prepared by:
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600 Parsippany Road
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Certificate of Authorization
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PART I: PROJECT DETAILS

A. INTRODUCTION

This Operations and Maintenance (“O&M”) Manual has been prepared for Carrier Clinic, Inc., applicant of the property known as Lots 2; 14.02 of Blocks 2001; 1001 in the Township of Montgomery, Somerset County, NJ. The drainage features and landcover are proposed to be maintained by the site owners. Failure to repair and maintain the drainage basins and associated structures may be cause for the Township of Montgomery to undertake all reasonably necessary repairs or maintenance and to charge such to the owners as a municipal lien on those properties.

This Operations and Maintenance (“O&M”) Manual has been prepared in accordance with the most recent standards of the New Jersey Stormwater Best Management Practices (BMP) Manual. Chapter 8 of the BMP Manual outlines the necessity for regular inspections and maintenance of stormwater facilities:

“Regular and thorough maintenance is necessary for stormwater management measures to perform effectively and reliably. They have also demonstrated that failure to perform such maintenance can lead to diminished performance, deterioration, and failure, in addition to a range of health and safety problems including mosquito breeding, vermin, and the potential for drowning. The potential for such problems to develop is accentuated by many of the very features and characteristics that allow stormwater management measures to do their job, including standing or slowing moving water, dense vegetation, forebays, trash racks, dams, and the need to continually function in all types of weather. As implied by their name, stormwater management measures are also expected to become the repositories for sediment, nutrients, trash, debris, and other pollutants targeted by the NJDEP Stormwater Management Rules. For this reason, stormwater management measures share maintenance requirements with more mundane items as vacuum cleaner bags, car motor filters, and floor mats, all of which require regular inspection and cleaning, sediment and debris removal, and periodic replacement.

In recognition of these needs and potential problems, the NJDEP Stormwater Management Rules require that a maintenance plan be developed for all stormwater management measures incorporated into the design of a major development. This maintenance plan must contain specific preventative and corrective maintenance tasks, schedules, cost estimates, and the name, address, and telephone number of the person or persons responsible for the measures’ maintenance.”

B. DESCRIPTION OF FACILITIES

The applicant proposes a building expansion with associated driveways, parking areas, drainage features, and landscaping. Improvements will increase the overall site impervious surface areas but will decrease the regulated motor vehicle surface areas as compared from existing to proposed conditions. The existing stormwater management facilities onsite include a basin, stormwater conveyance networks, and outfalls that discharge into existing drainage features. All existing outfalls will remain, and an additional outfall is proposed. Runoff quantity and quality standards are met through three (3) new pervious paving systems, a new detention basin, and low impact development techniques.

It is necessary that the BMPs, inlets, pipes, outfalls, and conduit outlet protection be regularly inspected for erosion and damage and cleared of any trash, sediment and/or debris that may collect. Failure to do so may result in blockage or clogging of outlet pipes and could cause excessive surface runoff and flooding. If outlet pipes do not operate properly the proposed management structures will not perform their intended function.

Rainfall events are random and inspection and maintenance of these facilities prior to them is impractical. Therefore the collection, detention and control structures must be consistently ready to function as designed. The maintenance required to accomplish this must, therefore, be performed thoroughly and on a regular basis, regardless of how often the facilities are called upon for stormwater management. The key to performing this level of maintenance lies in establishing and sustaining a comprehensive, regularly scheduled maintenance program. This manual is intended to provide guidance and instruction to project personnel for the proper operation and maintenance of the stormwater collection structures.

C. PROJECT CONTACTS:

<u>Township Engineer:</u>	Mark Herman, PE, CME, CFM Township of Montgomery Municipal Building 100 Community Drive Skillman, New Jersey 08558 Phone: (908) 359-8211 x2295
<u>Township Public Works Superintendent:</u>	Art Villano Township of Montgomery Municipal Building 100 Community Drive Skillman, New Jersey 08558 Phone: (908) 874-3144
<u>Township Construction Code Official:</u>	Roy Mondì Township of Montgomery Municipal Building 100 Community Drive Skillman, New Jersey 08558 Phone: (908) 533-9196
<u>DRCC:</u>	D&R Canal Commission P.O. Box 539 Stockton, NJ 08559 Phone: 609-397-2000
<u>NJDEP:</u>	Bureau of Nonpoint Pollution Control 501 East State Street P.O. Box 419 Trenton, NJ 08625-0419 Phone: 609-633-7021 Fax: 609-984-2147 Emergency Hotline – 1-877-WARNDEP
<u>Design Engineer:</u>	Mario Iannelli, P.E. Dewberry Engineers Inc. 600 Parsippany Rd., Suite 301 Parsippany, NJ 07054 Phone: (973) 576-9675
<u>Project Applicant/ Property Owner:</u>	West Dewey, LLC c/o Commercial Property Managers, Inc. 111 Littleton Road, Suite 100 Parsippany, NJ 07054 Phone: (973) 829-0077

PART II: ROUTINE INSPECTION AND MAINTENANCE

In discussing proper inspection and maintenance procedures, it is important to remember that there are two distinct reasons for proper inspection and maintenance of the facilities: to protect against loss of life and major property damage; and to ensure the proper functioning of the system to alleviate flooding. Proper inspection and maintenance procedures will include routine inspection and maintenance requirements for the outfall, inlets, and pipes.

A. PRE-CONSTRUCTION

During the construction activities, the vegetated areas must be protected from compaction by construction equipment, and no material shall be stockpiled in these areas.

B. STORMWATER MANAGEMENT FACILITIES

The stormwater management facilities have been designed to control stormwater flows and volumes. Without proper routine inspection and maintenance, they may lose their capability to function properly.

A consulting Professional Engineer should perform regularly scheduled maintenance inspection of the stormwater facilities for clogging and excessive debris and sediment accumulation at least four times annually as well as after every storm exceeding 1 inch of rainfall. Sediment removal should take place only when the system is thoroughly dry. Disposal of debris, trash, sediment, and other waste material should be done at suitable disposal/recycling sites and in compliance with all applicable local, state, and federal waste regulations. The primary purpose of these inspections is to ascertain the operational condition and safety of the facilities. Inspections will also provide information on the effectiveness of regularly scheduled Preventative and Corrective Maintenance procedures and identify where changes in the extent and scheduling of the procedures are warranted.

C. PREVENTIVE MAINTENANCE PROCEDURES:

The purpose of Preventive Maintenance is to maximize the effectiveness of the stormwater facilities. These procedures are as follows:

1. Maintenance of Grass and Landscaped Areas:

Vegetated areas must be inspected at least annually for erosion and scour. Biweekly inspections of vegetation health should be performed during the first growing season or until the vegetation is established. Once established, inspections of vegetation health, density, and diversity should be performed at least twice a year during both the growing and non-growing season. All vegetation deficiencies should be addressed without the use of fertilizers and pesticides whenever possible. All vegetated areas should be inspected at least once a year for

unwanted growth, which should be removed with minimum disruption to the remaining vegetation and basin subsoil.

Grass, tree and shrub areas require periodic fertilizing, de-thatching, and soil conditioning in order to maintain healthy growth and to provide soil stabilization. Grading and landscaping around facility inlets should be mowed, trimmed and debris should be removed. The application of fertilizers should follow manufacturer's instructions to reduce run-off of these compounds into the stormwater collection system. Additionally, provisions should be made to re-seed and re-establish grass cover in areas damaged by sediment accumulation, soil erosion or other causes. These tasks should be performed or at least evaluated on a quarterly basis.

Lawn areas should be mowed at least once a month during the growing season and shall be mowed on a regular basis as necessary to maintain the lawn at a height of 2 to 3 inches. Any dead or bare lawn areas shall be re-seeded in accordance with the original procedures as outlined in the Soil Erosion and Sediment Control Plans using the same mix and seeding rates. No lawn areas should be mowed twice per growing season.

The trees and shrubs shall be maintained regularly to ensure good health and exhibit an attractive appearance. Their maintenance should include fertilization twice annually with one application in the spring and another in early fall. Trees and shrubs shall be pruned in the late winter or early spring. However, dead branches should be removed as soon as they are noticed. The structure must be inspected for unwanted tree growth annually.

2. Removal and Disposal of Trash/Debris and Sediment

All stormwater management components expected to receive and/or trap debris and sediment must be inspected for clogging and excessive debris and sediment accumulation at least four times annually as well as after every storm exceeding one inch of rainfall in 24 hours. Such components should include the catch basins, outlet structures, trash racks and discharge points.

Removal of trash and debris will prevent possible damage and minimize potential mosquito breeding habitats. Debris and trash must be properly hauled off the site and transferred to an approved disposal site.

3. Maintenance of the Parking Lot and Pervious Paving

This management measure involves employing pavement cleaning practices, such as parking lot sweeping on a regular basis, to minimize pollutant export to the stormwater conveyance system/basins and eventually the receiving waters. The pervious paving sections must be vacuum swept a minimum four (4) times per year, including after every storm exceeding 1 inch of rainfall to prevent the surface course from clogging. These cleaning practices are

designed to remove sediment, debris, and other pollutants from access drive and parking lot surfaces that are a potential source of pollution impacting urban waterways. Mechanical machines that use vacuum assisted dry sweeping to remove particulate matter shall be utilized as these can remove finer sediment particles. Parking lots and access drives shall be swept/ vacuumed at least semi-annually or more often as conditions warrant. The disposal of the swept material must be properly hauled off the site and transferred to an approved disposal site. Other parking lot maintenance features include the use of on-site trash receptacle. These receptacles should be located in strategic areas where the majority of the pedestrian traffic occurs. These receptacles should be emptied weekly. The disposal of the solid waste must be properly hauled off the site and transferred to an approved disposal site.

4. Maintenance of the Basin

The inflow and outflow pipes of the basin are to be evaluated for excessive deposition of sediment and debris in pipe inverts at least four times a year, including after every storm exceeding 1 inch of rainfall. This includes the headwalls, FES, riprap apron, low-flow channels, trash rack, and outlet structure. Sediment accumulation should be examined at least four times a year and cleaned out when appreciable sediment build-up occurs. If the water fails to drain 72 hours after the end of the storm, corrective measures must be taken.

Basins should be inspected regularly by mosquito control personnel. All mosquito breeding habitats must be promptly eliminated.

D. CORRECTIVE MAINTENANCE PROCEDURES:

1. Structural Repairs:

All structural components must be inspected for cracking, subsidence, spalling, erosion, and deterioration at least annually. Structural damage to outlets and inlet structures, access points and roadways as a result of flood events, settlement or other causes must be repaired promptly. The urgency of the repairs will depend upon the nature of the damage and its effects on the safety and operation of the facility. The analysis of the structural damage and the design and performance of structural repairs should only be undertaken by a consulting Professional Engineer.

2. Erosion Repair:

Vegetative cover or other protective measures are necessary to prevent the loss of soil due to the forces of wind and water. Where a re-seeding program has not been effective in maintaining a non-erosive vegetative cover, other methods such as rip-rap, geotextile fabrics, sod or regrading shall be utilized.

3. Vegetative Cover Repair:

Vegetative cover should be maintained at 85 percent. If vegetative cover has greater than 50 percent damage, the area should be re-established in accordance with original plan specifications.

4. Snow and Ice Removal:

Accumulations of snow and ice can threaten the proper drainage of water to stormwater inlets. Provision of the equipment, material and personnel to monitor and remove snow and ice from critical areas will assure the proper drainage of stormwater during the winter months.

E. DRAIN-DOWN TIME (100-YEAR STORM EVENTS)

*Pervious Paving 1A-1 Drain Time = **39.22 hours***

*Pervious Paving 1A-2 Drain Time = **10.99 hours***

*Pervious Paving 1A-3 Drain Time = **14.82 hours***

*Basin 1A-4 Drain Time = **69.21 hours***

The calculations for these drain times include the time it takes for the 100-year storm volume to completely discharge through the most hydraulically restrictive layer, which is the average flow rate of the lowest outlet control structure orifice. These drain times are conservative and may be lower in practice. If significant increases in normal drain time is observed, the pond's outlet structure and tailwater levels must be evaluated, taking appropriate measures to comply with the maximum drain time requirements of 72 hours.

F. SUMMARY OF MAINTENANCE PROCEDURES:

Preventive Maintenance

1. Maintenance of Grass and Landscaped Areas
2. Removal and Disposal of Trash/Debris and Sediment
3. Maintenance of the Parking Lot/Pervious Paving Systems
4. Maintenance of the Basin

Corrective Maintenance

1. Structural Repairs
2. Erosion Repair
3. Vegetative Cover Repair
4. Snow and Ice Removal

PART III: MAINTENANCE EQUIPMENT & MATERIALS

1. Grass Maintenance Equipment

- A. Riding Mowers
- B. Hand Mower
- C. Gas Powered Trimmer
- D. Seed Spreaders

- E. Fertilizer Spreaders
- F. De-Thatching Equipment
- G. Pesticide and Herbicide Application Equipment
- H. Grass Clipping and Leaf Collection Equipment

2. Vegetative Equipment

- A. Saws
- B. Pruning Shears
- C. Hedge Trimmers
- D. Wood Chippers

3. Transportation Equipment

- A. Trucks for Transportation of Material and Equipment
- B. Vehicles for Transportation of Personnel

4. Debris, Trash, Snow, Sediment And Water Removal Equipment

- A. Loader/Backhoe
- B. Portable Pump for Dewatering
- C. Vacuum Truck
- D. Power Washer

5. Miscellaneous Equipment

- A. Shovels
- B. Rakes
- C. Picks
- D. Wheel Barrows
- E. Brooms

6. Maintenance Materials

- A. Topsoil
- B. Fill
- C. Seed
- D. Lawn Treatment (Fertilizer, Lime, Pesticides, Herbicides, etc.)
- E. Mulch

PART IV: REPORTING

The reporting of all maintenance work and inspections provides valuable data on the facility condition. Review of this information will also help to establish more efficient and beneficial maintenance procedures and practices. All completed forms shall be directed to the Borough Engineer for review and subsequent follow-up recommendation. From field personnel to the maintenance director, everyone should be encouraged to report any problems or suggest any changes to the site.

PART V: PERMITTING

The owner shall be responsible to obtain all permits (Federal, State, County and Municipal agencies) required to maintain the stormwater management facilities associated with this project and outlined in this operation and maintenance report. In addition, all maintenance and repair activities shall be done in accordance with all Federal, State and local requirements including, but not limited to, OSHA.

PART VI: APPENDIX

The appendix of this report contains a sample checklist and log for the inspection and maintenance of the site facilities.

Inspection Checklist / Maintenance Actions

Pipe Network

Checklist (circle one): Quarterly / Annual / Monthly / Special Event Inspection

Checklist No. _____ **Inspection Date:** _____

Date of most recent rain event: _____

Rain Condition (circle one):

Drizzle / Shower / Downpour / Other _____

Ground Condition (circle one):

Dry / Moist / Ponding / Submerged / Snow accumulation

The inspection items and preventative/corrective maintenance actions listed below represent general requirements. The design engineer and/or responsible party shall adjust the items and actions to better meet the conditions of the site, the specific design targets, and the requirements of regulatory authorities.

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
A Inlets and Manholes	1	Missing or damaged rim or grate.	Y__ N__	Repair or replace Work Order # _____
	2	Damaged structures (subsidence, spalling, erosion, or deterioration) and/or reinforcing exposed.	Y__ N__	Repair structure Work Order # _____
	3	Standing water or debris.	Y__ N__	Determine reason for downstream clog and remove the debris.
B Outfalls	1	Outlet components skewed, misaligned, or missing.	Y__ N__	Repair or replace Work Order # _____
	2	Cracked or damaged headwall and/or pipe.	Y__ N__	Repair Work Order # _____
C Vegetation	1	Erosion, sediment accumulation, and/or missing stones in river jack stone strip.	Y__ N__	Determine source of erosion and/or reason for sediment accumulation and address source. Replace stone in-kind.
	2	Dying vegetation and/or barren land where vegetation should be.	Y__ N__	Replant vegetation in-kind based on associated Landscaping Plan.

Note:

Follow Up Items (Component No. / Inspection Item No.):

Associated Work Orders: # _____, # _____, # _____, # _____, # _____

_____	_____	_____
Inspector Name	Signature	Date

Report issues to the local authority and mosquito commission as required by local ordinances and regulatory authorities.

File this checklist in the Maintenance Log after performing maintenance.

Preventative Maintenance Record

Corresponding Checklist No. _____
Component No. _____, Inspection Item No. _____

Work Logs

Activities	Components	Date Completed
Sediment/debris removal Sediment removal should be taken place when the system is thoroughly dry	A – Inlets and Manholes	
	B – Outfalls	
Dying/dead vegetation replacement	C – Vegetation	

Vegetation is removed by _____ (type of equipment) with minimum disruption to the remaining vegetation.

All use of fertilizers, pesticides, mechanical treatments, and other means to ensure optimum vegetation health must not compromise the intended purpose of the stormwater management measure. The fertilizer applied is _____ (type), and _____ (quantity per usage) is applied _____ (frequency of use).

Debris, sediment, and trash are handled (onsite / by _____ (contractor name) to disposal site _____). (See Part I: Maintenance Plan – Disposal Plan Section)

Crew member: _____ / _____ **Date:** _____
(name/ signature)

Supervisor: _____ / _____ **Date:** _____
(name/ signature)

File this Preventative Maintenance Record in the Maintenance Log after performing maintenance.

Corrective Maintenance Record

1. **Work Order #** _____ **Date Issued** _____

2. **Issue to be resolved:**

3. The issue was from **Corresponding Checklist** _____, **Component No.**
Inspection Item No. _____.

4. **Required Actions**

Actions	Planned Date	Date Completed

5. **Responsible person(s):**

6. **Special requirements**

- Time of the season or weather condition: _____
- Tools/equipment: _____
- Subcontractor (name or specific type): _____

Approved by _____/_____ **Date** _____
(name/signature)

Verification of completion by _____/_____ **Date** _____
(name/signature)

File this Corrective Maintenance Record in the Maintenance Log after performing maintenance.

Inspection Checklist / Maintenance Actions

Pervious Paving System

Checklist (circle one): Quarterly / Annual / Monthly / Special Event Inspection

Checklist No. _____ **Inspection Date:** _____

Date of most recent rain event: _____

Rain Condition (circle one):

Drizzle / Shower / Downpour / Other _____

Ground Condition (circle one):

Dry / Moist / Ponding / Submerged / Snow accumulation

The inspection items and preventative/corrective maintenance actions listed below represent general requirements. The design engineer and/or responsible party shall adjust the items and actions to better meet the conditions of the site, the specific design targets, and the requirements of regulatory authorities.

Component No. Component Name	For Inspector		For Maintenance Crew
	Inspection Item and Inspection Item No.	Result	Preventative / Corrective Maintenance Actions
1A-1 Pavement Surface (Porous Pavement)	1 Standing water present after the design drain time The observed drain time is approximately _____ hours Excessive sediment or mud accumulation on top of the pavement	Y____ N____	Recheck to determine if there is standing water after 72 hours If standing water is present longer than 5 days, report to mosquito commission. If excessive sediment is present, the system may be clogged: <ul style="list-style-type: none"> - Sweep the surface - Power wash (at 45° angle to the top) - Excavate to inspect the storage bed for clogging, replace the storage bed material if it is severely clogged - Check the permeability rate of the subsoil Work Order # _____
	2 Cracking, subsidence, spalling, or other damage to the pavement	Y____ N____	Repair according to the manufacturer's procedures and material. Work Order # _____
	3 Weeds or other vegetation on the porous pavement	Y____ N____	Remove the vegetation
1A-2 Pavement Surface (Porous Pavement)	1 Standing water present after the design drain time The observed drain time is approximately _____ hours Excessive sediment or mud accumulation on top of the pavement	Y____ N____	Recheck to determine if there is standing water after 72 hours If standing water is present longer than 5 days, report to mosquito commission. If excessive sediment is present, the system may be clogged: <ul style="list-style-type: none"> - Sweep the surface - Power wash (at 45° angle to the top) - Excavate to inspect the storage bed for clogging, replace the storage bed material if it is severely clogged - Check the permeability rate of the subsoil Work Order # _____

Component No. Component Name	For Inspector		For Maintenance Crew
	Inspection Item and Inspection Item No.	Result	Preventative / Corrective Maintenance Actions
	2	Cracking, subsidence, spalling, or other damage to the pavement Y___ N___	Repair according to the manufacturer's procedures and material. Work Order # _____
	3	Weeds or other vegetation on the porous pavement Y___ N___	Remove the vegetation
1A-3 Pavement Surface (Porous Pavement)	1	Standing water present after the design drain time The observed drain time is approximately _____ hours Excessive sediment or mud accumulation on top of the pavement Y___ N___	Recheck to determine if there is standing water after 72 hours If standing water is present longer than 5 days, report to mosquito commission. If excessive sediment is present, the system may be clogged: - Sweep the surface - Power wash (at 45° angle to the top) - Excavate to inspect the storage bed for clogging, replace the storage bed material if it is severely clogged - Check the permeability rate of the subsoil Work Order # _____
	2	Cracking, subsidence, spalling, or other damage to the pavement Y___ N___	Repair according to the manufacturer's procedures and material. Work Order # _____
	3	Weeds or other vegetation on the porous pavement Y___ N___	Remove the vegetation
B Outfalls	1	Outlet components skewed, misaligned, or missing. Y___ N___	Repair or replace Work Order # _____
	2	Cracked or damaged headwall and/or pipe. Y___ N___	Repair Work Order # _____
	2	Dying vegetation and/or barren land where vegetation should be. Y___ N___	Replant vegetation in-kind based on associated Landscaping Plan.

	For Inspector		For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.	Result	Preventative / Corrective Maintenance Actions
Note:			

Follow Up Items (Component No. / Inspection Item No.):

Associated Work Orders: # _____, # _____, # _____, # _____, # _____

Inspector Name Signature Date

Report issues to the local authority and mosquito commission as required by local ordinances and regulatory authorities.

File this checklist in the Maintenance Log after performing maintenance.

Preventative Maintenance Record

Corresponding Checklist No. _____
Component No. _____, Inspection Item No. _____

Work Logs

Activities	Components	Date Completed
Sediment/debris removal Sediment removal should be taken place when the system is thoroughly dry	1A-1 – Pavement Surface (Porous Pavement)	
	1A-2 – Pavement Surface (Porous Pavement)	
	1A-3 – Pavement Surface (Porous Pavement)	
	B – Outfalls	
Vegetation removal	1A-1 – Pavement Surface (Porous Pavement)	
	1A-2 – Pavement Surface (Porous Pavement)	
	1A-3 – Pavement Surface (Porous Pavement)	
	B – Outfalls	

Debris, sediment, and trash are handled (onsite / by _____ (contractor name) to disposal site _____). (See Part I: Maintenance Plan – Disposal Plan Section)

Crew member: _____/_____ **Date:** _____
(name/ signature)

Supervisor: _____/_____ **Date:** _____
(name/ signature)

File this Preventative Maintenance Record in the Maintenance Log after performing maintenance.

Corrective Maintenance Record

1. **Work Order #** _____ **Date Issued** _____

2. **Issue to be resolved:**

3. The issue was from **Corresponding Checklist No.** _____,
Component No. _____, **Inspection Item No.** _____,

4. **Required Actions**

Actions	Planned Date	Date Completed

5. **Responsible person(s):**

6. **Special requirements**

- Time of the season or weather condition: _____
- Tools/equipment: _____
- Subcontractor (name or specific type): _____

Approved by _____/_____ **Date** _____
(name/signature)

Verification of completion by _____/_____ **Date** _____
(name/signature)

File this Corrective Maintenance Record in the Maintenance Log after performing maintenance.

**Inspection Checklist / Maintenance Actions
Detention Basin**

Checklist (circle one): Quarterly / Annual / Monthly / Special Event Inspection

Checklist No. _____ **Inspection Date:** _____

Date of most recent rain event: _____

Rain Condition (circle one):

Drizzle / Shower / Downpour / Other _____

Ground Condition (circle one):

Dry / Moist / Ponding / Submerged / Snow accumulation

The inspection items and preventative/corrective maintenance actions listed below represent general requirements. The design engineer and/or responsible party shall adjust the items and actions to better meet the conditions of the site, the specific design targets, and the requirements of regulatory authorities.

A Conveyance System	1	Damaged parking lot or drive aisles that effects grading and drainage patterns	Y___ N___	Determine reason for damage Repair or replace surface cover Work Order # _____
	2	Cracked or clogged inlets and/or standing water in drain invert	Y___ N___	Remove clog in or downstream of the drain Replace the drain if needed Work Order # _____
	3	Conveyance pipes and headwalls clogged or damaged	Y___ N___	Remove the clog Replace the drain if needed Work Order # _____
	4	Inlet pipe aprons are eroded or scoured	Y___ N___	Restabilize the discharge riprap apron Work Order # _____

Notes:

B Basin Bed	1	Observed detention time is longer than the design detention time. Approximately _____ hours	Y____ N____	Check if outlets are clogged, see section E-Outlet of this checklist
	2	Standing water is present after the design drain time The observed drain time is approximately _____ hours	Y____ N____	Recheck to determine if there is standing water after 72 hours If standing water is present longer than 5 days, report to mosquito commission
	3	Excessive sediment, silt, or trash accumulation on basin bed	Y____ N____	Remove silt, sediment, and trash
	4	Animal burrows/rodents are present	Y____ N____	Pest control Work Order # _____
C Vegetation	1	Excessive vegetation	Y____ N____	Remove vegetation Work Order # _____
D Basin Embankment and Side Slopes	1	Signs of erosion, soil slide or bulges, seeps and wet spots, loss of vegetation, or erosion on the basin slope	Y____ N____	Check for excessive overland runoff flow through the embankment Check for any sink hole development Restabilize the bank and/or rip rap Work Order # _____

Note:

E Outlet	1	Trash or debris accumulation	Y____ N____	Clean and remove Determine source of trash and address to reduce future maintenance costs or basin failure
	2	Trash rack is damaged or rusted greater than 50% Trash rack is bent, loose, or missing parts	Y____ N____	Repair or replace trash rack Work Order # _____
	3	Outlet components (e.g., orifice plates or weir plate) skewed, misaligned, or missing	Y____ N____	Repair or replace component Work Order # _____
	4	Discharge pipe apron is eroded or scoured	Y____ N____	Restabilize the discharge riprap apron Work Order # _____
	5	Standing water is present in the outlet structure longer than 72 hours	Y____ N____	Pump out the standing water Work Order # _____
	6	Berm along outlet pipe is eroded/outlet pipe cover is low and showing the pipe	Y____ N____	Regrade the berm and provide adequate pipe cover Work Order # _____
F Emergency Spillway	1	Trees or excessive vegetation present	Y____ N____	Remove trees and roots, and restore berms if necessary Work Order # _____
	2	Damaged structure	Y____ N____	Repair Work Order # _____

Note:

Follow Up Items (Component No. / Inspection Item No.):

Associated Work Orders: # _____, # _____, # _____, # _____, # _____

<hr/> Inspector Name	<hr/> Signature	<hr/> Date
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Report issues to the local authority and mosquito commission as required by local ordinances and regulatory authorities.

File this checklist in the Maintenance Log after performing maintenance.

Preventative Maintenance Record

Corresponding Checklist No. _____
 Component No. _____, Inspection Item No. _____

Work Logs

Activities	Components	Date Completed
Sediment/debris removal Sediment removal should be taken place when the basin is thoroughly dry	A – Conveyance System	
	B – Basin Bed	
	D – Basin Embankment and Side Slopes	
	E – Outlet	
Vegetation removal	A – Conveyance System	
	B – Basin Bed	
	D – Basin Embankment and Side Slopes	
	E – Outlet	
	F – Emergency Spillway	

Vegetation is removed by _____ (type of equipment) with minimum disruption to the remaining vegetation.

All use of fertilizers, pesticides, mechanical treatments, and other means to ensure optimum vegetation health must not compromise the intended purpose of the stormwater management measure. The fertilizer applied is _____ (type), and _____ (quantity per usage) is applied _____ (frequency of use).

Debris, sediment, and trash are handled (onsite / by _____ (contractor name) to disposal site _____). (See Part I: Maintenance Plan – Disposal Plan Section)

Crew member: _____ / _____ **Date:** _____
 (name/ signature)

Supervisor: _____ / _____ **Date:** _____
 (name/ signature)

File this Preventative Maintenance Record in the Maintenance Log after performing maintenance.

Corrective Maintenance Record

1. **Work Order #** _____ **Date Issued** _____

2. **Issue to be resolved:**

3. The issue was from **Corresponding Checklist** _____, **Component No.**
Inspection Item No._____.

4. **Required Actions**

Actions	Planned Date	Date Completed

5. **Responsible person(s):**

6. **Special requirements**

- Time of the season or weather condition : _____
- Tools/equipment: _____
- Subcontractor (name or specific type): _____

Approved by _____/_____ **Date** _____
(name/signature)

Verification of completion by _____/_____ **Date** _____
(name/signature)

File this Corrective Maintenance Record in the Maintenance Log after performing maintenance.

APPENDIX VI:
Geotechnical Memorandum – Summary of Findings

Date: July 12, 2023

To: Mario Iannelli, P.E.

From: Chris Baldwin, P.E.; Donald Heck, P.E.

Subject: Summary of Preliminary Findings

Soil Profiles and Permeability Testing

Hackensack Meridian Health Carrier Clinic – Proposed Basins

Township of Montgomery, Somerset County, New Jersey

Message:

Dewberry's geotechnical group has completed a preliminary subsurface investigation to determine the soil profiles and seasonal high water table (SHWT) on the property of Hackensack Meridian Health (HMH) Carrier Clinic located at 252 County Route 601, in the Belle Mead section of Township of Montgomery, Somerset County, New Jersey. The preliminary subsurface investigation findings will be used to develop stormwater detention or retention systems for a proposed building expansion for an Adolescent Patient Unit. The proposed stormwater management practices are to be constructed on a predominately undeveloped section of the property, identified as Block 2001, Lots 2 and 14.02.

It is our understanding the project site is located primarily within two Hydraulic Soil Groups based on National Resources Conservation Service (NRCS) Web Soil Survey, however the anticipated location of proposed stormwater systems are located within the Penn channery silt loam (PeoB) hydraulic group. The existing site grades within the subsurface investigation area varies from approximately El. 111 to El. 115.

As per the NJDEP's *NJ Stormwater Best Management Practices Manual, dated April 2022 (NJDEP BMP)*, the SHWT shall be direct measurements during the months of January through April or determined by the presence of mottling at any time of year. If mottling is not observed outside of January through April the SHWT may be obtained from the NRCS Web Soil Survey provided the existing soil conditions confirm the NRCS records.

On June 28 and 29, 2023, Dewberry observed the excavation of eight (8) test pits, and performed one (1) basin flood test and one (1) double ring infiltrometer (DRI) test. The excavation of all test pits was performed by a sub-contractor retained by HMH. Test pits were performed in areas of interest for potential stormwater management practices. A basin flood test was performed in shallow bedrock where the DRI test would not be feasible. The DRI test was performed in the surficial soils prior to encountering bedrock.

A Dewberry Geotechnical Engineer was present during the subsurface investigation to record the soil profiles, perform infiltration testing, and observe the SHWT within each soil profile pit, if applicable.

Results and Findings

Subsurface conditions were very consistent across the site. Surficial soils contained extensive roots in a reddish brown loam to depths ranging from approximately 0.5 to 1 foot below existing grade. These surficial soils are considered topsoil. Beneath the topsoil, light brown to reddish brown silty clay loam was encountered to depths of 2 feet, which is underlain by highly weathered shale bedrock. Variable amounts of weathered and rippable bedrock was observed until variable termination depths. In general, test pits were terminated when the shale bedrock was no longer easily rippable with a conventional backhoe. Completion depths ranged from 4.5 feet to 9 feet below ground surface (bgs).

Test pits TP-1 through TP-5, and TP-7 observed moisture on the sidewall or water in the test pits at depths ranging from 5 to 6.5 feet bgs and were excavated to depths ranging from 6.5 feet to 9 feet bgs (El. ± 104.5 to El. ± 108.5). At the time of completion of the test pits, moisture was observed on the sidewall consistently at approximately El. ± 108.5 and water was observed infiltrating after initial excavation at El. ± 106 . Test pit TP-3 did not observe infiltrating water after the initial excavation but moisture was noted on the sidewall at 5.5 feet bgs (El. ± 108). Test pit TP-4 had a completion depth 8 feet bgs (El. ± 106.5) and remained open for 24 hours for additional observation. After 24 hours water was measured in test pit TP-4 at 6 feet bgs (El. ± 108.5). All test pits were immediately backfilled upon completion with the exception of TP-4 as previously noted. Similar moisture conditions were observed in the majority of the test pits with two exceptions. Test pits TP-6 and TP-8 did not encounter any moisture or wet conditions. Both of these test pits are located the furthest west and had very shallow hard shale with completion depths of 5.5 feet and 4.5 feet, respectively.

To determine the hydraulic conductivity of the site permeability tests were attempted in the surficial soils as well as the weathered bedrock. In accordance with Chapter 12 of NJDEP's *NJ Stormwater Best Management Practices Manual, dated April 2022*, a basin flood test is required to test the permeability of bedrock. On June 28, 2023, adjacent to test pit TP-7, a basin flood test was initiated in a 50 square foot basin (BF-1) which was excavated to a depth of 30 inches below grade and filled with 12 inches of water. During the pre-soak phase of the test the water remains in the basin for 24 hours and must completely drain in that time frame to proceed with the full test. On June 29, 2023 after the 24 hour pre-soak period it was observed that more than 11 inches of water remained in the basin, therefore the test was terminated and the area in question is not permeable.

To determine the hydraulic conductivity in the soil, an in-situ permeability test performed by method of a double ring infiltrometer (DRI) test in test pit DRI-1 at a depth of approximately 9 inches in the strata below the topsoil and the existing vegetation root system and above the weathered bedrock. During the pre-soak of the DRI test there was no observed infiltration, therefore the in-situ permeability test was terminated indicating the overburden soil of the area in question is not permeable.

In accordance with NJDEP BMP the SHWT can be established if the test pits observe mottling when performed outside of the months of January through April. However, because mottling was not observed the SHWT may be obtained from the NRCS Web Soil Survey if the soil series present at the site is confirmed during the subsurface investigation. The test pits excavated during this preliminary subsurface investigation encountered fine grained soils to depth of 2 feet underlain by weathered shale which confirms the NRCS classification of the PeoB Hydraulic Soil Group. Based on NRCS data for the PeoB Hydraulic Soil Group, groundwater is at least 200 centimeters, or 6.5 feet, below grade. Based on the preliminary subsurface investigation, groundwater was encountered at a depth of 6 feet below grade (El. ± 108.5). Therefore, the SHWT can be conservatively assumed to be at a depth of approximately 6 feet bgs (El. ± 108.5).


Locations of the soil profile pits and permeability test locations are shown on the attached Test Pit Location Plan. Soil profile pit logs and NRCS soil and water table information are also attached.

PRELIMINARY AND FINAL SITE PLAN
FOR
CARRIER CLINIC ADOLESCENT PATIENT UNIT
252 COUNTY ROAD 601
BLOCK 2001, LOTS 2 & 14.02
TOWNSHIP OF MONTGOMERY SOMERSET COUNTY NEW JERSEY

Mario Iannelli, P.E.
New Jersey Professional Engineer
License No. 24GE04174900

SCALE

GRAPHIC SCALE



0 20 40

SCALE: 1" = 20'

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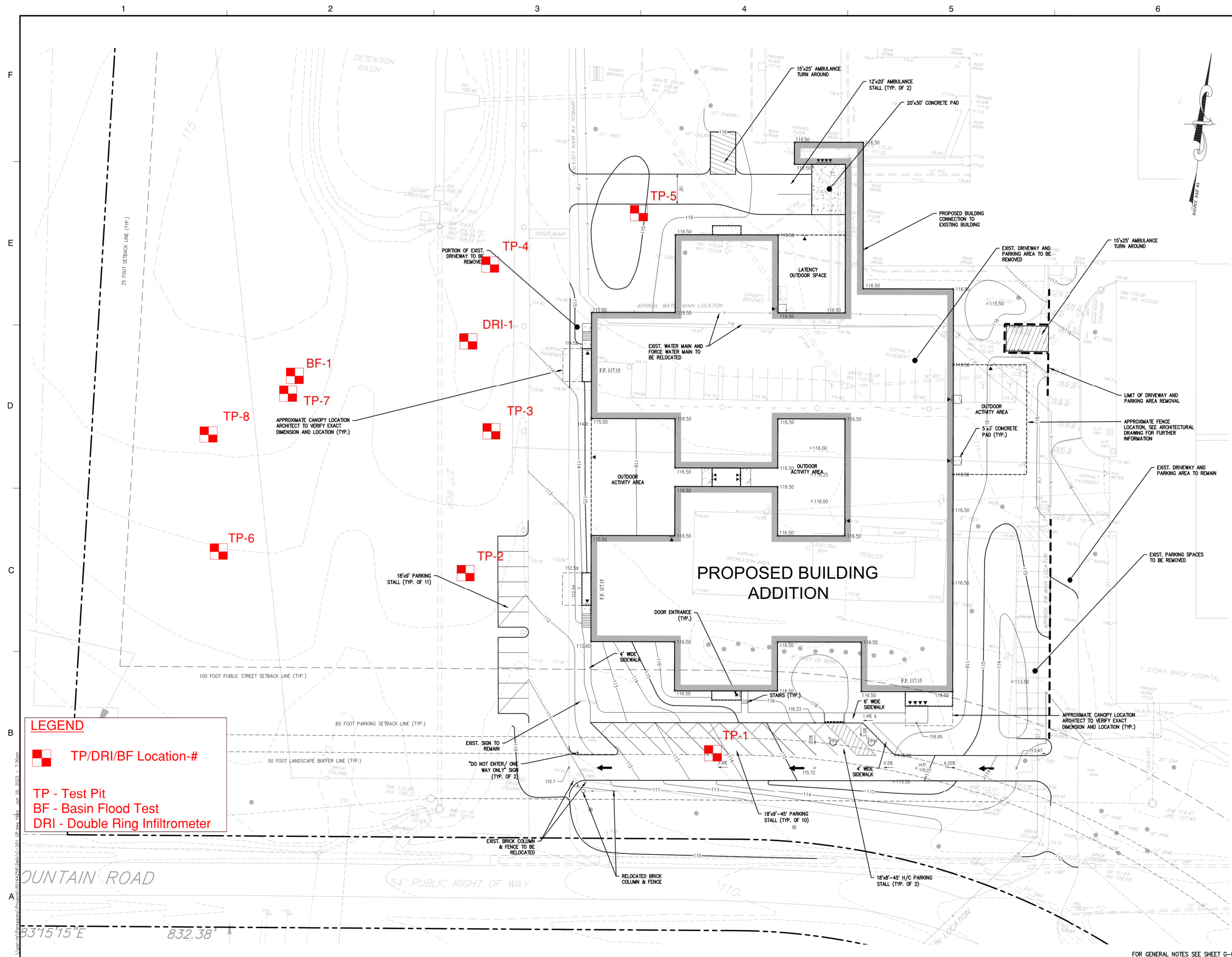
DRAWN BY	CFS/
APPROVED BY	MI
CHECKED BY	CFS/MI
DATE	05/31/2023
TITLE	

TEST PIT LOCATION
PLAN
JULY 2023

PROJECT NO. 50164256

C-201

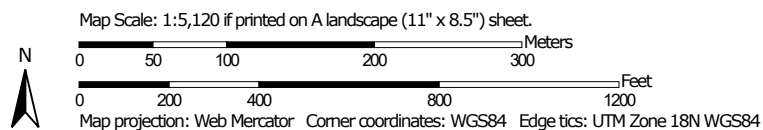
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Depth to Water Table—Somerset County, New Jersey



Soil Map may not be valid at this scale.



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

7/5/2023
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MAP LEGEND

Area of Interest (AOI)




 Area of Interest (AOI)

Soils







Soil Rating Polygons


-  0 - 25
-  25 - 50
-  50 - 100
-  100 - 150
-  150 - 200
-  > 200
-  Not rated or not available

Soil Rating Lines

-  0 - 25
-  25 - 50
-  50 - 100
-  100 - 150
-  150 - 200
-  > 200
-  Not rated or not available

Soil Rating Points






-  0 - 25
-  25 - 50
-  50 - 100
-  100 - 150
-  150 - 200
-  > 200

 Not rated or not available


Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Somerset County, New Jersey
Survey Area Data: Version 20, Aug 30, 2022

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

Date(s) aerial images were photographed: Mar 13, 2021—Sep 14, 2021

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

Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
KkoC	Klinesville channery loam, 6 to 12 percent slopes	>200	8.1	10.9%
PeoB	Penn channery silt loam, 2 to 6 percent slopes	>200	31.6	42.4%
RehA	Reaville silt loam, 0 to 2 percent slopes	46	34.1	45.7%
RehB	Reaville silt loam, 2 to 6 percent slopes	46	0.8	1.0%
Totals for Area of Interest			74.6	100.0%

Description

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

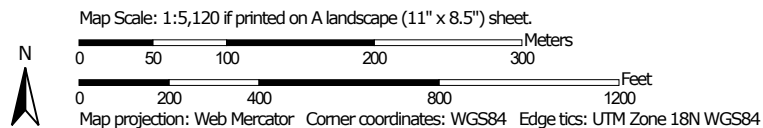
Beginning Month: January

Ending Month: December

Hydrologic Soil Group—Somerset County, New Jersey



Soil Map may not be valid at this scale.



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

7/5/2023
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MAP LEGEND

Area of Interest (AOI)









 Area of Interest (AOI)

Soils

Soil Rating Polygons





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

Soil Rating Lines

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

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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

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

Soil Survey Area: Somerset County, New Jersey
 Survey Area Data: Version 20, Aug 30, 2022

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

Date(s) aerial images were photographed: Mar 13, 2021—Sep 14, 2021

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
KkoC	Klinesville channery loam, 6 to 12 percent slopes	D	8.1	10.9%
PeoB	Penn channery silt loam, 2 to 6 percent slopes	C	31.6	42.4%
RehA	Reaville silt loam, 0 to 2 percent slopes	C	34.1	45.7%
RehB	Reaville silt loam, 2 to 6 percent slopes	C	0.8	1.0%
Totals for Area of Interest			74.6	100.0%

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Somerset County, New Jersey

PeoB—Penn channery silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 1j52v

Elevation: 250 to 1,300 feet

Mean annual precipitation: 30 to 64 inches

Mean annual air temperature: 46 to 79 degrees F

Frost-free period: 131 to 178 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Penn and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Penn

Setting

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Fine-loamy residuum weathered from acid reddish shale, siltstone, and fine-grain sandstone

Typical profile

Ap - 0 to 9 inches: channery silt loam

Bt - 9 to 22 inches: channery silt loam

C - 22 to 30 inches: very channery loam

R - 30 to 80 inches: weathered bedrock

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: 20 to 39 inches to lithic bedrock

Drainage class: Well drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water

(Ksat): Moderately high to high (0.60 to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C

Ecological site: F148XY022PA - Dry, Triassic, Upland, Mixed Oak
Heath / Oak-Pine Woodland
Hydric soil rating: No

Minor Components

Bucks

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Reaville

Percent of map unit: 5 percent
Landform: Interfluves
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Klinesville

Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Data Source Information

Soil Survey Area: Somerset County, New Jersey
Survey Area Data: Version 20, Aug 30, 2022

ROUTE:	LOCAL NAME: HMH Carrier Clinic	TEST PIT NO. TP-1
SECTION:	Township of Montgomery, Somerset County, NJ	FIELD TEST PIT NO.
STATION:	OFFSET:	REFERENCE LINE:
BORING BY: Client Sub-Contractor	DATE STARTED: 6/29/23	GROUND ELEVATION: ±112.0
INSPECTOR: C. Baldwin	DATE COMPLETED: 6/29/23	GROUND WATER ELEVATION 0 Hr. 6 ft. El. 106.0 Date: 6/29/23 24 Hr. Date:

DEPTH (ft.)	SAMPLE NO.	SAMPLE DEPTH	SOIL DESCRIPTION AND STRATIFICATION
1		0 1	Reddish brown (2.5YR 5/3) Silt loam, dry, crumb, soft, many medium to fine roots. gradual bottom boundary; topsoil
2		1 2	Light brown (7.5YR 6/4) and dark reddish brown (2.5YR 3/3) Silty clay loam, dry, crumb, soft, gradual bottom boundary
3		2 4	Dark reddish brown (2.5YR 3/3) Highly weathered shale, moist, soft, gradual bottom boundary
4			
5		4 7	Dark reddish brown (2.5YR 3/3) Weathered to slightly weathered shale, moist, slightly hard
6			
7			Water infiltrating sidewall at 6 feet
8			Bottom of Test Pit at 7 feet, El. ±105
9			
10			

Soil descriptions represent a field identification using Munsell Soil Color Chart and USDA soil textural triangle.

The subsurface information shown hereon was obtained for the Owner's design and estimate purposes. It is made available to authorized users only that they may have access to the same information available to the Owner. It is presented in good faith, but is not intended as a substitute for investigations, interpretation or judgment of such authorized users.

ROUTE:	LOCAL NAME: HMH Carrier Clinic	TEST PIT NO. TP-2
SECTION:	Township of Montgomery, Somerset County, NJ	FIELD TEST PIT NO.
STATION:	OFFSET:	REFERENCE LINE:
BORING BY: Client Sub-Contractor	DATE STARTED: 6/28/23	GROUND ELEVATION: ±112.5
INSPECTOR: C. Baldwin	DATE COMPLETED: 6/28/23	GROUND WATER ELEVATION 0 Hr. 6.5 ft. El. 106.0 Date: 6/28/23 24 Hr. Date:

DEPTH (ft.)	SAMPLE NO.	SAMPLE DEPTH	SOIL DESCRIPTION AND STRATIFICATION
1		0 1	Reddish brown (2.5YR 5/3) Silt loam, dry, 5% gravel, crumb, soft, many medium to fine roots. gradual bottom boundary; topsoil
2		1 4	Light brown (7.5YR 6/4) and dark reddish brown (2.5YR 3/3) Silty clay loam, dry, crumb, soft, gradual bottom boundary
3			
4		4 5	Dark reddish brown (2.5YR 3/3) Highly weathered shale, moist, soft, gradual bottom boundary
5		5 6.5	Dark reddish brown (2.5YR 3/3) Weathered to slightly weathered shale, wet, slightly hard Moisture observed on sidewall at 5 feet
6			
7			Water infiltrating sidewall at 6.5 feet
8			Bottom of Test Pit at 7 feet, El. ±105.5
9			
10			

Soil descriptions represent a field identification using Munsell Soil Color Chart and USDA soil textural triangle.

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ROUTE:	LOCAL NAME: HMH Carrier Clinic	TEST PIT NO. TP-3
SECTION:	Township of Montgomery, Somerset County, NJ	FIELD TEST PIT NO.
STATION:	OFFSET:	REFERENCE LINE:
BORING BY: Client Sub-Contractor		GROUND ELEVATION: ±113.5
DATE STARTED: 6/28/23		GROUND WATER ELEVATION
INSPECTOR: C. Baldwin		0 Hr. Not Observed Date: 6/28/23
DATE COMPLETED: 6/28/23		24 Hr. Date:

DEPTH (ft.)	SAMPLE NO.	SAMPLE DEPTH		SOIL DESCRIPTION AND STRATIFICATION
1		0	0.75	Reddish brown (2.5YR 5/3) Silt loam, dry, 5% gravel, crumb, soft, many medium to fine roots. gradual bottom boundary; topsoil
		0.75	2	Light brown (7.5YR 6/4) and dark reddish brown (2.5YR 3/3) Silty clay loam, dry, crumb, soft, gradual bottom boundary
2				
		2	9	Dark reddish brown (2.5YR 3/3) Highly weathered shale, moist, soft to slightly hard
3				
4				
5				
6				Moisture observed in sidewall of test pit at 5.5 feet
7				
8				
9				
10				Bottom of Test Pit at 9 feet. El. 104.5

Soil descriptions represent a field identification using Munsell Soil Color Chart and USDA soil textural triangle.

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ROUTE:	LOCAL NAME:	HMH Carrier Clinic	TEST PIT NO.	TP-4
SECTION:	Township of Montgomery, Somerset County, NJ		FIELD TEST PIT NO.	
STATION:	OFFSET:	REFERENCE LINE:	GROUND ELEVATION: ±114.5	
BORING BY:	Client Sub-Contractor	DATE STARTED:	6/28/23	GROUND WATER ELEVATION
INSPECTOR: C. Baldwin		DATE COMPLETED: 6/28/23		0 Hr. 8 ft. El. 106.5 Date: 6/28/23
				24 Hr. 6 ft. El. 108.5 Date: 6/29/23

DEPTH (ft.)	SAMPLE NO.	SAMPLE DEPTH		SOIL DESCRIPTION AND STRATIFICATION
1		0	0.5	Reddish brown (2.5YR 5/3) Silt loam, dry, 5% gravel, crumb, soft, many medium to fine roots. gradual bottom boundary; topsoil
		0.5	1.5	Light brown (7.5YR 6/4) and dark reddish brown (2.5YR 3/3) Silty clay loam, dry, crumb, soft, gradual bottom boundary
		1.5	7	Dark reddish brown (2.5YR 3/3) Highly weathered shale, moist, soft, gradual bottom boundary
2				
3				
4				
5				
6				
7				Moisture observed on sidewall at 6 feet during initial excavation. TP-4 was left open for 24 hours and approximately 2 feet of water was observed in the bottom of the test pit after 24 hours. GWT was assumed based on 24-hour observations
		7	8	Dark reddish brown (2.5YR 3/3) Weathered to slightly weathered shale, wet, slightly hard
8				
9				
10				

Bottom of Test Pit at 8 feet, El. ±106.5

Soil descriptions represent a field identification using Munsell Soil Color Chart and USDA soil textural triangle.

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ROUTE:	LOCAL NAME:	HMH Carrier Clinic	TEST PIT NO.	TP-5
SECTION:	Township of Montgomery, Somerset County, NJ		FIELD TEST PIT NO.	
STATION:	OFFSET:	REFERENCE LINE:	GROUND ELEVATION: ±115.0	
BORING BY:	Client Sub-Contractor	DATE STARTED:	6/29/23	GROUND WATER ELEVATION
INSPECTOR: C. Baldwin		DATE COMPLETED: 6/29/23		0 Hr. 7.5 ft. El. 107.5 Date: 6/29/23
				24 Hr. Date:

DEPTH (ft.)	SAMPLE NO.	SAMPLE DEPTH		SOIL DESCRIPTION AND STRATIFICATION
1		0	.5	Reddish brown (2.5YR 5/3) Silt loam, dry, crumb, soft, many medium to fine roots. gradual bottom boundary; topsoil
		.5	1.5	Reddish brown (2.5YR 5/3) Silty clay loam, dry, crumb, soft, gradual bottom boundary
2		1.5	7.5	Dark reddish brown (2.5YR 3/3) Highly weathered shale, moist, soft to slightly hard
3				
4				
5				
6				
7				Moisture observed on sidewall at 6.5 feet
				Water infiltrating sidewall at 7.5 feet
8				Bottom of Test Pit at 7.5 feet, El. ±107.5
9				
10				

Soil descriptions represent a field identification using Munsell Soil Color Chart and USDA soil textural triangle.

The subsurface information shown hereon was obtained for the Owner's design and estimate purposes. It is made available to authorized users only that they may have access to the same information available to the Owner. It is presented in good faith, but is not intended as a substitute for investigations, interpretation or judgment of such authorized users.

ROUTE:	LOCAL NAME: HMH Carrier Clinic	TEST PIT NO. TP-6
SECTION:	Township of Montgomery, Somerset County, NJ	FIELD TEST PIT NO.
STATION:	OFFSET:	REFERENCE LINE:
BORING BY: Client Sub-Contractor	DATE STARTED: 6/29/23	GROUND ELEVATION: ±113.0
INSPECTOR: C. Baldwin	DATE COMPLETED: 6/29/23	GROUND WATER ELEVATION 0 Hr. Not observed Date: 6/29/23 24 Hr. Date:

DEPTH (ft.)	SAMPLE NO.	SAMPLE DEPTH	SOIL DESCRIPTION AND STRATIFICATION
1		0 1	Reddish brown (2.5YR 5/3) Silt loam, dry, crumb, soft, many medium to fine roots. gradual bottom boundary; topsoil
2		1 2	Light brown (7.5YR 6/4) and dark reddish brown (2.5YR 3/3) Silty clay loam, dry, crumb, soft, gradual bottom boundary
3		2 3	Dark reddish brown (2.5YR 3/3) Highly weathered shale, dry, soft, gradual bottom boundary
4		3 5.5	Dark reddish brown (2.5YR 3/3) Weathered to slightly weathered shale, dry, slightly hard to hard
5			
6			Bottom of Test Pit at 5.5 feet, El. ±107.5
7			
8			
9			
10			

Soil descriptions represent a field identification using Munsell Soil Color Chart and USDA soil textural triangle.

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ROUTE:	LOCAL NAME:	HMH Carrier Clinic	TEST PIT NO.	TP-7
SECTION:	Township of Montgomery, Somerset County, NJ		FIELD TEST PIT NO.	
STATION:	OFFSET:	REFERENCE LINE:	GROUND ELEVATION: ±114.5	
BORING BY:	Client Sub-Contractor	DATE STARTED:	6/28/23	GROUND WATER ELEVATION
INSPECTOR: C. Baldwin		DATE COMPLETED: 6/28/23		0 Hr. 6.5 ft El. 108
				24 Hr. Date: 6/28/23

DEPTH (ft.)	SAMPLE NO.	SAMPLE DEPTH		SOIL DESCRIPTION AND STRATIFICATION
1		0	1	Reddish brown (2.5YR 5/3) Silt loam, dry, crumb, soft, many medium to fine roots. gradual bottom boundary; topsoil
2		1	1.5	Light brown (7.5YR 6/4) and dark reddish brown (2.5YR 3/3) Silty clay loam, dry, crumb, soft, gradual bottom boundary
3		1.5	6	Dark reddish brown (2.5YR 3/3) Highly weathered shale, dry, soft, gradual bottom boundary
4				A Basin Flood Test was performed in an adjacent test pit with dimensions of 7.5 ft x 7.5 ft and a depth of 2.5 ft.
				The test pit was filled with 12 inches of water for a 24-hour saturation period. Approximately 11.5 inches of water remained
				after 24 hours and the test was terminated.
5				
6				Moisture observed on sidewall at 5.5 ft
7		6	7	Dark reddish brown (2.5YR 3/3) Weathered to slightly weathered shale, dry, hard
				Water infiltrating sidewall at 6.5 feet
8				Bottom of Test Pit at 7 feet, El. ±107.5
9				
10				

Soil descriptions represent a field identification using Munsell Soil Color Chart and USDA soil textural triangle.

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ROUTE:	LOCAL NAME:	HMH Carrier Clinic	TEST PIT NO.	TP-8
SECTION:	Township of Montgomery, Somerset County, NJ		FIELD TEST PIT NO.	
STATION:	OFFSET:	REFERENCE LINE:	GROUND ELEVATION: ±114.5	
BORING BY:	Client Sub-Contractor	DATE STARTED:	6/29/23	GROUND WATER ELEVATION
INSPECTOR: C. Baldwin		DATE COMPLETED: 6/29/23		0 Hr. Not observed Date: 6/29/23
				24 Hr. Date:

DEPTH (ft.)	SAMPLE NO.	SAMPLE DEPTH		SOIL DESCRIPTION AND STRATIFICATION
1		0	1	Reddish brown (2.5YR 5/3) Silt loam, dry, crumb, soft, many medium to fine roots. gradual bottom boundary; topsoil
		1	1.5	Light brown (7.5YR 6/4) and dark reddish brown (2.5YR 3/3) Silty clay loam, dry, crumb, soft, gradual bottom boundary
2		1.5	2	Dark reddish brown (2.5YR 3/3) Highly weathered shale, dry, soft, gradual bottom boundary
		2	4.5	Dark reddish brown (2.5YR 3/3) Weathered to slightly weathered shale, dry, hard
3				
4				
5				Bottom of Test Pit at 4.5 feet, El. ±110.0
6				
7				
8				
9				
10				

Soil descriptions represent a field identification using Munsell Soil Color Chart and USDA soil textural triangle.

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Date: August 4, 2023

To: Mario Iannelli, P.E.

From: Chris Baldwin, P.E.; Donald Heck, P.E.

Subject: Summary of Findings

Supplemental Soil Profiles and Permeability Testing

Hackensack Meridian Health Carrier Clinic – Proposed Basins

Township of Montgomery, Somerset County, New Jersey

Message:

Dewberry's geotechnical group completed a supplemental subsurface investigation to determine the soil profiles and seasonal high water table (SHWT) on the property of Hackensack Meridian Health (HMH) Carrier Clinic located at 252 County Route 601, in the Belle Mead section of Township of Montgomery, Somerset County, New Jersey. A preliminary subsurface investigation was completed in June 2023 and included eight (8) test pits (designated TP-1 through TP-8), one (1) basin flood test (designated BF-1), and one (1) double ring infiltrometer (designated DRI-1). A supplemental subsurface investigation was performed in July 2023 to determine soil profile and permeability characteristics at proposed stormwater management practices. The proposed stormwater management practices include three (3) porous pavement areas and a detention basin. The proposed porous pavement areas are located north, west, and south, respectively, of the proposed building addition and the detention basin is proposed in an undeveloped area to the west of the proposed building.

It is our understanding the project site is located primarily within two Hydraulic Soil Groups based on National Resources Conservation Service (NRCS) Web Soil Survey, however the anticipated location of proposed stormwater systems are located within the Penn channery silt loam (PeoB) hydraulic group. The existing site grades within the subsurface investigation area varies from approximately El. 111 to El. 115.

As per the NJDEP's *NJ Stormwater Best Management Practices Manual, dated April 2022 (NJDEP BMP)*, the SHWT shall be direct measurements during the months of January through April or determined by the presence of mottling at any time of year. If mottling is not observed outside of January through April the SHWT may be obtained from the NRCS Web Soil Survey provided the existing soil conditions confirm the NRCS records.

On July 26 and 27, 2023, Dewberry performed a supplemental subsurface investigation consisting of the excavation of two (2) test pits (TP-9 and TP-10), and performing three (3) basin flood tests (BF-2 through BF-4). The excavation of all test pits was performed by a sub-contractor retained by HMH. Test pits were performed in the proposed areas for stormwater management practices. A basin flood test was performed in shallow bedrock where other infiltration tests would not be feasible.

A Dewberry Geotechnical Engineer was present during the subsurface investigation to record the soil profiles, perform infiltration testing, and observe the SHWT within each soil profile pit, if applicable.

Results and Findings

Subsurface conditions encountered in the supplemental subsurface investigation were consistent with the preliminary subsurface investigation and are generally uniform across the site. Surficial soils contained extensive roots in a reddish brown loam to depths ranging from approximately 0.5 to 1 foot below existing grade. These surficial soils are considered topsoil. Beneath the topsoil, light brown to reddish brown silty

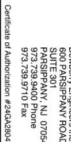
clay loam was encountered to depths of 2 feet, which is underlain by highly weathered shale bedrock. Variable amounts of weathered and rippable bedrock was observed until variable termination depths. In general, test pits were terminated when the shale bedrock was no longer easily rippable with a conventional backhoe. Completion depths ranged from 7 feet to 8 feet below ground surface (bgs).

Test pits TP-9 and TP-10 observed moisture on the sidewall or groundwater in the test pits at depths ranging from 6 to 7 feet bgs and were excavated to depths of 7 and 8 feet bgs (El. ± 105.0 to El. ± 107.5), respectively. At the time of completion of the test pits, moisture was observed on the sidewall of TP-10 at approximately El. ± 108.5 . Groundwater was observed infiltrating the excavation of test pit TP-9 at El. ± 106 .

To determine the hydraulic conductivity of the site, permeability tests were attempted in the weathered bedrock. In accordance with Chapter 12 of NJDEP's *NJ Stormwater Best Management Practices Manual, dated April 2022*, a basin flood test is required to test the permeability of bedrock. On July 26, 2023, three (3) locations were selected to perform basin flood tests (BF) within excavations with a minimum test area of 50 square feet. Basin flood tests BF-2 and BF-3 were excavated to depths of 30 inches below grade and basin flood test BF-4 was excavated to 36 inches below grade. All basins were filled with 12 inches of water to initiate the pre-soak phase of the test. During the initial phase the water remains in the basin for 24 hours and must completely drain in that time frame to proceed to the next phase of the test. On July 27, 2023 after the 24 hour pre-soak period it was observed that there was no measurable drop of water in the basins, therefore the tests were terminated and the areas in question are not permeable.

In accordance with NJDEP BMP the SHWT can be established if the test pits observe mottling when performed outside of the months of January through April. However, because mottling was not observed the SHWT may be obtained from the NRCS Web Soil Survey if the soil series present at the site is confirmed during the subsurface investigation. The test pits excavated during the preliminary and supplemental subsurface investigations encountered fine grained soils to depth of 2 feet underlain by weathered shale which confirms the NRCS classification of the PeoB Hydraulic Soil Group. Based on NRCS data for the PeoB Hydraulic Soil Group, groundwater is at least 200 centimeters, or 6.5 feet, below grade. Based on the supplemental subsurface investigation, groundwater was observed infiltrating into test pit TP-9 at 6 feet below grade (El. ± 106.0). The preliminary subsurface investigation approximated SHWT at El. ± 108.5 , however, the depth to groundwater was conservatively estimated at 6 foot bgs in the preliminary subsurface investigation and was confirmed during the supplemental investigation.

Locations of the soil profile pits and basin flood test locations are shown on the attached Test Pit Location Plan. Soil profile pit logs and NRCS soil and water table information are also attached.



PRELIMINARY AND FINAL SITE PLAN
FOR
CARRIER CLINIC ADOLESCENT PATIENT UNIT
252 COUNTY ROAD 601
BLOCK 2001, LOTS 2 & 14.02
TOWNSHIP OF MONTGOMERY SOMERSET COUNTY NEW JERSEY

GRAPHIC SCALE

0 20 40

SCALE: 1" = 20'

TEST PIT LOCATION PLAN

SHEET NO. OF ?

ROUTE:	LOCAL NAME:	HMH Carrier Clinic	TEST PIT NO.	TP-1
SECTION:	Township of Montgomery, Somerset County, NJ		FIELD TEST PIT NO.	
STATION:	OFFSET:	REFERENCE LINE:	GROUND ELEVATION: ±112.0	
BORING BY:	Client Sub-Contractor	DATE STARTED:	6/29/23	GROUND WATER ELEVATION
INSPECTOR: C. Baldwin		DATE COMPLETED: 6/29/23		0 Hr. 6 ft. El. 106.0 Date: 6/29/23
				24 Hr. Date:

DEPTH (ft.)	SAMPLE NO.	SAMPLE DEPTH		SOIL DESCRIPTION AND STRATIFICATION
1		0	1	Reddish brown (2.5YR 5/3) Silt loam, dry, crumb, soft, many medium to fine roots. gradual bottom boundary; topsoil
2		1	2	Light brown (7.5YR 6/4) and dark reddish brown (2.5YR 3/3) Silty clay loam, dry, crumb, soft, gradual bottom boundary
3		2	4	Dark reddish brown (2.5YR 3/3) Highly weathered shale, moist, soft, gradual bottom boundary
4				
5		4	7	Dark reddish brown (2.5YR 3/3) Weathered to slightly weathered shale, moist, slightly hard
6				
7				Water infiltrating sidewall at 6 feet
8				Bottom of Test Pit at 7 feet, El. ±105
9				
10				

Soil descriptions represent a field identification using Munsell Soil Color Chart and USDA soil textural triangle.

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ROUTE:	LOCAL NAME: HMH Carrier Clinic	TEST PIT NO. TP-2
SECTION:	Township of Montgomery, Somerset County, NJ	FIELD TEST PIT NO.
STATION:	OFFSET:	REFERENCE LINE:
BORING BY: Client Sub-Contractor	DATE STARTED: 6/28/23	GROUND ELEVATION: ±112.5
INSPECTOR: C. Baldwin	DATE COMPLETED: 6/28/23	GROUND WATER ELEVATION 0 Hr. 6.5 ft. El. 106.0 Date: 6/28/23 24 Hr. Date:

DEPTH (ft.)	SAMPLE NO.	SAMPLE DEPTH	SOIL DESCRIPTION AND STRATIFICATION
1		0 1	Reddish brown (2.5YR 5/3) Silt loam, dry, 5% gravel, crumb, soft, many medium to fine roots. gradual bottom boundary; topsoil
2		1 4	Light brown (7.5YR 6/4) and dark reddish brown (2.5YR 3/3) Silty clay loam, dry, crumb, soft, gradual bottom boundary
3			
4		4 5	Dark reddish brown (2.5YR 3/3) Highly weathered shale, moist, soft, gradual bottom boundary
5		5 6.5	Dark reddish brown (2.5YR 3/3) Weathered to slightly weathered shale, wet, slightly hard Moisture observed on sidewall at 5 feet
6			
7			Water infiltrating sidewall at 6.5 feet
8			Bottom of Test Pit at 7 feet, El. ±105.5
9			
10			

Soil descriptions represent a field identification using Munsell Soil Color Chart and USDA soil textural triangle.

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ROUTE:	LOCAL NAME: HMH Carrier Clinic	TEST PIT NO. TP-3
SECTION:	Township of Montgomery, Somerset County, NJ	FIELD TEST PIT NO.
STATION:	OFFSET:	REFERENCE LINE:
BORING BY: Client Sub-Contractor		GROUND ELEVATION: ±113.5
DATE STARTED: 6/28/23		GROUND WATER ELEVATION
INSPECTOR: C. Baldwin		0 Hr. Not Observed Date: 6/28/23
DATE COMPLETED: 6/28/23		24 Hr. Date:

DEPTH (ft.)	SAMPLE NO.	SAMPLE DEPTH		SOIL DESCRIPTION AND STRATIFICATION
1		0	0.75	Reddish brown (2.5YR 5/3) Silt loam, dry, 5% gravel, crumb, soft, many medium to fine roots. gradual bottom boundary; topsoil
		0.75	2	Light brown (7.5YR 6/4) and dark reddish brown (2.5YR 3/3) Silty clay loam, dry, crumb, soft, gradual bottom boundary
2				
		2	9	Dark reddish brown (2.5YR 3/3) Highly weathered shale, moist, soft to slightly hard
3				
4				
5				
6				Moisture observed in sidewall of test pit at 5.5 feet
7				
8				
9				
10				Bottom of Test Pit at 9 feet. El. 104.5

Soil descriptions represent a field identification using Munsell Soil Color Chart and USDA soil textural triangle.

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ROUTE:	LOCAL NAME: HMH Carrier Clinic	TEST PIT NO. TP-4
SECTION:	Township of Montgomery, Somerset County, NJ	FIELD TEST PIT NO.
STATION:	OFFSET:	REFERENCE LINE:
BORING BY: Client Sub-Contractor		GROUND ELEVATION: ±114.5
DATE STARTED: 6/28/23		GROUND WATER ELEVATION
INSPECTOR: C. Baldwin		DATE COMPLETED: 6/28/23
		0 Hr. 8 ft. El. 106.5 Date: 6/28/23
		24 Hr. 6 ft. El. 108.5 Date: 6/29/23

DEPTH (ft.)	SAMPLE NO.	SAMPLE DEPTH		SOIL DESCRIPTION AND STRATIFICATION
1		0	0.5	Reddish brown (2.5YR 5/3) Silt loam, dry, 5% gravel, crumb, soft, many medium to fine roots. gradual bottom boundary; topsoil
		0.5	1.5	Light brown (7.5YR 6/4) and dark reddish brown (2.5YR 3/3) Silty clay loam, dry, crumb, soft, gradual bottom boundary
		1.5	7	Dark reddish brown (2.5YR 3/3) Highly weathered shale, moist, soft, gradual bottom boundary
2				
3				
4				
5				
6				
7				Moisture observed on sidewall at 6 feet during initial excavation. TP-4 was left open for 24 hours and approximately 2 feet of water was observed in the bottom of the test pit after 24 hours. GWT was assumed based on 24-hour observations
8		7	8	Dark reddish brown (2.5YR 3/3) Weathered to slightly weathered shale, wet, slightly hard
9				
10				

Bottom of Test Pit at 8 feet, El. ±106.5

Soil descriptions represent a field identification using Munsell Soil Color Chart and USDA soil textural triangle.

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ROUTE:	LOCAL NAME:	HMH Carrier Clinic	TEST PIT NO.	TP-5
SECTION:	Township of Montgomery, Somerset County, NJ		FIELD TEST PIT NO.	
STATION:	OFFSET:	REFERENCE LINE:	GROUND ELEVATION: ±115.0	
BORING BY:	Client Sub-Contractor	DATE STARTED:	6/29/23	GROUND WATER ELEVATION
INSPECTOR: C. Baldwin		DATE COMPLETED: 6/29/23		0 Hr. 7.5 ft. El. 107.5 Date: 6/29/23
				24 Hr. Date:

DEPTH (ft.)	SAMPLE NO.	SAMPLE DEPTH		SOIL DESCRIPTION AND STRATIFICATION
1		0	.5	Reddish brown (2.5YR 5/3) Silt loam, dry, crumb, soft, many medium to fine roots. gradual bottom boundary; topsoil
		.5	1.5	Reddish brown (2.5YR 5/3) Silty clay loam, dry, crumb, soft, gradual bottom boundary
2		1.5	7.5	Dark reddish brown (2.5YR 3/3) Highly weathered shale, moist, soft to slightly hard
3				
4				
5				
6				
7				Moisture observed on sidewall at 6.5 feet
				Water infiltrating sidewall at 7.5 feet
8				Bottom of Test Pit at 7.5 feet, El. ±107.5
9				
10				

Soil descriptions represent a field identification using Munsell Soil Color Chart and USDA soil textural triangle.

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ROUTE:	LOCAL NAME: HMH Carrier Clinic	TEST PIT NO. TP-6
SECTION:	Township of Montgomery, Somerset County, NJ	FIELD TEST PIT NO.
STATION:	OFFSET:	REFERENCE LINE:
BORING BY: Client Sub-Contractor	DATE STARTED: 6/29/23	GROUND ELEVATION: ±113.0
INSPECTOR: C. Baldwin	DATE COMPLETED: 6/29/23	GROUND WATER ELEVATION 0 Hr. Not observed Date: 6/29/23 24 Hr. Date:

DEPTH (ft.)	SAMPLE NO.	SAMPLE DEPTH	SOIL DESCRIPTION AND STRATIFICATION
1		0 1	Reddish brown (2.5YR 5/3) Silt loam, dry, crumb, soft, many medium to fine roots. gradual bottom boundary; topsoil
2		1 2	Light brown (7.5YR 6/4) and dark reddish brown (2.5YR 3/3) Silty clay loam, dry, crumb, soft, gradual bottom boundary
3		2 3	Dark reddish brown (2.5YR 3/3) Highly weathered shale, dry, soft, gradual bottom boundary
4		3 5.5	Dark reddish brown (2.5YR 3/3) Weathered to slightly weathered shale, dry, slightly hard to hard
5			
6			Bottom of Test Pit at 5.5 feet, El. ±107.5
7			
8			
9			
10			

Soil descriptions represent a field identification using Munsell Soil Color Chart and USDA soil textural triangle.

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ROUTE:	LOCAL NAME:	HMH Carrier Clinic	TEST PIT NO.	TP-7
SECTION:	Township of Montgomery, Somerset County, NJ		FIELD TEST PIT NO.	
STATION:	OFFSET:	REFERENCE LINE:	GROUND ELEVATION: ±114.5	
BORING BY:	Client Sub-Contractor	DATE STARTED:	6/28/23	GROUND WATER ELEVATION
INSPECTOR: C. Baldwin		DATE COMPLETED: 6/28/23		0 Hr. 6.5 ft El. 108
				24 Hr. Date: 6/28/23

DEPTH (ft.)	SAMPLE NO.	SAMPLE DEPTH		SOIL DESCRIPTION AND STRATIFICATION
1		0	1	Reddish brown (2.5YR 5/3) Silt loam, dry, crumb, soft, many medium to fine roots. gradual bottom boundary; topsoil
2		1	1.5	Light brown (7.5YR 6/4) and dark reddish brown (2.5YR 3/3) Silty clay loam, dry, crumb, soft, gradual bottom boundary
3		1.5	6	Dark reddish brown (2.5YR 3/3) Highly weathered shale, dry, soft, gradual bottom boundary
4				A Basin Flood Test was performed in an adjacent test pit with dimensions of 7.5 ft x 7.5 ft and a depth of 2.5 ft.
				The test pit was filled with 12 inches of water for a 24-hour saturation period. Approximately 11.5 inches of water remained
				after 24 hours and the test was terminated.
5				
6				Moisture observed on sidewall at 5.5 ft
7		6	7	Dark reddish brown (2.5YR 3/3) Weathered to slightly weathered shale, dry, hard
				Water infiltrating sidewall at 6.5 feet
8				Bottom of Test Pit at 7 feet, El. ±107.5
9				
10				

Soil descriptions represent a field identification using Munsell Soil Color Chart and USDA soil textural triangle.

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ROUTE:	LOCAL NAME:	HMH Carrier Clinic	TEST PIT NO.	TP-8
SECTION:	Township of Montgomery, Somerset County, NJ		FIELD TEST PIT NO.	
STATION:	OFFSET:	REFERENCE LINE:	GROUND ELEVATION: ±114.5	
BORING BY:	Client Sub-Contractor	DATE STARTED:	6/29/23	GROUND WATER ELEVATION
INSPECTOR: C. Baldwin		DATE COMPLETED: 6/29/23		0 Hr. Not observed Date: 6/29/23
				24 Hr. Date:

DEPTH (ft.)	SAMPLE NO.	SAMPLE DEPTH		SOIL DESCRIPTION AND STRATIFICATION
1		0	1	Reddish brown (2.5YR 5/3) Silt loam, dry, crumb, soft, many medium to fine roots. gradual bottom boundary; topsoil
		1	1.5	Light brown (7.5YR 6/4) and dark reddish brown (2.5YR 3/3) Silty clay loam, dry, crumb, soft, gradual bottom boundary
2		1.5	2	Dark reddish brown (2.5YR 3/3) Highly weathered shale, dry, soft, gradual bottom boundary
		2	4.5	Dark reddish brown (2.5YR 3/3) Weathered to slightly weathered shale, dry, hard
3				
4				
5				Bottom of Test Pit at 4.5 feet, El. ±110.0
6				
7				
8				
9				
10				

Soil descriptions represent a field identification using Munsell Soil Color Chart and USDA soil textural triangle.

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ROUTE:	LOCAL NAME: HMH Carrier Clinic	TEST PIT NO. TP-9
SECTION:	Township of Montgomery, Somerset County, NJ	FIELD TEST PIT NO.
STATION:	OFFSET:	REFERENCE LINE:
BORING BY: Client Sub-Contractor		GROUND ELEVATION: ±112.0
DATE STARTED: 7/27/23		GROUND WATER ELEVATION
INSPECTOR: C. Baldwin		0 Hr. 6 ft. El. 106.0 Date: 7/27/23
DATE COMPLETED: 7/27/23		24 Hr. Date:

DEPTH (ft.)	SAMPLE NO.	SAMPLE DEPTH		SOIL DESCRIPTION AND STRATIFICATION
1		0	0.5	Reddish brown (2.5YR 5/3) Silt loam, dry, crumb, soft, many medium to fine roots. gradual bottom boundary; topsoil
		0.5	2	Light brown (7.5YR 6/4) and dark reddish brown (2.5YR 3/3) Silty clay loam, dry, crumb, soft, gradual bottom boundary
2				
3		2	6.5	Dark reddish brown (2.5YR 3/3) Highly weathered shale, moist, soft, gradual bottom boundary
4				
5				
6				
				Water infiltrating sidewall at 6 feet
7		6.5	7	Dark reddish brown (2.5YR 3/3) Slightly weathered shale, moist, slightly hard
8				Bottom of Test Pit at 7 feet, El. ±105
9				
10				

Soil descriptions represent a field identification using Munsell Soil Color Chart and USDA soil textural triangle.

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ROUTE:	LOCAL NAME: HMH Carrier Clinic	TEST PIT NO. TP-10
SECTION:	Township of Montgomery, Somerset County, NJ	FIELD TEST PIT NO.
STATION:	OFFSET:	REFERENCE LINE:
BORING BY: Client Sub-Contractor		GROUND ELEVATION: ±115.5
DATE STARTED: 7/27/23		GROUND WATER ELEVATION
INSPECTOR: C. Baldwin		0 Hr. Not observed Date: 7/27/23
DATE COMPLETED: 7/27/23		24 Hr. Date:

DEPTH (ft.)	SAMPLE NO.	SAMPLE DEPTH		SOIL DESCRIPTION AND STRATIFICATION
1		0	0.5	Reddish brown (2.5YR 5/3) Silt loam, dry, crumb, soft, many medium to fine roots. gradual bottom boundary; topsoil
		0.5	2.5	Reddish brown (2.5YR 5/3) Silty clay loam, dry, crumb, soft, gradual bottom boundary
2				
		2.5	7.5	Dark reddish brown (2.5YR 3/3) Highly weathered shale, moist, soft to slightly hard
3				
4				
5				
6				
7				
				Moisture observed on sidewall at 7 feet
8				Dark reddish brown (2.5YR 3/3) Slightly weathered shale, moist, slightly hard
9				
10				

Bottom of Test Pit at 8 feet, El. ±107.5

Soil descriptions represent a field identification using Munsell Soil Color Chart and USDA soil textural triangle.

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