Stormwater Management Report

Map 27 Lot 247
119 Winthrop Avenue
Reading, MA

Prepared:

May 12, 2025

Prepared For:

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Reading, MA 01867

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NARRATIVE

This report discusses the stormwater management system and analysis for the proposed redevelopment at 119 Winthrop Avenue in Reading, MA. It also contains documentation for compliance with the Reading Stormwater Management Standards.

The proposed redevelopment consists of adding a proposed two story addition with garage to the southern side of the existing dwelling and also revision of the existing driveway dimensions.

SUMMARY

The site is located at 119 Winthrop Avenue in Reading, MA. The site is 7,589 SF in size and is accessed by a driveway entrance on Winthrop Avenue. The site is abutted by # 113 Winthrop Ave to the South, 6 Woodland Street to the North, A wetlands on 126 and 129 Hanscom Ave to the East and Winthrop Ave. to the West. For the proposed redevelopment we will introduce a new stormwater management system.

The site consists of an existing two story cape style dwelling with grass yard and a wood deck and patio off of the rear of the house. There is also one shed at the rear of the property.

The proposed site improvements will include a proposed two story addition with garage underneath to the southern side of the existing dwelling. There will also be additional pavement added to the driveway in order to access the garage door entrance. However, the driveway pavement width will be reduced so there will be no net increase in impervious driveway pavement.

The stormwater management plan consists of collecting the runoff from the addition rooftop via gutters and downspouts and then conveying the runoff to a subsurface infiltration system consisting of 6” perforated pvc pipe in stone bedding for storage and groundwater recharge.
This new stormwater drainage system will function in mitigating the pre vs. post-development runoff peak flow and volume for the 2,10 and 100 year storm events.

Methodology

The drainage modeling and calculations were performed using HydroCAD Hydrology software. HydroCAD uses the Soil Conservation Service (SCS), time of concentration by TR-55 methodology, and TR-20 hydrologic analyses, reach and pond rating by the Storage Indication Method and Manning's Equation, unit Hydrograph Method and the Storage Indication Method for developing the runoff and reservoir routing hydrographs, respectively.

Drainage calculations for the pre- and post-development conditions were performed for the 2,10 and 100 year Type III, 24 hour storm events. All calculations generated for pre-, and post-development conditions can be found in the attached appendices.

Selection of Storm Events

The storm events have been compiled from the twenty-four-hour rainfall data taken from Northeast Regional Climate Center "Atlas of Precipitation Extremes for the Northeastern United States and Southeastern Canada" and were interpolated from the rain event maps to the nearest 0.10 inch

Rainfall frequency data has been provided as follows:

Frequency (Years)	Rainfall [24-Hour Event (inches)]
2	2.80
10	4.20
100	7.40

Soils

Natural Resources Conservation Service (NRCS) Web Soil Suvey indicates this site is in the area of Soil Type 626B-Merrimac--Urban Land complex which fall into the Hydrologic Soil Group Type “A”. A Soil test pit exploration was also conducted on this site on April 8, 2025. The result of the test pit indicates a sandy type material located in the “C” Horizon on the site. Since the infiltration system will be located in the Type “A” soil area, and the test pit confirms a sandy type material, we will be using the MASSDEP Rawls rate of 2.41 inch/hr for exfiltration. This rate is assigned to Type “A” HSG soil group in the Rawls Rate Table (Table 2.3.3. 1982 Rawls Rates)

EXISTING CONDITIONS

The site consists of an existing two story cape style dwelling with grass yard and a wood deck and patio off of the rear of the house. There is also one shed at the rear of the property.

Since the only increase in impervious area to the site is the addition rooftop, we will analyze the location of the proposed addition which is currently a section of grass yard. The existing condition subcatchment area is shown on the attached Existing Conditions Drainage Worksheet and is described as follows:

G — This area is located at the area of the grass yard where the proposed addition will be constructed. For this area we will analyze the characteristics of the surface runoff prior to the addition construction. This subcatchment consists of a grass yard where the surface runoff flows in easterly direction towards the rear property line at an approximate 2.5% slope. The area of this analysis will be the exact dimensions of the proposed addition which is 22 feet x 24 feet for a total area of 528 SF. From the soil type mentioned in the soils section of this report, the Hydrologic Soil Group is Type “A”. This yields a runoff CN value of 39 to be used in the Hydrocad Software model. Since the runoff flows in the easterly direction we will assign a study point titled “Outfall” that is located just outside the easterly edge of the subcatchment area.

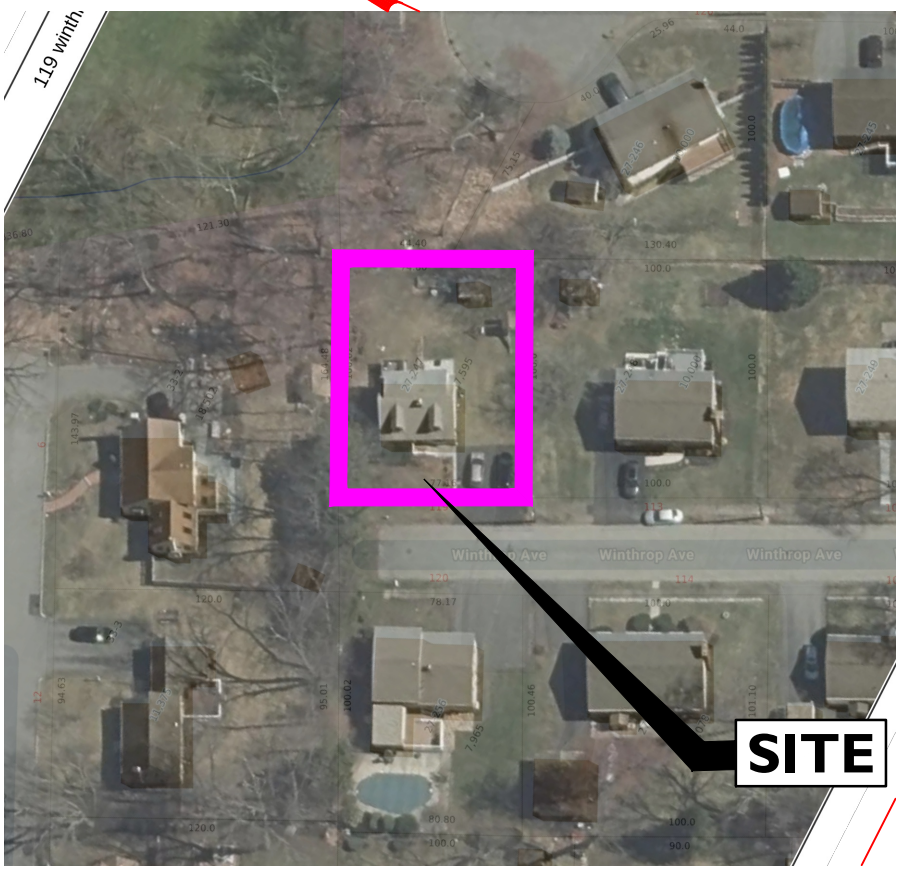
PROPOSED CONDITIONS

The proposed site improvements will include a proposed two story addition with garage underneath to the southern side of the existing dwelling. There will also be additional pavement added to the driveway in order to access the garage door entrance. However, the driveway pavement width will be reduced so there will be no net increase in impervious driveway pavement.

The stormwater management plan consists of collecting the runoff from the addition rooftop via gutters and downspouts and then conveying the runoff to a subsurface infiltration system consisting of 6" perforated pvc pipe in stone bedding for storage and groundwater recharge.
This new stormwater drainage system will function in mitigating the pre vs. post-development runoff peak flow and volume for the 2,10 and 100 year storm events.

The proposed condition subcatchment area is shown on the attached Proposed Conditions Drainage Worksheet and is described as follows:

AR-1 This area is the Proposed Addition rooftop. This proposed addition will be constructed in the exact location that is identified as subcatchment "G" on the predevelopment conditions plan. This subcatchment consists of the addition rooftop with dimensions of 22 feet x 24 feet for a total area of 528 SF. A CN of 98 will be used in the Hydrocad Software Model since this is an impervious surface. The surface runoff will be collected from the rooftop via gutters and downspouts and conveyed to a subsurface infiltration system consisting of 6" perforate pvc pipe in stone bedding for storage and groundwater recharge. The infiltration is designed to contain all of the runoff produced from the 2,10 and 100 year storm events. The bottom of the system is separated by two feet from the Estimated Seasonal High Groundwater Table and the exfiltration rate used will be the MASSDEP Rawls rate of 2.41 in/hr. The study point is titled "Outfall" and is located just outside the easterly edge of the addition subcatchment area at the same location of the study point "Outfall" in the pre-development condition plan



INFO OBTAINED FROM TOWN OF READING GIS

PARCEL ID #27-247
AERIAL MAP
JAMES & MARJORIE GALLAGHER
119 WINTHROP AVE.
READING, MA 01867

MAY 12, 2025

80 0 80 160

SCALE IN FEET

12513-3-MAPS.DWG FILE 12513

PREPARED BY:
MERRIMACK ENGINEERING
66 PARK STREET
ANDOVER, MA 01810
978-475-3555
www.merrimackengineering.com

INFO OBTAINED FROM Town of Reading GIS

PARCEL ID #27-247
GIS MAP WITH CONTOURS
JAMES & MARJORIE GALLAGHER
119 WINTHROP AVE.
READING, MA 01867

MAY 12, 2025

80 0 80 160

SCALE IN FEET

PREPARED BY:
MERRIMACK ENGINEERING
66 PARK STREET
ANDOVER, MA. 01810
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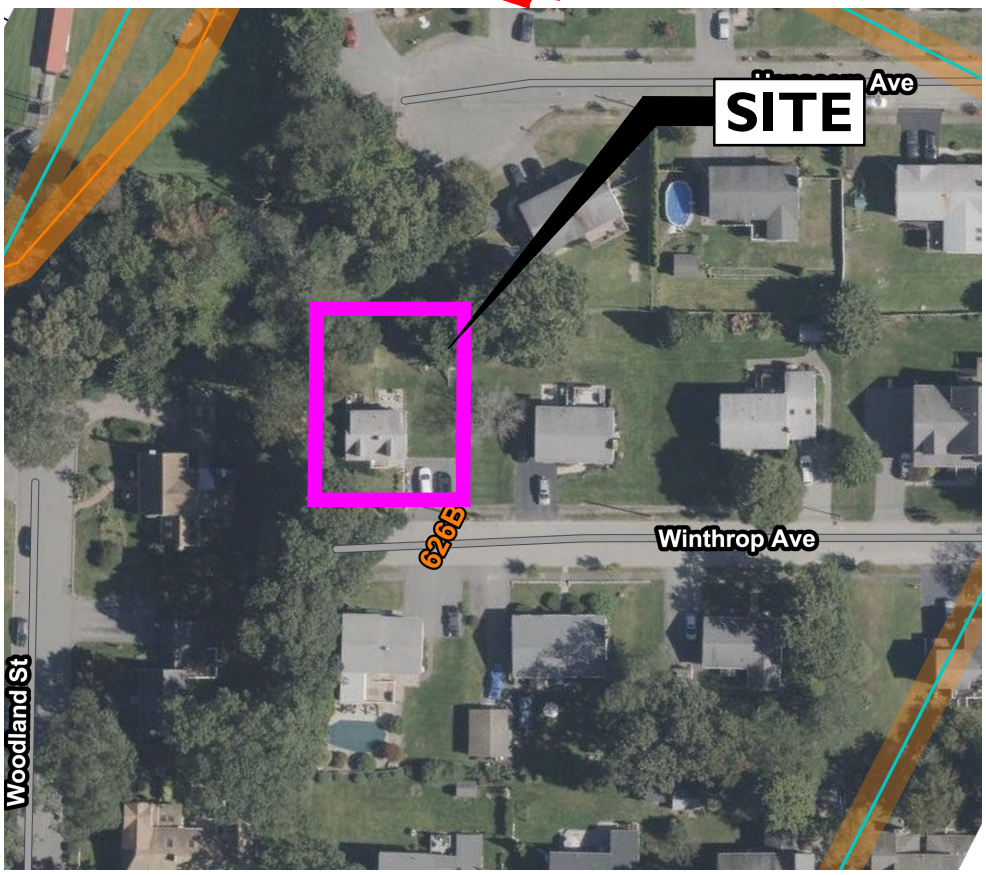
12513-3-MAPS.DWG FILE 12513



SOILS LEGEND:

LABEL	SOIL NAME	SOIL CLASS
626B	MERRIMAC-URBAN LAND COMPLEX 0-8% SLOPE	A

INFO OBTAINED FROM websoilsurvey.nrcs.usda.gov

PARCEL ID #27-247
SCS SOILS MAP
JAMES & MARJORIE GALLAGHER
119 WINTHROP AVE.
READING, MA 01867

MAY 12, 2025

100 0 100 200

SCALE IN FEET

12513-3-MAPS.DWG FILE 12513

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Total Peak Rate of Attenuation and Volume Table

RATE

TOTAL OFFSITE	EXISTING (CFS)	DEVELOPED(CFS)	DIFFERENCE (CFS)
2-Year	0.0	0.00	-0.00
10-Year	0.0	0.00	-0.00
100-Year	0.01	0.00	-0.01

VOLUME

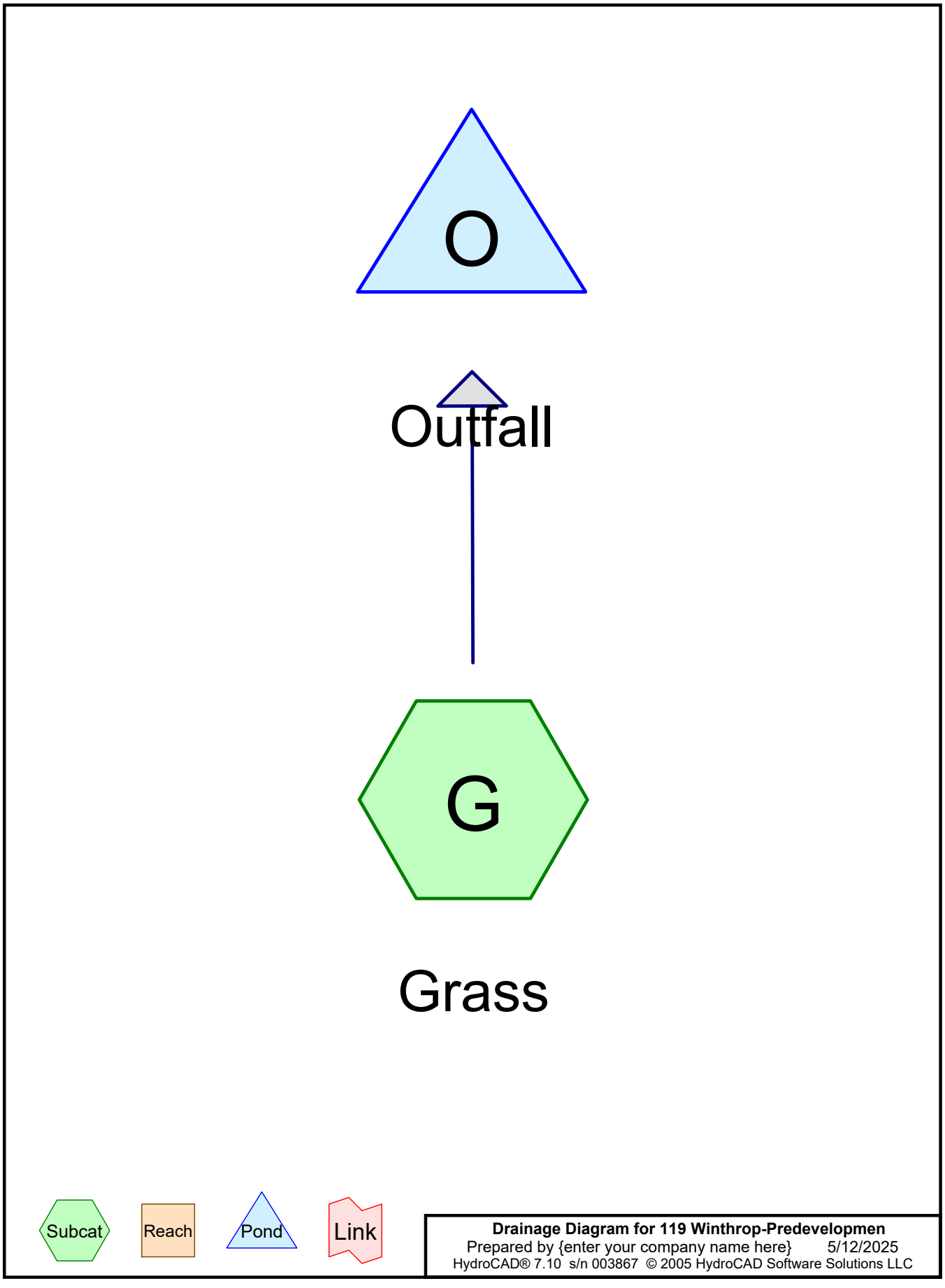
TOTAL OFFSITE	EXISTING (AC-FT)	DEVELOPED(AC-FT)	DIFFERENCE (AC-FT)
2-Year	0.000	0.000	-0.000
10-Year	0.000	0.000	-0.000
100-Year	0.001	0.000	-0.001

APPENDIX A

HYDROCAD PRE-DEVELOPMENT CALCULATIONS

HYDROCAD POST-DEVELOPMENT CALCULATIONS

DRAINAGE AREA WORKSHEETS



Drainage Diagram for 119 Winthrop-Predevelopmen
Prepared by {enter your company name here} 5/12/2025

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment G: Grass Runoff Area=528 sf Runoff Depth=0.00"
Tc=6.0 min CN=39 Runoff=0.00 cfs 0.000 af

Pond O: Outfall Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 0.012 ac Runoff Volume = 0.000 af Average Runoff Depth = 0.00"

Subcatchment G: Grass

[45] Hint: Runoff=Zero

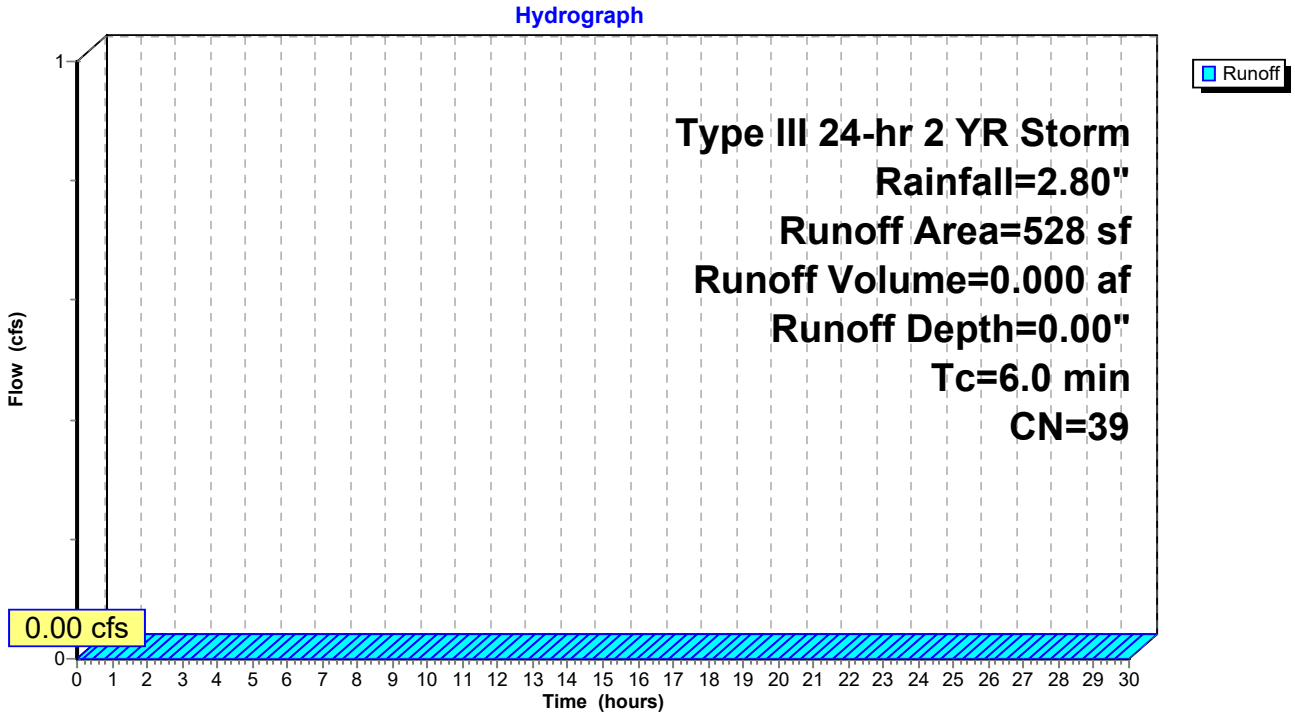
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Storm Rainfall=2.80"

Area (sf)	CN	Description
528	39	>75% Grass cover, Good, HSG A

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

Subcatchment G: Grass



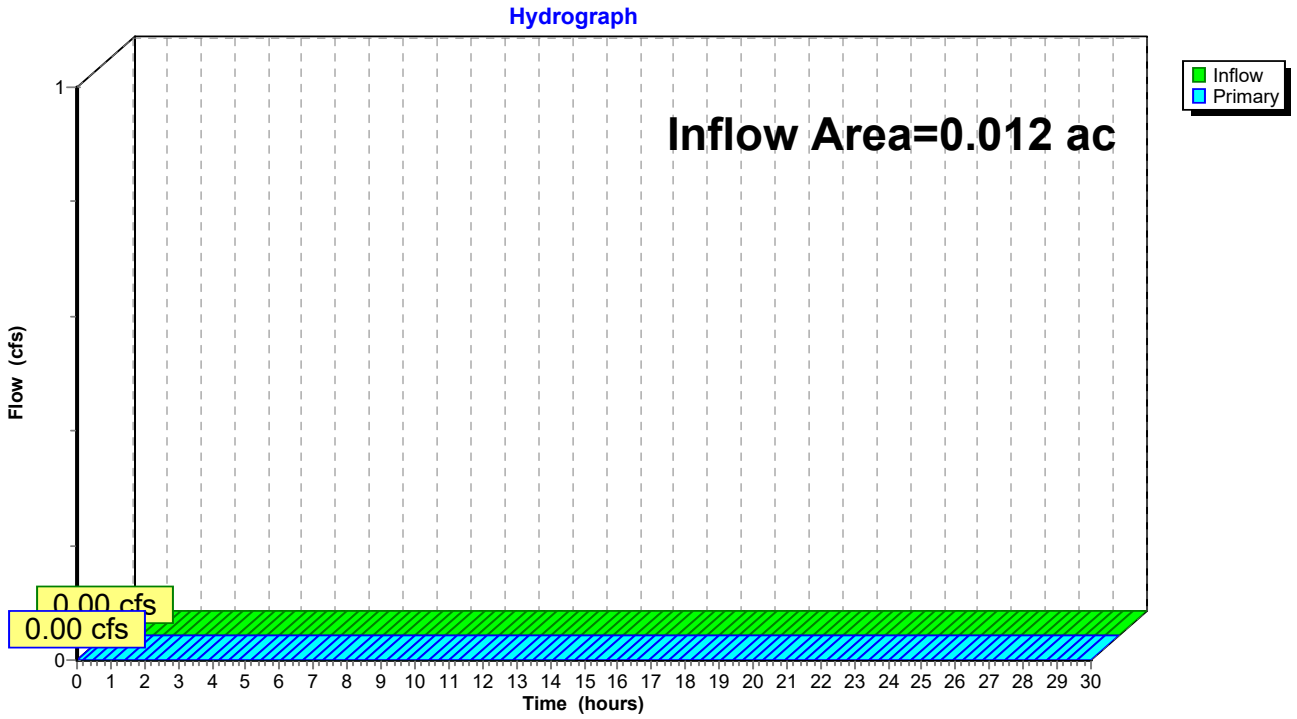
Pond O: Outfall

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.012 ac, Inflow Depth = 0.00" for 2 YR Storm event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond O: Outfall



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment G: Grass Runoff Area=528 sf Runoff Depth=0.07"
Tc=6.0 min CN=39 Runoff=0.00 cfs 0.000 af

Pond O: Outfall Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 0.012 ac Runoff Volume = 0.000 af Average Runoff Depth = 0.07"

Subcatchment G: Grass

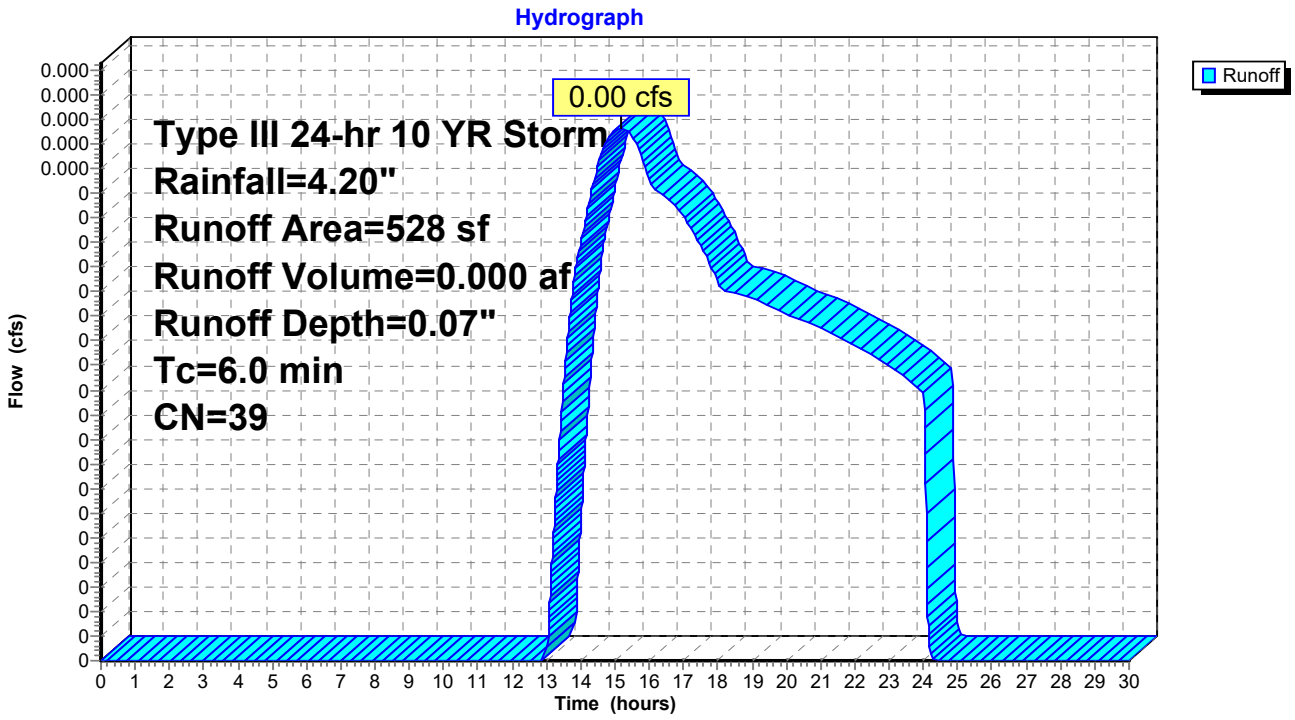
Runoff = 0.00 cfs @ 15.18 hrs, Volume= 0.000 af, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Storm Rainfall=4.20"

Area (sf)	CN	Description
528	39	>75% Grass cover, Good, HSG A

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

Subcatchment G: Grass



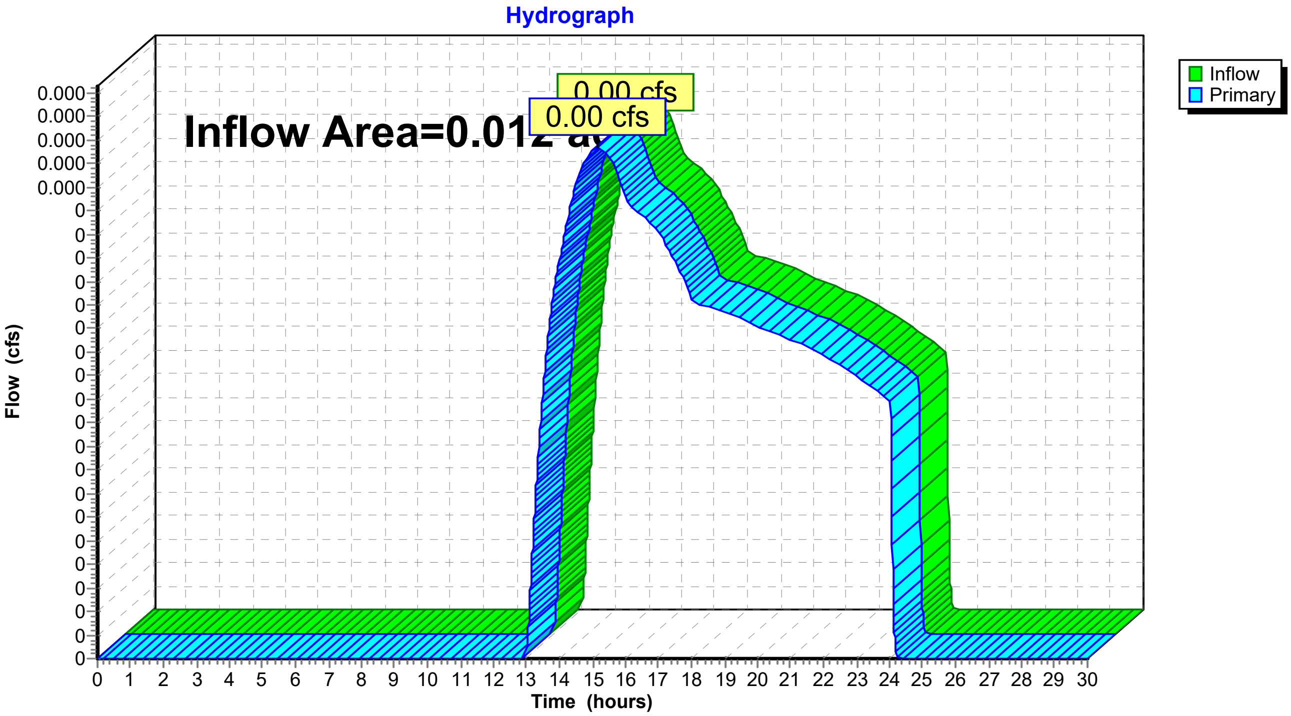
Pond O: Outfall

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.012 ac, Inflow Depth = 0.07" for 10 YR Storm event
Inflow = 0.00 cfs @ 15.18 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 15.18 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond O: Outfall



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment G: Grass Runoff Area=528 sf Runoff Depth=0.92"
Tc=6.0 min CN=39 Runoff=0.01 cfs 0.001 af

Pond O: Outfall Inflow=0.01 cfs 0.001 af
Primary=0.01 cfs 0.001 af

Total Runoff Area = 0.012 ac Runoff Volume = 0.001 af Average Runoff Depth = 0.92"

Subcatchment G: Grass

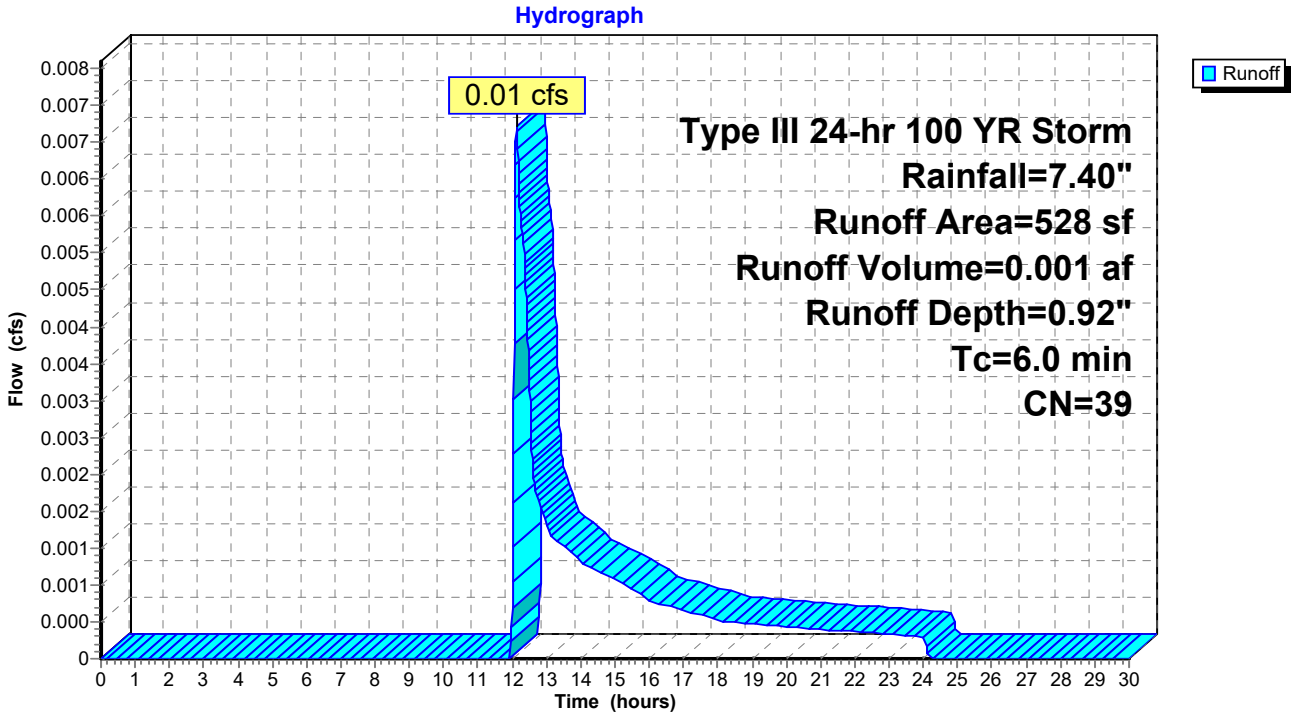
Runoff = 0.01 cfs @ 12.13 hrs, Volume= 0.001 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Storm Rainfall=7.40"

Area (sf)	CN	Description
528	39	>75% Grass cover, Good, HSG A

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

Subcatchment G: Grass



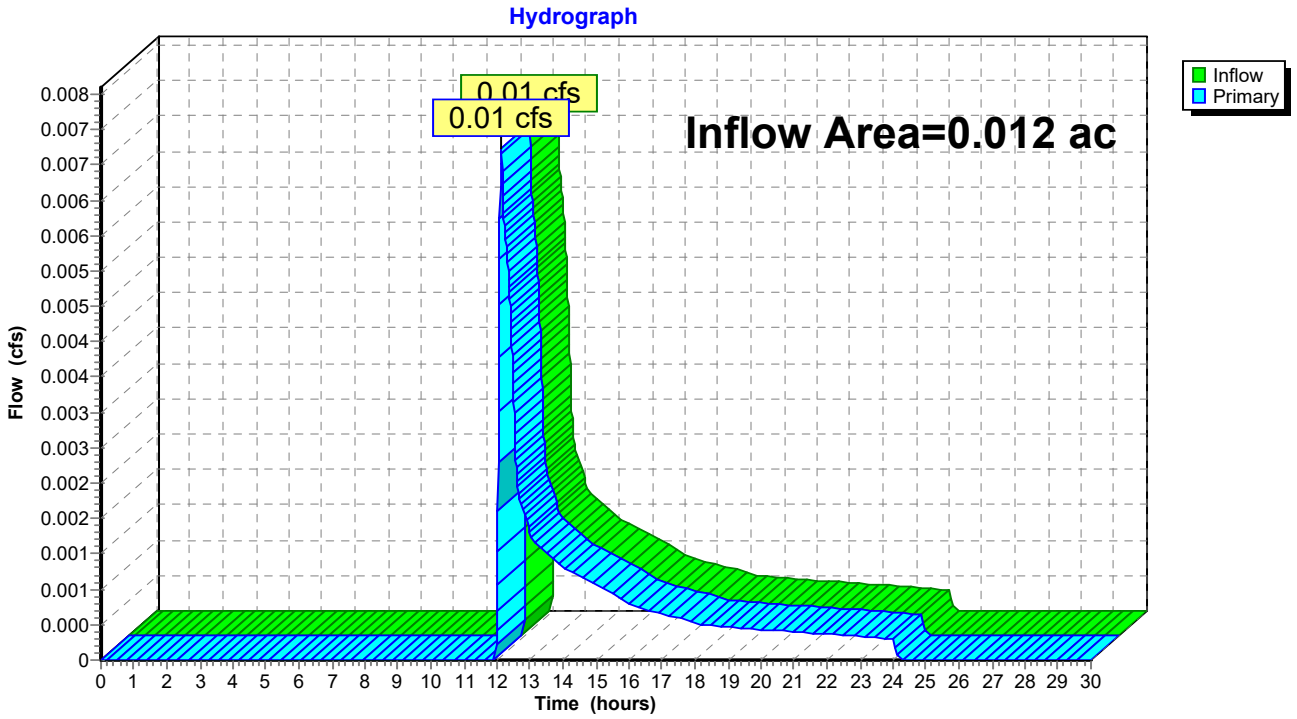
Pond O: Outfall

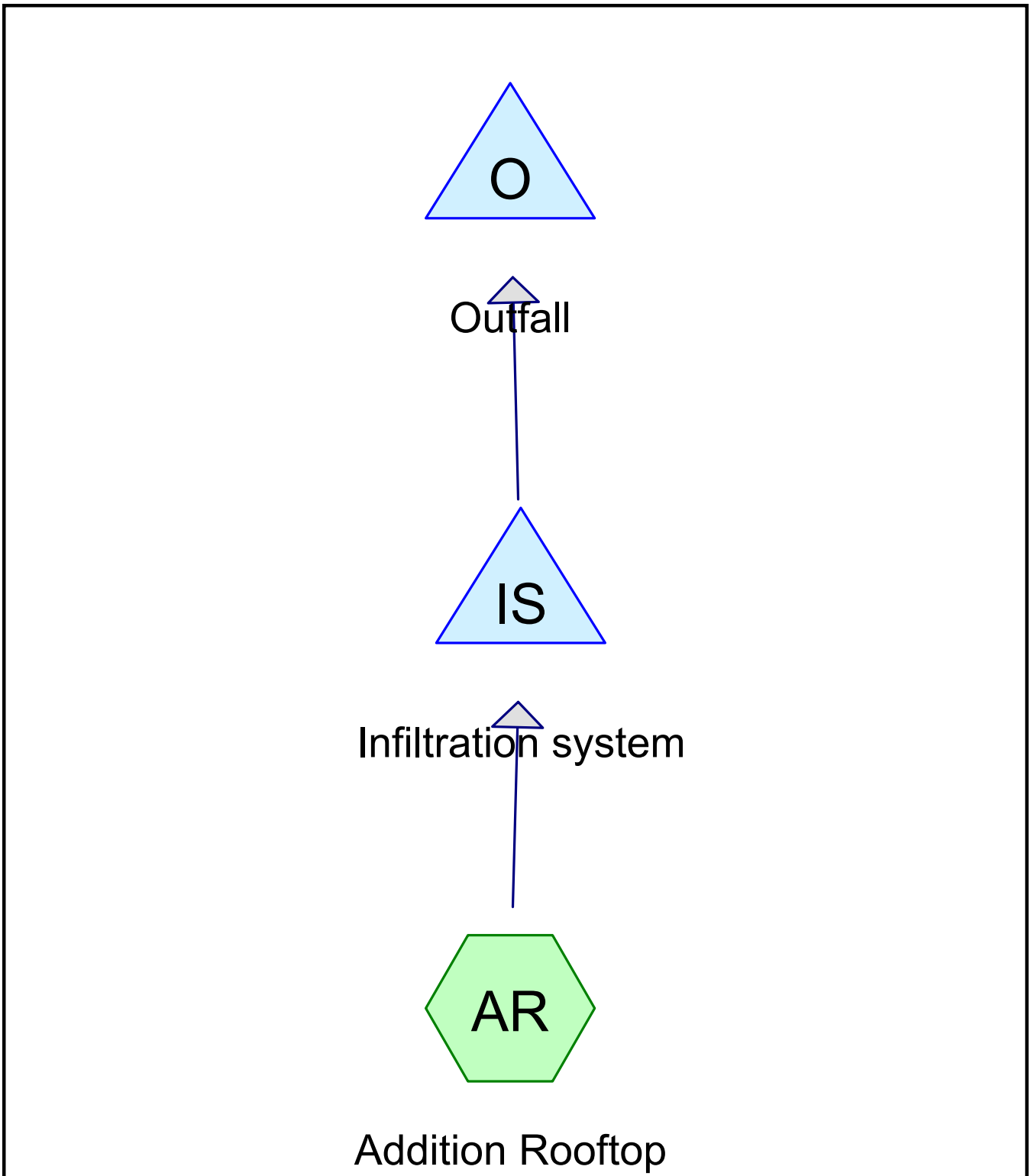
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.012 ac, Inflow Depth = 0.92" for 100 YR Storm event
Inflow = 0.01 cfs @ 12.13 hrs, Volume= 0.001 af
Primary = 0.01 cfs @ 12.13 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond O: Outfall





Drainage Diagram for 119 Winthrop-Postdevelopmen
Prepared by {enter your company name here} 5/12/2025

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment AR: Addition Rooftop Runoff Area=528 sf Runoff Depth=2.57"
Tc=6.0 min CN=98 Runoff=0.03 cfs 0.003 af

Pond IS: Infiltration system Peak Elev=91.21' Storage=20 cf Inflow=0.03 cfs 0.003 af
Discarded=0.01 cfs 0.003 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.003 af

Pond O: Outfall Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 0.012 ac Runoff Volume = 0.003 af Average Runoff Depth = 2.57"

Subcatchment AR: Addition Rooftop

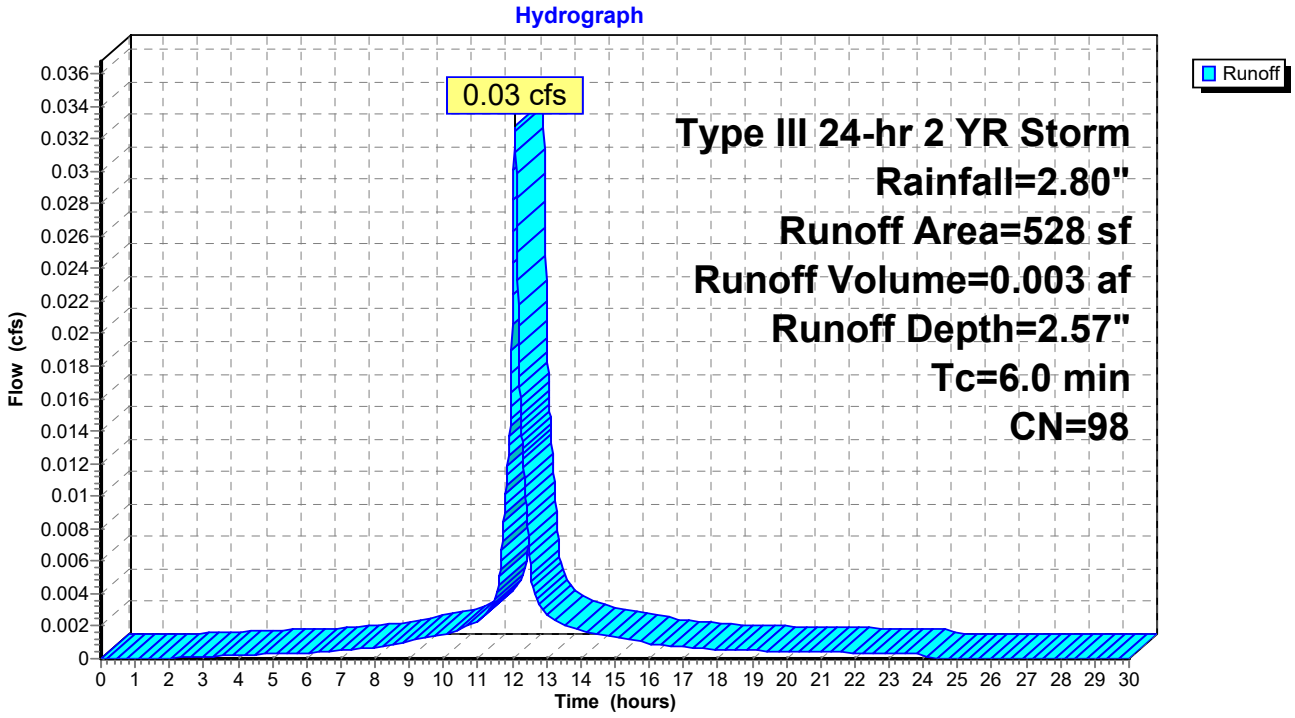
Runoff = 0.03 cfs @ 12.08 hrs, Volume= 0.003 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Storm Rainfall=2.80"

Area (sf)	CN	Description
528	98	Rooftop

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

Subcatchment AR: Addition Rooftop



Pond IS: Infiltration system

Inflow Area = 0.012 ac, Inflow Depth = 2.57" for 2 YR Storm event
Inflow = 0.03 cfs @ 12.08 hrs, Volume= 0.003 af
Outflow = 0.01 cfs @ 11.99 hrs, Volume= 0.003 af, Atten= 66%, Lag= 0.0 min
Discarded = 0.01 cfs @ 11.99 hrs, Volume= 0.003 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 91.21' @ 12.35 hrs Surf.Area= 200 sf Storage= 20 cf
Plug-Flow detention time= 14.2 min calculated for 0.003 af (100% of inflow)
Center-of-Mass det. time= 14.2 min (773.5 - 759.3)

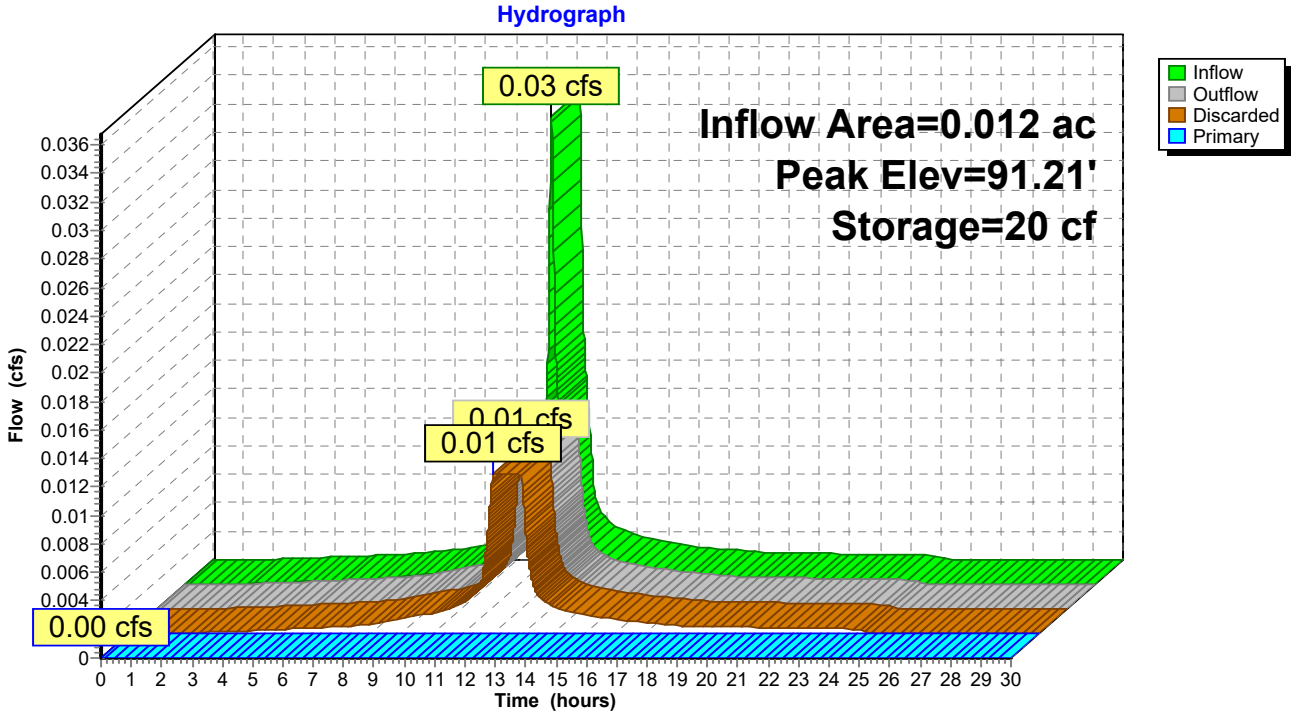
Volume	Invert	Avail.Storage	Storage Description
#1	91.00'	44 cf	**12.50'W x 16.00'L x 0.83'H stone bed** 166 cf Overall - 56 cf Embedded = 110 cf x 40.0% Voids
#2	91.15'	51 cf	**6.0"D x 14.50'L parallel 6" pvc** x 18 Inside #1
#3	91.15'	5 cf	**6.0"D x 11.70'L 6" dia header pipes (2 each)** x 2 Inside #1
#4	91.15'	1 cf	**0.33'D x 8.00'H Downspouts** x 2 -Impervious
		101 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	92.35'	**0.3" Vert. Downspout overflow X 2.00** C= 0.600

Discarded OutFlow Max=0.01 cfs @ 11.99 hrs HW=91.08' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge)
↑—**2=Downspout overflow** (Controls 0.00 cfs)

Pond IS: Infiltration system



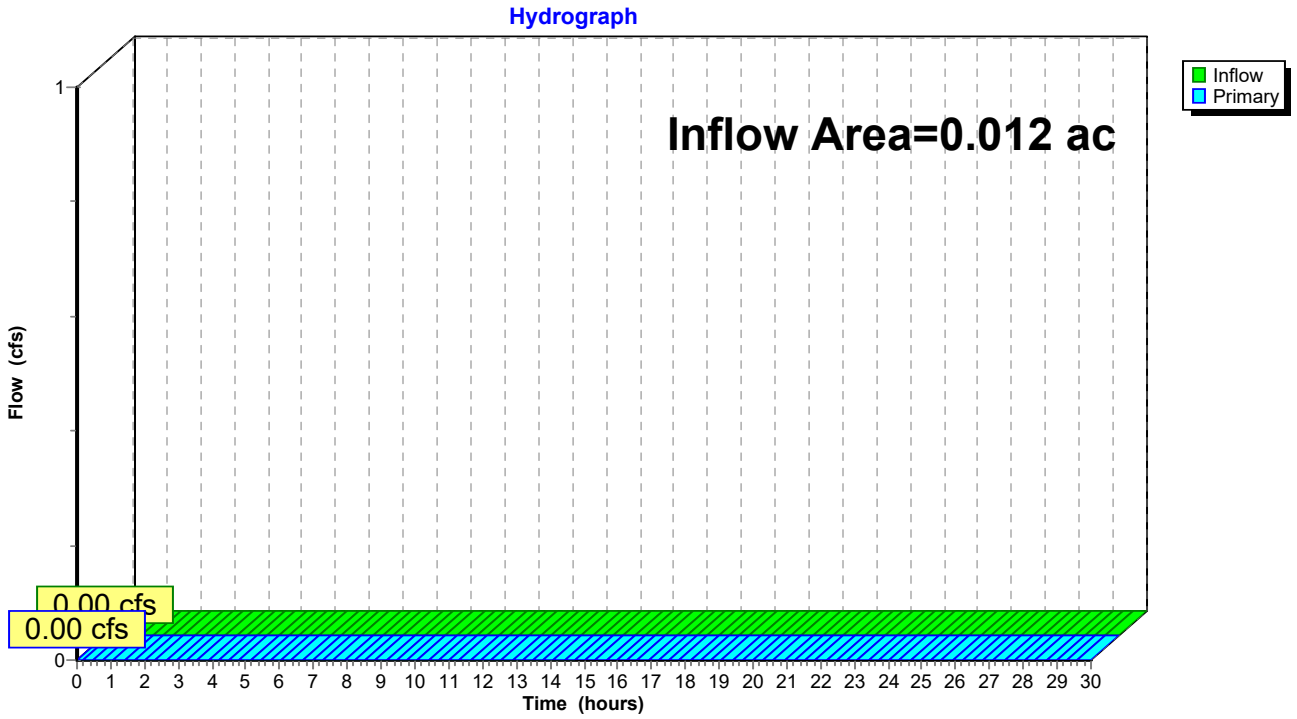
Pond O: Outfall

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.012 ac, Inflow Depth = 0.00" for 2 YR Storm event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond O: Outfall



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment AR: Addition Rooftop Runoff Area=528 sf Runoff Depth=3.96"
Tc=6.0 min CN=98 Runoff=0.05 cfs 0.004 af

Pond IS: Infiltration system Peak Elev=91.35' Storage=41 cf Inflow=0.05 cfs 0.004 af
Discarded=0.01 cfs 0.004 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.004 af

Pond O: Outfall Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 0.012 ac Runoff Volume = 0.004 af Average Runoff Depth = 3.96"

Subcatchment AR: Addition Rooftop

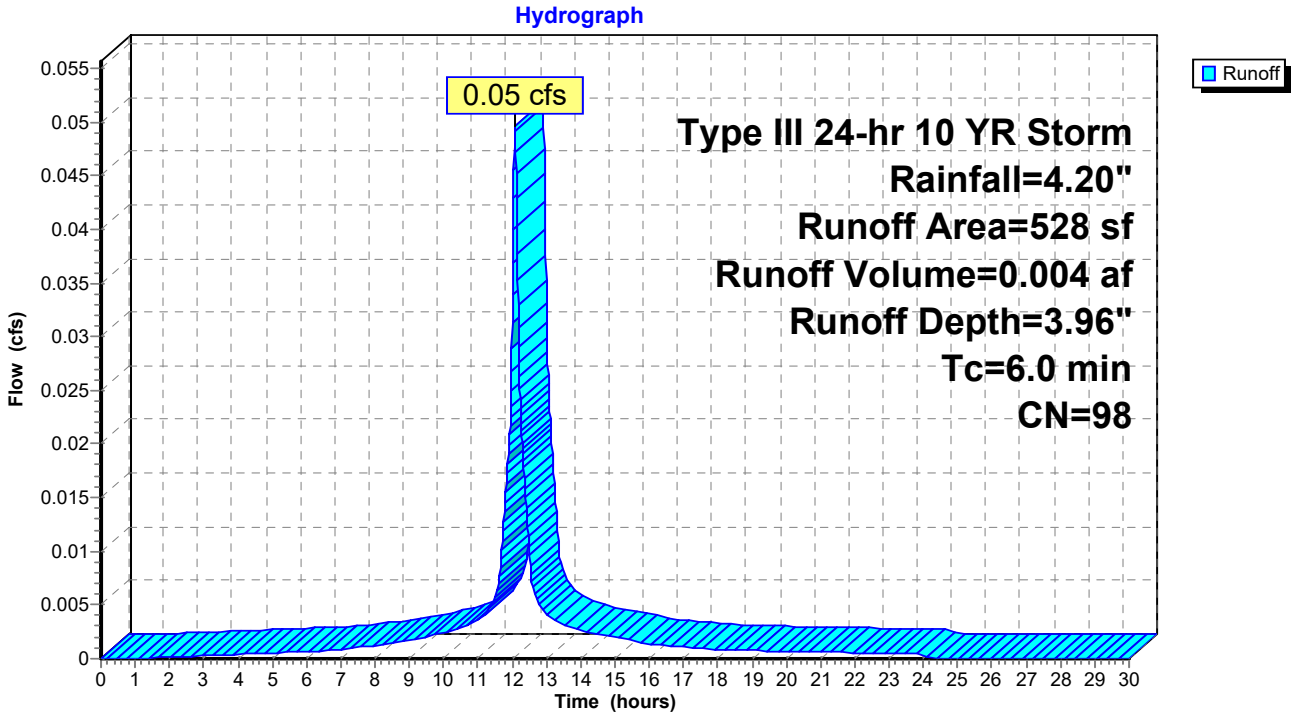
Runoff = 0.05 cfs @ 12.08 hrs, Volume= 0.004 af, Depth= 3.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Storm Rainfall=4.20"

Area (sf)	CN	Description
528	98	Rooftop

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

Subcatchment AR: Addition Rooftop



Pond IS: Infiltration system

Inflow Area = 0.012 ac, Inflow Depth = 3.96" for 10 YR Storm event
Inflow = 0.05 cfs @ 12.08 hrs, Volume= 0.004 af
Outflow = 0.01 cfs @ 11.84 hrs, Volume= 0.004 af, Atten= 78%, Lag= 0.0 min
Discarded = 0.01 cfs @ 11.84 hrs, Volume= 0.004 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 91.35' @ 12.48 hrs Surf.Area= 200 sf Storage= 41 cf
Plug-Flow detention time= 23.3 min calculated for 0.004 af (100% of inflow)
Center-of-Mass det. time= 23.3 min (774.4 - 751.1)

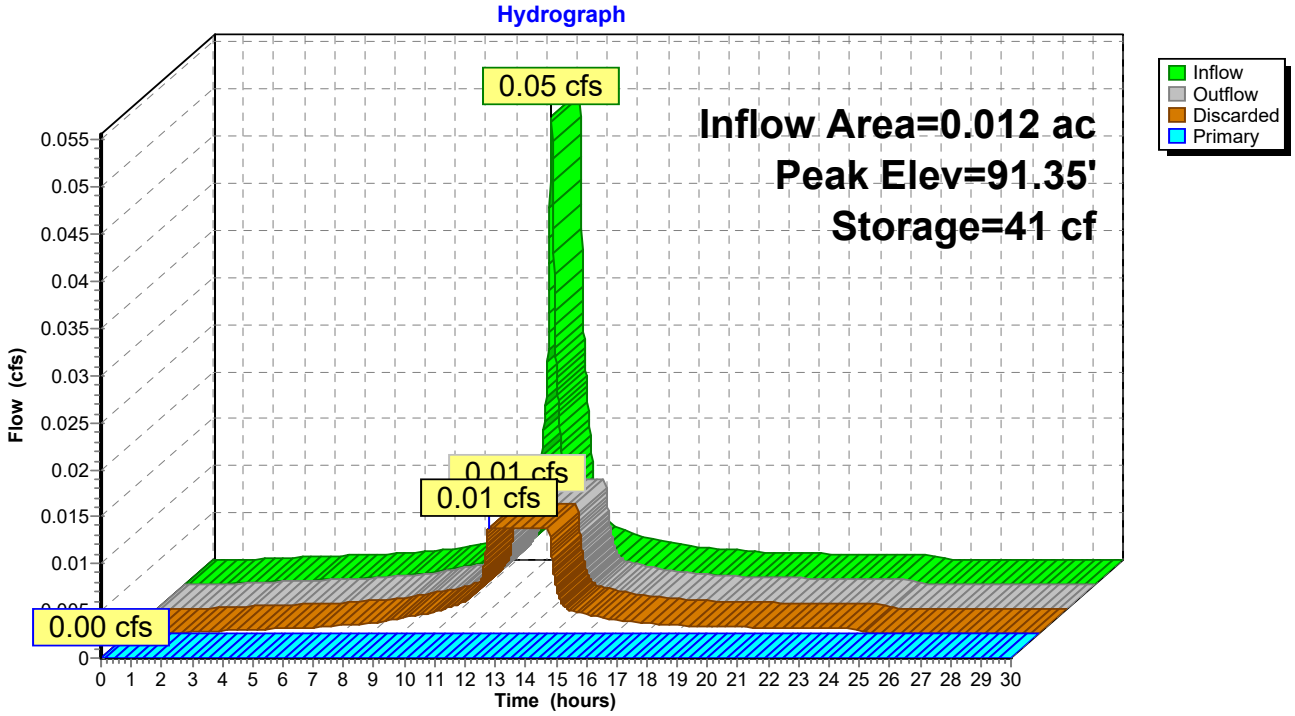
Volume	Invert	Avail.Storage	Storage Description
#1	91.00'	44 cf	**12.50'W x 16.00'L x 0.83'H stone bed** 166 cf Overall - 56 cf Embedded = 110 cf x 40.0% Voids
#2	91.15'	51 cf	**6.0"D x 14.50'L parallel 6" pvc** x 18 Inside #1
#3	91.15'	5 cf	**6.0"D x 11.70'L 6" dia header pipes (2 each)** x 2 Inside #1
#4	91.15'	1 cf	**0.33'D x 8.00'H Downspouts** x 2 -Impervious
		101 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	92.35'	**0.3" Vert. Downspout overflow X 2.00** C= 0.600

Discarded OutFlow Max=0.01 cfs @ 11.84 hrs HW=91.08' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge)
↑—**2=Downspout overflow** (Controls 0.00 cfs)

Pond IS: Infiltration system



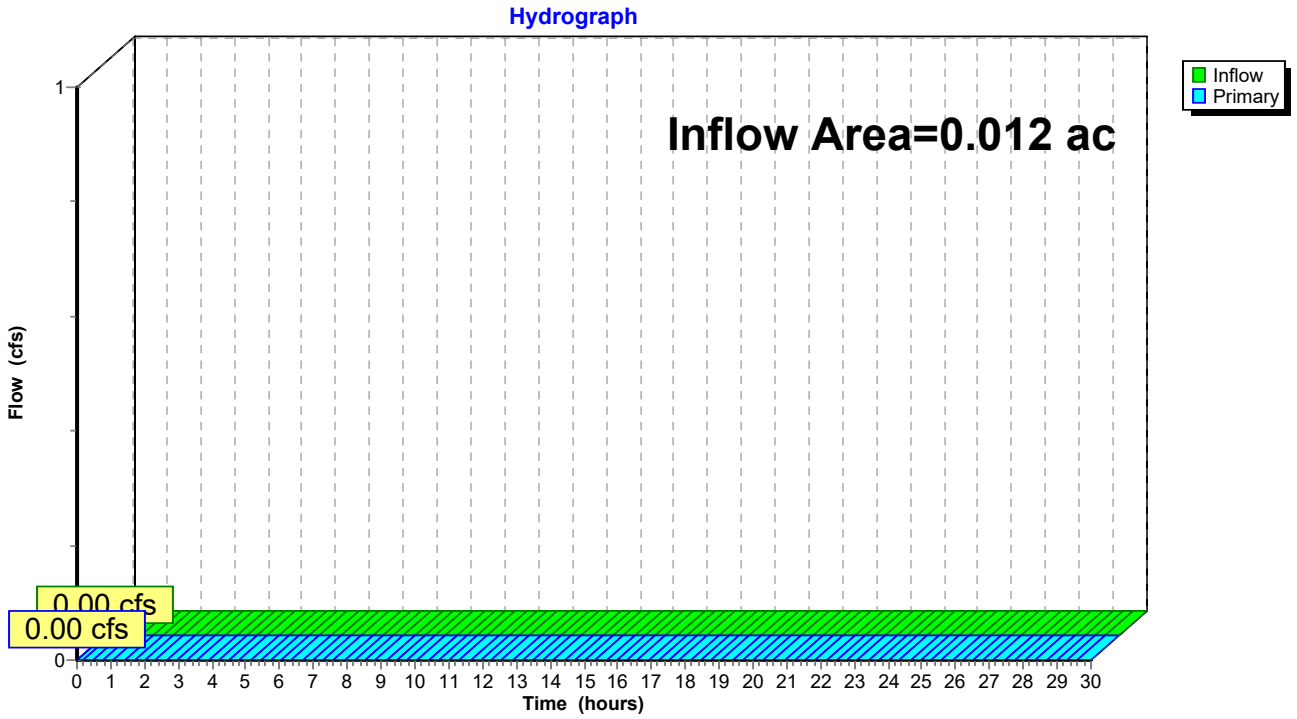
Pond O: Outfall

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.012 ac, Inflow Depth = 0.00" for 10 YR Storm event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond O: Outfall



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment AR: Addition Rooftop Runoff Area=528 sf Runoff Depth=7.16"
Tc=6.0 min CN=98 Runoff=0.09 cfs 0.007 af

Pond IS: Infiltration system Peak Elev=91.79' Storage=96 cf Inflow=0.09 cfs 0.007 af
Discarded=0.01 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.007 af

Pond O: Outfall Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 0.012 ac Runoff Volume = 0.007 af Average Runoff Depth = 7.16"

Subcatchment AR: Addition Rooftop

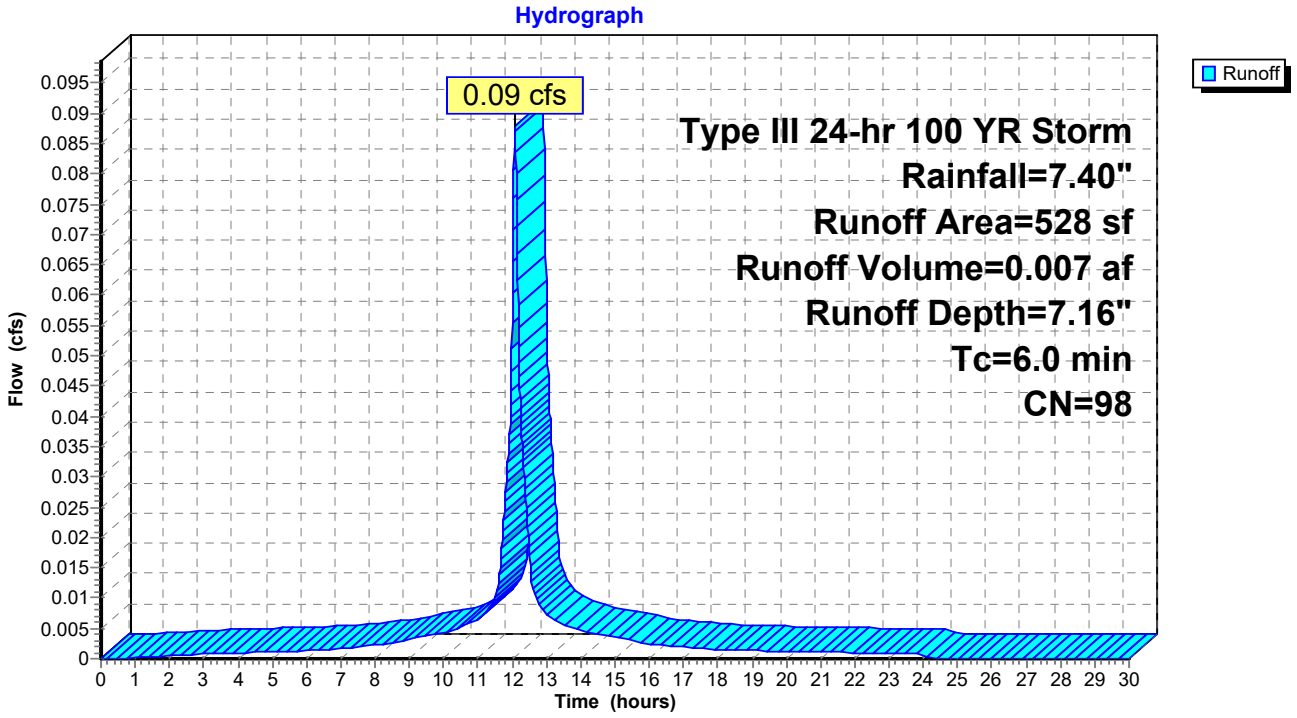
Runoff = 0.09 cfs @ 12.08 hrs, Volume= 0.007 af, Depth= 7.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Storm Rainfall=7.40"

Area (sf)	CN	Description
528	98	Rooftop

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

Subcatchment AR: Addition Rooftop



Pond IS: Infiltration system

Inflow Area = 0.012 ac, Inflow Depth = 7.16" for 100 YR Storm event
Inflow = 0.09 cfs @ 12.08 hrs, Volume= 0.007 af
Outflow = 0.01 cfs @ 11.67 hrs, Volume= 0.007 af, Atten= 87%, Lag= 0.0 min
Discarded = 0.01 cfs @ 11.67 hrs, Volume= 0.007 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 91.79' @ 12.62 hrs Surf.Area= 200 sf Storage= 96 cf
Plug-Flow detention time= 56.1 min calculated for 0.007 af (100% of inflow)
Center-of-Mass det. time= 56.1 min (798.3 - 742.2)

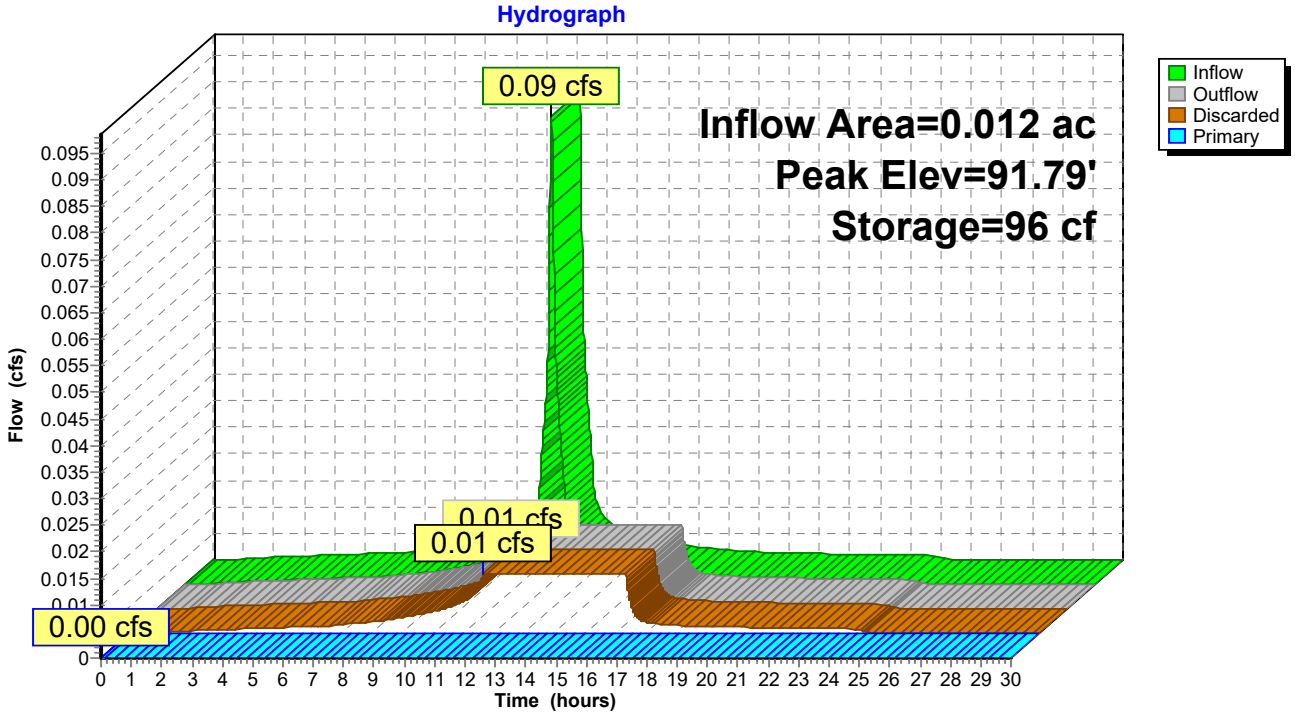
Volume	Invert	Avail.Storage	Storage Description
#1	91.00'	44 cf	**12.50'W x 16.00'L x 0.83'H stone bed** 166 cf Overall - 56 cf Embedded = 110 cf x 40.0% Voids
#2	91.15'	51 cf	**6.0"D x 14.50'L parallel 6" pvc** x 18 Inside #1
#3	91.15'	5 cf	**6.0"D x 11.70'L 6" dia header pipes (2 each)** x 2 Inside #1
#4	91.15'	1 cf	**0.33'D x 8.00'H Downspouts** x 2 -Impervious
		101 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	92.35'	**0.3" Vert. Downspout overflow X 2.00** C= 0.600

Discarded OutFlow Max=0.01 cfs @ 11.67 hrs HW=91.08' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge)
↑—**2=Downspout overflow** (Controls 0.00 cfs)

Pond IS: Infiltration system



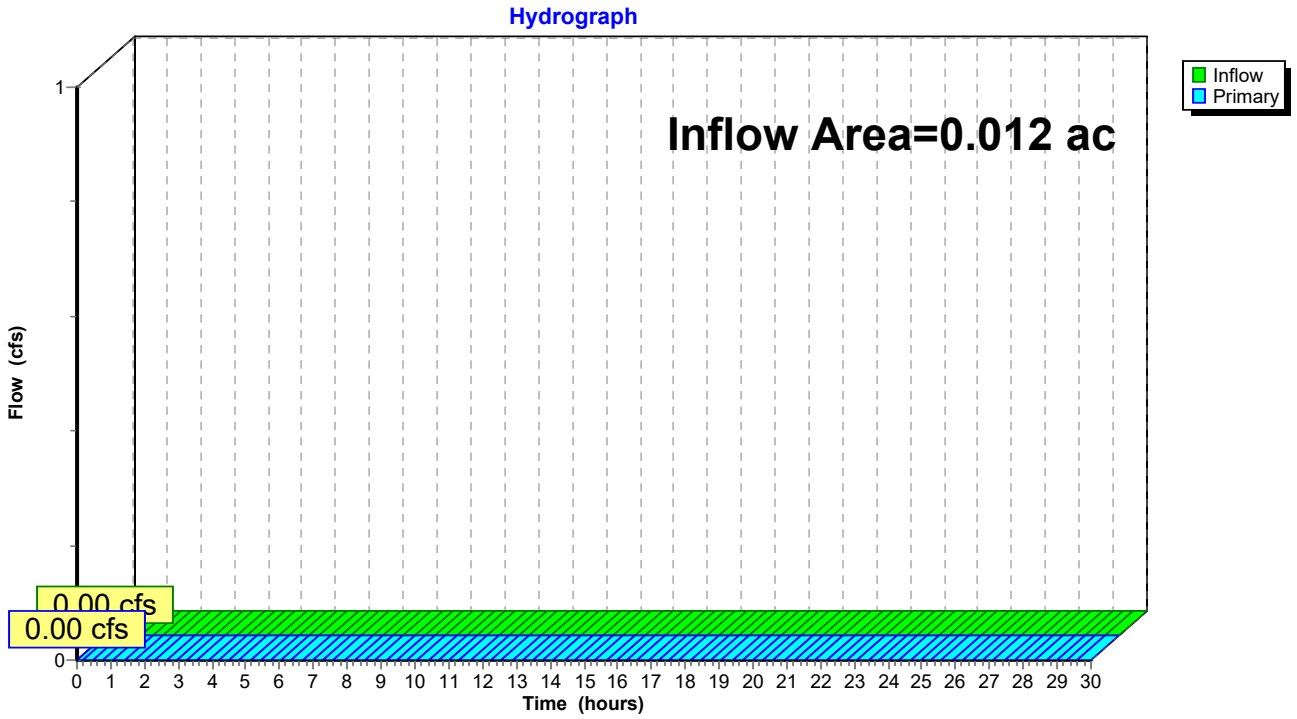
Pond O: Outfall

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.012 ac, Inflow Depth = 0.00" for 100 YR Storm event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond O: Outfall



APPENDIX B

SOIL TEST PIT LOGS

Location: 119 WINTHROP AVE READING

Map/Parcel:

Installer:

Owner's Name: Jay Gallagher

Address: 119 Winthrop Ave Reading MA

Tel #:

New (5150)

Repair

Date: 4-8-25 Wetlands — Zone II — Soil Symbol 626 Soil Name MERRIMAC Soil Class A

11 AM / RAIN / 42°

0-3%

Deep Observation Hole Logs BACK HOE: JIM BURKE

Elevation	Depth	Soil Horizon	Soil Texture	Soil Color	Soil Mottling	% Gravel, Stones, etc.
T-1	0-20	Fill	—	—	—	—
	20-26	Apb	F.S.L.	10YR3/4	—	WK GRANULAR FRIABLE
	26-34	Bwb	S.L.	10YR4/3	—	MASSIVE - FRIABLE
	34-48	C1	F. SAND	2.5Y6/2	REDOX @38" 5Y6/2 7.5YR4/6	MASSIVE - FRIABLE
	48-65	C2	GR C. SAND	10YR4/4		S.G. - LOOSE

Parent Material: OUTWASH Depth to Bedrock: — Standing Water in the Hole: 57" Weeping from Pit Face: 48" ESHGW: 38"

Elevation	Depth	Soil Horizon	Soil Texture	Soil Color	Soil Mottling	% Gravel, Stones, etc.

Parent Material: Depth to Bedrock: Standing Water in the Hole: Weeping from Pit Face: ESHGW:

Date

Percolation Tests

Observation Hole #: P-1 USE < 5 MPI

Depth of Perc				
Start Pre-soak				
Time at 12"				
Time at 9"				
Time at 6"				
Time (9"-6")				
Rate Min/Inch				

Performed By: WR Dufresne

Witnessed By:

Town of Reading, MA

April 3, 2025

119 Winthrop Ave

Property Information

Property ID	033.0-0000-0058.0
Location	0 BIRCH MEADOW
Owner	TOWN OF READING PARK

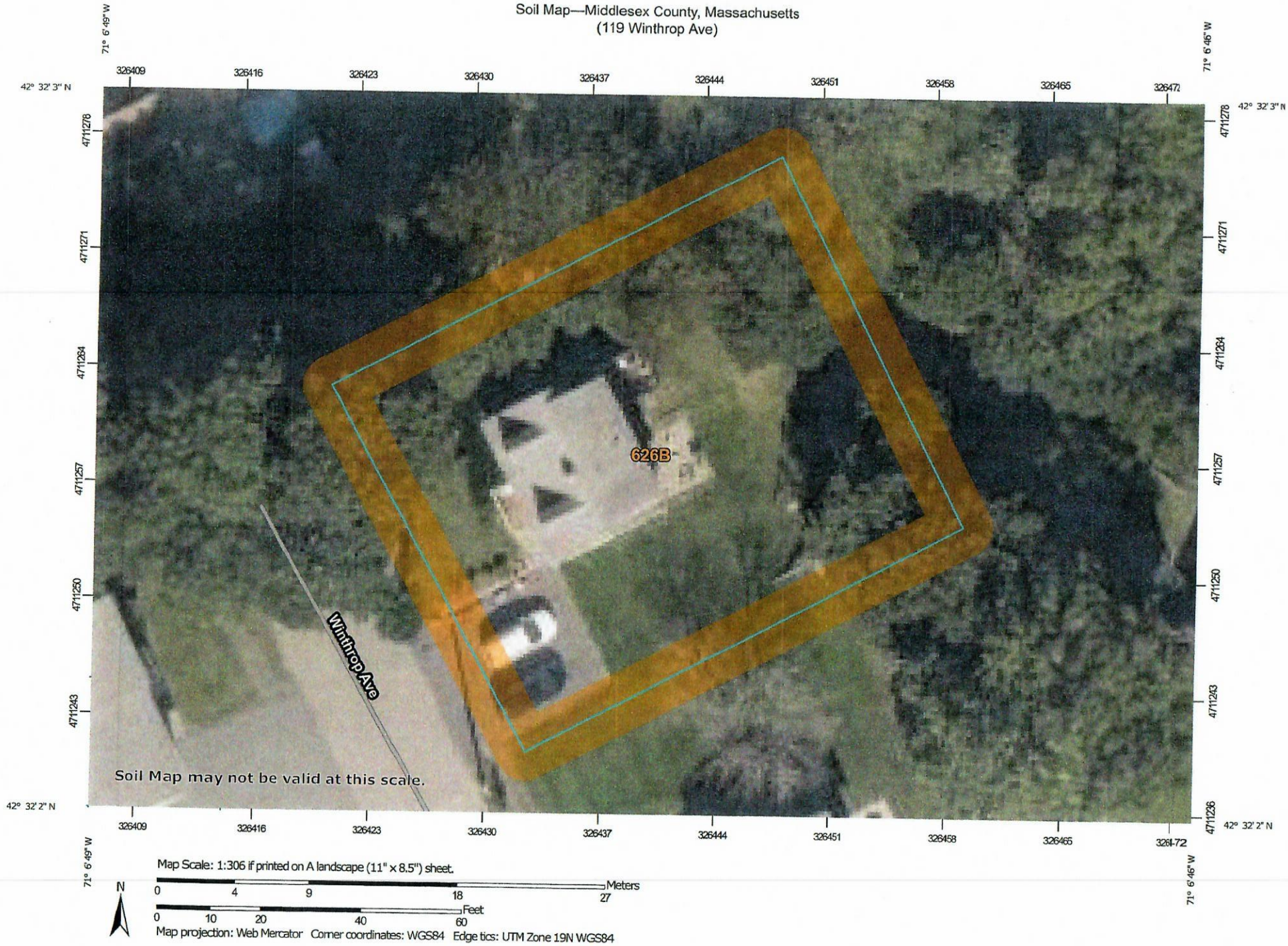
MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Town of Reading, MA makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 10/30/2024
Data updated 12/05/2024

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

Soil Map—Middlesex County, Massachusetts
(119 Winthrop Ave)



Map Scale: 1:306 if printed on A landscape (11" x 8.5") sheet.

N

0 4 9 18 27 Meters

0 10 20 40 60 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

USDA **Natural Resources Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	0.2	100.0%
Totals for Area of Interest		**0.2**	**100.0%**