ANAREX, INC

CIVIL ENGINEERING SERVICES
LAND SURVEYING

303 Najoles Road - Suite 114
Millersville, MD 21108

Phone: 410-987-6901
Fax: 410-987-0589

April 21, 2025

Ms. Sterling Seay
Anne Arundel County
Office of Planning and Zoning
2664 Riva Road
Annapolis MD 21401

> Re: **301 West Haven Drive**
> **TM 24, Blk 14, P 904**
> **GP#G02020290**

Dear Ms. Seay,

Please accept this as our formal variance request to the Zoning Regulations on behalf of our client regarding critical area law. The variance requests are to Article 17, Section 8-301(b) prohibiting structures in the buffer or expanded buffer and to Article 17-8-201 to allow disturbance of a steep slope.

We are requesting this variance to allow for a house and improvements to be torn down and rebuilt on an existing lot. The proposed house will be 2 stories tall (32'+/-) and 30' wide by 68' deep with a patio and pool. The proposed house will be no closer to the water than the current house is. The Eastern portion of the site is in the Buffer Modification Area, the Western part of the site is not buffer modified. A portion of the house, walkways and driveways are within the expanded buffer and 55 square feet of a steep slope will be disturbed for the construction of the driveway and turnaround area.

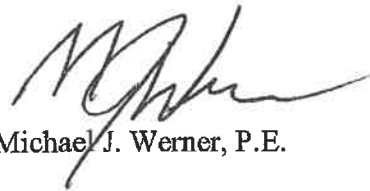Explanation as required by Article 18, Section 16-305(b)

The topographical conditions and irregular size and shape of this lot cause implementation of the County's critical area program to cause unwarranted hardship on the property. Literal interpretation of COMAR, Title 27, Criteria for Local Critical Area Program Development or the County's critical area program and related ordinances will deprive the applicant of rights commonly enjoyed by other properties in similar areas and will not confer special privilege onto the applicant as the property is being redeveloped in a way similar to other properties in the West Haven community. These variance requests are not results of actions by the applicant and there has been no commencement of development before this application for a variance was filed and does not have any bearing or connection to building on neighboring properties. The granting of this variance will not adversely affect water quality, fish, wildlife or plant habitat as the development will only occur if proper mitigation is provided.

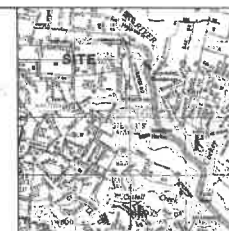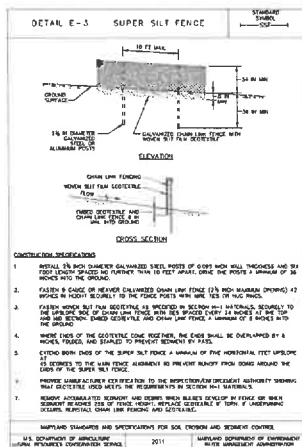<u>Explanation as required by Article 18, Section 16-305(c)</u>

We believe the granting of this variance is warranted because the requested variance is the minimal necessary to afford relief based upon the size of the lot and the unique physical conditions such as the shape and topography. The house and driveway placement are at the top of the property, on the flattest part of the site where the remaining woods on the slope leading to the water will be protected by a forest conservation easement. Due to the tight nature of the gravel access road, the driveway has been expanded to the Northwest for a turnaround area out of the garage that will cause minimal slope disturbance. The granting of this variance will not alter the character of the neighborhood as the redevelopment will be typical of houses in the surrounding area. This variance will not impair the appropriate use or development of the surrounding property as it will not deny access or the possibility to build on neighboring lots. The granting of this variance will not be detrimental to the welfare of the public. The variance will not be contrary to the clearing and replanting practices in the critical area as clearing is limited to what is allowed by code and will be mitigated accordingly.

If you have any questions or need any additional information, please feel free to contact me at your convenience.
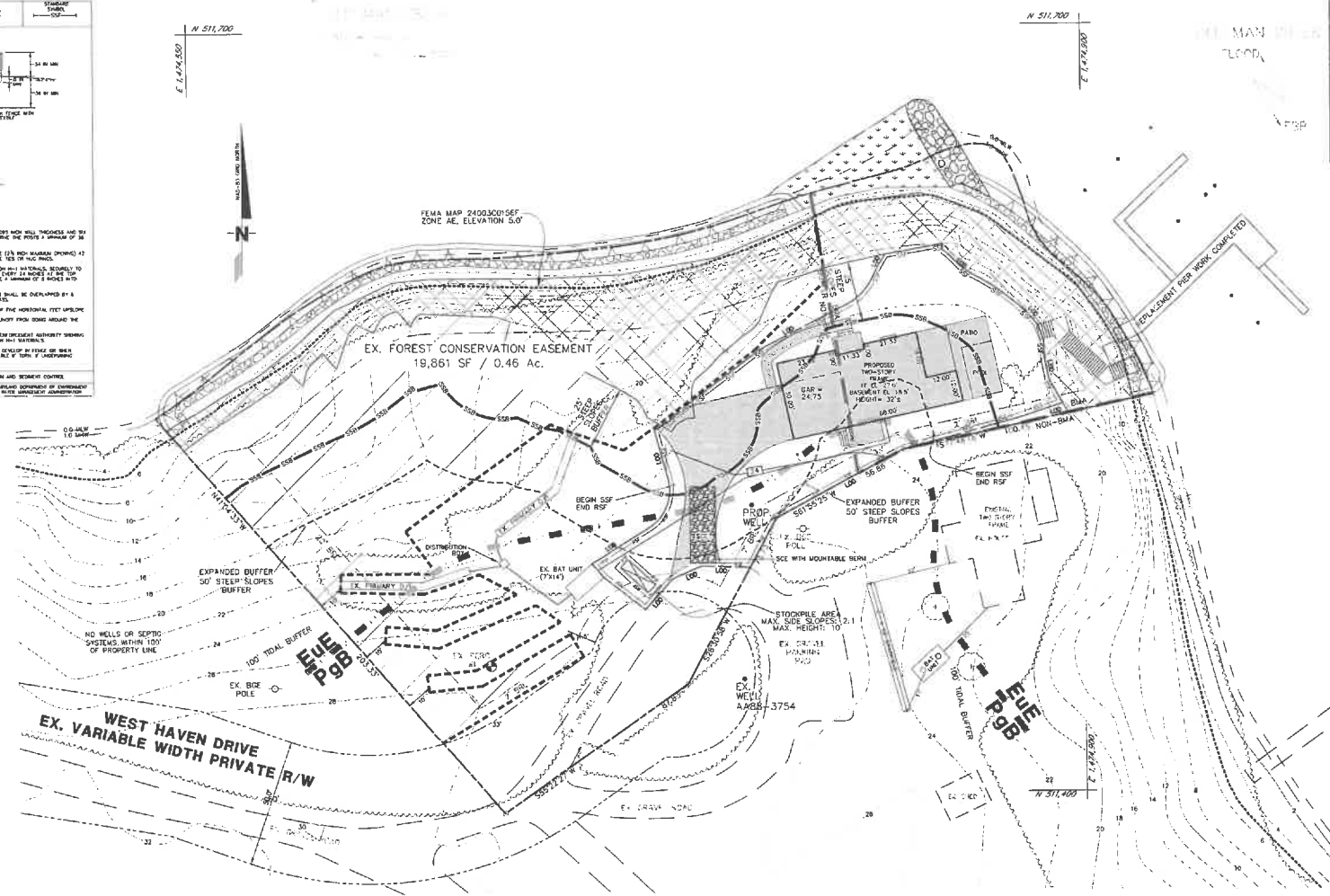
Sincerely,

Michael J. Werner, P.E.

VICINITY MAP
SCALE: 1" = 2,000'
Copyright ABC The Map People
Permitted Use Number 20403131

SITE

DETAIL E-3   SUPER SILT FENCE
STANDARD SYMBOL

ELEVATION

CROSS SECTION

CONSTRUCTION SPECIFICATIONS

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 |

FEMA MAP 24003C0156F
ZONE AE, ELEVATION 5.0'

EX. FOREST CONSERVATION EASEMENT
19,861 SF / 0.46 Ac.

PROPOSED TWO-STORY FRAME

EXPANDED BUFFER
50' STEEP SLOPES BUFFER

BEGIN SSF
END RSF

EXPANDED BUFFER
50' STEEP SLOPES BUFFER

NO WELLS OR SEPTIC SYSTEMS WITHIN 100' OF PROPERTY LINE

100' TIDAL BUFFER

STOCKPILE AREA
MAX. SIDE SLOPES: 2:1
MAX. HEIGHT: 10'

EX. WELL
AA08-3754

WEST HAVEN DRIVE
EX. VARIABLE WIDTH PRIVATE R/W

EuE PgB

N 511,700
N 511,700
N 511,400

PLAN:
SCALE: 1" = 20'

CRITICAL AREA NOTES

SITE AREA	EX. WOODLANDS SITE (TREE CANOPY)	EX. WOODLANDS SITE (TREE CANOPY) WITHIN LDA	EX. WOODLANDS SITE (TREE CANOPY) WITHIN LDA TO BE CLEARED	EXISTING LOT COVERAGE	PROPOSED LOT COVERAGE	MAX LOT COVERAGE (15%)	EXISTING LOT COVERAGE IN BMA	PROPOSED LOT COVERAGE IN BMA
48,823 S.F.	17,822 S.F.	17,822 S.F.	0 S.F.	4,403 S.F.	4,379 S.F.	7,323 S.F.	2,982 S.F.	1,529 S.F.

LEGEND

—152—	Existing Contours	-O-	Existing Pole
(152)	Proposed Contours	o	Existing Sewer Cleanout
	Existing Tree Line		Proposed Sewer Cleanout
	Soils Line		Existing Water Meter
EX. 8" S	Existing Sewer		Proposed Water Meter
EX. 15" SD	Existing Storm Drain	⊠	Temporary Stockpile Area
EX. 8" W	Existing Water		
X	Existing Fence Line		Proposed Impervious
LOD	Limit of Disturbance		
—RSF—	Reinforced Silt Fence		Stabilized Construction Entrance (S.C.E.)
			Steep Slopes

SOIL CLASSIFICATION CHART

SYMBOL	NAME	HYDROLOGIC SOIL GROUP
EuE	Evesboro-Galestown—Urban land complex	A
PgB	Potapsco-Fort Mott—Urban land complex	A

OWNER/DEVELOPER:
SCOTT & LISA WIELKE
301 WEST HAVEN DR
SEVERN PARK, MD 21146
CONTACT PERSON:
(P) 410-798-1494
(E) waterfrontdesign@verizon.net

#	REVISIONS.	APPROVED BY:	DATE:

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SHEET 1 OF 1
VARIANCE SITE PLAN

301 WEST HAVEN DRIVE

301 WEST HAVEN DR, SEVERN PARK, MD, 21146
GP# G02020290
TAX MAP 24 BLOCK 14 PARCEL 904 TAX ACCOUNT # 3-000-90002179
DATE: APRIL, 2025   ZONING: R5   ZIP CODE: 21146
FOURTH ASSESSMENT DISTRICT ANNE ARUNDEL COUNTY, MARYLAND

CRITICAL AREA COMMISSION
CHESAPEAKE AND ATLANTIC COASTAL BAYS
1804 WEST STREET, SUITE 100
ANNAPOLIS, MD 21401

PROJECT NOTIFICATION APPLICATION

GENERAL PROJECT INFORMATION

Jurisdiction: ANNE ARUNDEL COUNTY   Date: 4/10/25

Tax Map #	Parcel #	Block #	Lot #	Section
24	14	904	—	—

Tax ID: 03-000-90002179

FOR RESUBMITTAL ONLY

Corrections ☐
Redesign ☐
No Change ☐
Non-Critical Area ☐

*Complete Only Page 1
General Project Information

Project Name (site name, subdivision name, or other) | 301 WEST HAVEN DRIVE

Project location/Address | 301 WEST HAVEN DRIVE

City | SEVERNA PARK   Zip | 21146

Local case number

Applicant: Last name | MIELKE   First name | SCOTT

Company | —

Application Type (check all that apply):

Building Permit ☐   Variance ☑
Buffer Management Plan ☐   Rezoning ☐
Conditional Use ☐   Site Plan ☐
Consistency Report ☐   Special Exception ☐
Disturbance > 5,000 sq ft ☐   Subdivision ☐
Grading Permit ☐   Other ☐

Local Jurisdiction Contact Information:

Last name AACO ZONING ADMIN SECTION   First name

Phone # 410-222-7437   Response from Commission Required By TBD

Fax #   Hearing date TBD

Revised 12/14/2006

SPECIFIC PROJECT INFORMATION

Describe Proposed use of project site:

SINGLE FAMILY DWELLING

	Yes			Yes	
Intra-Family Transfer	☐		Growth Allocation	☐	
Grandfathered Lot	☐		Buffer Exemption Area	☑ PARTIAL	

Project Type (check all that apply)

Commercial	☐		Recreational	☐
Consistency Report	☐		Redevelopment	☐
Industrial	☐		Residential	☑
Institutional	☐		Shore Erosion Control	☐
Mixed Use	☐		Water-Dependent Facility	☐
Other	☐			

SITE INVENTORY (Enter acres or square feet)

	Acres	Sq Ft		Acres	Sq Ft
IDA Area			Total Disturbed Area	0.24	
LDA Area	1.12				
RCA Area			# of Lots Created		
Total Area	1.12				

	Acres	Sq Ft		Acres	Sq Ft
Existing Forest/Woodland/Trees		17,002	Existing Lot Coverage		4105
Created Forest/Woodland/Trees			New Lot Coverage		4359
Removed Forest/Woodland/Trees		0	Removed Lot Coverage		4105
			Total Lot Coverage		4359

VARIANCE INFORMATION (Check all that apply)

	Acres	Sq Ft		Acres	Sq Ft
Buffer Disturbance			Buffer Forest Clearing		
Non-Buffer Disturbance			Mitigation		

Variance Type		Structure	
Buffer	☑	Acc. Structure Addition	☐
Forest Clearing	☐	Barn	☐
HPA Impact	☐	Deck	☐
Lot Coverage	☐	Dwelling	☑
Expanded Buffer	☐	Dwelling Addition	☐
Nontidal Wetlands	☐	Garage	☐
Setback	☐	Gazebo	☐
Steep Slopes	☑	Patio	☐
Other	☐	Pool	☐
		Shed	☐
		Other	☐

Applicant: Lisa Barley and Scott Mielke

Site: 301 West Haven Road, Severna Park, MD 21146
    Tax Map 24, Grid 14, Parcel 904

Zoning: R-5

Critical Area Land Use Designation: LDA

June, 2018

Introduction/Purpose:

The applicants recently acquired this 51,593 square foot or 1.18-acre, waterfront parcel located on the tidal shores of Old Man Creek off of the Magothy River in Severna Park, Anne Arundel County. The property is a point of land on the creek and is located at the end of West Haven Road. The property contains an existing older house (1937, per SDAT), which has not been lived in for several years and is in very poor condition. The site is located completely in the Critical Area, with a Limited Development (LDA) land use designation. (See enclosed copy of County Critical Area Map 12.)

Although the existing house is as close as 30 feet to the tidal shoreline (and has stone patios even closer), the property was not mapped as Buffer Modified ("BMA", formerly known as Buffer Exempt) by the County during its 1990's BMA mapping. As part of permitting for a new home on the property (further back from the shoreline), an application is being submitted to Anne Arundel County for a map change to the BMA mapping to include the relevant portion of the property as BMA.

Requirements for a BMA map amendment are set forth in the County Zoning Ordinance at §18-13-301. Most of the requirements are technically survey and engineering in nature, and this portion of this report is limited to a review of the following two requirements:

(c)(5)(iii) plants, trees and foliage on the property, including details on the species and diameters of trees and a general description of other planting areas;

(c)(5)(vi) identification of any habitat protection area, slopes of 15% or greater, expanded buffer, and forest interior dwelling birds on the property and adjacent properties.

This report is based on the July 2018 site plan developed by Bay Engineering, Inc.

Site visits for this Critical Area study were conducted on May 2 and 11, 2018, by Eric E. See of See Environmental Services, Inc. The site plan previously provided a mapping of the 15% and greater slopes and expanded buffer as specified in item (vi), which are incorporated as part of this report.

General Site Conditions and Setting:

The subject property is located at the eastern end of West Haven Road in Severna Park, which is a gravel road at this point with a small turn around loop. Attached is a copy of an aerial photograph from the County's mapping web page, showing the site and adjoining properties. It is annotated with the approximate property lines and parcel/lot numbers from the SDAT website.

The subject lot is irregularly-shaped and is on a gently sloping upland plateau, with steep wooded slopes sloping down to the tidal shoreline. The existing house is on the eastern end of the site, surrounded by several old flagstone patios and a small yard and part of the driveway loop, the remainder of the site is forested. It has a septic tank that is completely non-functional.

A small section of old concrete block were placed by the previous landowner as riprap at the toe of the steep slopes along the shoreline around the existing pier, on the eastern end of the site, but the remainder of the toe of the slope of the shoreline is unprotected. As a result, a number of trees all along the steep slopes have already fallen or are about to fall into the water below. The shoreline is severely eroded and is not stable. Additionally, there is an existing septic drain field overflow pipe that extends out of the existing slope and directly discharges into the waters of Old Man Creek.

Adjoining lots to the south and west generally contain a mix of woodlands on the steep slopes and large, mowed lawns with scattered shade trees. A forest conservation easement covering 0.44 acres or 37.2% of the woodland on the site was previously platted by the former owner as part of a never-finalized approved grading permit application which was eventually abandoned.

Item (iii): Woodlands and Trees:

Because no guidance is contained in the County Code about what level of detail is required for a description of "plants, trees, and foliage on the property", the following procedure was used: All living trees 4 inches DNH and greater were tagged and their locations approximated on the current site plan. Unless noted as "I-NF" (inaccessible due to very steep slopes, no flag) were marked with a short piece of red-and-white-striped flagging with tree number, species, and DBH (e. g., 1 Chestnut oak 19"). A total of 149 trees were so located, and described in the attached 3-page list.

SEE ENVIRONMENTAL SERVICES, INC.
The Woodbridge Center · 2444 Solomons Island Road, Suite 217 · Annapolis, Maryland 21401
Tel: (410) 266-3828 · E-mail: ericsee1@outlook.com

Page 3

In summary, approximately 0.70 acres or 59.3% of the 1.18 acre lot is wooded. With the exception of some planted ornamental trees around the existing house, the majority of the woodlands is a "dry site" mixed hardwood forest, dominated by chestnut oak and other oaks in the canopy. English Ivy, Greenbriar and Japanese honeysuckle are the only common "exotic and invasive" species present, limited generally close to the edge of the woodlands around the house, yard, and driveway.

Item (iv): Habitat and FID's:

The required Maryland Department of Natural Resources Environmental Review Statement was obtained and a copy of that Statement is attached to this report. The DNR letter notes that there are no records of rare, threatened, or endangered species for the site, and did **not** specify recommendations for protection of FID's habitat. In absence of such recommendations, DNR effectively concurred with the finding that the woodlands on the subject lot are all within the forest "edge", and therefore the small area of woodlands on the subject property lacks sufficient size to be FID's habitat. Because the adjoining properties are mostly open, these would be even less likely to support FID's habitat.

Respectfully Submitted,

Eric E. See 7/16/18

Eric E. See, Principal Investigator
See Environmental Services, Inc.
2444 Solomons Island Road, Suite 217
410-266-3828

References/Attachments:

Anne Arundel County. Critical Area Map #24.

Anne Arundel County DPW. GIS aerial photography.

Bay Engineering, Inc., July, 2018 Existing Resources and Final Site Plan

Maryland DNR, June 5, 2018 Environmental Review Statement (ER# 2018.0756.aa)

US NRCS current soils mapping.

301 West Haven Drive

Severna Park, Md. 21146

Stormwater Management Computations
Tax Map 24 Block 14 Parcel 904

GP# G02020290

September, 2024
Revised:

301 West Haven Drive
Severna Park, Md. 21146
GP#:G02020290

NARRATIVE

The proposed plan is the best layout for this project based on the shape, size and topography of the site. The layout promotes flows to undisturbed areas on-site and to Natural Conveyance Systems on-site. All of the impervious areas (house, driveway and walkways) have been disconnected by eight rooftop disconnections and 3 non-rooftop disconnection and therefore the resultant impervious area for the site is 0 s.f. in DA "A". Drainage Area "B" has no proposed impervious cover and therefore the PE is 0.0".

All natural resources on-site have been protected. The lot consists of mostly existing grass and wooded areas and an existing house to be removed. Grading has been kept to a minimum to reduce the LOD to the maximum extent possible. The natural flow patterns to this area have been maintained to the maximum extent possible.

SWM Criteria

1. Water Quality, Recharge Volume and Channel Protection in drainage area "A" has been provided by using Rooftop Disconnections and Non-Rooftop Disconnections to provide a volume of 182 cf. There is no proposed impervious area in drainage are "B" so the required volume is 0 cf.

2. Overbank flood Protection Volume has been met in both drainage areas "A"and "B". Drainage area "A" has a direct tidal outfall (Old Man Creek). The proposed flow in drainage area "B" (0.1 cfs) is the same as the existing flow (0.1 cfs) at the site outfall.

3. Extreme Flood Protection Volume is not required as the site has an adequate site outfall and the downstream channel is in stable condition.

Sediment Control has been provided as to completely protect the natural areas.

Table of Contents

1 **DA "A"** - Water Quality, Recharge Volume & Channel Protection Volume Comps, and Site Pe Computation

ADDRESSING SWM REQUIREMENTS USING ENVIRONMENTAL SITE DESIGN

Treatment: ESD practices shall be used to treat the runoff from 1 inch of rainfall (i.e P_E = 1 inch) on all new developments and redevelopments where stormwater management is required.
ESD practices shall be used to the MEP to address CP_V (i.e. treat the runoff from the 1-year 24-hour design storm) for 1-year post development peak discharge using the reduced RCN from Table 5.3)

INPUT DATA ONLY IN GREEN SHADED AREAS
Site Data:

Site Location (County):	301 West Haven Drive DA "A"	
Site Area:	1.12	acres
Drainage Area:	0.51	acres
Soils:	100% A, 0% B, 0% C, 0% D.	
Impervious Area:	0.00	acres

Site Soil Distribution					
HSG	AREA			RCN*	Percent
A	Imp. Area	0.00	Acres	38	0%
A	Tot. Area	0.51	Acres	38	100%
B	Imp. Area	0.00	Acres	55	0%
B	Tot. Area	0.00	Acres	55	0%
C	Imp. Area	0.00	Acres	70	0%
C	Tot. Area	0.00	Acres	70	0%
D	Imp. Area	0.00	Acres	77	0%
D	Tot. Area	0.00	Acres	77	0%
Total Imp. Area		0.00	Acres		
Total Area		0.51	Acres		

(Percent = (Imp. Area/ Tot. Area)* 100)
(Percent = (Tot. Area/ Drainage Area)* 100)
(Percent = (Imp. Area/ Tot. Area)* 100)
(Percent = (Tot. Area/ Drainage Area)* 100)
(Percent = (Imp. Area/ Tot. Area)* 100)
(Percent = (Tot. Area/ Drainage Area)* 100)
(Percent = (Imp. Area/ Tot. Area)* 100)
(Percent = (Tot. Area/ Drainage Area)* 100)

* RCN is for woods in good condition (Table 2-2, TR-55)

Step 1: Determine ESD Implementation Goals

A. Determine Pre-Developed Conditions

. *Soil Conditions and RCN for " woods in good condition".*

Site Soil Distribution			
HSG	RCN*	Area	
A	38	0.51	acres
B	n/a	0.00	acres
C	n/a	0.00	acres
D	n/a	0.00	acres

* RCN is for woods in good condition (Table 2-2, TR-55)

. *Composite RCN for "woods in good condition".*

RCN_{woods} $= \dfrac{(38 \times 0.5 \text{ acres}) + (0 \times 0.0 \text{ acres}) + (0 \times 0.0 \text{ acres}) + (0 \times 0.0 \text{ acres})}{0.5 \text{ acres}}$

$= \quad 38$

The target RCN for "woods in good condition" i 38

B. Determine Target P_E Using Table 5.3

P_E = Rainfall Target from Table 5.3 used to dtermine EAD goals and size practices.

. **Determine % Impervious Area**

I = (Imp. Area/ Drainage Area)
I= (0.00 ac. / 0.51 ac.)
I =   0.0   %   Based on entire DA
CHECK BOTH 0% AND 0%, AND USE THE MOST CONSERVATIVE RESULT.

. **Determine P_E form Table.**

Target PE			
HSG	PE for 0%		PE for 0%	
A	n/a	"	n/a	"
B	n/a	"	n/a	"
C	n/a	"	n/a	"
D	n/a	"	n/a	"

Target P_E =   0.0   inches

C. Compute Q_E

Q_E = Runoff depth in inches that must be treated using ESD Practices.

$Q_E = P_E \times R_V$
$P_E = \quad 0.0 \quad$ inches
$R_V = 0.05 + (0.009)(I)$ R_V = the dimensionless volumetric runoff coefficient
$\quad = \quad 0.05$
$Q_E = \quad 0.0$ inches x 0.05
$Q_E = \quad 0.00$ inches

SWM Requirements After Using ESD

   A. Calculate Reduced RCN's

     . Determine Reduced RCN for P_E after ESD Implementation
       $P_E = $ **1.0**   inches   (Rainfall used to size ESD practices)

      CPV HAS BEEN SATISFIED

DA "A"

    Target Pe =   1.00 inches

        Rv =   0.05
        A =   0.51 ac.

    ESDv $\frac{\text{(Pe)(Rv)(A) 43560}}{12}$ =   93 cf

Computation of Site Pe

Roof-Top Disconnection #1   (15')
          DA =   360 sf
          Imp area= 360 sf   Pe =   0.2 "

      Vol. = $\frac{\text{(Pe)(Rv)(A)}}{12}$

          Rv = .05+.009(I)
           I =   100 %
          Rv =   0.95
      Vol. =   6 cf

Maximum volume that can be captured: **Pe=**   2.7 "

Vol.= $\frac{\text{(P) (Rv) (A)}}{12}$ Rv = .05+.009(I)
                      I =   100.00 %
                      Rv =   0.95
Vol.= $\frac{\text{(2.7)(0.95)(360)}}{12}$
Max. Vol. that can be captured=   77 cf

Roof-Top Disconnection #2   (15')

DA =	500 sf
Imp area=	500 sf

Pe =   0.2 "

$$Vol. = \frac{(Pe)(Rv)(A)}{12}$$

Rv = .05+.009(I)
  I =   100 %
  Rv =   0.95

Vol. =   8 cf

Maximum volume that can be captured: Pe=   2.7 "

$$Vol.= \frac{(P)(Rv)(A)}{12}$$

Rv = .05+.009(I)
  I =   100.00 %
  Rv =   0.95

$$Vol.= \frac{(2.7)(0.95)(500)}{12}$$

Max. Vol. that can be captured=   107 cf

Roof-Top Disconnection #3   (15')

DA =	330 sf
Imp area=	330 sf

Pe =   0.2 "

$$Vol. = \frac{(Pe)(Rv)(A)}{12}$$

Rv = .05+.009(I)
  I =   100 %
  Rv =   0.95

Vol. =   5 cf

Maximum volume that can be captured: Pe=   2.7 "

$$Vol.= \frac{(P)(Rv)(A)}{12}$$

Rv = .05+.009(I)
  I =   100.00 %
  Rv =   0.95

$$Vol.= \frac{(2.7)(0.95)(330)}{12}$$

Max. Vol. that can be captured=   71 cf

Roof-Top Disconnection #4 (15')

DA = 330 sf

Imp area= 330 sf   Pe =   0.2 "

$$Vol. = \frac{(Pe)(Rv)(A)}{12}$$

Rv = .05+.009(I)

I = 100 %

Rv = 0.95

Vol. =   5 cf

Maximum volume that can be captured: Pe=   2.7 "

$$Vol.= \frac{(P)(Rv)(A)}{12}$$ Rv = .05+.009(I)

I = 100.00 %

Rv = 0.95

$$Vol.= \frac{(2.7)(0.95)(330)}{12}$$

Max. Vol. that can be captured=   71 cf

Roof-Top Disconnection #5 (15')

DA = 500 sf

Imp area= 500 sf   Pe =   0.2 "

$$Vol. = \frac{(Pe)(Rv)(A)}{12}$$

Rv = .05+.009(I)

I = 100 %

Rv = 0.95

Vol. =   8 cf

Maximum volume that can be captured: Pe=   2.7 "

$$Vol.= \frac{(P)(Rv)(A)}{12}$$ Rv = .05+.009(I)

I = 100.00 %

Rv = 0.95

$$Vol.= \frac{(2.7)(0.95)(500)}{12}$$

Max. Vol. that can be captured=   107 cf

Roof-Top Disconnection #6   (15')

$DA =$ 360 sf

Imp area=   360 sf $Pe =$ 0.2 "

$$Vol. = \frac{(Pe)(Rv)(A)}{12}$$

$Rv = .05 + .009(I)$

$I =$ 100 %

$Rv =$ 0.95

$Vol. =$ 6 cf

Maximum volume that can be captured: **Pe=**   2.7 "

$$Vol. = \frac{(P)(Rv)(A)}{12}$$ $Rv = .05 + .009(I)$

                                  $I =$ 100.00 %

                                  $Rv =$ 0.95

$$Vol. = \frac{(2.7)(0.95)(360)}{12}$$

Max. Vol. that can be captured=   77 cf

Roof-Top Disconnection #7   (15')

$DA =$ 77 sf

Imp area=   77 sf $Pe =$ 0.2 "

$$Vol. = \frac{(Pe)(Rv)(A)}{12}$$

$Rv = .05 + .009(I)$

$I =$ 100 %

$Rv =$ 0.95

$Vol. =$ 1 cf

Maximum volume that can be captured: **Pe=**   2.7 "

$$Vol. = \frac{(P)(Rv)(A)}{12}$$ $Rv = .05 + .009(I)$

                                  $I =$ 100.00 %

                                  $Rv =$ 0.95

$$Vol. = \frac{(2.7)(0.95)(77)}{12}$$

Max. Vol. that can be captured=   16 cf

Roof-Top Disconnection #8   **(15')**

$$DA = 112 \text{ sf}$$
$$\text{Imp area} = 112 \text{ sf} \qquad Pe = 0.2 "$$

$$\text{Vol.} = \frac{(Pe)(Rv)(A)}{12}$$

$$Rv = .05 + .009(I)$$
$$I = 100 \%$$
$$Rv = 0.95$$

$$\text{Vol.} = \qquad 2 \text{ cf}$$

Maximum volume that can be captured: **Pe=**   **2.7 "**

$$\text{Vol.} = \frac{(P)(Rv)(A)}{12} \qquad Rv = .05 + .009(I)$$
$$I = 100.00 \%$$
$$Rv = 0.95$$

$$\text{Vol.} = \frac{(2.7)(0.95)(112)}{12}$$

Max. Vol. that can be captured=   **24 cf**

Non-Roof-Top Disconnection #1 (1:1)

$$DA = 432 \text{ sf}$$
$$\text{Imp area} = 432 \text{ sf} \qquad Pe = 1.0 "$$

$$\text{Vol.} = \frac{(Pe)(Rv)(A)}{12}$$

$$Rv = .05 + .009(I)$$
$$I = 100 \%$$
$$Rv = 0.95$$

$$\text{Vol.} = \qquad 34 \text{ cf}$$

Maximum volume that can be captured: **Pe=**   **2.7 "**

$$\text{Vol.} = \frac{(P)(Rv)(A)}{12} \qquad Rv = .05 + .009(I)$$
$$I = 100.00 \%$$
$$Rv = 0.95$$

$$\text{Vol.} = \frac{(2.7)(0.95)(432)}{12}$$

Max. Vol. that can be captured=   **92 cf**

Non-Roof-Top Disconnection #2 (1:1)

DA =	438 sf		
Imp area=	438 sf	Pe =	1.0 "

$$Vol. = \frac{(Pe)(Rv)(A)}{12}$$

$Rv = .05+.009(I)$
$I = 100 \%$
$Rv = 0.95$

Vol. = **35 cf**

Maximum volume that can be captured: **Pe=**   **2.7 "**

$$Vol.= \frac{(P)(Rv)(A)}{12}$$

$Rv = .05+.009(I)$
$I = 100.00 \%$
$Rv = 0.95$

$$Vol.= \frac{(2.7)(0.95)(438)}{12}$$

Max. Vol. that can be captured=   **94 cf**

Non-Roof-Top Disconnection #3 (1:1)

DA =	910 sf		
Imp area=	910 sf	Pe =	1.0 "

$$Vol. = \frac{(Pe)(Rv)(A)}{12}$$

$Rv = .05+.009(I)$
$I = 100 \%$
$Rv = 0.95$

Vol. = **72 cf**

Maximum volume that can be captured: **Pe=**   **2.7 "**

$$Vol.= \frac{(P)(Rv)(A)}{12}$$

$Rv = .05+.009(I)$
$I = 100.00 \%$
$Rv = 0.95$

$$Vol.= \frac{(2.7)(0.95)(910)}{12}$$

Max. Vol. that can be captured=   **195 cf**

Total ESDv Provided:

Practice	Location	Area Treated	Volume (ESD$_v$)
RTD 1	See ESD Plan	360	6
RTD 2	See ESD Plan	500	8
RTD 3	See ESD Plan	330	5
RTD 4	See ESD Plan	330	5
RTD 5	See ESD Plan	500	8
RTD 6	See ESD Plan	360	6
RTD 7	See ESD Plan	77	1
RTD 8	See ESD Plan	112	2
Non-RTD 1	Driveway & Walkways	432	34
Non-RTD 2	Driveway & Walkways	438	35
Non-RTD 3	Driveway	910	72
		Total cf	182
		ESD$_v$ Req'd cf	93

$Rv =$ 0.05

$A =$ 0.51 ac.

$$Pe = \frac{12(ESDv)}{(Rv)(A) \; 43560} =$$

1.00 inches

2   **DA "B"** - Water Quality, Recharge Volume & Channel Protection Volume Comps, and Site Pe Computation

ADDRESSING SWM REQUIREMENTS USING ENVIRONMENTAL SITE DESIGN

Treatment: ESD practices shall be used to treat the runoff from 1 inch of rainfall (i.e P_E = 1 inch) on all new developments and redevelopments where stormwater management is required.
ESD practices shall be used to the MEP to address CP_V (i.e. treat the runoff from the 1-year 24-hour design storm) for 1-year post development peak discharge using the reduced RCN from Table 5.3)

INPUT DATA ONLY IN GREEN SHADED AREAS
Site Data:

Site Location (County):	301 West Haven Road DA "B"	
Site Area:	1.12	acres
Drainage Area:	0.61	acres
Soils:	100% A,	0% B, 0% C, 0% D.
Impervious Area:	0.00	acres

Site Soil Distribution					
HSG	**AREA**			**RCN***	**Percent**
A	Imp. Area	0.00	Acres	38	0%
	Tot. Area	0.61	Acres	38	100%
B	Imp. Area	0.00	Acres	55	0%
	Tot. Area	0.00	Acres	55	0%
C	Imp. Area	0.00	Acres	70	0%
	Tot. Area	0.00	Acres	70	0%
D	Imp. Area	0.00	Acres	77	0%
	Tot. Area	0.00	Acres	77	0%
Total Imp. Area		0.00	Acres		
Total Area		0.61	Acres		

(Percent = (Imp. Area/ Tot. Area)* 100)
(Percent = (Tot. Area/ Drainage Area)* 100)
(Percent = (Imp. Area/ Tot. Area)* 100)
(Percent = (Tot. Area/ Drainage Area)* 100)
(Percent = (Imp. Area/ Tot. Area)* 100)
(Percent = (Tot. Area/ Drainage Area)* 100)
(Percent = (Imp. Area/ Tot. Area)* 100)
(Percent = (Tot. Area/ Drainage Area)* 100)

* RCN is for woods in good condition (Table 2-2, TR-55)

Step 1: Determine ESD Implementation Goals

A. Determine Pre-Developed Conditions

. *Soil Conditions and RCN for " woods in good condition".*

Site Soil Distribution			
HSG	RCN*	Area	
A	38	0.61	acres
B	n/a	0.00	acres
C	n/a	0.00	acres
D	n/a	0.00	acres

* RCN is for woods in good condition (Table 2-2, TR-55)

. *Composite RCN for "woods in good condition".*

$$RCN_{woods} = \frac{(38 \times 0.6 \text{ acres}) + (0 \times 0.0 \text{ acres}) + (0 \times 0.0 \text{ acres}) + (0 \times 0.0 \text{ acres})}{0.6 \text{ acres}}$$

$$= 38$$

The target RCN for "woods in good condition" i 38

B. Determine Target P_E Using Table 5.3

P_E = Rainfall Target from Table 5.3 used to dtermine EAD goals and size practices.

. **Determine % Impervious Area**

I = (Imp. Area/ Drainage Area)
I = (0.00 ac. / 0.61 ac.)
I = 0.0 % Based on entire DA
CHECK BOTH 0% AND 0%, AND USE THE MOST CONSERVATIVE RESULT.

. **Determine P_E form Table.**

Target PE			
HSG	PE for 0%	PE for 0%	
A	n/a	"	n/a	"
B	n/a	"	n/a	"
C	n/a	"	n/a	"
D	n/a	"	n/a	"

Target P_E = 0.0 inches

C. Compute Q_E

Q_E = Runoff depth in inches that must be treated using ESD Practices.

$Q_E = P_E \times R_V$
P_E = 0.0 inches
$R_V = 0.05 + (0.009)(I)$ R_V = the dimensionless volumetric runoff coefficient
= 0.05
Q_E = 0.0 inches x 0.05
Q_E = 0.00 inches

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SWM Requirements After Using ESD

A. Calculate Reduced RCN's

. **Determine Reduced RCN for P_E after ESD Implementation**

$P_E = $ _____ **0.0** _____ inches   (Rainfall used to size ESD practices)

CPV HAS BEEN SATISFIED

DA "B"

Target Pe =   0.00 inches

Rv =   0.05
A =   0.61 ac.

$$\text{ESDv} : \frac{(Pe)(Rv)(A)\ 43560}{12} = \qquad 0 \text{ cf}$$

3   DA "A"& "B" - Existing Conditions On-site

Worksheet 2: Runoff curve number and runoff

Project: 301 West Haven Drive DA "A"   By: KPO   Date: 10/8/24
Location: Severna Park, Md

Notes: Existing Conditions

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment,and hydrologic condition)	CN Table 2-2	CN Fig.2-3	CN Fig.2-4	Area acres mi² %	Product of CN x area
(A)	Woods	30			0.05	1.5
(A)	Lawn	39			0.35	13.65
(A)	Impervious	98			0.11	10.78
						0
1/ Use only one CN source per line				Totals =	0.51	25.93

$$CN\ (weighted) = \frac{total\ product}{total\ area\ (acres)} = \frac{25.93}{0.51} = 50.84$$

Use CN = 51

2. Runoff

		Storm #1	Storm #2	Storm #3
Frequency................................	yr	1	10	100
Rainfall, P (24-hour)....................	in	2.7	5.2	7.4
Runoff, Q.................................	in	0.056	0.825	1.97

(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: 301 West Haven Drive DA "A"　　　By: KPO　　　　　Date: 10/8/24
Location: Severna Park, Md

Notes: Existing Conditions

Sheet flow (Applicable to Tc only)	Segment ID		AB			
1	surface description (table 3-1)		woods			
2	Manning's roughness coeff., n (table 3-1)		0.400	0.400		
3	Flow length, L (total L ≤ 300 ft)	ft	78	0		
4	two-yr 24-hr rainfall, P_2	in	3.3	3.3		
5	Land slope, s	ft/ft	0.07	0.025		
6	$T_t = 0.007(nL)^{0.8}/ P_2^{0.5} s^{0.4}$	hr	0.18 +	0.00 +	=	0.175

Shallow concentrated flow	Segment ID		BC			
7	Surface description (paved(P) or unpaved(UP))		UP			
8	Flow length, L	ft	48	0		
9	Watercourse slope, s	ft/ft	0.5	0.04		
10	Average Velocity, V (figure 3-1)	ft/s	11.5	3.2		
11	$T_t = L / 3600 V$	hr	0.001 +	0.000 +	=	0.001

Channel Flow	Segment ID					
12	Cross sectional flow area, a	ft²				
13	Wetted perimeter,　Pw	ft				
14	Hydraulic radius,　　r = a / Pw compute r	ft				
15	Channel slope,　s	ft/ft	0.006	0		
16	Manning's roughness coeff. ,　n		0.025			
17	$V = 1.49 r^{2/3} s^{1/2}/ n$	ft/s	3.50	3.50		
18	Flow length , L	ft/s	0	0		
19	$T_t = L / 3600 V$	hr	0.000 +	0.000 +	=	0.000
20	Watershed or subarea Tc or Tt (add Tt in steps 6,11,and 19)					0.18

Worksheet 4: Graphical Peak Discharge Method

Project: 301 West Haven Drive DA "A"   By: KPO   Date: 10/8/24

Location: Severna Park, Md

Notes: _____ Existing Conditions _____

1. Data:

Drainage area ....   Am = __0.0008__ mi^2 (acres / 640)

Runoff curve nimber ...CN = __51__ (from worksheet 2)

Time of concentration .Tc = __0.18__ hr (from worksheet 3)

Rainfall distribution type = __II__ (I, IA, II, III)

Pond and swamp areas spread

throught watershed........ = _____ percent of Am (____ acrea or mi^2 covered)

		Storm # 1	Storm # 2	Storm # 3
2. Frequency...........................	yr	1	10	100
3. Rainfall, P (24-hour)	in	2.7	5.2	7.4
4. Initial abstraction, Ia (Use CN with table 4-1)	in	1.93	1.93	1.93
5. Compute Ia / P		0.72	0.37	0.26
6. Unit peak discharge, q_u (use Tc and Ia/ P with exhibit 4-6)	csm/in	0	650	0
7. Runoff, Q (from worksheet 2)	in	0.06	0.82	1.97
8. Pond and swamp factor , Fp (use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond and swamp area		1	1	1
9. Peak discharge, q_p (where $q_p = q_u$ Am Q F_p)	cfs	0.00	0.4	0.00

IB

Worksheet 2: Runoff curve number and runoff

Project: 301 West Haven Road   DA "B"   By: KPO   Date: 10/8/24
Location: Severna Park, Md

Notes: Existing Conditions

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment,and hydrologic condition)	CN Table 2-2	CN Fig.2-3	CN Fig.2-4	Area acres mi² %	Product of CN x area
(A)	Lawn	39			0.23	8.97
(A)	Woods	30			0.35	10.5
(A)	Impervious	98			0.03	2.94
						0

1/ Use only one CN source per line   Totals =   0.61   22.41

$$CN\ (weighted) = \frac{total\ product}{total\ area\ (acres)} = \frac{22.41}{0.61} = 36.74$$

Use CN = 37

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency................................ yr	1	10	100
Rainfall, P (24-hour).................... in	2.7	5.2	7.4
Runoff, Q................................ in	0.034	0.162	0.74

(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: 301 West Haven Road   DA "B"   By: KPO   Date: 10/8/24
Location: Severna Park, Md

Notes: Existing Conditions

Sheet flow (Applicable to Tc only)		Segment ID	AB-CD	BC			
1	surface description (table 3-1)		grass	Impervious			
2	Manning's roughness coeff., n (table 3-1)		0.240	0.013			
3	Flow length, L (total L $\leq$ 300 ft)	ft	92	9			
4	two-yr 24-hr rainfall, P_2	in	3.3	3.3			
5	Land slope, s	ft/ft	0.06	0.02			
6	$T_t = 0.007(nL)^{0.8} / P_2^{0.5} s^{0.4}$	hr	0.14 +	0.00 +	=	0.144

Shallow concentrated flow		Segment ID	DE				
7	Surface description (paved(P) or unpaved(UP))		UP				
8	Flow length, L	ft	118	0			
9	Watercourse slope, s	ft/ft	0.18	0.04			
10	Average Velocity, V (figure 3-1)	ft/s	7	3.2			
11	$T_t = L / 3600 V$	hr	0.005 +	0.000 +	=	0.005

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	0.2	0			
16	Manning's roughness coeff. , n		0.025				
17	$V = 1.49 r^{2/3} s^{1/2} / n$	ft/s	3.50	3.50			
18	Flow length , L	ft/s	0	0			
19	$T_t = L / 3600 V$	hr	0.000 +	0.000 +	=	0.000
20	Watershed or subarea Tc or Tt (add Tt in steps 6,11,and 19)						0.15

Worksheet 4: Graphical Peak Discharge Method

Project: 301 West Haven Road   DA "B"   By: KPO   Date: 10/8/24
Location: Severna Park, Md

Notes: Existing Conditions

1. Data:

Drainage area ....   Am =   0.00095 mi² (acres / 640)
Runoff curve nimber ...CN =   37   (from worksheet 2)
Time of concentration .Tc =   0.15   hr (from worksheet 3)
Rainfall distribution type =   II   (I, IA, II, III)
Pond and swamp areas spread
throught watershed........ =   percent of Am (_____ acrea or mi² covered)

		Storm # 1	Storm # 2	Storm # 3
2. Frequency............................	yr	1	10	100
3. Rainfall, P (24-hour)	in	2.7	5.2	7.4
4. Initial abstraction, Ia (Use CN with table 4-1)	in	3.44	3.44	3.44
5. Compute Ia / P		1.28	0.66	0.47
6. Unit peak discharge, q_u (use Tc and Ia/ P with exhibit 4-6)	csm/in	0	440	0
7. Runoff, Q (from worksheet 2)	in	0.03	0.16	0.74
8. Pond and swamp factor , Fp (use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond and swamp area)		1	1	1
9. Peak discharge, q_p (where $q_p = q_u \, Am \, Q \, F_p$)	cfs	0.00	0.1	0.00

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4   DA "A" & "B" - Proposed Conditions On-site

Worksheet 2: Runoff curve number and runoff

Project: 301 West Haven Drive DA "A"   By: KPO   Date: 10/8/24
Location: Severna Park, Md

Notes: Proposed Conditions

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment,and hydrologic condition)	CN Table 2-2	CN Fig.2-3	CN Fig.2-4	Area acres mi^2 %	Product of CN x area
(A)	Woods	30			0.05	1.5
(A)	Lawn	39			0.36	14.04
(A)	Impervious	98			0.1	9.8
						0
				Totals =	0.51	25.34

1/ Use only one CN source per line

$$CN \text{ (weighted)} = \frac{\text{total product}}{\text{total area (acres)}} = \frac{25.34}{0.51} = 49.69$$

Use CN = 50

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency.............................. yr	1	10	100
Rainfall, P (24-hour)..................... in	2.7	5.2	7.4
Runoff, Q.................................. in	0.042	0.758	1.86

(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: 301 West Haven Drive DA "A"   By: KPO   Date: 10/8/24
Location: Severna Park, Md

Notes: Proposed Conditions

Sheet flow (Applicable to Tc only)		Segment ID	AB-CD	BC		
1	surface description (table 3-1)		grass	Impervious		
2	Manning's roughness coeff., n (table 3-1)		0.240	0.013		
3	Flow length, L (total L ≤ 300 ft)	ft	67	24		
4	two-yr 24-hr rainfall, P_2	in	3.3	3.3		
5	Land slope, s	ft/ft	0.082	0.02		
6	$T_t = 0.007(nL)^{0.8} / P_2^{0.5} s^{0.4}$	hr	0.10 +	0.01 +	=	0.104

Shallow concentrated flow		Segment ID	BC			
7	Surface description (paved(P) or unpaved(UP))		UP			
8	Flow length, L	ft	30	0		
9	Watercourse slope, s	ft/ft	0.5	0.046		
10	Average Velocity, V (figure 3-1)	ft/s	11.5	3.5		
11	$T_t = L / 3600 V$	hr	0.001 +	0.000 +	=	0.001

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	0.006	0.037		
16	Manning's roughness coeff. , n		0.025	0.025		
17	$V = 1.49 r^{2/3} s^{1/2} / n$	ft/s	3.50	3.50		
18	Flow length , L	ft/s	0	0		
19	$T_t = L / 3600 V$	hr	0.000 +	0.000 +	=	0.000
20	Watershed or subarea Tc or Tt (add Tt in steps 6,11,and 19)					0.10

Worksheet 4: Graphical Peak Discharge Method

Project: 301 West Haven Drive DA "A"   By: KPO   Date: 10/8/24
Location: Severna Park, Md

Notes: _____ Proposed Conditions

1. Data:

Drainage area .... A_m = ___0.0008___ mi^2 (acres / 640)
Runoff curve nimber ...CN = ___50___ (from worksheet 2)
Time of concentration .T_c = ___0.10___ hr (from worksheet 3)
Rainfall distribution type = ___II___ (I, IA, II, III)
Pond and swamp areas spread
throught watershed........ = _____ percent of Am (_____ acrea or mi^2 covered)

		Storm # 1	Storm # 2	Storm # 3
2. Frequency...........................	yr	1	10	100
3. Rainfall, P (24-hour)	in	2.7	5.2	7.4
4. Initial abstraction, la (Use CN with table 4-1)	in	2.03	2.03	2.03
5. Compute Ia / P		0.75	0.39	0.27
6. Unit peak discharge, q_u (use Tc and Ia/ P with exhibit 4-6)	csm/in	0	850	0
7. Runoff, Q (from worksheet 2)	in	0.04	0.76	1.86
8. Pond and swamp factor , Fp (use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond and swamp area		1	1	1
9. Peak discharge, q_p (where $q_p = q_u\ A_m\ Q\ F_p$)	cfs	0.00	0.5	0.00

Worksheet 2: Runoff curve number and runoff

Project: 301 West Haven Road   DA "B"   By: KPO   Date: 10/8/24
Location: Severna Park, Md

Notes: Proposed Conditions

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment,and hydrologic condition)	CN Table 2-2	CN Fig.2-3	CN Fig.2-4	Area acres mi² %	Product of CN x area
(A)	Woods	30			0.35	10.5
(A)	Lawn	39			0.23	8.97
(A)	Impervious	98			0.03	2.94
						0
1/ Use only one CN source per line				Totals =	0.61	22.41

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area (acres)}} = \frac{22.41}{0.61} = \frac{36.74}{}$$

Use CN = 37

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency............................. yr	1	10	100
Rainfall, P (24-hour).................... in	2.7	5.2	7.4
Runoff, Q................................. in	0.034	0.162	0.74

(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: 301 West Haven Road   DA "B"   By: KPO   Date: 10/8/24
Location: Severna Park, Md

Notes: Proposed Conditions

Sheet flow (Applicable to Tc only)   Segment ID

			AB-CD	BC
			Grass	Impervious
1	surface description (table 3-1)		Grass	Impervious
2	Manning's roughness coeff., n (table 3-1)		0.240	0.013
3	Flow length, L (total L $\leq$ 300 ft)	ft	92	9
4	two-yr 24-hr rainfall, P_2	in	3.3	3.3
5	Land slope, s	ft/ft	0.06	0.02
6	$T_t = 0.007(nL)^{0.8}/ P_2^{0.5} s^{0.4}$	hr	0.14 +	0.00 +	=	0.144

Shallow concentrated flow   Segment ID

			DE	
			UP	
7	Surface description (paved(P) or unpaved(UP))		UP	
8	Flow length, L	ft	118	0
9	Watercourse slope, s	ft/ft	0.18	0.046
10	Average Velocity, V (figure 3-1)	ft/s	7	3.5
11	$T_t = L / 3600 V$	hr	0.005 +	0.000 +	=	0.005

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	0.015	0.037
16	Manning's roughness coeff. , n		0.025	0.025
17	$V = 1.49 r^{2/3} s^{1/2}/ n$	ft/s	3.50	3.50
18	Flow length , L	ft/s	0	0
19	$T_t = L / 3600 V$	hr	0.000 +	0.000 +	=	0.000
20	Watershed or subarea Tc or Tt (add Tt in steps 6,11,and 19)					0.15

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Worksheet 4: Graphical Peak Discharge Method

Project: 301 West Haven Road DA "B"	By: KPO	Date: 10/8/24

Location: Severna Park, Md

Notes: _____ Proposed Conditions

1. Data:

Drainage area ………. A_m = __0.00095__ mi^2 (acres / 640)
Runoff curve nimber …CN = __37__ (from worksheet 2)
Time of concentration .T_c = __0.15__ hr (from worksheet 3)
Rainfall distribution type = __II__ (I, IA, II, III)
Pond and swamp areas spread
throught watershed…….. = _____ percent of Am (_____ acrea or mi^2 covered)

		Storm # 1	Storm # 2	Storm # 3
2. Frequency……………………..	yr	1	10	100
3. Rainfall, P (24-hour)	in	2.7	5.2	7.4
4. Initial abstraction, Ia (Use CN with table 4-1)	in	3.44	3.44	3.44
5. Compute Ia / P		1.28	0.66	0.47
6. Unit peak discharge, q_u (use Tc and Ia/ P with exhibit 4-6)	csm/in	0	440	0
7. Runoff, Q (from worksheet 2)	in	0.03	0.16	0.74
8. Pond and swamp factor , Fp (use percent pond and swamp area with table 4-2. Factor is 1.0 for zero percent pond and swamp area		1	1	1
9. Peak discharge, q_p (where $q_p = q_u$ Am Q F_p)	cfs	0.00	0.1	0.00

5   DA "A" : Summary

STORMWATER MANAGEMENT DATA DA "A"

v1.1 / 2020

Project Table for Each Drainage Area

Permit Number	G02020290
Project Number	
Project Name	301 West Haven Drive DA "A"
StructureAddress	301 West Haven Drive
Structure City	Severna Park
State	Maryland
Structure Zip	21146
Total Drainage Area (Acres)	0.51
RCN - Pre Construction	51
RCN - Post Construction	50
RCN - Woods	38
Total Number of BMPs	11
PE Required (see Note 1)	1"
PE Addressed (see Note 2)	1"
MD 8-Digit HUC (see Note 4)	02131001
USGS 12-Digit HUC	

DO NOT ERASE; DO NOT PRINT	
0	0
Rooftop Disconnect #1	1
Rooftop Disconnect #2	1
#REF!	0
Test	0

For Each Practice in the Drainage Area

STORM_ID	STRU_NAME	E, S, or A — MDE BMP CLASS	MDE BMP TYPE	New development (NEWD), Redevelopment (REDE), or Restoration (REST) — CONSTRUCTION PURPOSE	ON or OFF SITE	MDP Code — LAND USE	DEVICE DRAINAGE AREA (acres)	IMPERVIOUS AREA DRAINING TO DEVICE (acres)	IMPERVIOUS ACRES RESTORED (See Note 3)	MD NORTH COORD (NAD83 - FT)	MD EAST COORD (NAD83 - FT)	NEW WQV (cf) (See Note 5)	NEW Maintenance Responsibility
Blank - County Use													
	Rooftop Disconnect #1	E	N-1	NEWD	ON	E	0.008	0.008	N/A	520,900	1,444,431	6	Individual Homeowner(Residential)
	Rooftop Disconnect #2	E	N-1	NEWD	ON	E	0.011	0.011	N/A	520,904	1,444,453	8	Individual Homeowner(Residential)
	Rooftop Disconnect #3	E	N-1	NEWD	ON	E	0.008	0.008	N/A	520,911	1,444,480	5	Individual Homeowner(Residential)
	Rooftop Disconnect #4	E	N-1	NEWD	ON	E	0.008	0.008	N/A	520,897	1,444,484	5	Individual Homeowner(Residential)
	Rooftop Disconnect #5	E	N-1	NEWD	ON	E	0.011	0.011	N/A	520,891	1,444,457	8	Individual Homeowner(Residential)
	Rooftop Disconnect #6	E	N-1	NEWD	ON	E	0.008	0.008	N/A	520,887	1,444,435	6	Individual Homeowner(Residential)
	Rooftop Disconnect #7	E	N-1	NEWD	ON	E	0.002	0.002	N/A	520,914	1,444,453	1	Individual Homeowner(Residential)
	Rooftop Disconnect #8	E	N-1	NEWD	ON	E	0.003	0.003	N/A	520,879	1,444,459	2	Individual Homeowner(Residential)
	Non-Rooftop Disconnect #1	E	N-2	NEWD	ON	E	0.010	0.010	N/A	520,888	1,444,412	34	Individual Homeowner(Residential)
	Non-Rooftop Disconnect #2	E	N-2	NEWD	ON	E	0.010	0.010	N/A	520,877	1,444,414	35	Individual Homeowner(Residential)
	Non-Rooftop Disconnect #3	E	N-2	NEWD	ON	E	0.010	0.010	N/A	520,859	1,444,395	72	Individual Homeowner(Residential)
	Test												

NOTES

1 – Rainfall target (from Table 5.3, Design Manual pp.5.21-22) used to determine ESD goals and size practices (for new development or redevelopment). If practice is for restoration, then PE_REQ is 1inch.

2 – Rainfall addressed (using both ESD techniques and practices, and structural practices) by the BMPs within the drainage area

3 – Equals Impervious Area Draining to Device when PE_ADR = 1 inch (for restoration only)

4 – Maryland 8-Digit HUC (Hydrologic Unit Code) can be found by using the map at: https://data.maryland.gov/Energy-and-Environment/Maryland-s-8-Digit-Sub-Watersheds/e9j9-vuxg

5 – Water Quality volume, the smaller of the volume of the actual storage volume in the device or the volume from the 1-year 24-hour storm for the drainage area to the device ((2.7" x Rv x A)/12)

STORMWATER MANAGEMENT SUMMARY TABLE DA "A"

Minimum Sizing Criteria	Symbol	Site Area (acres)	Drainage Area (acres)	Qe required (inches)	Pe required (inches)	Pe provided (inches)	Notes
Water Quality Recharge Channel Protection Volume	(WQv) (Rev) (CPv)	1.12	0.51	0.00	0.00	1.00	ESD's onsite required volumes ESDv = 93 cf ESD's onsite provided volumes ESDv = 182 cf
Overbank Flood Protection (Qp10)	(Qp10)	1.12	Ex. =0.51 Prop. =0.51	N/a	N/a	N/a	Ex. Q10=0.4
							Prop. Q10=0.3
							Overbank flood protection has been met as the as DA "A" outfalls directly to a Tidal Outfall (Old Man Creek).
Extreme Flood Volume (Qf)		N/a	N/a				N/a

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6 DA "B" : Summary

STORMWATER MANAGEMENT DATA DA "B"

v1.1 / 2020

Project Table for Each Drainage Area

Permit Number	G02020290
Project Number	
Project Name	301 West Haven Road DA "B"
StructureAddress	301 West Haven Road DA "B"
Structure City	Severna Park
State	Maryland
Structure Zip	21146
Total Drainage Area (Acres)	0.61
RCN – Pre Construction	37
RCN – Post Construction	37
RCN – Woods	38
Total Number of BMPs	0
PE Required (see Note 1)	0"
PE Addressed (see Note 2)	0"
MD 8-Digit HUC (see Note 4)	02131001
USGS 12-Digit HUC	

DO NOT ERASE; DO NOT PRINT	
0	0
0	0
0	0
#REF!	0
Test	0

For Each Practice in the Drainage Area

STORM_ID	STRU_NAME	E, S, or A MDE BMP CLASS	MDE BMP TYPE	CONSTRUCTION PURPOSE	New development (NEWD), Redevelopment (REDE), or Restoration (REST) ON or OFF SITE	MDP Code LAND USE	DEVICE DRAINAGE AREA (acres)	IMPERVIOUS AREA DRAINING TO DEVICE (acres)	IMPERVIOUS ACRES RESTORED (See Note 3)	MD NORTH COORD (NAD83 - FT)	MD EAST COORD (NAD83 - FT)	WQV (cf) (See Note 5)	NEW Maintenance Responsibility
Blank – County Use													
Test													

NOTES

1 - Rainfall target (from Table 5.3, Design Manual pp.5.21-22) used to determine ESD goals and size practices (for new development or redevelopment). If practice is for restoration, then PE_REQ is 1inch.

2 - Rainfall addressed (using both ESD techniques and practices, and structural practices) by the BMPs within the drainage area

3 - Equals Impervious Area Draining to Device when PE_ADR = 1 inch (for restoration only)

4 - Maryland 8-Digit HUC (Hydrologic Unit Code) can be found by using the map at: https://data.maryland.gov/Energy-and-Environment/Maryland-s-8-Digit-Sub-Watersheds/e9i9-vuxg

5 - Water Quality volume, the smaller of the volume of the actual storage volume in the device or the volume from the 1-year 24-hour storm for the drainage area to the device ((2.7" x Rv x A)/12)

STORMWATER MANAGEMENT SUMMARY TABLE - DA "B"

Minimum Sizing Criteria	Symbol	Site Area (acres)	Drainage Area (acres)	Qe required (inches)	Pe required (inches)	Pe provided (inches)	Notes
Water Quality Recharge Channel Protection Volume	(WQv) (Rev) (CPv)	1.12	0.61	0.00	0.00	0.00	ESD's onsite required volumes ESDv = 0 cf ESD's onsite provided volumes ESDv = 0 cf
Overbank Flood Protection (Qp10)	(Qp10)	1.12	Ex. =0.61 Prop. =0.61	N/a	N/a	N/a	Ex. Q10=0.1 Prop. Q10=0.1 Overbank flood protection has been met as the proposed flow is the same as the existing flow.
Extreme Flood Volume (Qf)		N/a	N/a				N/a

3
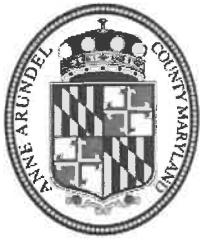
OFFICE OF PLANNING AND ZONING

CONFIRMATION OF PRE-FILE (2025-0022-P)

DATE OF MEETING: ___3/20/2025___

P&Z STAFF: _Sara Anzelmo, Kelly Krinetz, Jean Janvier_

APPLICANT/REPRESENTATIVE: _Scott Mielke / Matt Seiss, Anarex_ EMAIL: _matt@anarex.com_

SITE LOCATION: _301 West Haven Drive, Severna Park_ LOT SIZE: _1.18 acre_ ZONING: _R5_

CA DESIGNATION: _LDA_ BMA: _Part_ or BUFFER: _Part_ APPLICATION TYPE: _CA Variance_

The applicant proposes to tear down the existing dwelling and associated improvements and to redevelop the property. The proposed house would be 2 stories tall (35'+/-) and 30' wide by 68' deep with a patio and pool. The proposed house would be no closer to the water than the current house. The Eastern portion of the site is in the Buffer Modification Area, the Western part of the site is not buffer modified. A portion of the house, walkways and driveways would be within the expanded buffer, necessitating a variance. There have been several prior variances approved for this site. The current proposal does not match either of the two previously approved variances.

Prior variances: 2010-0034-V, 2017-0157-V, 2021-0119-V (time), 2023-0052-V (time)
Prior buffer map amendment: 2018-0291-C

COMMENTS

The **Critical Area Team** commented that the applicant will need to demonstrate full compliance with the variance approval standards with the variance application, particularly whether this is the minimum necessary to afford the applicant relief. From a BMA perspective, the placement of the pool within the footprint of the existing dwelling would be permitted; however, doing so on this site results in the proposed home/garage being pushed further into the expanded buffer. In addition, the driveway/parking area is large and could be reduced in order to reduce disturbance to the buffer. The site is difficult and is encumbered with multiple features; however, it does appear that there could be some revision to the layout that would reduce the impact.

The **Zoning Administration Section** commented that the variance site plan should label the dimensions and height of proposed structures. Zoning Admin concurs with the Critical Area Team's assessment regarding opportunities to minimize the environmental impacts. The applicant is reminded that, in order for a critical area variance to be approved, the applicant must demonstrate and the Hearing Officer must find that the proposal complies with each and every variance standard provided under Section 18-16-305(b) and (c).

The **Engineering Division of the Office of Inspections and Permits** provided the following comments:

1. On the Plan View on Sheet 4 on the grading plans, show the 100-foot Tidal Buffer Line. A label is shown on the plans, but there is no line indicating the location of this feature.
2. On the Plan Views on Sheets 3 and 4 of the grading plans, remove any features from the legend that are not shown in the plan view, such as existing water, existing sewer and existing and proposed water meter.
3. Add the proposed spot elevations from the ESD Plan on Sheet 5 to the Plan View on Sheet 4.
4. The grading shown on the Plan View of Sheet 4 of the grading plans must be consistent with that of the ESD Plan on Sheet 5 of the grading plans.
5. There may be an issue with the West Haven Dr Right of Way line overlapping the shared property line of 301 West Haven Drive and 303 West Haven Drive.
6. The grading permit number found on the charts entitled "Stormwater Management Data 'A'" and "Stormwater Management Data 'B'" on Sheet 5 of the grading plans is entirely unrelated to this prefile application. Please show the correct associated grading permit number, if there is one.

INFORMATION FOR THE APPLICANT

Section 18-16-201 (b) Pre-filing meeting required. Before filing an application for a variance, special exception, or to change a zoning district, to change or remove a critical area classification, or for a variance in the critical area or bog protection area, an applicant shall meet with the Office of Planning and Zoning to review a pre-file concept plan or an administrative site plan. For single lot properties, the owner shall prepare a simple site plan as a basis for determining what can be done under the provisions of this Code to avoid the need for a variance.

*** A preliminary plan checklist is required for development impacting environmentally sensitive areas and for all new single-family dwellings. A stormwater management plan that satisfies the requirements of the County Procedures Manual is required for development impacting environmentally sensitive areas OR disturbing 5,000 square feet or more. State mandates require a developer of land provide SWM to control new development runoff from the start of the development process.

Section 18-16-301 (c) Burden of Proof. The applicant has the burden of proof, including the burden of going forward with the production of evidence and the burden of persuasion, on all questions of fact. The burden of persuasion is by a preponderance of the evidence.
A variance to the requirements of the County's Critical Area Program may only be granted if the Administrative Hearing Officer makes affirmative findings that the applicant has addressed all the requirements outlined in Article 18-16-305. Comments made on this form are intended to provide guidance and are not intended to represent support or approval of the variance request.