



BOROUGH OF OCEANPORT

PLANNING/ZONING BOARD

AGENDA • JUNE 27, 2023

Regular

Clement V. Sommers Municipal Building

7:00 PM

910 Oceanport Way, Oceanport, NJ 07757

I. Call to Order

II. Open Public Meetings Statement

This meeting complies with the Open Public Meetings Act by adequate and electronic notification on Feb. 10, 2023 of this meeting and its location, date and time to the Asbury Park Press, Star Ledger and Two River Times and by the posting of same on the municipal bulletin board and Borough's Web Site.

III. Flag Salute

IV. Board Policy

- It is Board Policy that no application will be opened after 9:30 P.M.
- No new testimony will be taken after 10:00 P.M., except at the discretion of the Board.

V. Roll Call

VI. Board Business

1. Report of Pending Applications

VII. Approval of Minutes

1. Planning/Zoning Board - Regular - Jun 13, 2023 7:00 PM

VIII. Old Business

1. Resolution of Approval - 85 Horseneck Point Road

IX. New Business

1. PB2023-09 Sciacca, Paul

Block 12, Lot 25

111 Sagamore Avenue

Installation of pool and paver patio seeking bulk variance relief for:

- Maximum coverage permitted 37%, where 45.9% is proposed.

DFD 9/23/23

2. PB2022-27 SIGNAL POINT, LP

Block 110.18, Lot 1

Main St./ Stephenson Ave.

DFD 7/14/23

Convert existing building into apartment units and construct (10) town houses with ancillary parking area seeking variance relief for design requirements

X. Petitions from the Public

XI. Adjournment

**BOROUGH OF OCEANPORT****PLANNING/ZONING BOARD****MINUTES • JUNE 13, 2023****Regular****Clement V. Sommers Municipal Building****7:00 PM****910 Oceanport Way, Oceanport, NJ 07757**

- I. **Call to Order:** Chairman Whitson called the meeting to order at 7:01 PM
- II. **Open Public Meetings Statement:** This meeting complies with the Open Public Meetings Act by adequate and electronic notification on Feb. 10, 2023 of this meeting and its location, date and time to the Asbury Park Press, Star Ledger and Two River Times and by the posting of same on the municipal bulletin board and Borough's Web Site.
- III. **Flag Salute:** Chairman Whitson led attendees and members of the Board in the flag salute
- IV. **Board Policy:** Chairman Whitson advised of the following Board policies: It is Board Policy that no application will be opened after 9:30 P.M.; no new testimony will be taken after 10:00 P.M., except at the discretion of the Board.

V. Roll Call:

Attendee Name	Title	Status	Arrived
James Whitson	Chairman	Present	
John (Jack) Kahle	Vice Chairman	Present	
Patty Cooper	Mayor's Designee	Present	
Thomas Tvrdik	Class III	Absent	
Joseph Foster	Environmental Commission Liaison	Present	
Christopher Widdis C	Class IV	Absent	
Leslie B Widdis L	Class IV	Present	
Darren Davis	Class IV	Absent	
Michael Dailey	Class IV	Present	
Kevin Calver	Alternate I	Absent	
Robert Kleiberg	Alternate II	Absent	
Jeanne Smith	Board Secretary	Present	
Kevin Kennedy	Board Attorney	Present	
William White	Board Engineer/Planner	Present	

VI. Board Business:**1. Report of Pending Applications**

Ms. Smith advised the next meeting was scheduled for June 27, 2023 and described applications for 111 Sagamore Ave and the Nurse's Quarters. For the July 11th meeting it is anticipated that the Marina at Oceanport application will be scheduled.

VII. Approval of Minutes:**1. Planning/Zoning Board - Regular - Apr 11, 2023 7:00 PM**

RESULT:	ACCEPTED [4 TO 0]
MOVER:	John (Jack) Kahle, Vice Chairman
SECONDER:	Joseph Foster, Environmental Commission Liaison
AYES:	Whitson, Kahle, Foster, Dailey
ABSENT:	Tvrdik, Widdis C, Davis, Calver, Kleiberg
INELIGIBLE:	Cooper, Widdis L

VIII. Old Business - None:

IX. New Business:

1. PB2023-07 GILL, BRIAN

Block 109, Lot 10

85 Horseneck Point Road

Applicant seeks variance from flood damage prevention ordinance for lowest floor grade of 5.61' where 8.87' was permitted.

EXHIBITS:

A-1 Land Development Application

A-2 "Plot Plan" prepared by InSite Engineering, LLC, dated February 24, 2023

A-3 "Final As-built Survey" prepared by InSite Engineering, LLC, last revised October 22, 2022

A-4 "Foundation Plan Notes" prepared by Michael Savarese Associates, last revised March 15, 2023

A-5 Colliers Engineering Review letter dated

A-6 Photographs, 12 Sheets, taken by Applicant, undated

A-7 Elevation Certificate prepared by InSite Surveying Inc., dated August 8, 2022

The following person(s) were sworn in: William White, Board Engineer/Planner, Brian Gill Applicant/Owner and Michael Savarese, Applicant Architect.

Mr. Kennedy asked if there was anyone from the public with a question as to the sufficiency of the notice. As there were no objections to the notice, stated that he and Ms. Smith had reviewed the notice and found it to be in order. Mr. Kennedy then described and marked Exhibits A-1, A-2, A-3, A-4. A-5.

Motion to Approve Application with Conditions

RESULT:	ADOPTED [UNANIMOUS]
MOVER:	Leslie B Widdis L, Class IV
SECONDER:	John (Jack) Kahle, Vice Chairman
AYES:	Whitson, Kahle, Cooper, Foster, Widdis L, Dailey
ABSENT:	Tvrdik, Widdis C, Davis, Calver, Kleiberg

X. Petitions from the Public: Chairman Whitson opened the meeting to Petitions from the Public. As no one from the public wished to be heard, Chairman Whitson closed that portion of the meeting.

XI. Adjournment: As there was no further business, the meeting was adjourned at 7:49 pm on a motion by Mr. Kahle which was seconded by Chairman Whitson and approved by the Board.

Respectfully submitted,

Jeanne Smith
Board Secretary



Planning/Zoning Combined Board

PO Box 370
Oceanport, NJ 07757

SCHEDULED

RESOLUTION - PB (ID # 2854)

Meeting: 06/27/23 07:00 PM
Department: Planning/Zoning Board
Category: PB Resolutions
Prepared By: Jeanne Smith
Initiator: Jeanne Smith
Sponsors:
DOC ID: 2854

8.1

Resolution of Approval - 85 Horseneck Point Road



Planning/Zoning Combined Board

PO Box 370
Oceanport, NJ 07757

SCHEDULED

PLANNING BOARD APPLICATION (ID # 2810)

Meeting: 06/27/23 07:00 PM
Department: Planning/Zoning Board
Category: PB Applications
Prepared By: Kelle Burrough
Initiator: Jeanne Smith
Sponsors:
DOC ID: 2810

9.1

PB2023-09 Sciacca, Paul

Block 12, Lot 25

111 Sagamore Avenue

Installation of pool and paver patio seeking bulk variance relief for:

- Maximum coverage permitted 37%, where 45.9% is proposed.

DFD 9/23/23

101 Crawfords Corner Road
Suite 3400
Holmdel, New Jersey 07733
Main: 877 627 3772



May 30, 2023

VIA EMAIL

Jeanne Smith, Planning Board Secretary
Borough of Oceanport Planning Board
910 Oceanport Way
P. O. Box 370
Oceanport, NJ 07757

111 Sagamore Avenue – Bulk Variance
Block 12, Lot 25
Application No. PB2023-09
Borough of Oceanport, Monmouth County, New Jersey
Colliers Engineering & Design Project No. OPP-0348

Dear Board Members,

Our office has received the following information in support of the above-referenced Application:

- Plan entitled "Swimming Pool Plan," prepared by MGC Associates, last revised May 1, 2023, consisting of one (1) sheet.
- Plan entitled "Location Survey," prepared by Land Control Services, dated April 26, 2023, consisting of one (1) sheet.

The subject property is a 10,000 SF (0.23-acre) parcel on the north side of Sagamore Avenue approximately 1,325 feet west of Port Au Peck Avenue located in the R-3 Residential Zone. The Applicant proposes to install a pool, patio and fencing. The improvements will be replacing an above ground pool, wood deck, and concrete patio.

Based on our review, we recommend that the Application be deemed complete and scheduled for the next available public hearing. The Applicant shall provide proof of public notification as required for this Application. A planning and engineering review of the Application is included below.

A. Variances/Design Waivers

We offer the following comments for the Board's consideration:

1. Bulk variances are required for the following:
 - a. Impervious Coverage – Currently the property has 34.6% impervious coverage whereas the maximum permitted in the zone is 37%. The Applicant proposes to increase the impervious coverage to 45.9%.

The Municipal Land Use Law permits the granting of a hardship variance under either of two following situations (C.40:55D-70c):

1. **Hardship c(1) - Physical Constraints** – Hardship variances may be granted if the strict application of the ordinance would impose peculiar and exceptional practical difficulties to, or exceptional and undue hardship upon, the developer based upon the existence of the following conditions:
 - a. Exceptional narrowness, shallowness or shape of a specific piece of property;
 - b. Exceptional topographic conditions or physical features uniquely affecting a piece of property; and,
 - c. An extraordinary and exceptional situation uniquely affecting a specific piece of property of the structures lawfully existing thereon.
2. **Flexible “c” or c(2) - Benefits Outweighing Detriments** - A variance may be granted where the purpose of the Municipal Land Use Law would be advanced by the proposed deviation and the benefits of the deviation would substantially outweigh any detriment.

The Applicant shall provide testimony in support of the variance being requested and/or identified.

B. General Comments

1. A signed and sealed survey shall be submitted to the Board Secretary for the file.
2. A signed and sealed copy of the topographic survey from September 10, 2022, shall be provided.
3. The property is located in an AE10 Flood Hazard Area. The pool equipment must be at or above elevation 12.4

Project No. OPP-0348
May 30, 2023
Page 3 | 3



Should you have any questions regarding this matter, please do not hesitate to contact me directly.

Sincerely,

Colliers Engineering & Design
(DBA Maser Consulting)

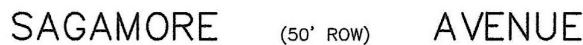
A handwritten signature in blue ink, appearing to read "W.H. White, III".

William H.R. White, III, PE, PP, CME, CFM, CPWM
Planning Board Engineer and Planner

WHW/dmm

cc: Paul Sciacca (via email)
Kevin Kennedy, Esq. (via email)

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Packet Pg. 10



Planning/Zoning Combined Board

PO Box 370
Oceanport, NJ 07757

SCHEDULED

PLANNING BOARD APPLICATION (ID # 2626)

Meeting: 06/27/23 07:00 PM
Department: Planning/Zoning Board
Category: PB Applications
Prepared By: Kelle Burrough
Initiator: Jeanne Smith
Sponsors:
DOC ID: 2626

9.2

PB2022-27 SIGNAL POINT, LP

Block 110.18, Lot 1

Main St./ Stephenson Ave.

DFD 7/14/23

Convert existing building into apartment units and construct (10) town houses with ancillary parking area seeking variance relief for design requirements

101 Crawfords Corner Road
Suite 3400
Holmdel New Jersey 07733
Main: 877 627 3772



April 26, 2023

VIA EMAIL

Jeanne Smith, Planning Board Secretary
Borough of Oceanport Planning Board
910 Oceanport Way
P. O. Box 370
Oceanport, NJ 07757

Signal Point, LP
Proposed New Block 110.18, Lot 1 – Stephenson Avenue
Application No. PB2022-27
Borough of Oceanport, Monmouth County, New Jersey
Colliers Engineering & Design Project No. OPP-0339

Dear Board Members,

Our office has received the following information in support of the above-referenced Application:

- Plan entitled "Topographic Survey" prepared by 3 Wire Surveying, LLC., last revised October 3, 2022, consisting of one (1) sheet.
- Plan entitled "Preliminary & Final Major Site Plan – Nurses Quarters," prepared by Shore Point Engineering, dated October 2, 2022, consisting of 14 sheets.
- Architectural Plans entitled "Nurses Quarters Redevelopment - Existing Dwellings Renovations and New 3-Story Townhouses," prepared by Inglese Architecture and Engineering, dated October 31, 2022, consisting of seven (7) sheets.
- Report entitled "Stormwater Management Report" prepared by Shore Point Engineering and dated October 7, 2022.
- Report entitled "Traffic Impact Statement" prepared by Shore Point Engineering and dated October 7, 2022.
- Report entitled "Operation and Maintenance Manual Stormwater Management Facilities" prepared by Shore Point Engineering and dated November 30, 2022.
- Mandatory Conceptual Review letter dated January 24, 2023.

The subject property is a ±3.75-acre parcel located in the Oceanport Education/Mixed-Use Neighborhood District within the Fort Monmouth/Oceanport Reuse Area. The parcel is bordered by Stephenson Avenue to the northeast, Main Street to the south and southeast, and Watson Place (Borough of Eatontown) to the west. Buildings 1077 & 1078 are to be renovated for 24 units. The proposed redevelopment will consist of eight (8) one-bedroom and 16 two-bedroom apartment units. Seven (7) of the two-bedroom apartments will be delineated for affordable housing. Additionally, ten (10) new three-story townhomes are proposed with frontages on Main Street. The

site will be accessed via a 34-foot-wide driveway also fronting Main Street. A total of 81 parking spaces will be provided on-site. Amenities for the apartments/townhomes include an outdoor picnic area in the western section of the site. The Application is consistent with Reuse Plan Amendment #18.

We offer the following preliminary comments for the Board's consideration:

A. Variances

1. The proposed development is in compliance with Reuse Plan Amendment 18 and thus no need exists for a use-type or bulk variance.

The Fort Monmouth Land Use Law permits the granting of a bulk and area-type variance under either of the following situations (NJAC 19:31C-3.21a):

- By reason of the exceptional narrowness, shallowness, or shape of the property; exceptional topographic conditions or physical features uniquely affecting the property; or an extraordinary and exceptional situation uniquely affecting the property or structures lawfully existing thereon, strict application would result in peculiar and exceptional practical difficulties to, or exceptional and undue hardship upon, the developer; or
- A determination that the purposes of the Reuse Plan and this subchapter would be advanced by a deviation from the bulk and area requirements of this subchapter and the benefits of the deviation would substantially outweigh any detriment.

B. Design Waivers/Exceptions

1. The Applicant proposes to provide a 24' width access aisle in the parking lots. NJAC 19:31C-3.10(c)3viii requires a minimum width of 25' for two-way traffic.
2. The proposed lighting is not compliant with the requirements of NJAC 19:31C-3.10(j)(4), maximum lighting intensity of 0.1 foot-candles at the property lines. Lighting levels along Stephenson Avenue and Main Street reach a maximum level of 0.3 fc and 0.8 fc respectively. The Applicant shall provide a justification for this exceedance.
3. N.J.A.C. 19:31-3.15(e)(1)(v) requires all medium density residential buildings to provide indoor bike racks in a garage area or within separate, secured room. Buildings 1077 & 1078 do not meet this requirement. FMERA recommends that a bicycle storage facility be provided.
4. Fences that exceed four feet (4') and are less than 50% open are not permitted in the front yard (N.J.A.C. 19:31C-3.10(g)1). The proposed six-foot (6') PVC privacy fence along the western property line extends past the front of the proposed townhouses.

The Fort Monmouth Land Use Law permits the granting of a design waiver/exception from requirements listed in N.J.A.C. 19:31C-3.10 through 3.12 under either of the following situations (NJAC 19:31C-3.21d):

- The literal enforcement of one or more of the rules in this subchapter is impractical; or
- The literal enforcement of one or more of the rules in this subchapter will exact undue hardship because of peculiar conditions pertaining to the land in question.

C. General Comments

1. The 3.7-acre parcel that is the subject of this Application has not been subdivided off of original Lot 4 which started as a total of 77.44 acres. It is our understanding that the closing has not occurred as of this date. Since the property boundary has not been legally established, an Amended Site Plan Application will be required if the boundary changes after the Planning Board hearing.
2. The Applicant shall address what is proposed for the open space area to the on the north side of the parcel. Will it be deed restricted and preserved as open space?
3. The survey labeled a portion of the area to the western and northern boundaries as "Area Inaac." The Applicant shall provide clarification of what this means and the impact on the Application.
4. The Applicant shall address the Electric Vehicle Charging Station Law which was signed into law in July 2021.

D. Grading Comments

1. The segmental block wall does not provide and spot grades. The wall exceeds four feet (4') thereby requiring a site-specific design and signed and sealed structural calculations by a New Jersey Professional Engineer.
2. The plans shall demonstrate the accessible path to each building and the proposed compliant slopes.
3. Additional spot grades shall be provided for the handicap parking and access aisle to demonstrate the slopes does not exceed 2%.

E. Landscaping

1. Along the northern portion of site by Stephenson Avenue, 6 Bluecrop Highbush Blueberry are shown in front of parking spaces. It would be recommended that these plantings be changed to an evergreen variety such as Inkberry to provide year-round screening.
2. Any plantings within the basin should be indicated on the Landscape Plan.
3. At the present time aerial photos indicate trees located in the south and westerly portions of the site. Are these trees to remain? If so, they should be indicated on the Landscape Plan. If not, they should be augmented with other plantings in these areas.
4. The plan indicates that a certain section of Boxwood hedge by the western most building is to remain. Are any other plantings to remain?
5. Plantings should be provided at the base of the Site Sign.

F. Lighting

1. The Application should clarify proposed fixture mounting heights for both wall mounted and pole mounted lighting.
2. The Applicant shall clarify if there will be any lighting for the Site Sign.
3. The Application may want to consider two (2) additional wall mounted fixtures, one (1) on the south façade of the northern building on the corner, and one (1) on the eastern end of the existing two-story building to illuminate the drive islands.

G. Traffic and Circulation

1. The traffic statement was prepared using an older version of the ITE Trip Generation Manual. Under the current version of the manual (11th Edition), 34 multi-family units would generate 33 trips (eight [8] entering/25 exiting) during the weekday morning peak hour and 35 trips (22 entering/13 exiting) during the weekday evening peak hour utilizing Land Use Code 221-Multifamily Housings (Low-Rise). Although this represents an increase in the traffic projections when compared to those in the traffic statement, it will not change the overall conclusion of the traffic statement which states the additional traffic will have a negligible impact on the surrounding roadway network.
2. The amount parking provided is adequate and exceeds the RSIS parking requirements.

3. The required sight distance triangles should be added to the layout plan in compliance with AASHTO sight distance standards for the access along Main Street.
4. A turning template plan should be provided showing that the emergency and garbage vehicles can adequately circulate through the development.
5. Justification should be provided for the need to provide separate left and right turn egress lanes for the site access along Main Street. It is our opinion, based on the limited amount of traffic generated by the project, one (1) egress lane would be adequate. This would allow the spacing distance between the site access and the intersection of Main Street/Hedge Drive to be increased.
6. Emergency access is provided to Stepheson Avenue which is a private road. Testimony should be provided as to any agreement/easement is in place to permit such access and not to prohibit the adjacent property owner from blocking access.

G. Pedestrian Circulation

1. It would be recommended that the walkway in the front of the western building be continued to connect with the walkway by the proposed benches and picnic tables.
2. The sidewalk connecting the northern two-story building with Stephenson Avenue will direct pedestrians onto the adjacent site. Is there an agreement in place to permit the sidewalk installation?

H. Stormwater Management

1. The proposed improvements will disturb approximately 2.59 acres of land and will increase the net impervious surface by more than $\frac{1}{4}$ of an acre. As such, the project is classified as a major development per N.J.A.C. 7:8 and is subject to the Green Infrastructure (GI) Standards (NJAC 7:8-5.3), Groundwater (GW) Recharge Standards (NJAC 7:8-5.4), Stormwater (SW) Runoff Quality Standards (NJAC 7:8-5.5), and SW Runoff Quantity Standards (NJAC 7:8-5.6).
2. The Applicant proposes to meet the stormwater quantity requirement per NJAC 7:8-5.6(b)3 by reducing the post-construction peak runoff rates for the 2, 10, and 100-year storm events to 50, 75 and 80%, respectively, of the pre-construction peak runoff rates. Please address the following:
 - a. The existing drainage area (DA) map shows two (2) drainage areas; EA-1 tributary to Stephenson Road and EA-2 tributary to Main Street. There is a concern that a portion of EA-1 bypasses the point of analysis on Stephenson Road, where the proposed runoff connects to the existing stormwater pipe and system.

- b. Stormwater Quantity should be further evaluated to confirm that the required reductions are satisfied and address potential downstream impacts.
 - c. Please revise the existing and proposed DA maps to identify the Point of Analysis (POA).
- 3. The Applicant is proposing a small-scale bioretention basin designed with infiltration. Please address the following:
 - a. The lowest outlet (12" H x 11.75" W rectangular weir) is set at the 2-year W.S.E. Per the current stormwater standards, infiltration of larger storms is allowed only when existing site conditions are such that no runoff leaves the site for the same design storm. Please revise the OCS to set the lowest quantity control outlet at the WQDS W.S.E. or lower.
 - b. The maximum depth of runoff is 1'. Based on the information provided, the bioretention basin has a depth of 2.71' between the bottom of basin and the first outlet control.
 - c. The plans shall be revised to identify a location for emergency overflow at the Bioretention Basin. Calculations should be provided based on the 100-year inflow. A minimum of 1' of freeboard is required. Please refer to NJAC 5:21-7.8 for emergency overflow and freeboard requirements for basins.
 - d. The plans shall be revised to provide maintenance access to the proposed Bioretention Basin.
- 4. The proposed Bioretention Basin is intended to capture and treat the WQ runoff generated by the proposed motor vehicle surface areas and reduce the post-construction load of total suspended solids (TSS) by 80%. Please revise the plans to provide a method for pretreatment as required for small-scale bioretention systems designed to infiltrate.
- 5. The Applicant proposes to meet the groundwater recharge requirement per N.J.A.C. 7:8-5.4(4)1ii by demonstrating through hydrologic and hydraulic analysis that the increase in stormwater runoff volume from pre-construction to post-construction for the 2-year storm is infiltrated. The following shall apply:
 - a. The current SWM plan proposes a 12" x 11.75" rectangular weir at the 2 yr. W.S.E. where the entire 2-yr. volume will be infiltrated. However, as noted above, only the increase in volume for the 2-year storm should be infiltrated to meet N.J.A.C. 7:8-5.4(4)1ii. Note: based on the SWM Report, the 2 yr. increase in volume is approximately 4,076 C.F. (lower than the WQDS Vol) and can be addressed by infiltrating the WQDS volume at the bioretention basin.

- b. Please revise the OCS so that the lowest quantity control outlet is set at the WQDS W.S.E. or lower. See comment no. 3.
- 6. The Applicant proposes an outflow pipe, 50 LF, 15" RCP at 0.5 % slope, from the bioretention basin's OCS to a proposed doghouse manhole connecting to the existing storm pipe and conveyance system located within Stephenson Avenue.
 - a. The plans shall be revised to specify the size, type, slope, and condition of the existing pipe downstream of the proposed doghouse manhole.
 - b. A portion of the proposed 15-inch outflow pipe will be exposed along the basin bottom based on the surrounding grading. The OCS should be relocated to provide adequate cover along the entire length of pipe.
 - c. The flow rate used in the pipe calculations for the outflow pipe should be revised to reflect the 100 yr. outflow.
- 7. The Applicant proposes a small-scale subsurface infiltration system consisting of 100 LF of 36-inch perforated pipe to capture roof runoff from one of the proposed buildings.
 - a. Please address how overflow will be facilitated.
 - b. An inspection port is required for maintenance.
 - c. Pretreatment is required to capture leaf debris. The Operations and Maintenance (O&M) Manual should address how roof runoff will be pretreated.
- 8. A groundwater mounding analysis is required per NJAC 7:8-5.2(h) at each proposed BMP.
- 9. The proposed hydrologic analysis uses a minimum Time of Concentration (T_c) value of 6 minutes (hydrographs DA-1A, DA-1B & DA-1C). Please note that per the current NJ BMP Manual (chapter 5), there is no longer a minimum or default value that may be used for the T_c (unless using the rational method). Please revise accordingly.
- 10. On sheet 6 of 14 of the plans, the grade elevations along the bottom of the profiles reflect the existing conditions. Please revise to provide the proposed finished grade elevations.
- 11. The Applicant proposes an on-site stormwater conveyance system consisting of Reinforced Concrete pipe (RCP). A pipe bedding detail shall be provided.

12. The plans show 4" PVC roof leader pipes connecting roof runoff to the proposed on-site stormwater conveyance system. The plans shall be revised to provide the intended pipe slope and inverts. Pipe calculations shall be provided to confirm adequate capacity for the 25 yr. storm event.
13. In accordance with NJAC 7:8-5.2(m), the proposed small-scale bioretention basin and subsurface infiltration basin shall be reflected in a deed notice recorded in the Office of the County Clerk. A form of deed notice shall be submitted to the Borough for approval prior to filing.
14. Spot elevations should be provided at the proposed accessible parking stalls, aisle, and along the accessible path to the building entrance to demonstrate compliance with the maximum slope requirements per the ADA Standards for Accessible Design.
15. The Applicant proposes a retaining wall along a portion of the proposed Bioretention Basin. The following shall apply:
 - a. The grading plan shall be revised to provide 'Top of wall' and 'bottom of wall elevations.'
 - b. Structural calculations will be required for heights exceeding four feet (4').
16. The outlet structure shall be provided with wingwall and recessed into the slopes to make it more aesthetically pleasing.
17. The site-specific O&M Manual for the stormwater system shall be submitted. In accordance with the Borough's Stormwater Control Ordinance the owner/operator of the Stormwater Facility is required to submit annual inspection reports and maintenance logs to the Borough Clerk by March 1st for the previous year. The Manual shall clearly note this requirement. The approved Manual will have to be filed at the County so that it can be discovered by future owners.

I. Miscellaneous

1. Sewer improvements will require opening up Main Street and Hedge Drive, both of which are under moratorium until July 2025. Special permission will be required from Borough Council to issue the required road opening permits.
2. The Applicant shall testify as to how garbage and recycling will be handled (i.e., private hauler) and what will be done if the single enclosure does not have sufficient capacity for the 24 units.

3. Additional detail on the trash enclosure gates shall be add to the plans along with a detail for the picnic tables.
4. All Handicap curb ramps shall have detectable warning.
5. Buildings 1077 & 1078 have existing geothermal systems. The Applicant should address if they are to be re-used or abandoned. If they are to be abandoned all NJDEP requirements are to be followed.
6. The Applicant shall be required to provide an electronic version (AutoCAD format) of the boundary survey.
7. A Tax Map Revision Fee of \$340.00 shall be paid to the Borough should the Application be approved (Ordinance 204.10).
8. The street addresses shall be approved by the appropriate Borough Official.
9. The crosswalk striping detail shall be revised to provide the required setback to the stop bar.

J. Additional Agency Approvals

1. This Application is subject, but not limited to, the following outside agency approvals or letter of no jurisdiction:
 - a) Oceanport Fire Marshal
 - b) Two River Water Reclamation Authority
 - c) New Jersey American Water
 - d) Freehold Soil Conservation District
 - e) New Jersey Natural Gas
 - f) JCP&L/FMERA

Project No. OPP-0339
April 26, 2023
Page 10 | 10



Should you have any questions regarding this matter, please do not hesitate to contact me directly.

Sincerely,

Colliers Engineering & Design

A handwritten signature in blue ink, appearing to read "W.H. White, III".

William H.R. White, III, PE, PP, CME, CFM, CPWM
Oceanport Planning Board Engineer and Planner

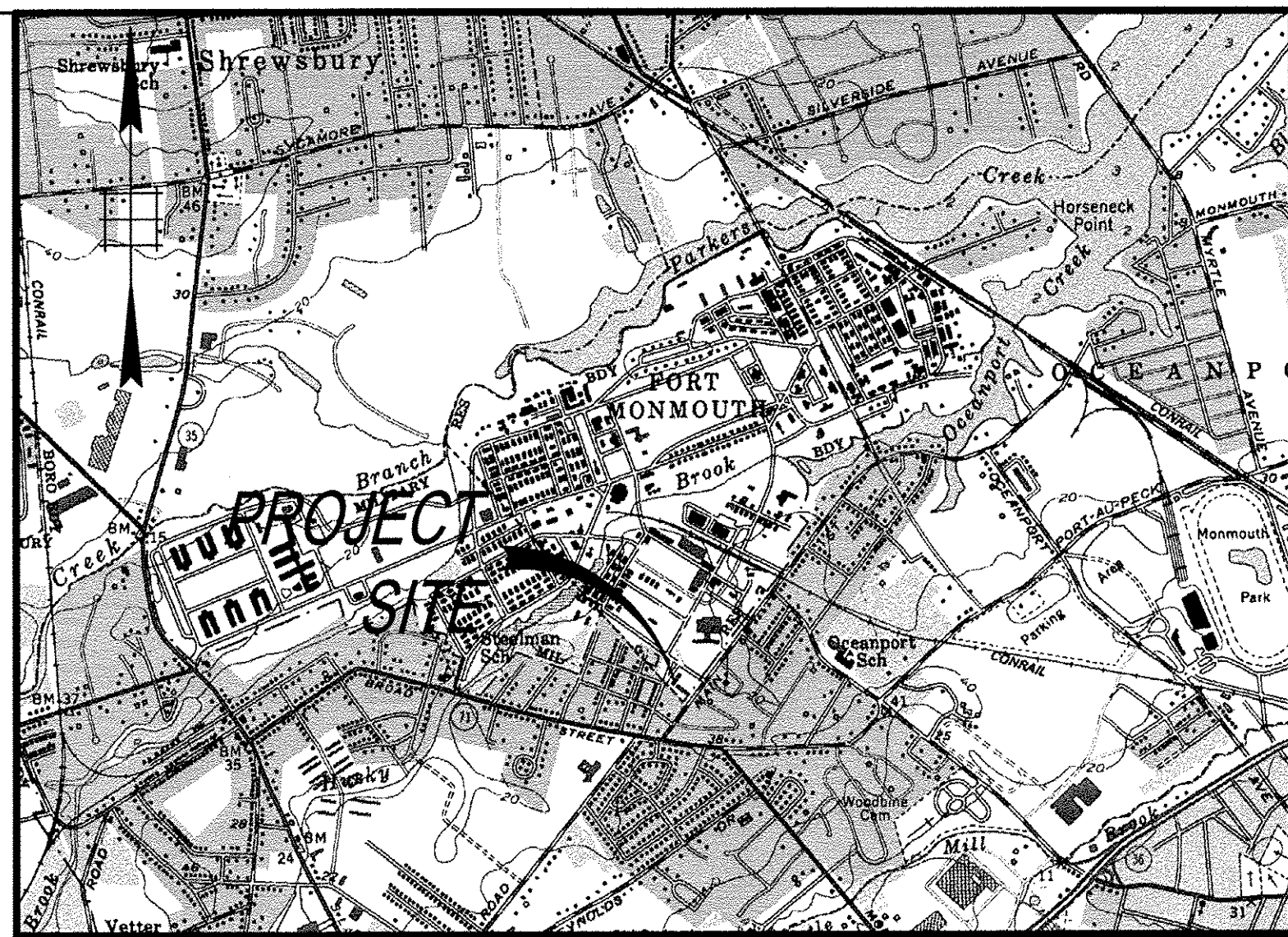
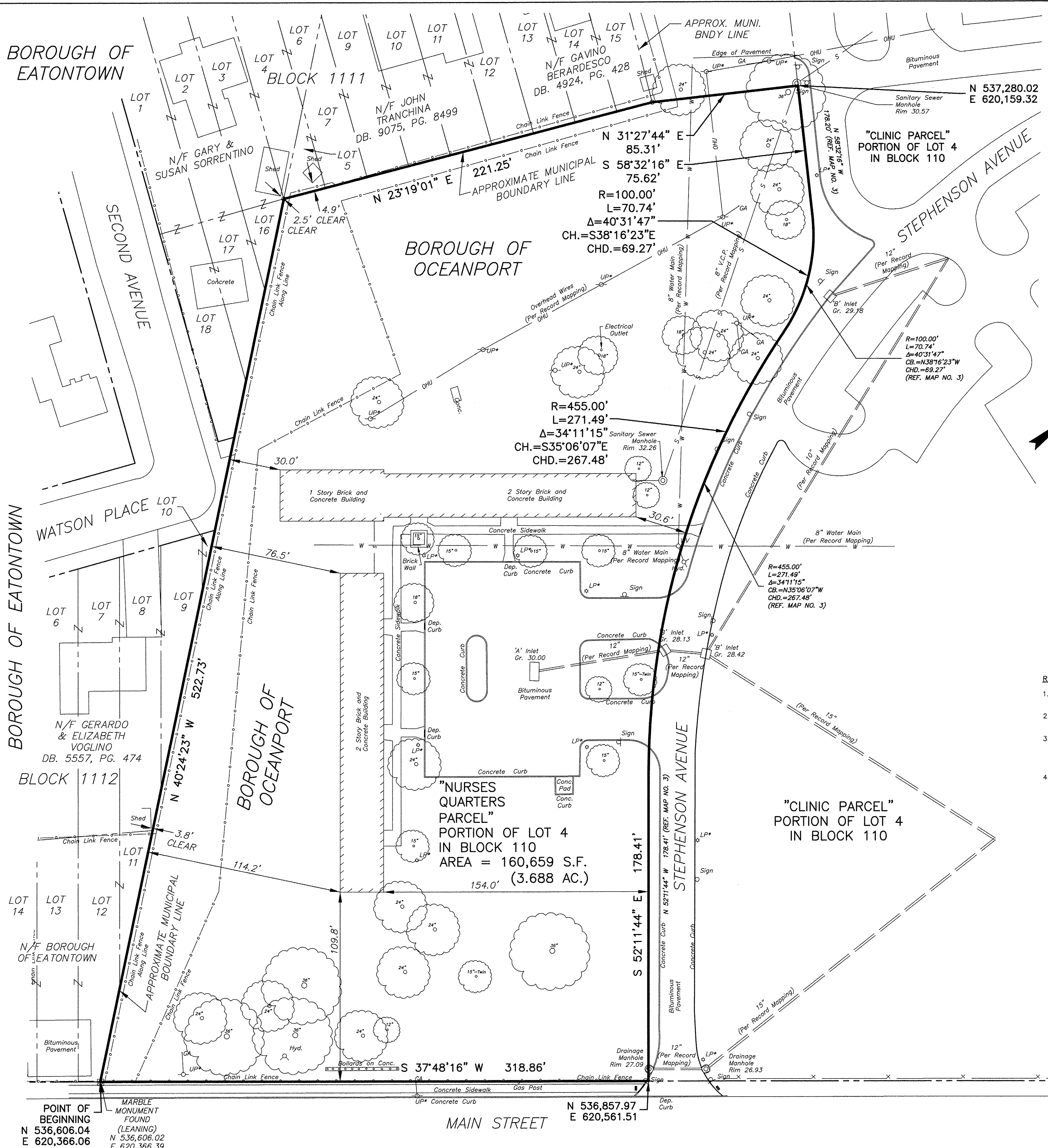
WHW/dmm

cc: Kevin Kennedy, Esq. (via email)
Salvatore Alfieri, Esq. (via email)
Kevin Shelly, PE (via email)

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PROJECT INFORMATION:
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FILE NAME: FMRA-00016 - Nurses Quarters_SUR-01.dwg
LAST SAVE DATE AND TIME: 25 Feb 2020, 5:02PM
LAST SAVE BY: BARK

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SOURCE: U.S.G.S. LONG BRANCH, N.J. QUADRANGLE MAP
VICINITY MAP SCALE 1" = 2000'

LEGEND

S 43°09'27" W 957.43' (C)	BOUNDARY COURSE
S 42°59'55" W 957.43' (D)	RECORD BOUNDARY COURSE (PER DEED)
---	SUBJECT PROPERTY BOUNDARY
---	EXISTING RIGHT-OF-WAY LINE
---	EXISTING ADJOINING PROPERTY LINE (TAX LOT)
---	EXISTING EASEMENT LINE
---	CHAIN LINK FENCE
---	WATER LINE MARKOUT
---	GAS LINE MARKOUT
---	TELEPHONE LINE MARKOUT
---	OVERHEAD WIRE
○	UTILITY POLE
◇	FIRE HYDRANT
○	CAPPED REBAR FOUND
⊠	CONCRETE MONUMENT FOUND

REFERENCE MAPS:

- TAX MAP, BOROUGH OF OCEANPORT, MONMOUTH COUNTY, NEW JERSEY, SHEET NOS. 1, 2, 3 AND 4, DATED MAY, 2016.
- TAX MAP, BOROUGH OF EATONTOWN, MONMOUTH COUNTY, NEW JERSEY, SHEET NO. 11, DATED AUGUST, 2002.
- MAP ENTITLED "FORT MONMOUTH CLINIC PARCEL 1 & 2, BORO OF OCEANPORT, MONMOUTH COUNTY, NEW JERSEY, ALTA/ACSM LAND TITLE SURVEY, PART OF BLOCK 110, LOT 4, PREPARED BY LANGAN, DATED SEPTEMBER 18, 2012.
- MAP ENTITLED "DIRECTORATE OF PUBLIC WORKS, FORT MONMOUTH, NEW JERSEY, FORT MONMOUTH GENERAL SANITARY - SEWER MAP", DATED JANUARY 4, 1999.

GENERAL NOTES:

- THE PREMISES SHOWN HEREON WERE SURVEYED WITHOUT THE BENEFIT OF A TITLE SEARCH AND ARE SUBJECT TO SUCH FACTS AS MAY BE DISCLOSED THEREIN. THE PROPERTY MAY BE SUBJECT TO THE FOLLOWING:
 - RIGHTS OR CLAIMS OF PARTIES IN POSSESSION SHOWN BY THE PUBLIC RECORD
 - RIGHTS OR CLAIMS OF PARTIES IN POSSESSION NOT SHOWN BY THE PUBLIC RECORD
 - EASEMENTS OR CLAIMS OF EASEMENTS SHOWN BY THE PUBLIC RECORD
 - EASEMENTS OR CLAIMS OF EASEMENTS NOT SHOWN BY THE PUBLIC RECORD
 - RESTRICTIVE COVENANTS NOTED THEREIN
- NO DETERMINATIONS HAVE BEEN MADE REGARDING WETLANDS LOCATIONS.
- NO DETERMINATIONS HAVE BEEN MADE REGARDING HAZARDOUS MATERIAL CONDITIONS.
- PLANIMETRIC AND TOPOGRAPHIC FEATURES SHOWN HEREON ARE DRAWN IN ACCORDANCE WITH FIELD SURVEY PERFORMED ON THE GROUND BY T&M ASSOCIATES, FEBRUARY, 2020. HORIZONTAL DATUM IS NEW JERSEY STATE PLANE COORDINATE (N.A.D. 1983), VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM (N.A.V.D. 1988).
- EXISTING UTILITY INFORMATION SHOWN HEREON HAS BEEN COLLECTED FROM VARIOUS SOURCES AND IS NOT GUARANTEED AS TO ACCURACY OR COMPLETENESS. THE CONTRACTOR SHALL VERIFY ALL INFORMATION TO HIS SATISFACTION PRIOR TO EXCAVATION. WHERE EXISTING UTILITIES ARE TO BE CROSSED BY PROPOSED CONSTRUCTION, TEST PITS SHALL BE DUG BY THE CONTRACTOR PRIOR TO CONSTRUCTION TO ASCERTAIN EXISTING INVERTS, MATERIALS AND SIZES. TEST PIT INFORMATION SHALL BE GIVEN TO THE ENGINEER PRIOR TO CONSTRUCTION TO PERMIT ADJUSTMENTS AS REQUIRED TO AVOID CONFLICTS.
- A WRITTEN WAIVER AND DIRECTION NOT TO SET CORNERS HAS BEEN OBTAINED FROM THE ULTIMATE USER PURSUANT TO P.L. 2003, c.14 (N.J.S.A. 45:8-36.3) AND N.J.A.C. 13:40-5.1(d).

I HEREBY CERTIFY TO:

FORT MONMOUTH ECONOMIC REVITALIZATION AUTHORITY
RPM DEVELOPMENT, L.L.C.
FIRST AMERICAN TITLE INSURANCE COMPANY

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE "2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS," JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2, 3, 4, 7, 8, 9, 11, 13, 14, 16, AND 17 OF TABLE A THEREOF. THE FIELDWORK WAS COMPLETED ON FEBRUARY 19, 2020.

2/25/2020
MICHAEL S. FINNEGAN, P.L.S. LIC. NO. GS34851
DATE

30' 15' 0 30' 60'
1" = 30'

NO.	DATE	REVISIONS	BY	CHKD

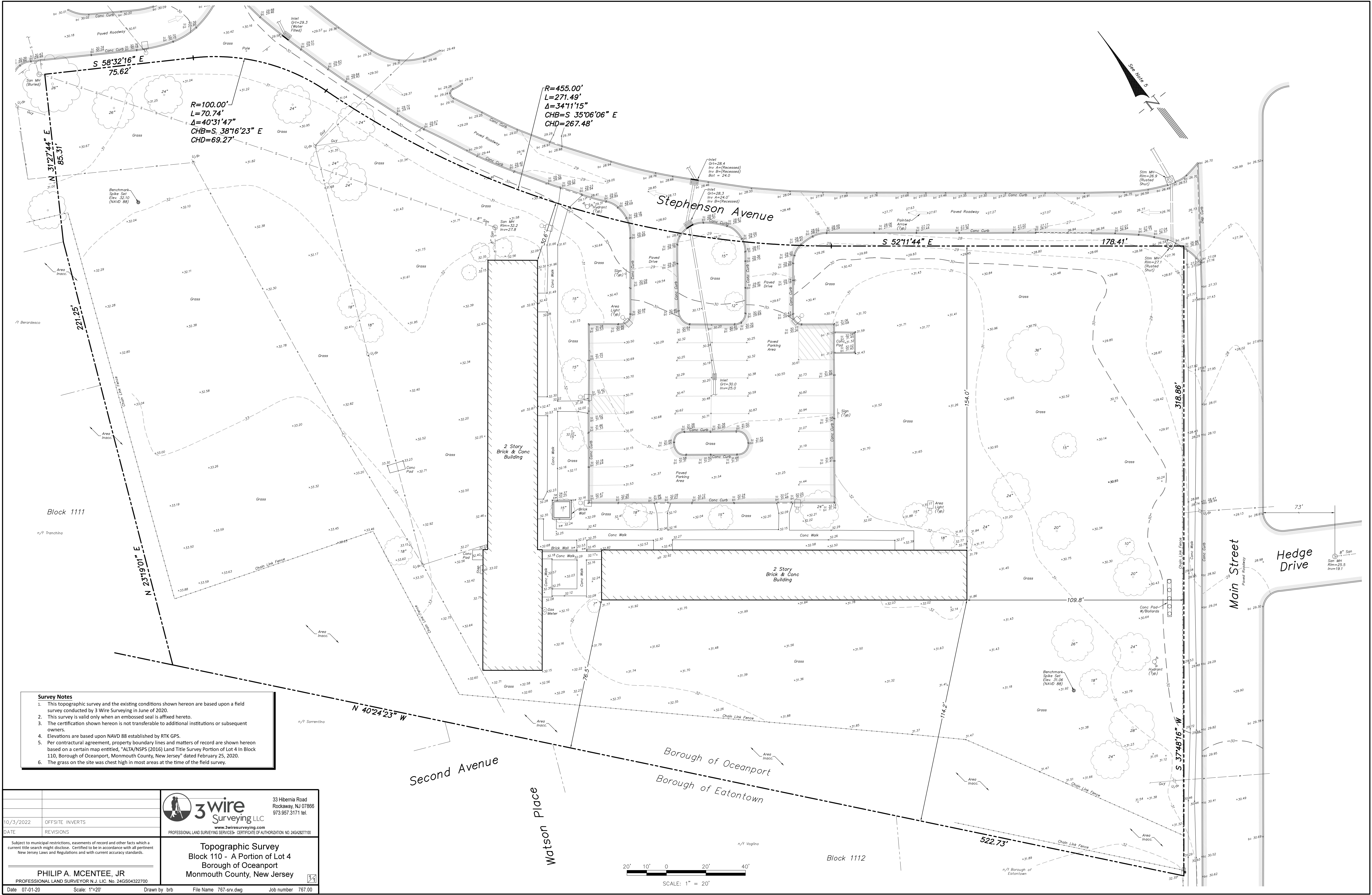
MICHAEL S. FINNEGAN, P.P., P.L.S.
GROUP MANAGER
FEBRUARY 25, 2020
LICENSED PROFESSIONAL LAND SURVEYOR
STATE OF NEW JERSEY, GS34851
NEW JERSEY BOARD OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS
CERTIFICATE OF AUTHORIZATION 24GA27987500

FORT MONMOUTH ECONOMIC REVITALIZATION AUTHORITY
ALTANSPS (2016) LAND TITLE SURVEY
PORTION OF LOT 4 IN BLOCK 110
BOROUGH OF OCEANPORT, MONMOUTH COUNTY, NEW JERSEY
EXHIBIT MAP SHOWING
NURSES QUARTERS PARCEL

AND
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CHECKED BY	MSF	SHEET	1
DRAWN BY	BRN	DATE	2/25/2020
SCALE	AS SHOWN	PROJ. NO.	FMRA00016
			OF 1

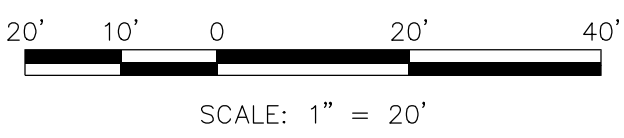


Survey Notes

1. This topographic survey and the existing conditions shown hereon are based upon a field survey conducted by 3 Wire Surveying in June of 2020.
2. This survey is valid only when an embossed seal is affixed hereto.
3. The certification shown hereon is not transferable to additional institutions or subsequent owners.
4. Elevations are based upon NAVD 88 established by RTK GPS.
5. Per contractual agreement, property boundary lines and matters of record are shown hereon based on a certain map entitled, "ALTA/NSPS (2016) Land Title Survey Portion of Lot 4 in Block 110, Borough of Oceanport, Monmouth County, New Jersey" dated February 25, 2020.
6. The grass on the site was chest high in most areas at the time of the field survey.

		33 Hibernia Road Rockaway, NJ 07866 973.957.3171 tel.
10/3/2022	OFFSITE INVERTS	www.3wiresurveying.com PROFESSIONAL LAND SURVEYING SERVICES- CERTIFICATE OF AUTHORIZATION NO. 24G042827100
DATE	REVISIONS	
Subject to municipal restrictions, easements of record and other facts which a current title search might disclose. Certified to be in accordance with all pertinent New Jersey Laws and Regulations and with current accuracy standards.		
PHILIP A. MCENTEE, JR PROFESSIONAL LAND SURVEYOR N.J. LIC. NO. 24G042827100		
Date 07-01-20	Scale: 1"=20'	Drawn by: brb File Name: 767-srv.dwg Job number: 767.00

Topographic Survey
Block 110 - A Portion of Lot 4
Borough of Oceanport
Monmouth County, New Jersey



October 7, 2022

RPM-203

STORMWATER MANAGEMENT REPORT

FOR

SIGNAL POINT, LP
NURSE'S QUARTERS
BLOCK 110.18, LOT 1
BOROUGH OF OCEANPORT, MONMOUTH COUNTY, NEW JERSEY

PREPARED BY:

SHORE POINT ENGINEERING, LLC
1985 HIGHWAY 34, SUITE A7
WALL, NJ 07719



Kevin E. Shelly, P.E.
Professional Engineer
New Jersey License No. 50313

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I. SITE DESCRIPTION

The property, located in the Fort Monmouth section of Oceanport, is known and designated as Block 110.18, Lot 1. The property was subdivided off the overall Block 110, Lot 1 Fort Monmouth parcel in 2020 and assigned the designation of Block 110.18, Lot 1 by the Oceanport Tax Assessor. The applicant, Signal Point, LP, proposes to rehabilitate the existing 24 apartments, formerly known as the Nurse's Quarters, and proposes to construct 10 additional townhomes along the property frontage on Main Street.

II. STORMWATER DESIGN OVERVIEW

This report describes and analyzes how the proposed stormwater management system has been designed in accordance with the applicable stormwater management rules and regulations established in N.J.A.C. 7:8 and the Borough of Oceanport Ordinance. The proposed project is classified as a major development as it disturbs more than one (1) acre of land and increases the amount of impervious cover onsite by more than $\frac{1}{4}$ acre.

Runoff from 1.81 acres of developed area is collected and conveyed to two proposed stormwater management basins that are designed to entirely store and infiltrate the water quality design storm of 1.25 inches of rainfall in two hours, as well as portions of the 2, 10 and 100-year storm storms. One basin is designed as a bioretention basin and the other as an underground infiltration basin.

In accordance with the stormwater management rules, the proposed stormwater management system must achieve an 80% reduction in the post-developed total suspended solids (TSS) runoff from the new impervious surfaces, to satisfy the water quality requirements. TSS removal will be achieved through the use of a bioretention basin which is approved for 80% TSS removal. The underground infiltration basin is sized to handle roof runoff only and therefore, does not require water quality treatment.

Additionally, the stormwater management rules also require major developments include measures to prevent the loss of groundwater recharge at the project site. Groundwater recharge for this project is addressed through the use of the stormwater management basins to infiltrate 100% of the difference between the site's pre- and post-development 2-year runoff volume.

III. PRE-DEVELOPMENT CONDITIONS

The stormwater analysis of this report is limited to the 2.33-acres that will be disturbed as part of this project. The site's topography indicates two existing drainage areas (EA-1 & EA-2). EA-1 consists of 0.93 acres of development area, including the buildings and parking lot, draining towards the existing drainage infrastructure within Stephenson Avenue. EA-2 consists of 1.40 acres of mostly lawn and vegetated area draining towards Main Street. Time of concentration was calculated assuming 100 linear feet of sheet flow and the remaining calculated as shallow concentrated flow. Based on Monmouth County soils survey information, the various onsite soils are parts of Hydrologic Soil Group (HSG) D, with a small portion of HSG B.

Runoff from the drainage areas was modeled separately using HydroCAD 10.10 to determine the peak runoff rates during the 2, 10 and 100-year storms. The calculated peak runoff rates are as follows:

EA-1		EA-2	
Storm Event (YR)	Pre-Dev Runoff (cfs)	Storm Event (YR)	Pre-Dev Runoff (cfs)
2	3.26	2	1.20
10	4.73	10	2.24
100	6.73	100	3.84

IV. POST-DEVELOPMENT SUMMARY

A. DESIGN METHODOLOGY

The pre- and post-development flows were calculated using the USDA Natural Resources Conservation Service methodology, as presented in Technical Release 55 (TR-55), which is incorporated into HydroCAD 10.10 modeling software. The new rainfall data from NOAA, NRCE was used in place of the previously used Type III distribution. All undisturbed areas of the site have been assumed to be in good hydrologic condition with good ground cover for the pre-development analysis.

B. RUNOFF QUANTITY

The stormwater management system has been designed to store and reduce the development runoff to 50%, 75% and 80% of the 2, 10 and 100-year storm storms, respectively, in the pre-developed condition for the area being disturbed. Flows are reduced by utilizing outlet structures in the basins. As such, the proposed system has been designed in accordance with Water Quantity requirements of N.J.A.C. 7-8-5.4.

The proposed development is broken into four drainage area (DA-1A, DA-1B, DA-1C & DA-2). DA-1A is 0.13 acres, consisting of mostly lawn with some pavement and sidewalk area that drains unattenuated towards Stephenson Avenue. DA-1B is 1.68 acres, containing most of the proposed improvements, that is collected and conveyed to the proposed bioretention basin. DA-1C consists of 0.13 acres of only roof area that is collected and conveyed to the proposed underground infiltration basin behind the building. DA-2 consists of 0.40 acres of mostly lawn and some driveway and sidewalk areas that drain unattenuated towards Main Street.

The post-development allowable peak runoff rates were calculated by applying the required reduction rates to the pre-development peak runoff rates for EA-1 & EA-2. The allowable peak runoff rates are as follows:

EA-1 vs DA-1A, DA-1B & DA-1C				
Storm Event (YR)	Pre-Dev Runoff (cfs)	% Reduction	Allowable Runoff (cfs)	Post-Dev Runoff (cfs)
2	3.26	50	1.63	0.21
10	4.73	75	3.55	2.16
100	6.73	80	5.38	5.35

EA-2 vs DA-2				
Storm Event (YR)	Pre-Dev Runoff (cfs)	% Reduction	Allowable Runoff (cfs)	Post-Dev Runoff (cfs)
2	1.20	50	0.60	0.37
10	2.24	75	1.68	0.65
100	3.84	80	3.07	1.08

For each of the storms, the post-development runoff rates are less than the allowable runoff rates, this meeting the requirements of N.J.A.C. 7-8-5.4.

C. STORMWATER MANAGEMENT DESIGN

The site has been designed so that majority of the runoff will be collected and conveyed via conventional drainage pipe networks to two basins. The bioretention basin infiltrates the entire 2-year storm, before ultimately discharging larger storm events to the existing drainage network in Stephenson Avenue. The underground infiltration basin infiltrates the entire 100-year storm event for the existing rear building.

BIORETENTION BASIN

The bioretention basin has been designed to accept runoff from 1.68 acres of the proposed development, including roadway, sidewalks, driveways, buildings and lawn areas. The basin was analyzed with an infiltration rate of 6 inches / hour, based on the findings from the subsurface soil investigation performed. The basin was modeled and analyzed with the HydroCAD 10.10 software and a summary of the peak flows, storage and basin elevations are outlined below:

Storm Event (YR)	Basin Inflow (cfs)	Basin Outflow (cfs)	Max. Basin Storage (cu-ft)	Water Surface Elevation
WQ	2.95	0.00	2,834	26.43
2	4.51	0.00	6,146	27.71
10	6.56	2.01	8,420	28.45
100	9.32	4.97	11,641	29.35

The bioretention basin bottom, which will be heavily vegetated with trees, shrubs and various plantings, is set at elevation 25.00 with a 24" deep soil bed, in accordance with the New Jersey Stormwater Best Management Practices Manual. Stormwater flows are attenuated through the outlet control structure. The first outlet is a 11.75" wide by 12" high rectangular orifice set at the 2-year water surface elevation of 27.71. The top of the outlet control structure is set at the 100-year water surface elevation of 29.35. Discharge from the basin is directed into the existing drainage network within Stephenson Avenue. Calculations are provided in Appendix C demonstrating that the basin fully drains within 72 hours with an infiltration rate of 6 inches/hour, which incorporates a factor of safety of 2.

INFILTRATION BASIN

The infiltration basin has been designed to accept runoff from 0.13 acres, which is the entire roof area of the rear residential apartment building. The basin is designed as 100 LF of 36" perforated HDPE pipe surrounded by stone. The basin was analyzed with an infiltration rate of 6 inches / hour, based on the findings from the subsurface soil investigations performed. The basin was modeled and analyzed with the HydroCAD 10.10 software and a summary of the peak flows, storage and basin elevations are outlined below:

Storm Event (YR)	Basin Inflow (cfs)	Basin Outflow (cfs)	Max. Basin Storage (cu-ft)	Water Surface Elevation
WQ	0.30	0.00	218	26.06
2	0.41	0.00	386	26.60
10	0.56	0.00	678	27.39
100	0.75	0.00	1259	29.09

The perforated pipes will be constructed above a 12" thick stone bottom layer at elevation 24.00. The entire 100-year storm will be stored and infiltrated within the underground basin. At the downstream end, there will be an inlet that will serve as an outlet structure. Any runoff that cannot be infiltrated in the basin will spill out through the inlet grate and flow overland towards the existing drainage network in Stephenson Avenue. Calculations are provided in Appendix C demonstrating that the basin fully drains within 72 hours with an infiltration rate of 6 inches/hour, which incorporates a factor of safety of 2.

D. WATER QUALITY

The proposed bioretention basin has been designed to store and infiltrate the entire water quality design storm. Bioretention basins are approved as having an 80% total suspended solids (TSS) removal rate. Since only roof runoff is being directed to the underground infiltration basin, no water quality treatment is necessary. As such, the proposed systems have been designed in accordance with Water Quality requirements of N.J.A.C. 7-8-5.5.

E. GROUNDWATER RECHARGE

The stormwater management rules require that major developments include measures to prevent the loss of groundwater recharge at the project site and the onsite soil testing confirmed that the site is suitable for recharge. The recharge requirements for this development are met by infiltrating 100% of the difference between the site's pre- and post-development 2-year runoff volume, through the use of the proposed bioretention basin and infiltration basin. A summary of pre- and post-development runoff volumes is provided in the table below:

Pre-Dev Runoff Volume (ac-ft)	Post-Dev Runoff Volume (ac-ft)	Required Recharge Volume (ac-ft)	Proposed Basin Recharge Volume (ac-ft)
0.364	0.458	0.094	0.384

As you can see above, the proposed basins recharge more than the required runoff volume and therefore, the proposed system has been designed in accordance with Groundwater Recharge requirements of N.J.A.C. 7-8-5.6. HydroCAD calculations for infiltration are provided in Appendix D.

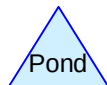
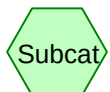
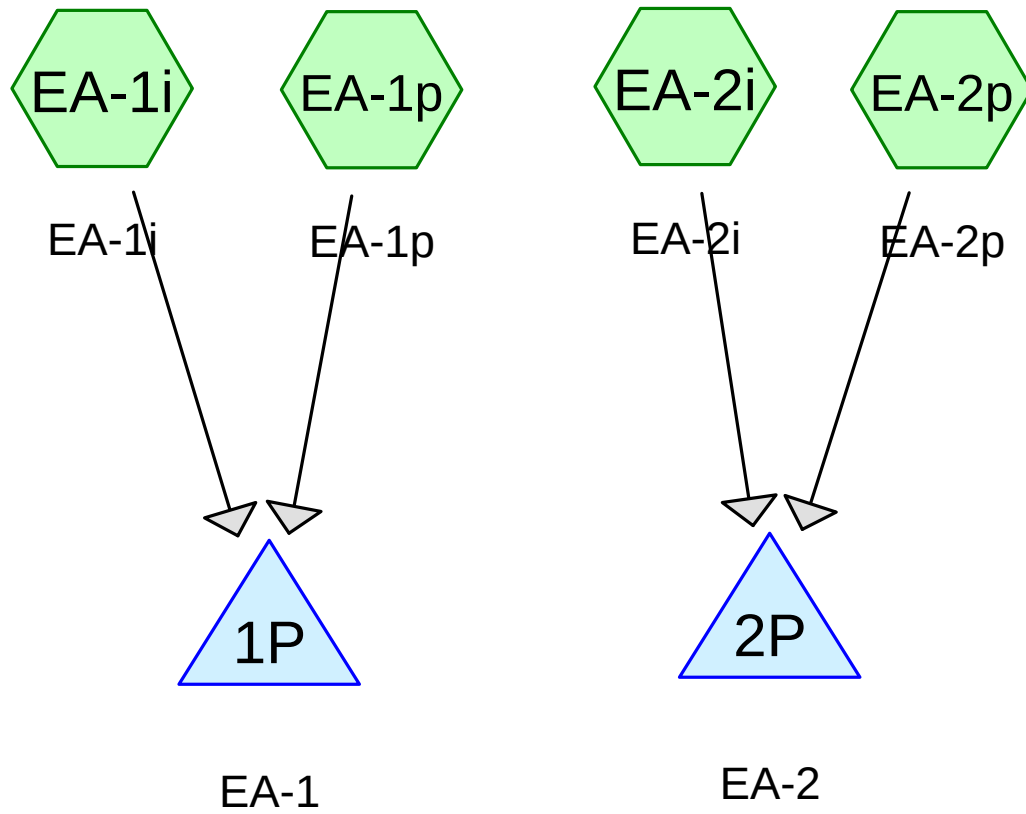
V. CONCLUSION

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

The proposed stormwater management system incorporates two stormwater management basins designed to reduce peak flow rates for the proposed development to meet the Water Quantity requirements of N.J.A.C. 7-8-5.4. Bioretention provides an 80% total suspended solid (TSS) removal rate to meet the Water Quality requirements of N.J.A.C. 7-8-5.5. The basins were also designed to meet the Groundwater Recharge requirements of N.J.A.C. 7-8-5.6.

APPENDIX A

PRE-DEVELOPMENT ANALYSIS



Routing Diagram for Pre-Development
Prepared by {enter your company name here}, Printed 10/5/2022
HydroCAD® 10.10-3a s/n 11244 © 2020 HydroCAD Software Solutions LLC

Pre-Development

Prepared by {enter your company name here}

NJ DEP 2-hr WQ Rainfall=1.25"

Printed 10/5/2022

HydroCAD® 10.10-3a s/n 11244 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment EA-1i: EA-1i

Runoff = 1.60 cfs @ 1.08 hrs, Volume= 1,960 cf, Depth= 1.03"

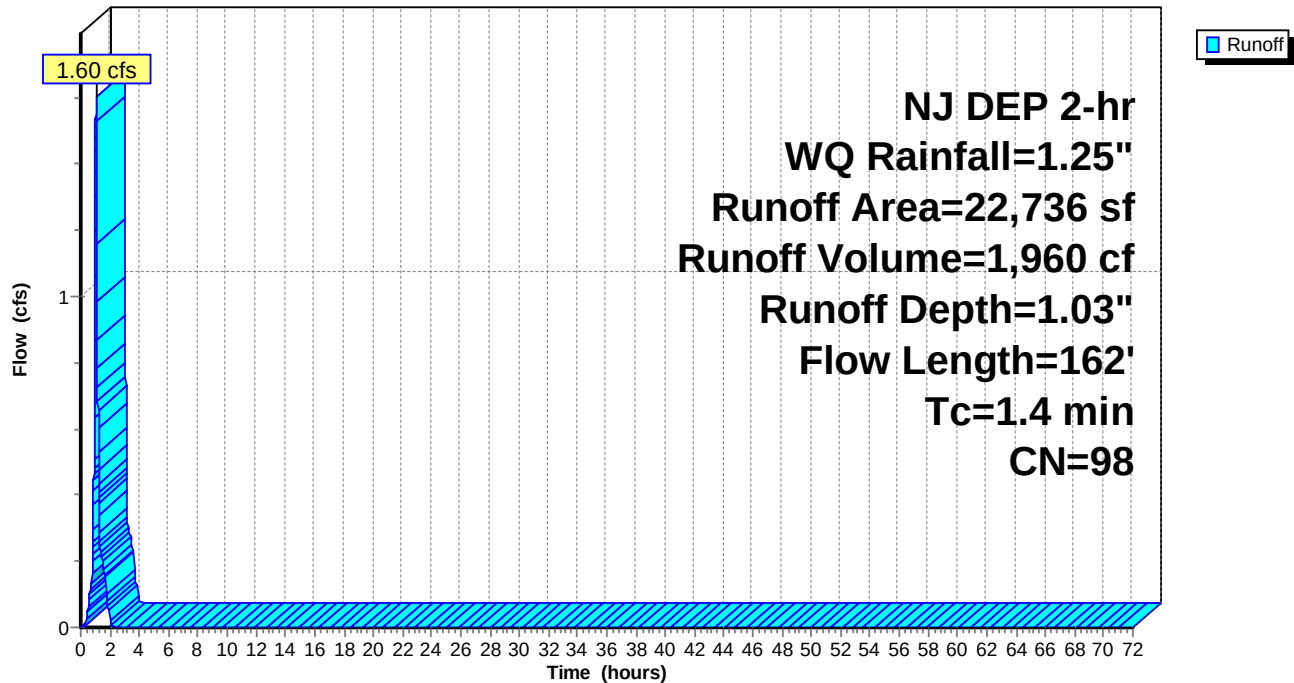
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (sf)	CN	Description
12,543	98	Unconnected pavement, HSG D
10,193	98	Roofs, HSG D
22,736	98	Weighted Average
22,736		100.00% Impervious Area
12,543		55.17% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0220	1.46		Sheet Flow,
					Smooth surfaces n= 0.011 P2= 3.34"
0.3	62	0.0270	3.34		Shallow Concentrated Flow,
					Paved Kv= 20.3 fps
1.4	162	Total			

Subcatchment EA-1i: EA-1i

Hydrograph



Pre-Development

Prepared by {enter your company name here}

NJ DEP 2-hr WQ Rainfall=1.25"

Printed 10/5/2022

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Summary for Subcatchment EA-1p: EA-1p

Runoff = 0.16 cfs @ 1.09 hrs, Volume= 173 cf, Depth= 0.12"

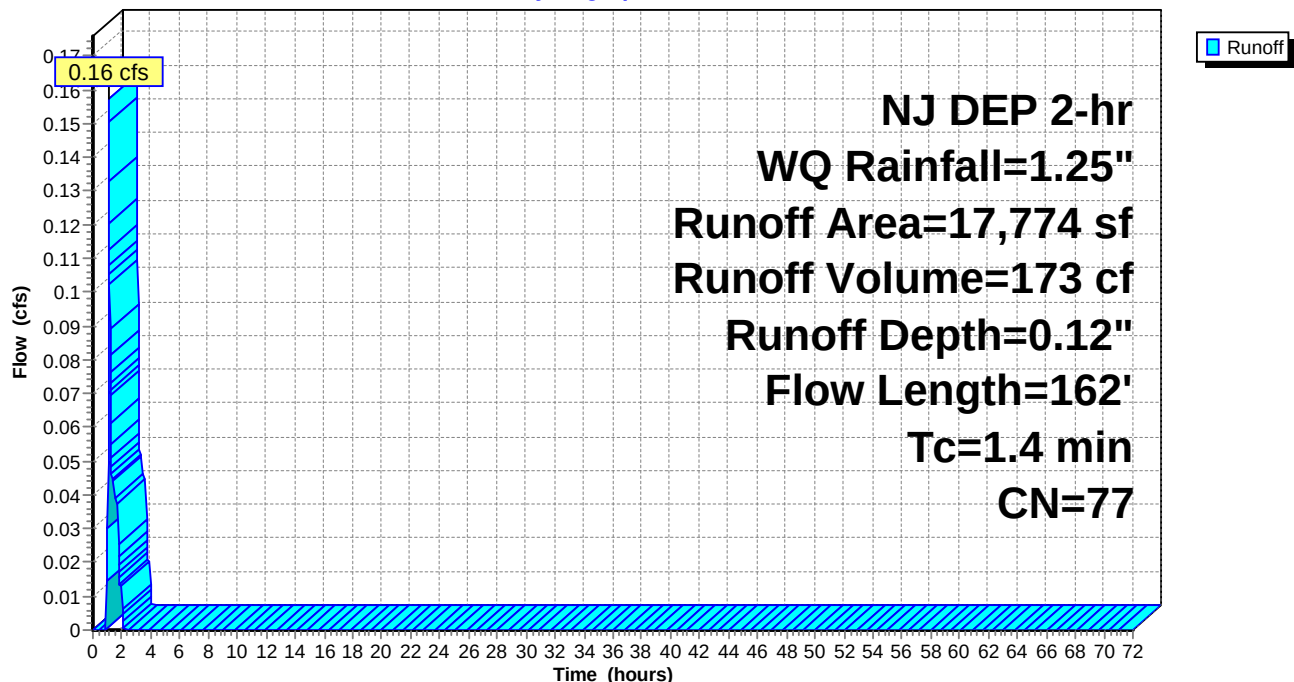
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (sf)	CN	Description
3,087	61	>75% Grass cover, Good, HSG B
14,687	80	>75% Grass cover, Good, HSG D
17,774	77	Weighted Average
17,774		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0220	1.46		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.34"
0.3	62	0.0270	3.34		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.4	162	Total			

Subcatchment EA-1p: EA-1p

Hydrograph



Pre-Development

Prepared by {enter your company name here}

NJ DEP 2-hr WQ Rainfall=1.25"

Printed 10/5/2022

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Summary for Subcatchment EA-2i: EA-2i

Runoff = 0.01 cfs @ 1.33 hrs, Volume= 46 cf, Depth= 1.03"

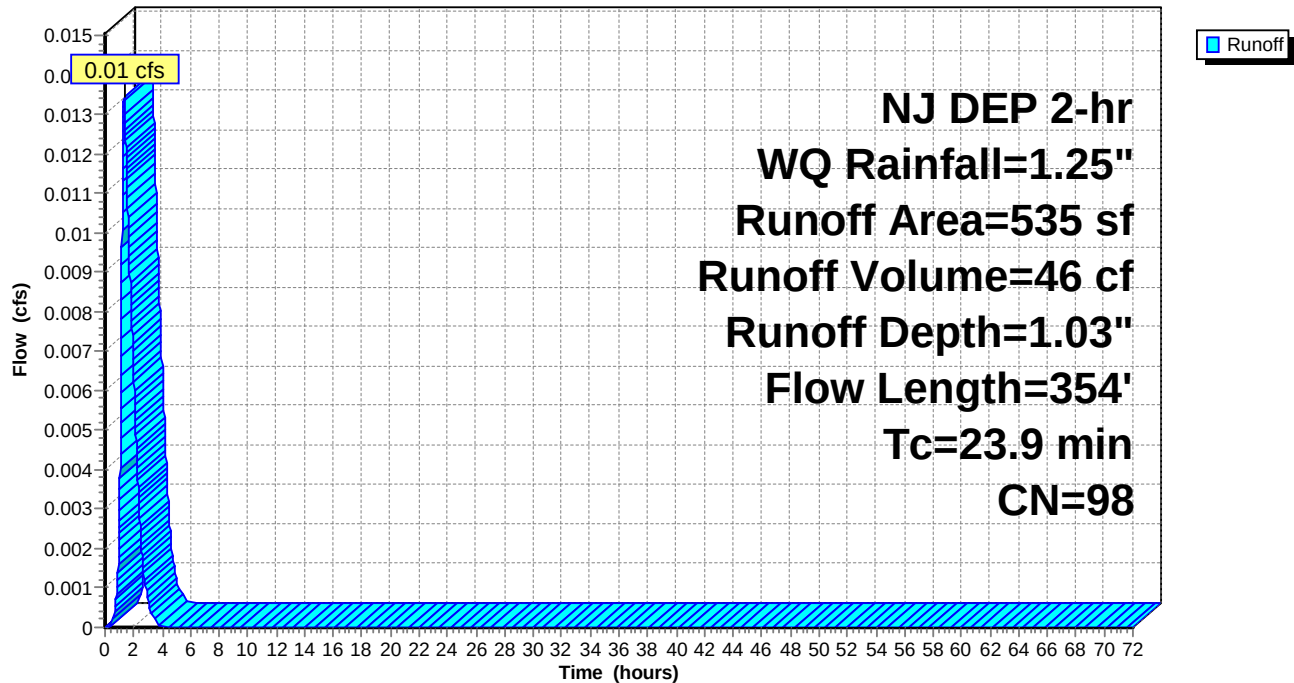
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (sf)	CN	Description
535	98	Unconnected pavement, HSG D
535		100.00% Impervious Area
535		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0120	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.34"
11.6	218	0.0020	0.31		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	36	0.0330	1.27		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
23.9	354	Total			

Subcatchment EA-2i: EA-2i

Hydrograph



Pre-Development

Prepared by {enter your company name here}

NJ DEP 2-hr WQ Rainfall=1.25"

Printed 10/5/2022

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Summary for Subcatchment EA-2p: EA-2p

Runoff = 0.22 cfs @ 1.49 hrs, Volume= 873 cf, Depth= 0.17"

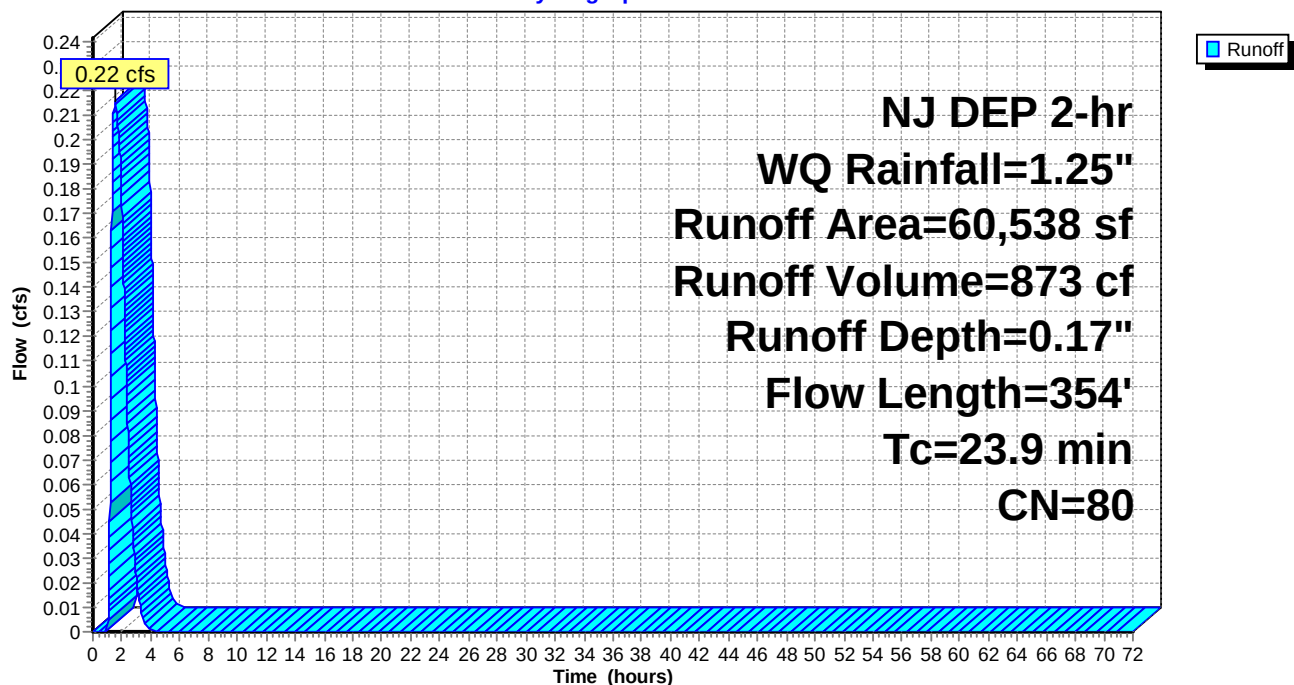
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (sf)	CN	Description
1,272	61	>75% Grass cover, Good, HSG B
59,266	80	>75% Grass cover, Good, HSG D
60,538	80	Weighted Average
60,538		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0120	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.34"
11.6	218	0.0020	0.31		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	36	0.0330	1.27		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
23.9	354	Total			

Subcatchment EA-2p: EA-2p

Hydrograph



Pre-Development

Prepared by {enter your company name here}

NJ DEP 2-hr WQ Rainfall=1.25"

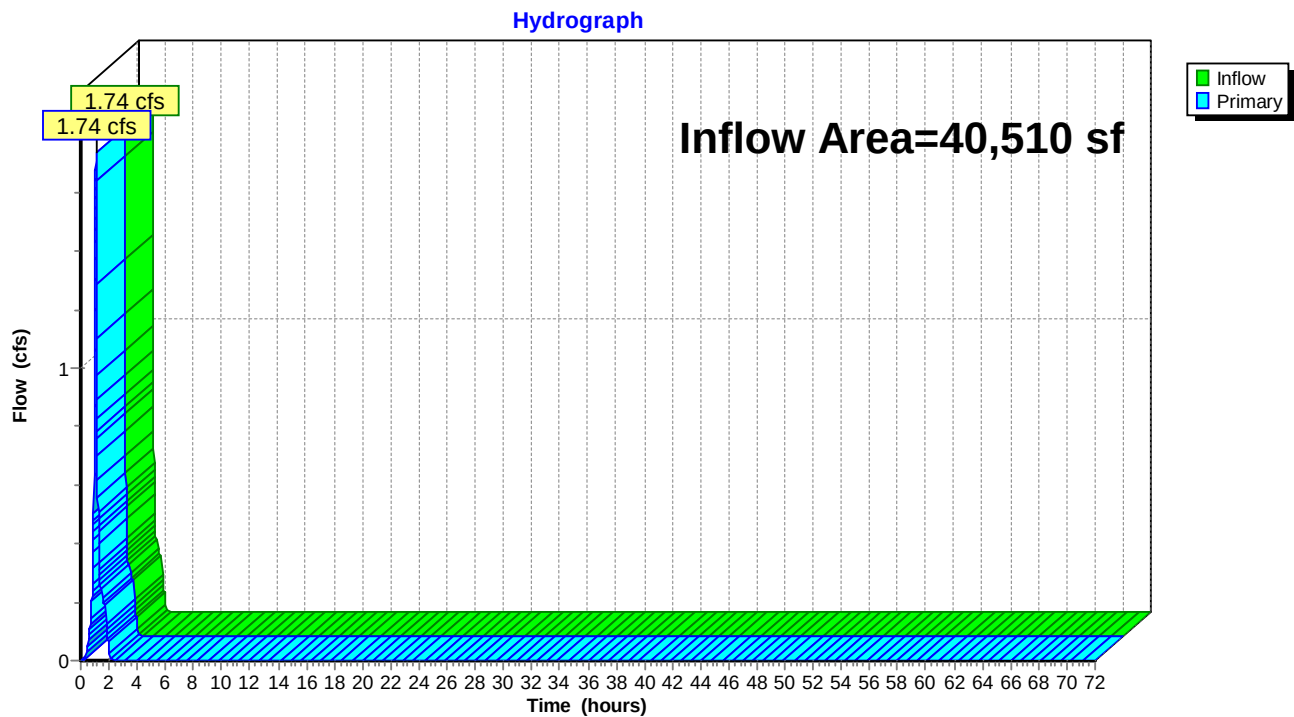
Printed 10/5/2022

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Summary for Pond 1P: EA-1

Inflow Area = 40,510 sf, 56.12% Impervious, Inflow Depth = 0.63" for WQ event
 Inflow = 1.74 cfs @ 1.08 hrs, Volume= 2,133 cf
 Primary = 1.74 cfs @ 1.08 hrs, Volume= 2,133 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 1P: EA-1

Pre-Development

NJ DEP 2-hr WQ Rainfall=1.25"

Prepared by {enter your company name here}

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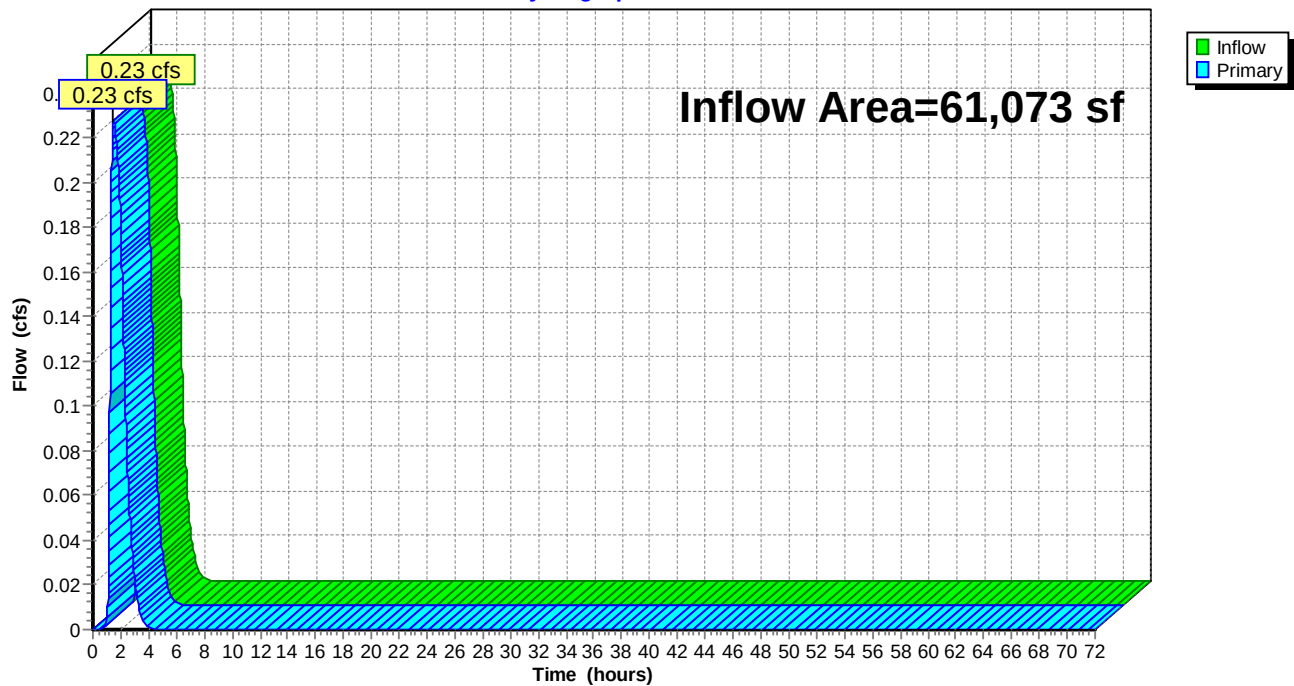
Summary for Pond 2P: EA-2

Inflow Area = 61,073 sf, 0.88% Impervious, Inflow Depth = 0.18" for WQ event
 Inflow = 0.23 cfs @ 1.49 hrs, Volume= 919 cf
 Primary = 0.23 cfs @ 1.49 hrs, Volume= 919 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 2P: EA-2

Hydrograph



Pre-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

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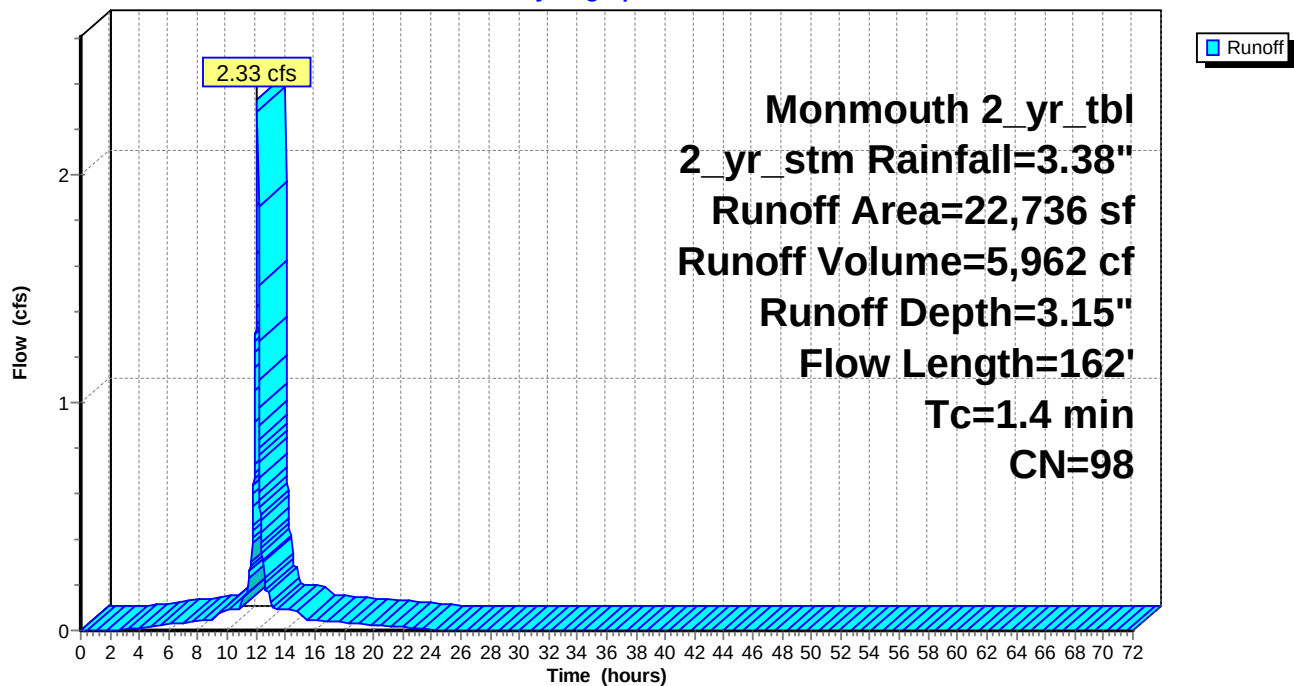
Summary for Subcatchment EA-1i: EA-1i

Runoff = 2.33 cfs @ 12.10 hrs, Volume= 5,962 cf, Depth= 3.15"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

Area (sf)	CN	Description
12,543	98	Unconnected pavement, HSG D
10,193	98	Roofs, HSG D
22,736	98	Weighted Average
22,736		100.00% Impervious Area
12,543		55.17% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0220	1.46		Sheet Flow,
					Smooth surfaces n= 0.011 P2= 3.34"
0.3	62	0.0270	3.34		Shallow Concentrated Flow,
					Paved Kv= 20.3 fps
1.4	162	Total			

Subcatchment EA-1i: EA-1i**Hydrograph**

Pre-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

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Summary for Subcatchment EA-1p: EA-1p

Runoff = 0.94 cfs @ 12.10 hrs, Volume= 1,988 cf, Depth= 1.34"

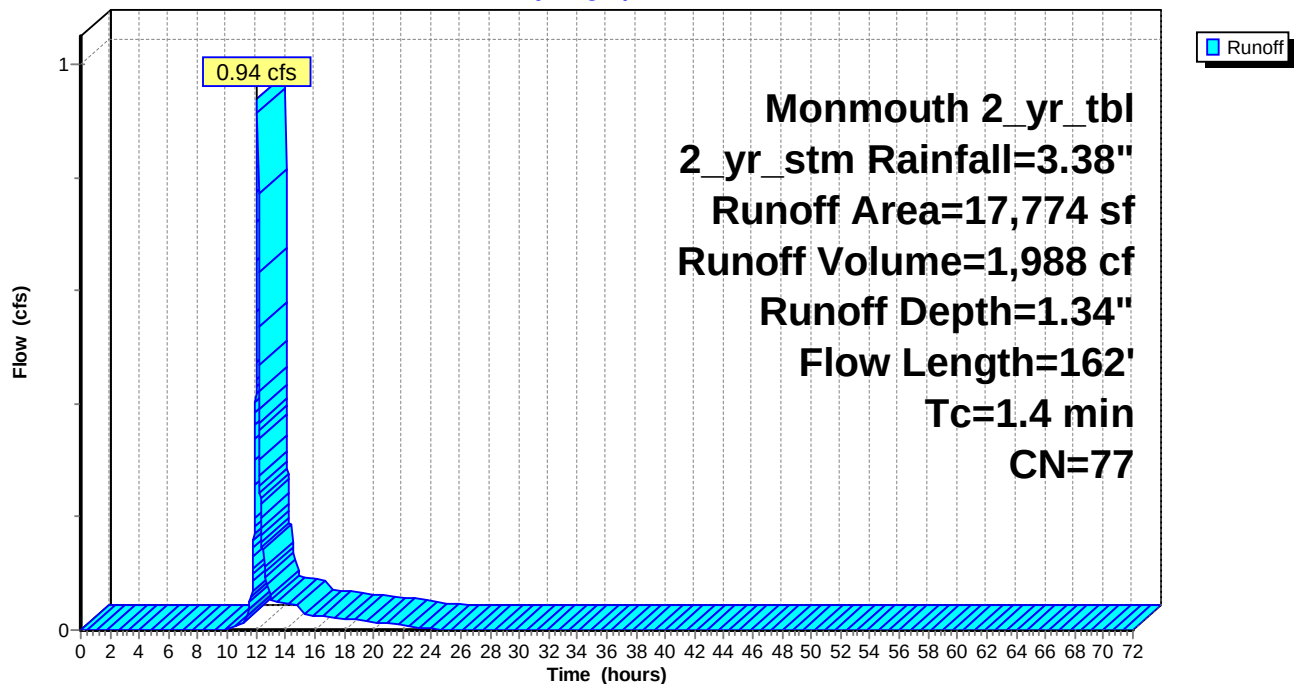
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

Area (sf)	CN	Description
3,087	61	>75% Grass cover, Good, HSG B
14,687	80	>75% Grass cover, Good, HSG D
17,774	77	Weighted Average
17,774		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0220	1.46		Sheet Flow,
					Smooth surfaces n= 0.011 P2= 3.34"
0.3	62	0.0270	3.34		Shallow Concentrated Flow,
					Paved Kv= 20.3 fps
1.4	162	Total			

Subcatchment EA-1p: EA-1p

Hydrograph



Pre-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

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Summary for Subcatchment EA-2i: EA-2i

Runoff = 0.02 cfs @ 12.37 hrs, Volume= 140 cf, Depth= 3.15"

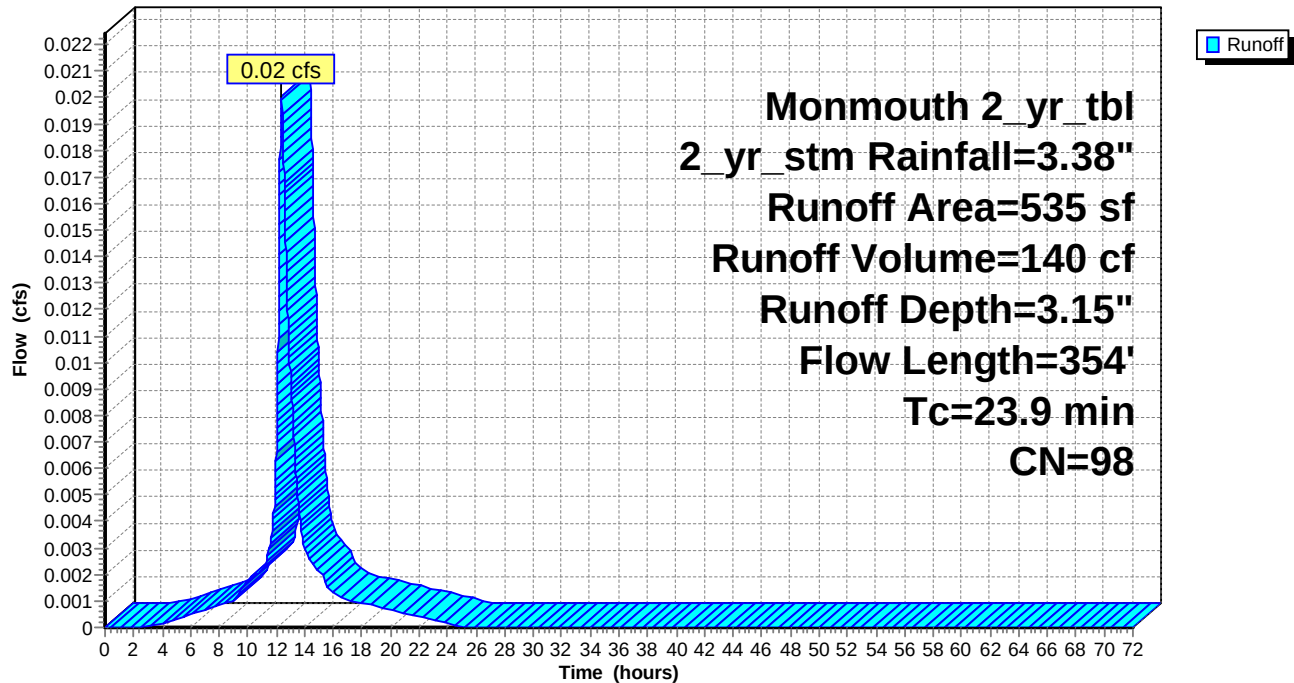
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

Area (sf)	CN	Description
535	98	Unconnected pavement, HSG D
535		100.00% Impervious Area
535		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0120	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.34"
11.6	218	0.0020	0.31		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	36	0.0330	1.27		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
23.9	354	Total			

Subcatchment EA-2i: EA-2i

Hydrograph



Pre-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

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Summary for Subcatchment EA-2p: EA-2p

Runoff = 1.18 cfs @ 12.38 hrs, Volume= 7,778 cf, Depth= 1.54"

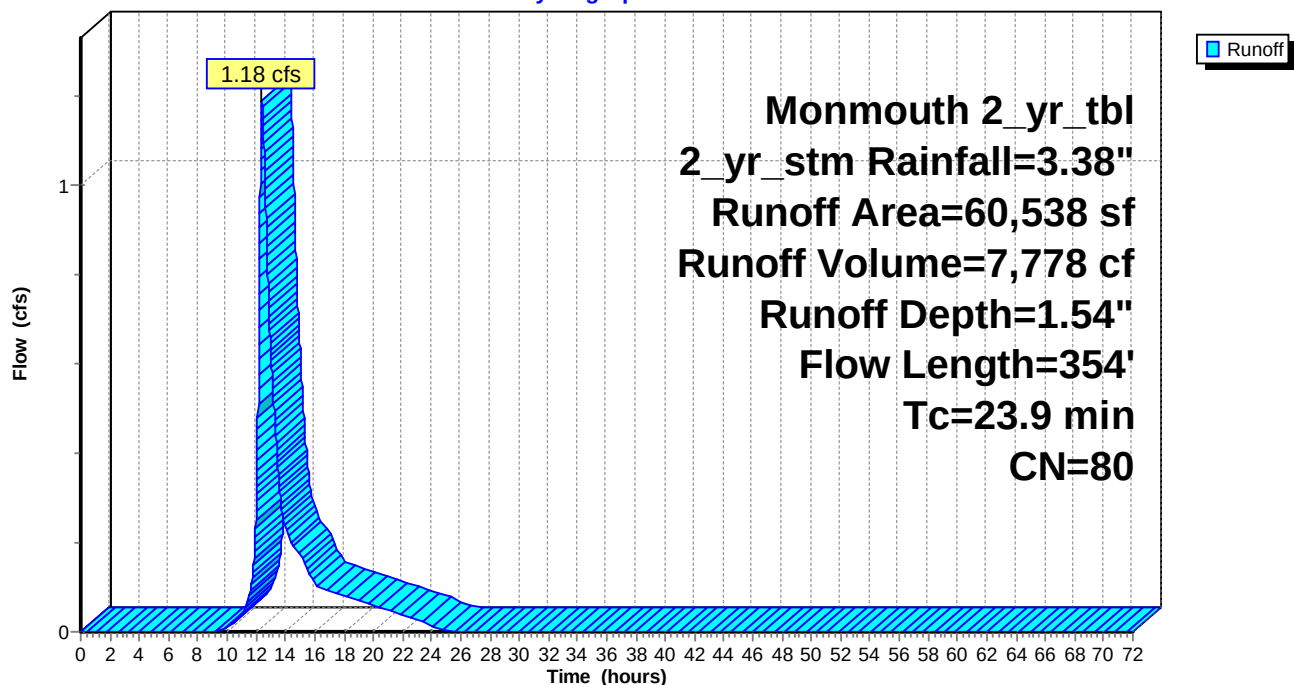
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

Area (sf)	CN	Description
1,272	61	>75% Grass cover, Good, HSG B
59,266	80	>75% Grass cover, Good, HSG D
60,538	80	Weighted Average
60,538		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0120	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.34"
11.6	218	0.0020	0.31		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	36	0.0330	1.27		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
23.9	354	Total			

Subcatchment EA-2p: EA-2p

Hydrograph



Pre-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

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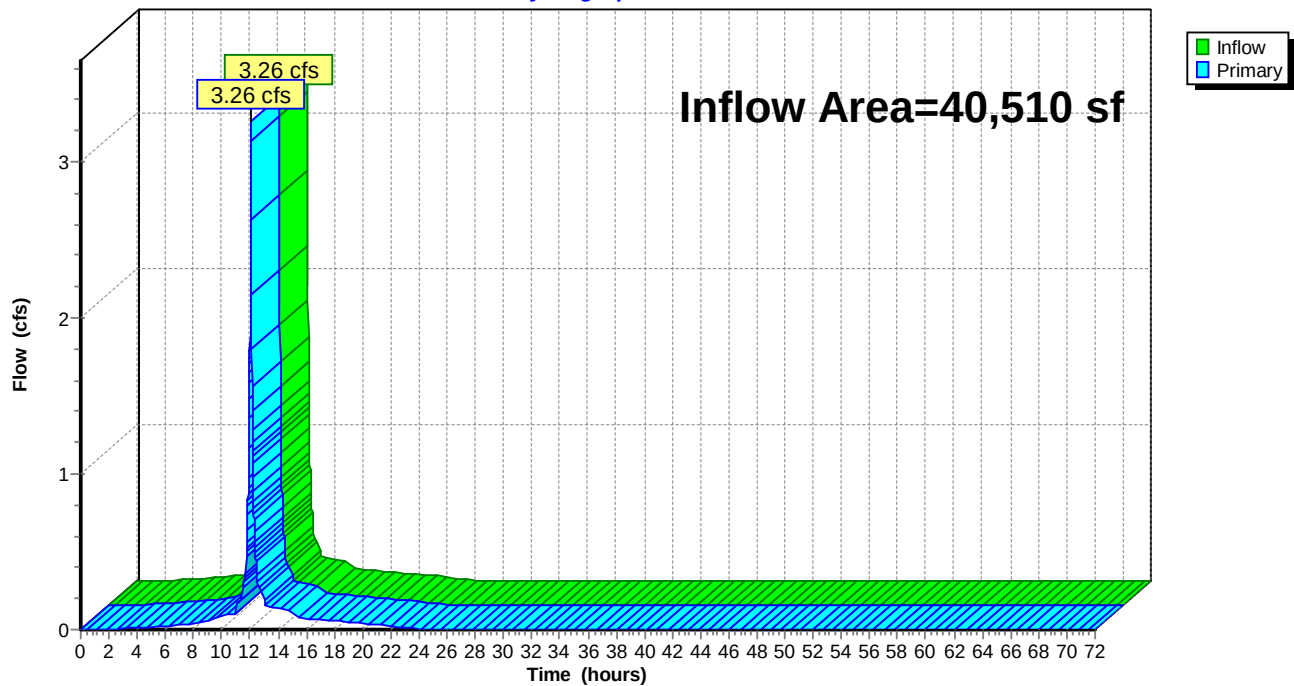
Summary for Pond 1P: EA-1

Inflow Area = 40,510 sf, 56.12% Impervious, Inflow Depth = 2.35" for 2_yr_stm event
 Inflow = 3.26 cfs @ 12.10 hrs, Volume= 7,950 cf
 Primary = 3.26 cfs @ 12.10 hrs, Volume= 7,950 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 1P: EA-1

Hydrograph



Pre-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

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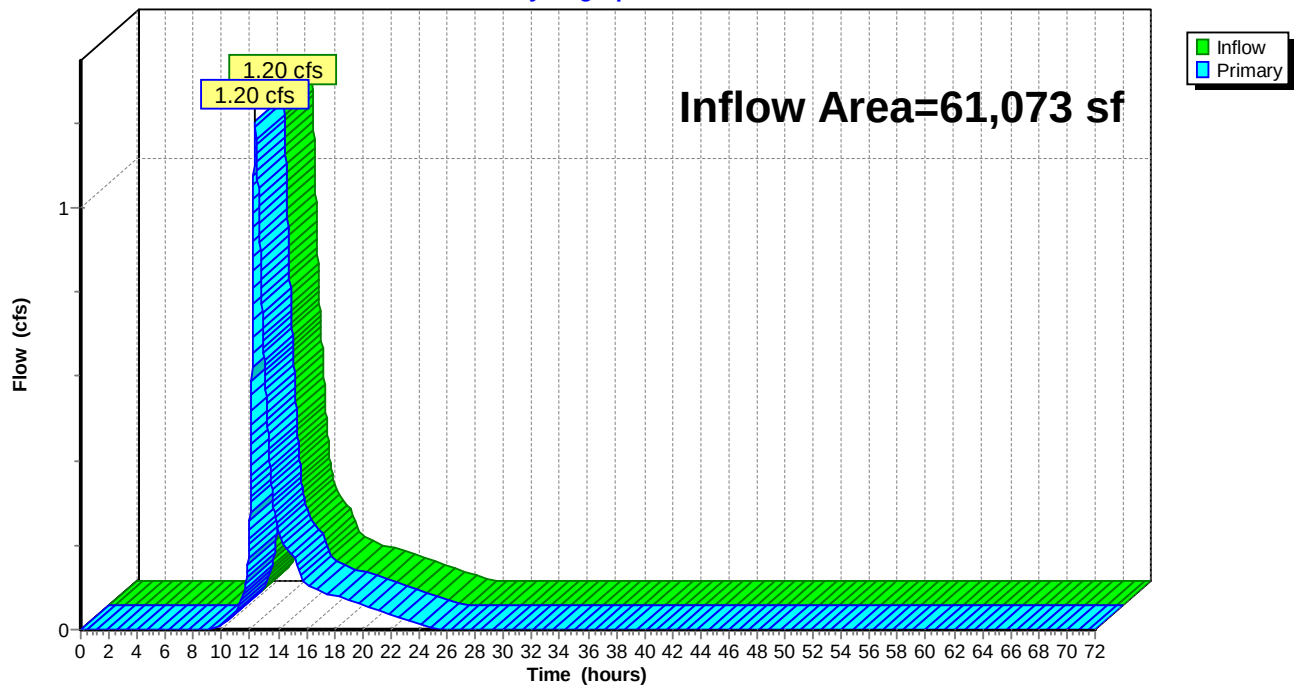
Summary for Pond 2P: EA-2

Inflow Area = 61,073 sf, 0.88% Impervious, Inflow Depth = 1.56" for 2_yr_stm event
 Inflow = 1.20 cfs @ 12.38 hrs, Volume= 7,918 cf
 Primary = 1.20 cfs @ 12.38 hrs, Volume= 7,918 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 2P: EA-2

Hydrograph



Pre-Development

Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

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Summary for Subcatchment EA-1i: EA-1i

Runoff = 3.09 cfs @ 12.10 hrs, Volume= 9,460 cf, Depth= 4.99"

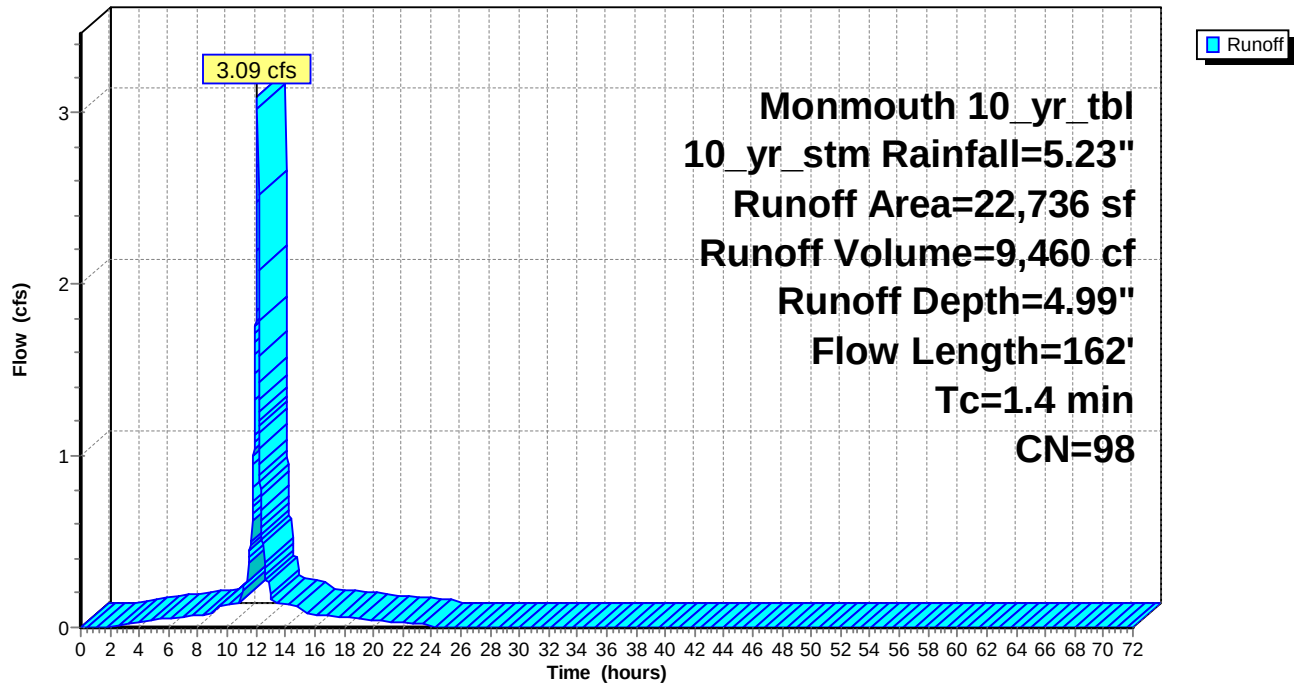
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

Area (sf)	CN	Description
12,543	98	Unconnected pavement, HSG D
10,193	98	Roofs, HSG D
22,736	98	Weighted Average
22,736		100.00% Impervious Area
12,543		55.17% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0220	1.46		Sheet Flow,
					Smooth surfaces n= 0.011 P2= 3.34"
0.3	62	0.0270	3.34		Shallow Concentrated Flow,
					Paved Kv= 20.3 fps
1.4	162	Total			

Subcatchment EA-1i: EA-1i

Hydrograph



Pre-Development

Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

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Summary for Subcatchment EA-1p: EA-1p

Runoff = 1.64 cfs @ 12.10 hrs, Volume= 4,172 cf, Depth= 2.82"

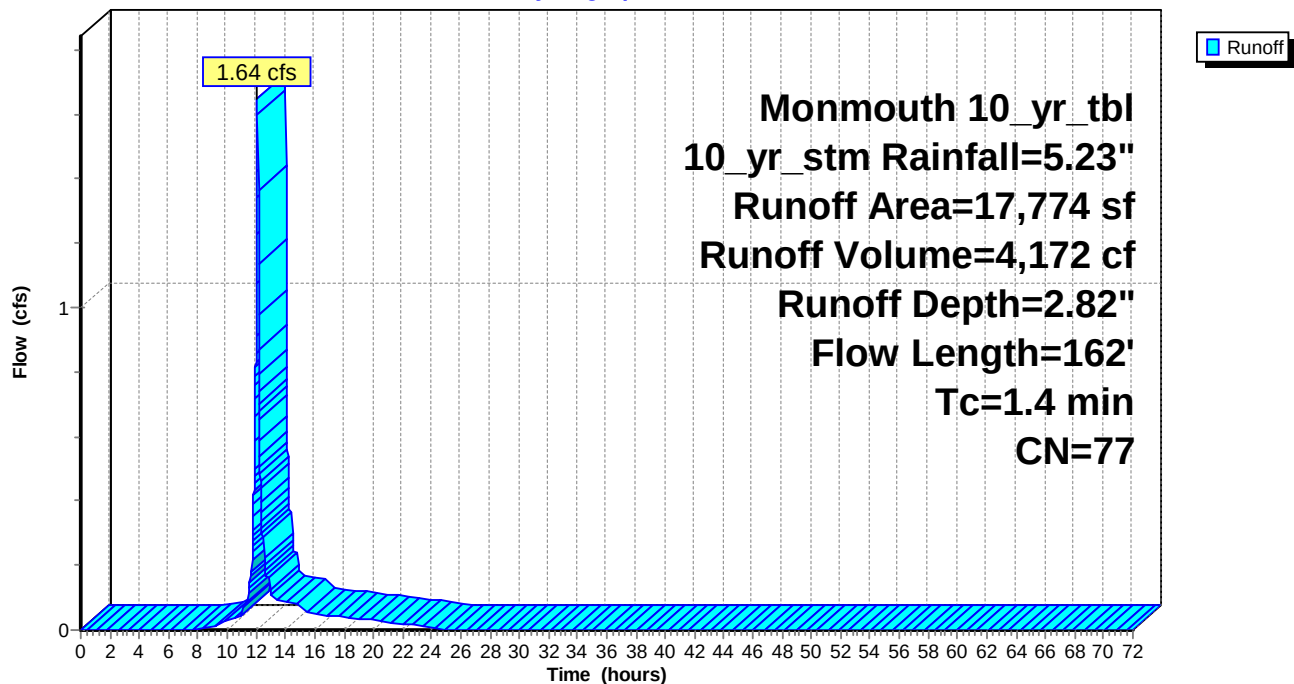
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

Area (sf)	CN	Description
3,087	61	>75% Grass cover, Good, HSG B
14,687	80	>75% Grass cover, Good, HSG D
17,774	77	Weighted Average
17,774		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0220	1.46		Sheet Flow,
					Smooth surfaces n= 0.011 P2= 3.34"
0.3	62	0.0270	3.34		Shallow Concentrated Flow,
					Paved Kv= 20.3 fps
1.4	162	Total			

Subcatchment EA-1p: EA-1p

Hydrograph



Pre-Development

Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

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Summary for Subcatchment EA-2i: EA-2i

Runoff = 0.03 cfs @ 12.37 hrs, Volume= 223 cf, Depth= 4.99"

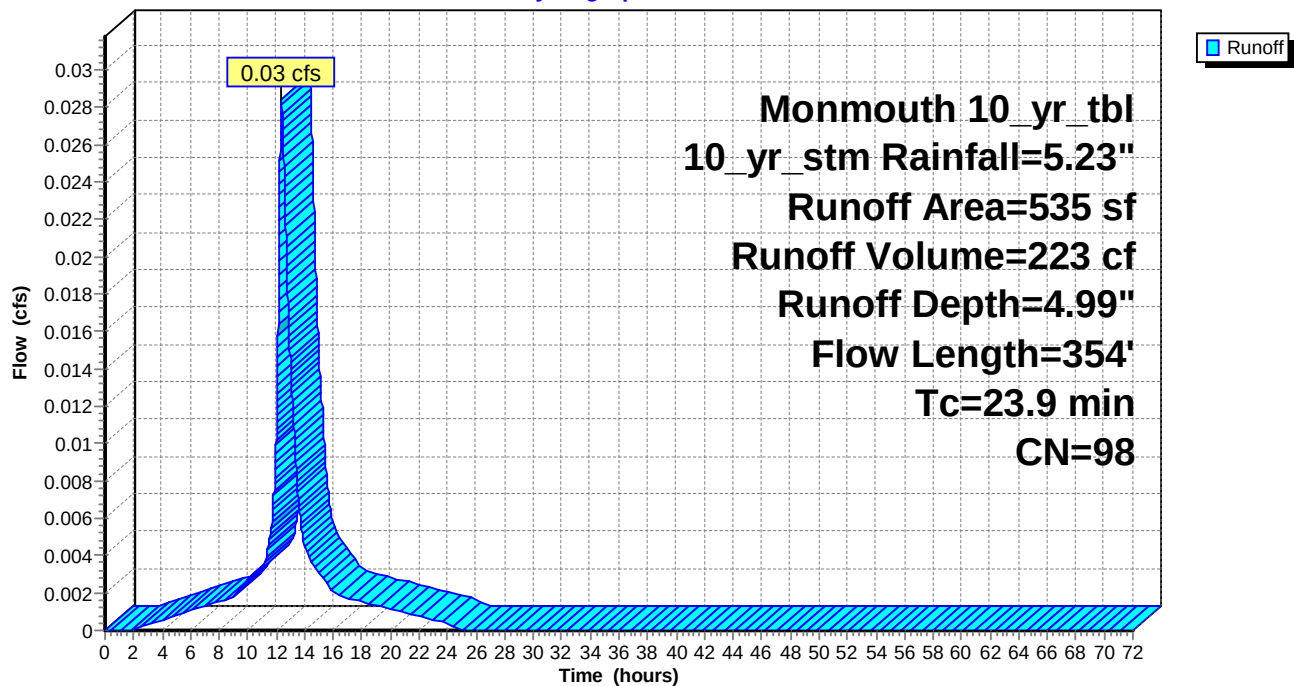
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

Area (sf)	CN	Description
535	98	Unconnected pavement, HSG D
535		100.00% Impervious Area
535		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0120	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.34"
11.6	218	0.0020	0.31		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	36	0.0330	1.27		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
23.9	354	Total			

Subcatchment EA-2i: EA-2i

Hydrograph



Pre-Development

Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

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Summary for Subcatchment EA-2p: EA-2p

Runoff = 2.21 cfs @ 12.38 hrs, Volume= 15,611 cf, Depth= 3.09"

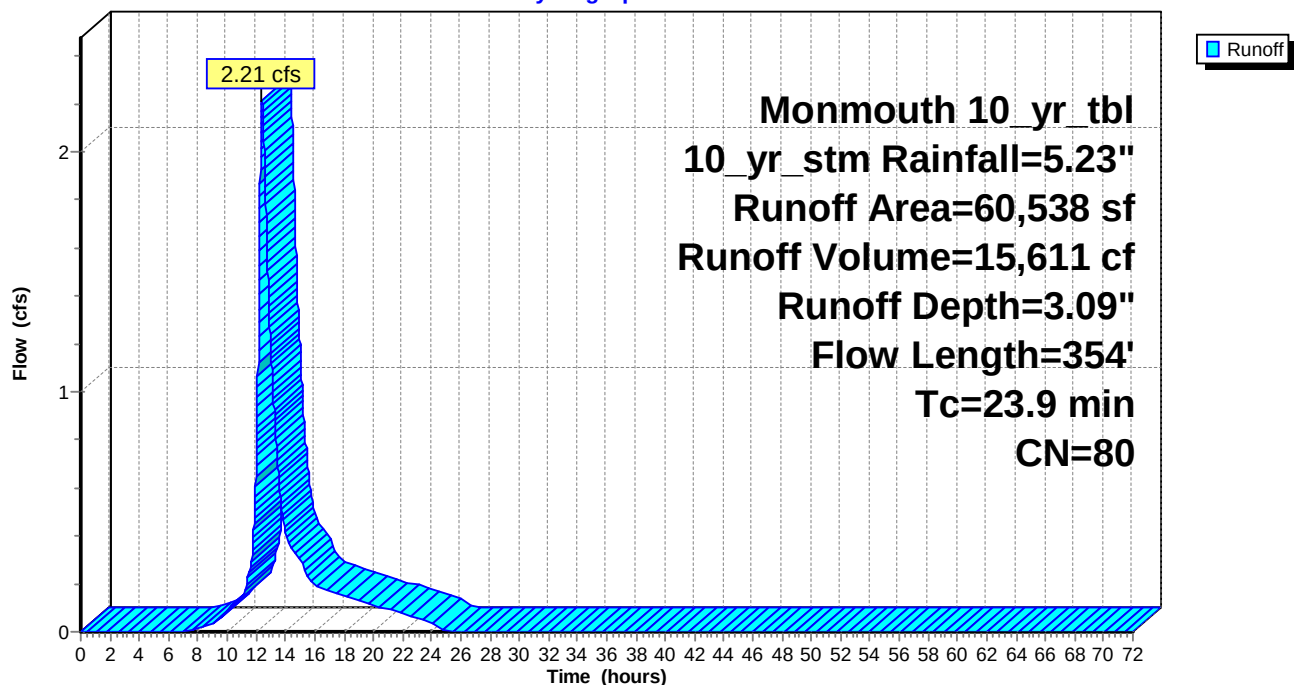
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

Area (sf)	CN	Description
1,272	61	>75% Grass cover, Good, HSG B
59,266	80	>75% Grass cover, Good, HSG D
60,538	80	Weighted Average
60,538		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0120	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.34"
11.6	218	0.0020	0.31		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	36	0.0330	1.27		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
23.9	354	Total			

Subcatchment EA-2p: EA-2p

Hydrograph



Pre-Development

Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

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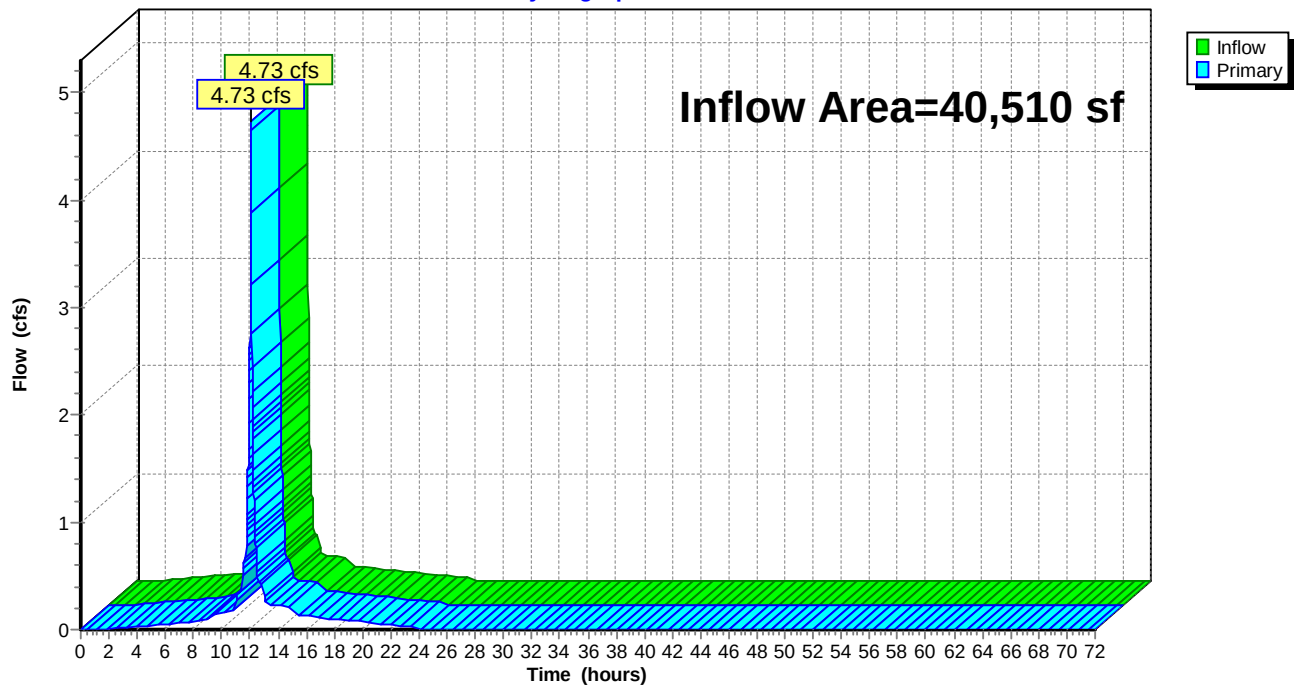
Summary for Pond 1P: EA-1

Inflow Area = 40,510 sf, 56.12% Impervious, Inflow Depth = 4.04" for 10_yr_stm event
 Inflow = 4.73 cfs @ 12.10 hrs, Volume= 13,632 cf
 Primary = 4.73 cfs @ 12.10 hrs, Volume= 13,632 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 1P: EA-1

Hydrograph



Pre-Development

Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

Prepared by {enter your company name here}

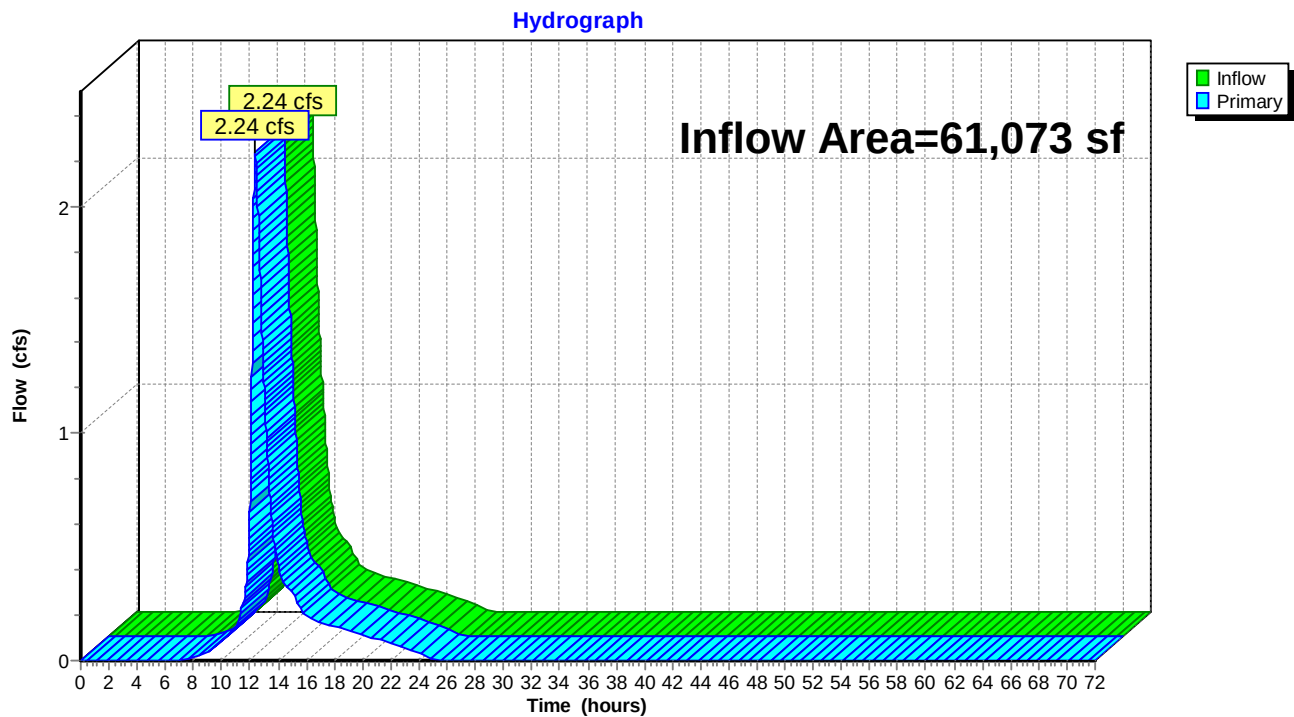
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Summary for Pond 2P: EA-2

Inflow Area = 61,073 sf, 0.88% Impervious, Inflow Depth = 3.11" for 10_yr_stm event
 Inflow = 2.24 cfs @ 12.38 hrs, Volume= 15,834 cf
 Primary = 2.24 cfs @ 12.38 hrs, Volume= 15,834 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 2P: EA-2

Pre-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

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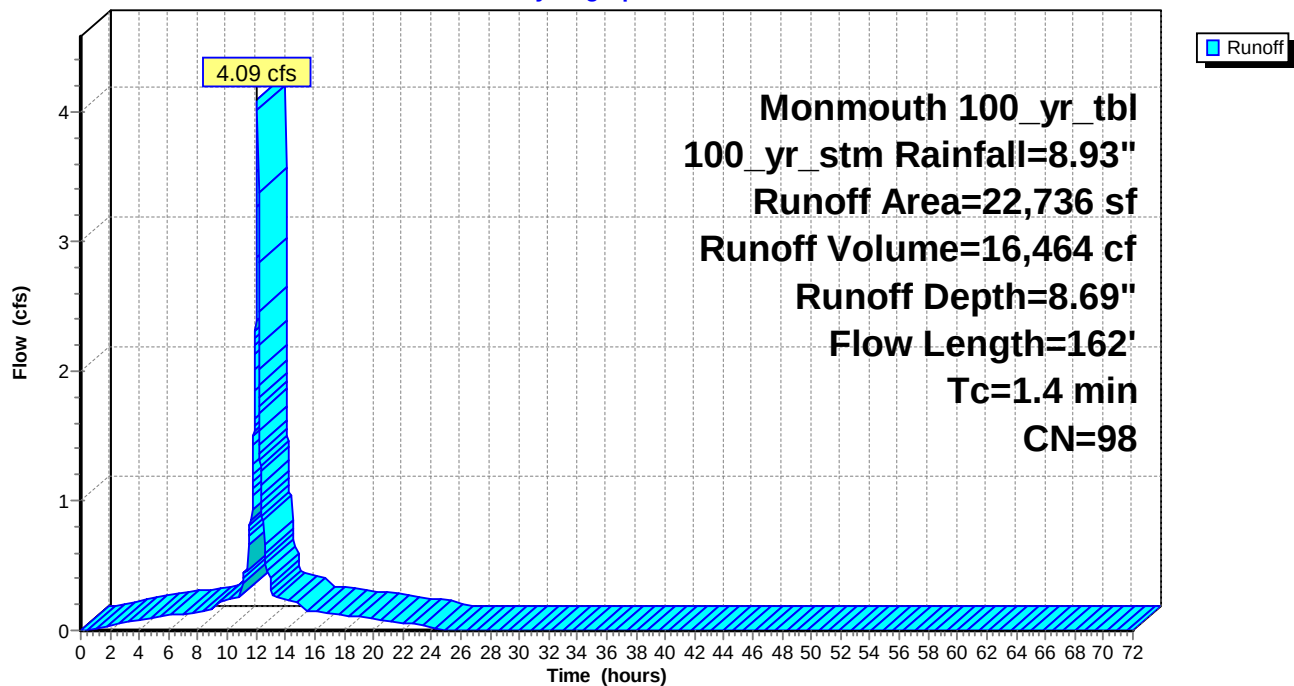
Summary for Subcatchment EA-1i: EA-1i

Runoff = 4.09 cfs @ 12.10 hrs, Volume= 16,464 cf, Depth= 8.69"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

Area (sf)	CN	Description
12,543	98	Unconnected pavement, HSG D
10,193	98	Roofs, HSG D
22,736	98	Weighted Average
22,736		100.00% Impervious Area
12,543		55.17% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0220	1.46		Sheet Flow,
					Smooth surfaces n= 0.011 P2= 3.34"
0.3	62	0.0270	3.34		Shallow Concentrated Flow,
					Paved Kv= 20.3 fps
1.4	162	Total			

Subcatchment EA-1i: EA-1i**Hydrograph**

Pre-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

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Summary for Subcatchment EA-1p: EA-1p

Runoff = 2.65 cfs @ 12.10 hrs, Volume= 9,085 cf, Depth= 6.13"

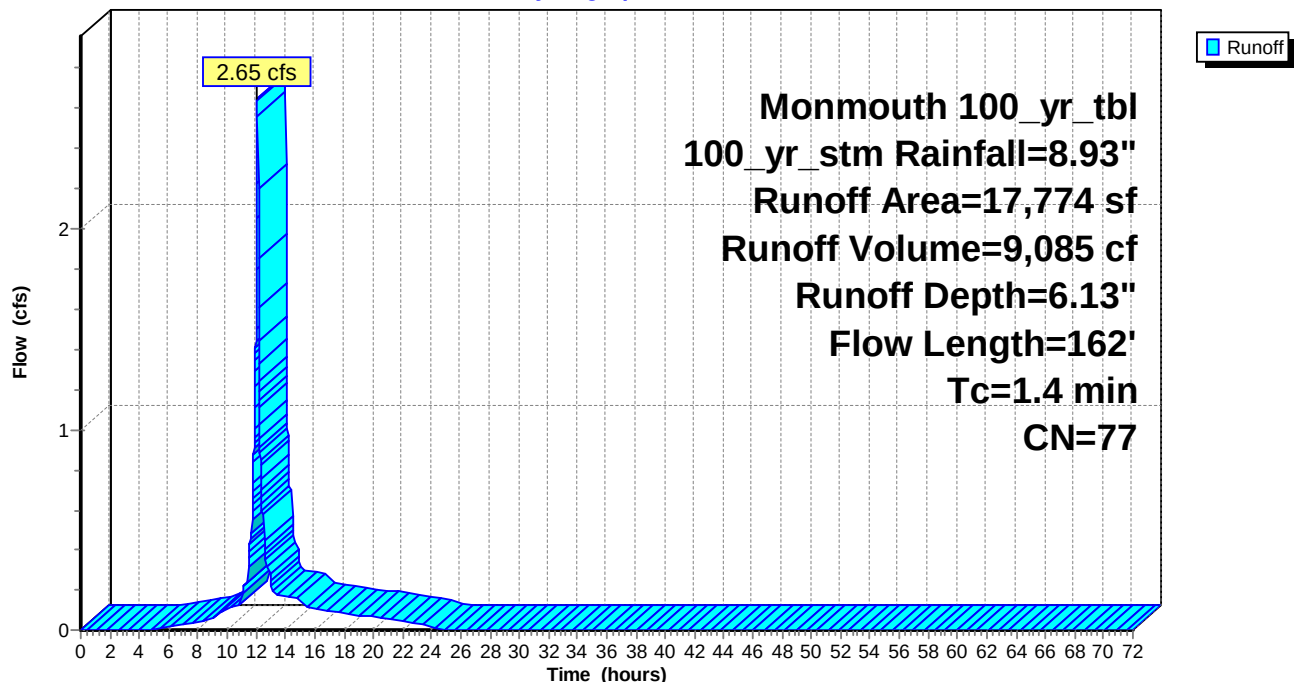
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

Area (sf)	CN	Description
3,087	61	>75% Grass cover, Good, HSG B
14,687	80	>75% Grass cover, Good, HSG D
17,774	77	Weighted Average
17,774		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0220	1.46		Sheet Flow,
					Smooth surfaces n= 0.011 P2= 3.34"
0.3	62	0.0270	3.34		Shallow Concentrated Flow,
					Paved Kv= 20.3 fps
1.4	162	Total			

Subcatchment EA-1p: EA-1p

Hydrograph



Pre-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

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Summary for Subcatchment EA-2i: EA-2i

Runoff = 0.04 cfs @ 12.37 hrs, Volume= 387 cf, Depth= 8.69"

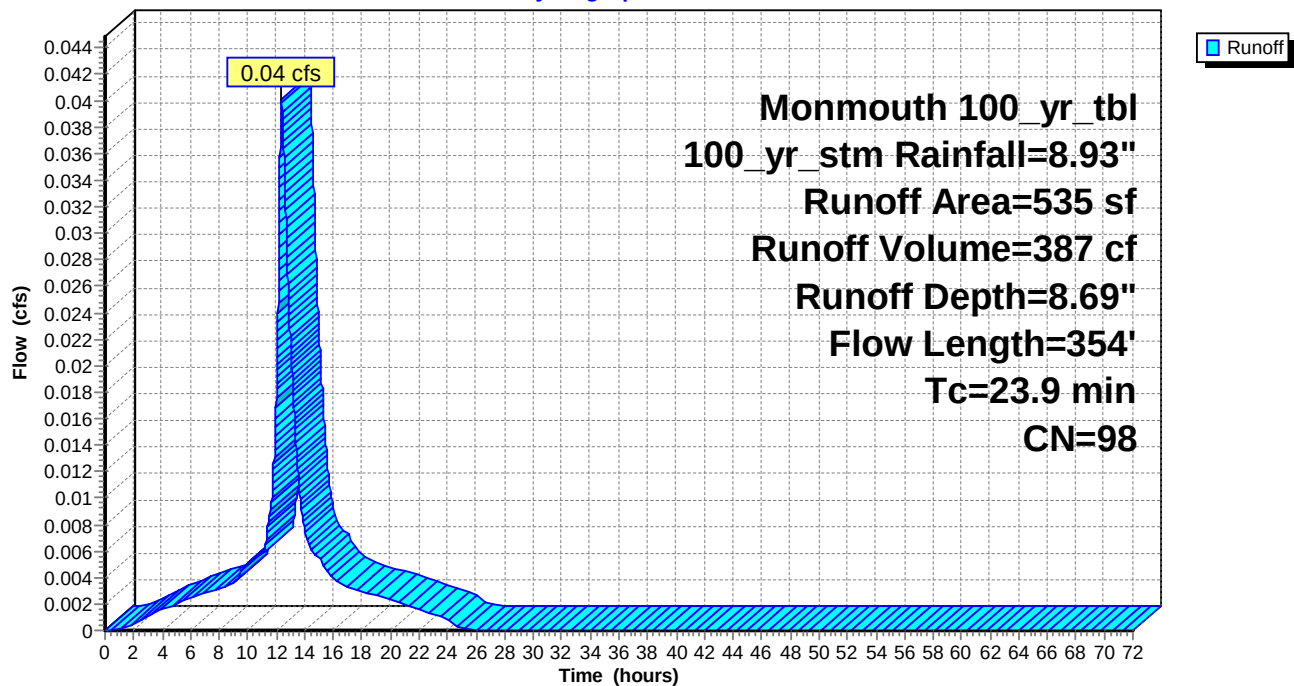
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

Area (sf)	CN	Description
535	98	Unconnected pavement, HSG D
535		100.00% Impervious Area
535		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0120	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.34"
11.6	218	0.0020	0.31		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	36	0.0330	1.27		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
23.9	354	Total			

Subcatchment EA-2i: EA-2i

Hydrograph



Pre-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

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Summary for Subcatchment EA-2p: EA-2p

Runoff = 3.80 cfs @ 12.38 hrs, Volume= 32,801 cf, Depth= 6.50"

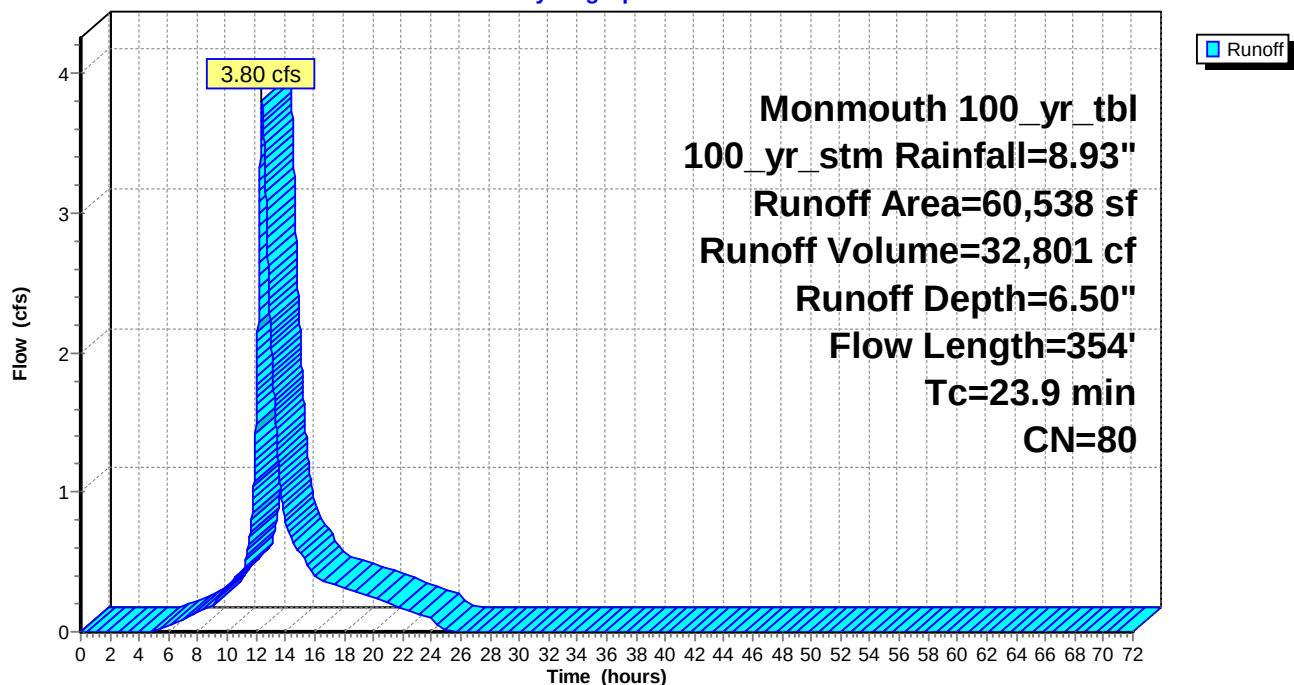
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

Area (sf)	CN	Description
1,272	61	>75% Grass cover, Good, HSG B
59,266	80	>75% Grass cover, Good, HSG D
60,538	80	Weighted Average
60,538		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0120	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.34"
11.6	218	0.0020	0.31		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	36	0.0330	1.27		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
23.9	354	Total			

Subcatchment EA-2p: EA-2p

Hydrograph



Pre-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

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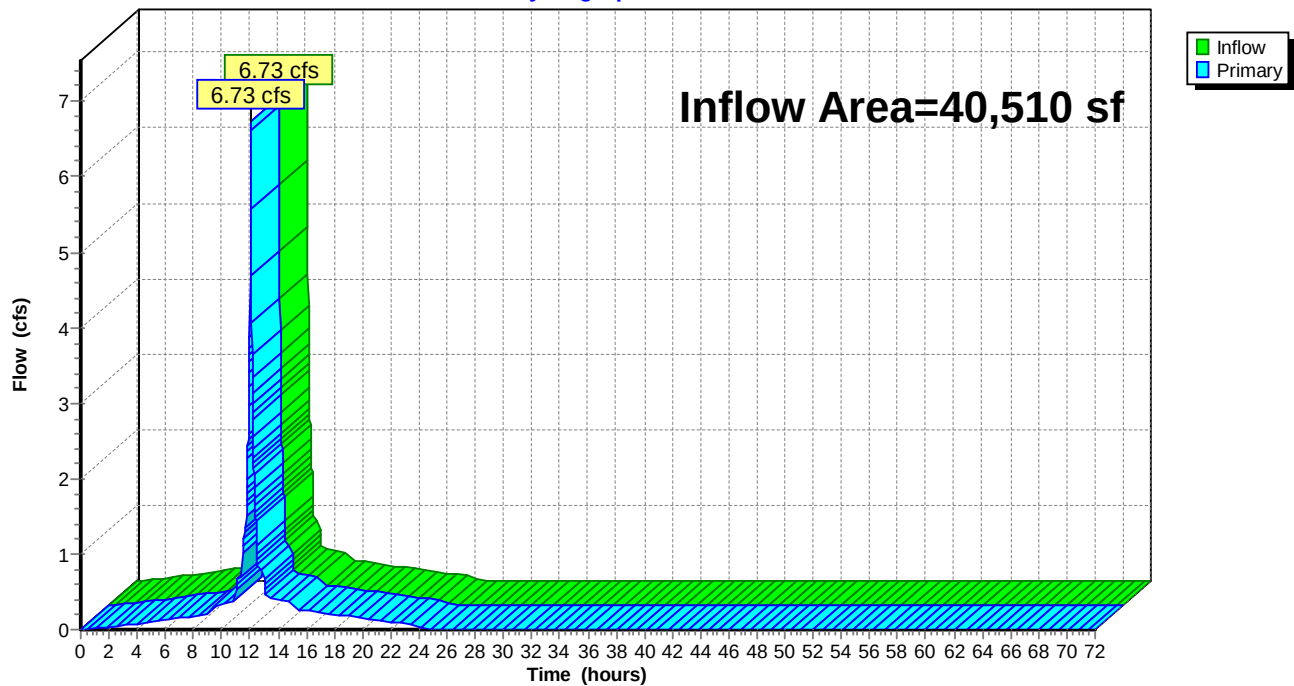
Summary for Pond 1P: EA-1

Inflow Area = 40,510 sf, 56.12% Impervious, Inflow Depth = 7.57" for 100_yr_stm event
 Inflow = 6.73 cfs @ 12.10 hrs, Volume= 25,549 cf
 Primary = 6.73 cfs @ 12.10 hrs, Volume= 25,549 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 1P: EA-1

Hydrograph



Pre-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

Prepared by {enter your company name here}

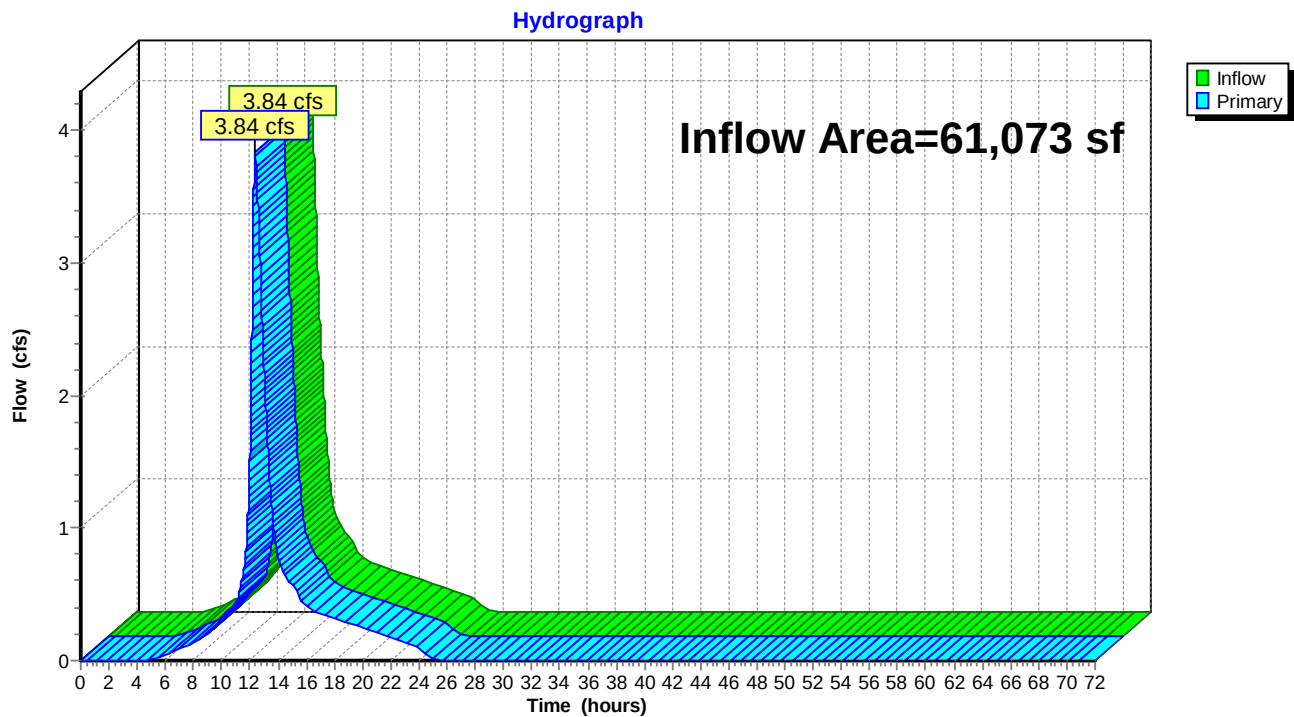
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Summary for Pond 2P: EA-2

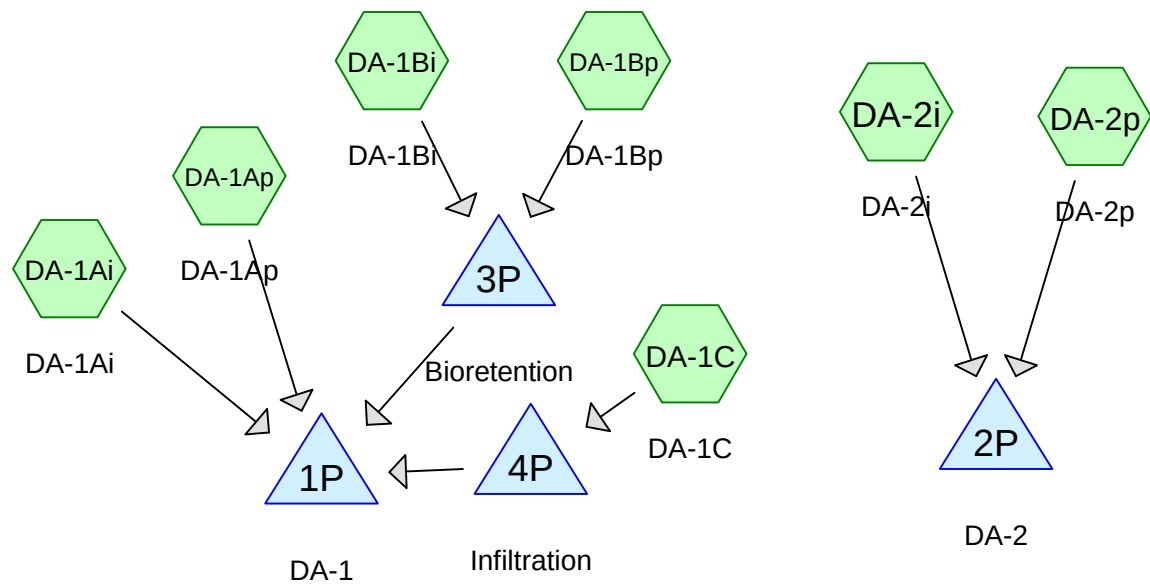
Inflow Area = 61,073 sf, 0.88% Impervious, Inflow Depth = 6.52" for 100_yr_stm event
 Inflow = 3.84 cfs @ 12.38 hrs, Volume= 33,188 cf
 Primary = 3.84 cfs @ 12.38 hrs, Volume= 33,188 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 2P: EA-2

APPENDIX B

POST-DEVELOPMENT ANALYSIS



Routing Diagram for Post-Development

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Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Subcatchment DA-1Ai: DA-1Ai

Runoff = 0.03 cfs @ 1.12 hrs, Volume= 41 cf, Depth= 1.03"

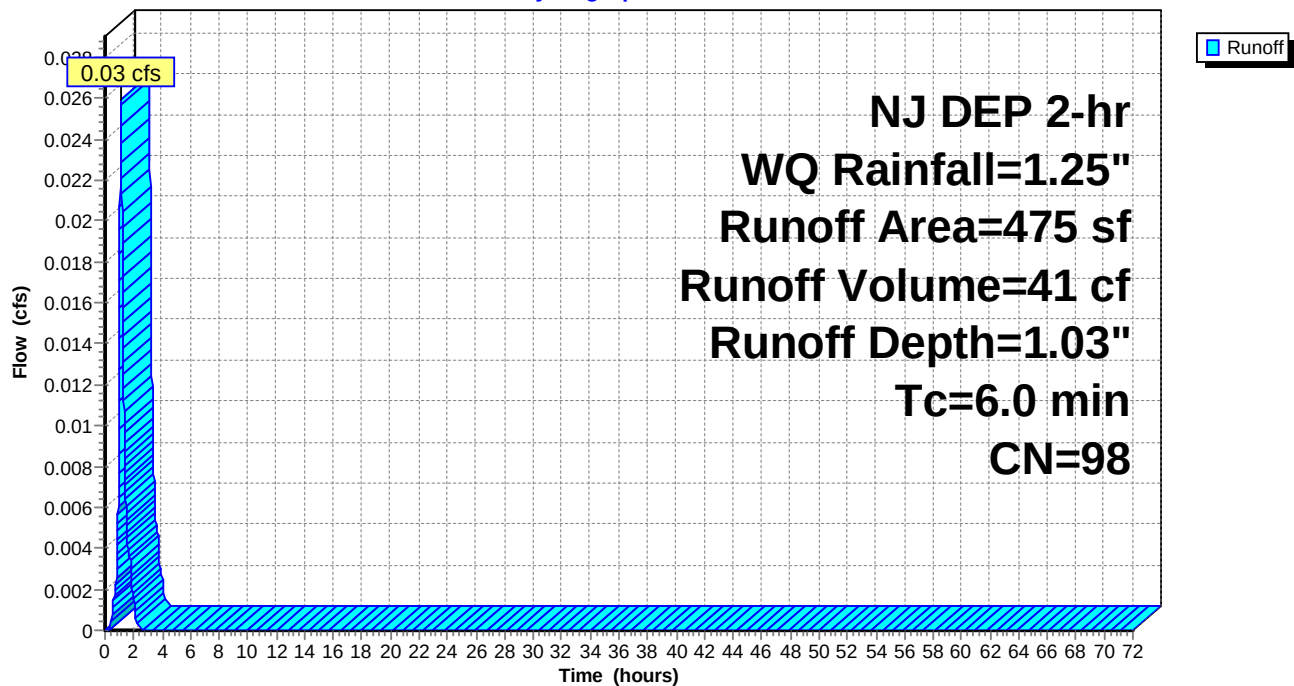
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (sf)	CN	Description
110	98	Unconnected pavement, HSG D
365	98	Paved parking, HSG D
475	98	Weighted Average
475		100.00% Impervious Area
110		23.16% Unconnected

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

Subcatchment DA-1Ai: DA-1Ai

Hydrograph



Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Subcatchment DA-1Ap: DA-1Ap

Runoff = 0.02 cfs @ 1.22 hrs, Volume= 43 cf, Depth= 0.10"

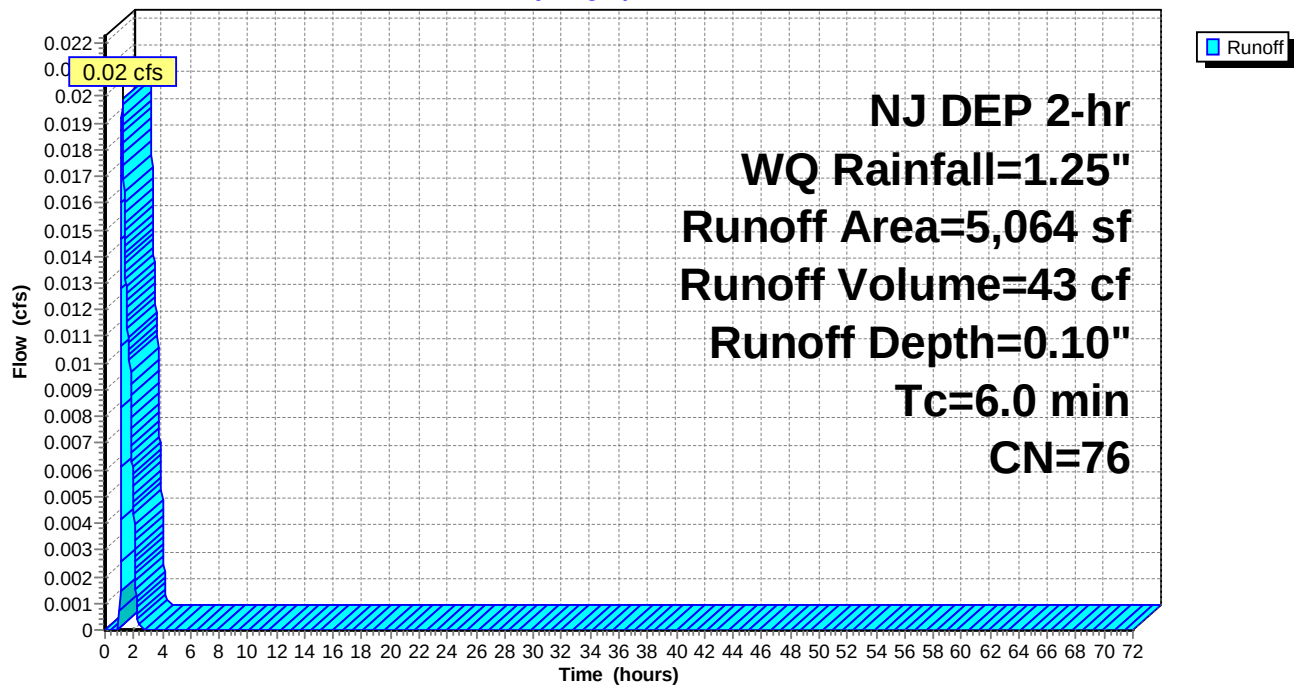
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (sf)	CN	Description
1,042	61	>75% Grass cover, Good, HSG B
4,022	80	>75% Grass cover, Good, HSG D
5,064	76	Weighted Average
5,064		100.00% Pervious Area

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

Subcatchment DA-1Ap: DA-1Ap

Hydrograph



Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Subcatchment DA-1Bi: DA-1Bi

Runoff = 2.40 cfs @ 1.12 hrs, Volume= 3,787 cf, Depth= 1.03"

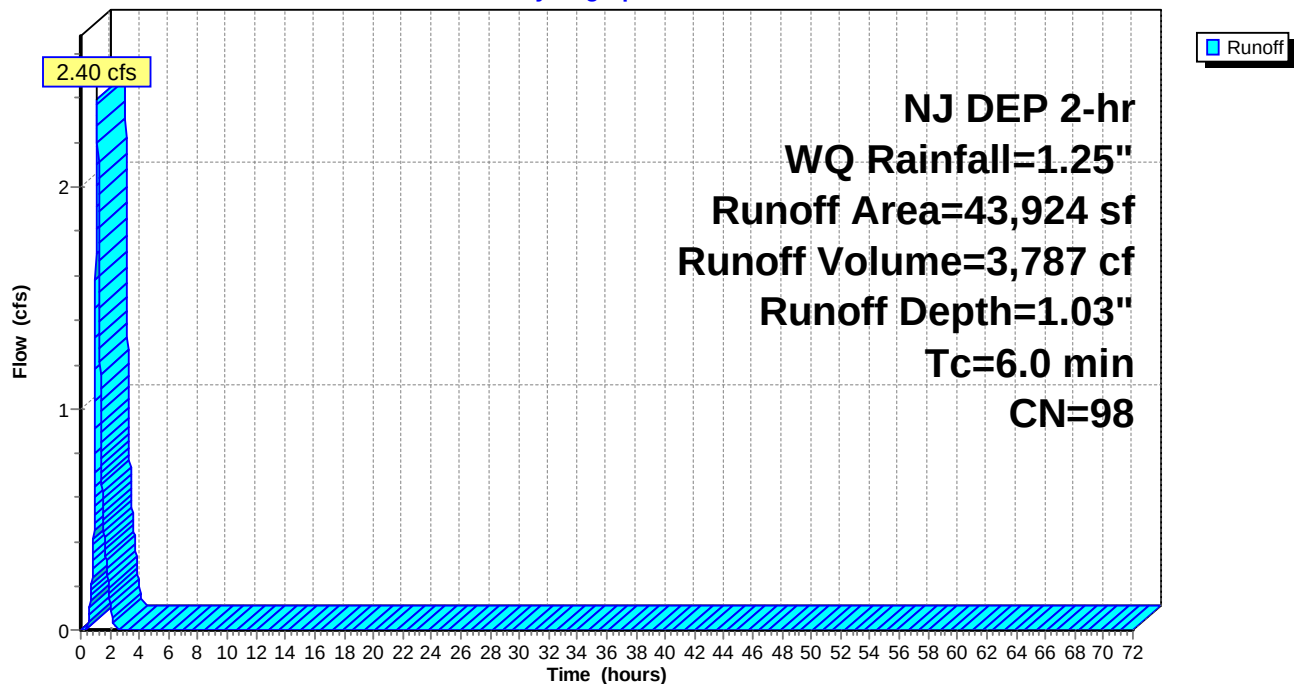
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

	Area (sf)	CN	Description
*	440	98	Pavement, HSG B
*	25,313	98	Pavement, HSG D
*	12,114	98	Roofs, HSG D
*	556	98	Roofs, HSG B
*	5,501	98	Concrete, HSG D
	43,924	98	Weighted Average
	43,924		100.00% Impervious Area

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

Subcatchment DA-1Bi: DA-1Bi

Hydrograph



Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Subcatchment DA-1Bp: DA-1Bp

Runoff = 0.22 cfs @ 1.19 hrs, Volume= 422 cf, Depth= 0.17"

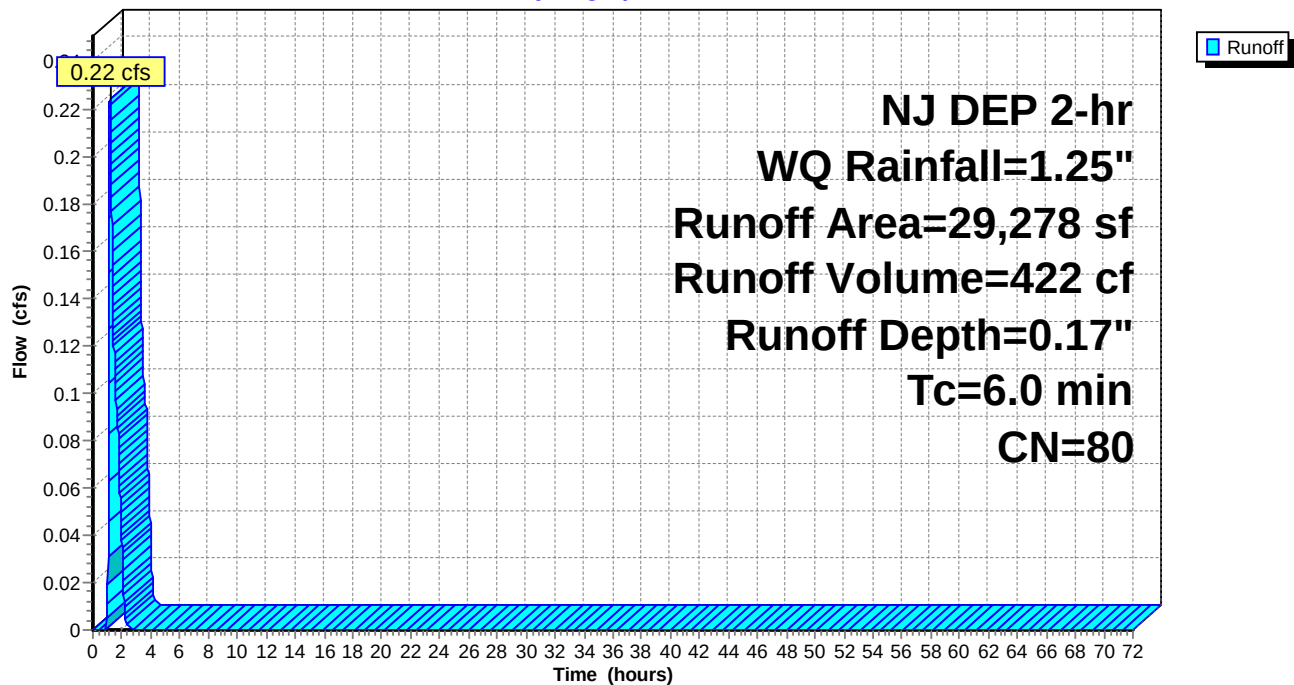
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (sf)	CN	Description
86	61	>75% Grass cover, Good, HSG B
29,192	80	>75% Grass cover, Good, HSG D
29,278	80	Weighted Average
29,278		100.00% Pervious Area

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

Subcatchment DA-1Bp: DA-1Bp

Hydrograph



Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Subcatchment DA-1C: DA-1C

Runoff = 0.30 cfs @ 1.12 hrs, Volume= 475 cf, Depth= 1.03"

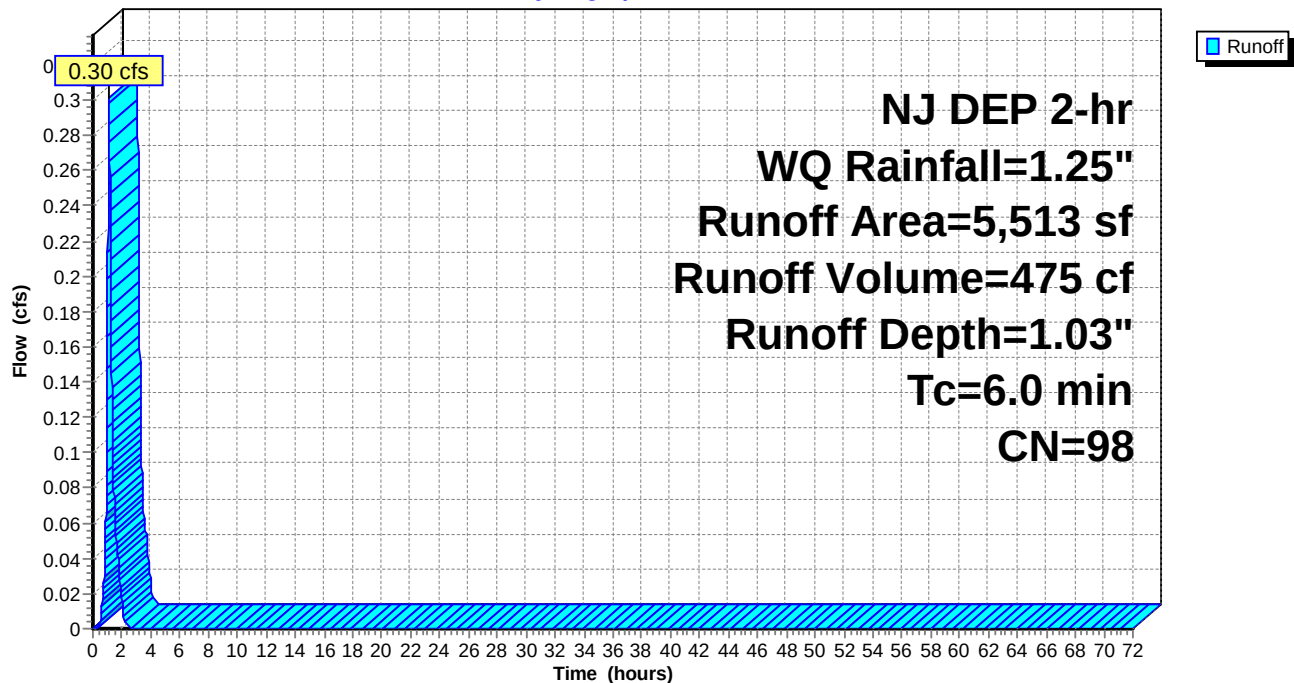
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

	Area (sf)	CN	Description
*	5,513	98	Roofs, HSG D
	5,513		100.00% Impervious Area

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

Subcatchment DA-1C: DA-1C

Hydrograph



Post-Development

Prepared by {enter your company name here}

NJ DEP 2-hr WQ Rainfall=1.25"

Printed 10/5/2022

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Summary for Subcatchment DA-2i: DA-2i

Runoff = 0.07 cfs @ 1.35 hrs, Volume= 264 cf, Depth= 1.03"

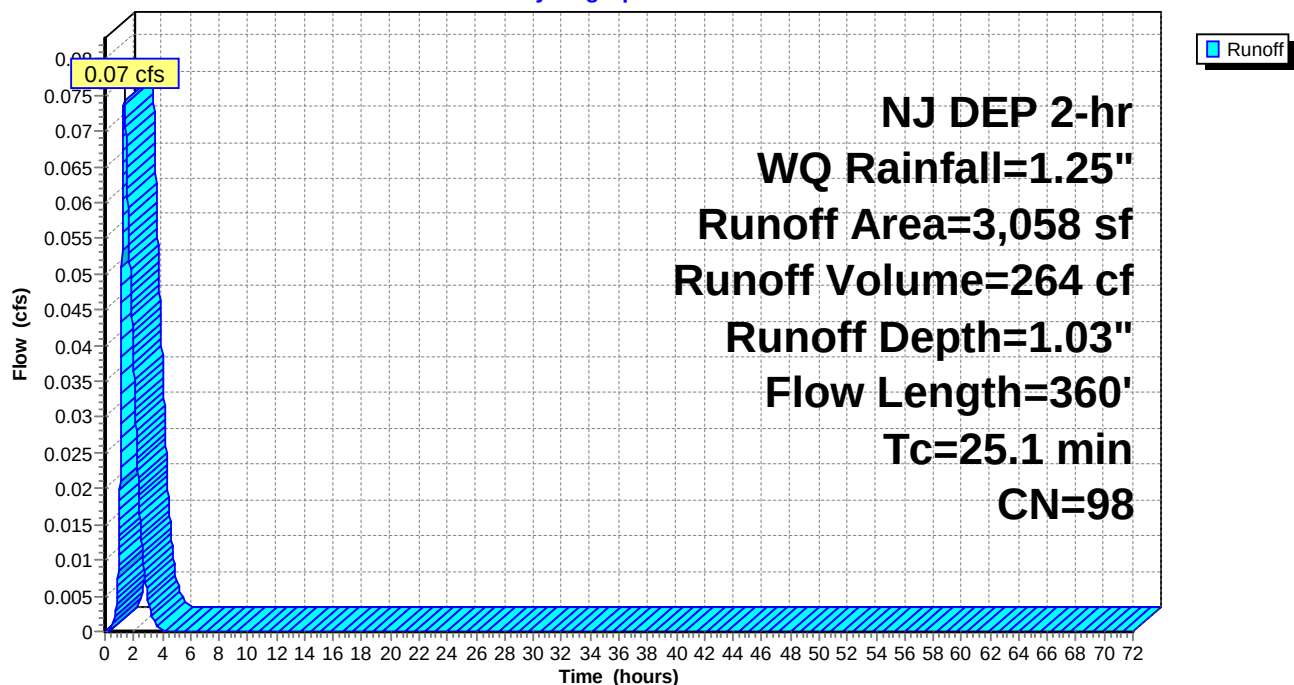
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (sf)	CN	Description
2,099	98	Paved parking, HSG D
870	98	Unconnected pavement, HSG D
89	98	Unconnected pavement, HSG B
3,058	98	Weighted Average
3,058		100.00% Impervious Area
959		31.36% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0110	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.34"
12.4	232	0.0020	0.31		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	28	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.1	360	Total			

Subcatchment DA-2i: DA-2i

Hydrograph



Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Subcatchment DA-2p: DA-2p

Runoff = 0.04 cfs @ 1.56 hrs, Volume= 181 cf, Depth= 0.15"

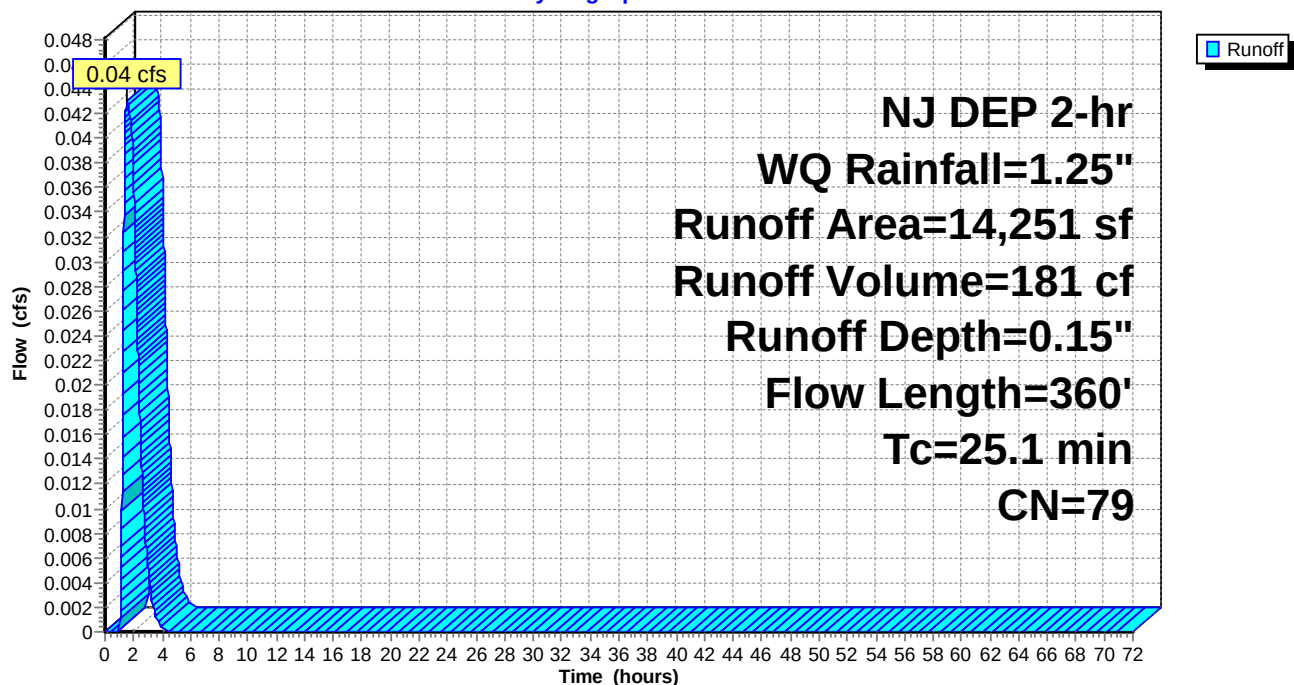
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (sf)	CN	Description
561	61	>75% Grass cover, Good, HSG B
13,690	80	>75% Grass cover, Good, HSG D
14,251	79	Weighted Average
14,251		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0110	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.34"
12.4	232	0.0020	0.31		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	28	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.1	360	Total			

Subcatchment DA-2p: DA-2p

Hydrograph



Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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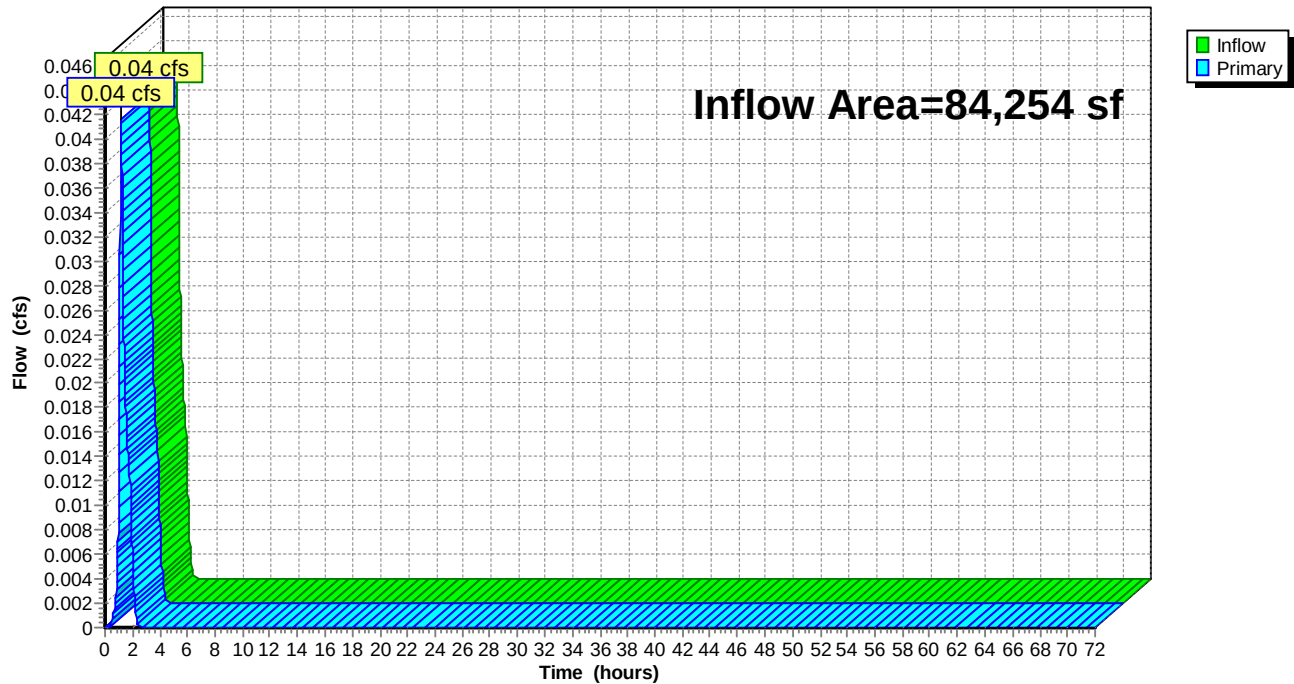
Summary for Pond 1P: DA-1

Inflow Area = 84,254 sf, 59.24% Impervious, Inflow Depth = 0.01" for WQ event
 Inflow = 0.04 cfs @ 1.15 hrs, Volume= 84 cf
 Primary = 0.04 cfs @ 1.15 hrs, Volume= 84 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 1P: DA-1

Hydrograph



Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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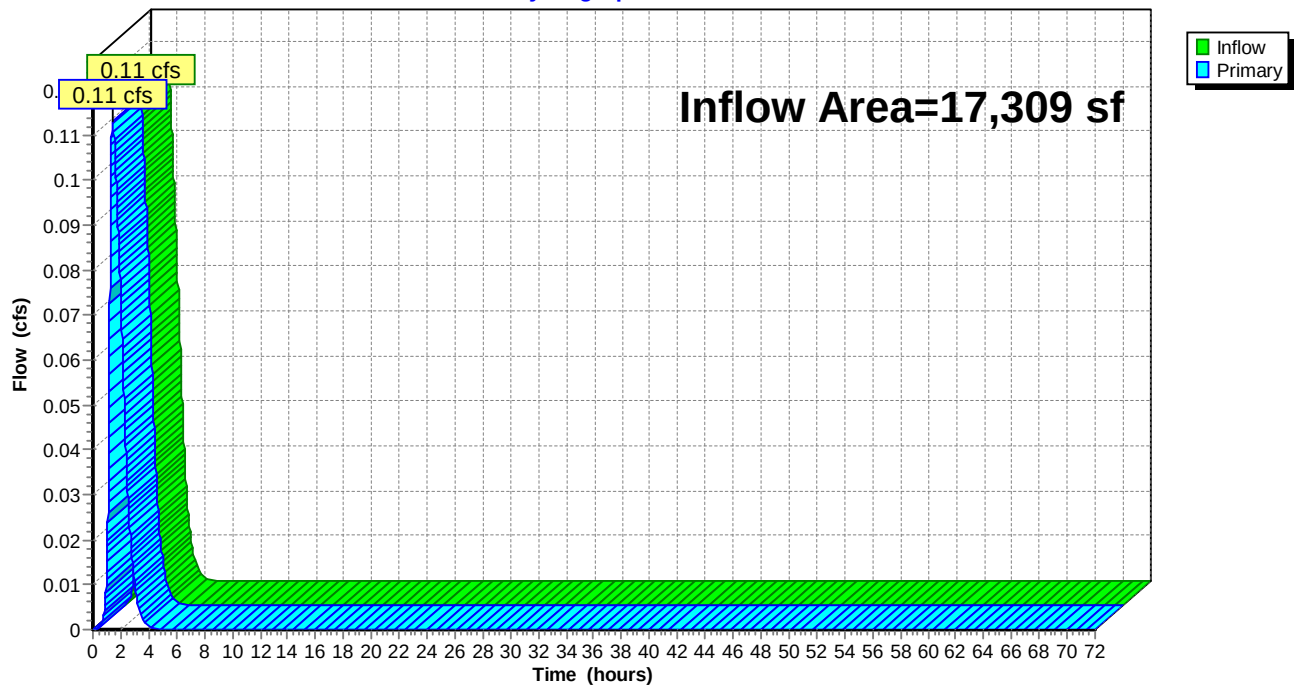
Summary for Pond 2P: DA-2

Inflow Area = 17,309 sf, 17.67% Impervious, Inflow Depth = 0.31" for WQ event
 Inflow = 0.11 cfs @ 1.40 hrs, Volume= 445 cf
 Primary = 0.11 cfs @ 1.40 hrs, Volume= 445 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 2P: DA-2

Hydrograph



Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Pond 3P: Bioretention

Inflow Area = 73,202 sf, 60.00% Impervious, Inflow Depth = 0.69" for WQ event
 Inflow = 2.59 cfs @ 1.13 hrs, Volume= 4,209 cf
 Outflow = 0.32 cfs @ 1.83 hrs, Volume= 4,209 cf, Atten= 88%, Lag= 42.4 min
 Discarded = 0.32 cfs @ 1.83 hrs, Volume= 4,209 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 26.43' @ 1.83 hrs Surf.Area= 2,282 sf Storage= 2,834 cf

Plug-Flow detention time= 89.0 min calculated for 4,209 cf (100% of inflow)
 Center-of-Mass det. time= 89.0 min (164.2 - 75.2)

Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	18,958 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.00	1,703	0	0
26.00	2,099	1,901	1,901
27.00	2,529	2,314	4,215
28.00	3,016	2,773	6,988
29.00	3,662	3,339	10,327
30.00	4,287	3,975	14,301
31.00	5,027	4,657	18,958

Device	Routing	Invert	Outlet Devices
#1	Primary	25.00'	15.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 25.00' / 24.75' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf
#2	Device 1	27.71'	11.7" W x 12.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	25.00'	6.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.32 cfs @ 1.83 hrs HW=26.43' (Free Discharge)

↑ **3=Exfiltration** (Exfiltration Controls 0.32 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=25.00' (Free Discharge)

↑ **1=Culvert** (Controls 0.00 cfs)

↑ **2=Orifice/Grate** (Controls 0.00 cfs)

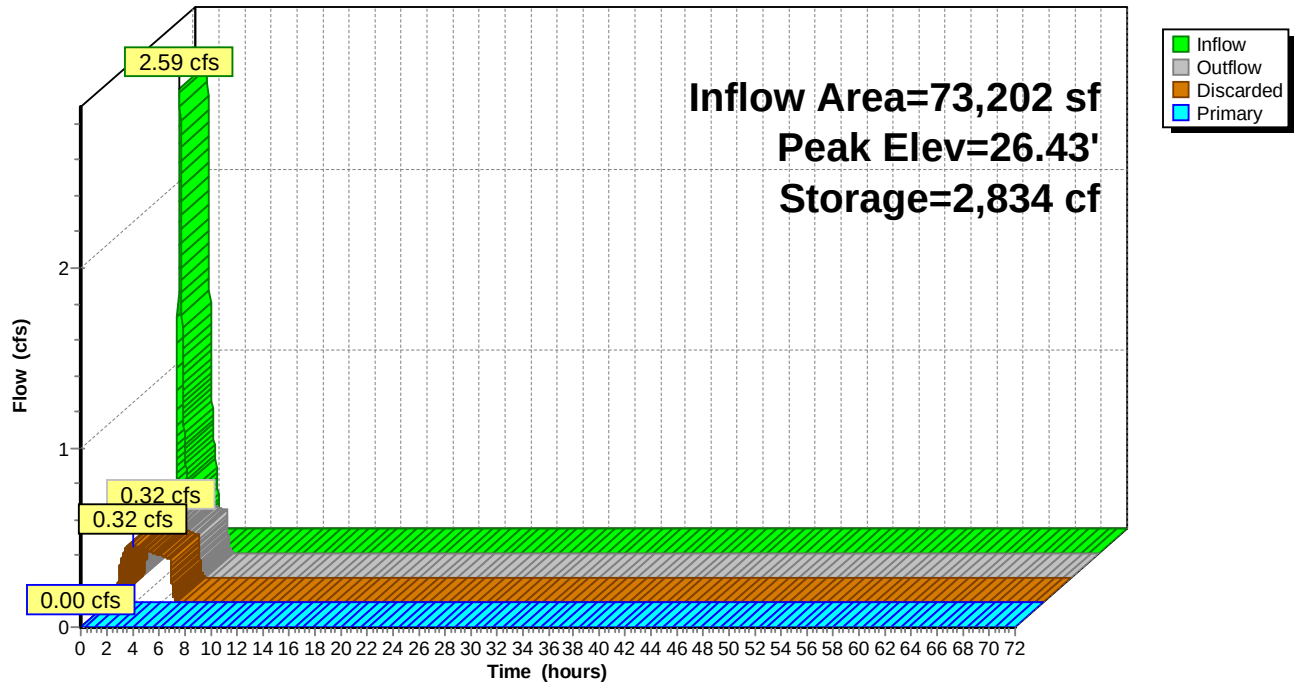
Post-Development

Prepared by {enter your company name here}

NJ DEP 2-hr WQ Rainfall=1.25"

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Pond 3P: Bioretention**Hydrograph**

Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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Hydrograph for Pond 3P: Bioretention

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	25.00	0.00	0.00	0.00
2.00	0.17	2,779	26.40	0.32	0.32	0.00
4.00	0.00	786	25.44	0.26	0.26	0.00
6.00	0.00	0	25.00	0.00	0.00	0.00
8.00	0.00	0	25.00	0.00	0.00	0.00
10.00	0.00	0	25.00	0.00	0.00	0.00
12.00	0.00	0	25.00	0.00	0.00	0.00
14.00	0.00	0	25.00	0.00	0.00	0.00
16.00	0.00	0	25.00	0.00	0.00	0.00
18.00	0.00	0	25.00	0.00	0.00	0.00
20.00	0.00	0	25.00	0.00	0.00	0.00
22.00	0.00	0	25.00	0.00	0.00	0.00
24.00	0.00	0	25.00	0.00	0.00	0.00
26.00	0.00	0	25.00	0.00	0.00	0.00
28.00	0.00	0	25.00	0.00	0.00	0.00
30.00	0.00	0	25.00	0.00	0.00	0.00
32.00	0.00	0	25.00	0.00	0.00	0.00
34.00	0.00	0	25.00	0.00	0.00	0.00
36.00	0.00	0	25.00	0.00	0.00	0.00
38.00	0.00	0	25.00	0.00	0.00	0.00
40.00	0.00	0	25.00	0.00	0.00	0.00
42.00	0.00	0	25.00	0.00	0.00	0.00
44.00	0.00	0	25.00	0.00	0.00	0.00
46.00	0.00	0	25.00	0.00	0.00	0.00
48.00	0.00	0	25.00	0.00	0.00	0.00
50.00	0.00	0	25.00	0.00	0.00	0.00
52.00	0.00	0	25.00	0.00	0.00	0.00
54.00	0.00	0	25.00	0.00	0.00	0.00
56.00	0.00	0	25.00	0.00	0.00	0.00
58.00	0.00	0	25.00	0.00	0.00	0.00
60.00	0.00	0	25.00	0.00	0.00	0.00
62.00	0.00	0	25.00	0.00	0.00	0.00
64.00	0.00	0	25.00	0.00	0.00	0.00
66.00	0.00	0	25.00	0.00	0.00	0.00
68.00	0.00	0	25.00	0.00	0.00	0.00
70.00	0.00	0	25.00	0.00	0.00	0.00
72.00	0.00	0	25.00	0.00	0.00	0.00

Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

Prepared by {enter your company name here}

Printed 10/5/2022

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Summary for Pond 4P: Infiltration

Inflow Area = 5,513 sf, 100.00% Impervious, Inflow Depth = 1.03" for WQ event
 Inflow = 0.30 cfs @ 1.12 hrs, Volume= 475 cf
 Outflow = 0.07 cfs @ 0.96 hrs, Volume= 475 cf, Atten= 76%, Lag= 0.0 min
 Discarded = 0.07 cfs @ 0.96 hrs, Volume= 475 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 26.06' @ 1.47 hrs Surf.Area= 510 sf Storage= 218 cf

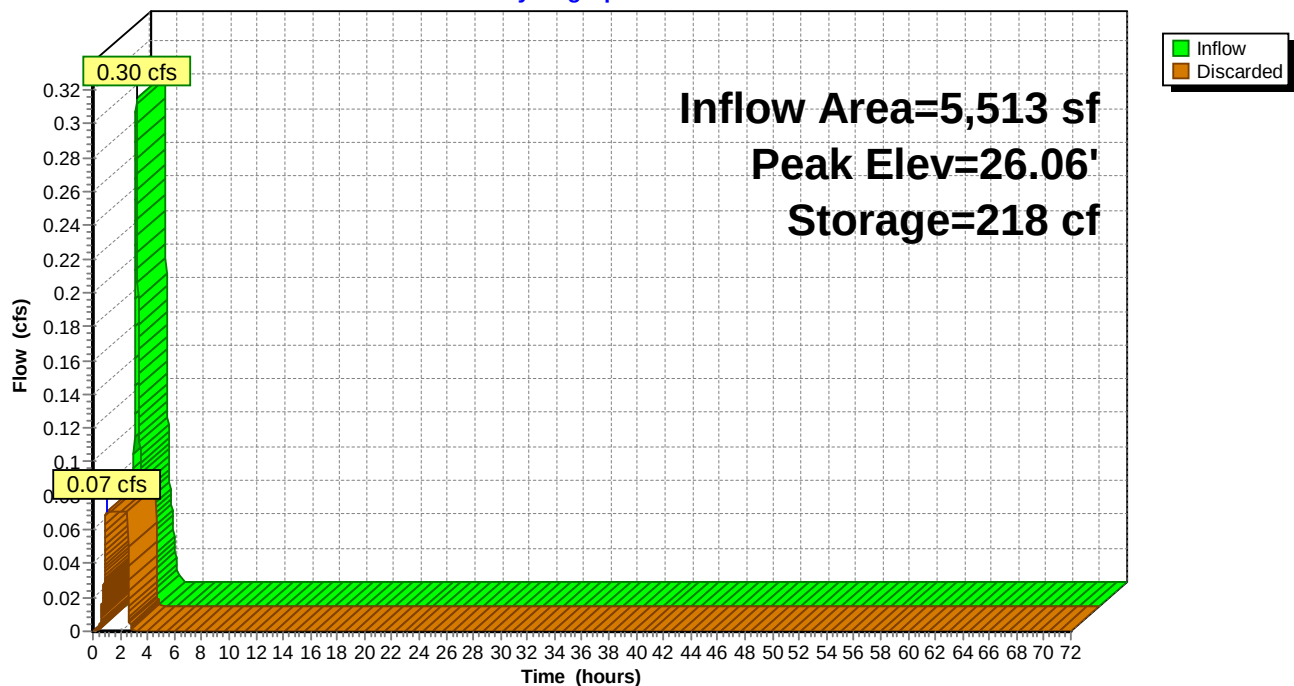
Plug-Flow detention time= 29.2 min calculated for 475 cf (100% of inflow)
 Center-of-Mass det. time= 29.1 min (103.1 - 73.9)

Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	737 cf	5.00'W x 102.00'L x 5.00'H Prismatoid 2,550 cf Overall - 707 cf Embedded = 1,843 cf x 40.0% Voids
#2	26.00'	707 cf	36.0" Round Pipe Storage Inside #1 L= 100.0'
		1,444 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	25.00'	6.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.07 cfs @ 0.96 hrs HW=25.05' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.07 cfs)

Pond 4P: Infiltration**Hydrograph**

Post-Development

NJ DEP 2-hr WQ Rainfall=1.25"

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Hydrograph for Pond 4P: Infiltration

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0	25.00	0.00
2.00	0.02	159	25.78	0.07
4.00	0.00	0	25.00	0.00
6.00	0.00	0	25.00	0.00
8.00	0.00	0	25.00	0.00
10.00	0.00	0	25.00	0.00
12.00	0.00	0	25.00	0.00
14.00	0.00	0	25.00	0.00
16.00	0.00	0	25.00	0.00
18.00	0.00	0	25.00	0.00
20.00	0.00	0	25.00	0.00
22.00	0.00	0	25.00	0.00
24.00	0.00	0	25.00	0.00
26.00	0.00	0	25.00	0.00
28.00	0.00	0	25.00	0.00
30.00	0.00	0	25.00	0.00
32.00	0.00	0	25.00	0.00
34.00	0.00	0	25.00	0.00
36.00	0.00	0	25.00	0.00
38.00	0.00	0	25.00	0.00
40.00	0.00	0	25.00	0.00
42.00	0.00	0	25.00	0.00
44.00	0.00	0	25.00	0.00
46.00	0.00	0	25.00	0.00
48.00	0.00	0	25.00	0.00
50.00	0.00	0	25.00	0.00
52.00	0.00	0	25.00	0.00
54.00	0.00	0	25.00	0.00
56.00	0.00	0	25.00	0.00
58.00	0.00	0	25.00	0.00
60.00	0.00	0	25.00	0.00
62.00	0.00	0	25.00	0.00
64.00	0.00	0	25.00	0.00
66.00	0.00	0	25.00	0.00
68.00	0.00	0	25.00	0.00
70.00	0.00	0	25.00	0.00
72.00	0.00	0	25.00	0.00

Post-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

Prepared by {enter your company name here}

Printed 10/5/2022

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Summary for Subcatchment DA-1Ai: DA-1Ai

Runoff = 0.04 cfs @ 12.14 hrs, Volume= 125 cf, Depth= 3.15"

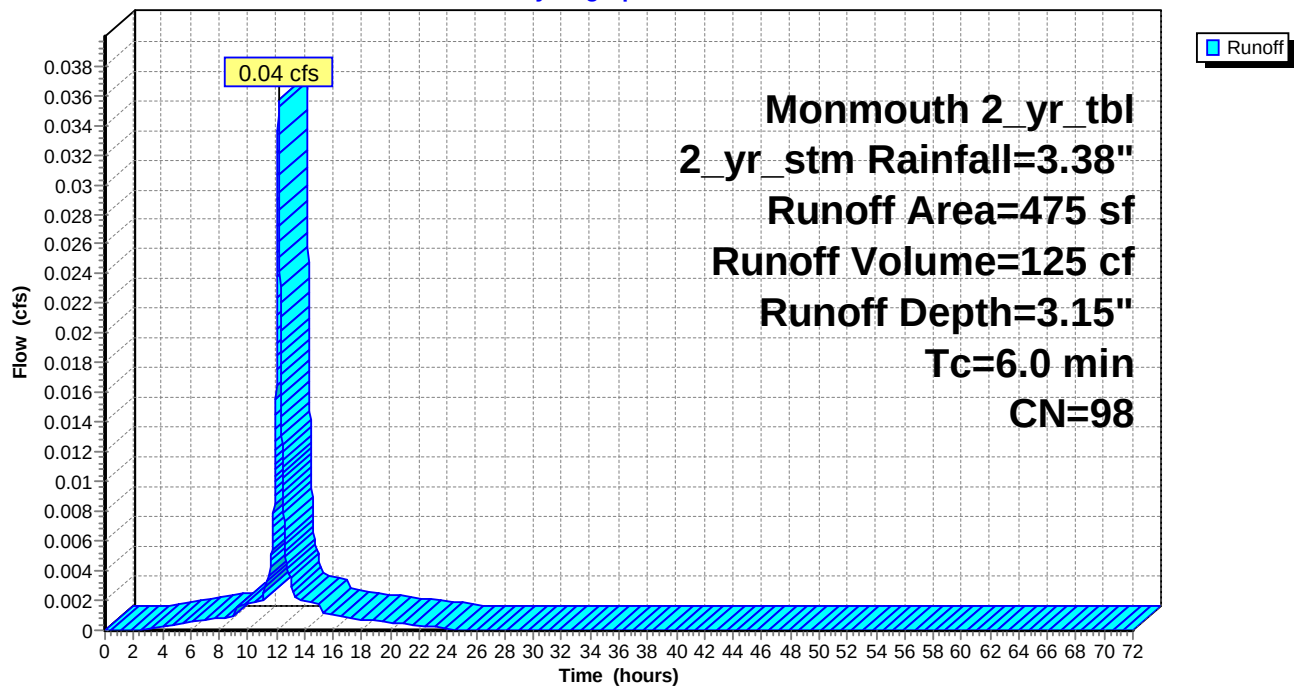
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

Area (sf)	CN	Description
110	98	Unconnected pavement, HSG D
365	98	Paved parking, HSG D
475	98	Weighted Average
475		100.00% Impervious Area
110		23.16% Unconnected

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

Subcatchment DA-1Ai: DA-1Ai

Hydrograph



Post-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

Prepared by {enter your company name here}

Printed 10/5/2022

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Summary for Subcatchment DA-1Ap: DA-1Ap

Runoff = 0.17 cfs @ 12.15 hrs, Volume= 540 cf, Depth= 1.28"

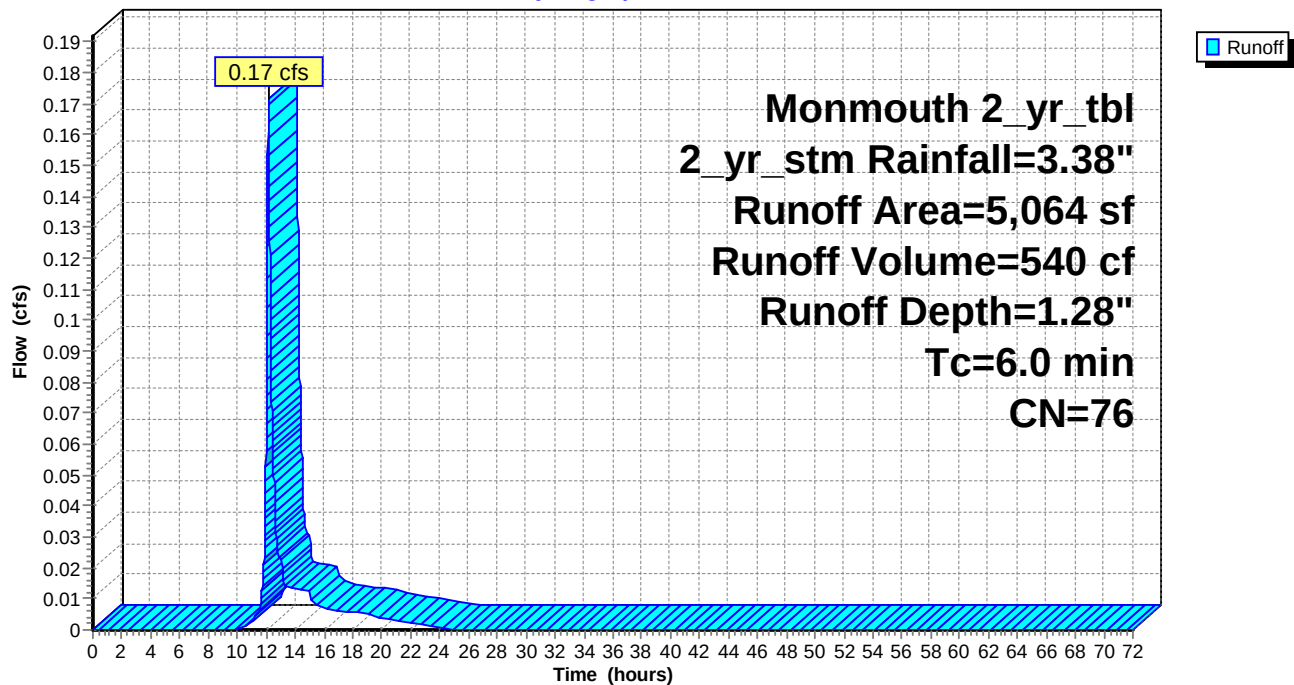
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

Area (sf)	CN	Description
1,042	61	>75% Grass cover, Good, HSG B
4,022	80	>75% Grass cover, Good, HSG D
5,064	76	Weighted Average
5,064		100.00% Pervious Area

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

Subcatchment DA-1Ap: DA-1Ap

Hydrograph



Post-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

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Summary for Subcatchment DA-1Bi: DA-1Bi

Runoff = 3.30 cfs @ 12.14 hrs, Volume= 11,519 cf, Depth= 3.15"

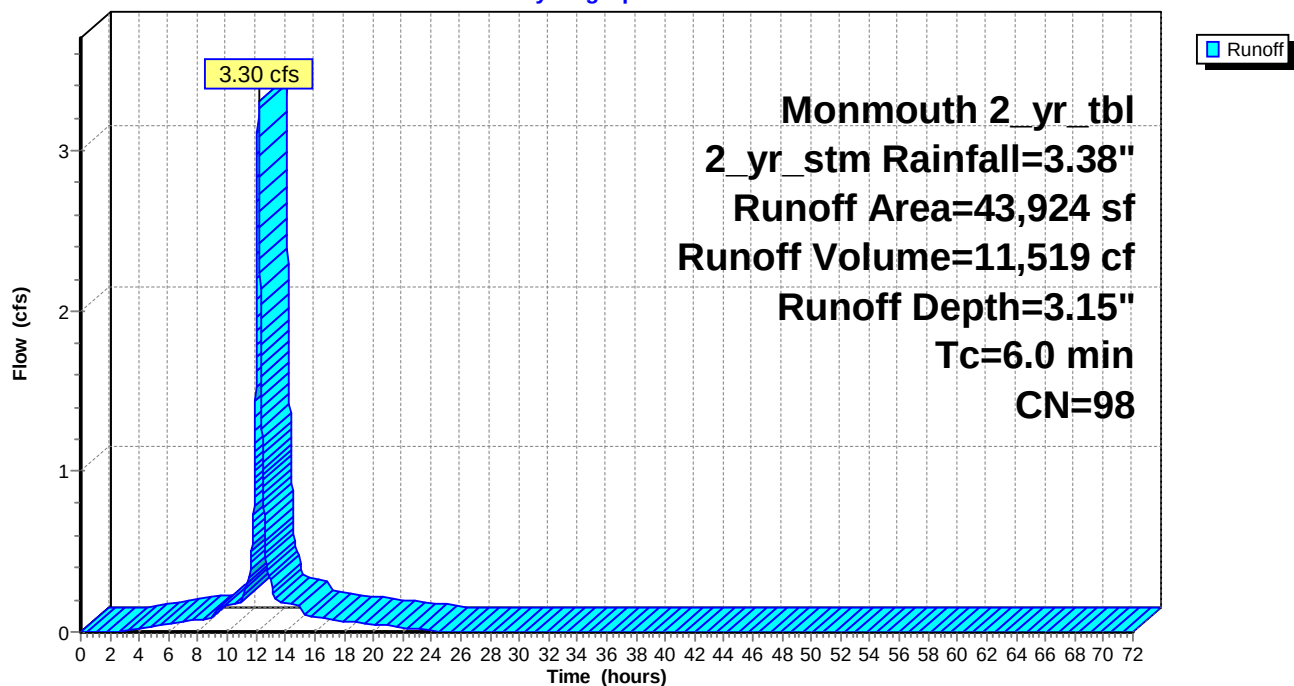
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

	Area (sf)	CN	Description
*	440	98	Pavement, HSG B
*	25,313	98	Pavement, HSG D
*	12,114	98	Roofs, HSG D
*	556	98	Roofs, HSG B
*	5,501	98	Concrete, HSG D
	43,924	98	Weighted Average
	43,924		100.00% Impervious Area

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

Subcatchment DA-1Bi: DA-1Bi

Hydrograph



Post-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

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Summary for Subcatchment DA-1Bp: DA-1Bp

Runoff = 1.21 cfs @ 12.15 hrs, Volume= 3,762 cf, Depth= 1.54"

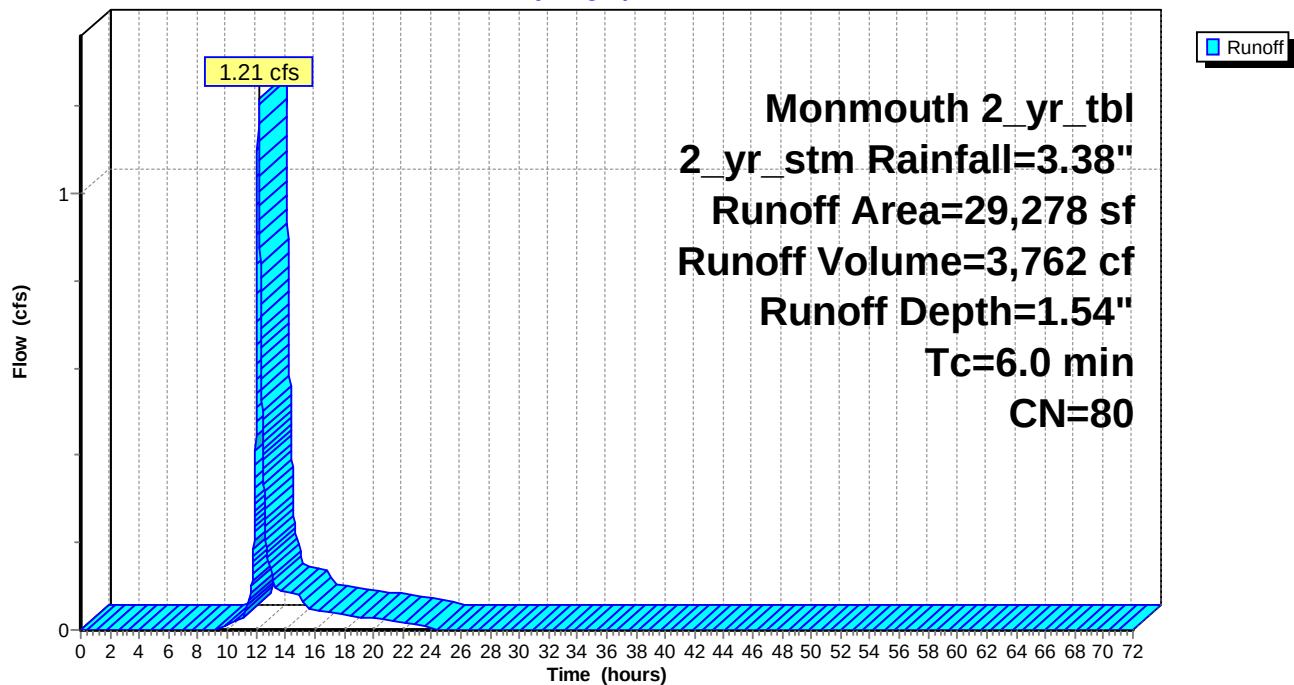
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

Area (sf)	CN	Description
86	61	>75% Grass cover, Good, HSG B
29,192	80	>75% Grass cover, Good, HSG D
29,278	80	Weighted Average
29,278		100.00% Pervious Area

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

Subcatchment DA-1Bp: DA-1Bp

Hydrograph



Post-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

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Summary for Subcatchment DA-1C: DA-1C

Runoff = 0.41 cfs @ 12.14 hrs, Volume= 1,446 cf, Depth= 3.15"

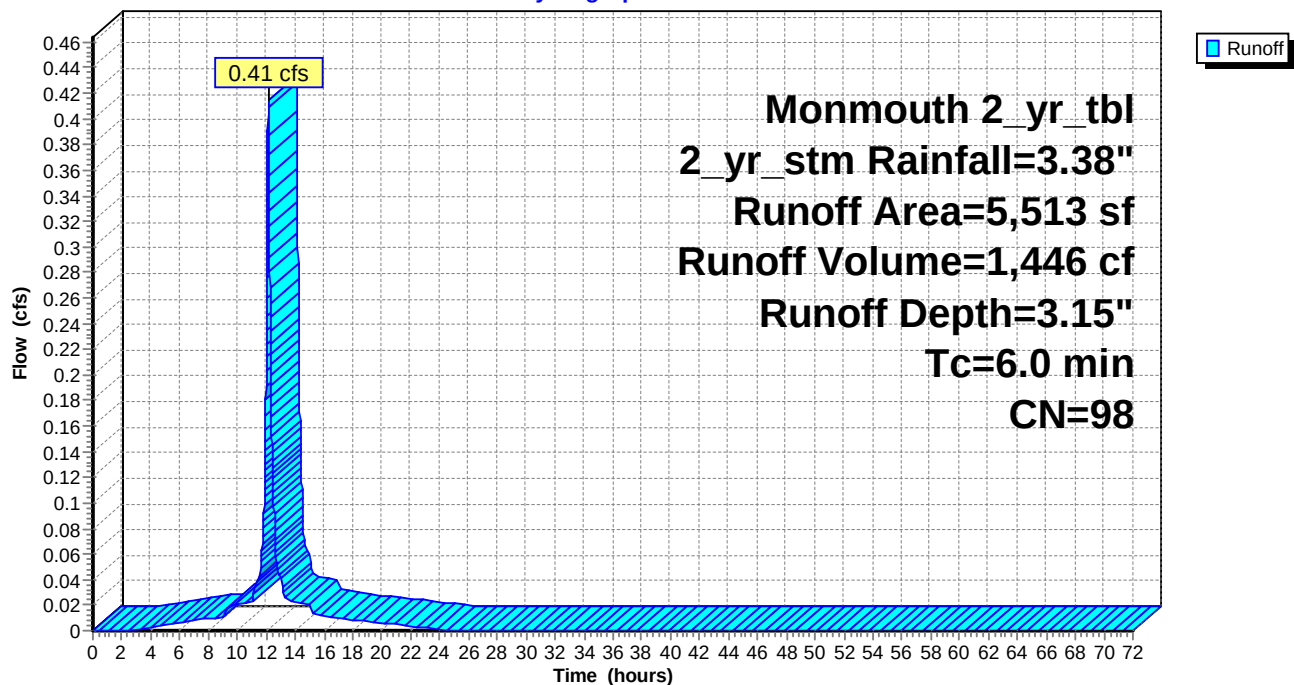
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

	Area (sf)	CN	Description
*	5,513	98	Roofs, HSG D
	5,513		100.00% Impervious Area

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

Subcatchment DA-1C: DA-1C

Hydrograph



Post-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

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Summary for Subcatchment DA-2i: DA-2i

Runoff = 0.11 cfs @ 12.38 hrs, Volume= 802 cf, Depth= 3.15"

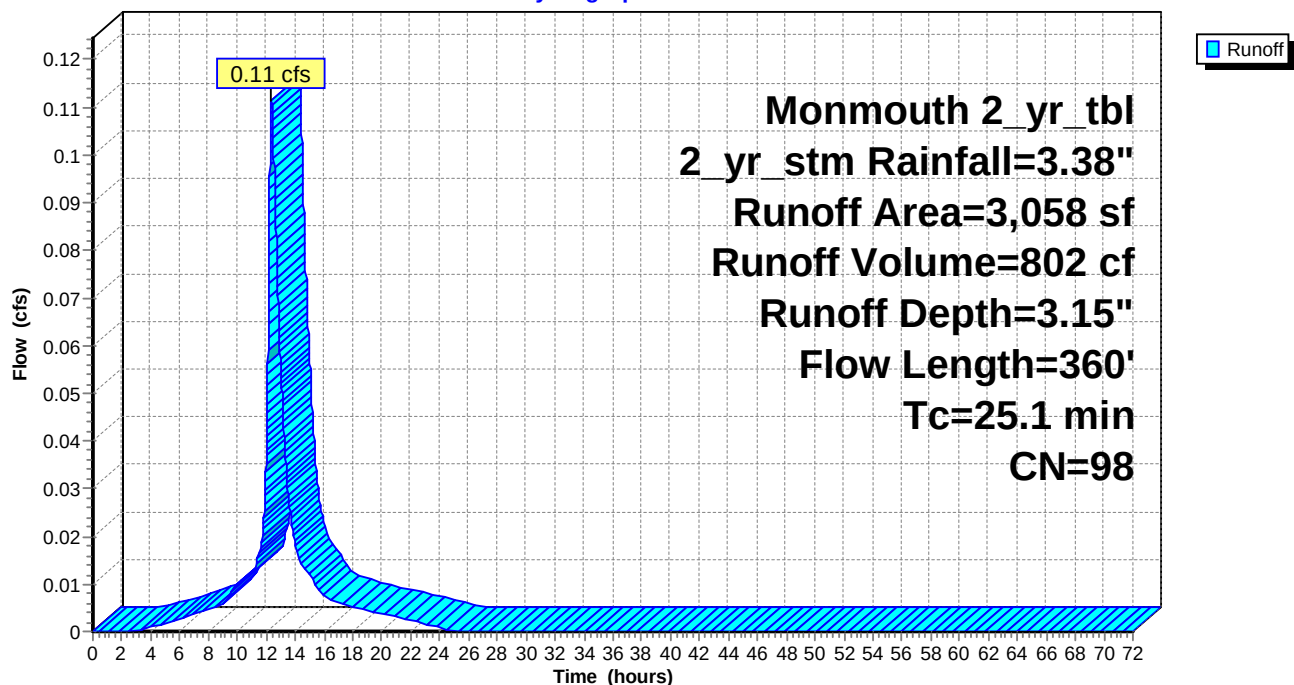
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

Area (sf)	CN	Description
2,099	98	Paved parking, HSG D
870	98	Unconnected pavement, HSG D
89	98	Unconnected pavement, HSG B
3,058	98	Weighted Average
3,058		100.00% Impervious Area
959		31.36% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0110	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.34"
12.4	232	0.0020	0.31		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	28	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.1	360	Total			

Subcatchment DA-2i: DA-2i

Hydrograph



Post-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

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Summary for Subcatchment DA-2p: DA-2p

Runoff = 0.26 cfs @ 12.39 hrs, Volume= 1,750 cf, Depth= 1.47"

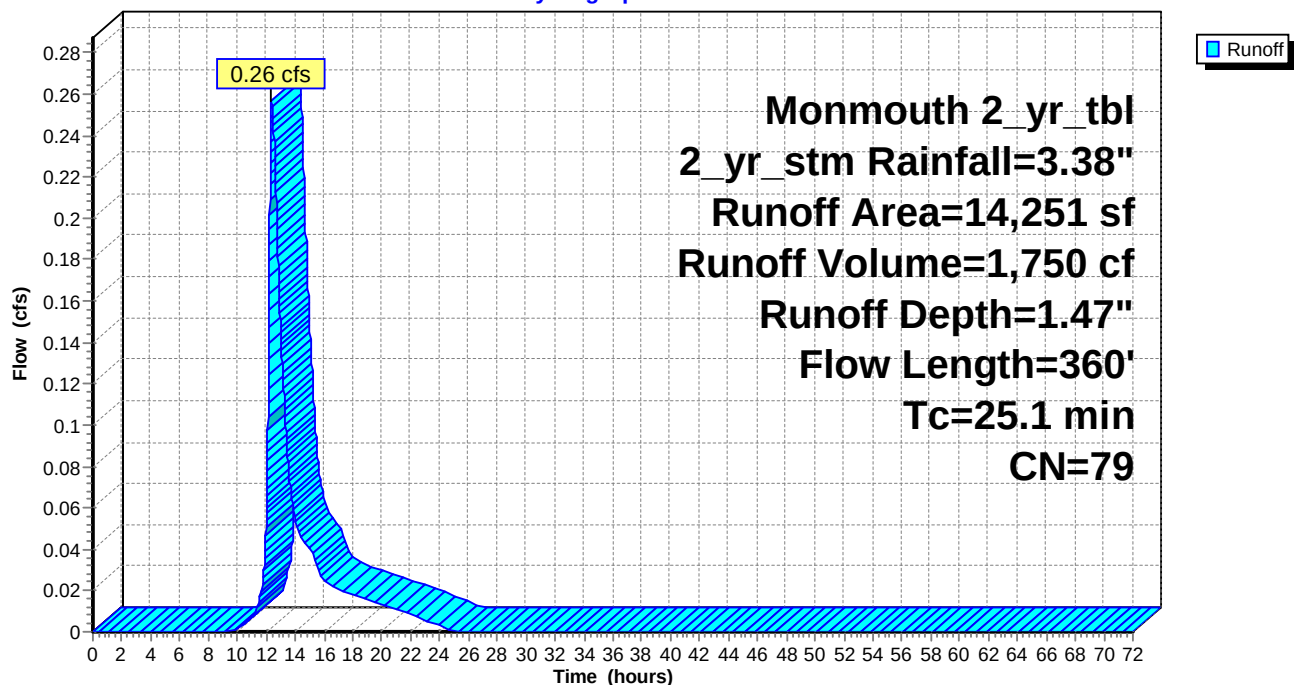
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

Area (sf)	CN	Description
561	61	>75% Grass cover, Good, HSG B
13,690	80	>75% Grass cover, Good, HSG D
14,251	79	Weighted Average
14,251		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0110	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.34"
12.4	232	0.0020	0.31		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	28	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.1	360	Total			

Subcatchment DA-2p: DA-2p

Hydrograph



Post-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

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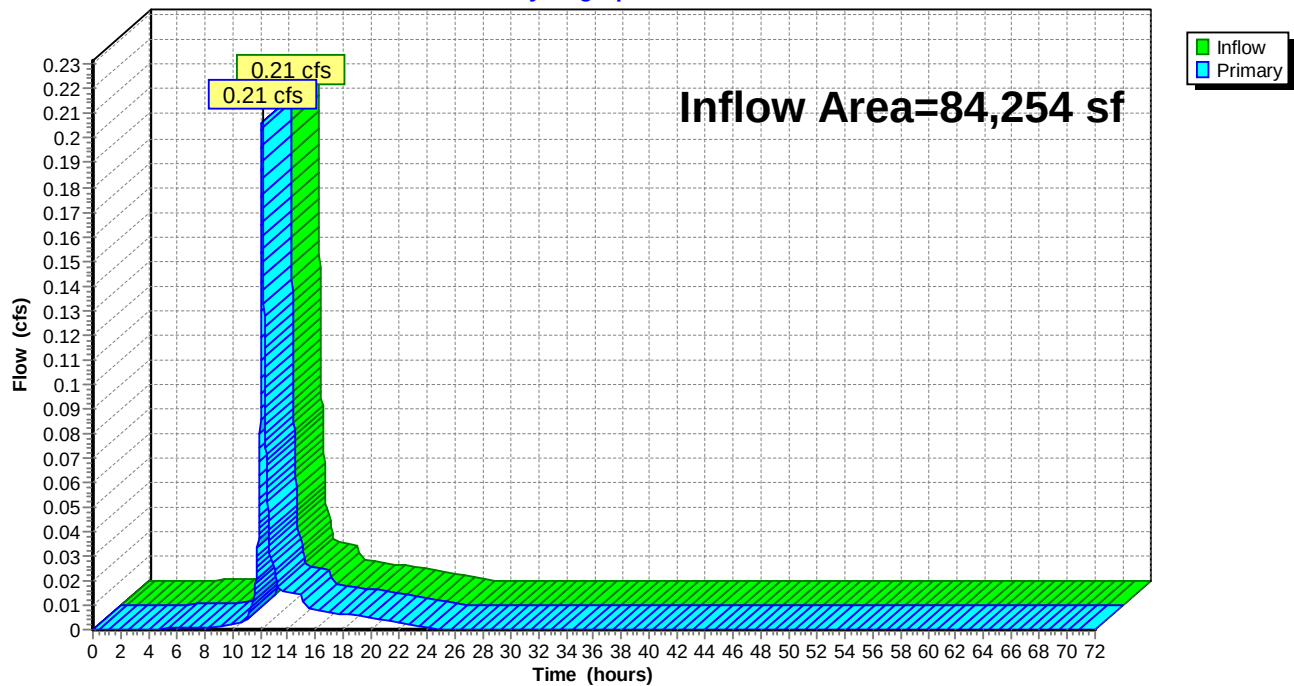
Summary for Pond 1P: DA-1

Inflow Area = 84,254 sf, 59.24% Impervious, Inflow Depth = 0.09" for 2_yr_stm event
 Inflow = 0.21 cfs @ 12.15 hrs, Volume= 666 cf
 Primary = 0.21 cfs @ 12.15 hrs, Volume= 666 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 1P: DA-1

Hydrograph



Post-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

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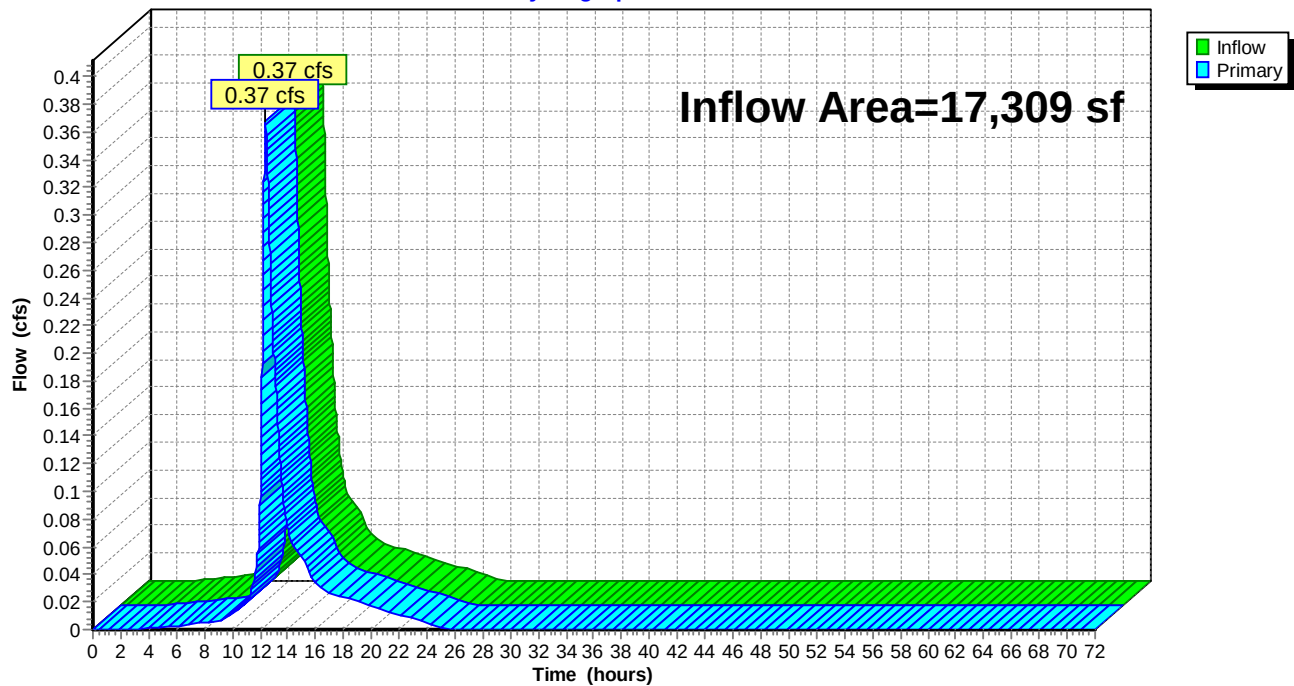
Summary for Pond 2P: DA-2

Inflow Area = 17,309 sf, 17.67% Impervious, Inflow Depth = 1.77" for 2_yr_stm event
 Inflow = 0.37 cfs @ 12.38 hrs, Volume= 2,552 cf
 Primary = 0.37 cfs @ 12.38 hrs, Volume= 2,552 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 2P: DA-2

Hydrograph



Post-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

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Summary for Pond 3P: Bioretention

Inflow Area = 73,202 sf, 60.00% Impervious, Inflow Depth = 2.50" for 2_yr_stm event
 Inflow = 4.51 cfs @ 12.14 hrs, Volume= 15,280 cf
 Outflow = 0.40 cfs @ 13.09 hrs, Volume= 15,280 cf, Atten= 91%, Lag= 57.2 min
 Discarded = 0.40 cfs @ 13.09 hrs, Volume= 15,279 cf
 Primary = 0.00 cfs @ 13.09 hrs, Volume= 1 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 27.71' @ 13.09 hrs Surf.Area= 2,877 sf Storage= 6,146 cf

Plug-Flow detention time= 140.1 min calculated for 15,278 cf (100% of inflow)
 Center-of-Mass det. time= 140.1 min (917.0 - 776.9)

Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	18,958 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.00	1,703	0	0
26.00	2,099	1,901	1,901
27.00	2,529	2,314	4,215
28.00	3,016	2,773	6,988
29.00	3,662	3,339	10,327
30.00	4,287	3,975	14,301
31.00	5,027	4,657	18,958

Device	Routing	Invert	Outlet Devices
#1	Primary	25.00'	15.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 25.00' / 24.75' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf
#2	Device 1	27.71'	11.7" W x 12.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	25.00'	6.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.40 cfs @ 13.09 hrs HW=27.71' (Free Discharge)

↑ **3=Exfiltration** (Exfiltration Controls 0.40 cfs)

Primary OutFlow Max=0.00 cfs @ 13.09 hrs HW=27.71' (Free Discharge)

↑ **1=Culvert** (Passes 0.00 cfs of 8.17 cfs potential flow)

↑ **2=Orifice/Grate** (Orifice Controls 0.00 cfs @ 0.22 fps)

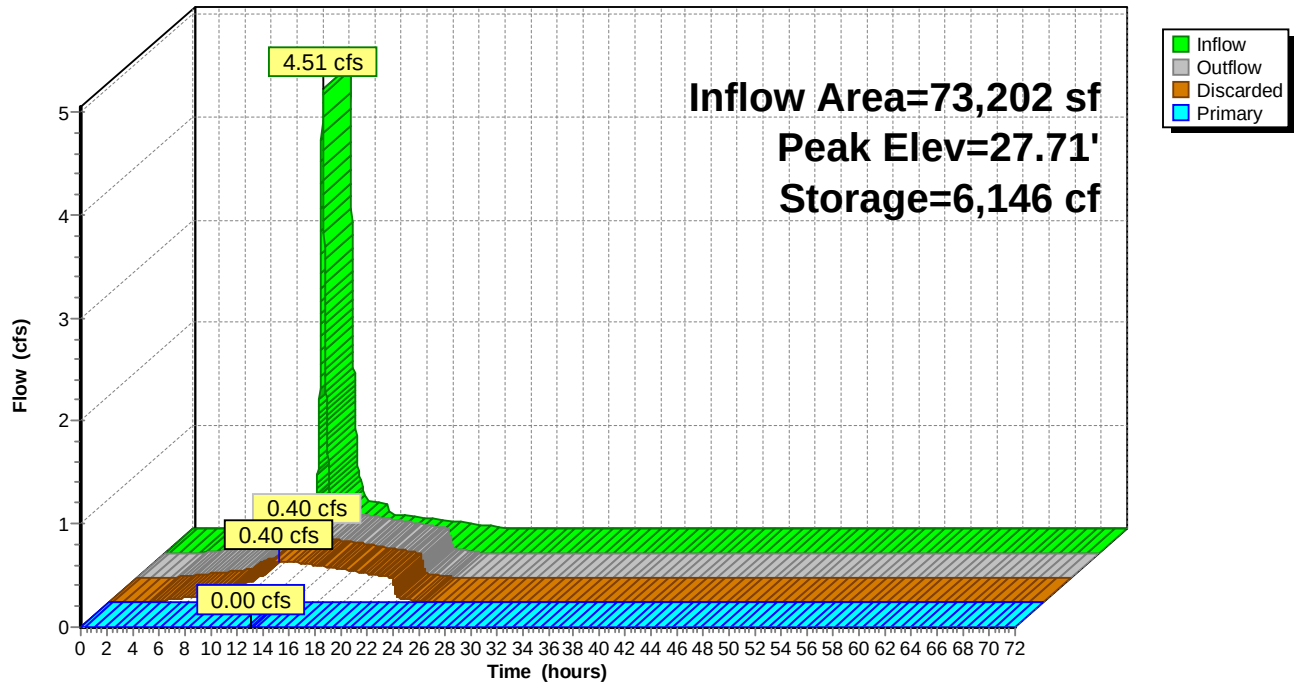
Post-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

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Pond 3P: Bioretention**Hydrograph**

Post-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

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Hydrograph for Pond 3P: Bioretention

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	25.00	0.00	0.00	0.00
2.00	0.00	0	25.00	0.00	0.00	0.00
4.00	0.02	7	25.00	0.02	0.02	0.00
6.00	0.05	20	25.01	0.05	0.05	0.00
8.00	0.08	32	25.02	0.07	0.07	0.00
10.00	0.18	74	25.04	0.17	0.17	0.00
12.00	2.22	1,346	25.73	0.28	0.28	0.00
14.00	0.27	5,795	27.59	0.39	0.39	0.00
16.00	0.14	4,567	27.14	0.36	0.36	0.00
18.00	0.11	2,991	26.49	0.32	0.32	0.00
20.00	0.08	1,482	25.80	0.28	0.28	0.00
22.00	0.05	62	25.04	0.14	0.14	0.00
24.00	0.01	7	25.00	0.02	0.02	0.00
26.00	0.00	0	25.00	0.00	0.00	0.00
28.00	0.00	0	25.00	0.00	0.00	0.00
30.00	0.00	0	25.00	0.00	0.00	0.00
32.00	0.00	0	25.00	0.00	0.00	0.00
34.00	0.00	0	25.00	0.00	0.00	0.00
36.00	0.00	0	25.00	0.00	0.00	0.00
38.00	0.00	0	25.00	0.00	0.00	0.00
40.00	0.00	0	25.00	0.00	0.00	0.00
42.00	0.00	0	25.00	0.00	0.00	0.00
44.00	0.00	0	25.00	0.00	0.00	0.00
46.00	0.00	0	25.00	0.00	0.00	0.00
48.00	0.00	0	25.00	0.00	0.00	0.00
50.00	0.00	0	25.00	0.00	0.00	0.00
52.00	0.00	0	25.00	0.00	0.00	0.00
54.00	0.00	0	25.00	0.00	0.00	0.00
56.00	0.00	0	25.00	0.00	0.00	0.00
58.00	0.00	0	25.00	0.00	0.00	0.00
60.00	0.00	0	25.00	0.00	0.00	0.00
62.00	0.00	0	25.00	0.00	0.00	0.00
64.00	0.00	0	25.00	0.00	0.00	0.00
66.00	0.00	0	25.00	0.00	0.00	0.00
68.00	0.00	0	25.00	0.00	0.00	0.00
70.00	0.00	0	25.00	0.00	0.00	0.00
72.00	0.00	0	25.00	0.00	0.00	0.00

Post-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

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Summary for Pond 4P: Infiltration

Inflow Area = 5,513 sf, 100.00% Impervious, Inflow Depth = 3.15" for 2_yr_stm event
 Inflow = 0.41 cfs @ 12.14 hrs, Volume= 1,446 cf
 Outflow = 0.07 cfs @ 11.79 hrs, Volume= 1,446 cf, Atten= 83%, Lag= 0.0 min
 Discarded = 0.07 cfs @ 11.79 hrs, Volume= 1,446 cf

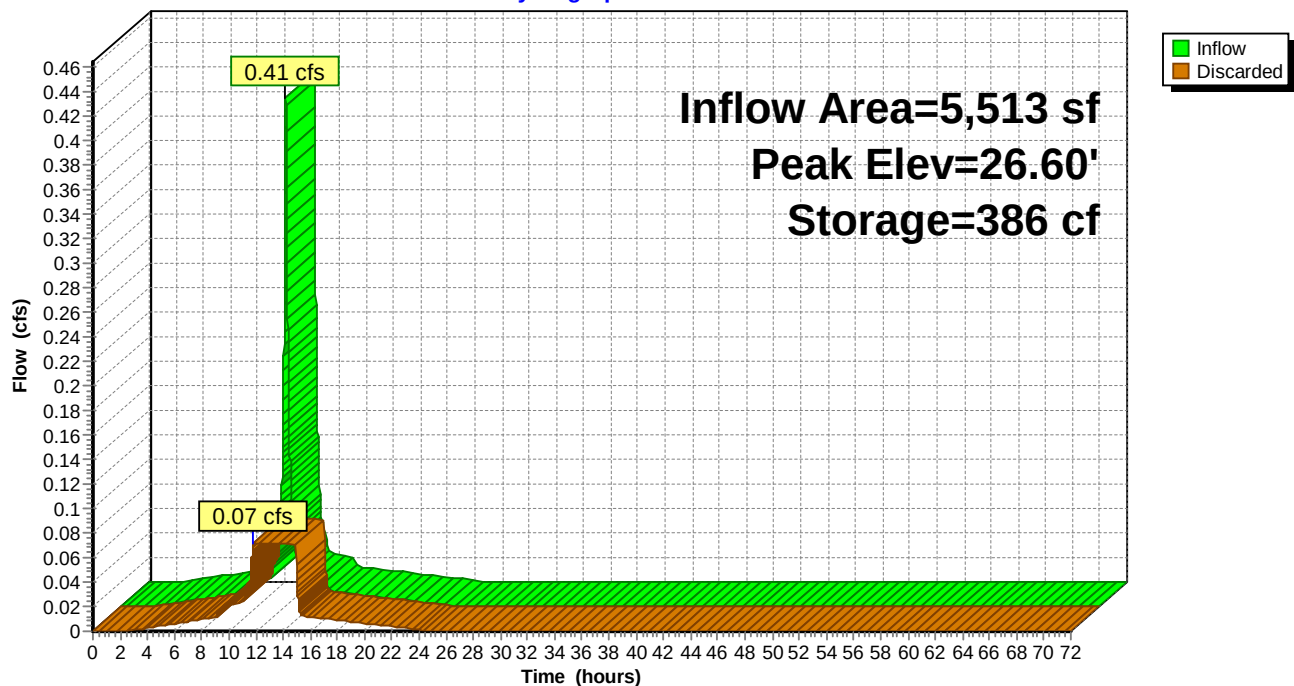
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 26.60' @ 12.60 hrs Surf.Area= 510 sf Storage= 386 cf

Plug-Flow detention time= 30.1 min calculated for 1,446 cf (100% of inflow)
 Center-of-Mass det. time= 30.1 min (787.2 - 757.0)

Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	737 cf	5.00'W x 102.00'L x 5.00'H Prismatoid 2,550 cf Overall - 707 cf Embedded = 1,843 cf x 40.0% Voids
#2	26.00'	707 cf	36.0" Round Pipe Storage Inside #1 L= 100.0'
1,444 cf			Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	25.00'	6.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.07 cfs @ 11.79 hrs HW=25.05' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.07 cfs)

Pond 4P: Infiltration**Hydrograph**

Post-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

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Hydrograph for Pond 4P: Infiltration

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0	25.00	0.00
2.00	0.00	0	25.00	0.00
4.00	0.00	0	25.00	0.00
6.00	0.01	1	25.00	0.01
8.00	0.01	1	25.01	0.01
10.00	0.02	3	25.01	0.02
12.00	0.21	55	25.27	0.07
14.00	0.02	191	25.94	0.07
16.00	0.01	2	25.01	0.01
18.00	0.01	1	25.01	0.01
20.00	0.01	1	25.00	0.01
22.00	0.00	1	25.00	0.00
24.00	0.00	0	25.00	0.00
26.00	0.00	0	25.00	0.00
28.00	0.00	0	25.00	0.00
30.00	0.00	0	25.00	0.00
32.00	0.00	0	25.00	0.00
34.00	0.00	0	25.00	0.00
36.00	0.00	0	25.00	0.00
38.00	0.00	0	25.00	0.00
40.00	0.00	0	25.00	0.00
42.00	0.00	0	25.00	0.00
44.00	0.00	0	25.00	0.00
46.00	0.00	0	25.00	0.00
48.00	0.00	0	25.00	0.00
50.00	0.00	0	25.00	0.00
52.00	0.00	0	25.00	0.00
54.00	0.00	0	25.00	0.00
56.00	0.00	0	25.00	0.00
58.00	0.00	0	25.00	0.00
60.00	0.00	0	25.00	0.00
62.00	0.00	0	25.00	0.00
64.00	0.00	0	25.00	0.00
66.00	0.00	0	25.00	0.00
68.00	0.00	0	25.00	0.00
70.00	0.00	0	25.00	0.00
72.00	0.00	0	25.00	0.00

Post-Development

Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

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Summary for Subcatchment DA-1Ai: DA-1Ai

Runoff = 0.05 cfs @ 12.14 hrs, Volume= 198 cf, Depth= 4.99"

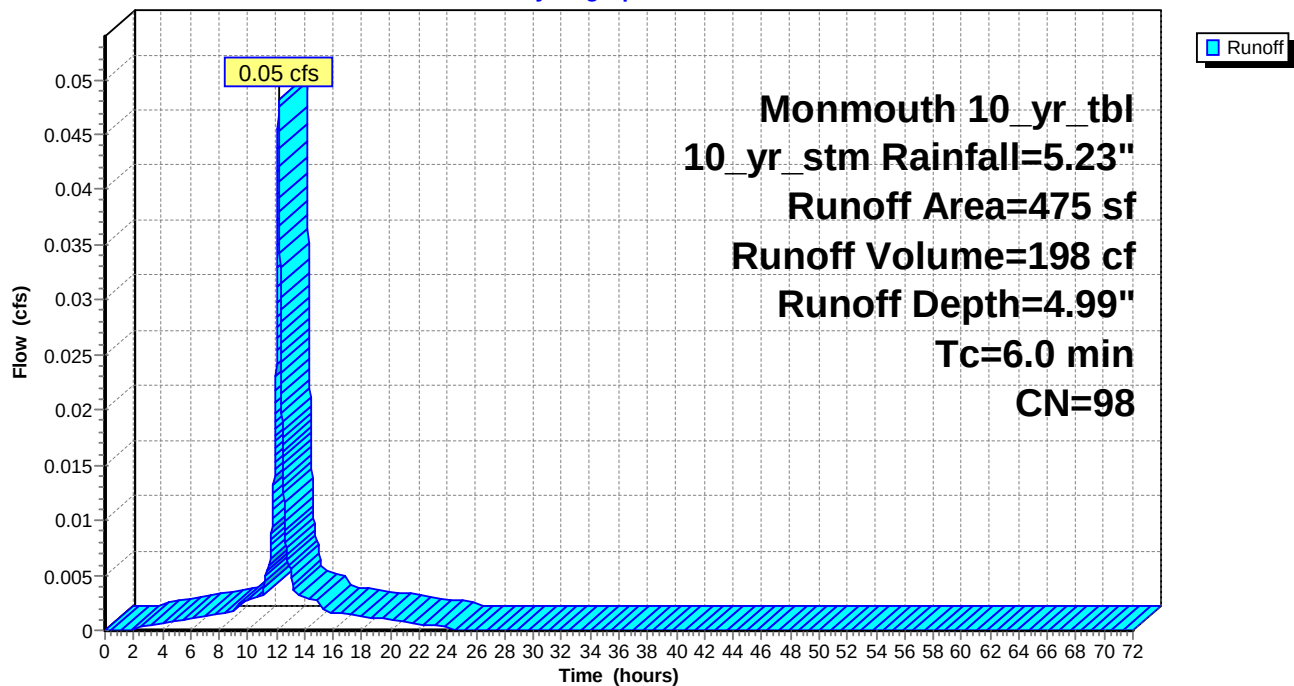
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

Area (sf)	CN	Description
110	98	Unconnected pavement, HSG D
365	98	Paved parking, HSG D
475	98	Weighted Average
475		100.00% Impervious Area
110		23.16% Unconnected

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

Subcatchment DA-1Ai: DA-1Ai

Hydrograph



Post-Development

Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

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Summary for Subcatchment DA-1Ap: DA-1Ap

Runoff = 0.32 cfs @ 12.14 hrs, Volume= 1,150 cf, Depth= 2.73"

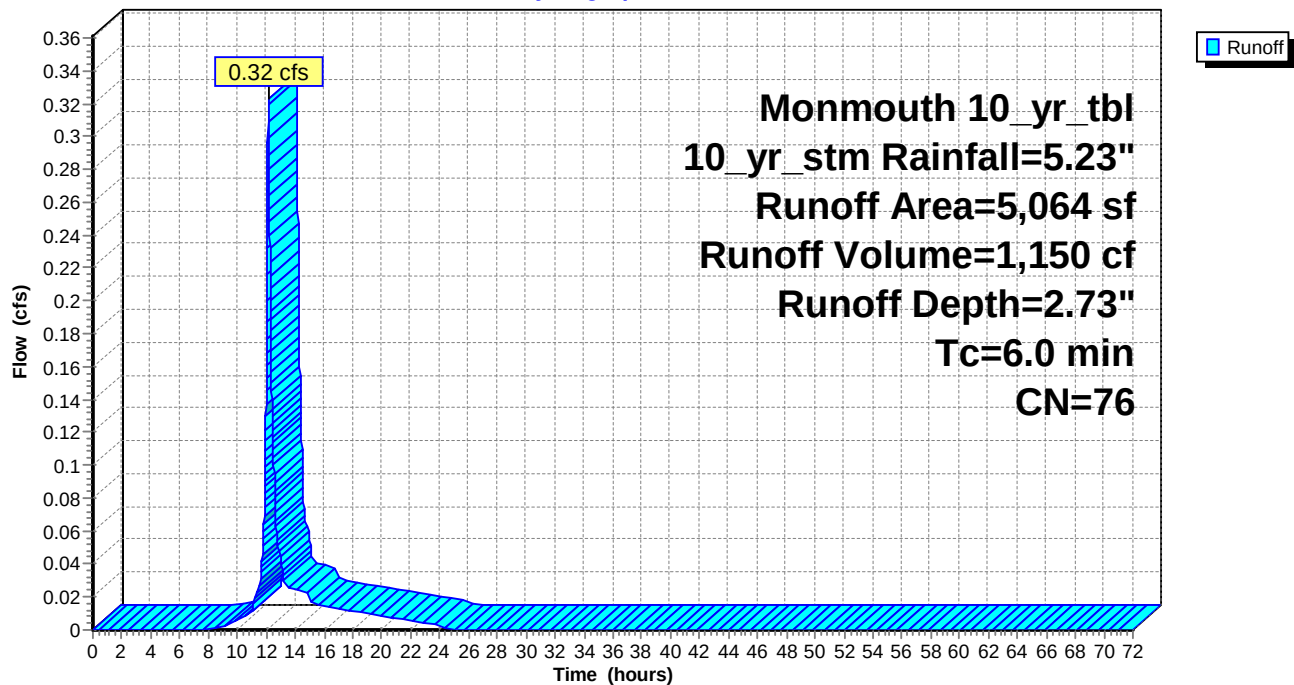
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

Area (sf)	CN	Description
1,042	61	>75% Grass cover, Good, HSG B
4,022	80	>75% Grass cover, Good, HSG D
5,064	76	Weighted Average
5,064		100.00% Pervious Area

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

Subcatchment DA-1Ap: DA-1Ap

Hydrograph



Post-Development

Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

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Summary for Subcatchment DA-1Bi: DA-1Bi

Runoff = 4.45 cfs @ 12.14 hrs, Volume= 18,275 cf, Depth= 4.99"

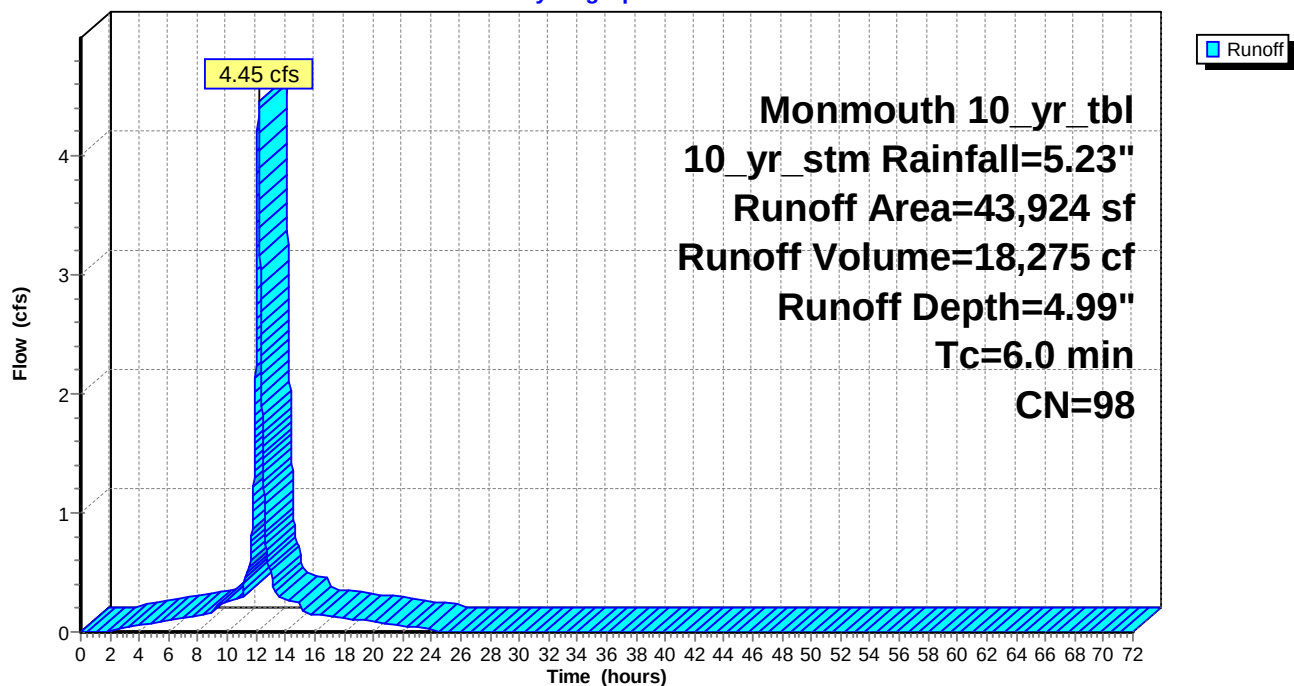
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

	Area (sf)	CN	Description
*	440	98	Pavement, HSG B
*	25,313	98	Pavement, HSG D
*	12,114	98	Roofs, HSG D
*	556	98	Roofs, HSG B
*	5,501	98	Concrete, HSG D
	43,924	98	Weighted Average
	43,924		100.00% Impervious Area

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

Subcatchment DA-1Bi: DA-1Bi

Hydrograph



Post-Development

Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

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Summary for Subcatchment DA-1Bp: DA-1Bp

Runoff = 2.11 cfs @ 12.14 hrs, Volume= 7,550 cf, Depth= 3.09"

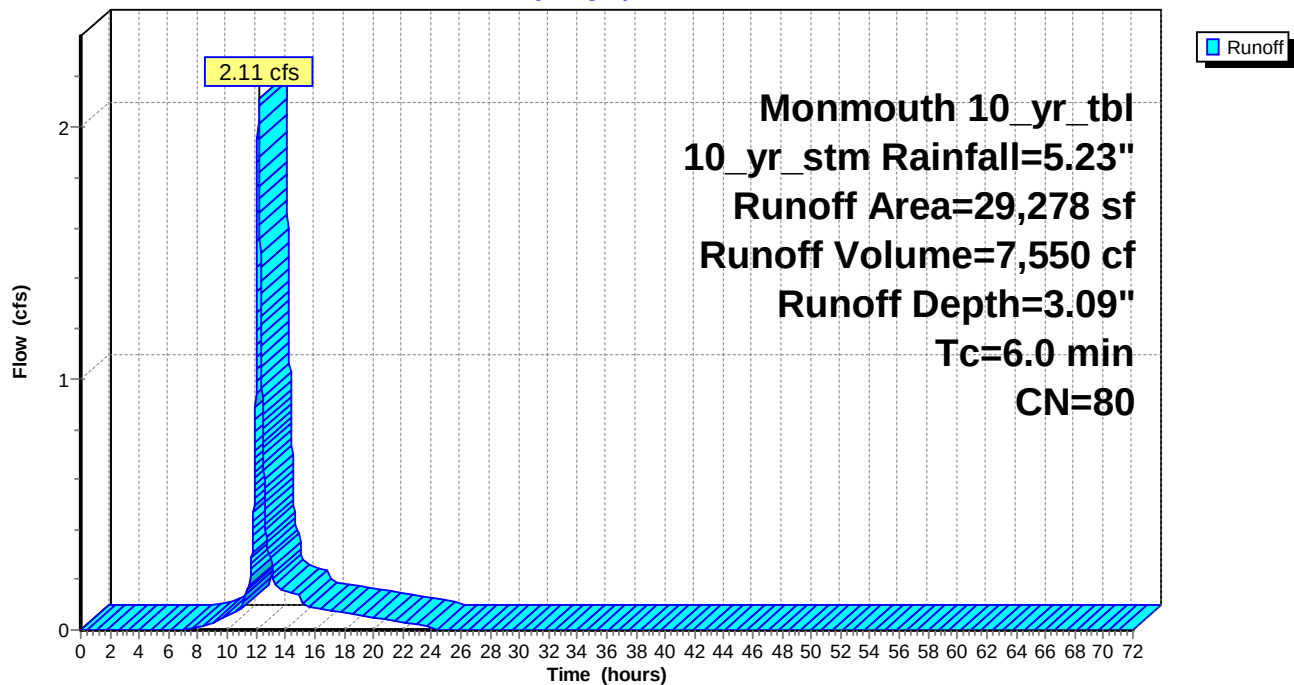
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

Area (sf)	CN	Description
86	61	>75% Grass cover, Good, HSG B
29,192	80	>75% Grass cover, Good, HSG D
29,278	80	Weighted Average
29,278		100.00% Pervious Area

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

Subcatchment DA-1Bp: DA-1Bp

Hydrograph



Post-Development

Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

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Summary for Subcatchment DA-1C: DA-1C

Runoff = 0.56 cfs @ 12.14 hrs, Volume= 2,294 cf, Depth= 4.99"

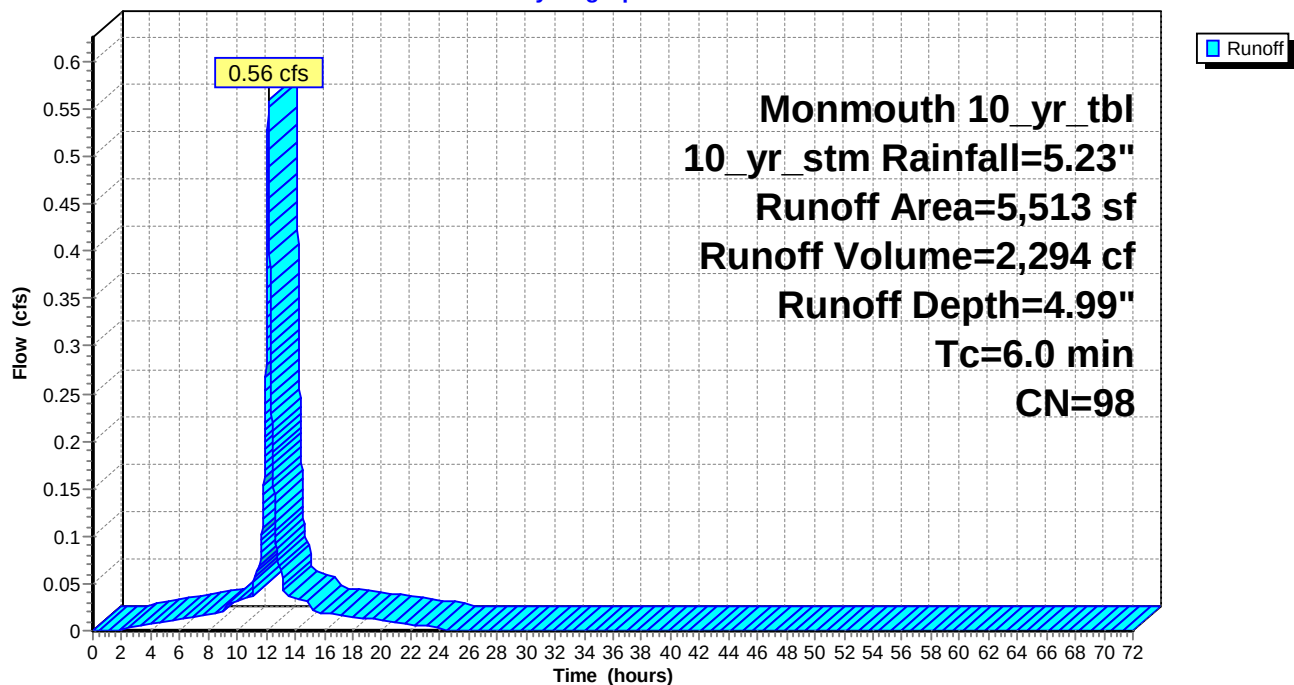
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

Area (sf)	CN	Description
* 5,513	98	Roofs, HSG D
5,513		100.00% Impervious Area

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

Subcatchment DA-1C: DA-1C

Hydrograph



Post-Development

Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

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Summary for Subcatchment DA-2i: DA-2i

Runoff = 0.16 cfs @ 12.38 hrs, Volume= 1,272 cf, Depth= 4.99"

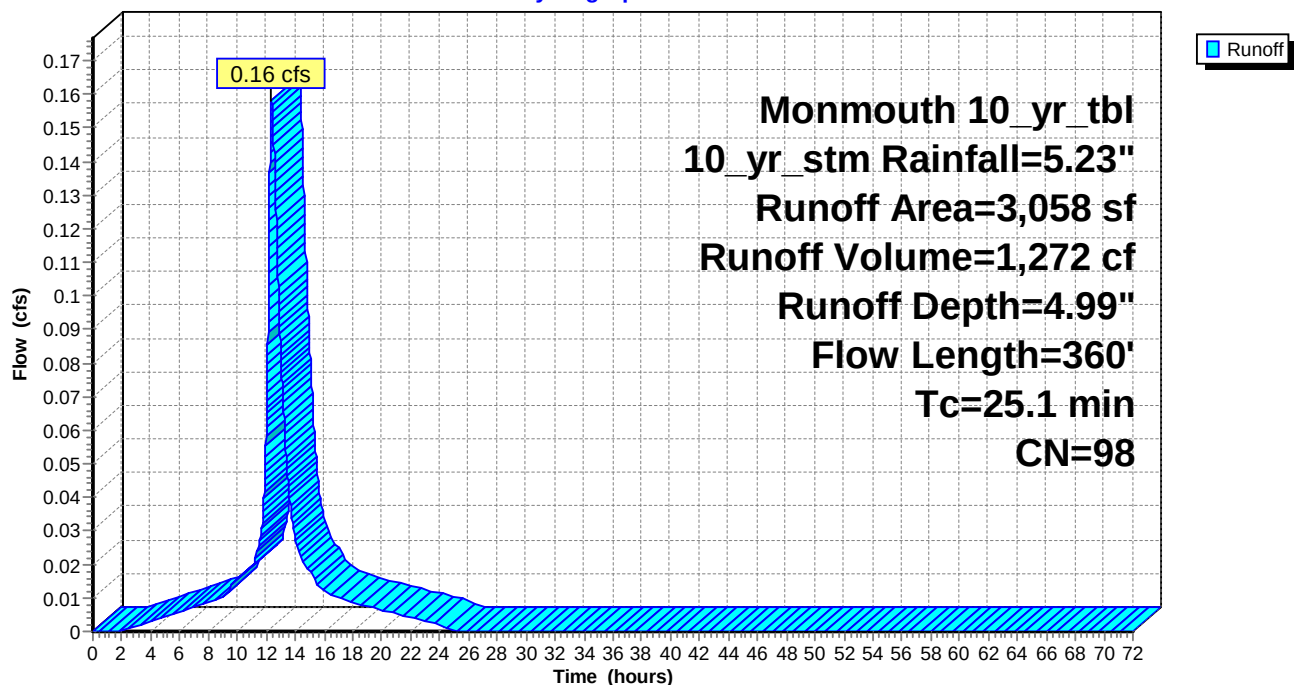
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

Area (sf)	CN	Description
2,099	98	Paved parking, HSG D
870	98	Unconnected pavement, HSG D
89	98	Unconnected pavement, HSG B
3,058	98	Weighted Average
3,058		100.00% Impervious Area
959		31.36% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0110	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.34"
12.4	232	0.0020	0.31		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	28	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.1	360	Total			

Subcatchment DA-2i: DA-2i

Hydrograph



Post-Development

Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

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Summary for Subcatchment DA-2p: DA-2p

Runoff = 0.49 cfs @ 12.39 hrs, Volume= 3,564 cf, Depth= 3.00"

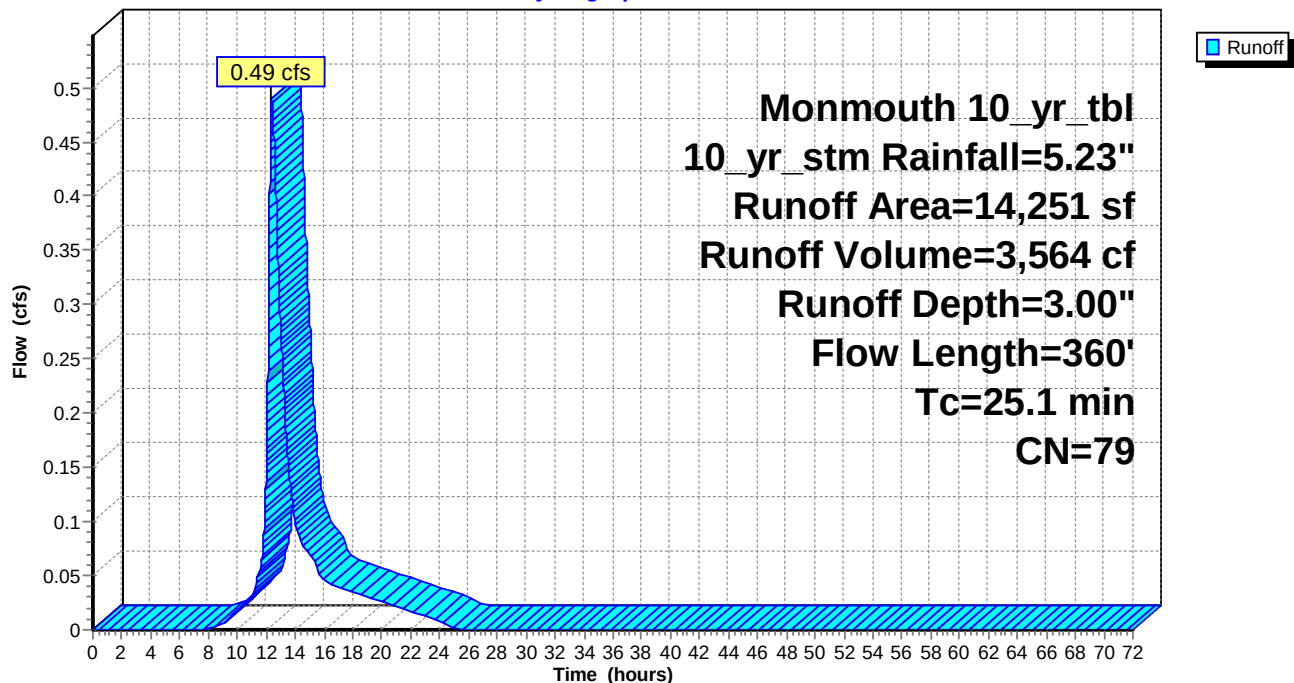
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

Area (sf)	CN	Description
561	61	>75% Grass cover, Good, HSG B
13,690	80	>75% Grass cover, Good, HSG D
14,251	79	Weighted Average
14,251		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0110	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.34"
12.4	232	0.0020	0.31		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	28	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.1	360	Total			

Subcatchment DA-2p: DA-2p

Hydrograph



Post-Development

Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

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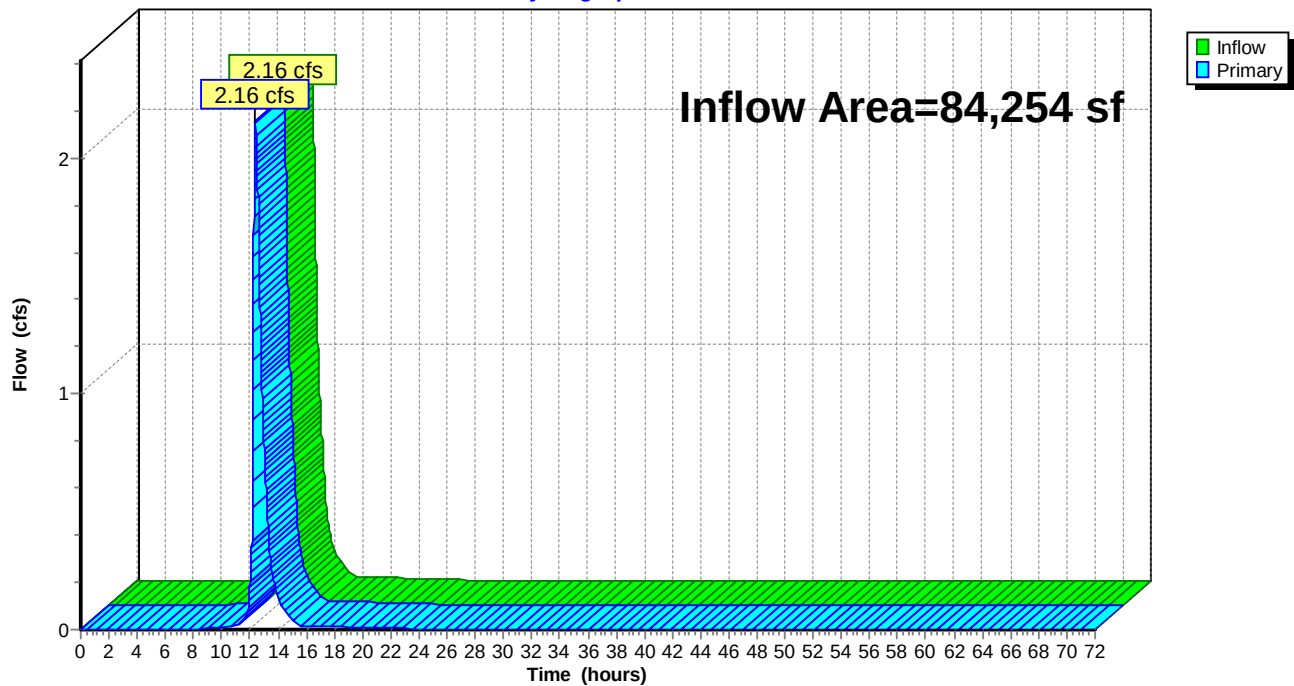
Summary for Pond 1P: DA-1

Inflow Area = 84,254 sf, 59.24% Impervious, Inflow Depth = 0.95" for 10_yr_stm event
 Inflow = 2.16 cfs @ 12.40 hrs, Volume= 6,699 cf
 Primary = 2.16 cfs @ 12.40 hrs, Volume= 6,699 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 1P: DA-1

Hydrograph



Post-Development

Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

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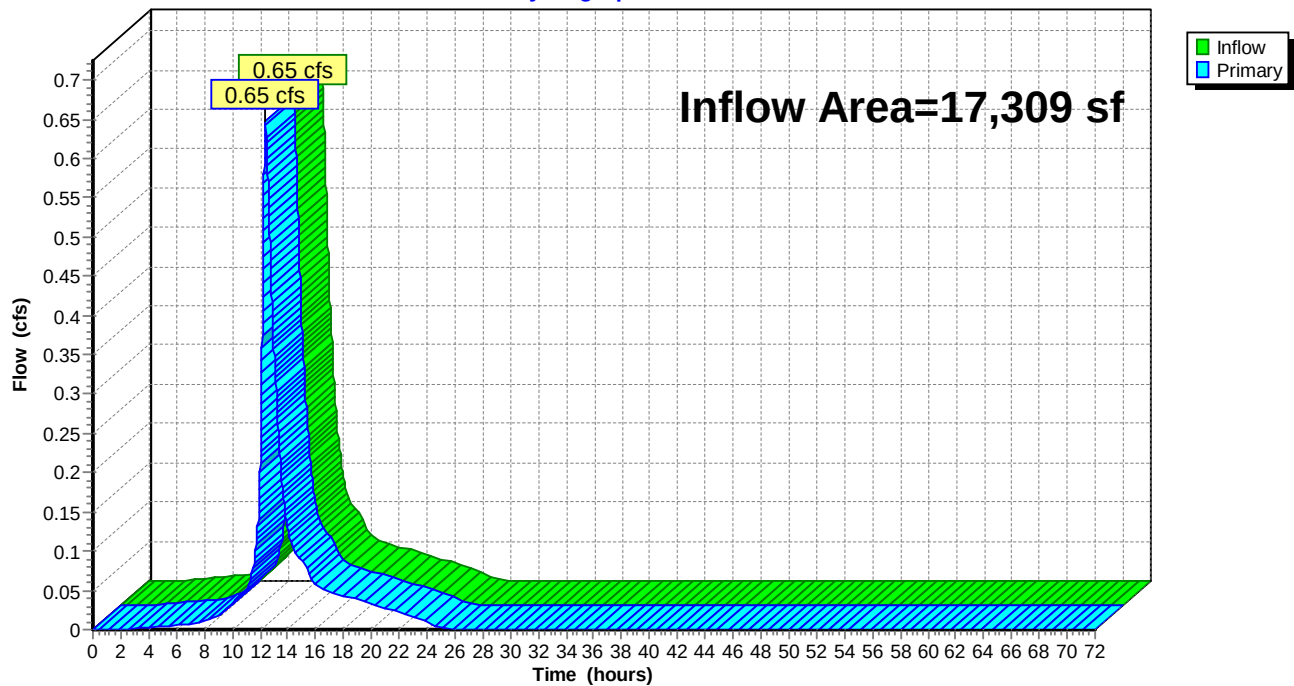
Summary for Pond 2P: DA-2

Inflow Area = 17,309 sf, 17.67% Impervious, Inflow Depth = 3.35" for 10_yr_stm event
 Inflow = 0.65 cfs @ 12.38 hrs, Volume= 4,836 cf
 Primary = 0.65 cfs @ 12.38 hrs, Volume= 4,836 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 2P: DA-2

Hydrograph



Post-Development

Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

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Summary for Pond 3P: Bioretention

Inflow Area = 73,202 sf, 60.00% Impervious, Inflow Depth = 4.23" for 10_yr_stm event
 Inflow = 6.56 cfs @ 12.14 hrs, Volume= 25,825 cf
 Outflow = 2.46 cfs @ 12.42 hrs, Volume= 25,825 cf, Atten= 62%, Lag= 16.6 min
 Discarded = 0.46 cfs @ 12.42 hrs, Volume= 20,475 cf
 Primary = 2.01 cfs @ 12.42 hrs, Volume= 5,351 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 28.45' @ 12.42 hrs Surf.Area= 3,309 sf Storage= 8,420 cf

Plug-Flow detention time= 125.2 min calculated for 25,822 cf (100% of inflow)
 Center-of-Mass det. time= 125.1 min (898.0 - 772.8)

Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	18,958 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.00	1,703	0	0
26.00	2,099	1,901	1,901
27.00	2,529	2,314	4,215
28.00	3,016	2,773	6,988
29.00	3,662	3,339	10,327
30.00	4,287	3,975	14,301
31.00	5,027	4,657	18,958

Device	Routing	Invert	Outlet Devices
#1	Primary	25.00'	15.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 25.00' / 24.75' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf
#2	Device 1	27.71'	11.7" W x 12.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	25.00'	6.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.46 cfs @ 12.42 hrs HW=28.45' (Free Discharge)

↑ **3=Exfiltration** (Exfiltration Controls 0.46 cfs)

Primary OutFlow Max=2.00 cfs @ 12.42 hrs HW=28.45' (Free Discharge)

↑ **1=Culvert** (Passes 2.00 cfs of 9.77 cfs potential flow)

↑ **2=Orifice/Grate** (Orifice Controls 2.00 cfs @ 2.77 fps)

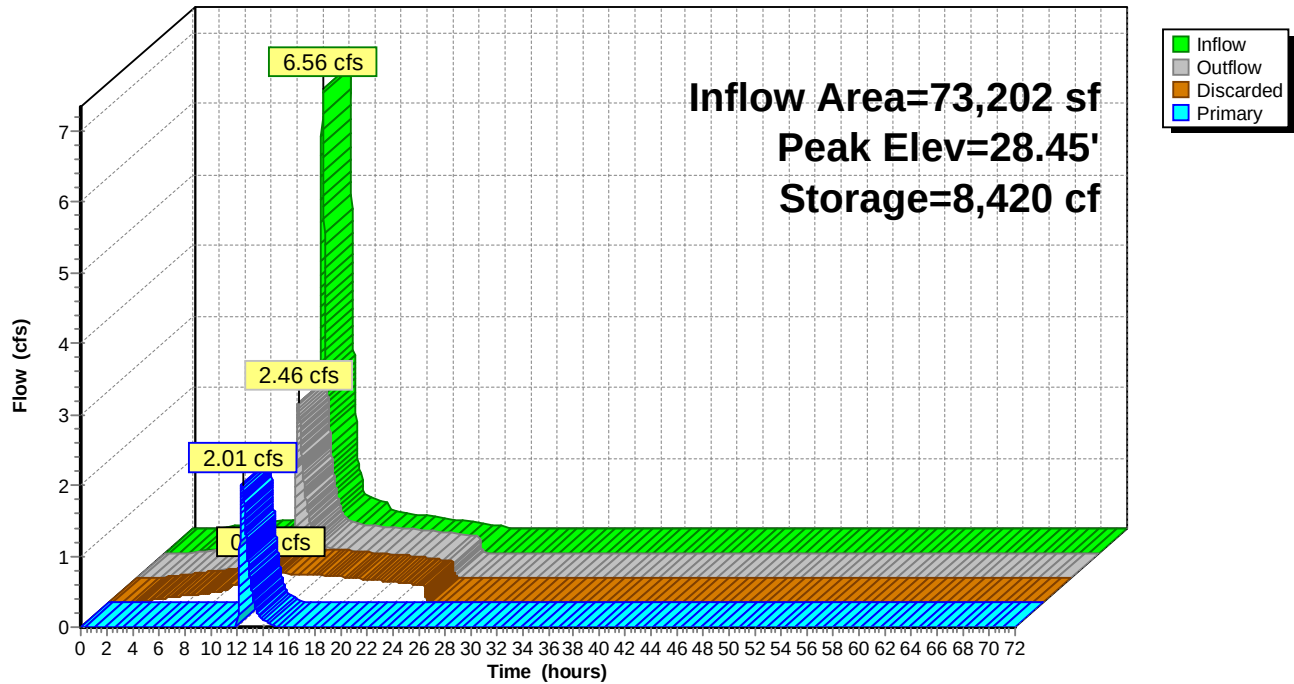
Post-Development

Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

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Pond 3P: Bioretention**Hydrograph**

Post-Development

Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

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Hydrograph for Pond 3P: Bioretention

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	25.00	0.00	0.00	0.00
2.00	0.01	4	25.00	0.01	0.01	0.00
4.00	0.06	23	25.01	0.05	0.05	0.00
6.00	0.10	41	25.02	0.10	0.10	0.00
8.00	0.15	61	25.04	0.14	0.14	0.00
10.00	0.31	222	25.13	0.24	0.24	0.00
12.00	3.49	3,354	26.65	0.33	0.33	0.00
14.00	0.42	6,428	27.81	0.51	0.41	0.10
16.00	0.23	5,738	27.57	0.39	0.39	0.00
18.00	0.19	4,546	27.13	0.36	0.36	0.00
20.00	0.14	3,232	26.60	0.33	0.33	0.00
22.00	0.09	1,818	25.96	0.29	0.29	0.00
24.00	0.04	336	25.19	0.25	0.25	0.00
26.00	0.00	0	25.00	0.00	0.00	0.00
28.00	0.00	0	25.00	0.00	0.00	0.00
30.00	0.00	0	25.00	0.00	0.00	0.00
32.00	0.00	0	25.00	0.00	0.00	0.00
34.00	0.00	0	25.00	0.00	0.00	0.00
36.00	0.00	0	25.00	0.00	0.00	0.00
38.00	0.00	0	25.00	0.00	0.00	0.00
40.00	0.00	0	25.00	0.00	0.00	0.00
42.00	0.00	0	25.00	0.00	0.00	0.00
44.00	0.00	0	25.00	0.00	0.00	0.00
46.00	0.00	0	25.00	0.00	0.00	0.00
48.00	0.00	0	25.00	0.00	0.00	0.00
50.00	0.00	0	25.00	0.00	0.00	0.00
52.00	0.00	0	25.00	0.00	0.00	0.00
54.00	0.00	0	25.00	0.00	0.00	0.00
56.00	0.00	0	25.00	0.00	0.00	0.00
58.00	0.00	0	25.00	0.00	0.00	0.00
60.00	0.00	0	25.00	0.00	0.00	0.00
62.00	0.00	0	25.00	0.00	0.00	0.00
64.00	0.00	0	25.00	0.00	0.00	0.00
66.00	0.00	0	25.00	0.00	0.00	0.00
68.00	0.00	0	25.00	0.00	0.00	0.00
70.00	0.00	0	25.00	0.00	0.00	0.00
72.00	0.00	0	25.00	0.00	0.00	0.00

Post-Development

Monmouth 10_yr_tbl 10_yr_stm Rainfall=5.23"

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Summary for Pond 4P: Infiltration

Inflow Area = 5,513 sf, 100.00% Impervious, Inflow Depth = 4.99" for 10_yr_stm event
 Inflow = 0.56 cfs @ 12.14 hrs, Volume= 2,294 cf
 Outflow = 0.07 cfs @ 11.59 hrs, Volume= 2,294 cf, Atten= 87%, Lag= 0.0 min
 Discarded = 0.07 cfs @ 11.59 hrs, Volume= 2,294 cf

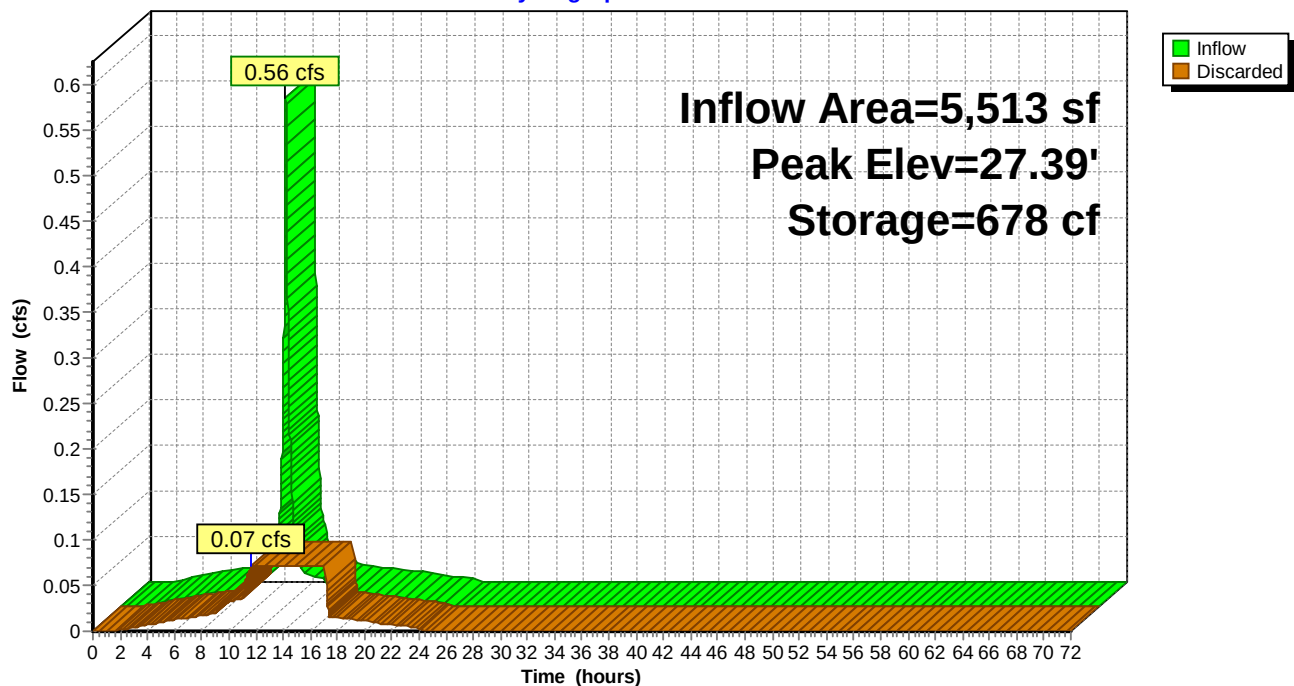
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 27.39' @ 12.81 hrs Surf.Area= 510 sf Storage= 678 cf

Plug-Flow detention time= 58.4 min calculated for 2,293 cf (100% of inflow)
 Center-of-Mass det. time= 58.4 min (809.1 - 750.7)

Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	737 cf	5.00'W x 102.00'L x 5.00'H Prismatoid 2,550 cf Overall - 707 cf Embedded = 1,843 cf x 40.0% Voids
#2	26.00'	707 cf	36.0" Round Pipe Storage Inside #1 L= 100.0'
1,444 cf			Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	25.00'	6.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.07 cfs @ 11.59 hrs HW=25.05' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.07 cfs)

Pond 4P: Infiltration**Hydrograph**

Post-Development

Monmouth 10_yr_tbf 10_yr_stm Rainfall=5.23"

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Hydrograph for Pond 4P: Infiltration

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0	25.00	0.00
2.00	0.00	0	25.00	0.00
4.00	0.01	1	25.00	0.01
6.00	0.01	2	25.01	0.01
8.00	0.02	2	25.01	0.02
10.00	0.03	5	25.02	0.03
12.00	0.31	133	25.65	0.07
14.00	0.03	565	27.09	0.07
16.00	0.02	247	26.17	0.07
18.00	0.01	2	25.01	0.01
20.00	0.01	2	25.01	0.01
22.00	0.01	1	25.00	0.01
24.00	0.00	0	25.00	0.00
26.00	0.00	0	25.00	0.00
28.00	0.00	0	25.00	0.00
30.00	0.00	0	25.00	0.00
32.00	0.00	0	25.00	0.00
34.00	0.00	0	25.00	0.00
36.00	0.00	0	25.00	0.00
38.00	0.00	0	25.00	0.00
40.00	0.00	0	25.00	0.00
42.00	0.00	0	25.00	0.00
44.00	0.00	0	25.00	0.00
46.00	0.00	0	25.00	0.00
48.00	0.00	0	25.00	0.00
50.00	0.00	0	25.00	0.00
52.00	0.00	0	25.00	0.00
54.00	0.00	0	25.00	0.00
56.00	0.00	0	25.00	0.00
58.00	0.00	0	25.00	0.00
60.00	0.00	0	25.00	0.00
62.00	0.00	0	25.00	0.00
64.00	0.00	0	25.00	0.00
66.00	0.00	0	25.00	0.00
68.00	0.00	0	25.00	0.00
70.00	0.00	0	25.00	0.00
72.00	0.00	0	25.00	0.00

Post-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

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Summary for Subcatchment DA-1Ai: DA-1Ai

Runoff = 0.06 cfs @ 12.14 hrs, Volume= 344 cf, Depth= 8.69"

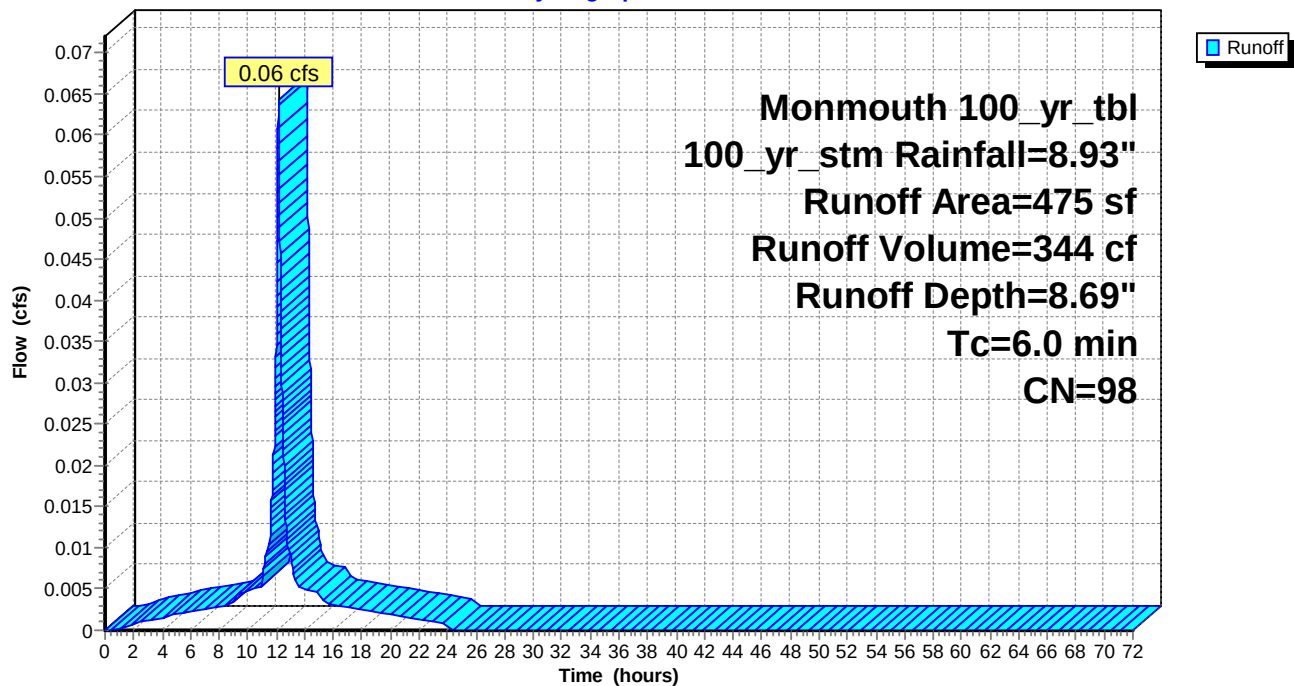
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

Area (sf)	CN	Description
110	98	Unconnected pavement, HSG D
365	98	Paved parking, HSG D
475	98	Weighted Average
475		100.00% Impervious Area
110		23.16% Unconnected

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

Subcatchment DA-1Ai: DA-1Ai

Hydrograph



Post-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

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Summary for Subcatchment DA-1Ap: DA-1Ap

Runoff = 0.55 cfs @ 12.14 hrs, Volume= 2,537 cf, Depth= 6.01"

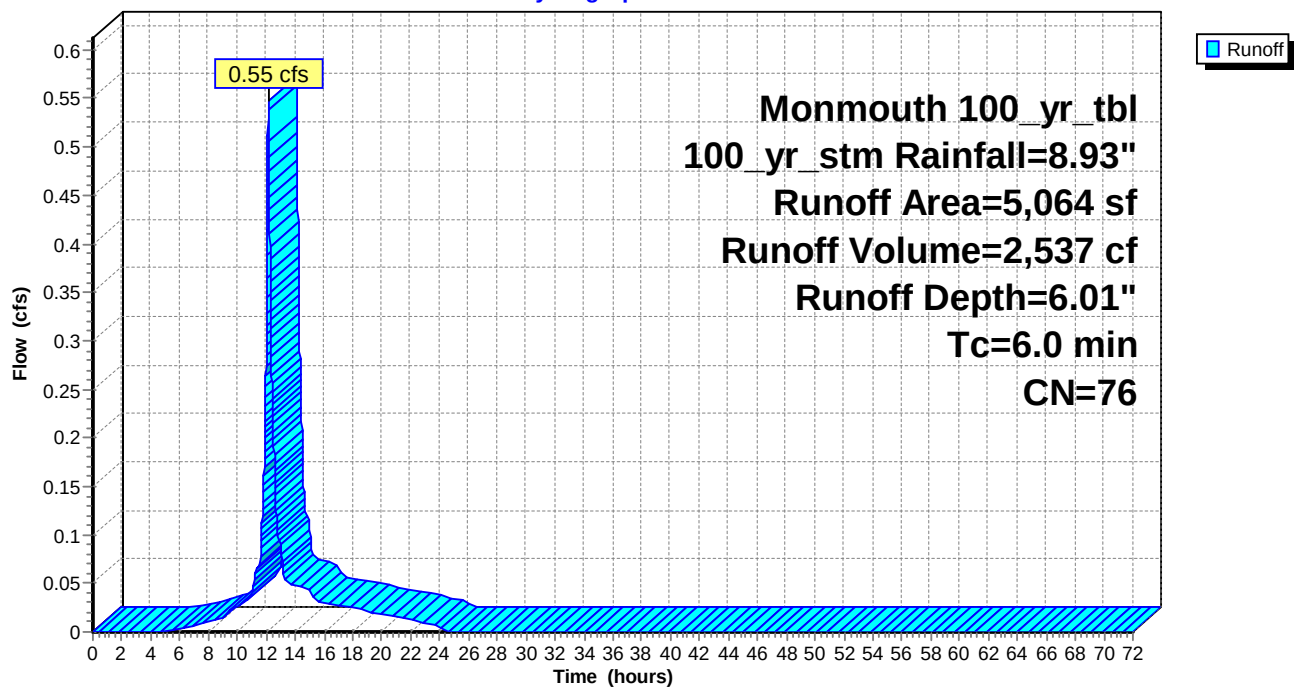
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

Area (sf)	CN	Description
1,042	61	>75% Grass cover, Good, HSG B
4,022	80	>75% Grass cover, Good, HSG D
5,064	76	Weighted Average
5,064		100.00% Pervious Area

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

Subcatchment DA-1Ap: DA-1Ap

Hydrograph



Post-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

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Summary for Subcatchment DA-1Bi: DA-1Bi

Runoff = 5.94 cfs @ 12.14 hrs, Volume= 31,807 cf, Depth= 8.69"

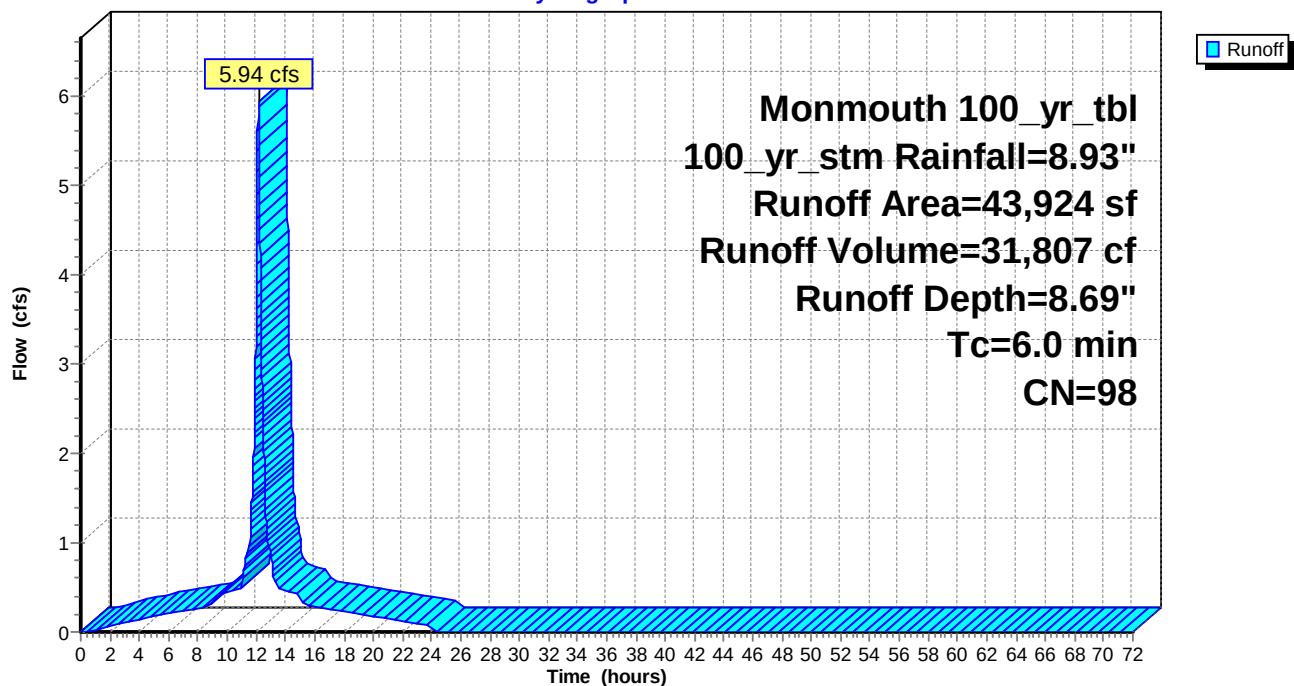
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

	Area (sf)	CN	Description
*	440	98	Pavement, HSG B
*	25,313	98	Pavement, HSG D
*	12,114	98	Roofs, HSG D
*	556	98	Roofs, HSG B
*	5,501	98	Concrete, HSG D
	43,924	98	Weighted Average
	43,924		100.00% Impervious Area

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

Subcatchment DA-1Bi: DA-1Bi

Hydrograph



Post-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

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Summary for Subcatchment DA-1Bp: DA-1Bp

Runoff = 3.38 cfs @ 12.14 hrs, Volume= 15,863 cf, Depth= 6.50"

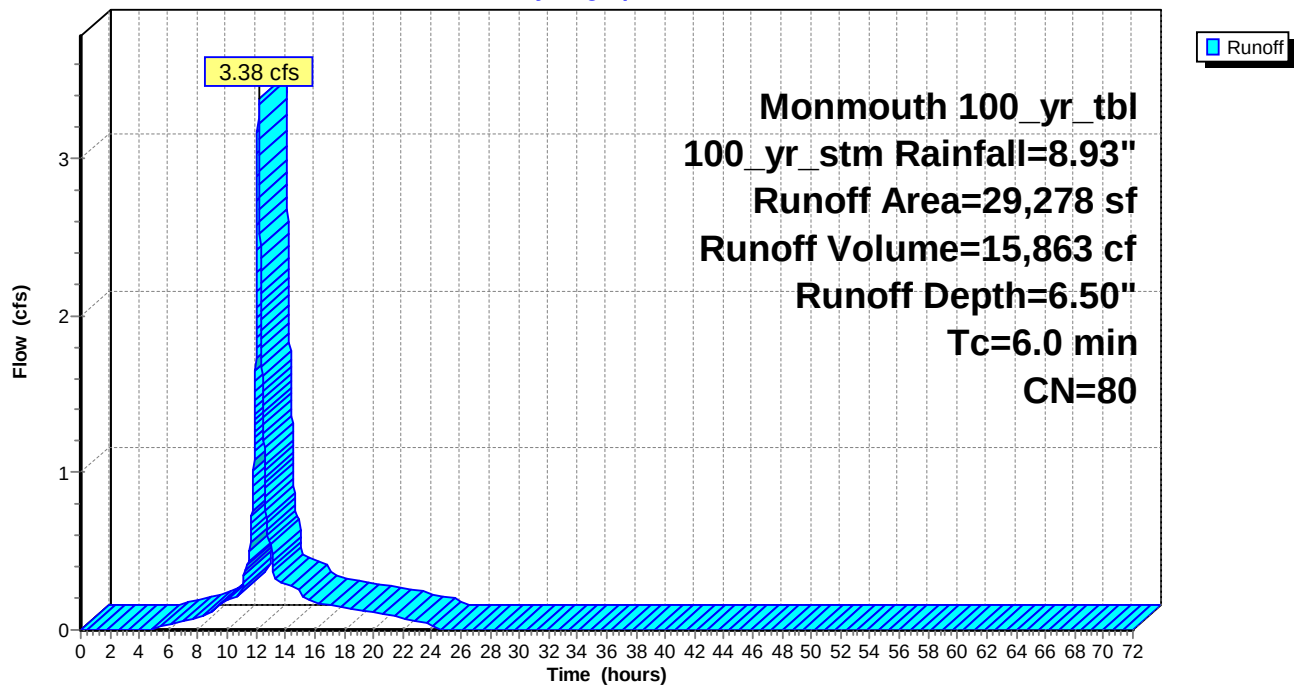
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

Area (sf)	CN	Description
86	61	>75% Grass cover, Good, HSG B
29,192	80	>75% Grass cover, Good, HSG D
29,278	80	Weighted Average
29,278		100.00% Pervious Area

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

Subcatchment DA-1Bp: DA-1Bp

Hydrograph



Post-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

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Summary for Subcatchment DA-1C: DA-1C

Runoff = 0.75 cfs @ 12.14 hrs, Volume= 3,992 cf, Depth= 8.69"

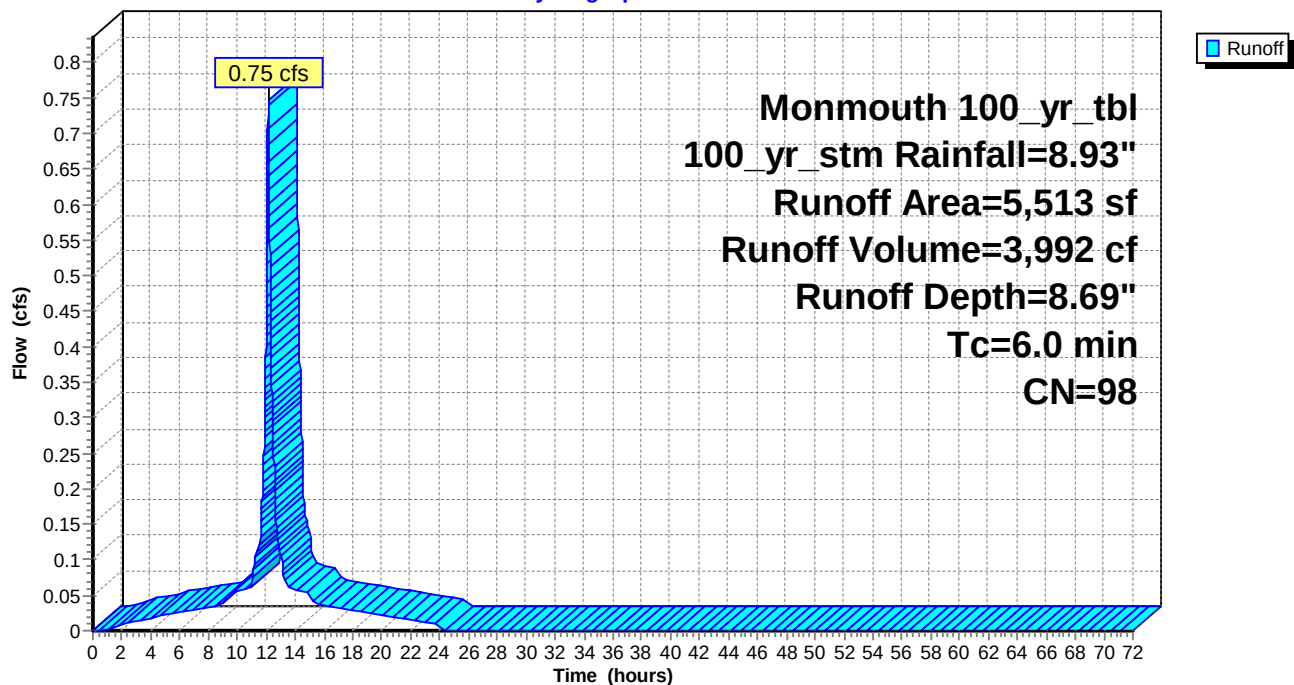
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

	Area (sf)	CN	Description
*	5,513	98	Roofs, HSG D
	5,513		100.00% Impervious Area

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

Subcatchment DA-1C: DA-1C

Hydrograph



Post-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

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Summary for Subcatchment DA-2i: DA-2i

Runoff = 0.22 cfs @ 12.38 hrs, Volume= 2,214 cf, Depth= 8.69"

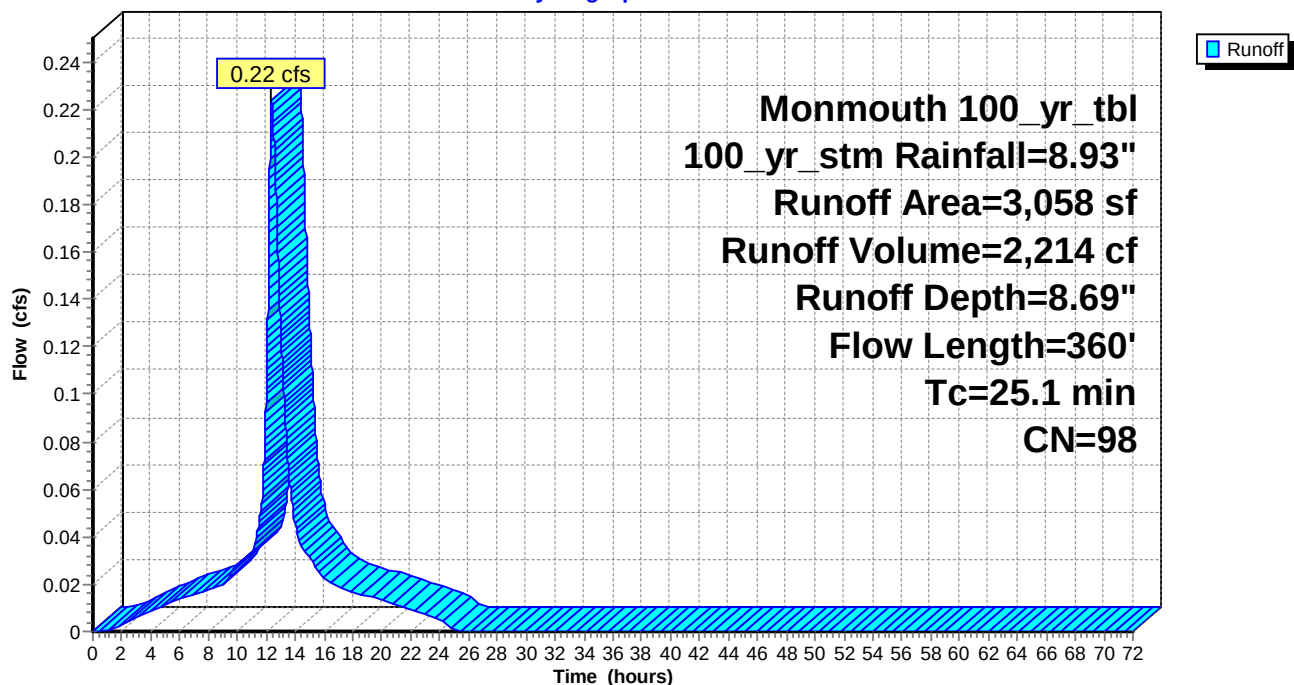
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

Area (sf)	CN	Description
2,099	98	Paved parking, HSG D
870	98	Unconnected pavement, HSG D
89	98	Unconnected pavement, HSG B
3,058	98	Weighted Average
3,058		100.00% Impervious Area
959		31.36% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0110	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.34"
12.4	232	0.0020	0.31		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	28	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.1	360	Total			

Subcatchment DA-2i: DA-2i

Hydrograph



Post-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

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Summary for Subcatchment DA-2p: DA-2p

Runoff = 0.86 cfs @ 12.38 hrs, Volume= 7,576 cf, Depth= 6.38"

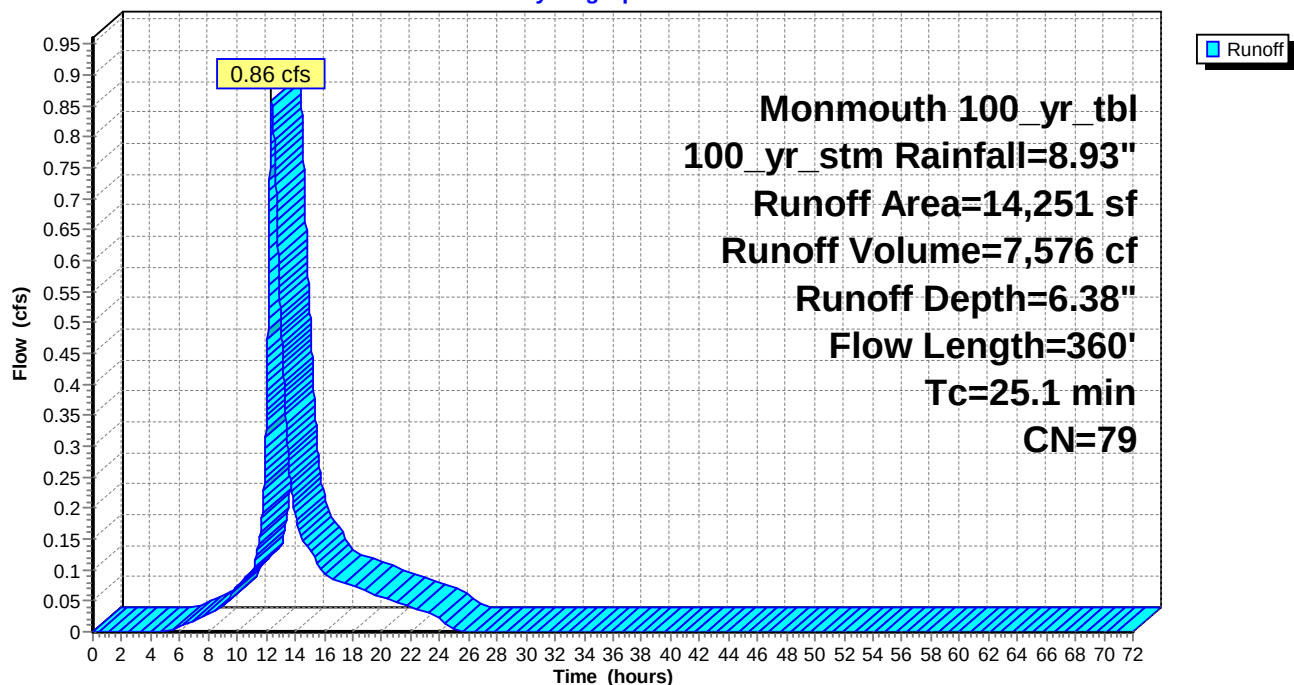
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

Area (sf)	CN	Description
561	61	>75% Grass cover, Good, HSG B
13,690	80	>75% Grass cover, Good, HSG D
14,251	79	Weighted Average
14,251		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0110	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.34"
12.4	232	0.0020	0.31		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.5	28	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
25.1	360	Total			

Subcatchment DA-2p: DA-2p

Hydrograph



Post-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

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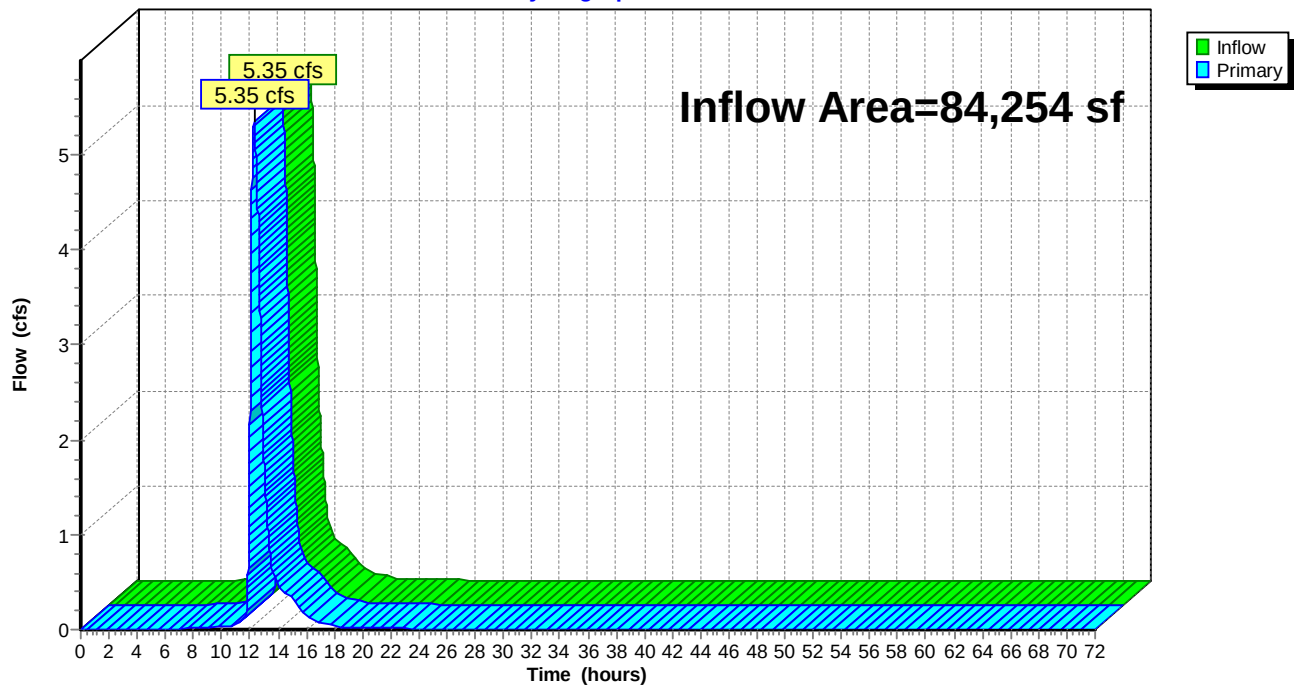
Summary for Pond 1P: DA-1

Inflow Area = 84,254 sf, 59.24% Impervious, Inflow Depth = 3.08" for 100_yr_stm event
 Inflow = 5.35 cfs @ 12.29 hrs, Volume= 21,622 cf
 Primary = 5.35 cfs @ 12.29 hrs, Volume= 21,622 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 1P: DA-1

Hydrograph



Post-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

Prepared by {enter your company name here}

Printed 10/5/2022

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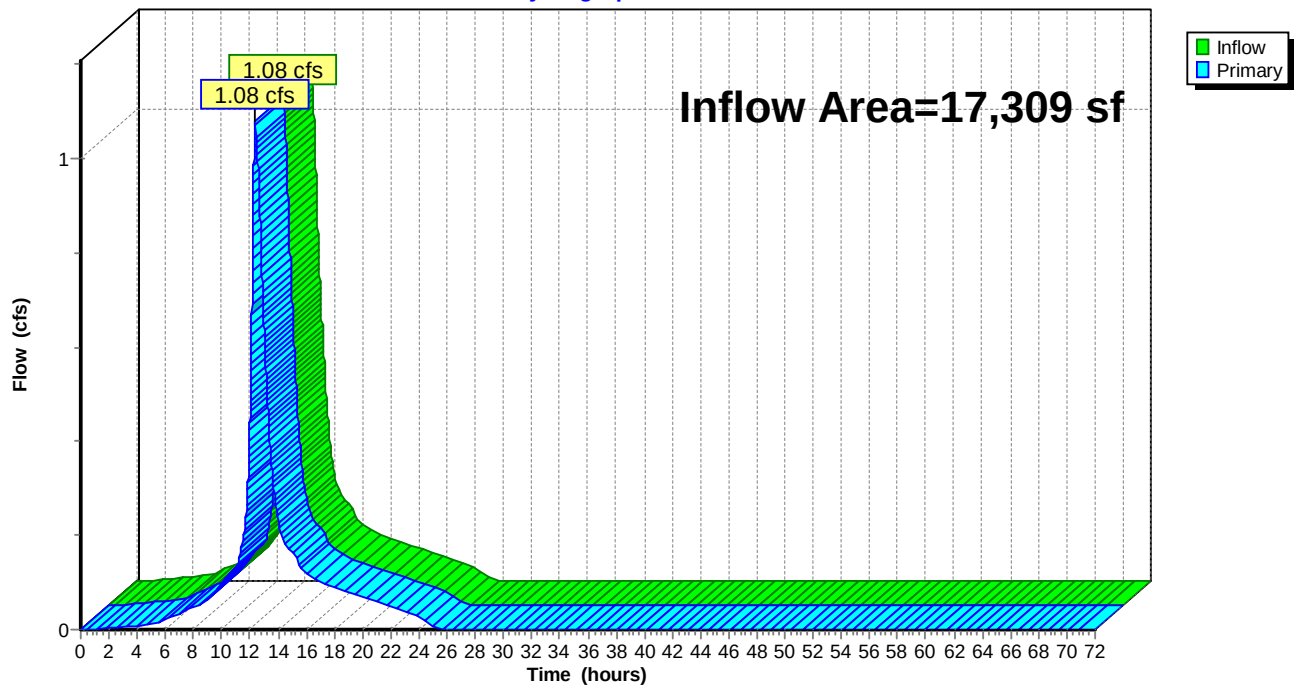
Summary for Pond 2P: DA-2

Inflow Area = 17,309 sf, 17.67% Impervious, Inflow Depth = 6.79" for 100_yr_stm event
 Inflow = 1.08 cfs @ 12.38 hrs, Volume= 9,790 cf
 Primary = 1.08 cfs @ 12.38 hrs, Volume= 9,790 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 2P: DA-2

Hydrograph



Post-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

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Summary for Pond 3P: Bioretention

Inflow Area = 73,202 sf, 60.00% Impervious, Inflow Depth = 7.81" for 100_yr_stm event
 Inflow = 9.32 cfs @ 12.14 hrs, Volume= 47,670 cf
 Outflow = 5.51 cfs @ 12.32 hrs, Volume= 47,670 cf, Atten= 41%, Lag= 10.8 min
 Discarded = 0.54 cfs @ 12.32 hrs, Volume= 28,929 cf
 Primary = 4.97 cfs @ 12.32 hrs, Volume= 18,741 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 29.35' @ 12.32 hrs Surf.Area= 3,880 sf Storage= 11,641 cf

Plug-Flow detention time= 112.4 min calculated for 47,664 cf (100% of inflow)
 Center-of-Mass det. time= 112.4 min (879.2 - 766.8)

Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	18,958 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.00	1,703	0	0
26.00	2,099	1,901	1,901
27.00	2,529	2,314	4,215
28.00	3,016	2,773	6,988
29.00	3,662	3,339	10,327
30.00	4,287	3,975	14,301
31.00	5,027	4,657	18,958

Device	Routing	Invert	Outlet Devices
#1	Primary	25.00'	15.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 25.00' / 24.75' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf
#2	Device 1	27.71'	11.7" W x 12.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	25.00'	6.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.54 cfs @ 12.32 hrs HW=29.35' (Free Discharge)

↑ **3=Exfiltration** (Exfiltration Controls 0.54 cfs)

Primary OutFlow Max=4.97 cfs @ 12.32 hrs HW=29.35' (Free Discharge)

↑ **1=Culvert** (Passes 4.97 cfs of 11.40 cfs potential flow)

↑ **2=Orifice/Grate** (Orifice Controls 4.97 cfs @ 5.09 fps)

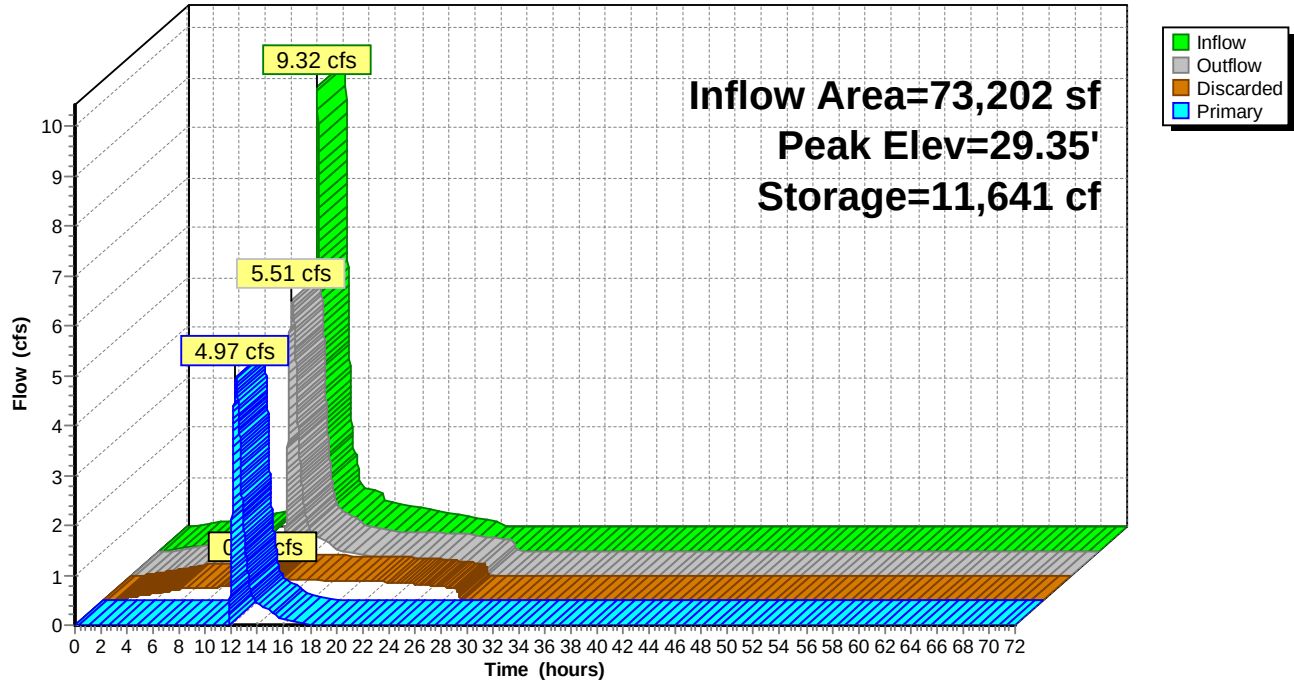
Post-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

Prepared by {enter your company name here}

Printed 10/5/2022

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Pond 3P: Bioretention**Hydrograph**

Post-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

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Hydrograph for Pond 3P: Bioretention

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	25.00	0.00	0.00	0.00
2.00	0.07	25	25.01	0.06	0.06	0.00
4.00	0.15	61	25.04	0.14	0.14	0.00
6.00	0.24	102	25.06	0.24	0.24	0.00
8.00	0.35	478	25.27	0.25	0.25	0.00
10.00	0.64	1,951	26.02	0.29	0.29	0.00
12.00	5.28	8,275	28.41	2.28	0.46	1.83
14.00	0.76	6,902	27.97	0.84	0.42	0.42
16.00	0.46	6,433	27.81	0.51	0.41	0.11
18.00	0.37	6,181	27.73	0.41	0.40	0.01
20.00	0.28	5,697	27.56	0.39	0.39	0.00
22.00	0.19	4,695	27.19	0.36	0.36	0.00
24.00	0.10	3,268	26.61	0.33	0.33	0.00
26.00	0.00	1,165	25.64	0.27	0.27	0.00
28.00	0.00	0	25.00	0.00	0.00	0.00
30.00	0.00	0	25.00	0.00	0.00	0.00
32.00	0.00	0	25.00	0.00	0.00	0.00
34.00	0.00	0	25.00	0.00	0.00	0.00
36.00	0.00	0	25.00	0.00	0.00	0.00
38.00	0.00	0	25.00	0.00	0.00	0.00
40.00	0.00	0	25.00	0.00	0.00	0.00
42.00	0.00	0	25.00	0.00	0.00	0.00
44.00	0.00	0	25.00	0.00	0.00	0.00
46.00	0.00	0	25.00	0.00	0.00	0.00
48.00	0.00	0	25.00	0.00	0.00	0.00
50.00	0.00	0	25.00	0.00	0.00	0.00
52.00	0.00	0	25.00	0.00	0.00	0.00
54.00	0.00	0	25.00	0.00	0.00	0.00
56.00	0.00	0	25.00	0.00	0.00	0.00
58.00	0.00	0	25.00	0.00	0.00	0.00
60.00	0.00	0	25.00	0.00	0.00	0.00
62.00	0.00	0	25.00	0.00	0.00	0.00
64.00	0.00	0	25.00	0.00	0.00	0.00
66.00	0.00	0	25.00	0.00	0.00	0.00
68.00	0.00	0	25.00	0.00	0.00	0.00
70.00	0.00	0	25.00	0.00	0.00	0.00
72.00	0.00	0	25.00	0.00	0.00	0.00

Post-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

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Summary for Pond 4P: Infiltration

Inflow Area = 5,513 sf, 100.00% Impervious, Inflow Depth = 8.69" for 100_yr_stm event
 Inflow = 0.75 cfs @ 12.14 hrs, Volume= 3,992 cf
 Outflow = 0.07 cfs @ 11.11 hrs, Volume= 3,992 cf, Atten= 91%, Lag= 0.0 min
 Discarded = 0.07 cfs @ 11.11 hrs, Volume= 3,992 cf

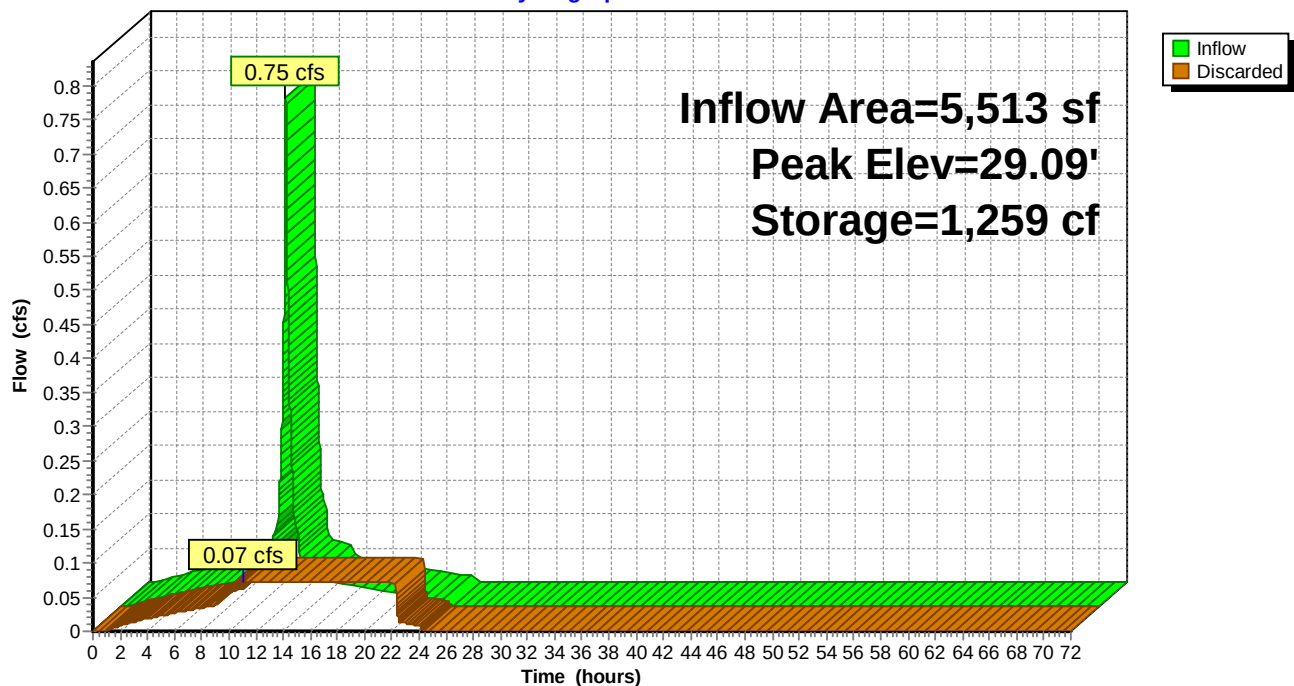
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 29.09' @ 13.24 hrs Surf.Area= 510 sf Storage= 1,259 cf

Plug-Flow detention time= 126.5 min calculated for 3,992 cf (100% of inflow)
 Center-of-Mass det. time= 126.5 min (870.5 - 744.1)

Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	737 cf	5.00'W x 102.00'L x 5.00'H Prismatoid 2,550 cf Overall - 707 cf Embedded = 1,843 cf x 40.0% Voids
#2	26.00'	707 cf	36.0" Round Pipe Storage Inside #1 L= 100.0'
		1,444 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	25.00'	6.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.07 cfs @ 11.11 hrs HW=25.05' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.07 cfs)

Pond 4P: Infiltration**Hydrograph**

Post-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

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Hydrograph for Pond 4P: Infiltration

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0	25.00	0.00
2.00	0.01	1	25.01	0.01
4.00	0.02	3	25.01	0.02
6.00	0.03	4	25.02	0.03
8.00	0.03	5	25.02	0.03
10.00	0.06	8	25.04	0.06
12.00	0.43	334	26.45	0.07
14.00	0.06	1,234	28.98	0.07
16.00	0.04	1,068	28.43	0.07
18.00	0.03	791	27.68	0.07
20.00	0.02	464	26.82	0.07
22.00	0.01	87	25.42	0.07
24.00	0.01	1	25.01	0.01
26.00	0.00	0	25.00	0.00
28.00	0.00	0	25.00	0.00
30.00	0.00	0	25.00	0.00
32.00	0.00	0	25.00	0.00
34.00	0.00	0	25.00	0.00
36.00	0.00	0	25.00	0.00
38.00	0.00	0	25.00	0.00
40.00	0.00	0	25.00	0.00
42.00	0.00	0	25.00	0.00
44.00	0.00	0	25.00	0.00
46.00	0.00	0	25.00	0.00
48.00	0.00	0	25.00	0.00
50.00	0.00	0	25.00	0.00
52.00	0.00	0	25.00	0.00
54.00	0.00	0	25.00	0.00
56.00	0.00	0	25.00	0.00
58.00	0.00	0	25.00	0.00
60.00	0.00	0	25.00	0.00
62.00	0.00	0	25.00	0.00
64.00	0.00	0	25.00	0.00
66.00	0.00	0	25.00	0.00
68.00	0.00	0	25.00	0.00
70.00	0.00	0	25.00	0.00
72.00	0.00	0	25.00	0.00

APPENDIX C

INFILTRATION ANALYSIS

Post-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

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Hydrograph for Pond 3P: Bioretention

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	25.00	0.00	0.00	0.00
2.00	0.07	25	25.01	0.06	0.06	0.00
4.00	0.15	61	25.04	0.14	0.14	0.00
6.00	0.24	102	25.06	0.24	0.24	0.00
8.00	0.35	478	25.27	0.25	0.25	0.00
10.00	0.64	1,951	26.02	0.29	0.29	0.00
12.00	5.28	8,275	28.41	2.28	0.46	1.83
14.00	0.76	6,902	27.97	0.84	0.42	0.42
16.00	0.46	6,433	27.81	0.51	0.41	0.11
18.00	0.37	6,181	27.73	0.41	0.40	0.01
20.00	0.28	5,697	27.56	0.39	0.39	0.00
22.00	0.19	4,695	27.19	0.36	0.36	0.00
24.00	0.10	3,268	26.61	0.33	0.33	0.00
26.00	0.00	1,165	25.64	0.27	0.27	0.00
28.00	0.00	0	25.00	0.00	0.00	0.00
30.00	0.00	0	25.00	0.00	0.00	0.00
32.00	0.00	0	25.00	0.00	0.00	0.00
34.00	0.00	0	25.00	0.00	0.00	0.00
36.00	0.00	0	25.00	0.00	0.00	0.00
38.00	0.00	0	25.00	0.00	0.00	0.00
40.00	0.00	0	25.00	0.00	0.00	0.00
42.00	0.00	0	25.00	0.00	0.00	0.00
44.00	0.00	0	25.00	0.00	0.00	0.00
46.00	0.00	0	25.00	0.00	0.00	0.00
48.00	0.00	0	25.00	0.00	0.00	0.00
50.00	0.00	0	25.00	0.00	0.00	0.00
52.00	0.00	0	25.00	0.00	0.00	0.00
54.00	0.00	0	25.00	0.00	0.00	0.00
56.00	0.00	0	25.00	0.00	0.00	0.00
58.00	0.00	0	25.00	0.00	0.00	0.00
60.00	0.00	0	25.00	0.00	0.00	0.00
62.00	0.00	0	25.00	0.00	0.00	0.00
64.00	0.00	0	25.00	0.00	0.00	0.00
66.00	0.00	0	25.00	0.00	0.00	0.00
68.00	0.00	0	25.00	0.00	0.00	0.00
70.00	0.00	0	25.00	0.00	0.00	0.00
72.00	0.00	0	25.00	0.00	0.00	0.00

Drains within 14 hours

Post-Development

Monmouth 100_yr_tbl 100_yr_stm Rainfall=8.93"

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Hydrograph for Pond 4P: Infiltration

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0	25.00	0.00
2.00	0.01	1	25.01	0.01
4.00	0.02	3	25.01	0.02
6.00	0.03	4	25.02	0.03
8.00	0.03	5	25.02	0.03
10.00	0.06	8	25.04	0.06
12.00	0.43	334	26.45	0.07
14.00	0.06	1,234	28.98	0.07
16.00	0.04	1,068	28.43	0.07
18.00	0.03	791	27.68	0.07
20.00	0.02	464	26.82	0.07
22.00	0.01	87	25.42	0.07
24.00	0.01	1	25.01	0.01
26.00	0.00	0	25.00	0.00
28.00	0.00	0	25.00	0.00
30.00	0.00	0	25.00	0.00
32.00	0.00	0	25.00	0.00
34.00	0.00	0	25.00	0.00
36.00	0.00	0	25.00	0.00
38.00	0.00	0	25.00	0.00
40.00	0.00	0	25.00	0.00
42.00	0.00	0	25.00	0.00
44.00	0.00	0	25.00	0.00
46.00	0.00	0	25.00	0.00
48.00	0.00	0	25.00	0.00
50.00	0.00	0	25.00	0.00
52.00	0.00	0	25.00	0.00
54.00	0.00	0	25.00	0.00
56.00	0.00	0	25.00	0.00
58.00	0.00	0	25.00	0.00
60.00	0.00	0	25.00	0.00
62.00	0.00	0	25.00	0.00
64.00	0.00	0	25.00	0.00
66.00	0.00	0	25.00	0.00
68.00	0.00	0	25.00	0.00
70.00	0.00	0	25.00	0.00
72.00	0.00	0	25.00	0.00

Drains within 12 hours

APPENDIX D

GROUNDWATER RECHARGE ANALYSIS

PRE-DEV: 7,950 CF + 7,918 CF = 15,868 CF (0.364 AF)

Pre-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

Prepared by {enter your company name here}

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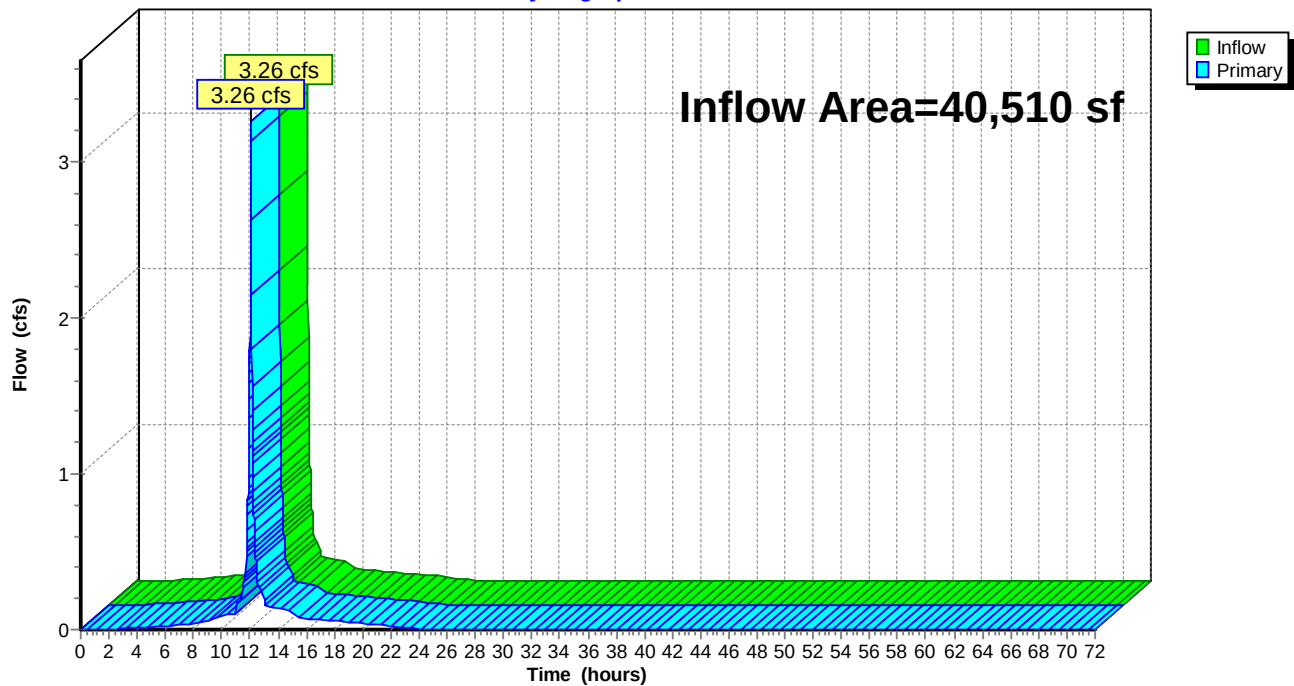
Summary for Pond 1P: EA-1

Inflow Area = 40,510 sf, 56.12% Impervious, Inflow Depth = 2.35" for 2_yr_stm event
 Inflow = 3.26 cfs @ 12.10 hrs, Volume= 7,950 cf
 Primary = 3.26 cfs @ 12.10 hrs, Volume= 7,950 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 1P: EA-1

Hydrograph



PRE-DEV: 7,950 CF + 7,918 CF = 15,868 CF (0.364 AF)

Pre-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

Prepared by {enter your company name here}

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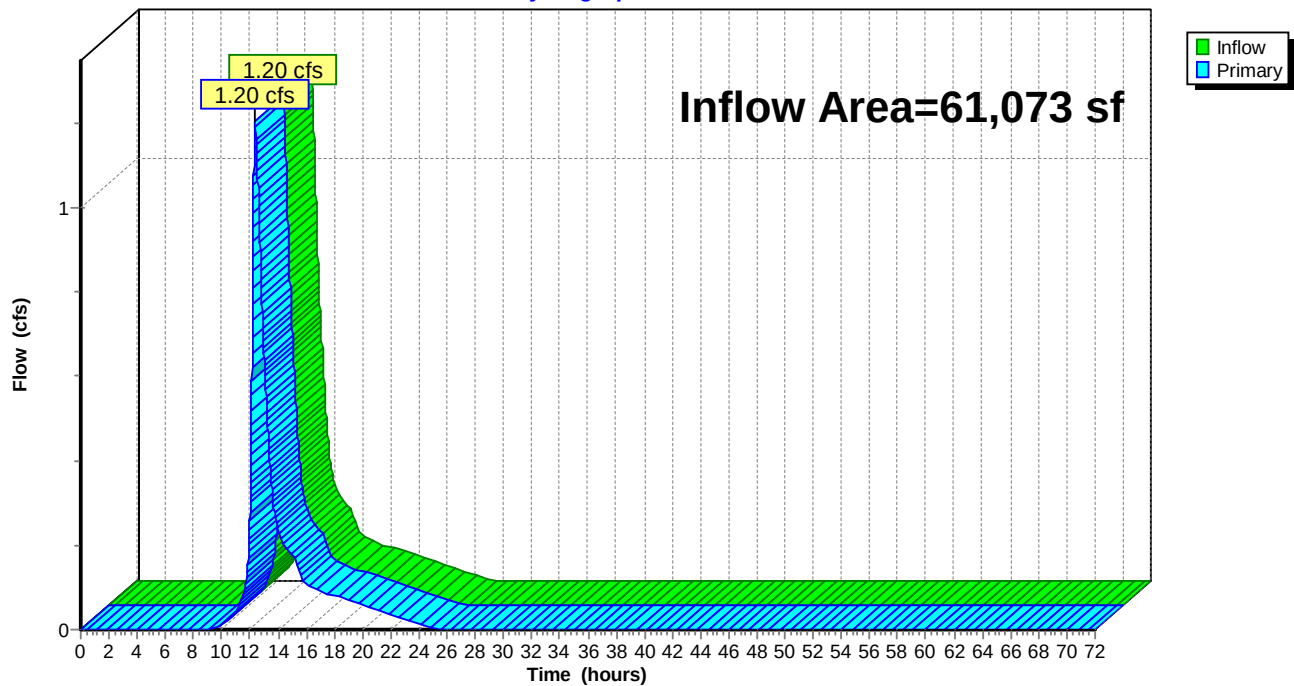
Summary for Pond 2P: EA-2

Inflow Area = 61,073 sf, 0.88% Impervious, Inflow Depth = 1.56" for 2_yr_stm event
 Inflow = 1.20 cfs @ 12.38 hrs, Volume= 7,918 cf
 Primary = 1.20 cfs @ 12.38 hrs, Volume= 7,918 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 2P: EA-2

Hydrograph



POST DEV: 666 CF + 2,552 CF + 15,280 CF + 1,446 CF = 19,944 CF (0.458 AF)

Post-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

Prepared by {enter your company name here}

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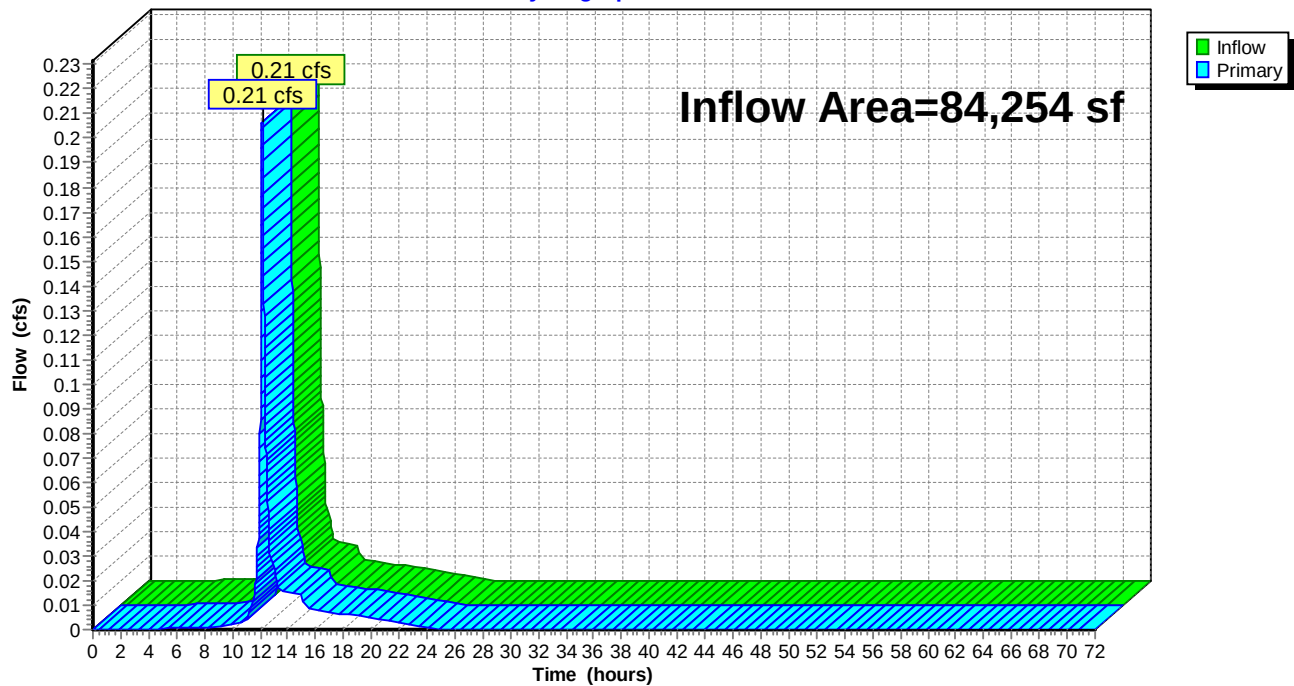
Summary for Pond 1P: DA-1

Inflow Area = 84,254 sf, 59.24% Impervious, Inflow Depth = 0.09" for 2_yr_stm event
 Inflow = 0.21 cfs @ 12.15 hrs, Volume= 666 cf
 Primary = 0.21 cfs @ 12.15 hrs, Volume= 666 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 1P: DA-1

Hydrograph



POST DEV: 666 CF + 2,552 CF + 15,280 CF + 1,446 CF = 19,944 CF (0.458 AF)

Post-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

Prepared by {enter your company name here}

Printed 10/5/2022

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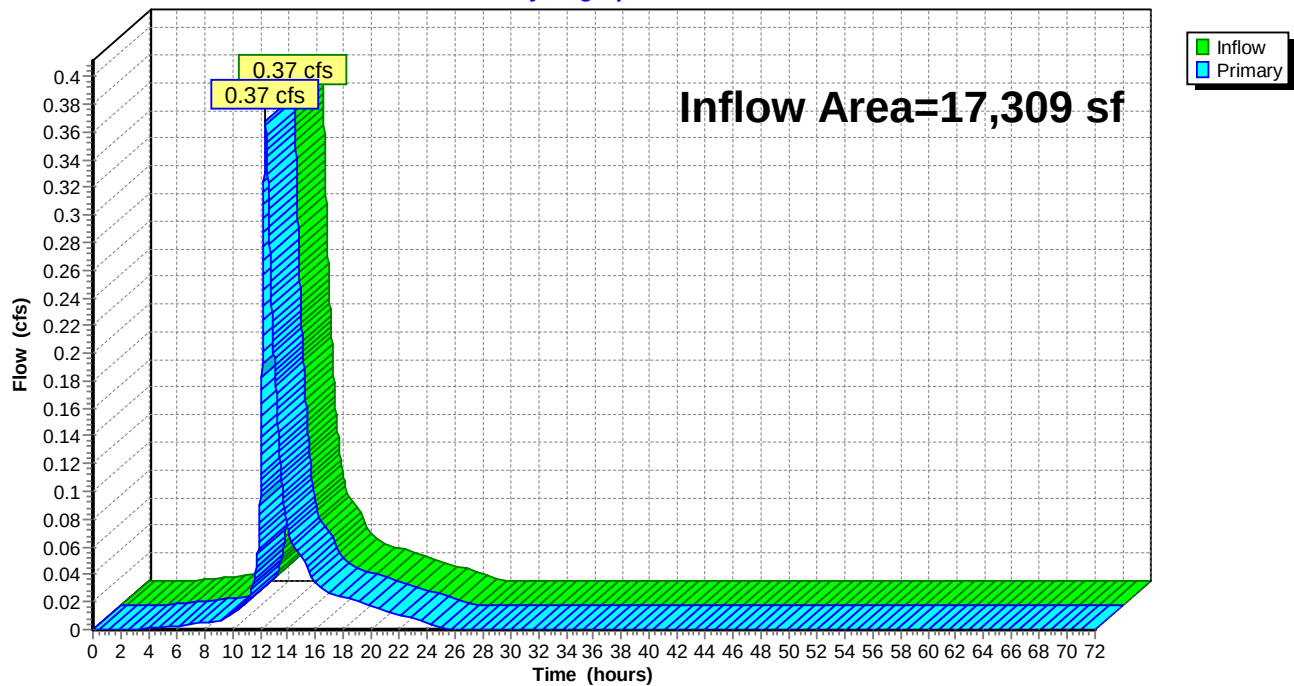
Summary for Pond 2P: DA-2

Inflow Area = 17,309 sf, 17.67% Impervious, Inflow Depth = 1.77" for 2_yr_stm event
 Inflow = 0.37 cfs @ 12.38 hrs, Volume= 2,552 cf
 Primary = 0.37 cfs @ 12.38 hrs, Volume= 2,552 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Pond 2P: DA-2

Hydrograph



Post-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

Prepared by {enter your company name here}

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Summary for Pond 3P: Bioretention

Inflow Area = 73,202 sf, 60.00% Impervious, Inflow Depth = 2.50" for 2_yr_stm event
Inflow = 4.51 cfs @ 12.14 hrs, Volume= 15,280 cf
Outflow = 0.40 cfs @ 13.09 hrs, Volume= 15,280 cf, Atten= 91%, Lag= 57.2 min
Discarded = 0.40 cfs @ 13.09 hrs, Volume= 15,279 cf
Primary = 0.00 cfs @ 13.09 hrs, Volume= 1 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 27.71' @ 13.09 hrs Surf.Area= 2,877 sf Storage= 6,146 cf

Plug-Flow detention time= 140.1 min calculated for 15,278 cf (100% of inflow)
Center-of-Mass det. time= 140.1 min (917.0 - 776.9)

Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	18,958 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.00	1,703	0	0
26.00	2,099	1,901	1,901
27.00	2,529	2,314	4,215
28.00	3,016	2,773	6,988
29.00	3,662	3,339	10,327
30.00	4,287	3,975	14,301
31.00	5,027	4,657	18,958

Device	Routing	Invert	Outlet Devices
#1	Primary	25.00'	15.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 25.00' / 24.75' S= 0.0050 ' / Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf
#2	Device 1	27.71'	11.7" W x 12.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	25.00'	6.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.40 cfs @ 13.09 hrs HW=27.71' (Free Discharge)

↑ **3=Exfiltration** (Exfiltration Controls 0.40 cfs)

Primary OutFlow Max=0.00 cfs @ 13.09 hrs HW=27.71' (Free Discharge)

↑ **1=Culvert** (Passes 0.00 cfs of 8.17 cfs potential flow)

↑ **2=Orifice/Grate** (Orifice Controls 0.00 cfs @ 0.22 fps)

Post-Development

Monmouth 2_yr_tbl 2_yr_stm Rainfall=3.38"

Prepared by {enter your company name here}

Printed 10/5/2022

HydroCAD® 10.10-3a s/n 11244 © 2020 HydroCAD Software Solutions LLC

Summary for Pond 4P: Infiltration

Inflow Area = 5,513 sf, 100.00% Impervious, Inflow Depth = 3.15" for 2_yr_stm event
 Inflow = 0.41 cfs @ 12.14 hrs, Volume= 1,446 cf
 Outflow = 0.07 cfs @ 11.79 hrs, Volume= 1,446 cf, Atten= 83%, Lag= 0.0 min
 Discarded = 0.07 cfs @ 11.79 hrs, Volume= 1,446 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 26.60' @ 12.60 hrs Surf.Area= 510 sf Storage= 386 cf

Plug-Flow detention time= 30.1 min calculated for 1,446 cf (100% of inflow)
 Center-of-Mass det. time= 30.1 min (787.2 - 757.0)

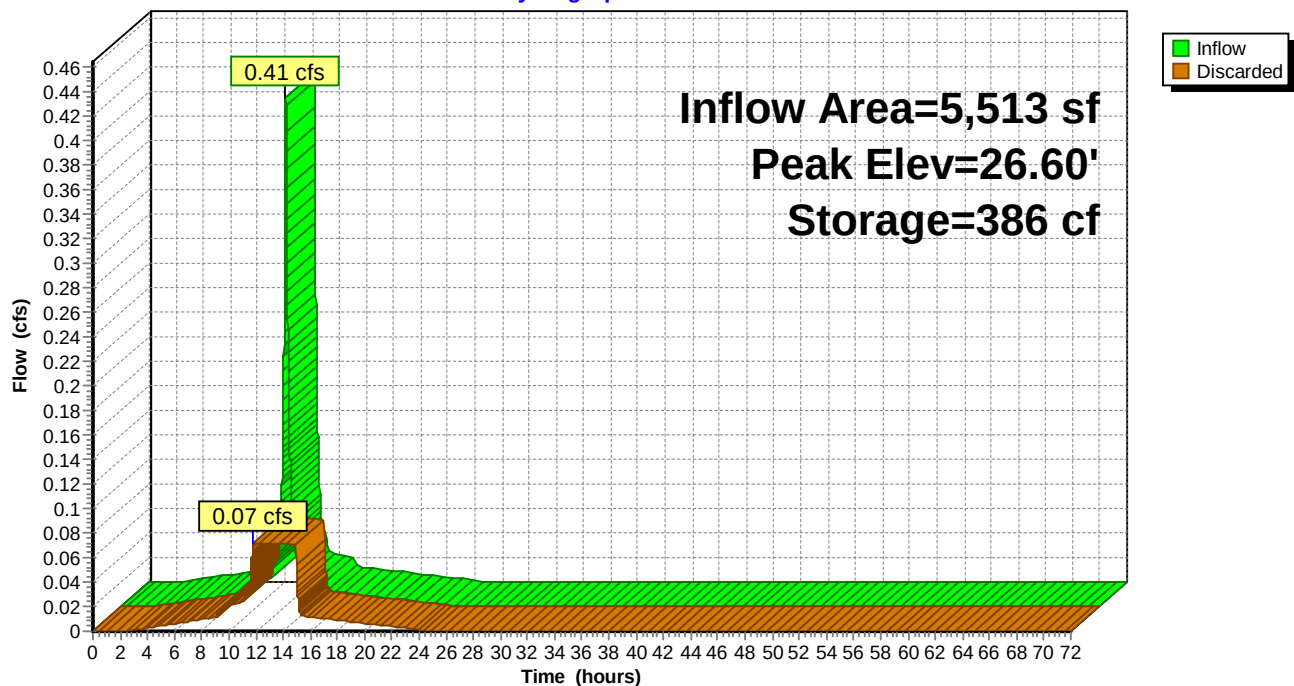
Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	737 cf	5.00'W x 102.00'L x 5.00'H Prismatoid 2,550 cf Overall - 707 cf Embedded = 1,843 cf x 40.0% Voids
#2	26.00'	707 cf	36.0" Round Pipe Storage Inside #1 L= 100.0'
1,444 cf			Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	25.00'	6.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.07 cfs @ 11.79 hrs HW=25.05' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.07 cfs)

Pond 4P: Infiltration

Hydrograph



APPENDIX E

BASIN SUMMARY SHEETS

New Jersey Department of Agriculture
Hydrologic Modeling Database – Data Entry Form

Project Site Details

Chpt. 251 Application Number:

Start Date (if known):

Street Address: Main Street

County: Monmouth

Municipality: Borough of Oceanport

Block: 110.18

Lot: 1

NJDEP Anderson Landuse Code (4 digits): 1110

Landuse description: Multi-Family Residential

Site Centroid Location (NJ State Plane Feet): ¹

Northing: 536,881

Easting: 620,354

Project Contact Details

Applicant: RPM Development Group

Address: 77 Park Street, Montclair, NJ 07042

Phone: 973-744-5410

Email: shenschel@rpmdev.com

Post Construction Operation & Maintenance:²

Party Name: RPM Development Group

Address: 77 Park Street, Montclair, NJ 07042

Phone: 973-744-5410

Email: shenschel@rpmdev.com

Party type: Owner

New Jersey Department of Agriculture

Hydrologic Modeling Database – Data Entry Form

Basin Details:³ Underground Infiltration Basin

 Basin Centroid (NJ State Plane Feet):⁴

Northing: 537,038

Easting: 620,233

Basin Type: Infiltration Basin

Construction: Underground

 Status phase:⁵ Design ☒ As-built ☐

Dam Height (ft) N/A

top width (ft) N/A

Dam Classification: N/A

Drainage Area(s) to Basin [note- include any bypass areas]⁶

Drainage Area Name	Drainage Area (acres)	Post-Development CN#	Percent Impervious	Time of Concentration (min)
DA-1C	0.13	98	100%	6

Basin Outlet Structure(s)⁷

ID: CB-18 'A'

 End of Pipe Location:⁸ Northing: 537,078

Easting: 620,264

Discharge Type ⁹ (weir, orifice, etc)	Dimensions (diameter, length)	Elevation (USGS)	Discharge ¹⁰ Coefficient	Equation Used ¹¹
Exfiltration	N/A	26.00	N/A	6.0 in/hr

New Jersey Department of Agriculture
Hydrologic Modeling Database – Data Entry Form

Basin Outlet Structure(s)

ID.

End of Pipe Location: Northing:

Easting:

Discharge Type (weir, orifice, etc)	Dimensions (diameter, length)	Elevation (USGS)	Discharge Coefficient	Equation Used

Basin Stage-Discharge Rating Table¹²

Elevation (USGS Feet)	Storage (Acre-Ft)	Total Outlet Structure Discharge (cfs)
25.00	0.000	0.00
25.50	0.002	0.00
26.00	0.005	0.00
26.50	0.007	0.00
27.00	0.012	0.00
27.50	0.017	0.00
28.00	0.021	0.00
28.50	0.025	0.00
29.00	0.028	0.00
29.50	0.031	0.00
30.00	0.033	0.00

New Jersey Department of Agriculture
Hydrologic Modeling Database – Data Entry Form

NJDEP BMP Water Quality Structures¹³

Type (rain garden, green roof, seepage pit etc)	Size	Size Units (cu ft, sq ft etc)	Northing (SPF)	Easting (SPF)
N/A				

Explanatory Notes-

¹ Approximate location of center of site, coordinates in state plane feet

² Indicate who will be responsible for permanent operation and maintenance

³ Additional Basin Detail Pages can be used for more than one basin in a project.

⁴ Approximate location of center of basin, coordinates in state plane feet

⁵ Indicate “design” for basins not yet constructed

⁶ Drainage areas which are modified by construction, but not directed to the basin should still be listed and described

⁷ “Outlet structure” means the control box, outlet headwall, FES etc. This does not refer to an individual control on the structure such as a weir or orifice. There are two tables for more than one outlet structure

⁸ Approximate location of terminal discharge end of basin outfall, coordinates in state plane feet

⁹ Indicate the type of outlet – weir, orifice, hydro brake, etc.

¹⁰ Discharge Coefficient specific to the type of outlet control i.e., 0.6 for circular orifice

¹¹ List the discharge equation for each outlet (weir, orifice etc) used

¹² For basins with dead storage below the primary outlet, indicate 0 cfs discharge until the lowest outlet is reached. Routing table should begin at the lowest basin elevation.

¹³ Describe NJDEP BMP Manual water quality devices such as seepage pits, rain gardens etc. Size is appropriate for device – cubic feet, square feet or linear feet. Location of device using state plane feet coordinates.

New Jersey Department of Agriculture

Hydrologic Modeling Database – Data Entry Form

Basin Details:³ Bioretention Basin

 Basin Centroid (NJ State Plane Feet):⁴

Northing: 536,932

Easting: 620,391

Basin Type: Surface

Construction: Surface

 Status phase:⁵ Design ☒ As-built ☐

Dam Height (ft) N/A top width (ft) N/A

Dam Classification: N/A

Drainage Area(s) to Basin [note- include any bypass areas]⁶

Drainage Area Name	Drainage Area (acres)	Post-Development CN#	Percent Impervious	Time of Concentration (min)
DA-2	1.68	91	60.0%	6

Basin Outlet Structure(s)⁷

ID: OS-16

 End of Pipe Location:⁸ Northing: 536,957 Easting: 620,381

Discharge Type ⁹ (weir, orifice, etc)	Dimensions (diameter, length)	Elevation (USGS)	Discharge ¹⁰ Coefficient	Equation Used ¹¹
Orifice	11.75" x 12"	27.71	0.60	$Q=CA(2gh)^{0.5}$

New Jersey Department of Agriculture
Hydrologic Modeling Database – Data Entry Form

Basin Outlet Structure(s)

ID.

End of Pipe Location: Northing:

Easting:

Discharge Type (weir, orifice, etc)	Dimensions (diameter, length)	Elevation (USGS)	Discharge Coefficient	Equation Used

Basin Stage-Discharge Rating Table¹²

Elevation (USGS Feet)	Storage (Acre-Ft)	Total Outlet Structure Discharge (cfs)
25.00	0.000	0.00
25.50	0.021	0.00
26.00	0.044	0.00
26.50	0.069	0.00
27.00	0.097	0.00
27.50	0.127	0.00
28.00	0.160	0.49
28.50	0.197	2.20
29.00	0.237	4.10
29.50	0.281	5.30
30.00	0.328	6.26
30.50	0.380	7.09
31.00	0.435	7.83

New Jersey Department of Agriculture

Hydrologic Modeling Database – Data Entry Form

NJDEP BMP Water Quality Structures¹³

Type (rain garden, green roof, seepage pit etc)	Size	Size Units (cu ft, sq ft etc)	Northing (SPF)	Easting (SPF)
bio-retention				

Explanatory Notes-

¹ Approximate location of center of site, coordinates in state plane feet

² Indicate who will be responsible for permanent operation and maintenance

³ Additional Basin Detail Pages can be used for more than one basin in a project.

⁴ Approximate location of center of basin, coordinates in state plane feet

⁵ Indicate “design” for basins not yet constructed

⁶ Drainage areas which are modified by construction, but not directed to the basin should still be listed and described

⁷ “Outlet structure” means the control box, outlet headwall, FES etc. This does not refer to an individual control on the structure such as a weir or orifice. There are two tables for more than one outlet structure

⁸ Approximate location of terminal discharge end of basin outfall, coordinates in state plane feet

⁹ Indicate the type of outlet – weir, orifice, hydro brake, etc.

¹⁰ Discharge Coefficient specific to the type of outlet control i.e., 0.6 for circular orifice

¹¹ List the discharge equation for each outlet (weir, orifice etc) used

¹² For basins with dead storage below the primary outlet, indicate 0 cfs discharge until the lowest outlet is reached. Routing table should begin at the lowest basin elevation.

¹³ Describe NJDEP BMP Manual water quality devices such as seepage pits, rain gardens etc. Size is appropriate for device – cubic feet, square feet or linear feet. Location of device using state plane feet coordinates.

APPENDIX F

LOW IMPACT DEVELOPMENT CHECKLIST

New Jersey Stormwater Best Management Practices Manual

February 2004

A P P E N D I X A

Low Impact Development Checklist

A checklist for identifying nonstructural stormwater management strategies incorporated into proposed land development

According to the NJDEP Stormwater Management Rules at N.J.A.C. 7:8, the groundwater recharge, stormwater quality, and stormwater quantity standards established by the Rules for major land development projects must be met by incorporating nine specific nonstructural stormwater management strategies into the project's design to the maximum extent practicable.

To accomplish this, the Rules require an applicant seeking land development approval from a regulatory board or agency to identify those nonstructural strategies that have been incorporated into the project's design. In addition, if an applicant contends that it is not feasible to incorporate any of the specific strategies into the project's design, particularly for engineering, environmental, or safety reasons, the Rules further require that the applicant provide a basis for that contention.

This checklist has been prepared to assist applicants, site designers, and regulatory boards and agencies in ensuring that the nonstructural stormwater management requirements of the Rules are met. It provides an applicant with a means to identify both the nonstructural strategies incorporated into the development's design and the specific low impact development BMPs (LID-BMPs) that have been used to do so. It can also help an applicant explain the engineering, environmental, and/or safety reasons that a specific nonstructural strategy could not be incorporated into the development's design.

The checklist can also assist municipalities and other land development review agencies in the development of specific requirements for both nonstructural strategies and LID-BMPs in zoning and/or land use ordinances and regulations. As such, where requirements consistent with the Rules have been adopted, they may supersede this checklist.

Finally, the checklist can be used during a pre-design meeting between an applicant and pertinent review personnel to discuss local nonstructural strategies and LID-BMPs requirements in order to optimize the development's nonstructural stormwater management design.

Since this checklist is intended to promote the use of nonstructural stormwater management strategies and provide guidance in their incorporation in land development projects, municipalities are permitted to revise it as necessary to meet the goals and objectives of their specific stormwater management program and plan within the limits of N.J.A.C. 7:8.

Low Impact Development Checklist

A checklist for identifying nonstructural stormwater management strategies incorporated into proposed land development

Municipality: Borough of Oceanport

County: Monmouth Date: 10/07/22

Review board or agency: Borough of Oceanport

Proposed land development name: Nurse's Quarters

Lot(s): 1 Block(s): 110.18

Project or application number: _____

Applicant's name: Signal Point, LP

Applicant's address: 77 Park Street

Montclair, NJ 07042

Telephone: 973-744-5410 Fax: _____

Email address: shenschel@rpmdev.com

Designer's name: Kevin E. Shelly, P.E., Shore Point Engineering

Designer's address: 1985 Highway 34, Suite A7

Wall, NJ 07719

Telephone: 732-924-8100 Fax: 732-924-8110

Email address: kshelly@shorepointengineering.com

Part 1: Description of Nonstructural Approach to Site Design

In narrative form, provide an overall description of the nonstructural stormwater management approach and strategies incorporated into the proposed site's design. Attach additional pages as necessary. Details of each nonstructural strategy are provided in Part 3 below.

The site is currently developed with two large buildings and paved parking areas or mostly vacant lawn areas totaling about 3.7 acres.

For the post development condition, the runoff will be collected via a conventional piped stormwater collection system routed to a bio-retention basin and an infiltration basin. Both quality and quantity control and groundwater recharge are provided by the basins. The allowable peak runoff rates for the post-developed site were found by applying the required reductions to the pre-developed peak flows for the onsite disturbed areas.

The stormwater management basins have been designed to meet the requirements of the "NJDEP Stormwater and Non-point Source Pollution - Best Management Practices Manual." It is designed for minimum disturbance to the natural landscape and utilizes the natural terrain for the majority of its storage. The stormwater collection system also utilizes both a pipe network, and to the maximum extent possible, overland drainage swales.

The system meets the technical requirements as well as the overall intent of the NJDEP regulations in an aesthetically pleasing and technically compliant manner.

Site design has been adjusted to minimize land disturbance and impervious coverage while maximizing preservation of existing vegetation and natural drainage features. Site landscaping will also utilize native plant species where possible. Trash refuse areas are provided inside the buildings to help minimize the accumulation of trash and debris that may otherwise enter the drainage system.

Part 2: Review of Local Stormwater Management Regulations

Title and date of stormwater management regulations used in development design:

N.J.A.C. 7:8 Stormwater Management Rules - Last revised 3/2/20

Do regulations include nonstructural requirements? Yes: X No:

If yes, briefly describe: Protect areas that provide water quality benefits or areas particularly susceptible to

List LID-BMPs prohibited by local regulations: N/A

Pre-design meeting held? Yes: X Date: 07/2020 No:

Meeting held with: Shore Point Engineering
 Signal Point, LP

Pre-design site walk held? Yes: X Date: 07/2020 No:

Site walk held with: Shore Point Engineering
 Signal Point, LP

Other agencies with stormwater review jurisdiction:

Name: Freehold Soil Conservation District

Required approval: Soil Erosion Permit

Name: Borough of Oceanport

Required approval: Site Plan Approval

Name: Monmouth County

Required approval: Site Plan Approval

Part 3: Nonstructural Strategies and LID-BMPs in Design

3.1 Vegetation and Landscaping

Effective management of both existing and proposed site vegetation can reduce a development's adverse impacts on groundwater recharges and runoff quality and quantity. This section of the checklist helps identify the vegetation and landscaping strategies and nonstructural LID-BMPs that have been incorporated into the proposed development's design to help maintain existing recharge rates and/or minimize or prevent increases in runoff quantity and pollutant loading.

A. Has an inventory of existing site vegetation been performed? Yes: X No:

If yes, was this inventory a factor in the site's layout and design? Yes: X No:

B. Does the site design utilize any of the following nonstructural LID-BMPs?

Preservation of natural areas? Yes: No: X If yes, specify % of site:

Native ground cover? Yes: No: X If yes, specify % of site:

Vegetated buffers? Yes: No: X If yes, specify % of site:

C. Do the land development regulations require these nonstructural LID-BMPs?

Preservation of natural areas? Yes: No: X If yes, specify % of site:

Native ground cover? Yes: No: X If yes, specify % of site:

Vegetated buffers? Yes: No: X If yes, specify % of site:

D. If vegetated filter strips or buffers are utilized, specify their functions:

Reduce runoff volume increases through lower runoff coefficient: Yes: X No:

Reduce runoff pollutant loads through runoff treatment: Yes: X No:

Maintain groundwater recharge by preserving natural areas: Yes: No: X

3.2 Minimize Land Disturbance

Minimizing land disturbance is a nonstructural LID-BMP that can be applied during both the development's construction and post-construction phases. This section of the checklist helps identify those land disturbance strategies and nonstructural LID-BMPs that have been incorporated into the proposed development's design to minimize land disturbance and the resultant change in the site's hydrologic character.

A. Have inventories of existing site soils and slopes been performed? Yes: X No: _____

If yes, were these inventories factors in the site's layout and design? Yes: X No: _____

B. Does the development's design utilize any of the following nonstructural LID-BMPs?

Restrict permanent site disturbance by land owners? Yes: _____ No: X

If yes, how: _____

Restrict temporary site disturbance during construction? Yes: _____ No: X

If yes, how: _____

Consider soils and slopes in selecting disturbance limits? N/A Yes: _____ No: _____

If yes, how: _____

C. Specify percentage of site to be cleared: 63% Regraded: 63%

D. Specify percentage of cleared areas done so for buildings: 11.3%

For driveways and parking: 17.6% For roadways: _____

E. What design criteria and/or site changes would be required to reduce the percentages in C and D above?

The site has been designed to reduce disturbance and minimize impervious coverage to the maximum extent possible while complying with municipal zone requirements. Reduction of percentages in B & D will result in a loss of units, making the project no longer viable.

F. Specify site's hydrologic soil group (HSG) percentages:

HSG A: _____ HSG B: 2.4% HSG C: _____ HSG D: 97.6%

G. Specify percentage of each HSG that will be permanently disturbed:

HSG A: _____ HSG B: 100% HSG C: _____ HSG D: 100%

H. Locating site disturbance within areas with less permeable soils (HSG C and D) and minimizing disturbance within areas with greater permeable soils (HSG A and B) can help maintain groundwater recharge rates and reduce runoff volume increases. In light of the HSG percentages in F and G above, what other practical measures if any can be taken to achieve this?

Majority of the project area is located within HSG D soil.

Disturbance areas have been minimized to the maximum extent

feasible.

I. Does the site include Karst topography?

Yes: _____ No: X

If yes, discuss measures taken to limit Karst impacts:

3.3 Impervious Area Management

New impervious surfaces at a development site can have the greatest adverse effect on groundwater recharge and stormwater quality and quantity. This section of the checklist helps identify those nonstructural strategies and LID-BMPs that have been incorporated into a proposed development's design to comprehensively manage the extent and impacts of new impervious surfaces.

A. Specify impervious cover at site: Existing: 16.3% Proposed: 32.9%

B. Specify maximum site impervious coverage allowed by regulations: 60%

C. Compare proposed street cartway widths with those required by regulations:

Type of Street	Proposed Cartway Width (feet)	Required Cartway Width (feet)
Residential access – low intensity		
Residential access – medium intensity		
Residential access – high intensity with parking	24'	24'
Residential access – high intensity without parking		
Neighborhood		
Minor collector – low intensity without parking		
Minor collector – with one parking lane		
Minor collector – with two parking lanes		
Minor collector – without parking		
Major collector		

D. Compare proposed parking space dimensions with those required by regulations:

Proposed: 9' x 18' Regulations: RSIS - 9' x 18'

E. Compare proposed number of parking spaces with those required by regulations:

Proposed: 81 Regulations: RSIS - 71

F. Specify percentage of total site impervious cover created by buildings: 11.3%

By driveways and parking: 17.6% By roadways: 0%

G. What design criteria and/or site changes would be required to reduce the percentages in F above?

In order to reduce with percentages above, buildings/units
would need to be removed, which is not a viable option.

H. Specify percentage of total impervious area that will be unconnected:

Total site: 0% Buildings: _____ Driveways and parking: _____ Roads: _____

I. Specify percentage of total impervious area that will be porous:

Total site: 0% Buildings: _____ Driveways and parking: _____ Roads: _____

J. Specify percentage of total building roof area that will be vegetated: 0%

K. Specify percentage of total parking area located beneath buildings: 0%

L. Specify percentage of total parking located within multi-level parking deck: 0%

3.4 Time of Concentration Modifications

Decreasing a site's time of concentration (Tc) can lead directly to increased site runoff rates which, in turn, can create new and/or aggravate existing erosion and flooding problems downstream. This section of the checklist helps identify those nonstructural strategies and LID-BMPs that have been incorporated into the proposed development's design to effectively minimize such Tc decreases.

When reviewing Tc modification strategies, it is important to remember that a drainage area's Tc should reflect the general conditions throughout the area. As a result, Tc modifications must generally be applied throughout a drainage area, not just along a specific Tc route.

A. Specify percentage of site's total stormwater conveyance system length that will be:

Storm sewer: 79% Vegetated swale: _____ Natural channel: _____

Stormwater management facility: 21% Other: _____

Note: the total length of the stormwater conveyance system should be measured from the site's downstream property line to the downstream limit of sheet flow at the system's headwaters.

B. What design criteria and/or site changes would be required to reduce the storm sewer percentages and increase the vegetated swale and natural channel percentages in A above?

Any changes to the site design to increase vegetated swales and natural channels would impact the site layout and require the loss of parking spaces or residential units which is not viable.

C. In conveyance system subareas that have overland or sheet flow over impervious surfaces or turf grass, what practical and effective site changes can be made to:

Decrease overland flow slope: N/A

Increase overland flow roughness: N/A

3.5 Preventative Source Controls

The most effective way to address water quality concerns is by pollution prevention. This section of the checklist helps identify those nonstructural strategies and LID-BMPs that have been incorporated into the proposed development's design to reduce the exposure of pollutants to prevent their release into the stormwater runoff.

A. Trash Receptacles

Specify the number of trash receptacles provided: 0

Specify the spacing between the trash receptacles: N/A

Compare trash receptacles proposed with those required by regulations:

Proposed: N/A Regulations: N/A

B. Pet Waste Stations

Specify the number of pet waste stations provided: 0

Specify the spacing between the pet waste stations: N/A

Compare pet waste stations proposed with those required by regulations:

Proposed: N/A Regulations: N/A

C. Inlets, Trash Racks, and Other Devices that Prevent Discharge of Large Trash and Debris

Specify percentage of total inlets that comply with the NJPDES storm drain inlet criteria: 100%

D. Maintenance

Specify the frequency of the following maintenance activities:

Street sweeping: Proposed: Monthly Regulations: N/A

Litter collection: Proposed: Weekly Regulations: N/A

Identify other stormwater management measures on the site that prevent discharge of large trash and debris:

N/A

E. Prevention and Containment of Spills

Identify locations where pollutants are located on the site, and the features that prevent these pollutants from being exposed to stormwater runoff:

Pollutant: _____ N/A _____ Location: _____ N/A _____

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: _____ Location: _____

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: _____ Location: _____

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: _____ Location: _____

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: _____ Location: _____

Part 4: Compliance with Nonstructural Requirements of NJDEP Stormwater Management Rules

1. Based upon the checklist responses above, indicate which nonstructural strategies have been incorporated into the proposed development's design in accordance with N.J.A.C. 7:8-5.3(b):

No.	Nonstructural Strategy	Yes	No
1.	Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss.	X	
2.	Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces.	X	
3.	Maximize the protection of natural drainage features and vegetation.	X	
4.	Minimize the decrease in the pre-construction time of concentration.	X	
5.	Minimize land disturbance including clearing and grading.	X	
6.	Minimize soil compaction.	X	
7.	Provide low maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers, and pesticides.	X	
8.	Provide vegetated open-channel conveyance systems discharge into and through stable vegetated areas.	X	
9.	Provide preventative source controls.	X	

2. For those strategies that have not been incorporated into the proposed development's design, provide engineering, environmental, and/or safety reasons. Attached additional pages as necessary.

APPENDIX G

SOIL TESTING ANALYSIS



1959 HIGHWAY 34
BUILDING A, SUITE 102
WALL, NJ 07719
732.592.2101
whitestoneassoc.com

October 6, 2022
(Updated October 7, 2022)

via email

SHORE POINT ENGINEERING
1985 Highway 34
Suite A7
Wall, New Jersey 07719

Attention: Kevin Shelly, P.E.
Owner

**Regarding: STORMWATER AREA EVALUATION
PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT
STEPHENSON AVENUE & MAIN STREET
BLOCK 110.18, LOT 1
OCEANPORT, MONMOUTH COUNTY, NEW JERSEY
WHITESTONE PROJECT NO.: GS2219551.000**

Dear Mr. Shelly:

Whitestone Associates, Inc. (Whitestone) is pleased to submit this *Stormwater Management (SWM) Area Evaluation* report in support of the proposed development referenced above. This report is based on the February 9, 2022 *Concept Layout* plan prepared by Shore Point Engineering (Shore Point), correspondence with Shore Point, and conditions encountered during Whitestone's subsurface exploration.

1.0 PROJECT DESCRIPTION

The subject site located west of the intersection of Stephenson Avenue and Main Street (Block 110.18, Lot 1) in Oceanport, Monmouth County, New Jersey currently houses a commercial building with associated pavements, landscaping, and utilities. The proposed improvements include constructing multi-story townhomes and installing a new SWM facility. Design details are not yet available, however, for the purposes of this report, Whitestone assumes the bottom of the SWM facilities will be situated approximately four feet below existing site grades.

2.0 FIELD EXPLORATION

Field exploration of the project site was conducted by means of two soil profile pits (identified as SPP-1 and SPP-2) conducted within accessible portions of the subject site with a track-mounted Komatsu excavator. The locations of the subsurface tests are shown on the *Test Location Plan* included as Figure 1. *Records of Subsurface Exploration* are provided in Appendix A.

The subsurface tests were conducted in the presence of a Whitestone engineer who conducted field tests, recorded visual classifications, and collected samples of the various strata encountered. The profile pits were located in the field using normal taping procedures and estimated right angles. These locations are presumed to be accurate within a few feet.

Other Office Locations:

WARREN, NJ
908.668.7777

CHALFONT, PA
215.712.2700

SOUTHBOROUGH, MA
508.485.0755

ROCKY HILL, CT
860.726.7889

PHILADELPHIA, PA
215.848.2323

BEDFORD, NH
603.514.2230

TAMPA, FL
813.851.0690

MIAMI, FL
786.783.6966



Groundwater level observations, although not encountered, were recorded during and immediately after the completion of field operations prior to backfilling the test locations. Groundwater elevations derived from sources other than seasonally observed groundwater monitor wells may not be representative of true groundwater levels.

3.0 SUMMARY OF FINDINGS

Estimated Seasonal High Groundwater Levels & Infiltration Results: Static groundwater was not encountered within the test locations to the depths explored. Groundwater levels are subject to fluctuation seasonally and following periods of heavy precipitation. The methods used in determining the estimated seasonal high groundwater level (ESHGW) included evaluating the soil morphology within a test excavation and identifying irregular spots or blotches of different colors or minerals unlike that of the surrounding soil (mottles). A summary of the estimated seasonal high groundwater observations and infiltration test results associated with this investigation are included in the following table.

INFILTRATION TEST SUMMARY				
Soil Profile Pit #	ESHGW (fbgs/feet)	USDA Classification @ Test Depth	Infiltration Test Results	
			Depth (fbgs/feet)	Rate (in/hour)
SPP-1	NE	Loamy Sand	4.0 / NS	5.2
SPP-1	NE	Sand	5.0 / NS	> 20.0
SPP-2	NE	Loamy Sand	4.5 / NS	12.0

USDA - United States Department of Agriculture; NE - Not Encountered; fbgs - Feet Below Ground Surface; NS - Not Surveyed

Soil Infiltration Rates: In-situ infiltration testing was conducted within the profile pits in accordance with the New Jersey *Stormwater Best Management Practices Manual*. Infiltration rates ranged from approximately 5.2 inches per hour (iph) to greater than 20 inches per hour. Limited seams of fine-grained materials with indications of impeded drainage were identified across the subject site, however, this fine-grained material may be overexcavated and the underlying well-draining sands can be considered for infiltration. Detailed infiltration test results are provided in Appendix B.

4.0 CLOSING

Whitestone appreciates the opportunity to be of continued service to Shore Point Engineering, LLC. Please contact us with any questions or comments regarding the information herein.

Sincerely,

WHITESTONE ASSOCIATES, INC.

Kyle J. Kopacz, P.E.
Associate

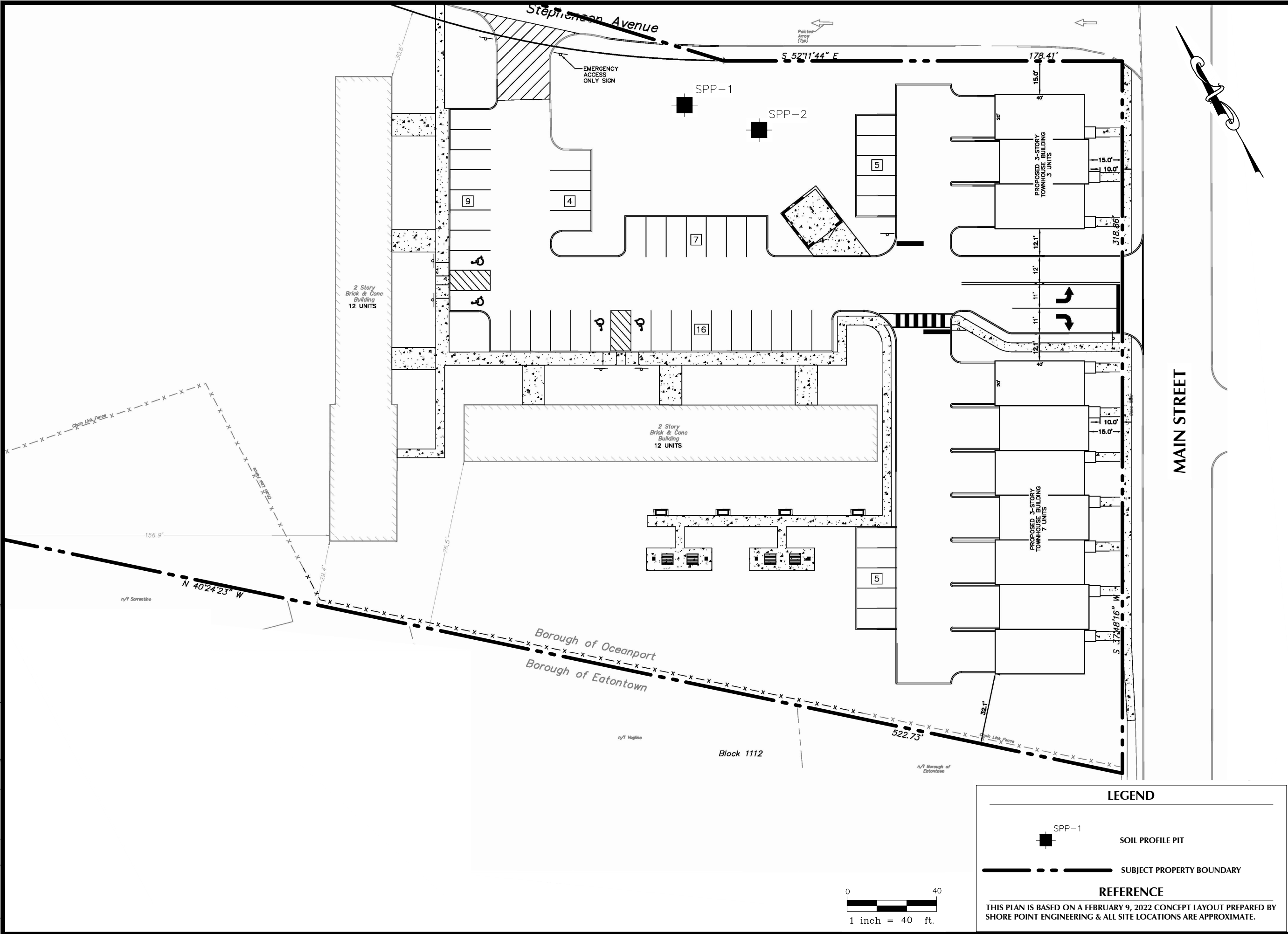
Laurence W. Keller, P.E.
Vice President



FIGURE 1

Test Location Plan

L:\Job_Folders\2022\2219551GS\Drawings and Plans\GS2219551.000_TLP.dwg



LEGEND

SPP-1 SOIL PROFILE PIT

SUBJECT PROPERTY BOUNDARY

REFERENCE

THIS PLAN IS BASED ON A FEBRUARY 9, 2022 CONCEPT LAYOUT PREPARED BY SHORE POINT ENGINEERING & ALL SITE LOCATIONS ARE APPROXIMATE.



WHITESTONE

An Employee-Owned Company

1959 HIGHWAY 34 BUILDING A, UNIT 102 WALL, NJ 07719
732-592-2101 WHITESTONEASSOC.COM

DRAWING TITLE: TEST LOCATION PLAN	
CLIENT: SHORE POINT ENGINEERING	
PROJECT: PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT STEPHENSON AVENUE & MAIN STREET OCEANPORT, MONMOUTH COUNTY, NJ	
PROJECT #: GS2219551.000	
DESIGNED BY: GR	PROJ. MGR.: MK
DATE: 10/4/22	FIGURE: 1
SCALE: 1" = 40'	

APPENDIX A

Records of Subsurface Exploration

RECORD OF SUBSURFACE EXPLORATION

Project: Proposed Multi-Family Residential Development			WAI Project No.: GS2219551.000		
Location: Stephenson Avenue & Main Street (Block 110.18, Lot 1); Oceanport, Monmouth County, NJ			Client: Shore Point Engineering		
Surface Elevation: ± <u>NS</u> feet	Date Started: <u>9/19/2022</u>	Water Depth Elevation (feet bgs) (feet)		Estimated Seasonal High	
Termination Depth: <u>11.0</u> feet bgs	Date Completed: <u>9/19/2022</u>			Groundwater Depth Elevation	
Proposed Location: <u>SWM</u>	Logged By: <u>MO</u>	During: <u>NE</u> <u>---</u> ▼		(feet bgs) (feet)	
Excavating Method: <u>Test Pit Excavation</u>	Contractor: <u>TS</u>	At Completion: <u>NE</u> <u>---</u> ▼		At Completion: <u>NE</u> <u>---</u>	
Test Method: <u>Visual Observation</u>	Rig Type: <u>Komatsu</u>	24 Hours: <u>---</u> <u>---</u> ▼			

SAMPLE INFORMATION			DEPTH	HORIZON	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	Number	Type	feet			
2.0	S-1	BAG	0.0			
			0 - 1	TOPSOIL	12" Topsoil	
			1.0			
2.0	S-1	BAG	1 - 3	FILL	Brown (7.5YR 5/4) CLAY LOAM; No Gravel; Damp; Moderate, Subangular Blocky Structure; Friable; Few Roots	
			2.0			
			3.0			
4.0	S-1	BAG	3 - 11	COASTAL PLAIN DEPOSITS	Reddish-Yellow (5YR 6/6) LOAMY SAND; No Gravel; Moist; Moderate, Granular Structure; Firm; No Roots	
			4.0			
			5.0			
			6.0			
			7.0			
			8.0			
			9.0			
			10.0			
			11.0			
			12.0			
			13.0			
			14.0			
			15.0			
Soil Profile Pit SPP-2 Terminated at a Depth of 11.0 Feet Below Ground Surface						

APPENDIX B

Infiltration Test Results



INFILTRATION TEST

Test Hole No.: I-1@SPP-1

Date: 9/19/2022

Weather: Partly Cloudy

Surface Elevation: NS

Test Depth (Feet): 4.00

Test Depth (Elevation): NS

[illegible]

Field $i = 5.23$ in/hr



INFILTRATION TEST

Client: Shore Point Engineering

Test Hole No.: I-2@SPP-1

Project: Proposed Multi-Family
Residential Development

Date: 9/19/2022

Location: Stephenson Avenue & Main Street
Oceanport, Monmouth County, NJ

Weather: Partly Cloudy

Surface Elevation: NS

File No. GS2219551.000

Test Depth (Feet): 5.00

Field Engineer: MO

Test Depth (Elevation): NS

Reading No.	Time		Water Level Reading (inches)		Water Level Fall (Inches)	Time Interval (Hours)	Rate of Flow (Inches/Hour)
	Start	Finish	Start	Finish			
PS	9:30	9:31	3.0	0.0	3.0	0.02	> 20.0
1	9:31	9:32	3.0	2.0	1.0	0.02	> 20.0
2	9:32	9:33	3.0	2.0	1.0	0.02	> 20.0
3	9:33	9:34	3.0	2.0	1.0	0.02	> 20.0
Remarks:						Field $i = > 20.0$ in/hr	



INFILTRATION TEST

Test Hole No.: I-2@SPP-2

Date: 9/19/2022

Weather: Partly Cloudy

Surface Elevation: NS

Test Depth (Feet): 4.50

Test Depth (Elevation): NS

[illegible]

Field $i = 12.0$ in/hr

APPENDIX C

Supplemental Information (USCS, Terms & Symbols)

UNIFIED SOIL CLASSIFICATION SYSTEM

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION <u>RETAINED</u> ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		CLEAN SAND (LITTLE OR NO FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	SAND AND SANDY SOILS	MORE THAN 50% OF COARSE FRACTION <u>PASSING</u> NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GC
			SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
MORE THAN 50% OF MATERIAL IS <u>LARGER</u> THAN NO. 200 SIEVE SIZE			SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMITS <u>LESS</u> THAN 50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
MORE THAN 50% OF MATERIAL IS <u>SMALLER</u> THAN NO. 200 SIEVE SIZE			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
	SILTS AND CLAYS	LIQUID LIMITS <u>GREATER</u> THAN 50	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS FOR SAMPLES WITH 5% TO 12% FINES

GRADATION*

% FINER BY WEIGHT

TRACE..... 1% TO 10%
LITTLE..... 10% TO 20%
SOME..... 20% TO 35%
AND..... 35% TO 50%

COMPACTNESS*

Sand and/or Gravel

RELATIVE DENSITY

LOOSE..... 0% TO 40%
MEDIUM DENSE..... 40% TO 70%
DENSE..... 70% TO 90%
VERY DENSE..... 90% TO 100%

CONSISTENCY*

Clay and/or Silt

RANGE OF SHEARING STRENGTH IN POUNDS PER SQUARE FOOT

VERY SOFT..... LESS THAN 250
SOFT..... 250 TO 500
MEDIUM..... 500 TO 1000
STIFF..... 1000 TO 2000
VERY STIFF..... 2000 TO 4000
HARD..... GREATER THAN 4000

* VALUES ARE FROM LABORATORY OR FIELD TEST DATA, WHERE APPLICABLE.
WHEN NO TESTING WAS PERFORMED, VALUES ARE ESTIMATED.

L:\Geotechnical Forms and References\Reports\USCSTRMSSYM NJ-Wall.docx

Other Office Locations:

WARREN, NJ
908.668.7777

CHALFONT, PA
215.712.2700

SOUTHBOROUGH, MA
508.485.0755

ROCKY HILL, CT
860.726.7889

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603.514.2230

TAMPA, FL
813.851.0690

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GEOTECHNICAL TERMS AND SYMBOLS

SAMPLE IDENTIFICATION

The Unified Soil Classification System is used to identify the soil unless otherwise noted.

SOIL PROPERTY SYMBOLS

- N: Standard Penetration Value: Blows per ft. of a 140 lb. hammer falling 30" on a 2" O.D. split-spoon.
 Qu: Unconfined compressive strength, TSF.
 Qp: Penetrometer value, unconfined compressive strength, TSF.
 Mc: Moisture content, %.
 LL: Liquid limit, %.
 PI: Plasticity index, %.
 δd : Natural dry density, PCF.
 ∇ : Apparent groundwater level at time noted after completion of boring.

DRILLING AND SAMPLING SYMBOLS

- NE: Not Encountered (Groundwater was not encountered).
 SS: Split-Spoon - 1 3/8" I.D., 2" O.D., except where noted.
 ST: Shelby Tube - 3" O.D., except where noted.
 AU: Auger Sample.
 OB: Diamond Bit.
 CB: Carbide Bit
 WS: Washed Sample.

RELATIVE DENSITY AND CONSISTENCY CLASSIFICATION

<u>Term (Non-Cohesive Soils)</u>	<u>Standard Penetration Resistance</u>
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	Over 50

<u>Term (Cohesive Soils)</u>	<u>Qu (TSF)</u>
Very Soft	0 - 0.25
Soft	0.25 - 0.50
Firm (Medium)	0.50 - 1.00
Stiff	1.00 - 2.00
Very Stiff	2.00 - 4.00
Hard	4.00+

PARTICLE SIZE

Boulders	8 in.+	Coarse Sand	5mm-0.6mm	Silt	0.074mm-0.005mm
Cobbles	8 in.-3 in.	Medium Sand	0.6mm-0.2mm	Clay	-0.005mm
Gravel	3 in.-5mm	Fine Sand	0.2mm-0.074mm		

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TAMPA, FL
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MIAMI, FL
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APPENDIX H

DRAINAGE PIPE DESIGN

Line No.	Inlet ID	Drng Area (ac)	Total Area (ac)	Runoff Coeff (C)	i Sys (in/hr)	Line Size (in)	Line Length (ft)	Invert Up (ft)	Invert Dn (ft)	Line Slope (%)	Flow Rate (cfs)	Capac Full (cfs)	n-val Pipe	Vel Ave (ft/s)	Vel Up (ft/s)	Vel Dn (ft/s)	HGL Up (ft)	HGL Dn (ft)	Tc (min)
1	CB-9 'B'	0.15	1.10	0.98	6.12	18	49.645	25.25	25.00	0.50	6.33	8.07	0.012	5.03	5.12	4.95	26.24	26.02	11.2
2	CB-8 'B'	0.01	0.95	0.99	6.21	18	80.810	25.65	25.25	0.49	5.51	8.00	0.012	3.19	3.26	3.12	27.01	26.85	10.8
3	CB-5 'B'	0.15	0.76	0.97	6.81	15	51.391	26.54	26.28	0.51	4.81	4.98	0.012	4.62	4.62	4.62	27.53	27.27	8.4
4	CB-4 'B'	0.18	0.61	0.99	6.91	15	73.189	26.91	26.54	0.51	3.88	4.97	0.012	3.23	3.30	3.16	28.05	27.85	8.0
5	CB-3 'Y'	0.16	0.43	0.94	7.01	12	71.934	27.88	27.16	1.00	2.68	3.86	0.012	3.97	4.53	3.42	28.59 j	28.31	7.7
6	CB-1 'Y'	0.12	0.12	0.85	7.53	12	97.050	29.10	28.13	1.00	0.77	3.86	0.012	1.98	2.95	1.01	29.47 j	29.06	6.0
7	CB-2 'Y'	0.15	0.15	0.87	7.53	12	46.488	28.34	27.88	0.99	0.98	3.84	0.012	1.41	1.57	1.25	29.08	29.06	6.0
8	CB-6 'B'	0.01	0.01	0.93	7.53	15	16.436	26.50	26.42	0.49	0.07	4.88	0.012	0.08	0.09	0.08	27.26	27.26	6.0
9	CB-7 'B'	0.17	0.17	0.95	7.53	15	42.998	26.34	26.13	0.49	1.22	4.89	0.012	2.12	3.21	1.04	26.77	27.26	6.0
10	CB-14 'B'	0.18	0.42	0.95	7.10	15	15.183	25.20	25.00	1.32	2.81	8.03	0.012	4.19	4.18	4.20	25.87	25.67	7.3
11	CB-12 'B'	0.10	0.24	0.95	7.23	15	32.923	25.36	25.20	0.49	1.63	4.88	0.012	2.96	3.50	2.42	25.87 j	25.87	6.9
12	CB-11 'B'	0.14	0.14	0.93	7.53	15	44.913	25.58	25.36	0.49	0.98	4.90	0.012	2.56	3.01	2.11	25.97 j	25.87	6.0
13	OS-16	0.00	0.00	0.00	0.00	15	50.451	25.00	24.75	0.50	3.94	4.92	0.012	4.52	4.31	4.73	25.87	25.55	6.0

Project File: 2022-10-06 Pipe Calcs.stm

Number of lines: 13

Date: 10/6/2022

NOTES: Intensity = 84.74 / (Inlet time + 12.30) ^ 0.83 -- Return period = 25 Yrs. ; ** Critical depth

APPENDIX I

OUTLET PROTECTION

JOB NAME: NURSE'S QUARTERS
 JOB NUMBER: RPM-203
 CALCULATED: RZH
 DATE: 10/06/12
 OUTLET ID: FES-10

Rip-Rap Design

Scour Hole

Q (cfs)	W (in)	H (in)	TW	W _o (ft)	H (ft)	D _o Multiplier	W (Total)	L	D ₅₀ (in)
6.33	18	18	2.71	1.5	1.5	1	12.0	13.5	0.2
6.33	18	18	2.71	1.5	1.5	0.5	7.5	9	0.4

THIS ONE

Rip Rap Apron

Q (cfs)	W (in)	H (in)	TW	W _o (ft)	H (ft)	3W _o	W (Total)	L _a	D ₅₀ (in)
6.33	18	18	2.71	1.5	1.5	4.5	21.2	16.7	0.5
6.33	18	18	2.71	1.5	1.5	4.5	8.6	10.3	0.5

TW < 0.5D_o

TW > 0.5D_o

THIS ONE

JOB NAME: NURSE'S QUARTERS
 JOB NUMBER: RPM-203
 CALCULATED: RZH
 DATE: 10/06/12
 OUTLET ID: HW-15

Rip-Rap Design

Scour Hole

Q (cfs)	W (in)	H (in)	TW	W _o (ft)	H (ft)	D _o Multiplier	W (Total)	L	D ₅₀ (in)
2.81	15	15	2.71	1.25	1.25	1	10.0	11.3	0.1
2.81	15	15	2.71	1.25	1.25	0.5	6.25	7.5	0.2

 THIS ONE

Rip Rap Apron

	Q (cfs)	W (in)	H (in)	TW	W _o (ft)	H (ft)	3W _o	W (Total)	L _a	D ₅₀ (in)
TW < 0.5D _o	2.81	15	15	2.71	1.25	1.25	3.8	16.1	12.4	0.2
TW > 0.5D _o	2.81	15	15	2.71	1.25	1.25	3.8	6.2	6.0	0.2

 THIS ONE

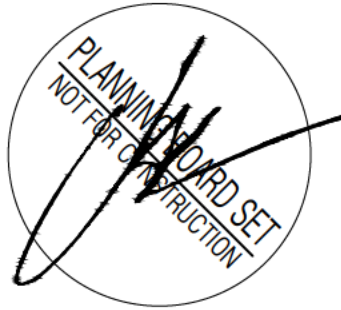
APPENDIX J

DRAINAGE AREA MAPS



Inglese Architecture
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CONSULTANTS:

NURSES QUARTERS REDEVELOPMENT

NEW 3-STORY TOWNHOUSES
BOROUGH OF OCEANPORT,
MONMOUTH COUNTY, NEW JERSEY
BLOCK: 110 LOT: 4

APPLICANT:

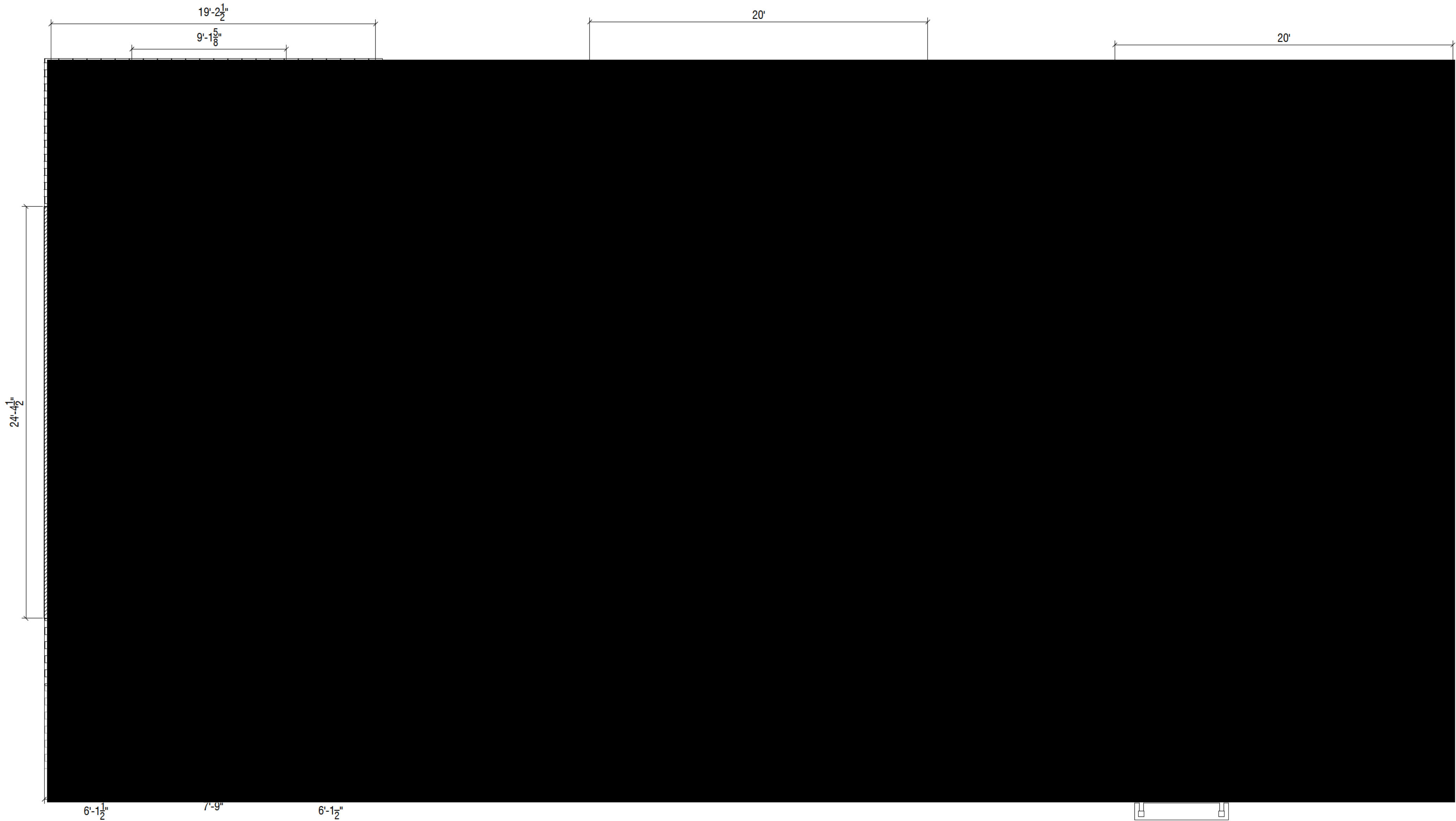
SUBMISSIONS:
APPROVAL SUBMISSION 08.10.2022

REVISIONS:

IAE PROJECT NO: 19081

SHEET TITLE:
TOWNHOUSE PLAN

SHEET:
A-100



③ **THIRD FLOOR PLAN**
SCALE: 1/4" = 1'-0"

② **SECOND FLOOR PLAN**
SCALE: 1/4" = 1'-0"

① **GROUND FLOOR PLAN**
SCALE: 1/4" = 1'-0"

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BOROUGH OF OCEANPORT,
MONMOUTH COUNTY, NEW JERSEY
BLOCK: 110 LOT: 4

APPLICANT:

SUBMISSIONS:

APPROVAL SUBMISSION	08.10.2022
---------------------	------------

REVISIONS:

IAE PROJECT NO: 19081

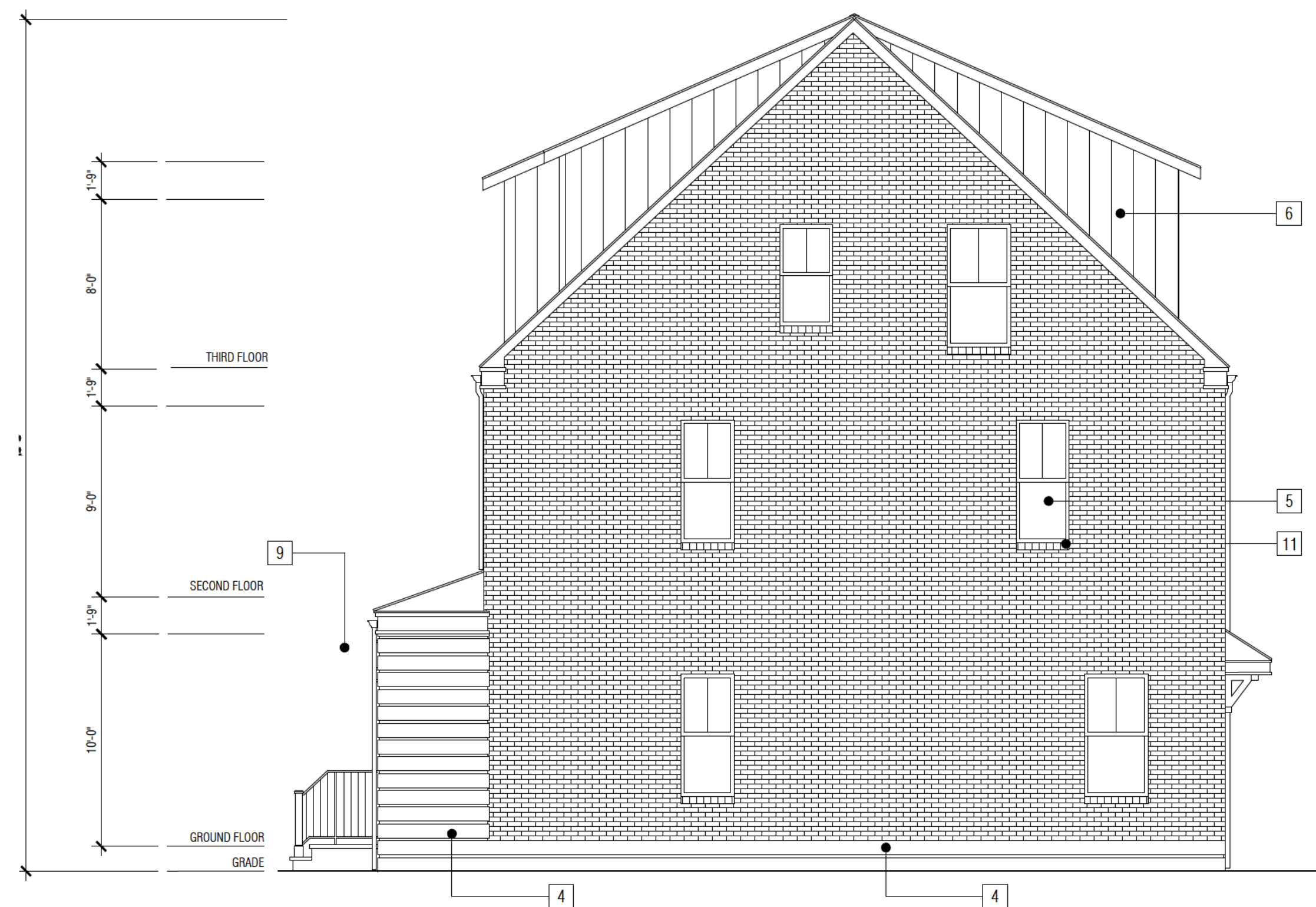
SHEET TITLE:
BUILDING ELEVATIONS

SHEET:

A-200

Packet Pg. 169

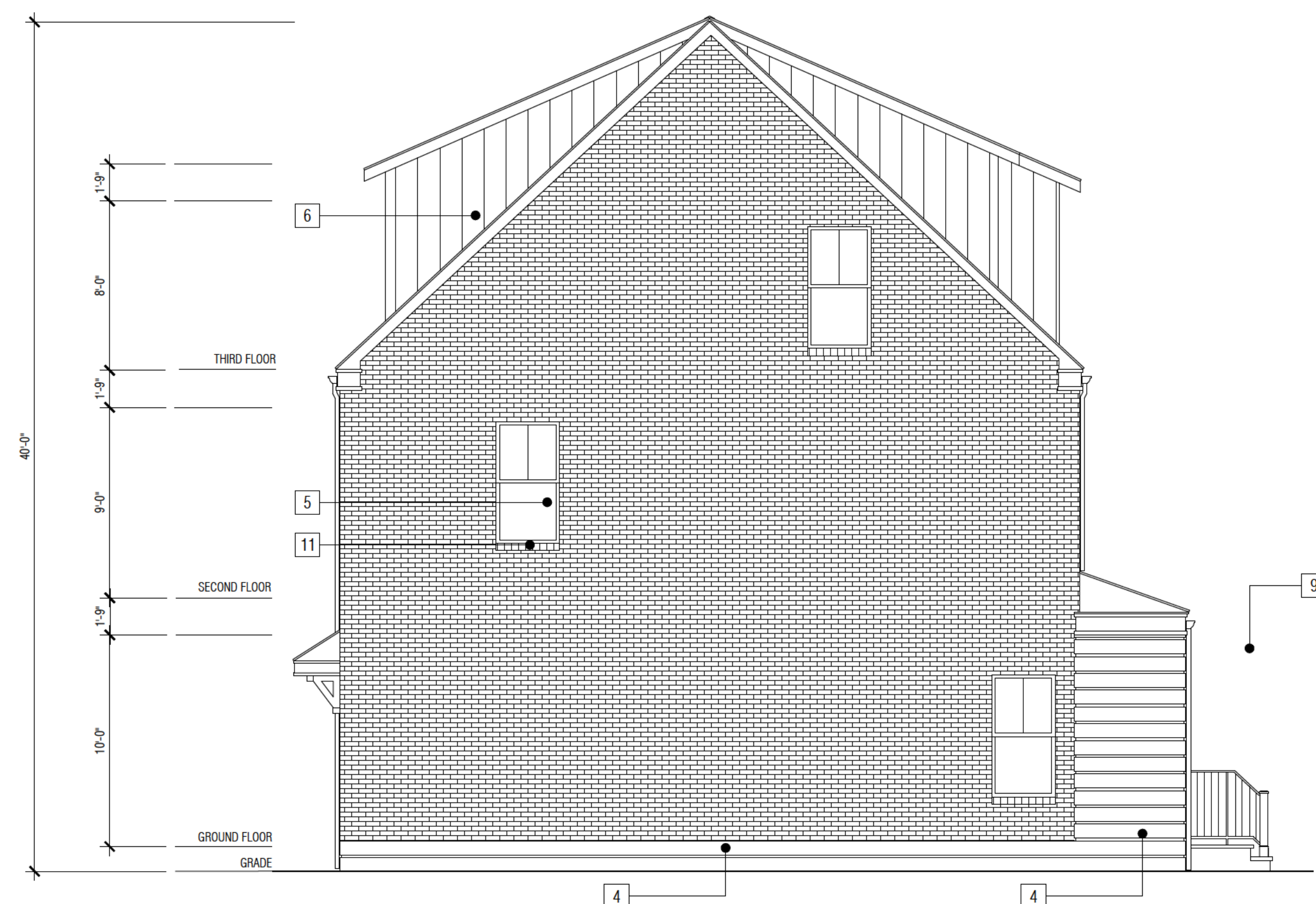
- | LEGEND | |
|--------|--------------------------|
| 1 | STANDING SEAM METAL ROOF |
| 2 | FIBERCEMENT SIDING |
| 3 | BRICK VENEER |
| 4 | CAST STONE |
| 5 | VINYL WINDOWS |
| 6 | METAL PANEL |
| 7 | METAL RAILINGS |
| 8 | ALUMINUM COPING |
| 9 | CANOPY |
| 10 | VINYL SLIDING DOORS |
| 11 | ROWLOCK WINDOW SILL |



4 **TYPICAL RIGHT SIDE ELEVATION**
SCALE: 3/16" = 1'-0"



3 - UNIT
REAR ELEVATION
SCALE: 3/16" = 1'-0"

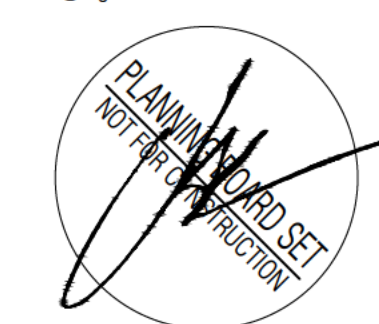


3 **TYPICAL LEFT
SIDE ELEVATION**
SCALE: 3/16" = 1'-0"



**3 - UNIT
FRONT ELEVATION**
SCALE: 3/16" = 1'-0"

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CONSULTANTS:

NURSES QUARTERS REDEVELOPMENT

NEW 3-STORY TOWNHOUSES
BOROUGH OF OCEANPORT,
MONMOUTH COUNTY, NEW JERSEY
BLOCK: 110 LOT: 4

APPLICANT:

SUBMISSIONS:

APPROVAL SUBMISSION 08.10.2023

REVISIONS:

IAE PROJECT NO: 19081

SHEET TITLE:
BUILDING ELEVATIONS

SHEET:

A-210

Packet Pg. 170

LEGEND	
1	STANDING SEAM METAL ROOF
2	FIBERCEMENT SIDING
3	BRICK VENEER
4	CAST STONE
5	VINYL WINDOWS
6	METAL PANEL
7	METAL RAILINGS
8	ALUMINUM COPING
9	CANOPY
10	VINYL SLIDING DOORS
11	ROWLOCK WINDOW SILL



**7 - UNIT
REAR ELEVATION**
SCALE: 3/16" = 1'-0"



**7 - UNIT
FRONT ELEVATION**
SCALE: 3/16" = 1'-0"