Easton Staff Development Review
MEETING AGENDA

Wednesday, August 23, 2023 - 11:00 AM
Council Chambers, Easton Town Office
14 S Harrison Street

1. Staff Review

a. Staff review only time: 10:00 AM - 11:00 AM

Easton Staff Development Review (ESDR) meetings are an opportunity for staff to meet with applicants to discuss our preliminary review of their application. At the ESDR meeting, staff also confirms with the applicant the next steps in the review process.

The August 23, 2023 meeting will be livestreamed and recorded.

No public comments will be taken at this meeting, but there will be opportunities for public comment at future Planning Commission and/or Town Council public hearings.

b.

Application Number:	2023-18
Location:	9719 Ocean Gateway Tax Map 0025, Grid 0006, Parcel 0113
Applicant:	Basi Brothers, LLC
Request:	Discussion of the Annexation of 3.25 acres of property located at 9719 Ocean Gateway, Easton, Maryland with a formal recommendation to the Town Council on the Annexation and the appropriate zoning classification.

2. Discussion Items

a.

Application Number:	2023-17
Location:	4 N. Washington Street Tax Map 103, Grid 0EA, Parcel 1216
Applicant:	4 North LLC
Request:	Site review for the conversion of the upper floors of the existing building to five (5) residential units.

b.	**Application Number:**	2023-10
	Location:	8685 Commerce Drive - Tuckahoe Hardwoods Tax Map 101, Grid 002, Parcel 0004, Lot 28
	Applicant:	Fink, Whitten & Associates, LLC c/o Elizabeth Fink
	Request:	Sketch Site Plan and Stormwater Management review of a proposed contractor's storage building.
c.	**Application Number:**	2023-12
	Location:	Elliott Road - Friel Storage Tax Map 109, Parcel 2849, Lot 4
	Applicant:	DMS & Associates, LLC
	Request:	Sketch Site Plan and Stormwater Management review of a proposed climate-controlled self storage facility.
d.	**Application Number:**	2023-15
	Location:	29533 Canvasback Drive - St. Vincent de Paul Tax Map 109, Grid 000, Parcel 4582, Lot 32
	Applicant:	Lane Engineering, LLC
	Request:	Sketch Site Plan and Stormwater Management review of a proposed 2,400 sq ft building addition and parking lot expansion.
e.	**Application Number:**	2023-16
	(County) Location:	Elliott Road Parcel 2866 - Elliott Road Apartments Tax Map 109, Parcel 2866, Lot 9
	Applicant:	McAllister, DeTar, Showalter & Walker LLC
	Request:	PUD Application amendment to add an additional sixteen (16) units for a total of 136 multifamily apartment units on the lands of Elliott Road Parcel 2866.
f.	**Application Number:**	2023-14
	Location:	Oxford Road - Poplar Hill Tax Map 0042, Grid 0004, Parcel 0573

Applicant:	5001 SHR, L.C.
Request:	Sketch Site Plan and Stormwater Management review the proposed development of 119 residential units and a recreational area consisting of a public park.

Town of Easton
Planning and Zoning
14 S. Harrison Street Easton, MD 21601 410-822-1943
HISTORIC DISTRICT COMMISSION
CERTIFICATE OF APPROPRIATENESS

Meeting Date:	**5/8/2023**
Application Number:	**2023-924**
Location:	**4 N Washington Street**
Applicant:	**4 North LLC**

Historic District Guideline references:

i. Guideline 80. Preserve Historic Storefronts
ii. Guideline 81. New Storefronts
iii. Guideline 89. Maintain Historic Windows
iv. Guideline 90. Make Sensitive Replacements

Commissioner Pezor moved to approve the application with the condition that **the muntin on the windows shall be SDL.** Vice Chairperson Brophy seconded the motion.

Vote 7-0
FOR: 7- Demby, Brophy, Greer, Pezor, Sebastian, Stuart

If the scope of work changes and or the materials and methods used are contrary to that understood by the application and any supplemental information provided, the work shall not continue until such time that the Commission is notified and said differences are considered and approved by the Commission.

"A Certificate of Appropriateness shall lapse upon the expiration of the corresponding Building Permit. For applications that require a building permit but for which none is issued, this Certificate of Appropriateness shall lapse six (6) months after issuance. In the event a building permit is not required, the Certificate of Appropriateness shall lapse six (6) months from its issuance if substantial work is not underway. For good cause shown, this period may be extended by the Commission".

Prior to start of work please contact the Building Inspection Department at 410 822 2525 to ensure all required building permits have been obtained.

Nicholas Johnson
Representative, Historic District Commission

5/23/2023
Date

TOWN OF EASTON
PLANNING & ZONING
14 S Harrison Street, Easton MD 21601

Historic District Commission Staff Report

Meeting Date: 5/8/2023

Staff Contact: Nicholas Johnson, Planner, njohnson@eastonmd.gov

Property Address: 4 N Washington Street

Application Number: 2023-924

Request: Exterior Renovations

Staff Recommendation: Approve ☐ Deny ☐ Continue ☒

Staff Comments:

The applicant is proposing to install new double hung wooden windows on the west and east elevations of the existing structure. On the east façade, the applicant proposes removing an existing door and replacing it with a wooden double hung window. On the Dover Street façade, the proposal is to remove part of the existing storefront window and install a new recessed entry door for the new apartments. Lastly, part of the roof on the interior of the building will be removed to allow for a new interior courtyard to be constructed.

This structure is a contributing structure within Easton's Historic District and is listed on the Maryland Register of Historic Places. The MHT survey identifies this structure as the former headquarters for the Star Democrat newspaper. Photos included in the MHT survey show that the storefront and third story windows have undergone changes over time. The main feature of the building highlighted in the MHT survey is the decorative cornice and crown molding.

Historic District Guidelines:

Guideline 44. Adding New Doors

a. Avoid adding a new door to a front façade.

b. Install additional doors, when needed, at the side or rear of the property. Avoid converting historic windows to door openings, especially where visible from the public-right-of-way.

Analysis – These two guidelines discourage the addition of new doors on the front façade and converting window openings to door openings. In this case, historic photographs show that this section of the front façade has changed overtime with the addition of the current door and the

addition of the new all glass storefront window. The Commission may request that the new door be located along a side façade in accordance with Guideline 44b.

Guideline 80. Preserve Historic Storefronts

a. Maintain original storefronts. Repair, rather than replace, deteriorated elements.

b. Make necessary replacements in-kind. When replacement is necessary, the new unit should match the original element as closely as possible in size, shape, profile, color, and material.

c. If using the original material is not economically or technically feasible, an alternative material that resembles the original in size, shape, profile, color, and other characteristics may be used. Avoid using inappropriate materials such as vinyl and aluminum siding, bare anodized aluminum, mirrored or tinted glass, artificial stone, and the like for a new storefront.

d. Missing storefront elements should be replaced. The design of the replacement should be based on documentary or photographic evidence. If none exists, the replacement element should be designed to be compatible in size, shape, profile, color, and character of the storefront.

e. If the use of the ground floor requires more privacy than allowed by the display windows, install privacy curtains or blinds. Avoid blocking in or otherwise removing or reducing storefront windows.

f. If storefront security systems are to be added, choose an electronic system that does not alter the appearance of the storefront.

g. Avoid adding details and ornamentation to existing storefronts that creates a false sense of history, or is incompatible with the overall design of the storefront.

Guideline 81. New Storefronts

a. A new storefront should be designed to fit within the existing storefront piers and cornice line. It should not be recessed behind the framing elements.

b. Design new storefronts to be compatible in scale, proportion, and details with the overall character of the front façade. Where possible, restore the original storefront based on documentary evidence.

c. Entrances in new storefronts should usually be recessed.

d. Avoid using inappropriate materials such as vinyl and aluminum siding, bare anodized aluminum, mirrored or tinted glass, artificial stone, and the like for a new storefront.

Analysis – The new storefront configuration uses a recessed entrance in keeping with Guideline 81c. The proposed door and transom window are similar to the two existing doors on this structure. Documentary photographic evidence shows that this side of the front façade has been drastically changed over time with the addition of the second door and changes in the storefront windows. There also appears to be a large canopy that historically covered the entire front façade of this structure. The Commission may request that the applicant re-creates this feature based on the historic photographs.

Guideline 89. Maintain Historic Windows

a. Maintain the historic shape, size, alignment, pattern, and details of existing historic windows. Where altered, consider restoring to its historic appearance based on physical or documentary evidence.

b. Do not infill window openings or cover existing historic windows.

c. Consider reopening windows that are presently blocked or boarded over.

d. Repair damaged or deteriorated windows. This may include replacing broken panes, sanding and repainting, or oiling operable components such as locks and chains.

e. Replace missing window elements, such as hardware or trim, in-kind.

f. Do not cover or wrap window trim or sills. Metal and vinyl coverings retain moisture and accelerate deterioration of wood and masonry elements.

g. Fix drafty windows by replacing weather stripping and ensuring that the window is well-fitted to the window opening. Add storm windows to provide a thermal break, if needed. Storm windows are a cost-effective alternative to replacing historic windows.

Analysis – The reopening of historic windows is consistent with guideline 89c.

Guideline 90. Make Sensitive Replacements

a. Replace windows that cannot be repaired in-kind. Replacement windows must match the original windows in size, proportion, design, and style. The number of windowpanes and the muntin and mullion profiles should match the historic window.

b. Replacement units for historic divided light (multi-pane) windows must have the appearance of a true divided light. Simulated divided light windows with three dimensional muntins are usually appropriate. “Snap-in” or “between-the-glass” vinyl muntins do not simulate a historic appearance and will not be approved for windows within the historic district.

c. Maintain the window type. For example, replacing a double-hung window with a casement window is not preferred.

d. Maintain the historic window opening size and surrounding trim. Altering the window opening to accommodate larger or smaller windows is not preferred.

e. Where inappropriate replacements were previously installed, and the original window appearance is unknown, neighboring buildings may provide clues to appropriate configurations. In general, a style of window that is in keeping with the architectural style of the building is most appropriate. Where the style of window cannot be determined, a one-over-one window configuration is usually most appropriate.

Analysis – The existing windows on the structure appear to be double hung wooden windows that match the style of the proposed windows.

STAFF RECOMENDATION:

Staff supports a HDC **continuance** of this application. The Commission may request that the applicant explore the feasibility of locating the new entrance door on the alley or the rear façade in keeping with Guideline 44.

DRAFT MOTIONS:

1. I move that the Historic District Commission **continue** the application while the applicant explores the feasibility of locating the new door on a side or rear façade.

OR

2. I move that the Historic District Commission approve the application as submitted.

OR

3. I move an alternate motion.

Tax Map 103
Grid EA
Parcel 1216

TOWN OF EASTON
PLANNING AND ZONING
14 SOUTH HARRISON STREET, EASTON, MD 21601

Application #:	2023-924
Date Received:	04/13/2023
Fee Paid:	$75.00
HDC Meeting Date:	05/08/2023
Date Property Posted	05/01/2023

HISTORIC DISTRICT COMMISSION HEARING APPLICATION

APPLICATION TYPE
(PLEASE CIRCLE)

ROOFING DEMOLITION SIGNAGE FENCING OTHER
NEW CONSTRUCTION/ADDITION EXTERIOR ALTERATIONS
FOR TREE REMOVAL(S) - PLEASE USE THE TREE REMOVAL APPLICATION

PROPERTY INFORMATION

ADDRESS: 4 North Washington Street - 9 East Dover Street

☐ Contributing ☐ Non-Contributing YEAR BUILT: _____ NATIONAL REGISTAR # _____

PROPERTY INFORMATION

OWNER NAME: 4 North LLC
TELEPHONE NO.: 410 924 1420 EMAIL: RQM1@Mac.com

Applicant or Agent

NAME: 4 North LLC Richard Meeks
TELEPHONE NO.: 410 924 1420 EMAIL: RQM1@Mac.com

Description of Proposal (include additional sheets, as necessary)

- Create New entrance on Dover Street
- Install 4 windows on 4th floor - 2 facing East 2 facing West
- Install 8 windows on 1st + 2nd floor - Alley side facing East

Specific Requirements

- The payment of fees is due at the time of application submittal.
  As of December 27, 2022, the fees are as follows:
  Commercial - $200 Residential - $75 Signs - $75 Staff Approval $25
- Provide 3 hard copies plus 1 digital copy of the application and all supplemental information.
- Disclose any easements or deed restrictions pertaining to the property and any improvements including the details of said easements or restrictions.
- Disclose any tax credits and or grants being considered for the project.

The Historic District Commission (HDC) reserves the right to request reasonable additional information or design drawings that further clarify proposals. In cases where professional design services are warranted, the HDC may require the applicant to retain a licensed design consultant.
If the applicant or their designee is not present for the scheduled meeting the Commission may elect to refrain from discussing and voting on the scheduled agenda item.
Any modifications during review shall warrant an updated application.

I hereby certify that I have reviewed the Easton Historic District Guidelines as published

Signature of Applicant or Agent 4 North LLC
Date 4/9/23
Printed Name of Applicant or Agent Richard Meeks

RECEIVED
APR 13 2023

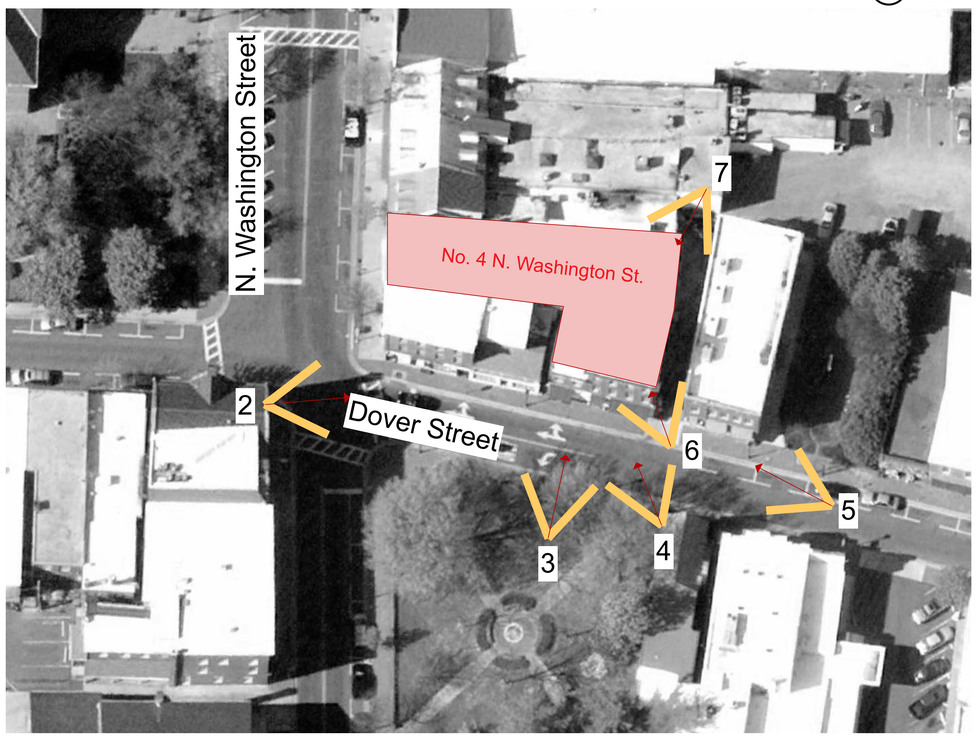
Revised 4.4.2022

2 EX'b 01 Dover from west
SCALE: 1:2.05

3 EX'b 01 Dover frontal
SCALE: 1:5.91

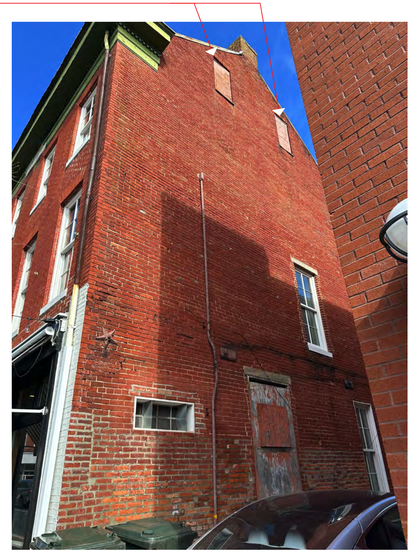
4 EX'b 01 Dover 3qrt
SCALE: 1:5.06

8 EX'b 01 Dover frontal
SCALE: 1:6.37



1 EX'b 01 aerial site plan
SCALE: 1:1.47

5 EX'b 01 Dover +Alley from East
SCALE: 1:6.94



6 EX'b 01 Alley south end
SCALE: 1:7.60

7 EX'b 01 Alley North end
SCALE: 1:7.60

1"=1'-0" 0' 1' 2'
1/2"=1'-0" 0' 5'
1/4"=1'-0" 0' 5' 10'
1/8"=1'-0" 0' 5' 10' 20'
True N Plan N

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Architect
McInturff Architects
4220 Leeward Place Bethesda, Maryland 20816
P 301.229.3705 (F 6380)
www.mcinturffarchitects.com

Consultant
Structural Engineer
Neubauer Consulting Engineers, P.A.
4701 Sangamore Rd., Suite N290
Bethesda, MD 20816
ph. 301.263.2727 fax 301.263.1039
Site Engineer
CAS Engineering Inc.
130 South Bentz Street Frederick, MD 21701
ph. 301.607.8025

Project Name and Address
#4 N. Washington Street
4 North Washington Street Easton MD

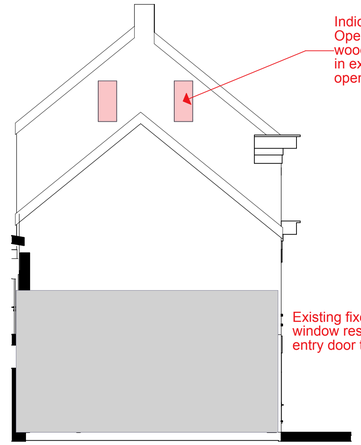
Drawing Status
Window Restoration Package 4/5/23

Sheet Content
Building Photos

Signature Verification

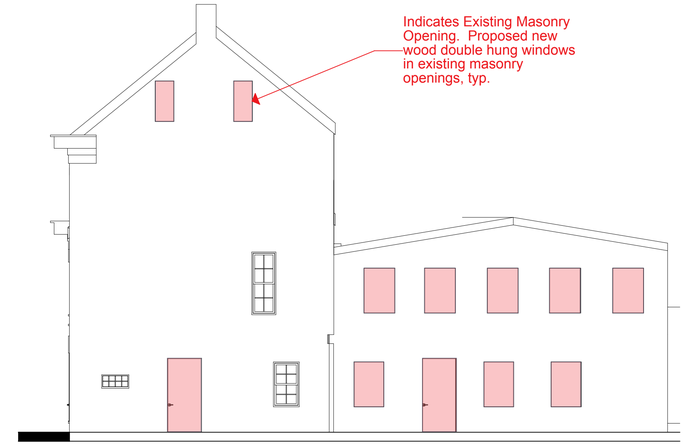
Sheet #
EX'b 01

Existing



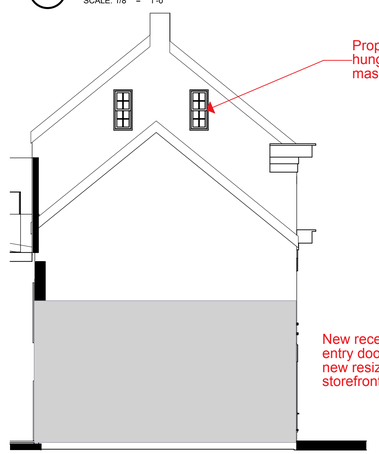
1 EX'b 02 Dover Bldg West Elev Exist 1/8"
SCALE: 1/8" = 1'-0"

2 EX'b 02 South / Dover Street Elevation, Existing
SCALE: 1/8" = 1'-0"



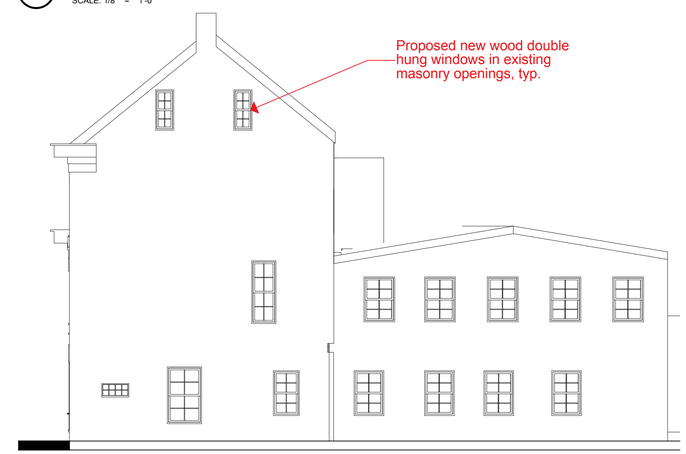
3 EX'b 02 East (S) Alley Elevation, Exisitng
SCALE: 1/8" = 1'-0"

Proposed



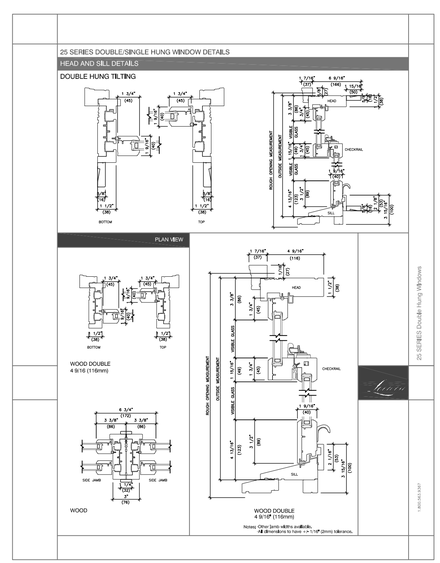
4 EX'b 02 Dover Bldg West Elev Proposed 1/8"
SCALE: 1/8" = 1'-0"

South / Dover Street Elevation, Proposed



6 EX'b 02 East (S) Alley Elevation, Proposed
SCALE: 1/8" = 1'-0"

7 EX'b 02 aerial site plan
SCALE: 1:1.47



Loewen Wood DH Std. BM Cut Sheet

1"=1'-0" 0' 1' 2'
1/2"=1'-0" 0' 5'
1/4"=1'-0" 0' 5' 10'
1/8"=1'-0" 0' 5' 10' 20'

True North Plan N

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Architect
McInturff Architects
4220 Leeward Place Bethesda, Maryland 20816
P 301.229.3705 (F 6380)
www.mcinturffarchitects.com

Consultant
Structural Engineer
Neubauer Consulting Engineers, P.A.
4701 Sangamore Road, Suite N290
Bethesda, MD 20816
ph. 301.263.2727 fax 301.263.1039
Site Engineer
CAS Engineering Inc.
115 South Bentz Street Frederick, MD 21701
ph. 301 607 8025

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4 North Washington Street Easton MD

Drawing Status
Window Restoration Package 4/5/23

Sheet Content
Building Elevations

Signature Verification

Sheet #
EX'b 02

1 EX'b 03 Existing Dover Street Elevation

2 EX'b 03 Proposed Dover Street Elevation

1"=1'-0" 0' 1' 2'
1/2"=1'-0" 0' 5'
1/4"=1'-0" 0' 5' 10'
1/8"=1'-0" 0' 5' 10' 20'

True N Plan N

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Architect
McInturff Architects
4220 Leeward Place Bethesda, Maryland 20816
P 301.229.3705 (F 6380)
www.mcinturffarchitects.com

Consultant
Structural Engineer
Neubauer Consulting Engineers, P.A.
4701 Sangamore Rd., Suite N290
Bethesda, MD 20816
ph. 301.263.2727 fax 301.263.1039
Site Engineer
CAS Engineering Inc.
100 South Bentz Street Frederick, MD 21701
ph. 301.607.8025

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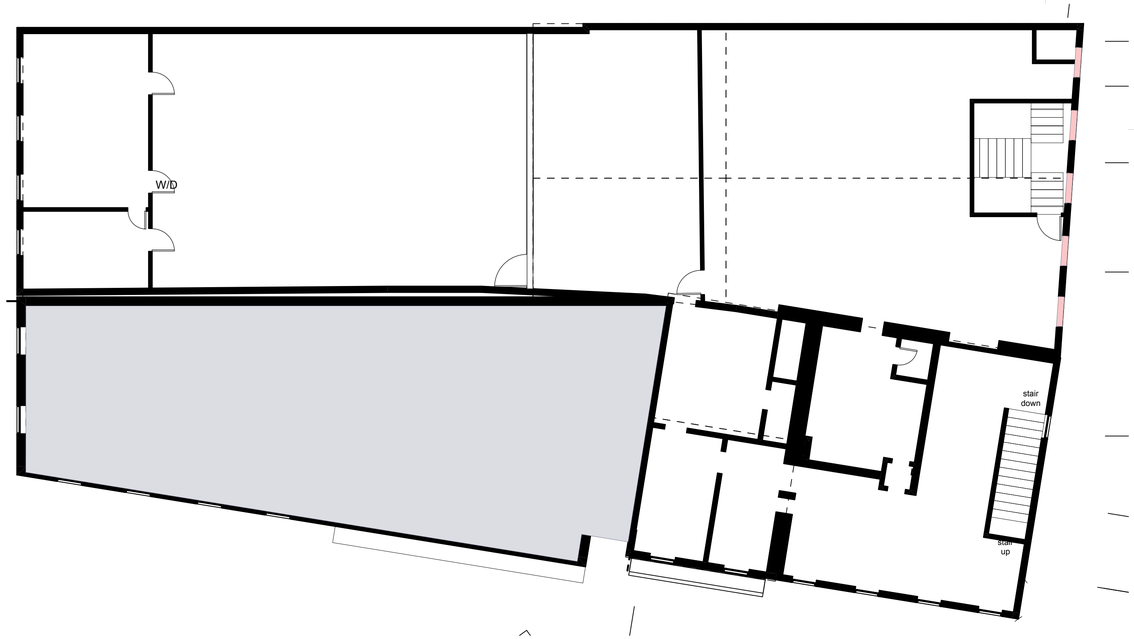
#4 N. Washington Street
4 North Washington Street Easton MD

Drawing Status
Window Restoration Package 4/5/23

Sheet Content
Building Elevations

Signature Verification

Sheet #
EX'b 03

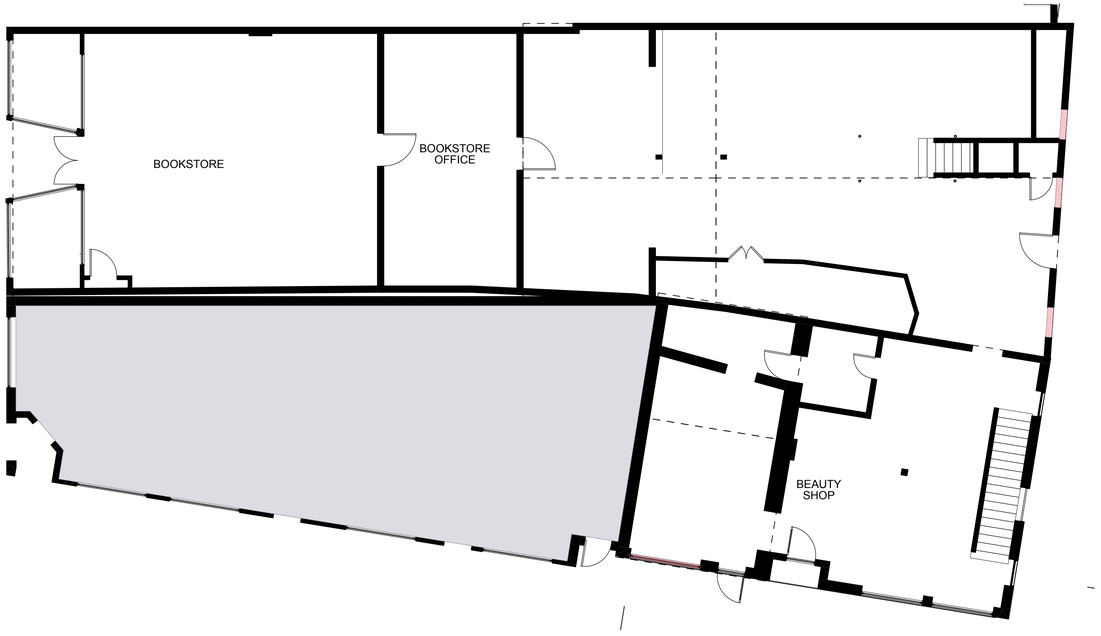


2 EX'b 04 Existing 2nd Floor Plan

SCALE: 1/8" = 1'-0"

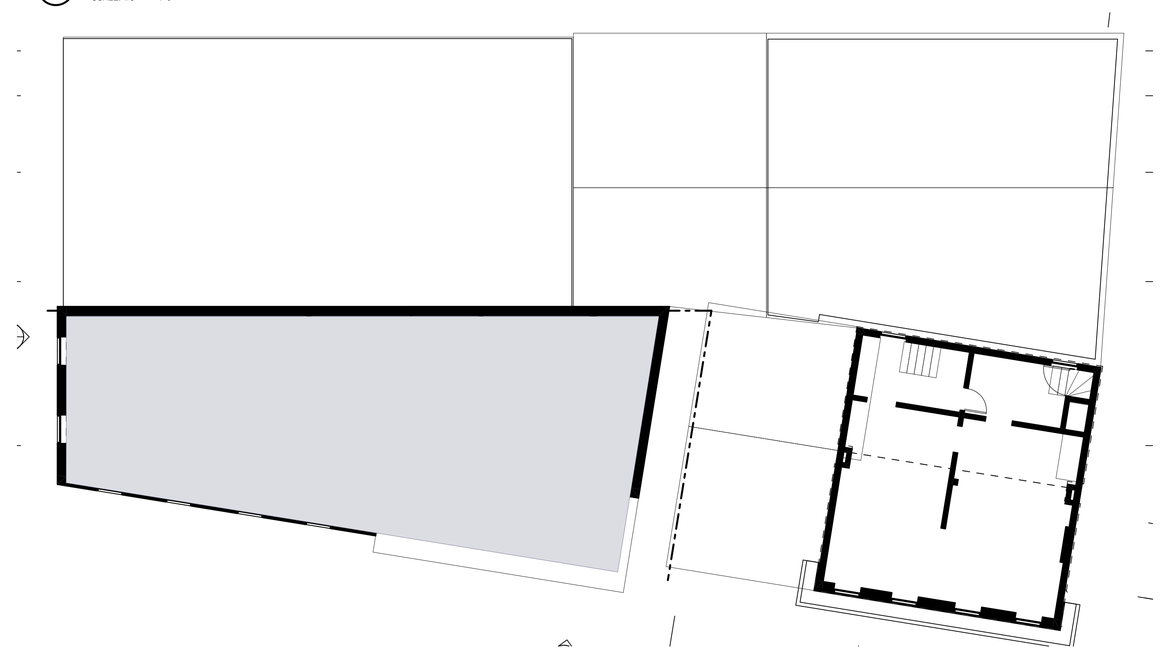
4 EX'b 04 Existing 4th Floor

SCALE: 1/8" = 1'-0"



1 EX'b 04 Existing 1st Floor Plan

SCALE: 1/8" = 1'-0"



3 EX'b 04 Existing 3rd Floor

SCALE: 1/8" = 1'-0"

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1/2"=1'-0" 0' 5'

1/4"=1'-0" 0' 5' 10'

1/8"=1'-0" 0' 5' 10' 20'

True N Plan N

Architect
McInturff Architects
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P 301.229.3705 (F 6380)
www.mcinturffarchitects.com

Consultant
Structural Engineer
Neubauer Consulting Engineers, P.A.
4701 Sangamore Rd., Suite N290
Bethesda, MD 20816
ph. 301.263.2727 fax 301.263.1039

Site Engineer
CAS Engineering Inc.
1100 South Market Street Frederick, MD 21701
ph. 301.607.8025

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#4 N. Washington Street
4 North Washington Street Easton MD

Drawing Status
Window Restoration Package 4/5/23

Sheet Content
Existing Plans

Signature Verification

Sheet #
EX'b 04

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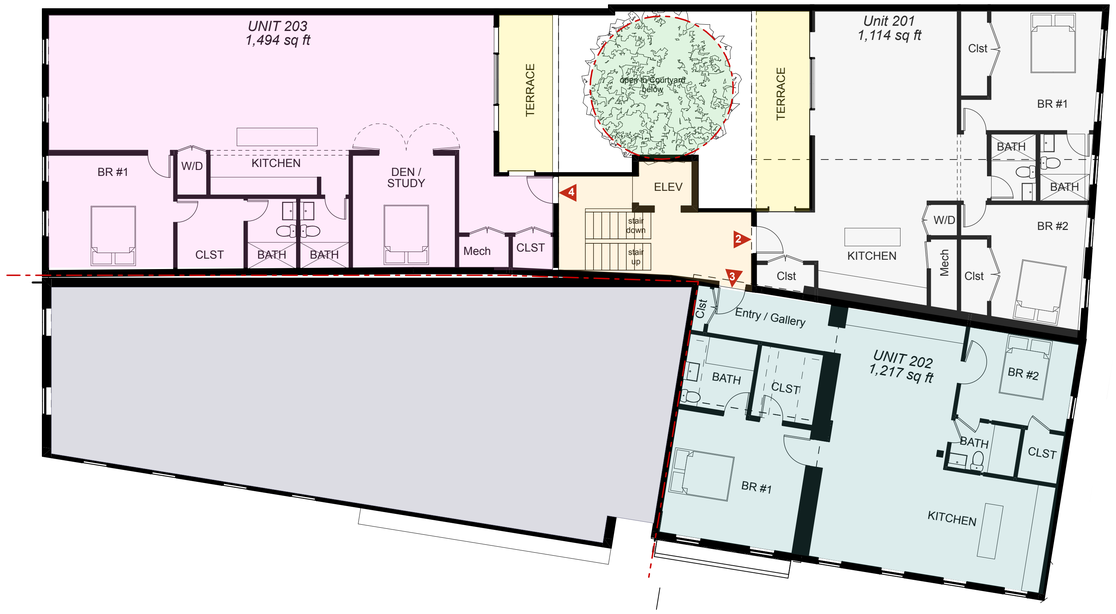
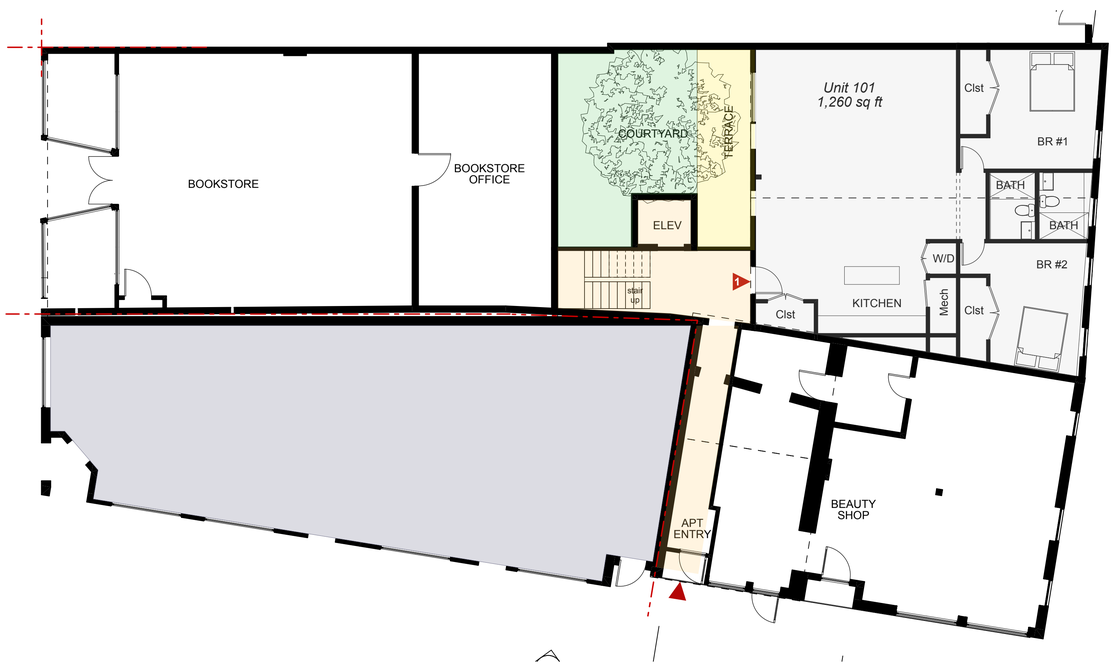


2 EX'b 05 Proposed 2nd Floor Plan

SCALE: 1/8" = 1'-0"

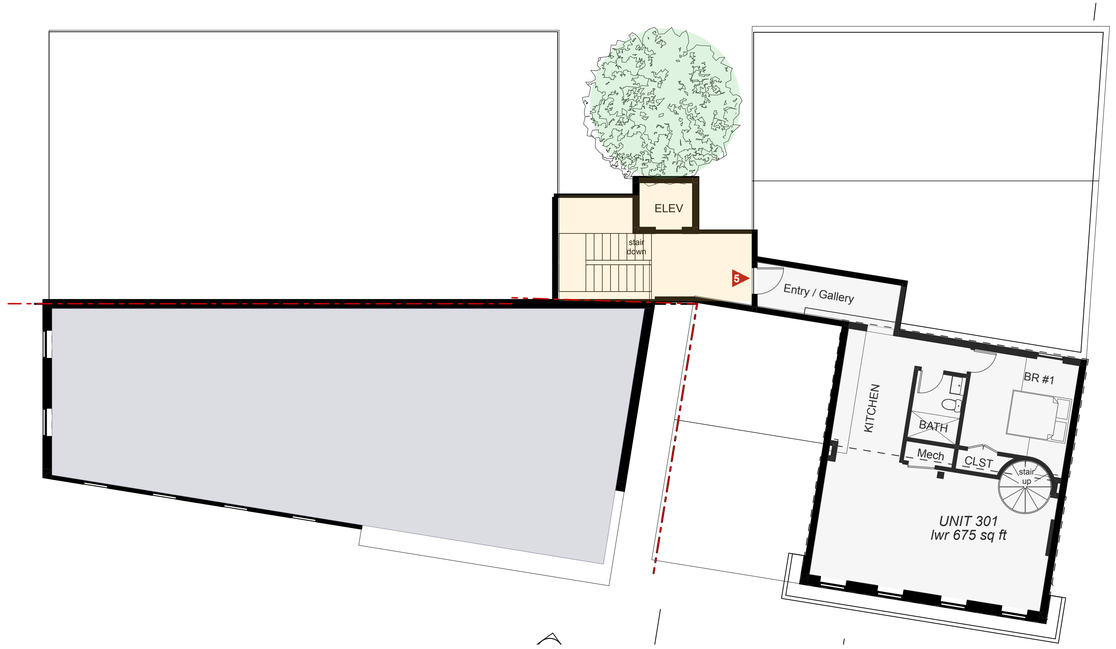
4 EX'b 05 Proposed 4th Floor

SCALE: 1/8" = 1'-0"



1 EX'b 05 Proposed 1st Floor Plan

SCALE: 1/8" = 1'-0"



3 EX'b 05 Proposed 3rd Floor

SCALE: 1/8" = 1'-0"

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1/2"=1'-0" 0' 5'
1/4"=1'-0" 0' 5' 10'
1/8"=1'-0" 0' 5' 10' 20'
True N Mag N

Architect
McInturff Architects
4220 Leeward Place Bethesda, Maryland 20816
P 301.229.3705 (F 6380)
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Consultant
Structural Engineer
Neubauer Consulting Engineers, P.A.
4701 Sangamore Rd., Suite N290
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CAS Engineering Inc.
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ph. 301.607.8025

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#4 N. Washington Street
4 North Washington Street Easton MD

Drawing Status
Window Restoration Package 4/5/23

Sheet Content
Architectural Floor Plans
Proposed

Signature Verification

Sheet #
EX'b 05

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subject buildings
match this door and transom, here

Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

RECEIVED
AUG 03 2023
TOWN OF EASTON

Easton Staff Development Review

Property Information

Address	4 North Washington Street Easton						
Tax Map	103	Grid	E1	Parcel	1216	Lot	
Deed Refernce:	Liber	2060	Folio	33			
Plat Reference:	Liber	505	Folio	543			
Base Zoning District			Historic District Y ☒ N ☐		Planning Redevelopment Y ☐ N ☐		

Purpose of Application / Description of Work: (VINTAGE BOOK)

Building currently houses 2 commercial entities on the first floor: one on Washington Street's one on Dover Street (PRIM). The upper floors are vacant and over time housed a department store, an accountants office and the town newspaper. We plan to create apartments on the upper floors and also one on the first floor, but also retain the existing commercial spaces.

Owner

Name	4 North LLC (Tim Boyle) (Richard Marks + Amy Haines)
Mailing Address	4 North Washington Street Easton, MD 21601
Telephone No.	410 822 4101 Email vintagebooks md@yahoo.com

Applicant / Agent

Name	Richard Marks
Mailing Address	205 Goldsborough Street Easton MD
Telephone No.	410 924 1420 Email RQM1@Mac.com

Surveyor / Engineer

Name	Linton Engineering	License No. 23910	Expiration Date
Mailing Address	46090 Lake Center Plaza Suite 309 Potomac Falls, VA 20165		
Telephone No.	571-239-4606	Email dlinton@lintonengineering.com	

Any modifications during review shall warrant an updated application.

I do hereby solemnly declare and affirm that the information provided by this application and the documents attached hereto accurately represent the conditions of the request and that submission of an incomplete application will be returned for correction prior to processing.

Signature of Applicant or Agent

Date 3 Aug 2023

Printed Name of Applicant or Agent Richard Marks

For Office Use Only

Easton Staff Development Review Meeting Required Y ☒ N ☐

Easton Staff Development Review Meeting Date 08/23/2023

Completeness Check Date

Revisions/Resubmissions Required Y ☐ N ☐

Resubmission Date

Documents Received Y ☐ N ☐

Staff Determination

Planning Commission Requir Y ☐ N ☐

BOZA Required Y ☐ N ☐

Historic District Commission Required Y ☐ N ☐

Resubmission for ESDR Required Y ☐ N ☐

Staff Signature

Date

Revised 02-2019

TOWN OF EASTON
Planning & Zoning Department
14 South Harrison Street
P.O. Box 520
Easton, Maryland 21601

Easton Staff Development Review Worksheet

Date: May 25, 2023
Project: 8685 Commerce Drive - Tuckahoe Hardwoods
To: Elizabeth Fink - Fink, Whitten & Associates, LLC.

The Easton Staff Development Review (ESDR) Committee meeting was held on May 24th at 11:00 am. Staff reviewed the Site Sketch Plan for the proposed warehouse building on the property located at 8685 Commerce Drive, also known as Tax Map 101, Parcel 004, Lot 28.

The project will need to address all agency comments as specified in the attached review letters and at ESDR. Specific areas discussed at the meeting included providing Quantity Stormwater Calculations, Forest Conservation and Landscape requirements.

The Committee determined that the application needs to return to the next available ESDR meeting. Please address all comments and submit an updated application.

The next ESDR meeting is scheduled for **Wednesday, June 28, 2023 at 11:00 am.** Submit all documentation to the Planning and Zoning Department no later than **Wednesday, June 7th at 12:00 pm.** Provide a digital submittal (via email) of the ESDR Application and its supporting documents, including **three paper copies**.

Based on the ESDR sketch plan submission, the Staff did not identify constraints which require action by the Board of Zoning Appeals.

Please contact the Planning & Zoning Department at 410 822-1943 with any questions.

Sincerely,

Joseph A. Mayer
Plan Reviewer - Planning and Zoning

TOWN OF EASTON
PLANNING & ZONING
PO Box 520
Easton, Maryland 21601
(410)-822-2526

DATE: **May 18, 2023**
TO: **Elizabeth Fink - Fink, Whitten & Associates, LLC.**
cc: **Miguel Salinas –** Director of Planning & Zoning Department
Rick Van Emburgh – Town Engineer, Department of Engineering
FROM: **Joseph A. Mayer -** Plan Reviewer, Planning & Zoning Department

SUBJECT: **8685 Commerce Drive - Tuckahoe Hardwoods**

PLANNING & ZONING COMMENTS

Sketch Site Plan

1. If there's no outside storage on-site, revise permissible use on the Site Statistics as *'Contractor's Office with no outside storage'*. Please confirm.
2. Per Chapter 28-1007.A.3.l.1 thru 5 of the Zoning Code, provide an impact statement on the site plan.
3. Revise The parking calculations for '*Construction-related business'.* Adjust parking space calculations per revision.
4. Show the minimum and maximum parking space requirements.
5. The proposed parking adjacent to the existing storage building at unit 1 and 3 impedes the access into the existing overhead doors if vehicles are to enter the warehouse. Please verify accessible ingress/egress for both units.
6. Include a statement regarding "*the nature of the proposed use, its expected impact on its surrounding area, expected truck traffic, and any other information necessary to provide a fair and accurate assessment of the impacts of the proposed use on the subject property and the surrounding area*." (28-1007.3.A.6).
7. Dimension all existing and proposed road widths
8. Provide applicable Bufferyard 'D' along Commerce Drive and Bufferyard 'E' along exterior property lines adjoining the site or submit a Supplemental Waiver Request

Application for Landscaping & Buffering.

9. Per Chapter 28-1014.6.F.1 of the Zoning Code, *Overall minimum tree plantings required (excluding required bufferyards) shall be based on site area to be disturbed. (Disturbed area includes all site areas except for existing forest retention and preservation, existing wetland preservation, significant non-buffyard areas of larger sites to be preserved in a natural state, and required bufferyard areas. The minimum tree requirement shall be one (1) tree per 3000 sq. ft. of disturbed area.* Nine trees are required. The applicant proposes to partially satisfy the requirement with five trees and submit a waiver request for four trees. However, appropriate plantings that are native species and consistent with the *"Maryland Aviation Administration Approved Planting List"* can be utilized to meet the zoning requirement. Please see attached documents.

10. Per Chapter 28-1014.6.F.2.a of the Zoning Code, *Interior Parking Lot Plantings- 1 tree per 10 spaces to be planted within the interior of the parking lot, see* ***Figure 10-7.*** *Trees shall be located within the parking bays so that no more than 15 parking spaces form an uninterrupted row. Trees shall be planted within an area of previous space of at least 64 sq.ft. allocated per tree, with no dimension of any parking lot planting island less than 6'.* One tree is required. The applicant proposes to submit a waiver request. There are six proposed parking spaces at the north side of the property. One parking space is adjacent to the drive aisle of the site. A landscape island at that location would be appropriate. Plantings that are native species and consistent with the *"Maryland Aviation Administration Approved Planting List"* can be utilized to meet the zoning requirement and satisfy the concern of the Municipal Airport requirements of plantings within the flight zone.

11. Provide additional screening for the loading and unloading area adjacent to the proposed stormwater management facilities. Per Chapter 28-308.2 J of the Zoning Code, any decorative screens or natural plantings used for screening off-street loading and unloading shall be a minimum of eight feet in height. Please revise the Legend & Schedule on the Landscape Plan to reflect the required height. However, an option is provided to utilize an evergreen tree buffer planting, minimum 7' height at installation, staggered to create a solid screen at installation. See Chapter 28-1014.6 F(2)d of the Zoning Code.

12. The approved Forest Conservation Plan was approved on August 11, 2016. The total area of 9,235 square feet was removed from the site under the approved Forest Stand Delineation/Forest Conservation Plan, Obstruction Removal Program to meet current Federal Aviation Administration (FAA) requirements outlined in 14 Code of Federal Regulations (CFR) Part 77, *Safe, Efficient Use, and Preservation of the navigable Airspace, and FAA Advisory Circular 150/5300-13A, Airport Design.* Mitigation was provided as a fee in lieu payment into the Forest Conservation Account for $4,963 on October 26, 2021. In order to meet Forest Conservation Requirements for the new site design, afforestation may be credited against the required landscape improvements. All plantings are to be native species and consistent with the *"Maryland Aviation*

Administration Approved Planting List". Please submit a Forest Conservation Plan and Application.

13. Please note on the Landscape Plan that all proposed trees shall be maintained at a maximum of fifty-three feet, per the agreement between Easton Airport.

14. Is there an exterior refuse collection area? Please advise.

15. Dimension offset distances from building to the property line adjacent to Lot 27.

16. Add Ward District in the Title Block to all sheets.

17. Label property owners adjacent to Commerce Drive.

18. Show zoning district boundaries on the Vicinity Map.

19. Show location of proposed site lighting. Indicate that the lights will be eighteen feet in height and shall not shine off-sight at levels greater than 1-foot candle unless approved otherwise by the Planning Commission.

DEPARTMENT OF ENGINEERING

COMMENTS ATTACHED.

EASTON UTILITIES

COMMENTS ATTACHED.

BUILDING INSPECTION & PERMIT DEPARTMENT

COMMENTS ATTACHED.

Plan Review Status

IMPROVEMENT PLAN REVIEW			Comments
Plans Approved	☐Y	☒ N	Please review the comments above. Revise and resubmit.

GRADING PERMIT STATUS			
Application and Final Approved Site Plan Submitted to Town Engineer	☐Y	☒ N	To be processed by the Department of Engineering.
LEGAL DOCUMENTS			
Storm Water Easement			
☒ Required ☐ Submitted ☐ Approved			To be processed by the Department of Engineering.
Drainage & Utility and Landscape Easement			
☐ Required ☐ Submitted ☐ Approved			**Not required**.
Shared Access/Use Easement			
☐ Required ☐ Submitted ☐ Approved			**Not required**
Sidewalk Easement			
☐Required ☐ Submitted ☐ Approved			**Not required**
Declaration of Covenants			
☒ Required ☐ Submitted ☐ Approved			To be prepared by Town Attorney
Public Works Agreement			
☒ Required ☐ Submitted ☐ Approved			To be prepared by Town Attorney
Bond/Letter of Credit/ Cash Agreement			
☒ Required ☐ Submitted ☐ Approved			To be processed by the Department of Engineering.
Talbot Soil Conservation District Approval			
☒ Approval Required			**Approval pending.**
Forest Stand Delineation & Forest Conservation Plan			
☐ Required ☐ Submitted ☐Approved			**The development of this site has already been mitigated for Forest Conservation under the Forest Conservation Plan, recorded on 8/11/2016. Trees within Forest Conservation were removed to comply with the Obstruction Removal Program to meet FAA requirements. Mitigation has been provided as a fee in lieu payment into the Forest Conservation Account.**
Other			
☒Required ☐ Submitted ☐ Approved			**Applicant to provide FAA Determination of no hazard to air shall be required prior to site plan Approval. In addition, obtain SHA Access Agreement for SWM outfall.**

Please contact me if you have any questions. Thank you.

TOWN OF

EASTON

ENGINEERING DEPARTMENT

DATE:	**May 23rd, 2023**
TO:	**Johnny Dent – Owner**
	Ebie Fink – Fink, Whitten
Cc:	**Rick Van Emburgh – Town Engineer**
	Miguel Salinas – Planning and Zoning Department
	Aaron Goller – EUC
FROM:	**Sierra Clem – Engineering Department**
SUBJECT:	**Tuckahoe Hardwood – Sketch Site Plan Review Comments**

I have reviewed the application for the subject project received on 5/12/2023. I have the following comments:

1. Show all adjacent property owners along Commerce Drive.
2. Please include the dimensions of all existing roads, ROW and entrances.
3. Please provide verification of SHA authorization for the LOD and outfall shown on SHA ROW.
4. There is as label for LOD in the SHA ROW but no line type. Please update the LOD boundary and confirm the total LOD calculations.
5. The space between the building and the SWM feature, and the SWM feature and the southern property line is tight. Please verify vehicular access for construction and maintenance of the feature.
6. Please complete the ESD Summary Chart with the Target ESDv and include on the site plan.
7. Provide quantity stormwater calculations. Please complete the Quantity summary chart and include on the site plan. Pre calculations need to be completed.
8. Since the existing rain garden typically holds water after rain events, please modify the landscape Plan to use wet soil rain garden plants similar to TOE-SWM 6.01-5.

The **Sketch Plan** is **acceptable** to the Engineering Department, but the **Sketch Stormwater Management Plan needs to be revised to address quantity prior to proceeding to the Planning Commission.** Please submit a Revised Sketch Stormwater Management Plan.

Please contact me if you have any questions. Thank you.

P.O. Box 520, Easton, Maryland 21601
410-820-8822
Engineering@EastonMD.gov - www.EastonMD.gov

TOWN OF EASTON

PO Box 520
Easton, Maryland 21601
(410)-822-2526 Fax (410)-822-8738
Office of Building Inspection.

ESDR- Building Inspection and Permit Department Comments

Date: May 24,2023

Project; 8685 Commerce Drive, Pole Construction

A Town of Easton Building Permit is required for all new construction.

- Contact this Department to verify current Building Codes including the Town of Easton's modifications prior to preparation of Building plans.

  The following lists items required on the construction drawings in order to apply for a Building Permit.

  - Indicate the type of construction, new (shell only or Tenant fit out).
  - Construction Documents (3 sets) for any new construction will be required. Documents must be prepared by a registered Maryland Registered Architect, with original plans signed and sealed. A code analysis completed by a Registered Maryland Architect including, classification (use group), construction type, and occupant loads must be completed and included with the application materials.
  - The Town of Easton, in accordance with the International Building Code Chapter 17, establishes a building inspections procedure that utilizes qualified, third-party professionals in addition to the Town's Building Inspectors. The purpose of this document is to establish the policy and guidelines for the construction process in accordance with the Building Code requirements and to:
    - Define the responsibility of all parties.
    - Standardize code application.
    - Provide for an orderly and systematic approach for updating standards that apply to the Special Inspections.
    - Set forth a guideline for Special Inspections.

    A copy of this can be found on the Towns Web Site
  - Items that must be addressed by the construction documents will be structural strength, means of egress (include travel distance), facilities, stability, sanitation, light and ventilation, energy conservation and safety to life and property from fire and other hazards attributed to the built environment, **Accessibility**, and other safety requirements for public access.

- All mechanical, electrical, and plumbing permits as required must include construction documents signed and sealed by a professional engineer and by a responsible party for the contractor receiving the permit. Be sure the Town of Easton modifications are included. Section 6-16 of the Town Code.
- Pursuant to Town of Easton Ordinance 477, Chapter 9 Fire Protection, Article VII Security Key Lock Boxes, a lockbox shall be provided on the exterior of the building and shall be located as required by the chief of the Easton Volunteer Fire Department, Inc. (410-822-4848).
- An appointment may be set up with this department to review your permit application materials prior to permit application submission.

- **State Fire Marshal,** (410-822-7609) plan review and inspections are required. It is your responsibility to contact them and make application.

EASTON UTILITIES

Life. Made better.™

Easton Utilities Commission

Plan Review Comments

Date:	Tuesday, May 23, 2023		
To:	Joe Mayer; Nicholas Johnson; Sierra Clem		
From:	Kia Gibbs on behalf of Aaron Goller, PE	**No. of Pages:**	1
Re:	8685 Commerce Drive	**Phase:**	Sketch Site Plan
Review Type:	Preliminary **SUBM:** 1	**Status:**	Approved as Noted

Easton Utilities Commission has reviewed the above referenced plans and have provided the following comments. Please provide your corrections as listed below. Additional reviews will be required to ensure comments have been addressed. Items or documents not provided on initial submission will be subject to further review. Please contact Kia Gibbs, Admin Support at kgibbs@eucmail.com should you have any questions.

ITEM:	DRAWING / PAGE	COMMENTS:
1	C-1	Capital Charges duefor 0.23 EDU's in the amount of $1.692
2	C-6	Electric service shall not be under structure
3	C-6	Show water and sewer utilities on plans
4	C-6	Clay sewer lateral under stormwater pond not permitted.
5	C-6	Sewer lateral to be verified, camera'd and pressure tested. If clay, lateral shall be replaced.
6	C-6	Underground electric service to be relocated at owners expense. Pull strings in ducts.
7	C-6	Will service be upgraded?

SITE PLAN
FOR THE DEVELOPMENT OF
CONTRACTOR'S STORAGE BUILDING
ON LOT 28 IN THE
EASTON BUSINESS CENTER
IN THE TOWN OF EASTON, MARYLAND

SITE STATISTICS

CURRENT USE – COMMERCIAL/STORAGE/OFFICE
PROPOSED USE – COMMERCIAL/STORAGE/OFFICE

GROSS SITE AREA	=	1.001 ac.± (43,618 sq. ft.±)
CRITICAL AREA	=	0.000 ac.± (0,000 sq. ft.±)
AREA WITHIN FLOODPLAIN	=	0.000 ac.± (0,000 sq. ft.±)
COVERAGE BY BUILDINGS (PERMITTED) (50%)	=	0.501 ac.± (21,809 sq. ft.±)
COVERAGE BY BUILDINGS (EXISTING) (14.1%)	=	0.144 ac.± (6,264 sq. ft.±)
COVERAGE BY BUILDINGS (PROPOSED) (9.0%)	=	0.090 ac.± (3,920 sq. ft.±)
TOTAL COVERAGE BY BUILDINGS (23.3%)	=	0.234 ac.± (10,194 sq. ft.±)
IMPERVIOUS AREA (EXISTING)	=	0.355 ac.± (15,484 sq. ft.±)
IMPERVIOUS AREA (TO BE REMOVED)	=	0.005 ac.± (105 sq. ft.±)
IMPERVIOUS AREA (PROPOSED)	=	0.211 ac.± (9,188 sq. ft.±)
IMPERVIOUS AREA (TOTAL)	=	0.564 ac.± (24,567 sq. ft.±)

PARKING REQUIREMENTS

EXISTING:
5 SPACES PER APPROVED 2016 SITE PLAN
PROPOSED:
1 space/2000 sq. ft. FOR STORAGE & WAREHOUSE X 3,920 sq. ft. FLOOR AREA = 2 SPACES
1 space/business vehicle X 3 POTENTIAL TENANTS = 3 SPACES
TOTAL PROPOSED = 5 SPACES

PARKING SPACES (REQUIRED) = 5 EXISTING + 5 PROPOSED = 10 SPACES (1 ADA ACCESSIBLE)
PARKING SPACES (PROVIDED) = 10 SPACES (1 ADA ACCESSIBLE)

OFF–STREET LOADING REQUIREMENTS

PROPOSED: (SECTION 28–1002.1(28)(A):
1 space/10,000 sq. ft. floor area X 3,920 sq. ft. FLOOR AREA = 1 SPACES

PARKING SPACES (REQUIRED) = 1 SPACES
PARKING SPACES (PROVIDED) = 1 SPACES

REVIEWED FOR THE TALBOT SOIL CONSERVATION DISTRICT AND MEET TECHNICAL REQUIREMENTS

APPROVED:

TALBOT SOIL CONSERVATION DISTRICT DISTRICT MANAGER _____ DATE _____

NOTE: THE TALBOT SOIL CONSERVATION DISTRICT RESERVES THE RIGHT TO ADD, DELETE, MODIFY OR OTHERWISE ALTER THE EROSION CONTROL PROVISIONS OF THIS PLAN IN THE EVENT ADDITIONAL PROTECTION BECOMES NECESSARY.

DEVELOPERS CERTIFICATION

I, DENNIS DULEY, HEREBY CERTIFY THAT ALL THE DEVELOPMENT AND/OR CONSTRUCTION SHALL BE DONE ACCORDING TO THIS PLAN OF EROSION AND SEDIMENT CONTROL.

OWNERS SIGNATURE _____ DATE _____

OWNERS NAME: _____

OWNERS ADDRESS: _____

OWNERS PHONE: _____

1. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR OR SUBCONTRACTOR TO NOTIFY THE ENGINEER OF ANY DEVIATION FROM THIS PLAN. ANY CHANGE MADE IN THIS PLAN WITHOUT WRITTEN AUTHORIZATION FROM THE ENGINEER WILL PLACE RESPONSIBILITY FOR SAID CHANGE ON THE CONTRACTOR OR SUBCONTRACTOR.
2. ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATION OF ATTENDANCE AT THE DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF EROSION AND SEDIMENT BEFORE BEGINNING THE PROJECT.

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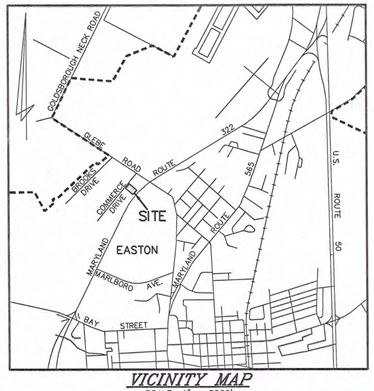
SITE NOTES

1. PROPERTY LOCATED AT: 8685 COMMERCE DRIVE EASTON, MARYLAND 21601
2. PROPERTY LINE INFORMATION SHOWN HEREON IS TAKEN FROM A PLAT ENTITLED "FINAL PLAT, EASTON BUSINESS CENTER" PREPARED BY EVANS, HAGAN & HODEFER, INC. IN AUGUST, 1977. BEARINGS HAVE BEEN ROTATED TO MATCH HORIZONTAL DATUM NAD 83/2011. PLAT BOOK 44, PAGE 8..
3. FOR DEED REFERENCE, SEE LIBER M.A.S. 2350, FOLIO 133.
4. CURRENT ZONING CLASSIFICATION IS "BC" (BUSINESS COMMERCIAL DISTRICT)
5. THE PROPERTY IS NOT LOCATED WITHIN THE CHESAPEAKE BAY CRITICAL AREA.
6. SITE IS NOT LOCATED WITHIN THE 100 YEAR FLOODPLAIN AS SCALED FROM FLOOD INSURANCE RATE MAP COMMUNITY PANEL No. 24041C0187C. (ZONE "X") (UNSHADED) DATED AUGUST 5, 2013.
7. SOILS ON SITE CONSIST OF "Up" (URBAN LAND) AS TAKEN FROM THE WEBSITE: http://websoilsurvey.nrcs.usda.gov FOR TALBOT COUNTY. NO HYDRIC SOILS EXIST ON THE SITE.
8. NO NATURAL RESOURCES (ie... WOODLANDS, NONTIDAL WETLANDS AND BUFFER, STREAM AND BUFFER, STEEP SLOPES, ENDANGERED SPECIES OR HABITATS) EXIST ON THE SITE.
9. EXISTING PUBLIC WATER WILL BE UTILIZED FOR POTABLE WATER SUPPLY.
10. EXISTING PUBLIC SEWER WILL BE UTILIZED FOR SEWAGE DISPOSAL. SUPPLY.
11. EXISTING SPOT ELEVATION AND CONTOURS SHOWN HEREON ARE THE RESULT OF A FIELD RUN SURVEY BY FINK, WHITTEN AND ASSOCIATES, LLC IN FEBRUARY, 2021. VERTICAL DATUM IS NAVD 88.
12. STORMWATER MANAGEMENT FOR THE SITE WILL BE ADDRESSED VIA THE IMPLEMENTATION OF ENVIRONMENTAL SITE DESIGN (ESD) TO THE MAXIMUM EXTENT PRACTICABLE (MEP).
13. ALL ONSITE LIGHTING SHALL BE TYPICAL BUILDING LIGHTING.
14. SITE REQUIREMENTS:
    FRONT = 40'
    REAR = 30'
    SIDE = 10'
    MAXIMUM BUILDING HEIGHT:
    PRINCIPAL = 35' (ALLOWED)
    PRINCIPAL = <35' (EXISTING/PROPOSED)



VICINITY MAP
SCALE 1" = 2000'

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SHEET C–1	–	TITLE SHEET
SHEET C–2	–	EXISTING CONDITIONS AND DEMOLITION PLAN
SHEET C–3	–	SITE PLAN
SHEET C–4	–	STORMWATER MANAGEMENT AND SEDIMENT & EROSION CONTROL PLAN
SHEET C–5	–	STORMWATER MANAGEMENT DETAILS AND SPECIFICATIONS
SHEET C–6	–	UTILITY PLAN
SHEET C–7	–	SITE DETAILS
SHEET C–8	–	SEDIMENT & EROSION CONTROL DETAILS AND SPECIFICATIONS
SHEET LS–1	–	LANDSCAPE PLAN

Capital Charges
3920 SF x 0.015 EDU/SF
58.8 gallons ÷ 250 gal/EDU
= 0.24 EDU
0.24 x 7050 = $1,692

LEGEND

	EXISTING TELEPHONE PEDESTAL		DEED POINT
T	EXISTING UNDERGROUND COMMUNICATION LINE		EDGE OF EXISTING TREES
	PROPOSED ACCESSIBLE PARKING SPACE	x 19.60	EXISTING SPOT ELEVATION
SS	EXISTING GRAVITY SEWER LINE	20x65	PROPOSED SPOT ELEVATION
	EXISTING SEWER MANHOLE	19	EXISTING CONTOUR
W	EXISTING WATER LINE	20	PROPOSED CONTOUR
	EXISTING WATER VALVE	E	EXISTING ELECTRIC TRANSFORMER
SF	PERIMETER SILT FENCE	E	EXISTING UNDERGROUND ELECTRIC LINE
L.O.D.	LIMITS OF DISTURBANCE		EXISTING LIGHT POLE

GENERAL NOTES

1. THE EXISTING UTILITIES SHOWN WERE TAKEN FROM THE BEST AVAILABLE RECORDS. THE CONTRACTOR SHALL VERIFY THEIR EXACT LOCATION PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE INCURRED TO SUCH UTILITIES SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL TEST PIT AS TO VERIFY THE LOCATION AND INVERT OF EXISTING UTILITIES.
2. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING TWO (2) WEEKS PRIOR TO THE START OF CONSTRUCTION AND SHALL COORDINATE CONSTRUCTION WITH THE UTILITY COMPANIES INVOLVED:

DELMARVA POWER & LIGHT COMPANY	1–800–375–7117
MISS UTILITY	1–800–441–8355
DMS & ASSOCIATES, LLC	1–443–262–9130
DEPARTMENT OF ENVIRONMENT	1–410–901–4020
TALBOT SOIL CONSERVATION DISTRICT	1–410–822–1577
TOWN OF EASTON ENGINEERING	1–410–820–8822
TOWN OF EASTON DEPARTMENT OF PUBLIC WORKS	1–410–822–0513
EASTON UTILITIES	1–410–822–6110

3. THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT, LABOR, AND MATERIALS FOR ANY MISCELLANEOUS OR TEST PIT EXCAVATIONS REQUIRED BY THE ENGINEER.
4. ALL CONSTRUCTION SHALL BE MARKED FOR TRAFFIC AND PEDESTRIAN SAFETY. ALL SIGNS SHALL BE PLACED IN ACCORDANCE WITH SECTION VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
5. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE TOWN OF EASTON STANDARDS AND SPECIFICATIONS.
6. THE CONTRACTOR ASSUMES ALL RESPONSIBILITIES FOR ANY DEVIATIONS FROM THESE PLANS, UNLESS SAID DEVIATION IS APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL RECEIVE WRITTEN PERMISSION FROM THE ENGINEER IF A DEVIATION OF THE PLAN IS NECESSARY.
7. ALL DISTURBED AREAS SHALL BE SMOOTHLY GRADED TO PROVIDE POSITIVE DRAINAGE IN THE DIRECTION OF FLOW ARROWS HEREIN AND STABILIZED WITH TOPSOIL, SEED, AND MULCH. IF SETTLEMENT OCCURS, TOPSOIL, SEEDING AND MULCHING SHALL BE REPEATED UNTIL SETTLEMENT SUBSIDES (SEE EROSION AND SEDIMENT CONTROL SPECIFICATIONS).
8. ALL TRASH, TREES, AND UNDERBRUSH ARE TO BE CLEARED AND REMOVED OFF SITE TO AN APPROVED DUMP SITE
9. ANY EXCESS EXCAVATED MATERIAL SHALL BE REMOVED OFF SITE BY THE CONTRACTOR OR MATERIAL SHALL BE PLACED ON SITE AS DIRECTED BY THE ENGINEER AND/OR OWNER.
10. ANY EXISTING SURVEY MONUMENTATION THAT IS DISTURBED DURING CONSTRUCTION SHALL BE REPLACED BY A REGISTERED SURVEYOR AT THE CONTRACTOR'S EXPENSE.
11. ALL FILL AREAS WITHIN LIMITS OF ROADWAY CONSTRUCTION AND OTHER AREAS AS DESIGNATED ON THESE PLANS SHALL BE COMPACTED TO 95% MODIFIED PROCTOR DENSITY AND LAID AND COMPACTED IN 8" LIFTS MAXIMUM.
12. TRENCHES SHALL NOT REMAIN OPEN OVERNIGHT. IF IT IS NECESSARY FOR TRENCHES TO REMAIN OPEN, STEEL PLATES, CAPABLE OF TRAFFIC BEARING, SHALL BE USED TO COMPLETELY COVER THE TRENCH.
13. CONTRACTOR MUST PROVIDE MONUMENTED SURVEY MARKERS PER PUBLIC WORKS AGREEMENT.
14. THE DEVELOPER SHALL COORDINATE WITH THE TOWN OF EASTON TO SCHEDULE INSTALLATION OF ANY NECESSARY SIGNAGE SHALL BE INSTALLED AT THE START OF CONSTRUCTION AND MAINTAINED BY THE TOWN OF EASTON THROUGHOUT THE COMPLETION OF THE WORK AT THE EXPENSE OF THE DEVELOPER. THE DEVELOPER SHALL PAY INVOICES UPON RECEIPT FROM THE TOWN OF EASTON.
15. ALL PROPOSED SITE IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH TOWN OF EASTON AND EASTON UTILITIES CONSTRUCTION STANDARDS AND SPECIFICATIONS FOR WATER, SEWER, AND STREETS ISSUES APRIL 12, 2011.
16. ONCE CONSTRUCTION IS COMPLETE, AS–BUILT PLAN CERTIFICATION SHALL BE SUBMITTED BY EITHER A PROFESSIONAL ENGINEER OR PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF MARYLAND TO ENSURE ALL CONSTRUCTION IS IN COMPLIANCE WITH THE SPECIFICATIONS AND APPROVED PLANS.

STATEMENT OF PURPOSE AND INTENT

THE SITE IS LOCATED ON THE SOUTHEAST SIDE OF COMMERCE DRIVE IN THE TOWN OF EASTON. THERE ARE CURRENTLY AN OFFICE BUILDING AND A CONTRACTORS STORAGE BUILDING LOCATED ON THE SITE. THE INTENT OF THIS SITE PLAN IS CONSTRUCT A NEW CONTRACTORS STORAGE BUILDING.

THE PURPOSE OF THIS SITE PLAN IS TO OBTAIN APPROVAL FROM THE TOWN OF EASTON FOR THE PROPOSED DEVELOPMENT.

OWNER/DEVELOPER:
8685 COMMERCE DRIVE, LLC
c/o JOHNNY DENT
8685 COMMERCE DRIVE
EASTON, MARYLAND 21632
PHONE No. 1–410–310–3937

ENGINEER:
DMS & ASSOCIATES, LLC
c/o BRANDON DAVIS, P.E.
P.O. BOX 80
CENTREVILLE, MARYLAND 21617
PHONE No. 1–443–262–9130

PLANNER/SURVEYOR:
FINK, WHITTEN & ASSOCIATES, LLC
c/o ELIZABETH FINK
113 E. DOVER ROAD, UNIT C
EASTON, MARYLAND 21601
PHONE No. 1–410–822–8484

TOWN OF EASTON – PLANNING AND ZONING

TOWN OF EASTON – TOWN ENGINEER

EASTON UTILITIES – MANAGER OF ENGINEERING

PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 37235 EXPIRATION DATE: 2024

MAY 3, 2023
DATE SEAL

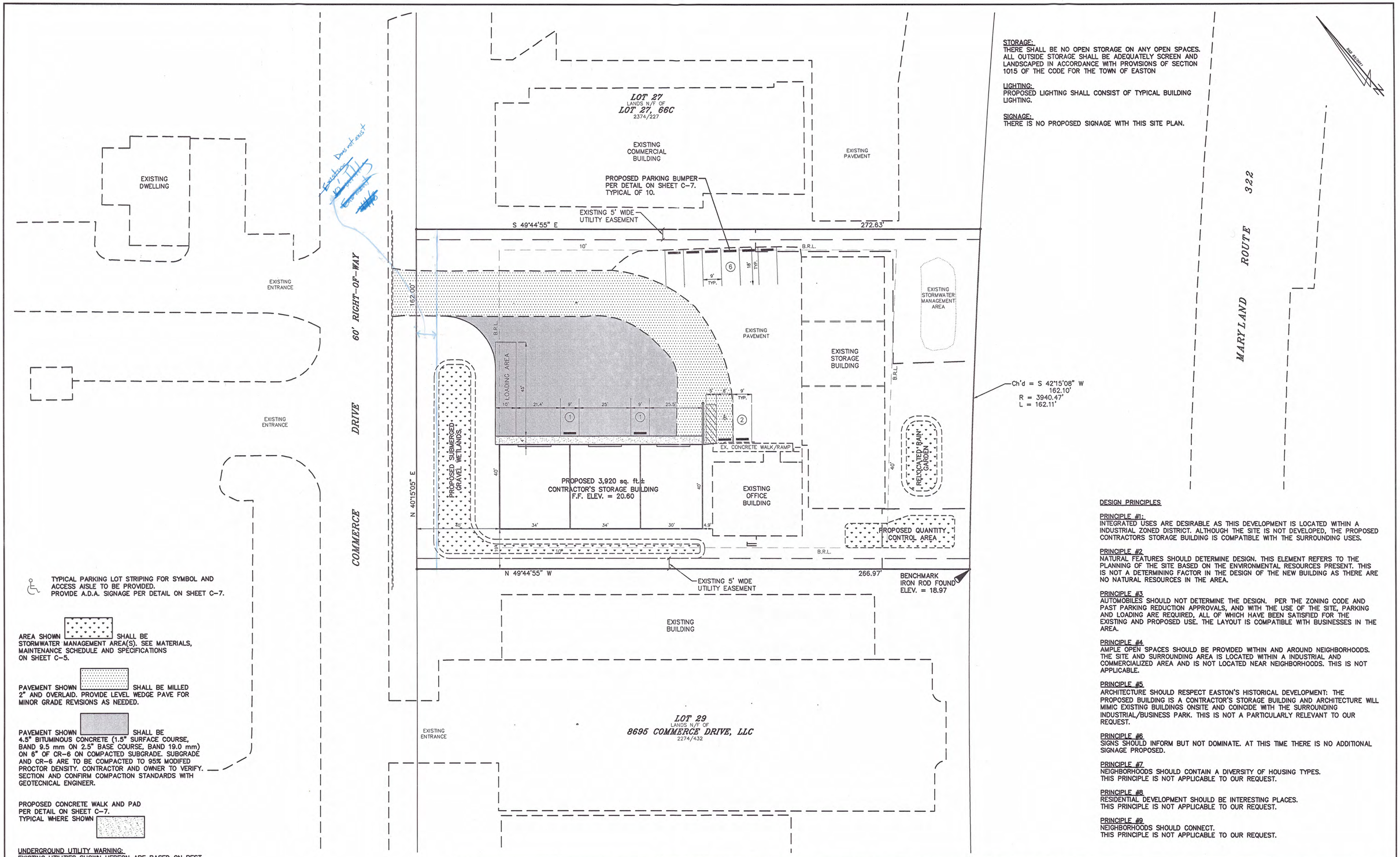
DAVIS, MOORE, SHEARON & ASSOCIATES, LLC
P.O. BOX 80
CENTREVILLE, MARYLAND 21617

FINK, WHITTEN & ASSOCIATES, LLC.
LAND SURVEYING
410–822–8484 113 E. Dover St., Unit C Easton, Maryland 21601
410–228–8885 504 Maryland Avenue Cambridge, Maryland 21613

DATE	REVISION

TITLE SHEET
FOR THE DEVELOPMENT OF A
CONTRACTOR'S STORAGE BUILDING
ON LOT 28 IN THE
EASTON BUSINESS CENTER
IN THE TOWN OF EASTON, 1st Elect. Dist., TALBOT Co., MARYLAND
TAX MAP – 101, GRID – 2, PARCEL – 4

DATE APRIL '23	SCALE AS SHOWN
JOB No. 2020157	DRAWN BY WJM
FOLDER Ref. 101–2020157	DESIGNED BY BD
SHEET No. – C–1	
CADD FILE – 20157C01	



STORAGE:
THERE SHALL BE NO OPEN STORAGE ON ANY OPEN SPACES. ALL OUTSIDE STORAGE SHALL BE ADEQUATELY SCREEN AND LANDSCAPED IN ACCORDANCE WITH PROVISIONS OF SECTION 1015 OF THE CODE FOR THE TOWN OF EASTON

LIGHTING:
PROPOSED LIGHTING SHALL CONSIST OF TYPICAL BUILDING LIGHTING.

SIGNAGE:
THERE IS NO PROPOSED SIGNAGE WITH THIS SITE PLAN.

TYPICAL PARKING LOT STRIPING FOR SYMBOL AND ACCESS AISLE TO BE PROVIDED.
PROVIDE A.D.A. SIGNAGE PER DETAIL ON SHEET C-7.

AREA SHOWN SHALL BE STORMWATER MANAGEMENT AREA(S). SEE MATERIALS, MAINTENANCE SCHEDULE AND SPECIFICATIONS ON SHEET C-5.

PAVEMENT SHOWN SHALL BE MILLED 2" AND OVERLAID. PROVIDE LEVEL WEDGE PAVE FOR MINOR GRADE REVISIONS AS NEEDED.

PAVEMENT SHOWN SHALL BE 4.5" BITUMINOUS CONCRETE (1.5" SURFACE COURSE, BAND 9.5 mm ON 2.5" BASE COURSE, BAND 19.0 mm) ON 6" OF CR-6 ON COMPACTED SUBGRADE. SUBGRADE AND CR-6 ARE TO BE COMPACTED TO 95% MODIFED PROCTOR DENSITY. CONTRACTOR AND OWNER TO VERIFY. SECTION AND CONFIRM COMPACTION STANDARDS WITH GEOTECNICAL ENGINEER.

PROPOSED CONCRETE WALK AND PAD PER DETAIL ON SHEET C-7.
TYPICAL WHERE SHOWN

UNDERGROUND UTILITY WARNING:
EXISTING UTILITIES SHOWN HEREON ARE BASED ON BEST AVAILABLE DATA. IT IS THE RESPONSIBILITY OF THE OWNER AND/OR CONTRACTOR(S) TO LOCATE EXISTING UTILITIES, TEST PIT AS NEEDED, AND COORDINATE WITH UTILITY COMPANIES. IT IS THE THE RESPONSIBILITY OF THE OWNER AND/OR CONTRACTOR(S) TO COMPLY WITH THE UNDERGROUND FACILITIES DAMAGE PREVENTION LAW AND THE REQUISITE PERMITS ARISING THEREFROM. DMS AND ASSOCIATES, LLC IS NOT RESPONSIBLE FOR THE ACCURACY OR THE EXTENT OF THE UNDERGROUND UTILITY MARKING PERFORMED BY MISS UTILITY AND SHOWN HEREON.

GRAPHIC SCALE
20 0 10 20 40
1 inch = 20 ft.

DESIGN PRINCIPLES

PRINCIPLE #1:
INTEGRATED USES ARE DESIRABLE AS THIS DEVELOPMENT IS LOCATED WITHIN A INDUSTRIAL ZONED DISTRICT. ALTHOUGH THE SITE IS NOT DEVELOPED, THE PROPOSED CONTRACTORS STORAGE BUILDING IS COMPATIBLE WITH THE SURROUNDING USES.

PRINCIPLE #2
NATURAL FEATURES SHOULD DETERMINE DESIGN. THIS ELEMENT REFERS TO THE PLANNING OF THE SITE BASED ON THE ENVIRONMENTAL RESOURCES PRESENT. THIS IS NOT A DETERMINING FACTOR IN THE DESIGN OF THE NEW BUILDING AS THERE ARE NO NATURAL RESOURCES IN THE AREA.

PRINCIPLE #3
AUTOMOBILES SHOULD NOT DETERMINE THE DESIGN. PER THE ZONING CODE AND PAST PARKING REDUCTION APPROVALS, AND WITH THE USE OF THE SITE, PARKING AND LOADING ARE REQUIRED, ALL OF WHICH HAVE BEEN SATISFIED FOR THE EXISTING AND PROPOSED USE. THE LAYOUT IS COMPATIBLE WITH BUSINESSES IN THE AREA.

PRINCIPLE #4
AMPLE OPEN SPACES SHOULD BE PROVIDED WITHIN AND AROUND NEIGHBORHOODS. THE SITE AND SURROUNDING AREA IS LOCATED WITHIN A INDUSTRIAL AND COMMERCIALIZED AREA AND IS NOT LOCATED NEAR NEIGHBORHOODS. THIS IS NOT APPLICABLE.

PRINCIPLE #5
ARCHITECTURE SHOULD RESPECT EASTON'S HISTORICAL DEVELOPMENT: THE PROPOSED BUILDING IS A CONTRACTOR'S STORAGE BUILDING AND ARCHITECTURE WILL MIMIC EXISTING BUILDINGS ONSITE AND COINCIDE WITH THE SURROUNDING INDUSTRIAL/BUSINESS PARK. THIS IS NOT A PARTICULARLY RELEVANT TO OUR REQUEST.

PRINCIPLE #6
SIGNS SHOULD INFORM BUT NOT DOMINATE. AT THIS TIME THERE IS NO ADDITIONAL SIGNAGE PROPOSED.

PRINCIPLE #7
NEIGHBORHOODS SHOULD CONTAIN A DIVERSITY OF HOUSING TYPES.
THIS PRINCIPLE IS NOT APPLICABLE TO OUR REQUEST.

PRINCIPLE #8
RESIDENTIAL DEVELOPMENT SHOULD BE INTERESTING PLACES.
THIS PRINCIPLE IS NOT APPLICABLE TO OUR REQUEST.

PRINCIPLE #9
NEIGHBORHOODS SHOULD CONNECT.
THIS PRINCIPLE IS NOT APPLICABLE TO OUR REQUEST.

TOWN OF EASTON – PLANNING AND ZONING

TOWN OF EASTON – TOWN ENGINEER

EASTON UTILITIES – MANAGER OF ENGINEERING

PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 37235 EXPIRATION DATE: 2024

MAY 3, 2023
DATE SEAL

DAVIS, MOORE, SHEARON & ASSOCIATES, LLC
P.O. BOX 80
CENTREVILLE, MARYLAND 21617

FINK, WHITTEN & ASSOCIATES, LLC.
LAND SURVEYING
410-822-8484
113 E. Dover St., Unit C
Easton, Maryland 21601
410-228-8885
504 Maryland Avenue
Cambridge, Maryland 21613

DATE	REVISION

SITE PLAN
FOR THE DEVELOPMENT OF A
CONTRACTOR'S STORAGE BUILDING
ON LOT 28 IN THE
EASTON BUSINESS CENTER
IN THE TOWN OF EASTON, 1st Elect. Dist., TALBOT Co., MARYLAND
TAX MAP – 101, GRID – 2, PARCEL – 4

DATE APRIL '23	SCALE 1" = 20'
JOB No. 2020157	DRAWN BY WJM
FOLDER Ref. 101-2020157	DESIGNED BY BD
SHEET No. – C-3	
CADD FILE – 20157C03	

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EXISTING COMMERCIAL BUILDING

LOT 27
LANDS N/F OF
LOT 27, 66C
2374/227

EXISTING TELEPHONE PEDESTAL. TYPICAL

PROPOSED PERIMETER SILT FENCE PER DETAIL (E-1) ON SHEET C-. TYPICAL WHERE SHOWN —SF—.

S 49°44'55" E

272.63'

RESURFACED PAVED ACCESS

EXISTING PAVEMENT

EXISTING STORMWATER MANAGEMENT AREA

EXISTING RIPRAP OVERFLOW PROTECTION

RESURFACED PAVEMENT

EXISTING STORAGE BUILDING

PROPOSED 4" PVC (SDR-35) TRENCH DRAIN OUTFALL PIPE

INV. = 19.36

PROPOSED HEAVY DUTY TRENCH DRAIN
MIN GRATE WITH = 5"
MAX. TROUGH DEPTH = 6"
MIN. RUNNING SLOPE = 0.3%
PER DETAIL AND INSTALLATION SPECIFICATIONS ON SHEET C-5.

PROPOSED SUBMERGED GRAVEL WETLANDS. SEE SPECIFICATIONS AND MAINTENANCE SCHEDULE ON SHEET C-5.
SURFACE ELEV. = 18.86
PONDING ELEV. = 19.61.
STABILIZE SIDE SLOPES WITH SOILS STABILIZATION MATTING - SLOPE APPLICATION PER DETAIL ON SHEET C-8

TW=20.20
BW=20.00

EXISTING LIGHT POLE. TYPICAL

PROPOSED MODIFIED 6" CURB AND GUTTER WITH EXPOSED BACKING AND DEEP FOOTING NEAR BUILDING, THEN TO TAPER TO GRADE AT END

TW=TC=20.95
BC=20.45

PROPOSED 2' WIDE EARTH BERM. TOP OF BERM ELEV. = 20.00

Ch'd = S 42°15'08" W
162.10'
R = 3940.47'
L = 162.11'

PROPOSED RAIN GARDEN. SIZE & VOLUME OF RAIN GARDEN EQUAL TO RAIN GARDEN PREVIOUSLY APPROVED AND CONSTRUCTED FROM 2016 SITE PLAN.
BOTTOM ELEV. = 18.70
PONDING ELEV. = 19.70.

60' RIGHT-OF-WAY

COMMERCE DRIVE

EXISTING CONCRETE WALK

PROPOSED 6" INLINE GRATE ON 6" PVC STAND PIPE TO BE PERFORATED FOR PORTION IN NO. 57 STONE. STAND PIPE TO TEE CONNECT TO 6" PERF. PVC DISPERSION PIPE LAID FLAT, INV. = 16.86. INLINE GRATE ELEV. = 19.36. SEE SHEET C-5 FOR DETAILS AND SPECIFICATIONS, TYPICAL OF 8.

PROPOSED DOWNSPOUT TYPICAL OF 4.

PROPOSED 12' WIDE RIPRAP OVERFLOW WEIR. TOP OF WEIR ELEV. = 19.70

PROPOSED 6" INLINE GRATE ON 6" PVC STAND PIPE. STANDPIPE TO BE PERFORATED WHEN IN NO. 57 STONE LAYER. PROVIDE ELBOW CONNECTION AND INCREASER TO 8" PERFORATED PVC, LAID FLAT, INV. = 16.86.

PROPOSED 2' WIDE EARTH BERM. TOP OF BERM ELEV. = 20.20

INV. = 18.70

PROPOSED 6" PERFORATED PVC. WITH END CAPS, TYPICAL

PROPOSED 3,920 sq. ft.±
CONTRACTOR'S STORAGE BUILDING
F.F. ELEV. = 20.60

EXISTING OFFICE BUILDING

PROPOSED 6" PVC (SDR-35) ROOF LEADER. PROVIDE CONNECTION FROM EXISTING DOWNSPOUTS.

PROPOSED 15" NYLOPLAST DRAIN BASIN WITH DOME GRATE PER DETAILS ON SHEET C-5. TOP OF GRATE RIM ELEV. = 19.61
8" PVC INV. OUT = 18.53
8" PERF. PVC INV. IN = 16.86

INV. = 18.28

PROPOSED QUANTITY CONTROL STORAGE AREA
SURFACE ELEV. = 18.28

SFN 49°15'05" E

N 49°44'55" W

266.97'

BENCHMARK
IRON ROD FOUND
ELEV. = 18.97

PROPOSED SOLID 8" PVC (SDR-35) @ 0.33%

PROPOSED 2' WIDE EARTH BERM. TOP OF BERM ELEV. = 20.00

PROPOSED 12' WIDE RIPRAP OVERFLOW WEIR. TOP OF WEIR ELEV. = 19.28

PROPOSED PERIMETER SILT FENCE PER DETAIL (E-1) ON SHEET C-. TYPICAL WHERE SHOWN —SF—.

L.O.D. – DENOTES LIMITS OF DISTURBANCE

EXISTING COMMERCIAL BUILDING

LOT 29
LANDS N/F OF
8695 COMMERCE DRIVE, LLC
2274/432

EXISTING ELECTRIC TRANSFORMER. TYPICAL

GRAPHIC SCALE
10 0 5 10 20
1 inch = 10 ft.

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NOTE:
SEDIMENT AND EROSION CONTROL WILL BE STRICTLY ENFORCED

NOTE:
FOLLOWING INITIAL DISTURBANCE, PERMANENT OR TEMPORARY, STABILIZATION SHALL BE COMPLETED WITHIN 3 CALENDAR DAYS ON ALL PERIMETER CONTROLS AND SLOPES GREATER THAN 3:1 AND 7 DAYS ON ALL OTHER DISTURBED AREAS ON THE SITE.

TOWN OF EASTON – PLANNING AND ZONING

TOWN OF EASTON – TOWN ENGINEER

EASTON UTILITIES – MANAGER OF ENGINEERING

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LAND SURVEYING
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113 E. Dover St., Unit C
Easton, Maryland 21601
410-228-8885
504 Maryland Avenue
Cambridge, Maryland 21613

DATE	REVISION

STORMWATER MANAGEMENT AND SEDIMENT & EROSION CONTROL PLAN

FOR THE DEVELOPMENT OF A

CONTRACTOR'S STORAGE BUILDING

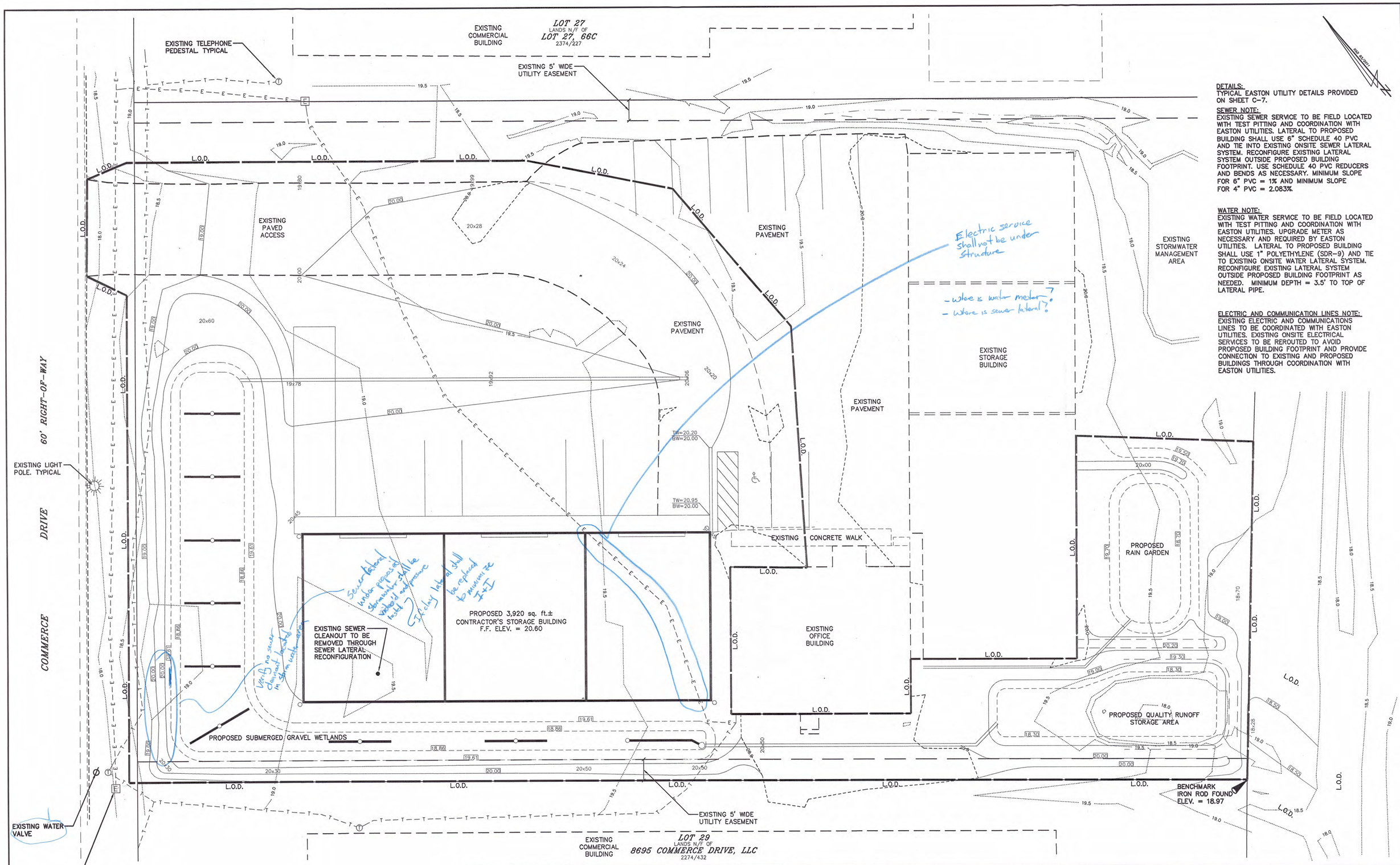
ON LOT 28 IN THE

EASTON BUSINESS CENTER

IN THE TOWN OF EASTON, 1st Elect. Dist., TALBOT Co., MARYLAND

TAX MAP – 101, GRID – 2, PARCEL – 4

DATE APRIL '23	SCALE 1" = 10'
JOB No. 2020157	DRAWN BY WJM
FOLDER Ref. 101-2020157	DESIGNED BY BD
SHEET No. – C-4	
CADD FILE – 20157C04	



DETAILS:
TYPICAL EASTON UTILITY DETAILS PROVIDED ON SHEET C-7.

SEWER NOTE:
EXISTING SEWER SERVICE TO BE FIELD LOCATED WITH TEST PITTING AND COORDINATION WITH EASTON UTILITIES. LATERAL TO PROPOSED BUILDING SHALL USE 6" SCHEDULE 40 PVC AND TIE INTO EXISTING ONSITE SEWER LATERAL SYSTEM. RECONFIGURE EXISTING LATERAL SYSTEM OUTSIDE PROPOSED BUILDING FOOTPRINT. USE SCHEDULE 40 PVC REDUCERS AND BENDS AS NECESSARY. MINIMUM SLOPE FOR 6" PVC = 1% AND MINIMUM SLOPE FOR 4" PVC = 2.083%.

WATER NOTE:
EXISTING WATER SERVICE TO BE FIELD LOCATED WITH TEST PITTING AND COORDINATION WITH EASTON UTILITIES. UPGRADE METER AS NECESSARY AND REQUIRED BY EASTON UTILITIES. LATERAL TO PROPOSED BUILDING SHALL USE 1" POLYETHYLENE (SDR-9) AND TIE TO EXISTING ONSITE WATER LATERAL SYSTEM. RECONFIGURE EXISTING LATERAL SYSTEM OUTSIDE PROPOSED BUILDING FOOTPRINT AS NEEDED. MINIMUM DEPTH = 3.5' TO TOP OF LATERAL PIPE.

ELECTRIC AND COMMUNICATION LINES NOTE:
EXISTING ELECTRIC AND COMMUNICATIONS LINES TO BE COORDINATED WITH EASTON UTILITIES. EXISTING ONSITE ELECTRICAL SERVICES TO BE REROUTED TO AVOID PROPOSED BUILDING FOOTPRINT AND PROVIDE CONNECTION TO EXISTING AND PROPOSED BUILDINGS THROUGH COORDINATION WITH EASTON UTILITIES.

L.O.D. – DENOTES LIMITS OF DISTURBANCE

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TOWN OF EASTON – PLANNING AND ZONING

TOWN OF EASTON – TOWN ENGINEER

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DATE	REVISION

UTILITY PLAN
FOR THE DEVELOPMENT OF A
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ON LOT 28 IN THE
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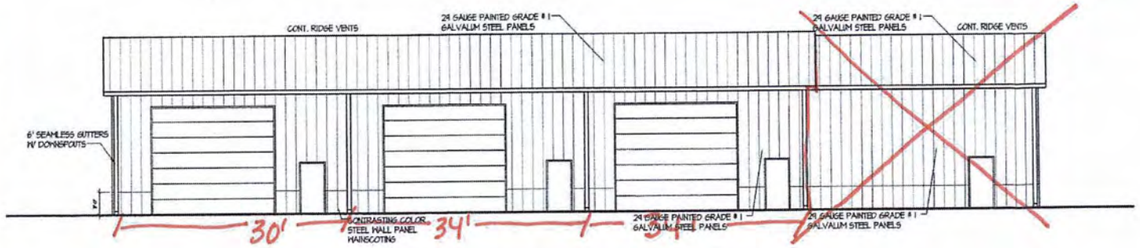
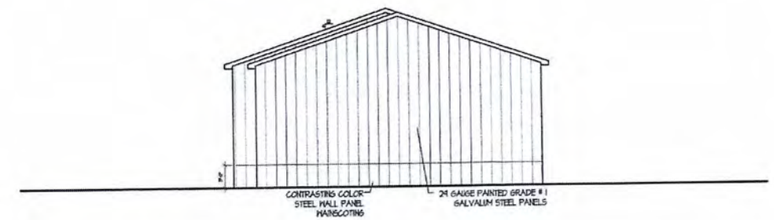
TAX MAP – 101, GRID – 2, PARCEL – 4

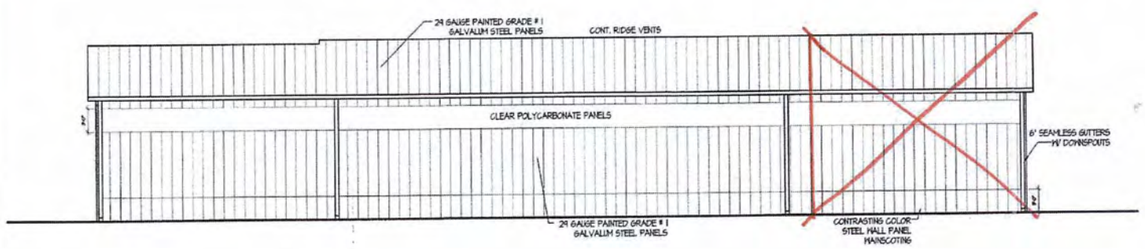
DATE APRIL '23	SCALE 1" = 10'
JOB No. 2020157	DRAWN BY WJM
FOLDER Ref. 101-2020157	DESIGNED BY BD
SHEET No. – C-6	
CADD FILE – 20157C06	



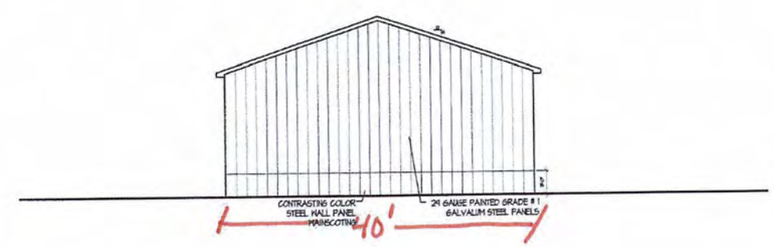
1 FRONT ELEVATION (N.T.S.)



2 RIGHT SIDE ELEVATION
1/8" = 1'-0"



3 REAR ELEVATION (N.T.S.)



4 LEFT SIDE ELEVATION (N.T.S.)

ARCHITECT LICENSE # 12319 WILLIAM F. HORN STATE OF MARYLAND

PROFESSIONAL CERTIFICATION

I CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NUMBER 12319, EXPIRATION DATE 1/6/2015.

PRINTED 01/25/16 — FOR CONSTRUCTION

DIAMOND STATE POLE BUILDINGS
P.O. BOX 163
MAGNOLIA, DELAWARE

W.F. HORN ARCHITECT, INC.
30800 E. DALLE ROSS BEND MILTON, DELAWARE
PHONE: 302-674-1620 302-231-2170

NEW BUILDING FOR
JOHNNY DENT
EASTON, MARYLAND

ELEVATIONS

DESIGNED	WFH
DRAWN	PAH
CHECKED	WFH
DATE	01/25/16
PROJ. NO.	31606
SCALE	AS NOTED
SHEET NO.	A2.1

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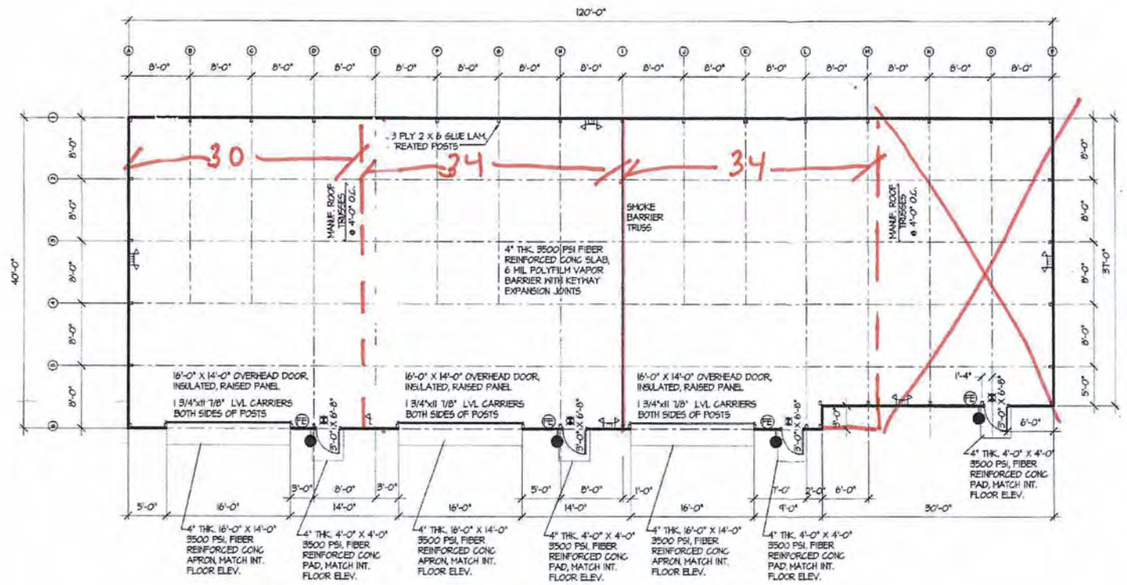

1 FLOOR PLAN (N.T.S.)

FOUNDATIONS

1. PRESUMPTIVE BEARING CAPACITY: 2000 PSF

2. FOUNDATION DESIGN IS BASED ON SHALLOW SPREAD FOOTINGS BEARING ON SUITABLE NATURAL SOILS AND/OR NEW COMPACTED STRUCTURAL FILL.

3. ALL ORGANIC MATERIALS EXCESSIVELY SOFT OR LOOSE SOILS, TREES, ASPHALT, CONCRETE, DEBRIS AND OTHER DELETERIOUS MATERIALS SHALL BE REMOVED, UNSUITABLE AREAS SHALL BE REMOVED AND REPLACED.

4. AREAS REQUIRING UNDERCUT AND FILL MATERIAL DUE TO THE PRESENCE OF UNSUITABLE MATERIAL SHALL BE BACKFILLED TO THE DESIGN FOOTING SUBGRADE WITH NEW COMPACTED STRUCTURAL FILL.

5. COMPACTED STRUCTURAL FILL FOR BUILDING SUPPORT UTILIZING MATERIAL APPROVED FOR USE INCLUDE:

ON-SITE GRANULAR SOILS INCLUDING GW, GP, GM, SW, SP, ND. SM, CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOLID CLASSIFICATION SYSTEM (USCS). FURTHERMORE, THE MATERIAL TO BE UTILIZED AS STRUCTURAL FILL SHOULD HAVE A PLASTICITY INDEX (PI) LESS THAN 20.

6. COMPACTED STRUCTURAL FILL BENEATH ALL FOUNDATIONS, SLABS ON GRADE AND ADJACENT TO FOUNDATION WALLS SHALL BE PLACED IN LIFTS NOT EXCEEDING 8 INCHES IN LOOSE THICKNESS AND BE COMPACTED TO 95 PERCENT OF MAXIMUM DRY DENSITY PER ASTM D-1557 MODIFIED PROCTOR TEST.

7. SOILS EXPOSED AT THE BASES OF ALL FOUNDATION EXCAVATIONS SHOULD BE PROTECTED AGAINST ANY DETRIMENTAL CHANGE IN CONDITION, SUCH AS DISTURBANCE FROM RAIN OR FROST. SURFACE RUNOFF SHOULD BE DRAINED AWAY FROM THE EXCAVATIONS AND NOT BE ALLOWED TO POND. FOUNDATION EXCAVATIONS SHOULD BE PROTECTED FROM RAINFALL OR FREEZING CONDITIONS. SLOPE FOOTINGS EXCAVATIONS AS REQUIRED FOR STABILITY AND SAFTY OR PROVIDED SHEETING OR SHORING IN ACCORDANCE WITH OSHA REQUIREMENTS. IN THE EVENT THAT THE CONTRACTOR DETERMINES THAT SHEETING OR SHORING IS REQUIRED FOR ESCALATION, THE CONTRACTOR SHALL RETAIN THE SERVICES OF A REGISTERED PROFESSIONAL STRUCTURAL ENGINEER FOR DESIGN AND DOCUMENTATION OF ALL SHEETING AND SHORING REQUIRED FOR THE WORK.

8. UTILITY LINES SHALL NOT PASS UNDER FOOTINGS, STEP FOOTINGS BELOW UTILITY LINES AND SLEEVE WALL.

9. TRENCHES WHICH RUN ADJACENT TO FOOTINGS AND ARE LOWER THAN THE FOOTING BOTTOM AND ARE WITHIN A HORIZONTAL DISTANCE OF 1.5 TIMES THE ELEVATION DIFFERENCE SHALL BE BACKFILLED WITH 1500 PSI CONCRETE TO THE FOOTING BOTTOM.

CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO ACI 318 (LATEST EDITION).

2. CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS SHALL BE:

FOUNDATION: 3500 PSI
GARAGE FLOOR SLABS: 3500 PSI
EXTERIOR WALKS, STEPS, PADS,
RAMPS AND CURBS: 3500 PSI
ALL CONCRETE SHALL BE AIR-ENTRAINED (6+/-1)%.

3. CONCRETE SHALL NOT BE PLACED IN WATER OR ON FROZEN GROUND.

4. CALCIUM CHLORIDE ADMIXTURES ARE PROHIBITED. USE OF ADMIXTURES SHALL BE SUBJECT TO APPROVAL BY THE ARCHITECT.

GENERAL NOTES

1. EXTERIOR WALLS SHALL BE 2x4 WOOD PURLINS @ 2'-0" O.C. HORIZ. W/ 26 GAUGE EVERLAST PAINTED STEEL PANELS.

2. ALL DIMENSIONS ARE TO FACE AND/OR CENTER OF STRUCTURE.

3. EXTERIOR STEEL FLUSH INSULATED DOOR W/ LEVER LOCKSET AND CLOSER.

SYMBOLS

- (FE) DENOTES FIRE EXTINGUISHER LOCATION. FIRE EXTINGUISHER SHALL BE 2A10B:C MOUNTED AT 40" TO TOP.
- DENOTES EMERGENCY LIGHT WITH BATTERY BACK UP
- DENOTES LIGHTED EXIT SIGNS
- DENOTES REMOTE HEAD EXTERIOR EMERGENCY LIGHT

ARCHITECT LICENSE #12319 WILLIAM F. HORN STATE OF MARYLAND

PROFESSIONAL CERTIFICATION

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DIAMOND STATE POLE BUILDINGS
P.O. BOX 163
MAGNOLIA, DELAWARE

W.F.HORN ARCHITECT, INC.
306W.E. SALLIE ROSS BEHIND
PHONE: 302-674-1500 302-231-2176
MILTON, DELAWARE

NEW BUILDING FOR
JOHNNY DENT
EASTON, MARYLAND

FLOOR PLAN AND NOTES

DESIGNED	WFH
DRAWN	PAV
CHECKED	W
DATE	01/
PROJ. NO.	
SCALE	
SHE NO.	

08-2023
Comment
Response

TOWN OF EASTON
PLANNING & ZONING
PO Box 520
Easton, Maryland 21601
(410)-822-2526

DATE: **May 18, 2023**
TO: **Elizabeth Fink - Fink, Whitten & Associates, LLC.**
cc: **Miguel Salinas** – Director of Planning & Zoning Department
Rick Van Emburgh – Town Engineer, Department of Engineering
FROM: **Joseph A. Mayer** - Plan Reviewer, Planning & Zoning Department

SUBJECT: **8685 Commerce Drive - Tuckahoe Hardwoods**

PLANNING & ZONING COMMENTS

Sketch Site Plan

1. If there's no outside storage on-site, revise permissible use on the Site Statistics as *'Contractor's Office with no outside storage'*. Please confirm. updated
2. Per Chapter 28-1007.A.3.l.1 thru 5 of the Zoning Code, provide an impact statement on the site plan. see sheet 3 for impact notes + explanation
3. Revise The parking calculations for *'Construction-related business'*. Adjust parking space calculations per revision. Parking Calc.'s updated
4. Show the minimum and maximum parking space requirements. Calc.'s updated
5. The proposed parking adjacent to the existing storage building at unit 1 and 3 impedes the access into the existing overhead doors if vehicles are to enter the warehouse. Please verify accessible ingress/egress for both units. Parking has been revised so no spaces are any closer to the existing bldg than exist. conditions
6. Include a statement regarding "*the nature of the proposed use, its expected impact on its surrounding area, expected truck traffic, and any other information necessary to provide a fair and accurate assessment of the impacts of the proposed use on the subject property and the surrounding area.*" (28-1007.3.A.6). See sheet 3 for impacts statements
7. Dimension all existing and proposed road widths Dimensions have been added
8. Provide applicable Bufferyard 'D' along Commerce Drive and Bufferyard 'E' along exterior property lines adjoining the site or submit a Supplemental Waiver Request

Application for Landscaping & Buffering. Bufferyards added to best of ability given existing development, SWM + ex easements.

9. Per Chapter 28-1014.6.F.1 of the Zoning Code, *Overall minimum tree plantings required (excluding required bufferyards) shall be based on site area to be disturbed. (Disturbed area includes all site areas except for existing forest retention and preservation, existing wetland preservation, significant non-buffyard areas of larger sites to be preserved in a natural state, and required bufferyard areas. The minimum tree requirement shall be one (1) tree per 3000 sq. ft. of disturbed area.* Nine trees are required. The applicant proposes to partially satisfy the requirement with five trees and submit a waiver request for four trees. However, appropriate plantings that are native species and consistent with the *"Maryland Aviation Administration Approved Planting List"* can be utilized to meet the zoning requirement. Please see attached documents. Satisfied with (8) Am Holly's + (1) London plane tree.

10. Per Chapter 28-1014.6.F.2.a of the Zoning Code, *Interior Parking Lot Plantings- 1 tree per 10 spaces to be planted within the interior of the parking lot, see* ***Figure 10-7.*** *Trees shall be located within the parking bays so that no more than 15 parking spaces form an uninterrupted row. Trees shall be planted within an area of previous space of at least 64 sq.ft. allocated per tree, with no dimension of any parking lot planting island less than 6'.* One tree is required. The applicant proposes to submit a waiver request. There are six proposed parking spaces at the north side of the property. One parking space is adjacent to the drive aisle of the site. A landscape island at that location would be appropriate. Plantings that are native species and consistent with the *"Maryland Aviation Administration Approved Planting List"* can be utilized to meet the zoning requirement and satisfy the concern of the Municipal Airport requirements of plantings within the flight zone. Proceed w/ waiver request for this.

11. Provide additional screening for the loading and unloading area adjacent to the proposed stormwater management facilities. Per Chapter 28-308.2 J of the Zoning Code, any decorative screens or natural plantings used for screening off-street loading and unloading shall be a minimum of eight feet in height. Please revise the Legend & Schedule on the Landscape Plan to reflect the required height. However, an option is provided to utilize an evergreen tree buffer planting, minimum 7' height at installation, staggered to create a solid screen at installation. See Chapter 28-1014.6 F(2)d of the Zoning Code. Screening added w/ Am Holly Evergreen trees.

12. The approved Forest Conservation Plan was approved on August 11, 2016. The total area of 9,235 square feet was removed from the site under the approved Forest Stand Delineation/Forest Conservation Plan, Obstruction Removal Program to meet current Federal Aviation Administration (FAA) requirements outlined in 14 Code of Federal Regulations (CFR) Part 77, *Safe, Efficient Use, and Preservation of the navigable Airspace, and FAA Advisory Circular 150/5300-13A, Airport Design.* Mitigation was provided as a fee in lieu payment into the Forest Conservation Account for $4,963 on October 26, 2021. In order to meet Forest Conservation Requirements for the new site design, afforestation may be credited against the required landscape improvements. All plantings are to be native species and consistent with the *"Maryland Aviation*

Administration Approved Planting List". Please submit a Forest Conservation Plan and Application. FCP added to LS plan sheet; LS stock used to satisfy FC afforestation requirements.

13. Please note on the Landscape Plan that all proposed trees shall be maintained at a maximum of fifty-three feet, per the agreement between Easton Airport.
Note added.
14. Is there an exterior refuse collection area? Please advise. The current site practices will be utilized. None proposed @ this time
15. Dimension offset distances from building to the property line adjacent to Lot 27.
Dimension added on sheet 3
16. Add Ward District in the Title Block to all sheets.
The Election Dist already on each sheet has been corrected to Ward. in the borders
17. Label property owners adjacent to Commerce Drive.
owners + boundaries added on sheet 3
18. Show zoning district boundaries on the Vicinity Map.
nearby Zoning has been added
19. Show location of proposed site lighting. Indicate that the lights will be eighteen feet in height and shall not shine off-sight at levels greater than 1-foot candle unless approved otherwise by the Planning Commission.
Note on cover has been expanded.

DEPARTMENT OF ENGINEERING

COMMENTS ATTACHED.

EASTON UTILITIES

COMMENTS ATTACHED.

BUILDING INSPECTION & PERMIT DEPARTMENT

COMMENTS ATTACHED.

Plan Review Status

IMPROVEMENT PLAN REVIEW			Comments
Plans Approved	☐Y	☒ N	Please review the comments above. Revise and resubmit.

GRADING PERMIT STATUS			
Application and Final Approved Site Plan Submitted to Town Engineer	☐Y	☒ N	To be processed by the Department of Engineering.
LEGAL DOCUMENTS			
Storm Water Easement			
☒ Required ☐ Submitted ☐ Approved			To be processed by the Department of Engineering.
Drainage & Utility and Landscape Easement			
☐ Required ☐ Submitted ☐ Approved			Not required.
Shared Access/Use Easement			
☐ Required ☐ Submitted ☐ Approved			Not required
Sidewalk Easement			
☐Required ☐ Submitted ☐ Approved			Not required
Declaration of Covenants			
☒ Required ☐ Submitted ☐ Approved			To be prepared by Town Attorney
Public Works Agreement			
☒ Required ☐ Submitted ☐ Approved			To be prepared by Town Attorney
Bond/Letter of Credit/ Cash Agreement			
☒ Required ☐ Submitted ☐ Approved			To be processed by the Department of Engineering.
Talbot Soil Conservation District Approval			
☒ Approval Required			Approval pending.
Forest Stand Delineation & Forest Conservation Plan			
☐ Required ☐ Submitted ☐Approved			The development of this site has already been mitigated for Forest Conservation under the Forest Conservation Plan, recorded on 8/11/2016. Trees within Forest Conservation were removed to comply with the Obstruction Removal Program to meet FAA requirements. Mitigation has been provided as a fee in lieu payment into the Forest Conservation Account.
Other			
☒Required ☐ Submitted ☐ Approved			Applicant to provide FAA Determination of no hazard to air shall be required prior to site plan Approval. In addition, obtain SHA Access Agreement for SWM outfall.

Please contact me if you have any questions. Thank you.

TOWN OF

EASTON

ENGINEERING DEPARTMENT

DATE:	**May 23rd, 2023**
TO:	**Johnny Dent – Owner**
	Ebie Fink – Fink, Whitten
Cc:	**Rick Van Emburgh – Town Engineer**
	Miguel Salinas – Planning and Zoning Department
	Aaron Goller – EUC
FROM:	**Sierra Clem – Engineering Department**
SUBJECT:	**Tuckahoe Hardwood – Sketch Site Plan Review Comments**

I have reviewed the application for the subject project received on 5/12/2023. I have the following comments:

1. Show all adjacent property owners along Commerce Drive. See sheet 3
2. Please include the dimensions of all existing roads, ROW and entrances. see sheet 3
3. Please provide verification of SHA authorization for the LOD and outfall shown on SHA ROW. We will Reach out to Henry Dierker @ the district
4. There is as label for LOD in the SHA ROW but no line type. Please update the LOD boundary and confirm the total LOD calculations. Line corrected
5. The space between the building and the SWM feature, and the SWM feature and the southern property line is tight. Please verify vehicular access for construction and maintenance of the feature. The space is similar to that encountered w/ the 2016 project.
6. Please complete the ESD Summary Chart with the Target ESDv and include on the site plan. Charts to be provided once SWM approach deemed acceptable
7. Provide quantity stormwater calculations. Please complete the Quantity summary chart and include on the site plan. Pre calculations need to be completed. Calcs have been completed + added to report.
8. Since the existing rain garden typically holds water after rain events, please modify the landscape Plan to use wet soil rain garden plants similar to TOE-SWM 6.01-5.

Note added to Landsc. Plan

The **Sketch Plan** is **acceptable** to the Engineering Department, but the **Sketch Stormwater Management Plan needs to be revised to address quantity prior to proceeding to the Planning Commission.** Please submit a Revised Sketch Stormwater Management Plan.

Please contact me if you have any questions. Thank you.

P.O. Box 520, Easton, Maryland 21601
410-820-8822
Engineering@EastonMD.gov - www.EastonMD.gov

EASTON UTILITIES

Life. Made better.™

Easton Utilities Commission

Plan Review Comments

Date: Tuesday, May 23, 2023
To: Joe Mayer; Nicholas Johnson; Sierra Clem
From: Kia Gibbs on behalf of Aaron Goller, PE — **No. of Pages:** 1
Re: 8685 Commerce Drive — **Phase:** Sketch Site Plan
Review Type: Preliminary — **SUBM:** 1 — **Status:** Approved as Noted

Easton Utilities Commission has reviewed the above referenced plans and have provided the following comments. Please provide your corrections as listed below. Additional reviews will be required to ensure comments have been addressed. Items or documents not provided on initial submission will be subject to further review. Please contact Kia Gibbs, Admin Support at kgibbs@eucmail.com should you have any questions.

ITEM:	DRAWING / PAGE	COMMENTS:
1	C-1	Capital Charges duefor 0.23 EDU's in the amount of $1.692
2	C-6	Electric service shall not be under structure
3	C-6	Show water and sewer utilities on plans
4	C-6	Clay sewer lateral under stormwater pond not permitted.
5	C-6	Sewer lateral to be verified, camera'd and pressure tested. If clay, lateral shall be replaced.
6	C-6	Underground electric service to be relocated at owners expense. Pull strings in ducts.
7	C-6	Will service be upgraded?

I have called Aaron Goller to discuss. He has no comments that hold up P.C. or ESDR. We will add a break + berm to the SWM wetland once sewer lateral location has been determined. Water, Sewer, + Electric will be upgraded + rerouted as necessary + required.

201 N. Washington Street | Easton, Maryland 21601
Telephone: 410-822-6110 | Fax: 410-822-0743 | eastonutilities.com

SITE PLAN
FOR THE DEVELOPMENT OF
CONTRACTOR'S STORAGE BUILDING
ON LOT 28 IN THE
EASTON BUSINESS CENTER
IN THE TOWN OF EASTON, MARYLAND

SITE STATISTICS

CURRENT USE – COMMERCIAL/STORAGE/OFFICE
PROPOSED USE – COMMERCIAL/CONTRACTOR'S OFFICE AND WAREHOUSE (NO OUTSIDE STORAGE)

GROSS SITE AREA	=	1.001 ac.± (43,618 sq. ft.±)
CRITICAL AREA	=	0.000 ac.± (0,000 sq. ft.±)
AREA WITHIN FLOODPLAIN	=	0.000 ac.± (0,000 sq. ft.±)
COVERAGE BY BUILDINGS (PERMITTED) (50%)	=	0.501 ac.± (21,809 sq. ft.±)
COVERAGE BY BUILDINGS (EXISTING) (14.1%)	=	0.144 ac.± (6,264 sq. ft.±)
COVERAGE BY BUILDINGS (PROPOSED) (9.0%)	=	0.090 ac.± (3,920 sq. ft.±)
TOTAL COVERAGE BY BUILDINGS (23.3%)	=	0.234 ac.± (10,194 sq. ft.±)
IMPERVIOUS AREA (EXISTING)	=	0.355 ac.± (15,484 sq. ft.±)
IMPERVIOUS AREA (TO BE REMOVED)	=	0.005 ac.± (105 sq. ft.±)
IMPERVIOUS AREA (PROPOSED)	=	0.211 ac.± (9,188 sq. ft.±)
IMPERVIOUS AREA (TOTAL)	=	0.564 ac.± (24,567 sq. ft.±)

PARKING REQUIREMENTS

EXISTING:
5 SPACES PER APPROVED 2016 SITE PLAN
PROPOSED – CONSTRUCTION RELATED BUSINESS:
MINIMUM: 1 space/1000 sq. ft. GFA = 3,920 sq. ft. / 1 space/1000 sq. ft. = 3.92 or 4 SPACES
MAXIMUM: 1 space/200 sq. ft. GFA = 3,920 sq. ft. / 1 space/200 sq. ft. = 19.6 or 20 SPACES
TOTAL PROPOSED = 5 SPACES

PARKING SPACES (REQUIRED) = 5 EXISTING + 4 PROPOSED = 9 SPACES (1 ADA ACCESSIBLE)
PARKING SPACES (PROVIDED) = 10 SPACES (1 ADA ACCESSIBLE)

OFF-STREET LOADING REQUIREMENTS

PROPOSED: (SECTION 28-1002.1(28)(A):
1 space/10,000 sq. ft. floor area X 3,920 sq. ft. FLOOR AREA = 1 SPACES

LOADING SPACES (REQUIRED) = 1 SPACES
LOADING SPACES (PROVIDED) = 1 SPACES

REVIEWED FOR THE TALBOT SOIL CONSERVATION DISTRICT AND MEET TECHNICAL REQUIREMENTS

APPROVED:

TALBOT SOIL CONSERVATION DISTRICT DISTRICT MANAGER _____ DATE _____

NOTE: THE TALBOT SOIL CONSERVATION DISTRICT RESERVES THE RIGHT TO ADD, DELETE, MODIFY OR OTHERWISE ALTER THE EROSION CONTROL PROVISIONS OF THIS PLAN IN THE EVENT ADDITIONAL PROTECTION BECOMES NECESSARY.

DEVELOPERS CERTIFICATION

I, DENNIS DULEY, HEREBY CERTIFY THAT ALL THE DEVELOPMENT AND/OR CONSTRUCTION SHALL BE DONE ACCORDING TO THIS PLAN OF EROSION AND SEDIMENT CONTROL.

OWNERS SIGNATURE _____ DATE _____

OWNERS NAME: _____

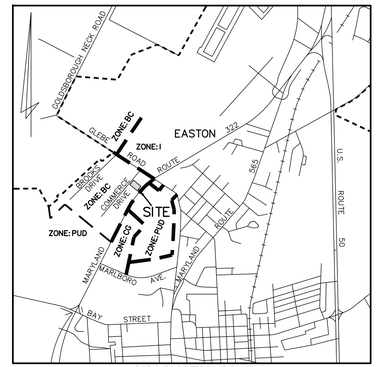
OWNERS ADDRESS: _____

OWNERS PHONE: _____

1. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR OR SUBCONTRACTOR TO NOTIFY THE ENGINEER OF ANY DEVIATION FROM THIS PLAN. ANY CHANGE MADE IN THIS PLAN WITHOUT WRITTEN AUTHORIZATION FROM THE ENGINEER WILL PLACE RESPONSIBILITY FOR SAID CHANGE ON THE CONTRACTOR OR SUBCONTRACTOR.
2. ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATION OF ATTENDANCE AT THE DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF EROSION AND SEDIMENT BEFORE BEGINNING THE PROJECT.

SITE NOTES

1. PROPERTY LOCATED AT: 8685 COMMERCE DRIVE EASTON, MARYLAND 21601
2. PROPERTY LINE INFORMATION SHOWN HEREON IS TAKEN FROM A PLAT ENTITLED "FINAL PLAT, EASTON BUSINESS CENTER" PREPARED BY EVANS, HAGAN & HODEFER, INC. IN AUGUST, 1977. BEARINGS HAVE BEEN ROTATED TO MATCH HORIZONTAL DATUM NAD 83/2011. PLAT BOOK 44, PAGE 8..
3. FOR DEED REFERENCE, SEE LIBER M.A.S. 2350, FOLIO 133.
4. CURRENT ZONING CLASSIFICATION IS "BC" (BUSINESS COMMERCIAL DISTRICT)
5. THE PROPERTY IS NOT LOCATED WITHIN THE CHESAPEAKE BAY CRITICAL AREA.
6. SITE IS NOT LOCATED WITHIN THE 100 YEAR FLOODPLAIN AS SCALED FROM FLOOD INSURANCE RATE MAP COMMUNITY PANEL No. 24041C0187C. (ZONE "X") (UNSHADED) DATED AUGUST 5, 2013.
7. SOILS ON SITE CONSIST OF "Up" (URBAN LAND) AS TAKEN FROM THE WEBSITE: http://websoilsurvey.nrcs.usda.gov FOR TALBOT COUNTY. NO HYDRIC SOILS EXIST ON THE SITE.
8. NO NATURAL RESOURCES (ie... WOODLANDS, NONTIDAL WETLANDS AND BUFFER, STREAM AND BUFFER, STEEP SLOPES, ENDANGERED SPECIES OR HABITATS) EXIST ON THE SITE.
9. EXISTING PUBLIC WATER WILL BE UTILIZED FOR POTABLE WATER SUPPLY.
10. EXISTING PUBLIC SEWER WILL BE UTILIZED FOR SEWAGE DISPOSAL. SUPPLY.
11. EXISTING SPOT ELEVATION AND CONTOURS SHOWN HEREON ARE THE RESULT OF A FIELD RUN SURVEY BY FINK, WHITTEN AND ASSOCIATES, LLC IN FEBRUARY, 2021. VERTICAL DATUM IS NAVD 88.
12. STORMWATER MANAGEMENT FOR THE SITE WILL BE ADDRESSED VIA THE IMPLEMENTATION OF ENVIRONMENTAL SITE DESIGN (ESD) TO THE MAXIMUM EXTENT PRACTICABLE (MEP).
13. ALL ONSITE LIGHTING SHALL BE TYPICAL BUILDING LIGHTING MIMICKING EXISTING BUILDINGS. NO PROPOSED POLE LIGHTS ARE PROPOSED AT THIS TIME.
14. SITE REQUIREMENTS:
    FRONT = 40'
    REAR = 30'
    SIDE = 10'
    MAXIMUM BUILDING HEIGHT:
    PRINCIPAL = 35' (ALLOWED)
    PRINCIPAL = <35' (EXISTING/PROPOSED)



VICINITY MAP
SCALE 1" = 2000'

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SHEET LS-1	–	LANDSCAPE & FOREST CONSERVATION PLAN

LEGEND

T	EXISTING TELEPHONE PEDESTAL		DEED POINT
T	EXISTING UNDERGROUND COMMUNICATION LINE		EDGE OF EXISTING TREES
	PROPOSED ACCESSIBLE PARKING SPACE	x 19.60	EXISTING SPOT ELEVATION
SS	EXISTING GRAVITY SEWER LINE	20x65	PROPOSED SPOT ELEVATION
S	EXISTING SEWER MANHOLE	19	EXISTING CONTOUR
W	EXISTING WATER LINE	20	PROPOSED CONTOUR
	EXISTING WATER VALVE	E	EXISTING ELECTRIC TRANSFORMER
SF	PERIMETER SILT FENCE	E	EXISTING UNDERGROUND ELECTRIC LINE
L.O.D.	LIMITS OF DISTURBANCE		EXISTING LIGHT POLE

GENERAL NOTES

1. THE EXISTING UTILITIES SHOWN WERE TAKEN FROM THE BEST AVAILABLE RECORDS. THE CONTRACTOR SHALL VERIFY THEIR EXACT LOCATION PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE INCURRED TO SUCH UTILITIES SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL TEST PIT AS TO VERIFY THE LOCATION AND INVERT OF EXISTING UTILITIES.
2. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING TWO (2) WEEKS PRIOR TO THE START OF CONSTRUCTION AND SHALL COORDINATE CONSTRUCTION WITH THE UTILITY COMPANIES INVOLVED:

DELMARVA POWER & LIGHT COMPANY	1-800-375-7117
MISS UTILITY	1-800-441-8355
DMS & ASSOCIATES, LLC	1-443-262-9130
DEPARTMENT OF ENVIRONMENT	1-410-901-4020
TALBOT SOIL CONSERVATION DISTRICT	1-410-822-1577
TOWN OF EASTON ENGINEERING	1-410-820-8822
TOWN OF EASTON DEPARTMENT OF PUBLIC WORKS	1-410-822-0513
EASTON UTILITIES	1-410-822-6110

3. THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT, LABOR, AND MATERIALS FOR ANY MISCELLANEOUS OR TEST PIT EXCAVATIONS REQUIRED BY THE ENGINEER.
4. ALL CONSTRUCTION SHALL BE MARKED FOR TRAFFIC AND PEDESTRIAN SAFETY. ALL SIGNS SHALL BE PLACED IN ACCORDANCE WITH SECTION VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
5. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE TOWN OF EASTON STANDARDS AND SPECIFICATIONS.
6. THE CONTRACTOR ASSUMES ALL RESPONSIBILITIES FOR ANY DEVIATIONS FROM THESE PLANS, UNLESS SAID DEVIATION IS APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL RECEIVE WRITTEN PERMISSION FROM THE ENGINEER IF A DEVIATION OF THE PLAN IS NECESSARY.
7. ALL DISTURBED AREAS SHALL BE SMOOTHLY GRADED TO PROVIDE POSITIVE DRAINAGE IN THE DIRECTION OF FLOW ARROWS HEREIN AND STABILIZED WITH TOPSOIL, SEED, AND MULCH. IF SETTLEMENT OCCURS, TOPSOIL, SEEDING AND MULCHING SHALL BE REPEATED UNTIL SETTLEMENT SUBSIDES (SEE EROSION AND SEDIMENT CONTROL SPECIFICATIONS).
8. ALL TRASH, TREES, AND UNDERBRUSH ARE TO BE CLEARED AND REMOVED OFF SITE TO AN APPROVED DUMP SITE
9. ANY EXCESS EXCAVATED MATERIAL SHALL BE REMOVED OFF SITE BY THE CONTRACTOR OR MATERIAL SHALL BE PLACED ON SITE AS DIRECTED BY THE ENGINEER AND/OR OWNER.
10. ANY EXISTING SURVEY MONUMENTATION THAT IS DISTURBED DURING CONSTRUCTION SHALL BE REPLACED BY A REGISTERED SURVEYOR AT THE CONTRACTOR'S EXPENSE.
11. ALL FILL AREAS WITHIN LIMITS OF ROADWAY CONSTRUCTION AND OTHER AREAS AS DESIGNATED ON THESE PLANS SHALL BE COMPACTED TO 95% MODIFIED PROCTOR DENSITY AND LAID AND COMPACTED IN 8" LIFTS MAXIMUM.
12. TRENCHES SHALL NOT REMAIN OPEN OVERNIGHT. IF IT IS NECESSARY FOR TRENCHES TO REMAIN OPEN, STEEL PLATES, CAPABLE OF TRAFFIC BEARING, SHALL BE USED TO COMPLETELY COVER THE TRENCH.
13. CONTRACTOR MUST PROVIDE MONUMENTED SURVEY MARKERS PER PUBLIC WORKS AGREEMENT.
14. THE DEVELOPER SHALL COORDINATE WITH THE TOWN OF EASTON TO SCHEDULE INSTALLATION OF ANY NECESSARY SIGNAGE SHALL BE INSTALLED AT THE START OF CONSTRUCTION AND MAINTAINED BY THE TOWN OF EASTON THROUGHOUT THE COMPLETION OF THE WORK AT THE EXPENSE OF THE DEVELOPER. THE DEVELOPER SHALL PAY INVOICES UPON RECEIPT FROM THE TOWN OF EASTON.
15. ALL PROPOSED SITE IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH TOWN OF EASTON AND EASTON UTILITIES CONSTRUCTION STANDARDS AND SPECIFICATIONS FOR WATER, SEWER, AND STREETS ISSUES APRIL 12, 2011.
16. ONCE CONSTRUCTION IS COMPLETE, AS-BUILT PLAN CERTIFICATION SHALL BE SUBMITTED BY EITHER A PROFESSIONAL ENGINEER OR PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF MARYLAND TO ENSURE ALL CONSTRUCTION IS IN COMPLIANCE WITH THE SPECIFICATIONS AND APPROVED PLANS.

STATEMENT OF PURPOSE AND INTENT

THE SITE IS LOCATED ON THE SOUTHEAST SIDE OF COMMERCE DRIVE IN THE TOWN OF EASTON. THERE ARE CURRENTLY AN OFFICE BUILDING AND A CONTRACTORS STORAGE BUILDING LOCATED ON THE SITE. THE INTENT OF THIS SITE PLAN IS CONSTRUCT A NEW CONTRACTORS STORAGE BUILDING.

THE PURPOSE OF THIS SITE PLAN IS TO OBTAIN APPROVAL FROM THE TOWN OF EASTON FOR THE PROPOSED DEVELOPMENT.

OWNER/DEVELOPER:
8685 COMMERCE DRIVE, LLC
c/o JOHNNY DENT
8685 COMMERCE DRIVE
EASTON, MARYLAND 21632
PHONE No. 1-410-310-3937

ENGINEER:
DMS & ASSOCIATES, LLC
c/o BRANDON DAVIS, P.E.
P.O. BOX 80
CENTREVILLE, MARYLAND 21617
PHONE No. 1-443-262-9130

PLANNER/SURVEYOR:
FINK, WHITTEN & ASSOCIATES, LLC
c/o ELIZABETH FINK
113 E. DOVER ROAD, UNIT C
EASTON, MARYLAND 21601
PHONE No. 1-410-822-8484

TOWN OF EASTON – PLANNING AND ZONING

TOWN OF EASTON – TOWN ENGINEER

EASTON UTILITIES – MANAGER OF ENGINEERING

PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 37235 EXPIRATION DATE: 2024

STATE OF MARYLAND BRANDON A. DAVIS No. 37235 PROFESSIONAL ENGINEER

AUG. 2, 2023
DATE SEAL

DAVIS, MOORE, SHEARON & ASSOCIATES, LLC
P.O. BOX 80
CENTREVILLE, MARYLAND 21617

FINK, WHITTEN & ASSOCIATES, LLC.
LAND SURVEYING
410-822-8484 113 E. Dover St., Unit C Easton, Maryland 21601
410-228-8885 504 Maryland Avenue Cambridge, Maryland 21613

DATE	REVISION
8/2/2023	PER 05-2023 ESDR COMMENTS

TITLE SHEET
FOR THE DEVELOPMENT OF A
CONTRACTOR'S STORAGE BUILDING
ON LOT 28 IN THE
EASTON BUSINESS CENTER
IN THE TOWN OF EASTON, 1st Elect. Ward, TALBOT Co., MARYLAND
TAX MAP – 101, GRID – 2, PARCEL – 4

DATE APRIL '23	SCALE AS SHOWN
JOB No. 2020157	DRAWN BY WJM
FOLDER Ref. 101-2020157	DESIGNED BY BD
SHEET No. – C-1	
CADD FILE – 20157C01	

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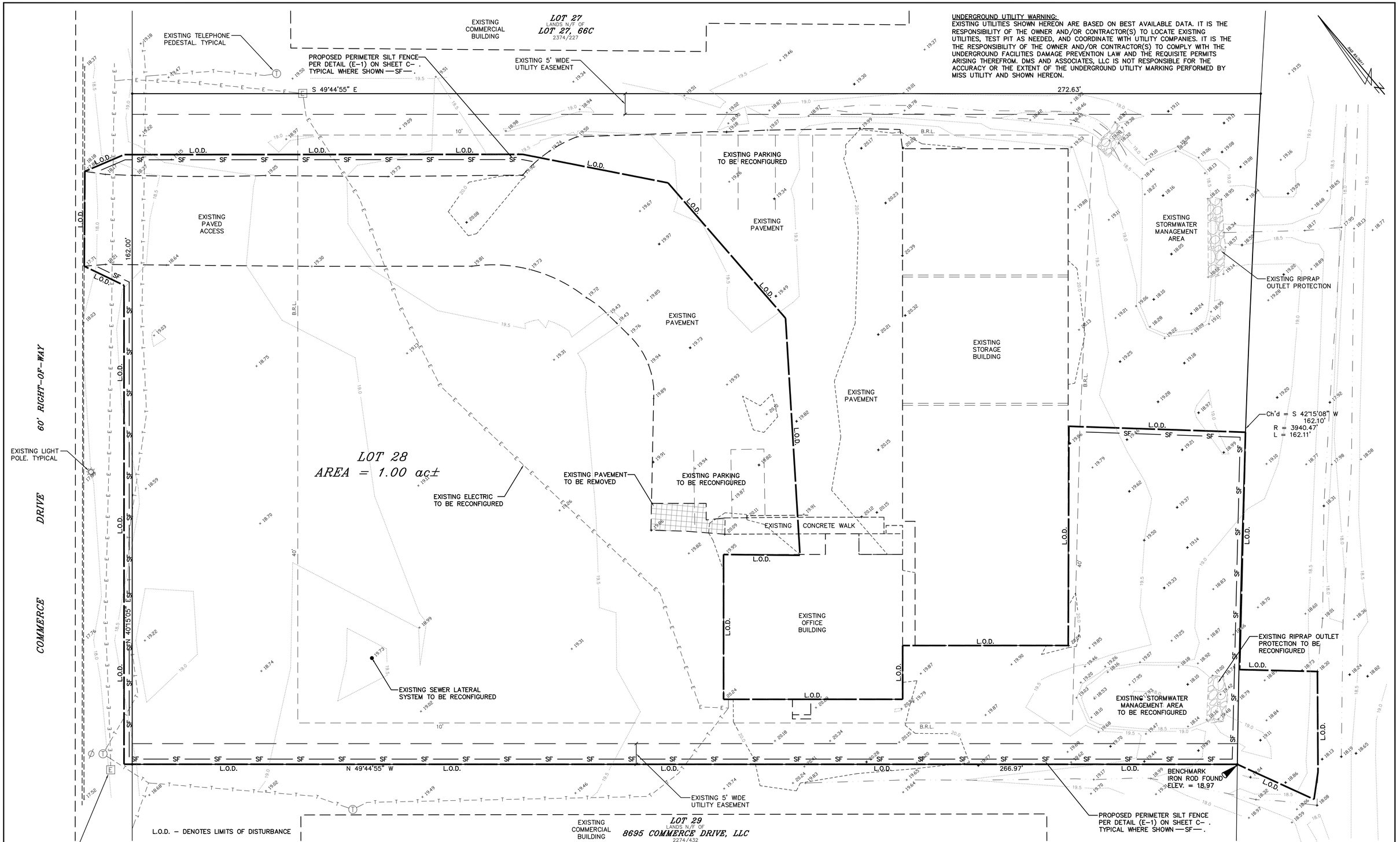
UNDERGROUND UTILITY WARNING:
EXISTING UTILITIES SHOWN HEREON ARE BASED ON BEST AVAILABLE DATA. IT IS THE RESPONSIBILITY OF THE OWNER AND/OR CONTRACTOR(S) TO LOCATE EXISTING UTILITIES, TEST PIT AS NEEDED, AND COORDINATE WITH UTILITY COMPANIES. IT IS THE RESPONSIBILITY OF THE OWNER AND/OR CONTRACTOR(S) TO COMPLY WITH THE UNDERGROUND FACILITIES DAMAGE PREVENTION LAW AND THE REQUISITE PERMITS ARISING THEREFROM. DMS AND ASSOCIATES, LLC IS NOT RESPONSIBLE FOR THE ACCURACY OR THE EXTENT OF THE UNDERGROUND UTILITY MARKING PERFORMED BY MISS UTILITY AND SHOWN HEREON.



NOTE:
SEDIMENT AND EROSION CONTROL WILL BE STRICTLY ENFORCED

NOTE:
FOLLOWING INITIAL DISTURBANCE, PERMANENT OR TEMPORARY, STABILIZATION SHALL BE COMPLETED WITHIN 3 CALENDAR DAYS ON ALL PERIMETER CONTROLS AND SLOPES GREATER THAN 3:1 AND 7 DAYS ON ALL OTHER DISTURBED AREAS ON THE SITE.

TOWN OF EASTON – PLANNING AND ZONING

TOWN OF EASTON – TOWN ENGINEER

EASTON UTILITIES – MANAGER OF ENGINEERING

PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 37235 EXPIRATION DATE: 2024

STATE OF MARYLAND
BRANDON A. MOORE
No. 37235
PROFESSIONAL ENGINEER

AUG. 2, 2023
DATE SEAL

DAVIS, MOORE, SHEARON & ASSOCIATES, LLC
P.O. BOX 80
CENTREVILLE, MARYLAND 21617

FINK, WHITTEN & ASSOCIATES, LLC.
LAND SURVEYING
410-822-8484
113 E. Dover St., Unit C
Easton, Maryland 21601
410-228-8885
504 Maryland Avenue
Cambridge, Maryland 21613

DATE	REVISION
8/2/2023	PER 05-2023 ESDR COMMENTS

EXISTING CONDITIONS AND DEMOLITION PLAN
FOR THE DEVELOPMENT OF A
CONTRACTOR'S STORAGE BUILDING
ON LOT 28 IN THE
EASTON BUSINESS CENTER
IN THE TOWN OF EASTON, 1st Elect. Ward, TALBOT Co., MARYLAND
TAX MAP – 101, GRID – 2, PARCEL – 4

DATE APRIL '23	SCALE 1" = 10'
JOB No. 2020157	DRAWN BY WJM
FOLDER Ref. 101-2020157	DESIGNED BY BD
SHEET No. – C-2	
CADD FILE – 20157C02	

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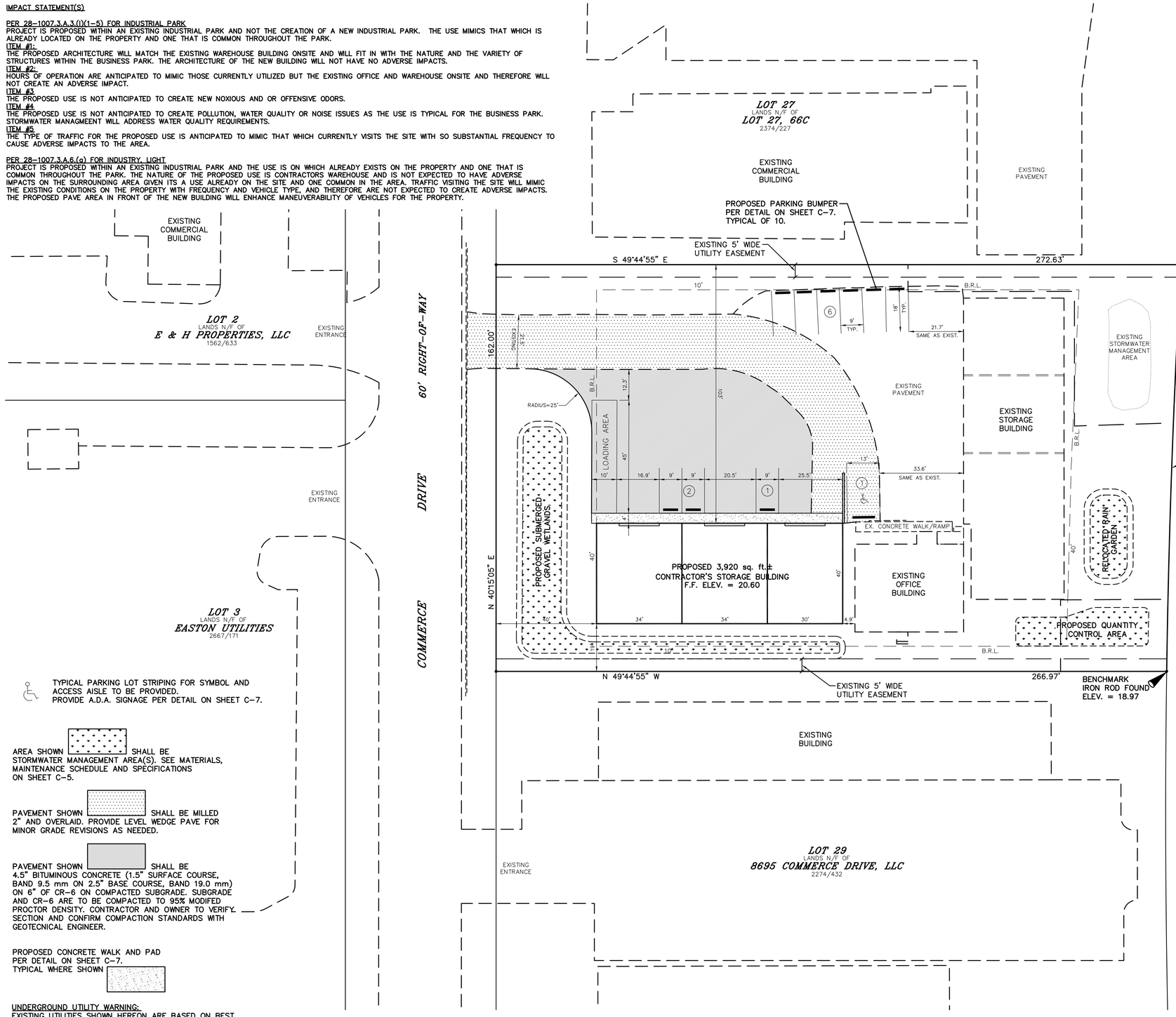
IMPACT STATEMENT(S)

PER 28-1007.3.A.3.(i)(1-5) FOR INDUSTRIAL PARK
PROJECT IS PROPOSED WITHIN AN EXISTING INDUSTRIAL PARK AND NOT THE CREATION OF A NEW INDUSTRIAL PARK. THE USE MIMICS THAT WHICH IS ALREADY LOCATED ON THE PROPERTY AND ONE THAT IS COMMON THROUGHOUT THE PARK.
ITEM #1:
THE PROPOSED ARCHITECTURE WILL MATCH THE EXISTING WAREHOUSE BUILDING ONSITE AND WILL FIT IN WITH THE NATURE AND THE VARIETY OF STRUCTURES WITHIN THE BUSINESS PARK. THE ARCHITECTURE OF THE NEW BUILDING WILL NOT HAVE NO ADVERSE IMPACTS.
ITEM #2:
HOURS OF OPERATION ARE ANTICIPATED TO MIMIC THOSE CURRENTLY UTILIZED BUT THE EXISTING OFFICE AND WAREHOUSE ONSITE AND THEREFORE WILL NOT CREATE AN ADVERSE IMPACT.
ITEM #3
THE PROPOSED USE IS NOT ANTICIPATED TO CREATE NEW NOXIOUS AND OR OFFENSIVE ODORS.
ITEM #4
THE PROPOSED USE IS NOT ANTICIPATED TO CREATE POLLUTION, WATER QUALITY OR NOISE ISSUES AS THE USE IS TYPICAL FOR THE BUSINESS PARK. STORMWATER MANAGMEENT WILL ADDRESS WATER QUALITY REQUIREMENTS.
ITEM #5
THE TYPE OF TRAFFIC FOR THE PROPOSED USE IS ANTICIPATED TO MIMIC THAT WHICH CURRENTLY VISITS THE SITE WITH SO SUBSTANTIAL FREQUENCY TO CAUSE ADVERSE IMPACTS TO THE AREA.

PER 28-1007.3.A.6.(a) FOR INDUSTRY, LIGHT
PROJECT IS PROPOSED WITHIN AN EXISTING INDUSTRIAL PARK AND THE USE IS ON WHICH ALREADY EXISTS ON THE PROPERTY AND ONE THAT IS COMMON THROUGHOUT THE PARK. THE NATURE OF THE PROPOSED USE IS CONTRACTORS WAREHOUSE AND IS NOT EXPECTED TO HAVE ADVERSE IMPACTS ON THE SURROUNDING AREA GIVEN ITS A USE ALREADY ON THE SITE AND ONE COMMON IN THE AREA. TRAFFIC VISITING THE SITE WILL MIMIC THE EXISTING CONDITIONS ON THE PROPERTY WITH FREQUENCY AND VEHICLE TYPE, AND THEREFORE ARE NOT EXPECTED TO CREATE ADVERSE IMPACTS. THE PROPOSED PAVE AREA IN FRONT OF THE NEW BUILDING WILL ENHANCE MANEUVERABILITY OF VEHICLES FOR THE PROPERTY.



TYPICAL PARKING LOT STRIPING FOR SYMBOL AND ACCESS AISLE TO BE PROVIDED. PROVIDE A.D.A. SIGNAGE PER DETAIL ON SHEET C-7.

AREA SHOWN SHALL BE STORMWATER MANAGEMENT AREA(S). SEE MATERIALS, MAINTENANCE SCHEDULE AND SPECIFICATIONS ON SHEET C-5.

PAVEMENT SHOWN SHALL BE MILLED 2" AND OVERLAID. PROVIDE LEVEL WEDGE PAVE FOR MINOR GRADE REVISIONS AS NEEDED.

PAVEMENT SHOWN SHALL BE 4.5" BITUMINOUS CONCRETE (1.5" SURFACE COURSE, BAND 9.5 mm ON 2.5" BASE COURSE, BAND 19.0 mm) ON 6" OF CR-6 ON COMPACTED SUBGRADE. SUBGRADE AND CR-6 ARE TO BE COMPACTED TO 95% MODIFED PROCTOR DENSITY. CONTRACTOR AND OWNER TO VERIFY SECTION AND CONFIRM COMPACTION STANDARDS WITH GEOTECNICAL ENGINEER.

PROPOSED CONCRETE WALK AND PAD PER DETAIL ON SHEET C-7. TYPICAL WHERE SHOWN

UNDERGROUND UTILITY WARNING:
EXISTING UTILITIES SHOWN HEREON ARE BASED ON BEST AVAILABLE DATA. IT IS THE RESPONSIBILITY OF THE OWNER AND/OR CONTRACTOR(S) TO LOCATE EXISTING UTILITIES, TEST PIT AS NEEDED, AND COORDINATE WITH UTILITY COMPANIES. IT IS THE THE RESPONSIBILITY OF THE OWNER AND/OR CONTRACTOR(S) TO COMPLY WITH THE UNDERGROUND FACILITIES DAMAGE PREVENTION LAW AND THE REQUISITE PERMITS ARISING THEREFROM. DMS AND ASSOCIATES, LLC IS NOT RESPONSIBLE FOR THE ACCURACY OR THE EXTENT OF THE UNDERGROUND UTILITY MARKING PERFORMED BY MISS UTILITY AND SHOWN HEREON.

GRAPHIC SCALE
20 0 10 20 40
1 inch = 20 ft.

STORAGE:
THERE SHALL BE NO OPEN STORAGE ON ANY OPEN SPACES. ALL OUTSIDE STORAGE SHALL BE ADEQUATELY SCREEN AND LANDSCAPED IN ACCORDANCE WITH PROVISIONS OF SECTION 1015 OF THE CODE FOR THE TOWN OF EASTON

LIGHTING:
PROPOSED LIGHTING SHALL CONSIST OF TYPICAL BUILDING LIGHTING.

SIGNAGE:
THERE IS NO PROPOSED SIGNAGE WITH THIS SITE PLAN.

DESIGN PRINCIPLES

PRINCIPLE #1:
INTEGRATED USES ARE DESIRABLE AS THIS DEVELOPMENT IS LOCATED WITHIN A INDUSTRIAL ZONED DISTRICT. ALTHOUGH THE SITE IS NOT DEVELOPED, THE PROPOSED CONTRACTORS STORAGE BUILDING IS COMPATIBLE WITH THE SURROUNDING USES.

PRINCIPLE #2
NATURAL FEATURES SHOULD DETERMINE DESIGN. THIS ELEMENT REFERS TO THE PLANNING OF THE SITE BASED ON THE ENVIRONMENTAL RESOURCES PRESENT. THIS IS NOT A DETERMINING FACTOR IN THE DESIGN OF THE NEW BUILDING AS THERE ARE NO NATURAL RESOURCES IN THE AREA.

PRINCIPLE #3
AUTOMOBILES SHOULD NOT DETERMINE THE DESIGN. PER THE ZONING CODE AND PAST PARKING REDUCTION APPROVALS, AND WITH THE USE OF THE SITE, PARKING AND LOADING ARE REQUIRED, ALL OF WHICH HAVE BEEN SATISFIED FOR THE EXISTING AND PROPOSED USE. THE LAYOUT IS COMPATIBLE WITH BUSINESSES IN THE AREA.

PRINCIPLE #4
AMPLE OPEN SPACES SHOULD BE PROVIDED WITHIN AND AROUND NEIGHBORHOODS. THE SITE AND SURROUNDING AREA IS LOCATED WITHIN A INDUSTRIAL AND COMMERCIALIZED AREA AND IS NOT LOCATED NEAR NEIGHBORHOODS. THIS IS NOT APPLICABLE.

PRINCIPLE #5
ARCHITECTURE SHOULD RESPECT EASTON'S HISTORICAL DEVELOPMENT: THE PROPOSED BUILDING IS A CONTRACTOR'S STORAGE BUILDING AND ARCHITECTURE WILL MIMIC EXISTING BUILDINGS ONSITE AND COINCIDE WITH THE SURROUNDING INDUSTRIAL/BUSINESS PARK. THIS IS NOT A PARTICULARLY RELEVANT TO OUR REQUEST.

PRINCIPLE #6
SIGNS SHOULD INFORM BUT NOT DOMINATE. AT THIS TIME THERE IS NO ADDITIONAL SIGNAGE PROPOSED.

PRINCIPLE #7
NEIGHBORHOODS SHOULD CONTAIN A DIVERSITY OF HOUSING TYPES.
THIS PRINCIPLE IS NOT APPLICABLE TO OUR REQUEST.

PRINCIPLE #8
RESIDENTIAL DEVELOPMENT SHOULD BE INTERESTING PLACES.
THIS PRINCIPLE IS NOT APPLICABLE TO OUR REQUEST.

PRINCIPLE #9
NEIGHBORHOODS SHOULD CONNECT.
THIS PRINCIPLE IS NOT APPLICABLE TO OUR REQUEST.

TOWN OF EASTON – PLANNING AND ZONING

TOWN OF EASTON – TOWN ENGINEER

EASTON UTILITIES – MANAGER OF ENGINEERING

PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 37230 EXPIRATION DATE: 2024

STATE OF MARYLAND BRADON A. DAVIS No. 37230 PROFESSIONAL ENGINEER

AUG. 2, 2023
DATE SEAL

DAVIS, MOORE, SHEARON & ASSOCIATES, LLC
P.O. BOX 80
CENTREVILLE, MARYLAND 21617

FINK, WHITTEN & ASSOCIATES, LLC.
LAND SURVEYING
410-822-8484
113 E. Dover St., Unit C
Easton, Maryland 21601
410-228-8885
504 Maryland Avenue
Cambridge, Maryland 21613

DATE	REVISION
8/2/2023	PER 05-2023 ESDR COMMENTS

SITE PLAN
FOR THE DEVELOPMENT OF A
CONTRACTOR'S STORAGE BUILDING
ON LOT 28 IN THE
EASTON BUSINESS CENTER
IN THE TOWN OF EASTON, 1st Elect. Ward, TALBOT Co., MARYLAND
TAX MAP – 101, GRID – 2, PARCEL – 4

DATE APRIL '23	SCALE 1" = 20'
JOB No. 2020157	DRAWN BY WJM
FOLDER Ref. 101-2020157	DESIGNED BY BD
SHEET No. – C-3	
CADD FILE – 20157C03	

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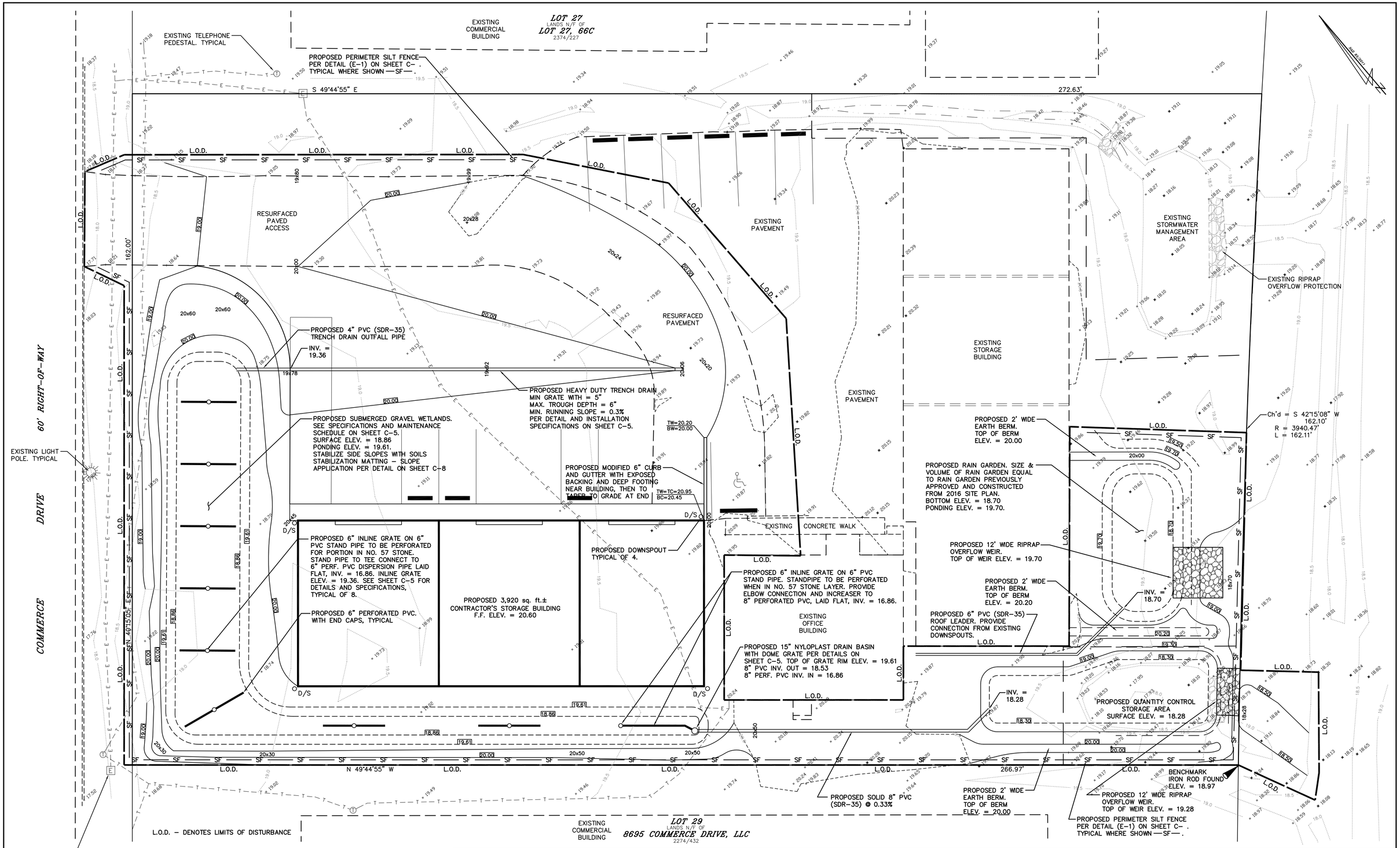

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NOTE:
SEDIMENT AND EROSION CONTROL WILL BE STRICTLY ENFORCED

NOTE:
FOLLOWING INITIAL DISTURBANCE, PERMANENT OR TEMPORARY, STABILIZATION SHALL BE COMPLETED WITHIN 3 CALENDAR DAYS ON ALL PERIMETER CONTROLS AND SLOPES GREATER THAN 3:1 AND 7 DAYS ON ALL OTHER DISTURBED AREAS ON THE SITE.

TOWN OF EASTON – PLANNING AND ZONING

TOWN OF EASTON – TOWN ENGINEER

EASTON UTILITES – MANAGER OF ENGINEERING

PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 37235 EXPIRATION DATE: 2024

STATE OF MARYLAND · BRIAN A. DAVIS · No. 37235 · PROFESSIONAL ENGINEER

AUG. 2, 2023
DATE SEAL

DAVIS, MOORE, SHEARON & ASSOCIATES, LLC
P.O. BOX 80
CENTREVILLE, MARYLAND 21617

FINK, WHITTEN & ASSOCIATES, LLC.
LAND SURVEYING
410-822-8484
113 E. Dover St., Unit C
Easton, Maryland 21601
410-228-8885
504 Maryland Avenue
Cambridge, Maryland 21613

DATE	REVISION
8/2/2023	PER 05-2023 ESDR COMMENTS

STORMWATER MANAGEMENT AND SEDIMENT & EROSION CONTROL PLAN

FOR THE DEVELOPMENT OF A

CONTRACTOR'S STORAGE BUILDING

ON LOT 28 IN THE

EASTON BUSINESS CENTER

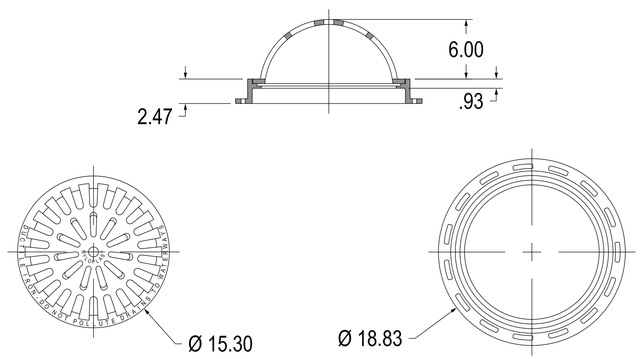
IN THE TOWN OF EASTON, 1st Elect. Ward, TALBOT Co., MARYLAND

TAX MAP – 101, GRID – 2, PARCEL – 4

DATE APRIL '23	SCALE 1" = 10'
JOB No. 2020157	DRAWN BY WJM
FOLDER Ref. 101-2020157	DESIGNED BY BD
SHEET No. – C-4	
CADD FILE – 20157C04	

1599CGD

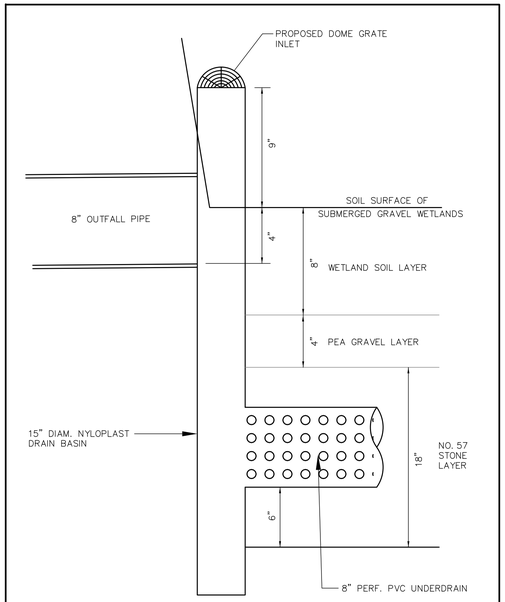
APPROX. DRAIN AREA = 115.49 SQ IN
APPROX. WEIGHT WITH FRAME = 47.30 LBS



ALL DIMENSIONS IN INCHES UNLESS NOTED OTHERWISE
QUALITY: MATERIAL SHALL CONFORM TO ASTM A536 GRADE 70-50-05
PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT
LOCKING DEVICE AVAILABLE UPON REQUEST SEE DRAWING NO. 7001-110-230

THIS PRINT DISCLOSES SUBJECT MATTER IN WHICH NYLOPLAST HAS PROPRIETARY RIGHTS. THE RECEIPT OR POSSESSION OF THIS PRINT DOES NOT CONFER, TRANSFER, OR LICENSE THE USE OF THE DESIGN OR TECHNICAL INFORMATION SHOWN HEREIN REPRODUCTION OF THIS PRINT OR ANY INFORMATION CONTAINED HEREIN, OR MANUFACTURE OF ANY ARTICLE HEREFROM, FOR THE DISCLOSURE TO OTHERS IS FORBIDDEN, EXCEPT BY SPECIFIC WRITTEN PERMISSION FROM NYLOPLAST.

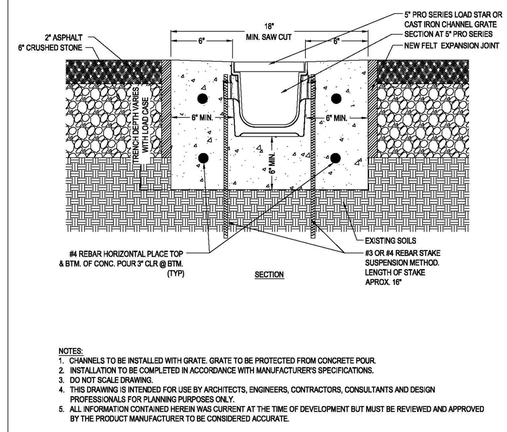
DRAWN BY EBC	MATERIAL DUCTILE IRON	Nyloplast	3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
DATE 3-7-06			
APPD BY CJA	PROJECT NO./NAME	TITLE 15 IN DOME GRATE ASSEMBLY	
DATE 3-7-06			
DWG SIZE A	SCALE 1:8 SHEET 1 OF 1	DWG NO. 7001-110-211	REV B



SUBMERGED GRAVEL WETLANDS OUTFALL STRUCTURE SCHEMATIC

NOT TO SCALE

NDS, INC.
851 NORTH HARVARD AVE.
LINDSAY, CA 93247
TOLL FREE: 1-800-726-1994
PHONE: (559) 562-9888
FAX: (559) 562-4488
www.ndspro.com



NOTES:
1. CHANNELS TO BE INSTALLED WITH GRATE. GRATE TO BE PROTECTED FROM CONCRETE POUR.
2. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
3. DO NOT SCALE DRAWING.
4. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY.
5. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.

PRO SERIES CHANNEL DRAIN SYSTEM

5" PRO SERIES INSTALLATION DETAIL - LOAD CLASS 'C' - 6" ENCASEMENT REBAR SUSPENSION W/ ASPHALT

REVISION DATE 3-5-2015

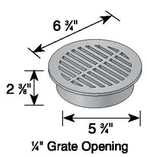
HEAVY DUTY TRENCH DRAIN (OR EQUIVALENT)

MAINTENANCE SCHEDULE

THE OWNER OF THE PROPERTY IS RESPONSIBLE FOR ONGOING MAINTENANCE OF STORMWATER MANAGEMENT FACILITIES.

SUBMERGED GRAVEL WETLANDS:
THE FOLLOWING ITEMS SHOULD BE ADDRESSED TO ENSURE PROPER MAINTENANCE AND LONG–TERM PERFORMANCE OF SUBMERGED GRAVEL WETLANDS:

- DURING THE FIRST YEAR OF OPERATION, INSPECTIONS SHOULD BE CONDUCTED AFTER MAJOR STORMS FOR PONDING AND POORLY ESTABLISHED AREAS VEGETATION. SURFACE SOIL SHOULD BE LEVELED TO CORRECT PONDING AND VEGETATION REPLANTED.
- SEDIMENT ACCUMULATION/DEBRIS IN THE WETLAND CELL SHOULD BE CHECKED QUARTERLY. REMOVE DEBRIS/SEDIMENT AS NECESSARY.
- SIGNS OF UNEVEN FLOW DISTRIBUTION WITHIN THE WETLAND MAY MEAN THAT THE GRAVEL OR UNDERDRAIN IS CLOGGED. THE GRAVEL AND/OR UNDERDRAIN MAY NEED TO BE REMOVED, CLEANED, AND REPLACED. DURING HEAVY RAINFALL, WATER WILL SURGE OUT OF THE DRAIN BASIN WITHIN THE SYSTEM BEFORE DRAINING OUT.
- A DENSE STAND OF WETLAND VEGETATION SHOULD BE MAINTAINED THROUGH THE LIFE OF THE FACILITY WITH PLANTINGS REPLACED AS NEEDED.
- INLETS AND OUTLETS TO SUBMERGED GRAVEL WETLAND CELL SHOULD BE FREE FROM DEBRIS TO PREVENT CLOGGING.
- EROSION AT INFLOW POINTS SHOULD BE REPAIRED AS NEEDED.



Part No.	Description	Color	Pkg. Qty.	Wt. Ea. lbs.	Product Class	Specifications
40	6" Round Grate	Black	10	0.49	10ND	6" Round Structural Foam Polyolefin Grate with UV inhibitor. Open surface area 9.10 square inches. 27.84 GPM.
50	6" Round Grate	Green	10	0.49	10ND	
60	6" Round Grate	Gray	10	0.49	10ND	
60S	6" Round Grate	Sand	10	0.49	10ND	
	Fits Spee-D® Basin, 6" Sewer and Drain Pipe & Fittings and 6" Corrugated Pipe. (see page 74). ADA Compliant/Heel-proof.					

6" INLINE GRATE (OR EQUIVALENT)

BMP MATERIAL SPECIFICATIONS FOR SUBMERGED GRAVEL WETLANDS

MATERIAL	SPECIFICATION	SIZE	NOTES
PLANTINGS	SEE PLAN	SEE PLAN	PLANTINGS ARE SITE–SPECIFIC – SEE LANDSCAPE PLAN FOR PLANT SPECIES
WETLAND MEDIA	LOAMY SAND COMPOST SANDY LOAM, COARSE SAND & COMPOST	N/A	USDA SOIL TYPES LOAMY SAND OR SANDY LOAM; CLAY CONTENT < 5% ORGANIC MATER CONTENT SHALL BE GREATER THAN 15% HYDRAULIC CONDUCTIVITY SHALL BE BETWEEN 0.01 AND 0.10 ft/day
PEA GRAVEL DIAPHRAGM	PEA GRAVEL; ASTM–D–448	No. 8 or No. 9 (1/8" to 3/8")	
UNDERDRAIN STONE	AASHTO M–43	No. 57 or No. 6 AGGREGATE (3/8" to 3/4")	
UNDERDRAIN PIPING	F 758, TYPE PS 28 or AASHTO M–278	6" RIGID PVC (SDR–35)	SLOTTED OR PERFORATED PIPE; 3/8" PERF. @ 6" ON CENTER, 4 HOLES PER ROW; MINIMUM OF 3" OF GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES. PERFORATED PIPE SHALL BE WRAPPED WITH 1/4" GALVANIZED HARDWARE CLOTH

TOWN OF EASTON – PLANNING AND ZONING

TOWN OF EASTON – TOWN ENGINEER

EASTON UTILITIES – MANAGER OF ENGINEERING

PROFESSIONAL CERTIFICATION.
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 37235 EXPIRATION DATE: 2024

STATE OF MARYLAND BRANDON A. MOORE No. 37235 PROFESSIONAL ENGINEER

AUG. 2, 2023
DATE SEAL

DAVIS, MOORE, SHEARON & ASSOCIATES, LLC
P.O. BOX 80
CENTREVILLE, MARYLAND 21617

FINK, WHITTEN & ASSOCIATES, LLC.
LAND SURVEYING
410–822–8484
113 E. Dover St., Unit C
Easton, Maryland 21601
410–228–8885
504 Maryland Avenue
Cambridge, Maryland 21613

DATE	REVISION
8/2/2023	PER 05–2023 ESDR COMMENTS

STORMWATER MANAGEMENT DETAILS AND SPECIFICATIONS
FOR THE DEVELOPMENT OF A
CONTRACTOR'S STORAGE BUILDING
ON LOT 28 IN THE
EASTON BUSINESS CENTER
IN THE TOWN OF EASTON, 1st Elect. Ward, TALBOT Co., MARYLAND
TAX MAP – 101, GRID – 2, PARCEL – 4

DATE APRIL '23	SCALE AS SHOWN
JOB No. 2020157	DRAWN BY WJM
FOLDER Ref. 101–2020157	DESIGNED BY BD
SHEET No. – C–5	
CADD FILE – 20157C05	

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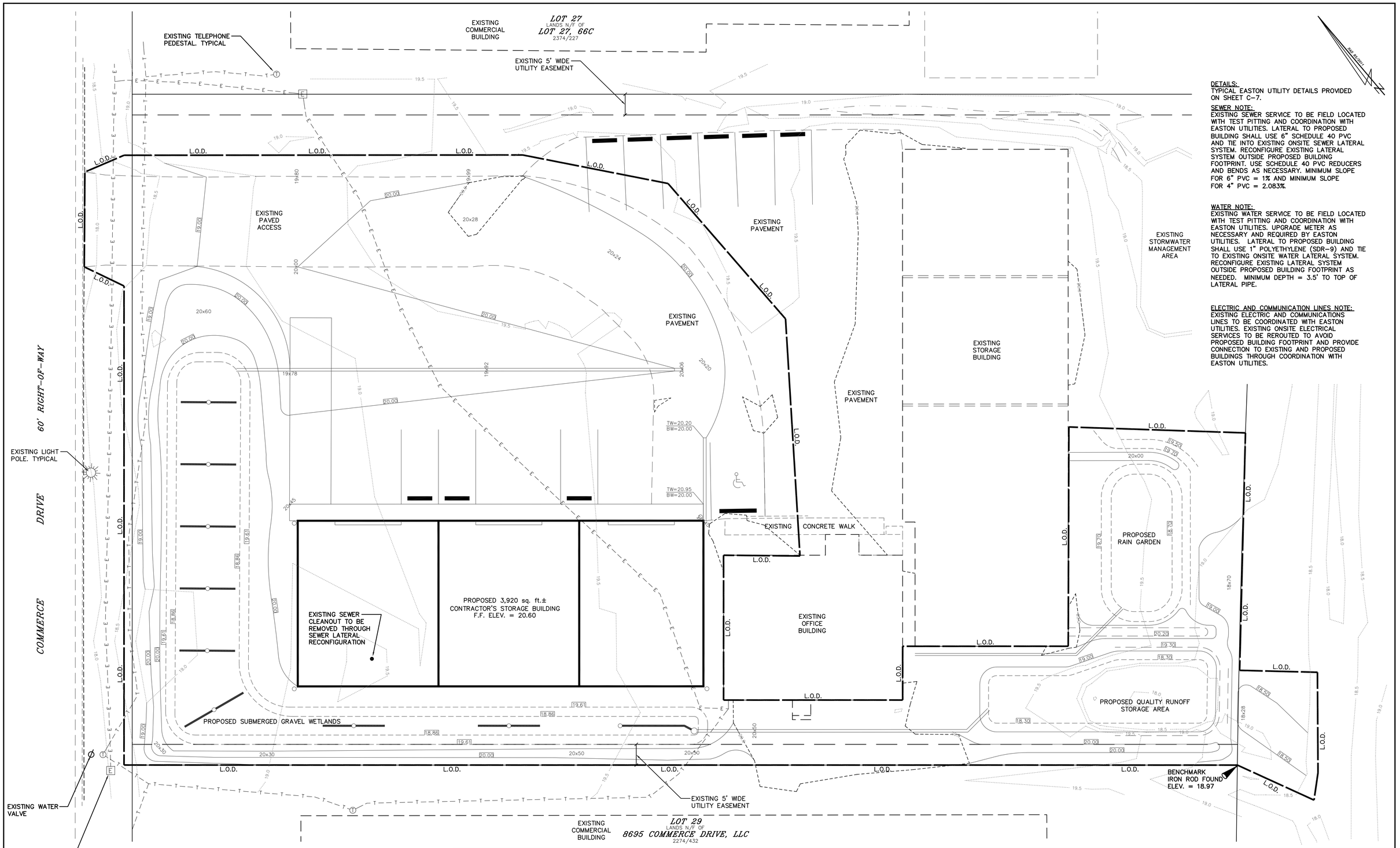

DETAILS:
TYPICAL EASTON UTILITY DETAILS PROVIDED ON SHEET C-7.

SEWER NOTE:
EXISTING SEWER SERVICE TO BE FIELD LOCATED WITH TEST PITTING AND COORDINATION WITH EASTON UTILITIES. LATERAL TO PROPOSED BUILDING SHALL USE 6" SCHEDULE 40 PVC AND TIE INTO EXISTING ONSITE SEWER LATERAL SYSTEM. RECONFIGURE EXISTING LATERAL SYSTEM OUTSIDE PROPOSED BUILDING FOOTPRINT. USE SCHEDULE 40 PVC REDUCERS AND BENDS AS NECESSARY. MINIMUM SLOPE FOR 6" PVC = 1% AND MINIMUM SLOPE FOR 4" PVC = 2.083%.

WATER NOTE:
EXISTING WATER SERVICE TO BE FIELD LOCATED WITH TEST PITTING AND COORDINATION WITH EASTON UTILITIES. UPGRADE METER AS NECESSARY AND REQUIRED BY EASTON UTILITIES. LATERAL TO PROPOSED BUILDING SHALL USE 1" POLYETHYLENE (SDR-9) AND TIE TO EXISTING ONSITE WATER LATERAL SYSTEM. RECONFIGURE EXISTING LATERAL SYSTEM OUTSIDE PROPOSED BUILDING FOOTPRINT AS NEEDED. MINIMUM DEPTH = 3.5' TO TOP OF LATERAL PIPE.

ELECTRIC AND COMMUNICATION LINES NOTE:
EXISTING ELECTRIC AND COMMUNICATIONS LINES TO BE COORDINATED WITH EASTON UTILITIES. EXISTING ONSITE ELECTRICAL SERVICES TO BE REROUTED TO AVOID PROPOSED BUILDING FOOTPRINT AND PROVIDE CONNECTION TO EXISTING AND PROPOSED BUILDINGS THROUGH COORDINATION WITH EASTON UTILITIES.

GRAPHIC SCALE
10 0 5 10 20
1 inch = 10 ft.

L.O.D. – DENOTES LIMITS OF DISTURBANCE

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TOWN OF EASTON – PLANNING AND ZONING

TOWN OF EASTON – TOWN ENGINEER

EASTON UTILITIES – MANAGER OF ENGINEERING

PROFESSIONAL CERTIFICATION:
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STATE OF MARYLAND
BRIAN D. DAVIS
No. 37235
PROFESSIONAL ENGINEER

AUG. 2, 2023
DATE SEAL

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DATE	REVISION
8/2/2023	PER 05-2023 ESDR COMMENTS

UTILITY PLAN

FOR THE DEVELOPMENT OF A

CONTRACTOR'S STORAGE BUILDING

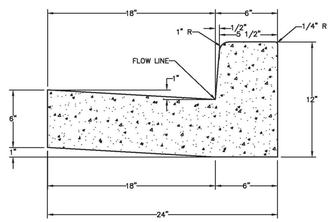
ON LOT 28 IN THE

EASTON BUSINESS CENTER

IN THE TOWN OF EASTON, 1st Elect. Ward, TALBOT Co., MARYLAND

TAX MAP – 101, GRID – 2, PARCEL – 4

DATE APRIL '23	SCALE 1" = 10'
JOB No. 2020157	DRAWN BY WJM
FOLDER Ref. 101-2020157	DESIGNED BY BD
SHEET No. – C-6	
CADD FILE – 20157C06	

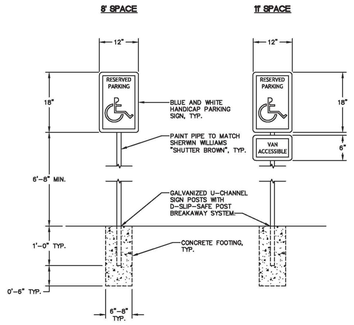


NOTES:

1. ALL CONCRETE USED FOR CURB AND GUTTER SHALL BE SHA MIX NO. 7.
2. CURB AND GUTTER SHALL HAVE CONTRACTION JOINTS EVERY 10'-0", AND EXPANSION JOINTS EVERY 40'-0". EXTRUDED CONCRETE AND GUTTER SHALL HAVE CONTRACTION JOINTS EVERY 10'-0", AND EXPANSION JOINTS EVERY 100'-0".
3. DEPRESSED CURB AND GUTTER SHALL BE UTILIZED AT HANDICAPPED RAMPS WHEN TRANSITIONING FROM STANDARD CURB AND GUTTER.
4. MAXIMUM GUTTER AND SLOPE ON CURB RETURNS SHALL BE 2% WHERE HANDICAPPED RAMPS ARE REQUIRED.

APPROVAL		
TOWN ENGINEER		TOWN OF EASTON STANDARD DETAILS
DATE 1/2020		STANDARD CURB AND GUTTER
ISSUED: JANUARY 2020		STANDARD NO.: TOE-R-6.01

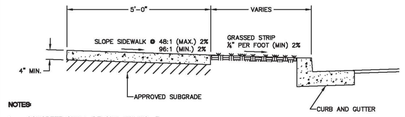
SIGN DETAILS FOR HANDICAP PARKING SPACES



NOTES:

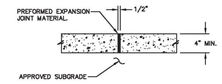
1. H/C PARKING SIGNS (US DOT STANDARD R7-8).

APPROVAL		
TOWN ENGINEER		TOWN OF EASTON STANDARD DETAILS
DATE 1/2020		SIGN DETAILS FOR HANDICAP PARKING SPACES
ISSUED: JANUARY 2020		STANDARD NO.: TOE-SI-4.01



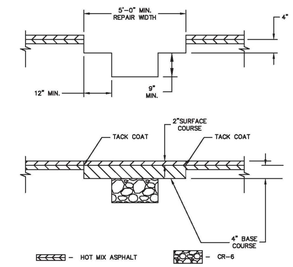
NOTES:

1. CONCRETE SHALL BE SHA MIX NO. 3.
2. CONTRACTION JOINTS SHALL BE TOOLED AT 5'-0" INTERVALS. (4' INTERVALS FOR 4' WIDE SIDEWALK)
3. EXPANSION JOINTS AT INTERVALS NOT GREATER THAN 20'-0".
4. ALL UNPAVED AREAS WITHIN STREET SIDELINES SHALL BE SEEDED OR SODDED PER SPECIFICATIONS.
5. SIDEWALKS AT DRIVEWAY LOCATIONS TO BE 8" THICK.
6. WHERE CONTINUOUS WIDTH OF TRAVEL IS LESS THAN 5'-0", PROVIDE PASSING ZONES AT AN INTERVAL NOT TO EXCEED 200' CENTER TO CENTER. ENTRANCES SHALL BE ACCEPTABLE PASSING ZONES PROVIDED PAVING WIDTH OF 5'-0" IS MAINTAINED AT 48:1 SLOPE.
7. GRASS STRIPS SHALL BE SLOPED AS TO PROVIDE POSITIVE DRAINAGE TOWARD STORMWATER FEATURES.
8. WHERE REVERSE SLOPES OF GRASS STRIPS AND SIDEWALKS ARE REQUIRED TO PROVIDE POSITIVE DRAINAGE TOWARDS A STORMWATER FEATURE, SPOT ELEVATIONS SHALL BE PROVIDED ON FRONT AND BACK OF SIDEWALK. (REVERSE SLOPES MUST BE APPROVED BY THE TOWN PRIOR TO CONSTRUCTION)
9. MAXIMUM SLOPE IN THE DIRECTION OF TRAVEL SHALL BE 5% IN LOCATIONS WITHOUT HANDICAPPED RAMPS.
10. SIDEWALKS SHALL COMPLY WITH ADA REQUIREMENTS PER THE MOST UP TO DATE DEPARTMENT OF JUSTICE REGULATION 28CFR PART 36.



EXPANSION JOINT DETAIL

APPROVAL		
TOWN ENGINEER		TOWN OF EASTON STANDARD DETAILS
DATE 1/2020		CONCRETE SIDEWALK
ISSUED: JANUARY 2020		STANDARD NO.: TOE-R-7.01



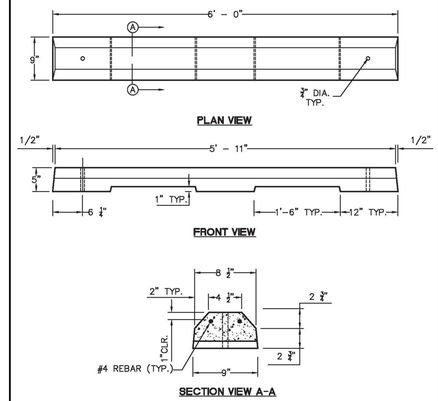
NOTES:

1. PAVEMENT SHALL BE SAW CUT FULL DEPTH OF THE EXISTING PAVEMENT SECTION. ALL CUTS SHALL BE MADE IN STRAIGHT LINES.
2. IF PATCH FALLS WITHIN 2' OF EXISTING CURB OR EDGE OF PAVING, CONTINUE RESTORATION TO EDGE OF PAVE.
3. SURFACE COURSE: 2" OF 9.5mm SUPERPAVE.
   BASE COURSE: 4" OF 9.5mm, 12.5mm OR 19.0 mm SUPERPAVE IN 2-2" LIFTS./NOTE: IF SC & BC ARE BOTH 9.5mm, THEY MAY BE DONE IN 2-3" LIFTS.
4. ADDITIONAL MILL AND OVERLAY MAY BE REQUIRED WHEN MULTIPLE PAVEMENT REPAIRS ARE LOCATED IN THE SAME RELATIVE VICINITY. LIMITS OF MILL AND OVERLAY, WHEN REQUIRED, WILL BE DETERMINED BY THE TOWN ENGINEER.
5. WHEN SURFACE AREA OF REPAIR EXCEEDS 100 SF, THE 2" SURFACE COURSE SHALL EXTEND ENTIRE WIDTH OF TRAVEL LANE(S) AND/OR SHOULDER. LIMITS OF MILL AND OVERLAY, WHEN REQUIRED, WILL BE DETERMINED BY THE TOWN ENGINEER.
6. CONTRACTOR MUST CONFIRM LIMITS OF PAVEMENT REQUIRED WITH TOWN ENGINEER PRIOR TO START OF PAVEMENT WORK.

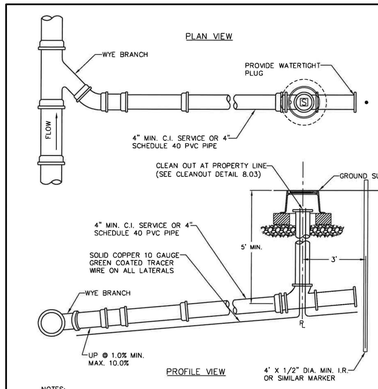
APPROVAL		
TOWN ENGINEER		TOWN OF EASTON STANDARD DETAILS
DATE 1/2020		PERMANENT ASPHALT PAVEMENT REPAIR FOR UTILITY TRENCHES
ISSUED: JANUARY 2020		STANDARD NO.: TOE-R-5.01-3

NOTES:

1. CONCRETE STRENGTH: 5000 PSI AT 28 DAYS.
2. REINFORCEMENT: ASTM A-615 GRADE 60.
3. PINS AVAILABLE: #5 REBAR AT 18" LONG.
4. WEIGHT: 170 LBS.



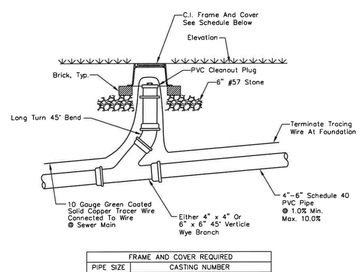
APPROVAL		
TOWN ENGINEER		TOWN OF EASTON STANDARD DETAILS
DATE 1/2020		6' PRECAST CONCRETE WHEEL STOP
ISSUED: JANUARY 2020		STANDARD NO.: TOE-SI-5.01



NOTES:

1. SERVICE CONNECTION SHALL BE PERPENDICULAR TO MAIN.
2. ADD DETECTOR TAPE TO ALL PIPE.
3. USE CLASS 50 DUCTILE IRON FOR SERVICES WITH LESS THAN 3' OF COVER.
4. NO SPLICES ON TRACER WIRE. MECHANICAL CONNECTORS ONLY IN CLEANOUTS.
5. EMBED PIPE IN #57 STONE FROM 6" BELOW INVERT TO 2" ABOVE CROWN.

APPROVAL	REVISED	
EU MANAGER OF ENGINEERING	MAY 1, 89	EASTON UTILITIES STANDARD DETAILS
	AUG 1, 94	
	MAR 9, 95	SEWER COLLECTION SYSTEM SEWER HOUSE SERVICE
JAN 15, 2019	FEB 1, 02	
DATE	JAN 15, 19	
ISSUED: MAY 1, 1986		STANDARD NO. SS-8.00

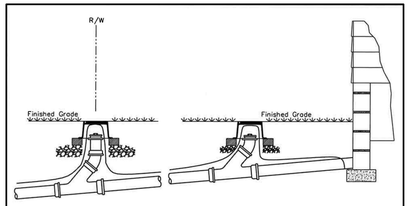


FRAME AND COVER REQUIRED	
PIPE SIZE	CASTING NUMBER
4"	EAST JORDAN IRON WORKS NO. 1570
6"	EAST JORDAN IRON WORKS NO. 1566

NOTES:

1. SERVICE CONNECTION SHALL BE PERPENDICULAR TO MAIN.
2. ADD DETECTOR TAPE TO ALL PIPE.
3. USE CLASS 50 DUCTILE IRON FOR SERVICES WITH LESS THAN 3' OF COVER.
4. NO SPLICES ON TRACER WIRE. MECHANICAL CONNECTORS ONLY IN CLEANOUTS.
5. EMBED PIPE IN #57 STONE FROM 6" BELOW INVERT TO 2" ABOVE CROWN.

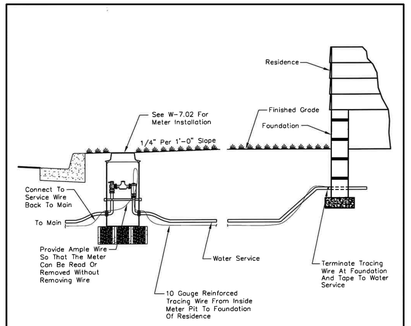
APPROVAL	REVISED	
EU MANAGER OF ENGINEERING		EASTON UTILITIES STANDARD DETAILS
JAN 15, 19		GRAVITY SEWER CLEANOUTS
DATE		
ISSUED: JAN 15, 2019		STANDARD NO. SS-8.03



NOTES:

1. SEE CLEANOUT DETAIL SS-8.03 FOR SPECIFICS ON ITS INSTALLATION.
2. TRACER WIRE TO BE 10 GAUGE, GREEN COATED, SOLID COPPER WIRE.
3. TRACER WIRE TO BE TAPED TO SERVICE LINE IMMEDIATELY ADJACENT TO FOUNDATION.
4. PLACE CLEANOUT IMMEDIATELY ADJACENT TO HOUSE, 3' TO 5' FROM FOUNDATION.
5. SECOND CLEANOUT AT PROPERTY LINE.
6. NO SPLICES ON TRACER WIRE; TAPED MECHANICAL CONNECTORS ONLY INSIDE CLEANOUT FRAME AND COVER.
7. PROVIDE 12" OF SLACK WIRE INSIDE OF CLEANOUT FRAME AND COVER.

APPROVAL	REVISED	
EU MANAGER OF ENGINEERING		EASTON UTILITIES STANDARD DETAILS
JAN 15, 19		SEWER SERVICE TRACER WIRE
DATE		
ISSUED: JAN 15, 2019		STANDARD NO. SS-8.04



Notes:

1. 10 Gauge Solid Copper Tracer Wire; Blue Jacket.
2. Thoroughly Tape Mechanical Connections With Electrical Tape.
3. Installation Of Water Service Into Foundation Per Town Of Easton Standards.

APPROVAL	REVISED	
EU MANAGER OF ENGINEERING DATE 8/16/19	JUN 23, 97	TOWN OF EASTON AND EASTON UTILITIES STANDARD DETAILS
	MAR 1, 98	
	MAR 1, 07	WATER SERVICE CONNECTION
	SEP 1, 09	
	SEP 15,14	
ISSUED: JUNE 5, 1997	AUG 6, 19	STANDARD NO. W-7.04

TOWN OF EASTON – PLANNING AND ZONING

TOWN OF EASTON – TOWN ENGINEER

EASTON UTILITIES – MANAGER OF ENGINEERING

PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 37235 EXPIRATION DATE: 2024

STATE OF MARYLAND · BRADLEY A. DAVIS · No. 37235 · PROFESSIONAL ENGINEER

AUG. 2, 2023
DATE SEAL

DAVIS, MOORE, SHEARON & ASSOCIATES, LLC
P.O. BOX 80
CENTREVILLE, MARYLAND 21617

FINK, WHITTEN & ASSOCIATES, LLC.
LAND SURVEYING
410-822-8484
113 E. Dover St., Unit C
Easton, Maryland 21601
410-228-8885
504 Maryland Avenue
Cambridge, Maryland 21613

DATE	REVISION
8/2/2023	PER 05-2023 ESDR COMMENTS

SITE AND UTILITY DETAILS

FOR THE DEVELOPMENT OF A

CONTRACTOR'S STORAGE BUILDING

ON LOT 28 IN THE

EASTON BUSINESS CENTER

IN THE TOWN OF EASTON, 1st Elect. Ward, TALBOT Co., MARYLAND

TAX MAP – 101, GRID – 2, PARCEL – 4

DATE	SCALE
APRIL '23	AS SHOWN
JOB No. 2020157	DRAWN BY WJM
FOLDER Ref. 101-2020157	DESIGNED BY BD
SHEET No. – C-7	
CADD FILE – 20157C07	

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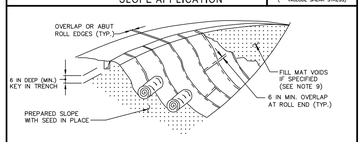
DETAIL B-4-6-D PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL
PSSMS – * lb/ft² (* INCLUDE SHEAR STRESS)



ISOMETRIC VIEW

CONSTRUCTION SPECIFICATIONS

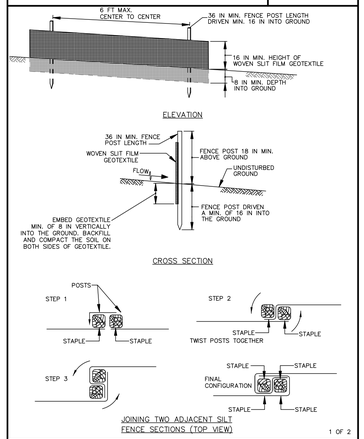
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE SOUND, STRAIGHT HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWN SLOPE. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL
——SF——



1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL
——SF——

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1½ X 1½ ± ¼ INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

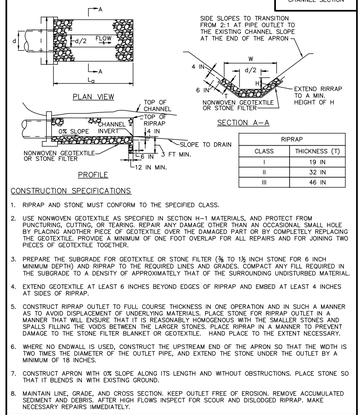
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

2 OF 2

DETAIL D-4-1-B ROCK OUTLET PROTECTION II

STANDARD SYMBOL
ROPII

DISCHARGE TO CONFINED CHANNEL SECTION



RIPRAP	
CLASS	THICKNESS (T)
I	19 IN
II	32 IN
III	46 IN

CONSTRUCTION SPECIFICATIONS

1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (⅞ TO 1½ INCH STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.
5. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE STONE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
7. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP; MAKE NECESSARY REPAIRS IMMEDIATELY.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

PHASE OF CONSTRUCTION

1. CONTACT THE MARYLAND DEPARTMENT OF THE ENVIRONMENT SEDIMENT AND EROSION CONTROL INSPECTOR AT 1-410-901-4020, TOWN ENGINEER AT 1-410-820-8822, AND EASTON UTILITIES AT 1-410-822-6110 A MINIMUM OF TWO (2) WEEKS PRIOR TO THE START OF CONSTRUCTION TO SCHEDULE A PRECONSTRUCTION MEETING.
2. INSTALL PERIMETER SILT FENCE AT LOCATIONS SHOWN. MAINTAIN THROUGHOUT THE LIFE OF THE PROJECT. POWER BRUSH AND SEDIMENT TRACKED ON TO ROADWAY FOR DURATION OF PROJECT.
3. CLEAR AND GRUB WITHIN THE LIMITS OF DISTURBANCE. DISPOSE OF ANY REMNANT ROOTMAT AND DEBRIS OFF SITE AT AN APPROVED LANDFILL LOCATION.
4. STRIP TOPSOIL FROM THE LIMITS OF DISTURBANCE AND DISPOSE OF OFF SITE AT AN APPROVED LANDFILL LOCATION. MAINTAIN ALL PERIMETER CONTROLS.
5. PERFORM UTILITY LOCATE REQUESTS AND TEST PIT FOR EXISTING UTILITIES AS NECESSARY THROUGH COORDINATION WITH EASTON UTILITIES. PERFORM WATER AND SEWER LATERALS RECONFIGURATION AND DRY UTILITY RELOCATION AS NECESSARY. PLACE MATERIAL FROM UTILITY TRENCHES ON THE HIGH SIDE AND BACKFILL AT THE END OF EACH DAY.
6. PREPARE BUILDING PAD TO GRADE.
7. BEGIN BUILDING CONSTRUCTION.
8. GRADE SITE TO SUBGRADE. MAINTAIN ALL PERIMETER CONTROLS.
9. MILL EXISTING PAVEMENT WHERE SHOWN.
10. BEGIN PLACEMENT OF CR-6 BASE IN NEW PAVEMENT AREAS AND WALKS.
11. ONCE CONTRIBUTING DRAINAGE AREAS ARE STABILIZED INSTALL RELOCATED RAIN GARDEN, QUANTITY CONTROL AREA, AND SUBMERGED GRAVEL WETLAND; AND ASSOCIATED PIPING, INLETS, BERMS, AND ROOF LEADERS. CONTRACTOR RESPONSIBLE FOR SCHEDULING INSPECTIONS WITH TOWN. CONTRACTOR RESPONSIBLE FOR ENSURING STORMWATER MANAGEMENT MEDIA MEETS SPECIFICATIONS AND IS APPROVED BY TOWN INSPECTOR. STABILIZE SIDE SLOPS WITH STABILIZATION MATTING.
14. INSTALL TRENCH DRAIN AND OUTFALL PIPE.
15. INSTALL CONCRETE CURB AND WALKS.
16. BEGIN PLACEMENT OF BITUMINOUS CONCRETE BASE COURSE.
17. INSTALL SURFACE COURSE OVER NEW BASE COURSE PAVE AND INSTALL SURFACE COURSE OVERLAY WITH LEVEL WEDGE WHERE NEEDED.
19. FINE GRADE ALL AREAS PER DESIGN GRADES AND STABILIZE WITH TOPSOIL, SEED AND MULCH.
20. INSTALL SITE LANDSCAPING AND SWM PLANTINGS.
21. STABILIZE ALL DISTURBED AREAS WITH TOPSOIL, SEED AND MULCH.
22. UPON APPROVAL FROM THE MARYLAND DEPARTMENT OF THE ENVIRONMENT INSPECTOR, REMOVE ALL TEMPORARY SEDIMENT AND EROSION CONTROL DEVICES AND STABILIZE ALL DISTURBED AREAS PER PERMANENT STABILIZATION SPECIFICATIONS FOUND ON THIS SHEET.

GENERAL NOTES

1. Notification of Talbot County Soil Conservation District (410-822-1577) at least five (5) days prior to the start of work.
2. Prior to the start of work, the Contractor is to obtain Town approval of any proposed plan changes and sequence of construction, specifically relating to installation, inspection, maintenance and removal of erosion and sediment control measures.
3. Sediment control measures are not to be removed until the areas served have established vegetative cover, or with the permission of the Talbot County Sediment Control Inspector.
4. When pumping sediment-laden water, the discharge must be directed to an approved sediment trapping measure prior to release from the site.
5. All temporary stockpiles are to be located within areas protected by sediment control measures, and are to be temporary stabilized.
6. All sediment control dikes, swales, basins and flow lines to basins will be temporarily seeded immediately upon installation to reduce the contribution to sediment loading.
7. Disposal of excess earth materials on State or Federal property requires MDE Approval, otherwise materials are to be disposed of at a location approved by the local authority.
8. Temporary soil erosion control and sediment control measures are to be provided as per the approved plan prior to grading operations. Location adjustments are to be made in the field as necessary. The minimum area practical shall be disturbed for the minimum possible time.
9. If grading is completed out of a seeding season, graded areas are to be temporarily stabilized by mulch and mulch anchoring. Mulch material shall be unweathered, unchopped small grain straw spread at the rate of 2 to 2-1/2 tons per acre. Mulch anchoring to be accomplished by an approved method, use of a mulch anchoring tool is recommended where possible.
10. Implementation of the sediment control plan shall be in accordance with the "2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control", of the Department.
11. The Contractor is responsible for implementation and maintenance of the approved plan, and all other measures necessary to control, filter, or prevent sediment from leaving the site.
12. In case where stormwater management structures are a part of site development, removal of sediment control structures may not be accomplished before the contributing drainage area to the stormwater management structure is dewatered and stabilized.
13. On sites where infiltration techniques are utilized for the control of stormwater, extreme care must be taken to prevent all runoff from entering the structure during construction.
14. Sediment control for utility construction in areas outside of designed controls:
    (a) Excavated trench material shall be placed on the high side of the trench.
    (b) Immediately following pipe installation the trench shall be backfilled, compacted and stabilized at the end of each working day.
    (c) Temporary silt fence or straw bale dikes shall be placed immediately downstream of any disturbed area intended to remain disturbed longer than one working day.
15. All points on construction ingress and egress shall be protected to prevent tracking of mud onto public ways.
16. Site information:

Total Area of Site	1.001 Acres
Area Disturbed	0.65 Acres
Area to be Roofed or Paved	0.34 Acres
Total Cut	---- cy*
Total Fill	---- cy*

* CUT AND FILL AMOUNTS ARE APPROXIMATE THE CONTRACTOR SHALL DO A SEPARATE TAKE-OFF

EROSION & SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

1.) Contractor shall install soil erosion and sediment control devices prior to any grading. Following initial disturbance or re-disturbance, permanent or temporary stabilization shall be completed within three (3) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes greater than three (3) horizontal to one (1) vertical (3:1) and seven days (7) as to all other disturbed or graded areas on the project site.

2.) All temporary erosion and sediment control devices are to be provided as indicated on this plan, with location adjustments to be made in the field as necessary, and to be maintained at the end of each working day until project completion. The minimum area practical shall be disturbed for the minimal amount of time possible.

3.) Clearing and grubbing shall include all trees, brush, debris, root mat and organic materials to be removed.

4.) Temporary seeding shall be accomplished between February 15th through April 30th, or August 15th through November 30th. During other times, temporary mulching shall be provided.

5.) Temporary seeding shall conform to the following applications: 436 lbs. per acre of 10-20-20; 4,000 lbs. per acre of ground limestone, to be incorporated into the soil by disking or other suitable means. Annual rye grass shall be applied at a rate of 50 lbs. per acre using suitable equipment. Mulching shall be accomplished immediately after seeding

Seed Mixture (For Hazard Zone 7a) (From Table B-1)					Fertilizer Rate (10-20-20)	Lime Rate
No.	Species	Appl. Rate (lbs./ac.)	Seeding Dates	Seeding Depths		
	ANNUAL RYE GRASS	50 lbs.	2/15-4/30 8/15-11/30	1/2"	436 lb/ac 10 lb/ 1000 sf	2 tons/ac 90 lb/ 1000 sf
	BARLEY OATS WHEAT CEREAL RYE	96 lbs. 72 lbs. 120 lbs. 112 lbs.	2/15-4/30, 8/15-11/30 2/15-4/30, 8/15-11/30 2/15-4/30, 8/15-11/30 2/15-4/30, 8/15-12/15	1" 1" 1" 1"		
	FOXTAIL MILLET PEARL MILLET	30 lbs. 20 lbs.	5/1-8/14 5/1-8/14	1/2"		

6.) Mulching shall be unchopped, unrotted, small grain straw applied at a rate of 2-2 1/2 tons per acre. Anchor mulch with a mulch anchoring tool on the contour. Wood cellulose fiber may be used for anchoring straw at 750 lbs. per acre mixed with water at a maximum of 50 lbs. of wood cellulose fiber per 100 gals of water, or with a synthetic liquid binder according to manufacture recommendations. Wood cellulose fiber used as mulch must be applied at a net dry weight of 1,500 lbs. per acre. Mix wood cellulose fiber with water to attain a mixture with a maximum of 50 lbs. of wood cellulose fiber per 100 gals. of water.

7.) Permanent seeding shall be accomplished between March 1st through May 15th, or August 15th through October 15th. Permanent seeding at other than specified times will be allowed only upon written approval. Permanent seeding shall conform to the following applications: Permanent seeding for sites having disturbed over five (5) acres shall use fertilizer rates recommended by a soil testing agency and the recommendations provided in the Permanent Seeding Summary Table. Permanent seeding for conditions other than listed above shall be performed at the rates and dates as provided in the Permanent Seeding Summary Table below. Fertilizer and lime amendments shall be incorporated into the top 3" - 5" of the soil be disking or other suitable means. Mulching shall be accomplished as discussed in Item #6 of these specifications.

Seed Mixture (For Hazard Zone 7a) (From Table B-3)					Fertilizer Rate (10-20-20)			Lime Rate
No.	Species	Appl. Rate (lbs./ac.)	Seeding Dates	Seeding Depths	N	P205	K20	
7	CREEPING RED FESCUE KENTUCKY BLUEGRASS	60 lbs 15 lbs.	3/1-5/15 8/15-10/15	1/4" to 1/2"	45 lb/ac 1 lb/ 1000 sf	90 lb/ac 2 lb/ 1000 sf	90 lb/ac 2 lb/ 1000 sf	2 tons/ac 90 lb/ 1000 sf
8	TALL FESCUE	100 lbs.	3/1-5/15 8/15-10/15	1/4" to 1/2"				
9	TALL FESCUE KENTUCKY BLUEGRASS PERENNIAL RYEGRASS	60 lbs 40 lbs. 20 lbs.	3/1-5/15 8/15-10/15	1/4" to 1/2"				

8.) Any spoil or borrow will be placed at a site approved by the Soil Conservation District.

9.) All areas remaining or intended to remain disturbed for longer than seven (7) days shall be stabilized in accordance with the USDA, Natural Resources Conservation Service Standards and Specifications for Soil Erosion and Sediment Control in developing areas for critical area stabilization.

10) It will be the responsibility of the Contractor or Subcontractor to notify the Engineer of any deviation from this plan. Any change made in this plan without written authorization from the Engineer will place responsibility of said change on the Contractor or the Subcontractor.

CONSTRUCTION SPECIFICATIONS

(MAXIMUM) SLOPE STEEPNESS	LENGTH (MAXIMUM) SLOPE LENGTH	LENGTH SLOPE LENGTH
FLATTER THAN 50:1	UNLIMITED	UNLIMITED
50:1 to 10:1	125 ft.	1,000 ft.
10:1 to 5:1	100 ft.	750 ft.
5:1 to 3:1	60 ft.	500 ft.
3:1 to 2:1	40 ft.	250 ft.
2:1 AND STEEP	20 ft.	125 ft.

NOTE: IN AREAS LESS THAN 2% SLOPE AND SANDY SOILS (USDA FEDERAL CLASSIFICATION SYSTEM, SOIL CLASS A), MAXIMUM SLOPE LENGTH AND SILT FENCE LENGTH WILL BE UNLIMITED. IN THESE AREAS, SILT FENCE MAY BE THE ONLY PERIMETER CONTROL REQUIRED.

THE FOLLOWING ITEMS HAVE BEEN ADDRESSED TO MEET THE REQUIREMENTS OF THE GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITY (NPDES NUMBER MDR10, STATE DISCHARGE PERMIT NUMBER 09GP).

1. UTILIZATION OF ENVIRONMENTAL SITE DESIGN.
2. MAINTENANCE OF LIMITS OF DISTURBANCE TO PROTECT NATURAL AREAS
3. CONTROL OF CONSTRUCTION EQUIPMENT AND VEHICLES
4. EVALUATION AND APPROPRIATE LIMITATION OF SITE CLEARING
5. EVALUATION AND DESIGNATION OF SITE AREA FOR PHASING AND SEQUENCING
6. IDENTIFICATION OF SOILS AT HIGH RISK FOR EROSION AND ADVANCED STABILIZATION TECHNIQUES TO BE USED
7. IDENTIFICATION OF STEEP SLOPES AND DESIGNATION OF LIMITATIONS ON CLEARING THEM
8. EVALUATION AND DESIGNATION OF STABILIZATION REQUIREMENTS AND TIME LIMITS AND PROTECTION MEASURES FOR DISCHARGES TO THE CHESAPEAKE BAY, IMPAIRED WATERS OR WATERS WITH AN ESTABLISHED TOTAL MAXIMUM DAILY LOAD (TMDL).

TOWN OF EASTON – PLANNING AND ZONING

TOWN OF EASTON – TOWN ENGINEER

EASTON UTILITIES – MANAGER OF ENGINEERING

PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 37235 EXPIRATION DATE: 2024

STATE OF MARYLAND · BRADON A. SMITH · No. 37235 · PROFESSIONAL ENGINEER

AUG. 2, 2023
DATE SEAL

DAVIS, MOORE, SHEARON & ASSOCIATES, LLC
P.O. BOX 80
CENTREVILLE, MARYLAND 21617

FINK, WHITTEN & ASSOCIATES, LLC.
LAND SURVEYING
410-822-8484 410-228-8885
113 E. Dover St., Unit C 504 Maryland Avenue
Easton, Maryland 21601 Cambridge, Maryland 21613

DATE	REVISION
8/2/2023	PER 05-2023 ESDR COMMENTS

SEDIMENT AND EROSION CONTROL DETAILS AND SPECIFICATIONS

FOR THE DEVELOPMENT OF A

CONTRACTOR'S STORAGE BUILDING

ON LOT 28 IN THE

EASTON BUSINESS CENTER

IN THE TOWN OF EASTON, 1st Elect. Ward, TALBOT Co., MARYLAND

TAX MAP – 101, GRID – 2, PARCEL – 4

DATE	SCALE
APRIL '23	AS SHOWN
JOB No. 2020157	DRAWN BY WJM
FOLDER Ref. 101-2020157	DESIGNED BY BD

SHEET No. – C-8

CADD FILE – 20157C08

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SIMPLE FOREST STAND DELINEATION AND FOREST CONSERVATION PLAN

NARRATIVE:

THIS SITE IS LOCATED WITHIN A COMMERCIAL BUSINESS PARK WHERE LITTLE TO NO NATIVE VEGETATION EXISTS. THERE IS CURRENTLY NO FOREST ON SITE.

NO SPECIAL HABITAT OR PROTECTED ENVIRONMENTAL FEATURES ARE KNOWN TO BE PRESENT ON THE SITE.

OWNERS OBJECTIVE: THE FOREST STAND DELINEATION AND FOREST CONSERVATION PLAN FOR THE SITE PLAN IS INTENDED TO COMPLY WITH THE FOREST CONSERVATION REGULATIONS FOR THE TOWN OF EASTON.

PURPOSE STATEMENT: THIS PLAN IS PREPARED AS A REQUIREMENT IN SITE PLAN REVIEW. THE SITE IS CURRENTLY IMPROVED WITH AN OFFICE BUILDING AND CONTRACTORS WAREHOUSE. THE PROPOSED ADDITIONAL STRUCUTRE WILL PROVIDE MORE WAREHOUSE SPACE, WITH THE END USE BEING THAT OF OFFICE AND CONTRACTORS STORAGE AND/OR WAREHOUSE.

FOREST SOIL TYPES: EMA – ELKTON SILT LOAM, UP – URBAN LAND

TOPOGRAPHY: THE SITE HAS NO SIGNIFICANT CHANGES IN ELEVATION.

CRITICAL HABITAT AREAS OR RARE, THREATENED AND ENDANGERED SPECIES OF PLANTS AND ANIMALS: A REQUEST WAS SUBMITTED TO MARYLAND DEPARTMENT OF NATURAL RESOURCES (DNR) REQUESTING INFORMATION REGARDING THE PRESENCE OF RARE, THREATENED AND ENDANGERED SPECIES, HISTORIC SITES, AND CRITICAL HABITATS. DNR RESPONDED STATING THE WILDLIFE AND HERITAGE SERVICE DIVISION HAS DETERMINED THAT THERE ARE NO OFFICIAL STATE OR FEDERAL RECORDS FOR LISTED PLAT OR ANIMAL SPECIES WITHIN THE PROJECT AREA.

ADJACENT LAND USE: INDUSTRIAL / COMMERCIAL

HYDROLOGY, WETLANDS, STREAMS AND BUFFERS: THERE ARE NO WETLANDS, STREAMS OR BUFFERS ON SITE.

CULTURAL FEATURES: NONE

FOREST CONSERVATION REQUIRED: .150 ACRES
FOREST CONSERVATION PROVIDED: .150 ACRES (VIA LANDSCAPE STOCK, SEE CHART BELOW)

M. STARK MCLAUGHLIN
FORESTER RPF#159

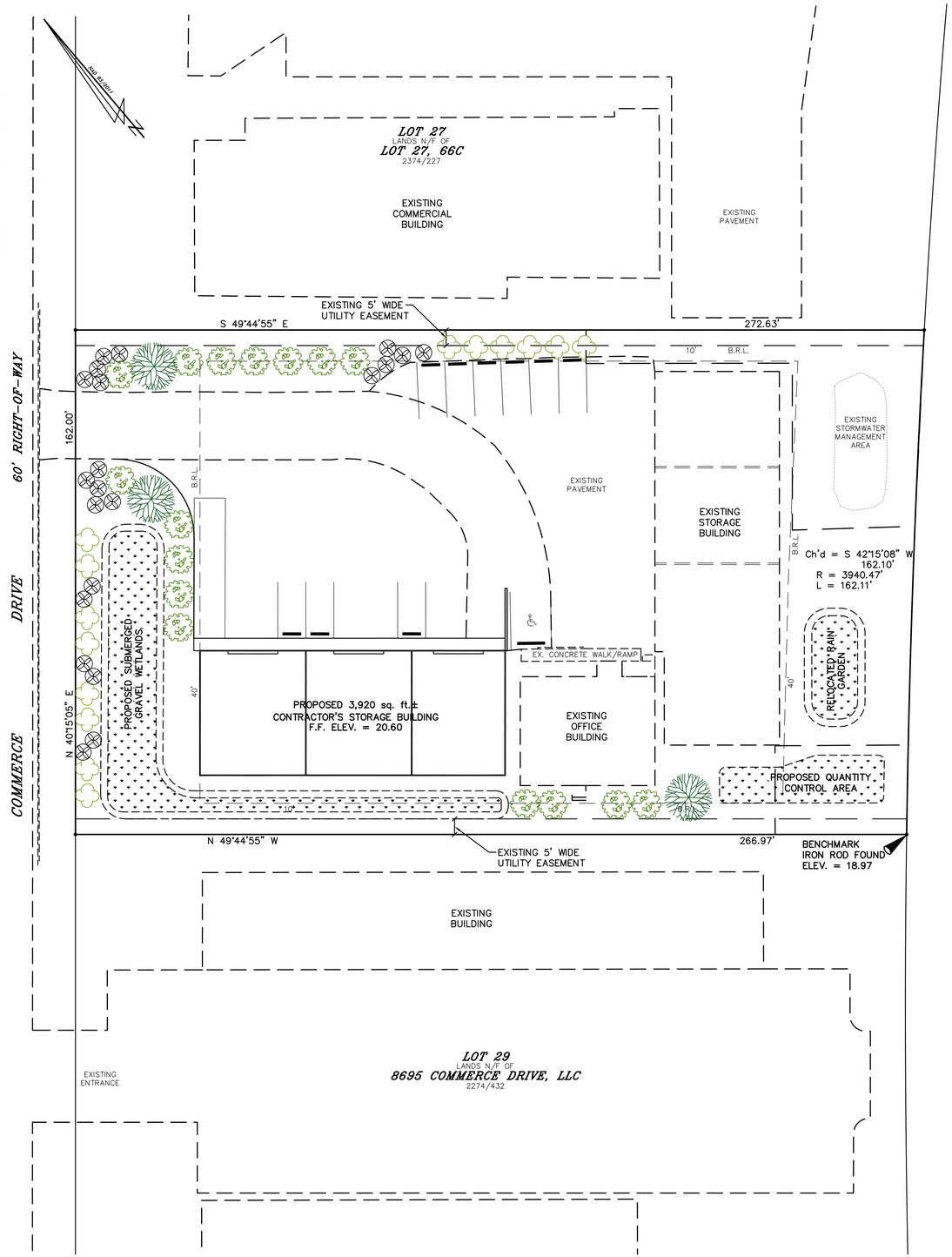
FOREST CONSERVATION CALCULATIONS:

TOTAL SITE AREA	=	1.001	ACRES
NET TRACT AREA	=	1.001	ACRES
EXISTING FOREST ON SITE	=	0.000	ACRES
AFFORESTATION AREA REQUIRED	=	0.150	ACRES
TOTAL PLANTING REQUIREMENT	=	0.150	ACRES
PLANTING PROVIDED	=	0.030	ACRES

LANDSCAPE USED IN FOREST CONSERVATION COMPLIANCE:

AFFORESTATION AREA REQUIRED = 0.150 ACRES (6,534 SF)
EXISTING EVERGREEN TREE (6) X 250 SF CREDIT = 1,500 SF
REMAINING AFFORESTATION AREA REQUIRED = 5,034 SF

LANDSCAPE STOCK PROVIDED
CANOPY TREE (3) X 400 SF CREDIT EACH = 1,200 SF
EVERGREEN TREE (16) X 250 SF CREDIT EACH = 4,000 SF
TOTAL AFFORESTATION LANDSCAPE PLANTING PROVIDED = 5,200 SF



THIS FOREST CONSERVATION PLAN IS ACCEPTED BY THE PROPERTY OWNER:

JAY FRIEL, FRIEL STORAGE, LLC. DATE

THIS FCP PLAN HAS BEEN REVIEWED AND APPROVED:

FOREST CONSERVATION AGENT, TOWN OF EASTON DATE

UNDERGROUND UTILITY WARNING:
EXISTING UTILITIES SHOWN HEREON ARE BASED ON BEST AVAILABLE DATA. IT IS THE RESPONSIBILITY OF THE OWNER AND/OR CONTRACTOR(S) TO LOCATE EXISTING UTILITIES, TEST PIT AS NEEDED, AND COORDINATE WITH UTILITY COMPANIES. IT IS THE THE RESPONSIBILITY OF THE OWNER AND/OR CONTRACTOR(S) TO COMPLY WITH THE UNDERGROUND FACILITIES DAMAGE PREVENTION LAW AND THE REQUISITE PERMITS ARISING THEREFROM. DMS AND ASSOCIATES, LLC IS NOT RESPONSIBLE FOR THE ACCURACY OR THE EXTENT OF THE UNDERGROUND UTILITY MARKING PERFORMED BY MISS UTILITY AND SHOWN HEREON.

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GRAPHIC SCALE
20 0 10 20 40
1 inch = 20 ft.

LANDSCAPE PLAN & FOREST CONSERVATION PLAN

NARRATIVE:

THIS SITE IS LOCATED WITHIN AN ESTABLISHED BUSINESS PARK WHERE LITTLE TO NO NATIVE VEGETATION EXISTS. THERE IS CURRENTLY NO EXISTING FOREST ON SITE. THE MUNICIPAL AIRPORT, IN COOPERATION WITH TALBOT COUNTY, CLEARED ALL EXISTING FOREST AS AN AVIATION PRACTICE AND PAID THE TOWN OF EASTON A FEE IN LIEU FOR FOREST CONSERVATION. HOWEVER, UPON SITE RE–DEVELOPMENT, THE TOWN OF EASTON HAS DETERMINED THAT FOREST CONSERVATION IS APPLICABLE AND THUS, SHALL BE SATISFIED USING CREDITS ACCUMULATED THROUGH LANDSCAPE STOCK AS INDICATED WITHIN THE CHART SHOWN HEREON.

PER SECTION 28–1014.6 OF THE TOWN OF EASTON ZONING ORDINANCE, THE FOLLOWING LANDSCAPE PLANTINGS ARE REQUIRED IN THIS SECTION:

ONE (1) TREE PER 3,000 SF OF DISTURBED AREA PER SECTION 2–1017.6F
RESPONSE: DISTURBED AREA = 27,570 SQ.FT. (BUILDING AREA, PAVEMENT AREA AND RECONFIGURED SWM AREA), THUS NINE (9) TREES ARE REQUIRED. EIGHT (8) AMERICAN HOLLY EVERGREEN TREES AND (1) ONE LONDON PLANE TREE ARE PROPOSED TO PARTIALLY SATISFY THIS REQUIREMENT.

ONE (1) INTERIOR PARKING LOT TREE PER SECTION 28–1014.6F(2)(a)
RESPONSE: TWO (2) CANOPY TREES AND (2) UNDERSTORY TREES ARE PROPOSED AT THE ENTRANCE TO THE SITE. NO OTHER TREES ARE PROPOSED WITHIN THE INTERIOR DUE TO EXISTING SITE LAYOUT, LOCATION OF EXISTING AND PROPOSED STORMWATER FACILITIES AND EXISTING UTILITY EASEMENTS. A WAIVER OF THIS REQUIREMENT IS REQUESTED BY THE PLANNING COMMISSION DUE TO THE UNIQUE CIRCUMSTANCES.

PARKING LOT SCREENING WITH AN EVERGREEN SHRUB HEDGE WHICH WILL GROW TO A MINIMUM OF 42" HEIGHT WITHIN 5 YEARS ALONG ALL STREET FRONTAGES, AND ALONG ALL, OR PORTIONS OF SIDES VISIBLE FROM A STREET, EXCLUDING THE BUILDING OR FACILITY ACCESS SIDES PER SECTION 28–1014.6F(2)(b)
RESPONSE: THE PLANTINGS PROPOSED ALONG THE SIDE PROPERTY LINES SATISFY THIS REQUIREMENT FOR THE CONSTRUCTION OF THE NEW STORAGE / WAREHOUSE STRUCTURE.

ONE (1) DECIDUOUS SHADE / CANOPY TREE PER EVERY 20' OF BUILDING FACADE PERIMETER VISIBLE FROM STREET PER SECTION 28–1016.F(2)(c).
RESPONSE: THE PROPOSED STORAGE / WAREHOUSE STRUCTURE IS 40 LINEAR FEET IN WIDTH AT THE STREET FRONTAGE, THUS 2 TREES ARE REQUIRED. THREE (3) LONDON PLANE TREES ARE PROPOSED TO SATISFY THIS REQUIREMENT.

A MIX OF LARGE SHRUBS, SMALL SHRUBS AND UNDERSTORY TREES ARE USED TO SATISFY THE BUFFERYARD REQUIREMENTS ALONG COMMERCE DRIVE AND ALONG COMMON SIDE PROPERTY LINES, TO THE BEST EXTENT POSSIBLE GIVEN THE EXISTING SITE LAYOUT, PAVEMENT AND LOCATION OF UTILITY EASEMENTS.

LANDSCAPING NOTES:

1.) LANDSCAPE INSTALLER SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO COMMENCING WORK. INSTALLER SHALL INSURE THAT FINAL GRADES HAVE BEEN ESTABLISHED AND THE SITE IS READY FOR LANDSCAPE INSTALLATION.

2.) LANDSCAPE INSTALLER SHALL MAINTAIN THE LANDSCAPE IMPROVEMENT AREAS IN A CLEAN CONDITION, REMOVING DEBRIS DAILY AND AT THE COMPLETION OF THE INSTALLATION.

3.) INSTALLER SHALL LAYOUT ALL BEDS AND POSITION PLANTS PER THE PLANS. ADJUST AS REQUIRED FOR FIELD CONDITIONS. REPORT SIGNIFICANT ADJUSTMENTS TO THE OWNER FOR APPROVAL PRIOR TO PLANT INSTALLATION. ALL BED AREAS SHALL BE SPRAYED WITH HERBICIDE AS NEEDED TO KILL AND/OR REMOVE ALL WEED OR GRASS VEGETATION.

4.) EXCEPT FOR TREE SPADE INSTALLATIONS, ALL TREE PITS SHALL BE EXCAVATED TO A DEPTH SO THAT THE ROOT BALL WILL REST ON SOLID SOIL AT THE PROPER HEIGHT. STREET TREES PLANTING PITS SHALL BE EXCAVATED AND WORKED IN A RECTANGULAR FORM WITH THE SMALL DIMENSION TWICE THE DIAMETER OF THE ROOT BALL AND THE LARGE DIMENSION AT LEAST THREE TIMES THE DIAMETER OF THE ROOT BALL. OPEN AREA TREE PITS SHALL BE EXCAVATED TO A MINIMUM DIMENSION OF TWICE THE ROOTBALL WIDTH. TREES PLANTED ON SLOPES OR SIDE SWALES SHALL BE INSTALLED AT A HEIGHT RELATING TO THE UP HILL SIDE OF THE PIT, AND MOUNDED WITH SOIL AROUND THE LOWER SIDE. ALL SIDES AND BOTTOM OF TREE PLANTING PITS SHALL BE SCARIFIED OR LOOSENED TO PERMIT ROOT GROWTH. EXCAVATED SOILS THAT HAVE BEEN PREVIOUSLY UNDISTURBED SHALL BE LOOSENED AND UTILIZED FOR BACKFILL. COMPACTED SOILS THAT CANNOT BE RESTORED TO A REASONABLE PLANTING SOIL SHALL BE REMOVED AND REPLACED WITH FRIABLE NATIVE SOILS FROM THE REGION.

5.) ALL SHRUB PLANTING PITS, LANDSCAPE BEDS AND PLANTING MASS AREAS SHALL BE WORKED TO A DEPTH OF 12" (OR RAISED SLIGHTLY TO ACHIEVE A 12" FRIABLE SOIL DEPTH). SHRUB PLANTING AREAS SHALL BE WORKED TO 12" MINIMUM OUTSIDE THE ROOT BALL.

6.) ALL LANDSCAPE BEDS SHALL BE 'V' EDGED AND MULCHED WITH MINIMUM 3" DOUBLE SHREDDED HARDWOOD BARK MULCH, OR APPROVED EQUAL. MULCH TO FENCE LINES OR BACK OF CURBS WHERE APPROPRIATE TO ELIMINATE NARROW GRASS AREAS. AVOID MULCH PILED AGAINST TREE TRUNKS, ETC.

7.) ALL TREES TO BE STAKED AND GUYED WITH HARDWOOD STAKES, MINIMUM OF TWO (2) – 5' LONG, OR OTHER APPROVED GUYING SYSTEM. STAKES SHALL BE DRIVEN INTO STABLE SOILS. PROVIDE WIRE GUYS WITH RUBBER PROTECTANT OR OTHER APPROVED INDUSTRY PRACTICE.

8.) LANDSCAPE INSTALLER SHALL MAINTAIN ALL PLANT MATERIALS THROUGH THE COMPLETION OF THE LANDSCAPE INSTALLATION, AND THEN AS REQUIRED BY THE OWNER.

9.) AT THE COMPLETION OF THE LANDSCAPE INSTALLATION (OR BY PHASED COMPLETION IF PROVIDED FOR ON THE PLAN), THE OWNER, OR HIS DESIGNATED REPRESENTATIVE SHALL REQUEST AN INSPECTION BY TOWN OF EASTON.

10.) ALL TREES ON THIS PROPERTY SHALL BE MAINTAINED AT A MAXIMUM HEIGHT OF 53', PER AGREEMENT WITH EASTON AIRPORT.

FOREST CONSERVATION NOTES:
PRIOR TO THE COMMENCEMENT OF ANY DEVELOPMENT ACTIVITIES AND IF THESE ACTIVITIES ARE TO OCCUR WITHIN 25' OF THE FOREST CONSERVATION RETENTION AREA(S), NOTIFY THE TOWN OF EASTON DEPARTMENT OF PLANNING & ZONING (410–822–1943, FOREST CONSERVATION COORDINATOR) TO DETERMINE IF TEMPORARY PROTECTIVE DEVICES (SILT, BLAZE, WIRE &/OR WOOD FENCING) ARE REQUIRED. IF REQUIRED, DEVICES ARE TO BE INSTALLED AND INSPECTED BY THIS OFFICE PRIOR TO THE COMMENCEMENT OF ANY DEVELOPMENT ACTIVITIES. OWNER MAY BE SUBJECT TO INSTALLATION OF PROTECTIVE DEVICES.

PROTECTIVE DEVICES MUST BE SURVEY LOCATED, OR AS DIRECTED BY THE TOWN OF EASTON FOREST CONSERVATION COORDINATOR. THE TOWN RESERVES THE RIGHT TO MAKE ON–SITE TREE–BY–TREE DECISIONS WHEN INSPECTING RETENTION AREAS FOR CRITICAL ROOT ZONE PROTECTION.

MATERIALS AND STOCKPILE AREAS SHALL BE LOCATED OUTSIDE, AND AT LEAST 25' AWAY FROM THE BOUNDARY OF THE FOREST CONSERVATION AREA(S).

PRIOR TO REQUESTING A CERTIFICATE OF OCCUPANCY, NOTIFY THE TOWN OF EASTON DEPARTMENT OF PLANNING & ZONING (410–822–1943, FOREST CONSERVATION COORDINATOR) TO DETERMINE PROTECTIVE DEVICE REMOVAL. FENCING SHALL REMAIN IN PLACE UNTIL DISTURBED AREAS ARE PERMANENTLY STABILIZED. SIGNAGE AND OTHER PERMANENT PROTECTIVE DEVICES ARE TO REMAIN IN PERPETUITY.

LONG TERM PROTECTION: THE FOREST CONSERVATION AREA(S) AS SHOWN ON THIS PLAT, ARE SUBJECT TO A LONG TERM PROTECTION AGREEMENT ENTITLED 'FOREST CONSERVATION EASEMENT DOCUMENT', RECORDED IN THE TALBOT COUNTY LAND RECORDS LIBER ____, FOLIO ____. THIS AGREEMENT, WHICH IS IN COMPLIANCE WITH THE TOWN OF EASTON FOREST CONSERVATION ORDINANCE, AND UNLESS OTHERWISE SPECIFICALLY NOTED, PRECLUDES MOWING, TRIMMING, CLEARING, REMOVAL OR OTHERWISE DESTRUCTION OF ANY FOREST PLANTS. THIS AGREEMENT IS UNDER THE JURISDICTION OF THE TOWN OF EASTON PLANNING AND ZONING. THIS AGREEMENT RUNS PERPETUAL WITH THE PROPERTY, AND IS BINDING UPON THE OWNER(S), OCCUPANTS, AND THEIR PERSONAL REPRESENTATIVES, HEIRS, SUCCESSORS AND ASSIGNS. THIS AGREEMENT MUST BE DISCLOSED IN ANY SUBSEQUENT SALE, CONTACT, LEASE, MORTGAGE, DEED OR OTHER LEGAL PROPERTY INSTRUMENT.

THE TOWN OF EASTON DEPARTMENT OF PLANNING & ZONING RESERVES THE RIGHT TO INSPECT THE FOREST CONSERVATION AREA(S) AT ANY FUTURE DATE, WITH PRE–NOTIFICATION OF THE PROPERTY OWNER OR THEIR REPRESENTATIVE, AND TO ENFORCE THE PROVISIONS OF THE PLANTING AGREEMENT AND/OR THE LONG TERM PROTECTIVE DEED OF FOREST CONSERVATION EASEMENT AT ANY TIME.

ENVIRONMENTAL FEATURES / SENSITIVE AREAS
CHECK LIST CHART

FEATURE	YES	NO
CONTIGUOUS FOREST		X
WETLANDS		X
STREAMS		X
FLOODPLAINS		X
HYDRIC SOILS		X
PRIME AGRICULTURE SOILS		X
SOILS WITH K–FACTOR ABOVE 35		X
SLOPES GREATER THAN 25%		X
HISTORICAL AND CULTURAL FEATURES		X
TREES >30" DBH		X
STATE CHAMPION TREES		X
TREES >75% STATE CHAMPION		X
RARE, THREATENED OR ENDANGERED FLORA		X
RARE, THREATENED OR ENDANGERED FAUNA HABITAT		X

LEGEND & SCHEDULE

CANOPY TREES:
= 1 – LONDON PLANETREE (Platanus x acerifolia); 2' CAL, 6' HEIGHT MIN.

UNDERSTORY TREES:
= 4 – AMERICAN HOLLY (Ilexx opaca); 2" CAL, 6' HEIGHT MIN.

LARGE SHRUBS:
= 10 – INKBERRY 'JIM DANDY' (*Ilex verticillata*); 18" HEIGHT MIN.

SMALL SHRUBS:
= 10 – VIRGINIA SWEETSPIRE (Itea virginica); 12" HEIGHT MIN.

AREA SHOWN SHALL BE STORMWATER MANAGEMENT AREA(S). PLANTS IN RAIN GARDEN TO BE WATER TOLERANT PLANS FOR A WET SOIL RAIN GARDEN TREATMENT TYPE.

TOWN OF EASTON – PLANNING AND ZONING

TOWN OF EASTON – TOWN ENGINEER

EASTON UTILITIES – MANAGER OF ENGINEERING

PROFESSIONAL CERTIFICATION.
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 37235 EXPIRATION DATE: 2024

AUGUST 2, 2023
DATE SEAL

DAVIS, MOORE, SHEARON & ASSOCIATES, LLC
P.O. BOX 80
CENTREVILLE, MARYLAND 21617

FINK, WHITTEN & ASSOCIATES, LLC.
LAND SURVEYING
410–822–8484
113 E. Dover St., Unit C
Easton, Maryland 21601
410–228–8885
504 Maryland Avenue
Cambridge, Maryland 21613

DATE	REVISION
8/2/2023	PER 05/2023 ESDR COMMENTS

LANDSCAPE & FOREST CONSERVATION PLAN
FOR THE DEVELOPMENT OF A
CONTRACTOR'S STORAGE BUILDING
ON LOT 28 IN THE
EASTON BUSINESS CENTER
IN THE TOWN OF EASTON, 1st Elect. Ward, TALBOT Co., MARYLAND
TAX MAP – 101, GRID – 2, PARCEL – 4

DATE APRIL '23	SCALE 1" = 20'
JOB No. 2020157	DRAWN BY WJM
FOLDER Ref. 101–2020157	DESIGNED BY BD
SHEET No. – C–3	
CADD FILE – 20157C03	

STORMWATER MANAGEMENT CALCULATIONS FOR

TUCKAHOE HARDWOODS CONTRACTOR'S STORAGE BUILDING

LANDS OF 8685 COMMERCE DRIVE, LLC
TAX MAP 101, PARCEL 4, LOT 28

PREPARED FOR:
FINK, WHITTEN & ASSOCIATES, LLC
113 E. DOVER ST., UNIT C
EASTON, MARYLAND 21601

PREPARED BY:
DMS & ASSOCIATES, LLC
P.O BOX 80
CENTREVILLE, MARYLAND 21617

DMS JOB #2020157
DATE: MAY, 2023
REVISED: AUGUST, 2023

STATE OF MARYLAND
BRANDON A. DAVIS
No. 37235
PROFESSIONAL ENGINEER

ex. 6/5/24

Davis, Moore, Shearon & Associates, LLC

P.O. Box 80 Centreville, MD 21617
Phone: (443) 262-9130
Email: email@dmsandassociates.com

STORMWATER MANAGEMENT NARRATIVE
CONTRACTOR'S STORAGE BUILDING
TAX MAP 101, PARCEL 4, LOT 28

This property is located at 8685 Commerce Drive in the Town of Easton, Maryland. The property consists of approximately 1 acre with frontage on Commerce Drive and is immediately adjacent to the Easton Bypass. The site is developed with a small commercial building, access drive, and parking lot that predates 2016. In 2016 a contractor's storage building was approved and then constructed adjacent to the parking lot that is parallel to the Easton Bypass. That site plan also added minimal pavement around. Two rain gardens were approved and constructed that addressed water quality and quantity requirements for that project.

The property owner has been able to remove wooded areas that existed between the developed portion of the site and Commerce Drive through FAA tree clearing related provisions. The owners wish to construct a new contractor's building with associated parking and pavement parallel to the southern property line and next to the existing office building. The proposed pavement will extend off existing parking and access drive. The project will relocate the southeast rain garden approved in 2016 slightly to the north of its current location and have roof leaders direct the constructed contractor's storage building to it. The rain garden will match the size and depth specified in the 2016 approved site plan. A quantity control ponding area will be constructed in the general area of where that rain garden is currently situated. The new building and new impervious area will be treated by a submerged gravel wetland that will wrap around the proposed building and outfall to the new quantity control area. A trench grate in the pavement will capture some building runoff and new pavement runoff and direct it to the submerged gravel wetland.

The submerged gravel wetland will address water quality requirements for the new building and new impervious areas of 0.318 acres pavement and its front limits of disturbance of 0.514 acres. The quantity control areas will provide additional treatment to store overflowing runoff from larger storm events and responsibly discharge towards the Easton Bypass. Runoff will discharge from the relocated rain garden and quantity control area in a stable and filtered manner through riprap overflow/flow-thru outfalls for each.

The target Environmental Site Design (ESD) volume for the new impervious area and front limits of disturbance is 2,040 c.f. The submerged gravel wetland is sized to address the quality ESD requirement and provides 2,042 c.f. to exceed that volumetric requirement. The quantity control area provides storage and attenuation for larger storm events. When routing the drainage that leads to the outfall of the quantity control area in the pre and post project conditions, the 2 year storm is addressed via the reduced curve number resulting from the providing of ESD treatment to the MEP. Using TR-55, reduced curve number calculations, and then TR-20 for the 10 year storm event, we find that the quantity control area with being provided two 4 in PVC low flow pipes controls the 10 year storm. The submerged gravel wetland provides further temporary storage and attenuation for larger storm events that is not yet included in the TR-20 and stage storage routing. Water quality is addressed via ESD to the maximum extent practicable (MEP) with the submerged gravel wetlands. ESD to the MEP also addresses the 2

year storm event. The quantity control area treats the 10 year storm. Furthermore, the configuration of the proposed improvements, trench drain, wrap around submerged gravel wetland, piping to quantity control area, and discharge of the quantity control area all allow for a development and drainage configuration that directs runoff away from Commerce Drive and toward the bypass. There are known drainage concerns during large storm events along Commerce Drive, so this development seeks to avoid adding to that known issue. This project results in a decrease in runoff towards commerce drive.

DMS

Davis, Moore, Shearon, & Assocates, LLC
Engineering, Drafting/Design, Environmental Services & Surveying

Site Name: Tuckahoe Hardwoods **Designed By:** B.A.D.
Date: May-23 **Checked By:**
Description: Developed Conditions

Determine ESD Implementation:

$$ESDv = \frac{(P_E)(Rv)(A)}{12.00}$$

A = Site Area
I = % Imperviousness
Rv = 0.05 + 0.009(I)

Site Data	Redeveloped Site=	No
A =	0.514 acres	Front LOD
New Imp. Area	0.318 acres	New Impervious
% Impervious =	62.0 %	
Rv =	0.61	

P_E= Rain Fall Target From Tbl. 5.3 (RCN Reductions)
(Total P_ExArea)/Area = Weighted P_E

Zone =	eastern	
P_E=	1.80	Inches

ESD_V = Runoff Volume for ESD design

ESD_V =	0.047	ac-ft
or	2,040	cf

$ESD_{V\ redev}$ = ESD Volume for redevelopment site

A_{redev} = (0.50)(Ex. Imp. Area) - (Ex. Imp. Area - Prop. Imp. Area)
A_{redev} = 0 acres

Ex. Imp. Area 0.000 acres

$ESD_{V\ redev}$ =	0.000	ac-ft
or	0	cf

Compute Recharge Volume (Rev)

HSG	RCN (woods)	P_E Table 5.3	P_E x Area	RCN xArea	Recharge factor (S)	Area	%
A	38	0.00	0.00	0	0.38	0.000	0.00%
B	55	0.00	0.00	0	0.26	0.000	0.00%
C	70	0.00	0.00	0	0.13	0.000	0.00%
D	77	1.80	0.92	40	0.07	0.514	100.00%
TOTALS			0.92	40		0.514	100.00%

S = 0.07

a.) Rev = [(S)(Rv)(A)]/12
(percent volume method)

Rev =	0.002	ac-ft
or	79	cf

DMS

Davis, Moore, Shearon, & Assocates, LLC

Engineering, Drafting/Design, Environmental Services & Surveying

Project: Tuckahoe Hardwoods

Submerged Gravel Wetland

Device: SGW #1

ESDv Calculations for Drainage Area

Device Drainage Area =	22370	sq. Ft.
DA Impervious Area =	13870	sq. Ft.
Device DA %I =	62.00	%
Device DA Rv =	0.608	
Soil Type	D	
Device DA P_E Target =	1.80	inches
Device DA ESDv Vol. =	2040	cu.Ft.
Device DA 1yr PE =	2.70	inches
Device ESDv 1 yr Volume =	3060	cu.Ft.

Treatment Requirements

75% Minimum ESDv Volume Stored =	1530	cu.Ft.

Provided

Cell Filtration Area Provided =	1912	sq. Ft.	
Media Storage w/in 4" Wetland Soil Above Saturation Level =	252	cu.Ft.	(porosity = 0.4)
Max. Ponding Depth =	9	inches	(see stage vs. storage calculations)
Max Ponding Area Provided =	2860	sq. Ft.	
Total Temporary Storage Provided =	1790	cu.Ft.	(see stage vs. storage calculations)
Total Treatment Volume Provided =	2042	cu.Ft.	

Additional Considerations

Minimum ESDv Storage Met (yes/no): yes

DMS

Davis, Moore, Shearon, & Associates, LLC

Engineering, Drafting/Design, Environmental Services & Surveying

DATA FOR STAGE vs. STORAGE CURVE
JOB NAME: Tuckahoe Hardwoods
DESCRIPTION: Quantitiy Control Area

FOREBAY #1 STORAGE:

ELEV. (FT)	SURFACE AREA (SQ.FT)	AVERAGE SURFACE AREA (SQ.FT.)	DIFF. IN ELEV. (FT)	INCREMENT STORAGE (CU.FT.)	STORAGE (CU. FT.)	STORAGE (ACRE FT.)
18.30	709				0	0.000
		918	1.00	918		
19.30	1,126				918	0.021

Worksheet 2: Runoff curve number and runoff

Project: Tuckahoe Hardwoods By: BD Date: August-23
Location: Commerce Drive
Checked: Date:

Check one: Present [x] Developed [ ]

Notes: DA 1 - towards Commerce Dr

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	**Cover description** (cover type, treatment,and hydroogic condition)	CN Table 2-2	CN Fig.2-3	CN Fig.2-4	**Area** acres mi^2 %	Product of CN x area
D	Lawn	80			0.4242	33.935721
D	IMPERVIOUS	98			0.0901	8.8303489
						0
						0
						0
						0
						0
				Totals =	0.5143	42.76607

1/ Use only one CN source per line

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area (acres)}} = \frac{42.76606979}{0.514302112} = 83.15$$

Use CN = 84

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency.....	yr	2	10	100
Rainfall, P (24-hour).....	in	3.33	5.20	8.98
Runoff, Q.....	in	1.792	3.454	7.04

(Use P and Cn with table 2-1, fig. 2-1
or equ. 2-3 and 2-4)
(210-VI-TR-55, Second Ed., June 1986)

Worksheet 2: Runoff curve number and runoff

Project: Tuckahoe Hardwoods By: BD Date: August-23
Location: Commerce Drive
Checked: Date:

Check one: Present ☐ Developed ☒

Notes: DA 1 - towards Commerce Drive

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	**Cover description** (cover type, treatment,and hydroogic condition)	CN Table 2-2	CN Fig.2-3	CN Fig.2-4	**Area** acres mi^2 %	Product of CN x area
D	**Lawn**	**80**			**0.029**	2.3195592
D	**IMPERVIOUS**	**98**			**0.0366**	3.5883838
						0
						0
						0
						0
						0
				Totals =	0.0656	5.9079431

1/ Use only one CN source per line

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area (acres)}} = \frac{5.907943067}{0.065610652} = 90.05$$

Use CN = **90**

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency.....	yr	2	10	100
Rainfall, P (24-hour).....	in	3.33	5.20	8.98
Runoff, Q.....	in	2.29	4.07	7.78

(Use P and Cn with table 2-1, fig. 2-1 or equ. 2-3 and 2-4)
(210-VI-TR-55, Second Ed., June 1986)

WinTR-55 Current Data Description

--- Identification Data ---

User: bdavis
Project: Tuckahoe Hardwoods
SubTitle: DA 1 (Commerce Dr)
State: Maryland
County: Talbot NOAA-C
Filename: S:\ACAD\PROJECTS\D-I\Fink & Whitten\20157 - 16024-Dent-Tuckahoe Hardwoods\SWM\TR-55 Analys

Date: 7/31/2023
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
DA1 Ex	Existing Conditions	Outlet	0.51	91	0.100
DA1 Pr	Proposed Conditions	Outlet	0.07	90	0.1

Total area: .58 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
3.33	4.33	5.2	6.52	7.73	8.98	2.74

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: NOAA_C
Dimensionless Unit Hydrograph: delmarva

bdavis

Tuckahoe Hardwoods
DA 1 (Commerce Dr)
Talbot NOAA-C County, Maryland

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
DA1 Ex	Open space; grass cover < 50%	(poor)	D	.424	89
	Paved parking lots, roofs, driveways		D	.09	98
	Total Area / Weighted Curve Number			.51	91
				===	==
DA1 Pr	Open space; grass cover > 75%	(good)	D	.029	80
	Paved parking lots, roofs, driveways		D	.037	98
	Total Area / Weighted Curve Number			.07	90
				===	==

bdavis

Tuckahoe Hardwoods
DA 1 (Commerce Dr)
Talbot NOAA-C County, Maryland

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
DA1 Ex							
SHEET	34	0.0100	0.011				0.011
SHALLOW	125	0.0050	0.050				0.030
					Time of Concentration		0.100
DA1 Pr							
SHEET	85	0.0200	0.011				0.017
					Time of Concentration		0.1

Value (.00011) below acceptable minimum (.00015) for Sub-Area Drainage Area and
Sub-Area Identifier (DA1 Pr) of Data Section SUB-AREA: (3)

Worksheet 2: Runoff curve number and runoff

Project: Tuckahoe Hardwoods By: BD Date: August-23
Location: Commerce Drive
Checked: Date:

Check one: Present [x] Developed [ ]

Notes: DA 2 - towards South

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	**Cover description** (cover type, treatment,and hydroogic condition)	CN Table 2-2	CN Fig.2-3	CN Fig.2-4	**Area** acres mi^2 %	Product of CN x area
D	**Lawn**	**80**			**0.12**	9.5977961
D	**IMPERVIOUS**	**98**			**0.1086**	10.641414
						0
						0
						0
						0
						0
1/ Use only one CN source per line				Totals =	0.2286	20.23921

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area (acres)}} = \frac{20.23921028}{0.22855831} = 88.55$$

Use CN = 89

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency.....	yr	2	10	100
Rainfall, P (24-hour).....	in	3.33	5.20	8.98
Runoff, Q.....	in	2.201	3.964	7.65

(Use P and Cn with table 2-1, fig. 2-1 or equ. 2-3 and 2-4)
(210-VI-TR-55, Second Ed., June 1986)

Worksheet 2: Runoff curve number and runoff

Project: Tuckahoe Hardwoods By: BD Date: August-23
Location: Commerce Drive
Checked: Date:

Check one: Present ☐ Developed ☒

Notes: DA 2 - towards South

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	**Cover description** (cover type, treatment,and hydroogic condition)	CN Table 2-2	CN Fig.2-3	CN Fig.2-4	**Area** acres mi^2 %	Product of CN x area
D	**Lawn**	**80**			**0.1821**	14.565657
D	**IMPERVIOUS**	**98**			**0.2795**	27.393205
						0
						0
						0
						0
						0
				Totals =	0.4616	41.958861

1/ Use only one CN source per line

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area (acres)}} = \frac{41.95886134}{0.461593205} = 90.90$$

Use CN = 91

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency.....	yr	2	10	100
Rainfall, P (24-hour).....	in	3.33	5.20	8.98
Runoff, Q.....	in	2.37	4.17	7.88

(Use P and Cn with table 2-1, fig. 2-1 or equ. 2-3 and 2-4)
(210-VI-TR-55, Second Ed., June 1986)

Stormwater Design Guidance - Addressing Quantity Control Requirements

Revisions to Maryland's stormwater management regulations in 2010 require that environmental site design (ESD) be used to the maximum extent practicable (MEP) to reduce the volume of runoff from the one-year design storm to levels equivalent to woods in good condition. This will address the groundwater recharge, water quality, and channel protection volumes (Re_v, WQ_v, and Cp_v, respectively) as described in Chapter 2 of the **2000 Maryland Stormwater Design Manual**[1] (the Manual). However, the ESD to the MEP mandate may not completely address overbank flood protection volume (Qp_2 or Qp_{10}) requirements for peak management of the two or ten-year design storm where locally required. In these situations, the volume of runoff that is captured using ESD techniques and practices (ESD_v) may contribute to meeting these requirements.

As described above and in Chapter 5 (see p. 5.19 of the Manual), the volume of storage within various ESD practices, or ESD_v, may be considered when determining Qp_2 and/or Qp_{10} requirements. There are several methods that may be used and designers are encouraged to consult with the local approval authority to find out which are acceptable. The Maryland Department of the Environment (MDE) recommends using the "Change in Runoff Curve Number Method"[2] as an acceptable approach for this purpose.

The "Change in Runoff Curve Number Method" was developed to be used with TR-20[3] to model how capturing runoff in small-scale, uniformly distributed practices would effect the hydrograph for a given drainage area. The method uses Equation 1 below to calculate a storm-specific runoff curve number, CN^*, that reflects the runoff volume stored by ESD techniques and practices. In this equation, P is the rainfall depth in inches for the specific design storm (e.g., 10 year 24 hour design storm). The second variable, Q, is the difference between the post-development runoff depth (e.g., Q_{10}) and Q_E, the runoff depth stored in ESD techniques and practices[‡] (e.g., $Q = Q_{10} - Q_E$). The resulting CN^* is used with either the TR-20 or TR-55[4] programs to develop downstream hydrographs that account for the difference in runoff from the two and/or ten-year design storms and the runoff already treated using ESD.

Equation 1. $$CN^* = \frac{200}{(P + 2Q + 2) - \sqrt{5PQ + 4Q^2}}$$

MDE offers the following examples for using the "Change in Runoff Curve Number Method" to address Qp_2 and Qp_{10} using ESD. These examples are based on the Reker Meadows and Claytor Community Center designs found in both Chapters 2 and 5 of the Manual. In each example, the existing and proposed conditions reflect the Unified Sizing Criteria and structural approach to stormwater management design described in Chapter 2 of the Manual while the ESD goals reflect newer design requirements found in Chapter 5.

Example 1 – Reker Meadows

Using the Reker Meadows design examples found in Chapters 2 and 5 (see pp. 2.14 - 2.21 and 5.23 - 5.27), the effect of ESD on ten-year peak discharge control could be determined as follows:

‡ NOTE: According to the Design Manual (see p. 5.18), Q_E is the depth of runoff treated using ESD practices and is equal to the product of P_E and the volumetric runoff coefficient, R_V. Because ESD requirements are based on the 1-year rainfall event, Q_E is limited to the runoff from the 1 year, 24 hour design storm.

Site Data:

Existing Conditions

Total Drainage Area:	38 acres	
Soil Types:	60% B, 40% C	
Land Use:	Residential	
Runoff Curve Numbers		
Pre-Development:	63	
Wooded Conditions:	61	
Time of Concentration (t_c):	0.35 hours	
Ten-Year Peak Discharge:	50.4 cubic feet per second (cfs)	

Proposed Conditions

Impervious Cover (I):	13.8 acres; %I = 13.8/38 or 36.3%	
Lot Size:	½ acre lots	
Runoff Curve Number:	78	
Time of Concentration:	0.19 hours	
Qp_{10} Criteria (see pp. 2.14 - 2.21 of the Manual)		
Ten-Year Rainfall (P_{10}):	5.0 inches	(see Table 2.2, p. 2.11)
Ten-Year Runoff (Q_{10}):	2.71 inches	(from TR-55, see p. 2.21)
Ten-Year Peak Discharge:	130 cfs	(from TR-55, see p. 2.21)
ESD Criteria (see pp. 5.23 - 5.27 of the Manual)		
One-Year Rainfall (P_1):	2.5 inches	
P_E:	1.8 inches	(see p. 5.25)
Q_E:	0.68 inches	($Q_E = P_E \times R_v$; see pp. 5.18 and 5.25)
ESD_v:	2.15 ac-ft or 93,800 ft^3 (see pp. 5.18 and 5.25)	

This example assumes that the ESD targets shown in Chapter 5 for the Reker Meadows project have been met. For the ten-year design storm, the design rainfall depth, or P_{10}, is 5.0 inches, Q_{10} (the post-development runoff depth) is 2.71 inches and Q_E (the runoff depth stored in ESD practices) is 0.68 inches. Q, (Q_{10} minus Q_E) is 2.03 inches. Using these values and Equation 1 (see above), the revised post-development RCN (CN^*) is determined as follows:

$$CN^* = \frac{200}{(P_{10} + 2Q + 2) - \sqrt{5P_{10}Q + 4Q^2}} = \frac{200}{[5 + (2 \times 2.03) + 2] - \sqrt{(5 \times 5 \times 2.03) + (4 \times 2.03^2)}} = 70$$

The revised CN^* of 70 is used with either the TR-20 or TR-55 models to determine a revised runoff depth and peak discharge that reflect the effect of ESD on peak discharge controls. However, for this example, the impact of ESD on Qp_{10} requirements is summarized below. Please recognize that steps in the process may be missing as this is not meant as an example of how to use TR-55.

To be conservative, this example assumes that there is no change in the post-development time of concentration (t_c). The example also uses an initial abstraction (I_a) of 0.857 inches (see Table 4-1, p. 4-1 of TR-55 for an RCN of 70), a P_{10} of 5.0 inches, and using Exhibit 4-II (p. 4-6, TR-55), the unit peak discharge (q_u) is 750 cfs/mi^2/in. Using these values, the post-development peak discharge or q_{p10} may be calculated as follows:

$q_{p10} = q_u A_m Q F_p$ (Equation 4-1, TR-55)

where A_m is the site area in square miles (38 acres/640 acres per mile^2 or 0.0594), Q is the 10-year post-development runoff depth for an RCN of 70 (2.03 inches), and F_p is an adjustment for ponds or swamps

within the watershed (in this case, F_p = 1.0). Using these values, the post-development peak discharge is:

$$q_{p10} = q_u A_m Q F_p = 750 \times 0.0594 \times 2.04 \times 1 = 90.8\, cfs$$

Using Figure 6-1 (see p. 6-2 of TR-55), for a inflow rate (q_{in}) of 90.8 cfs and an allowable outflow rate (q_{out}) of 50.4 cfs, the storage volume (V_s) necessary for control is 1.68 acre-ft (73,180 ft^3). This is almost 50,000 ft^3 less than the 123,275 ft^3 storage volume needed to address Qp_{10} without ESD.

Example 2 – Claytor Community Center

Using the Claytor Community Center design examples found in Chapters 2 and 5 (see pp. 2.22 - 2.27 and 5.28 - 5.31 of the Manual), the effect of ESD on two-year peak discharge control might be determined as follows:

Site Data:

Existing Conditions		
Total Drainage Area:	3 acres	
Soil Types:	100% B	
Land Use:	Commercial	
Runoff Curve Numbers		
Pre-Development:	57	
Wooded Conditions:	55	
Time of Concentration (t_c):	0.42 hours	
Two-Year Peak Discharge:	0.58 cfs	
Proposed Conditions		
Impervious Cover:	1.9 acres; I = 1.9/3 or 63.3%	
Runoff Curve Number:	83	
Time of Concentration:	0.16 hours	
Qp_2 Criteria (see pp. 2.22 - 2.27 of the Manual)		
Two-Year Rainfall (P_2):	3.4 inches	(see Table 2.2, p. 2.11)
Two-Year Runoff (Q_2):	1.77 inches	(from TR-55, see p. 2.27)
Two-Year Peak Discharge:	7.11 cfs	(from TR-55, see p. 2.27)
Storage Volume (V_s):	10,630 ft^3	(see p. 2.25)
ESD Criteria (see pp. 5.28 - 5.31)		
One-Year Rainfall (P_1):	2.8 inches	
Target P_E:	2.0 inches	(see p. 5.29)
Design P_E:	1.6 inches	(see p. 5.30)
Target Q_E:	1.24 inches	(see pp. 5.18 and 5.29)
Design Q_E:	0.99 inches	(see p. 5.30)
Target ESD_V:	13,505 ft^3	(see pp. 5.18 and 5.29)
Design Cp_V[§]:	3,265 ft^3	

This example assumes that the ESD targets shown above have not been met. When this occurs, the CN^* should be determined using the P_E and Q_E provided, which for this example are 1.6 inches and 0.99 inches respectively. For the two-year design storm, the design rainfall depth or P_2 is 3.4 inches, Q_2 is 1.77 inches, Q_E is 0.99 inches, and Q is 0.78 inches. Using these values and Equation 1, CN^* is determined as follows:

[§] Because the ESD targets have not been met, structural practices (see Chapter 3 of the Manual) must be used to capture and treat the difference in the 1 year design storm runoff from the achieved RCN of 65 (0.42 inches, see Manual, pp. 5.30 -5.31) and that for woods in good condition (runoff for an RCN =55 is 0.12 inches). Therefore, Cp_V is equal to [(0.42"– 0.12")x3 acres]/12", or approximately 3,265 ft^3.

$$CN^* = \frac{200}{(P_2 + 2Q + 2) - \sqrt{5P_2Q + 4Q^2}} = \frac{200}{[3.4 + (2 \times 0.78) + 2] - \sqrt{(5 \times 3.4 \times 0.78) + (4 \times 0.78^2)}} = 66$$

The revised CN* of 66 is used with either the TR-20 or TR-55 models to determine a revised runoff depth and peak discharge that reflect the effect of ESD on peak discharge controls. However, the impact of ESD on Qp_2 requirements is also summarized below. Again, to be conservative, the calculations assume that there is no change in the post-development time of concentration (t_c). The example also uses initial abstraction (I_a) of 1.03 inches (see Table 4-1, p. 4-1 of TR-55 for an RCN of 66), the 2-year rainfall depth (P_2) of 3.4 inches, and the unit peak discharge (q_u) is 775 cfs/mi^2/in (see Exhibit 4-II, TR-55). The site area (A_m) is 0.00468 square miles (3 acres/640 acres per mile^2), the 2-year post-development runoff depth (Q) for a RCN of 66 is 0.78 inches, and F_p is 1.0. Using these values, the post-development peak discharge or q_{p2} may be calculated using Equation 4-1 from TR-55 as follows:

$$q_{p2} = q_u A_m Q F_p = 775 \times 0.00468 \times 0.75 \times 1 = 2.7\ cfs$$

Using Figure 6-1 (see p. 6-2 of TR-55), for a q_{in} of 2.7 cfs and an allowable q_{out} of 0.58 cfs, the storage volume (V_s) necessary for control is 3,595 ft^3. This is almost 7,000 ft^3 less than the 10,630 ft^3 storage volume needed to address Qp_2 without ESD.

Conclusion

The primary purpose of the overbank flood protection criteria is to prevent increases in the frequency and magnitude of out-of-bank flooding attributed to new development. In Maryland, controlling overbank flooding is required only if the local approval authority determines that additional stormwater management is necessary because there are historical flooding problems and downstream floodplain development cannot be controlled. While designers should consult with the local approval authority for acceptable methods, MDE recommends using the "Reduced Runoff Curve Number Method" for determining the effect of ESD when determining Qp_2 and/or Qp_{10} requirements. As shown in the two examples above, meeting the ESD to the MEP mandate does not necessarily mean that overbank flood protection requirements are addressed as well. Where needed to manage peak discharges, additional storage may be provided by increasing the size of ESD practices, adding structural practices, or using some combination of ESD and structural practices.

Resources

[1] 2000 Maryland Stormwater Design Manual, Volumes I and II, MDE, October 2000 (http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/MarylandStormwaterDesignManual/Pages/Programs/WaterPrograms/SedimentandStormwater/stormwater_design/index.aspx)

[2] "Modeling Infiltration Practices Using the TR-20 Hydrologic Program", McCuen, R., MDE 1983 (http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/SoilErosionandSedimentControl/Documents/Modeling%20Infiltration%20wTR%2020.pdf)

[3] "Technical Release 20 - Computer Program for Project Formulation Hydrology", United States Department of Agriculture – Natural Resources Conservation Service, 1964, 1986, & 1992

[4] "Technical Release 55 – "Urban Hydrology for Small Watersheds", United States Department of Agriculture – Natural Resources Conservation Service, 1986

Reduced Curve Number Computations per MDE Stormwater Design Guidance - Addressing Quantity Control Requirements

Frequency	2	10
P	3.33	5.20

	Q (TR-55)	
DA 2	2.37	4.17
	Q*	
DA 2	1.28	3.08

	P + (2 x Q*) + 2	
DA 2	7.8812	13.3512

SQRT [(5 x P x Q*) + (4 x Q^2)]	
5.267576429	10.85370266

200
(P + 2 x Q* + 2) - SQRT (5 x P x Q* + 4 x Q^2)

CN*	DA 2	76.5	80.1

CN*	DA 2	77	81

A	CN
0.462	91

PE	Rv	QE
1.8	0.608	1.0944

WinTR-55 Current Data Description

--- Identification Data ---

User: bdavis
Project: Tuckahoe Hardwoods
SubTitle: DA 2 towards South
State: Maryland
County: Talbot NOAA-C
Filename: S:\ACAD\PROJECTS\D-I\Fink & Whitten\20157 - 16024-Dent-Tuckahoe Hardwoods\SWM\TR-55 Analys

Date: 8/2/2023
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
DA2 Ex	Existing Conditions	Outlet	0.23	93	0.100
DA2 Pr	Proposed Conditions	Outlet	0.46	91	.167
DA2 RCN2	Red. CN 2 Yr	Outlet	0.46	77	0.167
DA2 RCN10	Red. CN 01 Yr	Outlet	0.46	81	0.167

Total area: 1.61 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
3.33	4.33	5.2	6.52	7.73	8.98	2.74

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: NOAA_C
Dimensionless Unit Hydrograph: delmarva

bdavis

Tuckahoe Hardwoods
DA 2 towards South
Talbot NOAA-C County, Maryland

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
DA2 Ex							
User-provided							0.100
					Time of Concentration		0.100
DA2 Pr							
SHEET	45	0.0075	0.011				0.015
SHALLOW	204	0.0010	0.050				0.111
SHALLOW	57	0.0010	0.025				0.025
CHANNEL	108	0.0050	0.013	0.60	2.17	3.333	0.009
CHANNEL	72	0.0050	0.011	0.35	2.10	2.857	0.007
					Time of Concentration		.167
DA2 RCN2							
User-provided							0.167
					Time of Concentration		0.167
DA2 RCN10							
User-provided							0.167
					Time of Concentration		0.167

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Tuckahoe Hardwoods
DA 2 towards South
Talbot NOAA-C County, Maryland

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
DA2 Ex	Open space; grass cover < 50%	(poor)	D	.12	89
	Paved parking lots, roofs, driveways		D	.109	98
	Total Area / Weighted Curve Number			.23	93
				===	==
DA2 Pr	Open space; grass cover > 75%	(good)	D	.182	80
	Paved parking lots, roofs, driveways		D	.28	98
	Total Area / Weighted Curve Number			.46	91
				===	==
DA2 RCN2	CN directly entered by user		-	.46	77
	Total Area / Weighted Curve Number			.46	77
				===	==
DA2 RCN10	CN directly entered by user		-	.46	81
	Total Area / Weighted Curve Number			.46	81
				===	==

bdavis

Tuckahoe Hardwoods
DA 2 towards South
Talbot NOAA-C County, Maryland

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 2-Yr (cfs)	10-Yr (cfs)
SUBAREAS		
DA2 Ex	0.60	0.99
DA2 Pr	0.90	1.55
DA2 RCN2	0.49	
DA2 RCN10		1.22

DMS

Davis, Moore, Shearon, & Associates, LLC

Engineering, Drafting/Design, Environmental Services & Surveying

DATA FOR ELEVATION - STORAGE CURVE

JOB NAME: Tuckahoe Hardwoods

DESCRIPTION: Quantity Control Area

STORAGE: Proposed Conditions

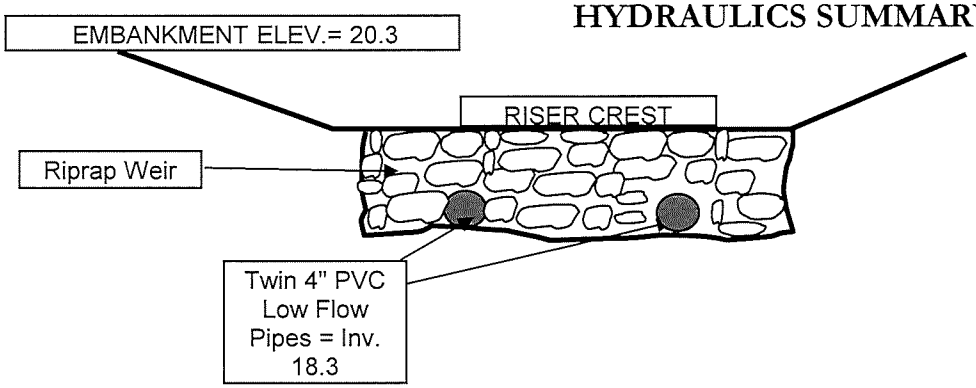
ELEV. (FT)	SURFACE AREA (SQ.FT)	AVERAGE SURFACE AREA (SQ.FT.)	DIFF. IN ELEV. (FT)	INCREMENT STORAGE (CU.FT.)	STORAGE (CU. FT.)	STORAGE (ACRE FT.)
18.30	709				0	0.0000
		749	0.20	150		
18.50	788				150	0.0034
		862	0.36	310		
18.86	936				460	0.0106
		966	0.14	135		
19.00	996				595	0.0137
		1,062	0.30	318		
19.30	1,127				914	0.0210
		1,222	0.20	244		
19.50	1,317				1,158	0.0266
		1,374	0.11	151		
19.61	1,430				1,309	0.0301
		1,562	0.39	609		
20.00	1,693				1,918	0.0440
		1,845	0.30	553		
20.30	1,996				2,472	0.0567

DMS & Associates

BY: B. DAVIS

7/1/23

Tuckahoe Hardwoods Quantity Control Area
SWM OUTLET STRUCTURE
HYDRAULICS SUMMARY



WATER in Pond Elev	ORIFICE		Stone		STRUC. TOP		OVERFLOW WEIR						FLOW Q	ACTUAL STORAGE VOLUME
	H CL = Size(ft) = Area =	Q **18.47** **0.33** 0.171	Crest= Size(ft) = Area =		Crest= Length=		Crest= Length=		Inlet Control * Cl Elev.= Size(ft)= **0.00**		Outlet Control Cl Elev= Kp= 0.0000			
ft	ft	cfs	ft	cfs	ft	cfs	ft	cfs	ft.	cfs	ft	cfs	cfs	ac. ft.
18.30	0.00	0.00											0.00	**0.0000**
18.50	0.04	0.15											0.15	**0.0034**
18.86	0.40	0.52											0.52	**0.0106**
19.00	0.54	0.60											0.60	**0.0137**
19.30	0.84	0.75											0.75	**0.0210**
19.50	1.04	0.84											0.84	**0.0266**
19.61	1.15	0.88											0.88	**0.0301**
20.00	1.54	1.02											1.02	**0.0440**
20.30	1.84	1.12											1.12	**0.0567**

```
******************80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY******************

JOB TR-20                    FULLPRINT          SUMMARY   NOPLOTS
TITLE 001 SCS ANALYSIS FOR TUCKAHOE HARDWOODS-COMMERCE DRIVE, EASTON
TITLE 002 TALBOT COUNTY  PREPARED BY BAD  07/2023  #2020157
 4 DIMHYD
 8          0.000       0.111       0.356       0.655       0.896
 8          1.000       0.929       0.828       0.737       0.656
 8          0.584       0.521       0.465       0.415       0.371
 8          0.331       0.296       0.265       0.237       0.212
 8          0.190       0.170       0.153       0.138       0.123
 8          0.109       0.097       0.086       0.076       0.066
 8          0.057       0.049       0.041       0.033       0.027
 8          0.024       0.021       0.018       0.015       0.013
 8          0.012       0.011       0.009       0.008       0.008
 8          0.006       0.006       0.005       0.005       0.000
 9 ENDTBL
 3 STRUCT      01
 8                      18.30       0.001       0.0000
 8                      18.50       0.150       0.0034
 8                      18.86       0.520       0.0106
 8                      19.00       0.600       0.0137
 8                      19.30       0.750       0.0210
 8                      19.50       0.840       0.0266
 8                      19.61       0.880       0.0301
 8                      20.00       1.020       0.0440
 8                      20.30       1.120       0.0567
 9 ENDTBL
 6 RUNOFF 1    01     1 0.00036     89.0        0.100       1 1   1 1 1
 6 RUNOFF 1    01     2 0.00072     81.0        0.167       1 1   1 1 1
 6 RESVOR 2    01 2   3 18.30                               1 1 1 1 1 1
   ENDATA
 7 INCREM 6             0.1
 7 COMPUT 7    01    01 0.0         5.20        1.0         2 2  01  10
   ENDCMP 1
 7 COMPUT 7    01    01 0.0         8.98        1.0         2 2  01  99
   ENDCMP 1
   ENDJOB 2
0*******************************END OF 80-80 LIST*******************************
1


 TR20 XEQ 07-31-23  16:19       SCS ANALYSIS FOR TUCKAHOE HARDWOODS-COMMERCE DRIVE, EASTON                    JOB  1   PASS   1
      REV PC 09/83(.2)          TALBOT COUNTY  PREPARED BY BAD  07/2023  #2020157                                PAGE   1



 EXECUTIVE CONTROL OPERATION INCREM                                                                          RECORD ID
+                                   MAIN TIME INCREMENT =   .10 HOURS


 EXECUTIVE CONTROL OPERATION COMPUT                                                                          RECORD ID
+                                   FROM STRUCTURE  1
+                                                        TO STRUCTURE  1
```

```
        STARTING TIME =   .00    RAIN DEPTH =  5.20    RAIN DURATION=  1.00    RAIN TABLE NO.= 2    ANT. MOIST. COND= 2
        ALTERNATE NO.= 1         STORM NO.=10    MAIN TIME INCREMENT =   .10 HOURS


 OPERATION RUNOFF   STRUCTURE  1
           OUTPUT HYDROGRAPH=  1
           AREA=    .00 SQ MI   INPUT RUNOFF CURVE= 89.    TIME OF CONCENTRATION=   .10 HOURS
           INTERNAL HYDROGRAPH TIME INCREMENT=  .0133 HOURS

           PEAK TIME(HRS)              PEAK DISCHARGE(CFS)           PEAK ELEVATION(FEET)
              11.98                           1.08                        (RUNOFF)

 TIME(HRS)         FIRST HYDROGRAPH POINT =   .00 HOURS      TIME INCREMENT =  .10 HOURS      DRAINAGE AREA =    .00 SQ.MI.
    6.00    DISCHG         .00       .00       .01       .01       .01       .01       .01       .01       .01       .01
    7.00    DISCHG         .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
    8.00    DISCHG         .01       .01       .01       .01       .01       .01       .02       .02       .02       .02
    9.00    DISCHG         .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
   10.00    DISCHG         .03       .03       .03       .03       .03       .04       .04       .04       .05       .05
   11.00    DISCHG         .06       .06       .07       .07       .08       .09       .22       .33       .49       .88
   12.00    DISCHG        1.08       .71       .41       .27       .18       .14       .12       .11       .10       .09
   13.00    DISCHG         .08       .08       .07       .07       .06       .06       .06       .05       .05       .05
   14.00    DISCHG         .05       .04       .04       .04       .04       .04       .03       .03       .03       .03
   15.00    DISCHG         .03       .03       .03       .03       .03       .03       .03       .03       .03       .03
   16.00    DISCHG         .03       .03       .03       .03       .03       .03       .03       .02       .02       .02
   17.00    DISCHG         .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
   18.00    DISCHG         .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
   19.00    DISCHG         .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
   20.00    DISCHG         .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
   21.00    DISCHG         .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
   22.00    DISCHG         .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
   23.00    DISCHG         .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
   24.00    DISCHG         .01       .01       .00

   RUNOFF VOLUME ABOVE BASEFLOW =  3.93 WATERSHED INCHES,       .91 CFS-HRS,      .08 ACRE-FEET;   BASEFLOW =    .00 CFS

                        --- HYDROGRAPH FOR STRUCTURE  1, ALTERNATE  1, STORM 10, ADDED TO OUTPUT HYDROGRAPH FILE ---


 OPERATION RUNOFF   STRUCTURE  1
           OUTPUT HYDROGRAPH=  2
           AREA=    .00 SQ MI   INPUT RUNOFF CURVE= 81.    TIME OF CONCENTRATION=   .17 HOURS
           INTERNAL HYDROGRAPH TIME INCREMENT=  .0223 HOURS

           PEAK TIME(HRS)              PEAK DISCHARGE(CFS)           PEAK ELEVATION(FEET)
              12.03                           1.45                        (RUNOFF)
1


 TR20 XEQ 07-31-23  16:19       SCS ANALYSIS FOR TUCKAHOE HARDWOODS-COMMERCE DRIVE, EASTON                        JOB  1   PASS   1
      REV PC 09/83(.2)          TALBOT COUNTY  PREPARED BY BAD  07/2023  #2020157                                         PAGE   2


 TIME(HRS)         FIRST HYDROGRAPH POINT =   .00 HOURS      TIME INCREMENT =  .10 HOURS      DRAINAGE AREA =    .00 SQ.MI.
    8.00    DISCHG         .00       .01       .01       .01       .01       .01       .01       .01       .01       .01
```

9.00	DISCHG	.01	.01	.02	.02	.02	.02	.02	.02	.02	.02
10.00	DISCHG	.02	.03	.03	.03	.03	.04	.04	.05	.05	.06
11.00	DISCHG	.06	.07	.08	.09	.10	.11	.21	.35	.52	1.01
12.00	DISCHG	1.43	1.33	.94	.70	.51	.39	.31	.25	.22	.19
13.00	DISCHG	.17	.15	.14	.13	.12	.11	.11	.10	.10	.09
14.00	DISCHG	.09	.08	.08	.08	.07	.07	.07	.06	.06	.06
15.00	DISCHG	.06	.06	.06	.06	.06	.05	.05	.05	.05	.05
16.00	DISCHG	.05	.05	.05	.05	.05	.05	.05	.05	.04	.04
17.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
18.00	DISCHG	.04	.04	.03	.03	.03	.03	.03	.03	.03	.03
19.00	DISCHG	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
20.00	DISCHG	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
21.00	DISCHG	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
22.00	DISCHG	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
23.00	DISCHG	.03	.03	.03	.03	.03	.03	.03	.03	.03	.02
24.00	DISCHG	.02	.02	.01	.01	.00					

RUNOFF VOLUME ABOVE BASEFLOW = 3.16 WATERSHED INCHES, 1.47 CFS-HRS, .12 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR STRUCTURE 1, ALTERNATE 1, STORM 10, ADDED TO OUTPUT HYDROGRAPH FILE ---

OPERATION RESVOR STRUCTURE 1
INPUT HYDROGRAPH= 2 OUTPUT HYDROGRAPH= 3
SURFACE ELEVATION= 18.30

*** WARNING - STRUCTURE 1 DELTA T IS TOO LARGE. O /2 > S /DELTA T OCCURED 80 TIMES STARTING WITH POINT 2

*** WARNING-NO PEAK FOUND, MAXIMUM DISCHARGE = .03 CFS.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
23.70	.03	18.33
12.30	.79	19.40

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .00 SQ.MI.

8.00	DISCHG	.00	.00	.00	.00	.00	.01	.01	.01	.01	.01
8.00	ELEV	18.30	18.30	18.30	18.30	18.30	18.31	18.31	18.31	18.31	18.31
9.00	DISCHG	.01	.01	.01	.01	.01	.02	.02	.02	.02	.02
9.00	ELEV	18.31	18.31	18.32	18.32	18.32	18.32	18.32	18.32	18.32	18.33
10.00	DISCHG	.02	.02	.02	.03	.03	.03	.03	.04	.04	.04
10.00	ELEV	18.33	18.33	18.33	18.33	18.34	18.34	18.34	18.35	18.35	18.36
11.00	DISCHG	.05	.06	.06	.07	.08	.08	.11	.16	.26	.44
11.00	ELEV	18.37	18.37	18.38	18.39	18.40	18.41	18.44	18.51	18.61	18.78
12.00	DISCHG	.62	.74	.79	.79	.77	.72	.67	.61	.53	.43
12.00	ELEV	19.04	19.28	19.39	19.40	19.34	19.25	19.13	19.01	18.89	18.77
13.00	DISCHG	.34	.28	.23	.20	.17	.15	.14	.13	.12	.11
13.00	ELEV	18.69	18.62	18.58	18.55	18.52	18.50	18.49	18.47	18.46	18.45

1

14.00	DISCHG	.10	.10	.09	.09	.08	.08	.08	.07	.07	.07

14.00	ELEV	18.44	18.43	18.42	18.42	18.41	18.41	18.40	18.40	18.39	18.39
15.00	DISCHG	.06	.06	.06	.06	.06	.06	.06	.05	.05	.05
15.00	ELEV	18.39	18.38	18.38	18.38	18.38	18.38	18.37	18.37	18.37	18.37
16.00	DISCHG	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
16.00	ELEV	18.37	18.37	18.37	18.37	18.37	18.37	18.37	18.36	18.36	18.36
17.00	DISCHG	.05	.04	.04	.04	.04	.04	.04	.04	.04	.04
17.00	ELEV	18.36	18.36	18.36	18.36	18.36	18.36	18.36	18.36	18.36	18.35
18.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.03	.03	.03
18.00	ELEV	18.35	18.35	18.35	18.35	18.35	18.35	18.35	18.35	18.34	18.34
19.00	DISCHG	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
19.00	ELEV	18.34	18.34	18.34	18.34	18.34	18.34	18.34	18.34	18.34	18.34
20.00	DISCHG	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
20.00	ELEV	18.34	18.34	18.34	18.34	18.34	18.34	18.33	18.33	18.33	18.33
21.00	DISCHG	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
21.00	ELEV	18.33	18.33	18.33	18.33	18.33	18.33	18.33	18.33	18.33	18.33
22.00	DISCHG	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
22.00	ELEV	18.33	18.33	18.33	18.33	18.33	18.33	18.33	18.33	18.33	18.33
23.00	DISCHG	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
23.00	ELEV	18.33	18.33	18.33	18.33	18.33	18.33	18.33	18.33	18.33	18.33
24.00	DISCHG	.02	.02	.02	.02	.01	.01	.01	.00		
24.00	ELEV	18.33	18.33	18.32	18.32	18.31	18.31	18.31	18.30		

RUNOFF VOLUME ABOVE BASEFLOW = 3.15 WATERSHED INCHES, 1.46 CFS-HRS, .12 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR STRUCTURE 1, ALTERNATE 1, STORM 10, ADDED TO OUTPUT HYDROGRAPH FILE ---

EXECUTIVE CONTROL OPERATION ENDCMP RECORD ID
+ COMPUTATIONS COMPLETED FOR PASS 1

1

TR20 XEQ 07-31-23 16:19 SCS ANALYSIS FOR TUCKAHOE HARDWOODS-COMMERCE DRIVE, EASTON JOB 1 PASS 2
REV PC 09/83(.2) TALBOT COUNTY PREPARED BY BAD 07/2023 #2020157 PAGE 4

EXECUTIVE CONTROL OPERATION COMPUT RECORD ID
+ FROM STRUCTURE 1
+ TO STRUCTURE 1
STARTING TIME = .00 RAIN DEPTH = 8.98 RAIN DURATION= 1.00 RAIN TABLE NO.= 2 ANT. MOIST. COND= 2
ALTERNATE NO.= 1 STORM NO.=99 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF STRUCTURE 1
OUTPUT HYDROGRAPH= 1
AREA= .00 SQ MI INPUT RUNOFF CURVE= 89. TIME OF CONCENTRATION= .10 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0133 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
11.98	2.01	(RUNOFF)

```
TIME(HRS)         FIRST HYDROGRAPH POINT =   .00 HOURS      TIME INCREMENT =  .10 HOURS      DRAINAGE AREA =    .00 SQ.MI.
   3.00    DISCHG         .00       .00       .00       .00       .00       .00       .00       .00       .01       .01
   4.00    DISCHG         .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
   5.00    DISCHG         .01       .01       .01       .01       .01       .01       .01       .01       .01       .02
   6.00    DISCHG         .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
   7.00    DISCHG         .02       .02       .02       .02       .02       .02       .03       .03       .03       .03
   8.00    DISCHG         .03       .03       .03       .03       .04       .04       .04       .04       .04       .04
   9.00    DISCHG         .04       .04       .05       .05       .05       .05       .05       .05       .06       .06
  10.00    DISCHG         .06       .06       .06       .07       .07       .08       .09       .10       .10       .12
  11.00    DISCHG         .12       .13       .14       .15       .17       .18       .45       .65       .95      1.66
  12.00    DISCHG        1.99      1.30       .75       .49       .32       .26       .22       .20       .18       .16
  13.00    DISCHG         .15       .14       .13       .12       .11       .11       .10       .09       .09       .08
  14.00    DISCHG         .08       .08       .08       .07       .07       .07       .06       .06       .06       .06
  15.00    DISCHG         .06       .06       .06       .06       .05       .05       .05       .05       .05       .05
  16.00    DISCHG         .05       .05       .05       .05       .05       .05       .05       .04       .04       .04
  17.00    DISCHG         .04       .04       .04       .04       .04       .04       .04       .04       .04       .04
  18.00    DISCHG         .03       .03       .03       .03       .03       .03       .03       .03       .03       .03
  19.00    DISCHG         .03       .03       .03       .03       .03       .03       .03       .03       .03       .03
  20.00    DISCHG         .03       .03       .02       .02       .02       .02       .02       .02       .02       .02
  21.00    DISCHG         .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
  22.00    DISCHG         .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
  23.00    DISCHG         .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
  24.00    DISCHG         .02       .01       .00

  RUNOFF VOLUME ABOVE BASEFLOW =  7.61 WATERSHED INCHES,      1.77 CFS-HRS,      .15 ACRE-FEET;   BASEFLOW =    .00 CFS

                      --- HYDROGRAPH FOR STRUCTURE  1, ALTERNATE  1, STORM 99, ADDED TO OUTPUT HYDROGRAPH FILE ---


OPERATION RUNOFF   STRUCTURE  1
          OUTPUT HYDROGRAPH=  2
          AREA=    .00 SQ MI   INPUT RUNOFF CURVE= 81.    TIME OF CONCENTRATION=   .17 HOURS
          INTERNAL HYDROGRAPH TIME INCREMENT=  .0223 HOURS

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)           PEAK ELEVATION(FEET)
             12.02                            2.99                        (RUNOFF)
1


TR20 XEQ 07-31-23  16:19       SCS ANALYSIS FOR TUCKAHOE HARDWOODS-COMMERCE DRIVE, EASTON                    JOB  1   PASS   2
     REV PC 09/83(.2)          TALBOT COUNTY  PREPARED BY BAD  07/2023  #2020157                                PAGE   5


TIME(HRS)         FIRST HYDROGRAPH POINT =   .00 HOURS      TIME INCREMENT =  .10 HOURS      DRAINAGE AREA =    .00 SQ.MI.
   5.00    DISCHG         .00       .00       .01       .01       .01       .01       .01       .01       .01       .01
   6.00    DISCHG         .01       .01       .01       .02       .02       .02       .02       .02       .02       .02
   7.00    DISCHG         .02       .02       .02       .02       .03       .03       .03       .03       .03       .03
   8.00    DISCHG         .03       .03       .03       .04       .04       .04       .05       .05       .05       .05
   9.00    DISCHG         .05       .05       .06       .06       .06       .06       .07       .07       .07       .08
  10.00    DISCHG         .08       .08       .09       .09       .10       .11       .12       .13       .14       .16
  11.00    DISCHG         .18       .19       .21       .23       .25       .28       .50       .84      1.19      2.19
  12.00    DISCHG        2.96      2.70      1.89      1.39      1.02       .77       .60       .48       .42       .36
  13.00    DISCHG         .32       .29       .27       .25       .23       .22       .20       .19       .18       .17
  14.00    DISCHG         .16       .16       .15       .15       .14       .13       .13       .12       .12       .11
```

15.00	DISCHG	.11	.11	.11	.11	.10	.10	.10	.10	.10	.09
16.00	DISCHG	.09	.09	.09	.09	.09	.09	.09	.09	.08	.08
17.00	DISCHG	.08	.08	.08	.08	.08	.08	.08	.08	.08	.07
18.00	DISCHG	.07	.07	.07	.06	.06	.06	.06	.06	.06	.06
19.00	DISCHG	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
20.00	DISCHG	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
21.00	DISCHG	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
22.00	DISCHG	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
23.00	DISCHG	.05	.05	.05	.05	.05	.05	.05	.05	.05	.04
24.00	DISCHG	.04	.03	.02	.01	.01	.00				

RUNOFF VOLUME ABOVE BASEFLOW = 6.67 WATERSHED INCHES, 3.10 CFS-HRS, .26 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR STRUCTURE 1, ALTERNATE 1, STORM 99, ADDED TO OUTPUT HYDROGRAPH FILE ---

OPERATION RESVOR STRUCTURE 1
INPUT HYDROGRAPH= 2 OUTPUT HYDROGRAPH= 3
SURFACE ELEVATION= 18.30

*** WARNING - STRUCTURE 1 DELTA T IS TOO LARGE. O /2 > S /DELTA T OCCURED 52 TIMES STARTING WITH POINT 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.36	1.18	20.49

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .00 SQ.MI.

5.00	DISCHG	.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
5.00	ELEV	18.30	18.30	18.30	18.30	18.30	18.30	18.31	18.31	18.31	18.31
6.00	DISCHG	.01	.01	.01	.01	.01	.01	.02	.02	.02	.02
6.00	ELEV	18.31	18.31	18.31	18.31	18.32	18.32	18.32	18.32	18.32	18.32
7.00	DISCHG	.02	.02	.02	.02	.02	.02	.02	.03	.03	.03
7.00	ELEV	18.32	18.33	18.33	18.33	18.33	18.33	18.33	18.33	18.33	18.33
8.00	DISCHG	.03	.03	.03	.03	.03	.04	.04	.04	.04	.05
8.00	ELEV	18.34	18.34	18.34	18.34	18.34	18.35	18.35	18.35	18.36	18.36
9.00	DISCHG	.05	.05	.05	.05	.06	.06	.06	.06	.07	.07
9.00	ELEV	18.36	18.36	18.37	18.37	18.37	18.38	18.38	18.38	18.39	18.39
10.00	DISCHG	.07	.07	.08	.08	.09	.09	.10	.11	.12	.13
10.00	ELEV	18.40	18.40	18.40	18.41	18.41	18.42	18.43	18.44	18.46	18.47

1

11.00	DISCHG	.14	.15	.17	.19	.21	.23	.28	.42	.58	.76
11.00	ELEV	18.49	18.50	18.52	18.54	18.55	18.57	18.63	18.76	18.96	19.31
12.00	DISCHG	.94	1.07	1.15	1.18	1.18	1.16	1.13	1.10	1.06	1.01
12.00	ELEV	19.76	20.16	20.39	20.48	20.49	20.43	20.34	20.23	20.11	19.98
13.00	DISCHG	.96	.91	.85	.78	.71	.63	.56	.46	.37	.30
13.00	ELEV	19.83	19.68	19.54	19.38	19.22	19.06	18.93	18.80	18.71	18.65
14.00	DISCHG	.25	.22	.20	.18	.17	.16	.15	.14	.13	.13
14.00	ELEV	18.60	18.57	18.55	18.53	18.52	18.51	18.50	18.49	18.48	18.47
15.00	DISCHG	.12	.12	.12	.11	.11	.11	.11	.10	.10	.10
15.00	ELEV	18.46	18.46	18.45	18.45	18.45	18.44	18.44	18.44	18.43	18.43

16.00	DISCHG	.10	.10	.10	.10	.10	.09	.09	.09	.09	.09
16.00	ELEV	18.43	18.43	18.43	18.43	18.43	18.43	18.43	18.42	18.42	18.42
17.00	DISCHG	.09	.08	.08	.08	.08	.08	.08	.08	.08	.08
17.00	ELEV	18.41	18.41	18.41	18.41	18.41	18.41	18.41	18.41	18.40	18.40
18.00	DISCHG	.08	.07	.07	.07	.07	.07	.07	.06	.06	.06
18.00	ELEV	18.40	18.40	18.39	18.39	18.39	18.39	18.39	18.39	18.38	18.38
19.00	DISCHG	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
19.00	ELEV	18.38	18.38	18.38	18.38	18.38	18.38	18.38	18.38	18.38	18.38
20.00	DISCHG	.06	.06	.06	.05	.05	.05	.05	.05	.05	.05
20.00	ELEV	18.38	18.38	18.37	18.37	18.37	18.37	18.37	18.36	18.36	18.36
21.00	DISCHG	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
21.00	ELEV	18.36	18.36	18.36	18.36	18.36	18.36	18.36	18.36	18.36	18.36
22.00	DISCHG	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
22.00	ELEV	18.36	18.36	18.36	18.36	18.36	18.36	18.36	18.36	18.36	18.36
23.00	DISCHG	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
23.00	ELEV	18.36	18.36	18.36	18.36	18.36	18.36	18.36	18.36	18.36	18.36
24.00	DISCHG	.04	.04	.04	.03	.02	.02	.01	.01	.01	.00
24.00	ELEV	18.36	18.35	18.35	18.34	18.33	18.32	18.31	18.31	18.31	18.30

RUNOFF VOLUME ABOVE BASEFLOW = 6.66 WATERSHED INCHES, 3.09 CFS-HRS, .26 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR STRUCTURE 1, ALTERNATE 1, STORM 99, ADDED TO OUTPUT HYDROGRAPH FILE ---

EXECUTIVE CONTROL OPERATION ENDCMP RECORD ID
+ COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL OPERATION ENDJOB RECORD ID
1

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 10													
+													
STRUCTURE 1	RUNOFF	.00	2	2	.10	.0	5.20	24.00	3.93	---	11.98	1.08	3007.8
STRUCTURE 1	RUNOFF	.00	2	2	.10	.0	5.20	24.00	3.16	---	12.03	1.45	2014.1
STRUCTURE 1	RESVOR	.00	2	2	.10	.0	5.20	24.00	3.15	19.40	12.30	.79	1101.5

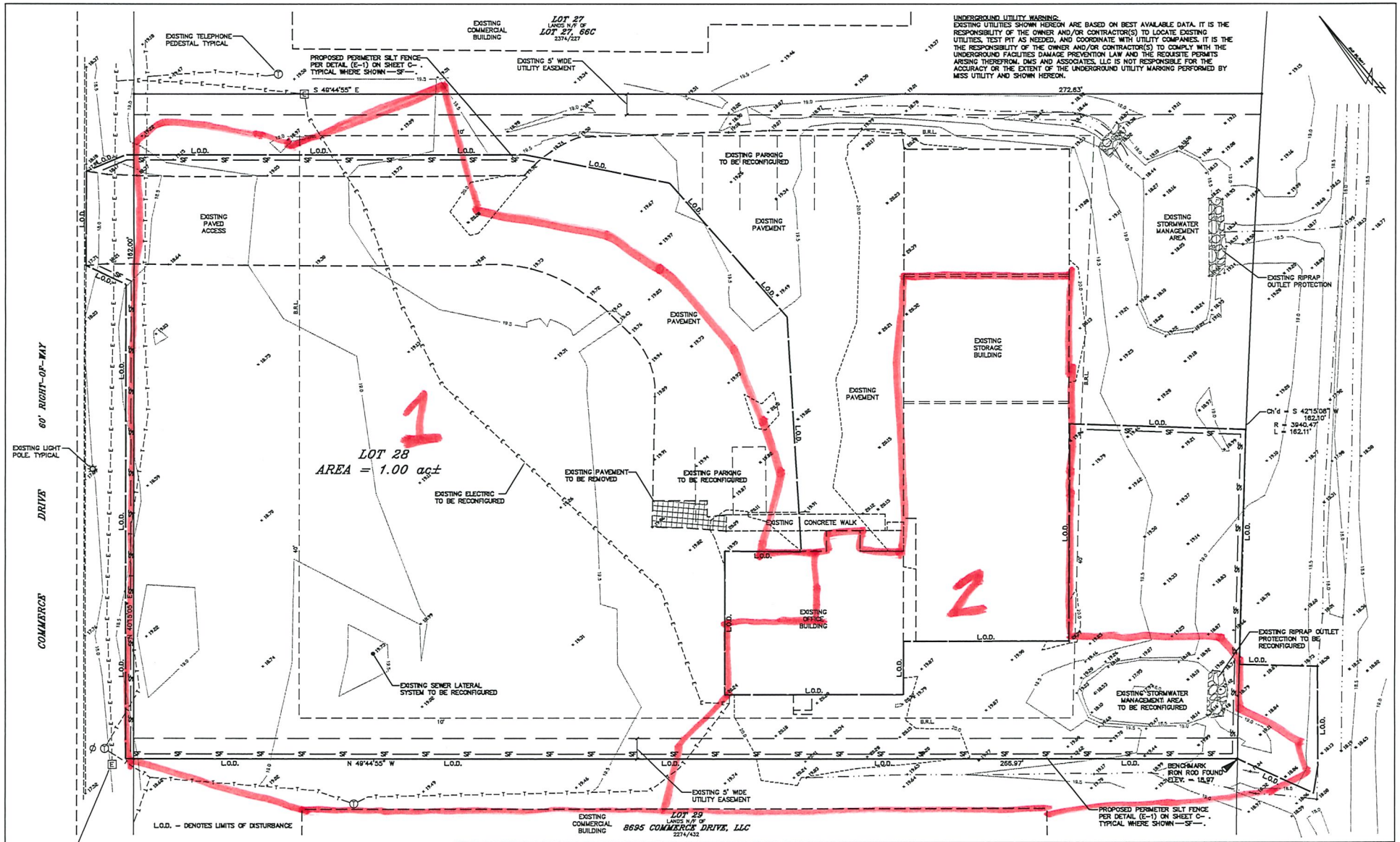
```
   ALTERNATE    1   STORM   99
+  ___________________________
 STRUCTURE  1  RUNOFF      .00      2      2     .10      .0     8.98    24.00     7.61       ---      11.98        2.01     5579.6
 STRUCTURE  1  RUNOFF      .00      2      2     .10      .0     8.98    24.00     6.67       ---      12.02        2.99     4155.9
 STRUCTURE  1  RESVOR      .00      2      2     .10      .0     8.98    24.00     6.66     20.49      12.36        1.18     1644.6
1
```



```
 SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

 XSECTION/          DRAINAGE
 STRUCTURE            AREA       STORM NUMBERS..........
   ID               (SQ MI)          10        99

0 STRUCTURE   1          .00
+___________________________
   ALTERNATE    1                   .79      1.18
1END OF  1 JOBS IN THIS RUN
```



NOTE:
SEDIMENT AND EROSION CONTROL WILL BE STRICTLY ENFORCED

NOTE:
FOLLOWING INITIAL DISTURBANCE, PERMANENT OR TEMPORARY, STABILIZATION SHALL BE COMPLETED WITHIN 3 CALENDAR DAYS ON ALL PERIMETER CONTROLS AND SLOPES GREATER THAN 3:1 AND 7 DAYS ON ALL OTHER DISTURBED AREAS ON THE SITE.

TOWN OF EASTON – PLANNING AND ZONING

TOWN OF EASTON – TOWN ENGINEER

EASTON UTILITIES – MANAGER OF ENGINEERING

PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 27230 EXPIRATION DATE: 2024

STATE OF MARYLAND
KEVIN P. COLLINS
No. 27230
PROFESSIONAL ENGINEER

AUG. 2, 2023
DATE SEAL

DAVIS, MOORE, SHEARON & ASSOCIATES, LLC
P.O. BOX 60
CENTREVILLE, MARYLAND 21617

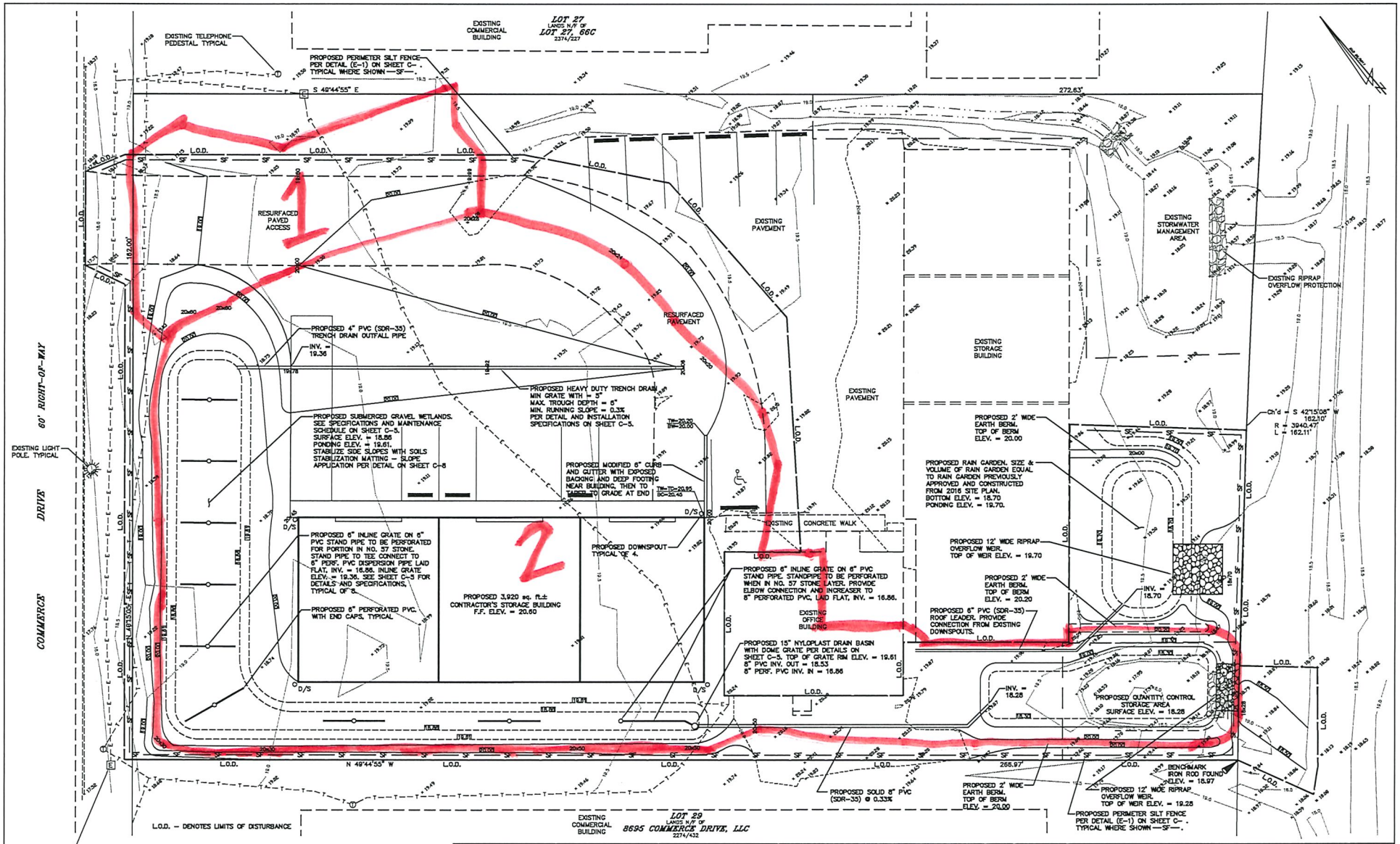
FINK, WHITTEN & ASSOCIATES, LLC.
LAND SURVEYING
410-822-8404
113 E. Dover St., Unit C
Easton, Maryland 21601
410-228-8883
304 Maryland Avenue
Cambridge, Maryland 21613

DATE	REVISION
8/2/2023	PER MD-DNR EMH COMMENTS

EXISTING CONDITIONS AND DEMOLITION PLAN
FOR THE DEVELOPMENT OF A
CONTRACTOR'S STORAGE BUILDING
ON LOT 28 IN THE
EASTON BUSINESS CENTER
IN THE TOWN OF EASTON, 1st Elect. Ward, TALBOT Co., MARYLAND
TAX MAP – 101, GRID – 2, PARCEL – 4

DATE APRIL '23	SCALE 1" = 10'
JOB No. 2020157	DRAWN BY WJM
FOLDER Ref. 101-2020157	DESIGNED BY BD
SHEET No. – C-2	
CADD FILE – 20157C02	

Pre Project



NOTE:
SEDIMENT AND EROSION CONTROL WILL BE STRICTLY ENFORCED

NOTE:
FOLLOWING INITIAL DISTURBANCE, PERMANENT OR TEMPORARY, STABILIZATION SHALL BE COMPLETED WITHIN 3 CALENDAR DAYS ON ALL PERIMETER CONTROLS AND SLOPES GREATER THAN 3:1 AND 7 DAYS ON ALL OTHER DISTURBED AREAS ON THE SITE.

TOWN OF EASTON – PLANNING AND ZONING	TOWN OF EASTON – TOWN ENGINEER
	EASTON UTILITIES – SUPERVISOR OF ENGINEERING

PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 37235 EXPIRATION DATE: 2024

AUG. 2, 2023
DATE SEAL

DAVIS, MOORE, SHEARON & ASSOCIATES, LLC
P.O. BOX 80
CENTREVILLE, MARYLAND 21617

FINK, WHITTEN & ASSOCIATES, LLC.
LAND SURVEYING
410-822-8484 — 113 E. Dover St., Unit C, Easton, Maryland 21601
410-228-8883 — 304 Maryland Avenue, Cambridge, Maryland 21613

DATE	REVISION
8/2/2023	PER SD-#003 DRAF COMMENTS

STORMWATER MANAGEMENT AND SEDIMENT & EROSION CONTROL PLAN

FOR THE DEVELOPMENT OF A

CONTRACTOR'S STORAGE BUILDING

ON LOT 28 IN THE

EASTON BUSINESS CENTER

IN THE TOWN OF EASTON, 1st Elect. Ward, TALBOT Co., MARYLAND

TAX MAP – 101, GRID – 2, PARCEL – 4

DATE APRIL '23	SCALE 1" = 10'
JOB No. 2020157	DRAWN BY WJM
FOLDER Ref. 101-2020157	DESIGNED BY BD
SHEET No. – C-4	
CADD FILE – 20157C04	

Post Project

1 CONCEPTUAL VIEW FROM ELLIOTT ROAD

Paul J. Gorman Architects

3928 Washington Blvd. Suite 201
Baltimore, MD 21227
Email: gormanarchitects@erols.com

Consulting Architect: Paul Gorman
Architectural Statement: I certify that these documents were reviewed by and approved by me and I am a duly licensed architect under the laws of the state of Maryland

STATE OF MARYLAND
PAUL J. GORMAN
7622
ARCHITECT

License Number 7622
Expiration Date 5.11.25

PROJECT NAME:

FRIEL
SELF STORAGE
ELLIOTT RD., EASTON, MARYLAND

SHEET ISSUE DATE:
07/28/23

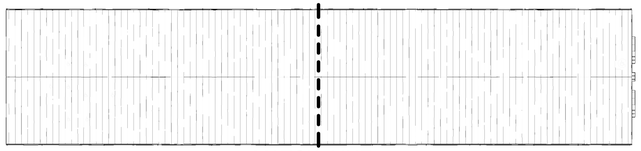
No.	Description	Date

SHEET TITLE:
Conceptual 3D View

SHEET:
A-1.1

Scale

BUILDING #1

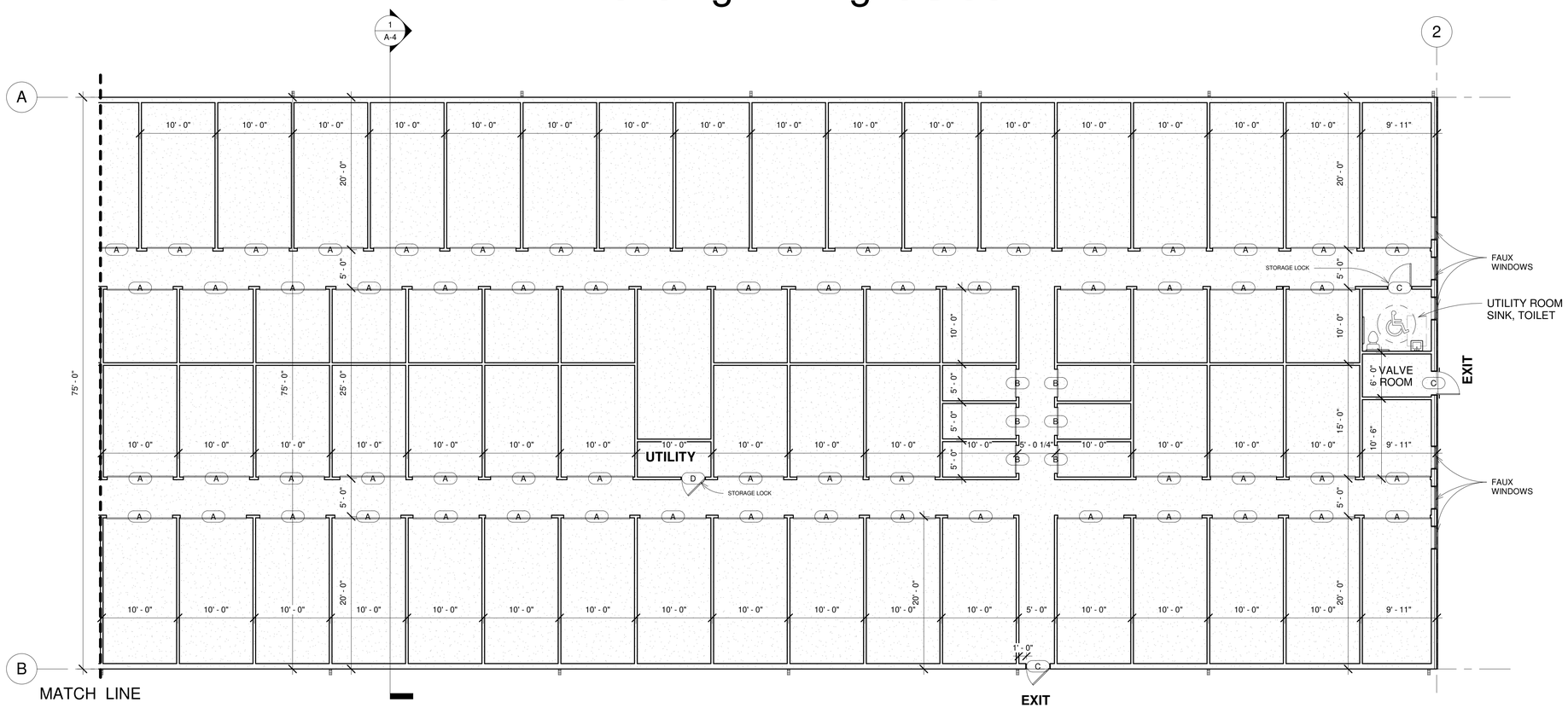


MATCH LINE

2 KEY PLAN BUILDING #1

1" = 40'-0"

Building 1 - Right Side



1 Floor Plan - Building 1 - Right

1/8" = 1'-0"

Paul J. Gorman Architects

3928 Washington Blvd. Suite 201
Baltimore, MD 21227
Email: gormanarchitects@erols.com

Consulting Architect: Paul Gorman
Architectural Statement: I certify that these documents were reviewed by and approved by me and I am a duly licensed architect under the laws of the state of Maryland

STATE OF MARYLAND PAUL J. GORMAN 7622 ARCHITECT

License Number 7622
Expiration Date 5.11.25

PROJECT NAME:

FRIEL SELF STORAGE

ELLIOTT RD., EASTON, MARYLAND

SHEET ISSUE DATE:

07/28/23

No.	Description	Date

SHEET TITLE:

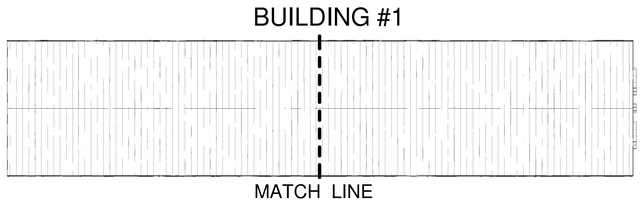
Floor Plan Building #1

SHEET:

A-2

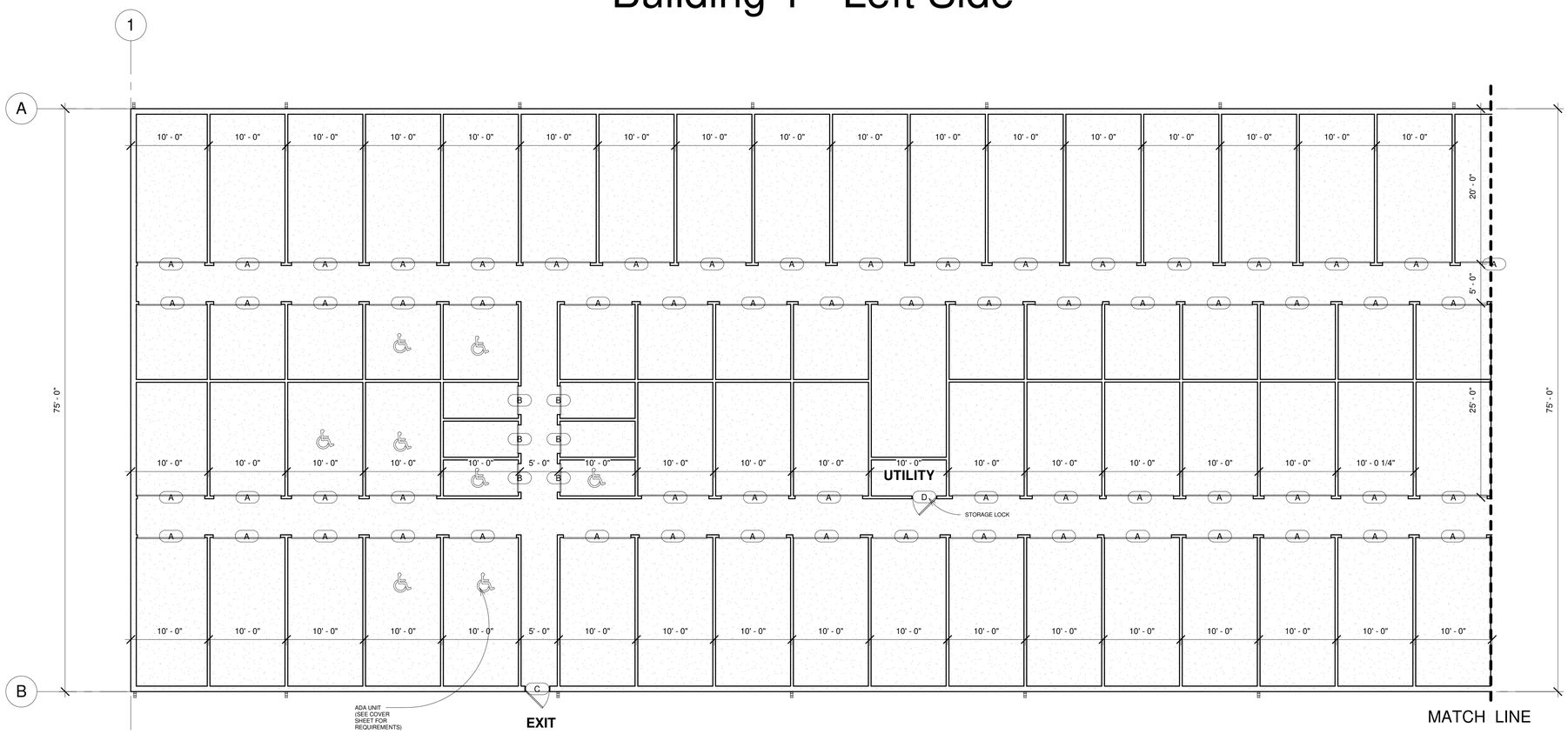
Scale

As indicated



2 KEY PLAN BUILDING #1.
1" = 40'-0"

Building 1 - Left Side



1 Floor Plan - Building 1 - Left
1/8" = 1'-0"

Paul J. Gorman Architects
3928 Washington Blvd. Suite 201
Baltimore, MD 21227
Email: gormanarchitects@erols.com

Consulting Architect: Paul Gorman
Architectural Statement: I certify that these documents were reviewed by and approved by me and I am a duly licensed architect under the laws of the state of Maryland

STATE OF MARYLAND
PAUL J. GORMAN
7622-A
ARCHITECT

License Number 7622
Expiration Date 5.11.25

PROJECT NAME:
FRIEL SELF STORAGE
ELLIOTT RD., EASTON, MARYLAND

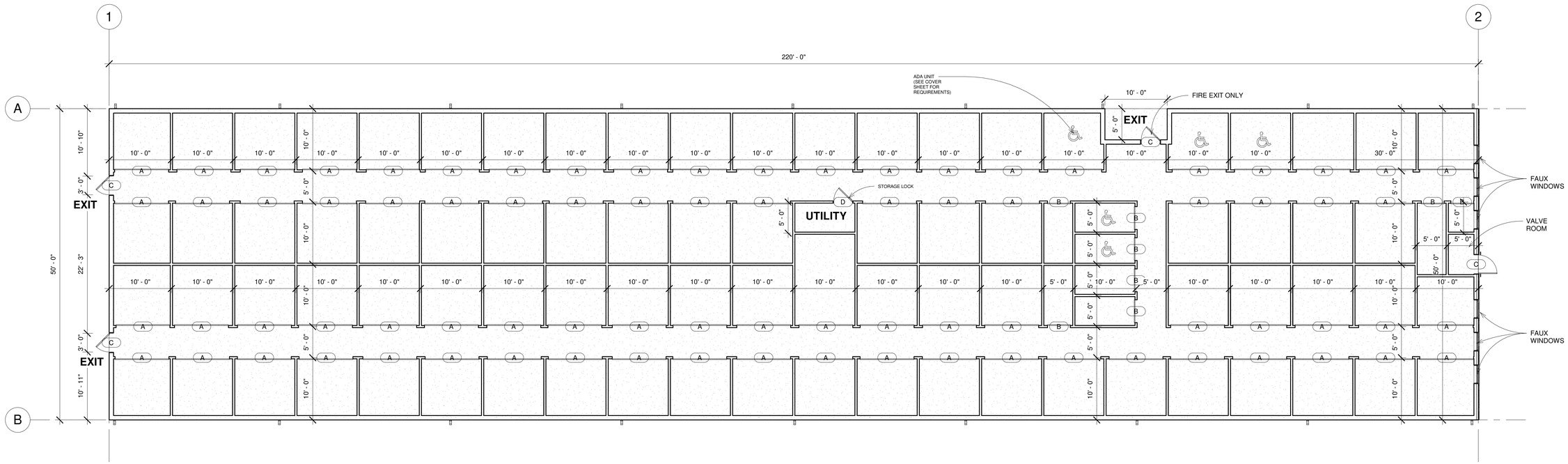
SHEET ISSUE DATE:
07/28/23

No.	Description	Date

SHEET TITLE:
Floor Plan Building #1

SHEET:
A-2.1

Scale
As indicated



1 Floor Plan - Building 2

1/8" = 1'-0"

Paul J. Gorman Architects

3928 Washington Blvd. Suite 201
Baltimore, MD 21227
Email: gormanarchitects@erols.com

Consulting Architect: Paul Gorman
Architectural Statement: I certify that these documents were reviewed by and approved by me and I am a duly licensed architect under the laws of the state of Maryland

STATE OF MARYLAND
PAUL J. GORMAN
No. 7622
ARCHITECT

License Number 7622
Expiration Date 5.11.25

PROJECT NAME:

FRIEL SELF STORAGE

ELLIOTT RD., EASTON, MARYLAND

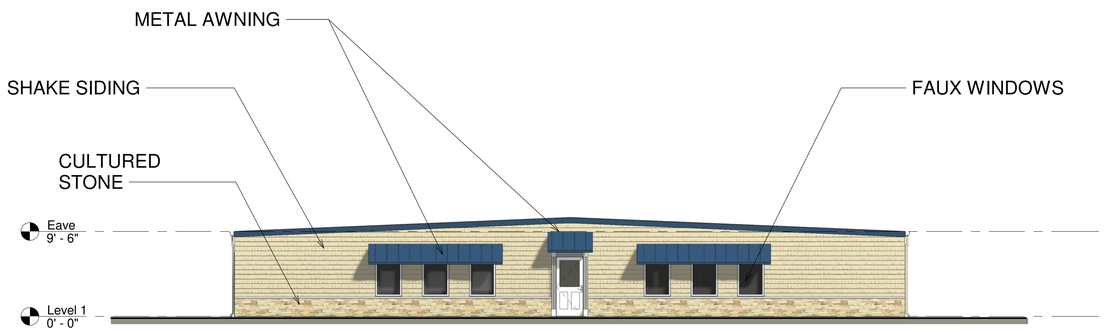
SHEET ISSUE DATE:
07/28/23

No.	Description	Date

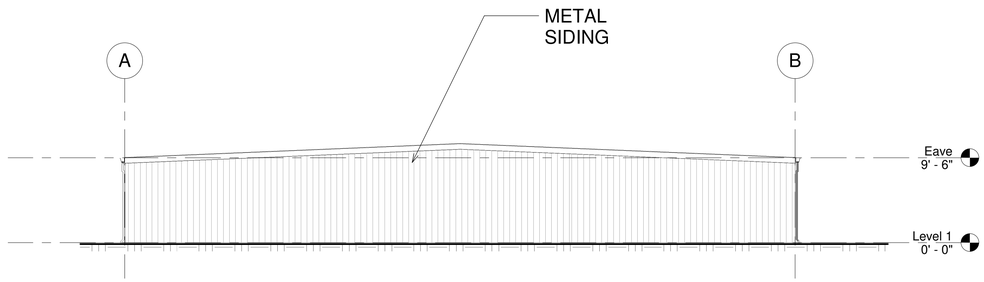
SHEET TITLE:
Floor Plan
Building #2

SHEET:
A-2.2

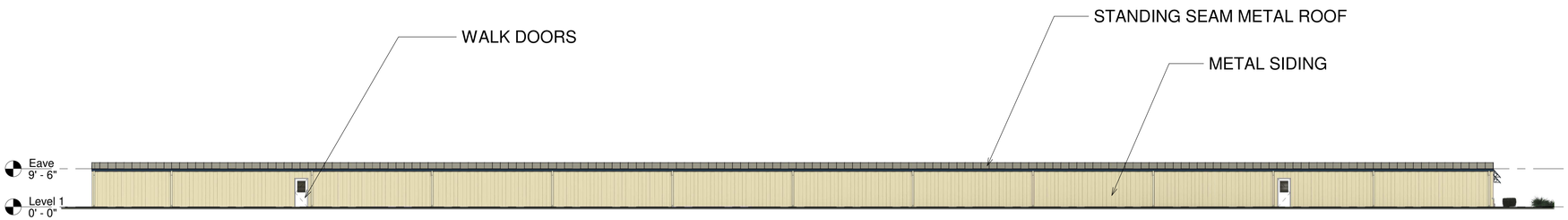
Scale
1/8" = 1'-0"



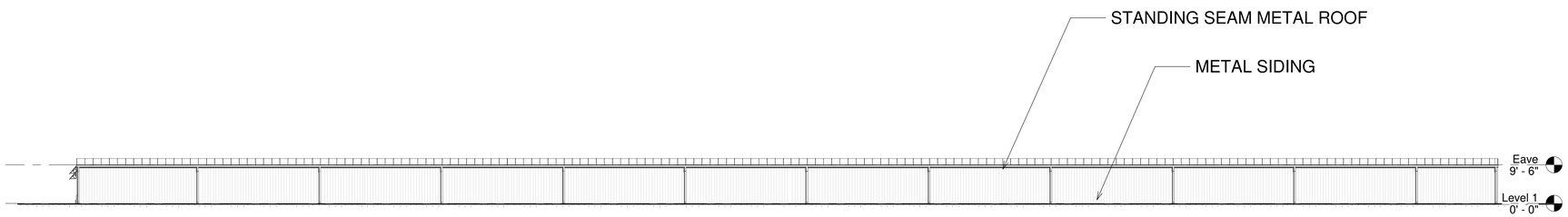
1 East - Building 1
1/8" = 1'-0"



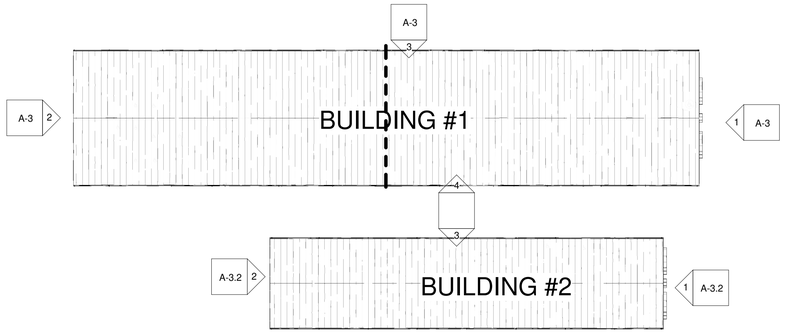
2 West- Building 1
1/8" = 1'-0"



4 South - Building 1
1/16" = 1'-0"



3 North - Building 1
1/16" = 1'-0"



5 KEY PLAN
1" = 40'-0"

Paul J. Gorman Architects
3928 Washington Blvd. Suite 201
Baltimore, MD 21227
Email: gormanarchitects@erols.com

Consulting Architect: Paul Gorman
Architectural Statement: I certify that these documents were reviewed by and approved by me and I am a duly licensed architect under the laws of the state of Maryland

STATE OF MARYLAND
PAUL J. GORMAN
7622-A
ARCHITECT

License Number 7622
Expiration Date 5.11.25

PROJECT NAME:
FRIEL SELF STORAGE
ELLIOTT RD., EASTON, MARYLAND

SHEET ISSUE DATE:
07/28/23

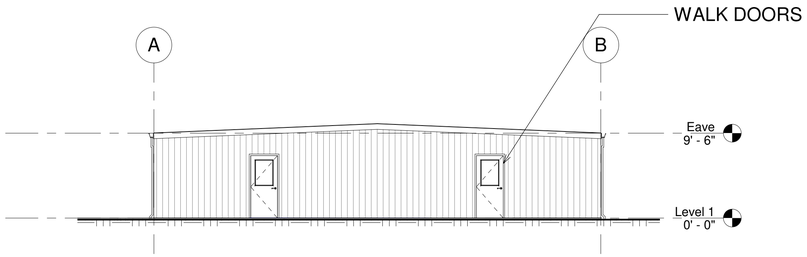
No.	Description	Date

SHEET TITLE:
Exterior Elevations Building #1

SHEET:
A-3

Scale
As indicated

1 East - Building 2
1/8" = 1'-0"



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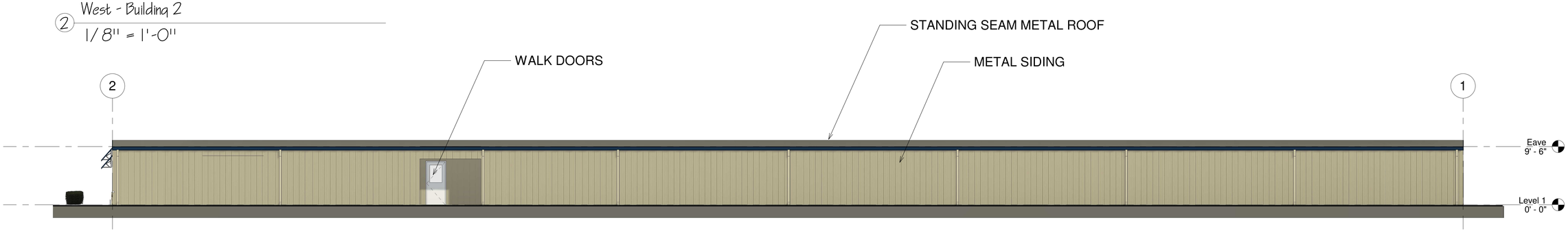
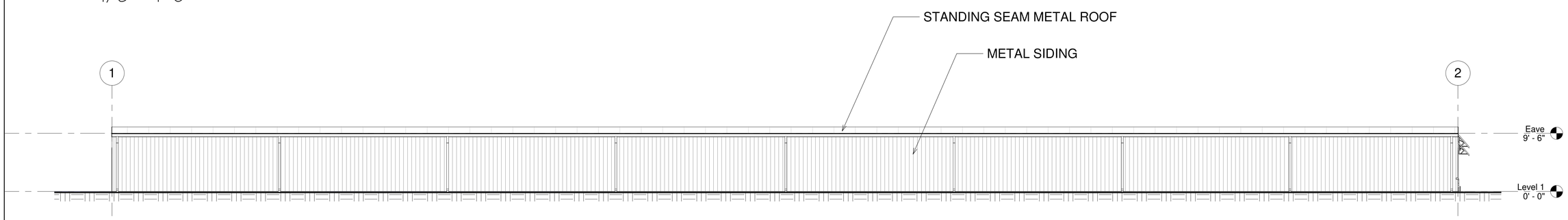
1/8" = 1'-0"



3 North - Building 2
1/8" = 1'-0"



4 South - Building 2
1/8" = 1'-0"

Paul J. Gorman Architects
3928 Washington Blvd. Suite 201
Baltimore, MD 21227
Email: gormanarchitects@erols.com

Consulting Architect: Paul Gorman
Architectural Statement: I certify that these documents were reviewed by and approved by me and I am a duly licensed architect under the laws of the state of Maryland

STATE OF MARYLAND PAUL J. GORMAN 7622-A ARCHITECT

License Number 7622
Expiration Date 5.11.25

PROJECT NAME:
FRIEL SELF STORAGE
ELLIOTT RD., EASTON, MARYLAND

SHEET ISSUE DATE:
07/28/23

No.	Description	Date

SHEET TITLE:
Exterior Elevations Building #2

SHEET:
A-3.2

Scale
1/8" = 1'-0"

PRELIMINARY SITE PLAN
FOR THE DEVELOPMENT OF
CLIMATE CONTROLLED SELF STORAGE
ON THE LANDS OF
FRIEL STORAGE, LLC.
IN THE TOWN OF EASTON, MARYLAND

SITE STATISTICS

CURRENT USE – COMMERCIAL/VACANT
PROPOSED USE – COMMERCIAL/CLIMATE CONTROLLED SELF STORAGE

GROSS SITE AREA	=	1.775 ac.± (77,341 sq. ft.±)
CRITICAL AREA	=	0.000 ac.± (0,000 sq. ft.±)
BASE SITE AREA	=	1.775 ac.± (77,341 sq. ft.±)
AREA IN BUFFERYARDS	=	0.061 ac.± (2,649 sq. ft.±)
AREA WITHIN FLOODPLAIN	=	0.000 ac.± (0,000 sq. ft.±)
LOT COVERAGE BY STRUCTURES (PERMITTED) (50%)	=	0.888 ac.± (38,670 sq. ft.±)
LOT COVERAGE BY STRUCTURES (EXISTING) (0.0%)	=	0.000 ac.± (0,000 sq. ft.±)
LOT COVERAGE BY STRUCTURES (PROPOSED) (48.2%)	=	0.855 ac.± (37244 sq. ft.±)
IMPERVIOUS AREA (EXISTING) (4.8%)	=	0.084 ac.± (3,674 sq. ft.±)
IMPERVIOUS AREA (TO BE REMOVED)	=	0.076 ac.± (3,312 sq. ft.±)
IMPERVIOUS AREA (PROPOSED) (65.7%)	=	1.167 ac.± (50,828 sq. ft.±)
IMPERVIOUS AREA (RESULTING) (66.2%)	=	1.175 ac.± (51,190 sq. ft.±)
LANDSCAPE AREA (EXISTING) (95.2%)	=	1.691 ac.± (73,667 sq. ft.±)
LANDSCAPE AREA (PROVIDED) (33.8%)	=	0.600 ac.± (26,151 sq. ft.±)

PARKING REQUIREMENTS

PROPOSED: (SECTION 28–1001.3):
4 spaces/climate controlled self storage (mini–warehouse) site = 4 SPACES
2 spaces/managers quarters X 0 managers quarters = 0 SPACES

PARKING SPACES (REQUIRED) = 4 SPACES (1 HANDICAP)
PARKING SPACES (PROVIDED) = 6 SPACES (1 HANDICAP)

OFF–STREET LOADING REQUIREMENTS

PROPOSED: (SECTION 28–1002.A):
1 loading space/10,000 sq. ft. floor area X 35,000 sq. ft. FLOOR AREA = 3.5 or 4 SPACES

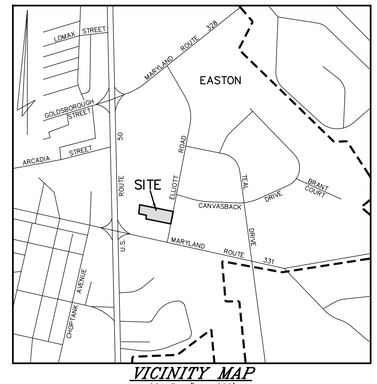
LOADING SPACES (REQUIRED) = 4 SPACES
LOADING SPACES (PROVIDED) = 4 SPACES

LEGEND

	DEED POINT
	EXISTING TREE
	EDGE OF EXISTING TREES
x 46.87	EXISTING SPOT ELEVATION
47.0	EXISTING CONTOUR
OHP	EXISTING UTILITY POLE OVERHEAD LINE
	EXISTING LIGHT POLE
	PROPOSED DRAINAGE MANHOLE
	PROPOSED SIGN
	PROPOSED ACCESSIBLE PARKING SPACE
SS SS	EXISTING GRAVITY SEWER LINE
	EXISTING SEWER MANHOLE
W W	EXISTING WATER LINE
	EXISTING FIRE HYDRANT
G G	EXISTING GAS LINE
SF	PERIMETER SILT FENCE
(CIP)	"CURB" INLET PROTECTION
(AGIP)	"AT GRADE" INLET PROTECTION
L.O.D.	LIMITS OF DISTURBANCE
	STABILIZED CONSTRUCTION ENTRANCE

NOTES

1. PROPERTY LINE INFORMATION SHOWN HEREON IS THE RESULT OF A FIELD RUN SURVEY BY FINK, WHITTEN AND ASSOCIATES, LLC IN NOVEMBER, 2021. HORIZONTAL DATUM IS NAD 83/2011.
2. FOR DEED REFERENCE, SEE LIBER 3052, FOLIO 169.
3. THE PROPERTY IS NOT LOCATED WITHIN THE CHESAPEAKE BAY CRITICAL AREA.
4. SITE IS NOT LOCATED WITHIN THE 100 YEAR FLOODPLAIN AS SCALED FROM FLOOD INSURANCE RATE MAP COMMUNITY PANEL No. 24041C0193C. (ZONE "X") (UNSHADED) DATED AUGUST 5, 2013.
5. SOILS ON SITE CONSIST OF "Up" (URBAN LAND) AS TAKEN FROM THE WEBSITE: http://websoilsurvey.nrcs.usda.gov FOR TALBOT COUNTY. NO HYDRIC SOILS EXIST ON THE SITE.
6. NO NATURAL RESOURCES (ie... WOODLANDS, NONTIDAL WETLANDS AND BUFFER, STREAM AND BUFFER, STEEP SLOPES, ENDANGERED SPECIES OR HABITATS) EXIST ON THE SITE.
7. EXISTING PUBLIC WATER SERVICES THE AREA.
8. EXISTING PUBLIC SEWER SERVICES THE AREA.
9. EXISTING SPOT ELEVATIONS AND CONTOURS SHOWN HEREON ARE THE RESULT OF A FIELD RUN SURVEY BY FINK, WHITTEN AND ASSOCIATES, LLC IN NOVEMBER, 2021. VERTICAL DATUM IS NAVD 88.
10. STORMWATER MANAGEMENT FOR THE SITE WILL BEEN ADDRESSED VIA THE IMPLEMENTATION OF ENVIRONMENTAL SITE DESIGN (ESD) TO THE MAXIMUM EXTENT PRACTICABLE (MEP).
11. ALL ONSITE LIGHTING WILL CONSIST OF WALL MOUNTED LIGHTING.
12. THERE SHALL BE NO OUTDOOR STORAGE.
13. ONE FREESTANDING SIGN IS PERMITTED, NOT TO EXCEED 50 sq. ft. PER SIDE IN AREA, NOT TO EXCEED 10 ft. VERTICAL DIMENSION, SHALL BE SETBACK AT LEAST 10' FROM ANY PROPERTY LINE. A LANDSCAPE AREA EQUIVALENT EQUIVALENT TO THE AREA OF EACH SIDE OF A FREESTANDING SIGN SHALL BE PROVIDED. SEE ARTICLE XI OF THE TOWN CODE FOR ADDITIONAL SIGN REGULATIONS. SIGNS REQUIRED TO OBTAIN A SIGN PERMIT FROM THE TOWN.
14. WALL MOUNTED SIGNAGE IS PERMITTED WITH A MAXIMUM AREA OF 1 sq. ft. OF SIGNAGE PER 1 LINEAL FOOT OF STREET FRONTAGE OF THE BUILDING. SEE ARTICLE XI OF THE TOWN CODE FOR ADDITIONAL SIGN REGULATIONS. SIGNS REQUIRED TO OBTAIN A SIGN PERMIT FROM THE TOWN AS APPLICABLE.
    BUILDING #1 = 75 sq. ft. (ALLOWED)
    BUILDING #2 = 50 sq. ft. (ALLOWED)
15. CURRENT ZONING CLASSIFICATION IS "CG" (GENERAL COMMERCIAL)
16. SITE REQUIREMENTS:
    BUILDING SETBACKS
    (SECTION 28.306.2):
    FRONT = 25'
    REAR = 15'
    SIDE = 10'
    MAXIMUM BUILDING HEIGHT:
    PRINCIPAL = 50' (ALLOWED)
    PRINCIPAL = <50' (PROPOSED)



VICINITY MAP
SCALE 1" = 1000'

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OWNER & APPLICANT
FRIEL STORAGE, LLC.
c/o JAY FRIEL
47 PROSPECT BAY DR W
GRASONVILLE, MARYLAND 21638
PHONE No. 1–410–827–8811

ENGINEER:
DMS & ASSOCIATES, LLC
c/o BRANDON DAVIS, P.E.
P.O. BOX 80
CENTREVILLE, MARYLAND 21617
PHONE No. 1–443–262–9130

PRIOR OWNER & APPLICANT
DENNIS P. DULEY
27967 JARBOE DRIVE
EASTON, MARYLAND 21632
PHONE No. 1–443–786–3266

SURVEYOR:
FINK, WHITTEN & ASSOCIATES, LLC
c/o ELIZABETH FINK
113 E. DOVER ROAD, UNIT C
EASTON, MARYLAND 21601
PHONE No. 1–410–822–8484

GENERAL NOTES

1. THE EXISTING UTILITIES SHOWN WERE TAKEN FROM THE BEST AVAILABLE RECORDS. THE CONTRACTOR SHALL VERIFY THEIR EXACT LOCATION PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE INCURRED TO SUCH UTILITIES SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL TEST PIT AS TO VERIFY THE LOCATION AND INVERT OF EXISTING UTILITIES.
2. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING TWO (2) WEEKS PRIOR TO THE START OF CONSTRUCTION AND SHALL COORDINATE CONSTRUCTION WITH THE UTILITY COMPANIES INVOLVED:

DELMARVA POWER & LIGHT COMPANY	1–800–375–7117
MISS UTILITY	1–800–441–8355
DMS & ASSOCIATES, LLC	1–443–262–9130
DEPARTMENT OF ENVIRONMENT	1–410–901–4020
TALBOT SOIL CONSERVATION DISTRICT	1–410–822–1577
TOWN OF EASTON ENGINEERING	1–410–820–8822
TOWN OF EASTON DEPARTMENT OF PUBLIC WORKS	1–410–822–0513
EASTON UTILITIES	1–410–822–6110

3. THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT, LABOR, AND MATERIALS FOR ANY MISCELLANEOUS OR TEST PIT EXCAVATIONS REQUIRED BY THE ENGINEER.
4. ALL CONSTRUCTION SHALL BE MARKED FOR TRAFFIC AND PEDESTRIAN SAFETY. ALL SIGNS SHALL BE PLACED IN ACCORDANCE WITH SECTION VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
5. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE TOWN OF EASTON STANDARDS AND SPECIFICATIONS.
6. THE CONTRACTOR ASSUMES ALL RESPONSIBILITIES FOR ANY DEVIATIONS FROM THESE PLANS, UNLESS SAID DEVIATION IS APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL RECEIVE WRITTEN PERMISSION FROM THE ENGINEER IF A DEVIATION OF THE PLAN IS NECESSARY.
7. ALL DISTURBED AREAS SHALL BE SMOOTHLY GRADED TO PROVIDE POSITIVE DRAINAGE IN THE DIRECTION OF FLOW ARROWS HEREIN AND STABILIZED WITH TOPSOIL, SEED, AND MULCH. IF SETTLEMENT OCCURS, TOPSOIL, SEEDING AND MULCHING SHALL BE REPEATED UNTIL SETTLEMENT SUBSIDES (SEE EROSION AND SEDIMENT CONTROL SPECIFICATIONS).
8. ALL TRASH, TREES, AND UNDERBRUSH ARE TO BE CLEARED AND REMOVED OFF SITE TO AN APPROVED DUMP SITE
9. ANY EXCESS EXCAVATED MATERIAL SHALL BE REMOVED OFF SITE BY THE CONTRACTOR OR MATERIAL SHALL BE PLACED ON SITE AS DIRECTED BY THE ENGINEER AND/OR OWNER.
10. ANY EXISTING SURVEY MONUMENTATION THAT IS DISTURBED DURING CONSTRUCTION SHALL BE REPLACED BY A REGISTERED SURVEYOR AT THE CONTRACTOR'S EXPENSE.
11. ALL FILL AREAS WITHIN LIMITS OF ROADWAY CONSTRUCTION AND OTHER AREAS AS DESIGNATED ON THESE PLANS SHALL BE COMPACTED TO 95% MODIFIED PROCTOR DENSITY AND LAID AND COMPACTED IN 8" LIFTS MAXIMUM.
12. TRENCHES SHALL NOT REMAIN OPEN OVERNIGHT. IF IT IS NECESSARY FOR TRENCHES TO REMAIN OPEN, STEEL PLATES, CAPABLE OF TRAFFIC BEARING, SHALL BE USED TO COMPLETELY COVER THE TRENCH.
13. ALL SEWER VALVES, BOXES AND FRAMES & COVERS SHALL BE SET AND ADJUSTED TO FINISHED GRADE.
14. CONTRACTOR MUST PROVIDE MONUMENTED SURVEY MARKERS PER PUBLIC WORKS AGREEMENT.
15. THE DEVELOPER SHALL COORDINATE WITH THE TOWN OF EASTON TO SCHEDULE INSTALLATION OF ALL NECESSARY ROADWAY SAFETY SIGNAGE AND ROAD NAME BLADES. SIGNAGE SHALL BE INSTALLED AT THE START OF CONSTRUCTION AND MAINTAINED BY THE TOWN OF EASTON THROUGHOUT THE COMPLETION OF THE WORK AT THE EXPENSE OF THE DEVELOPER. THE DEVELOPER SHALL PAY INVOICES UPON RECEIPT FROM THE TOWN OF EASTON.
16. ALL PVC, PE, AND HDPE PIPE, OTHER THAN PIPE RUNS BETWEEN GRAVITY SEWER MANHOLES, SHALL HAVE A CONTINUOUS, SINGLE STRAND, 8–GAUGE UNCOATED COPPER TRACER WIRE LOCATED BENEATH THE PIPE. THE WIRE SHALL BE STUBBED INTO ALL METER PITS, VACUUM VALVE PITS, CLEANOUTS, AND DIVISION VALVE BOXES.
17. ONCE CONSTRUCTION IS COMPLETE, AS–BUILT PLAN CERTIFICATION SHALL BE SUBMITTED BY EITHER A PROFESSIONAL ENGINEER OR PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF MARYLAND TO ENSURE ALL CONSTRUCTION IS IN COMPLIANCE WITH THE SPECIFICATIONS AND APPROVED PLANS.

STATEMENT OF PURPOSE AND INTENT

THE SITE IS LOCATED ON THE WEST SIDE OF ELLIOTT ROAD IN THE TOWN OF EASTON. THE SITE IS CURRENTLY VACANT. TWO (2) NEW CLIMATE CONTROLLED SELF STORAGE BUILDINGS ARE PROPOSED FOR THIS DEVELOPMENT.

THE PURPOSE OF THIS PRELIMINARY SITE PLAN IS TO OBTAIN APPROVAL FROM THE TOWN OF EASTON PLANNING AND ZONING AND TOWN OF EASTON PLANNING COMMISSION FOR THE PROPOSED DEVELOPMENT.

TOWN OF EASTON PLANNING AND ZONING

TOWN OF EASTON ENGINEER

EASTON UTILITIES – ENGINEER

PROFESSIONAL CERTIFICATION.
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 17660 EXPIRATION DATE: 2024

STATE OF MARYLAND WILLIAM THOMAS DAVIS No. 17660 REGISTERED PROFESSIONAL ENGINEER

8/2/2023
DATE SEAL

DAVIS, MOORE, SHEARON & ASSOCIATES, LLC
ENGINEERING, DRAFTING/DESIGN,
ENVIRONMENTAL SERVICES & SURVEYING
P.O. BOX 80
CENTREVILLE, MARYLAND 21617
PHONE : 1–443–262–9130
FAX : 1–443–262–9148

DATE	REVISION
6/7/2023	PER 06/22 ESDR COMMENTS
7/3/2023	PER 06/23 ESDR MTG
8/2/2023	PER 07/23 PC COMMENTS AND SPRINKLERS

TITLE SHEET
FOR THE DEVELOPMENT OF
CLIMATE CONTROLED SELF STORAGE
ON THE LANDS OF
FRIEL STORAGE, LLC.
IN THE TOWN OF EASTON, 1st Elect. Dist., TALBOT Co., MARYLAND
TAX MAP – 109, PARCEL – 2849

DATE MAY '22	SCALE AS SHOWN
JOB No. 2022009	DRAWN BY WJM
FOLDER Ref. 109–2022009	DESIGNED BY BD
SHEET No. – C–1	
CADD FILE – 22009C01	

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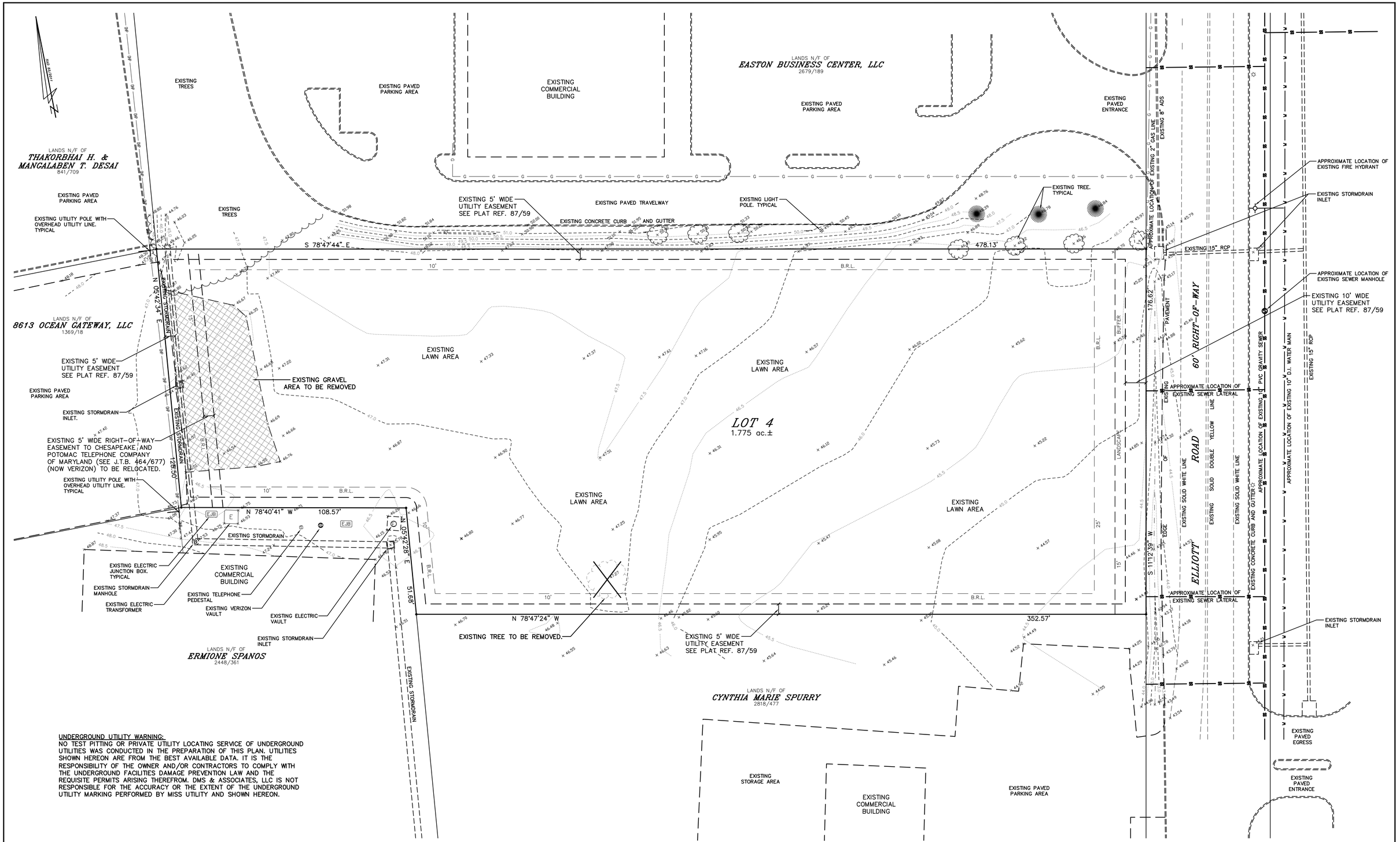

UNDERGROUND UTILITY WARNING:
NO TEST PITTING OR PRIVATE UTILITY LOCATING SERVICE OF UNDERGROUND UTILITIES WAS CONDUCTED IN THE PREPARATION OF THIS PLAN. UTILITIES SHOWN HEREON ARE FROM THE BEST AVAILABLE DATA. IT IS THE RESPONSIBILITY OF THE OWNER AND/OR CONTRACTORS TO COMPLY WITH THE UNDERGROUND FACILITIES DAMAGE PREVENTION LAW AND THE REQUISITE PERMITS ARISING THEREFROM. DMS & ASSOCIATES, LLC IS NOT RESPONSIBLE FOR THE ACCURACY OR THE EXTENT OF THE UNDERGROUND UTILITY MARKING PERFORMED BY MISS UTILITY AND SHOWN HEREON.

GRAPHIC SCALE

20 0 10 20 40

1 inch = 20 ft.

TOWN OF EASTON PLANNING AND ZONING

TOWN OF EASTON ENGINEER

EASTON UTILITIES - ENGINEER

PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 17660 EXPIRATION DATE: 2024

STATE OF MARYLAND
WILLIAM DENNIS DUNN
No. 17660
8/31/2024
PROFESSIONAL ENGINEER

8/2/2023
DATE SEAL

DAVIS, MOORE, SHEARON & ASSOCIATES, LLC
ENGINEERING, DRAFTING/DESIGN, ENVIRONMENTAL SERVICES & SURVEYING
P.O. BOX 80
CENTREVILLE, MARYLAND 21617
PHONE : 1-443-262-9130
FAX : 1-443-262-9148

DATE	REVISION
6/7/2023	PER 06/22 ESDR COMMENTS
7/3/2023	PER 06/23 ESDR MTG
8/2/2023	PER 07/23 PC COMMENTS AND SPRINKLERS

EXISTING CONDITIONS AND DEMOLITION PLAN

FOR THE DEVELOPMENT OF

CLIMATE CONTROLLED SELF STORAGE

ON THE LANDS OF

FRIEL STORAGE, LLC.

IN THE TOWN OF EASTON, 1st Elect. Dist., TALBOT Co., MARYLAND

TAX MAP – 109, PARCEL – 2849

DATE MAY '22	SCALE 1" = 20'
JOB No. 2022009	DRAWN BY WJM
FOLDER Ref. 109-2022009	DESIGNED BY BD
SHEET No. – C-2	
CADD FILE – 22009C02	

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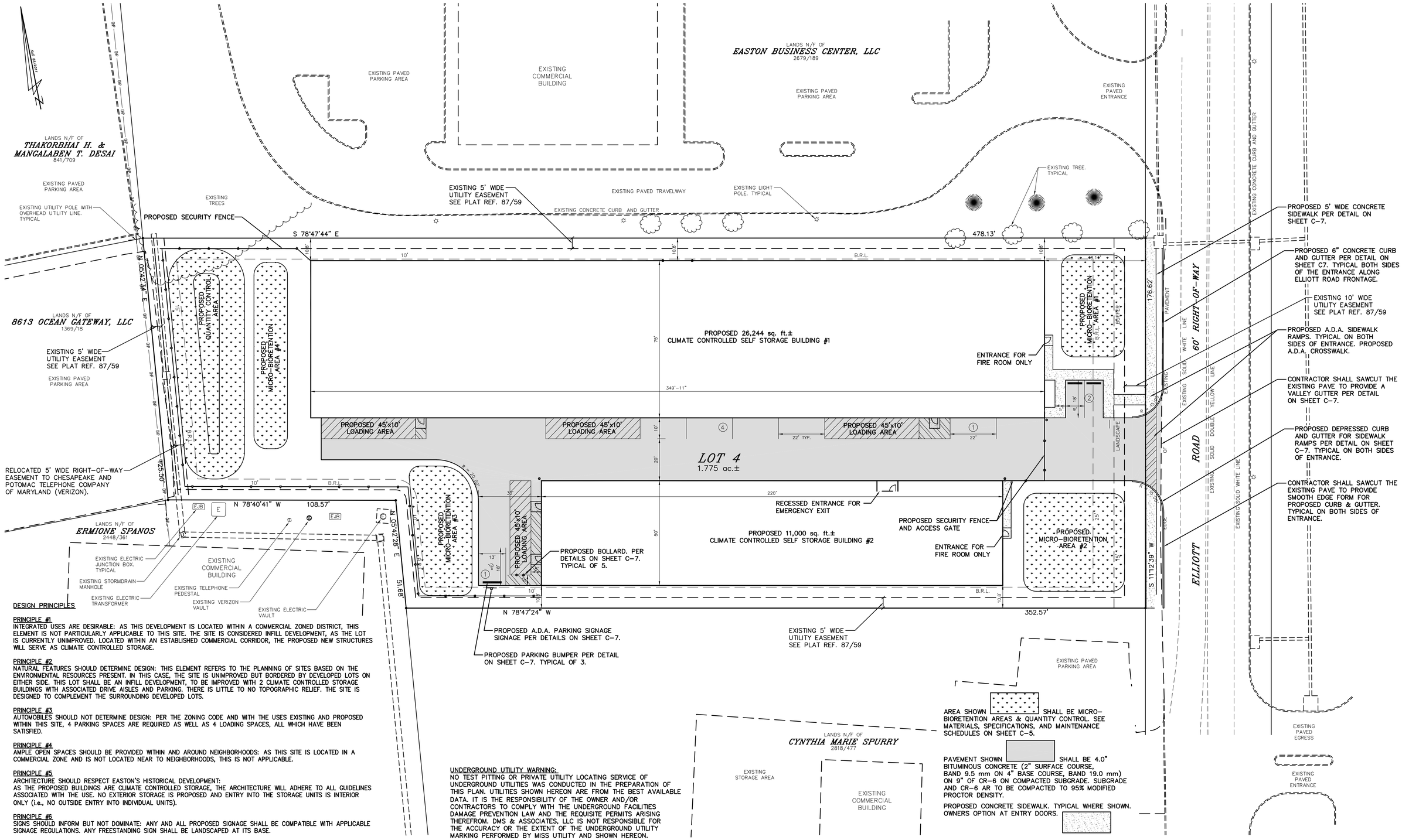

DESIGN PRINCIPLES

PRINCIPLE #1
INTEGRATED USES ARE DESIRABLE: AS THIS DEVELOPMENT IS LOCATED WITHIN A COMMERCIAL ZONED DISTRICT, THIS ELEMENT IS NOT PARTICULARLY APPLICABLE TO THIS SITE. THE SITE IS CONSIDERED INFILL DEVELOPMENT, AS THE LOT IS CURRENTLY UNIMPROVED. LOCATED WITHIN AN ESTABLISHED COMMERCIAL CORRIDOR, THE PROPOSED NEW STRUCTURES WILL SERVE AS CLIMATE CONTROLLED STORAGE.

PRINCIPLE #2
NATURAL FEATURES SHOULD DETERMINE DESIGN: THIS ELEMENT REFERS TO THE PLANNING OF SITES BASED ON THE ENVIRONMENTAL RESOURCES PRESENT. IN THIS CASE, THE SITE IS UNIMPROVED BUT BORDERED BY DEVELOPED LOTS ON EITHER SIDE. THIS LOT SHALL BE AN INFILL DEVELOPMENT, TO BE IMPROVED WITH 2 CLIMATE CONTROLLED STORAGE BUILDINGS WITH ASSOCIATED DRIVE AISLES AND PARKING. THERE IS LITTLE TO NO TOPOGRAPHIC RELIEF. THE SITE IS DESIGNED TO COMPLEMENT THE SURROUNDING DEVELOPED LOTS.

PRINCIPLE #3
AUTOMOBILES SHOULD NOT DETERMINE DESIGN: PER THE ZONING CODE AND WITH THE USES EXISTING AND PROPOSED WITHIN THIS SITE, 4 PARKING SPACES ARE REQUIRED AS WELL AS 4 LOADING SPACES, ALL WHICH HAVE BEEN SATISFIED.

PRINCIPLE #4
AMPLE OPEN SPACES SHOULD BE PROVIDED WITHIN AND AROUND NEIGHBORHOODS: AS THIS SITE IS LOCATED IN A COMMERCIAL ZONE AND IS NOT LOCATED NEAR TO NEIGHBORHOODS, THIS IS NOT APPLICABLE.

PRINCIPLE #5
ARCHITECTURE SHOULD RESPECT EASTON'S HISTORICAL DEVELOPMENT:
AS THE PROPOSED BUILDINGS ARE CLIMATE CONTROLLED STORAGE, THE ARCHITECTURE WILL ADHERE TO ALL GUIDELINES ASSOCIATED WITH THE USE. NO EXTERIOR STORAGE IS PROPOSED AND ENTRY INTO THE STORAGE UNITS IS INTERIOR ONLY (i.e., NO OUTSIDE ENTRY INTO INDIVIDUAL UNITS).

PRINCIPLE #6
SIGNS SHOULD INFORM BUT NOT DOMINATE: ANY AND ALL PROPOSED SIGNAGE SHALL BE COMPATIBLE WITH APPLICABLE SIGNAGE REGULATIONS. ANY FREESTANDING SIGN SHALL BE LANDSCAPED AT ITS BASE.

PRINCIPLE #7
NEIGHBORHOODS SHOULD CONTAIN A DIVERSITY OF HOUSING TYPES: THIS PRINCIPLE IS NOT APPLICABLE TO OUR REQUEST.

PRINCIPLE #8
RESIDENTIAL DEVELOPMENT SHOULD BE INTERESTING PLACES: THIS PRINCIPLE IS NOT APPLICABLE TO OUR REQUEST.

PRINCIPLE #9
NEIGHBORHOODS SHOULD CONNECT: THIS PRINCIPLE IS NOT APPLICABLE TO OUR REQUEST.

GRAPHIC SCALE
20 0 10 20 40
1 inch = 20 ft.

UNDERGROUND UTILITY WARNING:
NO TEST PITTING OR PRIVATE UTILITY LOCATING SERVICE OF UNDERGROUND UTILITIES WAS CONDUCTED IN THE PREPARATION OF THIS PLAN. UTILITIES SHOWN HEREON ARE FROM THE BEST AVAILABLE DATA. IT IS THE RESPONSIBILITY OF THE OWNER AND/OR CONTRACTORS TO COMPLY WITH THE UNDERGROUND FACILITIES DAMAGE PREVENTION LAW AND THE REQUISITE PERMITS ARISING THEREFROM. DMS & ASSOCIATES, LLC IS NOT RESPONSIBLE FOR THE ACCURACY OR THE EXTENT OF THE UNDERGROUND UTILITY MARKING PERFORMED BY MISS UTILITY AND SHOWN HEREON.

TOWN OF EASTON PLANNING AND ZONING

TOWN OF EASTON ENGINEER

EASTON UTILITIES - ENGINEER

PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 17660 EXPIRATION DATE: 2024

STATE OF MARYLAND
WILLIAM THOMAS DAVIS
No. 17660
8/31/2024
PROFESSIONAL ENGINEER

8/2/2023
DATE SEAL

DAVIS, MOORE, SHEARON & ASSOCIATES, LLC
ENGINEERING, DRAFTING/DESIGN,
ENVIRONMENTAL SERVICES & SURVEYING
P.O. BOX 80
CENTREVILLE, MARYLAND 21617
PHONE : 1-443-262-9130
FAX : 1-443-262-9148

DATE	REVISION
6/7/2023	PER 06/22 ESDR COMMENTS
7/3/2023	PER 06/23 ESDR MTG
8/2/2023	PER 07/23 PC COMMENTS AND SPRINKLERS

PRELIMINARY SITE PLAN
FOR THE DEVELOPMENT OF
CLIMATE CONTROLLED SELF STORAGE
ON THE LANDS OF
FRIEL STORAGE, LLC.
IN THE TOWN OF EASTON, 1st Elect. Dist., TALBOT Co., MARYLAND
TAX MAP - 109, PARCEL - 2849

DATE MAY '22	SCALE 1" = 20'
JOB No. 2022009	DRAWN BY WJM
FOLDER Ref. 109-2022009	DESIGNED BY BD
SHEET No. - C-3	
CADD FILE - 22009C03	

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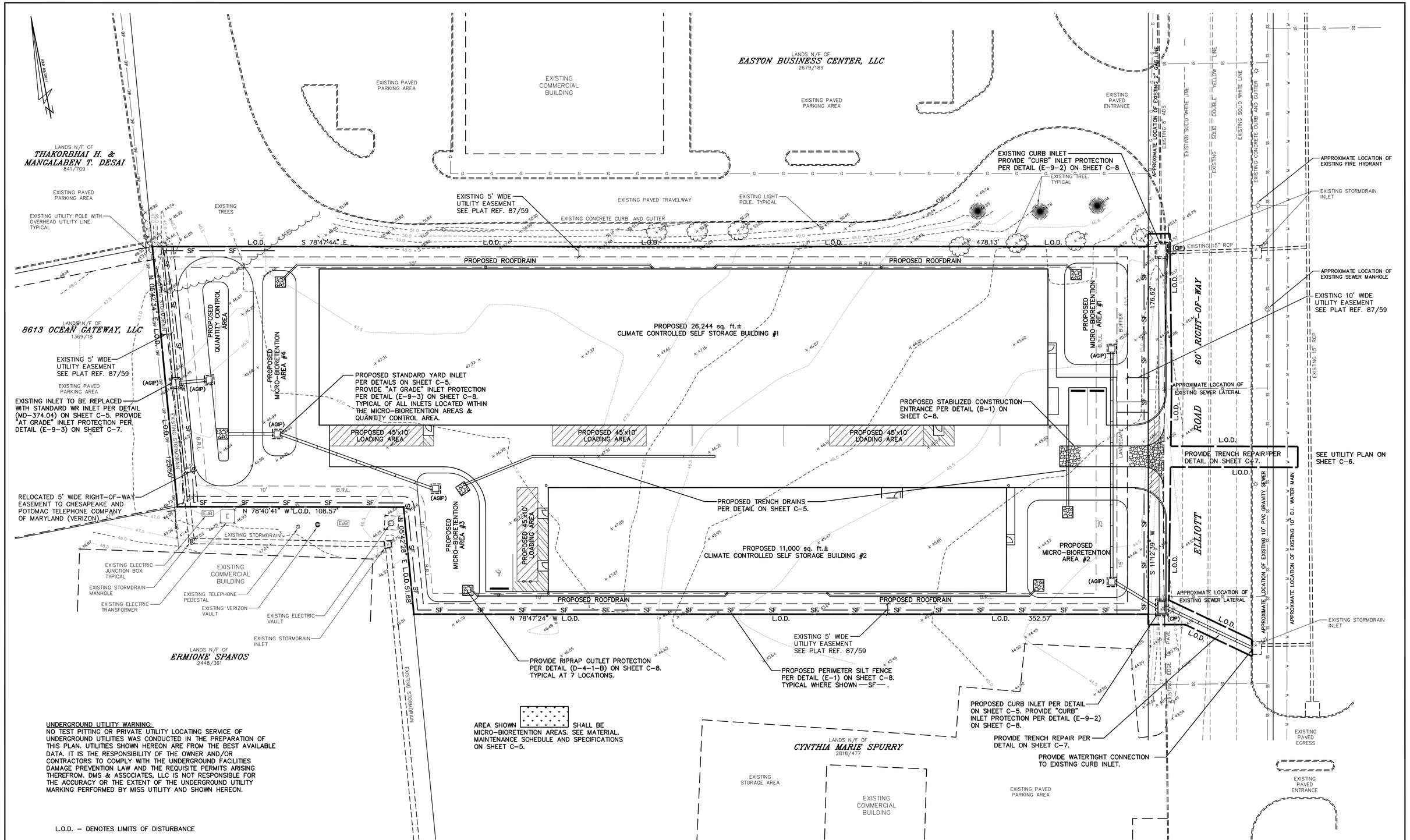

UNDERGROUND UTILITY WARNING:
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L.O.D. – DENOTES LIMITS OF DISTURBANCE

NOTE:
SEDIMENT AND EROSION CONTROL WILL BE STRICTLY ENFORCED

NOTE:
FOLLOWING INITIAL DISTURBANCE, PERMANENT OR TEMPORARY, STABILIZATION SHALL BE COMPLETED WITHIN 3 CALENDAR DAYS ON ALL PERIMETER CONTROLS AND SLOPES GREATER THAN 3:1 AND 7 DAYS ON ALL OTHER DISTURBED AREAS ON THE SITE.

GRAPHIC SCALE
20 0 10 20 40
1 inch = 20 ft.

TOWN OF EASTON PLANNING AND ZONING

TOWN OF EASTON ENGINEER

EASTON UTILITIES – ENGINEER

PROFESSIONAL CERTIFICATION:
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STATE OF MARYLAND WILLIAM JAMES MOORE No. 17660 REGISTERED PROFESSIONAL ENGINEER

8/2/2023
DATE SEAL

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PRELIMINARY STORMWATER MANAGEMENT AND SEDIMENT & EROSION CONTROL PLAN

FOR THE DEVELOPMENT OF

CLIMATE CONTROLLED SELF STORAGE

ON THE LANDS OF

FRIEL STORAGE, LLC.

IN THE TOWN OF EASTON, 1st Elect. Dist., TALBOT Co., MARYLAND

TAX MAP – 109, PARCEL – 2849

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SHEET No. – C-4	
CADD FILE – 22009C04	

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BIORETENTION MAINTENANCE SCHEDULE

DESCRIPTION	METHOD	FREQUENCY	TIME OF THE YEAR
SOIL			
INSPECT AND REPAIR EROSION REPLACEMENT OF SOILS IF PONDING TIME EXCEEDS 48 HOURS	VISUAL	MONTHLY	MONTHLY
ORGANIC LAYER			
RE-MULCH ANY VOID AREAS	BY HAND	WHENEVER NEEDED	WHENEVER NEED
REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER (OPTIONAL)	BY HAND	ONCE EVERY TWO TO THREE YEARS	SPRING
ADD FRESH MULCH LAYER	BY HAND	YEARLY	SPRING
PLANTS			
REMOVAL AND REPLACEMENT OF ALL DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT	SEE PLANTING SPECS.	YEARLY	3/15 to 4/30
INSPECT FOR DISEASE/PEST PROBLEMS	VISUAL	ONCE A MONTH (AVERAGE)	INSPECT MORE FREQUENTLY IN WARMER MONTHS
DETERMINE IF TREATMENT IS WARRANTED. USE LEAST TOXIC TREATMENT APPROACH	BY HAND	N/A	VARIES, DEPENDS ON DISEASE OR INSECT INFESTATION
WATERING OF PLANT MATERIAL SHALL TAKE PLACE FOR FOURTEEN CONSECUTIVE DAYS AFTER PLANTING HAS BEEN COMPLETED UNLESS THERE IS SUFFICIENT NATURAL RAINFALL	BY HAND	IMMEDIATELY AFTER COMPLETION OF PROJECT	N/A
REMOVE STAKES AND WIRES AFTER 6 MONTHS	BY HAND	AFTER TREES HAVE TAKEN ROOT	REMOVE STAKES AND WIRES WHEN POSSIBLE, BUT AT LEAST BY SIX MONTHS TIME
REMOVE TAGS AFTER 6 MONTHS	BY HAND	AT END OF WARRANTEE PERIOD	

MATERIAL SPECIFICATIONS FOR BIORETENTION

MATERIAL	SPECIFICATION	SIZE	NOTES
PLANTINGS	SEE APPENDIX A, TABLE A.4	SEE PLAN	PLANTINGS ARE SITE-SPECIFIC – SEE LANDSCAPE PLAN FOR PLANT SPECIES
PLANTINGS SOILS (2' to 4' DEEP)	LOAMY SAND (60% to 65%) & COMPOST (35% to 40%) or SANDY LOAM (30%), COARSE SAND (30%) & COMPOST (40%)	N/A	USDA SOIL TYPES LOAMY SAND OR SANDY LOAM; CLAY CONTENT < 5%
ORGANIC CONTENT	Min. 10% BY DRY WEIGHT (ASTM D 2974)		
MULCH	SHREDDED HARDWOOD		AGED 6 MONTHS, MINIMUM; NO PINE OR WOOD CHIPS
PEA GRAVEL DIAPHRAGM	PEA GRAVEL; ASTM-D-448	No. 8 or No. 9 (1/8" to 3/8")	
CURRENT DRAIN	ORNAMENTAL STONE; WASHED COBBLES	STONE: 2" to 5"	
GEOTEXTILE (SIDES ONLY)	SEE APPENDIX A, TABLE A.4	N/A	PE TYPE 1 NONWOVEN
GRAVEL (UNDERDRAINS AND INFILTRATION BERMS)	AASHTO M-43	No. 57 or No. 6 AGGREGATE (3/8" to 3/4")	
UNDERDRAIN PIPING	F 758, TYPE PS 28 or AASHTO M-278	4" to 6" RIGID (SCH-40) PVC or SDR-35	SLOTTED OR PERFORATED PIPE; 3/8" PERF. @ 6" ON CENTER, 4 HOLES PER ROW; MINIMUM OF 3" OF GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES. PERFORATED PIPE SHALL BE WRAPPED WITH 1/4" GALVANIZED HARDWARE CLOTH
POURED IN PLACE CONCRETE (IF REQUIRED)	MSHA MIX No. 3; f_c = 3500 psi @ 28 DAYS, NORMAL WEIGHT, AIR-ENTRAINED; REINFORCING TO MEET ASTM-615-60	N/A	ON-SITE TESTING OF POURED-IN-PLACE CONCRETE REQUIRED: 28 DAY STRENGTH AND SLUMP TEST; ALL CONCRETE DESIGN (CAST-IN-PLACE OR PRE-CAST) NOT USING PREVIOUSLY APPROVED STATE OR LOCAL STANDARDS REQUIRES DESIGN DRAWINGS SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND – DESIGN TO INCLUDE MEETING ACI CODE 350.R/89; VERTICAL LOADING [H-10 OR H-20]; ALLOWABLE HORIZONTAL LOADING (BASED ON SOIL PRESSURES); AND ANALYSIS OF POTENTIAL CRACKING
SAND	AASHTO M-6 or ASTM-C-33	0.02" to 0.04"	SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE (AASHTO) #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTION ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND

ESD SUMMARY CHART

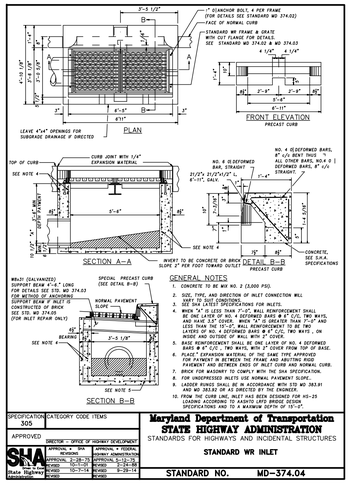
DRAINAGE AREA	TYPE OF ESD PRACTICE	NAME OF ESD PRACTICE (STRUCTURE NAME)	ON-SITE OR OFF-SITE STRUCTURE	RUNOFF CURVE NUMBER (RCN) WEIGHTED	MARYLAND GRID COORDINATE NAD 83 METERS NORTHING	MARYLAND GRID COORDINATE NAD 83 METERS EASTING	ESD PRACTICE TOTAL DRAINAGE AREA (ACRES)	ESD PRACTICE IMPERVIOUS DRAINAGE AREA (ACRES)	SURFACE AREA OF ESD PRACTICE (ACRES)	TARGET PE (INCHES)	ACTUAL PE (INCHES)	TARGET ESDv (CU.FT.)	ACTUAL ESDv (CU.FT.)
1	MICRO-BIORETENTION (M-7)	MICRO BIO #1	ON	92	123240.31	481890.29	0.3286	0.2617	0.0235	1.8	2.5	1670	2287
2	MICRO-BIORETENTION (M-7)	MICRO BIO #2	ON	94	123206.64	481880.99	0.3204	0.2443	0.0392	1.8	4.36	1558	3730
3	MICRO-BIORETENTION (M-7)	MICRO BIO #3	ON	96	123225.45	481791.39	0.4174	0.3660	0.0268	1.8	2.05	2335	2608
4	MICRO-BIORETENTION (M-7)	MICRO BIO #4	ON	93	123256.89	481772.10	0.3688	0.2752	0.0189	1.8	2.02	1755	1957

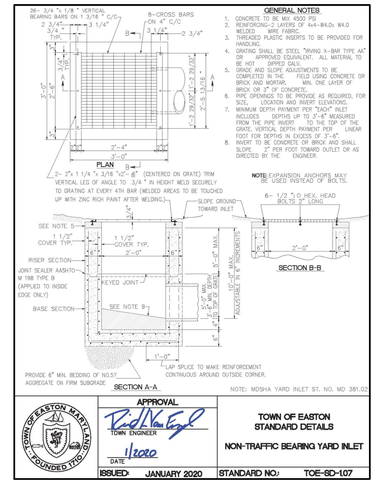
TOWN OF EASTON STANDARD DETAILS - ESD SUMMARY CHART - STANDARD NO. TOE-SWM-7.01

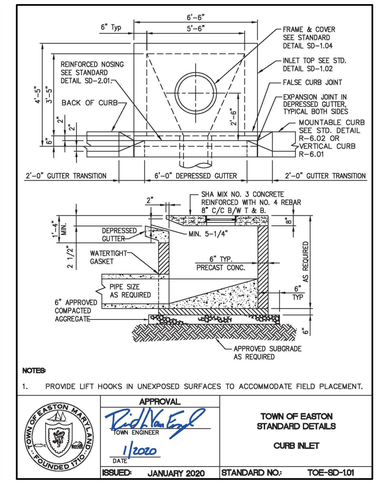
PRACTICE	DA (ACRES)	IMPERVIOUS (ACRES)	RCN**** (POST)	Tc (MINUTES)	PRE 2-YEAR (cfs)	POST 2-YEAR (cfs)	W.S.E.	PRE 10-YEAR (cfs)	POST 10-YEAR (cfs)	W.S.E.	PRE 100-YEAR (cfs)	POST 100-YEAR (cfs)	W.S.E.
DETENTION POND (DA #1, BACK)	1.0145	0.6412	91	6 (MIN.)	1.04*	1.00*	45.90*	2.07*	1.96*	46.75*	4.22*	9.55*	47.07*
ESD DEVICES (DA #2, FRONT)***	0.7596	0.5272	92	6 (MIN.)	1.39**	0.04**	45.84**	2.85**	2.56**	46.02**	6.02**	6.28**	46.20**

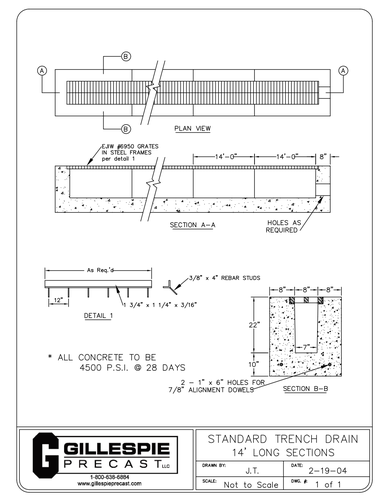
TOWN OF EASTON STANDARD DETAILS - SWM QUANTITIY SUMMARY CHART - STANDARD NO. TOE-SWM-7.02

* VALUES ARE FROM TR-20 AND DO NOT CONSIDER REDUCED CURVE NUMBER COMPUTATIONS
** VALUES ARE FROM TR-20 AND CONSIDER REDUCED CURVE NUMBER COMPUTATIONS AND VOLUME PROVIDED IN ESD DEVICES FOR QUANTITY CONTROL
*** Extra Storage Provided in ESD Device to Address 10yr Quantity Control Requirement
**** VALUES DO NOT CONSIDER REDCUDED CURVE NUMBER COMPUTATIONS









B.4.C Specifications for Micro-Bioretention

1. Materials Specifications

The allowable materials to be used in bioretention area are detailed in Table B.4.1

2. Filtering Media or Planting Soil

The soil shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the bioretention area that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR 15.08.01.05.

The planting soil shall be tested and shall meet following criteria:

- –Soil Component – Loamy Sand or Sandy Loam (USDA Soil Textural Classification)
- –Organic Content – Minimum 10% by dry weight (ASTM D 2974). In general, this can be met with a mixture of loamy sand (60%-65%) and compost (35% to 40%) or sandy loam (30%), coarse sand (30%), and compost (40%).
- –Clay Content – Media shall have a clay content of less than 5%.
- –pH Range – Should be between 5.5 – 7.0. Amendments (e.g., lime, iron sulfate plus sulfur) may be mixed into the soil to increase or decrease pH.

There shall be at least one soil test per project. Each test shall consist of both the standard soil test for pH, and additional tests of organic matter, and soluble salts. A textural analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the topsoil was excavated.

3. Compaction

It is very important to minimize compaction of both the base of bioretention practices and the required backfill. When possible, use excavation hoes to remove original soil. If practices are excavated using a loader, the contractor should use wide track or marsh track equipment or light equipment with turf type tires. Use of equipment with narrow tracks or narrow tires,rubber tires with large lugs, or high pressure tires will cause excessive compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure.

Compaction can be alleviated at the base of the bioretention facility by using a primary tilling operation such as a chisel plow, ripper, or subsoiler. These tilling operations are to refracture the soil profile through the 12 inch compaction zone. Substitute methods must be approved by the engineer. Rototillers typically do not till deep enough to reduce the effects of compaction from heavy equipment.

Rototill 2 to 3 inches of sand into the base of the bioretention facility before backfilling the optional sand layer. Pump any ponded water before preparing (rototilling) base.

When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade.

When backfilling the bioretention facility, place soil in lifts 12" to 18". Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Grade bioretention materials with light equipment such as a compact loader or a dozer/loader with marsh tracks.

4. Plant Material

Recommended plant material for micro-bioretention areas can be found in Appendix A.

5. Plant Installation

Compost is a better organic material source, is less likely to float, and should be placed in the invert and other low areas. Mulch should be placed in surrounding to a uniform thickness of 2" to 3". 3?. Shredded or chipped hardwood mulch is the only accepted mulch. Pine mulch and wood chips will float and move to the perimeter of the bioretention area during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance.

Rootstock of the plant materials shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/8th of the ball is above final grade surface. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting ball. Set and maintain the plant straight during the entire planting process. Thoroughly water ground bed cover after installation.

Trees shall be braced using 2" by 2" stakes only as necessary and for the first growing season only. Stakes are to be equally spaced on the outside of the tree ball.

Grasses and legume seed should be drilled into the soil to a depth of at least one inch. Grass and legume plugs shall be planted following the non-grass ground cover planting specifications.

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers defeats, or at a minimum, impedes this goal. only add fertilizer if wood chips or mulch are used to amend the soil. Rototill urea fertilizer at a rate of 2 pounds per 1000 square feet.

6. Underdrains

Underdrains should meet the following criteria:

- –Pipe–Should be 4" to 6" diameter, slotted or perforated rigid plastic pipe (ASTMF 758, Type PS 28, or AASHTO-M-278) in a gravel layer. The preferred material is slotted, 4" rigid pipe (e.g., PVC or HDPE).
- –Perforations–If perforated pipe is used, perforations should be 3" diameter located 6" on center with a minimum of four holes per row. Pipe shall be wrapped with a ¼" (No. 4 or 4x4) galvanized hardware cloth.
- –Gravel–The gravel layer (No. 57 stone preferred) shall be at least 3" thick above and below the underdrain.
- –The main collector pipe shall be at a minimum 0.5% slope.
- –A rigid, non-perforated observation well must be provided (one per every 1,0000 square feet) to provide a clean-out port and monitor performance of the filter.
- –A 4" layer of pea gravel (1/8" to 3/8" stone) shall be located between the filter media and underdrain to prevent migration of fines into the underdrain. This layer may be considered part of the filter bed when bed thickness exceeds 24".

The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

7. Miscellaneous

The bioretention facility may not be constructed until all contributing drainage area has been stabilized.

INSPECTION REQUIREMENTS DURING CONSTRUCTION

THE CONTRACTOR SHALL NOTIFY THE TOWN OF EASTON ENGINEERING DEPARTMENT AT 410-820-8822, THREE (3) DAYS IN ADVANCE OF BEGINNING CONSTRUCTION FOR THE FOLLOWING:

FOR MICRO-BIORETENTION AREA:
- (a) DURING EXCAVATION TO SUBGRADE
- (b) DURING PLACEMENT OF BACKFILL OF UNDERDRAIN SYSTEMS;
- (c) DURING PLACEMENT OF GEOTEXTILES AND ALL FILTER MEDIA
- (d) DURING CONSTRUCTION OF ANY APPURTENANT CONVEYANCE SYSTEMS SUCH AS STORMDRAIN SYSTEMS, INLETS, OUTLETS, AND FLOW DISTRIBUTION STRUCTURES.
- (e) UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

FOR STORMDRAINS:
- (a) DURING EXCAVATION TO SUBGRADE
- (b) DURING PLACEMENT OF PIPES
- (c) DURING CONSTRUCTION OF ANY APPURTENANT CONVEYANCE SYSTEMS
- (d) DURING COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION

FOR QUANTITY CONTROL AREAS:
- (a) DURING EXCAVATION
- (b) DURING BERM INSTALLATION
- (c) DURING INSTALLATION OF PIPES, STRUCTURES, AND OVERFLOW WEIRS
- (d) DURING CONSTRUCTION OF ANY APPURTENANT CONVEYANCE SYSTEMS
- (e) DURING COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION

FINAL LOT GRADING TO ENSURE COMPLIANCE WITH ROOFTOP AND NON-ROOFTOP DISCONNECTION CREDIT CRITERIA

TOWN OF EASTON PLANNING AND ZONING

TOWN OF EASTON ENGINEER

EASTON UTILITIES – ENGINEER

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STORMWATER MANAGEMENT DETAILS AND SPECIFICATIONS

FOR THE DEVELOPMENT OF

CLIMATE CONTROLLED SELF STORAGE

ON THE LANDS OF

FRIEL STORAGE, LLC.

IN THE TOWN OF EASTON, 1st Elect. Dist., TALBOT Co., MARYLAND

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CADD FILE – 22009C05

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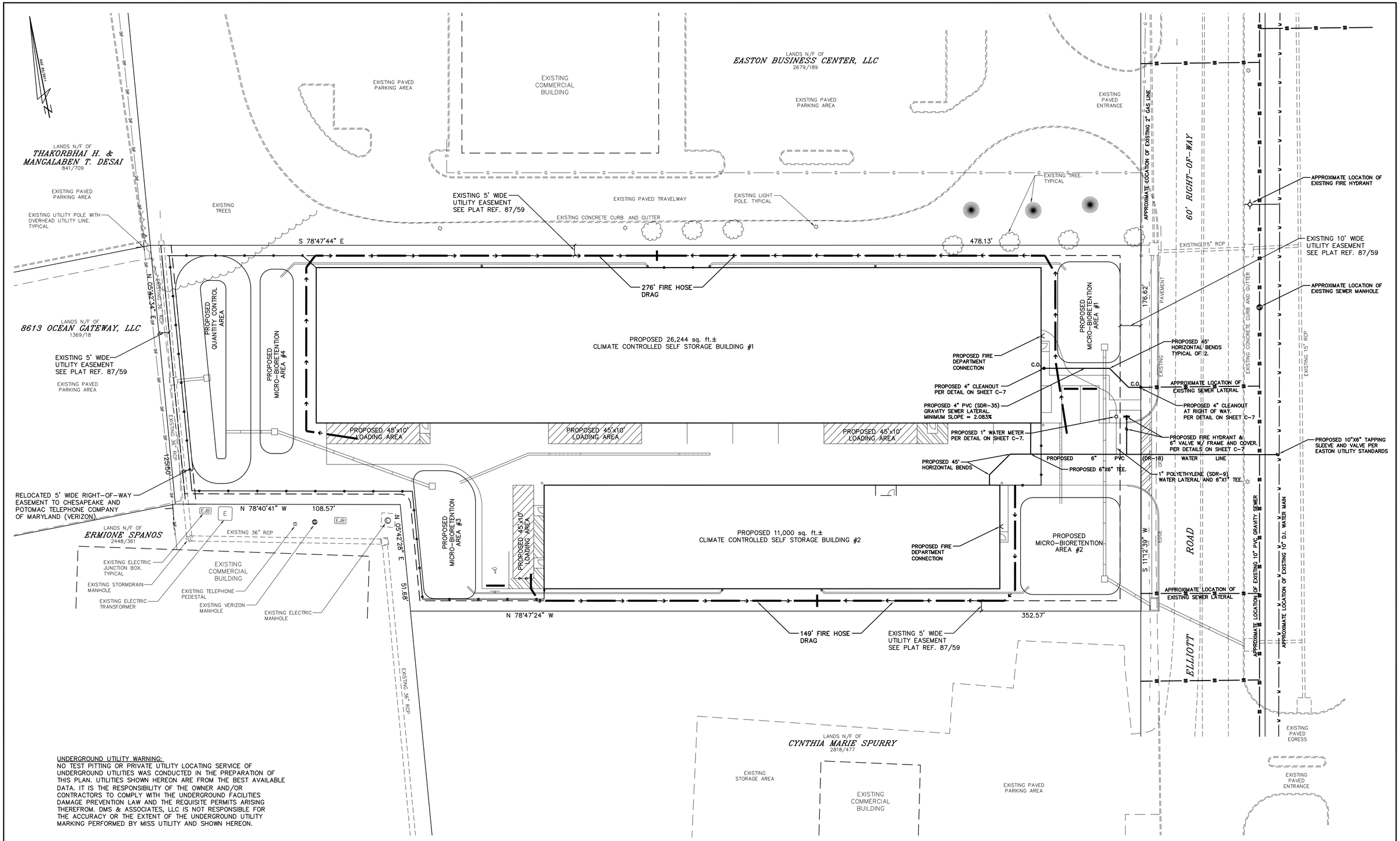

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TOWN OF EASTON PLANNING AND ZONING

TOWN OF EASTON ENGINEER

EASTON UTILITIES - ENGINEER

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PRELIMINARY UTILITY PLAN & EMERGENCY SITE ACCESS PLAN
FOR THE DEVELOPMENT OF
CLIMATE CONTROLLED SELF STORAGE
ON THE LANDS OF
FRIEL STORAGE, LLC.
IN THE TOWN OF EASTON, 1st Elect. Dist., TALBOT Co., MARYLAND
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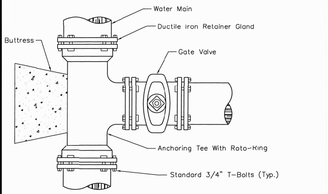
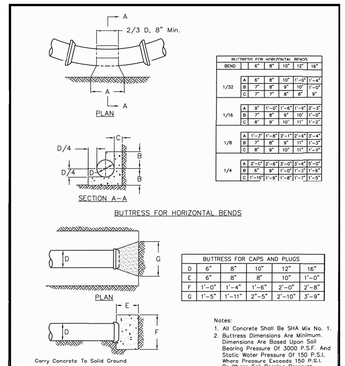


Note:

1. All Fittings Shall Be Mechanical Joint, With Ductile Iron Retainer Glands And Mega-Lug Or Equivalent Restraint.
2. Anchoring Tee Shall Be As Indicated And As Manufactured By Griffin Pipe Products, 1100 West Front St. Florance, N.J. 08518, Or An Approved Equal.
3. Retainer Gland Shall Be As Indicated And As Manufactured By Russell Pipe & Foundry Co. Inc., 910 Washington St., Alexander City, AL. 35010, Or An Approved Equal.

APPROVAL	REVISED	
EU MANAGER OF ENGINEERING DATE	AUG 1, 94 MAR 9, 95 MAR 1, 98	TOWN OF EASTON AND EASTON UTILITIES STANDARD DETAILS ANCHORING TEE
ISSUED: MAY 1, 1986		STANDARD NO. W-2.01



BUTTRESS FOR HORIZONTAL BENDS

BEND		4"	6"	10"	12"	18"
1/32	A	4"	6"	10"	1'-0"	1'-4"
	B	7"	8"	9"	10"	1'-0"
	C	7"	7"	8"	9"	9"
1/16	A	9"	1'-0"	1'-6"	2'-0"	2'-7"
	B	7"	8"	9"	10"	1'-0"
	C	9"	9"	10"	11"	1'-2"
1/8	A	1'-7"	1'-9"	2'-1"	2'-9"	3'-4"
	B	7"	8"	9"	11"	1'-3"
	C	9"	9"	10"	11"	1'-2"
1/4	A	2'-2"	2'-6"	3'-0"	3'-9"	5'-0"
	B	9"	9"	1'-0"	1'-2"	1'-6"
	C	9"	1'-0"	1'-0"	1'-2"	1'-3"

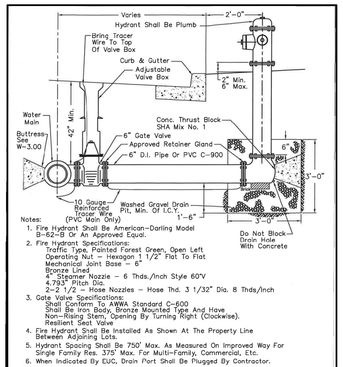
BUTTRESS FOR CAPS AND PLUGS

D	6"	8"	10"	12"	18"
E	6"	8"	8"	10"	1'-0"
F	1'-0"	1'-4"	1'-6"	2'-0"	2'-8"
G	1'-5"	1'-11"	2'-5"	2'-10"	3'-9"

Notes:

1. All Concrete Shall Be SHA Mix No. 1.
2. Buttress Dimensions Are Minimum. Dimensions Are Based Upon Soil Bearing Pressure Of 3000 P.S.F. And Static Water Pressure Of 150 P.S.I. Where Pressure Exceeds 150 P.S.I. Or Where Soil Bearing Pressure Is Less Than 3000 P.S.F. Special Buttress Design Is Required.

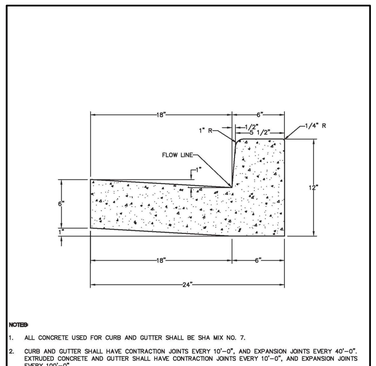
APPROVAL	REVISED	
EU MANAGER OF ENGINEERING DATE		TOWN OF EASTON AND EASTON UTILITIES STANDARD DETAILS BUTTRESSES FOR CAPS AND HORIZONTAL BENDS
ISSUED: MAY 1, 1986		STANDARD NO. W-3.00



Notes:

1. Fire Hydrant Shall Be American-Darling Model B-62-B Or An Approved Equal.
2. Fire Hydrant Specifications:
   Traffic Type, Painted Forest Green, Open Left Operating Nut – Hexagon 1 1/2" Flat To Flat Mechanical Joint Base – 6" Bronze Lined
   4" Steamer Nozzle – 6 Thds./Inch Style 60V 4.793" Pitch Dia.
   2–2 1/2" – Hose Nozzles – Hose Thd. 3 1/32" Dia. 8 Thds/Inch
3. Gate Valve Specifications:
   Shall Conform To AWWA Standard C-500 Shall Have Iron Body, Bronze Mounted Type And Have Non-Rising Stem, Opening By Turning Right (Clockwise). Resilient Seat Valve
4. Fire Hydrant Shall Be Installed As Shown At The Property Line Between Adjoining Lots.
5. Hydrant Spacing Shall Be 750' Max. As Measured On Improved Way For Single Family Res. 375' Max. For Multi-Family, Commercial, Etc.
6. When Indicated By CUC, Drain Port Shall Be Plugged By Contractor.
7. 10 Gauge Coated Solid Copper Tracer Wire Or An Approved Equal.
8. Thoroughly Tape Mechanical Connections With Electrical Tape.

APPROVAL	REVISED	
EU MANAGER OF ENGINEERING DATE	MAR 1, 94 AUG 1, 94 MAR 9, 95 MAR 1, 98 SEP 1, 09	TOWN OF EASTON AND EASTON UTILITIES STANDARD DETAILS FIRE HYDRANT
ISSUED: MAY 1, 1986	APR 4, 16	STANDARD NO. W-4.00

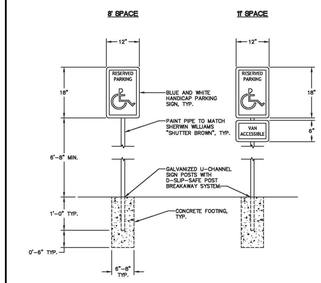


NOTES:

1. ALL CONCRETE USED FOR CURB AND GUTTER SHALL BE SHA MIX NO. 7.
2. CURB AND GUTTER SHALL HAVE CONTRACTION JOINTS EVERY 10'-0", AND EXPANSION JOINTS EVERY 40'-0". EXTRUDED CONCRETE AND GUTTER SHALL HAVE CONTRACTION JOINTS EVERY 10'-0", AND EXPANSION JOINTS EVERY 100'-0".
3. DEPRESSED CURB AND GUTTER SHALL BE UTILIZED AT HANDICAPPED RAMPS WHEN TRANSITIONING FROM STANDARD CURB AND GUTTER.
4. MAXIMUM GUTTER AND SLOPE ON CURB RETURNS SHALL BE 2% WHERE HANDICAPPED RAMPS ARE REQUIRED.

APPROVAL		
TOWN ENGINEER DATE 1/2020		TOWN OF EASTON STANDARD DETAILS STANDARD CURB AND GUTTER
ISSUED: JANUARY 2020		STANDARD NO: TOE-R-6.01

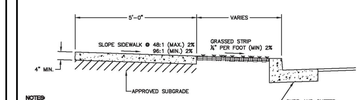
SIGN DETAILS FOR HANDICAP PARKING SPACES



NOTES:

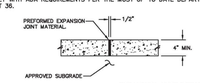
1. H/C PARKING SIGNS (US DOT STANDARD R7-8).

APPROVAL		
TOWN ENGINEER DATE 1/2020		TOWN OF EASTON STANDARD DETAILS SIGN DETAILS FOR HANDICAP PARKING SPACES
ISSUED: JANUARY 2020		STANDARD NO: TOE-SI-4.01



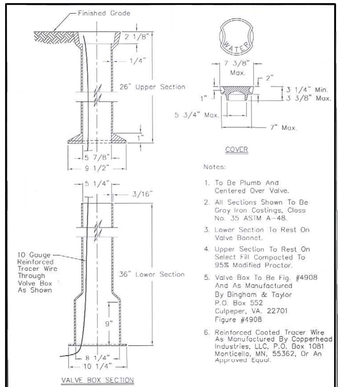
NOTES:

1. CONCRETE SHALL BE SHA MIX NO. 3.
2. CONTRACTION JOINTS SHALL BE TOOLED AT 5'-0" INTERVALS. (4' INTERVALS FOR 4' WIDE SIDEWALK)
3. EXPANSION JOINTS AT INTERVALS NOT GREATER THAN 20'-0".
4. ALL UNPAVED AREAS WITHIN STREET SIDELINES SHALL BE SEEDED OR SODDED PER SPECIFICATIONS.
5. SIDEWALKS AT DRIVEWAY LOCATIONS TO BE 8" THICK.
6. WHERE CONTINUOUS WIDTH OF TRAVEL IS LESS THAN 5'-0", PROVIDE PASSING ZONES AT AN INTERVAL NOT TO EXCEED 200' CENTER TO CENTER. ENTRANCES SHALL BE ACCEPTABLE PASSING ZONES PROVIDED PAVING WIDTH OF 3'-0" IS MAINTAINED AT 48:1 SLOPE.
7. GRASS STRIPS SHALL BE SLOPED AS TO PROVIDE POSITIVE DRAINAGE TOWARD STORMWATER FEATURES.
8. WHERE REVERSE SLOPES OF GRASS STRIPS AND SIDEWALKS ARE REQUIRED TO PROVIDE POSITIVE DRAINAGE TOWARDS A STORMWATER FEATURE, SPOT ELEVATIONS SHALL BE PROVIDED ON FRONT AND BACK OF SIDEWALK. (REVERSE SLOPES MUST BE APPROVED BY THE TOWN PRIOR TO CONSTRUCTION)
9. MAXIMUM SLOPE IN THE DIRECTION OF TRAVEL SHALL BE 5% IN LOCATIONS WITHOUT HANDICAPPED RAMPS.
10. SIDEWALKS SHALL COMPLY WITH ADA REQUIREMENTS PER THE MOST UP TO DATE DEPARTMENT OF JUSTICE REGULATION 28CFR PART 36.



EXPANSION JOINT DETAIL

APPROVAL		
TOWN ENGINEER DATE 1/2020		TOWN OF EASTON STANDARD DETAILS CONCRETE SIDEWALK
ISSUED: JANUARY 2020		STANDARD NO: TOE-R-7.01



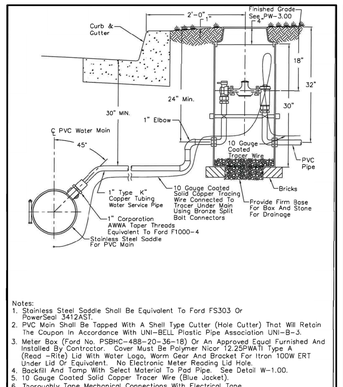
COVER

Notes:

1. To Be Plumb And Centered Over Valve.
2. All Sections Shown To Be Gray Iron Castings, Class No. 35 ASTM A-48.
3. Lower Section To Rest On Valve Bonnet.
4. Upper Section To Rest On Select Fill Compacted To 95% Modified Proctor.
5. Valve Box To Be Fig. #4908 And As Manufactured By Bingham & Taylor P.O. Box 552 Culpeper, VA. 22701 Figure #4908
6. Reinforced Coated Tracer Wire As Manufactured By Copperhead Industries, LLC, P.O. Box 1081 Monticello, MN. 55362, Or An Approved Equal.

VALVE BOX SECTION

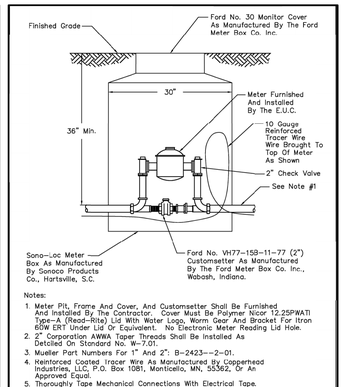
APPROVAL	REVISED	
EU MANAGER OF ENGINEERING DATE	AUG 1, 94 MAR 1, 98 SEP 1, 09	TOWN OF EASTON AND EASTON UTILITIES STANDARD DETAILS ADJUSTABLE VALVE BOX
ISSUED: MAY 1, 1986		STANDARD NO. W-6.00



Notes:

1. Stainless Steel Saddle Shall Be Equivalent To Ford FS303 Or PowerSeal 3412AST.
2. PVC Main Shall Be Tapped With A Shell Type Cutter (Hole Cutter) That Will Retain The Coupon In Accordance With UNI-BELL Plastic Pipe Association UNI-B-3.
3. Meter Box (Ford No. PSBHC-488-20-36-18) Or An Approved Equal Furnished And Installed By Contractor. Cover Must Be Polymer Nicor 12.25PWATI Type A (Read -Rite) Lid With Water Logo, Worm Gear And Bracket For Itron 100W ERT Under Lid Or Equivalent. No Electronic Meter Reading Lid Hole.
4. Backfill And Tamp With Select Material To Pad Pipe. See Detail W-1.00.
5. 10 Gauge Coated Solid Copper Tracer Wire (Blue Jacket).
6. Thoroughly Tape Mechanical Connections With Electrical Tape.

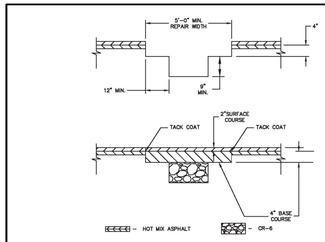
APPROVAL	REVISED	
EU MANAGER OF ENGINEERING DATE	MAR 9, 95 MAR 1, 98 SEP 1, 09 NOV 1, 10 JUL 20, 11 MAR 18, 19	TOWN OF EASTON AND EASTON UTILITIES STANDARD DETAILS 1" WATER SERVICE INSTALLATION – PVC WATER MAIN
ISSUED: AUG 1, 1994		STANDARD NO. W-7.02



Notes:

1. Meter Pit, Frame And Cover, And Customsetter Shall Be Furnished And Installed By The Contractor. Cover Must Be Polymer Nicor 12.25PWATI Type-A (Read-Rite) Lid With Water Logo, Worm Gear And Bracket For Itron 60W ERT Under Lid Or Equivalent. No Electronic Meter Reading Lid Hole.
2. 2" Corporation AWWA Taper Threads Shall Be Installed As Detailed On Standard No. W-7.01.
3. Mueller Part Numbers For 1" And 2": B-2423-—-2-01.
4. Reinforced Coated Tracer Wire As Manufactured By Copperhead Industries, LLC, P.O. Box 1081, Monticello, MN, 55362, Or An Approved Equal.
5. Thoroughly Tape Mechanical Connections With Electrical Tape.

APPROVAL	REVISED	
EU MANAGER OF ENGINEERING DATE	MAR 1, 98 FEB 1, 06 MAR 1, 07 SEP 1, 09 NOV 1, 10	TOWN OF EASTON AND EASTON UTILITIES STANDARD DETAILS 1" AND 2" METER INSTALLATION
ISSUED: MAY 1, 1986	JUL 20, 11	STANDARD NO. W-7.03

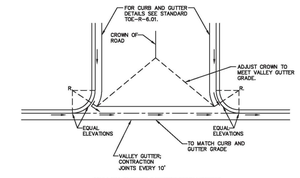


NOTES:

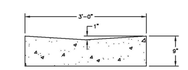
1. PAVEMENT SHALL BE SAW CUT FULL DEPTH OF THE EXISTING PAVEMENT SECTION. ALL CUTS SHALL BE MADE IN STRAIGHT LINES.
2. IF PATCH FALLS WITHIN 2' OF EXISTING CURB OR EDGE OF PAVING, CONTINUE RESTORATION TO EDGE OF PAVE.
3. SURFACE COURSE: 2" OF 9.5mm SUPERPAVE.
   BASE COURSE: 4" OF 9.5mm, 12.5mm OR 19.0 mm SUPERPAVE IN 2–2" LIFTS./NOTE: IF SC & BC ARE BOTH 9.5mm, THEY MAY BE DONE IN 2–3" LIFTS.
4. ADDITIONAL MILL AND OVERLAY MAY BE REQUIRED WHEN MULTIPLE PAVEMENT REPAIRS ARE LOCATED IN THE SAME RELATIVE VICINITY. LIMITS OF MILL AND OVERLAY, WHEN REQUIRED, WILL BE DETERMINED BY THE TOWN ENGINEER.
5. WHEN SURFACE ARES OF REPAIR EXCEEDS 100 SF, THE 2" SURFACE COURSE SHALL EXTEND ENTIRE WIDTH OF TRAVEL LANE(S) AND/OR SHOULDER. LIMITS OF MILL AND OVERLAY, WHEN REQUIRED, WILL BE DETERMINED BY THE TOWN ENGINEER.
6. CONTRACTOR MUST CONFIRM LIMITS OF PAVEMENT REQUIRED WITH TOWN ENGINEER PRIOR TO START OF PAVEMENT WORK.

APPROVAL		
TOWN ENGINEER DATE 1/2020		TOWN OF EASTON STANDARD DETAILS PERMANENT ASPHALT PAVEMENT REPAIR FOR UTILITY TRENCHES
ISSUED: JANUARY 2020		STANDARD NO: TOE-R-5.01-3

VALLEY GUTTER AND INTERSECTION DETAIL



VALLEY GUTTER INTERSECTION DETAIL



VALLEY GUTTER DETAIL

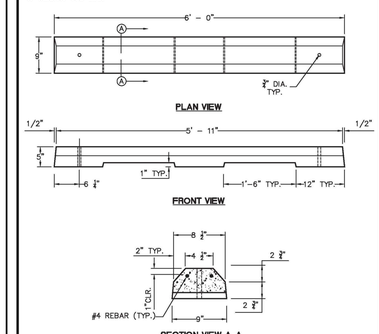
NOTES:

1. ALL CONCRETE USED FOR CURB AND GUTTER SHALL BE MIX NO. 7.

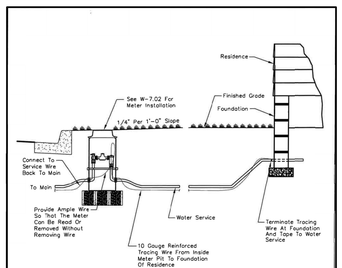
APPROVAL		
TOWN ENGINEER DATE 1/2020		TOWN OF EASTON STANDARD DETAILS VALLEY GUTTER AND INTERSECTION DETAIL
ISSUED: JANUARY 2020		STANDARD NO: TOE-R-6.05

NOTES:

1. CONCRETE STRENGTH: 5000 PSI AT 28 DAYS.
2. REINFORCEMENT: ASTM A-615 GRADE 60.
3. PINS AVAILABLE: #5 REBAR AT 18" LONG.
4. WEIGHT: 170 LBS.



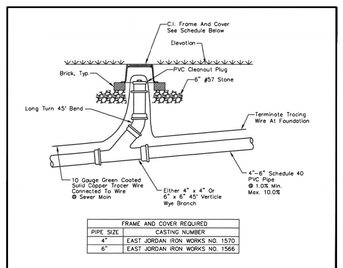
APPROVAL		
TOWN ENGINEER DATE 1/2020		TOWN OF EASTON STANDARD DETAILS 6' PRECAST CONCRETE WHEEL STOP
ISSUED: JANUARY 2020		STANDARD NO: TOE-SI-5.01



Notes:

1. 10 Gauge Solid Copper Tracer Wire; Blue Jacket.
2. Thoroughly Tape Mechanical Connections With Electrical Tape.
3. Installation Of Water Service Into Foundation Per Town Of Easton Standards.

APPROVAL	REVISED	
EU MANAGER OF ENGINEERING DATE	JUN 23, 97 MAR 1, 98 MAR 1, 07 SEP 1, 09 SEP 15,14	TOWN OF EASTON AND EASTON UTILITIES STANDARD DETAILS WATER SERVICE CONNECTION
ISSUED: JUNE 5, 1997	AUG 6, 19	STANDARD NO. W-7.04

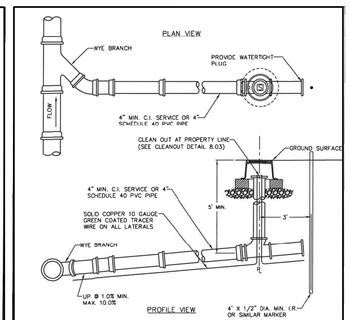


FRAME AND COVER REQUIRED	
PIPE SIZE	CASTING NUMBER
4"	EAST JORDAN IRON WORKS NO. 1570
6"	EAST JORDAN IRON WORKS NO. 1566

NOTES:

1. SERVICE CONNECTION SHALL BE PERPENDICULAR TO MAIN.
2. ADD DETECTOR TAPE TO ALL PIPE.
3. USE CLASS 50 DUCTILE IRON FOR SERVICES WITH LESS THAN 3' OF COVER.
4. NO SPLICES ON TRACER WIRE. MECHANICAL CONNECTORS ONLY IN CLEANOUTS.
5. EMBED PIPE IN #57 STONE FROM 6" BELOW INVERT TO 2" ABOVE CROWN.

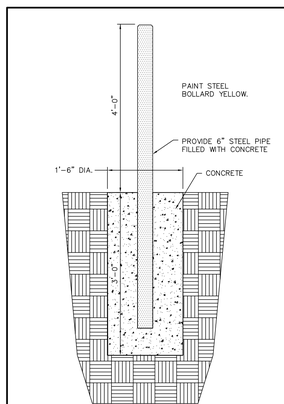
APPROVAL	REVISED	
EU MANAGER OF ENGINEERING JAN 15, 19 DATE		EASTON UTILITIES STANDARD DETAILS GRAVITY SEWER CLEANOUTS
ISSUED: JAN 15, 2019		STANDARD NO. SS-8.03



NOTES:

1. SERVICE CONNECTION SHALL BE PERPENDICULAR TO MAIN.
2. ADD DETECTOR TAPE TO ALL PIPE.
3. USE CLASS 50 DUCTILE IRON FOR SERVICES WITH LESS THAN 3' OF COVER.
4. NO SPLICES ON TRACER WIRE. MECHANICAL CONNECTORS ONLY IN CLEANOUTS.
5. EMBED PIPE IN #57 STONE FROM 6" BELOW INVERT TO 2" ABOVE CROWN.

APPROVAL	REVISED	
EU MANAGER OF ENGINEERING JAN 15, 2019 DATE	MAY 1, 89 AUG 1, 94 MAR 9, 95 FEB 1, 02 JAN 15, 19	EASTON UTILITIES STANDARD DETAILS SEWER COLLECTION SYSTEM SEWER HOUSE SERVICE
ISSUED: MAY 1, 1986		STANDARD NO. SS-8.00



PIPE BOLLARD DETAIL

NOT TO SCALE

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TOWN OF EASTON PLANNING AND ZONING

TOWN OF EASTON ENGINEER

EASTON UTILITIES – ENGINEER

PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 17660 EXPIRATION DATE: 2024

STATE OF MARYLAND – WILLIAM THOMAS MOORE JR. – No. 17660 – PROFESSIONAL ENGINEER

8/2/2023
DATE SEAL

DAVIS, MOORE, SHEARON & ASSOCIATES, LLC
ENGINEERING, DRAFTING/DESIGN,
ENVIRONMENTAL SERVICES & SURVEYING
P.O. BOX 80
CENTREVILLE, MARYLAND 21617
PHONE : 1-443-262-9130
FAX : 1-443-262-9148

DATE	REVISION
6/7/2023	PER 06/22 ESDR COMMENTS
7/3/2023	PER 06/23 ESDR MTG
8/2/2023	PER 07/23 PC COMMENTS AND SPRINKLERS

SITE DETAILS

FOR THE DEVELOPMENT OF

CLIMATE CONTROLLED SELF STORAGE

ON THE LANDS OF

FRIEL STORAGE, LLC.

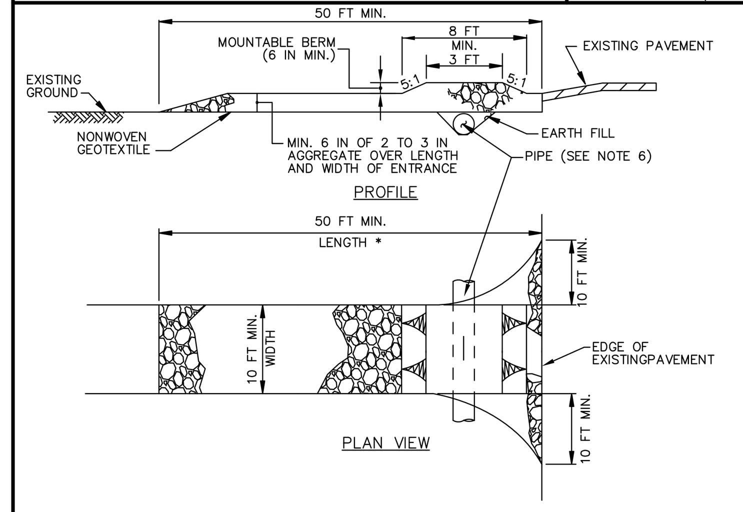
IN THE TOWN OF EASTON, 1st Elect. Dist., TALBOT Co., MARYLAND

TAX MAP – 109, PARCEL – 2849

DATE	SCALE
MAY '22	AS SHOWN
JOB No. 2022009	DRAWN BY WJM
FOLDER Ref. 109-2022009	DESIGNED BY BD
SHEET No. – C-7	
CADD FILE – 22009C07	

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS

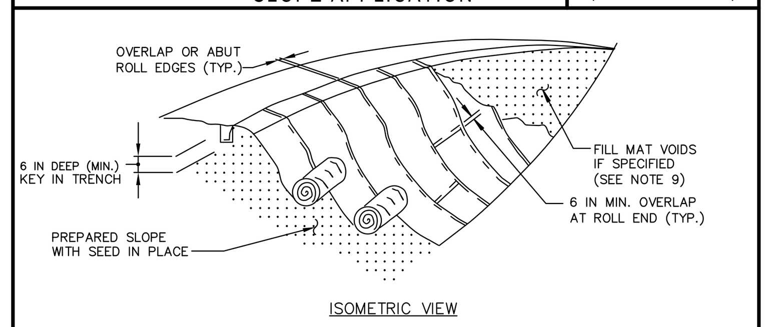
1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H–1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-D PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL: PSSMS – * lb/ft² (* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

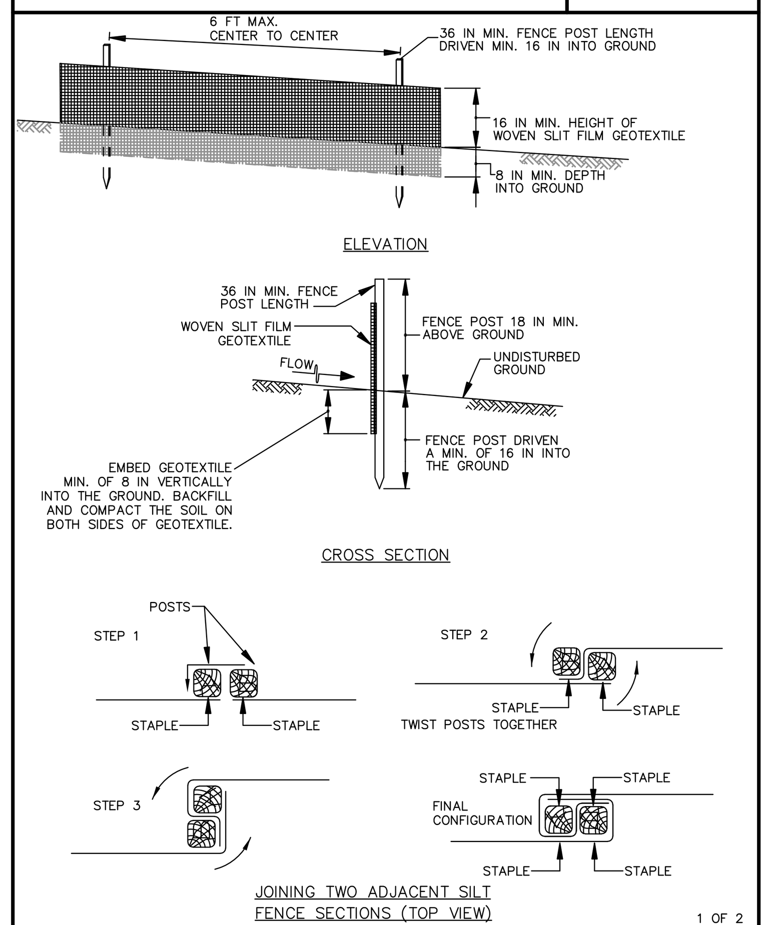
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON–DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON–LEACHING AND NON–TOXIC TO VEGETATION AND SEED GERMINATION AND NON–INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH–SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWN SLOPE. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: ——SF——



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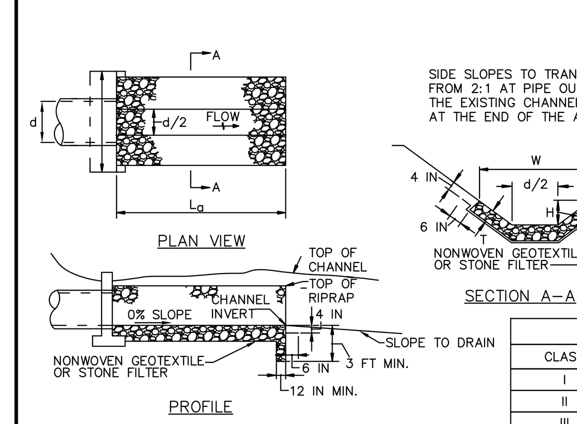
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL D-4-1-B ROCK OUTLET PROTECTION II

STANDARD SYMBOL: ROPII

DISCHARGE TO CONFINED CHANNEL SECTION



RIPRAP	
CLASS	THICKNESS (T)
I	19 IN
II	32 IN
III	46 IN

CONSTRUCTION SPECIFICATIONS

1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (⅜ TO 1½ INCH STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.
5. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE STONE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
7. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

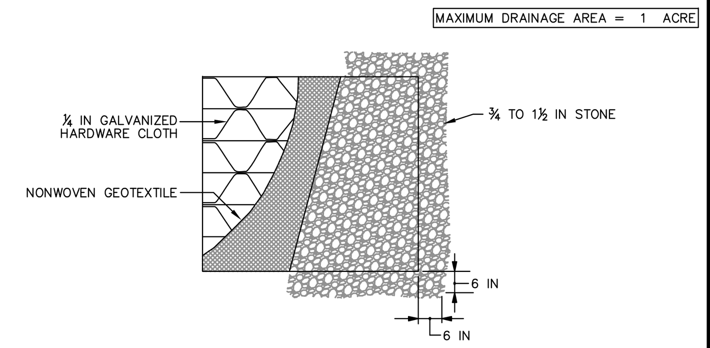
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

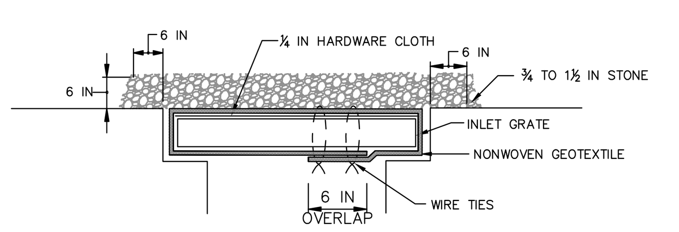
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-2 AT-GRADE INLET PROTECTION

STANDARD SYMBOL: AGIP

MAXIMUM DRAINAGE AREA = 1 ACRE





CONSTRUCTION SPECIFICATIONS

1. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS.
2. LIFT GRATE AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS. SECURE WITH WIRE TIES AND SET GRATE BACK IN PLACE.
3. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE 6 INCHES THICK ON THE GRATE.
4. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

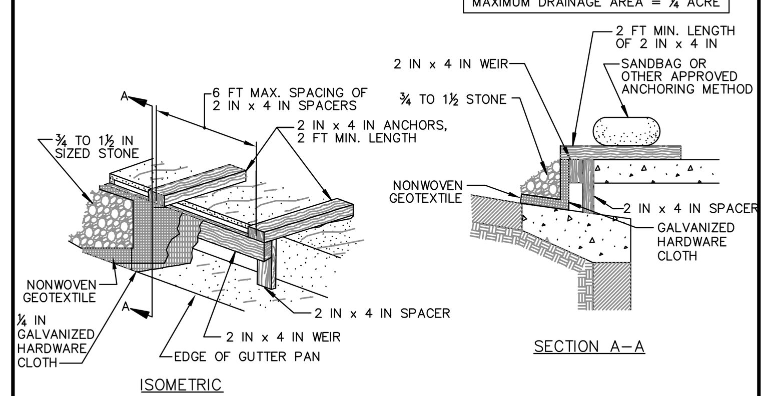
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-3 CURB INLET PROTECTION

STANDARD SYMBOL: CIP

MAXIMUM DRAINAGE AREA = ¼ ACRE



CONSTRUCTION SPECIFICATIONS

1. USE NOMINAL 2 INCH x 4 INCH LUMBER
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS.
3. NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART).
4. ATTACH A CONTINUOUS PIECE OF ¼ INCH GALVANIZED HARDWARE CLOTH, WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING IT 2 FEET BEYOND THROAT ON EACH SIDE.
5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2x4 WEIR.
6. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FEET LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
7. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
8. FORM THE HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND FACE OF CURB TO SPAN THE INLET OPENING. COVER THE HARDWARE CLOTH AND GEOTEXTILE WITH CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
9. AT NON–SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
10. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: ——SF——

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± $\frac{1}{16}$ INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID–SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H–1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

REVIEWED FOR THE TALBOT SOIL CONSERVATION DISTRICT AND MEET TECHNICAL REQUIREMENTS

APPROVED:

SHAWN SMITH, DISTRICT MANAGER ______ DATE ______
TALBOT SOIL CONSERVATION DISTRICT

NOTE: THE TALBOT SOIL CONSERVATION DISTRICT RESERVES THE RIGHT TO ADD, DELETE, MODIFY OR OTHERWISE ALTER THE EROSION CONTROL PROVISIONS OF THIS PLAN IN THE EVENT ADDITIONAL PROTECTION BECOMES NECESSARY.

DEVELOPERS CERTIFICATION

I, JAY FRIEL, HEREBY CERTIFY THAT ALL THE DEVELOPMENT AND/OR CONSTRUCTION SHALL BE DONE ACCORDING TO THIS PLAN OF EROSION AND SEDIMENT CONTROL.

OWNERS SIGNATURE ______ DATE ______

OWNERS NAME: JAY FRIEL, FRIEL STORAGE, LLC.

OWNERS ADDRESS: 47 PROSPECT BAY DR W
GRASONVILLE, MARYLAND 21638

OWNERS PHONE: 1–410–827–8811

1. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR OR SUBCONTRACTOR TO NOTIFY THE ENGINEER OF ANY DEVIATION FROM THIS PLAN. ANY CHANGE MADE IN THIS PLAN WITHOUT WRITTEN AUTHORIZATION FROM THE ENGINEER WILL PLACE RESPONSIBILITY FOR SAID CHANGE ON THE CONTRACTOR OR SUBCONTRACTOR.
2. ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATION OF ATTENDANCE AT THE DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF EROSION AND SEDIMENT BEFORE BEGINNING THE PROJECT.

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CONSTRUCTION SPECIFICATIONS

(MAXIMUM) SLOPE STEEPNESS LENGTH	(MAXIMUM) SLOPE LENGTH	SLOPE LENGTH
FLATTER THAN 50:1	UNLIMITED	UNLIMITED
50:1 to 10:1	125 ft.	1,000 ft.
10:1 to 5:1	100 ft.	750 ft.
5:1 to 3:1	60 ft.	500 ft.
3:1 to 2:1	40 ft.	250 ft.
2:1 AND STEEP	20 ft.	125 ft.

NOTE: IN AREAS LESS THAN 2% SLOPE AND SANDY SOILS (USDA FEDERAL CLASSIFICATION SYSTEM, SOIL CLASS A), MAXIMUM SLOPE LENGTH AND SILT FENCE LENGTH WILL BE UNLIMITED. IN THESE AREAS, SILT FENCE MAY BE THE ONLY PERIMETER CONTROL REQUIRED.

PHASE OF CONSTRUCTION

1. CONTACT THE MARYLAND DEPARTMENT OF THE ENVIRONMENT SEDIMENT AND EROSION CONTROL INSPECTOR AT 1–410–901–4020 AND TOWN OF EASTON AT 1–410–820–8822 A MINIMUM OF TWO (2) WEEKS PRIOR TO THE START OF CONSTRUCTION TO SCHEDULE A PRECONSTRUCTION MEETING.
2. INSTALL STABILIZED CONSTRUCTION ENTRANCE AT LOCATION SHOWN.
3. INSTALL PERIMETER SILT FENCE AT LOCATIONS SHOWN. MAINTAIN THROUGHOUT THE LIFE OF THE PROJECT.
4. STRIP TOPSOIL FROM THE LIMITS OF DISTURBANCE, REMOVE EXISTING GRAVEL AND DISPOSE OF OFF SITE AT AN APPROVED LANDFILL LOCATION.
5. IMPORT FILL FOR BUILDING PADS AND BEGIN BUILDING CONSTRUCTION.
6. INSTALL PROPOSED STORMDRAIN, ROOF LEADERS, AND REAR QUANTITY CONTROL SWM AREA WITH DEWATERING DEVICE FOR OUTFALL STRUCTURE. INSTALL INLET PROTECTION.
7. GRADE TRAVEL WAYS AND WALKWAYS WITH COMPACTED SUBBASE.
8. INSTALL CR–6 BASE FOR TRAVEL WAYS AND CONCRETE.
9. ONCE CONTRIBUTING DRAINAGE AREAS ARE ADEQUATELY STABILIZED AND AFTER NOTIFYING THE TOWN OF EASTON SWM INSPECTOR, INSTALL STORMWATER MANAGEMENT MICRO–BIRETENTION AREAS. INSTALL RIPRAP PROTECTION AND CONNECT ROOF LEADERS TO SWM AREA.INSTALL
10. INSTALL PROPOSED CURB AND GUTTER, CONCRETE PADS AND WALKS.
11. INSTALL BITUMINOUS CONCRETE BASE COURSE.
12. FINE GRADE ALL AREAS PER DESIGN GRADES AND REMOVE ALL EXCESS TOPSOIL AND OR FILL MATERIAL FROM THE SITE. STABILIZE ALL DISTURBED AREAS WITH TOPSOIL, SEED AND MULCH. INSTALL ALL LANDSCAPING AND SWM PLANTINGS.
13. INSTALL BITUMINOUS CONCRETE SURFACE COURSE.
14. UPON APPROVAL FROM THE MARYLAND DEPARTMENT OF THE ENVIRONMENT INSPECTOR, REMOVE ALL TEMPORARY SEDIMENT AND EROSION CONTROL DEVICES AND STABILIZE ALL DISTURBED AREAS PER PERMANENT STABILIZATION SPECIFICATIONS FOUND ON THIS SHEET.

GENERAL NOTES

1. Notification of Talbot County Soil Conservation District (410–822–1577) at least five (5) days prior to the start of work.
2. Prior to the start of work, the Contractor is to obtain Town approval of any proposed plan changes and sequence of construction, specifically relating to installation, inspection, maintenance and removal of erosion and sediment control measures.
3. Sediment control measures are not to be removed until the areas served have established vegetative cover, or with the permission of the Talbot County Sediment Control Inspector.
4. When pumping sediment–laden water, the discharge must be directed to an approved sediment trapping measure prior to release from the site.
5. All temporary stockpiles are to be located within areas protected by sediment control measures, and are to be temporary stabilized.
6. All sediment control dikes, swales, basins and flow lines to basins will be temporarily seeded immediately upon installation to reduce the contribution to sediment loading.
7. Disposal of excess earth materials on State or Federal property requires MDE Approval, otherwise materials are to be disposed of at a location approved by the local authority.
8. Temporary soil erosion control and sediment control measures are to be provided as per the approved plan prior to grading operations. Location adjustments are to be made in the field as necessary. The minimum area practical shall be disturbed for the minimum possible time.
9. If grading is completed out of a seeding season, graded areas are to be temporarily stabilized by mulch and mulch anchoring. Mulch material shall be unweathered, unchopped small grain straw spread at the rate of 2 to 2–1/2 tons per acre. Mulch anchoring to be accomplished by an approved method, use of a mulch anchoring tool is recommended where possible.
10. Implementation of the sediment control plan shall be in accordance with the "2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control", of the Department.
11. The Contractor is responsible for implementation and maintenance of the approved plan, and all other measures necessary to control, filter, or prevent sediment from leaving the site.
12. In case where stormwater management structures are a part of site development, removal of sediment control structures may not be accomplished before the contributing drainage area to the stormwater management structure is dewatered and stabilized.
13. On sites where infiltration techniques are utilized for the control of stormwater, extreme care must be taken to prevent all runoff from entering the structure during construction.
14. Sediment control for utility construction in areas outside of designed controls:
    - (a) Excavated trench material shall be placed on the high side of the trench.
    - (b) Immediately following pipe installation the trench shall be backfilled, compacted and stabilized at the end of each working day.
    - (c) Temporary silt fence or straw bale dikes shall be placed immediately downstream of any disturbed area intended to remain disturbed longer than one working day.
15. All points on construction ingress and egress shall be protected to prevent tracking of mud onto public ways.
16. Site information:

Total Area of Site	1.775 Acres
Area Disturbed	1.843 Acres
Area to be Roofed or Paved	1.17 Acres
Total Cut	____ cy*
Total Fill	____ cy*

* CUT AND FILL AMOUNTS ARE APPROXIMATE
THE CONTRACTOR SHALL DO A SEPARATE TAKE–OFF

EROSION & SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

1.) Contractor shall install soil erosion and sediment control devices prior to any grading. Following initial disturbance or re–disturbance, permanent or temporary stabilization shall be completed within three (3) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes greater than three (3) horizontal to one (1) vertical (3:1) and seven days (7) as to all other disturbed or graded areas on the project site.

2.) All temporary erosion and sediment control devices are to be provided as indicated on this plan, with location adjustments to be made in the field as necessary, and to be maintained at the end of each working day until project completion. The minimum area practical shall be disturbed for the minimal amount of time possible.

3.) Clearing and grubbing shall include all trees, brush, debris, root mat and organic materials to be removed.

4.) Temporary seeding shall be accomplished between February 15th through April 30th, or August 15th through November 30th. During other times, temporary mulching shall be provided.

5.) Temporary seeding shall conform to the following applications: 436 lbs. per acre of 10–20–20; 4,000 lbs. per acre of ground limestone, to be incorporated into the soil by disking or other suitable means. Annual rye grass shall be applied at a rate of 50 lbs. per acre using suitable equipment. Mulching shall be accomplished immediately after seeding

Seed Mixture (For Hazard Zone 7a) (From Table B–1)					Fertilizer Rate (10–20–20)	Lime Rate
No.	Species	Appl. Rate (lbs./ac.)	Seeding Dates	Seeding Depths		
	ANNUAL RYE GRASS	50 lbs.	2/15–4/30 8/15–11/30	1/2"	436 lb/ac 10 lb/ 1000 sf	2 tons/ac 90 lb/ 1000 sf
	BARLEY OATS WHEAT CEREAL RYE	96 lbs. 72 lbs. 120 lbs. 112 lbs.	2/15–4/30, 8/15–11/30 2/15–4/30, 8/15–11/30 2/15–4/30, 8/15–11/30 2/15–4/30, 8/15–12/15	1" 1" 1" 1"		
	FOXTAIL MILLET PEARL MILLET	30 lbs. 20 lbs.	5/1–8/14 5/1–8/14	1/2"		

6.) Mulching shall be unchopped, unrotted, small grain straw applied at a rate of 2–2 1/2 tons per acre. Anchor mulch with a mulch anchoring tool on the contour. Wood cellulose fiber may be used for anchoring straw at 750 lbs. per acre mixed with water at a maximum of 50 lbs. of wood cellulose fiber per 100 gals of water, or with a synthetic liquid binder according to manufacture recommendations. Wood cellulose fiber used as mulch must be applied at a net dry weight of 1,500 lbs. per acre. Mix wood cellulose fiber with water to attain a mixture with a maximum of 50 lbs. of wood cellulose fiber per 100 gals. of water.

7.) Permanent seeding shall be accomplished between March 1st through May 15th, or August 15th through October 15th. Permanent seeding at other than specified times will be allowed only upon written approval. Permanent seeding shall conform to the following applications: Permanent seeding for sites having disturbed over five (5) acres shall use fertilizer rates recommended by a soil testing agency and the recommendations provided in the Permanent Seeding Summary Table. Permanent seeding for conditions other than listed above shall be performed at the rates and dates as provided in the Permanent Seeding Summary Table below. Fertilizer and lime amendments shall be incorporated into the top 3" – 5" of the soil be disking or other suitable means. Mulching shall be accomplished as discussed in Item #6 of these specifications.

Seed Mixture (For Hazard Zone 7a) (From Table B–3)					Fertilizer Rate (10–20–20)			Lime Rate
No.	Species	Appl. Rate (lbs./ac.)	Seeding Dates	Seeding Depths	N	P205	K20	
7	CREEPING RED FESCUE KENTUCKY BLUEGRASS	60 lbs 15 lbs.	3/1–5/15 8/15–10/15	1/4" to 1/2"	45 lb/ac 1 lb/ 1000 sf	90 lb/ac 2 lb/ 1000 sf	90 lb/ac 2 lb/ 1000 sf	2 tons/ac 90 lb/ 1000 sf
8	TALL FESCUE	100 lbs.	3/1–5/15 8/15–10/15	1/4" to 1/2"				
9	TALL FESCUE KENTUCKY BLUEGRASS PERENNIAL RYEGRASS	60 lbs 40 lbs. 20 lbs.	3/1–5/15 8/15–10/15	1/4" to 1/2"				

8.) Any spoil or borrow will be placed at a site approved by the Soil Conservation District.

9.) All areas remaining or intended to remain disturbed for longer than seven (7) days shall be stabilized in accordance with the USDA, Natural Resources Conservation Service Standards and Specifications for Soil Erosion and Sediment Control in developing areas for critical area stabilization.

10) It will be the responsibility of the Contractor or Subcontractor to notify the Engineer of any deviation from this plan. Any change made in this plan without written authorization from the Engineer will place responsibility of said change on the Contractor or the Subcontractor.

THE FOLLOWING ITEMS HAVE BEEN ADDRESSED TO MEET THE REQUIREMENTS OF THE GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITY (NPDES NUMBER MDR10, STATE DISCHARGE PERMIT NUMBER 09GP).

1. UTILIZATION OF ENVIRONMENTAL SITE DESIGN.
2. MAINTENANCE OF LIMITS OF DISTURBANCE TO PROTECT NATURAL AREAS
3. CONTROL OF CONSTRUCTION EQUIPMENT AND VEHICLES
4. EVALUATION AND APPROPRIATE LIMITATION OF SITE CLEARING
5. EVALUATION AND DESIGNATION OF SITE AREA FOR PHASING AND SEQUENCING
6. IDENTIFICATION OF SOILS AT HIGH RISK FOR EROSION AND ADVANCED STABILIZATION TECHNIQUES TO BE USED
7. IDENTIFICATION OF STEEP SLOPES AND DESIGNATION OF LIMITATIONS ON CLEARING THEM
8. EVALUATION AND DESIGNATION OF STABILIZATION REQUIREMENTS AND TIME LIMITS AND PROTECTION MEASURES FOR DISCHARGES TO THE CHESAPEAKE BAY, IMPAIRED WATERS OR WATERS WITH AN ESTABLISHED TOTAL MAXIMUM DAILY LOAD (TMDL).

TOWN OF EASTON PLANNING AND ZONING

TOWN OF EASTON ENGINEER

EASTON UTILIITIES – ENGINEER

PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 17660 EXPIRATION DATE: 2024

STATE OF MARYLAND — WILLIAM THOMAS DAVIS, JR. — NO. 17660 — REGISTERED PROFESSIONAL ENGINEER

8/2/2023
DATE SEAL

DAVIS, MOORE, SHEARON & ASSOCIATES, LLC
ENGINEERING, DRAFTING/DESIGN, ENVIRONMENTAL SERVICES & SURVEYING
P.O. BOX 80
CENTREVILLE, MARYLAND 21617
PHONE : 1–443–262–9130
FAX : 1–443–262–9148

DATE	REVISION
6/7/2023	PER 06/22 ESDR COMMENTS
7/3/2023	PER 06/23 ESDR MTG
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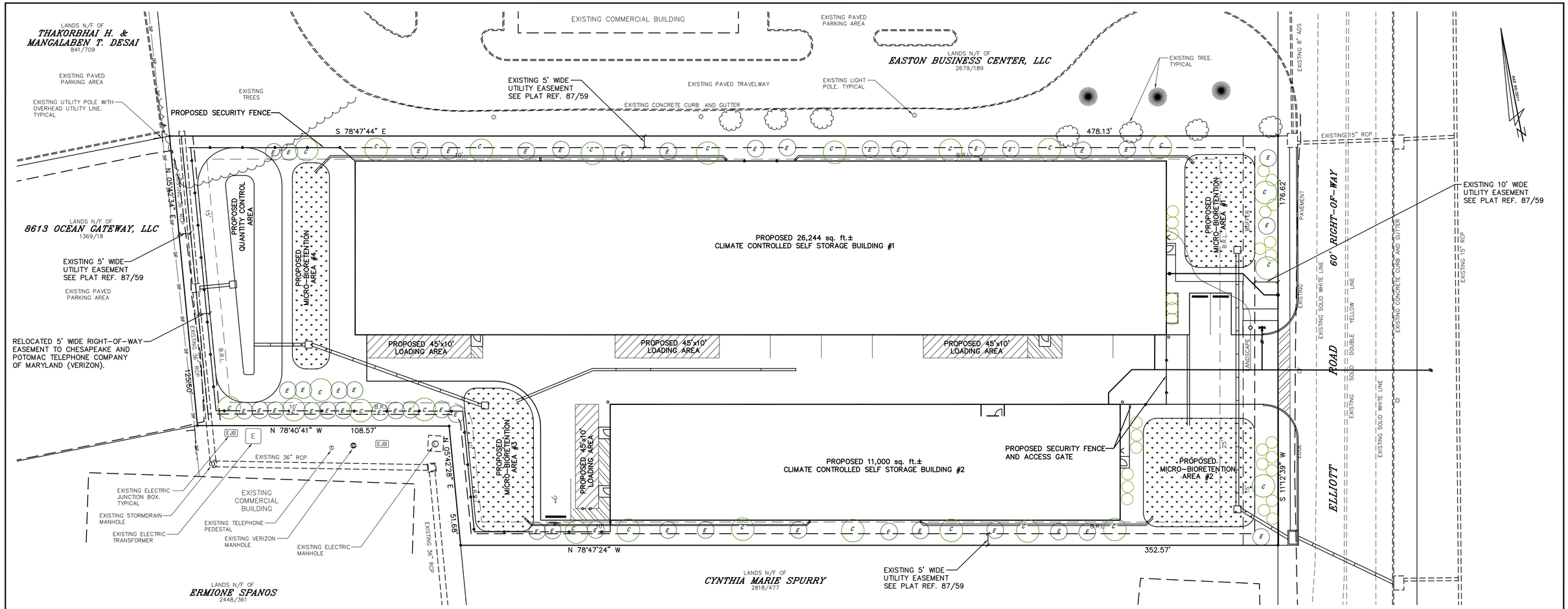
SEDIMENT AND EROSION CONTROL DETAILS AND SPECIFICATIONS

FOR THE DEVELOPMENT OF
CLIMATE CONTROLLED SELF STORAGE
ON THE LANDS OF
FRIEL STORAGE, LLC.
IN THE TOWN OF EASTON, 1st Elect. Dist., TALBOT Co., MARYLAND
TAX MAP – 109, PARCEL – 2849

DATE: MAY '22	SCALE: AS SHOWN
JOB No.: 2022009	DRAWN BY: WJM
FOLDER Ref.: 109–2022009	DESIGNED BY: BD

SHEET No. – C–8

CADD FILE – 22009C08



LANDSCAPE PLAN

NARRATIVE:

THIS SITE IS LOCATED WITHIN A COMMERCIAL ZONING DISTRICT, SURROUNDED BY DEVELOPED COMMERCIAL ESTABLISHMENTS. THERE IS CURRENTLY NO EXISTING FOREST ON SITE. THERE IS ONE DECIDUOUS TREE ON SITE, WHICH WILL BE REMOVED FOR CONSTRUCTION.

PER SECTION 28-1014.6 OF THE TOWN OF EASTON ZONING ORDINANCE, THE FOLLOWING LANDSCAPE PLANTINGS ARE REQUIRED IN THIS SECTION:

ONE (1) TREE PER 3,000 SF OF DISTURBED AREA PER SECTION 28-1014,6,F,1.
RESPONSE: DISTURBED AREA = 77,319 SQ.FT. (BUILDING AND PAVEMENT AREA), THUS 26 TREES ARE REQUIRED AND PROVIDED AS CANOPY AND EVERGREEN TREES IN THE BACK OF THE SITE.

ONE (1) TREE PER 10 INTERIOR PARKING LOT TREE PER SECTION 28-1014,6,F,2,a.
RESPONSE: JUST 6 PARKING SPACES ARE SPREAD THROUGHOUT THE SITE WITH NO FORMAL PARKING LOT. 1 CANOPY TREE IS REQUIRED FOR PARKING AND IS PROVIDED ONSITE NEAR THE ADA PARKING SPACE.

PARKING LOT SCREENING WITH AN EVERGREEN SHRUB HEDGE WHICH WILL GROW TO A MINIMUM OF 42" HEIGHT WITHIN 5 YEARS ALONG ALL STREET FRONTAGES, AND ALONG ALL, OR PORTIONS OF SIDES VISIBLE FROM A STREET, EXCLUDING THE BUILDING OR FACILITY ACCESS SIDES PER SECTION 28-1014,6,F,2,b.
RESPONSE: THEIR IS NO INTERIOR PARKING LOT, AS PATRONS WILL ENTER THE BUILDING FROM AN INTERNAL ENTRY SYSTEM AND WILL NOT STAY FOR AN EXTENDED PERIOD OF TIME. THEIR IS EXTENSIVE SCREENING ALONG THE FRONT STREET BUFFER IN ADDITION TO STORMWATER FEATURES WITH PLANTINGS, AS WELL AS LANDSCAPE PLANTINGS ALONG EITHER SIDE PROPERTY LINES.

BUILDING ENVELOPE PLANTINGS-ENTRANCE FACADES AND OTHER FACADES VISIBLE FROM A STREET SHALL INCORPORATE TREE PLANTINGS WITHIN 50' OF THESE BUILDING FACADES PER SECTION 28-1014,6,F,2,c
RESPONSE: NO VISITOR ENTRANCES ARE FROM STREET VISIBLE FACADES AS THE ELLIOTT ROAD FACING ENTRANCES ARE FOR FIRE SPRINKLER ROOM ACCESS ONLY, EACH WITH STORMWATER MANAGEMENT FEATURES IN FRONT OF THEM AND THE FRONT LANDSCAPE BUFFER.

BUILDING ENVELOPE PLANTINGS-ENTRANCE FACADES PER SECTION 28-1014,6,F,2,c
ONE (1) DECIDUOUS SHADE / CANOPY TREE PER EVERY 20' OF BUILDING FACADE PERIMETER VISIBLE FROM STREET FOR MONOLITHIC BUILDING FACADES. THERE IS AN OPTION SUBSTITUTE 1.5 EVERGREEN TREES OR UNDERSTORY TREE FOR 1 SHADE/CANOPY TREE UP TO 50% OF REQUIRED MINIMUM.
RESPONSE: BUILDING #1 NORTHERN FACADE IS APPROXIMATELY 350 FT, 350 FT / 1 TREE PER 20 FT OF FACADE = 17.5 OR 18 CANOPY TREES
OR IF 50% ARE AS EVERGREEN OR UNDERSTORY TREES AT 1:1.5 = 18 X 50% X 1.5 = 13.5 OR 14 EVERGREEN OR UNDERSTORY TREES AND 9 CANOPY TREES. TREES ARE PROVIDED ALONG THE NORTHERN FACADE OF BUILDING #1.
BUILDING #2 SOUTHERN FACADE IS 220 FT. 220 FT / 1 TREE PER 20 FT OF FACADE = 11 CANOPY TREES
OR IF 50% ARE AS EVERGREEN OR UNDERSTORY TREES AT 1:1.5 = 11 X 50% X 1.5 = 8.25 OR 8 EVERGREEN OR UNDERSTORY TREES AND 6 CANOPY TREES. TREES ARE PROVIDED ALONG THE SOUTHERN FACADE OF BUILDING #2.

SERVICE/LOADING AREAS SCREEN PER 28-1014,6,F,2,d
RESPONSE: SERVICE/LOADING AREAS ARE ON THE INTERIOR OF THE SITE ALONG DRIVE AISLES MOSTLY AND WHEN VIEWABLE ARE SCREEN BY SITE PERIMETER PLANTINGS. NO TRASH RECEPTACLE AREA IS PROPOSED.

EARTH BERMING AND DRAINAGE/SWM FEATURES PER 28-1014,6,F,2,e
RESPONSE: SWM AREAS WILL BE LANDSCAPE WITH APPROPRIATELY WATER TOLERANT PLANT TYPES THAT ARE AESTHETICALLY PLEASING.

BUFFERYARDS - BUFFERYARD 'D' BASED ON 50' INCREMENT, PROVIDE A 15' WIDTH WITH 1 PLANT UNIT AS 1 SHADE/CANOPY TREES, 1 EVERGREEN TREES & 5 SHRUBS PER 28-1014,7,E,4.
RESPONSE: A FRONT BUFFER PER THE CODE IS PROVIDED WHILE AVOIDING A 25' CLEAR SITE TRIANGLE AND SUBTRACTING THE ENTRANCE WIDTH. 176.67 FT RIGHT OF WAY LENGTH - 30 FT WIDE ENTRANCE = 146.76 FT. 146.76 FT / 1 PLANTING UNIT PER 50 FT = 2.94. 2.94 PLANTING UNITS X 1 SHADE/CANOPY TREE, 1 EVERGREEN TREE & 5 SHRUBS = 3 CANOPY TREES, 3 EVERGREEN TREES, AND 15 SHRUBS

1.) LANDSCAPE INSTALLER SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO COMMENCING WORK. INSTALLER SHALL INSURE THAT FINAL GRADES HAVE BEEN ESTABLISHED AND THE SITE IS READY FOR LANDSCAPE INSTALLATION.

2.) LANDSCAPE INSTALLER SHALL MAINTAIN THE LANDSCAPE IMPROVEMENT AREAS IN A CLEAN CONDITION, REMOVING DEBRIS DAILY AND AT THE COMPLETION OF THE INSTALLATION.

3.) INSTALLER SHALL LAYOUT ALL BEDS AND POSITION PLANTS PER THE PLANS. ADJUST AS REQUIRED FOR FIELD CONDITIONS. REPORT SIGNIFICANT ADJUSTMENTS TO THE OWNER FOR APPROVAL PRIOR TO PLANT INSTALLATION. ALL BED AREAS SHALL BE SPRAYED WITH HERBICIDE AS NEEDED TO KILL AND/OR REMOVE ALL WEED OR GRASS VEGETATION.

4.) EXCEPT FOR TREE SPADE INSTALLATIONS, ALL TREE PITS SHALL BE EXCAVATED TO A DEPTH SO THAT THE ROOT BALL WILL REST ON SOLID S OIL AT THE PROPER HEIGHT. STREET TREES PLANTING PITS SHALL BE EXCAVATED AND WORKED IN A RECTANGULAR FORM WITH THE SMALL DIMENSION TWCE THE DIAMETER OF THE ROOT BALL AND THE LARGE DIMENSION AT LEAST THREE TIMES THE DIAMETER OF THE ROOT BALL. OPEN AREA TREE PITS SHALL BE EXCAVATED TO A MINIMUM DIMENSION OF TWCE THE ROOTBALL WIDTH. TREES PLANTED ON SLOPES OR SIDE SWALES SHALL BE INSTALLED AT A HEIGHT RELATING TO THE UP HILL SIDE OF THE PIT, AND MOUNDED WITH SOIL AROUND THE LOWER SIDE. ALL SIDES AND BOTTOM OF TREE PLANTING PITS SHALL BE SCARIFIED OR LOOSENED TO PERMIT ROOT GROWTH. EXCAVATED SOILS THAT HAVE BEEN PREVIOUSLY UNDISTURBED SHALL BE LOOSENED AND UTILIZED FOR BACKFILL. COMPACTED SOILS THAT CANNOT BE RESTORED TO A REASONABLE PLANTING SOIL SHALL BE REMOVED AND REPLACED WITH FRIABLE NATIVE SOILS FROM THE REGION.

5.) ALL SHRUB PLANTING PITS, LANDSCAPE BEDS AND PLANTING MASS AREAS SHALL BE WORKED TO A DEPTH OF 12" (OR RAISED SLIGHTLY TO ACHIEVE A 12" FRIABLE SOIL DEPTH). SHRUB PLANTING AREAS SHALL BE WORKED TO 12" MINIMUM OUTSIDE THE ROOT BALL.

6.) ALL LANDSCAPE BEDS SHALL BE 'V' EDGED AND MULCHED WITH MINIMUM 3" DOUBLE SHREDDED HARDWOOD BARK MULCH, OR APPROVED EQUAL. MULCH TO FENCE LINES OR BACK OF CURBS WHERE APPROPRIATE TO ELIMINATE NARROW GRASS AREAS. AVOID MULCH PILED AGAINST TREE TRUNKS, ETC.

7.) ALL TREES TO BE STAKED AND GUYED WITH HARDWOOD STAKES, MINIMUM OF TWO (2) – 5' LONG, OR OTHER APPROVED GUYING SYSTEM. STAKES SHALL BE DRIVEN INTO STABLE SOILS. PROVIDE WIRE GUYS WITH RUBBER PROTECTANT OR OTHER APPROVED INDUSTRY PRACTICE.

8.) LANDSCAPE INSTALLER SHALL MAINTAIN ALL PLANT MATERIALS THROUGH THE COMPLETION OF THE LANDSCAPE INSTALLATION, AND THEN AS REQUIRED BY THE OWNER.

9.) AT THE COMPLETION OF THE LANDSCAPE INSTALLATION (OR BY PHASED COMPLETION IF PROVIDED FOR ON THE PLAN), THE OWNER, OR HIS DESIGNATED REPRESENTATIVE SHALL REQUEST AN INSPECTION BY TOWN OF EASTON.

LANDSCAPE STOCK LEGEND – SITE LANDSCAPING

PROPOSED LANSCAPE PLANTING:

C = NATIVE CANOPY TREE (MIX)

E = NATIVE EVERGREEN TREE (MIX)

=NATIVE LARGE SHRUB (MIX)

AREA SHOWN SHALL BE MICRO-BIORETENTION AREAS WITH NATIVE WATER TOLORANT PLANTINGS.

GRAPHIC SCALE

20 0 10 20 40

1 inch = 20 ft.

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TOWN OF EASTON PLANNING AND ZONING

TOWN OF EASTON ENGINEER

EASTON UTILITIES – ENGINEER

8/2/2023
DATE SEAL

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PRELIMINARY LANDSCAPE PLAN

FOR THE DEVELOPMENT OF

CLIMATE CONTROLLED SELF STORAGE

ON THE LANDS OF

FRIEL STORAGE, LLC.

IN THE TOWN OF EASTON, 1st Elect. Dist., TALBOT Co., MARYLAND

TAX MAP – 109, PARCEL – 2849

DATE MAY '22	SCALE 1" = 20'
JOB No. 2022009	DRAWN BY WJM
FOLDER Ref. 109-2022009	DESIGNED BY BD
SHEET No. – L-1	
CADD FILE – 22009-L1	

ENVIRONMENTAL FEATURES / SENSITIVE AREAS
CHECK LIST CHART

FEATURE	YES	NO
CONTIGUOUS FOREST		X
WETLANDS		X
STREAMS		X
FLOODPLAINS		X
HYDRIC SOILS		X
PRIME AGRICULTURE SOILS		X
SOILS WITH K-FACTOR ABOVE .35		X
SLOPES GREATER THAN 25%		X
HISTORICAL AND CULTURAL FEATURES		X
TREES >30" DBH		X
STATE CHAMPION TREES		X
TREES >75% STATE CHAMPION		X
RARE, THREATENED OR ENDANGERED FLORA		X
RARE, THREATENED OR ENDANGERED FAUNA HABITAT		X

SIMPLE FOREST STAND DELINEATION AND FOREST CONSERVATION PLAN

NARRATIVE:

THIS SITE IS LOCATED WITHIN A COMMERCIAL ZONING DISTRICT WHERE LITTLE TO NO NATIVE VEGETATION EXISTS. THERE IS CURRENTLY NO FOREST ON SITE. ONE MATURE HARDWOOD TREE EXISTS ON SITE, WHICH WILL BE REMOVED FOR DEVELOPMENT. THE REMAINDER OF THE SITE IS IN OPEN LAWN AREA.

NO SPECIAL HABITAT OR PROTECTED ENVIRONMENTAL FEATURES ARE KNOWN TO BE PRESENT ON THE SITE.

OWNERS OBJECTIVES: THE FOREST STAND DELINEATION AND FOREST CONSERVATION PLAN FOR THE SITE PLAN IS INTENDED TO COMPLY WITH THE FOREST CONSERVATION REGULATIONS FOR THE TOWN OF EASTON.

PROPOSED DEVELOPMENT / USE: THE LOT WILL BE IMPROVED WITH (3) CLIMATE CONTROLLED STORAGE BUILDINGS WITH ASSOCIATED PAVED PARKING AND DRIVE AISLES.

FOREST SOIL TYPES: Up – URBAN LAND

TOPOGRAPHY: THE SITE HAS NO SIGNIFICANT CHANGES IN ELEVATION.

CRITICAL HABITAT AREAS OR RARE, THREATENED AND ENDANGERED SPECIES OF PLANTS AND ANIMALS: A REQUEST WAS SUBMITTED TO MARYLAND DEPARTMENT OF NATURAL RESOURCES (DNR) REQUESTING INFORMATION REGARDING THE PRESENCE OF RARE, THREATENED AND ENDANGERED SPECIES, HISTORIC SITES, AND CRITICAL HABITATS. ON XXXXX XX, 2022, DNR RESPONDED STATING THAT THERE ARE NO OFFICIAL STATE OR FEDERAL RECORDS FOR LISTED PLANT OR ANIMAL SPECIES WITHIN THE DELINEATED PROJECT AREA.

ADJACENT LAND USE: COMMERCIAL

HYDROLOGY, WETLANDS, STREAMS AND BUFFERS: THE SITE DOES NOT CONTAIN ANY HYDROLOGIC FEATURES, WETLANDS, STREAMS OR BUFFERS OF ANY KIND.

THE SITE IS LOCATED ENTIRELY OUTSIDE OF THE CHESAPEAKE BAY CRITICAL AREA.

CULTURAL FEATURES: NONE

FOREST CONSERVATION REQUIRED: 0.266 ACRES
FOREST CONSERVATION PROVIDED: 0.479 ACRES USING CREDITS FOR LANDSCAPE PLANTINGS
24 DECIDUOUS CANOPY TREES PROVIDED AT 400 SQ.FT. CREDIT EACH AND
45 EVERGREEN TREES AT 250 SQ.FT. EACH
= 20,850 SQ.FT. OR 0.479 ACRES

FOREST CONSERVATION NOTES:
PRIOR TO THE COMMENCEMENT OF ANY DEVELOPMENT ACTIVITIES AND IF THESE ACTIVITIES ARE TO OCCUR WITHIN 25' OF THE FOREST CONSERVATION RETENTION AREA(S), NOTIFY THE TOWN OF EASTON DEPARTMENT OF PLANNING & ZONING (410–822–1943, FOREST CONSERVATION COORDINATOR) TO DETERMINE IF TEMPORARY PROTECTIVE DEVICES (SILT, BLAZE, WIRE &/OR WOOD FENCING) ARE REQUIRED. IF REQUIRED, DEVICES ARE TO BE INSTALLED AND INSPECTED BY THIS OFFICE PRIOR TO THE COMMENCEMENT OF ANY DEVELOPMENT ACTIVITIES. OWNER MAY BE SUBJECT TO INSTALLATION OF PROTECTIVE DEVICES.

PROTECTIVE DEVICES MUST BE SURVEY LOCATED, OR AS DIRECTED BY THE TOWN OF EASTON FOREST CONSERVATION COORDINATOR. THE TOWN RESERVES THE RIGHT TO MAKE ON–SITE TREE–BY–TREE DECISIONS WHEN INSPECTING RETENTION AREAS FOR CRITICAL ROOT ZONE PROTECTION.

MATERIALS AND STOCKPILE AREAS SHALL BE LOCATED OUTSIDE, AND AT LEAST 25' AWAY FROM THE BOUNDARY OF THE FOREST CONSERVATION AREA(S).

PRIOR TO REQUESTING A CERTIFICATE OF OCCUPANCY, NOTIFY THE TOWN OF EASTON DEPARTMENT OF PLANNING & ZONING (410–822–1943, FOREST CONSERVATION COORDINATOR) TO DETERMINE PROTECTIVE DEVICE REMOVAL. FENCING SHALL REMAIN IN PLACE UNTIL DISTURBED AREAS ARE PERMANENTLY STABILIZED. SIGNAGE AND OTHER PERMANENT PROTECTIVE DEVICES ARE TO REMAIN IN PERPETUITY.

LONG TERM PROTECTION: THE FOREST CONSERVATION AREA(S) AS SHOWN ON THIS PLAT, ARE SUBJECT TO A LONG TERM PROTECTION AGREEMENT ENTITLED FOREST CONSERVATION EASEMENT DOCUMENT; RECORDED IN THE TALBOT COUNTY LAND RECORDS LIBER ____ FOLIO ____. THIS AGREEMENT, WHICH IS IN COMPLIANCE WITH THE TOWN OF EASTON FOREST CONSERVATION ORDINANCE, AND UNLESS OTHERWISE SPECIFICALLY NOTED, PRECLUDES MOWING, TRIMMING, CLEARING, REMOVAL OR OTHERWISE DESTRUCTION OF ANY FOREST PLANTS. THIS AGREEMENT IS UNDER THE JURISDICTION OF THE TOWN OF EASTON DEPARTMENT OF PLANNING AND ZONING. THIS AGREEMENT RUNS PERPETUAL WITH THE PROPERTY, AND IS BINDING UPON THE OWNER(S), OCCUPANTS, AND THEIR PERSONAL REPRESENTATIVES, HEIRS, SUCCESSORS AND ASSIGNS. THIS AGREEMENT MUST BE DISCLOSED IN ANY SUBSEQUENT SALE, CONTACT, LEASE, MORTGAGE, DEED OR OTHER LEGAL PROPERTY INSTRUMENT.

THE TOWN OF EASTON DEPARTMENT OF PLANNING & ZONING RESERVES THE RIGHT TO INSPECT THE FOREST CONSERVATION AREA(S) AT ANY FUTURE DATE, WITH PRE–NOTIFICATION OF THE PROPERTY OWNER OR THEIR REPRESENTATIVE, AND TO ENFORCE THE PROVISIONS OF THE PLANTING AGREEMENT AND/OR THE LONG TERM PROTECTIVE DEED OF FOREST CONSERVATION EASEMENT AT ANY TIME.

FOREST CONSERVATION CALCULATIONS:

TOTAL SITE AREA	=	1.775	ACRES
NET TRACT AREA	=	1.775	ACRES
EXISTING FOREST ON SITE	=	0.000	ACRES
FOREST TO BE CLEARED	=	0.000	ACRES
FOREST TO BE RETAINED	=	0.000	ACRES
FOREST CONSERVATION AREA REQUIRED	=	0.266	ACRES
TOTAL FOREST CONSERVATION PROVIDED (LANDSCAPE PLANTINGS)	=	0.479	ACRES

NOTE: PER SECTION 28–1014.5B OF THE TOWN OF EASTON ZONING ORDINANCE, LANDSCAPE PLANTINGS REQUIRED IN THIS SECTION AND MEETING THE SIZE AND SPECIFICATION REQUIREMENTS OF THIS SECTION, MAY BE CREDITED AGAINST AFFORESTATION OR REFORESTATION REQUIREMENTS OF A RELATED FOREST CONSERVATION PLAN FOR THE SAME SITE, IN ACCORDANCE WITH THE FOLLOWING SCHEDULE: (1) DECIDUOUS, SHADE/CANOPY TREES, 400 SQ. FT. AREA; (2) EVERGREEN TREES, 250 SQ. FT. AREA AND (3) UNDERSTORY TREES, 125 SQ. FT. AREA.

DECIDUOUS CANOPY TREES AND EVERGREEN TREES SHOWN HEREON SHALL COUNT TOWARDS FOREST CONSERVATION REQUIREMENT;

24 DECIDUOUS CANOPY TREES PROPOSED @ 400 SQ.FT. CREDIT = 9,600 SQ.FT. AND
45 EVERGREEN TREES PROPOSED @ 250 SQ.FT. CREDIT = 11,250 SQ.FT.
TOTAL = 20,850 SQ.FT. OR 0.479 ACRES;
SEE LANDSCAPE PLAN FOR LOCATIONS

TOTAL CREDIT PROVIDED TOWARDS FOREST CONSERVATION = 0.479 ACRES
TOTAL REQUIRED FOREST CONSERVATION = 0.266 ACRES

THIS FOREST CONSERVATION PLAN IS ACCEPTED BY THE PROPERTY OWNER:

JAY FRIEL, FRIEL STORAGE, LLC. DATE

THIS FCP PLAN HAS BEEN REVIEWED AND APPROVED:

FOREST CONSERVATION AGENT, TOWN OF EASTON DATE

TOWN OF EASTON PLANNING AND ZONING

TOWN OF EASTON ENGINEER

EASTON UTILITIES – ENGINEER

8/2/2023
DATE SEAL

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SHEET No. – FCP	
CADD FILE – 22009–FCP	

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Davis, Moore, Shearon & Associates, LLC

August 2, 2023

Mr. Joe Mayer
Town of Easton Planning & Zoning Dept.
PO Box 520
Easton, MD 21601

RE: RESUBMITTAL FOR ELLIOTT ROAD, LOT 4 – CLIMATE CONTROLLED SELF STORAGE FRIEL STORAGE, LLC. SITE PLAN 2023-959 DMS & ASSOCIATES PROJECT #2023084

Dear Joe:

Please accept this letter, revised plans, architectural information, and SWM report as a formal resubmittal following up our July Planning Commission meeting where we requested the project to be tabled to consider some building detail before moving forward. The main reason for the request to table the project was because we were evaluating a sprinkler requirements. We did not want to get the project approved by the planning commission only to find out days after that the buildings and associated layout must change. Our coordination with the architect and town building department found that our design was acceptable per building code and did not need sprinklers or sewer and water service. However, once we consulted with the fire marshal we discovered there to be additional interior challenges to avoid sprinklers including substantial fire barriers and fire walls that would have made that approach impractical and costly.

Given what we found with that fire marshal consolation, we have revised the project layout and buildings. It did not make sense to have the detached back building if it had to be sprinklered because the exterior water fire line infrastructure would be extensive. The revised layout combines what used to be two buildings along the northern side of the site into one large sprinklered building we call building #1. Building #2 is on the southern side of the site and is the same as prior layouts but will now be sprinklered also. The location of the front and rear facades of building #1 match those shown when the configuration was two separate buildings and the area between them has been consumed with the revised layout. The doors for building access and exterior parking and loading areas have been updated. Each building will have a door that faces Elliott Drive however

P.O. Box 80 Centreville, MD 21617
Phone: (443) 262-9130
Email: email@dmsandassociates.com

those are only to access a fire room and not for patrons of the business. With addition of water service to the buildings for sprinklers, we have added an onsite fire hydrant in the front of the property. We have also extended a domestic water lateral and gravity sewer lateral to building #1 as it will now have a small bathroom. These utilities have been added to the plans. The northern side entrance to building #2 remains as emergency exit only. The stormwater management areas are essentially the same with some minor volumetric tweaks. With the change to add sprinklers to the e have add

The Planning Commission members provided their initial comments based on what we submitted last time and we have attempted to address as many of those as we could at this juncture. One commission member provided some architectural comments related to the exposed façade that faces staples and the exposed façade that faces south and for them to be dressed up some with additional architectural features. We hope to ensure the layout is acceptable and then will add that architectural detail with our next submittal. We have also tried to address as many of Engineering's comments with this submittal even though they provided sketch approval. We have provided additional quantity control analysis for drainage areas #2 and have adjusted landscaping for clear sight view at the entrance. Lastly, we have run through the landscaping requirements versus the proposed landscape and forest conservation plans as that was also questioned by planning commission members. We have reviewed the code to reconfirm calculations and refined the proposed landscaping to address the specific and applicable requirements. We have expanded our narrative on the landscape plan to better explain the requirements and how we address them.

We believe that the revision is relatively minor give front and back facades didn't change and the revision has minimal effects to stormwater management. We ask that you please review this submittal for the August 23rd ESDR meeting and we are hopeful comments will be minor and can resubmit the following week on August 31st for the September Planning Commission meeting.

We look forward to working through this layout revision with you and furthering the project towards site plan and planning commission approvals. If you should have any questions or need any additional information, please do not hesitate to contact me at (443) 262-9130 or bdavis@dmsandassociates.com.

Sincerely,
DMS & Associates, LLC

Brandon A. Davis, PE

Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

Forest Conservation Application

Project Information

Project Name	Elliott Rd Climate Controlled Self Str.	Project Number	2023-959
Project Location	Elliott Road, Easton MD		
Project Description	Construction of ~~three~~ 2 climate controlled self storage buildings w/ associated improvements		

Watershed Information

Watershed Name	Lower Choptank	Sub-watershed No.	02130403
County	Talbot	Municipality	Easton

Property Information

National Spatial Reference System (NSRS)
Alignment of passive control with the latest realization of the North American Datum of 1983:
NAD 83(2011), NAD 83(PA11), and NAD 83(MA11) Epoch 2010.00

Maryland Grid Coordinates centroid:			404322	ft. North		1580812	ft. East
ADC Map: Year	2012		Page	45	Grid	B2	
Tax Map:	109	Grid	EA	Parcel	2849	Block	—
District / Account Number	01-059793					Lot	4
Liber	3052	Folio	169				

Agent Information

Name	Elizabeth Fink	License No.		Expiration Date	
Firm Name	Fink Whitten & Assoc.				
Mailing Address	113 E. Dover St. Unit C Easton MD 21601				
Telephone No.	410 822 8484	Email	efink@finkwhitten.com		

Forest Stand Delineation Information

Details of Request (Acreage or portion thereof)

Total Tract Area	1.775 Ac.	*Net Tract Area*	1.775 Ac.
Area within 100-year Floodplain	0 Ac.	Area of Existing Forest	0 Ac.
Area Remaining in Agriculture	0 Ac.	Area of Existing NTW	0 Ac.
Other	0 Ac.	Sensitive Areas	0 Ac.

Forested Stream Buffers (minimum 50' wide):			Yes	No
One Side		Both Sides		
Buffer Area Forested	Ac.	Length	Ft.	
Steep Slopes		Yes	No	
Threatened & Endangered Species		Yes	No	
Dominant & Co-dominant Species		Yes	No	

Forest Stand Delineation Prepared by:

Licensed Landscape Architect | Licensed Forester | Qualified Professional

Forest Conservation Plan Information

Details of Request (Acreage or portion thereof)

Existing Land Use (zone)	CIA	Proposed Land Use (zone)	CIA		
Afforestation Threshold	0.266	Conservation Threshold	0.266		
Proposed Area of Disturbance	1.775 ac.	in Sensitive Areas	0		
Proposed Forest Clearing	0	in Sensitive Areas	0	in NTW	0

Forest Retention:

Onsite	0.321	Offsite	0	in Long Term Protection	~~0.321~~	0.479
Forest Conservation Required			0.266	Forest Conservation Provided	~~0.321~~	0.479

Planting:

Onsite	0.321	Offsite	0	Sensitive Area Planting	0

Stream Buffer Established: Length N/A Width N/A

Other:

Offsite Location:

County		Municipality					
ADC Map:		Year		Page		Grid	
Tax Map:		Grid		Parcel		Block	
Maryland Grid:		North American Datum Year				Lot	
District / Account Number		Sub-watershed No.					
Planting Responsibility:		Contact #					
Maintenance Responsibility:		Contact #					
Long Term Protection		% in Sensitive Areas					
Long Term Protection Agreement Type							
Fee-in Lieu Amount		Acreage					
Forest Conservation Plan Prepared by							
Licensed Landscape Architect							
Licensed Forester							
Qualified Professional							

Subject to previous FCP? Y / N

If yes, please provide a copy of previous approved FCP.

Subject to ESDR? Y/ N

Required:

- ☐ Completed Form
- ☐ Written Statement
- ☐ Signature of Applicant
- ☐ Hardcopy of Drawings
- ☐ Digital Copy of Drawings
- ☐ Copies Hard / Digital of Any Previous FCP + Application
- ☐ Review Fee

Any modifications during review shall warrant an updated application.

I do hereby solemnly declare and affirm that the information provided by this application and the documents attached hereto accurately represent the conditions of the request and that submission of an incomplete application will be returned for correction prior to processing.

By signing below, the applicant certifies that he of she has the legal right to implement proposed planting, maintenance and or a long-term protection agreement. The applicant further certifies that the property, subject to a long-term protection agreement is not otherwise protected under Federal, State or local programs.

Signature of Applicant or Agent	B.D.
Date	7/3/2023 8/4/23
Printed Name of Applicant or Agent	Brandon Davis DMS

For Office Use Only

Planning Commission Meeting Date			
Sketch Approval Date		Project No.	ESDR 23-12
Prelim/Dev. Approval Date		Application No.	2023-959
Final Approval Date		Sketch Fee Paid	-
Recordation Date		Develop. Fee Paid	-
			Revised 02-2019

Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

Site Plan Number: 2023-959

Site Plan, PUD, Planned Healthcare Application

Application Type

Planned Unit Development ☐ Amendment ☐ Health Care (HC) ☐ Site Plan ☒

Subdivision Information

Name					
Original Property Size	Acres		Square Feet		
Telephone No.		Email			

Site Plan Information

Property Size	Acres	1.775	Square Feet		37,244 s.f.
Structure's Floor Area	~~35,000~~	37,244	Structure's Square Feet	~~35,000~~	total (~~3~~ 2 buildings)
Area of Disturbance	~~1.80~~	1.84	Number of Dwelling Units	0	

Property Information

Address	Elliott Road						
Tax Map	109	Grid	EA	Parcel	2849	Lot	4
Deed Refernce:	Liber	3052	Folio	169			
Plat Reference:	Liber	87	Folio	59			
Base Zoning District		CG	Historic Y ☐ N ☒		Planned Redevelopment Y ☐ N ☒		
Source of Electricity		Easton Utilities					

Owner

Name	Friel Storage LLC c/o Jay Friel		
Mailing Address	47 Prospect Bay Drive W., Grasonville MD 21638		
Telephone No.	410 827 8811	Email	jay@sewfriel.com

Applicant or Agent

Name	Fink Whitten & Assoc. c/o Elizabeth Fink		
Mailing Address	113 E. Dover St., Unit C, Easton MD 21601		
Telephone No.	410 822 8484	Email	efink@finkwhitten.com

Surveyor / Engineer

Name	DMS & Asso, Brandon Davis	License No.	37235	Expiration Date	06/2024
Mailing Address	Po Box 80 Centreville MD 21617				
Telephone No.	443 262 9130	Email	bdavis@dmsandassociates.com		

Any modifications during review shall warrant an updated application.

I hereby certify that I have reviewed and satisfied the Town of Easton Development Standards and that submission of an incomplete application will be returned for correction prior to processing.

Signature of Applicant or Agent Engineer	[signature] E.D.
Date	6/7/2023 8/2/2023
Printed Name of Applicant or Agent	Brandon Davis engineer w/ DMS + Assoc

For Office Use Only

Planning Commission Required	Y ☒ N ☐		
Planning Commission Meeting Date	09/21/2023		
Sketch Approval Date		Project No.	ESDR 23-12
Prelim/Dev. Approval Date		Application No.	2023-959
Final Approval Date		Sketch Fee Paid	
Recordation Date		Develop. Fee Paid	

Revised 02-2019

STORMWATER MANAGEMENT NARRATIVE AND CALCULATIONS

FOR

PRELIMINARY SITE PLAN

FOR

CLIMATE CONTROLLED SELF STORAGE

LOT 4 OF ELLIOTT ROAD
EASTON, MARYLAND 21601

PREPARED FOR:

FRIEL STORAGE, LLC.
C/O JAY FRIEL
47 PROSPECT BAY DR W
GRASONVILLE, MD 21638

AND

FINK, WHITTEN & ASSOCIATES, LLC.
C/O ELIZABETH FINK
113 E. DOVER ST., UNIT C
EASTON, MD 21601

STATE OF MARYLAND
BRANDON A. DAVIS
No. 37235
PROFESSIONAL ENGINEER
exp 6-5-24

PREPARED BY:
DMS & ASSOCIATES, LLC
P.O BOX 80
CENTREVILLE, MD 21617
DMS JOB# 2022009
PRELIMINARY PLAN DATE: JUNE, 2022
REVISED: JUNE, 2023
REVISED: JULY, 2023
REVISED: AUGUST, 2023

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STORMWATER MANAGEMENT NARRATIVE
PRELIMINARY PLAN
ELLIOTT ROAD – LOT 4

The subject property is located on Elliott Road in Easton, Maryland. The lot is a vacant lawn area and is commercially zoned. The lot is south of the Staples strip center, east of MyDocsIn, northeast of Aldi's, north of Spurry's Auto Center, and west of Elliott Road. This 1.775 acre lot is covered in lawn. There is a drainage swale along the southern portion of the Elliott Road frontage and storm drain at the northeast corner of the property along Elliott Road. There is a storm drain system running along the rear of the property also. The drainage from the subject property is general spilt equally in the existing conditions to the front and rear of the site. The soils inherent to the subject property are classified as Urban Land (Up) by the USDA-NRCS soil survey. These soils are thereby considered hydrologic soil group "D".

Project Description

The proposed project has been revised to construct two climate controlled self storage buildings with required access, parking, and associated improvements. The two buildings are elongated in shape to mimic the property shape. At one time in the project history there where three buildings however two were combined due to need to sprinkler the buildings. The roof lines of the buildings will run down the middle of their long axis and drain north and south for each building. Roof leaders will be applied as needed to direct runoff to appropriate treatment areas. Trench drains and storm drain in the middle of the site will collect roof and pavement runoff and direct it to stormwater treatment areas. Front and rear treatment areas will connect to nearby existing stormdrain systems.

Quality Control

The proposed project will result in approximately 1.79 acres of disturbance (Limits of Disturbance = LOD) with 1.18 acres of impervious area (or 65.6% imperviousness of the LOD). Water quality measures will be provided to meet the requirements of the Town of Easton Stormwater Management Ordinance and chapter 5 of the Maryland Department of the Environment (MDE) Stormwater Management Design Manual. Per chapter 5 of the MDE SWM Design Manual, Environmental Site Design (ESD) will be implemented to the Maximum Extent Practicable. The resulting ESD volume requirement for this project is 7,496 c.f. and recharge volume requirement (Rev) of 292 c.f. Two micro-bioretention devices in the front of the property and two in the rear of the property will provide water quality treatment to address ESD and Rev requirements. The micro-bioretention areas will meet the restrictions inherent to their respective drainage areas. They will filter runoff, allow it to infiltrate where possible, and will direct it to quantity control areas or storm drain system. The proposed treatment will provide 10,582 c.f. of ESD volume and 4,406 c.f. of Rev volume. The site will mimic woods in good condition as these measures provide ESD to the MEP, and thereby address water quality, ESD, recharge, and channel protection requirements.

Quantity Control

NRCS USDA TR-55 methodology was utilized to compute pre project and post project runoff curve numbers, times of concentration, and peak flow values (without consideration for ESD treatment). ESD is provided to the MEP for the project. That ESD treatment is taken into

consideration using the MDE "Stormwater Design Guidance – Addressing Quantity Control Requirements" supplement. The calculation procedure of determining a reduced curve number for both the 2 and 10 year storms was completed for each outfall drainage area. Those reduced curve numbers are utilized in TR-55 and TR-20 to determine the positive effects that the ESD treatment has on the peak discharges at the outfall locations.

Rear Outfall to Existing Stormdrain – Drainage Area #1

A quantity control treatment area is provided in the rear of the property to address quantity treatment requirements for the rear outfall. The provided calculations currently do not consider the reduced curve numbers calculated based on the provided ESD to the MEP treatment, and therefore currently are considered conservative. TR-20 methodology has been utilized using non-reduced CNs, stage storage analysis, and outfall structure routing. The analysis shows the post project peak flows for the 2 year and 10 year storms do not exceed pre project, therefore, quantity control for the increase to runoff and drainage area to the rear of the site is addressed. The use of reduced curve numbers will be explored in the detailed final site plan phase and coordinated with the Town Engineering Department.

Front Outfall at Elliott Road Existing Stormdrain – Drainage Area #2

Two micro bioretentions in the front of the property will provide required water quality treatment for the portion of the site that will drain towards Elliott Road to address ESD to the MEP. The post project drainage area towards Elliott Road is reduced from pre project conditions. Both Micro-Bioretentions in this outfall drainage area provide substantially more volume than what the target ESD volumes are for each device based on their respective P_E values. The volume overage provides extra storage for the overall front drainage area and assists with quantity treatment requirements. Given that ESD is met to the MEP, the 2 year storm is addressed fully by the reduced curve number created. The 10 year storm is addressed partially by the reduced curve number with the remainder addressed by the volumetric storage provided in the micro-bioretention areas. TR-55 quantity control volume calculations (worksheet 6) determine a requirement of 1,500 c.f. to address the 10 year storm control after the reduced curve number is considered. The volume overage provided is 2,789 c.f., thereby addressing any remaining quantity control requirements.

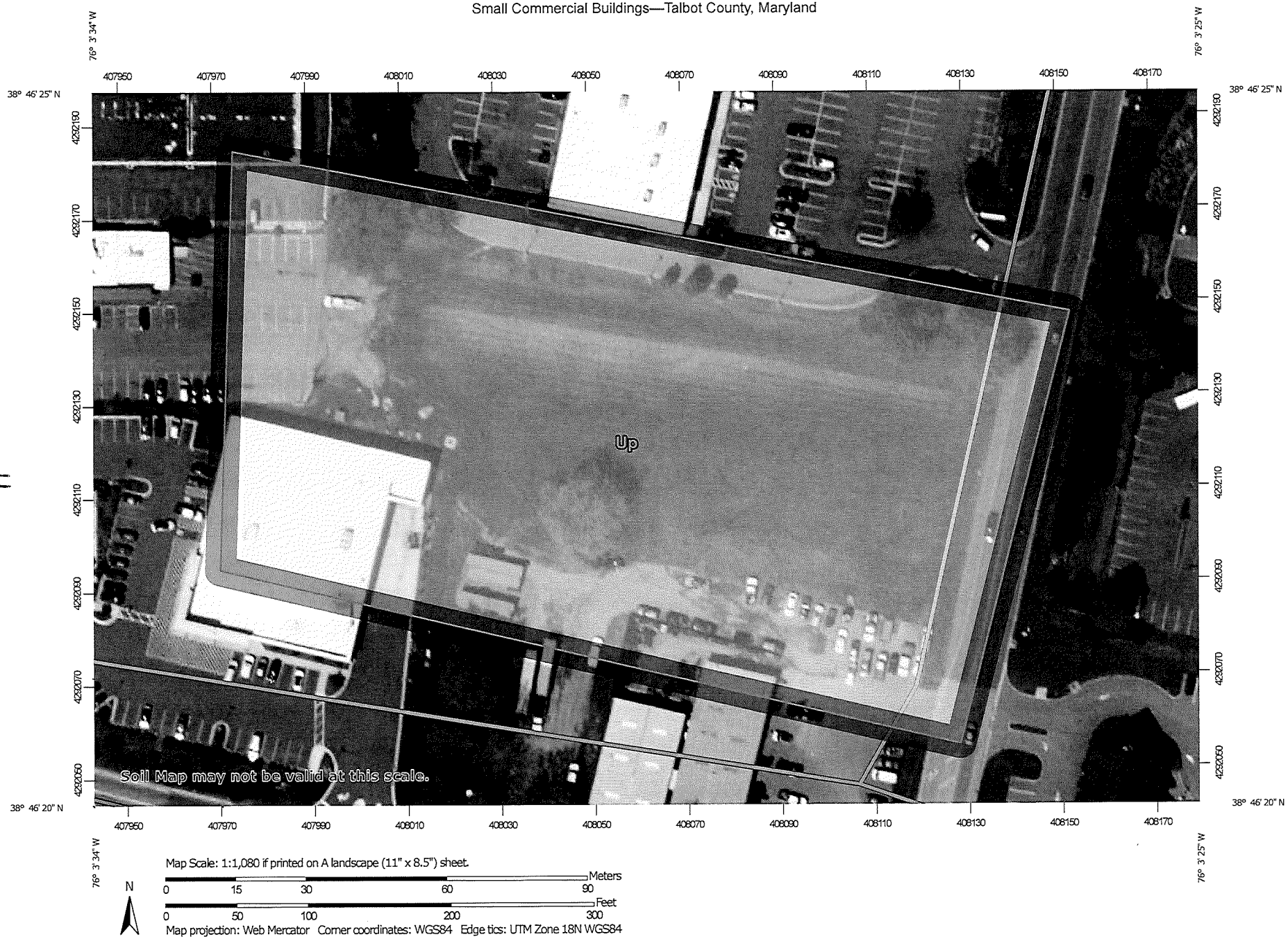
To further support that micro bioretentions 1 and 2 provided 10 year storm quantity control we have run the ponding storage and micro-bioretention #2 overflow inlet in TR-20 using the reduced curve number that has been computed based on ESD. The TR-20 program results in a post project 10 year storm peak flow that is less than the existing conditions value and a ponding elevation as expected just above the crest of the yard inlet that is used as an overflow structure.

Both the TR-55 volumetric approach and the TR-20 routing for the drainage area and outfall support that quantity control is addressed. By reducing the drainage area, providing ESD to the MEP, providing an overage of volumetric storage in the ESD devices, and using the reduced curve number we show that post project peak flows are less than pre project, therefore quantity control requirements are addressed for this drainage area.

The combination of ESD treatment and quantity control storage for the project will allow it to mimic the pre project outfall peak flows. The proposed water quality and quantity measures collect, store, filter and discharge runoff in a responsible manner. The piping, storm drain

structures, rip rap protection, and storm drain connections will provide controlled release of treated stormwater to the existing downstream conveyance systems. Neighboring properties will not be negatively impacted as side drainage is captured in roof leader systems and directed towards outfalls even though the southern and southwestern neighbors receive direct runoff in the pre project conditions.

In conclusion, we feel that this preliminary site plan and associated SWM calculations support that this project abides by all Town and MDE SWM requirements for recommendation of preliminary SWM approval.


76° 3' 34" W
76° 3' 25" W
38° 46' 25" N
38° 46' 20" N
407950
407970
407990
408010
408030
408050
408070
408090
408110
408130
408150
408170
4232190
4232170
4232150
4232130
4232110
4232090
4232070
4232050
Up
Soil Map may not be valid at this scale.
Map Scale: 1:1,080 if printed on A landscape (11" x 8.5") sheet.
Meters
0 15 30 60 90
Feet
0 50 100 200 300
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Lines

- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Points

- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Talbot County, Maryland
Survey Area Data: Version 18, Aug 27, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 1, 2021—Oct 1, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

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Small Commercial Buildings

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
Up	Urban land	Not rated	Urban land (90%)		3.9	100.0%
Totals for Area of Interest					**3.9**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Null or Not Rated	3.9	100.0%
Totals for Area of Interest	**3.9**	**100.0%**

Description

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification of the soil). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

DMS

Davis, Moore, Shearon, & Assocates, LLC
Engineering, Drafting/Design, Environmental Services & Surveying

Site Name: Elliott Rd - Climate Controlled Storage **Designed By:** B.A.D.
Date: Aug-23 **Checked By:** W.T.D
Description: Development Conditions

Determine ESD Implementation:

$$ESDv = \frac{(P_E)(Rv)(A)}{12.00}$$

A = Site Area
I = % Imperviousness
Rv = 0.05 + 0.009(I)

P_E= Rain Fall Target From Tbl. 5.3 (RCN Reductions)
(Total P_ExArea)/Area = Weighted P_E

ESD_V = Runoff Volume for ESD design

Site Data			Redeveloped Site=	No
Area A =	**1.793**	acres		LOD
Prop. Hard Surfaces =	**1.175**	acres		
Alternative Surfaces =	**0.000**			
Net Imp. Area =	**1.175**			
% Impervious =	65.6	%		
Rv =	0.640			
Zone =	eastern			
P_E=	**1.80**	inches		

ESD_V =	0.172	ac-ft
or	7,496	cf

$ESD_{V\ redev}$ = ESD Volume for redevelopment site

A_{redev} = (0.50)(Ex. Imp. Area) - (Ex. Imp. Area - Prop. Imp. Area)

A_{redev} = 0 acres

Ex. Imp. Area _____ acres

$ESD_{V\ redev}$ =	0.000	ac-ft
or	0	cf

Compute Recharge Volume (Rev)

HSG	RCN (woods)	P_E Table 5.3	P_E x Area	RCN xArea	Recharge factor (S)	Area	%
A	38	**0.00**	0.00	0	0.38	**0.000**	0.00%
B	55	**0.00**	0.00	0	0.26	**0.000**	0.00%
C	70	**0.00**	0.00	0	0.13	**0.000**	0.00%
D	77	**1.80**	3.23	138	0.07	**1.793**	100.00%
TOTALS			**3.23**	**138**		**1.793**	100.00%

S = 0.07

a.) *Rev =* [(S)(Rv)(A)]/12
(percent volume method)

Rev =	0.007	ac-ft
or	292	cf

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Table 5.3 Runoff Curve Number Reductions used for Environmental Site Design

Hydroligic Soil Group D										
%I	RCN*	P_E = 1"	1.2"	1.4"	1.6"	1.8"	2.0"	2.2"	2.4"	2.6"
0%	80									
5%	81									
10%	82									
15%	83									
20%	84	**77**								
25%	85	78								
30%	85	78	**77**	**77**						
35%	86	79	78	78						
40%	87	82	75	79	**77**					
45%	88	82	76	79	78					
50%	89	83	76	80	78					
55%	90	84	76	80	78					
60%	91	85	78	81	78					
65%	92	85	80	81	78					
70%	93	86	80	81	78					
75%	94	86	81	81	78					
80%	94	86	82	82	79					
85%	95	86	82	82	79					
90%	96	87	83	82	79	**77**				
95%	97	88	85	82	80	78				
100%	98	89	86	83	80	78	**77**			

Cpv Addressed (RCN = Woods in Good Condition

RCN Applied to Cpv Calculations

NON-STRUCTURAL

AND

ESD PRACTICES

CRITERIA & DESIGN PARAMETERS MET FOR SELECTED PRACTICE

M-6 Micro-Bioretention (page 5.96 of the MDE SWM design manual):

Performance Criteria:

- Equation 5.2 is applied during the sizing criteria to ensure that the device is had an adequate area and volume provided. Recharge requirements are not required in a redevelopment criteria situation.

Constraints:

- Space – the provided area aligns with the site shape and is adequate area for the contributing impervious area and overall drainage area.
- Topography – the site is less than 5% and will be flat in the treatment area. Runoff will enter the SWM area using sheet flow, or piped with riprap protection.
- Soils – the developed nature of the site and associated soils have led us to this practice since undisturbed high infiltrating soils are not available. An underdrain will be provided to avoid ponding water.
- Drainage Area – the drainage areas meets the constraints.
- Hotspot Runoff – this site is not considered a hotspot
- Infrastructure – the selected locations avoid conflicts with existing utilities and is in a convenient location to easily tie into existing stormwater conveyance system.

Design Guidance:

- Conveyance – the SWM is located off line and not in series with other conveyance paths. Runoff will enter the treatment area in a stable manner. The proposed underdrain will convey treated runoff to existing storm drain system.
- Treatment – the device meets within reason the maximum drainage area, capture volume, surface area minimum, filter bed depth, groundwater avoidance, media layering, and material spec. requirements.
- Setbacks – the SWM area meets all MDE recommended setbacks from buildings, wells, and utilities.
- Landscaping – plantings are provided in the SWM area to provide nutrient uptake, filtration surface stabilization and gel with landscaping.

Construction Criteria:

- Sediment and Erosion Control – the construction sequencing requires drainage areas to be stabilized before SWM is installed.
- Soil Compaction – the SWM area is set off to the sides of the LOD to avoid construction traffic and associated compaction.
- Underdrain Installation – gravel and drain specifications are shown on the plans per MDE recommendations.
- Filter Media Installation – soils specifications are shown on the plans per MDE recommendations.
- Landscaping – plantings should be installed at the optimum seasonal timing, otherwise provisions should be made to ensure their health

Inspection and Maintenance Criteria:

- Inspection and Maintenance procedures are provided on the plans.

DMS

Davis, Moore, Shearon, & Assocates, LLC

Engineering, Drafting/Design, Environmental Services & Surveying

Project: Elliott Rd - Climate Controlled Storage

Micro-Bioretention

Device: MB #1

Filter Bed Requirements

Device Drainage Area =	14312	sq. Ft.
Minimum Af (2% of DA) =	286	sq. Ft.

ESDv Targets

DA Impervious Area =	11401	sq. Ft.	% Site Area =	22.3%
Device DA %I =	79.66	%		
Device DA Rv =	0.767			
Soil Type	D			
Minimum Device P_E Target =	1.00	inches		
Minimum Device ESDv =	915	cu.Ft.		
ESDv burden per % Site Area =	1670	cu.Ft.		
1-year P_E =	2.70	inches		
1-year Strom Max. ESDv =	2470	cu.Ft.		

Provided

Af Provided =	1023	sq. Ft.	d_{mulch} =	3	inches
			d_{soil} =	12	inches
			d_{pea} =	4	inches
			d_{stone} =	12	inches
			porosity =	0.40	
Temp Pond. Area Prov. =	1437	sq. Ft.	$D_{temp.\ Stor.}$ =	12	inches
Media Storage Provided =	1057	cu.Ft.			
Temp Pond. Stor. Prov. =	1230	cu.Ft.			
Total ESDv Provided =	2287	cu.Ft.			

Re_v

Soils S Factor =	0.07		
P_E Achieved	1.072	inches	(Equation 5.2)
P_E Achiev. > Soil S Factor (yes/no):	yes		
Re_v Credit:	955	cu.Ft.	

Additional Considerations

Underdrain Provided (yes/no): yes

Notes: Device will have perforated underdrain and tie to stormdrain

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DMS

Davis, Moore, Shearon, & Assocates, LLC

Engineering, Drafting/Design, Environmental Services & Surveying

Project: Elliott Rd - Climate Controlled Storage

Micro-Bioretention

Device: MB #2

Filter Bed Requirements

Device Drainage Area =	13957	sq. Ft.
Minimum Af (2% of DA) =	279	sq. Ft.

ESDv Targets

DA Impervious Area =	10641	sq. Ft.	% Site Area =	20.8%
Device DA %I =	76.24	%		
Device DA Rv =	0.736			
Soil Type	D			
Minimum Device P_E Target =	1.00	inches		
Minimum Device ESDv =	856	cu.Ft.		
ESDv burden per % Site Area =	1558	cu.Ft.		
1-year P_E =	2.70	inches		
1-year Strom Max. ESDv =	2311	cu.Ft.		

Provided

Af Provided =	1709	sq. Ft.	d_{mulch} =	3	inches
			d_{soil} =	12	inches
			d_{pea} =	4	inches
			d_{stone} =	12	inches
			porosity =	0.40	
Temp Pond. Area Prov. =	2219	sq. Ft.	$D_{temp.\ Stor.}$ =	12	inches
Media Storage Provided =	1766	cu.Ft.			
Temp Pond. Stor. Prov. =	1964	cu.Ft.			
Total ESDv Provided =	3730	cu.Ft.			

Re_v

Soils S Factor =	0.07		
P_E Achieved	1.837	inches	(Equation 5.2)
P_E Achiev. > Soil S Factor (yes/no):	yes		
Re_v Credit:	1595	cu.Ft.	

Additional Considerations

Underdrain Provided (yes/no): yes

Notes: Device will have perforated underdrain and tie to stormdrain

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DMS

Davis, Moore, Shearon, & Assocates, LLC

Engineering, Drafting/Design, Environmental Services & Surveying

Project: Elliott Rd - Climate Controlled Storage

Micro-Bioretention

Device: MB #3

Filter Bed Requirements

Device Drainage Area =	18180	sq. Ft.
Minimum Af (2% of DA) =	364	sq. Ft.

ESDv Targets

DA Impervious Area =	15945	sq. Ft.	% Site Area =	31.1%
Device DA %I =	87.71	%		
Device DA Rv =	0.839			
Soil Type	D			
Minimum Device P_E Target =	1.00	inches		
Minimum Device ESDv =	1271	cu.Ft.		
ESDv burden per % Site Area =	2335	cu.Ft.		
1-year P_E =	2.70	inches		
1-year Strom Max. ESDv =	3432	cu.Ft.		

Provided

Af Provided =	1167	sq. Ft.	d_{mulch} =	3	inches
			d_{soil} =	12	inches
			d_{pea} =	4	inches
			d_{stone} =	12	inches
			porosity =	0.40	
Temp Pond. Area Prov. =	1636	sq. Ft.	$D_{temp.\ Stor.}$ =	12	inches
Media Storage Provided =	1206	cu.Ft.			
Temp Pond. Stor. Prov. =	1402	cu.Ft.			
Total ESDv Provided =	2608	cu.Ft.			

Re_v

Soils S Factor =	0.07		
P_E Achieved	0.963	inches	(Equation 5.2)
P_E Achiev. > Soil S Factor (yes/no):	yes		
Re_v Credit:	1089	cu.Ft.	

Additional Considerations

Underdrain Provided (yes/no): yes

Notes: Device will have perforated underdrain and tie to stormdrain

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DMS

Davis, Moore, Shearon, & Assocates, LLC

Engineering, Drafting/Design, Environmental Services & Surveying

Project: Elliott Rd - Climate Controlled Storage

Micro-Bioretention

Device: MB #4

Filter Bed Requirements

Device Drainage Area =	16063	sq. Ft.
Minimum Af (2% of DA) =	321	sq. Ft.

ESDv Targets

DA Impervious Area =	11987	sq. Ft.	% Site Area =	23.4%
Device DA %I =	74.62	%		
Device DA Rv =	0.722			
Soil Type	D			
Minimum Device P_E Target =	1.00	inches		
Minimum Device ESDv =	966	cu.Ft.		
ESDv burden per % Site Area =	1755	cu.Ft.		
1-year P_E =	2.70	inches		
1-year Strom Max. ESDv =	2609	cu.Ft.		

Provided

Af Provided =	822	sq. Ft.	d_{mulch} =	3	inches
			d_{soil} =	12	inches
			d_{pea} =	4	inches
			d_{stone} =	12	inches
			porosity =	0.40	
Temp Pond. Area Prov. =	1393	sq. Ft.	$D_{temp.\ Stor.}$ =	12	inches
Media Storage Provided =	849	cu.Ft.			
Temp Pond. Stor. Prov. =	1108	cu.Ft.			
Total ESDv Provided =	1957	cu.Ft.			

Re_v

Soils S Factor =	0.07		
P_E Achieved	0.768	inches	(Equation 5.2)
P_E Achiev. > Soil S Factor (yes/no):	yes		
Re_v Credit:	767	cu.Ft.	

Additional Considerations

Underdrain Provided (yes/no): yes

Notes: Device will have perforated underdrain and tie to stormdrain

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Device #	Type	Provided ESDv	Provided Rev
MB #1	Micro-Bioretention	2287	955
MB #2	Micro-Bioretention	3730	1595
MB #1	Micro-Bioretention	2608	1089
MB #2	Micro-Bioretention	1957	767
Total		**10582**	**4406**

Summary

Step	Requirement	Volume Required (cft)	Volume Provided (cft)	Notes
1	ESD_V =	7496	**10582**	Micro-Bioretention
2	Recharge (Rev)	292	**4406**	Micro-Bioretention
3	Channel Protection (CPv)	N/A	**N/A**	ESD to MEP and overflow volume storage
4	Overbank Flood (Qp)		**Provided**	See Quantity Control Calculations
5	Extreme Flood (Qf)	N/A	N/A	N/A

Worksheet 2: Runoff curve number and runoff

Project: Elliott Rd - Clim. Cont. Self Storage By: BD Date: August-23
Location: Elliott Rd, Easton
Checked: Date:

Check one: Present [x] Developed [ ]

Notes: Existing Conditions DA 1 - Western Outfall (Back)

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment,and hydroogic condition)	CN Table 2-2	CN Fig.2-3	CN Fig.2-4	Area acres mi^2 %	Product of CN x area
D	Lawn	80			0.6862	54.898072
D	IMPERVIOUS	98			0.0843	8.2656566
						0
						0
						0
						0
						0
				Totals =	0.7706	63.163728

1/ Use only one CN source per line

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area (acres)}} = \frac{63.16372819}{0.77056933} = 81.97$$

Use CN = 82

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency.....	yr	2	10	100
Rainfall, P (24-hour).....	in	3.33	5.20	8.98
Runoff, Q.....	in	1.643	3.259	6.79

(Use P and Cn with table 2-1, fig. 2-1 or equ. 2-3 and 2-4)
(210-VI-TR-55, Second Ed., June 1986)

Worksheet 3: Time of concentration (Tc) or travel time (Tt)

Project: Elliott Rd - Clim. Cont. Self Storag By: BD Date: August-23
Location: Elliott Rd, Easton
Checked: Date:

Circle one: Present [x] Developed [ ]

Circle one: Tc [x] Tt [ ] rough subarea [ ] Notes: Existing Conditions DA 1 - Western Outfall (Back)

Sheet flow (Applicable to Tc only)			Segment ID				
			AB				
1	surface description (table 3-1)		LAWN				
2	Manning's roughness coeff., n (table 3-1)		0.15				
3	Flow length, L (total L $\leq$ 300 ft)	ft	100				
4	two-yr 24-hr rainfall, P_2	in	3.33				
5	Land slope, s	ft/ft	0.0092				
6	$T_t = 0.007(nL)^{0.8} / P_2^{0.5} s^{0.4}$	hr	0.22	+		=	0.218

Shallow concentrated flow			Segment ID				
			BC				
7	Surface description (paved(P) or unpaved(UP))		UP				
8	Flow length, L	ft	103				
9	Watercourse slope, s	ft/ft	0.01				
10	Average Velocity, V (figure 3-1)	ft/s	1.61				
11	$T_t = L / 3600 V$	hr	0.018	+	0	=	0.018

Channel Flow			Segment ID				
			CD				
12	Cross sectional flow area, a	ft^2	3.142				
13	Wetted perimeter, Pw	ft	6.28				
14	Hydraulic radius, r = a / Pw compute r	ft	0.50				
15	Channel slope, s	ft/ft	0.005				
16	Manning's roughness coeff. , n		0.013				
17	$V = 1.49 r^{2/3} s^{1/2} / n$	ft/s	5.11				
18	Flow length , L	ft	240				
19	$T_t = L / 3600 V$	hr	0.013	+	0	=	0.013
20	Watershed or subarea Tc or Tt (add Tt in steps 6,11,and 19)						0.249

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Worksheet 2: Runoff curve number and runoff

Project: Elliott Rd - Clim. Cont. Self Storage By: BD Date: August-23
Location: Elliott Rd, Easton
Checked: Date:

Check one: Present ☐ Developed ☒

Notes: Proposed Conditions DA 1 - Western Outfall (Back)

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	**Cover description** (cover type, treatment,and hydroogic condition)	CN Table 2-2	CN Fig.2-3	CN Fig.2-4	**Area** acres mi^2 %	Product of CN x area
D	**Lawn**	**80**			**0.3732**	29.858586
D	**IMPERVIOUS**	**98**			**0.6412**	62.840588
						0
						0
						0
						0
						0
				Totals =	1.0145	92.699174

1/ Use only one CN source per line

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area (acres)}} = \frac{92.69917355}{1.01446281} = 91.38$$

Use CN = **91**

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency.....	yr	2	10	100
Rainfall, P (24-hour).....	in	3.33	5.20	8.98
Runoff, Q.....	in	2.42	4.22	7.94

(Use P and Cn with table 2-1, fig. 2-1 or equ. 2-3 and 2-4)
(210-VI-TR-55, Second Ed., June 1986)

Worksheet 3: Time of concentration (Tc) or travel time (Tt)

Project: Elliott Rd - Clim. Cont. Self Storag By: WTD Date: August-23
Location: Elliott Rd, Easton
Checked: _____ Date: _____

Circle one: Present [ ] Developed [x]

Circle one: Tc [x] Tt [ ] rough subarea [ ] Notes: Proposed Conditions DA 1 - Western Outfall (Back)

Sheet flow (Applicable to Tc only)		Segment ID	AB			
1	surface description (table 3-1)		Smooth			
2	Manning's roughness coeff., n (table 3-1)		0.011			
3	Flow length, L (total L ≤ 300 ft)	ft	37.5			
4	two-yr 24-hr rainfall, P_2	in	3.33			
5	Land slope, s	ft/ft	0.05			
6	$T_t = 0.007(nL)^{0.8} / P_2^{0.5} s^{0.4}$	hr	0.01	+	+ =	0.006

Shallow concentrated flow		Segment ID				
7	Surface description (paved(P) or unpaved(UP))					
8	Flow length, L	ft				
9	Watercourse slope, s	ft/ft				
10	Average Velocity, V (figure 3-1)	ft/s				
11	$T_t = L / 3600 V$	hr	0	+	=	0.000

Channel Flow		Segment ID	BC			
12	Cross sectional flow area, a	ft^2	1.227			
13	Wetted perimeter, Pw	ft	3.93			
14	Hydraulic radius, r = a / Pw compute r	ft	0.31			
15	Channel slope, s	ft/ft	0.005			
16	Manning's roughness coeff. , n		0.013			
17	$V = 1.49 r^{2/3} s^{1/2} / n$	ft/s	3.73			
18	Flow length , L	ft	341			
19	$T_t = L / 3600 V$	hr	0.025	+	+ =	0.025
20	Watershed or subarea Tc or Tt (add Tt in steps 6,11,and 19)					0.031

0.1

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Worksheet 2: Runoff curve number and runoff

Project: Elliott Rd - Clim. Cont. Self Storage By: BD Date: August-23
Location: Elliott Rd, Easton
Checked: Date:

Check one: Present [x] Developed [ ]

Notes: Existing Conditions DA 2 - Eastern Outfall (Front)

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment,and hydroogic condition)	CN Table 2-2	CN Fig.2-3	CN Fig.2-4	Area acres mi^2 %	Product of CN x area
D	Lawn	80			1.0049	80.393021
D	IMPERVIOUS	98			0	0
						0
						0
						0
						0
						0
1/ Use only one CN source per line				Totals =	1.0049	80.393021

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area (acres)}} = \frac{80.39302112}{1.004912764} = 80.00$$

Use CN = 80

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency.....	yr	2	10	100
Rainfall, P (24-hour).....	in	3.33	5.20	8.98
Runoff, Q.....	in	1.503	3.068	6.55

(Use P and Cn with table 2-1, fig. 2-1 or equ. 2-3 and 2-4)
(210-VI-TR-55, Second Ed., June 1986)

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Worksheet 3: Time of concentration (Tc) or travel time (Tt)

Project: Elliott Rd - Clim. Cont. Self Storag By: BD Date: August-23
Location: Elliott Rd, Easton
Checked: Date:

Circle one: Present [x] Developed [ ]

Circle one: Tc [x] Tt [ ] rough subarea [ ] Notes: Existing Conditions DA 2 - Eastern Outfall (Front)

Sheet flow (Applicable to Tc only)			Segment ID			
			AB			
1	surface description (table 3-1)		LAWN			
2	Manning's roughness coeff., n (table 3-1)		0.15			
3	Flow length, L (total L ≤ 300 ft)	ft	100			
4	two-yr 24-hr rainfall, P_2	in	3.33			
5	Land slope, s	ft/ft	0.02			
6	$T_t = 0.007(nL)^{0.8} / P_2^{0.5} s^{0.4}$	hr	0.16	+	=	0.160

Shallow concentrated flow			Segment ID			
			BC			
7	Surface description (paved(P) or unpaved(UP))		UP			
8	Flow length, L	ft	192			
9	Watercourse slope, s	ft/ft	0.011			
10	Average Velocity, V (figure 3-1)	ft/s	1.69			
11	$T_t = L / 3600 V$	hr	0.032	+ 0	=	0.032

Channel Flow			Segment ID			
12	Cross sectional flow area, a	ft^2				
13	Wetted perimeter, Pw	ft				
14	Hydraulic radius, r = a / Pw compute r	ft				
15	Channel slope, s	ft/ft				
16	Manning's roughness coeff. , n					
17	$V = 1.49 r^{2/3} s^{1/2} / n$	ft/s				
18	Flow length , L	ft				
19	$T_t = L / 3600 V$	hr	#VALUE	+ 0	=	
20	Watershed or subarea Tc or Tt (add Tt in steps 6,11,and 19)					0.192

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Worksheet 2: Runoff curve number and runoff

Project: Elliott Rd - Clim. Cont. Self Storage By: BD Date: August-23
Location: Elliott Rd, Easton
Checked: Date:

Check one: Present ☐ Developed ☒

Notes: Proposed Conditions DA 2 - Eastern Outfall (Front)

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	**Cover description** (cover type, treatment,and hydroogic condition)	CN Table 2-2	CN Fig.2-3	CN Fig.2-4	**Area** acres mi^2 %	Product of CN x area
D	Lawn	80			0.2323	18.587695
D	IMPERVIOUS	98			0.5272	51.670478
						0
						0
						0
						0
						0
				Totals =	0.7596	70.258173

1/ Use only one CN source per line

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area (acres)}} = \frac{70.25817264}{0.75959596} = 92.49$$

Use CN = 92

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency.....	yr	2	10	100
Rainfall, P (24-hour).....	in	3.33	5.20	8.98
Runoff, Q.....	in	2.52	4.34	8.07

(Use P and Cn with table 2-1, fig. 2-1 or equ. 2-3 and 2-4)
(210-VI-TR-55, Second Ed., June 1986)

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Worksheet 3: Time of concentration (Tc) or travel time (Tt)

Project: Elliott Rd - Clim. Cont. Self Storag By: WTD Date: August-23
Location: Elliott Rd, Easton
Checked: _____ Date: _____

Circle one: Present ☐ Developed ☒

Circle one: Tc ☒ Tt ☐ rough subarea ☐ Notes: Proposed Conditions DA 2 - Eastern Outfall (Front)

Sheet flow (Applicable to Tc only)		Segment ID	AB		
1	surface description (table 3-1)		Smooth		
2	Manning's roughness coeff., n (table 3-1)		0.011		
3	Flow length, L (total L ≤ 300 ft)	ft	40		
4	two-yr 24-hr rainfall, P_2	in	3.33		
5	Land slope, s	ft/ft	0.005		
6	$T_t = 0.007(nL)^{0.8} / P_2^{0.5} s^{0.4}$	hr	0.02 +	+ =	0.017

Shallow concentrated flow		Segment ID			
7	Surface description (paved(P) or unpaved(UP))				
8	Flow length, L	ft			
9	Watercourse slope, s	ft/ft			
10	Average Velocity, V (figure 3-1)	ft/s			
11	$T_t = L / 3600 V$	hr	0 +	=	0.000

Channel Flow		Segment ID	BC		
12	Cross sectional flow area, a	ft^2	1.227		
13	Wetted perimeter, Pw	ft	3.93		
14	Hydraulic radius, r = a / Pw compute r	ft	0.31		
15	Channel slope, s	ft/ft	0.005		
16	Manning's roughness coeff. , n		0.013		
17	$V = 1.49 r^{2/3} s^{1/2} / n$	ft/s	3.73		
18	Flow length , L	ft	217		
19	$T_t = L / 3600 V$	hr	0.016 +	+ =	0.016
20	Watershed or subarea Tc or Tt (add Tt in steps 6,11,and 19)				0.033

0.1

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Stormwater Design Guidance - Addressing Quantity Control Requirements

Revisions to Maryland's stormwater management regulations in 2010 require that environmental site design (ESD) be used to the maximum extent practicable (MEP) to reduce the volume of runoff from the one-year design storm to levels equivalent to woods in good condition. This will address the groundwater recharge, water quality, and channel protection volumes (Re_v, WQ_v, and Cp_v, respectively) as described in Chapter 2 of the **2000 Maryland Stormwater Design Manual**[1] (the Manual). However, the ESD to the MEP mandate may not completely address overbank flood protection volume (Qp_2 or Qp_{10}) requirements for peak management of the two or ten-year design storm where locally required. In these situations, the volume of runoff that is captured using ESD techniques and practices (ESD_v) may contribute to meeting these requirements.

As described above and in Chapter 5 (see p. 5.19 of the Manual), the volume of storage within various ESD practices, or ESD_v, may be considered when determining Qp_2 and/or Qp_{10} requirements. There are several methods that may be used and designers are encouraged to consult with the local approval authority to find out which are acceptable. The Maryland Department of the Environment (MDE) recommends using the "Change in Runoff Curve Number Method"[2] as an acceptable approach for this purpose.

The "Change in Runoff Curve Number Method" was developed to be used with TR-20[3] to model how capturing runoff in small-scale, uniformly distributed practices would effect the hydrograph for a given drainage area. The method uses Equation 1 below to calculate a storm-specific runoff curve number, CN^*, that reflects the runoff volume stored by ESD techniques and practices. In this equation, P is the rainfall depth in inches for the specific design storm (e.g., 10 year 24 hour design storm). The second variable, Q, is the difference between the post-development runoff depth (e.g., Q_{10}) and Q_E, the runoff depth stored in ESD techniques and practices[‡] (e.g., $Q = Q_{10} - Q_E$). The resulting CN^* is used with either the TR-20 or TR-55[4] programs to develop downstream hydrographs that account for the difference in runoff from the two and/or ten-year design storms and the runoff already treated using ESD.

Equation 1. $$CN^* = \frac{200}{(P + 2Q + 2) - \sqrt{5PQ + 4Q^2}}$$

MDE offers the following examples for using the "Change in Runoff Curve Number Method" to address Qp_2 and Qp_{10} using ESD. These examples are based on the Reker Meadows and Claytor Community Center designs found in both Chapters 2 and 5 of the Manual. In each example, the existing and proposed conditions reflect the Unified Sizing Criteria and structural approach to stormwater management design described in Chapter 2 of the Manual while the ESD goals reflect newer design requirements found in Chapter 5.

Example 1 – Reker Meadows

Using the Reker Meadows design examples found in Chapters 2 and 5 (see pp. 2.14 - 2.21 and 5.23 - 5.27), the effect of ESD on ten-year peak discharge control could be determined as follows:

‡ NOTE: According to the Design Manual (see p. 5.18), Q_E is the depth of runoff treated using ESD practices and is equal to the product of P_E and the volumetric runoff coefficient, R_V. Because ESD requirements are based on the 1-year rainfall event, Q_E is limited to the runoff from the 1 year, 24 hour design storm.

Site Data:

Existing Conditions

Total Drainage Area:	38 acres	
Soil Types:	60% B, 40% C	
Land Use:	Residential	
Runoff Curve Numbers		
Pre-Development:	63	
Wooded Conditions:	61	
Time of Concentration (t_c):	0.35 hours	
Ten-Year Peak Discharge:	50.4 cubic feet per second (cfs)	

Proposed Conditions

Impervious Cover (I):	13.8 acres; %I = 13.8/38 or 36.3%	
Lot Size:	½ acre lots	
Runoff Curve Number:	78	
Time of Concentration:	0.19 hours	
Qp_{10} Criteria (see pp. 2.14 - 2.21 of the Manual)		
Ten-Year Rainfall (P_{10}):	5.0 inches	(see Table 2.2, p. 2.11)
Ten-Year Runoff (Q_{10}):	2.71 inches	(from TR-55, see p. 2.21)
Ten-Year Peak Discharge:	130 cfs	(from TR-55, see p. 2.21)
ESD Criteria (see pp. 5.23 - 5.27 of the Manual)		
One-Year Rainfall (P_1):	2.5 inches	
P_E:	1.8 inches	(see p. 5.25)
Q_E:	0.68 inches	($Q_E = P_E \times R_v$; see pp. 5.18 and 5.25)
ESD_v:	2.15 ac-ft or 93,800 ft^3 (see pp. 5.18 and 5.25)	

This example assumes that the ESD targets shown in Chapter 5 for the Reker Meadows project have been met. For the ten-year design storm, the design rainfall depth, or P_{10}, is 5.0 inches, Q_{10} (the post-development runoff depth) is 2.71 inches and Q_E (the runoff depth stored in ESD practices) is 0.68 inches. Q, (Q_{10} minus Q_E) is 2.03 inches. Using these values and Equation 1 (see above), the revised post-development RCN (CN^*) is determined as follows:

$$CN^* = \frac{200}{(P_{10} + 2Q + 2) - \sqrt{5P_{10}Q + 4Q^2}} = \frac{200}{[5 + (2 \times 2.03) + 2] - \sqrt{(5 \times 5 \times 2.03) + (4 \times 2.03^2)}} = 70$$

The revised CN^* of 70 is used with either the TR-20 or TR-55 models to determine a revised runoff depth and peak discharge that reflect the effect of ESD on peak discharge controls. However, for this example, the impact of ESD on Qp_{10} requirements is summarized below. Please recognize that steps in the process may be missing as this is not meant as an example of how to use TR-55.

To be conservative, this example assumes that there is no change in the post-development time of concentration (t_c). The example also uses an initial abstraction (I_a) of 0.857 inches (see Table 4-1, p. 4-1 of TR-55 for an RCN of 70), a P_{10} of 5.0 inches, and using Exhibit 4-II (p. 4-6, TR-55), the unit peak discharge (q_u) is 750 cfs/mi^2/in. Using these values, the post-development peak discharge or q_{p10} may be calculated as follows:

$q_{p10} = q_u A_m Q F_p$ (Equation 4-1, TR-55)

where A_m is the site area in square miles (38 acres/640 acres per mile^2 or 0.0594), Q is the 10-year post-development runoff depth for an RCN of 70 (2.03 inches), and F_p is an adjustment for ponds or swamps

within the watershed (in this case, $F_p = 1.0$). Using these values, the post-development peak discharge is:

$$q_{p10} = q_u A_m Q F_p = 750 \times 0.0594 \times 2.04 \times 1 = 90.8\, cfs$$

Using Figure 6-1 (see p. 6-2 of TR-55), for a inflow rate (q_{in}) of 90.8 cfs and an allowable outflow rate (q_{out}) of 50.4 cfs, the storage volume (V_s) necessary for control is 1.68 acre-ft (73,180 ft^3). This is almost 50,000 ft^3 less than the 123,275 ft^3 storage volume needed to address Qp_{10} without ESD.

Example 2 – Claytor Community Center

Using the Claytor Community Center design examples found in Chapters 2 and 5 (see pp. 2.22 - 2.27 and 5.28 - 5.31 of the Manual), the effect of ESD on two-year peak discharge control might be determined as follows:

Site Data:

Existing Conditions		
Total Drainage Area:	3 acres	
Soil Types:	100% B	
Land Use:	Commercial	
Runoff Curve Numbers		
Pre-Development:	57	
Wooded Conditions:	55	
Time of Concentration (t_c):	0.42 hours	
Two-Year Peak Discharge:	0.58 cfs	
Proposed Conditions		
Impervious Cover:	1.9 acres; I = 1.9/3 or 63.3%	
Runoff Curve Number:	83	
Time of Concentration:	0.16 hours	
Qp_2 Criteria (see pp. 2.22 - 2.27 of the Manual)		
Two-Year Rainfall (P_2):	3.4 inches	(see Table 2.2, p. 2.11)
Two-Year Runoff (Q_2):	1.77 inches	(from TR-55, see p. 2.27)
Two-Year Peak Discharge:	7.11 cfs	(from TR-55, see p. 2.27)
Storage Volume (V_s):	10,630 ft^3	(see p. 2.25)
ESD Criteria (see pp. 5.28 - 5.31)		
One-Year Rainfall (P_1):	2.8 inches	
Target P_E:	2.0 inches	(see p. 5.29)
Design P_E:	1.6 inches	(see p. 5.30)
Target Q_E:	1.24 inches	(see pp. 5.18 and 5.29)
Design Q_E:	0.99 inches	(see p. 5.30)
Target ESD_v:	13,505 ft^3	(see pp. 5.18 and 5.29)
Design Cp_V[§]:	3,265 ft^3	

This example assumes that the ESD targets shown above have not been met. When this occurs, the CN^* should be determined using the P_E and Q_E provided, which for this example are 1.6 inches and 0.99 inches respectively. For the two-year design storm, the design rainfall depth or P_2 is 3.4 inches, Q_2 is 1.77 inches, Q_E is 0.99 inches, and Q is 0.78 inches. Using these values and Equation 1, CN^* is determined as follows:

[§] Because the ESD targets have not been met, structural practices (see Chapter 3 of the Manual) must be used to capture and treat the difference in the 1 year design storm runoff from the achieved RCN of 65 (0.42 inches, see Manual, pp. 5.30 -5.31) and that for woods in good condition (runoff for an RCN =55 is 0.12 inches). Therefore, Cp_V is equal to [(0.42"– 0.12")x3 acres]/12", or approximately 3,265 ft^3.

$$CN^{*} = \frac{200}{(P_2 + 2Q + 2) - \sqrt{5P_2Q + 4Q^2}} = \frac{200}{[3.4 + (2 \times 0.78) + 2] - \sqrt{(5 \times 3.4 \times 0.78) + (4 \times 0.78^2)}} = 66$$

The revised CN* of 66 is used with either the TR-20 or TR-55 models to determine a revised runoff depth and peak discharge that reflect the effect of ESD on peak discharge controls. However, the impact of ESD on Qp_2 requirements is also summarized below. Again, to be conservative, the calculations assume that there is no change in the post-development time of concentration (t_c). The example also uses initial abstraction (I_a) of 1.03 inches (see Table 4-1, p. 4-1 of TR-55 for an RCN of 66), the 2-year rainfall depth (P_2) of 3.4 inches, and the unit peak discharge (q_u) is 775 cfs/mi^2/in (see Exhibit 4-II, TR-55). The site area (A_m) is 0.00468 square miles (3 acres/640 acres per mile^2), the 2-year post-development runoff depth (Q) for a RCN of 66 is 0.78 inches, and F_p is 1.0. Using these values, the post-development peak discharge or q_{p2} may be calculated using Equation 4-1 from TR-55 as follows:

$$q_{p2} = q_u A_m Q F_p = 775 \times 0.00468 \times 0.75 \times 1 = 2.7\, cfs$$

Using Figure 6-1 (see p. 6-2 of TR-55), for a q_{in} of 2.7 cfs and an allowable q_{out} of 0.58 cfs, the storage volume (V_s) necessary for control is 3,595 ft^3. This is almost 7,000 ft^3 less than the 10,630 ft^3 storage volume needed to address Qp_2 without ESD.

Conclusion

The primary purpose of the overbank flood protection criteria is to prevent increases in the frequency and magnitude of out-of-bank flooding attributed to new development. In Maryland, controlling overbank flooding is required only if the local approval authority determines that additional stormwater management is necessary because there are historical flooding problems and downstream floodplain development cannot be controlled. While designers should consult with the local approval authority for acceptable methods, MDE recommends using the "Reduced Runoff Curve Number Method" for determining the effect of ESD when determining Qp_2 and/or Qp_{10} requirements. As shown in the two examples above, meeting the ESD to the MEP mandate does not necessarily mean that overbank flood protection requirements are addressed as well. Where needed to manage peak discharges, additional storage may be provided by increasing the size of ESD practices, adding structural practices, or using some combination of ESD and structural practices.

Resources

[1] 2000 Maryland Stormwater Design Manual, Volumes I and II, MDE, October 2000 (http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/MarylandStormwaterDesignManual/Pages/Programs/WaterPrograms/SedimentandStormwater/stormwater_design/index.aspx)

[2] "Modeling Infiltration Practices Using the TR-20 Hydrologic Program", McCuen, R., MDE 1983 (http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/SoilErosionandSedimentControl/Documents/Modeling%20Infiltration%20wTR%2020.pdf)

[3] "Technical Release 20 - Computer Program for Project Formulation Hydrology", United States Department of Agriculture – Natural Resources Conservation Service, 1964, 1986, & 1992

[4] "Technical Release 55 – "Urban Hydrology for Small Watersheds", United States Department of Agriculture – Natural Resources Conservation Service, 1986

Reduced Curve Number Computations per MDE Stormwater Design Guidance - Addressing Quantity Control Requirements

Frequency	2	10
P	3.33	5.20

	Q (TR-55)	
DA1	2.42	4.22
DA2	2.52	4.34

	Q*	
DA1	1.27	3.07
DA2	1.37	3.19

	P + (2 x Q*) + 2	
DA1	7.866	13.336
DA2	8.066	13.576

SQRT [(5 x P x Q*) + (4 x Q^2)]	
5.248189783	10.83598154
5.501172239	11.11491682

200
(P + 2 x Q* + 2) - SQRT (5 x P x Q* + 4 x Q^2)

CN*	DA1	76.4	80.0
	DA2	78.0	81.3

Rounded CN*	DA1	77	80
	DA2	78	82

A	CN
1.0097	91
0.7665	92

PE	Rv	QE
1.8	0.64	1.152

30

WinTR-55 Current Data Description

--- Identification Data ---

User: bdavis
Project: Elliott Rd - Clim. Cont. Stor.
SubTitle: DA 1 (Western) (Back)
State: Maryland
County: Talbot NOAA-C
Filename: S:\ACAD\PROJECTS\D-I\Fink & Whitten\22009-Duley-Miniwarehouses\SWM\08-2023\TR-55 Analysis - DA 1

Date: 8/2/2023
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
DA1 Ex	Existing Conditions	Outlet	0.77	82	0.249
DA1 Pr	Proposed Conditions	Outlet	1.01	91	0.100
DA1 RCN2	Reduc. CN 2 yr	Outlet	1.01	77	0.100
DA1 RCN10	Reduc. CN 10 yr	Outlet	1.01	80	0.100

Total area: 3.80 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
3.33	4.33	5.2	6.52	7.73	8.98	2.74

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: NOAA_C
Dimensionless Unit Hydrograph: delmarva

bdavis

Elliott Rd - Clim. Cont. Stor.
DA 1 (Western) (Back)
Talbot NOAA-C County, Maryland

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
DA1 Ex							
User-provided							0.249
					Time of Concentration		0.249
DA1 Pr							
User-provided							0.100
					Time of Concentration		0.100
DA1 RCN2							
User-provided							0.100
					Time of Concentration		0.100
DA1 RCN10							
User-provided							0.100
					Time of Concentration		0.100

bdavis

Elliott Rd - Clim. Cont. Stor.
DA 1 (Western) (Back)
Talbot NOAA-C County, Maryland

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
DA1 Ex	CN directly entered by user	-	.77	82
	Total Area / Weighted Curve Number		.77	82
DA1 Pr	CN directly entered by user	-	1.01	91
	Total Area / Weighted Curve Number		1.01	91
DA1 RCN2	CN directly entered by user	-	1.01	77
	Total Area / Weighted Curve Number		1.01	77
DA1 RCN10	CN directly entered by user	-	1.01	80
	Total Area / Weighted Curve Number		1.01	80

bdavis

Elliott Rd - Clim. Cont. Stor.
DA 1 (Western) (Back)
Talbot NOAA-C County, Maryland

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 2-Yr (cfs)	10-Yr (cfs)	100-Yr (cfs)
SUBAREAS			
DA1 Ex	0.86	1.71	3.51
DA1 Pr	2.47	4.22	7.69
DA1 RCN2	1.36		
DA1 RCN10		3.25	

DMS

Davis, Moore, Shearon, & Associates, LLC
Engineering, Drafting/Design, Environmental Services & Surveying

DATA FOR ELEVATION - STORAGE CURVE

JOB NAME: Elliott Rd Climate Contr. Self Storage

DESCRIPTION: Cumulative Storage

STORAGE: Proposed Conditions

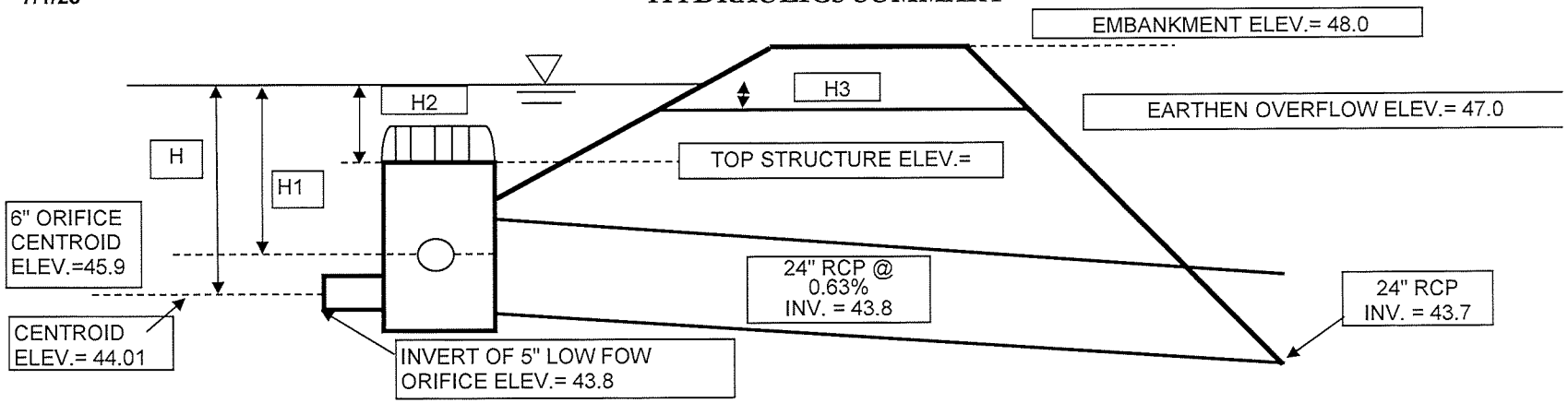
ELEV. (FT)	SURFACE AREA (SQ.FT)	AVERAGE SURFACE AREA (SQ.FT.)	DIFF. IN ELEV. (FT)	INCREMENT STORAGE (CU.FT.)	STORAGE (CU. FT.)	STORAGE (ACRE FT.)
42.50	56				0	0.0000
		136	0.50	68		
43.00	215				68	0.0016
		338	0.50	169		
43.50	461				237	0.0054
		542	0.30	162		
43.80	622				399	0.0092
		677	0.20	135		
44.00	732				535	0.0123
		874	0.50	437		
44.50	1,016				972	0.0223
		1,166	0.50	583		
45.00	1,315				1,554	0.0357
		1,471	0.50	736		
45.50	1,627				2,290	0.0526
		1,758	0.40	703		
45.90	1,888				2,993	0.0687
		1,921	0.10	192		
46.00	1,954				3,185	0.0731
		2,125	0.50	1,062		
46.50	2,295				4,247	0.0975
		2,383	0.25	596		
46.75	2,471				4,843	0.1112
		2,561	0.25	640		
47.00	2,650				5,483	0.1259
		2,835	0.50	1,418		
47.50	3,020				6,901	0.1584
		3,212	0.50	1,606		
48.00	3,403				8,506	0.1953

DMS & Associates

BY: B. DAVIS

7/1/23

ELLIOTT ROAD POND (DA #1)
SWM POND OUTLET STRUCTURE
HYDRAULICS SUMMARY



WATER in Pond Elev	ORIFICE		ORIFICE		STRUC. TOP		OVERFLOW WEIR		24" ADS CAPACITY.				FLOW Q	ACTUAL STORAGE VOLUME
									Inlet Control *		Outlet Control			
	H	Q	H1	Q1	H2	Q2	H3	Q3	H1	Q1	H3	Q3		
	CL =	**44.01**	CL	**45.90**	Crest=	46.75	Crest=	47.00	CI Elev.=	**44.8**	CI Elev=	**44.7**		
	Size(ft) =	**0.42**	Size(ft) =	**0.5**	Length=	**9.66**	Length=	10	Size(ft)=	**2.00**	Kp=	0.0106		
	Area =	0.136	Area =	0.196										
ft	ft	cfs	ft	cfs	ft	cfs	ft	cfs	ft.	cfs	ft	cfs	cfs	ac. ft.
42.50	-1.51	0.00	**0**	0	**0**	0	**0**	0	-2.30	**0.00**	-2.20	**0.00**	0.00	**0.0000**
43.00	-1.01	0.00	**0**	0	**0**	0	**0**	0	-1.80	**0.00**	-1.70	**0.00**	0.00	**0.0016**
43.50	-0.51	0.00	**0**	0	**0**	0	**0**	0	-1.30	**0.00**	-1.20	**0.00**	0.00	**0.0054**
43.80	-0.21	0.00	**0**	0	**0**	0	**0**	0	-1.00	**0.00**	-0.90	**0.00**	0.00	**0.0092**
44.00	-0.01	0.01	**0**	0	**0**	0	**0**	0	-0.80	**0.10**	-0.70	**0.10**	0.01	**0.0123**
44.50	0.49	0.46	**0**	0	**0**	0	**0**	0	-0.30	**0.30**	-0.20	**0.30**	0.46	**0.0223**
45.00	0.99	0.65	**0**	0	**0**	0	**0**	0	0.20	**6.76**	0.30	**9.37**	0.65	**0.0357**
45.50	1.49	0.80	**0**	0	**0**	0	**0**	0	0.70	**12.65**	0.80	**15.30**	0.80	**0.0526**
45.90	1.89	0.90	**0**	0.1	**0**	**0.00**	0.00	**0.00**	1.10	**15.86**	1.20	**18.74**	1.00	**0.0687**
46.00	1.99	0.93	0.10	0.30	**0**	**0.00**	0.00	**0.00**	1.20	**16.56**	1.30	**19.51**	1.23	**0.0731**
46.50	2.49	1.04	0.60	0.73	**0**	**0.00**	0.00	**0.00**	1.70	**19.71**	1.80	**22.95**	1.77	**0.0975**
46.75	2.74	1.09	0.85	0.87	**0**	**0.00**	0.00	**0.00**	1.95	**21.11**	2.05	**24.50**	1.96	**0.1112**
47.00	2.99	1.14	1.10	0.99	0.25	**3.74**	0.00	**0.00**	2.20	**22.43**	2.30	**25.95**	5.87	**0.1259**
47.50	3.49	1.23	1.60	1.20	0.75	**19.45**	0.50	**10.59**	2.70	**24.84**	2.80	**28.63**	32.46	**0.1584**
48.00	3.99	1.31	2.10	1.37	1.25	**41.85**	1.00	**29.95**	3.20	**27.05**	3.30	**31.08**	56.99	**0.1953**

NOTES: Q = 0.6 A [(2gH)^1/2] Q1 = 0.6 A [(2gH)^1/2] Q2= 3.1(L)(H3/2) Q3 =3.1(L)(H3/2)

(1) Weir flow Q = CLH3/2 C = 3.1

Roughness Coefficient n= **0.012**	PIPE AREA(ft^2)= **3.140**
PIPE DIA.(in)= **24.00**	PIPE LEGTH= **16.00**

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```
******************80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY******************

JOB TR-20                      FULLPRINT           SUMMARY   NOPLOTS
TITLE 001 SCS ANALYSIS FOR FRIEL - ELLIOTT ROAD, EASTON
TITLE 002 TALBOT COUNTY  PREPARED BY BAD  12/2022  #2022009
 4 DIMHYD
 8          0.000       0.111       0.356       0.655       0.896
 8          1.000       0.929       0.828       0.737       0.656
 8          0.584       0.521       0.465       0.415       0.371
 8          0.331       0.296       0.265       0.237       0.212
 8          0.190       0.170       0.153       0.138       0.123
 8          0.109       0.097       0.086       0.076       0.066
 8          0.057       0.049       0.041       0.033       0.027
 8          0.024       0.021       0.018       0.015       0.013
 8          0.012       0.011       0.009       0.008       0.008
 8          0.006       0.006       0.005       0.005       0.000
 9 ENDTBL
 3 STRUCT      01
 8                      42.50       0.001       0.0000
 8                      43.00       0.002       0.0016
 8                      43.50       0.003       0.0054
 8                      43.80       0.004       0.0092
 8                      44.00       0.01        0.0123
 8                      44.50       0.46        0.0223
 8                      45.00       0.65        0.0357
 8                      45.50       0.80        0.0526
 8                      45.90       1.00        0.0687
 8                      46.00       1.23        0.0731
 8                      46.50       1.77        0.0975
 8                      46.75       1.96        0.1112
 8                      47.00       5.87        0.1259
 8                      47.50       32.46       0.1584
 8                      48.00       56.99       0.1953
 9 ENDTBL
 6 RUNOFF 1    01     1 0.001204    82.0        0.249       1 1   1 1 1
 6 RUNOFF 1    01     2 0.001585    91.0        0.100       1 1   1 1 1
 6 RESVOR 2    01 2   3 42.50                               1 1 1 1 1 1
   ENDATA
 7 INCREM 6             0.1
 7 COMPUT 7    01    01 0.0         3.33        1.0         2 2  01  02
   ENDCMP 1
 7 COMPUT 7    01    01 0.0         5.20        1.0         2 2  01  10
   ENDCMP 1
 7 COMPUT 7    01    01 0.0         8.98        1.0         2 2  01  99
   ENDCMP 1
   ENDJOB 2
0*****************************END OF 80-80 LIST*******************************
1
```

```
 EXECUTIVE CONTROL OPERATION INCREM                                                                                    RECORD ID
+                                    MAIN TIME INCREMENT =   .10 HOURS


 EXECUTIVE CONTROL OPERATION COMPUT                                                                                    RECORD ID
+                                    FROM STRUCTURE  1
+                                                          TO STRUCTURE  1
        STARTING TIME =   .00    RAIN DEPTH =  3.33    RAIN DURATION=  1.00    RAIN TABLE NO.= 2    ANT. MOIST. COND= 2
        ALTERNATE NO.= 1         STORM NO.= 2    MAIN TIME INCREMENT =   .10 HOURS


 OPERATION RUNOFF   STRUCTURE  1
           OUTPUT HYDROGRAPH=  1
           AREA=    .00 SQ MI   INPUT RUNOFF CURVE= 82.    TIME OF CONCENTRATION=   .25 HOURS
           INTERNAL HYDROGRAPH TIME INCREMENT=  .0332 HOURS

 *** WARNING-NO PEAK FOUND, MAXIMUM DISCHARGE =         .03 CFS.

           PEAK TIME(HRS)              PEAK DISCHARGE(CFS)           PEAK ELEVATION(FEET)
              23.70                            .03                        (RUNOFF)
              12.10                           1.04                        (RUNOFF)

 TIME(HRS)         FIRST HYDROGRAPH POINT =   .00 HOURS      TIME INCREMENT =  .10 HOURS      DRAINAGE AREA =    .00 SQ.MI.
    9.00    DISCHG         .00       .00       .00       .00       .00       .00       .01       .01       .01       .01
   10.00    DISCHG         .01       .01       .01       .01       .01       .02       .02       .02       .03       .03
   11.00    DISCHG         .03       .04       .04       .05       .06       .07       .10       .19       .30       .57
   12.00    DISCHG         .91      1.04       .87       .71       .58       .47       .39       .33       .28       .24
   13.00    DISCHG         .20       .18       .16       .15       .13       .12       .11       .10       .10       .09
   14.00    DISCHG         .09       .08       .08       .08       .07       .07       .07       .06       .06       .06
   15.00    DISCHG         .06       .06       .06       .06       .05       .05       .05       .05       .05       .05
   16.00    DISCHG         .05       .05       .05       .05       .05       .05       .05       .05       .04       .04
   17.00    DISCHG         .04       .04       .04       .04       .04       .04       .04       .04       .04       .04
   18.00    DISCHG         .04       .04       .04       .03       .03       .03       .03       .03       .03       .03
   19.00    DISCHG         .03       .03       .03       .03       .03       .03       .03       .03       .03       .03
   20.00    DISCHG         .03       .03       .03       .03       .03       .03       .03       .03       .03       .03
   21.00    DISCHG         .03       .03       .02       .02       .02       .03       .03       .03       .03       .03
   22.00    DISCHG         .03       .03       .03       .03       .03       .03       .03       .03       .03       .03
   23.00    DISCHG         .03       .03       .03       .03       .03       .03       .03       .03       .02       .02
   24.00    DISCHG         .02       .02       .01       .01       .01       .00

   RUNOFF VOLUME ABOVE BASEFLOW =  1.64 WATERSHED INCHES,      1.27 CFS-HRS,      .11 ACRE-FEET;   BASEFLOW =    .00 CFS

                        --- HYDROGRAPH FOR STRUCTURE  1, ALTERNATE  1, STORM  2, ADDED TO OUTPUT HYDROGRAPH FILE ---


 OPERATION RUNOFF   STRUCTURE  1
           OUTPUT HYDROGRAPH=  2
           AREA=    .00 SQ MI   INPUT RUNOFF CURVE= 91.    TIME OF CONCENTRATION=   .10 HOURS
           INTERNAL HYDROGRAPH TIME INCREMENT=  .0133 HOURS

           PEAK TIME(HRS)              PEAK DISCHARGE(CFS)           PEAK ELEVATION(FEET)
              11.99                           2.91                        (RUNOFF)
1
```

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TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .00 SQ.MI.

5.00	DISCHG	.00	.00	.00	.00	.00	.00	.00	.00	.01	.01
6.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
7.00	DISCHG	.01	.02	.02	.02	.02	.02	.02	.02	.02	.02
8.00	DISCHG	.02	.02	.02	.03	.03	.03	.03	.03	.04	.04
9.00	DISCHG	.04	.04	.04	.05	.05	.05	.05	.05	.06	.06
10.00	DISCHG	.06	.06	.07	.07	.08	.08	.10	.11	.12	.13
11.00	DISCHG	.14	.16	.17	.18	.21	.23	.57	.84	1.28	2.34
12.00	DISCHG	2.89	1.91	1.12	.74	.49	.39	.33	.30	.28	.25
13.00	DISCHG	.23	.21	.20	.19	.17	.17	.15	.14	.14	.13
14.00	DISCHG	.13	.12	.12	.11	.11	.10	.10	.09	.09	.09
15.00	DISCHG	.09	.09	.09	.09	.08	.08	.08	.08	.08	.08
16.00	DISCHG	.08	.08	.08	.08	.08	.08	.07	.07	.06	.06
17.00	DISCHG	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
18.00	DISCHG	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
19.00	DISCHG	.05	.05	.05	.05	.05	.05	.05	.05	.05	.04
20.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
21.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
22.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
23.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.03
24.00	DISCHG	.03	.01	.01	.00						

RUNOFF VOLUME ABOVE BASEFLOW = 2.37 WATERSHED INCHES, 2.42 CFS-HRS, .20 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR STRUCTURE 1, ALTERNATE 1, STORM 2, ADDED TO OUTPUT HYDROGRAPH FILE ---

OPERATION RESVOR STRUCTURE 1
INPUT HYDROGRAPH= 2 OUTPUT HYDROGRAPH= 3
SURFACE ELEVATION= 42.50

*** WARNING - STRUCTURE 1 DELTA T IS TOO LARGE. O /2 > S /DELTA T OCCURED 64 TIMES STARTING WITH POINT 2

*** WARNING-NO PEAK FOUND, MAXIMUM DISCHARGE = .04 CFS.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
23.70	.04	44.03
12.20	1.00	45.90

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .00 SQ.MI.

10.00	DISCHG	.00	.00	.00	.00	.01	.01	.01	.01	.04	.06
10.00	ELEV	42.00	42.00	42.00	42.00	43.86	43.90	43.94	43.99	44.03	44.06
11.00	DISCHG	.09	.11	.12	.14	.16	.18	.25	.39	.51	.65
11.00	ELEV	44.09	44.11	44.13	44.15	44.17	44.19	44.26	44.42	44.63	45.01
12.00	DISCHG	.79	.95	1.00	.99	.96	.91	.85	.80	.76	.73
12.00	ELEV	45.47	45.79	45.90	45.89	45.81	45.71	45.61	45.50	45.38	45.26
13.00	DISCHG	.69	.66	.62	.57	.53	.49	.43	.34	.28	.23
13.00	ELEV	45.15	45.04	44.91	44.79	44.67	44.57	44.47	44.37	44.30	44.25
14.00	DISCHG	.20	.18	.16	.14	.13	.12	.12	.11	.10	.10

1

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14.00	ELEV	44.21	44.19	44.17	44.15	44.14	44.13	44.12	44.11	44.10	44.10
15.00	DISCHG	.10	.09	.09	.09	.09	.09	.08	.08	.08	.08
15.00	ELEV	44.10	44.09	44.09	44.09	44.09	44.08	44.08	44.08	44.08	44.08
16.00	DISCHG	.08	.08	.08	.08	.08	.08	.08	.07	.07	.07
16.00	ELEV	44.07	44.07	44.07	44.07	44.07	44.07	44.07	44.07	44.07	44.07
17.00	DISCHG	.07	.07	.07	.06	.06	.06	.06	.06	.06	.06
17.00	ELEV	44.06	44.06	44.06	44.06	44.06	44.06	44.06	44.06	44.06	44.06
18.00	DISCHG	.06	.06	.06	.05	.05	.05	.05	.05	.05	.05
18.00	ELEV	44.05	44.05	44.05	44.05	44.05	44.05	44.05	44.05	44.05	44.05
19.00	DISCHG	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
19.00	ELEV	44.05	44.05	44.05	44.05	44.05	44.05	44.05	44.05	44.05	44.04
20.00	DISCHG	.05	.04	.04	.04	.04	.04	.04	.04	.04	.04
20.00	ELEV	44.04	44.04	44.04	44.03	44.03	44.03	44.03	44.03	44.03	44.03
21.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
21.00	ELEV	44.03	44.03	44.03	44.03	44.03	44.03	44.03	44.03	44.03	44.03
22.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
22.00	ELEV	44.03	44.03	44.03	44.03	44.03	44.03	44.03	44.03	44.03	44.03
23.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
23.00	ELEV	44.03	44.03	44.03	44.03	44.03	44.03	44.03	44.03	44.03	44.03
24.00	DISCHG	.03	.03	.02	.02	.01	.01	.01			
24.00	ELEV	44.03	44.02	44.02	44.01	44.00	44.00	43.99			

RUNOFF VOLUME ABOVE BASEFLOW = 2.22 WATERSHED INCHES, 2.27 CFS-HRS, .19 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR STRUCTURE 1, ALTERNATE 1, STORM 2, ADDED TO OUTPUT HYDROGRAPH FILE ---

EXECUTIVE CONTROL OPERATION ENDCMP RECORD ID
+ COMPUTATIONS COMPLETED FOR PASS 1

1

EXECUTIVE CONTROL OPERATION COMPUT RECORD ID
+ FROM STRUCTURE 1
+ TO STRUCTURE 1
STARTING TIME = .00 RAIN DEPTH = 5.20 RAIN DURATION= 1.00 RAIN TABLE NO.= 2 ANT. MOIST. COND= 2
ALTERNATE NO.= 1 STORM NO.=10 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF STRUCTURE 1

OUTPUT HYDROGRAPH= 1
AREA= .00 SQ MI INPUT RUNOFF CURVE= 82. TIME OF CONCENTRATION= .25 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0332 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.09	2.07	(RUNOFF)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .00 SQ.MI.

7.00	DISCHG	.00	.00	.00	.01	.01	.01	.01	.01	.01	.01
8.00	DISCHG	.01	.01	.01	.01	.01	.02	.02	.02	.02	.02
9.00	DISCHG	.02	.02	.03	.03	.03	.03	.03	.04	.04	.04
10.00	DISCHG	.04	.05	.05	.05	.06	.06	.07	.08	.08	.09
11.00	DISCHG	.10	.12	.13	.14	.16	.18	.26	.46	.69	1.23
12.00	DISCHG	1.86	2.06	1.71	1.38	1.11	.90	.75	.62	.53	.44
13.00	DISCHG	.37	.33	.29	.26	.24	.22	.20	.19	.18	.17
14.00	DISCHG	.16	.15	.14	.14	.13	.13	.12	.11	.11	.11
15.00	DISCHG	.10	.10	.10	.10	.10	.09	.09	.09	.09	.09
16.00	DISCHG	.09	.09	.09	.09	.09	.09	.08	.08	.08	.08
17.00	DISCHG	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07
18.00	DISCHG	.07	.06	.06	.06	.06	.06	.06	.06	.06	.06
19.00	DISCHG	.06	.06	.06	.06	.06	.06	.06	.06	.06	.05
20.00	DISCHG	.05	.05	.05	.05	.05	.04	.04	.04	.04	.04
21.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
22.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
23.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
24.00	DISCHG	.04	.03	.02	.02	.01	.01	.01	.00		

RUNOFF VOLUME ABOVE BASEFLOW = 3.26 WATERSHED INCHES, 2.53 CFS-HRS, .21 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR STRUCTURE 1, ALTERNATE 1, STORM 10, ADDED TO OUTPUT HYDROGRAPH FILE ---

OPERATION RUNOFF STRUCTURE 1
OUTPUT HYDROGRAPH= 2
AREA= .00 SQ MI INPUT RUNOFF CURVE= 91. TIME OF CONCENTRATION= .10 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0133 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
11.98	4.94	(RUNOFF)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .00 SQ.MI.

4.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.02	.02
5.00	DISCHG	.02	.02	.02	.02	.02	.02	.02	.02	.03	.03

1

6.00	DISCHG	.03	.03	.03	.04	.04	.04	.04	.04	.04	.04
7.00	DISCHG	.04	.05	.05	.05	.05	.05	.05	.05	.05	.05
8.00	DISCHG	.05	.06	.06	.07	.08	.08	.08	.08	.08	.09
9.00	DISCHG	.09	.09	.10	.10	.10	.11	.11	.12	.12	.13
10.00	DISCHG	.13	.13	.14	.15	.17	.18	.20	.22	.24	.26

11.00	DISCHG	.28	.31	.33	.36	.40	.43	1.06	1.54	2.29	4.06
12.00	DISCHG	4.91	3.22	1.87	1.22	.81	.65	.55	.49	.46	.41
13.00	DISCHG	.38	.34	.32	.31	.28	.27	.25	.23	.23	.21
14.00	DISCHG	.21	.20	.19	.18	.17	.17	.16	.15	.15	.14
15.00	DISCHG	.14	.14	.14	.14	.13	.13	.12	.12	.12	.12
16.00	DISCHG	.12	.12	.12	.12	.12	.12	.11	.11	.10	.10
17.00	DISCHG	.10	.10	.10	.10	.10	.10	.10	.10	.10	.09
18.00	DISCHG	.09	.08	.08	.08	.08	.08	.08	.08	.08	.08
19.00	DISCHG	.08	.08	.08	.08	.08	.08	.08	.08	.08	.07
20.00	DISCHG	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
21.00	DISCHG	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
22.00	DISCHG	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
23.00	DISCHG	.06	.06	.06	.06	.06	.06	.06	.06	.06	.05
24.00	DISCHG	.04	.02	.01	.00						

RUNOFF VOLUME ABOVE BASEFLOW = 4.16 WATERSHED INCHES, 4.26 CFS-HRS, .35 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR STRUCTURE 1, ALTERNATE 1, STORM 10, ADDED TO OUTPUT HYDROGRAPH FILE ---

OPERATION RESVOR STRUCTURE 1
INPUT HYDROGRAPH= 2 OUTPUT HYDROGRAPH= 3
SURFACE ELEVATION= 42.50

*** WARNING - STRUCTURE 1 DELTA T IS TOO LARGE. O /2 > S /DELTA T OCCURED 44 TIMES STARTING WITH POINT 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.21	1.96	46.75

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .00 SQ.MI.

8.00	DISCHG	.00	.00	.01	.01	.01	.01	.01	.03	.05	.06
8.00	ELEV	42.00	42.00	43.85	43.88	43.92	43.95	43.99	44.02	44.04	44.05
9.00	DISCHG	.07	.07	.08	.09	.09	.10	.10	.11	.11	.11
9.00	ELEV	44.06	44.07	44.08	44.09	44.09	44.10	44.10	44.11	44.11	44.12
10.00	DISCHG	.12	.12	.13	.13	.14	.15	.16	.18	.19	.21
10.00	ELEV	44.12	44.12	44.13	44.14	44.15	44.16	44.17	44.19	44.20	44.22
11.00	DISCHG	.23	.25	.27	.29	.32	.35	.47	.56	.69	.89
11.00	ELEV	44.24	44.27	44.29	44.32	44.35	44.38	44.51	44.76	45.12	45.67
12.00	DISCHG	1.53	1.89	1.96	1.91	1.82	1.66	1.48	1.32	1.12	.97
12.00	ELEV	46.28	46.66	46.75	46.69	46.56	46.40	46.23	46.08	45.95	45.83
13.00	DISCHG	.91	.86	.81	.77	.74	.70	.67	.64	.59	.55
13.00	ELEV	45.72	45.61	45.51	45.40	45.29	45.18	45.07	44.96	44.85	44.74
14.00	DISCHG	.51	.48	.42	.35	.29	.26	.23	.20	.19	.17
14.00	ELEV	44.64	44.55	44.46	44.38	44.32	44.27	44.24	44.21	44.19	44.18
15.00	DISCHG	.16	.16	.15	.15	.15	.14	.14	.13	.13	.13

1

15.00	ELEV	44.17	44.16	44.16	44.16	44.15	44.14	44.14	44.14	44.13	44.13
16.00	DISCHG	.13	.13	.12	.12	.12	.12	.12	.12	.11	.11
16.00	ELEV	44.13	44.13	44.13	44.13	44.13	44.13	44.12	44.12	44.12	44.11

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  17.00    DISCHG        .11       .11       .11       .10       .10       .10       .10       .10       .10       .10
  17.00      ELEV      44.11     44.11     44.11     44.11     44.10     44.10     44.10     44.10     44.10     44.10
  18.00    DISCHG        .10       .09       .09       .09       .09       .08       .08       .08       .08       .08
  18.00      ELEV      44.10     44.09     44.09     44.09     44.08     44.08     44.08     44.08     44.08     44.08
  19.00    DISCHG        .08       .08       .08       .08       .08       .08       .08       .08       .08       .08
  19.00      ELEV      44.08     44.08     44.08     44.08     44.08     44.08     44.08     44.08     44.08     44.08
  20.00    DISCHG        .08       .07       .07       .07       .07       .06       .06       .06       .06       .06
  20.00      ELEV      44.07     44.07     44.07     44.06     44.06     44.06     44.06     44.06     44.06     44.06
  21.00    DISCHG        .06       .06       .06       .06       .06       .06       .06       .06       .06       .06
  21.00      ELEV      44.06     44.06     44.06     44.06     44.06     44.06     44.06     44.06     44.06     44.06
  22.00    DISCHG        .06       .06       .06       .06       .06       .06       .06       .06       .06       .06
  22.00      ELEV      44.06     44.06     44.06     44.06     44.06     44.06     44.06     44.06     44.06     44.06
  23.00    DISCHG        .06       .06       .06       .06       .06       .06       .06       .06       .06       .06
  23.00      ELEV      44.06     44.06     44.06     44.06     44.06     44.06     44.06     44.06     44.06     44.05
  24.00    DISCHG        .06       .05       .04       .03       .02       .01       .01       .01
  24.00      ELEV      44.05     44.04     44.03     44.02     44.01     44.00     44.00     43.99

  RUNOFF VOLUME ABOVE BASEFLOW =  4.01 WATERSHED INCHES,      4.10 CFS-HRS,      .34 ACRE-FEET;   BASEFLOW =    .00 CFS

                    --- HYDROGRAPH FOR STRUCTURE  1, ALTERNATE  1, STORM 10, ADDED TO OUTPUT HYDROGRAPH FILE ---


 EXECUTIVE CONTROL OPERATION ENDCMP                                                                          RECORD ID
+                                   COMPUTATIONS COMPLETED FOR PASS   2


1


 TR20 XEQ 08-02-23  02:32       SCS ANALYSIS FOR FRIEL - ELLIOTT ROAD, EASTON                          JOB  1   PASS   3
      REV PC 09/83(.2)          TALBOT COUNTY  PREPARED BY BAD  12/2022  #2022009                                PAGE   7


 EXECUTIVE CONTROL OPERATION COMPUT                                                                          RECORD ID
+                                   FROM STRUCTURE  1
+                                                     TO STRUCTURE  1
         STARTING TIME =   .00    RAIN DEPTH =  8.98    RAIN DURATION=  1.00    RAIN TABLE NO.= 2    ANT. MOIST. COND= 2
         ALTERNATE NO.= 1         STORM NO.=99    MAIN TIME INCREMENT =   .10 HOURS


 OPERATION RUNOFF   STRUCTURE  1
           OUTPUT HYDROGRAPH=  1
           AREA=    .00 SQ MI   INPUT RUNOFF CURVE= 82.    TIME OF CONCENTRATION=   .25 HOURS
           INTERNAL HYDROGRAPH TIME INCREMENT=  .0332 HOURS

           PEAK TIME(HRS)              PEAK DISCHARGE(CFS)           PEAK ELEVATION(FEET)
              12.08                          4.22                          (RUNOFF)

 TIME(HRS)         FIRST HYDROGRAPH POINT =   .00 HOURS      TIME INCREMENT =  .10 HOURS      DRAINAGE AREA =    .00 SQ.MI.
    4.00    DISCHG        .00       .00       .00       .00       .00       .00       .00       .00       .01       .01
    5.00    DISCHG        .01       .01       .01       .01       .01       .01       .02       .02       .02       .02
    6.00    DISCHG        .02       .02       .02       .03       .03       .03       .03       .03       .04       .04
    7.00    DISCHG        .04       .04       .04       .04       .04       .05       .05       .05       .05       .05
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8.00	DISCHG	.05	.05	.06	.06	.07	.07	.08	.08	.08	.09
9.00	DISCHG	.09	.09	.10	.10	.11	.11	.11	.12	.13	.13
10.00	DISCHG	.13	.14	.15	.15	.16	.18	.19	.21	.23	.26
11.00	DISCHG	.28	.30	.33	.36	.40	.44	.64	1.07	1.55	2.65
12.00	DISCHG	3.87	4.20	3.45	2.77	2.22	1.79	1.47	1.22	1.02	.85
13.00	DISCHG	.72	.63	.55	.50	.45	.41	.38	.35	.33	.31
14.00	DISCHG	.30	.28	.27	.26	.25	.24	.22	.21	.20	.20
15.00	DISCHG	.19	.19	.19	.19	.18	.17	.17	.17	.16	.16
16.00	DISCHG	.16	.16	.16	.16	.16	.16	.16	.15	.14	.14
17.00	DISCHG	.14	.14	.14	.13	.13	.13	.13	.13	.13	.13
18.00	DISCHG	.12	.12	.11	.11	.11	.11	.11	.11	.11	.11
19.00	DISCHG	.11	.11	.11	.11	.11	.11	.11	.11	.11	.10
20.00	DISCHG	.09	.09	.09	.08	.08	.08	.08	.08	.08	.08
21.00	DISCHG	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08
22.00	DISCHG	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08
23.00	DISCHG	.08	.08	.08	.08	.08	.08	.08	.08	.08	.07
24.00	DISCHG	.07	.06	.04	.03	.02	.01	.01	.01	.00	

RUNOFF VOLUME ABOVE BASEFLOW = 6.80 WATERSHED INCHES, 5.28 CFS-HRS, .44 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR STRUCTURE 1, ALTERNATE 1, STORM 99, ADDED TO OUTPUT HYDROGRAPH FILE ---

OPERATION RUNOFF STRUCTURE 1
OUTPUT HYDROGRAPH= 2
AREA= .00 SQ MI INPUT RUNOFF CURVE= 91. TIME OF CONCENTRATION= .10 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0133 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET) (RUNOFF)
11.98	8.99	

1

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TR20 XEQ 08-02-23 02:32 SCS ANALYSIS FOR FRIEL - ELLIOTT ROAD, EASTON JOB 1 PASS 3
REV PC 09/83(.2) TALBOT COUNTY PREPARED BY BAD 12/2022 #2022009 PAGE 8

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .00 SQ.MI.

2.00	DISCHG	.00	.00	.00	.01	.01	.01	.01	.01	.02	.02
3.00	DISCHG	.02	.02	.02	.02	.03	.03	.03	.03	.03	.04
4.00	DISCHG	.05	.05	.05	.05	.06	.06	.06	.06	.06	.07
5.00	DISCHG	.07	.07	.07	.07	.07	.08	.08	.08	.08	.08
6.00	DISCHG	.08	.09	.10	.11	.11	.11	.11	.11	.12	.12
7.00	DISCHG	.12	.12	.12	.12	.12	.13	.13	.13	.13	.13
8.00	DISCHG	.13	.14	.15	.16	.18	.19	.19	.19	.20	.20
9.00	DISCHG	.20	.21	.22	.23	.23	.24	.25	.26	.27	.27
10.00	DISCHG	.27	.29	.30	.32	.35	.37	.42	.45	.48	.54
11.00	DISCHG	.57	.62	.66	.71	.80	.85	2.05	2.94	4.29	7.48
12.00	DISCHG	8.91	5.81	3.36	2.19	1.44	1.16	.97	.88	.82	.72
13.00	DISCHG	.68	.61	.57	.54	.50	.48	.44	.42	.40	.38
14.00	DISCHG	.37	.35	.33	.32	.30	.30	.28	.26	.26	.25
15.00	DISCHG	.25	.25	.25	.25	.23	.22	.22	.22	.22	.22
16.00	DISCHG	.22	.22	.22	.22	.22	.22	.20	.19	.18	.18
17.00	DISCHG	.18	.18	.18	.18	.18	.18	.18	.18	.18	.16

18.00	DISCHG	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15
19.00	DISCHG	.15	.15	.15	.15	.15	.15	.15	.15	.14	.12
20.00	DISCHG	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
21.00	DISCHG	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
22.00	DISCHG	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
23.00	DISCHG	.11	.11	.11	.11	.11	.11	.11	.11	.10	.09
24.00	DISCHG	.08	.04	.02	.01	.00					

RUNOFF VOLUME ABOVE BASEFLOW = 7.87 WATERSHED INCHES, 8.05 CFS-HRS, .67 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR STRUCTURE 1, ALTERNATE 1, STORM 99, ADDED TO OUTPUT HYDROGRAPH FILE ---

OPERATION RESVOR STRUCTURE 1
INPUT HYDROGRAPH= 2 OUTPUT HYDROGRAPH= 3
SURFACE ELEVATION= 42.50

*** WARNING - STRUCTURE 1 DELTA T IS TOO LARGE. O /2 > S /DELTA T OCCURED 25 TIMES STARTING WITH POINT 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.02	9.55	47.07

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .00 SQ.MI.

5.00	DISCHG	.00	.00	.00	.00	.00	.01	.01	.01	.01	.02
5.00	ELEV	42.00	42.00	42.00	42.00	42.00	43.86	43.90	43.93	43.97	44.01
6.00	DISCHG	.04	.05	.07	.08	.09	.09	.10	.10	.11	.11
6.00	ELEV	44.03	44.05	44.06	44.08	44.09	44.09	44.10	44.10	44.11	44.11
7.00	DISCHG	.11	.11	.12	.12	.12	.12	.12	.12	.13	.13
7.00	ELEV	44.11	44.12	44.12	44.12	44.12	44.12	44.13	44.13	44.13	44.13
8.00	DISCHG	.13	.13	.14	.14	.15	.16	.17	.18	.18	.19
8.00	ELEV	44.13	44.13	44.14	44.15	44.16	44.17	44.18	44.19	44.19	44.20
9.00	DISCHG	.19	.20	.20	.21	.22	.22	.23	.24	.25	.25

1

9.00	ELEV	44.20	44.21	44.21	44.22	44.23	44.24	44.24	44.25	44.26	44.27
10.00	DISCHG	.26	.27	.27	.29	.30	.32	.34	.37	.40	.44
10.00	ELEV	44.28	44.28	44.29	44.31	44.32	44.34	44.37	44.40	44.43	44.47
11.00	DISCHG	.46	.48	.50	.52	.54	.57	.66	.79	1.23	1.93
11.00	ELEV	44.51	44.55	44.60	44.65	44.72	44.80	45.04	45.48	46.00	46.71
12.00	DISCHG	9.32	6.30	4.37	2.70	1.94	1.87	1.78	1.65	1.51	1.39
12.00	ELEV	47.06	47.01	46.90	46.80	46.72	46.63	46.52	46.39	46.26	46.15
13.00	DISCHG	1.27	1.10	.98	.94	.90	.86	.82	.79	.76	.73
13.00	ELEV	46.04	45.94	45.85	45.77	45.69	45.61	45.53	45.45	45.36	45.27
14.00	DISCHG	.71	.68	.66	.63	.59	.56	.53	.50	.47	.43
14.00	ELEV	45.19	45.11	45.03	44.94	44.85	44.76	44.68	44.60	44.53	44.47
15.00	DISCHG	.37	.34	.31	.29	.28	.26	.25	.24	.23	.23
15.00	ELEV	44.41	44.36	44.33	44.31	44.29	44.28	44.26	44.25	44.25	44.24
16.00	DISCHG	.22	.22	.22	.22	.22	.22	.22	.21	.20	.20
16.00	ELEV	44.24	44.24	44.23	44.23	44.23	44.23	44.23	44.22	44.21	44.21
17.00	DISCHG	.19	.19	.19	.18	.18	.18	.18	.18	.18	.18

45

17.00	ELEV	44.20	44.20	44.20	44.19	44.19	44.19	44.19	44.19	44.19	44.19
18.00	DISCHG	.17	.16	.16	.15	.15	.15	.15	.15	.15	.15
18.00	ELEV	44.18	44.17	44.16	44.16	44.16	44.15	44.15	44.15	44.15	44.15
19.00	DISCHG	.15	.15	.15	.15	.15	.15	.15	.15	.14	.14
19.00	ELEV	44.15	44.15	44.15	44.15	44.15	44.15	44.15	44.15	44.15	44.14
20.00	DISCHG	.13	.13	.12	.12	.11	.11	.11	.11	.11	.11
20.00	ELEV	44.14	44.13	44.12	44.12	44.12	44.11	44.11	44.11	44.11	44.11
21.00	DISCHG	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
21.00	ELEV	44.11	44.11	44.11	44.11	44.11	44.11	44.11	44.11	44.11	44.11
22.00	DISCHG	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
22.00	ELEV	44.11	44.11	44.11	44.11	44.11	44.11	44.11	44.11	44.11	44.11
23.00	DISCHG	.11	.11	.11	.11	.11	.11	.11	.11	.11	.10
23.00	ELEV	44.11	44.11	44.11	44.11	44.11	44.11	44.11	44.11	44.11	44.10
24.00	DISCHG	.10	.09	.07	.05	.04	.02	.02	.01	.01	.01
24.00	ELEV	44.10	44.08	44.06	44.04	44.03	44.02	44.01	44.00	44.00	43.99

RUNOFF VOLUME ABOVE BASEFLOW = 7.58 WATERSHED INCHES, 7.76 CFS-HRS, .64 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR STRUCTURE 1, ALTERNATE 1, STORM 99, ADDED TO OUTPUT HYDROGRAPH FILE ---

EXECUTIVE CONTROL OPERATION ENDCMP RECORD ID
+ COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL OPERATION ENDJOB RECORD ID
1

TR20 XEQ 08-02-23 02:32 SCS ANALYSIS FOR FRIEL - ELLIOTT ROAD, EASTON JOB 1 SUMMARY
REV PC 09/83(.2) TALBOT COUNTY PREPARED BY BAD 12/2022 #2022009 PAGE 10

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)

```
   ALTERNATE    1   STORM    2
+
 STRUCTURE  1  RUNOFF      .00     2     2    .10     .0    3.33   24.00    1.64     ---    12.10     1.04     864.3
 STRUCTURE  1  RUNOFF      .00     2     2    .10     .0    3.33   24.00    2.37     ---    11.99     2.91    1834.7
 STRUCTURE  1  RESVOR      .00     2     2    .10     .0    3.33   24.00    2.22   45.90    12.20     1.00     633.9

   ALTERNATE    1   STORM   10
+
 STRUCTURE  1  RUNOFF      .00     2     2    .10     .0    5.20   24.00    3.26     ---    12.09     2.07    1718.1
 STRUCTURE  1  RUNOFF      .00     2     2    .10     .0    5.20   24.00    4.16     ---    11.98     4.94    3118.2
 STRUCTURE  1  RESVOR      .00     2     2    .10     .0    5.20   24.00    4.01   46.75    12.21     1.96    1236.8

   ALTERNATE    1   STORM   99
+
 STRUCTURE  1  RUNOFF      .00     2     2    .10     .0    8.98   24.00    6.80     ---    12.08     4.22    3505.6
 STRUCTURE  1  RUNOFF      .00     2     2    .10     .0    8.98   24.00    7.87     ---    11.98     8.99    5670.1
 STRUCTURE  1  RESVOR      .00     2     2    .10     .0    8.98   24.00    7.58   47.07    12.02     9.55    6023.2
1
```



```
 SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

 XSECTION/          DRAINAGE
 STRUCTURE            AREA       STORM NUMBERS..........
   ID               (SQ MI)            2        10        99

0 STRUCTURE   1          .00
+
    ALTERNATE    1                   1.00      1.96      9.55
1END OF  1 JOBS IN THIS RUN
```

WinTR-55 Current Data Description

--- Identification Data ---

User: bdavis
Project: Elliott Rd -Clim. Cont. Stor.
SubTitle: DA 2 (Eastern) (Front)
State: Maryland
County: Talbot NOAA-C
Filename: S:\ACAD\PROJECTS\D-I\Fink & Whitten\22009-Duley-Miniwarehouses\SWM\08-2023\TR-55 Analysis - DA 2

Date: 8/2/2023
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
DA2 Ex	Existing Conditions	Outlet	1	80	0.192
DA2 Pr	Proposed Conditions	Outlet	0.76	92	0.100
DA2 RCN2	Reduc. CN 2 yr	Outlet	0.76	78	0.100
DA2 RCN10	Reduc. CN 10 yr	Outlet	0.76	82	0.100

Total area: 3.28 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
3.33	4.33	5.2	6.52	7.73	8.98	2.74

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: NOAA_C
Dimensionless Unit Hydrograph: delmarva

bdavis

Elliott Rd -Clim. Cont. Stor.
DA 2 (Eastern) (Front)
Talbot NOAA-C County, Maryland

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
DA2 Ex							
User-provided							0.192
					Time of Concentration		0.192
DA2 Pr							
User-provided							0.100
					Time of Concentration		0.100
DA2 RCN2							
User-provided							0.100
					Time of Concentration		0.100
DA2 RCN10							
User-provided							0.100
					Time of Concentration		0.100

bdavis

Elliott Rd -Clim. Cont. Stor.
DA 2 (Eastern) (Front)
Talbot NOAA-C County, Maryland

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
DA2 Ex	CN directly entered by user	-	1	80
	Total Area / Weighted Curve Number		1	80
DA2 Pr	CN directly entered by user	-	.76	92
	Total Area / Weighted Curve Number		.76	92
DA2 RCN2	CN directly entered by user	-	.76	78
	Total Area / Weighted Curve Number		.76	78
DA2 RCN10	CN directly entered by user	-	.76	82
	Total Area / Weighted Curve Number		.76	82

bdavis

Elliott Rd -Clim. Cont. Stor.
DA 2 (Eastern) (Front)
Talbot NOAA-C County, Maryland

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 2-Yr (cfs)	10-Yr (cfs)	100-Yr (cfs)
SUBAREAS			
DA2 Ex	1.16	2.40	5.04
DA2 Pr	1.92	3.23	5.81
DA2 RCN2	1.08		
DA2 RCN10		2.59	

Worksheet 6A: Detention Basin Storage

Project: Elliott Rd - Clim. Cont. Self Storag By: B.D Date: August-23
Location: Elliott Rd, Easton
Checked: _____ Date: _____
Check one: Present ☐ Developed [X]
Notes: Proposed Conditions DA 2 - Eastern Outfall (Front)

1. Data:
   Drainage area..... Am = 0.00119 mi^2
   Rainfall distribution
   Type(I,IA,II,III) II

	1st Freq.	2nd Freq.
2. Frequency.....yr	2	10
3. Peak inflow discharge, qi .....cfs	1.08	2.59
4. peak outflow dischagre, qo.....cfs	**1.16**	**2.40**
5. Compute qo/qi	N/A	0.927

6. Vs/Vr use figure 6-1		0.125
7. Runoff Q....in From wk-2		4.34
8. Runoff Volume, Vr.....ac-ft Vr=Q Am 53.33		0.27
9 Storage volume, Vs.....ac-ft Vs = Vr (Vs/Vr)		0.034
Vs.....c.f.		**1,500**
Provided SWM Volume Within DA .....c.f.		**2,789**

2 year Storm Addressed using Reduced CN. Storage Provided in Micro-Bio's Above Target ESD Volumes Addresses 10 year Storm

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DMS

Davis, Moore, Shearon, & Associates, LLC
Engineering, Drafting/Design, Environmental Services & Surveying

DATA FOR ELEVATION - STORAGE CURVE

JOB NAME: Elliott Rd Climate Contr. Self Storage
Drainage Area #2
DESCRIPTION: Cumulative Storage

STORAGE: Proposed Conditions

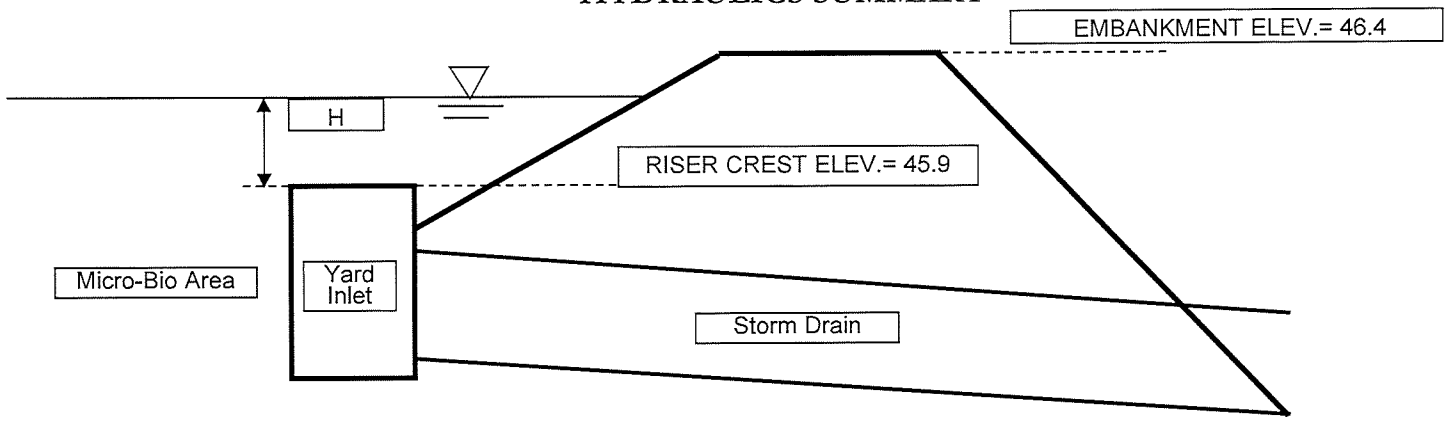
ELEV. (FT)	SURFACE AREA (SQ.FT)	AVERAGE SURFACE AREA (SQ.FT.)	DIFF. IN ELEV. (FT)	INCREMENT STORAGE (CU.FT.)	STORAGE (CU. FT.)	STORAGE (ACRE FT.)
Micro Bioretention 2 Ponding Storage						
44.90	1,709				0	0.0000
		1,833	0.50	917		
45.40	1,957				917	0.0210
		2,009	0.20	402		
45.60	2,060				1,318	0.0303
		2,140	0.30	642		
45.90	2,219				1,960	0.0450
		2,357	0.50	1,179		
46.40	2,495				3,139	0.0721
Micro Bioretention 1 Ponding Storage						
45.60	1,023				0	0.0000
		1,083	0.30	325		
45.90	1,142				325	0.0075
		1,246	0.50	623		
46.40	1,350				948	0.0218
		1,394	0.20	279		
46.60	1,437				1,226	0.0282
Combined Ponding Storage Provided in DA #2						
44.90					0	0.0000
45.40					917	0.0210
45.60					1,318	0.0303
45.90					2,285	0.0525
46.40					4,086	0.0938
46.60					4,365	0.1002

DMS & Associates

BY: B. DAVIS

7/1/23

ELLIOTT ROAD DA #2 ANALYSIS
MICRO BIO #2 INLET OVERFLOW STRUCTURE
HYDRAULICS SUMMARY



WATER in Pond Elev	ORIFICE		RISER NOTCH		STRUC. TOP		OVERFLOW WEIR		Inlet Control *		Outlet Control		FLOW Q	ACTUAL STORAGE VOLUME
	CL = Size(ft) = Area =	0.000	CL Size(ft) = Area =	0.000	H Crest= Length=	Q 45.90 **9.66**	Crest= Length=		H1 Q1 CI Elev.= Size(ft)=		H3 Q3 CI Elev= Kp=			
ft	ft	cfs	ft	cfs	ft	cfs	ft	cfs	ft.	cfs	ft	cfs	cfs	ac. ft.
44.90					**0**	0							0.00	**0.0000**
45.40					**0**	0							0.00	**0.0210**
45.60					**0**	0							0.00	**0.0303**
45.90					**0**	0							0.00	**0.0525**
46.40					0.50	10.58751							10.59	**0.0938**
46.60					0.70	17.53823							17.54	**0.1002**

NOTES: Q= 3.1(L)(H3/2)

(1) Weir flow Q = CLH3/2 C = 3.1

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```
******************80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY******************

JOB TR-20                    FULLPRINT          SUMMARY   NOPLOTS
TITLE 001 SCS ANALYSIS FOR FRIEL - ELLIOTT ROAD, EASTON
TITLE 002 TALBOT COUNTY  PREPARED BY BAD  12/2022  #2022009
 4 DIMHYD
 8          0.000       0.111       0.356       0.655       0.896
 8          1.000       0.929       0.828       0.737       0.656
 8          0.584       0.521       0.465       0.415       0.371
 8          0.331       0.296       0.265       0.237       0.212
 8          0.190       0.170       0.153       0.138       0.123
 8          0.109       0.097       0.086       0.076       0.066
 8          0.057       0.049       0.041       0.033       0.027
 8          0.024       0.021       0.018       0.015       0.013
 8          0.012       0.011       0.009       0.008       0.008
 8          0.006       0.006       0.005       0.005       0.000
 9 ENDTBL
 3 STRUCT      01
 8                      44.90       0.01        0.0000
 8                      45.40       0.02        0.0210
 8                      45.60       0.03        0.0303
 8                      45.90       0.04        0.0525
 8                      46.40       10.59       0.0938
 8                      46.60       17.54       0.1002
 9 ENDTBL
 6 RUNOFF 1    01     1 0.001570    80.0        0.192       1 1   1 1 1
 6 RUNOFF 1    01     2 0.001187    78.0        0.100       1 1   1 1 1
 6 RESVOR 2    01 2   3 44.90                               1 1 1 1 1 1
   ENDATA
 7 INCREM 6             0.1
 7 COMPUT 7    01    01 0.0         3.33        1.0         2 2  01  02
   ENDCMP 1
   ENDJOB 2
0*****************************END OF 80-80 LIST*****************************
1


 TR20 XEQ 08-02-23  03:30       SCS ANALYSIS FOR FRIEL - ELLIOTT ROAD, EASTON                    JOB  1   PASS   1
      REV PC 09/83(.2)          TALBOT COUNTY  PREPARED BY BAD  12/2022  #2022009                         PAGE   1


 EXECUTIVE CONTROL OPERATION INCREM                                                                RECORD ID
+                                   MAIN TIME INCREMENT =   .10 HOURS


 EXECUTIVE CONTROL OPERATION COMPUT                                                                RECORD ID
+                                   FROM STRUCTURE  1
+                                                       TO STRUCTURE  1
         STARTING TIME =   .00    RAIN DEPTH =  3.33    RAIN DURATION=  1.00    RAIN TABLE NO.= 2    ANT. MOIST. COND= 2
         ALTERNATE NO.= 1         STORM NO.= 2    MAIN TIME INCREMENT =   .10 HOURS


 OPERATION RUNOFF   STRUCTURE  1
```

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          OUTPUT HYDROGRAPH=  1
          AREA=    .00 SQ MI   INPUT RUNOFF CURVE= 80.    TIME OF CONCENTRATION=   .19 HOURS
          INTERNAL HYDROGRAPH TIME INCREMENT=  .0256 HOURS

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)           PEAK ELEVATION(FEET)
             12.06                          1.39                        (RUNOFF)

TIME(HRS)         FIRST HYDROGRAPH POINT =   .00 HOURS      TIME INCREMENT =  .10 HOURS      DRAINAGE AREA =    .00 SQ.MI.
   9.00    DISCHG         .00       .00       .00       .00       .00       .00       .00       .00       .00       .01
  10.00    DISCHG         .01       .01       .01       .01       .01       .02       .02       .02       .03       .03
  11.00    DISCHG         .04       .04       .05       .05       .06       .08       .14       .26       .41       .86
  12.00    DISCHG        1.32      1.36      1.02       .79       .61       .48       .39       .32       .27       .23
  13.00    DISCHG         .21       .19       .17       .16       .15       .14       .13       .12       .11       .11
  14.00    DISCHG         .10       .10       .10       .09       .09       .08       .08       .08       .07       .07
  15.00    DISCHG         .07       .07       .07       .07       .07       .06       .06       .06       .06       .06
  16.00    DISCHG         .06       .06       .06       .06       .06       .06       .06       .06       .05       .05
  17.00    DISCHG         .05       .05       .05       .05       .05       .05       .05       .05       .05       .05
  18.00    DISCHG         .05       .04       .04       .04       .04       .04       .04       .04       .04       .04
  19.00    DISCHG         .04       .04       .04       .04       .04       .04       .04       .04       .04       .04
  20.00    DISCHG         .04       .03       .03       .03       .03       .03       .03       .03       .03       .03
  21.00    DISCHG         .03       .03       .03       .03       .03       .03       .03       .03       .03       .03
  22.00    DISCHG         .03       .03       .03       .03       .03       .03       .03       .03       .03       .03
  23.00    DISCHG         .03       .03       .03       .03       .03       .03       .03       .03       .03       .03
  24.00    DISCHG         .03       .02       .01       .01       .01       .00

  RUNOFF VOLUME ABOVE BASEFLOW =  1.50 WATERSHED INCHES,      1.52 CFS-HRS,      .13 ACRE-FEET;   BASEFLOW =    .00 CFS

                      --- HYDROGRAPH FOR STRUCTURE  1, ALTERNATE  1, STORM  2, ADDED TO OUTPUT HYDROGRAPH FILE ---


OPERATION RUNOFF   STRUCTURE  1
          OUTPUT HYDROGRAPH=  2
          AREA=    .00 SQ MI   INPUT RUNOFF CURVE= 78.    TIME OF CONCENTRATION=   .10 HOURS
          INTERNAL HYDROGRAPH TIME INCREMENT=  .0133 HOURS

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)           PEAK ELEVATION(FEET)
             12.00                          1.29                        (RUNOFF)

TIME(HRS)         FIRST HYDROGRAPH POINT =   .00 HOURS      TIME INCREMENT =  .10 HOURS      DRAINAGE AREA =    .00 SQ.MI.
  10.00    DISCHG         .00       .00       .00       .00       .01       .01       .01       .01       .01       .02
1


TR20 XEQ 08-02-23  03:30       SCS ANALYSIS FOR FRIEL - ELLIOTT ROAD, EASTON                                JOB  1   PASS   1
     REV PC 09/83(.2)          TALBOT COUNTY  PREPARED BY BAD  12/2022  #2022009                                       PAGE   2


  11.00    DISCHG         .02       .03       .03       .04       .05       .05       .15       .25       .43       .93
  12.00    DISCHG        1.29       .89       .54       .37       .25       .21       .17       .16       .15       .13
  13.00    DISCHG         .13       .11       .11       .10       .09       .09       .08       .08       .08       .07
  14.00    DISCHG         .07       .07       .06       .06       .06       .06       .05       .05       .05       .05
  15.00    DISCHG         .05       .05       .05       .05       .05       .04       .04       .04       .04       .04
  16.00    DISCHG         .04       .04       .04       .04       .04       .04       .04       .04       .04       .04
  17.00    DISCHG         .04       .04       .04       .04       .04       .04       .04       .04       .04       .03
  18.00    DISCHG         .03       .03       .03       .03       .03       .03       .03       .03       .03       .03
```

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19.00	DISCHG	.03	.03	.03	.03	.03	.03	.03	.03	.03	.02
20.00	DISCHG	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
21.00	DISCHG	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
22.00	DISCHG	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
23.00	DISCHG	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
24.00	DISCHG	.02	.01	.00							

RUNOFF VOLUME ABOVE BASEFLOW = 1.36 WATERSHED INCHES, 1.04 CFS-HRS, .09 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR STRUCTURE 1, ALTERNATE 1, STORM 2, ADDED TO OUTPUT HYDROGRAPH FILE ---

OPERATION RESVOR STRUCTURE 1
INPUT HYDROGRAPH= 2 OUTPUT HYDROGRAPH= 3
SURFACE ELEVATION= 44.90

*** WARNING - STRUCTURE 1 DELTA T IS TOO LARGE. O /2 > S /DELTA T OCCURED118 TIMES STARTING WITH POINT 2

*** WARNING-NO PEAK FOUND, MAXIMUM DISCHARGE = .04 CFS.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.70	.04	45.84

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .00 SQ.MI.

.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.00	ELEV	44.90	44.90	44.90	44.89	44.89	44.89	44.89	44.89	44.88	44.88
1.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
1.00	ELEV	44.88	44.88	44.88	44.88	44.87	44.87	44.87	44.87	44.87	44.86
2.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
2.00	ELEV	44.86	44.86	44.86	44.86	44.85	44.85	44.85	44.85	44.85	44.85
3.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
3.00	ELEV	44.84	44.84	44.84	44.84	44.84	44.84	44.83	44.83	44.83	44.83
4.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
4.00	ELEV	44.83	44.83	44.82	44.82	44.82	44.82	44.82	44.82	44.81	44.81
5.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
5.00	ELEV	44.81	44.81	44.81	44.81	44.80	44.80	44.80	44.80	44.80	44.80
6.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
6.00	ELEV	44.79	44.79	44.79	44.79	44.79	44.79	44.79	44.78	44.78	44.78
7.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
7.00	ELEV	44.78	44.78	44.78	44.78	44.77	44.77	44.77	44.77	44.77	44.77
8.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
8.00	ELEV	44.76	44.76	44.76	44.76	44.76	44.76	44.76	44.76	44.75	44.75

1

9.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
9.00	ELEV	44.75	44.75	44.75	44.75	44.75	44.74	44.74	44.74	44.74	44.74
10.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
10.00	ELEV	44.74	44.74	44.73	44.73	44.73	44.73	44.73	44.73	44.74	44.74
11.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
11.00	ELEV	44.74	44.74	44.75	44.75	44.76	44.77	44.79	44.82	44.89	45.02

12.00	DISCHG	.02	.02	.03	.03	.03	.03	.03	.03	.03	.03
12.00	ELEV	45.24	45.44	45.57	45.63	45.66	45.68	45.70	45.71	45.72	45.74
13.00	DISCHG	.03	.04	.04	.04	.04	.04	.04	.04	.04	.04
13.00	ELEV	45.75	45.76	45.76	45.77	45.78	45.78	45.79	45.80	45.80	45.80
14.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
14.00	ELEV	45.81	45.81	45.81	45.82	45.82	45.82	45.82	45.83	45.83	45.83
15.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
15.00	ELEV	45.83	45.83	45.83	45.83	45.84	45.84	45.84	45.84	45.84	45.84
16.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
16.00	ELEV	45.84	45.84	45.84	45.84	45.84	45.84	45.84	45.84	45.84	45.84
17.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
17.00	ELEV	45.84	45.84	45.84	45.84	45.84	45.84	45.84	45.84	45.84	45.84
18.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
18.00	ELEV	45.84	45.84	45.84	45.84	45.84	45.83	45.83	45.83	45.83	45.83
19.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
19.00	ELEV	45.83	45.83	45.83	45.83	45.83	45.83	45.82	45.82	45.82	45.82
20.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
20.00	ELEV	45.82	45.82	45.82	45.82	45.81	45.81	45.81	45.81	45.81	45.81
21.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
21.00	ELEV	45.80	45.80	45.80	45.80	45.80	45.80	45.79	45.79	45.79	45.79
22.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
22.00	ELEV	45.79	45.79	45.79	45.78	45.78	45.78	45.78	45.78	45.78	45.77
23.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
23.00	ELEV	45.77	45.77	45.77	45.77	45.77	45.77	45.76	45.76	45.76	45.76
24.00	DISCHG	.04	.04	.04	.03	.03	.03	.03	.03	.03	.03
24.00	ELEV	45.76	45.76	45.75	45.75	45.74	45.74	45.74	45.73	45.73	45.72
25.00	DISCHG	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
25.00	ELEV	45.72	45.72	45.71	45.71	45.71	45.70	45.70	45.69	45.69	45.69
26.00	DISCHG	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
26.00	ELEV	45.68	45.68	45.68	45.67	45.67	45.67	45.66	45.66	45.65	45.65
27.00	DISCHG	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
27.00	ELEV	45.65	45.64	45.64	45.64	45.63	45.63	45.63	45.62	45.62	45.62
28.00	DISCHG	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
28.00	ELEV	45.61	45.61	45.61	45.60	45.60	45.59	45.59	45.58	45.58	45.57
29.00	DISCHG	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
29.00	ELEV	45.57	45.56	45.56	45.55	45.55	45.54	45.54	45.53	45.53	45.52

RUNOFF VOLUME ABOVE BASEFLOW = .94 WATERSHED INCHES, .72 CFS-HRS, .06 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR STRUCTURE 1, ALTERNATE 1, STORM 2, ADDED TO OUTPUT HYDROGRAPH FILE ---

EXECUTIVE CONTROL OPERATION ENDCMP RECORD ID

\+ COMPUTATIONS COMPLETED FOR PASS 1

1

EXECUTIVE CONTROL OPERATION ENDJOB RECORD ID
1

TR20 XEQ 08-02-23 03:30 SCS ANALYSIS FOR FRIEL - ELLIOTT ROAD, EASTON JOB 1 SUMMARY
REV PC 09/83(.2) TALBOT COUNTY PREPARED BY BAD 12/2022 #2022009 PAGE 5

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 2													
+													
STRUCTURE 1	RUNOFF	.00	2	2	.10	.0	3.33	24.00	1.50	---	12.06	1.39	885.2
STRUCTURE 1	RUNOFF	.00	2	2	.10	.0	3.33	24.00	1.36	---	12.00	1.29	1088.1
STRUCTURE 1	RESVOR	.00	2	2	.10	.0	3.33	24.00	.94	45.84	16.70?	.04?	32.1

1

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TR20 XEQ 08-02-23 03:30 SCS ANALYSIS FOR FRIEL - ELLIOTT ROAD, EASTON JOB 1 SUMMARY
REV PC 09/83(.2) TALBOT COUNTY PREPARED BY BAD 12/2022 #2022009 PAGE 6

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 2
0 STRUCTURE 1	.00	
+		
ALTERNATE 1		.04

1END OF 1 JOBS IN THIS RUN

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******************80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY******************

 JOB TR-20                      FULLPRINT           SUMMARY   NOPLOTS
 TITLE 001 SCS ANALYSIS FOR FRIEL - ELLIOTT ROAD, EASTON
 TITLE 002 TALBOT COUNTY  PREPARED BY BAD  12/2022  #2022009
  4 DIMHYD
  8          0.000       0.111       0.356       0.655       0.896
  8          1.000       0.929       0.828       0.737       0.656
  8          0.584       0.521       0.465       0.415       0.371
  8          0.331       0.296       0.265       0.237       0.212
  8          0.190       0.170       0.153       0.138       0.123
  8          0.109       0.097       0.086       0.076       0.066
  8          0.057       0.049       0.041       0.033       0.027
  8          0.024       0.021       0.018       0.015       0.013
  8          0.012       0.011       0.009       0.008       0.008
  8          0.006       0.006       0.005       0.005       0.000
  9 ENDTBL
  3 STRUCT      01
  8                      44.90       0.01        0.0000
  8                      45.40       0.02        0.0210
  8                      45.60       0.03        0.0303
  8                      45.90       0.04        0.0525
  8                      46.40       10.59       0.0938
  8                      46.60       17.54       0.1002
  9 ENDTBL
  6 RUNOFF 1    01     1 0.001570    80.0        0.192       1 1   1 1 1
  6 RUNOFF 1    01     2 0.001187    82.0        0.100       1 1   1 1 1
  6 RESVOR 2    01 2   3 44.90                               1 1 1 1 1 1
    ENDATA
  7 INCREM 6             0.1
  7 COMPUT 7    01    01 0.0         5.20        1.0         2 2  01  10
    ENDCMP 1
    ENDJOB 2
0*****************************END OF 80-80 LIST*****************************
1


 TR20 XEQ 08-02-23  03:28       SCS ANALYSIS FOR FRIEL - ELLIOTT ROAD, EASTON                          JOB  1   PASS   1
      REV PC 09/83(.2)          TALBOT COUNTY  PREPARED BY BAD  12/2022  #2022009                            PAGE   1


 EXECUTIVE CONTROL OPERATION INCREM                                                                    RECORD ID
+                                     MAIN TIME INCREMENT =   .10 HOURS


 EXECUTIVE CONTROL OPERATION COMPUT                                                                    RECORD ID
+                                     FROM STRUCTURE  1
+                                                        TO STRUCTURE  1
         STARTING TIME =   .00    RAIN DEPTH =  5.20    RAIN DURATION=  1.00    RAIN TABLE NO.= 2    ANT. MOIST. COND= 2
         ALTERNATE NO.= 1         STORM NO.=10    MAIN TIME INCREMENT =   .10 HOURS


 OPERATION RUNOFF   STRUCTURE  1
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OUTPUT HYDROGRAPH=  1
AREA=    .00 SQ MI   INPUT RUNOFF CURVE= 80.    TIME OF CONCENTRATION=   .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT=  .0256 HOURS

PEAK TIME(HRS)              PEAK DISCHARGE(CFS)           PEAK ELEVATION(FEET)
   12.05                           2.85                        (RUNOFF)

TIME(HRS)         FIRST HYDROGRAPH POINT =   .00 HOURS      TIME INCREMENT =  .10 HOURS      DRAINAGE AREA =    .00 SQ.MI.
   7.00    DISCHG         .00       .00       .00       .00       .00       .00       .00       .01       .01       .01
   8.00    DISCHG         .01       .01       .01       .01       .01       .02       .02       .02       .02       .02
   9.00    DISCHG         .02       .03       .03       .03       .03       .03       .04       .04       .04       .04
  10.00    DISCHG         .05       .05       .05       .06       .06       .07       .08       .09       .10       .11
  11.00    DISCHG         .13       .14       .16       .17       .20       .22       .38       .67       .99      1.90
  12.00    DISCHG        2.76      2.77      2.06      1.58      1.21       .94       .75       .61       .51       .44
  13.00    DISCHG         .39       .35       .31       .29       .27       .25       .24       .22       .21       .20
  14.00    DISCHG         .19       .18       .17       .17       .16       .15       .15       .14       .13       .13
  15.00    DISCHG         .13       .13       .13       .13       .12       .12       .11       .11       .11       .11
  16.00    DISCHG         .11       .11       .11       .11       .11       .11       .11       .10       .10       .09
  17.00    DISCHG         .09       .09       .09       .09       .09       .09       .09       .09       .09       .08
  18.00    DISCHG         .08       .08       .08       .07       .07       .07       .07       .07       .07       .07
  19.00    DISCHG         .07       .07       .07       .07       .07       .07       .07       .07       .07       .07
  20.00    DISCHG         .06       .06       .06       .06       .06       .06       .06       .06       .06       .06
  21.00    DISCHG         .06       .06       .06       .06       .06       .06       .06       .06       .06       .06
  22.00    DISCHG         .06       .06       .06       .06       .06       .06       .06       .06       .06       .06
  23.00    DISCHG         .06       .06       .06       .06       .06       .06       .06       .06       .05       .05
  24.00    DISCHG         .04       .04       .02       .01       .01       .01       .00

 RUNOFF VOLUME ABOVE BASEFLOW =  3.07 WATERSHED INCHES,      3.11 CFS-HRS,      .26 ACRE-FEET;   BASEFLOW =    .00 CFS

                    --- HYDROGRAPH FOR STRUCTURE  1, ALTERNATE  1, STORM 10, ADDED TO OUTPUT HYDROGRAPH FILE ---


OPERATION RUNOFF   STRUCTURE  1
OUTPUT HYDROGRAPH=  2
AREA=    .00 SQ MI   INPUT RUNOFF CURVE= 82.    TIME OF CONCENTRATION=   .10 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT=  .0133 HOURS

PEAK TIME(HRS)              PEAK DISCHARGE(CFS)           PEAK ELEVATION(FEET)
   11.99                           3.04                        (RUNOFF)
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1

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TR20 XEQ 08-02-23  03:28       SCS ANALYSIS FOR FRIEL - ELLIOTT ROAD, EASTON                                JOB  1   PASS   1
     REV PC 09/83(.2)          TALBOT COUNTY  PREPARED BY BAD  12/2022  #2022009                                      PAGE   2


TIME(HRS)         FIRST HYDROGRAPH POINT =   .00 HOURS      TIME INCREMENT =  .10 HOURS      DRAINAGE AREA =    .00 SQ.MI.
   7.00    DISCHG         .00       .01       .01       .01       .01       .01       .01       .01       .01       .01
   8.00    DISCHG         .01       .01       .01       .02       .02       .02       .02       .02       .02       .02
   9.00    DISCHG         .03       .03       .03       .03       .03       .04       .04       .04       .04       .05
  10.00    DISCHG         .05       .05       .05       .06       .07       .07       .08       .09       .10       .11
  11.00    DISCHG         .12       .14       .15       .17       .19       .21       .53       .81      1.27      2.39
  12.00    DISCHG        3.03      2.03      1.19       .79       .53       .43       .36       .33       .31       .27
  13.00    DISCHG         .25       .23       .22       .20       .19       .18       .17       .16       .15       .14
```

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14.00	DISCHG	.14	.13	.13	.12	.12	.11	.11	.10	.10	.10
15.00	DISCHG	.10	.10	.10	.10	.09	.09	.08	.08	.08	.08
16.00	DISCHG	.08	.08	.08	.08	.08	.08	.08	.07	.07	.07
17.00	DISCHG	.07	.07	.07	.07	.07	.07	.07	.07	.07	.06
18.00	DISCHG	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
19.00	DISCHG	.06	.06	.06	.06	.06	.06	.06	.06	.05	.05
20.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
21.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
22.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
23.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.03
24.00	DISCHG	.03	.02	.01	.00						

RUNOFF VOLUME ABOVE BASEFLOW = 3.24 WATERSHED INCHES, 2.49 CFS-HRS, .21 ACRE-FEET; BASEFLOW = .00 CFS

--- HYDROGRAPH FOR STRUCTURE 1, ALTERNATE 1, STORM 10, ADDED TO OUTPUT HYDROGRAPH FILE ---

OPERATION RESVOR STRUCTURE 1
INPUT HYDROGRAPH= 2 OUTPUT HYDROGRAPH= 3
SURFACE ELEVATION= 44.90

*** WARNING - STRUCTURE 1 DELTA T IS TOO LARGE. O /2 > S /DELTA T OCCURED104 TIMES STARTING WITH POINT 2

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.10	2.56	46.02

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .00 SQ.MI.

.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.00	ELEV	44.90	44.90	44.90	44.89	44.89	44.89	44.89	44.89	44.88	44.88
1.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
1.00	ELEV	44.88	44.88	44.88	44.88	44.87	44.87	44.87	44.87	44.87	44.86
2.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
2.00	ELEV	44.86	44.86	44.86	44.86	44.85	44.85	44.85	44.85	44.85	44.85
3.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
3.00	ELEV	44.84	44.84	44.84	44.84	44.84	44.84	44.83	44.83	44.83	44.83
4.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
4.00	ELEV	44.83	44.83	44.82	44.82	44.82	44.82	44.82	44.82	44.81	44.81
5.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
5.00	ELEV	44.81	44.81	44.81	44.81	44.80	44.80	44.80	44.80	44.80	44.80
6.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
6.00	ELEV	44.79	44.79	44.79	44.79	44.79	44.79	44.79	44.78	44.78	44.78

1

7.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
7.00	ELEV	44.78	44.78	44.78	44.78	44.78	44.78	44.78	44.78	44.78	44.78
8.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
8.00	ELEV	44.78	44.78	44.78	44.78	44.79	44.79	44.79	44.79	44.80	44.80
9.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
9.00	ELEV	44.80	44.81	44.81	44.81	44.82	44.82	44.83	44.84	44.84	44.85
10.00	DISCHG	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01

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10.00	ELEV	44.86	44.86	44.87	44.88	44.89	44.90	44.92	44.93	44.95	44.97
11.00	DISCHG	.01	.01	.01	.01	.01	.01	.02	.02	.03	.04
11.00	ELEV	44.99	45.01	45.04	45.07	45.10	45.14	45.21	45.34	45.52	45.75
12.00	DISCHG	1.43	2.56	1.58	.97	.65	.47	.39	.34	.32	.29
12.00	ELEV	45.97	46.02	45.97	45.94	45.93	45.92	45.92	45.91	45.91	45.91
13.00	DISCHG	.26	.24	.22	.21	.20	.19	.17	.16	.15	.15
13.00	ELEV	45.91	45.91	45.91	45.91	45.91	45.91	45.91	45.91	45.91	45.91
14.00	DISCHG	.14	.14	.13	.13	.12	.11	.11	.10	.10	.10
14.00	ELEV	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90
15.00	DISCHG	.10	.10	.10	.10	.09	.09	.09	.08	.08	.08
15.00	ELEV	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90
16.00	DISCHG	.08	.08	.08	.08	.08	.08	.08	.08	.07	.07
16.00	ELEV	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90
17.00	DISCHG	.07	.07	.07	.07	.07	.07	.07	.07	.07	.06
17.00	ELEV	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90
18.00	DISCHG	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
18.00	ELEV	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90
19.00	DISCHG	.06	.06	.06	.06	.06	.06	.06	.06	.06	.05
19.00	ELEV	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90
20.00	DISCHG	.05	.04	.04	.04	.04	.04	.04	.04	.04	.04
20.00	ELEV	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90
21.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
21.00	ELEV	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90
22.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
22.00	ELEV	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90
23.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
23.00	ELEV	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90
24.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
24.00	ELEV	45.90	45.90	45.89	45.89	45.89	45.88	45.88	45.87	45.87	45.86
25.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
25.00	ELEV	45.86	45.85	45.85	45.85	45.84	45.84	45.83	45.83	45.83	45.82
26.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
26.00	ELEV	45.82	45.81	45.81	45.80	45.80	45.80	45.79	45.79	45.78	45.78
27.00	DISCHG	.04	.04	.04	.04	.04	.04	.04	.03	.03	.03
27.00	ELEV	45.78	45.77	45.77	45.76	45.76	45.76	45.75	45.75	45.74	45.74
28.00	DISCHG	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
28.00	ELEV	45.74	45.73	45.73	45.73	45.72	45.72	45.71	45.71	45.71	45.70
29.00	DISCHG	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
29.00	ELEV	45.70	45.70	45.69	45.69	45.68	45.68	45.68	45.67	45.67	45.67

RUNOFF VOLUME ABOVE BASEFLOW = 2.70 WATERSHED INCHES, 2.07 CFS-HRS, .17 ACRE-FEET; BASEFLOW = .00 CFS
1

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TR20 XEQ 08-02-23 03:28 SCS ANALYSIS FOR FRIEL - ELLIOTT ROAD, EASTON JOB 1 PASS 1
REV PC 09/83(.2) TALBOT COUNTY PREPARED BY BAD 12/2022 #2022009 PAGE 4

--- HYDROGRAPH FOR STRUCTURE 1, ALTERNATE 1, STORM 10, ADDED TO OUTPUT HYDROGRAPH FILE ---

EXECUTIVE CONTROL OPERATION ENDCMP RECORD ID
+ COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL OPERATION ENDJOB RECORD ID
1

TR20 XEQ 08-02-23 03:28 SCS ANALYSIS FOR FRIEL - ELLIOTT ROAD, EASTON JOB 1 SUMMARY
REV PC 09/83(.2) TALBOT COUNTY PREPARED BY BAD 12/2022 #2022009 PAGE 5

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 10													
STRUCTURE 1	RUNOFF	.00	2	2	.10	.0	5.20	24.00	3.07	---	12.05	2.85	1817.7
STRUCTURE 1	RUNOFF	.00	2	2	.10	.0	5.20	24.00	3.24	---	11.99	3.04	2564.2
STRUCTURE 1	RESVOR	.00	2	2	.10	.0	5.20	24.00	2.70	46.02	12.10	2.56	2157.1

1

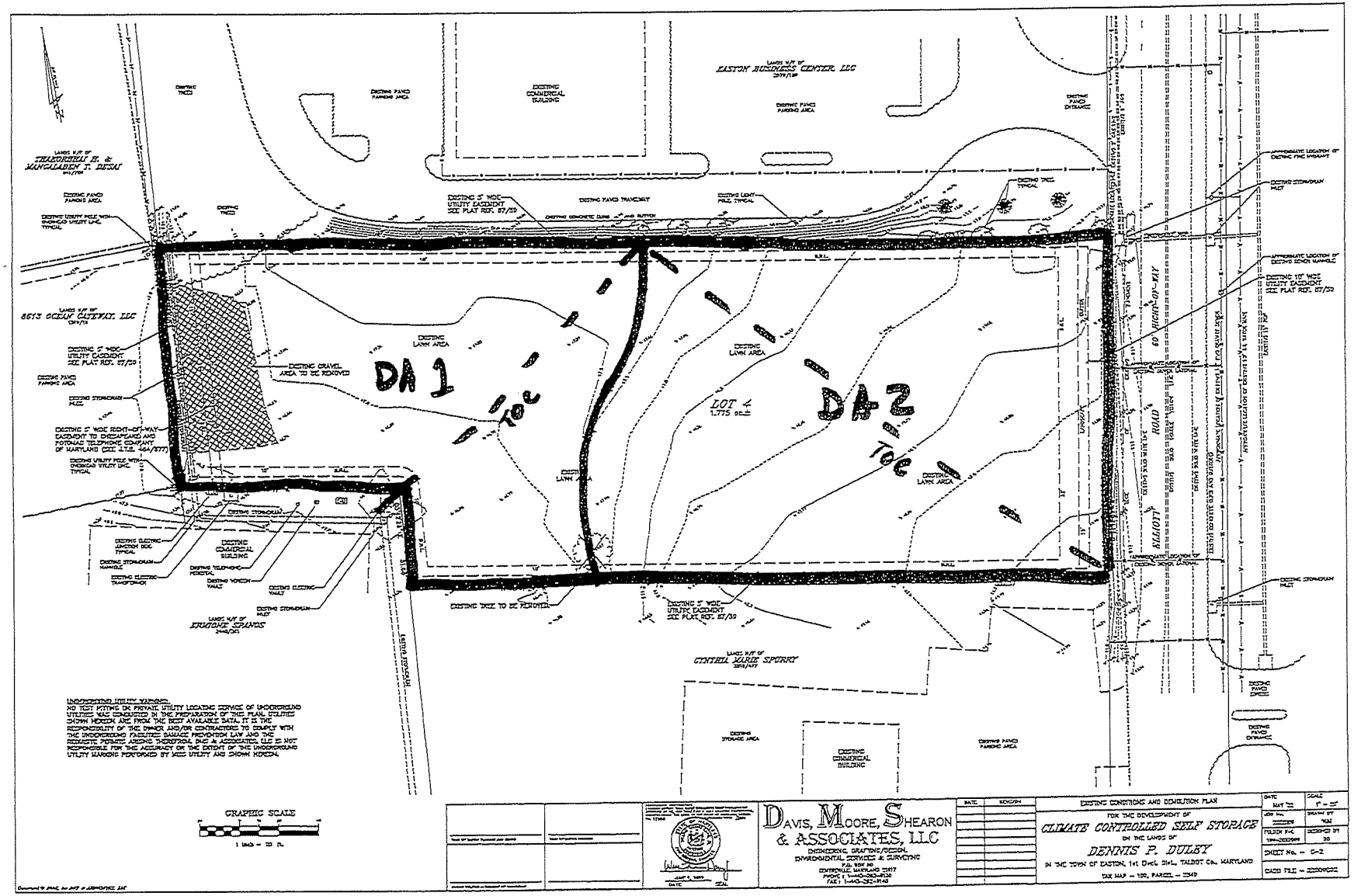
TR20 XEQ 08-02-23 03:28 SCS ANALYSIS FOR FRIEL - ELLIOTT ROAD, EASTON JOB 1 SUMMARY
REV PC 09/83(.2) TALBOT COUNTY PREPARED BY BAD 12/2022 #2022009 PAGE 6

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

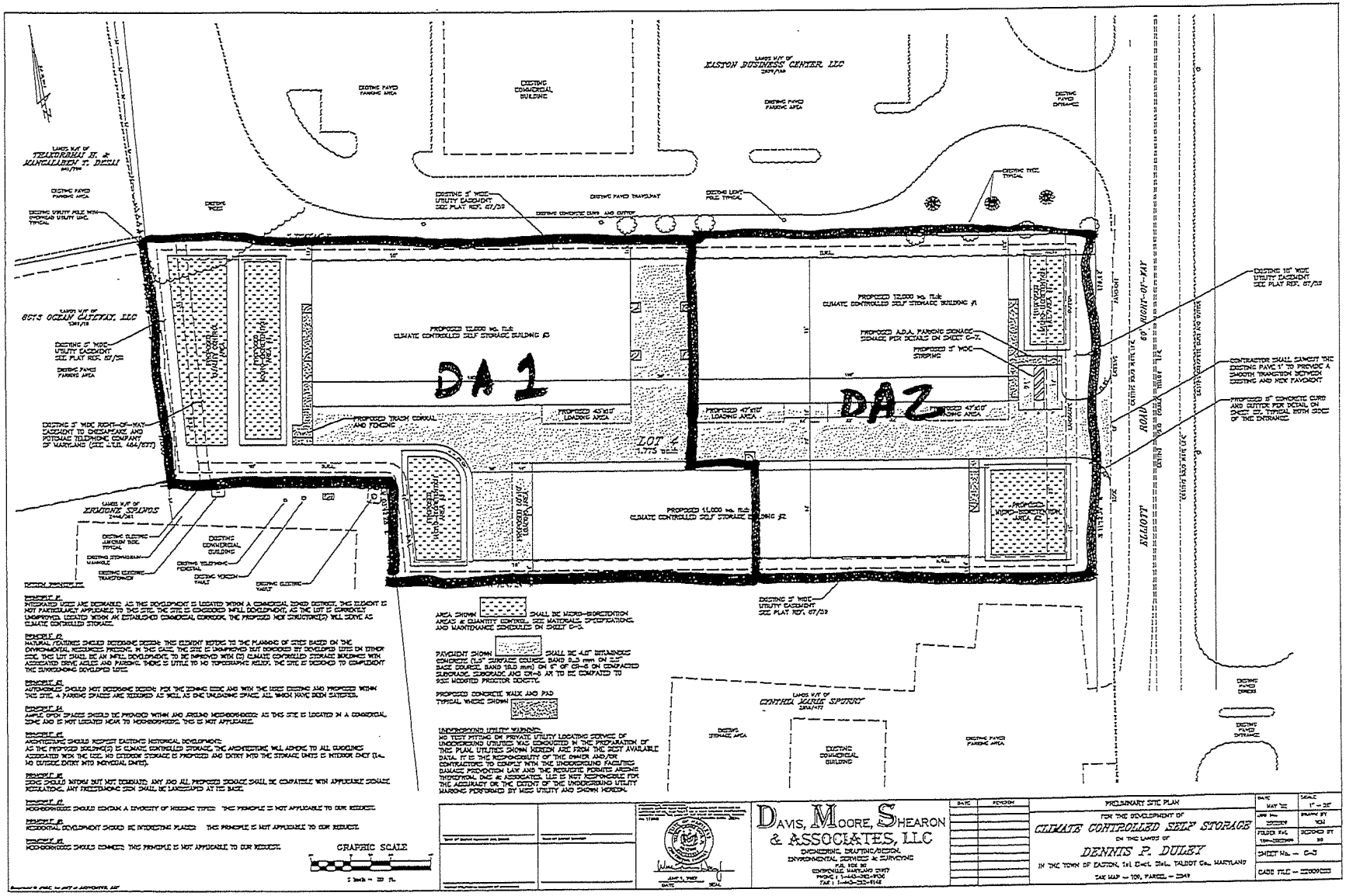
XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 10
0 STRUCTURE 1	.00	
ALTERNATE 1		2.56

1END OF 1 JOBS IN THIS RUN

64


EASTON BUSINESS CENTER, LLC
DA 1
DA 2
LOT 4
1.775 ac±
EXISTING COMMERCIAL BUILDING
EXISTING LAWN AREA
EXISTING GRAVEL AREA TO BE REMOVED
EXISTING TREE TO BE REMOVED
EXISTING 5' WIDE UTILITY EASEMENT SEE PLAT REF. 87/39
EXISTING 10' WIDE UTILITY EASEMENT SEE PLAT REF. 87/39
EXISTING 5' WIDE RIGHT-OF-WAY EASEMENT TO CHESAPEAKE AND POTOMAC TELEPHONE COMPANY OF MARYLAND
EXISTING STORMDRAIN INLET
EXISTING UTILITY POLE WITH OVERHEAD UTILITY LINE TYPICAL
EXISTING ELECTRIC JUNCTION BOX TYPICAL
EXISTING STORMDRAIN MANHOLE
EXISTING ELECTRIC TRANSFORMER
EXISTING TELEPHONE PEDESTAL
EXISTING VERIZON VAULT
EXISTING ELECTRIC VAULT
EXISTING PAVED PARKING AREA
EXISTING PAVED TRANSITAT
EXISTING CONCRETE CURB AND GUTTER
EXISTING LIGHT POLE TYPICAL
EXISTING TREE TYPICAL
EXISTING PAVED ENTRANCE
EXISTING STORAGE AREA
APPROXIMATE LOCATION OF EXISTING FIRE HYDRANT
APPROXIMATE LOCATION OF EXISTING SEWER MANHOLE
APPROXIMATE LOCATION OF EXISTING WATER VALVE
LANDS N/F OF THEODOREAL H. & MANGALADEVI T. DESAI
LANDS N/F OF 8613 OCEAN GATEWAY, LLC
LANDS N/F OF KRISTINE SPANOS
LANDS N/F OF CENTEL MARK SPORRY
EASTON BUSINESS CENTER
EASTON STORAGE
EXISTING COMMERCIAL BUILDING
EXISTING PAVED PARKING AREA
EXISTING PAVED ENTRANCE
UNDERGROUND UTILITY WARNING
NO TEST PITTING OR PRIVATE UTILITY LOCATING SERVICE OF UNDERGROUND UTILITIES WAS CONDUCTED IN THE PREPARATION OF THIS PLAN. UTILITIES SHOWN HEREON ARE FROM THE BEST AVAILABLE DATA. IT IS THE RESPONSIBILITY OF THE OWNER AND/OR CONTRACTORS TO COMPLY WITH THE UNDERGROUND FACILITIES DAMAGE PREVENTION LAW AND THE REASONABLE PERILS ARISING THEREFROM. DAVIS, MOORE, SHEARON & ASSOCIATES, LLC IS NOT RESPONSIBLE FOR THE ACCURACY OR THE EXTENT OF THE UNDERGROUND UTILITY MARKING PERFORMED BY MISS UTILITY AND SHOWN HEREON.
GRAPHIC SCALE
1 inch = 20 ft.
DAVIS, MOORE, SHEARON & ASSOCIATES, LLC
ENGINEERING, GRADING/DESIGN, ENVIRONMENTAL SERVICES & SURVEYING
P.O. BOX 90
CENTREVILLE, MARYLAND 21617
PHONE : 1-443-262-0138
FAX : 1-443-262-0140
DATE
REVISION
EXISTING CONDITIONS AND DEMOLITION PLAN
FOR THE DEVELOPMENT OF
CLIMATE CONTROLLED SELF STORAGE
ON THE LANDS OF
DENNIS P. DULEY
IN THE TOWN OF EASTON, 1st Elect. Dist., TALBOT Co., MARYLAND
TAX MAP – 100, PARCEL – 1349
SCALE 1" = 20'
DRAWN BY KAH
SCREENED BY JD
SHEET No. – C-2
CADD FILE – 22000C02

65



ToC Assumed = 0.1 hr

ESD SUMMARY CHART													
DRAINAGE AREA	TYPE OF ESD PRACTICE	NAME OF ESD PRACTICE (STRUCTURE NAME)	ON-SITE OR OFF-SITE STRUCTURE	RUNOFF CURVE NUMBER (RCN) WEIGHTED	MARYLAND GRID COORDINATE NAD 83 METERS NORTHING	MARYLAND GRID COORDINATE NAD 83 METERS EASTING	ESD PRACTICE TOTAL DRAINAGE AREA (ACRES)	ESD PRACTICE IMPERVIOUS DRAINAGE AREA (ACRES)	SURFACE AREA OF ESD PRACTICE (ACRES)	TARGET PE (INCHES)	ACTUAL PE (INCHES)	TARGET ESDv (CU.FT.)	ACTUAL ESDv (CU.FT.)
1	MICRO-BIORETENTION (M-7)	MICRO BIO #1	ON	92	123240.31	481890.29	0.3286	0.2617	0.0235	1.8	2.5	1670	2287
2	MICRO-BIORETENTION (M-7)	MICRO BIO #2	ON	94	123206.64	481880.99	0.3204	0.2443	0.0392	1.8	4.36	1558	3730
3	MICRO-BIORETENTION (M-7)	MICRO BIO #3	ON	96	123225.45	481791.39	0.4174	0.3660	0.0268	1.8	2.05	2335	2608
4	MICRO-BIORETENTION (M-7)	MICRO BIO #4	ON	93	123256.89	481772.10	0.3688	0.2752	0.0189	1.8	2.02	1755	1957

TOWN OF EASTON STANDARD DETAILS - ESD SUMMARY CHART - STANDARD NO. TOE-SWM-7.01

67

SWM QUANTITY SUMMARY CHART													
PRACTICE	DA (ACRES)	IMPERVIOUS (ACRES)	RCN**** (POST)	Tc (MINUTES)	PRE 2-YEAR (cfs)	POST 2-YEAR (cfs)	W.S.E.	PRE 10-YEAR (cfs)	POST 10-YEAR (cfs)	W.S.E.	PRE 100-YEAR (cfs)	POST 100-YEAR (cfs)	W.S.E.
DETENTION POND (DA #1, BACK)	1.0145	0.6412	91	6 (MIN.)	1.04*	1.00*	45.90*	2.07*	1.96*	46.75*	4.22*	9.55*	47.07*
ESD DEVICES (DA #2, FRONT)***	0.7596	0.5272	92	6 (MIN.)	1.39**	0.04**	45.84**	2.85**	2.56**	46.02**	6.02**	6.28**	46.20**
						TOWN OF EASTON STANDARD DETAILS - SWM QUANTITIY SUMMARY CHART - STANDARD NO. TOE-SWM-7.02							

* VALUES ARE FROM TR-20 AND DO NOT CONSIDER REDUCED CURVE NUMBER COMPUTATIONS

** VALUES ARE FROM TR-20 AND CONSIDER REDUCED CURVE NUMBER COMPUTATIONS AND VOLUME PROVIDED IN ESD DEVICES FOR QUANTITY CONTROL

*** Extra Storage Provided in ESD Device to Address 10yr Quantity Control Requirement

**** VALUES DO NOT CONSIDER REDCUDED CURVE NUMBER COMPUTATIONS

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Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

RECEIVED
AUG 0 2 2023
TOWN OF EASTON

Easton Staff Development Review

Property Information

Address	29533 Canvasback Drive Easton, MD 21601						
Tax Map	109	Grid		Parcel	4582	Lot	32
Deed Refernce:	Liber	2744	Folio	409			
Plat Reference:	Liber	1	Folio	19AA			
Base Zoning District		I-1	Historic District	Y ☐ N ☒	Planning Redevelopment	Y ☐ N ☒	

Purpose of Application / Description of Work:

Proposed 2,400 SF building addition, proposed parking lot expansion, including the addition of 10 parking spaces, drive aisle and associated improvements. Removal of 3 existing spaces.

Owner

Name	Society of St. Vincent de Paul c/o Mike Klein		
Mailing Address	PO Box 783 Easton, MD 21601		
Telephone No.	410-375-4815	Email	

Applicant / Agent

Name	Lane Engineering, LLC c/o Brett Ewing		
Mailing Address	117 Bay Street Easton, MD 21601		
Telephone No.	410-822-8003	Email	bewing@leinc.com

Surveyor / Engineer

Name	Tim Glass	License No.	23152	Expiration Date	7/5/25
Mailing Address	117 Bay Street Easton, MD 21601				
Telephone No.	410-822-8003	Email	tglass@leinc.com		

Any modifications during review shall warrant an updated application.

I do hereby solemnly declare and affirm that the information provided by this application and the documents attached hereto accurately represent the conditions of the request and that submission of an incomplete application will be returned for correction prior to processing.

Signature of Applicant or Agent		
Date	8/1/23	
Printed Name of Applicant or Agent	Brett Ewing-Agent	

For Office Use Only

Easton Staff Development Review Meeting Required Y ☒ N ☐

Easton Staff Development Review Meeting Date 08/23/2023

ESDR 23-15 / 2023-998

Completeness Check Date

Revisions/Resubmissions Required Y ☐ N ☐

Resubmission Date

Documents Received Y ☐ N ☐

Staff Determination

Planning Commission Requir Y ☐ N ☐

BOZA Required Y ☐ N ☐

Historic District Commission Required Y ☐ N ☐

Resubmission for ESDR Required Y ☐ N ☐

Staff Signature

Date

Revised 02-2019

TOWN OF EASTON
Planning & Zoning Department
14 South Harrison Street
P.O. Box 520
Easton, Maryland 21601

Easton Staff Development Review Worksheet

Date: December 21, 2021
Project: 29533 Canvasback Drive – St. Vincent De Paul
To: Brett Ewing, Lane Engineering, LLC.
CC: Society of St. Vincent De Paul, c/o Mike Klein

The Easton Staff Development Review meeting was held on December 21st, at 11:15 am. Staff reviewed the Site Sketch Plan for the proposed parking lot and provided comments for the proposed project.

In addition to the Comments forwarded on December 20, 2021, Staff requested applicant to:

- Provide documentation of payment of fee-in-lieu for the Forest Conservation Easement and submit Forest Conservation Application.
- Revise project with current zoning requirements.

Send revised plans to jmayer@eastonmd.gov . (It is recommended that all digital copies of Site Plan, ESDR, BoZA, HDC Submissions, etc. be sent to jmayer@eastonmd.gov .) Please note, all ESDR comments from the Talbot County Health Department will be forwarded within a week.

Based on the ESDR sketch plan submission, the Staff did not identify constraints which require action by the Board of Zoning Appeals.

Project is approved to submit application for Grading Permit.

If the project requires a Supplemental Waiver Request Application for parking spaces, files for presentation at the Planning Commission need to be provided on a flash drive. In addition, provide a digital submittal (via email) of the Planning Commission Application and its supporting documents, including ten paper copies. Submit all documentation no later than January 5th. The next Planning Commission meeting is scheduled for **Thursday, January 20, 2022 at 1:00 pm. Please contact the Planning & Zoning Department at 410 822-1943 with any questions.**

Sincerely,

Joseph A. Mayer
Plan Reviewer

TOWN OF EASTON
PLANNING & ZONING DEPARTMENT
P.O. Box 520
Easton, Maryland 21601
410-820-8822
www.EastonMD.gov

DATE: **December 20, 2021**
TO: **Brett Ewing –** Lane Engineering, LLC/**Mike Klein –** Society of St. Vincent De Paul
cc: **Katie Reedy – Planning & Zoning Department, Rick Van Emburgh – Department of Engineering**
FROM: **Joseph A. Mayer**

SUBJECT: **29533 Canvasback Drive – Society of St. Vincent De Paul**
We reviewed the **December 1, 2021** Sketch Site Plan Submittal for the Subject Project and have the following comments:

PLANNING & ZONING COMMENTS

Site Plan

1. Label all existing road paving widths on all plan views. In addition, show the entire existing road width of Canvasback Drive and adjacent driveway entrance.
2. Show and label all existing and proposed utilities.
3. Please show adjacent property owners on Canvasback Drive.
4. Connect proposed sidewalk along Canvasback Drive to the existing sidewalk at Lot 31. Please see attached Site Plan from Lot 31.
5. Revise Project Data on the Sketch Site Plan with the current zoning and its requirements. The site in now currently zoned BC – Business Commercial District. See attached zoning regulations.
6. Define the proposed parking calculations with the current Zoning Ordinance 28-1001.3 Parking Requirements. Provide the minimum and maximum vehicle spaces to determine if a Parking Waiver Request is required. See attached parking requirements.
7. Prior to Site Development Plan Review, provide photometric plan and light details for the site.
8. Indicate the Fire Lane & Access will meet requirements for the existing building prior to the Final Site Plan. Please list in General Notes.
9. Prior to Site Development Plan Review, verify and label on the plan that all proposed

landscape material will be native plant species, prior to submitting. Please see the attached *"Talbot County Buffer Management Plan Guideline & Plant List"* for reference.

10. Prior to Site Development Plan Review add a separate Landscape Plan with landscape requirements described under section 28-1014. Include applicable notes from section 28-1014.2. Label and quantify proposed landscaping on the plan view sheet.

11. Show and label the existing landscaping on the Site Plan. Depict what existing plants are to be removed and/or relocated.

12. The proposed dumpster pad area requires screening.

13. Provide screening adjacent to the exterior property line along Lot 33 and the proposed parking area.

14. Remove Waiver Request of the pervious parking material.

15. Provide MDE Authorization Letter in regards to the October 25, 2021 site visit stating that there were no non-tidal wetlands present onsite.

16. The proposed ESD feature at the North end of the site is within the existing 60' Storm Drain Easement. Please revise.

Environmental Review

1. Please clarify the intent of the exemption from a Forest Conservation Application/Plan listed under the Forest Conservation Ordinance – Article III, 31-3.2. Provide documentation from the previously approved 2016 Site Plan and its fee-in-lieu provisions.

Legal Agreements (Required upon Final Site Plan Approval)

1. There will be a required Declaration of Covenants that addresses maintenance and inspections for Storm Water Management. In addition, a Bond/Letter of Credit is required.

2. There will be a required Public Works Agreement and a Bond/Letter of Credit is required for the work in the Town's right-of-way.

3. A Storm Water Management Easement is required. Please provide SWM Exhibit upon instruction of Town Attorney.

4. Prior to Final Site Plan approval, please provide a Construction Cost Estimate for the SWM facility and right-of-way improvements.

5. Please confirm or provide items listed below for preparing legal documents.
   - **Owner name**
     Please advise.
   - **Address for property**
     29533 Canvasback Drive, Easton, MD 21601
   - **Legal agreements required (To be prepared by the Town Attorney)**
     Declaration of Covenants, Conditions and Restrictions for Stormwater Improvements Agreement.
     Deed of Easement for Stormwater Management.
     Public Works Agreement.
   - **Easement Exhibits**
     Exhibit A - Stormwater Management Easement (To be provided)
   - **Approved Cost Estimate**
     To be submitted at Site Development Plan review.
   - **The Title of the Improvement Plans and who they were prepared by.**
     Please advise on title.
     Prepared by: Lane Engineering, LLC.
   - **The Authorized Person who will be signing the documents and their title.**
     Please advise.
6. Per the latest requirement of the Clerk's Office-Circuit Court of Talbot County, add the title Exhibit 'A' above the top boarder to all exhibit sheets.

DEPARTMENT OF ENGINEERING COMMENTS

COMMENTS ATTACHED.

BUILDING INSPECTION AND PERMIT DEPARTMENT COMMENTS

NO COMMENTS ATTACHED.

EASTON UTILITIES COMMENTS

COMMENTS ATTACHED.

Sketch SITE PLAN REVIEW – **29533 Canvasback Drive – Society of St. Vincent De Paul**

Plan Review Status

FINAL SITE PLAN REVIEW			**Comments**
Plans Approved	☐Y	☒ N	Please review comments above Revise and Resubmit.

GRADING PERMIT STATUS			
Application and Final Approved Site Plan Submitted to Town Engineer	☐Y	☒ N	
Easements			
Storm Water			
☒ Required ☐ Submitted ☐ Approved			Waiting on applicant to submit.
Drainage & Utility and Landscape			
☐Required ☐ Submitted ☐ Approved			Not required.
Shared Access/Use			
☐ Required ☐ Submitted ☐ Approved			Not required.
Sidewalk			
☐ Required ☐ Submitted ☐ Approved			Not required.
Declaration of Covenants			
☒ Required ☐ Submitted ☐ Approved			To be prepared by Town Attorney
Public Works Agreement			
☒ Required ☐ Submitted ☐ Approved			To be prepared by Town Attorney
Bond/Letter of Credit/ Cash Agreement			
☒ Required ☐ Submitted ☐ Approved			SWM – Required ROW – Required
Talbot Soil Conservation District Approval			
☐ Approval Required			Approval Required.
Forest Stand Delineation & Forest Conservation Plan			
☐ Required ☐ Submitted ☐Approved			Needs to be clarified.
Other			
☒ Required ☐ Submitted ☐ Approved			MDE letter of approval.

Please contact me if you have any questions. Thank you.

Talbot County Buffer Management Plan Guidelines & Plant List

Call Talbot County Planning & Zoning Office For Further Information (410) 770-8030

PLANTING CRITERIA: Planting should occur between March 1 to May 15 and September 15 to December 31. Large trees may require staking or guying and smaller trees and whips will require protection devices or fencing. Watering and fertilizing may be needed depending on weather, soil conditions, or if planted out of season. A minimum of two inches of hardwood shredded mulch, spread to at least canopy extent is strongly recommended. Granular pre-emergent herbicides, such as Preen™ of herbicide applications such as Oust ™ are also recommended.

PLANT SELECTION: All planting plans must contain a minimum of 100% plants native to this County, or approved by this office. Enclosed is a list of woody plants appropriate for this County. It is very important to use hardy, site-specific plant material matching the plants to the unique conditions of the area. Soil, moisture, salt spray, prevailing winds, sun/shade exposure and habitat opportunities should all be considered when choosing the most appropriate plants.

PLANT LOCATION: Credit will not be given for foundation plantings within 20' of primary structures. Planting should occur within or contiguous to the Shoreline Development Buffer (Buffer), existing wooded or other sensitive areas, in the following order of preference:

1. On-site within the buffer
2. On-site adjacent to the Buffer, wooded, or other sensitive areas
3. On-site within critical area
4. On-site within non-productive agricultural lands
5. Off-site (follow order of preference 1-4 above)
6. $1.50 per square foot, Fee-in-lieu payment, only approved by Talbot County Office of Planning & Zoning under certain conditions, not for Buffer Establishment.

TYPES OF PLANTING PLANS-

1. Simplified Buffer Management Plan/ Property Maintenance Permit
2. Minor Buffer Management Plan/ Critical Area Forest Preservation Plan
3. Major Buffer Management Plan/ Critical Area Forest Preservation Plan

PLANTING AND SURETY AGREEMENTS AND SURETY: Most planting plans will be required to be guaranteed by a cash bond or irrevocable letter of credit.

BOTANICAL NAME	COMMON NAME	CREDIT CATAGORY
Acer barbatum	Southern Sugar Maple	Decid. Canopy Tree
Acer rubrum	Red Maple	Decid. Canopy Tree
Acer saccharinum	Silver Maple	Decid. Understory Tree
Acer saccharum	Sugar Maple	Decid. Canopy Tree
Alnus serrulata	Smooth Alder	Decid. Understory Tree
Amelanchier arborea, canad or laevis	Serviceberry	Decid. Understory Tree
Amelanchier obovalis	Obvate Serviceberry	Decid. Understory Tree
Amelanchier obpvalis	Paw Paw	Decid. Understory Tree
Baccharis halimifolia	High-tide Bush	Decid. Shrub > 3’
Carpinus caroliniana	American Hornbeam	Decid. Canopy Tree
Carya glabra	Pignut Hickory	Decid. Canopy Tree
Carya tomentosa	Mochernut Hickory	Decid. Canopy Tree
Castanea pumila	Chinquapin	Decid. Understory Tree
Celtis occidentallis	Hackberry	Decid. Understory Tree
Cephalanthus occidentalis	Button Bush	Decid. Shrub > 3’
Cercis canadensis	Eastern Redbud	Decid. Understory Tree
Cercis canadensis	Redbud	Decid. Understory Tree
Chionanthus virginicus	Fringe Tree	Decid. Understory Tree
Cladrastis lutea	American Yellowwood	Decid. Canopy Tree
Clethra alnifolia	Sweet Pepperbush	Decid. Shrub < 3’
Comptonia peregrina	Sweet Fern	Decid. Shrub < 3’
Cornus amomum	Silky Dogwood	Decid. Shrub > 3’
Crataegus viridis	Southern or Green Hawthorn	Decid. Understory Tree
Cratagegus canbyi	Canby’s Hawthorn	Decid. Understory Tree
Diospyros virginiana	Common Persimmon	Decid. Understory Tree
Euonymus americanus	Strawberry Bush	Decid. Shrub > 3’
Fagus grandifolia	American Beech	Decid. Canopy Tree
Fagus sylvatica ‘Purpurea’	Copper Beech	Decid. Canopy Tree
Gaylussacia dumosa	Dwarf Huckleberry*	Decid. Shrub > 3’
Gaylussacia frondosa	Dangleberry*	Decid. Shrub > 3’
Hamamelis virginiana	Witch Hazel	Decid. Shrub > 3’
Ilex decidua	Possumhaw*	Decid. Shrub > 3’
Ilex glabra	Inkberry*	Decid. Shrub < & > 3’

BOTANICAL NAME	COMMON NAME	CREDIT CATAGORY
Ilex laevigata	Winterberry*	Evergreen shrub < 3’
Ilex opaca	American Holly	Evergreen Tree
Ilex x “Nellie R. Stevens	Nellie Stevens Holly	Evergreen Tree
Itea virginica	Tassel or Virginia Sweetspire	Decid. Shrub < 3’
Juglans nigra	Black Walnut	Decid. Canopy Tree
Juniperus viriniana	Eastern Red Cedar	Evergreen Tree
Kalmia latifolia	Mountain Laurel*	Evergreen Shrub > 3’
Leucothoe racemosa	Fetterbush/Sweetbells Leucothoe*	Evergreen Shrub < & > 3’
Lindera benzoin	Spicebush	Decid. Shrub > 3’
Liquidambar styraciflua	American Sweet Gum	Decid. Canopy Tree
Liriodendron tulipfera	Tulip Tree or Tulip Poplar	Decid. Canopy Tree
Lyonia ligustrina	Maple-berry	Decid. Shrub > 3’
Lyonia mariana	Staggerbush	Decid. Shrub > 3’
Magnolia grandiflora	Southern Magnolia	Understory Tree
Magnolia virginiana	Sweetbay Magnolia	Decid. Understory Tree
Mitchella repens	Partridge Berry	Ground Cover
Morus rubra	Red Mulberry	Decid. Understory Tree
Myrica cerifera	Waxmyrtle	Evergreen shrub > 3’
Myrica pensylvanica	Bayberry	Evergreen shrub > 3’
Nyssa sylvatica	Black or Sour Gum	Decid. Canopy Tree
Pinus echinata	Shortleaf Pine	Evergreen Canopy Tree
Pinus rigida	Pitch Pine	Evergreen Canopy Tree
Pinus taeda	Loblolly Pine	Evergreen Canopy Tree
Platanus occidentalis SUBSTITUTE WITH Platanus x acerifolia	American Sycamore NOTE: Sycamore susceptible to disease, may substitute London Planetree	Decid. Canopy Tree
Populus deltoides	Eastern Cottonwood	Decid. Canopy Tree
Populus occidentalis	Aspen	Decid. Understory Tree
Prunus maritima	Beach Plum	Decid. Understory Tree
Prunus serotina	Black Cherry	Decid. Understory Tree
Prunus virginiana	Choke Cherry	Decid. Understory Tree
Pyrus arbutfolia	Red Chokecherry	Decid. Understory Tree
Pyrus coronaria	Wild Crab	Decid. Understory Tree
Quercus alba	White Oak	Decid. Canopy Tree

BOTANICAL NAME	COMMON NAME	CREDIT CATAGORY
Quercus bicolor	Swamp White Oak	Decid. Canopy Tree
Quercus borealis	Northern Red Oak	Decid. Canopy Tree
Quercus coccinea	Scarlet Oak	Decid. Canopy Tree
Quercus falcata	Southern Red Oak	Decid. Canopy Tree
Quercus macrocarpa	Bur Oak	Decid. Canopy Tree
Quercus marilandica	Black Jack Oak	Decid. Canopy Tree
Quercus muehlenbergii	Yellow Chestnut Oak	Decid. Canopy Tree
Quercus palustria	Pin Oak	Decid. Canopy Tree
Quercus phelos	Willow Oak	Decid. Canopy Tree
Quercus prinus	Chestnut Oak	Decid. Canopy Tree
Quercus rubra	Red Oak	Decid. Canopy Tree
Quercus velutina	Black Oak	Decid. Canopy Tree
Rhododendron atlanticum	Dwarf Azalea*	Decid & Evergreen Shrub > 3’
Rhododendron canescens	Sweet Azalea*	Decid & Evergreen Shrub > 3’
Rhododendron nudiflorum	Pink Azalea*	Decid & Evergreen Shrub > 3’
Rhododendron viscosum	Swamp Azalea*	Decid & Evergreen Shrub > 3’
Rhus copallina	Dwarf or Ginger Sumac	Decid. Shrub < & > 3’
Rhus glabra	Sweet or Fragrant Sumac	Decid. Shrub > 3’
Rhus Typhina	Staghorn Sumac	Decid. Shrub > 3’
Robinia pseudoacacia	Black Locust	Decid. Canopy Tree
Rubus cuneifolius	Blueberry*	Decid. Shrub < 3’
Salix nigra	Black Willow	Decid. Understory Tree
Sassafras albidum	Sassafras	Decid. Shrub > 3’
Spiraea latifolia	American Meadow-sweet	Decid. Shrub > 3’
Spirea alba	Meadow Sweet	Decid. Shrub > 3’
Styrax americanus	American Snowbell	Decid. Shrub > 3’
Styrax grandifolius	Bigleaf Snowbell	Decid. Shrub > 3’
Tasodium distichum	Bald Cypress	Decid. Coniferous Canopy Tree
Ulmus rubra	Slippery Elm	Decid. Canopy Tree
Vaccinium corymbosum	Higbush Blueberry*	Decid. Shrub > 3’
Vaccinium stamineum	Deerberry*	Decid. Shrub > 3’

BOTANICAL NAME	COMMON NAME	CREDIT CATAGORY
Vaccinium vacillans	Low Blueberry*	Decid. Shrub > 3’
Viburnum acerifolium	Maple-leaved Viburnum	Decid. Shrub > 3’
Viburnum dentatum	Arrowwood	Decid. Shrub > 3’
Viburnum prunifolium	Blackhaw Viburnum	Decid. Shrub > 3’
Zelkova serrata (replace Am. elm)	Zelkova	Decid. Canopy Tree

*Ericaceae family--best in acidic soils

Mitigation Standards

Vegetation Type	Minimum Size Eligible for Credit	Maximum Credit Allowed (Square Feet)	Maximum Percent of Credit
Canopy tree	2-inch caliper and 8 feet high	200	Not applicable
Canopy tree	1-inch caliper and 6 feet high	100	Not applicable
Understory tree	1-inch caliper and 6 feet high	75	Not applicable
Large shrub	1 gallon and 4 feet high	50	30
Small shrub	1 gallon and 18 inches high	25	20
Herbaceous perennial*	1 quart	2	10
Planting Cluster 1*	1 canopy tree; and 3 large shrubs or 6 small shrubs of sizes listed above	300	Not applicable
Planting Cluster 2*	2 understory trees; and 3 large shrubs or 6 small shrubs of sizes listed above	350	Not applicable

*** OR AS DETERMINED BY TALBOT COUNTY PLANNING AND ZONING OFFICE ***

SECTION 28 – 308 BC – BUSINESS COMMERCIAL DISTRICT

28 – 308.1 PURPOSE

The purpose of this district is to provide areas for light industrial, service/business commercial and related uses which can operate in a clean and quiet manner. Certain public facilities needed to serve the district and adjoining residential and commercial districts are permitted. Regulations are designed to protect abutting or surrounding districts; to establish standards for intensity of use and to guide the character of development. In keeping with the purpose of this district, no use may be permitted which may be detrimental to the area because of odor, smoke, dust, fumes, fire, noise, explosion, or open storage.

28 – 308.2 DEVELOPMENT STANDARDS

The following minimum development standards shall be observed in the BC District:

A. The minimum size for all uses hereafter established shall be 40,000 square feet.

B. Off-street parking shall be provided in accordance with the provisions of Section 28 – 1001.

C. All lots hereafter established shall have a frontage on a public street or way of at least one hundred (100) feet.

D. Minimum setbacks for all uses shall be as follows:

1. Front – forty (40) feet from the property line.

2. Side – ten (10) feet on each side of the property line.

3. Rear – thirty (30) feet from the property line.

E. Height limitations – thirty-five (35) feet.

F. Building Envelope – all lots shall have a minimum building envelope of thirty (30) feet deep by eighty (80) feet wide.

G. Lot coverage by all buildings and structures shall not exceed fifty (50%) percent of the lot area.

H. There shall be no open storage on any lot or open areas, nor shall any products be

displayed in open areas. All outside storage shall be adequately screened and landscaped in accordance with provisions of Section 28 – 1014 of this Ordinance.

I. All on-site lighting unless approved otherwise by the Planning and Zoning Commission shall be low cut-off shielded luminaries at 18' height and light shall not shine off-site at levels greater than 1-foot candle.

J. All off-street loading and unloading areas shall be screened from view by permanent decorative screens or natural planting, either of which shall be a minimum of eight (8) feet in height, in accordance with the provisions of Section 28 – 1014 of this Ordinance

K. All areas not devoted to buildings or parking areas shall be landscaped and maintained in a suitable manner, in accordance with the provisions of Section 28 – 1014 of this Ordinance.

SECTION 28 – 309 I – INDUSTRIAL DISTRICT

28 – 309.1 PURPOSE

The purpose of this district is to provide areas for industrial and related uses which can operate in a clean and quiet manner, with an emphasis on reserving land for uses of a truly industrial nature. Certain public facilities needed to serve the district and adjoining residential and commercial districts are permitted. Regulations are designed to protect abutting or surrounding districts; to establish standards for intensity of use and to guide the character of development. In keeping with the purpose of this district, no use may be permitted which may be detrimental to the area because of odor, smoke, dust, fumes, fire, noise, explosion, or open storage.

28 – 309.2 DEVELOPMENT STANDARDS

The following minimum development standards shall be observed in the I District:

A. The minimum lot size for all uses hereafter established shall be 40,000 square feet.

B. Off-street parking shall be provided in accordance with the provisions of Section 28 – 1001.

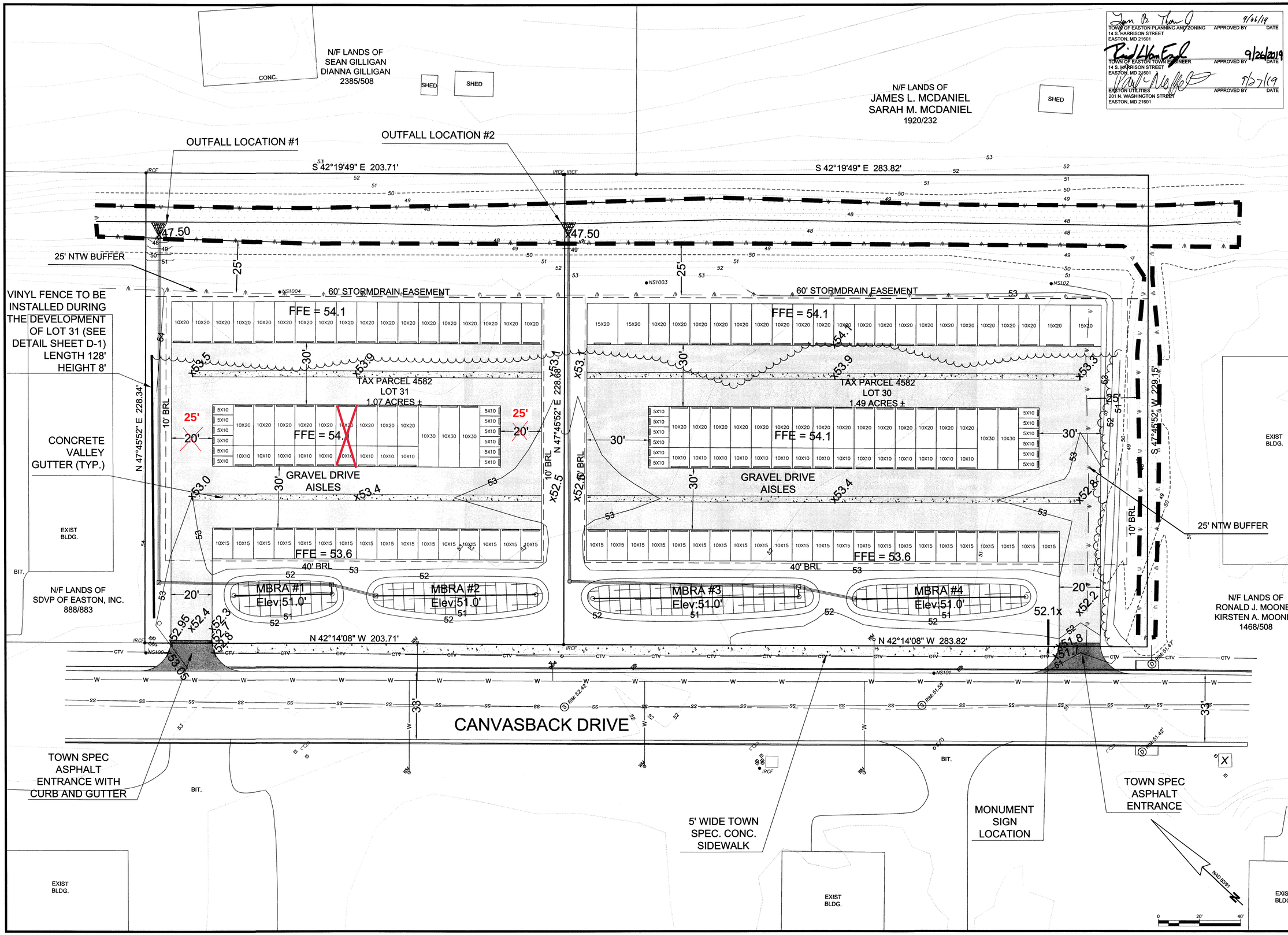
C. All lots hereafter established shall have a frontage on a public street or way of at least one hundred (100) feet.

D. Minimum setbacks for all uses shall be as follows:

	Use/Activity	Minimum Vehicle Spaces	Maximum Vehicle Spaces	Minimum Bicycle Spaces	Notes
	Residential Buildings				
1	Single-Family Detached	2 per du	--	--	
2	Single-Family Attached	2 per du	--	--	
3	Any Middle Housing Type (except single-family attached/Townhome)	0.75 per du	1.0 per du		
4	Multifamily	1 per du	2 per du	0.5 per du	
5	Retirement Community	1 per 3 du	1.5 per du	--	Plus 1 space for any facility vehicles and plus parking for any offices, community centers, etc., per schedule below
6	Nursing Home/Domiciliary Care	0.3 per room	1 per room	--	
	Lodging				
7	Hotels/Motels	0.8 per guest room	1.25 per guest room	--	Plus 1 space per 600 sq. ft. of public meeting area and restaurant space
8	Bed & Breakfast	1 per guest room plus two spaces for owner's portion	--	--	
	Commercial Buildings				
9	Auto Sales or Showroom	1 per 375 sq. ft. GFA of sales and service building	1 per 200 sq. ft. GFA of sales and service building	--	
10	Auto Rental	1 per 1,000 sf GFA	1 per 200 sf GFA	--	
11	Animal Hospital	1 per employee	1 per 200 sf GFA	--	
12	Automotive Repair Garage	1 per 500 sf GFA, including service bays, wash tunnels, and retail areas	1 per 375 sf GFA, including service bays, wash tunnels, and retail areas	--	
13	Office or Bank with Drive-Thru	1 per 1,500 sf GFA plus 5 stacking spaces per each drive-thru stall	1 per 200 sf GFA plus 5 stacking spaces per each drive-thru stall	1 per 10 vehicle spaces	
14	Office or Bank without Drive-Thru	1 per 250 sf GFA	1 per 140 sf GFA	1 per 10 vehicle spaces	
15	Standalone Retail Store	1 per 300 sf GFA	1 per 200 sf GFA	1 per 10 vehicle spaces	
16	Warehouse Discount Store/superstore	1 per 300 sf GFA	1 per 200 sf GFA	1 per 10 vehicle spaces	
17	Gasoline Station	1 per 500 sf GFA, including service bays, wash tunnels, and retail areas	1 per 375 sf GFA, including service bays, wash tunnels, and retail areas	--	

18	Lumberyard & Building Materials	1 per 375 sf GFA of sales and service building	1.5 per 375 sf GFA of sales and service building	--	
19	Beer, Wine & Liquor Store	1 per 300 sf GFA	1 per 200 sf GFA	1 per 10 vehicle spaces	
20	Shopping Center	1 per 300 sf GFA	1 per 200 sf GFA	1 per 10 vehicle spaces	
21	Convenience Store	6 per 1,000 sf GFA	1 per 100 sf GFA	1 per 10 vehicle spaces	
22	Car Wash	1 per 500 sf GFA, including service bays, wash tunnels, and retail areas	1 per 375 sf GFA, including service bays, wash tunnels, and retail areas	--	Minimum 5 stacking spaces per drive-thru stall required
23	Live-Work Space	Ground floor as required plus 1 space for residence	Ground floor as required plus 2 spaces for residence	--	
24	Research and Technology Services	1 space per 1,000 sf GFA	1 space per 200 sf GFA	1 per 10 vehicle spaces	
25	Bars, Taverns, Nightclubs	1 space per 100 sf GFA	1 space per 50 sf GFA	1 per 10 vehicle spaces	
26	Restaurant, Fast Food	1 space per 100 sf GFA	1 space per 50 sf GFA	1 per 10 vehicle spaces	Minimum 5 stacking spaces per drive-thru stall required
27	Restaurant, Carry-out	1 space per 300 sf GFA	1 space per 200 sf GFA	1 per 10 vehicle spaces	Plus 1 space per delivery vehicle
28	Restaurant, Sit-Down	1 space per 100 sf GFA	1 space per 50 sf GFA	1 per 10 vehicle spaces	
29	Craft Beverage Manufacturing or Brew Pub	1 space per 100 sf GFA	1 space per 50 sf GFA	1 per 10 vehicle spaces	
30	Services to buildings and dwellings (pest control, janitorial, landscaping, etc.)	1 space per 1,000 sf GFA	1 space per 200 sf GFA	1 per 10 vehicle spaces	
	Industrial Buildings				
31	Light industrial structures and facilities (not enumerated below)	1 space per 2000 sf GFA	1 space per 300 sf GFA	--	
32	Mill-type factory	1 space per 2000 sf GFA	1 space per 300 sf GFA	--	
33	Manufacturing Plant	1 space per 2000 sf GFA	1 space per 300 sf GFA	--	
34	Industrial Park	1 space per 2000 sf GFA	1 space per 300 sf GFA	--	
35	Laboratory or specialized industrial facility	1 space per 2000 sf GFA	1 space per 300 sf GFA	--	
36	Assembly & Construction-type plants	1 space per 2000 sf GFA	1 space per 300 sf GFA	--	
37	Process Plants (metals, chemicals, etc.)	1 space per 2000 sf GFA	1 space per 300 sf GFA	--	
38	Construction-related businesses	1 per 1,000 sf GFA	1 space per 200 sf GFA	--	
39	Mini-warehouse or self-storage	4 spaces plus 2 for manager's quarters	--	--	

40	Warehouse	1 per 2000 sf GFA	1 per 350 sf GFA	--	
41	Wholesale Trade and Storage	1 per 2000 sf GFA	1 per 350 sf GFA	--	
	Public Assembly Structures				
42	Performance Theatre	1 per 6 seats	1 per 4 seats	1 per 20 vehicle spaces	
43	Movie Theatre	1 per 6 seats	1 per 4 seats	1 per 20 vehicle spaces	
44	Indoor Games Facility	5 per 1,000 sf GFA	6 per 1,000 sf GFA	1 per 10 vehicle spaces	
45	Fitness, recreational sports, gym, or athletic club	1.5 per 1,000 sf GFA	10 per 1,000 sf GFA	1 per 10 vehicle spaces	
46	Bowling, Billiards, etc.	2 per lane	4 per lane	1 per 10 vehicle spaces	
47	Skating Rink	5 per 1,000 sf GFA	7 per 1,000 sf GFA	1 per 10 vehicle spaces	
48	Sports stadium or arena	1 per 6 seats or 1 per 50 sf GFA if no permanent seats	1 per 4 seats or 1 per 30 sf GFA if no permanent seats	1 per 20 vehicle spaces	
49	Exhibition, conference, or convention structure	1 per 6 seats or 1 per 50 sf GFA if no permanent seats	1 per 4 seats or 1 per 30 sf GFA if no permanent seats	1 per 20 vehicle spaces	
50	House of Worship	1 per 8 seats	1 per 2 seats	1 per 20 vehicle spaces	
	Institutional or Community Facilities				
51	Hospital	1 per 600 sf GFA	1 per 100 sf GFA	1 per 20 vehicle spaces	
52	Medical Clinic	1 per 400 sf GFA	1 per 100 sf GFA	1 per 20 vehicle spaces	
53	Day Care Center	1 per 375 sf GFA	1.5 per 375 sf GFA		
54	Community Food, emergency relief, family, or elderly and disabled services	1 per 250 sf GFA	1 per 200 sf GFA	1 per 20 vehicle spaces	
55	Schools, elementary, junior or middle	1 per classroom	2 per classroom	1 per 10 students	Plus any requirements for auditoriums or gymnasiums
56	Schools, senior high or college	1.5 per classroom	2.5 per classroom	1 per 5 vehicle spaces	
57	Library	1 per 300 sf GFA	1 per 125 sf GFA	1 per 20 vehicle spaces	
58	Museum, exhibition, or similar facility	1 per 1,000 sf GFA	1.5 per 1,000 sf GFA	2 per 1,000 sf GFA	
59	Public Safety, fire and rescue, or police station	1 per employee + 1 per each 3 personnel on normal shift + 1 per 200 sf usable office space	--	3% of number of vehicle parking spaces	
60	Post Office	1 per employee	--	--	
61	Clubs or lodges	1 per 3 persons	--	1 per 20 vehicle spaces	
62	Funeral Homes	1 per 4 seats	1 per 2 seats	--	



TOWN OF EASTON PLANNING AND ZONING — APPROVED BY — DATE 9/26/19
14 S. HARRISON STREET
EASTON, MD 21601

TOWN OF EASTON TOWN ENGINEER — APPROVED BY — DATE 9/26/2019
14 S. HARRISON STREET
EASTON, MD 21601

EASTON UTILITIES — APPROVED BY — DATE 9/27/19
201 N. WASHINGTON STREET
EASTON, MD 21601

SITE/GRADING PLAN

FOR THE LANDS OF

ATLANTIC COASTAL PARTNERS, LLC

TALBOT COUNTY, MARYLAND

RAUCH inc
engineering design & development services
office: 410.770.9581 | fax: 410.770.3867
email: design@rauchinc.com | web: www.rauchinc.com
Maryland Office: 108 N. Washington Street, Easton, MD 21601
Virginia Office: 8229 Boone Blvd., Suite 525 - Vienna, VA 22182

SEAL — DATE 8/23/2019

REVISIONS

REV. #	DATE	DESCRIPTION
1	5/10/19	REVISED PER ESDR COMMENTS DATED 3/25/19
2	7/10/19	REVISED PER TOE, EUC, SCD COMMENTS
3	8/14/19	REVISED PER TOE, EUC, SCD COMMENTS
4	8/23/19	REVISED PER TOE, EUC, SCD COMMENTS

DATE: 8/23/2019
JOB NUMBER:
SCALE: 1" = 20'
DRAWN BY: CDR
DESIGNED BY:
APPROVED BY:
FOLDER REF:
SHEET NO.: SP-1
FILE NO.:

TOWN OF
EASTON
ENGINEERING DEPARTMENT

DATE: **December 17, 2021**

TO: **Joe Mayer**

FROM: **Rick Van Emburgh, P.E. – Town Engineer**

SUBJECT: **Saint Vincent DePaul**
Sketch Site Plan and
Stormwater Management Sketch Plan Review
Resubmittal

I reviewed the Application for the Subject project received on 12/6/2021.

Plan Review

The **Sketch Plan** is **acceptable to the Engineering Department.**

Stormwater Management

The **Stormwater Management Sketch Plan** (also called the "Sketch Site Plan" in the Stormwater Management Ordinance) is **Approved.**

Quantity

Quantity Management is addressed with the existing regional Stormwater Management Pond.

Quality

Quality Management is addressed with two (2) proposed Micro-Bioretention Facilities.

The project may proceed to the Stormwater Management Preliminary Plan.

Please contact me if you have any questions. Thank you.

P.O. Box 520, Easton, Maryland 21601
410-820-8822
Engineering@EastonMD.gov - www.EastonMD.gov

EASTON UTILITIES
Life. Made better.™

EUC Return Comment Sheet

Project Name: St. Vincent de Paul
Project Address: 29533 Canvasback Drive
Type of Permit: ESDR Review

Date Received: 12/7/2021
Due Date: 12/20/2021
Date Returned: 12/20/2021

Recipients: Shelby Ruf, Joe Mayer, Beverly Williamson, Casey Ortiz, Ryan Heckler, Robert Haase

CC: Aaron Goller

No.	DWG/PAGE	PROJECT REVIEW COMMENTS	DEPT.
1	Sketch Plan	Show existing utilities and test pit to confirm depth prior to construction	W/WW
2	Skecth Plan	Show existing CATV & Fiber in this area	Cable

201 N. Washington Street | Easton, Maryland 21601
Telephone: 410-822-6110 | Fax: 410-822-0743 | eastonutilities.com

PROJECT DATA

PROPERTY: TAX MAP 109, TAX PARCEL 4582, LOT 32
DEED: 2744/409
PLAT: 1/19AA
29533 CANVASBACK DRIVE
EASTON, MARYLAND 21601

OWNER: SOCIETY OF ST. VINCENT DE PAUL
SAINTS PETER AND PAUL CONFERENCE INC
C/O MIKE KLEIN
P.O. BOX 783
EASTON, MARYLAND 21601
(410) 375–4815

ZONING: I–1 (SELECT INDUSTRIAL DISTRICT)

SITE AREA: 1.07 ACRES±

BUILDING SETBACKS: FRONT – 40'
SIDE – 10'
NTW – 25'

MINIMUM LOT SIZE: 40,000 SF

EXISTING CONDITIONS: THE SITE IS CURRENTLY IMPROVED WITH A ONE STORY METAL BUILDING AND SHED THAT SERVES THE COMMUNITY AS A FOOD PANTRY, THRIFT CENTER AND BOUTIQUE.

PROPOSED DEVELOPMENT: PROPOSED PARKING LOT EXPANSION INCLUDING THE ADDITION OF 11 PARKING SPACE, DRIVE AISLE, AND ASSOCIATED IMPROVEMENTS. REMOVAL OF 3 EXISTING SPACES. APPLICANT REQUEST ASPHALT TO BE APPROVED FOR PROPOSED PARKING SPACES AS OPPOSED TO PERVIOUS PAVERS.

PARKING REQUIRED: 1 SPACES/250 SF RETAIL USE (2,200 SF) = 22 SPACES
1 SPACE/2,000 STORAGE/WAREHOUSE USE (2,200 SF) = 1 SPACES
TOTAL = 30 SPACES PROVIDED

PARKING PROPOSED: 30 SPACES, INCLUDING 2 ADA VAN ACCESSIBLE SPACES

28–1001.3.K: THE APPLICANT REQUESTS A WAIVER OF THE PERVIOUS PARKING MATERIAL.

REFUSE/TRASH: CONTAINED IN DUMPSTER WITHIN GATED FENCE STRUCTURE AT REAR OF SITE

STORMWATER MANAGEMENT: QUANTITY AND ESD PROVIDED ON SITE IN MIRCO–BIORETENTION TYPE FACILITIES SEE STORMWATER MANAGEMENT CONCEPT REPORT INCORPORATED HEREIN WITH THIS SKETCH PLAN SUBMITTAL

FOREST CONSERVATION: PREVIOUSLY SATISFIED FOR ENTIRE SITE IN 2016 WITH A FEE–IN–LIEU.

PROJECT NOTES

PROPERTY BOUNDARY AND EXISTING CONDITIONS SURVEYED BY LANE ENGINEERING, LLC ON 07/19/2012 AND FIELD VERIFIED ON 06/24/2015.

THE ELEVATIONS SHOWN HEREON ARE NAVD 1988 DATUM.

THE COORDINATES SHOWN HEREON ARE BASED ON THE MARYLAND STATE PLANE COORDINATE SYSTEM NAD83 (2011).

THE SITE IS LOCATED ENTIRELY OUTSIDE OF THE CHESAPEAKE BAY CRITICAL AREA.

THERE ARE NO KNOWN HISTORIC STRUCTURES OR ARCHEOLOGICALLY SIGNIFICANT RESOURCES, STREAMS, TIDAL WETLANDS OR KNOWN HABITAT PROTECTION AREAS IN PROXIMITY TO THE PROPOSED SITE IMPROVEMENTS.

NO NON–TIDAL WETLANDS WERE PRESENT ON SITE BASED OBSERVATIONS IN THE FIELD BY SEAN CALLAHAN, QUALIFIED PROFESSIONAL WITH LANE ENGINEERING, LLC AND CHRIS PAJAK, MARYLAND DEPARTMENT OF THE ENVIRONMENT VIA SITE VISIT ON 10/25/21.

THE TREE LINE SHOWN HEREON WAS TAKEN FROM THE 2019 TALBOT COUNTY AERIALS AND IS APPROXIMATE ONLY.

THE CONTOURS SHOWN HEREON WERE TAKEN FROM 2015 TALBOT COUNTY LIDAR PROVIDED BY THE STATE OF MARYLAND AND ARE APPROXIMATE ONLY.

PUBLIC WATER AND SEWER SERVICES ARE PROVIDED BY THE TOWN OF EASTON.

FLOOD DATA

THE PROPERTY SHOWN HEREON IS NOT LOCATED IN THE NATIONAL FLOOD INSURANCE PROGRAM (NFIP) SPECIAL FLOOD HAZARD AREA (SFHA) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD. THE PROPERTY IS MAPPED IN THE X FLOOD ZONE AS SHOWN ON THE FEDERAL INSURANCE RATE MAPS FOR COMMUNITY NO. 240067, MAP NO. 24041C0193C FOR TOWN OF EASTON, MARYLAND. THE 1% ANNUAL CHANCE FLOOD (100–YEAR FLOOD), ALSO KNOWN AS THE BASE FLOOD, IS THE FLOOD THAT HAS A 1% CHANCE OF BEING EQUALED OR EXCEEDED IN ANY GIVEN YEAR. THE SFHA IS THE AREA SUBJECT TO FLOODING BY THE 1% ANNUAL CHANCE FLOOD. THE SFHA INCLUDES ZONES A, AE, AH, AO, AR, A99, V & VE. THE BASE FLOOD ELEVATION (BFE) IS THE WATER SURFACE ELEVATION OF THE 1% ANNUAL CHANCE FLOOD. FLOOD INSURANCE MAY BE REQUIRED FOR STRUCTURES LOCATED IN THE SPECIAL FLOOD HAZARD AREA.

FLOOD ZONE LEGEND
ZONE X – AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD

THE FLOOD DATA SHOWN HEREON IS BASED ON AVAILABLE MAPPED AND/OR DIGITAL INFORMATION AND IS DEPICTED AS DIRECTED AND REQUIRED BY FEDERAL, STATE AND LOCAL REGULATIONS. IT IS SUBJECT TO DATA INACCURACIES AND REGULATORY CHANGE AND SHOULD BE VERIFIED PRIOR TO FINALIZING DEVELOPMENT OR IMPROVEMENT PLANS FOR THE SUBJECT LANDS.

LANDSCAPE REQUIREMENTS SUMMARY PER ZONING ORDINANCE:

STREET TREES PER 28–1014.6C.1. @ 1 TREE/70' OF STREET FRONTAGES = 1 TREES REQUIRED

ON–SITE LANDSCAPE REQUIREMENTS PER 28–1014.6F.

1. OVERALL TREES: 1 TREE/3,000 SF DISTURBED AREA (13,233 SF±) = 4 TREES REQUIRED
   - 2.A. PARKING LOT TREES: 1 TREE/10 SPACES (NEW SPACES) = 1 TREES REQUIRED
   - 2.B. PARKING HEDGE: FULLY PLANTED STORMWATER MANAGEMENT AREAS SHALL BE UTILIZED
   - 2.C. BUILDING FAÇADE PLANTINGS; 1 TREE/20' FRONT FAÇADE = N/A (PARKING AREA ONLY)
   - 2.D. SERVICE LOADING/DUMPSTER SCREENING: AS SHOWN HEREON
   - 2.E. SWM FEATURES: USE TO ENHANCE BUILDING– AS SHOWN HEREON
   - 2.F. BUFFERYARDS: NONE REQUIRED

COMPREHENSIVE PLAN DESIGN PRINCIPLES RESPONSE NARRATIVE

PRINCIPLE #1– INTEGRATED USES ARE DESIRABLE– THIS DEVELOPMENT PROPOSAL PROVIDES ADDITIONAL PARKING.

PRINCIPLE #2– NATURAL FEATURES SHOULD DETERMINE DESIGN– NO COMPELLING NATURAL FEATURES; SITE LAYOUT ORIENTED TO TAKE ADVANTAGE OF NATURAL DRAINAGE PATTERNS.

PRINCIPLE #3– AUTOMOBILES SHOULD NOT DETERMINE DESIGN– NEW PARKING AREA PROVIDES CONVENIENCE WITH BULK OF THE PARKING TO SIDE OF FACILITY.

PRINCIPLE #4– AMPLE OPEN SPACES SHOULD BE PROVIDED WITHIN & AROUND NEIGHBORHOODS– USABLE OPEN SPACE NOT APPLICABLE HERE.

PRINCIPLE #5– ARCHITECTURE SHOULD RESPECT EASTON'S HISTORICAL DEVELOPMENT– THIS APPLICATION PROPOSES THE CONSTRUCTION OF A NEW PARKING AREA – NOT APPLICABLE HERE

PRINCIPLE #6– SIGNS SHOULD INFORM BUT NOT DOMINATE– SIGNAGE, SIMPLE AND PER CODE.

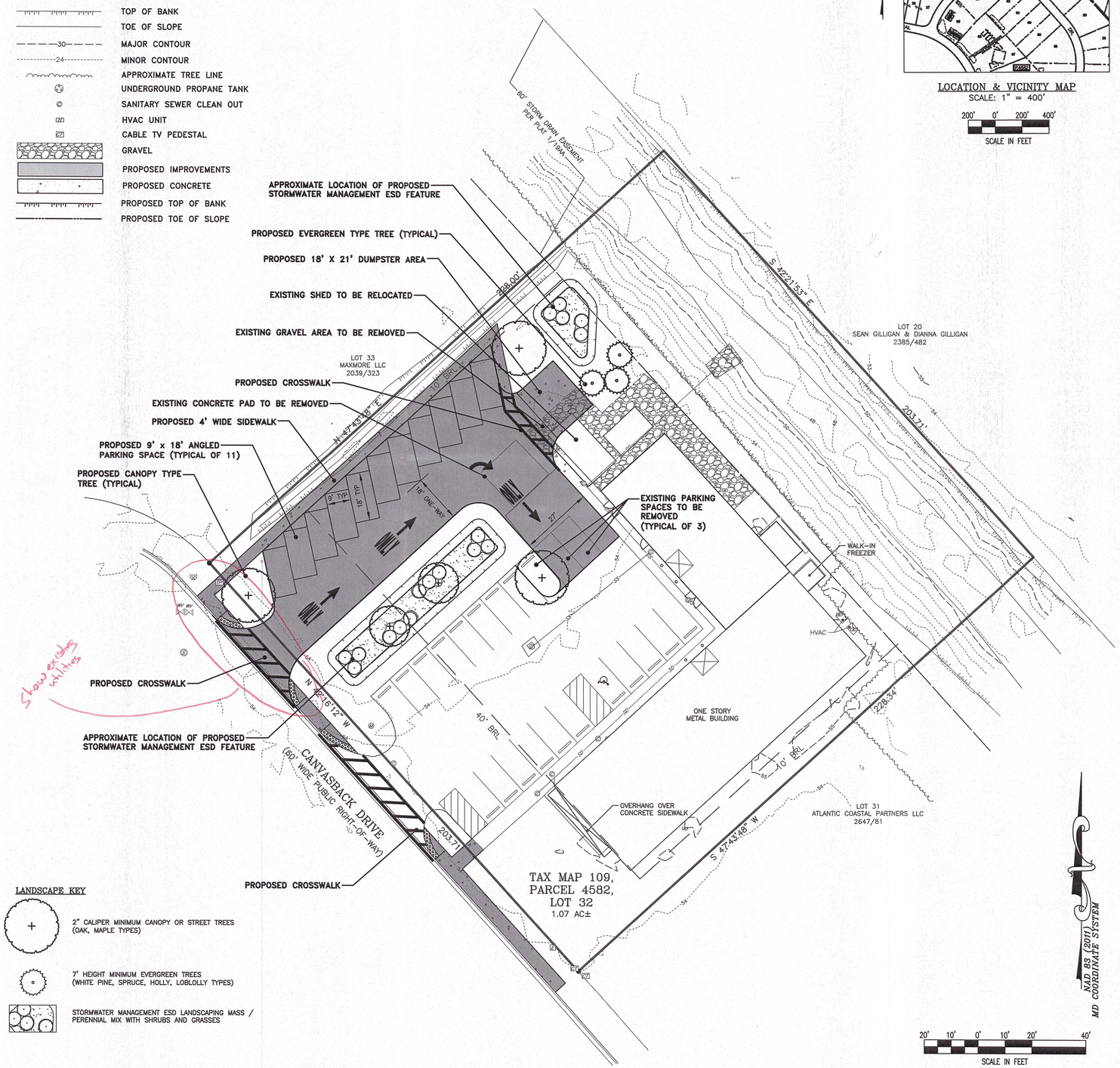
PRINCIPLE #7– NEIGHBORHOODS SHOULD CONTAIN A DIVERSITY OF HOUSING TYPES– NOT APPLICABLE TO THIS APPLICATION

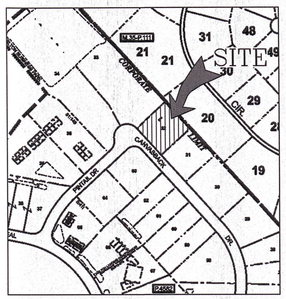
PRINCIPLE #8– RESIDENTIAL NEIGHBORHOODS SHOULD BE INTERESTING PLACES– NOT APPLICABLE TO THIS APPLICATION

PRINCIPLE #9– NEIGHBORHOODS SHOULD CONNECT– NOT SPECIFICALLY APPLICABLE TO THIS APPLICATION.

LEGEND

- COMPUTED POINT
- IRON ROD FOUND
- ELECTRIC TRANSFORMER
- SANITARY SEWER MANHOLE
- TELEPHONE PEDESTAL
- FIRE HYDRANT
- WATER VALVE
- WATER METER
- STORMDRAIN
- TOP OF BANK
- TOE OF SLOPE
- MAJOR CONTOUR
- MINOR CONTOUR
- APPROXIMATE TREE LINE
- UNDERGROUND PROPANE TANK
- SANITARY SEWER CLEAN OUT
- HVAC UNIT
- CABLE TV PEDESTAL
- GRAVEL
- PROPOSED IMPROVEMENTS
- PROPOSED CONCRETE
- PROPOSED TOP OF BANK
- PROPOSED TOE OF SLOPE





LOCATION & VICINITY MAP
SCALE: 1" = 400'

200' 0' 200' 400'
SCALE IN FEET

LANDSCAPE KEY

- 2" CALIPER MINIMUM CANOPY OR STREET TREES (OAK, MAPLE TYPES)
- 7' HEIGHT MINIMUM EVERGREEN TREES (WHITE PINE, SPRUCE, HOLLY, LOBLOLLY TYPES)
- STORMWATER MANAGEMENT ESD LANDSCAPING MASS / PERENNIAL MIX WITH SHRUBS AND GRASSES

REVISIONS

No.	DATE	DESCRIPTION	BY

WARNING!!
THE LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THIS PLAN ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. THE QUANTITIES SHOWN ON THIS PLAN ARE FOR INFORMATIONAL AND PERMITTING PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES TO HIS OWN SATISFACTION PRIOR TO BEGINNING CONSTRUCTION.

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Lane Engineering, LLC
Established 1986
Civil Engineers • Land Planning • Land Surveyors
E–mail: general@leinc.com
117 Bay St. Easton, MD 21601 (410) 822–8003
15 Washington St. Cambridge, MD 21613 (410) 221–0818
354 Pennsylvania Ave. Centreville, MD 21617 (410) 758–2065

SEAL

DATE

SKETCH SITE PLAN

FOR
ST. VINCENT DE PAUL

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 109 PARCEL 4582 LOT 32

ISSUED FOR: AGENCY REVIEW
DATE: 12/01/21 BY: BCE

SHEET No. 1 OF 1	DATE: 12/01/21
SCALE: AS NOTED	JOB No. 200184
	FILE No. 3248

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Date: 11/30/2021 – 11:55am User: wbernhart Project Manager BCE
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CONCEPT STORMWATER MANAGEMENT REPORT

For

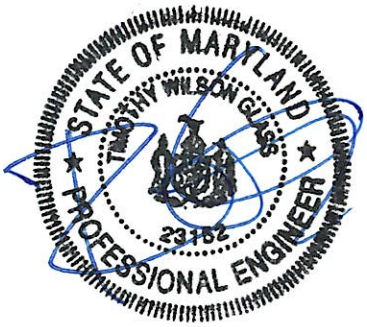
St. Vincent de Paul
Parking Lot Expansion
Easton, Maryland

Owner/Developer

Society of St. Vincent de Paul
Saints Peter and Paul Conference Inc.
c/o Mike Klein
P.O. Box 783
Easton, MD 21601
(410) 375-4815

Design Professional

Lane Engineering, LLC.
117 Bay Street
Easton, Maryland 21601
410-822-8003



Date Prepared

August 1, 2023

Prepared by
Matt Rajacich, E.I.T.

Approved by
Timothy W. Glass, P.E.
Civil Engineer

PROFESSIONAL CERTIFICATION: I hereby certify that this document was prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 23152; Expiration Date: 7/5/2025.

St. Vincent de Paul is located at 29533 Canvasback Drive in Easton, within Carlton Business Park. Existing onsite is retail and storage buildings, a 22-space parking lot, and associated improvements. Site soils consist of Fallsington Sandy Loam and Kentuck Mucky Silt Loam (HSG “D”). Existing stormwater management consists of disconnection to conservation area, which surrounds the site on the west and north sides.

St. Vincent de Paul proposes to add an entrance, 10 parking spaces, construct a 2,400 sf building addition, and relocate the dumpster pad to facilitate these changes. Three spaces will be removed, resulting in a 7-space increase for the site. The proposed improvements will occupy a significant portion of the current disconnect area on the west side of the site. The disconnect to the north will not be affected, and thus stormwater management for the buildings will not be affected. Please refer to Appendix B for further clarification.

A micro-bioretention facility is proposed to replace stormwater management for the existing parking lot, as well as for the proposed parking improvements. The proposed feature is not large enough to meet the ESD target for the site, therefore, two planter boxes are proposed to collect rooftop runoff from the existing building to treat the additional ESD volume needed to meet the ESD target for the proposed site. Stormwater quality calculations and a drainage area map follow in Appendices A and B. There is a regional stormwater management pond, and therefore quantity management is not required.

APPENDIX A
STORMWATER QUALITY (ESD) CALCULATIONS

ESD Target for Site Development (Site)

Earthen Disturbance (LOD) = 0.517 acres = 22,524 sf (excluding work associated with Planter Box installation)

Onsite Soils in LOD: "HSG D"

Proposed Buildings, Parking, and Sidewalks within the LOD = 16,523 sf

Impervious I = 73%

R_V = 0.05 + 0.009 (I) = 0.05 + 0.009 (73%) = 0.707

Based on I = 73%: HSG D P_E = 1.8"

$ESD_{V\_Total\_Target} = \frac{(Pe)(Rv)(A)}{12} = \frac{(1.8)(0.707)(22,524)}{12}$ = **2,389 *cf***

Micro-Bioretention Area (DA-1)

Drainage Area = 18,937

Proposed Improvements = 16,523 sf; Impervious I = 87%

R_V = 0.05 + 0.009 (I) = 0.05 + 0.009 (87%) = 0.833

Based on I = 87%: HSG D P_E = 1.8"

$ESD_{V\_Total\_Target\_DA\text{-}1} = \frac{(Pe)(Rv)(A)}{12} = \frac{(1.8)(0.833)(18,937)}{12}$ = **2,366 *cf***

$ESD_{V\_Ponding} = \frac{(Area\ at\ Temporary\ Ponding\ Elevation + Floor\ Area)}{2} \times$ Ponding Depth = $\frac{(734+1,225)}{2} \times 1.00 = \mathbf{980\ cf}$

$ESD_{V\_Media} = Porosity\ of\ Media \times Media\ depth\ \times Floor\ Area = 0.4 \times 734\ \times 2.0\ = \mathbf{587\ cf}$

$ESD_{V\_Provided} = ESD_{V\_Ponding} + ESD_{V\_Media}$ = 980 + 587 = **1,567 *cf***

Planter Box (DA-2)

Drainage Area = 1,453 sf; Impervious I = 100%

R_V = 0.05 + 0.009 (I) = 0.05 + 0.009 (100%) = 0.95

Based on I = 100%: HSG D P_E = 2.0"

$ESD_{V\_Total\_Target\_DA\text{-}2} = \frac{(Pe)(Rv)(A)}{12} = \frac{(2.0)(0.95)(1,453)}{12}$ = **230 *cf***

Max allowable ESD_V allowed based on 2.8 in. Cp_V storm

$ESD_{V\_Maximum\_Allowed} = \frac{(Pe)(Rv)(A)}{12} = \frac{(2.8)(0.95)(1,453)}{12}$ = **322 *cf***

$ESD_{V\_Ponding} = \frac{(Area\ at\ Temporary\ Ponding\ Elevation + Floor\ Area)}{2} \times$ Ponding Depth = $180 \times 1.00 = \mathbf{180\ cf}$

$ESD_{V\_Media} = Porosity\ of\ Media \times Media\ depth\ \times Floor\ Area = 0.4 \times 180\ \times 3.0\ = \mathbf{216}\ \boldsymbol{cf}$

$ESD_{V\_Provided} = ESD_{V\_Ponding} + ESD_{V\_Media}$ = 180 + 216 = **396 *cf***

$ESD_{V\_Provided}$ when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **322 *cf***

<u>Planter Box (DA-3)</u>

Drainage Area = 2,494 sf; Impervious I = 100%

R_V = 0.05 + 0.009 (I) = 0.05 + 0.009 (100%) = 0.95

Based on I = 100%: HSG D P_E = 2.0"

$ESD_{V\_Total\_Target\_DA\text{-}3} = \frac{(Pe)(Rv)(A)}{12} = \frac{(2.0)(0.95)(2{,}494)}{12}$ = **395 *cf***

Max allowable ESD_V allowed based on 2.8 in. Cp_V storm

$ESD_{V\_Maximum\_Allowed} = \frac{(Pe)(Rv)(A)}{12} = \frac{(2.8)(0.95)(2{,}494)}{12}$ = **553 *cf***

$ESD_{V\_Ponding} = \frac{(Area\ at\ Temporary\ Ponding\ Elevation + Floor\ Area)}{2} \times$ Ponding Depth = $264 \times 1.00 = \mathbf{264}\ \boldsymbol{cf}$

$ESD_{V\_Media} = Porosity\ of\ Media \times Media\ depth\ \times Floor\ Area = 0.4 \times 264\ \times 3.0\ = \mathbf{317}\ \boldsymbol{cf}$

$ESD_{V\_Provided} = ESD_{V\_Ponding} + ESD_{V\_Media}$ = 264 + 317 = **581 *cf***

$ESD_{V\_Provided}$ when assessing compliance with the MEP standard, the volume of runoff treated by this micro-bioretention practice is **553 *cf***

Total $ESD_{V\_Provided}$ = 1,567+322+553 = 2,422 *cf*

$ESD_{V\_Provided}) > ESD_{V\_Target}$

ESD SUMMARY CHART

DRAINAGE AREA	TYPE OF ESD PRACTICE	NAME OF ESD PRACTICE (STRUCTURE NAME)	ON-SITE OR OFF-SITE STRUCTURE	RUNOFF CURVE NUMBER (RCN) WEIGHTED	MARYLAND GRID COORDINATE NAD 83 METERS NORTHING	MARYLAND GRID COORDINATE NAD 83 METERS EASTING	ESD PRACTICE TOTAL DRAINAGE AREA (ACRES)	ESD PRACTICE IMPERVIOUS DRAINAGE AREA (ACRES)	SURFACE AREA OF ESD PRACTICE (ACRES)	TARGET PE (IN.)	ACTUAL PE (IN.)	TARGET ESDv ($FT.^3$)	ACTUAL ESDv ($ft.^3$)
1	M-6	MICRO-BIORETENTION	ON-SITE	95	405846.20	1572388.51	0.434	0.379	0.0168	1.8	1.8	2,366	1,567
2	M-6	PLANTER BOX	ON-SITE	98	405899.28	1582489.43	0.033	0.033	0.004	2.0	2.0	230	322
3	M-6	PLANTER BOX	ON-SITE	98	405797.07	1582523.92	0.057	0.057	0.006	2.0	2.0	395	553
4													
5													
6													
7													
8													
9													
10													
TOTAL/ AVERAGE													

TOWN OF EASTON MARYLAND · FOUNDED 1710

APPROVAL

TOWN ENGINEER

1/2020

DATE

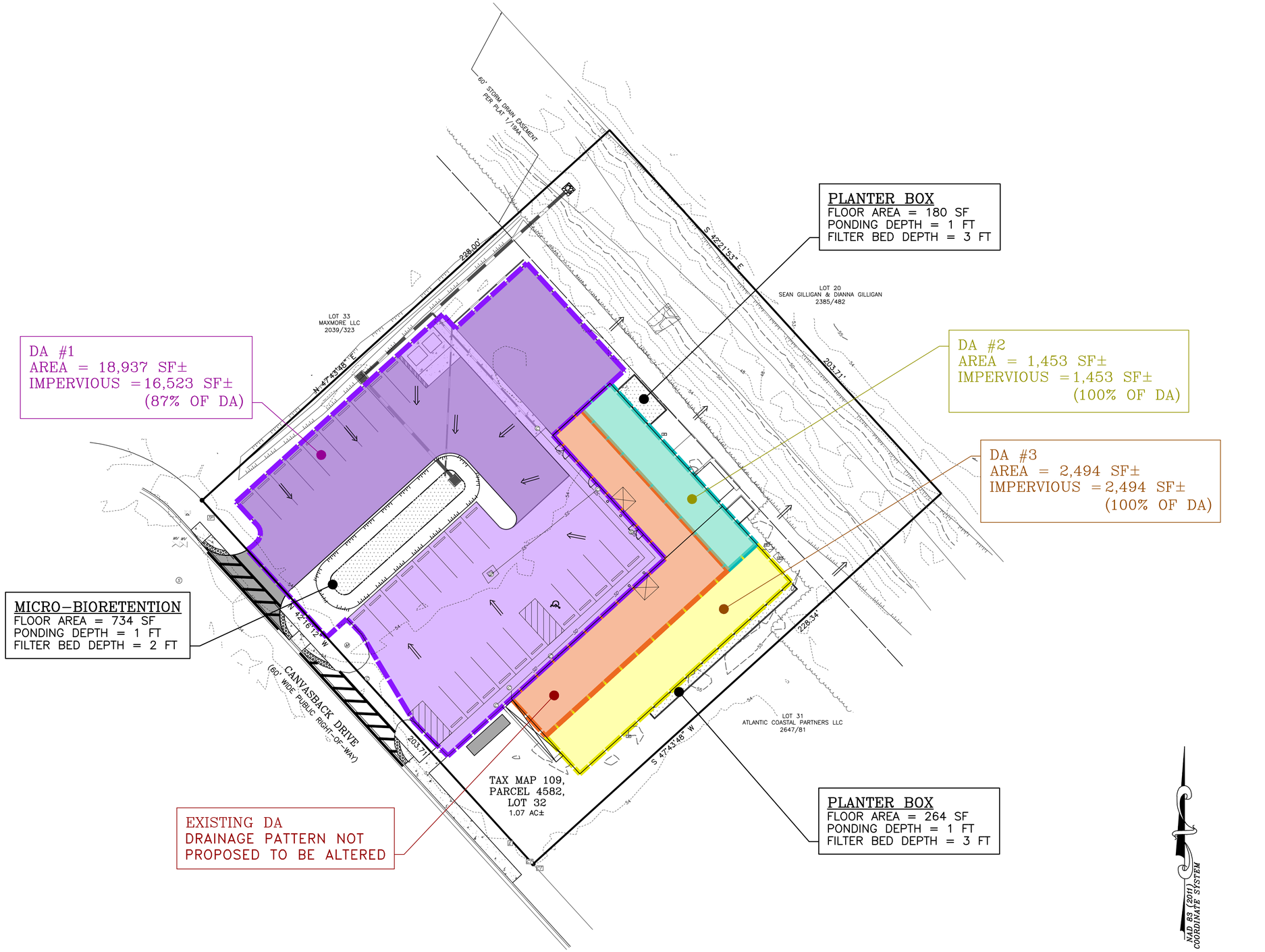
TOWN OF EASTON
STANDARD DETAILS

ESD SUMMARY CHART

ISSUED: JANUARY 2020

STANDARD NO.: TOE-SWM-7.01

APPENDIX C
PROPOSED DRAINAGE AREA MAP



REVISIONS

No.	DATE	DESCRIPTION	BY

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TWO WORKING DAYS NOTICE

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Established 1986
Civil Engineers • Land Planning • Land Surveyors
E-mail: general@leinc.com
117 Bay St. Easton, MD 21601 (410) 822-8003
15 Washington St. Cambridge, MD 21613 (410) 221-0818
354 Pennsylvania Ave. Centreville, MD 21617 (410) 758-2095

PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 23152 , Expiration Date: 7/5/2025.

SEAL

STATE OF MARYLAND
TIMOTHY V. BLAKE
No. 23152
REGISTERED
PROFESSIONAL ENGINEER

DATE

PROPOSED DRAINAGE AREA MAP

FOR

ST. VINCENT DE PAUL

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 109 PARCEL 4582 LOT 32

ISSUED FOR:	DATE:	BY:
ESDR SUBMITTAL	08/01/23	BCE

SHEET No. 1 OF 1	DATE: 08/01/2023
SCALE: AS NOTED	JOB No. 230215
	FILE No. 3248

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Date: 08/01/2023 - 2:20pm User: mrajacich Project Manager: BCE
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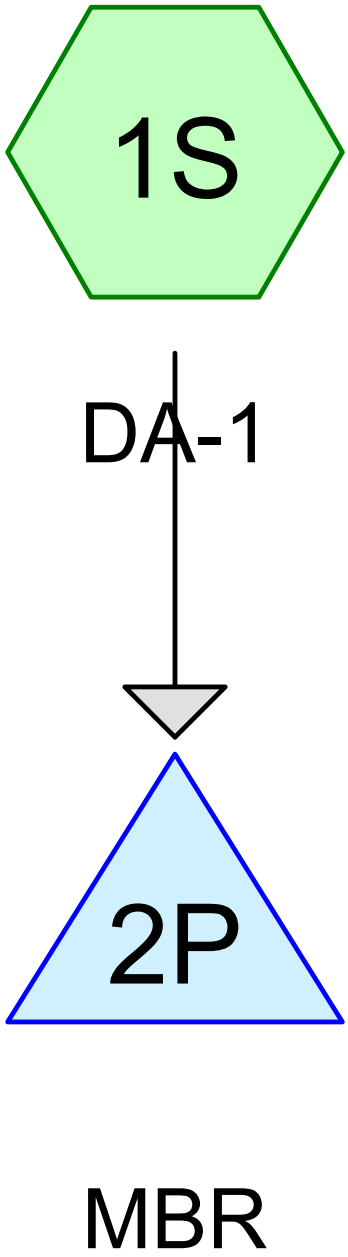
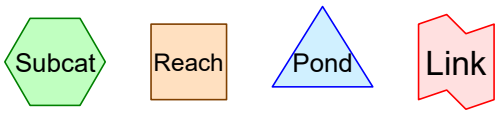
XREF File(s): RBS-BASE-2438-230215/CDA-BASE-230215/RLD-BASE-230215/RSF-BASE-230215/RSW-BASE-230215

APPENDIX D
HYDROCAD CALCULATIONS





Routing Diagram for 230215 - Concept HydroCAD
Prepared by {enter your company name here}, Printed 7/28/2023
HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

Summary for Subcatchment 1S: DA-1

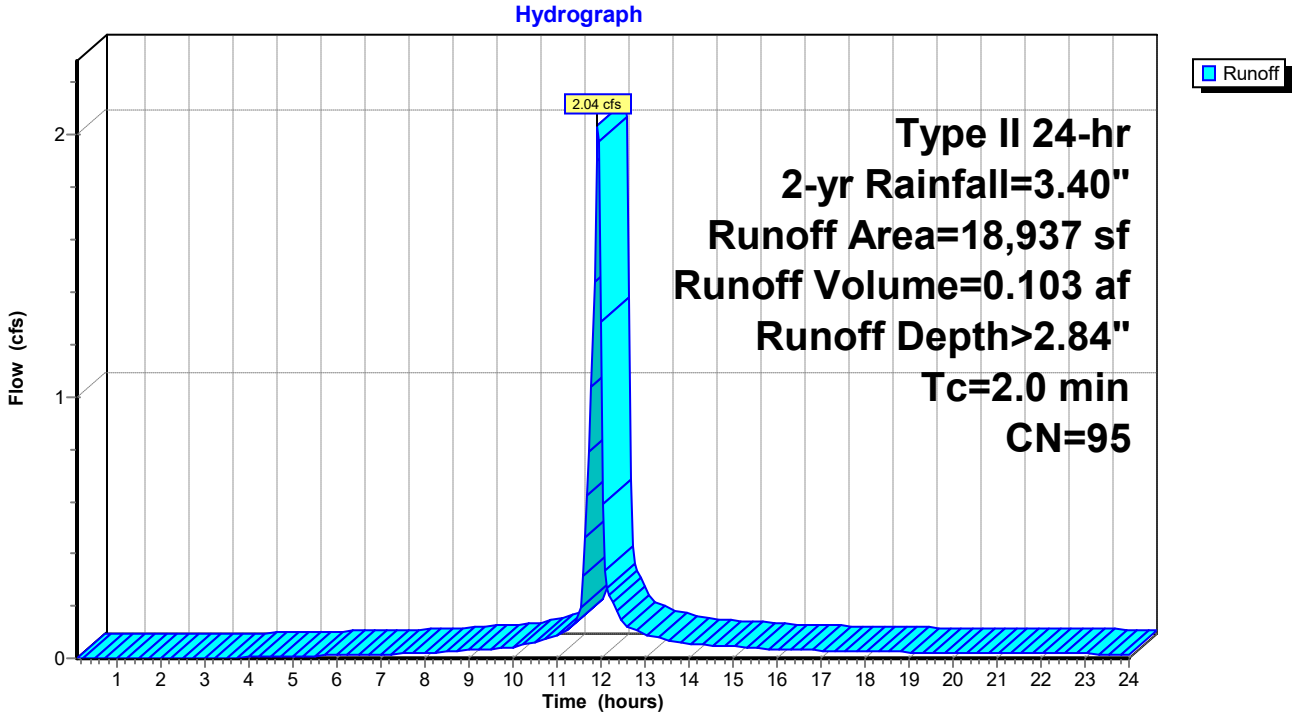
Runoff = 2.04 cfs @ 11.93 hrs, Volume= 0.103 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.10-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

Area (sf)	CN	Description
16,523	98	Roofs, HSG D
2,414	74	>75% Grass cover, Good, HSG C
18,937	95	Weighted Average
2,414		12.75% Pervious Area
16,523		87.25% Impervious Area

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

Subcatchment 1S: DA-1



Summary for Pond 2P: MBR

Inflow Area = 0.435 ac, 87.25% Impervious, Inflow Depth > 2.84" for 2-yr event
Inflow = 2.04 cfs @ 11.93 hrs, Volume= 0.103 af
Outflow = 2.00 cfs @ 11.95 hrs, Volume= 0.066 af, Atten= 2%, Lag= 1.4 min
Primary = 2.00 cfs @ 11.95 hrs, Volume= 0.066 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-24.00 hrs, dt= 0.05 hrs
Peak Elev= 52.65' @ 11.95 hrs Surf.Area= 1,328 sf Storage= 1,771 cf

Plug-Flow detention time= 177.1 min calculated for 0.066 af (64% of inflow)
Center-of-Mass det. time= 78.0 min (851.0 - 773.0)

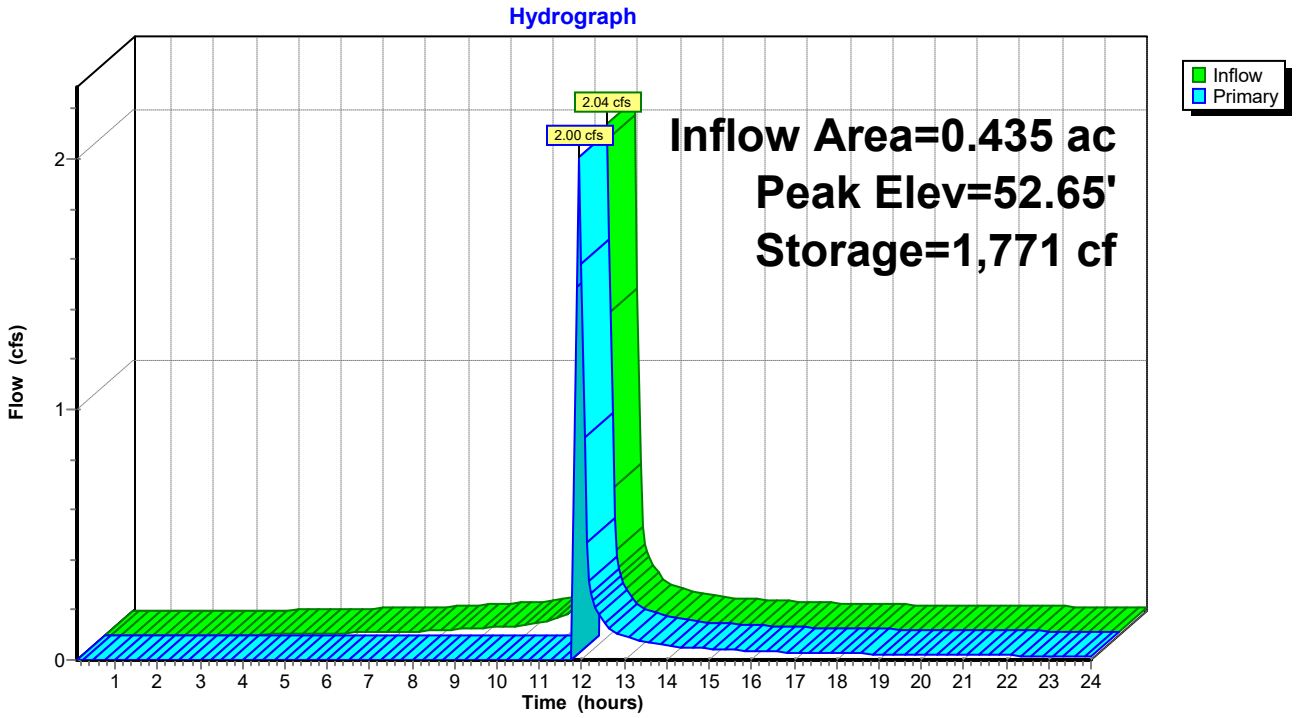
Volume	Invert	Avail.Storage	Storage Description
#1	49.49'	3,091 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
49.49	734	0.0	0	0
49.50	734	40.0	3	3
51.50	734	40.0	587	590
51.51	734	100.0	7	597
53.50	1,772	100.0	2,493	3,091

Device	Routing	Invert	Outlet Devices
#1	Primary	49.50'	**18.0" Round Culvert** L= 160.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 49.50' / 49.00' S= 0.0031 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	52.50'	**10.7' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)

Primary OutFlow Max=1.98 cfs @ 11.95 hrs HW=52.65' (Free Discharge)
└─**1=Culvert** (Passes 1.98 cfs of 10.15 cfs potential flow)
└─**2=Sharp-Crested Rectangular Weir** (Weir Controls 1.98 cfs @ 1.26 fps)

Pond 2P: MBR


Hydrograph
Inflow
Primary
2.04 cfs
2.00 cfs
Inflow Area=0.435 ac
Peak Elev=52.65'
Storage=1,771 cf
Flow (cfs)
0
1
2
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

Summary for Subcatchment 1S: DA-1

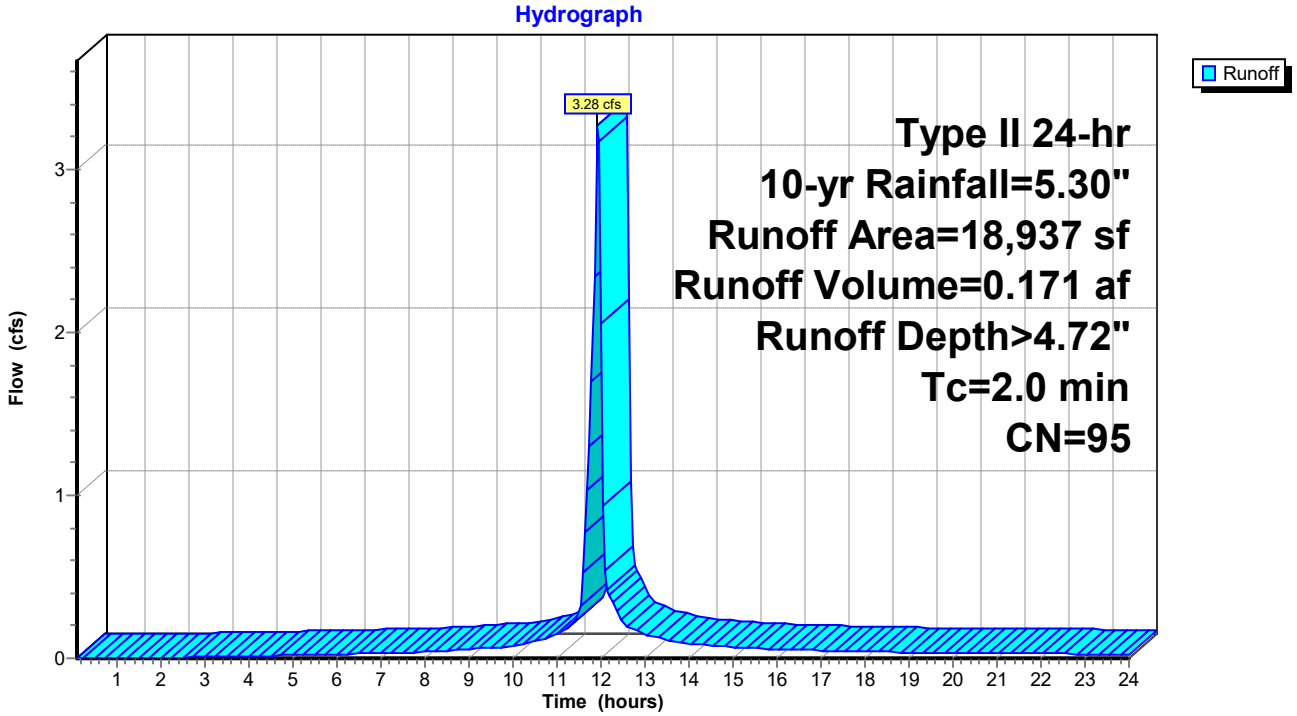
Runoff = 3.28 cfs @ 11.93 hrs, Volume= 0.171 af, Depth> 4.72"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.10-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

Area (sf)	CN	Description
16,523	98	Roofs, HSG D
2,414	74	>75% Grass cover, Good, HSG C
18,937	95	Weighted Average
2,414		12.75% Pervious Area
16,523		87.25% Impervious Area

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

Subcatchment 1S: DA-1



Summary for Pond 2P: MBR

Inflow Area = 0.435 ac, 87.25% Impervious, Inflow Depth > 4.72" for 10-yr event
Inflow = 3.28 cfs @ 11.93 hrs, Volume= 0.171 af
Outflow = 3.20 cfs @ 11.94 hrs, Volume= 0.134 af, Atten= 2%, Lag= 0.8 min
Primary = 3.20 cfs @ 11.94 hrs, Volume= 0.134 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-24.00 hrs, dt= 0.05 hrs
Peak Elev= 52.70' @ 11.94 hrs Surf.Area= 1,356 sf Storage= 1,844 cf

Plug-Flow detention time= 140.7 min calculated for 0.134 af (79% of inflow)
Center-of-Mass det. time= 58.8 min (819.1 - 760.3)

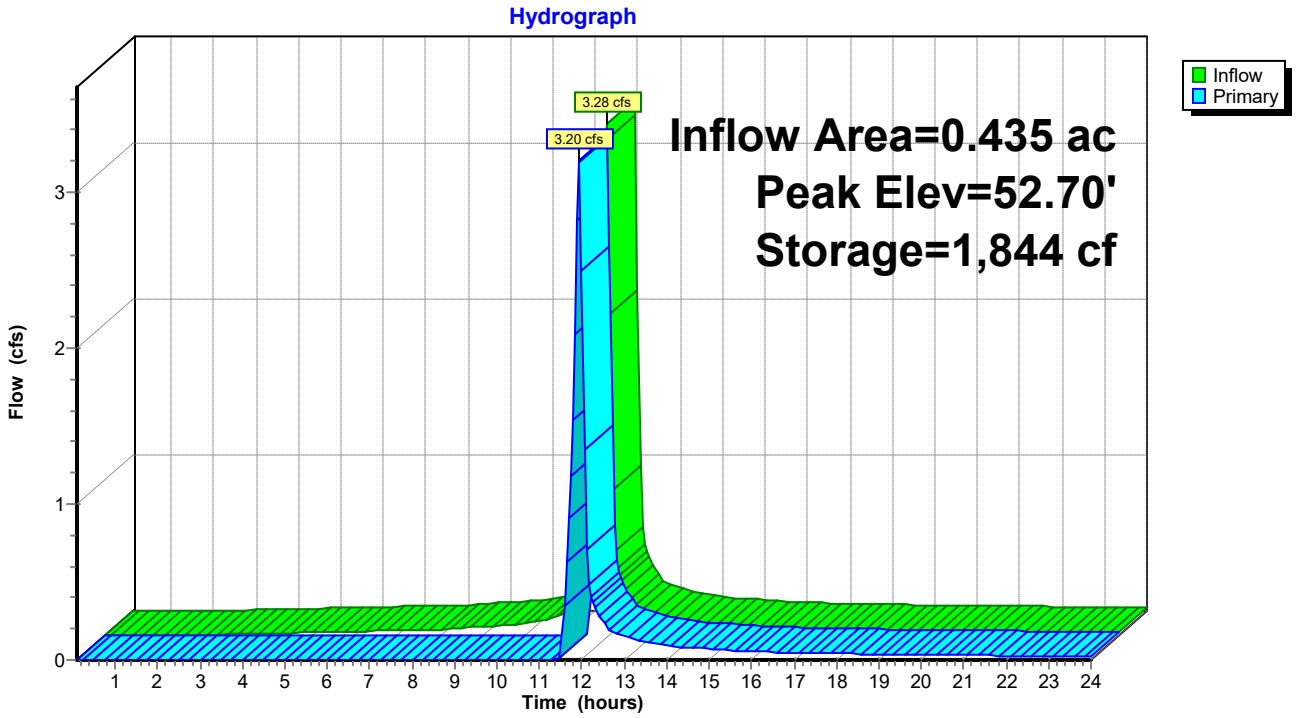
Volume	Invert	Avail.Storage	Storage Description
#1	49.49'	3,091 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
49.49	734	0.0	0	0
49.50	734	40.0	3	3
51.50	734	40.0	587	590
51.51	734	100.0	7	597
53.50	1,772	100.0	2,493	3,091

Device	Routing	Invert	Outlet Devices
#1	Primary	49.50'	**18.0" Round Culvert** L= 160.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 49.50' / 49.00' S= 0.0031 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	52.50'	**10.7' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)

Primary OutFlow Max=3.13 cfs @ 11.94 hrs HW=52.70' (Free Discharge)
└─**1=Culvert** (Passes 3.13 cfs of 10.27 cfs potential flow)
└─**2=Sharp-Crested Rectangular Weir** (Weir Controls 3.13 cfs @ 1.46 fps)

Pond 2P: MBR


Hydrograph
Inflow
Primary
3.28 cfs
3.20 cfs
Inflow Area=0.435 ac
Peak Elev=52.70'
Storage=1,844 cf
Flow (cfs)
0
1
2
3
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

Summary for Subcatchment 1S: DA-1

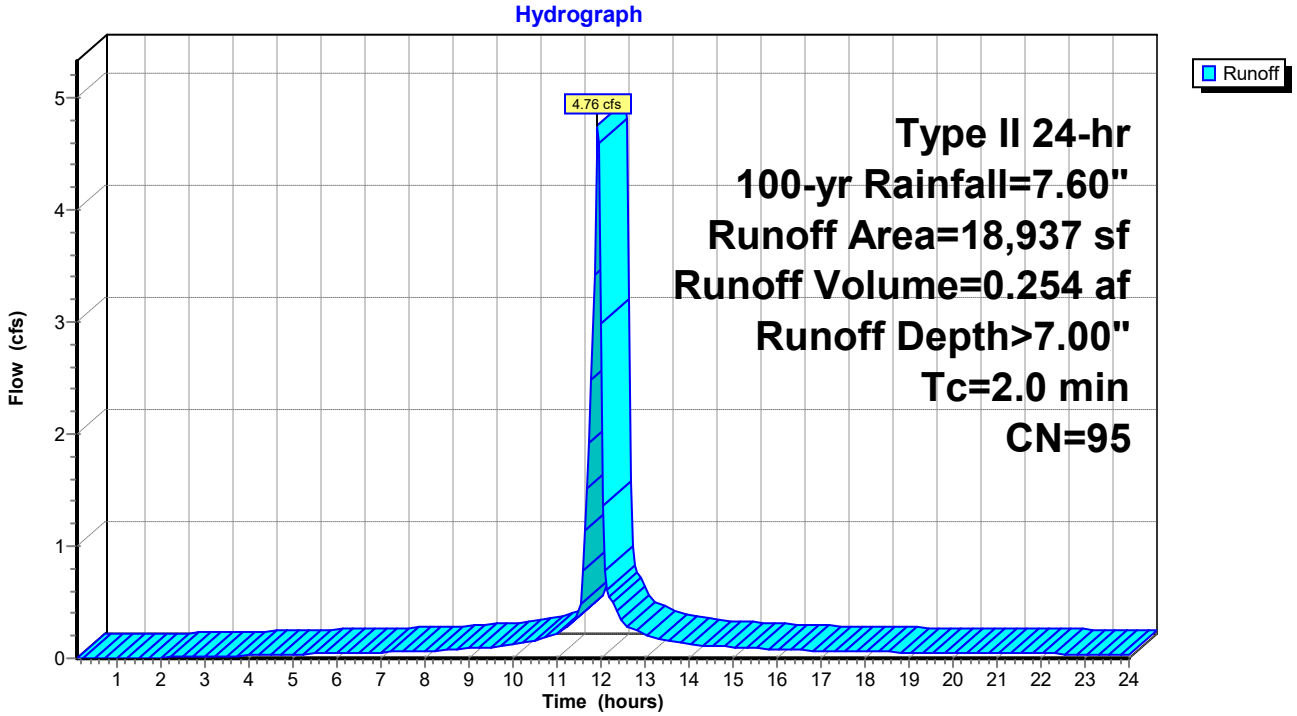
Runoff = 4.76 cfs @ 11.93 hrs, Volume= 0.254 af, Depth> 7.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.10-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

Area (sf)	CN	Description
16,523	98	Roofs, HSG D
2,414	74	>75% Grass cover, Good, HSG C
18,937	95	Weighted Average
2,414		12.75% Pervious Area
16,523		87.25% Impervious Area

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

Subcatchment 1S: DA-1



Summary for Pond 2P: MBR

Inflow Area = 0.435 ac, 87.25% Impervious, Inflow Depth > 7.00" for 100-yr event
Inflow = 4.76 cfs @ 11.93 hrs, Volume= 0.254 af
Outflow = 4.66 cfs @ 11.94 hrs, Volume= 0.217 af, Atten= 2%, Lag= 0.7 min
Primary = 4.66 cfs @ 11.94 hrs, Volume= 0.217 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-24.00 hrs, dt= 0.05 hrs
Peak Elev= 52.76' @ 11.94 hrs Surf.Area= 1,386 sf Storage= 1,924 cf

Plug-Flow detention time= 117.2 min calculated for 0.217 af (86% of inflow)
Center-of-Mass det. time= 51.1 min (802.7 - 751.6)

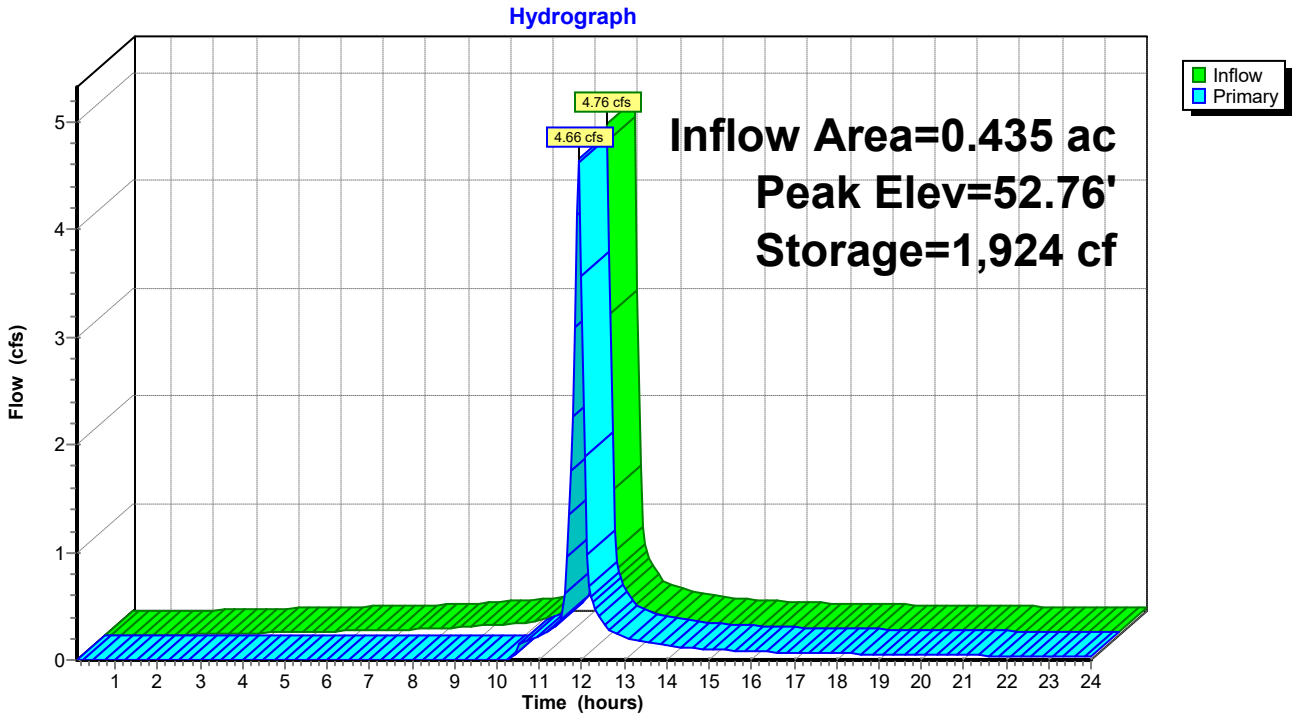
Volume	Invert	Avail.Storage	Storage Description
#1	49.49'	3,091 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
49.49	734	0.0	0	0
49.50	734	40.0	3	3
51.50	734	40.0	587	590
51.51	734	100.0	7	597
53.50	1,772	100.0	2,493	3,091

Device	Routing	Invert	Outlet Devices
#1	Primary	49.50'	**18.0" Round Culvert** L= 160.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 49.50' / 49.00' S= 0.0031 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	52.50'	**10.7' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)

Primary OutFlow Max=4.54 cfs @ 11.94 hrs HW=52.76' (Free Discharge)
└─**1=Culvert** (Passes 4.54 cfs of 10.40 cfs potential flow)
└─**2=Sharp-Crested Rectangular Weir** (Weir Controls 4.54 cfs @ 1.66 fps)

Pond 2P: MBR


Hydrograph
Inflow
Primary
4.76 cfs
4.66 cfs
Inflow Area=0.435 ac
Peak Elev=52.76'
Storage=1,924 cf
Flow (cfs)
0
1
2
3
4
5
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

PROJECT DATA

PROPERTY: TAX MAP 109, TAX PARCEL 4582, LOT 32
DEED: 2744/409
PLAT: 1/19AA
29533 CANVASBACK DRIVE
EASTON, MARYLAND 21601

OWNER: SOCIETY OF ST. VINCENT DE PAUL
SAINTS PETER AND PAUL CONFERENCE INC
C/O MIKE KLEIN
P.O. BOX 783
EASTON, MARYLAND 21601
(410) 375–4815

ZONING: I–1 (SELECT INDUSTRIAL DISTRICT)

SITE AREA: 1.07 ACRES±

BUILDING SETBACKS: FRONT – 40'
SIDE – 10'
NTW – 25'
MINIMUM LOT SIZE: 40,000 SF

EXISTING CONDITIONS: THE SITE IS CURRENTLY IMPROVED WITH A ONE STORY METAL BUILDING AND SHED THAT SERVES THE COMMUNITY AS A FOOD PANTRY, THRIFT CENTER AND BOUTIQUE.

PROPOSED DEVELOPMENT: PROPOSED 2,400 SF BUILDING ADDITION, PROPOSED PARKING LOT EXPANSION INCLUDING THE ADDITION OF 10 PARKING SPACES, DRIVE AISLE, AND ASSOCIATED IMPROVEMENTS. REMOVAL OF 3 EXISTING SPACES.

PARKING REQUIRED: COMMUNITY FOOD, EMERGENCY RELIEF, FAMILY, OR ELDERLY AND DISABLED SERVICES
1 SPACE/250 GFA (5,000 SF) = 20 SPACES MINIMUM
1 SPACE/200 GFA (5,000 SF) = 25 SPACES MAXIMUM

WAREHOUSE
1 SPACE/2000 GFA (4,120 SF) = 2 SPACES MINIMUM
1 SPACE/350 GFA (4,120 SF) = 12 SPACES MAXIMUM

TOTAL = 22 SPACES MINIMUM
37 SPACES MAXIMUM

PARKING PROPOSED: 29 SPACES, INCLUDING 2 ADA VAN ACCESSIBLE SPACES

BICYCLE PARKING REQUIRED: COMMUNITY FOOD, EMERGENCY RELIEF, FAMILY, OR ELDERLY AND DISABLED SERVICES
1 SPACE/20 VEHICLE SPACES = 2 SPACES REQUIRED

BICYCLE PARKING PROPOSED: 2 SPACES

STORMWATER MANAGEMENT: QUANTITY MANAGEMENT IS ADDRESSED BY AN EXISTING REGIONAL STORMWATER FACILITY. QUALITY MANAGEMENT IS PROVIDED ON SITE IN A MIRCO–BIORETENTION TYPE FACILITY AND PLANTER BOXES. SEE STORMWATER MANAGEMENT CONCEPT REPORT INCORPORATED HEREIN WITH THIS SKETCH PLAN SUBMITTAL.

FOREST CONSERVATION: PREVIOUSLY SATISFIED FOR ENTIRE SITE IN 2016 WITH A FEE–IN–LIEU.

PROJECT NOTES

PROPERTY BOUNDARY AND EXISTING CONDITIONS SURVEYED BY LANE ENGINEERING, LLC ON 07/19/2012 AND FIELD VERIFIED ON 06/24/2015.

THE ELEVATIONS SHOWN HEREON ARE NAVD 1988 DATUM.

THE COORDINATES SHOWN HEREON ARE BASED ON THE MARYLAND STATE PLANE COORDINATE SYSTEM NAD83 (2011).

THE SITE IS LOCATED ENTIRELY OUTSIDE OF THE CHESAPEAKE BAY CRITICAL AREA.

THERE ARE NO KNOWN HISTORIC STRUCTURES OR ARCHEOLOGICALLY SIGNIFICANT RESOURCES, STREAMS, TIDAL WETLANDS OR KNOWN HABITAT PROTECTION AREAS IN PROXIMITY TO THE PROPOSED SITE IMPROVEMENTS.

NO NON–TIDAL WETLANDS WERE PRESENT ON SITE BASED OBSERVATIONS IN THE FIELD BY SEAN CALLAHAN, QUALIFIED PROFESSIONAL WITH LANE ENGINEERING, LLC AND CHRIS PAJAK, MARYLAND DEPARTMENT OF THE ENVIRONMENT VIA SITE VISIT ON 10/25/21.

THE TREE LINE SHOWN HEREON WAS TAKEN FROM THE 2019 TALBOT COUNTY AERIALS AND IS APPROXIMATE ONLY.

THE CONTOURS SHOWN HEREON WERE TAKEN FROM 2015 TALBOT COUNTY LIDAR PROVIDED BY THE STATE OF MARYLAND AND ARE APPROXIMATE ONLY.

PUBLIC WATER AND SEWER SERVICES ARE PROVIDED BY THE TOWN OF EASTON.

FLOOD DATA

THE PROPERTY SHOWN HEREON IS NOT LOCATED IN THE NATIONAL FLOOD INSURANCE PROGRAM (NFIP) SPECIAL FLOOD HAZARD AREA (SFHA) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD. THE PROPERTY IS MAPPED IN THE X FLOOD ZONE AS SHOWN ON THE FEDERAL INSURANCE RATE MAPS FOR COMMUNITY NO. 240067, MAP NO. 24041C0193C FOR TOWN OF EASTON, MARYLAND. THE 1% ANNUAL CHANCE FLOOD (100–YEAR FLOOD), ALSO KNOWN AS THE BASE FLOOD, IS THE FLOOD THAT HAS A 1% CHANCE OF BEING EQUALED OR EXCEEDED IN ANY GIVEN YEAR. THE SFHA IS THE AREA SUBJECT TO FLOODING BY THE 1% ANNUAL CHANCE FLOOD. THE SFHA INCLUDES ZONES A, AE, AH, AO, AR, A99, V & VE. THE BASE FLOOD ELEVATION (BFE) IS THE WATER SURFACE ELEVATION OF THE 1% ANNUAL CHANCE FLOOD. FLOOD INSURANCE MAY BE REQUIRED FOR STRUCTURES LOCATED IN THE SPECIAL FLOOD HAZARD AREA.

FLOOD ZONE LEGEND
ZONE X – AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD

THE FLOOD DATA SHOWN HEREON IS BASED ON AVAILABLE MAPPED AND/OR DIGITAL INFORMATION AND IS DEPICTED AS DIRECTED AND REQUIRED BY FEDERAL, STATE AND LOCAL REGULATIONS. IT IS SUBJECT TO DATA INACCURACIES AND REGULATORY CHANGE AND SHOULD BE VERIFIED PRIOR TO FINALIZING DEVELOPMENT OR IMPROVEMENT PLANS FOR THE SUBJECT LANDS.

LANDSCAPE REQUIREMENTS SUMMARY PER ZONING ORDINANCE:

STREET TREES PER 28–1014.6C.1. @ 1 TREE/70' OF STREET FRONTAGES = 1 TREES REQUIRED

ON–SITE LANDSCAPE REQUIREMENTS PER 28–1014.6F.

1. OVERALL TREES: 1 TREE/3,000 SF DISTURBED AREA (16,398 SF±) = 5 TREES REQUIRED
   - 2.A. PARKING LOT TREES: 1 TREE/10 SPACES (NEW SPACES) = 1 TREES REQUIRED
   - 2.B. PARKING HEDGE: FULLY PLANTED STORMWATER MANAGEMENT AREA SHALL BE UTILIZED
   - 2.C. BUILDING FAÇADE PLANTINGS; 1 TREE/20' FRONT FAÇADE = 3 TREES REQUIRED
   - 2.D. SERVICE LOADING/DUMPSTER SCREENING: AS SHOWN HEREON
   - 2.E. SWM FEATURES: USE TO ENHANCE BUILDING– AS SHOWN HEREON
   - 2.F. BUFFERYARDS: NONE REQUIRED

LANDSCAPE KEY

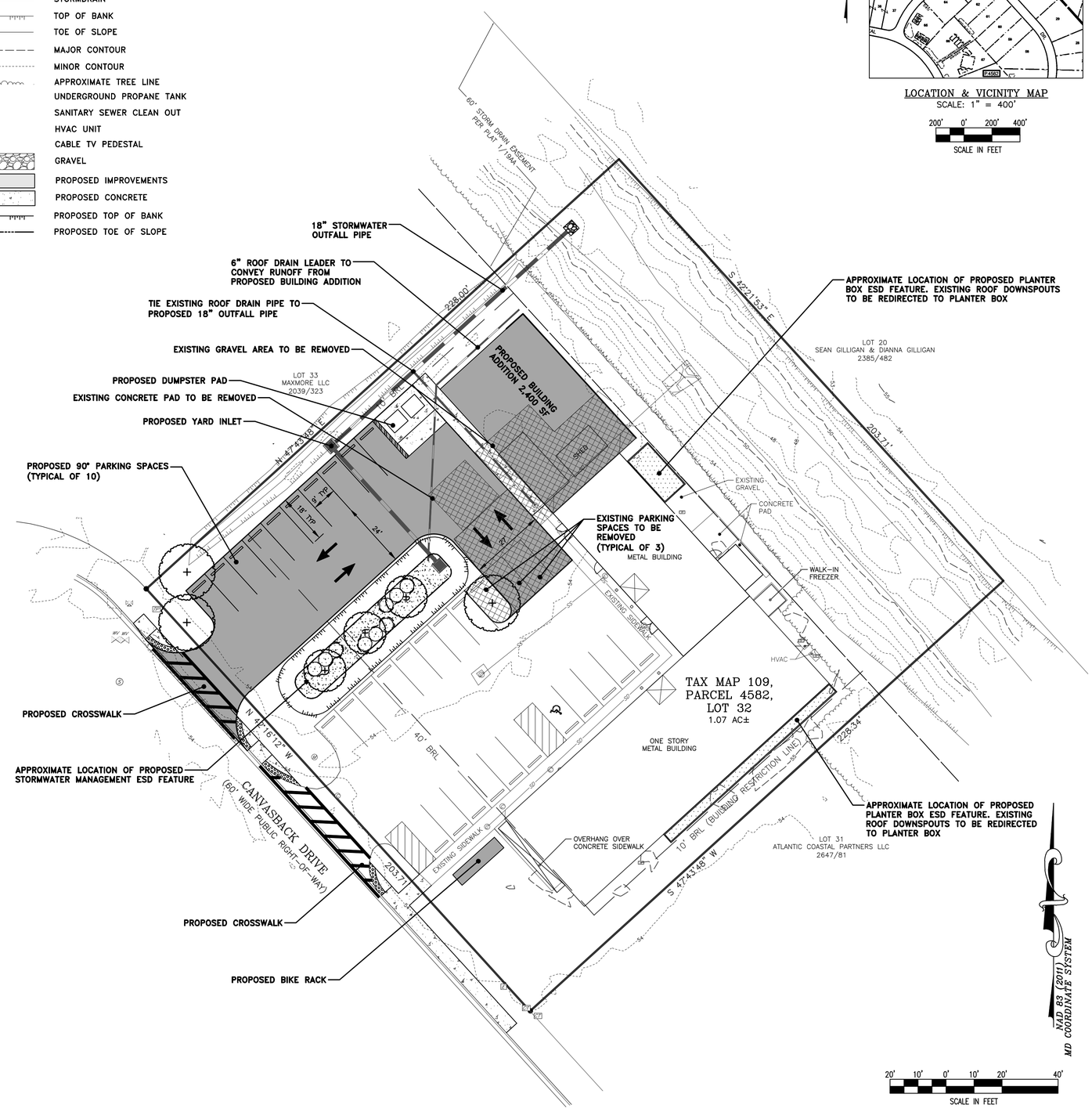
2" CALIPER MINIMUM CANOPY OR STREET TREES (OAK, MAPLE TYPES)

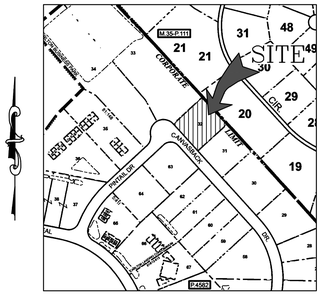
7' HEIGHT MINIMUM EVERGREEN TREES (WHITE PINE, SPRUCE, HOLLY, LOBLOLLY TYPES)

STORMWATER MANAGEMENT ESD LANDSCAPING MASS / PERENNIAL MIX WITH SHRUBS AND GRASSES

LEGEND

COMPUTED POINT
IRON ROD FOUND
ELECTRIC TRANSFORMER
SANITARY SEWER MANHOLE
TELEPHONE PEDESTAL
FIRE HYDRANT
WATER VALVE
WATER METER
STORMDRAIN
TOP OF BANK
TOE OF SLOPE
MAJOR CONTOUR
MINOR CONTOUR
APPROXIMATE TREE LINE
UNDERGROUND PROPANE TANK
SANITARY SEWER CLEAN OUT
HVAC UNIT
CABLE TV PEDESTAL
GRAVEL
PROPOSED IMPROVEMENTS
PROPOSED CONCRETE
PROPOSED TOP OF BANK
PROPOSED TOE OF SLOPE





LOCATION & VICINITY MAP
SCALE: 1" = 400'

200' 0' 200' 400'
SCALE IN FEET

REVISIONS			
No.	DATE	DESCRIPTION	BY

WARNING!!
THE LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THIS PLAN ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. THE QUANTITIES SHOWN ON THIS PLAN ARE FOR INFORMATIONAL AND PERMITTING PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES TO HIS OWN SATISFACTION PRIOR TO BEGINNING CONSTRUCTION.

THE CONTRACTOR SHALL TEST PIT AND LOCATE EXISTING UNDERGROUND UTILITIES PRIOR TO THE BEGINNING OF ANY WORK ON–SITE. THE CONTRACTOR SHALL NOTIFY DEPT. OF PUBLIC WORKS OF ANY POSSIBLE CONFLICT AND REQUEST THE RELOCATION OF THE EXISTING UNDERGROUND UTILITIES BEFORE BEGINNING ANY WORK ON–SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RELOCATION EXPENSE.

MISS UTILITY
DIG WITH CARE
MARYLAND
BEFORE YOU DIG CALL 1-800-441-8355 OR 811 PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

Lane Engineering, LLC
Established 1986
Civil Engineers • Land Planning • Land Surveyors
E–mail: general@lelinc.com
117 Bay St. Easton, MD 21601 (410) 822–8003
15 Washington St. Cambridge, MD 21613 (410) 221–0818
354 Pennsylvania Ave. Centreville, MD 21617 (410) 758–2095

PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 23152 , Expiration Date: 7/5/2025.

SEAL
STATE OF MARYLAND
CHRISTOPHER B. CROUCH
No. 23152
REGISTERED PROFESSIONAL ENGINEER
8.1.23
DATE

SKETCH SITE PLAN

FOR
ST. VINCENT DE PAUL

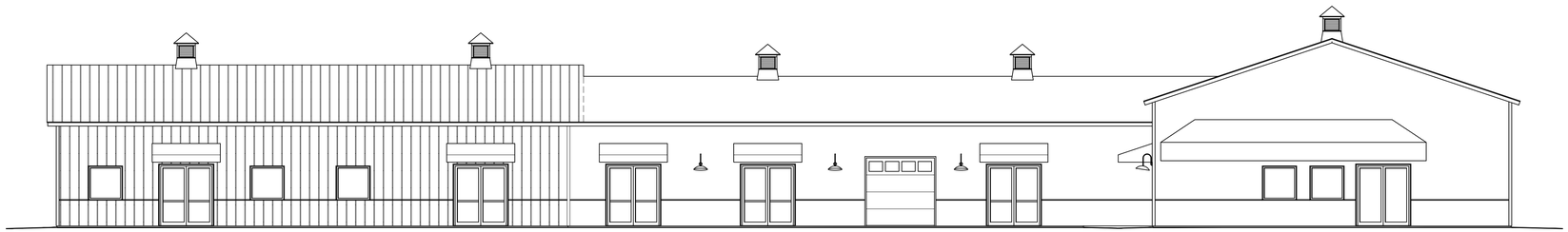
IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 109 PARCEL 4582 LOT 32

ISSUED FOR: ESDR SUBMITTAL
DATE: 08/01/23 BY: BCE

SHEET No. 1 OF 1	DATE: 08/01/2023
SCALE: AS NOTED	JOB No. 230215
	FILE No. 3248

Date: 08/01/2023 – 2:18pm User: mrajacich Project Manager: BCE
Drawing Path: J:\2023\0200\230215\Civil3D–230215\Dwg\Plots\RSK–PLTS–230215.dwg | SKETCH
XREF File(s): RSK–BASE–230215/RLD–BASE–230215/RBS–BASE–2435–230215/FAR–BASE–230215/RSF–BASE–230215/LLP–BASE–230215

© LANE ENGINEERING, LLC



CONCEPTUAL WEST ELEVATION

SCALE: 1/8" = 1'-0"

PRELIMINARY

DO NOT SCALE DRAWINGS: In the event that a dimension is inadvertently left off a drawing or the Contractor is unable to determine a dimension by a mathematical process, contact the Architect. Pamela P Gardner, AIA will not be held responsible for any assumptions arising from the scaling of a drawing by the Contractor.

ARCHITECT:

PAMELA P. GARDNER, AIA, LLC

311 N. AURORA STREET

PO BOX 971 EASTON, MARYLAND 21601

410-820-7973

ST. VINCENT DE PAUL CONCEPT

TOWN OF EASTON, MARYLAND

PROJECT: 2311

SCALE: 1/8" = 1'-0"

WEST ELEVATION

Conceptual

REV-DATE:

DATE: 8-2-23

DRAWN BY: TGB

SHEET

A-2

APPENDIX B

SKETCH PLAN
SUBMITTAL CHECKLIST

NOTE: **THIS CHECKLIST REPRESENTS THE MINIMUM INFORMATION TO BE SUBMITTED ON A SITE PLAN. ADDITIONAL INFORMATION MAY BE REQUIRED FOR UNIQUE SITUATIONS.**

COMPLETE THE CHECKLIST AND SUBMIT IT WITH THE PLAN. IF AN ITEM IS NOT APPLICABLE, ENTER "N/A".

1. Location map, x
2. Boundary, x
3. Topography, x
4. General proposed land uses drawn to scale, and x
5. The Forest Stand Delineation as detailed in the Town of Easton's Forest Conservation Ordinance. N/A
6. The location of any easements, rights-of-way or any other encumbrances which pertain to the property subject to the site plan review. x
7. Conditions of concern, for example, water courses, wetlands, floodplains, or other environmentally sensitive features. x
8. Location of refuse collection, exterior lighting, fencing, and all pedestrian walkways and sidewalks. x
9. General location and description (r.e. intended function, proposed species, etc.) of proposed landscaping. x
10. Location of parking including layout and landscaping. x
11. Conceptual building elevations or renderings illustrating the character, scale, and materials of all proposed structures. Such elevations or renderings shall be sealed by a licensed professional as described above. x
12. A statement describing the extent to which the application complies with the Recommended Design Principles for Easton set forth on pages 29-31 of the Comprehensive Plan. x

APPENDIX B-2

SKETCH STORMWATER MANAGEMENT PLAN
SUBMITTAL CHECKLIST

EFFECTIVE MAY 4, 2010

NOTE: THE FOLLOWING CHECKLIST REPRESENTS THE MINIMUM INFORMATION TO BE SUBMITTED FOR SUPPORT OF A STORMWATER MANAGEMENT CONCEPT PLAN, SITE DEVELOPMENT PLAN, AND/OR FINAL DESIGN PLAN. THE TOWN MAY REQUEST ADDITIONAL INFORMATION AS DEEMED NECESSARY.

COMPLETE THE APPROPRIATE CHECKLIST AND SUBMIT IT WITH THE PLANS, APPLICATION FORM, NARRATIVE OR REPORT, AND FEE. ITEMS IN BOLD ARE REQUIRED FOR CONCEPT AND/OR SITE DEVELOPMENT PHASE REVIEW.

I. Sketch Plan Submittal

A. Site and Resource Map

Natural Resources Identified on Plan, including, but not limited to:
Please use these responses for the following:
(Provided = P; Not Provided = NP; Not Applicable = N/A)

Tidal and Non-Tidal Wetland Boundaries	N/A
Wetland Buffers	N/A
Floodplain Boundaries and Elevations	
Streams and other Waterways	N/A
Stream Buffers	N/A
Forest Boundaries	N/A
Forest Buffers	P
Critical Areas	N/A
Steep Slopes (>25%)	P
Erodible Soils	N/A
Areas of High Recharge	N/A
Springs	N/A
Soil Types and Hydrologic Soil Groups	P
Bedrock and/or other Geologic Features	N/A
Vegetative Cover	P
Existing Drainage Areas and Flow Patterns	P
Existing Stormwater Outfalls	P
Site and Resource Map field verified by a properly licensed design professional.	P

Existing contours (1' max intervals) and utilities shown. P

Large tracts of contiguous open spaces, forested areas and other important resources protected by conservation easements. P

Opportunities for afforestation identified. N/A

Wetland, stream and forest buffers enhanced and/or

expanded. N/A

B. Site Fingerprinting and Development Layout

Locations of proposed impervious areas provided. P

Proposed contours (1' max intervals) and utilities shown. P

Preliminary locations of proposed Environmental Site Design (ESD) practices provided. P

Locations of stormwater outfalls and conveyance provided with offsite storm drains, culverts and grass channels with size and slope. P

Limit of disturbance and extent of clearing & grading. P

Site natural resources protected during construction. If site natural resources must be disturbed during construction, please include an explanation in the stormwater narrative. P

Better Site Design Techniques incorporated, including:

Sheetflow and overland flow provided wherever possible P

Building footprint and site layout designed to protect conservation areas P

Proposed streets, rights of way, and/or sidewalks with modifications to reduce impervious area P

Landscaped medians and/or cul-de-sacs P

Stormwater management features in medians or cul-de-sacs P

Private open road section with grass channels and/or biofilters N/A

Minimize numbers of parking spaces and sizes P

Narrow frontages to reduce road length P

Site graded to encourage runoff from impervious areas to pervious areas or other natural conveyance systems P

C. Stormwater Narrative

Title Page includes:

Job Name P

Owner/Developer P

Design Professional P

Date Prepared P

Seal and Signature (properly licensed Design Professional) P

Project is identified as new development or redevelopment. (Redevelopment projects have ≥40% total site imperviousness) P

Project and streets designed for 2-year and 10-year quantitative management. N/A

Project is identified as being within the Tanyard Branch Watershed. (Projects within this watershed must manage proposed 10-year storm flows to the existing 2-year storm discharge rate.) N/A

A narrative that supports the concept and describes how the design will achieve:

Natural resource protection and enhancement P
Maintenance of natural flow patterns P
Reduction of impervious areas through better site design, alternative surfaces, and non-structural practices P
Implementation of ESD planning techniques and practices to the Maximum Extent Practicable (MEP) P
Preliminary ESD sizing calculations provided P
Integration of erosion and sediment controls (ESC) into the stormwater strategy P

D. Sketch Plan Meeting

Following the Sketch Plan submittal, a meeting will be scheduled between the Town of Easton Planning & Zoning, Town Engineer, the Talbot County Soil Conservation District (SCD) ESC reviewer, the owner/developer, the SWM and ESC designer(s), and any other reviewers deemed necessary by the Town of Easton and/or the Talbot County SCD. Official Minutes from the Sketch Plan Meeting must be submitted for review and acceptance by all parties. These minutes must accompany all future submittals. P

This checklist completed by MATT RAJACICH Date 8/1/2023

Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

RECEIVED
AUG 0 2 2023
TOWN OF EASTON

Site Plan, PUD, Planned Healthcare Application

Application Type

Planned Unit Development ☐ Amendment ☒ Health Care (HC) ☐ Site Plan ☐

Subdivision Information

Name	N/A				
Original Property Size	Acres	N/A	Square Feet	N/A	
Telephone No.	N/A	Email	N/A		

Site Plan Information

Property Size	Acres	6.84 AC	Square Feet	297,950 sf	
Structure's Floor Area	See Plans	Structure's Square Feet	12,502 x 4=	50,008	
Area of Disturbance	6.80 AC	Number of Dwelling Units	136		

Property Information

Address	Corner of Elliott Rd & MD RT 328 (Matthewstown Rd)						
Tax Map	109	Grid	-	Parcel	2866	Lot	9
Deed Refernce:	Liber	3045	Folio	394			
Plat Reference:	Liber		Folio				
Base Zoning District	GC	Historic Y ☐ N ☒		Planned Redevelopment Y ☐ N ☒			
Source of Electricity	Easton Utilities						

Owner

Name	ELLIOTT ROAD LLC		
Mailing Address	116 S PINEY ROAD #208, CHESTER, MD 21619		
Telephone No.	401-820-0250	Email	jim@mallardconstruction.com

Applicant or Agent

Name	MDSW C/O Brendan Mullaney		
Mailing Address	100 N West ST, Easton, MD 21601		
Telephone No.	410-820-0250	Email	bmullaney@mdswlaw.com

Surveyor / Engineer

Name	Lane Engineering, LLC	License No.		Expiration Date	
Mailing Address	117 Bay Street, Easton, MD 21601				
Telephone No.	410-822-8003	Email	bewing@leinc.com		

Any modifications during review shall warrant an updated application.

I hereby certify that I have reviewed and satisfied the Town of Easton Development Standards and that submission of an incomplete application will be returned for correction prior to processing.

Signature of Applicant or Agent

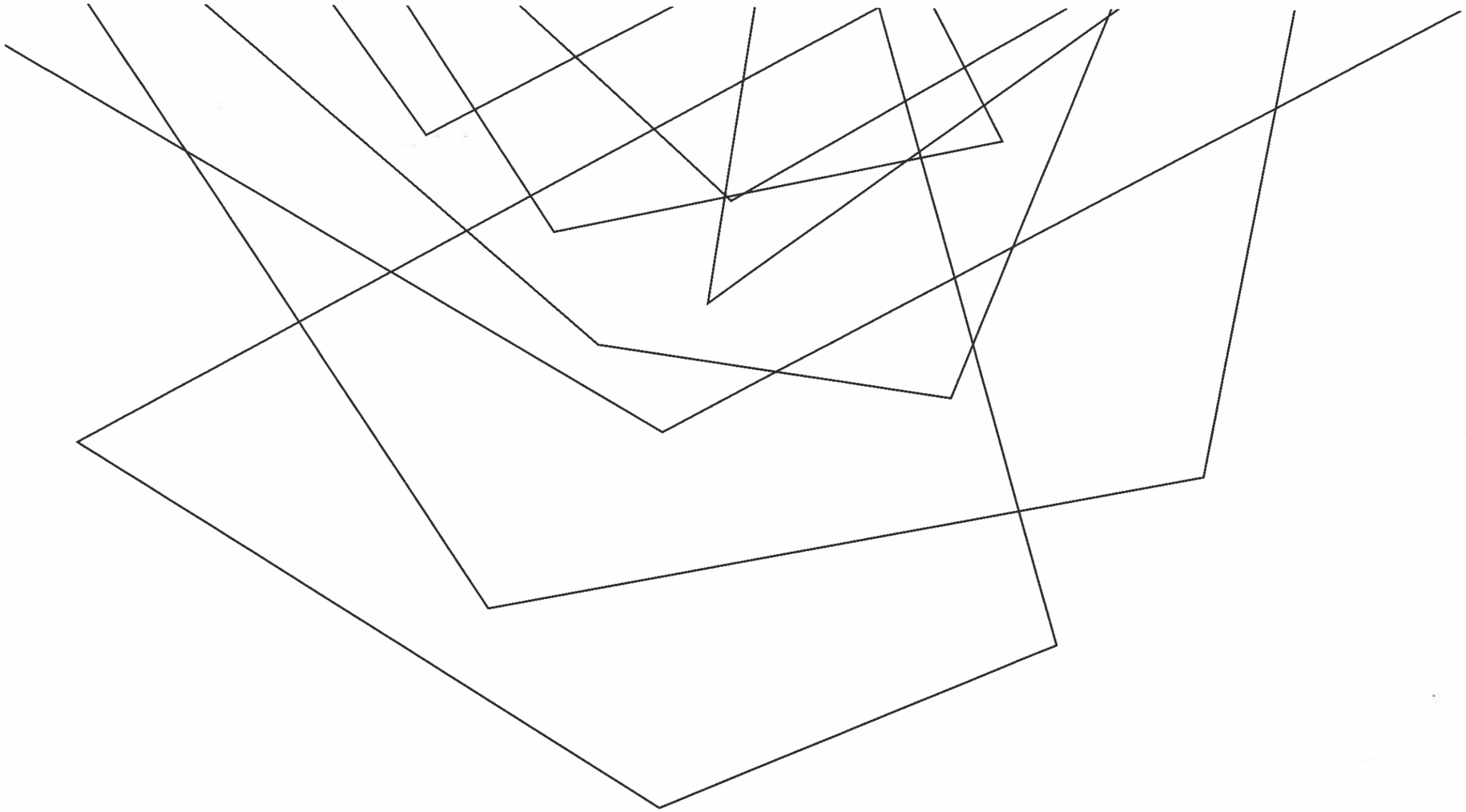
Date 8.1.23

Printed Name of Applicant or Agent Brendan Mullaney, Counsel

For Office Use Only

Planning Commission Required	Y ☒ N ☐		
Planning Commission Meeting Date			ESDR 23-16
Sketch Approval Date		Project No.	PUD 23-02
Prelim/Dev. Approval Date		Application No.	2023-997
Final Approval Date		Sketch Fee Paid	08/03/2023
Recordation Date		Develop. Fee Paid	

Revised 02-2019



EASTON APARTMENTS

Building & Rendering Updates

APPROVED 3-STORY FRONT ELEVATION

PROPOSED 4-STORY FRONT ELEVATION

APPROVED 3-STORY REAR ELEVATION

PROPSED 4-STORY REAR ELEVATION

APPROVED 3-STORY ELEVATIONS (LEFT & RIGHT)

Left Elevation

Right Elevation

PROPOSED 4-STORY ELEVATIONS (LEFT & RIGHT)

Left Elevation

Right Elevation

BUILDING INFO

3- Story Building Info

- 46'-8" building height from grade to top roof peak
- 30 units
  - (12) 1 bed units
  - (12) 2 bed units
  - (6) 3 bed units

4 Story Building Info

- 49'-3" building height from grade to top roof peak
- 38 units
  - (16) 1 bed units
  - (16) 2 bed units
  - (6) 3 bed units

- Building Materials & colors
  - Vinyl shake (located in gables):
    - CertainTeed 5" clapboard: Flagstone Blue
  - Vertical Siding (located at 3rd & 4th level):
    - CertainTeed Board & Batten: Sterling Gray
  - Horizontal Siding (located at all levels):
    - CertainTeed 5" clapboard: Granite Gray & Sterling Gray
  - Roofing
    - Asphalt Shingle Main roof: Oxford Gray
    - Black, Standing Seam metal roof gable return

UPDATED SITE RENDERING

May 2023

4 Story Building-
Front Elevation
Rendering

3 Story Building Prototype- Side and Rear Elevation
Actual Building on Kent Island

3 Story Building Prototype- Rear Elevation
Actual Building on Kent Island

MCALLISTER
DETAR
SHOWALTER
& WALKER

Brendan S. Mullaney
bmullaney@mdswlaw.com
(410) 820-0250 (Direct)

August 1, 2023

To: Easton Town Council
From: McAllister, DeTar, Showalter, & Walker, LLC on behalf of Mallard Construction Group, Inc. and Elliott Road, LLC (Developer and Property Owner)

Re: PUD Application on lands of Elliott Road, LLC (the "Project")

Dear Council Members:

McAllister, DeTar, Showalter & Walker LLC submits this memorandum on behalf of Mallard Construction Group, Inc. and Elliott Road, LLC (collectively, "Applicant") along with various plans, renderings, and information related to the approved 120-unit multifamily residential development on the corner of Elliott Road and Matthewstown Road. The Applicant is proposing an amendment to add an additional sixteen (16) units to the project resulting in a total of 136 multifamily apartment units. The Applicant submitted a Planned Unit Development ("PUD") application in 2021 which was subsequently approved by the Town Council through Ordinance No. 778 on March 7, 2022. While the application was pending and in the review process with the Town, the Town adopted revisions to the Code that changed, among other things, parking requirements applicable to multifamily housing. Due to these changes, the Project can now comfortably support 136 units on the Property. The following comprises a narrative summary of the Project and its compliance with Article 8 of the Town of Easton Zoning Ordinance.

Background

The subject property is designated Parcel 2866, Lot 9 on Talbot County Tax Map 109 (the "Property") and contains 6.840 acres of land. The Property is owned by Elliott Road, LLC. The Project has already received approval for 120 units pursuant to Ordinance No. 778 and has been deemed to satisfy the criteria applicable to the use and PUD requirements. The Property lies within the Town of Easton and is zoned Commercial General (CG).

The current use of the Property is agricultural, with direct frontage on Matthewstown Road and Elliott Road, a Town-owned street. The site is adjacent to commercial activities to the north, south and west and existing single-family residential development to the east and a townhome development to the north.

The Town of Easton currently faces a severe shortage of affordable housing and has undertaken multiple initiatives to bring developers to the area to build houses and projects that will address the needs of the community. Mallard Construction is a Maryland developer located on the Eastern

Shore who develops, owns, and manages multifamily properties. Their attention to amenities and the unique needs of each community that they serve is paramount. For instance, recognizing the need for police officers to find affordable, comfortable housing, Mallard Construction Group offers discounted rents for both local and State active police officers who live in their communities. The Project will provide one, two, and three-bedroom apartment units for workforce housing that will serve the Town and surrounding area. Twenty Four (24) of the units already approved meet the affordability requirement of Section 28-701.G.8 of the Code. Likewise, four of the additional sixteen (16) units will meet the affordability requirement.

The Easton Planning Commission reviewed the Project at its November 18, 2021 meeting and unanimously recommended approval of the proposed PUD application. It was subsequently approved by the Town Council on March 7, 2022.

Development Proposal

As shown on the enclosed Site Exhibit, the Applicant proposes to improve the Property with two 3-story apartment buildings and two 4-story apartment buildings with a total of 136 residential units and associated development infrastructure (the "Project"). Since approval of the Project, sidewalks have been installed along the eastern side of Elliott Road to provide pedestrian access from residential developments in the area to retail businesses to the south. The Applicant is, as part of the initial approval, obligated to reimburse the Town for costs related to the sidewalk. Amenities on the Property will include a community clubhouse, pickle ball courts, pet exercise area, playground area, and significant open space, including a large passive field for resident use on the southern portion of the Property. The Project initially contemplated a pool adjacent to the amenities building and leasing office but in response to market research and new input from residents and industry professionals, Applicant is proposing to replace the pool with pickleball courts and a pet exercise area as now depicted by the site plan submitted with this narrative.

The three-story buildings will include twelve (12) one-bedroom units, twelve (12) two-bedroom units, and six (6) three-bedroom units. The four-story buildings will include sixteen (1) one-bedroom units, sixteen (16) two-bedroom units, and six (6) three-bedroom units.

Buffer plantings will be installed to help screen the buildings from street but to also allow for privacy for the residents. These landscape buffers will also be utilized to satisfy the Town's Forest Conservation Requirements as permitted pursuant to Article X of the Zoning Code.

Stormwater management for the site will comply with ESD and quantity control requirements and stormwater management mechanisms will mimic landscaping beds that will add to the attractive character of the community.

Applicant proposes an additional sixteen (16) residential units on the 6.840 acres, resulting in approximately 19.88 dwelling units per acre. Section 28-801(G) states that "The Town Council may consider projects with a density of up to 25% more than the maximum stated in [Article VII]

upon a finding that such increased density is in keeping with the existing or intended character of the neighborhood (as expressed in the Comprehensive Plan or, if applicable, any adopted Small Area Plans) and that any potential detrimental impacts from such increased density are ameliorated to the satisfaction of the Council. . . ."

The Applicant is proposing to exceed the permitted sixteen (16) units per acre by 3.88 units per acre, which is under the maximum permitted by the Code. The building design has been utilized by the Applicant in another location in Maryland and the ability to construct the buildings as proposed allows for lower construction and design costs and therefore lower rent values for the Project. A very modest increase in the dwelling density permitted also allows for development of more attractive and affordable housing units within the Town of Easton, providing a much-needed resource in the community.

Strict application of the sixteen (16) unit threshold would place an undue burden on the Applicant. The only conceivable adverse impact that may result from the 3.88 unit per acre difference would be an increase in traffic but as the Traffic Impact Study ("TIS") submitted with this narrative explains, the additional sixteen (16) units do not adversely impact traffic in the area. The Project proposes open space in excess of what is required and will provide amenities to residents of the community, such as a common room, playground, and pickleball courts, that ameliorate impacts that could otherwise result from the allowance of an additional 3.88 units per acre.

The density proposed allows for consistency with the building design, proposing two thirty-unit 3-story buildings and two thirty-six-unit 4-story buildings onsite. The four-story buildings were purposefully chosen to be the two buildings set back furthest from Matthewstown Road and Elliott Road. Higher density is encouraged with infill development to reduce demand outside of Town limits and to help eliminate sprawl. This request meets several Comprehensive Plan goals and objectives and addresses a critical housing issue within the Town.

PUD Development Standard Compliance Summary

In accordance with Section 28-701(G). Development Standards (1) through (8), the Project complies with the following requirements:

(1) The area proposed for a planned unit development shall be in one (1) ownership, or, if in several ownerships, the proposal shall be filed jointly by all the owners of the property included in the development plan.

The Property is owned by a single entity and the owner will appear at necessary hearings in this matter.

(2) The site shall be of a configuration suitable for the development proposed.

The site includes 6.840 acres and has direct access onto Elliott Road. The planned layout and site design proposed provide for a functional and well-designed residential community. The

configuration proposed restricts parking to the interior of the Property and provides for attractive and well-landscaped residential buildings.

(3) Public water and sewerage shall be available, although it may be made available in conjunction with the development of the PUD.

Adequate water and sewer services to serve the proposed Project exist and are adjacent to the Property. The Applicant will provide the utility extensions that are necessary to connect the Project to Town services and will work with Easton Utilities to ensure that all permits and approvals are granted.

(4) The site shall be located adjacent to adequate transportation facilities capable of serving existing traffic and that expected to be generated by the proposed development. Private roads may only be approved in commercial and multifamily projects or portions of projects. Such roads shall be internal to the development. Private roads shall comply with any standards developed and adopted for such roads by the Town Council. The Town shall bear no responsibility for construction or maintenance of private roads. Development on private roads may not be entitled to all Town Services.

The Project will have a single access from Elliott Road, a Town owned street. A Traffic Impact Study ("TIS") was conducted by Traffic Concepts, Inc. in September 2021 and revised in March, 2023, which is included with the submittal of this Application. The TIS demonstrates that all intersections of interest near the Project will continue to operate at a Level of Service (LOS) of "C" after the Project is completed. The Maryland State Highway Administration ("SHA") guidelines recommend that all intersections need to operate at a LOS of "D" or better. The TIS incorporates all existing traffic flows, has utilized actual traffic count data in the area, and has incorporated traffic impacts from proposed or developing projects in the area. The existing roads and traffic signaling in the area are adequate to serve the Project and its residents and development of the Project will not place an undue burden on public roadways. The internal driving and parking surfaces serving the Project comply with applicable Town standards. Additionally, since approval of Ordinance No. 778 SHA has undertaken efforts to analyze Matthewstown Road to address Town and Council concerns about traffic queuing. The additional sixteen (16) units have a negligible impact on the traffic impacts of the Project.

(5) The owners or developers must indicate that they plan to begin construction of the development within two (2) years after final approval. If there is no action on the part of the applicant at any point in the process for a period of two (2) years, the zoning of the site shall revert to its previous classification unless a time extension is requested by the developer and granted by the Planning and Zoning Commission. For projects constructed in parts of phases, the PUD approval applicable to any portion not improved in accordance with said PUD approval, shall expire if no development activity occurs for a period of five years.

The Applicant intends to commence construction within two (2) years of final approval. Applicant is requesting that the Council, in light of the time incurred in proposing this minor amendment

and receiving site plan approval, confirm that the two (2) year construction period commence upon approval of this amendment.

(6) The setback, lot size, lot coverage, height, minimum frontage, minimum open space, and yard requirements shall be established for each individual project by the Town Council in the ordinance granting the application. The Planning Commission shall make recommendations to the Town Council with regard to these requirements. The Town recognizes that it is necessary and encourages such uniquely established standards.

The minimum bulk requirements for the Project will remain consistent with the established standards for the Town's CG zoning district and the supplemental standards for multifamily buildings as identified in zoning code Section 28-1007.1.14. The proposed four-story buildings are 49'-3" at their highest point and the three-story buildings already approved are 46'-8". The Project will remain under the 50' maximum height prescribed in the CG zoning district. No additional relief is requested.

(7) Off-street parking shall be provided for each individual use in the planned unit development in accordance with the requirements of Section 1001. Mixed-use PUD's that integrate coordinated pedestrian and bicycle circulation systems throughout the development, shall be permitted to reduce the required off-street parking by 20% of the required standard without the need for a parking variance, waiver, or deferral.

Off street parking within the Project will comply with Town standards. The Town code requires a minimum of one parking space per unit (136 spaces) and a maximum of two parking spaces per unit (272 spaces). The Project proposes 178 spaces, which is well above the minimum parking requirement for the multifamily community. The parking lot is designed to accommodate emergency vehicles, trash, school buses, and delivery trucks.

(8) No more than 50% of the off-street parking area for the entire property of a major retail or shopping center use, shall be located between the front façade of the principal building(s) and the primary abutting street.

Not Applicable.

Standard		*Project Compliance*
	PUD - General	
Minimum Size*	5 acres	*The Property is 6.840 acres.*
Maximum Size	N/A	
Maximum Residential Density (per gross residential acre)**	16 du/acre****	
Minimum Open Space Requirement****	30% of total gross area shall be developed as recreational	

	areas or designated for common use of the residence of the PUD	
Applicability	Lands not qualifying as Infill or Redevelopment	

* Smaller Sites may be permitted when it is found that proposed PUD is Compatible with existing development in the area and does not disrupt the orderly expansion of the transportation system of the Town.

N/A.

** The Town Council may consider projects with a density of up to 25% more than the maximum stated in this table upon a finding that such increased density is in keeping with the existing or intended character of the neighborhood (as expressed in the Comprehensive Plan or, if applicable, any adopted Small Area Plans) and that any potential detrimental impacts from such increased density are ameliorated to the satisfaction of the Council. Additionally, if residential use is part of a vertically-mixed use project (i.e., non-residential uses are present on the ground floor with residential units on non-ground floors), there shall be no limit on the residential density.

As explained above, Applicant is requesting approval of the PUD allowing a density of 19.88 dwelling units per acre. The 3.88 dwelling units per acre over the otherwise-prescribed 16 dwelling units per acre will not result in any detriment to neighboring properties or nearby traffic patterns and public right of ways. The Council has already approved the Project to exceed the 16 unit specification by 1.54 units per acre and the request now before the Council is minor in nature. The Property is situated between commercial uses and lower-density residential uses and forest to the east and northeast and is perfectly suited for higher-density development to create a tiered development scheme moving further from the heart of Easton and Route 50. Approval of the requested density is consistent with the goals of the Comprehensive Plan and results in provision of housing that the Town of Easton is seeking for its current and future residents.

*** The Town Council may consider projects with less than the minimum open space required as specified in the Table, upon a finding that unique circumstances or conditions exist which warrant such a reduction and further provide that the applicant addresses the open space requirements in another acceptable means.

Applicant has designed the Project to provide significant open space and meaningful in-site improvements to residents. A minimum of 2.052 acres of open space is required to meet the 30% open space requirement. The Project will provide 2.79 acres of open space (40.7%, not including incidental parking lot areas). The open space that is provided includes a large grass field that can be used for a multitude of passive outdoor activities and a playground for children in the community that is directly adjacent to the community clubhouse and pickle ball area.

MDSW

**** In the PUD General sub district, for any residential units proposed in excess of the maximum residential density permitted in base residential zoning districts (3.5 du/ac), at least 25% must be devoted to affordable housing, or the developer may contribute a fee-in-lieu to an entity to be determined by the Town.

Applicant complies with this standard as defined by the Town Code and Easton Affordable Housing Board. At least twenty five percent (25%) of the units proposed in excess of the maximum residential density permitted in the base residential zoning district (3.5 du/acre) will be devoted to affordable housing.

Zoning Code Multifamily Standard Compliance Summary

In accordance with supplemental standards, Section 1007.1.14, the Project complies with the following requirements:

a. Multi-family apartment complexes dwelling shall be constructed in accordance with an approved Site Plan prepared under the provisions of Section 28-901 of this Ordinance.
   - *The Planning Commission granted Sketch Plan approval at its November 18, 2021 meeting and final site plan approval for the 120-unit project has been granted by the Town. The Project complies with the requirements of the Ordinance.*
b. At least twenty-five (25%) percent of the gross development area shall be reserved as common open space, except for projects developed in the CBD Zoning District, in which case this standard shall not apply.
   - *PUD provisions require at least thirty percent (30%) open space. The Project is providing 40.7% open space on the Property.*
c. The setback requirements for multi-family apartment complexes shall be determined by the development standards for the zoning district in which the project is located except as hereby modified.
   iii. When more than one (1) apartment building in constructed, all buildings shall collectively adhere to the front setback requirements of the district in which they are located, plus five (5) feet per story over two (2) stories, or portion thereof.
   ii. When more than one (1) apartment building is built, no building shall be closer than twenty-five (25) feet from any other apartment building that is part of the complex.
   iii. No Apartment structure shall be constructed at a distance of less than twenty (20) feet from any adjoining property lines; except for such structures constructed in the CBD district, wherein the development standard for that district shall apply.
   - *The Project complies with the setback requirements applicable to Multifamily development in the underlying zoning district.*
d. When more than one apartment building is constructed, external walkaway shall be paved and lighted.
   - *External walkways will be paved and lighted.*

e. In the event that swimming facilities are designed as part of the project, these facilities shall be enclosed by a fence not less than six (6) feet high.
   - *N/A. No swimming pool is proposed.*

f. All areas not utilized for building or off-street parking shall be landscaped and maintained in accordance with Section 28-1014 of the Ordinance.
   - *As depicted by the Site Exhibit submitted with this application, all areas not proposed for building or parking will be landscaped and maintained in accordance with Section 28-1014 of the Ordinance.*

g. All buildings within the multi-family apartment complex shall be of compatible architectural design.
   - *The four (4) proposed buildings are architecturally compatible and use the same materials and color schemes to ensure an aesthetically pleasing development. The clubhouse will utilize similar or identical materials and colors to ensure compatibility.*

h. Architecture shall be compatible among the units within the development and harmonious with the existing architecture of the Town of Easton.
   - *The proposed architecture is consistent with projects and developments within the Town of Easton. The buildings use a staggered façade, provide unit balconies, and take advantage of a variety of colors and materials to ensure that the development is attractive both to the public at large and its residents.*

i. Public water and sewage systems must be available to serve the project.
   - *Public water and sewer are available to serve the Project and the Applicant will work with Easton Utilities and the Town to ensure that all necessary permits and approvals are issued for the Project.*

j. The maximum permitted density shall be as follows:
   i. In R-7A – 8 dwelling units per acre.
   ii. In R-10-A and R-10M Districts - 5 dwelling units per acre.
   iii. In the CBD Zoning District – 30 dwelling units per acre.
   iv. In the MXW – See Article 3 (Table 312 B) for density provisions.
   - *N/A*

k. Side yard setback requirements for apartment buildings adjacent to a single family detached residence or vacant residential lot shall be fifty feet (50'). Parking setback is also fifty (50) feet.
   - *The Project exceeds the required fifty-foot (50') side yard setback requirement from single family residences or vacant residential lots.*

l. Rear yard setback requirements for apartment building adjacent to a single-family residence or vacant residential lot shall be seventy-five (75) feet. The setback for parking areas is also seventy-five (75) feet.
   - *The Project complies with rear yard setback requirements.*

MDSW
MCALLISTER
DETAR
SHOWALTER
& WALKER

PUD PROJECT AMENDMENT – ELLIOTT ROAD APARTMENTS
August 1, 2023

This PUD multi-family housing amendment is consistent with many goals and visions of the Easton Comprehensive Plan (the "Plan") including, but not limited to the following:

- This PUD implements several of the 12 State Planning Visions cited in SB 273/HB 294 and incorporated by reference in the Plan including at a minimum Visions 1, 3, 4, 5, 7.

  This PUD provides moderate price point rental housing helping to fulfill the goal found on Page 43, Residential Land uses to create ".... a seamless, interesting, Smart Growth inspired Easton; one Easton, not a collection of suburban residential enclaves." In fact, the location of the Project addresses the tiered development approach contemplated by the Plan, with commercial uses to the west, the multifamily Project located as proposed, and townhome and single-family development to the north and east, moving further from Downtown Easton.

- Page 44, Benefits of Mixed Land Uses; PUD accomplishes, "Increase[d] housing options with addition of moderate price point rental housing for more diverse household types", "Reduce[d] automobile dependence", "Reduce a community's carbon footprint by encouraging walking and biking as an alternative to automobile use", and "Increase[d] the safety of the neighborhood by putting more eyes on the street".

- Page 45, Under Land Use Goals and Objectives, the PUD implements Goal #5, "slow the demand for more land by increasing the density of future residential areas. At a minimum, "the Smart Growth Priority Funding Area net density of 3.5 units per acre should be achieved in these developments." This PUD proposes wise use of undeveloped, infill lands inside the Town boundary.

- Page 51, Capacity for Development within Town Limits, this PUD fulfills the Plan goal to, "develop within town limits utilizing infill and renovation development techniques."

- Page 140, Housing goals and Objectives; the PUD is consistent with at least two of the Plan goals, "To insure that housing in Easton is safe, sanitary, structurally sound and safeguards or upgrades neighborhood design; and, "To insure a more heterogeneous mix of price points in future residential projects". This PUD offers moderate price point market rate housing suitable for the young and for seniors looking to live and provide critical population mass to Easton's core.

Beyond the specific outlined above, this PUD is consistent with the Comprehensive Plan's intent to promote infill development, renovation and redevelopment within Easton's current town limits.

100 N. WEST STREET EASTON, MD 21601 410.820.0222 WWW.MDSWLAW.COM
ANNAPOLIS - EASTON - CAMBRIDGE - OCEAN CITY

PROJECT DATA

PROPERTY: TAX MAP 109, PARCEL 2866, LOT 9
ELLIOTT ROAD
EASTON, MD 21601

OWNER: ELLIOT ROAD, LLC
116 SOUTH PINEY RD, SUITE 208
CHESTER, MD 21619
(410) 643-4131

DEVELOPER: MALLARD CONSTRUCTION
C/O JIM DIDONATO
116 SOUTH PINEY RD, SUITE 208
CHESTER, MD 21619
(410) 643-4131

DEED REFERENCE: 3045/394

PROJECT HISTORY: PLANNING COMMISSION APPROVAL – 11/18/2021
TOWN COUNCIL APPROVAL – 03/07/2022

ZONING CLASSIFICATION: CG – GENERAL COMMERCIAL

SITE AREA: 6.84 ACRES±

PARKING REQUIRED: MINIMUM – 1 SPACE/ UNIT (136 SPACES)
MAXIMUM – 2 SPACES/ UNIT (272 SPACES)

PARKING PROVIDED: 178 TOTAL SPACES PROVIDED

ADA ACCESSIBLE PARKING SPACES REQUIRED: 5 STANDARD & 1 VAN
ADA ACCESSIBLE PARKING SPACES PROPOSED: 6 STANDARD & 3 VAN (9 TOTAL)

OPEN SPACE: 30% REQUIRED; 40.7% PROVIDED (2.79 AC±)

PROJECT NOTES

THE SITE IS LOCATED ENTIRELY OUTSIDE OF THE CHESAPEAKE BAY CRITICAL AREA.

THE PROPERTY BOUNDARY AS SHOWN HEREON IS BASED TAX MAP INFORMATION AND IS APPROXIMATE ONLY, NO BOUNDARY SURVEY HAS BEEN COMPLETED.

THE CONTOURS SHOWN HEREON WERE TAKEN FROM TOPOGRAPHY 2019 PROVIDED BY TALBOT COUNTY AND ARE APPROXIMATE ONLY.

THERE ARE NO KNOWN HISTORIC STRUCTURES OR ARCHEOLOGICALLY SIGNIFICANT RESOURCES, STEEP SLOPES APPROACHING 15%, STREAMS, TIDAL WETLANDS/NON-TIDAL WETLANDS OR KNOWN HABITAT PROTECTION AREAS IN PROXIMITY TO THE PROPOSED SITE IMPROVEMENTS.

A FIELD DELINEATION HAS NOT BEEN PERFORMED FOR THE PRESENCE OF NON-TIDAL WETLANDS ON SITE.

PUBLIC WATER AND SEWER SERVICES ARE PROVIDED BY THE TOWN OF EASTON, EASTON UTILITIES.

FLOOD DATA

THE PROPERTY SHOWN HEREON IS NOT LOCATED IN THE NATIONAL FLOOD INSURANCE PROGRAM (NFIP) SPECIAL FLOOD HAZARD AREA (SFHA) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD. THE PROPERTY IS MAPPED IN THE "X" FLOOD ZONE(S) AS SHOWN ON THE FEDERAL INSURANCE RATE MAPS FOR COMMUNITY NO. 240067, MAP NO. 24041C0193C FOR TOWN OF EASTON, MARYLAND. THE 1% ANNUAL CHANCE FLOOD (100-YEAR FLOOD), ALSO KNOWN AS THE BASE FLOOD, IS THE FLOOD THAT HAS A 1% CHANCE OF BEING EQUALED OR EXCEEDED IN ANY GIVEN YEAR. THE SFHA IS THE AREA SUBJECT TO FLOODING BY THE 1% ANNUAL CHANCE FLOOD. THE SFHA INCLUDE ZONES A, AE, AH, AO, AR, A99, V & VE. THE BASE FLOOD ELEVATION (BFE) IS THE WATER SURFACE ELEVATION OF THE 1% ANNUAL CHANCE FLOOD. FLOOD INSURANCE MAY BE REQUIRED FOR STRUCTURES LOCATED IN THE SPECIAL FLOOD HAZARD AREA.

FLOOD ZONE LEGEND
ZONE X – AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD

THE FLOOD DATA SHOWN HEREON IS BASED ON AVAILABLE MAPPED AND/OR DIGITAL INFORMATION AND IS DEPICTED AS DIRECTED AND REQUIRED BY FEDERAL, STATE AND LOCAL REGULATIONS. IT IS SUBJECT TO DATA INACCURACIES AND REGULATORY CHANGE AND SHOULD BE VERIFIED PRIOR TO FINALIZING DEVELOPMENT OR IMPROVEMENT PLANS FOR THE SUBJECT LANDS.

LEGEND

- COMPUTED POINT
- UTILITY POLE
- OVERHEAD ELECTRIC LINE
- UNDERGROUND ELECTRIC LINE
- STORM DRAIN MANHOLE
- STORM DRAIN LINE
- WATER VALVE
- CONTOUR LINE (MAJOR)
- CONTOUR LINE (MINOR)

REVISIONS			
No.	DATE	DESCRIPTION	BY

WARNING!!
THE LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THIS PLAN ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. THE QUANTITIES SHOWN ON THIS PLAN ARE FOR INFORMATIONAL AND PERMITTING PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES TO HIS OWN SATISFACTION PRIOR TO BEGINNING CONSTRUCTION.

THE CONTRACTOR SHALL TEST PIT AND LOCATE EXISTING UNDERGROUND UTILITIES PRIOR TO THE BEGINNING OF ANY WORK ON-SITE. THE CONTRACTOR SHALL NOTIFY DEPT. OF PUBLIC WORKS OF ANY POSSIBLE CONFLICT AND REQUEST THE RELOCATION OF THE EXISTING UNDERGROUND UTILITIES BEFORE BEGINNING ANY WORK ON-SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RELOCATION EXPENSE.

MISS UTILITY
BEFORE YOU DIG CALL
1-800-441-8355 OR 811
PROTECT YOURSELF, ONE
TWO WORKING DAYS NOTICE

Lane Engineering, LLC
Established 1986
Civil Engineers • Land Planning • Land Surveyors
E-mail: general@lanesc.com
117 Bay St. Easton, MD 21601 (410) 822-8003
15 Washington St. Cambridge, MD 21613 (410) 221-0818
354 Pennsylvania Ave. Centreville, MD 21617 (410) 758-2085

SEAL

DATE

SITE EXHIBIT

ON THE LANDS OF
ELLIOTT ROAD, LLC

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 109 PARCEL 2866 LOT 9

ISSUED FOR:	DATE:	BY:
AGENCY REVIEW	12/31/21	BCE
AGENCY REVIEW	10/14/22	BCE
AGENCY REVIEW	01/25/23	BCE
AGENCY APPROVAL	3/28/23	BCE
PUD AMENDMENT	8/01/23	BCE

SHEET No. 1 OF 1
DATE: 12/31/21
JOB No. 210375
SCALE: AS NOTED
FILE No. 9809

Date: 08/01/2023 – 1:36pm User: ebarnhart Project Manager: BCE
Drawing Path: J:\2021\0300\210375\Dwgs\Plats\WD\SED-CSK-EXB1-PLTS-210375.dwg | Concept Exhibit
XREF FILE(S): XLD-BASE-210375/CSP-BASE-210375/DRN-BASE-210375/GRD-BASE-210375/MBS-BASE-210375/PDF-BASE-210375/LP-BASE-210375/VGL-BASE-210375/VGL-BASE-210375
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TRAFFIC IMPACT STUDY

Raughley Family Realty Business Trust

Residential Development
Town of Easton, Maryland

September, 2021
Revised March, 2023

Prepared For:
Mallard Construction Group, Inc.

Prepared By:
TRAFFIC CONCEPTS, INC.
7525 Connelley Drive
Suite B
Hanover, Maryland 21076
Phone 410-760-2911

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INTRODUCTION

Traffic Concepts, Inc. has conducted a traffic impact study for the Raughley Family Realty Business Trust to develop a multi-family residential apartment project. The proposed development includes four apartment buildings with a total of 136 apartments. The development will also include a clubhouse, a playground, and a pool.

The subject property is located within the town of Easton and is situated on the southeast quadrant of MD 328 and Elliott Road. As shown on the site plan, the property will be served by a single full-movement access to Elliott Road. The site and the proposed site access point are shown on Exhibit 1.

SCOPE OF WORK

The traffic study was conducted in accordance with the Maryland Department of Transportation State Highway Administration (MDOT SHA) *Traffic Impact Study Guidelines* and with the Town of Easton's Subdivision Regulations; Section 703 Street Design and Layout (e) Traffic Impact Study.

The key study intersections are listed below and were counted during the weekday morning (7:00 AM to 9:00 AM) and afternoon (4:00 PM to 6:00 PM) peak hours.

KEY INTERSECTIONS

- MD 328 (Matthewstown Road) @ Elliott Road
- US 50 @ MD 328 (Matthewstown Road)
- MD 331 (Dover Road) @ Elliott Road
- US 50 @ MD 331 (Dover Road)
- Elliott Road @ site access

INTERSECTION ANALYSIS METHODOLOGY

The signalized key intersections were analyzed with the Critical Lane Volume (CLV) method and the unsignalized intersections were analyzed with the Highway Capacity Manual (HCM) method. The intersection level of service standard is "D", as required by the MDOT SHA.

TRAFFIC IMPACT STUDY & TRIP GENERATION

An intersection level of service was conducted at all key intersections for each traffic condition described below.

> Existing Condition: Determined with the current intersection turning movement counts and creates the baseline traffic condition for all proceeding analyses.
>
> Background Condition: Includes traffic volumes resulting from a regional growth rate and or from any nearby development projects that are approved, but are not constructed or completed.
>
> Future Condition: The planned traffic is generated with the *Institute of Transportation Engineers' Trip Generation Manual 11th Edition* or the most current edition.

Total Future Traffic = [Existing Traffic + Background Traffic (Growth in Existing Traffic + Approved Development Traffic) + Site Generated Traffic]

NOT TO SCALE

TRAFFIC CONCEPTS, INC.
7525 Connelley Drive
Suite B
Hanover, Maryland 21076
410-760-2911

EXHIBIT 1
Site Location Map

EXISTING CONDITION

As stated, the existing traffic condition determined the baseline traffic conditions at the key intersections. The key intersections and the existing lane use configurations are shown on Exhibit 2. The detailed intersection configuration diagrams are provided in Appendix IV.

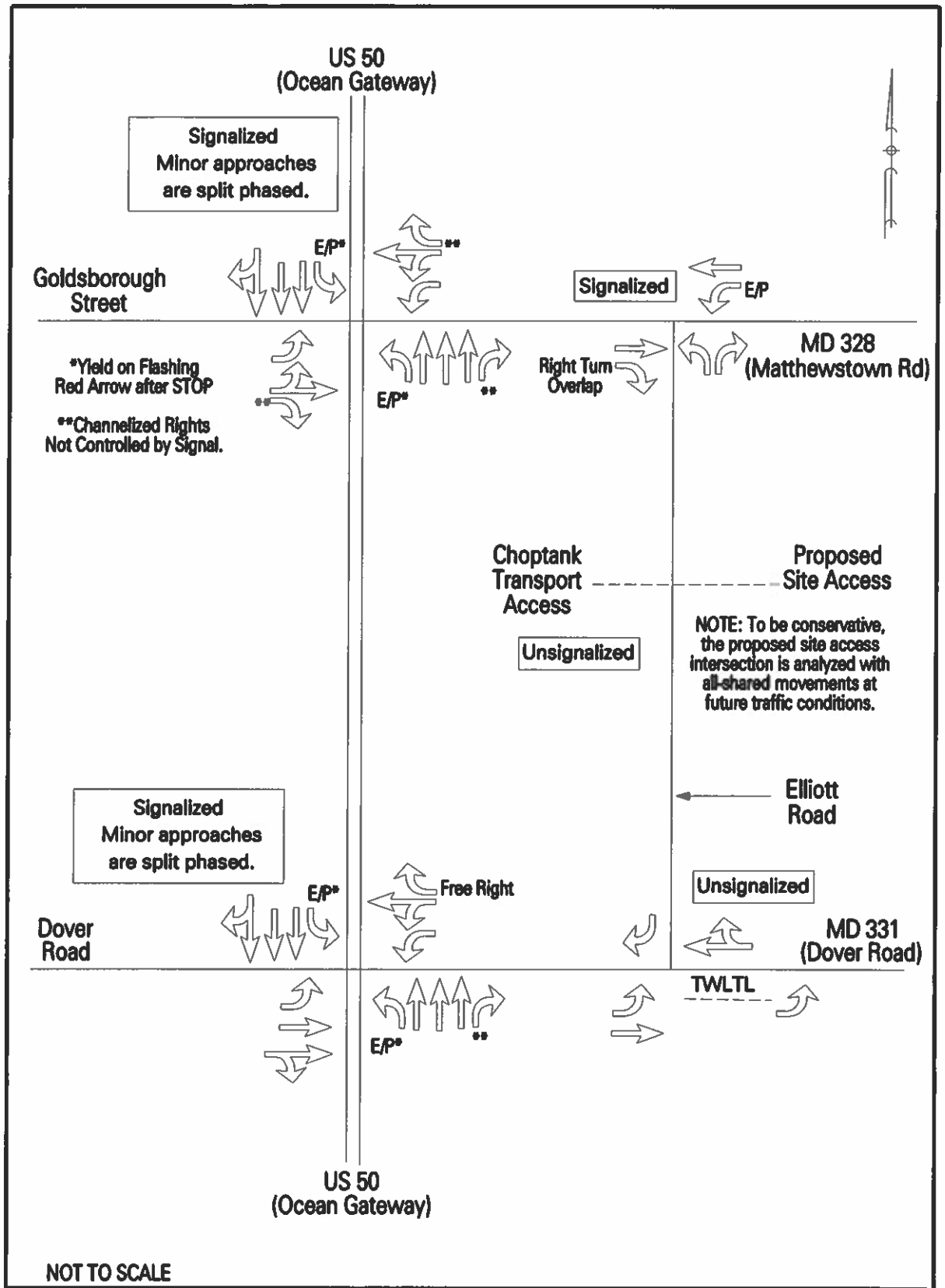
The peak one-hour intersection volumes are displayed on Exhibit 3. The complete peak hour intersection counts are provided in Appendix IV. The existing peak hour intersection level of service results are displayed below and details of the intersection calculations are included in Appendix I & II. The site access intersection was analyzed under the future build-out conditions.

CRITICAL LANE ANALYSIS	**AM**	**PM**
	CLV(LOS)	**CLV(LOS)**
US 50 @ MD 328	965(A)	1032(B)
US 50 @ MD 331	1015(B)	1142(B)
MD 328 @ Elliott Road	810(A)	805(A)
MD 331 @ Elliott Road	1118(B)	1036(B)

HCM ANALYSIS – UNSIGNALIZED INTERSECTION

MD 331 @ Elliott Road

	Control Delay AM(PM)	LOS AM(PM)	Delay By Approach AM(PM)	LOS By Approach AM(PM)
EB Left	11.4(9.9)	B(A)		
SB Right	20.7(17.1)	C(C)	20.7(17.1)	C(C)



NOT TO SCALE

TRAFFIC CONCEPTS, INC. 7525 Connelley Drive Suite B Hanover, Maryland 21076 410-760-2911	EXHIBIT 2 Lane Configuration

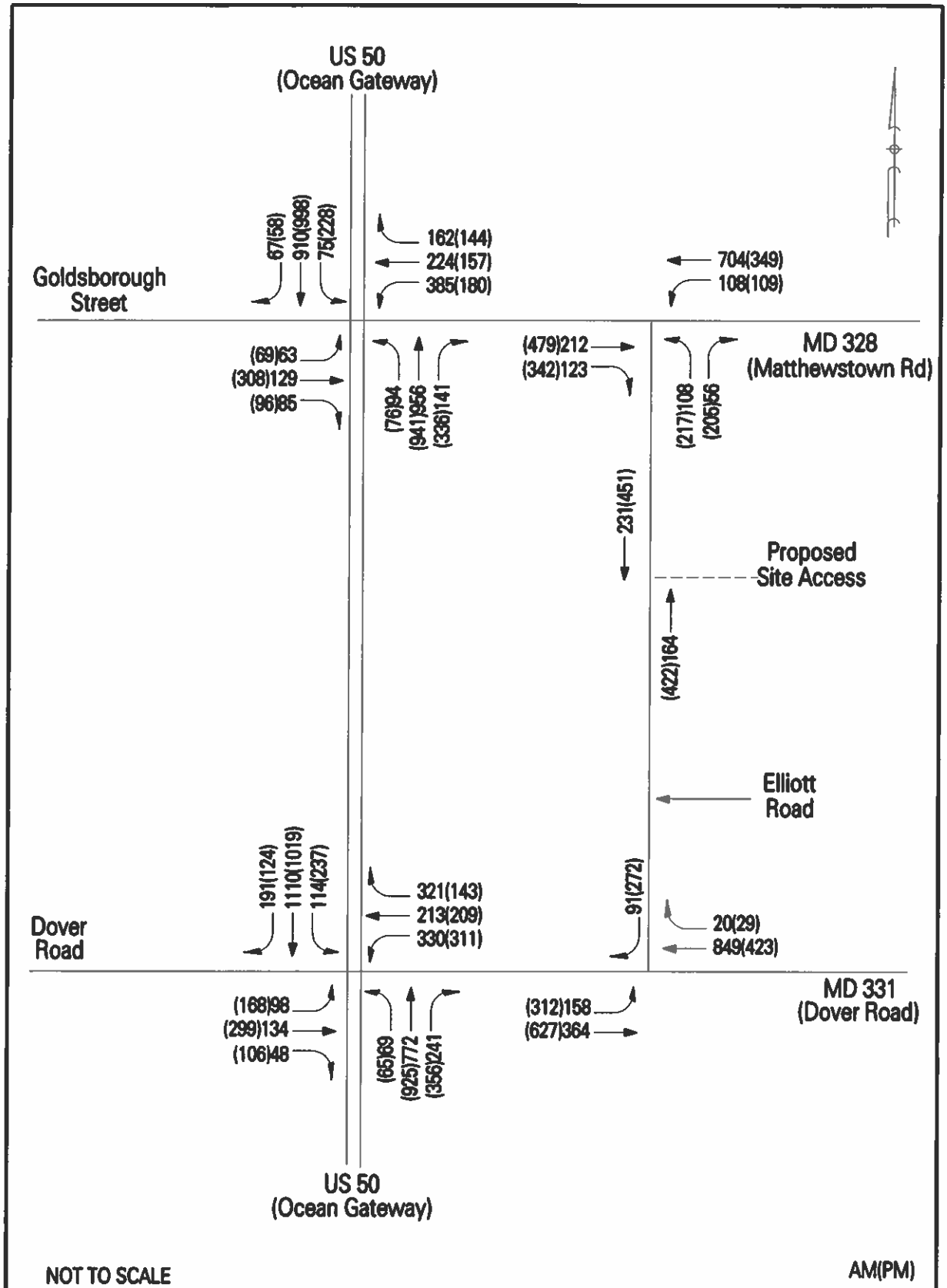


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EXHIBIT 3
Existing Traffic Volumes

BACKGROUND CONDITION

The background condition includes new peak hour trips generated by regional traffic increases that are represented by a growth rate and any nearby background developments.

Regional Growth Rate

In order to establish the recent traffic conditions within the study area, we examined MDOT SHA historical traffic data for the past three years (pre-Covid). The information provided below is be found on the Internet Traffic Monitoring System (I-TMS) web page. Based on this information, traffic volumes have remained stable over the last three years. Therefore, a growth rate was not applied to the existing traffic volumes.

AADT History County: TALBOT
MD 328 - .50 MI E OF US 50 - Location ID: B3821

Year	AADT	AAWDT
2019	10241	10861
2018	10240	10960
2017	10452	11182

AADT History County: TALBOT
US 50 - .50 MI E OF MD 331 – Location ID: B3812

Year	AADT	AAWDT
2019	38362	39902
2018	37901	39801
2017	38130	40040

Source: MDOT SHA I-TMS

BACKGROUND DEVELOPMENTS

The following background developments were identified as projects that could impact the key study intersections. The locations of these developments are shown on Exhibit 4. The peak hour trips listed below were determined with the ITE, Trip Generation Manual 10th Edition.

1. Brant Court Apartments, 29568 Brant Court, Easton MD - 96 Apt units

Multifamily Housing (Mid-Rise)	AM		PM	
LUC 221	IN	OUT	IN	OUT
96 Apt Units	9	24	26	17

2. DR Horton (Lands of Gannon Family), 29659 Matthewstown Rd – 200 SFU

Single-Family Detached Housing	AM		PM	
LUC 210	IN	OUT	IN	OUT
200 Units	37	110	125	73

3. Choptank Transport (logistics office), 8338 Elliott Rd, 90 Employees

General Office	AM		PM	
LUC 710	IN	OUT	IN	OUT
100 Employees	40	8	10	41

The peak hour trip distribution and assignment patterns for each background development are provided in Appendix III. The combined background trips are shown on Exhibit 5.

In order to generate the total background traffic volumes (Exhibit 6), we added the existing traffic volumes (Exhibit 3) to the background development volumes (Exhibit 5). The background intersection analysis results are shown below and the detailed calculations are provided in Appendix I & II of this report.

CRITICAL LANE ANALYSIS	**AM**	**PM**
	CLV(LOS)	**CLV(LOS)**
US 50 @ MD 328	1001(B)	1096(B)
US 50 @ MD 331	1034(B)	1172(C)
MD 328 @ Elliott Road	876(A)	889(A)
MD 331 @ Elliott Road	1152(C)	1064(B)

HCM ANALYSIS – UNSIGNALIZED INTERSECTION

MD 331 @ Elliott Road

	Control Delay AM(PM)	LOS AM(PM)	Delay By Approach AM(PM)	LOS By Approach AM(PM)
EB Left	11.7(10.0)	B(A)		
SB Right	21.4(18.1)	C(C)	21.4(18.1)	C(C)

Background Developments:
1 - Brant Court Apartments
2 - DR Horton (aka Lands of Gannon Family)
3 - Choptank Transport

NOT TO SCALE

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EXHIBIT 4
Background Development Locations

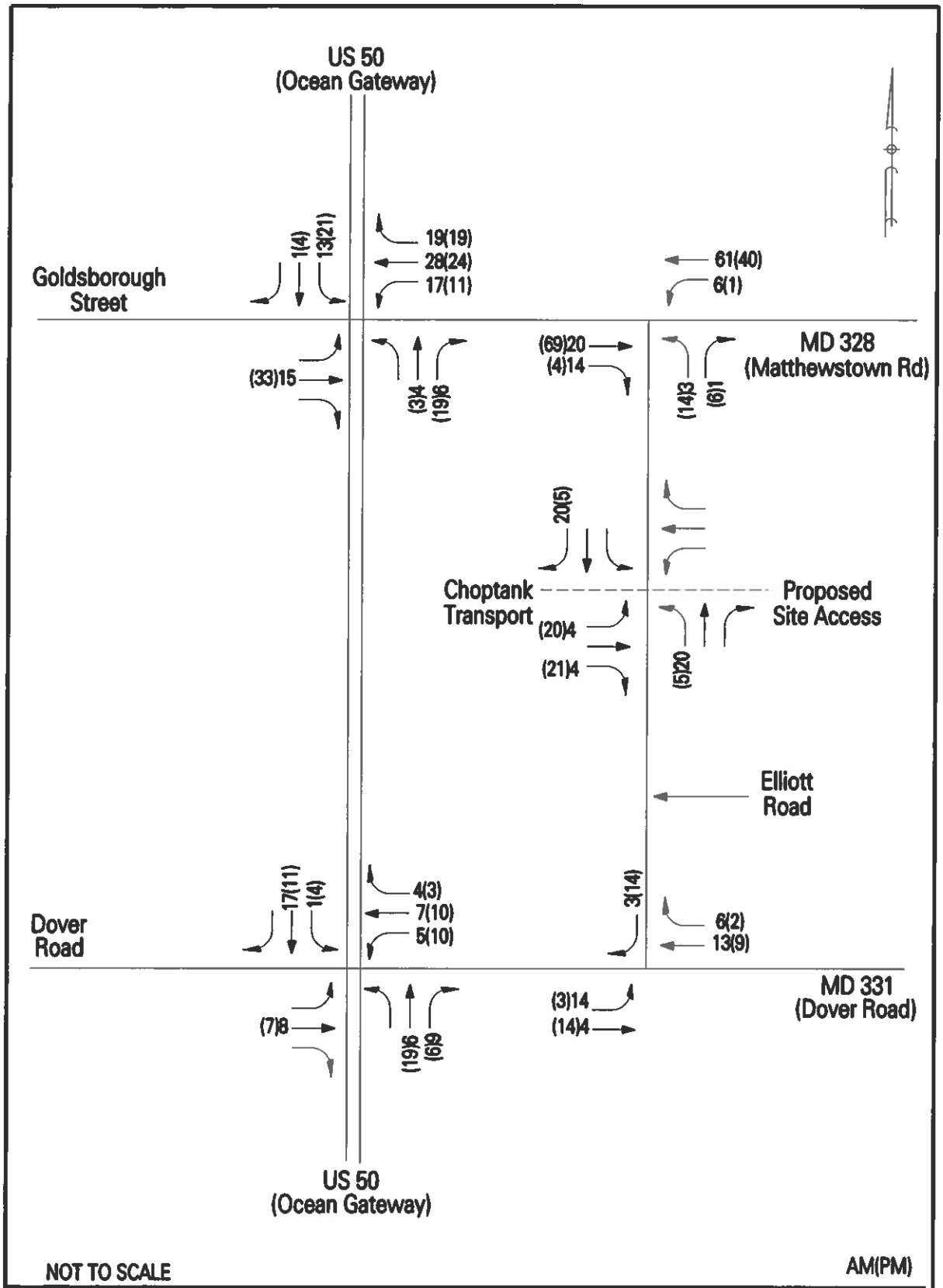

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EXHIBIT 5
Background Traffic Volumes

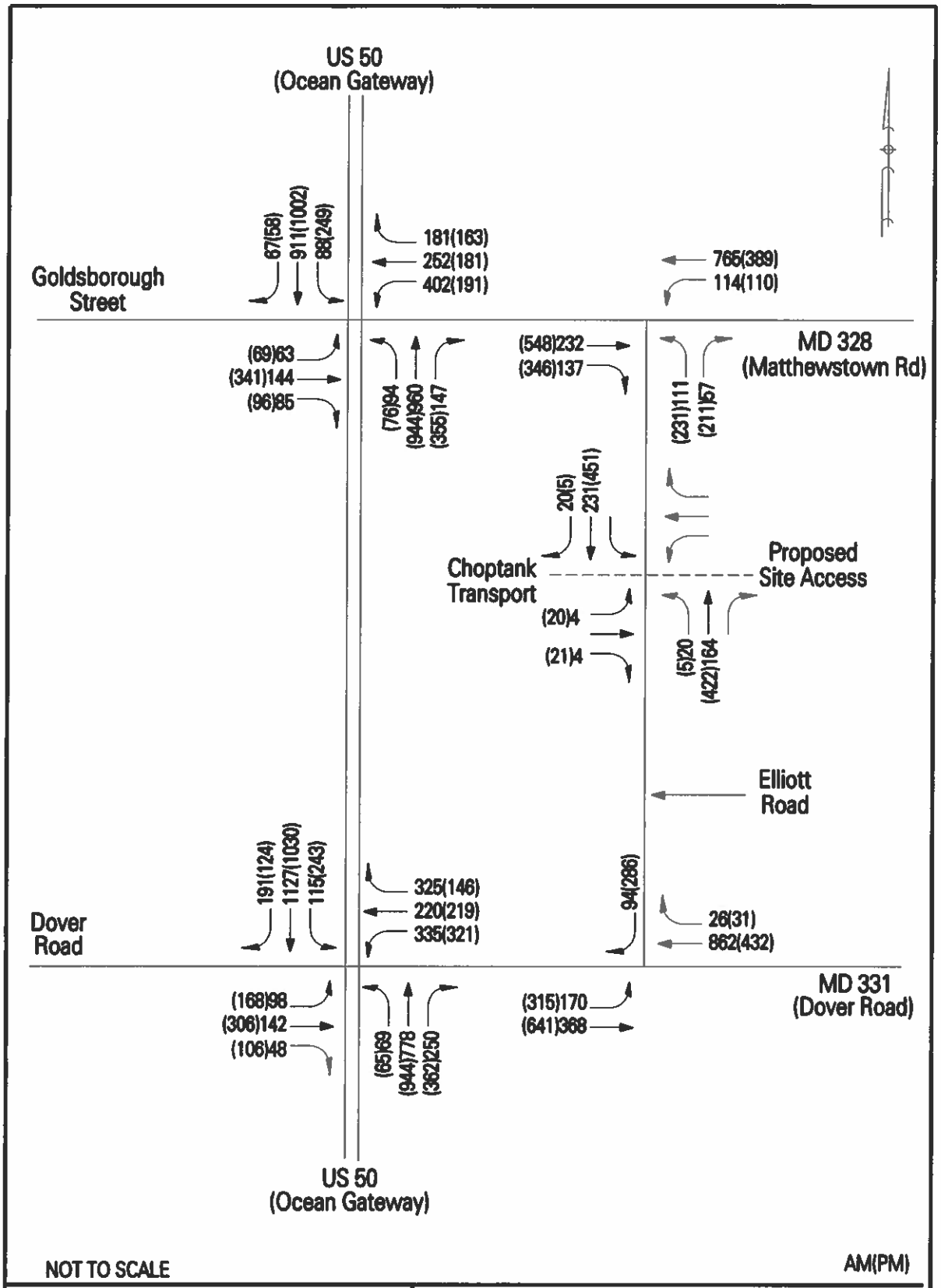

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EXHIBIT 6
Total Background Traffic Volumes

FUTURE CONDITION

The proposed development will create 136 apartment units. The new site generated peak hour trips shown below were generated with the *Institute of Transportation Engineers', Trip Generation Manual, 11th Edition* (ITE). The ITE land-use that corresponds to the new project is the Multifamily Housing (Mid-Rise) land-use (LUC 221). This information is provided in Appendix V.

TRIP GENERATION

Multifamily Housing (Mid-Rise) (221)	**AM**		**PM**	
	IN	**OUT**	**IN**	**OUT**
136 Apt Units	**11**	**37**	**33**	**20**

The new site's trip distribution and assignment pattern, shown on Exhibit 7, was determined with the location of the proposed site access point and the existing traffic patterns. The total future traffic volumes (Exhibit 8) are calculated by adding the site generated trips to total background traffic volumes. The intersection analysis findings are displayed below and the calculations are provided in Appendices I & II.

CRITICAL LANE ANALYSIS	**AM**	**PM**
	CLV(LOS)	**CLV(LOS)**
US 50 @ MD 328	1006(B)	1108(B)
US 50 @ MD 331	1044(B)	1206(C)
MD 328 @ Elliott Road	889(A)	901(A)
MD 331 @ Elliott Road	1173(C)	1088(B)
Elliott Road @ Site Access	320(A)	548(A)

HCM ANALYSIS – UNSIGNALIZED INTERSECTIONS

MD 331 @ Elliott Road

	Control Delay AM(PM)	LOS AM(PM)	Delay By Approach AM(PM)	LOS By Approach AM(PM)
EB Left	11.8(10.1)	B(B)		
SB Right	22.7(18.6)	C(C)	22.7(18.6)	C(C)

HCM ANALYSIS – UNSIGNALIZED INTERSECTIONS (CONTINUED)

Elliott Road @ Proposed Site Access

	Control Delay AM(PM)	LOS AM(PM)	Delay By Approach AM(PM)	LOS By Approach AM(PM)
EB L/T/R	11.5(19.2)	B(C)	11.5(19.2)	B(C)
WB L/T/R	11.4(18.4)	B(C)	11.4(18.4)	B(C)
NB L/T/R	7.9(8.4)	A(A)		
SB L/T/R	7.6(8.4)	A(A)		

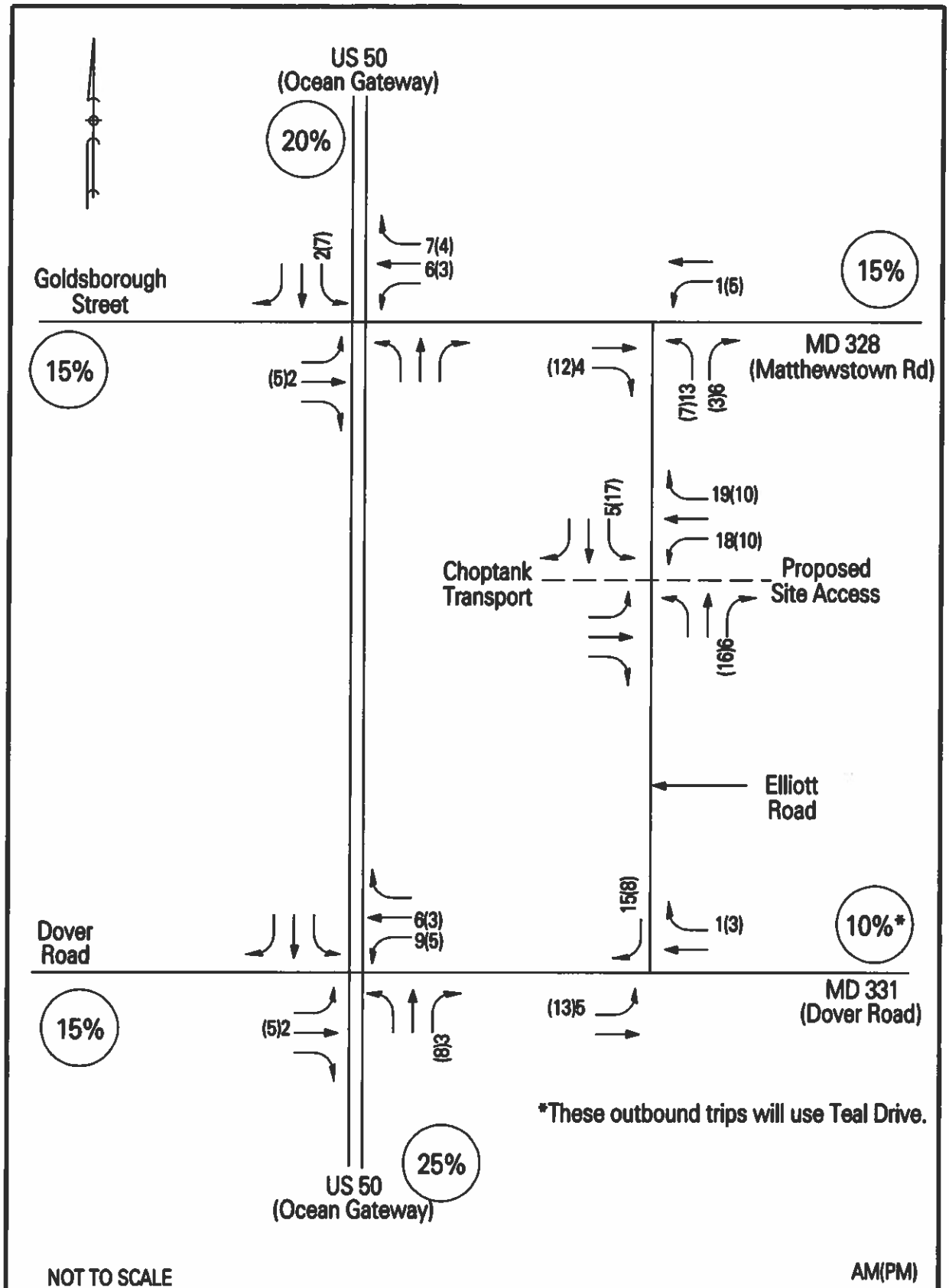

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EXHIBIT 7
Site Generated Trips

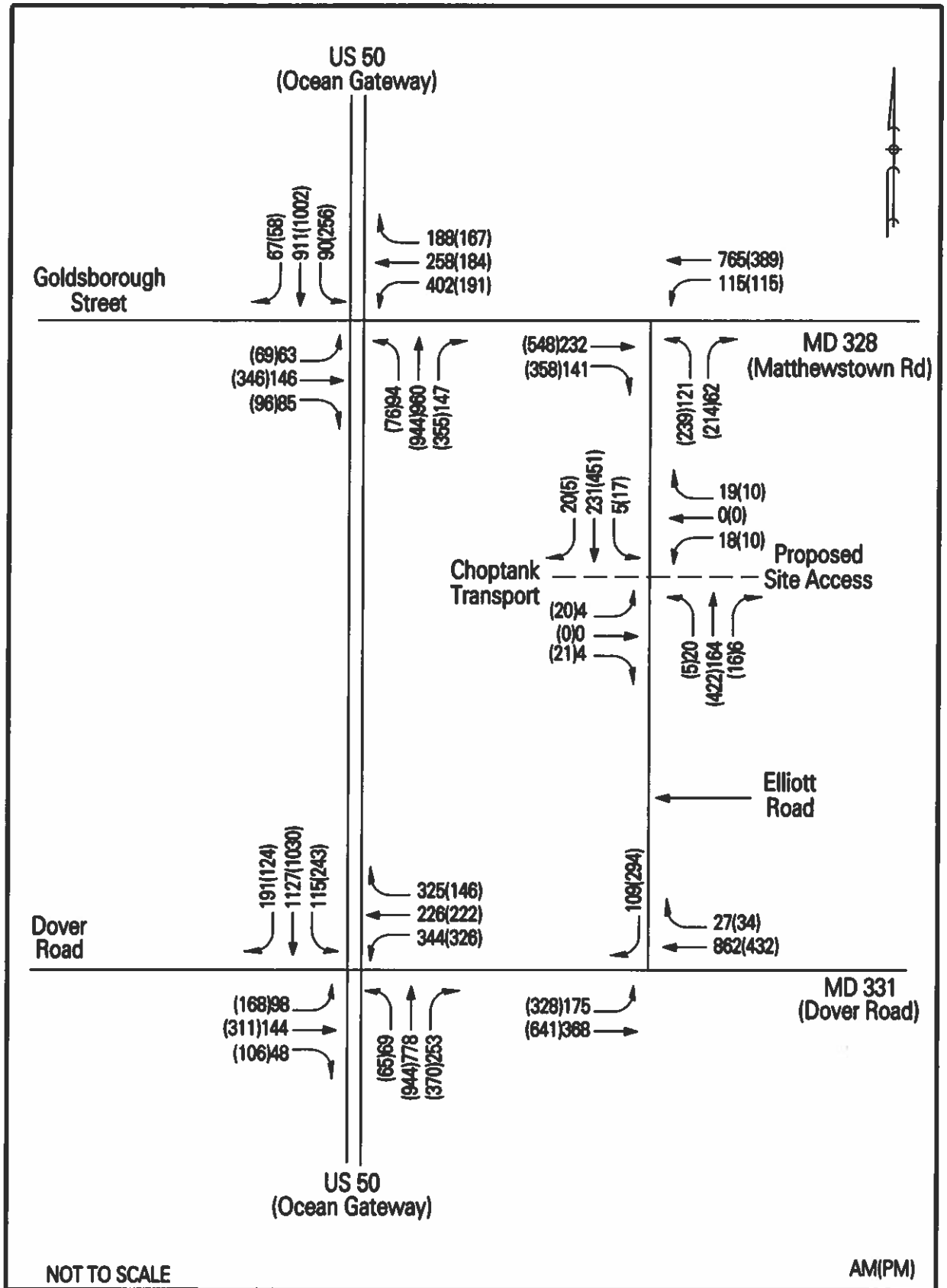

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EXHIBIT 8
Total Future Traffic Volumes

QUEUING ANALYSIS

A queuing analysis was conducted for the dedicated left turn movements at the signalized study intersections using the total background and future traffic volumes. The queue lengths were calculated using the following State Highway Administration methodology:

95th Percentile Queue = Volume x LUF x Cycle Length x 1.4 x 25'/3600

	95th Percentile Queue Length (ft.)		
	Background AM(PM)	Future AM(PM)	Storage Length (ft.)
US 50 at MD 328			
Eastbound Left/Thru			Continuous
Westbound Left/Thru			Continuous
Northbound Left	123(111)	123(111)	125
Southbound Left	116(363)	118(373)	475

Cycle Length: 135 AM (150 PM)

US 50 at MD 331			
Eastbound Left	129(245)	129(245)	400
Westbound Left/Thru			Continuous
Northbound Left	91(95)	91(95)	150
Southbound Left	151(354)	151(354)	450

Cycle Length: 135 AM (150 PM)

CONCLUSIONS AND RECOMMENDATIONS

The results of the Raughley Family Realty Business Trust residential development are presented below.

INTERSECTION LEVEL OF SERVICE

The results of the study find that upon the build-out of the Raughley Family Realty Business Trust residential development, all of the study intersections are projected to operate at acceptable "C" or better levels of service when analyzed using the Critical Lane Volume (CLV) and the Highway Capacity Manual (HCM) analysis methods.

INTERSECTION QUEUING ANALYSIS

The queuing analyses results determined the existing turn bays at the key signalized study intersections are adequate to store the new site generated trips. The queues for the stopped approaches at the site access intersection are approximately one vehicle and Elliott Road operates with queue-free conditions.

Based on the adequate study results, we recommend approval of this development from a traffic impact standpoint.

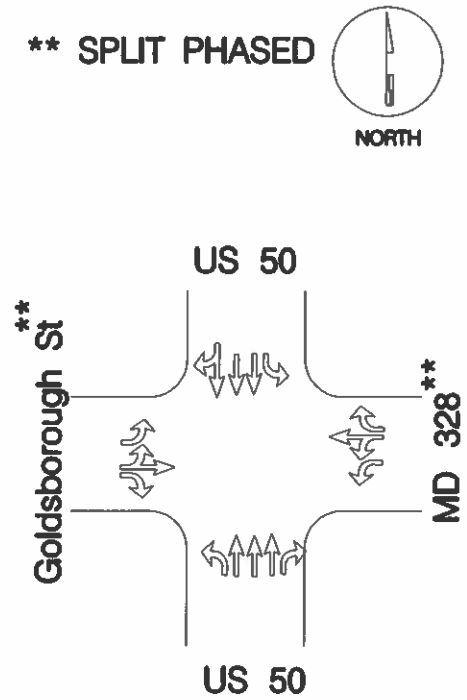
APPENDIX I

CRITICAL LANE VOLUME ANALYSES

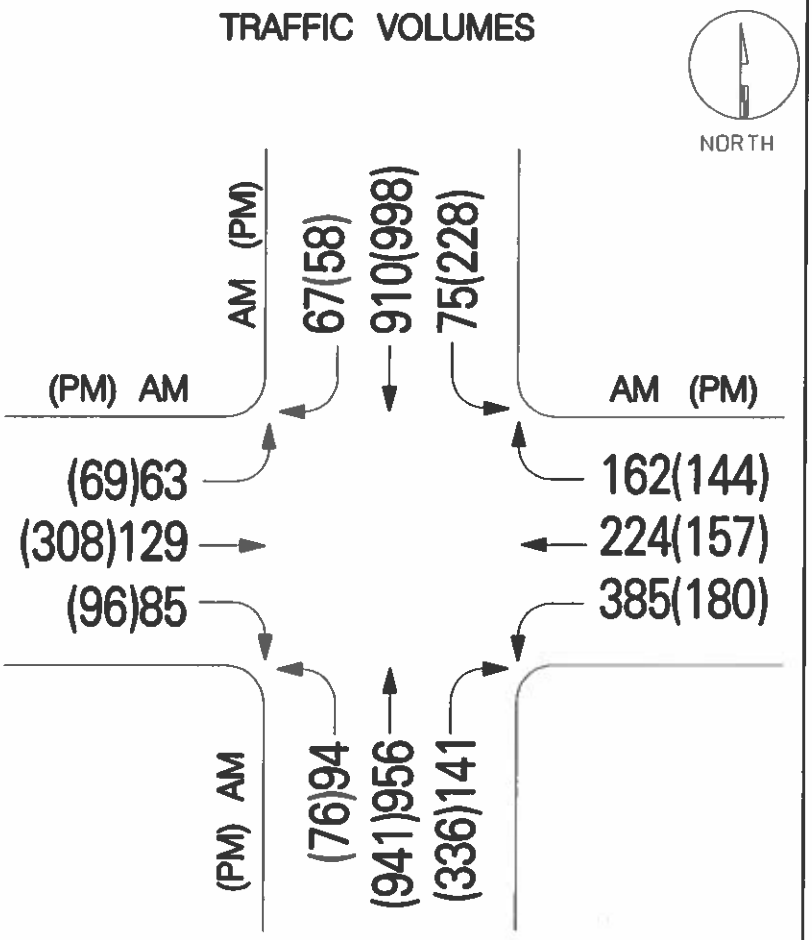
TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

** SPLIT PHASED



TRAFFIC VOLUMES



		TOTAL VOLUME * LUF	*		+	OPPOSING LEFTS * LUF	*		=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	956	*	0.4	+	75	*	1	=	457	
	SB	(910+67)	*	0.4	+	94	*	1	=	485*	
	EB	(63+129)	*	0.6					=	115*	A
	WB	(385+224)	*	0.6					=	365*	965
PM	NB	941	*	0.4	+	228	*	1	=	604*	
	SB	(998+58)	*	0.4	+	76	*	1	=	498	
	EB	(69+309)	*	0.6					=	226*	B
	WB	(180+157)	*	0.6					=	202*	1032

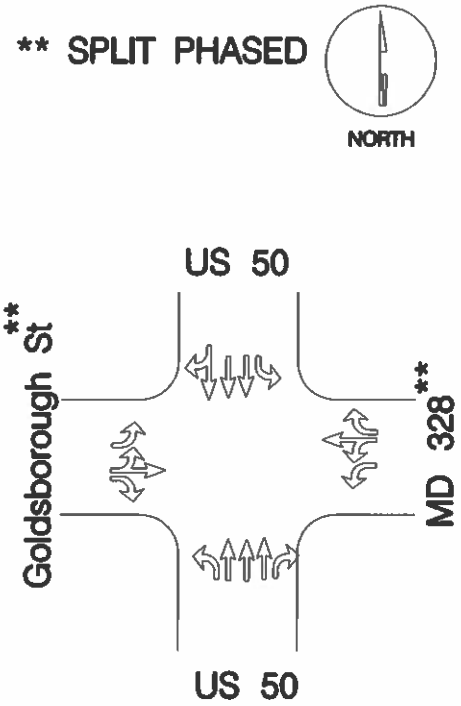
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: EXISTING

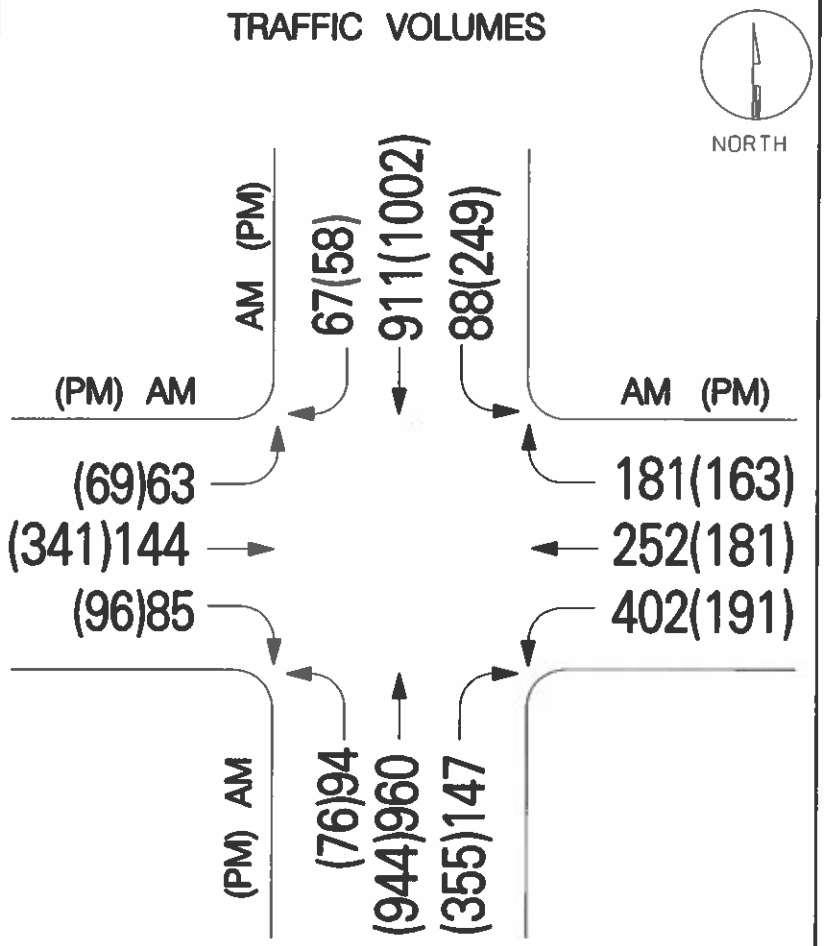
TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

** SPLIT PHASED



TRAFFIC VOLUMES



		TOTAL VOLUME	*	LUF	+	OPPOSING LEFTS	*	LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	960	*	0.4	+	88	*	1	=	472	
	SB	(911+67)	*	0.4	+	94	*	1	=	485*	
	EB	(63+144)	*	0.6					=	124*	B
	WB	(402+252)	*	0.6					=	392*	1001
PM	NB	944	*	0.4	+	249	*	1	=	627*	
	SB	(1002+58)	*	0.4	+	76	*	1	=	500	
	EB	(69+341)	*	0.6					=	246*	B
	WB	(191+181)	*	0.6					=	223*	1096

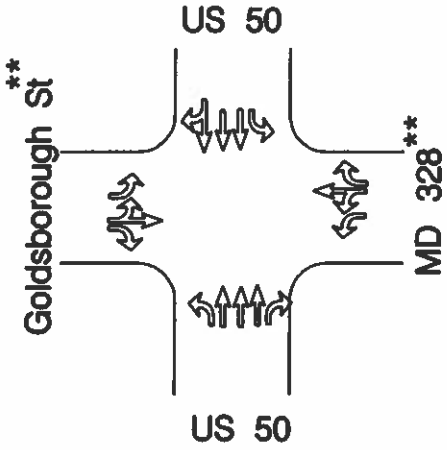
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: BACKGROUND

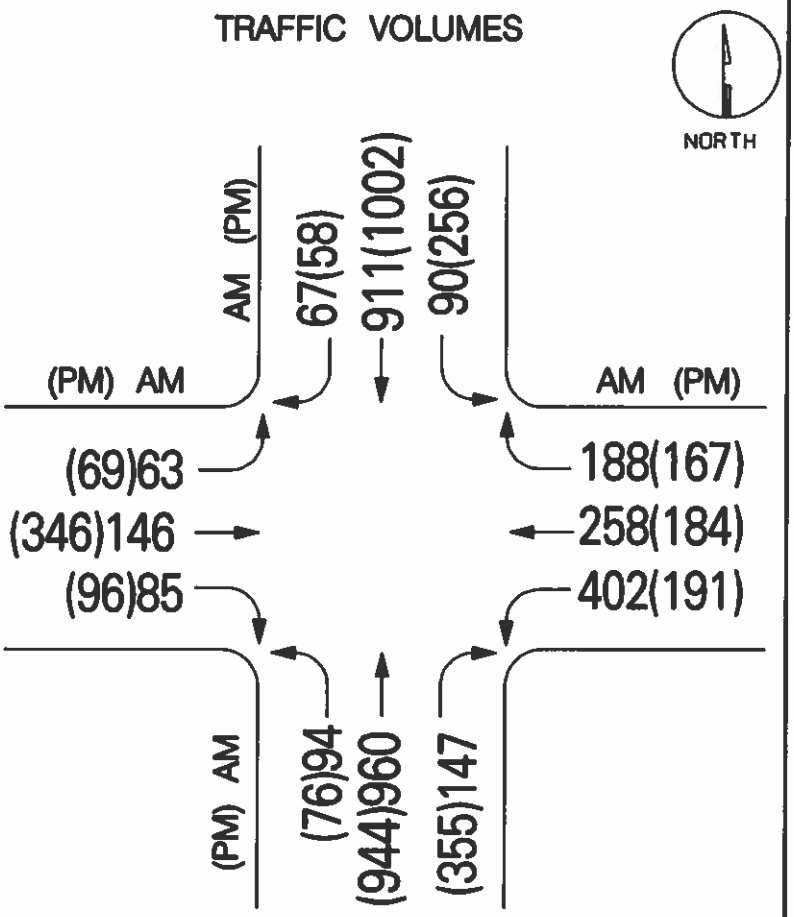
TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

** SPLIT PHASED



TRAFFIC VOLUMES



		TOTAL VOLUME * LUF	*		+	OPPOSING LEFTS * LUF	*		=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	960	*	0.4	+	90	*	1	=	474	
	SB	(911+67)	*	0.4	+	94	*	1	=	485*	
	EB	(63+146)	*	0.6					=	125*	B
	WB	(402+258)	*	0.6					=	396*	1006
PM	NB	944	*	0.4	+	256	*	1	=	634*	
	SB	(1002+58)	*	0.4	+	76	*	1	=	500	
	EB	(69+346)	*	0.6					=	249*	B
	WB	(191+184)	*	0.6					=	225*	1108

CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: FUTURE

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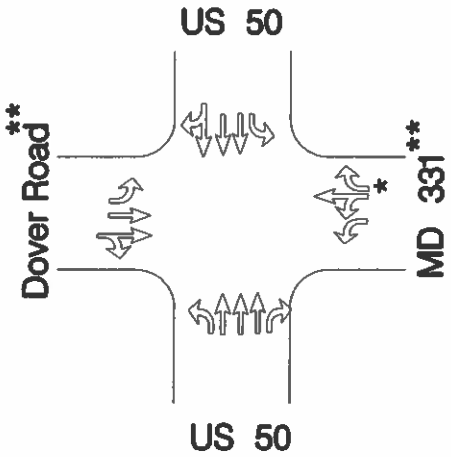
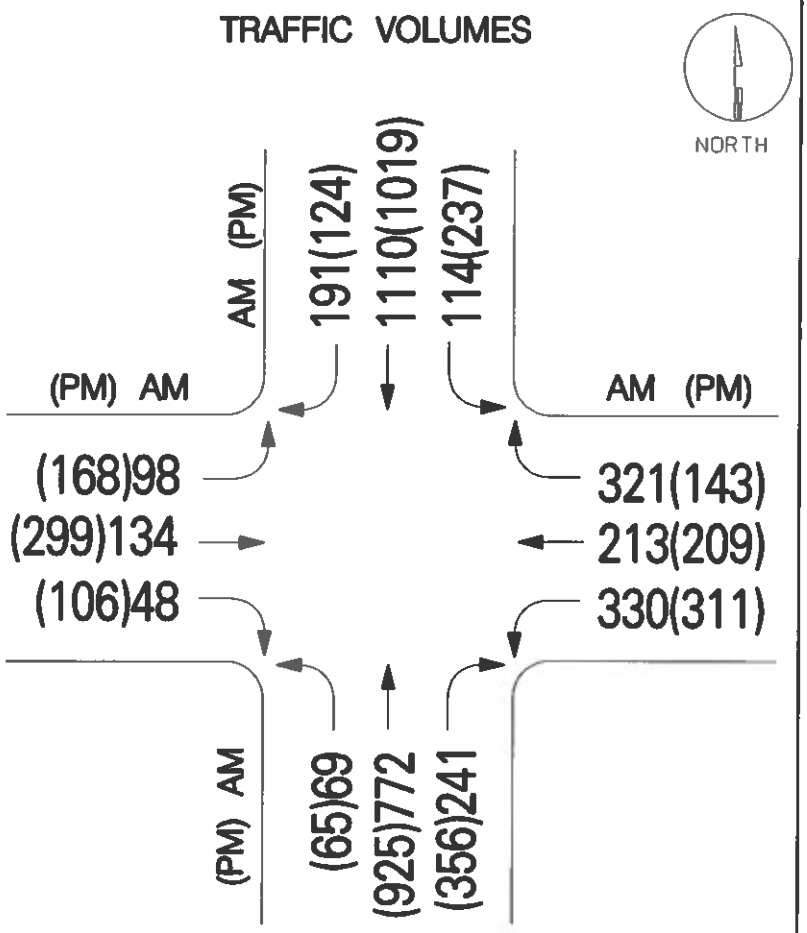
LANE CONFIGURATION
* FREE RIGHT
** SPLIT PHASED



TRAFFIC VOLUMES



		TOTAL VOLUME * LUF	*		+	OPPOSING LEFTS * LUF	*		=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	772	*	0.4	+	114	*	1	=	423	
	SB	(1110+191)	*	0.4	+	69	*	1	=	589*	
	EB	(134+48)	*	0.55					=	100*	B
	WB	(330+213)	*	0.6					=	326*	1015
PM	NB	925	*	0.4	+	237	*	1	=	607*	
	SB	(1019+124)	*	0.4	+	65	*	1	=	522	
	EB	(106+299)	*	0.55					=	223*	B
	WB	(311+209)	*	0.6					=	312*	1142

CRITICAL LANE ANALYSIS

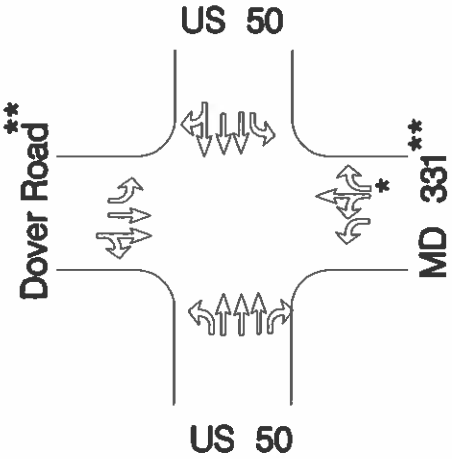
Prepared By: J. CAREY Condition: EXISTING

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

* FREE RIGHT

** SPLIT PHASED



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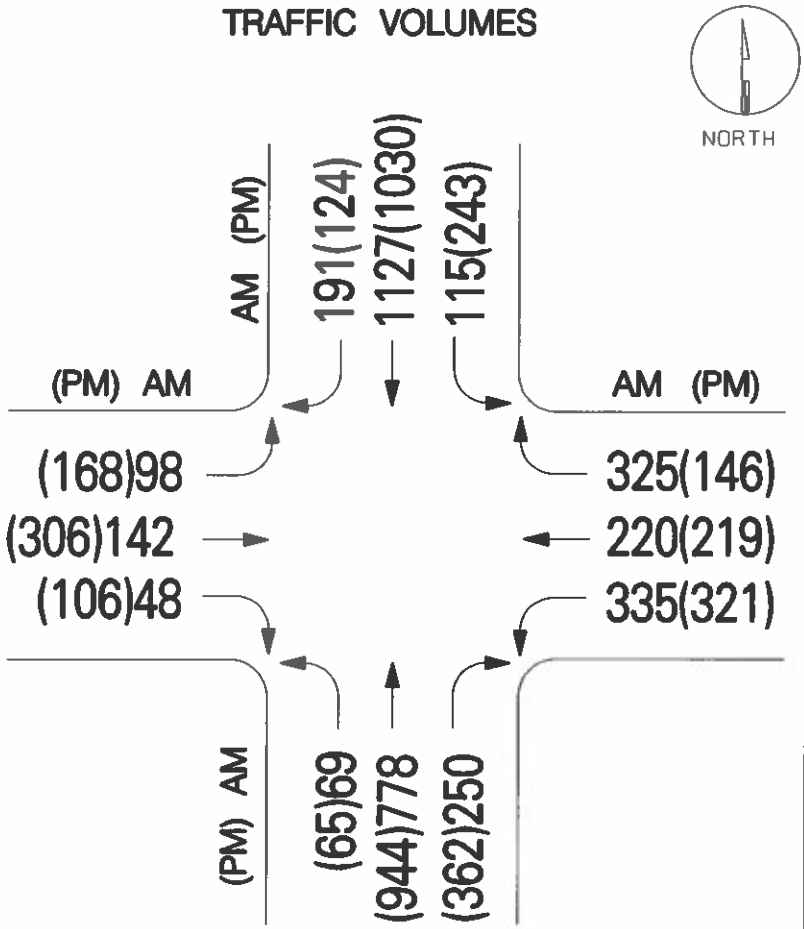

		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	778	*	0.4	+	115	*	1	=	426	
	SB	(1127+191)	*	0.4	+	69	*	1	=	596*	
	EB	(142+48)	*	0.55					=	105*	B
	WB	(333+220)	*	0.6					=	333*	1034
PM	NB	944	*	0.4	+	243	*	1	=	621*	
	SB	(1030+124)	*	0.4	+	65	*	1	=	527	
	EB	(106+306)	*	0.55					=	227*	C
	WB	(321+219)	*	0.6					=	324*	1172

CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: BACKGROUND

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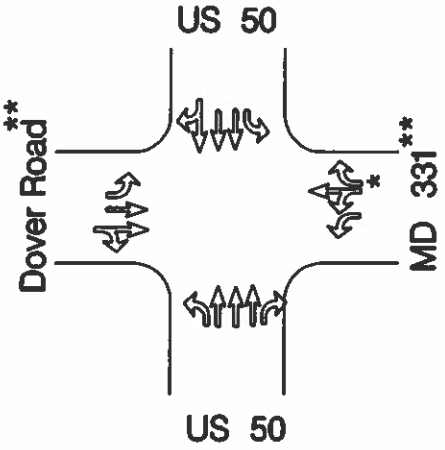
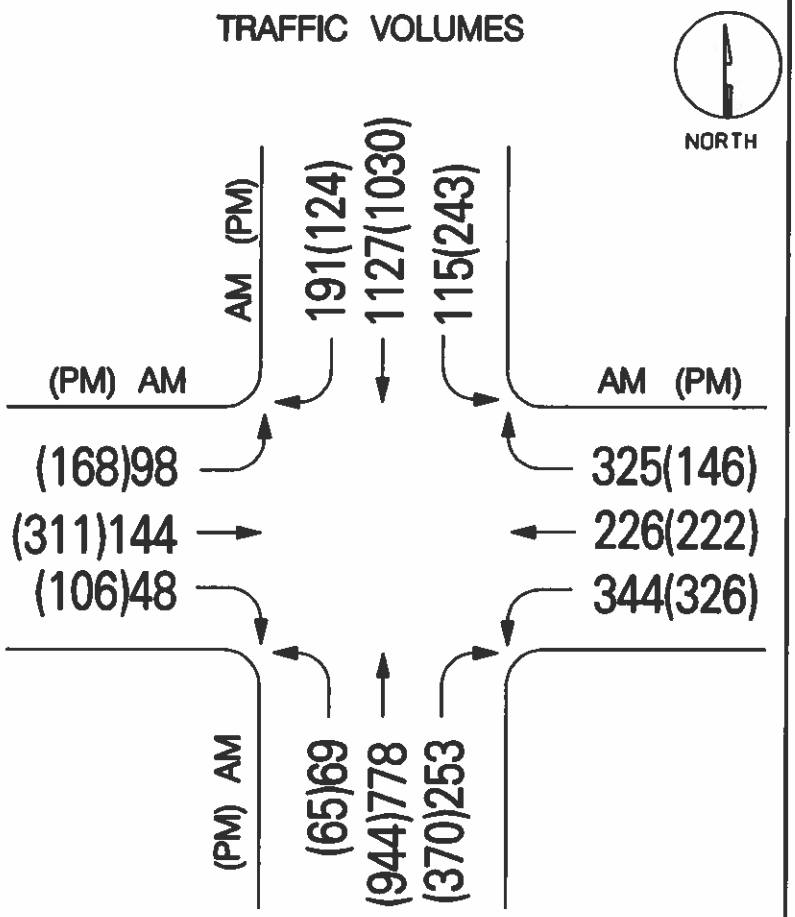
LANE CONFIGURATION

* FREE RIGHT

** SPLIT PHASED



TRAFFIC VOLUMES



		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	778	*	0.4	+	115	*	1	=	426	
	SB	(1127+191)	*	0.4	+	69	*	1	=	596*	
	EB	(144+48)	*	0.55					=	106*	B
	WB	(344+226)	*	0.6					=	342*	1044
PM	NB	944	*	0.4	+	243	*	1	=	621*	
	SB	(1030+124)	*	0.4	+	65	*	1	=	527	
	EB	(106+311)	*	0.55					=	229*	C
	WB	(326+222)	*	0.6					=	329*	1206

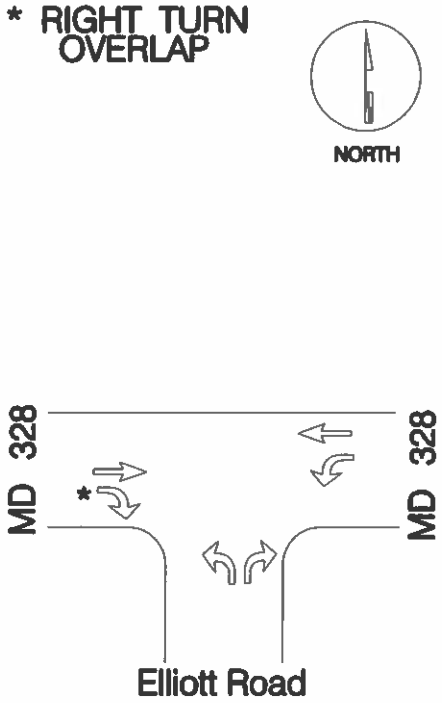
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: FUTURE

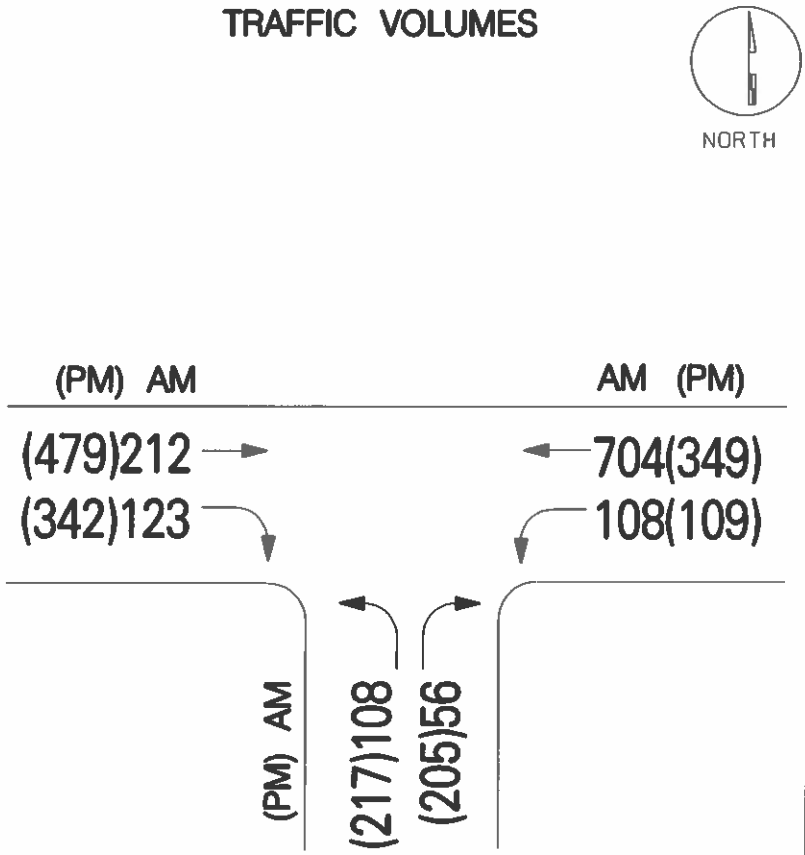
TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

* RIGHT TURN OVERLAP



TRAFFIC VOLUMES



		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	106	*	1					=	106*	
	SB				—					—	
	EB	212	*	1	+	108	*	1	=	320	A
	WB	704	*	1					=	704*	810
PM	NB	217	*	1					=	217*	
	SB				—					—	
	EB	479	*	1	+	109	*	1	=	588*	A
	WB	349	*	1					=	349	805

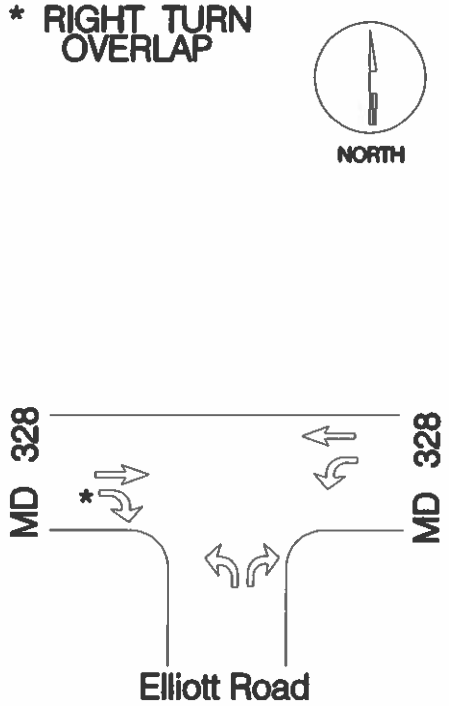
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: EXISTING

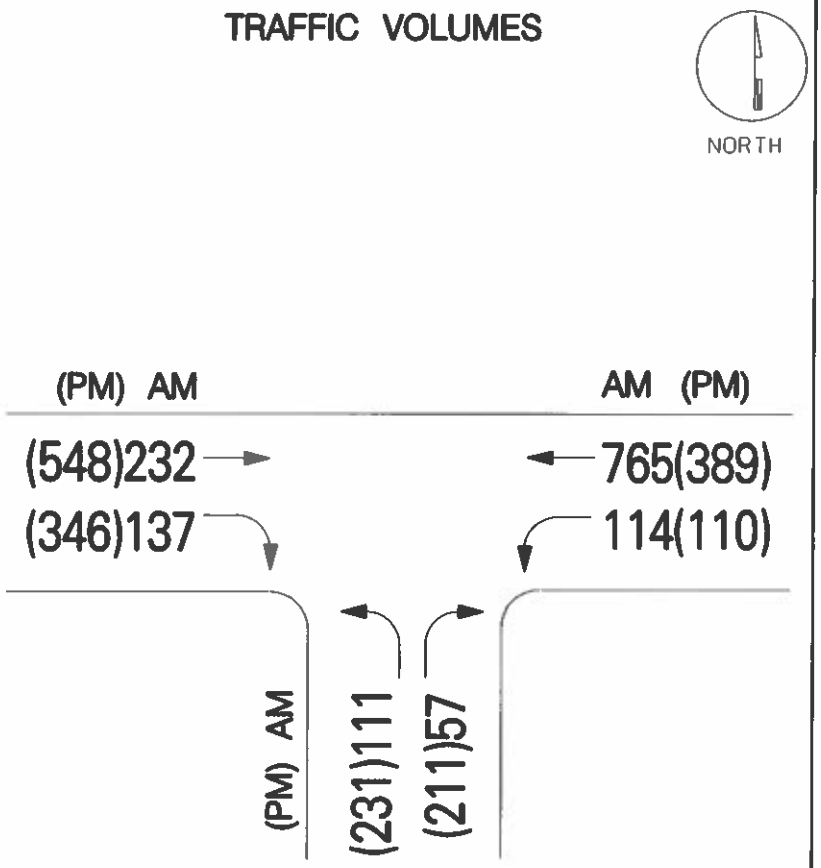
TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

* RIGHT TURN OVERLAP



TRAFFIC VOLUMES



		TOTAL VOLUME * LUF	+	OPPOSING LEFTS * LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	111 * 1			=	111*	
	SB	—				—	
	EB	232 * 1	+	114 * 1	=	346	A
	WB	765 * 1			=	765*	876
PM	NB	231 * 1			=	231*	
	SB	—				—	
	EB	548 * 1	+	110 * 1	=	658*	A
	WB	389 * 1			=	389	889

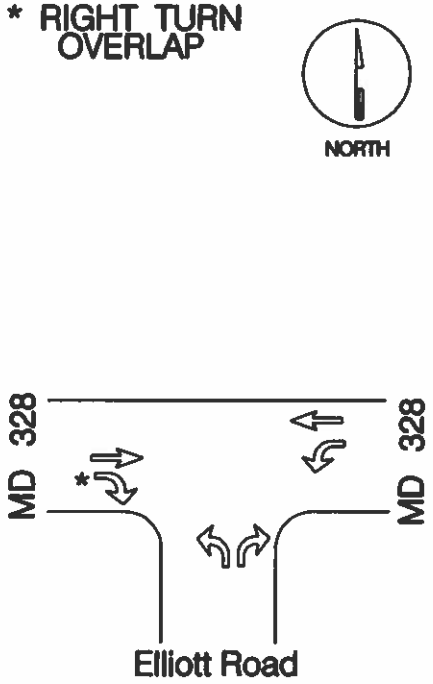
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: BACKGROUND

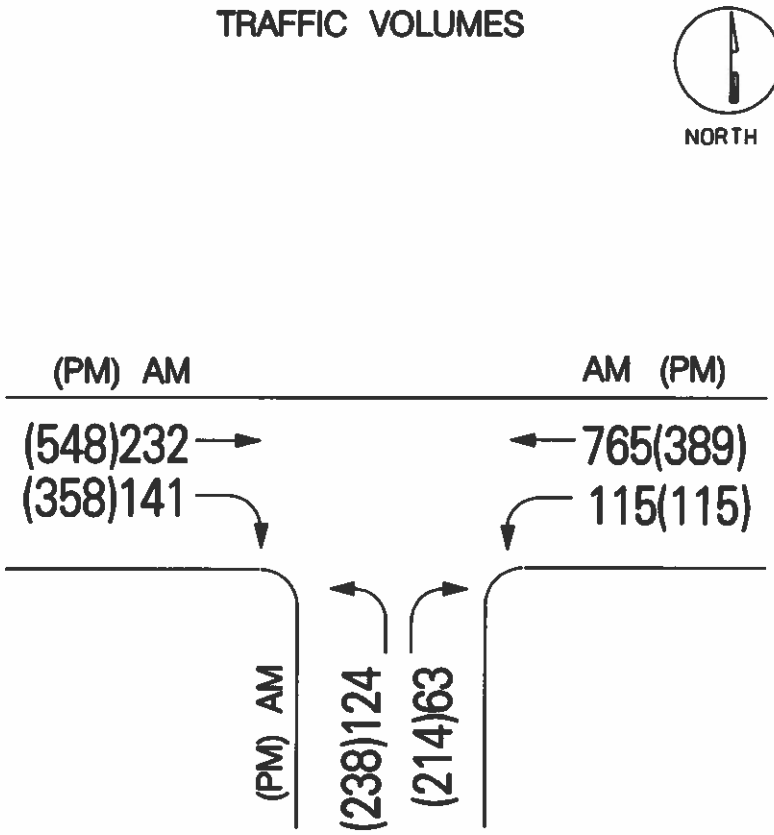
TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

* RIGHT TURN OVERLAP



TRAFFIC VOLUMES



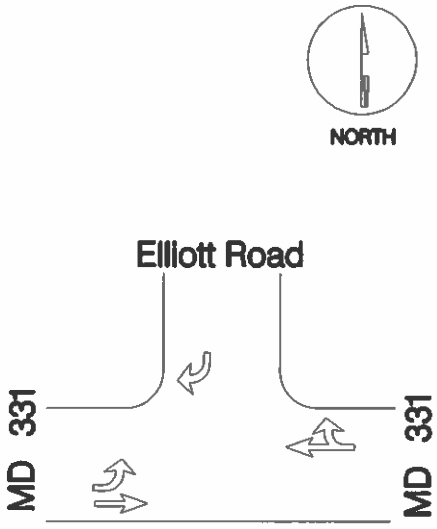
		TOTAL VOLUME * LUF	+	OPPOSING LEFTS * LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	124 * 1			=	124*	
	SB		—			—	
	EB	232 * 1	+	115 * 1	=	347	A
	WB	765 * 1			=	765*	889
PM	NB	238 * 1			=	238*	
	SB		—			—	
	EB	548 * 1	+	115 * 1	=	663*	A
	WB	389 * 1			=	389	901

CRITICAL LANE ANALYSIS

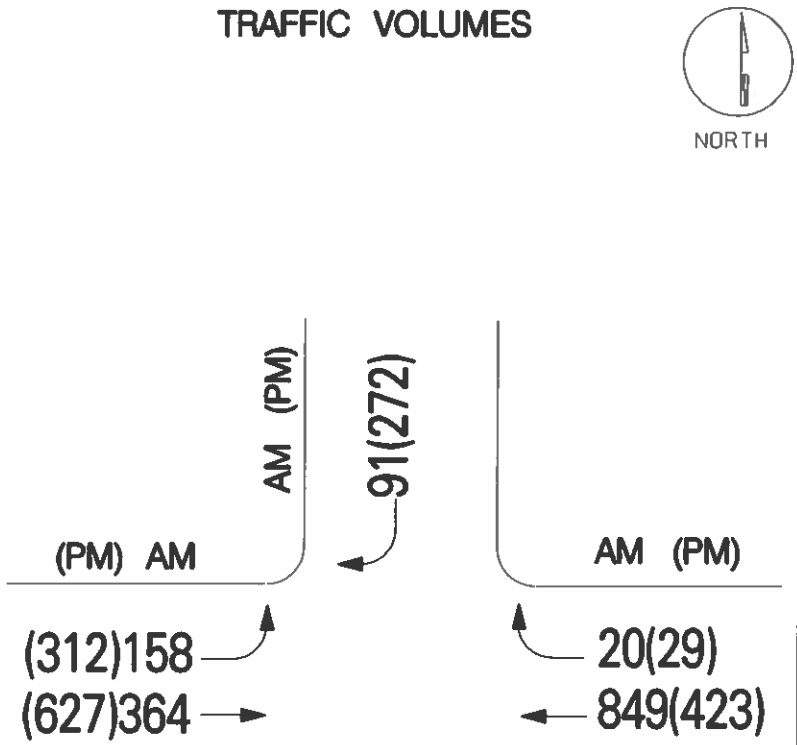
Prepared By: J. CAREY Condition: FUTURE

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION



TRAFFIC VOLUMES



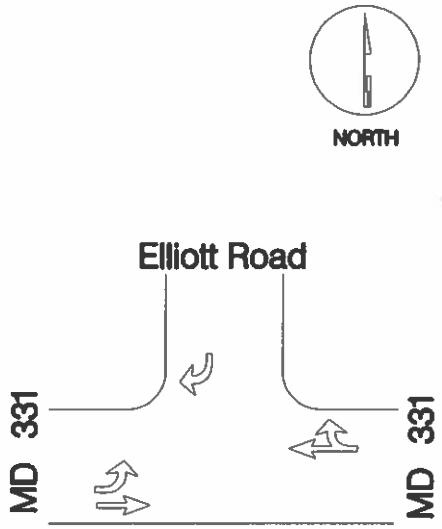
		TOTAL VOLUME * LUF	+	OPPOSING LEFTS * LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	—				—	
	SB	91 * 1	+		=	91*	
	EB	364 * 1	+		=	364	B
	WB	(849+20) * 1	+	158 * 1	=	1027*	1118
PM	NB	—				—	
	SB	272 * 1			=	272*	
	EB	627 * 1			=	627	B
	WB	(423+29) * 1	+	312 * 1	=	764*	1036

CRITICAL LANE ANALYSIS

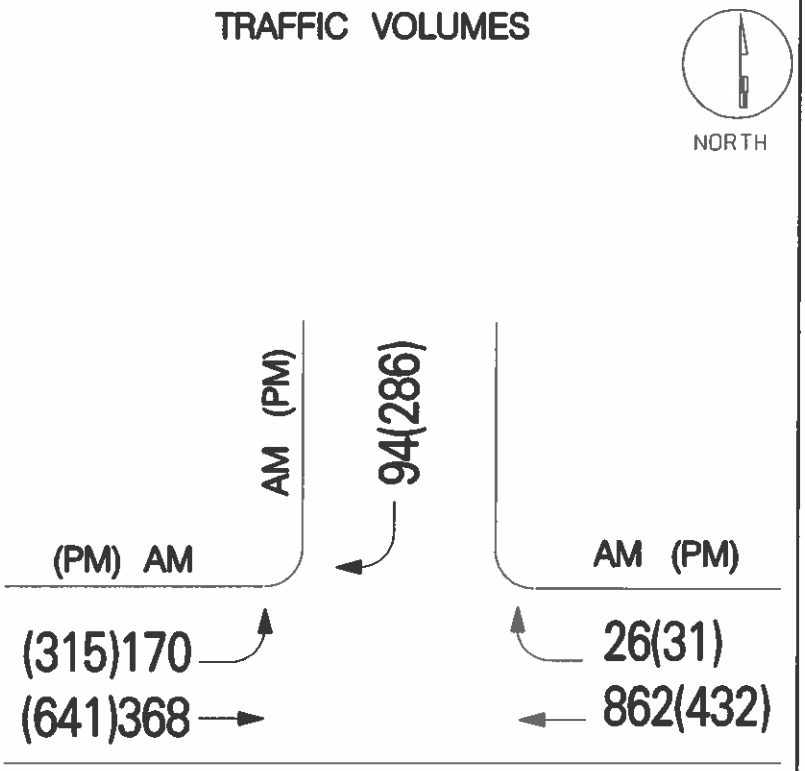
Prepared By: J. CAREY Condition: EXISTING

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION



TRAFFIC VOLUMES



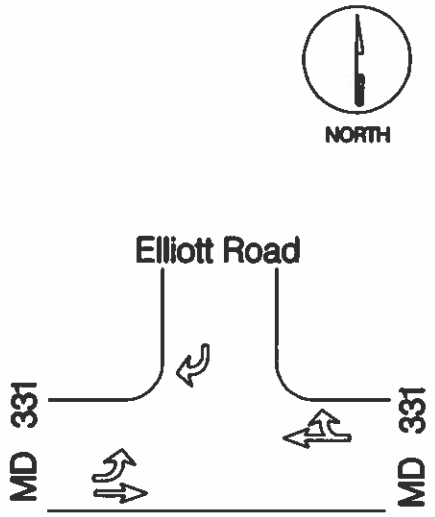
		TOTAL VOLUME * LUF	+	OPPOSING LEFTS * LUF =	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	—			—	
	SB	94 * 1	+	=	94*	
	EB	368 * 1	+	=	368	C
	WB	(862+26) * 1	+	170 * 1 =	1058*	1152
PM	NB	—			—	
	SB	286 * 1		=	286*	
	EB	641 * 1		=	641	B
	WB	(432+31) * 1	+	315 * 1 =	778*	1064

CRITICAL LANE ANALYSIS

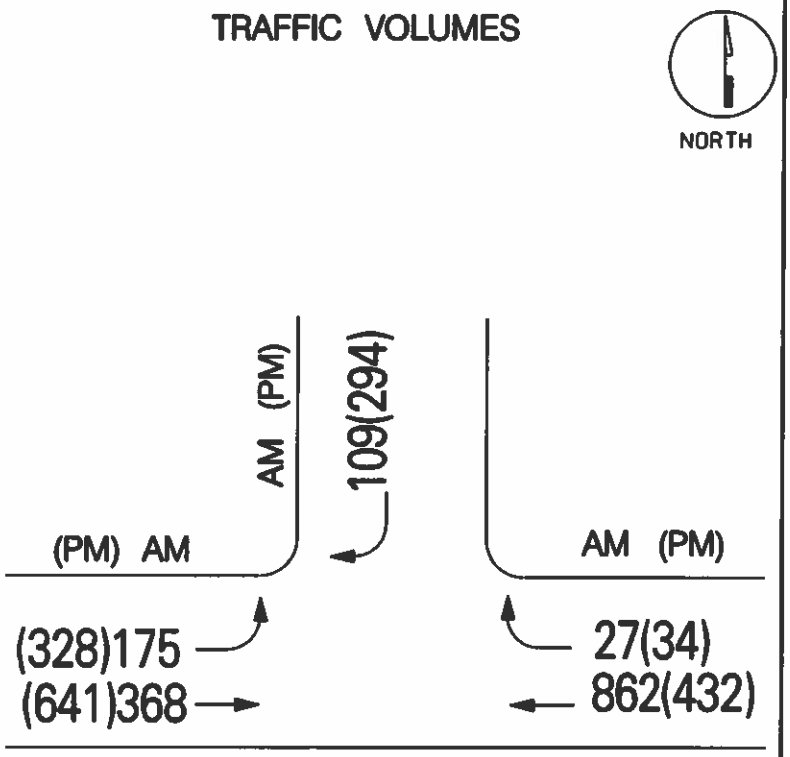
Prepared By: J. CAREY Condition: BACKGROUND

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION



TRAFFIC VOLUMES



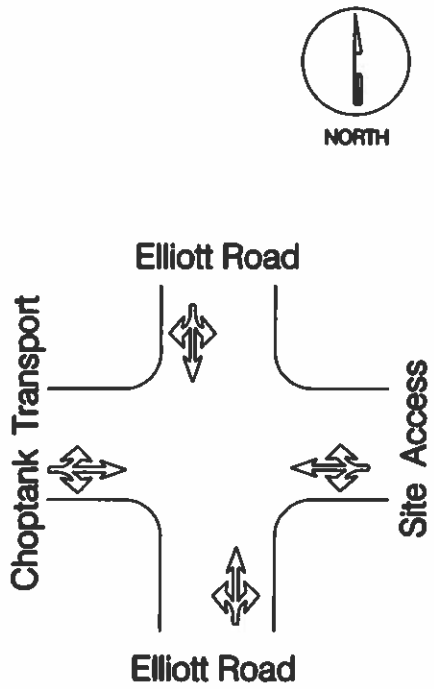
		TOTAL VOLUME * LUF	+	OPPOSING LEFTS * LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	—				—	
	SB	109 * 1	+		=	109*	
	EB	368 * 1	+		=	368	C
	WB	(862+27) * 1	+	175 * 1	=	1064*	1173
PM	NB	—				—	
	SB	294 * 1			=	294*	
	EB	641 * 1			=	641	B
	WB	(432+34) * 1	+	328 * 1	=	794*	1088

CRITICAL LANE ANALYSIS

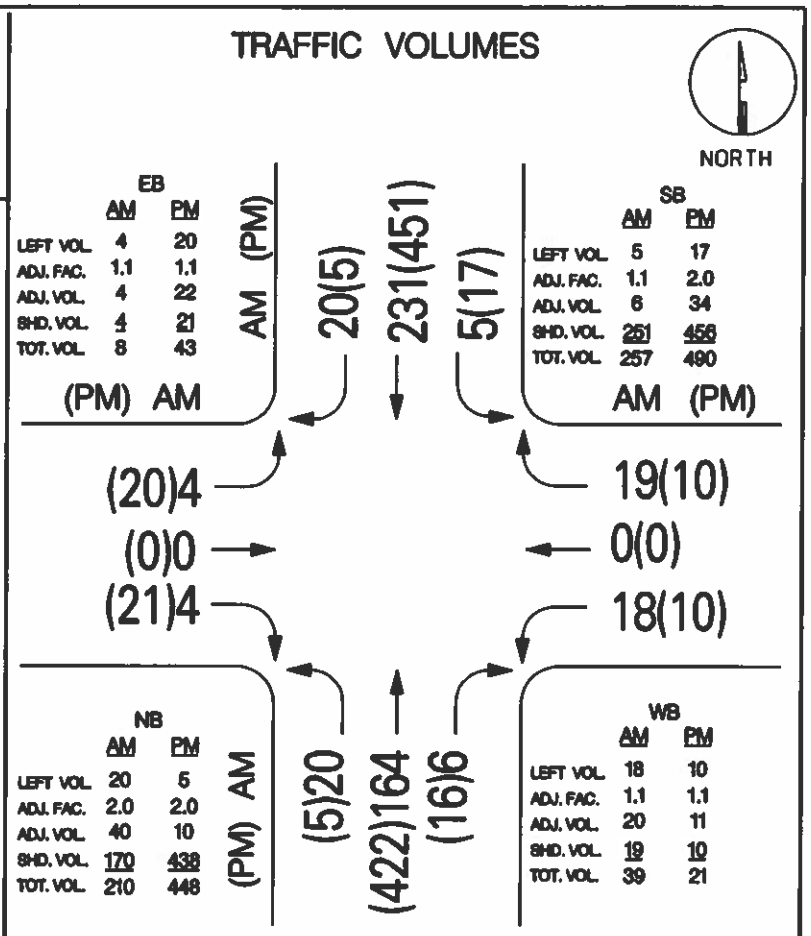
Prepared By: J. CAREY Condition: FUTURE

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION



TRAFFIC VOLUMES



		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	210	*	1	+	5	*	1	=	215	
	SB	257	*	1	+	20	*	1	=	277*	
	EB	8	*	1	+	18	*	1	=	26	A
	WB	39	*	1	+	4	*	1	=	43*	320
PM	NB	448	*	1	+	17	*	1	=	465	
	SB	490	*	1	+	5	*	1	=	495*	
	EB	43	*	1	+	10	*	1	=	53*	A
	WB	21	*	1	+	20	*	1	=	41	548

CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: FUTURE

APPENDIX II

HIGHWAY CAPACITY MANUAL ANALYSES

HCS7 Two-Way Stop-Control Report

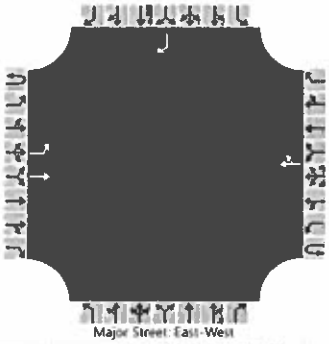
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	9/17/2021
Analysis Year	2021
Time Analyzed	Existing AM
Intersection Orientation	East-West
Project Description	3793

Site Information

Intersection	MD 331 at Elliott Rd
Jurisdiction	Town of Easton, MD
East/West Street	MD 331 (Dover Rd)
North/South Street	Elliott Rd
Peak Hour Factor	0.93
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		0	0	1
Configuration		L	T					TR								R
Volume (veh/h)		158	364				849	20								91
Percent Heavy Vehicles (%)		2														2
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1														6.2
Critical Headway (sec)		4.12														6.22
Base Follow-Up Headway (sec)		2.2														3.3
Follow-Up Headway (sec)		2.22														3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		170														98
Capacity, c (veh/h)		733														327
v/c Ratio		0.23														0.30
95% Queue Length, Q_{95}(veh)		0.9														1.2
Control Delay (s/veh)		11.4														20.7
Level of Service (LOS)		B														C
Approach Delay (s/veh)	3.4												20.7			
Approach LOS													C			

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HCS7 Two-Way Stop-Control Report

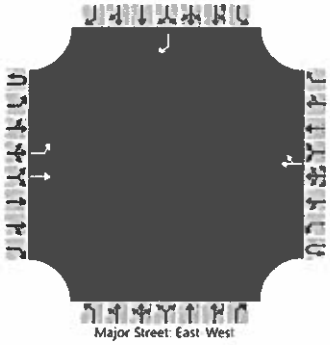
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	9/17/2021
Analysis Year	2021
Time Analyzed	Existing PM
Intersection Orientation	East-West
Project Description	3793

Site Information

Intersection	MD 331 at Elliott Rd
Jurisdiction	Town of Easton, MD
East/West Street	MD 331 (Dover Rd)
North/South Street	Elliott Rd
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		0	0	1
Configuration		L	T					TR								R
Volume (veh/h)		312	627				423	29								272
Percent Heavy Vehicles (%)		2														2
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized													No			
Median Type | Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1														6.2
Critical Headway (sec)		4.12														6.22
Base Follow-Up Headway (sec)		2.2														3.3
Follow-Up Headway (sec)		2.22														3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		339														296
Capacity, c (veh/h)		1072														589
v/c Ratio		0.32														0.50
95% Queue Length, Q_{95}(veh)		1.4														2.8
Control Delay (s/veh)		9.9														17.1
Level of Service (LOS)		A														C
Approach Delay (s/veh)	3.3												17.1			
Approach LOS													C			

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HCS7 Two-Way Stop-Control Report

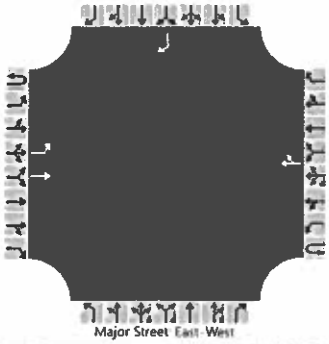
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	9/17/2021
Analysis Year	2024
Time Analyzed	Background AM
Intersection Orientation	East-West
Project Description	3793

Site Information

Intersection	MD 331 at Elliott Rd
Jurisdiction	Town of Easton, MD
East/West Street	MD 331 (Dover Rd)
North/South Street	Elliott Rd
Peak Hour Factor	0.93
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		0	0	1
Configuration		L	T					TR								R
Volume (veh/h)		170	368				862	26								94
Percent Heavy Vehicles (%)		2														2
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1														6.2
Critical Headway (sec)		4.12														6.22
Base Follow-Up Headway (sec)		2.2														3.3
Follow-Up Headway (sec)		2.22														3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		183														101
Capacity, c (veh/h)		720														319
v/c Ratio		0.25														0.32
95% Queue Length, Q_{95}(veh)		1.0														1.3
Control Delay (s/veh)		11.7														21.4
Level of Service (LOS)		B														C
Approach Delay (s/veh)	3.7												21.4			
Approach LOS													C			

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HCS7 Two-Way Stop-Control Report

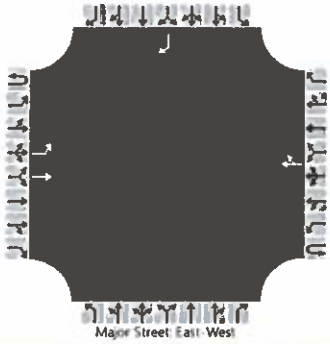
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	9/17/2021
Analysis Year	2024
Time Analyzed	Background PM
Intersection Orientation	East-West
Project Description	3793

Site Information

Intersection	MD 331 at Elliott Rd
Jurisdiction	Town of Easton, MD
East/West Street	MD 331 (Dover Rd)
North/South Street	Elliott Rd
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		0	0	1
Configuration		L	T					TR								R
Volume (veh/h)		315	641				432	31								286
Percent Heavy Vehicles (%)		2														2
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized													No			
Median Type | Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1														6.2
Critical Headway (sec)		4.12														6.22
Base Follow-Up Headway (sec)		2.2														3.3
Follow-Up Headway (sec)		2.22														3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		342														311
Capacity, c (veh/h)		1061														581
v/c Ratio		0.32														0.54
95% Queue Length, Q_{95}(veh)		1.4														3.2
Control Delay (s/veh)		10.0														18.1
Level of Service (LOS)		A														C
Approach Delay (s/veh)	3.3												18.1			
Approach LOS													C			

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HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	I. Halsall	Intersection	MD 331 at Elliott Rd
Agency/Co.	Traffic Concepts, Inc.	Jurisdiction	Town of Easton, MD
Date Performed	3/22/2023	East/West Street	MD 331 (Dover Rd)
Analysis Year	2024	North/South Street	Elliott Rd
Time Analyzed	Future AM	Peak Hour Factor	0.93
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	3793		

Lanes

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		0	0	1
Configuration		L	T					TR								R
Volume (veh/h)		175	368				862	27								109
Percent Heavy Vehicles (%)		2														2
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1														6.2
Critical Headway (sec)		4.12														6.22
Base Follow-Up Headway (sec)		2.2														3.3
Follow-Up Headway (sec)		2.22														3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		188														117
Capacity, c (veh/h)		719														319
v/c Ratio		0.26														0.37
95% Queue Length, Q_{95} (veh)		1.0														1.6
Control Delay (s/veh)		11.8														22.7
Level of Service (LOS)		B														C
Approach Delay (s/veh)	3.8												22.7			
Approach LOS	A												C			

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HCS7 Two-Way Stop-Control Report

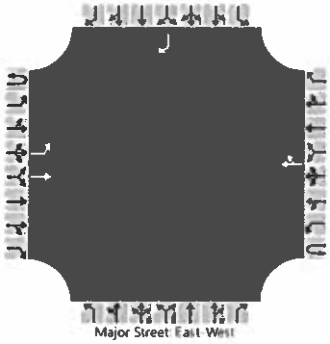
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	9/17/2021
Analysis Year	2024
Time Analyzed	Future PM
Intersection Orientation	East-West
Project Description	3793

Site Information

Intersection	MD 331 at Elliott Rd
Jurisdiction	Town of Easton, MD
East/West Street	MD 331 (Dover Rd)
North/South Street	Elliott Rd
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		0	0	1
Configuration		L	T					TR								R
Volume (veh/h)		328	641				432	34								294
Percent Heavy Vehicles (%)		2														2
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized													No			
Median Type | Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1														6.2
Critical Headway (sec)		4.12														6.22
Base Follow-Up Headway (sec)		2.2														3.3
Follow-Up Headway (sec)		2.22														3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		357														320
Capacity, c (veh/h)		1058														580
v/c Ratio		0.34														0.55
95% Queue Length, Q_{95}(veh)		1.5														3.3
Control Delay (s/veh)		10.1														18.6
Level of Service (LOS)		B														C
Approach Delay (s/veh)	3.4												18.6			
Approach LOS													C			

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HCS Two-Way Stop-Control Report

General Information

Analyst	I. Halsall
Agency/Co.	Traffic Conceps, Inc.
Date Performed	3/22/2023
Analysis Year	2024
Time Analyzed	Future AM
Intersection Orientation	North-South
Project Description	3793

Site Information

Intersection	Elliott Rd at Site Access
Jurisdiction	Town of Easton, MD
East/West Street	Elliott Rd
North/South Street	Site Access
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		4	0	4		18	0	19		20	164	6		5	231	20
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			9				41			22				6		
Capacity, c (veh/h)			564				603			1284				1385		
v/c Ratio			0.02				0.07			0.02				0.00		
95% Queue Length, Q_{95} (veh)			0.0				0.2			0.1				0.0		
Control Delay (s/veh)			11.5				11.4			7.9	0.2	0.2		7.6	0.0	0.0
Level of Service (LOS)			B				B			A	A	A		A	A	A
Approach Delay (s/veh)	11.5				11.4				1.0				0.2			
Approach LOS	B				B				A				A			

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HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	I. Halsall	Intersection	Elliott Rd at Site Access
Agency/Co.	Traffic Conceps, Inc.	Jurisdiction	Town of Easton, MD
Date Performed	3/22/2023	East/West Street	Elliott Rd
Analysis Year	2024	North/South Street	Site Access
Time Analyzed	Future PM	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	3793		

Lanes

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		20	0	21		10	0	10		5	422	16		17	451	5
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			46				22			6				19		
Capacity, c (veh/h)			298				290			1058				1076		
v/c Ratio			0.15				0.08			0.01				0.02		
95% Queue Length, Q_{95} (veh)			0.5				0.2			0.0				0.1		
Control Delay (s/veh)			19.2				18.4			8.4	0.1	0.1		8.4	0.2	0.2
Level of Service (LOS)			C				C			A	A	A		A	A	A
Approach Delay (s/veh)	19.2				18.4				0.2				0.5			
Approach LOS	C				C				A				A			

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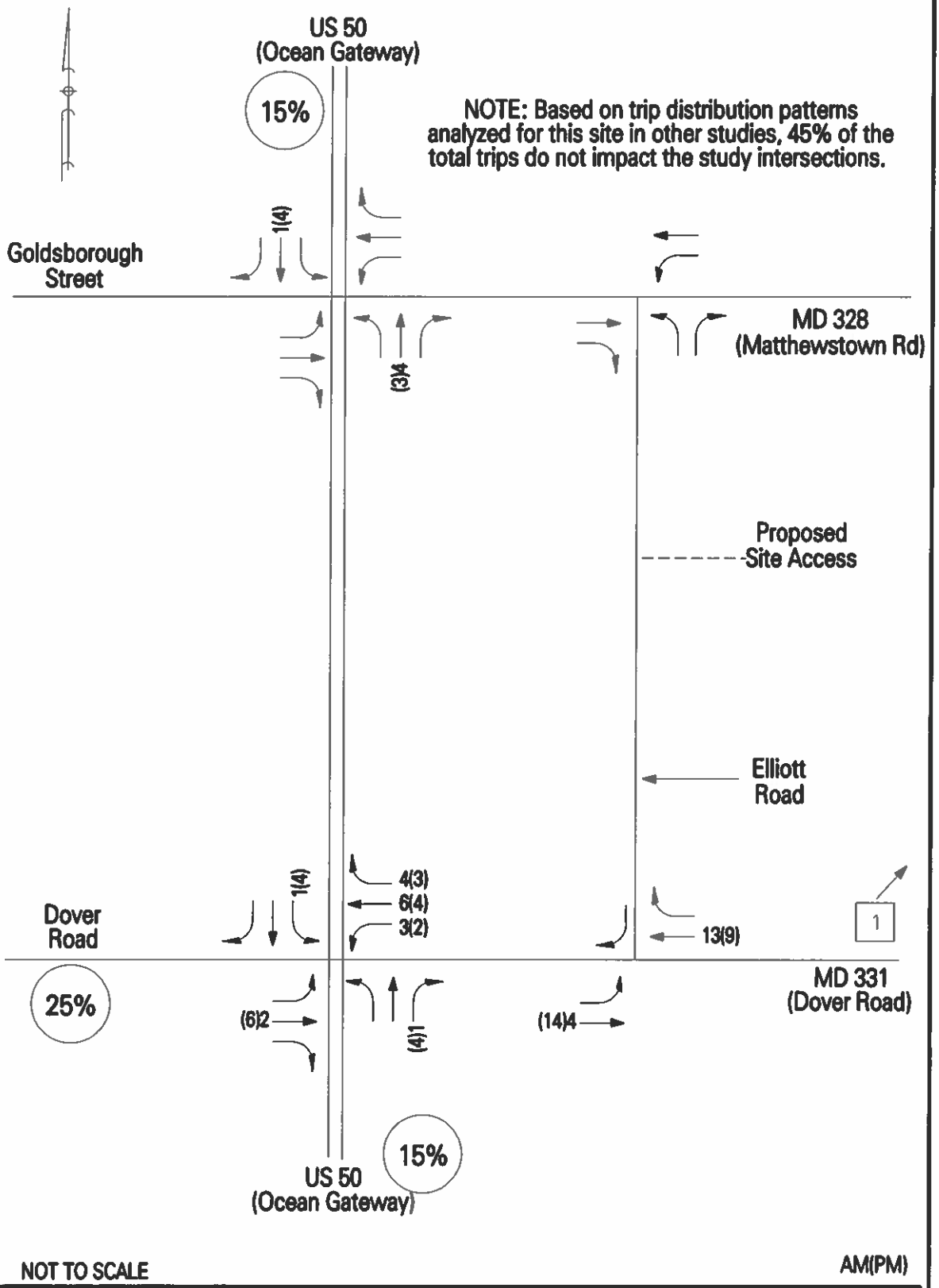
APPENDIX III

BACKGROUND TRAFFIC DATA



TRAFFIC CONCEPTS, INC.
7525 Connelley Drive
Suite B
Hanover, Maryland 21076
410-760-2911

BACKGROUND 1
Brant Court Apartments

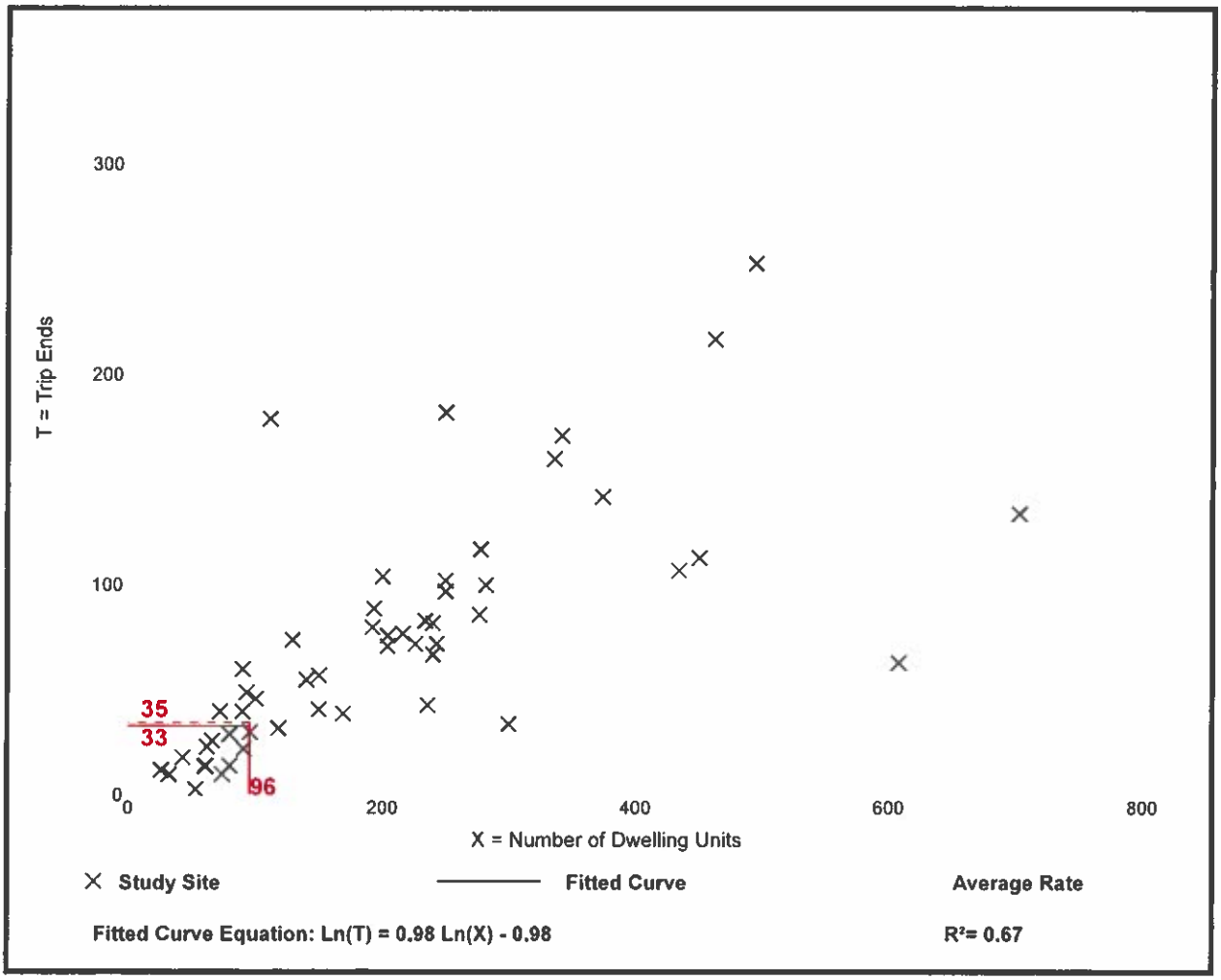
Multifamily Housing (Mid-Rise)
(221)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	53
Avg. Num. of Dwelling Units:	207
Directional Distribution:	26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.06 - 1.61	0.19

Data Plot and Equation



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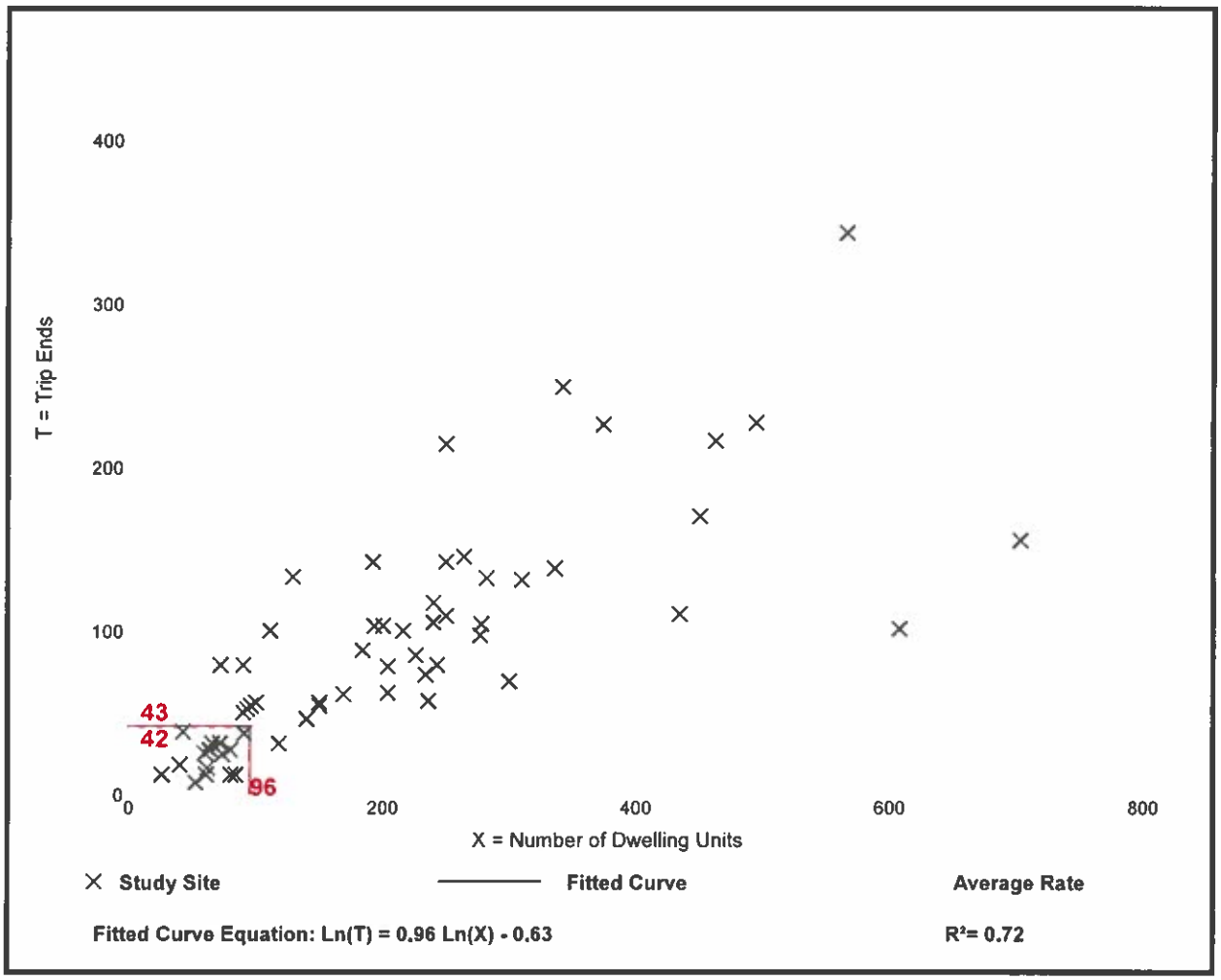
Multifamily Housing (Mid-Rise)
(221)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	60
Avg. Num. of Dwelling Units:	208
Directional Distribution:	61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.44	0.15 - 1.11	0.19

Data Plot and Equation



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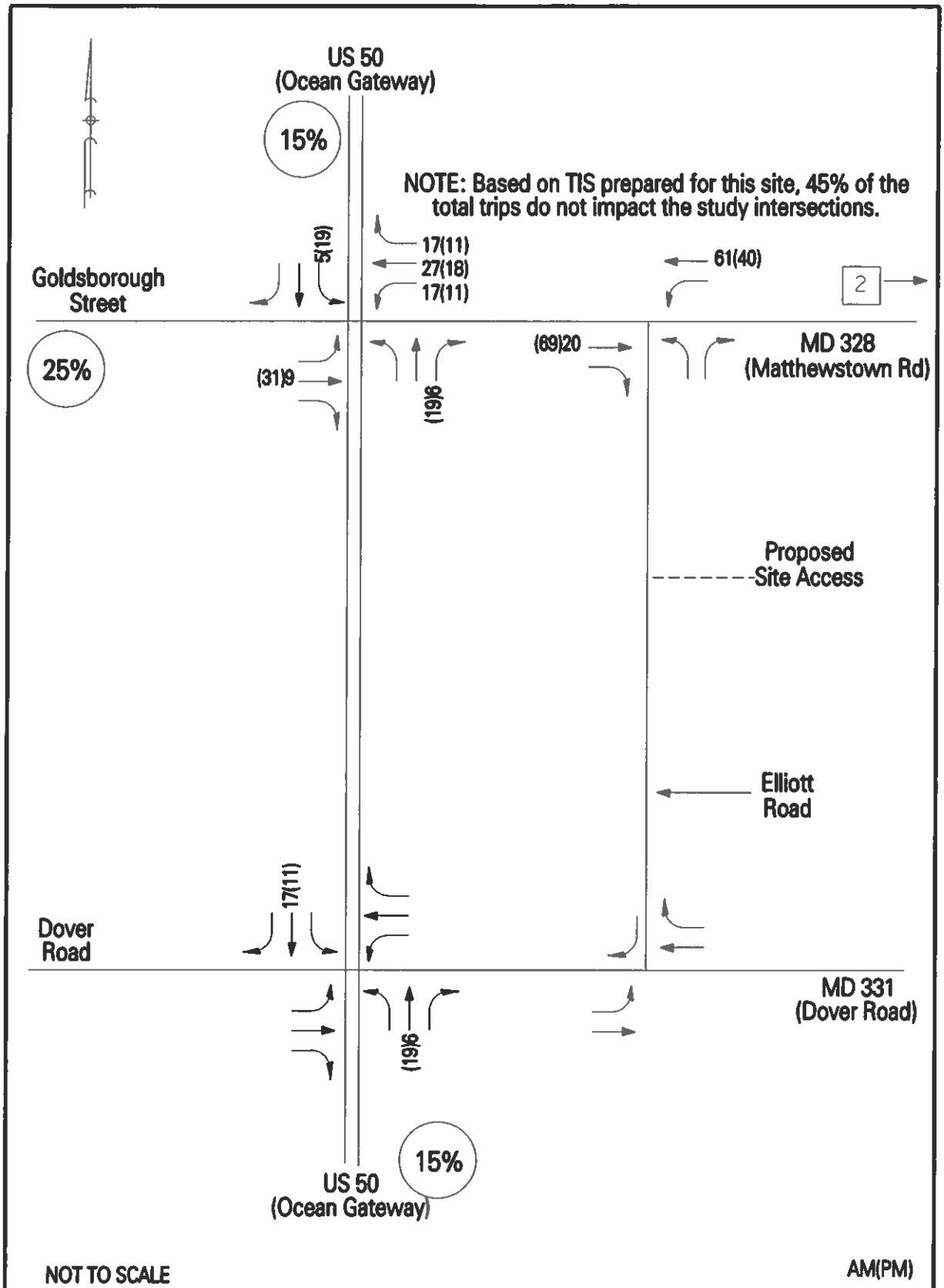

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BACKGROUND 2
DR Horton
(aka Lands of Gannon Family)

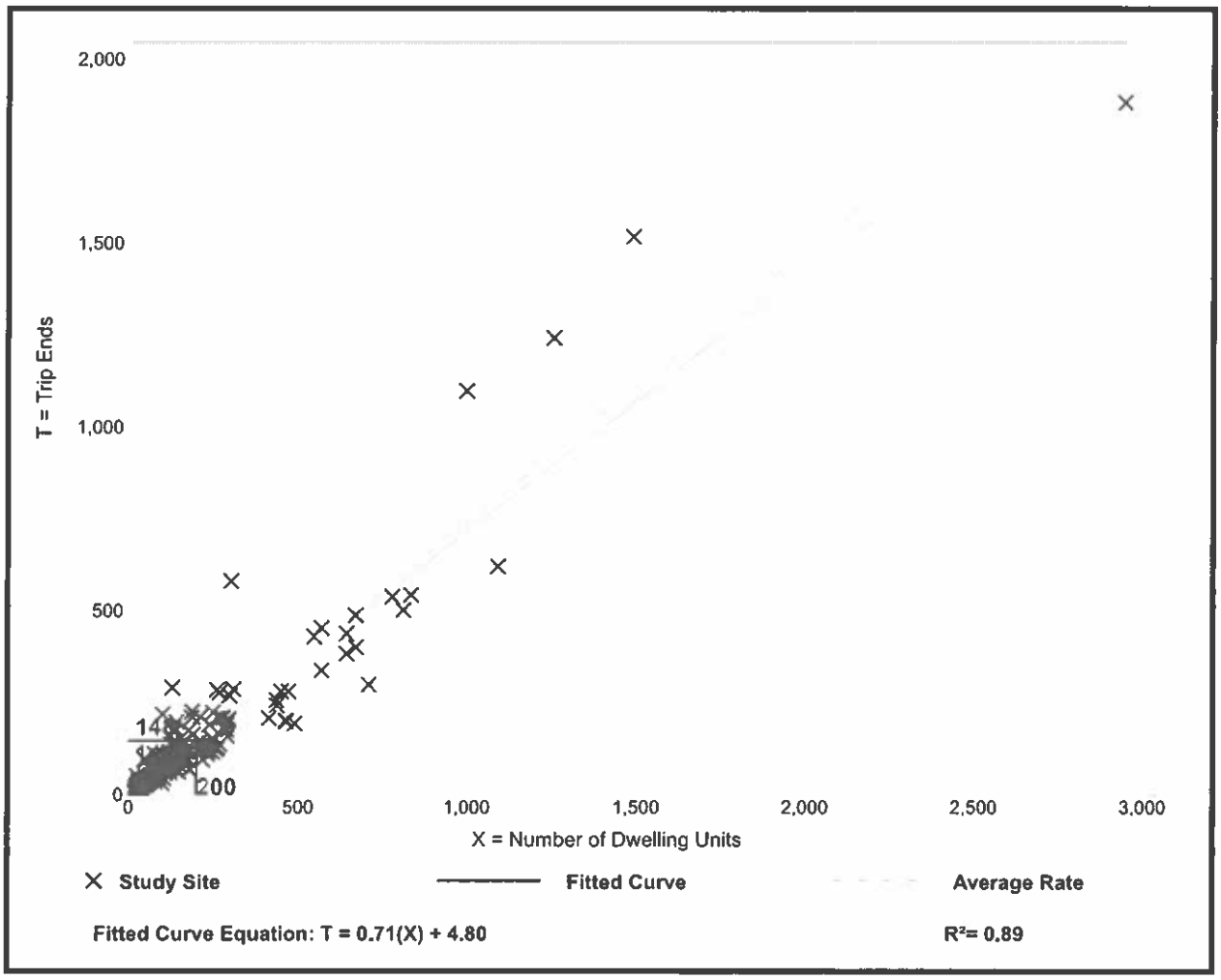
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	173
Avg. Num. of Dwelling Units:	219
Directional Distribution:	25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.74	0.33 - 2.27	0.27

Data Plot and Equation



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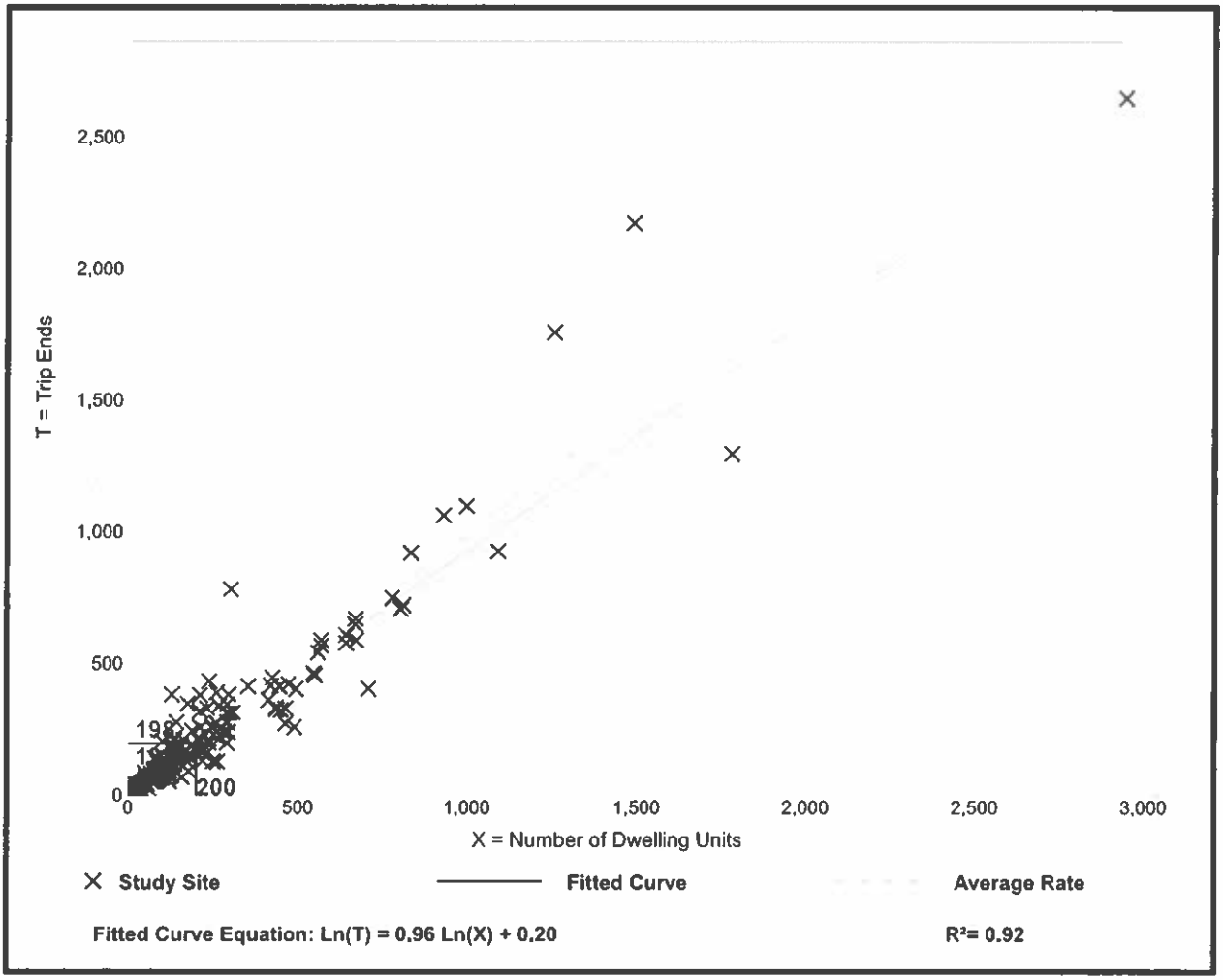
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	190
Avg. Num. of Dwelling Units:	242
Directional Distribution:	63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.99	0.44 - 2.98	0.31

Data Plot and Equation



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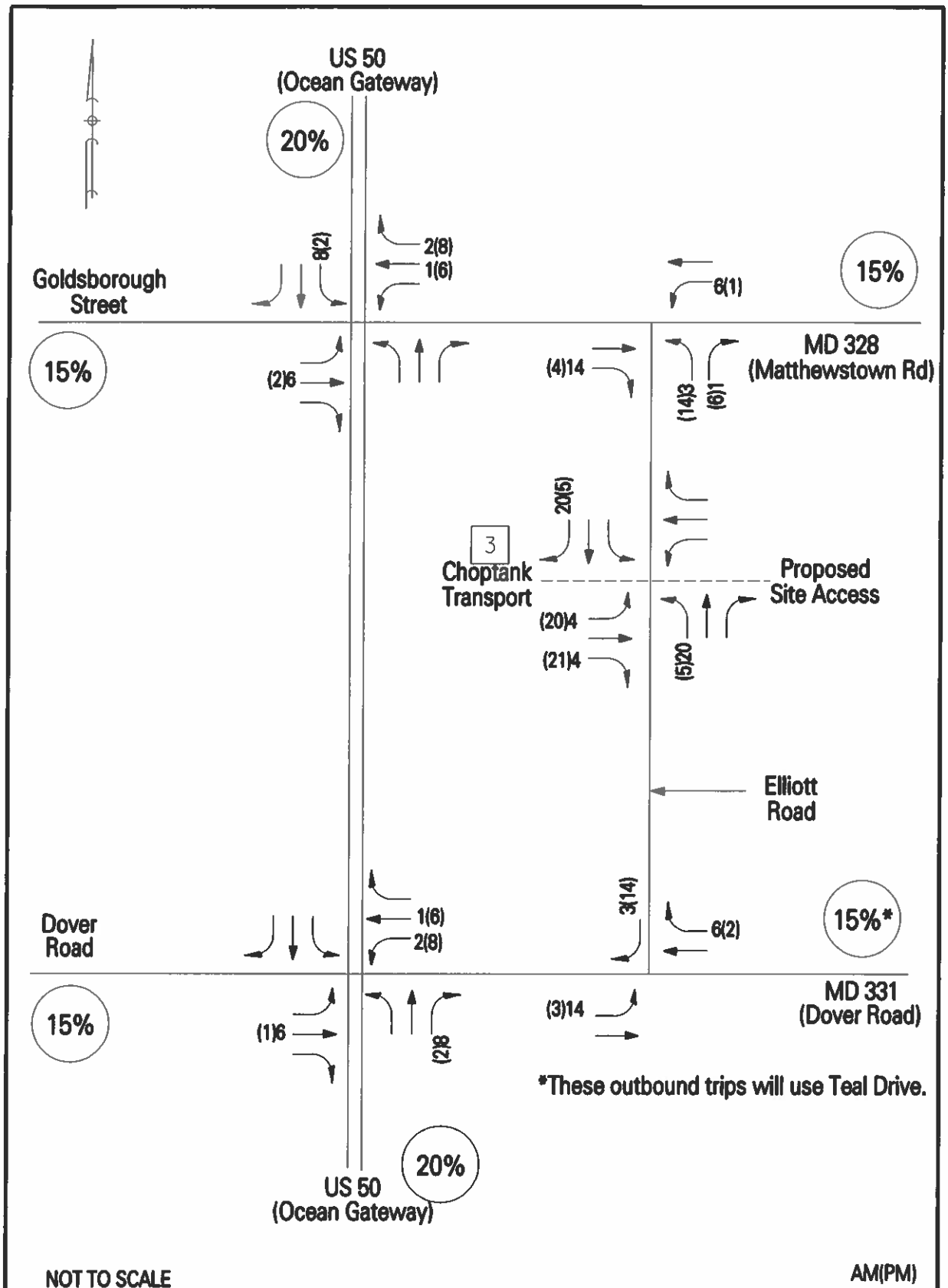

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BACKGROUND 3
Choptank Transport

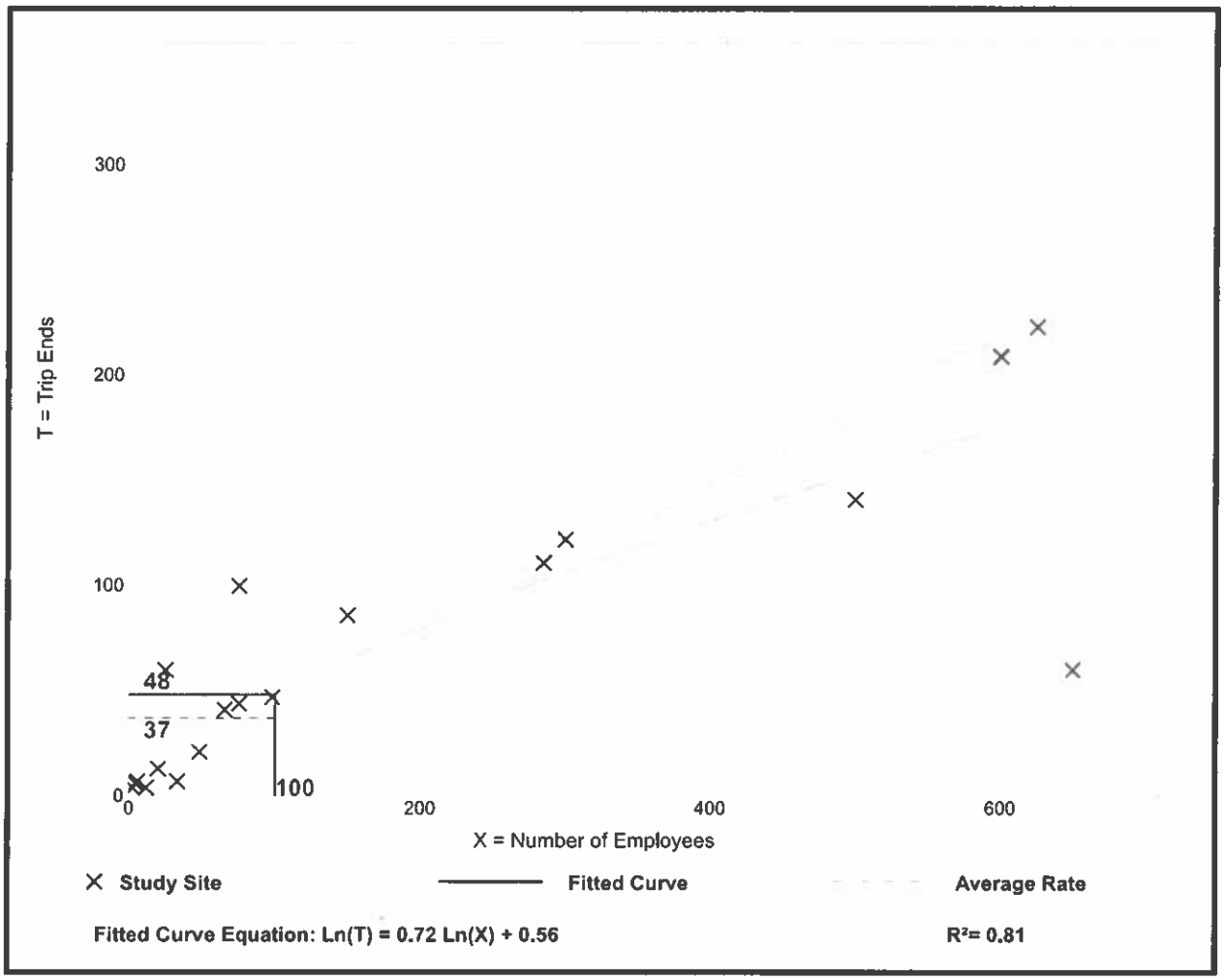
General Office Building
(710)

Vehicle Trip Ends vs:	**Employees**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	19
Avg. Num. of Employees:	188
Directional Distribution:	83% entering, 17% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.37	0.09 - 2.40	0.27

Data Plot and Equation



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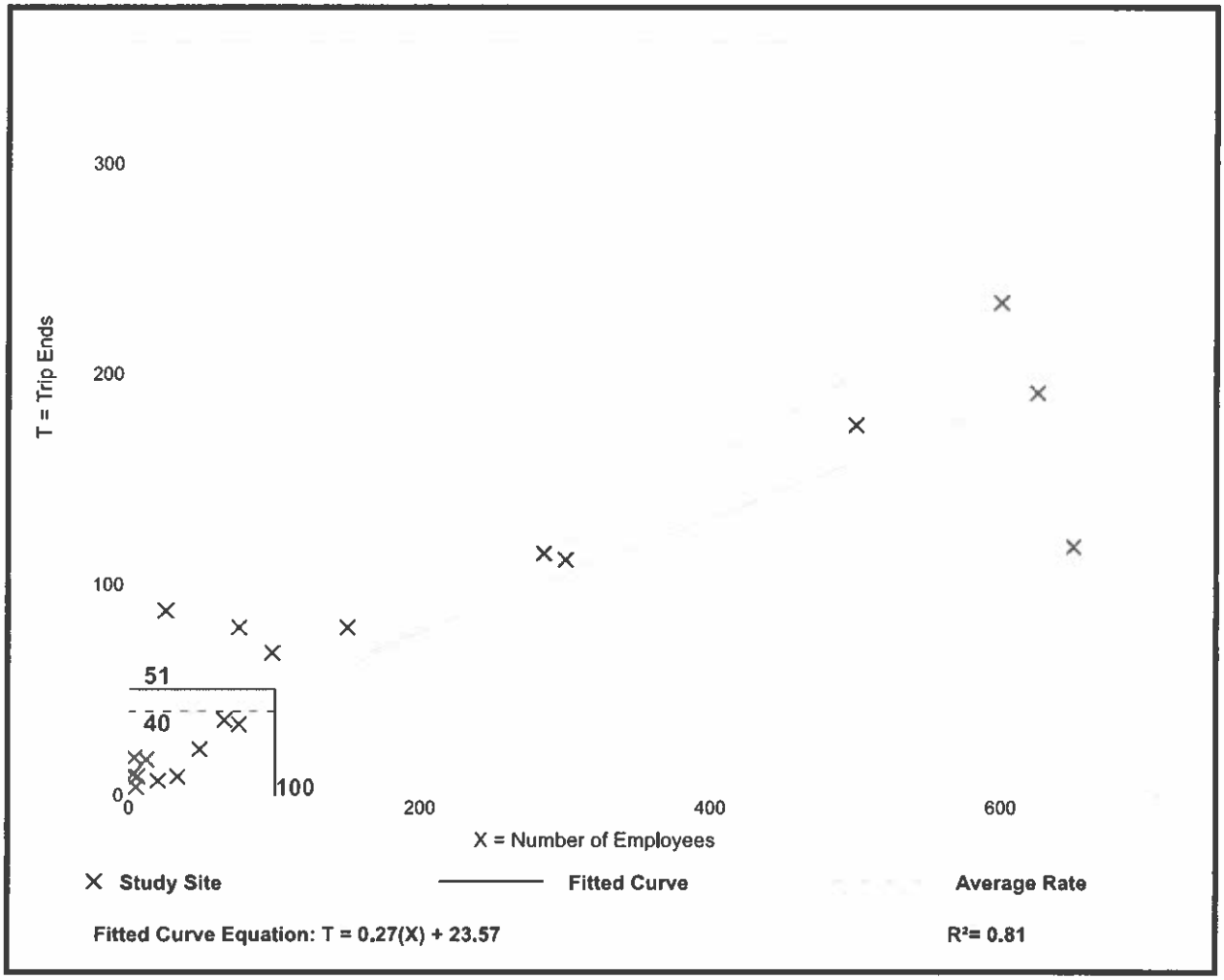
General Office Building
(710)

Vehicle Trip Ends vs:	**Employees**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	20
Avg. Num. of Employees:	179
Directional Distribution:	20% entering, 80% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.40	0.18 - 4.50	0.36

Data Plot and Equation



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APPENDIX IV

TRAFFIC
COUNT DATA

MARYLAND DEPARTMENT OF TRANSPORTATION

STATE HIGHWAY ADMINISTRATION

County:	TALBOT		Municipality:	NONE	
Prefix:	MD	Route NO: 328	Suffix:		Mile Point: 0.5
Location:	MD328-.50 MI E OF US50				
Begin Sect:	0		End Sect:	6.51	
Station Desc:	US 50 TO LEWISTOWN RD				
Func Class:	17-URBAN COLLECTOR		Location ID:	B3821	

Year	AADT	AAWDT	Single Unit	Combination Unit	K Factor	D Factor	North East Split	South West Split	Dir In Peak Hour
2020	8,552	9,242	5	1	8.55	64.58	50.03	49.97	EAST
2019	10,241	10,861	5	1	8.55	64.58	50.03	49.97	EAST
2018	10,240	10,960	5	1	8.55	64.58	50.03	49.97	EAST
2017	10,452	11,182	6	1	8.91	62.86	49.32	50.68	EAST
2016	10,201	10,921	6	1	8.91	62.86	49.32	50.68	EAST
2015	10,010	10,710	6	1	8.91	62.86	49.32	50.68	EAST
2014	10,132	10,842	7	1	8.86	62.42	49.36	50.64	EAST
2013	10,161	10,971	7	1	8.86	62.42	49.36	50.64	EAST
2012	10,140	10,950	6	1	8.86	62.42	49.36	50.64	EAST
2011	10,332	11,162	5	1	8.77	60.32	49.99	50.01	EAST

Note

AADT: Annual Average Daily Traffic is the number of vehicles expected to pass a given location on an average day of the year.

AAWDT: Annual Average Weekday Traffic is the number of vehicles expected to pass a given location on an average Weekday (Monday – Friday).

Single Unit: Percentage of Trucks (FHWA Classes 4 -7).

Combination Unit: Percentage of Trucks (FHWA Classes 8-13).

K Factor: Proportion of Annual Average Daily Traffic occurring in the 30th highest hour volume for Continuous count station and Peak hour volume for Short duration count stations.

D Factor: Percentage of traffic moving in the peak direction during the 30th highest hour volume for Continuous count station and Peak hour volume for Short duration count stations.

North East Split: Percentage of traffic in the North or East Direction.

South West Split: Percentage of traffic in the South or West Direction.

Peak Hour Direction: The direction with largest volume in the peak hour.

MARYLAND DEPARTMENT OF TRANSPORTATION

STATE HIGHWAY ADMINISTRATION

County:	TALBOT		Municipality:	NONE	
Prefix:	US	Route NO: 50	Suffix:		Mile Point: 12
Location:	US50-.50 MI E OF MD331				
Begin Sect:	8.72		End Sect:	14.65	
Station Desc:	MD 322 to MD 565/Landing Neck Rd				
Func Class:	14-URBAN OTHER PRINCIPAL ARTERIAL		Location ID:	B3812	

Year	AADT	AAWDT	Single Unit	Combination Unit	K Factor	D Factor	North East Split	South West Split	Dir In Peak Hour
2020	31,763	33,033	8	5	7.31	52.5	53.07	46.93	EAST
2019	38,362	39,902	7	4	7.31	52.5	53.07	46.93	EAST
2018	37,901	39,801	7	4	7.31	52.5	53.07	46.93	EAST
2017	38,130	40,040	5	3	7.31	52.5	53.07	46.93	EAST
2016	35,812	38,322	7	5	7.38	51.28	50.34	49.66	EAST
2015	35,071	37,531	7	5	7.38	51.28	50.34	49.66	EAST
2014	33,660	36,020	7	5	7.38	51.28	50.34	49.66	EAST
2013	23,542	25,432	9	5	7.32	51.88	47.93	52.07	EAST
2012	23,631	25,521	9	5	7.32	51.88	47.93	52.07	EAST
2011	23,560	25,450	6	4	7.32	51.88	47.93	52.07	EAST

Note

AADT: Annual Average Daily Traffic is the number of vehicles expected to pass a given location on an average day of the year.

AAWDT: Annual Average Weekday Traffic is the number of vehicles expected to pass a given location on an average Weekday (Monday – Friday).

Single Unit: Percentage of Trucks (FHWA Classes 4 -7).

Combination Unit: Percentage of Trucks (FHWA Classes 8-13).

K Factor: Proportion of Annual Average Daily Traffic occurring in the 30th highest hour volume for Continuous count station and Peak hour volume for Short duration count stations.

D Factor: Percentage of traffic moving in the peak direction during the 30th highest hour volume for Continuous count station and Peak hour volume for Short duration count stations.

North East Split: Percentage of traffic in the North or East Direction.

South West Split: Percentage of traffic in the South or West Direction.

Peak Hour Direction: The direction with largest volume in the peak hour.

PEAK HOUR TURNING MOVEMENT COUNT

INTERSECTION: US 50 @ MD 328 (GOLDSBOROUGH ST) **COUNTY:** TALBOT

COUNT BY: B.SMITH **DATE:** SEPTEMBER 8, 2021

WEATHER: CLEAR **DAY:** WEDNESDAY

	US 50 NORTHBOUND			US 50 SOUTHBOUND			GOLDSBOROUGH ST EASTBOUND			MD 328 WESTBOUND			
TIME	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
AM													
7:00-7:15	18	223	32	20	184	10	10	10	9	75	24	26	641
7:15-7:30	23	229	28	17	247	11	12	23	10	113	44	39	796
7:30-7:45	21	228	34	17	212	19	10	29	19	105	55	40	789
7:45-8:00	29	274	39	18	226	27	20	40	31	85	66	43	898
8:00-8:15	21	225	40	23	225	10	21	37	25	82	59	40	808
8:15-8:30	19	224	41	28	201	11	12	30	13	66	46	54	745
8:30-8:45	16	212	34	27	205	11	12	39	19	47	31	46	699
8:45-9:00	11	227	24	28	203	17	14	27	16	55	42	35	699
PEAK HR 7:15-8:15 TOTALS	**94**	**956**	**141**	**75**	**910**	**67**	**63**	**129**	**85**	**385**	**224**	**162**	**PHF 0.92**
PM													
4:00-4:15	24	192	78	53	239	13	21	70	23	33	31	37	814
4:15-4:30	19	246	76	65	264	11	16	84	33	36	32	35	917
4:30-4:45	19	222	81	50	239	15	15	77	17	39	46	43	863
4:45-5:00	20	233	90	63	251	15	15	71	22	55	42	35	912
5:00-5:15	18	240	89	50	244	17	23	76	24	50	37	31	899
5:15-5:30	16	225	70	49	239	16	15	66	20	39	49	43	847
5:30-5:45	15	211	62	45	185	14	11	65	24	35	44	34	745
5:45-6:00	15	181	43	32	181	14	14	50	13	47	32	36	658
PEAK HR 4:15-5:15 TOTALS	**76**	**941**	**336**	**228**	**998**	**58**	**69**	**308**	**96**	**180**	**157**	**144**	**PHF 0.98**

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HANOVER, MARYLAND 21076
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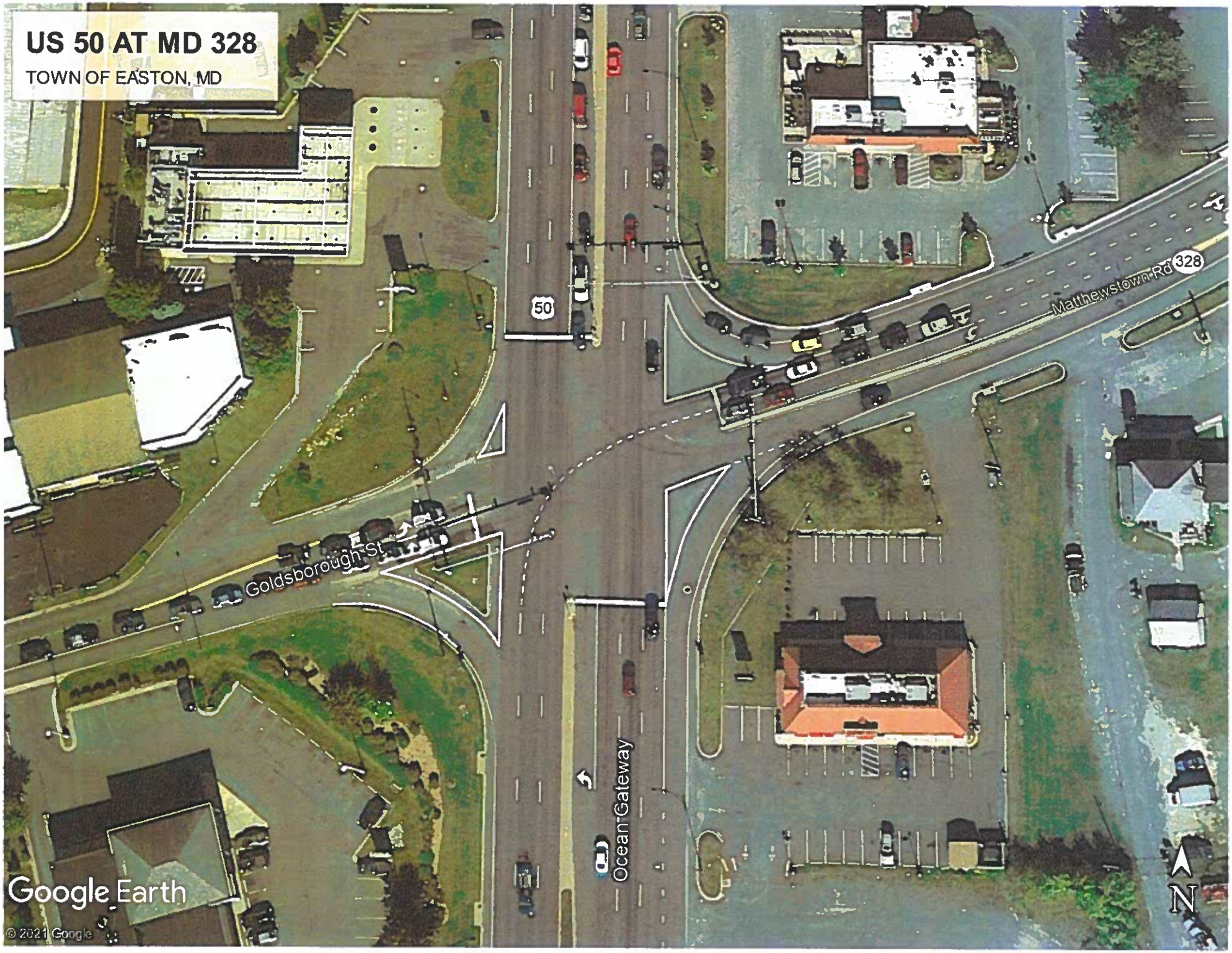
US 50 AT MD 328
TOWN OF EASTON, MD
50
Matthewstown Rd
328
Goldsborough St
Ocean Gateway
Google Earth
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PEAK HOUR TURNING MOVEMENT COUNT

INTERSECTION: US 50 @ MD 331 (DOVER RD) **COUNTY:** TALBOT

COUNT BY: B.SMITH **DATE:** SEPTEMBER 8, 2021

WEATHER: CLEAR **DAY:** WEDNESDAY

	US 50 NORTHBOUND			US 50 SOUTHBOUND			DOVER RD EASTBOUND			MD 331 WESTBOUND			
TIME	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
AM													
7:00-7:15	16	175	28	23	196	24	23	31	10	47	41	55	669
7:15-7:30	14	179	53	22	286	52	23	17	15	84	48	71	864
7:30-7:45	13	208	56	40	265	35	22	38	10	86	62	88	923
7:45-8:00	20	200	70	25	284	47	20	49	13	76	44	87	935
8:00-8:15	22	185	62	27	275	57	33	30	10	84	59	75	919
8:15-8:30	16	218	58	22	212	33	51	36	13	67	46	64	836
8:30-8:45	14	191	52	22	207	27	23	32	21	61	39	55	744
8:45-9:00	19	167	55	18	229	30	25	36	13	76	45	49	762
PEAK HR 7:15-8:15 TOTALS	**69**	**772**	**241**	**114**	**1110**	**191**	**98**	**134**	**48**	**330**	**213**	**321**	**PHF 0.97**
PM													
4:00-4:15	19	219	85	48	256	26	37	66	25	71	48	35	935
4:15-4:30	15	224	83	69	259	25	40	87	26	73	44	25	970
4:30-4:45	13	249	109	57	248	33	30	68	32	72	62	31	1004
4:45-5:00	17	214	86	59	273	27	56	81	28	77	47	45	1010
5:00-5:15	20	238	78	52	239	39	42	63	20	89	56	42	978
5:15-5:30	19	216	57	58	226	32	40	80	22	75	64	46	935
5:30-5:45	15	201	66	38	199	22	35	64	16	95	64	40	855
5:45-6:00	16	178	51	39	219	30	33	42	16	83	56	33	796
PEAK HR 4:15-5:15 TOTALS	**65**	**925**	**356**	**237**	**1019**	**124**	**168**	**299**	**106**	**311**	**209**	**143**	**PHF 0.98**

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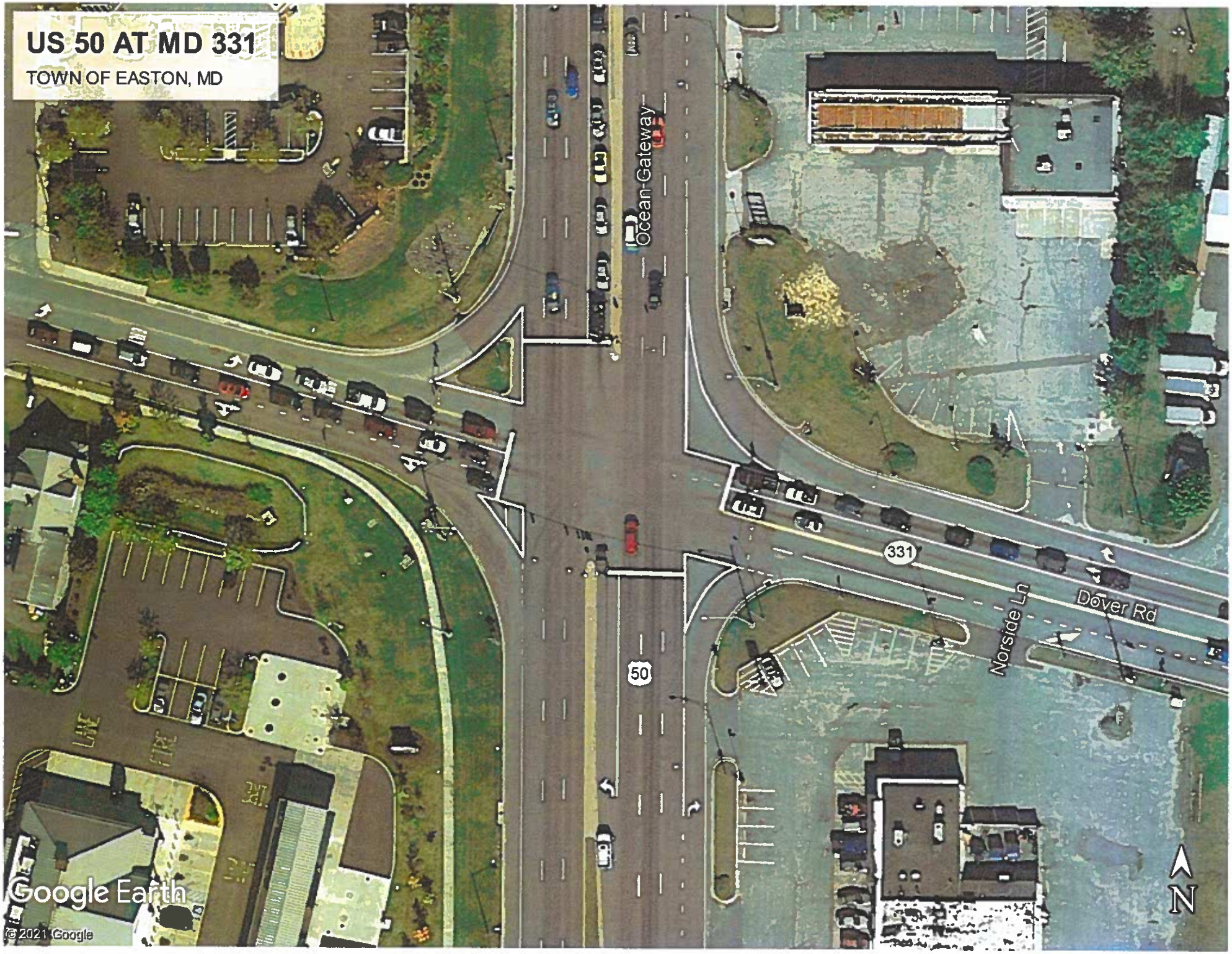
US 50 AT MD 331
TOWN OF EASTON, MD
Ocean Gateway
331
50
Norside Ln
Dover Rd
N
Google Earth
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PEAK HOUR TURNING MOVEMENT COUNT

INTERSECTION: MD 328 (MATTHEWSTOWN RD) @ ELLIOTT RD **COUNTY:** TALBOT

COUNT BY: CAMERA (B.SMITH) **DATE:** SEPTEMBER 8, 2021

WEATHER: CLEAR **DAY:** WEDNESDAY

	ELLIOTT RD NORTHBOUND			SOUTHBOUND			MD 328 EASTBOUND			MD 328 WESTBOUND			
TIME	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
AM													
7:00-7:15	12		7					48	20	15	118		220
7:15-7:30	26		11					40	20	20	190		307
7:30-7:45	22		9					51	31	24	192		329
7:45-8:00	27		19					62	38	31	187		364
8:00-8:15	33		17					59	34	33	135		311
8:15-8:30	37		11					64	33	17	132		294
8:30-8:45	33		11					52	52	17	117		282
8:45-9:00	36		14					50	36	18	91		245
PEAK HR 7:15-8:15 TOTALS	**108**		**56**					**212**	**123**	**108**	**704**		**PHF 0.90**
PM													
4:00-4:15	50		49					114	77	23	66		379
4:15-4:30	48		36					132	91	26	64		397
4:30-4:45	55		46					119	79	29	85		413
4:45-5:00	46		61					124	93	30	94		448
5:00-5:15	58		51					130	93	25	77		434
5:15-5:30	58		47					106	77	25	93		406
5:30-5:45	44		46					100	66	21	75		352
5:45-6:00	40		41					67	58	21	76		303
PEAK HR 4:30-5:30 TOTALS	**217**		**205**					**479**	**342**	**109**	**349**		**PHF 0.95**

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TOWN OF EASTON, MD
Matthewstown Rd
Elliott Rd
Elliott Rd
328
Google Earth
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N

PEAK HOUR TURNING MOVEMENT COUNT

INTERSECTION: MD 331 (DOVER RD) @ ELLIOTT RD **COUNTY:** TALBOT

COUNT BY: CAMERA (B.SMITH) **DATE:** SEPTEMBER 8, 2021

WEATHER: CLEAR **DAY:** WEDNESDAY

	NORTHBOUND			ELLIOTT RD SOUTHBOUND			MD 331 EASTBOUND			MD 331 WESTBOUND			
TIME	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
AM													
7:00-7:15				2		17	20	67			133	5	244
7:15-7:30				0		19	26	75			212	4	336
7:30-7:45				0		16	31	98			237	7	389
7:45-8:00				0		23	46	102			225	3	399
8:00-8:15				0		33	55	89			175	6	358
8:15-8:30				0		31	35	78			152	7	303
8:30-8:45				0		35	39	70			145	4	293
8:45-9:00				0		34	48	75			155	5	317
PEAK HR 7:15-8:15 TOTALS				**0**		**91**	**158**	**364**			**849**	**20**	**PHF 0.93**
PM													
4:00-4:15				0		53	71	131			105	13	373
4:15-4:30				0		57	76	165			99	12	409
4:30-4:45				0		84	78	173			111	7	453
4:45-5:00				0		64	82	147			95	5	393
5:00-5:15				0		67	76	142			118	5	408
5:15-5:30				0		59	54	131			111	5	360
5:30-5:45				0		53	72	105			150	9	389
5:45-6:00				0		73	44	98			103	7	325
PEAK HR 4:15-5:15 TOTALS				**0**		**272**	**312**	**627**			**423**	**29**	**PHF 0.92**

TRAFFIC CONCEPTS, INC.
7525 CONNELLEY DRIVE, SUITE B
HANOVER, MARYLAND 21076
410-760-2911 FAX 410-760-2915
E-MAIL TRAFFIC@TRAFFIC-CONCEPTS.COM

M:\3793

MD 331 AT ELLIOTT RD
TOWN OF EASTON, MD
331
Elliott Rd
Dover Rd
Google Earth
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APPENDIX V

SITE PLAN &
SITE TRIP DATA

PROJECT DATA

PROPERTY: TAX MAP 108, PARCEL 2866 LOT 9
DEED 978/497
EAST SIDE ELLIOTT ROAD
EASTON, MARYLAND 21601

OWNER: RAUCHLEY FAMILY REALTY BUSINESS TRUST
26108 CANTERBURY COURT
EASTON, MARYLAND 21601

POTENTIAL DEVELOPER: WALLACE CONSTRUCTION
ATTN: JIM DEGRANTO
110 SOUTH PINEY ROAD, SUITE 200
CHESTER, MARYLAND 21619
(410) 643-4131

ZONING: CG - GENERAL COMMERCIAL

SITE AREA: 6.617 ACRES±

BUILDING SETBACKS: FRONT - 25'
REAR - 15'
SIDE - 10'
MAJOR ROADS - 40' (NO ROUTE 328)

EXISTING CONDITIONS: OPEN AG FIELD

PROPOSED DEVELOPMENT: 3-STORY MULTI-FAMILY APARTMENTS (TYPICAL OF 4)

BUILDING FOOTPRINT: 12,302 SF

OPEN SPACE: 30% OPEN SPACE REQUIRED, 43% OPEN SPACE PROVIDED

PARKING REQUIRED: 1 SPACE/ ONE BEDROOM UNIT
2 SPACES/ TWO BEDROOM UNIT

PARKING PROVIDED: 48 ONE BEDROOM UNITS 48 X 1 = 48 SPACES
72 TWO BEDROOM UNITS 72 X 2 = 144 SPACES
192 TOTAL SPACES REQUIRED; PROVIDED

PROJECT NOTES

THE SITE IS LOCATED ENTIRELY OUTSIDE OF THE CHESAPEAKE BAY CRITICAL AREA

THE PROPERTY BOUNDARY AS SHOWN HEREON IS BASED TAX MAP INFORMATION AND IS APPROXIMATE ONLY. NO BOUNDARY SURVEY HAS BEEN COMPLETED.

THE CONTOURS SHOWN HEREON WERE TAKEN FROM TOPOGRAPHY DATA PROVIDED BY TALBOT COUNTY AND ARE APPROXIMATE ONLY.

THERE ARE NO KNOWN HISTORIC STRUCTURES OR ARCHEOLOGICALLY SIGNIFICANT RESOURCES. [illegible] APPROXIMATELY 15% SEASONAL TIDAL WETLANDS/NON-TIDAL WETLANDS OR KNOWN HABITAT PROTECTION AREAS IN PROXIMITY TO THE PROPOSED SITE IMPROVEMENTS. NON-TIDAL WETLANDS ARE PRESENT ON SITE AND HAVE BEEN FIELD LOCATED BY LANE ENGINEERING, LLC. ANY DISTURBANCE TO WETLANDS OR BUFFER AREAS WILL REQUIRE APPROVAL BY MARYLAND DEPARTMENT OF THE ENVIRONMENT AND TOWN OF EASTON.

A FIELD DELINEATION HAS NOT BEEN PERFORMED FOR THE PRESENCE OF NON-TIDAL WETLANDS ON SITE.

PUBLIC WATER AND SEWER SERVICES ARE PROVIDED BY THE TOWN OF EASTON, EASTON UTILITIES

FLOOD DATA

THE PROPERTY SHOWN HEREON IS NOT LOCATED IN THE NATIONAL FLOOD INSURANCE PROGRAM (NFIP) SPECIAL FLOOD HAZARD AREA (SFHA) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD. THE PROPERTY IS MAPPED IN THE 2 FLOOD ZONE(S) AS SHOWN ON THE FEDERAL INSURANCE RATE MAPS FOR COMMUNITY NO 240067 MAP NO 24041C0192C FOR TOWN OF EASTON, MARYLAND. THE 1% ANNUAL CHANCE FLOOD (100-YEAR FLOOD), ALSO KNOWN AS THE BASE FLOOD, IS THE FLOOD THAT HAS A 1% CHANCE OF BEING EQUALLED OR EXCEEDED IN ANY GIVEN YEAR. THE SFHA IS THE AREA SUBJECT TO FLOODING BY THE 1% ANNUAL CHANCE FLOOD. THE SFHA INCLUDE ZONES A, AE, AH, AO, AR, A99, V & VE. THE BASE FLOOD ELEVATION (BFE) IS THE WATER SURFACE ELEVATION OF THE 1% ANNUAL CHANCE FLOOD. FLOOD INSURANCE MAY BE REQUIRED FOR STRUCTURES LOCATED IN THE SPECIAL FLOOD HAZARD AREA

FLOOD ZONE LEGEND
ZONES A, AE, AH, AO, AR, A99, V & VE - 1% ANNUAL CHANCE FLOOD
ZONE X (SHADED) - 0.2% ANNUAL CHANCE FLOOD
ZONE X - AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD

THE FLOOD DATA SHOWN HEREON IS BASED ON AVAILABLE MAPPED AND/OR DIGITAL INFORMATION AND IS SUBJECT TO AS DIRECTED AND REQUIRED BY FEDERAL, STATE AND LOCAL REGULATIONS. IT IS SUBJECT TO DATA INACCURACIES AND REGULATORY CHANGE AND SHOULD BE VERIFIED PRIOR TO FINALIZING DEVELOPMENT OR IMPROVEMENT PLANS FOR THE SUBJECT LANDS

LANDSCAPE REQUIREMENTS SUMMARY PER ZONING ORDINANCE

SECTION 1014.8.B.

1 OVERALL TREES = 3 TREES/ RESIDENTIAL UNIT (120 UNITS X 3 = 360 TREES REQUIRED

1A STREET TREES= 1 DECIDUOUS TREE/ 25' OF STREET CENTERLINE 290 LF/ 25 = 12 TREES REQUIRED

1B PARKING LOT/ PARKING COURTS: 1 TREE/ 5 SPACES. 192 SPACES/5 = 38 TREES REQUIRED

2 SHRUB/GROUNDCOVER PLANTINGS PROVIDED ACROSS SITE AS SHOWN HEREON

LANDSCAPE BUFFERYARD REQUIREMENTS (SECTION 1014.7.E.)

40' WIDE LANDSCAPE BUFFERYARD "A" ALONG MATTHEWSTOWN ROAD
376 LF / 50' = 8.52 PLANT UNITS (PU)

3 SHADE/ CANOPY TREES X 5.52 PU = 17 SHADE/ CANOPY TREES REQUIRED
2 EVERGREEN TREES X 5.52 PU = 11 EVERGREEN TREES REQUIRED
10 LARGE SHRUBS X 5.52 PU = 55 LARGE SHRUBS REQUIRED

20' WIDE LANDSCAPE BUFFERYARD "B" ALONG ELLIOTT ROAD
767 LF OF ENTRANCE & SIDEWALK (LF LF) EQUALS 736 LF / 50' = 14.72 PLANT UNITS (PU)

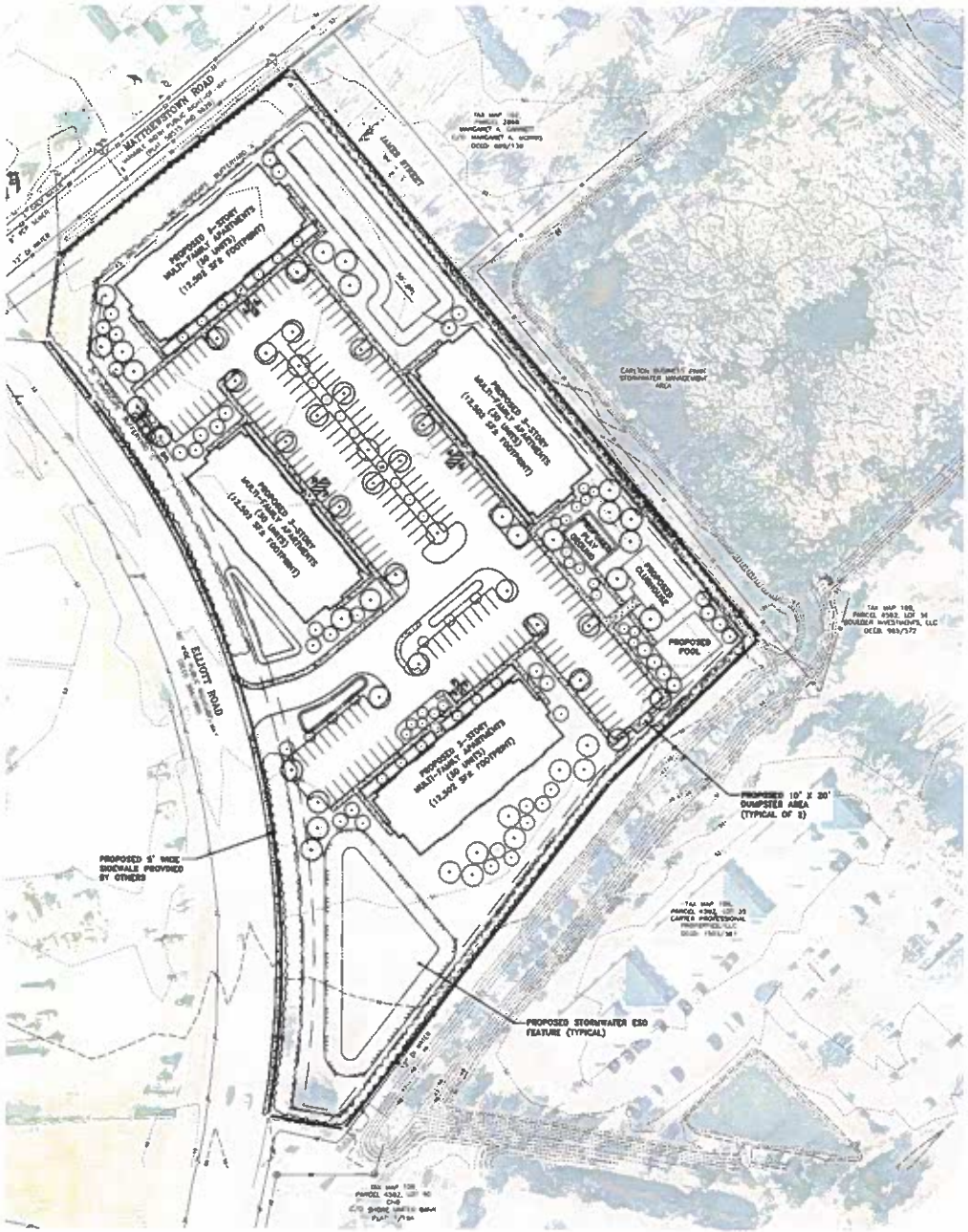
4 SHADE/ CANOPY TREE X 14.72 PU = 15 SHADE/ CANOPY TREES REQUIRED
2 EVERGREEN TREES X 14.72 PU = 28 EVERGREEN TREES REQUIRED
5 LARGE SHRUBS X 14.72 PU = 74 LARGE SHRUBS REQUIRED

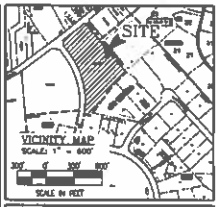
10' WIDE LANDSCAPE BUFFERYARD "C" ALONG SOUTH & EAST PROPERTY LINES
1,345 LF / 50' = 26.90 PLANT UNITS (PU)

9 SHADE/ CANOPY TREE X 26.90 PU = 27 SHADE/ CANOPY TREES REQUIRED
3 EVERGREEN TREES X 26.90 PU = 81 EVERGREEN TREES REQUIRED

NOTE:

THE LAYOUT AS SHOWN HEREON IS CONCEPTUAL ONLY AND NOT INTENDED TO BE UTILIZED FOR DESIGN OR CONSTRUCTION PURPOSES.





REVISIONS

No.	DATE	DESCRIPTION	BY

WARNING!!
THE LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THIS PLAN ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. THE QUANTITIES SHOWN ON THIS PLAN ARE FOR INFORMATIONAL AND PERMITTING PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES TO HIS OWN SATISFACTION PRIOR TO BEGINNING CONSTRUCTION.

THE CONTRACTOR SHALL POT PIT AND LOCATE EXISTING UNDERGROUND UTILITIES PRIOR TO THE BEGINNING OF ANY WORK ON-SITE. THE CONTRACTOR SHALL NOTIFY DEPT. OF PUBLIC WORKS OF ANY POSSIBLE CONFLICT AND REQUEST THE RELOCATION OF THE EXISTING UNDERGROUND UTILITIES BEFORE BEGINNING ANY WORK ON-SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RELOCATION EXPENSE.

MISS UTILITY
STOP, LOOK & DIG
BEFORE YOU DIG CALL
1-800-441-8355 OR 811
PROTECT YOURSELF OR
YOU MAY BURY MORE THAN YOU DIG

Lane Engineering, LLC
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111 Bay St, Easton, MD 21601 (410) 822-8811
10 Huntington St, Cambridge, MD 21613 (410) 228-1575
204 Piney Neck Road, Chestertown, MD 21620 (410) 778-1970

SCALE

DATE

SKETCH CONCEPT SITE PLAN

ON THE LANDS OF
RAUCHLEY FAMILY REALTY BUSINESS TRUST

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 108 PARCEL 2866 LOT 9

ISSUED FOR: CLIENT REVIEW — DATE: 8/11/21

SHEET No. 1 OF 1 — DATE: 8/11/21
SCALE: AS NOTED — JOB No. 210375 — FILE No. [illegible]

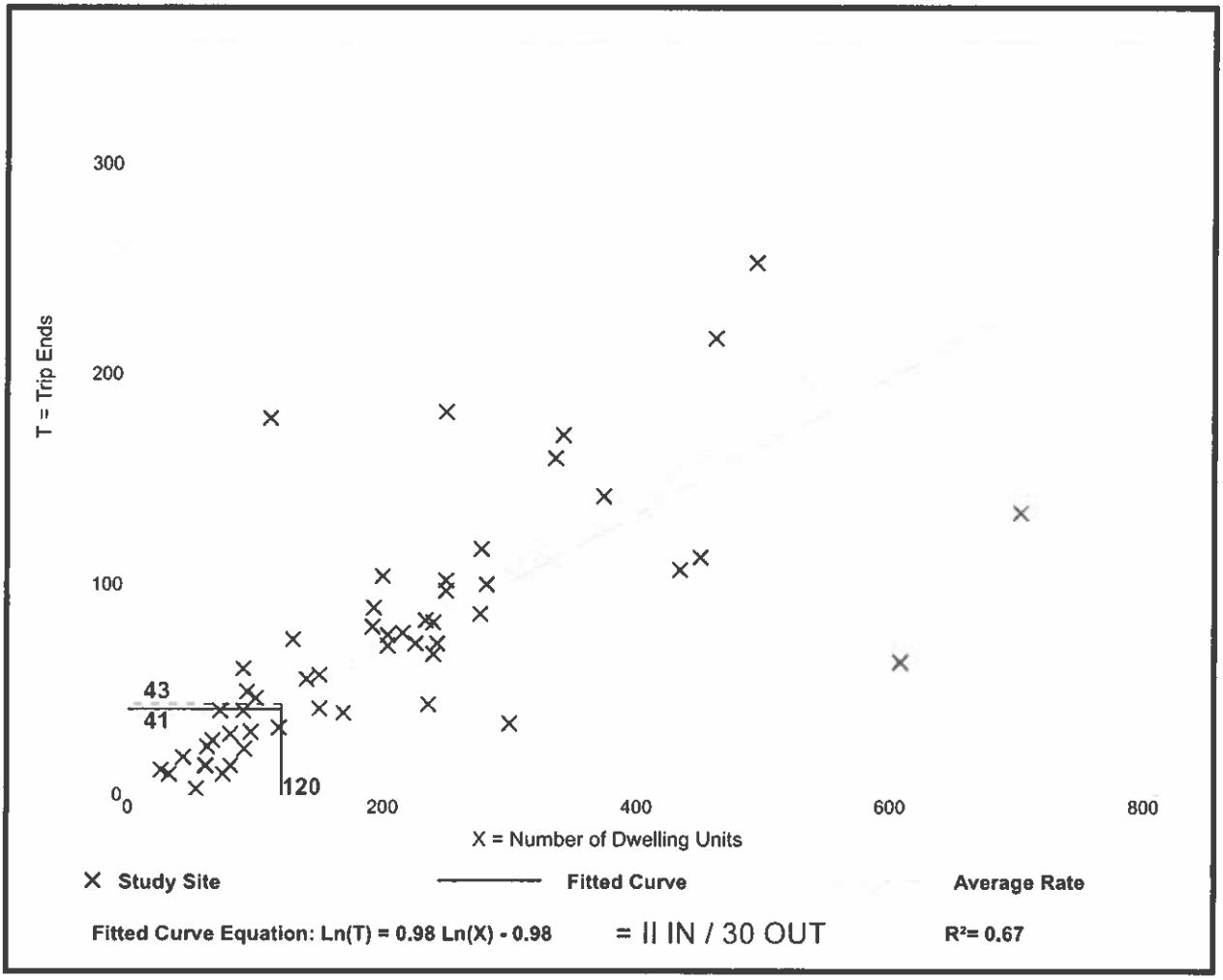
Multifamily Housing (Mid-Rise)
(221)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	53
Avg. Num. of Dwelling Units:	207
Directional Distribution:	26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.06 - 1.61	0.19

Data Plot and Equation



Trip Gen Manual, 10th Ed + Supplement • Institute of Transportation Engineers

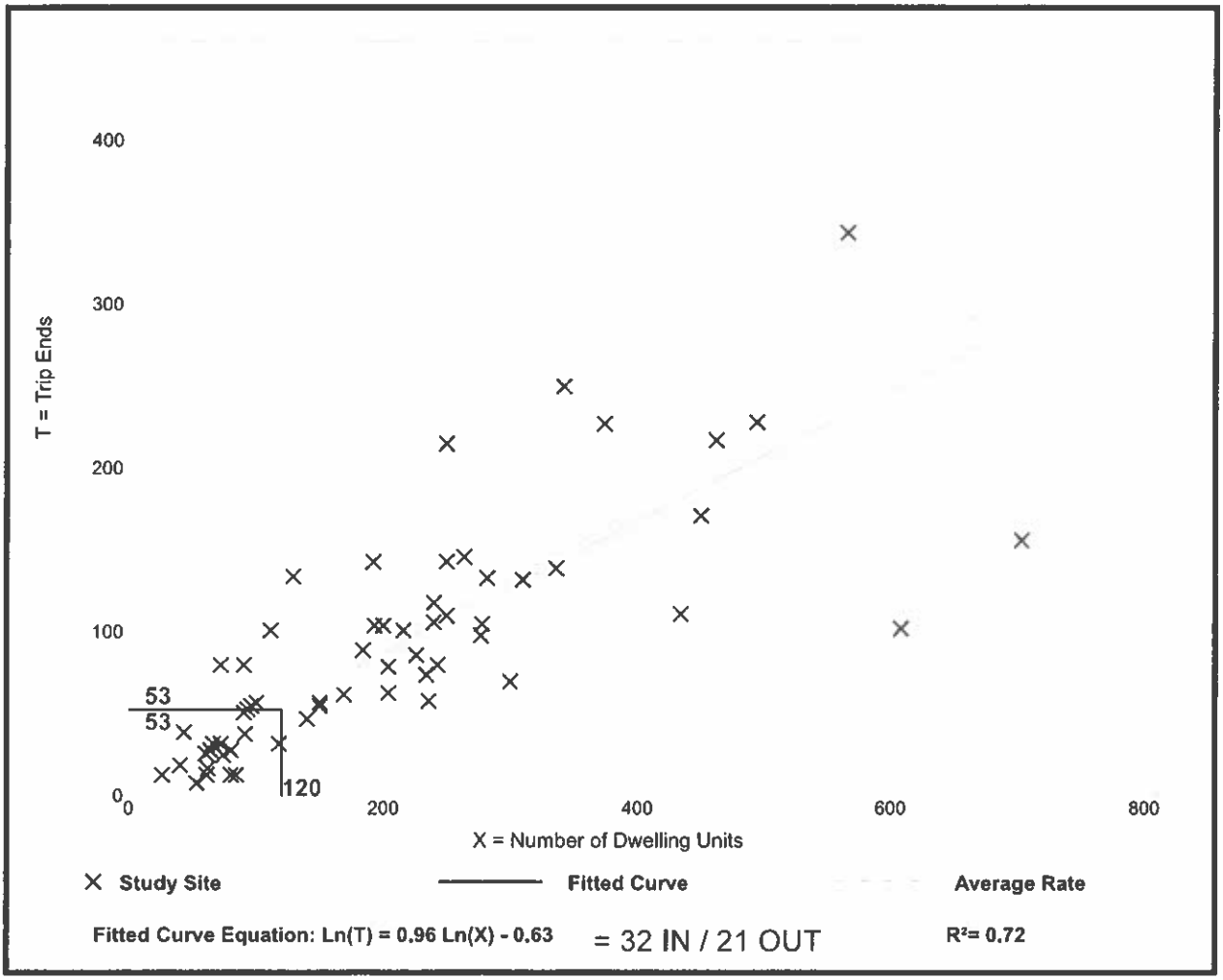
Multifamily Housing (Mid-Rise)
(221)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	60
Avg. Num. of Dwelling Units:	208
Directional Distribution:	61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.44	0.15 - 1.11	0.19

Data Plot and Equation



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MDSW
MCALLISTER
DETAR
SHOWALTER
& WALKER

Ryan D. Showalter
rshowalter@mdswlaw.com
(410) 820-0259 Direct

August 2, 2023

VIA EMAIL TO msalinas@eastonmd.gov
Miguel Salinas
Director of Planning and Zoning
Town of Easton
14 S. Harrison St.
Easton, Maryland 21601

Re: Withdrawal of Growth Allocation Request for Poplar Hill Project

Dear Mr. Salinas:

On behalf of 5001 SHR, L.C. ("SHR"), I hereby formally withdraw the pending Critical Area Growth Allocation Request for the Poplar Hill Project that was submitted to the Town of Easton on July 6, 2022.

New development plans that do not require Growth Allocation are being submitted concurrently with this letter. We appreciate the time that Town officials and staff devoted to evaluating the Growth Allocation application.

Very truly yours,

Ryan D. Showalter

cc: Megan Cook, Mayor, Town of Easton

MDSW MCALLISTER DETAR SHOWALTER & WALKER

Ryan D. Showalter
rshowalter@mdswlaw.com
(410) 820-0259 Direct

August 3, 2023

VIA EMAIL TO msalinas@eastonmd.gov
Miguel Salinas
Director of Planning and Zoning
Town of Easton
14 S. Harrison St.
Easton, Maryland 21601

Re: Withdrawal of Planned Unit Development Application for Poplar Hill Project

Dear Mr. Salinas:

On behalf of 5001 SHR, L.C., I hereby formally withdraw the pending Planned Unit Development ("PUD") application for the Poplar Hill Project.

New development plans that do not require PUD approval were submitted this week. We appreciate the time that Town officials and staff devoted to evaluating the PUD application.

Very truly yours,

Ryan D. Showalter

cc: Megan Cook, Mayor, Town of Easton

SUBDIVISION SKETCH PLAN
FOR
POPLAR HILL
IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND

PLANS ARE ISSUED FOR REVIEW ONLY

PLANS ARE NOT APPROVED FOR CONSTRUCTION

REVISIONS TO APPROVED PLANS

No.	DATE	DESCRIPTION	BY

SITE PLAN DATA

OWNER: 5001 SHR, L. C.
9161 LIBERIA AVE #201
MANASSAS, VA 20110-0000

PROPERTY: TAX MAP 42 GRID 4 TAX PARCEL 57
OXFORD RD
EASTON, MD 21601

DEED: 02827/00090

PLAT: 84/22

ZONING: R-10A/GI

SITE AREA: 120.476 ACRES

EXISTING DEVELOPMENT: N/A

PROPOSED DEVELOPMENT:BY-RIGHT SUBDIVISION WITH 119 RESIDENTIAL LOTS.

ZONING CLASSIFICATION: R10A (RESIDENTIAL DISTRICT) & GI (GOVERNMENTAL/INSTITUTIONAL)
SETBACKS:

	R10A	GI
FRONT:	15'	40'
SIDE:	8'	15'
REAR:	30'	30'
STATE HIGHWAY:	40'	40'
MEAN HIGH WATER	100' (200' FOR SUBDIVISION)	100'
TIDAL WETLANDS:	100' (200' FOR SUBDIVISION)	100'
NON-TIDAL WETLANDS:	25'	25'
MINIMUM LOT SIZE:	10,000 SQ. FT.	40,000 SQ. FT.
MINIMUM LOT FRONTAGE:	35'	100'
MAXIMUM BUILDING HEIGHT:	35'	50'

PARKING REQUIRED:
SINGLE FAMILY DETACHED DWELLING: 2 SPACES/DWELLING; 119 X 2 = 238 SPACES REQUIRED; 238 PROVIDED (20'WX30'D DRIVEWAYS)

COMMUNITY PARK SPACE: REQUIRED: 3.28 AC (1,200 SF/DWELLING UNIT)
PROVIDED: 3.83 AC

STORMWATER MANAGEMENT: QUANTITY CONTROL IS ADDRESSED. QUALITY TREATMENT ADDRESSED BY PROVIDING ENVIRONMENTAL SITE DESIGN IN ACCORDANCE WITH CHAPTER 5 OF THE MARYLAND STORMWATER DESIGN MANUAL, PROVIDING ESDV TO THE MAXIMUM EXTENT PRACTICABLE (MEP).

NON-CRITICAL AREA DEVELOPMENT RIGHTS CALCULATIONS (BEFORE SUBDIVISION)

R10A = 54.499 AC±
DEVELOPMENT RIGHTS PERMITTED = 190 (3.5 PER 1 AC.)
DEVELOPMENT RIGHTS USED = 114 (LOTS 1 THROUGH 114)
DEVELOPMENT RIGHTS REMAINING = 75
DEVELOPMENT RIGHTS SHOWN HEREON ARE BASED UPON CURRENT REGULATIONS AND MAY BE SUBJECT TO CHANGE BASED ON ZONING ORDINANCE REGULATIONS IN EFFECT AT THE TIME OF DEVELOPMENT ACTIVITY.

CRITICAL AREA DEVELOPMENT RIGHTS CALCULATIONS (BEFORE SUBDIVISION)

R10A (RCA) = 65.977 AC±
DEVELOPMENT RIGHTS PERMITTED = 3 (1 PER 20 AC.)
DEVELOPMENT RIGHTS USED = 3 (LOTS 115, 116, AND 117)
DEVELOPMENT RIGHTS REMAINING = 0
DEVELOPMENT RIGHTS SHOWN HEREON ARE BASED UPON CURRENT REGULATIONS AND MAY BE SUBJECT TO CHANGE BASED ON ZONING ORDINANCE REGULATIONS IN EFFECT AT THE TIME OF DEVELOPMENT ACTIVITY.

CRITICAL AREA LOT COVERAGE CALCULATIONS (AFTER SUBDIVISION)

LOT 115
AREA IN RCA = 5.002 AC.± (217,872 SQ. FT.)
ALLOWABLE SITE COVERAGE = 32,680 SQ. FT. (15% OF 217,872 SQ. FT.)
TOTAL EXISTING SITE COVERAGE = 0 SQ. FT.
ALLOWABLE SITE COVERAGE REMAINING = 32,680 SQ. FT.

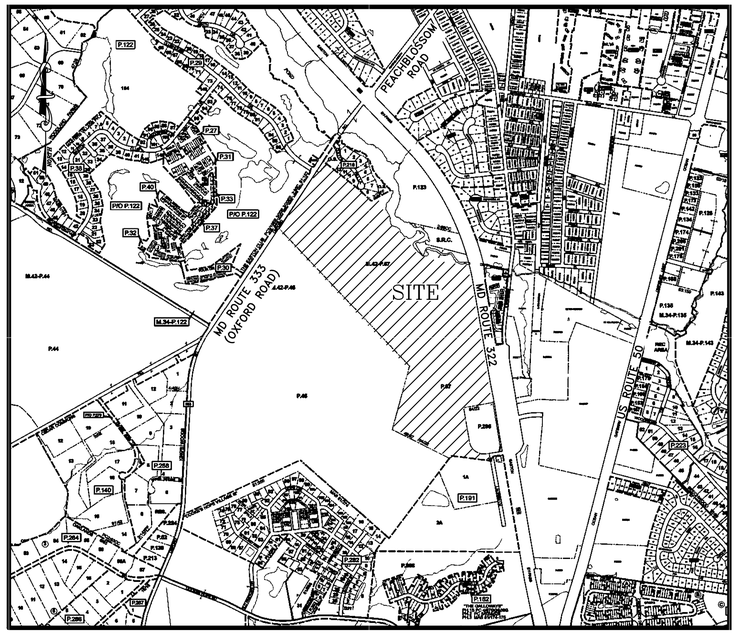
LOT 116
AREA IN RCA = 5.002 AC.± (217,880 SQ. FT.)
ALLOWABLE SITE COVERAGE = 32,682 SQ. FT. (15% OF 217,880 SQ. FT.)
TOTAL EXISTING SITE COVERAGE = 0 SQ. FT.
ALLOWABLE SITE COVERAGE REMAINING = 32,682 SQ. FT.

LOT 117
AREA IN RCA = 5.002 AC.± (217,893 SQ. FT.)
ALLOWABLE SITE COVERAGE = 32,683 SQ. FT. (15% OF 217,893 SQ. FT.)
TOTAL EXISTING SITE COVERAGE = 0 SQ. FT.
ALLOWABLE SITE COVERAGE REMAINING = 32,683 SQ. FT.

REVISED REMAINING LANDS
AREA IN RCA = 50.972 AC.± (2,220,375 SQ. FT.)
ALLOWABLE SITE COVERAGE = 333,056 (15% OF 2,220,375 SQ. FT.)
TOTAL EXISTING SITE COVERAGE = 578 SQ. FT.
ALLOWABLE SITE COVERAGE REMAINING = 332,478 SQ. FT.

CRITICAL AREA – FOREST CALCULATIONS

15% FOREST PRESERVATION: 431,113 SQ.FT. (15% OF 2,874,089 SQ.FT.)
TOTAL PROVIDED: 458,856 SQ.FT.; 16% (EXISTING FOREST IN THE CRITICAL AREA)



VICINITY MAP

1000' 500' 0' 500' 1000' 2000'
SCALE IN FEET

INDEX OF SHEETS

SHEET No.	TITLE
1	TITLE SHEET
2	EXISTING CONDITIONS & INTERMEDIATE FSD
3	SKETCH SUBDIVISION PLAT
4	LAND USE PLAN
5	TRANSPORTATION EXHIBIT

LANDSCAPE REQUIREMENTS SUMMARY PER ZONING ORDINANCE (ALL NATIVE SPECIES):

SECTION 1014.6.A.:

1. STREET TREES @ 1 TREE/25' OF STREET CENTERLINE LENGTH
9,523 LF / 25 = 380 TREES REQUIRED

LANDSCAPE BUFFERYARD REQUIREMENTS (SECTION 1014.7.E.)

40' WIDE LANDSCAPE BUFFERYARD 'A' (ALONG OXFORD ROAD)
1135 LF LESS ENTRANCE (60 LF) LESS EXISTING FOREST (193 LF) LESS AG ENTRANCE (10 LF) = 872 LF / 50' = 17.4 PLANT UNITS (PU)

2 SHADE/ CANOPY TREES X 17.4 PU = 35 SHADE/ CANOPY TREES REQUIRED (35 PROPOSED)
2 EVERGREEN TREES X 17.4 PU = 35 EVERGREEN TREES REQUIRED (35 PROPOSED)
10 LARGE SHRUBS X 17.4 PU = 174 LARGE SHRUBS REQUIRED (174 PROPOSED)

40' WIDE LANDSCAPE BUFFERYARD 'A' (ALONG MD ROUTE 322)
1975 LF LESS EXISTING FOREST (803 LF) = 1172 LF / 50' = 23.4 PLANT UNITS (PU)

2 SHADE/ CANOPY TREES X 23.4 PU = 47 SHADE/ CANOPY TREES REQUIRED (47 PROPOSED)
2 EVERGREEN TREES X 23.4 PU = 47 EVERGREEN TREES REQUIRED (47 PROPOSED)
10 LARGE SHRUBS X 23.4 PU = 234 LARGE SHRUBS REQUIRED (234 PROPOSED)

10' WIDE LANDSCAPE BUFFERYARD 'E' (ALONG PROPOSED POLLY HILL SUBDIVISION)
791 LF LESS EXISTING FOREST (254 LF) = 537 LF / 50' = 10.7 PLANT UNITS (PU)

1 SHADE/ CANOPY TREE X 10.7 PU = 11 SHADE/ CANOPY TREES REQUIRED (11 PROPOSED)
3 EVERGREEN TREES X 10.7 PU = 32 EVERGREEN TREES REQUIRED (32 PROPOSED)

10' WIDE ENHANCED LANDSCAPE BUFFERYARD 'E' (ALONG TEMPLE B'NAI)
371 LF / 50' = 7.4 PLANT UNITS (PU)
(50'± WIDE PLANTING AREA ASSUMED)
1 SHADE/ CANOPY TREE X 5 = 5 X 7.4 PU = 37 SHADE/ CANOPY TREES REQUIRED (37 PROPOSED)
3 EVERGREEN TREES X 5 = 15 X 7.4 PU = 111 EVERGREEN TREES REQUIRED (111 PROPOSED)

10' WIDE LANDSCAPE BUFFERYARD 'E' (ALONG SOUTH & WEST PROPERTY LINE)
4985 LF LESS DRAINAGE EASEMENT (10 LF) LESS WELL PARCEL (105 LF) LESS RIGHT OF WAY (99 LF) = 4771 LF/ 50' = 95.4 PLANT UNITS (PU)

1 SHADE/ CANOPY TREE X 95.4 PU = 95 SHADE/ CANOPY TREES REQUIRED (95 PROPOSED)
3 EVERGREEN TREES X 95.4 PU = 286 EVERGREEN TREES REQUIRED (286 PROPOSED)

FOREST CONSERVATION REQUIREMENTS

INTERMEDIATE FOREST STAND DELINEATION NARRATIVE

THE PROPOSED DEVELOPMENT REQUIRES THE OWNER TO DEMONSTRATE FOREST CONSERVATION COMPLIANCE. THE 120.48 ACRE PROPERTY AS SHOWN IS ENTIRELY AN OPEN FIELD SOUTHEAST OF THE SUBDIVISION OF THE EASTON CLUB AND ON THE SOUTH SIDE OF OXFORD ROAD (MD ROUTE 333). THE SITE LIES AT THE EDGE OF AN URBANIZING AREA WITHIN THE TOWN OF EASTON AND IS BOUNDED BY RESIDENTIAL DEVELOPMENT GENERALLY TO THE NORTH, EAST AND SOUTH AND ADJACENT TO EXISTING FOREST TO THE WEST. DUE TO THE SITES PROXIMITY AND ACCESS TO OXFORD ROAD AND MD ROUTE 322 (EASTON PARKWAY); THIS PROPERTY IS IDEALLY SUITED FOR RESIDENTIAL DEVELOPMENT. THE SITE IS AN OPEN FIELD WITH SOME EXISTING FOREST AND GENERALLY DRAINS TO THE SOUTH WEST AND SOUTH EAST. THERE IS EXISTING FOREST TO THE WEST OF THE PROPERTY ADJACENT TO THE SITE. NO OTHER FEATURES CHARACTERIZE THE SITE. THE NET TRACT IS COMPRISED OF THE SUBJECT PROPERTY (120.48 ACRES) LESS THE CRITICAL AREA PORTION OF THE SITE (65.98 ACRES) EQUALING 54.50 ACRES FOR PURPOSES OF FOREST CONSERVATION FOR THIS PROJECT. THERE IS EXISTING FOREST ON-SITE. IN ORDER TO SATISFY FOREST CONSERVATION REQUIREMENTS, THE OWNER IS REQUIRED TO PLANT/AFFOREST A TOTAL OF 13.48 ACRES.

PRELIMINARY INTERMEDIATE FOREST CONSERVATION NARRATIVE

THE OWNER PROPOSES TO DEVELOP THE PROPERTY FOR RESIDENTIAL USES, CONTAINING RESIDENTIAL SINGLE FAMILY LOTS. THE NET TRACT CONSISTS OF THE SUBJECT PROPERTY (120.48 ACRES) LESS THE CRITICAL AREA PORTION OF THE SITE (65.98 ACRES) EQUALING 54.50 ACRES FOR PURPOSES OF FOREST CONSERVATION FOR THIS PROJECT. EXISTING NON-CRITICAL AREA FOREST WILL BE REMOVED (5.31 ACRES±) FOR THE CONSTRUCTION OF STORMWATER MANAGEMENT FEATURES AND INFRASTRUCTURE. THE OWNER/APPLICANT IS REQUIRED TO PLANT A TOTAL OF 13.48 ACRES TO MEET FOREST CONSERVATION REQUIREMENTS. THE AFFORESTATION REQUIREMENTS SHALL BE MET THROUGH BUFFERYARD AND STREET TREE AFFORESTATION CREDITS PER THE FOREST CONSERVATION OVERLAPPING REQUIREMENTS (SECTION 1014.5), A PORTION OF CRITICAL AREA FOREST RETENTION AND PROPOSED SEEDLING PLANTING AREA WHICH SHALL BE PLACED UNDER A LONG TERM PROTECTIVE EASEMENT AND RECORDED WITHIN THE LAND RECORDS OF TALBOT COUNTY.

STATEMENT OF PURPOSE & INTENT

THE PURPOSE OF THESE PLANS IS TO OBTAIN SUBDIVISION BY-RIGHT APPROVAL FOR 119 RESIDENTIAL LOTS.

SITE ADDRESS

OXFORD ROAD
EASTON, MD 21601

OWNER
5001 SHR, L.C.
9161 LIBERIA AVE. #201
MANASSAS, VA 20110

LAND PLANNER/CIVIL ENGINEER

LANE ENGINEERING, LLC
C/O BRETT C. EWING, AICP
C/O JARRET BEYER, PE
117 BAY STREET
EASTON, MD 21601
(410) 822-8003

WARNING!!
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MISS UTILITY
BEFORE YOU DIG CALL 1-800-441-8355 OR 811 PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

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Established 1986
Civil Engineers • Land Planning • Land Surveyors
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117 Bay St. Easton, MD 21601 (410) 822-8003
15 Washington St. Cambridge, MD 21613 (410) 221-0818
354 Pennsylvania Ave. Centreville, MD 21617 (410) 758-2095

SEAL

DATE

TITLE SHEET

POPLAR HILL
SUBDIVISION
SKETCH PLAN
IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 42 GRID 4 TAX PARCEL 57

ISSUED/REVISED FOR:	DATE:	BY:
AGENCY REVIEW	7/06/22	BCE
AGENCY REVIEW	8/03/22	BCE
AGENCY REVIEW	10/05/22	BCE
AGENCY REVIEW	11/01/22	BCE
AGENCY REVIEW	01/27/23	BCE
ESDR SUBMITTAL	08/02/23	BCE

SHEET No. 1 OF 5
7/06/22
JOB No. 220155
SCALE: AS NOTED
FILE No. 1324

Date: 08/01/2023 - 3:42pm User: mphillips Project Manager: BCE
Drawing Path: J:\2022\0160\220155\Civil3D-220155\Dwg\Plats\CSK-PLTS-220155.dwg | 1-COVER
XREF File(s): WLD-BASE-220155/TSK-BASE-220155/CSK-LUP-BASE-220155/PUD-BASE-2435-220155/RAR-BASE-220155/VSF-BASE-220155/VSL-BASE-220155/VSK-BASE-220155/FSL-BASE-220155/ELEC-BASE-220155/GAS-BASE-220155/SEWER-BASE-220155/STORM-BASE-220155/WATER-BASE-220155/CABLE-BASE-220155/CSK-RoadClassification/CSK-USEout

PROJECT NOTES

THE PROPERTY SHOWN HEREON LIES PARTIALLY WITHIN THE CHESAPEAKE BAY CRITICAL AREA DESIGNATED AS RCA (RESOURCE CONSERVATION AREA) AS SHOWN ON THE TALBOT COUNTY CRITICAL AREA MAPS IN ACCORDANCE WITH TALBOT COUNTY BILL No. 1295, ENACTED AUGUST 12, 2014.

MEAN HIGH WATER WAS NOT ESTABLISHED BY THIS SURVEY. MEAN HIGH WATER IS DEFINED BY ELEVATION REFERENCED TO A TIDAL BENCH MARK. THE SHORELINE WAS LOCATED TO THE EDGE OF TIDAL VEGETATION. THE BOUNDARY IS SUBJECT TO CHANGE DUE TO NATURAL CAUSES AND IT MAY NOT REPRESENT THE ACTUAL LOCATION OF THE LIMIT OF TITLE.

THE WETLANDS SHOWN HEREON WERE DELINEATED BY SEAN CALLAHAN, A QUALIFIED PROFESSIONAL WITH LANE ENGINEERING, LLC. SURVEY LOCATED ON FEBRUARY 9, 2021 AND VERIFIED BY CHRIS PAJAK, MDE. MARY PHIPPS DICKERSON, MDE, AND WILLIAM SEIGER, MDE ON FEBRUARY 25, 2021 AND JASON PETERSON, USACE ON MAY 13, 2022.

LANE ENGINEERING, LLC HAS REVIEWED THE MAPPED SOILS AND TOPOGRAPHIC INFORMATION FOR THIS PROPERTY RELATED TO POSSIBLE 100, BUFFER EXPANSION REQUIREMENTS DUE TO STEEP SLOPES AND/OR HYDRIC AND HIGHLY ERODIBLE SOILS AND HAS DETERMINED THAT EXPANSION AS SHOWN IS REQUIRED UNDER THE STATE AND COUNTY REGULATIONS AS OF THE DATE OF THIS PLAN.

LANE ENGINEERING, LLC HAS REVIEWED THE MAPPED SOILS AND TOPOGRAPHIC INFORMATION FOR THIS PROPERTY RELATED TO POSSIBLE 200' BUFFER EXPANSION REQUIREMENTS DUE TO STEEP SLOPES AND/OR HYDRIC AND HIGHLY ERODIBLE SOILS AND HAS DETERMINED THAT NO EXPANSION IS REQUIRED UNDER THE STATE AND COUNTY REGULATIONS AS OF THE DATE OF THIS PLAN.

THE IMPROVEMENTS SHOWN HEREON WERE FIELD LOCATED BY LANE ENGINEERING, LLC ON FEBRUARY 10, 2021.

THE DIMENSIONS OF BUILDINGS, STRUCTURES AND SETBACKS WERE MEASURED TO THE NEAREST 0.1 FOOT.

THE TREE LINE SHOWN HEREON WAS TAKEN FROM THE 2019 TALBOT COUNTY AERIALS AND IS APPROXIMATE ONLY.

LAND SHOWN UPON THIS PLAT MAY CONTAIN NON-TIDAL WETLANDS REGULATED UNDER COMAR 08.0504; THE FEDERAL WATER POLLUTION ACT SECTION 404; OR THE RIVERS HARBOR ACT SECTION 10. DEVELOPMENT AND CONSTRUCTION WITHIN WETLANDS ARE SUBJECT TO FEDERAL AND STATE REGULATIONS AND MAY BE PROHIBITED OR RESTRICTED BY SUCH REGULATIONS.

NO ABSTRACT OF TITLE, TITLE COMMITMENT, NOR RESULTS OF A TITLE SEARCH HAVE BEEN FURNISHED TO LANE ENGINEERING, LLC. THE BUILDING RESTRICTION LINES AS SHOWN HEREON ARE BASED SOLELY ON THE CURRENT TOWN OF EASTON ZONING ORDINANCE APPLICABLE TO THE PROPERTY SHOWN HEREON AND ARE SUBJECT TO CHANGE WITH THE REVISION OF ZONING LAWS. OTHER DOCUMENTS OF RECORD MAY EXIST THAT MAY AFFECT THE SURVEYED PROPERTY REFLECTED HEREON, INCLUDING BUT NOT LIMITED TO EASEMENTS, ENCUMBRANCES, RESTRICTIVE COVENANTS, PLAT RESTRICTIONS OR ANY OTHER FACTS THAT AN ACCURATE, COMPLETE AND CURRENT TITLE SEARCH MAY DISCLOSE.

FLOOD DATA

A PORTION OF THE PROPERTY SHOWN HEREON IS LOCATED IN THE NATIONAL FLOOD INSURANCE PROGRAM (NFIP) SPECIAL FLOOD HAZARD AREA (SFHA) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD. THE PROPERTY IS MAPPED IN THE "X", "X" (SHADED), AND "AE" (EL 5) FLOOD ZONES AS SHOWN ON THE FEDERAL INSURANCE RATE MAPS FOR COMMUNITY NO. 240067, MAP NO. 24041C0189D AND 24041C0302D FOR TOWN OF EASTON, MARYLAND. THE 1% ANNUAL CHANCE FLOOD (100-YEAR FLOOD), ALSO KNOWN AS THE BASE FLOOD, IS THE FLOOD THAT HAS A 1% CHANCE OF BEING EQUALED OR EXCEEDED IN ANY GIVEN YEAR. THE SFHA IS THE AREA SUBJECT TO FLOODING BY THE 1% ANNUAL CHANCE FLOOD. THE SFHA INCLUDES ZONES A, AE, AH, AO, AR, A99, V & VE. THE BASE FLOOD ELEVATION (BFE) IS THE WATER SURFACE ELEVATION OF THE 1% ANNUAL CHANCE FLOOD. FLOOD INSURANCE MAY BE REQUIRED FOR STRUCTURES LOCATED IN THE SPECIAL FLOOD HAZARD AREA.

FLOOD ZONE LEGEND
ZONES AE – 1% ANNUAL CHANCE FLOOD
ZONE X (SHADED) – 0.2% ANNUAL CHANCE FLOOD
ZONE X – AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD

THE FLOOD DATA SHOWN HEREON IS BASED ON AVAILABLE MAPPED AND/OR DIGITAL INFORMATION AND IS DEPICTED AS DIRECTED AND REQUIRED BY FEDERAL, STATE AND LOCAL REGULATIONS. IT IS SUBJECT TO DATA INACCURACIES AND REGULATORY CHANGE AND SHOULD BE VERIFIED PRIOR TO FINALIZING DEVELOPMENT OR IMPROVEMENT PLANS FOR THE SUBJECT LANDS.

Forest Conservation Worksheet 2.2

Net Tract Area			
A.	Total Tract Area	A =	120.48
B.	Deductions	B =	65.98
C.	Net Tract Area	C =	54.50
Land Use Category			

Input the number "1" under the appropriate land use zoning, and limit to only one entry

ARA	MDR	IDA	HDR	MPD	CIA
0	0	0	1	0	0

D.	Afforestation Threshold (Net Tract Area x 15%)	D =	8.17
E.	Conservation Threshold (Net Tract Area x 20%)	E =	10.90
Existing Forest Cover			
F.	Existing Forest Cover within the Net Tract Area	F =	5.31
G.	Area of Forest Above Conservation Threshold	G =	0.00
Break Even Point			
H.	Break Even Point	H =	5.31
I.	Forest Clearing Permitted Without Mitigation	I =	0.00
Proposed Forest Clearing			
J.	Total Area of Forest to be Cleared	J =	5.31
K.	Total Area of Forest to be Retained	K =	0.00
Planting Requirements			
L.	Reforestation for Clearing Above the Conservation Threshold	L =	0.00
M.	Reforestation for Clearing Below the Conservation Threshold	M =	10.62
N.	Credit for Retention above the Conservation Threshold	N =	0.00
P.	Total Reforestation Required	P =	10.62
Q.	Total Afforestation Required	Q =	2.86
R.	Total Planting Requirement	R =	13.48

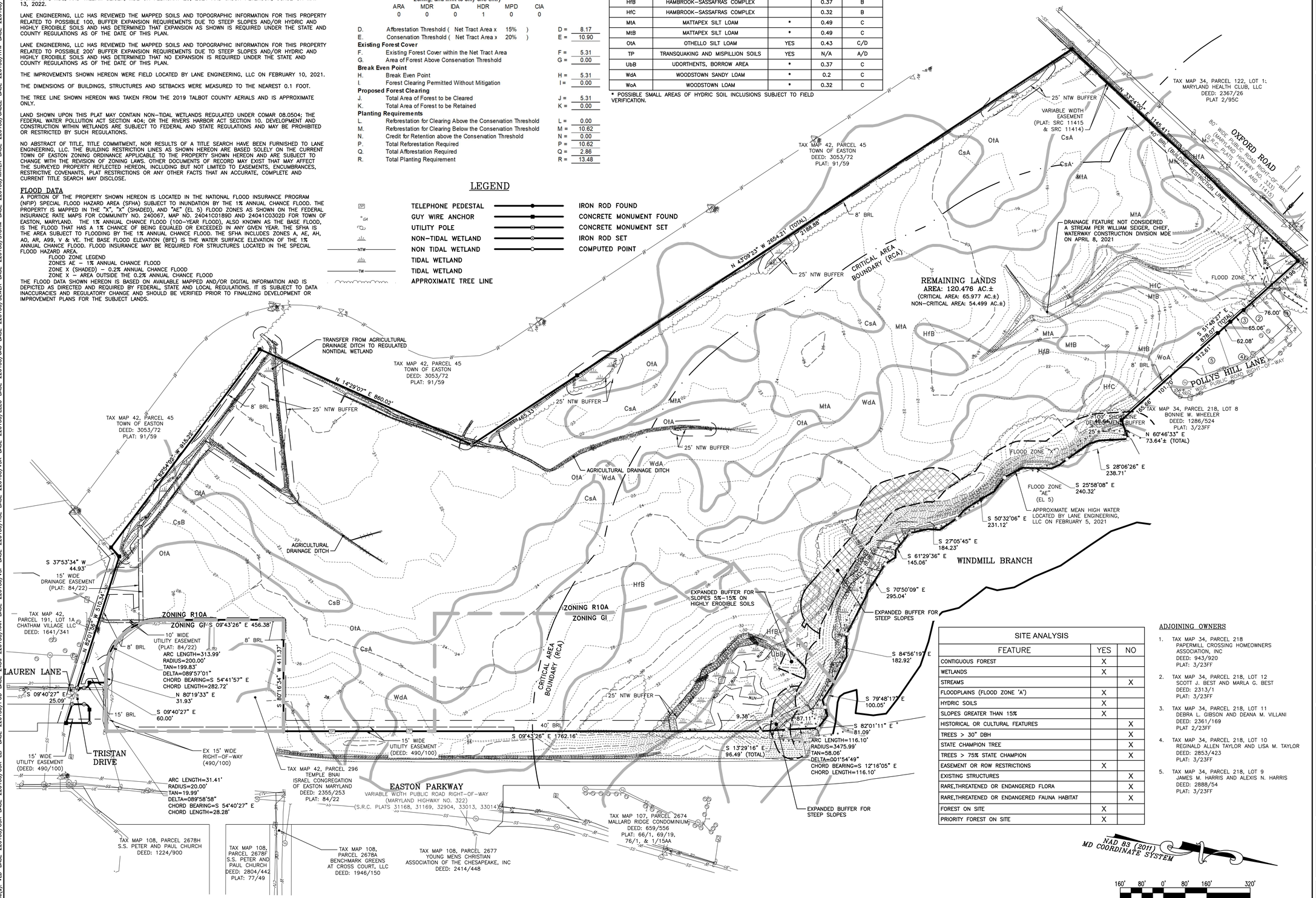
TALBOT COUNTY SOILS

MAP SYMBOL	SOILS NAME	HYDRIC SOILS	K FACTOR	SOIL GROUP
CsA	CROSIADORE SILT LOAM	*	0.49	C/D
CsB	CROSIADORE SILT LOAM	*	0.49	C/D
HfA	HAMBROOK–SASSAFRAS COMPLEX		0.37	B
HfB	HAMBROOK–SASSAFRAS COMPLEX		0.37	B
HfC	HAMBROOK–SASSAFRAS COMPLEX		0.32	B
MtA	MATTAPEX SILT LOAM	*	0.49	C
MtB	MATTAPEX SILT LOAM	*	0.49	C
OtA	OTHELLO SILT LOAM	YES	0.43	C/D
TP	TRANSQUAKING AND MISPILLION SOILS	YES	N/A	A/D
UbB	UDORTHENTS, BORROW AREA	*	0.37	C
WdA	WOODSTOWN SANDY LOAM	*	0.2	C
WoA	WOODSTOWN LOAM	*	0.32	C

* POSSIBLE SMALL AREAS OF HYDRIC SOIL INCLUSIONS SUBJECT TO FIELD VERIFICATION.

LEGEND

TELEPHONE PEDESTAL
GUY WIRE ANCHOR
UTILITY POLE
NON-TIDAL WETLAND
NON TIDAL WETLAND
TIDAL WETLAND
APPROXIMATE TREE LINE
IRON ROD FOUND
CONCRETE MONUMENT FOUND
CONCRETE MONUMENT SET
IRON ROD SET
COMPUTED POINT



SITE ANALYSIS

FEATURE	YES	NO
CONTIGUOUS FOREST	X	
WETLANDS	X	
STREAMS		X
FLOODPLAINS (FLOOD ZONE 'A')	X	
HYDRIC SOILS	X	
SLOPES GREATER THAN 15%	X	
HISTORICAL OR CULTURAL FEATURES		X
TREES > 30" DBH		X
STATE CHAMPION TREE		X
TREES > 75% STATE CHAMPION		X
EASEMENT OR ROW RESTRICTIONS	X	
EXISTING STRUCTURES		X
RARE,THREATENED OR ENDANGERED FLORA		X
RARE,THREATENED OR ENDANGERED FAUNA HABITAT		X
FOREST ON SITE	X	
PRIORITY FOREST ON SITE	X	

ADJOINING OWNERS

1. TAX MAP 34, PARCEL 218
   PAPERMILL CROSSING HOMEOWNERS ASSOCIATION, INC
   DEED: 943/920
   PLAT: 3/23FF
2. TAX MAP 34, PARCEL 218, LOT 12
   SCOTT J. BEST AND MARLA G. BEST
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   DEBRA L. GIBSON AND DEANA M. VILLANI
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DATE

EXISTING CONDITIONS & INTERMEDIATE FSD

POPLAR HILL SUBDIVISION SKETCH PLAN

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 42 GRID 4 TAX PARCEL 57

ISSUED/REVISED FOR:	DATE:	BY:
AGENCY REVIEW	7/06/22	BCE
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SHEET No. 2 OF 5	7/06/22
SCALE: AS NOTED	JOB No. 220155
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Date: 08/01/2023 – 3:37pm User: mphillips Project Manager: BCE
Drawing Path: J:\2022\0100\220155\Civil3D-220155\Dwg\Plats\CSK-PLTS-220155.dwg | 2-EXISTING
XREF File(s): WD-BASE-220155/CSK-BASE-220155/CSK-LIP-BASE-220155/PUD-BASE-2438-220155/RAR-BASE-220155/ASF-BASE-220155/HSL-BASE-220155/ELEC-BASE-220155/GAS-BASE-220155/SEWER-BASE-220155/STORM-BASE-220155/WATER-BASE-220155/CABLE-BASE-220155/TWN-BASE-220155/CSK-RoadClassification/CSK-USEout

GENERAL NOTES

BY ACCEPTANCE OF THE DEED TO THIS PROPERTY, EACH LOT OWNER OR THEIR SUCCESSORS OR ASSIGNS, HEREBY ACKNOWLEDGE THAT THEY ARE AWARE THAT THE PROPERTY BORDERS ON PROPERTY UNDER AGRICULTURAL USE AND THAT THE NORMAL FARMING OPERATIONS ON SUCH AGRICULTURAL LAND MAY CAUSE SOME INTERFERENCE WITH THE USE AND ENJOYMENT OF THE PROPERTY, SUCH AS ODOR, DUST, NOISE, AND DRIFT OF PESTICIDES OR CHEMICALS. THE LOT OWNER ACCEPTS THE LIMITATIONS ON USE AND ENJOYMENT AFFECTING THE PROPERTY.

A UTILITIES DISTRIBUTION RIGHT-OF-WAY AND EASEMENT IS HEREBY DEDICATED TO THE TOWN OF EASTON IN AND OVER STRIPS OF LAND TEN (10) FEET IN WIDTH ALONG THOSE BOUNDARY LINES CONTIGUOUS TO ANY STREET OR ALLEY AND FIVE (5) FEET IN WIDTH ON EACH SIDE OF SIDE LOT LINES

ALL EASEMENTS SHOWN HEREON, UNLESS OTHERWISE LABELED AS "PRIVATE", ARE HEREBY DEDICATED FOR USE BY: (I) THE TOWN OF EASTON, (II) UTILITY COMPANIES, (III) SERVICE PROVIDERS, (IV) ANY OTHER PARTIES TO OR FOR WHOM SUCH RIGHTS ARE ESTABLISHED BY INSTRUMENTS RECORDED AMONG THE LAND RECORDS OF TALBOT COUNTY.

THE PLANNING AND ZONING COMMISSION MAY WAVE OR TERMINATE, UPON RESUBDIVISION SUCH UTILITY EASEMENTS WHICH HAVE NOT BEEN ACCEPTED BY USE THEREOF, UPON RECEIVING APPROVAL FROM THE TOWN ENGINEER.

ALL STREETS AND STREET WIDENINGS, PARKS AND OTHER LANDS INTENDED FOR PUBLIC USE ARE RESERVED BY THE OWNER FOR FUTURE CONVEYANCE TO THE TOWN OF EASTON.

BUILDING PERMITS SHALL BE ISSUED ONLY IF SUFFICIENT CAPACITY IS AVAILABLE IN THE COMMUNITY WATER SUPPLY SYSTEM, SEWERAGE SYSTEM, AND SOLID WASTE ACCEPTANCE FACILITY SERVING THE SUBDIVISION.

NON-CRITICAL AREA DEVELOPMENT RIGHTS CALCULATIONS (BEFORE SUBDIVISION)

R10A = 54.499 AC.±
DEVELOPMENT RIGHTS PERMITTED = 190 (3.5 PER 1 AC.)
DEVELOPMENT RIGHTS USED = 114 (LOTS 1 THROUGH 114)
DEVELOPMENT RIGHTS REMAINING = 75
DEVELOPMENT RIGHTS SHOWN HEREON ARE BASED UPON CURRENT REGULATIONS AND MAY BE SUBJECT TO CHANGE BASED ON ZONING ORDINANCE REGULATIONS IN EFFECT AT THE TIME OF DEVELOPMENT ACTIVITY.

CRITICAL AREA DEVELOPMENT RIGHTS CALCULATIONS (BEFORE SUBDIVISION)

R10A (RCA) = 65.977 AC.±
DEVELOPMENT RIGHTS PERMITTED = 3 (1 PER 20 AC.)
DEVELOPMENT RIGHTS USED = 3 (LOTS 115, 116, AND 117)
DEVELOPMENT RIGHTS REMAINING = 0
DEVELOPMENT RIGHTS SHOWN HEREON ARE BASED UPON CURRENT REGULATIONS AND MAY BE SUBJECT TO CHANGE BASED ON ZONING ORDINANCE REGULATIONS IN EFFECT AT THE TIME OF DEVELOPMENT ACTIVITY.

CRITICAL AREA LOT COVERAGE CALCULATIONS (AFTER SUBDIVISION)

LOT 115
AREA IN RCA = 5.002 AC.± (217,872 SQ. FT.)
ALLOWABLE SITE COVERAGE = 32,680 SQ. FT. (15% OF 217,872 SQ. FT.)
TOTAL EXISTING SITE COVERAGE = 0 SQ. FT.
ALLOWABLE SITE COVERAGE REMAINING = 32,680 SQ. FT.

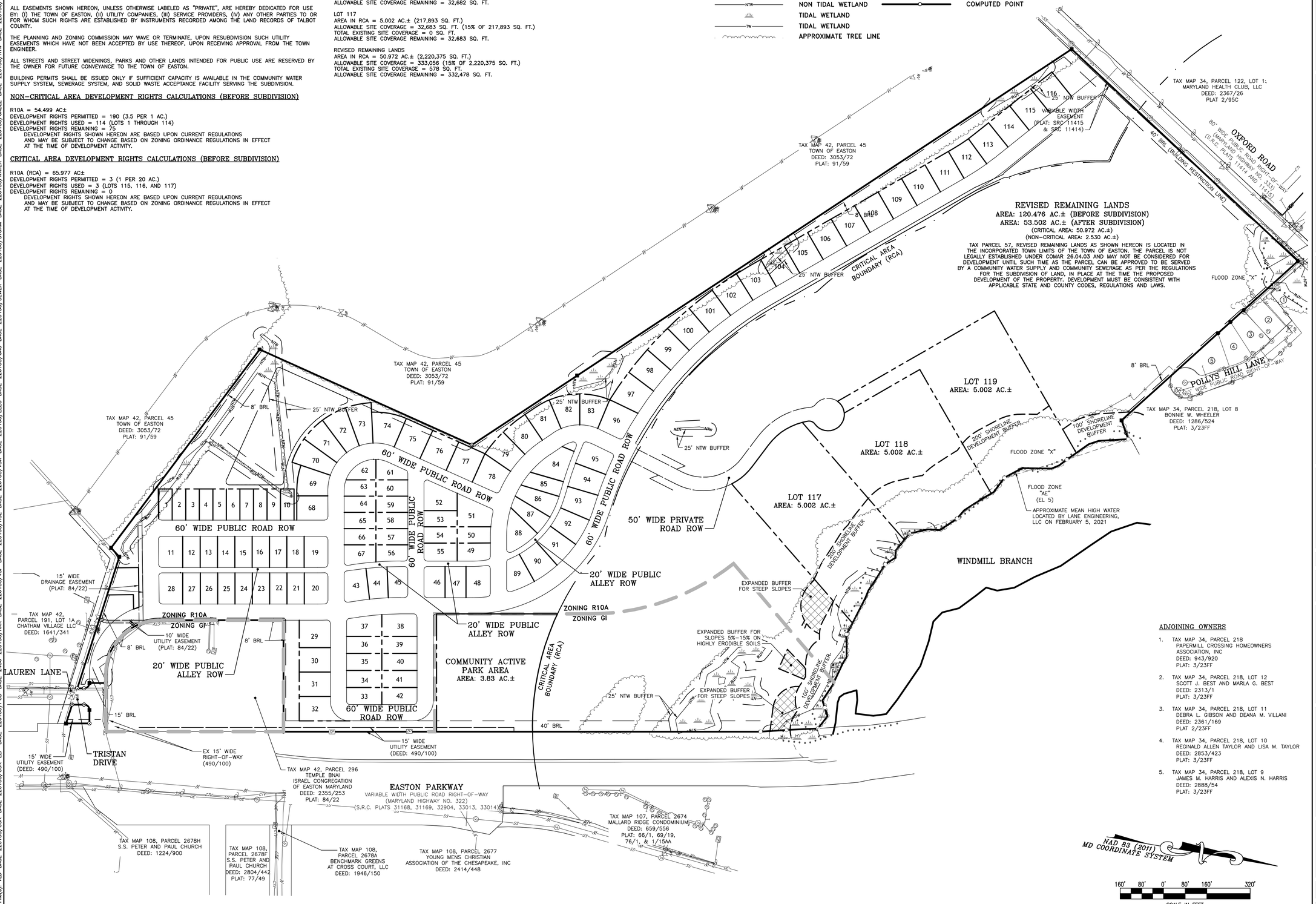
LOT 116
AREA IN RCA = 5.002 AC.± (217,880 SQ. FT.)
ALLOWABLE SITE COVERAGE = 32,682 SQ. FT. (15% OF 217,880 SQ. FT.)
TOTAL EXISTING SITE COVERAGE = 0 SQ. FT.
ALLOWABLE SITE COVERAGE REMAINING = 32,682 SQ. FT.

LOT 117
AREA IN RCA = 5.002 AC.± (217,893 SQ. FT.)
ALLOWABLE SITE COVERAGE = 32,683 SQ. FT. (15% OF 217,893 SQ. FT.)
TOTAL EXISTING SITE COVERAGE = 0 SQ. FT.
ALLOWABLE SITE COVERAGE REMAINING = 32,683 SQ. FT.

REVISED REMAINING LANDS
AREA IN RCA = 50.972 AC.± (2,220,375 SQ. FT.)
ALLOWABLE SITE COVERAGE = 333,056 (15% OF 2,220,375 SQ. FT.)
TOTAL EXISTING SITE COVERAGE = 578 SQ. FT.
ALLOWABLE SITE COVERAGE REMAINING = 332,478 SQ. FT.

LEGEND

TELEPHONE PEDESTAL	IRON ROD FOUND
GUY WIRE ANCHOR	CONCRETE MONUMENT FOUND
UTILITY POLE	CONCRETE MONUMENT SET
NON-TIDAL WETLAND	IRON ROD SET
NON TIDAL WETLAND	COMPUTED POINT
TIDAL WETLAND	
TIDAL WETLAND	
APPROXIMATE TREE LINE	



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SKETCH SUBDIVISION PLAT

POPLAR HILL SUBDIVISION SKETCH PLAN

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 42 GRID 4 TAX PARCEL 57

ISSUED/REVISED FOR:	DATE:	BY:
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SHEET No. 3 OF 5
7/06/22
SCALE: AS NOTED
JOB No. 220155
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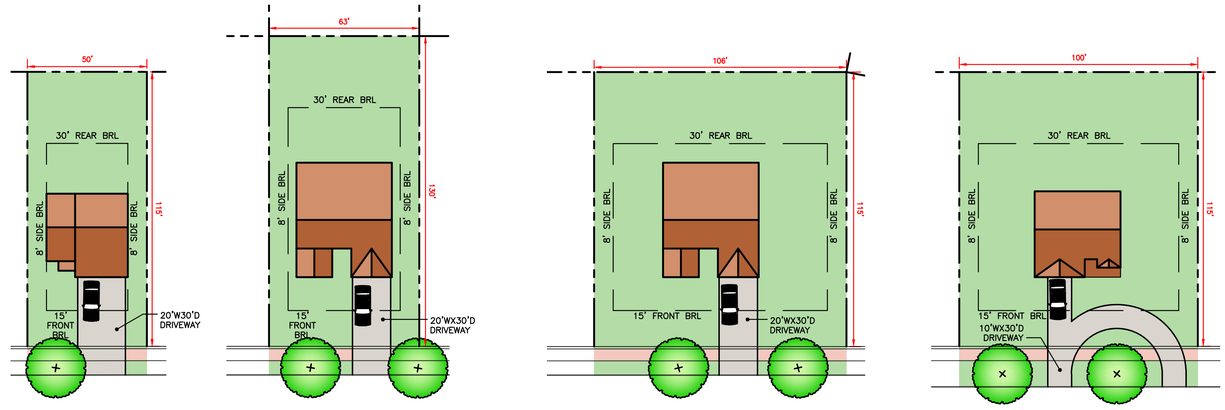
Drawing Path: J:\2022\0100\220155\Civil3D-220155\Dwg\Plots\CSK-PLTS-220155.dwg | J-CONCEPT
XREF File(s): VLD-BASE-220155/CSK-BASE-220155/CSK-LLP-BASE-220155/PUD-BASE-2436-220155/RAR-BASE-220155/VSF-BASE-220155/VGL-BASE-220155/ELEC-BASE-220155/GAS-BASE-220155/SEWER-BASE-220155/STORM-BASE-220155/WATER-BASE-220155/CABLE-BASE-220155/TNW-BASE-220155/CSK-RoadClassification/CSK-USEout



<7,000 SF LOT (TYPICAL)
SCALE: 1" = 30'

7,000 SF – 10,000 SF LOT (TYPICAL)
SCALE: 1" = 30'

≥10,000 SF LOT–OPTION 1 (TYPICAL)
SCALE: 1" = 30'

≥10,000 SF LOT–OPTION 2 (TYPICAL)
SCALE: 1" = 30'

BUFFERYARD LEGEND

(A) 40' WIDE BUFFERYARD 'A'

(E) 10' WIDE BUFFERYARD 'E'

NOTE: PROPOSED BUFFERYARDS UTILIZE LANDSCAPE OVERLAPPING CREDITS FOR FOREST CONSERVATION; SEE SEPARATE FOREST CONSERVATION PLAN FOR DETAILS.

LEGEND

- ≥ 10,000 SF LOTS
- 7,000 SF - 10,000 SF LOTS
- < 7,000 SF LOTS
- COMMUNITY PARK AREA
- FOREST CONSERVATION/ BUFFERYARD
- AGRICULTURAL LAND

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MISS UTILITY
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SEAL

DATE

LAND USE PLAN

POPLAR HILL SUBDIVISION SKETCH PLAN

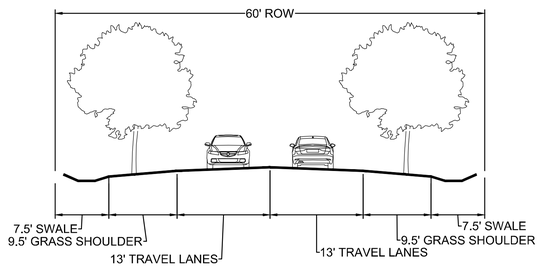
IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 42 GRID 4 TAX PARCEL 57

ISSUED/REVISED FOR:	DATE:	BY:
AGENCY REVIEW	7/06/22	BCE
AGENCY REVIEW	8/03/22	BCE
AGENCY REVIEW	10/05/22	BCE
AGENCY REVIEW	11/01/22	BCE
AGENCY REVIEW	01/27/23	BCE
ESDR SUBMITTAL	08/02/23	BCE

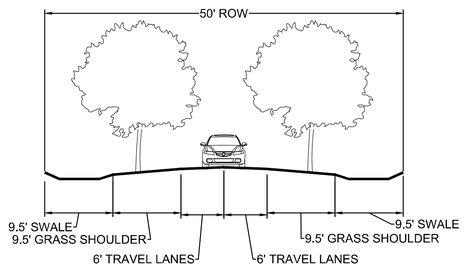
SHEET No. 4 OF 5	7/06/22
SCALE: AS NOTED	JOB No. 220155
	FILE No. 1324

Date: 08/01/2023 – 3:38pm User: mphillips Project Manager: BCE
Drawing Path: J:\2022\0100\220155\Civil3D-220155\Dwg\Plats\CSK-PLTS-220155.dwg | 4-LAND USE
XREF File(s): VD-BASE-220155/CSK-BASE-220155/CSK-LIP-BASE-220155/PUD-BASE-2436-220155/PAR-BASE-220155/VSF-BASE-220155/HSL-BASE-220155/VSK-BASE-220155/ELEC-BASE-220155/GAS-BASE-220155/SEWER-BASE-220155/STORM-BASE-220155/WATER-BASE-220155/CABLE-BASE-220155/FIBR-BASE-220155/CSK-RoadClassification/CSK-USEoutlines

RESIDENTIAL COLLECTOR
NOT TO SCALE



PRIVATE ROAD
NOT TO SCALE



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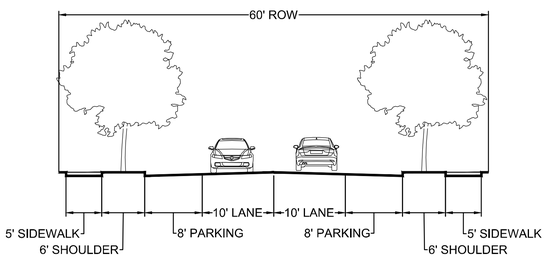
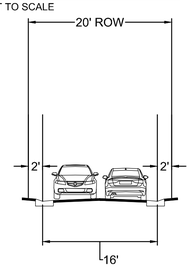
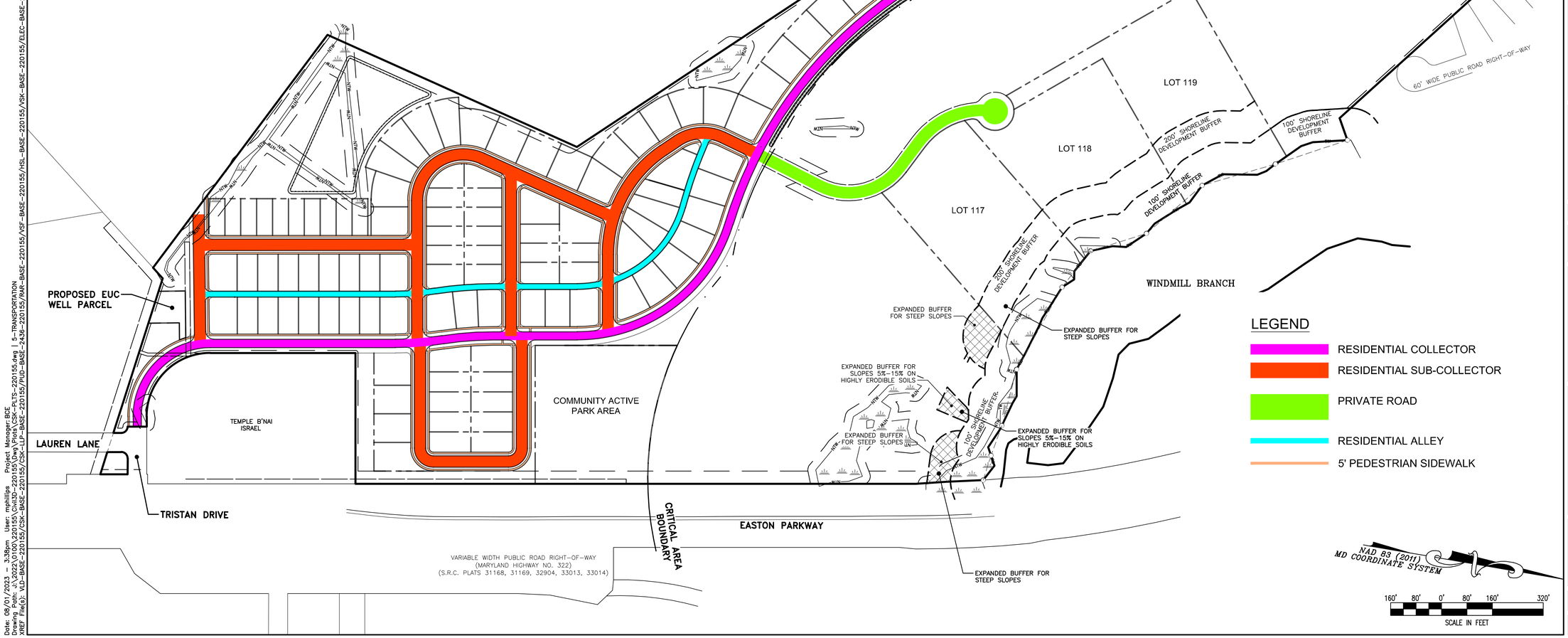
NOT TO SCALE



RESIDENTIAL ALLEY
NOT TO SCALE





PLANS ARE ISSUED FOR REVIEW ONLY

PLANS ARE NOT APPROVED FOR CONSTRUCTION

REVISIONS TO APPROVED PLANS

No.	DATE	DESCRIPTION	BY

WARNING!!

THE LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THIS PLAN ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. THE QUANTITIES SHOWN ON THIS PLAN ARE FOR INFORMATIONAL AND PERMITTING PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES TO HIS OWN SATISFACTION PRIOR TO BEGINNING CONSTRUCTION.

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SEAL

DATE

TRANSPORTATION EXHIBIT

POPLAR HILL SUBDIVISION SKETCH PLAN

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 42 GRID 4 TAX PARCEL 57

ISSUED/REVISED FOR:	DATE:	BY:
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ESDR SUBMITTAL	08/02/23	BCE

SHEET No. 5 OF 5

SCALE: AS NOTED

7/06/22

JOB No. 220155

FILE No. 1324

Date: 08/01/2023 - 3:38pm User: mphillips Project Manager: BCE
Drawing Path: J:\2022\0100\220155\Dwg\Plats\CSK-PLTS-220155.dwg | 5-TRANSPORTATION
XREF File(s): VLD-BASE-220155/CSK-BASE-220155/CSK-LIP-BASE-220155/PUD-BASE-2436-220155/PAR-BASE-220155/ASF-BASE-220155/HSL-BASE-220155/ELEC-BASE-220155/GAS-BASE-220155/SEWER-BASE-220155/STORM-BASE-220155/WATER-BASE-220155/CABLE-BASE-220155/RAR-BASE-220155/CSK-RoadClassification/CSK-USEoutl

CONCEPT STORMWATER MANAGEMENT REPORT

For

Poplar Hill
PUD

Developer

5001 SHR, L.C.
9161 Liberia Avenue, Suite 201
Manassas, VA 20110

Design Professional

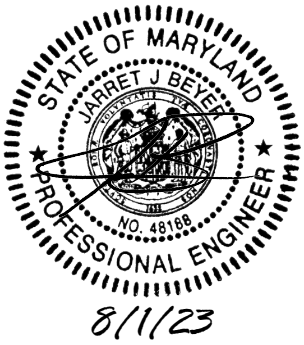
Lane Engineering, LLC
117 Bay Street
Easton, Maryland 21601
410-822-8003

Date Prepared

August 1, 2023

Prepared by

Jarret J. Beyer, P.E.



PROFESSIONAL CERTIFICATION: I hereby certify that this document was prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 48188, Expiration Date: 12/28/2023.

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2. General Site Information
3. Proposed Project
4. Stormwater Management
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5. Conclusion

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APPENDIX B – Stormwater Quantity Calculations
APPENDIX C – Pre-development Drainage Area Map
APPENDIX D – Post-development Drainage Area Map

Poplar Hill PUD
STORMWATER MANAGEMENT REPORT

1. INTRODUCTION

This report addresses the stormwater management requirements of the *2000 Maryland Stormwater Design Manual Volumes I and II* (Manual) as currently updated. Development projects are required to be reviewed during the concept, preliminary site development, and final design stages. This narrative addresses the requirements pertaining to the concept design stage and meets the intent of the guidelines and methodologies presented in the MDE document *Environmental Site Design (ESD) Process & Computations* dated July 2010.

2. GENERAL SITE INFORMATION

The site is a 120.5 acre parcel located along Oxford Road across from Easton Club, and partially fronting the Easton Bypass. The site is currently in agricultural use. Surrounding lands consist of residential development, forest, and Temple B'Nai Israel.

The parcel discharges to three main points, two of which discharge to tidal waters. Geo-Technology Associates, Inc. have done soils borings. Soils on the south end of the site are mixtures of sand and silty sand to about 5 feet, with clay/silty clay/clayey silt below 5 feet. Moving north on the site towards the middle, silty sand/silt/silty clay extend to depths of about 3 to 4 feet. Below this elevation soils become sand and silty sand for a few feet before becoming silty clay/clayey silt. Groundwater elevations are generally high on the south half of the site and drop down at the central part of the site. Additional borings will be necessary on the north end of the site and for both proposed stormwater features. USDA soil maps classify site soils as B and C soils.

3. PROPOSED PROJECT

The proposed development will consist of residential single-family homes and a community park. Roads and sidewalks will be constructed to serve the improvements. The community park is at concept design at this time. Forest conservation areas will surround the development. Two stormwater management features are proposed: one on the north end of the site and the other at the southwest corner of the site. Development will occur entirely outside the Critical Area, except for the three 5-acre estate lots, consistent with Critical Area density standards. These lots will address stormwater management at time of development, consistent with rural county lots.

4. STORMWATER MANAGEMENT

Stormwater management is conceptual at this point and has been analyzed to meet quality and quantity requirements. Several storm drain pipe runs and a flat bottom swale at the rear of lots 73-83/96 will convey runoff to the proposed stormwater feature in the southwest corner (SWM-SW). An 8-foot-wide flat bottom swale along the east side of the main drive (along the Critical Area boundary) will convey runoff from lots 46-48 and 89-112 north to the proposed stormwater feature at the north end of the site (SWM-N). Since this is a concept level analysis, treatment volumes are calculated by ponding volume only. We believe this is a conservative approach giving us a good starting point for discussion and refinement. Additional soils testing and discussion with the Town Engineer will potentially lead to different features.

4.1 STORMWATER QUANTITY MANAGEMENT

The 2-year and 10-year storm events are required to be managed onsite, with the 100-year storm event safely conveyed for discharge at the southwest corner and north end of the site (POI-1 and POI-2.) An additional point of discharge along the east property line of the site is to Windmill Branch, routed to tidal waters (POI-3.) Development (aside from the three estate lots) will occur outside the Critical Area, and there is not any proposed discharge to POI-3.

STORMWATER DISCHARGE (cfs)						
	Pre 2-yr	Post 2-yr	Pre 10-yr	Post 10-yr	Pre 100-yr	Post 100-yr
POI-1	28.95	**5.49**	69.81	**39.71**	125.31	**136.93**
POI-2	18.47	**0.61**	44.38	**4.25**	79.43	**14.39**
POI-3	3.68	**-**	14.68	**-**	32.10	**-**

The existing site is currently an open farm field. However, for a conservative approach the existing drainage area ground cover is modeled as grass in good condition. This reduces the pre-development runoff significantly. Even with the conservative approach to existing conditions, the stormwater discharge to the surrounding ditches is significantly reduced with this development.

4.2 STORMWATER QUALITY MANAGEMENT

This project is classified as new development. ESD requirements must be addressed for the project's entire limits of disturbance (LOD.) For a conservative approach, all soils are assumed as group C soils, resulting in a higher Pe. Lots will be proposed to be graded entirely to the street when situated back-to-back, or in a 2/3 towards the street-1/3 towards the rear fashion. Research has shown that approximately 2/3 of the proposed lot size will be developed. The entirety of this impervious area has been routed towards the stormwater features. The flat bottom conveyance swale at the rear of lots 73-83/96 is strictly for conveyance of rear yard runoff to the proposed stormwater feature SWM-SW. The proposed stormwater features adequately address ESD requirements.

Drainage Area	Type of ESD Practice	Drainage Area (sq. feet)	Impervious Area (sq. feet)	Target ESD_v (cu. feet)	ESD_v Provided (cu. Feet)
SWM-N	SGW	680,191	215,534	30,399	53,014
SWM-SW	SGW	1,521,779	644,319	98,396	123,776

5. CONCLUSION

This stormwater management analysis indicates that the proposed design will successfully meet, and exceed, stormwater quality and quantity requirements. The ESD volume provided is greater than the ESD volume required and proposed site runoff is significantly less than existing conditions. Planning and design analysis indicates that stormwater quality and quantity management can be accomplished as described. Please see the attached appendices for detailed calculations and drainage area maps.

APPENDIX A

MARYLAND ENVIRONMENTAL SITE DESIGN (ESD) CALCULATIONS

Maryland Environmental Site Design (ESD) Computations

Project	Poplar Hill	By	JJB
Location	Oxford Road/Easton Bypass	Date	8/1/2023

Determine Target ESDv

Initial Site Assessment (Site Data):

Existing Conditions

Total LOD Area: 2,201,970 sf

Soil Types:

HSG	A	B	C	D
Area			2,201,970	
Percent			100.0	

Proposed Layout

Impervious Cover: 859,853 sf

Percent Impervious (I) 39 %

Determine RCNs for Wooded Conditions:

HSG	A	B	C	D
Area			2,201,970	
Percent			100.0	
RCN	38	55	70	77

Weighted RCN: **70**

Determine ESD Targets:

= 0.40

From Table 5.3 and

%I = 39

HSG	A	B	C	D
Area			2,201,970	
Target P_E			1.80	

Composite Target P_E (in.): **1.80**

$$ESDv = \frac{(P_E)(Rv)(A)}{12}$$

= **132,595** **cf**

ESD Provided:

ESDv = **176,790** **cf**

SWM-N

Total Area	680,191	sf	Target ESDv =	$\frac{(P_F)(Rv)(A)}{12}$	
Impervious Area	215,534	sf			
Percent Impervious (I)	32	%	=	30,399	cf
Rv = 0.05 +0.009(I)	0.34		75% of target=	22,799	cf

Site Development Design:

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{53,198}\ \mathbf{cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage ONLY)
= **53,014** **cf**

Surface Area=	51,291	sf	Media Depth=	3	ft
Ponding Area=	54,736	sf			
Ponding depth=	1	ft	Porosity=	0.4	

Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this submerged gravel wetland practice is **53,014 cf.**

Now check for compliance with design criteria:

Submerged Gravel Wetland Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ Drainage area to practice is large to maintain submerged flow	✓
Appropriate soils and/or high groundwater is present	✓
Section dimensions of soil media layers greater than minimum	✓
Distribution and collection piping / underdrains provided	✓
Flow paths through gravel greater than 15 ft	✓
Riser pipes provided and spaced at 15 ft or less apart	✓
Cleanouts provided	✓

SWM-SW

Total Area	1,521,779	sf	Target ESDv =	$\frac{(P_F)(Rv)(A)}{12}$	
Impervious Area	644,319	sf			
Percent Impervious (I)	42	%	=	98,396	cf
Rv = 0.05 +0.009(I)	0.43		75% of target=	73,797	cf

Site Development Design - Submerged Gravel Wetland (M-2):

Based on the Cpv storm (2.8 in.): Max allowable ESDv that can be used:

$$V = \frac{(P)(Rv)(A)}{12} = \mathbf{153{,}061}\ \mathbf{cf}$$

The computed ESDv provided is:

ESDv = (Ponding storage ONLY)
= **123,776** **cf**

Surface Area=	79,478	sf	Media Depth=	3	ft
Ponding Area=	85,557	sf			
Ponding depth=	1.5	ft	Porosity=	0.4	

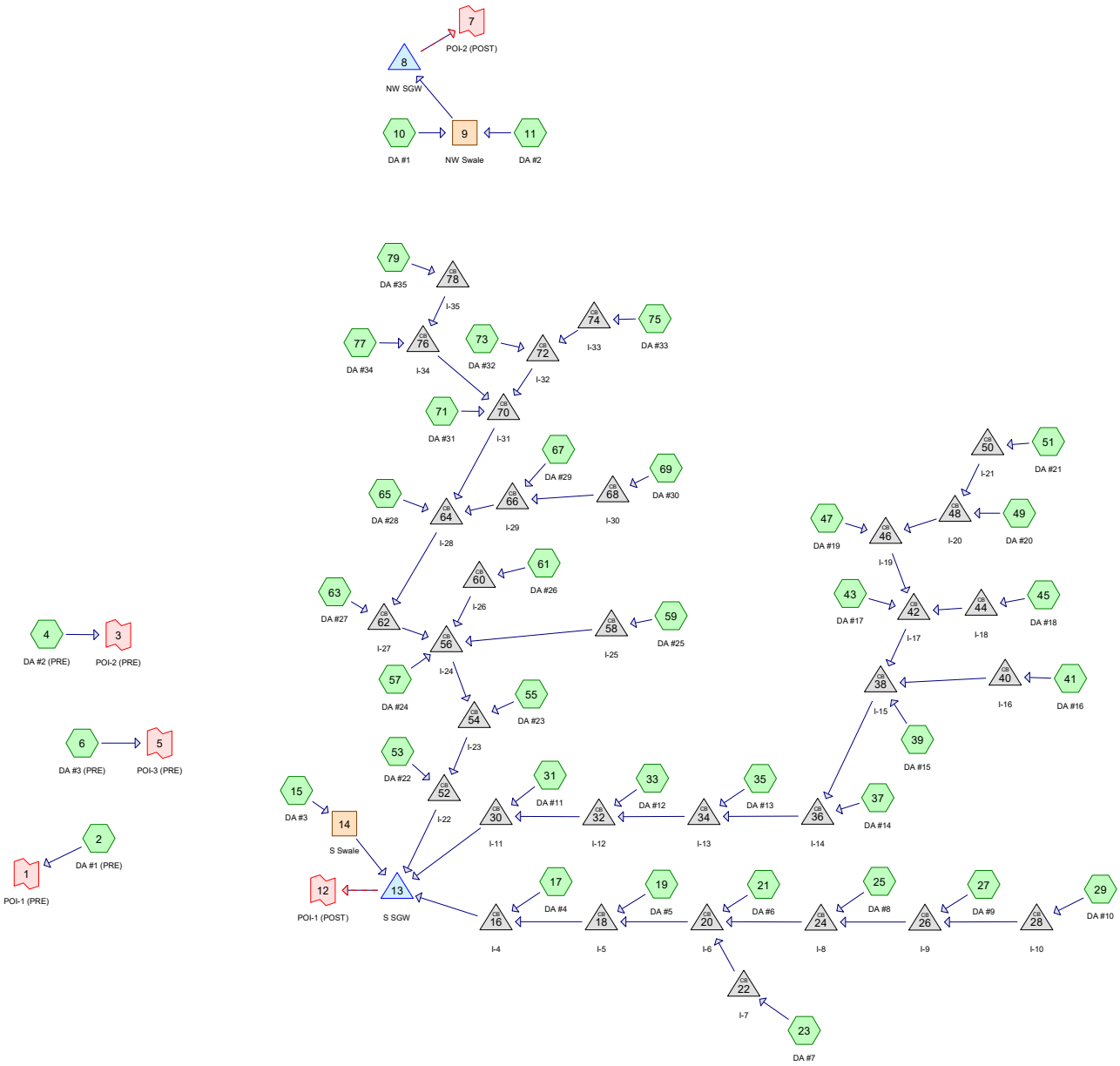
Therefore, when assessing compliance with the MEP standard, the volume of runoff treated by this submerged gravel wetland practice is **123,776 cf.**

Now check for compliance with design criteria:

Submerged Gravel Wetland Design Criteria:	**Provided**
_ Runoff shall enter, flowthrough, and exit in safe and non-erosive manner	✓
_ Drainage area to practice is large to maintain submerged flow	✓
Appropriate soils and/or high groundwater is present	✓
Section dimensions of soil media layers greater than minimum	✓
Distribution and collection piping / underdrains provided	✓
Flow paths through gravel greater than 15 ft	✓
Riser pipes provided and spaced at 15 ft or less apart	✓
Cleanouts provided	✓

APPENDIX B

STORMWATER QUANTITY CALCULATIONS



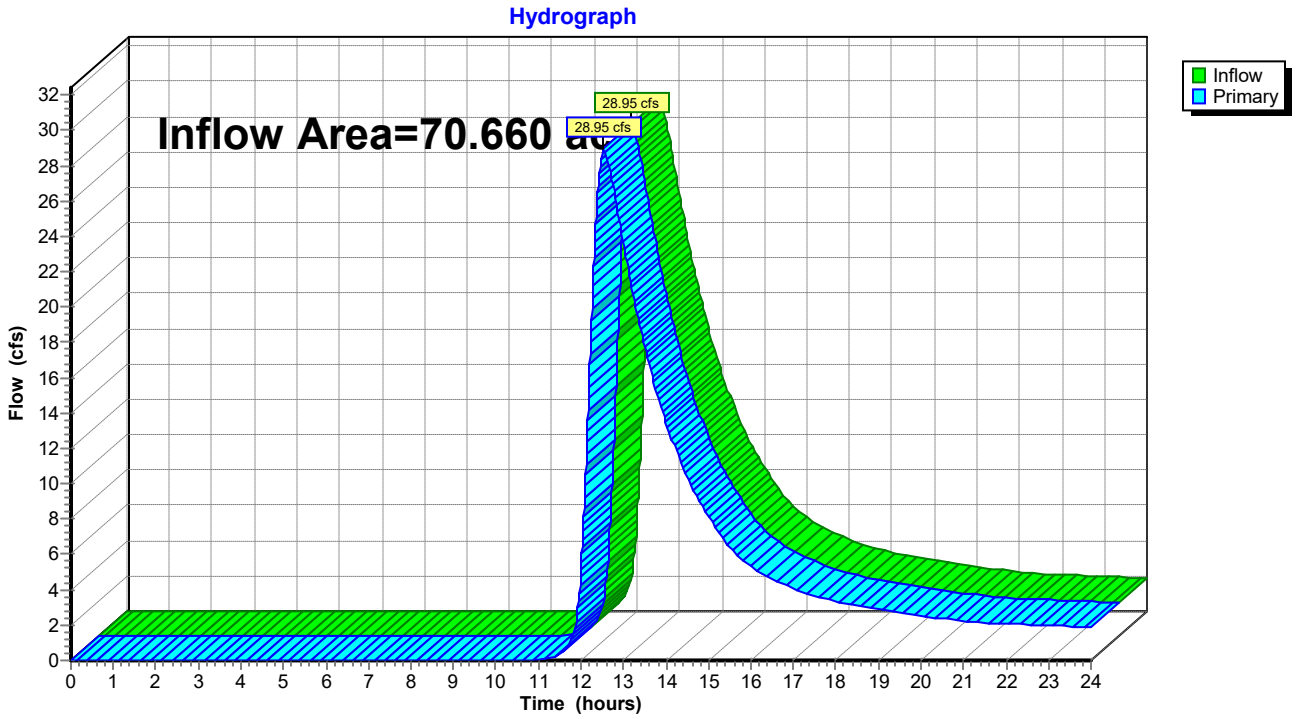
Routing Diagram for Poplar Hill-220155
Prepared by {enter your company name here}, Printed 8/1/2023
HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

Summary for Link 1: POI-1 (PRE)

Inflow Area = 70.660 ac, 0.00% Impervious, Inflow Depth > 1.14" for 2-Yr event
Inflow = 28.95 cfs @ 12.51 hrs, Volume= 6.707 af
Primary = 28.95 cfs @ 12.51 hrs, Volume= 6.707 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 1: POI-1 (PRE)



Summary for Subcatchment 2: DA #1 (PRE)

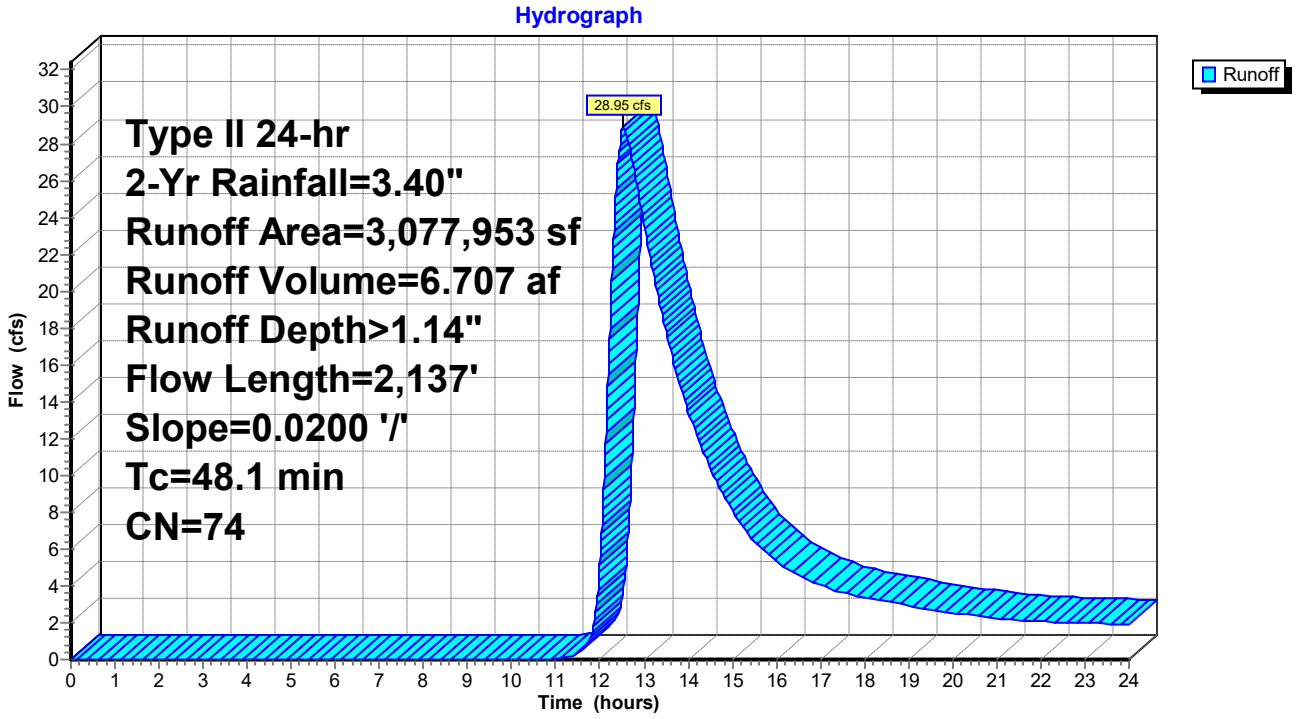
Runoff = 28.95 cfs @ 12.51 hrs, Volume= 6.707 af, Depth> 1.14"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
3,077,953	74	>75% Grass cover, Good, HSG C
3,077,953		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	100	0.0200	0.12		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"
34.3	2,037	0.0200	0.99		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
48.1	2,137	Total			

Subcatchment 2: DA #1 (PRE)

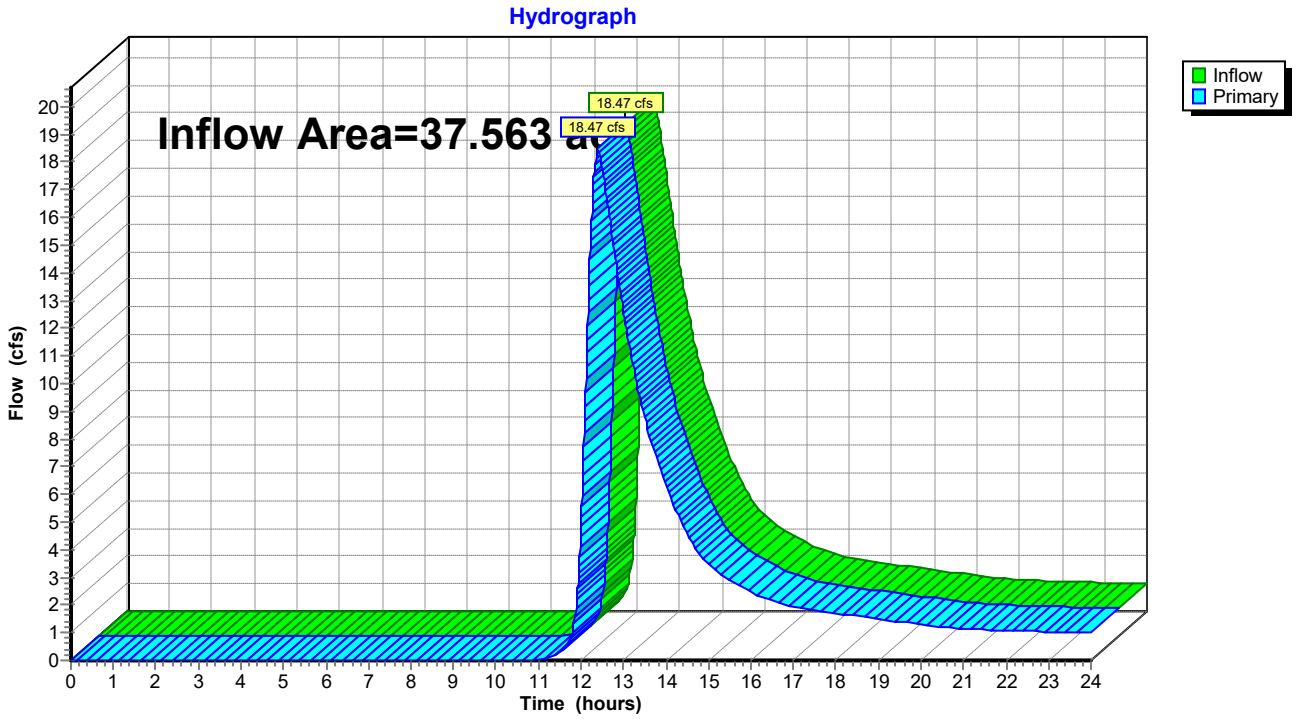


Summary for Link 3: POI-2 (PRE)

Inflow Area = 37.563 ac, 0.00% Impervious, Inflow Depth > 1.15" for 2-Yr event
Inflow = 18.47 cfs @ 12.38 hrs, Volume= 3.588 af
Primary = 18.47 cfs @ 12.38 hrs, Volume= 3.588 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 3: POI-2 (PRE)



Summary for Subcatchment 4: DA #2 (PRE)

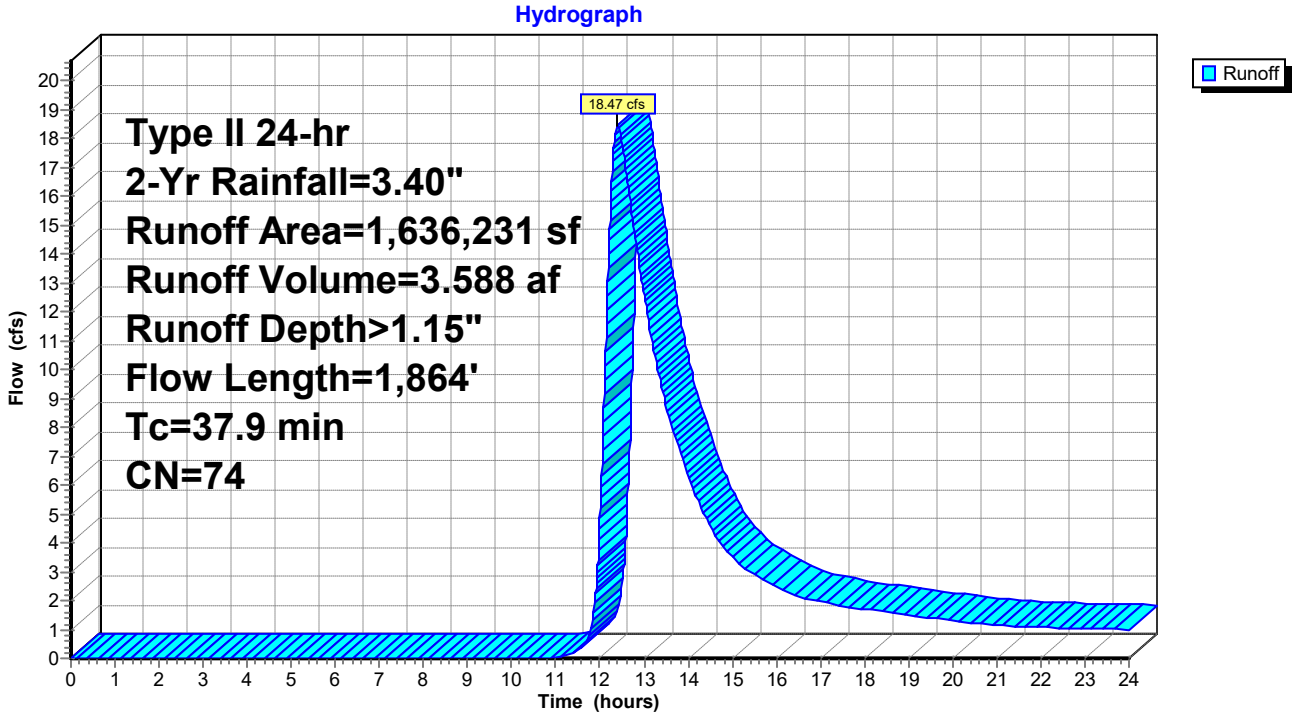
Runoff = 18.47 cfs @ 12.38 hrs, Volume= 3.588 af, Depth> 1.15"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
1,636,231	74	>75% Grass cover, Good, HSG C
1,636,231		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	100	0.0200	0.12		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"
10.5	482	0.0120	0.77		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
13.6	1,282	0.0110	1.57		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
37.9	1,864	Total			

Subcatchment 4: DA #2 (PRE)

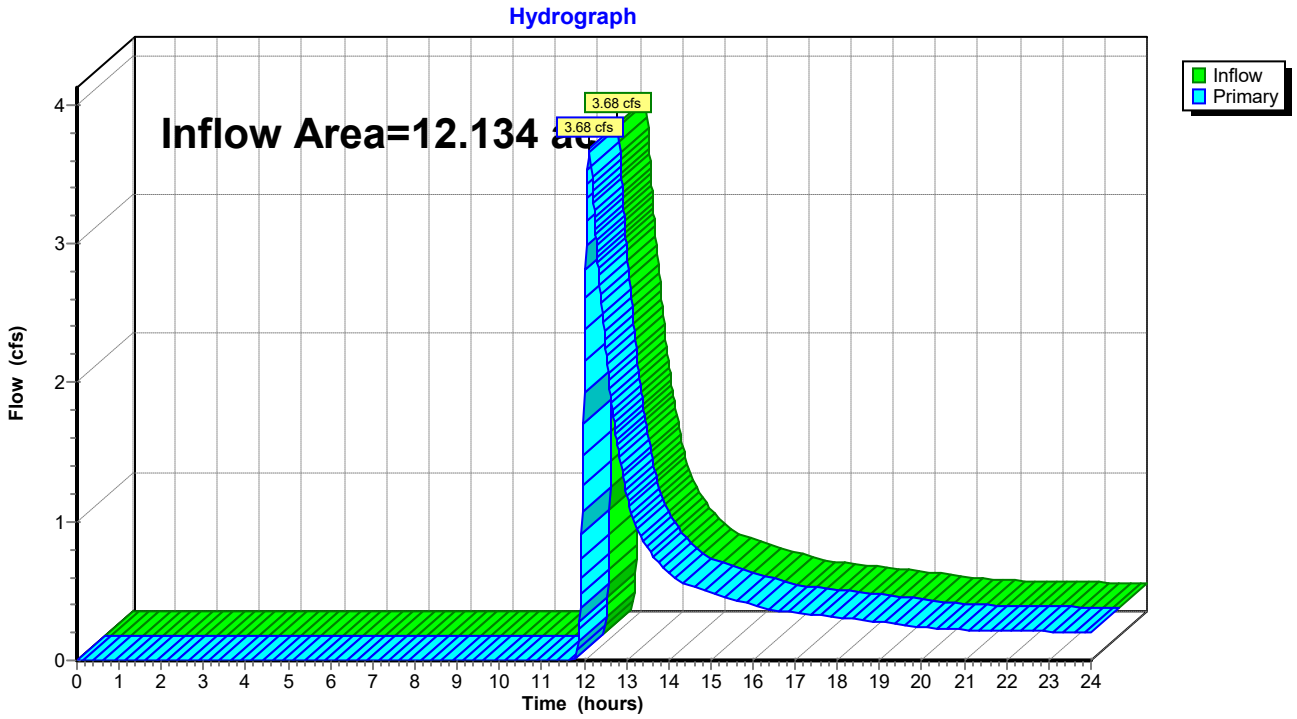


Summary for Link 5: POI-3 (PRE)

Inflow Area = 12.134 ac, 0.00% Impervious, Inflow Depth > 0.52" for 2-Yr event
Inflow = 3.68 cfs @ 12.13 hrs, Volume= 0.528 af
Primary = 3.68 cfs @ 12.13 hrs, Volume= 0.528 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 5: POI-3 (PRE)



Summary for Subcatchment 6: DA #3 (PRE)

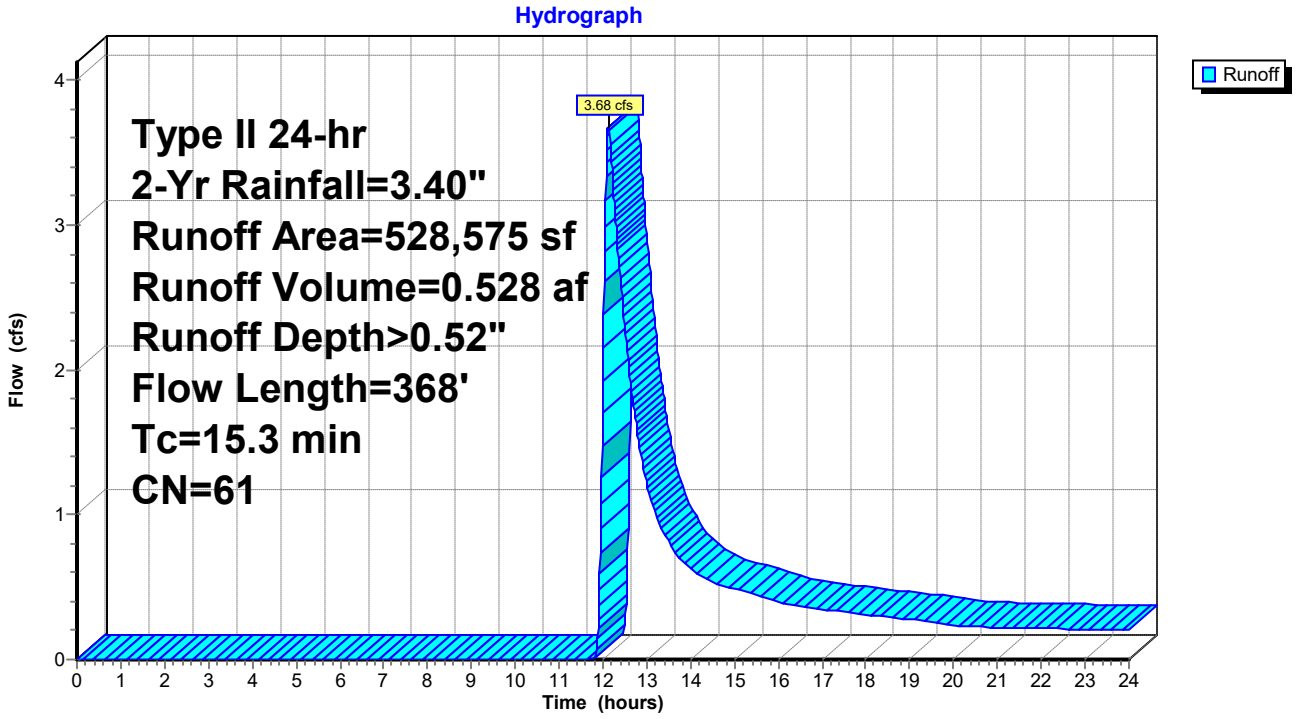
Runoff = 3.68 cfs @ 12.13 hrs, Volume= 0.528 af, Depth> 0.52"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
528,575	61	>75% Grass cover, Good, HSG B
528,575		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0230	0.13		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"
2.2	268	0.0810	1.99		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
15.3	368	Total			

Subcatchment 6: DA #3 (PRE)

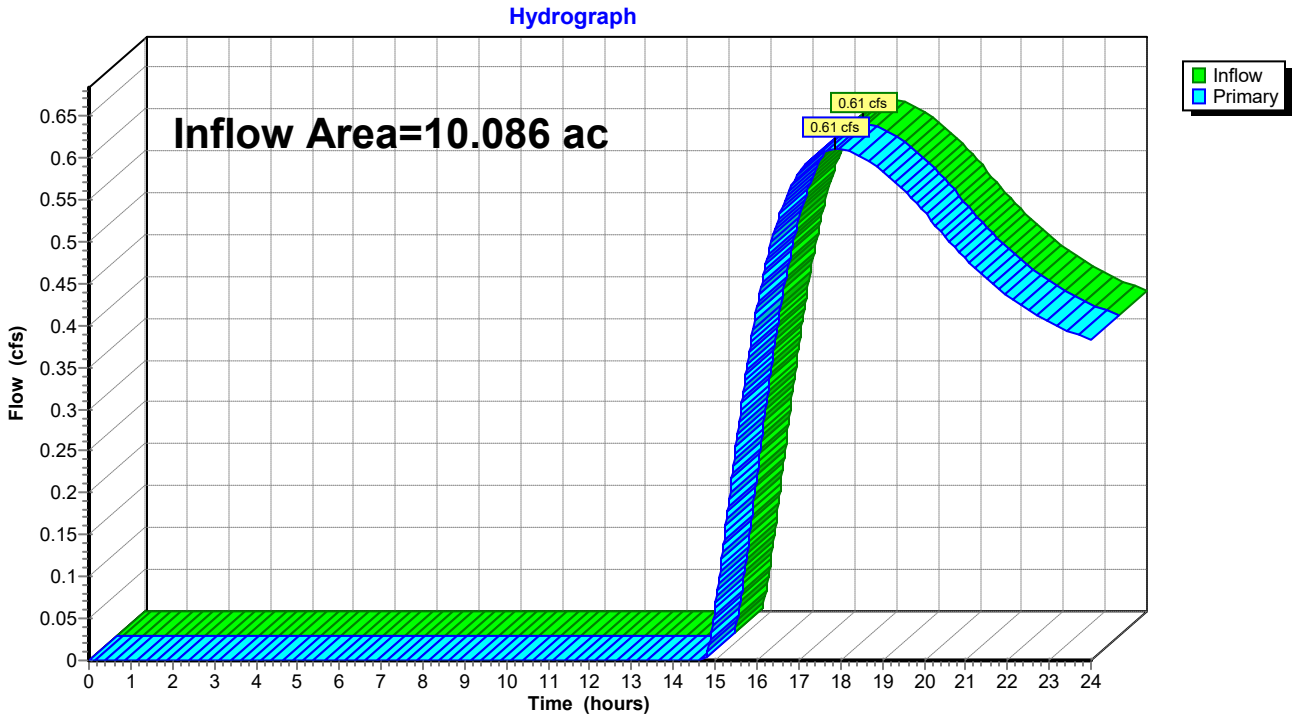


Summary for Link 7: POI-2 (POST)

Inflow Area = 10.086 ac, 48.77% Impervious, Inflow Depth > 0.42" for 2-Yr event
Inflow = 0.61 cfs @ 17.87 hrs, Volume= 0.357 af
Primary = 0.61 cfs @ 17.87 hrs, Volume= 0.357 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 7: POI-2 (POST)



Summary for Pond 8: NW SGW

Inflow Area = 10.086 ac, 48.77% Impervious, Inflow Depth > 1.96" for 2-Yr event
Inflow = 14.47 cfs @ 12.18 hrs, Volume= 1.648 af
Outflow = 0.61 cfs @ 17.87 hrs, Volume= 0.357 af, Atten= 96%, Lag= 341.7 min
Primary = 0.61 cfs @ 17.87 hrs, Volume= 0.357 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 16.28' @ 17.87 hrs Surf.Area= 54,993 sf Storage= 57,470 cf

Plug-Flow detention time= 460.5 min calculated for 0.357 af (22% of inflow)
Center-of-Mass det. time= 321.8 min (1,168.4 - 846.6)

Volume	Invert	Avail.Storage	Storage Description
#1	15.20'	167,693 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

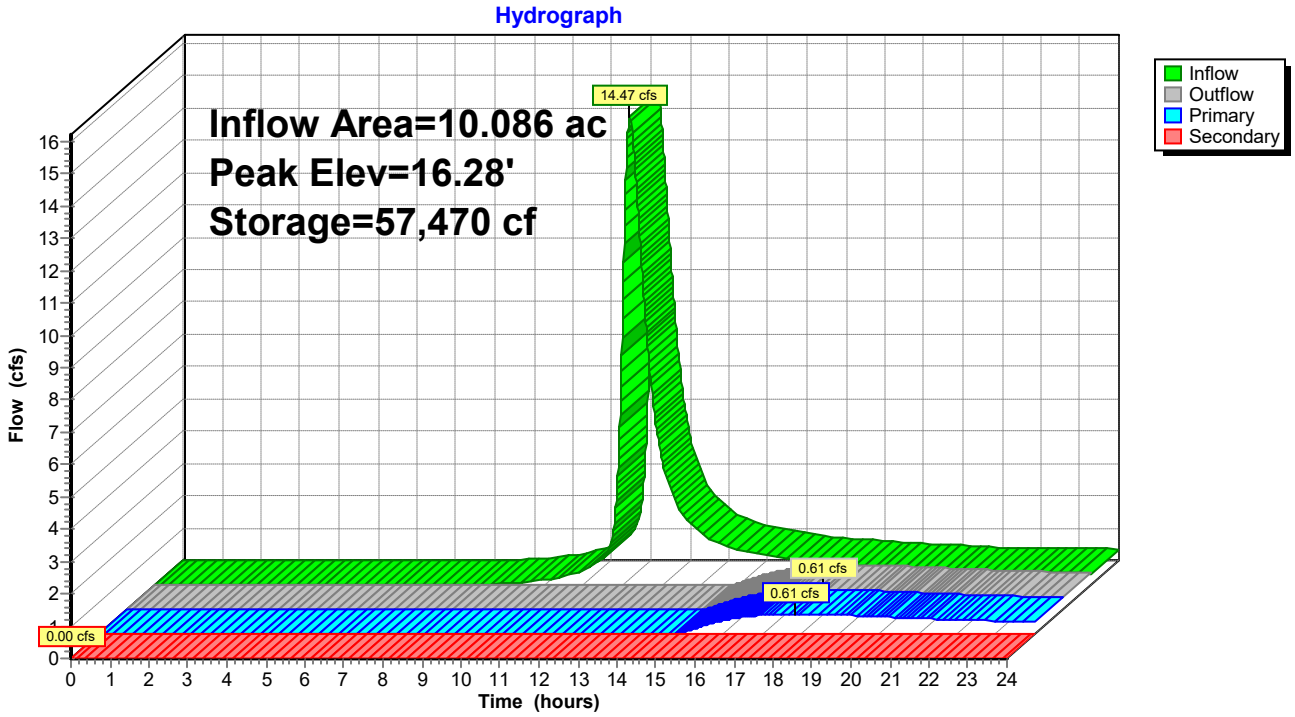
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
15.20	51,291	1,138.9	0	0	51,291
17.20	58,238	1,176.6	109,455	109,455	58,613
18.20	58,238	1,176.6	58,238	167,693	59,790

Device	Routing	Invert	Outlet Devices
#1	Primary	14.87'	**12.0" Round Culvert** L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 14.87' / 13.00' S= 0.0312 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	16.20'	**8.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#3	Secondary	17.20'	**124.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.61 cfs @ 17.87 hrs HW=16.28' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.61 cfs of 3.61 cfs potential flow)
  └─**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.61 cfs @ 0.93 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=15.20' TW=0.00' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 8: NW SGW


Hydrograph
Inflow Area=10.086 ac
Peak Elev=16.28'
Storage=57,470 cf
14.47 cfs
0.61 cfs
0.61 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Reach 9: NW Swale

Inflow Area = 10.086 ac, 48.77% Impervious, Inflow Depth > 2.00" for 2-Yr event
Inflow = 23.59 cfs @ 12.02 hrs, Volume= 1.683 af
Outflow = 14.47 cfs @ 12.18 hrs, Volume= 1.648 af, Atten= 39%, Lag= 9.2 min

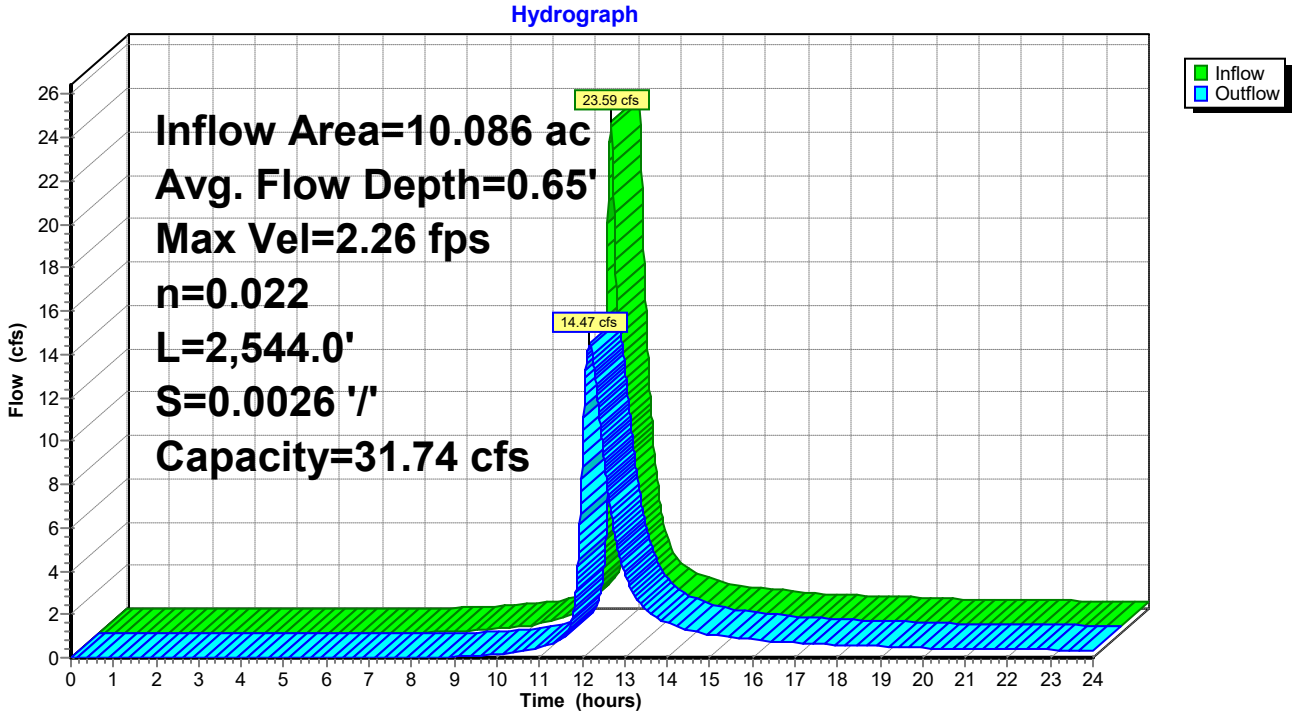
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.26 fps, Min. Travel Time= 18.8 min
Avg. Velocity = 0.73 fps, Avg. Travel Time= 57.8 min

Peak Storage= 16,320 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.65'
Bank-Full Depth= 1.00' Flow Area= 11.0 sf, Capacity= 31.74 cfs

8.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 2,544.0' Slope= 0.0026 '/'
Inlet Invert= 23.30', Outlet Invert= 16.70'

‡

Reach 9: NW Swale



Summary for Subcatchment 10: DA #1

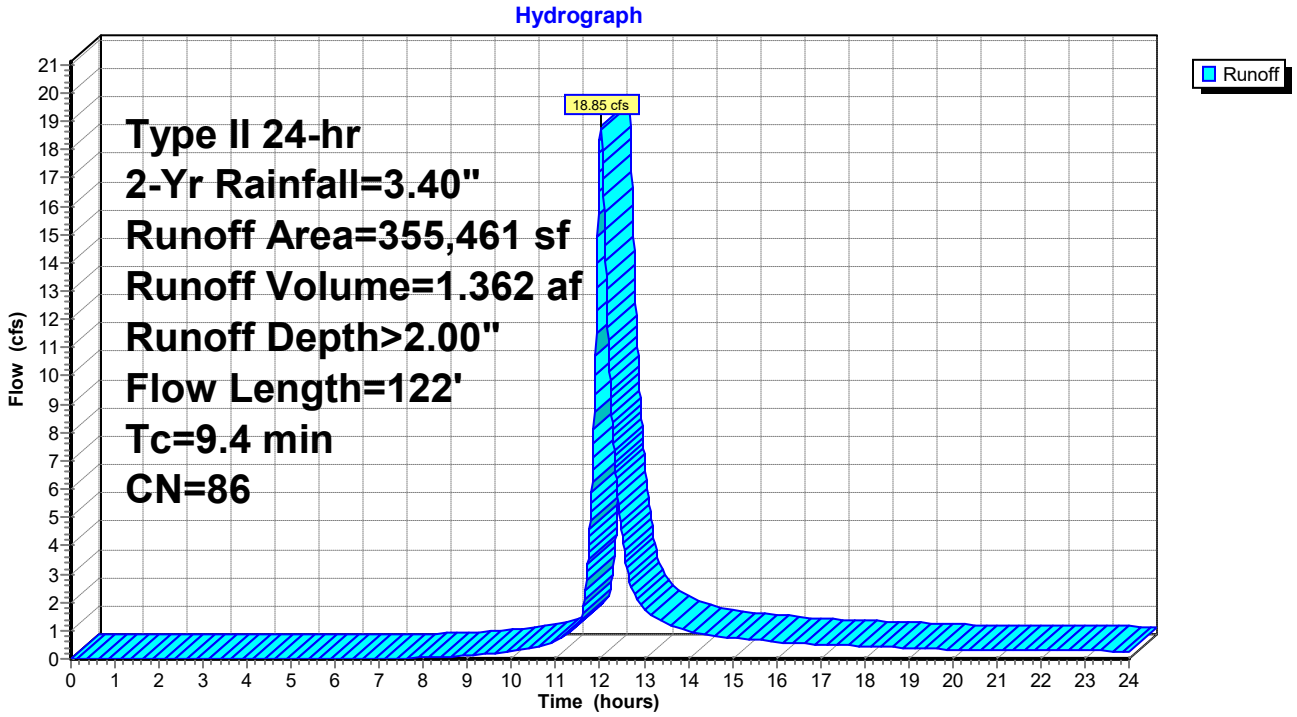
Runoff = 18.85 cfs @ 12.03 hrs, Volume= 1.362 af, Depth> 2.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
172,774	98	Paved parking, HSG C
182,687	74	>75% Grass cover, Good, HSG C
355,461	86	Weighted Average
182,687		51.39% Pervious Area
172,774		48.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	94	0.0200	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.4	28	0.0208	1.12		**Sheet Flow, B-C** Smooth surfaces n= 0.011 P2= 3.40"
9.4	122	Total			

Subcatchment 10: DA #1



Summary for Subcatchment 11: DA #2

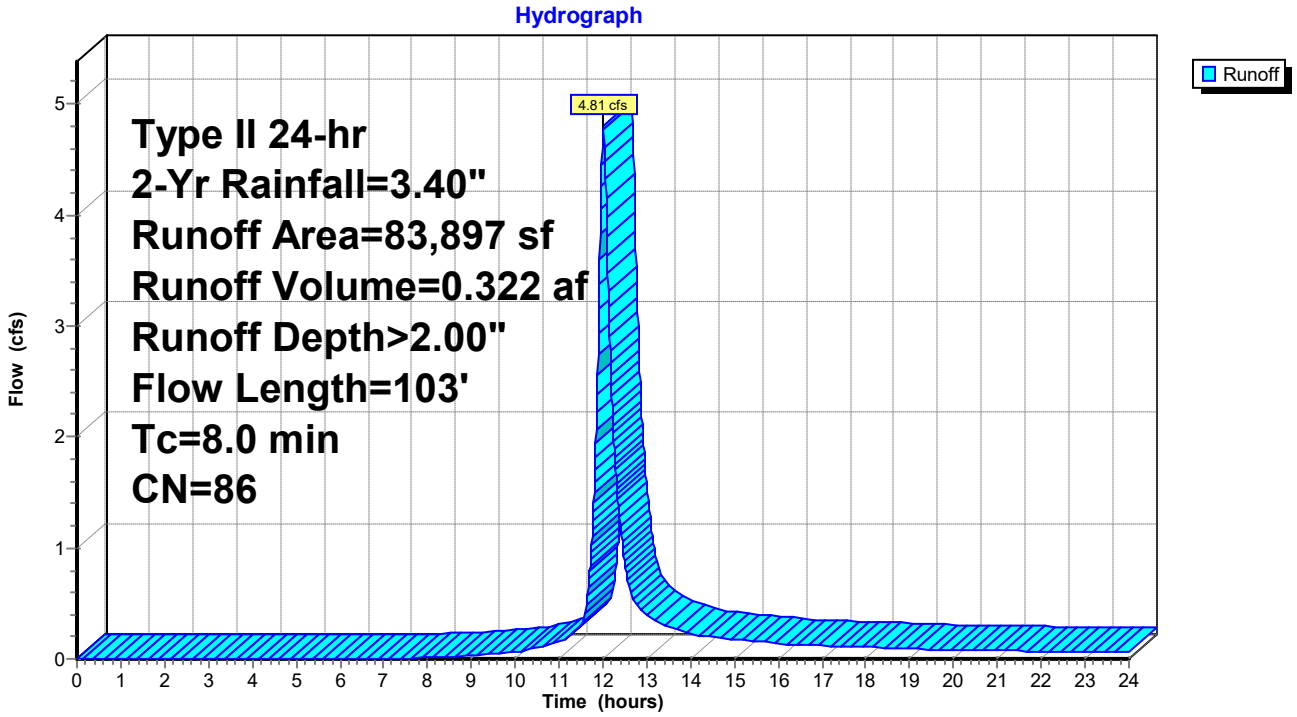
Runoff = 4.81 cfs @ 12.01 hrs, Volume= 0.322 af, Depth> 2.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
41,506	98	Paved parking, HSG C
42,391	74	>75% Grass cover, Good, HSG C
83,897	86	Weighted Average
42,391		50.53% Pervious Area
41,506		49.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	75	0.0200	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.4	28	0.0208	1.12		**Sheet Flow, B-C** Smooth surfaces n= 0.011 P2= 3.40"
8.0	103	Total			

Subcatchment 11: DA #2

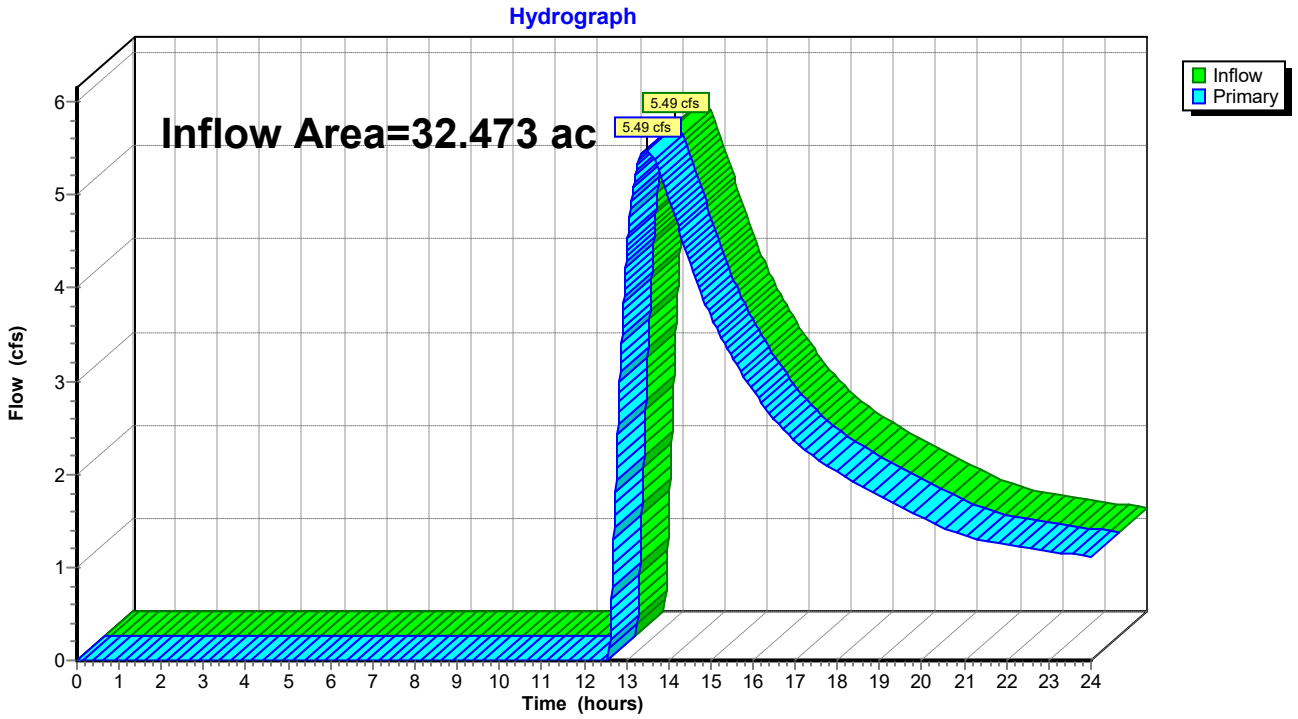


Summary for Link 12: POI-1 (POST)

Inflow Area = 32.473 ac, 44.87% Impervious, Inflow Depth > 0.83" for 2-Yr event
Inflow = 5.49 cfs @ 13.47 hrs, Volume= 2.240 af
Primary = 5.49 cfs @ 13.47 hrs, Volume= 2.240 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 12: POI-1 (POST)



Summary for Pond 13: S SGW

Inflow Area = 32.473 ac, 44.87% Impervious, Inflow Depth > 1.93" for 2-Yr event
Inflow = 58.00 cfs @ 12.07 hrs, Volume= 5.231 af
Outflow = 5.49 cfs @ 13.47 hrs, Volume= 2.240 af, Atten= 91%, Lag= 83.8 min
Primary = 5.49 cfs @ 13.47 hrs, Volume= 2.240 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 19.62' @ 13.47 hrs Surf.Area= 86,441 sf Storage= 142,859 cf

Plug-Flow detention time= 300.0 min calculated for 2.239 af (43% of inflow)
Center-of-Mass det. time= 177.6 min (1,005.7 - 828.1)

Volume	Invert	Avail.Storage	Storage Description
#1	17.90'	300,999 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

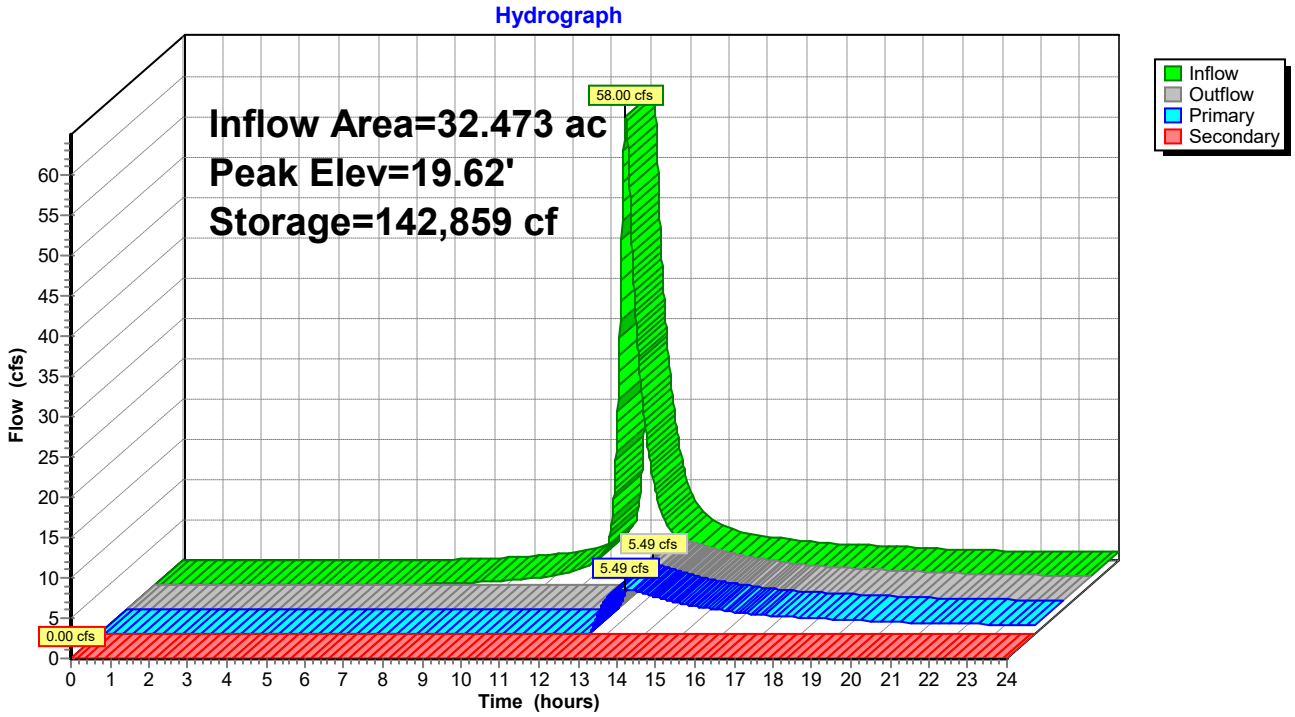
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
17.90	79,478	1,336.7	0	0	79,478
20.40	89,680	1,383.8	211,319	211,319	90,227
21.40	89,680	1,383.8	89,680	300,999	91,611

Device	Routing	Invert	Outlet Devices
#1	Primary	17.57'	**36.0" Round Culvert X 2.00** L= 73.0' Ke= 0.500 Inlet / Outlet Invert= 17.57' / 17.40' S= 0.0023 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	19.40'	**8.0' long Sharp-Crested Rectangular Weir X 2.00** 0 End Contraction(s)
#3	Secondary	20.40'	**265.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=5.49 cfs @ 13.47 hrs HW=19.62' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 5.49 cfs of 34.77 cfs potential flow)
  └─**2=Sharp-Crested Rectangular Weir** (Weir Controls 5.49 cfs @ 1.54 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=17.90' TW=0.00' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 13: S SGW


Hydrograph
Inflow Area=32.473 ac
Peak Elev=19.62'
Storage=142,859 cf
58.00 cfs
5.49 cfs
5.49 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Reach 14: S Swale

Inflow Area = 7.080 ac, 0.00% Impervious, Inflow Depth > 1.17" for 2-Yr event
Inflow = 12.85 cfs @ 11.97 hrs, Volume= 0.689 af
Outflow = 9.14 cfs @ 12.05 hrs, Volume= 0.680 af, Atten= 29%, Lag= 4.3 min

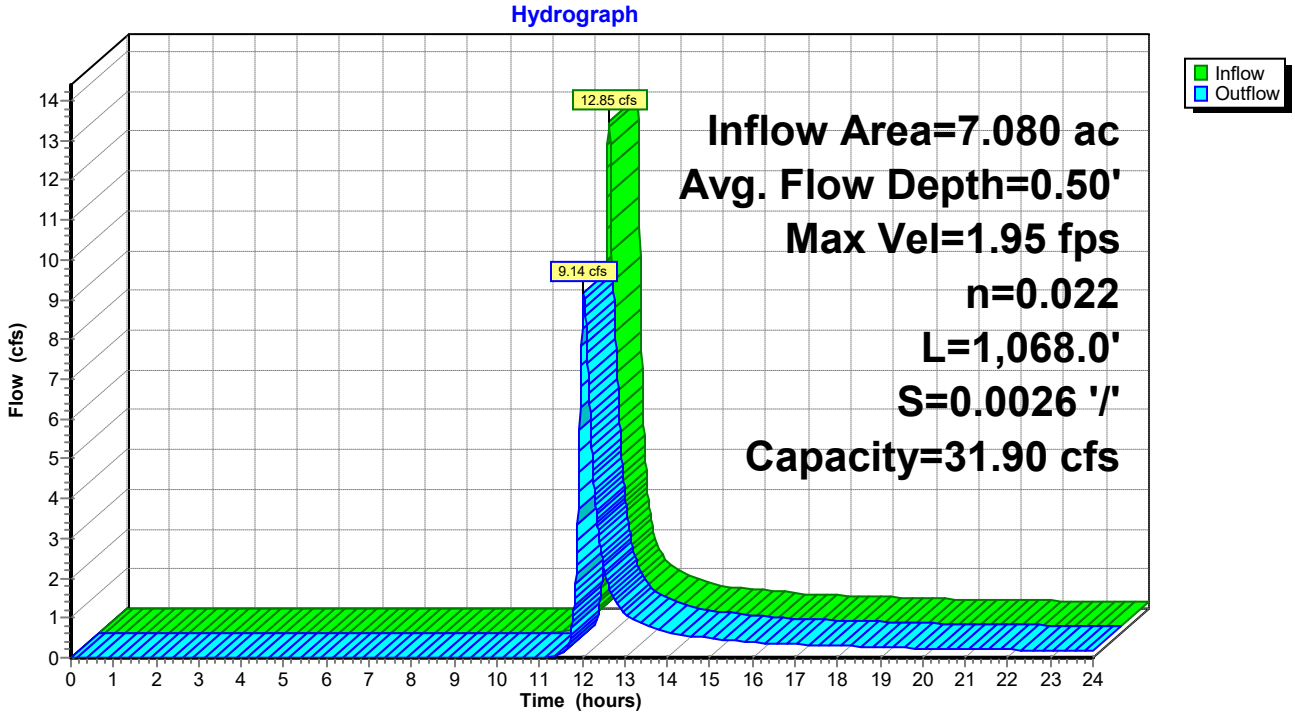
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.95 fps, Min. Travel Time= 9.1 min
Avg. Velocity = 0.61 fps, Avg. Travel Time= 29.0 min

Peak Storage= 5,017 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 1.00' Flow Area= 11.0 sf, Capacity= 31.90 cfs

8.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 1,068.0' Slope= 0.0026 '/'
Inlet Invert= 22.70', Outlet Invert= 19.90'

‡

Reach 14: S Swale



Summary for Subcatchment 15: DA #3

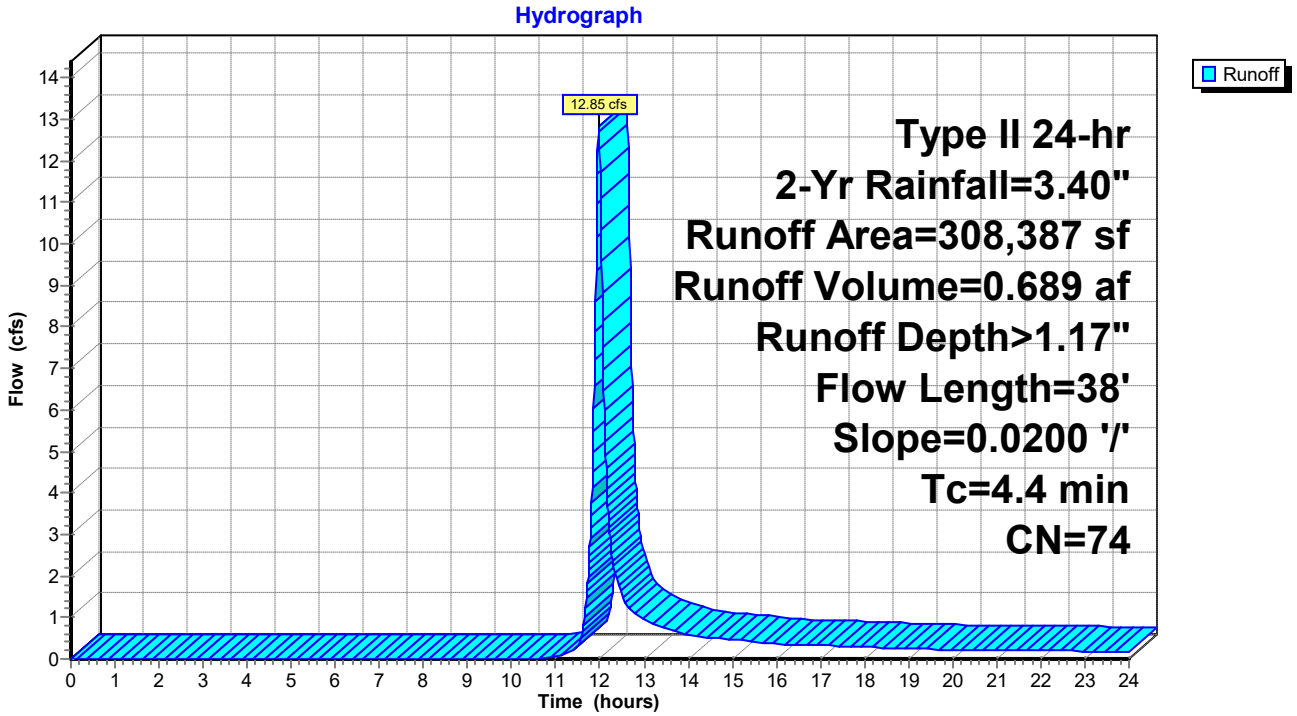
Runoff = 12.85 cfs @ 11.97 hrs, Volume= 0.689 af, Depth> 1.17"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
308,387	74	>75% Grass cover, Good, HSG C
308,387		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	38	0.0200	0.14		**Sheet Flow, Yard** Grass: Short n= 0.150 P2= 3.40"

Subcatchment 15: DA #3



Summary for Pond 16: I-4

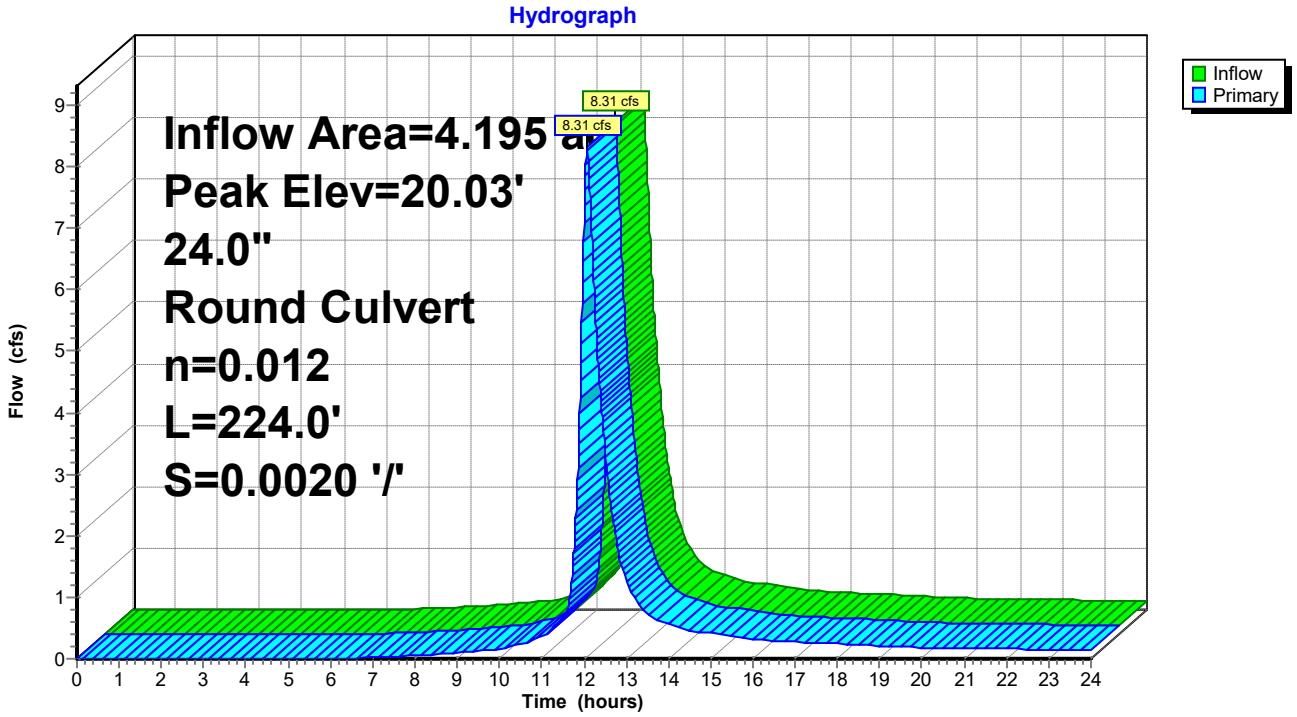
Inflow Area = 4.195 ac, 57.26% Impervious, Inflow Depth > 2.17" for 2-Yr event
Inflow = 8.31 cfs @ 12.08 hrs, Volume= 0.759 af
Outflow = 8.31 cfs @ 12.08 hrs, Volume= 0.759 af, Atten= 0%, Lag= 0.0 min
Primary = 8.31 cfs @ 12.08 hrs, Volume= 0.759 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.03' @ 12.08 hrs
Flood Elev= 25.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.35'	**24.0" Round Culvert** L= 224.0' Ke= 0.500 Inlet / Outlet Invert= 18.35' / 17.90' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=8.31 cfs @ 12.08 hrs HW=20.03' TW=18.63' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 8.31 cfs @ 3.99 fps)

Pond 16: I-4



Summary for Subcatchment 17: DA #4

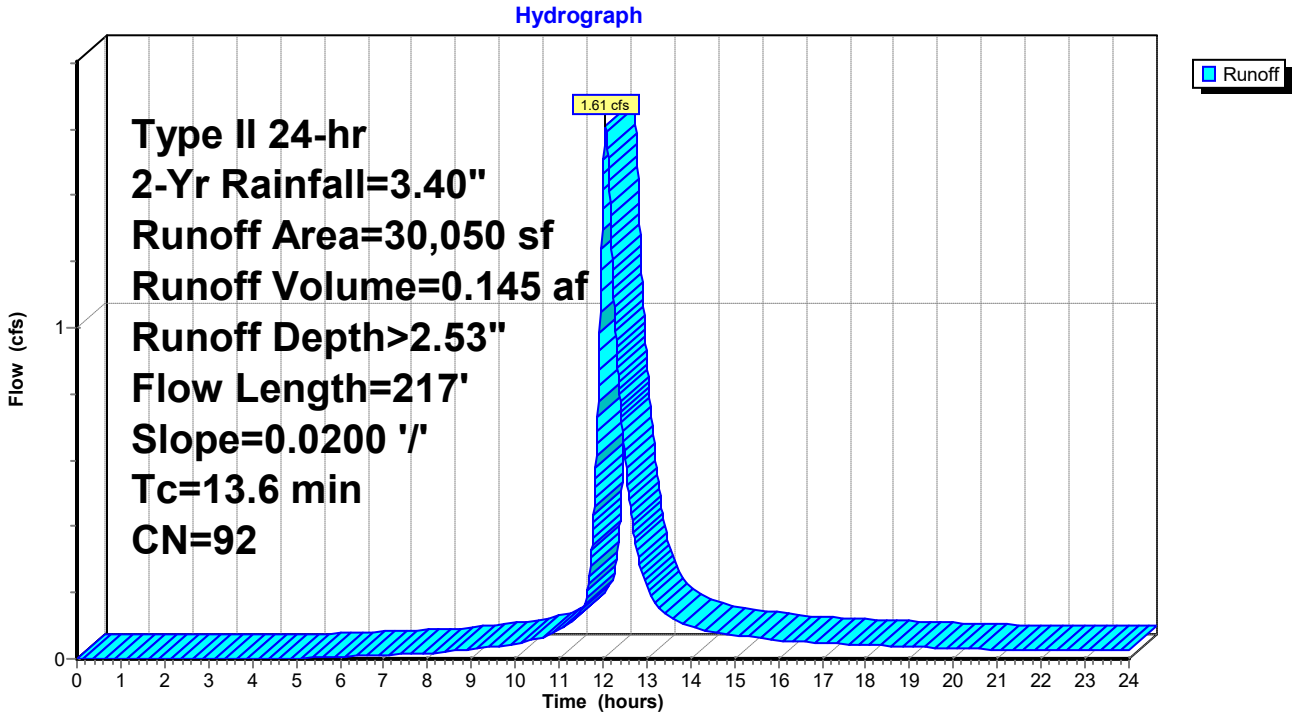
Runoff = 1.61 cfs @ 12.06 hrs, Volume= 0.145 af, Depth> 2.53"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
21,915	98	Paved parking, HSG C
8,135	74	>75% Grass cover, Good, HSG C
30,050	92	Weighted Average
8,135		27.07% Pervious Area
21,915		72.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.5	67	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.6	217	Total			

Subcatchment 17: DA #4



Summary for Pond 18: I-5

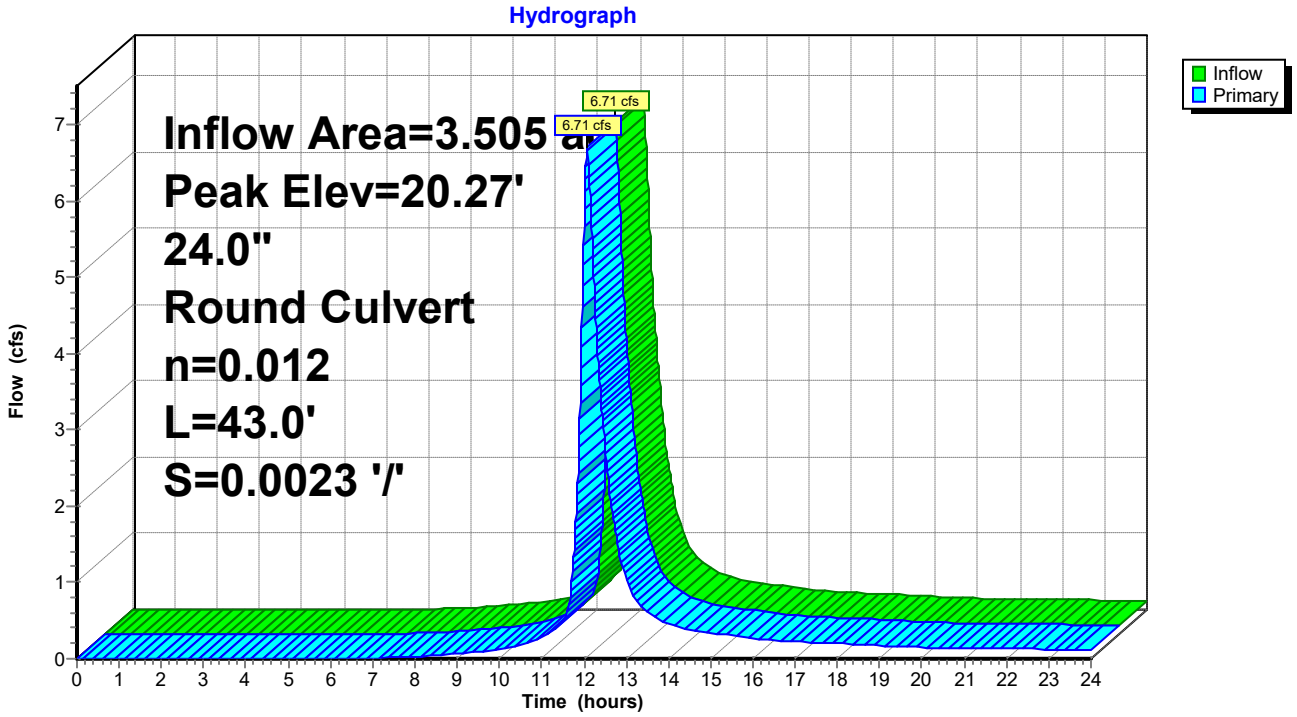
Inflow Area = 3.505 ac, 54.18% Impervious, Inflow Depth > 2.10" for 2-Yr event
Inflow = 6.71 cfs @ 12.08 hrs, Volume= 0.614 af
Outflow = 6.71 cfs @ 12.08 hrs, Volume= 0.614 af, Atten= 0%, Lag= 0.0 min
Primary = 6.71 cfs @ 12.08 hrs, Volume= 0.614 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.27' @ 12.08 hrs
Flood Elev= 26.56'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.45'	**24.0" Round Culvert** L= 43.0' Ke= 0.500 Inlet / Outlet Invert= 18.45' / 18.35' S= 0.0023 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=6.68 cfs @ 12.08 hrs HW=20.27' TW=20.03' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 6.68 cfs @ 2.92 fps)

Pond 18: I-5



Summary for Subcatchment 19: DA #5

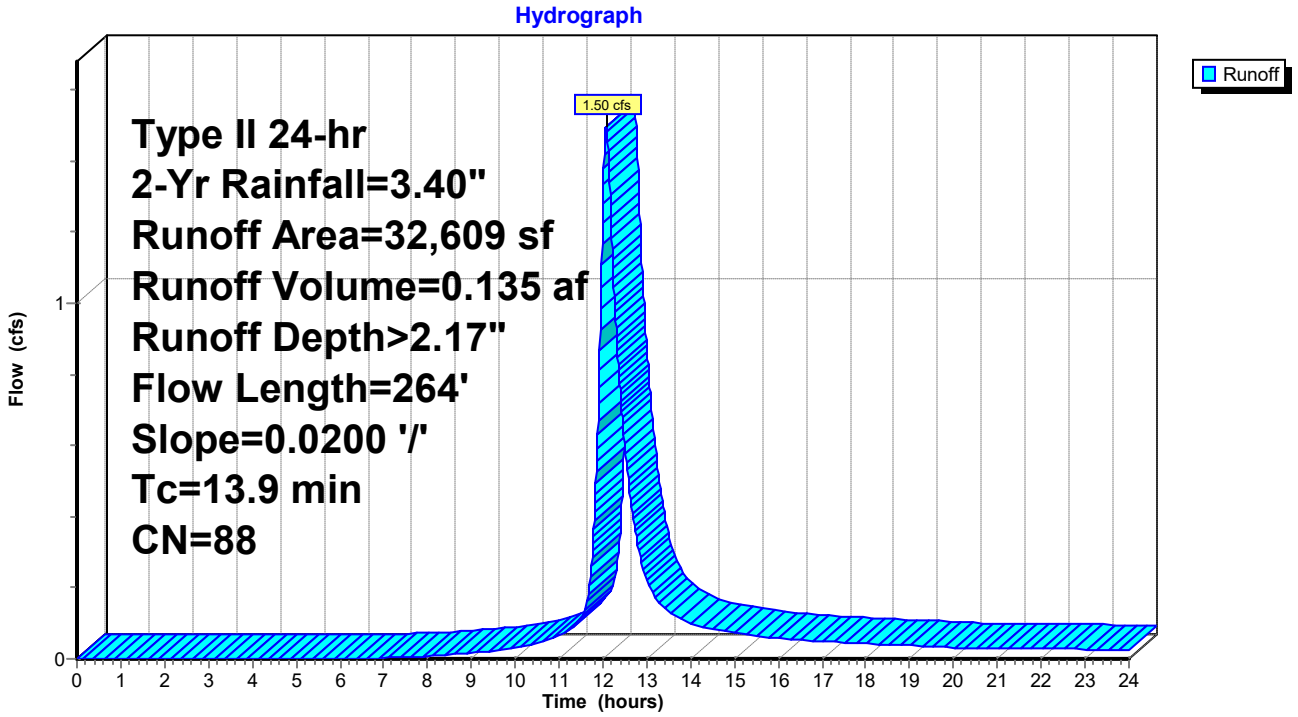
Runoff = 1.50 cfs @ 12.08 hrs, Volume= 0.135 af, Depth> 2.17"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
18,997	98	Paved parking, HSG C
13,612	74	>75% Grass cover, Good, HSG C
32,609	88	Weighted Average
13,612		41.74% Pervious Area
18,997		58.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.8	114	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.9	264	Total			

Subcatchment 19: DA #5



Summary for Pond 20: I-6

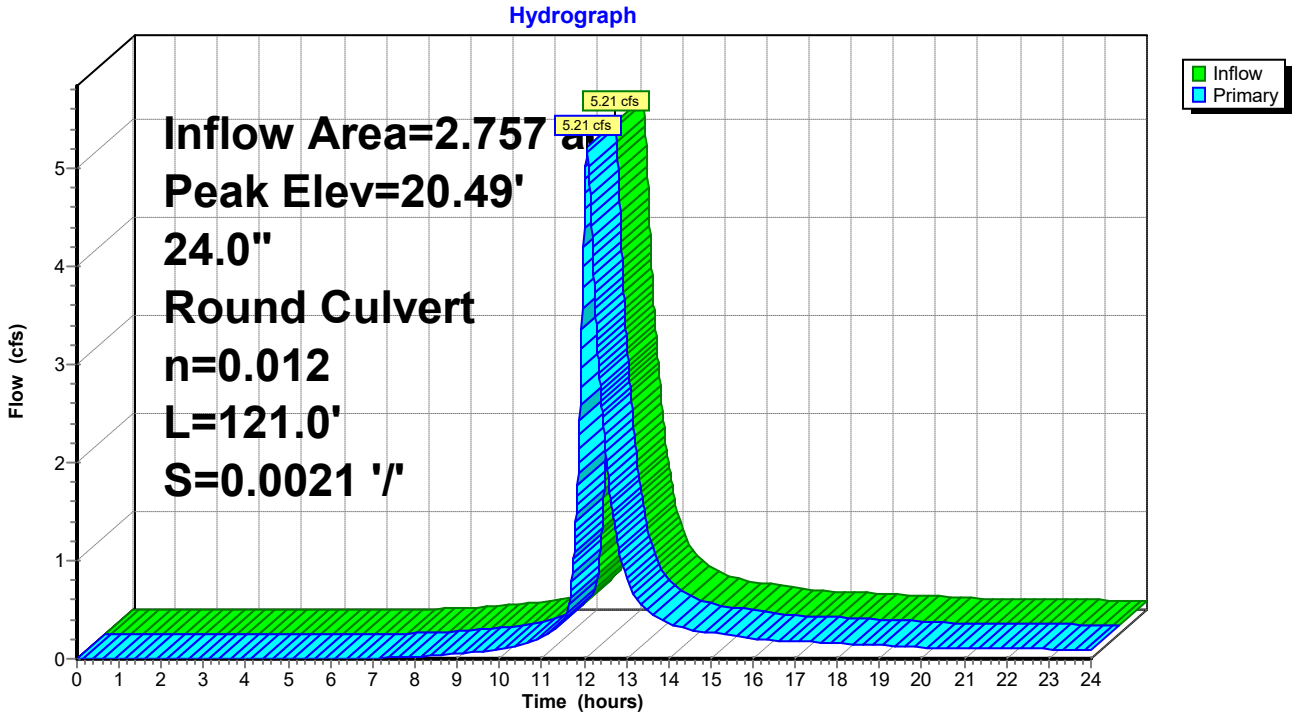
Inflow Area = 2.757 ac, 53.07% Impervious, Inflow Depth > 2.08" for 2-Yr event
Inflow = 5.21 cfs @ 12.08 hrs, Volume= 0.479 af
Outflow = 5.21 cfs @ 12.08 hrs, Volume= 0.479 af, Atten= 0%, Lag= 0.0 min
Primary = 5.21 cfs @ 12.08 hrs, Volume= 0.479 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.49' @ 12.09 hrs
Flood Elev= 27.27'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.70'	**24.0" Round Culvert** L= 121.0' Ke= 0.500 Inlet / Outlet Invert= 18.70' / 18.45' S= 0.0021 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=5.14 cfs @ 12.08 hrs HW=20.48' TW=20.27' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 5.14 cfs @ 2.30 fps)

Pond 20: I-6



Summary for Subcatchment 21: DA #6

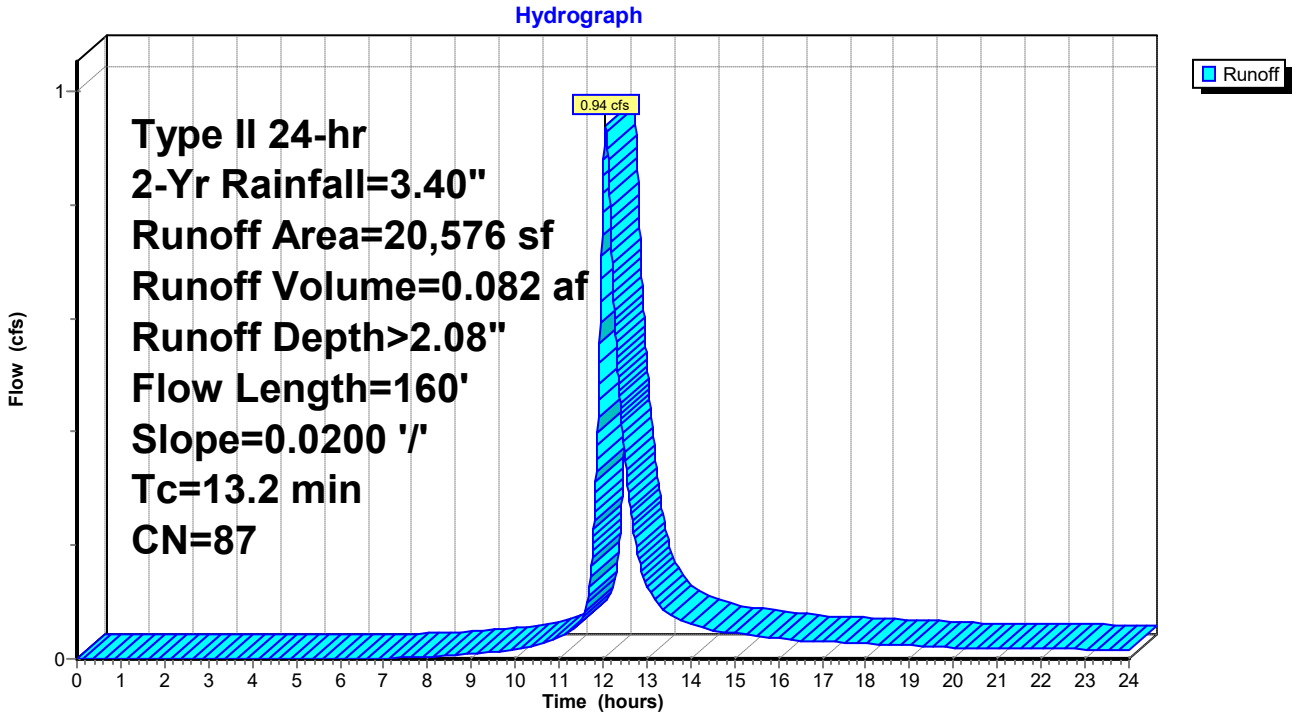
Runoff = 0.94 cfs @ 12.06 hrs, Volume= 0.082 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
10,975	98	Paved parking, HSG C
9,601	74	>75% Grass cover, Good, HSG C
20,576	87	Weighted Average
9,601		46.66% Pervious Area
10,975		53.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.1	10	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.2	160	Total			

Subcatchment 21: DA #6



Summary for Pond 22: I-7

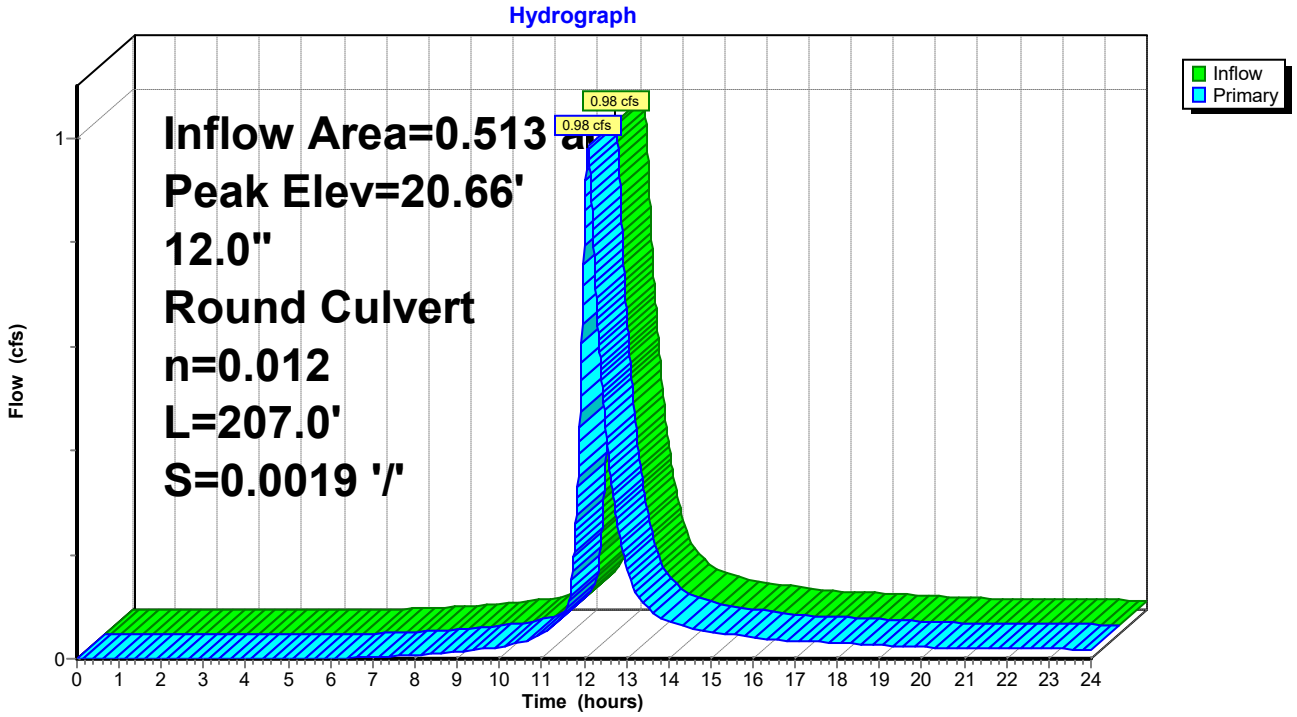
Inflow Area = 0.513 ac, 60.78% Impervious, Inflow Depth > 2.25" for 2-Yr event
Inflow = 0.98 cfs @ 12.08 hrs, Volume= 0.096 af
Outflow = 0.98 cfs @ 12.08 hrs, Volume= 0.096 af, Atten= 0%, Lag= 0.0 min
Primary = 0.98 cfs @ 12.08 hrs, Volume= 0.096 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.66' @ 12.10 hrs
Flood Elev= 27.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.10'	**12.0" Round Culvert** L= 207.0' Ke= 0.500 Inlet / Outlet Invert= 19.10' / 18.70' S= 0.0019 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.96 cfs @ 12.08 hrs HW=20.65' TW=20.48' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.96 cfs @ 1.22 fps)

Pond 22: I-7



Summary for Subcatchment 23: DA #7

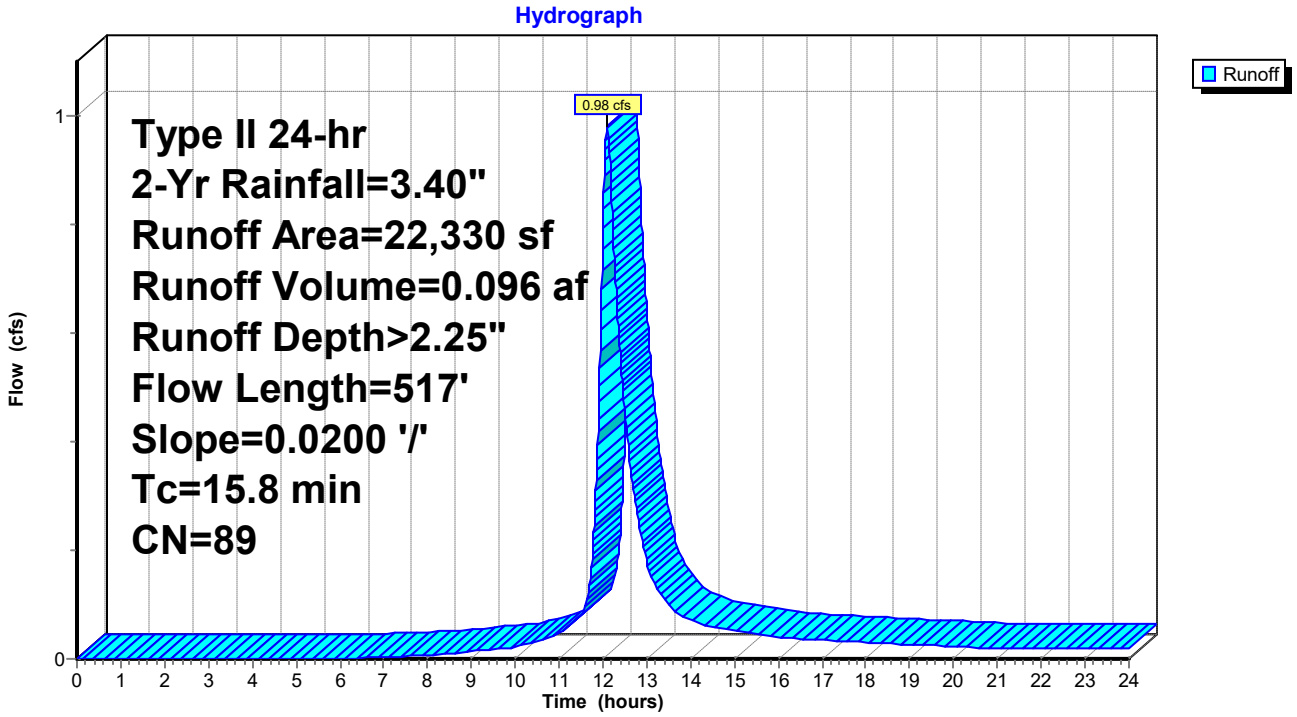
Runoff = 0.98 cfs @ 12.08 hrs, Volume= 0.096 af, Depth> 2.25"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
13,573	98	Paved parking, HSG C
8,757	74	>75% Grass cover, Good, HSG C
22,330	89	Weighted Average
8,757		39.22% Pervious Area
13,573		60.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
2.7	367	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
15.8	517	Total			

Subcatchment 23: DA #7



Summary for Pond 24: I-8

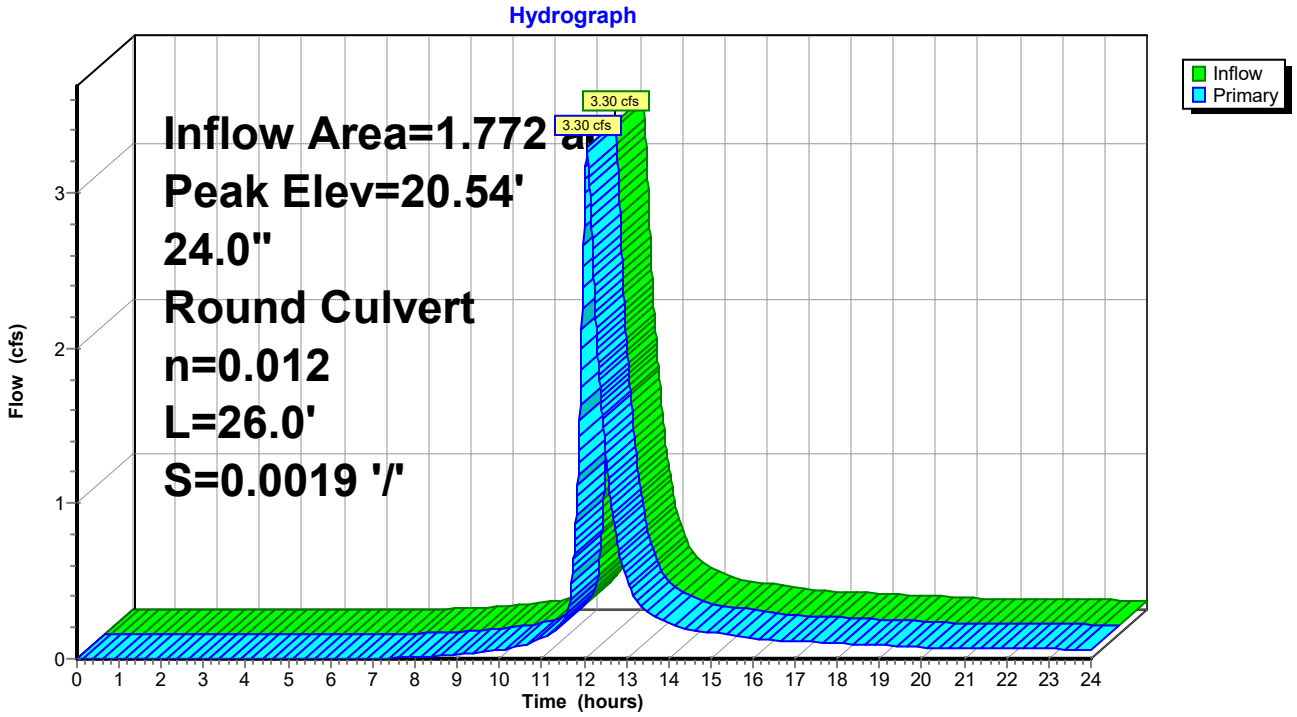
Inflow Area = 1.772 ac, 50.77% Impervious, Inflow Depth > 2.04" for 2-Yr event
Inflow = 3.30 cfs @ 12.08 hrs, Volume= 0.301 af
Outflow = 3.30 cfs @ 12.08 hrs, Volume= 0.301 af, Atten= 0%, Lag= 0.0 min
Primary = 3.30 cfs @ 12.08 hrs, Volume= 0.301 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.54' @ 12.10 hrs
Flood Elev= 27.26'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.75'	**24.0" Round Culvert** L= 26.0' Ke= 0.500 Inlet / Outlet Invert= 18.75' / 18.70' S= 0.0019 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=2.98 cfs @ 12.08 hrs HW=20.53' TW=20.48' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 2.98 cfs @ 1.34 fps)

Pond 24: I-8



Summary for Subcatchment 25: DA #8

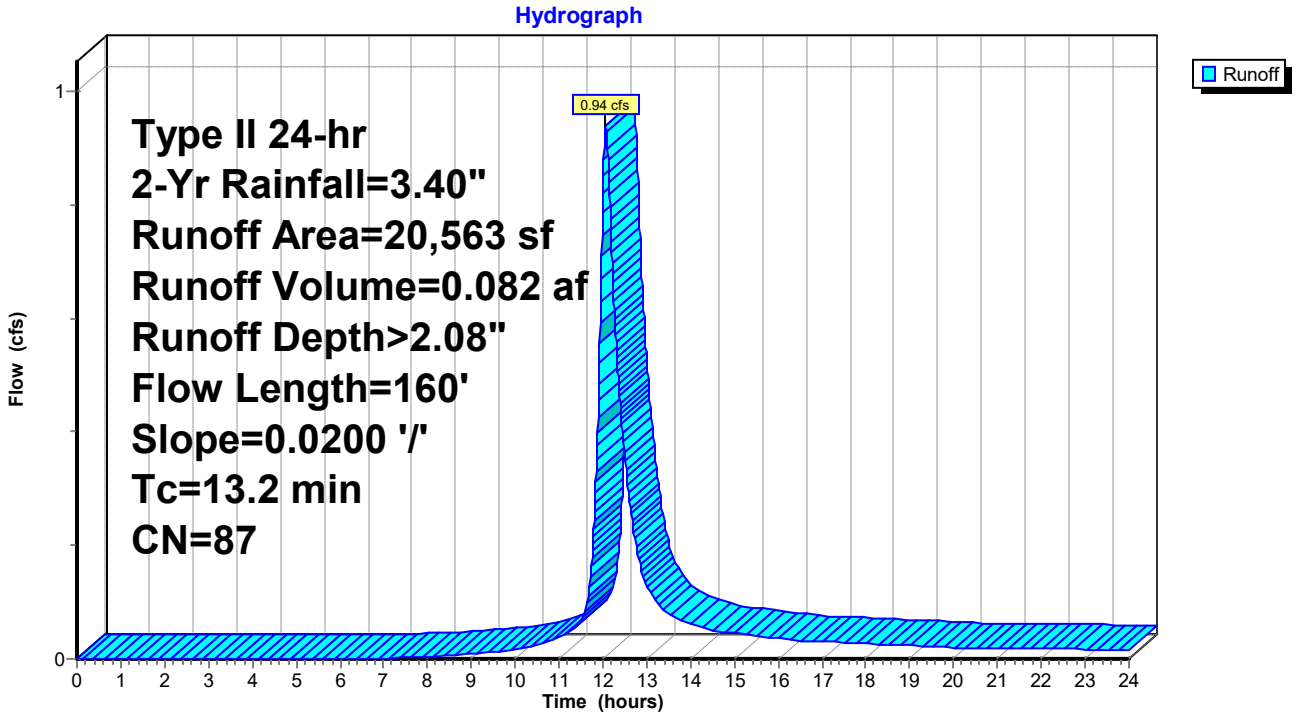
Runoff = 0.94 cfs @ 12.06 hrs, Volume= 0.082 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
11,019	98	Paved parking, HSG C
9,544	74	>75% Grass cover, Good, HSG C
20,563	87	Weighted Average
9,544		46.41% Pervious Area
11,019		53.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.1	10	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.2	160	Total			

Subcatchment 25: DA #8



Summary for Pond 26: I-9

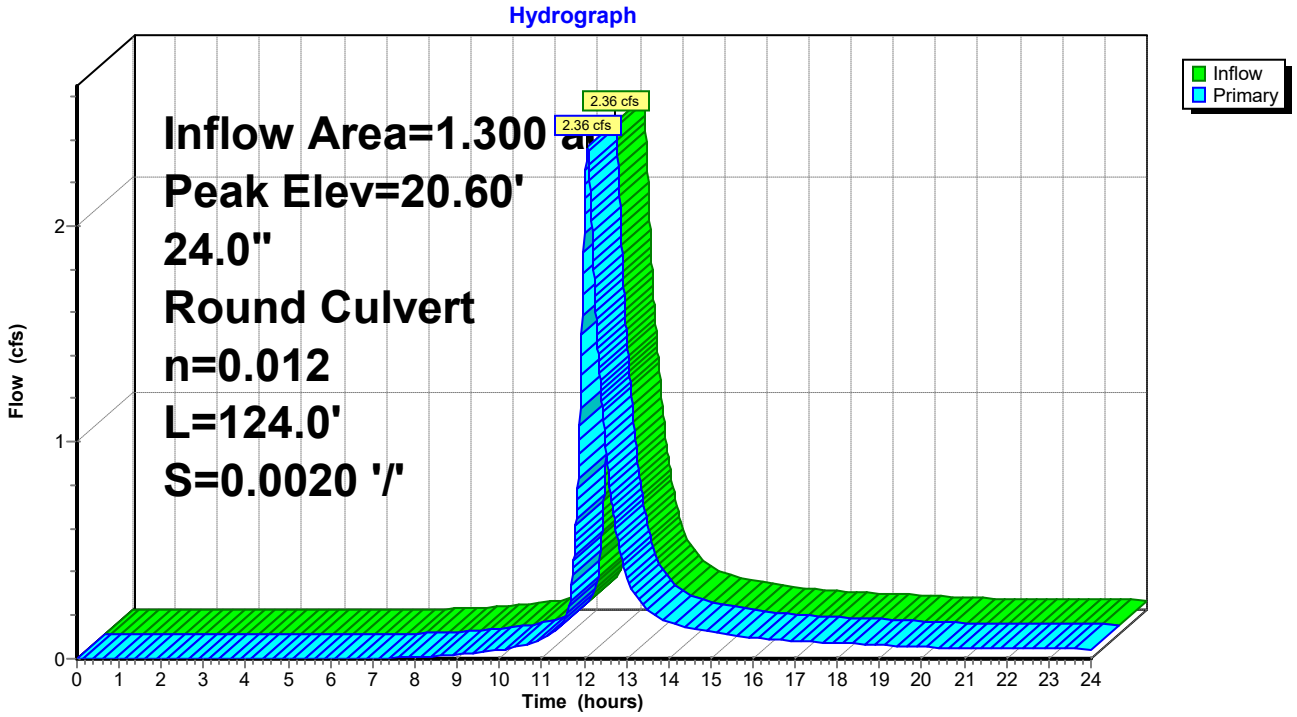
Inflow Area = 1.300 ac, 49.75% Impervious, Inflow Depth > 2.02" for 2-Yr event
Inflow = 2.36 cfs @ 12.08 hrs, Volume= 0.219 af
Outflow = 2.36 cfs @ 12.08 hrs, Volume= 0.219 af, Atten= 0%, Lag= 0.0 min
Primary = 2.36 cfs @ 12.08 hrs, Volume= 0.219 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.60' @ 12.11 hrs
Flood Elev= 27.89'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.00'	**24.0" Round Culvert** L= 124.0' Ke= 0.500 Inlet / Outlet Invert= 19.00' / 18.75' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=2.05 cfs @ 12.08 hrs HW=20.58' TW=20.53' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 2.05 cfs @ 1.06 fps)

Pond 26: I-9



Summary for Subcatchment 27: DA #9

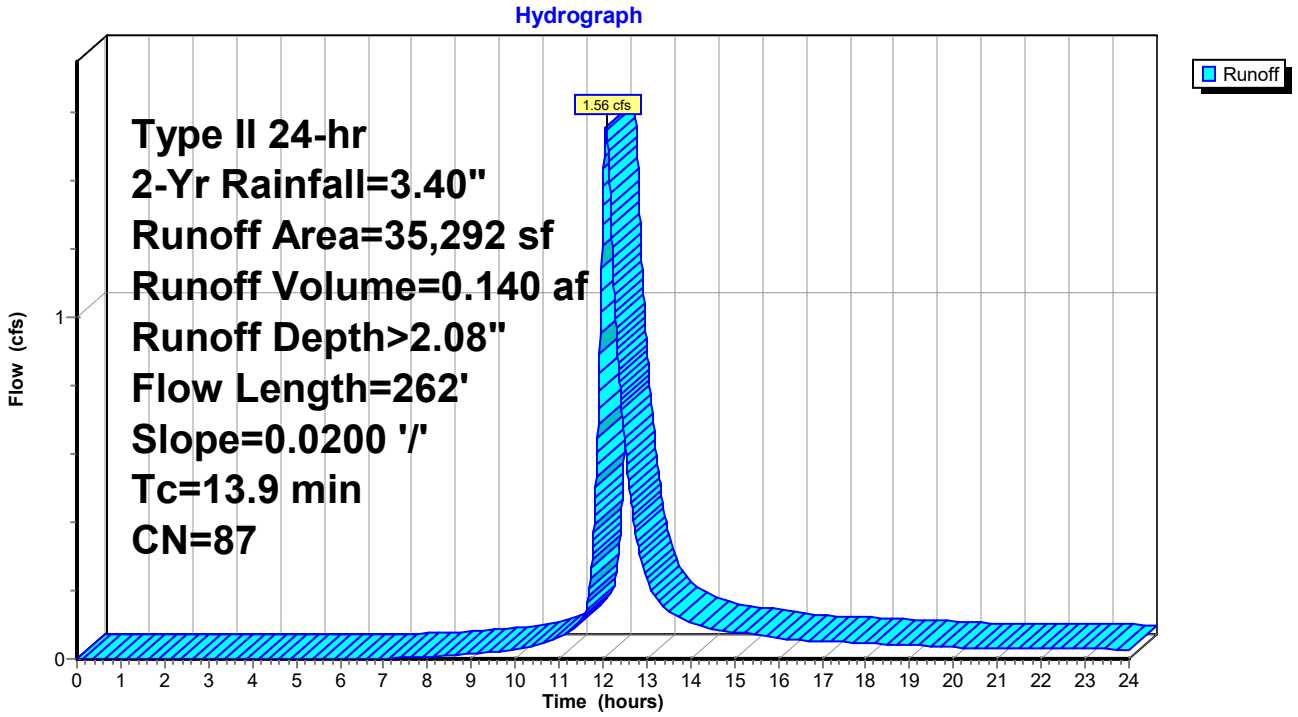
Runoff = 1.56 cfs @ 12.08 hrs, Volume= 0.140 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
18,751	98	Paved parking, HSG C
16,541	74	>75% Grass cover, Good, HSG C
35,292	87	Weighted Average
16,541		46.87% Pervious Area
18,751		53.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.8	112	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.9	262	Total			

Subcatchment 27: DA #9



Summary for Pond 28: I-10

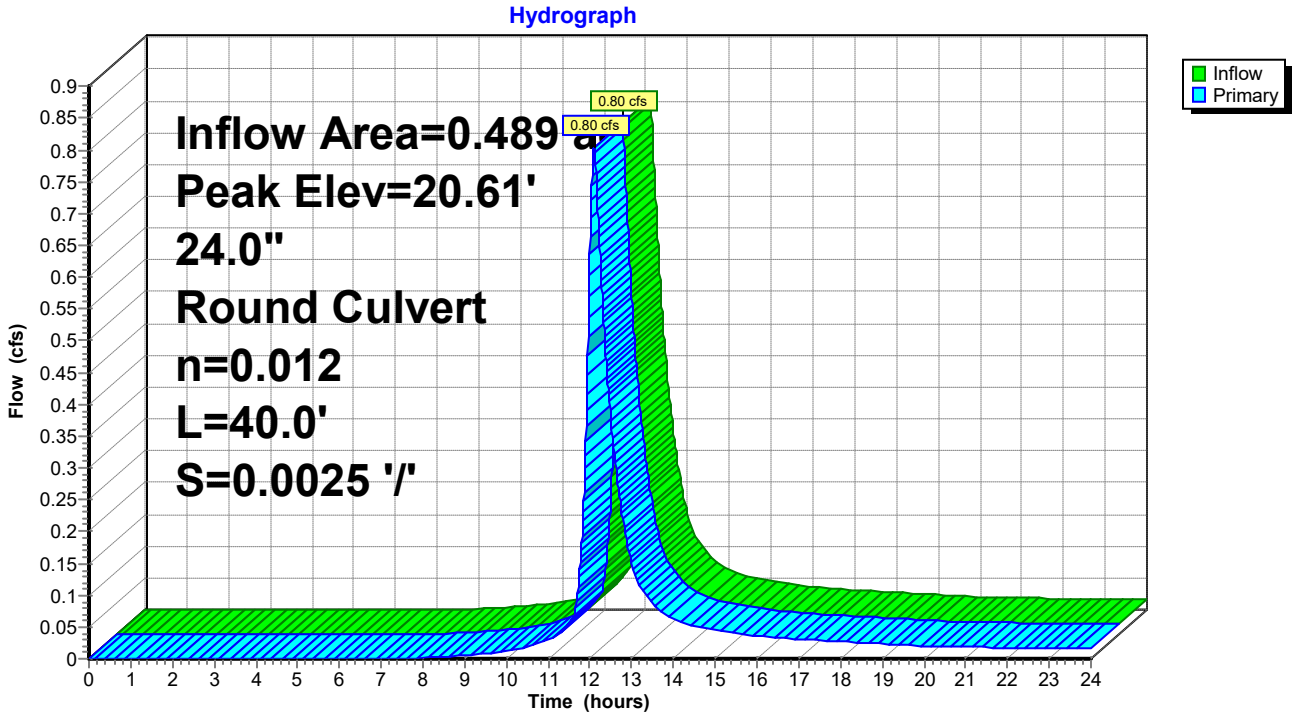
Inflow Area = 0.489 ac, 44.15% Impervious, Inflow Depth > 1.92" for 2-Yr event
Inflow = 0.80 cfs @ 12.10 hrs, Volume= 0.078 af
Outflow = 0.80 cfs @ 12.10 hrs, Volume= 0.078 af, Atten= 0%, Lag= 0.0 min
Primary = 0.80 cfs @ 12.10 hrs, Volume= 0.078 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.61' @ 12.12 hrs
Flood Elev= 27.69'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.10'	**24.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 19.10' / 19.00' S= 0.0025 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.02 cfs @ 12.10 hrs HW=20.60' TW=20.60' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.02 cfs @ 0.01 fps)

Pond 28: I-10



Summary for Subcatchment 29: DA #10

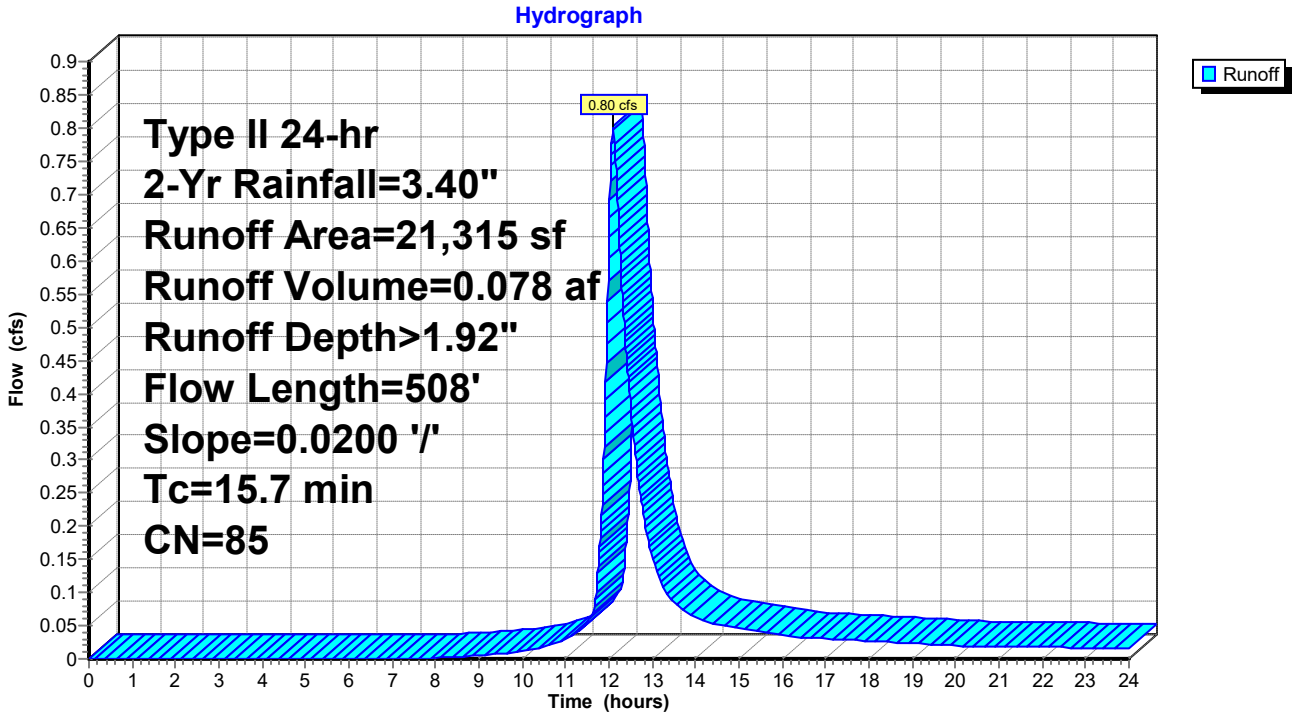
Runoff = 0.80 cfs @ 12.10 hrs, Volume= 0.078 af, Depth> 1.92"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
9,410	98	Paved parking, HSG C
11,905	74	>75% Grass cover, Good, HSG C
21,315	85	Weighted Average
11,905		55.85% Pervious Area
9,410		44.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
2.6	358	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
15.7	508	Total			

Subcatchment 29: DA #10



Summary for Pond 30: I-11

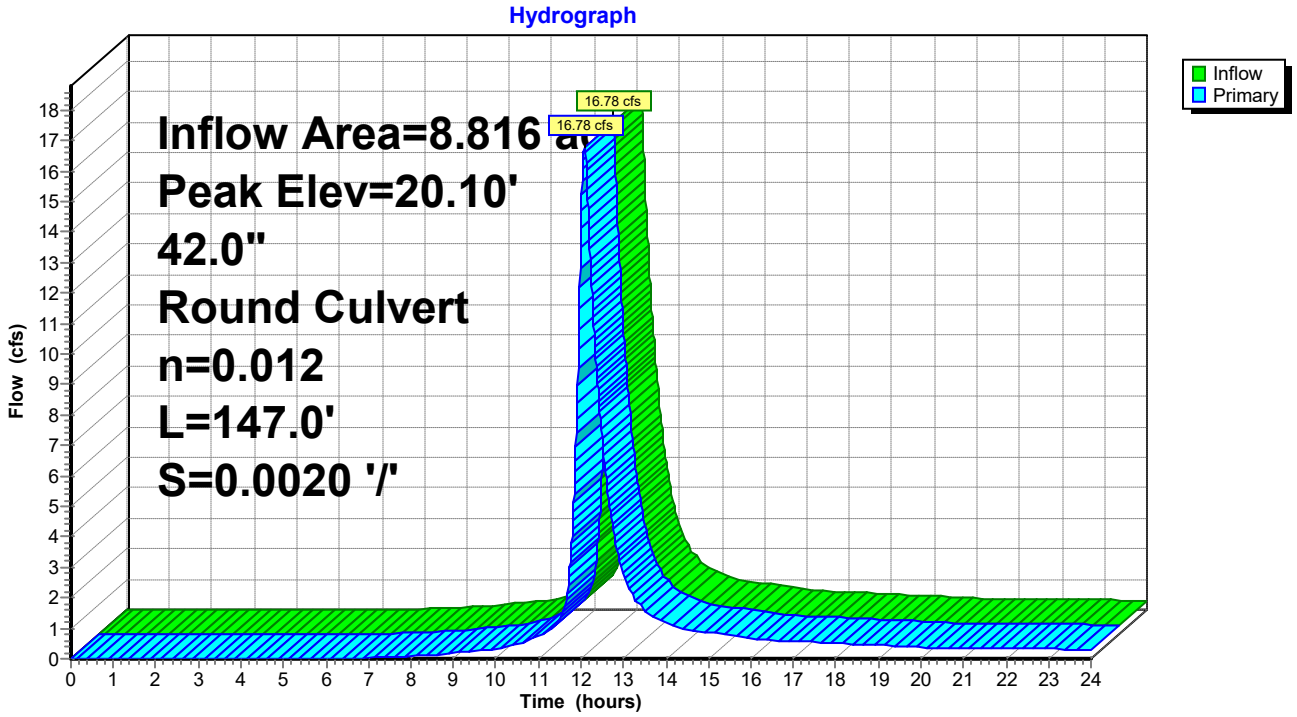
Inflow Area = 8.816 ac, 56.89% Impervious, Inflow Depth > 2.14" for 2-Yr event
Inflow = 16.78 cfs @ 12.08 hrs, Volume= 1.573 af
Outflow = 16.78 cfs @ 12.08 hrs, Volume= 1.573 af, Atten= 0%, Lag= 0.0 min
Primary = 16.78 cfs @ 12.08 hrs, Volume= 1.573 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.10' @ 12.08 hrs
Flood Elev= 22.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.20'	**42.0" Round Culvert** L= 147.0' Ke= 0.500 Inlet / Outlet Invert= 18.20' / 17.90' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=16.78 cfs @ 12.08 hrs HW=20.10' TW=18.64' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 16.78 cfs @ 4.56 fps)

Pond 30: I-11



Summary for Subcatchment 31: DA #11

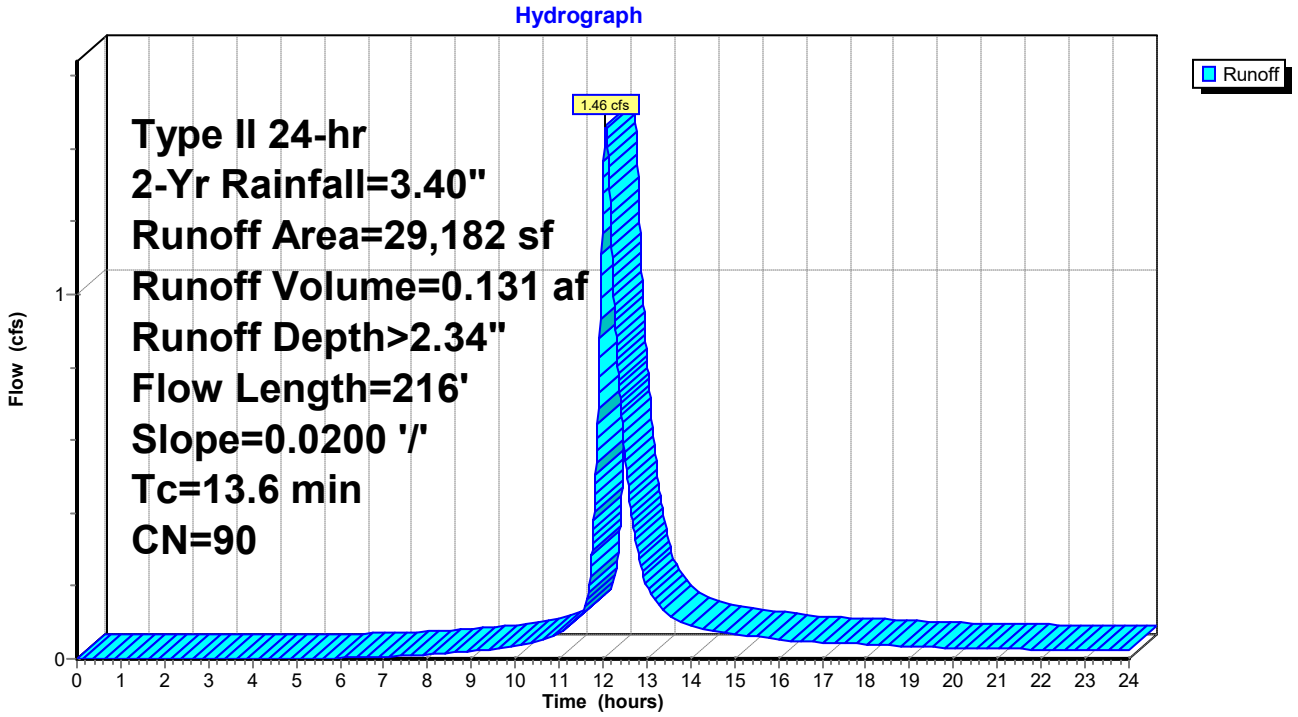
Runoff = 1.46 cfs @ 12.06 hrs, Volume= 0.131 af, Depth> 2.34"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
18,979	98	Paved parking, HSG C
10,203	74	>75% Grass cover, Good, HSG C
29,182	90	Weighted Average
10,203		34.96% Pervious Area
18,979		65.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.5	66	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.6	216	Total			

Subcatchment 31: DA #11



Summary for Pond 32: I-12

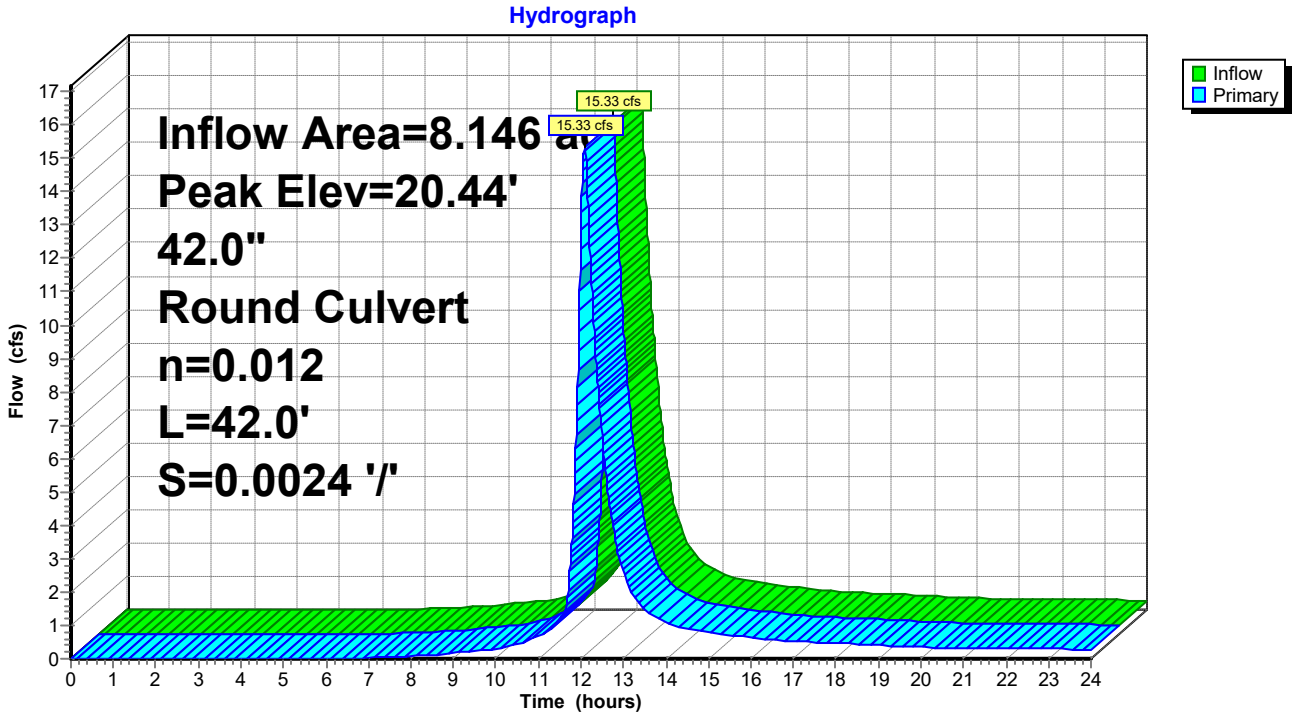
Inflow Area = 8.146 ac, 56.22% Impervious, Inflow Depth > 2.12" for 2-Yr event
Inflow = 15.33 cfs @ 12.08 hrs, Volume= 1.442 af
Outflow = 15.33 cfs @ 12.08 hrs, Volume= 1.442 af, Atten= 0%, Lag= 0.0 min
Primary = 15.33 cfs @ 12.08 hrs, Volume= 1.442 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.44' @ 12.09 hrs
Flood Elev= 22.63'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.30'	**42.0" Round Culvert** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 18.30' / 18.20' S= 0.0024 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=15.28 cfs @ 12.08 hrs HW=20.44' TW=20.10' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 15.28 cfs @ 3.56 fps)

Pond 32: I-12



Summary for Subcatchment 33: DA #12

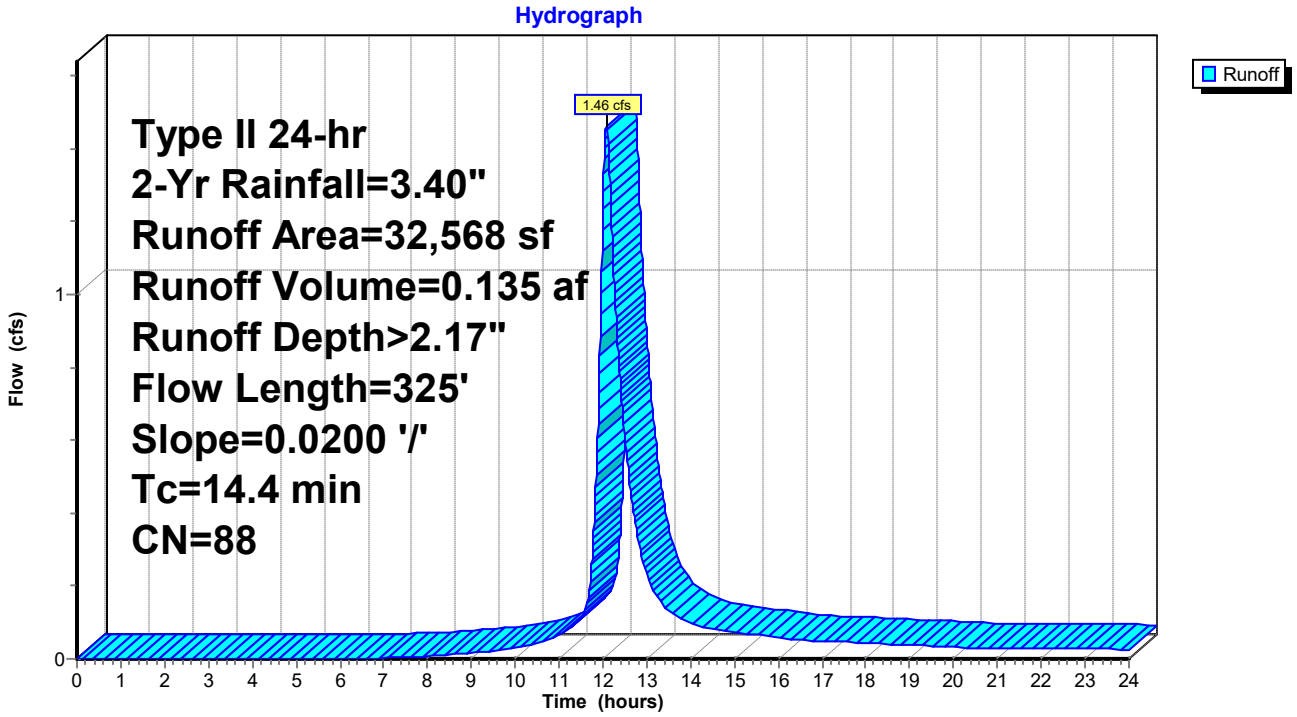
Runoff = 1.46 cfs @ 12.07 hrs, Volume= 0.135 af, Depth> 2.17"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
18,953	98	Paved parking, HSG C
13,615	74	>75% Grass cover, Good, HSG C
32,568	88	Weighted Average
13,615		41.80% Pervious Area
18,953		58.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
1.3	175	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.4	325	Total			

Subcatchment 33: DA #12



Summary for Pond 34: I-13

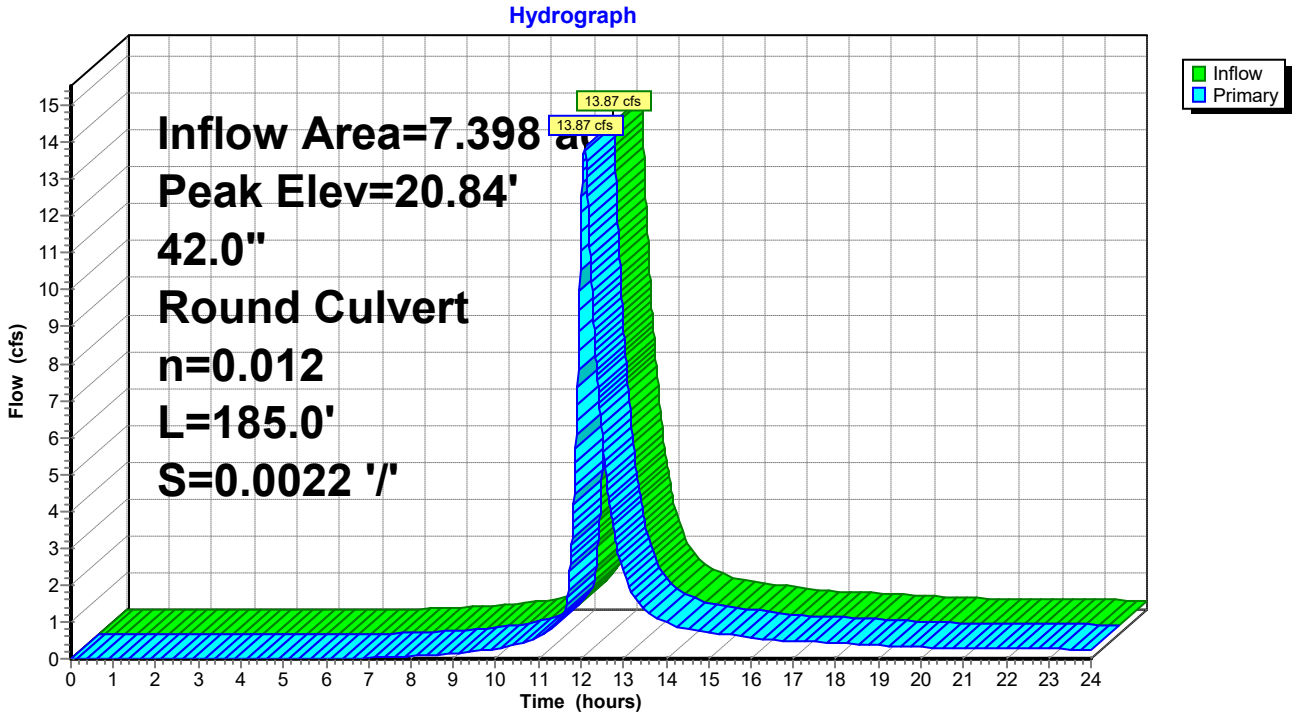
Inflow Area = 7.398 ac, 56.02% Impervious, Inflow Depth > 2.12" for 2-Yr event
Inflow = 13.87 cfs @ 12.08 hrs, Volume= 1.307 af
Outflow = 13.87 cfs @ 12.08 hrs, Volume= 1.307 af, Atten= 0%, Lag= 0.0 min
Primary = 13.87 cfs @ 12.08 hrs, Volume= 1.307 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.84' @ 12.09 hrs
Flood Elev= 23.18'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.70'	**42.0" Round Culvert** L= 185.0' Ke= 0.500 Inlet / Outlet Invert= 18.70' / 18.30' S= 0.0022 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=13.76 cfs @ 12.08 hrs HW=20.84' TW=20.44' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 13.76 cfs @ 3.20 fps)

Pond 34: I-13



Summary for Subcatchment 35: DA #13

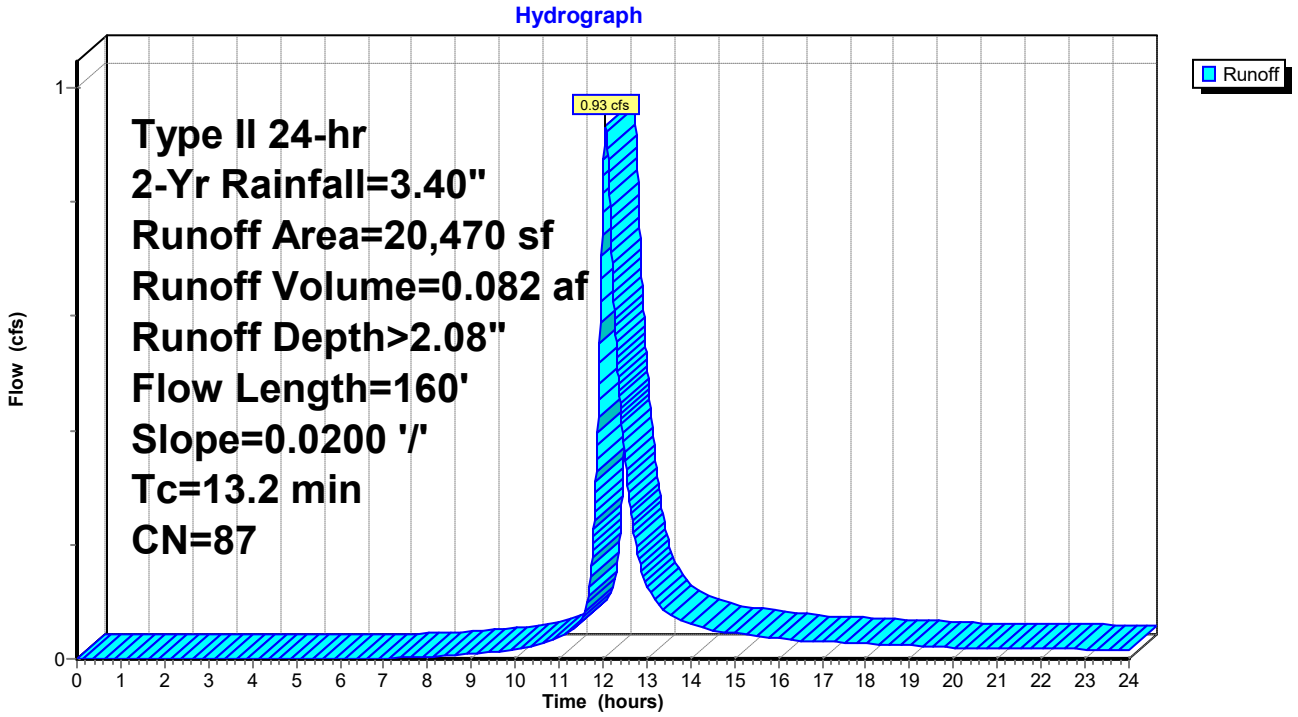
Runoff = 0.93 cfs @ 12.06 hrs, Volume= 0.082 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
10,957	98	Paved parking, HSG C
9,513	74	>75% Grass cover, Good, HSG C
20,470	87	Weighted Average
9,513		46.47% Pervious Area
10,957		53.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.1	10	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.2	160	Total			

Subcatchment 35: DA #13



Summary for Pond 36: I-14

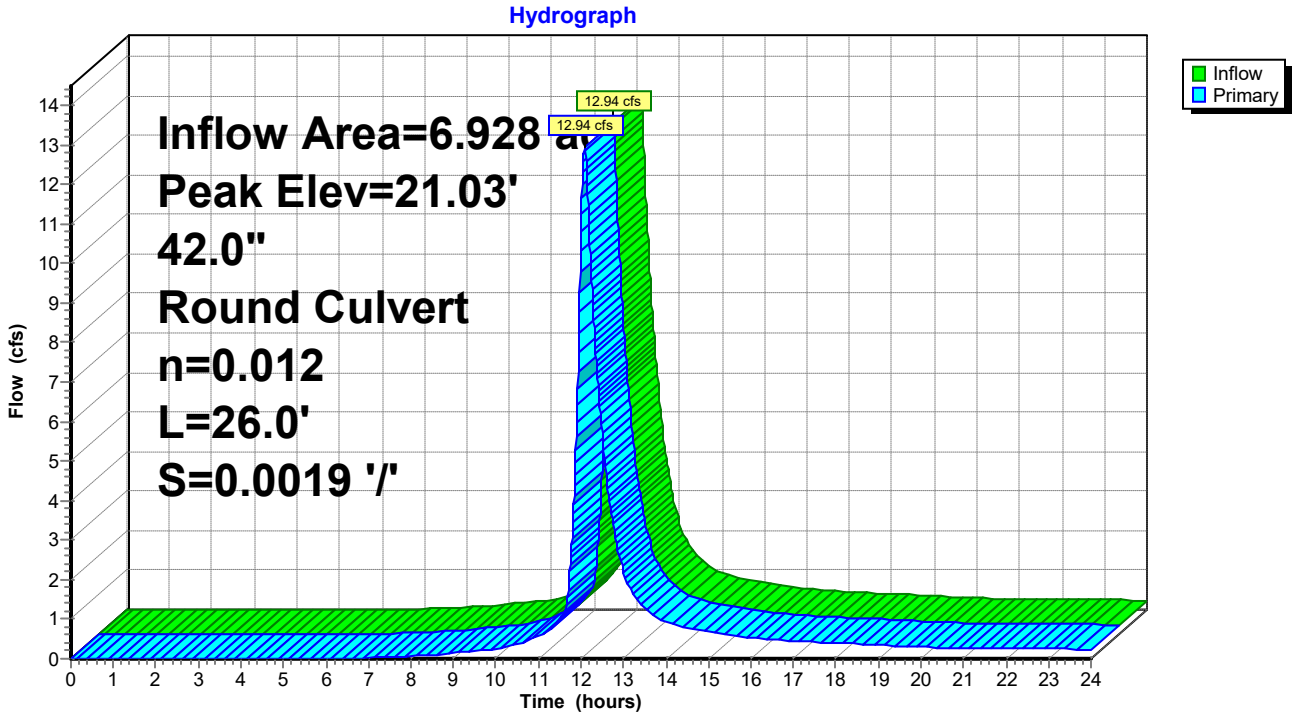
Inflow Area = 6.928 ac, 56.19% Impervious, Inflow Depth > 2.12" for 2-Yr event
Inflow = 12.94 cfs @ 12.08 hrs, Volume= 1.226 af
Outflow = 12.94 cfs @ 12.08 hrs, Volume= 1.226 af, Atten= 0%, Lag= 0.0 min
Primary = 12.94 cfs @ 12.08 hrs, Volume= 1.226 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.03' @ 12.10 hrs
Flood Elev= 23.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.75'	**42.0" Round Culvert** L= 26.0' Ke= 0.500 Inlet / Outlet Invert= 18.75' / 18.70' S= 0.0019 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=12.65 cfs @ 12.08 hrs HW=21.02' TW=20.84' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 12.65 cfs @ 2.72 fps)

Pond 36: I-14



Summary for Subcatchment 37: DA #14

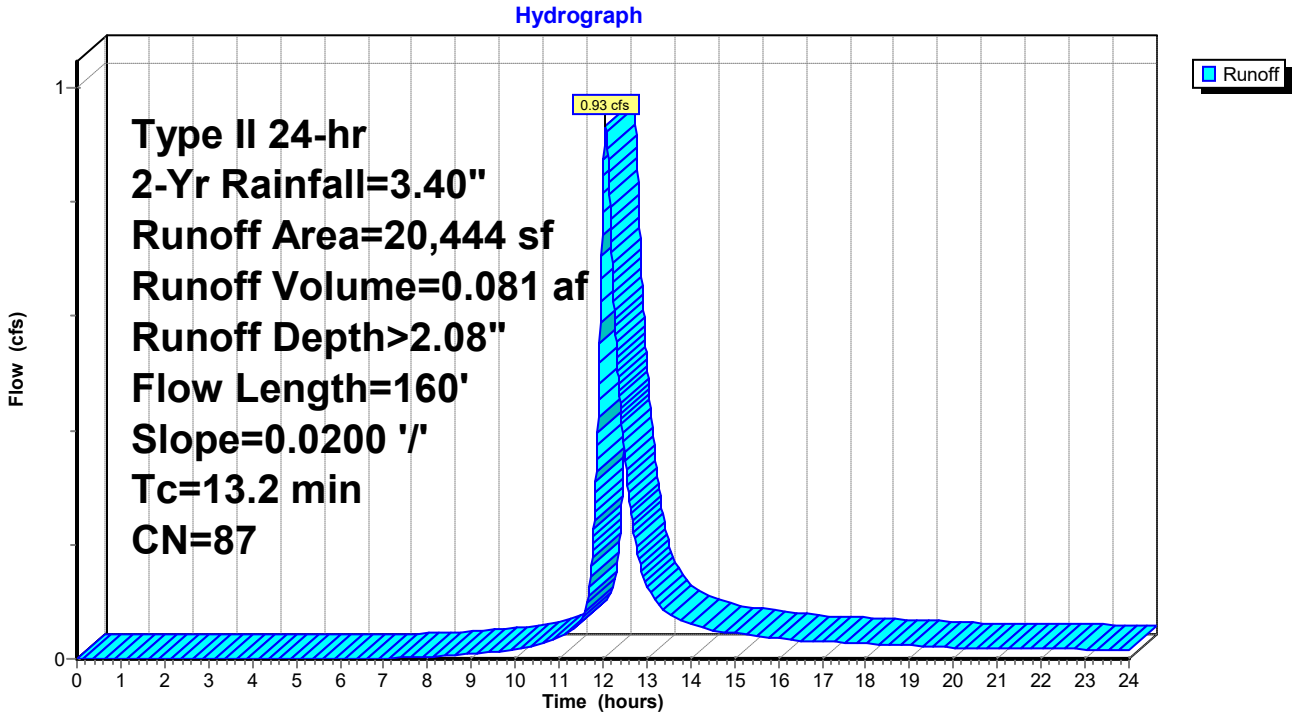
Runoff = 0.93 cfs @ 12.06 hrs, Volume= 0.081 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
10,945	98	Paved parking, HSG C
9,499	74	>75% Grass cover, Good, HSG C
20,444	87	Weighted Average
9,499		46.46% Pervious Area
10,945		53.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.1	10	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.2	160	Total			

Subcatchment 37: DA #14



Summary for Pond 38: I-15

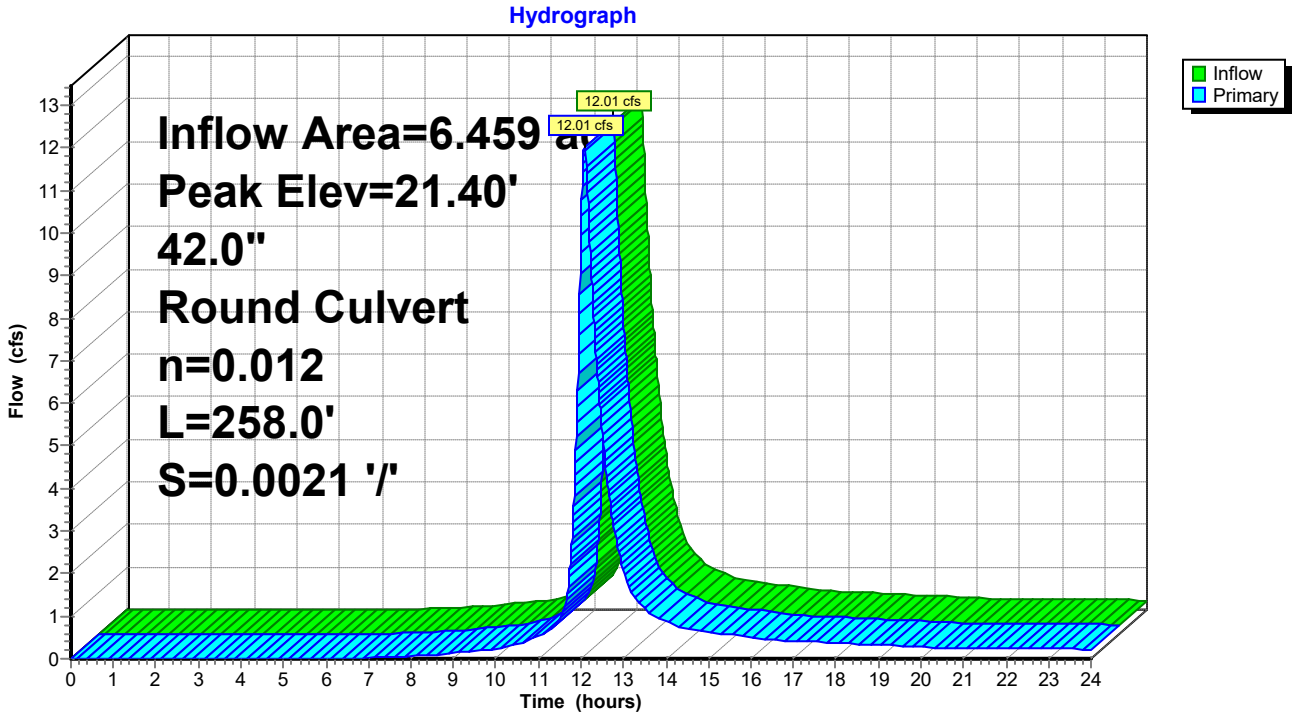
Inflow Area = 6.459 ac, 56.38% Impervious, Inflow Depth > 2.13" for 2-Yr event
Inflow = 12.01 cfs @ 12.08 hrs, Volume= 1.144 af
Outflow = 12.01 cfs @ 12.08 hrs, Volume= 1.144 af, Atten= 0%, Lag= 0.0 min
Primary = 12.01 cfs @ 12.08 hrs, Volume= 1.144 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.40' @ 12.10 hrs
Flood Elev= 23.24'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.30'	**42.0" Round Culvert** L= 258.0' Ke= 0.500 Inlet / Outlet Invert= 19.30' / 18.75' S= 0.0021 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=11.81 cfs @ 12.08 hrs HW=21.39' TW=21.03' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 11.81 cfs @ 2.83 fps)

Pond 38: I-15



Summary for Subcatchment 39: DA #15

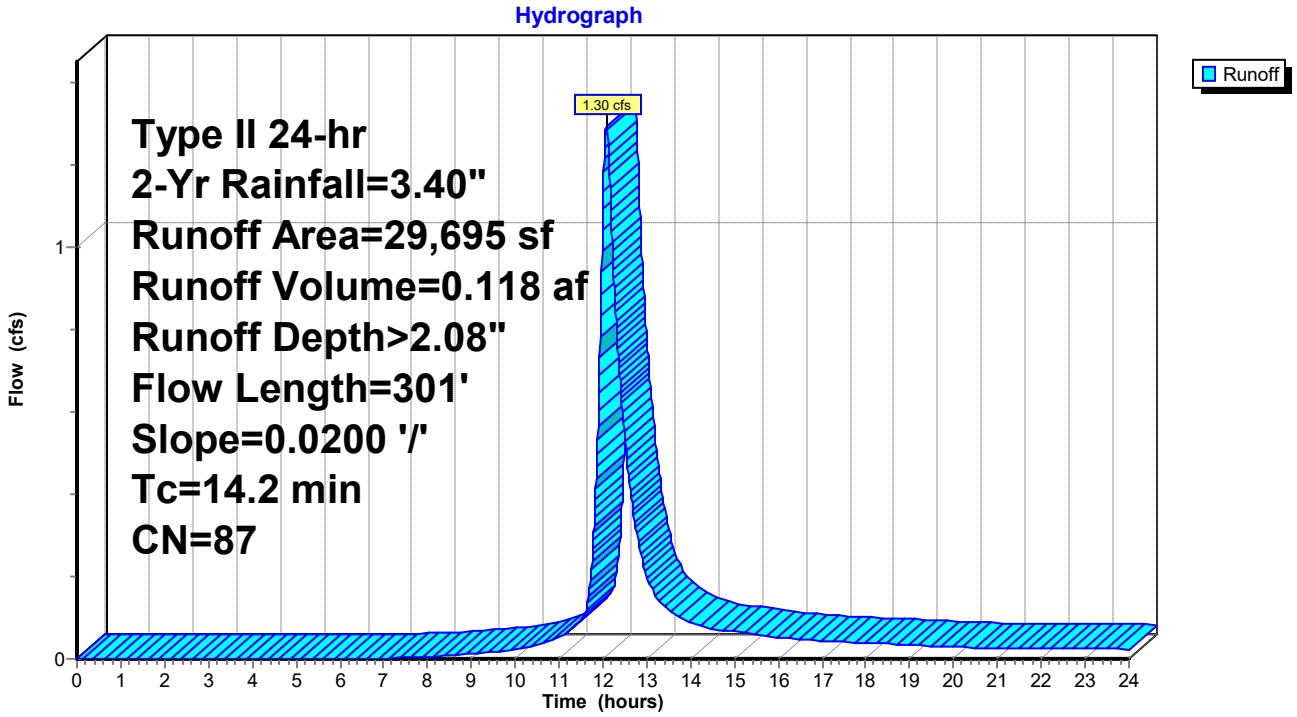
Runoff = 1.30 cfs @ 12.08 hrs, Volume= 0.118 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
15,959	98	Paved parking, HSG C
13,736	74	>75% Grass cover, Good, HSG C
29,695	87	Weighted Average
13,736		46.26% Pervious Area
15,959		53.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
1.1	151	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.2	301	Total			

Subcatchment 39: DA #15



Summary for Pond 40: I-16

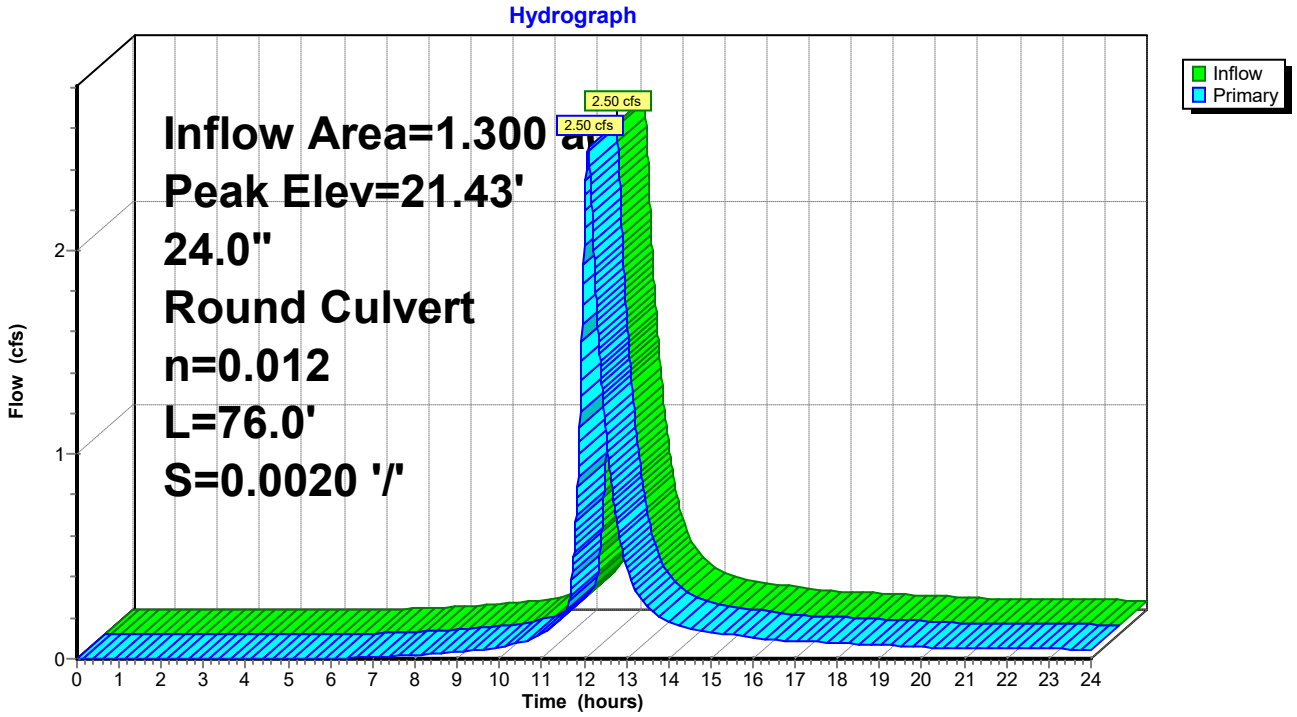
Inflow Area = 1.300 ac, 62.25% Impervious, Inflow Depth > 2.25" for 2-Yr event
Inflow = 2.50 cfs @ 12.10 hrs, Volume= 0.244 af
Outflow = 2.50 cfs @ 12.10 hrs, Volume= 0.244 af, Atten= 0%, Lag= 0.0 min
Primary = 2.50 cfs @ 12.10 hrs, Volume= 0.244 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.43' @ 12.11 hrs
Flood Elev= 23.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.45'	**24.0" Round Culvert** L= 76.0' Ke= 0.500 Inlet / Outlet Invert= 19.45' / 19.30' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=2.33 cfs @ 12.10 hrs HW=21.43' TW=21.40' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 2.33 cfs @ 0.93 fps)

Pond 40: I-16



Summary for Subcatchment 41: DA #16

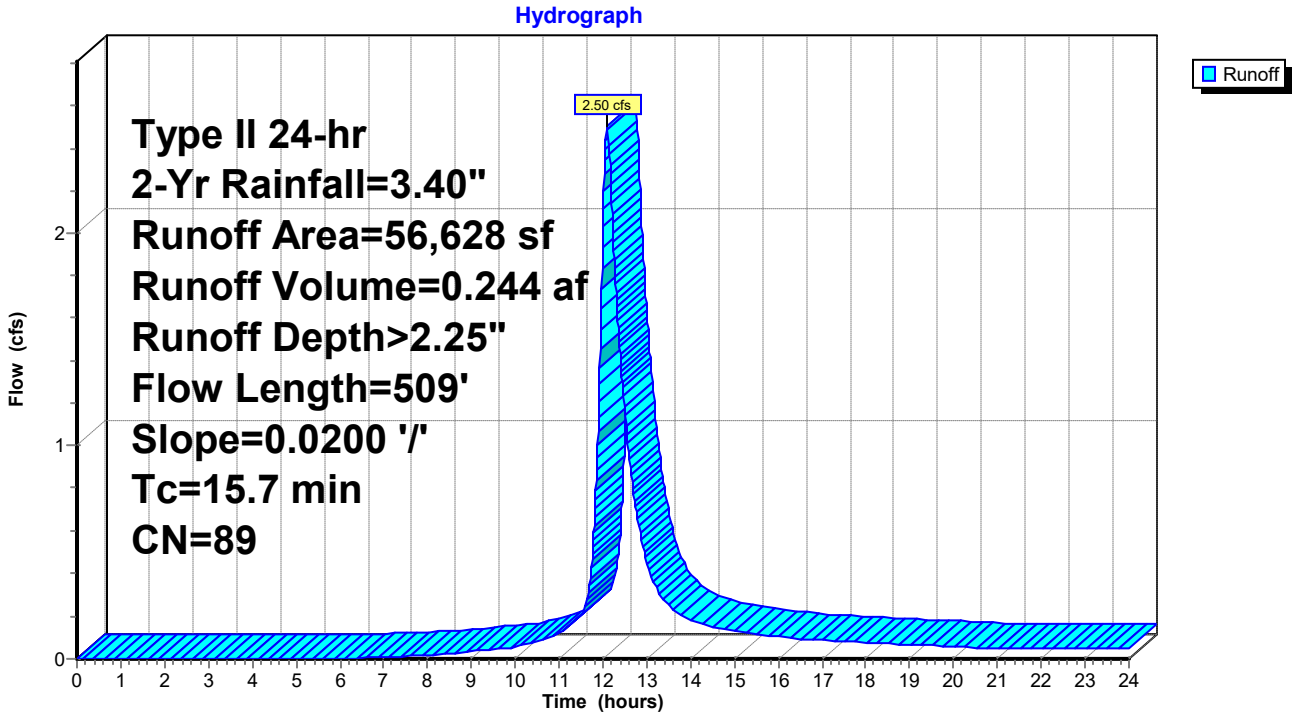
Runoff = 2.50 cfs @ 12.10 hrs, Volume= 0.244 af, Depth> 2.25"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
35,249	98	Paved parking, HSG C
21,379	74	>75% Grass cover, Good, HSG C
56,628	89	Weighted Average
21,379		37.75% Pervious Area
35,249		62.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
2.6	359	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
15.7	509	Total			

Subcatchment 41: DA #16



Summary for Pond 42: I-17

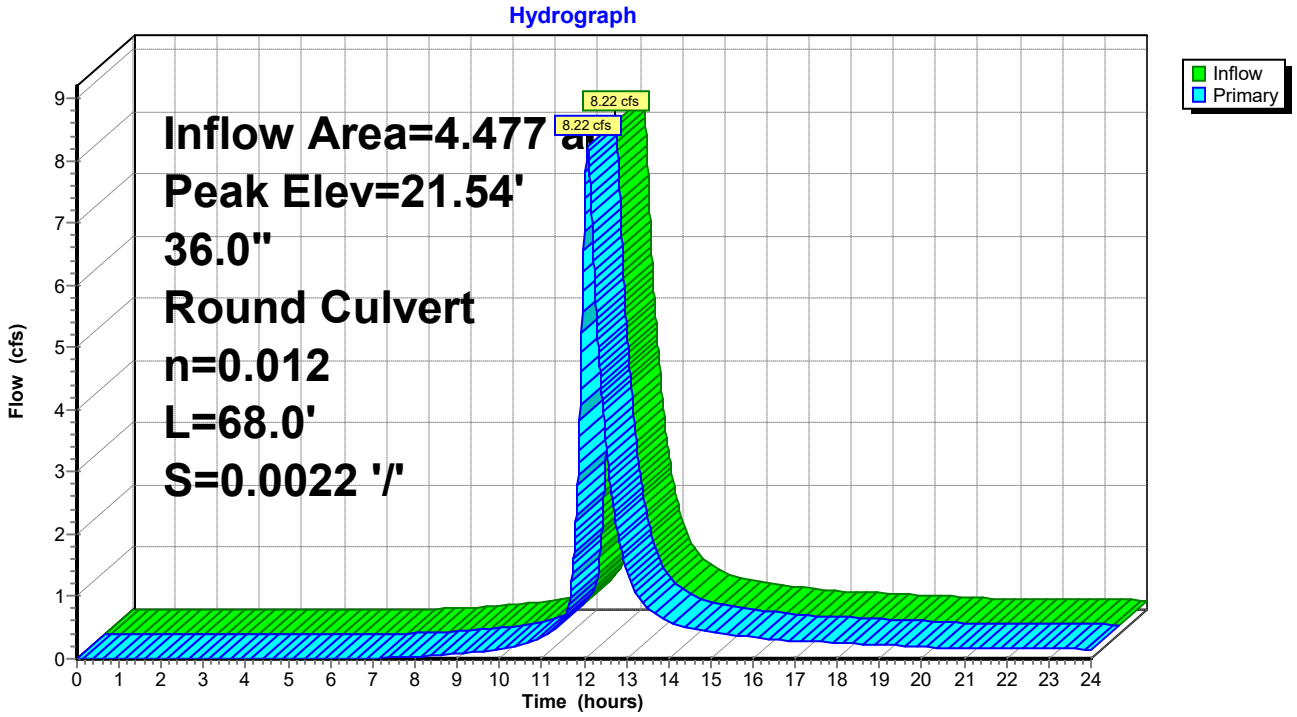
Inflow Area = 4.477 ac, 55.08% Impervious, Inflow Depth > 2.10" for 2-Yr event
Inflow = 8.22 cfs @ 12.08 hrs, Volume= 0.782 af
Outflow = 8.22 cfs @ 12.08 hrs, Volume= 0.782 af, Atten= 0%, Lag= 0.0 min
Primary = 8.22 cfs @ 12.08 hrs, Volume= 0.782 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.54' @ 12.11 hrs
Flood Elev= 23.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.45'	**36.0" Round Culvert** L= 68.0' Ke= 0.500 Inlet / Outlet Invert= 19.45' / 19.30' S= 0.0022 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=7.83 cfs @ 12.08 hrs HW=21.52' TW=21.39' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 7.83 cfs @ 2.12 fps)

Pond 42: I-17



Summary for Subcatchment 43: DA #17

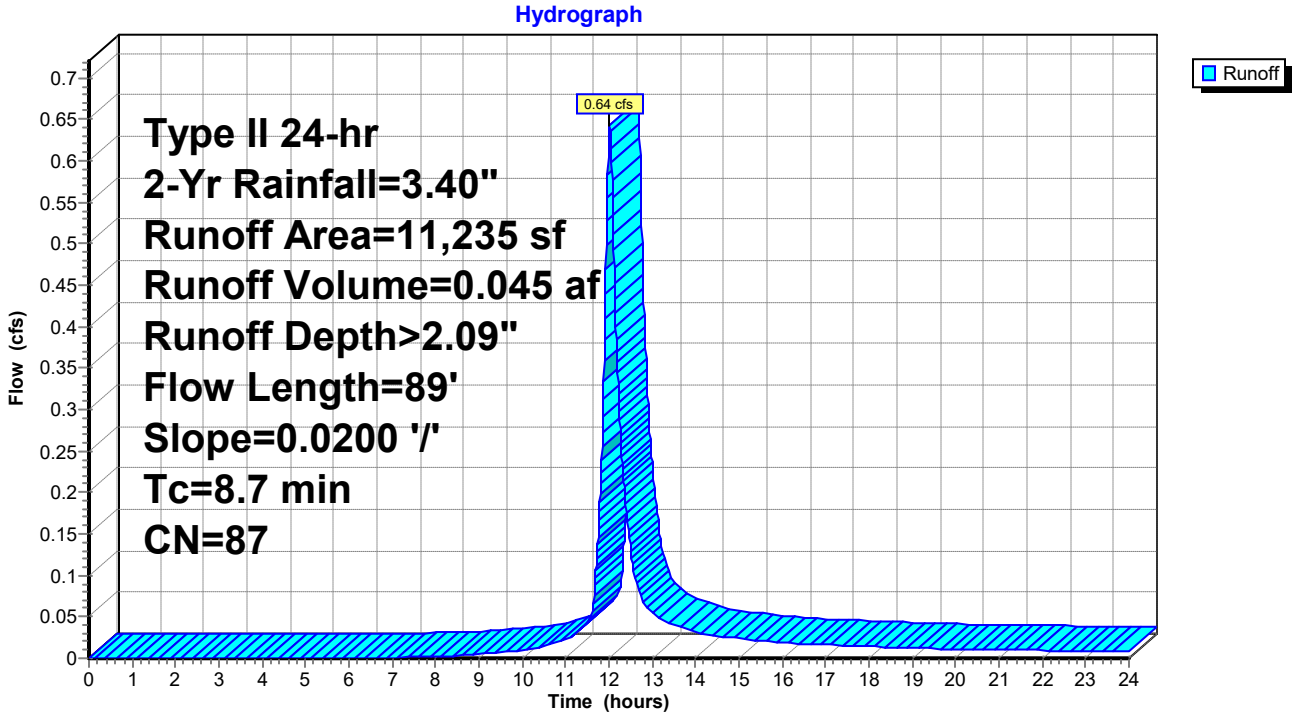
Runoff = 0.64 cfs @ 12.02 hrs, Volume= 0.045 af, Depth> 2.09"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
6,208	98	Paved parking, HSG C
5,027	74	>75% Grass cover, Good, HSG C
11,235	87	Weighted Average
5,027		44.74% Pervious Area
6,208		55.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	89	0.0200	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"

Subcatchment 43: DA #17



Summary for Pond 44: I-18

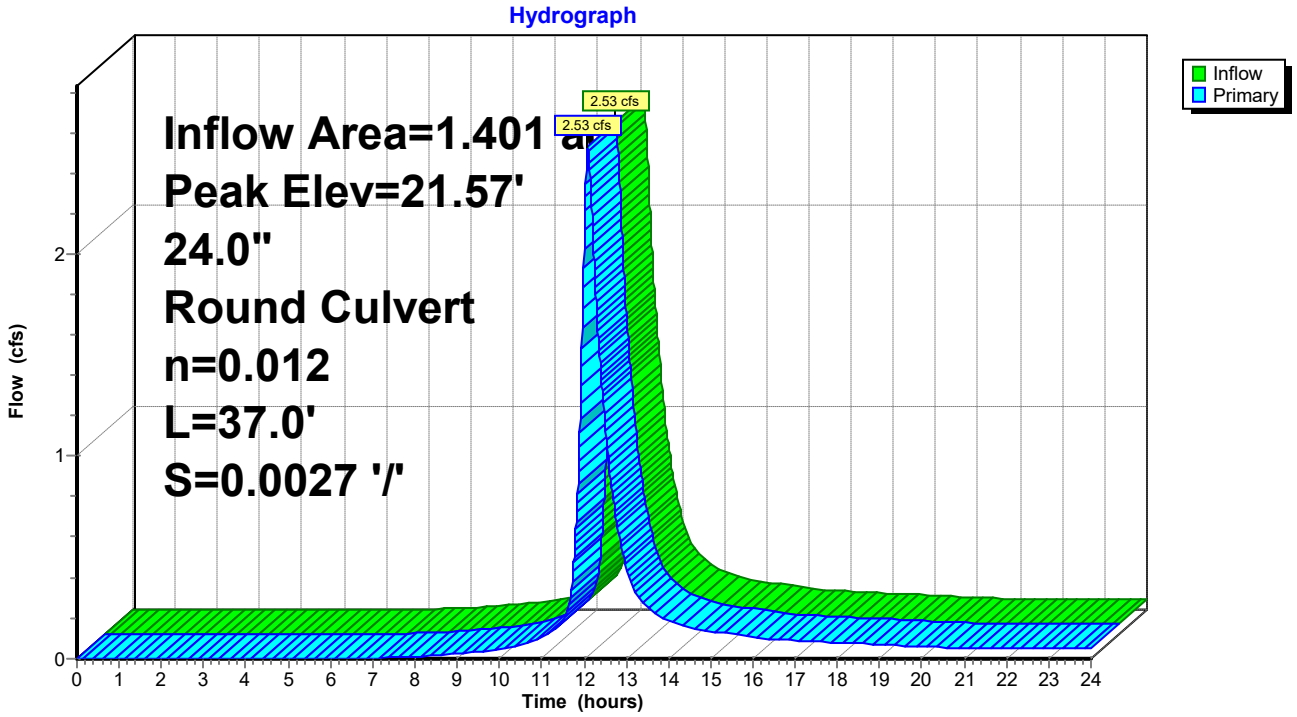
Inflow Area = 1.401 ac, 53.73% Impervious, Inflow Depth > 2.08" for 2-Yr event
Inflow = 2.53 cfs @ 12.09 hrs, Volume= 0.243 af
Outflow = 2.53 cfs @ 12.09 hrs, Volume= 0.243 af, Atten= 0%, Lag= 0.0 min
Primary = 2.53 cfs @ 12.09 hrs, Volume= 0.243 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.57' @ 12.12 hrs
Flood Elev= 23.44'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.55'	**24.0" Round Culvert** L= 37.0' Ke= 0.500 Inlet / Outlet Invert= 19.55' / 19.45' S= 0.0027 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=1.86 cfs @ 12.09 hrs HW=21.55' TW=21.53' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.86 cfs @ 0.74 fps)

Pond 44: I-18



Summary for Subcatchment 45: DA #18

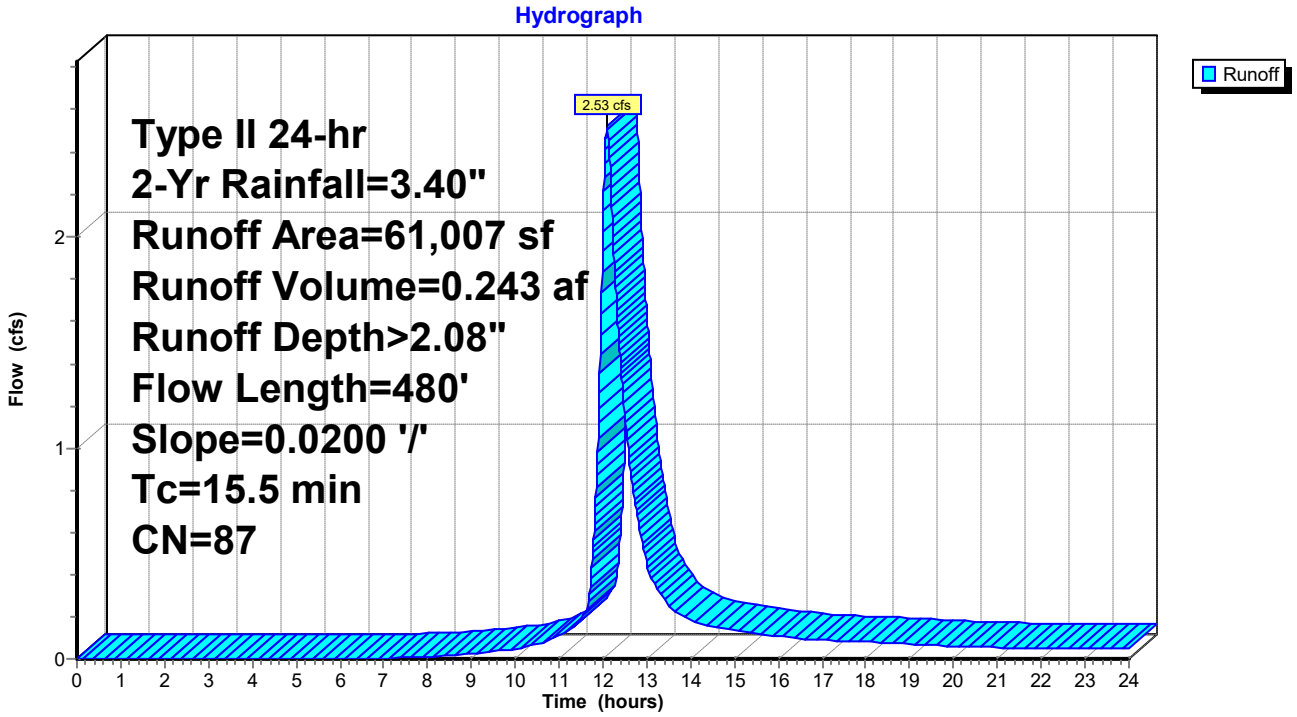
Runoff = 2.53 cfs @ 12.09 hrs, Volume= 0.243 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
32,777	98	Paved parking, HSG C
28,230	74	>75% Grass cover, Good, HSG C
61,007	87	Weighted Average
28,230		46.27% Pervious Area
32,777		53.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
2.4	330	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
15.5	480	Total			

Subcatchment 45: DA #18



Summary for Pond 46: I-19

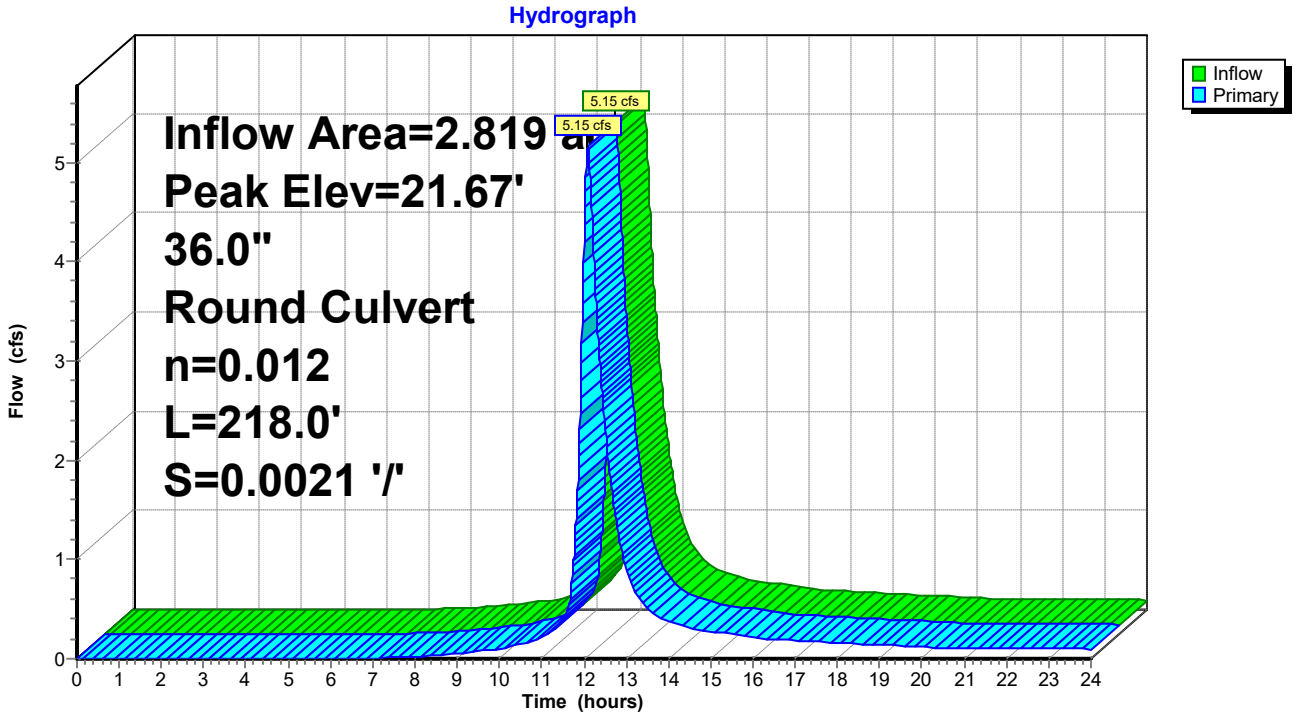
Inflow Area = 2.819 ac, 55.73% Impervious, Inflow Depth > 2.11" for 2-Yr event
Inflow = 5.15 cfs @ 12.09 hrs, Volume= 0.495 af
Outflow = 5.15 cfs @ 12.09 hrs, Volume= 0.495 af, Atten= 0%, Lag= 0.0 min
Primary = 5.15 cfs @ 12.09 hrs, Volume= 0.495 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.67' @ 12.11 hrs
Flood Elev= 22.68'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.90'	**36.0" Round Culvert** L= 218.0' Ke= 0.500 Inlet / Outlet Invert= 19.90' / 19.45' S= 0.0021 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=4.85 cfs @ 12.09 hrs HW=21.65' TW=21.53' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 4.85 cfs @ 1.63 fps)

Pond 46: I-19



Summary for Subcatchment 47: DA #19

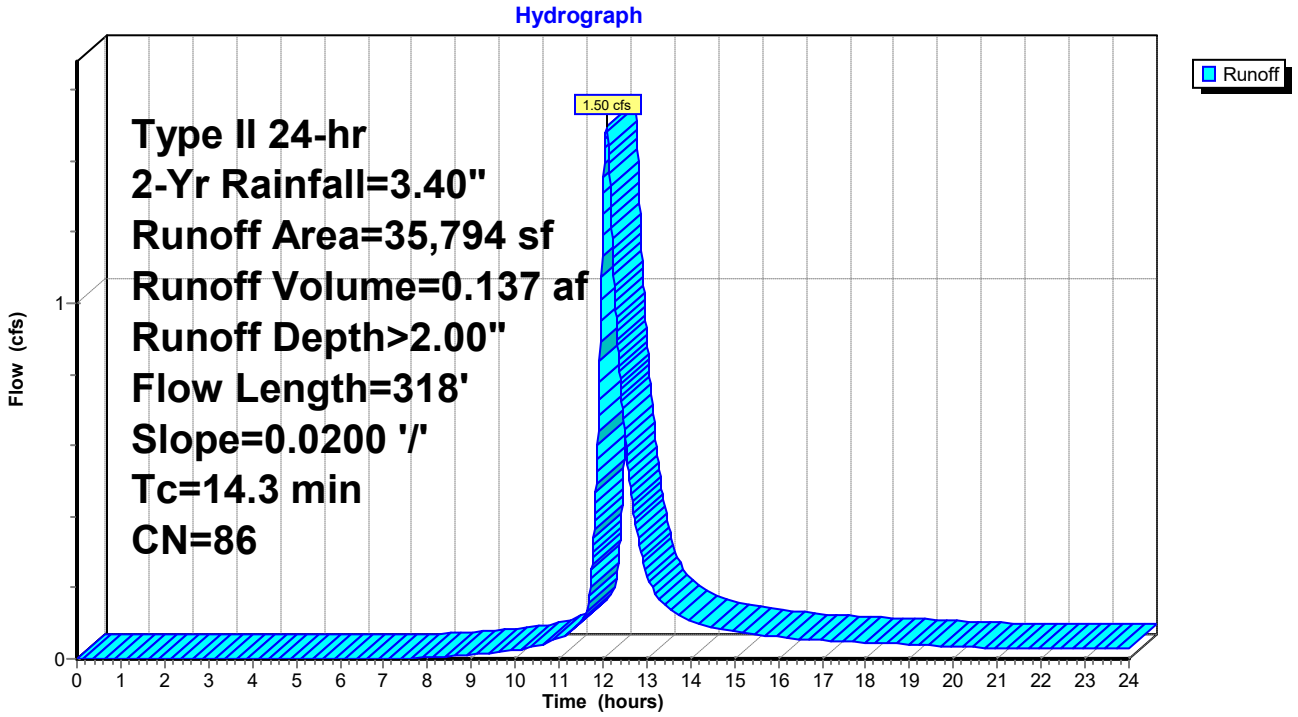
Runoff = 1.50 cfs @ 12.08 hrs, Volume= 0.137 af, Depth> 2.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
18,459	98	Paved parking, HSG C
17,335	74	>75% Grass cover, Good, HSG C
35,794	86	Weighted Average
17,335		48.43% Pervious Area
18,459		51.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
1.2	168	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.3	318	Total			

Subcatchment 47: DA #19



Summary for Pond 48: I-20

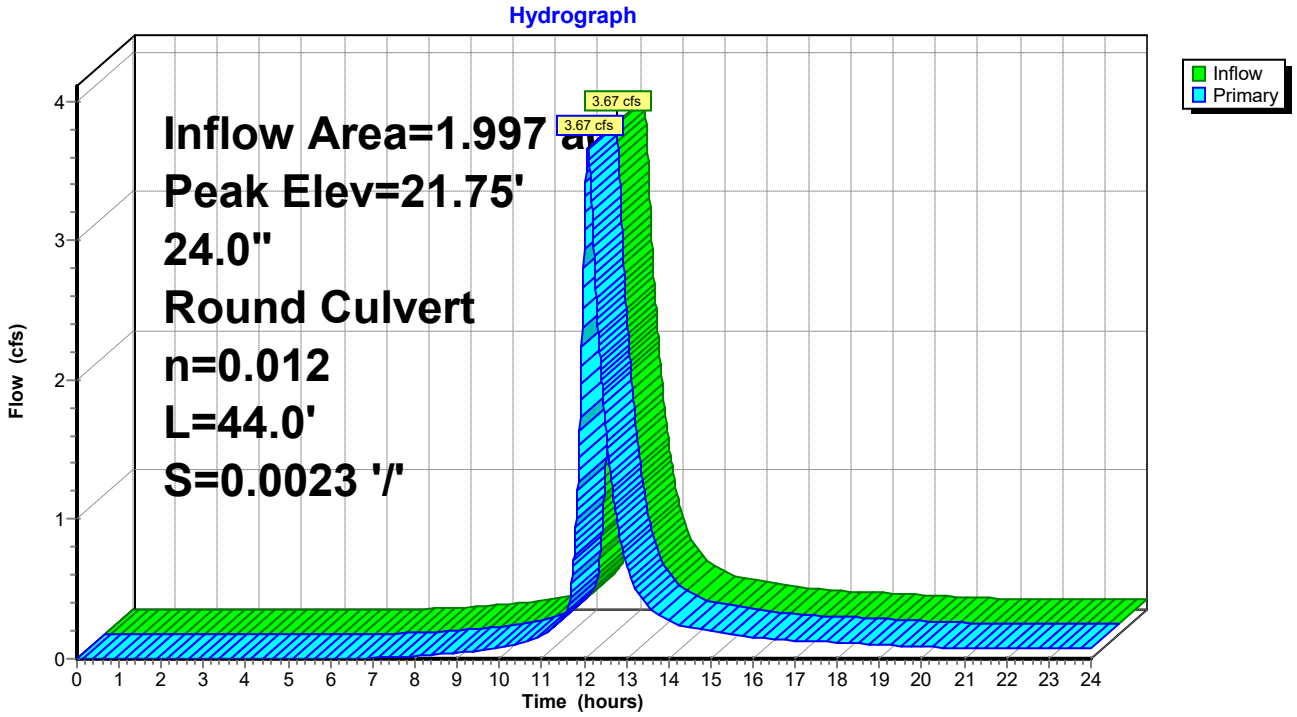
Inflow Area = 1.997 ac, 57.44% Impervious, Inflow Depth > 2.15" for 2-Yr event
Inflow = 3.67 cfs @ 12.10 hrs, Volume= 0.358 af
Outflow = 3.67 cfs @ 12.10 hrs, Volume= 0.358 af, Atten= 0%, Lag= 0.0 min
Primary = 3.67 cfs @ 12.10 hrs, Volume= 0.358 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.75' @ 12.12 hrs
Flood Elev= 23.01'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.00'	**24.0" Round Culvert** L= 44.0' Ke= 0.500 Inlet / Outlet Invert= 20.00' / 19.90' S= 0.0023 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=3.39 cfs @ 12.10 hrs HW=21.74' TW=21.66' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 3.39 cfs @ 1.56 fps)

Pond 48: I-20



Summary for Subcatchment 49: DA #20

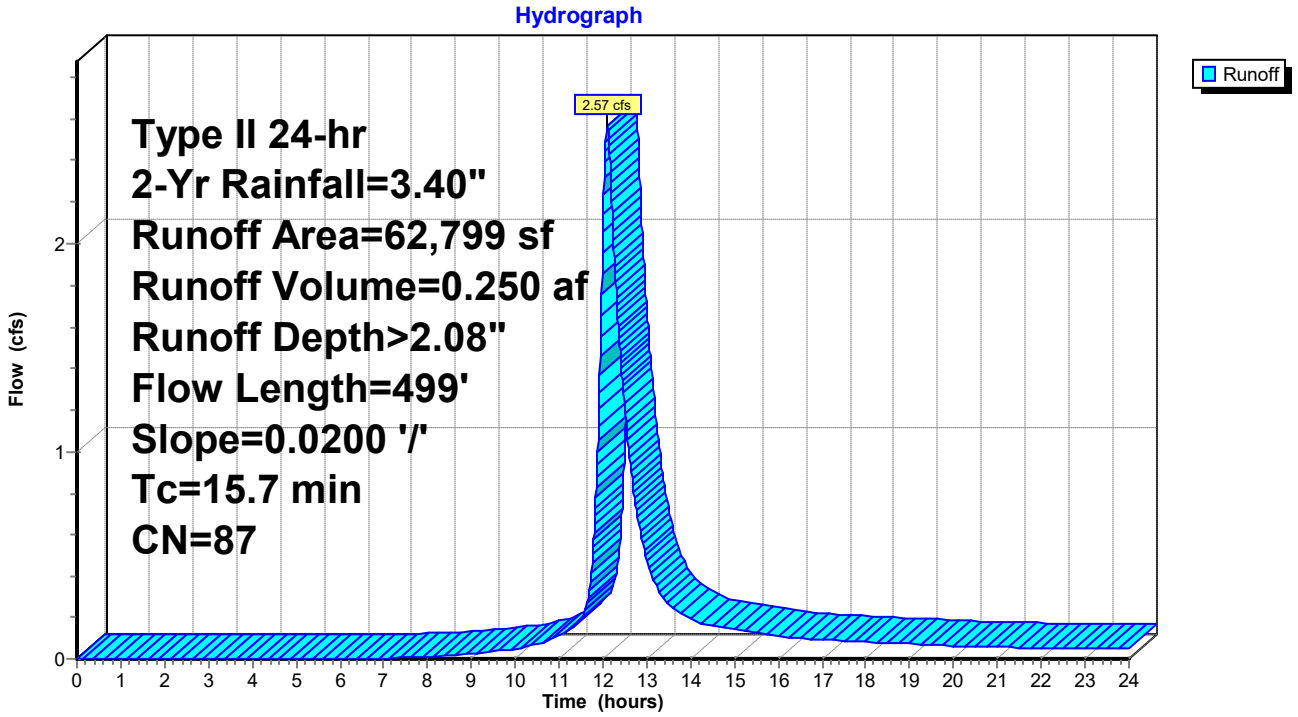
Runoff = 2.57 cfs @ 12.10 hrs, Volume= 0.250 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
33,785	98	Paved parking, HSG C
29,014	74	>75% Grass cover, Good, HSG C
62,799	87	Weighted Average
29,014		46.20% Pervious Area
33,785		53.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
2.6	349	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
15.7	499	Total			

Subcatchment 49: DA #20



Summary for Pond 50: I-21

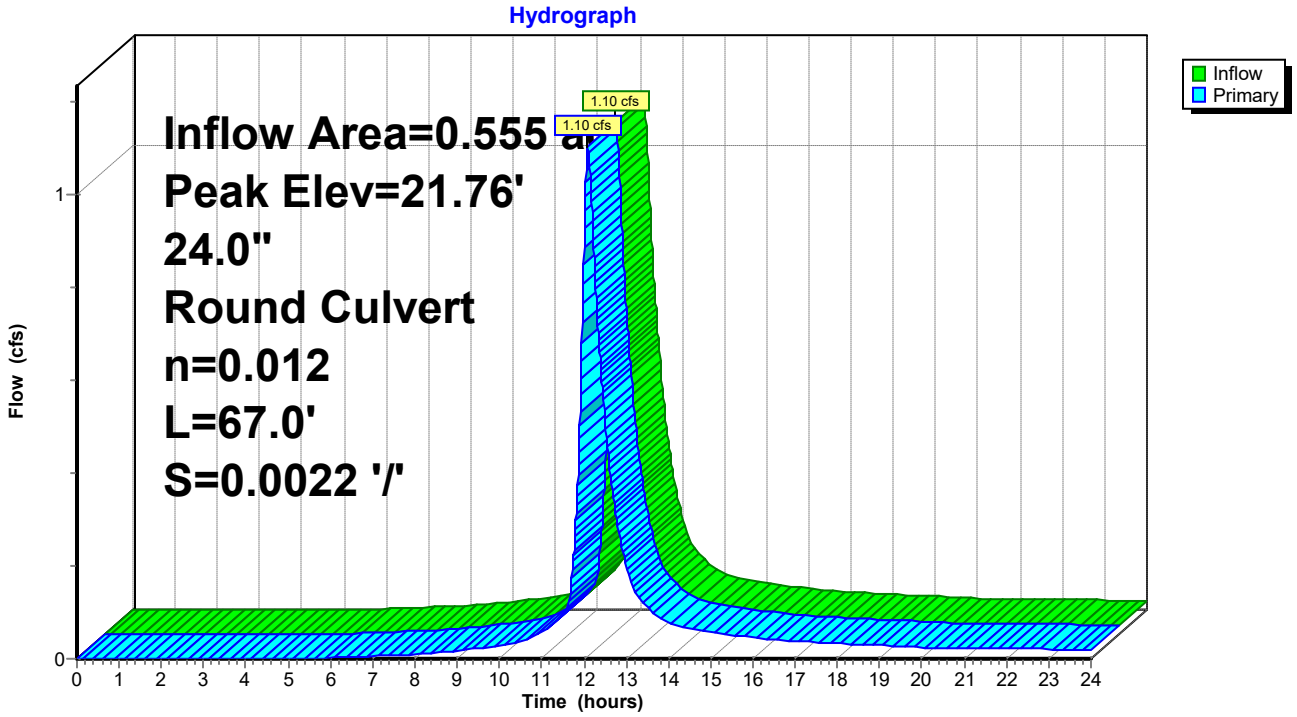
Inflow Area = 0.555 ac, 66.91% Impervious, Inflow Depth > 2.34" for 2-Yr event
Inflow = 1.10 cfs @ 12.09 hrs, Volume= 0.108 af
Outflow = 1.10 cfs @ 12.09 hrs, Volume= 0.108 af, Atten= 0%, Lag= 0.0 min
Primary = 1.10 cfs @ 12.09 hrs, Volume= 0.108 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.76' @ 12.13 hrs
Flood Elev= 23.46'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.15'	**24.0" Round Culvert** L= 67.0' Ke= 0.500 Inlet / Outlet Invert= 20.15' / 20.00' S= 0.0022 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=21.72' TW=21.72' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 50: I-21



Summary for Subcatchment 51: DA #21

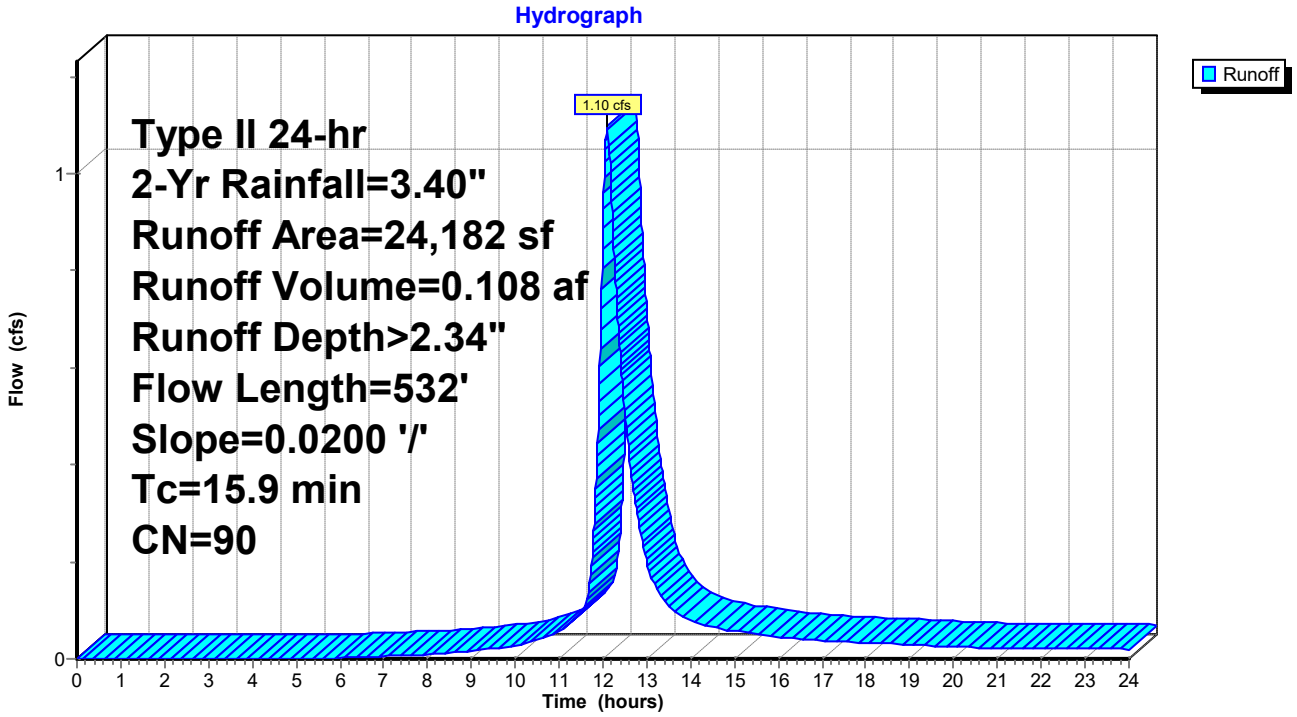
Runoff = 1.10 cfs @ 12.09 hrs, Volume= 0.108 af, Depth> 2.34"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
16,181	98	Paved parking, HSG C
8,001	74	>75% Grass cover, Good, HSG C
24,182	90	Weighted Average
8,001		33.09% Pervious Area
16,181		66.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
2.8	382	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
15.9	532	Total			

Subcatchment 51: DA #21



Summary for Pond 52: I-22

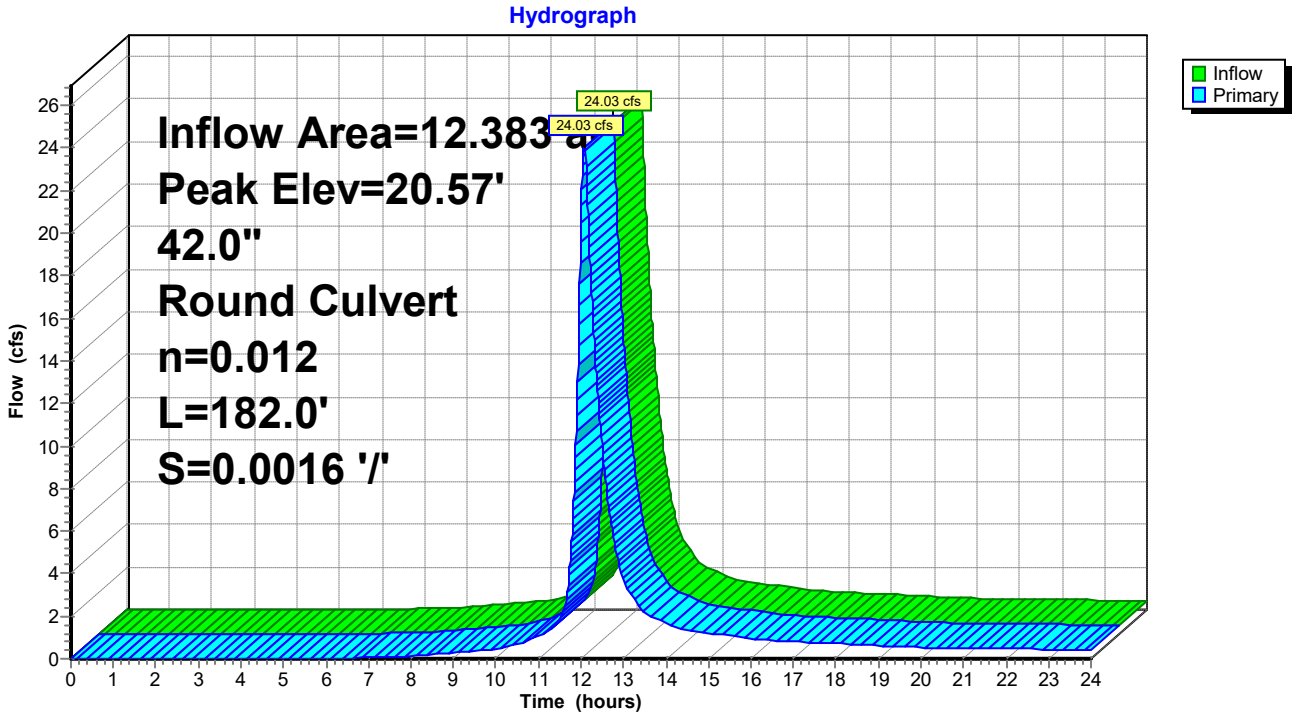
Inflow Area = 12.383 ac, 57.77% Impervious, Inflow Depth > 2.15" for 2-Yr event
Inflow = 24.03 cfs @ 12.08 hrs, Volume= 2.220 af
Outflow = 24.03 cfs @ 12.08 hrs, Volume= 2.220 af, Atten= 0%, Lag= 0.0 min
Primary = 24.03 cfs @ 12.08 hrs, Volume= 2.220 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.57' @ 12.08 hrs
Flood Elev= 20.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.20'	**42.0" Round Culvert** L= 182.0' Ke= 0.500 Inlet / Outlet Invert= 18.20' / 17.90' S= 0.0016 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=24.03 cfs @ 12.08 hrs HW=20.57' TW=18.63' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 24.03 cfs @ 4.89 fps)

Pond 52: I-22



Summary for Subcatchment 53: DA #22

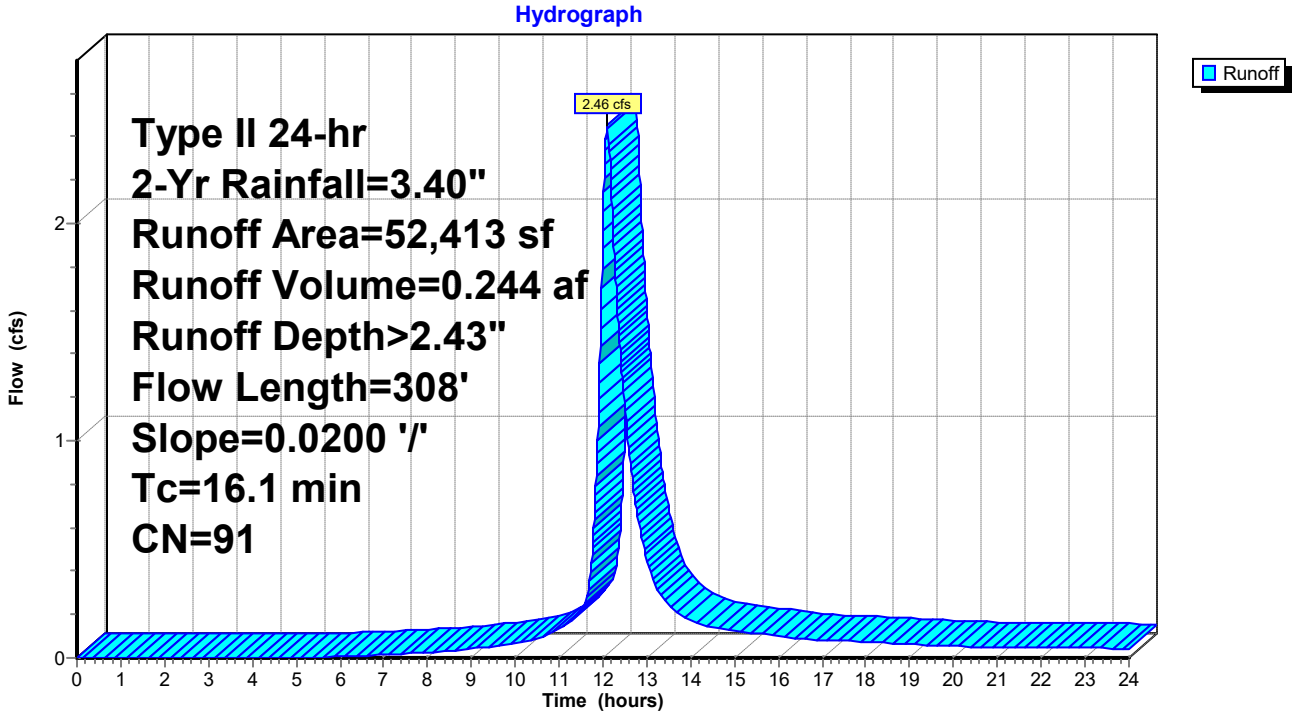
Runoff = 2.46 cfs @ 12.09 hrs, Volume= 0.244 af, Depth> 2.43"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
36,862	98	Paved parking, HSG C
15,551	74	>75% Grass cover, Good, HSG C
52,413	91	Weighted Average
15,551		29.67% Pervious Area
36,862		70.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	109	0.0200	0.18		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
4.7	41	0.0200	0.15		**Sheet Flow, B-C** Grass: Short n= 0.150 P2= 3.40"
1.2	158	0.0200	2.28		**Shallow Concentrated Flow, C-D** Unpaved Kv= 16.1 fps
16.1	308	Total			

Subcatchment 53: DA #22



Summary for Pond 54: I-23

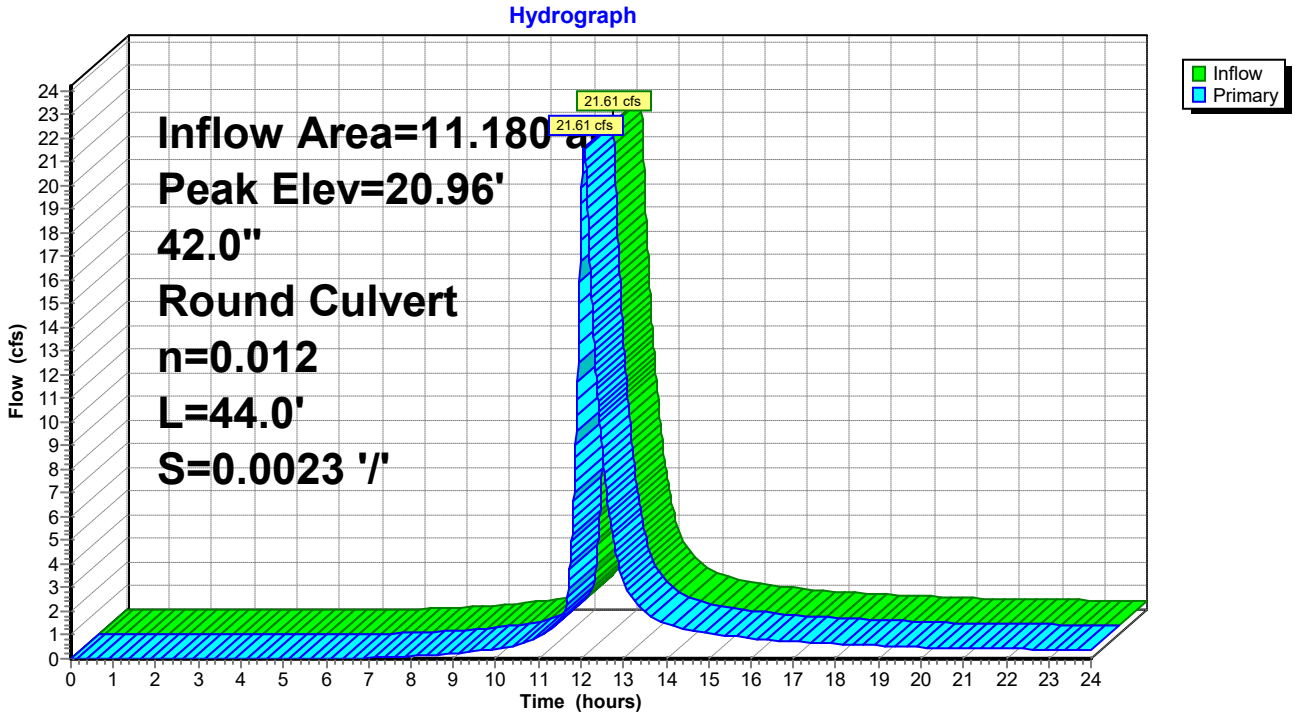
Inflow Area = 11.180 ac, 56.42% Impervious, Inflow Depth > 2.12" for 2-Yr event
Inflow = 21.61 cfs @ 12.07 hrs, Volume= 1.976 af
Outflow = 21.61 cfs @ 12.07 hrs, Volume= 1.976 af, Atten= 0%, Lag= 0.0 min
Primary = 21.61 cfs @ 12.07 hrs, Volume= 1.976 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.96' @ 12.08 hrs
Flood Elev= 20.68'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.30'	**42.0" Round Culvert** L= 44.0' Ke= 0.500 Inlet / Outlet Invert= 18.30' / 18.20' S= 0.0023 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=21.51 cfs @ 12.07 hrs HW=20.95' TW=20.57' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 21.51 cfs @ 3.81 fps)

Pond 54: I-23



Summary for Subcatchment 55: DA #23

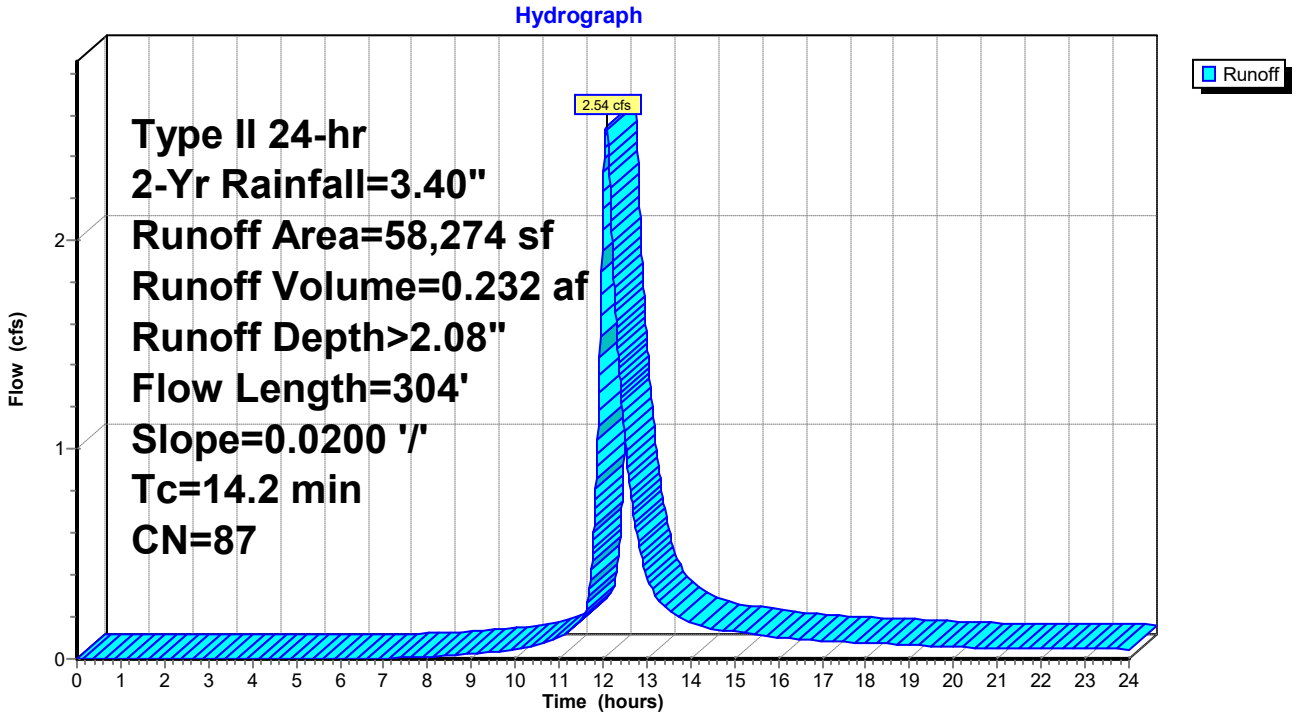
Runoff = 2.54 cfs @ 12.08 hrs, Volume= 0.232 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
31,377	98	Paved parking, HSG C
26,897	74	>75% Grass cover, Good, HSG C
58,274	87	Weighted Average
26,897		46.16% Pervious Area
31,377		53.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
1.1	154	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.2	304	Total			

Subcatchment 55: DA #23



Summary for Pond 56: I-24

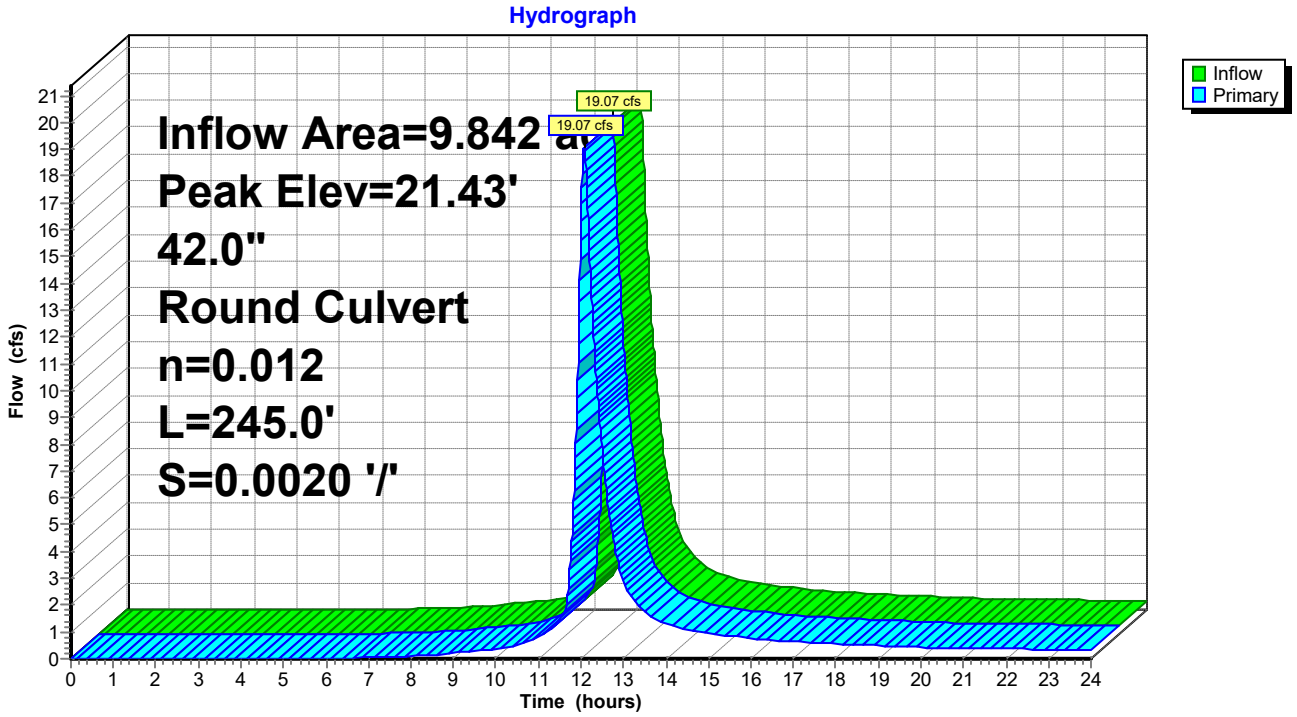
Inflow Area = 9.842 ac, 56.77% Impervious, Inflow Depth > 2.13" for 2-Yr event
Inflow = 19.07 cfs @ 12.07 hrs, Volume= 1.744 af
Outflow = 19.07 cfs @ 12.07 hrs, Volume= 1.744 af, Atten= 0%, Lag= 0.0 min
Primary = 19.07 cfs @ 12.07 hrs, Volume= 1.744 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.43' @ 12.09 hrs
Flood Elev= 21.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.80'	**42.0" Round Culvert** L= 245.0' Ke= 0.500 Inlet / Outlet Invert= 18.80' / 18.30' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=18.85 cfs @ 12.07 hrs HW=21.42' TW=20.95' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 18.85 cfs @ 3.39 fps)

Pond 56: I-24



Summary for Subcatchment 57: DA #24

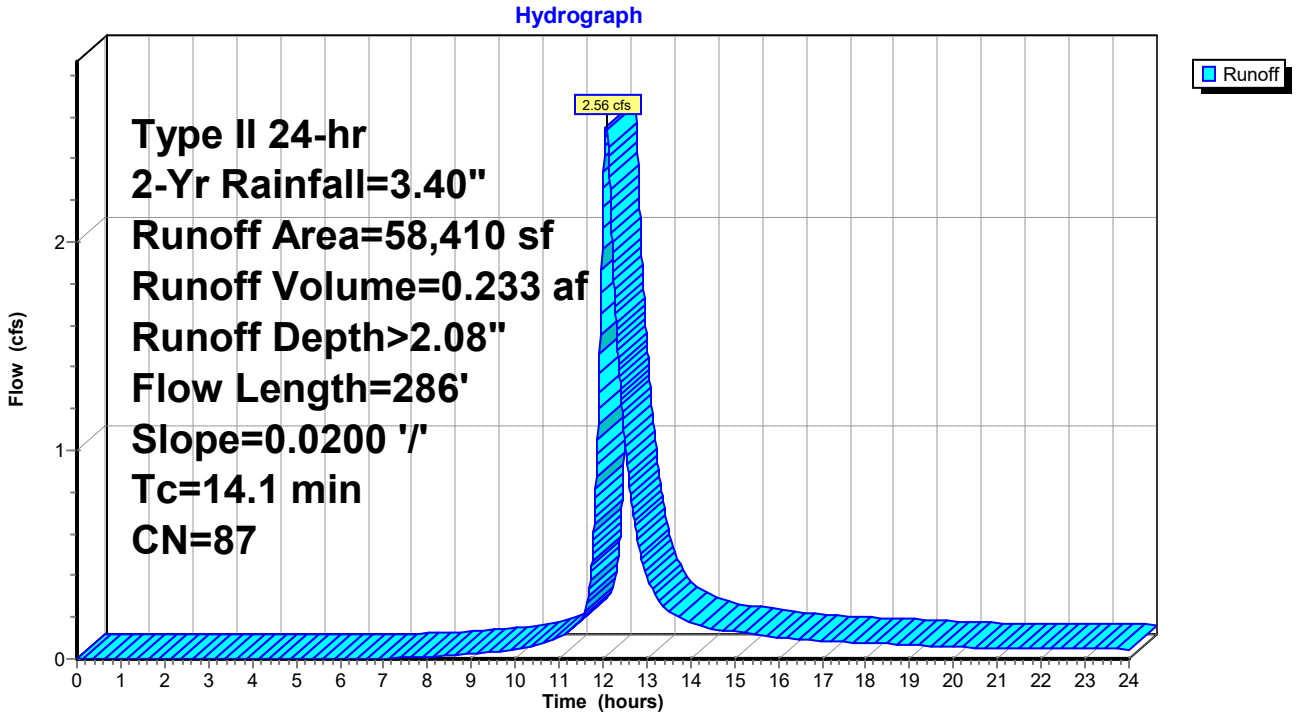
Runoff = 2.56 cfs @ 12.07 hrs, Volume= 0.233 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
31,604	98	Paved parking, HSG C
26,806	74	>75% Grass cover, Good, HSG C
58,410	87	Weighted Average
26,806		45.89% Pervious Area
31,604		54.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
1.0	136	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.1	286	Total			

Subcatchment 57: DA #24



Summary for Pond 58: I-25

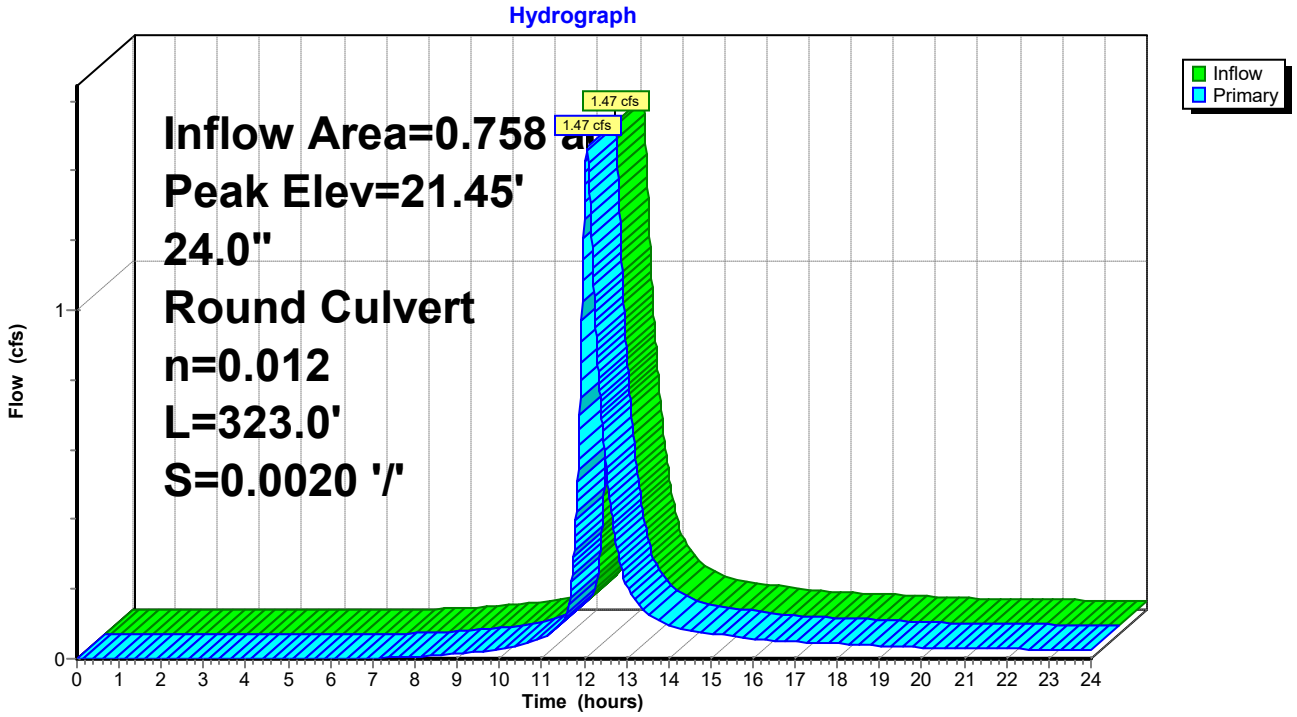
Inflow Area = 0.758 ac, 53.66% Impervious, Inflow Depth > 2.08" for 2-Yr event
Inflow = 1.47 cfs @ 12.08 hrs, Volume= 0.131 af
Outflow = 1.47 cfs @ 12.08 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min
Primary = 1.47 cfs @ 12.08 hrs, Volume= 0.131 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.45' @ 12.09 hrs
Flood Elev= 22.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.45'	**24.0" Round Culvert** L= 323.0' Ke= 0.500 Inlet / Outlet Invert= 19.45' / 18.80' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=1.13 cfs @ 12.08 hrs HW=21.44' TW=21.43' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.13 cfs @ 0.45 fps)

Pond 58: I-25



Summary for Subcatchment 59: DA #25

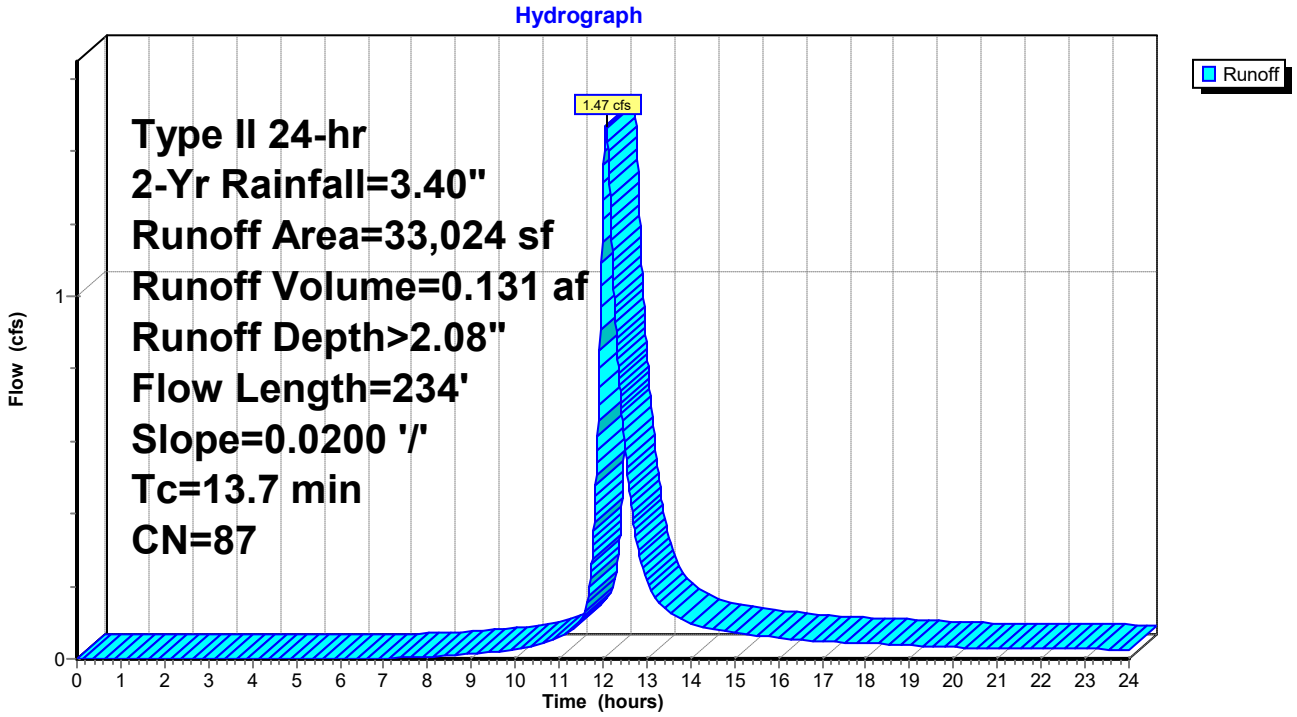
Runoff = 1.47 cfs @ 12.08 hrs, Volume= 0.131 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
17,720	98	Paved parking, HSG C
15,304	74	>75% Grass cover, Good, HSG C
33,024	87	Weighted Average
15,304		46.34% Pervious Area
17,720		53.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.6	84	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.7	234	Total			

Subcatchment 59: DA #25



Summary for Pond 60: I-26

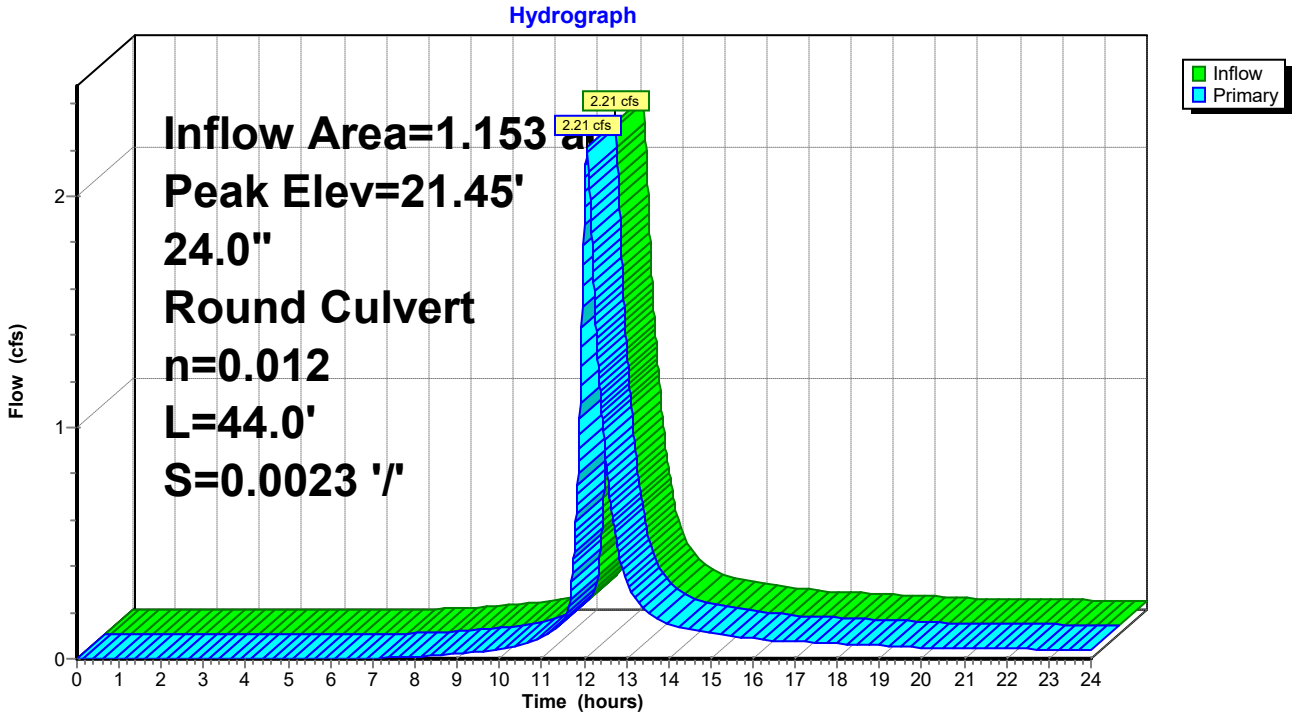
Inflow Area = 1.153 ac, 55.44% Impervious, Inflow Depth > 2.08" for 2-Yr event
Inflow = 2.21 cfs @ 12.07 hrs, Volume= 0.200 af
Outflow = 2.21 cfs @ 12.07 hrs, Volume= 0.200 af, Atten= 0%, Lag= 0.0 min
Primary = 2.21 cfs @ 12.07 hrs, Volume= 0.200 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.45' @ 12.09 hrs
Flood Elev= 21.74'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.90'	**24.0" Round Culvert** L= 44.0' Ke= 0.500 Inlet / Outlet Invert= 18.90' / 18.80' S= 0.0023 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=1.15 cfs @ 12.07 hrs HW=21.43' TW=21.42' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.15 cfs @ 0.37 fps)

Pond 60: I-26



Summary for Subcatchment 61: DA #26

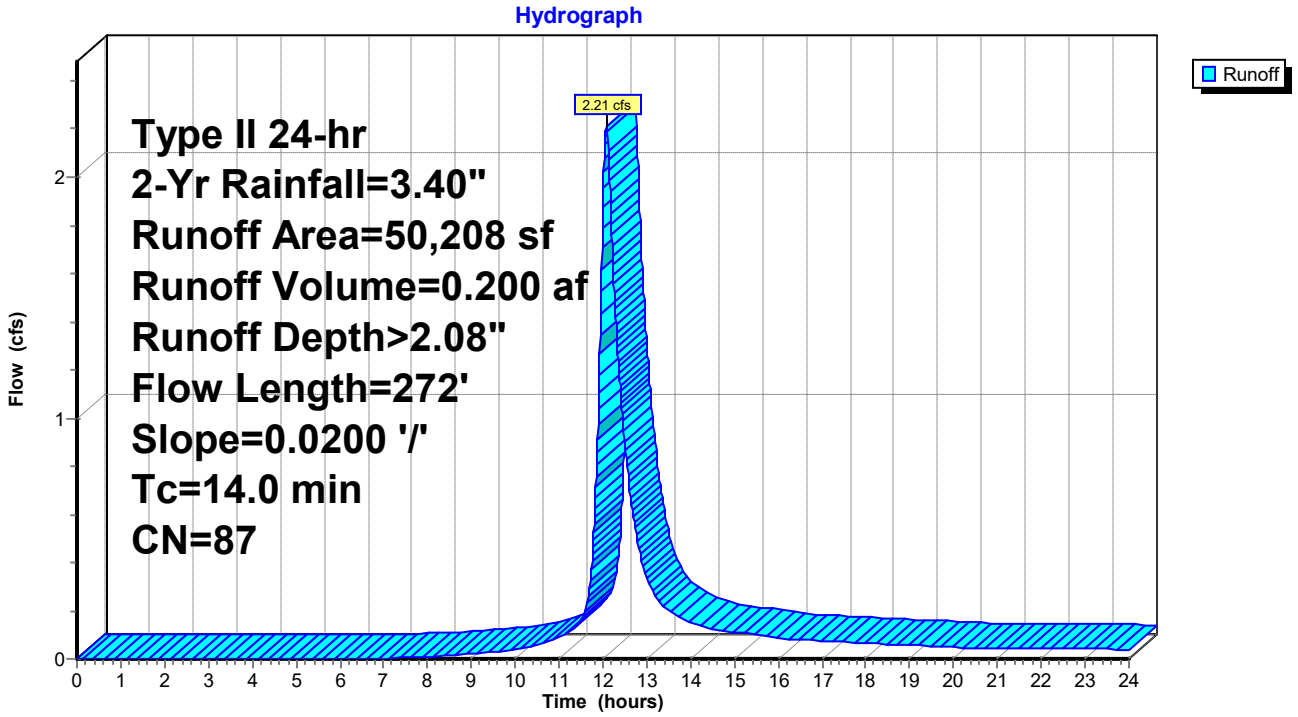
Runoff = 2.21 cfs @ 12.07 hrs, Volume= 0.200 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
27,835	98	Paved parking, HSG C
22,373	74	>75% Grass cover, Good, HSG C
50,208	87	Weighted Average
22,373		44.56% Pervious Area
27,835		55.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.9	122	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.0	272	Total			

Subcatchment 61: DA #26



Summary for Pond 62: I-27

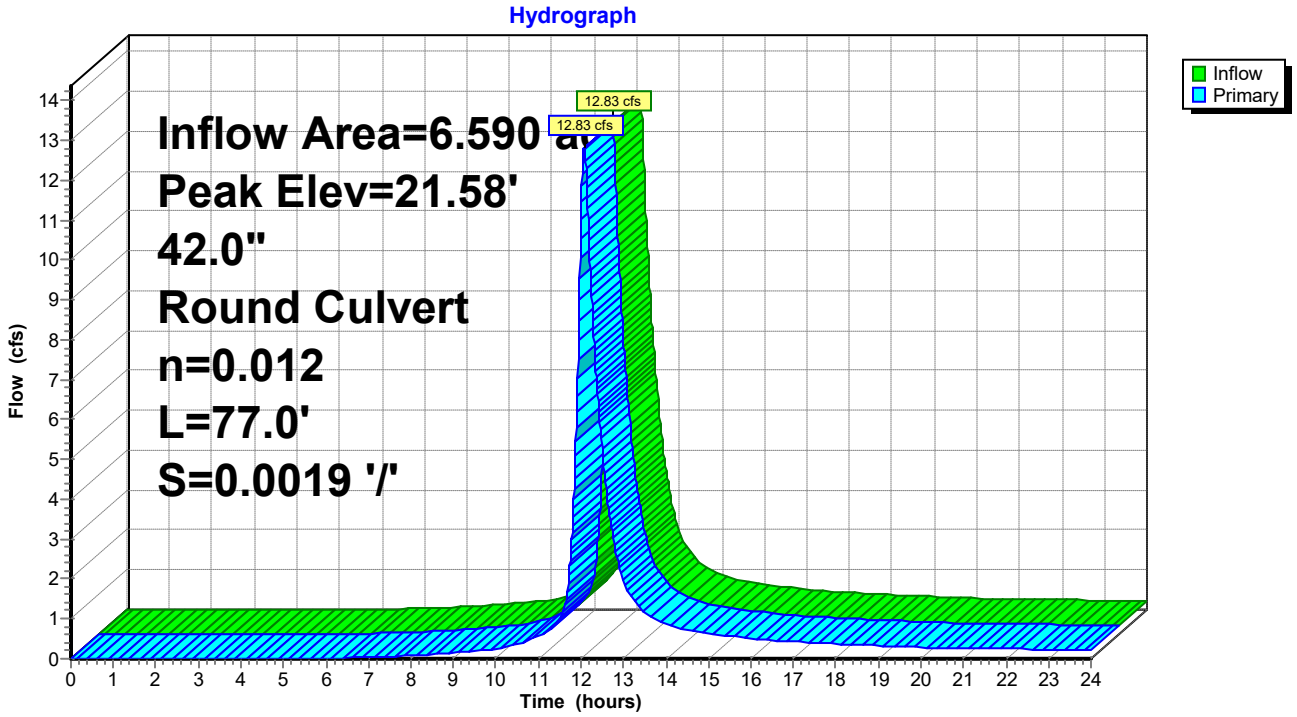
Inflow Area = 6.590 ac, 57.90% Impervious, Inflow Depth > 2.15" for 2-Yr event
Inflow = 12.83 cfs @ 12.07 hrs, Volume= 1.180 af
Outflow = 12.83 cfs @ 12.07 hrs, Volume= 1.180 af, Atten= 0%, Lag= 0.0 min
Primary = 12.83 cfs @ 12.07 hrs, Volume= 1.180 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.58' @ 12.09 hrs
Flood Elev= 21.84'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.95'	**42.0" Round Culvert** L= 77.0' Ke= 0.500 Inlet / Outlet Invert= 18.95' / 18.80' S= 0.0019 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=12.21 cfs @ 12.07 hrs HW=21.56' TW=21.42' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 12.21 cfs @ 2.20 fps)

Pond 62: I-27



Summary for Subcatchment 63: DA #27

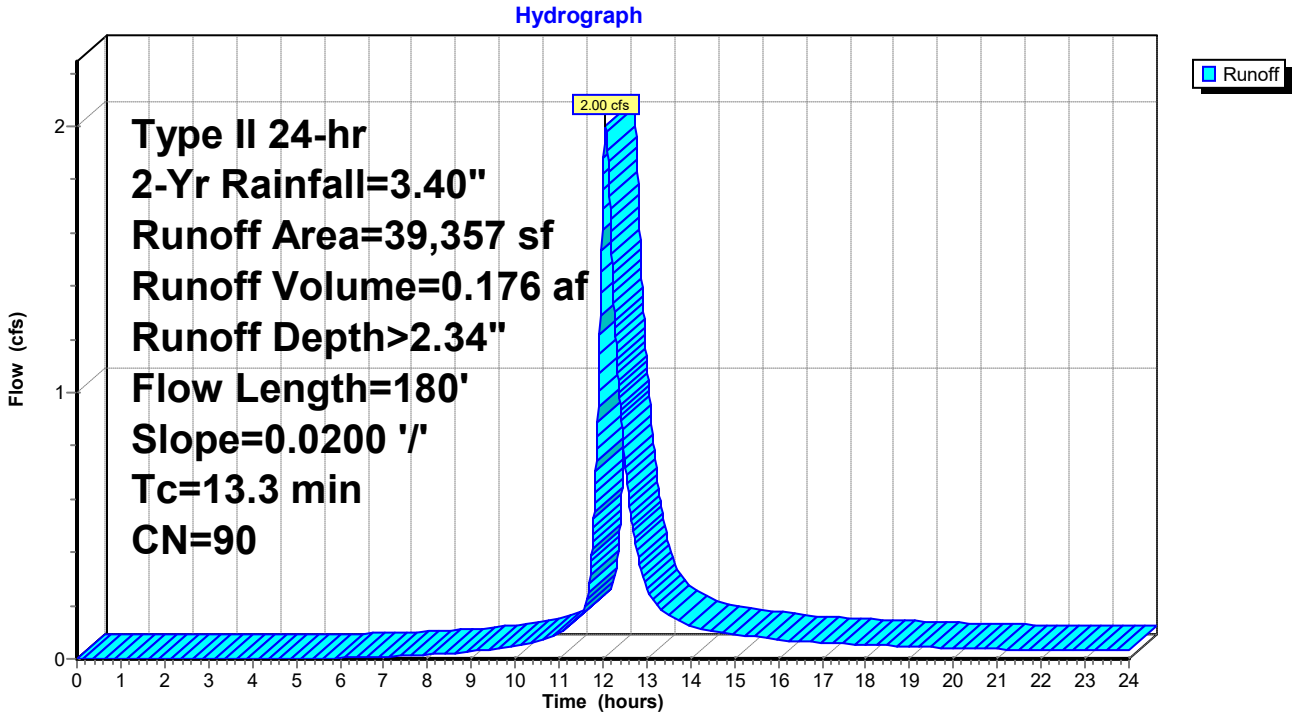
Runoff = 2.00 cfs @ 12.06 hrs, Volume= 0.176 af, Depth> 2.34"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
27,040	98	Paved parking, HSG C
12,317	74	>75% Grass cover, Good, HSG C
39,357	90	Weighted Average
12,317		31.30% Pervious Area
27,040		68.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.2	30	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.3	180	Total			

Subcatchment 63: DA #27



Summary for Pond 64: I-28

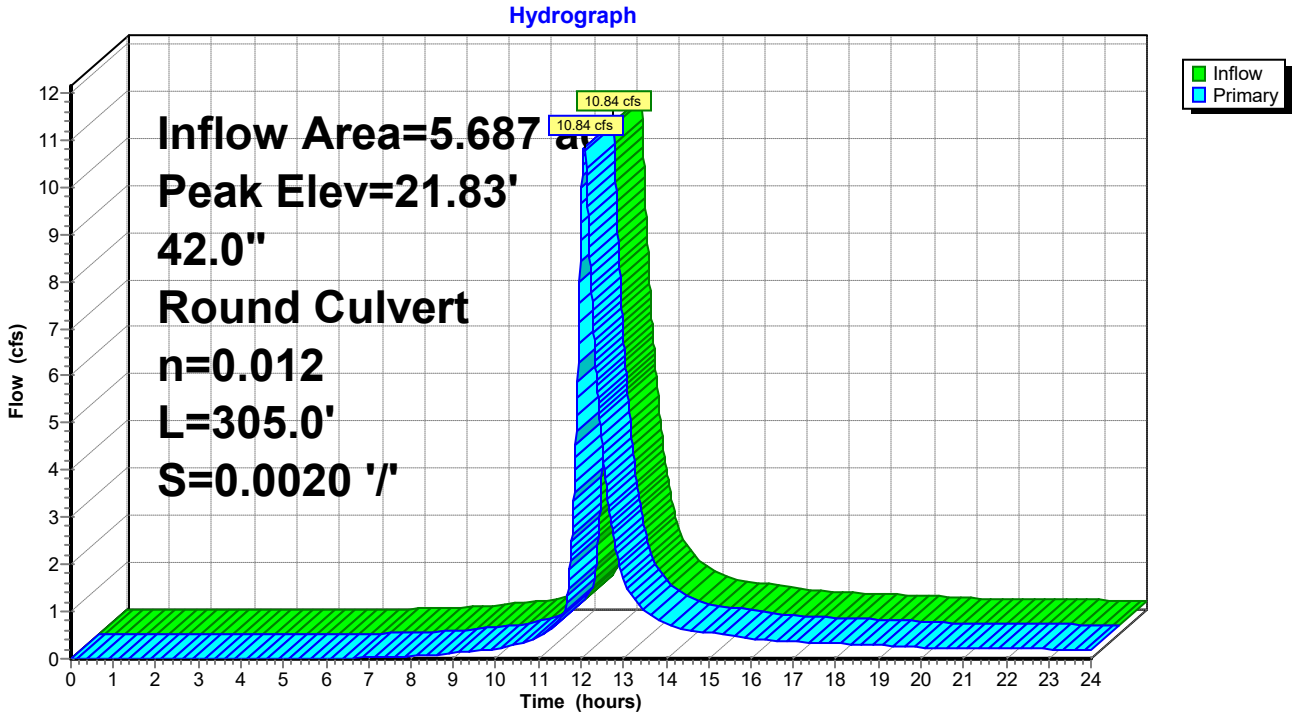
Inflow Area = 5.687 ac, 56.19% Impervious, Inflow Depth > 2.12" for 2-Yr event
Inflow = 10.84 cfs @ 12.08 hrs, Volume= 1.004 af
Outflow = 10.84 cfs @ 12.08 hrs, Volume= 1.004 af, Atten= 0%, Lag= 0.0 min
Primary = 10.84 cfs @ 12.08 hrs, Volume= 1.004 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.83' @ 12.10 hrs
Flood Elev= 21.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.56'	**42.0" Round Culvert** L= 305.0' Ke= 0.500 Inlet / Outlet Invert= 19.56' / 18.95' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=10.45 cfs @ 12.08 hrs HW=21.81' TW=21.57' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 10.45 cfs @ 2.27 fps)

Pond 64: I-28



Summary for Subcatchment 65: DA #28

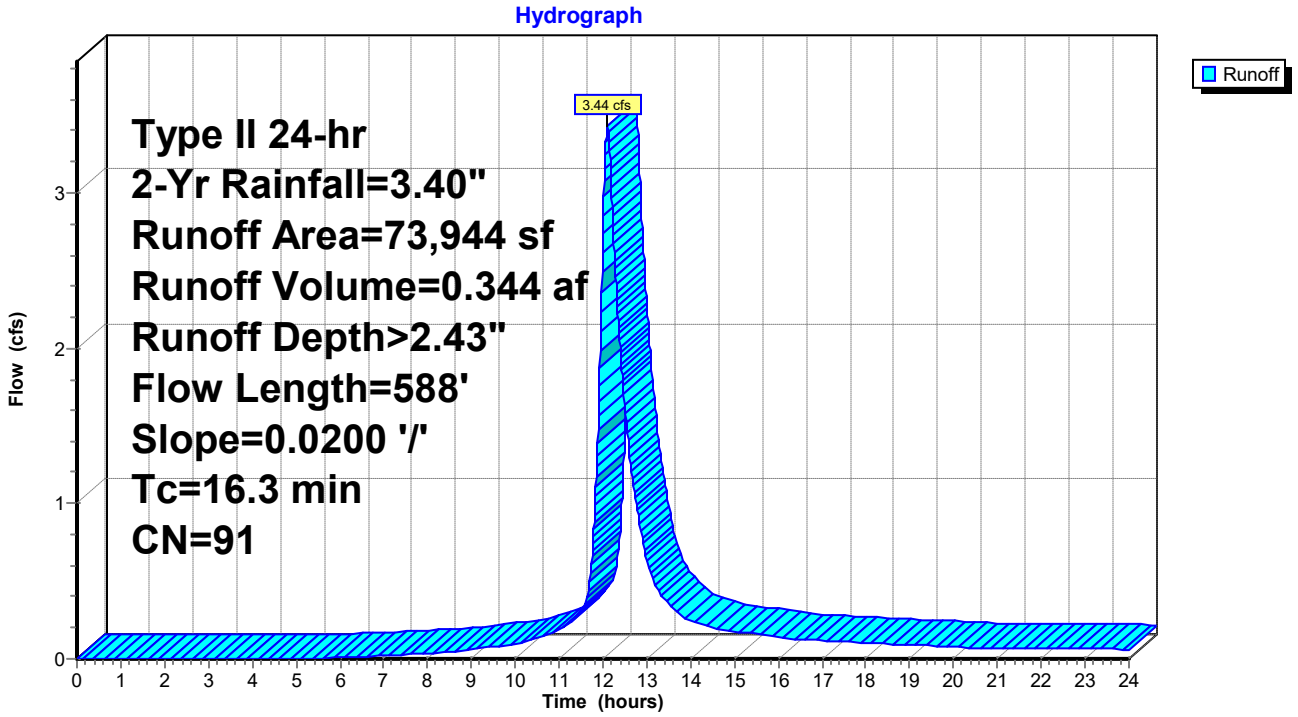
Runoff = 3.44 cfs @ 12.10 hrs, Volume= 0.344 af, Depth> 2.43"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
53,413	98	Paved parking, HSG C
20,531	74	>75% Grass cover, Good, HSG C
73,944	91	Weighted Average
20,531		27.77% Pervious Area
53,413		72.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
3.2	438	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
16.3	588	Total			

Subcatchment 65: DA #28



Summary for Pond 66: I-29

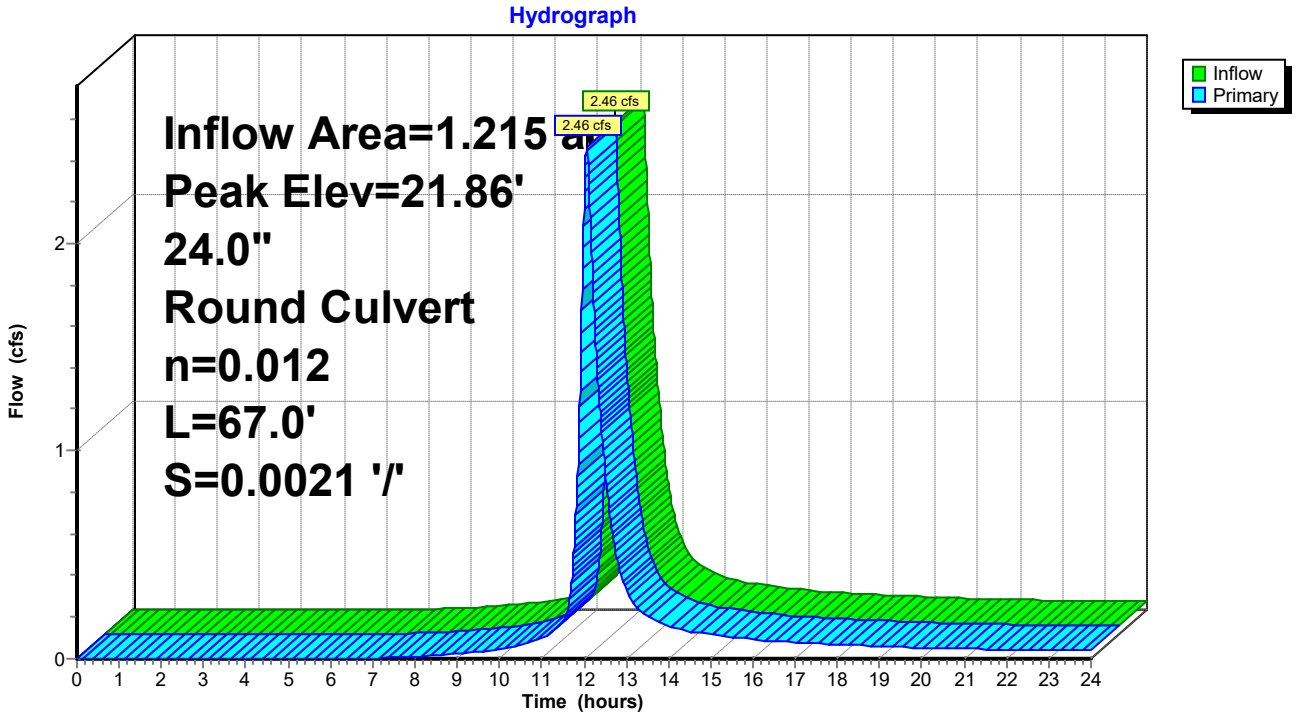
Inflow Area = 1.215 ac, 55.29% Impervious, Inflow Depth > 2.10" for 2-Yr event
Inflow = 2.46 cfs @ 12.06 hrs, Volume= 0.213 af
Outflow = 2.46 cfs @ 12.06 hrs, Volume= 0.213 af, Atten= 0%, Lag= 0.0 min
Primary = 2.46 cfs @ 12.06 hrs, Volume= 0.213 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.86' @ 12.11 hrs
Flood Elev= 22.46'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.70'	**24.0" Round Culvert** L= 67.0' Ke= 0.500 Inlet / Outlet Invert= 19.70' / 19.56' S= 0.0021 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 12.06 hrs HW=21.78' TW=21.78' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 66: I-29



Summary for Subcatchment 67: DA #29

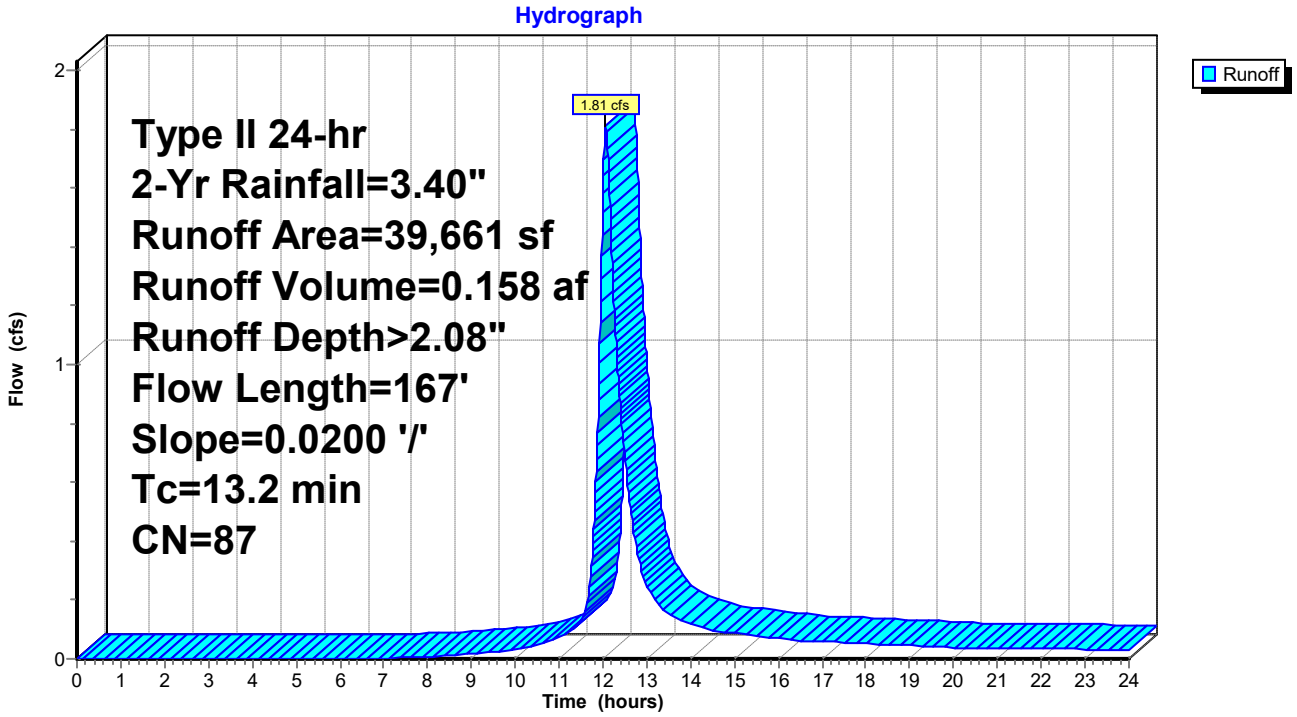
Runoff = 1.81 cfs @ 12.06 hrs, Volume= 0.158 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
21,601	98	Paved parking, HSG C
18,060	74	>75% Grass cover, Good, HSG C
39,661	87	Weighted Average
18,060		45.54% Pervious Area
21,601		54.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.1	17	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.2	167	Total			

Subcatchment 67: DA #29



Summary for Pond 68: I-30

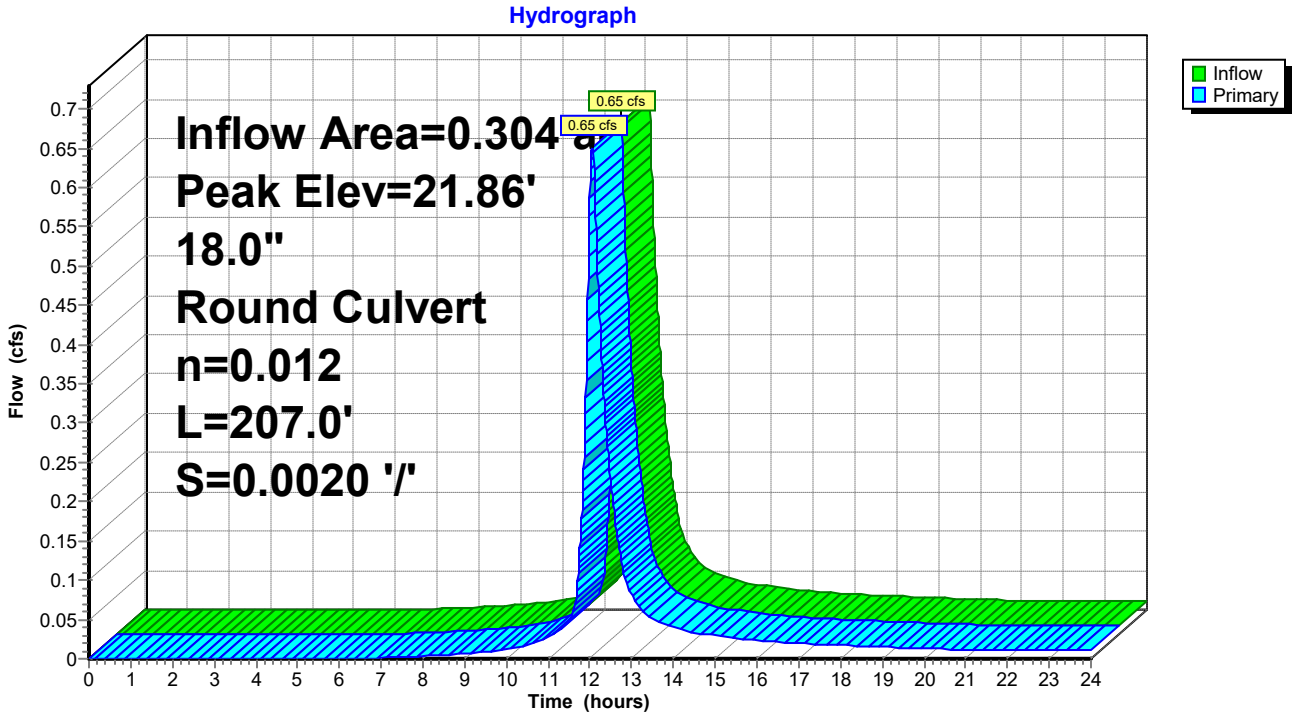
Inflow Area = 0.304 ac, 57.75% Impervious, Inflow Depth > 2.17" for 2-Yr event
Inflow = 0.65 cfs @ 12.06 hrs, Volume= 0.055 af
Outflow = 0.65 cfs @ 12.06 hrs, Volume= 0.055 af, Atten= 0%, Lag= 0.0 min
Primary = 0.65 cfs @ 12.06 hrs, Volume= 0.055 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.86' @ 12.12 hrs
Flood Elev= 22.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.11'	**18.0" Round Culvert** L= 207.0' Ke= 0.500 Inlet / Outlet Invert= 20.11' / 19.70' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 12.06 hrs HW=21.72' TW=21.76' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 68: I-30



Summary for Subcatchment 69: DA #30

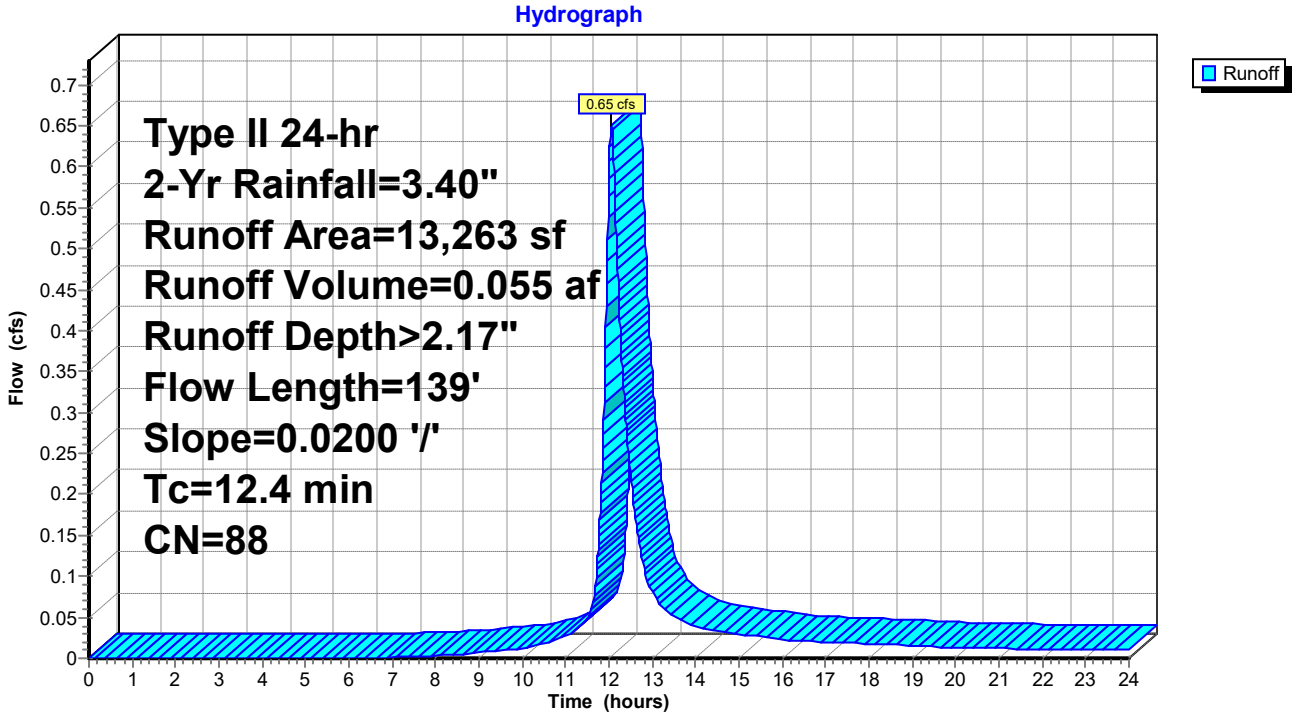
Runoff = 0.65 cfs @ 12.06 hrs, Volume= 0.055 af, Depth> 2.17"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
7,660	98	Paved parking, HSG C
5,603	74	>75% Grass cover, Good, HSG C
13,263	88	Weighted Average
5,603		42.25% Pervious Area
7,660		57.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	139	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"

Subcatchment 69: DA #30



Summary for Pond 70: I-31

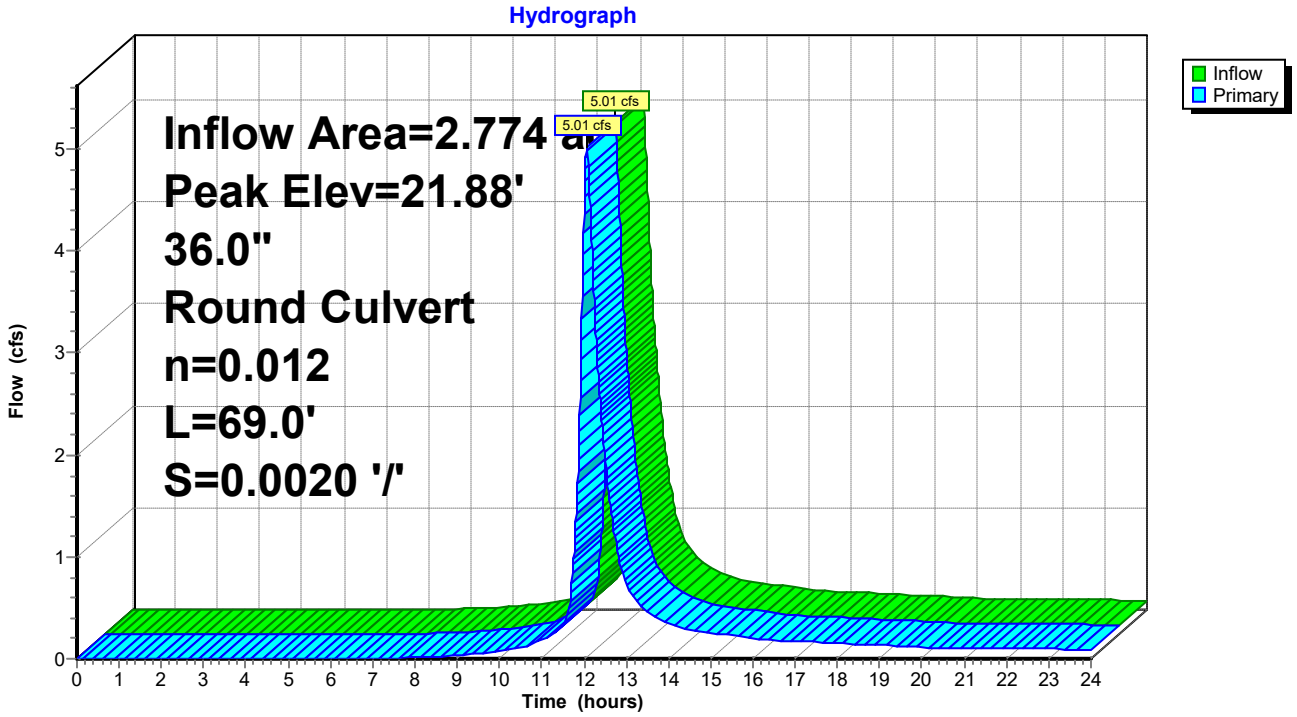
Inflow Area = 2.774 ac, 46.76% Impervious, Inflow Depth > 1.93" for 2-Yr event
Inflow = 5.01 cfs @ 12.07 hrs, Volume= 0.447 af
Outflow = 5.01 cfs @ 12.07 hrs, Volume= 0.447 af, Atten= 0%, Lag= 0.0 min
Primary = 5.01 cfs @ 12.07 hrs, Volume= 0.447 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.88' @ 12.11 hrs
Flood Elev= 22.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.70'	**36.0" Round Culvert** L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 19.70' / 19.56' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=3.36 cfs @ 12.07 hrs HW=21.82' TW=21.79' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 3.36 cfs @ 0.88 fps)

Pond 70: I-31



Summary for Subcatchment 71: DA #31

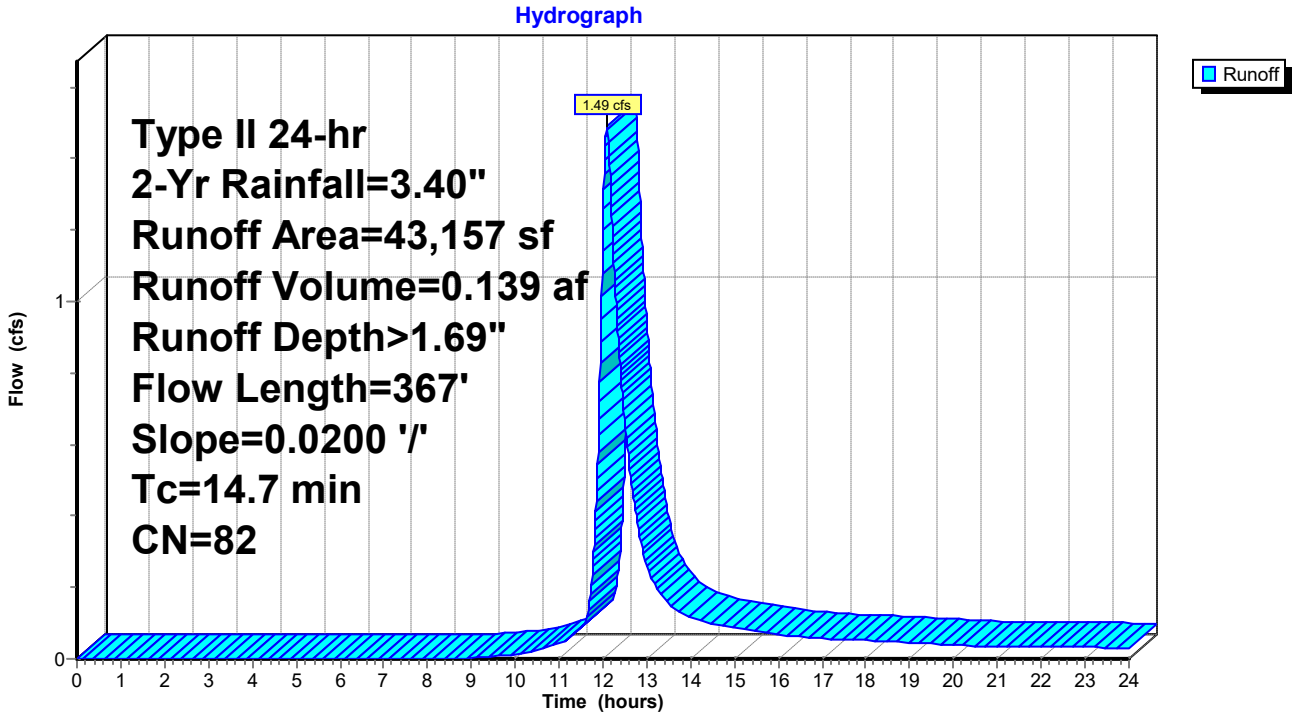
Runoff = 1.49 cfs @ 12.09 hrs, Volume= 0.139 af, Depth> 1.69"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
14,691	98	Paved parking, HSG C
28,466	74	>75% Grass cover, Good, HSG C
43,157	82	Weighted Average
28,466		65.96% Pervious Area
14,691		34.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
1.6	217	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.7	367	Total			

Subcatchment 71: DA #31



Summary for Pond 72: I-32

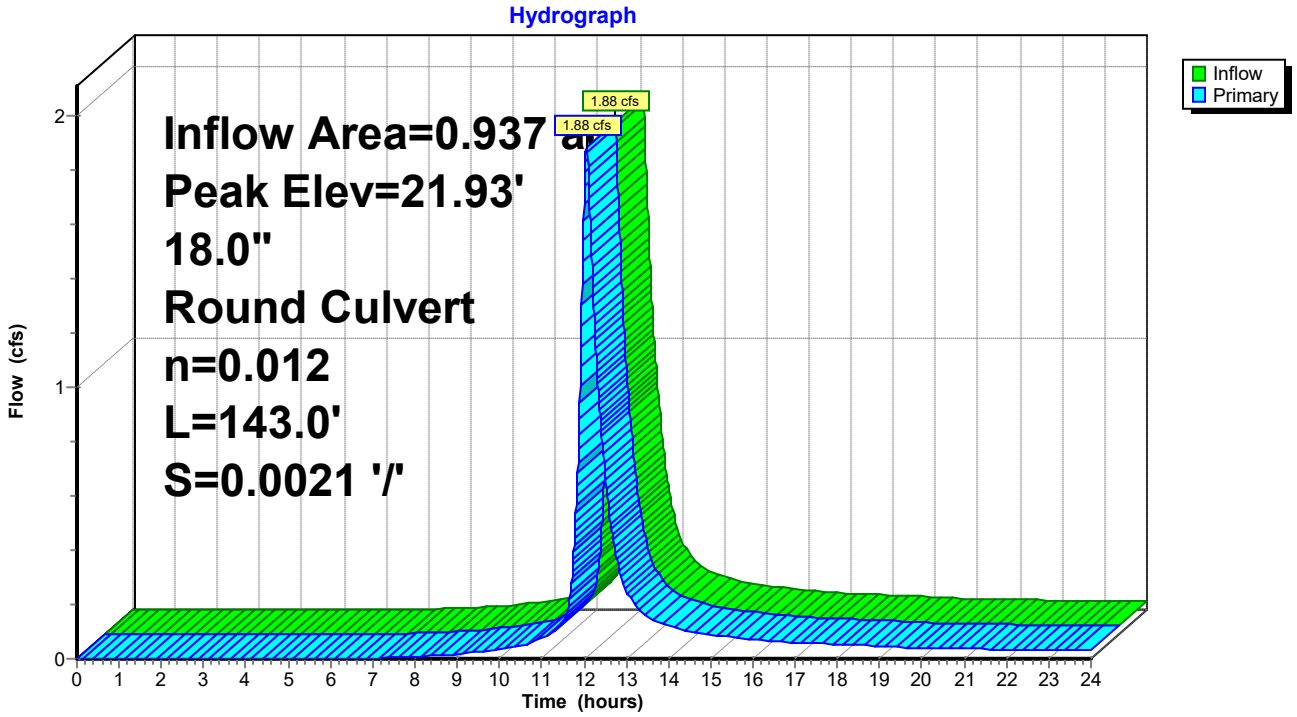
Inflow Area = 0.937 ac, 54.44% Impervious, Inflow Depth > 2.08" for 2-Yr event
Inflow = 1.88 cfs @ 12.06 hrs, Volume= 0.162 af
Outflow = 1.88 cfs @ 12.06 hrs, Volume= 0.162 af, Atten= 0%, Lag= 0.0 min
Primary = 1.88 cfs @ 12.06 hrs, Volume= 0.162 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.93' @ 12.11 hrs
Flood Elev= 22.72'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.00'	**18.0" Round Culvert** L= 143.0' Ke= 0.500 Inlet / Outlet Invert= 20.00' / 19.70' S= 0.0021 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=1.13 cfs @ 12.06 hrs HW=21.81' TW=21.79' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.13 cfs @ 0.67 fps)

Pond 72: I-32



Summary for Subcatchment 73: DA #32

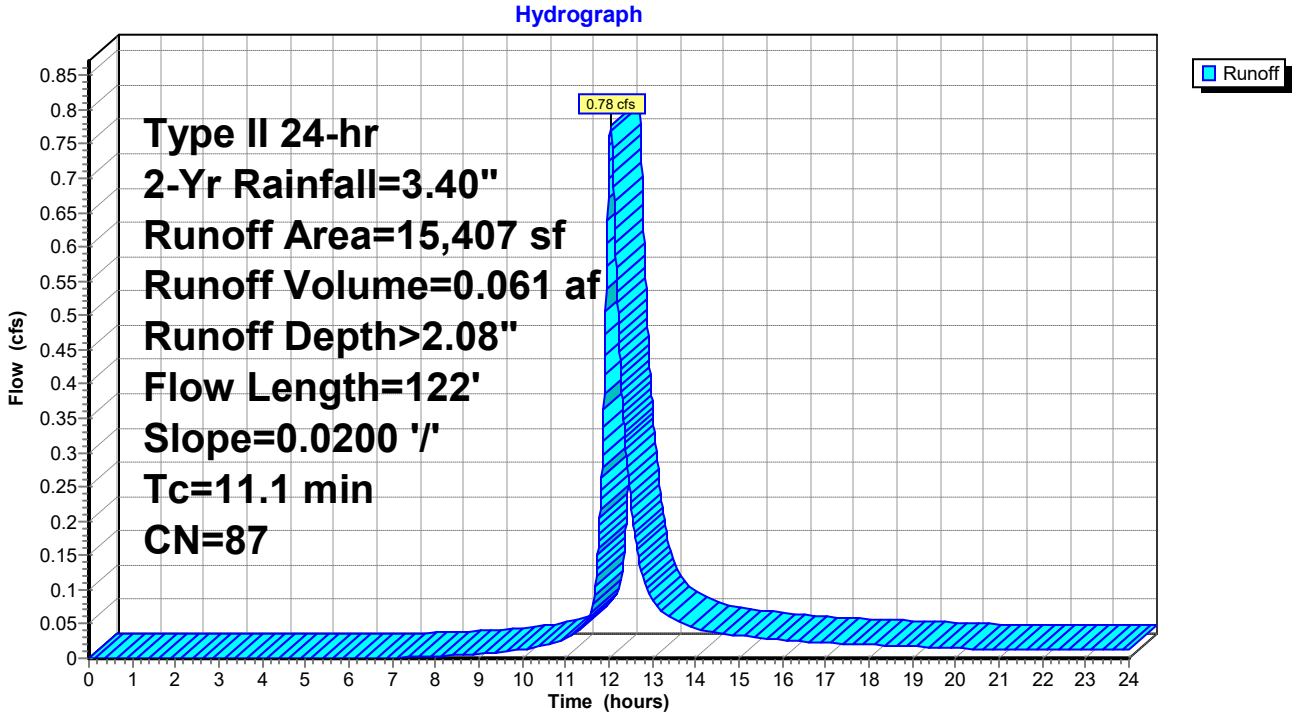
Runoff = 0.78 cfs @ 12.04 hrs, Volume= 0.061 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
8,396	98	Paved parking, HSG C
7,011	74	>75% Grass cover, Good, HSG C
15,407	87	Weighted Average
7,011		45.51% Pervious Area
8,396		54.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	122	0.0200	0.18		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"

Subcatchment 73: DA #32



Summary for Pond 74: I-33

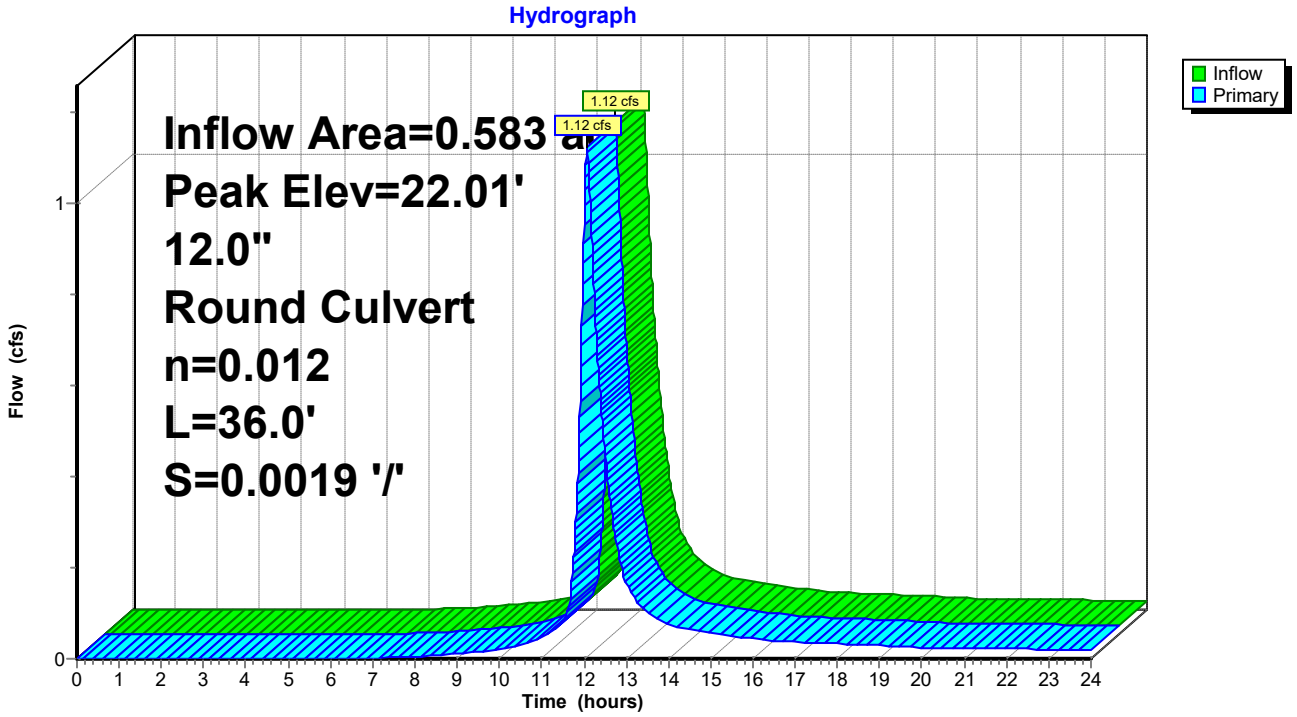
Inflow Area = 0.583 ac, 54.40% Impervious, Inflow Depth > 2.08" for 2-Yr event
Inflow = 1.12 cfs @ 12.08 hrs, Volume= 0.101 af
Outflow = 1.12 cfs @ 12.08 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min
Primary = 1.12 cfs @ 12.08 hrs, Volume= 0.101 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.01' @ 12.12 hrs
Flood Elev= 22.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.07'	**12.0" Round Culvert** L= 36.0' Ke= 0.500 Inlet / Outlet Invert= 20.07' / 20.00' S= 0.0019 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.88 cfs @ 12.08 hrs HW=21.93' TW=21.88' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.88 cfs @ 1.12 fps)

Pond 74: I-33



Summary for Subcatchment 75: DA #33

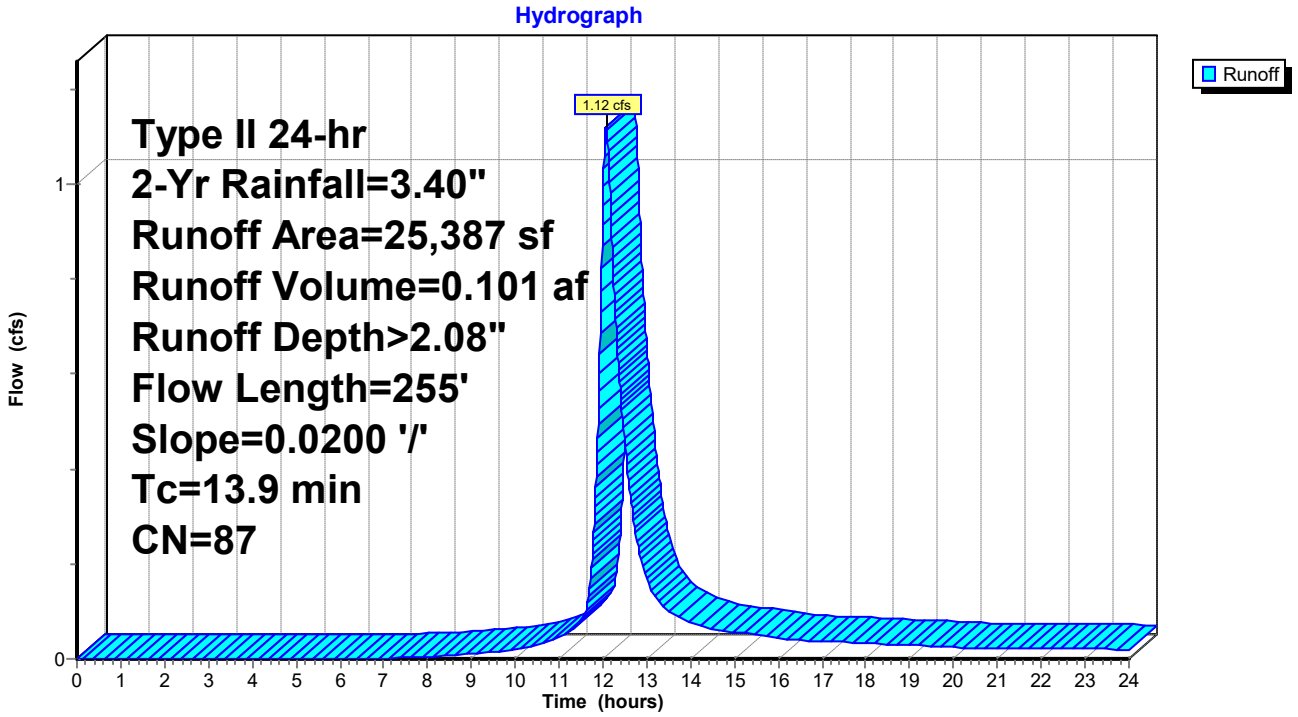
Runoff = 1.12 cfs @ 12.08 hrs, Volume= 0.101 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
13,811	98	Paved parking, HSG C
11,576	74	>75% Grass cover, Good, HSG C
25,387	87	Weighted Average
11,576		45.60% Pervious Area
13,811		54.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.8	105	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.9	255	Total			

Subcatchment 75: DA #33



Summary for Pond 76: I-34

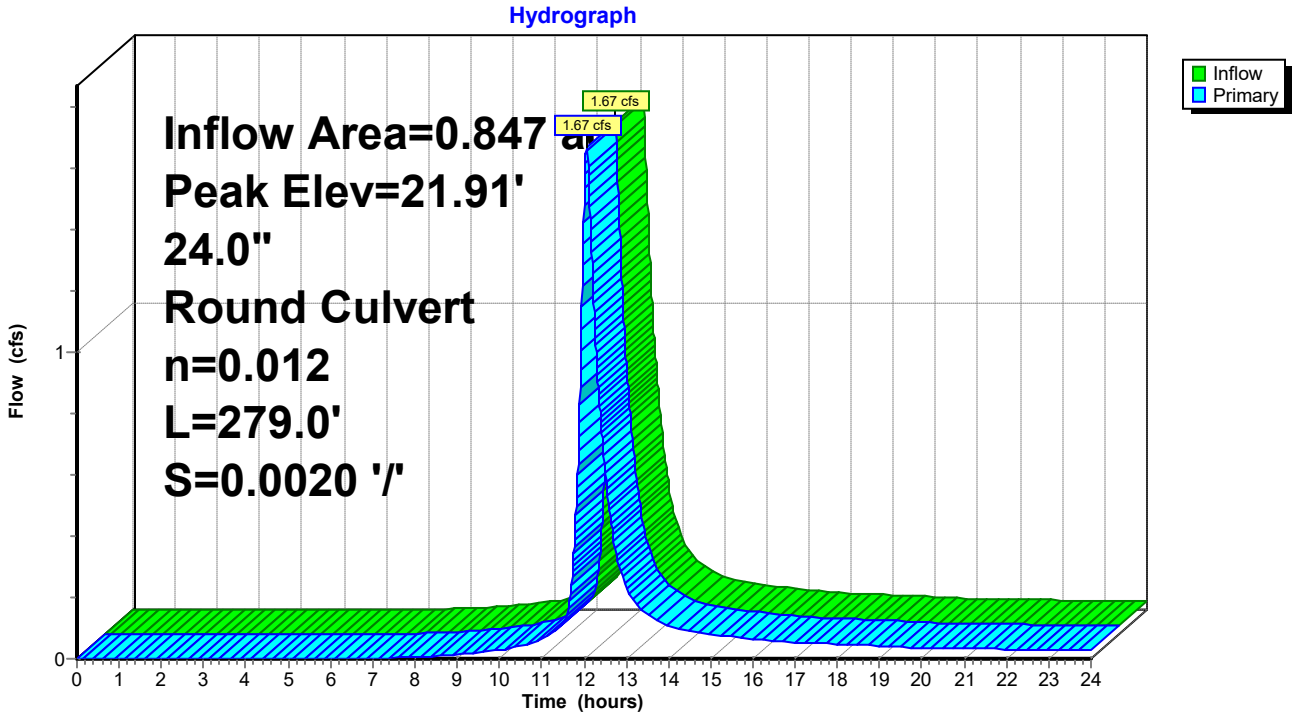
Inflow Area = 0.847 ac, 53.16% Impervious, Inflow Depth > 2.05" for 2-Yr event
Inflow = 1.67 cfs @ 12.06 hrs, Volume= 0.145 af
Outflow = 1.67 cfs @ 12.06 hrs, Volume= 0.145 af, Atten= 0%, Lag= 0.0 min
Primary = 1.67 cfs @ 12.06 hrs, Volume= 0.145 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.91' @ 12.11 hrs
Flood Elev= 21.76'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.26'	**24.0" Round Culvert** L= 279.0' Ke= 0.500 Inlet / Outlet Invert= 20.26' / 19.70' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.74 cfs @ 12.06 hrs HW=21.80' TW=21.79' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 0.74 cfs @ 0.39 fps)

Pond 76: I-34



Summary for Subcatchment 77: DA #34

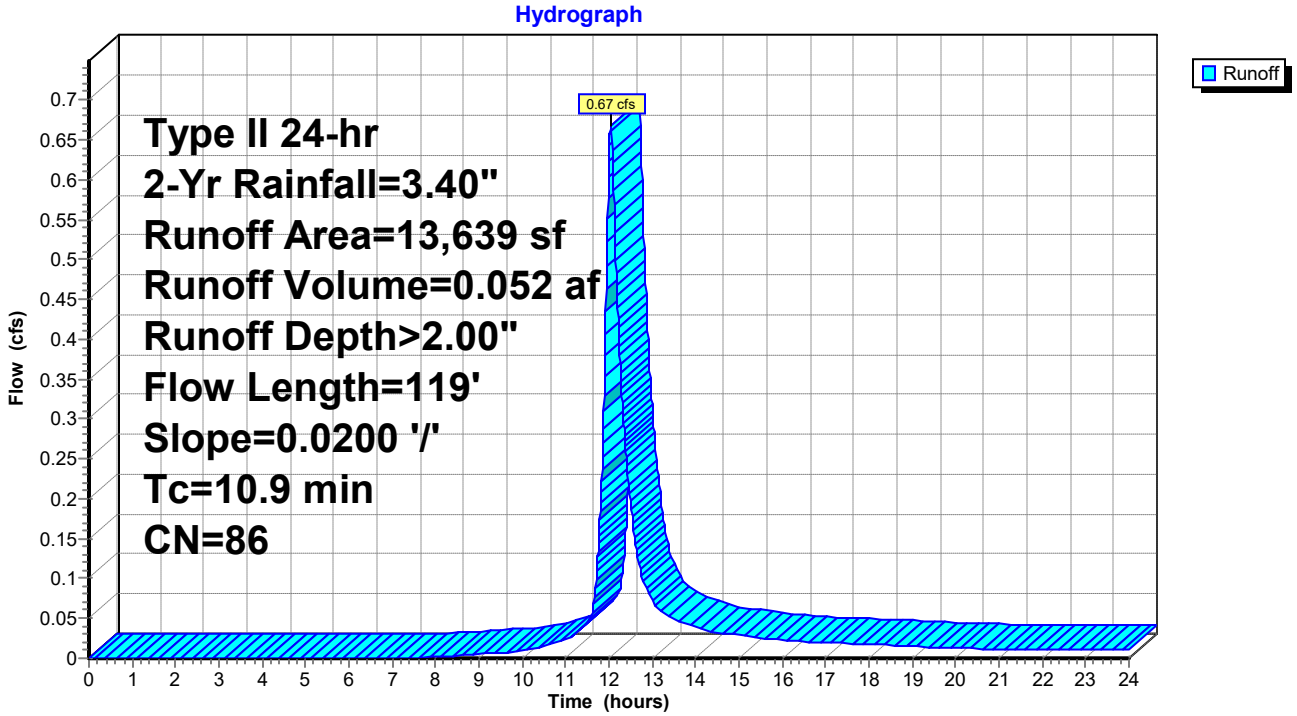
Runoff = 0.67 cfs @ 12.04 hrs, Volume= 0.052 af, Depth> 2.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
6,904	98	Paved parking, HSG C
6,735	74	>75% Grass cover, Good, HSG C
13,639	86	Weighted Average
6,735		49.38% Pervious Area
6,904		50.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	119	0.0200	0.18		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"

Subcatchment 77: DA #34



Summary for Pond 78: I-35

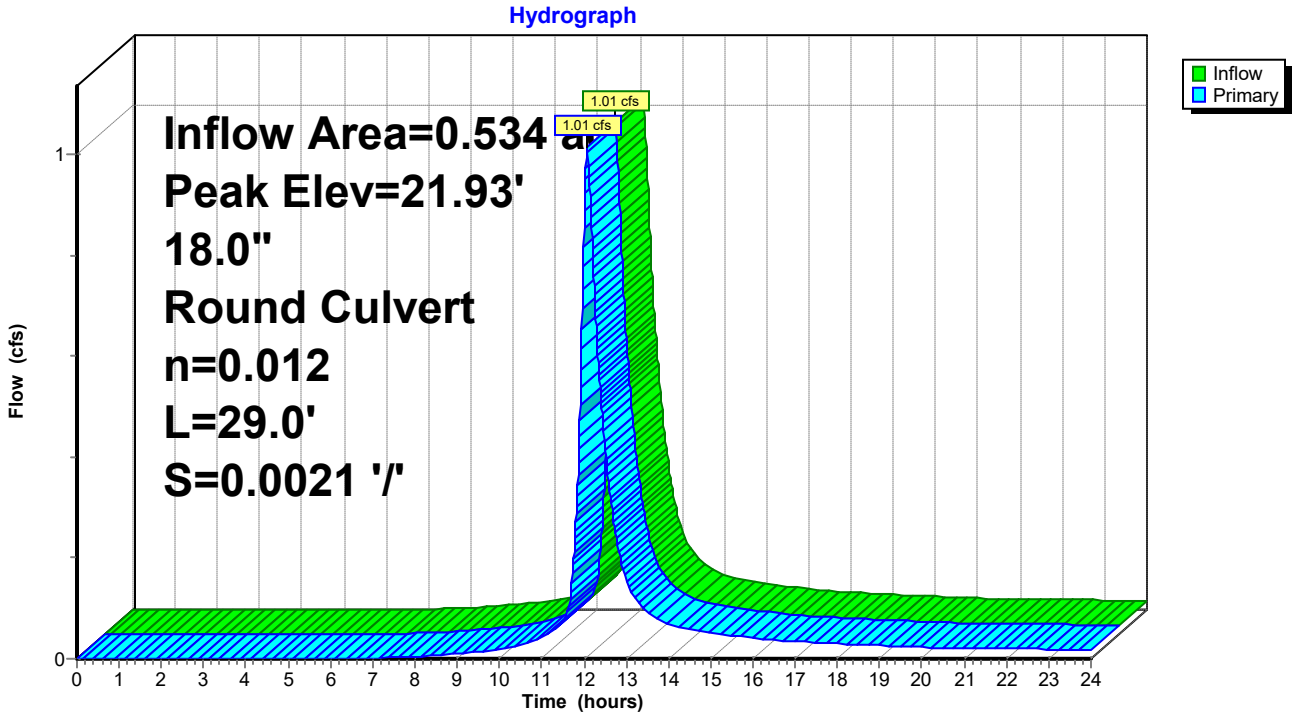
Inflow Area = 0.534 ac, 54.65% Impervious, Inflow Depth > 2.08" for 2-Yr event
Inflow = 1.01 cfs @ 12.08 hrs, Volume= 0.093 af
Outflow = 1.01 cfs @ 12.08 hrs, Volume= 0.093 af, Atten= 0%, Lag= 0.0 min
Primary = 1.01 cfs @ 12.08 hrs, Volume= 0.093 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.93' @ 12.12 hrs
Flood Elev= 22.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.32'	**18.0" Round Culvert** L= 29.0' Ke= 0.500 Inlet / Outlet Invert= 20.32' / 20.26' S= 0.0021 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 12.08 hrs HW=21.86' TW=21.87' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 78: I-35



Summary for Subcatchment 79: DA #35

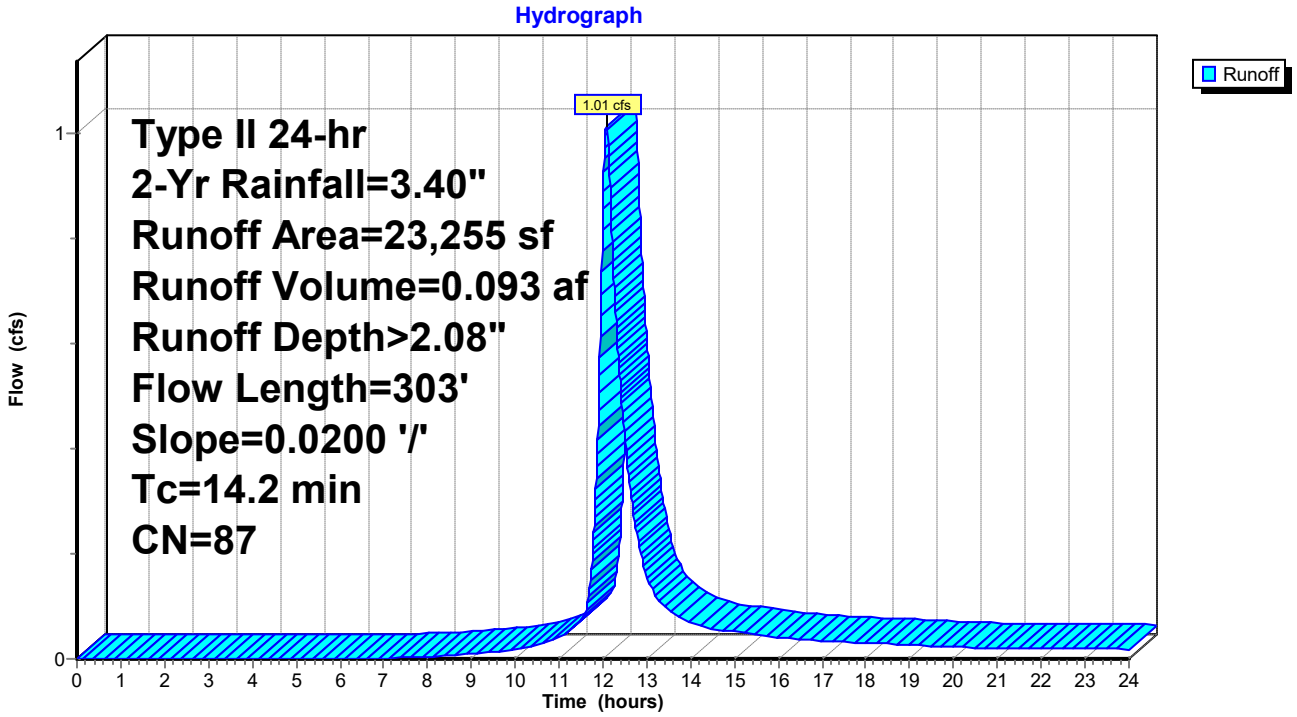
Runoff = 1.01 cfs @ 12.08 hrs, Volume= 0.093 af, Depth> 2.08"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-Yr Rainfall=3.40"

Area (sf)	CN	Description
12,708	98	Paved parking, HSG C
10,547	74	>75% Grass cover, Good, HSG C
23,255	87	Weighted Average
10,547		45.35% Pervious Area
12,708		54.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
1.1	153	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.2	303	Total			

Subcatchment 79: DA #35

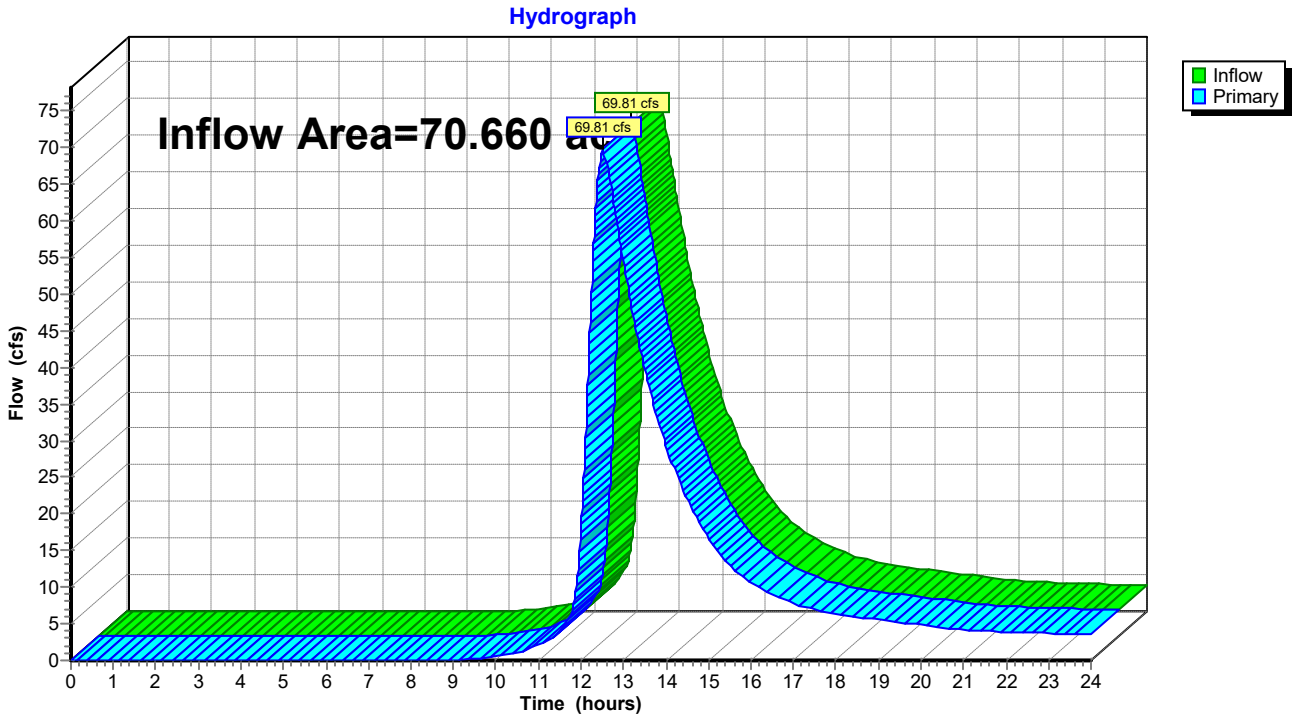


Summary for Link 1: POI-1 (PRE)

Inflow Area = 70.660 ac, 0.00% Impervious, Inflow Depth > 2.55" for 10-Yr event
Inflow = 69.81 cfs @ 12.51 hrs, Volume= 14.989 af
Primary = 69.81 cfs @ 12.51 hrs, Volume= 14.989 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 1: POI-1 (PRE)



Summary for Subcatchment 2: DA #1 (PRE)

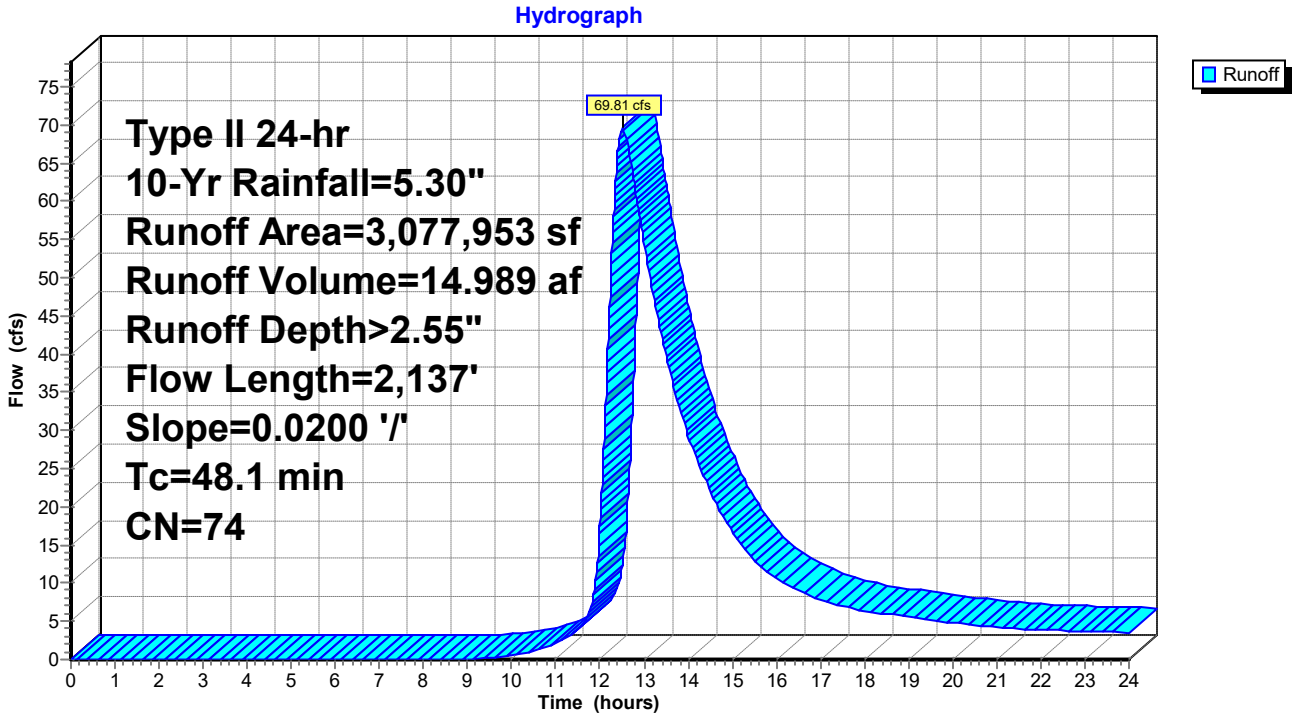
Runoff = 69.81 cfs @ 12.51 hrs, Volume= 14.989 af, Depth> 2.55"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
3,077,953	74	>75% Grass cover, Good, HSG C
3,077,953		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	100	0.0200	0.12		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"
34.3	2,037	0.0200	0.99		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
48.1	2,137	Total			

Subcatchment 2: DA #1 (PRE)

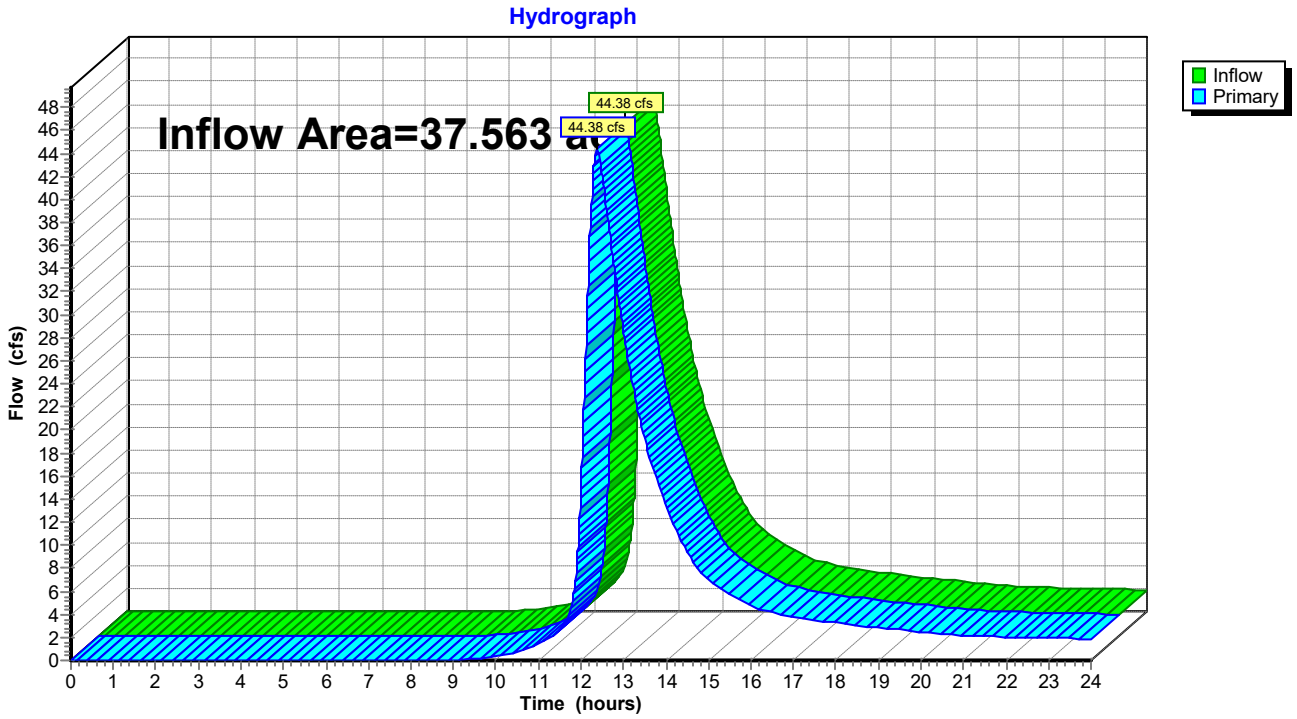


Summary for Link 3: POI-2 (PRE)

Inflow Area = 37.563 ac, 0.00% Impervious, Inflow Depth > 2.56" for 10-Yr event
Inflow = 44.38 cfs @ 12.38 hrs, Volume= 8.009 af
Primary = 44.38 cfs @ 12.38 hrs, Volume= 8.009 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 3: POI-2 (PRE)



Summary for Subcatchment 4: DA #2 (PRE)

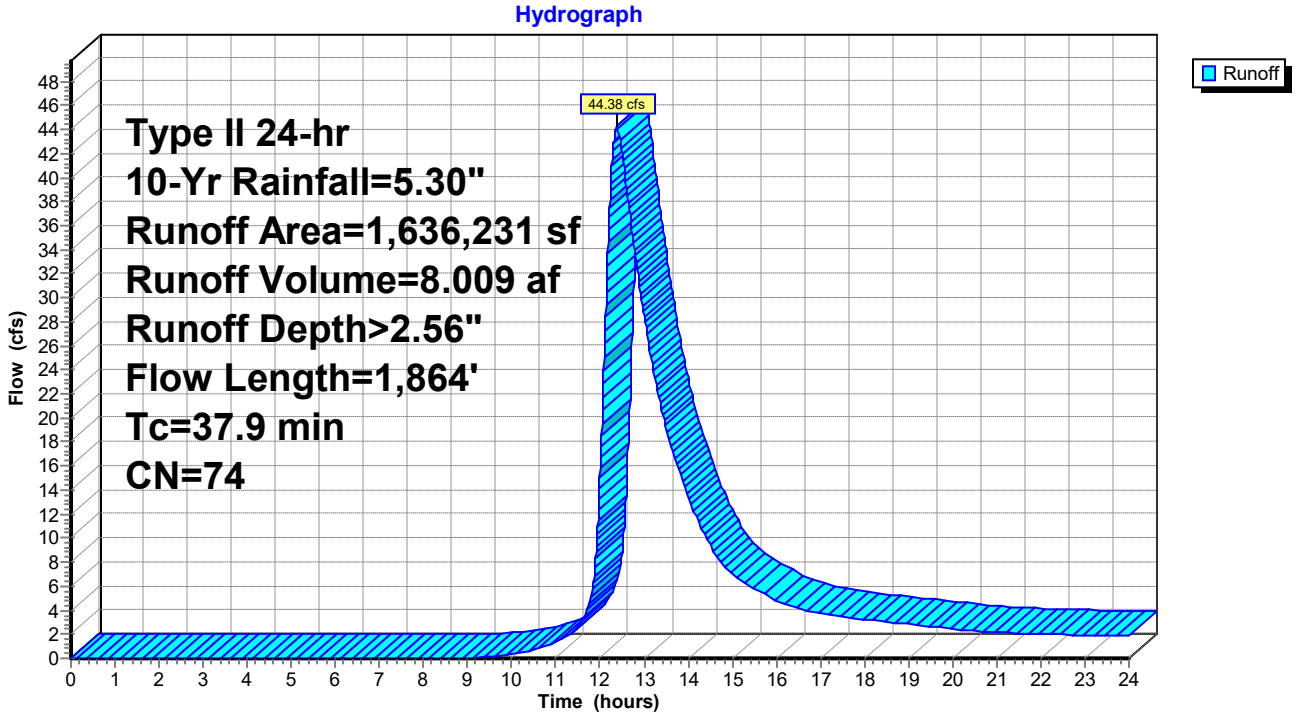
Runoff = 44.38 cfs @ 12.38 hrs, Volume= 8.009 af, Depth> 2.56"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
1,636,231	74	>75% Grass cover, Good, HSG C
1,636,231		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	100	0.0200	0.12		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"
10.5	482	0.0120	0.77		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
13.6	1,282	0.0110	1.57		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
37.9	1,864	Total			

Subcatchment 4: DA #2 (PRE)

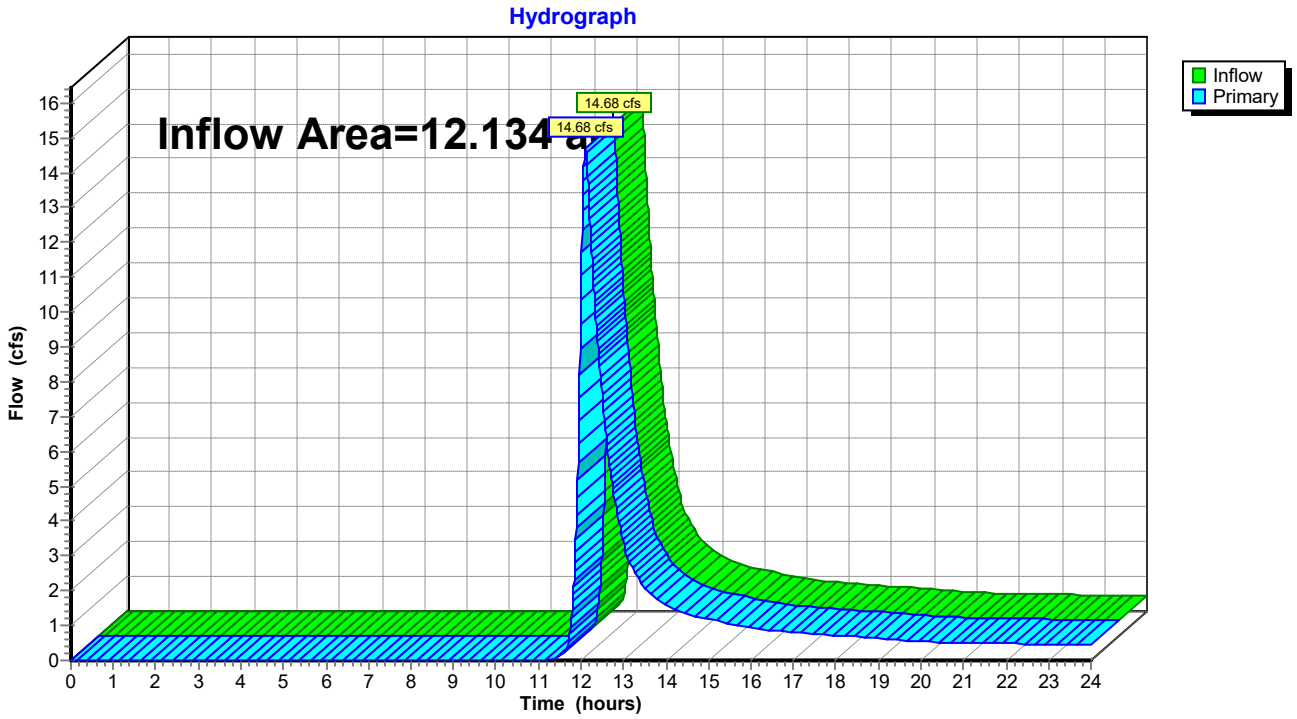


Summary for Link 5: POI-3 (PRE)

Inflow Area = 12.134 ac, 0.00% Impervious, Inflow Depth > 1.54" for 10-Yr event
Inflow = 14.68 cfs @ 12.11 hrs, Volume= 1.556 af
Primary = 14.68 cfs @ 12.11 hrs, Volume= 1.556 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 5: POI-3 (PRE)



Summary for Subcatchment 6: DA #3 (PRE)

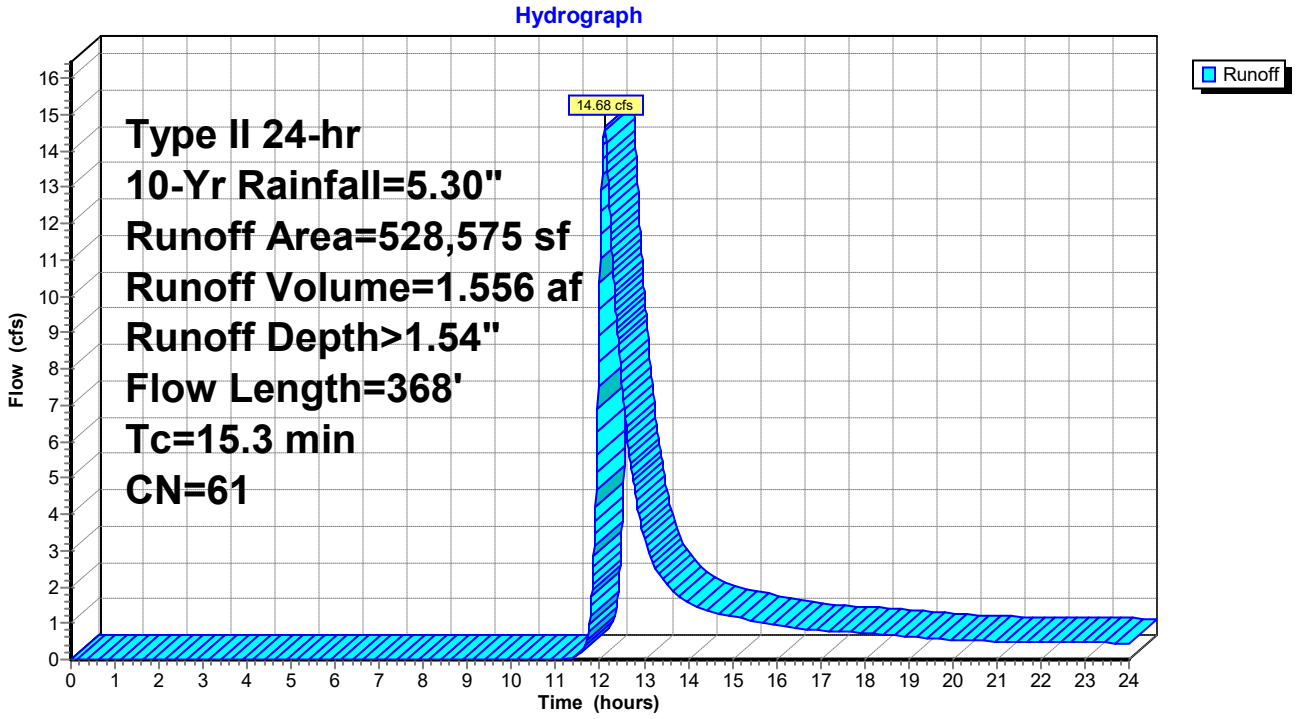
Runoff = 14.68 cfs @ 12.11 hrs, Volume= 1.556 af, Depth> 1.54"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
528,575	61	>75% Grass cover, Good, HSG B
528,575		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0230	0.13		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"
2.2	268	0.0810	1.99		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
15.3	368	Total			

Subcatchment 6: DA #3 (PRE)

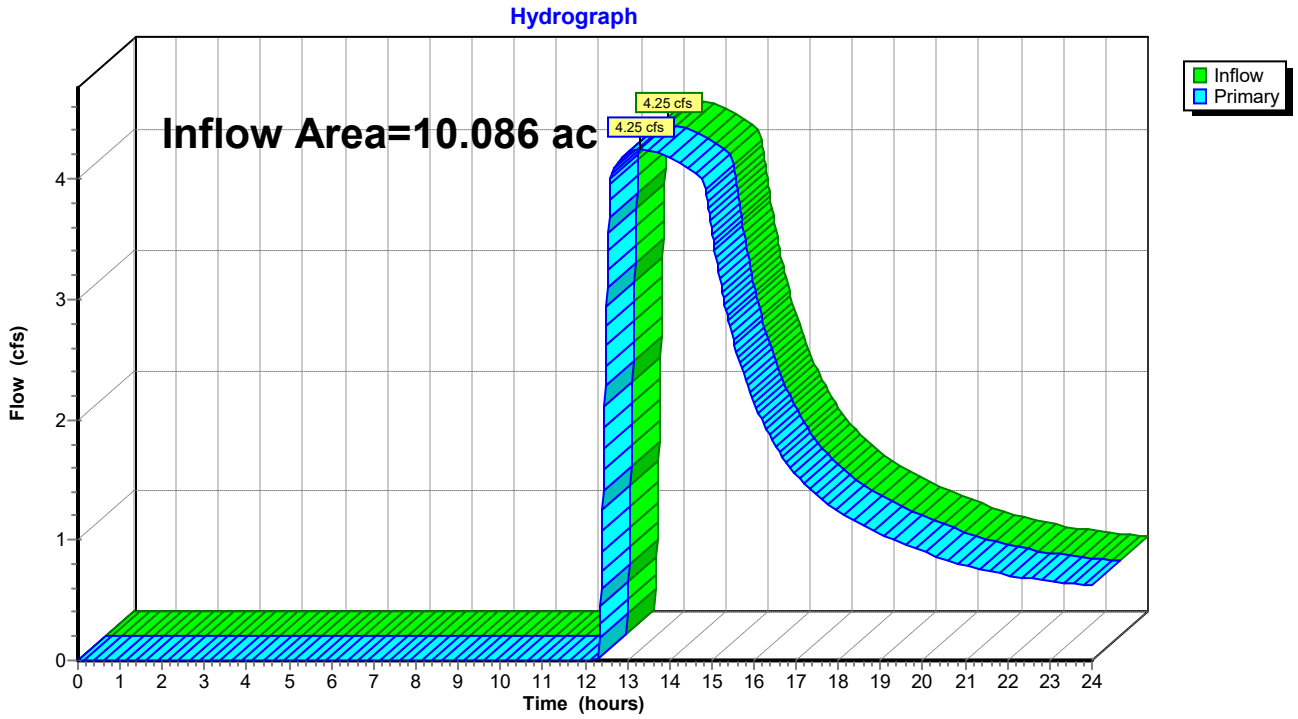


Summary for Link 7: POI-2 (POST)

Inflow Area = 10.086 ac, 48.77% Impervious, Inflow Depth > 2.11" for 10-Yr event
Inflow = 4.25 cfs @ 13.31 hrs, Volume= 1.772 af
Primary = 4.25 cfs @ 13.31 hrs, Volume= 1.772 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 7: POI-2 (POST)



Summary for Pond 8: NW SGW

Inflow Area = 10.086 ac, 48.77% Impervious, Inflow Depth > 3.68" for 10-Yr event
Inflow = 29.42 cfs @ 12.15 hrs, Volume= 3.092 af
Outflow = 4.25 cfs @ 13.31 hrs, Volume= 1.772 af, Atten= 86%, Lag= 69.7 min
Primary = 4.25 cfs @ 13.31 hrs, Volume= 1.772 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 16.63' @ 13.31 hrs Surf.Area= 56,229 sf Storage= 77,095 cf

Plug-Flow detention time= 244.3 min calculated for 1.772 af (57% of inflow)
Center-of-Mass det. time= 136.9 min (962.7 - 825.7)

Volume	Invert	Avail.Storage	Storage Description
#1	15.20'	167,693 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

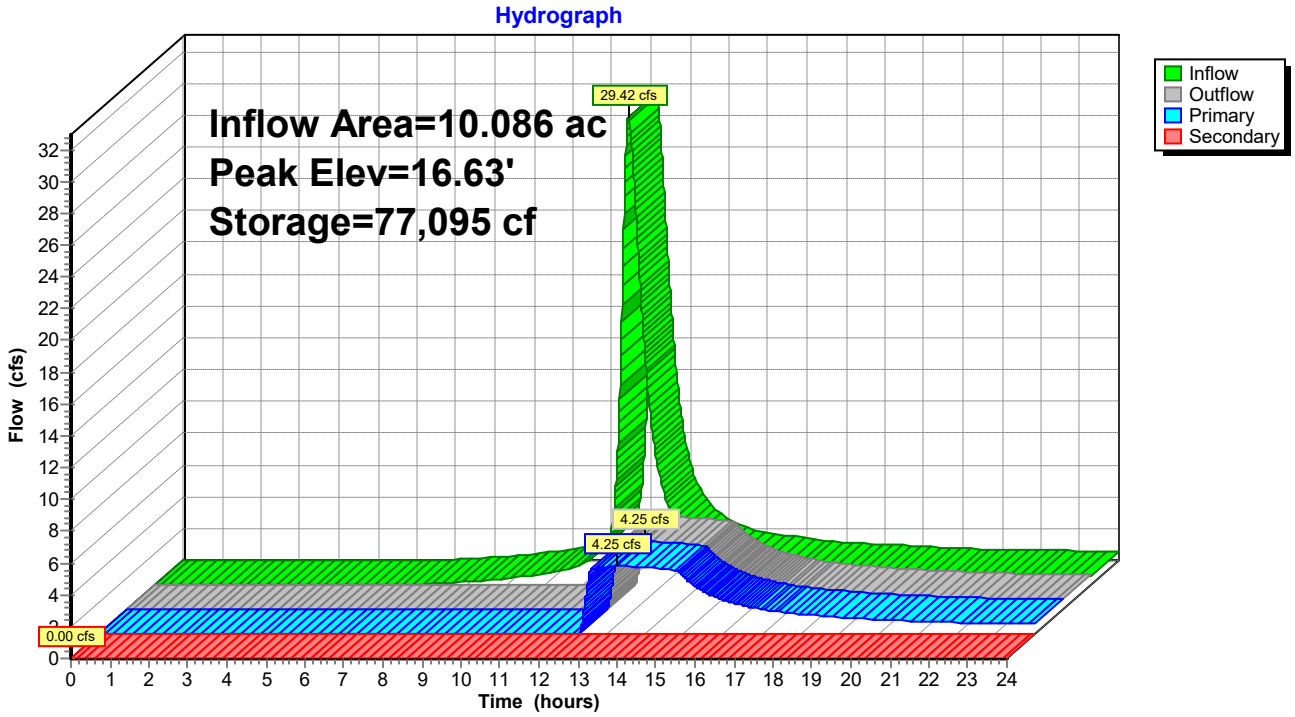
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
15.20	51,291	1,138.9	0	0	51,291
17.20	58,238	1,176.6	109,455	109,455	58,613
18.20	58,238	1,176.6	58,238	167,693	59,790

Device	Routing	Invert	Outlet Devices
#1	Primary	14.87'	**12.0" Round Culvert** L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 14.87' / 13.00' S= 0.0312 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	16.20'	**8.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#3	Secondary	17.20'	**124.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=4.25 cfs @ 13.31 hrs HW=16.63' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 4.25 cfs @ 5.41 fps)
└─**2=Sharp-Crested Rectangular Weir** (Passes 4.25 cfs of 7.49 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=15.20' TW=0.00' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 8: NW SGW


Hydrograph
Inflow Area=10.086 ac
Peak Elev=16.63'
Storage=77,095 cf
29.42 cfs
4.25 cfs
4.25 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Reach 9: NW Swale

Inflow Area = 10.086 ac, 48.77% Impervious, Inflow Depth > 3.74" for 10-Yr event
Inflow = 43.34 cfs @ 12.02 hrs, Volume= 3.140 af
Outflow = 29.42 cfs @ 12.15 hrs, Volume= 3.092 af, Atten= 32%, Lag= 7.6 min

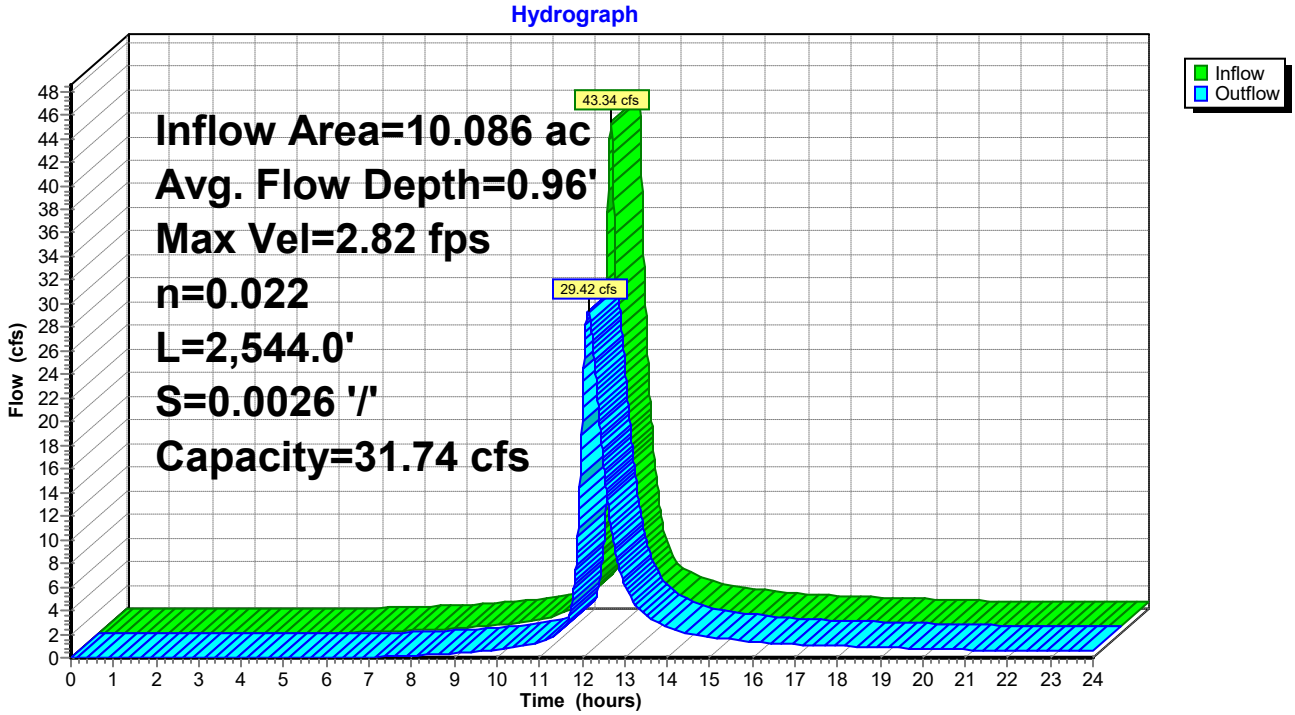
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.82 fps, Min. Travel Time= 15.0 min
Avg. Velocity = 0.88 fps, Avg. Travel Time= 48.5 min

Peak Storage= 26,544 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.96'
Bank-Full Depth= 1.00' Flow Area= 11.0 sf, Capacity= 31.74 cfs

8.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 2,544.0' Slope= 0.0026 '/'
Inlet Invert= 23.30', Outlet Invert= 16.70'

‡

Reach 9: NW Swale



Summary for Subcatchment 10: DA #1

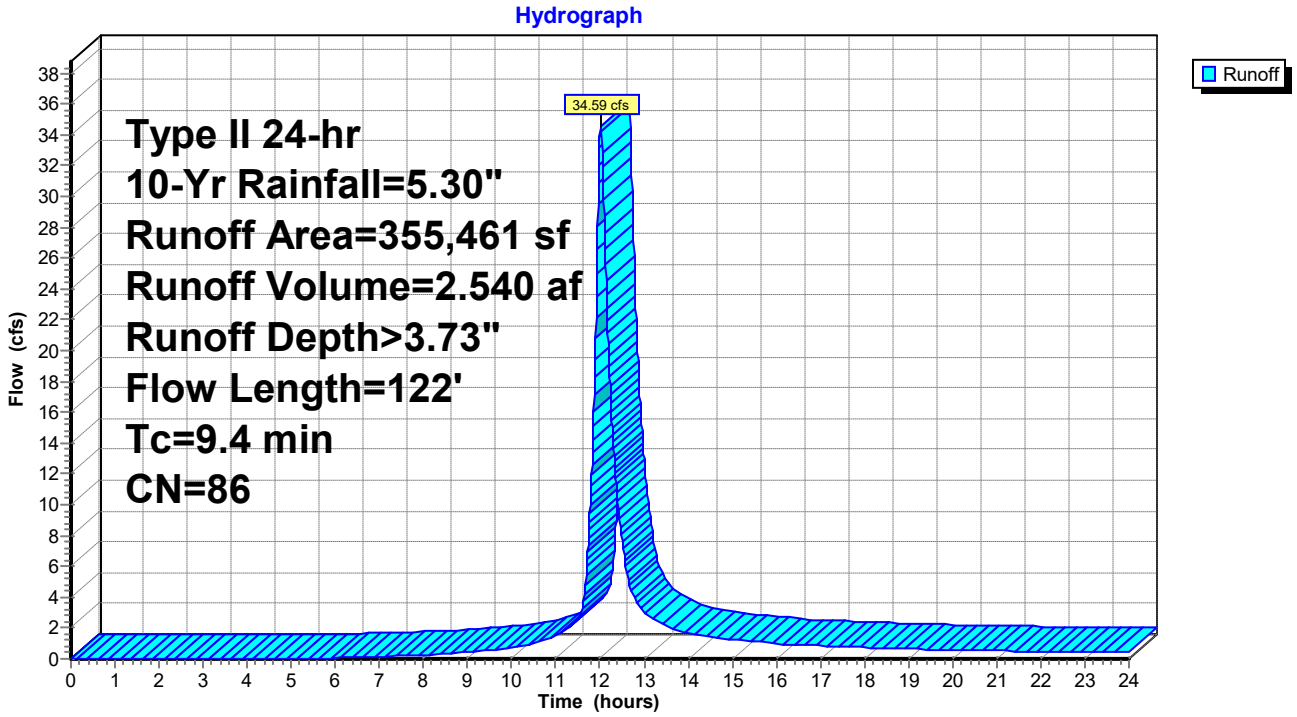
Runoff = 34.59 cfs @ 12.02 hrs, Volume= 2.540 af, Depth> 3.73"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
172,774	98	Paved parking, HSG C
182,687	74	>75% Grass cover, Good, HSG C
355,461	86	Weighted Average
182,687		51.39% Pervious Area
172,774		48.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	94	0.0200	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.4	28	0.0208	1.12		**Sheet Flow, B-C** Smooth surfaces n= 0.011 P2= 3.40"
9.4	122	Total			

Subcatchment 10: DA #1



Summary for Subcatchment 11: DA #2

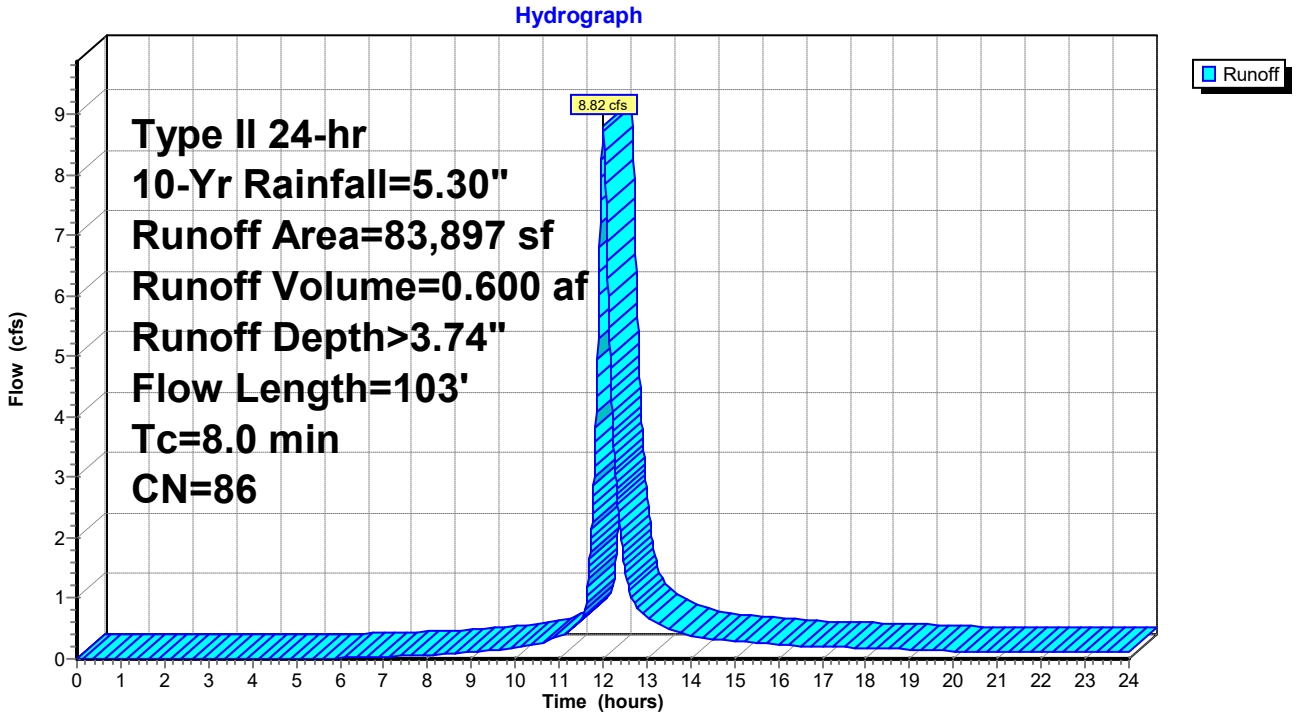
Runoff = 8.82 cfs @ 12.01 hrs, Volume= 0.600 af, Depth> 3.74"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
41,506	98	Paved parking, HSG C
42,391	74	>75% Grass cover, Good, HSG C
83,897	86	Weighted Average
42,391		50.53% Pervious Area
41,506		49.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	75	0.0200	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.4	28	0.0208	1.12		**Sheet Flow, B-C** Smooth surfaces n= 0.011 P2= 3.40"
8.0	103	Total			

Subcatchment 11: DA #2

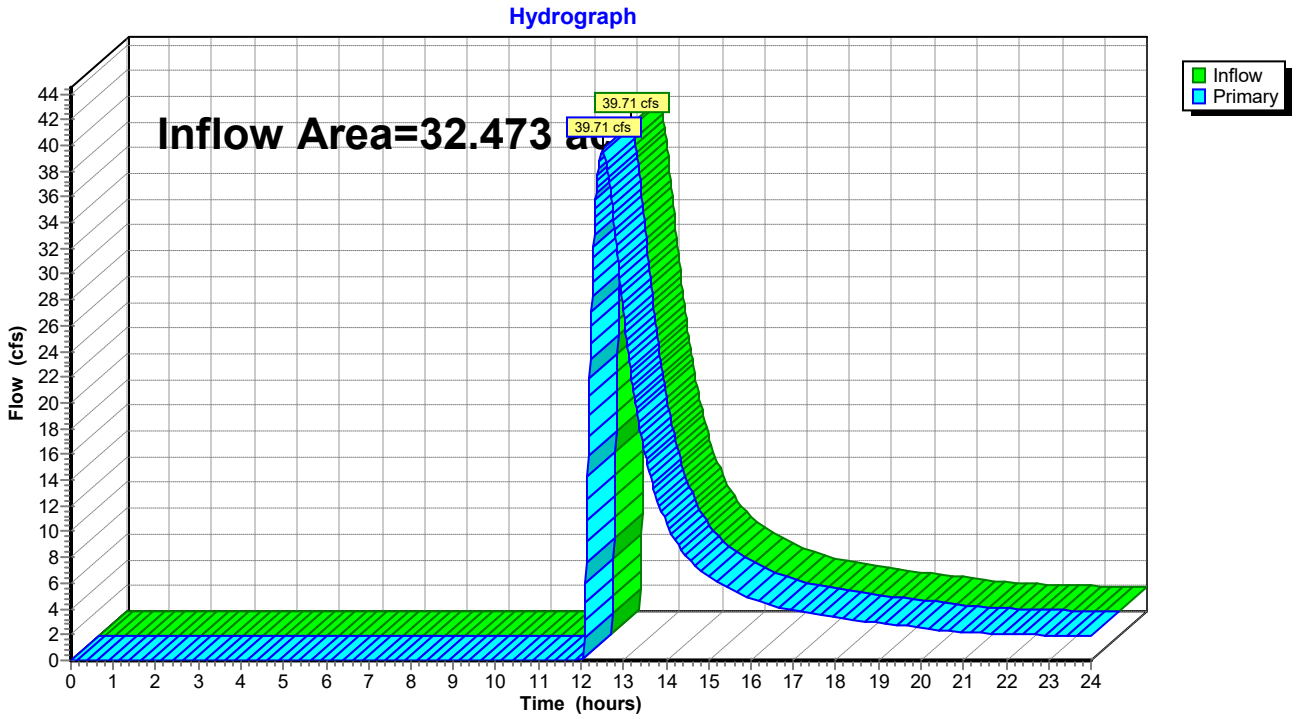


Summary for Link 12: POI-1 (POST)

Inflow Area = 32.473 ac, 44.87% Impervious, Inflow Depth > 2.49" for 10-Yr event
Inflow = 39.71 cfs @ 12.51 hrs, Volume= 6.748 af
Primary = 39.71 cfs @ 12.51 hrs, Volume= 6.748 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 12: POI-1 (POST)



Summary for Pond 13: S SGW

Inflow Area = 32.473 ac, 44.87% Impervious, Inflow Depth > 3.62" for 10-Yr event
Inflow = 110.12 cfs @ 12.06 hrs, Volume= 9.802 af
Outflow = 39.71 cfs @ 12.51 hrs, Volume= 6.748 af, Atten= 64%, Lag= 26.7 min
Primary = 39.71 cfs @ 12.51 hrs, Volume= 6.748 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.23' @ 12.51 hrs Surf.Area= 88,976 sf Storage= 196,323 cf

Plug-Flow detention time= 184.2 min calculated for 6.745 af (69% of inflow)
Center-of-Mass det. time= 87.3 min (898.7 - 811.4)

Volume	Invert	Avail.Storage	Storage Description
#1	17.90'	300,999 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

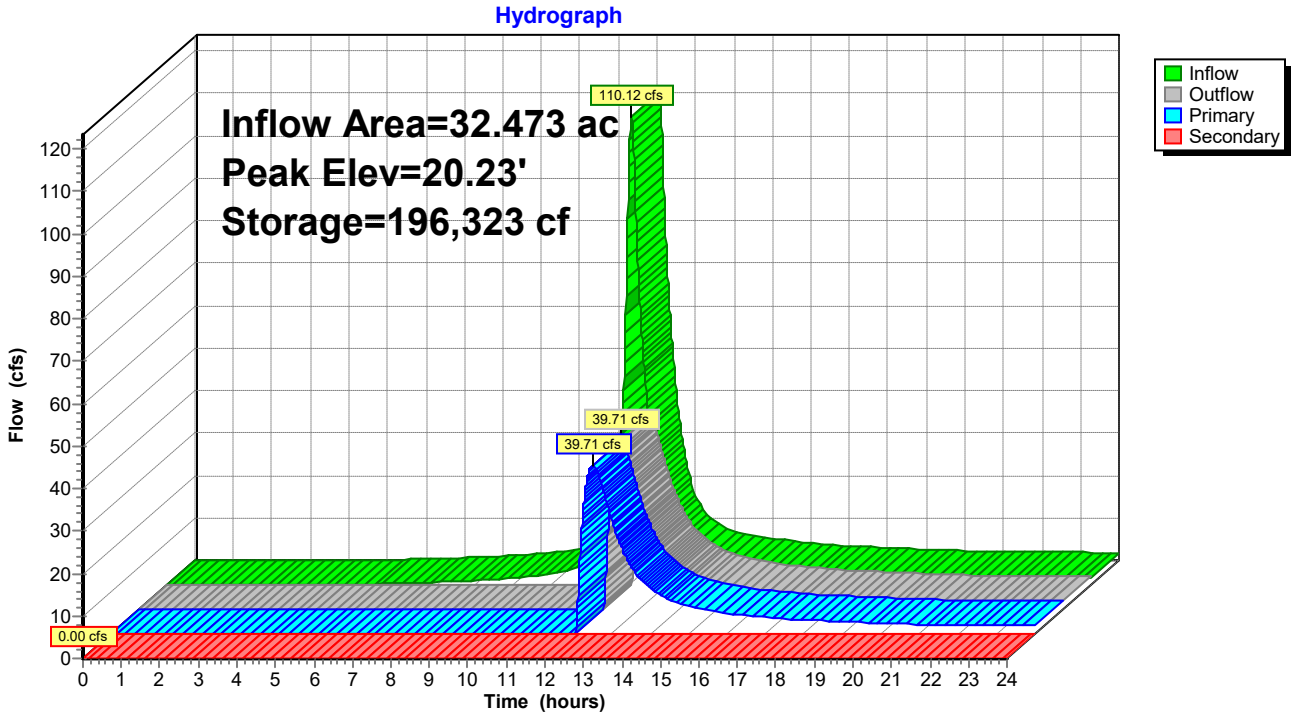
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
17.90	79,478	1,336.7	0	0	79,478
20.40	89,680	1,383.8	211,319	211,319	90,227
21.40	89,680	1,383.8	89,680	300,999	91,611

Device	Routing	Invert	Outlet Devices
#1	Primary	17.57'	**36.0" Round Culvert X 2.00** L= 73.0' Ke= 0.500 Inlet / Outlet Invert= 17.57' / 17.40' S= 0.0023 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	19.40'	**8.0' long Sharp-Crested Rectangular Weir X 2.00** 0 End Contraction(s)
#3	Secondary	20.40'	**265.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=39.71 cfs @ 12.51 hrs HW=20.23' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 39.71 cfs of 53.62 cfs potential flow)
  └─**2=Sharp-Crested Rectangular Weir** (Weir Controls 39.71 cfs @ 2.98 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=17.90' TW=0.00' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 13: S SGW


Hydrograph
Inflow Area=32.473 ac
Peak Elev=20.23'
Storage=196,323 cf
110.12 cfs
39.71 cfs
39.71 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Reach 14: S Swale

Inflow Area = 7.080 ac, 0.00% Impervious, Inflow Depth > 2.60" for 10-Yr event
Inflow = 29.07 cfs @ 11.97 hrs, Volume= 1.534 af
Outflow = 23.41 cfs @ 12.03 hrs, Volume= 1.520 af, Atten= 19%, Lag= 3.4 min

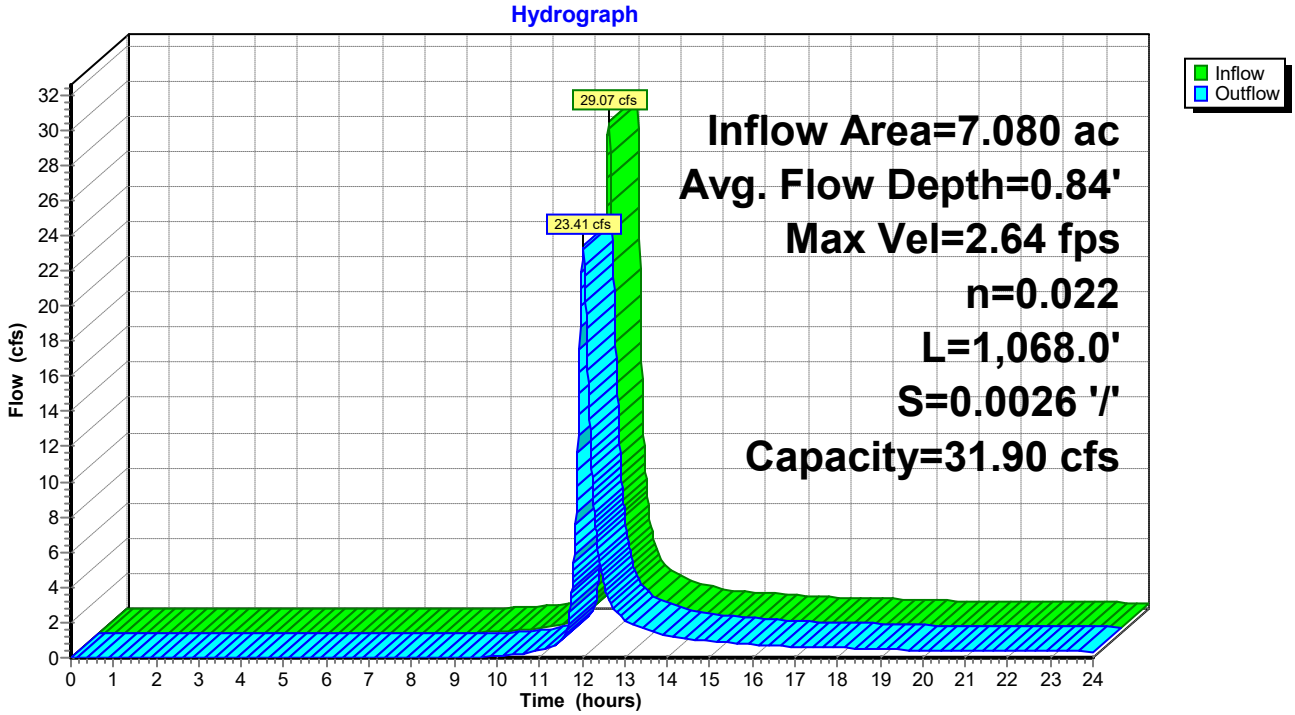
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.64 fps, Min. Travel Time= 6.8 min
Avg. Velocity = 0.75 fps, Avg. Travel Time= 23.7 min

Peak Storage= 9,480 cf @ 12.03 hrs
Average Depth at Peak Storage= 0.84'
Bank-Full Depth= 1.00' Flow Area= 11.0 sf, Capacity= 31.90 cfs

8.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 1,068.0' Slope= 0.0026 '/'
Inlet Invert= 22.70', Outlet Invert= 19.90'

‡

Reach 14: S Swale



Summary for Subcatchment 15: DA #3

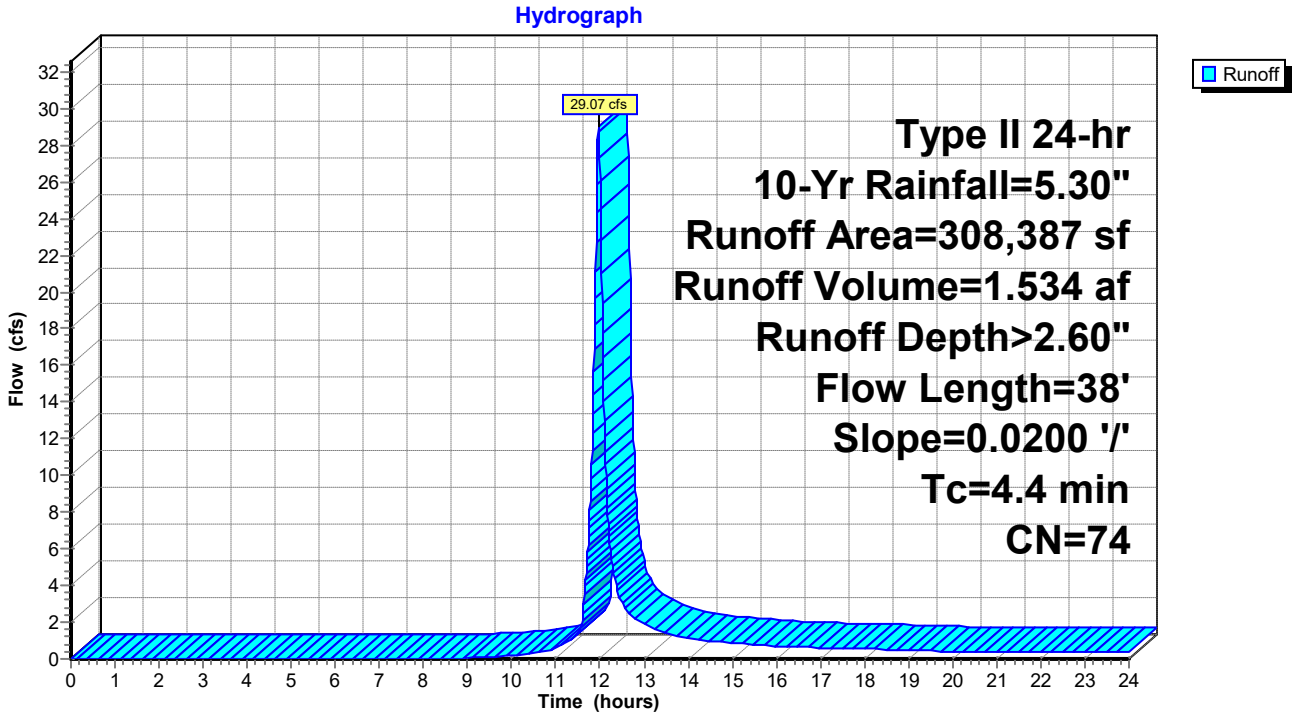
Runoff = 29.07 cfs @ 11.97 hrs, Volume= 1.534 af, Depth> 2.60"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
308,387	74	>75% Grass cover, Good, HSG C
308,387		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	38	0.0200	0.14		**Sheet Flow, Yard** Grass: Short n= 0.150 P2= 3.40"

Subcatchment 15: DA #3



Summary for Pond 16: I-4

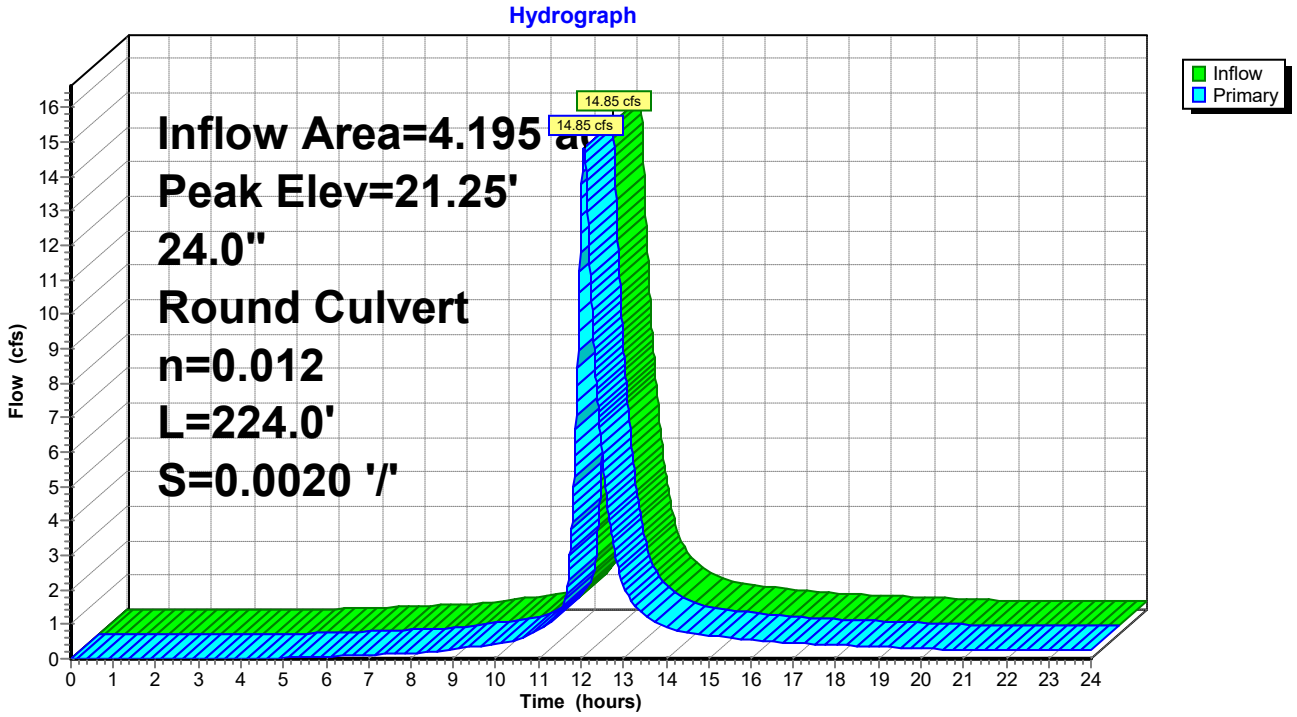
Inflow Area = 4.195 ac, 57.26% Impervious, Inflow Depth > 3.94" for 10-Yr event
Inflow = 14.85 cfs @ 12.08 hrs, Volume= 1.377 af
Outflow = 14.85 cfs @ 12.08 hrs, Volume= 1.377 af, Atten= 0%, Lag= 0.0 min
Primary = 14.85 cfs @ 12.08 hrs, Volume= 1.377 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.25' @ 12.08 hrs
Flood Elev= 25.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.35'	**24.0" Round Culvert** L= 224.0' Ke= 0.500 Inlet / Outlet Invert= 18.35' / 17.90' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=14.84 cfs @ 12.08 hrs HW=21.24' TW=19.48' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 14.84 cfs @ 4.72 fps)

Pond 16: I-4



Summary for Subcatchment 17: DA #4

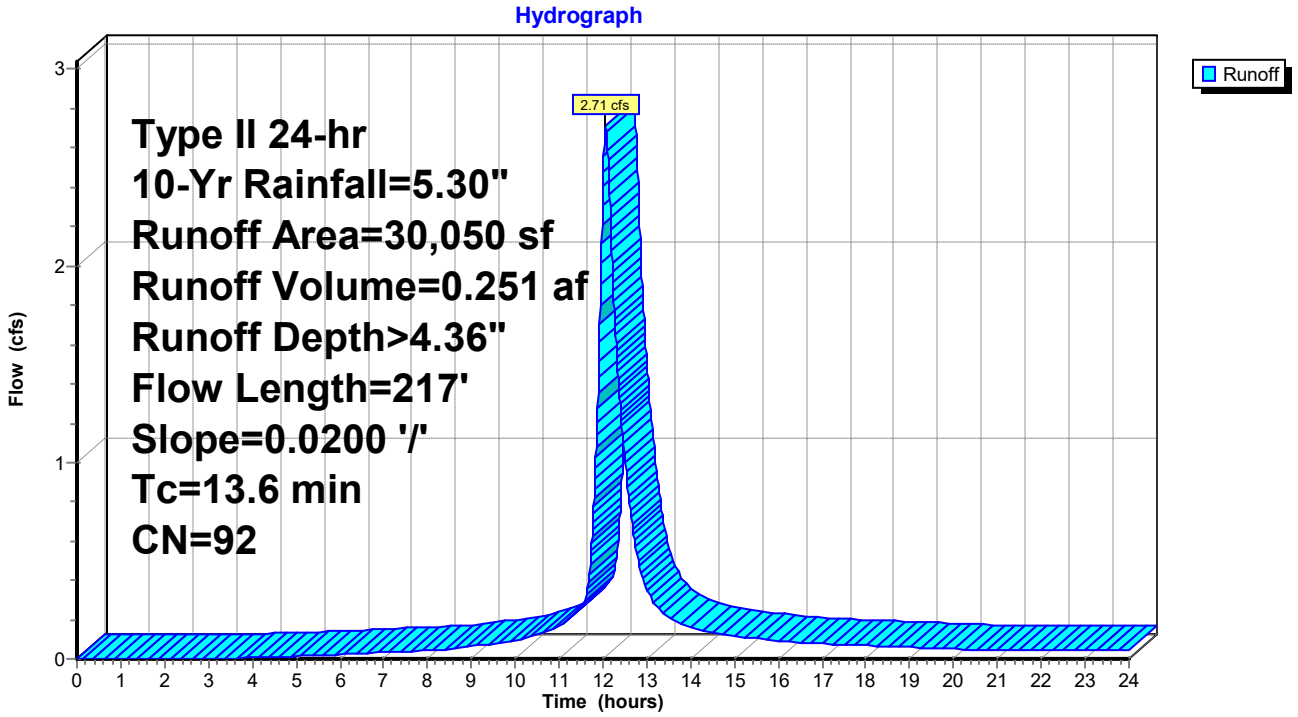
Runoff = 2.71 cfs @ 12.06 hrs, Volume= 0.251 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
21,915	98	Paved parking, HSG C
8,135	74	>75% Grass cover, Good, HSG C
30,050	92	Weighted Average
8,135		27.07% Pervious Area
21,915		72.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.5	67	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.6	217	Total			

Subcatchment 17: DA #4



Summary for Pond 18: I-5

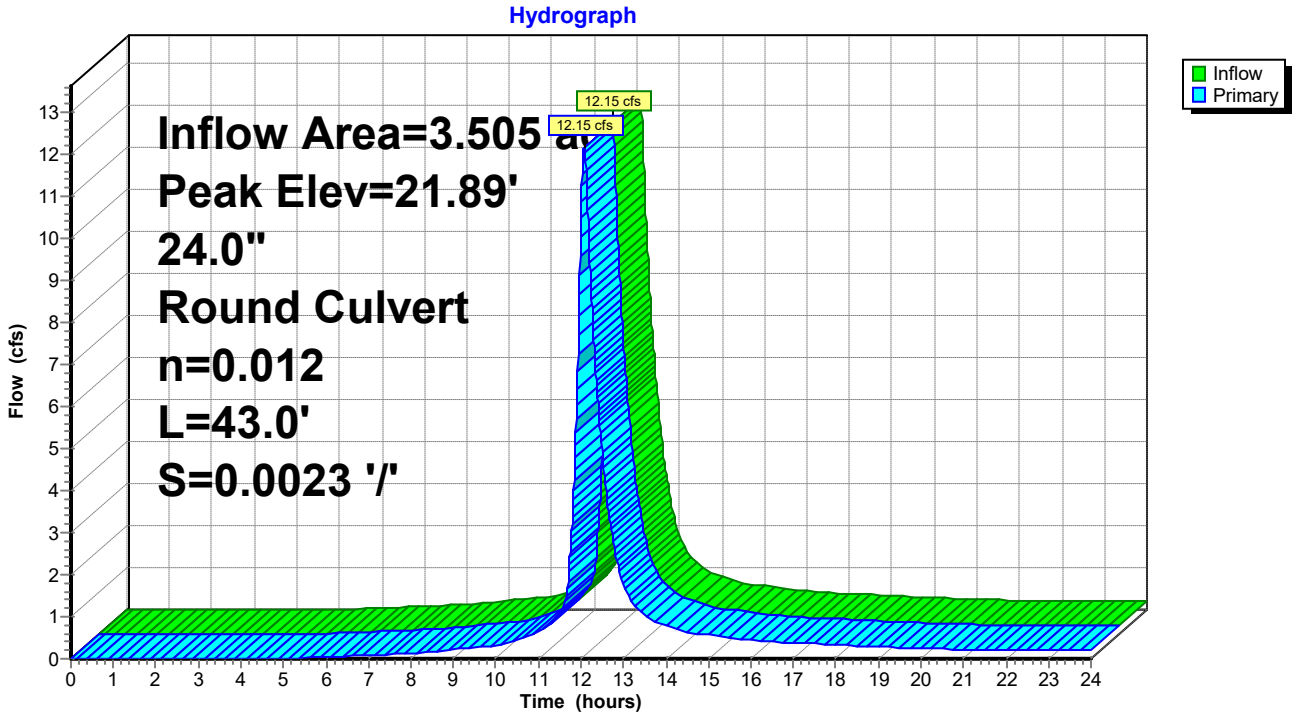
Inflow Area = 3.505 ac, 54.18% Impervious, Inflow Depth > 3.85" for 10-Yr event
Inflow = 12.15 cfs @ 12.08 hrs, Volume= 1.126 af
Outflow = 12.15 cfs @ 12.08 hrs, Volume= 1.126 af, Atten= 0%, Lag= 0.0 min
Primary = 12.15 cfs @ 12.08 hrs, Volume= 1.126 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.89' @ 12.08 hrs
Flood Elev= 26.56'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.45'	**24.0" Round Culvert** L= 43.0' Ke= 0.500 Inlet / Outlet Invert= 18.45' / 18.35' S= 0.0023 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=12.11 cfs @ 12.08 hrs HW=21.88' TW=21.24' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 12.11 cfs @ 3.85 fps)

Pond 18: I-5



Summary for Subcatchment 19: DA #5

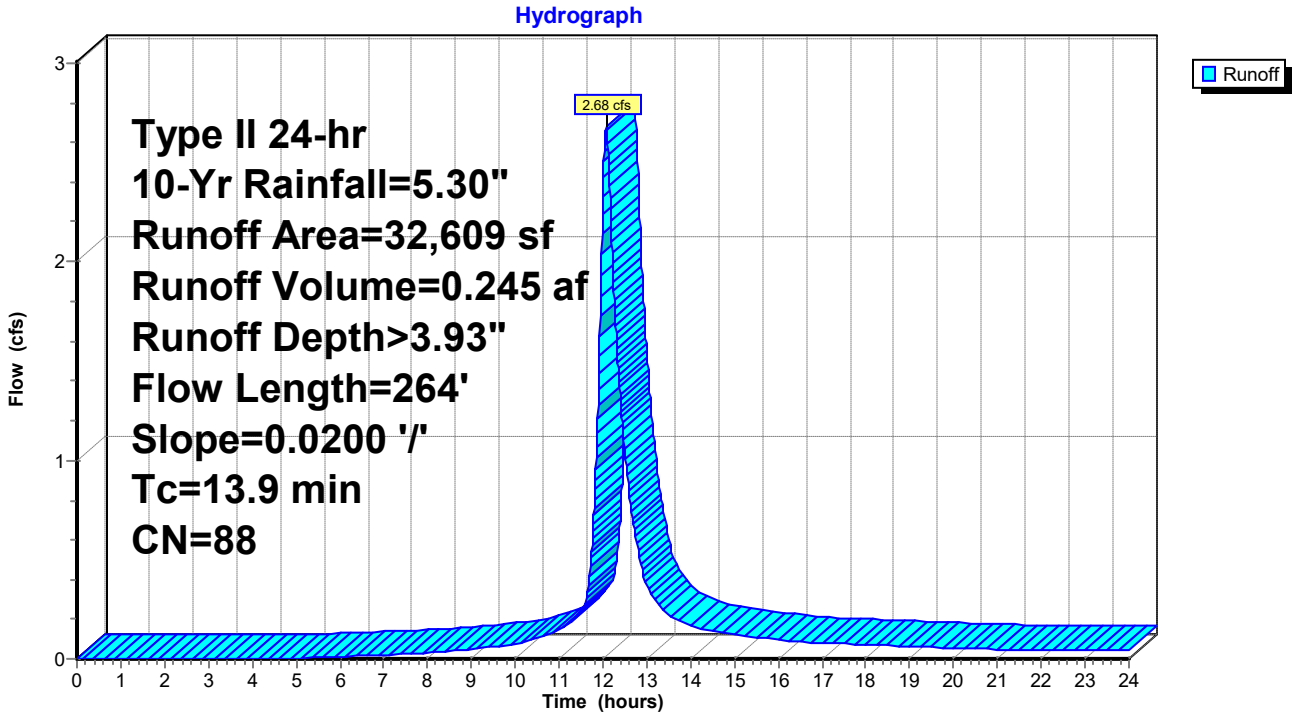
Runoff = 2.68 cfs @ 12.08 hrs, Volume= 0.245 af, Depth> 3.93"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
18,997	98	Paved parking, HSG C
13,612	74	>75% Grass cover, Good, HSG C
32,609	88	Weighted Average
13,612		41.74% Pervious Area
18,997		58.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.8	114	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.9	264	Total			

Subcatchment 19: DA #5



Summary for Pond 20: I-6

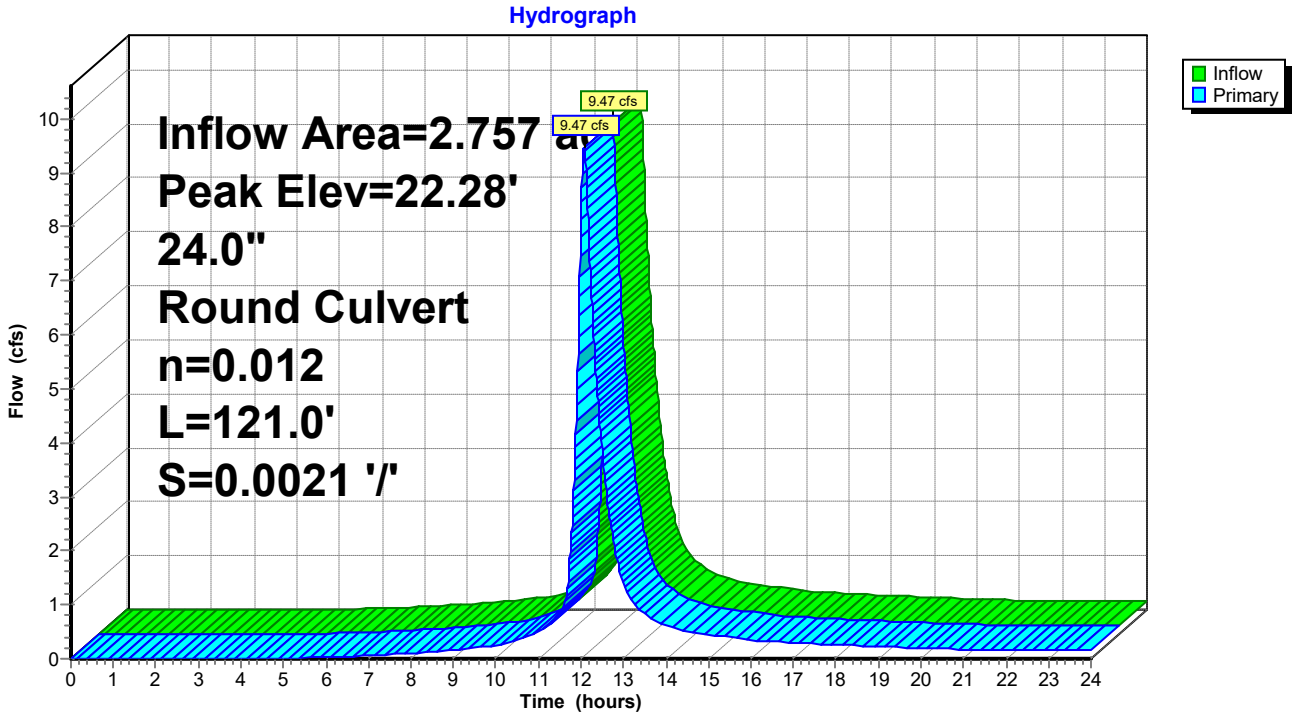
Inflow Area = 2.757 ac, 53.07% Impervious, Inflow Depth > 3.83" for 10-Yr event
Inflow = 9.47 cfs @ 12.08 hrs, Volume= 0.881 af
Outflow = 9.47 cfs @ 12.08 hrs, Volume= 0.881 af, Atten= 0%, Lag= 0.0 min
Primary = 9.47 cfs @ 12.08 hrs, Volume= 0.881 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.28' @ 12.09 hrs
Flood Elev= 27.27'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.70'	**24.0" Round Culvert** L= 121.0' Ke= 0.500 Inlet / Outlet Invert= 18.70' / 18.45' S= 0.0021 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=9.26 cfs @ 12.08 hrs HW=22.26' TW=21.88' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 9.26 cfs @ 2.95 fps)

Pond 20: I-6



Summary for Subcatchment 21: DA #6

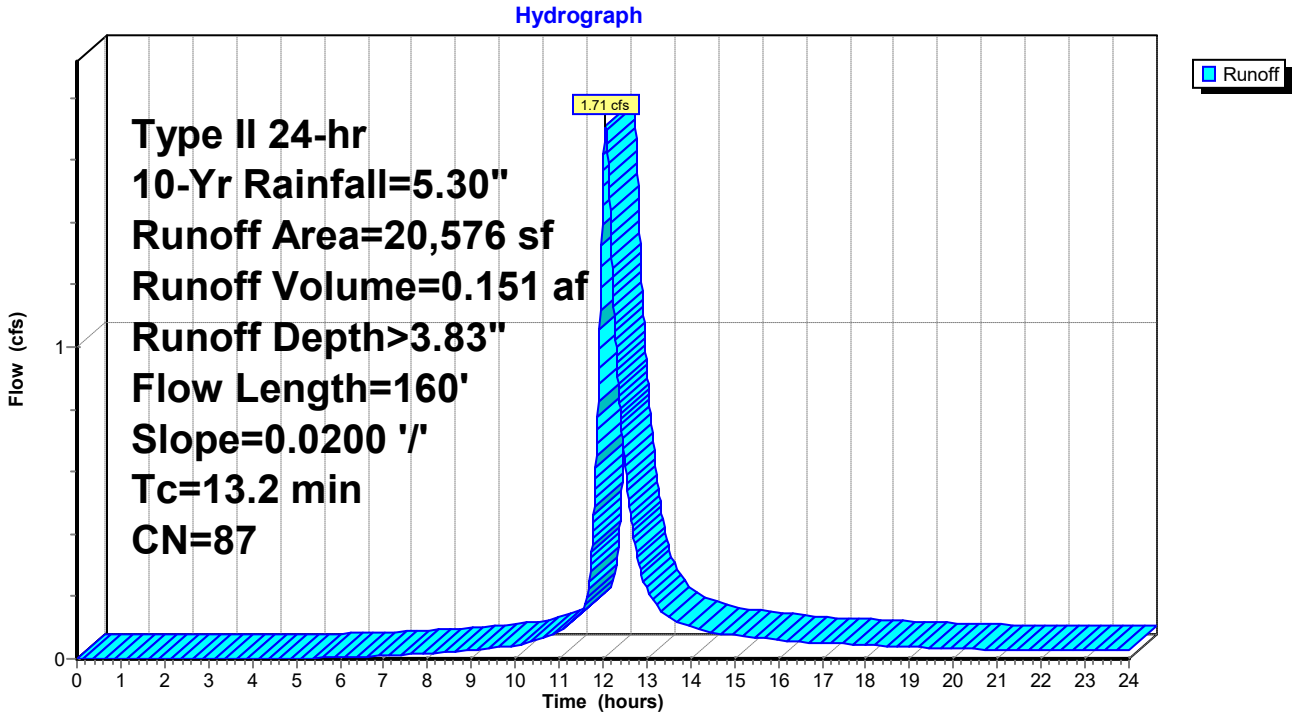
Runoff = 1.71 cfs @ 12.06 hrs, Volume= 0.151 af, Depth> 3.83"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
10,975	98	Paved parking, HSG C
9,601	74	>75% Grass cover, Good, HSG C
20,576	87	Weighted Average
9,601		46.66% Pervious Area
10,975		53.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.1	10	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.2	160	Total			

Subcatchment 21: DA #6



Summary for Pond 22: I-7

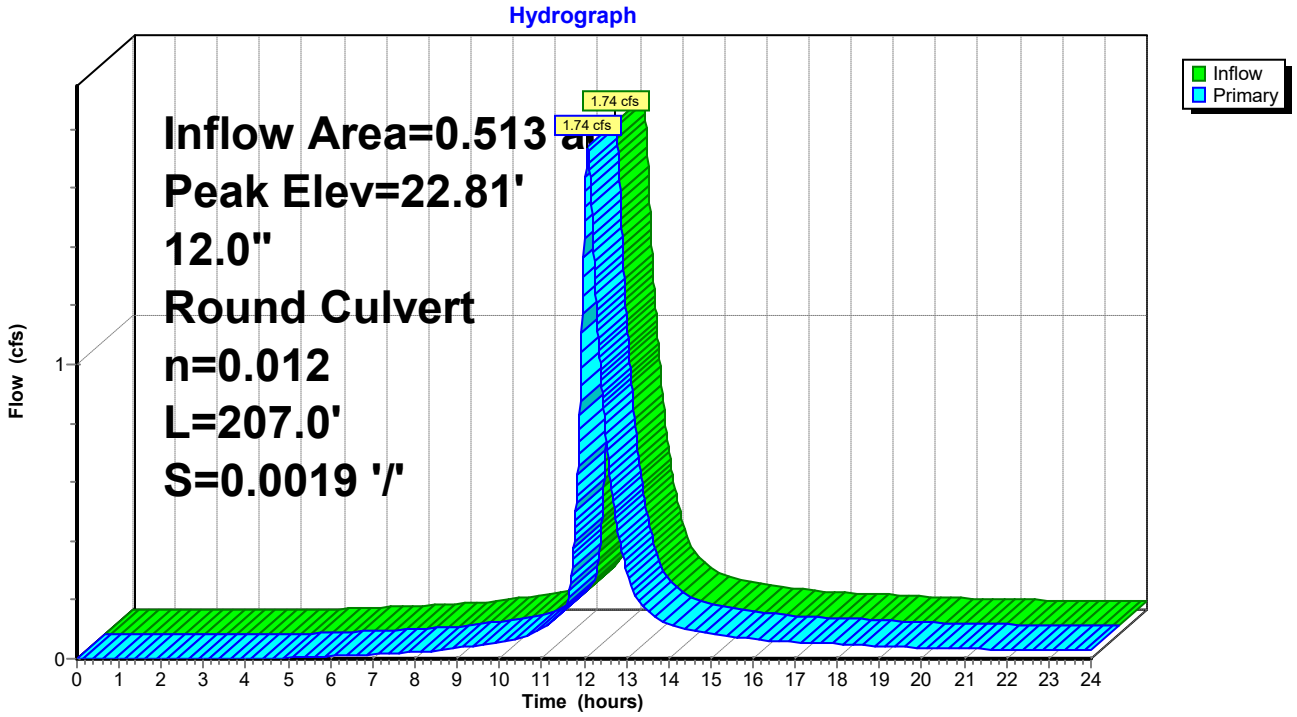
Inflow Area = 0.513 ac, 60.78% Impervious, Inflow Depth > 4.04" for 10-Yr event
Inflow = 1.74 cfs @ 12.08 hrs, Volume= 0.172 af
Outflow = 1.74 cfs @ 12.08 hrs, Volume= 0.172 af, Atten= 0%, Lag= 0.0 min
Primary = 1.74 cfs @ 12.08 hrs, Volume= 0.172 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.81' @ 12.10 hrs
Flood Elev= 27.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.10'	**12.0" Round Culvert** L= 207.0' Ke= 0.500 Inlet / Outlet Invert= 19.10' / 18.70' S= 0.0019 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.70 cfs @ 12.08 hrs HW=22.78' TW=22.27' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.70 cfs @ 2.17 fps)

Pond 22: I-7



Summary for Subcatchment 23: DA #7

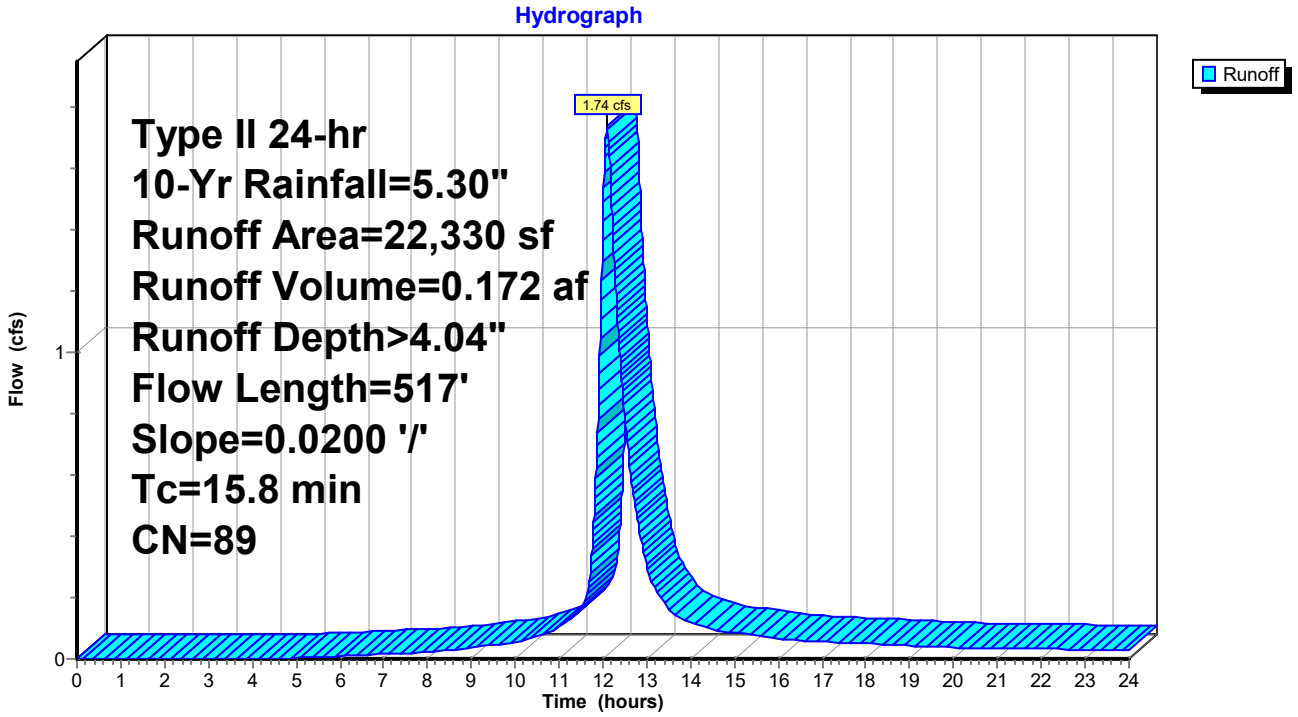
Runoff = 1.74 cfs @ 12.08 hrs, Volume= 0.172 af, Depth> 4.04"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
13,573	98	Paved parking, HSG C
8,757	74	>75% Grass cover, Good, HSG C
22,330	89	Weighted Average
8,757		39.22% Pervious Area
13,573		60.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
2.7	367	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
15.8	517	Total			

Subcatchment 23: DA #7



Summary for Pond 24: I-8

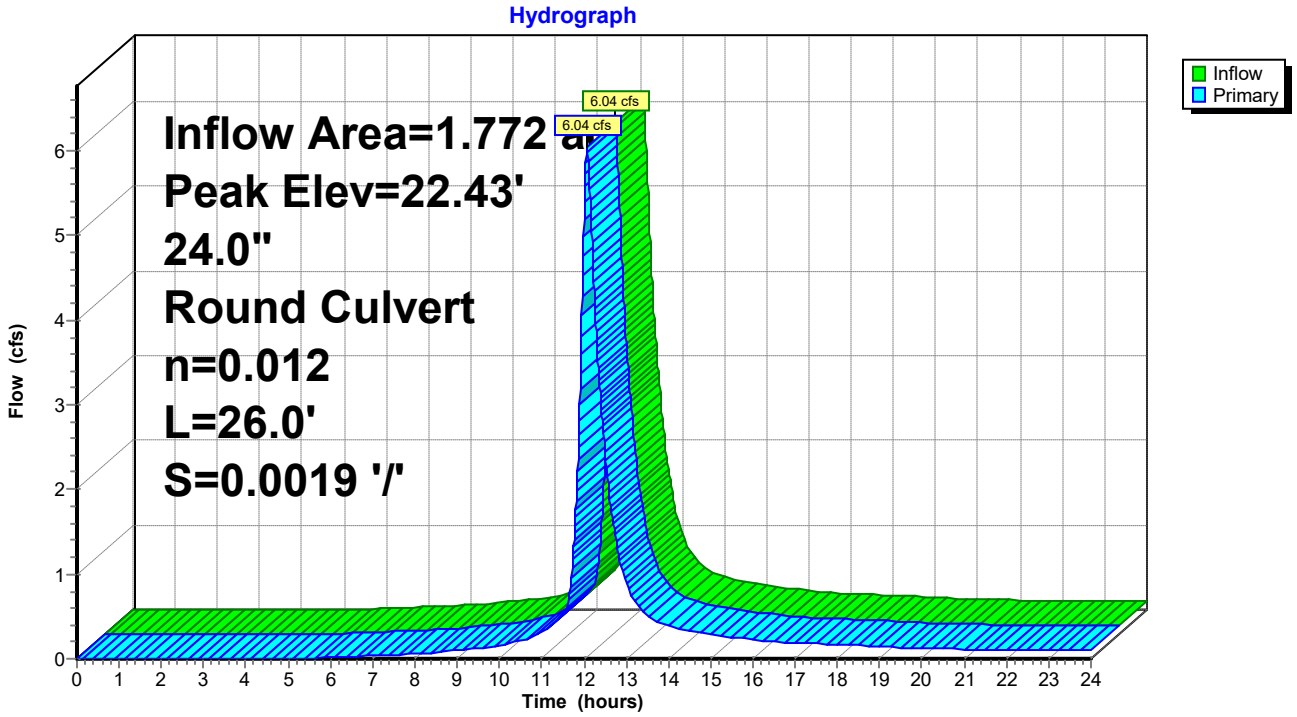
Inflow Area = 1.772 ac, 50.77% Impervious, Inflow Depth > 3.77" for 10-Yr event
Inflow = 6.04 cfs @ 12.08 hrs, Volume= 0.557 af
Outflow = 6.04 cfs @ 12.08 hrs, Volume= 0.557 af, Atten= 0%, Lag= 0.0 min
Primary = 6.04 cfs @ 12.08 hrs, Volume= 0.557 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.43' @ 12.10 hrs
Flood Elev= 27.26'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.75'	**24.0" Round Culvert** L= 26.0' Ke= 0.500 Inlet / Outlet Invert= 18.75' / 18.70' S= 0.0019 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=5.21 cfs @ 12.08 hrs HW=22.37' TW=22.26' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 5.21 cfs @ 1.66 fps)

Pond 24: I-8



Summary for Subcatchment 25: DA #8

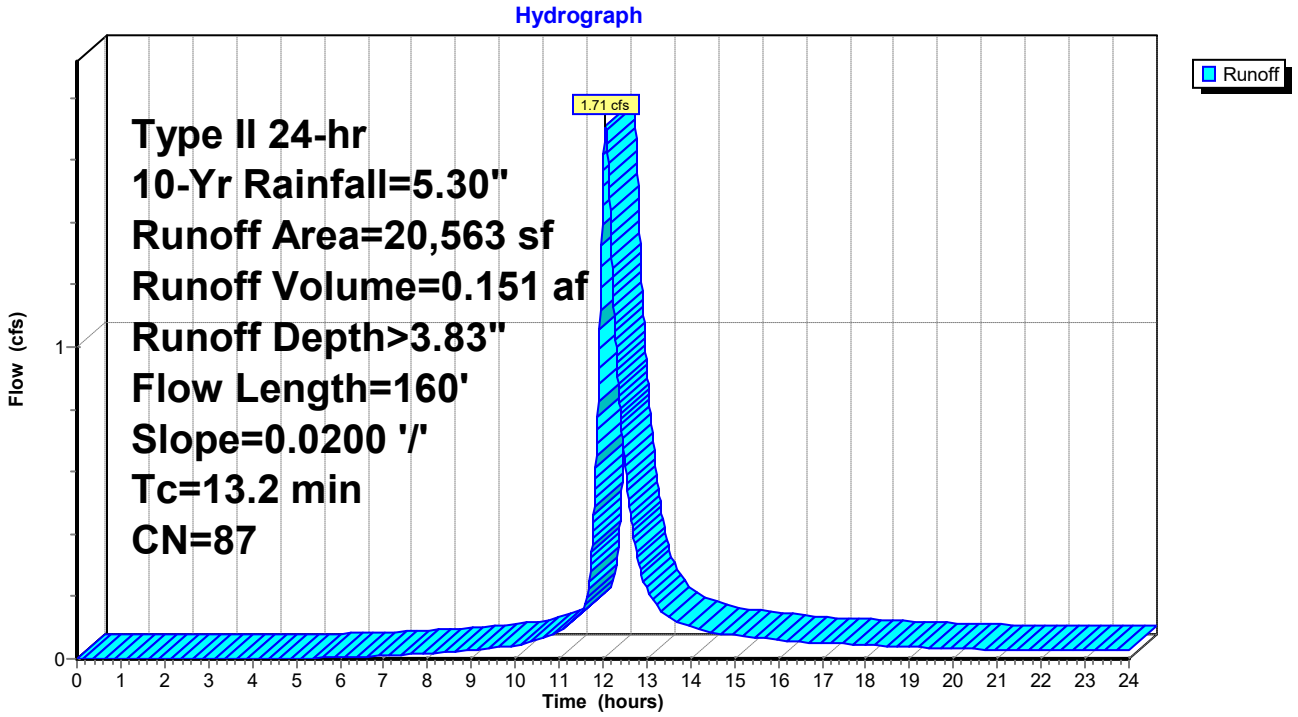
Runoff = 1.71 cfs @ 12.06 hrs, Volume= 0.151 af, Depth> 3.83"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
11,019	98	Paved parking, HSG C
9,544	74	>75% Grass cover, Good, HSG C
20,563	87	Weighted Average
9,544		46.41% Pervious Area
11,019		53.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.1	10	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.2	160	Total			

Subcatchment 25: DA #8



Summary for Pond 26: I-9

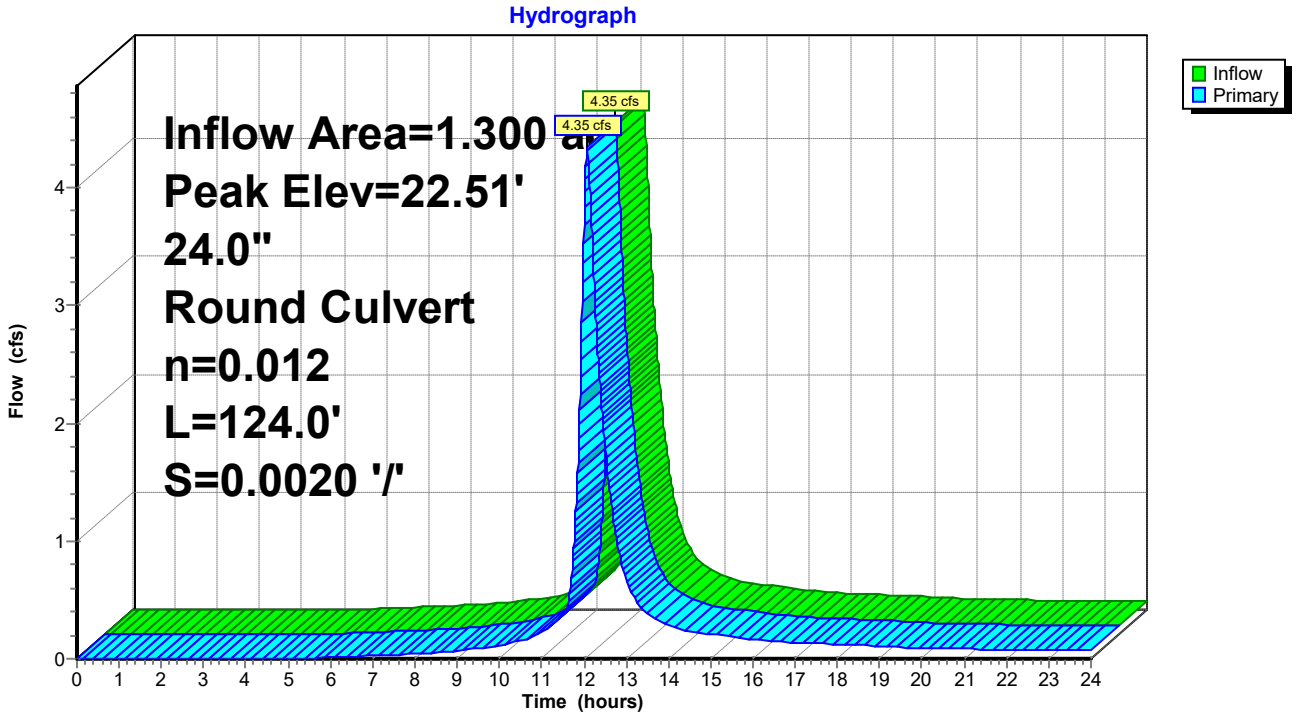
Inflow Area = 1.300 ac, 49.75% Impervious, Inflow Depth > 3.75" for 10-Yr event
Inflow = 4.35 cfs @ 12.08 hrs, Volume= 0.406 af
Outflow = 4.35 cfs @ 12.08 hrs, Volume= 0.406 af, Atten= 0%, Lag= 0.0 min
Primary = 4.35 cfs @ 12.08 hrs, Volume= 0.406 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.51' @ 12.11 hrs
Flood Elev= 27.89'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.00'	**24.0" Round Culvert** L= 124.0' Ke= 0.500 Inlet / Outlet Invert= 19.00' / 18.75' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=2.30 cfs @ 12.08 hrs HW=22.41' TW=22.39' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 2.30 cfs @ 0.73 fps)

Pond 26: I-9



Summary for Subcatchment 27: DA #9

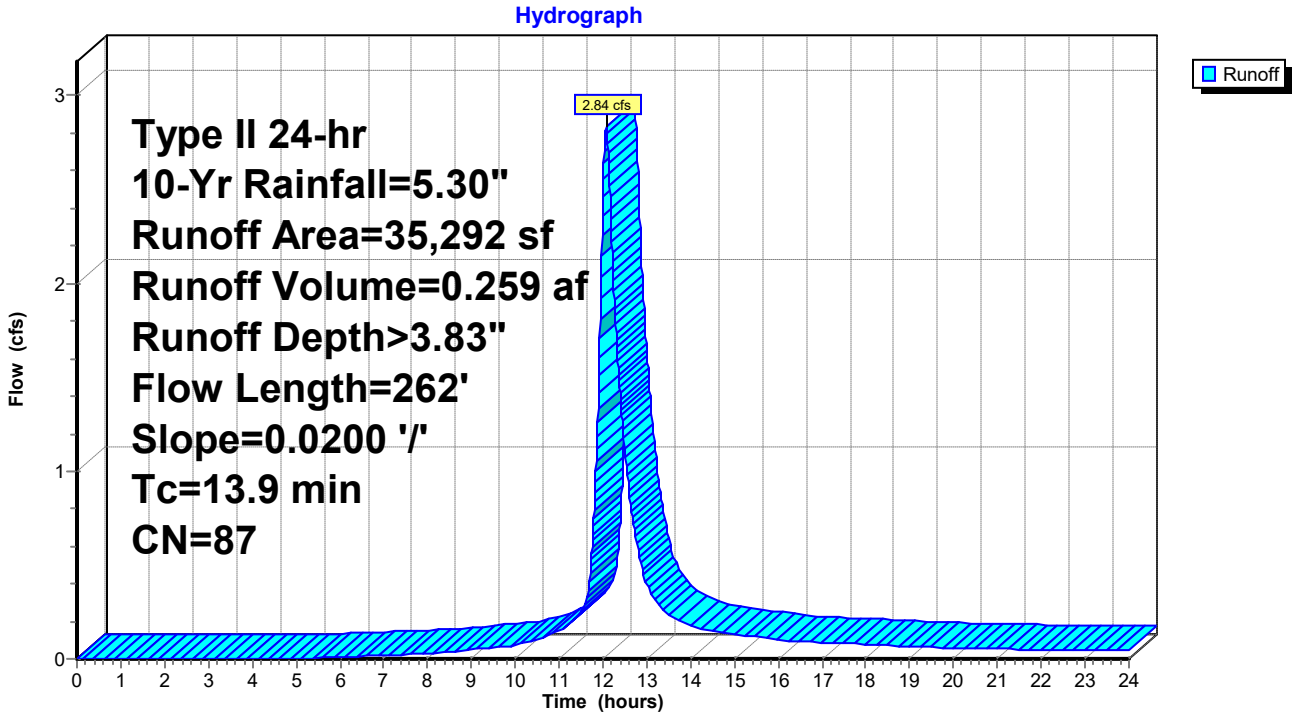
Runoff = 2.84 cfs @ 12.08 hrs, Volume= 0.259 af, Depth> 3.83"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
18,751	98	Paved parking, HSG C
16,541	74	>75% Grass cover, Good, HSG C
35,292	87	Weighted Average
16,541		46.87% Pervious Area
18,751		53.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.8	112	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.9	262	Total			

Subcatchment 27: DA #9



Summary for Pond 28: I-10

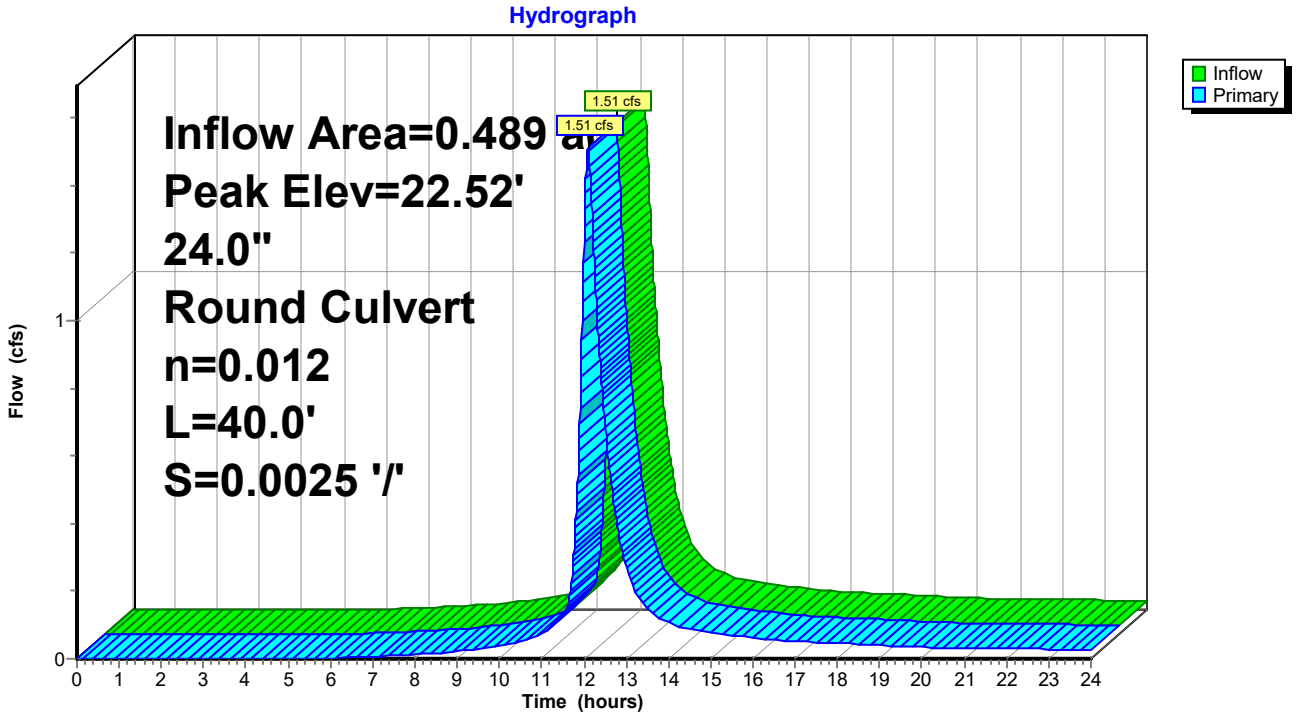
Inflow Area = 0.489 ac, 44.15% Impervious, Inflow Depth > 3.62" for 10-Yr event
Inflow = 1.51 cfs @ 12.10 hrs, Volume= 0.148 af
Outflow = 1.51 cfs @ 12.10 hrs, Volume= 0.148 af, Atten= 0%, Lag= 0.0 min
Primary = 1.51 cfs @ 12.10 hrs, Volume= 0.148 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.52' @ 12.12 hrs
Flood Elev= 27.69'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.10'	**24.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 19.10' / 19.00' S= 0.0025 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 12.10 hrs HW=22.48' TW=22.50' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 28: I-10



Summary for Subcatchment 29: DA #10

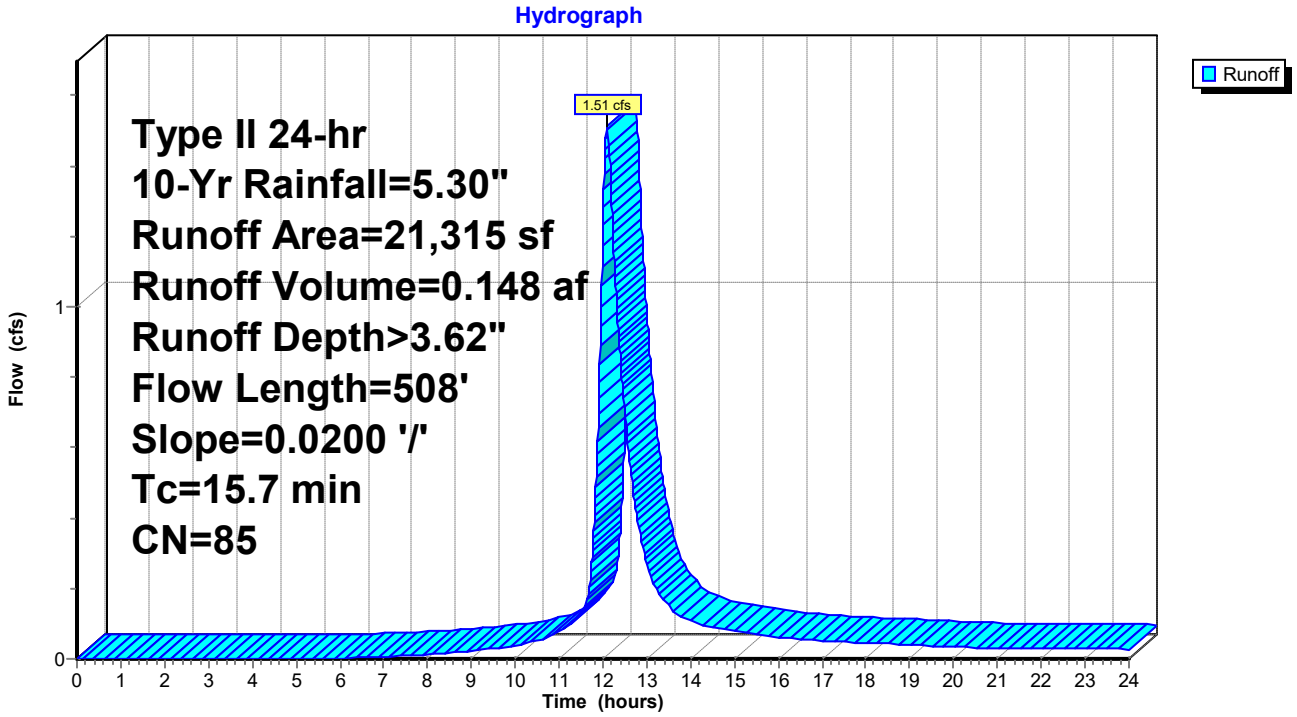
Runoff = 1.51 cfs @ 12.10 hrs, Volume= 0.148 af, Depth> 3.62"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
9,410	98	Paved parking, HSG C
11,905	74	>75% Grass cover, Good, HSG C
21,315	85	Weighted Average
11,905		55.85% Pervious Area
9,410		44.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
2.6	358	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
15.7	508	Total			

Subcatchment 29: DA #10



Summary for Pond 30: I-11

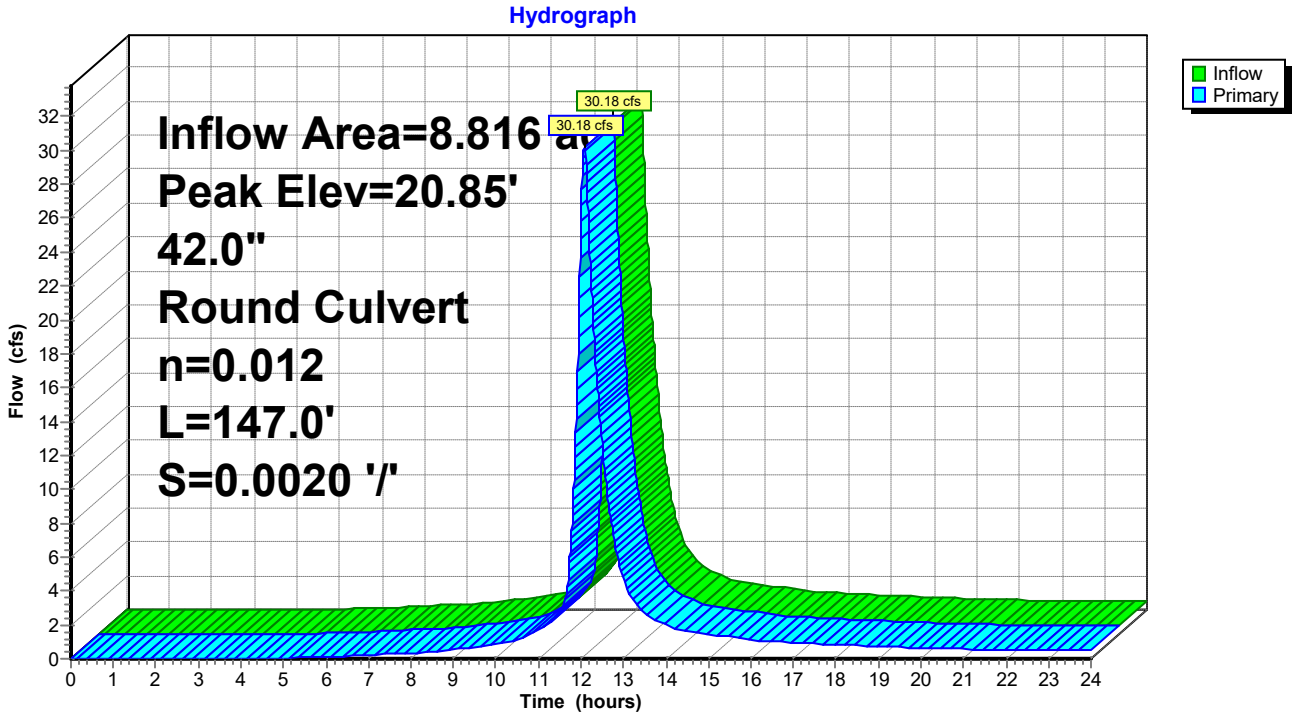
Inflow Area = 8.816 ac, 56.89% Impervious, Inflow Depth > 3.90" for 10-Yr event
Inflow = 30.18 cfs @ 12.08 hrs, Volume= 2.868 af
Outflow = 30.18 cfs @ 12.08 hrs, Volume= 2.868 af, Atten= 0%, Lag= 0.0 min
Primary = 30.18 cfs @ 12.08 hrs, Volume= 2.868 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.85' @ 12.08 hrs
Flood Elev= 22.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.20'	**42.0" Round Culvert** L= 147.0' Ke= 0.500 Inlet / Outlet Invert= 18.20' / 17.90' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=30.17 cfs @ 12.08 hrs HW=20.85' TW=19.50' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 30.17 cfs @ 5.35 fps)

Pond 30: I-11



Summary for Subcatchment 31: DA #11

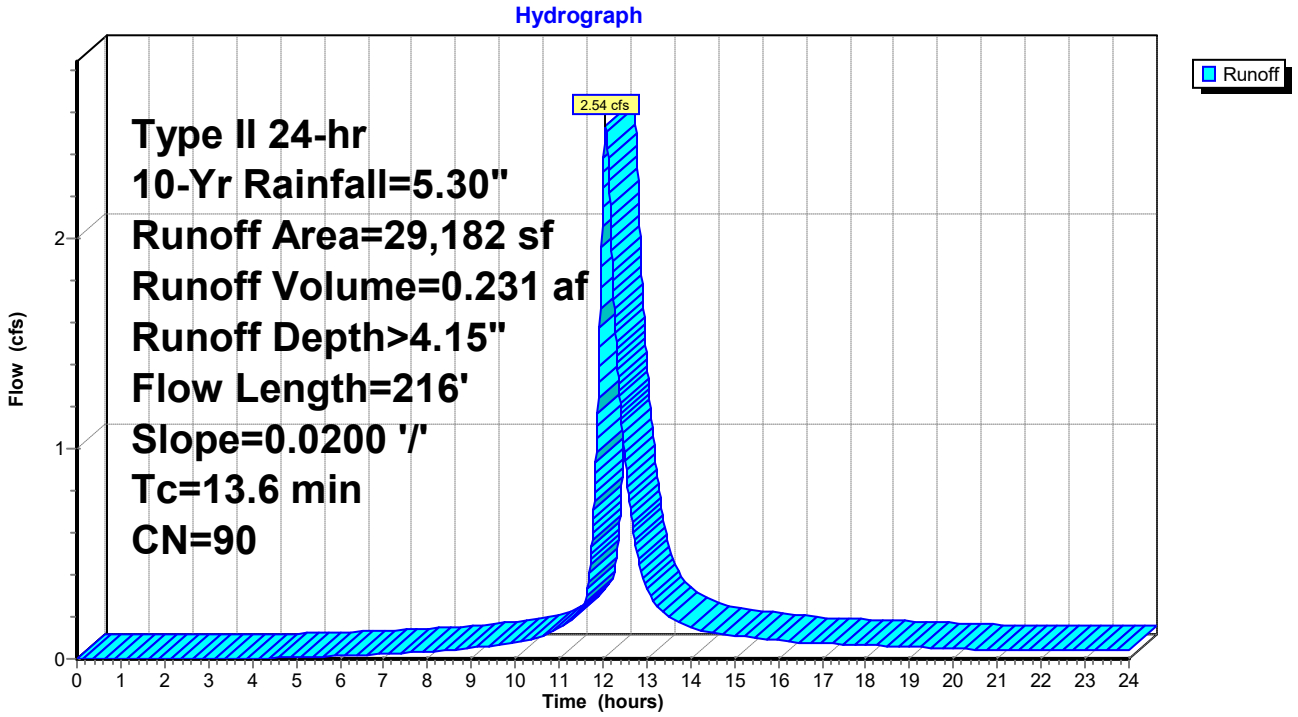
Runoff = 2.54 cfs @ 12.06 hrs, Volume= 0.231 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
18,979	98	Paved parking, HSG C
10,203	74	>75% Grass cover, Good, HSG C
29,182	90	Weighted Average
10,203		34.96% Pervious Area
18,979		65.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.5	66	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.6	216	Total			

Subcatchment 31: DA #11



Summary for Pond 32: I-12

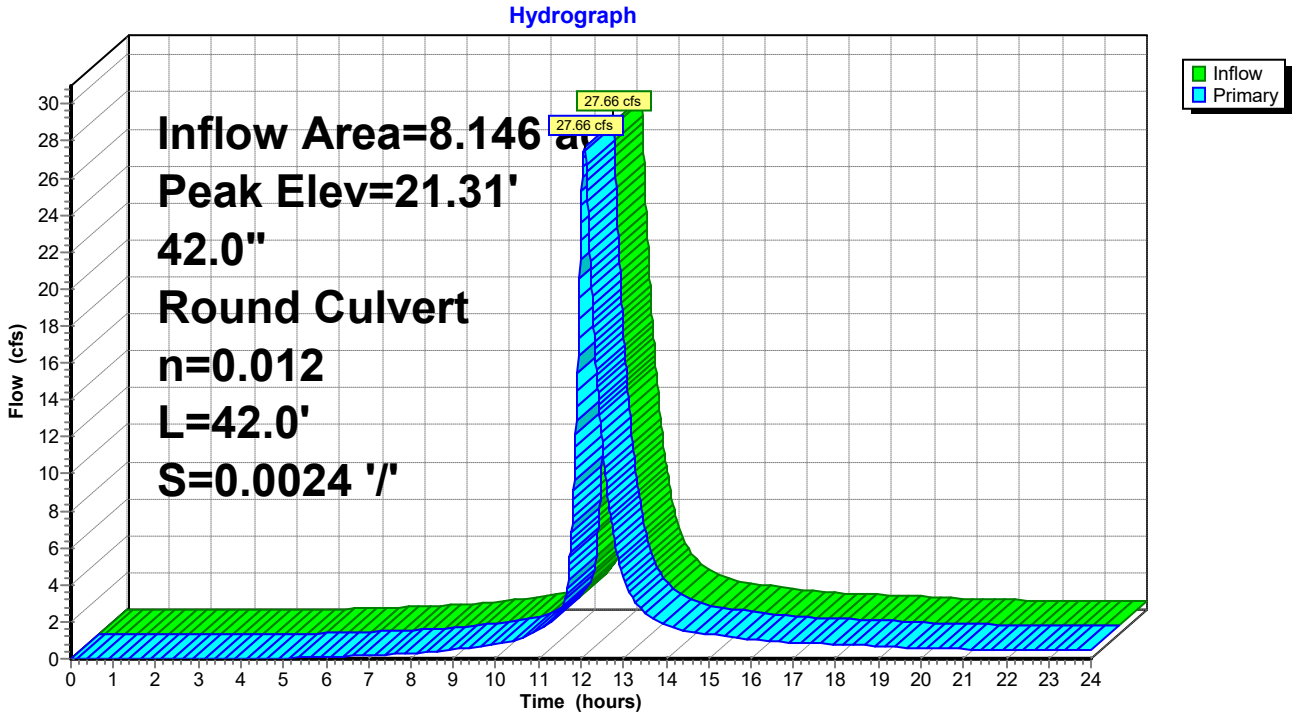
Inflow Area = 8.146 ac, 56.22% Impervious, Inflow Depth > 3.88" for 10-Yr event
Inflow = 27.66 cfs @ 12.08 hrs, Volume= 2.636 af
Outflow = 27.66 cfs @ 12.08 hrs, Volume= 2.636 af, Atten= 0%, Lag= 0.0 min
Primary = 27.66 cfs @ 12.08 hrs, Volume= 2.636 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.31' @ 12.08 hrs
Flood Elev= 22.63'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.30'	**42.0" Round Culvert** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 18.30' / 18.20' S= 0.0024 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=27.57 cfs @ 12.08 hrs HW=21.31' TW=20.85' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 27.57 cfs @ 4.20 fps)

Pond 32: I-12



Summary for Subcatchment 33: DA #12

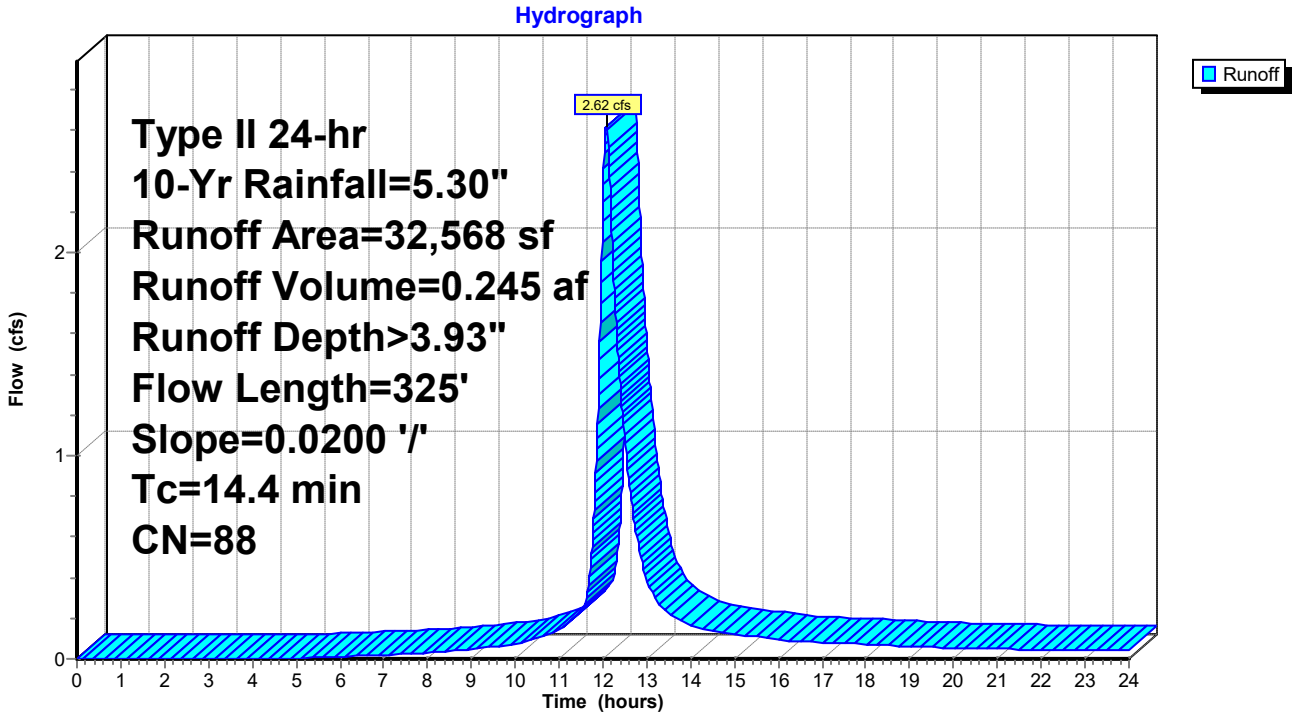
Runoff = 2.62 cfs @ 12.07 hrs, Volume= 0.245 af, Depth> 3.93"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
18,953	98	Paved parking, HSG C
13,615	74	>75% Grass cover, Good, HSG C
32,568	88	Weighted Average
13,615		41.80% Pervious Area
18,953		58.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
1.3	175	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.4	325	Total			

Subcatchment 33: DA #12



Summary for Pond 34: I-13

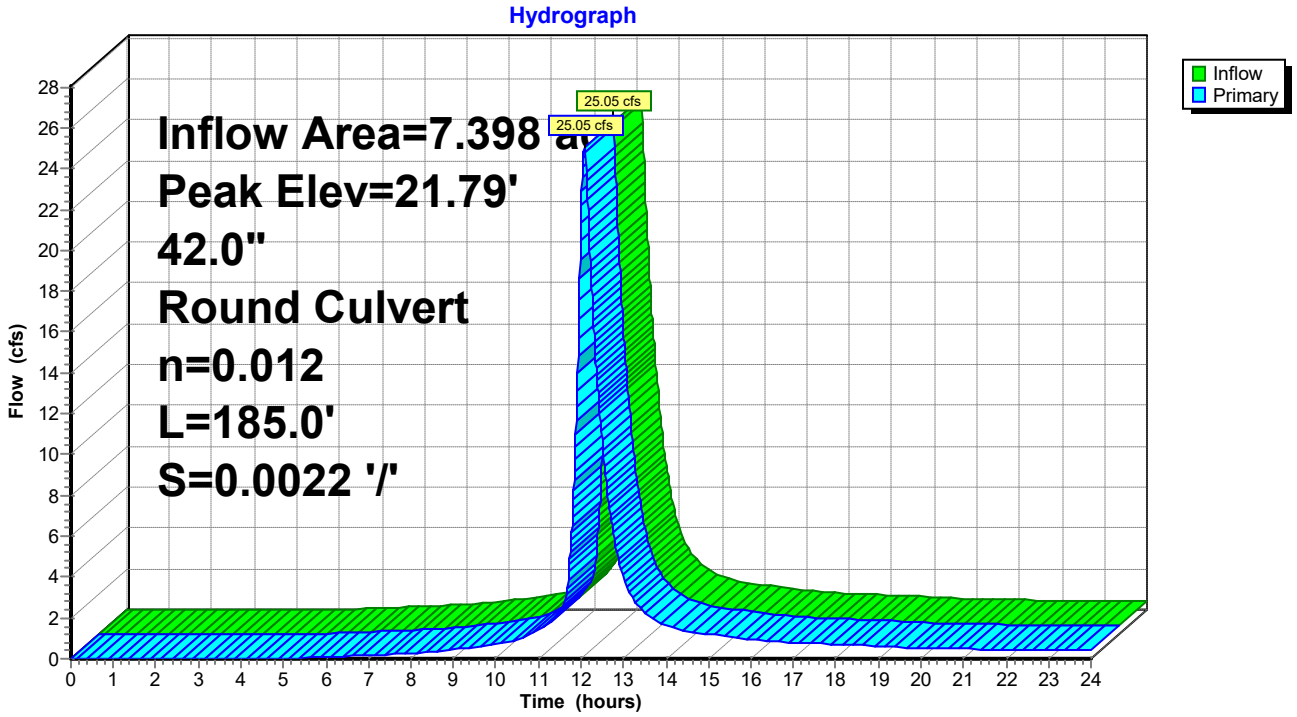
Inflow Area = 7.398 ac, 56.02% Impervious, Inflow Depth > 3.88" for 10-Yr event
Inflow = 25.05 cfs @ 12.08 hrs, Volume= 2.391 af
Outflow = 25.05 cfs @ 12.08 hrs, Volume= 2.391 af, Atten= 0%, Lag= 0.0 min
Primary = 25.05 cfs @ 12.08 hrs, Volume= 2.391 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.79' @ 12.09 hrs
Flood Elev= 23.18'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.70'	**42.0" Round Culvert** L= 185.0' Ke= 0.500 Inlet / Outlet Invert= 18.70' / 18.30' S= 0.0022 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=24.81 cfs @ 12.08 hrs HW=21.79' TW=21.31' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 24.81 cfs @ 3.67 fps)

Pond 34: I-13



Summary for Subcatchment 35: DA #13

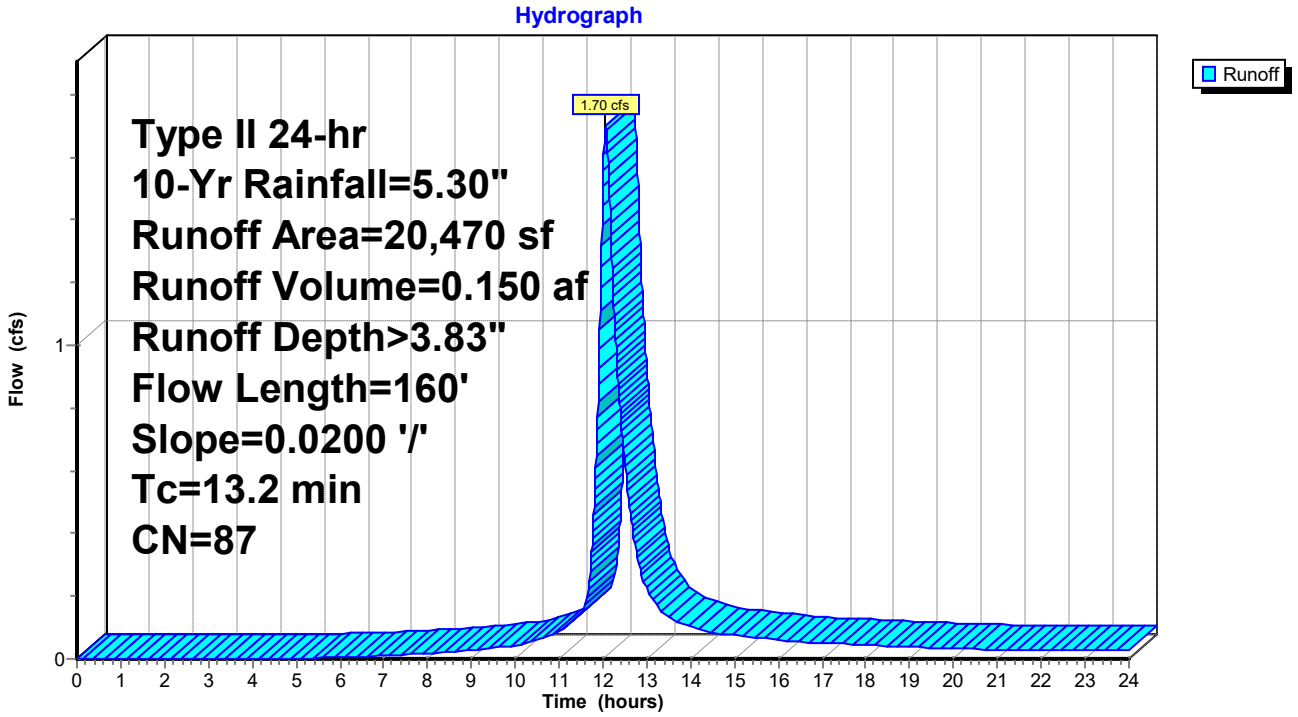
Runoff = 1.70 cfs @ 12.06 hrs, Volume= 0.150 af, Depth> 3.83"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
10,957	98	Paved parking, HSG C
9,513	74	>75% Grass cover, Good, HSG C
20,470	87	Weighted Average
9,513		46.47% Pervious Area
10,957		53.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.1	10	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.2	160	Total			

Subcatchment 35: DA #13



Summary for Pond 36: I-14

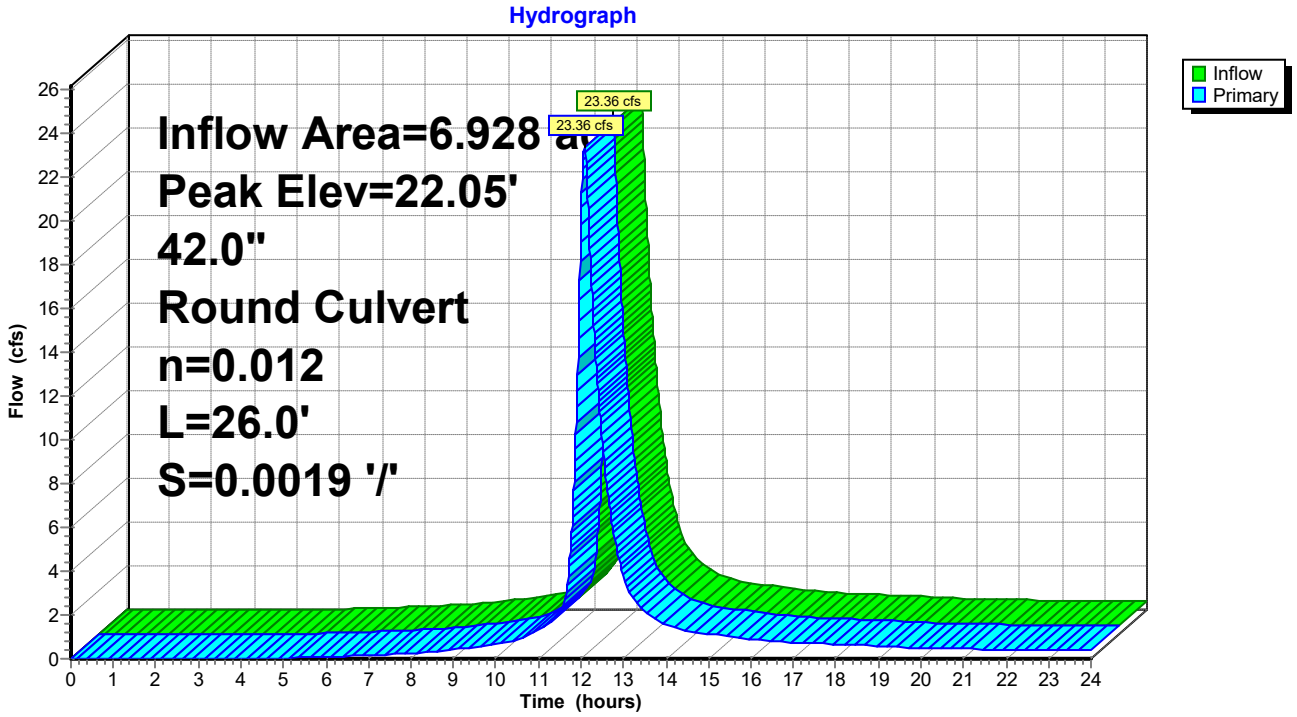
Inflow Area = 6.928 ac, 56.19% Impervious, Inflow Depth > 3.88" for 10-Yr event
Inflow = 23.36 cfs @ 12.08 hrs, Volume= 2.241 af
Outflow = 23.36 cfs @ 12.08 hrs, Volume= 2.241 af, Atten= 0%, Lag= 0.0 min
Primary = 23.36 cfs @ 12.08 hrs, Volume= 2.241 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.05' @ 12.10 hrs
Flood Elev= 23.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.75'	**42.0" Round Culvert** L= 26.0' Ke= 0.500 Inlet / Outlet Invert= 18.75' / 18.70' S= 0.0019 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=22.73 cfs @ 12.08 hrs HW=22.04' TW=21.79' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 22.73 cfs @ 2.42 fps)

Pond 36: I-14



Summary for Subcatchment 37: DA #14

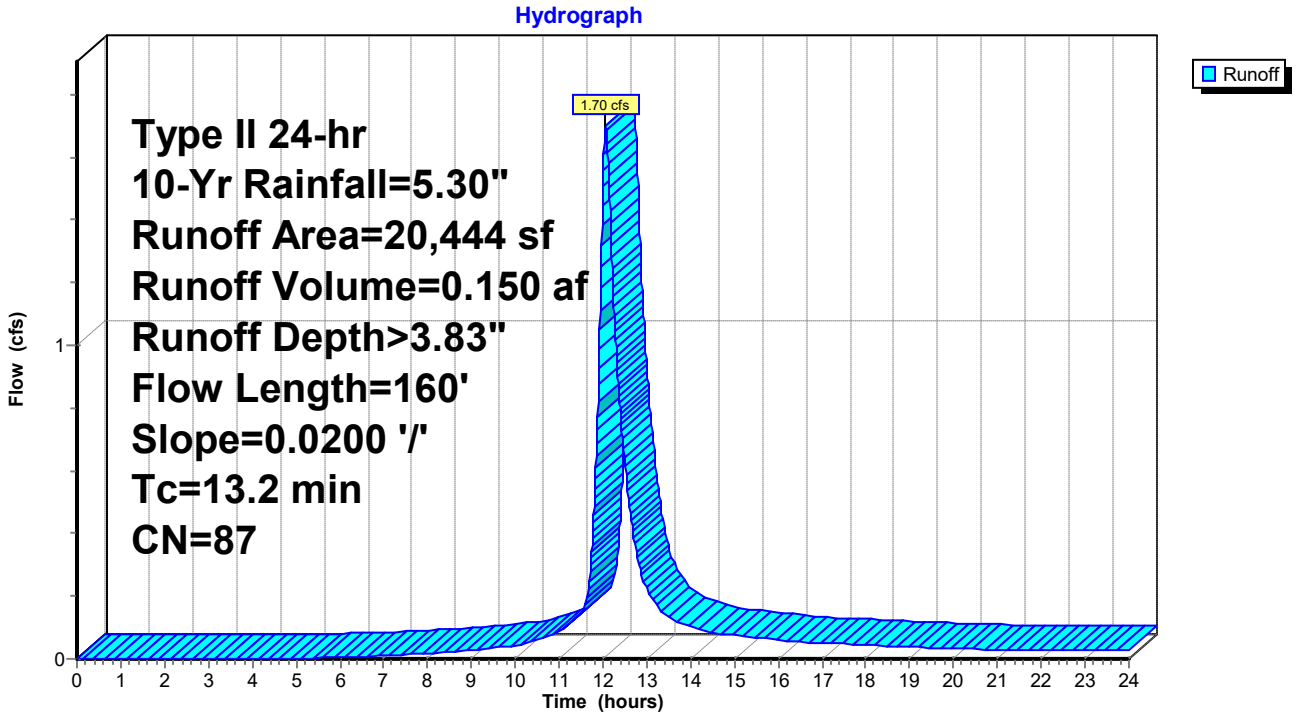
Runoff = 1.70 cfs @ 12.06 hrs, Volume= 0.150 af, Depth> 3.83"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
10,945	98	Paved parking, HSG C
9,499	74	>75% Grass cover, Good, HSG C
20,444	87	Weighted Average
9,499		46.46% Pervious Area
10,945		53.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.1	10	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.2	160	Total			

Subcatchment 37: DA #14



Summary for Pond 38: I-15

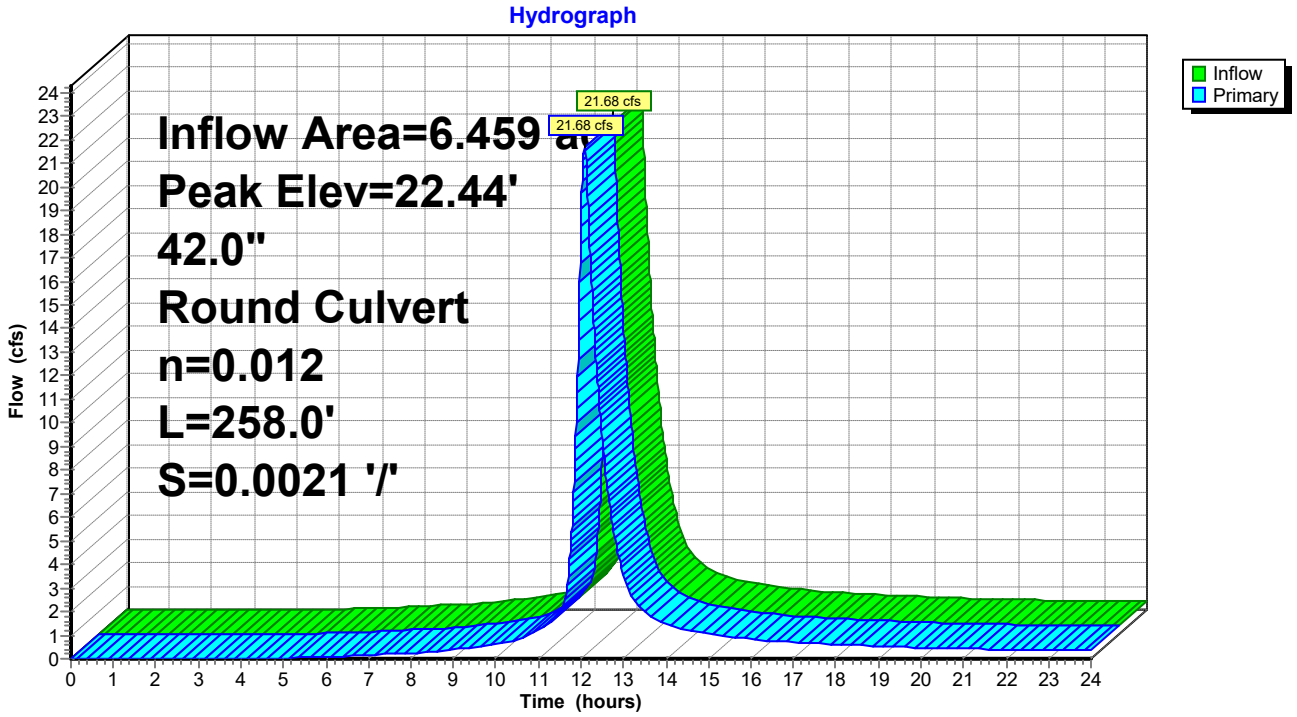
Inflow Area = 6.459 ac, 56.38% Impervious, Inflow Depth > 3.89" for 10-Yr event
Inflow = 21.68 cfs @ 12.08 hrs, Volume= 2.091 af
Outflow = 21.68 cfs @ 12.08 hrs, Volume= 2.091 af, Atten= 0%, Lag= 0.0 min
Primary = 21.68 cfs @ 12.08 hrs, Volume= 2.091 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.44' @ 12.10 hrs
Flood Elev= 23.24'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.30'	**42.0" Round Culvert** L= 258.0' Ke= 0.500 Inlet / Outlet Invert= 19.30' / 18.75' S= 0.0021 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=21.08 cfs @ 12.08 hrs HW=22.42' TW=22.04' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 21.08 cfs @ 3.08 fps)

Pond 38: I-15



Summary for Subcatchment 39: DA #15

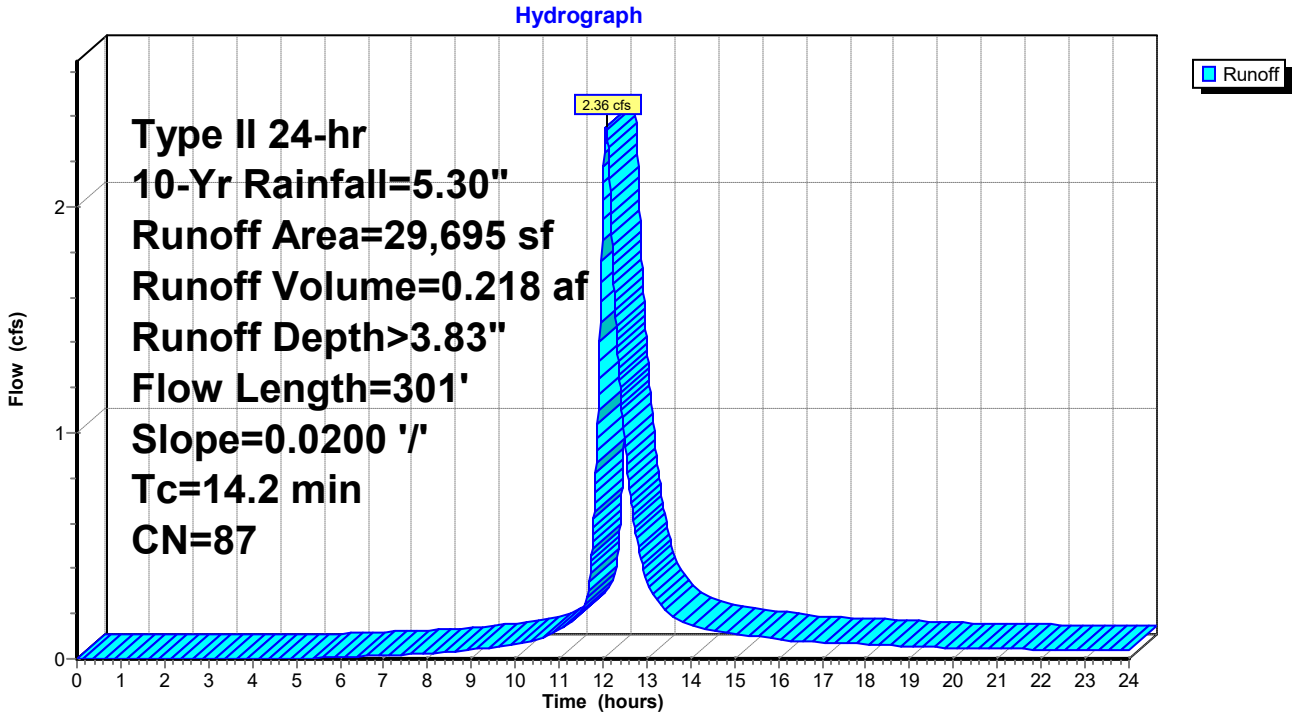
Runoff = 2.36 cfs @ 12.08 hrs, Volume= 0.218 af, Depth> 3.83"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
15,959	98	Paved parking, HSG C
13,736	74	>75% Grass cover, Good, HSG C
29,695	87	Weighted Average
13,736		46.26% Pervious Area
15,959		53.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
1.1	151	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.2	301	Total			

Subcatchment 39: DA #15



Summary for Pond 40: I-16

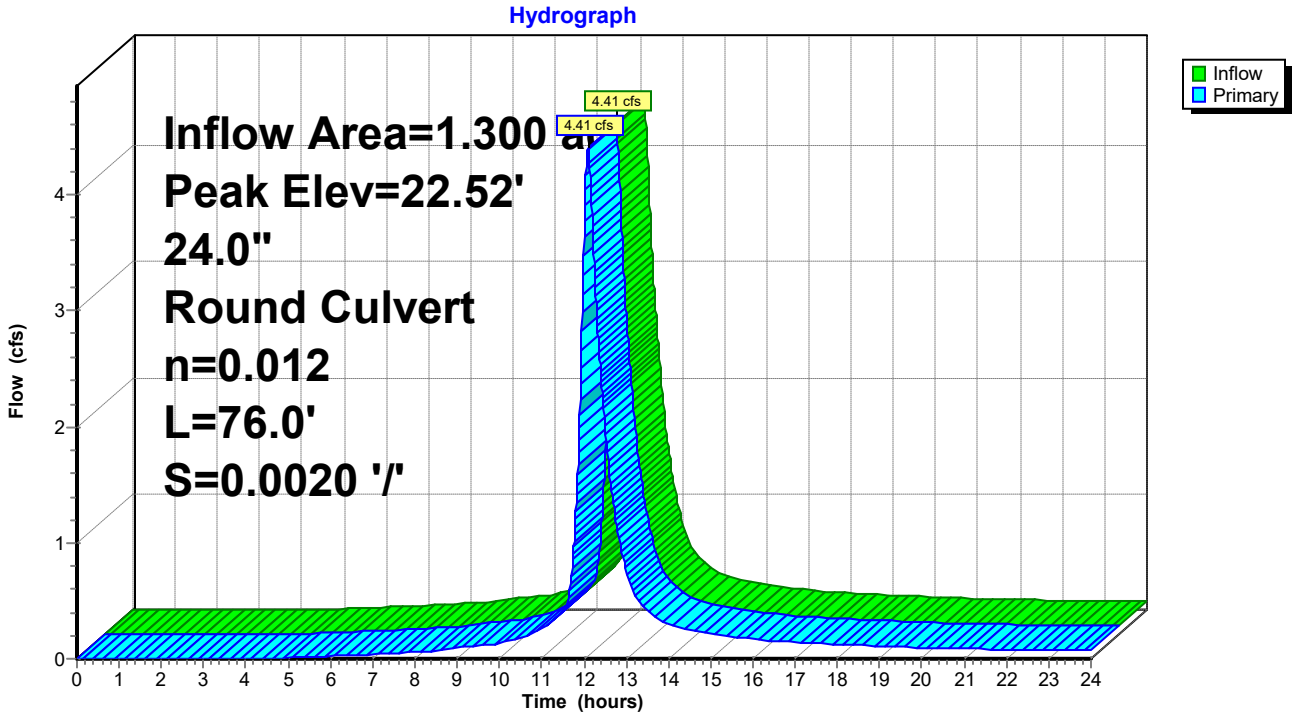
Inflow Area = 1.300 ac, 62.25% Impervious, Inflow Depth > 4.04" for 10-Yr event
Inflow = 4.41 cfs @ 12.10 hrs, Volume= 0.437 af
Outflow = 4.41 cfs @ 12.10 hrs, Volume= 0.437 af, Atten= 0%, Lag= 0.0 min
Primary = 4.41 cfs @ 12.10 hrs, Volume= 0.437 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.52' @ 12.11 hrs
Flood Elev= 23.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.45'	**24.0" Round Culvert** L= 76.0' Ke= 0.500 Inlet / Outlet Invert= 19.45' / 19.30' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=4.13 cfs @ 12.10 hrs HW=22.51' TW=22.44' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 4.13 cfs @ 1.31 fps)

Pond 40: I-16



Summary for Subcatchment 41: DA #16

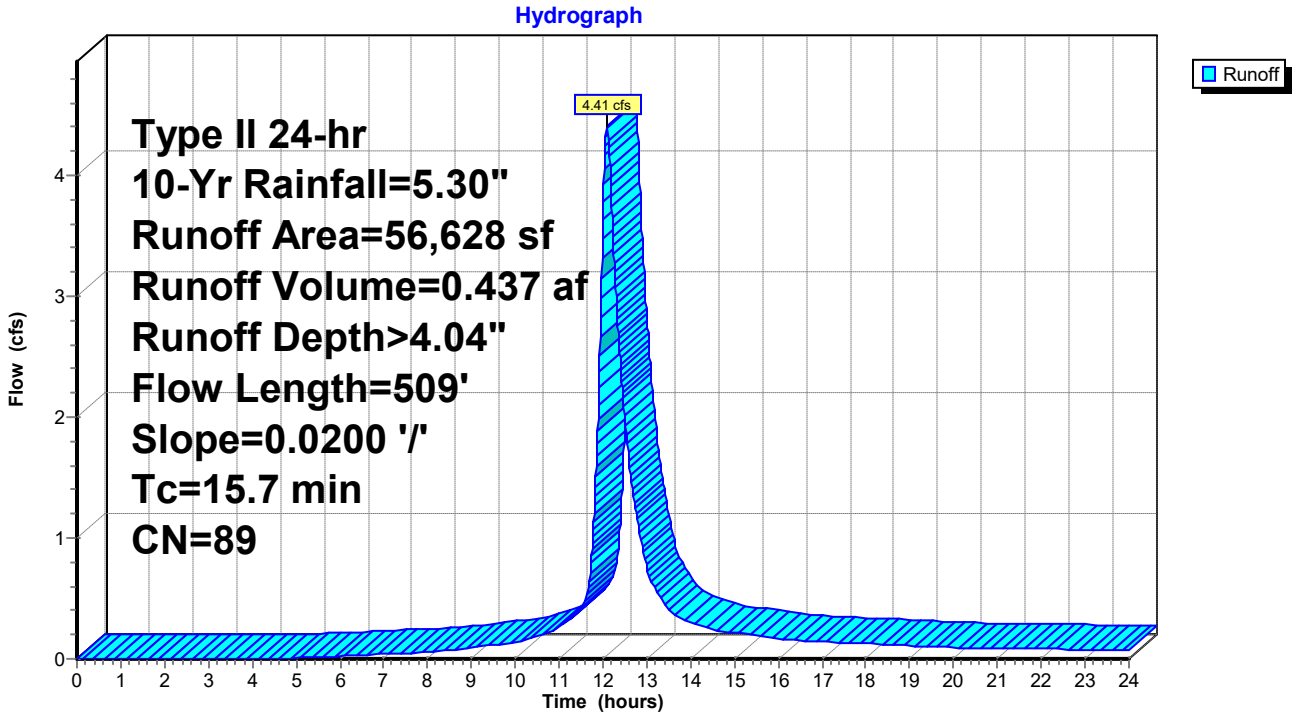
Runoff = 4.41 cfs @ 12.10 hrs, Volume= 0.437 af, Depth> 4.04"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
35,249	98	Paved parking, HSG C
21,379	74	>75% Grass cover, Good, HSG C
56,628	89	Weighted Average
21,379		37.75% Pervious Area
35,249		62.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
2.6	359	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
15.7	509	Total			

Subcatchment 41: DA #16



Summary for Pond 42: I-17

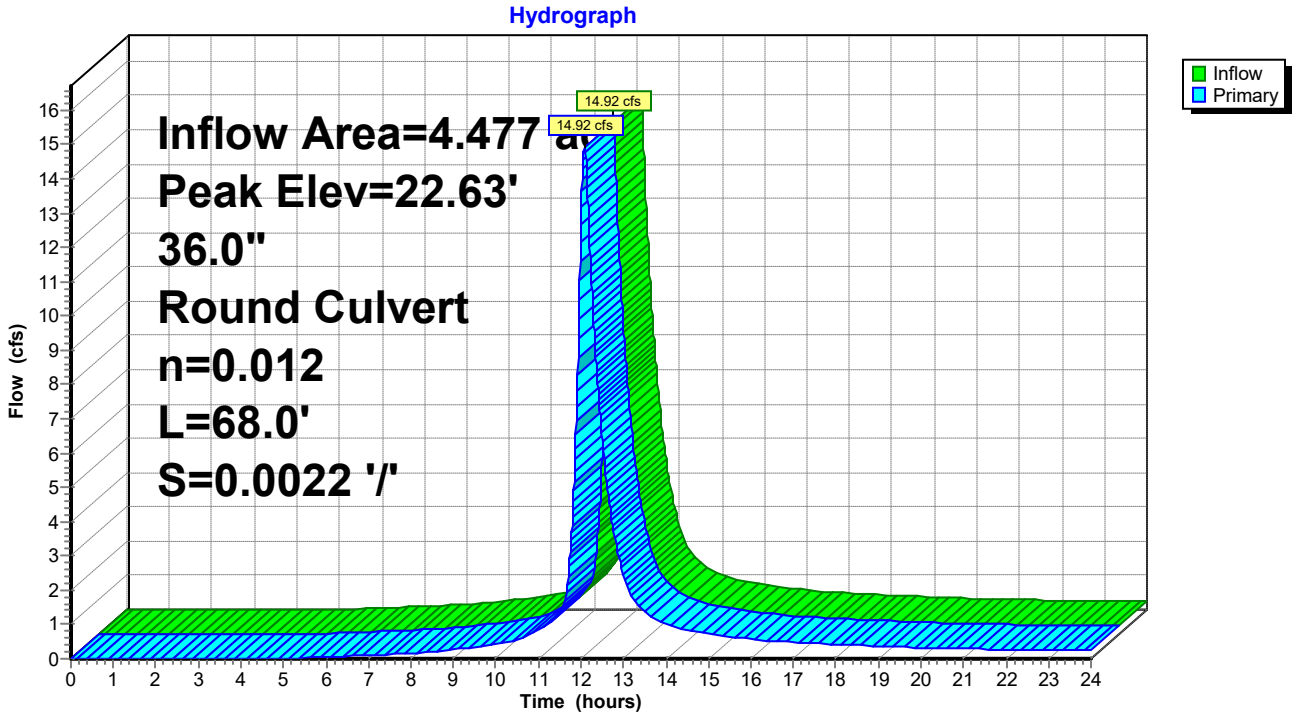
Inflow Area = 4.477 ac, 55.08% Impervious, Inflow Depth > 3.85" for 10-Yr event
Inflow = 14.92 cfs @ 12.08 hrs, Volume= 1.436 af
Outflow = 14.92 cfs @ 12.08 hrs, Volume= 1.436 af, Atten= 0%, Lag= 0.0 min
Primary = 14.92 cfs @ 12.08 hrs, Volume= 1.436 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.63' @ 12.11 hrs
Flood Elev= 23.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.45'	**36.0" Round Culvert** L= 68.0' Ke= 0.500 Inlet / Outlet Invert= 19.45' / 19.30' S= 0.0022 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=13.86 cfs @ 12.08 hrs HW=22.58' TW=22.42' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 13.86 cfs @ 1.96 fps)

Pond 42: I-17



Summary for Subcatchment 43: DA #17

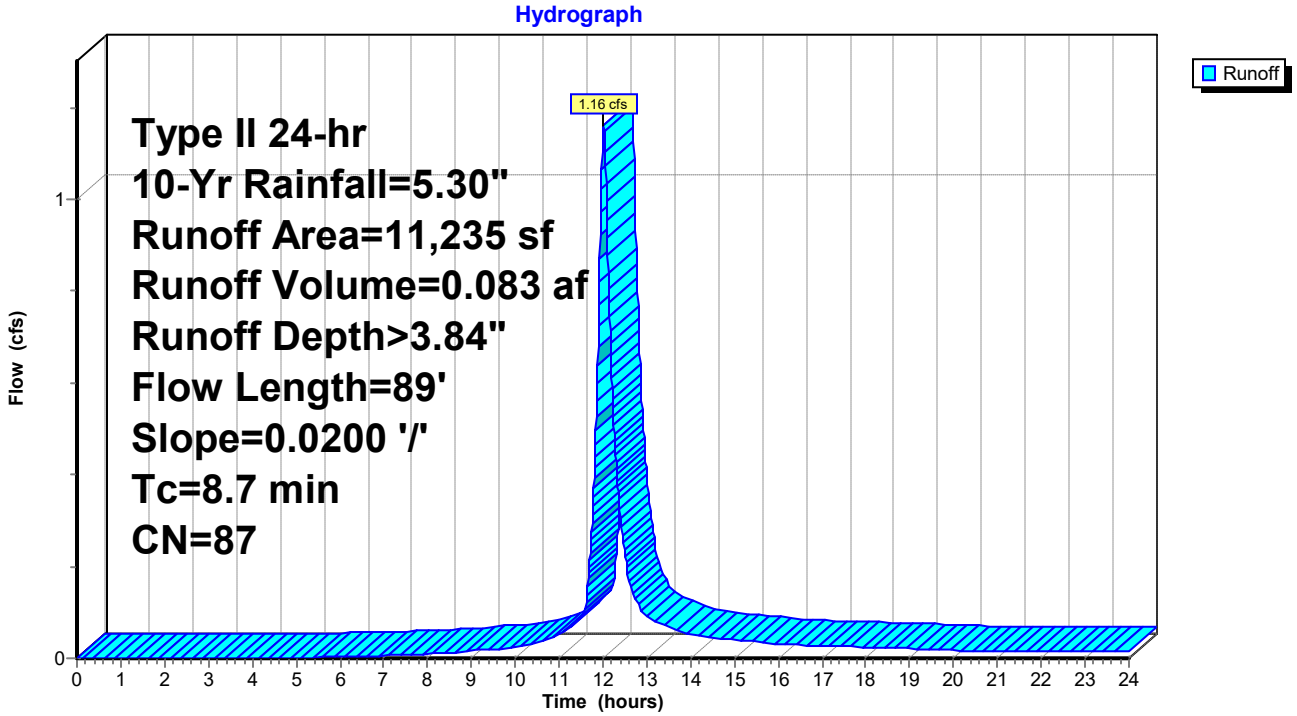
Runoff = 1.16 cfs @ 12.01 hrs, Volume= 0.083 af, Depth> 3.84"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
6,208	98	Paved parking, HSG C
5,027	74	>75% Grass cover, Good, HSG C
11,235	87	Weighted Average
5,027		44.74% Pervious Area
6,208		55.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	89	0.0200	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"

Subcatchment 43: DA #17



Summary for Pond 44: I-18

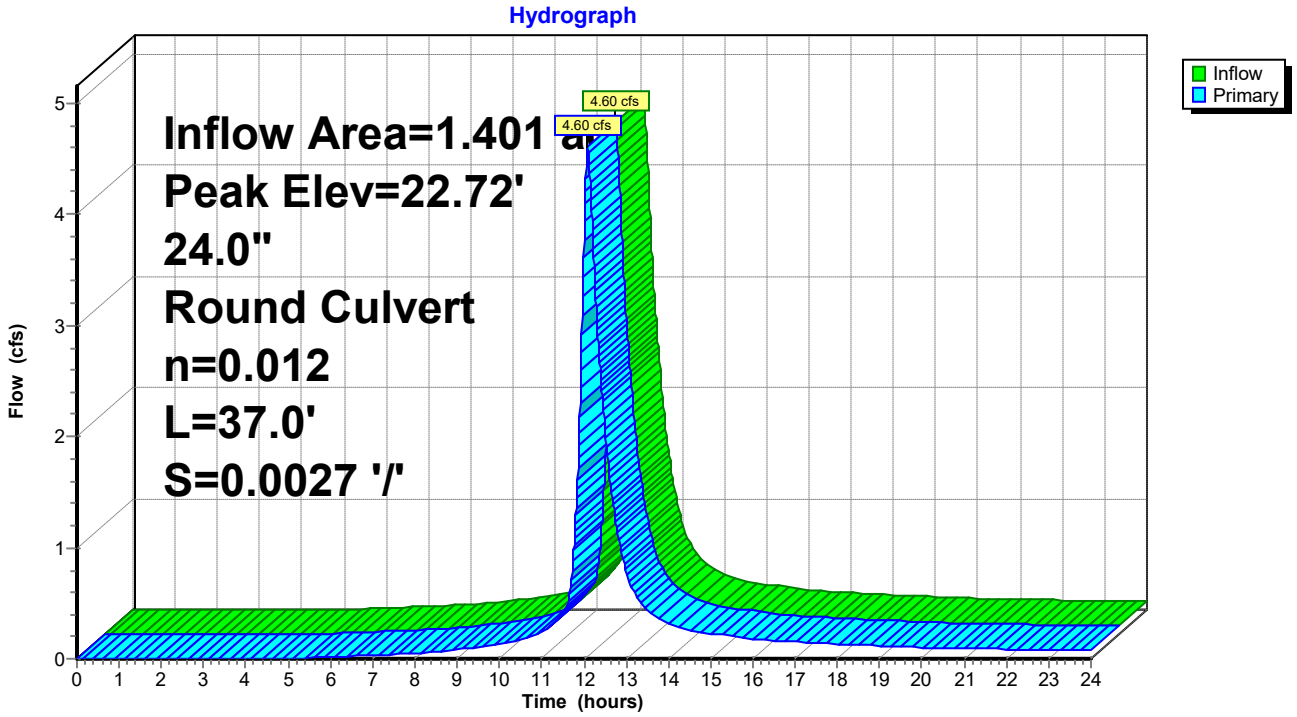
Inflow Area = 1.401 ac, 53.73% Impervious, Inflow Depth > 3.83" for 10-Yr event
Inflow = 4.60 cfs @ 12.09 hrs, Volume= 0.447 af
Outflow = 4.60 cfs @ 12.09 hrs, Volume= 0.447 af, Atten= 0%, Lag= 0.0 min
Primary = 4.60 cfs @ 12.09 hrs, Volume= 0.447 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.72' @ 12.12 hrs
Flood Elev= 23.44'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.55'	**24.0" Round Culvert** L= 37.0' Ke= 0.500 Inlet / Outlet Invert= 19.55' / 19.45' S= 0.0027 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=3.87 cfs @ 12.09 hrs HW=22.67' TW=22.61' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.87 cfs @ 1.23 fps)

Pond 44: I-18



Summary for Subcatchment 45: DA #18

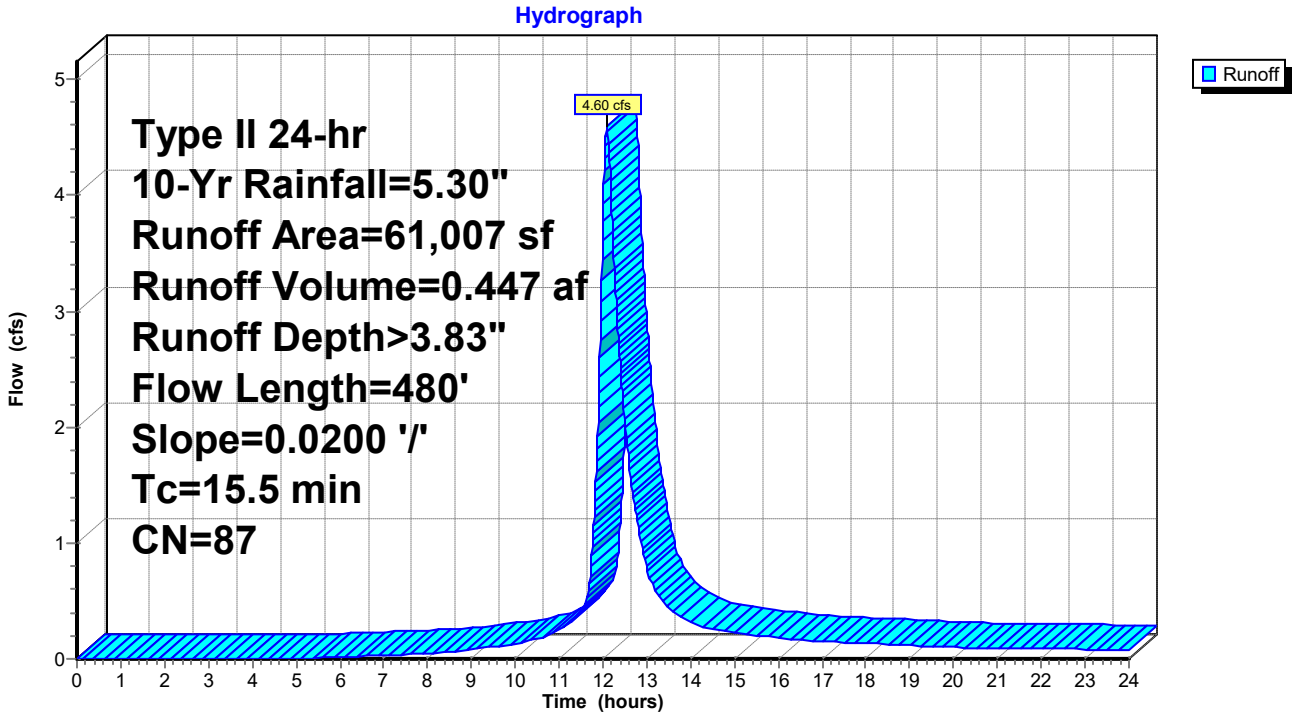
Runoff = 4.60 cfs @ 12.09 hrs, Volume= 0.447 af, Depth> 3.83"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
32,777	98	Paved parking, HSG C
28,230	74	>75% Grass cover, Good, HSG C
61,007	87	Weighted Average
28,230		46.27% Pervious Area
32,777		53.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
2.4	330	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
15.5	480	Total			

Subcatchment 45: DA #18



Summary for Pond 46: I-19

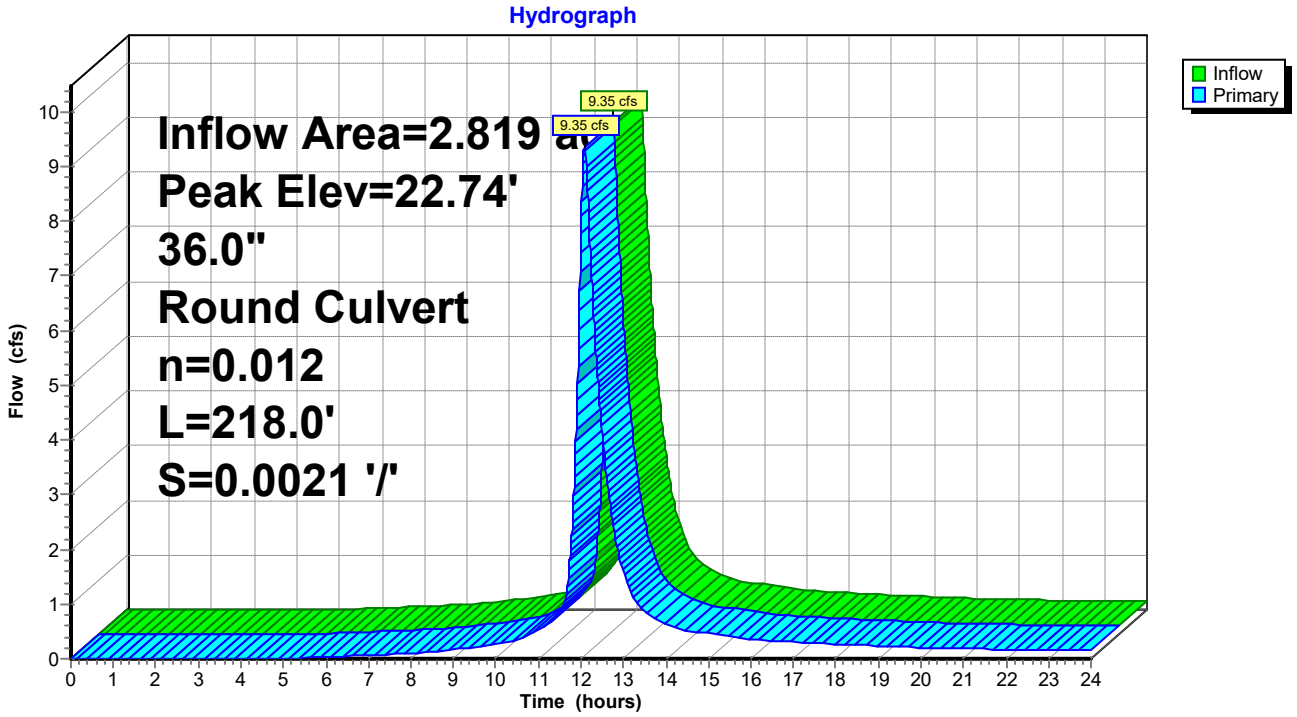
Inflow Area = 2.819 ac, 55.73% Impervious, Inflow Depth > 3.86" for 10-Yr event
Inflow = 9.35 cfs @ 12.08 hrs, Volume= 0.907 af
Outflow = 9.35 cfs @ 12.08 hrs, Volume= 0.907 af, Atten= 0%, Lag= 0.0 min
Primary = 9.35 cfs @ 12.08 hrs, Volume= 0.907 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.74' @ 12.12 hrs
Flood Elev= 22.68'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.90'	**36.0" Round Culvert** L= 218.0' Ke= 0.500 Inlet / Outlet Invert= 19.90' / 19.45' S= 0.0021 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=7.89 cfs @ 12.08 hrs HW=22.68' TW=22.59' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 7.89 cfs @ 1.50 fps)

Pond 46: I-19



Summary for Subcatchment 47: DA #19

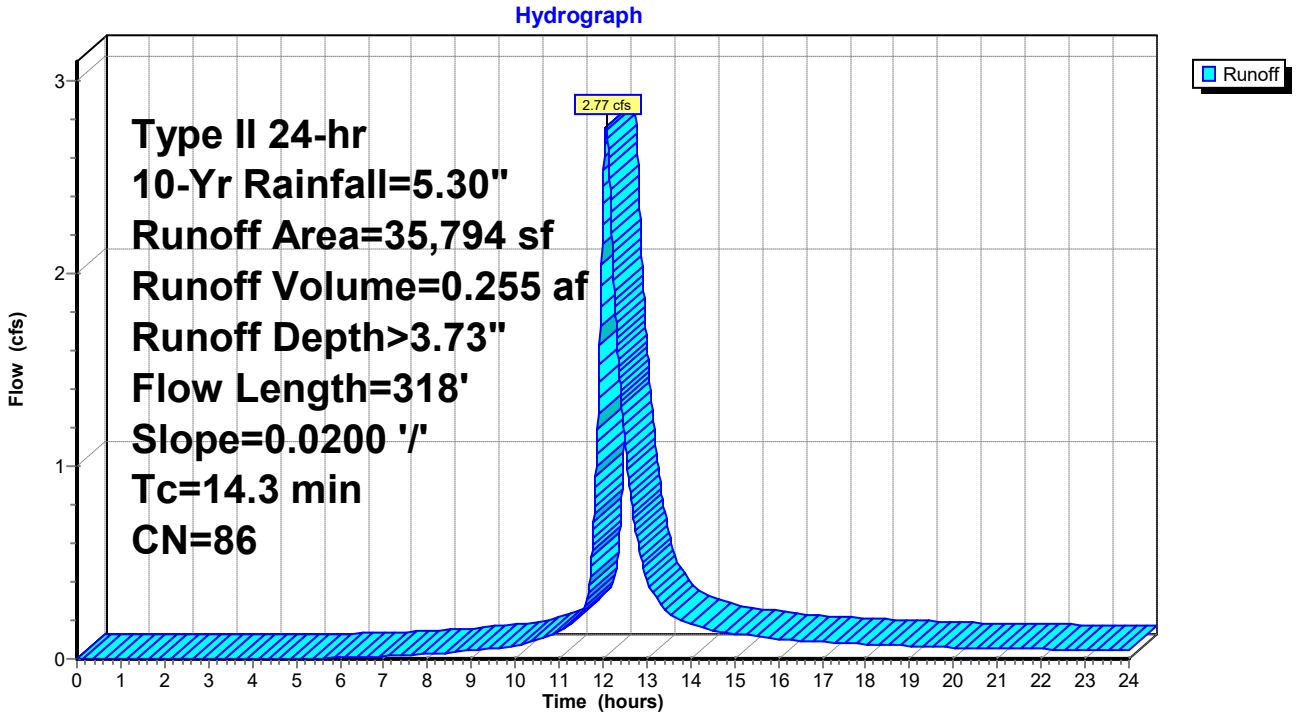
Runoff = 2.77 cfs @ 12.08 hrs, Volume= 0.255 af, Depth> 3.73"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
18,459	98	Paved parking, HSG C
17,335	74	>75% Grass cover, Good, HSG C
35,794	86	Weighted Average
17,335		48.43% Pervious Area
18,459		51.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
1.2	168	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.3	318	Total			

Subcatchment 47: DA #19



Summary for Pond 48: I-20

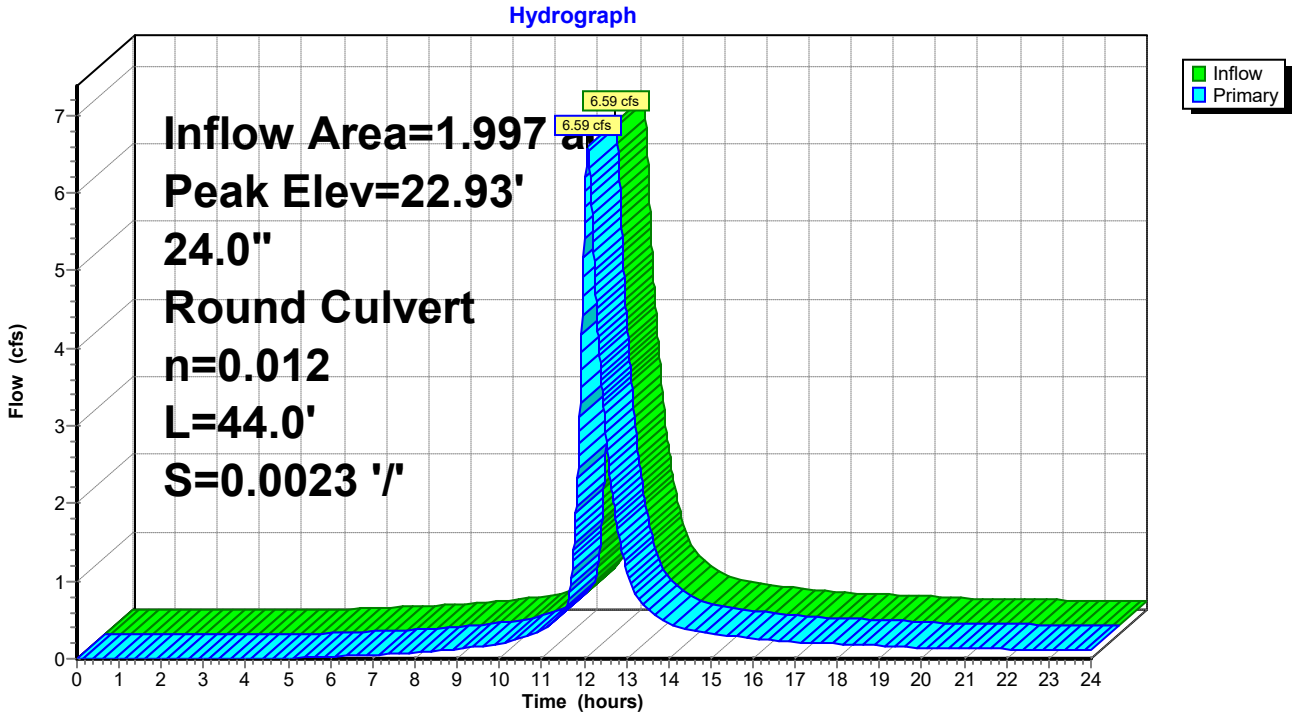
Inflow Area = 1.997 ac, 57.44% Impervious, Inflow Depth > 3.92" for 10-Yr event
Inflow = 6.59 cfs @ 12.09 hrs, Volume= 0.652 af
Outflow = 6.59 cfs @ 12.09 hrs, Volume= 0.652 af, Atten= 0%, Lag= 0.0 min
Primary = 6.59 cfs @ 12.09 hrs, Volume= 0.652 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.93' @ 12.12 hrs
Flood Elev= 23.01'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.00'	**24.0" Round Culvert** L= 44.0' Ke= 0.500 Inlet / Outlet Invert= 20.00' / 19.90' S= 0.0023 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=5.97 cfs @ 12.09 hrs HW=22.87' TW=22.71' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 5.97 cfs @ 1.90 fps)

Pond 48: I-20



Summary for Subcatchment 49: DA #20

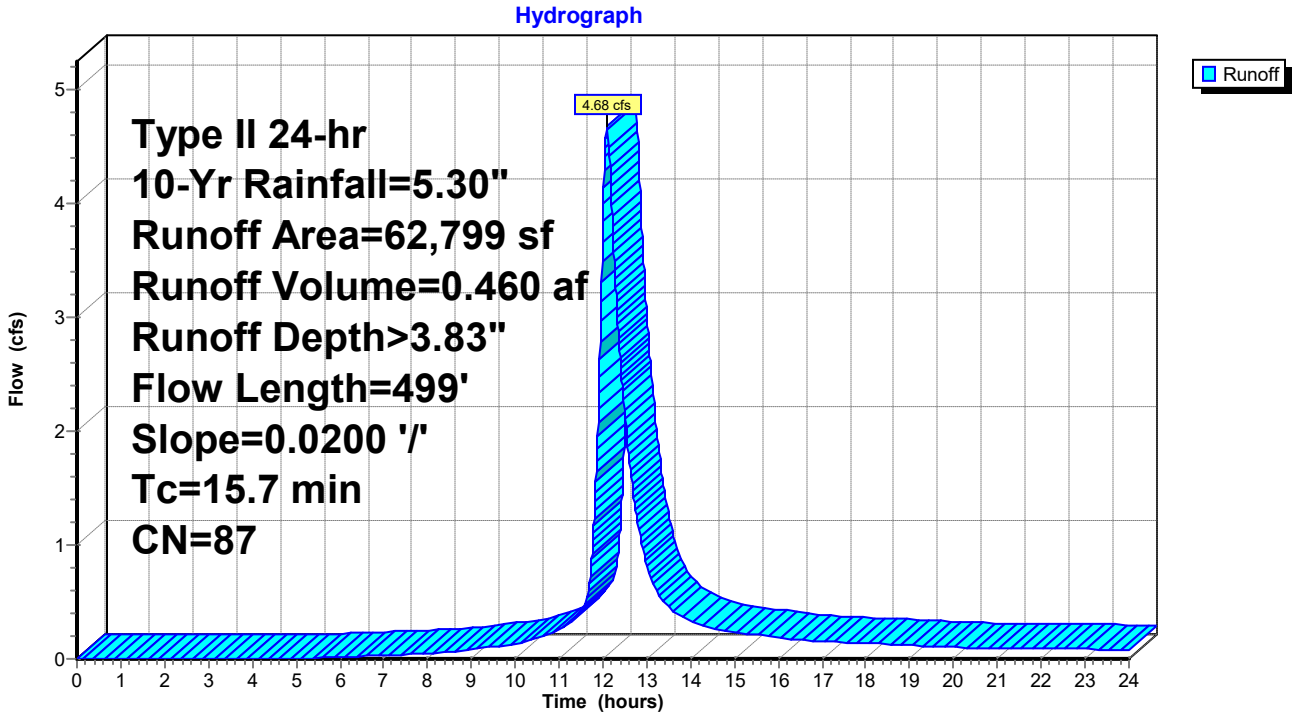
Runoff = 4.68 cfs @ 12.10 hrs, Volume= 0.460 af, Depth> 3.83"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
33,785	98	Paved parking, HSG C
29,014	74	>75% Grass cover, Good, HSG C
62,799	87	Weighted Average
29,014		46.20% Pervious Area
33,785		53.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
2.6	349	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
15.7	499	Total			

Subcatchment 49: DA #20



Summary for Pond 50: I-21

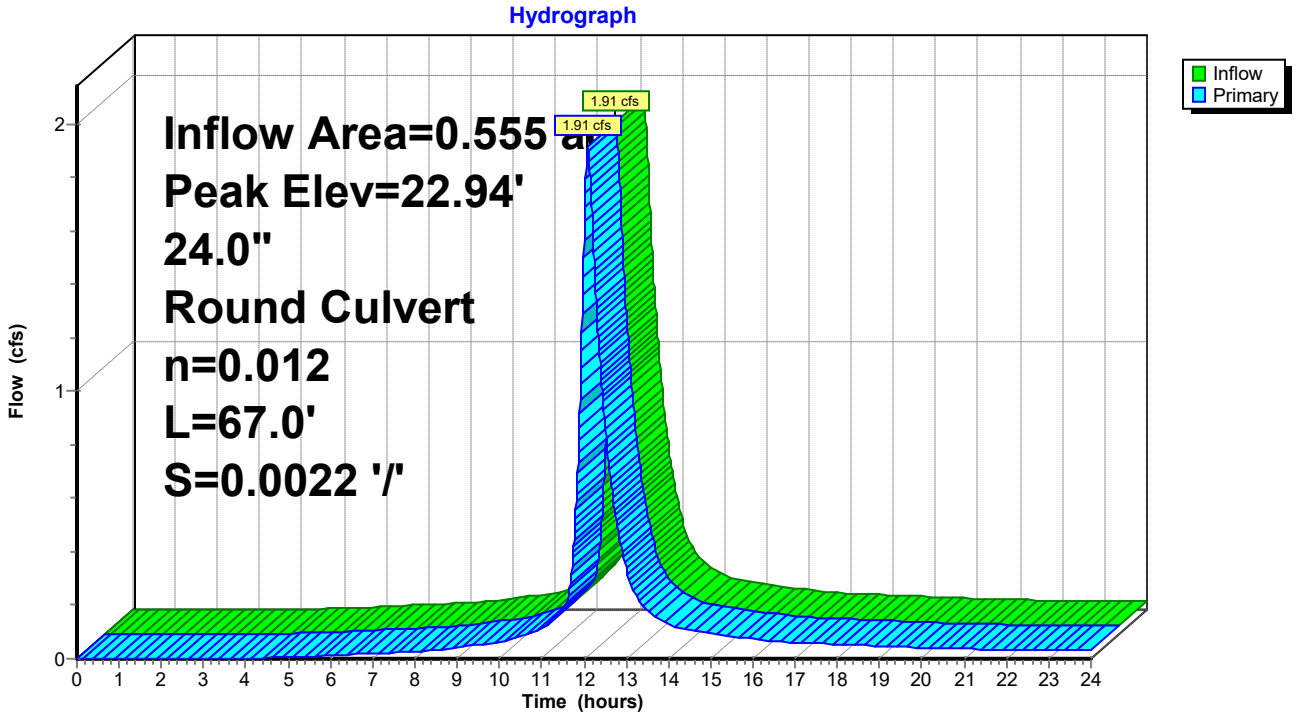
Inflow Area = 0.555 ac, 66.91% Impervious, Inflow Depth > 4.14" for 10-Yr event
Inflow = 1.91 cfs @ 12.09 hrs, Volume= 0.192 af
Outflow = 1.91 cfs @ 12.09 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.0 min
Primary = 1.91 cfs @ 12.09 hrs, Volume= 0.192 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.94' @ 12.13 hrs
Flood Elev= 23.46'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.15'	**24.0" Round Culvert** L= 67.0' Ke= 0.500 Inlet / Outlet Invert= 20.15' / 20.00' S= 0.0022 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=22.82' TW=22.85' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 50: I-21



Summary for Subcatchment 51: DA #21

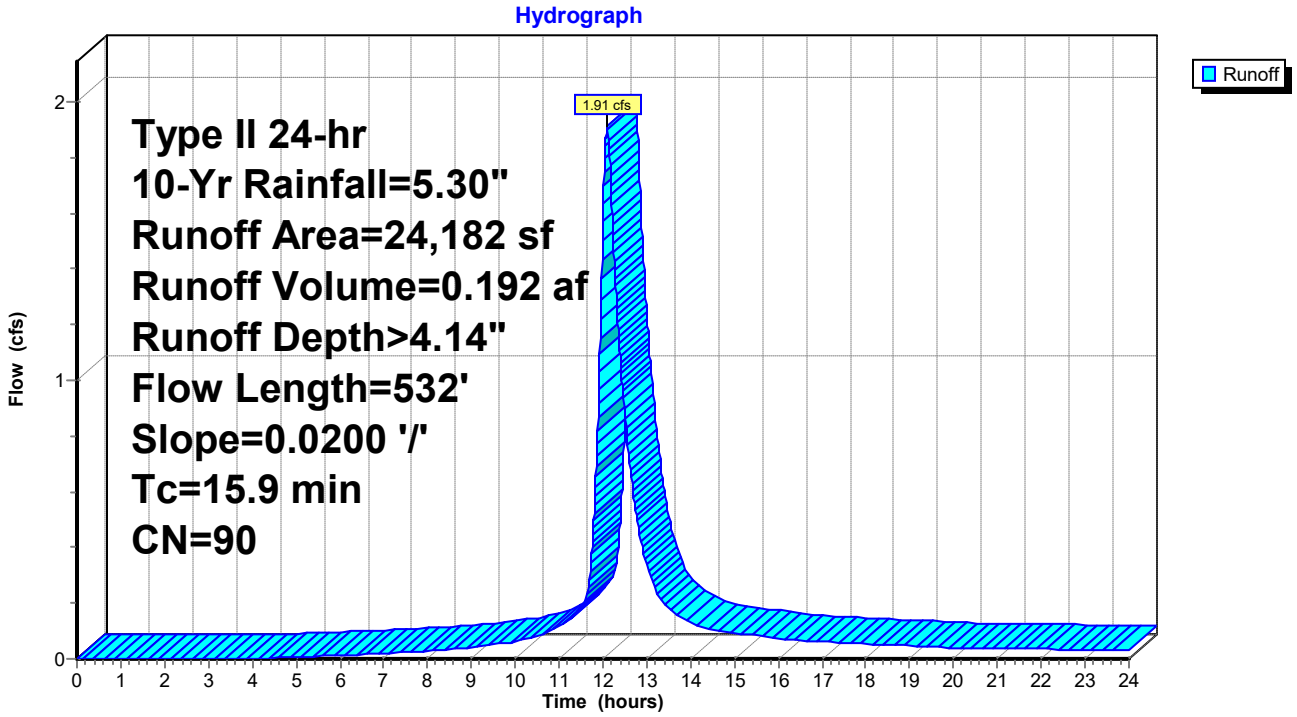
Runoff = 1.91 cfs @ 12.09 hrs, Volume= 0.192 af, Depth> 4.14"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
16,181	98	Paved parking, HSG C
8,001	74	>75% Grass cover, Good, HSG C
24,182	90	Weighted Average
8,001		33.09% Pervious Area
16,181		66.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
2.8	382	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
15.9	532	Total			

Subcatchment 51: DA #21



Summary for Pond 52: I-22

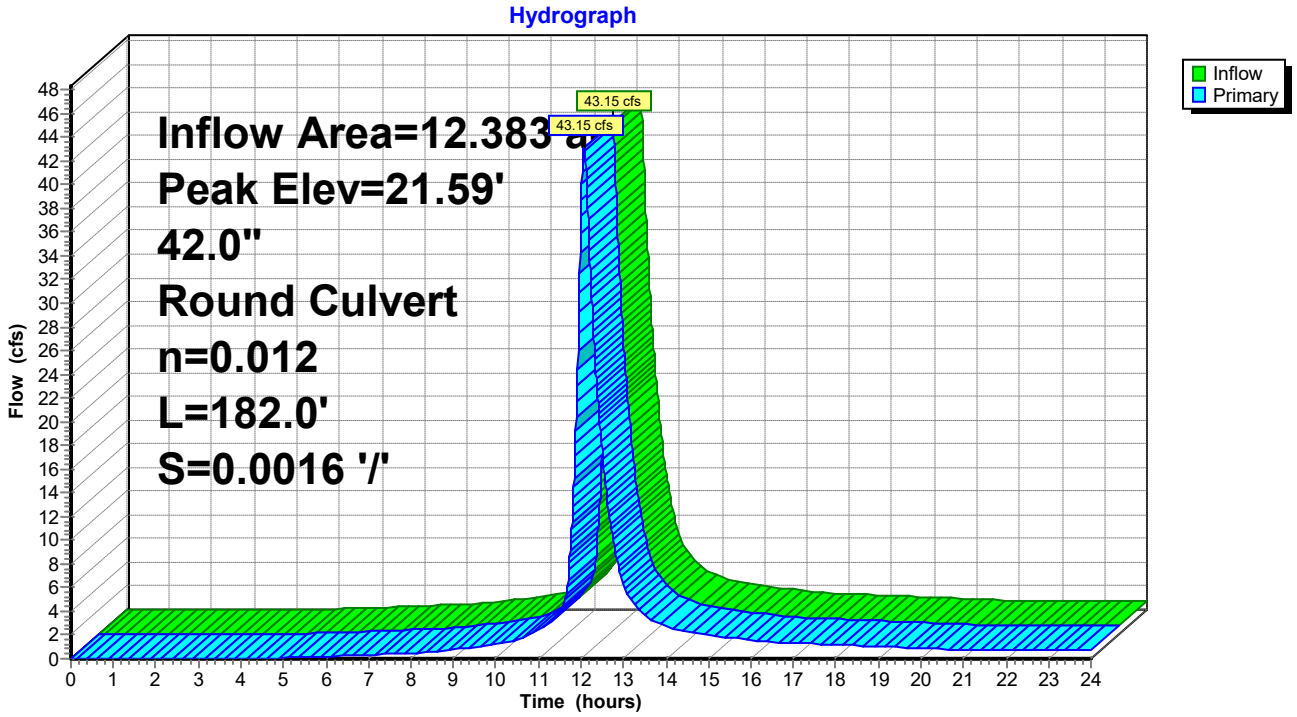
Inflow Area = 12.383 ac, 57.77% Impervious, Inflow Depth > 3.91" for 10-Yr event
Inflow = 43.15 cfs @ 12.07 hrs, Volume= 4.037 af
Outflow = 43.15 cfs @ 12.07 hrs, Volume= 4.037 af, Atten= 0%, Lag= 0.0 min
Primary = 43.15 cfs @ 12.07 hrs, Volume= 4.037 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.59' @ 12.07 hrs
Flood Elev= 20.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.20'	**42.0" Round Culvert** L= 182.0' Ke= 0.500 Inlet / Outlet Invert= 18.20' / 17.90' S= 0.0016 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=43.13 cfs @ 12.07 hrs HW=21.59' TW=19.47' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 43.13 cfs @ 5.77 fps)

Pond 52: I-22



Summary for Subcatchment 53: DA #22

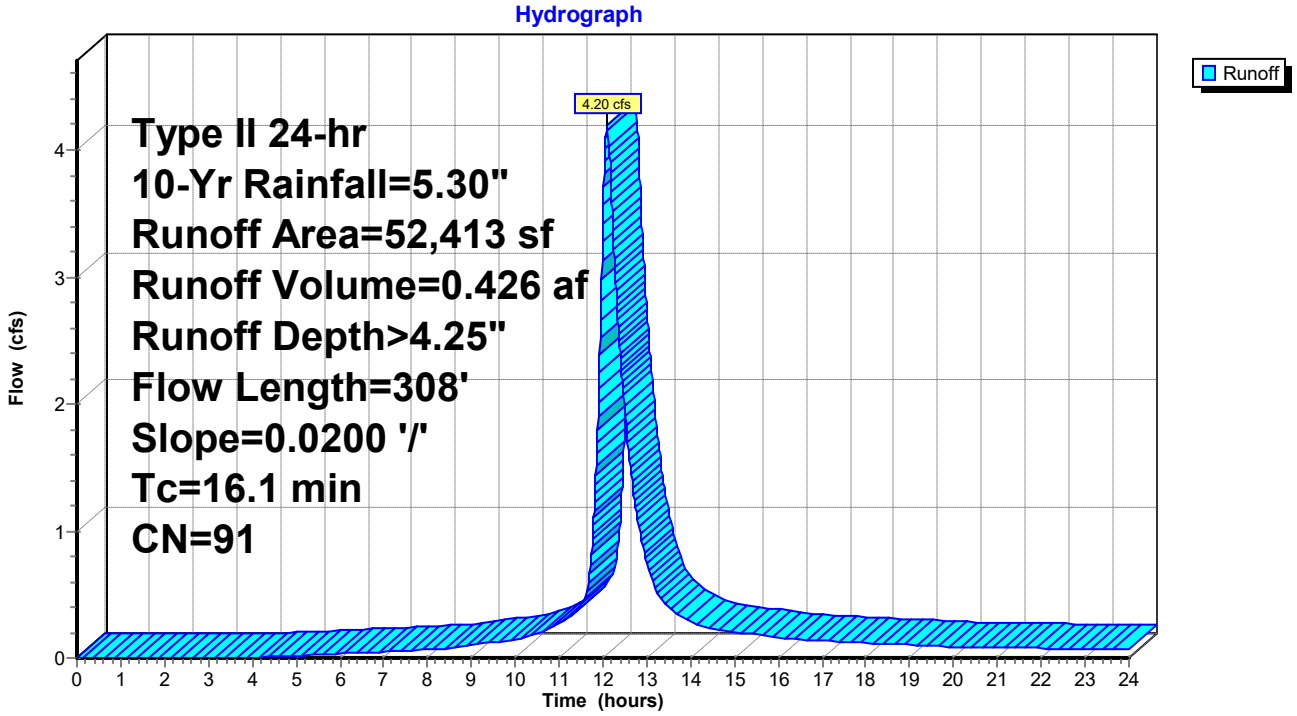
Runoff = 4.20 cfs @ 12.09 hrs, Volume= 0.426 af, Depth> 4.25"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
36,862	98	Paved parking, HSG C
15,551	74	>75% Grass cover, Good, HSG C
52,413	91	Weighted Average
15,551		29.67% Pervious Area
36,862		70.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	109	0.0200	0.18		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
4.7	41	0.0200	0.15		**Sheet Flow, B-C** Grass: Short n= 0.150 P2= 3.40"
1.2	158	0.0200	2.28		**Shallow Concentrated Flow, C-D** Unpaved Kv= 16.1 fps
16.1	308	Total			

Subcatchment 53: DA #22



Summary for Pond 54: I-23

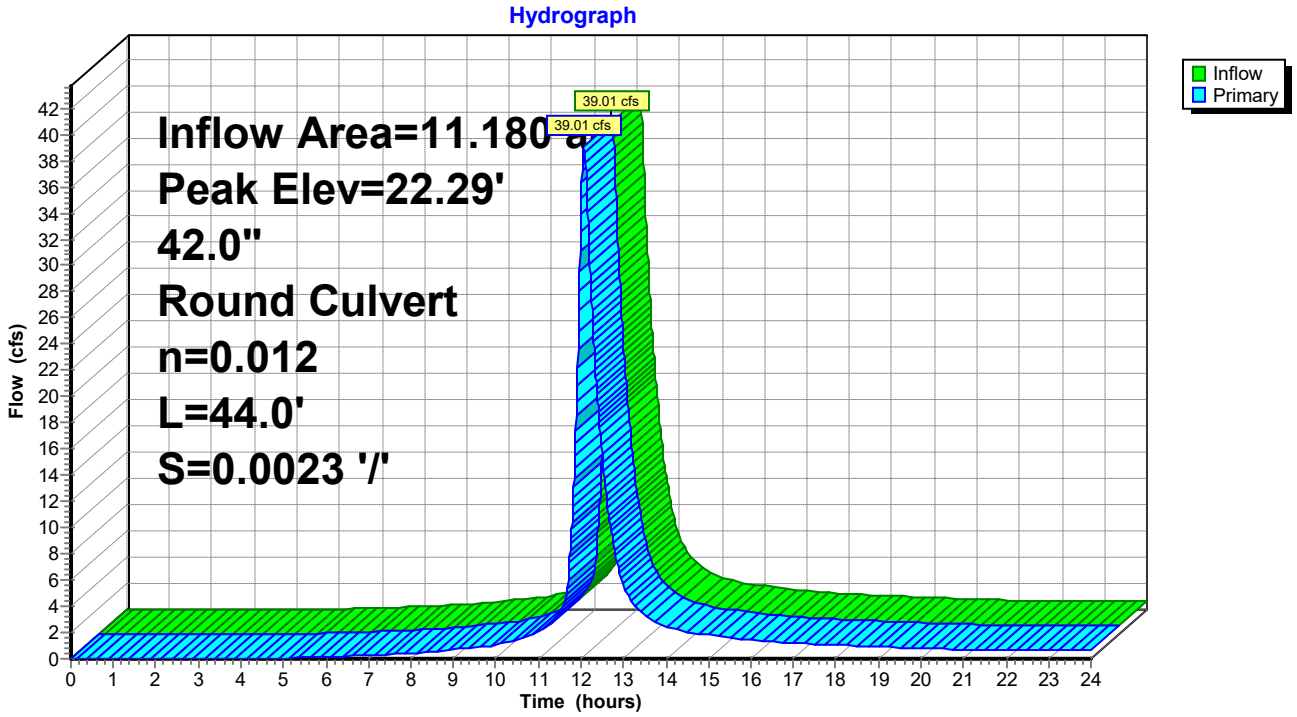
Inflow Area = 11.180 ac, 56.42% Impervious, Inflow Depth > 3.88" for 10-Yr event
Inflow = 39.01 cfs @ 12.07 hrs, Volume= 3.611 af
Outflow = 39.01 cfs @ 12.07 hrs, Volume= 3.611 af, Atten= 0%, Lag= 0.0 min
Primary = 39.01 cfs @ 12.07 hrs, Volume= 3.611 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.29' @ 12.08 hrs
Flood Elev= 20.68'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.30'	**42.0" Round Culvert** L= 44.0' Ke= 0.500 Inlet / Outlet Invert= 18.30' / 18.20' S= 0.0023 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=38.86 cfs @ 12.07 hrs HW=22.29' TW=21.59' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 38.86 cfs @ 4.04 fps)

Pond 54: I-23



Summary for Subcatchment 55: DA #23

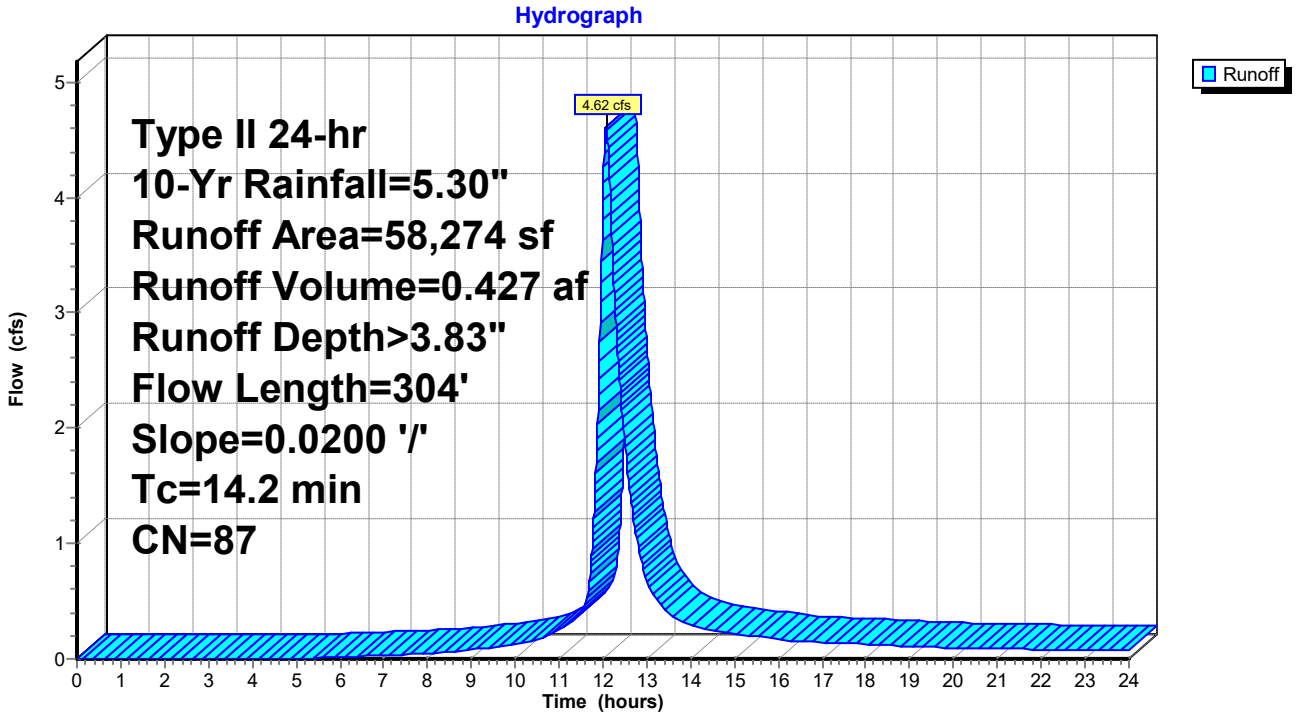
Runoff = 4.62 cfs @ 12.08 hrs, Volume= 0.427 af, Depth> 3.83"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
31,377	98	Paved parking, HSG C
26,897	74	>75% Grass cover, Good, HSG C
58,274	87	Weighted Average
26,897		46.16% Pervious Area
31,377		53.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
1.1	154	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.2	304	Total			

Subcatchment 55: DA #23



Summary for Pond 56: I-24

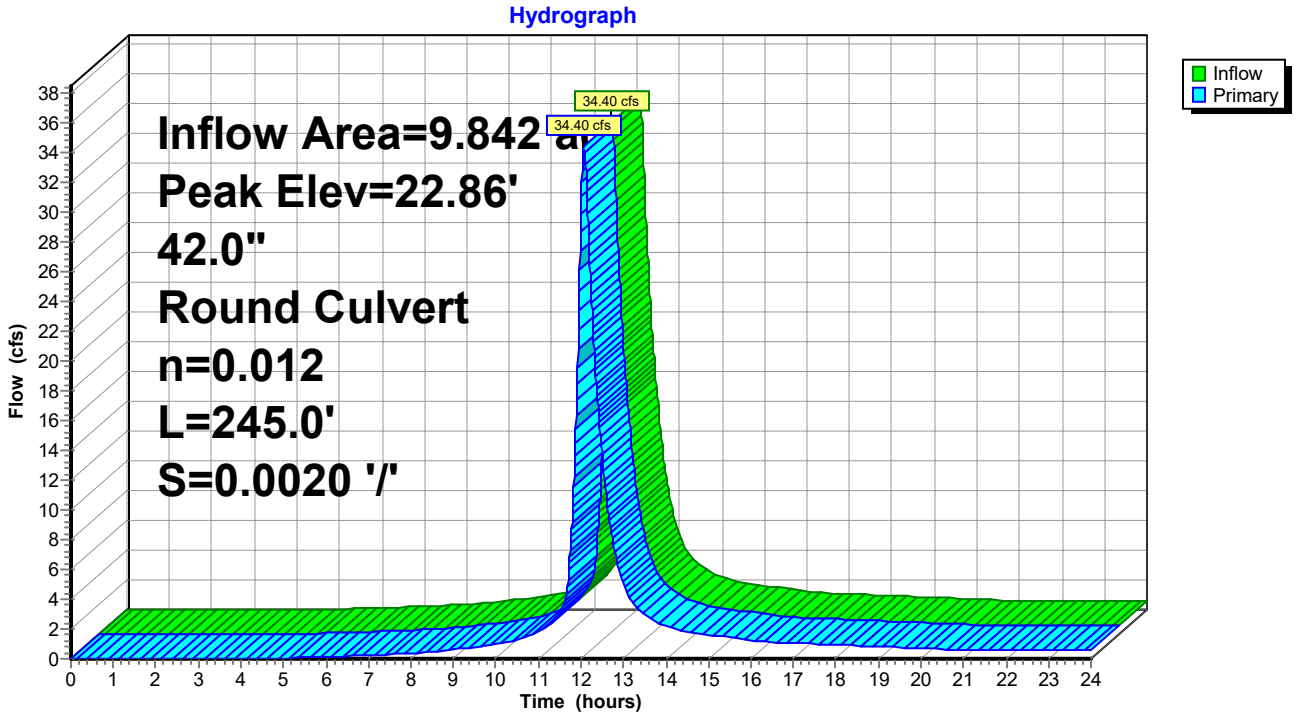
Inflow Area = 9.842 ac, 56.77% Impervious, Inflow Depth > 3.88" for 10-Yr event
Inflow = 34.40 cfs @ 12.07 hrs, Volume= 3.184 af
Outflow = 34.40 cfs @ 12.07 hrs, Volume= 3.184 af, Atten= 0%, Lag= 0.0 min
Primary = 34.40 cfs @ 12.07 hrs, Volume= 3.184 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.86' @ 12.08 hrs
Flood Elev= 21.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.80'	**42.0" Round Culvert** L= 245.0' Ke= 0.500 Inlet / Outlet Invert= 18.80' / 18.30' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=33.54 cfs @ 12.07 hrs HW=22.84' TW=22.29' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 33.54 cfs @ 3.79 fps)

Pond 56: I-24



Summary for Subcatchment 57: DA #24

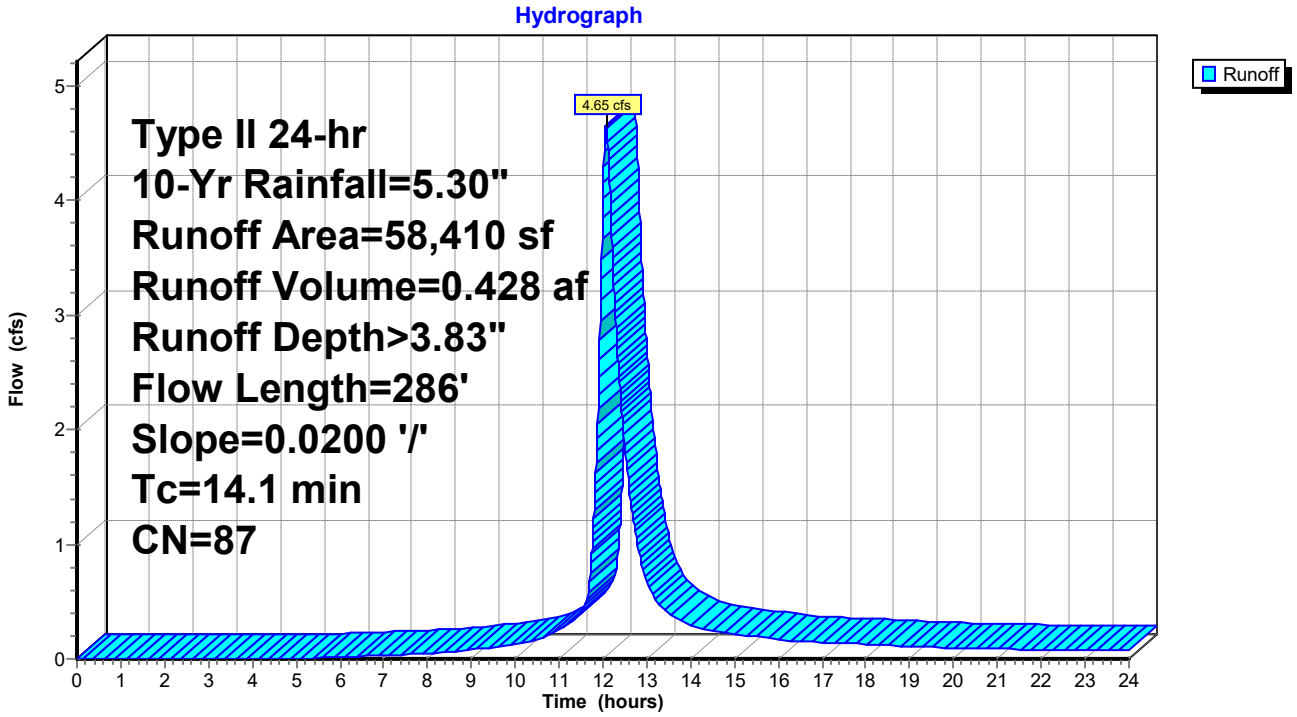
Runoff = 4.65 cfs @ 12.07 hrs, Volume= 0.428 af, Depth> 3.83"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
31,604	98	Paved parking, HSG C
26,806	74	>75% Grass cover, Good, HSG C
58,410	87	Weighted Average
26,806		45.89% Pervious Area
31,604		54.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
1.0	136	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.1	286	Total			

Subcatchment 57: DA #24



Summary for Pond 58: I-25

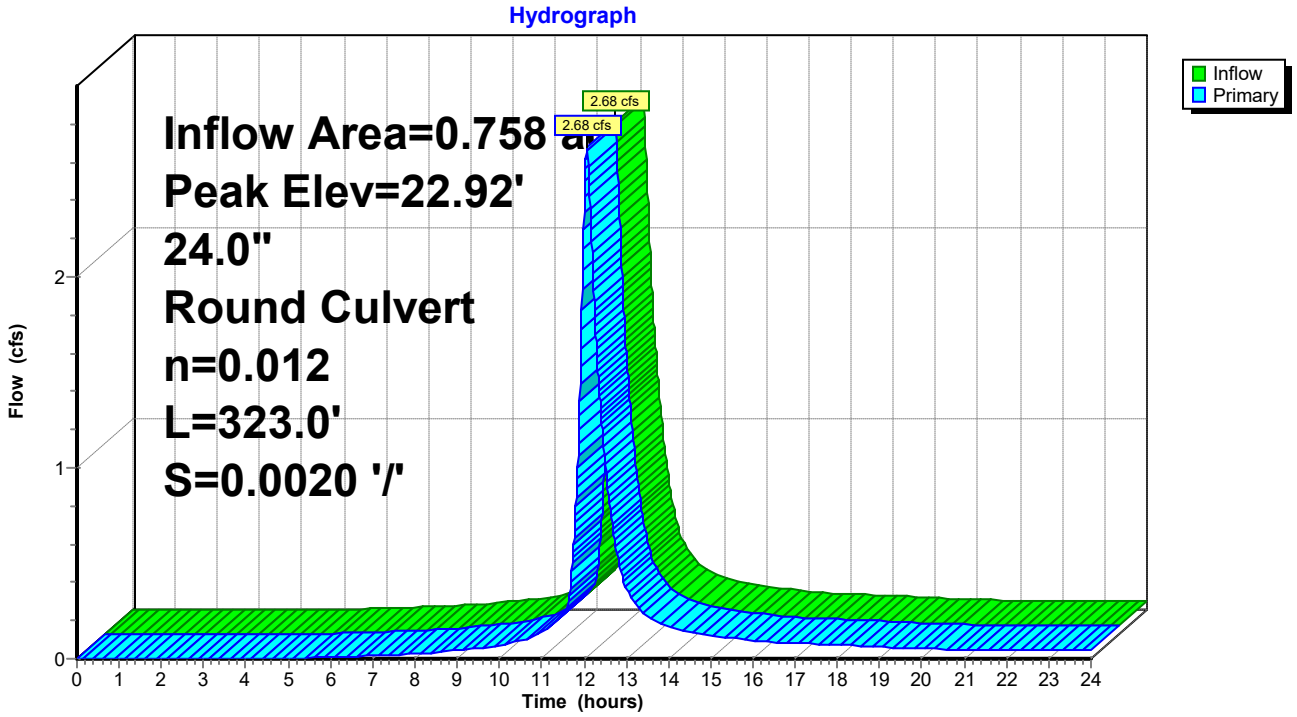
Inflow Area = 0.758 ac, 53.66% Impervious, Inflow Depth > 3.83" for 10-Yr event
Inflow = 2.68 cfs @ 12.06 hrs, Volume= 0.242 af
Outflow = 2.68 cfs @ 12.06 hrs, Volume= 0.242 af, Atten= 0%, Lag= 0.0 min
Primary = 2.68 cfs @ 12.06 hrs, Volume= 0.242 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.92' @ 12.09 hrs
Flood Elev= 22.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.45'	**24.0" Round Culvert** L= 323.0' Ke= 0.500 Inlet / Outlet Invert= 19.45' / 18.80' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.53 cfs @ 12.06 hrs HW=22.82' TW=22.81' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.53 cfs @ 0.17 fps)

Pond 58: I-25



Summary for Subcatchment 59: DA #25

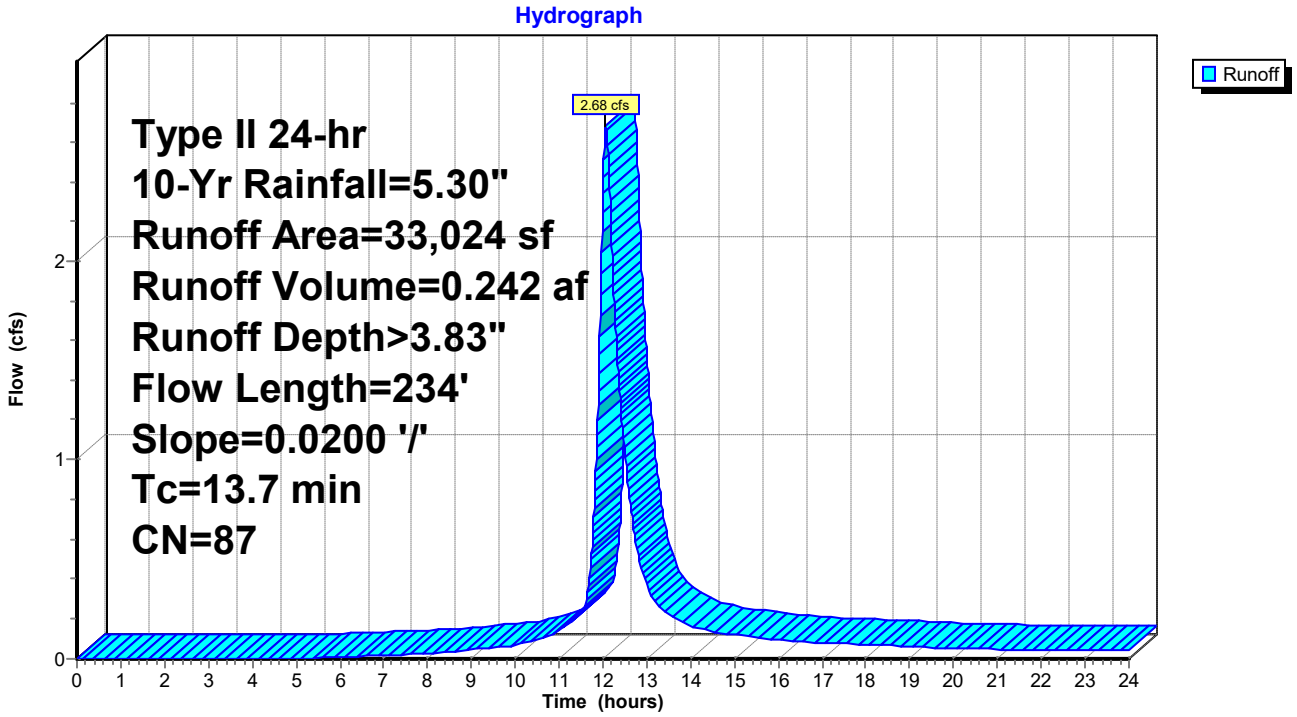
Runoff = 2.68 cfs @ 12.06 hrs, Volume= 0.242 af, Depth> 3.83"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
17,720	98	Paved parking, HSG C
15,304	74	>75% Grass cover, Good, HSG C
33,024	87	Weighted Average
15,304		46.34% Pervious Area
17,720		53.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.6	84	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.7	234	Total			

Subcatchment 59: DA #25



Summary for Pond 60: I-26

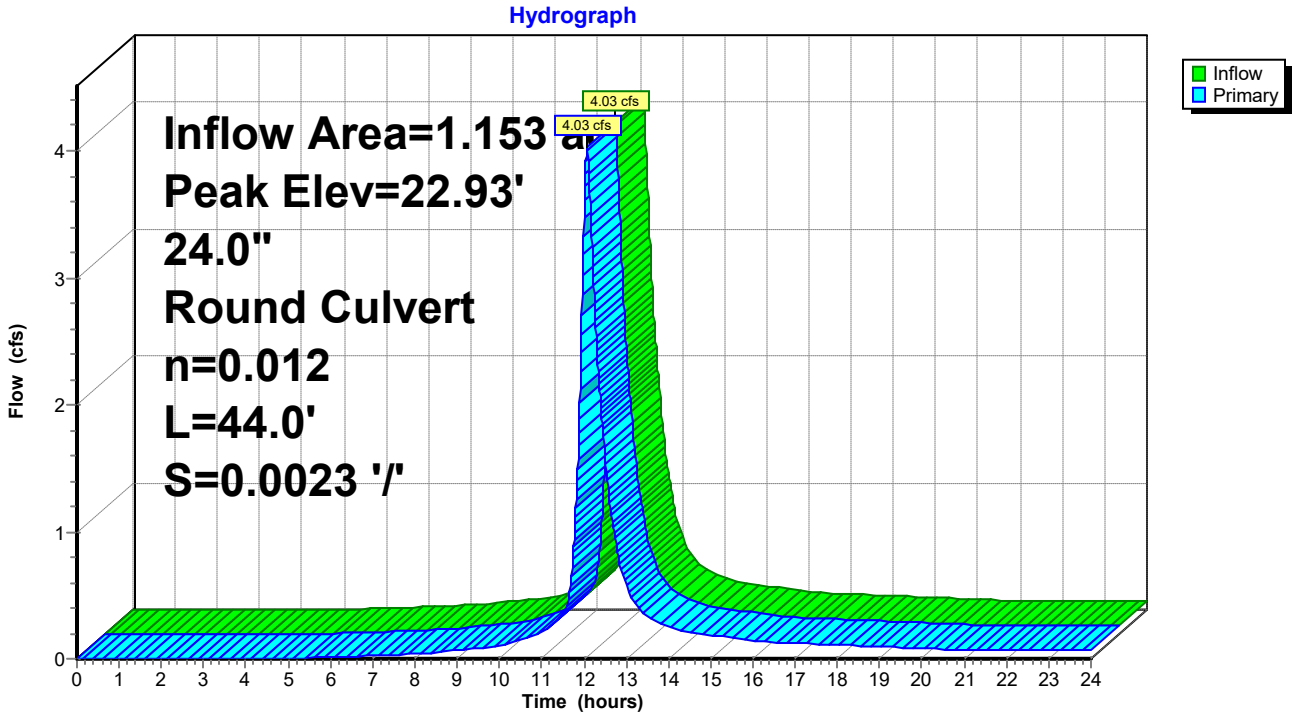
Inflow Area = 1.153 ac, 55.44% Impervious, Inflow Depth > 3.83" for 10-Yr event
Inflow = 4.03 cfs @ 12.07 hrs, Volume= 0.368 af
Outflow = 4.03 cfs @ 12.07 hrs, Volume= 0.368 af, Atten= 0%, Lag= 0.0 min
Primary = 4.03 cfs @ 12.07 hrs, Volume= 0.368 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.93' @ 12.09 hrs
Flood Elev= 21.74'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.90'	**24.0" Round Culvert** L= 44.0' Ke= 0.500 Inlet / Outlet Invert= 18.90' / 18.80' S= 0.0023 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=2.71 cfs @ 12.07 hrs HW=22.88' TW=22.84' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.71 cfs @ 0.86 fps)

Pond 60: I-26



Summary for Subcatchment 61: DA #26

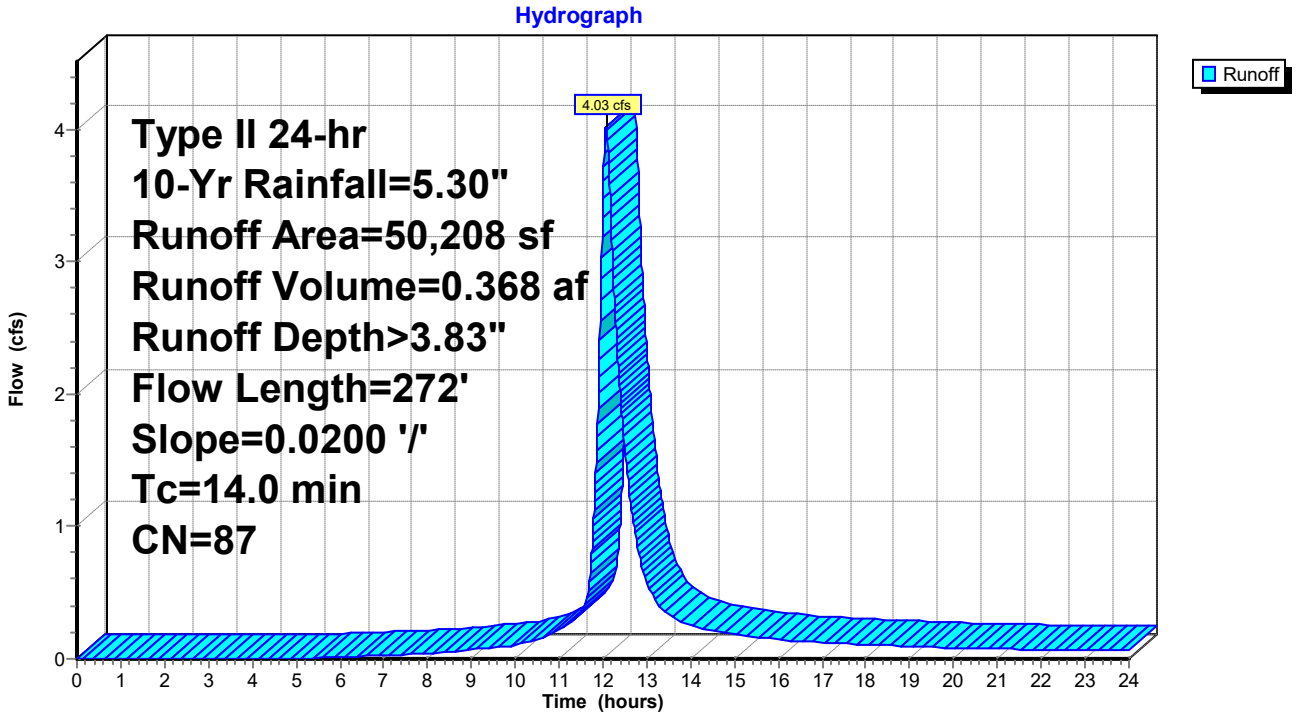
Runoff = 4.03 cfs @ 12.07 hrs, Volume= 0.368 af, Depth> 3.83"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
27,835	98	Paved parking, HSG C
22,373	74	>75% Grass cover, Good, HSG C
50,208	87	Weighted Average
22,373		44.56% Pervious Area
27,835		55.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.9	122	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.0	272	Total			

Subcatchment 61: DA #26



Summary for Pond 62: I-27

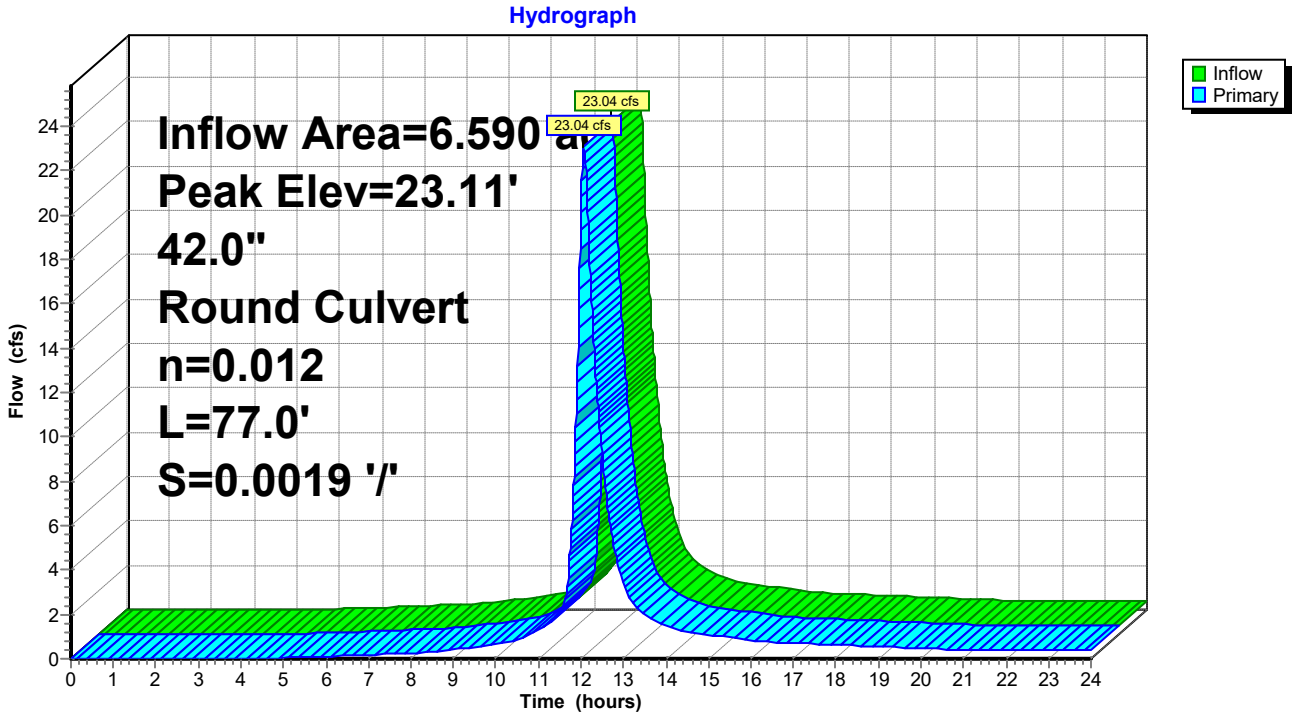
Inflow Area = 6.590 ac, 57.90% Impervious, Inflow Depth > 3.91" for 10-Yr event
Inflow = 23.04 cfs @ 12.07 hrs, Volume= 2.146 af
Outflow = 23.04 cfs @ 12.07 hrs, Volume= 2.146 af, Atten= 0%, Lag= 0.0 min
Primary = 23.04 cfs @ 12.07 hrs, Volume= 2.146 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 23.11' @ 12.09 hrs
Flood Elev= 21.84'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.95'	**42.0" Round Culvert** L= 77.0' Ke= 0.500 Inlet / Outlet Invert= 18.95' / 18.80' S= 0.0019 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=20.82 cfs @ 12.07 hrs HW=23.04' TW=22.83' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 20.82 cfs @ 2.16 fps)

Pond 62: I-27



Summary for Subcatchment 63: DA #27

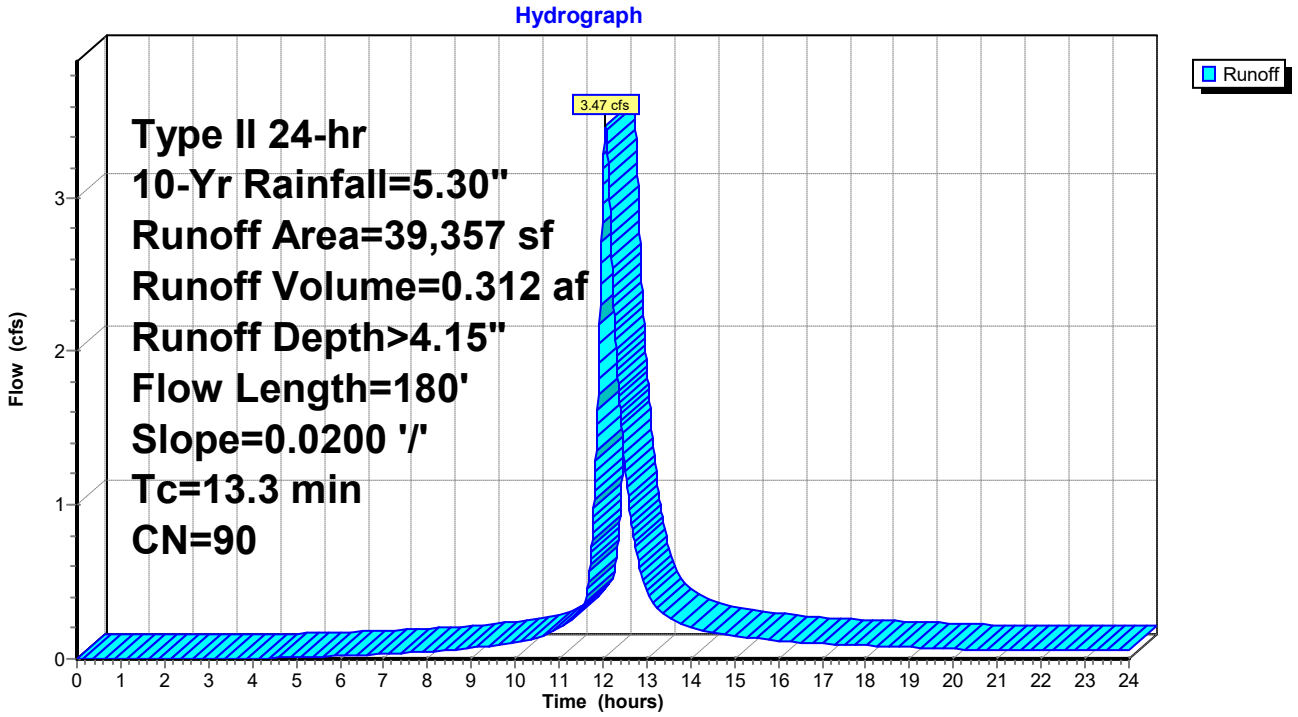
Runoff = 3.47 cfs @ 12.06 hrs, Volume= 0.312 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
27,040	98	Paved parking, HSG C
12,317	74	>75% Grass cover, Good, HSG C
39,357	90	Weighted Average
12,317		31.30% Pervious Area
27,040		68.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.2	30	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.3	180	Total			

Subcatchment 63: DA #27



Summary for Pond 64: I-28

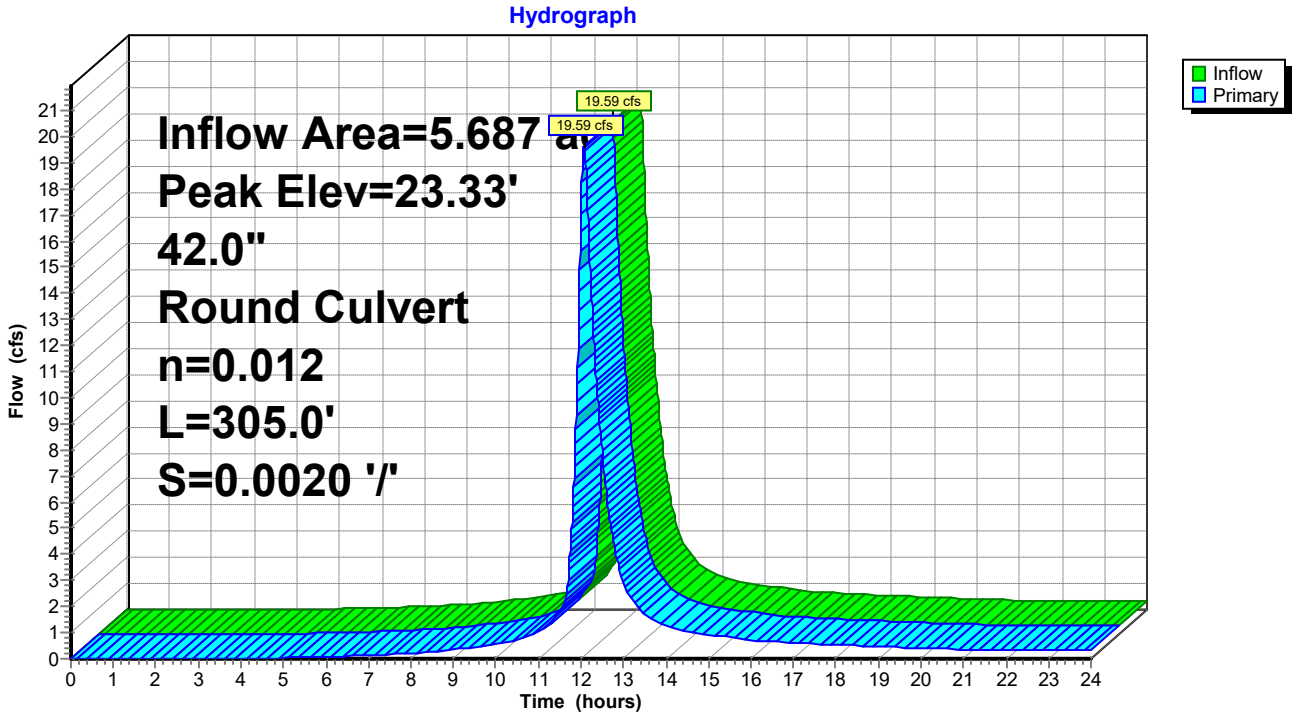
Inflow Area = 5.687 ac, 56.19% Impervious, Inflow Depth > 3.87" for 10-Yr event
Inflow = 19.59 cfs @ 12.07 hrs, Volume= 1.834 af
Outflow = 19.59 cfs @ 12.07 hrs, Volume= 1.834 af, Atten= 0%, Lag= 0.0 min
Primary = 19.59 cfs @ 12.07 hrs, Volume= 1.834 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 23.33' @ 12.10 hrs
Flood Elev= 21.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.56'	**42.0" Round Culvert** L= 305.0' Ke= 0.500 Inlet / Outlet Invert= 19.56' / 18.95' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=17.09 cfs @ 12.07 hrs HW=23.24' TW=23.05' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 17.09 cfs @ 2.10 fps)

Pond 64: I-28



Summary for Subcatchment 65: DA #28

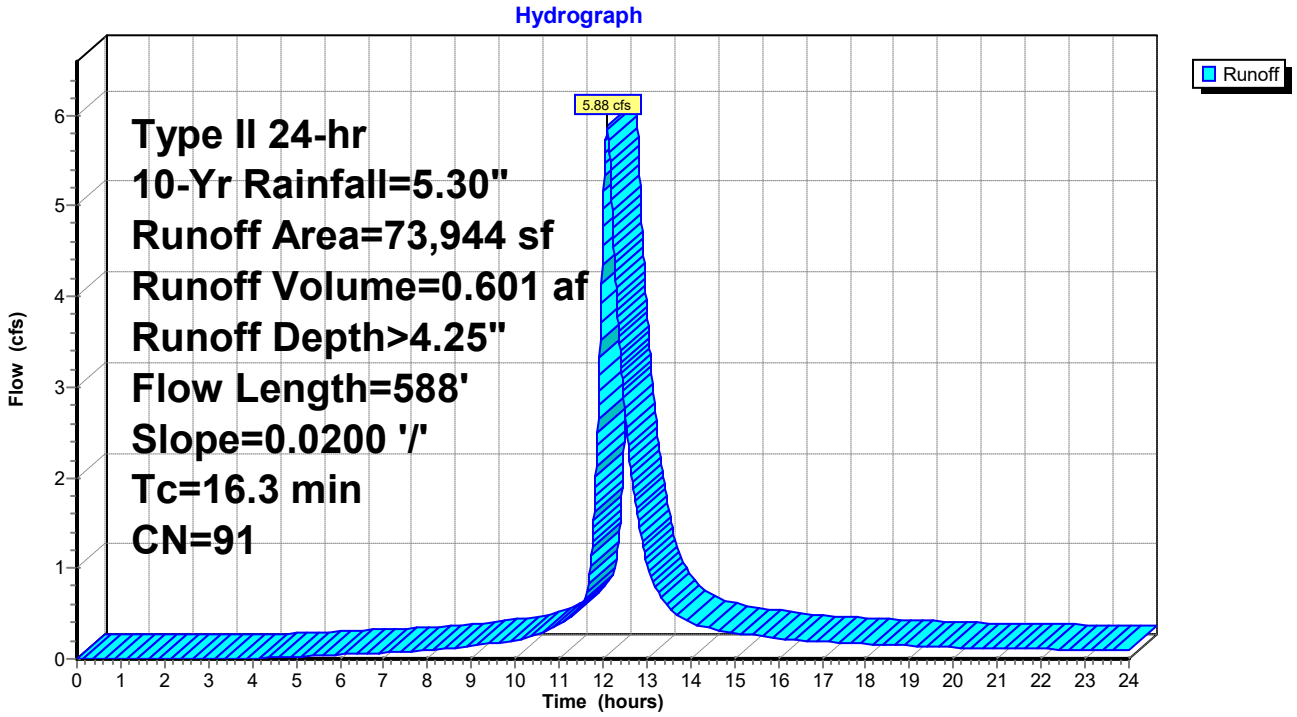
Runoff = 5.88 cfs @ 12.10 hrs, Volume= 0.601 af, Depth> 4.25"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
53,413	98	Paved parking, HSG C
20,531	74	>75% Grass cover, Good, HSG C
73,944	91	Weighted Average
20,531		27.77% Pervious Area
53,413		72.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
3.2	438	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
16.3	588	Total			

Subcatchment 65: DA #28



Summary for Pond 66: I-29

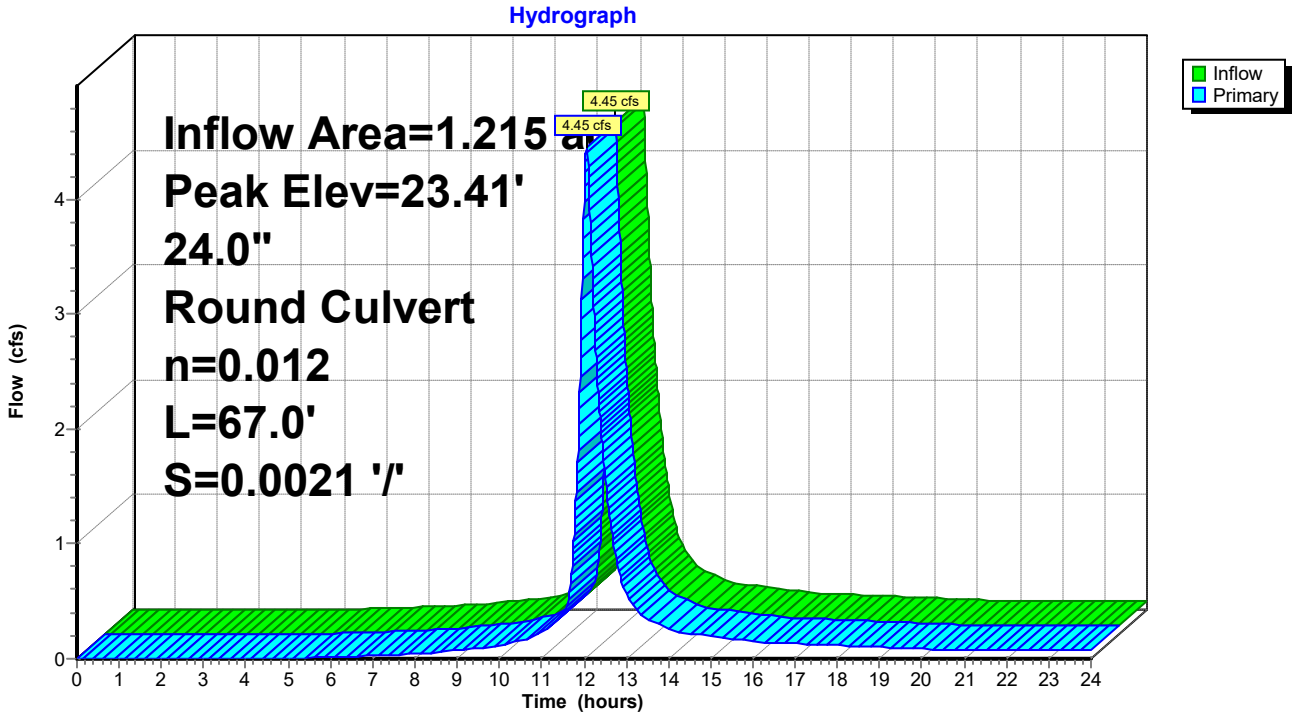
Inflow Area = 1.215 ac, 55.29% Impervious, Inflow Depth > 3.86" for 10-Yr event
Inflow = 4.45 cfs @ 12.06 hrs, Volume= 0.391 af
Outflow = 4.45 cfs @ 12.06 hrs, Volume= 0.391 af, Atten= 0%, Lag= 0.0 min
Primary = 4.45 cfs @ 12.06 hrs, Volume= 0.391 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 23.41' @ 12.11 hrs
Flood Elev= 22.46'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.70'	**24.0" Round Culvert** L= 67.0' Ke= 0.500 Inlet / Outlet Invert= 19.70' / 19.56' S= 0.0021 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 12.06 hrs HW=23.15' TW=23.16' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 66: I-29



Summary for Subcatchment 67: DA #29

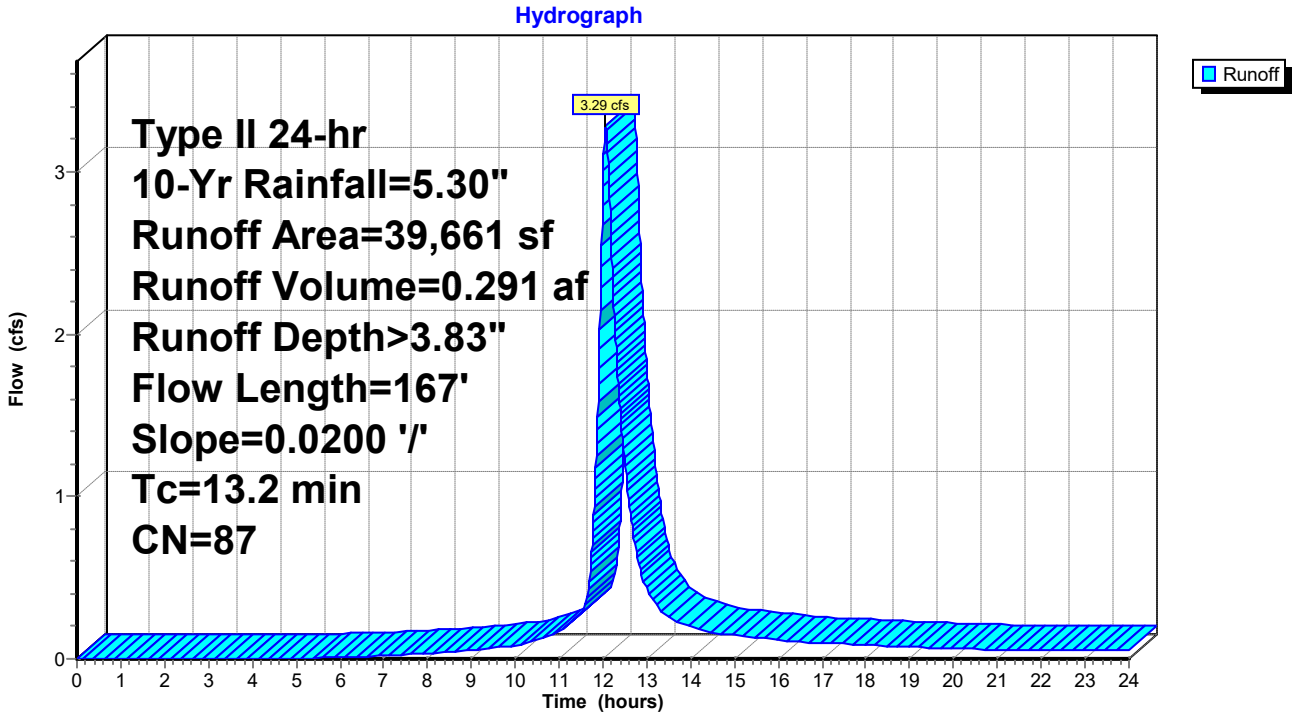
Runoff = 3.29 cfs @ 12.06 hrs, Volume= 0.291 af, Depth> 3.83"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
21,601	98	Paved parking, HSG C
18,060	74	>75% Grass cover, Good, HSG C
39,661	87	Weighted Average
18,060		45.54% Pervious Area
21,601		54.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.1	17	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.2	167	Total			

Subcatchment 67: DA #29



Summary for Pond 68: I-30

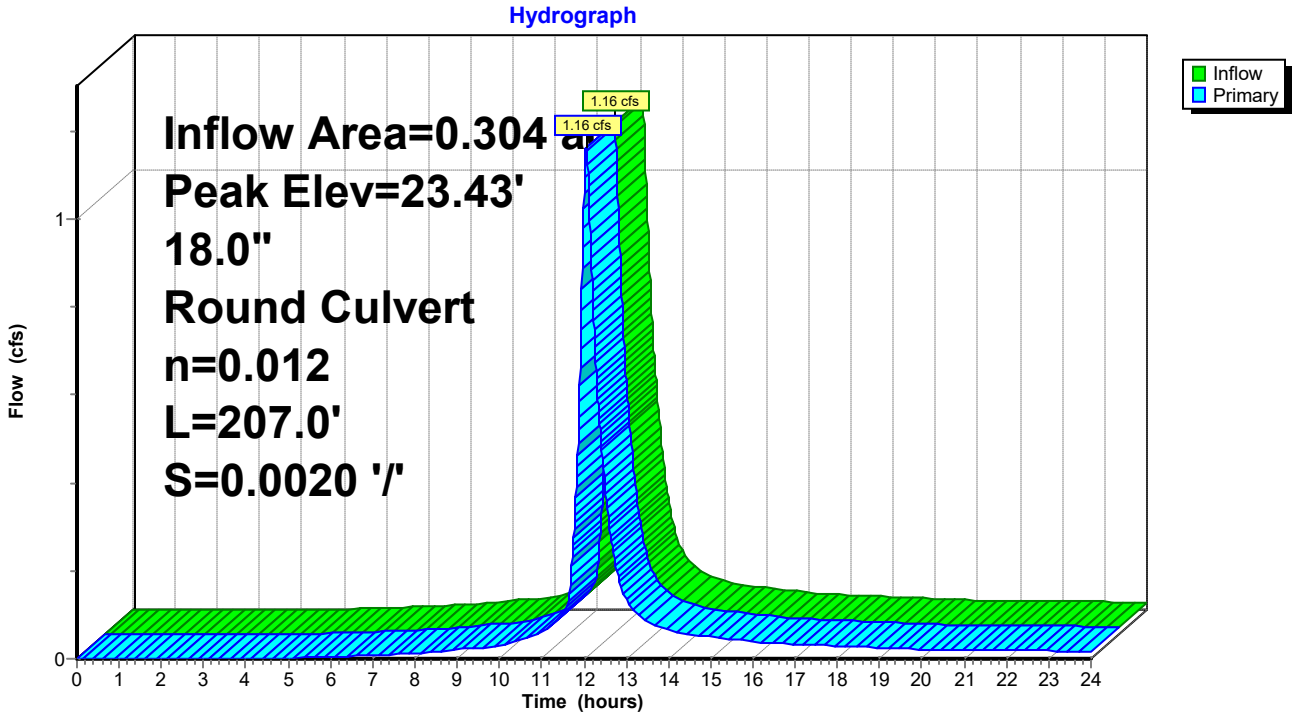
Inflow Area = 0.304 ac, 57.75% Impervious, Inflow Depth > 3.94" for 10-Yr event
Inflow = 1.16 cfs @ 12.05 hrs, Volume= 0.100 af
Outflow = 1.16 cfs @ 12.05 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min
Primary = 1.16 cfs @ 12.05 hrs, Volume= 0.100 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 23.43' @ 12.12 hrs
Flood Elev= 22.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.11'	**18.0" Round Culvert** L= 207.0' Ke= 0.500 Inlet / Outlet Invert= 20.11' / 19.70' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 12.05 hrs HW=22.99' TW=23.07' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 68: I-30



Summary for Subcatchment 69: DA #30

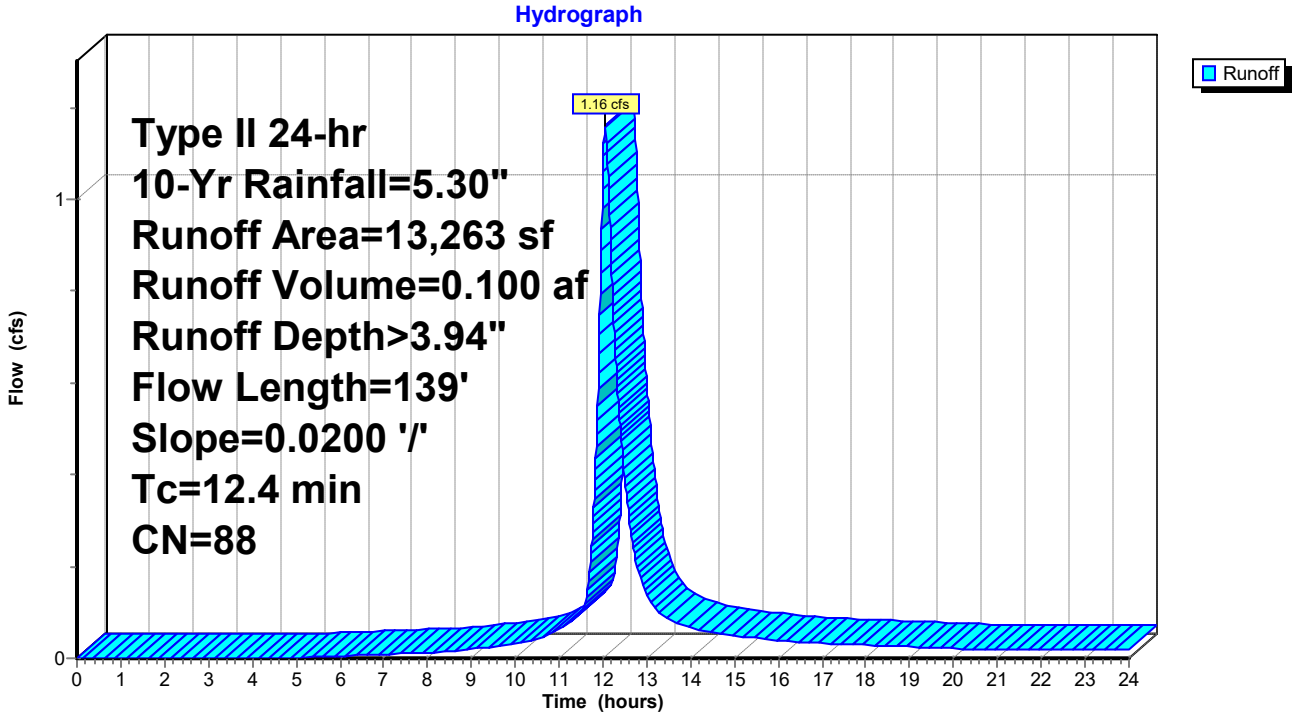
Runoff = 1.16 cfs @ 12.05 hrs, Volume= 0.100 af, Depth> 3.94"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
7,660	98	Paved parking, HSG C
5,603	74	>75% Grass cover, Good, HSG C
13,263	88	Weighted Average
5,603		42.25% Pervious Area
7,660		57.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	139	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"

Subcatchment 69: DA #30



Summary for Pond 70: I-31

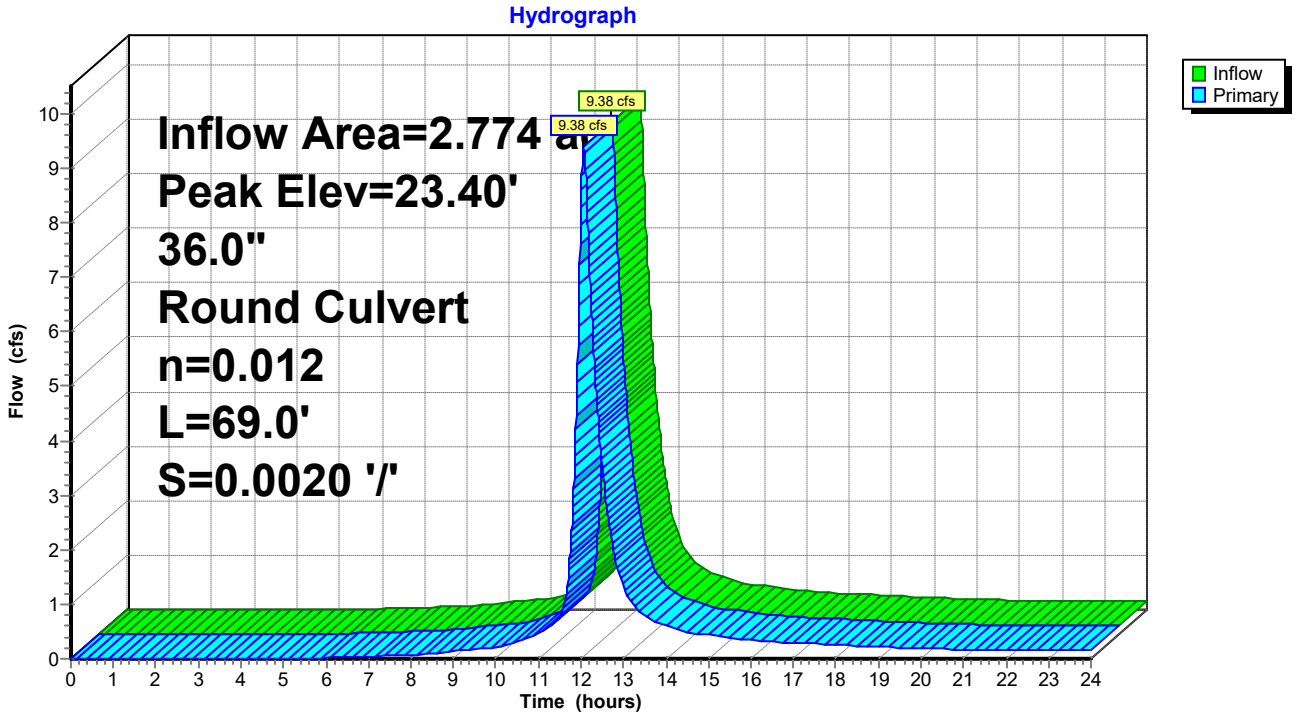
Inflow Area = 2.774 ac, 46.76% Impervious, Inflow Depth > 3.64" for 10-Yr event
Inflow = 9.38 cfs @ 12.06 hrs, Volume= 0.842 af
Outflow = 9.38 cfs @ 12.06 hrs, Volume= 0.842 af, Atten= 0%, Lag= 0.0 min
Primary = 9.38 cfs @ 12.06 hrs, Volume= 0.842 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 23.40' @ 12.11 hrs
Flood Elev= 22.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.70'	**36.0" Round Culvert** L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 19.70' / 19.56' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=0.00 cfs @ 12.06 hrs HW=23.17' TW=23.18' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 70: I-31



Summary for Subcatchment 71: DA #31

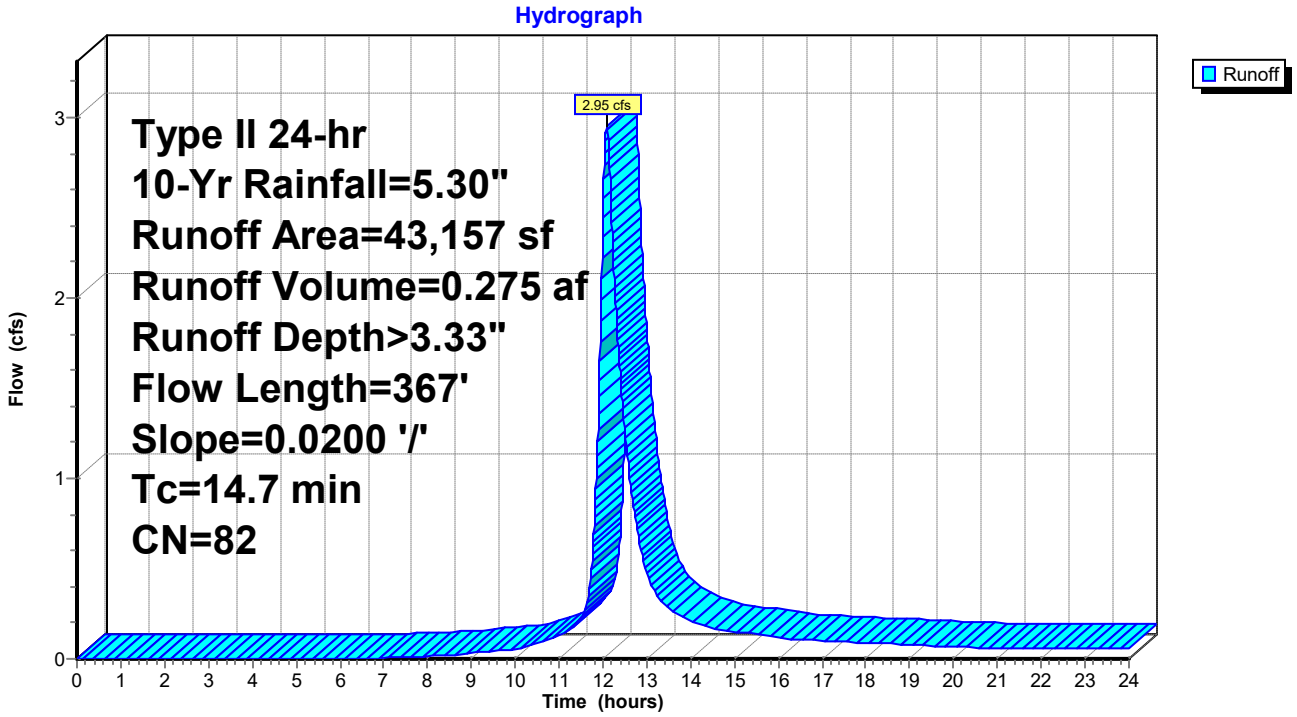
Runoff = 2.95 cfs @ 12.09 hrs, Volume= 0.275 af, Depth> 3.33"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
14,691	98	Paved parking, HSG C
28,466	74	>75% Grass cover, Good, HSG C
43,157	82	Weighted Average
28,466		65.96% Pervious Area
14,691		34.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
1.6	217	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.7	367	Total			

Subcatchment 71: DA #31



Summary for Pond 72: I-32

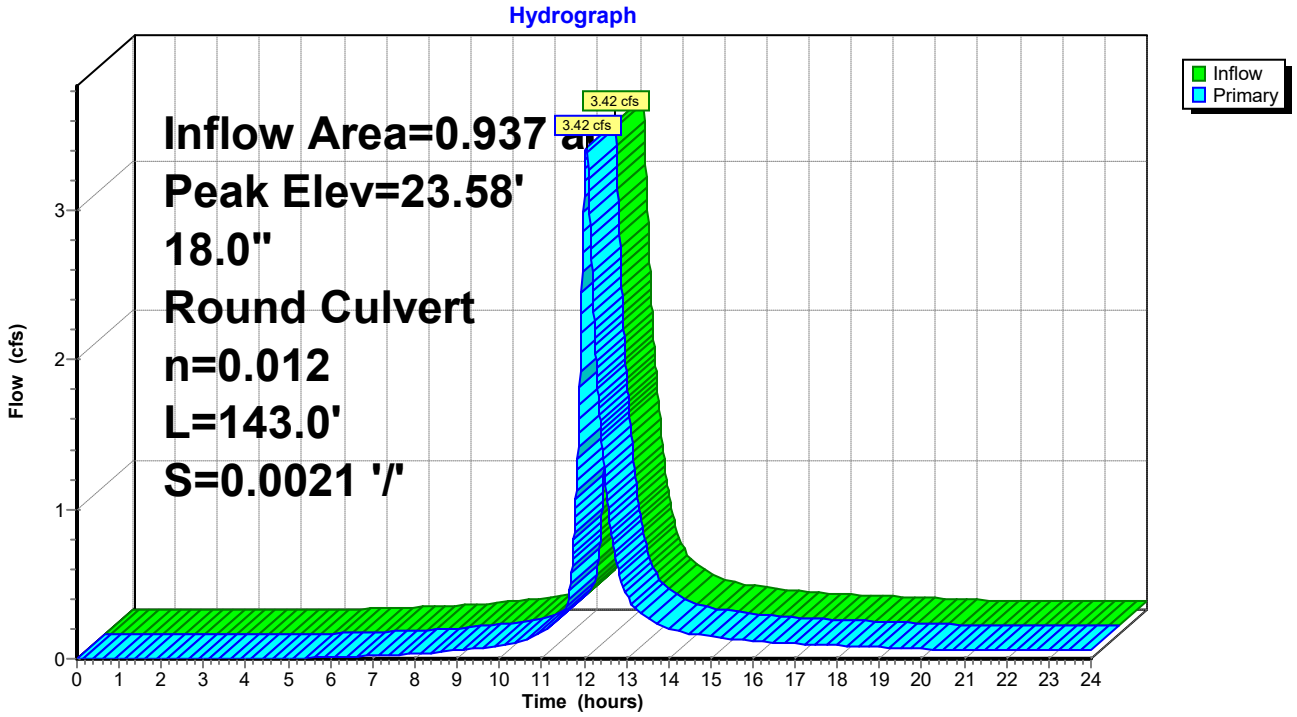
Inflow Area = 0.937 ac, 54.44% Impervious, Inflow Depth > 3.83" for 10-Yr event
Inflow = 3.42 cfs @ 12.06 hrs, Volume= 0.299 af
Outflow = 3.42 cfs @ 12.06 hrs, Volume= 0.299 af, Atten= 0%, Lag= 0.0 min
Primary = 3.42 cfs @ 12.06 hrs, Volume= 0.299 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 23.58' @ 12.12 hrs
Flood Elev= 22.72'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.00'	**18.0" Round Culvert** L= 143.0' Ke= 0.500 Inlet / Outlet Invert= 20.00' / 19.70' S= 0.0021 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=2.39 cfs @ 12.06 hrs HW=23.19' TW=23.09' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 2.39 cfs @ 1.35 fps)

Pond 72: I-32



Summary for Subcatchment 73: DA #32

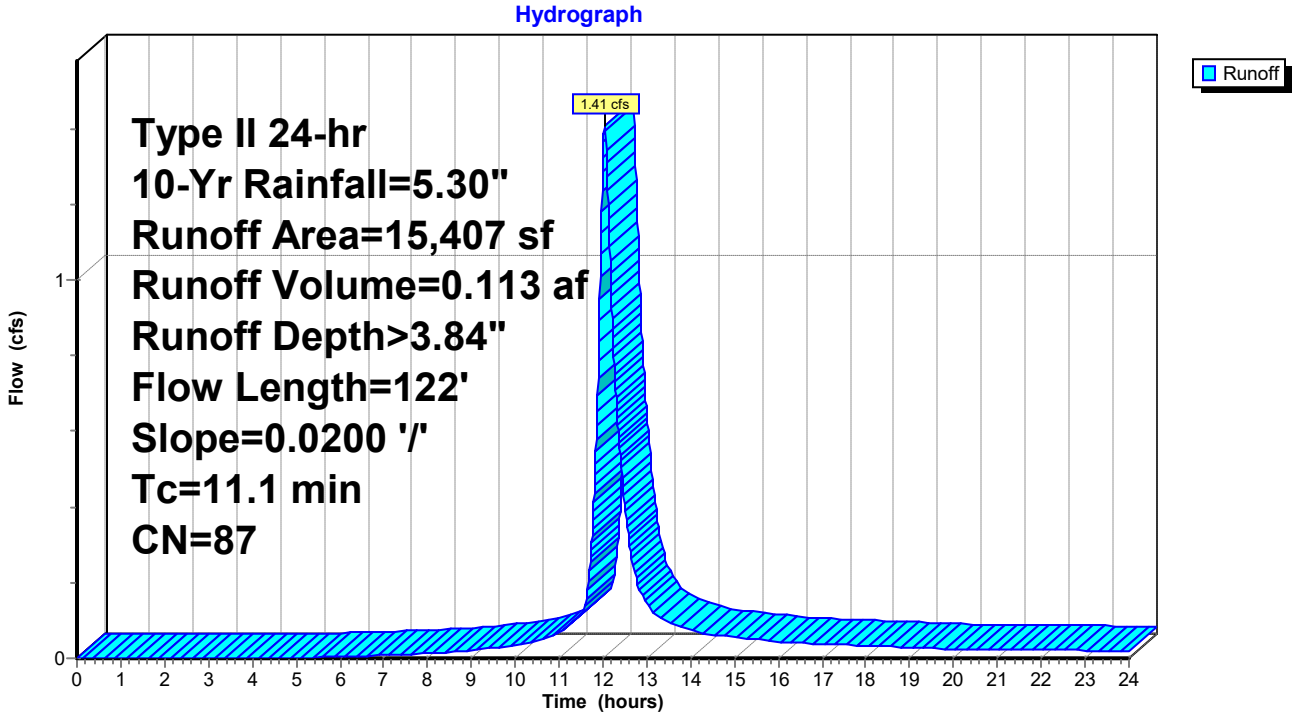
Runoff = 1.41 cfs @ 12.04 hrs, Volume= 0.113 af, Depth> 3.84"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
8,396	98	Paved parking, HSG C
7,011	74	>75% Grass cover, Good, HSG C
15,407	87	Weighted Average
7,011		45.51% Pervious Area
8,396		54.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	122	0.0200	0.18		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"

Subcatchment 73: DA #32



Summary for Pond 74: I-33

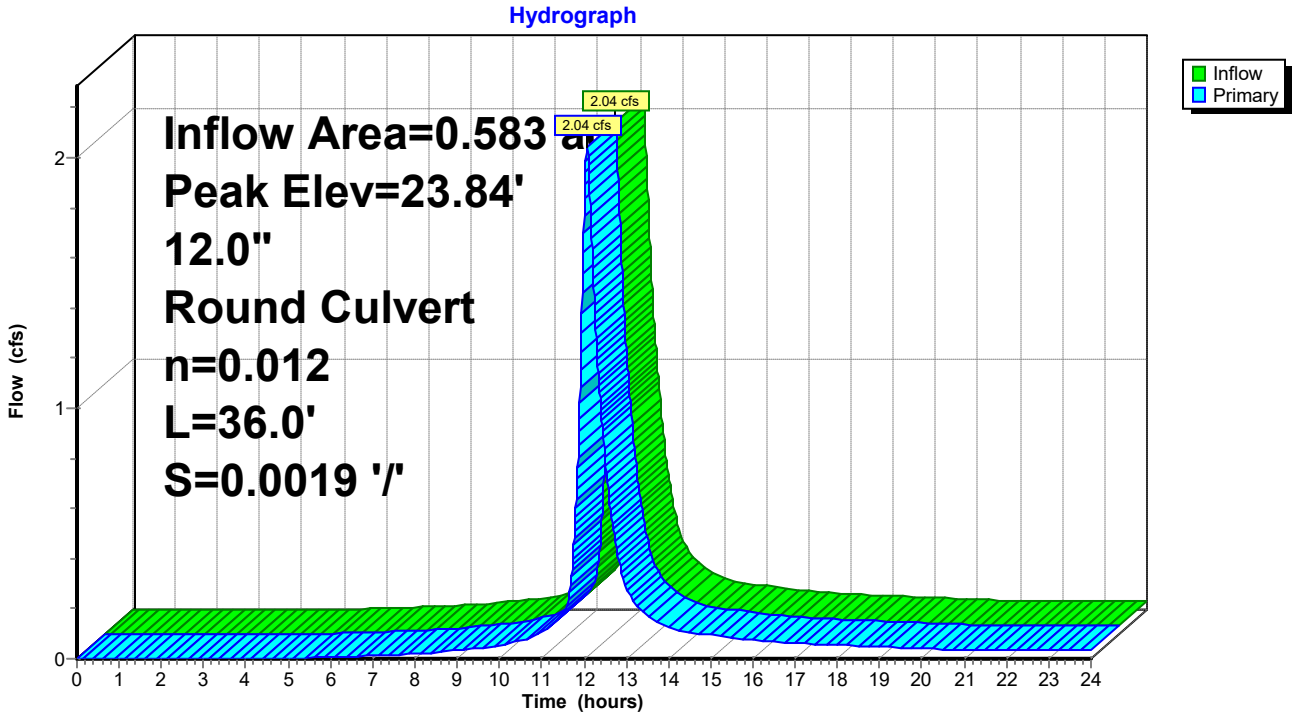
Inflow Area = 0.583 ac, 54.40% Impervious, Inflow Depth > 3.83" for 10-Yr event
Inflow = 2.04 cfs @ 12.08 hrs, Volume= 0.186 af
Outflow = 2.04 cfs @ 12.08 hrs, Volume= 0.186 af, Atten= 0%, Lag= 0.0 min
Primary = 2.04 cfs @ 12.08 hrs, Volume= 0.186 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 23.84' @ 12.12 hrs
Flood Elev= 22.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.07'	**12.0" Round Culvert** L= 36.0' Ke= 0.500 Inlet / Outlet Invert= 20.07' / 20.00' S= 0.0019 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.67 cfs @ 12.08 hrs HW=23.60' TW=23.40' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.67 cfs @ 2.12 fps)

Pond 74: I-33



Summary for Subcatchment 75: DA #33

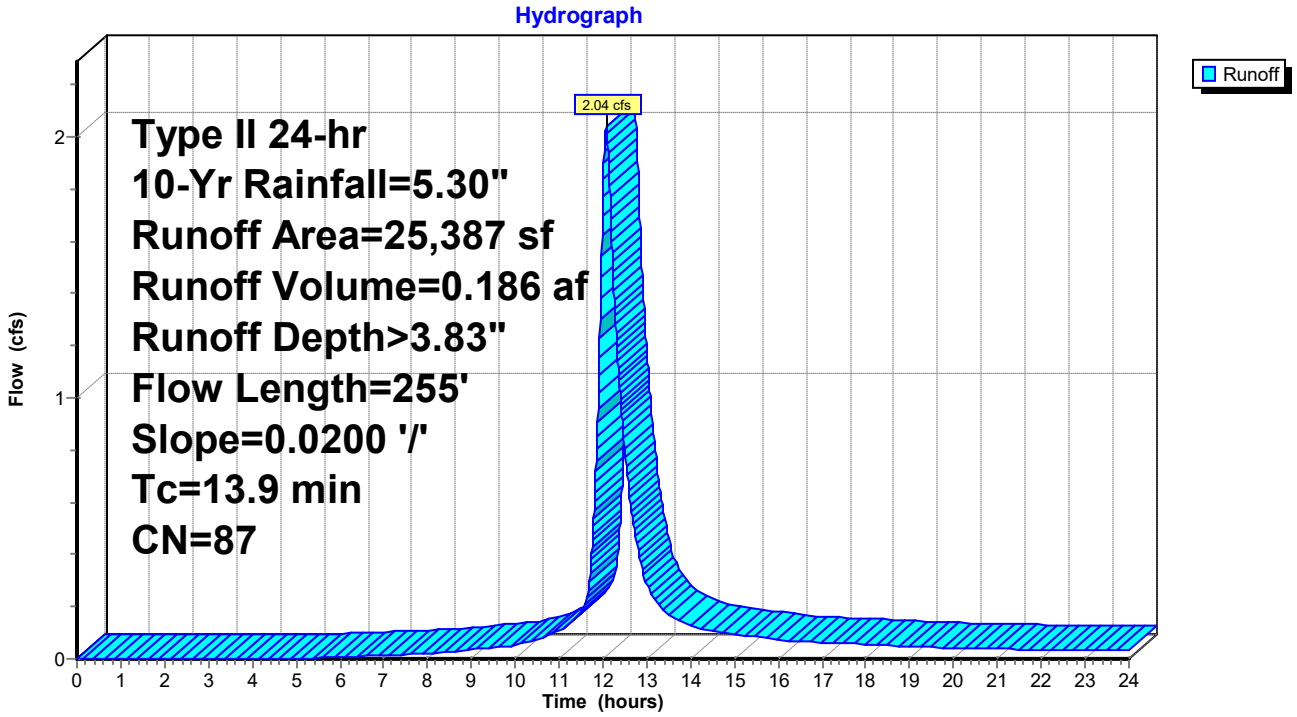
Runoff = 2.04 cfs @ 12.08 hrs, Volume= 0.186 af, Depth> 3.83"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
13,811	98	Paved parking, HSG C
11,576	74	>75% Grass cover, Good, HSG C
25,387	87	Weighted Average
11,576		45.60% Pervious Area
13,811		54.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.8	105	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.9	255	Total			

Subcatchment 75: DA #33



Summary for Pond 76: I-34

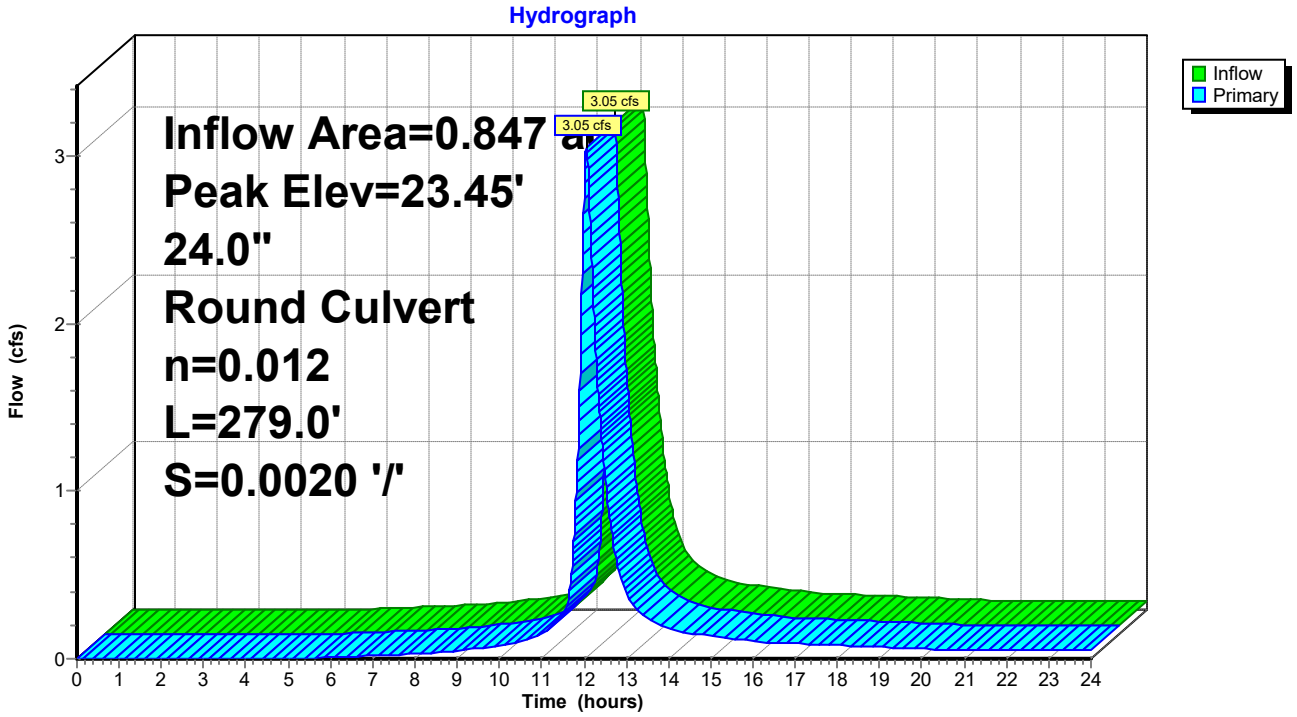
Inflow Area = 0.847 ac, 53.16% Impervious, Inflow Depth > 3.79" for 10-Yr event
Inflow = 3.05 cfs @ 12.06 hrs, Volume= 0.268 af
Outflow = 3.05 cfs @ 12.06 hrs, Volume= 0.268 af, Atten= 0%, Lag= 0.0 min
Primary = 3.05 cfs @ 12.06 hrs, Volume= 0.268 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 23.45' @ 12.12 hrs
Flood Elev= 21.76'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.26'	**24.0" Round Culvert** L= 279.0' Ke= 0.500 Inlet / Outlet Invert= 20.26' / 19.70' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 12.06 hrs HW=23.07' TW=23.12' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 76: I-34



Summary for Subcatchment 77: DA #34

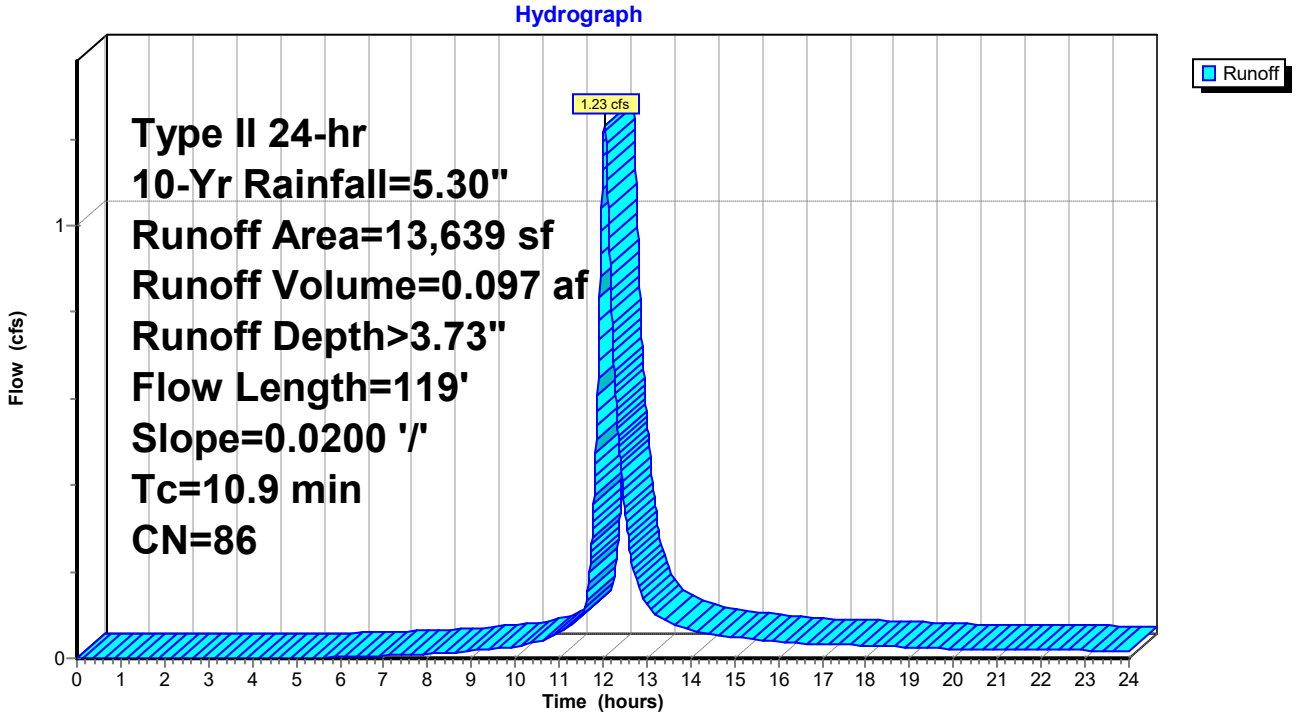
Runoff = 1.23 cfs @ 12.04 hrs, Volume= 0.097 af, Depth> 3.73"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
6,904	98	Paved parking, HSG C
6,735	74	>75% Grass cover, Good, HSG C
13,639	86	Weighted Average
6,735		49.38% Pervious Area
6,904		50.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	119	0.0200	0.18		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"

Subcatchment 77: DA #34



Summary for Pond 78: I-35

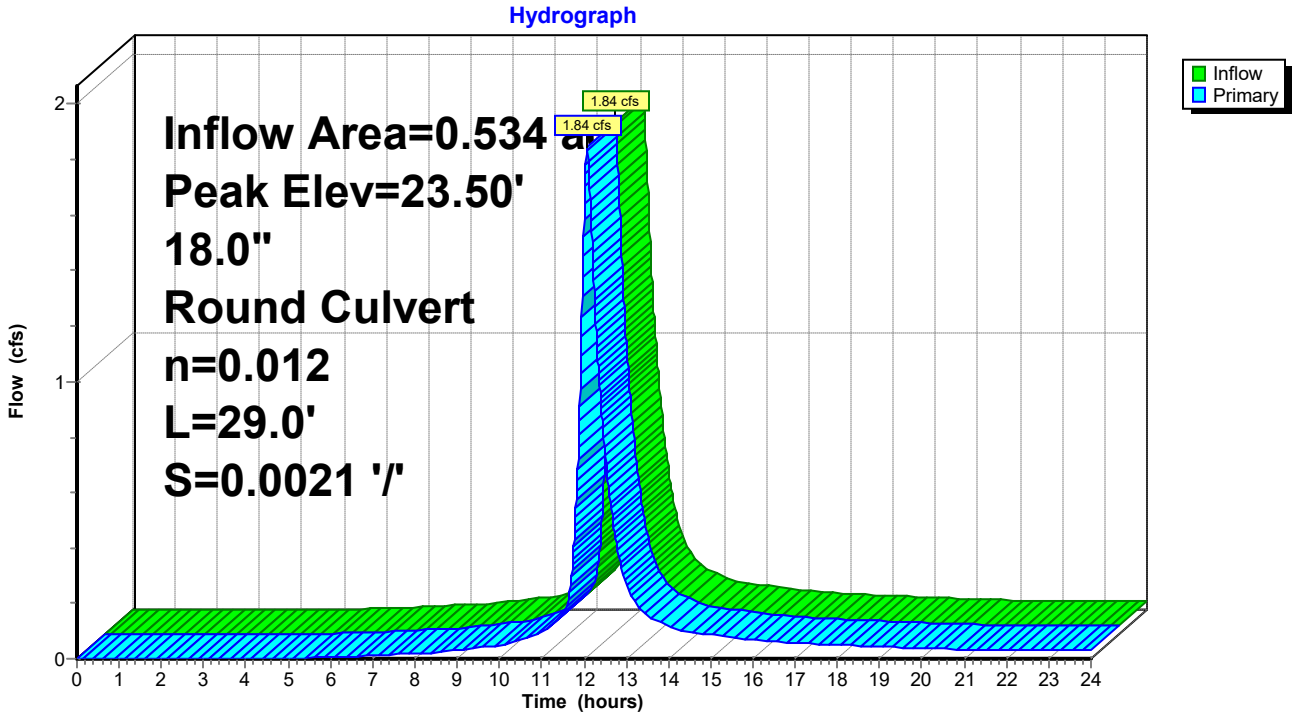
Inflow Area = 0.534 ac, 54.65% Impervious, Inflow Depth > 3.83" for 10-Yr event
Inflow = 1.84 cfs @ 12.08 hrs, Volume= 0.170 af
Outflow = 1.84 cfs @ 12.08 hrs, Volume= 0.170 af, Atten= 0%, Lag= 0.0 min
Primary = 1.84 cfs @ 12.08 hrs, Volume= 0.170 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 23.50' @ 12.13 hrs
Flood Elev= 22.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.32'	**18.0" Round Culvert** L= 29.0' Ke= 0.500 Inlet / Outlet Invert= 20.32' / 20.26' S= 0.0021 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 12.08 hrs HW=23.24' TW=23.28' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 78: I-35



Summary for Subcatchment 79: DA #35

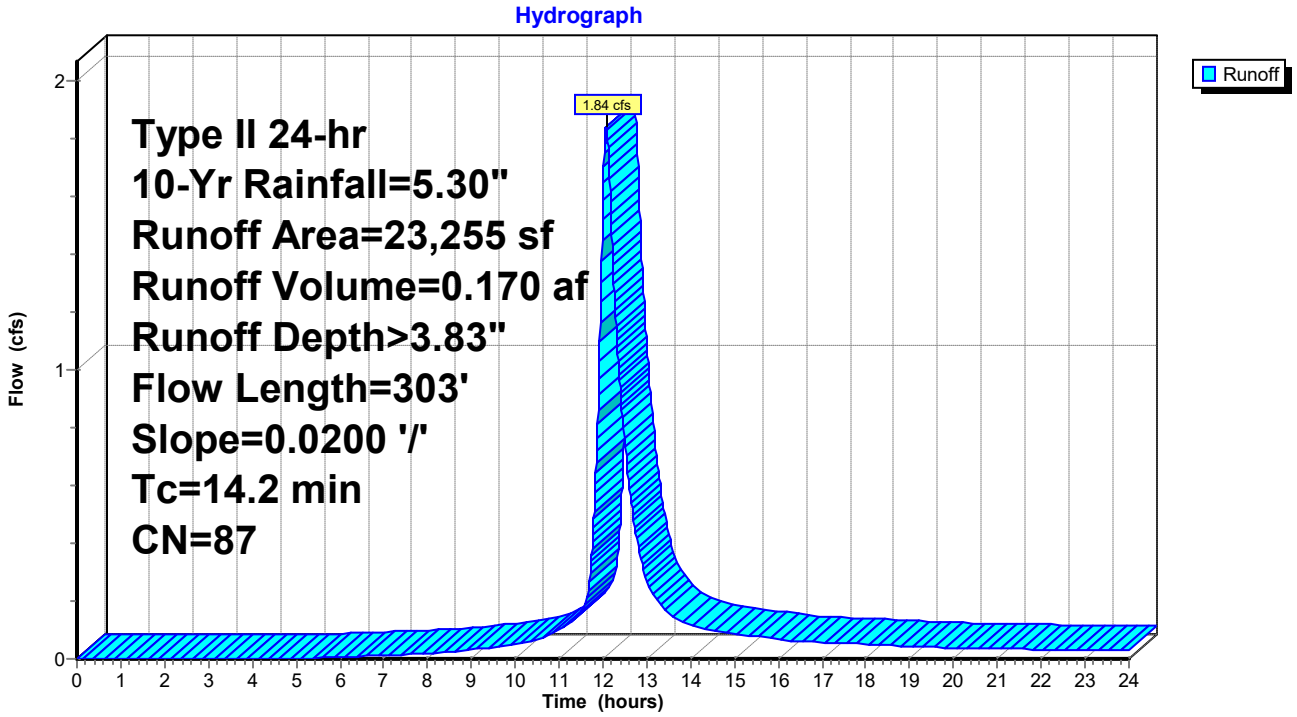
Runoff = 1.84 cfs @ 12.08 hrs, Volume= 0.170 af, Depth> 3.83"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Yr Rainfall=5.30"

Area (sf)	CN	Description
12,708	98	Paved parking, HSG C
10,547	74	>75% Grass cover, Good, HSG C
23,255	87	Weighted Average
10,547		45.35% Pervious Area
12,708		54.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
1.1	153	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.2	303	Total			

Subcatchment 79: DA #35

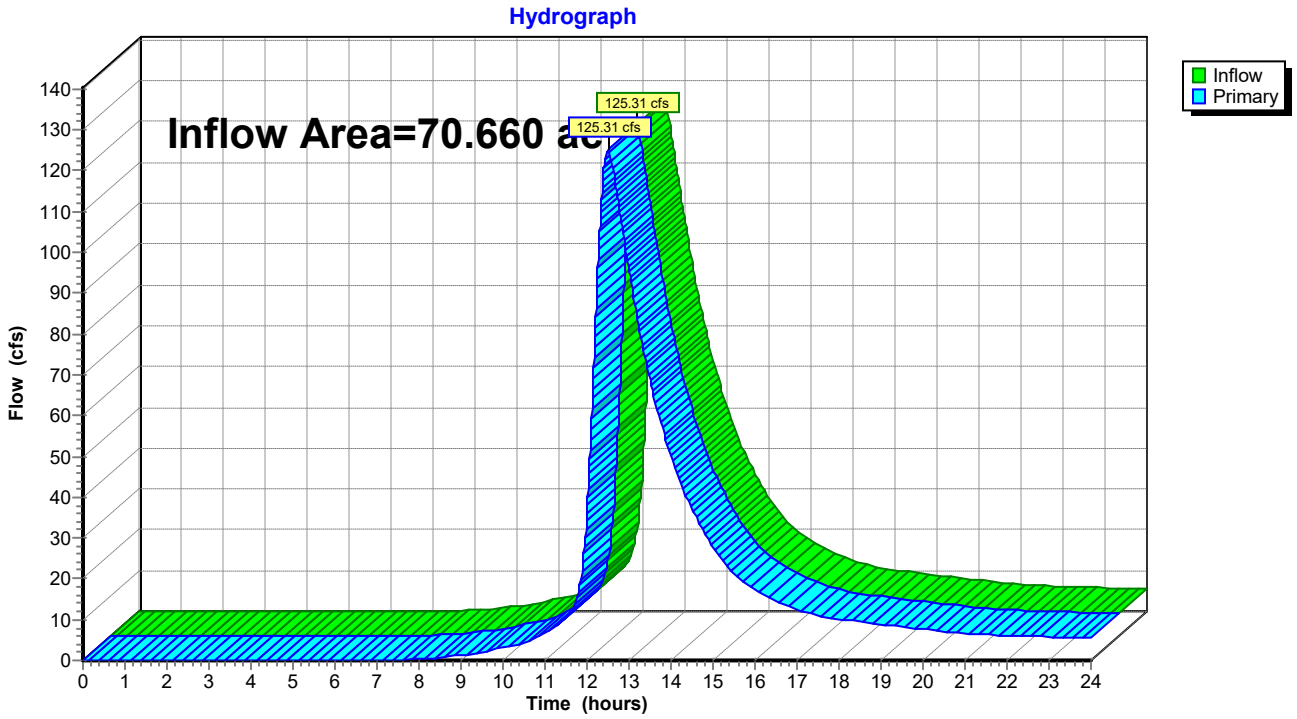


Summary for Link 1: POI-1 (PRE)

Inflow Area = 70.660 ac, 0.00% Impervious, Inflow Depth > 4.48" for 100-Yr event
Inflow = 125.31 cfs @ 12.51 hrs, Volume= 26.351 af
Primary = 125.31 cfs @ 12.51 hrs, Volume= 26.351 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 1: POI-1 (PRE)



Summary for Subcatchment 2: DA #1 (PRE)

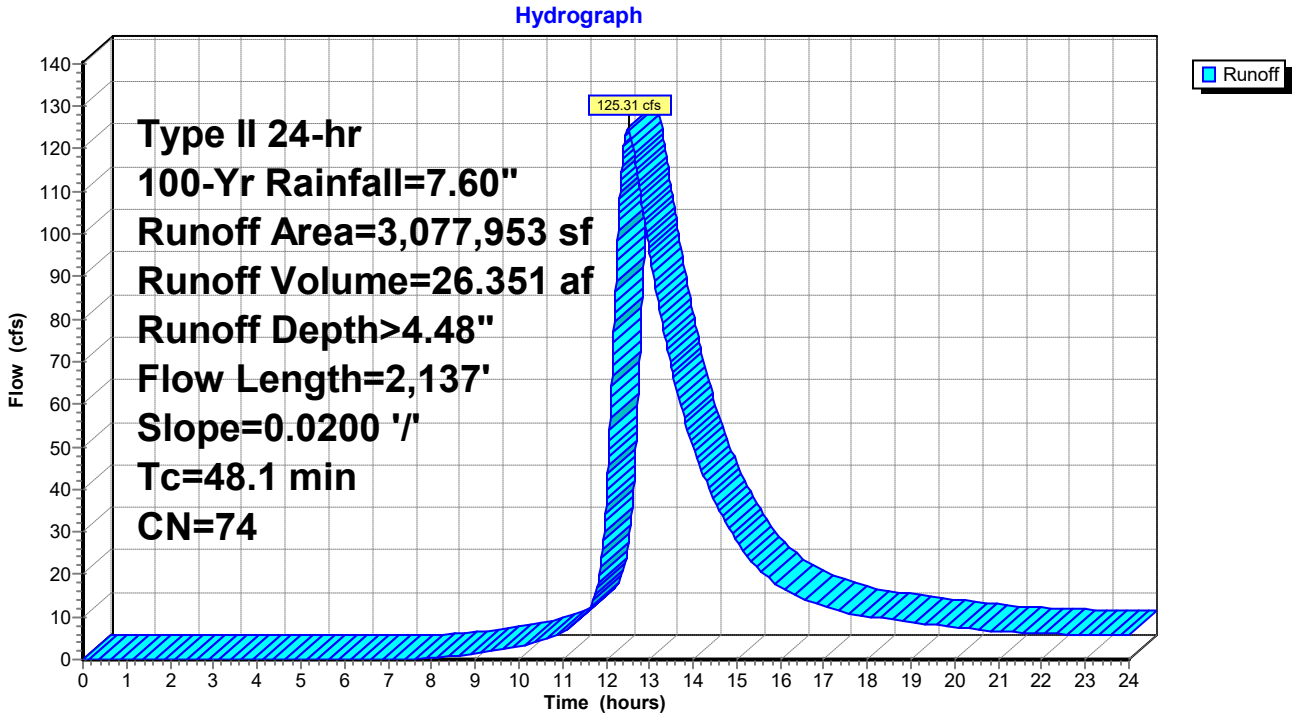
Runoff = 125.31 cfs @ 12.51 hrs, Volume= 26.351 af, Depth> 4.48"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
3,077,953	74	>75% Grass cover, Good, HSG C
3,077,953		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	100	0.0200	0.12		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"
34.3	2,037	0.0200	0.99		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
48.1	2,137	Total			

Subcatchment 2: DA #1 (PRE)

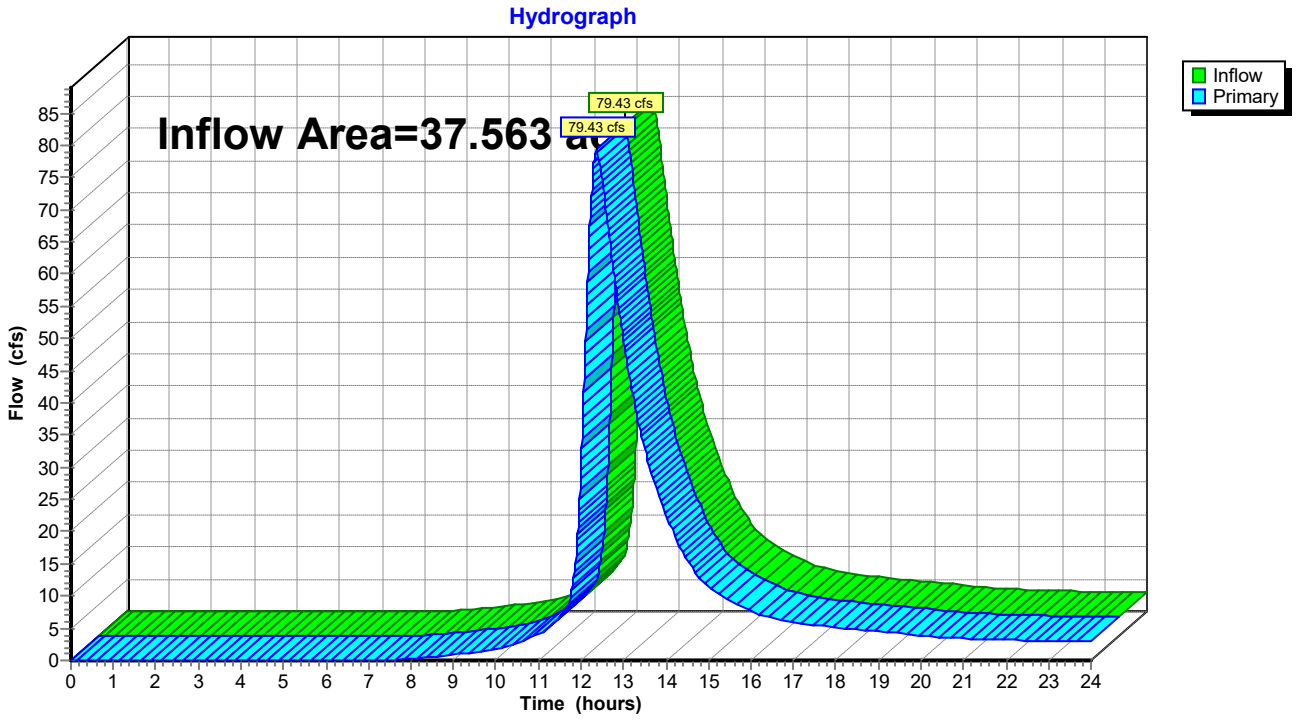


Summary for Link 3: POI-2 (PRE)

Inflow Area = 37.563 ac, 0.00% Impervious, Inflow Depth > 4.50" for 100-Yr event
Inflow = 79.43 cfs @ 12.38 hrs, Volume= 14.073 af
Primary = 79.43 cfs @ 12.38 hrs, Volume= 14.073 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 3: POI-2 (PRE)



Summary for Subcatchment 4: DA #2 (PRE)

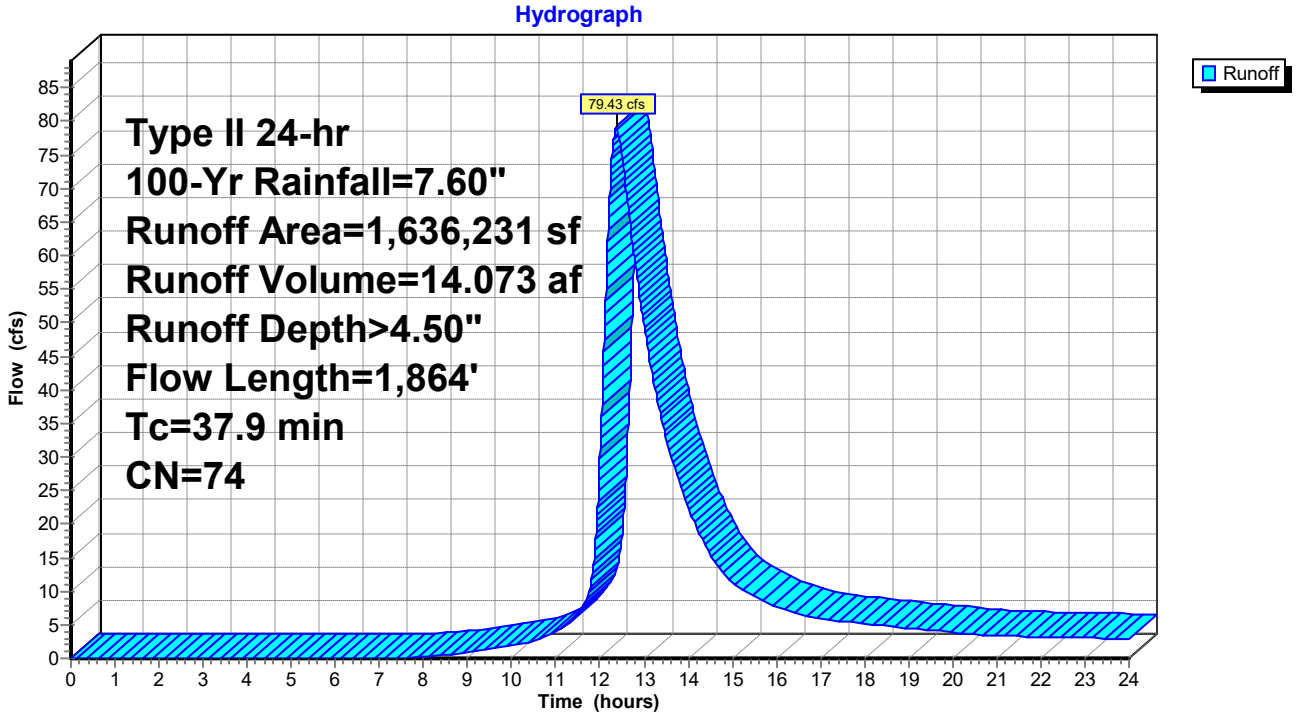
Runoff = 79.43 cfs @ 12.38 hrs, Volume= 14.073 af, Depth> 4.50"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
1,636,231	74	>75% Grass cover, Good, HSG C
1,636,231		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	100	0.0200	0.12		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"
10.5	482	0.0120	0.77		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
13.6	1,282	0.0110	1.57		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
37.9	1,864	Total			

Subcatchment 4: DA #2 (PRE)

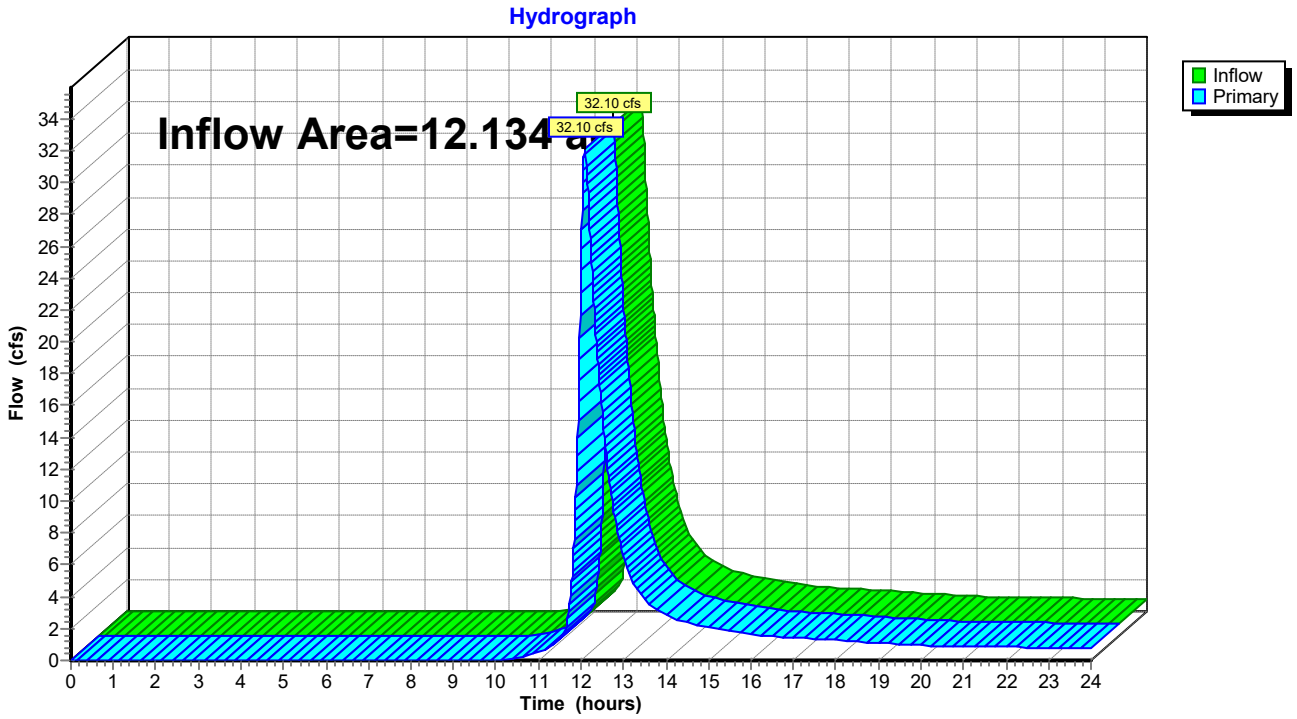


Summary for Link 5: POI-3 (PRE)

Inflow Area = 12.134 ac, 0.00% Impervious, Inflow Depth > 3.12" for 100-Yr event
Inflow = 32.10 cfs @ 12.10 hrs, Volume= 3.153 af
Primary = 32.10 cfs @ 12.10 hrs, Volume= 3.153 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 5: POI-3 (PRE)



Summary for Subcatchment 6: DA #3 (PRE)

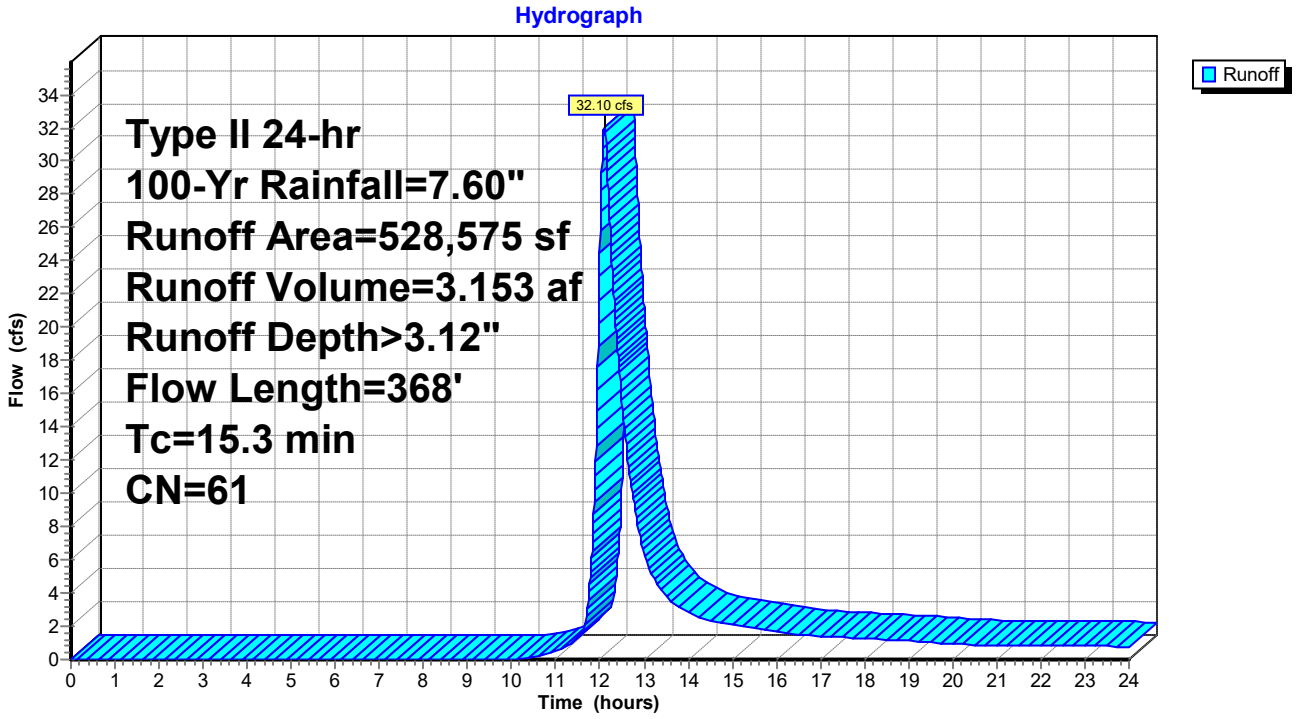
Runoff = 32.10 cfs @ 12.10 hrs, Volume= 3.153 af, Depth> 3.12"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
528,575	61	>75% Grass cover, Good, HSG B
528,575		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0230	0.13		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.40"
2.2	268	0.0810	1.99		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
15.3	368	Total			

Subcatchment 6: DA #3 (PRE)

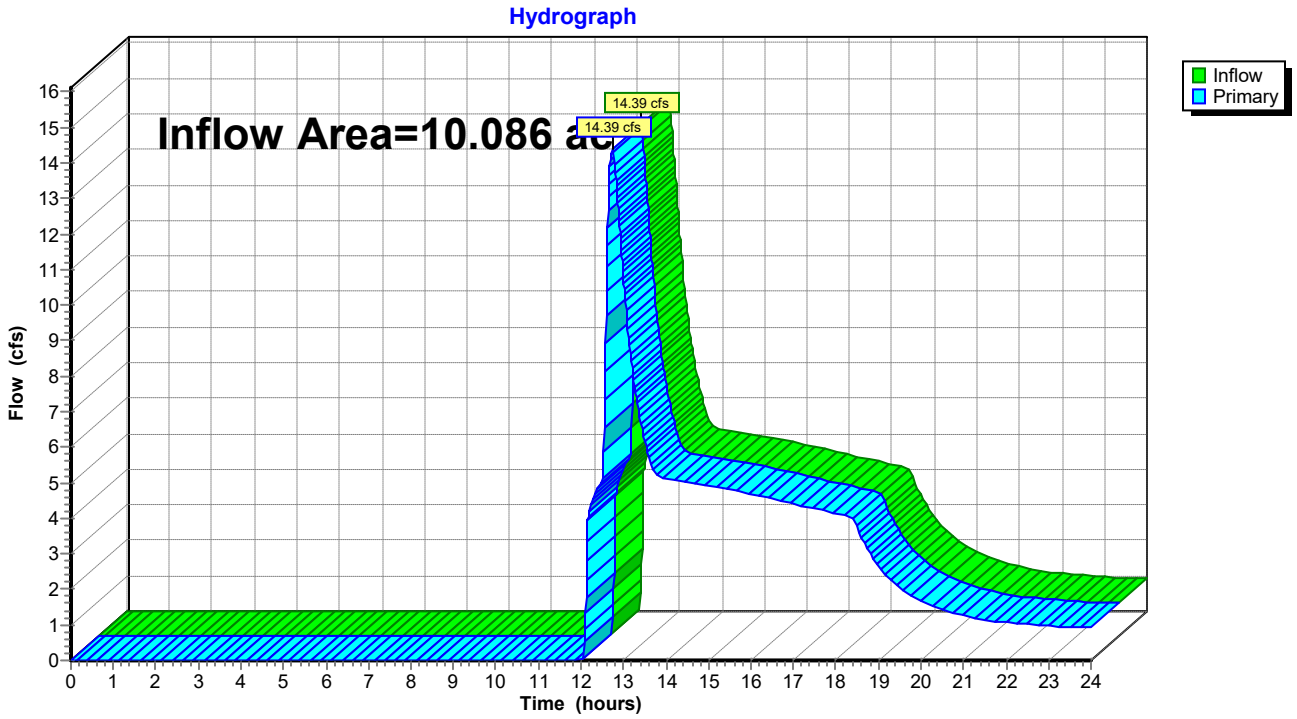


Summary for Link 7: POI-2 (POST)

Inflow Area = 10.086 ac, 48.77% Impervious, Inflow Depth > 4.25" for 100-Yr event
Inflow = 14.39 cfs @ 12.73 hrs, Volume= 3.569 af
Primary = 14.39 cfs @ 12.73 hrs, Volume= 3.569 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 7: POI-2 (POST)



Summary for Pond 8: NW SGW

Inflow Area = 10.086 ac, 48.77% Impervious, Inflow Depth > 5.85" for 100-Yr event
Inflow = 47.82 cfs @ 12.13 hrs, Volume= 4.920 af
Outflow = 14.39 cfs @ 12.73 hrs, Volume= 3.569 af, Atten= 70%, Lag= 36.0 min
Primary = 5.25 cfs @ 12.73 hrs, Volume= 3.169 af
Secondary = 9.15 cfs @ 12.73 hrs, Volume= 0.401 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 17.29' @ 12.73 hrs Surf.Area= 58,238 sf Storage= 114,958 cf

Plug-Flow detention time= 237.0 min calculated for 3.568 af (73% of inflow)
Center-of-Mass det. time= 147.1 min (957.9 - 810.8)

Volume	Invert	Avail.Storage	Storage Description
#1	15.20'	167,693 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

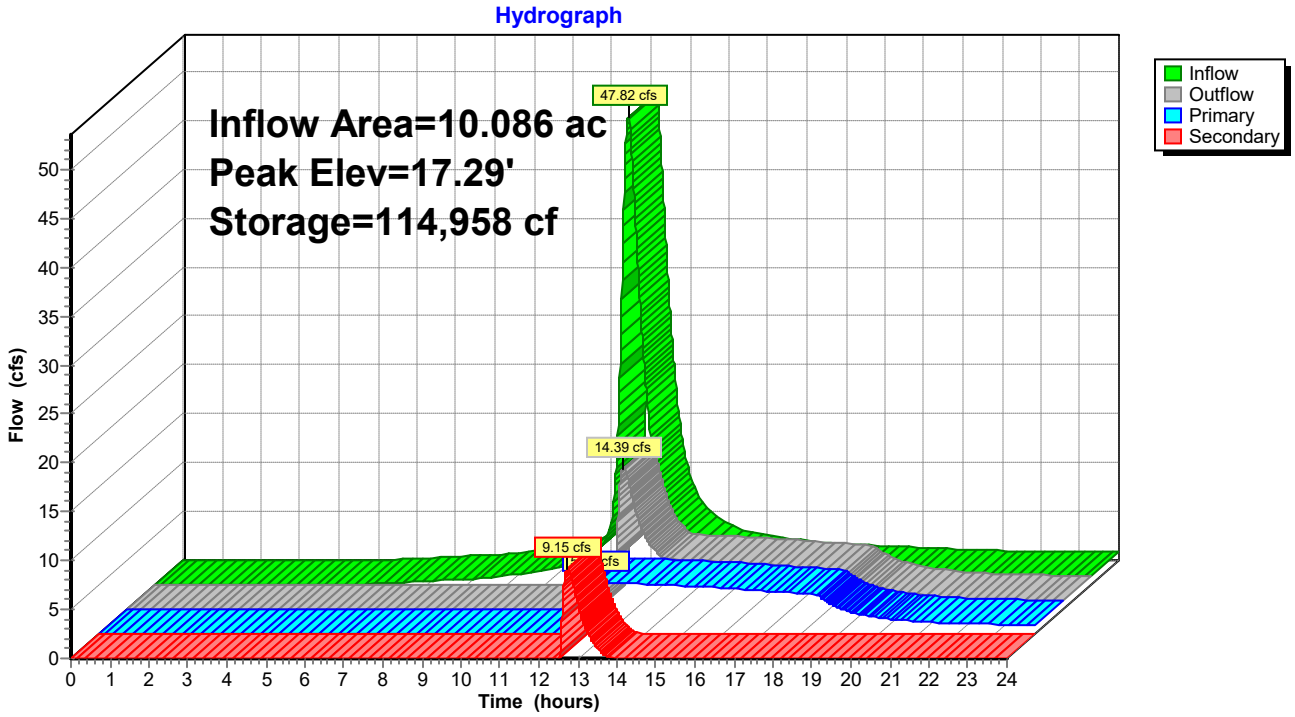
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
15.20	51,291	1,138.9	0	0	51,291
17.20	58,238	1,176.6	109,455	109,455	58,613
18.20	58,238	1,176.6	58,238	167,693	59,790

Device	Routing	Invert	Outlet Devices
#1	Primary	14.87'	**12.0" Round Culvert** L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 14.87' / 13.00' S= 0.0312 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	16.20'	**8.0' long Sharp-Crested Rectangular Weir** 0 End Contraction(s)
#3	Secondary	17.20'	**124.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=5.25 cfs @ 12.73 hrs HW=17.29' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 5.25 cfs @ 6.68 fps)
└─**2=Sharp-Crested Rectangular Weir** (Passes 5.25 cfs of 29.95 cfs potential flow)

Secondary OutFlow Max=9.14 cfs @ 12.73 hrs HW=17.29' TW=0.00' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 9.14 cfs @ 0.78 fps)

Pond 8: NW SGW


Hydrograph
Inflow Area=10.086 ac
Peak Elev=17.29'
Storage=114,958 cf
47.82 cfs
14.39 cfs
9.15 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Reach 9: NW Swale

Inflow Area = 10.086 ac, 48.77% Impervious, Inflow Depth > 5.93" for 100-Yr event
Inflow = 67.38 cfs @ 12.02 hrs, Volume= 4.981 af
Outflow = 47.82 cfs @ 12.13 hrs, Volume= 4.920 af, Atten= 29%, Lag= 7.0 min

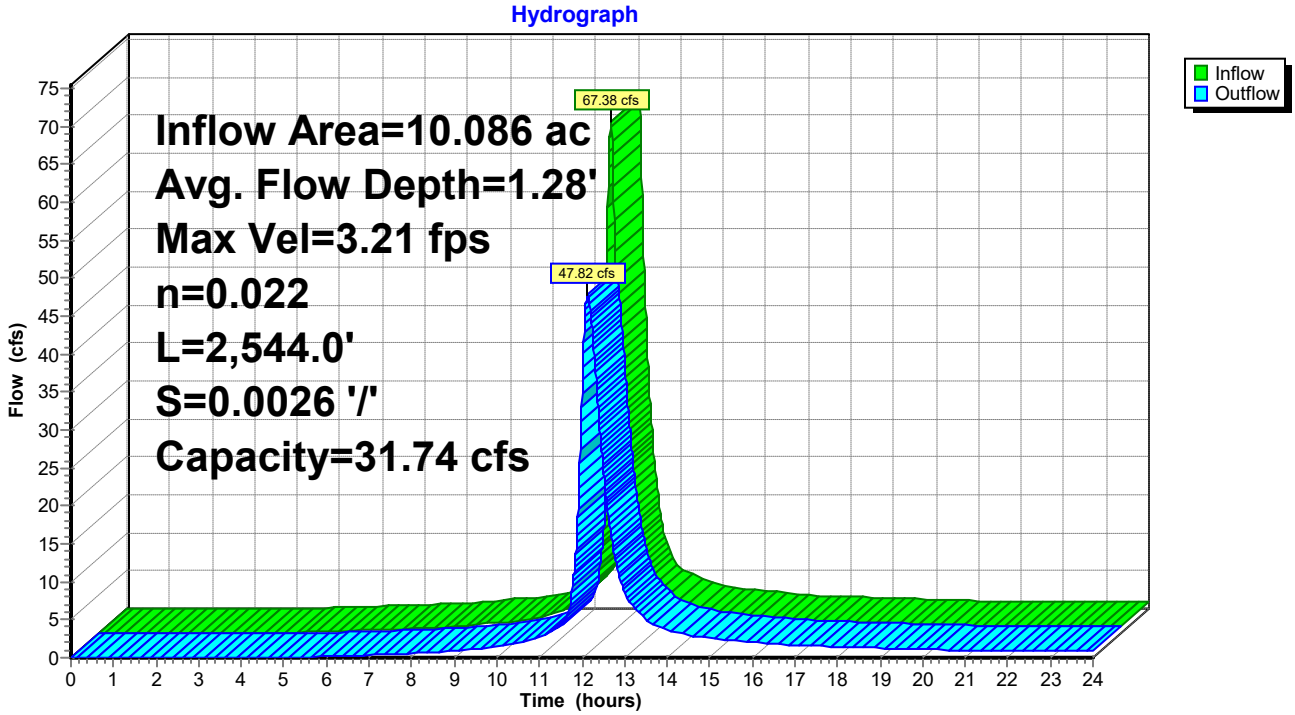
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.21 fps, Min. Travel Time= 13.2 min
Avg. Velocity = 1.01 fps, Avg. Travel Time= 41.9 min

Peak Storage= 37,886 cf @ 12.13 hrs
Average Depth at Peak Storage= 1.28'
Bank-Full Depth= 1.00' Flow Area= 11.0 sf, Capacity= 31.74 cfs

8.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 2,544.0' Slope= 0.0026 '/'
Inlet Invert= 23.30', Outlet Invert= 16.70'

‡

Reach 9: NW Swale



Summary for Subcatchment 10: DA #1

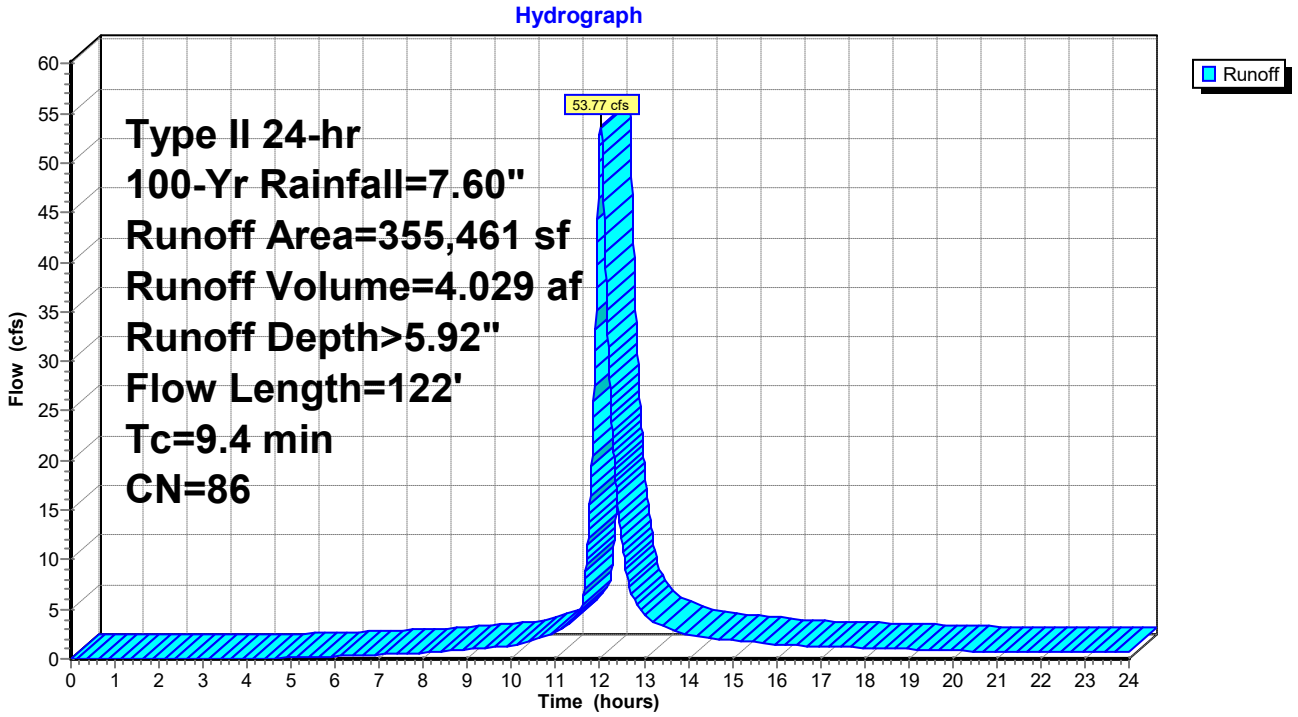
Runoff = 53.77 cfs @ 12.02 hrs, Volume= 4.029 af, Depth> 5.92"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
172,774	98	Paved parking, HSG C
182,687	74	>75% Grass cover, Good, HSG C
355,461	86	Weighted Average
182,687		51.39% Pervious Area
172,774		48.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	94	0.0200	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.4	28	0.0208	1.12		**Sheet Flow, B-C** Smooth surfaces n= 0.011 P2= 3.40"
9.4	122	Total			

Subcatchment 10: DA #1



Summary for Subcatchment 11: DA #2

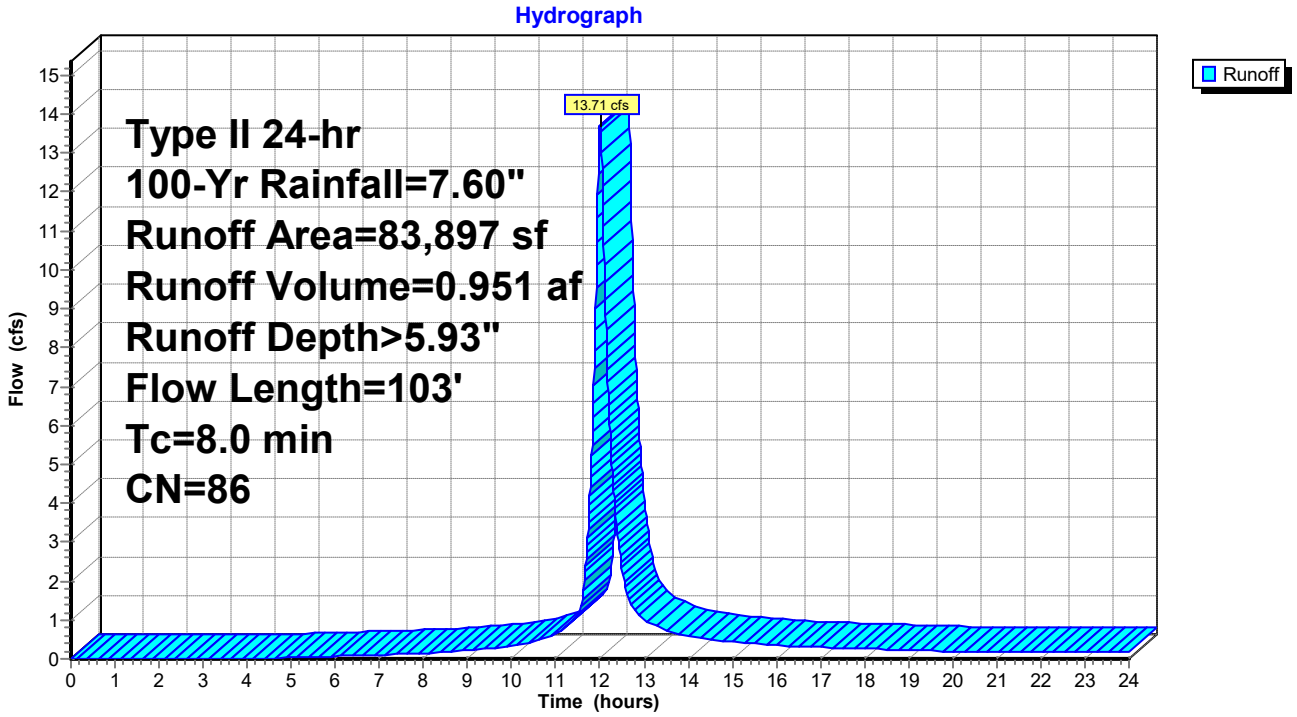
Runoff = 13.71 cfs @ 12.00 hrs, Volume= 0.951 af, Depth> 5.93"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
41,506	98	Paved parking, HSG C
42,391	74	>75% Grass cover, Good, HSG C
83,897	86	Weighted Average
42,391		50.53% Pervious Area
41,506		49.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	75	0.0200	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.4	28	0.0208	1.12		**Sheet Flow, B-C** Smooth surfaces n= 0.011 P2= 3.40"
8.0	103	Total			

Subcatchment 11: DA #2

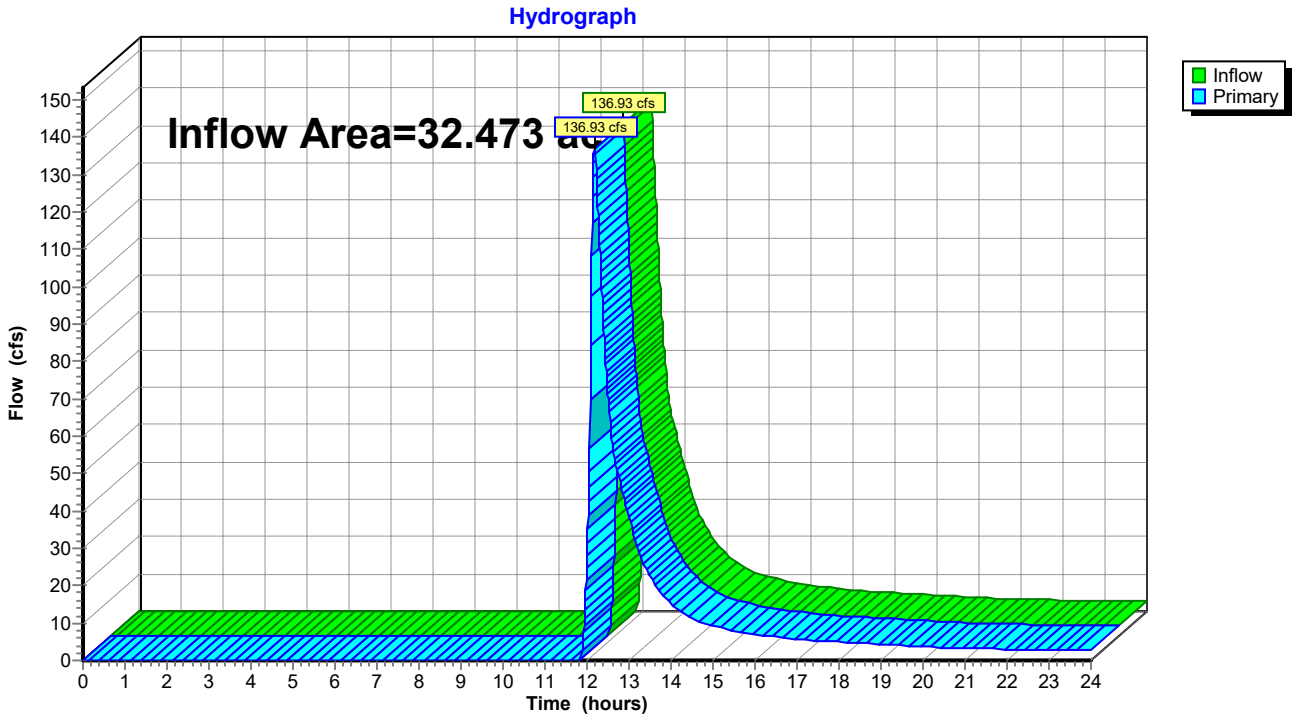


Summary for Link 12: POI-1 (POST)

Inflow Area = 32.473 ac, 44.87% Impervious, Inflow Depth > 4.62" for 100-Yr event
Inflow = 136.93 cfs @ 12.18 hrs, Volume= 12.511 af
Primary = 136.93 cfs @ 12.18 hrs, Volume= 12.511 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 12: POI-1 (POST)



Summary for Pond 13: S SGW

Inflow Area = 32.473 ac, 44.87% Impervious, Inflow Depth > 5.78" for 100-Yr event
Inflow = 174.63 cfs @ 12.06 hrs, Volume= 15.628 af
Outflow = 136.93 cfs @ 12.18 hrs, Volume= 12.511 af, Atten= 22%, Lag= 7.3 min
Primary = 65.98 cfs @ 12.18 hrs, Volume= 10.926 af
Secondary = 70.95 cfs @ 12.18 hrs, Volume= 1.585 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.62' @ 12.18 hrs Surf.Area= 89,680 sf Storage= 231,289 cf

Plug-Flow detention time= 142.0 min calculated for 12.506 af (80% of inflow)
Center-of-Mass det. time= 63.9 min (863.0 - 799.0)

Volume	Invert	Avail.Storage	Storage Description
#1	17.90'	300,999 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

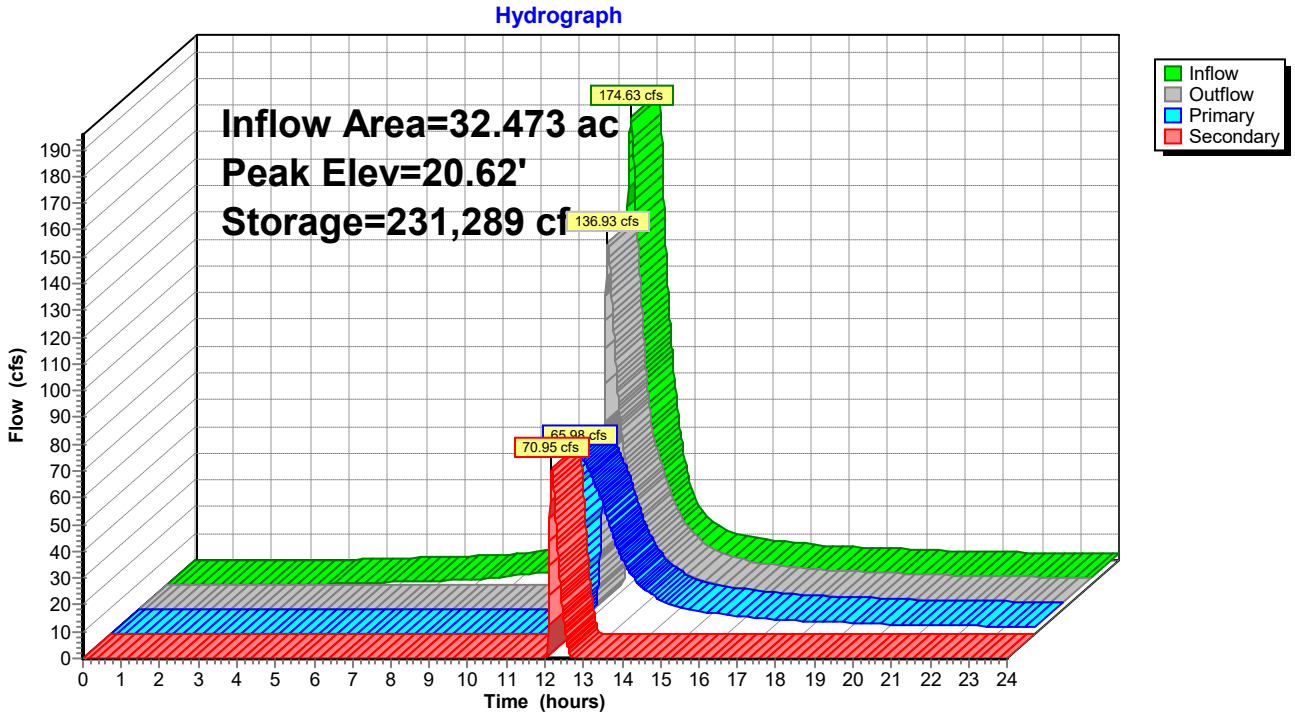
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
17.90	79,478	1,336.7	0	0	79,478
20.40	89,680	1,383.8	211,319	211,319	90,227
21.40	89,680	1,383.8	89,680	300,999	91,611

Device	Routing	Invert	Outlet Devices
#1	Primary	17.57'	**36.0" Round Culvert X 2.00** L= 73.0' Ke= 0.500 Inlet / Outlet Invert= 17.57' / 17.40' S= 0.0023 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	19.40'	**8.0' long Sharp-Crested Rectangular Weir X 2.00** 0 End Contraction(s)
#3	Secondary	20.40'	**265.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=65.98 cfs @ 12.18 hrs HW=20.62' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 65.98 cfs @ 5.70 fps)
  └─**2=Sharp-Crested Rectangular Weir** (Passes 65.98 cfs of 70.72 cfs potential flow)

Secondary OutFlow Max=70.87 cfs @ 12.18 hrs HW=20.62' TW=0.00' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 70.87 cfs @ 1.20 fps)

Pond 13: S SGW


Hydrograph
Inflow Area=32.473 ac
Peak Elev=20.62'
Storage=231,289 cf
174.63 cfs
136.93 cfs
65.98 cfs
70.95 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Reach 14: S Swale

Inflow Area = 7.080 ac, 0.00% Impervious, Inflow Depth > 4.56" for 100-Yr event
Inflow = 50.48 cfs @ 11.97 hrs, Volume= 2.691 af
Outflow = 42.52 cfs @ 12.02 hrs, Volume= 2.672 af, Atten= 16%, Lag= 3.1 min

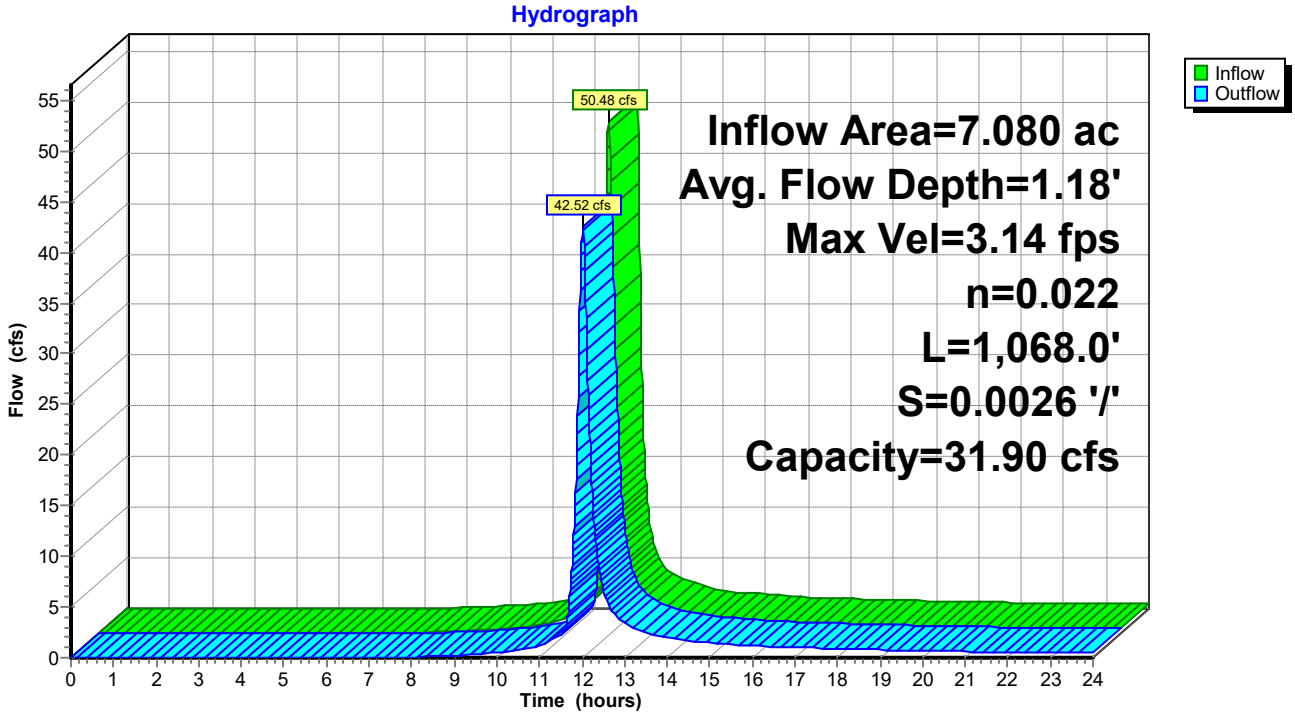
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.14 fps, Min. Travel Time= 5.7 min
Avg. Velocity = 0.87 fps, Avg. Travel Time= 20.5 min

Peak Storage= 14,480 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.18'
Bank-Full Depth= 1.00' Flow Area= 11.0 sf, Capacity= 31.90 cfs

8.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 1,068.0' Slope= 0.0026 '/'
Inlet Invert= 22.70', Outlet Invert= 19.90'

‡

Reach 14: S Swale



Summary for Subcatchment 15: DA #3

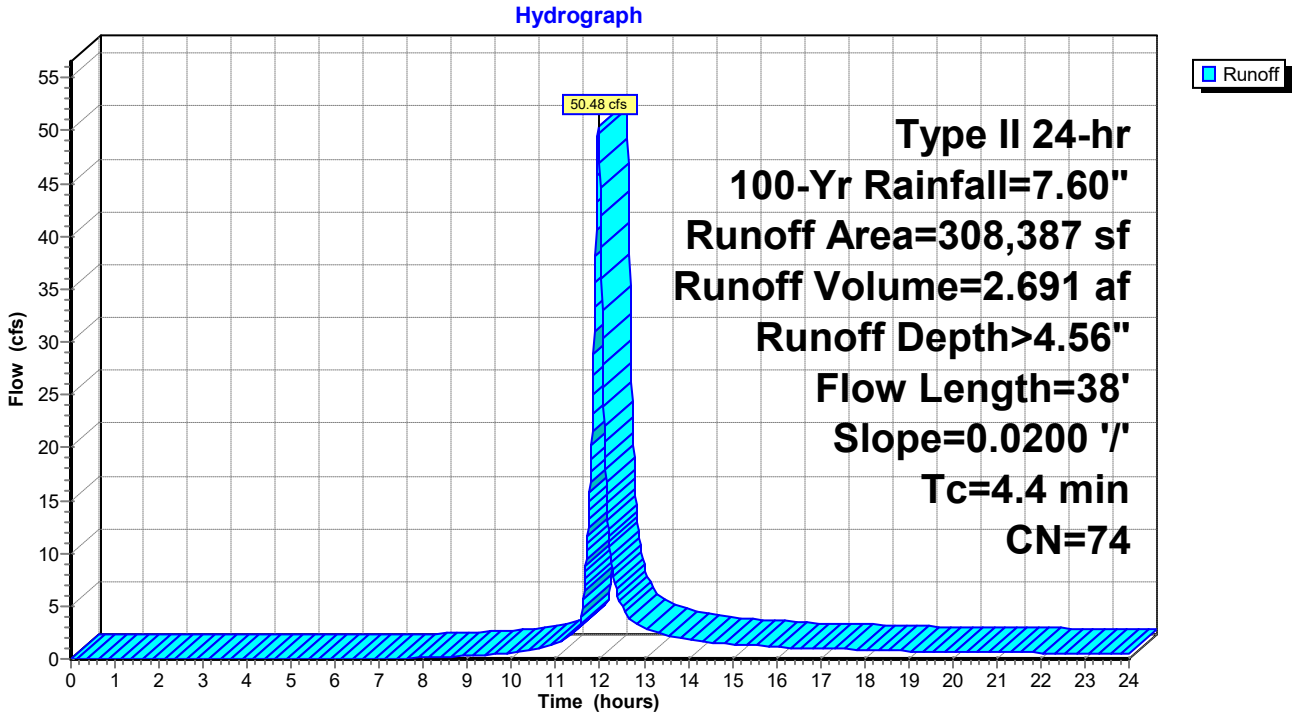
Runoff = 50.48 cfs @ 11.97 hrs, Volume= 2.691 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
308,387	74	>75% Grass cover, Good, HSG C
308,387		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	38	0.0200	0.14		**Sheet Flow, Yard** Grass: Short n= 0.150 P2= 3.40"

Subcatchment 15: DA #3



Summary for Pond 16: I-4

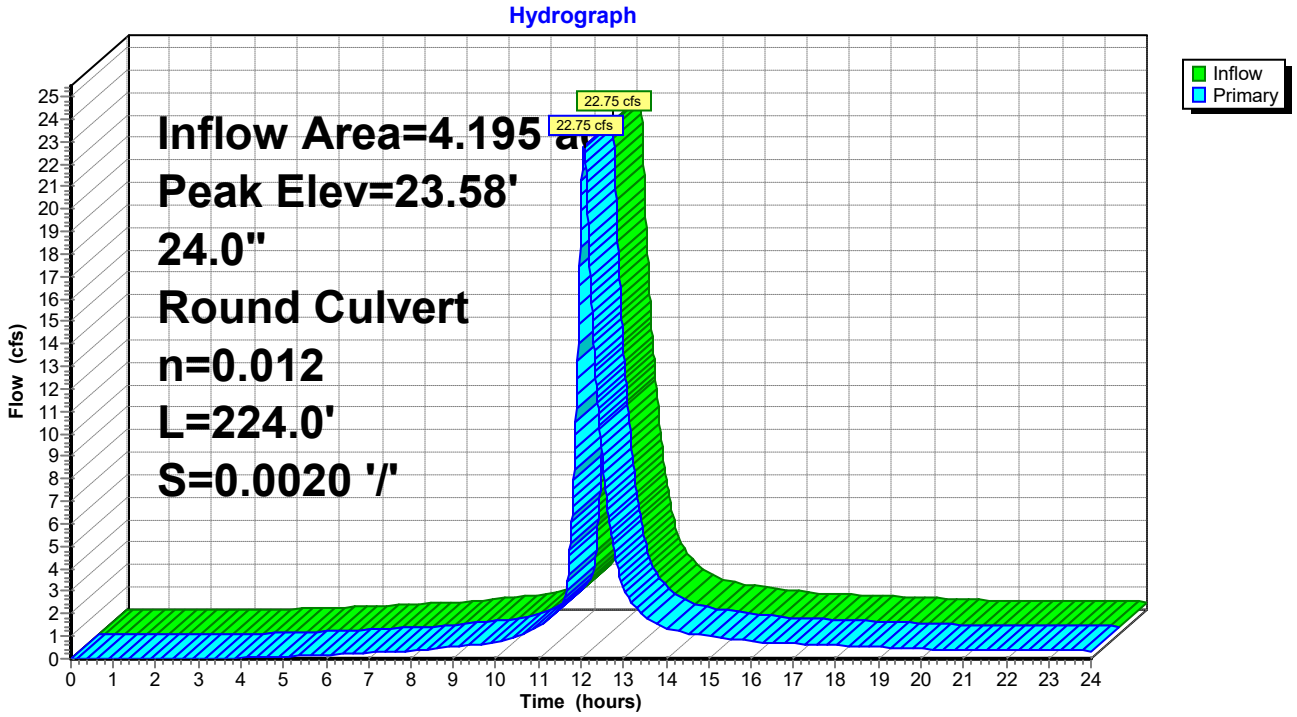
Inflow Area = 4.195 ac, 57.26% Impervious, Inflow Depth > 6.15" for 100-Yr event
Inflow = 22.75 cfs @ 12.07 hrs, Volume= 2.150 af
Outflow = 22.75 cfs @ 12.07 hrs, Volume= 2.150 af, Atten= 0%, Lag= 0.0 min
Primary = 22.75 cfs @ 12.07 hrs, Volume= 2.150 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 23.58' @ 12.08 hrs
Flood Elev= 25.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.35'	**24.0" Round Culvert** L= 224.0' Ke= 0.500 Inlet / Outlet Invert= 18.35' / 17.90' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=22.57 cfs @ 12.07 hrs HW=23.55' TW=20.44' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 22.57 cfs @ 7.18 fps)

Pond 16: I-4



Summary for Subcatchment 17: DA #4

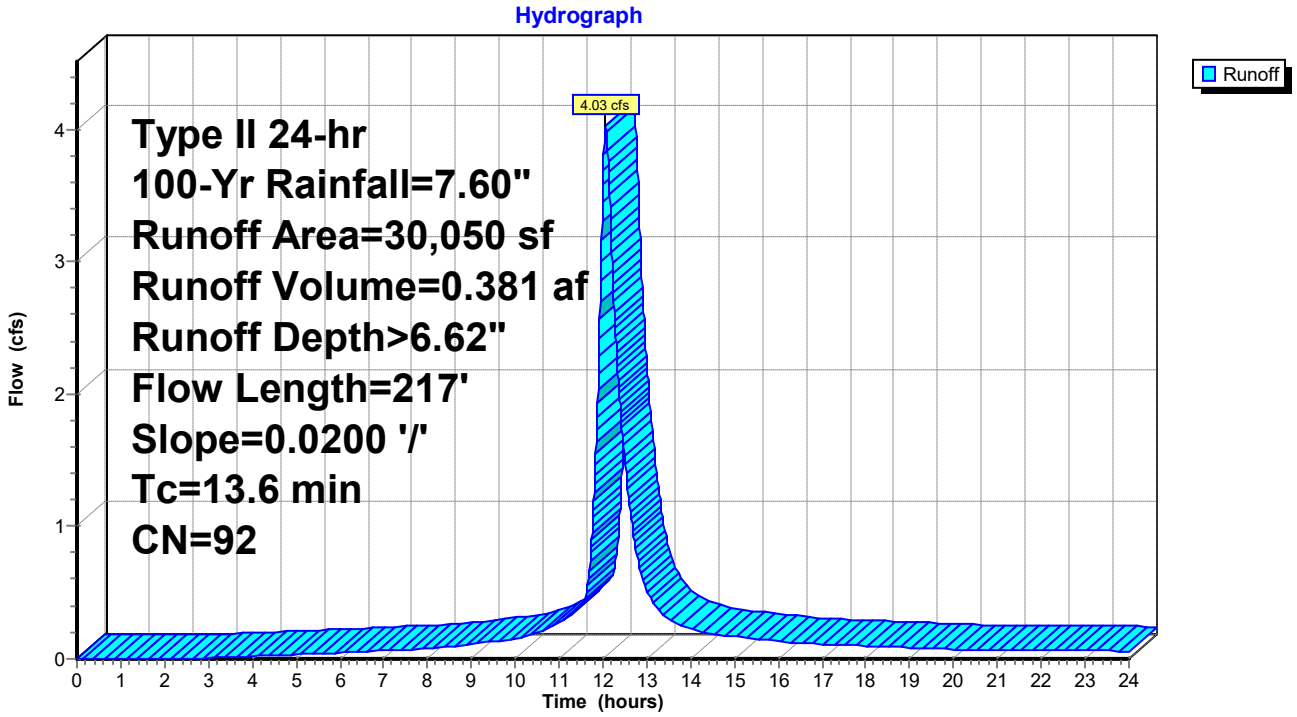
Runoff = 4.03 cfs @ 12.06 hrs, Volume= 0.381 af, Depth> 6.62"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
21,915	98	Paved parking, HSG C
8,135	74	>75% Grass cover, Good, HSG C
30,050	92	Weighted Average
8,135		27.07% Pervious Area
21,915		72.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.5	67	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.6	217	Total			

Subcatchment 17: DA #4



Summary for Pond 18: I-5

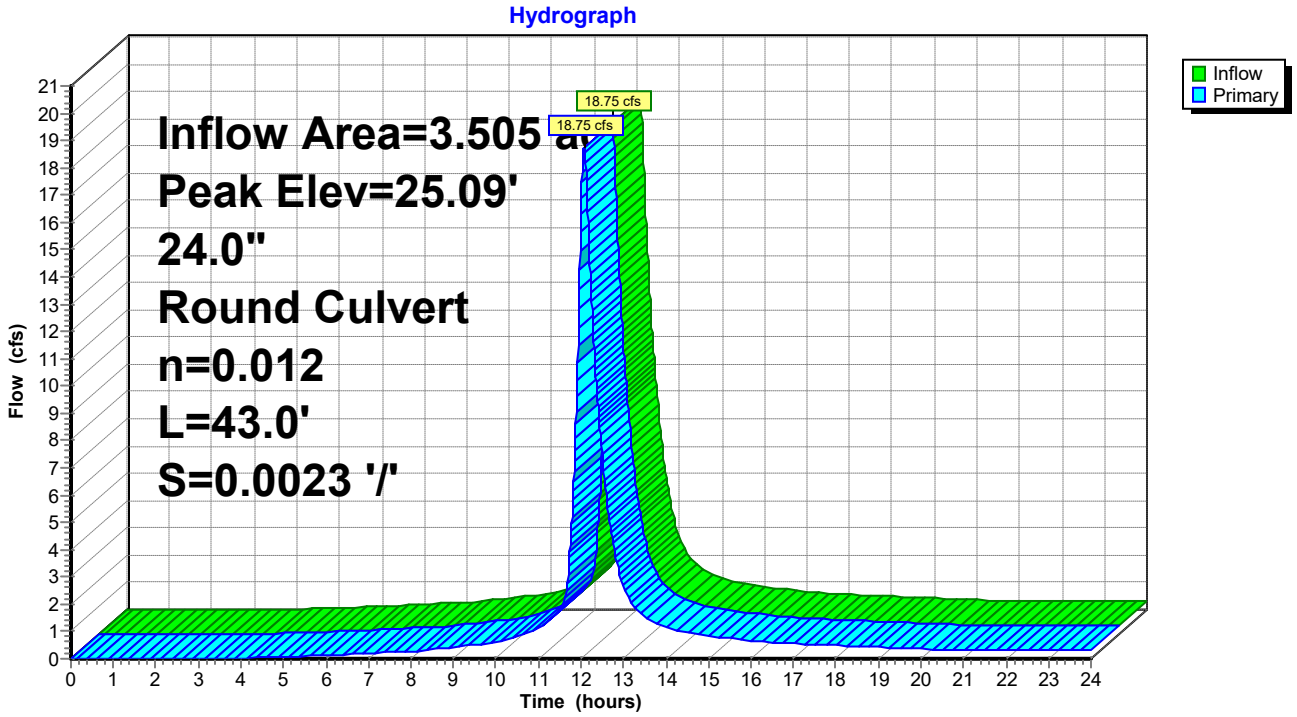
Inflow Area = 3.505 ac, 54.18% Impervious, Inflow Depth > 6.06" for 100-Yr event
Inflow = 18.75 cfs @ 12.08 hrs, Volume= 1.769 af
Outflow = 18.75 cfs @ 12.08 hrs, Volume= 1.769 af, Atten= 0%, Lag= 0.0 min
Primary = 18.75 cfs @ 12.08 hrs, Volume= 1.769 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.09' @ 12.09 hrs
Flood Elev= 26.56'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.45'	**24.0" Round Culvert** L= 43.0' Ke= 0.500 Inlet / Outlet Invert= 18.45' / 18.35' S= 0.0023 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=18.39 cfs @ 12.08 hrs HW=25.04' TW=23.56' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 18.39 cfs @ 5.85 fps)

Pond 18: I-5



Summary for Subcatchment 19: DA #5

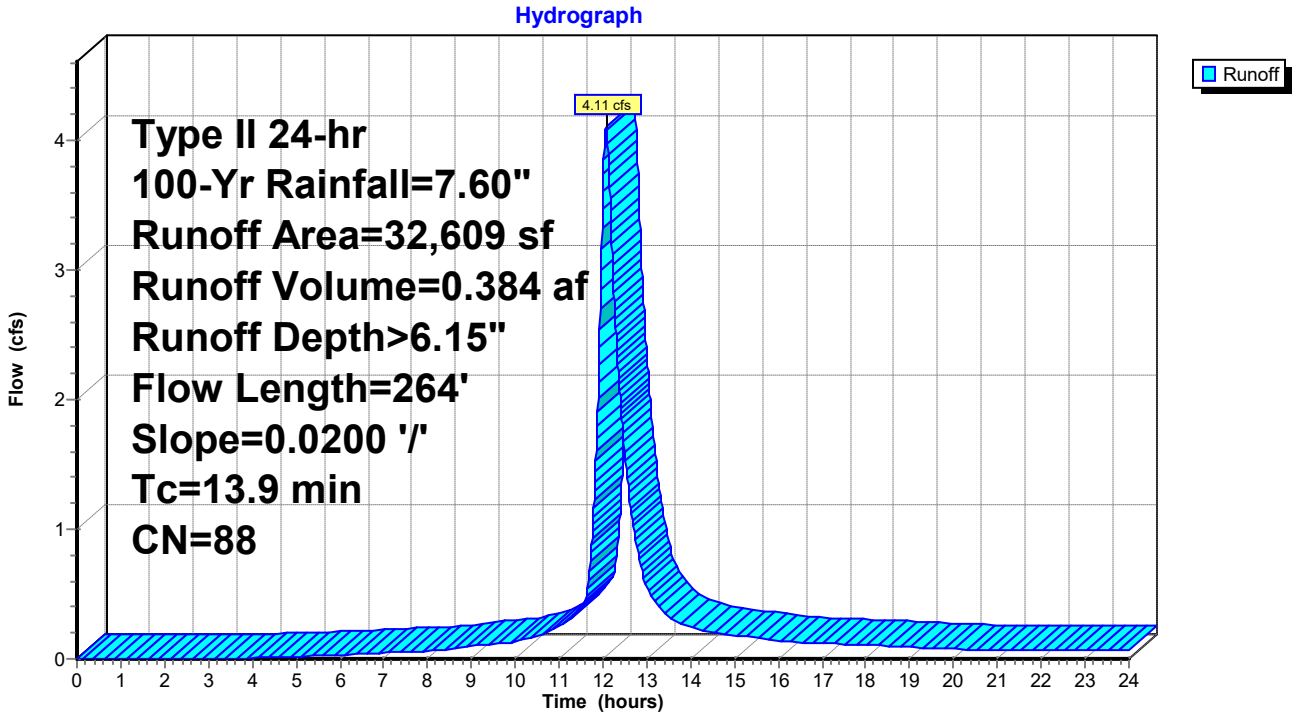
Runoff = 4.11 cfs @ 12.07 hrs, Volume= 0.384 af, Depth> 6.15"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
18,997	98	Paved parking, HSG C
13,612	74	>75% Grass cover, Good, HSG C
32,609	88	Weighted Average
13,612		41.74% Pervious Area
18,997		58.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.8	114	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.9	264	Total			

Subcatchment 19: DA #5



Summary for Pond 20: I-6

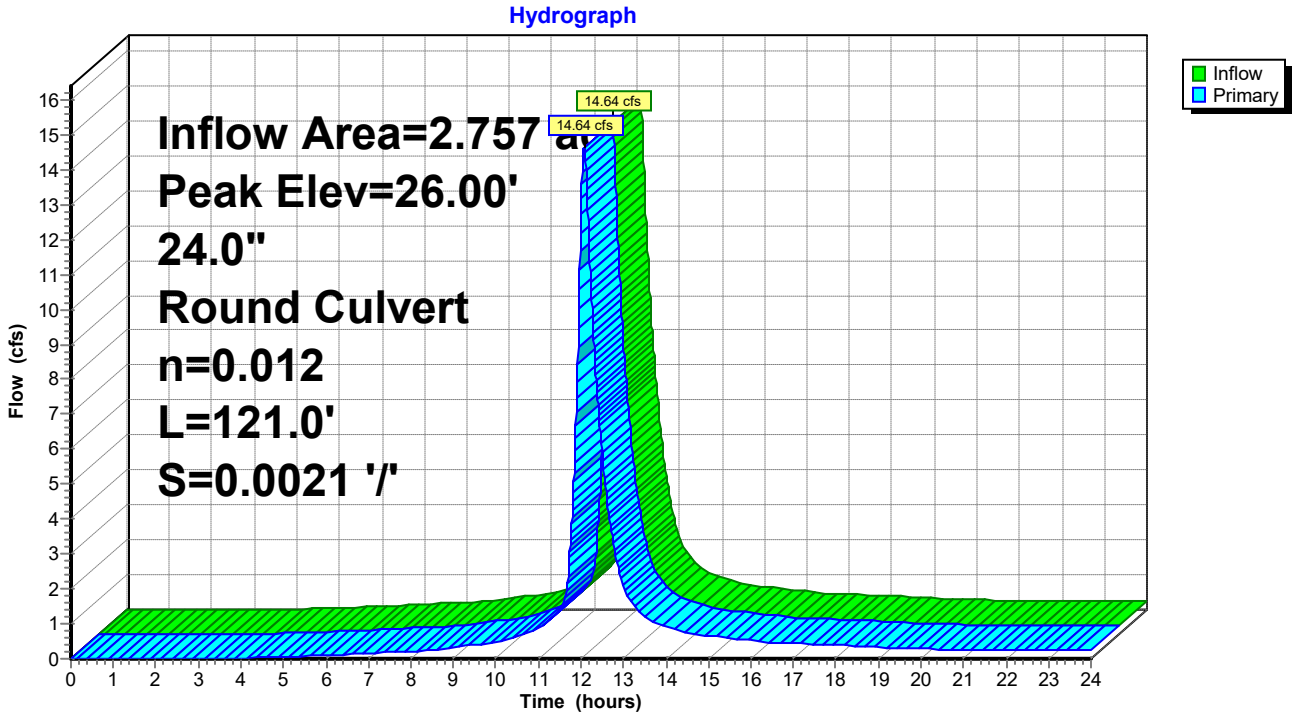
Inflow Area = 2.757 ac, 53.07% Impervious, Inflow Depth > 6.03" for 100-Yr event
Inflow = 14.64 cfs @ 12.08 hrs, Volume= 1.386 af
Outflow = 14.64 cfs @ 12.08 hrs, Volume= 1.386 af, Atten= 0%, Lag= 0.0 min
Primary = 14.64 cfs @ 12.08 hrs, Volume= 1.386 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 26.00' @ 12.10 hrs
Flood Elev= 27.27'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.70'	**24.0" Round Culvert** L= 121.0' Ke= 0.500 Inlet / Outlet Invert= 18.70' / 18.45' S= 0.0021 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=13.93 cfs @ 12.08 hrs HW=25.89' TW=25.04' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 13.93 cfs @ 4.43 fps)

Pond 20: I-6



Summary for Subcatchment 21: DA #6

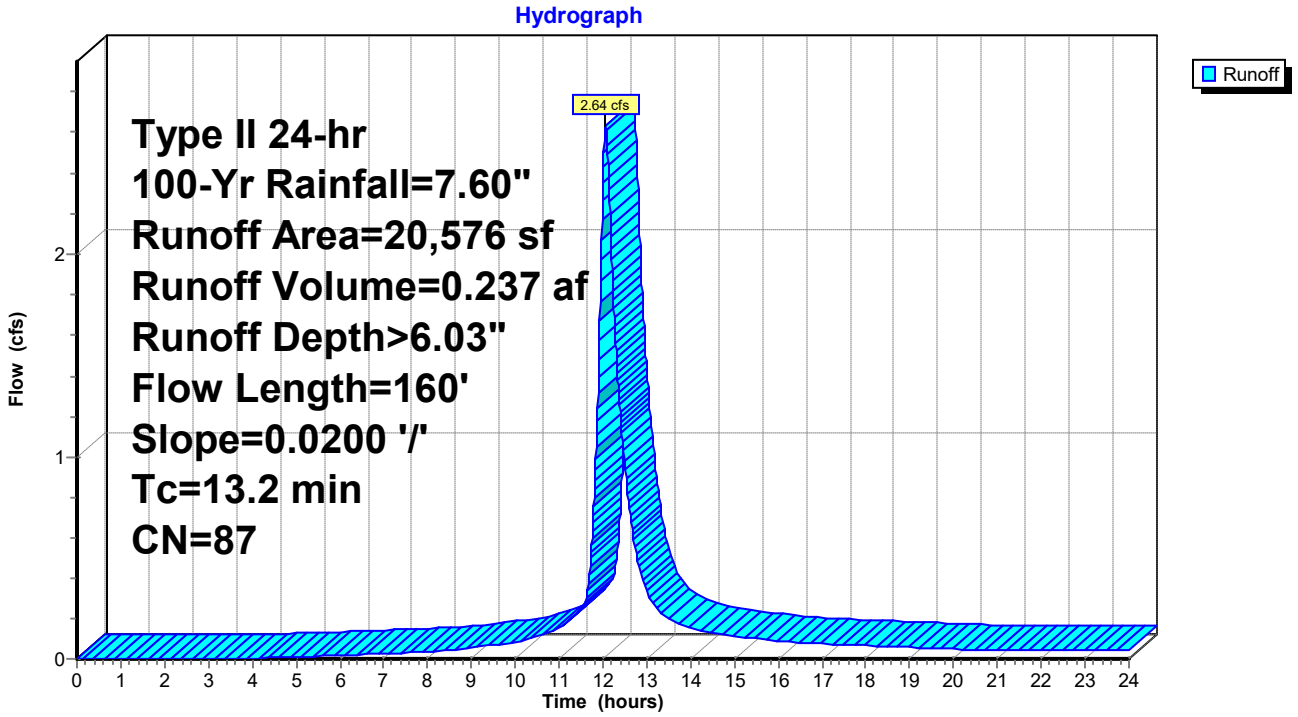
Runoff = 2.64 cfs @ 12.06 hrs, Volume= 0.237 af, Depth> 6.03"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
10,975	98	Paved parking, HSG C
9,601	74	>75% Grass cover, Good, HSG C
20,576	87	Weighted Average
9,601		46.66% Pervious Area
10,975		53.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.1	10	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.2	160	Total			

Subcatchment 21: DA #6



Summary for Pond 22: I-7

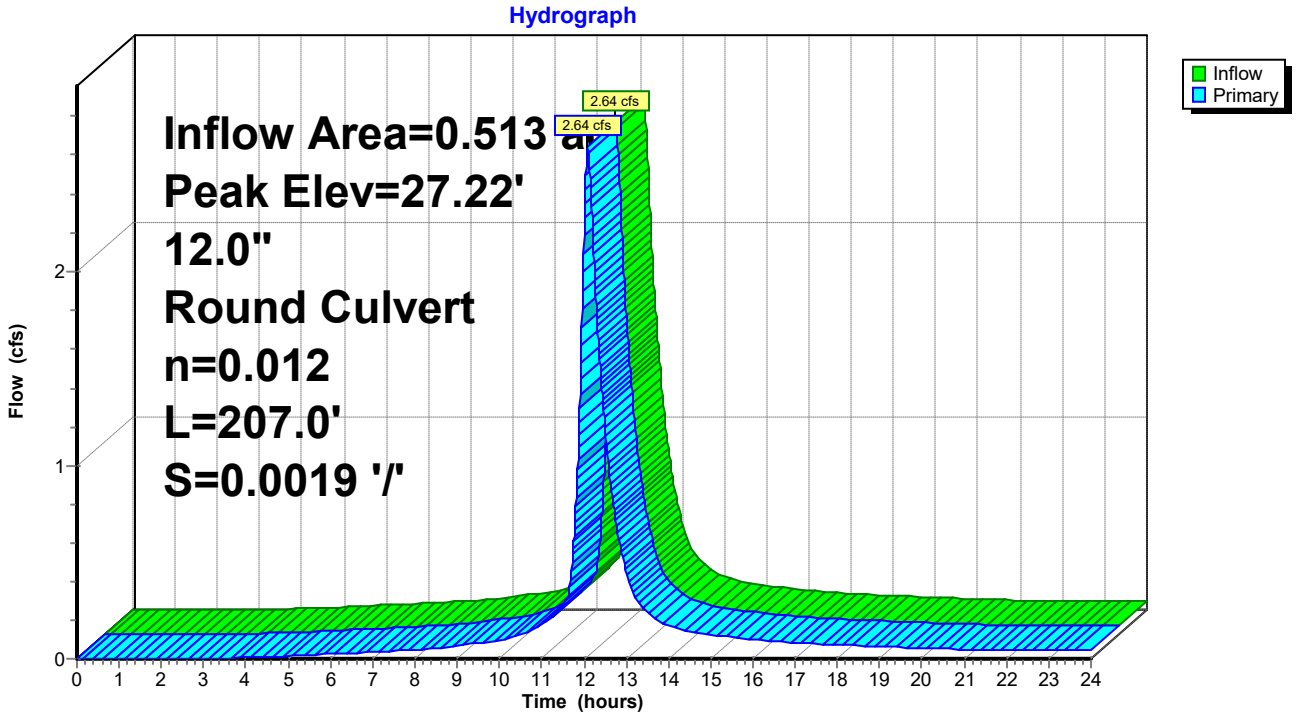
Inflow Area = 0.513 ac, 60.78% Impervious, Inflow Depth > 6.26" for 100-Yr event
Inflow = 2.64 cfs @ 12.08 hrs, Volume= 0.267 af
Outflow = 2.64 cfs @ 12.08 hrs, Volume= 0.267 af, Atten= 0%, Lag= 0.0 min
Primary = 2.64 cfs @ 12.08 hrs, Volume= 0.267 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 27.22' @ 12.10 hrs
Flood Elev= 27.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.10'	**12.0" Round Culvert** L= 207.0' Ke= 0.500 Inlet / Outlet Invert= 19.10' / 18.70' S= 0.0019 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.54 cfs @ 12.08 hrs HW=27.10' TW=25.96' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 2.54 cfs @ 3.23 fps)

Pond 22: I-7



Summary for Subcatchment 23: DA #7

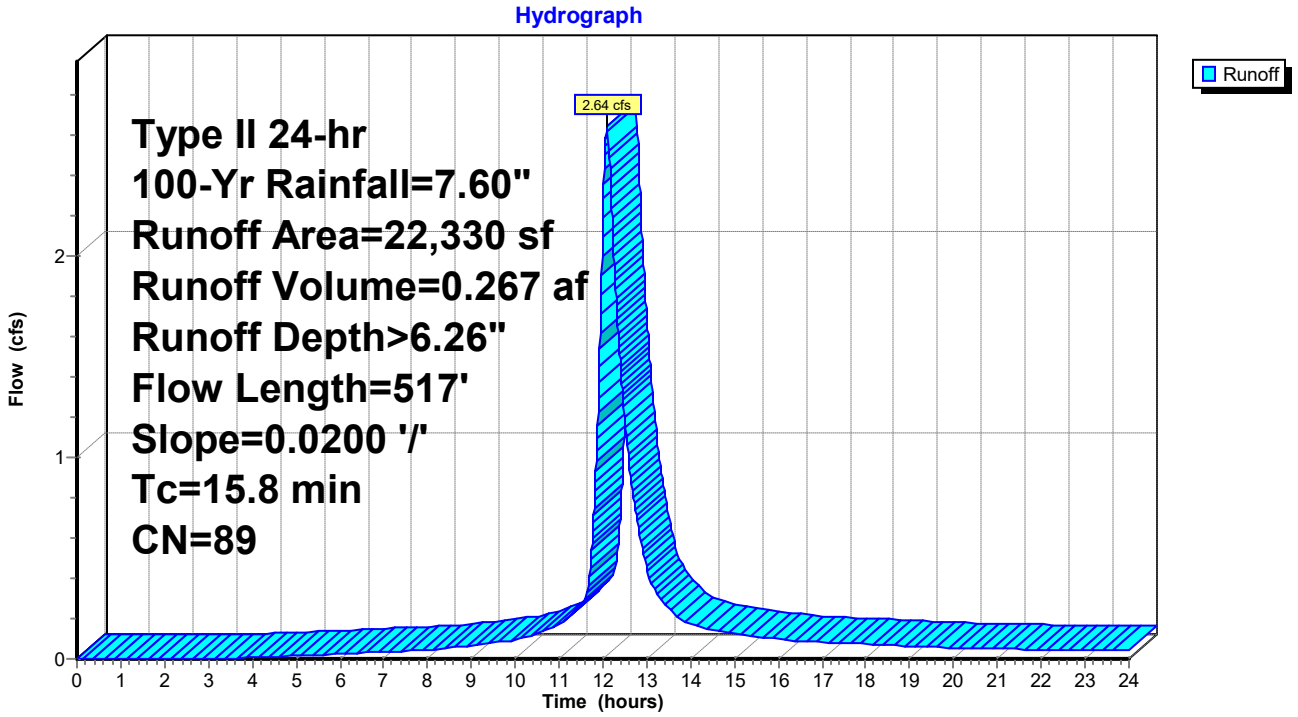
Runoff = 2.64 cfs @ 12.08 hrs, Volume= 0.267 af, Depth> 6.26"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
13,573	98	Paved parking, HSG C
8,757	74	>75% Grass cover, Good, HSG C
22,330	89	Weighted Average
8,757		39.22% Pervious Area
13,573		60.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
2.7	367	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
15.8	517	Total			

Subcatchment 23: DA #7



Summary for Pond 24: I-8

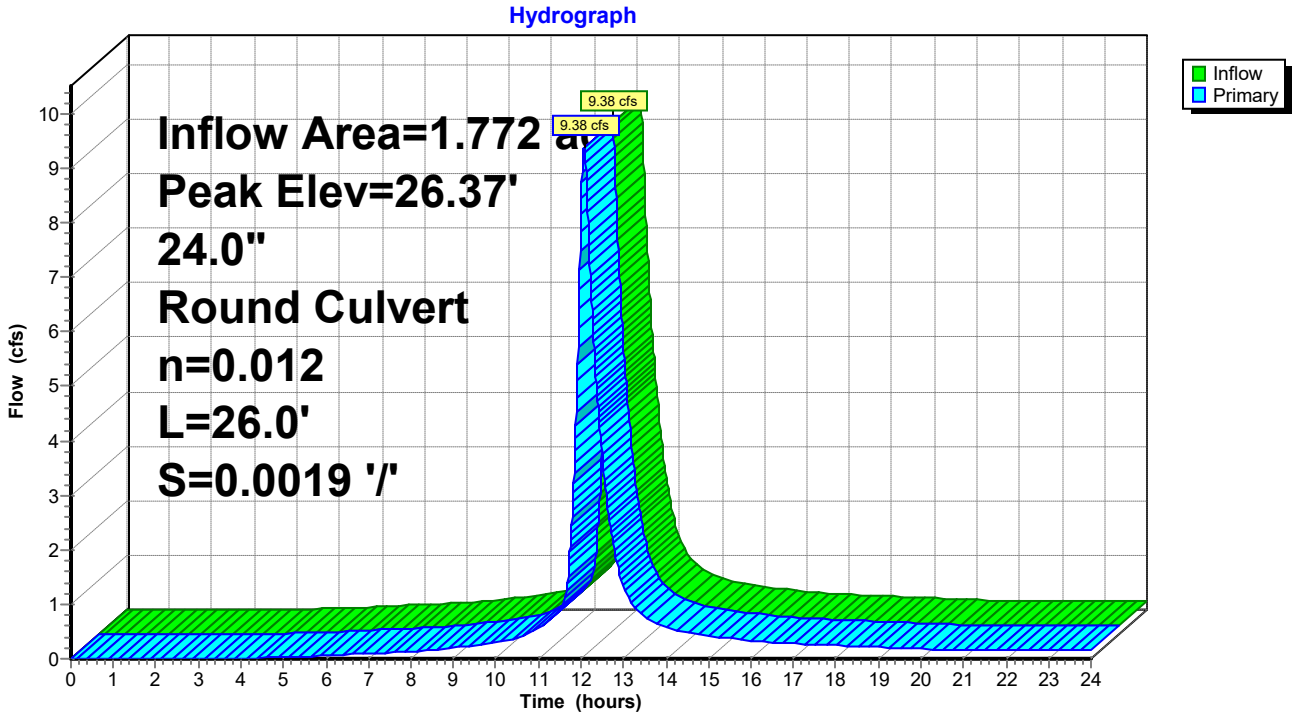
Inflow Area = 1.772 ac, 50.77% Impervious, Inflow Depth > 5.97" for 100-Yr event
Inflow = 9.38 cfs @ 12.07 hrs, Volume= 0.881 af
Outflow = 9.38 cfs @ 12.07 hrs, Volume= 0.881 af, Atten= 0%, Lag= 0.0 min
Primary = 9.38 cfs @ 12.07 hrs, Volume= 0.881 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 26.37' @ 12.10 hrs
Flood Elev= 27.26'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.75'	**24.0" Round Culvert** L= 26.0' Ke= 0.500 Inlet / Outlet Invert= 18.75' / 18.70' S= 0.0019 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=7.36 cfs @ 12.07 hrs HW=26.11' TW=25.87' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 7.36 cfs @ 2.34 fps)

Pond 24: I-8



Summary for Subcatchment 25: DA #8

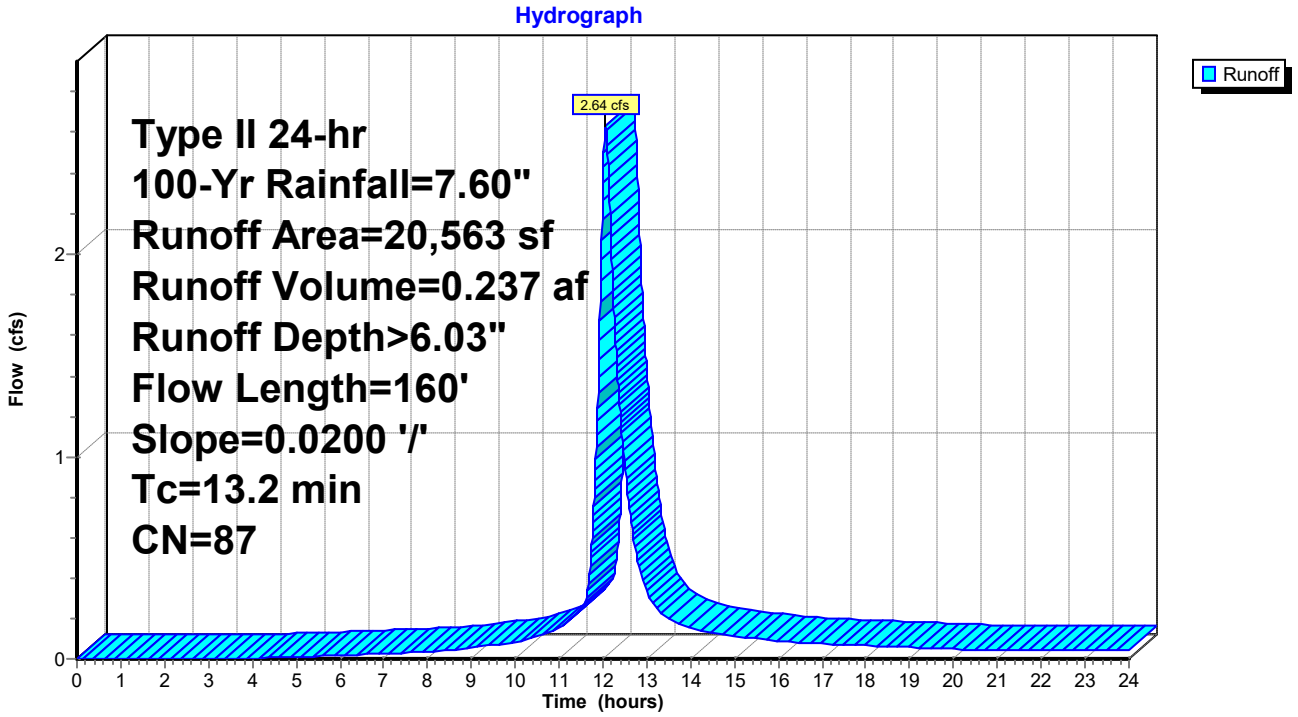
Runoff = 2.64 cfs @ 12.06 hrs, Volume= 0.237 af, Depth> 6.03"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
11,019	98	Paved parking, HSG C
9,544	74	>75% Grass cover, Good, HSG C
20,563	87	Weighted Average
9,544		46.41% Pervious Area
11,019		53.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.1	10	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.2	160	Total			

Subcatchment 25: DA #8



Summary for Pond 26: I-9

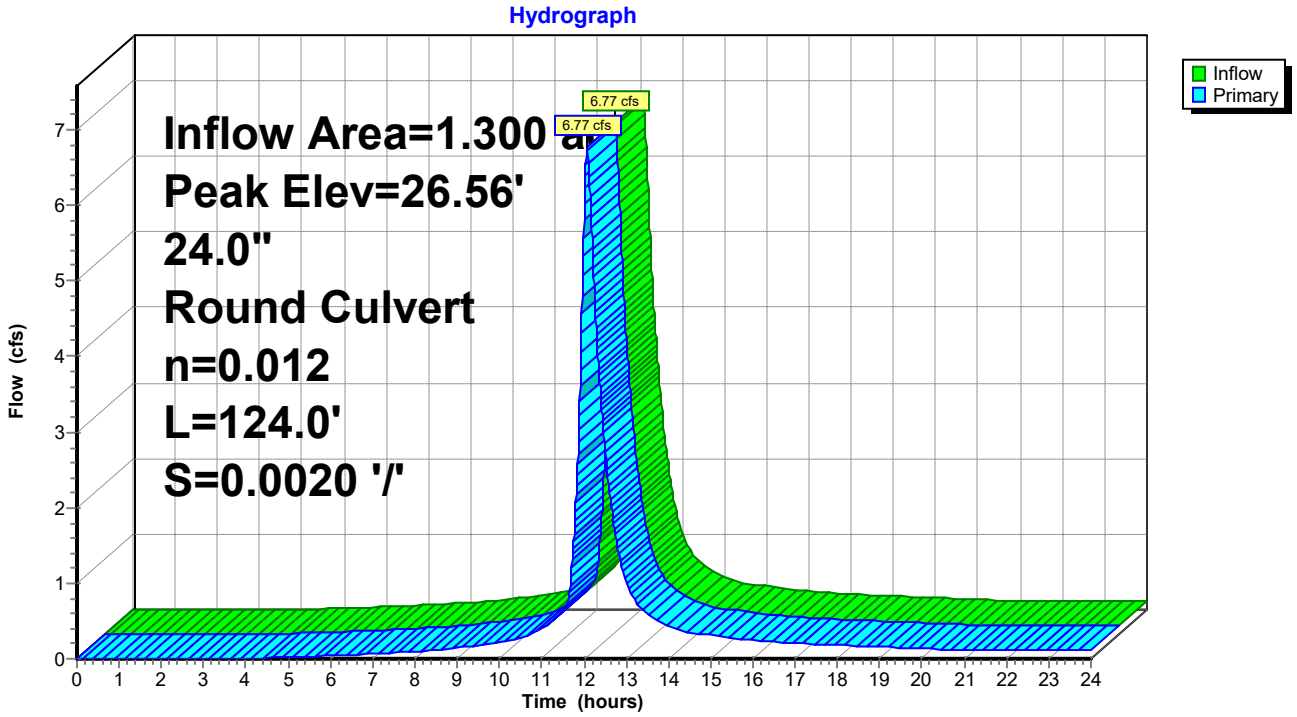
Inflow Area = 1.300 ac, 49.75% Impervious, Inflow Depth > 5.94" for 100-Yr event
Inflow = 6.77 cfs @ 12.08 hrs, Volume= 0.644 af
Outflow = 6.77 cfs @ 12.08 hrs, Volume= 0.644 af, Atten= 0%, Lag= 0.0 min
Primary = 6.77 cfs @ 12.08 hrs, Volume= 0.644 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 26.56' @ 12.11 hrs
Flood Elev= 27.89'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.00'	**24.0" Round Culvert** L= 124.0' Ke= 0.500 Inlet / Outlet Invert= 19.00' / 18.75' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=1.67 cfs @ 12.08 hrs HW=26.16' TW=26.15' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.67 cfs @ 0.53 fps)

Pond 26: I-9



Summary for Subcatchment 27: DA #9

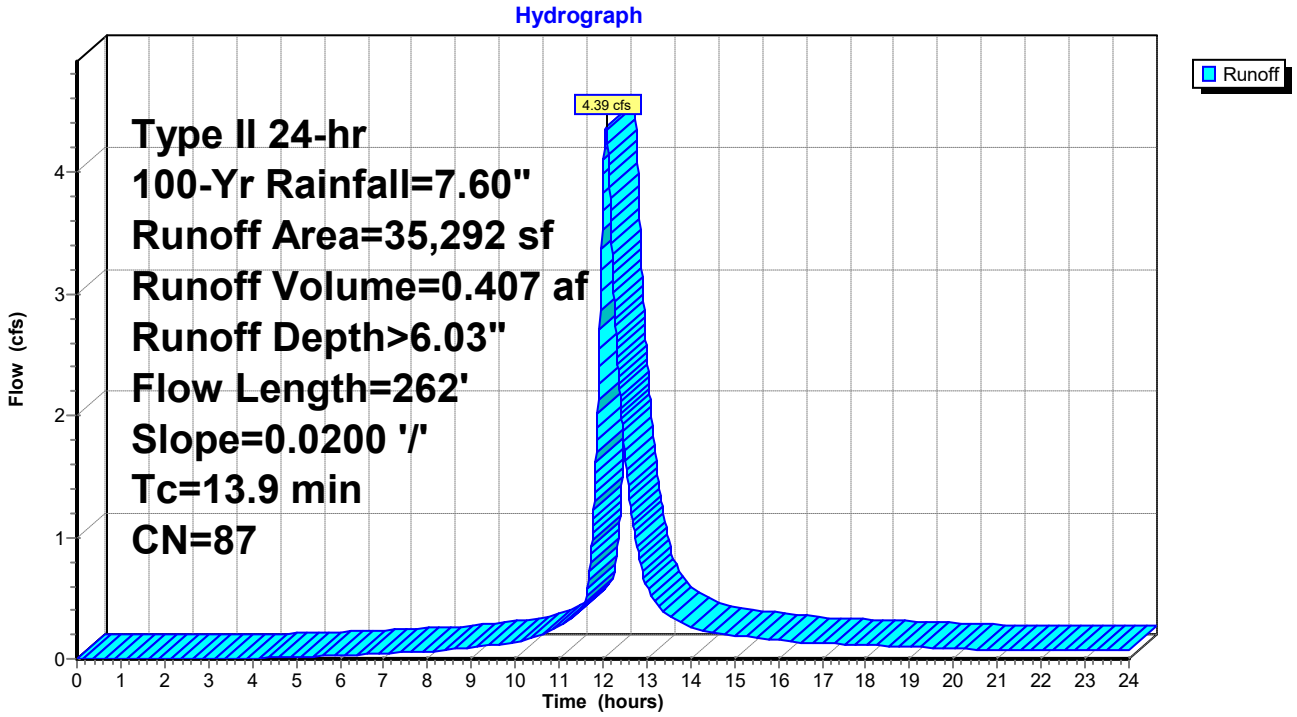
Runoff = 4.39 cfs @ 12.07 hrs, Volume= 0.407 af, Depth> 6.03"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
18,751	98	Paved parking, HSG C
16,541	74	>75% Grass cover, Good, HSG C
35,292	87	Weighted Average
16,541		46.87% Pervious Area
18,751		53.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.8	112	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.9	262	Total			

Subcatchment 27: DA #9



Summary for Pond 28: I-10

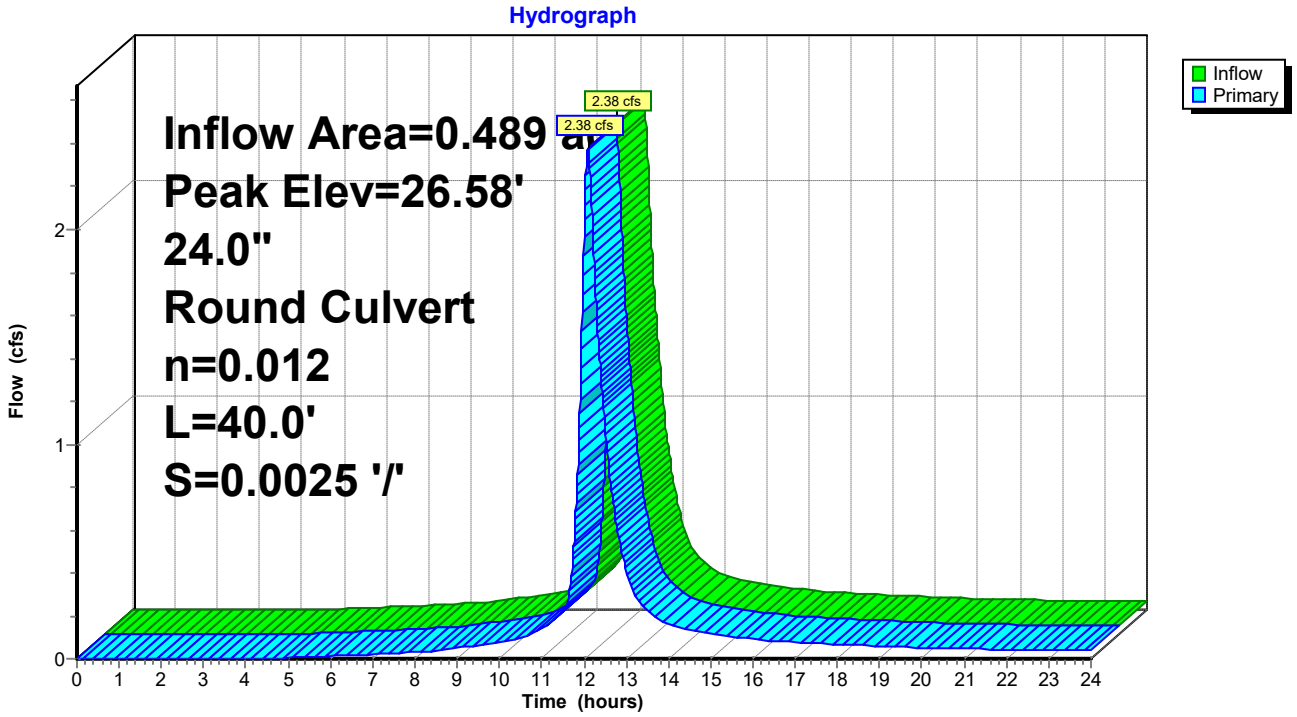
Inflow Area = 0.489 ac, 44.15% Impervious, Inflow Depth > 5.80" for 100-Yr event
Inflow = 2.38 cfs @ 12.10 hrs, Volume= 0.236 af
Outflow = 2.38 cfs @ 12.10 hrs, Volume= 0.236 af, Atten= 0%, Lag= 0.0 min
Primary = 2.38 cfs @ 12.10 hrs, Volume= 0.236 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 26.58' @ 12.12 hrs
Flood Elev= 27.69'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.10'	**24.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 19.10' / 19.00' S= 0.0025 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 12.10 hrs HW=26.37' TW=26.47' (Dynamic Tailwater)
└**1=Culvert** (Controls 0.00 cfs)

Pond 28: I-10



Summary for Subcatchment 29: DA #10

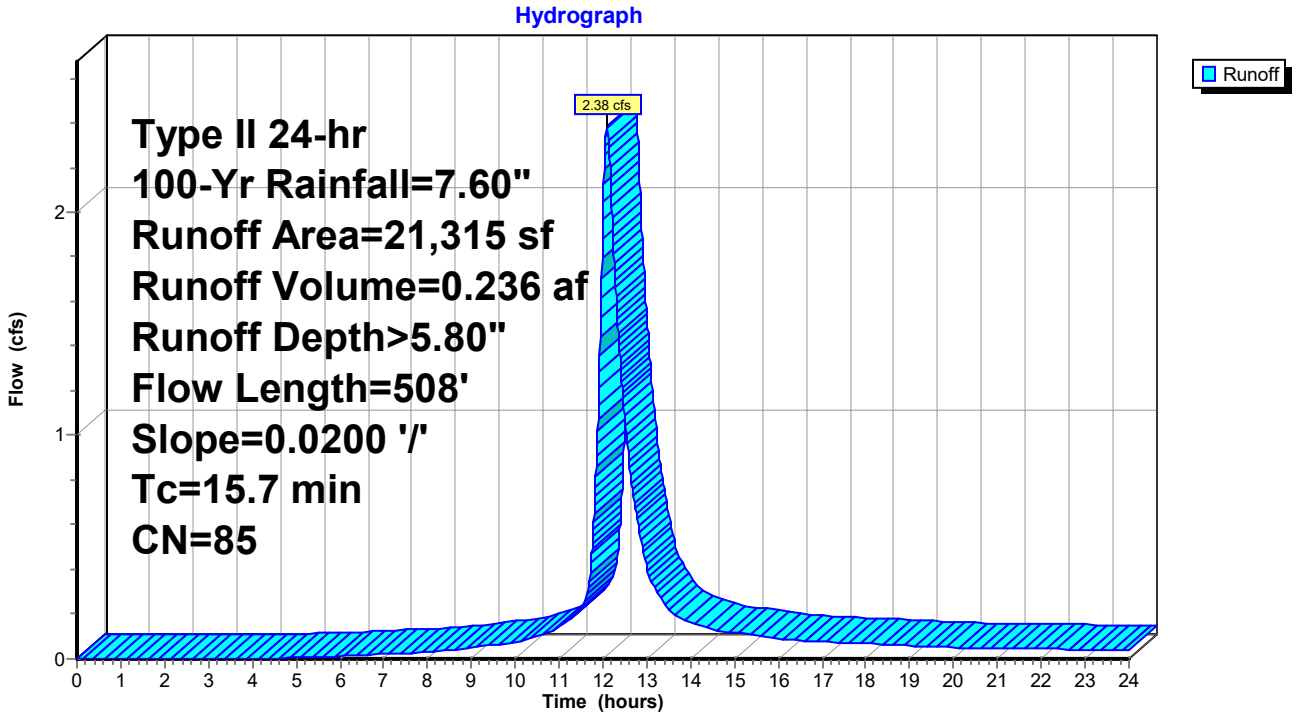
Runoff = 2.38 cfs @ 12.10 hrs, Volume= 0.236 af, Depth> 5.80"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
9,410	98	Paved parking, HSG C
11,905	74	>75% Grass cover, Good, HSG C
21,315	85	Weighted Average
11,905		55.85% Pervious Area
9,410		44.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
2.6	358	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
15.7	508	Total			

Subcatchment 29: DA #10



Summary for Pond 30: I-11

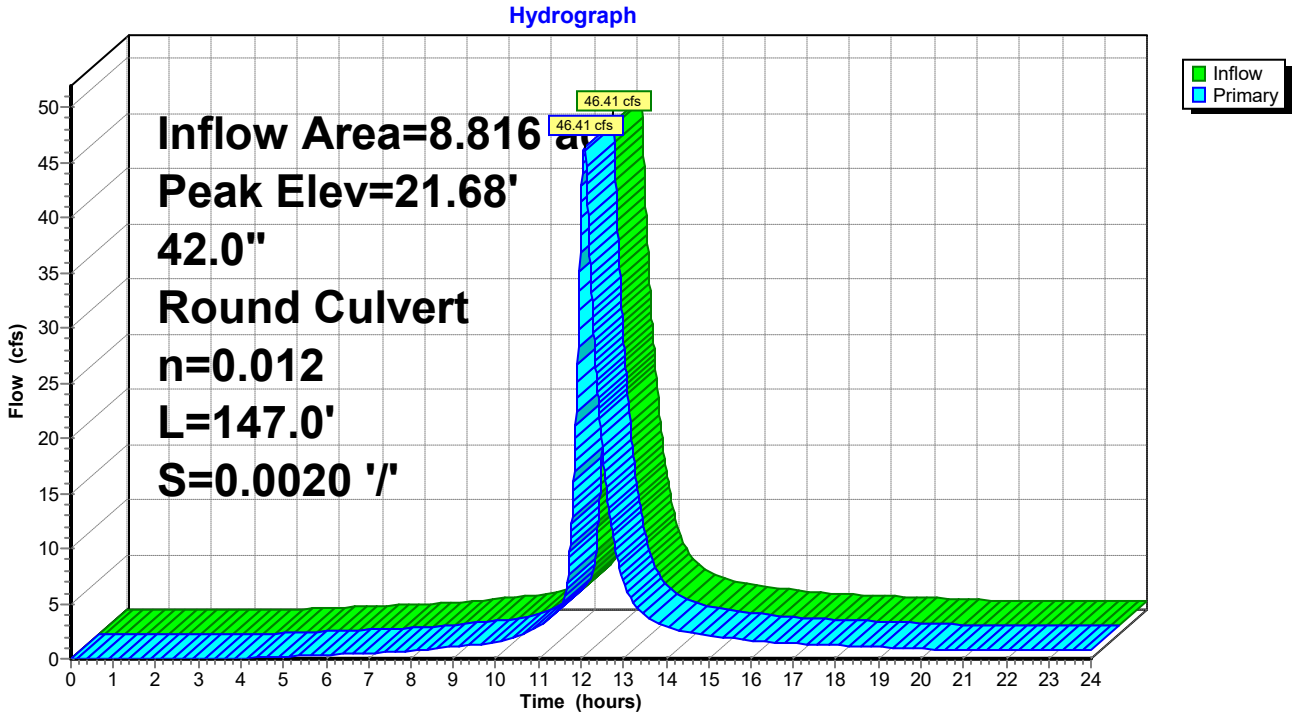
Inflow Area = 8.816 ac, 56.89% Impervious, Inflow Depth > 6.11" for 100-Yr event
Inflow = 46.41 cfs @ 12.08 hrs, Volume= 4.490 af
Outflow = 46.41 cfs @ 12.08 hrs, Volume= 4.490 af, Atten= 0%, Lag= 0.0 min
Primary = 46.41 cfs @ 12.08 hrs, Volume= 4.490 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.68' @ 12.08 hrs
Flood Elev= 22.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.20'	**42.0" Round Culvert** L= 147.0' Ke= 0.500 Inlet / Outlet Invert= 18.20' / 17.90' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=46.39 cfs @ 12.08 hrs HW=21.68' TW=20.45' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 46.39 cfs @ 6.02 fps)

Pond 30: I-11



Summary for Subcatchment 31: DA #11

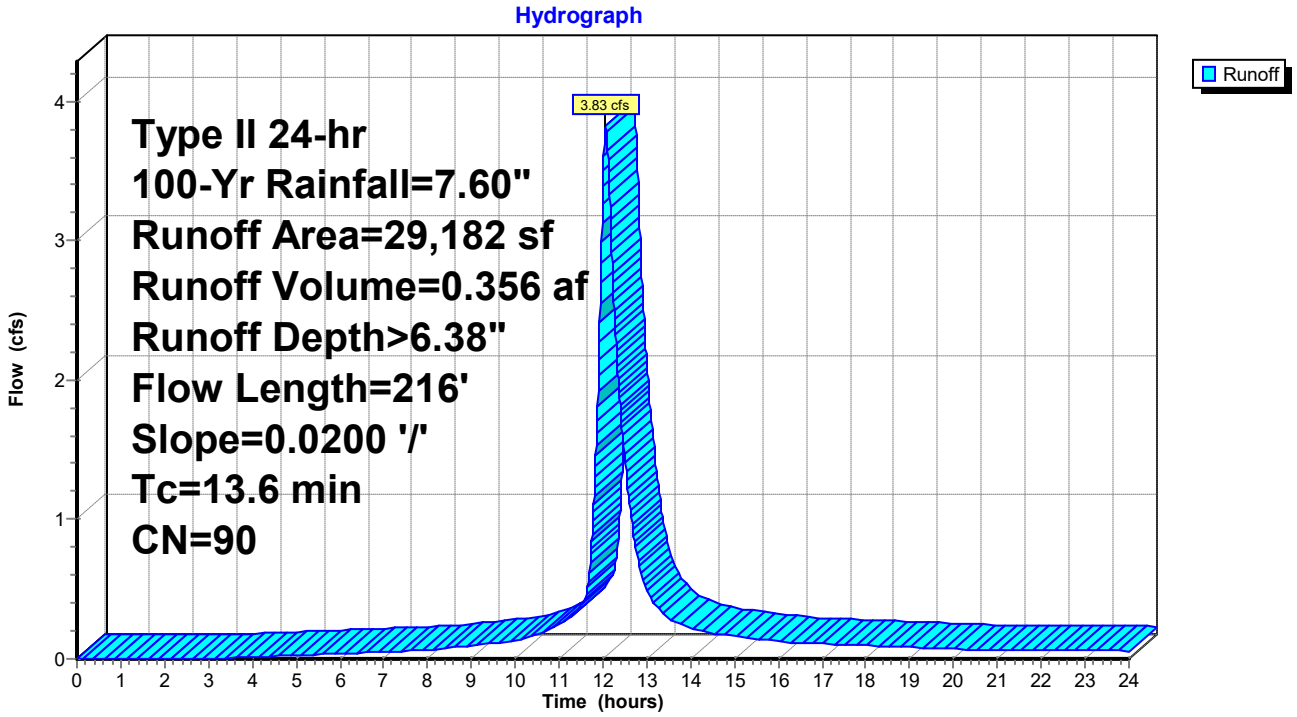
Runoff = 3.83 cfs @ 12.06 hrs, Volume= 0.356 af, Depth> 6.38"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
18,979	98	Paved parking, HSG C
10,203	74	>75% Grass cover, Good, HSG C
29,182	90	Weighted Average
10,203		34.96% Pervious Area
18,979		65.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.5	66	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.6	216	Total			

Subcatchment 31: DA #11



Summary for Pond 32: I-12

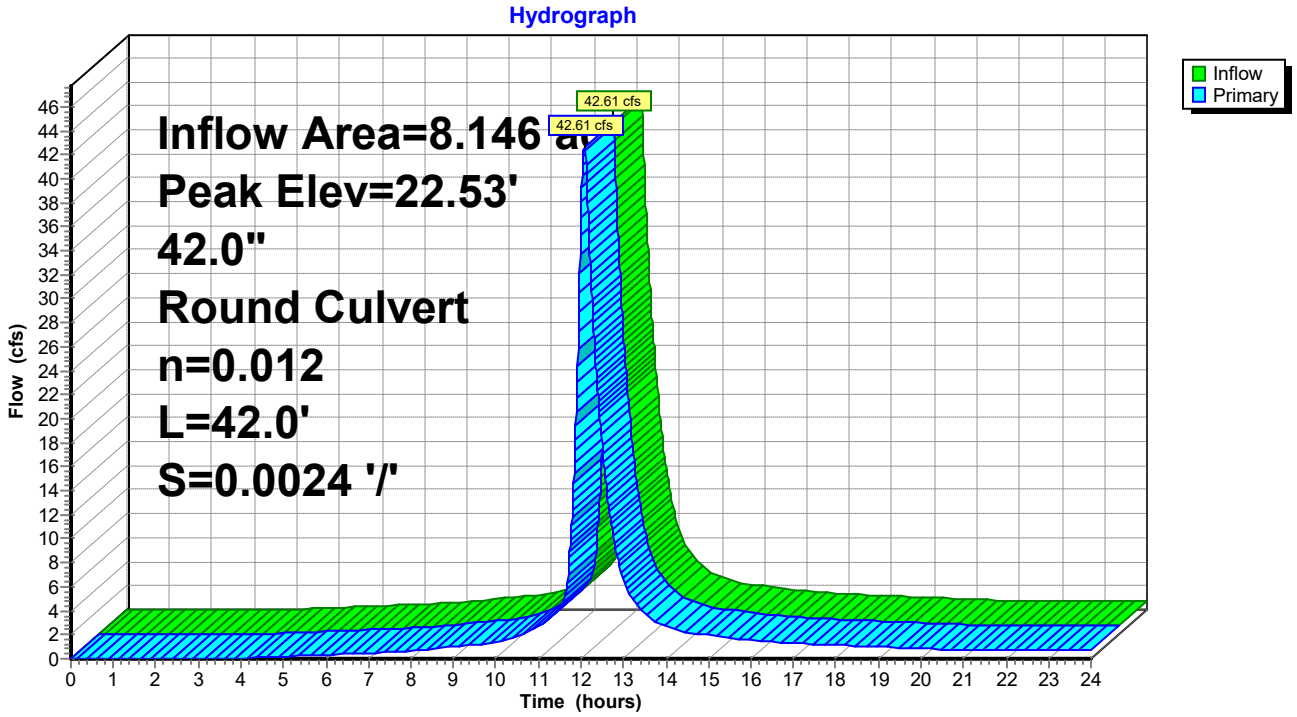
Inflow Area = 8.146 ac, 56.22% Impervious, Inflow Depth > 6.09" for 100-Yr event
Inflow = 42.61 cfs @ 12.08 hrs, Volume= 4.134 af
Outflow = 42.61 cfs @ 12.08 hrs, Volume= 4.134 af, Atten= 0%, Lag= 0.0 min
Primary = 42.61 cfs @ 12.08 hrs, Volume= 4.134 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.53' @ 12.08 hrs
Flood Elev= 22.63'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.30'	**42.0" Round Culvert** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 18.30' / 18.20' S= 0.0024 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=42.48 cfs @ 12.08 hrs HW=22.52' TW=21.68' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 42.48 cfs @ 4.41 fps)

Pond 32: I-12



Summary for Subcatchment 33: DA #12

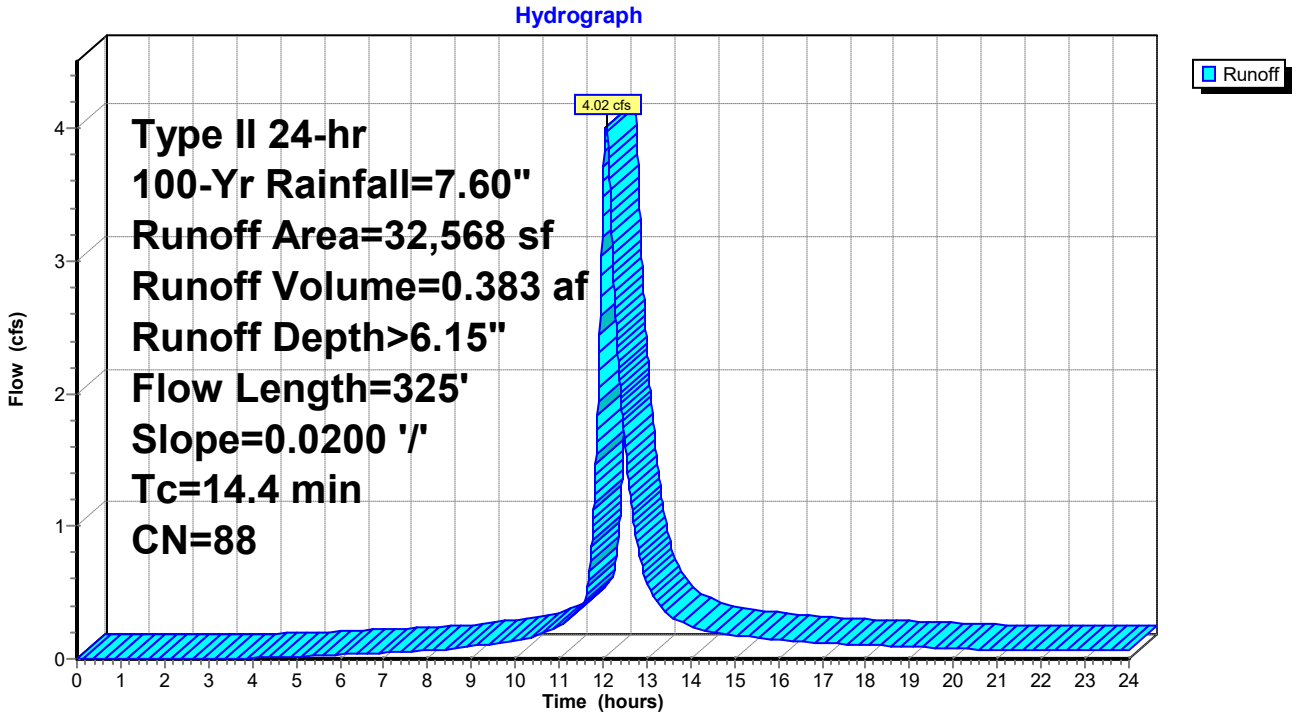
Runoff = 4.02 cfs @ 12.07 hrs, Volume= 0.383 af, Depth> 6.15"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
18,953	98	Paved parking, HSG C
13,615	74	>75% Grass cover, Good, HSG C
32,568	88	Weighted Average
13,615		41.80% Pervious Area
18,953		58.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
1.3	175	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.4	325	Total			

Subcatchment 33: DA #12



Summary for Pond 34: I-13

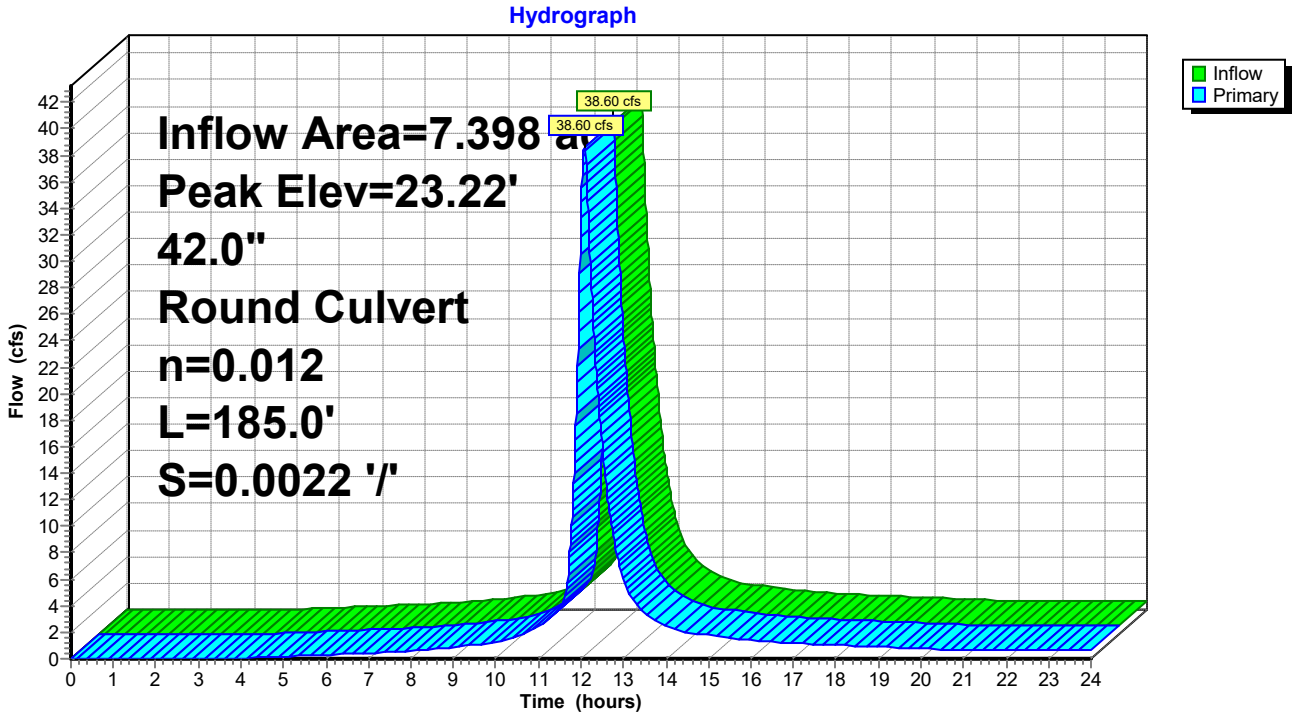
Inflow Area = 7.398 ac, 56.02% Impervious, Inflow Depth > 6.08" for 100-Yr event
Inflow = 38.60 cfs @ 12.08 hrs, Volume= 3.751 af
Outflow = 38.60 cfs @ 12.08 hrs, Volume= 3.751 af, Atten= 0%, Lag= 0.0 min
Primary = 38.60 cfs @ 12.08 hrs, Volume= 3.751 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 23.22' @ 12.09 hrs
Flood Elev= 23.18'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.70'	**42.0" Round Culvert** L= 185.0' Ke= 0.500 Inlet / Outlet Invert= 18.70' / 18.30' S= 0.0022 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=38.04 cfs @ 12.08 hrs HW=23.20' TW=22.52' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 38.04 cfs @ 3.95 fps)

Pond 34: I-13



Summary for Subcatchment 35: DA #13

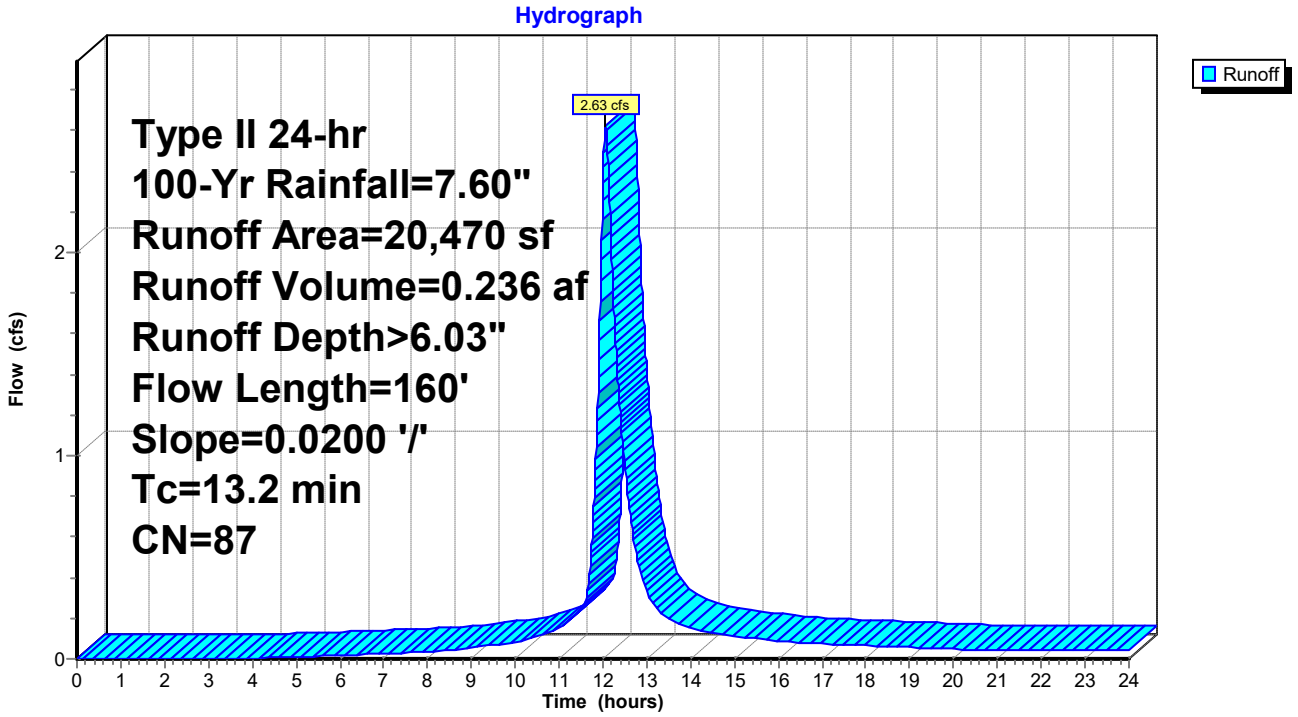
Runoff = 2.63 cfs @ 12.06 hrs, Volume= 0.236 af, Depth> 6.03"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
10,957	98	Paved parking, HSG C
9,513	74	>75% Grass cover, Good, HSG C
20,470	87	Weighted Average
9,513		46.47% Pervious Area
10,957		53.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.1	10	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.2	160	Total			

Subcatchment 35: DA #13



Summary for Pond 36: I-14

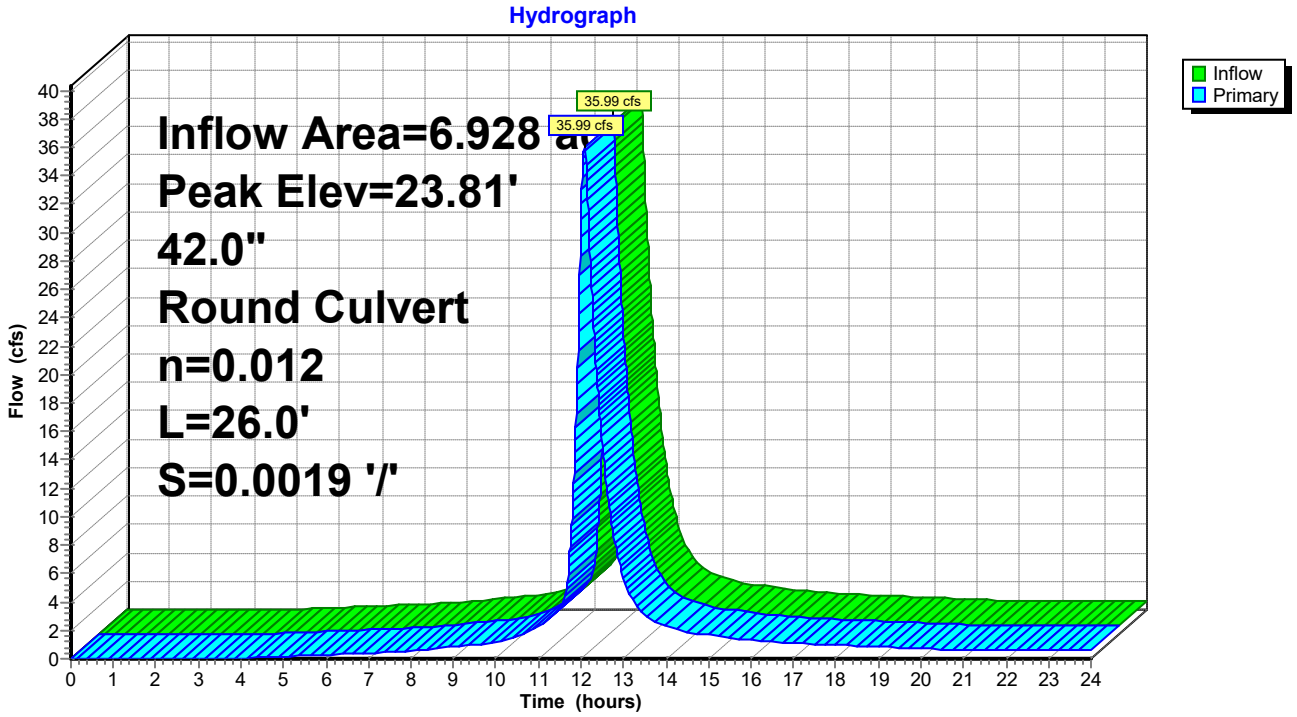
Inflow Area = 6.928 ac, 56.19% Impervious, Inflow Depth > 6.09" for 100-Yr event
Inflow = 35.99 cfs @ 12.08 hrs, Volume= 3.515 af
Outflow = 35.99 cfs @ 12.08 hrs, Volume= 3.515 af, Atten= 0%, Lag= 0.0 min
Primary = 35.99 cfs @ 12.08 hrs, Volume= 3.515 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 23.81' @ 12.10 hrs
Flood Elev= 23.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.75'	**42.0" Round Culvert** L= 26.0' Ke= 0.500 Inlet / Outlet Invert= 18.75' / 18.70' S= 0.0019 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=34.74 cfs @ 12.08 hrs HW=23.76' TW=23.20' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 34.74 cfs @ 3.61 fps)

Pond 36: I-14



Summary for Subcatchment 37: DA #14

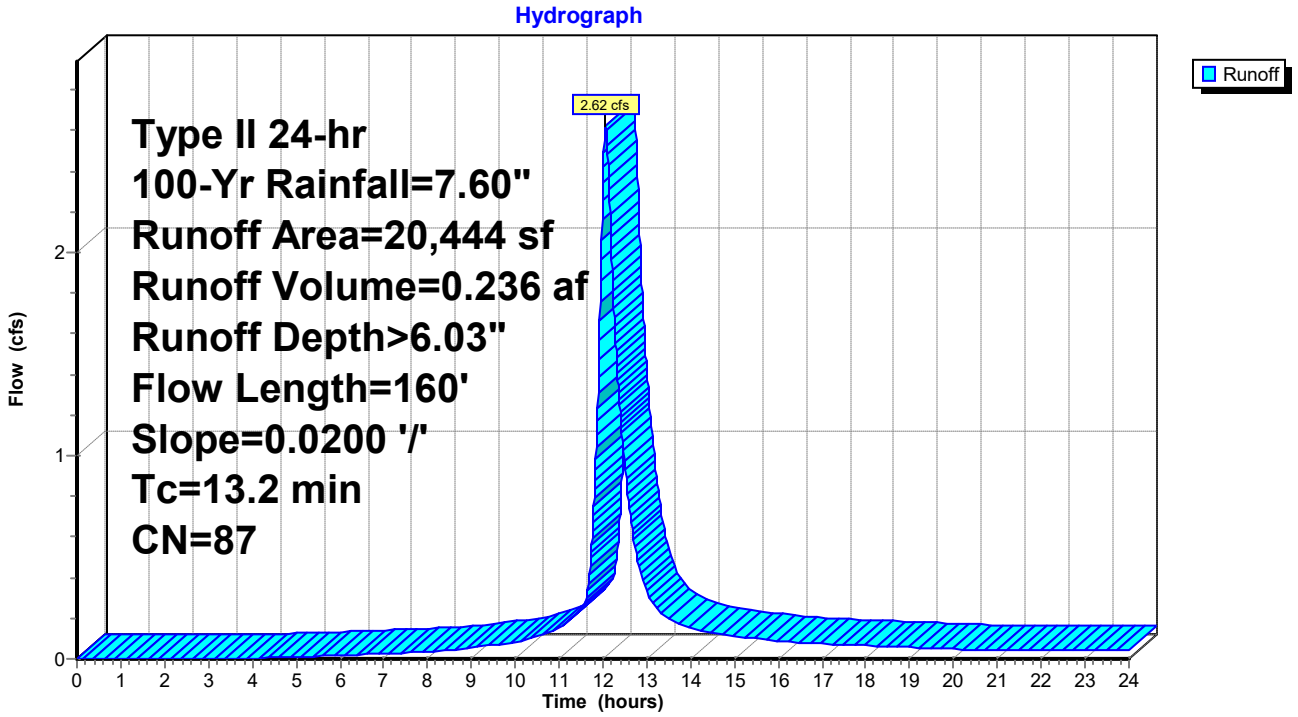
Runoff = 2.62 cfs @ 12.06 hrs, Volume= 0.236 af, Depth> 6.03"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
10,945	98	Paved parking, HSG C
9,499	74	>75% Grass cover, Good, HSG C
20,444	87	Weighted Average
9,499		46.46% Pervious Area
10,945		53.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.1	10	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.2	160	Total			

Subcatchment 37: DA #14



Summary for Pond 38: I-15

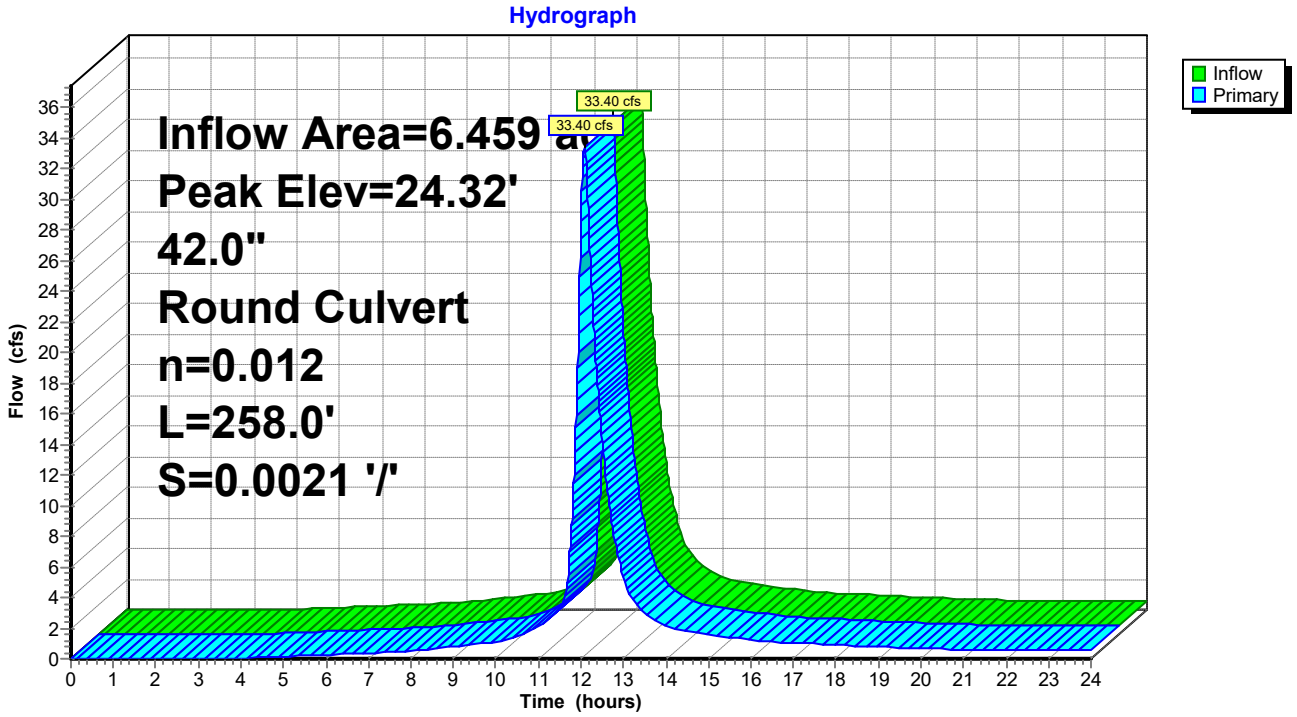
Inflow Area = 6.459 ac, 56.38% Impervious, Inflow Depth > 6.09" for 100-Yr event
Inflow = 33.40 cfs @ 12.08 hrs, Volume= 3.279 af
Outflow = 33.40 cfs @ 12.08 hrs, Volume= 3.279 af, Atten= 0%, Lag= 0.0 min
Primary = 33.40 cfs @ 12.08 hrs, Volume= 3.279 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 24.32' @ 12.10 hrs
Flood Elev= 23.24'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.30'	**42.0" Round Culvert** L= 258.0' Ke= 0.500 Inlet / Outlet Invert= 19.30' / 18.75' S= 0.0021 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=31.25 cfs @ 12.08 hrs HW=24.23' TW=23.77' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 31.25 cfs @ 3.25 fps)

Pond 38: I-15



Summary for Subcatchment 39: DA #15

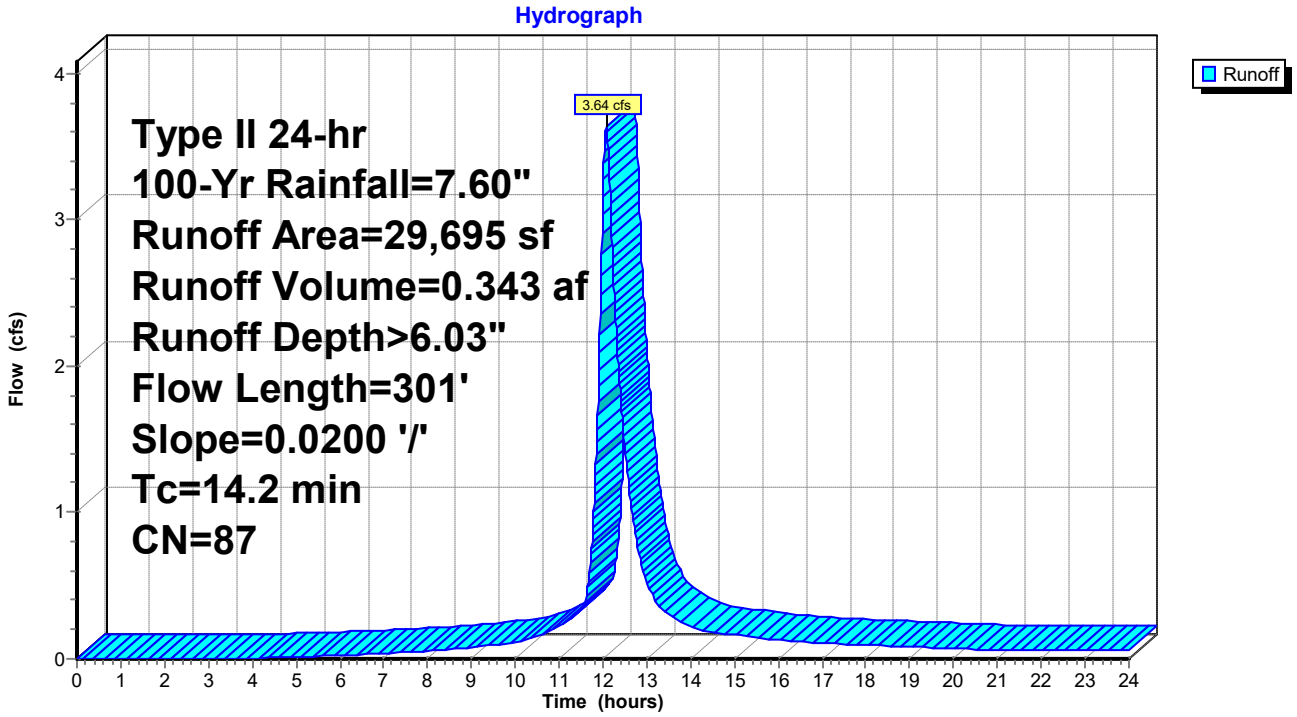
Runoff = 3.64 cfs @ 12.08 hrs, Volume= 0.343 af, Depth> 6.03"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
15,959	98	Paved parking, HSG C
13,736	74	>75% Grass cover, Good, HSG C
29,695	87	Weighted Average
13,736		46.26% Pervious Area
15,959		53.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
1.1	151	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.2	301	Total			

Subcatchment 39: DA #15



Summary for Pond 40: I-16

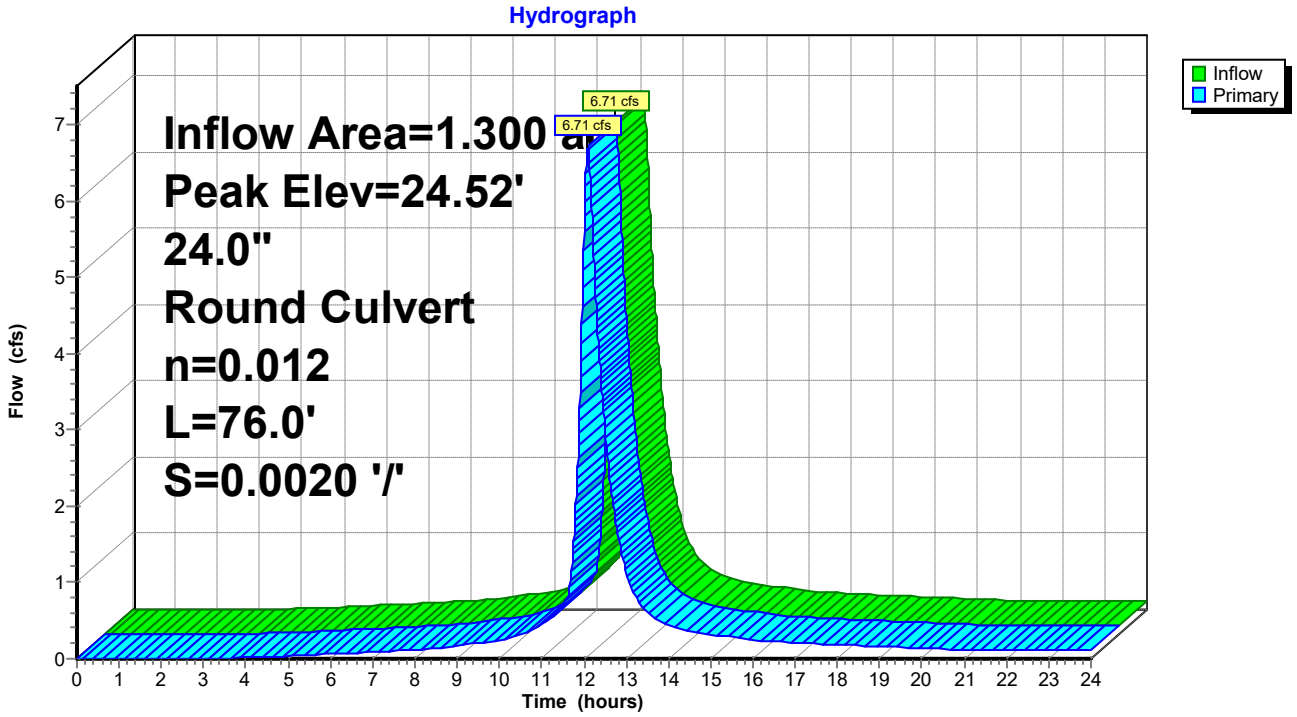
Inflow Area = 1.300 ac, 62.25% Impervious, Inflow Depth > 6.26" for 100-Yr event
Inflow = 6.71 cfs @ 12.08 hrs, Volume= 0.678 af
Outflow = 6.71 cfs @ 12.08 hrs, Volume= 0.678 af, Atten= 0%, Lag= 0.0 min
Primary = 6.71 cfs @ 12.08 hrs, Volume= 0.678 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 24.52' @ 12.11 hrs
Flood Elev= 23.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.45'	**24.0" Round Culvert** L= 76.0' Ke= 0.500 Inlet / Outlet Invert= 19.45' / 19.30' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=4.78 cfs @ 12.08 hrs HW=24.33' TW=24.23' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 4.78 cfs @ 1.52 fps)

Pond 40: I-16



Summary for Subcatchment 41: DA #16

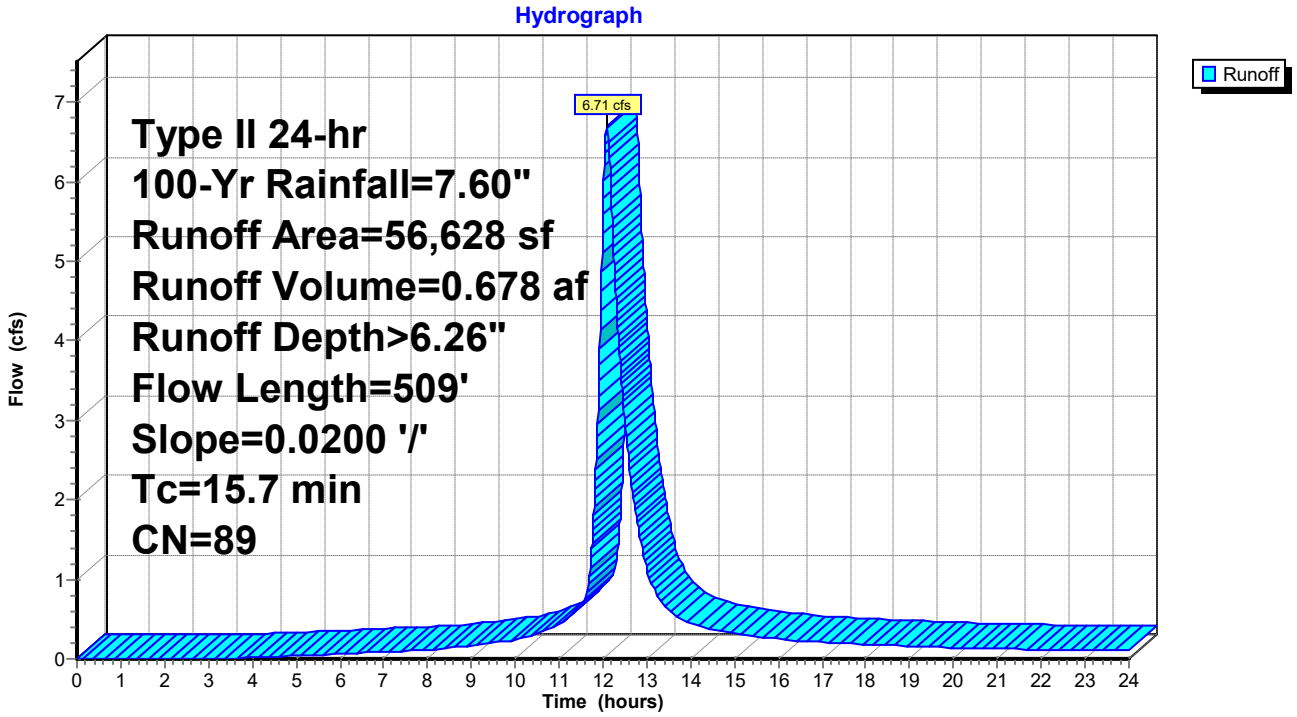
Runoff = 6.71 cfs @ 12.08 hrs, Volume= 0.678 af, Depth> 6.26"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
35,249	98	Paved parking, HSG C
21,379	74	>75% Grass cover, Good, HSG C
56,628	89	Weighted Average
21,379		37.75% Pervious Area
35,249		62.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
2.6	359	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
15.7	509	Total			

Subcatchment 41: DA #16



Summary for Pond 42: I-17

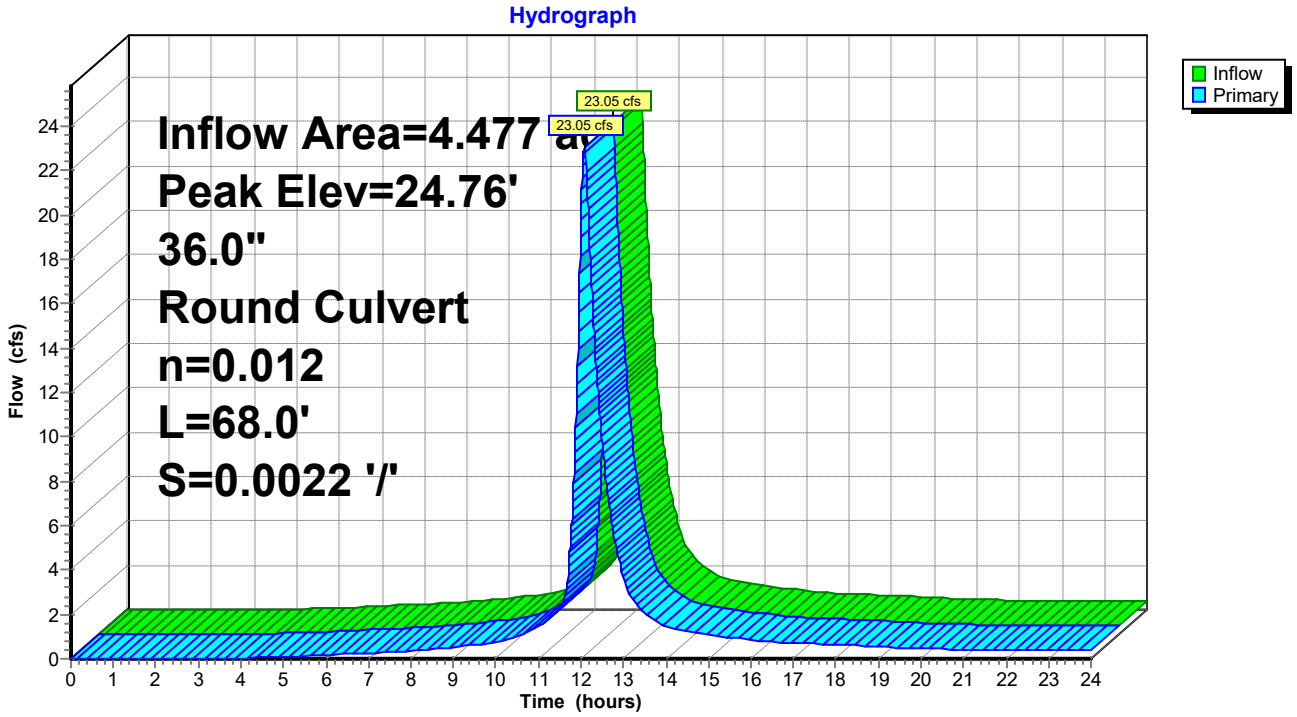
Inflow Area = 4.477 ac, 55.08% Impervious, Inflow Depth > 6.05" for 100-Yr event
Inflow = 23.05 cfs @ 12.08 hrs, Volume= 2.258 af
Outflow = 23.05 cfs @ 12.08 hrs, Volume= 2.258 af, Atten= 0%, Lag= 0.0 min
Primary = 23.05 cfs @ 12.08 hrs, Volume= 2.258 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 24.76' @ 12.11 hrs
Flood Elev= 23.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.45'	**36.0" Round Culvert** L= 68.0' Ke= 0.500 Inlet / Outlet Invert= 19.45' / 19.30' S= 0.0022 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=20.40 cfs @ 12.08 hrs HW=24.59' TW=24.23' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 20.40 cfs @ 2.89 fps)

Pond 42: I-17



Summary for Subcatchment 43: DA #17

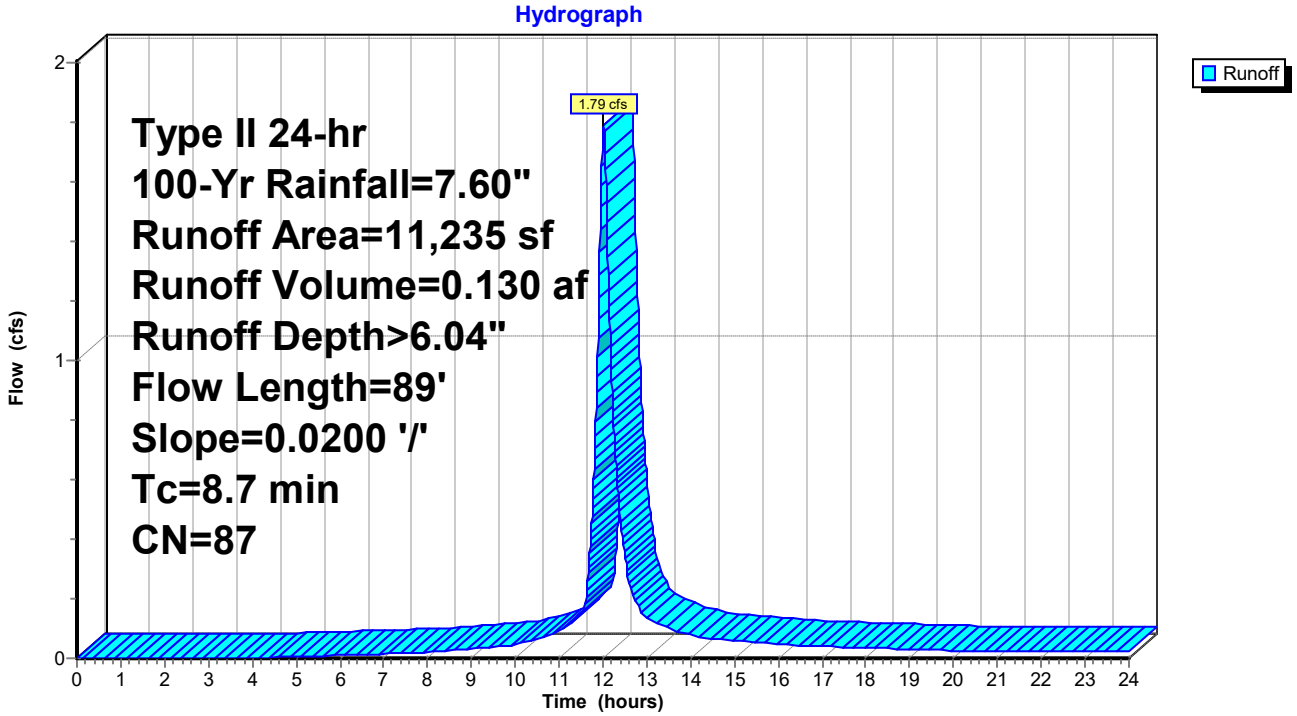
Runoff = 1.79 cfs @ 12.01 hrs, Volume= 0.130 af, Depth> 6.04"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
6,208	98	Paved parking, HSG C
5,027	74	>75% Grass cover, Good, HSG C
11,235	87	Weighted Average
5,027		44.74% Pervious Area
6,208		55.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	89	0.0200	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"

Subcatchment 43: DA #17



Summary for Pond 44: I-18

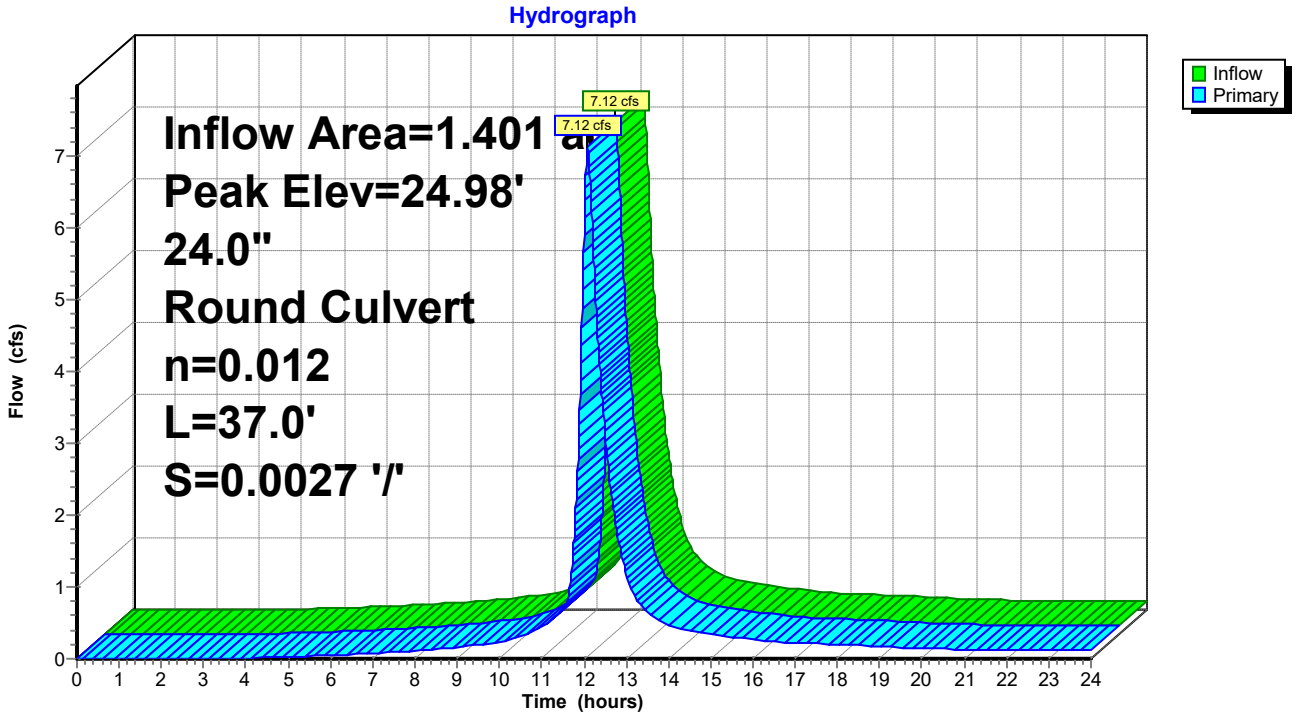
Inflow Area = 1.401 ac, 53.73% Impervious, Inflow Depth > 6.03" for 100-Yr event
Inflow = 7.12 cfs @ 12.09 hrs, Volume= 0.704 af
Outflow = 7.12 cfs @ 12.09 hrs, Volume= 0.704 af, Atten= 0%, Lag= 0.0 min
Primary = 7.12 cfs @ 12.09 hrs, Volume= 0.704 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 24.98' @ 12.12 hrs
Flood Elev= 23.44'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.55'	**24.0" Round Culvert** L= 37.0' Ke= 0.500 Inlet / Outlet Invert= 19.55' / 19.45' S= 0.0027 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=5.32 cfs @ 12.09 hrs HW=24.81' TW=24.68' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 5.32 cfs @ 1.69 fps)

Pond 44: I-18



Summary for Subcatchment 45: DA #18

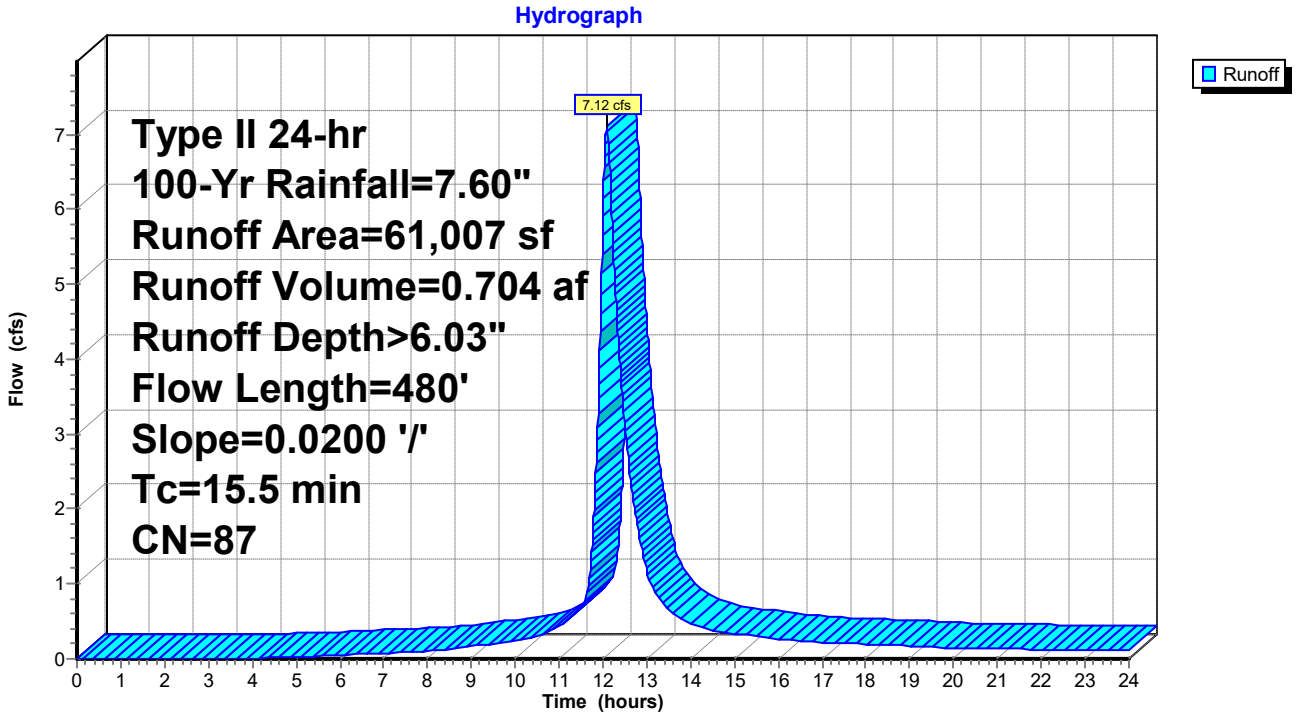
Runoff = 7.12 cfs @ 12.09 hrs, Volume= 0.704 af, Depth> 6.03"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
32,777	98	Paved parking, HSG C
28,230	74	>75% Grass cover, Good, HSG C
61,007	87	Weighted Average
28,230		46.27% Pervious Area
32,777		53.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
2.4	330	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
15.5	480	Total			

Subcatchment 45: DA #18



Summary for Pond 46: I-19

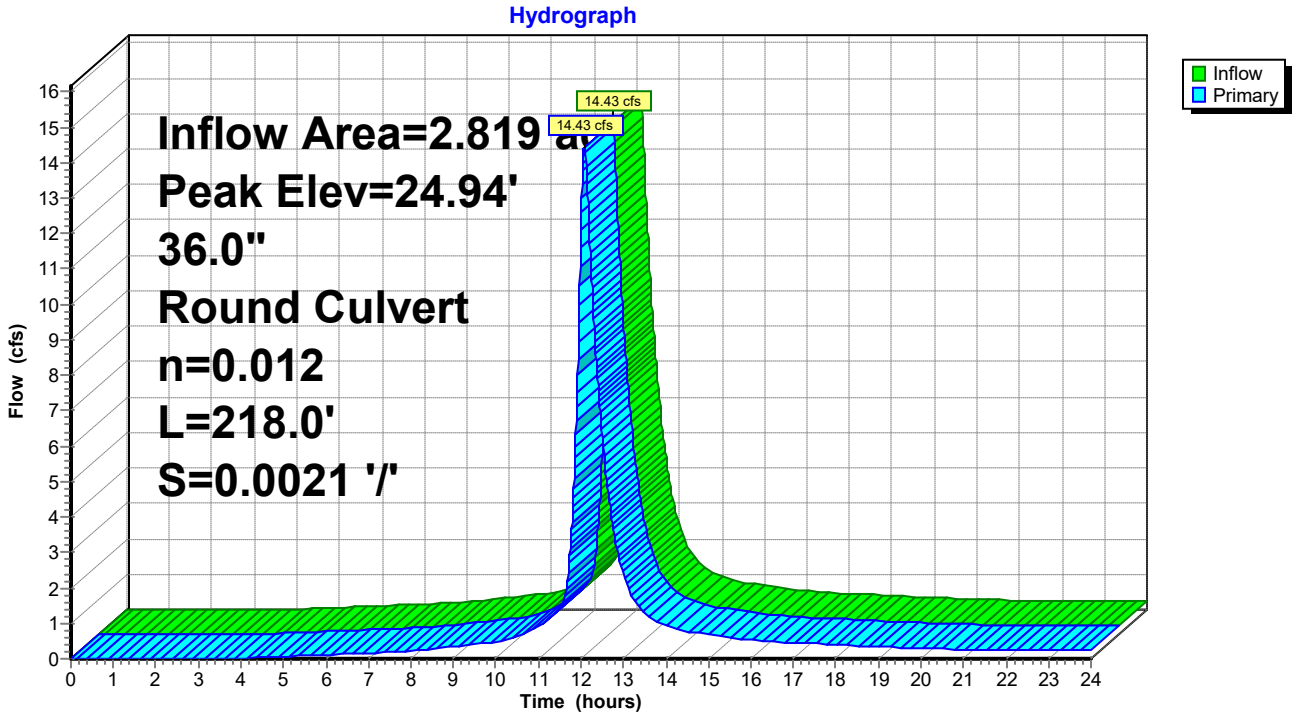
Inflow Area = 2.819 ac, 55.73% Impervious, Inflow Depth > 6.06" for 100-Yr event
Inflow = 14.43 cfs @ 12.08 hrs, Volume= 1.424 af
Outflow = 14.43 cfs @ 12.08 hrs, Volume= 1.424 af, Atten= 0%, Lag= 0.0 min
Primary = 14.43 cfs @ 12.08 hrs, Volume= 1.424 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 24.94' @ 12.12 hrs
Flood Elev= 22.68'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.90'	**36.0" Round Culvert** L= 218.0' Ke= 0.500 Inlet / Outlet Invert= 19.90' / 19.45' S= 0.0021 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=7.92 cfs @ 12.08 hrs HW=24.67' TW=24.61' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 7.92 cfs @ 1.12 fps)

Pond 46: I-19



Summary for Subcatchment 47: DA #19

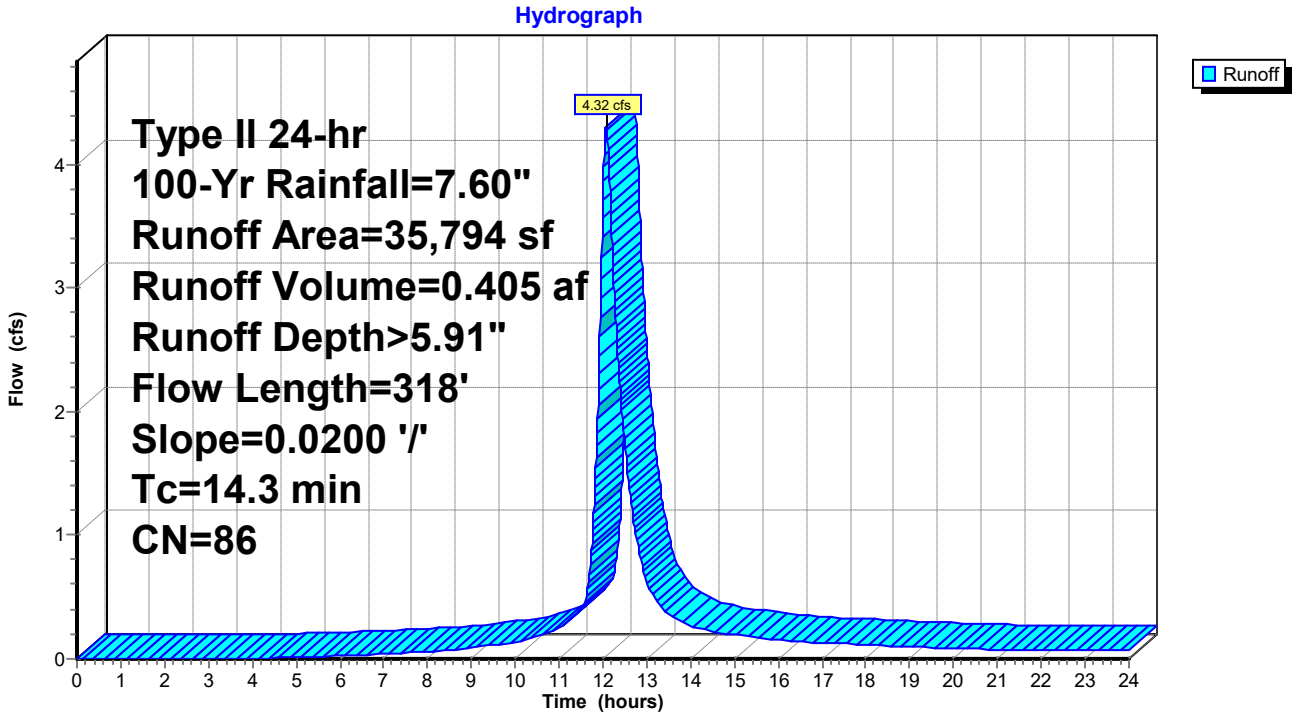
Runoff = 4.32 cfs @ 12.08 hrs, Volume= 0.405 af, Depth> 5.91"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
18,459	98	Paved parking, HSG C
17,335	74	>75% Grass cover, Good, HSG C
35,794	86	Weighted Average
17,335		48.43% Pervious Area
18,459		51.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
1.2	168	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.3	318	Total			

Subcatchment 47: DA #19



Summary for Pond 48: I-20

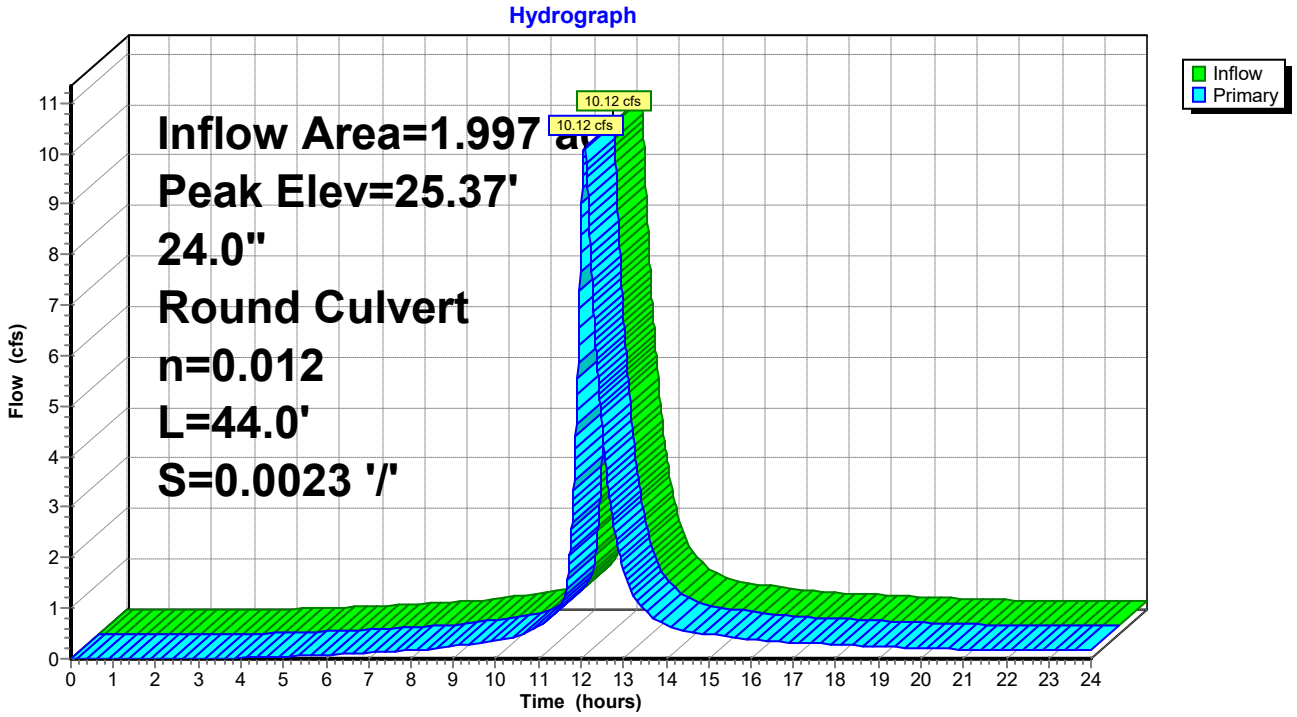
Inflow Area = 1.997 ac, 57.44% Impervious, Inflow Depth > 6.13" for 100-Yr event
Inflow = 10.12 cfs @ 12.09 hrs, Volume= 1.019 af
Outflow = 10.12 cfs @ 12.09 hrs, Volume= 1.019 af, Atten= 0%, Lag= 0.0 min
Primary = 10.12 cfs @ 12.09 hrs, Volume= 1.019 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.37' @ 12.13 hrs
Flood Elev= 23.01'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.00'	**24.0" Round Culvert** L= 44.0' Ke= 0.500 Inlet / Outlet Invert= 20.00' / 19.90' S= 0.0023 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=8.35 cfs @ 12.09 hrs HW=25.06' TW=24.75' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 8.35 cfs @ 2.66 fps)

Pond 48: I-20



Summary for Subcatchment 49: DA #20

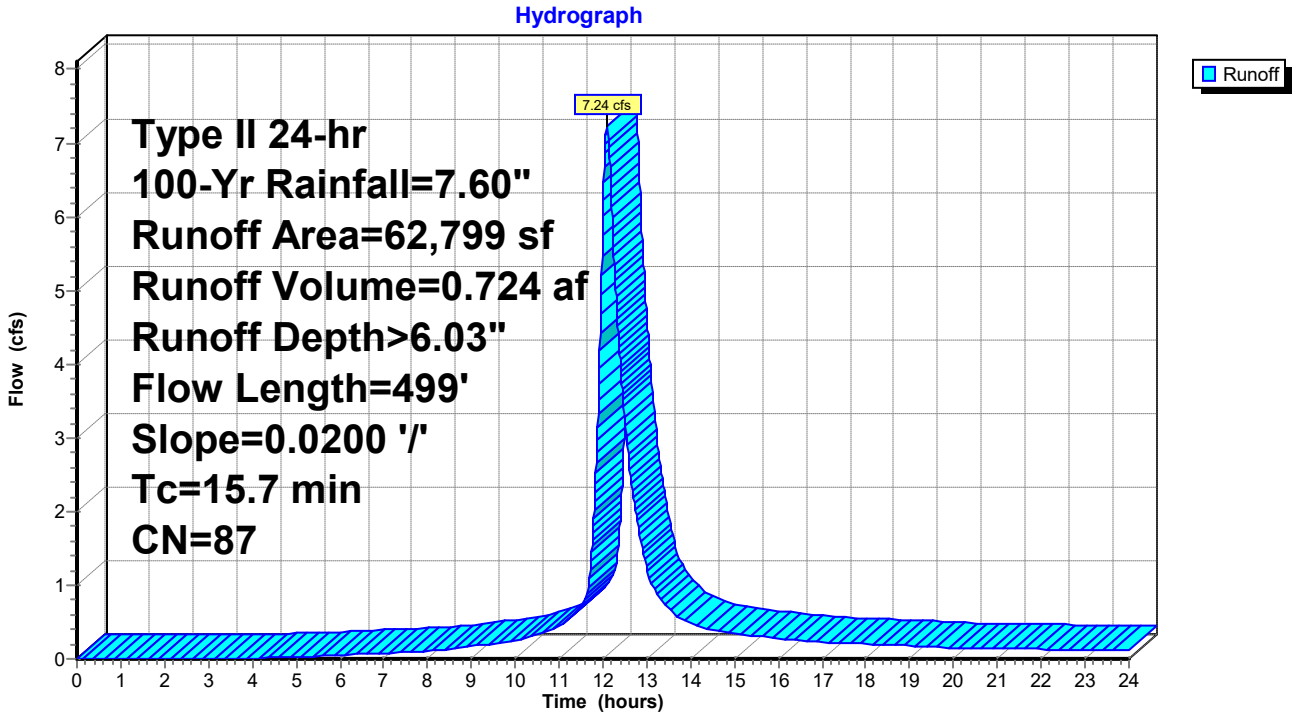
Runoff = 7.24 cfs @ 12.10 hrs, Volume= 0.724 af, Depth> 6.03"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
33,785	98	Paved parking, HSG C
29,014	74	>75% Grass cover, Good, HSG C
62,799	87	Weighted Average
29,014		46.20% Pervious Area
33,785		53.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
2.6	349	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
15.7	499	Total			

Subcatchment 49: DA #20



Summary for Pond 50: I-21

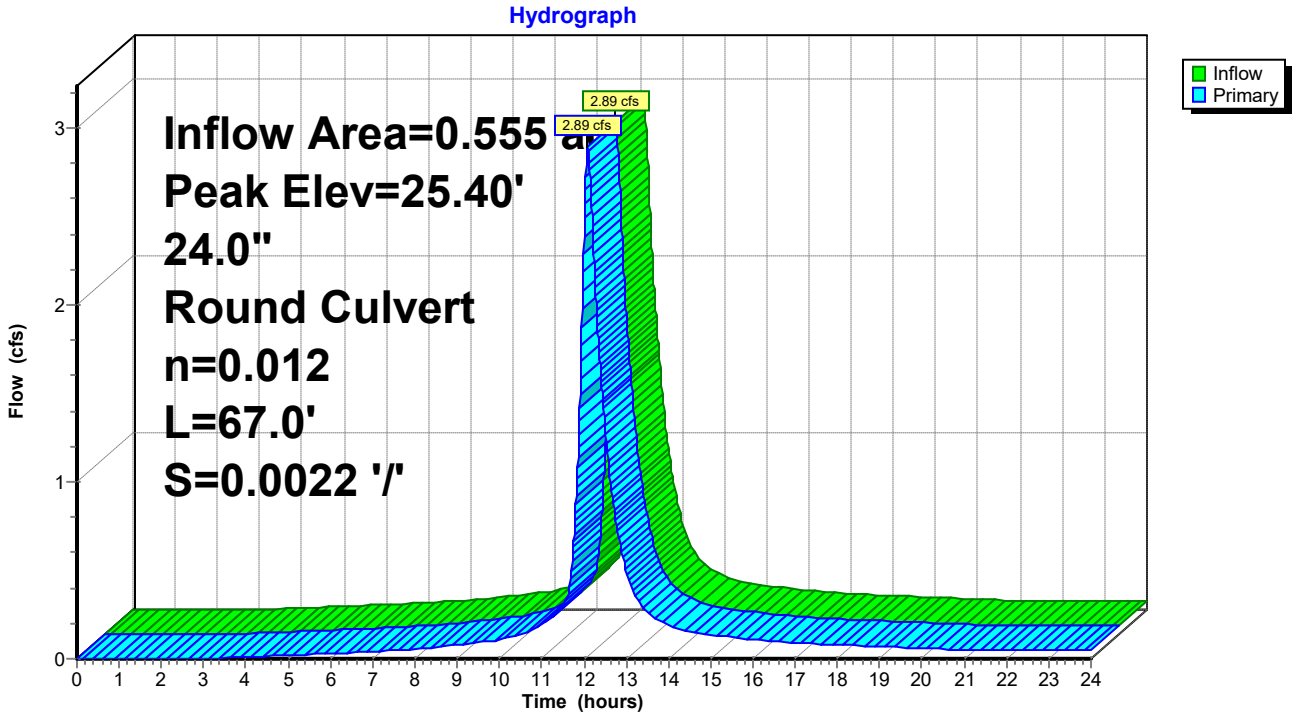
Inflow Area = 0.555 ac, 66.91% Impervious, Inflow Depth > 6.38" for 100-Yr event
Inflow = 2.89 cfs @ 12.09 hrs, Volume= 0.295 af
Outflow = 2.89 cfs @ 12.09 hrs, Volume= 0.295 af, Atten= 0%, Lag= 0.0 min
Primary = 2.89 cfs @ 12.09 hrs, Volume= 0.295 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.40' @ 12.14 hrs
Flood Elev= 23.46'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.15'	**24.0" Round Culvert** L= 67.0' Ke= 0.500 Inlet / Outlet Invert= 20.15' / 20.00' S= 0.0022 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=24.90' TW=25.05' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 50: I-21



Summary for Subcatchment 51: DA #21

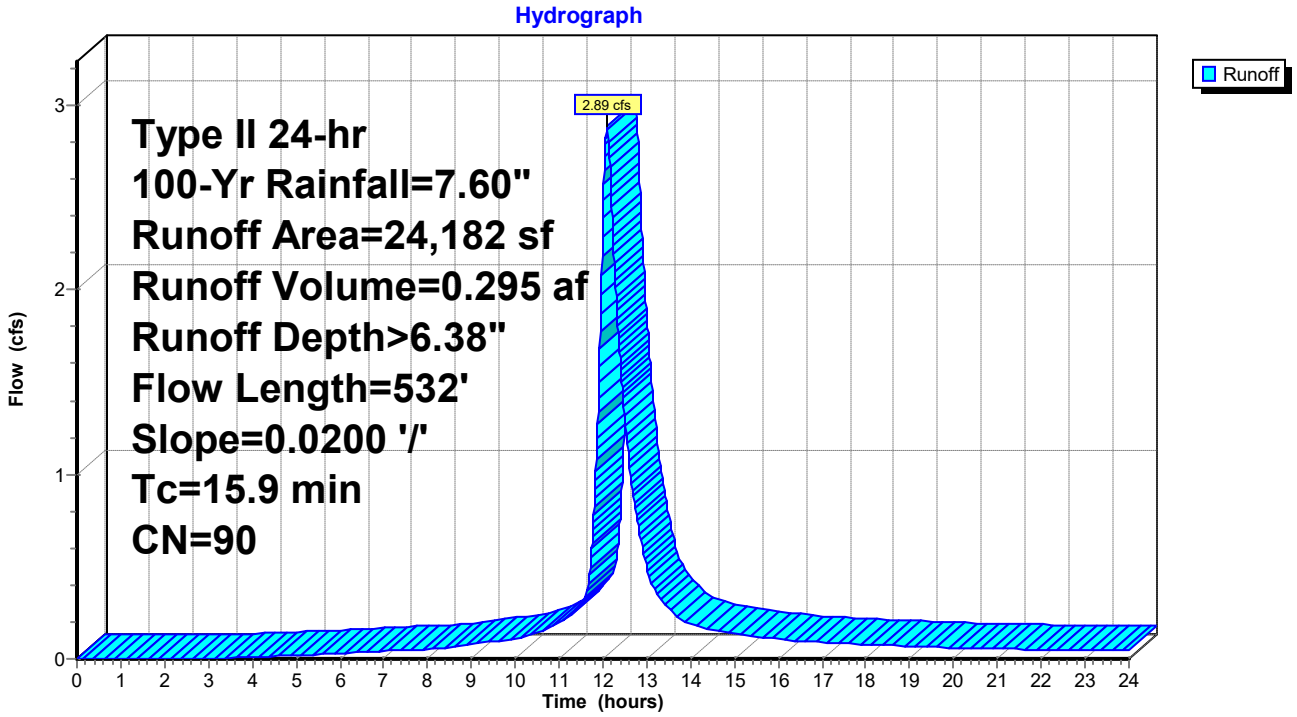
Runoff = 2.89 cfs @ 12.09 hrs, Volume= 0.295 af, Depth> 6.38"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
16,181	98	Paved parking, HSG C
8,001	74	>75% Grass cover, Good, HSG C
24,182	90	Weighted Average
8,001		33.09% Pervious Area
16,181		66.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
2.8	382	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
15.9	532	Total			

Subcatchment 51: DA #21



Summary for Pond 52: I-22

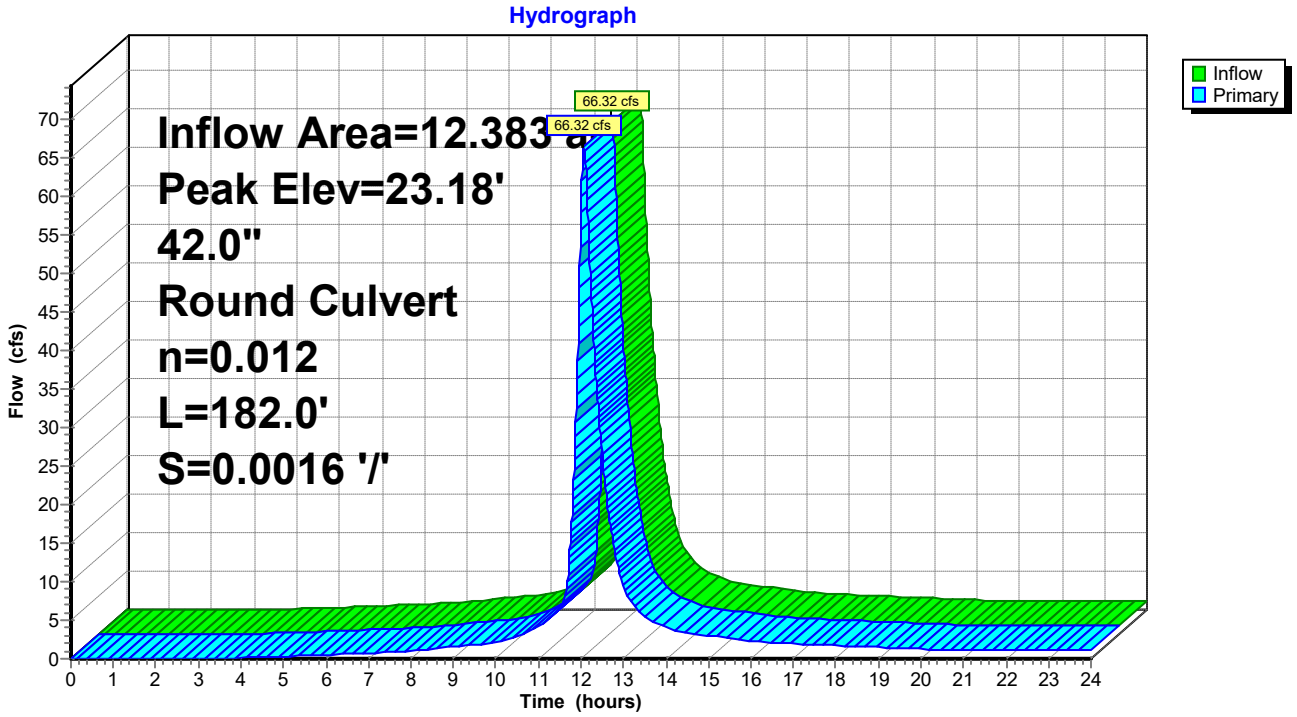
Inflow Area = 12.383 ac, 57.77% Impervious, Inflow Depth > 6.12" for 100-Yr event
Inflow = 66.32 cfs @ 12.07 hrs, Volume= 6.315 af
Outflow = 66.32 cfs @ 12.07 hrs, Volume= 6.315 af, Atten= 0%, Lag= 0.0 min
Primary = 66.32 cfs @ 12.07 hrs, Volume= 6.315 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 23.18' @ 12.07 hrs
Flood Elev= 20.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.20'	**42.0" Round Culvert** L= 182.0' Ke= 0.500 Inlet / Outlet Invert= 18.20' / 17.90' S= 0.0016 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=66.32 cfs @ 12.07 hrs HW=23.18' TW=20.43' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 66.32 cfs @ 6.89 fps)

Pond 52: I-22



Summary for Subcatchment 53: DA #22

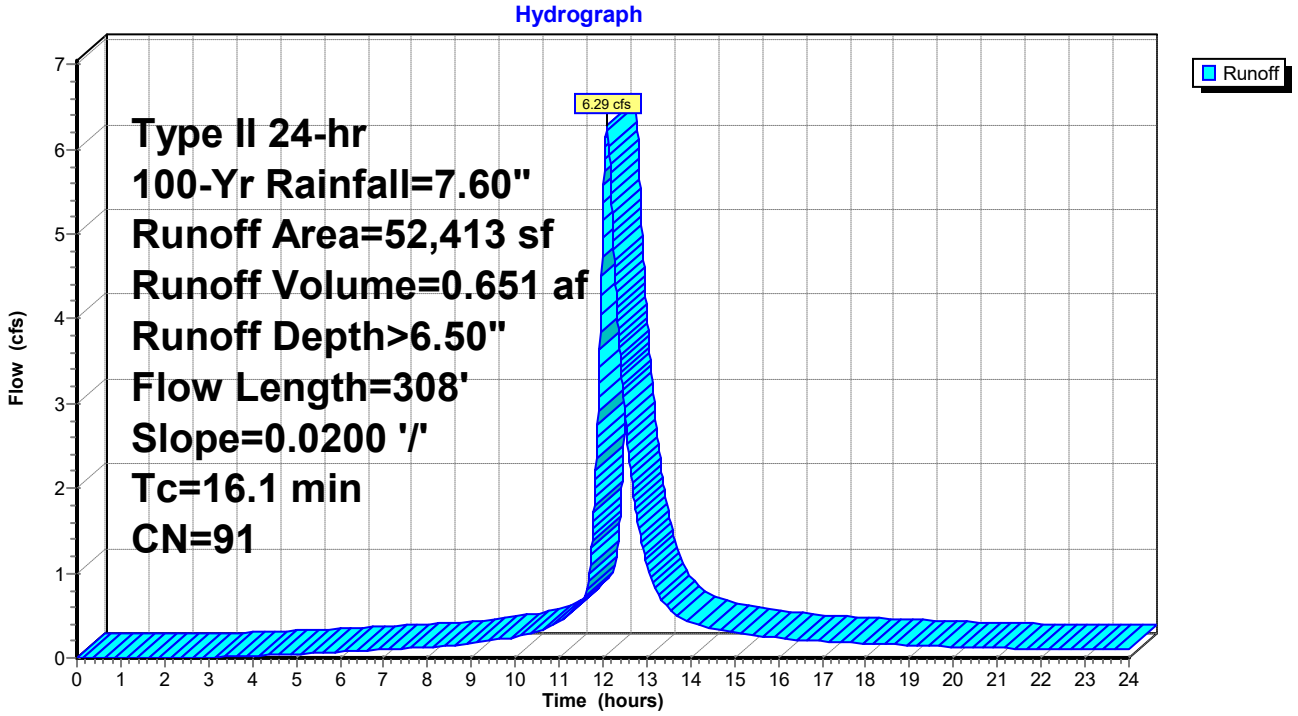
Runoff = 6.29 cfs @ 12.09 hrs, Volume= 0.651 af, Depth> 6.50"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
36,862	98	Paved parking, HSG C
15,551	74	>75% Grass cover, Good, HSG C
52,413	91	Weighted Average
15,551		29.67% Pervious Area
36,862		70.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	109	0.0200	0.18		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
4.7	41	0.0200	0.15		**Sheet Flow, B-C** Grass: Short n= 0.150 P2= 3.40"
1.2	158	0.0200	2.28		**Shallow Concentrated Flow, C-D** Unpaved Kv= 16.1 fps
16.1	308	Total			

Subcatchment 53: DA #22



Summary for Pond 54: I-23

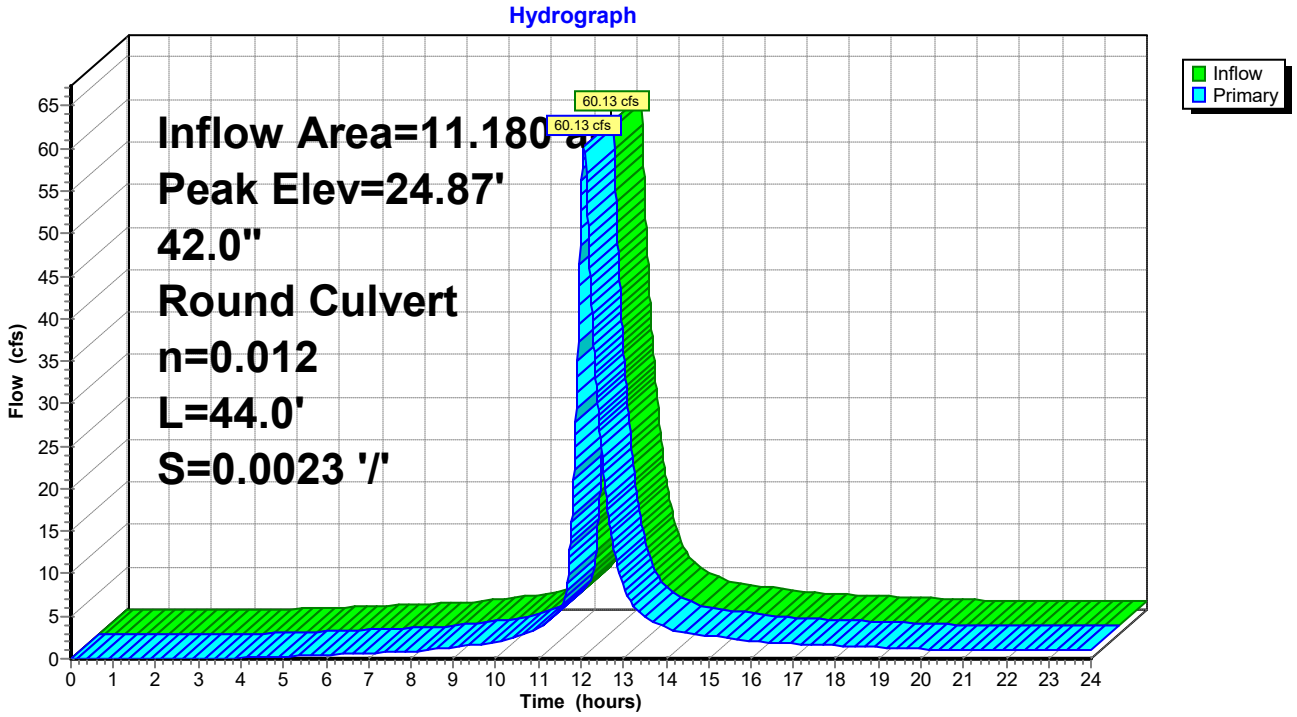
Inflow Area = 11.180 ac, 56.42% Impervious, Inflow Depth > 6.08" for 100-Yr event
Inflow = 60.13 cfs @ 12.07 hrs, Volume= 5.664 af
Outflow = 60.13 cfs @ 12.07 hrs, Volume= 5.664 af, Atten= 0%, Lag= 0.0 min
Primary = 60.13 cfs @ 12.07 hrs, Volume= 5.664 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 24.87' @ 12.07 hrs
Flood Elev= 20.68'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.30'	**42.0" Round Culvert** L= 44.0' Ke= 0.500 Inlet / Outlet Invert= 18.30' / 18.20' S= 0.0023 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=59.89 cfs @ 12.07 hrs HW=24.85' TW=23.18' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 59.89 cfs @ 6.23 fps)

Pond 54: I-23



Summary for Subcatchment 55: DA #23

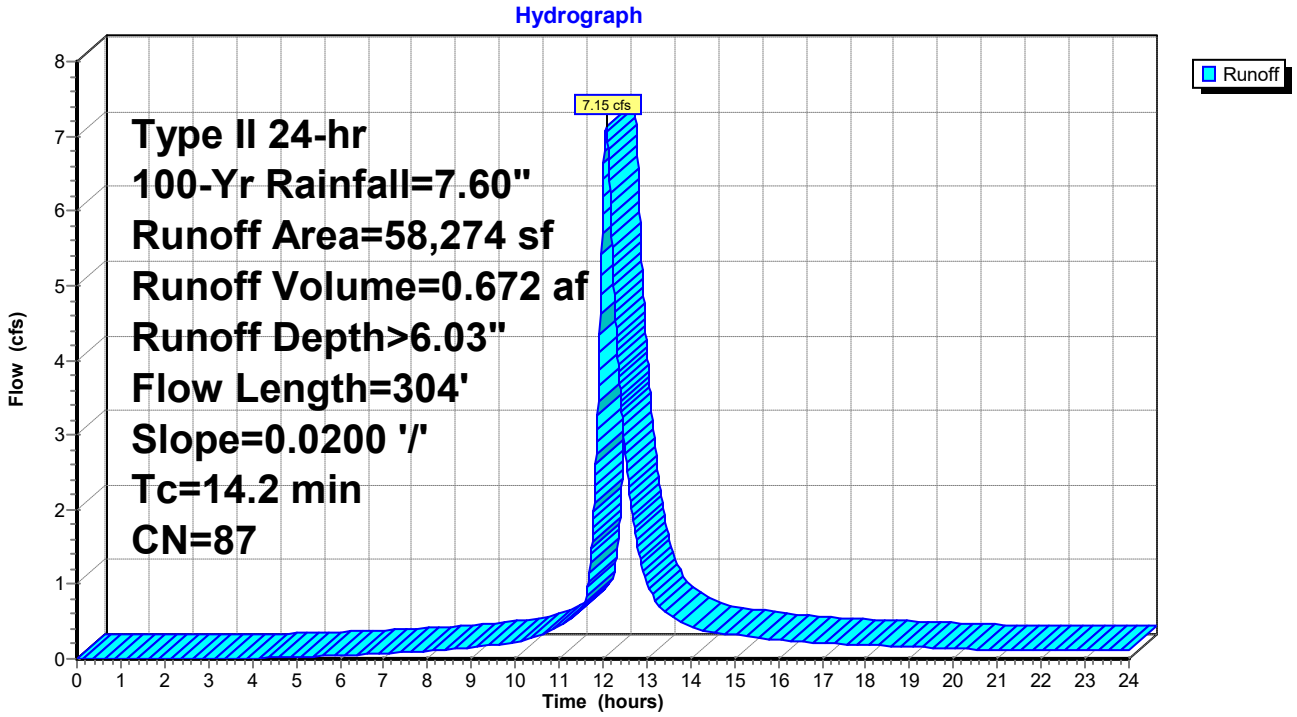
Runoff = 7.15 cfs @ 12.08 hrs, Volume= 0.672 af, Depth> 6.03"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
31,377	98	Paved parking, HSG C
26,897	74	>75% Grass cover, Good, HSG C
58,274	87	Weighted Average
26,897		46.16% Pervious Area
31,377		53.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
1.1	154	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.2	304	Total			

Subcatchment 55: DA #23



Summary for Pond 56: I-24

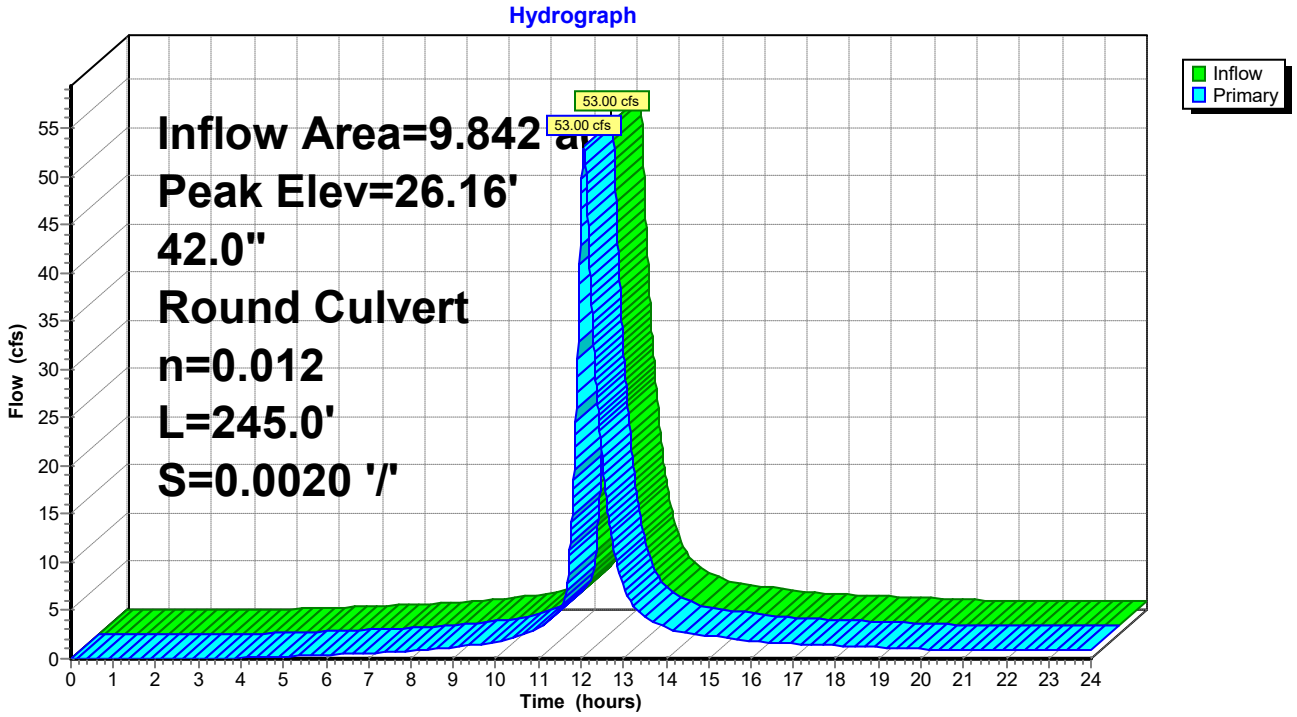
Inflow Area = 9.842 ac, 56.77% Impervious, Inflow Depth > 6.09" for 100-Yr event
Inflow = 53.00 cfs @ 12.07 hrs, Volume= 4.992 af
Outflow = 53.00 cfs @ 12.07 hrs, Volume= 4.992 af, Atten= 0%, Lag= 0.0 min
Primary = 53.00 cfs @ 12.07 hrs, Volume= 4.992 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 26.16' @ 12.08 hrs
Flood Elev= 21.54'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.80'	**42.0" Round Culvert** L= 245.0' Ke= 0.500 Inlet / Outlet Invert= 18.80' / 18.30' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=51.97 cfs @ 12.07 hrs HW=26.11' TW=24.85' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 51.97 cfs @ 5.40 fps)

Pond 56: I-24



Summary for Subcatchment 57: DA #24

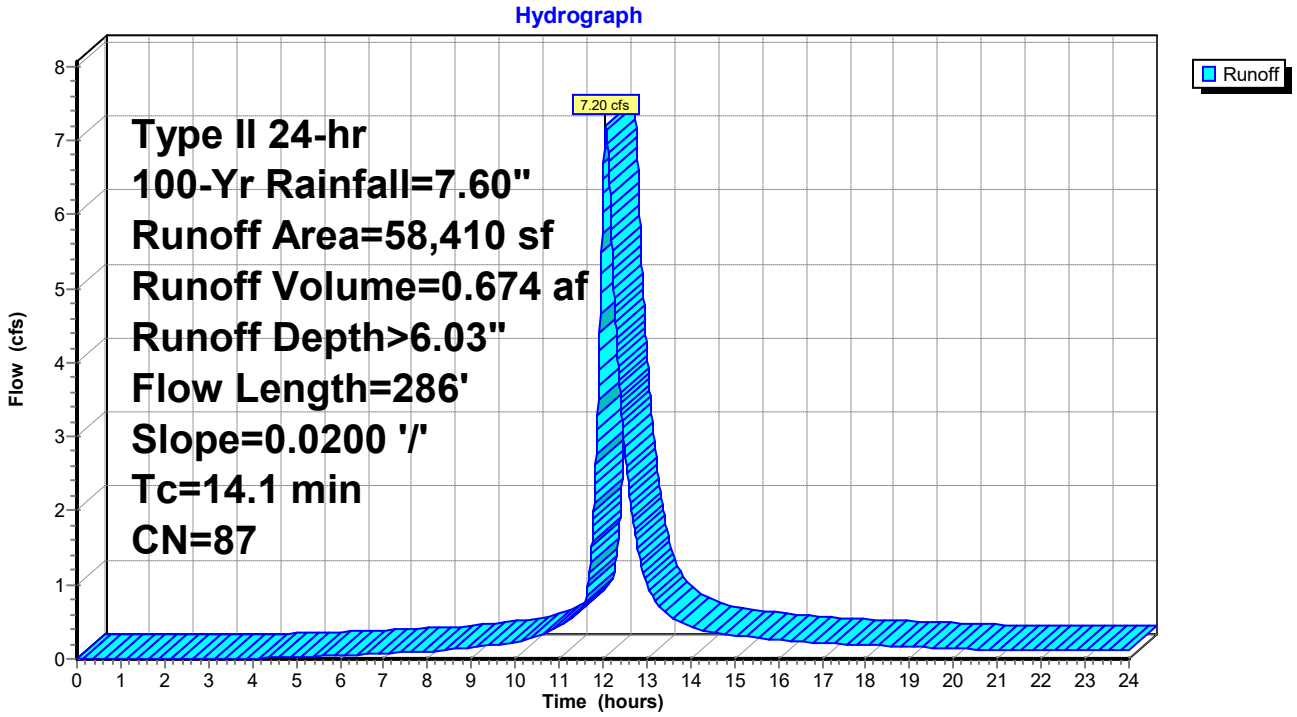
Runoff = 7.20 cfs @ 12.07 hrs, Volume= 0.674 af, Depth> 6.03"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
31,604	98	Paved parking, HSG C
26,806	74	>75% Grass cover, Good, HSG C
58,410	87	Weighted Average
26,806		45.89% Pervious Area
31,604		54.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
1.0	136	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.1	286	Total			

Subcatchment 57: DA #24



Summary for Pond 58: I-25

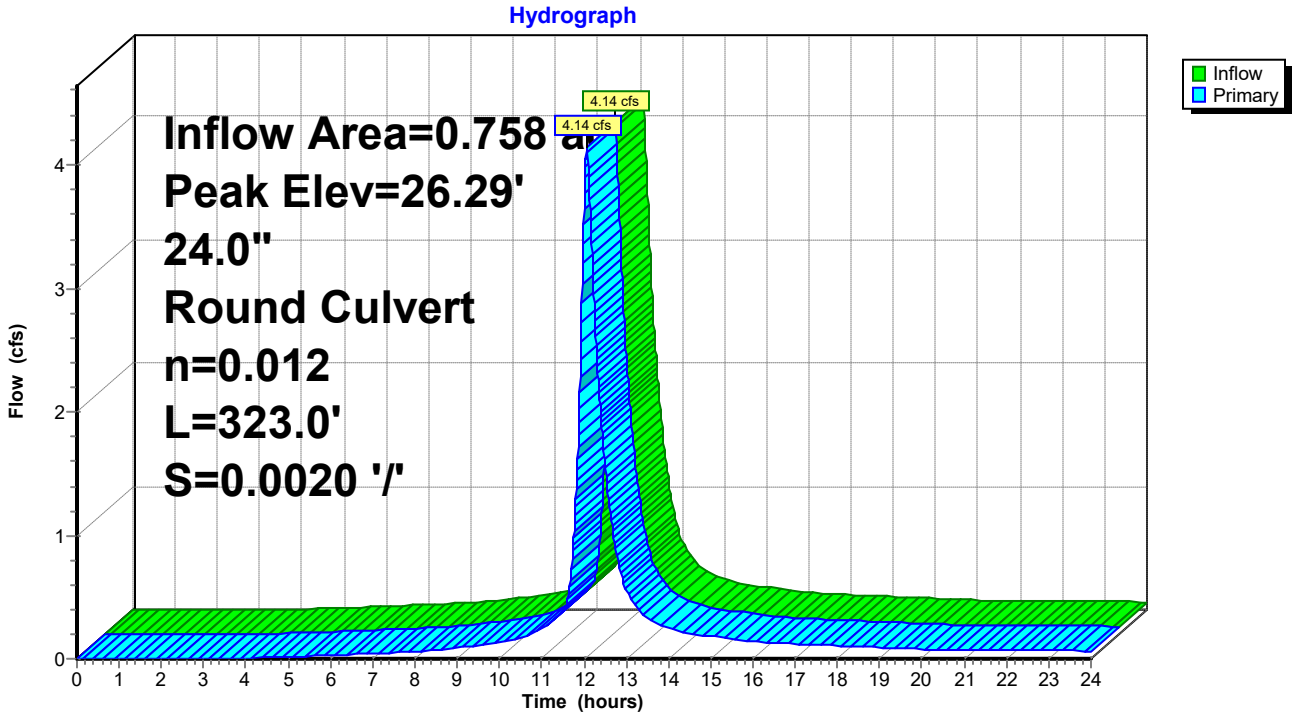
Inflow Area = 0.758 ac, 53.66% Impervious, Inflow Depth > 6.03" for 100-Yr event
Inflow = 4.14 cfs @ 12.06 hrs, Volume= 0.381 af
Outflow = 4.14 cfs @ 12.06 hrs, Volume= 0.381 af, Atten= 0%, Lag= 0.0 min
Primary = 4.14 cfs @ 12.06 hrs, Volume= 0.381 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 26.29' @ 12.09 hrs
Flood Elev= 22.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.45'	**24.0" Round Culvert** L= 323.0' Ke= 0.500 Inlet / Outlet Invert= 19.45' / 18.80' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=1.49 cfs @ 12.06 hrs HW=26.09' TW=26.07' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.49 cfs @ 0.47 fps)

Pond 58: I-25



Summary for Subcatchment 59: DA #25

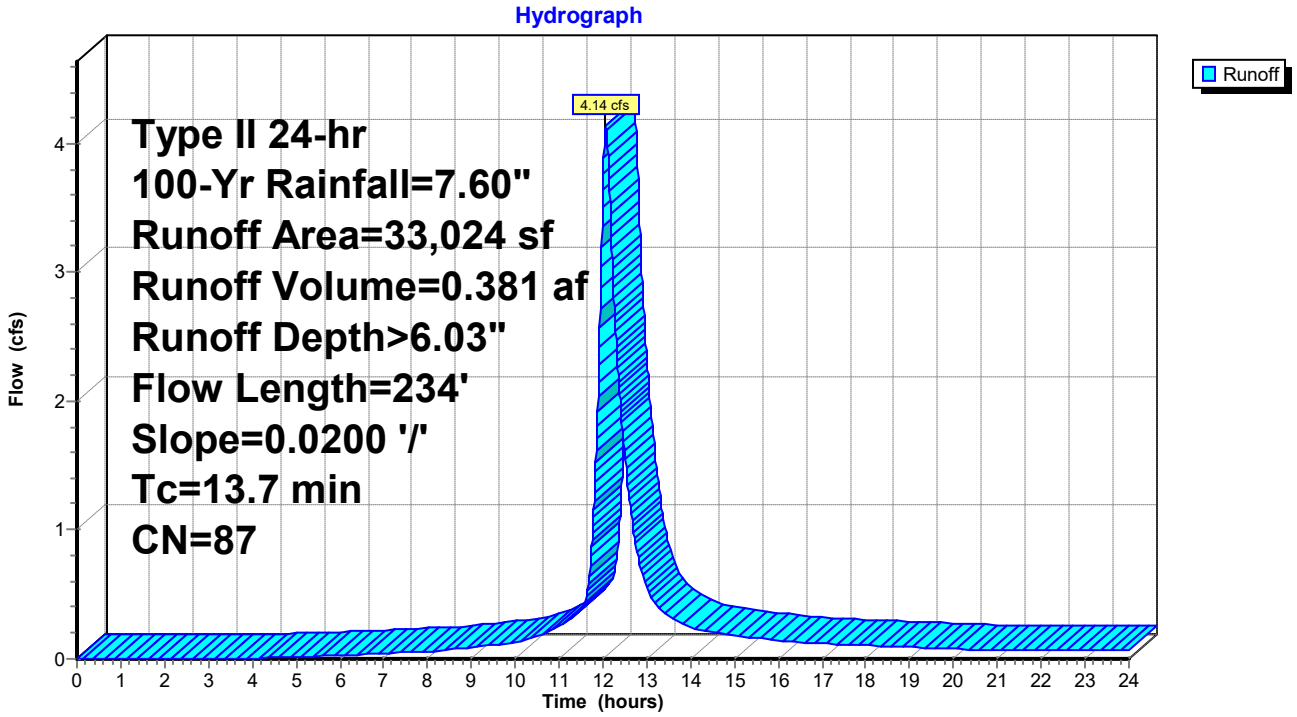
Runoff = 4.14 cfs @ 12.06 hrs, Volume= 0.381 af, Depth> 6.03"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
17,720	98	Paved parking, HSG C
15,304	74	>75% Grass cover, Good, HSG C
33,024	87	Weighted Average
15,304		46.34% Pervious Area
17,720		53.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.6	84	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.7	234	Total			

Subcatchment 59: DA #25



Summary for Pond 60: I-26

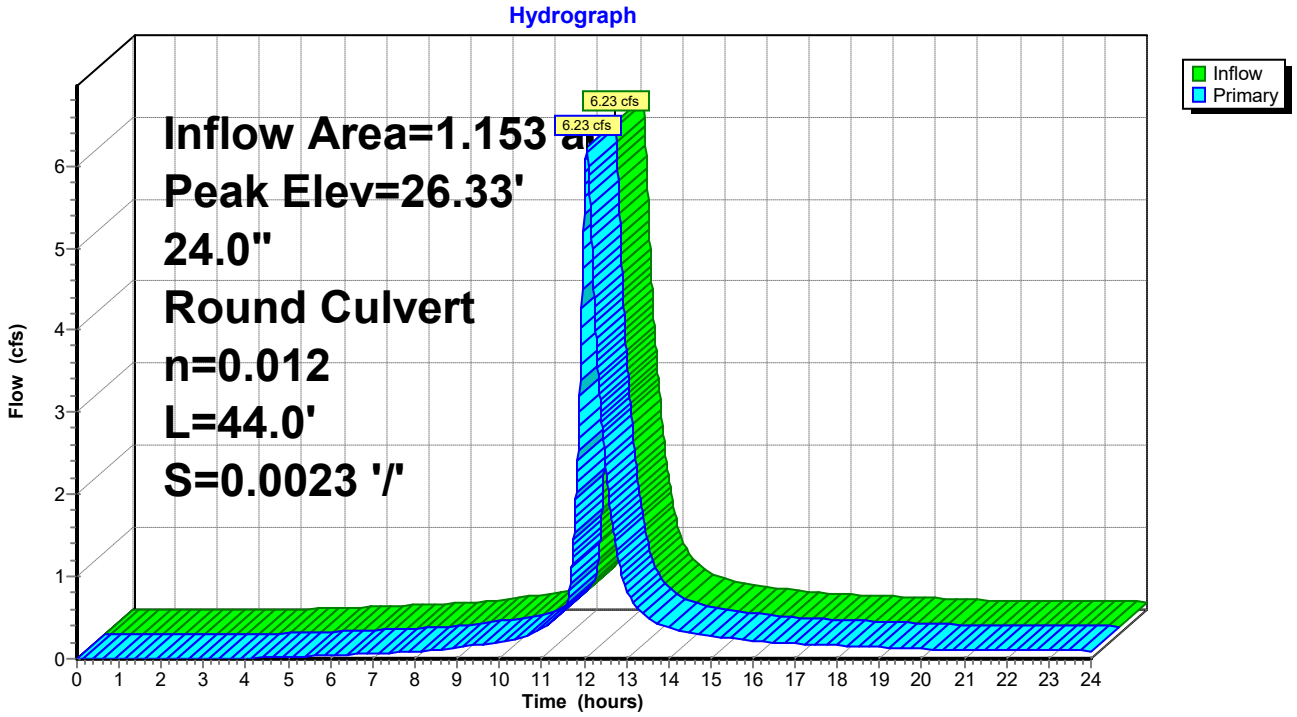
Inflow Area = 1.153 ac, 55.44% Impervious, Inflow Depth > 6.03" for 100-Yr event
Inflow = 6.23 cfs @ 12.07 hrs, Volume= 0.579 af
Outflow = 6.23 cfs @ 12.07 hrs, Volume= 0.579 af, Atten= 0%, Lag= 0.0 min
Primary = 6.23 cfs @ 12.07 hrs, Volume= 0.579 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 26.33' @ 12.09 hrs
Flood Elev= 21.74'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.90'	**24.0" Round Culvert** L= 44.0' Ke= 0.500 Inlet / Outlet Invert= 18.90' / 18.80' S= 0.0023 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=4.56 cfs @ 12.07 hrs HW=26.23' TW=26.14' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 4.56 cfs @ 1.45 fps)

Pond 60: I-26



Summary for Subcatchment 61: DA #26

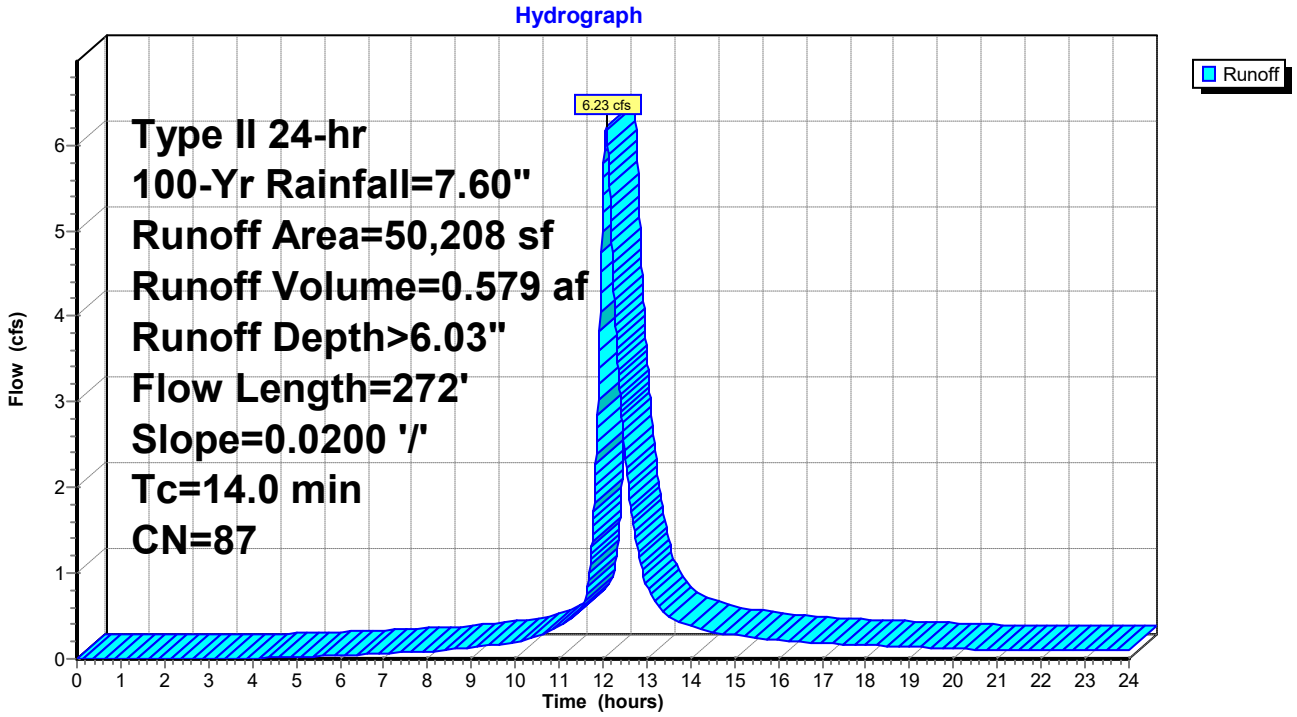
Runoff = 6.23 cfs @ 12.07 hrs, Volume= 0.579 af, Depth> 6.03"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
27,835	98	Paved parking, HSG C
22,373	74	>75% Grass cover, Good, HSG C
50,208	87	Weighted Average
22,373		44.56% Pervious Area
27,835		55.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.9	122	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.0	272	Total			

Subcatchment 61: DA #26



Summary for Pond 62: I-27

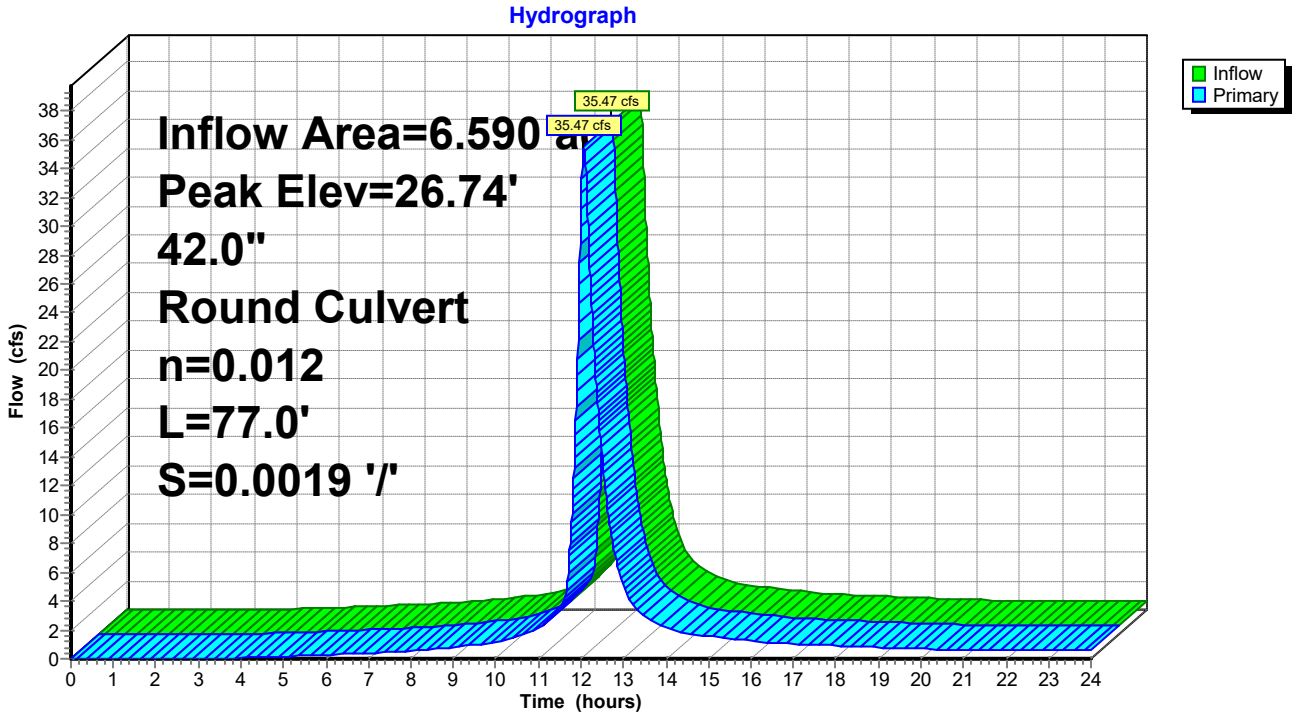
Inflow Area = 6.590 ac, 57.90% Impervious, Inflow Depth > 6.11" for 100-Yr event
Inflow = 35.47 cfs @ 12.06 hrs, Volume= 3.357 af
Outflow = 35.47 cfs @ 12.06 hrs, Volume= 3.357 af, Atten= 0%, Lag= 0.0 min
Primary = 35.47 cfs @ 12.06 hrs, Volume= 3.357 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 26.74' @ 12.09 hrs
Flood Elev= 21.84'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.95'	**42.0" Round Culvert** L= 77.0' Ke= 0.500 Inlet / Outlet Invert= 18.95' / 18.80' S= 0.0019 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=32.07 cfs @ 12.06 hrs HW=26.57' TW=26.09' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 32.07 cfs @ 3.33 fps)

Pond 62: I-27



Summary for Subcatchment 63: DA #27

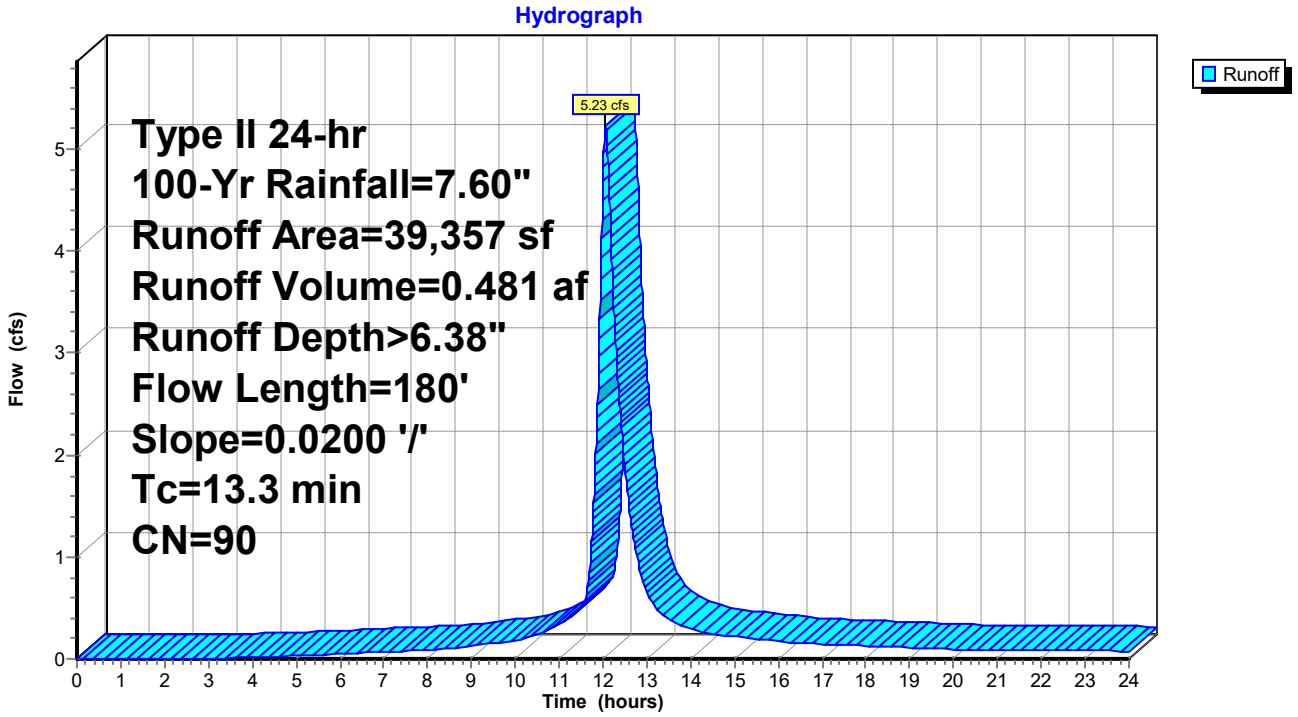
Runoff = 5.23 cfs @ 12.06 hrs, Volume= 0.481 af, Depth> 6.38"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
27,040	98	Paved parking, HSG C
12,317	74	>75% Grass cover, Good, HSG C
39,357	90	Weighted Average
12,317		31.30% Pervious Area
27,040		68.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.2	30	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.3	180	Total			

Subcatchment 63: DA #27



Summary for Pond 64: I-28

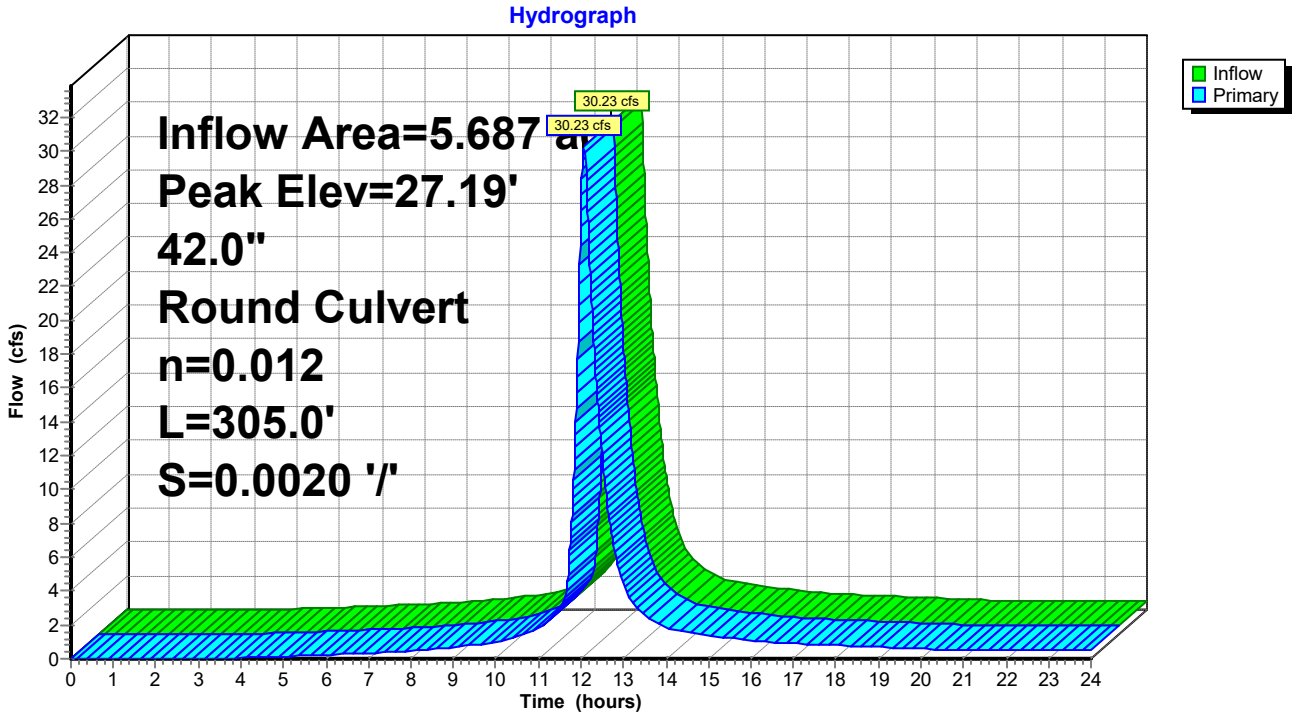
Inflow Area = 5.687 ac, 56.19% Impervious, Inflow Depth > 6.07" for 100-Yr event
Inflow = 30.23 cfs @ 12.07 hrs, Volume= 2.877 af
Outflow = 30.23 cfs @ 12.07 hrs, Volume= 2.877 af, Atten= 0%, Lag= 0.0 min
Primary = 30.23 cfs @ 12.07 hrs, Volume= 2.877 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 27.19' @ 12.10 hrs
Flood Elev= 21.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.56'	**42.0" Round Culvert** L= 305.0' Ke= 0.500 Inlet / Outlet Invert= 19.56' / 18.95' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 9.62 sf

Primary OutFlow Max=25.36 cfs @ 12.07 hrs HW=26.94' TW=26.61' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 25.36 cfs @ 2.64 fps)

Pond 64: I-28



Summary for Subcatchment 65: DA #28

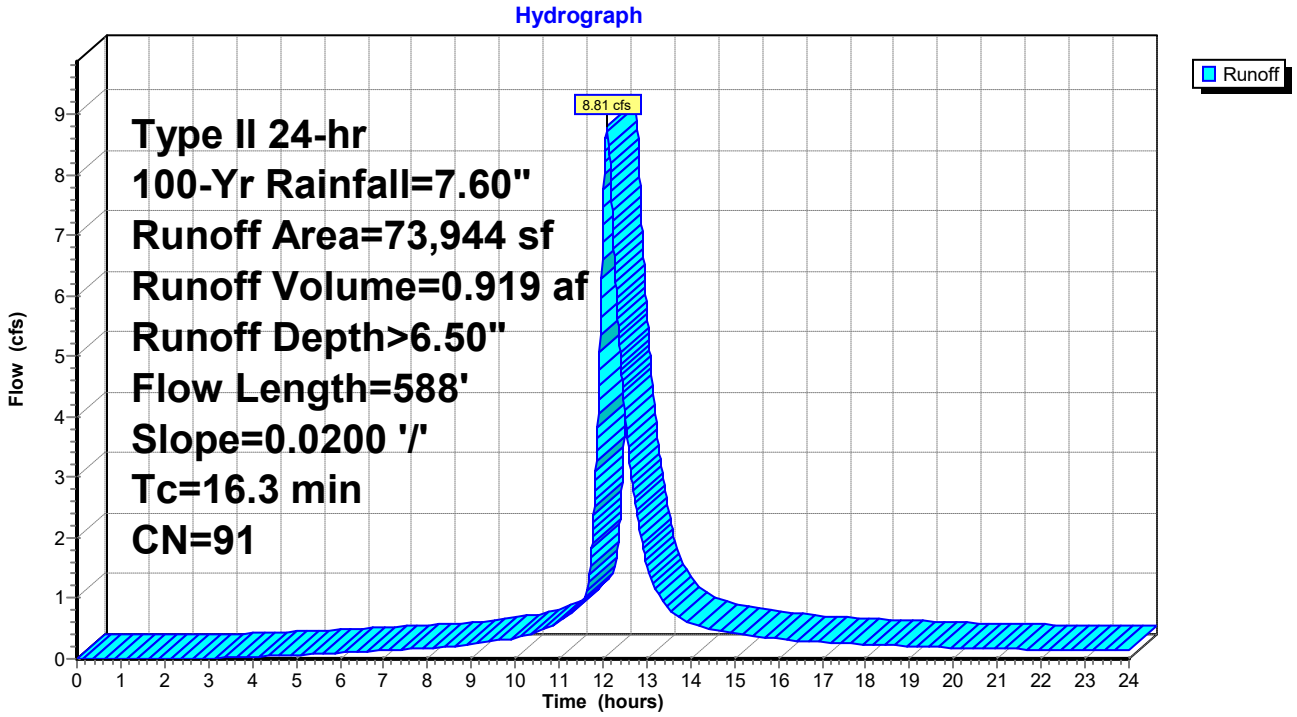
Runoff = 8.81 cfs @ 12.10 hrs, Volume= 0.919 af, Depth> 6.50"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
53,413	98	Paved parking, HSG C
20,531	74	>75% Grass cover, Good, HSG C
73,944	91	Weighted Average
20,531		27.77% Pervious Area
53,413		72.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
3.2	438	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
16.3	588	Total			

Subcatchment 65: DA #28



Summary for Pond 66: I-29

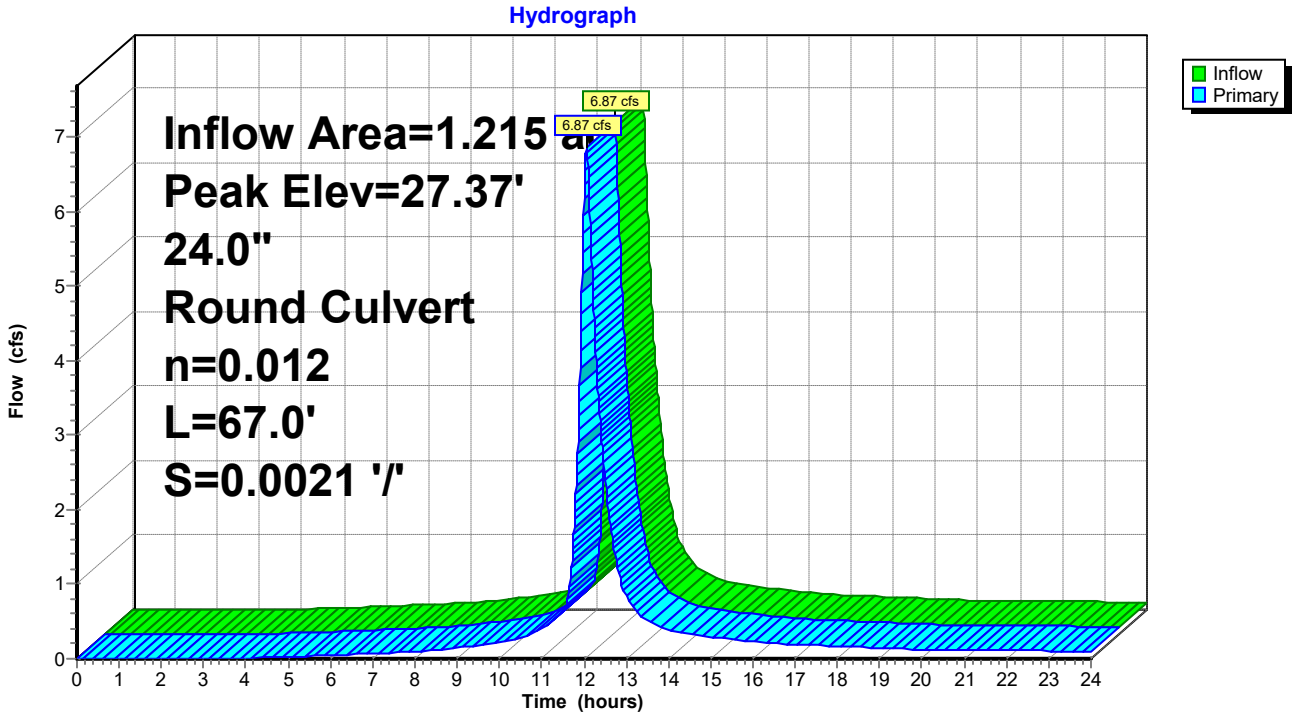
Inflow Area = 1.215 ac, 55.29% Impervious, Inflow Depth > 6.06" for 100-Yr event
Inflow = 6.87 cfs @ 12.06 hrs, Volume= 0.614 af
Outflow = 6.87 cfs @ 12.06 hrs, Volume= 0.614 af, Atten= 0%, Lag= 0.0 min
Primary = 6.87 cfs @ 12.06 hrs, Volume= 0.614 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 27.37' @ 12.11 hrs
Flood Elev= 22.46'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.70'	**24.0" Round Culvert** L= 67.0' Ke= 0.500 Inlet / Outlet Invert= 19.70' / 19.56' S= 0.0021 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 12.06 hrs HW=26.53' TW=26.75' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 66: I-29



Summary for Subcatchment 67: DA #29

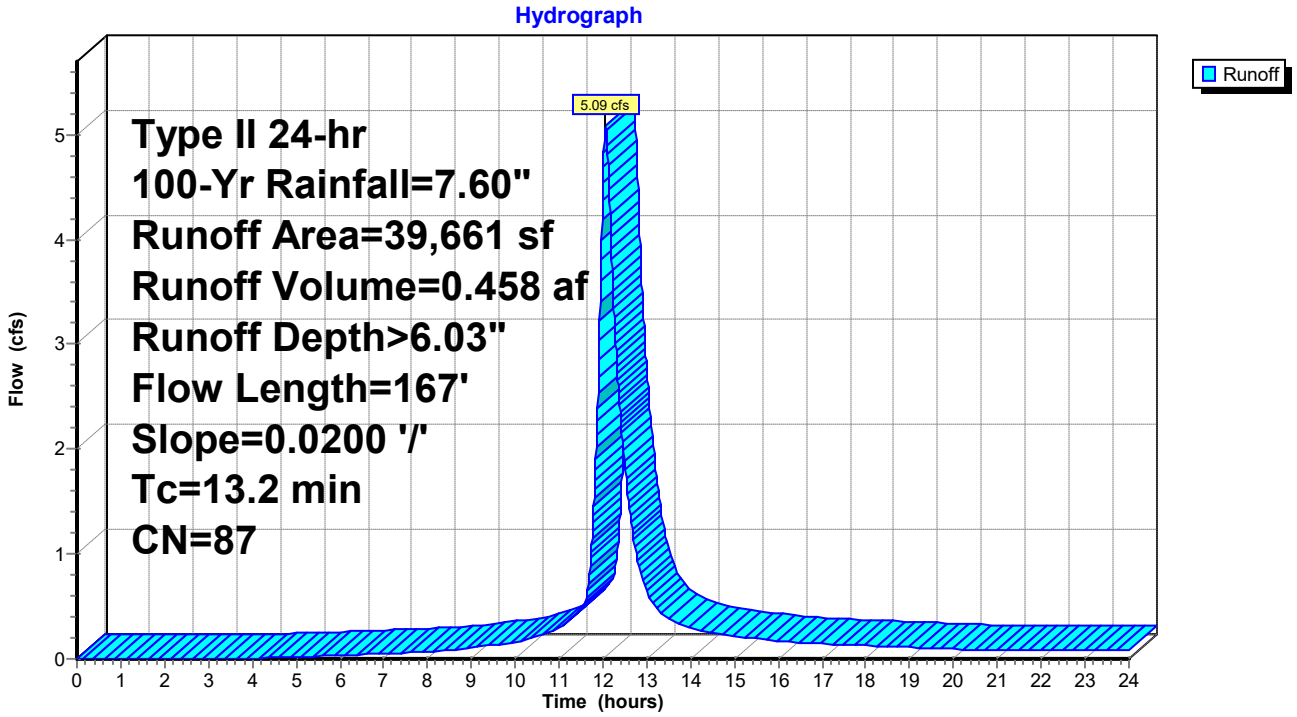
Runoff = 5.09 cfs @ 12.06 hrs, Volume= 0.458 af, Depth> 6.03"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
21,601	98	Paved parking, HSG C
18,060	74	>75% Grass cover, Good, HSG C
39,661	87	Weighted Average
18,060		45.54% Pervious Area
21,601		54.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.1	17	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.2	167	Total			

Subcatchment 67: DA #29



Summary for Pond 68: I-30

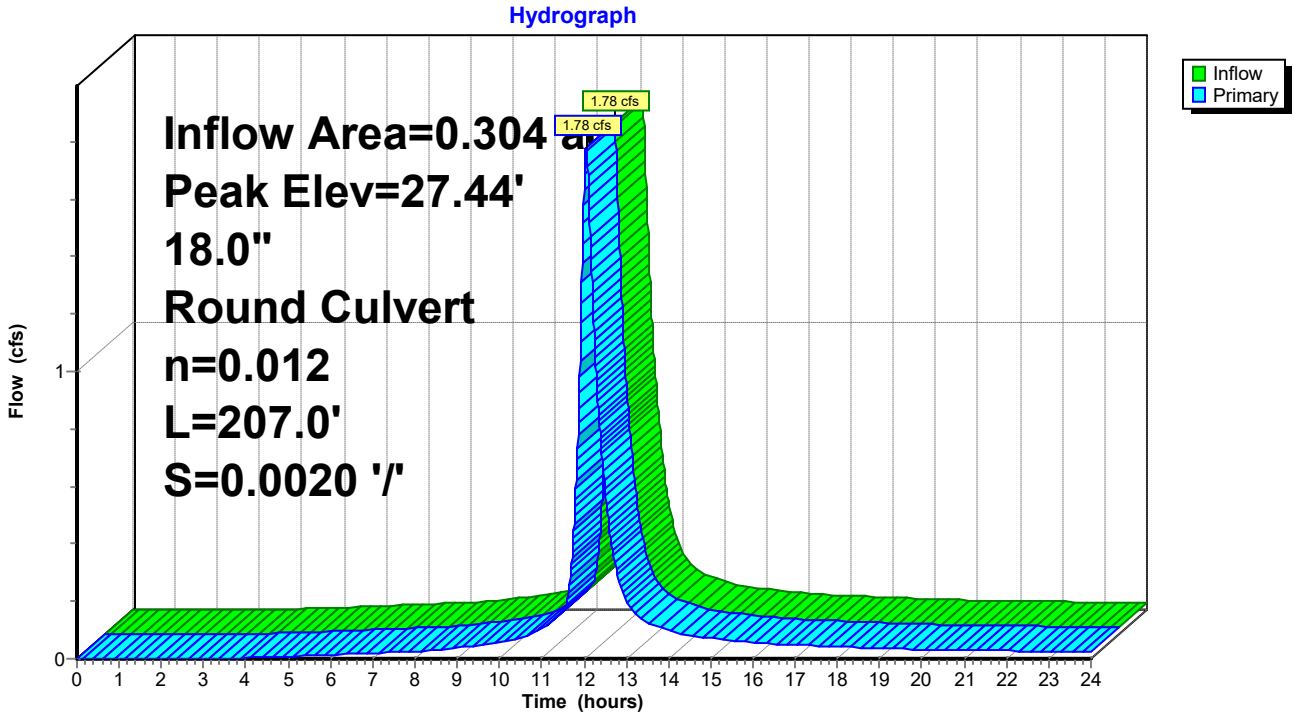
Inflow Area = 0.304 ac, 57.75% Impervious, Inflow Depth > 6.15" for 100-Yr event
Inflow = 1.78 cfs @ 12.05 hrs, Volume= 0.156 af
Outflow = 1.78 cfs @ 12.05 hrs, Volume= 0.156 af, Atten= 0%, Lag= 0.0 min
Primary = 1.78 cfs @ 12.05 hrs, Volume= 0.156 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 27.44' @ 12.12 hrs
Flood Elev= 22.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.11'	**18.0" Round Culvert** L= 207.0' Ke= 0.500 Inlet / Outlet Invert= 20.11' / 19.70' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 12.05 hrs HW=25.91' TW=26.20' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 68: I-30



Summary for Subcatchment 69: DA #30

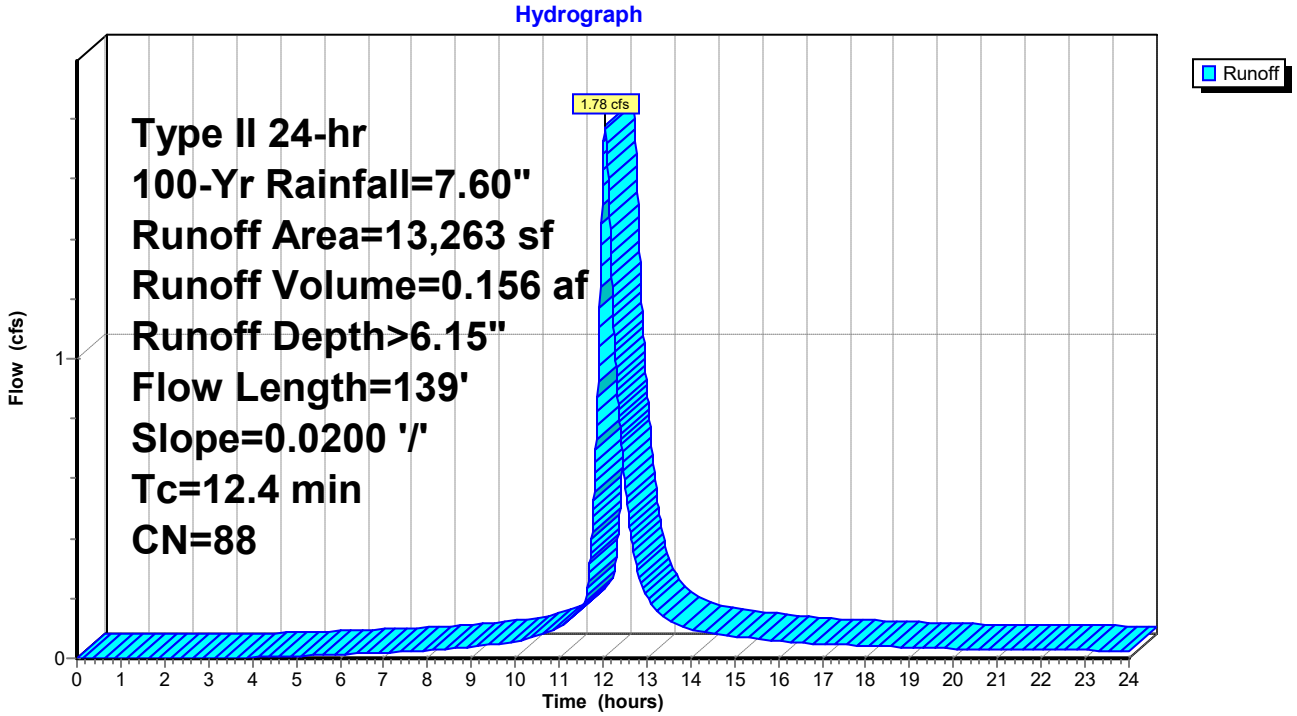
Runoff = 1.78 cfs @ 12.05 hrs, Volume= 0.156 af, Depth> 6.15"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
7,660	98	Paved parking, HSG C
5,603	74	>75% Grass cover, Good, HSG C
13,263	88	Weighted Average
5,603		42.25% Pervious Area
7,660		57.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	139	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"

Subcatchment 69: DA #30



Summary for Pond 70: I-31

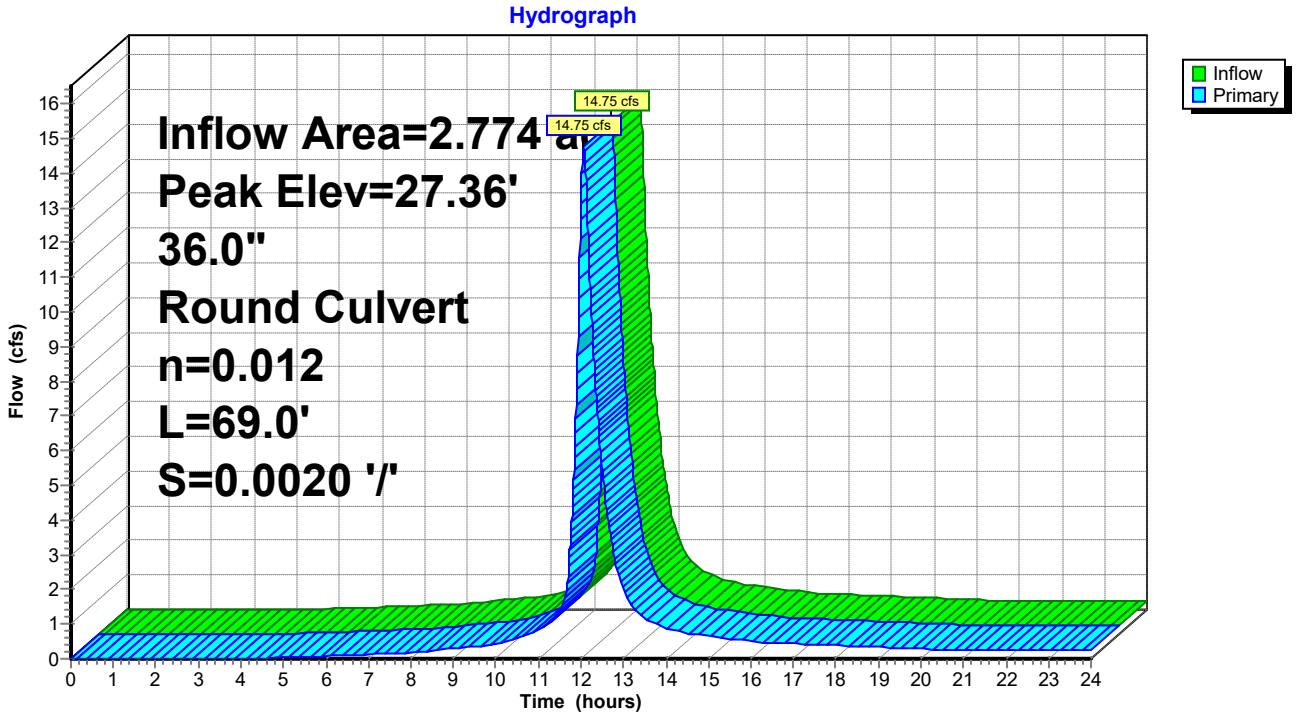
Inflow Area = 2.774 ac, 46.76% Impervious, Inflow Depth > 5.81" for 100-Yr event
Inflow = 14.75 cfs @ 12.06 hrs, Volume= 1.344 af
Outflow = 14.75 cfs @ 12.06 hrs, Volume= 1.344 af, Atten= 0%, Lag= 0.0 min
Primary = 14.75 cfs @ 12.06 hrs, Volume= 1.344 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 27.36' @ 12.11 hrs
Flood Elev= 22.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.70'	**36.0" Round Culvert** L= 69.0' Ke= 0.500 Inlet / Outlet Invert= 19.70' / 19.56' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf

Primary OutFlow Max=0.00 cfs @ 12.06 hrs HW=26.61' TW=26.82' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 70: I-31



Summary for Subcatchment 71: DA #31

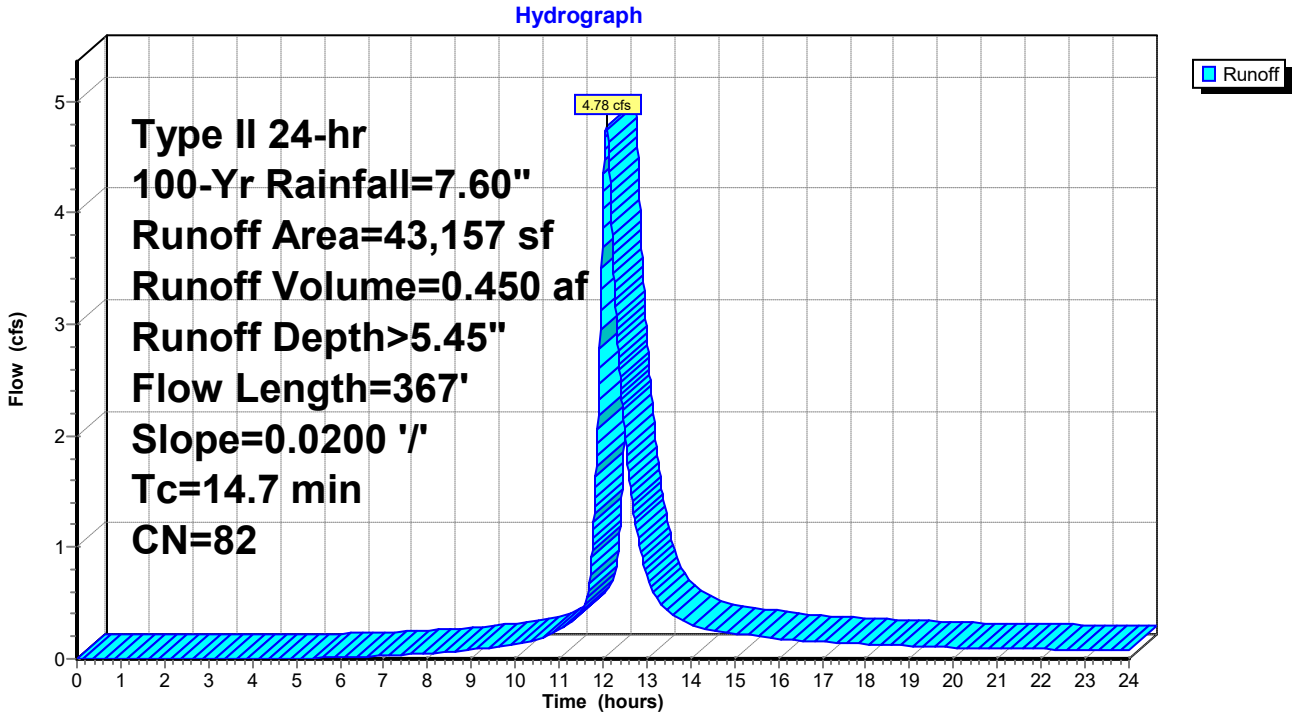
Runoff = 4.78 cfs @ 12.08 hrs, Volume= 0.450 af, Depth> 5.45"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
14,691	98	Paved parking, HSG C
28,466	74	>75% Grass cover, Good, HSG C
43,157	82	Weighted Average
28,466		65.96% Pervious Area
14,691		34.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
1.6	217	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.7	367	Total			

Subcatchment 71: DA #31



Summary for Pond 72: I-32

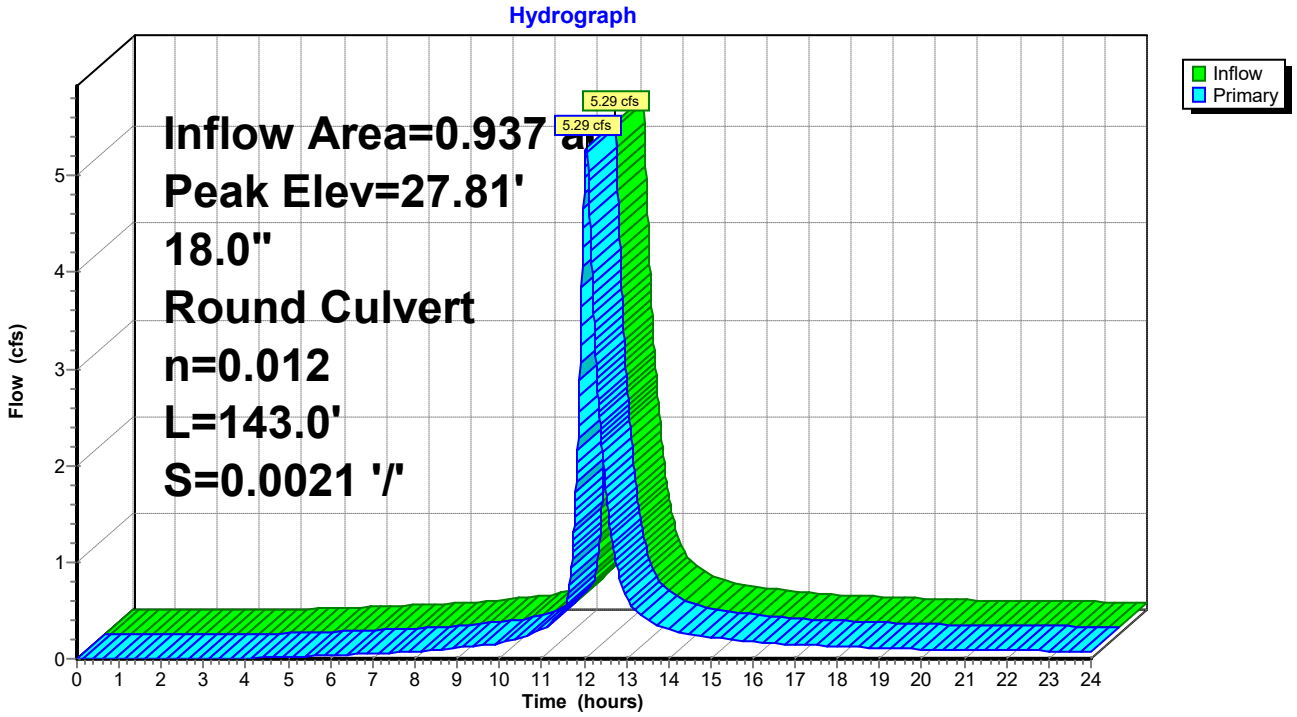
Inflow Area = 0.937 ac, 54.44% Impervious, Inflow Depth > 6.03" for 100-Yr event
Inflow = 5.29 cfs @ 12.05 hrs, Volume= 0.471 af
Outflow = 5.29 cfs @ 12.05 hrs, Volume= 0.471 af, Atten= 0%, Lag= 0.0 min
Primary = 5.29 cfs @ 12.05 hrs, Volume= 0.471 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 27.81' @ 12.11 hrs
Flood Elev= 22.72'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.00'	**18.0" Round Culvert** L= 143.0' Ke= 0.500 Inlet / Outlet Invert= 20.00' / 19.70' S= 0.0021 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=2.86 cfs @ 12.05 hrs HW=26.47' TW=26.32' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 2.86 cfs @ 1.62 fps)

Pond 72: I-32



Summary for Subcatchment 73: DA #32

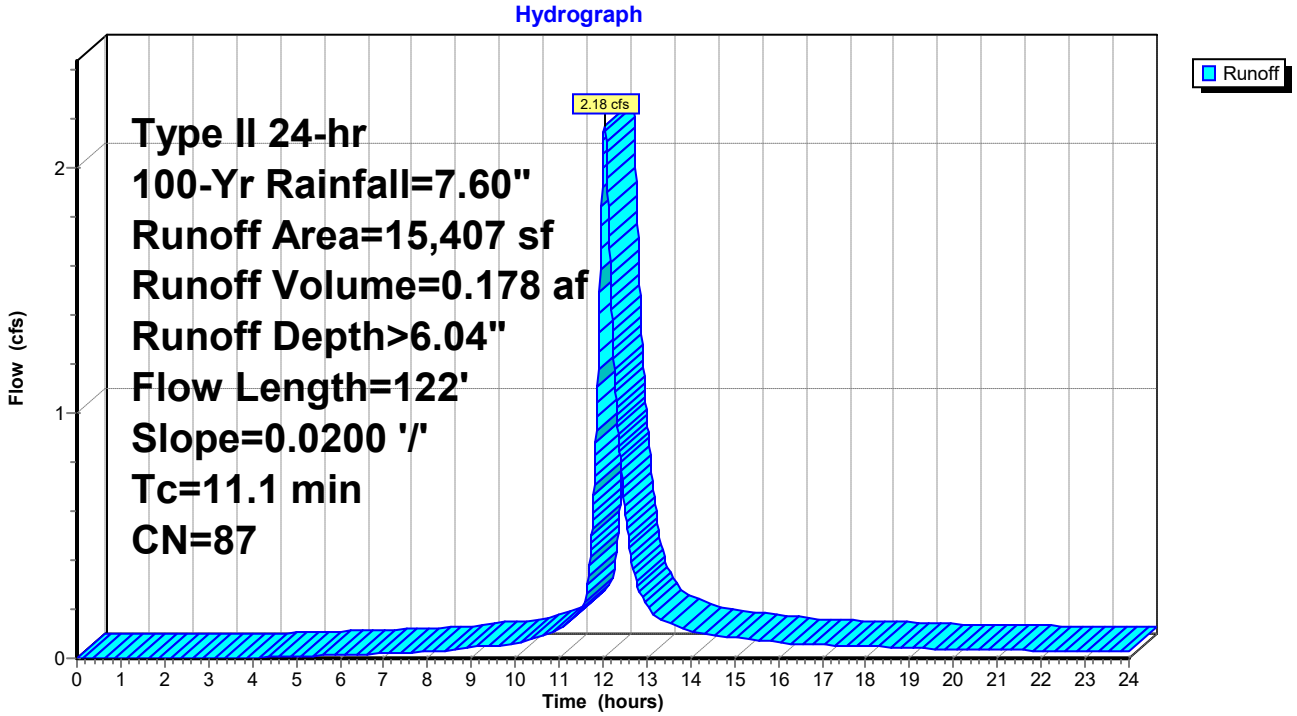
Runoff = 2.18 cfs @ 12.04 hrs, Volume= 0.178 af, Depth> 6.04"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
8,396	98	Paved parking, HSG C
7,011	74	>75% Grass cover, Good, HSG C
15,407	87	Weighted Average
7,011		45.51% Pervious Area
8,396		54.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	122	0.0200	0.18		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"

Subcatchment 73: DA #32



Summary for Pond 74: I-33

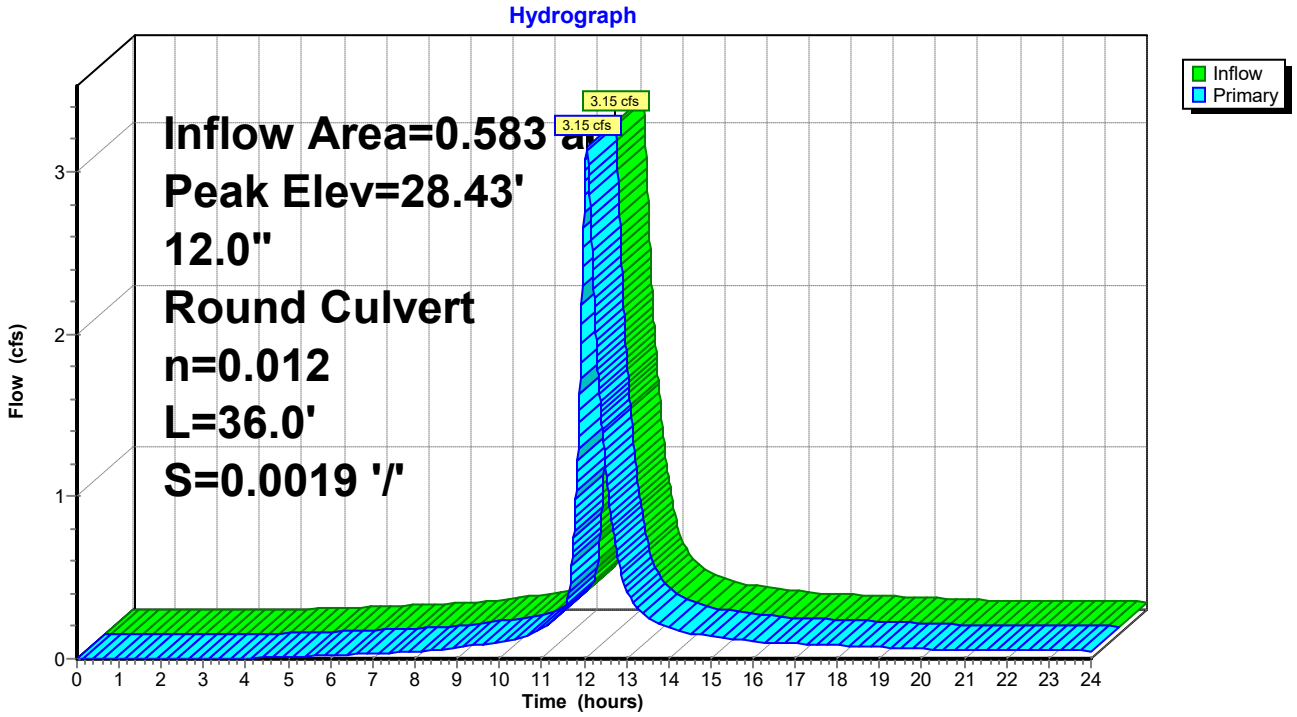
Inflow Area = 0.583 ac, 54.40% Impervious, Inflow Depth > 6.03" for 100-Yr event
Inflow = 3.15 cfs @ 12.07 hrs, Volume= 0.293 af
Outflow = 3.15 cfs @ 12.07 hrs, Volume= 0.293 af, Atten= 0%, Lag= 0.0 min
Primary = 3.15 cfs @ 12.07 hrs, Volume= 0.293 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 28.43' @ 12.12 hrs
Flood Elev= 22.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.07'	**12.0" Round Culvert** L= 36.0' Ke= 0.500 Inlet / Outlet Invert= 20.07' / 20.00' S= 0.0019 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.09 cfs @ 12.07 hrs HW=27.55' TW=27.24' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.09 cfs @ 2.67 fps)

Pond 74: I-33



Summary for Subcatchment 75: DA #33

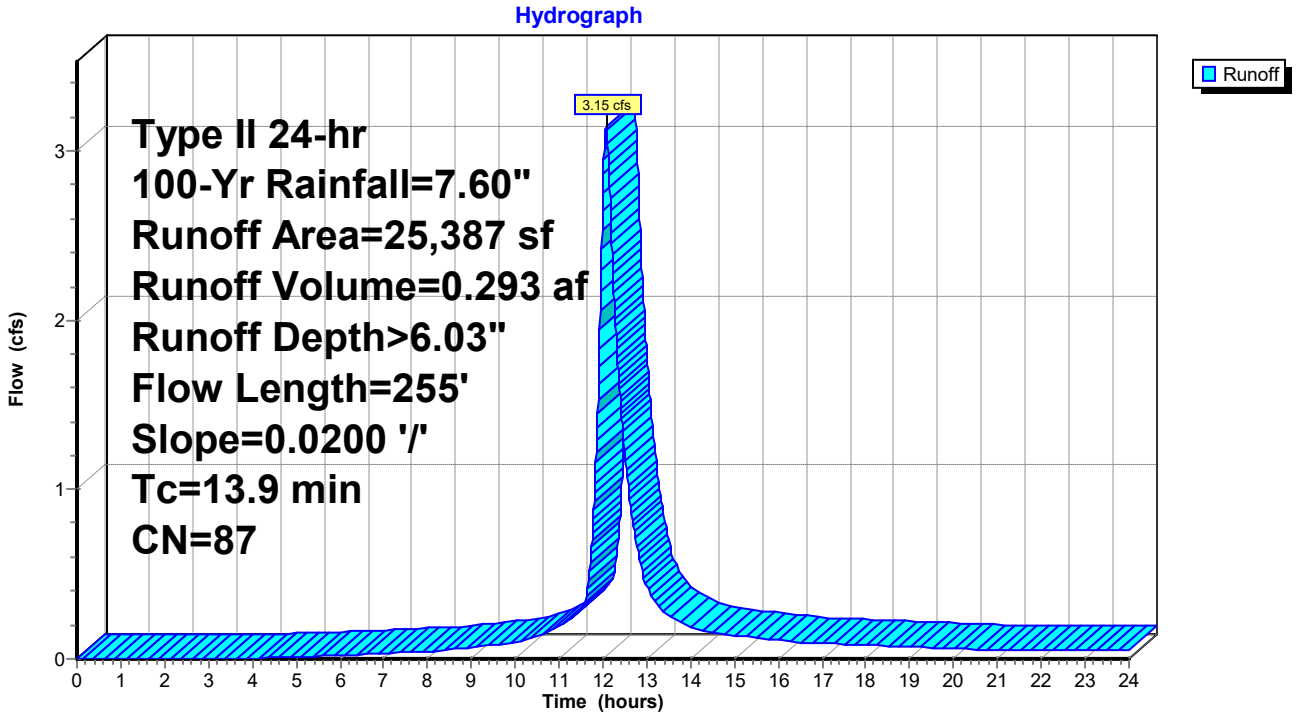
Runoff = 3.15 cfs @ 12.07 hrs, Volume= 0.293 af, Depth> 6.03"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
13,811	98	Paved parking, HSG C
11,576	74	>75% Grass cover, Good, HSG C
25,387	87	Weighted Average
11,576		45.60% Pervious Area
13,811		54.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
0.8	105	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
13.9	255	Total			

Subcatchment 75: DA #33



Summary for Pond 76: I-34

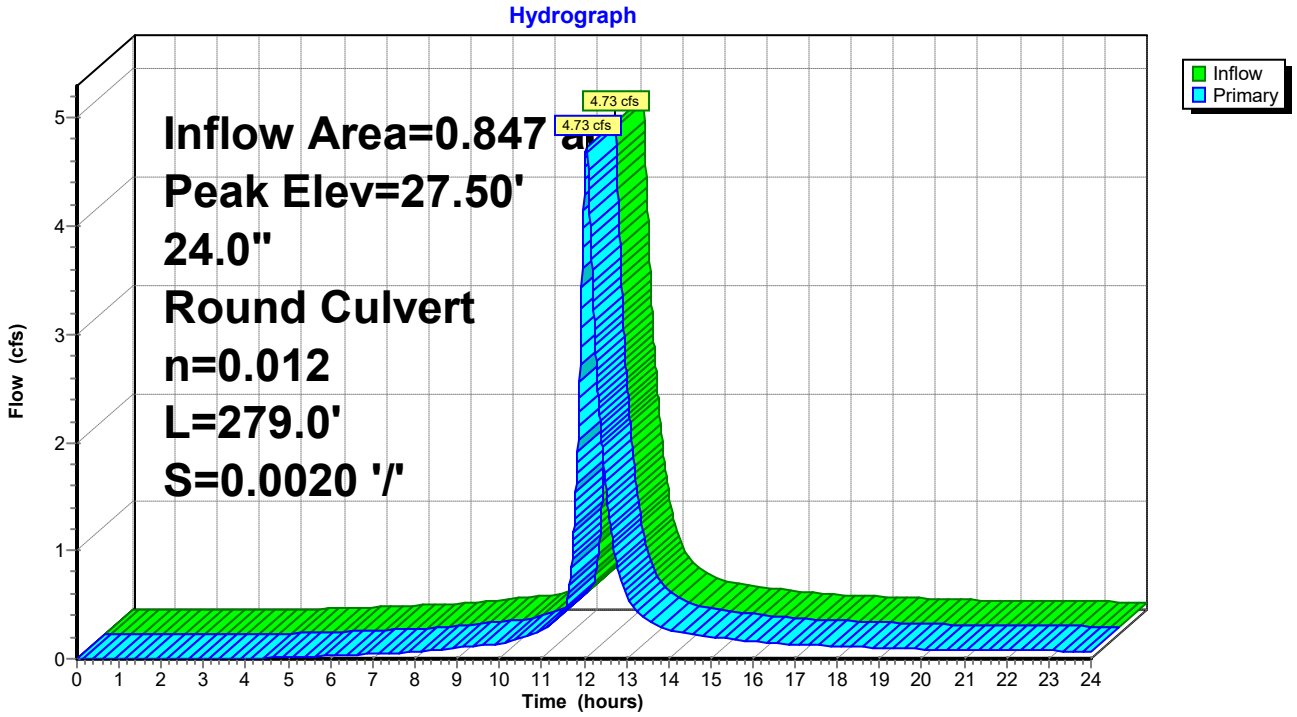
Inflow Area = 0.847 ac, 53.16% Impervious, Inflow Depth > 5.99" for 100-Yr event
Inflow = 4.73 cfs @ 12.06 hrs, Volume= 0.423 af
Outflow = 4.73 cfs @ 12.06 hrs, Volume= 0.423 af, Atten= 0%, Lag= 0.0 min
Primary = 4.73 cfs @ 12.06 hrs, Volume= 0.423 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 27.50' @ 12.12 hrs
Flood Elev= 21.76'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.26'	**24.0" Round Culvert** L= 279.0' Ke= 0.500 Inlet / Outlet Invert= 20.26' / 19.70' S= 0.0020 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 12.06 hrs HW=26.21' TW=26.43' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 76: I-34



Summary for Subcatchment 77: DA #34

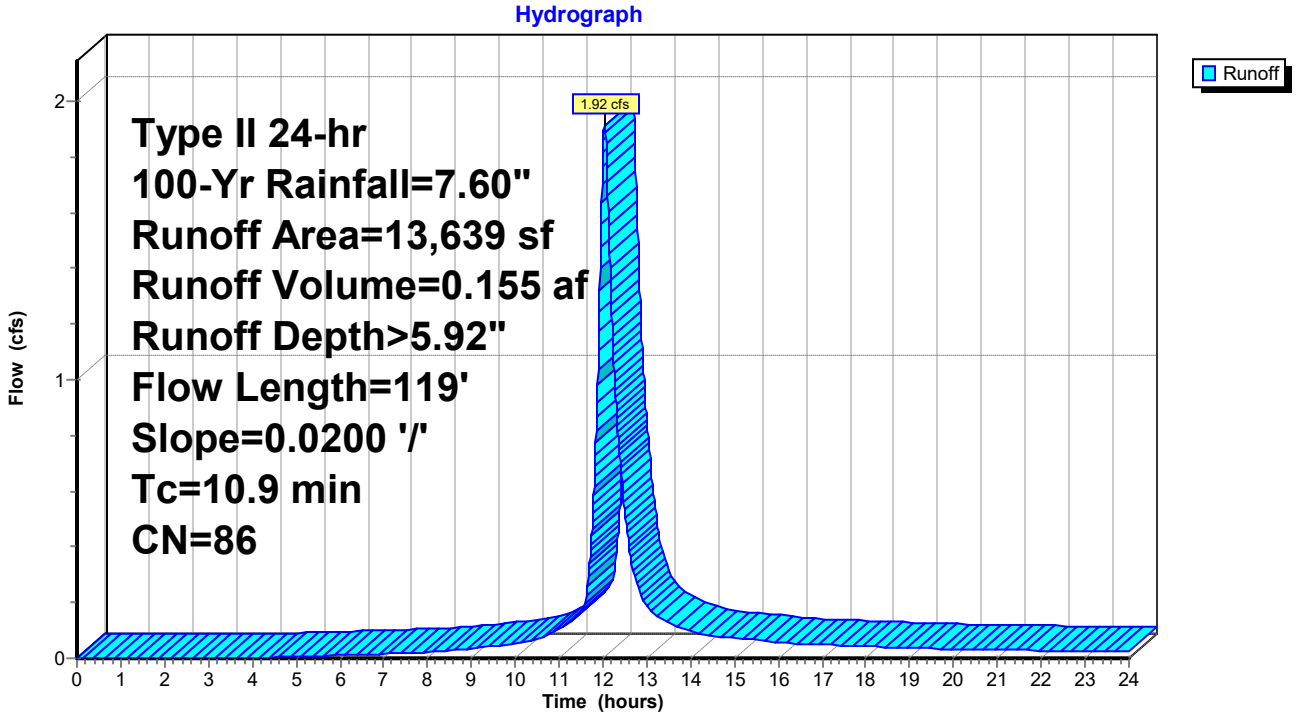
Runoff = 1.92 cfs @ 12.04 hrs, Volume= 0.155 af, Depth> 5.92"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
6,904	98	Paved parking, HSG C
6,735	74	>75% Grass cover, Good, HSG C
13,639	86	Weighted Average
6,735		49.38% Pervious Area
6,904		50.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	119	0.0200	0.18		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"

Subcatchment 77: DA #34



Summary for Pond 78: I-35

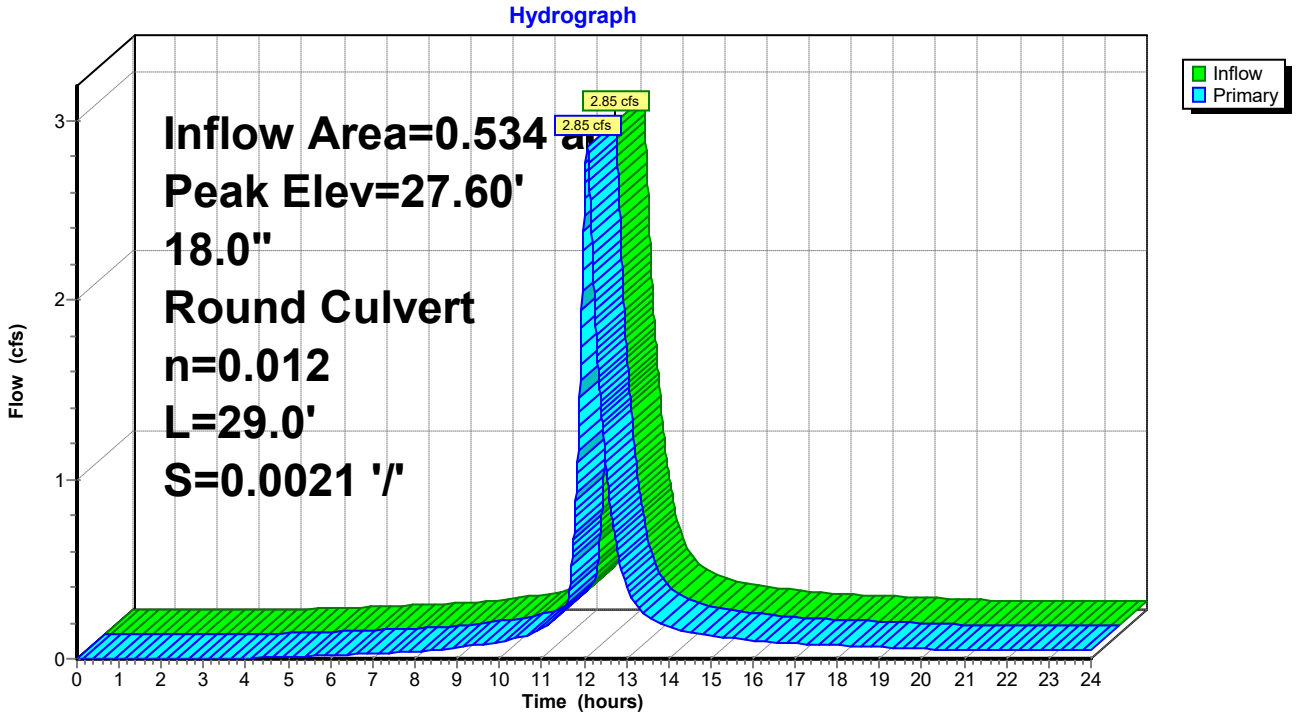
Inflow Area = 0.534 ac, 54.65% Impervious, Inflow Depth > 6.03" for 100-Yr event
Inflow = 2.85 cfs @ 12.08 hrs, Volume= 0.268 af
Outflow = 2.85 cfs @ 12.08 hrs, Volume= 0.268 af, Atten= 0%, Lag= 0.0 min
Primary = 2.85 cfs @ 12.08 hrs, Volume= 0.268 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 27.60' @ 12.12 hrs
Flood Elev= 22.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.32'	**18.0" Round Culvert** L= 29.0' Ke= 0.500 Inlet / Outlet Invert= 20.32' / 20.26' S= 0.0021 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 12.08 hrs HW=26.72' TW=27.02' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Pond 78: I-35



Summary for Subcatchment 79: DA #35

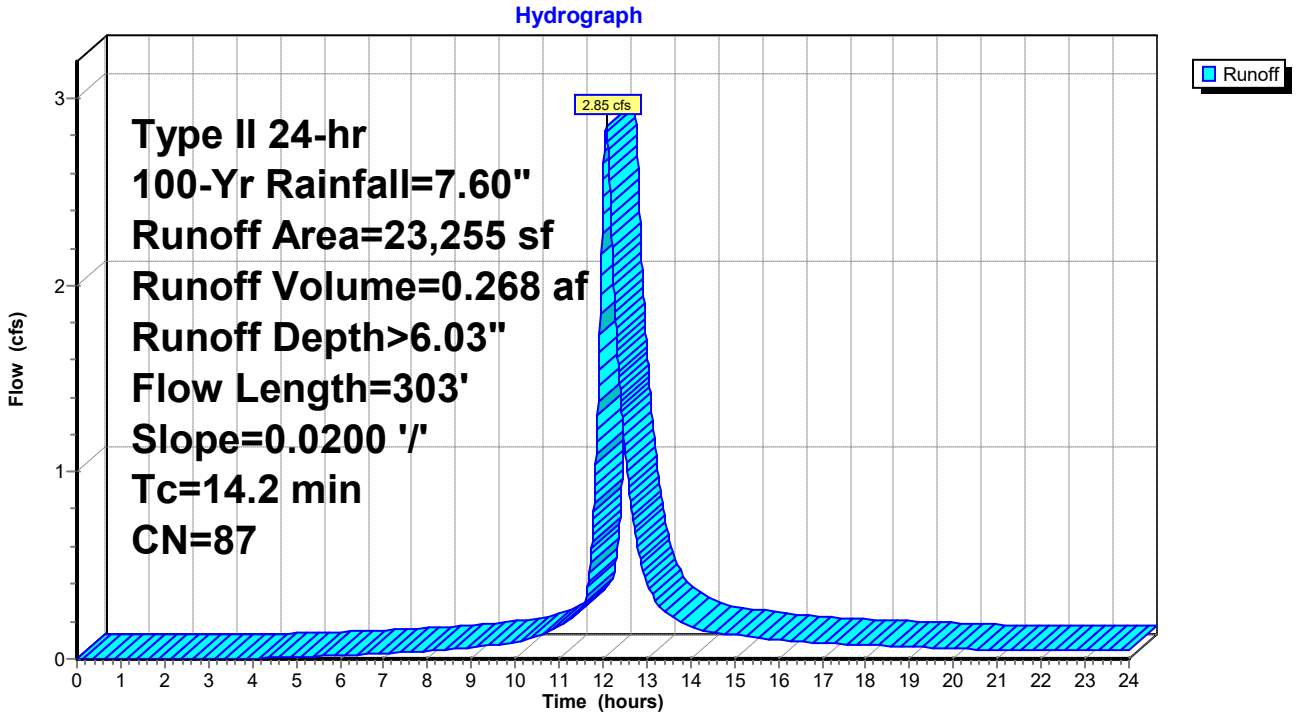
Runoff = 2.85 cfs @ 12.08 hrs, Volume= 0.268 af, Depth> 6.03"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Yr Rainfall=7.60"

Area (sf)	CN	Description
12,708	98	Paved parking, HSG C
10,547	74	>75% Grass cover, Good, HSG C
23,255	87	Weighted Average
10,547		45.35% Pervious Area
12,708		54.65% Impervious Area

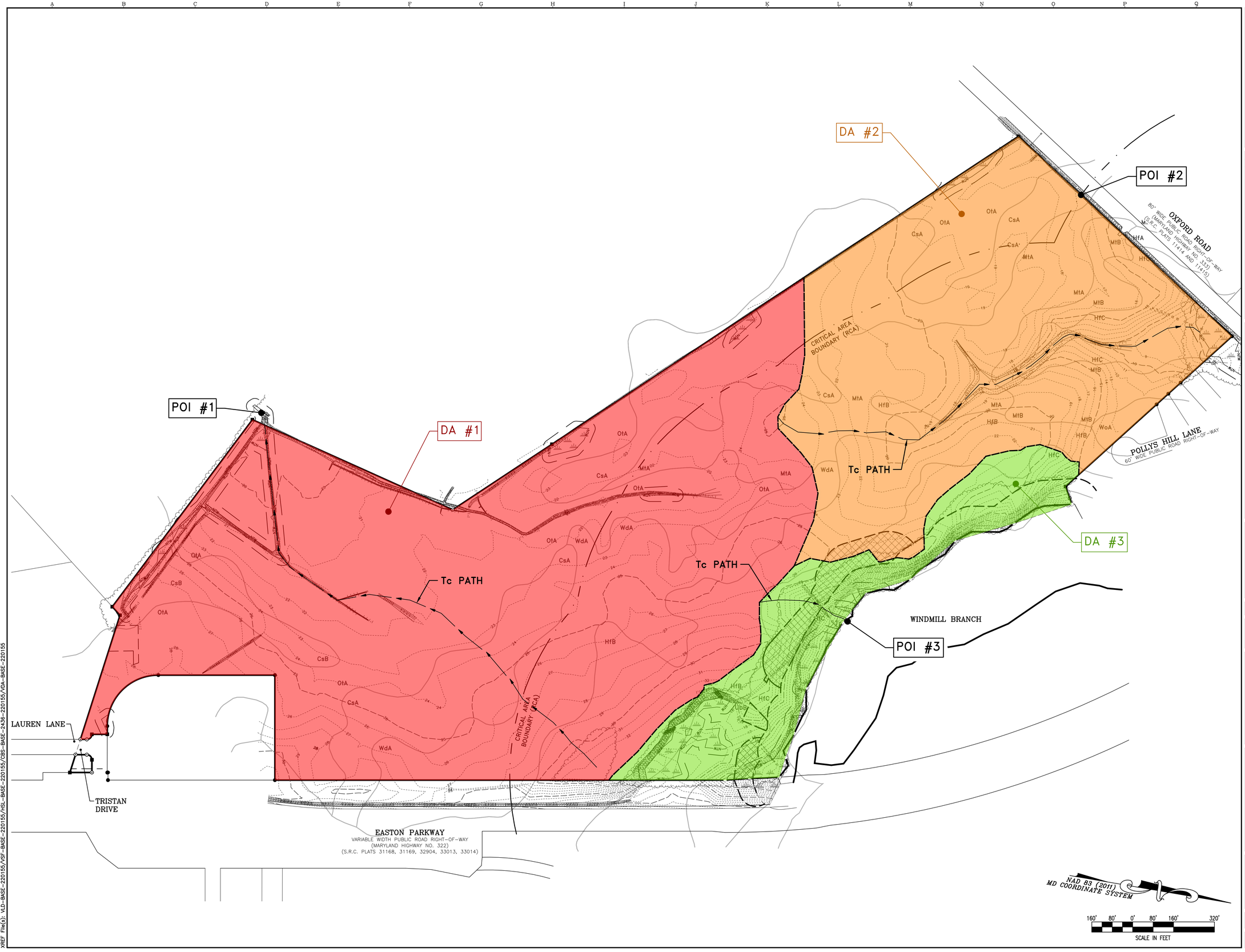
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	150	0.0200	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.40"
1.1	153	0.0200	2.28		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
14.2	303	Total			

Subcatchment 79: DA #35



APPENDIX C

PRE-DEVELOPMENT DRAINAGE AREA MAP



PLANS ARE ISSUED FOR REVIEW ONLY

PLANS ARE NOT APPROVED FOR CONSTRUCTION

REVISIONS TO APPROVED PLANS			
No.	DATE	DESCRIPTION	BY

WARNING!!

THE LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THIS PLAN ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. THE QUANTITIES SHOWN ON THIS PLAN ARE FOR INFORMATIONAL AND PERMITTING PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES TO HIS OWN SATISFACTION PRIOR TO BEGINNING CONSTRUCTION.

THE CONTRACTOR SHALL TEST PIT AND LOCATE EXISTING UNDERGROUND UTILITIES PRIOR TO THE BEGINNING OF ANY WORK ON-SITE. THE CONTRACTOR SHALL NOTIFY DEPT. OF PUBLIC WORKS OF ANY POSSIBLE CONFLICT AND REQUEST THE RELOCATION OF THE EXISTING UNDERGROUND UTILITIES BEFORE BEGINNING ANY WORK ON-SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RELOCATION EXPENSE.

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PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 48188 , Expiration Date: 12/28/2023.

SEAL

STATE OF MARYLAND
JARRET J. BEYER
No. 48188
PROFESSIONAL ENGINEER

DATE

EXISTING CONDITIONS DRAINAGE AREA MAP

POPLAR HILL
PUD PLAN

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 42 GRID 4 PARCEL 57

ISSUED/REVISED FOR: DATE: BY:

SHEET No. APPENDIX C

SCALE: AS NOTED

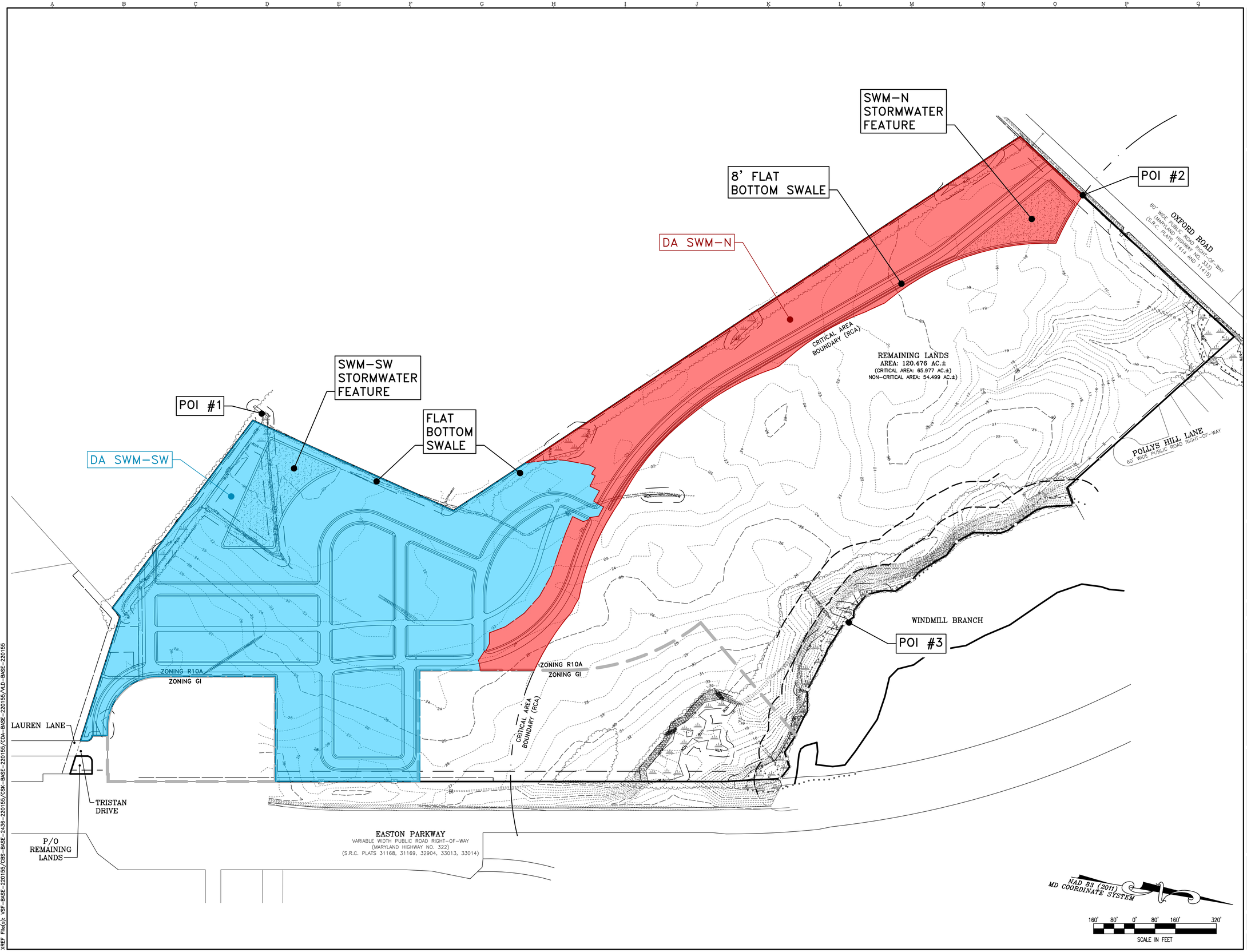
JOB No. 220155

FILE No. 1324

Date: 08/01/2023 - 5:53pm User: jbeyer Project Manager: BCE
Drawing Path: J:\2022\0100\220155\Civil3D-220155\Dwg\Plots\VDA-PLTS-220155.dwg | APP. C
XREF File(s): VLD-BASE-220155/VSF-BASE-220155/HSL-BASE-220155/CBS-BASE-2436-220155/VDA-BASE-220155

APPENDIX D

POST-DEVELOPMENT DRAINAGE AREA MAP



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REVISIONS TO APPROVED PLANS

No.	DATE	DESCRIPTION	BY

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15 Washington St. Cambridge, MD 21613 (410) 221-0818
354 Pennsylvania Ave. Centreville, MD 21617 (410) 758-2095

PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 48188 , Expiration Date: 12/28/2023.

SEAL

STATE OF MARYLAND
JARRETT BEYER
No. 48188
REGISTERED
PROFESSIONAL ENGINEER

DATE

PROPOSED CONDITIONS DRAINAGE AREA MAP

POPLAR HILL PUD PLAN

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 42 GRID 4 PARCEL 57

ISSUED/REVISED FOR: DATE: BY:

SHEET No. APPENDIX D

SCALE: AS NOTED

JOB No. 220155

FILE No. 1324

Date: 08/01/2023 - 5:51pm User: jbeyer Project Manager: BCE
Drawing Path: J:\2022\0100\220155\Civil3D-220155\Dwg\Plots\CDA-PLTS-220155.dwg | APP D
XREF File(s): VSF-BASE-220155/CBS-BASE-2436-220155/CSK-BASE-220155/CDA-BASE-220155/NLD-BASE-220155

Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

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TOWN OF EASTON

Forest Conservation Application

Project Information

Project Name	Poplar Hill	Project Number	
Project Location	Across from Easton Club, South Side of Oxford Road		
Project Description	Proposed Residential By Right Subdivision		

Watershed Information

Watershed Name	Choptank-021304	Sub-watershed No.	2130403
County	Talbot	Municipality	Easton

Property Information

National Spatial Reference System (NSRS)
Alignment of passive control with the latest realization of the North American Datum of 1983:
NAD 83(2011), NAD 83(PA11), and NAD 83(MA11) Epoch 2010.00

Maryland Grid Coordinates centroid:	336,700			ft. North	1,061,100		ft. East
ADC Map: Year	2003	Page	14	Grid	B9		
Tax Map:	42	Grid		Parcel	57	Block	
District / Account Number	01-045571					Lot	
Liber	2827	Folio	90				

Agent Information

Name	Brett Ewing	License No.		Expiration Date	
Firm Name	Lane Engineering, LLC				
Mailing Address	117 Bay Street, Easton, MD 21601				
Telephone No.	(410) 822-8003	Email	bewing@leinc.com		

Forest Stand Delineation Information

Details of Request (Acreage or portion thereof)

Total Tract Area	120.48 Ac.	*Net Tract Area*	54.50 Ac.
Area within 100-year Floodplain	0.551 Ac.	Area of Existing Forest	5.31 Ac.
Area Remaining in Agriculture	103.96 Ac.	Area of Existing NTW	2.77 Ac.
Other	- Ac.	Sensitive Areas	0 Ac.

Forested Stream Buffers (minimum 50' wide):			Yes	X	No
One Side		Both Sides			
Buffer Area Forested	Ac.	Length	Ft.		
Steep Slopes	X Yes		No		
Threatened & Endangered Species	Yes	X	No		
Dominant & Co-dominant Species	Yes	X	No		

Forest Stand Delineation Prepared by:

Forest Conservation Plan Information

Details of Request (Acreage or portion thereof)

Existing Land Use (zone)	Ag	Proposed Land Use (zone)	Residential		
Afforestation Threshold	15%	Conservation Threshold	20%		
Proposed Area of Disturbance	54.50 AC	in Sensitive Areas	2.68		
Proposed Forest Clearing	5.31	in Sensitive Areas	0	in NTW	0

Forest Retention:

Onsite		Offsite		in Long Term Protection	
Forest Conservation Required	13.48 AC	Forest Conservation Provided			

Planting:

Onsite		Offsite		Sensitive Area Planting	

Stream Buffer Established: Length Width

Other:

Offsite Location:

County		Municipality			
ADC Map:	Year		Page		Grid
Tax Map:	Grid		Parcel		Block
Maryland Grid:		North American Datum Year			Lot
District / Account Number		Sub-watershed No.			
Planting Responsibility:		Contact #			
Maintenance Responsibility:		Contact #			
Long Term Protection		% in Sensitive Areas			
Long Term Protection Agreement Type					
Fee-in Lieu Amount		Acreage			
Forest Conservation Plan Prepared by	D. Wayde Barnhart				
Licensed Landscape Architect					
Licensed Forester					
Qualified Professional	D. Wayde Barnhart				

Subject to previous FCP? Y / N

If yes, please provide a copy of previous approved FCP.

Subject to ESDR? Y/ N

***Afforestation Required shall be acheived utilizing the forest conservaiton overlapping requirements per 1014.5, CA Forest Retention & Proposed Seedling Planting Area & provided on-site and shall be placed under a long term protective easement.**

Required:

- ☐ Completed Form
- ☐ Written Statement
- ☐ Signature of Applicant
- ☐ Hardcopy of Drawings
- ☐ Digital Copy of Drawings
- ☐ Copies Hard / Digital of Any Previous FCP + Application
- ☐ Review Fee

Any modifications during review shall warrant an updated application.

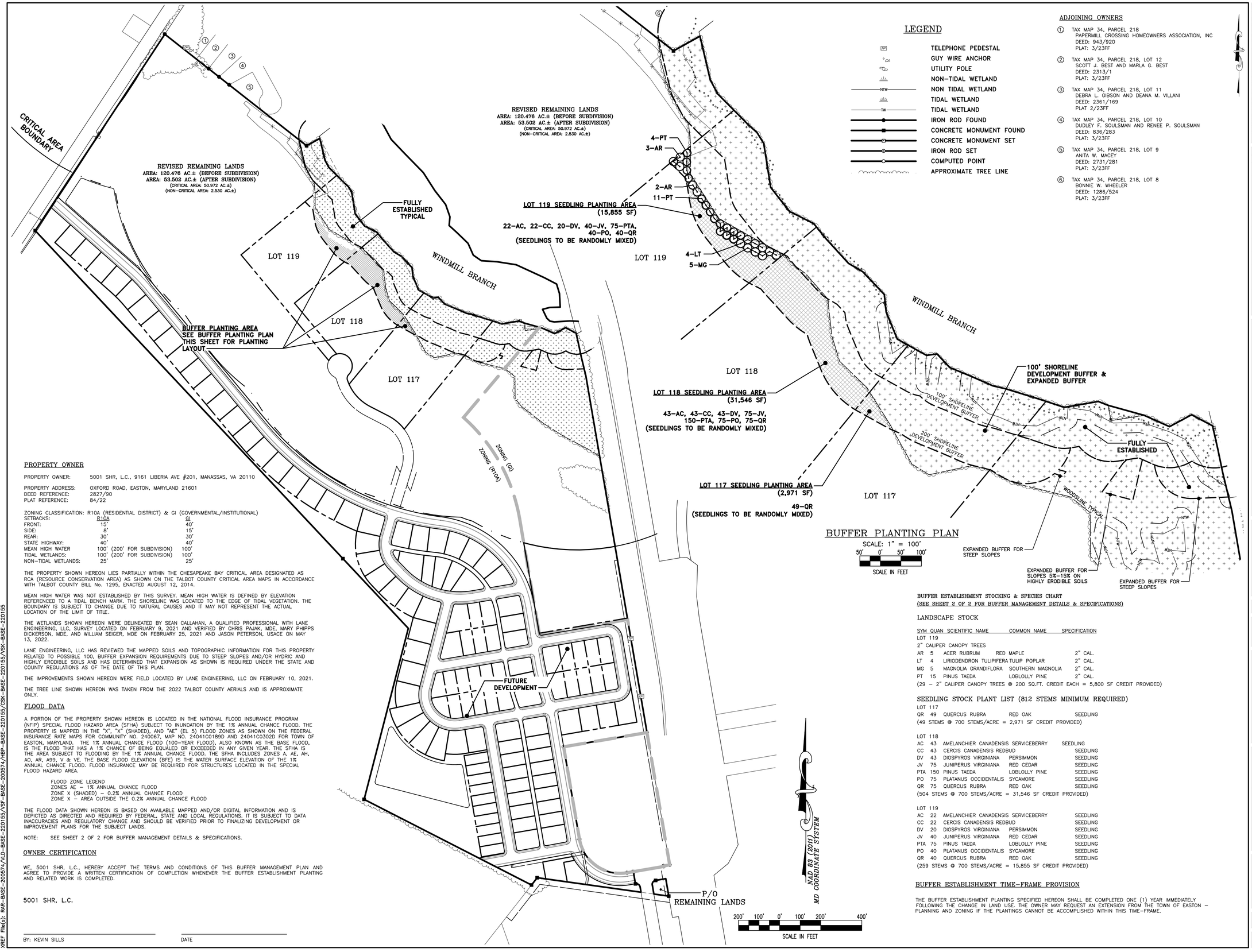
I do hereby solemnly declare and affirm that the information provided by this application and the documents attached hereto accurately represent the conditions of the request and that submission of an incomplete application will be returned for correction prior to processing.

By signing below, the applicant certifies that he of she has the legal right to implement proposed planting, maintenance and or a long-term protection agreement. The applicant further certifies that the property, subject to a long-term protection agreement is not otherwise protected under Federal, State or local programs.

Signature of Applicant or Agent		
	Date	8/02/23
Printed Name of Applicant or Agent		Brett Ewing

For Office Use Only

Planning Commission Meeting Date			
Sketch Approval Date		Project No.	ESDR 23-14
Prelim/Dev. Approval Date		Application No.	2021-561
Final Approval Date		Sketch Fee Paid	-
Recordation Date		Develop. Fee Paid	-
			Revised 02-2019



BUFFER PLANTING PLAN

SCALE: 1" = 100'

50' 0' 50' 100'

SCALE IN FEET

LEGEND

- TELEPHONE PEDESTAL
- GUY WIRE ANCHOR
- UTILITY POLE
- NON-TIDAL WETLAND
- NTW — NON TIDAL WETLAND
- TIDAL WETLAND
- TW — TIDAL WETLAND
- IRON ROD FOUND
- CONCRETE MONUMENT FOUND
- CONCRETE MONUMENT SET
- IRON ROD SET
- COMPUTED POINT
- APPROXIMATE TREE LINE

ADJOINING OWNERS

1. TAX MAP 34, PARCEL 218
   PAPERMILL CROSSING HOMEOWNERS ASSOCIATION, INC
   DEED: 943/920
   PLAT: 3/23FF
2. TAX MAP 34, PARCEL 218, LOT 12
   SCOTT J. BEST AND MARLA G. BEST
   DEED: 2313/1
   PLAT: 3/23FF
3. TAX MAP 34, PARCEL 218, LOT 11
   DEBRA L. GIBSON AND DEANA M. VILLANI
   DEED: 2361/169
   PLAT 2/23FF
4. TAX MAP 34, PARCEL 218, LOT 10
   DUDLEY F. SOULSMAN AND RENEE P. SOULSMAN
   DEED: 836/283
   PLAT: 3/23FF
5. TAX MAP 34, PARCEL 218, LOT 9
   ANITA W. MACEY
   DEED: 2731/281
   PLAT: 3/23FF
6. TAX MAP 34, PARCEL 218, LOT 8
   BONNIE W. WHEELER
   DEED: 1286/524
   PLAT: 3/23FF

PROPERTY OWNER

PROPERTY OWNER: 5001 SHR, L.C., 9161 LIBERIA AVE #201, MANASSAS, VA 20110

PROPERTY ADDRESS: OXFORD ROAD, EASTON, MARYLAND 21601
DEED REFERENCE: 2827/90
PLAT REFERENCE: 84/22

ZONING CLASSIFICATION: R10A (RESIDENTIAL DISTRICT) & GI (GOVERNMENTAL/INSTITUTIONAL)

SETBACKS:	R10A	GI
FRONT:	15'	40'
SIDE:	8'	15'
REAR:	30'	30'
STATE HIGHWAY:	40'	40'
MEAN HIGH WATER	100' (200' FOR SUBDIVISION)	100'
TIDAL WETLANDS:	100' (200' FOR SUBDIVISION)	100'
NON-TIDAL WETLANDS:	25'	25'

THE PROPERTY SHOWN HEREON LIES PARTIALLY WITHIN THE CHESAPEAKE BAY CRITICAL AREA DESIGNATED AS RCA (RESOURCE CONSERVATION AREA) AS SHOWN ON THE TALBOT COUNTY CRITICAL AREA MAPS IN ACCORDANCE WITH TALBOT COUNTY BILL No. 1295, ENACTED AUGUST 12, 2014.

MEAN HIGH WATER WAS NOT ESTABLISHED BY THIS SURVEY. MEAN HIGH WATER IS DEFINED BY ELEVATION REFERENCED TO A TIDAL BENCH MARK. THE SHORELINE WAS LOCATED TO THE EDGE OF TIDAL VEGETATION. THE BOUNDARY IS SUBJECT TO CHANGE DUE TO NATURAL CAUSES AND IT MAY NOT REPRESENT THE ACTUAL LOCATION OF THE LIMIT OF TITLE.

THE WETLANDS SHOWN HEREON WERE DELINEATED BY SEAN CALLAHAN, A QUALIFIED PROFESSIONAL WITH LANE ENGINEERING, LLC, SURVEY LOCATED ON FEBRUARY 9, 2021 AND VERIFIED BY CHRIS PAJAK, MDE, MARY PHIPPS DICKERSON, MDE, AND WILLIAM SEIGER, MDE ON FEBRUARY 25, 2021 AND JASON PETERSON, USACE ON MAY 13, 2022.

LANE ENGINEERING, LLC HAS REVIEWED THE MAPPED SOILS AND TOPOGRAPHIC INFORMATION FOR THIS PROPERTY RELATED TO POSSIBLE 100, BUFFER EXPANSION REQUIREMENTS DUE TO STEEP SLOPES AND/OR HYDRIC AND HIGHLY ERODIBLE SOILS AND HAS DETERMINED THAT EXPANSION AS SHOWN IS REQUIRED UNDER THE STATE AND COUNTY REGULATIONS AS OF THE DATE OF THIS PLAN.

THE IMPROVEMENTS SHOWN HEREON WERE FIELD LOCATED BY LANE ENGINEERING, LLC ON FEBRUARY 10, 2021.

THE TREE LINE SHOWN HEREON WAS TAKEN FROM THE 2022 TALBOT COUNTY AERIALS AND IS APPROXIMATE ONLY.

FLOOD DATA

A PORTION OF THE PROPERTY SHOWN HEREON IS LOCATED IN THE NATIONAL FLOOD INSURANCE PROGRAM (NFIP) SPECIAL FLOOD HAZARD AREA (SFHA) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD. THE PROPERTY IS MAPPED IN THE "X", "X" (SHADED), AND "AE" (EL 5) FLOOD ZONES AS SHOWN ON THE FEDERAL INSURANCE RATE MAPS FOR COMMUNITY NO. 240067, MAP NO. 24041C0189D AND 24041C0302D FOR TOWN OF EASTON, MARYLAND. THE 1% ANNUAL CHANCE FLOOD (100-YEAR FLOOD), ALSO KNOWN AS THE BASE FLOOD, IS THE FLOOD THAT HAS A 1% CHANCE OF BEING EQUALED OR EXCEEDED IN ANY GIVEN YEAR. THE SFHA IS THE AREA SUBJECT TO FLOODING BY THE 1% ANNUAL CHANCE FLOOD. THE SFHA INCLUDES ZONES A, AE, AH, AO, AR, A99, V & VE. THE BASE FLOOD ELEVATION (BFE) IS THE WATER SURFACE ELEVATION OF THE 1% ANNUAL CHANCE FLOOD. FLOOD INSURANCE MAY BE REQUIRED FOR STRUCTURES LOCATED IN THE SPECIAL FLOOD HAZARD AREA.

FLOOD ZONE LEGEND
ZONES AE – 1% ANNUAL CHANCE FLOOD
ZONE X (SHADED) – 0.2% ANNUAL CHANCE FLOOD
ZONE X – AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD

THE FLOOD DATA SHOWN HEREON IS BASED ON AVAILABLE MAPPED AND/OR DIGITAL INFORMATION AND IS DEPICTED AS DIRECTED AND REQUIRED BY FEDERAL, STATE AND LOCAL REGULATIONS. IT IS SUBJECT TO DATA INACCURACIES AND REGULATORY CHANGE AND SHOULD BE VERIFIED PRIOR TO FINALIZING DEVELOPMENT OR IMPROVEMENT PLANS FOR THE SUBJECT LANDS.

NOTE: SEE SHEET 2 OF 2 FOR BUFFER MANAGEMENT DETAILS & SPECIFICATIONS.

OWNER CERTIFICATION

WE, 5001 SHR, L.C., HEREBY ACCEPT THE TERMS AND CONDITIONS OF THIS BUFFER MANAGEMENT PLAN AND AGREE TO PROVIDE A WRITTEN CERTIFICATION OF COMPLETION WHENEVER THE BUFFER ESTABLISHMENT PLANTING AND RELATED WORK IS COMPLETED.

5001 SHR, L.C.

BY: KEVIN SILLS

DATE

BUFFER ESTABLISHMENT STOCKING & SPECIES CHART

(SEE SHEET 2 OF 2 FOR BUFFER MANAGEMENT DETAILS & SPECIFICATIONS)

LANDSCAPE STOCK

SYM	QUAN	SCIENTIFIC NAME	COMMON NAME	SPECIFICATION
LOT 119				
2" CALIPER CANOPY TREES				
AR	5	ACER RUBRUM	RED MAPLE	2" CAL.
LT	4	LIRIODENDRON TULIPIFERA	TULIP POPLAR	2" CAL.
MG	5	MAGNOLIA GRANDIFLORA	SOUTHERN MAGNOLIA	2" CAL.
PT	15	PINUS TAEDA	LOBLOLLY PINE	2" CAL.

(29 – 2" CALIPER CANOPY TREES @ 200 SQ.FT. CREDIT EACH = 5,800 SF CREDIT PROVIDED)

SEEDLING STOCK PLANT LIST (812 STEMS MINIMUM REQUIRED)

LOT 117				
QR	49	QUERCUS RUBRA	RED OAK	SEEDLING

(49 STEMS @ 700 STEMS/ACRE = 2,971 SF CREDIT PROVIDED)

LOT 118				
AC	43	AMELANCHIER CANADENSIS	SERVICEBERRY	SEEDLING
CC	43	CERCIS CANADENSIS	REDBUD	SEEDLING
DV	43	DIOSPYROS VIRGINIANA	PERSIMMON	SEEDLING
JV	75	JUNIPERUS VIRGINIANA	RED CEDAR	SEEDLING
PTA	150	PINUS TAEDA	LOBLOLLY PINE	SEEDLING
PO	75	PLATANUS OCCIDENTALIS	SYCAMORE	SEEDLING
QR	75	QUERCUS RUBRA	RED OAK	SEEDLING

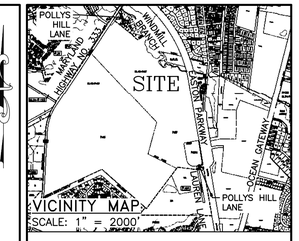
(504 STEMS @ 700 STEMS/ACRE = 31,546 SF CREDIT PROVIDED)

LOT 119				
AC	22	AMELANCHIER CANADENSIS	SERVICEBERRY	SEEDLING
CC	22	CERCIS CANADENSIS	REDBUD	SEEDLING
DV	20	DIOSPYROS VIRGINIANA	PERSIMMON	SEEDLING
JV	40	JUNIPERUS VIRGINIANA	RED CEDAR	SEEDLING
PTA	75	PINUS TAEDA	LOBLOLLY PINE	SEEDLING
PO	40	PLATANUS OCCIDENTALIS	SYCAMORE	SEEDLING
QR	40	QUERCUS RUBRA	RED OAK	SEEDLING

(259 STEMS @ 700 STEMS/ACRE = 15,855 SF CREDIT PROVIDED)

BUFFER ESTABLISHMENT TIME-FRAME PROVISION

THE BUFFER ESTABLISHMENT PLANTING SPECIFIED HEREON SHALL BE COMPLETED ONE (1) YEAR IMMEDIATELY FOLLOWING THE CHANGE IN LAND USE. THE OWNER MAY REQUEST AN EXTENSION FROM THE TOWN OF EASTON – PLANNING AND ZONING IF THE PLANTINGS CANNOT BE ACCOMPLISHED WITHIN THIS TIME-FRAME.



REVISIONS			
No.	DATE	DESCRIPTION	BY

Lane Engineering, LLC
Established 1986
Civil Engineers • Land Planning • Land Surveyors
E-mail: general@lelnc.com
117 Bay St. Easton, MD 21601 (410) 822-8003
15 Washington St. Cambridge, MD 21613 (410) 221-0818
354 Pennsylvania Ave. Centreville, MD 21617 (410) 758-2095

SEAL

DATE

MAJOR BUFFER MANAGEMENT PLAN
ON THE LANDS OF 5001 SHR, L.C.

TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 42, GRID 4, PARCEL 57

ISSUED FOR: AGENCY REVIEW
DATE: 8/2/23
BY: BCE

SHEET No. 1 OF 2	DATE: 8/2/23
SCALE: AS NOTED	JOB No. 220155
	FILE No. 1324

Date: 08/01/2023 – 2:56pm User: wbarnhart Project Manager: BCE
Drawing Path: J:\2022\0100\220155\Civil3D-220155\Dwg\Plats\HBP-BASE-220155\CSK-BASE-220155/VSK-BASE-220155
XREF File(s): RAR-BASE-200574/WLD-BASE-220155/VSF-BASE-200574/HBP-BASE-220155/CSK-BASE-220155.dwg | -1
Lane Consulting, LLC

BUFFER ESTABLISHMENT REQUIREMENTS & PROPOSAL

COMAR 27.01.01.01–1.C., "SUBDIVISION", LOT CREATED AFTER LOCAL PROGRAM ADOPTION, FULLY ESTABLISH THE UPLAND NON–FORESTED PORTIONS OF THE BUFFER.

LOT 117

TOTAL BUFFER AREA:	72,776 SF
LESS EXISTING VEGETATION:	(69,805 SF)
BUFFER AVAILABLE FOR ESTABLISHMENT:	2,971 SF;
BUFFER ESTABLISHMENT PLANTING REQUIRED:	2,971 SF; (0.07 AC.)

LOT 118

TOTAL BUFFER AREA:	79,248 SF
LESS EXISTING VEGETATION:	(47,702 SF)
BUFFER AVAILABLE FOR ESTABLISHMENT:	31,546 SF;
BUFFER ESTABLISHMENT PLANTING REQUIRED:	31,546 SF; (0.72 AC.)

LOT 119

TOTAL BUFFER AREA:	73,171 SF
LESS EXISTING VEGETATION:	(51,516 SF)
BUFFER AVAILABLE FOR ESTABLISHMENT:	21,655 SF;
BUFFER ESTABLISHMENT PLANTING REQUIRED:	21,655 SF; (0.50 AC.)

REVISED REMAINING LANDS

TOTAL BUFFER AREA:	102,966 SF
LESS EXISTING VEGETATION:	(102,966 SF)
BUFFER AVAILABLE FOR ESTABLISHMENT:	0 SF

BUFFER FULLY ESTABLISHED; THEREFORE, NO BUFFER ESTABLISHMENT REQUIRED

PLANTING STANDARDS

PLANTING REQUIREMENTS IN ACCORDANCE WITH (COMAR 27.01.09.01–2.K): BUFFER ESTABLISHMENT, GREATER THAN 1 ACRE – AT LEAST 10% OF THE BUFFER ESTABLISHMENT AFFORESTATION TO BE PLANTED IN LANDSCAPE STOCK IN ACCORDANCE WITH COMAR 27.01.09.01–2.K;

COMAR 27.01.09.01–3.J. (3) – A SINGLE SPECIES MAY NOT EXCEED 20% OF THE TOTAL PLANTING REQUIREMENT.

LANDSCAPE STOCK PROPOSED–
68 – 2" CALIPER, CANOPY TREES @ 200 SF CREDIT = 13,600 SF CREDIT; (10%)

SEEDLING STOCK PROPOSED–
2.79 AC. @ 700 STEMS/AC. =1953 STEMS; 1953 STEMS PROVIDED = 121,425 SF CREDIT; (75%)
TOTAL = 135,025 SF; (3.10 AC) CREDIT PROVIDED

BUFFER ESTABLISHMENT STOCKING & SPECIES CHART

LANDSCAPE STOCK

SYM	QUAN	SCIENTIFIC NAME	COMMON NAME	SPECIFICATION	UNIT COST	TOTAL PLANT COST
LOT 119						
2" CALIPER CANOPY TREES						
AR	5	ACER RUBRUM	RED MAPLE	2" CAL.	$165.00	$ 825.00
LT	4	LIRIODENDRON TULIPIFERA	TULIP POPLAR	2" CAL.	$165.00	$ 660.00
MG	5	MAGNOLIA GRANDIFLORA	SOUTHERN MAGNOLIA	2" CAL.	$165.00	$ 825.00
PT	15	PINUS TAEDA	LOBLOLLY PINE	2" CAL.	$150.00	$2,250.00
(29 – 2" CALIPER CANOPY TREES @ 200 SQ.FT. CREDIT EACH = 5,800 SF CREDIT PROVIDED)						
				TOTAL LANDSCAPE STOCK PLANT COST =		$4,560.00

SEEDLING STOCK PLANT LIST (812 STEMS MINIMUM REQUIRED)

LOT 117						
QR	49	QUERCUS RUBRA	RED OAK	SEEDLING	$ 0.65	$ 31.85
(49 STEMS @ 700 STEMS/ACRE = 2,971 SF CREDIT PROVIDED)						
LOT 118						
AC	43	AMELANCHIER CANADENSIS	SERVICEBERRY	SEEDLING	$ 0.75	$ 32.25
CC	43	CERCIS CANADENSIS	REDBUD	SEEDLING	$ 0.60	$ 25.80
DV	43	DIOSPYROS VIRGINIANA	PERSIMMON	SEEDLING	$ 0.65	$ 27.95
JV	75	JUNIPERUS VIRGINIANA	RED CEDAR	SEEDLING	$ 0.75	$ 56.25
PTA	150	PINUS TAEDA	LOBLOLLY PINE	SEEDLING	$ 0.30	$ 45.00
PO	75	PLATANUS OCCIDENTALIS	SYCAMORE	SEEDLING	$ 0.60	$ 45.00
QR	75	QUERCUS RUBRA	RED OAK	SEEDLING	$ 0.65	$ 48.75
(504 STEMS @ 700 STEMS/ACRE = 31,546 SF CREDIT PROVIDED)						
LOT 119						
AC	22	AMELANCHIER CANADENSIS	SERVICEBERRY	SEEDLING	$ 0.75	$ 16.50
CC	22	CERCIS CANADENSIS	REDBUD	SEEDLING	$ 0.60	$ 13.20
DV	20	DIOSPYROS VIRGINIANA	PERSIMMON	SEEDLING	$ 0.65	$ 13.00
JV	40	JUNIPERUS VIRGINIANA	RED CEDAR	SEEDLING	$ 0.75	$ 30.00
PTA	75	PINUS TAEDA	LOBLOLLY PINE	SEEDLING	$ 0.30	$ 22.50
PO	40	PLATANUS OCCIDENTALIS	SYCAMORE	SEEDLING	$ 0.60	$ 24.00
QR	40	QUERCUS RUBRA	RED OAK	SEEDLING	$ 0.65	$ 26.00
(259 STEMS @ 700 STEMS/ACRE = 15,855 SF CREDIT PROVIDED)						
				TOTAL SEEDLING STOCK PLANT COST =		$ 458.05

NOTE: THE LANDSCAPE PLANT COSTS SHOWN HEREON REFLECT THE PRICING PROVIDED FROM TIDELAND GARDENS, 10040 PERKINS HILL ROAD, CHESTERTOWN, MARYLAND 21620, (410) 778–5787; (www.tidelandgardens.com).

THE SEEDLING PLANT COSTS SHOWN HEREON REFLECT THE PRICING FROM THE SEEDLING CATALOG FOR JOHN S. AYTON, STATE FOREST TREE NURSERY, MARYLAND DEPARTMENT OF NATURAL RESOURCES, 3424 GALLAGHER ROAD, PRESTON, MARYLAND 21655, (800) 873–3763; (www.dnr.md.gov/forest/nursery)

BUFFER ESTABLISHMENT COST ESTIMATE FOR REMAINING LANDS

LANDSCAPE STOCK

TOTAL INSTALLED COST INCLUDES PLANT MATERIAL COSTS, INSTALLATION/LABOR COSTS, MULCH AND OTHER INSTALLATION MATERIAL COSTS AND EQUALS PLANT MATERIAL COST ($4,560.00 X 2.0 MULTIPLIER):	$ 9,120.00	
LANDSCAPE MAINTENANCE – 2 YEARS ($600 PER YEAR)	$ 1,200.00	
TOTAL COST FOR LANDSCAPE STOCK BUFFER ESTABLISHMENT:	$10,320.00	
SURETY AMOUNT (110% OF $10,320.00):		$11,352.00

SEEDLING STOCK INSTALLED COST

SEEDLING STOCK PLANT COST	$ 458.05	
INSTALLATION COSTS – 2 ACRE MINIMUM ($125.00 PER ACRE X 1.16 ACRES)	$ 250.00	
BAND SPRAYING OUST – 1 ACRE MINIMUM ($80.00 PER ACRE X 1.16 ACRES)	$ 92.80	
4' TREE SHELTERS W/STAKE FOR 50% OF [OAKS, SYCAMORE AND SERVICEBERRY] PLUS INSTALLATION @ $4.00 EA. X 172 SHELTERS:	$ 688.00	
SEEDLING MAINTENANCE – 5 YEARS ($400 PER YEAR)	$ 2,000.00	
TOTAL COST FOR SEEDLING STOCK BUFFER ESTABLISHMENT:	$ 3,488.85	
SURETY AMOUNT (110% OF $3,488.85):		$3,837.74
TOTAL BUFFER ESTABLISHMENT COST:		$15,189.74

PLANTING SUBSTITUTIONS

SUBSTITUTION OF SPECIFIC SPECIES SHALL BE APPROVED BY THE TOWN OF EASTON IN ADVANCE OF IMPLEMENTATION IF THE SPECIFIED SPECIES MIX IS UNAVAILABLE.

LANDSCAPE PLANT MATERIAL AND INSTALLATION SPECIFICATIONS

GENERAL: ALL LANDSCAPE INSTALLATION SHALL BE ACCOMPLISHED WITH QUALIFIED PERSONNEL, UTILIZING INDUSTRY STANDARD PRACTICES AND TECHNIQUES.

THE CONTRACTOR (CONTRACTOR) IS RESPONSIBLE FOR THE COMPLETE INSTALLATION OF ALL LANDSCAPING SHOWN OR IMPLIED ON THIS PLAN. PLANT QUANTITIES ARE SHOWN FOR CONVENIENCE ONLY. PRIOR TO INSTALLATION THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT IF PROPOSED SPECIES AND/OR SITE PLANTING CONDITIONS WARRANT RE–DESIGN CONSIDERATIONS.

PRE–PLANTING SITE PREPARATION

AREAS ADJOINING PLANTING AREAS SHALL REMAIN IN EXISTING ESTABLISHED GROUNDCOVER.

PLANTING AREAS THAT ARE OVERGROWN/FALLOW SHALL BE SPRAYED WITH HERBICIDE, MOWN AFTER THREE (3) WEEKS, AND THEN PLANTED.

PLANTING AREAS THAT ARE CURRENTLY IN TURF GRASS SHALL BE SPRAYED WITH HERBICIDE. NO TURF GRASS IS PERMITTED IN THESE "FULL" BUFFER ESTABLISHMENT AREAS.

PRE–PLANTING SITE PREPARATION

- REMOVAL OF NON–NATIVE INVASIVE SPECIES BY OBTAINING A STATE OF MARYLAND TOXIC MATERIALS PERMIT AND FOLLOWING ALL GUIDELINES FOR THE INVASIVE SPECIES REMOVAL.
- LANDSCAPE PLANTING AREAS SHALL BE PLANTED WITH NO OTHER REQUIRED SITE PREPARATION
- AREAS ADJOINING PLANTING AREAS SHALL REMAIN IN EXISTING ESTABLISHED GROUNDCOVER.
- PLANTING AREAS THAT ARE OVERGROWN/FALLOW SHALL BE SPRAYED WITH HERBICIDE, MOWN AFTER THREE (3) WEEKS, AND THEN PLANTED.
- PLANTING AREAS THAT ARE CURRENTLY IN NATIVE GRASS AND SLATED FOR SEEDLING STOCK– SHALL BE MOWN TO 2" OR AS CLOSE AS FEASIBLE PRIOR TO PLANTING.

POST–PLANTING AREA GROUND SURFACE TREATMENT REQUIREMENTS

COMAR 27.01.09.01–1 B. AND AS REFERENCED THEREIN, COMAR 27.01.09.01–2 B. (3) REQUIRE THE GROUND SURFACE OF THE BUFFER MITIGATION & ESTABLISHMENT AREAS TO BE COVERED "WITH MULCH OR GROUND COVER UNTIL BUFFER PLANTINGS ARE ESTABLISHED". SPECIFIC GROUND SURFACE ESTABLISHMENT SHALL BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING:

LANDSCAPE STOCK PLANTING AREAS

THE PROPOSED PLANTING AREAS THAT ARE CURRENTLY STABILIZED IN TURF SHALL REMAIN IN THEIR CURRENT CONDITION POST PLANTING INSTALLATION. INDIVIDUAL LANDSCAPE PLANTS (TREES) SHALL BE MULCHED WITH 2" THICK, DOUBLE GROUND HARDWOOD BARK MULCH, ALL OTHER AREAS OF THE BUFFER MAY BE MAINTAINED IN THEIR CURRENT CONDITION OR ENCOURAGED TO NATURALIZE WITH NATIVE SPECIES.

SEEDLING STOCK PLANTING AREAS

NO SPECIFIC GROUND SURFACE ESTABLISHMENT IS REQUIRED IN SEEDLING PLANTING AREAS BECAUSE THESE PLANTING AREAS LIE UPSTREAM FROM EXISTING FOREST AND/OR VEGETATED SHORELINES THAT INTERCEPT POTENTIAL SEDIMENT LADEN RUN–OFF CAUSED BY MINOR PLANTING DISTURBANCE ACTIVITIES.

PROTECTIVE DEVICES

BUFFER PROTECTION SIGNS ARE REQUIRED EVERY 200' ALONG THE ENHANCED BUFFER.

MAINTENANCE PROVISIONS

THE PROPERTY OWNER IS RESPONSIBLE AND SHALL INSURE ADEQUATE MAINTENANCE IS PROVIDED THROUGH THE INSTALLATION AND WARRANTY PERIOD AND FINAL INSPECTION BY THE TOWN OF EASTON. THE CONTRACTOR SHALL MAINTAIN ALL PLANTING INSTALLATION, ON A LOT BY LOT BASIS AS NECESSARY, THROUGH JOB COMPLETION AND APPROVAL OF INITIAL INSTALLATION BY THE TOWN OF EASTON. ADDITIONAL MAINTENANCE REQUIREMENTS OF THE CONTRACTOR SHALL BE AS SPECIFICALLY NEGOTIATED WITH THE PROPERTY OWNER. MAINTENANCE SHALL INCLUDE, BUT NOT BE LIMITED TO:

- PERIODIC WATERING OF LARGER STOCK DURING PERIODS OF DROUGHT.
- BI–ANNUAL MOWING OF COMPETING VEGETATION BETWEEN SEEDLING PLANTING ROWS.
- HAND REMOVAL OF COMPETING WOODY VEGETATION, WEEDS OR INVASIVE SPECIES WHERE GROUND PLAIN IN LANDSCAPE STOCK PLANTING AREAS IS ESTABLISHED IN NATIVE GRASSES.
- OTHER SPOT HERBICIDE APPLICATIONS FOR COMPETING VEGETATION CONTROL.
- STATE OF MARYLAND REQUIRED NOXIOUS WEED CONTROL (JOHNSON GRASS AND THISTLE).
- NON–NATIVE INVASIVE SPECIES REMOVAL.
- RE–MULCHING PLANT MATERIAL ANNUALLY. RE–ESTABLISH FOREST ORGANIC MATTER OR COMPOST OVER BARE AREAS PREVIOUSLY ESTABLISHED.
- MAINTENANCE OF PLANT STABILIZATION PRACTICES

OTHER BUFFER MAINTENANCE RECOMMENDATIONS

EXISTING FOREST FRINGE AND WOODY VEGETATION MAINTENANCE

THE EXISTING FOREST FRINGE AND WOODY VEGETATION PORTION OF THE BUFFER MAY BE MAINTAINED AS FOLLOWS:

1. SELECTIVE PRUNING TO IMPROVE HEALTH AND FORM OF TREES
2. UP–LIMBING OF TREES
3. REMOVAL OF ALL VINE GROWTH FROM TREES/SHRUBS
4. REMOVAL OF ANY DOWNED OR DEAD TREES IN THE BUFFER. (NOTE– IF ADDITIONAL TREE OR WOODY VEGETATION REMOVAL IS REQUIRED TO ACCOMPLISH THIS TREE REMOVAL, THEN THIS BMP SHALL BE AMENDED AND RE–APPROVED BY THE TOWN TO INSURE COMPLIANCE WITH THIS ACTIVITY.
5. HAND REMOVAL, OR HAND APPLICATION OF HERBICIDE TO KILL AND REMOVE HONEYSUCKLE, POISON IVY, WILD GRAPE, AND ENGLISH IVY.

TREE SAPLINGS, UNDERSTORY SHRUBS SHALL BE RETAINED UNLESS OTHERWISE SPECIFICALLY REVIEWED AND APPROVED BY THE TOWN. THE GROUND PLAIN SHALL REMAIN IN NATIVE LEAF MAT OR FOREST LITTER AND SHALL BE REPAIRED TO THIS CONDITION SHOULD ANY MINOR DISRUPTION TO THE GROUND SURFACE OCCUR DUE TO THE ACTIONS SUMMARIZED ABOVE. MAJOR GROUND DISTURBANCE IS NOT PERMITTED UNDER THIS BMP AND REQUIRES ADDITIONAL TOWN APPROVAL.

INSPECTION REQUIREMENTS

INITIAL JOB COMPLETION INSPECTION – ALL WORK SHALL BE INSPECTED BY THE TOWN OF EASTON AFTER COMPLETION. ANY DEFICIENCIES SHALL BE CORRECTED IMMEDIATELY. PROPERTY OWNER SHALL PROVIDE INITIAL CERTIFICATE OF COMPLETION FOR TOWN APPROVAL.

FINAL INSPECTION FOR LANDSCAPE STOCK PLANTINGS AFTER TWO (2) FULL YEARS FROM INITIAL CERTIFICATE OF COMPLETION – THE PLANTINGS SITES SHALL BE INSPECTED BY THE TOWN OF EASTON. THE INSPECTOR SHALL DETERMINE THE SURVIVAL RATE OF THE PLANTINGS AND SUMMARIZE THE OVERALL GENERAL CHARACTERISTICS OF THE PLANTING AREA. DEFICIENT SURVIVAL RATES SHALL BE REVIEWED WITH THE TOWN OF EASTON TO DETERMINE POSSIBLE CAUSES AND TO DIRECT REQUIRED REMEDIATION. IF REMEDIATION IS REQUIRED, THE WARRANTY PERIOD AND FINAL INSPECTION REQUIREMENT FOR THE REMEDIATION PLANTINGS SHALL BE EXTENDED BY ONE (1) FULL YEAR.

FINAL INSPECTION FOR SEEDLING STOCK PLANTINGS AFTER FIVE (5) FULL YEARS FROM INITIAL CERTIFICATE OF COMPLETION – THE PLANTINGS SITES SHALL BE INSPECTED BY THE TOWN OF EASTON. THE INSPECTOR SHALL DETERMINE THE SURVIVAL RATE OF THE PLANTINGS AND SUMMARIZE THE OVERALL GENERAL CHARACTERISTICS OF THE PLANTING AREA. DEFICIENT SURVIVAL RATES SHALL BE REVIEWED WITH THE TOWN OF EASTON TO DETERMINE POSSIBLE CAUSES AND TO DIRECT REQUIRED REMEDIATION. IF REMEDIATION IS REQUIRED, THE WARRANTY PERIOD AND FINAL INSPECTION REQUIREMENT FOR THE REMEDIATION PLANTINGS SHALL BE EXTENDED BY 2 YEARS.

THE PROPERTY OWNER IS STRONGLY ENCOURAGED TO INSPECT THE PLANTINGS REGULARLY AND TO REMEDIATE DEFICIENT PLANTING AREAS.

PLANT INSTALLATION SPECIFICATIONS

OVERALL COMPLIANCE WITH THE TERMS OF THIS BUFFER MANAGEMENT PLAN INCLUDING ALL MAINTENANCE AND WARRANTY REQUIREMENTS PRESCRIBED HEREON IS THE RESPONSIBILITY OF THE OWNER/DEVELOPER. MAINTENANCE, WARRANTY AND PLANT MATERIAL SURVIVAL RESPONSIBILITIES OF THE LANDSCAPE CONTRACTOR ("CONTRACTOR") SHALL BE AS SPECIFICALLY NEGOTIATED BETWEEN OWNER/DEVELOPER AND CONTRACTOR.

ALL WORK SHALL BE ACCOMPLISHED WITH QUALIFIED PERSONNEL, UTILIZING INDUSTRY STANDARD PRACTICES AND TECHNIQUES. THE CONTRACTOR (CONTRACTOR) IS RESPONSIBLE FOR THE COMPLETE INSTALLATION OF ALL LANDSCAPING SHOWN OR IMPLIED ON THIS PLAN. PRIOR TO INSTALLATION THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT OR PLAN PREPARER IF SITE PLANTING CONDITIONS WARRANT RE–DESIGN CONSIDERATION.

THE LANDSCAPE ARCHITECT OR PLAN PREPARER SHALL REJECT ANY AND ALL PLANT MATERIAL THAT DOES NOT MEET SPEC, IS DISEASED OR IS OTHERWISE UNHEALTHY.

WARRANTY

ALL LANDSCAPING STOCK PLANTED SHALL BE WARRANTED IN ACCORDANCE WITH COMAR 27.01.09.01–2.N., OR TO A 100% SURVIVAL RATE FOR TWO (2) FULL YEARS FROM DATE OF SUBSTANTIAL COMPLETION OF THE WORK AND ACCEPTANCE OF THE INITIAL INSTALLATION BY THE TOWN OF EASTON.

ALL SEEDLING STOCK PLANTED SHALL BE WARRANTED IN ACCORDANCE WITH COMAR 27.01.09.01–2.O., OR TO A 50% SURVIVAL RATE FOR FIVE (5) FULL YEARS FROM DATE OF SUBSTANTIAL COMPLETION OF THE WORK AND ACCEPTANCE OF THE INITIAL INSTALLATION BY THE THE TOWN OF EASTON.

LANDSCAPE STOCK LAYOUT AND PLANTING SUBSTITUTIONS NOTE

THE BUFFER MITIGATION PLANTINGS SHOWN HEREON ARE GUIDELINE PLANTING LAYOUTS AND SPECIES MIX. ALTERNATIVE "NATIVE" SPECIES MAY BE SUBSTITUTED SUBJECT TO REVISED APPROVALS FROM THE TOWN OF EASTON.

PLANTING SPECIFICATIONS – LANDSCAPE STOCK (BALL & BURLAP AND/OR CONTAINER GROWN STOCK)

PLANT MATERIAL – ALL PLANT MATERIAL SHALL CONFORM TO THE AMERICAN STANDARD FOR NURSERY STOCK AS APPROVED BY THE AMERICAN NATIONAL STANDARDS INSTITUTE, INC. LATEST EDITION. ALL PLANT MATERIAL SHALL BE NURSERY GROWN WITH SOUND HORTICULTURAL PRACTICES AND UNLESS OTHERWISE APPROVED BY THE LANDSCAPE ARCHITECT, GROWN IN SOIL AND CLIMATIC CONDITIONS SIMILAR TO THIS PROJECT SITE. ALL MATERIAL SHALL EXHIBIT HEALTHY GROWTH WITH GOOD BRANCHING STRUCTURE, DENSE FOLIAGE AND A FIBROUS, DEVELOPED ROOT SYSTEM. ALL MATERIAL SHALL BE FREE OF INSECT INFESTATION AND DISEASE. THE OWNER RESERVES THE RIGHT TO HAVE THE PLANT MATERIAL INSPECTED AND TAGGED AT THE GROWING SITE, AND TO REJECT ANY DEFICIENT MATERIAL AT THE JOB SITE.

PLANT MATERIAL HANDLING – ALL PLANT MATERIAL SHALL ARRIVE AT THE JOB SITE IN A HEALTHY CONDITION. CRACKED ROOT BALLS AND OTHER DAMAGED MATERIALS SHALL BE REJECTED AND REPLACED BY CONTRACTOR. THE CONTRACTOR SHALL STAGE DELIVERY AND PLANT INSTALLATION TO MINIMIZE STRESS ON PLANT MATERIAL. MATERIAL TO BE STAGED ON OR OFF THE JOB SITE SHALL BE LOCATED TO MAXIMIZE PROTECTION FROM HOT SUN AND DRYING WINDS, AND SHALL BE WATERED TO MAINTAIN A STRESS FREE CONDITION. ON–SITE WATER MAY NOT BE AVAILABLE FOR CONTRACTOR USE. THE LACK OF AVAILABLE WATER SHALL NOT RELIEVE THE CONTRACTOR OF ADEQUATE MAINTENANCE.

PLANTING BED/PIT PREPARATION –CONTRACTOR SHALL LAYOUT BEDS AND POSITION PLANTS FOR APPROVAL BY LANDSCAPE ARCHITECT. REVIEW ANY SIGNIFICANT FIELD ADJUSTMENTS PRIOR TO INSTALLATION. ALL BED/MASS PLANTING AREAS SHALL BE TREATED WITH HERBICIDE TO KILL TURF GRASS.

ALL TREE PITS AND INDIVIDUAL SHRUB PLANTING PITS SHALL BE EXCAVATED TO A DEPTH SO THAT THE PLANT ROOT FLARE SHALL LIE AT THE FINISHED GRADE SURROUNDING THE PLANT OR PLANTINGS. REMOVE SOIL THAT MAY HAVE BEEN PLACED ON TOP OF ROOT BALL OR SETTLED AROUND TRUNK OR ROOT FLARE DURING TRANSPORT TO ADEQUATELY EXPOSE ROOT FLARE SO PROPER PLANTING DEPTH CAN BE ESTABLISHED. THE ROOT BALL SHALL REST ON UNDISTURBED OR STABILIZED SOIL. THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT IF THIS PLANTING DEPTH SPECIFICATION CANNOT BE IMPLEMENTED. TREE PLANTING PITS SHALL BE EXCAVATED TO A WIDTH EQUALING TWICE THE ROOT BALL DIAMETER. TREE PITS ON SLOPED AREAS SHALL BE EXCAVATED TO THE PROPER DEPTH BASED ON THE UPHILL SIDE OF THE SLOPE. SHRUB/PERENNIAL AND MASS PLANTING BEDS SHALL BE WORKED OR EXCAVATED TO THE DEPTH OF THE ROOT BALL PROVIDING FOR THE ROOT BALL TO REST ON UNDISTURBED SOIL. EXCAVATED SOILS NOT PREVIOUSLY COMPACTED OR OTHERWISE DEGRADED SHALL BE RE– USED FOR PLANTING PIT BACKFILL. EXCAVATED SOILS UNSUITED FOR BACKFILL SHALL BE AMENDED WITH FRIABLE TOPSOIL TO CREATE A SUITABLE PLANTING SOIL AS APPROVED BY THE LANDSCAPE ARCHITECT. EXCAVATED SOILS THAT CANNOT BE RESTORED TO A REASONABLE PLANTING SOIL SHALL BE REMOVED AND REPLACED WITH A FRIABLE, TOPSOIL/SUB SOIL PLANTING MIX TYPICAL OF THE REGION. NOTE– FOR BIDDING PURPOSES OR UNLESS OTHERWISE SPECIFIED HEREON, THE CONTRACTOR SHALL ASSUME EXCAVATED SOILS ARE SUITABLE FOR PLANTING BACKFILL.

PLANTING BEDS FOR AZALEAS, RHODODENDRONS, YEWS AND OTHER MOISTURE SENSITIVE PLANT MATERIAL SHALL BE MOUNDED AND AMENDED WITH SAND, PEAT OR COMPOST AS NECESSARY TO PROVIDE SUITABLE PLANTING SOIL AND DRAINAGE.

PLANT INSTALLATION – REMOVE BURLAP AND OTHER ROOT BALL COVERING TO THE EXTENT POSSIBLE – AT A MINIMUM THE UPPER 1/2 OF ROOT BALL WRAP SHALL BE REMOVED. CUT AND REMOVE AT LEAST THE TOP 1/3 OF WIRE BASKETS AND ALL ROOT BALL BINDINGS, STRING TIES, STRAPPING, LABELS, ETC. FROM THE PLANT MATERIAL. CUT OR SCARIFY THE SIDES OF CONTAINER GROWN STOCK TO ELIMINATE BOUND ROOTS AND PROMOTE HEALTHY ROOT GROWTH.

PLANTS SHALL BE INSTALLED VERTICALLY AND PLUMB. PLANT PITS SHALL BE BACKFILLED AND COMPACTED. ALL PLANTS SHALL BE WATERED DURING PLANTING TO MINIMIZE AIR POCKETS AND TO INSURE SOIL CONTACT WITH ROOTS. LET PLANT PITS SETTLE, AND ADD SOIL TO FILL VOIDS PRIOR TO MULCHING. WHERE PLANTINGS ARE NOT IRRIGATED, UTILIZE EXCAVATED SOIL TO FORM A WATERING COLLAR AROUND THE TREE OR SHRUB AT THE PERIMETER OF THE ROOT BALL. FEATHER SOIL GRADES AROUND PLANTINGS TO BLEND WITH SURROUNDING LANDSCAPE OR TURF AREAS. EXCESS EXCAVATED SOIL SHALL BE REMOVED FROM JOB SITE.

DECIDUOUS TREES OVER 2" CALIPER AND EVERGREEN TREES OVER 7' HEIGHT (UNLESS OTHERWISE WAIVED BY THE LANDSCAPE ARCHITECT), SHALL BE STAKED AND GUYED WITH MINIMUM 2 – 2" X 2" X 6' HARDWOOD STAKES PLACED IN STABLE SOILS. GUY TREES TO STAKES WITH PROTECTIVE MATERIALS TYPICALLY UTILIZED IN THE INDUSTRY.

ALL PLANTING BEDS AND PITS NOT OTHERWISE CONTAINED WITH HARD EDGING SHALL BE EDGED WITH A 3" DEEP "V" TRENCH AND MULCHED TO A 2" DEPTH WITH DOUBLE SHREDDED, HARDWOOD BARK MULCH. MULCH SHALL GENERALLY EXTEND TO THE EDGE OF PAVING OR BUILDINGS, OR BACK OF CURB. IN OPEN AREAS ADJACENT TO TURF OR NATURALIZED AREAS, MULCH SHALL EXTEND A MINIMUM OF 2.5' BEYOND THE TRUNK FOR TREES AND 1.0' BEYOND THE EDGE OF SHRUB FOLIAGE. UNLESS OTHERWISE SPECIFICALLY DIRECTED HEREON, SHAPE THE MULCH–BED EDGE CONDUCIVE TO EASE OF MOWING OR MAINTENANCE OF THE ADJOINING AREA. DO NOT PLACE OR MOUND MULCH AGAINST THE TRUNK OR FOLIAGE OF PLANTS.

PLANTING SPECIFICATIONS – SEEDLING & BARE–ROOT/WHIP STOCK

PLANT MATERIAL – SEEDLINGS/WHIPS: ALL SEEDLINGS SHALL BE SPECIES NATIVE TO THIS PHYSIOGRAPHIC REGION OF MARYLAND, AND GROWN AT THE JOHN S. AYTON STATE FOREST NURSERY OUTSIDE PRESTON, MARYLAND, OR AS OTHERWISE APPROVED BY THE LANDSCAPE ARCHITECT. ALL SEEDLINGS SHALL HAVE HEALTHY, INTACT ROOT SYSTEMS, SHALL BE FREE FROM DISEASE AND PESTS AND SHALL BE DELIVERED TO THE SITE IN APPROPRIATE MOISTURE CONSERVING CONTAINERS. ALL SEEDLINGS SHALL BE UTILIZED IN PLANTING WITHIN 24 HOURS OF DELIVERY AND/OR ADEQUATELY PROTECTED FROM MOISTURE LOSS THRU HEALING IN UNTIL THEY CAN BE UTILIZED FOR PLANTING.

HARDWOODS–	1/4" TO ½" CALIPER W/ROOTS NO LESS THAN 8" LONG.
CONIFERS–	1/8" TO 1/4" CALIPER W/ROOTS NO LESS THAN 8" LONG
SHRUBS–	1/8" CALIPER OR LARGER WITH MINIMUM 8" ROOT SYSTEM.

PLANTING AREA PREPARATION –CONTRACTOR SHALL DELINEATE PLANTING AREAS. CONTACT LANDSCAPE ARCHITECT FOR STAKEOUT OF PERIMETER WHERE LIMITS OF PLANTING ARE NOT CLEARLY DEFINED. THE PLANTING AREA SHALL BE LEFT IN ITS NATURAL CONDITION UNLESS DIRECTED HEREON OR AS OTHERWISE APPROVED BY THE LANDSCAPE ARCHITECT TO FACILITATE REASONABLE PLANTING CONDITIONS. MOWING OR HERBICIDE APPLICATION MAY BE WARRANTED AND/OR PERMITTED SUBJECT TO PRIOR APPROVAL. COORDINATE ALL PLANTING AREA ADJUSTMENTS PRIOR TO INSTALLATION.

INSTALLATION SPECIFICATIONS – PROVIDE PLANTINGS IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OUTLINED HEREIN. EXTREME CARE SHOULD BE TAKEN TO RETAIN MOISTURE IN THE ROOTS OF THE SEEDLINGS. WHILE PLANTING SEEDLINGS, CARRY EXTRA SEEDLINGS IN A PROTECTED, MOIST CONTAINER AND KEEP ALL UN–USED SEEDLINGS IN A SHADED, MOIST PLACE. FIRMLY COMPRESS THE SOIL AROUND SEEDLINGS AFTER INSTALLATION TO ELIMINATE AIR POCKETS AND POSSIBLE ROOT DESICCATION. ELIMINATE "J–ROOTS", OR ROOTS THAT BEND UPWARD IN PLANTING HOLE. ALL PLANTS SHALL BE INSTALLED AT THE CORRECT PLANTING DEPTH WITH ROOT FLARE JUST ABOVE FINISHED GRADE.

"ROUNDUP" OR EQUAL HERBICIDE AT A RATE OF 2 OUNCES/ACRE SHALL BE APPLIED NEAR GROUND LEVEL OVER THE TOP OF SEEDLING PLANTINGS (DORMANT ONLY) FOLLOWING INSTALLATION. CERTAIN SPECIES MAY BE HARMED BY "ROUNDUP". CONTRACTOR SHALL VERIFY THESE CONSTRAINTS PRIOR TO APPLICATION.

REVISIONS

No.	DATE	DESCRIPTION	BY

Lane Engineering, LLC
Established 1986
Civil Engineers • Land Planning • Land Surveyors
E–mail: general@leinc.com
117 Bay St. Easton, MD 21601 (410) 822–8003
15 Washington St. Cambridge, MD 21613 (410) 221–0818
354 Pennsylvania Ave. Centreville, MD 21617 (410) 758–2095

SEAL

DATE

BUFFER MANAGEMENT DETAILS & SPECIFICATIONS

ON THE LANDS OF 5001 SHR, L.C.

TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 42, GRID 4, PARCEL 57

ISSUED FOR: AGENCY REVIEW | DATE: 8/2/23 | BY: BCE

SHEET No. 2 OF 2	DATE:	8/2/23	
	JOB No.	220155	
SCALE: AS NOTED	FILE No.	1324	

Date: 08/01/2023 – 2:58pm User: wbarnhart Project Manager: BCE
Drawing Path: J:\2022\0100\220155\Civil3D–220155\Dwg\Plats\HBP–PLTS–220155.dwg | 2
XREF File(s): RAR–BASE–200574/ALD–BASE–220135/VSK–BASE–200574/HBP–BASE–220135/CSK–BASE–220155/VSK–BASE–220155

PROPERTY OWNER

PROPERTY OWNER: 5001 SHR, L.C., 9161 LIBERIA AVE #201, MANASSAS, VA 20110

PROPERTY ADDRESS: OXFORD ROAD, EASTON, MARYLAND 21601
DEED REFERENCE: 2827/90
PLAT REFERENCE: 84/22

ZONING CLASSIFICATION: R10A (RESIDENTIAL DISTRICT) & GI (GOVERNMENTAL/INSTITUTIONAL)

SETBACKS:	R10A	GI
FRONT:	15'	40'
SIDE:	8'	15'
REAR:	30'	30'
STATE HIGHWAY:	40'	40'
MEAN HIGH WATER	100' (200' FOR SUBDIVISION)	100'
TIDAL WETLANDS:	100' (200' FOR SUBDIVISION)	100'
NON-TIDAL WETLANDS:	25'	25'

THE PROPERTY SHOWN HEREON LIES PARTIALLY WITHIN THE CHESAPEAKE BAY CRITICAL AREA DESIGNATED AS RCA (RESOURCE CONSERVATION AREA) AS SHOWN ON THE TALBOT COUNTY CRITICAL AREA MAPS IN ACCORDANCE WITH TALBOT COUNTY BILL No. 1295, ENACTED AUGUST 12, 2014.

MEAN HIGH WATER WAS NOT ESTABLISHED BY THIS SURVEY. MEAN HIGH WATER IS DEFINED BY ELEVATION REFERENCED TO A TIDAL BENCH MARK. THE SHORELINE WAS LOCATED TO THE EDGE OF TIDAL VEGETATION. THE BOUNDARY IS SUBJECT TO CHANGE DUE TO NATURAL CAUSES AND IT MAY NOT REPRESENT THE ACTUAL LOCATION OF THE LIMIT OF TITLE.

THE WETLANDS SHOWN HEREON WERE DELINEATED BY SEAN CALLAHAN, A QUALIFIED PROFESSIONAL WITH LANE ENGINEERING, LLC, SURVEY LOCATED ON FEBRUARY 9, 2021 AND VERIFIED BY CHRIS PAJAK, MDE, MARY PHIPPS DICKERSON, MDE, AND WILLIAM SEIGER, MDE ON FEBRUARY 25, 2021 AND JASON PETERSON, USACE ON MAY 13, 2022.

LANE ENGINEERING, LLC HAS REVIEWED THE MAPPED SOILS AND TOPOGRAPHIC INFORMATION FOR THIS PROPERTY RELATED TO POSSIBLE 100, BUFFER EXPANSION REQUIREMENTS DUE TO STEEP SLOPES AND/OR HYDRIC AND HIGHLY ERODIBLE SOILS AND HAS DETERMINED THAT EXPANSION AS SHOWN IS REQUIRED UNDER THE STATE AND COUNTY REGULATIONS AS OF THE DATE OF THIS PLAN.

THE IMPROVEMENTS SHOWN HEREON WERE FIELD LOCATED BY LANE ENGINEERING, LLC ON FEBRUARY 10, 2021.

THE DIMENSIONS OF BUILDINGS, STRUCTURES AND SETBACKS WERE MEASURED TO THE NEAREST 0.1 FOOT.

THE TREE LINE SHOWN HEREON WAS TAKEN FROM THE 2019 TALBOT COUNTY AERIALS AND IS APPROXIMATE ONLY.

FLOOD DATA

A PORTION OF THE PROPERTY SHOWN HEREON IS LOCATED IN THE NATIONAL FLOOD INSURANCE PROGRAM (NFIP) SPECIAL FLOOD HAZARD AREA (SFHA) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD. THE PROPERTY IS MAPPED IN THE "X", "X" (SHADED), AND "AE" (EL 5) FLOOD ZONES AS SHOWN ON THE FEDERAL INSURANCE RATE MAPS FOR COMMUNITY NO. 240067, MAP NO. 24041C0189D AND 24041C0302D FOR TOWN OF EASTON, MARYLAND. THE 1% ANNUAL CHANCE FLOOD (100-YEAR FLOOD), ALSO KNOWN AS THE BASE FLOOD, IS THE FLOOD THAT HAS A 1% CHANCE OF BEING EQUALED OR EXCEEDED IN ANY GIVEN YEAR. THE SFHA IS THE AREA SUBJECT TO FLOODING BY THE 1% ANNUAL CHANCE FLOOD. THE SFHA INCLUDES ZONES A, AE, AH, AO, AR, A99, V & VE. THE BASE FLOOD ELEVATION (BFE) IS THE WATER SURFACE ELEVATION OF THE 1% ANNUAL CHANCE FLOOD. FLOOD INSURANCE MAY BE REQUIRED FOR STRUCTURES LOCATED IN THE SPECIAL FLOOD HAZARD AREA.

FLOOD ZONE LEGEND
ZONES AE – 1% ANNUAL CHANCE FLOOD
ZONE X (SHADED) – 0.2% ANNUAL CHANCE FLOOD
ZONE X – AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD

THE FLOOD DATA SHOWN HEREON IS BASED ON AVAILABLE MAPPED AND/OR DIGITAL INFORMATION AND IS DEPICTED AS DIRECTED AND REQUIRED BY FEDERAL, STATE AND LOCAL REGULATIONS. IT IS SUBJECT TO DATA INACCURACIES AND REGULATORY CHANGE AND SHOULD BE VERIFIED PRIOR TO FINALIZING DEVELOPMENT OR IMPROVEMENT PLANS FOR THE SUBJECT LANDS.

SITE ANALYSIS

FEATURE	YES	NO
CONTIGUOUS FOREST	X	
WETLANDS	X	
STREAMS		X
FLOODPLAINS (FLOOD ZONE 'A')	X	
HYDRIC SOILS	X	
SLOPES GREATER THAN 15%	X	
HISTORICAL OR CULTURAL FEATURES		X
TREES > 30" DBH		X
STATE CHAMPION TREE		X
TREES > 75% STATE CHAMPION		X
EASEMENT OR ROW RESTRICTIONS	X	
EXISTING STRUCTURES		X
RARE,THREATENED OR ENDANGERED FLORA		X
RARE,THREATENED OR ENDANGERED FAUNA HABITAT		X
FOREST ON SITE	X	
PRIORITY FOREST ON SITE	X	

TALBOT COUNTY SOILS

MAP SYMBOL	SOILS NAME	HYDRIC SOILS	K FACTOR	SOIL GROUP
CsA	CROSIADORE SILT LOAM	*	0.49	C/D
CsB	CROSIADORE SILT LOAM	*	0.49	C/D
HfA	HAMBROOK–SASSAFRAS COMPLEX		0.37	B
HfB	HAMBROOK–SASSAFRAS COMPLEX		0.37	B
HfC	HAMBROOK–SASSAFRAS COMPLEX		0.32	B
MtA	MATTAPEX SILT LOAM	*	0.49	C
MtB	MATTAPEX SILT LOAM	*	0.49	C
OtA	OTHELLO SILT LOAM	YES	0.43	C/D
TP	TRANSQUAKING AND MISPILLION SOILS	YES	N/A	A/D
UbB	UDORTHENTS, BORROW AREA	*	0.37	C
WdA	WOODSTOWN SANDY LOAM	*	0.2	C
WoA	WOODSTOWN LOAM	*	0.32	C

* POSSIBLE SMALL AREAS OF HYDRIC SOIL INCLUSIONS SUBJECT TO FIELD VERIFICATION.

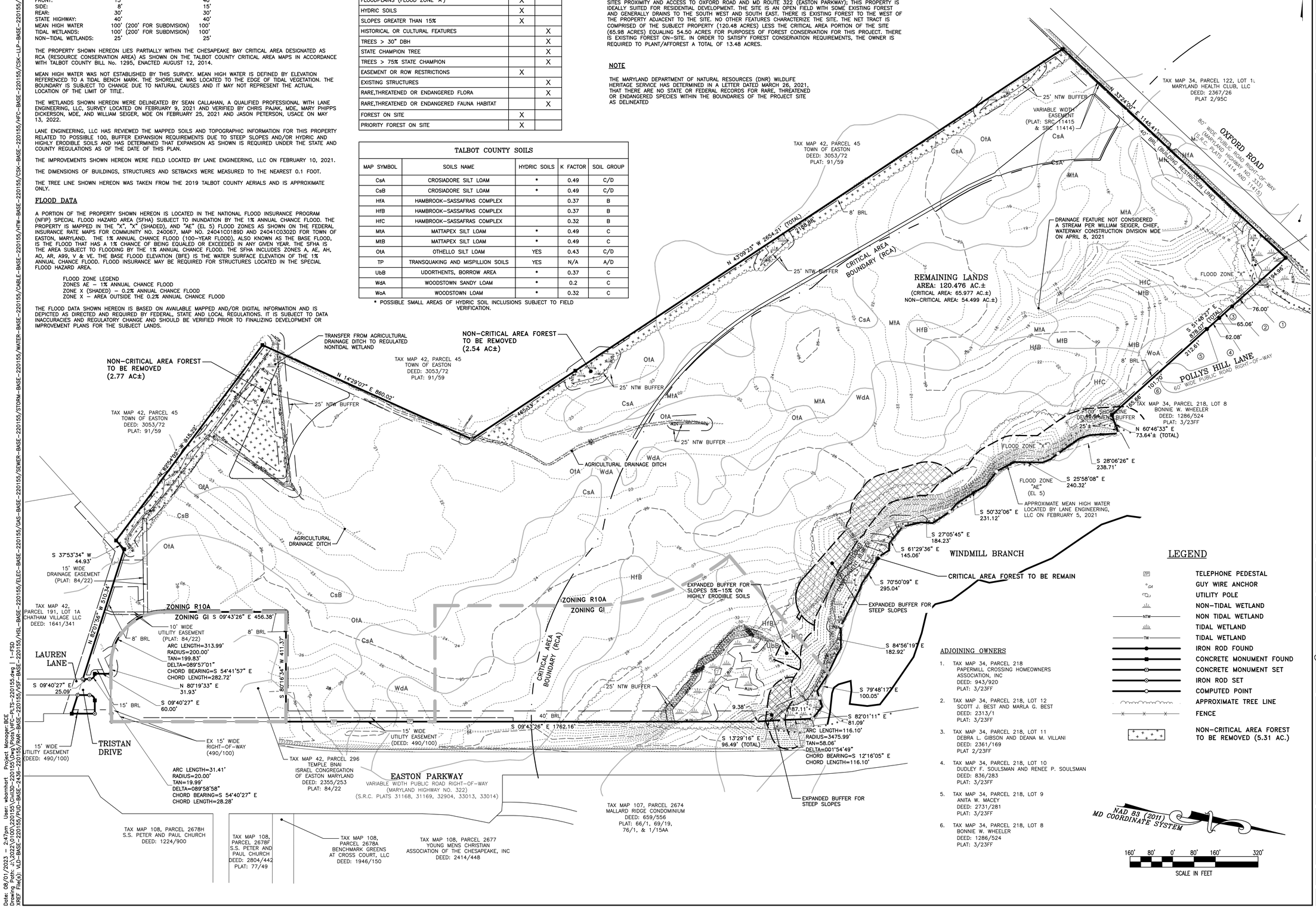
FOREST CONSERVATION REQUIREMENTS

INTERMEDIATE FOREST STAND DELINEATION NARRATIVE

THE PROPOSED DEVELOPMENT REQUIRES THE OWNER TO DEMONSTRATE FOREST CONSERVATION COMPLIANCE. THE 120.48 ACRE PROPERTY AS SHOWN IS ENTIRELY AN OPEN FIELD SOUTHEAST OF THE SUBDIVISION OF THE EASTON CLUB AND ON THE SOUTH SIDE OF OXFORD ROAD (MD ROUTE 333). THE SITE LIES AT THE EDGE OF AN URBANIZING AREA WITHIN THE TOWN OF EASTON AND IS BOUNDED BY RESIDENTIAL DEVELOPMENT GENERALLY TO THE NORTH, EAST AND SOUTH AND ADJACENT TO EXISTING FOREST TO THE WEST. DUE TO THE SITES PROXIMITY AND ACCESS TO OXFORD ROAD AND MD ROUTE 322 (EASTON PARKWAY); THIS PROPERTY IS IDEALLY SUITED FOR RESIDENTIAL DEVELOPMENT. THE SITE IS AN OPEN FIELD WITH SOME EXISTING FOREST AND GENERALLY DRAINS TO THE SOUTH WEST AND SOUTH EAST. THERE IS EXISTING FOREST TO THE WEST OF THE PROPERTY ADJACENT TO THE SITE. NO OTHER FEATURES CHARACTERIZE THE SITE. THE NET TRACT IS COMPRISED OF THE SUBJECT PROPERTY (120.48 ACRES) LESS THE CRITICAL AREA PORTION OF THE SITE (65.98 ACRES) EQUALING 54.50 ACRES FOR PURPOSES OF FOREST CONSERVATION FOR THIS PROJECT. THERE IS EXISTING FOREST ON–SITE. IN ORDER TO SATISFY FOREST CONSERVATION REQUIREMENTS, THE OWNER IS REQUIRED TO PLANT/AFFOREST A TOTAL OF 13.48 ACRES.

NOTE

THE MARYLAND DEPARTMENT OF NATURAL RESOURCES (DNR) WILDLIFE HERITAGE SERVICE HAS DETERMINED IN A LETTER DATED MARCH 26, 2021, THAT THERE ARE NO STATE OR FEDERAL RECORDS FOR RARE, THREATENED OR ENDANGERED SPECIES WITHIN THE BOUNDARIES OF THE PROJECT SITE AS DELINEATED



LEGEND

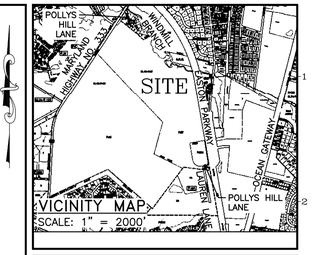
- TELEPHONE PEDESTAL
- GUY WIRE ANCHOR
- UTILITY POLE
- NON–TIDAL WETLAND
- NON TIDAL WETLAND
- TIDAL WETLAND
- TIDAL WETLAND
- IRON ROD FOUND
- CONCRETE MONUMENT FOUND
- CONCRETE MONUMENT SET
- IRON ROD SET
- COMPUTED POINT
- APPROXIMATE TREE LINE
- FENCE
- NON–CRITICAL AREA FOREST TO BE REMOVED (5.31 AC.)

ADJOINING OWNERS

1. TAX MAP 34, PARCEL 218
   PAPERMILL CROSSING HOMEOWNERS ASSOCIATION, INC
   DEED: 943/920
   PLAT: 3/23FF
2. TAX MAP 34, PARCEL 218, LOT 12
   SCOTT J. BEST AND MARLA G. BEST
   DEED: 2313/1
   PLAT: 3/23FF
3. TAX MAP 34, PARCEL 218, LOT 11
   DEBRA L. GIBSON AND DEANA M. VILLANI
   DEED: 2361/169
   PLAT 2/23FF
4. TAX MAP 34, PARCEL 218, LOT 10
   DUDLEY F. SOULSMAN AND RENEE P. SOULSMAN
   DEED: 836/283
   PLAT: 3/23FF
5. TAX MAP 34, PARCEL 218, LOT 9
   ANITA W. MACEY
   DEED: 2731/281
   PLAT: 3/23FF
6. TAX MAP 34, PARCEL 218, LOT 8
   BONNIE W. WHEELER
   DEED: 1286/524
   PLAT: 3/23FF

NAD 83 (2011) MD COORDINATE SYSTEM

160' 80' 0' 80' 160' 320'
SCALE IN FEET



REVISIONS TO APPROVED PLANS

No.	DATE	DESCRIPTION	BY

WARNING!!
THE LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THIS PLAN ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. THE QUANTITIES SHOWN ON THIS PLAN ARE FOR INFORMATIONAL AND PERMITTING PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES TO HIS OWN SATISFACTION PRIOR TO BEGINNING CONSTRUCTION.

THE CONTRACTOR SHALL TEST PIT AND LOCATE EXISTING UNDERGROUND UTILITIES PRIOR TO THE BEGINNING OF ANY WORK ON–SITE. THE CONTRACTOR SHALL NOTIFY DEPT. OF PUBLIC WORKS OF ANY POSSIBLE CONFLICT AND REQUEST THE RELOCATION OF THE EXISTING UNDERGROUND UTILITIES BEFORE BEGINNING ANY WORK ON–SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RELOCATION EXPENSE.

MISS UTILITY
BEFORE YOU DIG CALL 1–800–441–8355 OR 811
PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

Lane Engineering, LLC
Established 1986
Civil Engineers • Land Planning • Land Surveyors
E–mail: general@leinc.com
117 Bay St. Easton, MD 21601 (410) 822–8003
15 Washington St. Cambridge, MD 21613 (410) 221–0818
354 Pennsylvania Ave. Centreville, MD 21617 (410) 758–2095

SEAL

This Plan was prepared by a qualified professional in accordance with the requirements of The Maryland Forest Conservation Act of 1991 (COMAR 0.8.19.06.01) and Qualification letter dated MARCH 7, 2007

8/2/23
DAVID W. BARNHART DATE

INTERMEDIATE FSD

POPLAR HILL SUBDIVISION SKETCH PLAN

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 42 GRID 4 TAX PARCEL 57

ISSUED/REVISED FOR:	DATE:	BY:
AGENCY REVIEW	7/06/22	BCE
AGENCY REVIEW	8/03/22	BCE
AGENCY REVIEW	10/05/22	BCE
AGENCY REVIEW	11/01/22	BCE
AGENCY REVIEW	01/27/23	BCE
ESDR SUBMITTAL	08/02/23	BCE

SHEET No. 1 OF 2	7/06/22
SCALE: AS NOTED	JOB No. 220155
	FILE No. 1324

Date: 08/01/2023 – 2:47pm User: wbarnhart Project Manager: BCE
Drawing Path: J:\2022\0100\220155\Civil3D–220155\Dwg\Plats\HFC–PLTS–220155.dwg | 1–FSD
XREF File(s): WLD–BASE–220155/PUD–BASE–2438–220155/PAR–BASE–220155/VSF–BASE–220155/VSH–BASE–220155/SEWER–BASE–220155/STORM–BASE–220155/WATER–BASE–220155/CABLE–BASE–220155/TWN–BASE–220155/HFC–PLTS–220155/HSL–BASE–220155/ELEC–BASE–220155/GAS–BASE–220155/CSK–LLP–BASE–220155/CSK–BASE–220155/VSK–BASE–220155

FOREST CONSERVATION REQUIREMENTS

PRELIMINARY INTERMEDIATE FOREST CONSERVATION NARRATIVE

THE OWNER PROPOSES TO DEVELOP THE PROPERTY FOR RESIDENTIAL USES, CONTAINING RESIDENTIAL SINGLE FAMILY LOTS. THE NET TRACT CONSISTS OF THE SUBJECT PROPERTY (120.48 ACRES) LESS THE CRITICAL AREA PORTION OF THE SITE (65.98 ACRES) EQUALING 54.50 ACRES FOR PURPOSES OF FOREST CONSERVATION FOR THIS PROJECT. EXISTING NON-CRITICAL AREA FOREST WILL BE REMOVED (5.31 ACRES±) FOR THE CONSTRUCTION OF STORMWATER MANAGEMENT FEATURES AND INFRSTRUCTURE. THE OWNER/APPLICANT IS REQUIRED TO PLANT A TOTAL OF 13.48 ACRES TO MEET FOREST CONSERVATION REQUIREMENTS. THE AFFORESTATION REQUIREMENTS SHALL BE MET THROUGH BUFFERYARD AND STREET TREE AFFORESTATION CREDITS PER THE FOREST CONSERVATION OVERLAPPING REQUIREMENTS (SECTION 1014.5). A PORTION OF CRITICAL ARE FOREST RETENTION AND PROPOSED SEEDLING PLANTING AREA WHICH SHALL BE PLACED UNDER A LONG TERM PROTECTIVE EASEMENT AND RECORDED WITHIN THE LAND RECORDS OF TALBOT COUNTY.

FOREST CONSERVATION AFFORESTATION CALCULATIONS

STREET TREES

380	– DECIDUOUS SHADE/CANOPY TREES @ 400 SF EACH	=	152,000 SF CREDIT

40' WIDE LANDSCAPE BUFFERYARD 'A' (ALONG OXFORD ROAD)

35	– DECIDUOUS SHADE/CANOPY TREES @ 400 SF EACH	=	14,000 SF CREDIT
35	– EVERGREEN TREES @ 250 SF EACH	=	8,750 SF CREDIT

40' WIDE LANDSCAPE BUFFERYARD 'A' (ALONG MD ROUTE 322)

47	– DECIDUOUS SHADE/CANOPY TREES @ 400 SF EACH	=	18,800 SF CREDIT
47	– EVERGREEN TREES @ 250 SF EACH	=	11,750 SF CREDIT

10' WIDE LANDSCAPE BUFFERYARD 'E' (ALONG PROPOSED POLLY HILL SUBDIVISION)

11	– DECIDUOUS SHADE/CANOPY TREES @ 400 SF EACH	=	4,400 SF CREDIT
32	– EVERGREEN TREES @ 250 SF EACH	=	8,000 SF CREDIT

10' WIDE ENHANCED LANDSCAPE BUFFERYARD 'E' (ALONG TEMPLE B'NAI)

37	– DECIDUOUS SHADE/CANOPY TREES @ 400 SF EACH	=	14,800 SF CREDIT
111	– EVERGREEN TREES @ 250 SF EACH	=	27,750 SF CREDIT

10' WIDE LANDSCAPE BUFFERYARD 'E' (ALONG SOUTH & WEST PROPERTY LINE)

95	– DECIDUOUS SHADE/CANOPY TREES @ 400 SF EACH	=	38,000 SF CREDIT
286	– EVERGREEN TREES @ 250 SF EACH	=	71,500 SF CREDIT

EXISTING FOREST RETENTION WITHIN BUFFERYARDS	=	42,380 SF CREDIT
ON-SITE CRITICAL AREA FOREST RETENTION	=	112,266 SF CREDIT
PROPOSED SEEDLING PLANTINGS	=	62,793 SF CREDIT

Forest Conservation Worksheet 2.2

Net Tract Area			
A.	Total Tract Area	A =	120.48
B.	Deductions	B =	66.98
C.	Net Tract Area	C =	54.50
Land Use Category			

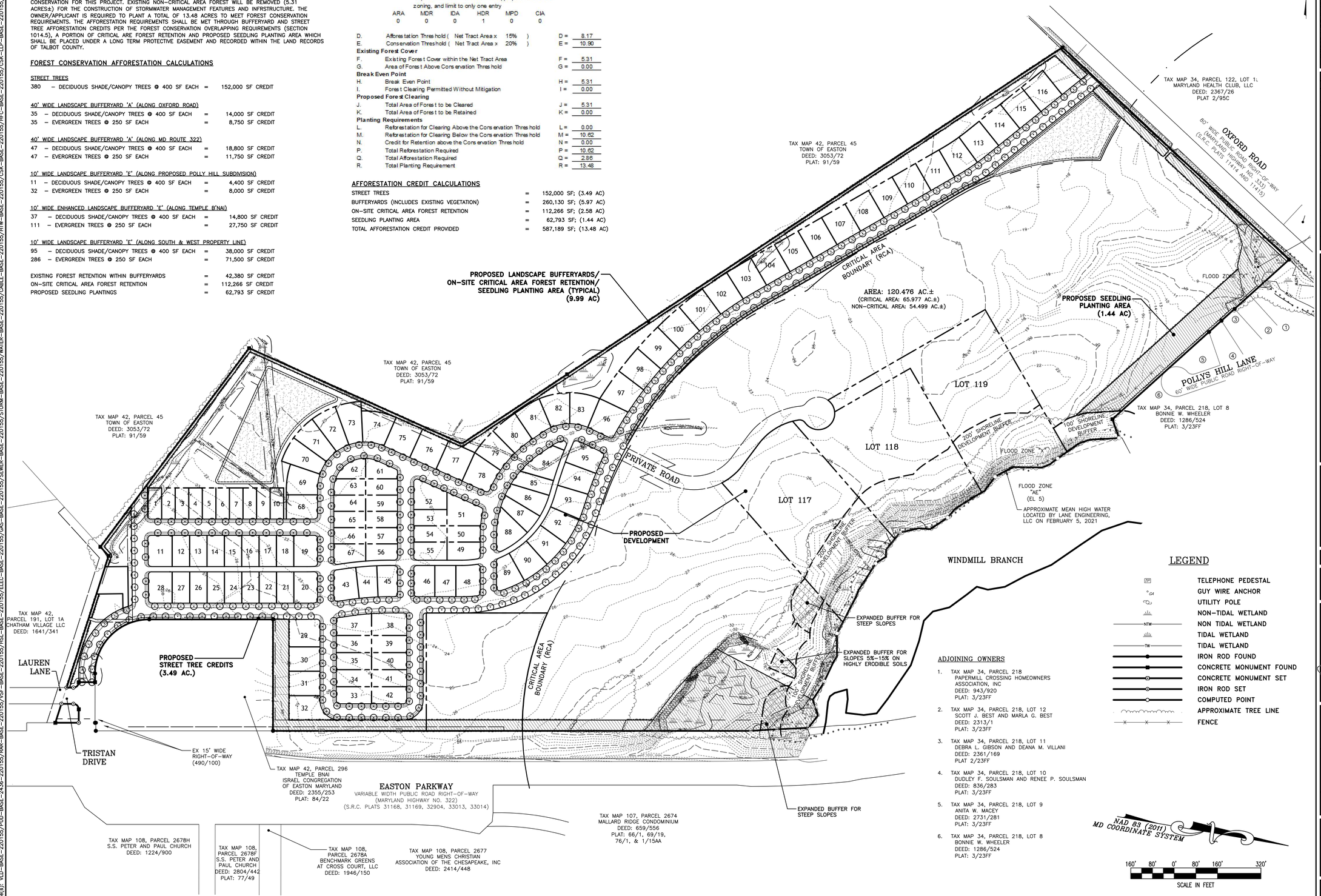
Input the number "1" under the appropriate land use zoning, and limit to only one entry

ARA	MDR	IDA	HDR	MPD	CIA
0	0	0	1	0	0

D.	Afforestation Threshold (Net Tract Area x 15%)	D =	8.17
E.	Conservation Threshold (Net Tract Area x 20%)	E =	10.90
Existing Forest Cover			
F.	Existing Forest Cover within the Net Tract Area	F =	5.31
G.	Area of Forest Above Conservation Threshold	G =	0.00
Break Even Point			
H.	Break Even Point	H =	5.31
I.	Forest Clearing Permitted Without Mitigation	I =	0.00
Proposed Forest Clearing			
J.	Total Area of Forest to be Cleared	J =	5.31
K.	Total Area of Forest to be Retained	K =	0.00
Planting Requirements			
L.	Reforestation for Clearing Above the Conservation Threshold	L =	0.00
M.	Reforestation for Clearing Below the Conservation Threshold	M =	10.62
N.	Credit for Retention above the Conservation Threshold	N =	0.00
P.	Total Reforestation Required	P =	10.62
Q.	Total Afforestation Required	Q =	2.86
R.	Total Planting Requirement	R =	13.48

AFFORESTATION CREDIT CALCULATIONS

STREET TREES	=	152,000 SF; (3.49 AC)
BUFFERYARDS (INCLUDES EXISTING VEGETATION)	=	260,130 SF; (5.97 AC)
ON-SITE CRITICAL AREA FOREST RETENTION	=	112,266 SF; (2.58 AC)
SEEDLING PLANTING AREA	=	62,793 SF; (1.44 AC)
TOTAL AFFORESTATION CREDIT PROVIDED	=	587,189 SF; (13.48 AC)

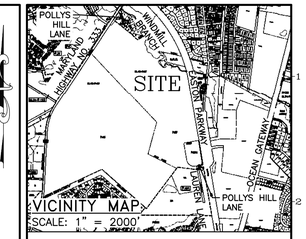


ADJOINING OWNERS

1. TAX MAP 34, PARCEL 218
   PAPERMILL CROSSING HOMEOWNERS ASSOCIATION, INC
   DEED: 943/920
   PLAT: 3/23FF
2. TAX MAP 34, PARCEL 218, LOT 12
   SCOTT J. BEST AND MARLA G. BEST
   DEED: 2313/1
   PLAT: 3/23FF
3. TAX MAP 34, PARCEL 218, LOT 11
   DEBRA L. GIBSON AND DEANA M. VILLANI
   DEED: 2361/169
   PLAT 2/23FF
4. TAX MAP 34, PARCEL 218, LOT 10
   DUDLEY F. SOULSMAN AND RENEE P. SOULSMAN
   DEED: 836/283
   PLAT: 3/23FF
5. TAX MAP 34, PARCEL 218, LOT 9
   ANITA W. MACEY
   DEED: 2731/281
   PLAT: 3/23FF
6. TAX MAP 34, PARCEL 218, LOT 8
   BONNIE W. WHEELER
   DEED: 1286/524
   PLAT: 3/23FF

LEGEND

- TELEPHONE PEDESTAL
- GUY WIRE ANCHOR
- UTILITY POLE
- NON-TIDAL WETLAND
- NON TIDAL WETLAND
- TIDAL WETLAND
- TIDAL WETLAND
- IRON ROD FOUND
- CONCRETE MONUMENT FOUND
- CONCRETE MONUMENT SET
- IRON ROD SET
- COMPUTED POINT
- APPROXIMATE TREE LINE
- FENCE



REVISIONS TO APPROVED PLANS			
No.	DATE	DESCRIPTION	BY

WARNING!!

THE LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THIS PLAN ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. THE QUANTITIES SHOWN ON THIS PLAN ARE FOR INFORMATIONAL AND PERMITTING PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES TO HIS OWN SATISFACTION PRIOR TO BEGINNING CONSTRUCTION.

THE CONTRACTOR SHALL TEST PIT AND LOCATE EXISTING UNDERGROUND UTILITIES PRIOR TO THE BEGINNING OF ANY WORK ON-SITE. THE CONTRACTOR SHALL NOTIFY DEPT. OF PUBLIC WORKS OF ANY POSSIBLE CONFLICT AND REQUEST THE RELOCATION OF THE EXISTING UNDERGROUND UTILITIES BEFORE BEGINNING ANY WORK ON-SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RELOCATION EXPENSE.

MISS UTILITY
BEFORE YOU DIG CALL 1-800-441-8355 OR 811 PROTECT YOURSELF, GIVE TWO WORKING DAYS NOTICE

Lane Engineering, LLC
Established 1986
Civil Engineers • Land Planning • Land Surveyors
E-mail: lanesys@leinc.com
117 Bay St. Easton, MD 21601 (410) 822-8003
15 Washington St. Cambridge, MD 21613 (410) 221-0818
354 Pennsylvania Ave. Centreville, MD 21617 (410) 758-2095

SEAL

This Plan was prepared by a qualified professional in accordance with the requirements of The Maryland Forest Conservation Act of 1991 (COMAR 0.8.19.06.01) and Qualification letter dated MARCH 1, 2007

DAVID W. BARNHART — 8/2/23 DATE

PRELIMINARY INTERMEDIATE FCP

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IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 42 GRID 4 TAX PARCEL 57

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