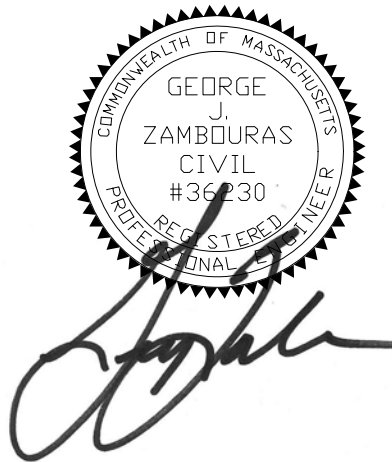# Stormwater Compliance Calculations

For

4 Thompson Lane

Topsfield, Massachusetts 01983

2, 10, & 100 Year Storm
24 Hour Duration

Date: March 6, 2017

_____

George J. Zambouras, P.E.
17 Noble Hill Road, Beverly, Massachusetts
(978) 922-0217

INTRODUCTION:

This report provides the post hydraulic analysis and sizing of stormwater infiltration devices proposed to mitigate the impacts of the impervious areas created in the development of the property located at 4 Thompson Lane, Topsfield MA.

The design of the stormwater system's components and the computation of the post development runoff rates and volumes are based on a hydraulic analysis performed utilizing "HydroCAD Stormwater Modeling Software" for storm events of 2, 10 and 100-year storm frequencies.

Sizing of the infiltration systems are based on achieving a no increase in runoff from impervious areas for all storm events.

SITE SOILS:

Site soils used in the calculations are based on test pits performed by others on April 29, 2013. Four test pits were taken in the vicinity of the proposed septic system and all four test indicated site soils consisted of sands. Each of the test pits also indicated estimated high ground water at depths of 96 inches to 112 inches.

Based on the test pit information the soil classification of Hydrologic Soil Group A is utilized in the hydraulic analysis.

Additionally the corresponding Rawls infiltration rate of 8.27 inches per hour for HSG A sands is utilized in modeling the infiltration rate of the proposed infiltration units.

INFILTRATION UNIT CALCULATION SUMMARY:

ROOF INFILTRATION UNITS:

To mitigate the effects of the dwelling, the dwellings roof runoff (sub-catchment 1S) is routed through a series of infiltration units (pond 3P) consisting of Cultec R-150 units. As indicated in the attached calculations ten (10) Cultec R-150 units are required to store and infiltrate all runoff from the roofs impervious surface for all storms events modeled.
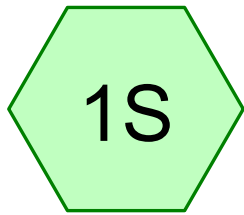
DRIVEWAY INFILTRATION TRENCH:

To mitigate the effects of the driveway, the driveways runoff (sub-catchment 2S) is routed through a stoned infiltration trench (pond 4P). As indicated in the attached calculations a stoned trench 75 feet in length having a width of 4 feet and a depth of 2.75 feet is required to store and infiltrate all runoff from the driveways impervious surface for all storms events modeled.

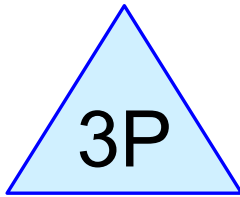| Calculation Summary				
Design Storm	Max. Discharge (CFS.)	Max. Volume (C-FT.)	Max. Discharge (CFS.)	Max. Volume (C-FT.)
	Roof Infiltration Pond-3	Roof Infiltration Pond-3	Driveway Infiltration Pond-4	Driveway Infiltration Pond-4
2 Yr.	0.0	0.0	0.0	0.0
10 Yr.	0.0	0.0	0.0	0.0
100 Yr.	0.0	0.0	0.0	0.0

HYDRAULIC CALCULATIONS
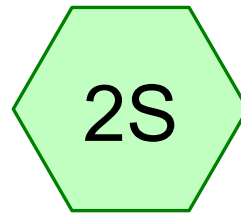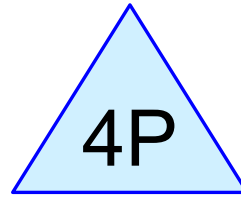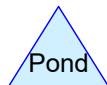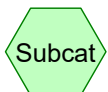
1S

House

3P

Roof Infiltration

2S

Driveway

4P

Driveway Infiltration

Subcat Reach Pond Link

4 Thompson

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
2,040	98	Paved parking, HSG A (2S)
3,065	98	Roofs, HSG A (1S)
5,105	**98**	**TOTAL AREA**

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: House　　　　　　Runoff Area=3,065 sf 100.00% Impervious   Runoff Depth>2.87"
Tc=6.0 min   CN=98   Runoff=0.21 cfs 732 cf

Subcatchment 2S: Driveway　　　　　Runoff Area=2,040 sf 100.00% Impervious   Runoff Depth>2.87"
Tc=6.0 min   CN=98   Runoff=0.14 cfs 487 cf

Pond 3P: Roof Infiltration　　　　　　Peak Elev=86.74' Storage=122 cf Inflow=0.21 cfs 732 cf
Discarded=0.06 cfs 732 cf   Primary=0.00 cfs 0 cf   Outflow=0.06 cfs 732 cf

Pond 4P: Driveway Infiltration　　　　　Peak Elev=85.42' Storage=51 cf Inflow=0.14 cfs 487 cf
Discarded=0.06 cfs 487 cf   Primary=0.00 cfs 0 cf   Outflow=0.06 cfs 487 cf

Total Runoff Area = 5,105 sf   Runoff Volume = 1,219 cf   Average Runoff Depth = 2.87"
0.00% Pervious = 0 sf   100.00% Impervious = 5,105 sf

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Summary for Subcatchment 1S: House

Runoff   =   0.21 cfs @ 12.09 hrs, Volume=   732 cf, Depth> 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
3,065	98	Roofs, HSG A
3,065		100.00% Impervious Area

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

Summary for Subcatchment 2S: Driveway

Runoff   =   0.14 cfs @ 12.09 hrs, Volume=   487 cf, Depth> 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
2,040	98	Paved parking, HSG A
2,040		100.00% Impervious Area

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

Summary for Pond 3P: Roof Infiltration

Inflow Area =   3,065 sf,100.00% Impervious, Inflow Depth > 2.87"   for 2-Year event
Inflow   =   0.21 cfs @ 12.09 hrs, Volume=   732 cf
Outflow   =   0.06 cfs @ 11.85 hrs, Volume=   732 cf, Atten= 70%, Lag= 0.0 min
Discarded =   0.06 cfs @ 11.85 hrs, Volume=   732 cf
Primary   =   0.00 cfs @   0.00 hrs, Volume=   0 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 86.74' @ 12.41 hrs   Surf.Area= 320 sf   Storage= 122 cf

Plug-Flow detention time= 9.4 min calculated for 730 cf (100% of inflow)
Center-of-Mass det. time= 9.2 min (765.9 - 756.6)

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Volume	Invert	Avail.Storage	Storage Description
#1A	86.00'	240 cf	**17.75'W x 18.00'L x 2.54'H Field A**
			812 cf Overall - 212 cf Embedded = 600 cf x 40.0% Voids
#2A	86.50'	212 cf	**Cultec R-150** x 10 Inside #1
			Effective Size= 29.8"W x 18.0"H => 2.65 sf x 7.50'L = 19.9 cf
			Overall Size= 33.0"W x 18.5"H x 8.50'L with 1.00' Overlap
			Row Length Adjustment= +1.00' x 2.65 sf x 5 rows
#3	88.53'	1 cf	**0.50'D x 1.75'H Vertical Cone/Cylinder** x 4
		453 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**4.0" Horiz. Orifice/Grate X 4.00** C= 0.600
			Limited to weir flow at low heads
#2	Discarded	86.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.06 cfs @ 11.85 hrs HW=86.05' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=86.00' (Free Discharge)
└─**1=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 4P: Driveway Infiltration

Inflow Area =		2,040 sf,100.00% Impervious, Inflow Depth > 2.87" for 2-Year event				
Inflow	=	0.14 cfs @	12.09 hrs,	Volume=	487 cf	
Outflow	=	0.06 cfs @	11.95 hrs,	Volume=	487 cf,	Atten= 58%, Lag= 0.0 min
Discarded	=	0.06 cfs @	11.95 hrs,	Volume=	487 cf	
Primary	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf	

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 85.42' @ 12.29 hrs   Surf.Area= 300 sf   Storage= 51 cf

Plug-Flow detention time= 3.9 min calculated for 486 cf (100% of inflow)
Center-of-Mass det. time= 3.8 min (760.4 - 756.6)

Volume	Invert	Avail.Storage	Storage Description
#1	85.00'	330 cf	**4.00'W x 75.00'L x 2.75'H Prismatoid**
			825 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	85.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	87.05'	**10.0' long x 1.0' 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
			Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31
			3.30 3.31 3.32

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Discarded OutFlow Max=0.06 cfs @ 11.95 hrs HW=85.03'   (Free Discharge)

└─**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=85.00'   (Free Discharge)

└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Type III 24-hr 10-Year Rainfall=4.50"
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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: House   Runoff Area=3,065 sf 100.00% Impervious Runoff Depth>4.26"
Tc=6.0 min CN=98 Runoff=0.30 cfs 1,088 cf

Subcatchment 2S: Driveway   Runoff Area=2,040 sf 100.00% Impervious Runoff Depth>4.26"
Tc=6.0 min CN=98 Runoff=0.20 cfs 724 cf

Pond 3P: Roof Infiltration   Peak Elev=87.29' Storage=250 cf Inflow=0.30 cfs 1,088 cf
Discarded=0.06 cfs 1,088 cf Primary=0.00 cfs 0 cf Outflow=0.06 cfs 1,088 cf

Pond 4P: Driveway Infiltration   Peak Elev=86.02' Storage=122 cf Inflow=0.20 cfs 724 cf
Discarded=0.06 cfs 724 cf Primary=0.00 cfs 0 cf Outflow=0.06 cfs 724 cf

Total Runoff Area = 5,105 sf   Runoff Volume = 1,813 cf   Average Runoff Depth = 4.26"
0.00% Pervious = 0 sf   100.00% Impervious = 5,105 sf

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Type III 24-hr 10-Year Rainfall=4.50"

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Summary for Subcatchment 1S: House

Runoff   =   0.30 cfs @ 12.09 hrs, Volume=   1,088 cf, Depth> 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
3,065	98	Roofs, HSG A
3,065		100.00% Impervious Area

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

Summary for Subcatchment 2S: Driveway

Runoff   =   0.20 cfs @ 12.09 hrs, Volume=   724 cf, Depth> 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
2,040	98	Paved parking, HSG A
2,040		100.00% Impervious Area

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

Summary for Pond 3P: Roof Infiltration

Inflow Area =   3,065 sf,100.00% Impervious, Inflow Depth > 4.26"   for 10-Year event
Inflow   =   0.30 cfs @ 12.09 hrs, Volume=   1,088 cf
Outflow   =   0.06 cfs @ 11.75 hrs, Volume=   1,088 cf, Atten= 80%, Lag= 0.0 min
Discarded =   0.06 cfs @ 11.75 hrs, Volume=   1,088 cf
Primary   =   0.00 cfs @   0.00 hrs, Volume=   0 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 87.29' @ 12.51 hrs   Surf.Area= 320 sf   Storage= 250 cf

Plug-Flow detention time= 20.8 min calculated for 1,086 cf (100% of inflow)
Center-of-Mass det. time= 20.6 min (770.0 - 749.4)

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Volume	Invert	Avail.Storage	Storage Description
#1A	86.00'	240 cf	**17.75'W x 18.00'L x 2.54'H Field A**
			812 cf Overall - 212 cf Embedded = 600 cf x 40.0% Voids
#2A	86.50'	212 cf	**Cultec R-150 x 10 Inside #1**
			Effective Size= 29.8"W x 18.0"H => 2.65 sf x 7.50'L = 19.9 cf
			Overall Size= 33.0"W x 18.5"H x 8.50'L with 1.00' Overlap
			Row Length Adjustment= +1.00' x 2.65 sf x 5 rows
#3	88.53'	1 cf	**0.50'D x 1.75'H Vertical Cone/Cylinder x 4**
		453 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**4.0" Horiz. Orifice/Grate X 4.00** C= 0.600
			Limited to weir flow at low heads
#2	Discarded	86.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.06 cfs @ 11.75 hrs HW=86.06' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=86.00' (Free Discharge)
└─**1=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 4P: Driveway Infiltration

Inflow Area =		2,040 sf,100.00% Impervious, Inflow Depth > 4.26" for 10-Year event			
Inflow	=	0.20 cfs @	12.09 hrs,	Volume=	724 cf
Outflow	=	0.06 cfs @	11.80 hrs,	Volume=	724 cf, Atten= 71%, Lag= 0.0 min
Discarded	=	0.06 cfs @	11.80 hrs,	Volume=	724 cf
Primary	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 86.02' @ 12.42 hrs   Surf.Area= 300 sf   Storage= 122 cf

Plug-Flow detention time= 9.5 min calculated for 723 cf (100% of inflow)
Center-of-Mass det. time= 9.4 min (758.8 - 749.4)

Volume	Invert	Avail.Storage	Storage Description
#1	85.00'	330 cf	**4.00'W x 75.00'L x 2.75'H Prismatoid**
			825 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	85.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	87.05'	**10.0' long x 1.0' 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
			Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31
			3.30 3.31 3.32

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Discarded OutFlow Max=0.06 cfs @ 11.80 hrs HW=85.03'   (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=85.00'   (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: House Runoff Area=3,065 sf 100.00% Impervious Runoff Depth>6.26"
Tc=6.0 min CN=98 Runoff=0.44 cfs 1,598 cf

Subcatchment 2S: Driveway Runoff Area=2,040 sf 100.00% Impervious Runoff Depth>6.26"
Tc=6.0 min CN=98 Runoff=0.29 cfs 1,064 cf

Pond 3P: Roof Infiltration Peak Elev=88.53' Storage=451 cf Inflow=0.44 cfs 1,598 cf
Discarded=0.06 cfs 1,598 cf Primary=0.00 cfs 0 cf Outflow=0.06 cfs 1,598 cf

Pond 4P: Driveway Infiltration Peak Elev=87.04' Storage=245 cf Inflow=0.29 cfs 1,064 cf
Discarded=0.06 cfs 1,064 cf Primary=0.00 cfs 0 cf Outflow=0.06 cfs 1,064 cf

Total Runoff Area = 5,105 sf   Runoff Volume = 2,662 cf   Average Runoff Depth = 6.26"
0.00% Pervious = 0 sf   100.00% Impervious = 5,105 sf

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Summary for Subcatchment 1S: House

Runoff   =   0.44 cfs @ 12.09 hrs, Volume=   1,598 cf, Depth> 6.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
3,065	98	Roofs, HSG A
3,065		100.00% Impervious Area

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

Summary for Subcatchment 2S: Driveway

Runoff   =   0.29 cfs @ 12.09 hrs, Volume=   1,064 cf, Depth> 6.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
2,040	98	Paved parking, HSG A
2,040		100.00% Impervious Area

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

Summary for Pond 3P: Roof Infiltration

Inflow Area =   3,065 sf,100.00% Impervious, Inflow Depth > 6.26"   for 100-Year event
Inflow   =   0.44 cfs @ 12.09 hrs, Volume=   1,598 cf
Outflow   =   0.06 cfs @ 12.61 hrs, Volume=   1,598 cf, Atten= 86%, Lag= 31.2 min
Discarded =   0.06 cfs @ 12.61 hrs, Volume=   1,598 cf
Primary   =   0.00 cfs @   0.00 hrs, Volume=   0 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 88.53' @ 12.60 hrs   Surf.Area= 320 sf   Storage= 451 cf

Plug-Flow detention time= 42.6 min calculated for 1,595 cf (100% of inflow)
Center-of-Mass det. time= 42.3 min (785.9 - 743.6)

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Volume	Invert	Avail.Storage	Storage Description
#1A	86.00'	240 cf	**17.75'W x 18.00'L x 2.54'H Field A** 812 cf Overall - 212 cf Embedded = 600 cf x 40.0% Voids
#2A	86.50'	212 cf	**Cultec R-150 x 10 Inside #1** Effective Size= 29.8"W x 18.0"H => 2.65 sf x 7.50'L = 19.9 cf Overall Size= 33.0"W x 18.5"H x 8.50'L with 1.00' Overlap Row Length Adjustment= +1.00' x 2.65 sf x 5 rows
#3	88.53'	1 cf	**0.50'D x 1.75'H Vertical Cone/Cylinder x 4**
		453 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**4.0" Horiz. Orifice/Grate X 4.00** C= 0.600 Limited to weir flow at low heads
#2	Discarded	86.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.06 cfs @ 12.61 hrs HW=88.53'   (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=86.00'   (Free Discharge)
└─**1=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 4P: Driveway Infiltration

Inflow Area =		2,040 sf,100.00% Impervious, Inflow Depth > 6.26" for 100-Year event	
Inflow =	0.29 cfs @ 12.09 hrs,	Volume=	1,064 cf
Outflow =	0.06 cfs @ 11.70 hrs,	Volume=	1,064 cf, Atten= 80%, Lag= 0.0 min
Discarded =	0.06 cfs @ 11.70 hrs,	Volume=	1,064 cf
Primary =	0.00 cfs @ 0.00 hrs,	Volume=	0 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 87.04' @ 12.52 hrs   Surf.Area= 300 sf   Storage= 245 cf

Plug-Flow detention time= 21.2 min calculated for 1,064 cf (100% of inflow)
Center-of-Mass det. time= 21.1 min (764.7 - 743.6)

Volume	Invert	Avail.Storage	Storage Description
#1	85.00'	330 cf	**4.00'W x 75.00'L x 2.75'H Prismatoid** 825 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	85.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	87.05'	**10.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

4 Thompson
Prepared by George J. Zambouras, P.E.
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4 Thompson Lane
Type III 24-hr 100-Year Rainfall=6.50"
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Discarded OutFlow Max=0.06 cfs @ 11.70 hrs HW=85.03'   (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=85.00'   (Free Discharge)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

STORM WATER OPERATION AND MAINTENANCE PLAN

4 Thompson Lane – Topsfield, Ma

Post Construction Operation and Maintenance Plan

The long-term post construction operation, monitoring and maintenance of the stormwater systems will be the responsibility of the property owner. A copy of all maintenance inspections, cleanings and repairs should be maintained on site and forwarded to the appropriate Town office no later than January 30th of each year or as directed.

The following is the recommended operation and maintenance program for the installed stormwater system devices.

SNOW MANAGEMENT

Snow storage should be managed to prevent blockage of the driveway infiltration trench. Snow combined with sand and debris may block the stormwater management system and diminish the infiltration capacity of the system and cause localized flooding.

- ➢ Roadway snow storage should be directed away from the driveway infiltration trench side of the driveway to the extent possible
- ➢ Sand and debris which may accumulate on the surface of the infiltration trench shall be cleared and properly disposed of at the end of the snow season, no later than May 15.

ROOF INFILTRATION UNITS

The subsurface roof infiltration units are used to capture and infiltrate roof runoff. To maintain functionality, this system requires regular inspection.

Inspections

- ➢ The subsurface infiltration systems shall be inspected at least once each year, in the spring, by removing the access port covers and determining if sediment that has accumulated in the system.
- ➢ Inspect system after significant rainfalls to see if it is properly draining.
- ➢ If sediment builds up, poor draining of the system or excess flow from the roof leader overflow is observed, the system shall be inspected further and repaired as needed.

DRIVEWAY INFILTRATION TRENCH

The driveway infiltration trench is used to capture and infiltrate runoff from the driveway's impervious surface. To maintain functionality, this system requires regular inspection and maintenance as follows:

Inspections

> Inspect system annually and after significant rainfalls to verify that runoff is properly draining.
> If poor draining of the infiltration trench is observed it is an indication that the trench has been damaged or clogged and should be further inspected and repaired as needed

Routine Maintenance

> Snow storage should not be permitted on the infiltration trench to the extent possible
> The infiltration trench surface shall be kept free of grass clippings, leaves, litter sand and debris
> Disturbed stones should be restored when observed to prevent erosion and insure stability of the infiltration trench