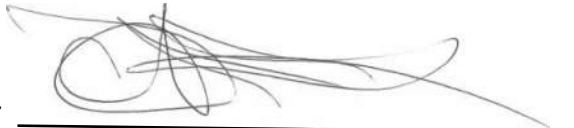


STROMWATER MANAGEMENT REPORT FOR FORREST VIEW ESTATES

*Preliminary Subdivision
Block 116, Lot 47
239 Mountainside Roads
Mendham Township, NJ 07945*

April, 2023

Prepared by:



Anthony A. Mortezaei, P.E., P.P.

CERTIFIED ENGINEERING OF NEW JERSEY

6 Old Farmstead Road

Chester, NJ 07930

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Pashaconstructioncorp.com

Appendices

Appendix A: Drainage and Grading Plan (DA Map)

Appendix B: Peak Flow Volume Calculations

Appendix C: Dry Well Analyses

**STROMWATER MANAGEMENT
REPORT FOR
FORREST VIEW ESTATES**

The existing site located at 239 Mountainside Road, Block 47 Lot 116 is a wooded tract of land approximately 7.496-acres. The site is in the Township of Mendham, Morris County NJ. Current site is zoned R3 Residential single family. The entire tract is proposed to be sub-divided into two lots zoned as R3, three-acre single family. A Preliminary Minor Subdivision Application is being requested from the Township of Mendham Planning Board. This report and attached calculations are in support of the application.

The site is located in the Highlands Planning Area. Based on NJDEP Geo-Web Mapping, there are no environmentally sensitive areas adjacent to or onsite. There are no stream corridors, wetlands, or wetlands buffer on the site. The site is located in the Skylands, but there is no T&E Species or habitats and there are no timing restrictions for the removal of trees.

The information on the site is as follows:

- 1.) The property is located in the Highlands Planning Area.
- 2.) The site does not lie in a Flood Hazard Area or associated Riparian Zone.
- 3.) There are no wetlands, streams and/or open bodies of water (C1 waters) on site, nor is the property located in any transition area or 300-foot buffer to an environmentally sensitive area.
- 4.) There is a small Buffer Area Easement located to the Northwest corner. It is a 300-foot Riparian Zone Limit from the adjacent Lot 49, existing pond. The LOI was extended, reference NJDEP FWW, LOI File No. 1419-15-0003.1 (FWW-150002). A copy has been submitted. The proposed project will not impact the buffer and it will be a deed restricted area.
- 5.) There are no Threatened or Endangered (T&E) species on site. Skylands indicate Wood Thrush, which is not listed as a T&E and requires no timing restrictions.
- 6.) The area does not contain any environmentally sensitive habitats.

In addition to the NJDEP site, we also obtained Site Soils information from the USDA NRCS soils map and report and the site is mostly composed of gravely sandy loam, Hydrologic Soil Group B. Depth to ground water is anticipated to be over 80-inches or about 7-feet. Detailed borings and test pits were taken between February and March of 2020, by Van Cleef Engineering, the information has been previously submitted under separate cover.

We are proposing two lots: Lot 1.01 = 3.607-acres and Lot 1.02 = 3.741-acres, with roadway ROW = 0.148-acres, for the approximate 7.50-acre site. This anticipated subdivision complies with current R3 zoning, 3-acres (min.) Single Family residential.

We feel the proposed improvements will be a benefit to the Township and surrounding community and will have a positive impact:

- 1.) The proposed development enhances the existing conditions of the site, by cleaning the site, removing the existing deteriorated house and barn and removal of debris left over at the site.
- 2.) The 3-acre zoning is in compliance with local zoning.
- 3.) The proposed development due to the natural landscape contains almost no critical slopes. This will minimize earthwork and disturbance to the natural landscape.
- 4.) The site soils are Type B soils which will help in percolation of stormwater. We anticipate the use of dry wells, to recharge roof runoff and grass/vegetated swales with stones pocket to recharge the stormwater in compliance with the Municipal drainage ordinances.
- 5.) The proposed development will enhance the existing Neighborhood with its proposed architectural integrity in compliance with surrounding neighboring properties.

Existing Conditions:

The existing project site is wooded with predominant Type B Soil. Sheet flow from the site runs in a north south direction, with portions of the site near Mountainside Road flowing to the south west. Water sheet flows across Mountainside Road, towards the south east, to adjacent woods. Water also sheets flows across the site towards the adjacent property to the south east, and across the site towards the adjacent wooded property on the east side.

There are no existing inlets or drainage collection systems on site or in the vicinity of the site. Water flows along Mountainside Road uncontrolled.

Proposed Conditions:

The existing hydrologic flow patterns will remain undisturbed. The site grading will match existing grades and contours. Roof runoff from the proposed dwellings will be directed to Dry Wells which will allow for the runoff to recharge back into the sandy soils. As required 3-inches of runoff from the roof areas will be captured and recharged. Overflows will be allowed to sheet flow back to the natural woods, following natural flow patterns. The proposed sizes and number of Dry wells will provide for a greater storage volume than the volume of runoff required to be captured, resulting in no net increase in peak runoff volumes. The additional volume provided, results in a reduced peak volume, below predeveloped conditions.

Runoff from the proposed driveway and from the parking areas in front of the garages will be captured in grass/vegetated swales and allowed to recharge. Overflow from the swales will sheet flow and discharge controlled runoff downstream following the natural flow patterns back to wooded areas and ultimately to Mountainside Road. The proposed length of the swales at each driveway will provide for a greater peak storage volume than the volume of runoff required to be captured, resulting in no net increase in peak runoff volumes. The additional volume provided, results in a reduced peak volume, below predeveloped conditions. The vegetated swales will allow for treatment of runoff and will allow the WQ storm volume and up to the 100-year Peak inflow Volume to recharge back into the soils.

Detailed calculations are provided in Appendices. A Drainage and Grading Plan, showing the drainage areas of existing impervious surfaces to be removed, and proposed new impervious is provided in **Appendix A**. The table below provides a summary of the areas.

IMPERVIOUS AREAS	LOT 1.01	LOT 1.02
PROP. IMP. DRIVEWAY	4,638 SF	1,525 + 2,934 = 4,459 SF
DRIVEWAY AREA (35'X52')	1,820 SF	1,820 SF
EXISTING IMP. TO BE REMOVED	0.000 SF	-7,635 SF
TOTAL	6,458 SF	-1,356 SF
TOTAL NET NEW IMPERVIOUS (MVS) = 5,102 SF OR 0.117 ACRES		

Calculations to estimate the Peak Inflow Volumes and storage volumes provided in the grass/vegetated swales are provided in **Appendix B**. The tables below provide a summary of the peak outflow volumes and the storage provided, resulting in a reduced peak outflow volume.

SUMMARY PEAK OUTFLOW VOLUMES FORREST VIEW ESTATES LOT 1.01				
LOT	FREQ (YRS)	PRE (AC-FT)	POST (AC-FT)	DIFF (CU-FT)
1.01	WQ	391	0	391
1.01	100	444	1293	849
Storage Volume Require is the greater of the Two				849
1.02	WQ	0	0	0
1.02	100	0	1	1
Storage Volume Require is the greater of the Two				1
TOTAL All MVS Surfaces				849

TOT VOL. = SWALES (1.01) 564 CU-FT + SWALE (1.02) 564 = 1,128-CUFT
REQUIRED LOT 1.01 849 CU-FT + 1.02 0.0 CU-FT = 849-CUFT
NO DRY-WELLS NEEDED STORAGE IN SWALES > 279-CUFT REDUCTION

Dry-Wells: To comply with the SWM rules “Dry-Wells” will be used to capture and infiltrate roof runoff. The dry wells will be sized to capture 3-inches of surface runoff from the roof areas. Roof runoff will be collected from the roof leaders and discharged into the Dry wells. Assuming roof area is approximately 5,000-sf. Each house will have approximately 13 Dry wells, about 6-feet in diameter, about 4-feet deep, and can hold approximately 153-cft of water. Since the roof is considered clean runoff, we can directly recharge the flows. Three inches of direct runoff over

the surface area yields approximately 1,250-cft of water for the entire roof area. To capture and hold this volume the proposed 13 dry-wells can hold approximately 1,989-cft. Additional Dry wells are provided for excess storage and to help reduce peak outflow volumes. Detailed Dry Well analysis is provided in **Appendix C**.

Soil Erosion and Sediment Control: The proposed project activities will exceed 5,000-sf of disturbance. A Soil Erosion Plan, Details and Notes are provided with the Minor Site Plans. An application has been made to the Morris County Soil Conservation District for review and certification of plans.

Summary / Conclusion

The proposed improvements result in no net increase in peak runoff volumes and peak runoff, by holding back and infiltrating the increase in volume. The post developed runoff is reduced by infiltration and by increasing the Tc paths and overall timing. Flows are discharged back to the natural wooded areas to remain and at the same locations as they do today, maintaining existing hydrologic flow patterns. The grass/vegetated swales reduce the flows and enhance ground water recharge and quality, while reducing the post developed volumes and flow quantities below predeveloped, resulting in no impacts to water quality, quantity and recharge, or impacts to environmentally sensitive areas and the surrounding community.

Appendix A

Drainage and Grading Plan (DA Map)

IMPERVIOUS AREAS	LOT 1.01	LOT 1.02
PROP. IMP. DRIVEWAY	4,638 SF	1,525 + 2,934 = 4,459 SF
DRIVEWAY AREA (35'X52')	1,820 SF	1,820 SF
EXISTING IMP. TO BE REMOVED	0.000 SF	-7,635 SF
TOTAL	6,458 SF	-1,356 SF
TOTAL NET NEW IMPERVIOUS (MVS) = 5,102 SF OR 0.117 ACRES		

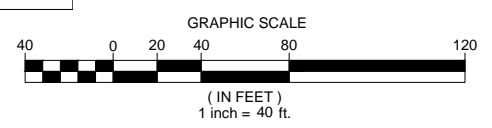
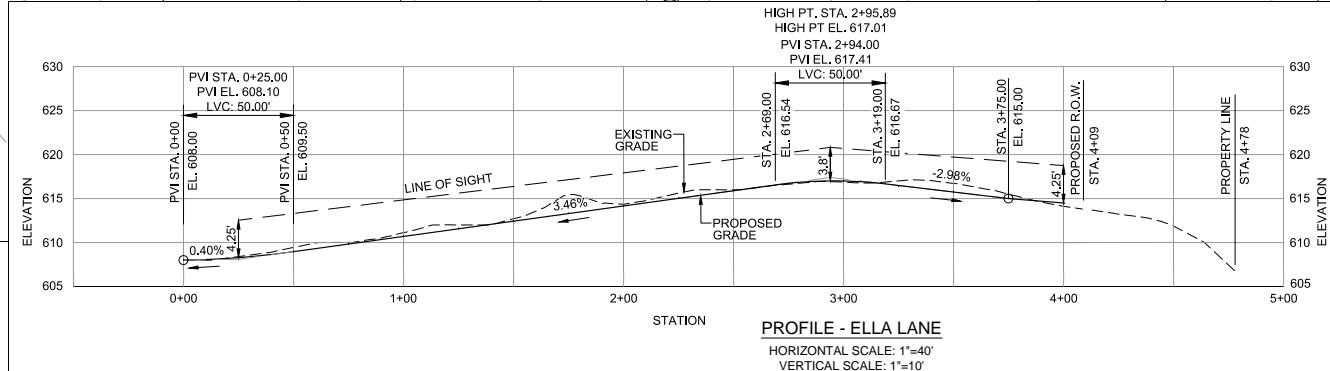
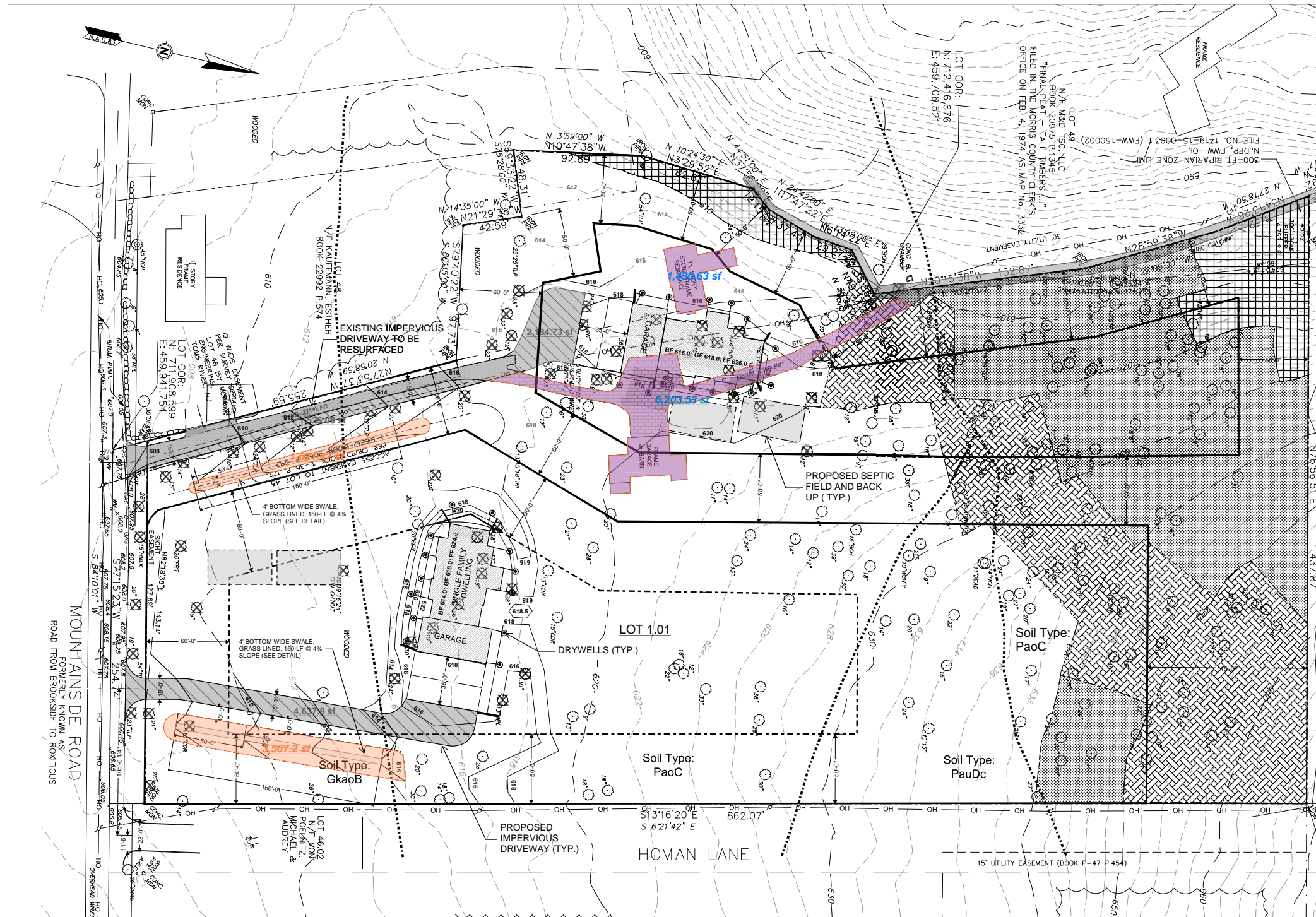
TABULATION OF CRITICAL SLOPE AREAS

LAND SLOPE SYMBOL	CATEGORY (%)	AREA (ACRES)	MAXIMUM ALLOWABLE DISTURBANCE (%)	MAXIMUM ALLOWABLE DISTURBANCE (ACRES)	PROPOSED DISTURBANCE (ACRES)	VARIANCE REQUIRED?
[Symbol]	0-10	5.2046	100%	5.2046	0.000	NO
[Symbol]	10-15	0.9779	25%	0.2445	0.000	NO
[Symbol]	15-25	1.0534	15%	0.1580	0.000	NO
[Symbol]	25+	0.2597	5%	0.0130	0.000	NO
TOTAL DISTURBANCE		7.4956	N/A	5.6201	0.000	NO

*SLOPES CALCULATED BETWEEN 2' CONTOURS.

NOTES:

- SOIL TYPE "Gkaob" IS GLADSTONE GRAVELLY LOAM, 3 TO 8 PERCENT SLOPES. USDA TEXTURES RANGED FROM GRAVELLY TO SANDY WITH A HYDROLOGIC SOIL GROUP OF B.
 TYPICALLY PROFILE
 Ap- 0 to 10in: GRAVELLY LOAM
 Bt1- 10 to 22in: SANDY CLAY LOAM
 Bt2- 22 to 37in: LOAM
 C- 22 to 66in: SANDY LOAM
 R- 66 to 76in: BEDROCK
 PROPERTY AND QUANTITIES
 DEPTH TO RESTRICTIVE FEATURES: 60 TO 80in TO LITHIC BEDROCK
 NATURAL DRAINAGE CLASS: WELL DRAINED
 DEPTH TO WATER TABLE: MORE THAN 80in
- SOIL TYPE "PaoC" IS PARKER GRAVELLY SANDY LOAM, 3 TO 15 PERCENT SLOPES. USDA TEXTURE IS VERY GRAVELLY TO VERY SANDY WITH A HYDROLOGIC SOIL **GROUP B**
 TYPICALLY PROFILE
 A- 0 to 5in: VERY GRAVELLY SANDY LOAM
 Bw1- 5 to 20in: VERY GRAVELLY SANDY LOAM
 Bw2- 20 to 31in: VERY GRAVELLY SANDY LOAM
 C- 31 to 60in: VERY GRAVELLY SANDY LOAM
 PROPERTY AND QUANTITIES
 DEPTH TO RESTRICTIVE FEATURES: MORE THAN 80in
 NATURAL DRAINAGE CLASS: SOMEWHAT EXCESSIVELY DRAINED
 DEPTH TO WATER TABLE: MORE THAN 80in
- SOIL TYPE "PauDc" IS PARKER-GLADSTONE COMPLEX, 15 TO 25 PERCENT SLOPES. USDA TEXTURES IS VERY GRAVELLY TO VERY SANDY WITH A HYDROLOGIC SOIL **GROUP B**
 TYPICALLY PROFILE
 A- 0 to 5in: VERY GRAVELLY SANDY LOAM
 Bw1- 5 to 20in: VERY GRAVELLY SANDY LOAM
 Bw2- 20 to 31in: VERY GRAVELLY SANDY LOAM
 C- 31 to 60in: VERY GRAVELLY SANDY LOAM
 PROPERTY AND QUANTITIES
 DEPTH TO RESTRICTIVE FEATURES: MORE THAN 80in
 NATURAL DRAINAGE CLASS: SOMEWHAT EXCESSIVELY DRAINED
 DEPTH TO WATER TABLE: MORE THAN 80in
- SOIL TYPE "PauCc" IS PARKER-GLADSTONE COMPLEX, 0 TO 15 PERCENT SLOPES. USDA TEXTURE IS VERY GRAVELLY SANDY LOAM WITH A HYDROLOGIC SOIL **GROUP B**
 TYPICALLY PROFILE
 A- 0 to 5in: VERY GRAVELLY SANDY LOAM
 Bw1- 5 to 20in: VERY GRAVELLY SANDY LOAM
 Bw2- 20 to 31in: VERY GRAVELLY SANDY LOAM
 C- 31 to 60in: VERY GRAVELLY SANDY LOAM
 PROPERTY AND QUANTITIES
 DEPTH TO RESTRICTIVE FEATURES: MORE THAN 80in
 NATURAL DRAINAGE CLASS: SOMEWHAT EXCESSIVELY DRAINED
 DEPTH TO WATER TABLE: MORE THAN 80in



DATE	REVISIONS	BY
4-17-23	ADDED GRASS SWALE DETAIL	RM
4-1-2023	REMOVED RAINGARDENS	RM
4-1-2023	REVISED LOT 1 HSE LOCATION	RM



CERTIFIED ENGINEERING OF NJ
 6 OLD FARMSTEAD ROAD
 CHESTER NJ 07930
 TEL. (908) 879-2663, FAX. (908) 879-9880
 CERTIFICATE OF AUTHORIZATION - 24GA28095000

PROJECT No: _____
 DATE: March 14, 2023
 SCALE: 1" = 40'
 CHECKED BY: RAM
 DRAFTED BY: DC

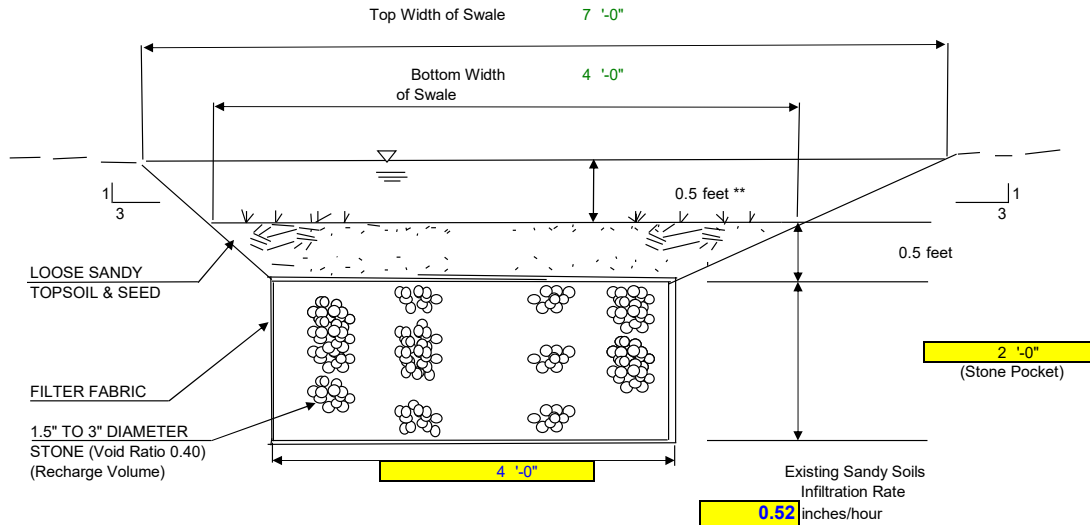
Anthony A. Mortezaei
ANTHONY A MORTEZAI, PE, PP
 NJ LICENSE NO. 33920

SHEET: GRADING, DRAINAGE PLAN AND PROFILE
 LOT 47 - BLOCK 116
 239 MOUNTAIN SIDE ROAD
 TOWNSHIP OF MENDHAM
 MORRIS COUNTY NEW JERSEY

5
9
OF

Appendix B

Peak Flow Volume Calculations



RECHARGE SWALES

(N.T.S.)

TOTAL LENGTH OF PROPOSED SWALE LOT 1.01						TIME TO RECHARGE	
Percent Slope	Length of Swale	Recharge Volume	** Storage Volume	* Combined Volume	Combined Volume	SWALE VOLUME	
(%)	(ft.)	(cu-ft.)	(cu-ft.)	(cu-ft.)	(ac-ft.)	Bott. Swale	Bott Stones
						(Hours)	(Hours)
0.0	150	511	413	923	0.02	23.1	69.2
0.3	167	511	708	1219	0.03	23.1	69.2
0.5	100	511	425	936	0.02	23.1	69.2
1.0	50	511	213	723	0.02	23.1	69.2
1.5	33	511	142	652	0.01	23.1	69.2
3.5	14	511	61	572	0.01	23.1	69.2
4.0	13	511	53	564	0.01	23.1	69.2
5.0	10	511	43	553	0.01	23.1	69.2

Recharge Time (hours) per Rate	
*T=	69.2
**t=	23.1
***t=	46.2

*(T) Total Recharge Time.
 **(t) Time to store W.S.E. depth, to bottom of SWALE
 ***(t) Time to recharge stone pocket

Soil Type	SCS Soil Group	1. Minimum Infiltration Rate (fc = In./hr.)
Sand	A	8.27
Loamy Sand	A	2.41
Sandy Loam	B	1.02
Loam	B	0.52
Silt Loam	C	0.27

Average Slope at each Swlae for Lots 1.01 and 1.02 = 4.0%
 storage Volume Provide per 150-lf of Swale is Approx. 564 cu-ft
Total Storage Volume Provide for both Lots = 1,128 cu-ft

LOT 1.01 150-LF SWALES @ 4%=	564 cu-ft
LOT 1.02 150-LF SWALES @ 4%=	564 cu-ft

- Data taken from "A Guide to Stormwater Management Practices in New Jersey," April 1986
- Max. Depth that can drain completely after given time period. Clay soils are not Feasible for infiltration.

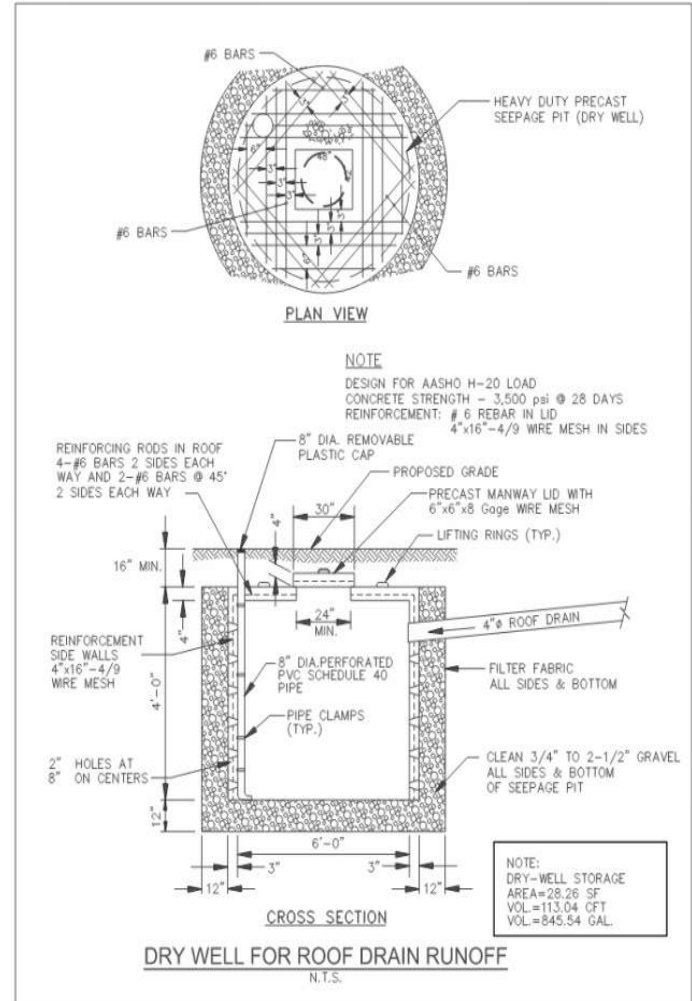
SUMMARY PEAK OUTFLOW VOLUMES FORREST VIEW ESTATES LOT 1.01				
LOT	FREQ (YRS)	PRE (AC-FT)	POST (AC-FT)	DIFF (CU-FT)
1.01	WQ	391	0	391
1.01	100	444	1293	849
Storage Volume Require is the greater of the Two				849
1.02	WQ	0	0	0
1.02	100	0	1	1
Storage Volume Require is the greater of the Two				1
TOTAL All MVS Surfaces				849

TOT VOL. = SWALES (1.01) 564 CU-FT + SWALE (1.02) 564 = 1,128-CUFT
REQUIRED LOT 1.01 849 CU-FT + 1.02 0.0 CU-FT = 849-CUFT
NO DRY-WELLS NEEDED STORAGE IN SWALES > 279-CUFT REDUCTION

Dry Well Size		Depth of Sotrage
6 ft Dia. Dry well		4 ft Storage Area
Area of Well =	28.26 sf	
Storage Vol Well =	113.04 Cubic Feet	

Stone Pocket 2-foot Diameter Around Well		Depth of Sotrage
		4 ft Storage Area
Area of Stones =	21.98 sf	
Storage Vol Stones =	35.168 Cubic Feet	
Bottom Vol Stones =	4.8 Cubic Feet	
Tot Vol Stones =	39.968 Cubic Feet	

Tot Vol Dry Well =	153.0 Cubic Feet
Prop Wells Lot 1.01	6 Dry Wells (USE STORAGE VOL. IN SWALES)
Prop Wells Lot 1.02	0 Dry Wells



SUMMARY OF PEAK OUTFLOW VOLUMES
FORREST VIEW ESTATES
POST DEVELOPED CONDITION LOT 1.01

0.12	Proposed Area (acres)
0.99	Proposed Cw
0.12	Proposed AC
0.625	inches per hour
0.1	Proposed Q (cfs)
0.50	Time to Peak (hrs.)

LOC	AREA	C
PAVED	0.117	0.99
GRASS	0	0.25
WOODS	0	0.25



Storage Volume Required Water Quality Storm

Volume =	391 cubic feet
Volume =	0.01 acre-feet

SUMMARY OF PEAK OUTFLOW VOLUMES
FORREST VIEW ESTATES
POST DEVELOPED CONDITION LOT 1.02

0.00	Proposed Area (acres)
0.99	Proposed Cw
0.00	Proposed AC
0.625	inches per hour
0.0	Proposed Q (cfs)
0.50	Time to Peak (hrs.)

LOC	AREA	C
PAVED	0.0001	0.99
GRASS	0	0.25
WOODS	0	0.25



Storage Volume Required Water Quality Storm

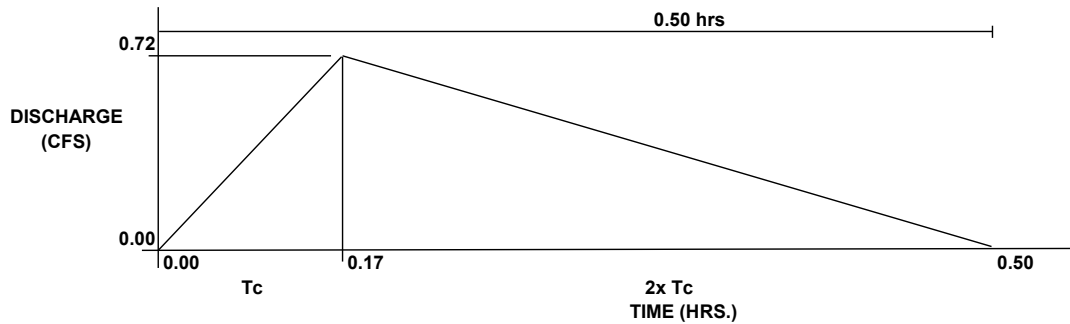
Volume =	0 cubic feet
Volume =	0.00 acre-feet

**SUMMARY OF PEAK OUTFLOW VOLUMES
FORREST VIEW ESTATES
POST DEVELOPED CONDITION LOT 1.01**

IMPERVIOUS AREAS	LOT 1.01	LOT 1.02
PROP. IMP. DRIVEWAY	4,638 SF	1,525 + 2,934 = 4,459 SF
DRIVEWAY AREA (35'x52')	1,820 SF	1,820 SF
EXISTING IMP. TO BE REMOVED	0.000 SF	-7,635 SF
TOTAL	6,458 SF	-1,356 SF
TOTAL NET NEW IMPERVIOUS (MVS) = 5,102 SF OR 0.117 ACRES		

COVER	AREA	C
PAVED	0.117	0.99
GRASS	0	0.25
WOODS	0	0.34

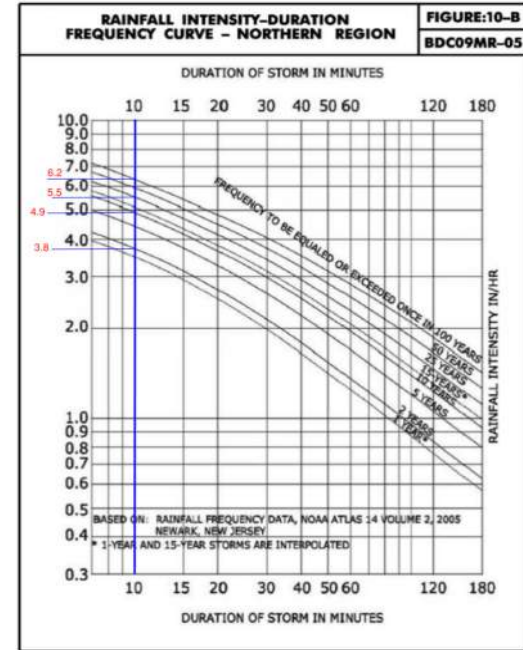
0.12	Proposed Area (acres)
0.99	Proposed Cw
0.12	Proposed AC
6.2	inches per hour 100-Yr Storm
0.17	Time to Peak (hrs.)
0.72	Proposed Q (cfs)



Storage Volume Required

Volume =	1293 cubic feet
Volume =	0.03 acre-feet

wqvolrat.xls



NJDOT Design Manual - Roadway
Drainage Design

10-22

**Table 10-4
Recommended Coefficient of Runoff Values
for Various Selected Land Uses**

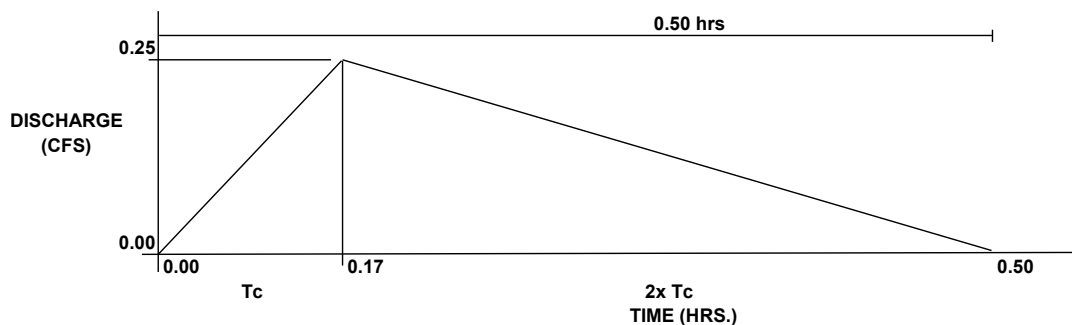
Land Use	Description	Hydrologic Soils Group			
		A	B	C	D
Cultivated Land	without conservation treatment	0.49	0.67	0.81	0.88
	with conservation treatment	0.27	0.43	0.67	0.67
Pasture or Range Land	poor condition	0.38	0.63	0.78	0.84
	good condition	---	0.25	0.51	0.65
Meadow	good condition	---	---	0.41	0.61
	thin stand, poor cover, no mulch	---	0.34	0.59	0.70
Wood or Forest Land	good cover	---	---	0.45	0.59
	Open Spaces, Lawns, Parks, Golf Courses, Cemeteries	---	0.25	0.51	0.65
Good Condition	grass cover on 75% or more	---	0.45	0.63	0.74
	Fair Condition	---	0.45	0.63	0.74
Commercial and Business Area	85% impervious	0.84	0.90	0.93	0.96
	Industrial Districts	0.67	0.81	0.88	0.92
Residential	average % impervious				
	Average Lot Size (acres)				
1/8	65	0.59	0.76	0.86	0.90
	38	0.29	0.55	0.70	0.80
	30	---	0.49	0.67	0.78
	25	---	0.45	0.65	0.76
	20	---	0.41	0.63	0.74
Paved Areas	parking lots, roofs, driveways, etc.	0.99	0.99	0.99	0.99
	Streets and Roads				
paved with curbs & storm sewers	gravel	0.99	0.99	0.99	0.99
	sewers	0.57	0.76	0.84	0.88
	gravel	0.49	0.69	0.80	0.84
	dirt	0.49	0.69	0.80	0.84

**SUMMARY OF PEAK OUTFLOW VOLUMES
FORREST VIEW ESTATES
PRE DEVELOPED CONDITION LOT 1.01**

IMPERVIOUS AREAS	LOT 1.01	LOT 1.02
PROP. IMP. DRIVEWAY	4,638 SF	1,525 + 2,934 = 4,459 SF
DRIVEWAY AREA (35'X52')	1,820 SF	1,820 SF
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TOTAL	6,458 SF	-1,356 SF
TOTAL NET NEW IMPERVIOUS (MVS) = 5,102 SF OR 0.117 ACRES		

COVER	AREA	C
PAVED	0.000	0.99
GRASS	0	0.25
WOODS	0.117	0.34

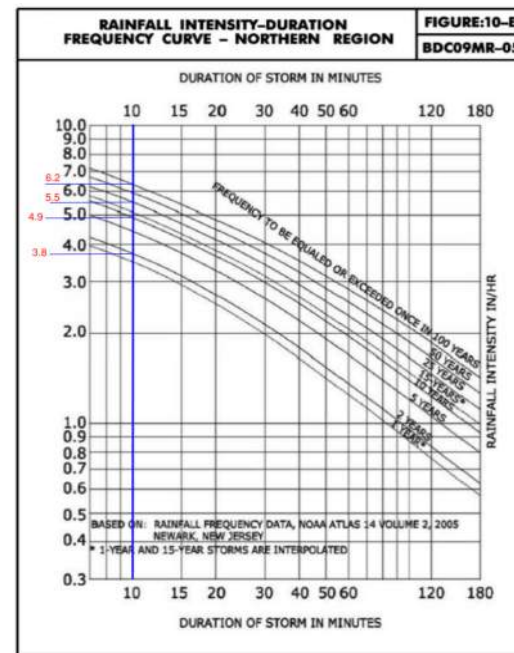
0.12	Proposed Area (acres)
0.34	Proposed Cw
0.04	Proposed AC
6.2	inches per hour 100-Yr Storm
0.17	Time to Peak (hrs.)
0.25	Proposed Q (cfs)



Storage Volume Required

Volume =	444 cubic feet
Volume =	0.01 acre-feet

wqvolrat.xls



NJDOT Design Manual - Roadway
Drainage Design

10-22

**Table 10-4
Recommended Coefficient of Runoff Values
for Various Selected Land Uses**

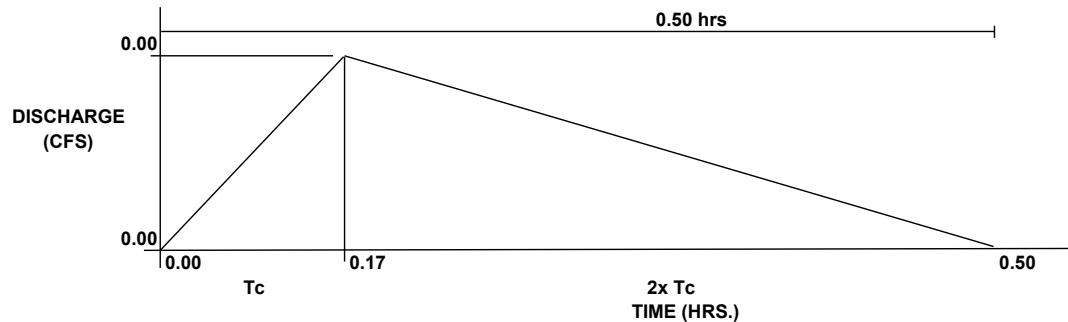
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		A	B	C	D	
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	with conservation treatment	0.27	0.43	0.67	0.67	
Pasture or Range Land	poor condition	0.38	0.63	0.78	0.84	
	good condition	---	0.25	0.51	0.65	
Meadow	good condition	---	---	0.41	0.61	
	thin stand, poor cover, no mulch	---	0.34	0.59	0.70	
Wood or Forest Land	good cover	---	---	0.45	0.59	
	Open Spaces, Lawns, Parks, Golf Courses, Cemeteries	---	0.25	0.51	0.65	
Good Condition	grass cover on 75% or more	---	0.45	0.63	0.74	
	Fair Condition	---	0.45	0.63	0.74	
Commercial and Business Area	85% impervious	0.84	0.90	0.93	0.96	
	Industrial Districts	0.67	0.81	0.88	0.92	
Residential	average % impervious					
	Average Lot Size (acres)					
1/8	65	0.59	0.76	0.86	0.90	
	38	0.29	0.55	0.70	0.80	
	1/3	30	---	0.49	0.67	0.78
	1/2	25	---	0.45	0.65	0.76
1	20	---	0.41	0.63	0.74	
	Paved Areas	0.99	0.99	0.99	0.99	
Streets and Roads	parking lots, roofs, driveways, etc.	0.99	0.99	0.99	0.99	
	paved with curbs & storm sewers	0.57	0.76	0.84	0.88	
	gravel	0.49	0.69	0.80	0.84	
	dirt	0.49	0.69	0.80	0.84	

**SUMMARY OF PEAK OUTFLOW VOLUMES
FORREST VIEW ESTATES
POST DEVELOPED CONDITION LOT 1.02**

IMPERVIOUS AREAS	LOT 1.01	LOT 1.02
PROP. IMP. DRIVEWAY	4,638 SF	1,525 + 2,934 = 4,459 SF
DRIVEWAY AREA (35'X52')	1,820 SF	1,820 SF
EXISTING IMP. TO BE REMOVED	0.000 SF	-7,635 SF
TOTAL	6,458 SF	-1,356 SF
TOTAL NET NEW IMPERVIOUS (MVS) = 5,102 SF OR 0.117 ACRES		

COVER	AREA	C
PAVED	0.000	0.99
GRASS	0	0.25
WOODS	0	0.34

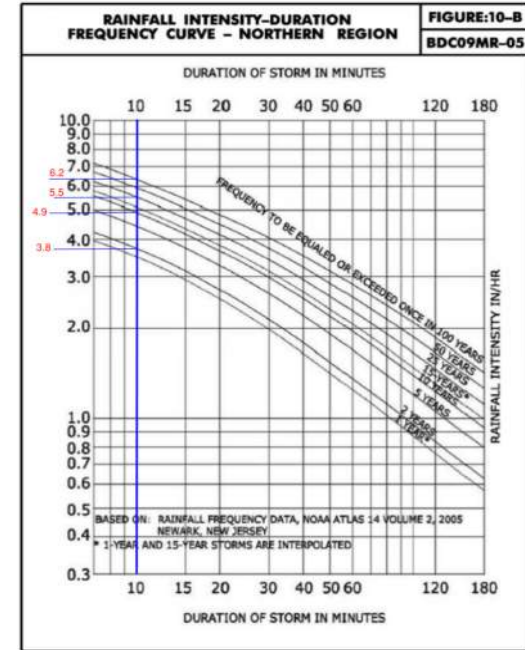
0.00	Proposed Area (acres)
0.99	Proposed Cw
0.00	Proposed AC
6.2	inches per hour 100-Yr Storm
0.17	Time to Peak (hrs.)
0.00	Proposed Q (cfs)



Storage Volume Required

Volume =	1 cubic feet
Volume =	0.00 acre-feet

wqvolrat.xls



NJDOT Design Manual - Roadway
Drainage Design

10-22

**Table 10-4
Recommended Coefficient of Runoff Values
for Various Selected Land Uses**

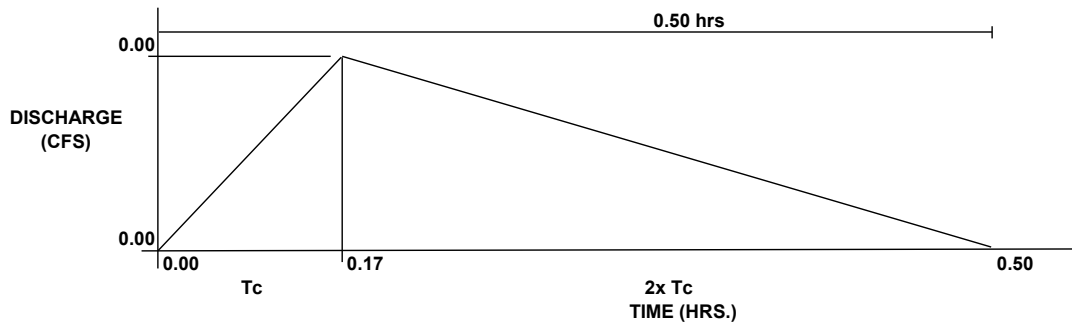
Land Use	Description	Hydrologic Soils Group			
		A	B	C	D
Cultivated Land	without conservation treatment	0.49	0.67	0.81	0.88
	with conservation treatment	0.27	0.43	0.67	0.67
Pasture or Range Land	poor condition	0.38	0.63	0.78	0.84
	good condition	---	0.25	0.51	0.65
Meadow	poor condition	---	---	0.41	0.61
	good condition	---	---	0.41	0.61
Wood or Forest Land	thin stand, poor cover, no mulch	---	0.34	0.59	0.70
	good cover	---	---	0.45	0.59
Open Spaces, Lawns, Parks, Golf Courses, Cemeteries	Good Condition	---	0.25	0.51	0.65
	Fair Condition	---	0.45	0.63	0.74
	grass cover on 75% or more	---	0.25	0.51	0.65
Commercial and Business Area	85% impervious	0.84	0.90	0.93	0.96
	72% impervious	0.67	0.81	0.88	0.92
Industrial Districts	average % impervious	---	---	---	---
	Average Lot Size (acres)	---	---	---	---
Residential	1/8	0.59	0.76	0.86	0.90
	1/4	0.29	0.55	0.70	0.80
	1/3	30	---	0.49	0.67
	1/2	25	---	0.45	0.65
	1	20	---	0.41	0.63
Paved Areas	parking lots, roofs, driveways, etc.	0.99	0.99	0.99	0.99
	Streets and Roads	0.99	0.99	0.99	0.99
Streets and Roads	paved with curbs & storm sewers	0.57	0.76	0.84	0.88
	gravel	0.49	0.69	0.80	0.84
	dirt	---	---	---	---
	---	---	---	---	

**SUMMARY OF PEAK OUTFLOW VOLUMES
FORREST VIEW ESTATES
PRE DEVELOPED CONDITION LOT 1.02**

IMPERVIOUS AREAS	LOT 1.01	LOT 1.02
PROP. IMP. DRIVEWAY	4,638 SF	1,525 + 2,934 = 4,459 SF
DRIVEWAY AREA (35'X52')	1,820 SF	1,820 SF
EXISTING IMP. TO BE REMOVED	0.000 SF	-7,635 SF
TOTAL	6,458 SF	-1,356 SF
TOTAL NET NEW IMPERVIOUS (MVS) = 5,102 SF OR 0.117 ACRES		

COVER	AREA	C
PAVED	0.000	0.99
GRASS	0	0.25
WOODS	0.0001	0.34

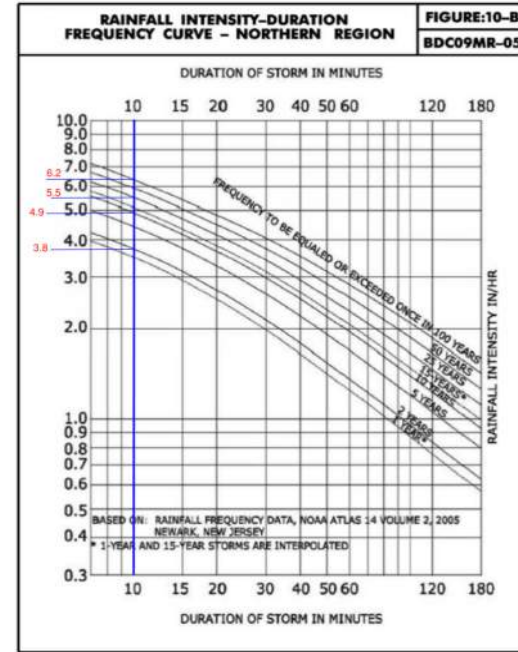
0.00	Proposed Area (acres)
0.34	Proposed Cw
0.00	Proposed AC
6.2	inches per hour 100-Yr Storm
0.17	Time to Peak (hrs.)
0.00	Proposed Q (cfs)



Storage Volume Required

Volume =	0 cubic feet
Volume =	0.00 acre-feet

wqvolrat.xls



NJDOT Design Manual - Roadway
Drainage Design

10-22

**Table 10-4
Recommended Coefficient of Runoff Values
for Various Selected Land Uses**

Land Use	Description	Hydrologic Soils Group				
		A	B	C	D	
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Meadow	poor condition	---	---	0.41	0.61	
	good condition	---	---	0.59	0.70	
Wood or Forest Land	thin stand, poor cover, no mulch	---	0.34	0.59	0.70	
	good cover	---	---	0.45	0.59	
Open Spaces, Lawns, Parks, Golf Courses, Cemeteries	Good Condition	---	0.25	0.51	0.65	
	Fair Condition	---	0.45	0.63	0.74	
		grass cover on 75% or more	---	0.45	0.63	0.74
	grass cover on 50% to 75%	---	0.45	0.63	0.74	
Commercial and Business Area	85% impervious	0.84	0.90	0.93	0.96	
Industrial Districts	72% impervious	0.67	0.81	0.88	0.92	
Residential Average Lot Size (acres)	average % impervious					
	1/8	65	0.59	0.76	0.86	0.90
	1/4	38	0.29	0.55	0.70	0.80
	1/3	30	---	0.49	0.67	0.78
	1/2	25	---	0.45	0.65	0.76
	2/3	20	---	0.41	0.63	0.74
	1	20	---	0.41	0.63	0.74
Paved Areas	parking lots, roofs, driveways, etc.	0.99	0.99	0.99	0.99	
Streets and Roads	paved with curbs & storm sewers	0.99	0.99	0.99	0.99	
	gravel	0.57	0.76	0.84	0.88	
	dirt	0.49	0.69	0.80	0.84	

Appendix C

Dry Well Analyses

