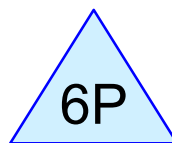
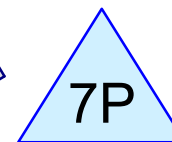




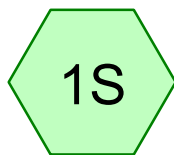
Erann



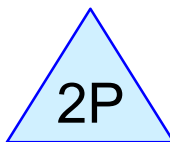
Erann



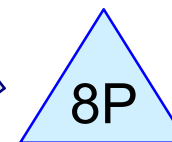
Analysis Point



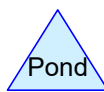
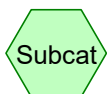
Van Dunk



Van Dunk



Analysis Point



Routing Diagram for Town of Holland pre

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Page 1

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.900	39	>75% Grass cover, Good, HSG A (5S)
0.186	98	Paved roads w/curbs & sewers, HSG A (5S)
0.328	98	Roofs, HSG A (5S)
3.414	48	TOTAL AREA

20191230 Town of Holland pre

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
3.414	HSG A	5S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
3.414		TOTAL AREA

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
2.900	0.000	0.000	0.000	0.000	2.900	>75% Grass cover, Good	5S
0.186	0.000	0.000	0.000	0.000	0.186	Paved roads w/curbs & sewers	5S
0.328	0.000	0.000	0.000	0.000	0.328	Roofs	5S
3.414	0.000	0.000	0.000	0.000	3.414	TOTAL AREA	

20191230 Town of Holland pre*Type II 24-hr 1-yr Rainfall=2.56"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 5S: Erann Ct

Runoff Area=148,712 sf 15.06% Impervious Runoff Depth>0.01"
Flow Length=370' Tc=18.8 min CN=48 Runoff=0.01 cfs 0.002 af

Pond 6P: Erann Ct

Peak Elev=711.02' Storage=76 cf Inflow=0.01 cfs 0.002 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 7P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 3.414 ac Runoff Volume = 0.002 af Average Runoff Depth = 0.01"
84.94% Pervious = 2.900 ac 15.06% Impervious = 0.514 ac

Summary for Subcatchment 5S: Erann Ct

[73] Warning: Peak may fall outside time span

Runoff = 0.01 cfs @ 19.32 hrs, Volume= 0.002 af, Depth> 0.01"

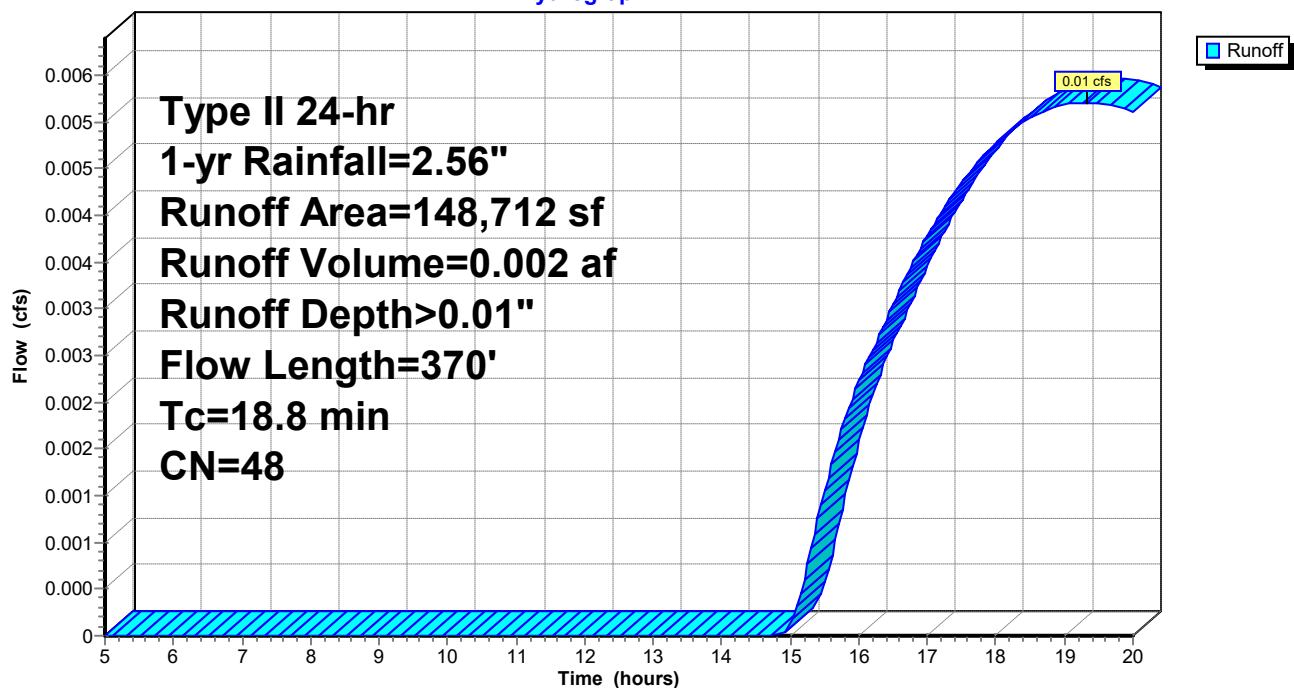
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.56"

Area (sf)	CN	Description
14,300	98	Roofs, HSG A
8,100	98	Paved roads w/curbs & sewers, HSG A
126,312	39	>75% Grass cover, Good, HSG A
148,712	48	Weighted Average
126,312		84.94% Pervious Area
22,400		15.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	180	0.0140	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
0.2	190	0.0680	13.69	164.26	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
18.8	370	Total			

Subcatchment 5S: Erann Ct

Hydrograph



Summary for Pond 6P: Erann Ct

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth > 0.01" for 1-yr event
 Inflow = 0.01 cfs @ 19.32 hrs, Volume= 0.002 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 711.02' @ 20.00 hrs Surf.Area= 3,603 sf Storage= 76 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description	
#1	711.00'	13,056 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
711.00	3,600	0.0	0	0
711.01	3,600	100.0	36	36
712.00	3,900	100.0	3,713	3,749
713.00	7,310	100.0	5,605	9,354
713.50	7,500	100.0	3,703	13,056

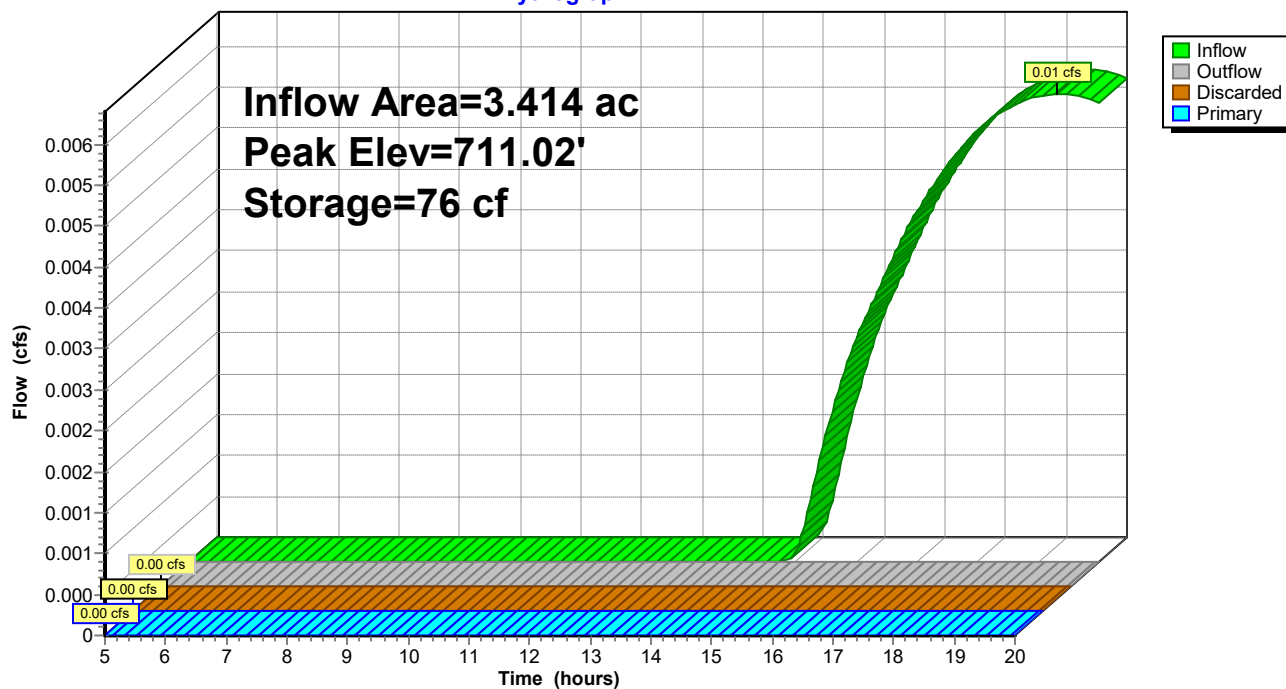
Device	Routing	Invert	Outlet Devices
#1	Discarded	711.00'	1.600 in/hr Exfiltration over Horizontal area from 707.00' - 711.00' Conductivity to Groundwater Elevation = 698.00' Excluded Horizontal area = 0 sf
#2	Primary	713.00'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=711.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=711.00' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 6P: Erann Ct

Hydrograph

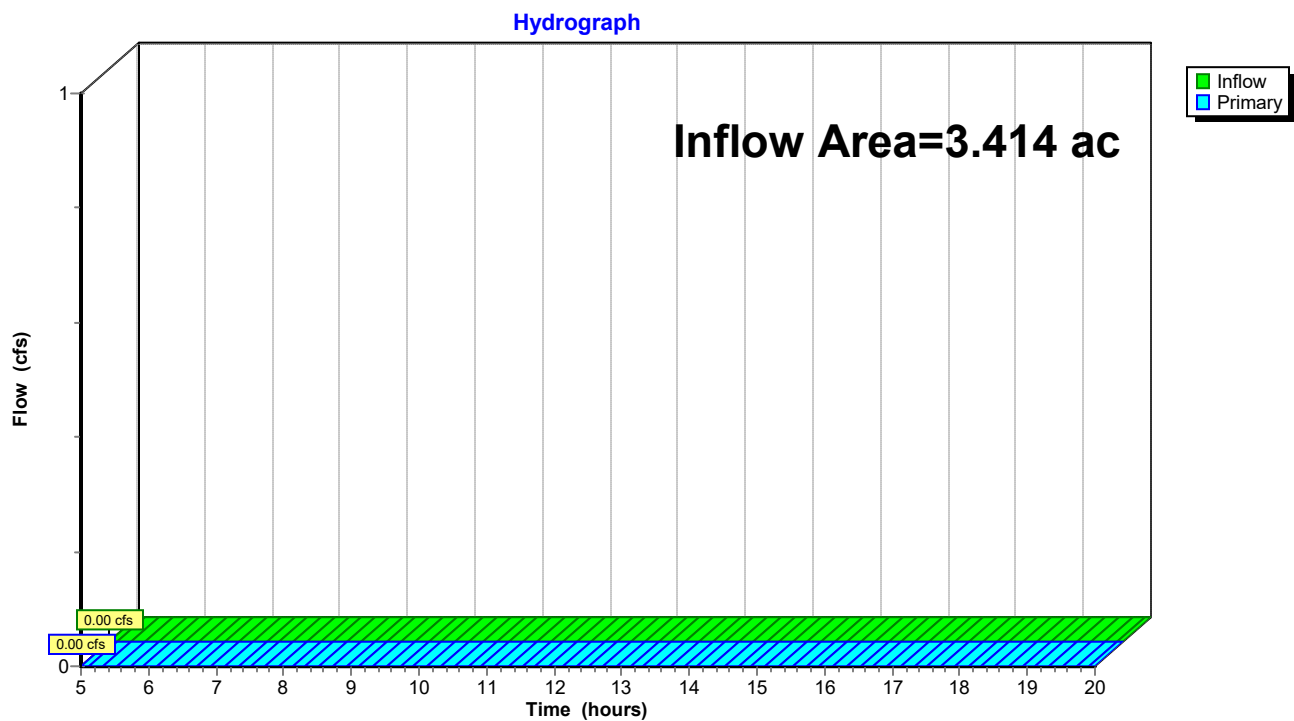


Summary for Pond 7P: Analysis Point

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

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 7P: Analysis Point

20191230 Town of Holland pre*Type II 24-hr 2-yr Rainfall=2.93"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 5S: Erann Ct

Runoff Area=148,712 sf 15.06% Impervious Runoff Depth>0.03"
Flow Length=370' Tc=18.8 min CN=48 Runoff=0.02 cfs 0.009 af

Pond 6P: Erann Ct

Peak Elev=711.11' Storage=405 cf Inflow=0.02 cfs 0.009 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 7P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 3.414 ac Runoff Volume = 0.009 af Average Runoff Depth = 0.03"
84.94% Pervious = 2.900 ac 15.06% Impervious = 0.514 ac

Summary for Subcatchment 5S: Erann Ct

Runoff = 0.02 cfs @ 15.40 hrs, Volume= 0.009 af, Depth> 0.03"

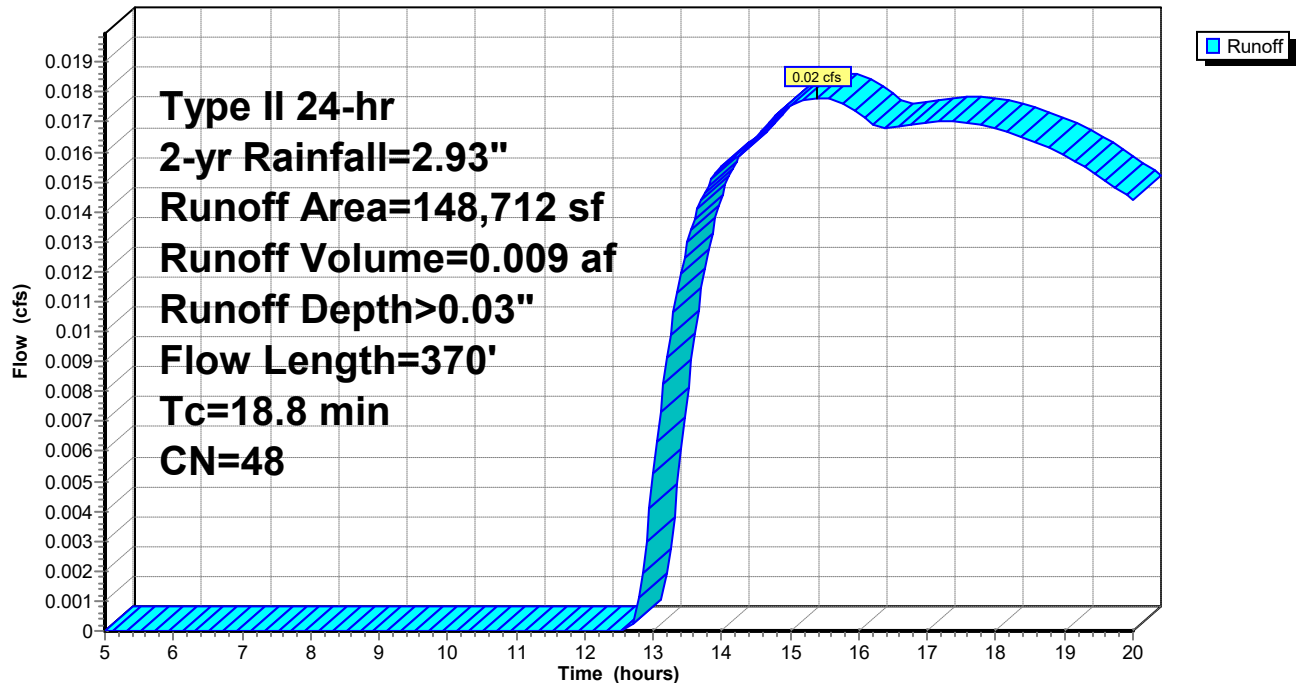
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=2.93"

Area (sf)	CN	Description
14,300	98	Roofs, HSG A
8,100	98	Paved roads w/curbs & sewers, HSG A
126,312	39	>75% Grass cover, Good, HSG A
148,712	48	Weighted Average
126,312		84.94% Pervious Area
22,400		15.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	180	0.0140	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
0.2	190	0.0680	13.69	164.26	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
18.8	370	Total			

Subcatchment 5S: Erann Ct

Hydrograph



Summary for Pond 6P: Erann Ct

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth > 0.03" for 2-yr event
 Inflow = 0.02 cfs @ 15.40 hrs, Volume= 0.009 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 711.11' @ 20.00 hrs Surf.Area= 3,631 sf Storage= 405 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description	
#1	711.00'	13,056 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
711.00	3,600	0.0	0	0
711.01	3,600	100.0	36	36
712.00	3,900	100.0	3,713	3,749
713.00	7,310	100.0	5,605	9,354
713.50	7,500	100.0	3,703	13,056

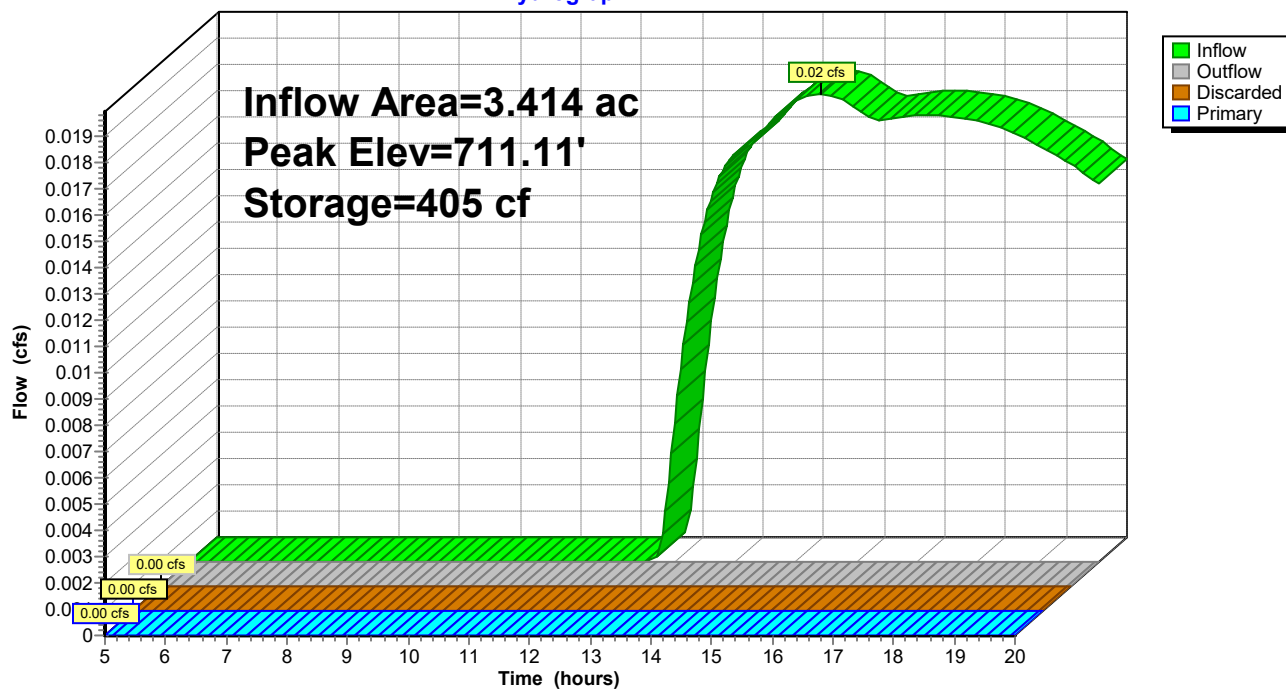
Device	Routing	Invert	Outlet Devices
#1	Discarded	711.00'	1.600 in/hr Exfiltration over Horizontal area from 707.00' - 711.00' Conductivity to Groundwater Elevation = 698.00' Excluded Horizontal area = 0 sf
#2	Primary	713.00'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=711.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=711.00' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 6P: Erann Ct

Hydrograph

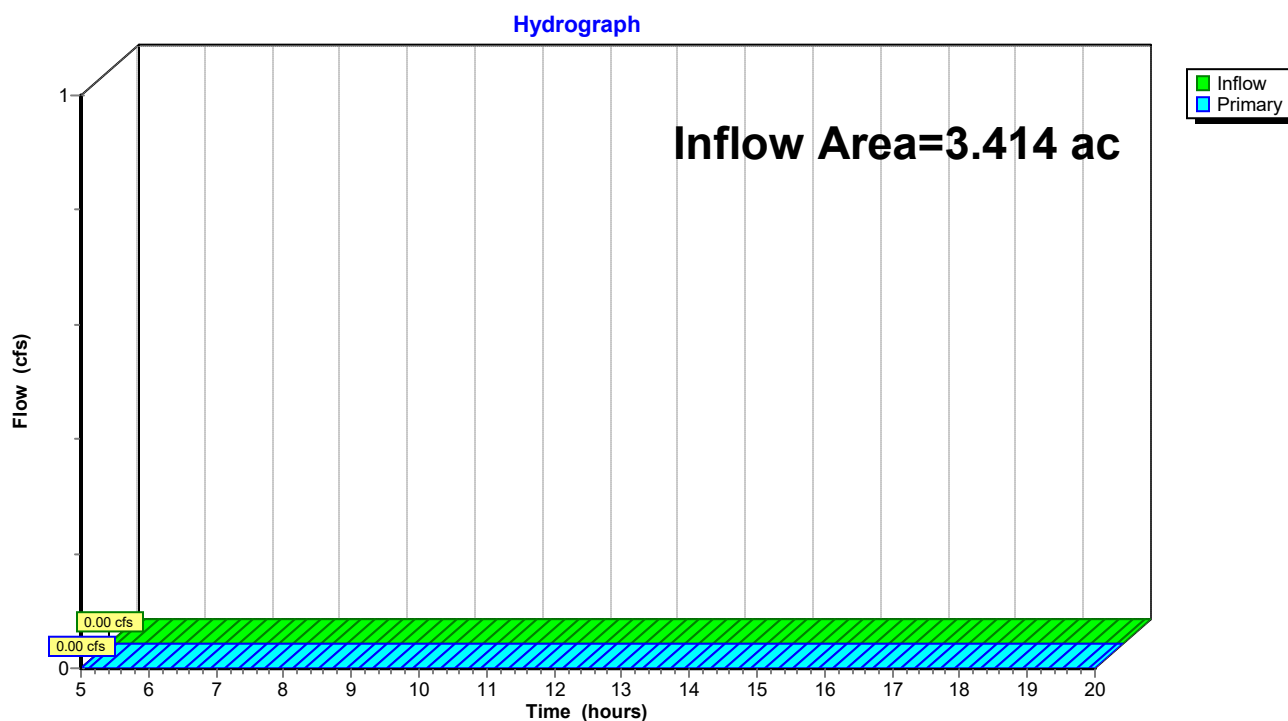


Summary for Pond 7P: Analysis Point

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

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 7P: Analysis Point

20191230 Town of Holland pre*Type II 24-hr 5-yr Rainfall=3.64"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 5S: Erann Ct

Runoff Area=148,712 sf 15.06% Impervious Runoff Depth>0.14"
Flow Length=370' Tc=18.8 min CN=48 Runoff=0.12 cfs 0.039 af

Pond 6P: Erann Ct

Peak Elev=711.46' Storage=1,687 cf Inflow=0.12 cfs 0.039 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 7P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 3.414 ac Runoff Volume = 0.039 af Average Runoff Depth = 0.14"
84.94% Pervious = 2.900 ac 15.06% Impervious = 0.514 ac

Summary for Subcatchment 5S: Erann Ct

Runoff = 0.12 cfs @ 12.46 hrs, Volume= 0.039 af, Depth> 0.14"

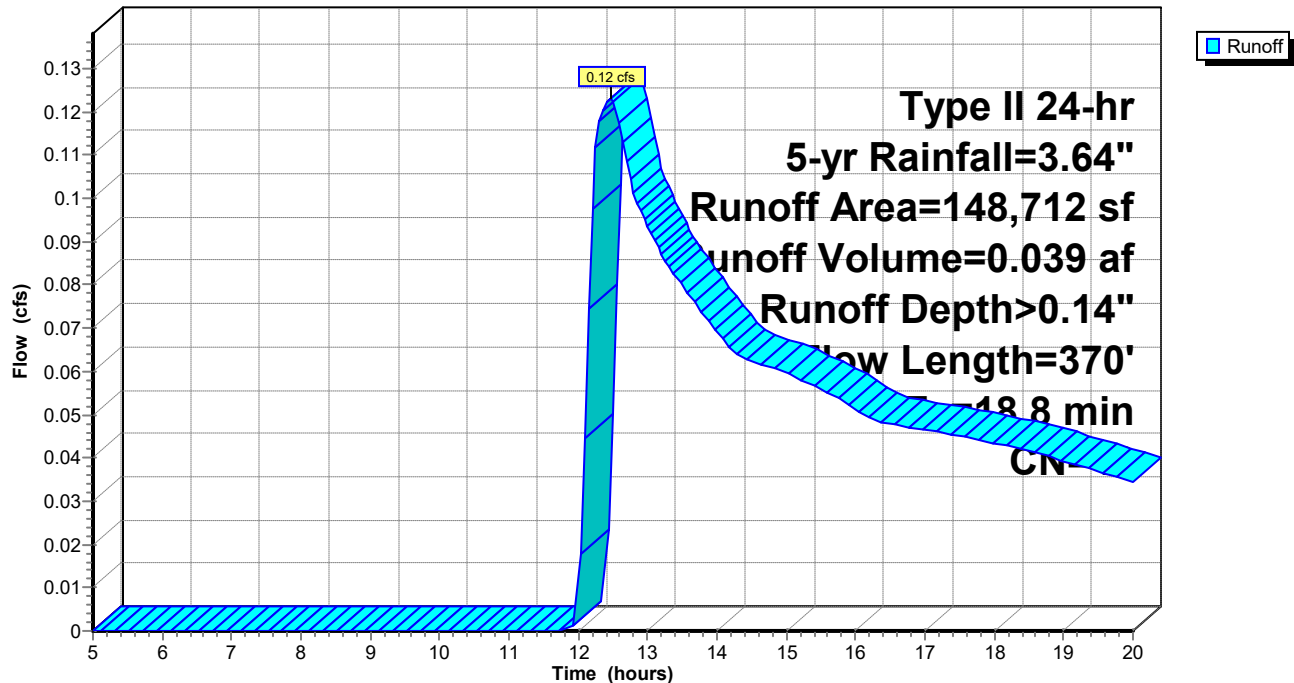
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-yr Rainfall=3.64"

Area (sf)	CN	Description
14,300	98	Roofs, HSG A
8,100	98	Paved roads w/curbs & sewers, HSG A
126,312	39	>75% Grass cover, Good, HSG A
148,712	48	Weighted Average
126,312		84.94% Pervious Area
22,400		15.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	180	0.0140	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
0.2	190	0.0680	13.69	164.26	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
18.8	370	Total			

Subcatchment 5S: Erann Ct

Hydrograph



Summary for Pond 6P: Erann Ct

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth > 0.14" for 5-yr event
 Inflow = 0.12 cfs @ 12.46 hrs, Volume= 0.039 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 711.46' @ 20.00 hrs Surf.Area= 3,736 sf Storage= 1,687 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description	
#1	711.00'	13,056 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
711.00	3,600	0.0	0	0
711.01	3,600	100.0	36	36
712.00	3,900	100.0	3,713	3,749
713.00	7,310	100.0	5,605	9,354
713.50	7,500	100.0	3,703	13,056

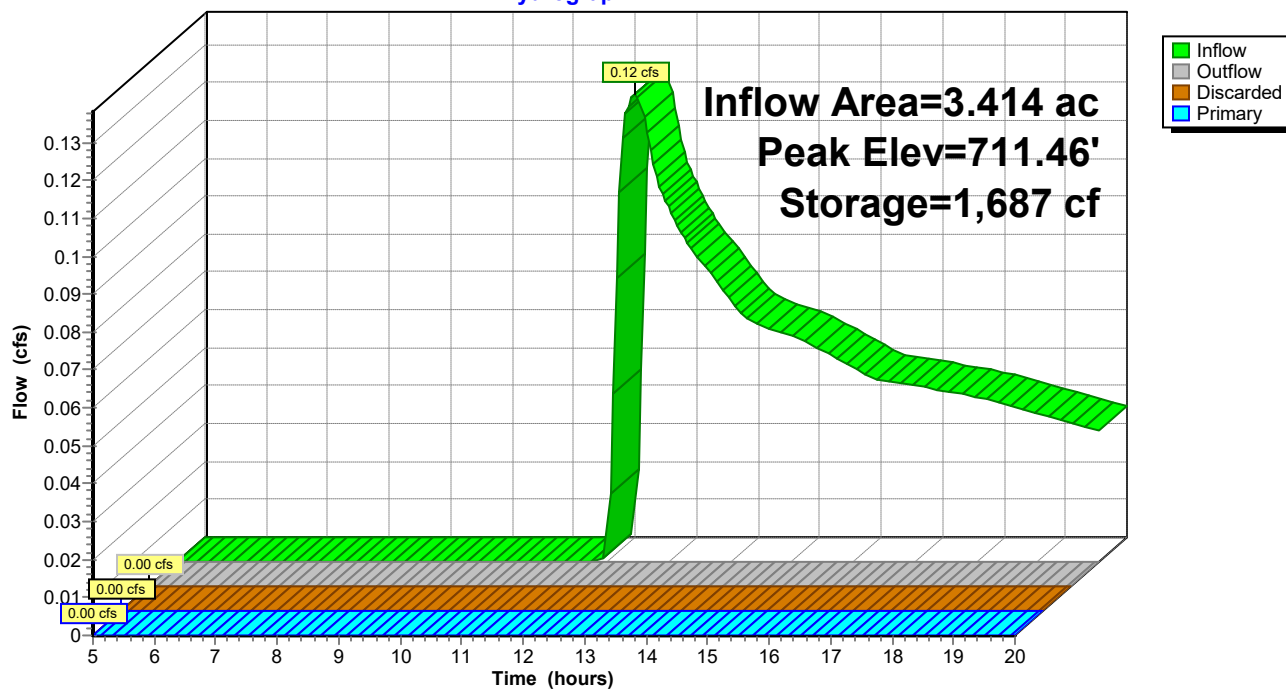
Device	Routing	Invert	Outlet Devices
#1	Discarded	711.00'	1.600 in/hr Exfiltration over Horizontal area from 707.00' - 711.00' Conductivity to Groundwater Elevation = 698.00' Excluded Horizontal area = 0 sf
#2	Primary	713.00'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=711.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=711.00' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 6P: Erann Ct

Hydrograph

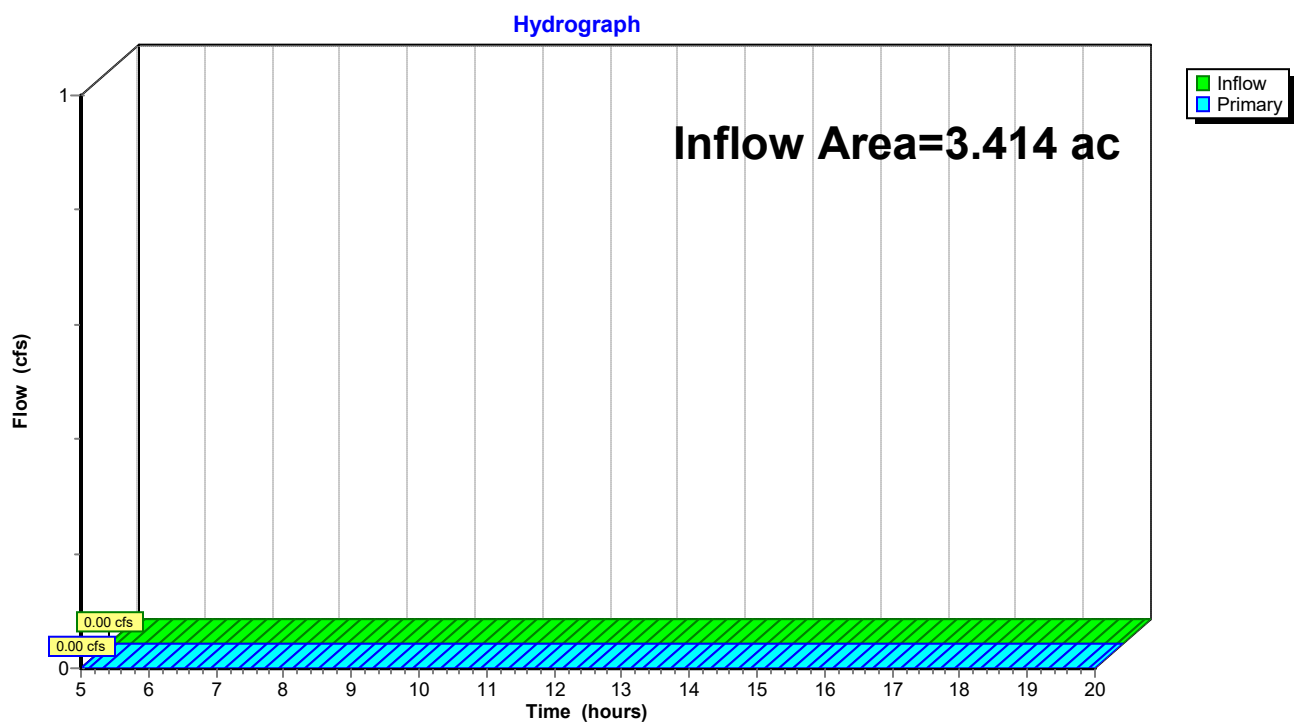


Summary for Pond 7P: Analysis Point

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

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth = 0.00" for 5-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 7P: Analysis Point

20191230 Town of Holland pre*Type II 24-hr 10-yr Rainfall=4.30"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 5S: Erann Ct

Runoff Area=148,712 sf 15.06% Impervious Runoff Depth>0.29"
Flow Length=370' Tc=18.8 min CN=48 Runoff=0.55 cfs 0.082 af

Pond 6P: Erann Ct

Peak Elev=711.95' Storage=3,548 cf Inflow=0.55 cfs 0.082 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 7P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 3.414 ac Runoff Volume = 0.082 af Average Runoff Depth = 0.29"
84.94% Pervious = 2.900 ac 15.06% Impervious = 0.514 ac

Summary for Subcatchment 5S: Erann Ct

Runoff = 0.55 cfs @ 12.21 hrs, Volume= 0.082 af, Depth> 0.29"

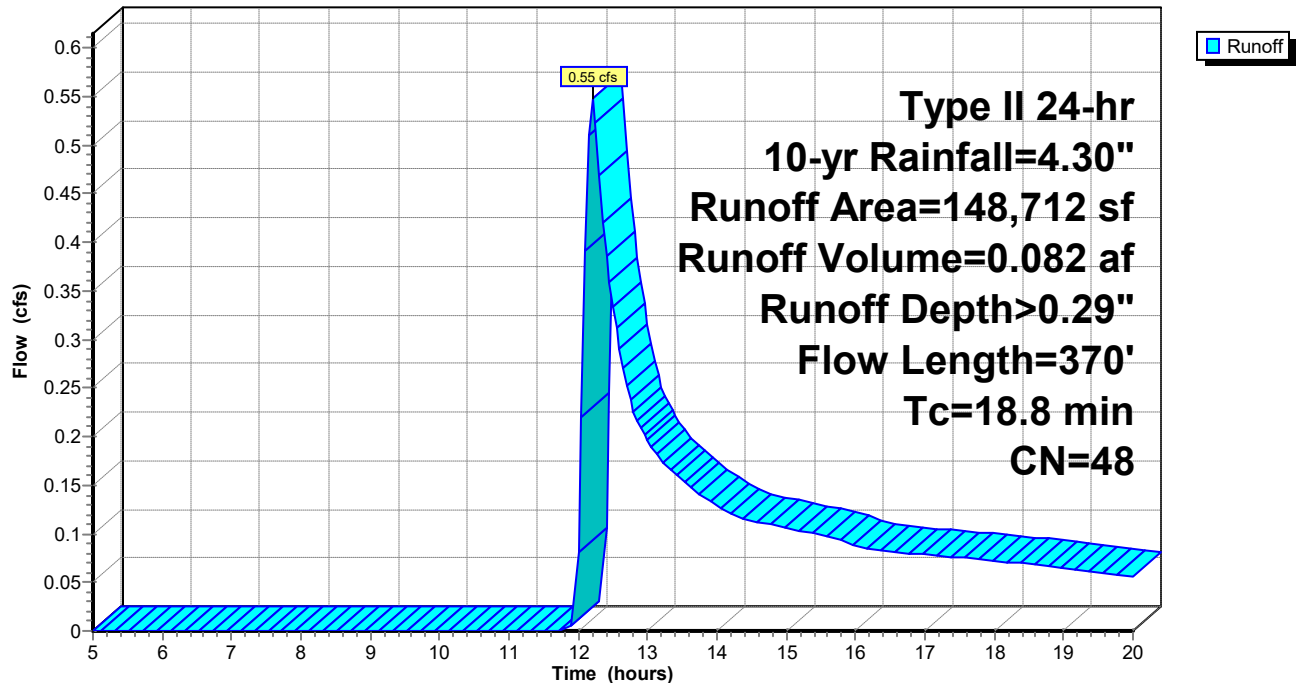
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.30"

Area (sf)	CN	Description
14,300	98	Roofs, HSG A
8,100	98	Paved roads w/curbs & sewers, HSG A
126,312	39	>75% Grass cover, Good, HSG A
148,712	48	Weighted Average
126,312		84.94% Pervious Area
22,400		15.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	180	0.0140	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
0.2	190	0.0680	13.69	164.26	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
18.8	370	Total			

Subcatchment 5S: Erann Ct

Hydrograph



Summary for Pond 6P: Erann Ct

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth > 0.29" for 10-yr event
 Inflow = 0.55 cfs @ 12.21 hrs, Volume= 0.082 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 711.95' @ 20.00 hrs Surf.Area= 3,884 sf Storage= 3,548 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description	
#1	711.00'	13,056 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
711.00	3,600	0.0	0	0
711.01	3,600	100.0	36	36
712.00	3,900	100.0	3,713	3,749
713.00	7,310	100.0	5,605	9,354
713.50	7,500	100.0	3,703	13,056

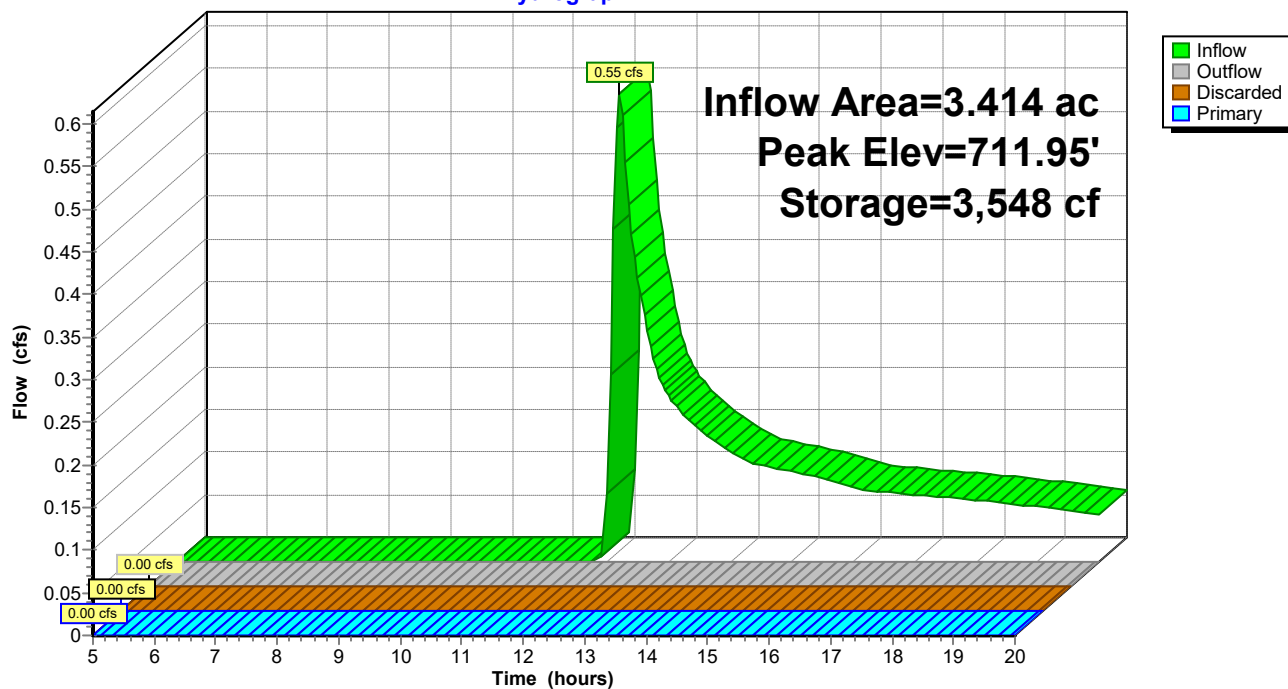
Device	Routing	Invert	Outlet Devices
#1	Discarded	711.00'	1.600 in/hr Exfiltration over Horizontal area from 707.00' - 711.00' Conductivity to Groundwater Elevation = 698.00' Excluded Horizontal area = 0 sf
#2	Primary	713.00'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=711.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=711.00' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 6P: Erann Ct

Hydrograph

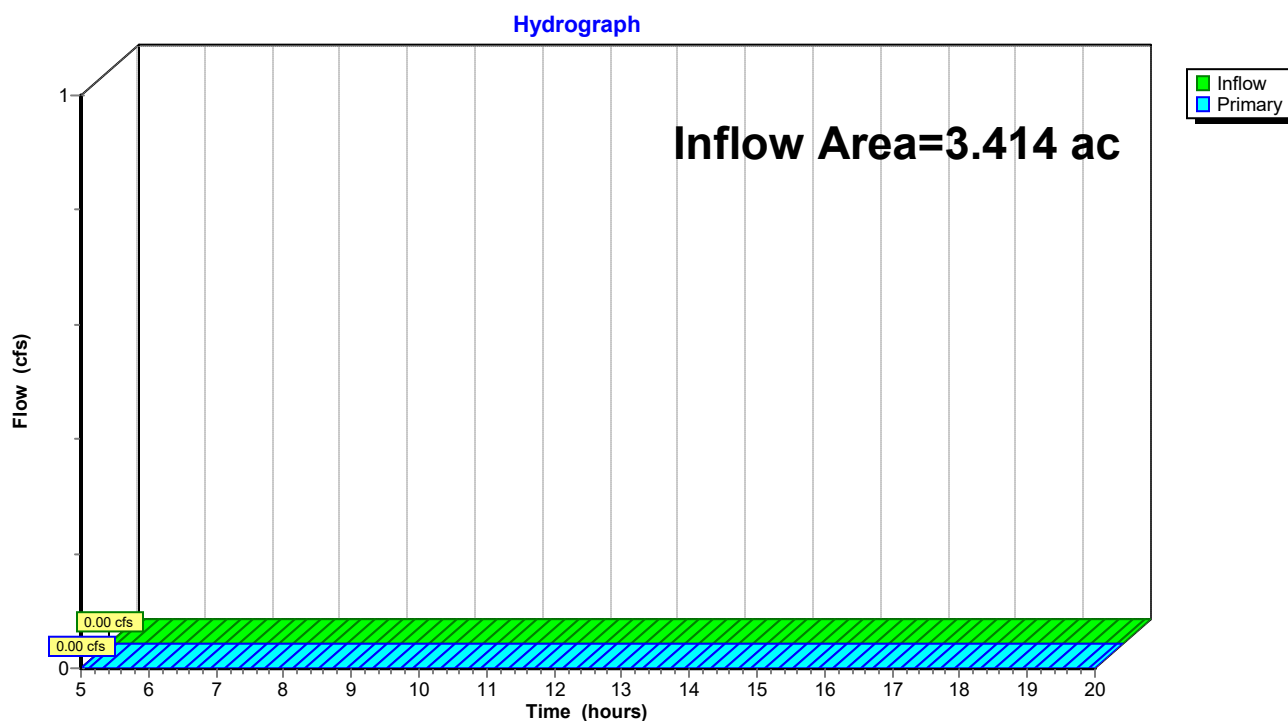


Summary for Pond 7P: Analysis Point

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

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 7P: Analysis Point

20191230 Town of Holland pre*Type II 24-hr 25-yr Rainfall=5.34"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 5S: Erann Ct

Runoff Area=148,712 sf 15.06% Impervious Runoff Depth>0.61"
Flow Length=370' Tc=18.8 min CN=48 Runoff=1.84 cfs 0.174 af

Pond 6P: Erann Ct

Peak Elev=712.74' Storage=7,571 cf Inflow=1.84 cfs 0.174 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 7P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 3.414 ac Runoff Volume = 0.174 af Average Runoff Depth = 0.61"
84.94% Pervious = 2.900 ac 15.06% Impervious = 0.514 ac

Summary for Subcatchment 5S: Erann Ct

Runoff = 1.84 cfs @ 12.17 hrs, Volume= 0.174 af, Depth> 0.61"

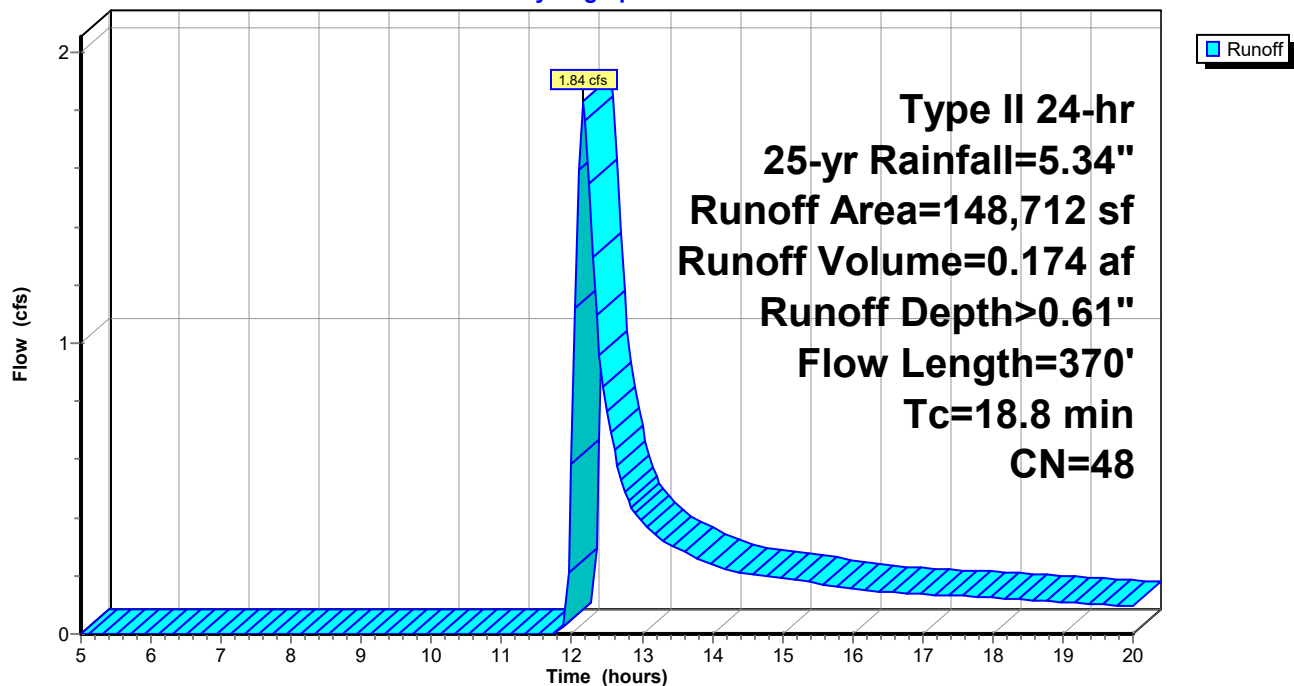
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=5.34"

Area (sf)	CN	Description
14,300	98	Roofs, HSG A
8,100	98	Paved roads w/curbs & sewers, HSG A
126,312	39	>75% Grass cover, Good, HSG A
148,712	48	Weighted Average
126,312		84.94% Pervious Area
22,400		15.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	180	0.0140	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
0.2	190	0.0680	13.69	164.26	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
18.8	370	Total			

Subcatchment 5S: Erann Ct

Hydrograph



Summary for Pond 6P: Erann Ct

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth > 0.61" for 25-yr event
 Inflow = 1.84 cfs @ 12.17 hrs, Volume= 0.174 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 712.74' @ 20.00 hrs Surf.Area= 6,425 sf Storage= 7,571 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description	
#1	711.00'	13,056 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
711.00	3,600	0.0	0	0
711.01	3,600	100.0	36	36
712.00	3,900	100.0	3,713	3,749
713.00	7,310	100.0	5,605	9,354
713.50	7,500	100.0	3,703	13,056

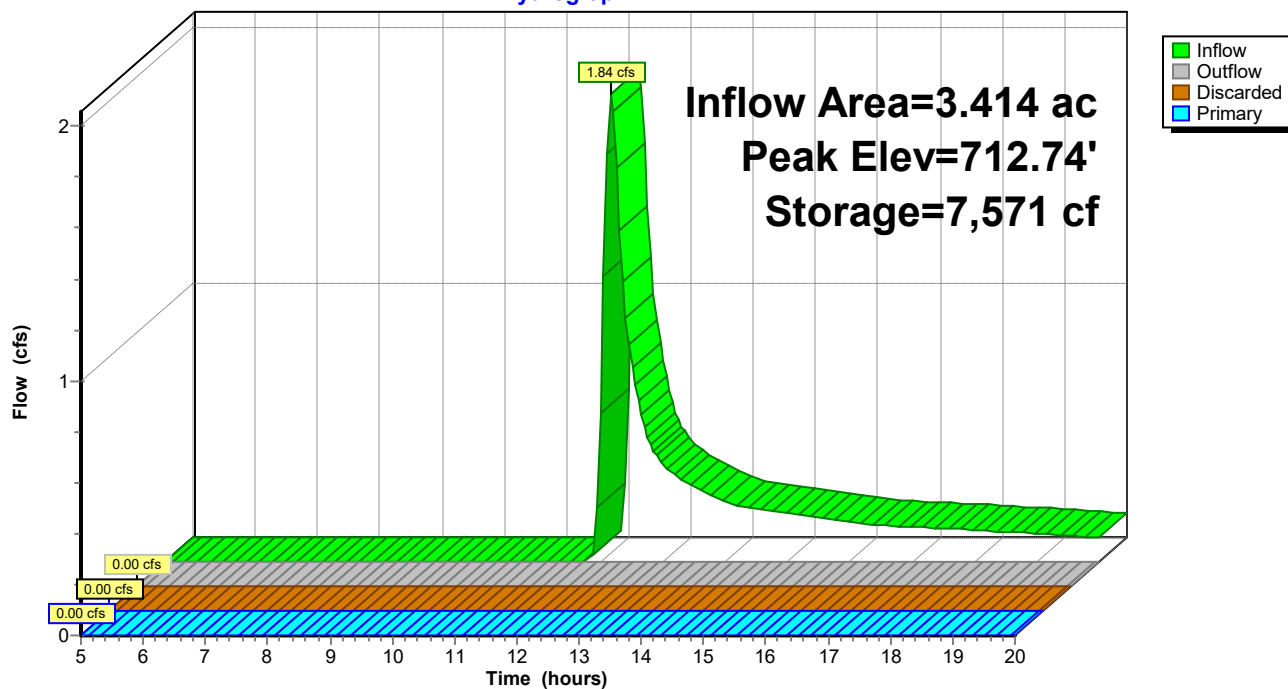
Device	Routing	Invert	Outlet Devices
#1	Discarded	711.00'	1.600 in/hr Exfiltration over Horizontal area from 707.00' - 711.00' Conductivity to Groundwater Elevation = 698.00' Excluded Horizontal area = 0 sf
#2	Primary	713.00'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=711.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=711.00' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 6P: Erann Ct

Hydrograph

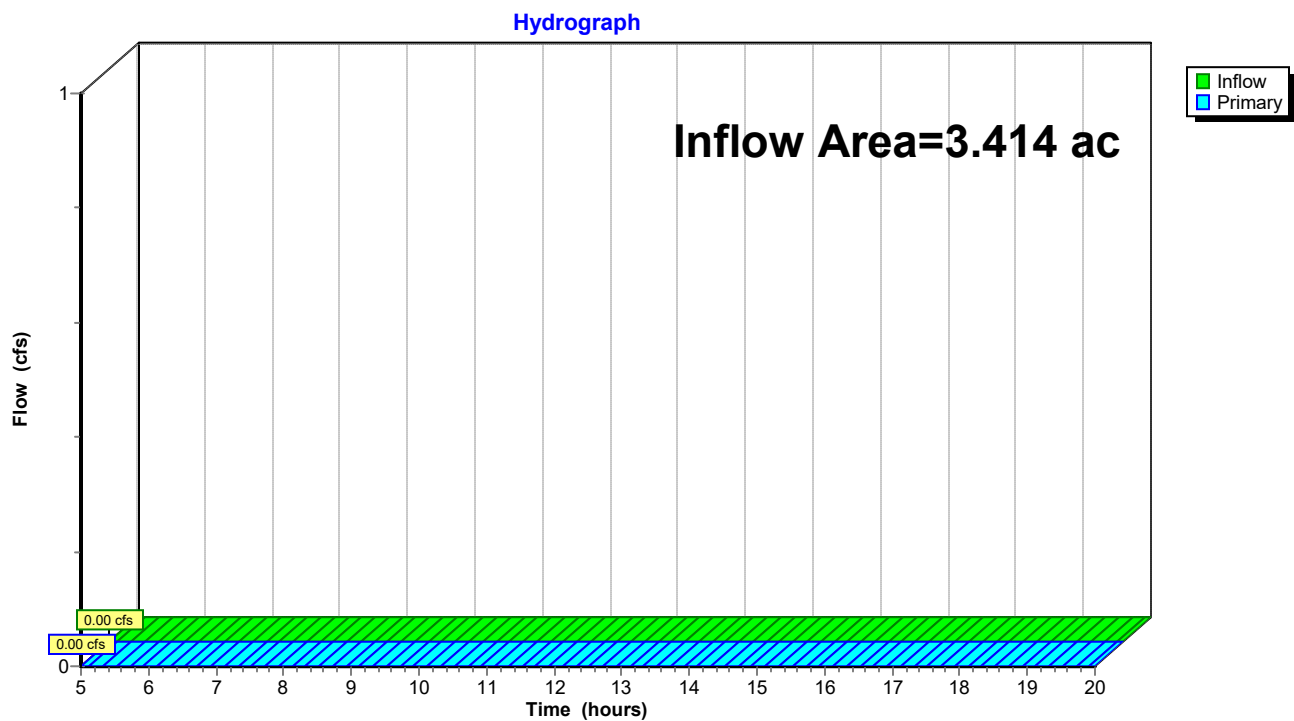


Summary for Pond 7P: Analysis Point

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

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth = 0.00" for 25-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 7P: Analysis Point

20191230 Town of Holland pre*Type II 24-hr 50-yr Rainfall=6.25"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 5S: Erann Ct

Runoff Area=148,712 sf 15.06% Impervious Runoff Depth>0.97"
Flow Length=370' Tc=18.8 min CN=48 Runoff=3.40 cfs 0.276 af

Pond 6P: Erann Ct

Peak Elev=713.02' Storage=9,525 cf Inflow=3.40 cfs 0.276 af
Discarded=0.00 cfs 0.000 af Primary=0.20 cfs 0.058 af Outflow=0.20 cfs 0.058 af

Pond 7P: Analysis Point

Inflow=0.20 cfs 0.058 af
Primary=0.20 cfs 0.058 af

Total Runoff Area = 3.414 ac Runoff Volume = 0.276 af Average Runoff Depth = 0.97"
84.94% Pervious = 2.900 ac 15.06% Impervious = 0.514 ac

Summary for Subcatchment 5S: Erann Ct

Runoff = 3.40 cfs @ 12.15 hrs, Volume= 0.276 af, Depth> 0.97"

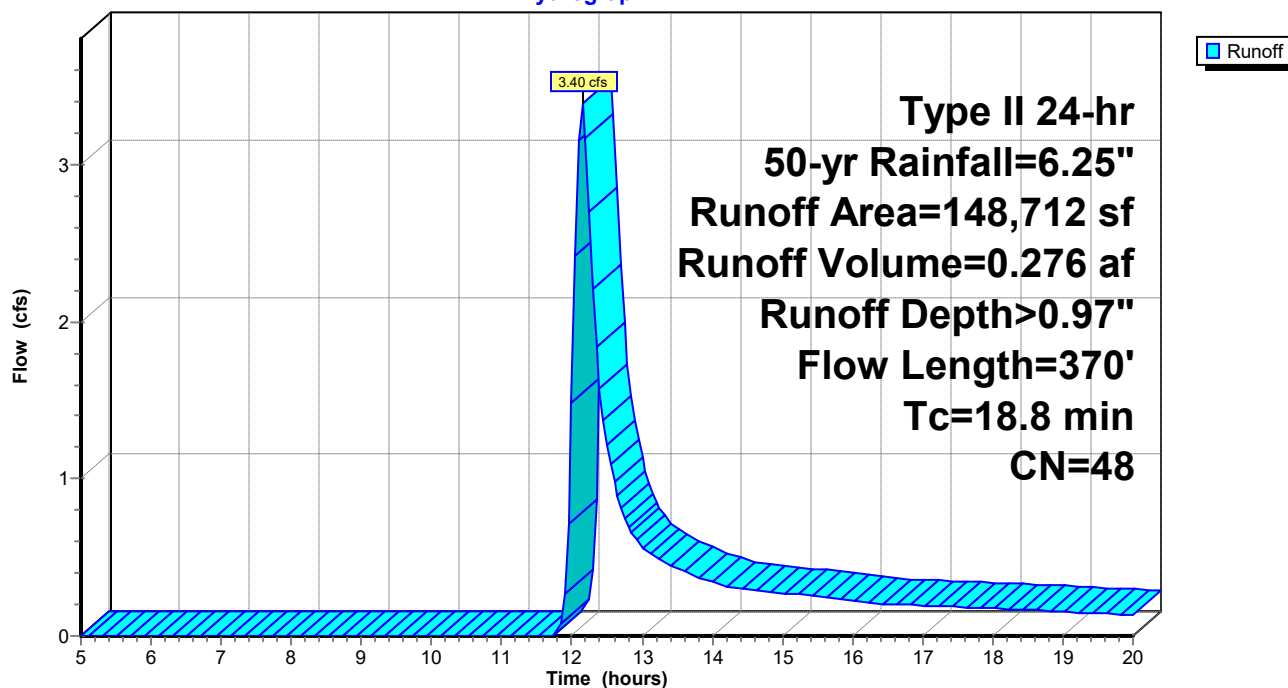
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=6.25"

Area (sf)	CN	Description
14,300	98	Roofs, HSG A
8,100	98	Paved roads w/curbs & sewers, HSG A
126,312	39	>75% Grass cover, Good, HSG A
148,712	48	Weighted Average
126,312		84.94% Pervious Area
22,400		15.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	180	0.0140	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
0.2	190	0.0680	13.69	164.26	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
18.8	370	Total			

Subcatchment 5S: Erann Ct

Hydrograph



Summary for Pond 6P: Erann Ct

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth > 0.97" for 50-yr event
 Inflow = 3.40 cfs @ 12.15 hrs, Volume= 0.276 af
 Outflow = 0.20 cfs @ 16.72 hrs, Volume= 0.058 af, Atten= 94%, Lag= 274.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.20 cfs @ 16.72 hrs, Volume= 0.058 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 713.02' @ 16.72 hrs Surf.Area= 7,319 sf Storage= 9,525 cf

Plug-Flow detention time= 346.5 min calculated for 0.058 af (21% of inflow)
 Center-of-Mass det. time= 229.4 min (1,073.2 - 843.8)

Volume	Invert	Avail.Storage	Storage Description	
#1	711.00'	13,056 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
711.00	3,600	0.0	0	0
711.01	3,600	100.0	36	36
712.00	3,900	100.0	3,713	3,749
713.00	7,310	100.0	5,605	9,354
713.50	7,500	100.0	3,703	13,056

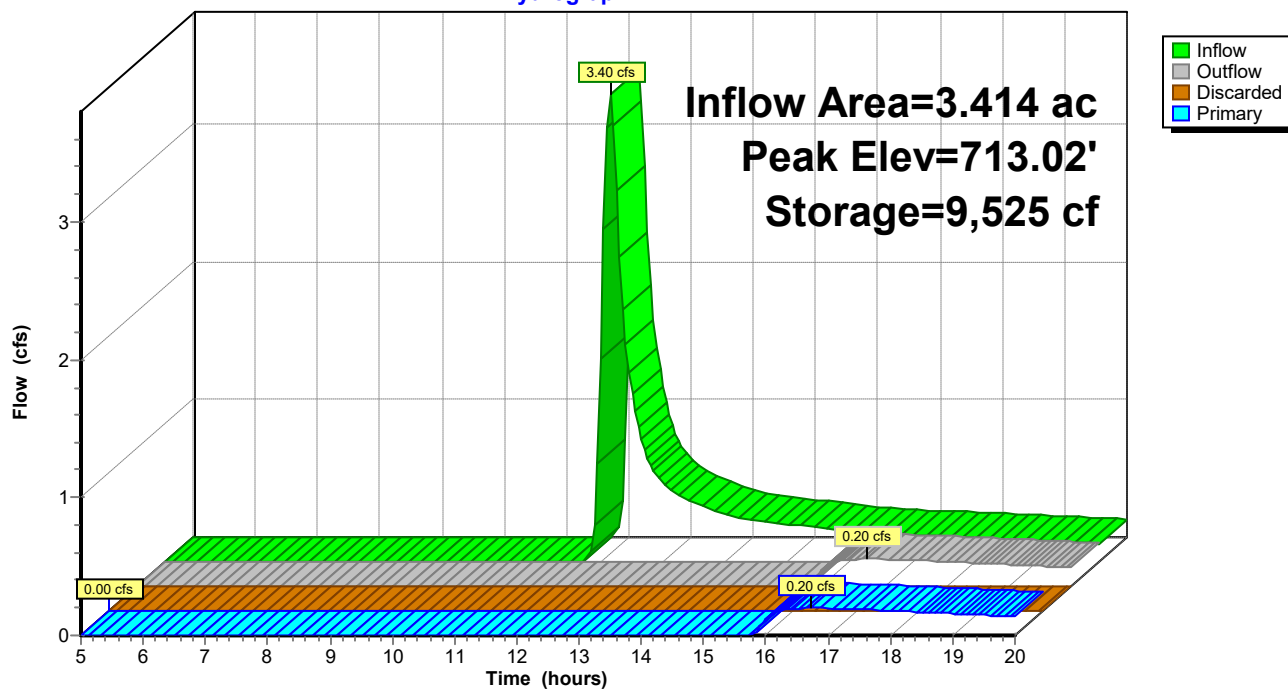
Device	Routing	Invert	Outlet Devices
#1	Discarded	711.00'	1.600 in/hr Exfiltration over Horizontal area from 707.00' - 711.00' Conductivity to Groundwater Elevation = 698.00' Excluded Horizontal area = 0 sf
#2	Primary	713.00'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=711.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.19 cfs @ 16.72 hrs HW=713.02' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 0.19 cfs @ 0.41 fps)

Pond 6P: Erann Ct

Hydrograph

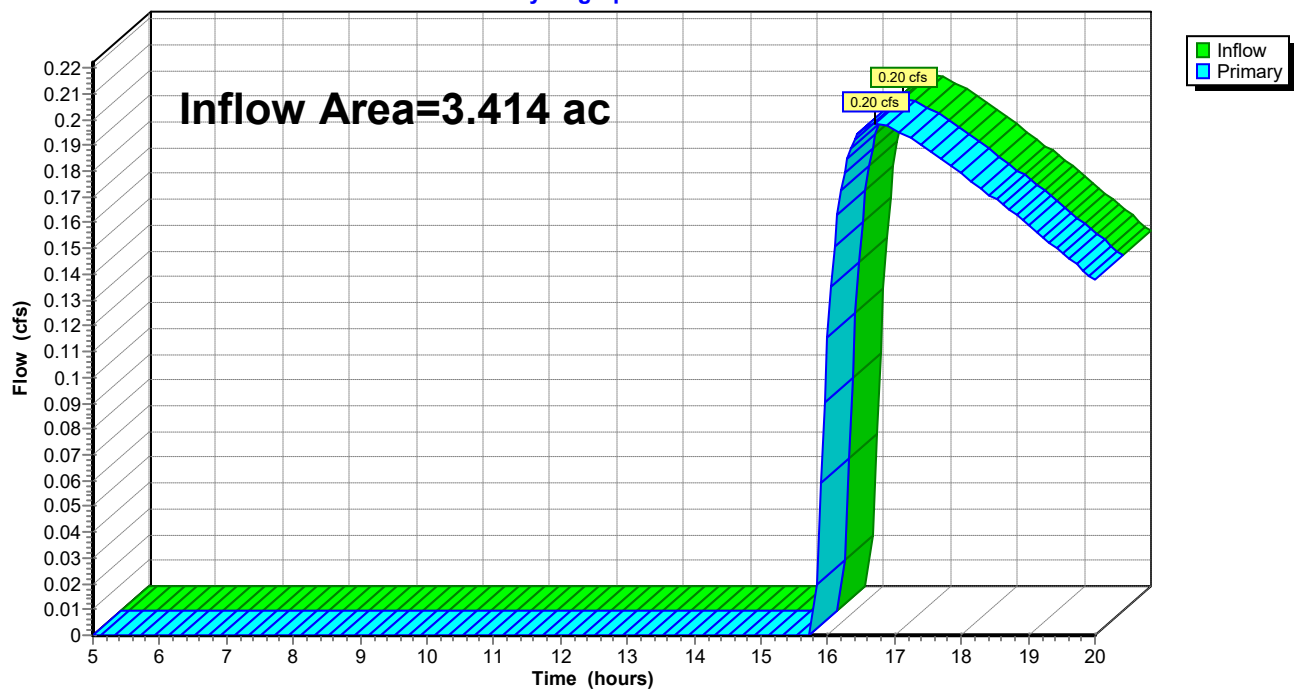


Summary for Pond 7P: Analysis Point

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

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth > 0.20" for 50-yr event
Inflow = 0.20 cfs @ 16.72 hrs, Volume= 0.058 af
Primary = 0.20 cfs @ 16.72 hrs, Volume= 0.058 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 7P: Analysis Point**Hydrograph**

20191230 Town of Holland pre*Type II 24-hr 100-yr Rainfall=7.24"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 5S: Erann Ct

Runoff Area=148,712 sf 15.06% Impervious Runoff Depth>1.42"
Flow Length=370' Tc=18.8 min CN=48 Runoff=5.42 cfs 0.405 af

Pond 6P: Erann Ct

Peak Elev=713.05' Storage=9,731 cf Inflow=5.42 cfs 0.405 af
Discarded=0.00 cfs 0.000 af Primary=0.63 cfs 0.186 af Outflow=0.63 cfs 0.186 af

Pond 7P: Analysis Point

Inflow=0.63 cfs 0.186 af
Primary=0.63 cfs 0.186 af

Total Runoff Area = 3.414 ac Runoff Volume = 0.405 af Average Runoff Depth = 1.42"
84.94% Pervious = 2.900 ac 15.06% Impervious = 0.514 ac

Summary for Subcatchment 5S: Erann Ct

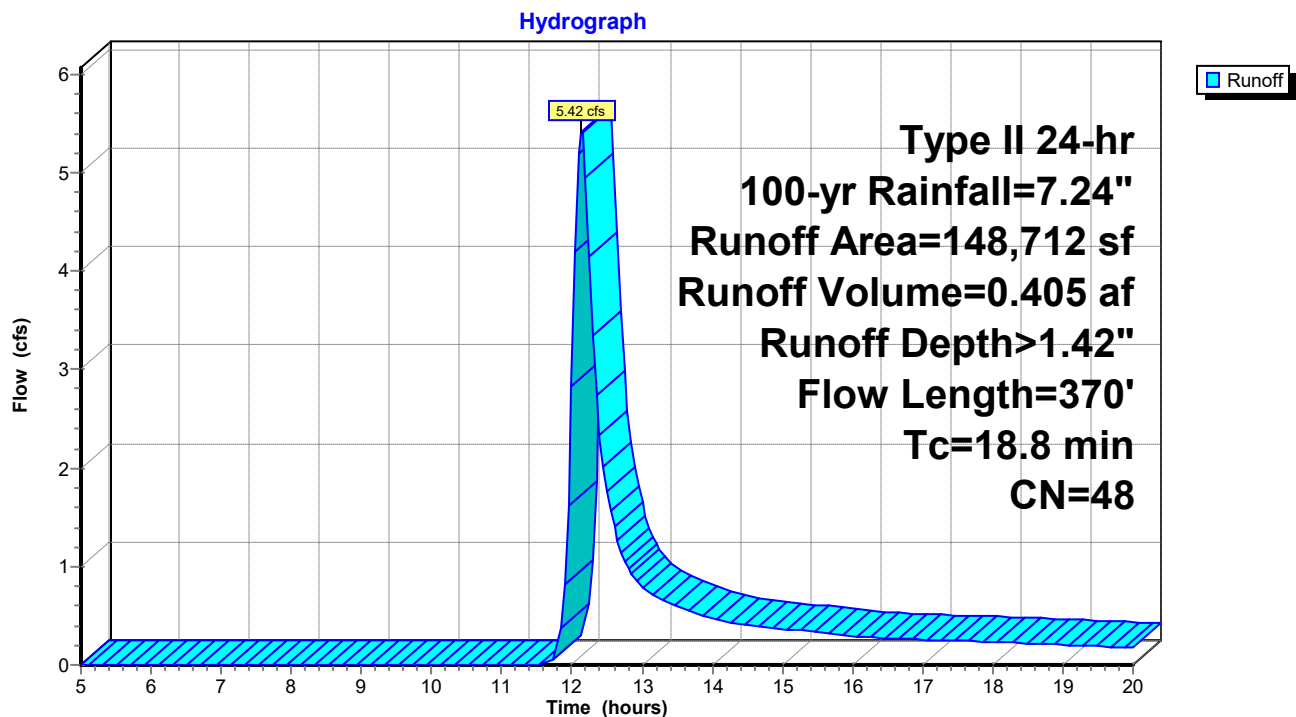
Runoff = 5.42 cfs @ 12.14 hrs, Volume= 0.405 af, Depth> 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.24"

Area (sf)	CN	Description
14,300	98	Roofs, HSG A
8,100	98	Paved roads w/curbs & sewers, HSG A
126,312	39	>75% Grass cover, Good, HSG A
148,712	48	Weighted Average
126,312		84.94% Pervious Area
22,400		15.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	180	0.0140	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
0.2	190	0.0680	13.69	164.26	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
18.8	370	Total			

Subcatchment 5S: Erann Ct



Summary for Pond 6P: Erann Ct

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth > 1.42" for 100-yr event
 Inflow = 5.42 cfs @ 12.14 hrs, Volume= 0.405 af
 Outflow = 0.63 cfs @ 13.37 hrs, Volume= 0.186 af, Atten= 88%, Lag= 73.9 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.63 cfs @ 13.37 hrs, Volume= 0.186 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 713.05' @ 13.37 hrs Surf.Area= 7,330 sf Storage= 9,731 cf

Plug-Flow detention time= 216.8 min calculated for 0.186 af (46% of inflow)
 Center-of-Mass det. time= 116.0 min (950.0 - 833.9)

Volume	Invert	Avail.Storage	Storage Description	
#1	711.00'	13,056 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
711.00	3,600	0.0	0	0
711.01	3,600	100.0	36	36
712.00	3,900	100.0	3,713	3,749
713.00	7,310	100.0	5,605	9,354
713.50	7,500	100.0	3,703	13,056

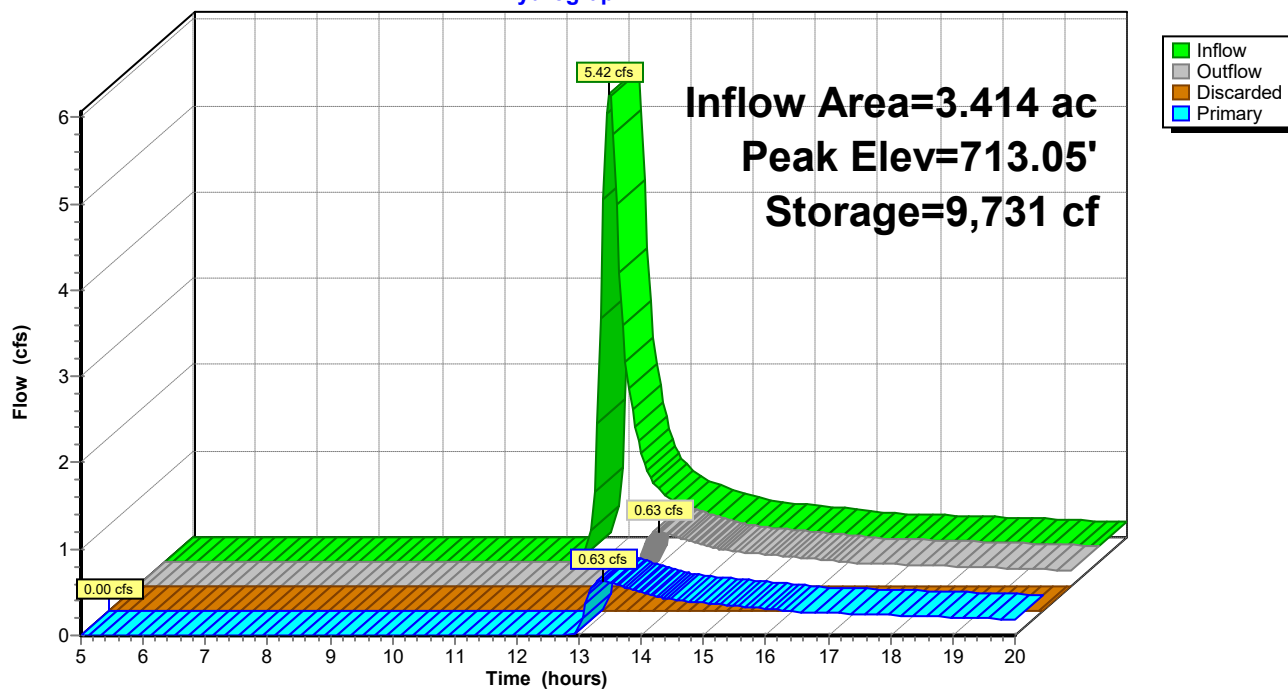
Device	Routing	Invert	Outlet Devices
#1	Discarded	711.00'	1.600 in/hr Exfiltration over Horizontal area from 707.00' - 711.00' Conductivity to Groundwater Elevation = 698.00' Excluded Horizontal area = 0 sf
#2	Primary	713.00'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=711.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.63 cfs @ 13.37 hrs HW=713.05' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 0.63 cfs @ 0.61 fps)

Pond 6P: Erann Ct

Hydrograph



Summary for Pond 7P: Analysis Point

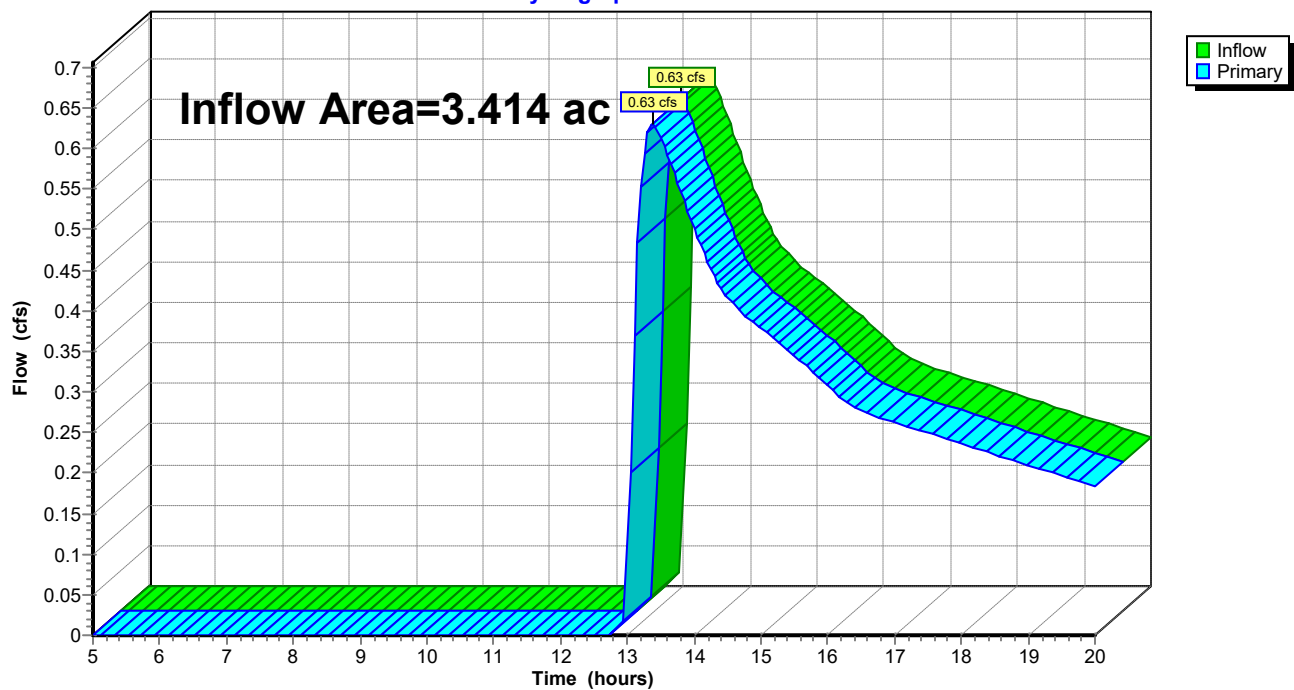
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth > 0.65" for 100-yr event
Inflow = 0.63 cfs @ 13.37 hrs, Volume= 0.186 af
Primary = 0.63 cfs @ 13.37 hrs, Volume= 0.186 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 7P: Analysis Point

Hydrograph



20191230 Town of Holland pre*Type II 24-hr 200-yr Rainfall=8.33"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 5S: Erann Ct

Runoff Area=148,712 sf 15.06% Impervious Runoff Depth>1.98"
Flow Length=370' Tc=18.8 min CN=48 Runoff=7.94 cfs 0.565 af

Pond 6P: Erann Ct

Peak Elev=713.13' Storage=10,278 cf Inflow=7.94 cfs 0.565 af
Discarded=0.00 cfs 0.000 af Primary=2.40 cfs 0.345 af Outflow=2.40 cfs 0.345 af

Pond 7P: Analysis Point

Inflow=2.40 cfs 0.345 af
Primary=2.40 cfs 0.345 af

Total Runoff Area = 3.414 ac Runoff Volume = 0.565 af Average Runoff Depth = 1.98"
84.94% Pervious = 2.900 ac 15.06% Impervious = 0.514 ac

Summary for Subcatchment 5S: Erann Ct

Runoff = 7.94 cfs @ 12.13 hrs, Volume= 0.565 af, Depth> 1.98"

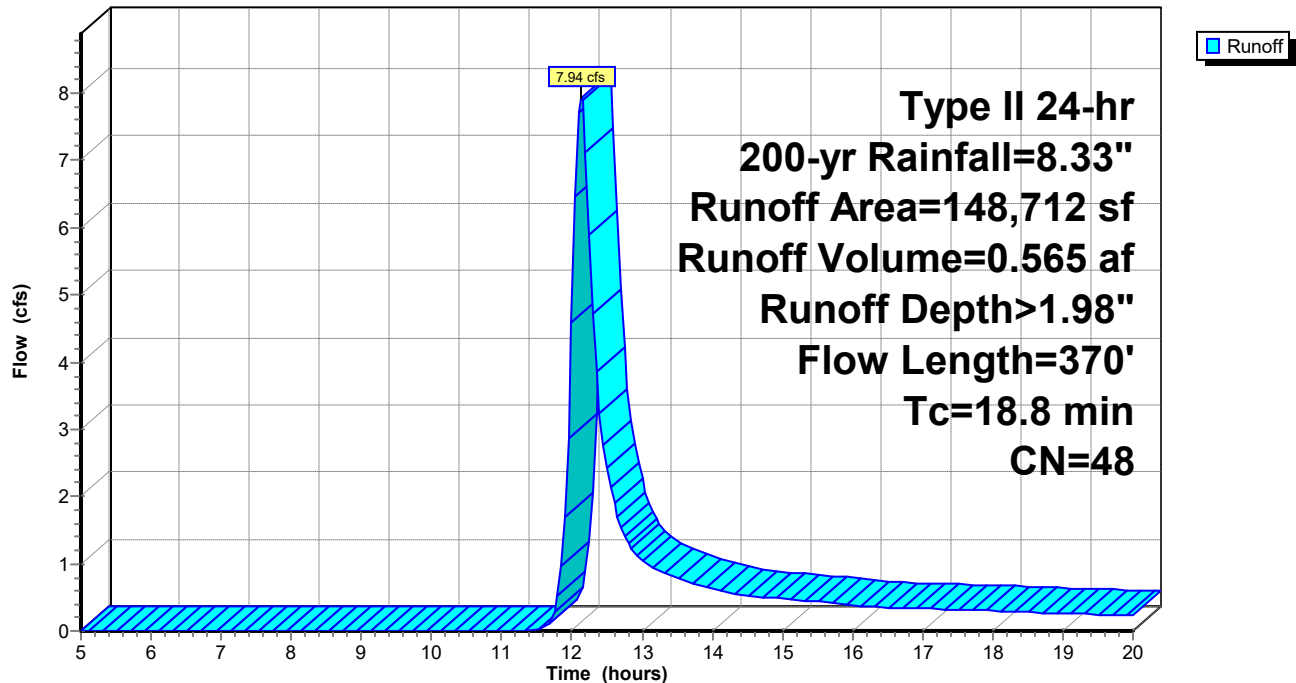
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 200-yr Rainfall=8.33"

Area (sf)	CN	Description
14,300	98	Roofs, HSG A
8,100	98	Paved roads w/curbs & sewers, HSG A
126,312	39	>75% Grass cover, Good, HSG A
148,712	48	Weighted Average
126,312		84.94% Pervious Area
22,400		15.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	180	0.0140	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
0.2	190	0.0680	13.69	164.26	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
18.8	370	Total			

Subcatchment 5S: Erann Ct

Hydrograph



Summary for Pond 6P: Erann Ct

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth > 1.98" for 200-yr event
 Inflow = 7.94 cfs @ 12.13 hrs, Volume= 0.565 af
 Outflow = 2.40 cfs @ 12.51 hrs, Volume= 0.345 af, Atten= 70%, Lag= 22.8 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 2.40 cfs @ 12.51 hrs, Volume= 0.345 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 713.13' @ 12.51 hrs Surf.Area= 7,358 sf Storage= 10,278 cf

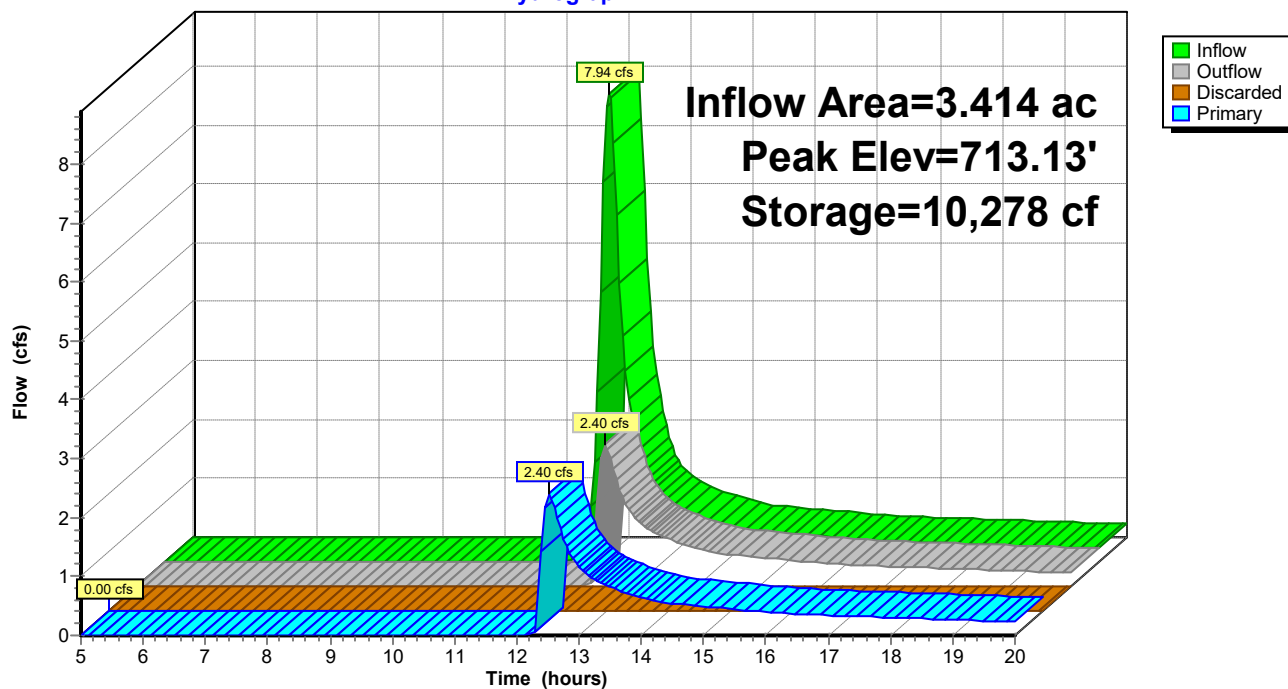
Plug-Flow detention time= 152.3 min calculated for 0.345 af (61% of inflow)
 Center-of-Mass det. time= 66.7 min (892.9 - 826.2)

Volume	Invert	Avail.Storage	Storage Description	
#1	711.00'	13,056 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
711.00	3,600	0.0	0	0
711.01	3,600	100.0	36	36
712.00	3,900	100.0	3,713	3,749
713.00	7,310	100.0	5,605	9,354
713.50	7,500	100.0	3,703	13,056

Device	Routing	Invert	Outlet Devices
#1	Discarded	711.00'	1.600 in/hr Exfiltration over Horizontal area from 707.00' - 711.00' Conductivity to Groundwater Elevation = 698.00' Excluded Horizontal area = 0 sf
#2	Primary	713.00'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=711.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=2.37 cfs @ 12.51 hrs HW=713.13' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 2.37 cfs @ 0.95 fps)

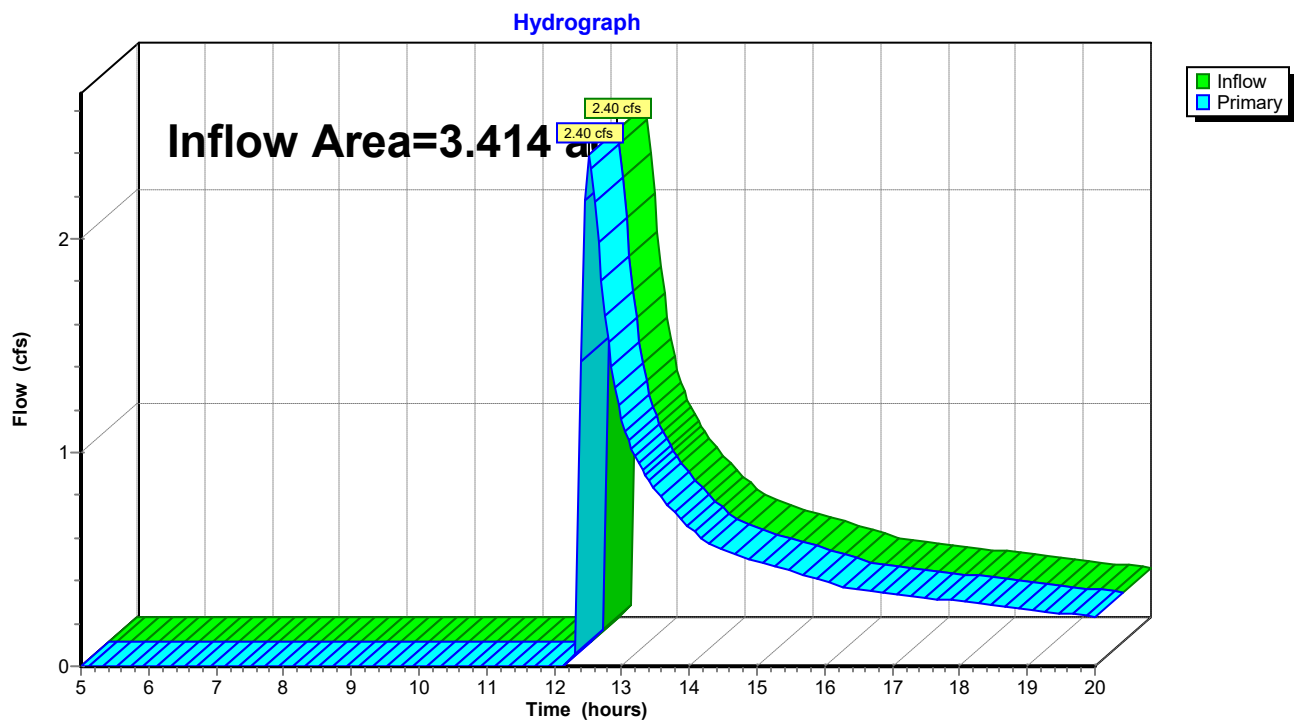
Pond 6P: Erann Ct**Hydrograph**

Summary for Pond 7P: Analysis Point

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

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth > 1.21" for 200-yr event
Inflow = 2.40 cfs @ 12.51 hrs, Volume= 0.345 af
Primary = 2.40 cfs @ 12.51 hrs, Volume= 0.345 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 7P: Analysis Point

20191230 Town of Holland pre

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.152	39	>75% Grass cover, Good, HSG A (1S)
10.819	39	>75% Grass cover, Good, HSG B (1S)
0.272	98	Paved roads w/curbs & sewers, HSG A (1S)
0.239	98	Roofs, HSG A (1S)
13.481	41	TOTAL AREA

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.662	HSG A	1S
10.819	HSG B	1S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
13.481		TOTAL AREA

20191230 Town of Holland pre

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
2.152	10.819	0.000	0.000	0.000	12.970	>75% Grass cover, Good	1S
0.272	0.000	0.000	0.000	0.000	0.272	Paved roads w/curbs & sewers	1S
0.239	0.000	0.000	0.000	0.000	0.239	Roofs	1S
2.662	10.819	0.000	0.000	0.000	13.481	TOTAL AREA	

20191230 Town of Holland pre*Type II 24-hr 1-yr Rainfall=2.56"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Van Dunk

Runoff Area=587,232 sf 3.79% Impervious Runoff Depth=0.00"
Flow Length=875' Tc=14.0 min CN=41 Runoff=0.00 cfs 0.000 af

Pond 2P: Van Dunk

Peak Elev=709.00' Storage=0 cf Inflow=0.00 cfs 0.000 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 8P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 13.481 ac Runoff Volume = 0.000 af Average Runoff Depth = 0.00"
96.21% Pervious = 12.970 ac 3.79% Impervious = 0.511 ac

Summary for Subcatchment 1S: Van Dunk

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

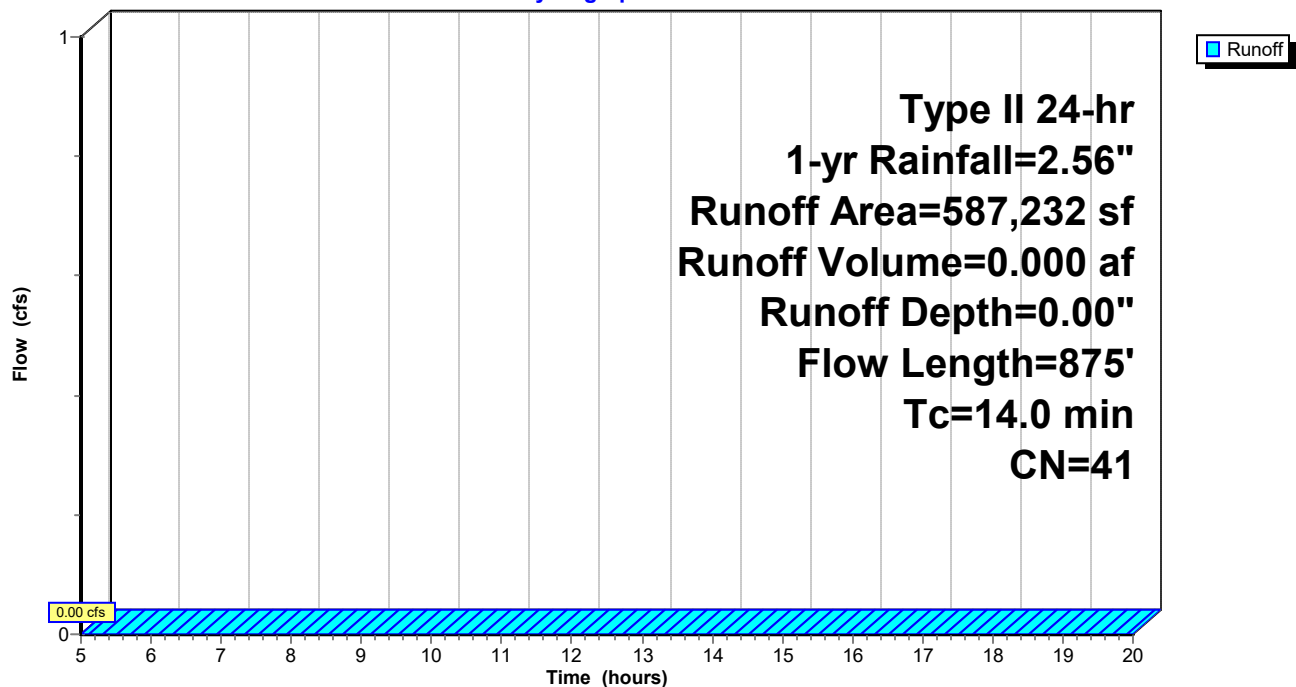
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.56"

Area (sf)	CN	Description
10,400	98	Roofs, HSG A
11,850	98	Paved roads w/curbs & sewers, HSG A
93,725	39	>75% Grass cover, Good, HSG A
* 471,257	39	>75% Grass cover, Good, HSG B
587,232	41	Weighted Average
564,982		96.21% Pervious Area
22,250		3.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0270	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
1.6	725	0.0200	7.42	89.08	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
14.0	875	Total			

Subcatchment 1S: Van Dunk

Hydrograph



Summary for Pond 2P: Van Dunk

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth = 0.00" for 1-yr event
 Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 709.00' @ 5.00 hrs Surf.Area= 4,000 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description	
#1	709.00'	55,623 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
709.00	4,000	0.0	0	0
710.00	5,346	100.0	4,673	4,673
711.00	10,428	100.0	7,887	12,560
712.00	15,513	100.0	12,971	25,531
713.00	22,115	100.0	18,814	44,345
713.50	23,000	100.0	11,279	55,623

Device	Routing	Invert	Outlet Devices
#1	Discarded	709.00'	1.500 in/hr Exfiltration over Horizontal area from 705.00' - 709.00' Conductivity to Groundwater Elevation = 700.00' Excluded Horizontal area = 0 sf
#2	Primary	712.75'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=709.00' (Free Discharge)

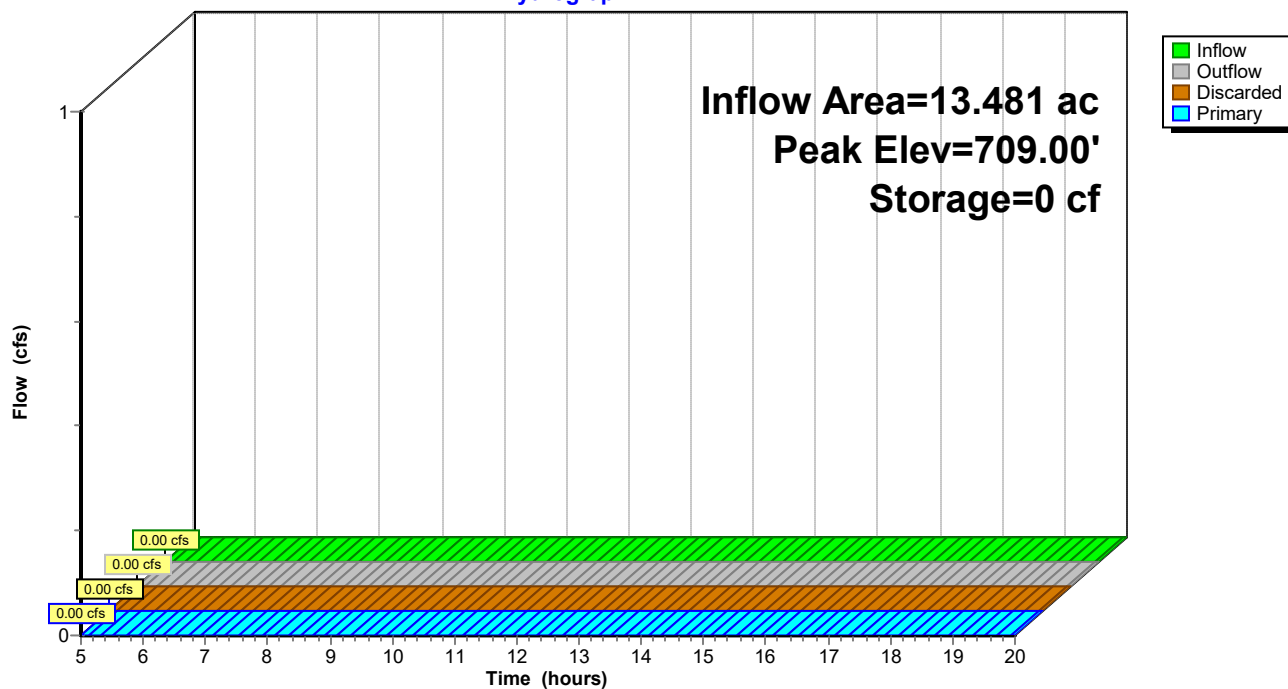
↑1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=709.00' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 2P: Van Dunk

Hydrograph

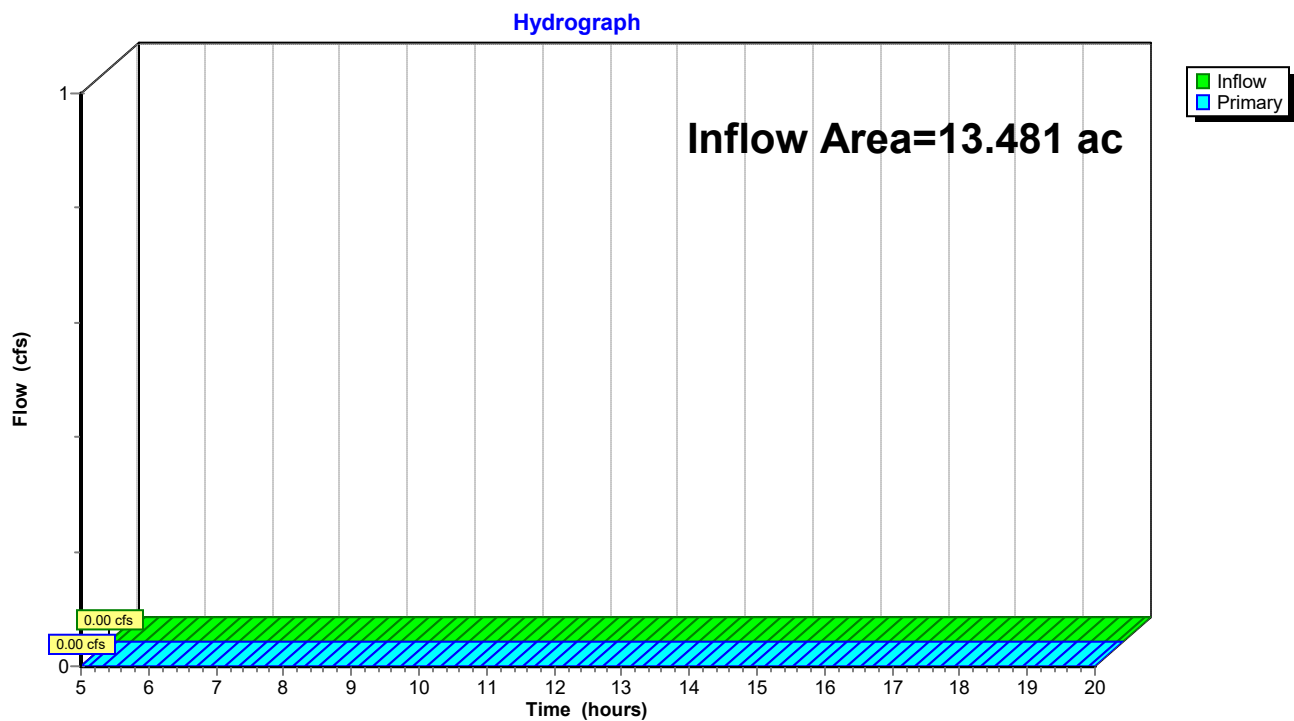


Summary for Pond 8P: Analysis Point

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

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 8P: Analysis Point

20191230 Town of Holland pre*Type II 24-hr 2-yr Rainfall=2.93"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Van Dunk

Runoff Area=587,232 sf 3.79% Impervious Runoff Depth=0.00"
Flow Length=875' Tc=14.0 min CN=41 Runoff=0.00 cfs 0.000 af

Pond 2P: Van Dunk

Peak Elev=709.00' Storage=0 cf Inflow=0.00 cfs 0.000 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 8P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 13.481 ac Runoff Volume = 0.000 af Average Runoff Depth = 0.00"
96.21% Pervious = 12.970 ac 3.79% Impervious = 0.511 ac

Summary for Subcatchment 1S: Van Dunk

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

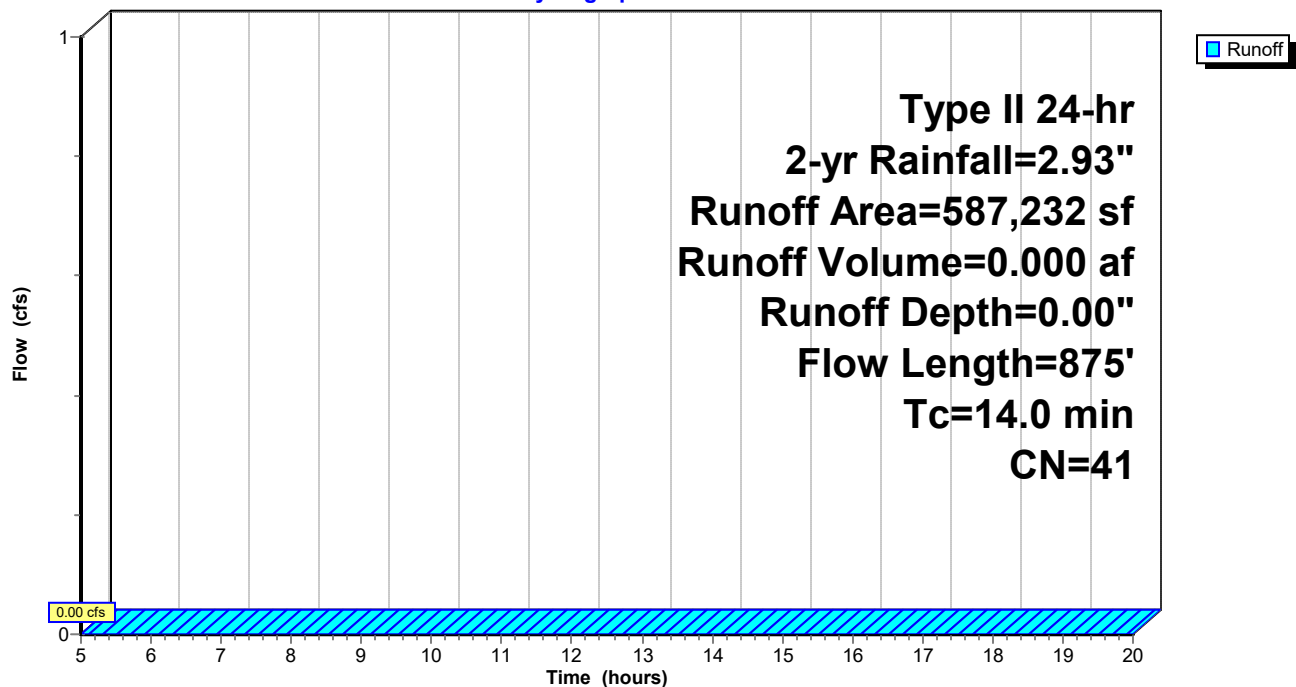
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=2.93"

Area (sf)	CN	Description
10,400	98	Roofs, HSG A
11,850	98	Paved roads w/curbs & sewers, HSG A
93,725	39	>75% Grass cover, Good, HSG A
* 471,257	39	>75% Grass cover, Good, HSG B
587,232	41	Weighted Average
564,982		96.21% Pervious Area
22,250		3.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0270	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
1.6	725	0.0200	7.42	89.08	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
14.0	875	Total			

Subcatchment 1S: Van Dunk

Hydrograph



Summary for Pond 2P: Van Dunk

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth = 0.00" for 2-yr event
 Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 709.00' @ 5.00 hrs Surf.Area= 4,000 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description	
#1	709.00'	55,623 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
709.00	4,000	0.0	0	0
710.00	5,346	100.0	4,673	4,673
711.00	10,428	100.0	7,887	12,560
712.00	15,513	100.0	12,971	25,531
713.00	22,115	100.0	18,814	44,345
713.50	23,000	100.0	11,279	55,623

Device	Routing	Invert	Outlet Devices
#1	Discarded	709.00'	1.500 in/hr Exfiltration over Horizontal area from 705.00' - 709.00' Conductivity to Groundwater Elevation = 700.00' Excluded Horizontal area = 0 sf
#2	Primary	712.75'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=709.00' (Free Discharge)

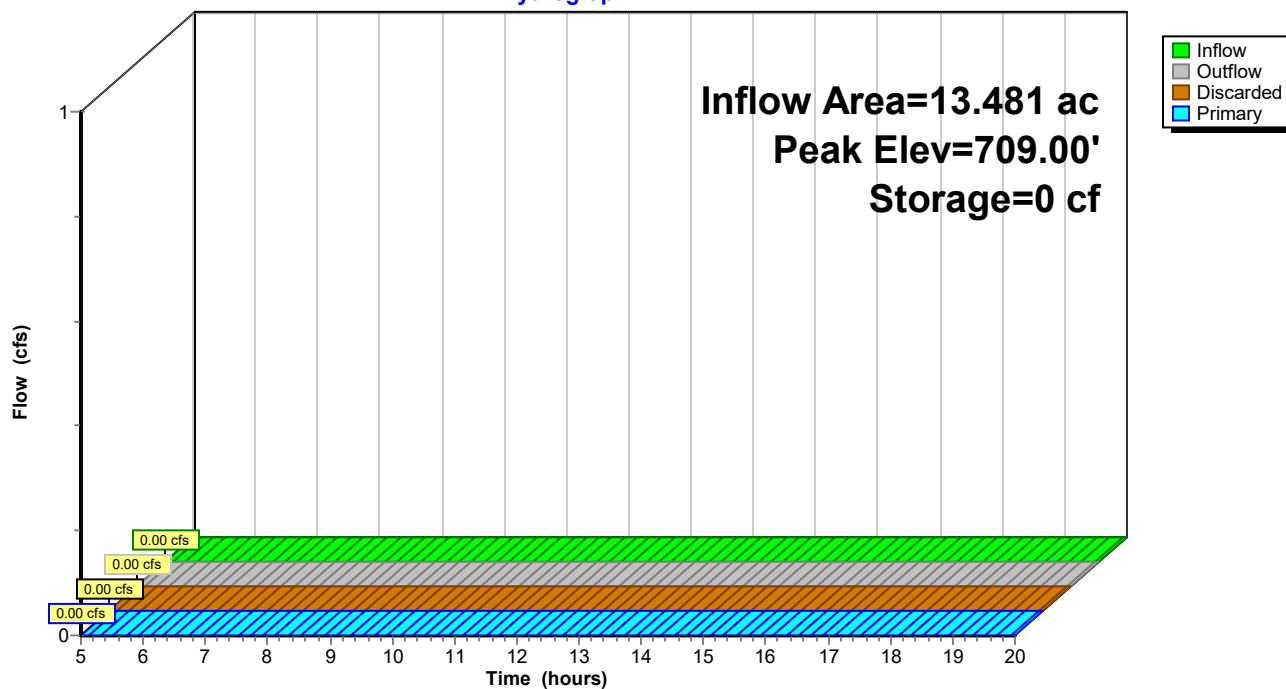
↑1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=709.00' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 2P: Van Dunk

Hydrograph

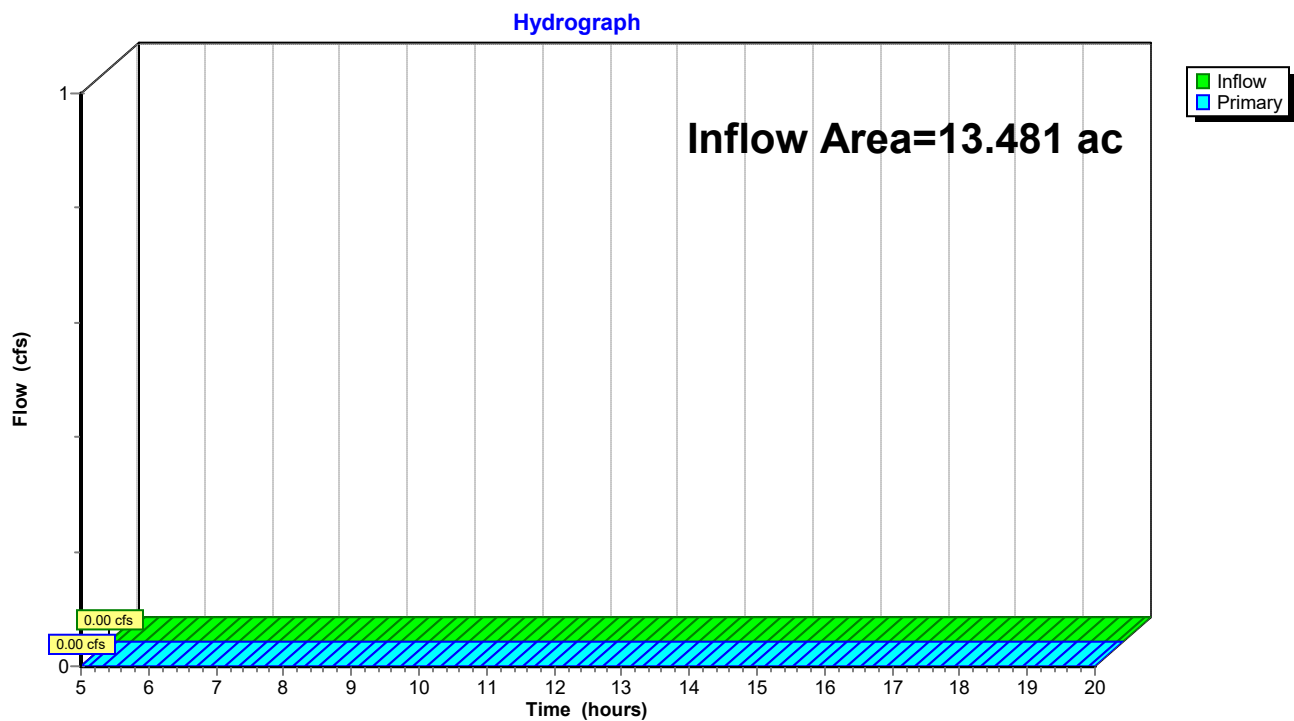


Summary for Pond 8P: Analysis Point

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

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 8P: Analysis Point

20191230 Town of Holland pre*Type II 24-hr 5-yr Rainfall=3.64"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Van Dunk

Runoff Area=587,232 sf 3.79% Impervious Runoff Depth>0.02"
Flow Length=875' Tc=14.0 min CN=41 Runoff=0.06 cfs 0.025 af

Pond 2P: Van Dunk

Peak Elev=709.26' Storage=1,087 cf Inflow=0.06 cfs 0.025 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 8P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 13.481 ac Runoff Volume = 0.025 af Average Runoff Depth = 0.02"
96.21% Pervious = 12.970 ac 3.79% Impervious = 0.511 ac

Summary for Subcatchment 1S: Van Dunk

Runoff = 0.06 cfs @ 18.08 hrs, Volume= 0.025 af, Depth> 0.02"

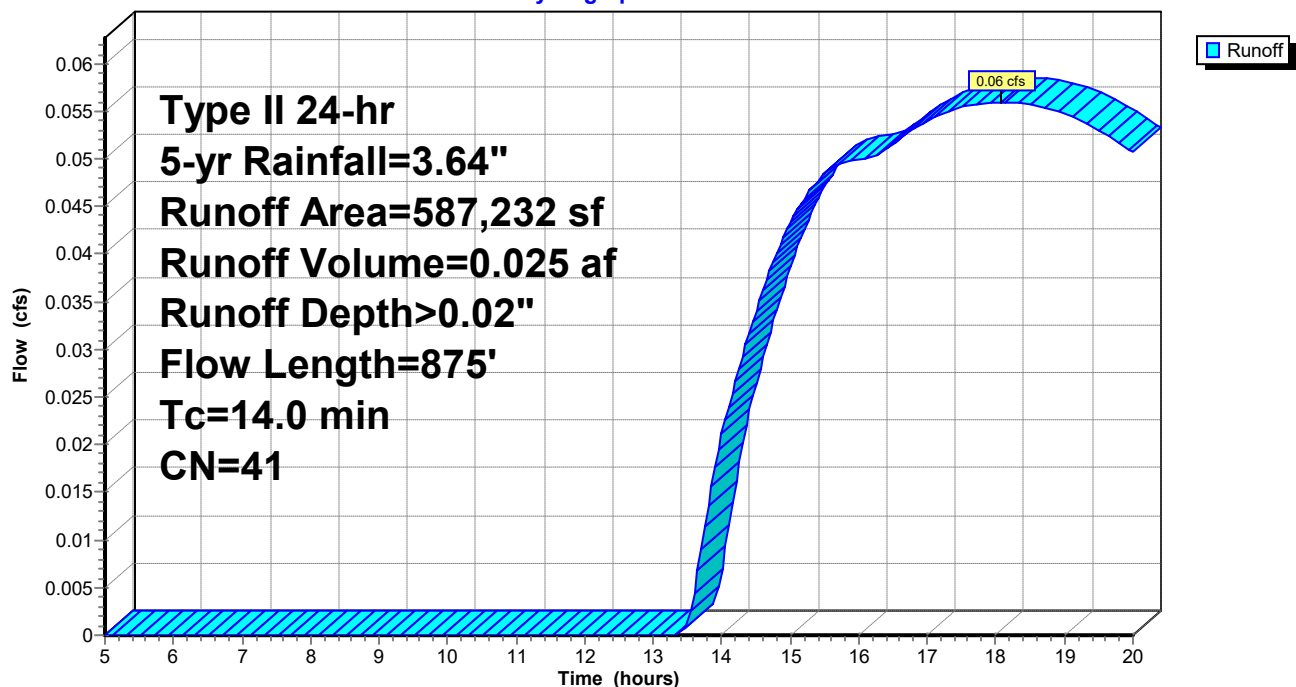
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-yr Rainfall=3.64"

Area (sf)	CN	Description
10,400	98	Roofs, HSG A
11,850	98	Paved roads w/curbs & sewers, HSG A
93,725	39	>75% Grass cover, Good, HSG A
* 471,257	39	>75% Grass cover, Good, HSG B
587,232	41	Weighted Average
564,982		96.21% Pervious Area
22,250		3.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0270	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
1.6	725	0.0200	7.42	89.08	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
14.0	875	Total			

Subcatchment 1S: Van Dunk

Hydrograph



Summary for Pond 2P: Van Dunk

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth > 0.02" for 5-yr event
 Inflow = 0.06 cfs @ 18.08 hrs, Volume= 0.025 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 709.26' @ 20.00 hrs Surf.Area= 4,351 sf Storage= 1,087 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description	
#1	709.00'	55,623 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
709.00	4,000	0.0	0	0
710.00	5,346	100.0	4,673	4,673
711.00	10,428	100.0	7,887	12,560
712.00	15,513	100.0	12,971	25,531
713.00	22,115	100.0	18,814	44,345
713.50	23,000	100.0	11,279	55,623

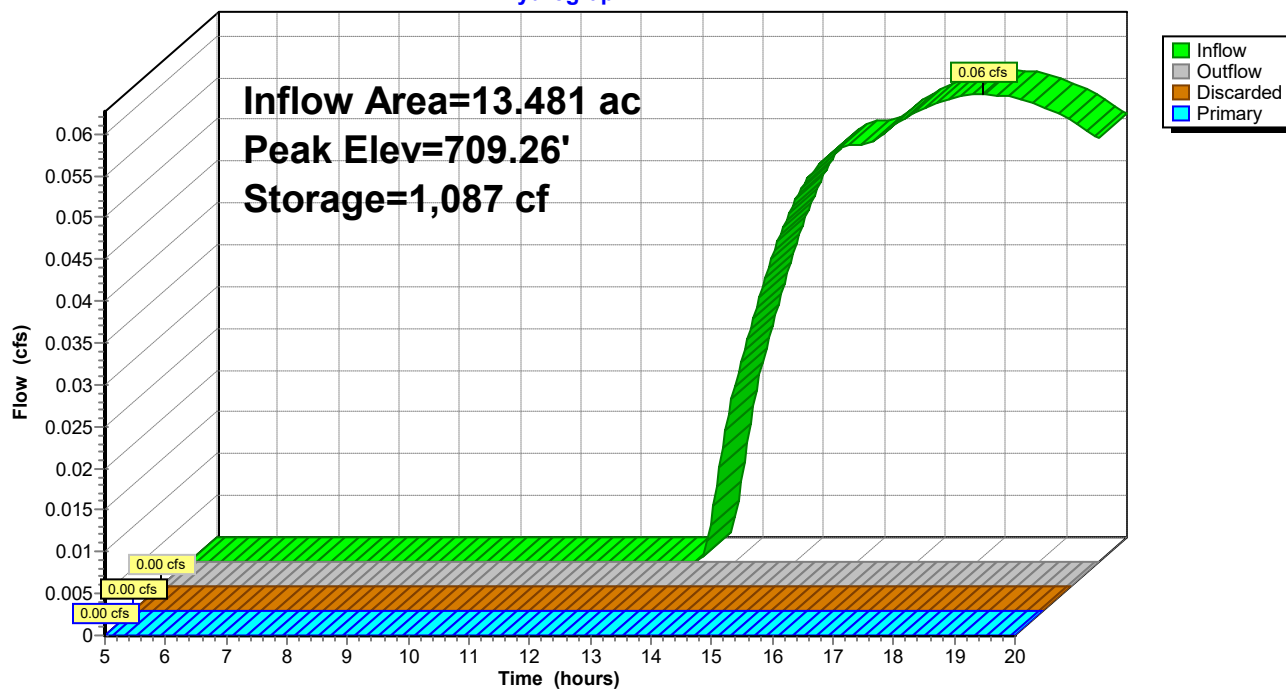
Device	Routing	Invert	Outlet Devices
#1	Discarded	709.00'	1.500 in/hr Exfiltration over Horizontal area from 705.00' - 709.00' Conductivity to Groundwater Elevation = 700.00' Excluded Horizontal area = 0 sf
#2	Primary	712.75'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=709.00' (Free Discharge)

↑ **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=709.00' (Free Discharge)

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

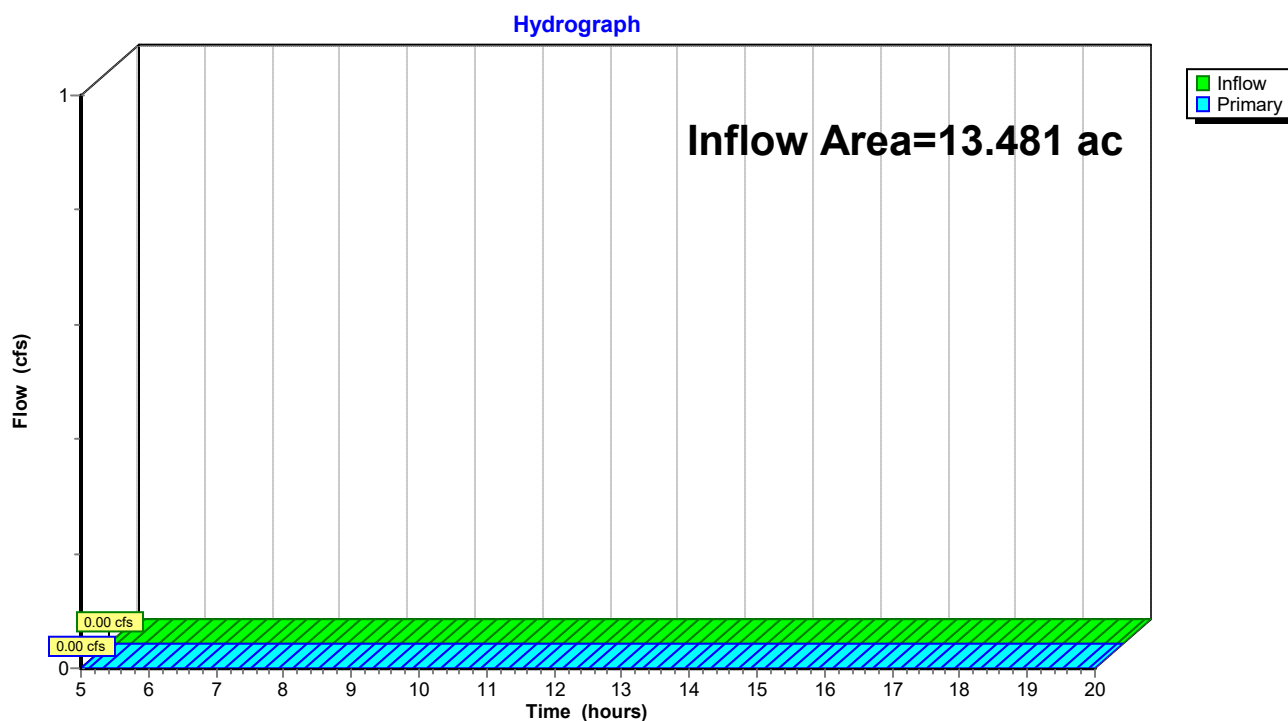
Pond 2P: Van Dunk**Hydrograph**

Summary for Pond 8P: Analysis Point

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

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth = 0.00" for 5-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 8P: Analysis Point

20191230 Town of Holland pre*Type II 24-hr 10-yr Rainfall=4.30"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Van Dunk

Runoff Area=587,232 sf 3.79% Impervious Runoff Depth>0.09"
Flow Length=875' Tc=14.0 min CN=41 Runoff=0.21 cfs 0.105 af

Pond 2P: Van Dunk

Peak Elev=709.98' Storage=4,543 cf Inflow=0.21 cfs 0.105 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 8P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 13.481 ac Runoff Volume = 0.105 af Average Runoff Depth = 0.09"
96.21% Pervious = 12.970 ac 3.79% Impervious = 0.511 ac

Summary for Subcatchment 1S: Van Dunk

Runoff = 0.21 cfs @ 13.04 hrs, Volume= 0.105 af, Depth> 0.09"

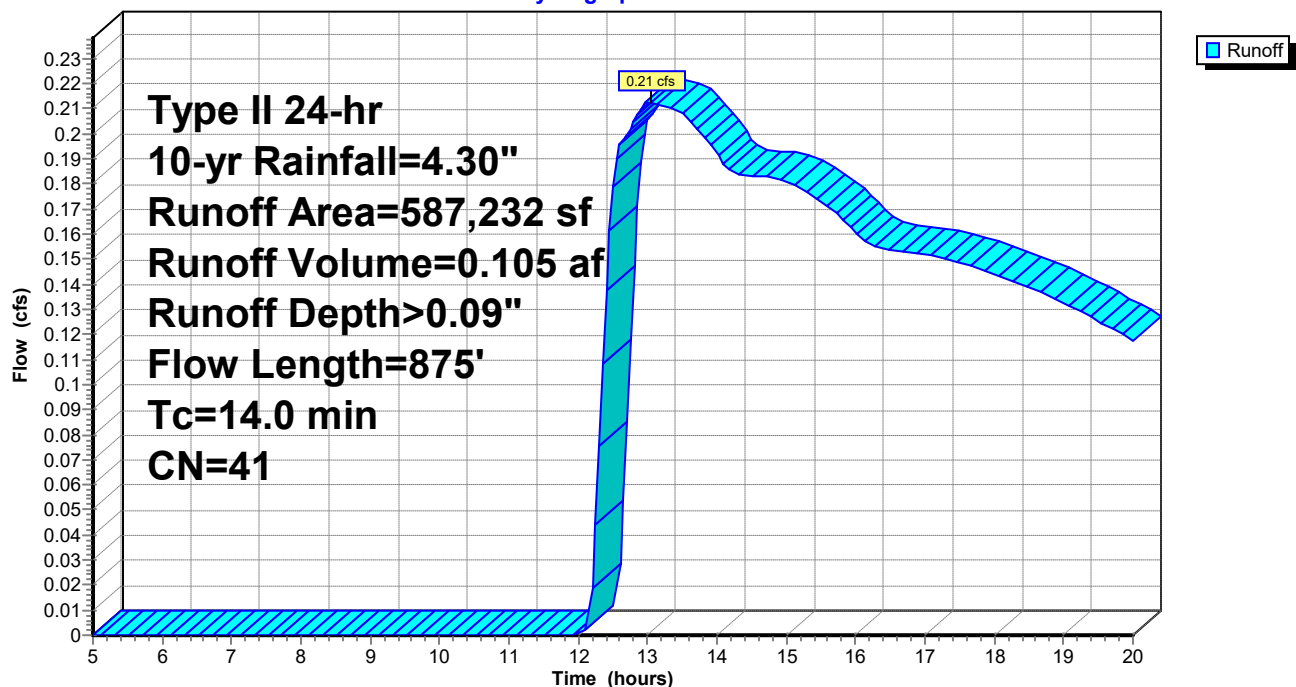
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.30"

Area (sf)	CN	Description
10,400	98	Roofs, HSG A
11,850	98	Paved roads w/curbs & sewers, HSG A
93,725	39	>75% Grass cover, Good, HSG A
* 471,257	39	>75% Grass cover, Good, HSG B
587,232	41	Weighted Average
564,982		96.21% Pervious Area
22,250		3.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0270	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
1.6	725	0.0200	7.42	89.08	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
14.0	875	Total			

Subcatchment 1S: Van Dunk

Hydrograph



Summary for Pond 2P: Van Dunk

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth > 0.09" for 10-yr event
 Inflow = 0.21 cfs @ 13.04 hrs, Volume= 0.105 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 709.98' @ 20.00 hrs Surf.Area= 5,313 sf Storage= 4,543 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description	
#1	709.00'	55,623 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
709.00	4,000	0.0	0	0
710.00	5,346	100.0	4,673	4,673
711.00	10,428	100.0	7,887	12,560
712.00	15,513	100.0	12,971	25,531
713.00	22,115	100.0	18,814	44,345
713.50	23,000	100.0	11,279	55,623

Device	Routing	Invert	Outlet Devices
#1	Discarded	709.00'	1.500 in/hr Exfiltration over Horizontal area from 705.00' - 709.00' Conductivity to Groundwater Elevation = 700.00' Excluded Horizontal area = 0 sf
#2	Primary	712.75'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=709.00' (Free Discharge)

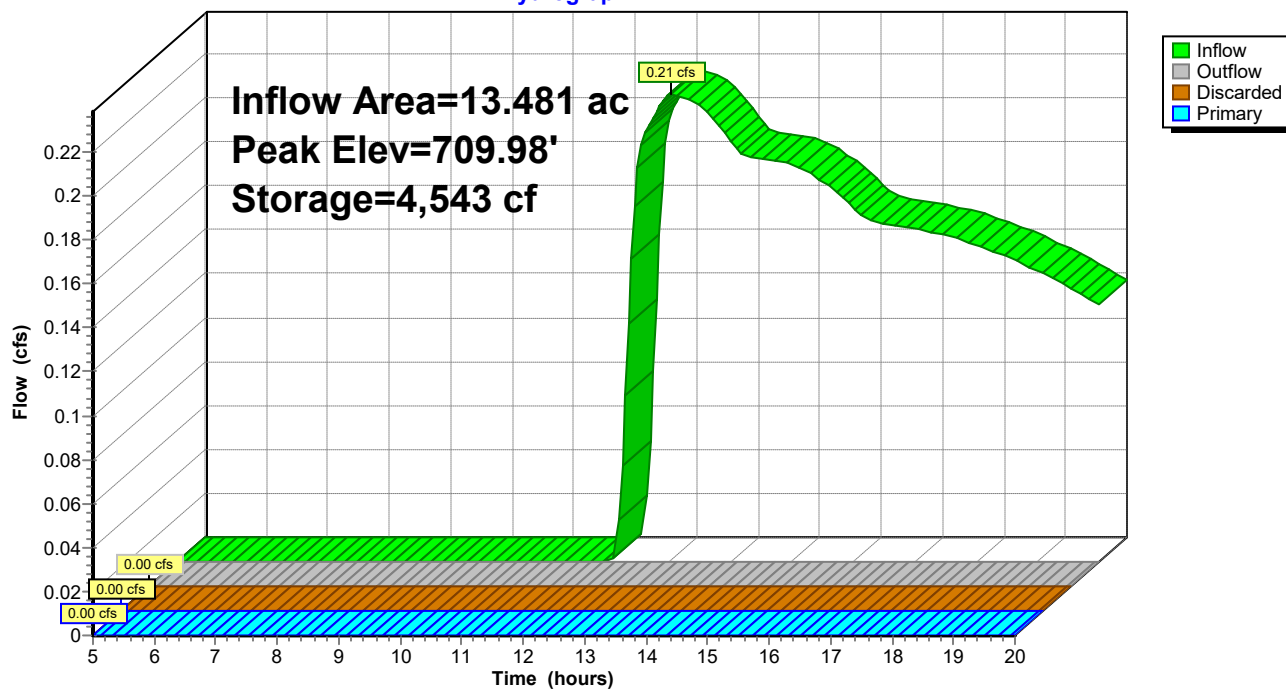
↑1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=709.00' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 2P: Van Dunk

Hydrograph

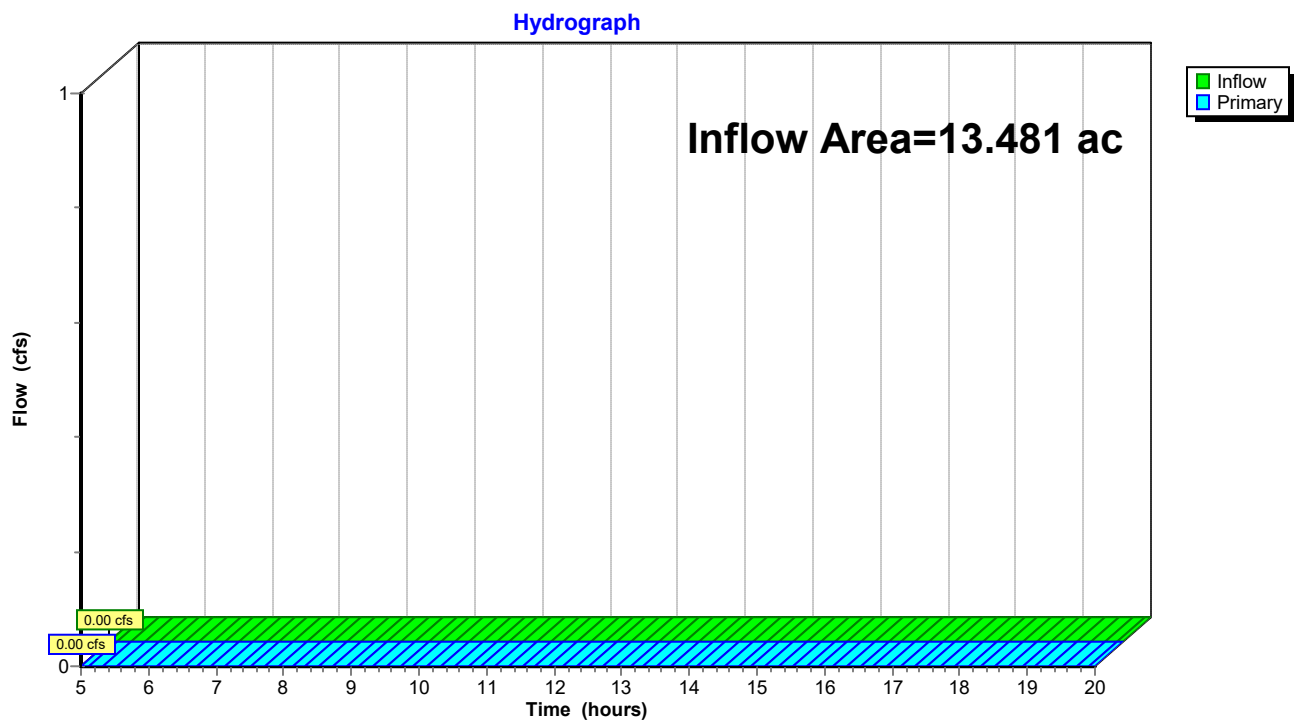


Summary for Pond 8P: Analysis Point

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

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 8P: Analysis Point

20191230 Town of Holland pre*Type II 24-hr 25-yr Rainfall=5.34"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Van Dunk

Runoff Area=587,232 sf 3.79% Impervious Runoff Depth>0.29"
Flow Length=875' Tc=14.0 min CN=41 Runoff=2.00 cfs 0.326 af

Pond 2P: Van Dunk

Peak Elev=711.15' Storage=14,157 cf Inflow=2.00 cfs 0.326 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 8P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 13.481 ac Runoff Volume = 0.326 af Average Runoff Depth = 0.29"
96.21% Pervious = 12.970 ac 3.79% Impervious = 0.511 ac

Summary for Subcatchment 1S: Van Dunk

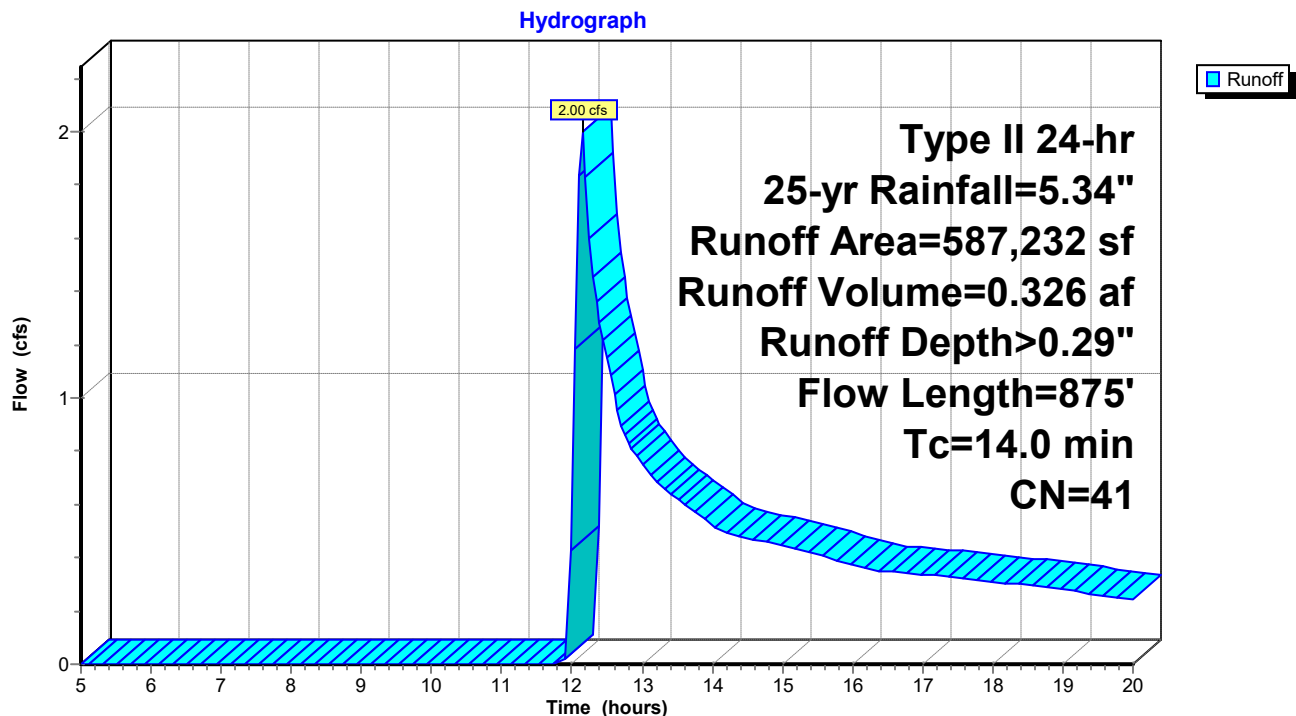
Runoff = 2.00 cfs @ 12.15 hrs, Volume= 0.326 af, Depth> 0.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=5.34"

Area (sf)	CN	Description
10,400	98	Roofs, HSG A
11,850	98	Paved roads w/curbs & sewers, HSG A
93,725	39	>75% Grass cover, Good, HSG A
* 471,257	39	>75% Grass cover, Good, HSG B
587,232	41	Weighted Average
564,982		96.21% Pervious Area
22,250		3.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0270	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
1.6	725	0.0200	7.42	89.08	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
14.0	875	Total			

Subcatchment 1S: Van Dunk



Summary for Pond 2P: Van Dunk

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth > 0.29" for 25-yr event
 Inflow = 2.00 cfs @ 12.15 hrs, Volume= 0.326 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 711.15' @ 20.00 hrs Surf.Area= 11,180 sf Storage= 14,157 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description	
#1	709.00'	55,623 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
709.00	4,000	0.0	0	0
710.00	5,346	100.0	4,673	4,673
711.00	10,428	100.0	7,887	12,560
712.00	15,513	100.0	12,971	25,531
713.00	22,115	100.0	18,814	44,345
713.50	23,000	100.0	11,279	55,623

Device	Routing	Invert	Outlet Devices
#1	Discarded	709.00'	1.500 in/hr Exfiltration over Horizontal area from 705.00' - 709.00' Conductivity to Groundwater Elevation = 700.00' Excluded Horizontal area = 0 sf
#2	Primary	712.75'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=709.00' (Free Discharge)

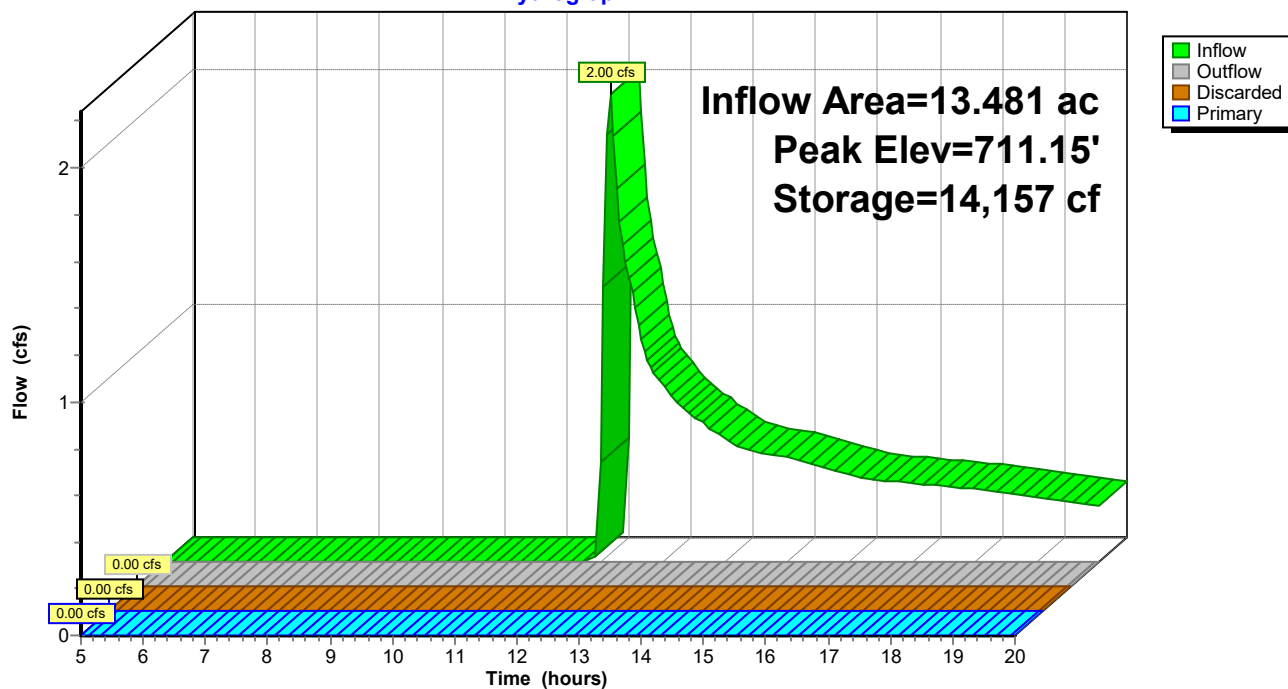
↑1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=709.00' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 2P: Van Dunk

Hydrograph

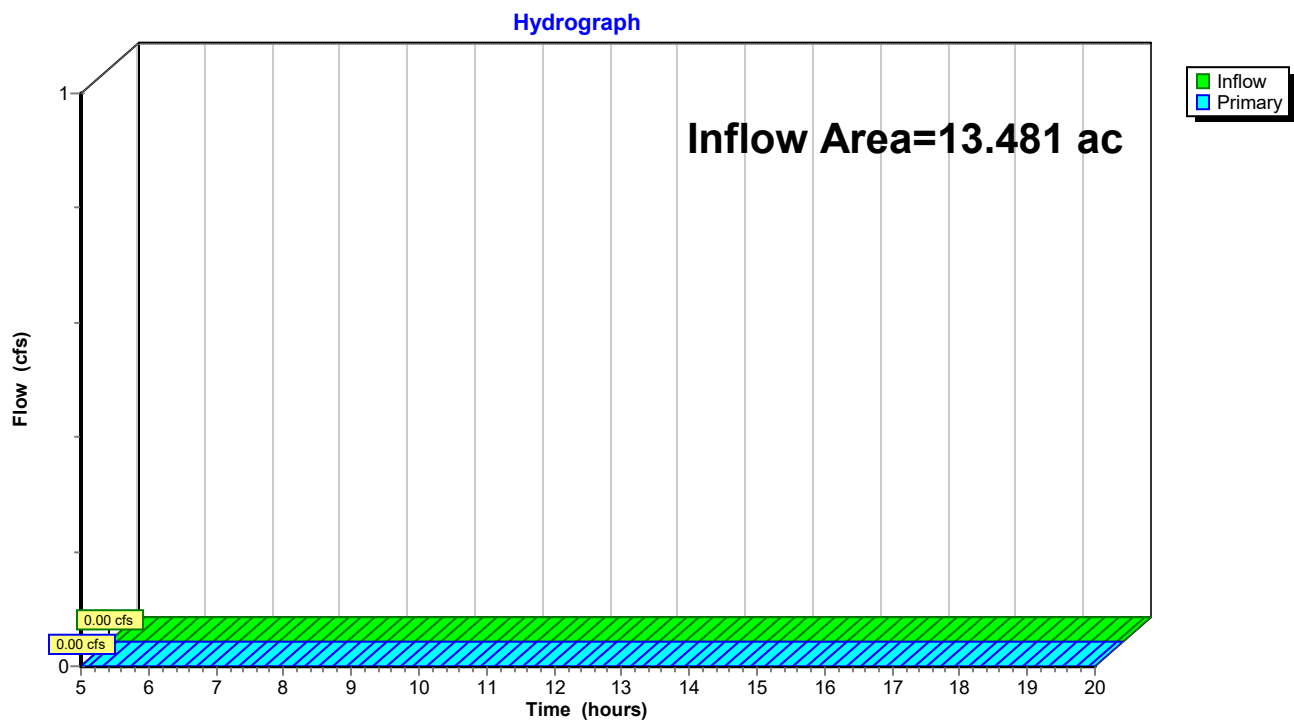


Summary for Pond 8P: Analysis Point

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

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth = 0.00" for 25-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 8P: Analysis Point

20191230 Town of Holland pre*Type II 24-hr 50-yr Rainfall=6.25"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Van Dunk

Runoff Area=587,232 sf 3.79% Impervious Runoff Depth>0.54"
Flow Length=875' Tc=14.0 min CN=41 Runoff=6.22 cfs 0.601 af

Pond 2P: Van Dunk

Peak Elev=712.04' Storage=26,162 cf Inflow=6.22 cfs 0.601 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 8P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 13.481 ac Runoff Volume = 0.601 af Average Runoff Depth = 0.54"
96.21% Pervious = 12.970 ac 3.79% Impervious = 0.511 ac

Summary for Subcatchment 1S: Van Dunk

Runoff = 6.22 cfs @ 12.11 hrs, Volume= 0.601 af, Depth> 0.54"

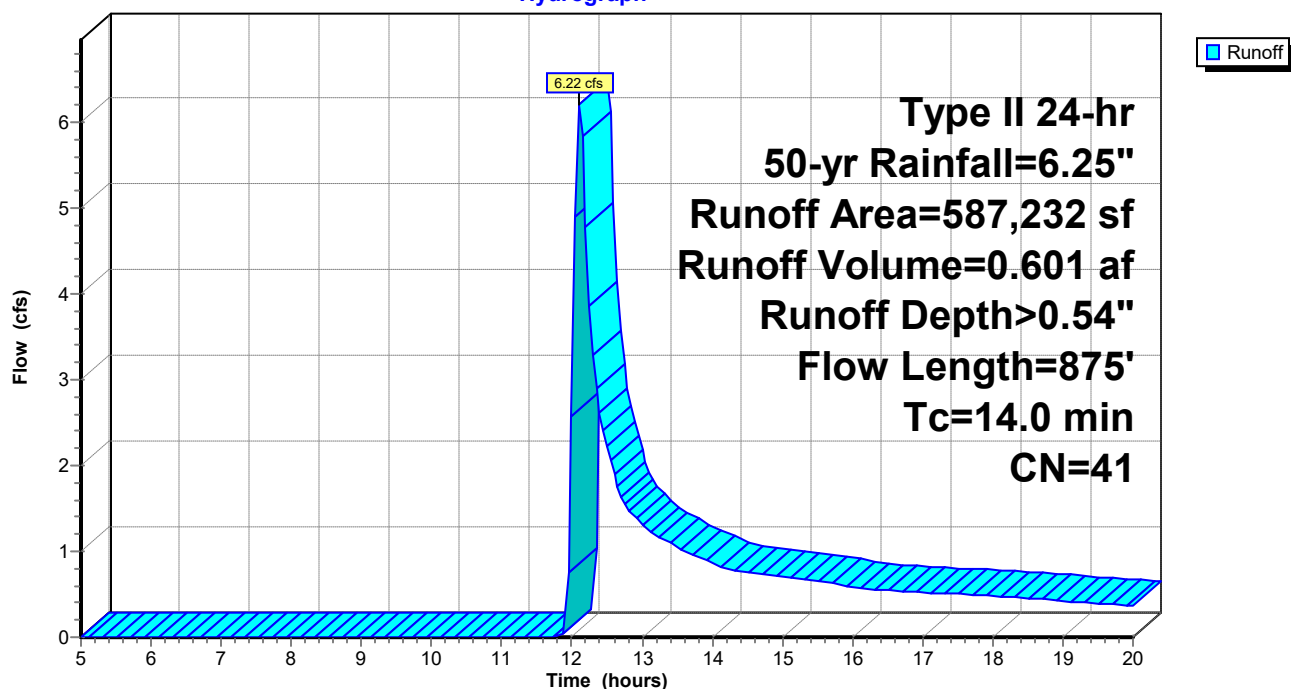
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=6.25"

Area (sf)	CN	Description
10,400	98	Roofs, HSG A
11,850	98	Paved roads w/curbs & sewers, HSG A
93,725	39	>75% Grass cover, Good, HSG A
* 471,257	39	>75% Grass cover, Good, HSG B
587,232	41	Weighted Average
564,982		96.21% Pervious Area
22,250		3.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0270	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
1.6	725	0.0200	7.42	89.08	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
14.0	875	Total			

Subcatchment 1S: Van Dunk

Hydrograph



Summary for Pond 2P: Van Dunk

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth > 0.54" for 50-yr event
 Inflow = 6.22 cfs @ 12.11 hrs, Volume= 0.601 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 712.04' @ 20.00 hrs Surf.Area= 15,779 sf Storage= 26,162 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description	
#1	709.00'	55,623 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
709.00	4,000	0.0	0	0
710.00	5,346	100.0	4,673	4,673
711.00	10,428	100.0	7,887	12,560
712.00	15,513	100.0	12,971	25,531
713.00	22,115	100.0	18,814	44,345
713.50	23,000	100.0	11,279	55,623

Device	Routing	Invert	Outlet Devices
#1	Discarded	709.00'	1.500 in/hr Exfiltration over Horizontal area from 705.00' - 709.00' Conductivity to Groundwater Elevation = 700.00' Excluded Horizontal area = 0 sf
#2	Primary	712.75'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=709.00' (Free Discharge)

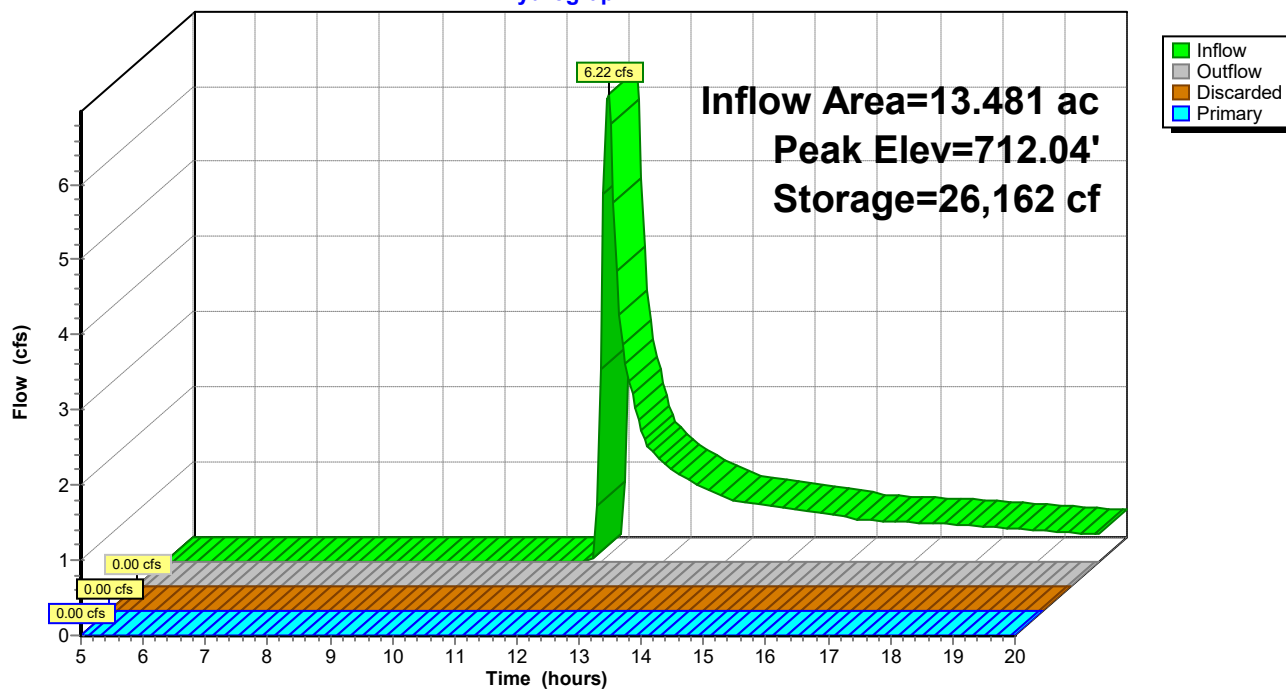
↑1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=709.00' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 2P: Van Dunk

Hydrograph

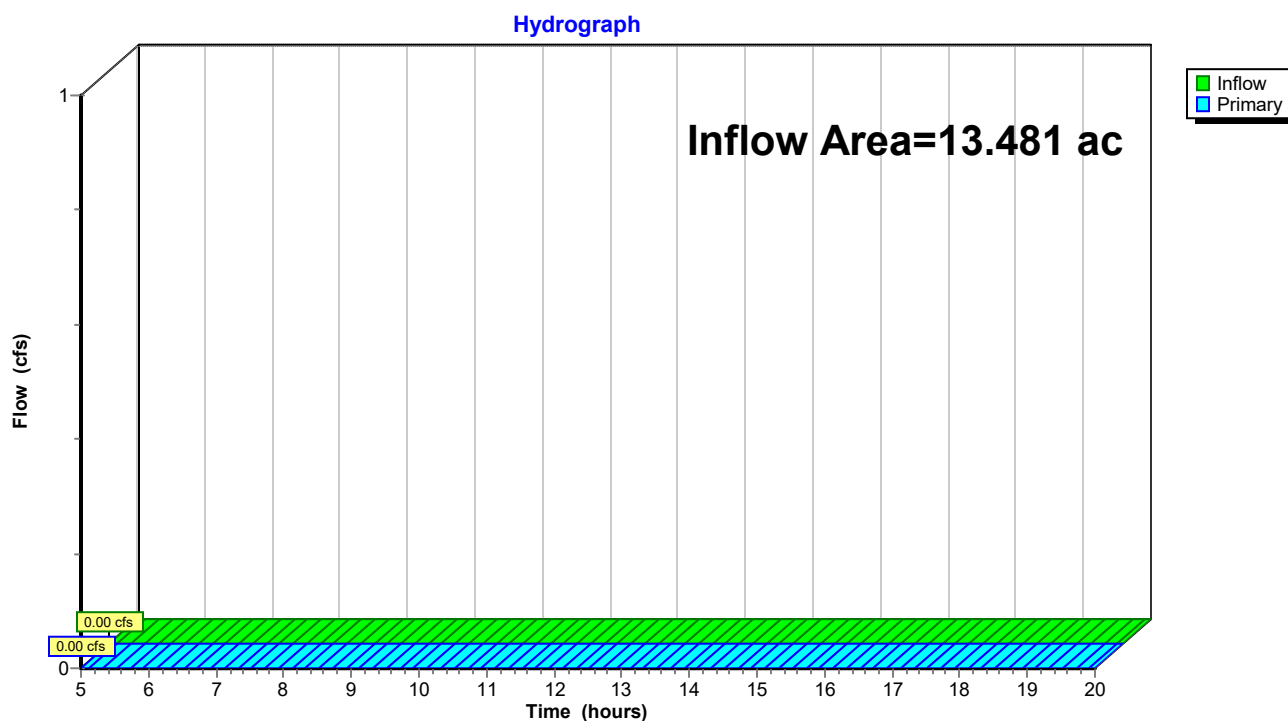


Summary for Pond 8P: Analysis Point

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

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth = 0.00" for 50-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 8P: Analysis Point

20191230 Town of Holland pre*Type II 24-hr 100-yr Rainfall=7.24"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Van Dunk

Runoff Area=587,232 sf 3.79% Impervious Runoff Depth>0.87"
Flow Length=875' Tc=14.0 min CN=41 Runoff=12.74 cfs 0.976 af

Pond 2P: Van Dunk

Peak Elev=712.80' Storage=39,951 cf Inflow=12.74 cfs 0.976 af
Discarded=0.00 cfs 0.000 af Primary=0.55 cfs 0.059 af Outflow=0.55 cfs 0.059 af

Pond 8P: Analysis Point

Inflow=0.55 cfs 0.059 af
Primary=0.55 cfs 0.059 af

Total Runoff Area = 13.481 ac Runoff Volume = 0.976 af Average Runoff Depth = 0.87"
96.21% Pervious = 12.970 ac 3.79% Impervious = 0.511 ac

Summary for Subcatchment 1S: Van Dunk

Runoff = 12.74 cfs @ 12.10 hrs, Volume= 0.976 af, Depth> 0.87"

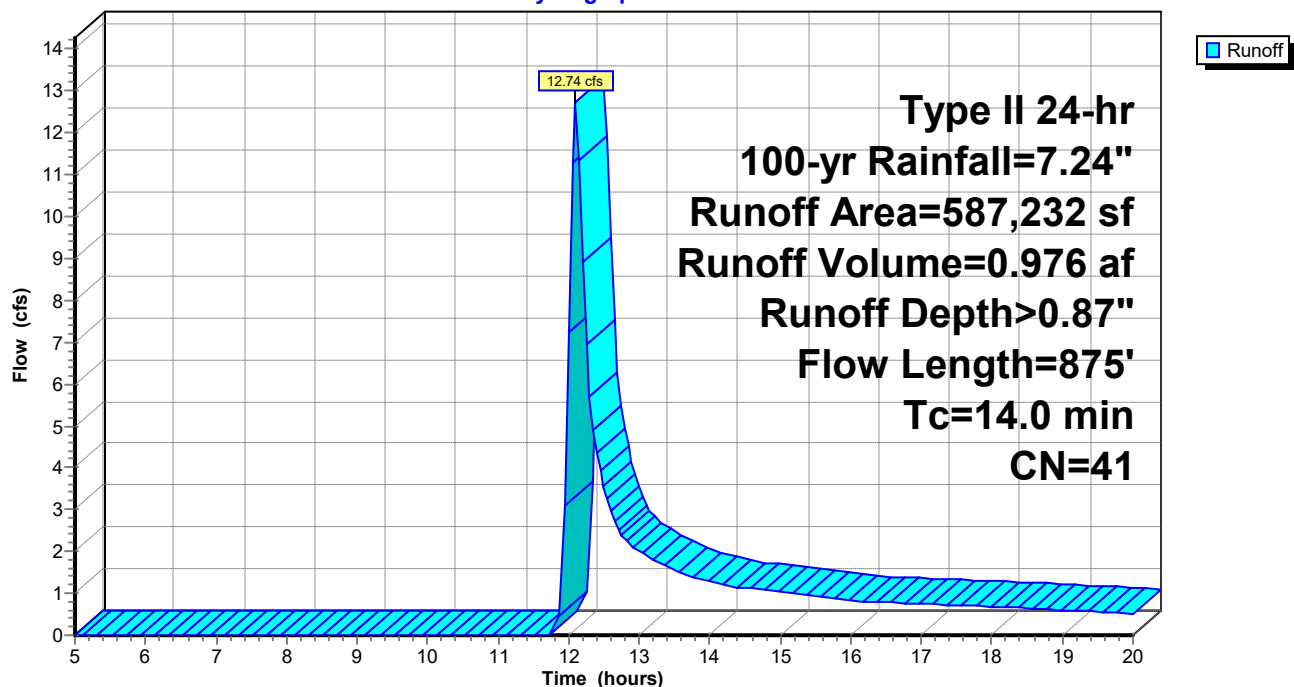
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.24"

Area (sf)	CN	Description
10,400	98	Roofs, HSG A
11,850	98	Paved roads w/curbs & sewers, HSG A
93,725	39	>75% Grass cover, Good, HSG A
* 471,257	39	>75% Grass cover, Good, HSG B
587,232	41	Weighted Average
564,982		96.21% Pervious Area
22,250		3.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0270	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
1.6	725	0.0200	7.42	89.08	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
14.0	875	Total			

Subcatchment 1S: Van Dunk

Hydrograph



Summary for Pond 2P: Van Dunk

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth > 0.87" for 100-yr event
 Inflow = 12.74 cfs @ 12.10 hrs, Volume= 0.976 af
 Outflow = 0.55 cfs @ 19.56 hrs, Volume= 0.059 af, Atten= 96%, Lag= 447.7 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.55 cfs @ 19.56 hrs, Volume= 0.059 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 712.80' @ 19.56 hrs Surf.Area= 20,762 sf Storage= 39,951 cf

Plug-Flow detention time= 441.1 min calculated for 0.059 af (6% of inflow)
 Center-of-Mass det. time= 309.1 min (1,161.1 - 851.9)

Volume	Invert	Avail.Storage	Storage Description
#1	709.00'	55,623 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
709.00	4,000	0.0	0	0
710.00	5,346	100.0	4,673	4,673
711.00	10,428	100.0	7,887	12,560
712.00	15,513	100.0	12,971	25,531
713.00	22,115	100.0	18,814	44,345
713.50	23,000	100.0	11,279	55,623

Device	Routing	Invert	Outlet Devices
#1	Discarded	709.00'	1.500 in/hr Exfiltration over Horizontal area from 705.00' - 709.00' Conductivity to Groundwater Elevation = 700.00' Excluded Horizontal area = 0 sf
#2	Primary	712.75'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=709.00' (Free Discharge)

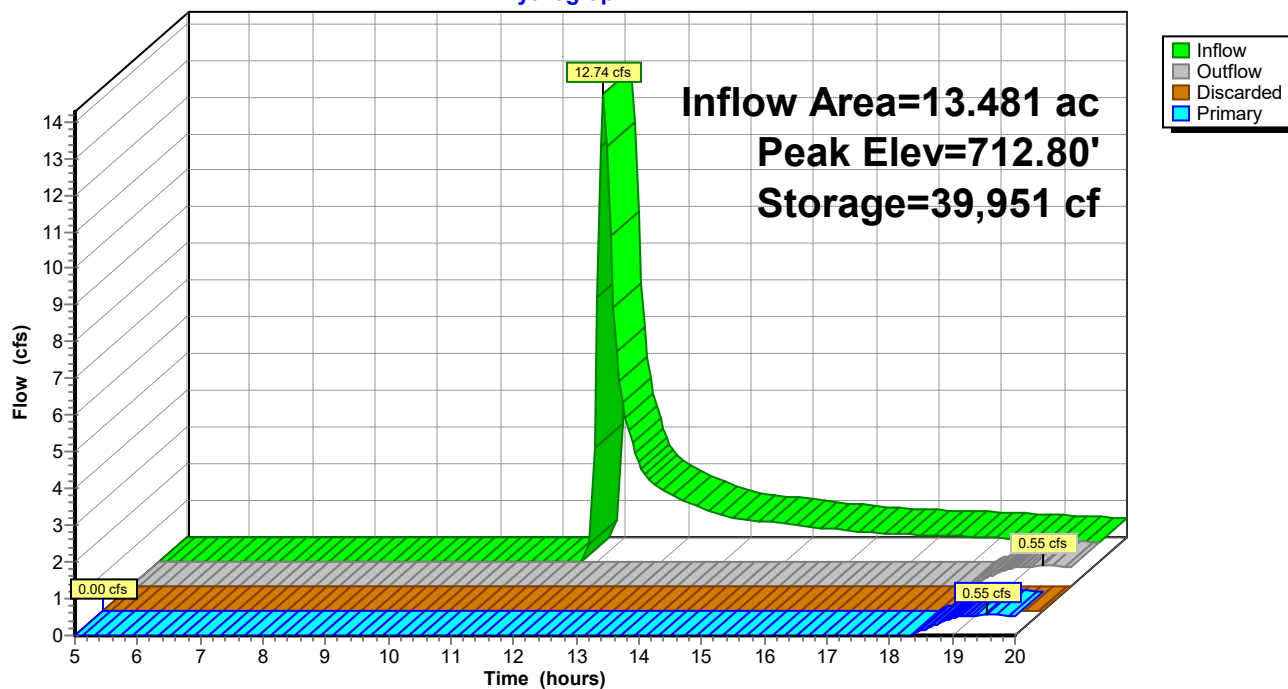
↑1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.51 cfs @ 19.56 hrs HW=712.80' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Weir Controls 0.51 cfs @ 0.57 fps)

Pond 2P: Van Dunk

Hydrograph

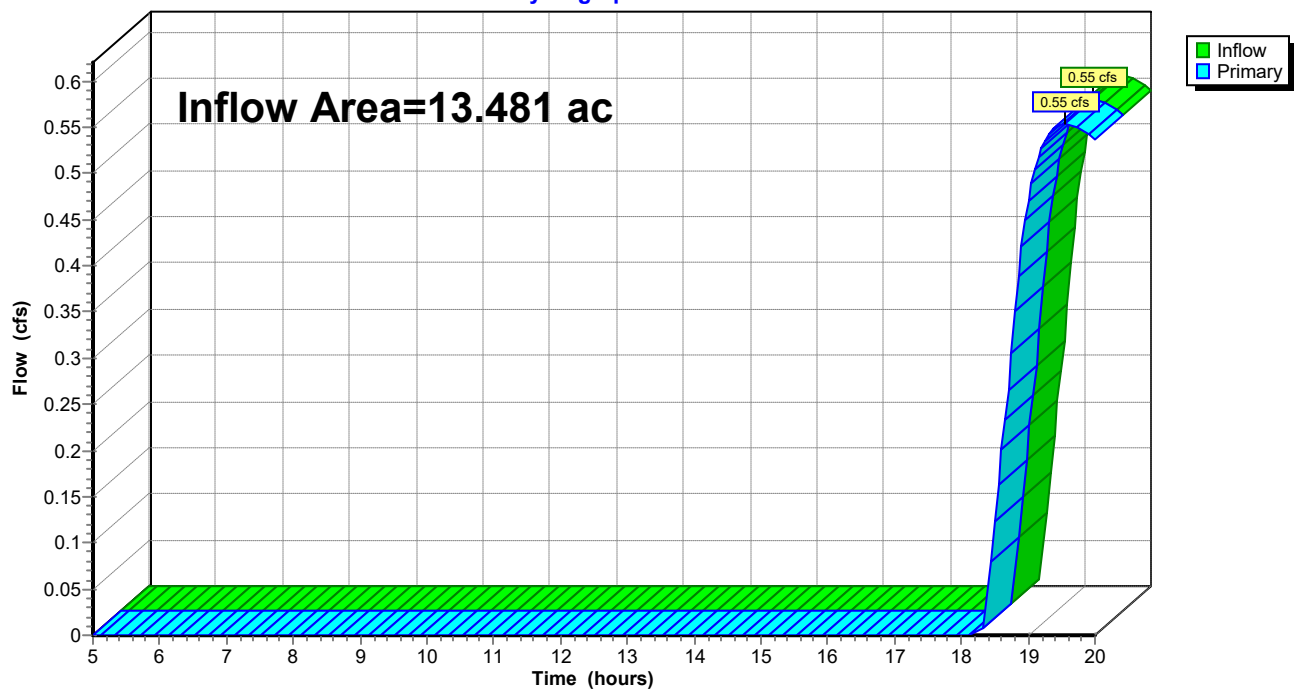


Summary for Pond 8P: Analysis Point

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

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth > 0.05" for 100-yr event
Inflow = 0.55 cfs @ 19.56 hrs, Volume= 0.059 af
Primary = 0.55 cfs @ 19.56 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 8P: Analysis Point**Hydrograph**

20191230 Town of Holland pre*Type II 24-hr 200-yr Rainfall=8.33"*

Prepared by {enter your company name here}

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Van Dunk

Runoff Area=587,232 sf 3.79% Impervious Runoff Depth>1.30"
Flow Length=875' Tc=14.0 min CN=41 Runoff=21.61 cfs 1.464 af

Pond 2P: Van Dunk

Peak Elev=712.84' Storage=40,910 cf Inflow=21.61 cfs 1.464 af
Discarded=0.00 cfs 0.000 af Primary=1.50 cfs 0.542 af Outflow=1.50 cfs 0.542 af

Pond 8P: Analysis Point

Inflow=1.50 cfs 0.542 af
Primary=1.50 cfs 0.542 af

Total Runoff Area = 13.481 ac Runoff Volume = 1.464 af Average Runoff Depth = 1.30"
96.21% Pervious = 12.970 ac 3.79% Impervious = 0.511 ac

Summary for Subcatchment 1S: Van Dunk

Runoff = 21.61 cfs @ 12.09 hrs, Volume= 1.464 af, Depth> 1.30"

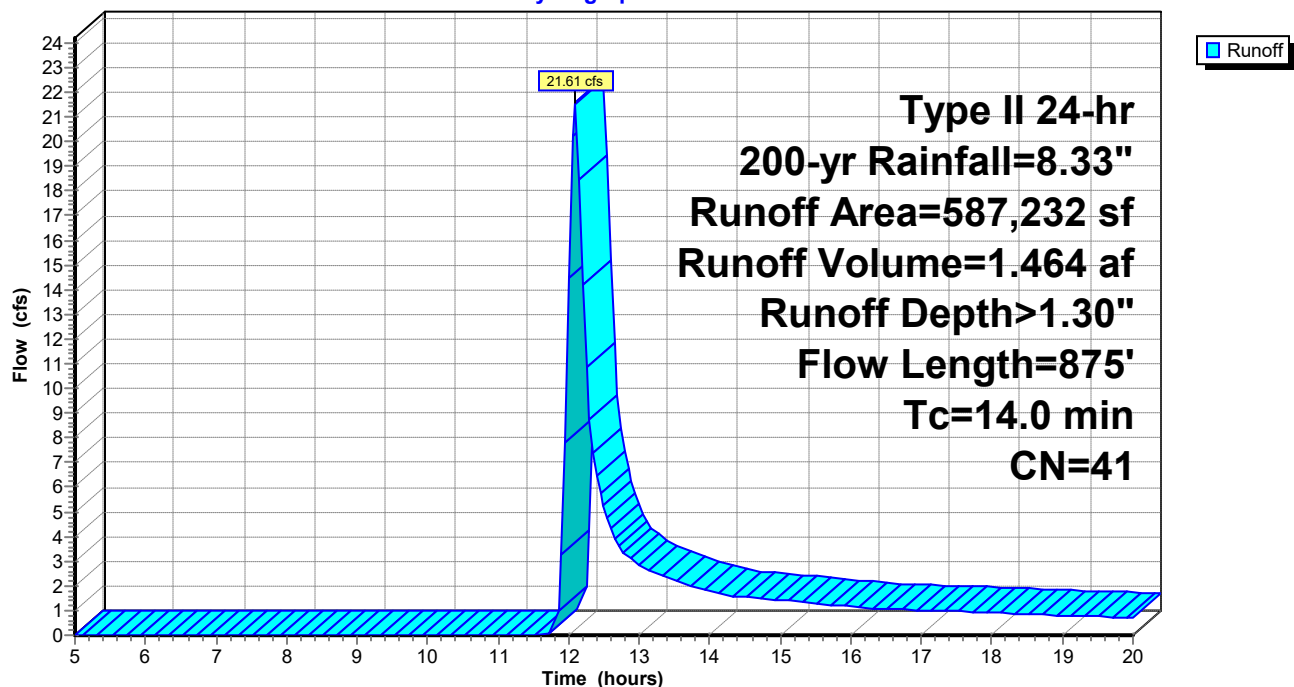
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 200-yr Rainfall=8.33"

Area (sf)	CN	Description
10,400	98	Roofs, HSG A
11,850	98	Paved roads w/curbs & sewers, HSG A
93,725	39	>75% Grass cover, Good, HSG A
* 471,257	39	>75% Grass cover, Good, HSG B
587,232	41	Weighted Average
564,982		96.21% Pervious Area
22,250		3.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0270	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
1.6	725	0.0200	7.42	89.08	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
14.0	875	Total			

Subcatchment 1S: Van Dunk

Hydrograph



Summary for Pond 2P: Van Dunk

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth > 1.30" for 200-yr event
 Inflow = 21.61 cfs @ 12.09 hrs, Volume= 1.464 af
 Outflow = 1.50 cfs @ 14.70 hrs, Volume= 0.542 af, Atten= 93%, Lag= 156.7 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 1.50 cfs @ 14.70 hrs, Volume= 0.542 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 712.84' @ 14.70 hrs Surf.Area= 21,065 sf Storage= 40,910 cf

Plug-Flow detention time= 270.4 min calculated for 0.541 af (37% of inflow)
 Center-of-Mass det. time= 158.9 min (999.0 - 840.2)

Volume	Invert	Avail.Storage	Storage Description	
#1	709.00'	55,623 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
709.00	4,000	0.0	0	0
710.00	5,346	100.0	4,673	4,673
711.00	10,428	100.0	7,887	12,560
712.00	15,513	100.0	12,971	25,531
713.00	22,115	100.0	18,814	44,345
713.50	23,000	100.0	11,279	55,623

Device	Routing	Invert	Outlet Devices
#1	Discarded	709.00'	1.500 in/hr Exfiltration over Horizontal area from 705.00' - 709.00' Conductivity to Groundwater Elevation = 700.00' Excluded Horizontal area = 0 sf
#2	Primary	712.75'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=709.00' (Free Discharge)

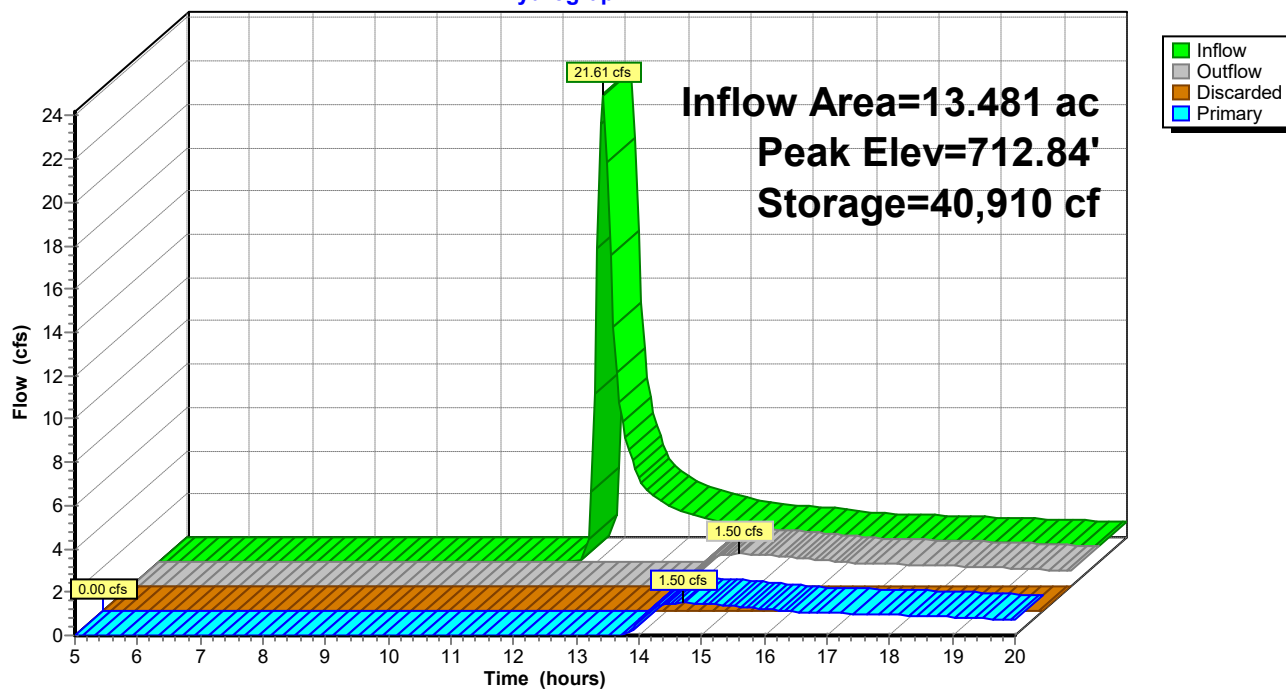
↑ **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=1.47 cfs @ 14.70 hrs HW=712.84' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 1.47 cfs @ 0.81 fps)

Pond 2P: Van Dunk

Hydrograph



Summary for Pond 8P: Analysis Point

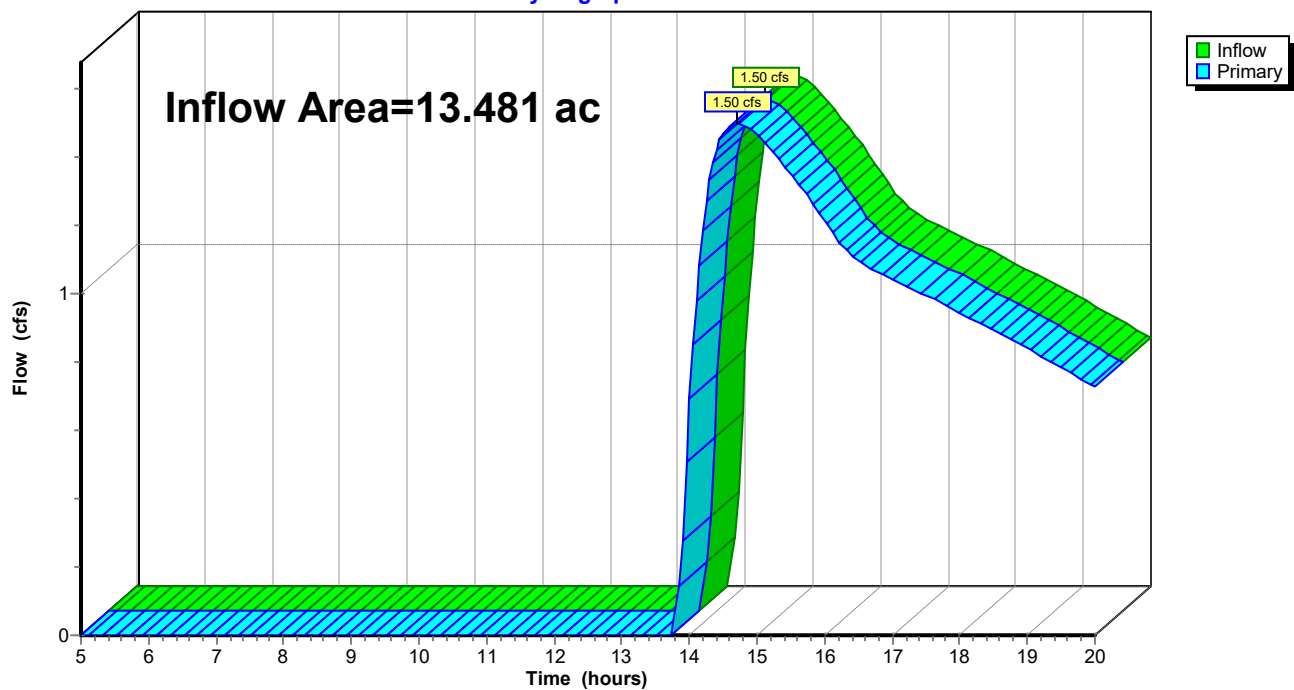
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth > 0.48" for 200-yr event
Inflow = 1.50 cfs @ 14.70 hrs, Volume= 0.542 af
Primary = 1.50 cfs @ 14.70 hrs, Volume= 0.542 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

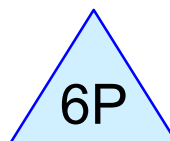
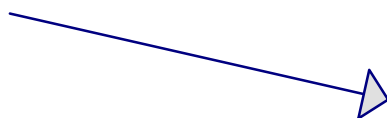
Pond 8P: Analysis Point

Hydrograph

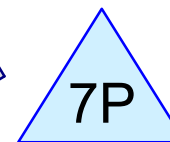
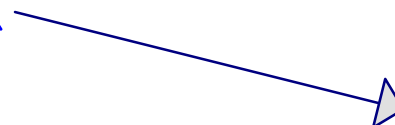




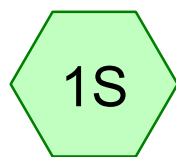
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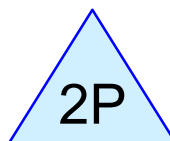
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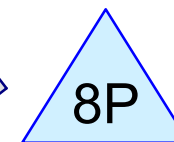
Analysis Point



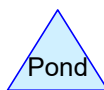
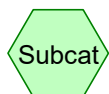
Van Dunk



Van Dunk



Analysis Point



Routing Diagram for Town of Holland pre

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20191230 Town of Holland

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Page 1

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.900	39	>75% Grass cover, Good, HSG A (5S)
0.186	98	Paved roads w/curbs & sewers, HSG A (5S)
0.328	98	Roofs, HSG A (5S)
3.414	48	TOTAL AREA

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
3.414	HSG A	5S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
3.414		TOTAL AREA

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
2.900	0.000	0.000	0.000	0.000	2.900	>75% Grass cover, Good	5S
0.186	0.000	0.000	0.000	0.000	0.186	Paved roads w/curbs & sewers	5S
0.328	0.000	0.000	0.000	0.000	0.328	Roofs	5S
3.414	0.000	0.000	0.000	0.000	3.414	TOTAL AREA	

20191230 Town of Holland*Type II 24-hr 1-yr Rainfall=2.56"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 5S: Erann Ct

Runoff Area=148,712 sf 15.06% Impervious Runoff Depth>0.01"
Flow Length=370' Tc=18.8 min CN=48 Runoff=0.01 cfs 0.002 af

Pond 6P: Erann Ct

Peak Elev=707.06' Storage=76 cf Inflow=0.01 cfs 0.002 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 7P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 3.414 ac Runoff Volume = 0.002 af Average Runoff Depth = 0.01"
84.94% Pervious = 2.900 ac 15.06% Impervious = 0.514 ac

Summary for Subcatchment 5S: Erann Ct

[73] Warning: Peak may fall outside time span

Runoff = 0.01 cfs @ 19.32 hrs, Volume= 0.002 af, Depth> 0.01"

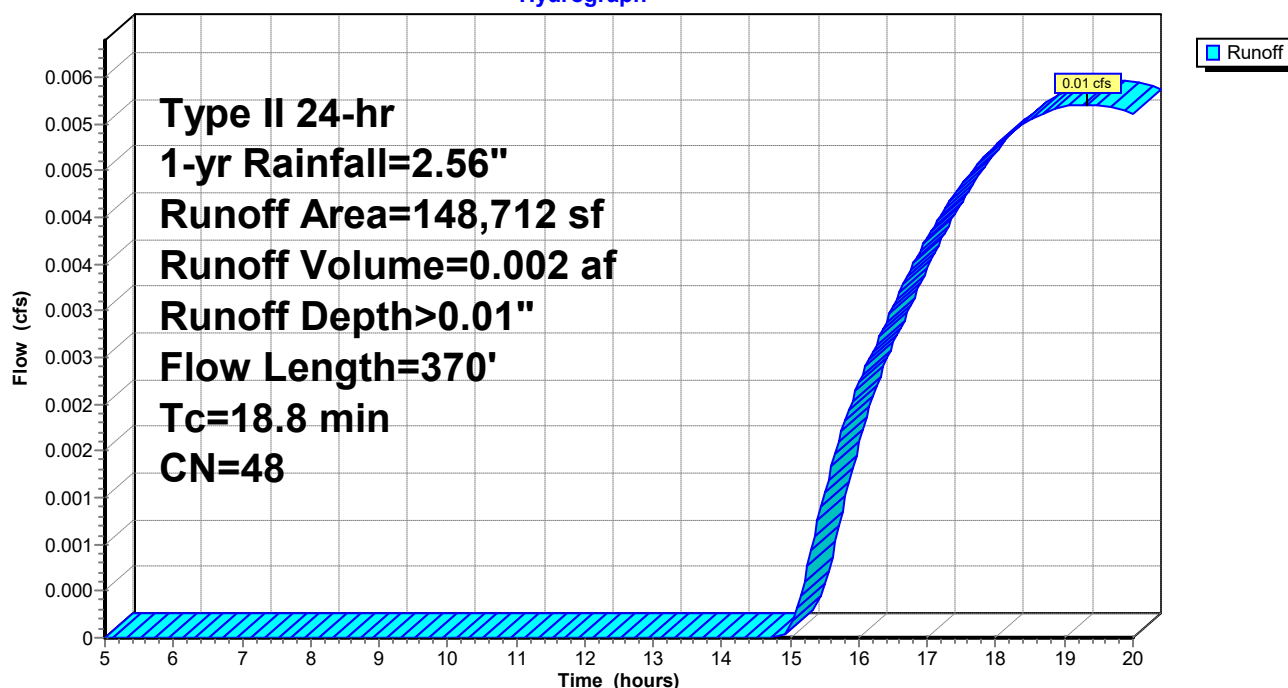
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.56"

Area (sf)	CN	Description
14,300	98	Roofs, HSG A
8,100	98	Paved roads w/curbs & sewers, HSG A
126,312	39	>75% Grass cover, Good, HSG A
148,712	48	Weighted Average
126,312		84.94% Pervious Area
22,400		15.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	180	0.0140	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
0.2	190	0.0680	13.69	164.26	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
18.8	370	Total			

Subcatchment 5S: Erann Ct

Hydrograph



Summary for Pond 6P: Erann Ct

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth > 0.01" for 1-yr event
 Inflow = 0.01 cfs @ 19.32 hrs, Volume= 0.002 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 707.06' @ 20.00 hrs Surf.Area= 3,600 sf Storage= 76 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	707.00'	17,466 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
707.00	3,600	0.0	0	0
708.00	3,600	35.0	1,260	1,260
709.00	3,600	35.0	1,260	2,520
710.00	3,600	35.0	1,260	3,780
710.50	3,600	35.0	630	4,410
711.00	3,600	0.0	0	4,410
711.01	3,600	100.0	36	4,446
712.00	3,900	100.0	3,713	8,159
713.00	7,310	100.0	5,605	13,764
713.50	7,500	100.0	3,703	17,466

Device	Routing	Invert	Outlet Devices
#1	Discarded	707.00'	1.600 in/hr Exfiltration over Horizontal area from 707.00' - 711.00' Conductivity to Groundwater Elevation = 698.00' Excluded Horizontal area = 3,600 sf
#2	Primary	713.00'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=707.00' (Free Discharge)

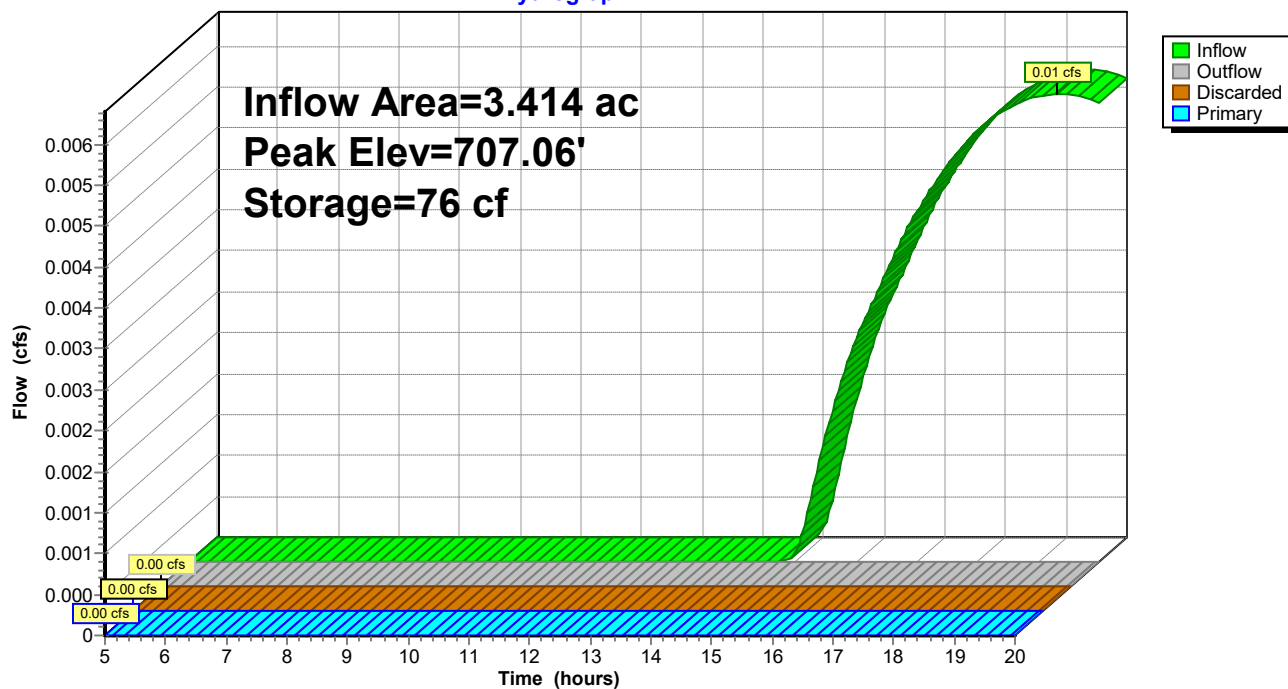
↑ **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=707.00' (Free Discharge)

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

Pond 6P: Erann Ct

Hydrograph

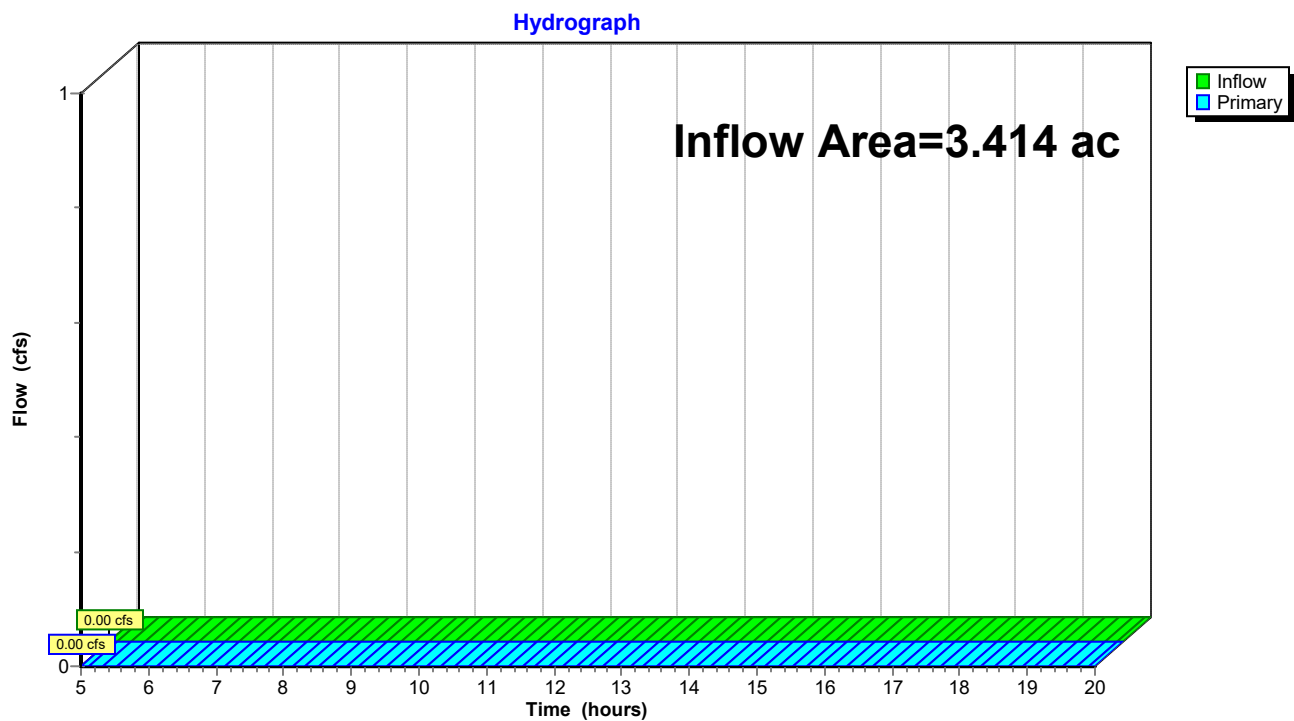


Summary for Pond 7P: Analysis Point

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

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 7P: Analysis Point

20191230 Town of Holland*Type II 24-hr 2-yr Rainfall=2.93"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 5S: Erann Ct

Runoff Area=148,712 sf 15.06% Impervious Runoff Depth>0.03"
Flow Length=370' Tc=18.8 min CN=48 Runoff=0.02 cfs 0.009 af

Pond 6P: Erann Ct

Peak Elev=707.32' Storage=405 cf Inflow=0.02 cfs 0.009 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 7P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 3.414 ac Runoff Volume = 0.009 af Average Runoff Depth = 0.03"
84.94% Pervious = 2.900 ac 15.06% Impervious = 0.514 ac

Summary for Subcatchment 5S: Erann Ct

Runoff = 0.02 cfs @ 15.40 hrs, Volume= 0.009 af, Depth> 0.03"

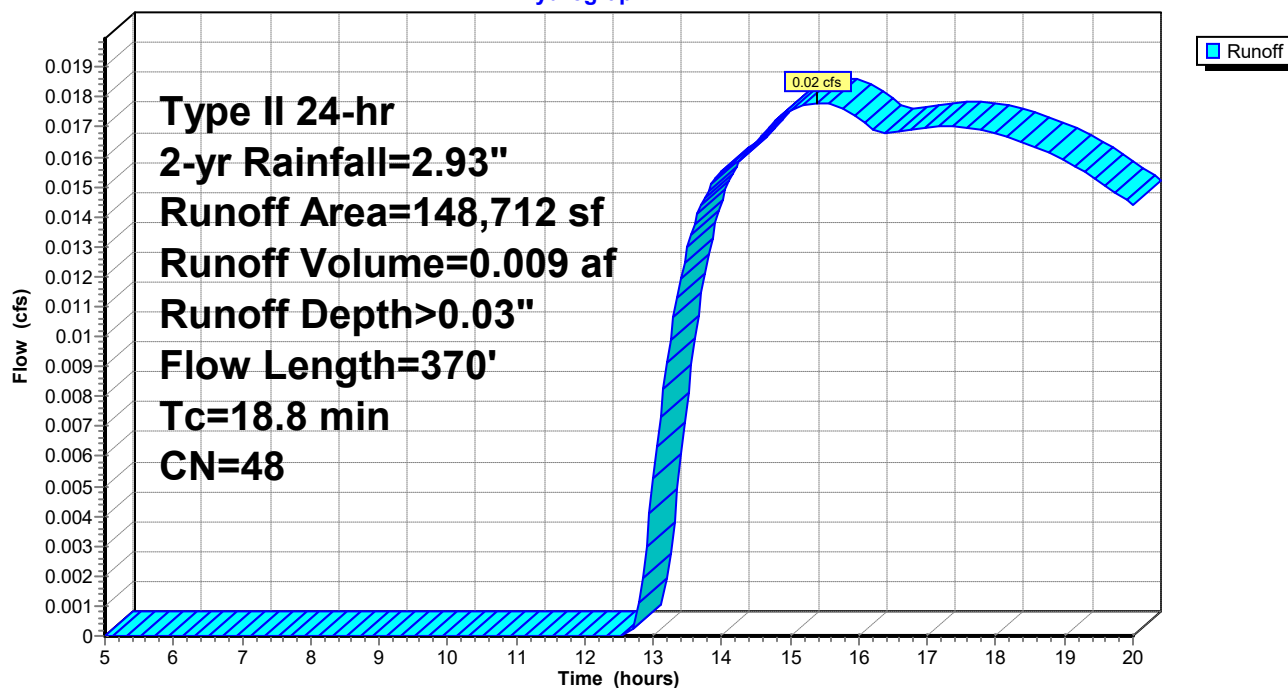
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=2.93"

Area (sf)	CN	Description
14,300	98	Roofs, HSG A
8,100	98	Paved roads w/curbs & sewers, HSG A
126,312	39	>75% Grass cover, Good, HSG A
148,712	48	Weighted Average
126,312		84.94% Pervious Area
22,400		15.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	180	0.0140	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
0.2	190	0.0680	13.69	164.26	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
18.8	370	Total			

Subcatchment 5S: Erann Ct

Hydrograph



Summary for Pond 6P: Erann Ct

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth > 0.03" for 2-yr event
 Inflow = 0.02 cfs @ 15.40 hrs, Volume= 0.009 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 707.32' @ 20.00 hrs Surf.Area= 3,600 sf Storage= 405 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	707.00'	17,466 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
707.00	3,600	0.0	0	0
708.00	3,600	35.0	1,260	1,260
709.00	3,600	35.0	1,260	2,520
710.00	3,600	35.0	1,260	3,780
710.50	3,600	35.0	630	4,410
711.00	3,600	0.0	0	4,410
711.01	3,600	100.0	36	4,446
712.00	3,900	100.0	3,713	8,159
713.00	7,310	100.0	5,605	13,764
713.50	7,500	100.0	3,703	17,466

Device	Routing	Invert	Outlet Devices
#1	Discarded	707.00'	1.600 in/hr Exfiltration over Horizontal area from 707.00' - 711.00' Conductivity to Groundwater Elevation = 698.00' Excluded Horizontal area = 3,600 sf
#2	Primary	713.00'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=707.00' (Free Discharge)

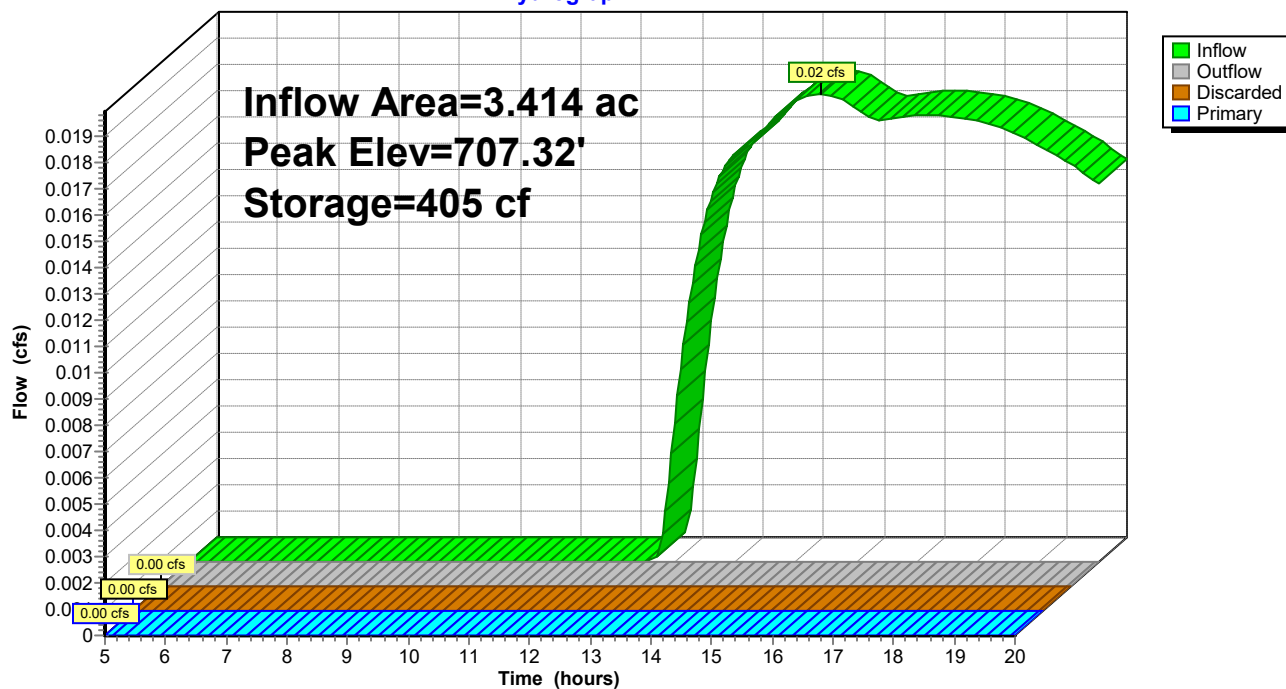
↑ **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=707.00' (Free Discharge)

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

Pond 6P: Erann Ct

Hydrograph



Summary for Pond 7P: Analysis Point

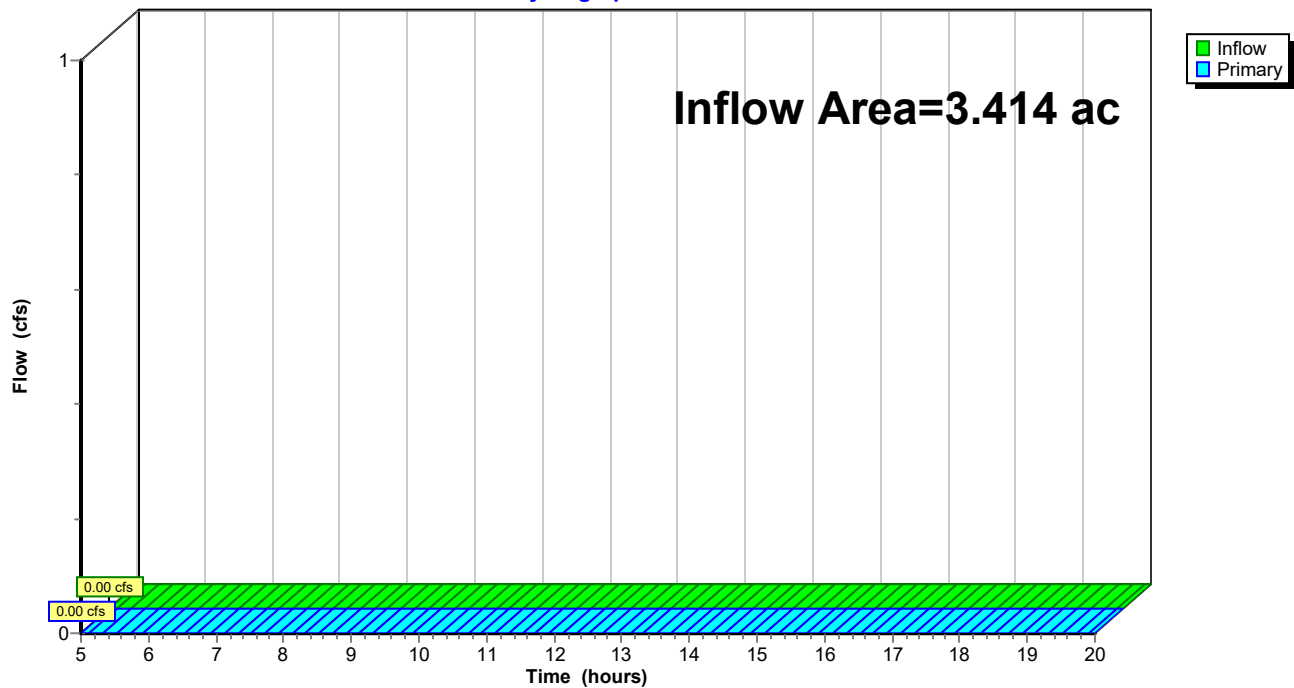
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth = 0.00" for 2-yr event
 Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 7P: Analysis Point

Hydrograph



20191230 Town of Holland*Type II 24-hr 5-yr Rainfall=3.64"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 5S: Erann Ct

Runoff Area=148,712 sf 15.06% Impervious Runoff Depth>0.14"
Flow Length=370' Tc=18.8 min CN=48 Runoff=0.12 cfs 0.039 af

Pond 6P: Erann Ct

Peak Elev=708.34' Storage=1,687 cf Inflow=0.12 cfs 0.039 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 7P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 3.414 ac Runoff Volume = 0.039 af Average Runoff Depth = 0.14"
84.94% Pervious = 2.900 ac 15.06% Impervious = 0.514 ac

Summary for Subcatchment 5S: Erann Ct

Runoff = 0.12 cfs @ 12.46 hrs, Volume= 0.039 af, Depth> 0.14"

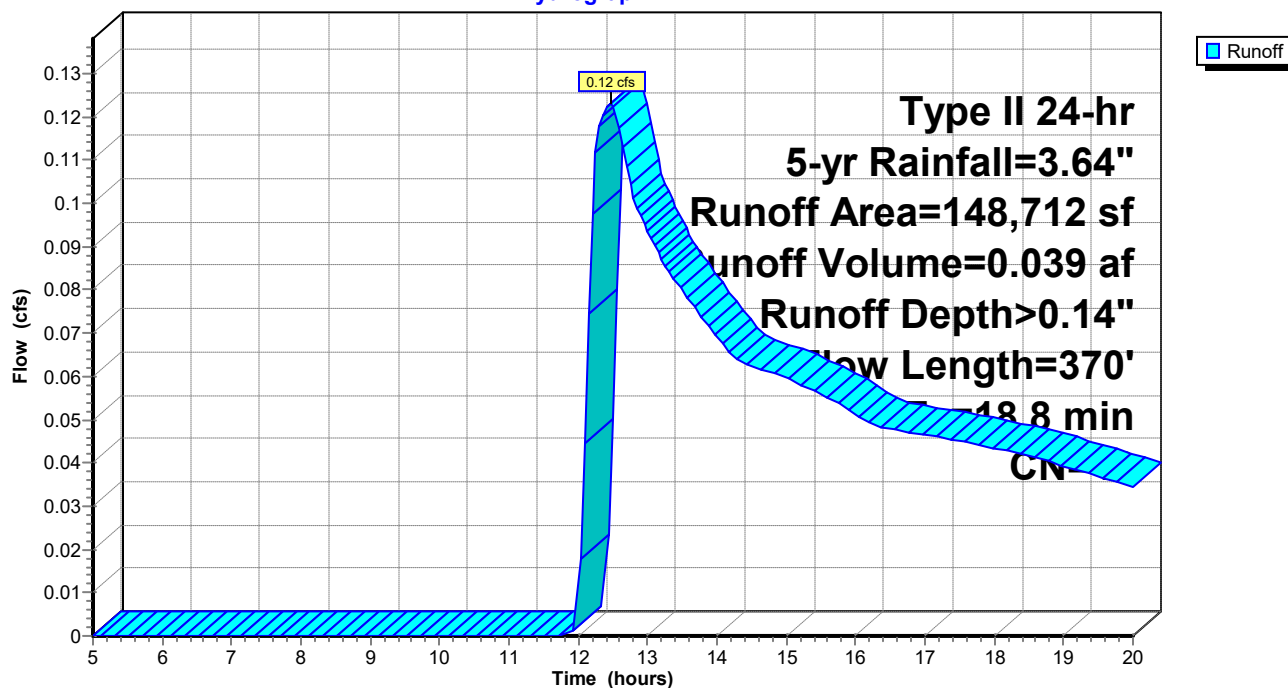
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-yr Rainfall=3.64"

Area (sf)	CN	Description
14,300	98	Roofs, HSG A
8,100	98	Paved roads w/curbs & sewers, HSG A
126,312	39	>75% Grass cover, Good, HSG A
148,712	48	Weighted Average
126,312		84.94% Pervious Area
22,400		15.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	180	0.0140	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
0.2	190	0.0680	13.69	164.26	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
18.8	370	Total			

Subcatchment 5S: Erann Ct

Hydrograph



Summary for Pond 6P: Erann Ct

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth > 0.14" for 5-yr event
 Inflow = 0.12 cfs @ 12.46 hrs, Volume= 0.039 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 708.34' @ 20.00 hrs Surf.Area= 3,600 sf Storage= 1,687 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	707.00'	17,466 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
707.00	3,600	0.0	0	0
708.00	3,600	35.0	1,260	1,260
709.00	3,600	35.0	1,260	2,520
710.00	3,600	35.0	1,260	3,780
710.50	3,600	35.0	630	4,410
711.00	3,600	0.0	0	4,410
711.01	3,600	100.0	36	4,446
712.00	3,900	100.0	3,713	8,159
713.00	7,310	100.0	5,605	13,764
713.50	7,500	100.0	3,703	17,466

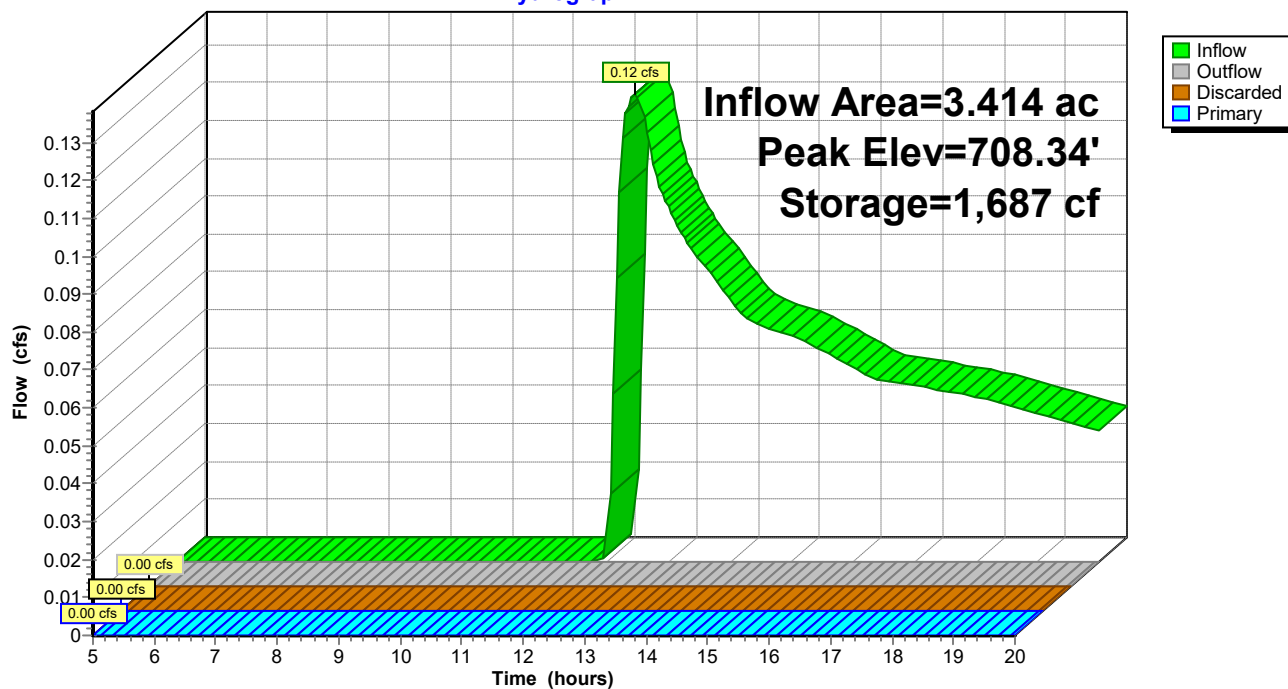
Device	Routing	Invert	Outlet Devices
#1	Discarded	707.00'	1.600 in/hr Exfiltration over Horizontal area from 707.00' - 711.00' Conductivity to Groundwater Elevation = 698.00' Excluded Horizontal area = 3,600 sf
#2	Primary	713.00'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=707.00' (Free Discharge)

↑ **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=707.00' (Free Discharge)

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

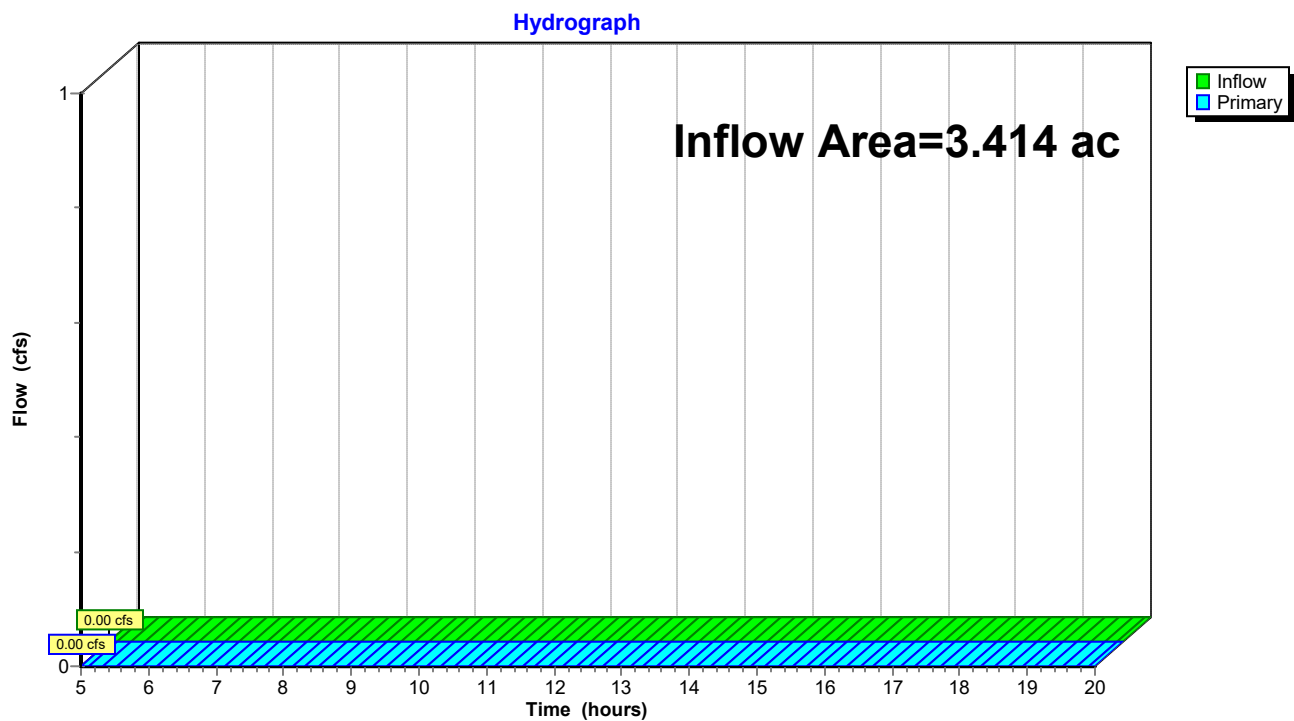
Pond 6P: Erann Ct**Hydrograph**

Summary for Pond 7P: Analysis Point

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

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth = 0.00" for 5-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 7P: Analysis Point

20191230 Town of Holland*Type II 24-hr 10-yr Rainfall=4.30"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 5S: Erann Ct

Runoff Area=148,712 sf 15.06% Impervious Runoff Depth>0.29"
Flow Length=370' Tc=18.8 min CN=48 Runoff=0.55 cfs 0.082 af

Pond 6P: Erann Ct

Peak Elev=709.82' Storage=3,548 cf Inflow=0.55 cfs 0.082 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 7P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 3.414 ac Runoff Volume = 0.082 af Average Runoff Depth = 0.29"
84.94% Pervious = 2.900 ac 15.06% Impervious = 0.514 ac

Summary for Subcatchment 5S: Erann Ct

Runoff = 0.55 cfs @ 12.21 hrs, Volume= 0.082 af, Depth> 0.29"

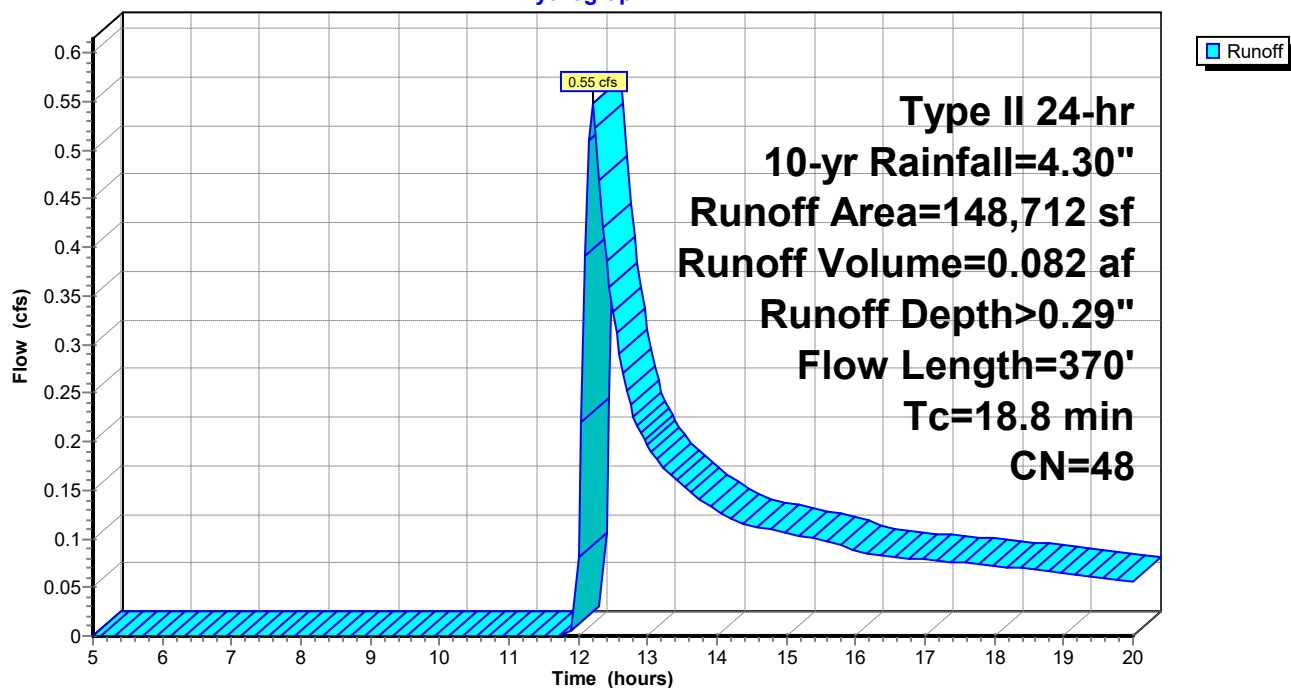
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.30"

Area (sf)	CN	Description
14,300	98	Roofs, HSG A
8,100	98	Paved roads w/curbs & sewers, HSG A
126,312	39	>75% Grass cover, Good, HSG A
148,712	48	Weighted Average
126,312		84.94% Pervious Area
22,400		15.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	180	0.0140	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
0.2	190	0.0680	13.69	164.26	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
18.8	370	Total			

Subcatchment 5S: Erann Ct

Hydrograph



Summary for Pond 6P: Erann Ct

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth > 0.29" for 10-yr event
 Inflow = 0.55 cfs @ 12.21 hrs, Volume= 0.082 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 709.82' @ 20.00 hrs Surf.Area= 3,600 sf Storage= 3,548 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	707.00'	17,466 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
707.00	3,600	0.0	0	0
708.00	3,600	35.0	1,260	1,260
709.00	3,600	35.0	1,260	2,520
710.00	3,600	35.0	1,260	3,780
710.50	3,600	35.0	630	4,410
711.00	3,600	0.0	0	4,410
711.01	3,600	100.0	36	4,446
712.00	3,900	100.0	3,713	8,159
713.00	7,310	100.0	5,605	13,764
713.50	7,500	100.0	3,703	17,466

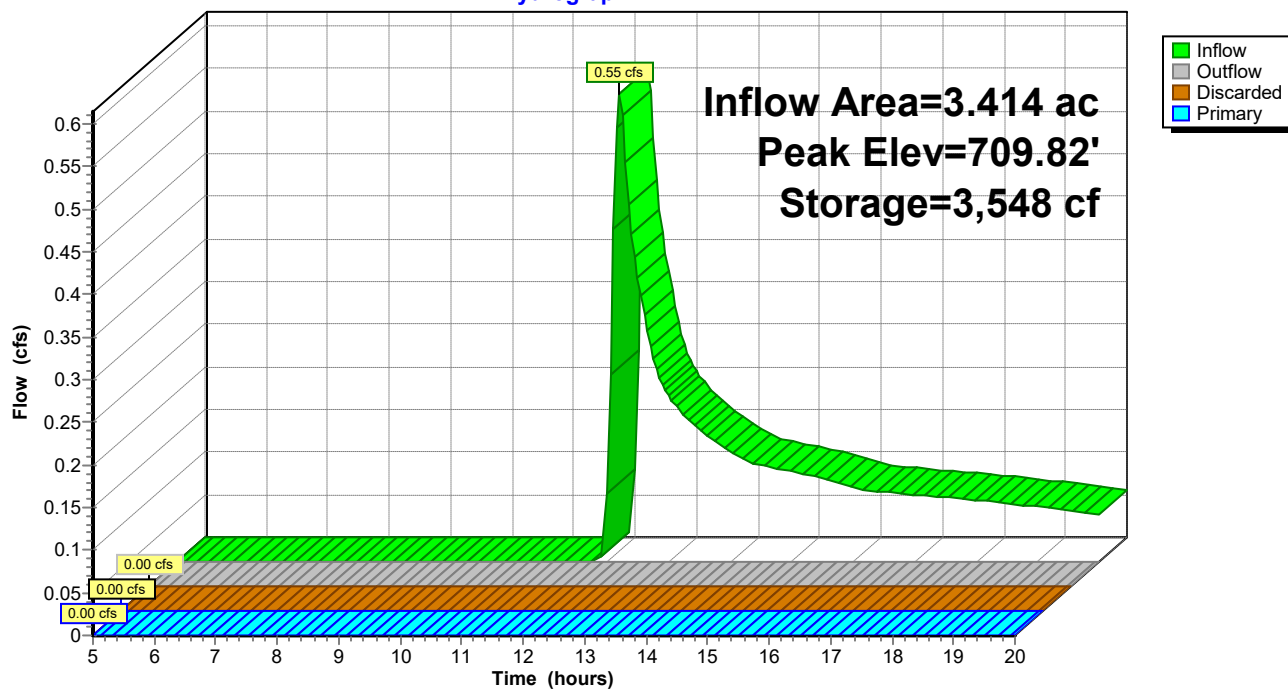
Device	Routing	Invert	Outlet Devices
#1	Discarded	707.00'	1.600 in/hr Exfiltration over Horizontal area from 707.00' - 711.00' Conductivity to Groundwater Elevation = 698.00' Excluded Horizontal area = 3,600 sf
#2	Primary	713.00'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=707.00' (Free Discharge)

↑ **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=707.00' (Free Discharge)

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

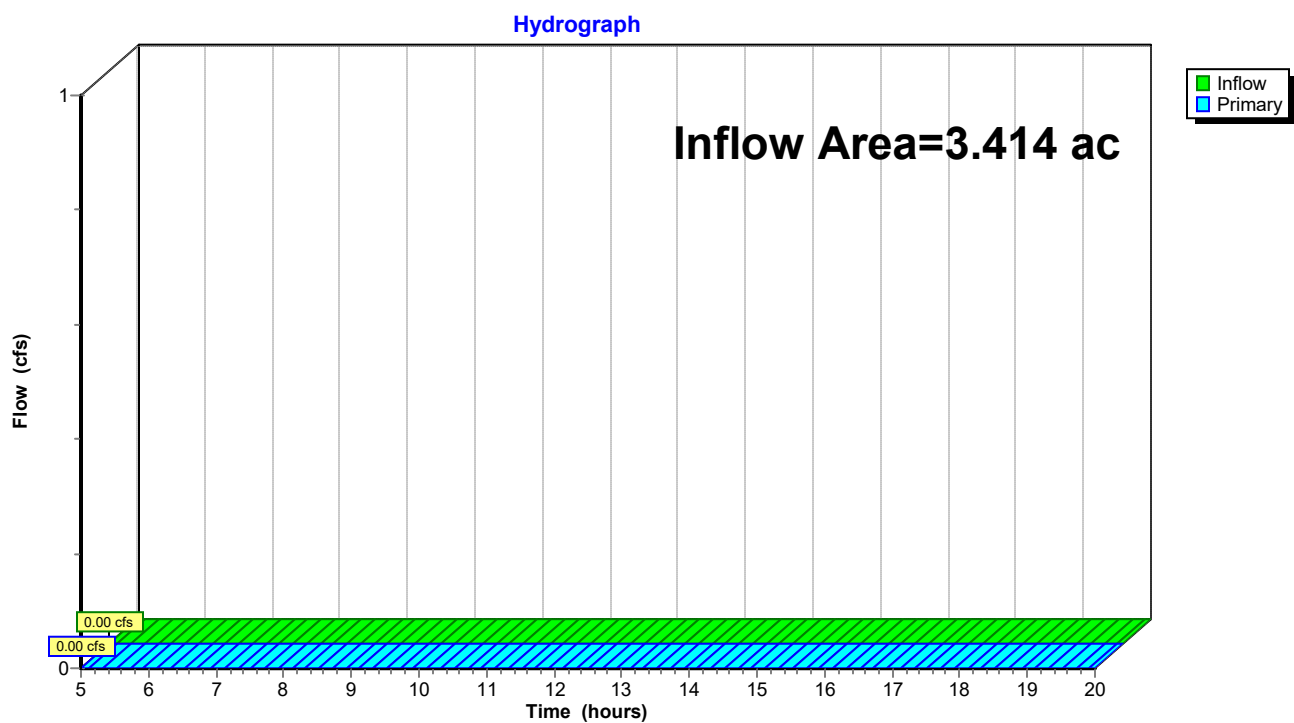
Pond 6P: Erann Ct**Hydrograph**

Summary for Pond 7P: Analysis Point

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

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 7P: Analysis Point

20191230 Town of Holland*Type II 24-hr 25-yr Rainfall=5.34"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 5S: Erann Ct

Runoff Area=148,712 sf 15.06% Impervious Runoff Depth>0.61"
Flow Length=370' Tc=18.8 min CN=48 Runoff=1.84 cfs 0.174 af

Pond 6P: Erann Ct

Peak Elev=711.85' Storage=7,571 cf Inflow=1.84 cfs 0.174 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 7P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 3.414 ac Runoff Volume = 0.174 af Average Runoff Depth = 0.61"
84.94% Pervious = 2.900 ac 15.06% Impervious = 0.514 ac

Summary for Subcatchment 5S: Erann Ct

Runoff = 1.84 cfs @ 12.17 hrs, Volume= 0.174 af, Depth> 0.61"

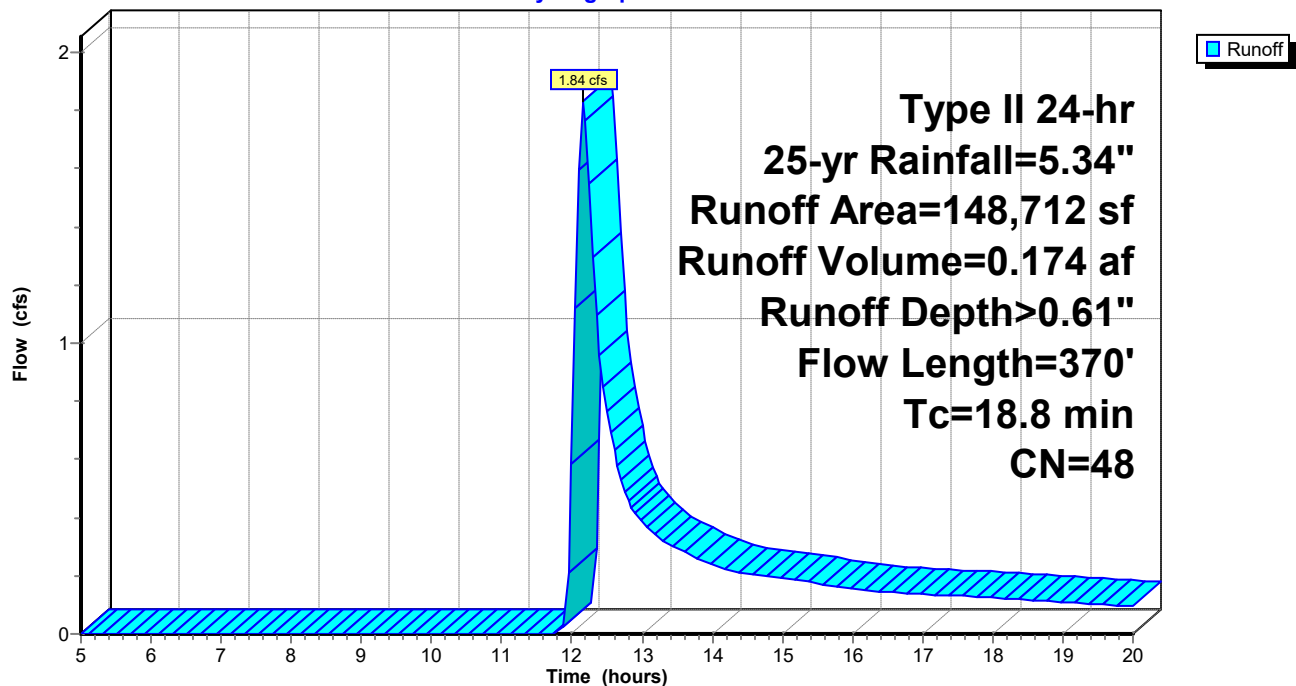
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=5.34"

Area (sf)	CN	Description
14,300	98	Roofs, HSG A
8,100	98	Paved roads w/curbs & sewers, HSG A
126,312	39	>75% Grass cover, Good, HSG A
148,712	48	Weighted Average
126,312		84.94% Pervious Area
22,400		15.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	180	0.0140	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
0.2	190	0.0680	13.69	164.26	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
18.8	370	Total			

Subcatchment 5S: Erann Ct

Hydrograph



Summary for Pond 6P: Erann Ct

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth > 0.61" for 25-yr event
 Inflow = 1.84 cfs @ 12.17 hrs, Volume= 0.174 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 711.85' @ 20.00 hrs Surf.Area= 3,854 sf Storage= 7,571 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	707.00'	17,466 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
707.00	3,600	0.0	0	0
708.00	3,600	35.0	1,260	1,260
709.00	3,600	35.0	1,260	2,520
710.00	3,600	35.0	1,260	3,780
710.50	3,600	35.0	630	4,410
711.00	3,600	0.0	0	4,410
711.01	3,600	100.0	36	4,446
712.00	3,900	100.0	3,713	8,159
713.00	7,310	100.0	5,605	13,764
713.50	7,500	100.0	3,703	17,466

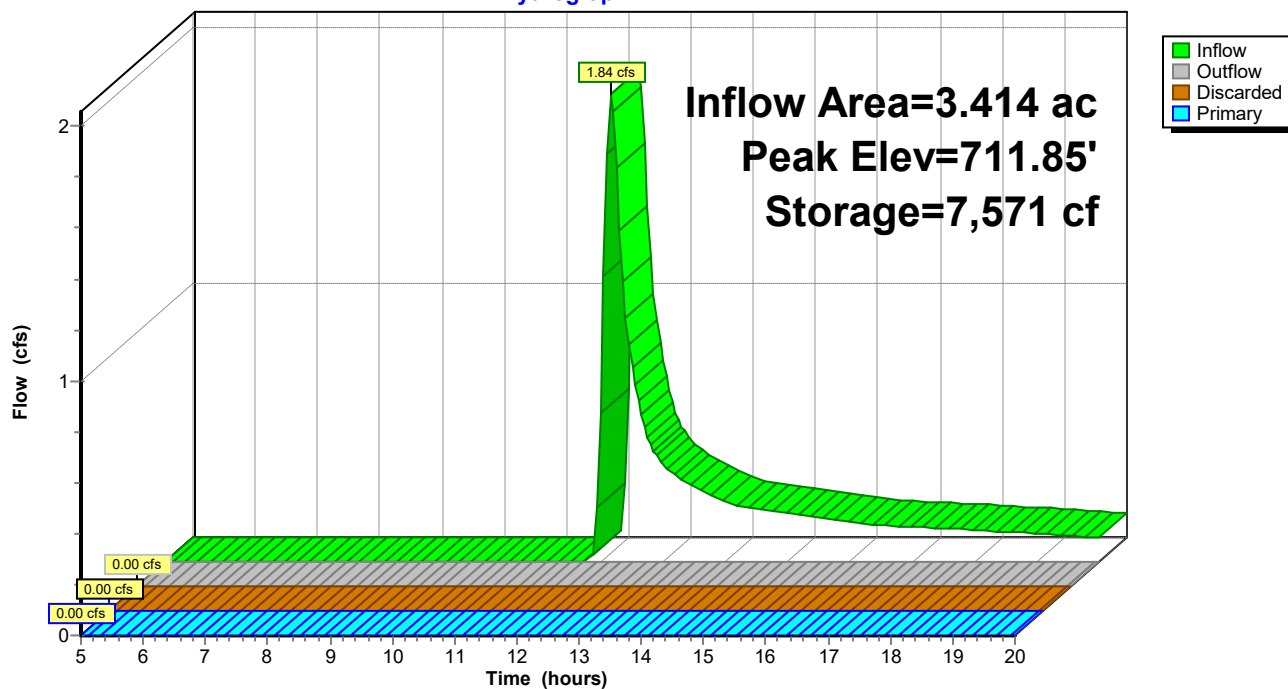
Device	Routing	Invert	Outlet Devices
#1	Discarded	707.00'	1.600 in/hr Exfiltration over Horizontal area from 707.00' - 711.00' Conductivity to Groundwater Elevation = 698.00' Excluded Horizontal area = 3,600 sf
#2	Primary	713.00'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=707.00' (Free Discharge)

↑ **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=707.00' (Free Discharge)

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

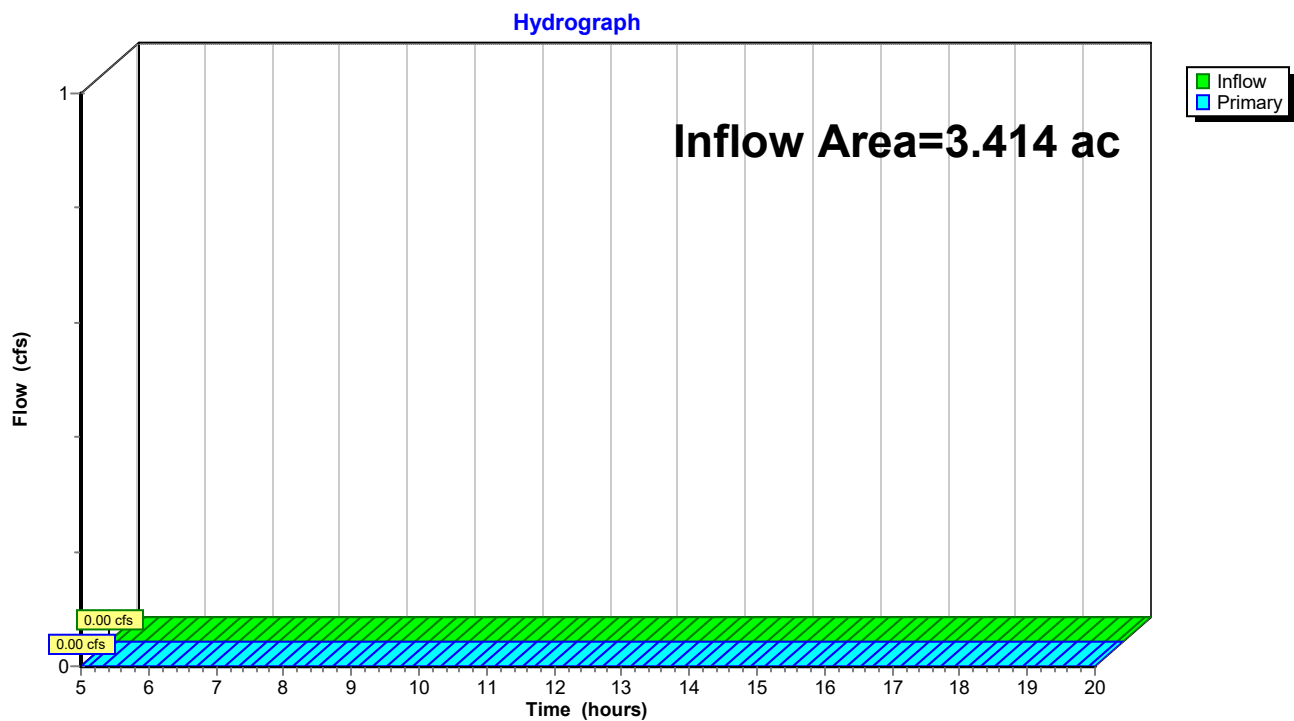
Pond 6P: Erann Ct**Hydrograph**

Summary for Pond 7P: Analysis Point

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

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth = 0.00" for 25-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 7P: Analysis Point

20191230 Town of Holland*Type II 24-hr 50-yr Rainfall=6.25"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 5S: Erann Ct

Runoff Area=148,712 sf 15.06% Impervious Runoff Depth>0.97"
Flow Length=370' Tc=18.8 min CN=48 Runoff=3.40 cfs 0.276 af

Pond 6P: Erann Ct

Peak Elev=712.74' Storage=11,998 cf Inflow=3.40 cfs 0.276 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 7P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 3.414 ac Runoff Volume = 0.276 af Average Runoff Depth = 0.97"
84.94% Pervious = 2.900 ac 15.06% Impervious = 0.514 ac

Summary for Subcatchment 5S: Erann Ct

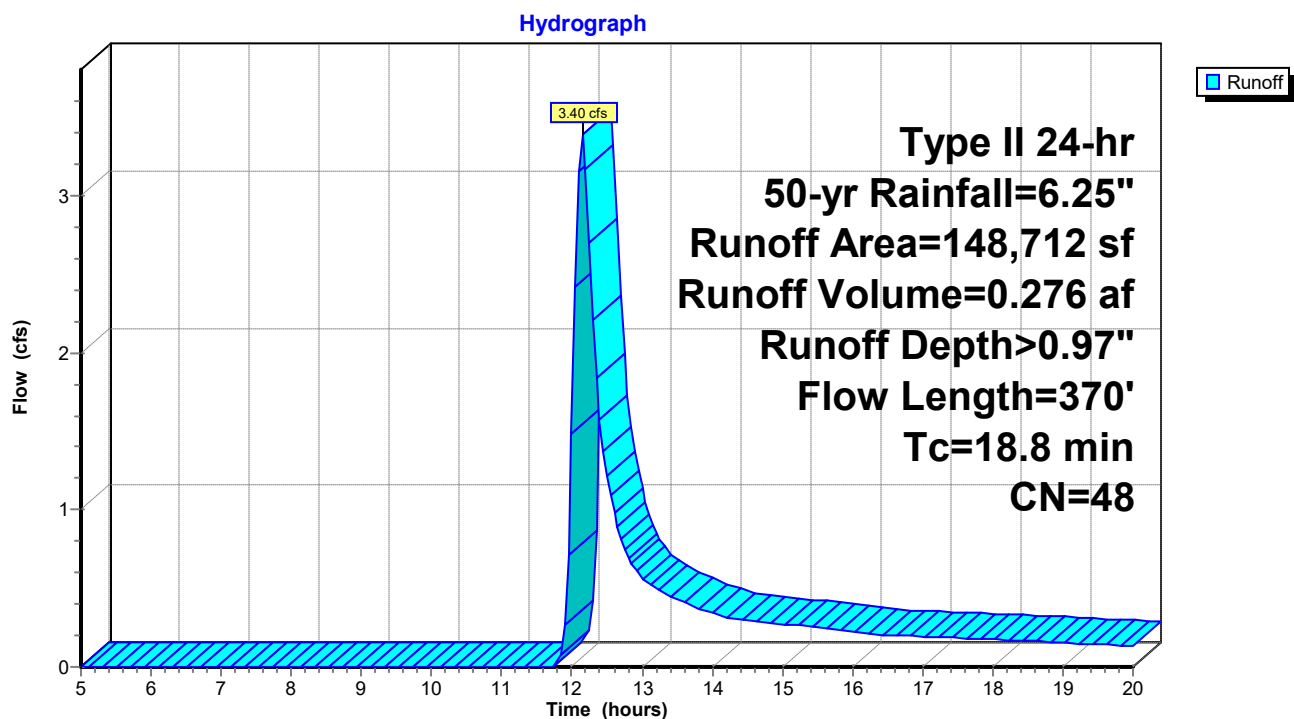
Runoff = 3.40 cfs @ 12.15 hrs, Volume= 0.276 af, Depth> 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=6.25"

Area (sf)	CN	Description
14,300	98	Roofs, HSG A
8,100	98	Paved roads w/curbs & sewers, HSG A
126,312	39	>75% Grass cover, Good, HSG A
148,712	48	Weighted Average
126,312		84.94% Pervious Area
22,400		15.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	180	0.0140	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
0.2	190	0.0680	13.69	164.26	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
18.8	370	Total			

Subcatchment 5S: Erann Ct



Summary for Pond 6P: Erann Ct

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth > 0.97" for 50-yr event
 Inflow = 3.40 cfs @ 12.15 hrs, Volume= 0.276 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 712.74' @ 20.00 hrs Surf.Area= 6,434 sf Storage= 11,998 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description	
#1	707.00'	17,466 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
707.00	3,600	0.0	0	0
708.00	3,600	35.0	1,260	1,260
709.00	3,600	35.0	1,260	2,520
710.00	3,600	35.0	1,260	3,780
710.50	3,600	35.0	630	4,410
711.00	3,600	0.0	0	4,410
711.01	3,600	100.0	36	4,446
712.00	3,900	100.0	3,713	8,159
713.00	7,310	100.0	5,605	13,764
713.50	7,500	100.0	3,703	17,466

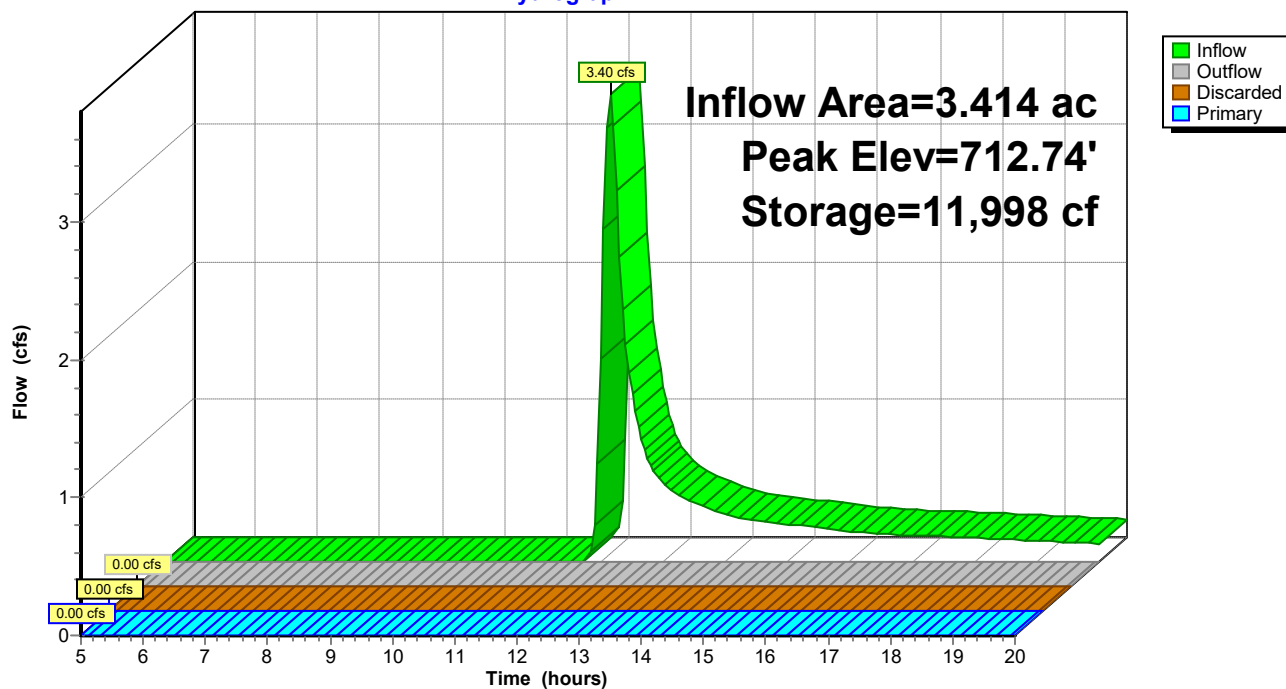
Device	Routing	Invert	Outlet Devices
#1	Discarded	707.00'	1.600 in/hr Exfiltration over Horizontal area from 707.00' - 711.00' Conductivity to Groundwater Elevation = 698.00' Excluded Horizontal area = 3,600 sf
#2	Primary	713.00'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=707.00' (Free Discharge)

↑ **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=707.00' (Free Discharge)

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

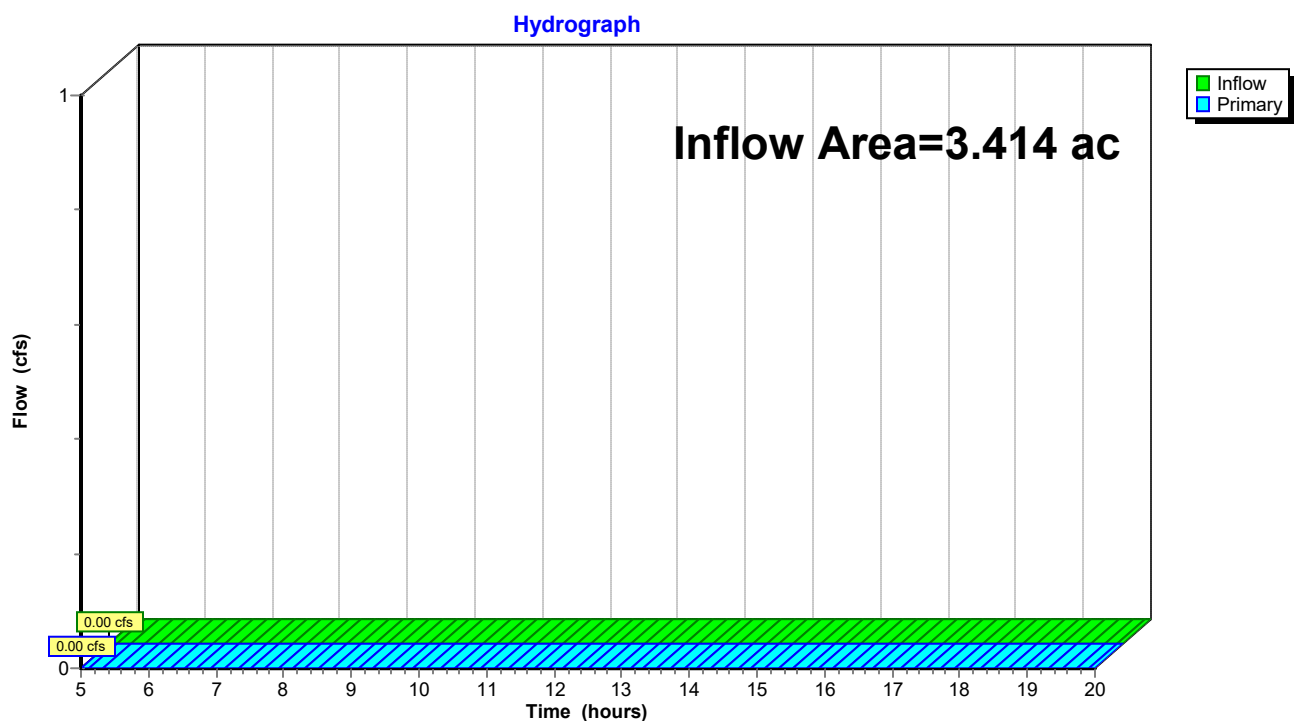
Pond 6P: Erann Ct**Hydrograph**

Summary for Pond 7P: Analysis Point

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

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth = 0.00" for 50-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 7P: Analysis Point

20191230 Town of Holland*Type II 24-hr 100-yr Rainfall=7.24"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 5S: Erann Ct

Runoff Area=148,712 sf 15.06% Impervious Runoff Depth>1.42"
Flow Length=370' Tc=18.8 min CN=48 Runoff=5.42 cfs 0.405 af

Pond 6P: Erann Ct

Peak Elev=713.03' Storage=13,949 cf Inflow=5.42 cfs 0.405 af
Discarded=0.00 cfs 0.000 af Primary=0.29 cfs 0.086 af Outflow=0.29 cfs 0.086 af

Pond 7P: Analysis Point

Inflow=0.29 cfs 0.086 af
Primary=0.29 cfs 0.086 af

Total Runoff Area = 3.414 ac Runoff Volume = 0.405 af Average Runoff Depth = 1.42"
84.94% Pervious = 2.900 ac 15.06% Impervious = 0.514 ac

Summary for Subcatchment 5S: Erann Ct

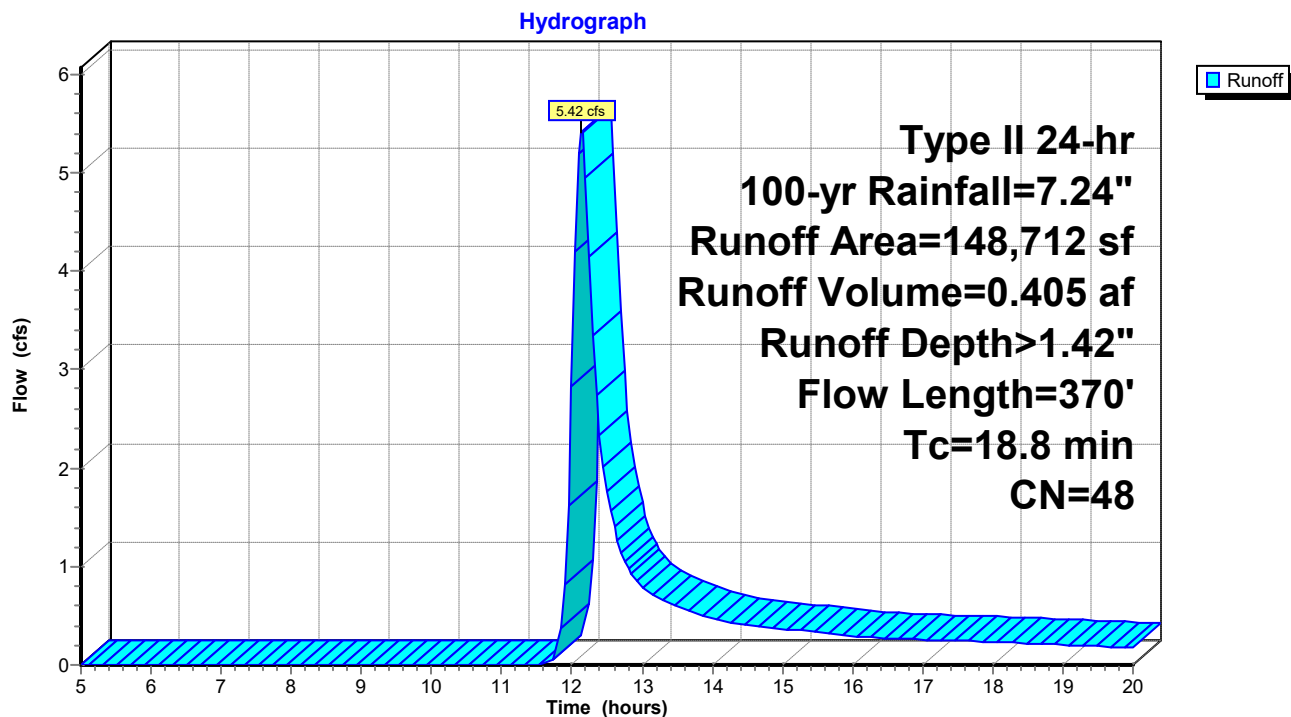
Runoff = 5.42 cfs @ 12.14 hrs, Volume= 0.405 af, Depth> 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.24"

Area (sf)	CN	Description
14,300	98	Roofs, HSG A
8,100	98	Paved roads w/curbs & sewers, HSG A
126,312	39	>75% Grass cover, Good, HSG A
148,712	48	Weighted Average
126,312		84.94% Pervious Area
22,400		15.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	180	0.0140	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
0.2	190	0.0680	13.69	164.26	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
18.8	370	Total			

Subcatchment 5S: Erann Ct



Summary for Pond 6P: Erann Ct

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth > 1.42" for 100-yr event
 Inflow = 5.42 cfs @ 12.14 hrs, Volume= 0.405 af
 Outflow = 0.29 cfs @ 16.14 hrs, Volume= 0.086 af, Atten= 95%, Lag= 239.8 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.29 cfs @ 16.14 hrs, Volume= 0.086 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 713.03' @ 16.14 hrs Surf.Area= 7,320 sf Storage= 13,949 cf

Plug-Flow detention time= 336.4 min calculated for 0.086 af (21% of inflow)
 Center-of-Mass det. time= 227.1 min (1,061.0 - 833.9)

Volume	Invert	Avail.Storage	Storage Description
#1	707.00'	17,466 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
707.00	3,600	0.0	0	0
708.00	3,600	35.0	1,260	1,260
709.00	3,600	35.0	1,260	2,520
710.00	3,600	35.0	1,260	3,780
710.50	3,600	35.0	630	4,410
711.00	3,600	0.0	0	4,410
711.01	3,600	100.0	36	4,446
712.00	3,900	100.0	3,713	8,159
713.00	7,310	100.0	5,605	13,764
713.50	7,500	100.0	3,703	17,466

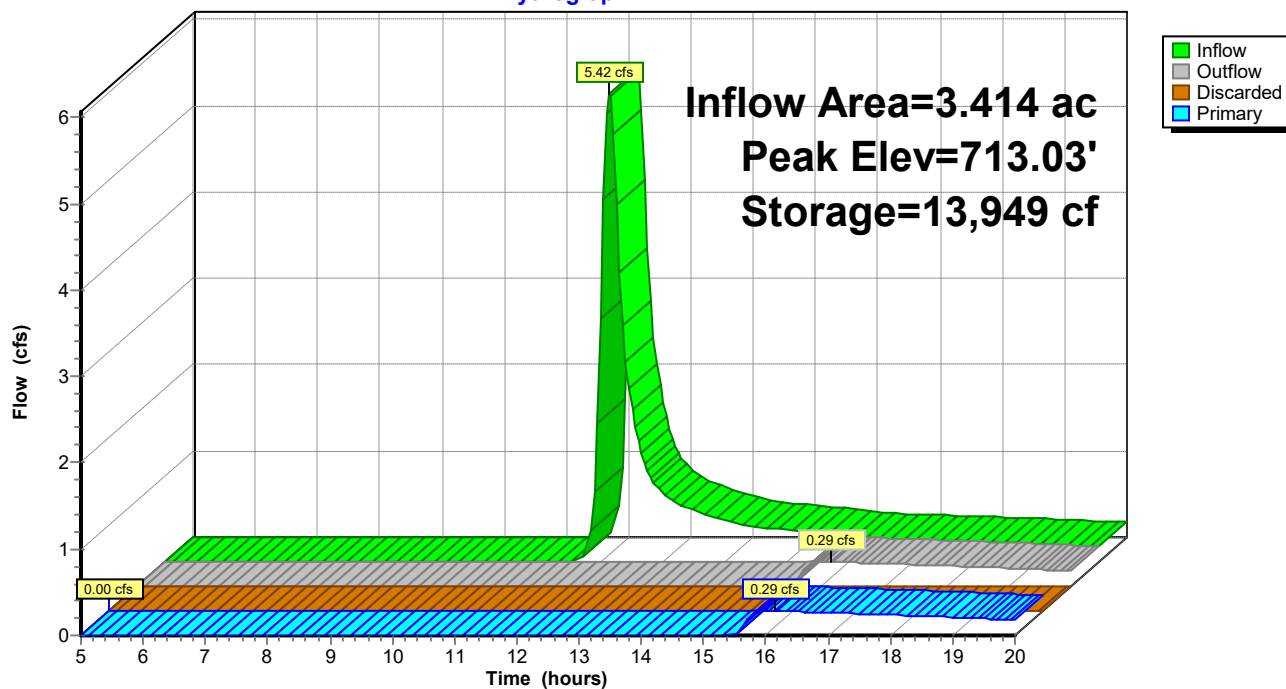
Device	Routing	Invert	Outlet Devices
#1	Discarded	707.00'	1.600 in/hr Exfiltration over Horizontal area from 707.00' - 711.00' Conductivity to Groundwater Elevation = 698.00' Excluded Horizontal area = 3,600 sf
#2	Primary	713.00'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=707.00' (Free Discharge)

↑ **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.22 cfs @ 16.14 hrs HW=713.03' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.22 cfs @ 0.43 fps)

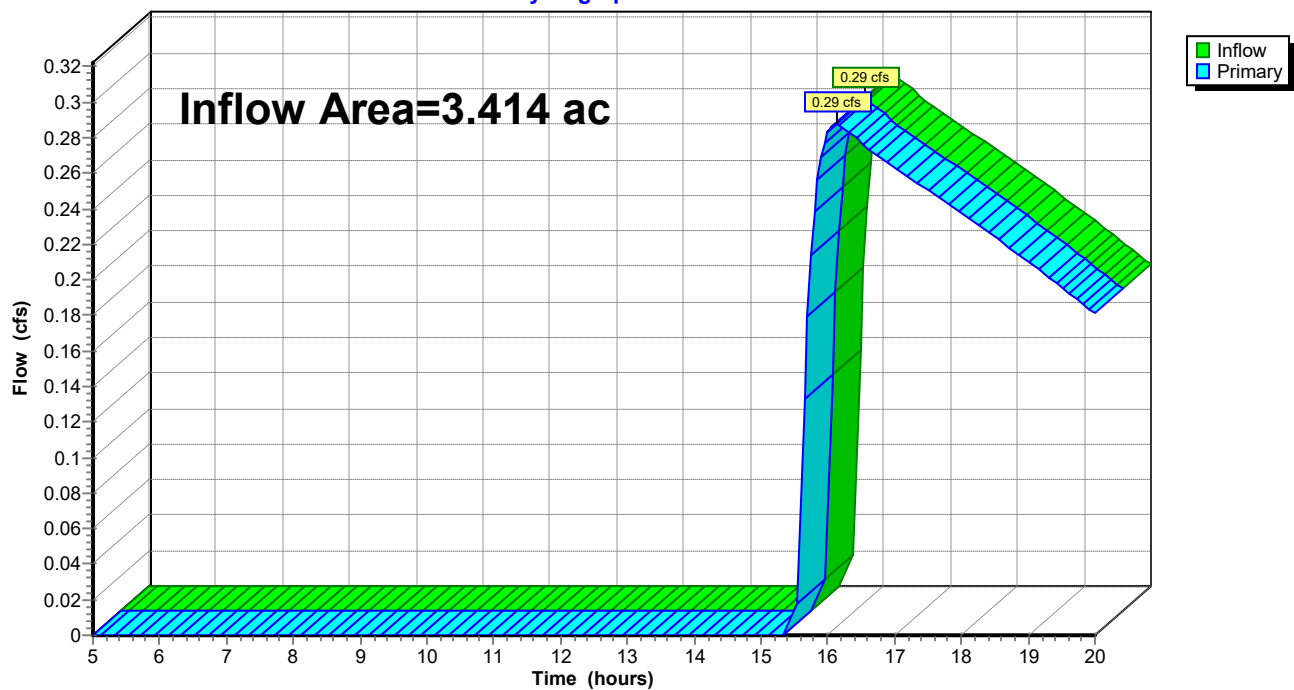
Pond 6P: Erann Ct**Hydrograph**

Summary for Pond 7P: Analysis Point

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

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth > 0.30" for 100-yr event
Inflow = 0.29 cfs @ 16.14 hrs, Volume= 0.086 af
Primary = 0.29 cfs @ 16.14 hrs, Volume= 0.086 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 7P: Analysis Point**Hydrograph**

20191230 Town of Holland*Type II 24-hr 200-yr Rainfall=8.33"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 5S: Erann Ct

Runoff Area=148,712 sf 15.06% Impervious Runoff Depth>1.98"
Flow Length=370' Tc=18.8 min CN=48 Runoff=7.94 cfs 0.565 af

Pond 6P: Erann Ct

Peak Elev=713.06' Storage=14,209 cf Inflow=7.94 cfs 0.565 af
Discarded=0.00 cfs 0.000 af Primary=0.86 cfs 0.245 af Outflow=0.86 cfs 0.245 af

Pond 7P: Analysis Point

Inflow=0.86 cfs 0.245 af
Primary=0.86 cfs 0.245 af

Total Runoff Area = 3.414 ac Runoff Volume = 0.565 af Average Runoff Depth = 1.98"
84.94% Pervious = 2.900 ac 15.06% Impervious = 0.514 ac

Summary for Subcatchment 5S: Erann Ct

Runoff = 7.94 cfs @ 12.13 hrs, Volume= 0.565 af, Depth> 1.98"

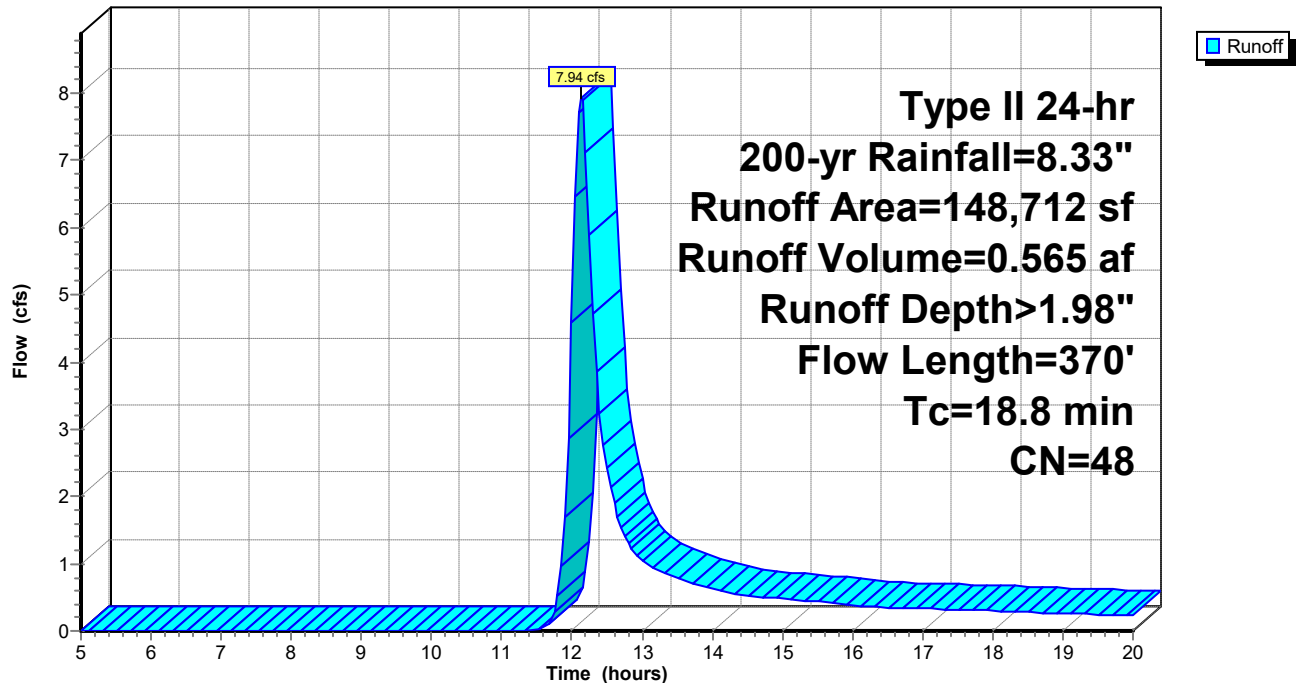
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 200-yr Rainfall=8.33"

Area (sf)	CN	Description
14,300	98	Roofs, HSG A
8,100	98	Paved roads w/curbs & sewers, HSG A
126,312	39	>75% Grass cover, Good, HSG A
148,712	48	Weighted Average
126,312		84.94% Pervious Area
22,400		15.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	180	0.0140	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
0.2	190	0.0680	13.69	164.26	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
18.8	370	Total			

Subcatchment 5S: Erann Ct

Hydrograph



Summary for Pond 6P: Erann Ct

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth > 1.98" for 200-yr event
 Inflow = 7.94 cfs @ 12.13 hrs, Volume= 0.565 af
 Outflow = 0.86 cfs @ 13.30 hrs, Volume= 0.245 af, Atten= 89%, Lag= 70.2 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.86 cfs @ 13.30 hrs, Volume= 0.245 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 713.06' @ 13.30 hrs Surf.Area= 7,333 sf Storage= 14,209 cf

Plug-Flow detention time= 218.1 min calculated for 0.245 af (43% of inflow)
 Center-of-Mass det. time= 121.2 min (947.4 - 826.2)

Volume	Invert	Avail.Storage	Storage Description
#1	707.00'	17,466 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
707.00	3,600	0.0	0	0
708.00	3,600	35.0	1,260	1,260
709.00	3,600	35.0	1,260	2,520
710.00	3,600	35.0	1,260	3,780
710.50	3,600	35.0	630	4,410
711.00	3,600	0.0	0	4,410
711.01	3,600	100.0	36	4,446
712.00	3,900	100.0	3,713	8,159
713.00	7,310	100.0	5,605	13,764
713.50	7,500	100.0	3,703	17,466

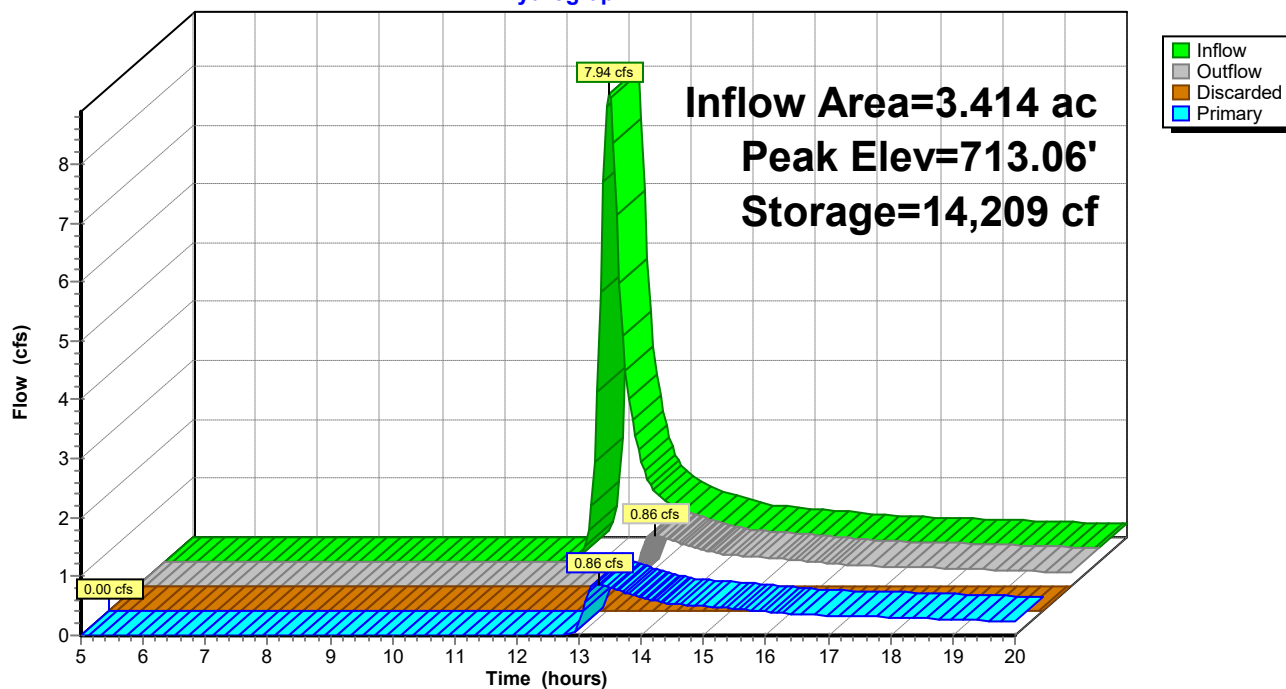
Device	Routing	Invert	Outlet Devices
#1	Discarded	707.00'	1.600 in/hr Exfiltration over Horizontal area from 707.00' - 711.00' Conductivity to Groundwater Elevation = 698.00' Excluded Horizontal area = 3,600 sf
#2	Primary	713.00'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=707.00' (Free Discharge)

↑ **1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.80 cfs @ 13.30 hrs HW=713.06' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.80 cfs @ 0.66 fps)

Pond 6P: Erann Ct**Hydrograph**

Summary for Pond 7P: Analysis Point

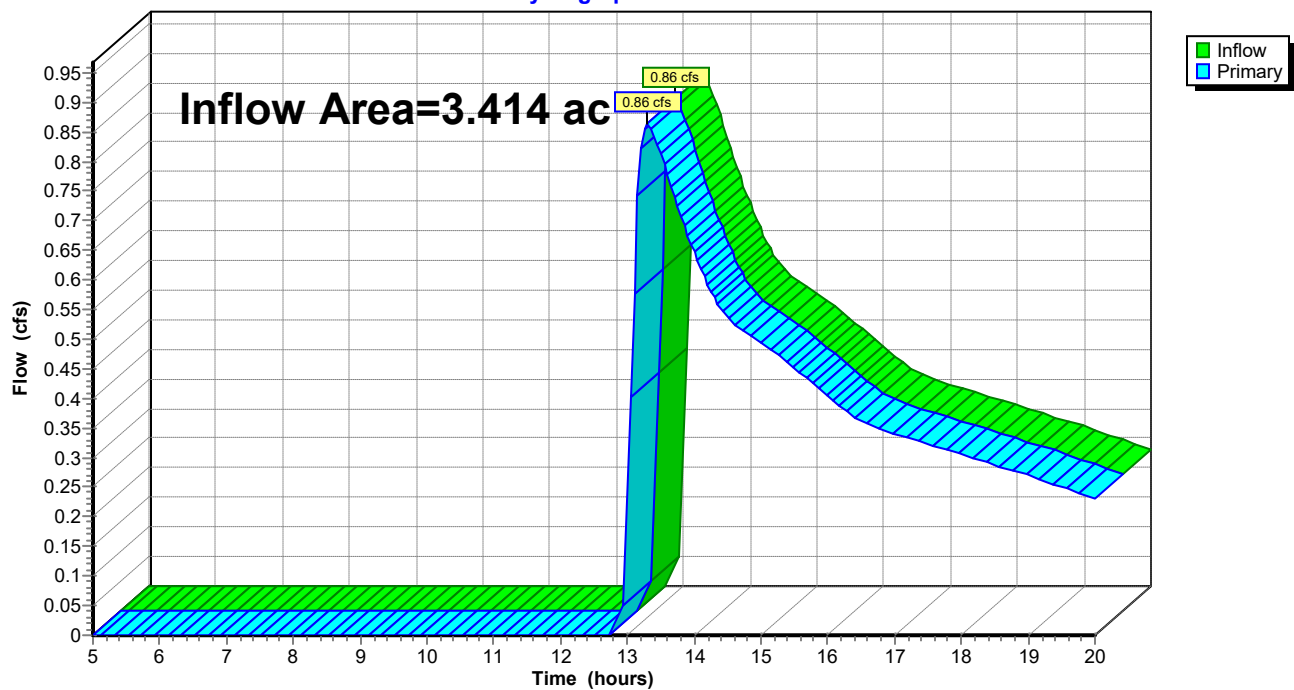
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.414 ac, 15.06% Impervious, Inflow Depth > 0.86" for 200-yr event
Inflow = 0.86 cfs @ 13.30 hrs, Volume= 0.245 af
Primary = 0.86 cfs @ 13.30 hrs, Volume= 0.245 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 7P: Analysis Point

Hydrograph



20191230 Town of Holland

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Page 1

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.152	39	>75% Grass cover, Good, HSG A (1S)
10.819	39	>75% Grass cover, Good, HSG B (1S)
0.272	98	Paved roads w/curbs & sewers, HSG A (1S)
0.239	98	Roofs, HSG A (1S)
13.481	41	TOTAL AREA

20191230 Town of Holland

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Page 2

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.662	HSG A	1S
10.819	HSG B	1S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
13.481		TOTAL AREA

20191230 Town of Holland

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
2.152	10.819	0.000	0.000	0.000	12.970	>75% Grass cover, Good	1S
0.272	0.000	0.000	0.000	0.000	0.272	Paved roads w/curbs & sewers	1S
0.239	0.000	0.000	0.000	0.000	0.239	Roofs	1S
2.662	10.819	0.000	0.000	0.000	13.481	TOTAL AREA	

20191230 Town of Holland*Type II 24-hr 1-yr Rainfall=2.56"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Van Dunk

Runoff Area=587,232 sf 3.79% Impervious Runoff Depth=0.00"
Flow Length=875' Tc=14.0 min CN=41 Runoff=0.00 cfs 0.000 af

Pond 2P: Van Dunk

Peak Elev=705.00' Storage=0 cf Inflow=0.00 cfs 0.000 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 8P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 13.481 ac Runoff Volume = 0.000 af Average Runoff Depth = 0.00"
96.21% Pervious = 12.970 ac 3.79% Impervious = 0.511 ac

Summary for Subcatchment 1S: Van Dunk

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

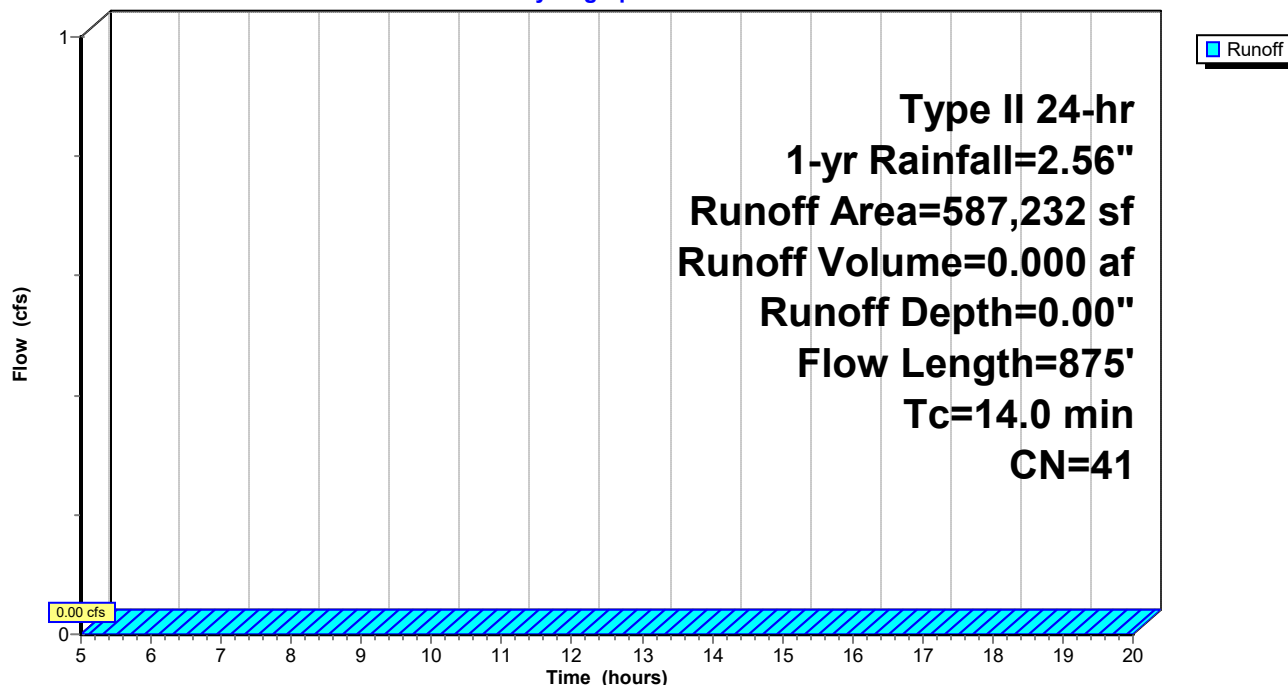
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.56"

Area (sf)	CN	Description
10,400	98	Roofs, HSG A
11,850	98	Paved roads w/curbs & sewers, HSG A
93,725	39	>75% Grass cover, Good, HSG A
* 471,257	39	>75% Grass cover, Good, HSG B
587,232	41	Weighted Average
564,982		96.21% Pervious Area
22,250		3.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0270	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
1.6	725	0.0200	7.42	89.08	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
14.0	875	Total			

Subcatchment 1S: Van Dunk

Hydrograph



Summary for Pond 2P: Van Dunk

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth = 0.00" for 1-yr event
 Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 705.00' @ 5.00 hrs Surf.Area= 2,400 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	705.00'	47,185 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
705.00	2,400	0.0	0	0
706.00	2,400	35.0	840	840
707.00	2,400	35.0	840	1,680
708.00	2,400	35.0	840	2,520
709.00	4,000	10.0	320	2,840
710.00	5,346	100.0	4,673	7,513
711.00	10,428	100.0	7,887	15,400
712.00	15,513	100.0	12,971	28,371
713.00	22,115	100.0	18,814	47,185

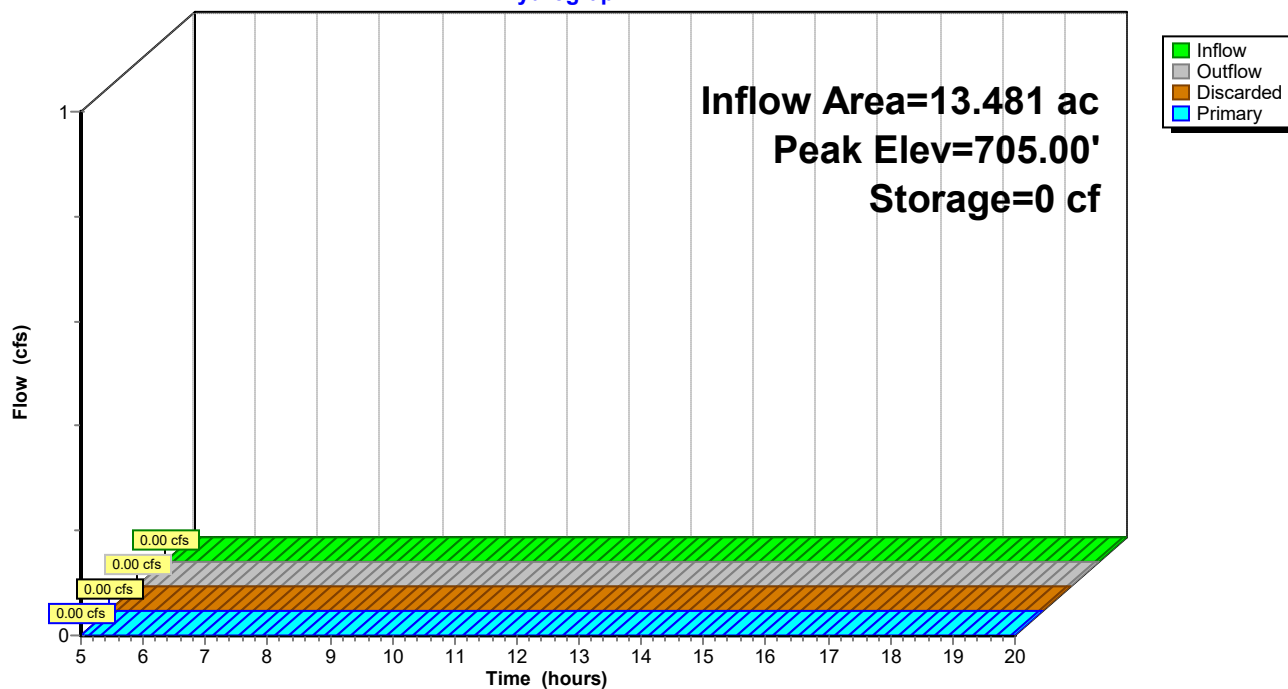
Device	Routing	Invert	Outlet Devices
#1	Discarded	705.00'	1.500 in/hr Exfiltration over Horizontal area from 705.00' - 709.00' Conductivity to Groundwater Elevation = 700.00' Excluded Horizontal area = 2,400 sf
#2	Primary	712.75'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=705.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=705.00' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 2P: Van Dunk

Hydrograph

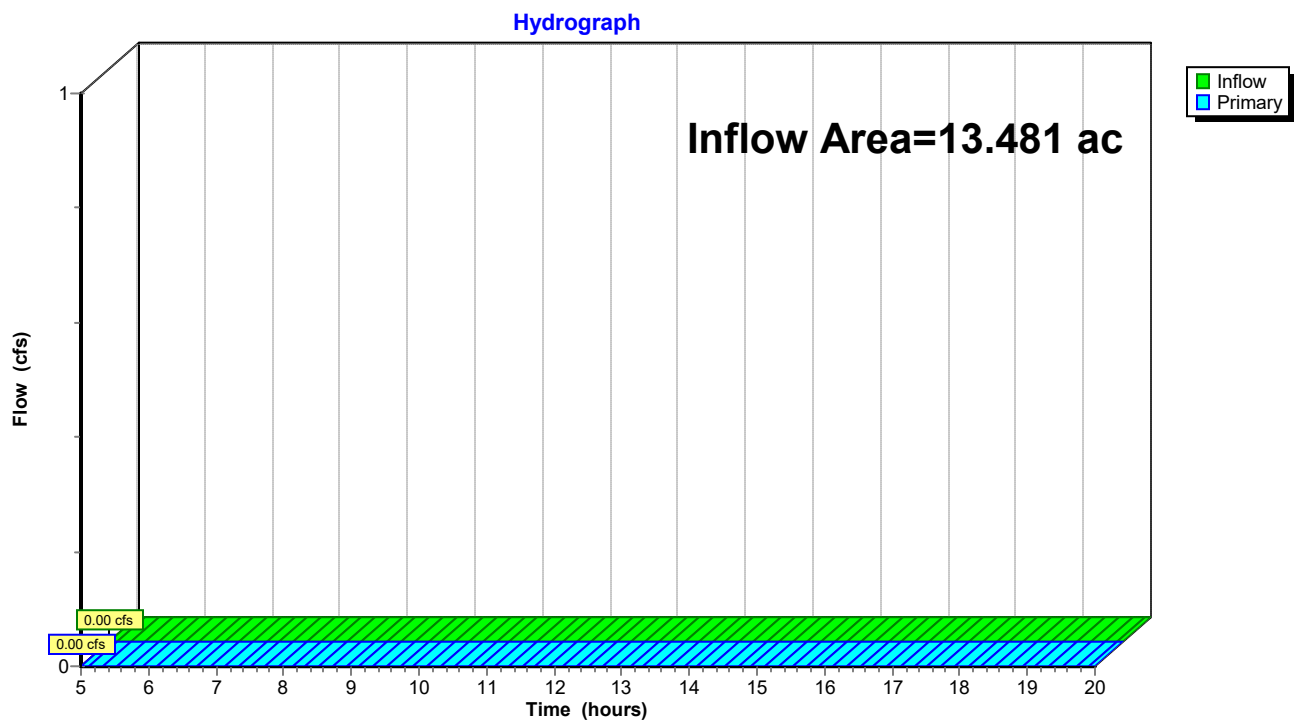


Summary for Pond 8P: Analysis Point

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

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 8P: Analysis Point

20191230 Town of Holland*Type II 24-hr 2-yr Rainfall=2.93"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Van Dunk

Runoff Area=587,232 sf 3.79% Impervious Runoff Depth=0.00"
Flow Length=875' Tc=14.0 min CN=41 Runoff=0.00 cfs 0.000 af

Pond 2P: Van Dunk

Peak Elev=705.00' Storage=0 cf Inflow=0.00 cfs 0.000 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 8P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 13.481 ac Runoff Volume = 0.000 af Average Runoff Depth = 0.00"
96.21% Pervious = 12.970 ac 3.79% Impervious = 0.511 ac

Summary for Subcatchment 1S: Van Dunk

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

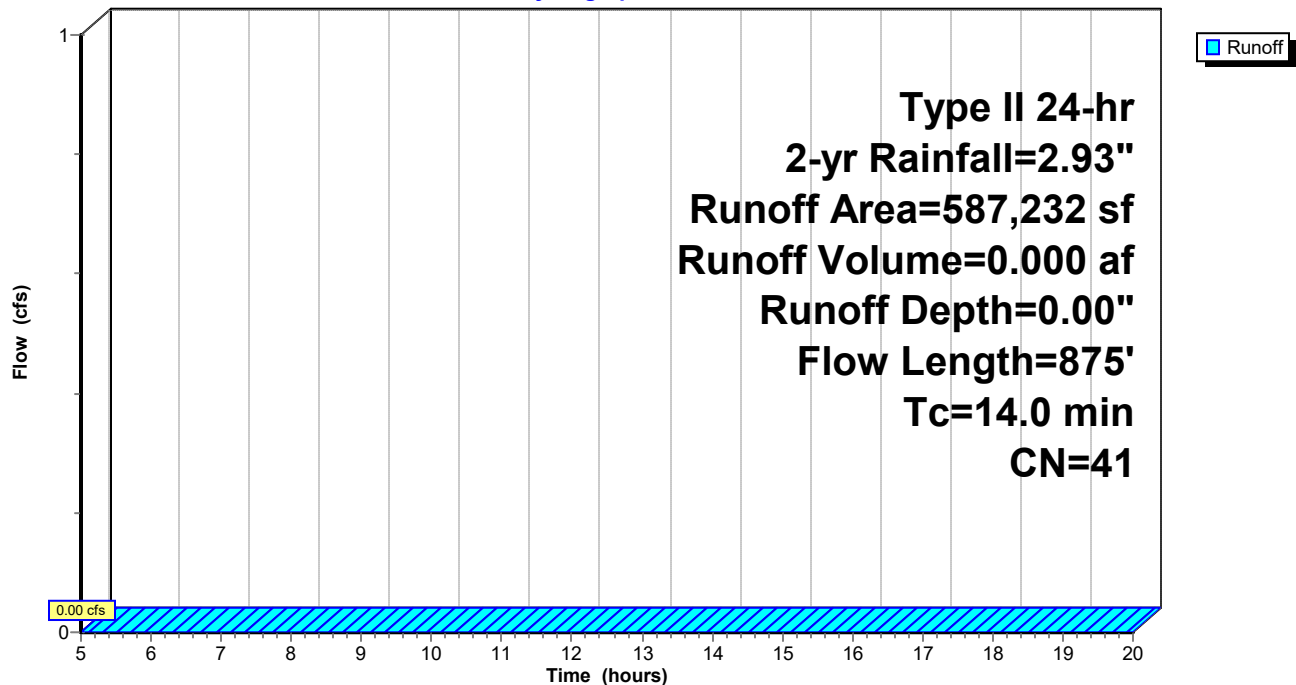
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=2.93"

Area (sf)	CN	Description
10,400	98	Roofs, HSG A
11,850	98	Paved roads w/curbs & sewers, HSG A
93,725	39	>75% Grass cover, Good, HSG A
* 471,257	39	>75% Grass cover, Good, HSG B
587,232	41	Weighted Average
564,982		96.21% Pervious Area
22,250		3.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0270	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
1.6	725	0.0200	7.42	89.08	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
14.0	875	Total			

Subcatchment 1S: Van Dunk

Hydrograph



Summary for Pond 2P: Van Dunk

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth = 0.00" for 2-yr event
 Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 705.00' @ 5.00 hrs Surf.Area= 2,400 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	705.00'	47,185 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
705.00	2,400	0.0	0	0
706.00	2,400	35.0	840	840
707.00	2,400	35.0	840	1,680
708.00	2,400	35.0	840	2,520
709.00	4,000	10.0	320	2,840
710.00	5,346	100.0	4,673	7,513
711.00	10,428	100.0	7,887	15,400
712.00	15,513	100.0	12,971	28,371
713.00	22,115	100.0	18,814	47,185

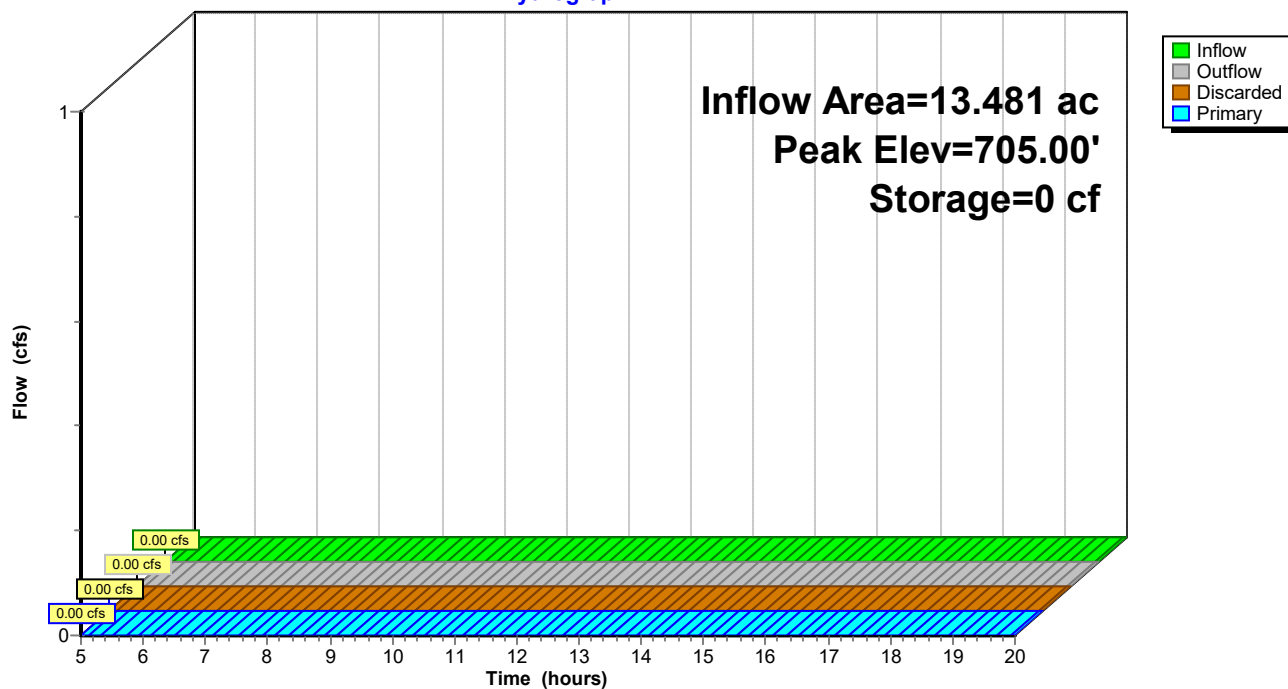
Device	Routing	Invert	Outlet Devices
#1	Discarded	705.00'	1.500 in/hr Exfiltration over Horizontal area from 705.00' - 709.00' Conductivity to Groundwater Elevation = 700.00' Excluded Horizontal area = 2,400 sf
#2	Primary	712.75'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=705.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=705.00' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 2P: Van Dunk

Hydrograph

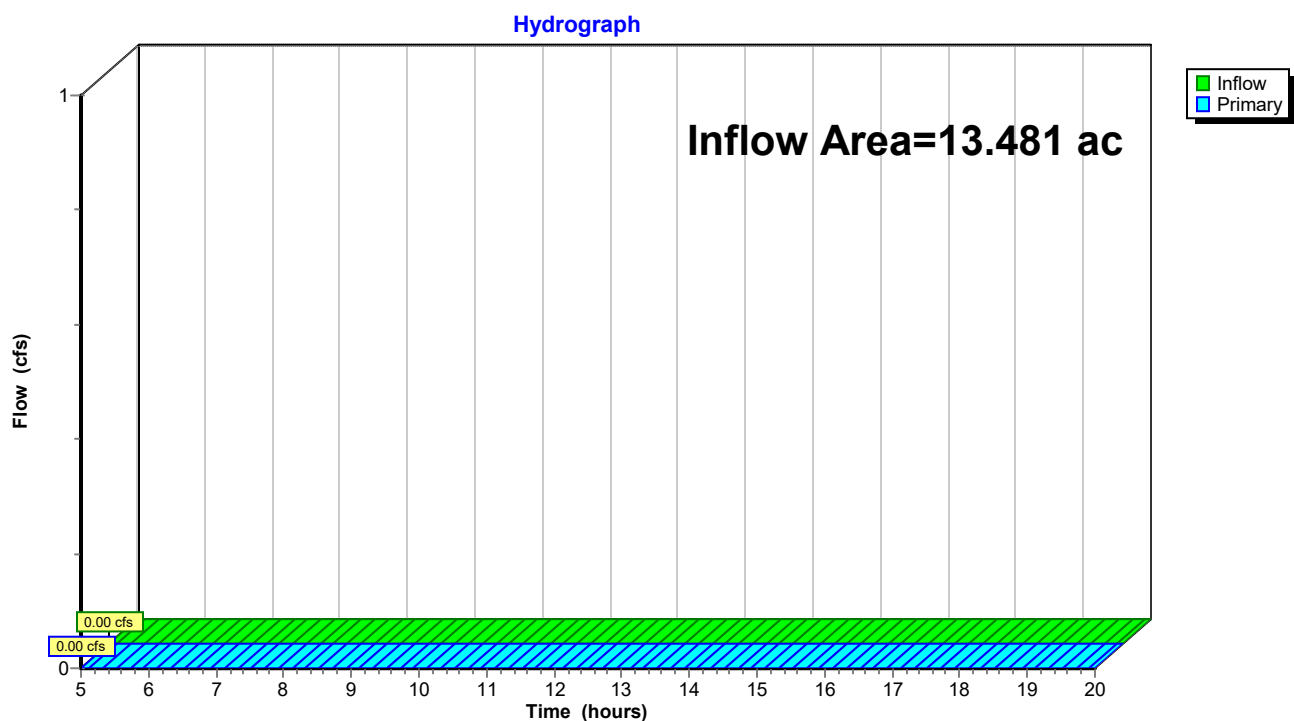


Summary for Pond 8P: Analysis Point

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

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 8P: Analysis Point

20191230 Town of Holland*Type II 24-hr 5-yr Rainfall=3.64"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Van Dunk

Runoff Area=587,232 sf 3.79% Impervious Runoff Depth>0.02"
Flow Length=875' Tc=14.0 min CN=41 Runoff=0.06 cfs 0.025 af

Pond 2P: Van Dunk

Peak Elev=706.29' Storage=1,088 cf Inflow=0.06 cfs 0.025 af
Discarded=0.00 cfs 0.000 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 8P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 13.481 ac Runoff Volume = 0.025 af Average Runoff Depth = 0.02"
96.21% Pervious = 12.970 ac 3.79% Impervious = 0.511 ac

Summary for Subcatchment 1S: Van Dunk

Runoff = 0.06 cfs @ 18.08 hrs, Volume= 0.025 af, Depth> 0.02"

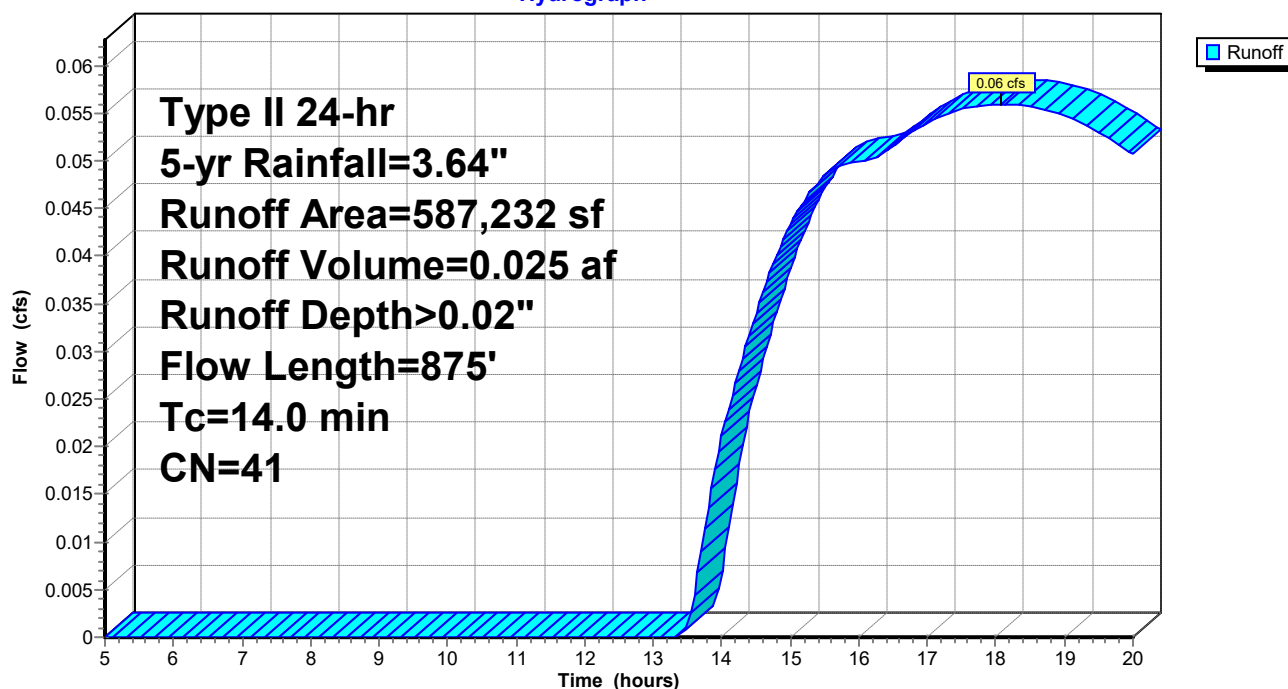
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-yr Rainfall=3.64"

Area (sf)	CN	Description
10,400	98	Roofs, HSG A
11,850	98	Paved roads w/curbs & sewers, HSG A
93,725	39	>75% Grass cover, Good, HSG A
* 471,257	39	>75% Grass cover, Good, HSG B
587,232	41	Weighted Average
564,982		96.21% Pervious Area
22,250		3.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0270	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
1.6	725	0.0200	7.42	89.08	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
14.0	875	Total			

Subcatchment 1S: Van Dunk

Hydrograph



Summary for Pond 2P: Van Dunk

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth > 0.02" for 5-yr event
 Inflow = 0.06 cfs @ 18.08 hrs, Volume= 0.025 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 706.29' @ 20.00 hrs Surf.Area= 2,400 sf Storage= 1,088 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

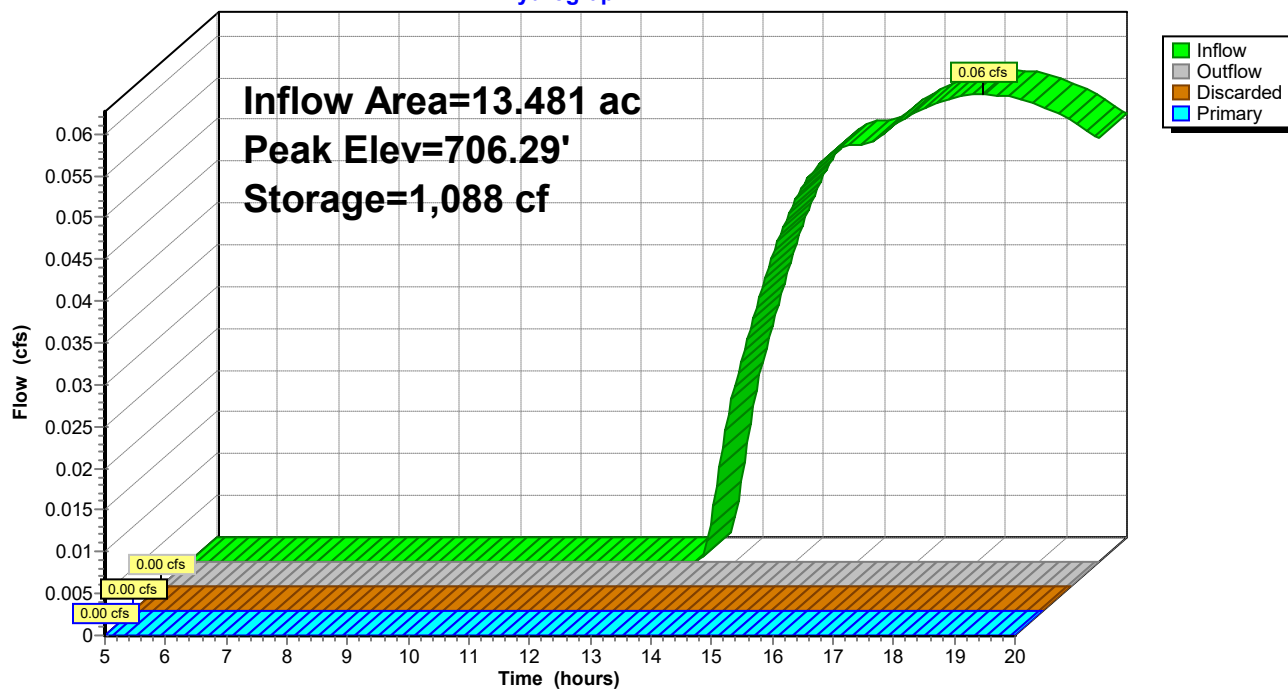
Volume	Invert	Avail.Storage	Storage Description
#1	705.00'	47,185 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
705.00	2,400	0.0	0	0
706.00	2,400	35.0	840	840
707.00	2,400	35.0	840	1,680
708.00	2,400	35.0	840	2,520
709.00	4,000	10.0	320	2,840
710.00	5,346	100.0	4,673	7,513
711.00	10,428	100.0	7,887	15,400
712.00	15,513	100.0	12,971	28,371
713.00	22,115	100.0	18,814	47,185

Device	Routing	Invert	Outlet Devices
#1	Discarded	705.00'	1.500 in/hr Exfiltration over Horizontal area from 705.00' - 709.00' Conductivity to Groundwater Elevation = 700.00' Excluded Horizontal area = 2,400 sf
#2	Primary	712.75'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=705.00' (Free Discharge)
 ↑1=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=705.00' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

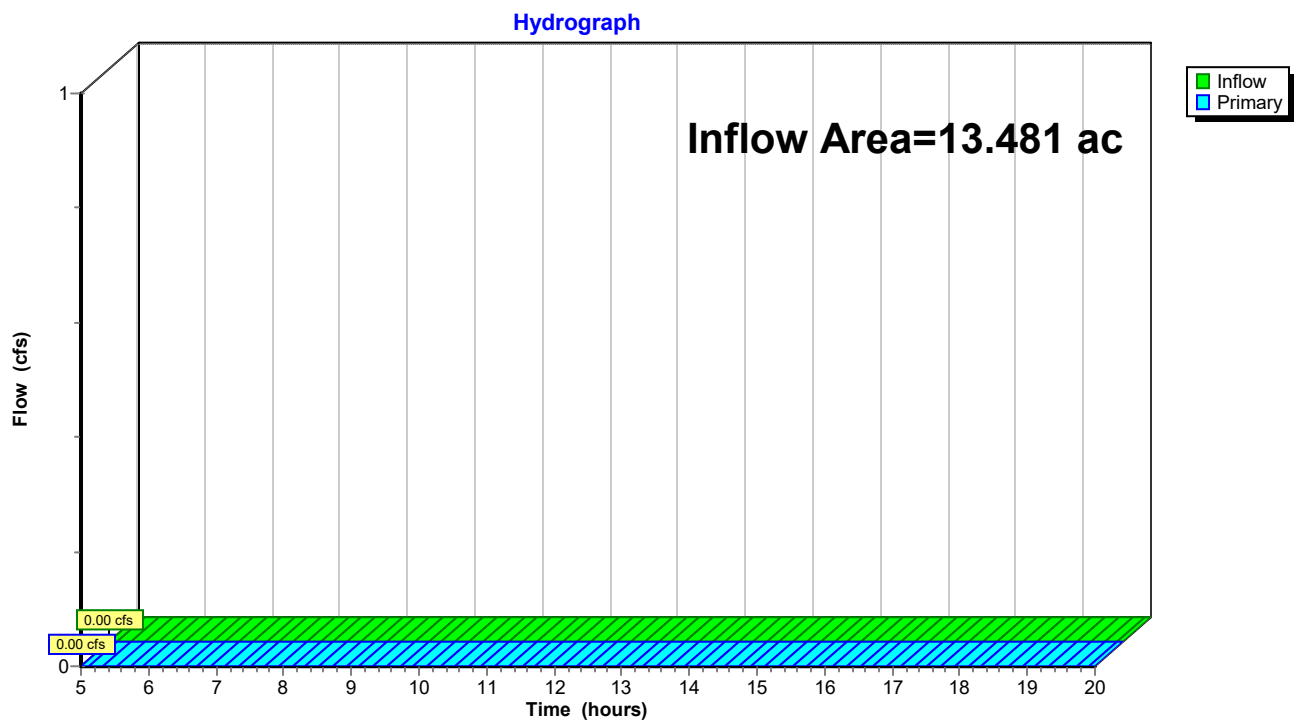
Pond 2P: Van Dunk**Hydrograph**

Summary for Pond 8P: Analysis Point

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

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth = 0.00" for 5-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 8P: Analysis Point

20191230 Town of Holland*Type II 24-hr 10-yr Rainfall=4.30"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Van Dunk

Runoff Area=587,232 sf 3.79% Impervious Runoff Depth>0.09"
Flow Length=875' Tc=14.0 min CN=41 Runoff=0.21 cfs 0.105 af

Pond 2P: Van Dunk

Peak Elev=709.22' Storage=3,759 cf Inflow=0.21 cfs 0.105 af
Discarded=0.06 cfs 0.018 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.018 af

Pond 8P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 13.481 ac Runoff Volume = 0.105 af Average Runoff Depth = 0.09"
96.21% Pervious = 12.970 ac 3.79% Impervious = 0.511 ac

Summary for Subcatchment 1S: Van Dunk

Runoff = 0.21 cfs @ 13.04 hrs, Volume= 0.105 af, Depth> 0.09"

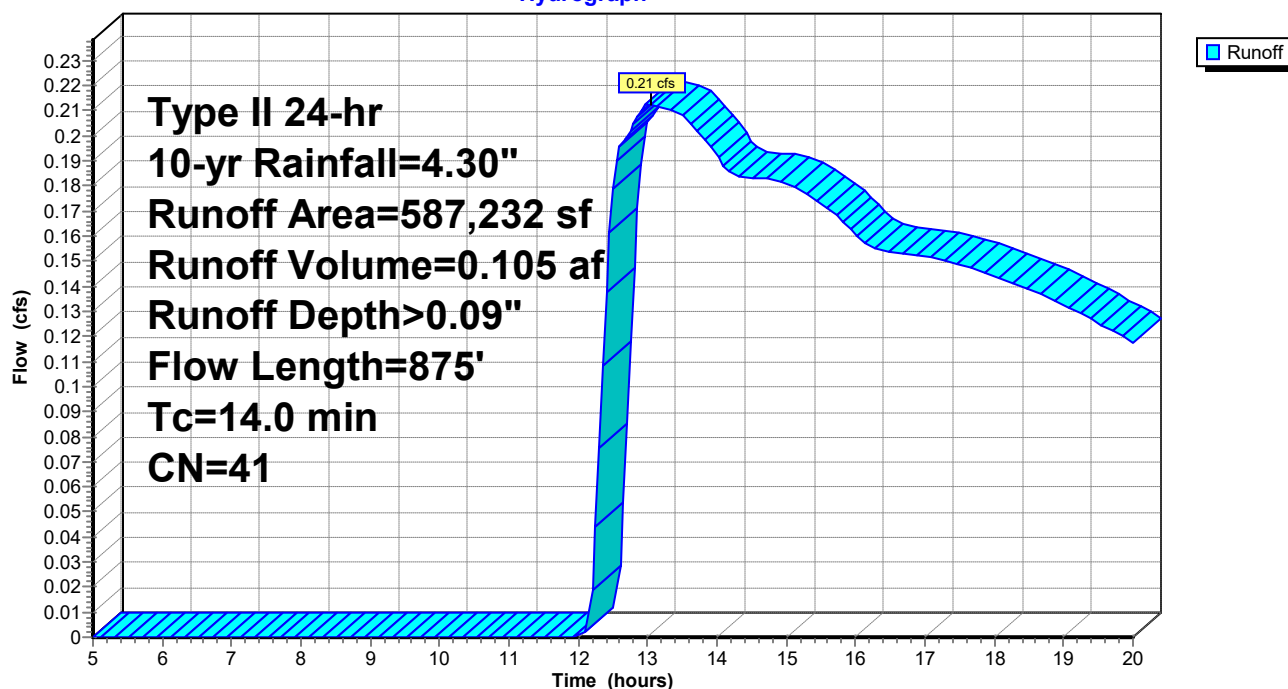
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.30"

Area (sf)	CN	Description
10,400	98	Roofs, HSG A
11,850	98	Paved roads w/curbs & sewers, HSG A
93,725	39	>75% Grass cover, Good, HSG A
* 471,257	39	>75% Grass cover, Good, HSG B
587,232	41	Weighted Average
564,982		96.21% Pervious Area
22,250		3.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0270	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
1.6	725	0.0200	7.42	89.08	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
14.0	875	Total			

Subcatchment 1S: Van Dunk

Hydrograph



Summary for Pond 2P: Van Dunk

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth > 0.09" for 10-yr event
 Inflow = 0.21 cfs @ 13.04 hrs, Volume= 0.105 af
 Outflow = 0.06 cfs @ 20.00 hrs, Volume= 0.018 af, Atten= 72%, Lag= 417.9 min
 Discarded = 0.06 cfs @ 20.00 hrs, Volume= 0.018 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 709.22' @ 20.00 hrs Surf.Area= 4,298 sf Storage= 3,759 cf

Plug-Flow detention time= 317.8 min calculated for 0.018 af (17% of inflow)
 Center-of-Mass det. time= 142.1 min (1,091.2 - 949.1)

Volume	Invert	Avail.Storage	Storage Description	
#1	705.00'	47,185 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
705.00	2,400	0.0	0	0
706.00	2,400	35.0	840	840
707.00	2,400	35.0	840	1,680
708.00	2,400	35.0	840	2,520
709.00	4,000	10.0	320	2,840
710.00	5,346	100.0	4,673	7,513
711.00	10,428	100.0	7,887	15,400
712.00	15,513	100.0	12,971	28,371
713.00	22,115	100.0	18,814	47,185

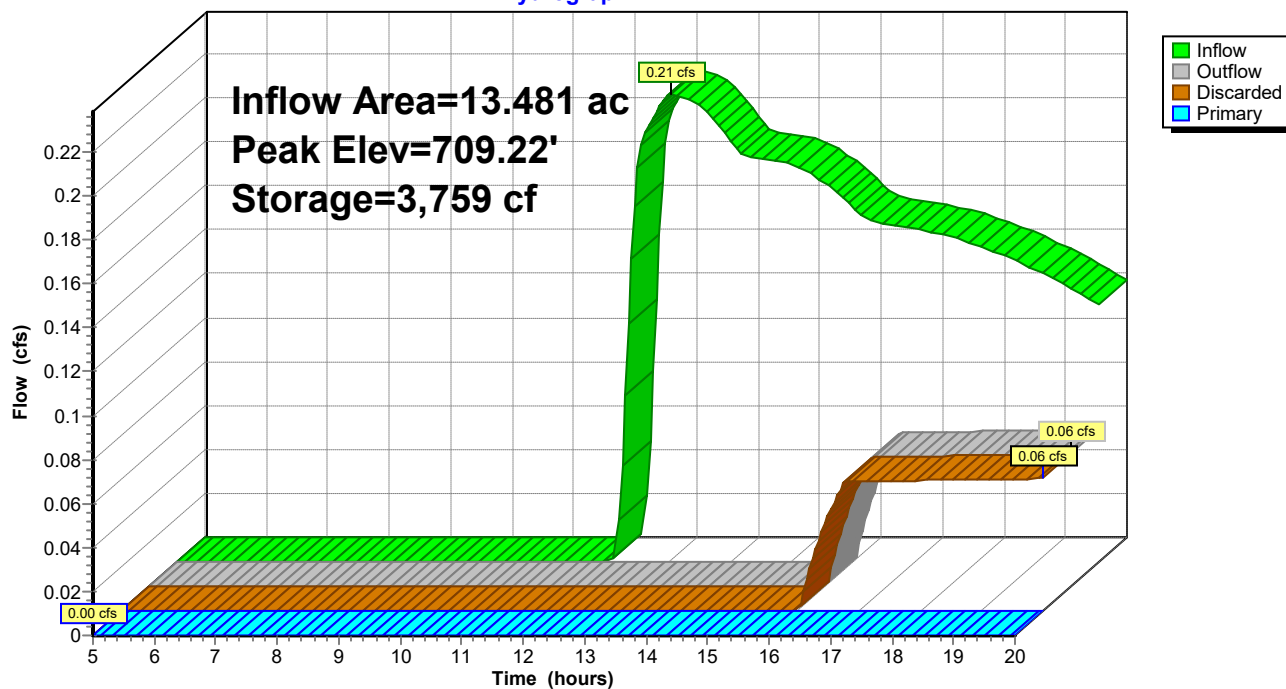
Device	Routing	Invert	Outlet Devices
#1	Discarded	705.00'	1.500 in/hr Exfiltration over Horizontal area from 705.00' - 709.00' Conductivity to Groundwater Elevation = 700.00' Excluded Horizontal area = 2,400 sf
#2	Primary	712.75'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.06 cfs @ 20.00 hrs HW=709.22' (Free Discharge)
 ↑1=Exfiltration (Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=705.00' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 2P: Van Dunk

Hydrograph

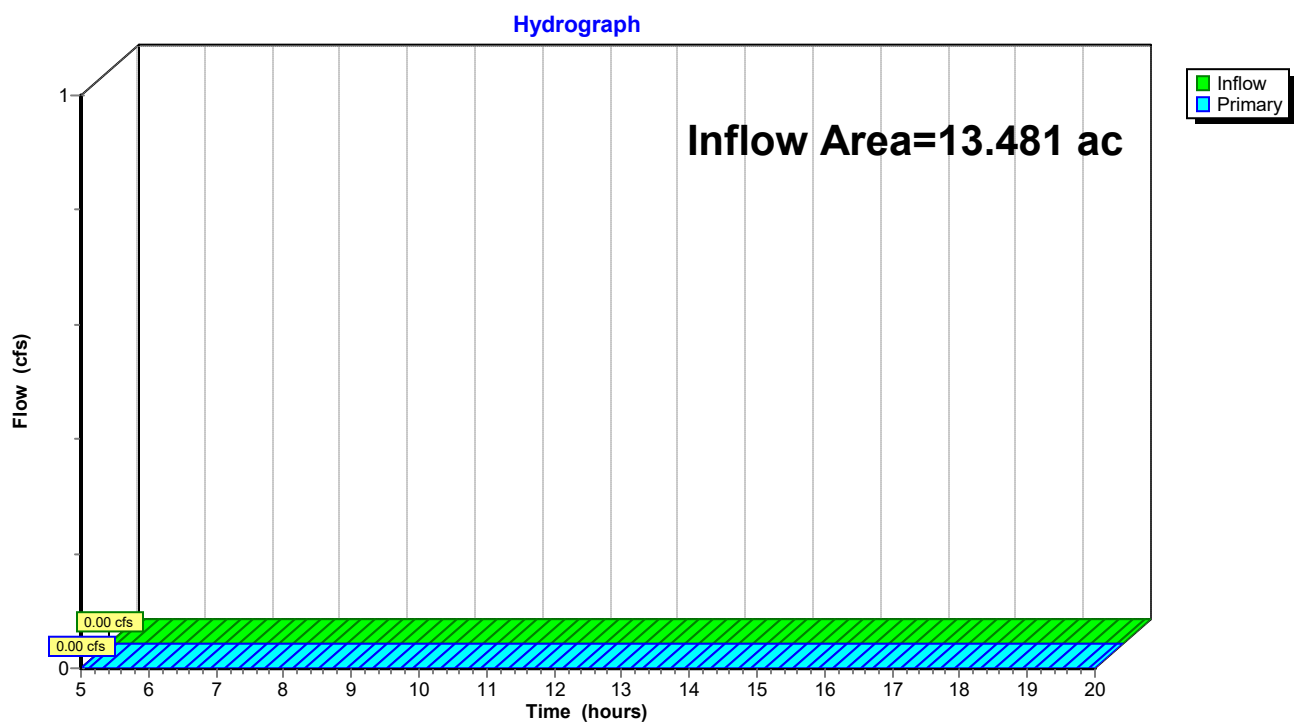


Summary for Pond 8P: Analysis Point

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

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 8P: Analysis Point

20191230 Town of Holland*Type II 24-hr 25-yr Rainfall=5.34"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Van Dunk

Runoff Area=587,232 sf 3.79% Impervious Runoff Depth>0.29"
Flow Length=875' Tc=14.0 min CN=41 Runoff=2.00 cfs 0.326 af

Pond 2P: Van Dunk

Peak Elev=710.69' Storage=12,368 cf Inflow=2.00 cfs 0.326 af
Discarded=0.07 cfs 0.041 af Primary=0.00 cfs 0.000 af Outflow=0.07 cfs 0.041 af

Pond 8P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 13.481 ac Runoff Volume = 0.326 af Average Runoff Depth = 0.29"
96.21% Pervious = 12.970 ac 3.79% Impervious = 0.511 ac

Summary for Subcatchment 1S: Van Dunk

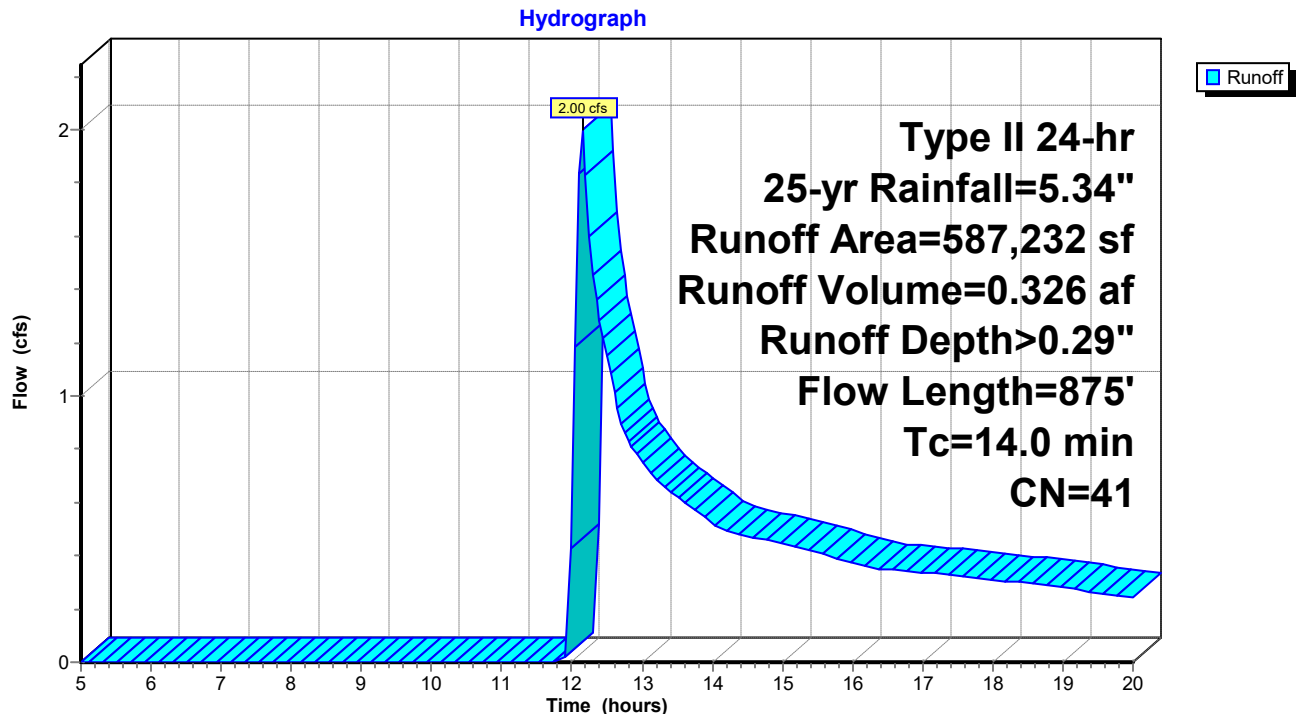
Runoff = 2.00 cfs @ 12.15 hrs, Volume= 0.326 af, Depth> 0.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=5.34"

Area (sf)	CN	Description
10,400	98	Roofs, HSG A
11,850	98	Paved roads w/curbs & sewers, HSG A
93,725	39	>75% Grass cover, Good, HSG A
* 471,257	39	>75% Grass cover, Good, HSG B
587,232	41	Weighted Average
564,982		96.21% Pervious Area
22,250		3.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0270	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
1.6	725	0.0200	7.42	89.08	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
14.0	875	Total			

Subcatchment 1S: Van Dunk



Summary for Pond 2P: Van Dunk

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth > 0.29" for 25-yr event
 Inflow = 2.00 cfs @ 12.15 hrs, Volume= 0.326 af
 Outflow = 0.07 cfs @ 20.00 hrs, Volume= 0.041 af, Atten= 97%, Lag= 471.0 min
 Discarded = 0.07 cfs @ 20.00 hrs, Volume= 0.041 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 710.69' @ 20.00 hrs Surf.Area= 8,828 sf Storage= 12,368 cf

Plug-Flow detention time= 250.8 min calculated for 0.041 af (13% of inflow)
 Center-of-Mass det. time= 88.8 min (981.2 - 892.4)

Volume	Invert	Avail.Storage	Storage Description	
#1	705.00'	47,185 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
705.00	2,400	0.0	0	0
706.00	2,400	35.0	840	840
707.00	2,400	35.0	840	1,680
708.00	2,400	35.0	840	2,520
709.00	4,000	10.0	320	2,840
710.00	5,346	100.0	4,673	7,513
711.00	10,428	100.0	7,887	15,400
712.00	15,513	100.0	12,971	28,371
713.00	22,115	100.0	18,814	47,185

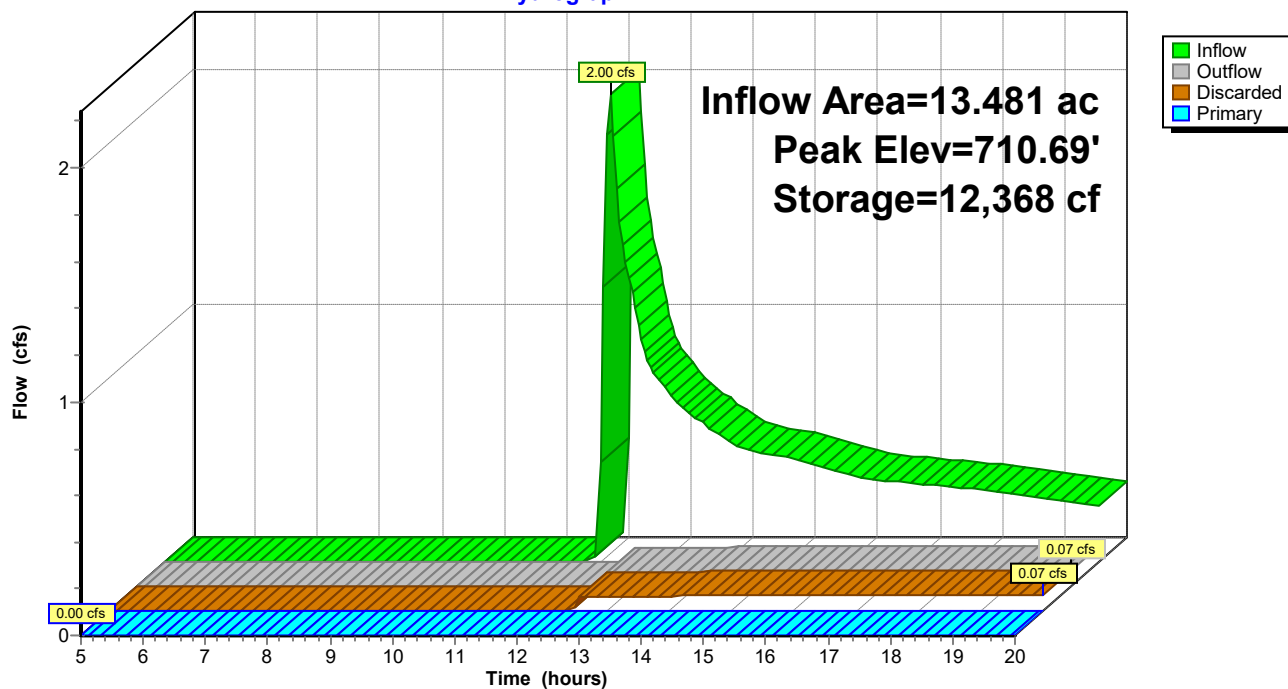
Device	Routing	Invert	Outlet Devices
#1	Discarded	705.00'	1.500 in/hr Exfiltration over Horizontal area from 705.00' - 709.00' Conductivity to Groundwater Elevation = 700.00' Excluded Horizontal area = 2,400 sf
#2	Primary	712.75'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.07 cfs @ 20.00 hrs HW=710.69' (Free Discharge)
 ↑1=Exfiltration (Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=705.00' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 2P: Van Dunk

Hydrograph

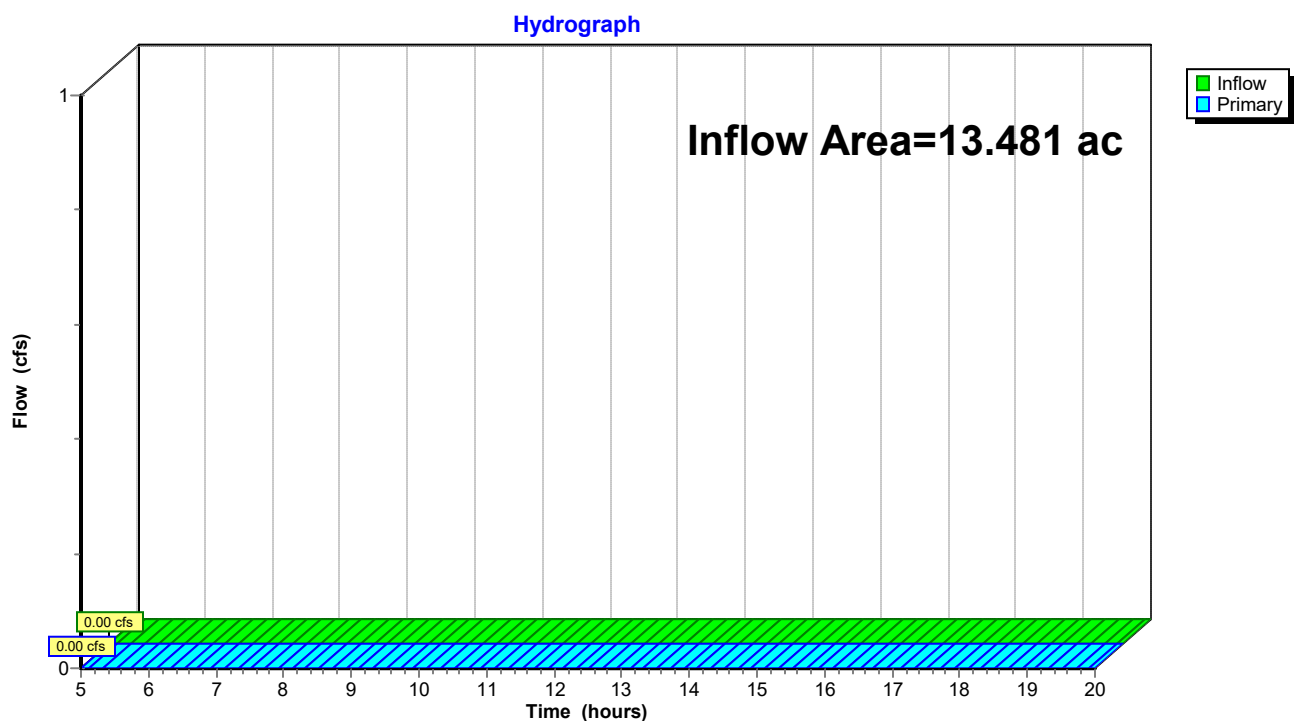


Summary for Pond 8P: Analysis Point

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

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth = 0.00" for 25-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 8P: Analysis Point

20191230 Town of Holland*Type II 24-hr 50-yr Rainfall=6.25"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Van Dunk

Runoff Area=587,232 sf 3.79% Impervious Runoff Depth>0.54"
Flow Length=875' Tc=14.0 min CN=41 Runoff=6.22 cfs 0.601 af

Pond 2P: Van Dunk

Peak Elev=711.71' Storage=24,104 cf Inflow=6.22 cfs 0.601 af
Discarded=0.08 cfs 0.047 af Primary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.047 af

Pond 8P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 13.481 ac Runoff Volume = 0.601 af Average Runoff Depth = 0.54"
96.21% Pervious = 12.970 ac 3.79% Impervious = 0.511 ac

Summary for Subcatchment 1S: Van Dunk

Runoff = 6.22 cfs @ 12.11 hrs, Volume= 0.601 af, Depth> 0.54"

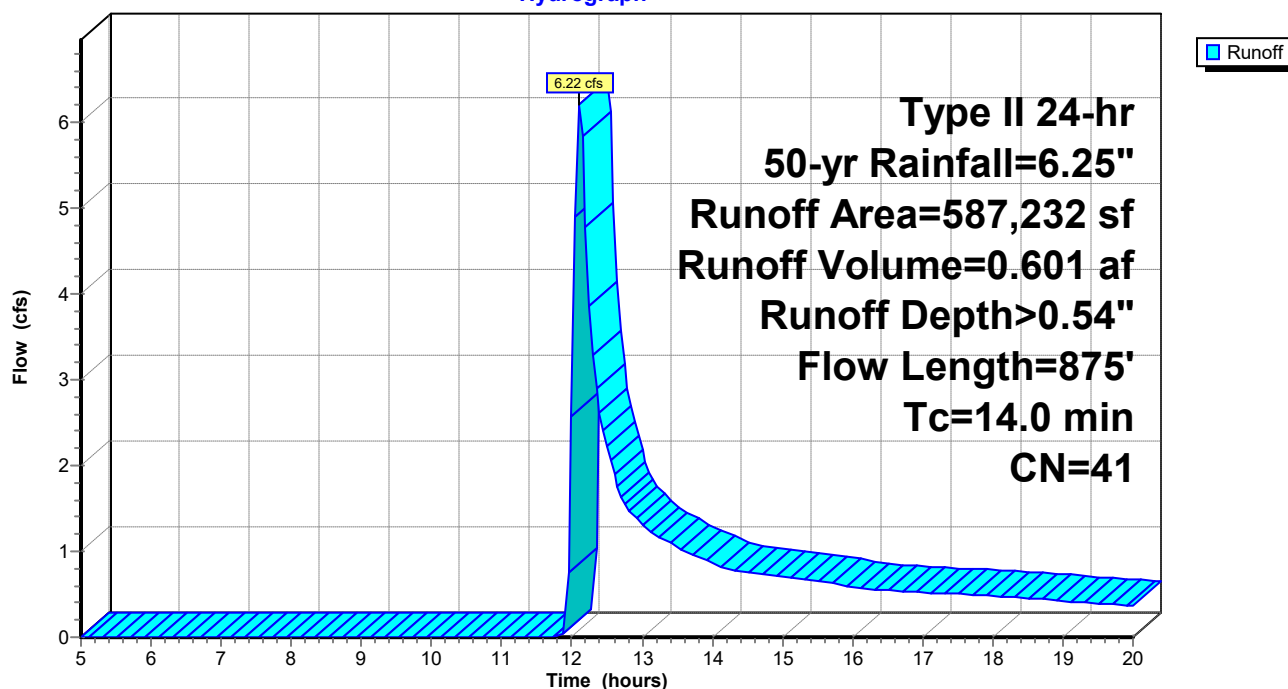
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=6.25"

Area (sf)	CN	Description
10,400	98	Roofs, HSG A
11,850	98	Paved roads w/curbs & sewers, HSG A
93,725	39	>75% Grass cover, Good, HSG A
* 471,257	39	>75% Grass cover, Good, HSG B
587,232	41	Weighted Average
564,982		96.21% Pervious Area
22,250		3.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0270	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
1.6	725	0.0200	7.42	89.08	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
14.0	875	Total			

Subcatchment 1S: Van Dunk

Hydrograph



Summary for Pond 2P: Van Dunk

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth > 0.54" for 50-yr event
 Inflow = 6.22 cfs @ 12.11 hrs, Volume= 0.601 af
 Outflow = 0.08 cfs @ 20.00 hrs, Volume= 0.047 af, Atten= 99%, Lag= 473.1 min
 Discarded = 0.08 cfs @ 20.00 hrs, Volume= 0.047 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 711.71' @ 20.00 hrs Surf.Area= 14,045 sf Storage= 24,104 cf

Plug-Flow detention time= 247.3 min calculated for 0.047 af (8% of inflow)
 Center-of-Mass det. time= 102.5 min (970.6 - 868.1)

Volume	Invert	Avail.Storage	Storage Description
#1	705.00'	47,185 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
705.00	2,400	0.0	0	0
706.00	2,400	35.0	840	840
707.00	2,400	35.0	840	1,680
708.00	2,400	35.0	840	2,520
709.00	4,000	10.0	320	2,840
710.00	5,346	100.0	4,673	7,513
711.00	10,428	100.0	7,887	15,400
712.00	15,513	100.0	12,971	28,371
713.00	22,115	100.0	18,814	47,185

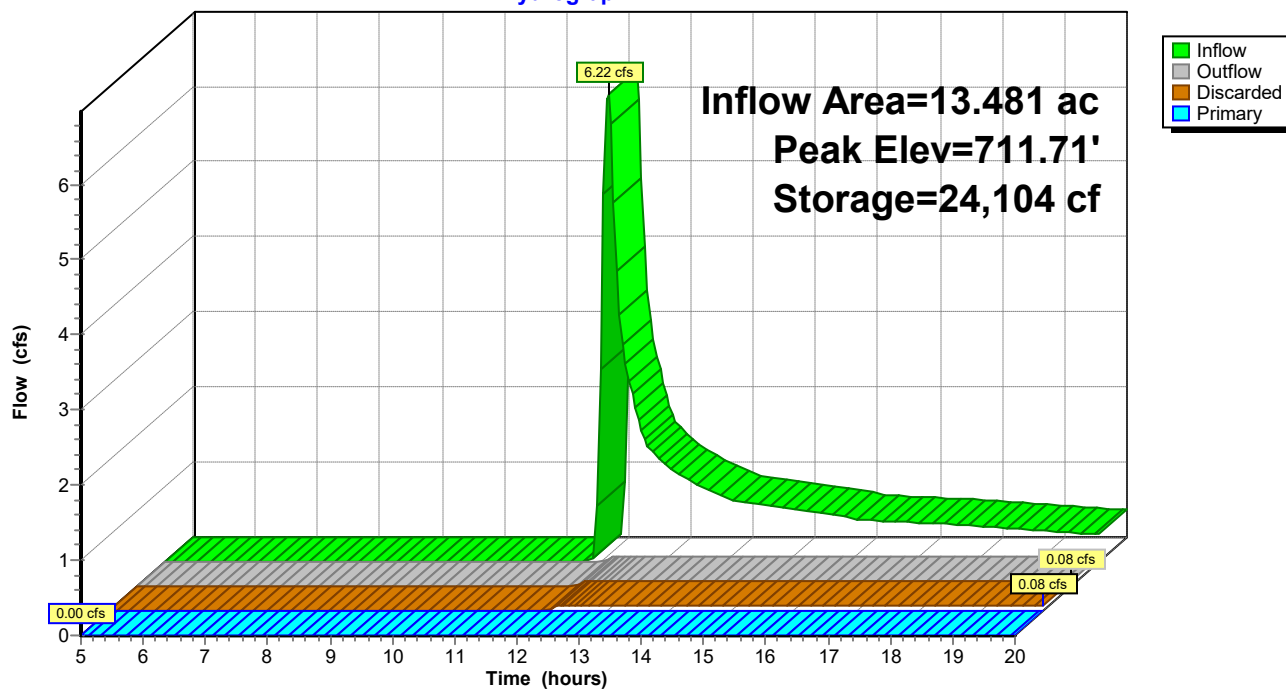
Device	Routing	Invert	Outlet Devices
#1	Discarded	705.00'	1.500 in/hr Exfiltration over Horizontal area from 705.00' - 709.00' Conductivity to Groundwater Elevation = 700.00' Excluded Horizontal area = 2,400 sf
#2	Primary	712.75'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.08 cfs @ 20.00 hrs HW=711.71' (Free Discharge)

↑1=Exfiltration (Controls 0.08 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=705.00' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

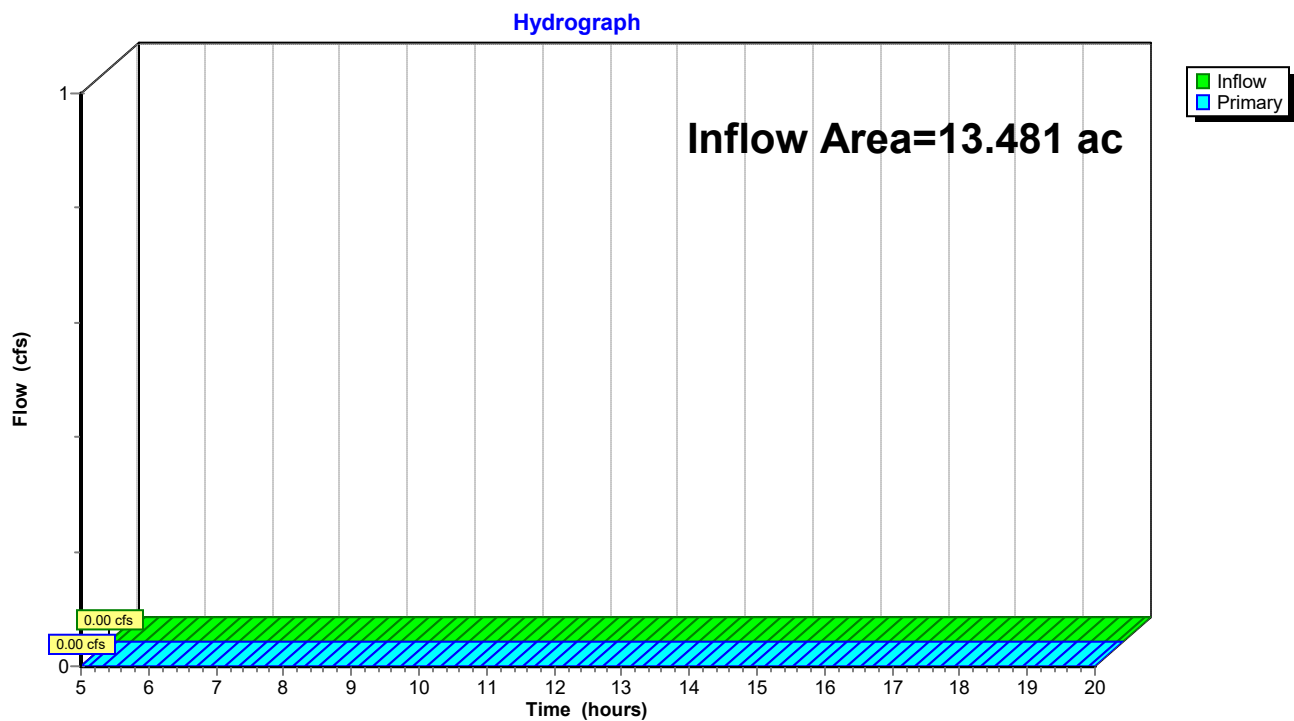
Pond 2P: Van Dunk**Hydrograph**

Summary for Pond 8P: Analysis Point

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

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth = 0.00" for 50-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 8P: Analysis Point

20191230 Town of Holland*Type II 24-hr 100-yr Rainfall=7.24"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Van Dunk

Runoff Area=587,232 sf 3.79% Impervious Runoff Depth>0.87"
Flow Length=875' Tc=14.0 min CN=41 Runoff=12.74 cfs 0.976 af

Pond 2P: Van Dunk

Peak Elev=712.67' Storage=40,197 cf Inflow=12.74 cfs 0.976 af
Discarded=0.08 cfs 0.052 af Primary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.052 af

Pond 8P: Analysis Point

Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 13.481 ac Runoff Volume = 0.976 af Average Runoff Depth = 0.87"
96.21% Pervious = 12.970 ac 3.79% Impervious = 0.511 ac

Summary for Subcatchment 1S: Van Dunk

Runoff = 12.74 cfs @ 12.10 hrs, Volume= 0.976 af, Depth> 0.87"

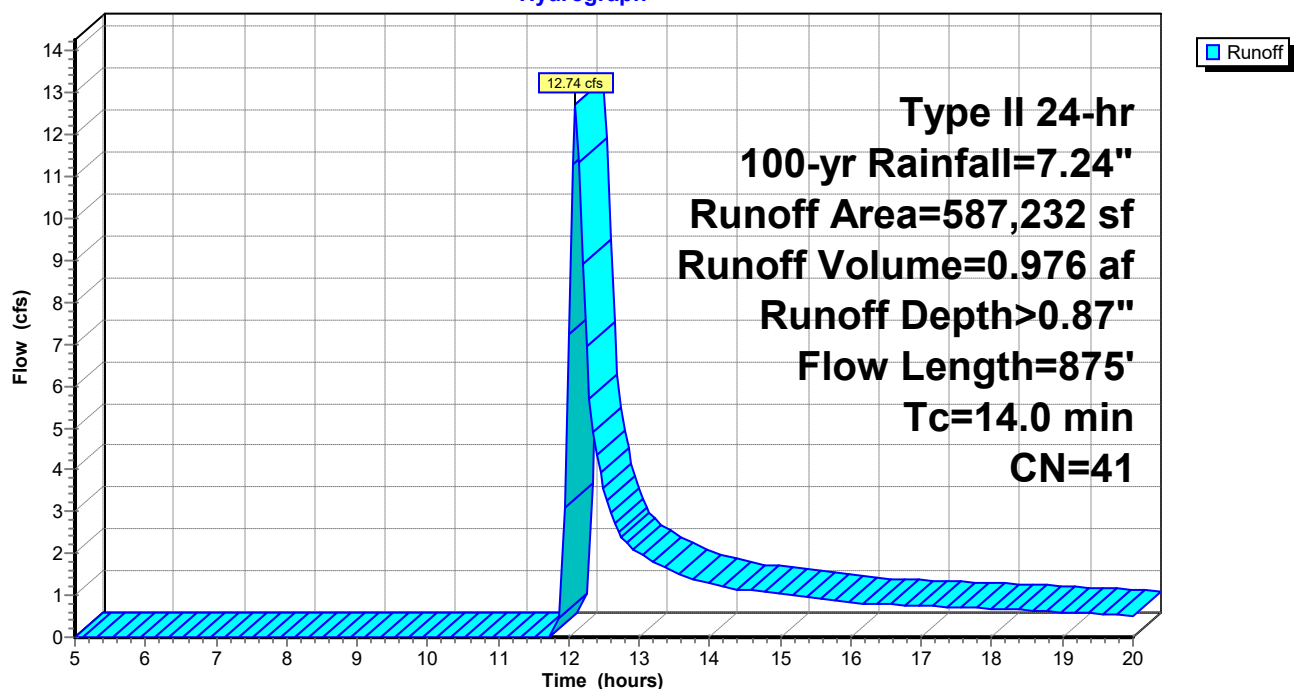
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.24"

Area (sf)	CN	Description
10,400	98	Roofs, HSG A
11,850	98	Paved roads w/curbs & sewers, HSG A
93,725	39	>75% Grass cover, Good, HSG A
* 471,257	39	>75% Grass cover, Good, HSG B
587,232	41	Weighted Average
564,982		96.21% Pervious Area
22,250		3.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0270	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
1.6	725	0.0200	7.42	89.08	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
14.0	875	Total			

Subcatchment 1S: Van Dunk

Hydrograph



Summary for Pond 2P: Van Dunk

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth > 0.87" for 100-yr event
 Inflow = 12.74 cfs @ 12.10 hrs, Volume= 0.976 af
 Outflow = 0.08 cfs @ 20.00 hrs, Volume= 0.052 af, Atten= 99%, Lag= 474.0 min
 Discarded = 0.08 cfs @ 20.00 hrs, Volume= 0.052 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 712.67' @ 20.00 hrs Surf.Area= 19,920 sf Storage= 40,197 cf

Plug-Flow detention time= 248.0 min calculated for 0.052 af (5% of inflow)
 Center-of-Mass det. time= 115.8 min (967.8 - 851.9)

Volume	Invert	Avail.Storage	Storage Description	
#1	705.00'	47,185 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
705.00	2,400	0.0	0	0
706.00	2,400	35.0	840	840
707.00	2,400	35.0	840	1,680
708.00	2,400	35.0	840	2,520
709.00	4,000	10.0	320	2,840
710.00	5,346	100.0	4,673	7,513
711.00	10,428	100.0	7,887	15,400
712.00	15,513	100.0	12,971	28,371
713.00	22,115	100.0	18,814	47,185

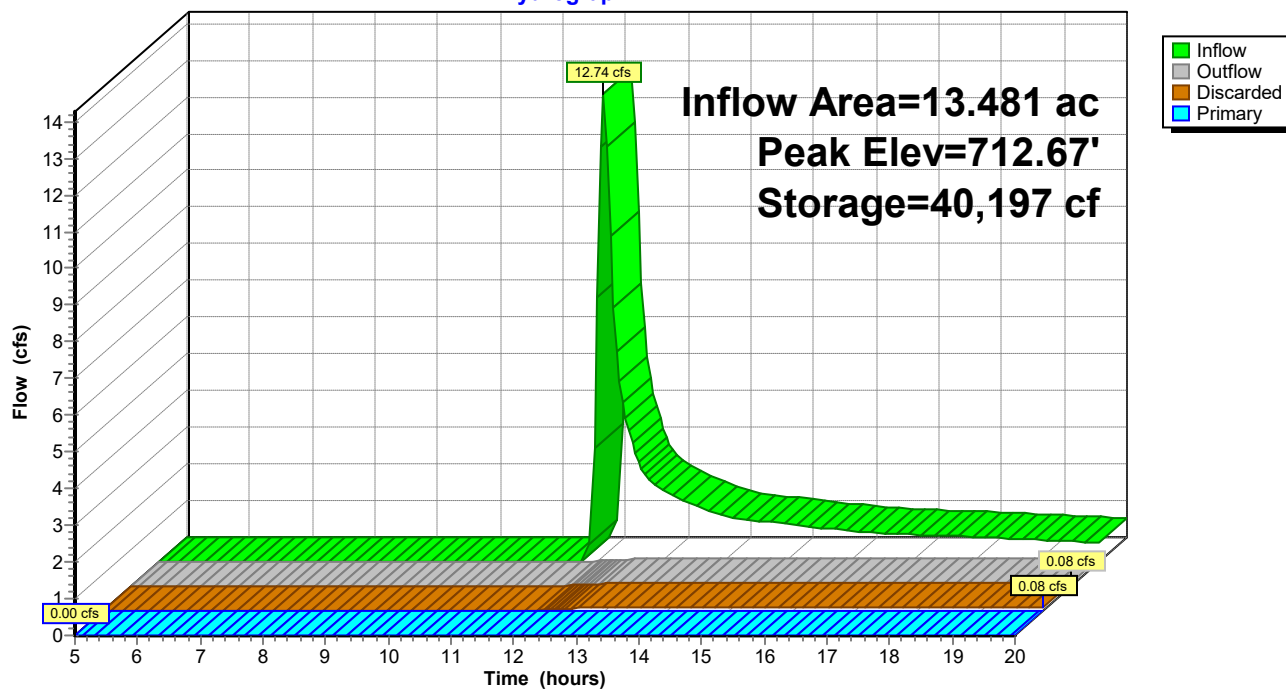
Device	Routing	Invert	Outlet Devices
#1	Discarded	705.00'	1.500 in/hr Exfiltration over Horizontal area from 705.00' - 709.00' Conductivity to Groundwater Elevation = 700.00' Excluded Horizontal area = 2,400 sf
#2	Primary	712.75'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.08 cfs @ 20.00 hrs HW=712.67' (Free Discharge)

↑1=Exfiltration (Controls 0.08 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=705.00' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

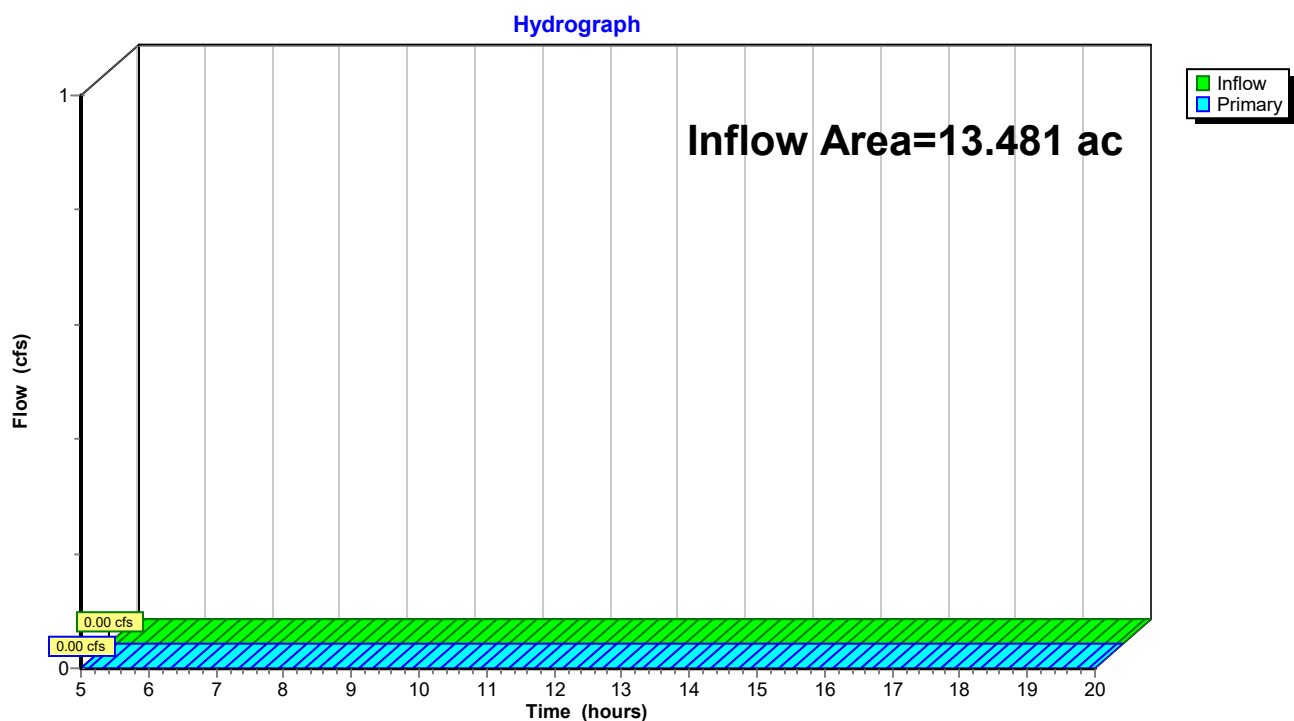
Pond 2P: Van Dunk**Hydrograph**

Summary for Pond 8P: Analysis Point

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

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth = 0.00" for 100-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 8P: Analysis Point

20191230 Town of Holland*Type II 24-hr 200-yr Rainfall=8.33"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Van Dunk

Runoff Area=587,232 sf 3.79% Impervious Runoff Depth>1.30"
Flow Length=875' Tc=14.0 min CN=41 Runoff=21.61 cfs 1.464 af

Pond 2P: Van Dunk

Peak Elev=712.83' Storage=43,489 cf Inflow=21.61 cfs 1.464 af
Discarded=0.08 cfs 0.055 af Primary=1.25 cfs 0.427 af Outflow=1.33 cfs 0.482 af

Pond 8P: Analysis Point

Inflow=1.25 cfs 0.427 af
Primary=1.25 cfs 0.427 af

Total Runoff Area = 13.481 ac Runoff Volume = 1.464 af Average Runoff Depth = 1.30"
96.21% Pervious = 12.970 ac 3.79% Impervious = 0.511 ac

Summary for Subcatchment 1S: Van Dunk

Runoff = 21.61 cfs @ 12.09 hrs, Volume= 1.464 af, Depth> 1.30"

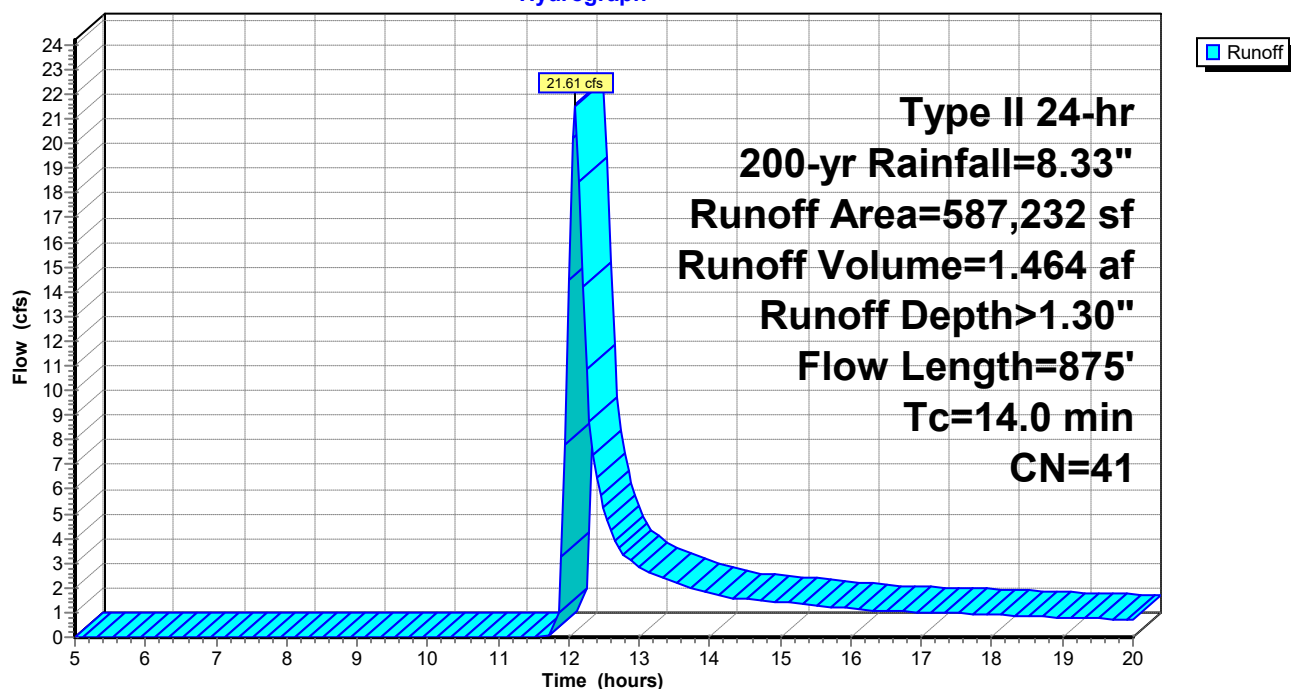
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 200-yr Rainfall=8.33"

Area (sf)	CN	Description
10,400	98	Roofs, HSG A
11,850	98	Paved roads w/curbs & sewers, HSG A
93,725	39	>75% Grass cover, Good, HSG A
* 471,257	39	>75% Grass cover, Good, HSG B
587,232	41	Weighted Average
564,982		96.21% Pervious Area
22,250		3.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	150	0.0270	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.01"
1.6	725	0.0200	7.42	89.08	Channel Flow, Area= 12.0 sf Perim= 11.0' r= 1.09' n= 0.030 Earth, grassed & winding
14.0	875	Total			

Subcatchment 1S: Van Dunk

Hydrograph



Summary for Pond 2P: Van Dunk

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth > 1.30" for 200-yr event
 Inflow = 21.61 cfs @ 12.09 hrs, Volume= 1.464 af
 Outflow = 1.33 cfs @ 15.36 hrs, Volume= 0.482 af, Atten= 94%, Lag= 196.1 min
 Discarded = 0.08 cfs @ 15.36 hrs, Volume= 0.055 af
 Primary = 1.25 cfs @ 15.36 hrs, Volume= 0.427 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 712.83' @ 15.36 hrs Surf.Area= 20,983 sf Storage= 43,489 cf

Plug-Flow detention time= 287.9 min calculated for 0.482 af (33% of inflow)
 Center-of-Mass det. time= 173.9 min (1,014.0 - 840.2)

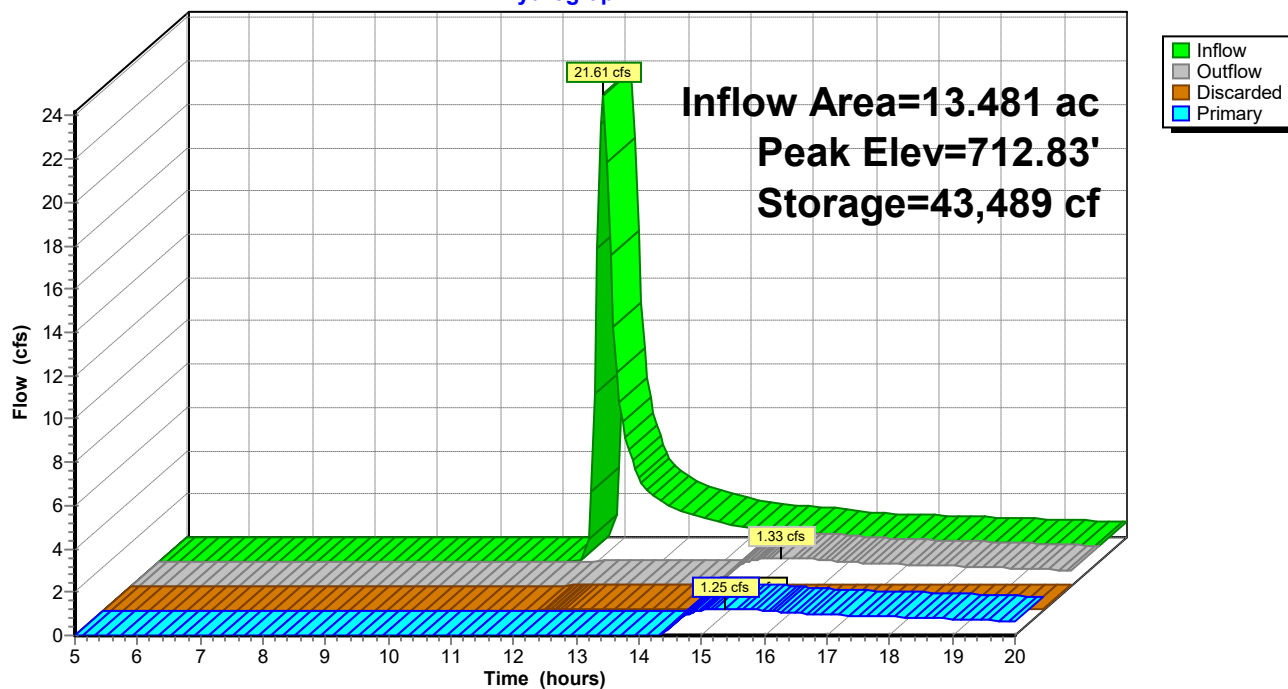
Volume	Invert	Avail.Storage	Storage Description
#1	705.00'	47,185 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
705.00	2,400	0.0	0	0
706.00	2,400	35.0	840	840
707.00	2,400	35.0	840	1,680
708.00	2,400	35.0	840	2,520
709.00	4,000	10.0	320	2,840
710.00	5,346	100.0	4,673	7,513
711.00	10,428	100.0	7,887	15,400
712.00	15,513	100.0	12,971	28,371
713.00	22,115	100.0	18,814	47,185

Device	Routing	Invert	Outlet Devices
#1	Discarded	705.00'	1.500 in/hr Exfiltration over Horizontal area from 705.00' - 709.00' Conductivity to Groundwater Elevation = 700.00' Excluded Horizontal area = 2,400 sf
#2	Primary	712.75'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.08 cfs @ 15.36 hrs HW=712.83' (Free Discharge)
 ↑1=Exfiltration (Controls 0.08 cfs)

Primary OutFlow Max=1.18 cfs @ 15.36 hrs HW=712.83' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 1.18 cfs @ 0.75 fps)

Pond 2P: Van Dunk**Hydrograph**

Summary for Pond 8P: Analysis Point

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

Inflow Area = 13.481 ac, 3.79% Impervious, Inflow Depth > 0.38" for 200-yr event
Inflow = 1.25 cfs @ 15.36 hrs, Volume= 0.427 af
Primary = 1.25 cfs @ 15.36 hrs, Volume= 0.427 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 8P: Analysis Point

Hydrograph

