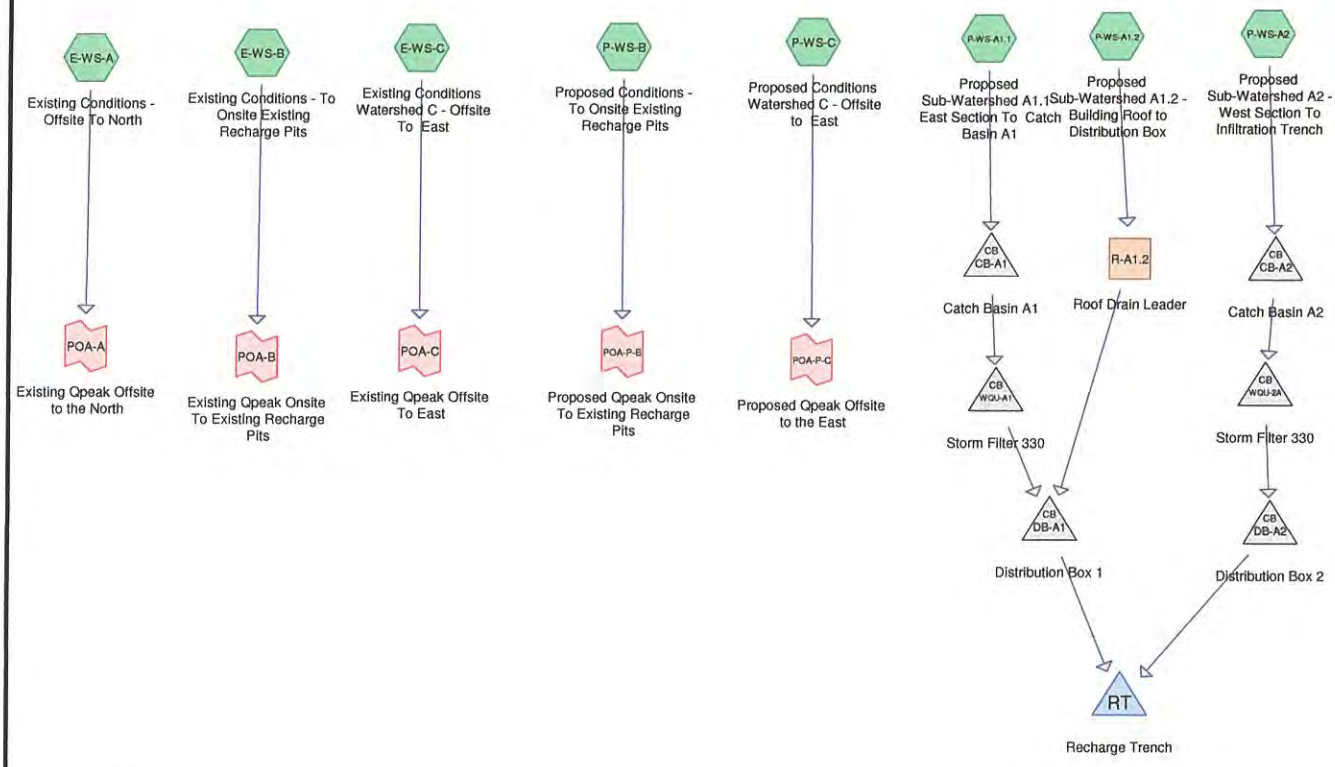


COMMONWEALTH OF MASSACHUSETTS
ALTON D. STONE
ENVIRONMENTAL
No. 40502
REGISTERED PROFESSIONAL ENGINEER

Alton D. Stone
05-12-20

Subcat Reach Pond Link

Routing Diagram for $REV HYdroCAD Carrier 5-12-20
Prepared by Alton Engineering, Printed 5/16/2020
HydroCAD® 10.10-3b s/n M20943 © 2020 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	NRCC 24-hr	D	Default	24.00	1	2.58	2
2	2-Year	NRCC 24-hr	D	Default	24.00	1	3.13	2
3	5-Year	NRCC 24-hr	D	Default	24.00	1	3.93	2
4	10-Year	NRCC 24-hr	D	Default	24.00	1	4.68	2
5	25-Year	NRCC 24-hr	D	Default	24.00	1	5.88	2
6	50-Year	NRCC 24-hr	D	Default	24.00	1	7.00	2
7	100-Year	NRCC 24-hr	D	Default	24.00	1	8.34	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.569	39	>75% Grass cover, Good, HSG A (E-WS-A, E-WS-B, P-WS-A1.1, P-WS-B)
0.558	48	Brush, Poor, HSG A (E-WS-C, P-WS-C)
2.399	98	Impervious drive & rroof (E-WS-A, E-WS-B, P-WS-B)
0.895	98	Paved parking, HSG A (P-WS-A1.1, P-WS-A2, P-WS-C)
0.407	98	Roof (P-WS-A1.2)
4.828	**85**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.021	HSG A	E-WS-A, E-WS-B, E-WS-C, P-WS-A1.1, P-WS-A2, P-WS-B, P-WS-C
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
2.806	Other	E-WS-A, E-WS-B, P-WS-A1.2, P-WS-B
4.828		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.569	0.000	0.000	0.000	0.000	0.569	>75% Grass cover, Good	E-WS-A, E-WS-B, P-WS-A1.1, P-WS-B
0.558	0.000	0.000	0.000	0.000	0.558	Brush, Poor	E-WS-C, P-WS-C
0.000	0.000	0.000	0.000	2.399	2.399	Impervious drive & rroof	E-WS-A, E-WS-B, P-WS-B
0.895	0.000	0.000	0.000	0.000	0.895	Paved parking	P-WS-A1.1, P-WS-A2, P-WS-C
0.000	0.000	0.000	0.000	0.407	0.407	Roof	P-WS-A1.2
2.021	**0.000**	**0.000**	**0.000**	**2.806**	**4.828**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	R-A1.2	412.88	412.50	32.0	0.0119	0.010	12.0	0.0	0.0
2	CB-A1	413.00	412.90	3.0	0.0333	0.010	12.0	0.0	0.0
3	CB-A2	413.00	412.90	5.0	0.0200	0.010	12.0	0.0	0.0
4	DB-A1	412.50	412.50	5.0	0.0000	0.010	12.0	0.0	0.0
5	DB-A2	412.50	412.50	3.0	0.0000	0.010	12.0	0.0	0.0
6	WQU-2A	412.70	412.60	10.0	0.0100	0.010	12.0	0.0	0.0
7	WQU-A1	412.70	412.60	3.0	0.0333	0.010	12.0	0.0	0.0

Time span=0.10-72.00 hrs, dt=0.05 hrs, 1439 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 E-WS-A: Existing Runoff Area=63,338 sf 82.59% Impervious Runoff Depth=1.93"
Tc=5.0 min CN=88 Runoff=3.09 cfs 0.234 af

Subcatchment E-WS-B: Existing Runoff Area=26,870 sf 97.10% Impervious Runoff Depth=2.68"
Tc=5.0 min CN=96 Runoff=1.67 cfs 0.138 af

Subcatchment E-WS-C: Existing Conditions Runoff Area=15,172 sf 0.00% Impervious Runoff Depth=0.08"
Tc=5.0 min CN=48 Runoff=0.00 cfs 0.002 af

Subcatchment P-WS-A1.1: Proposed Runoff Area=38,666 sf 68.48% Impervious Runoff Depth=1.28"
Tc=5.0 min CN=79 Runoff=1.25 cfs 0.095 af

Subcatchment P-WS-A1.2: Proposed Runoff Area=17,750 sf 100.00% Impervious Runoff Depth=2.90"
Tc=5.0 min CN=98 Runoff=1.14 cfs 0.098 af

Subcatchment P-WS-A2: Proposed Runoff Area=11,297 sf 100.00% Impervious Runoff Depth=2.90"
Tc=5.0 min CN=98 Runoff=0.73 cfs 0.063 af

Subcatchment P-WS-B: Proposed Runoff Area=26,870 sf 97.10% Impervious Runoff Depth=2.68"
Tc=5.0 min CN=96 Runoff=1.67 cfs 0.138 af

Subcatchment P-WS-C: Proposed Runoff Area=10,329 sf 11.77% Impervious Runoff Depth=0.20"
Tc=5.0 min CN=54 Runoff=0.01 cfs 0.004 af

Reach R-A1.2: Roof Drain Leader Avg. Flow Depth=0.32' Max Vel=5.17 fps Inflow=1.14 cfs 0.098 af
12.0" Round Pipe n=0.010 L=32.0' S=0.0119 '/' Capacity=5.05 cfs Outflow=1.13 cfs 0.098 af

Pond CB-A1: Catch Basin A1 Peak Elev=413.65' Inflow=1.25 cfs 0.095 af
12.0" Round Culvert n=0.010 L=3.0' S=0.0333 '/' Outflow=1.25 cfs 0.095 af

Pond CB-A2: Catch Basin A2 Peak Elev=413.47' Inflow=0.73 cfs 0.063 af
12.0" Round Culvert n=0.010 L=5.0' S=0.0200 '/' Outflow=0.73 cfs 0.063 af

Pond DB-A1: Distribution Box 1 Peak Elev=413.08' Inflow=2.38 cfs 0.193 af
12.0" Round Culvert x 3.00 n=0.010 L=5.0' S=0.0000 '/' Outflow=2.38 cfs 0.193 af

Pond DB-A2: Distribution Box 2 Peak Elev=412.81' Inflow=0.73 cfs 0.063 af
12.0" Round Culvert x 3.00 n=0.010 L=3.0' S=0.0000 '/' Outflow=0.73 cfs 0.063 af

Pond RT: Recharge Trench Peak Elev=408.59' Storage=778 cf Inflow=3.11 cfs 0.256 af
Outflow=1.53 cfs 0.256 af

Pond WQU-2A: Storm Filter 330 Peak Elev=413.18' Inflow=0.73 cfs 0.063 af
12.0" Round Culvert n=0.010 L=10.0' S=0.0100 '/' Outflow=0.73 cfs 0.063 af

Pond WQU-A1: Storm Filter 330 Peak Elev=413.35' Inflow=1.25 cfs 0.095 af
12.0" Round Culvert n=0.010 L=3.0' S=0.0333 '/' Outflow=1.25 cfs 0.095 af

Link POA-A: Existing Qpeak Offsite to the North Inflow=3.09 cfs 0.234 af
Primary=3.09 cfs 0.234 af

Link POA-B: Existing Qpeak Onsite To Existing Recharge Pits Inflow=1.67 cfs 0.138 af
Primary=1.67 cfs 0.138 af

Link POA-C: Existing Qpeak Offsite To East Inflow=0.00 cfs 0.002 af
Primary=0.00 cfs 0.002 af

Link POA-P-B: Proposed Qpeak Onsite To Existing Recharge Pits Inflow=1.67 cfs 0.138 af
Primary=1.67 cfs 0.138 af

Link POA-P-C: Proposed Qpeak Offsite to the East Inflow=0.01 cfs 0.004 af
Primary=0.01 cfs 0.004 af

Total Runoff Area = 4.828 ac Runoff Volume = 0.772 af Average Runoff Depth = 1.92"
23.33% Pervious = 1.126 ac 76.67% Impervious = 3.701 ac

Summary for Subcatchment E-WS-A: Existing Conditions - Offsite To North

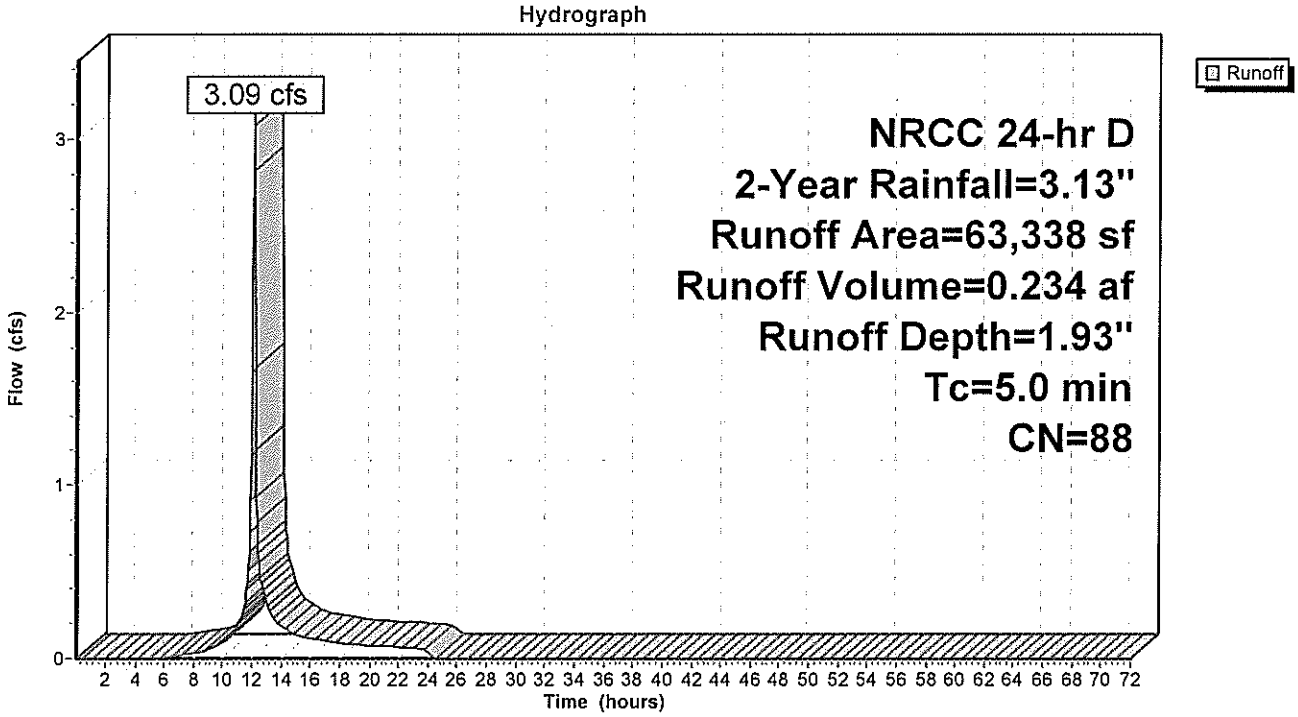
Runoff = 3.09 cfs @ 12.11 hrs, Volume= 0.234 af, Depth= 1.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.13"

	Area (sf)	CN	Description
*	52,309	98	Impervious drive & rroof
	11,029	39	>75% Grass cover, Good, HSG A
	63,338	88	Weighted Average
	11,029		17.41% Pervious Area
	52,309		82.59% Impervious Area

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

Subcatchment E-WS-A: Existing Conditions - Offsite To North



Summary for Subcatchment E-WS-B: Existing Conditions - To Onsite Existing Recharge Pits

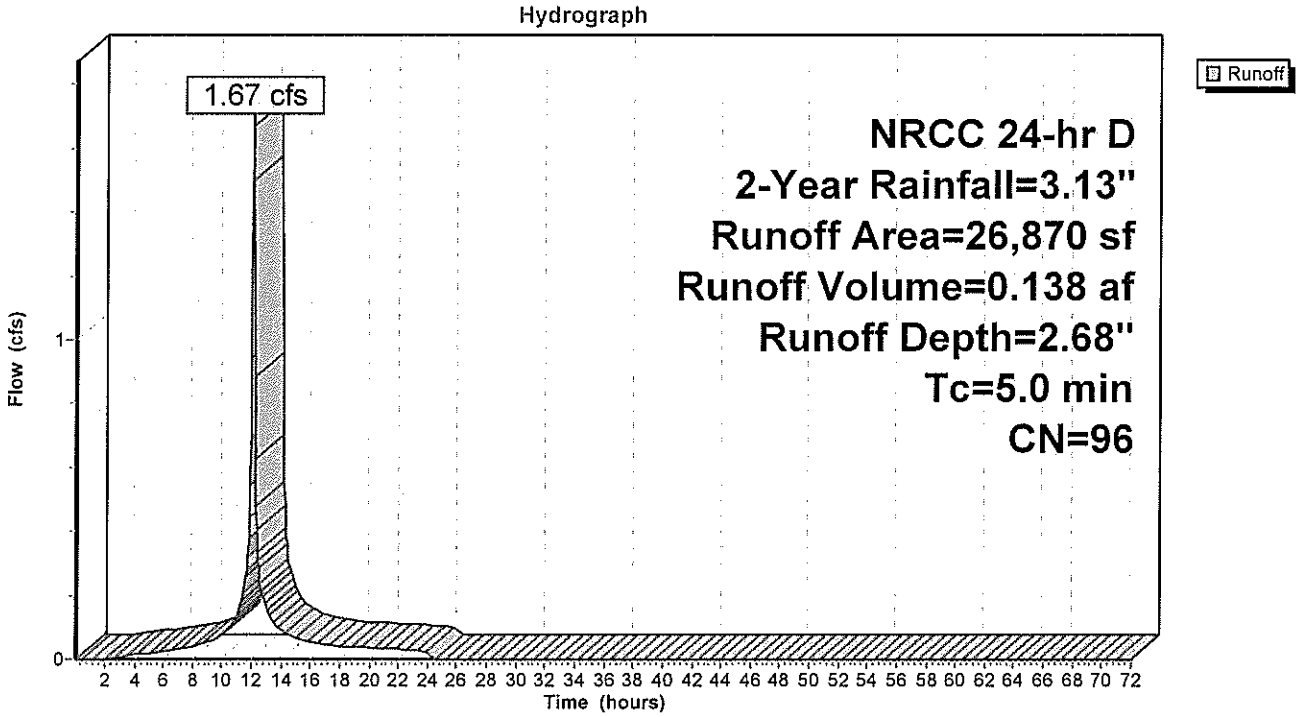
Runoff = 1.67 cfs @ 12.11 hrs, Volume= 0.138 af, Depth= 2.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.13"

	Area (sf)	CN	Description
*	26,090	98	Impervious drive & rroof
	780	39	>75% Grass cover, Good, HSG A
	26,870	96	Weighted Average
	780		2.90% Pervious Area
	26,090		97.10% Impervious Area

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

Subcatchment E-WS-B: Existing Conditions - To Onsite Existing Recharge Pits



Summary for Subcatchment E-WS-C: Existing Conditions Watershed C - Offsite To East

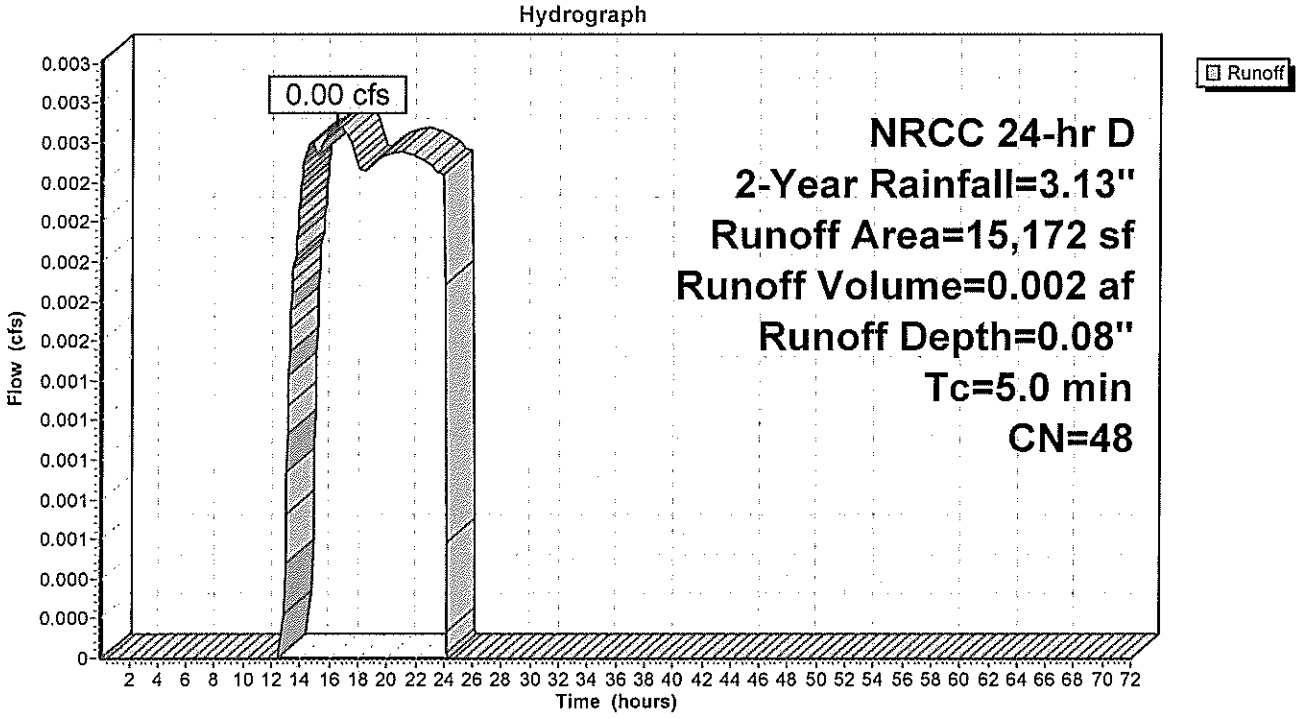
Runoff = 0.00 cfs @ 16.46 hrs, Volume= 0.002 af, Depth= 0.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.13"

Area (sf)	CN	Description
15,172	48	Brush, Poor, HSG A
15,172		100.00% Pervious Area

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

Subcatchment E-WS-C: Existing Conditions Watershed C - Offsite To East



ummary for Subcatchment P-WS-A1.1: Proposed Sub-Watershed A1.1 - East Section To Catch Basi

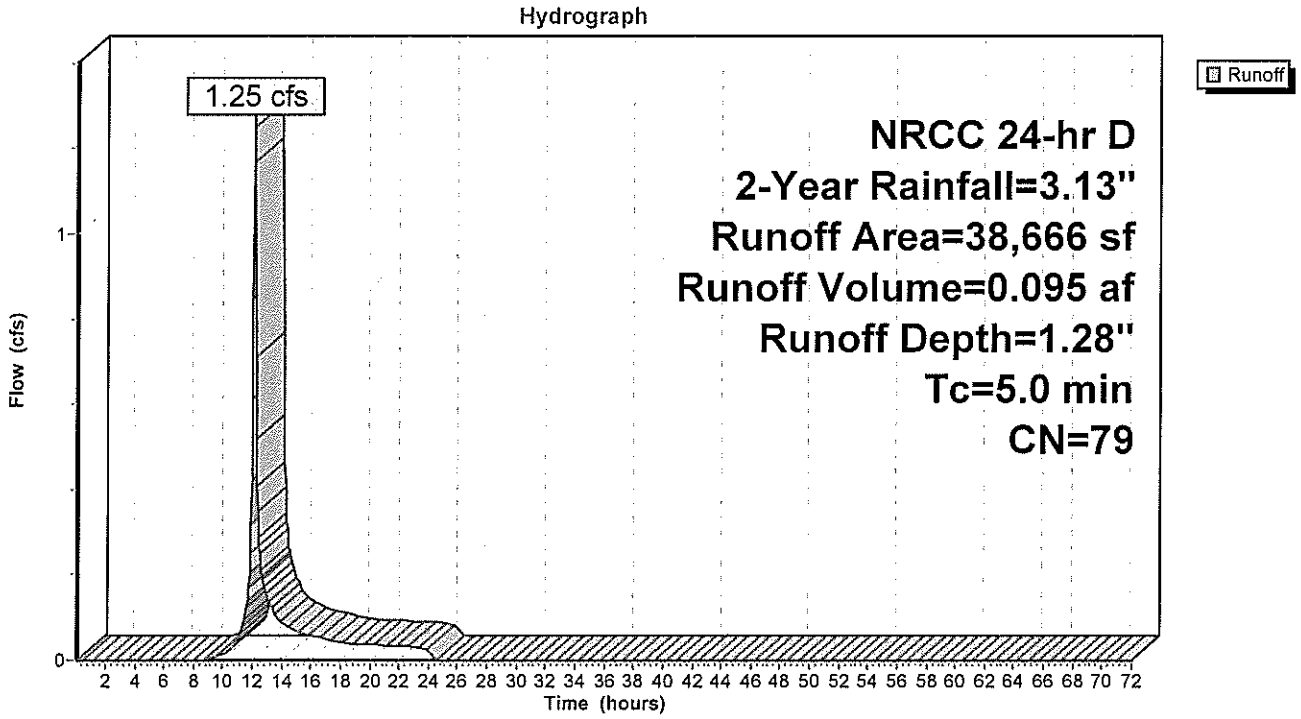
Runoff = 1.25 cfs @ 12.12 hrs, Volume= 0.095 af, Depth= 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.13"

Area (sf)	CN	Description
26,480	98	Paved parking, HSG A
12,186	39	>75% Grass cover, Good, HSG A
38,666	79	Weighted Average
12,186		31.52% Pervious Area
26,480		68.48% Impervious Area

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

Subcatchment P-WS-A1.1: Proposed Sub-Watershed A1.1 - East Section To Catch Basin A1



ımmary for Subcatchment P-WS-A1.2: Proposed Sub-Watershed A1.2 - Building Roof to Distributior

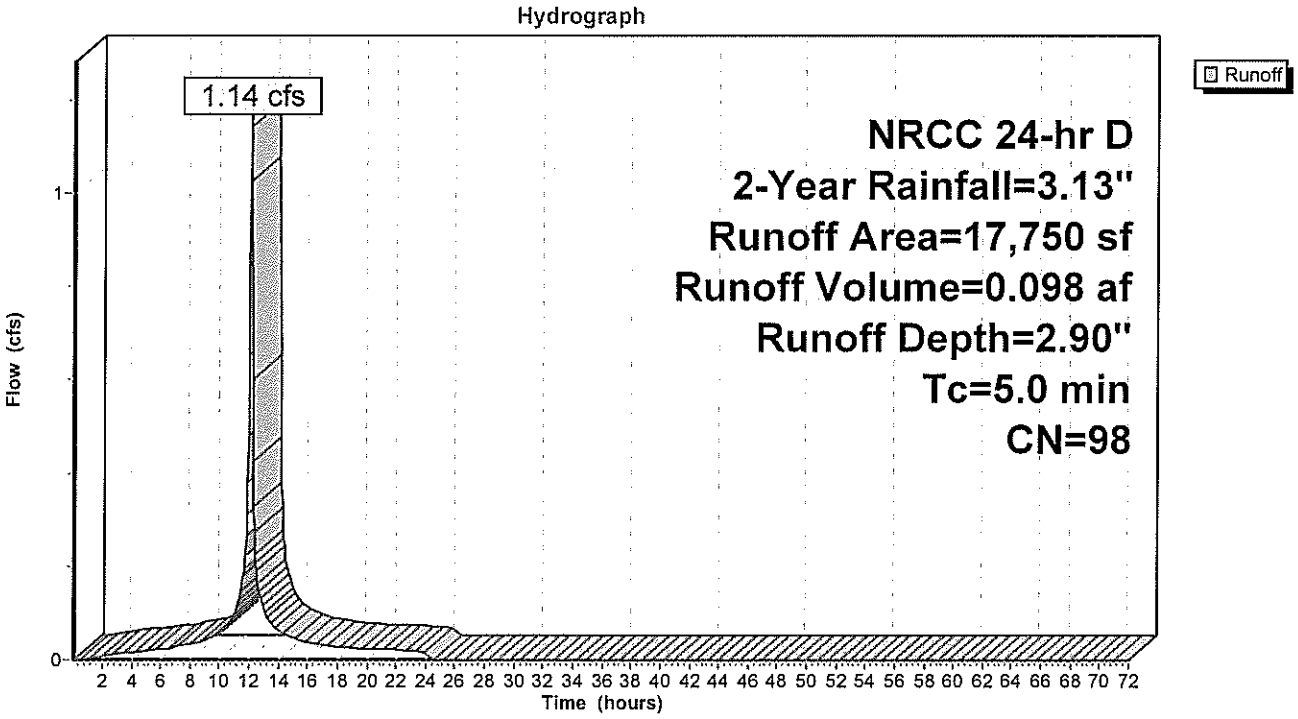
Runoff = 1.14 cfs @ 12.11 hrs, Volume= 0.098 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.13"

	Area (sf)	CN	Description
*	17,750	98	Roof
	17,750		100.00% Impervious Area

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

Subcatchment P-WS-A1.2: Proposed Sub-Watershed A1.2 - Building Roof to Distribution Box



ummary for Subcatchment P-WS-A2: Proposed Sub-Watershed A2 - West Section To Infiltration Tre

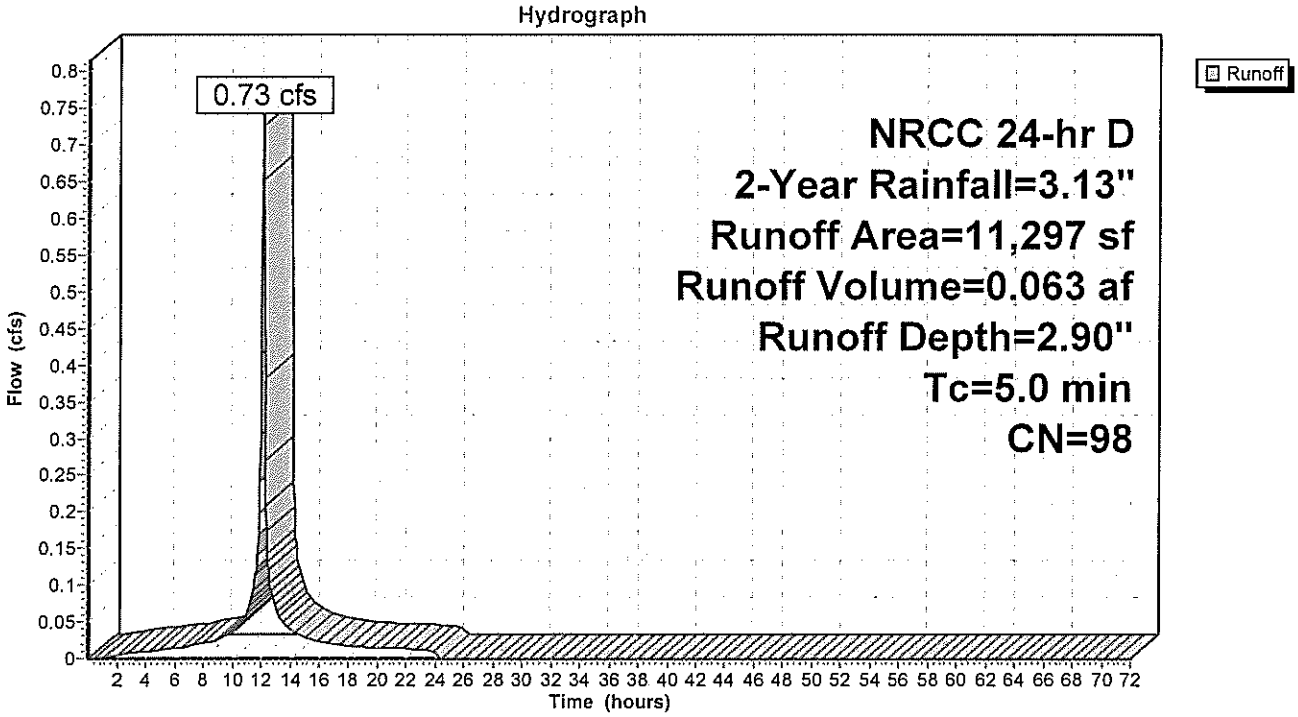
Runoff = 0.73 cfs @ 12.11 hrs, Volume= 0.063 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.13"

Area (sf)	CN	Description
11,297	98	Paved parking, HSG A
11,297		100.00% Impervious Area

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

Subcatchment P-WS-A2: Proposed Sub-Watershed A2 - West Section To Infiltration Trench



Summary for Subcatchment P-WS-B: Proposed Conditions - To Onsite Existing Recharge Pits

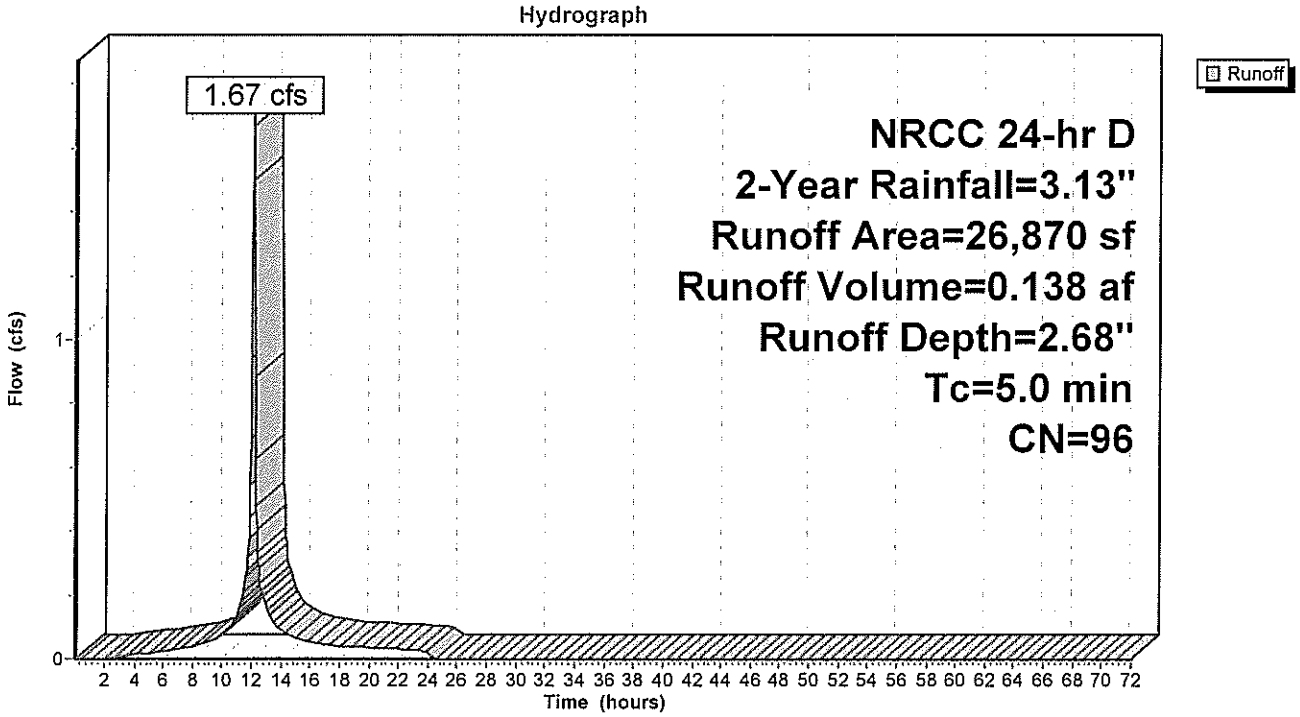
Runoff = 1.67 cfs @ 12.11 hrs, Volume= 0.138 af, Depth= 2.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.13"

	Area (sf)	CN	Description
*	26,090	98	Impervious drive & rroof
	780	39	>75% Grass cover, Good, HSG A
	26,870	96	Weighted Average
	780		2.90% Pervious Area
	26,090		97.10% Impervious Area

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

Subcatchment P-WS-B: Proposed Conditions - To Onsite Existing Recharge Pits



Summary for Subcatchment P-WS-C: Proposed Conditions Watershed C - Offsite to East

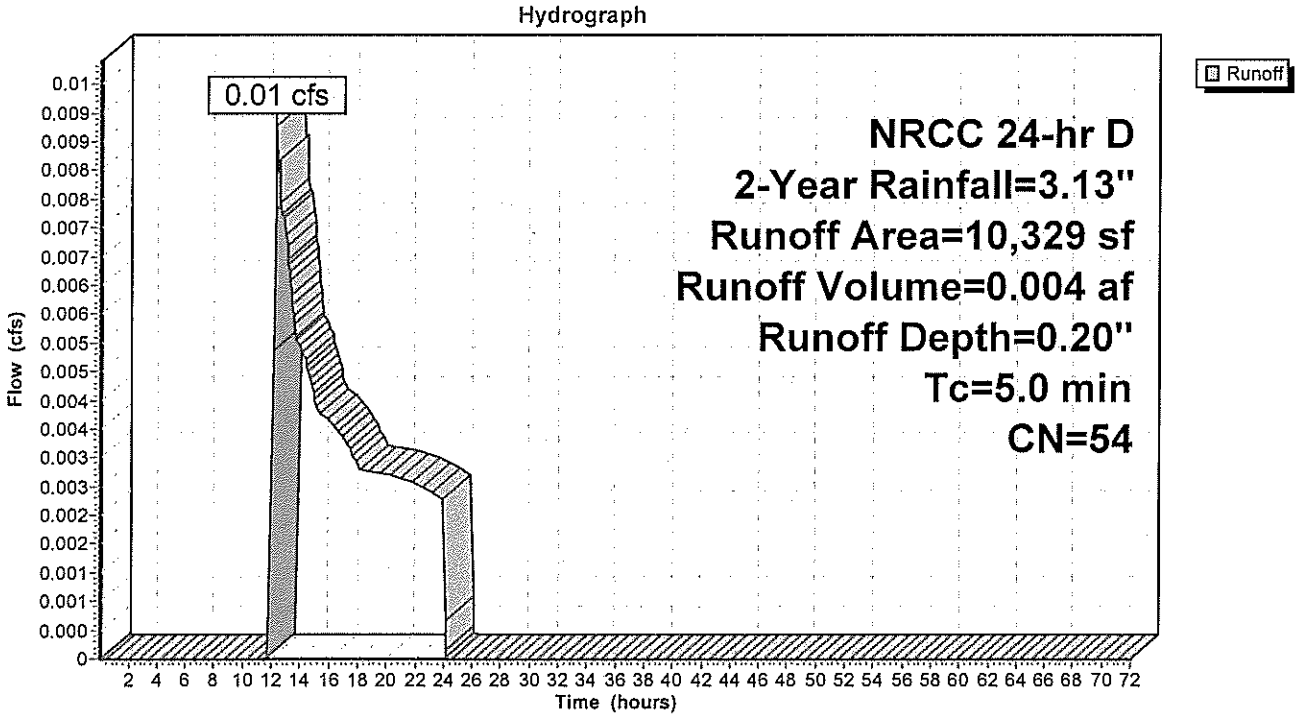
Runoff = 0.01 cfs @ 12.33 hrs, Volume= 0.004 af, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.13"

Area (sf)	CN	Description
9,113	48	Brush, Poor, HSG A
1,216	98	Paved parking, HSG A
10,329	54	Weighted Average
9,113		88.23% Pervious Area
1,216		11.77% Impervious Area

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

Subcatchment P-WS-C: Proposed Conditions Watershed C - Offsite to East



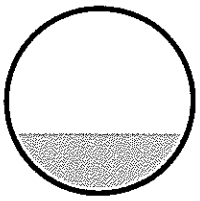
Summary for Reach R-A1.2: Roof Drain Leader

Inflow Area = 0.407 ac,100.00% Impervious, Inflow Depth = 2.90" for 2-Year event
Inflow = 1.14 cfs @ 12.11 hrs, Volume= 0.098 af
Outflow = 1.13 cfs @ 12.11 hrs, Volume= 0.098 af, Atten= 1%, Lag= 0.2 min

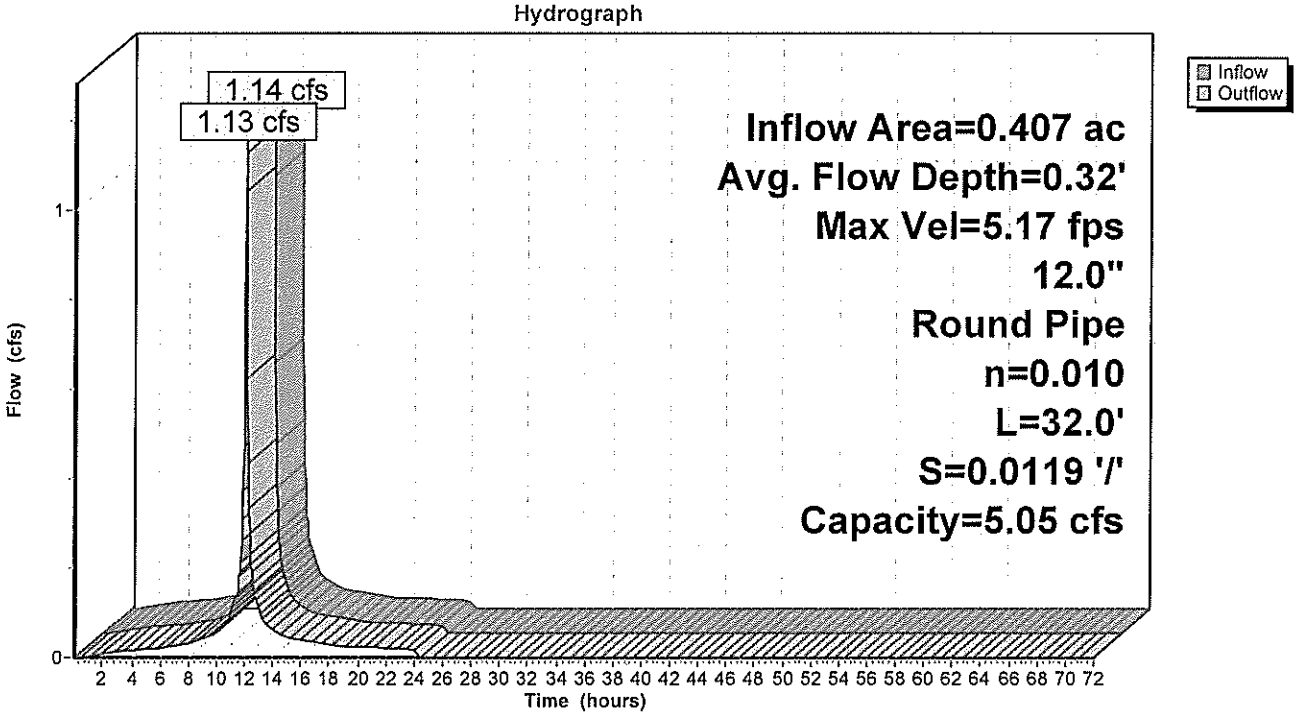
Routing by Stor-Ind+Trans method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.17 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.83 fps, Avg. Travel Time= 0.3 min

Peak Storage= 7 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.32' , Surface Width= 0.94'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.05 cfs

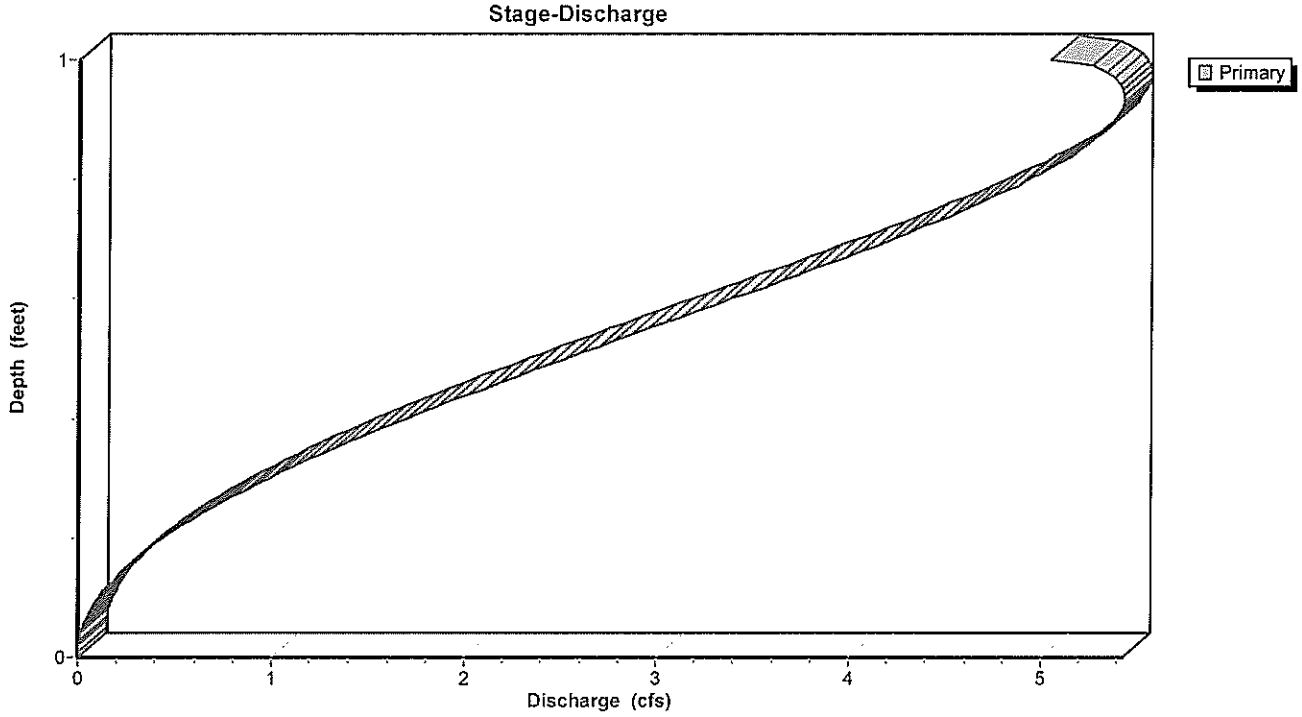
12.0" Round Pipe
n= 0.010
Length= 32.0' Slope= 0.0119 '/'
Inlet Invert= 412.88', Outlet Invert= 412.50'



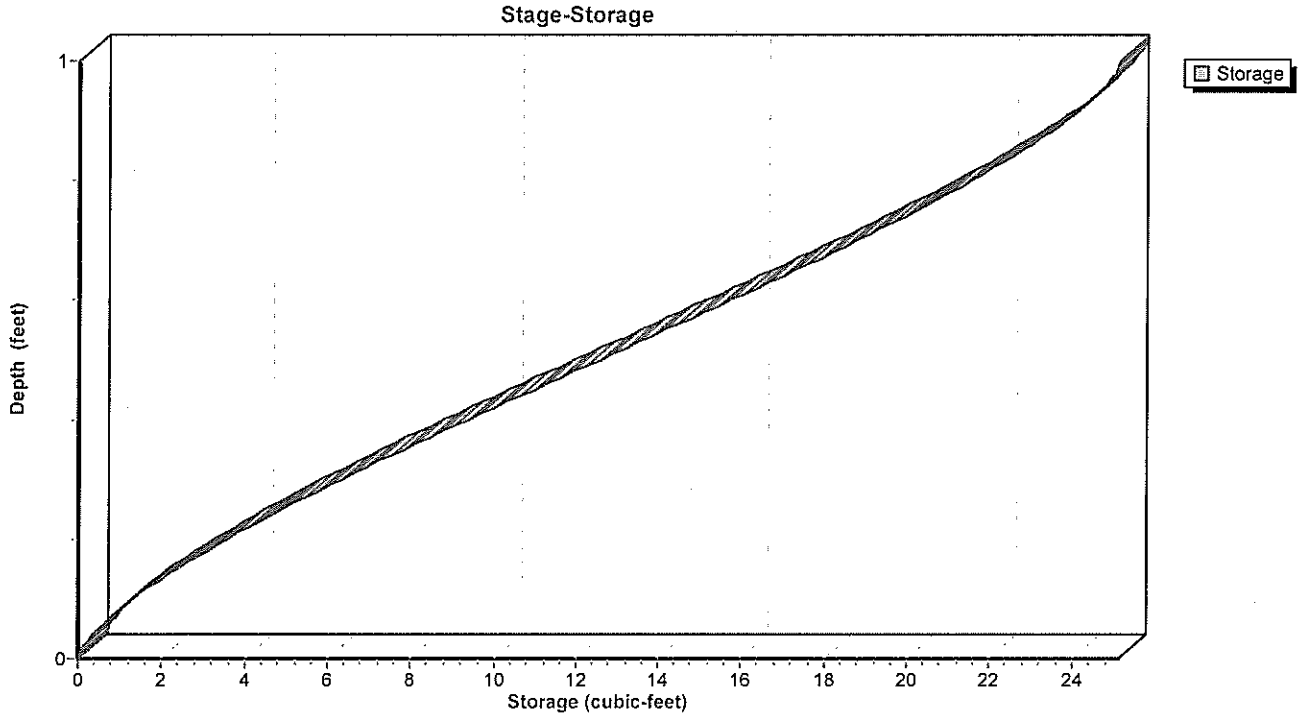
Reach R-A1.2: Roof Drain Leader



Reach R-A1.2: Roof Drain Leader



Reach R-A1.2: Roof Drain Leader



Summary for Pond CB-A1: Catch Basin A1

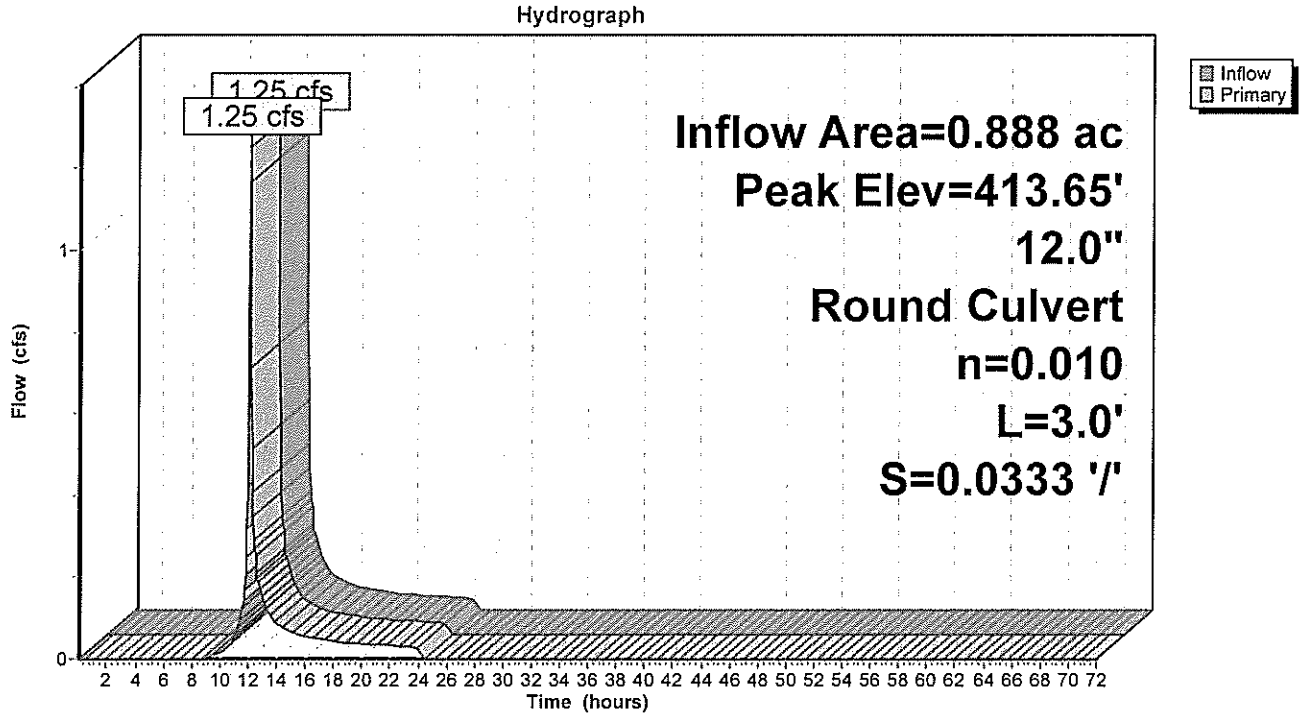
Inflow Area =	0.888 ac, 68.48% Impervious, Inflow Depth = 1.28" for 2-Year event			
Inflow =	1.25 cfs @ 12.12 hrs, Volume=	0.095 af		
Outflow =	1.25 cfs @ 12.12 hrs, Volume=	0.095 af, Atten= 0%, Lag= 0.0 min		
Primary =	1.25 cfs @ 12.12 hrs, Volume=	0.095 af		

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 413.65' @ 12.12 hrs

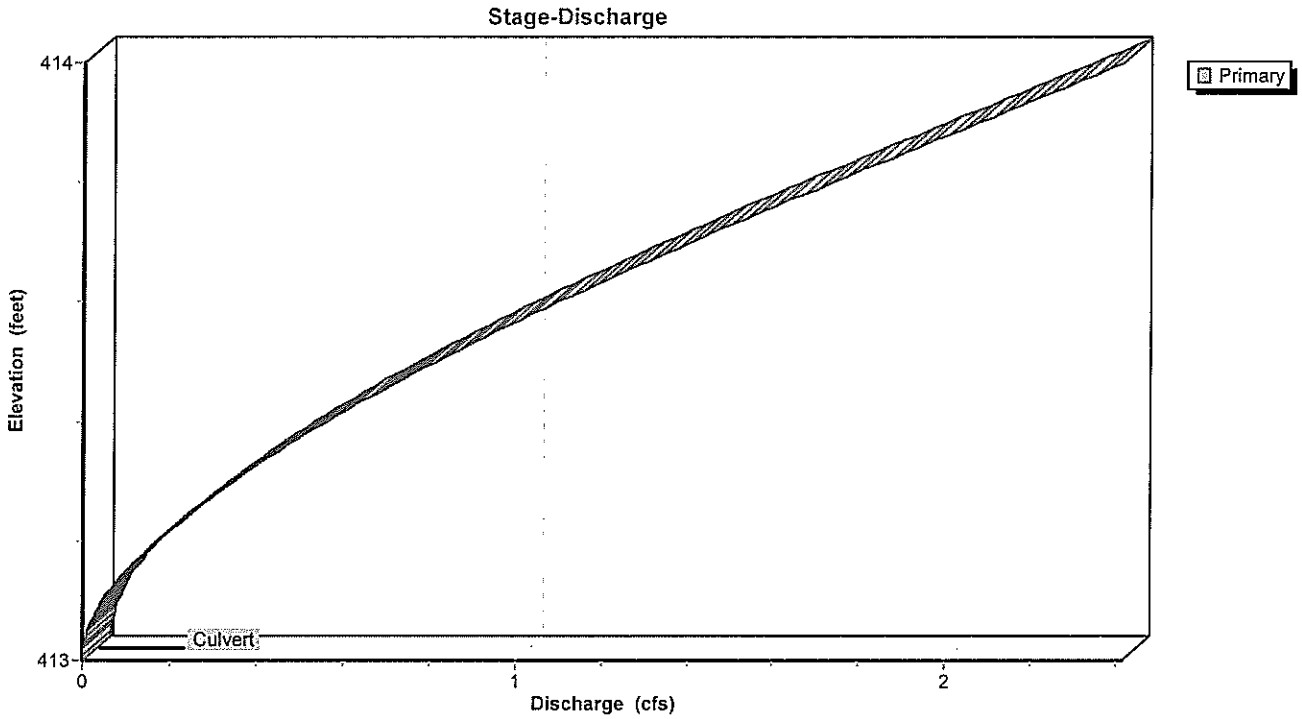
Device	Routing	Invert	Outlet Devices
#1	Primary	413.00'	**12.0" Round Culvert** L= 3.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 413.00' / 412.90' S= 0.0333 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=1.20 cfs @ 12.12 hrs HW=413.63' (Free Discharge)
└─**1=Culvert** (Barrel Controls 1.20 cfs @ 3.27 fps)

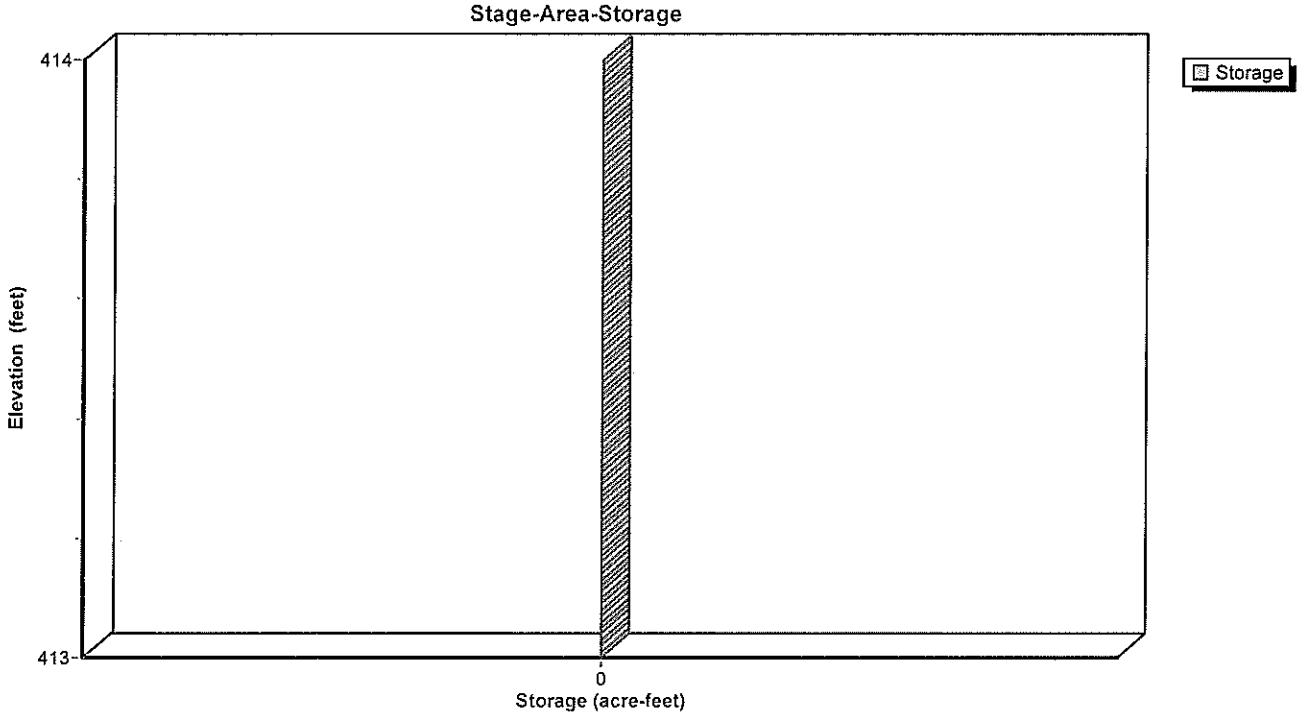
Pond CB-A1: Catch Basin A1



Pond CB-A1: Catch Basin A1



Pond CB-A1: Catch Basin A1



Summary for Pond CB-A2: Catch Basin A2

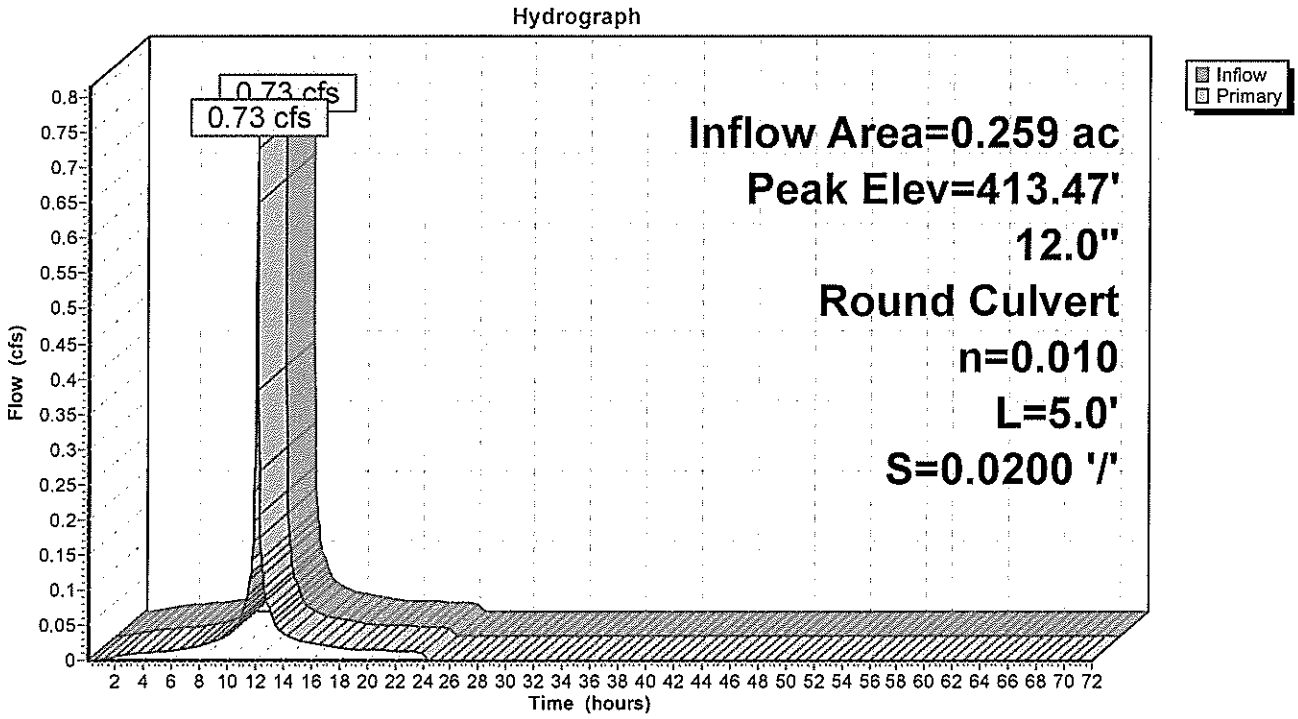
Inflow Area =	0.259 ac,100.00% Impervious, Inflow Depth = 2.90" for 2-Year event			
Inflow =	0.73 cfs @ 12.11 hrs, Volume=	0.063 af		
Outflow =	0.73 cfs @ 12.11 hrs, Volume=	0.063 af, Atten= 0%, Lag= 0.0 min		
Primary =	0.73 cfs @ 12.11 hrs, Volume=	0.063 af		

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 413.47' @ 12.11 hrs

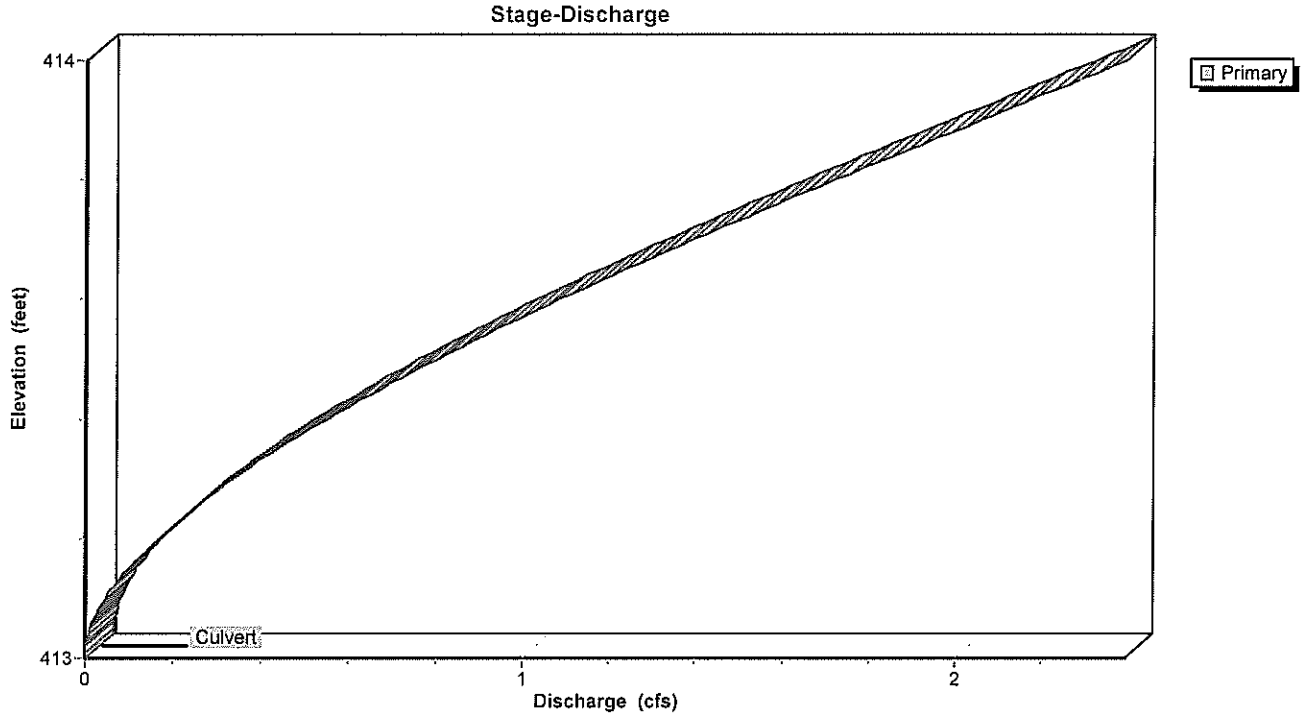
Device	Routing	Invert	Outlet Devices
#1	Primary	413.00'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 413.00' / 412.90' S= 0.0200 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=0.71 cfs @ 12.11 hrs HW=413.46' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.71 cfs @ 2.92 fps)

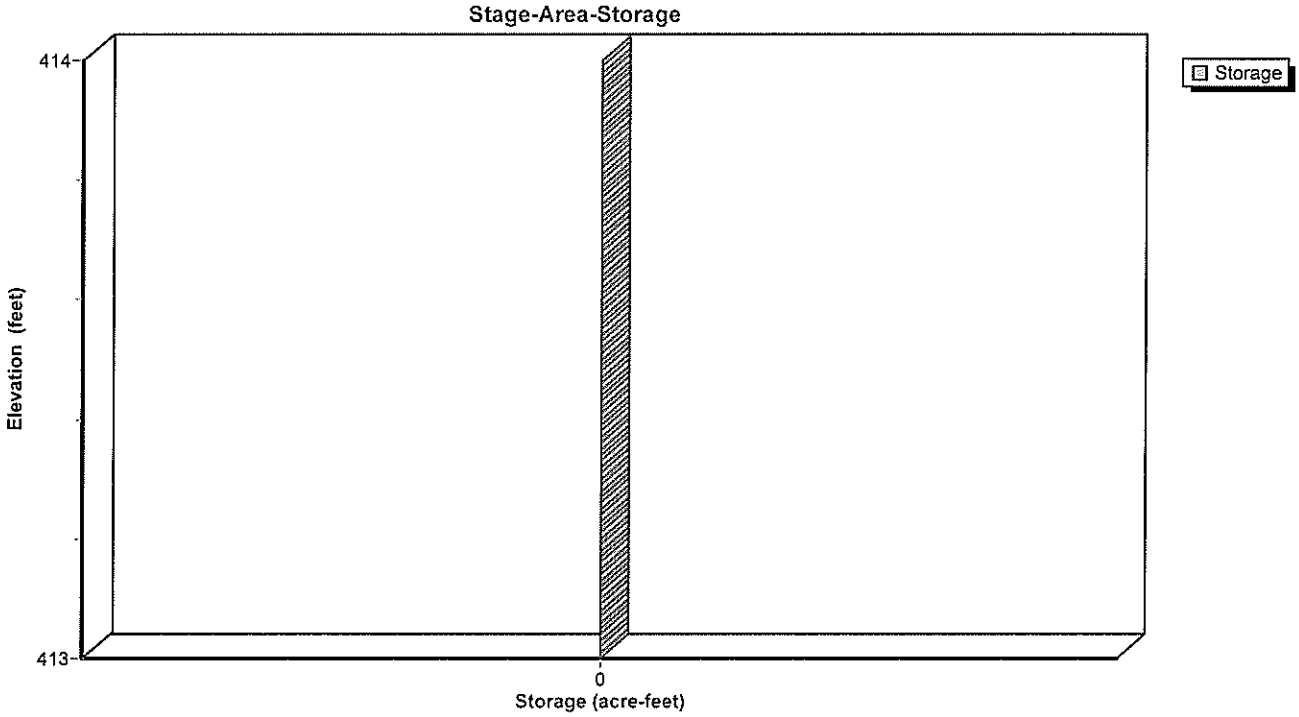
Pond CB-A2: Catch Basin A2



Pond CB-A2: Catch Basin A2



Pond CB-A2: Catch Basin A2



Summary for Pond DB-A1: Distribution Box 1

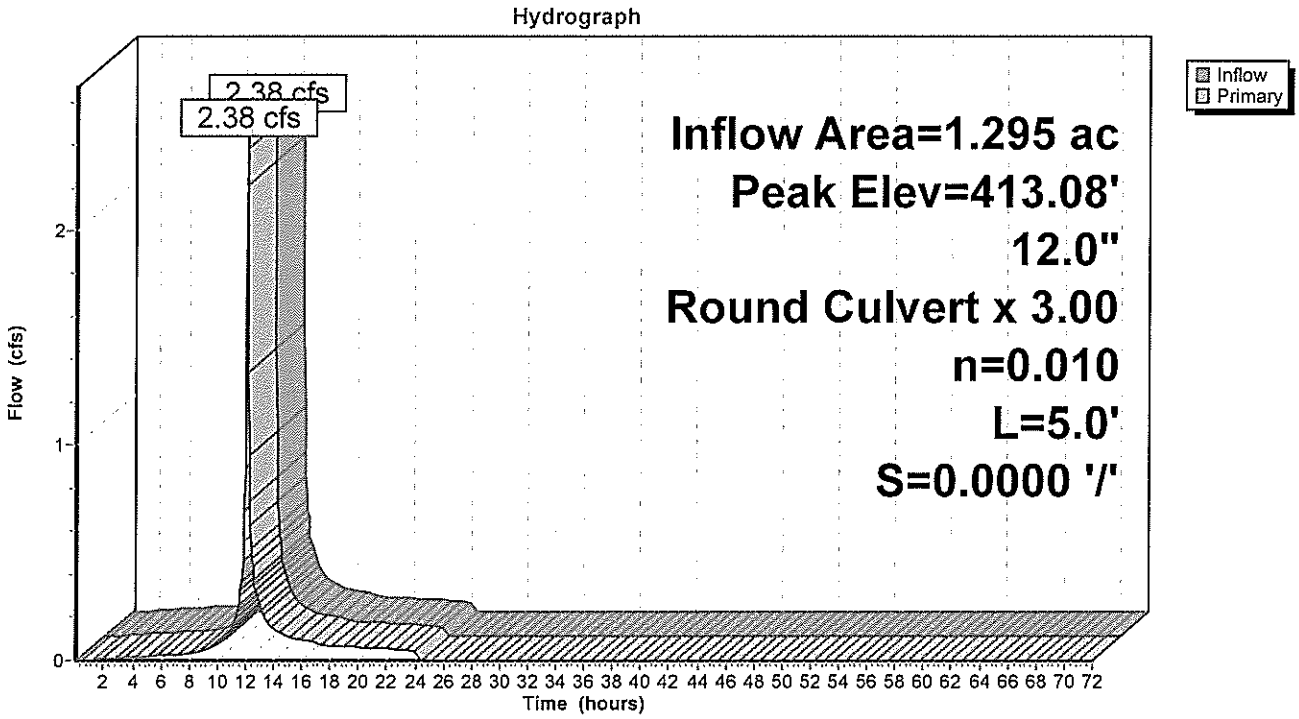
Inflow Area =	1.295 ac, 78.40% Impervious, Inflow Depth = 1.79" for 2-Year event				
Inflow =	2.38 cfs @	12.12 hrs, Volume=	0.193 af		
Outflow =	2.38 cfs @	12.12 hrs, Volume=	0.193 af, Atten= 0%, Lag= 0.0 min		
Primary =	2.38 cfs @	12.12 hrs, Volume=	0.193 af		

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 413.08' @ 12.12 hrs

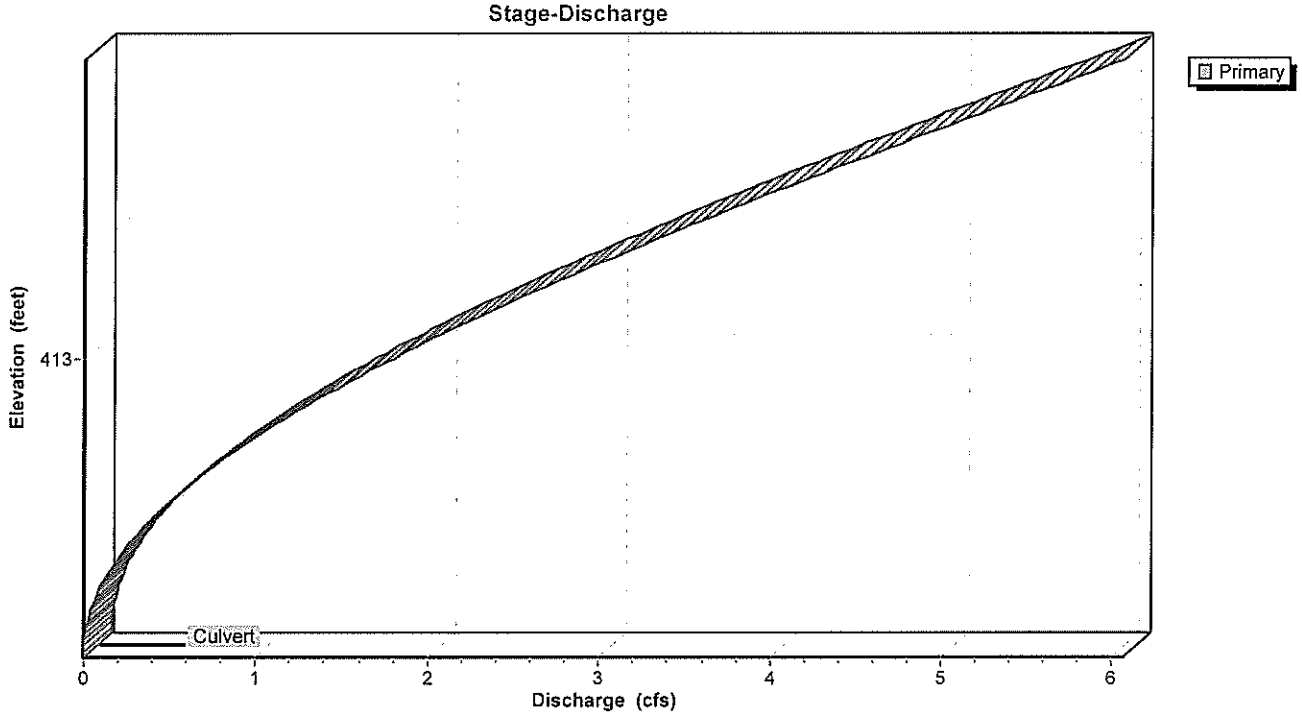
Device	Routing	Invert	Outlet Devices
#1	Primary	412.50'	**12.0" Round Culvert X 3.00** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 412.50' / 412.50' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=2.29 cfs @ 12.12 hrs HW=413.07' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.29 cfs @ 2.39 fps)

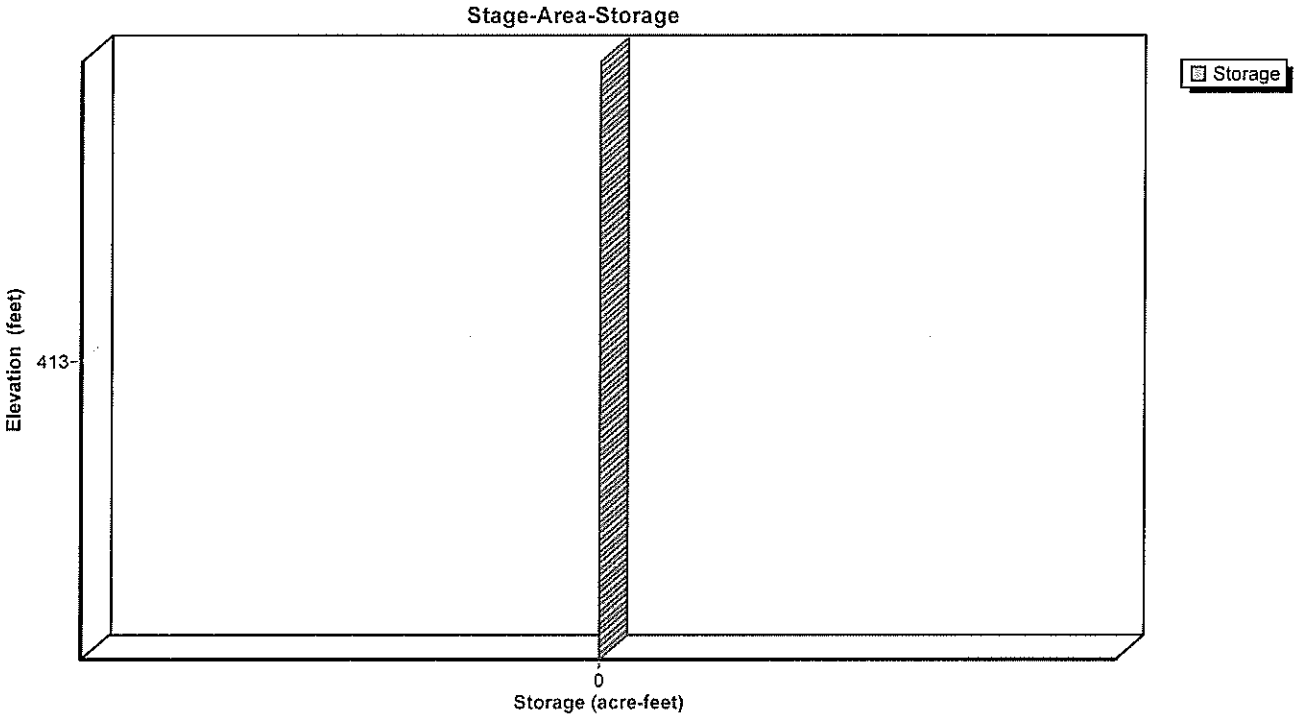
Pond DB-A1: Distribution Box 1



Pond DB-A1: Distribution Box 1



Pond DB-A1: Distribution Box 1



Summary for Pond DB-A2: Distribution Box 2

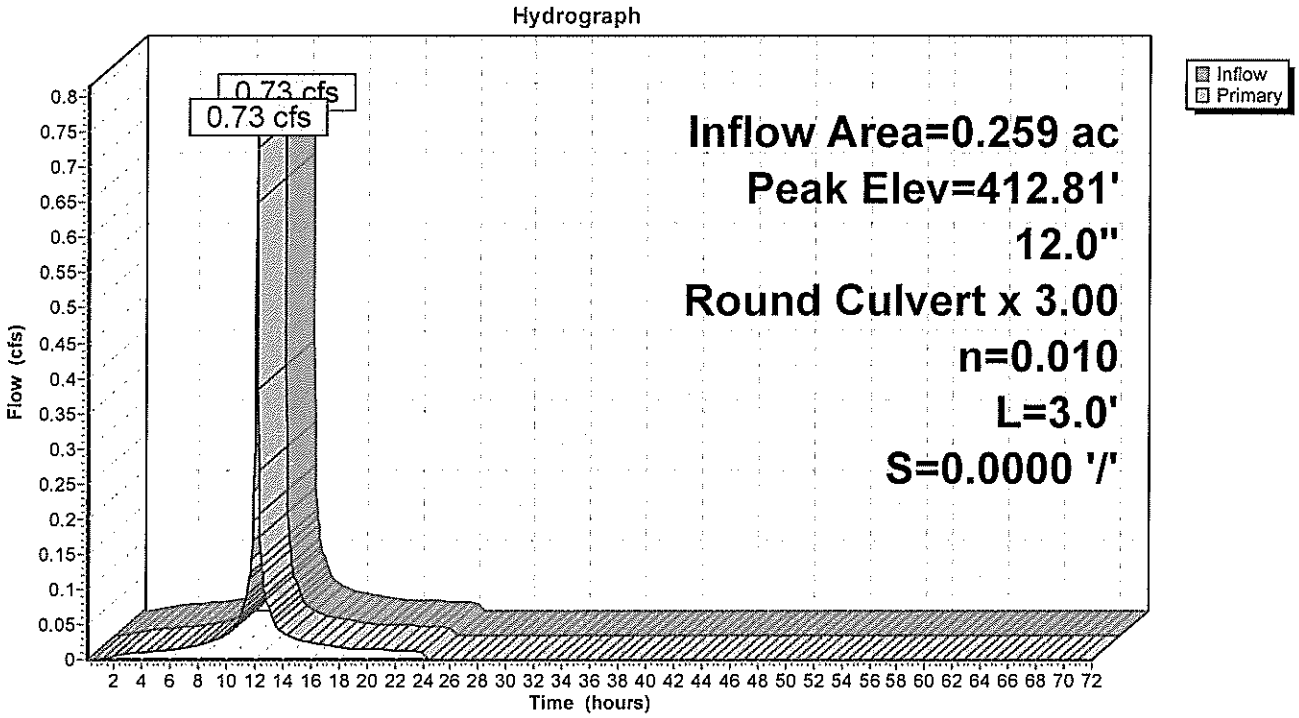
Inflow Area =	0.259 ac,100.00% Impervious, Inflow Depth = 2.90" for 2-Year event			
Inflow =	0.73 cfs @ 12.11 hrs, Volume=	0.063 af		
Outflow =	0.73 cfs @ 12.11 hrs, Volume=	0.063 af, Atten= 0%, Lag= 0.0 min		
Primary =	0.73 cfs @ 12.11 hrs, Volume=	0.063 af		

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 412.81' @ 12.11 hrs

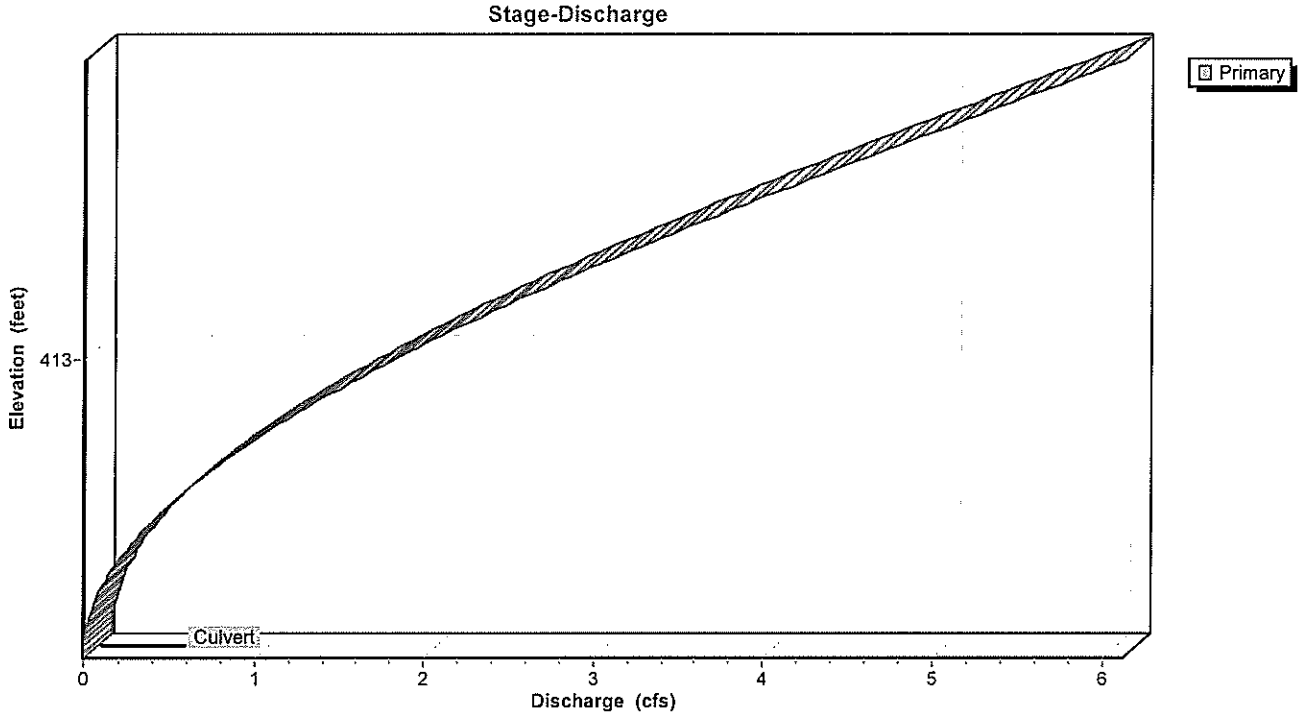
Device	Routing	Invert	Outlet Devices
#1	Primary	412.50'	**12.0" Round Culvert X 3.00** L= 3.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 412.50' / 412.50' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=0.71 cfs @ 12.11 hrs HW=412.80' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.71 cfs @ 1.74 fps)

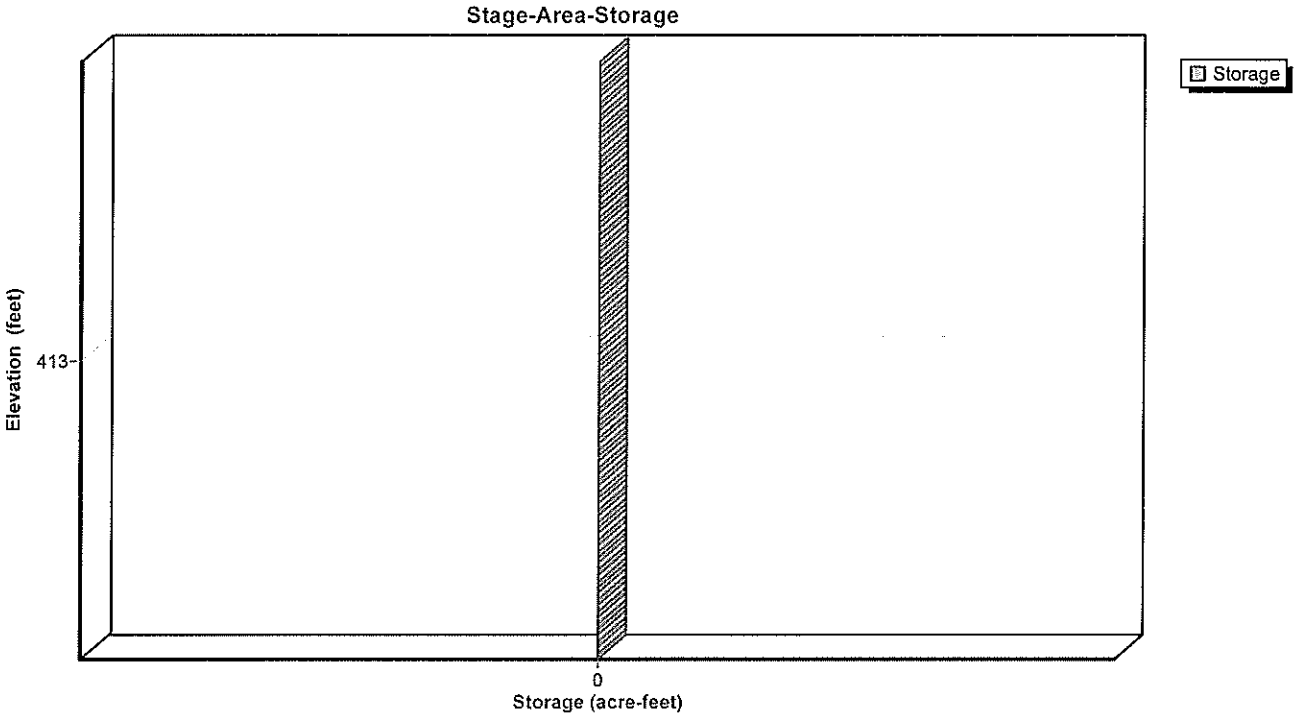
Pond DB-A2: Distribution Box 2



Pond DB-A2: Distribution Box 2



Pond DB-A2: Distribution Box 2



Summary for Pond RT: Recharge Trench

Inflow Area =	1.554 ac, 82.00% Impervious, Inflow Depth = 1.98" for 2-Year event			
Inflow =	3.11 cfs @ 12.12 hrs, Volume=	0.256 af		
Outflow =	1.53 cfs @ 12.05 hrs, Volume=	0.256 af, Atten= 51%, Lag= 0.0 min		
Discarded =	1.53 cfs @ 12.05 hrs, Volume=	0.256 af		

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 408.59' @ 12.22 hrs Surf.Area= 3,300 sf Storage= 778 cf

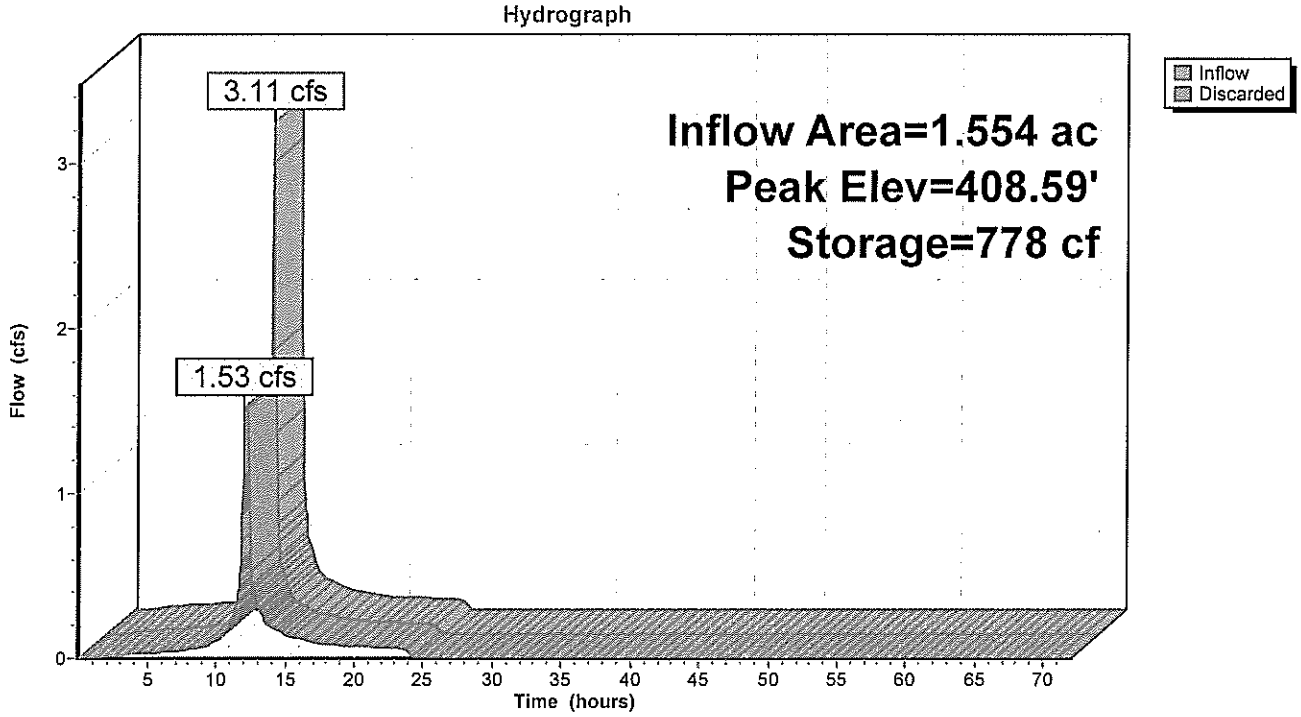
Plug-Flow detention time= 2.0 min calculated for 0.256 af (100% of inflow)
Center-of-Mass det. time= 2.0 min (804.9 - 802.9)

Volume	Invert	Avail.Storage	Storage Description
#1	408.00'	9,240 cf	**30.00'W x 110.00'L x 7.00'H Prismatoid** 23,100 cf Overall x 40.0% Voids

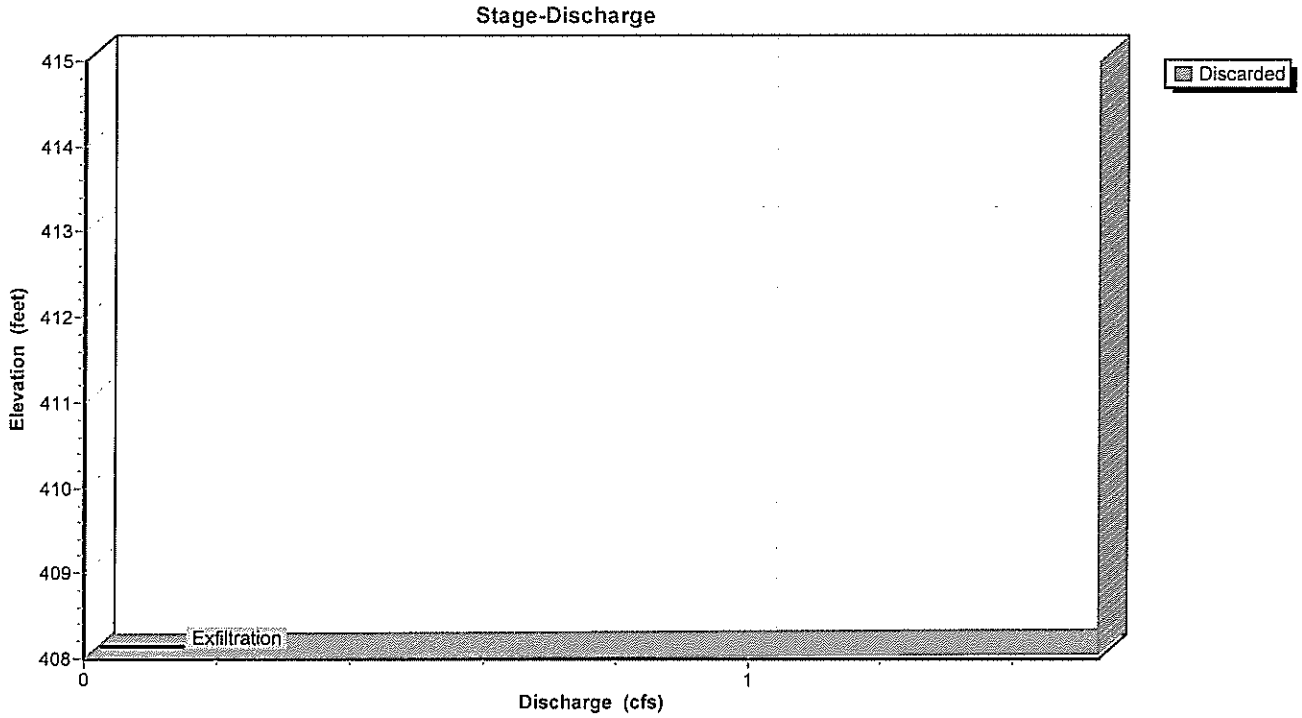
Device	Routing	Invert	Outlet Devices
#1	Discarded	408.00'	**20.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=1.53 cfs @ 12.05 hrs HW=408.13' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 1.53 cfs)

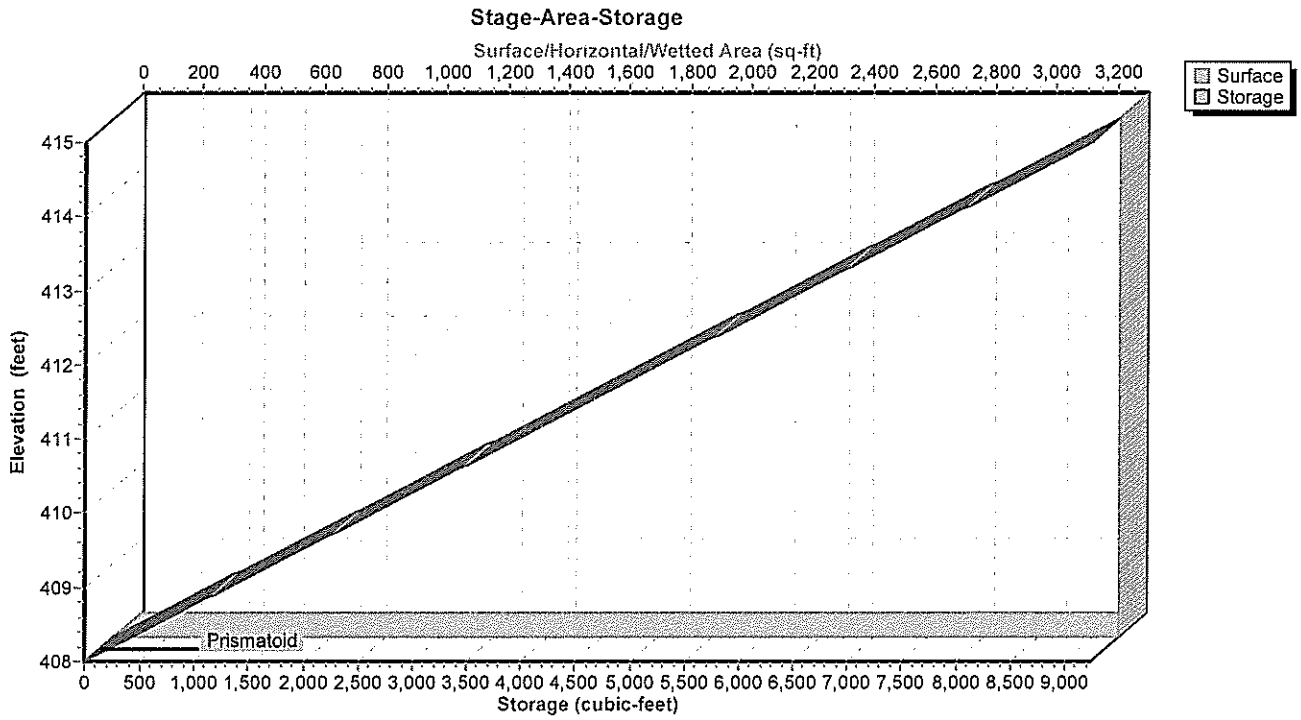
Pond RT: Recharge Trench



Pond RT: Recharge Trench



Pond RT: Recharge Trench



Summary for Pond WQU-2A: Storm Filter 330

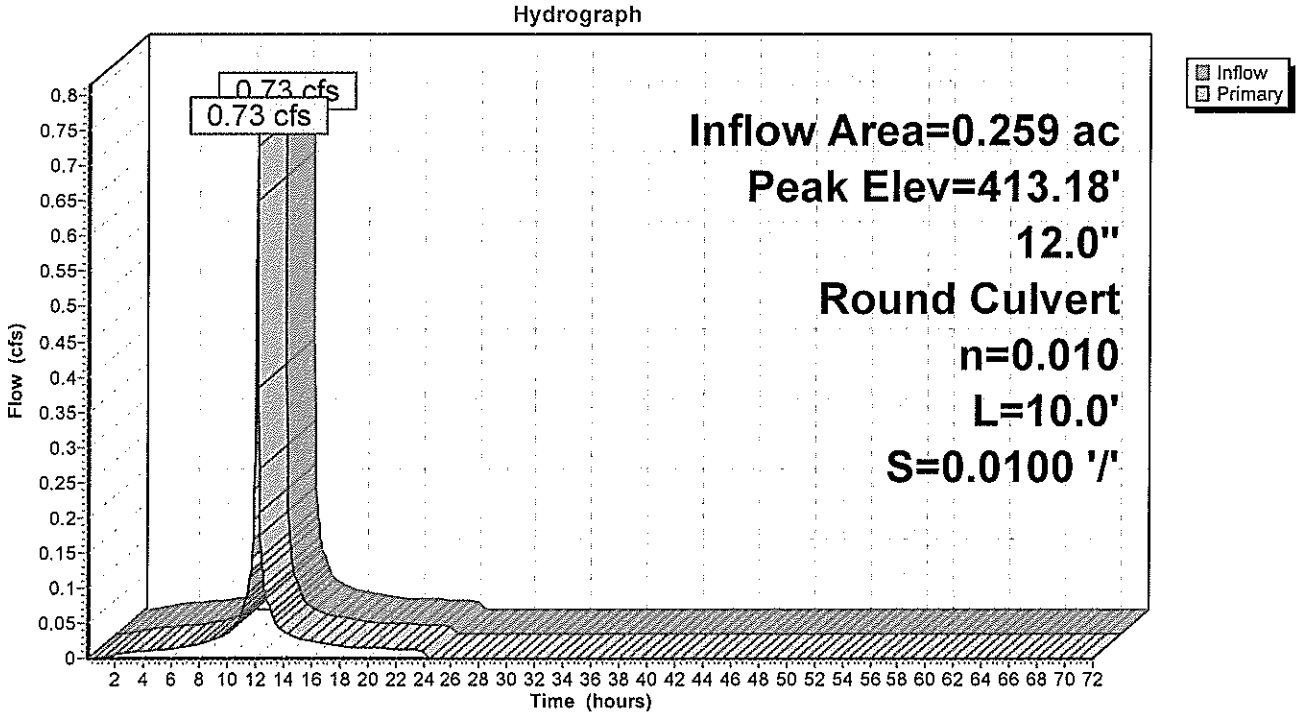
Inflow Area =	0.259 ac,100.00% Impervious, Inflow Depth = 2.90" for 2-Year event			
Inflow =	0.73 cfs @ 12.11 hrs, Volume=	0.063 af		
Outflow =	0.73 cfs @ 12.11 hrs, Volume=	0.063 af, Atten= 0%, Lag= 0.0 min		
Primary =	0.73 cfs @ 12.11 hrs, Volume=	0.063 af		

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 413.18' @ 12.11 hrs

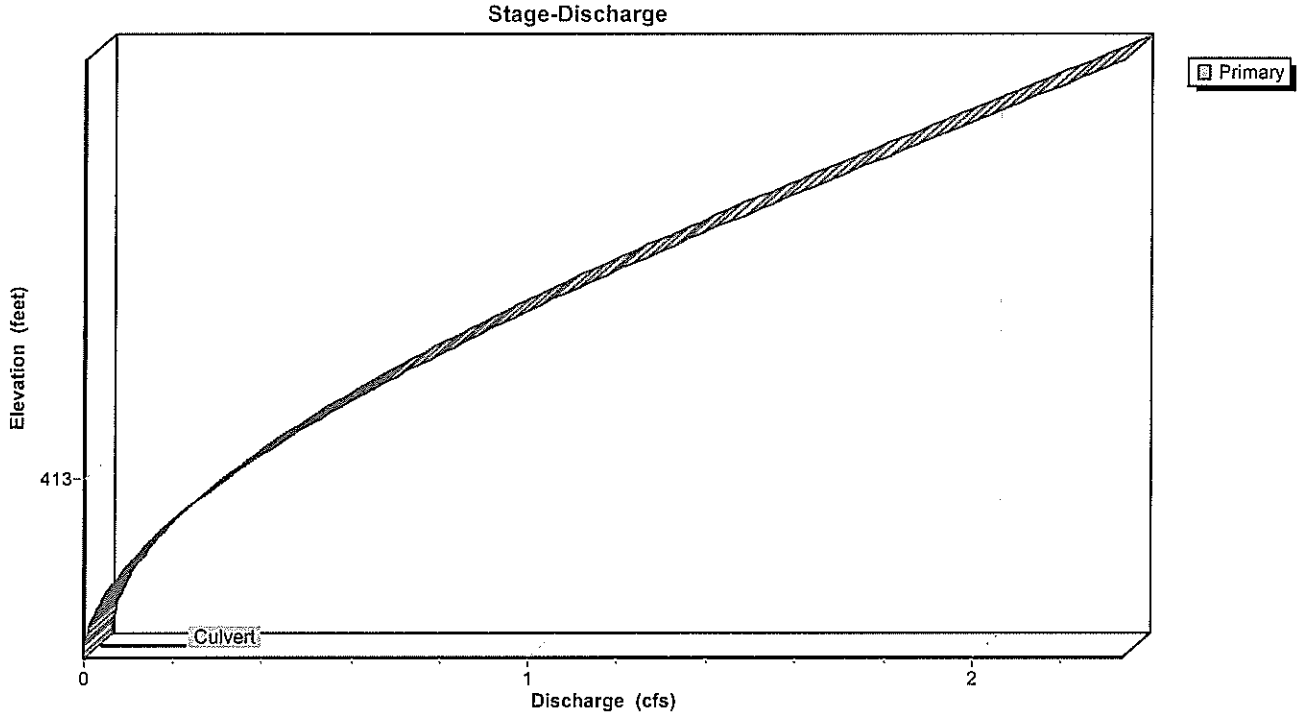
Device	Routing	Invert	Outlet Devices
#1	Primary	412.70'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 412.70' / 412.60' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=0.71 cfs @ 12.11 hrs HW=413.17' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.71 cfs @ 2.83 fps)

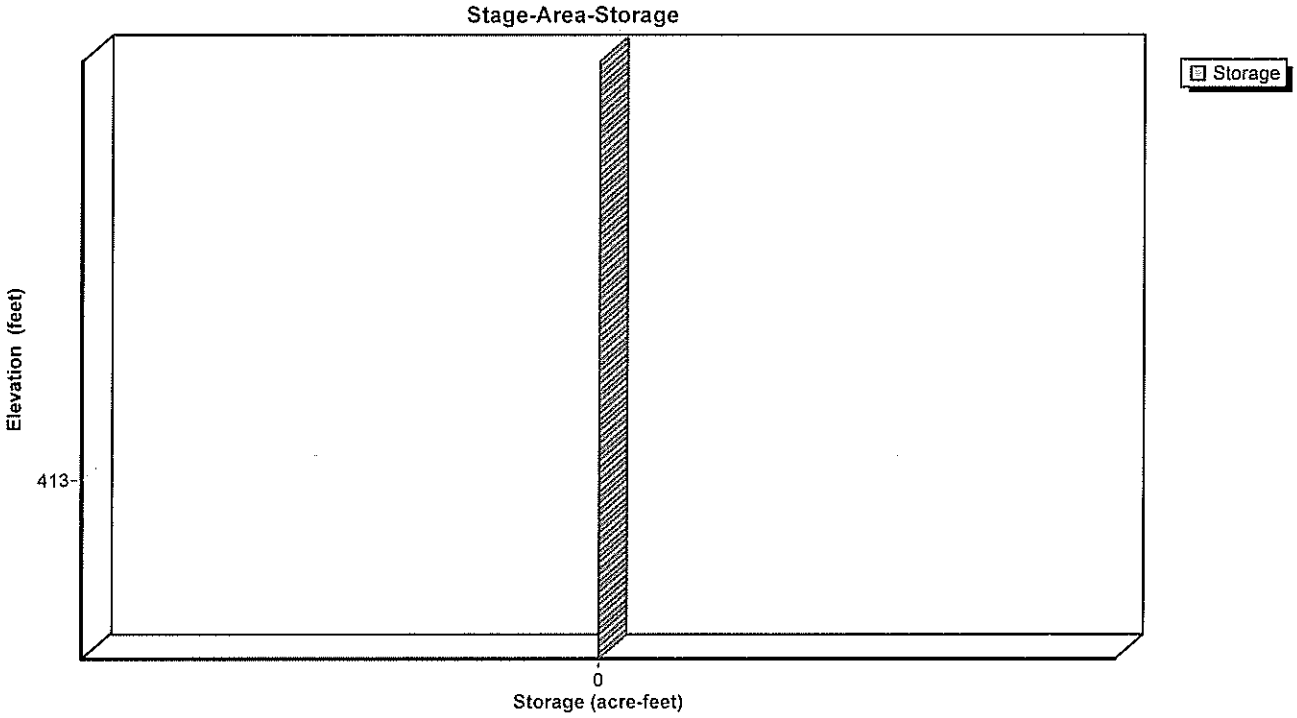
Pond WQU-2A: Storm Filter 330



Pond WQU-2A: Storm Filter 330



Pond WQU-2A: Storm Filter 330



Summary for Pond WQU-A1: Storm Filter 330

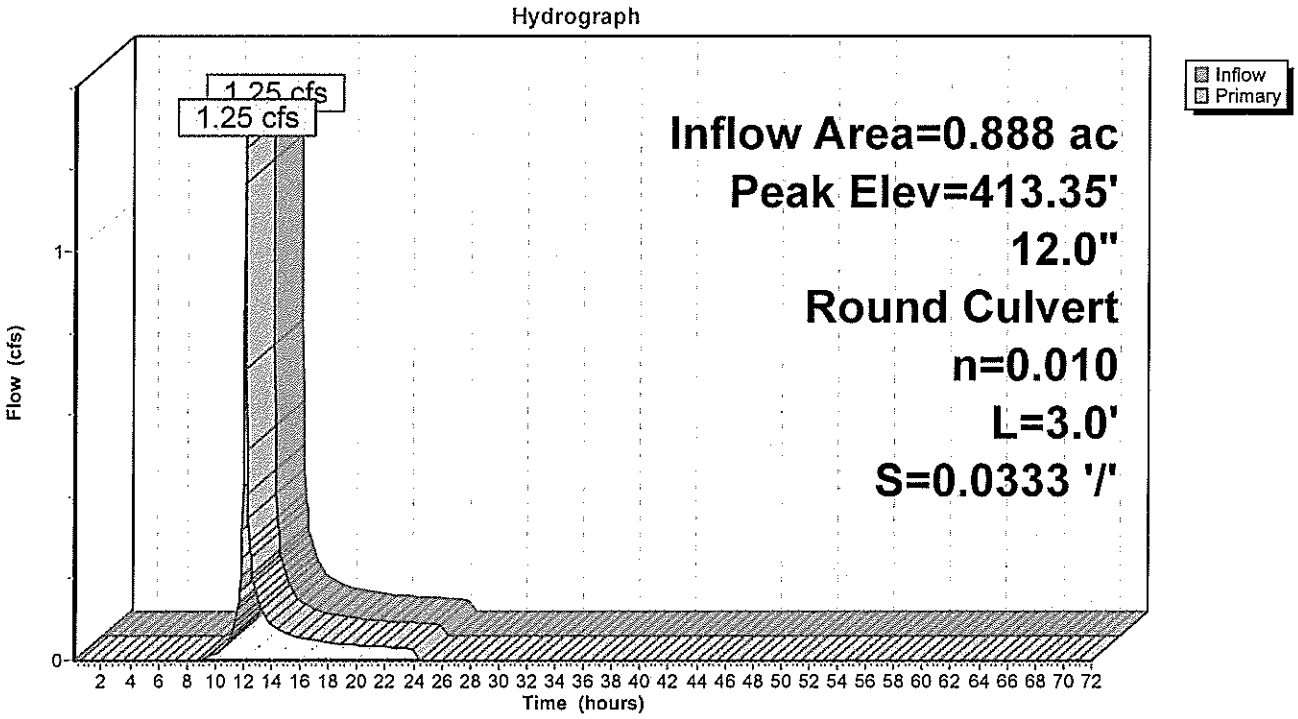
Inflow Area =	0.888 ac, 68.48% Impervious, Inflow Depth = 1.28" for 2-Year event			
Inflow =	1.25 cfs @ 12.12 hrs, Volume=	0.095 af		
Outflow =	1.25 cfs @ 12.12 hrs, Volume=	0.095 af, Atten= 0%, Lag= 0.0 min		
Primary =	1.25 cfs @ 12.12 hrs, Volume=	0.095 af		

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 413.35' @ 12.12 hrs

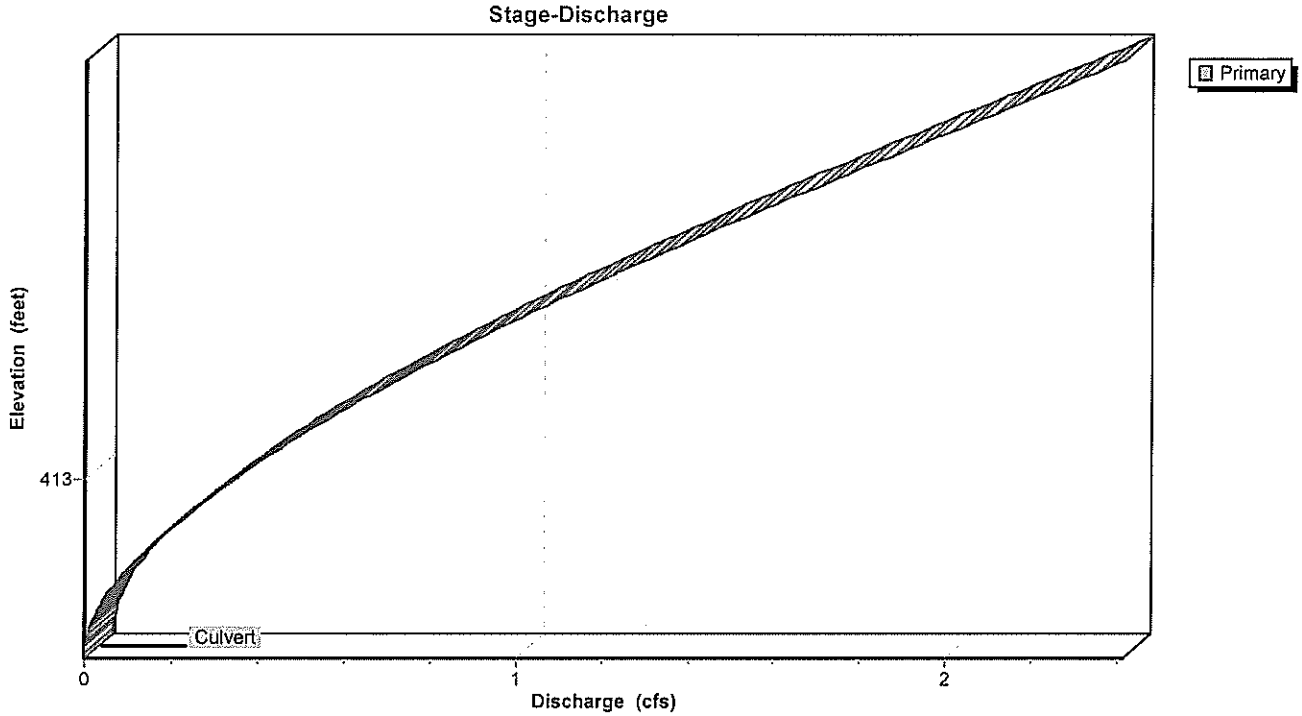
Device	Routing	Invert	Outlet Devices
#1	Primary	412.70'	**12.0" Round Culvert** L= 3.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 412.70' / 412.60' S= 0.0333 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=1.20 cfs @ 12.12 hrs HW=413.33' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.20 cfs @ 3.27 fps)

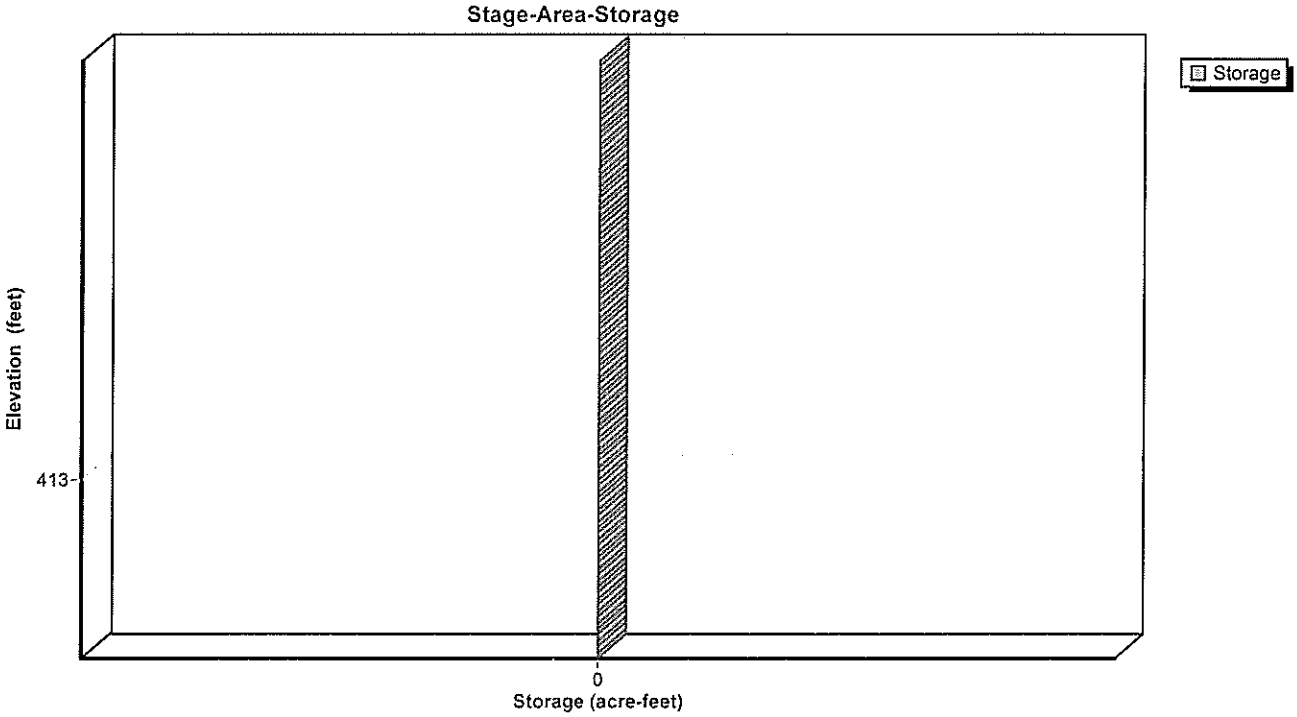
Pond WQU-A1: Storm Filter 330



Pond WQU-A1: Storm Filter 330



Pond WQU-A1: Storm Filter 330

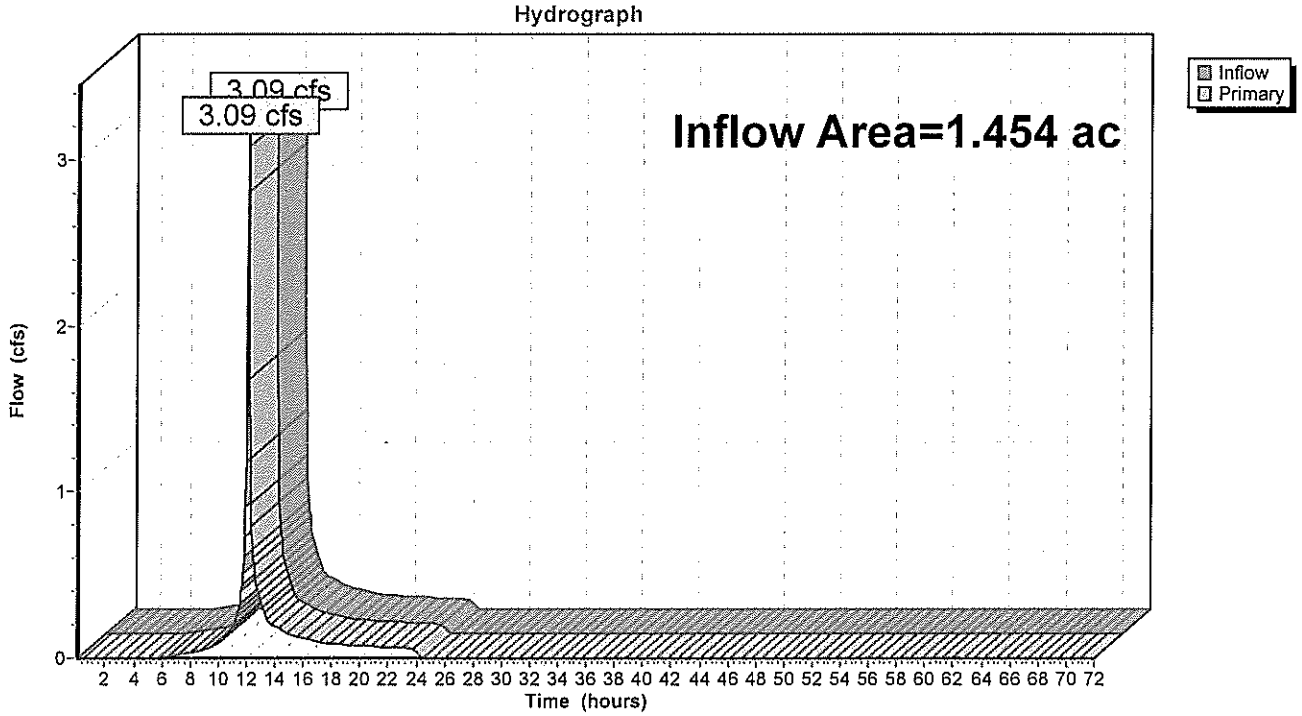


Summary for Link POA-A: Existing Qpeak Offsite to the North

Inflow Area = 1.454 ac, 82.59% Impervious, Inflow Depth = 1.93" for 2-Year event
Inflow = 3.09 cfs @ 12.11 hrs, Volume= 0.234 af
Primary = 3.09 cfs @ 12.11 hrs, Volume= 0.234 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link POA-A: Existing Qpeak Offsite to the North

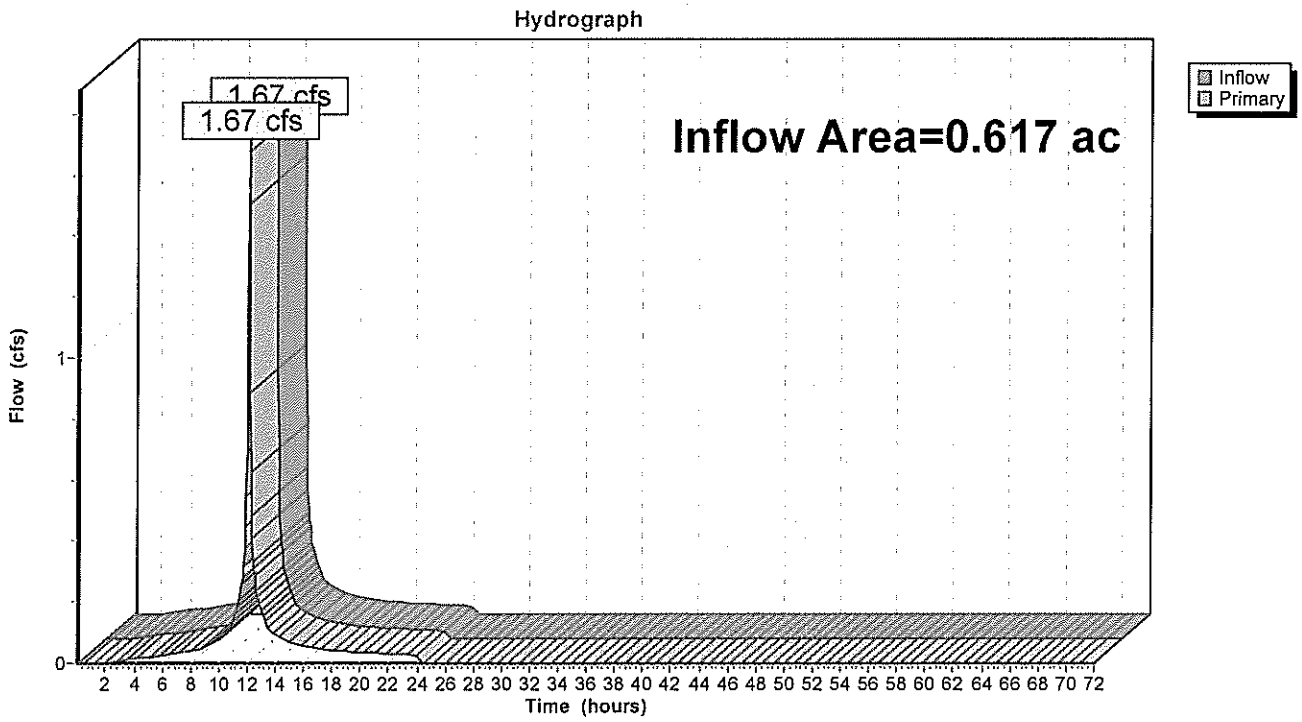


Summary for Link POA-B: Existing Qpeak Onsite To Existing Recharge Pits

Inflow Area = 0.617 ac, 97.10% Impervious, Inflow Depth = 2.68" for 2-Year event
Inflow = 1.67 cfs @ 12.11 hrs, Volume= 0.138 af
Primary = 1.67 cfs @ 12.11 hrs, Volume= 0.138 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link POA-B: Existing Qpeak Onsite To Existing Recharge Pits

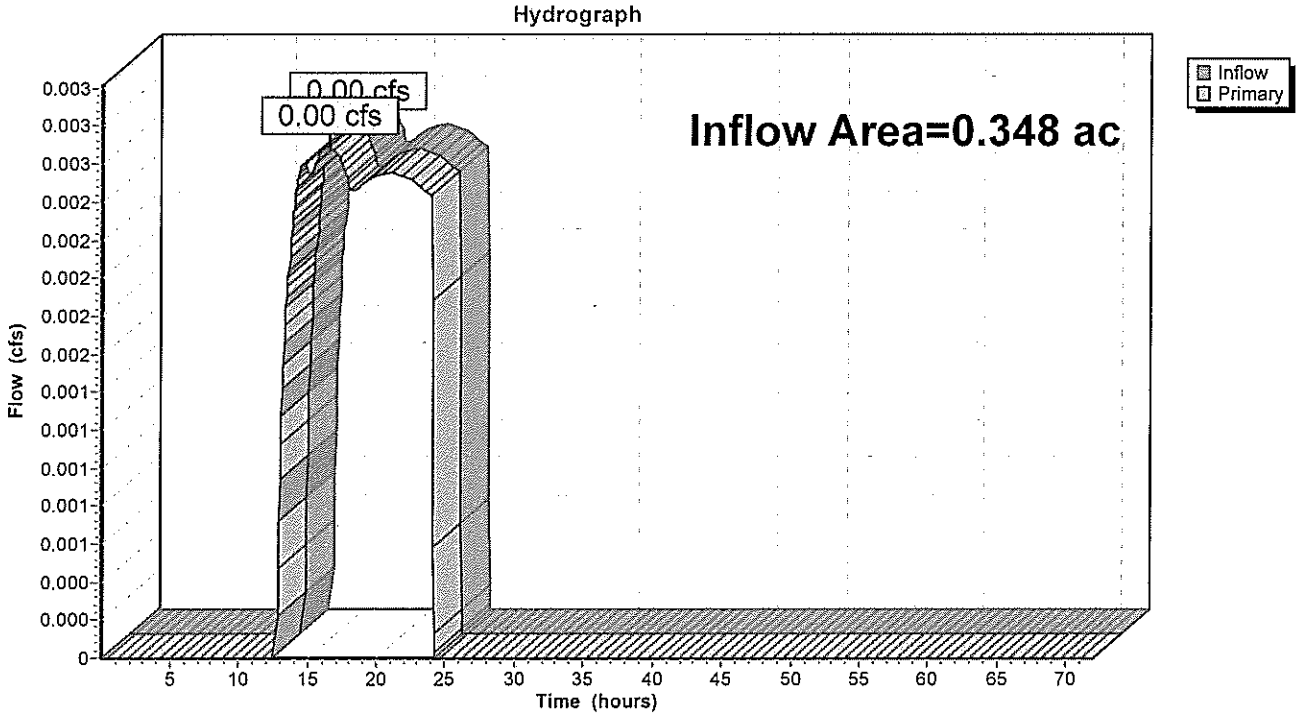


Summary for Link POA-C: Existing Qpeak Offsite To East

Inflow Area = 0.348 ac, 0.00% Impervious, Inflow Depth = 0.08" for 2-Year event
Inflow = 0.00 cfs @ 16.46 hrs, Volume= 0.002 af
Primary = 0.00 cfs @ 16.46 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link POA-C: Existing Qpeak Offsite To East

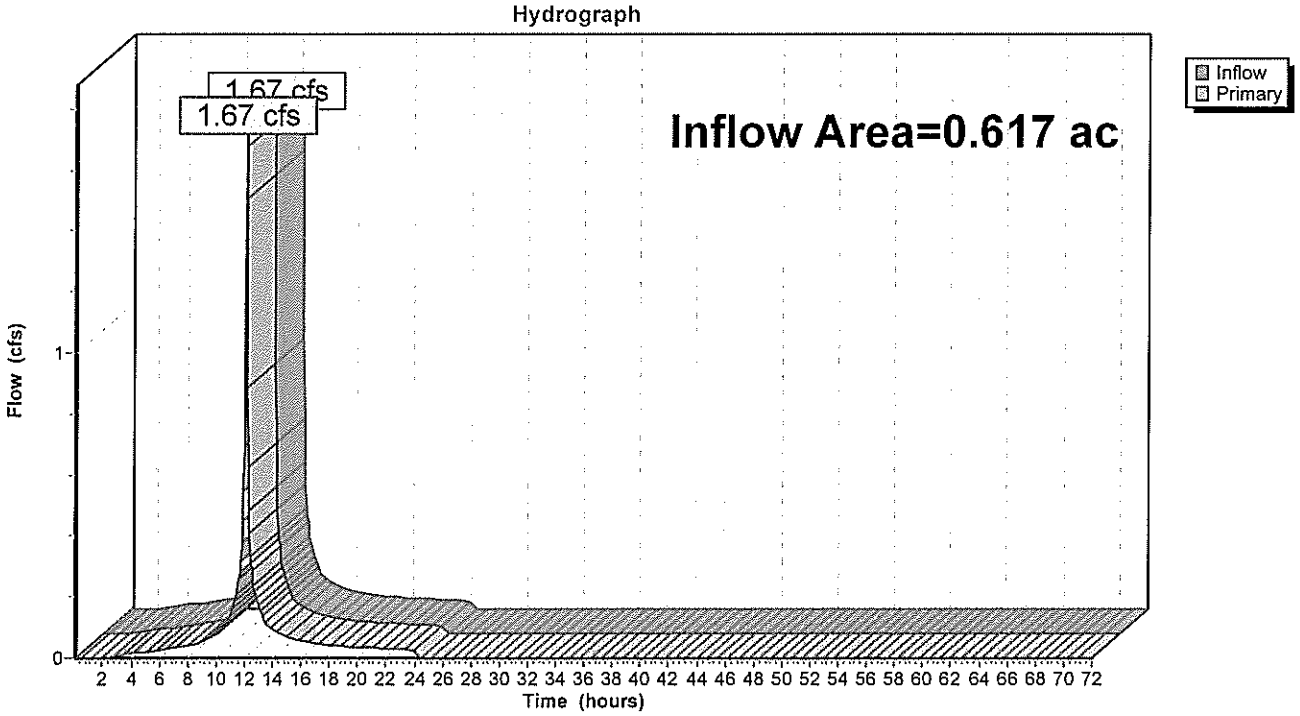


Summary for Link POA-P-B: Proposed Qpeak Onsite To Existing Recharge Pits

Inflow Area = 0.617 ac, 97.10% Impervious, Inflow Depth = 2.68" for 2-Year event
Inflow = 1.67 cfs @ 12.11 hrs, Volume= 0.138 af
Primary = 1.67 cfs @ 12.11 hrs, Volume= 0.138 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link POA-P-B: Proposed Qpeak Onsite To Existing Recharge Pits

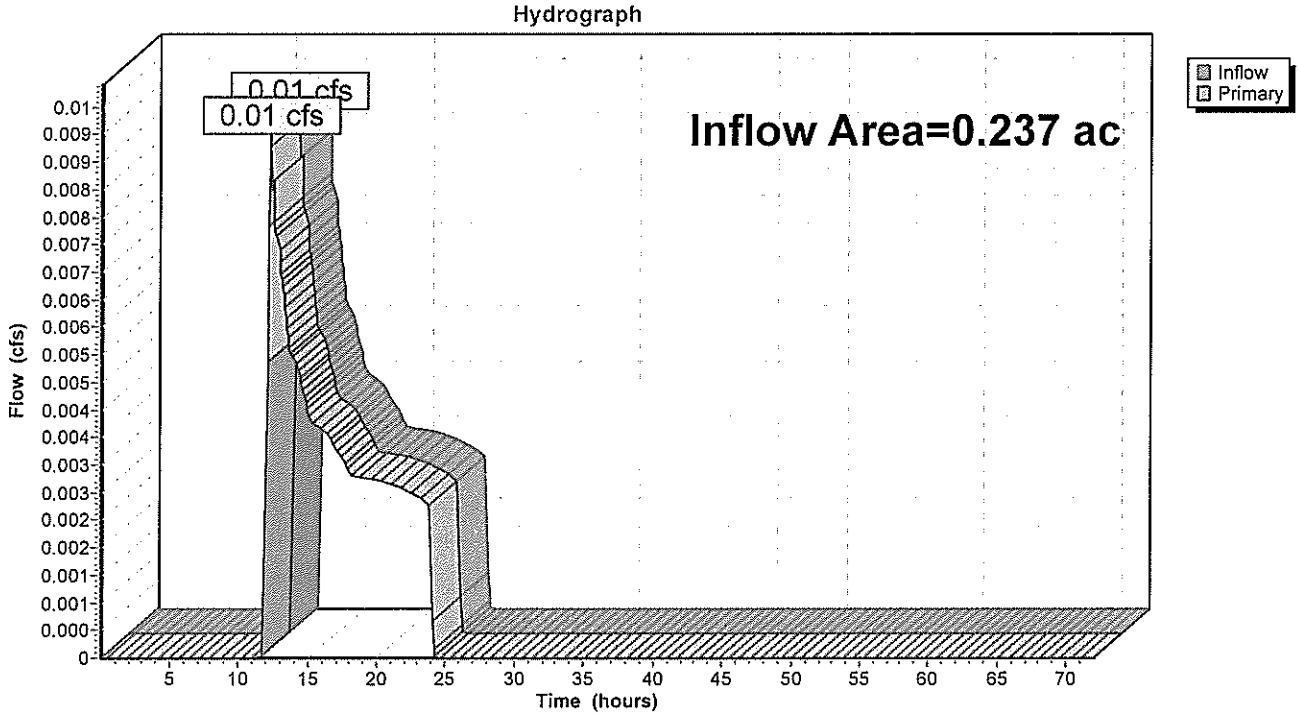


Summary for Link POA-P-C: Proposed Qpeak Offsite to the East

Inflow Area = 0.237 ac, 11.77% Impervious, Inflow Depth = 0.20" for 2-Year event
Inflow = 0.01 cfs @ 12.33 hrs, Volume= 0.004 af
Primary = 0.01 cfs @ 12.33 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link POA-P-C: Proposed Qpeak Offsite to the East



Time span=0.10-72.00 hrs, dt=0.05 hrs, 1439 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 E-WS-A: Existing Runoff Area=63,338 sf 82.59% Impervious Runoff Depth=3.37"
Tc=5.0 min CN=88 Runoff=5.25 cfs 0.408 af

Subcatchment E-WS-B: Existing Runoff Area=26,870 sf 97.10% Impervious Runoff Depth=4.21"
Tc=5.0 min CN=96 Runoff=2.56 cfs 0.217 af

Subcatchment E-WS-C: Existing Conditions Runoff Area=15,172 sf 0.00% Impervious Runoff Depth=0.47"
Tc=5.0 min CN=48 Runoff=0.09 cfs 0.014 af

Subcatchment P-WS-A1.1: Proposed Runoff Area=38,666 sf 68.48% Impervious Runoff Depth=2.53"
Tc=5.0 min CN=79 Runoff=2.48 cfs 0.187 af

Subcatchment P-WS-A1.2: Proposed Runoff Area=17,750 sf 100.00% Impervious Runoff Depth=4.44"
Tc=5.0 min CN=98 Runoff=1.72 cfs 0.151 af

Subcatchment P-WS-A2: Proposed Runoff Area=11,297 sf 100.00% Impervious Runoff Depth=4.44"
Tc=5.0 min CN=98 Runoff=1.10 cfs 0.096 af

Subcatchment P-WS-B: Proposed Runoff Area=26,870 sf 97.10% Impervious Runoff Depth=4.21"
Tc=5.0 min CN=96 Runoff=2.56 cfs 0.217 af

Subcatchment P-WS-C: Proposed Runoff Area=10,329 sf 11.77% Impervious Runoff Depth=0.77"
Tc=5.0 min CN=54 Runoff=0.16 cfs 0.015 af

Reach R-A1.2: Roof Drain Leader Avg. Flow Depth=0.40' Max Vel=5.79 fps Inflow=1.72 cfs 0.151 af
12.0" Round Pipe n=0.010 L=32.0' S=0.0119 '/' Capacity=5.05 cfs Outflow=1.70 cfs 0.151 af

Pond CB-A1: Catch Basin A1 Peak Elev=414.02' Inflow=2.48 cfs 0.187 af
12.0" Round Culvert n=0.010 L=3.0' S=0.0333 '/' Outflow=2.48 cfs 0.187 af

Pond CB-A2: Catch Basin A2 Peak Elev=413.60' Inflow=1.10 cfs 0.096 af
12.0" Round Culvert n=0.010 L=5.0' S=0.0200 '/' Outflow=1.10 cfs 0.096 af

Pond DB-A1: Distribution Box 1 Peak Elev=413.30' Inflow=4.19 cfs 0.338 af
12.0" Round Culvert x 3.00 n=0.010 L=5.0' S=0.0000 '/' Outflow=4.19 cfs 0.338 af

Pond DB-A2: Distribution Box 2 Peak Elev=412.88' Inflow=1.10 cfs 0.096 af
12.0" Round Culvert x 3.00 n=0.010 L=3.0' S=0.0000 '/' Outflow=1.10 cfs 0.096 af

Pond RT: Recharge Trench Peak Elev=409.86' Storage=2,459 cf Inflow=5.28 cfs 0.434 af
Outflow=1.53 cfs 0.434 af

Pond WQU-2A: Storm Filter 330 Peak Elev=413.31' Inflow=1.10 cfs 0.096 af
12.0" Round Culvert n=0.010 L=10.0' S=0.0100 '/' Outflow=1.10 cfs 0.096 af

Pond WQU-A1: Storm Filter 330 Peak Elev=413.72' Inflow=2.48 cfs 0.187 af
12.0" Round Culvert n=0.010 L=3.0' S=0.0333 '/' Outflow=2.48 cfs 0.187 af

Link POA-A: Existing Qpeak Offsite to the North Inflow=5.25 cfs 0.408 af
Primary=5.25 cfs 0.408 af

Link POA-B: Existing Qpeak Onsite To Existing Recharge Pits Inflow=2.56 cfs 0.217 af
Primary=2.56 cfs 0.217 af

Link POA-C: Existing Qpeak Offsite To East Inflow=0.09 cfs 0.014 af
Primary=0.09 cfs 0.014 af

Link POA-P-B: Proposed Qpeak Onsite To Existing Recharge Pits Inflow=2.56 cfs 0.217 af
Primary=2.56 cfs 0.217 af

Link POA-P-C: Proposed Qpeak Offsite to the East Inflow=0.16 cfs 0.015 af
Primary=0.16 cfs 0.015 af

Total Runoff Area = 4.828 ac Runoff Volume = 1.304 af Average Runoff Depth = 3.24"
23.33% Pervious = 1.126 ac 76.67% Impervious = 3.701 ac

Summary for Subcatchment E-WS-A: Existing Conditions - Offsite To North

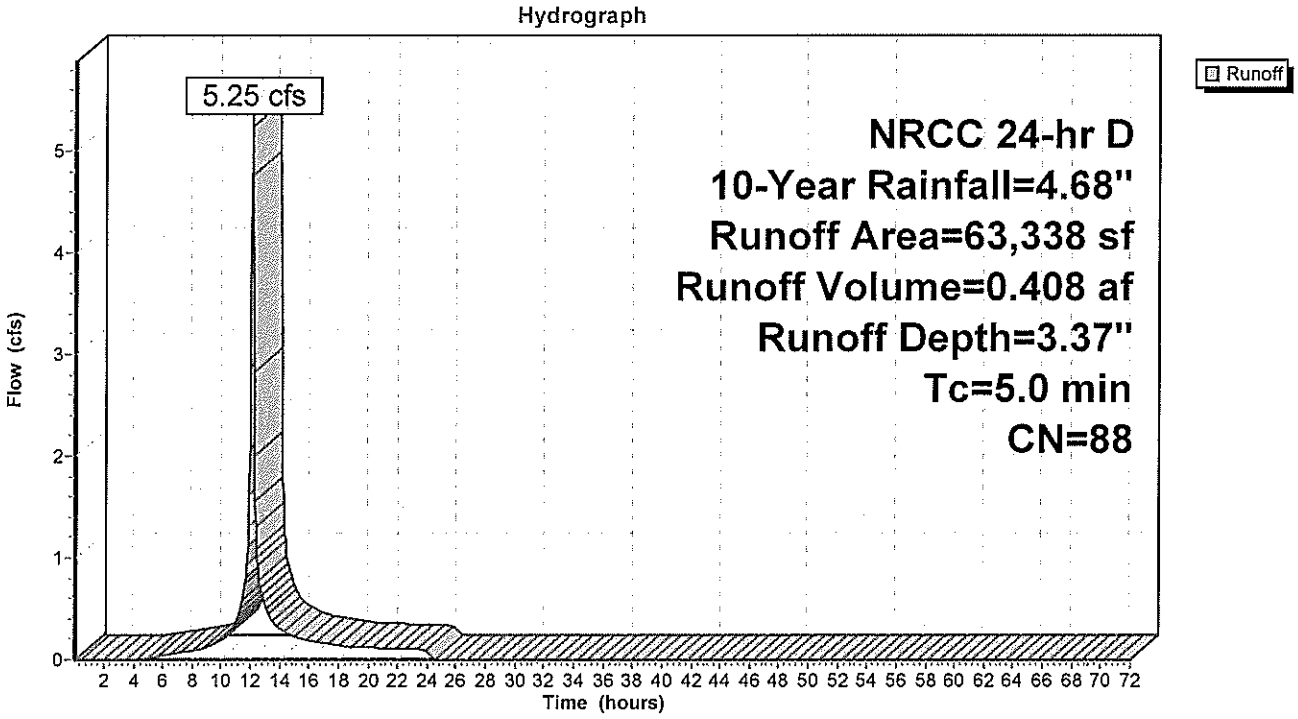
Runoff = 5.25 cfs @ 12.11 hrs, Volume= 0.408 af, Depth= 3.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.68"

	Area (sf)	CN	Description
*	52,309	98	Impervious drive & rroof
	11,029	39	>75% Grass cover, Good, HSG A
	63,338	88	Weighted Average
	11,029		17.41% Pervious Area
	52,309		82.59% Impervious Area

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

Subcatchment E-WS-A: Existing Conditions - Offsite To North



Summary for Subcatchment E-WS-B: Existing Conditions - To Onsite Existing Recharge Pits

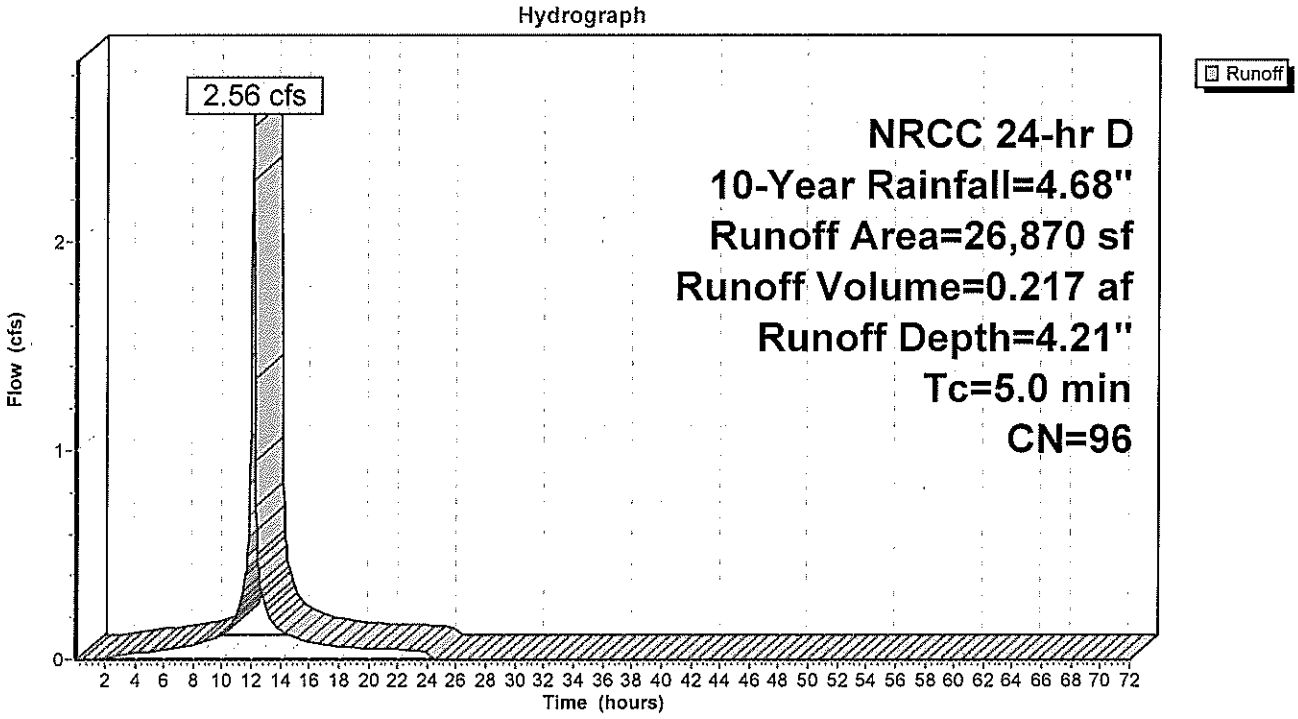
Runoff = 2.56 cfs @ 12.11 hrs, Volume= 0.217 af, Depth= 4.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.68"

	Area (sf)	CN	Description
*	26,090	98	Impervious drive & rroof
	780	39	>75% Grass cover, Good, HSG A
	26,870	96	Weighted Average
	780		2.90% Pervious Area
	26,090		97.10% Impervious Area

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

Subcatchment E-WS-B: Existing Conditions - To Onsite Existing Recharge Pits



Summary for Subcatchment E-WS-C: Existing Conditions Watershed C - Offsite To East

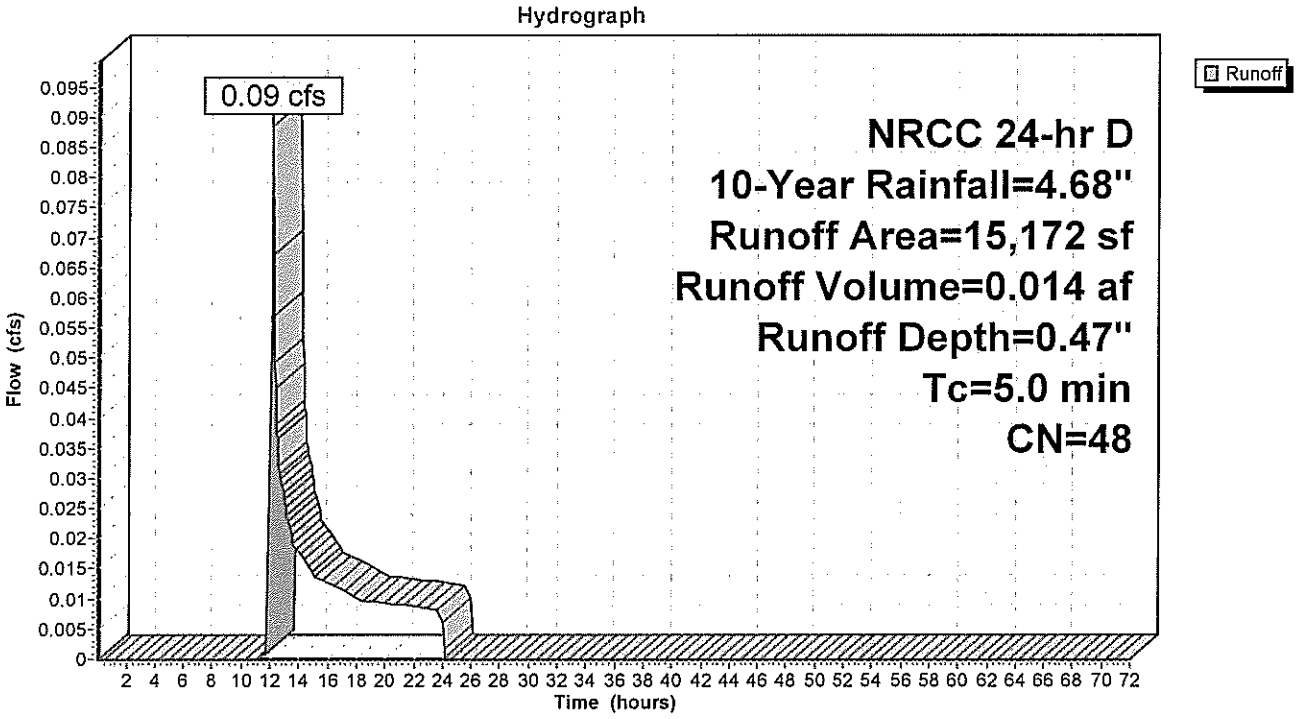
Runoff = 0.09 cfs @ 12.15 hrs, Volume= 0.014 af, Depth= 0.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.68"

Area (sf)	CN	Description
15,172	48	Brush, Poor, HSG A
15,172		100.00% Pervious Area

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

Subcatchment E-WS-C: Existing Conditions Watershed C - Offsite To East



ummary for Subcatchment P-WS-A1.1: Proposed Sub-Watershed A1.1 - East Section To Catch Basi

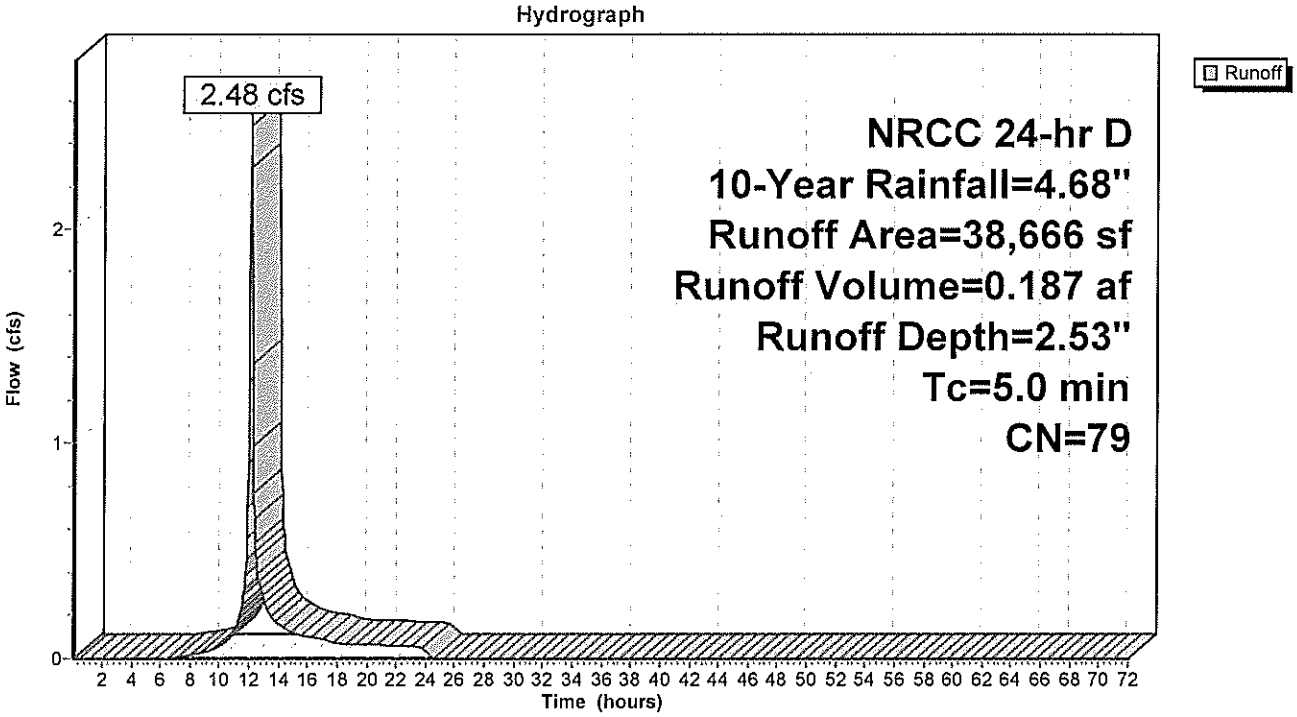
Runoff = 2.48 cfs @ 12.12 hrs, Volume= 0.187 af, Depth= 2.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.68"

Area (sf)	CN	Description
26,480	98	Paved parking, HSG A
12,186	39	>75% Grass cover, Good, HSG A
38,666	79	Weighted Average
12,186		31.52% Pervious Area
26,480		68.48% Impervious Area

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

Subcatchment P-WS-A1.1: Proposed Sub-Watershed A1.1 - East Section To Catch Basin A1



ımmary for Subcatchment P-WS-A1.2: Proposed Sub-Watershed A1.2 - Building Roof to Distributior

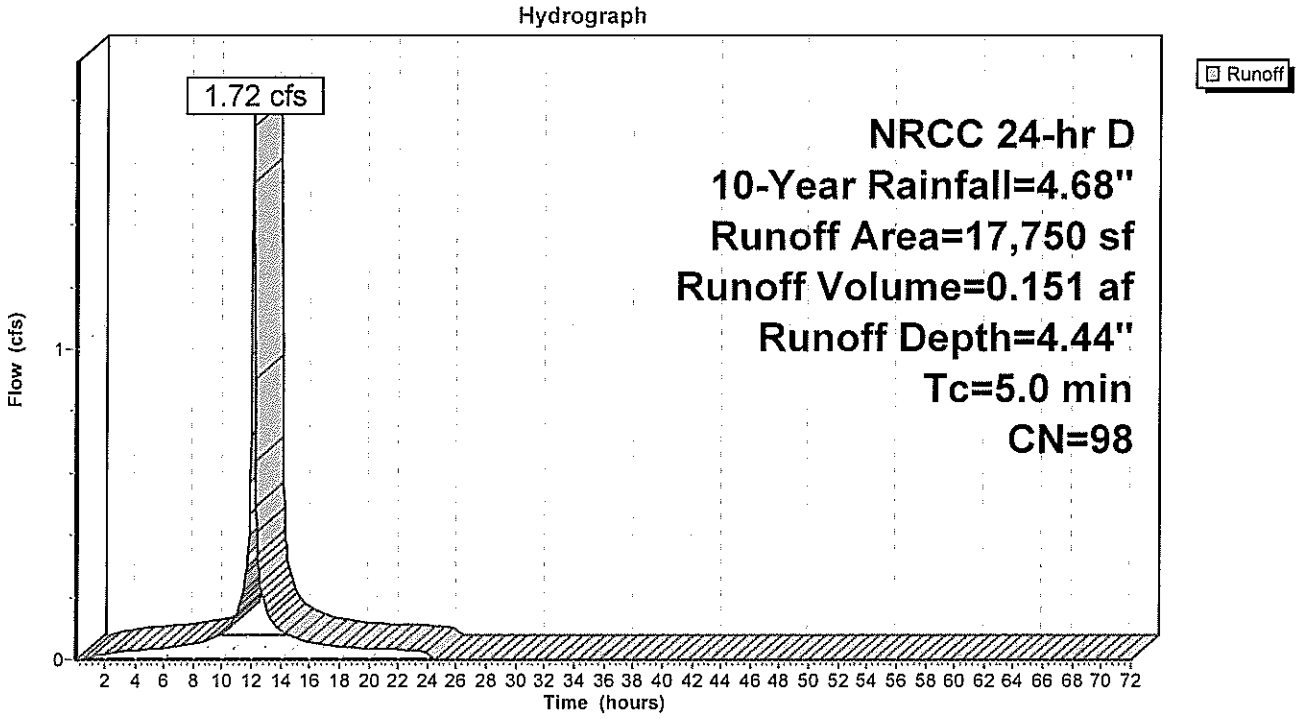
Runoff = 1.72 cfs @ 12.11 hrs, Volume= 0.151 af, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.68"

	Area (sf)	CN	Description
*	17,750	98	Roof
	17,750		100.00% Impervious Area

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

Subcatchment P-WS-A1.2: Proposed Sub-Watershed A1.2 - Building Roof to Distribution Box



ummary for Subcatchment P-WS-A2: Proposed Sub-Watershed A2 - West Section To Infiltration Tre

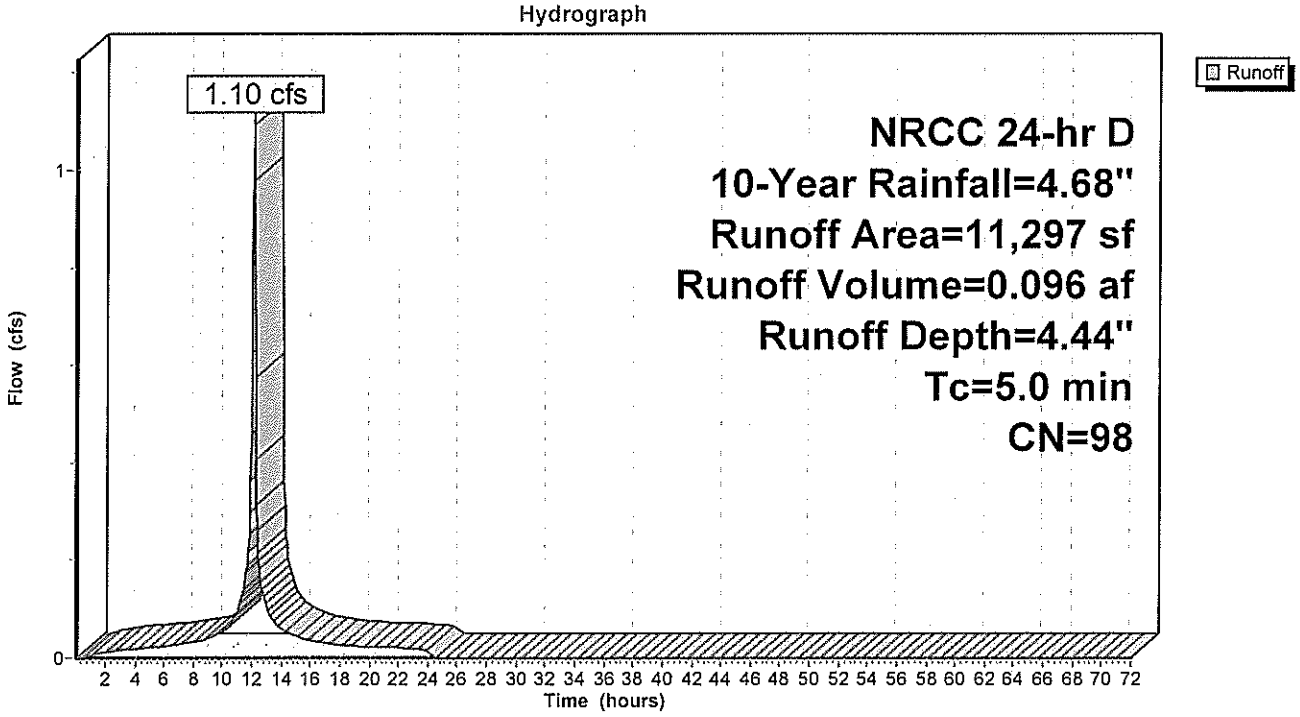
Runoff = 1.10 cfs @ 12.11 hrs, Volume= 0.096 af, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.68"

Area (sf)	CN	Description
11,297	98	Paved parking, HSG A
11,297		100.00% Impervious Area

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

Subcatchment P-WS-A2: Proposed Sub-Watershed A2 - West Section To Infiltration Trench



Summary for Subcatchment P-WS-B: Proposed Conditions - To Onsite Existing Recharge Pits

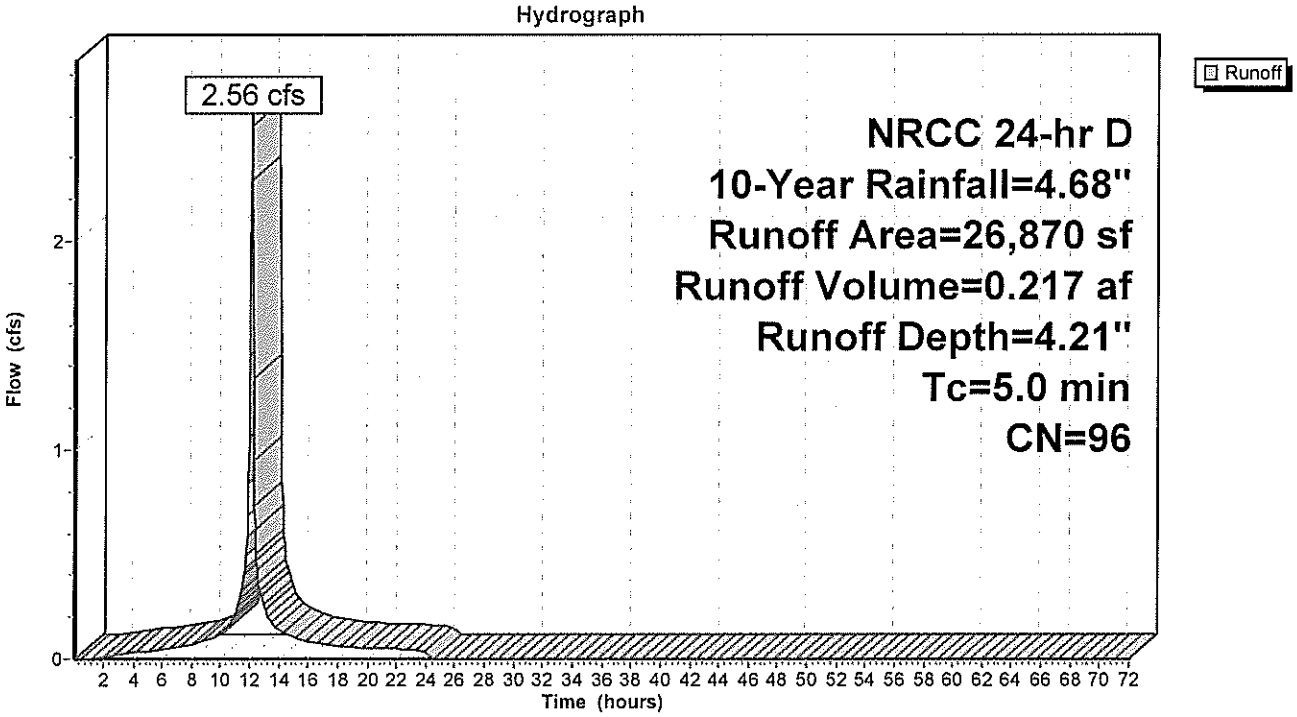
Runoff = 2.56 cfs @ 12.11 hrs, Volume= 0.217 af, Depth= 4.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.68"

	Area (sf)	CN	Description
*	26,090	98	Impervious drive & rroof
	780	39	>75% Grass cover, Good, HSG A
	26,870	96	Weighted Average
	780		2.90% Pervious Area
	26,090		97.10% Impervious Area

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

Subcatchment P-WS-B: Proposed Conditions - To Onsite Existing Recharge Pits



Summary for Subcatchment P-WS-C: Proposed Conditions Watershed C - Offsite to East

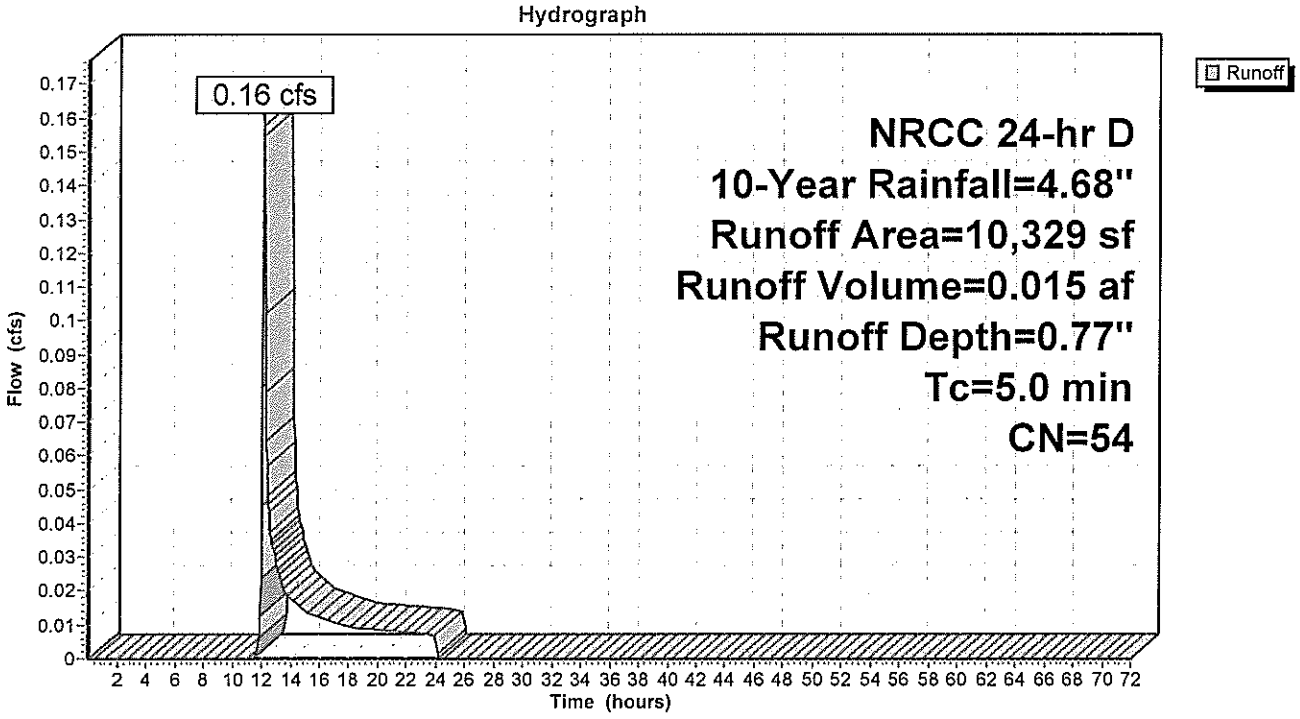
Runoff = 0.16 cfs @ 12.13 hrs, Volume= 0.015 af, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.68"

Area (sf)	CN	Description
9,113	48	Brush, Poor, HSG A
1,216	98	Paved parking, HSG A
10,329	54	Weighted Average
9,113		88.23% Pervious Area
1,216		11.77% Impervious Area

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

Subcatchment P-WS-C: Proposed Conditions Watershed C - Offsite to East



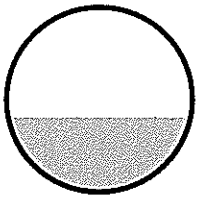
Summary for Reach R-A1.2: Roof Drain Leader

Inflow Area = 0.407 ac,100.00% Impervious, Inflow Depth = 4.44" for 10-Year event
Inflow = 1.72 cfs @ 12.11 hrs, Volume= 0.151 af
Outflow = 1.70 cfs @ 12.11 hrs, Volume= 0.151 af, Atten= 1%, Lag= 0.2 min

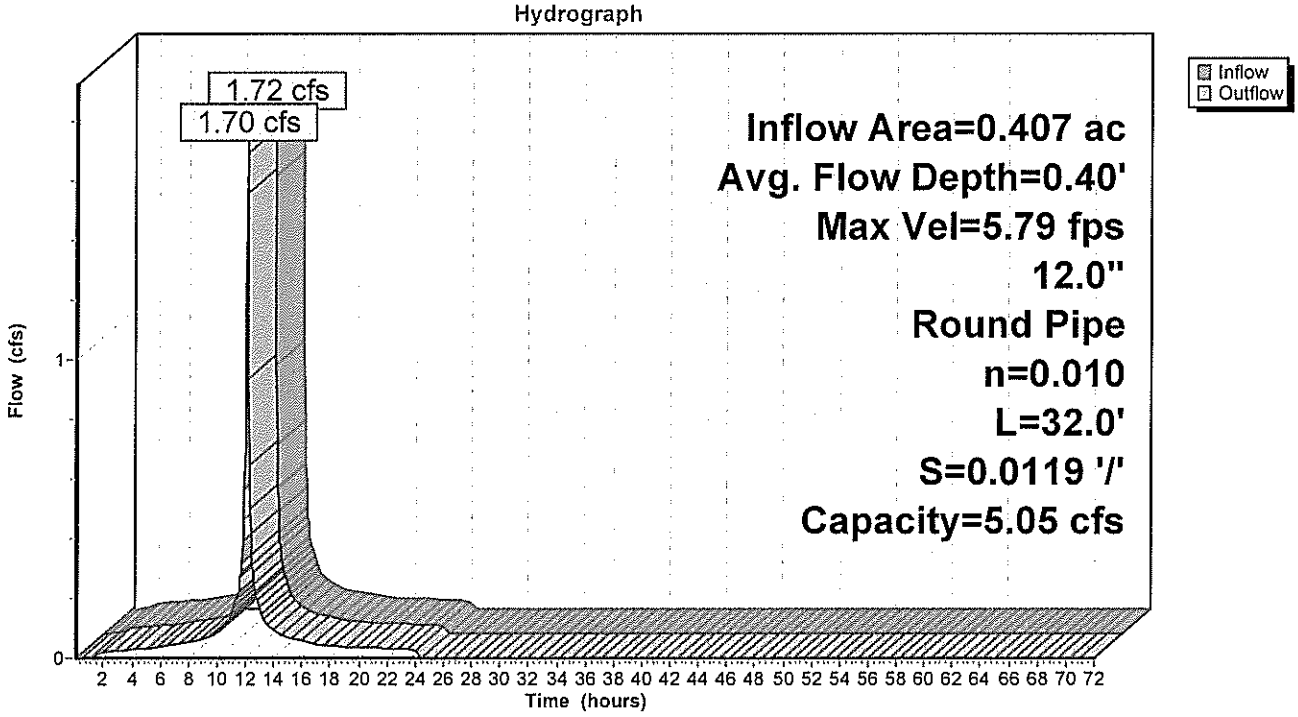
Routing by Stor-Ind+Trans method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.79 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.08 fps, Avg. Travel Time= 0.3 min

Peak Storage= 9 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.40' , Surface Width= 0.98'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.05 cfs

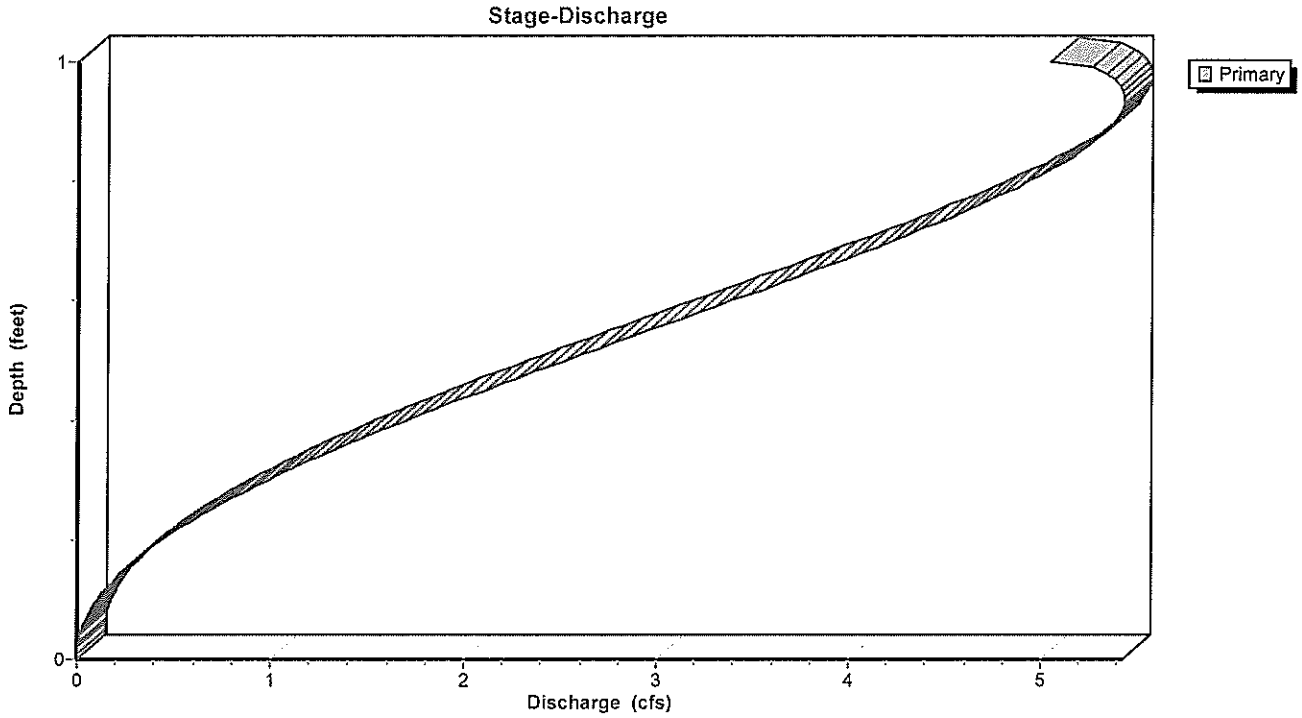
12.0" Round Pipe
n= 0.010
Length= 32.0' Slope= 0.0119 '/'
Inlet Invert= 412.88', Outlet Invert= 412.50'



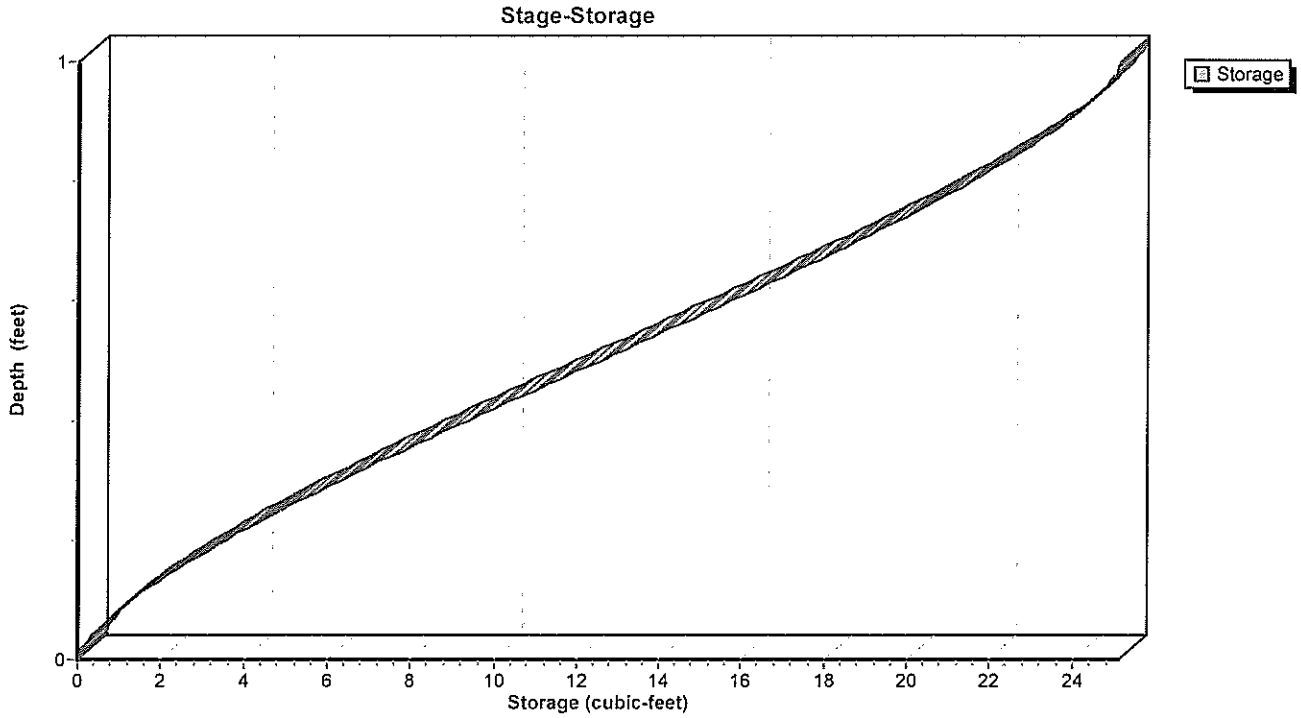
Reach R-A1.2: Roof Drain Leader



Reach R-A1.2: Roof Drain Leader



Reach R-A1.2: Roof Drain Leader



Summary for Pond CB-A1: Catch Basin A1

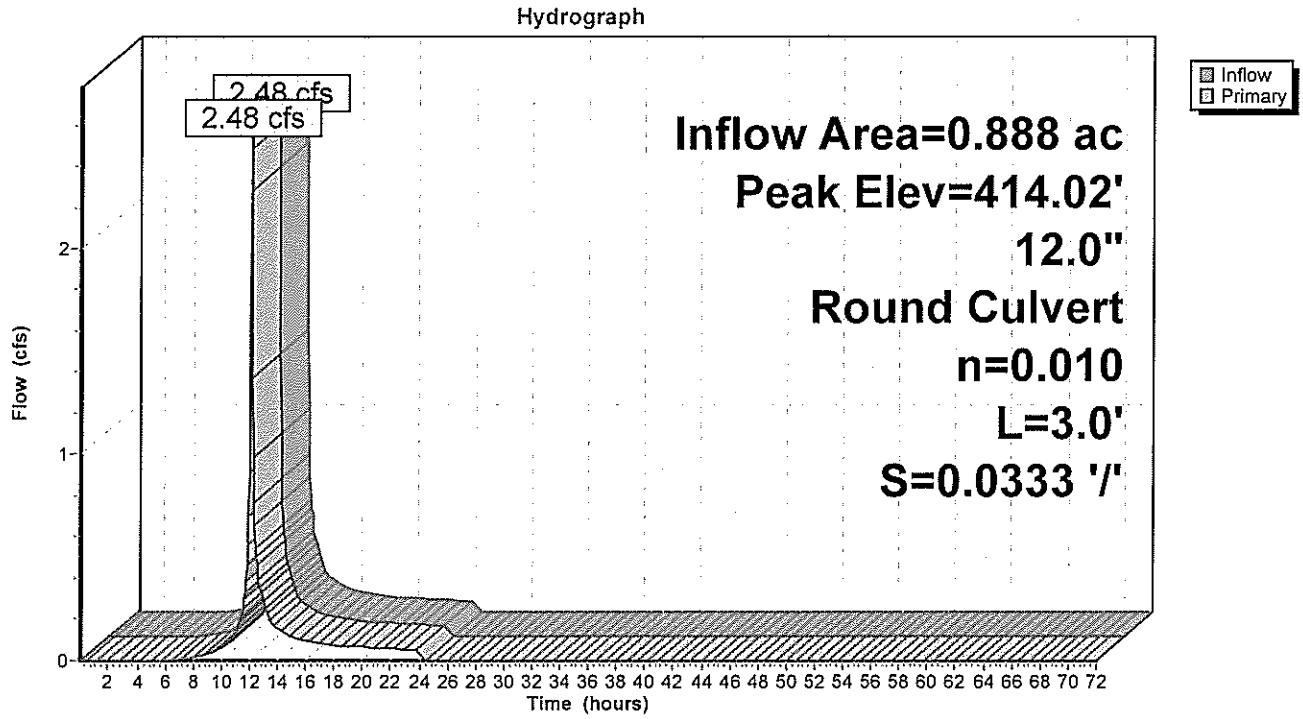
Inflow Area =	0.888 ac, 68.48% Impervious, Inflow Depth = 2.53" for 10-Year event				
Inflow =	2.48 cfs @ 12.12 hrs, Volume=	0.187 af			
Outflow =	2.48 cfs @ 12.12 hrs, Volume=	0.187 af, Atten= 0%, Lag= 0.0 min			
Primary =	2.48 cfs @ 12.12 hrs, Volume=	0.187 af			

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 414.02' @ 12.12 hrs

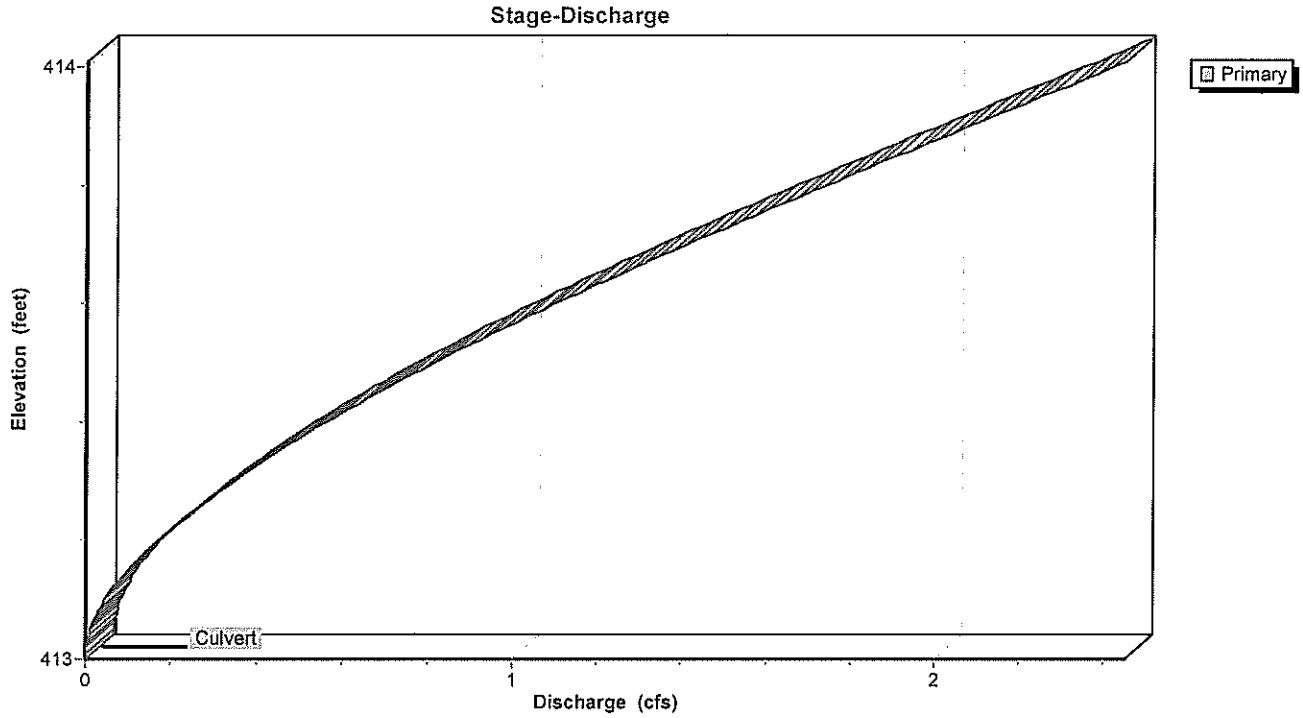
Device	Routing	Invert	Outlet Devices
#1	Primary	413.00'	**12.0" Round Culvert** L= 3.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 413.00' / 412.90' S= 0.0333 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=2.39 cfs @ 12.12 hrs HW=413.99' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.39 cfs @ 3.81 fps)

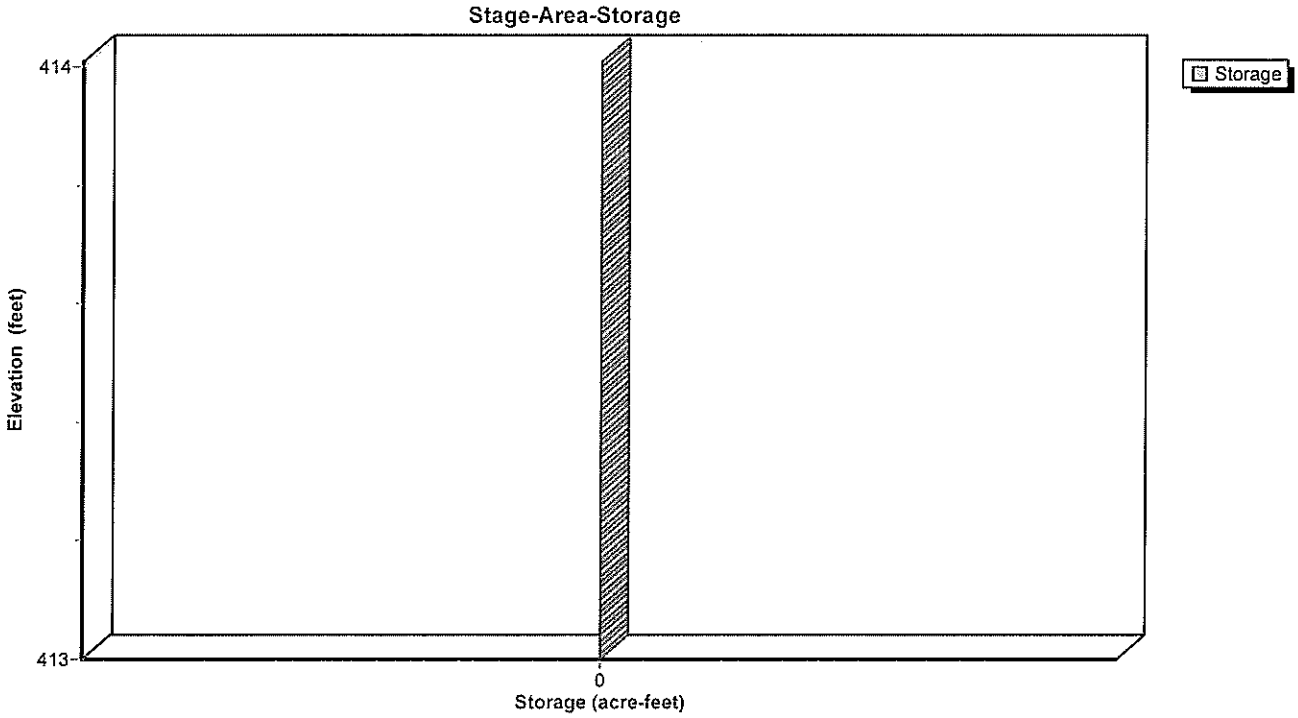
Pond CB-A1: Catch Basin A1



Pond CB-A1: Catch Basin A1



Pond CB-A1: Catch Basin A1



Summary for Pond CB-A2: Catch Basin A2

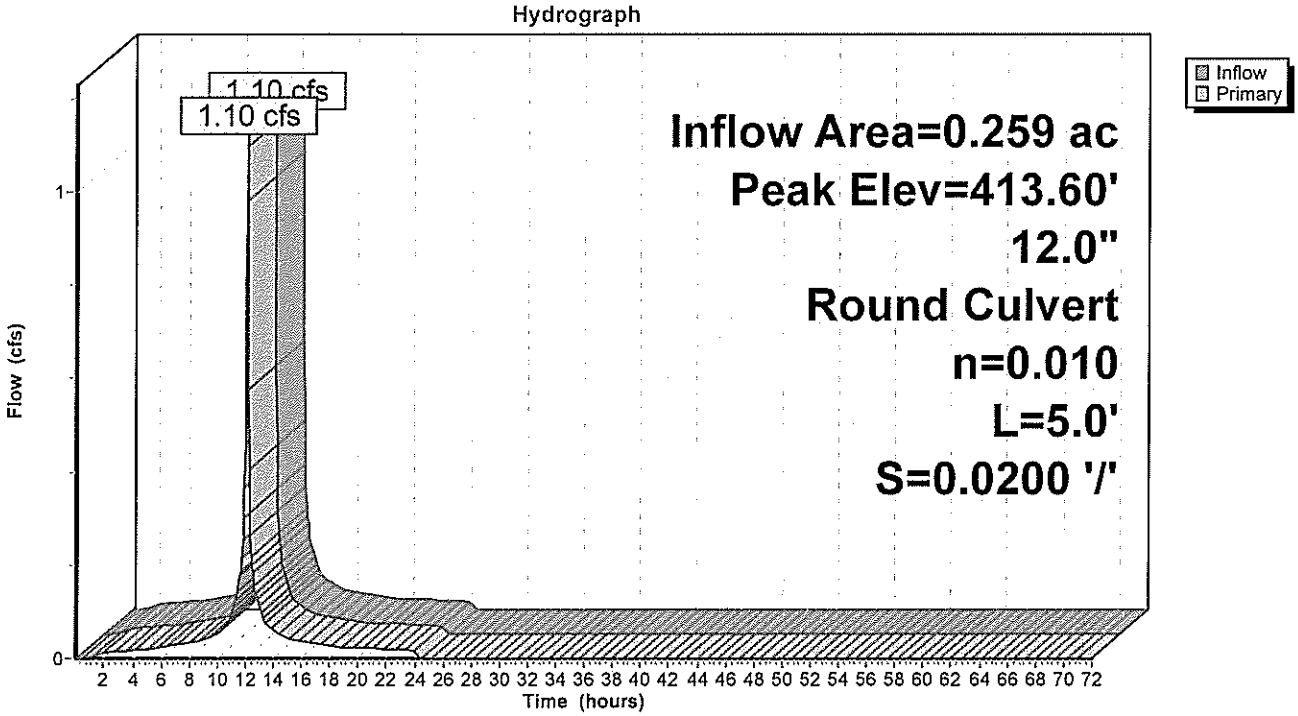
Inflow Area =	0.259 ac,100.00% Impervious, Inflow Depth = 4.44" for 10-Year event			
Inflow =	1.10 cfs @ 12.11 hrs, Volume=	0.096 af		
Outflow =	1.10 cfs @ 12.11 hrs, Volume=	0.096 af, Atten= 0%, Lag= 0.0 min		
Primary =	1.10 cfs @ 12.11 hrs, Volume=	0.096 af		

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 413.60' @ 12.11 hrs

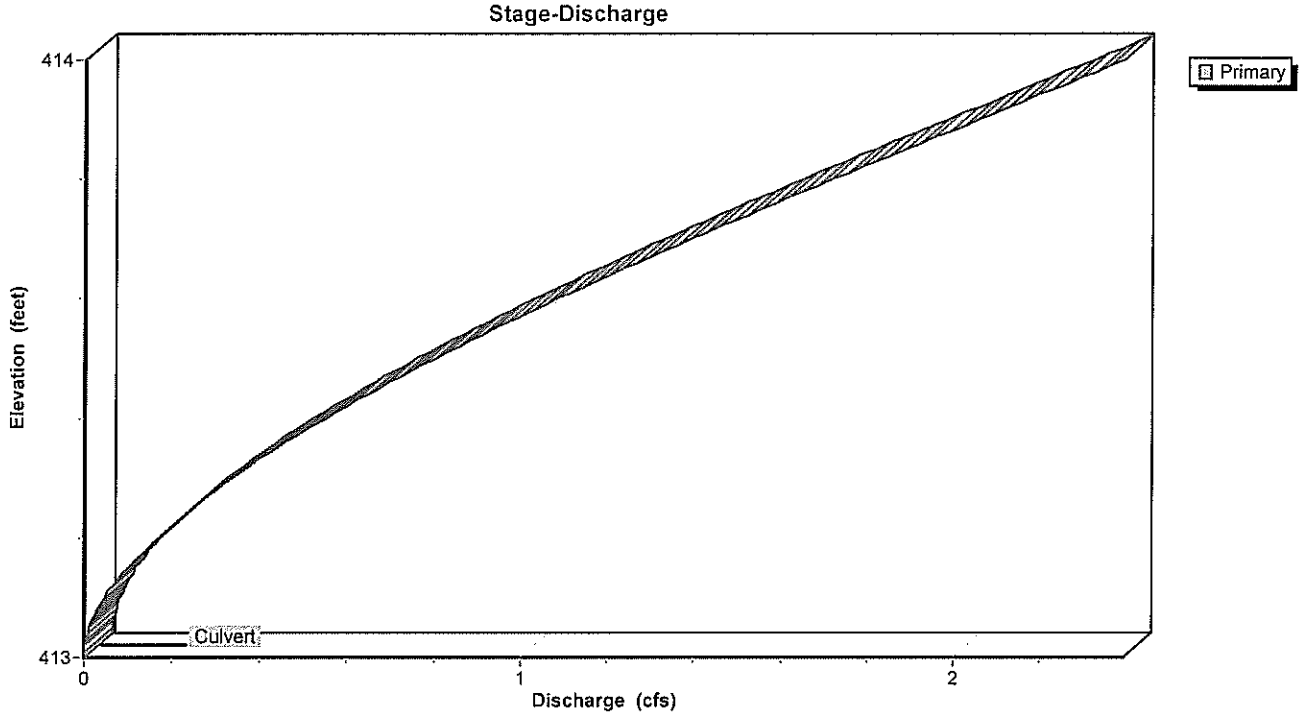
Device	Routing	Invert	Outlet Devices
#1	Primary	413.00'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 413.00' / 412.90' S= 0.0200 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=1.06 cfs @ 12.11 hrs HW=413.59' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.06 cfs @ 3.16 fps)

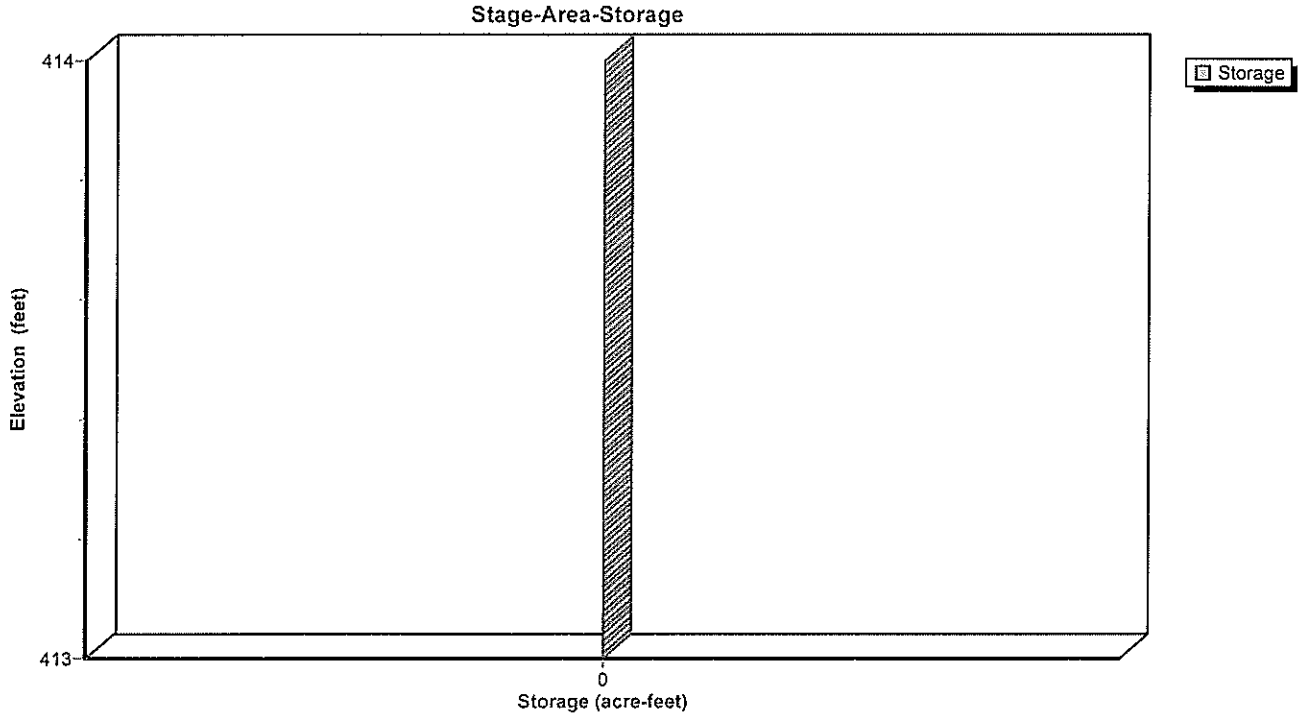
Pond CB-A2: Catch Basin A2



Pond CB-A2: Catch Basin A2



Pond CB-A2: Catch Basin A2



Summary for Pond DB-A1: Distribution Box 1

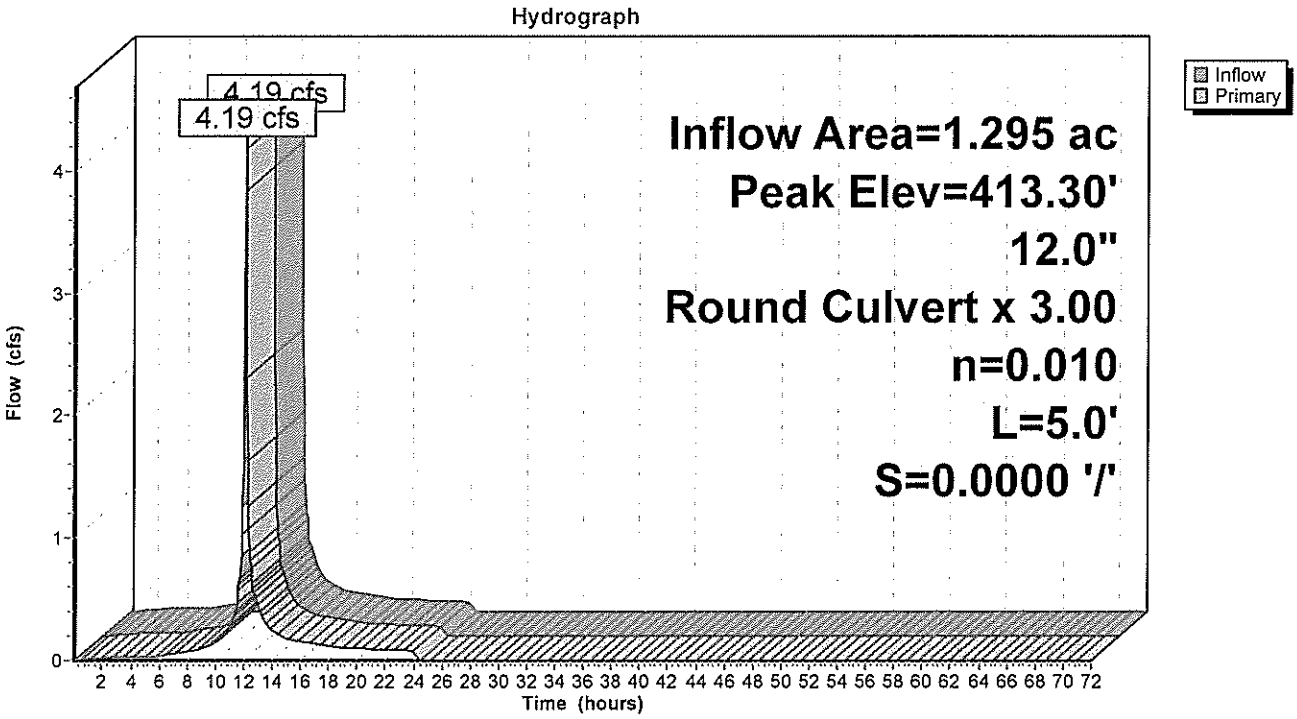
Inflow Area =	1.295 ac, 78.40% Impervious, Inflow Depth = 3.13" for 10-Year event				
Inflow =	4.19 cfs @ 12.12 hrs, Volume=	0.338 af			
Outflow =	4.19 cfs @ 12.12 hrs, Volume=	0.338 af, Atten= 0%, Lag= 0.0 min			
Primary =	4.19 cfs @ 12.12 hrs, Volume=	0.338 af			

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 413.30' @ 12.12 hrs

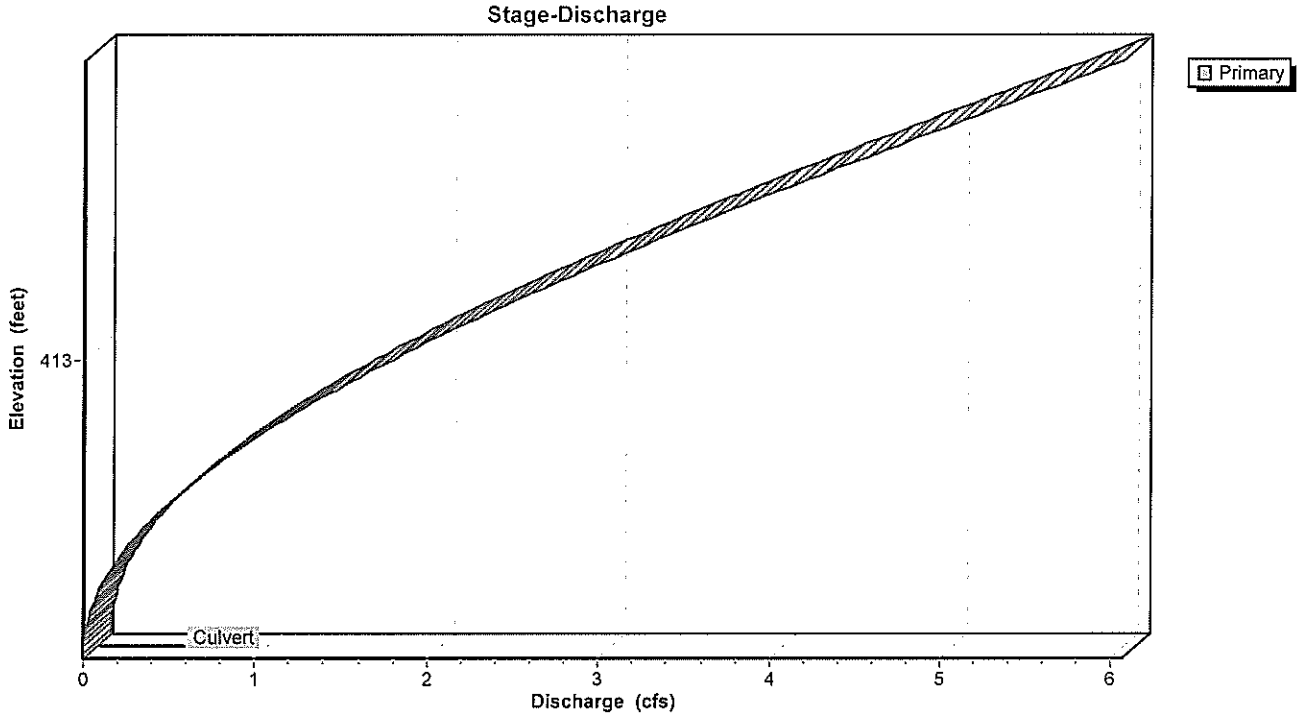
Device	Routing	Invert	Outlet Devices
#1	Primary	412.50'	**12.0" Round Culvert X 3.00** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 412.50' / 412.50' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=4.04 cfs @ 12.12 hrs HW=413.28' (Free Discharge)
└**1=Culvert** (Barrel Controls 4.04 cfs @ 2.82 fps)

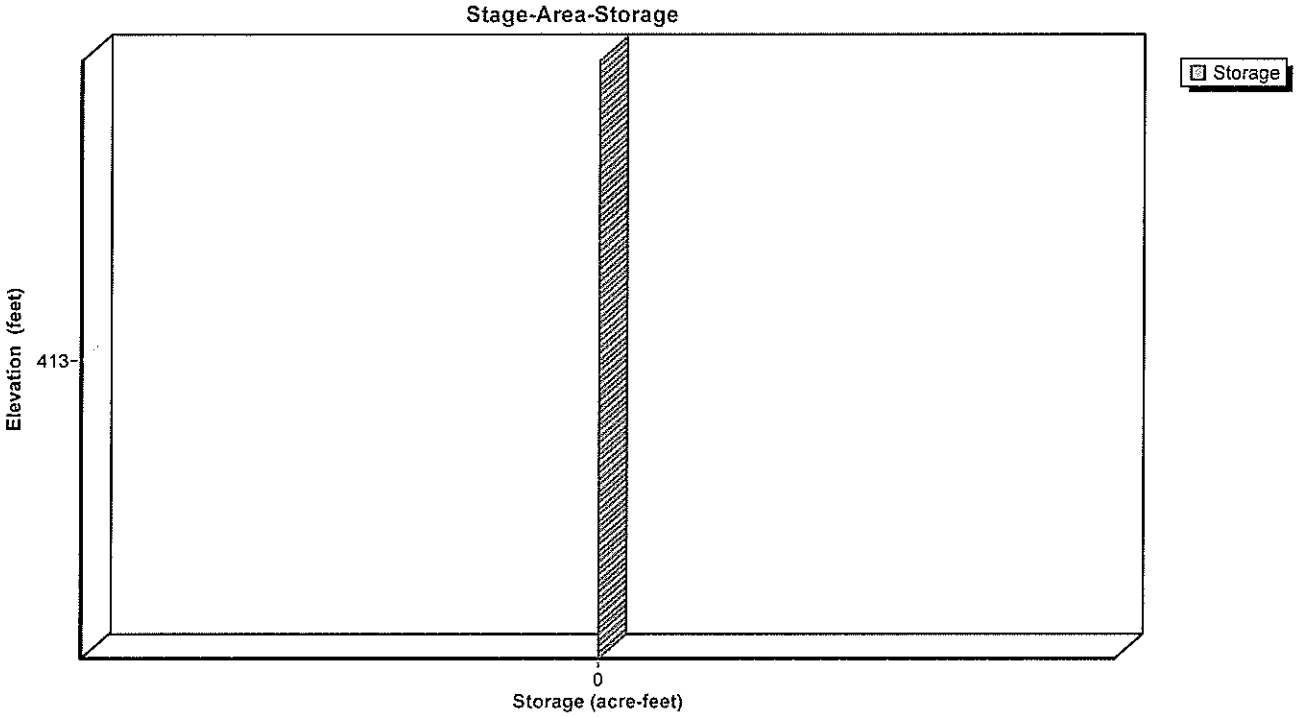
Pond DB-A1: Distribution Box 1



Pond DB-A1: Distribution Box 1



Pond DB-A1: Distribution Box 1



Summary for Pond DB-A2: Distribution Box 2

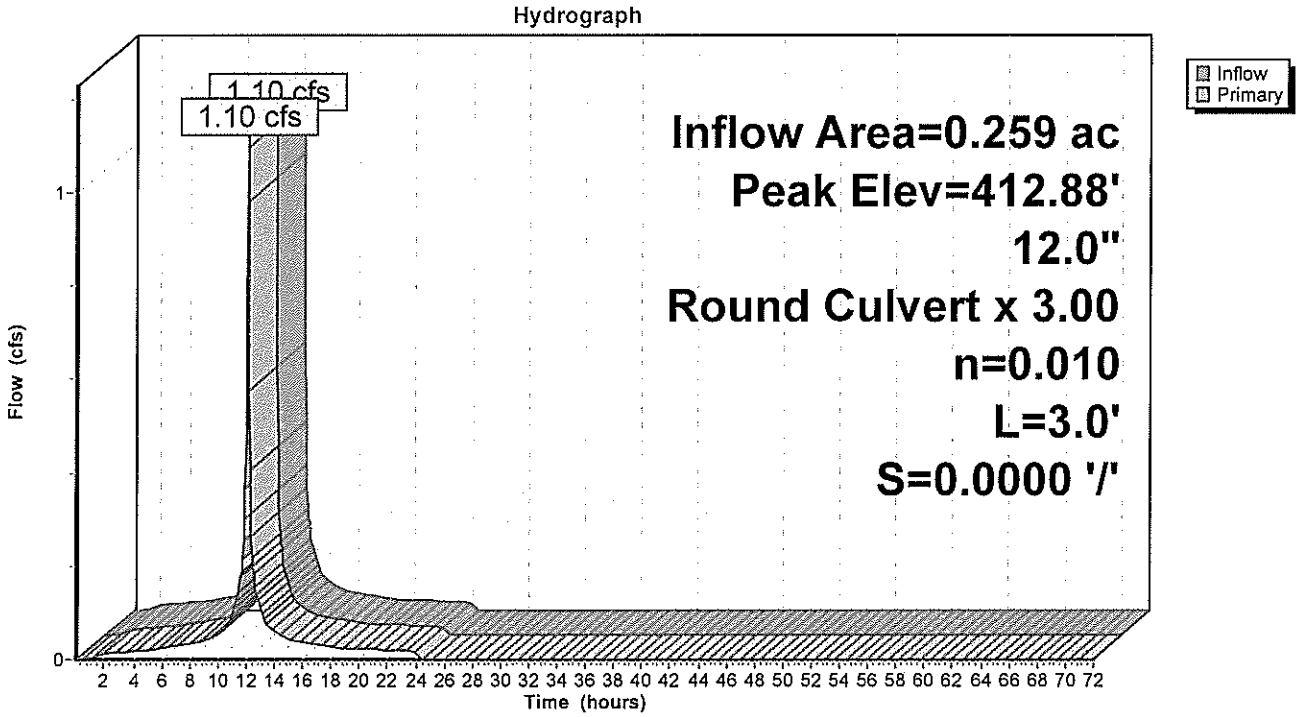
Inflow Area =	0.259 ac,100.00% Impervious, Inflow Depth = 4.44" for 10-Year event			
Inflow =	1.10 cfs @ 12.11 hrs, Volume=	0.096 af		
Outflow =	1.10 cfs @ 12.11 hrs, Volume=	0.096 af, Atten= 0%, Lag= 0.0 min		
Primary =	1.10 cfs @ 12.11 hrs, Volume=	0.096 af		

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 412.88' @ 12.11 hrs

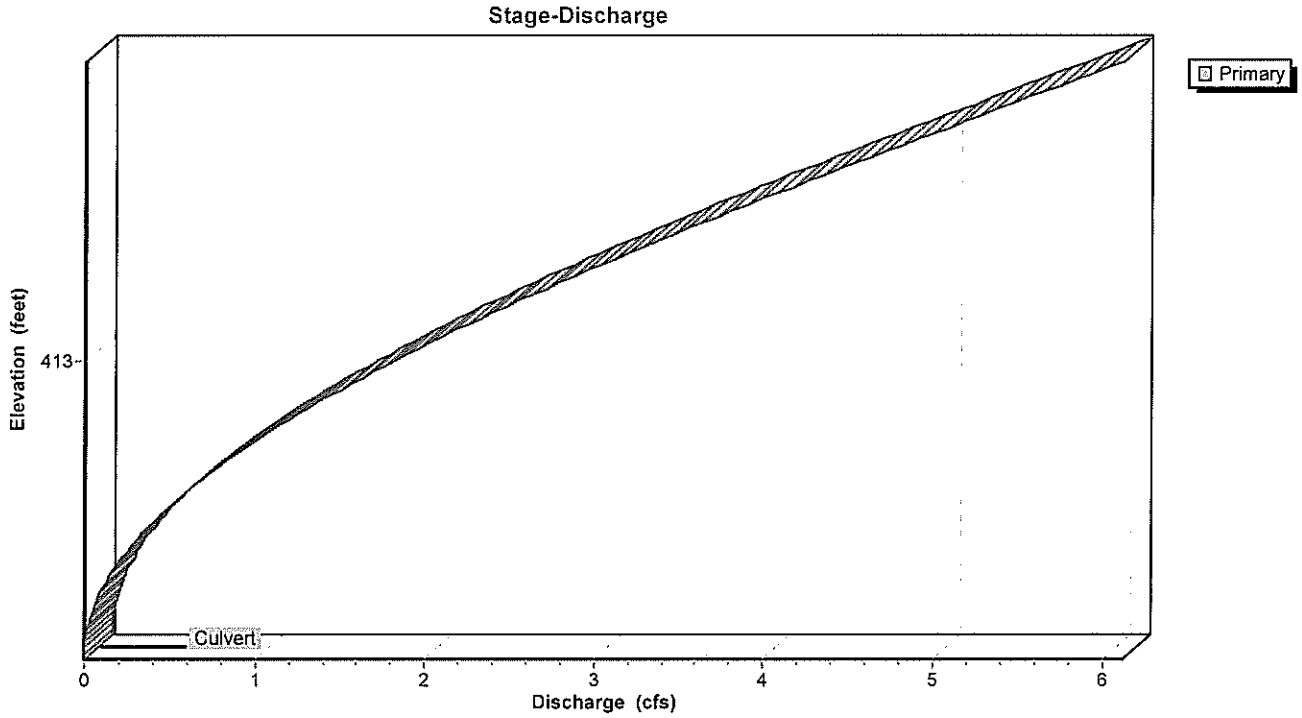
Device	Routing	Invert	Outlet Devices
#1	Primary	412.50'	**12.0" Round Culvert X 3.00** L= 3.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 412.50' / 412.50' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=1.06 cfs @ 12.11 hrs HW=412.88' (Free Discharge)
└─**1=Culvert** (Barrel Controls 1.06 cfs @ 1.95 fps)

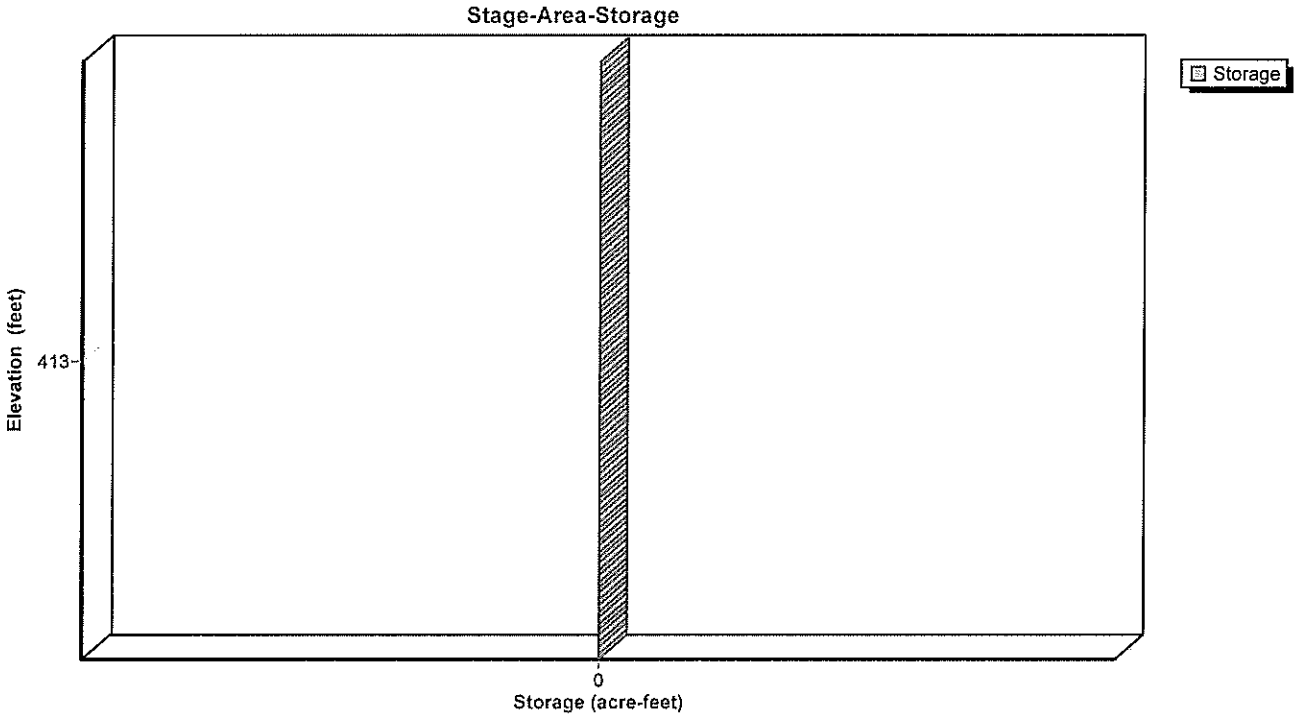
Pond DB-A2: Distribution Box 2



Pond DB-A2: Distribution Box 2



Pond DB-A2: Distribution Box 2



Summary for Pond RT: Recharge Trench

Inflow Area =	1.554 ac, 82.00% Impervious, Inflow Depth = 3.35" for 10-Year event			
Inflow =	5.28 cfs @ 12.11 hrs, Volume=	0.434 af		
Outflow =	1.53 cfs @ 11.95 hrs, Volume=	0.434 af, Atten= 71%, Lag= 0.0 min		
Discarded =	1.53 cfs @ 11.95 hrs, Volume=	0.434 af		

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 409.86' @ 12.32 hrs Surf.Area= 3,300 sf Storage= 2,459 cf

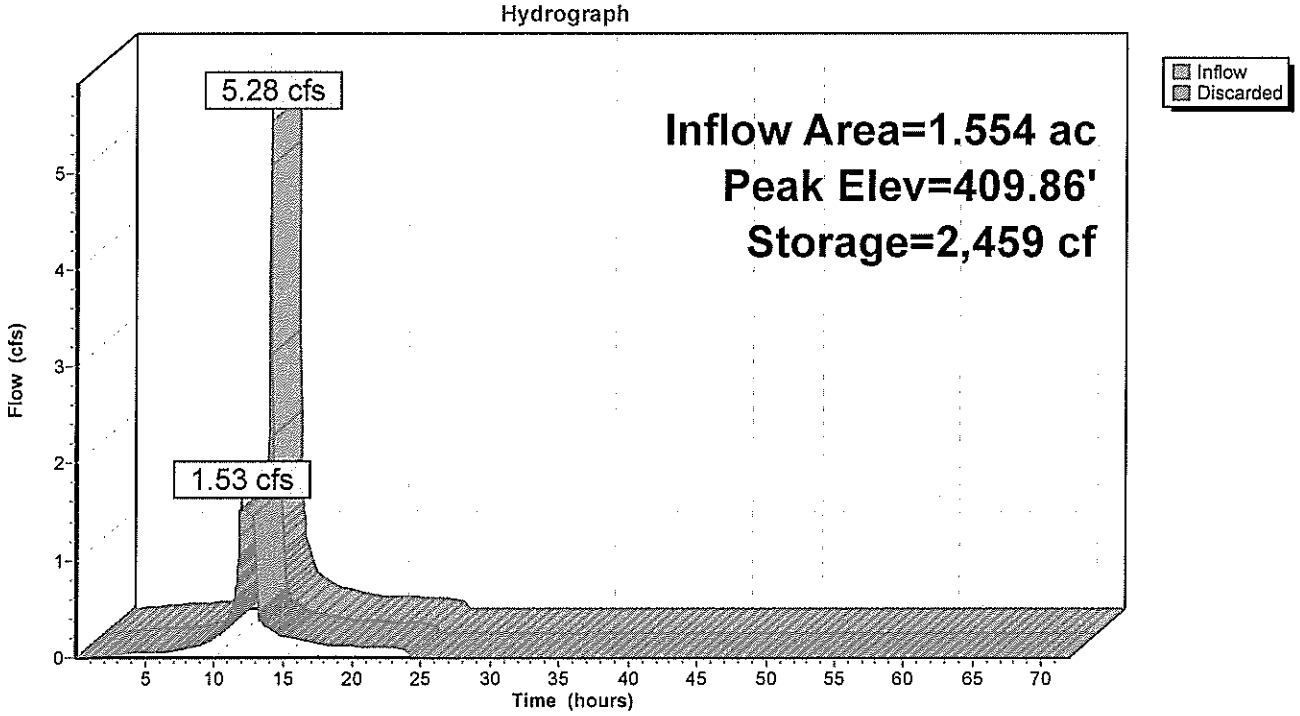
Plug-Flow detention time= 6.4 min calculated for 0.434 af (100% of inflow)
Center-of-Mass det. time= 6.4 min (800.1 - 793.7)

Volume	Invert	Avail.Storage	Storage Description
#1	408.00'	9,240 cf	**30.00'W x 110.00'L x 7.00'H Prismatoid** 23,100 cf Overall x 40.0% Voids

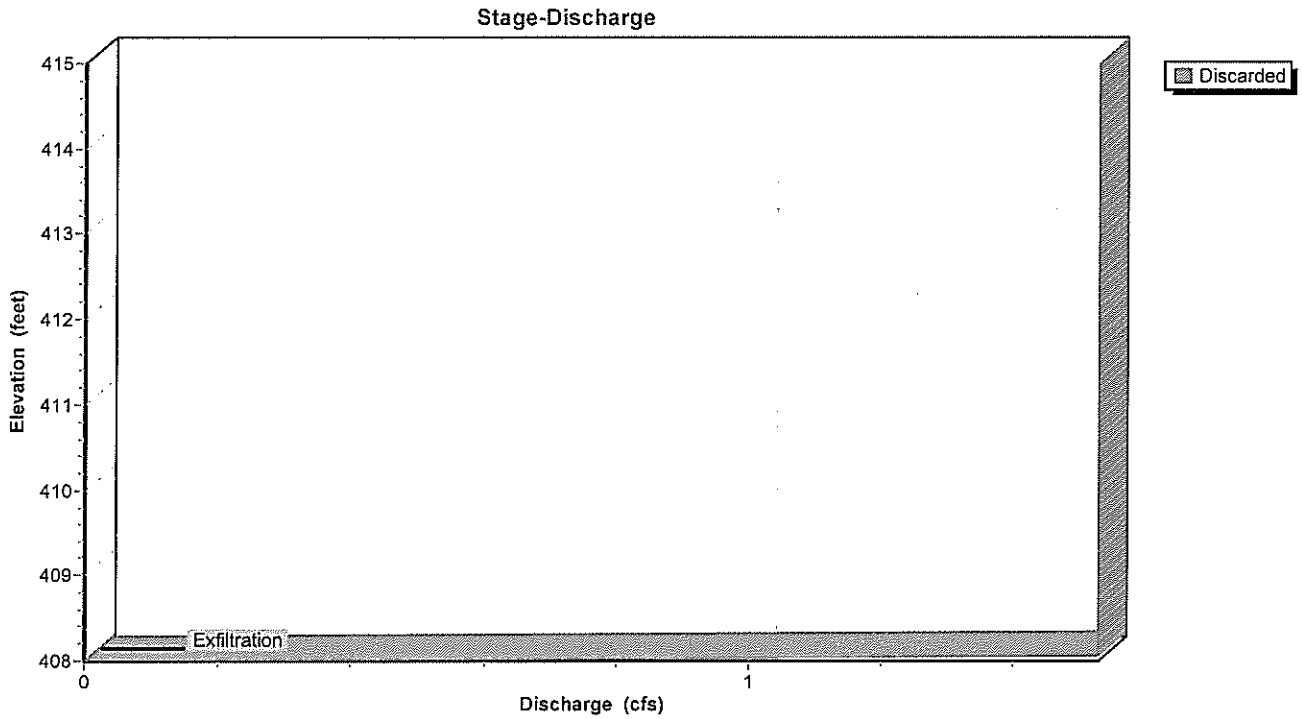
Device	Routing	Invert	Outlet Devices
#1	Discarded	408.00'	**20.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=1.53 cfs @ 11.95 hrs HW=408.12' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 1.53 cfs)

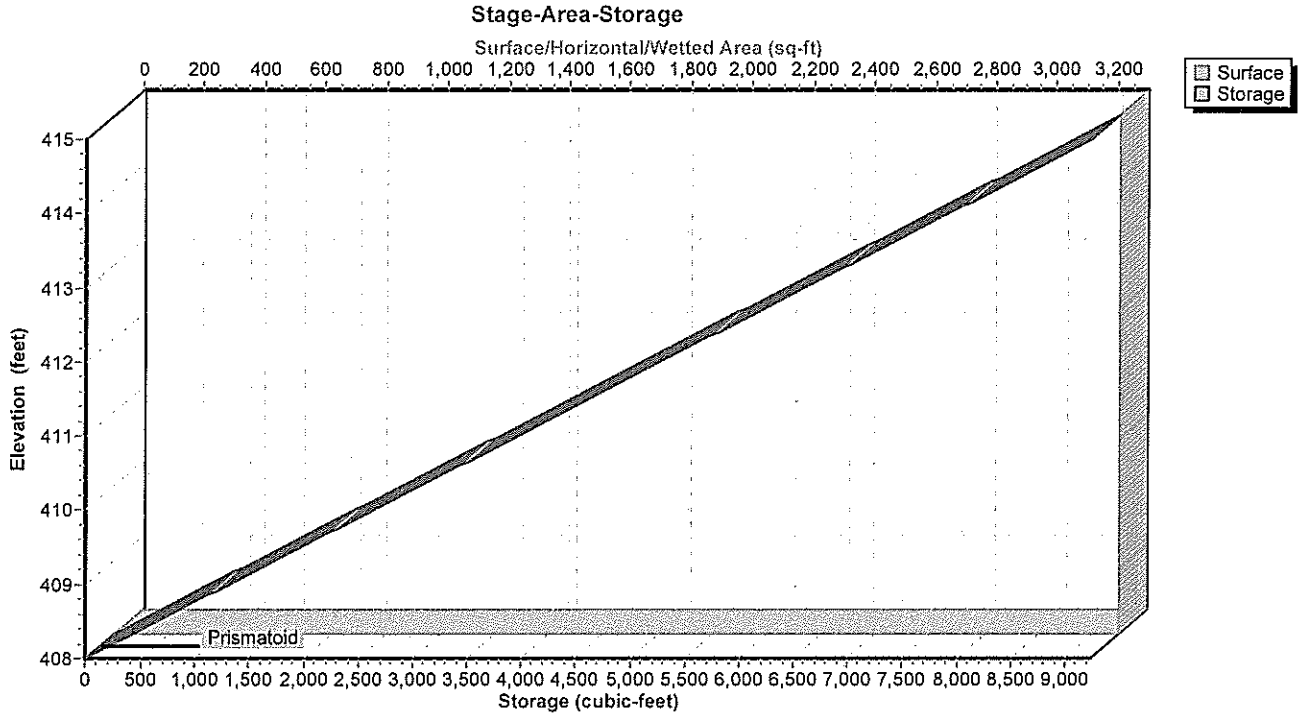
Pond RT: Recharge Trench



Pond RT: Recharge Trench



Pond RT: Recharge Trench



Summary for Pond WQU-2A: Storm Filter 330

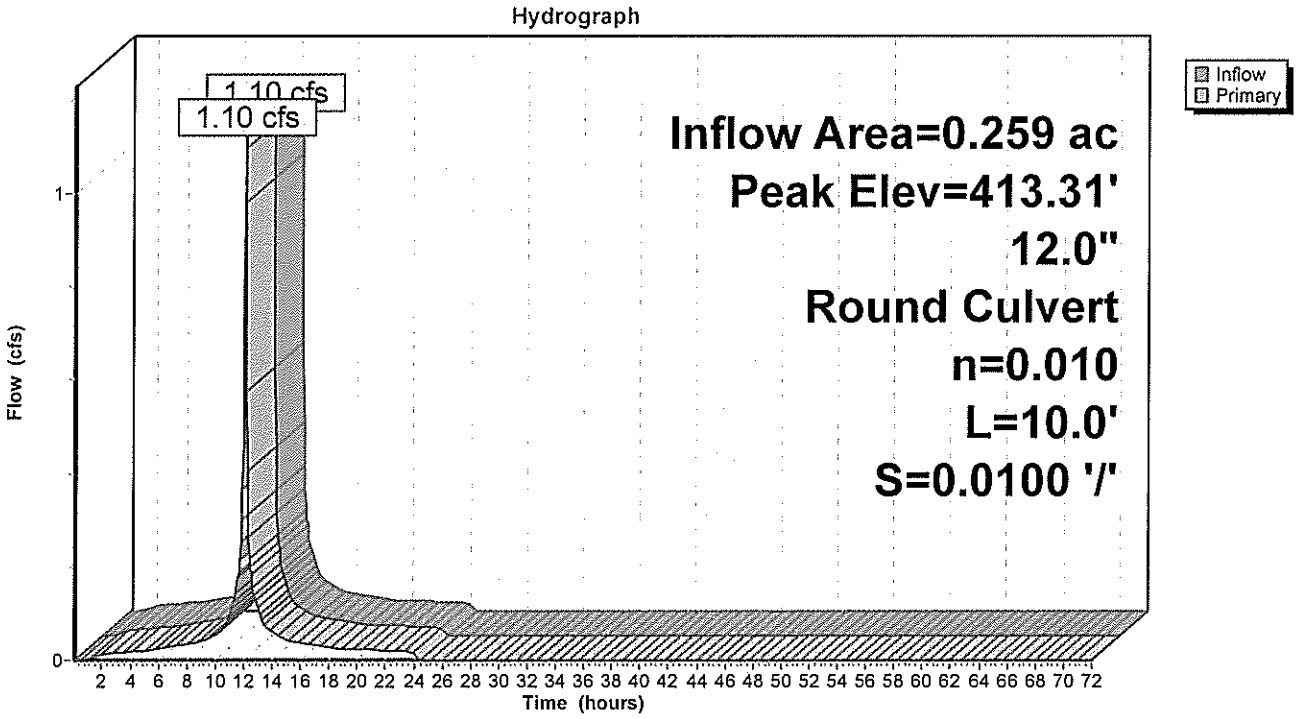
Inflow Area =	0.259 ac,100.00% Impervious, Inflow Depth = 4.44" for 10-Year event			
Inflow =	1.10 cfs @ 12.11 hrs, Volume=	0.096 af		
Outflow =	1.10 cfs @ 12.11 hrs, Volume=	0.096 af, Atten= 0%, Lag= 0.0 min		
Primary =	1.10 cfs @ 12.11 hrs, Volume=	0.096 af		

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 413.31' @ 12.11 hrs

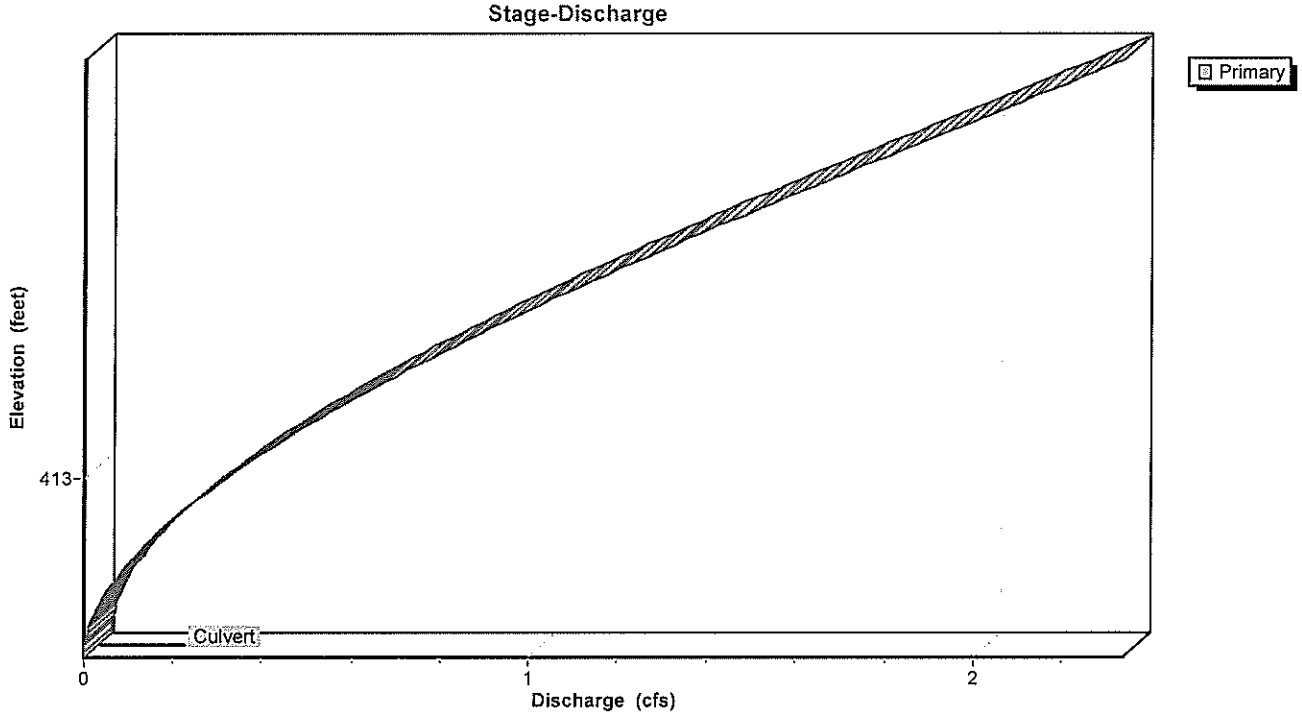
Device	Routing	Invert	Outlet Devices
#1	Primary	412.70'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 412.70' / 412.60' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=1.06 cfs @ 12.11 hrs HW=413.30' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.06 cfs @ 3.08 fps)

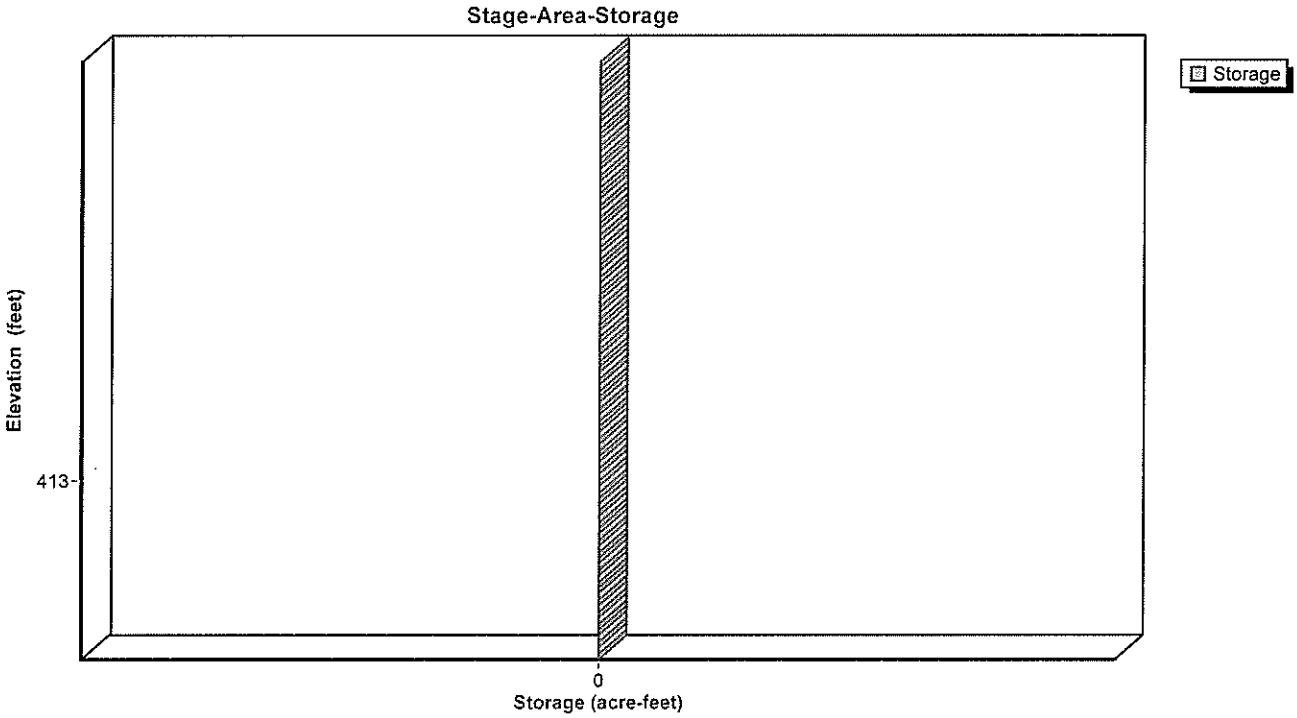
Pond WQU-2A: Storm Filter 330



Pond WQU-2A: Storm Filter 330



Pond WQU-2A: Storm Filter 330



Summary for Pond WQU-A1: Storm Filter 330

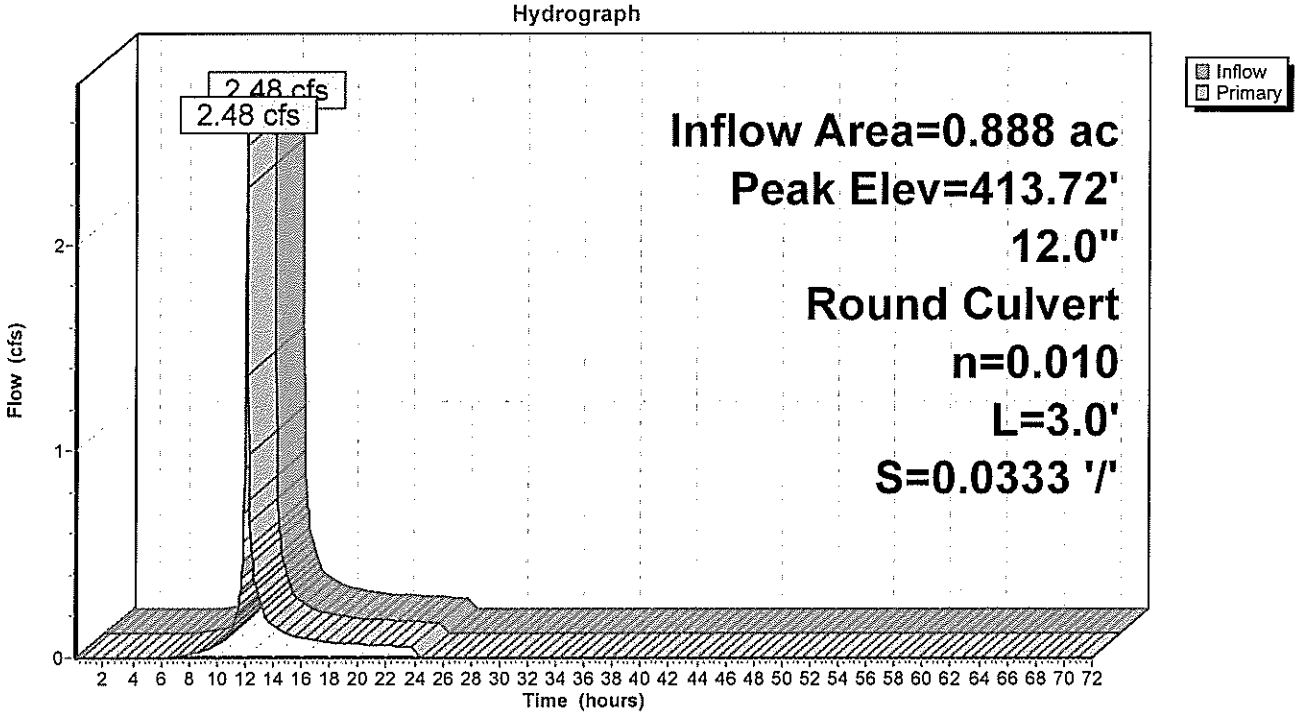
Inflow Area =	0.888 ac, 68.48% Impervious, Inflow Depth = 2.53" for 10-Year event				
Inflow =	2.48 cfs @ 12.12 hrs, Volume=	0.187 af			
Outflow =	2.48 cfs @ 12.12 hrs, Volume=	0.187 af, Atten= 0%, Lag= 0.0 min			
Primary =	2.48 cfs @ 12.12 hrs, Volume=	0.187 af			

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 413.72' @ 12.12 hrs

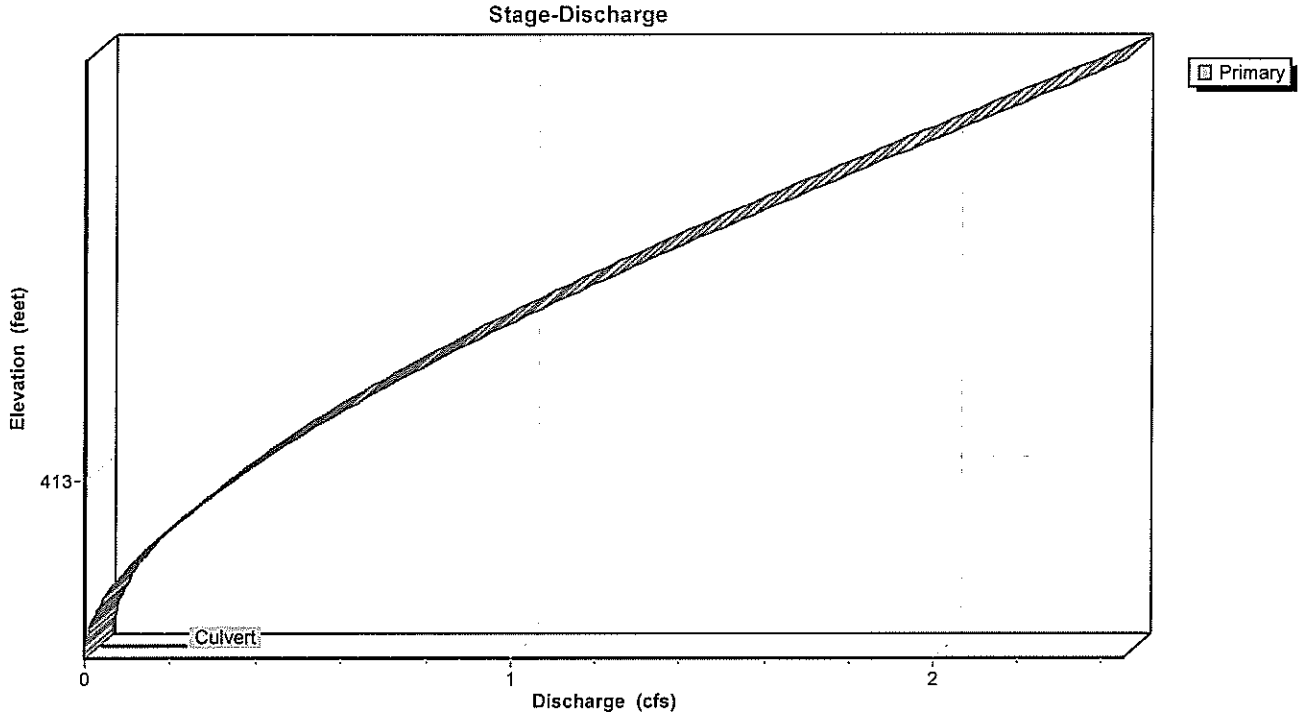
Device	Routing	Invert	Outlet Devices
#1	Primary	412.70'	**12.0" Round Culvert** L= 3.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 412.70' / 412.60' S= 0.0333 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=2.39 cfs @ 12.12 hrs HW=413.69' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.39 cfs @ 3.81 fps)

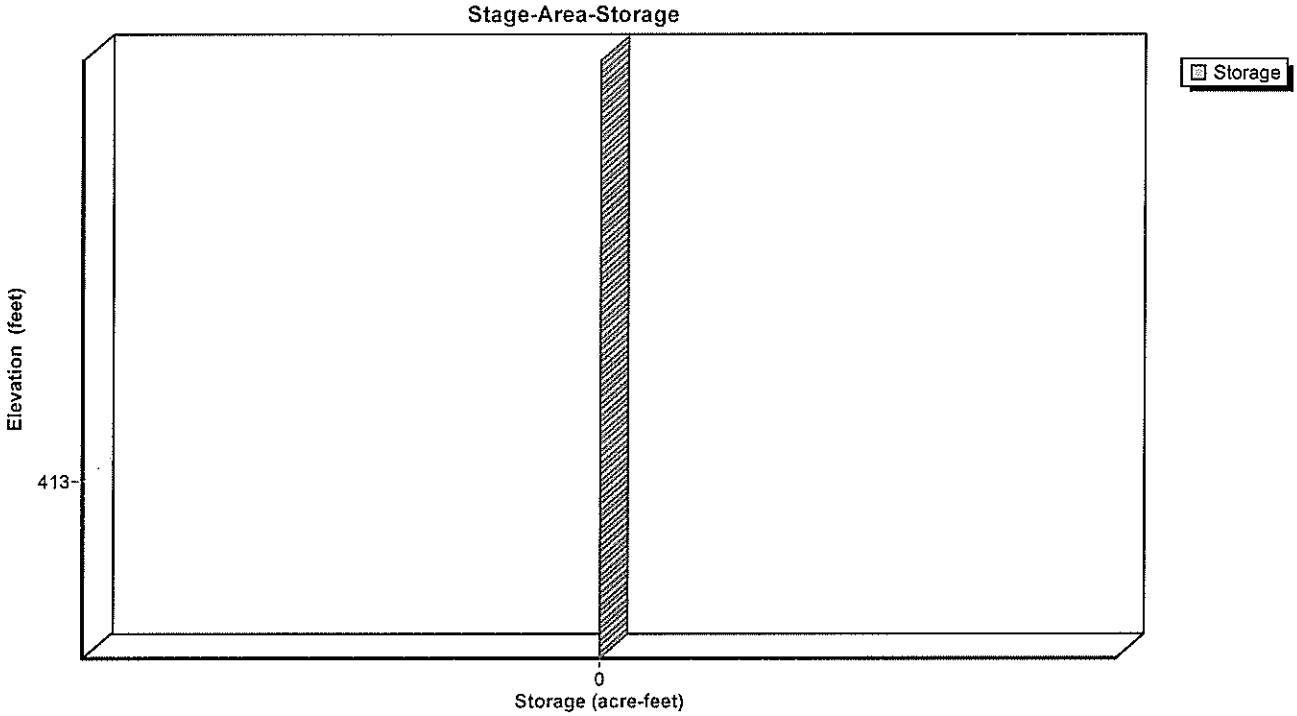
Pond WQU-A1: Storm Filter 330



Pond WQU-A1: Storm Filter 330



Pond WQU-A1: Storm Filter 330

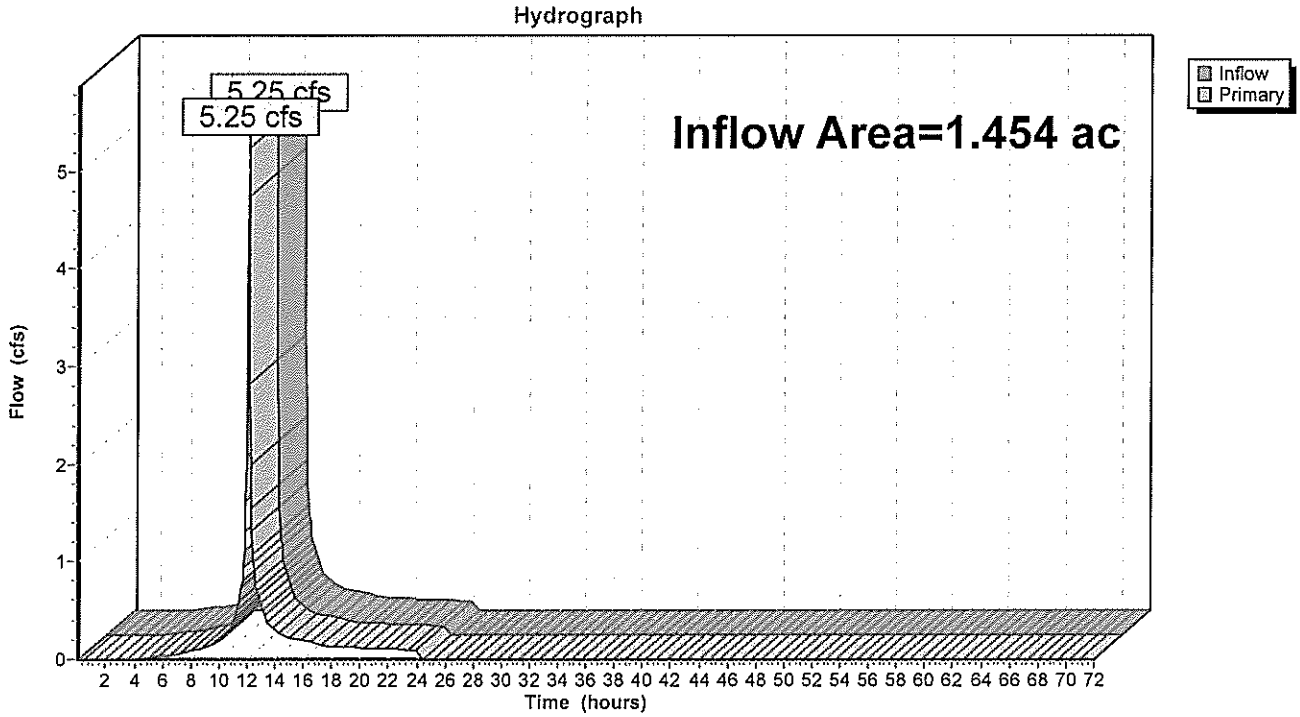


Summary for Link POA-A: Existing Qpeak Offsite to the North

Inflow Area = 1.454 ac, 82.59% Impervious, Inflow Depth = 3.37" for 10-Year event
Inflow = 5.25 cfs @ 12.11 hrs, Volume= 0.408 af
Primary = 5.25 cfs @ 12.11 hrs, Volume= 0.408 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link POA-A: Existing Qpeak Offsite to the North

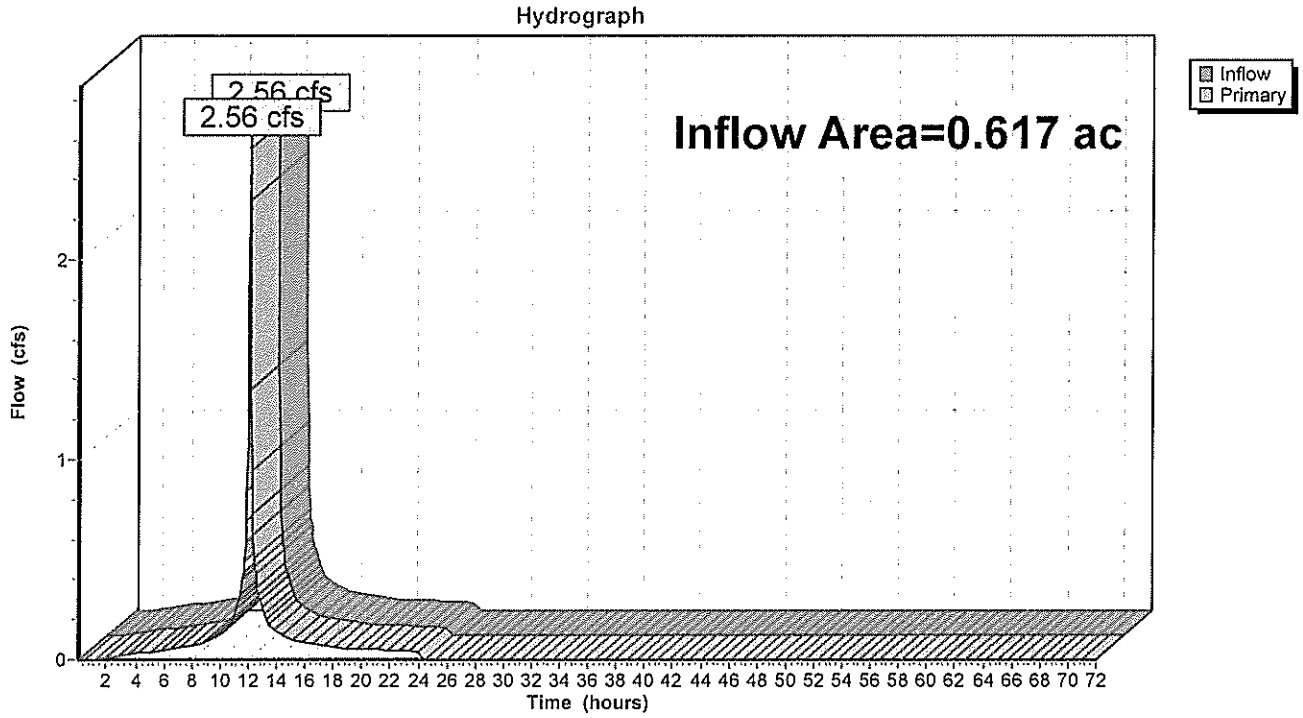


Summary for Link POA-B: Existing Qpeak Onsite To Existing Recharge Pits

Inflow Area = 0.617 ac, 97.10% Impervious, Inflow Depth = 4.21" for 10-Year event
Inflow = 2.56 cfs @ 12.11 hrs, Volume= 0.217 af
Primary = 2.56 cfs @ 12.11 hrs, Volume= 0.217 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link POA-B: Existing Qpeak Onsite To Existing Recharge Pits

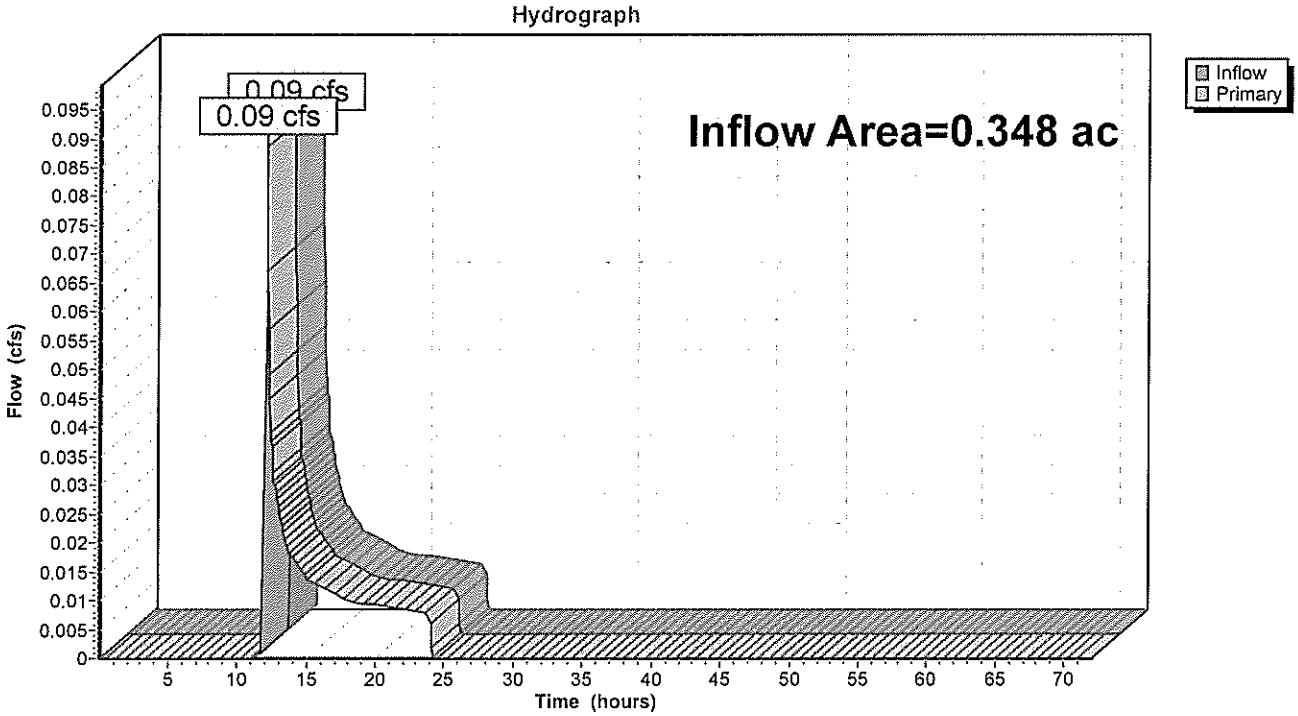


Summary for Link POA-C: Existing Qpeak Offsite To East

Inflow Area = 0.348 ac, 0.00% Impervious, Inflow Depth = 0.47" for 10-Year event
Inflow = 0.09 cfs @ 12.15 hrs, Volume= 0.014 af
Primary = 0.09 cfs @ 12.15 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link POA-C: Existing Qpeak Offsite To East

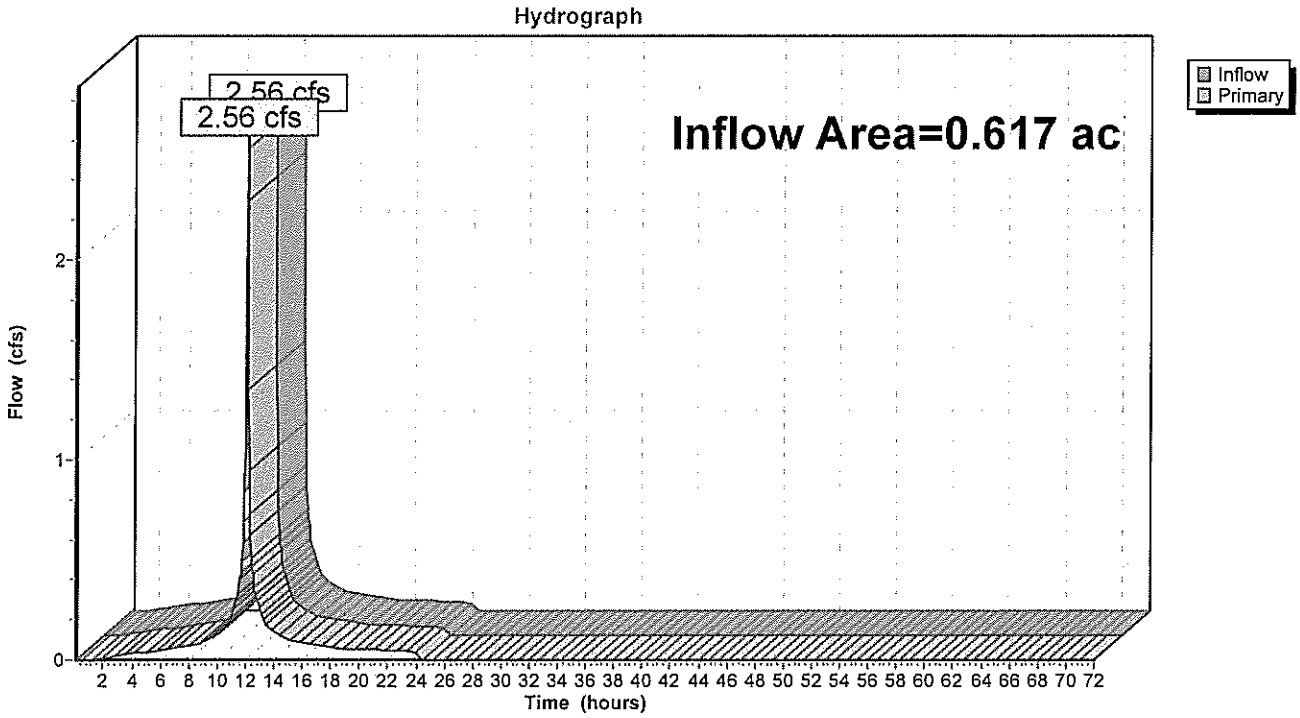


Summary for Link POA-P-B: Proposed Qpeak Onsite To Existing Recharge Pits

Inflow Area = 0.617 ac, 97.10% Impervious, Inflow Depth = 4.21" for 10-Year event
Inflow = 2.56 cfs @ 12.11 hrs, Volume= 0.217 af
Primary = 2.56 cfs @ 12.11 hrs, Volume= 0.217 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link POA-P-B: Proposed Qpeak Onsite To Existing Recharge Pits

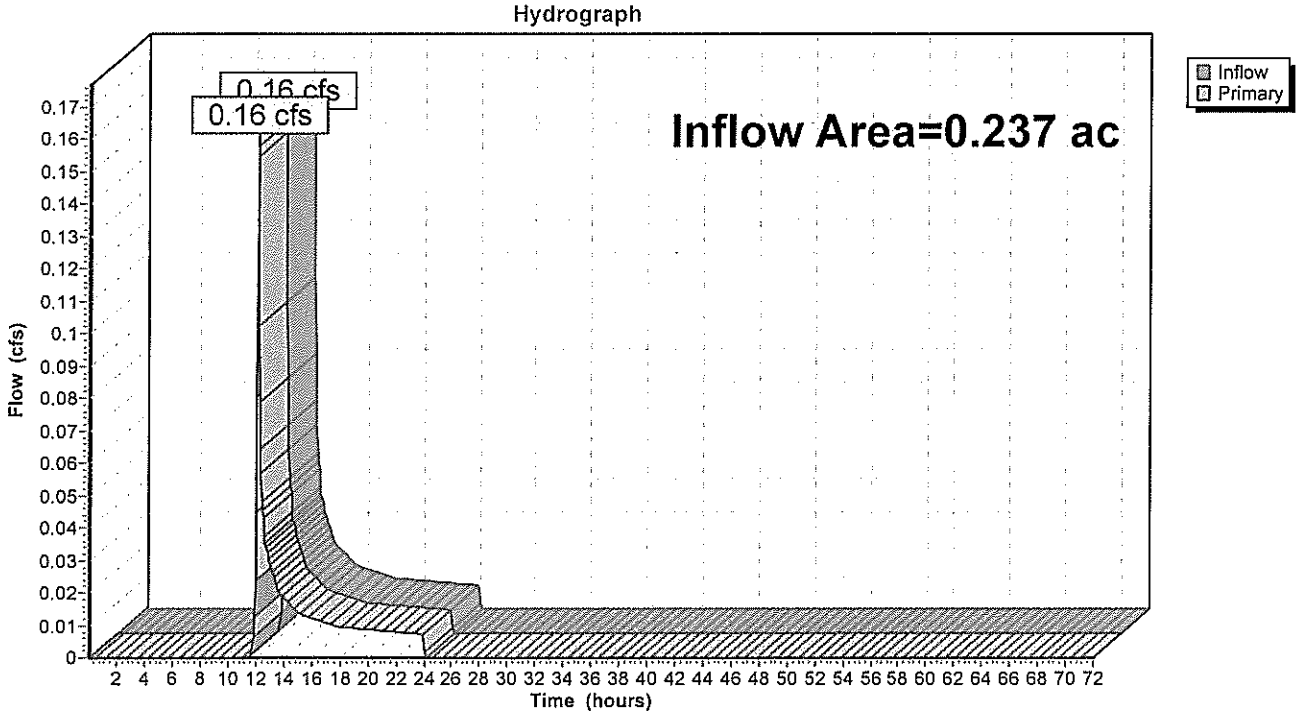


Summary for Link POA-P-C: Proposed Qpeak Offsite to the East

Inflow Area = 0.237 ac, 11.77% Impervious, Inflow Depth = 0.77" for 10-Year event
Inflow = 0.16 cfs @ 12.13 hrs, Volume= 0.015 af
Primary = 0.16 cfs @ 12.13 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link POA-P-C: Proposed Qpeak Offsite to the East



Time span=0.10-72.00 hrs, dt=0.05 hrs, 1439 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 E-WS-A: Existing Runoff Area=63,338 sf 82.59% Impervious Runoff Depth=4.51"
Tc=5.0 min CN=88 Runoff=6.92 cfs 0.547 af

Subcatchment E-WS-B: Existing Runoff Area=26,870 sf 97.10% Impervious Runoff Depth=5.41"
Tc=5.0 min CN=96 Runoff=3.25 cfs 0.278 af

Subcatchment E-WS-C: Existing Conditions Runoff Area=15,172 sf 0.00% Impervious Runoff Depth=0.95"
Tc=5.0 min CN=48 Runoff=0.28 cfs 0.028 af

Subcatchment P-WS-A1.1: Proposed Runoff Area=38,666 sf 68.48% Impervious Runoff Depth=3.57"
Tc=5.0 min CN=79 Runoff=3.49 cfs 0.264 af

Subcatchment P-WS-A1.2: Proposed Runoff Area=17,750 sf 100.00% Impervious Runoff Depth=5.64"
Tc=5.0 min CN=98 Runoff=2.17 cfs 0.192 af

Subcatchment P-WS-A2: Proposed Runoff Area=11,297 sf 100.00% Impervious Runoff Depth=5.64"
Tc=5.0 min CN=98 Runoff=1.38 cfs 0.122 af

Subcatchment P-WS-B: Proposed Runoff Area=26,870 sf 97.10% Impervious Runoff Depth=5.41"
Tc=5.0 min CN=96 Runoff=3.25 cfs 0.278 af

Subcatchment P-WS-C: Proposed Runoff Area=10,329 sf 11.77% Impervious Runoff Depth=1.37"
Tc=5.0 min CN=54 Runoff=0.33 cfs 0.027 af

Reach R-A1.2: Roof Drain Leader Avg. Flow Depth=0.46' Max Vel=6.16 fps Inflow=2.17 cfs 0.192 af
12.0" Round Pipe n=0.010 L=32.0' S=0.0119 '/' Capacity=5.05 cfs Outflow=2.14 cfs 0.192 af

Pond CB-A1: Catch Basin A1 Peak Elev=414.38' Inflow=3.49 cfs 0.264 af
12.0" Round Culvert n=0.010 L=3.0' S=0.0333 '/' Outflow=3.49 cfs 0.264 af

Pond CB-A2: Catch Basin A2 Peak Elev=413.70' Inflow=1.38 cfs 0.122 af
12.0" Round Culvert n=0.010 L=5.0' S=0.0200 '/' Outflow=1.38 cfs 0.122 af

Pond DB-A1: Distribution Box 1 Peak Elev=413.45' Inflow=5.63 cfs 0.456 af
12.0" Round Culvert x 3.00 n=0.010 L=5.0' S=0.0000 '/' Outflow=5.63 cfs 0.456 af

Pond DB-A2: Distribution Box 2 Peak Elev=412.93' Inflow=1.38 cfs 0.122 af
12.0" Round Culvert x 3.00 n=0.010 L=3.0' S=0.0000 '/' Outflow=1.38 cfs 0.122 af

Pond RT: Recharge Trench Peak Elev=411.14' Storage=4,149 cf Inflow=7.01 cfs 0.578 af
Outflow=1.53 cfs 0.578 af

Pond WQU-2A: Storm Filter 330 Peak Elev=413.41' Inflow=1.38 cfs 0.122 af
12.0" Round Culvert n=0.010 L=10.0' S=0.0100 '/' Outflow=1.38 cfs 0.122 af

Pond WQU-A1: Storm Filter 330 Peak Elev=414.08' Inflow=3.49 cfs 0.264 af
12.0" Round Culvert n=0.010 L=3.0' S=0.0333 '/' Outflow=3.49 cfs 0.264 af

Link POA-A: Existing Qpeak Offsite to the North Inflow=6.92 cfs 0.547 af
Primary=6.92 cfs 0.547 af

Link POA-B: Existing Qpeak Onsite To Existing Recharge Pits Inflow=3.25 cfs 0.278 af
Primary=3.25 cfs 0.278 af

Link POA-C: Existing Qpeak Offsite To East Inflow=0.28 cfs 0.028 af
Primary=0.28 cfs 0.028 af

Link POA-P-B: Proposed Qpeak Onsite To Existing Recharge Pits Inflow=3.25 cfs 0.278 af
Primary=3.25 cfs 0.278 af

Link POA-P-C: Proposed Qpeak Offsite to the East Inflow=0.33 cfs 0.027 af
Primary=0.33 cfs 0.027 af

Total Runoff Area = 4.828 ac Runoff Volume = 1.735 af Average Runoff Depth = 4.31"
23.33% Pervious = 1.126 ac 76.67% Impervious = 3.701 ac

Summary for Subcatchment E-WS-A: Existing Conditions - Offsite To North

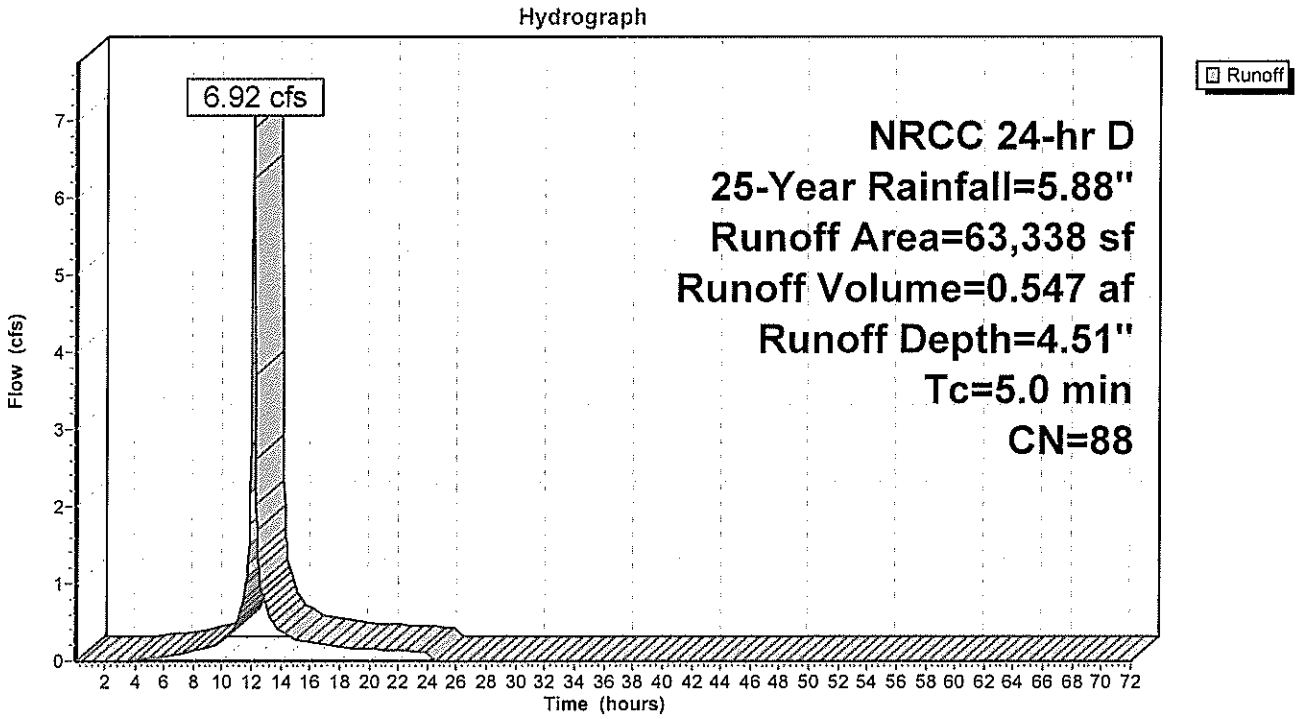
Runoff = 6.92 cfs @ 12.11 hrs, Volume= 0.547 af, Depth= 4.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.88"

	Area (sf)	CN	Description
*	52,309	98	Impervious drive & rroof
	11,029	39	>75% Grass cover, Good, HSG A
	63,338	88	Weighted Average
	11,029		17.41% Pervious Area
	52,309		82.59% Impervious Area

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

Subcatchment E-WS-A: Existing Conditions - Offsite To North



Summary for Subcatchment E-WS-B: Existing Conditions - To Onsite Existing Recharge Pits

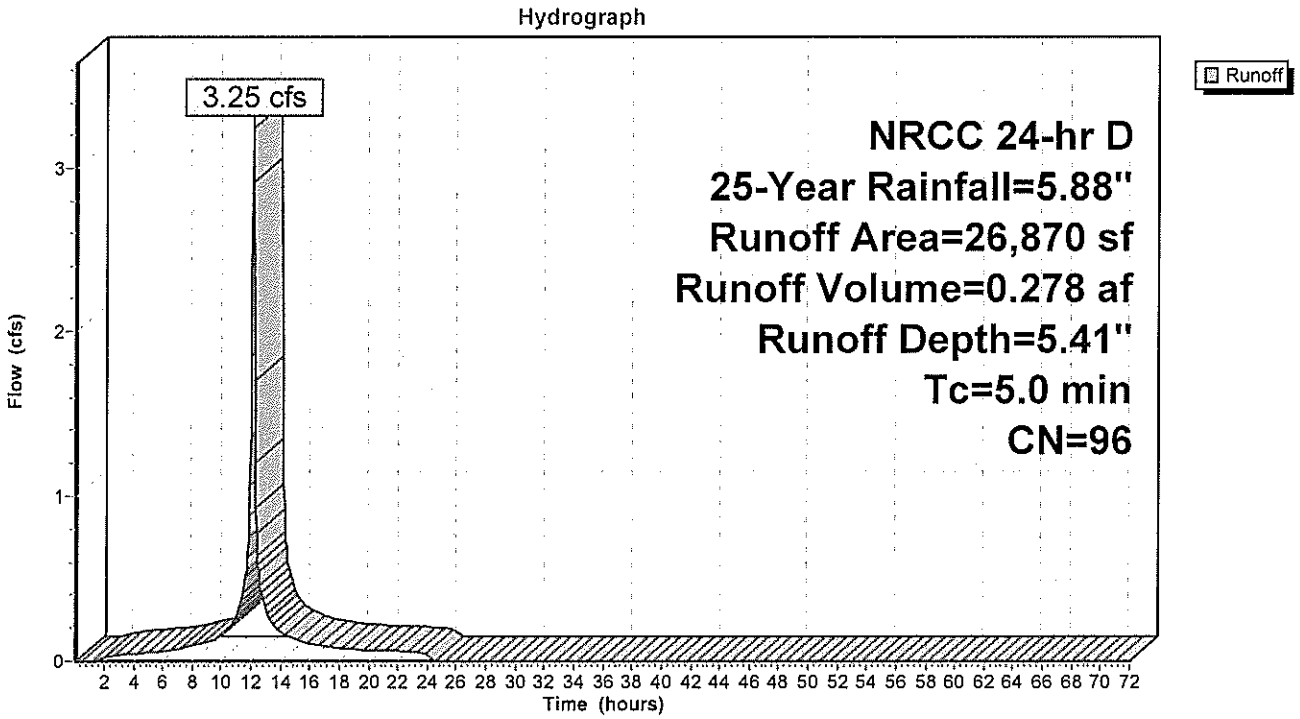
Runoff = 3.25 cfs @ 12.11 hrs, Volume= 0.278 af, Depth= 5.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.88"

	Area (sf)	CN	Description
*	26,090	98	Impervious drive & rroof
	780	39	>75% Grass cover, Good, HSG A
	26,870	96	Weighted Average
	780		2.90% Pervious Area
	26,090		97.10% Impervious Area

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

Subcatchment E-WS-B: Existing Conditions - To Onsite Existing Recharge Pits



Summary for Subcatchment E-WS-C: Existing Conditions Watershed C - Offsite To East

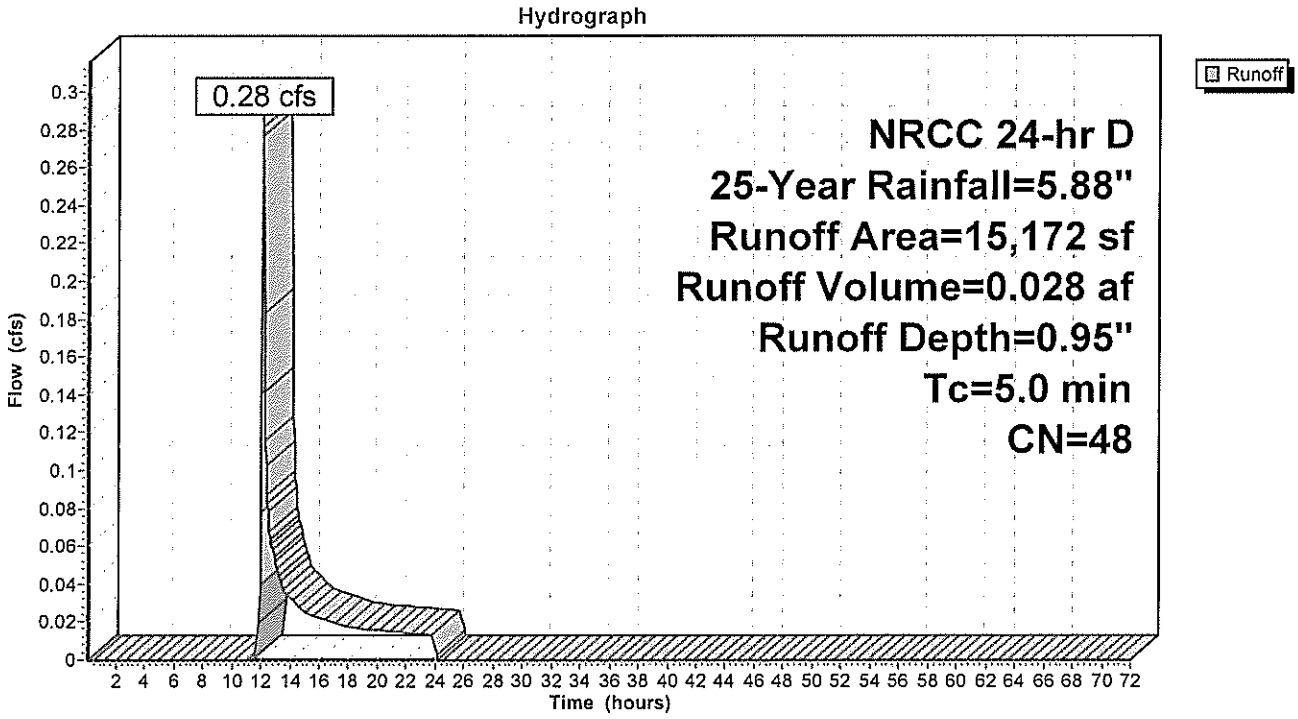
Runoff = 0.28 cfs @ 12.14 hrs, Volume= 0.028 af, Depth= 0.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.88"

Area (sf)	CN	Description
15,172	48	Brush, Poor, HSG A
15,172		100.00% Pervious Area

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

Subcatchment E-WS-C: Existing Conditions Watershed C - Offsite To East



ummary for Subcatchment P-WS-A1.1: Proposed Sub-Watershed A1.1 - East Section To Catch Basi

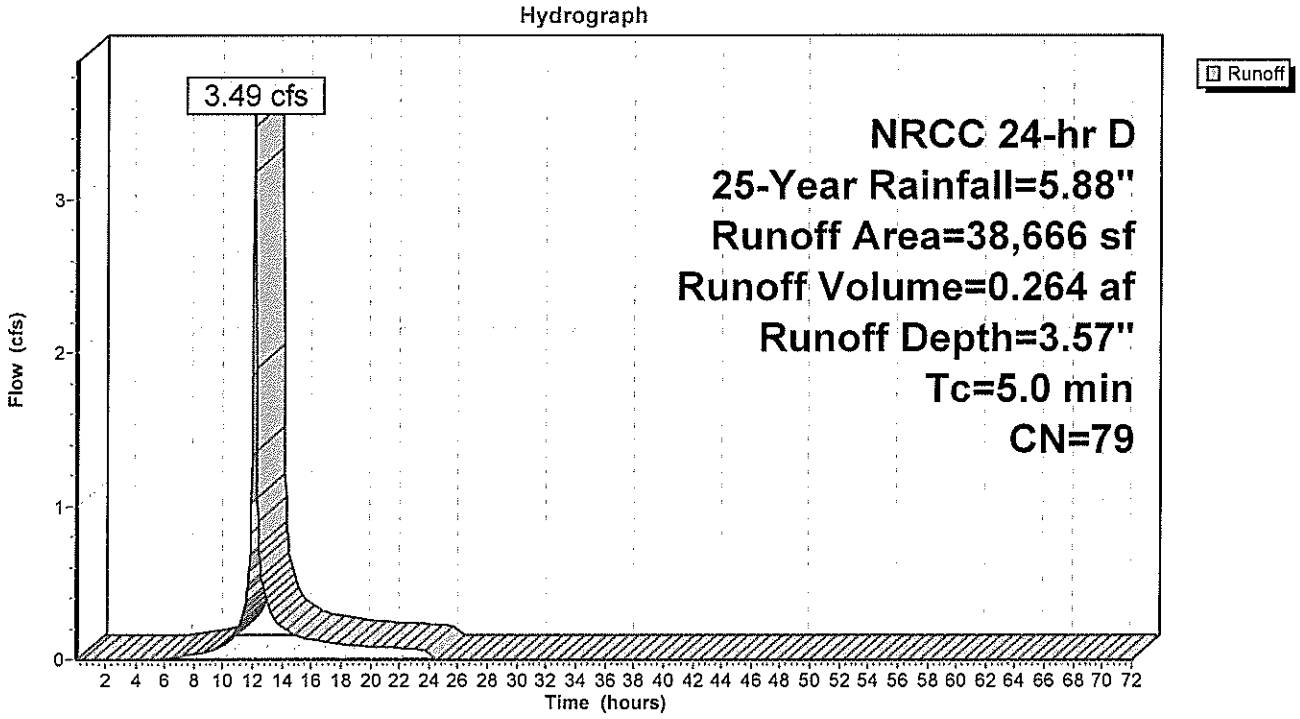
Runoff = 3.49 cfs @ 12.11 hrs, Volume= 0.264 af, Depth= 3.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.88"

Area (sf)	CN	Description
26,480	98	Paved parking, HSG A
12,186	39	>75% Grass cover, Good, HSG A
38,666	79	Weighted Average
12,186		31.52% Pervious Area
26,480		68.48% Impervious Area

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

Subcatchment P-WS-A1.1: Proposed Sub-Watershed A1.1 - East Section To Catch Basin A1



ımmary for Subcatchment P-WS-A1.2: Proposed Sub-Watershed A1.2 - Building Roof to Distributior

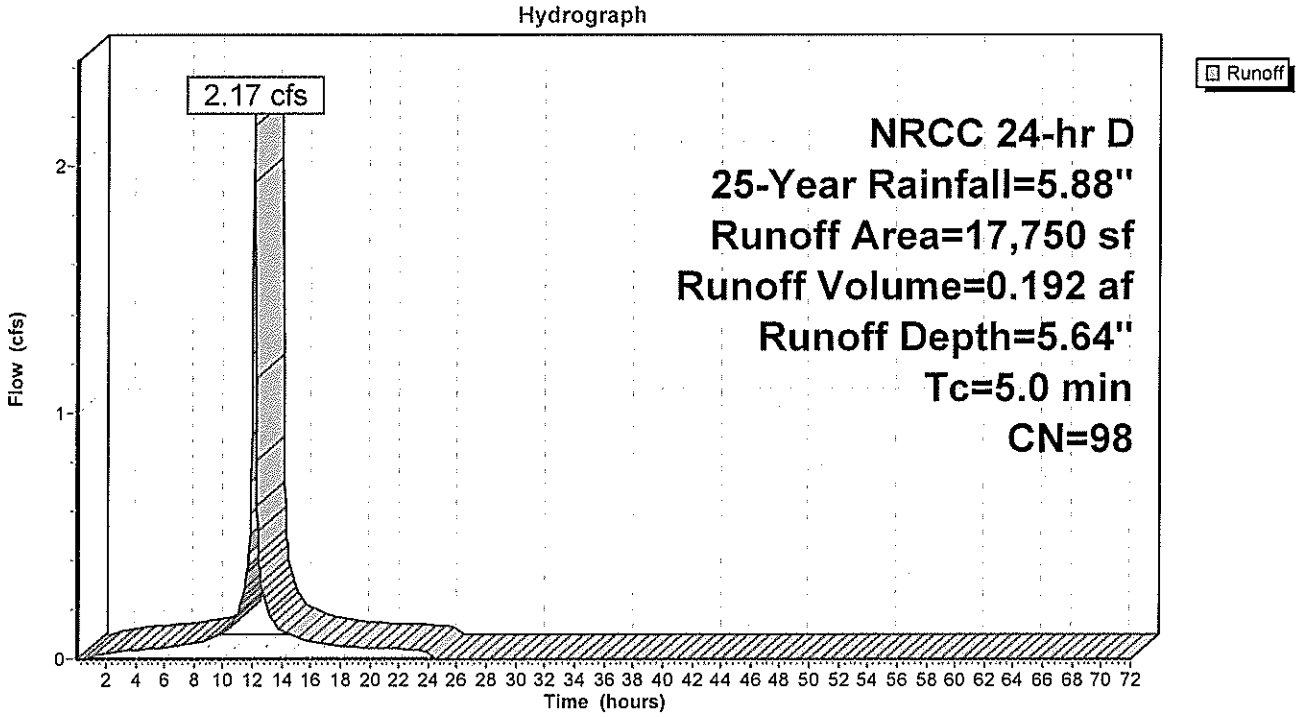
Runoff = 2.17 cfs @ 12.11 hrs, Volume= 0.192 af, Depth= 5.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.88"

	Area (sf)	CN	Description
*	17,750	98	Roof
	17,750		100.00% Impervious Area

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

Subcatchment P-WS-A1.2: Proposed Sub-Watershed A1.2 - Building Roof to Distribution Box



ummary for Subcatchment P-WS-A2: Proposed Sub-Watershed A2 - West Section To Infiltration Tre

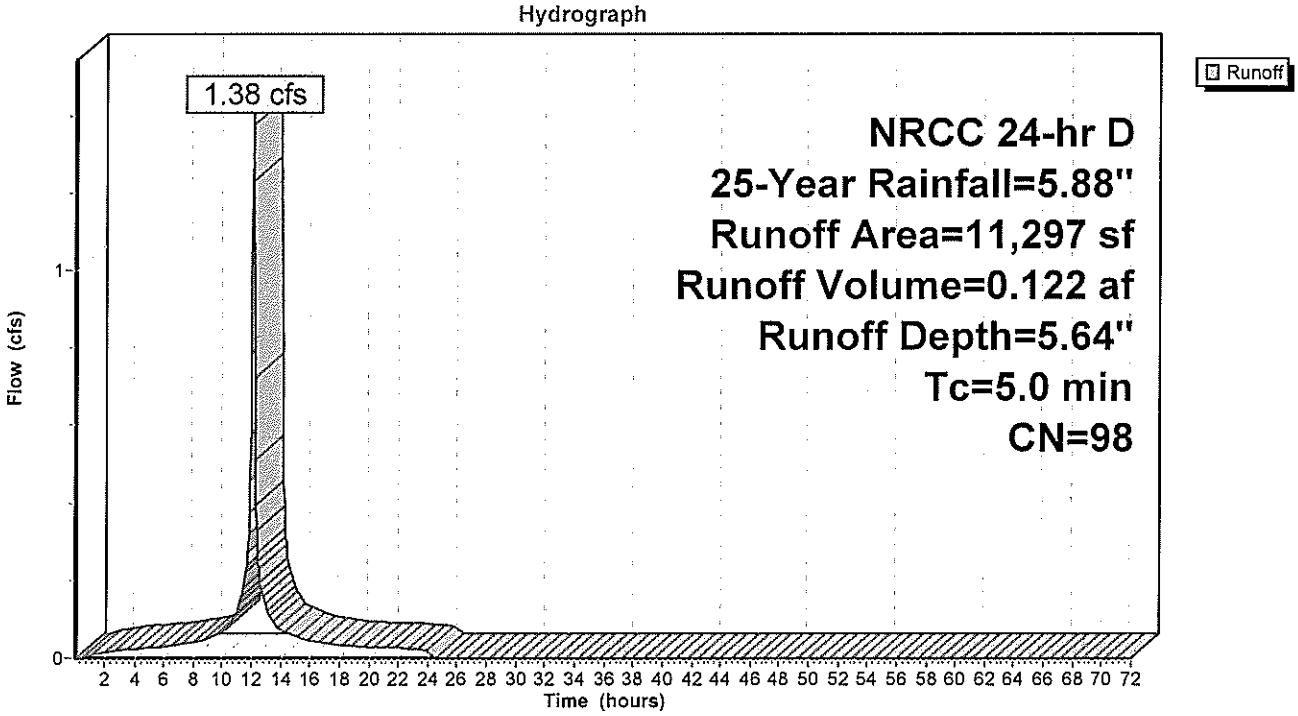
Runoff = 1.38 cfs @ 12.11 hrs, Volume= 0.122 af, Depth= 5.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.88"

Area (sf)	CN	Description
11,297	98	Paved parking, HSG A
11,297		100.00% Impervious Area

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

Subcatchment P-WS-A2: Proposed Sub-Watershed A2 - West Section To Infiltration Trench



Summary for Subcatchment P-WS-B: Proposed Conditions - To Onsite Existing Recharge Pits

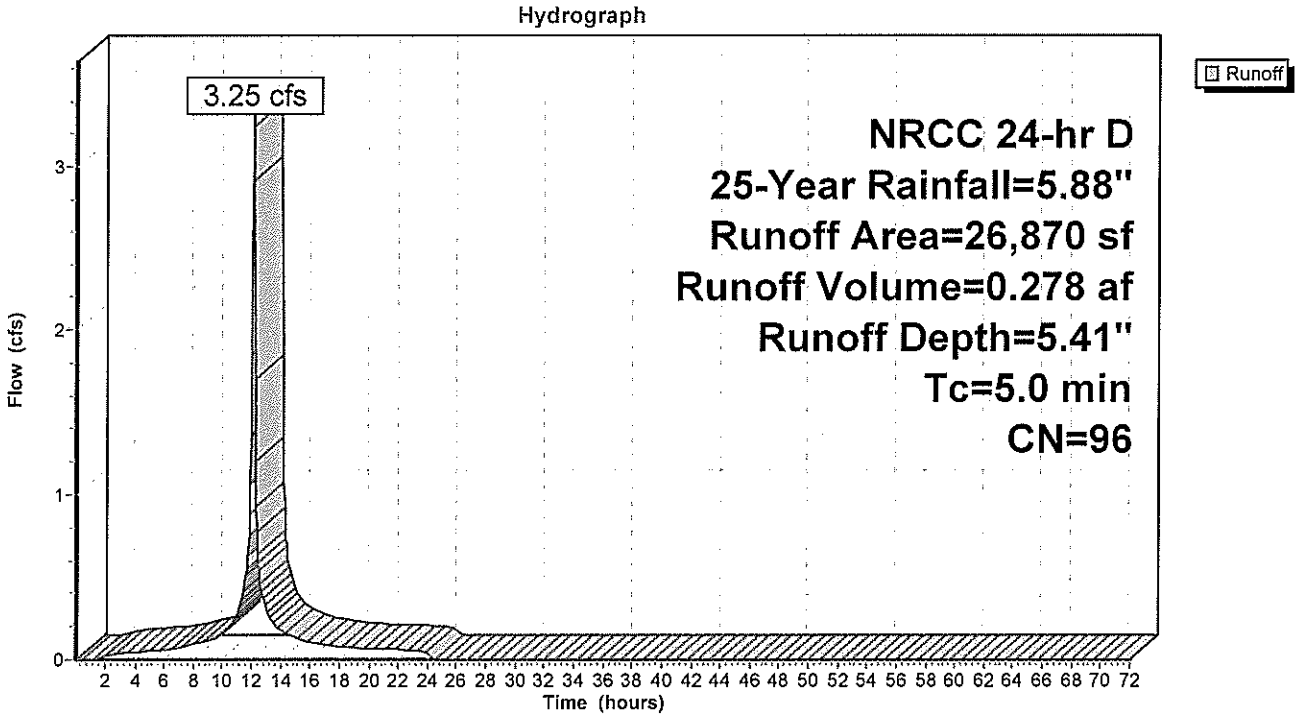
Runoff = 3.25 cfs @ 12.11 hrs, Volume= 0.278 af, Depth= 5.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.88"

	Area (sf)	CN	Description
*	26,090	98	Impervious drive & rroof
	780	39	>75% Grass cover, Good, HSG A
	26,870	96	Weighted Average
	780		2.90% Pervious Area
	26,090		97.10% Impervious Area

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

Subcatchment P-WS-B: Proposed Conditions - To Onsite Existing Recharge Pits



Summary for Subcatchment P-WS-C: Proposed Conditions Watershed C - Offsite to East

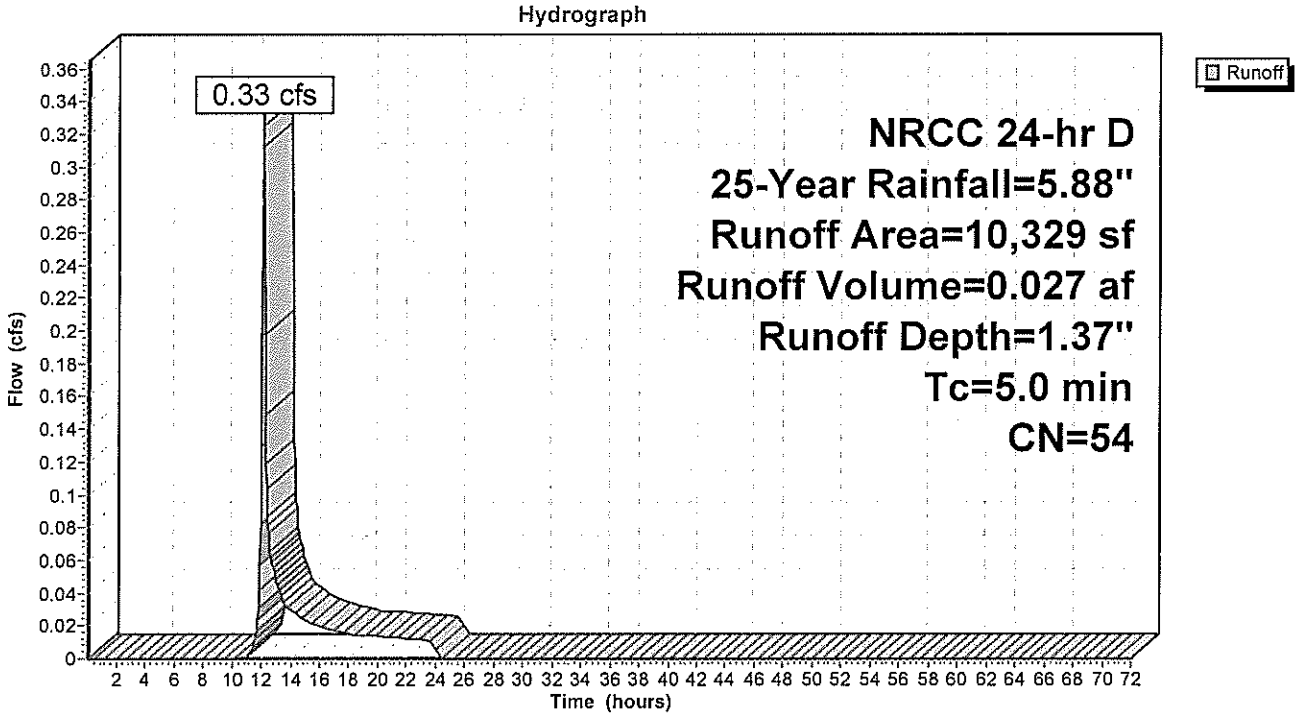
Runoff = 0.33 cfs @ 12.13 hrs, Volume= 0.027 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.88"

Area (sf)	CN	Description
9,113	48	Brush, Poor, HSG A
1,216	98	Paved parking, HSG A
10,329	54	Weighted Average
9,113		88.23% Pervious Area
1,216		11.77% Impervious Area

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

Subcatchment P-WS-C: Proposed Conditions Watershed C - Offsite to East



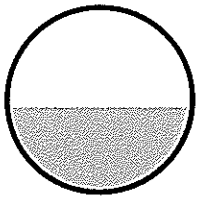
Summary for Reach R-A1.2: Roof Drain Leader

Inflow Area = 0.407 ac,100.00% Impervious, Inflow Depth = 5.64" for 25-Year event
Inflow = 2.17 cfs @ 12.11 hrs, Volume= 0.192 af
Outflow = 2.14 cfs @ 12.11 hrs, Volume= 0.192 af, Atten= 1%, Lag= 0.2 min

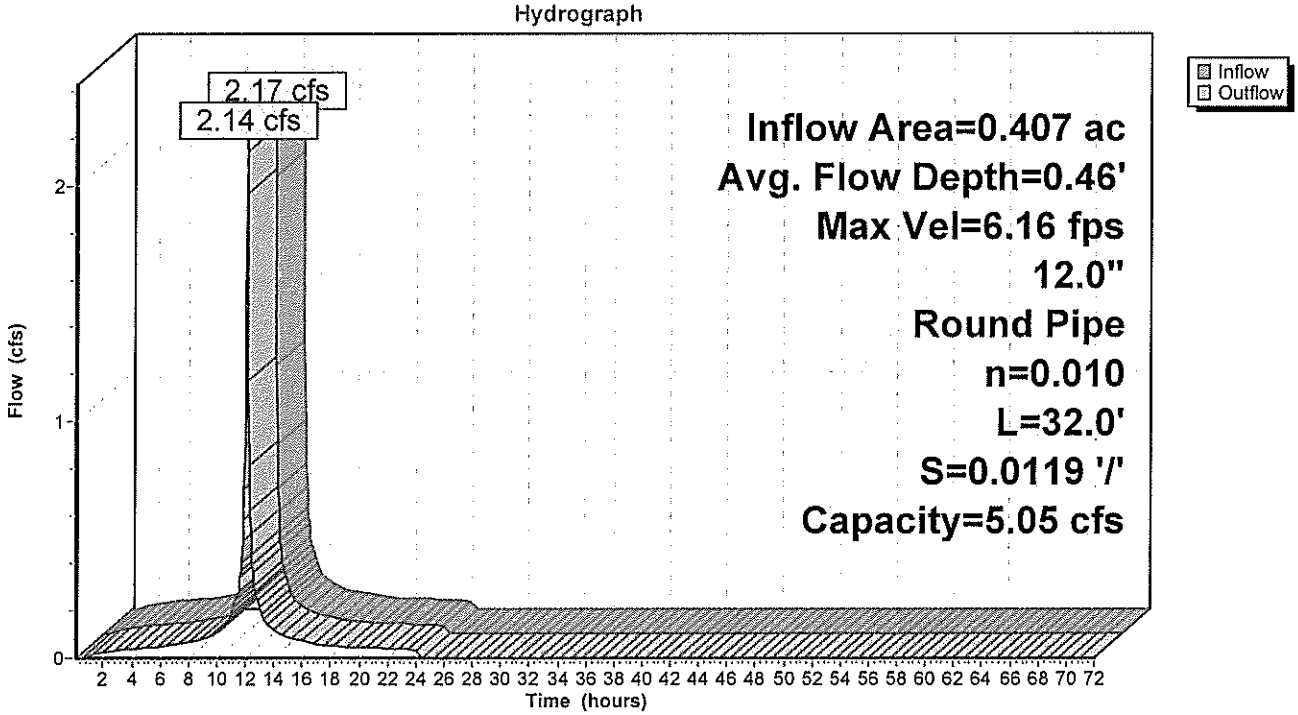
Routing by Stor-Ind+Trans method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.16 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.24 fps, Avg. Travel Time= 0.2 min

Peak Storage= 11 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.46' , Surface Width= 1.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.05 cfs

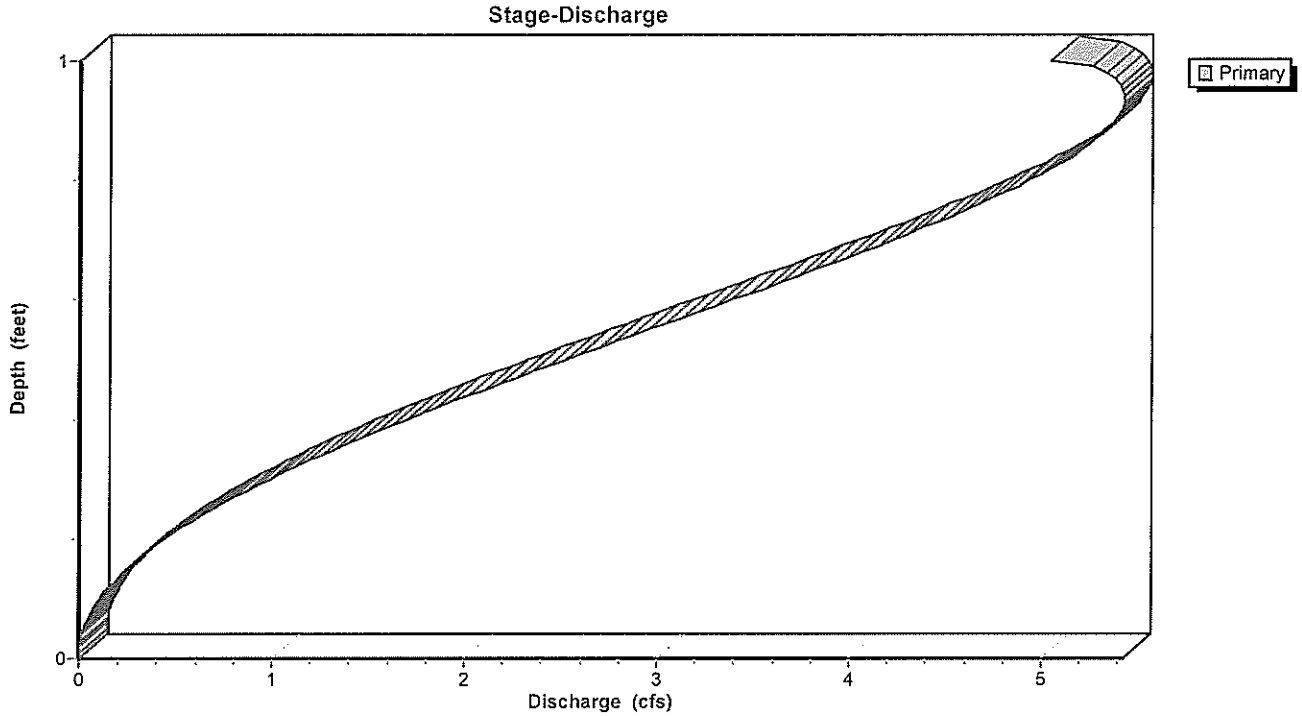
12.0" Round Pipe
n= 0.010
Length= 32.0' Slope= 0.0119 '/'
Inlet Invert= 412.88', Outlet Invert= 412.50'



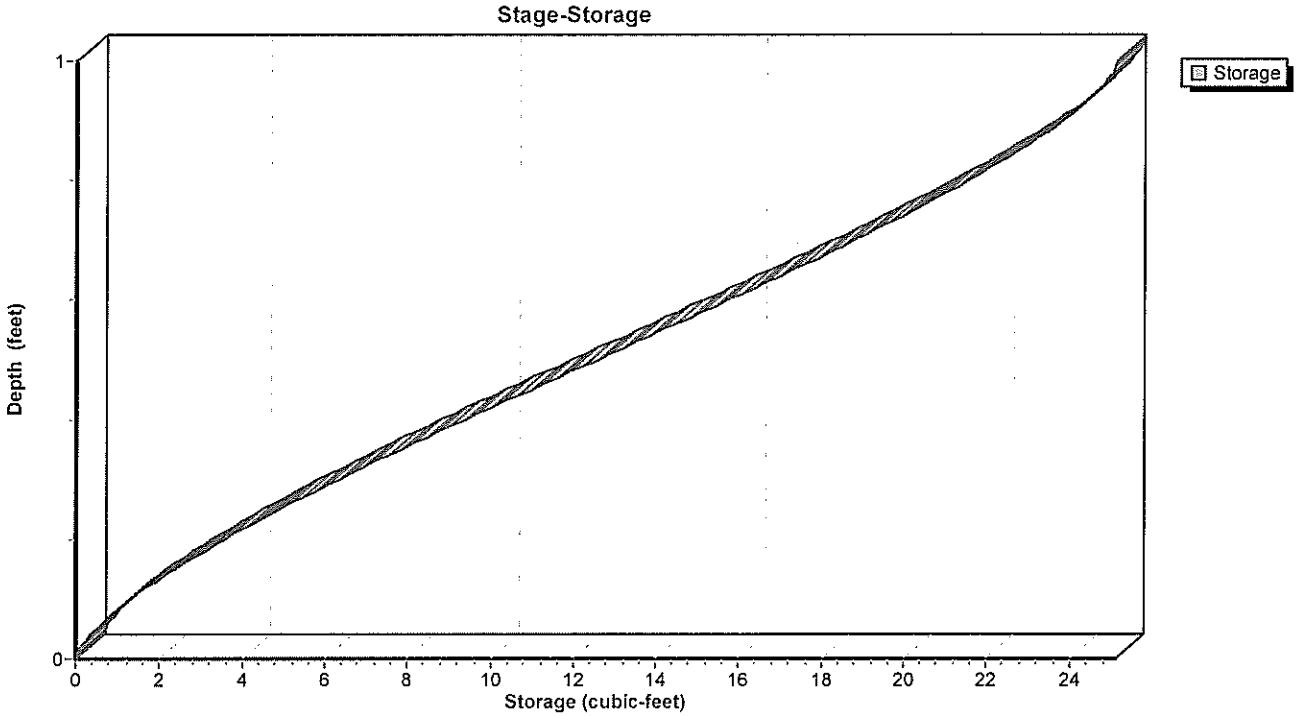
Reach R-A1.2: Roof Drain Leader



Reach R-A1.2: Roof Drain Leader



Reach R-A1.2: Roof Drain Leader



Summary for Pond CB-A1: Catch Basin A1

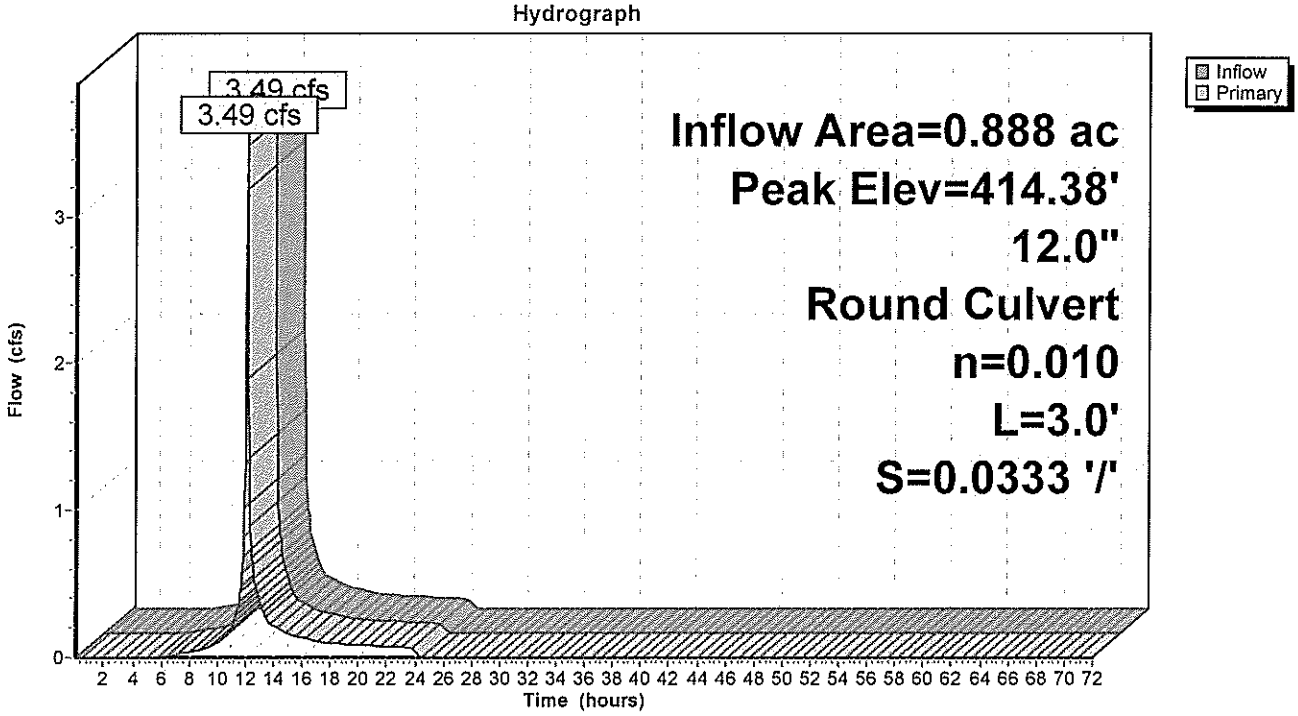
Inflow Area =	0.888 ac, 68.48% Impervious, Inflow Depth = 3.57" for 25-Year event				
Inflow =	3.49 cfs @ 12.11 hrs, Volume=	0.264 af			
Outflow =	3.49 cfs @ 12.11 hrs, Volume=	0.264 af, Atten= 0%, Lag= 0.0 min			
Primary =	3.49 cfs @ 12.11 hrs, Volume=	0.264 af			

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 414.38' @ 12.11 hrs

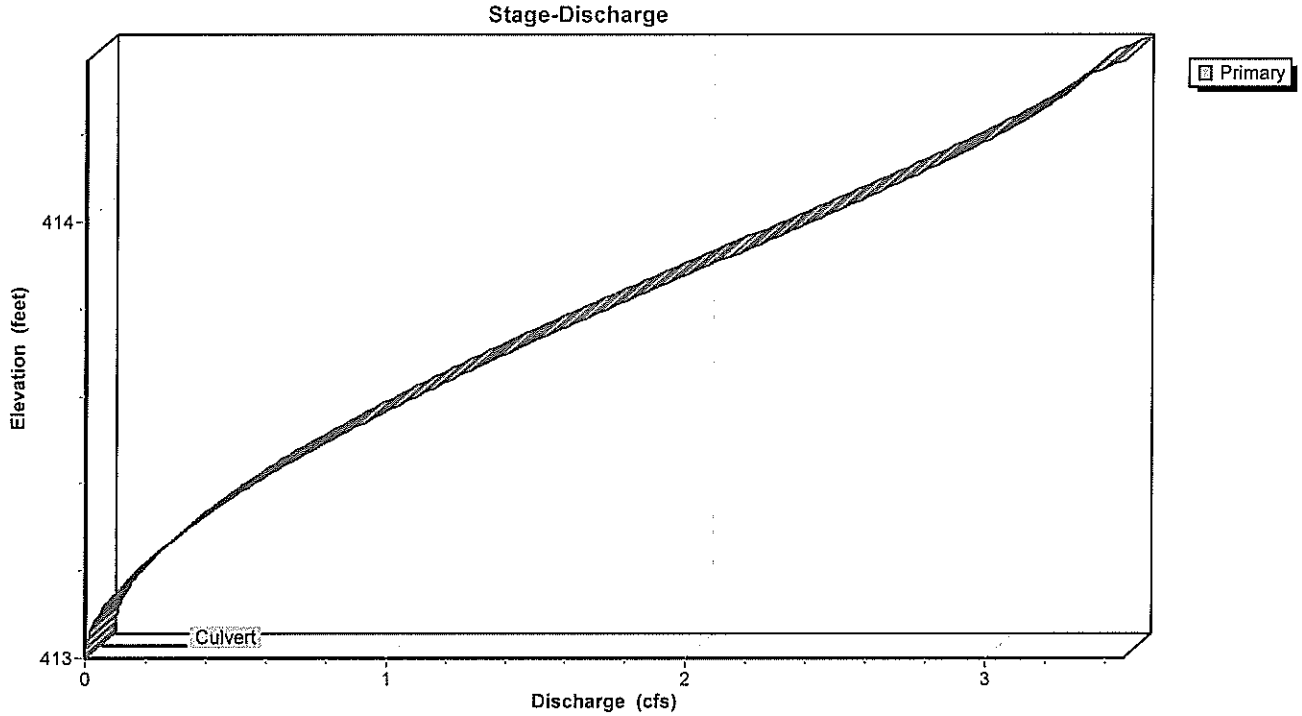
Device	Routing	Invert	Outlet Devices
#1	Primary	413.00'	**12.0" Round Culvert** L= 3.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 413.00' / 412.90' S= 0.0333 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=3.33 cfs @ 12.11 hrs HW=414.33' (Free Discharge)
└─**1=Culvert** (Barrel Controls 3.33 cfs @ 4.23 fps)

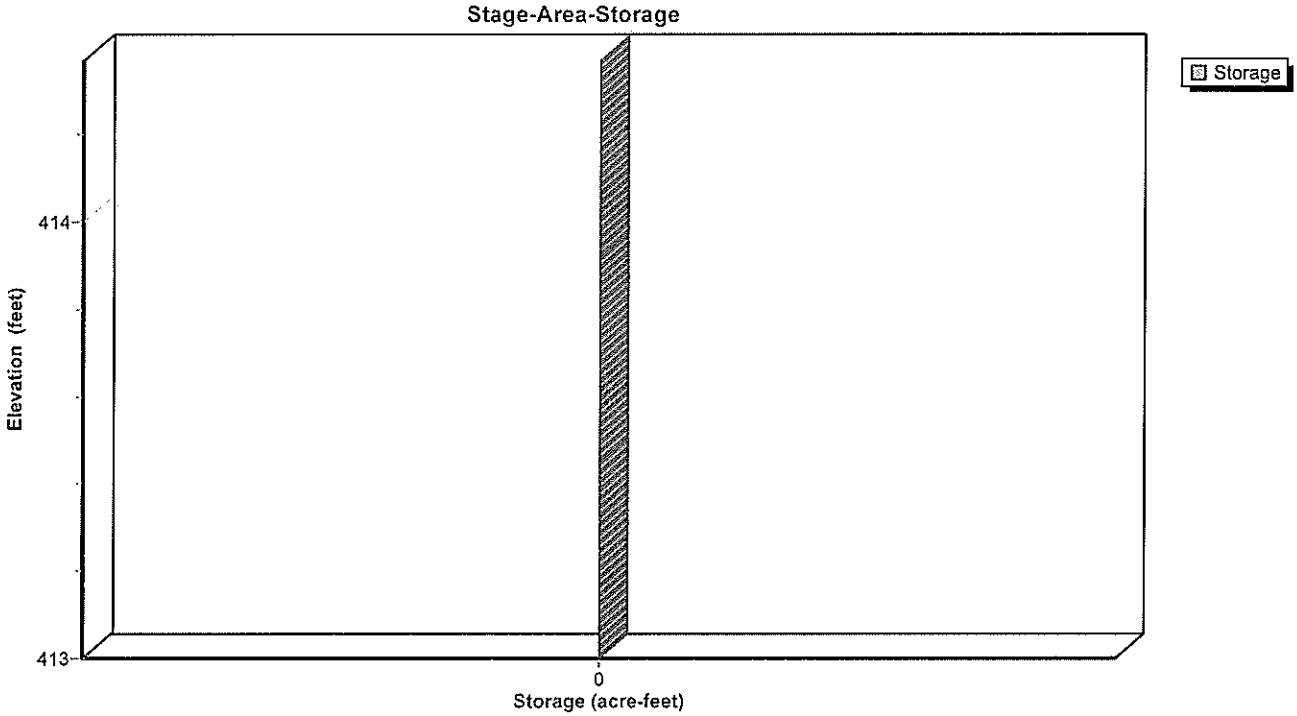
Pond CB-A1: Catch Basin A1



Pond CB-A1: Catch Basin A1



Pond CB-A1: Catch Basin A1



Summary for Pond CB-A2: Catch Basin A2

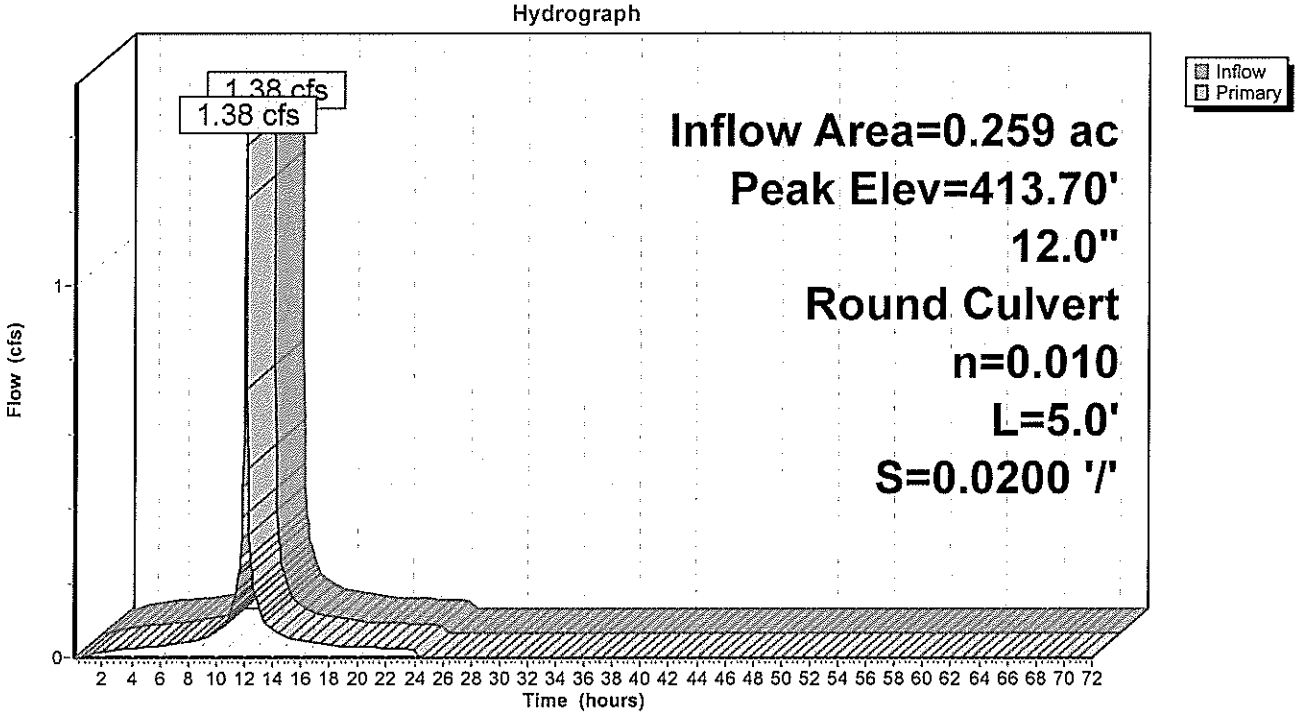
Inflow Area =	0.259 ac,100.00% Impervious, Inflow Depth = 5.64" for 25-Year event				
Inflow =	1.38 cfs @ 12.11 hrs, Volume=	0.122 af			
Outflow =	1.38 cfs @ 12.11 hrs, Volume=	0.122 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.38 cfs @ 12.11 hrs, Volume=	0.122 af			

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 413.70' @ 12.11 hrs

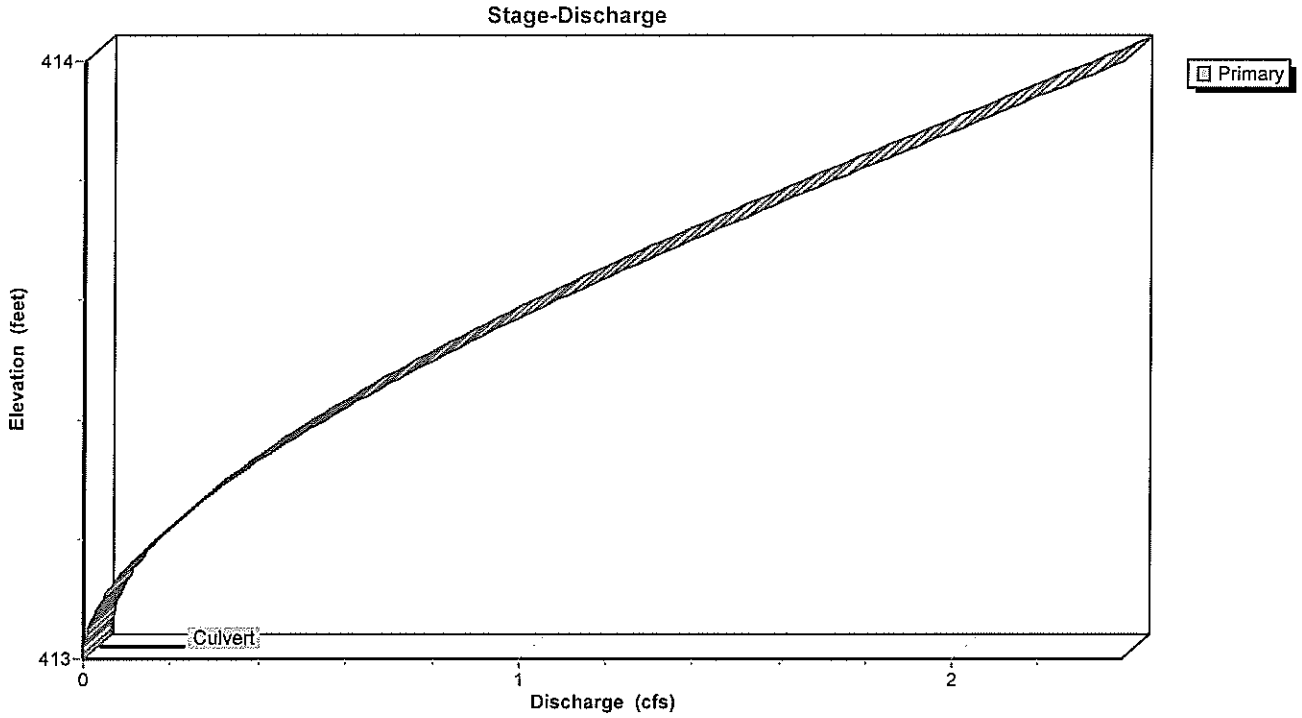
Device	Routing	Invert	Outlet Devices
#1	Primary	413.00'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 413.00' / 412.90' S= 0.0200 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=1.34 cfs @ 12.11 hrs HW=413.68' (Free Discharge)
└─**1=Culvert** (Barrel Controls 1.34 cfs @ 3.31 fps)

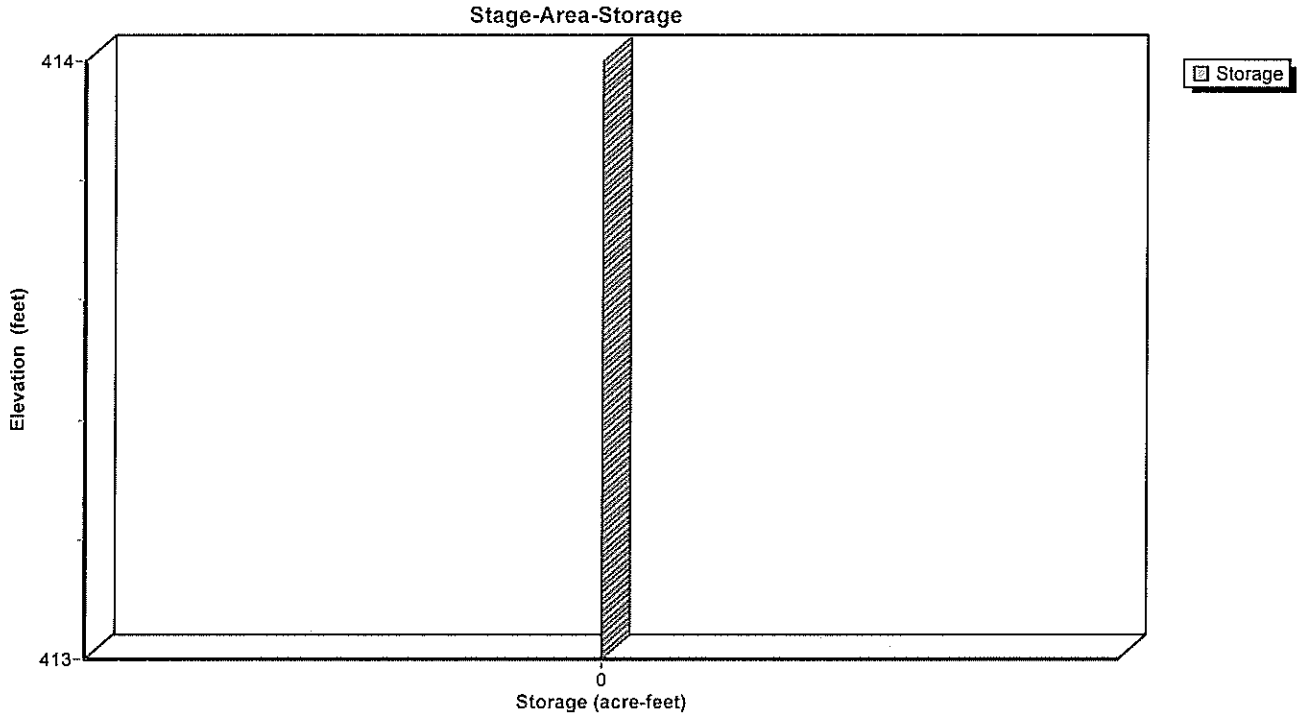
Pond CB-A2: Catch Basin A2



Pond CB-A2: Catch Basin A2



Pond CB-A2: Catch Basin A2



Summary for Pond DB-A1: Distribution Box 1

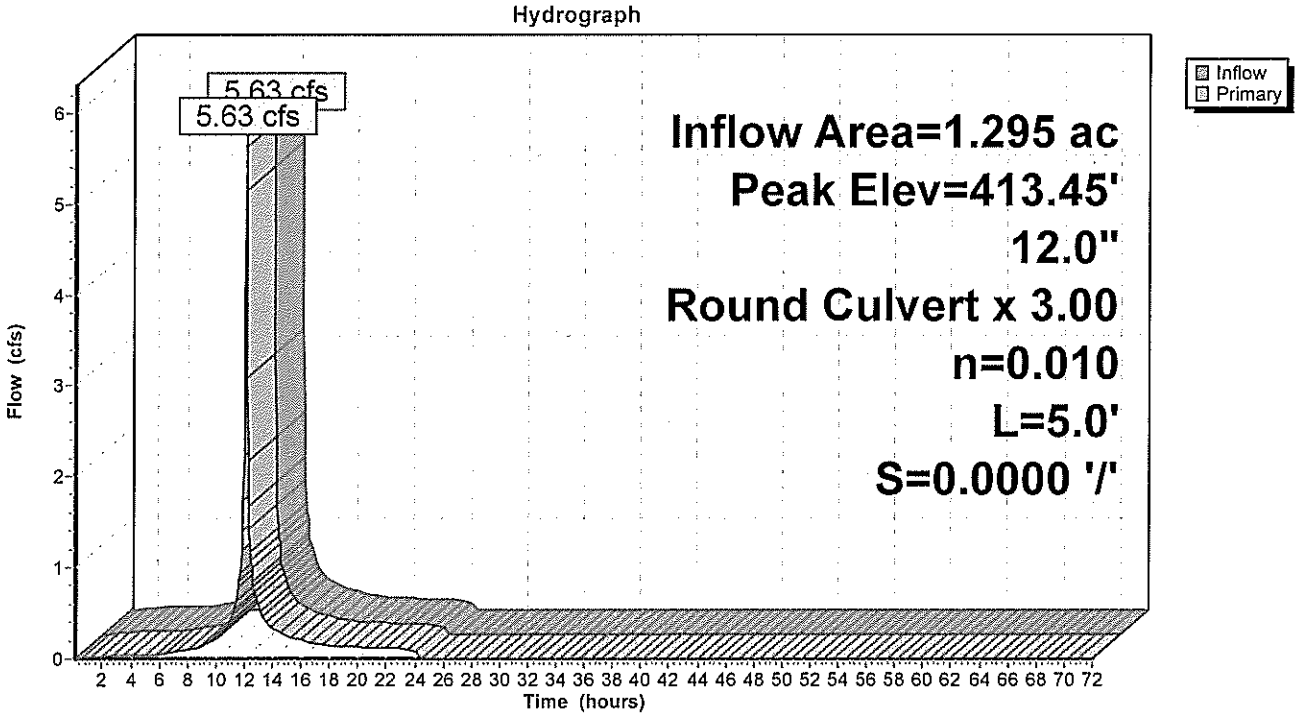
Inflow Area =	1.295 ac, 78.40% Impervious, Inflow Depth = 4.22" for 25-Year event				
Inflow =	5.63 cfs @ 12.11 hrs, Volume=	0.456 af			
Outflow =	5.63 cfs @ 12.11 hrs, Volume=	0.456 af, Atten= 0%, Lag= 0.0 min			
Primary =	5.63 cfs @ 12.11 hrs, Volume=	0.456 af			

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 413.45' @ 12.11 hrs

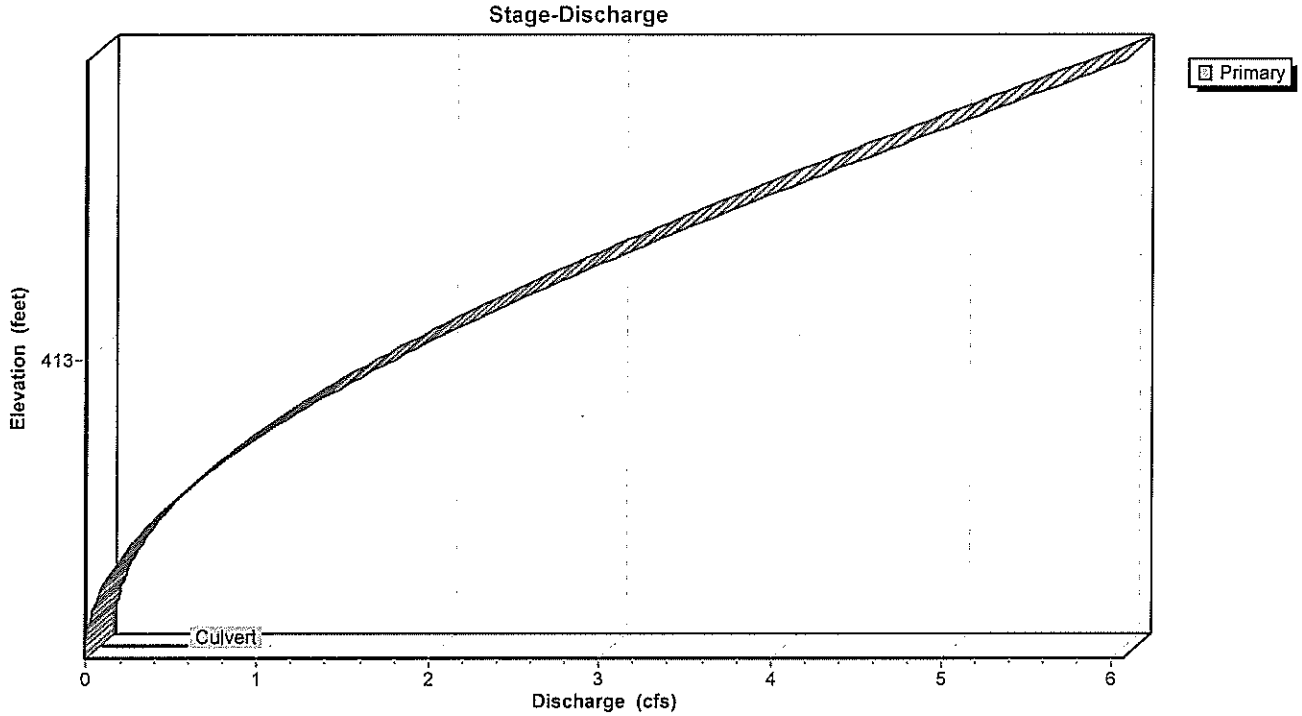
Device	Routing	Invert	Outlet Devices
#1	Primary	412.50'	**12.0" Round Culvert X 3.00** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 412.50' / 412.50' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=5.44 cfs @ 12.11 hrs HW=413.43' (Free Discharge)
└**1=Culvert** (Barrel Controls 5.44 cfs @ 3.09 fps)

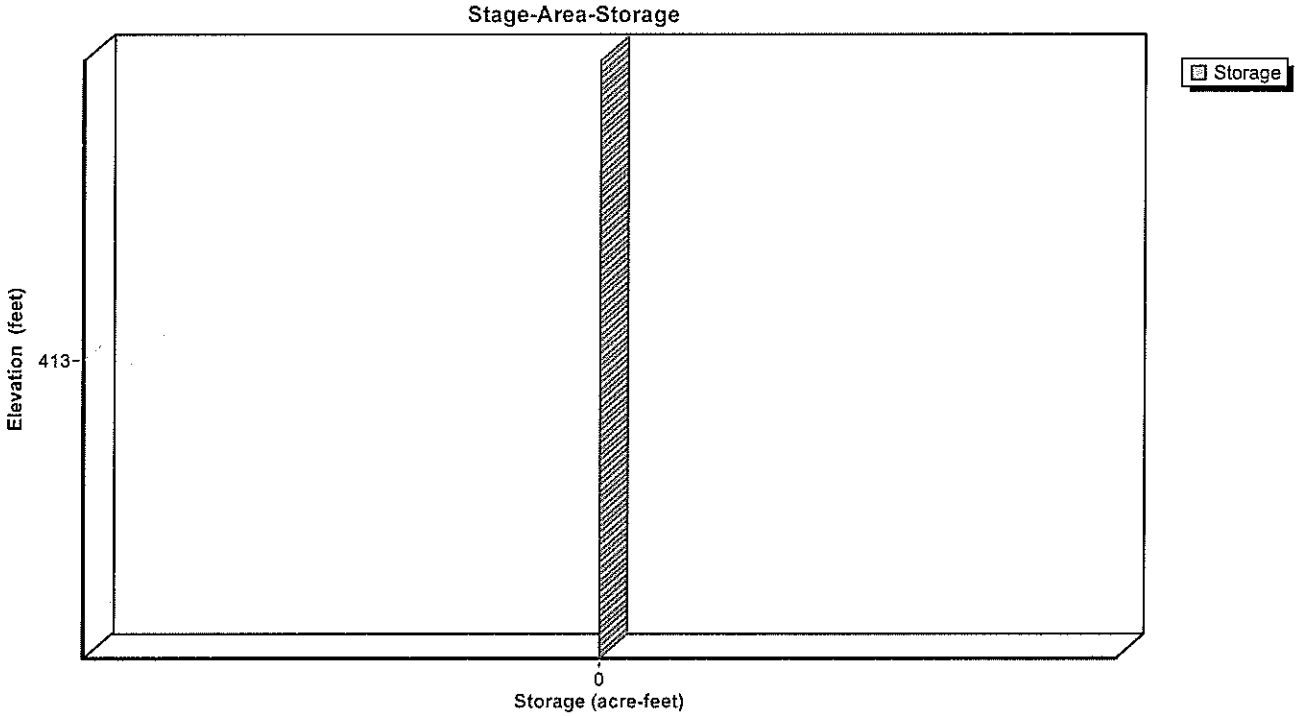
Pond DB-A1: Distribution Box 1



Pond DB-A1: Distribution Box 1



Pond DB-A1: Distribution Box 1



Summary for Pond DB-A2: Distribution Box 2

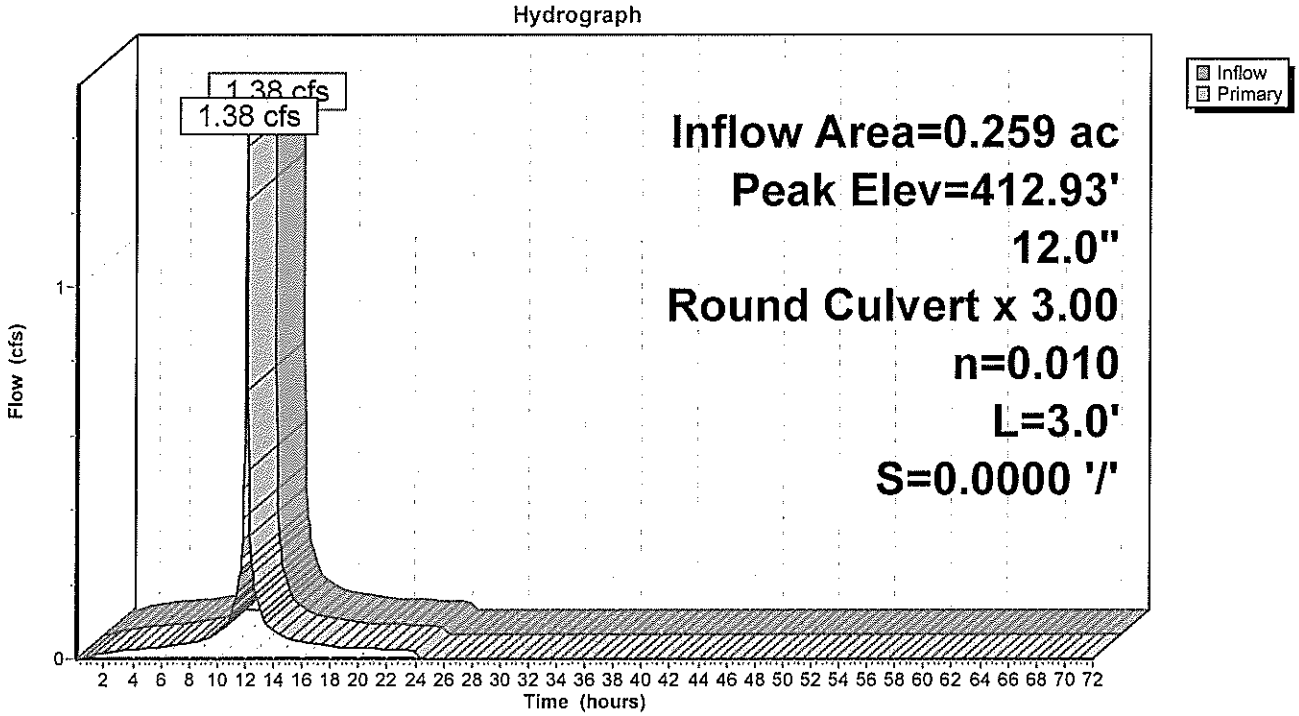
Inflow Area =	0.259 ac,100.00% Impervious, Inflow Depth = 5.64" for 25-Year event				
Inflow =	1.38 cfs @ 12.11 hrs, Volume=	0.122 af			
Outflow =	1.38 cfs @ 12.11 hrs, Volume=	0.122 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.38 cfs @ 12.11 hrs, Volume=	0.122 af			

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 412.93' @ 12.11 hrs

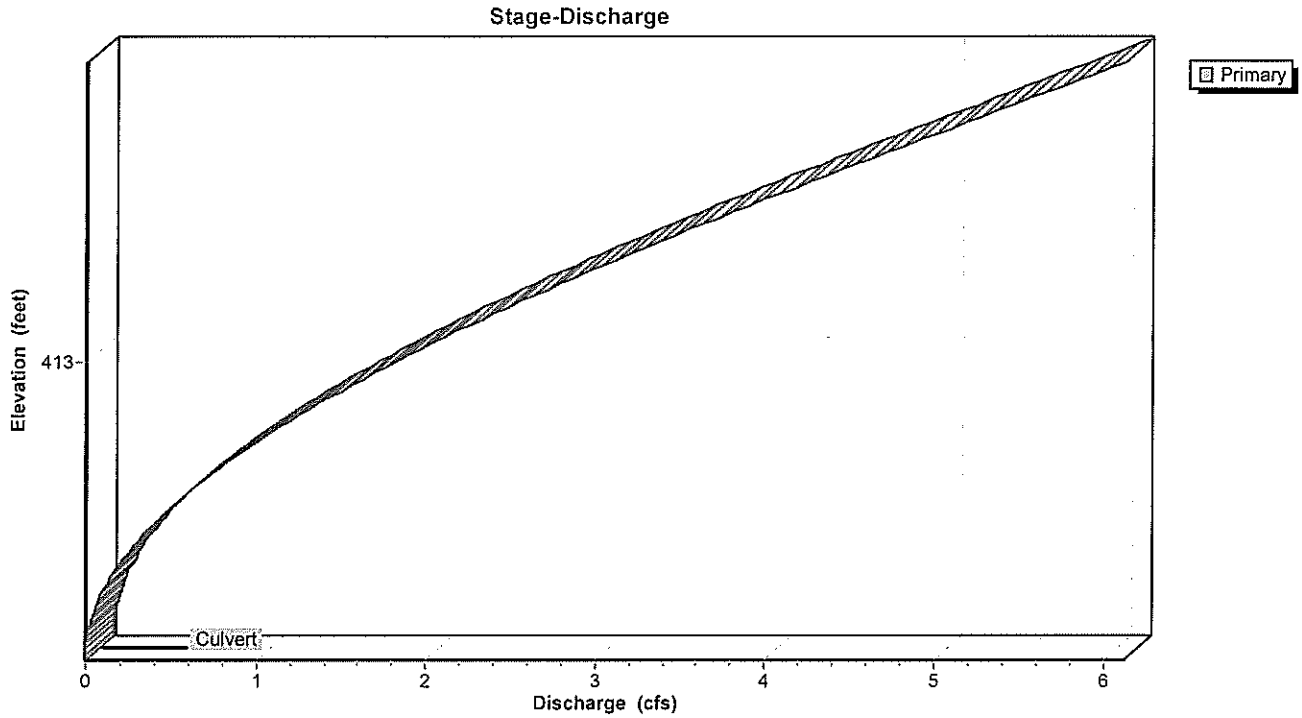
Device	Routing	Invert	Outlet Devices
#1	Primary	412.50'	**12.0" Round Culvert X 3.00** L= 3.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 412.50' / 412.50' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=1.34 cfs @ 12.11 hrs HW=412.92' (Free Discharge)
└─**1=Culvert** (Barrel Controls 1.34 cfs @ 2.07 fps)

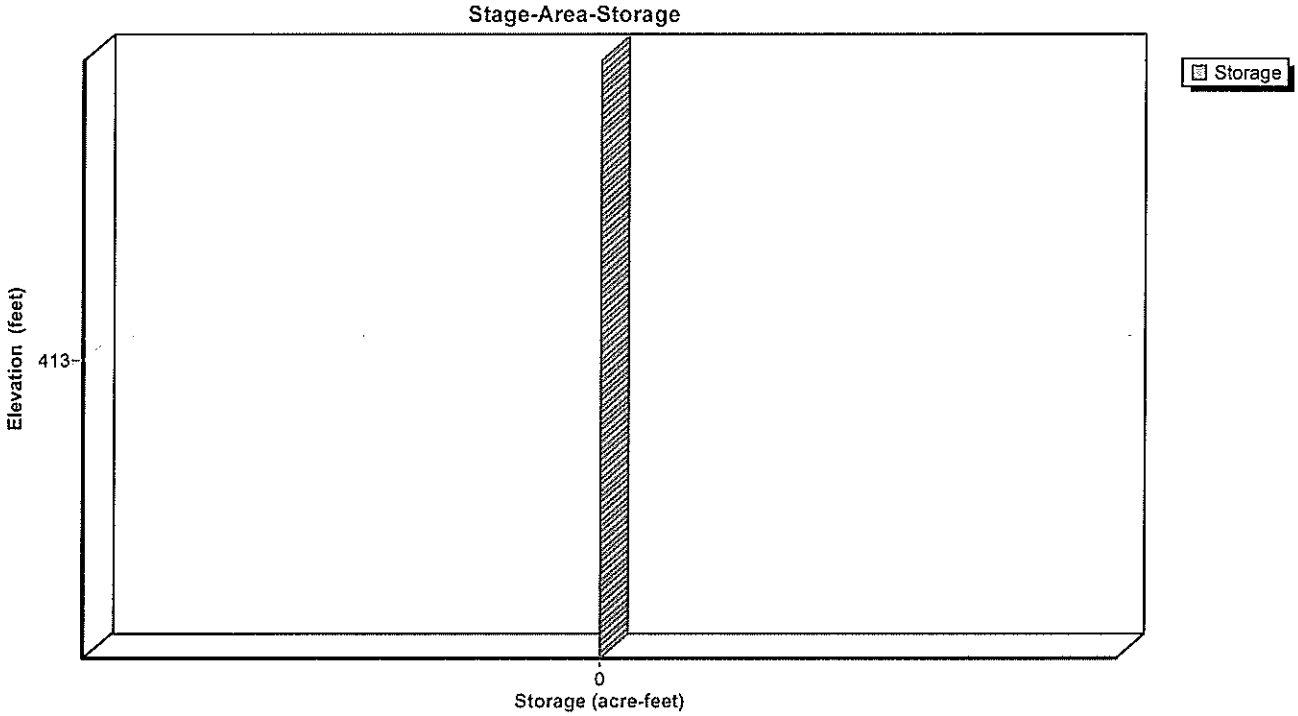
Pond DB-A2: Distribution Box 2



Pond DB-A2: Distribution Box 2



Pond DB-A2: Distribution Box 2



Summary for Pond RT: Recharge Trench

Inflow Area = 1.554 ac, 82.00% Impervious, Inflow Depth = 4.46" for 25-Year event
Inflow = 7.01 cfs @ 12.11 hrs, Volume= 0.578 af
Outflow = 1.53 cfs @ 11.85 hrs, Volume= 0.578 af, Atten= 78%, Lag= 0.0 min
Discarded = 1.53 cfs @ 11.85 hrs, Volume= 0.578 af

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 411.14' @ 12.39 hrs Surf.Area= 3,300 sf Storage= 4,149 cf

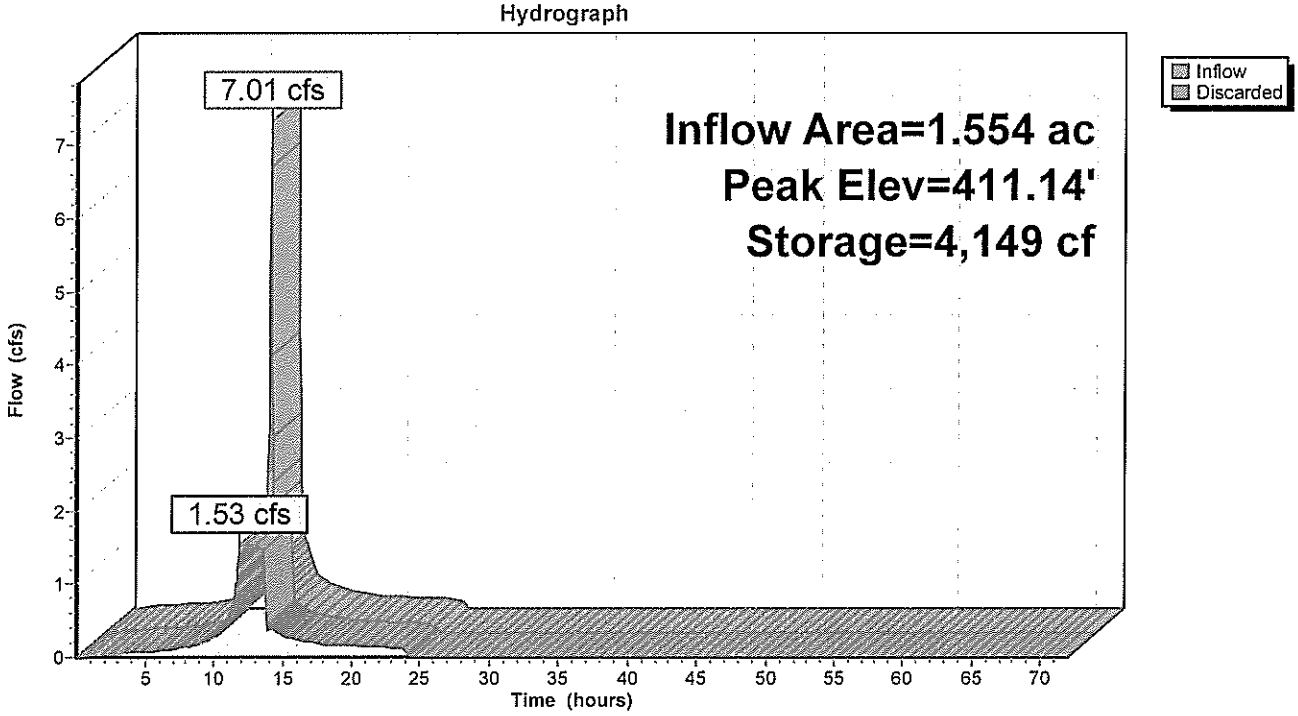
Plug-Flow detention time= 12.1 min calculated for 0.577 af (100% of inflow)
Center-of-Mass det. time= 12.1 min (800.1 - 788.1)

Volume	Invert	Avail.Storage	Storage Description
#1	408.00'	9,240 cf	**30.00'W x 110.00'L x 7.00'H Prismatoid** 23,100 cf Overall x 40.0% Voids

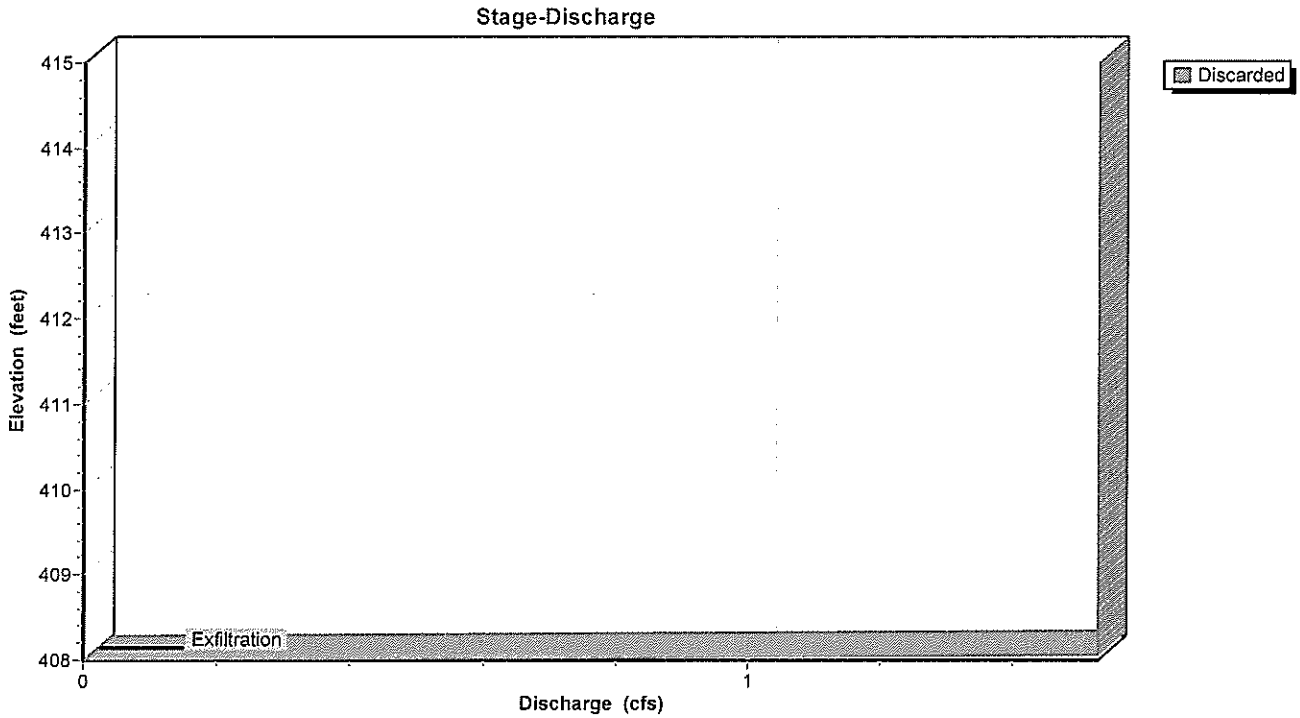
Device	Routing	Invert	Outlet Devices
#1	Discarded	408.00'	**20.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=1.53 cfs @ 11.85 hrs HW=408.09' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 1.53 cfs)

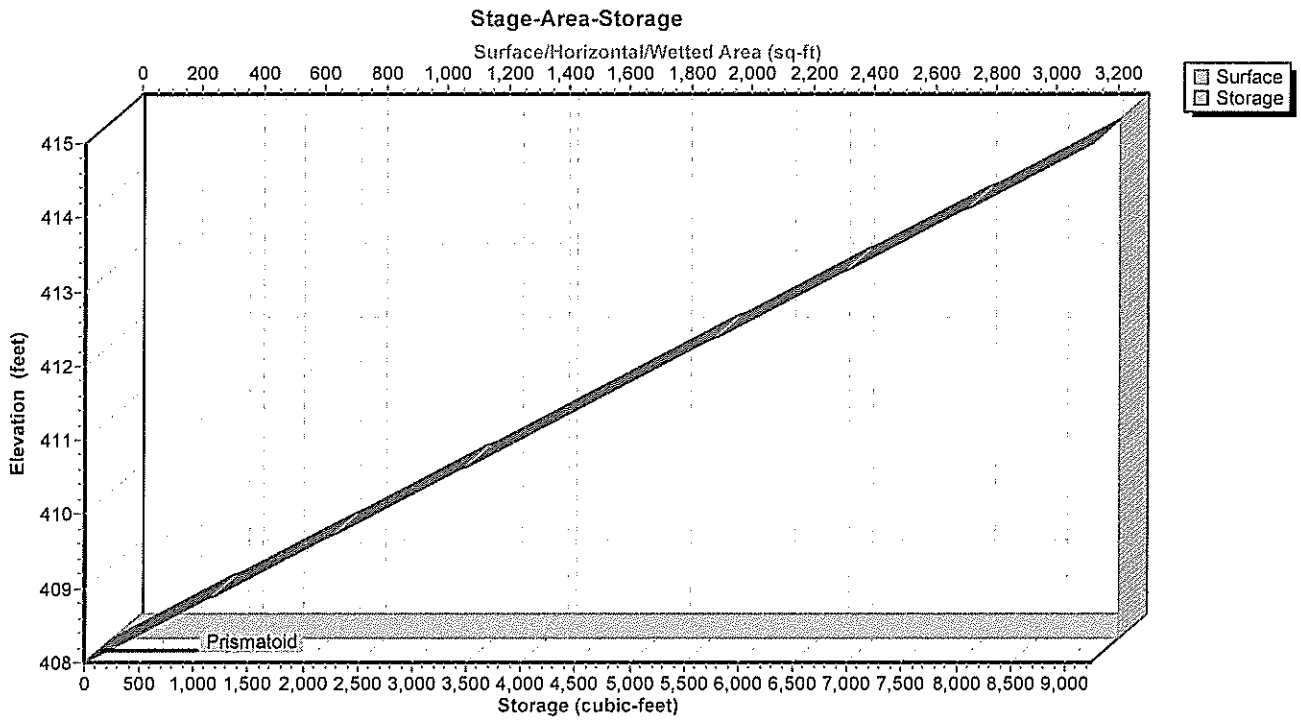
Pond RT: Recharge Trench



Pond RT: Recharge Trench



Pond RT: Recharge Trench



Summary for Pond WQU-2A: Storm Filter 330

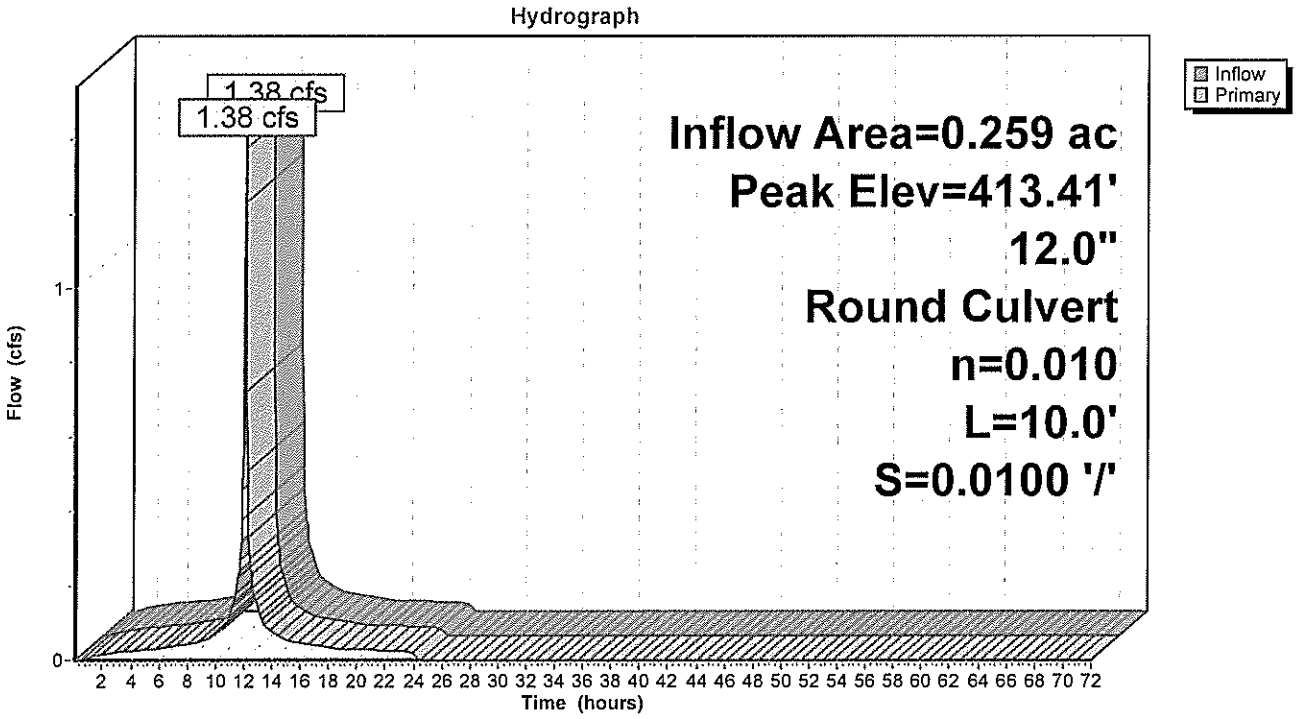
Inflow Area =	0.259 ac,100.00% Impervious, Inflow Depth = 5.64" for 25-Year event			
Inflow =	1.38 cfs @ 12.11 hrs, Volume=	0.122 af		
Outflow =	1.38 cfs @ 12.11 hrs, Volume=	0.122 af, Atten= 0%, Lag= 0.0 min		
Primary =	1.38 cfs @ 12.11 hrs, Volume=	0.122 af		

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 413.41' @ 12.11 hrs

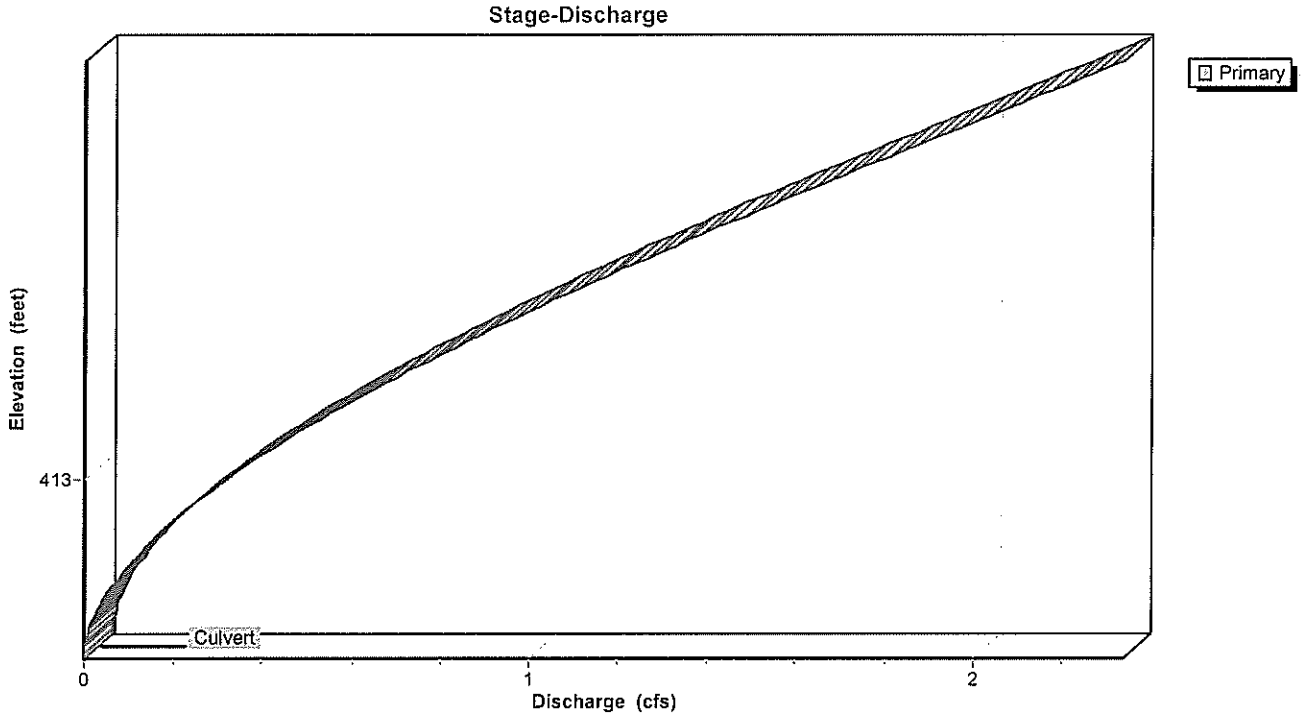
Device	Routing	Invert	Outlet Devices
#1	Primary	412.70'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 412.70' / 412.60' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=1.34 cfs @ 12.11 hrs HW=413.39' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.34 cfs @ 3.24 fps)

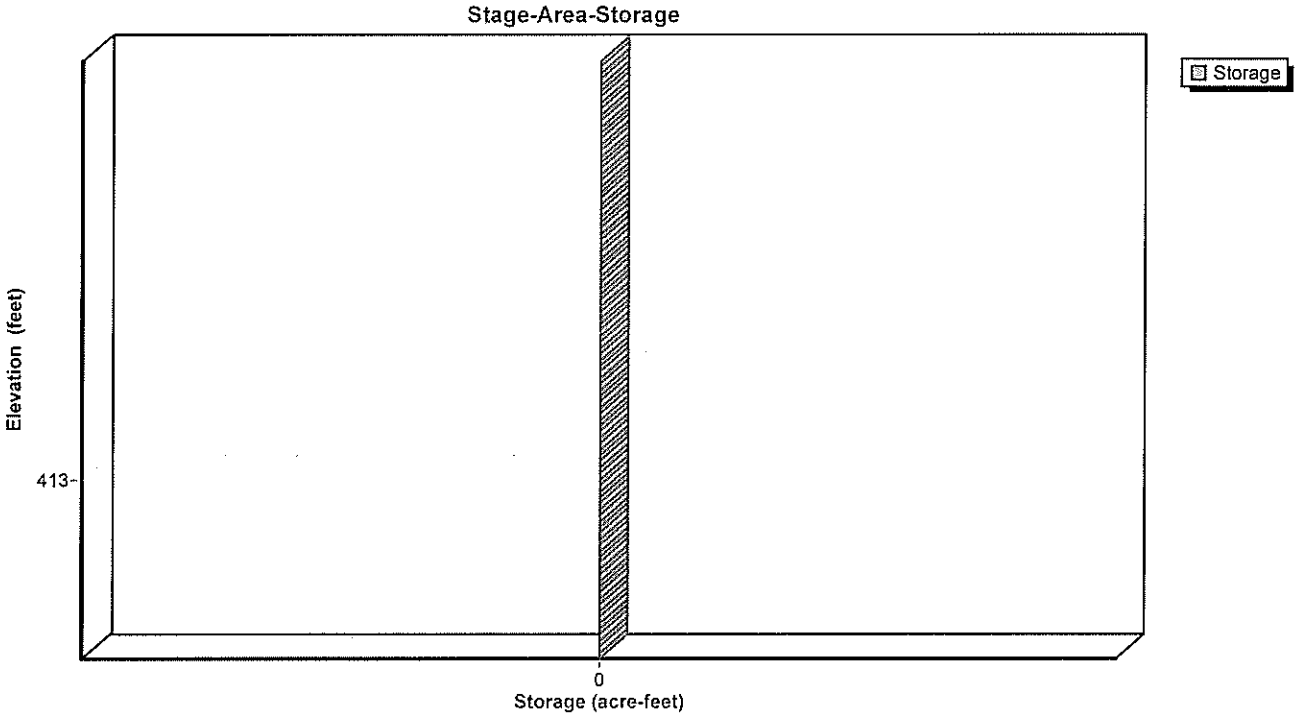
Pond WQU-2A: Storm Filter 330



Pond WQU-2A: Storm Filter 330



Pond WQU-2A: Storm Filter 330



Summary for Pond WQU-A1: Storm Filter 330

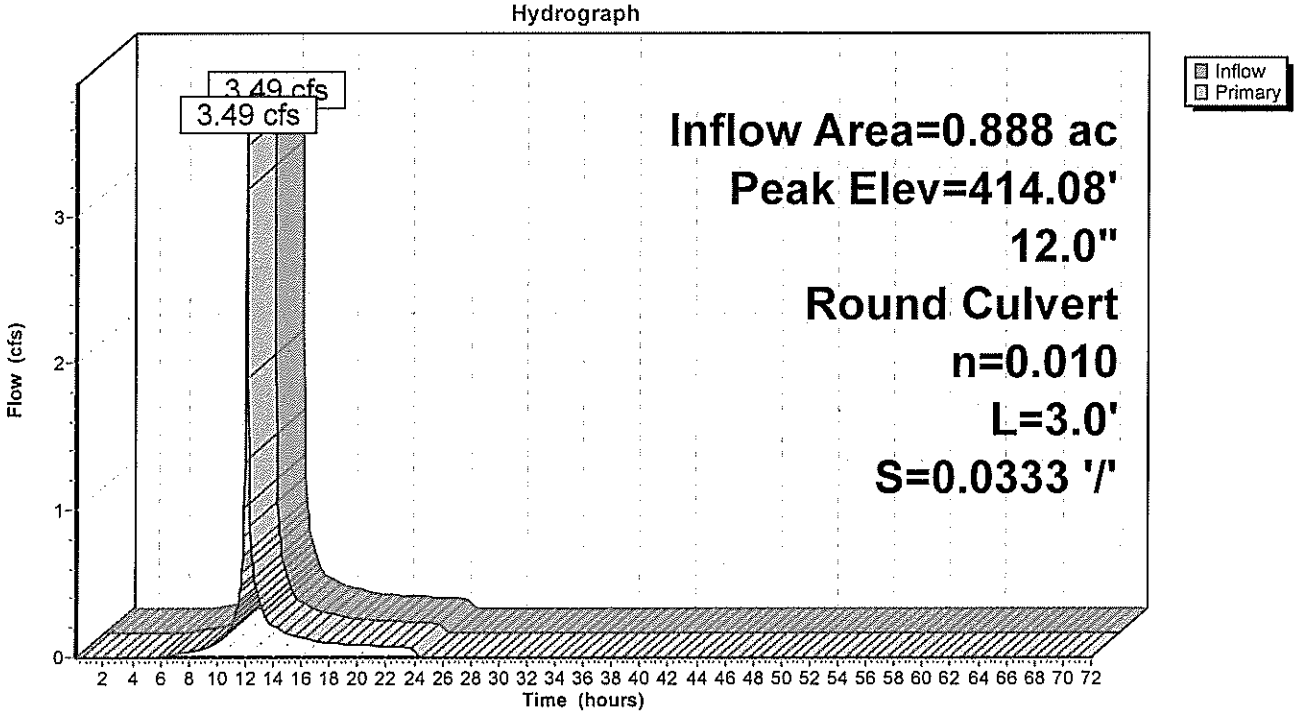
Inflow Area =	0.888 ac, 68.48% Impervious, Inflow Depth = 3.57" for 25-Year event				
Inflow =	3.49 cfs @ 12.11 hrs, Volume=	0.264 af			
Outflow =	3.49 cfs @ 12.11 hrs, Volume=	0.264 af, Atten= 0%, Lag= 0.0 min			
Primary =	3.49 cfs @ 12.11 hrs, Volume=	0.264 af			

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 414.08' @ 12.11 hrs

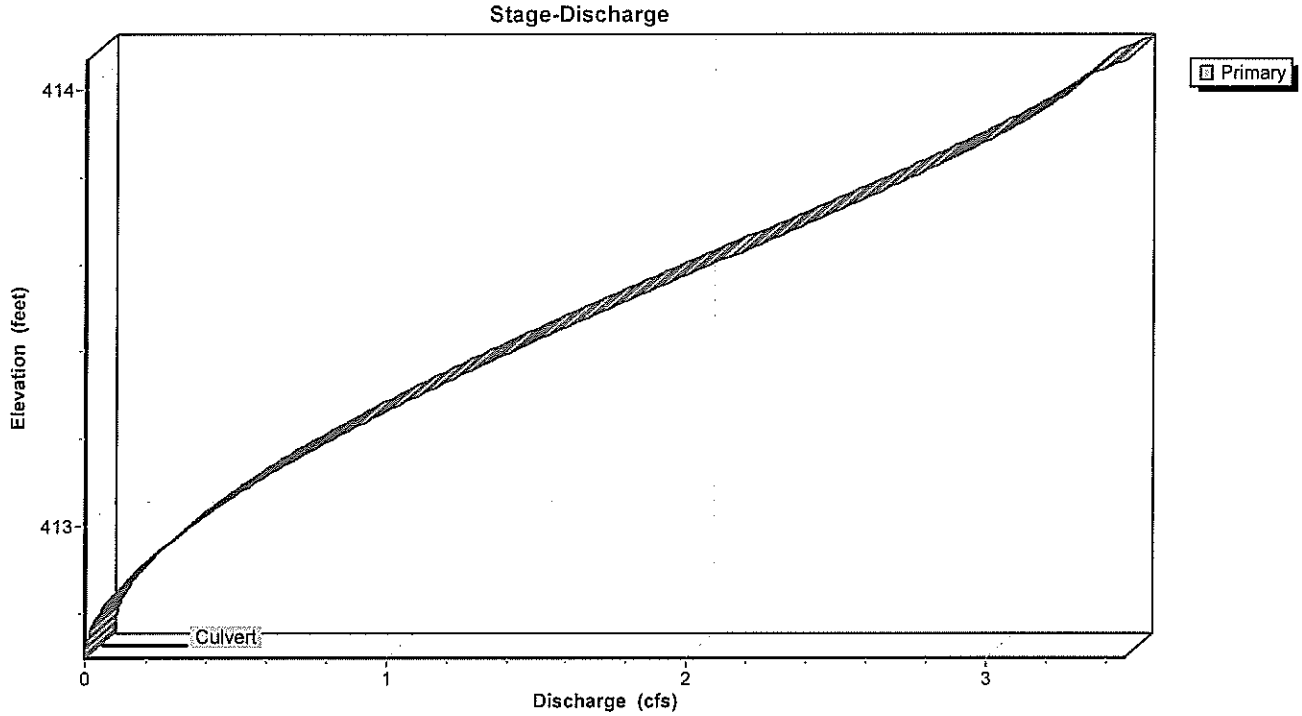
Device	Routing	Invert	Outlet Devices
#1	Primary	412.70'	**12.0" Round Culvert** L= 3.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 412.70' / 412.60' S= 0.0333 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=3.33 cfs @ 12.11 hrs HW=414.03' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.33 cfs @ 4.23 fps)

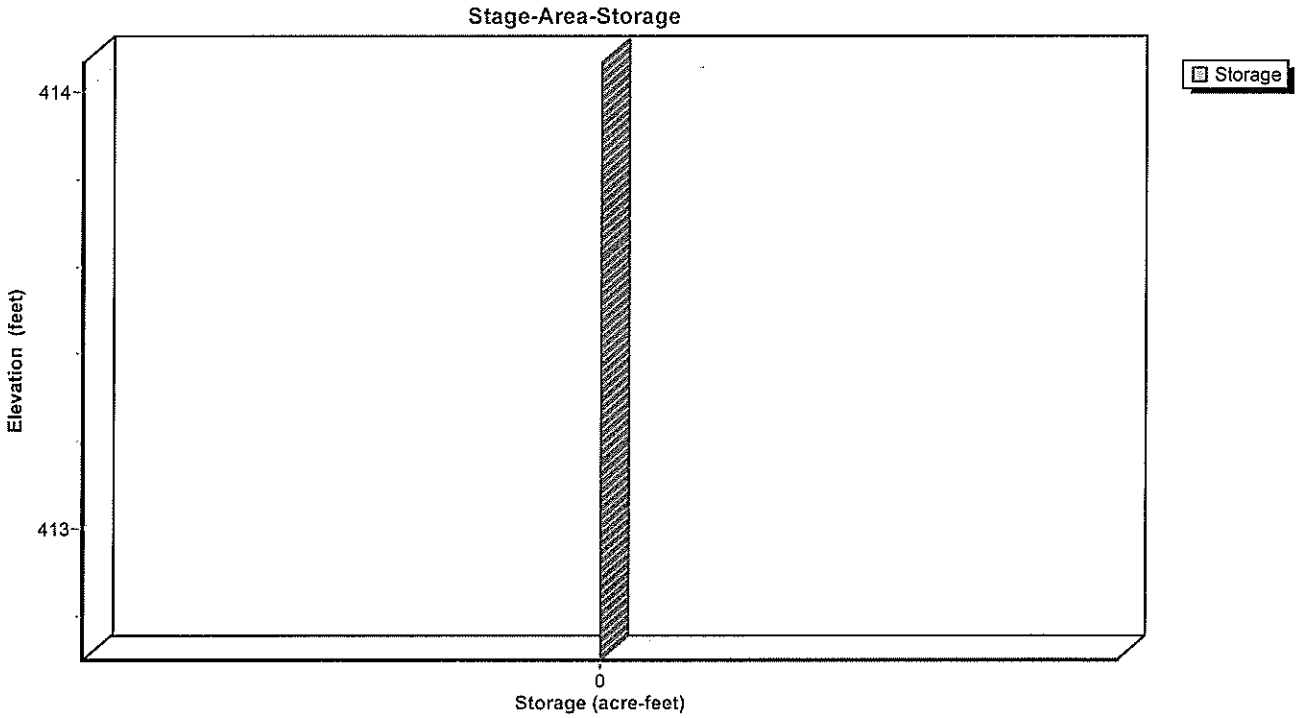
Pond WQU-A1: Storm Filter 330



Pond WQU-A1: Storm Filter 330



Pond WQU-A1: Storm Filter 330

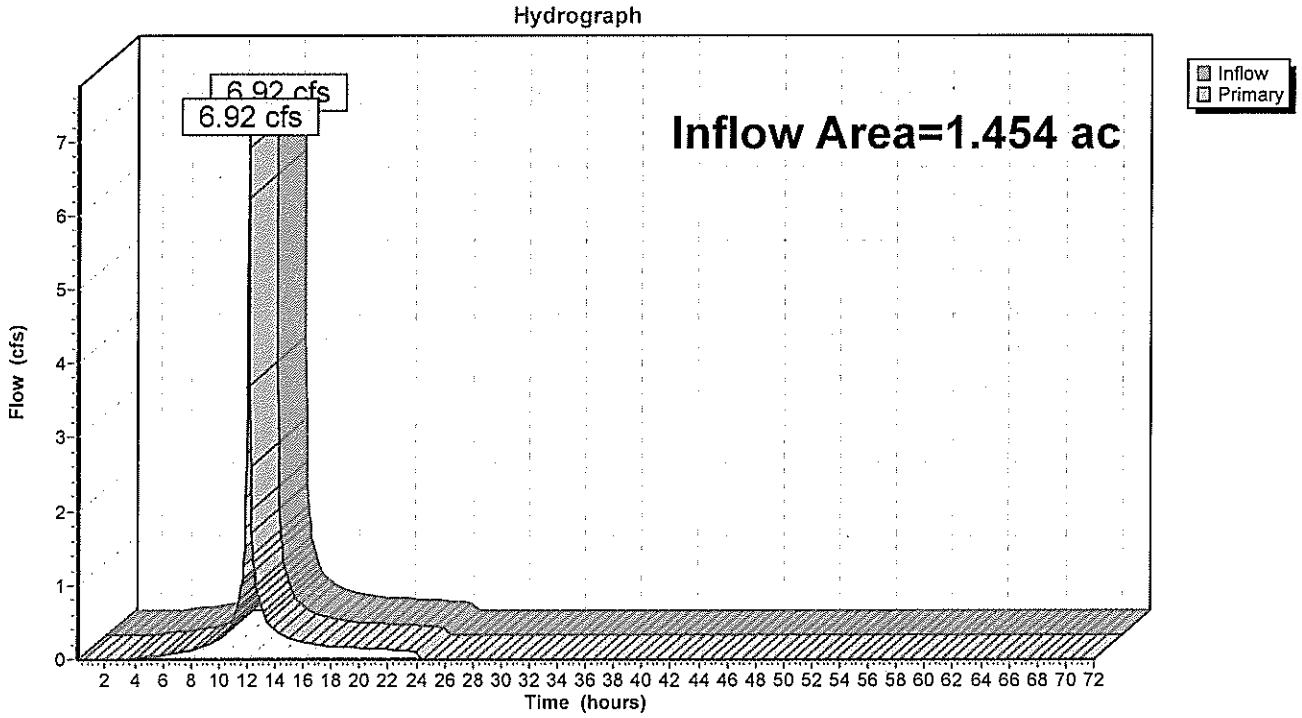


Summary for Link POA-A: Existing Qpeak Offsite to the North

Inflow Area = 1.454 ac, 82.59% Impervious, Inflow Depth = 4.51" for 25-Year event
Inflow = 6.92 cfs @ 12.11 hrs, Volume= 0.547 af
Primary = 6.92 cfs @ 12.11 hrs, Volume= 0.547 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link POA-A: Existing Qpeak Offsite to the North

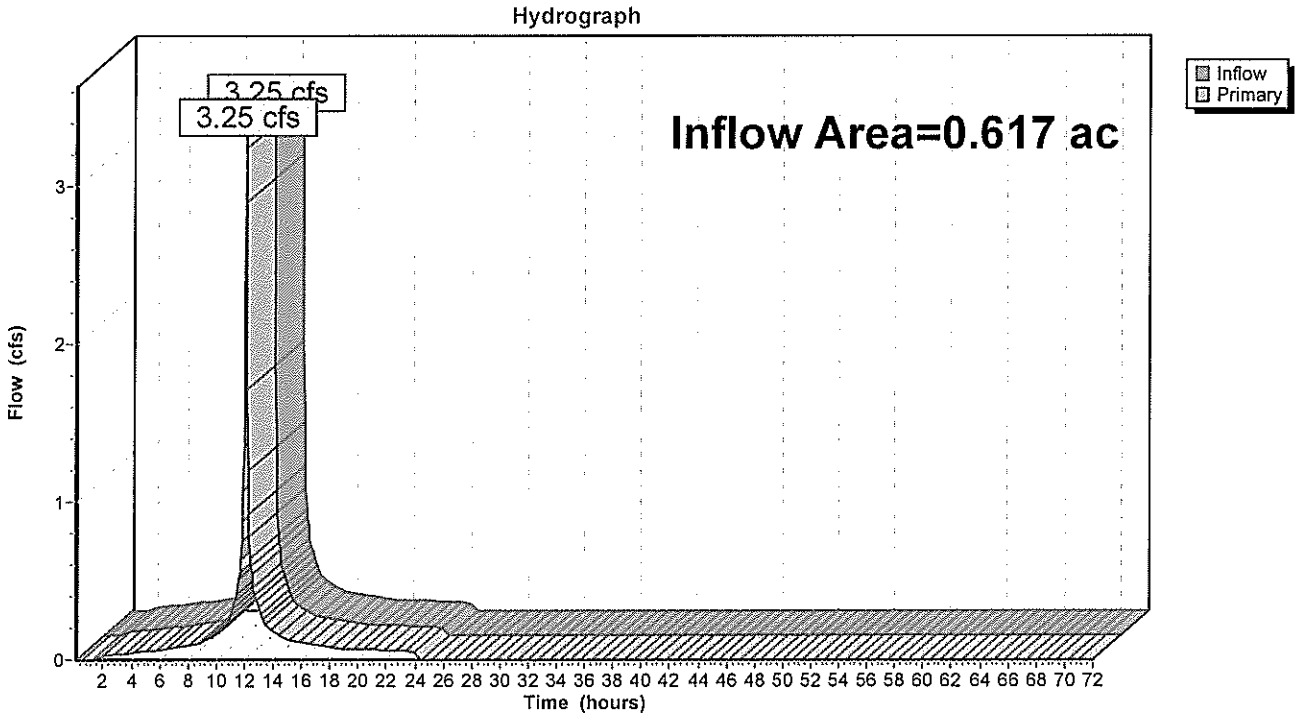


Summary for Link POA-B: Existing Qpeak Onsite To Existing Recharge Pits

Inflow Area = 0.617 ac, 97.10% Impervious, Inflow Depth = 5.41" for 25-Year event
Inflow = 3.25 cfs @ 12.11 hrs, Volume= 0.278 af
Primary = 3.25 cfs @ 12.11 hrs, Volume= 0.278 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link POA-B: Existing Qpeak Onsite To Existing Recharge Pits

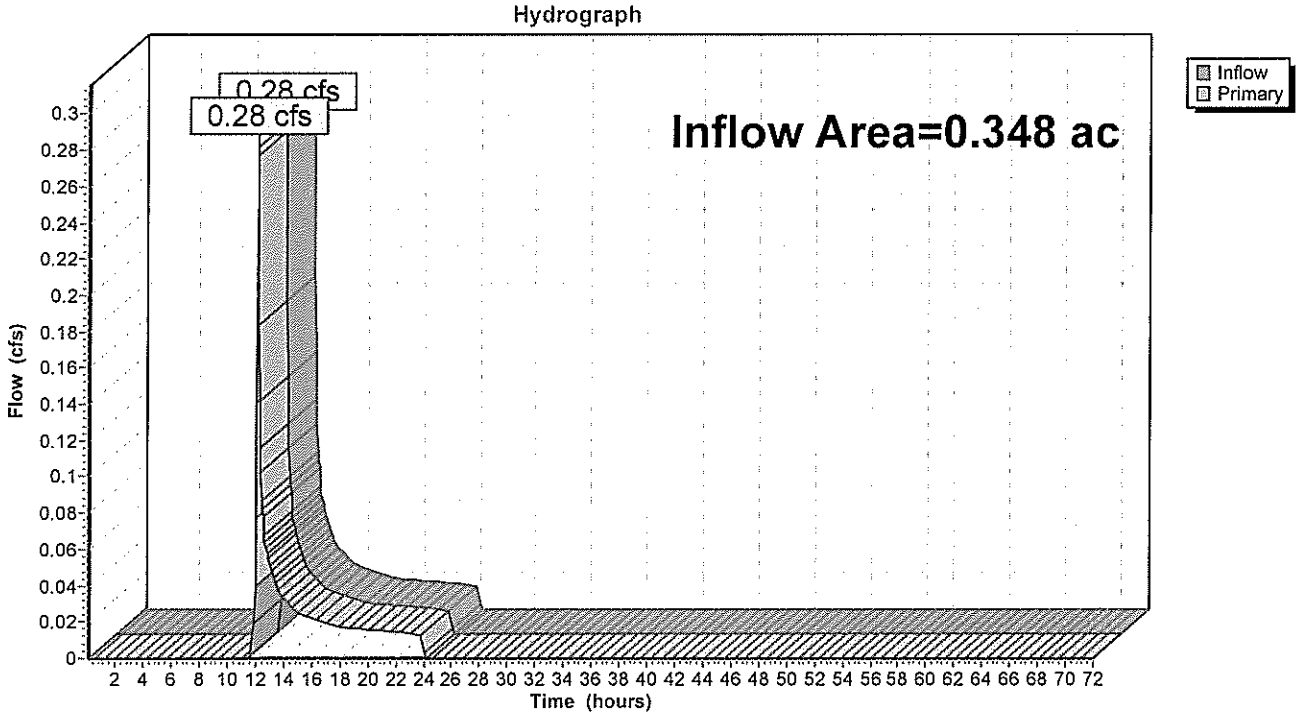


Summary for Link POA-C: Existing Qpeak Offsite To East

Inflow Area = 0.348 ac, 0.00% Impervious, Inflow Depth = 0.95" for 25-Year event
Inflow = 0.28 cfs @ 12.14 hrs, Volume= 0.028 af
Primary = 0.28 cfs @ 12.14 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link POA-C: Existing Qpeak Offsite To East

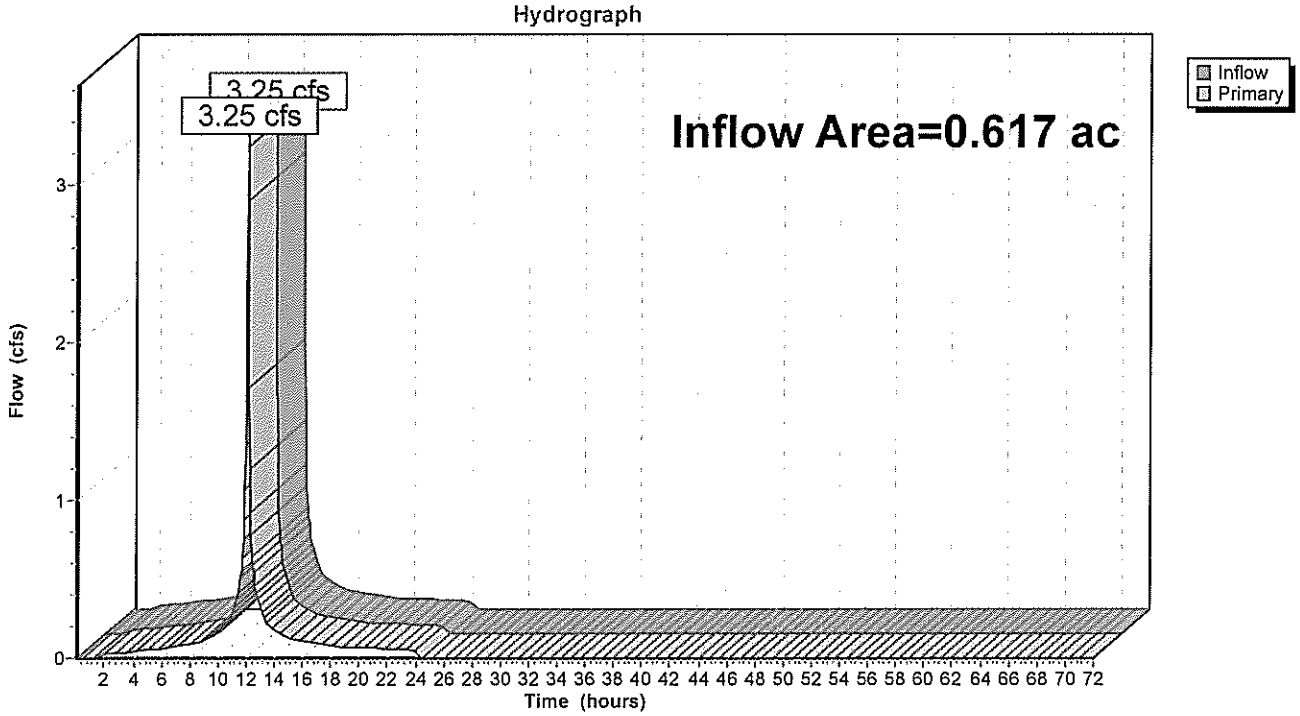


Summary for Link POA-P-B: Proposed Qpeak Onsite To Existing Recharge Pits

Inflow Area = 0.617 ac, 97.10% Impervious, Inflow Depth = 5.41" for 25-Year event
Inflow = 3.25 cfs @ 12.11 hrs, Volume= 0.278 af
Primary = 3.25 cfs @ 12.11 hrs, Volume= 0.278 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link POA-P-B: Proposed Qpeak Onsite To Existing Recharge Pits

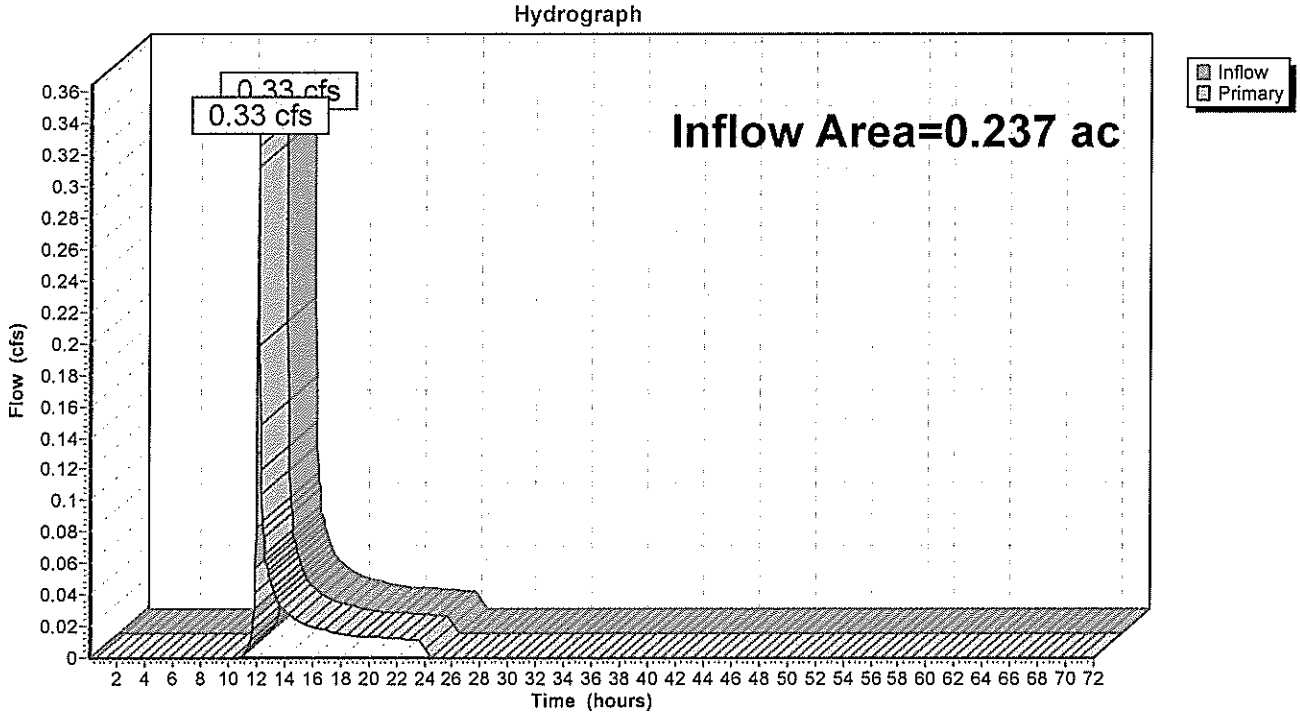


Summary for Link POA-P-C: Proposed Qpeak Offsite to the East

Inflow Area = 0.237 ac, 11.77% Impervious, Inflow Depth = 1.37" for 25-Year event
Inflow = 0.33 cfs @ 12.13 hrs, Volume= 0.027 af
Primary = 0.33 cfs @ 12.13 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link POA-P-C: Proposed Qpeak Offsite to the East



Time span=0.10-72.00 hrs, dt=0.05 hrs, 1439 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 E-WS-A: Existing Runoff Area=63,338 sf 82.59% Impervious Runoff Depth=6.90"
Tc=5.0 min CN=88 Runoff=10.32 cfs 0.836 af

Subcatchment E-WS-B: Existing Runoff Area=26,870 sf 97.10% Impervious Runoff Depth=7.86"
Tc=5.0 min CN=96 Runoff=4.64 cfs 0.404 af

Subcatchment E-WS-C: Existing Conditions Runoff Area=15,172 sf 0.00% Impervious Runoff Depth=2.24"
Tc=5.0 min CN=48 Runoff=0.81 cfs 0.065 af

Subcatchment P-WS-A1.1: Proposed Runoff Area=38,666 sf 68.48% Impervious Runoff Depth=5.83"
Tc=5.0 min CN=79 Runoff=5.58 cfs 0.431 af

Subcatchment P-WS-A1.2: Proposed Runoff Area=17,750 sf 100.00% Impervious Runoff Depth=8.10"
Tc=5.0 min CN=98 Runoff=3.08 cfs 0.275 af

Subcatchment P-WS-A2: Proposed Runoff Area=11,297 sf 100.00% Impervious Runoff Depth=8.10"
Tc=5.0 min CN=98 Runoff=1.96 cfs 0.175 af

Subcatchment P-WS-B: Proposed Runoff Area=26,870 sf 97.10% Impervious Runoff Depth=7.86"
Tc=5.0 min CN=96 Runoff=4.64 cfs 0.404 af

Subcatchment P-WS-C: Proposed Runoff Area=10,329 sf 11.77% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=54 Runoff=0.75 cfs 0.057 af

Reach R-A1.2: Roof Drain Leader Avg. Flow Depth=0.56' Max Vel=6.72 fps Inflow=3.08 cfs 0.275 af
12.0" Round Pipe n=0.010 L=32.0' S=0.0119 '/' Capacity=5.05 cfs Outflow=3.05 cfs 0.275 af

Pond CB-A1: Catch Basin A1 Peak Elev=415.66' Inflow=5.58 cfs 0.431 af
12.0" Round Culvert n=0.010 L=3.0' S=0.0333 '/' Outflow=5.58 cfs 0.431 af

Pond CB-A2: Catch Basin A2 Peak Elev=413.87' Inflow=1.96 cfs 0.175 af
12.0" Round Culvert n=0.010 L=5.0' S=0.0200 '/' Outflow=1.96 cfs 0.175 af

Pond DB-A1: Distribution Box 1 Peak Elev=413.81' Inflow=8.63 cfs 0.706 af
12.0" Round Culvert x 3.00 n=0.010 L=5.0' S=0.0000 '/' Outflow=8.63 cfs 0.706 af

Pond DB-A2: Distribution Box 2 Peak Elev=413.02' Inflow=1.96 cfs 0.175 af
12.0" Round Culvert x 3.00 n=0.010 L=3.0' S=0.0000 '/' Outflow=1.96 cfs 0.175 af

Pond RT: Recharge Trench Peak Elev=414.36' Storage=8,400 cf Inflow=10.59 cfs 0.881 af
Outflow=1.53 cfs 0.881 af

Pond WQU-2A: Storm Filter 330 Peak Elev=413.59' Inflow=1.96 cfs 0.175 af
12.0" Round Culvert n=0.010 L=10.0' S=0.0100 '/' Outflow=1.96 cfs 0.175 af

Pond WQU-A1: Storm Filter 330 Peak Elev=415.36' Inflow=5.58 cfs 0.431 af
12.0" Round Culvert n=0.010 L=3.0' S=0.0333 '/' Outflow=5.58 cfs 0.431 af

Link POA-A: Existing Qpeak Offsite to the North Inflow=10.32 cfs 0.836 af
Primary=10.32 cfs 0.836 af

Link POA-B: Existing Qpeak Onsite To Existing Recharge Pits Inflow=4.64 cfs 0.404 af
Primary=4.64 cfs 0.404 af

Link POA-C: Existing Qpeak Offsite To East Inflow=0.81 cfs 0.065 af
Primary=0.81 cfs 0.065 af

Link POA-P-B: Proposed Qpeak Onsite To Existing Recharge Pits Inflow=4.64 cfs 0.404 af
Primary=4.64 cfs 0.404 af

Link POA-P-C: Proposed Qpeak Offsite to the East Inflow=0.75 cfs 0.057 af
Primary=0.75 cfs 0.057 af

Total Runoff Area = 4.828 ac Runoff Volume = 2.648 af Average Runoff Depth = 6.58"
23.33% Pervious = 1.126 ac 76.67% Impervious = 3.701 ac

Summary for Subcatchment E-WS-A: Existing Conditions - Offsite To North

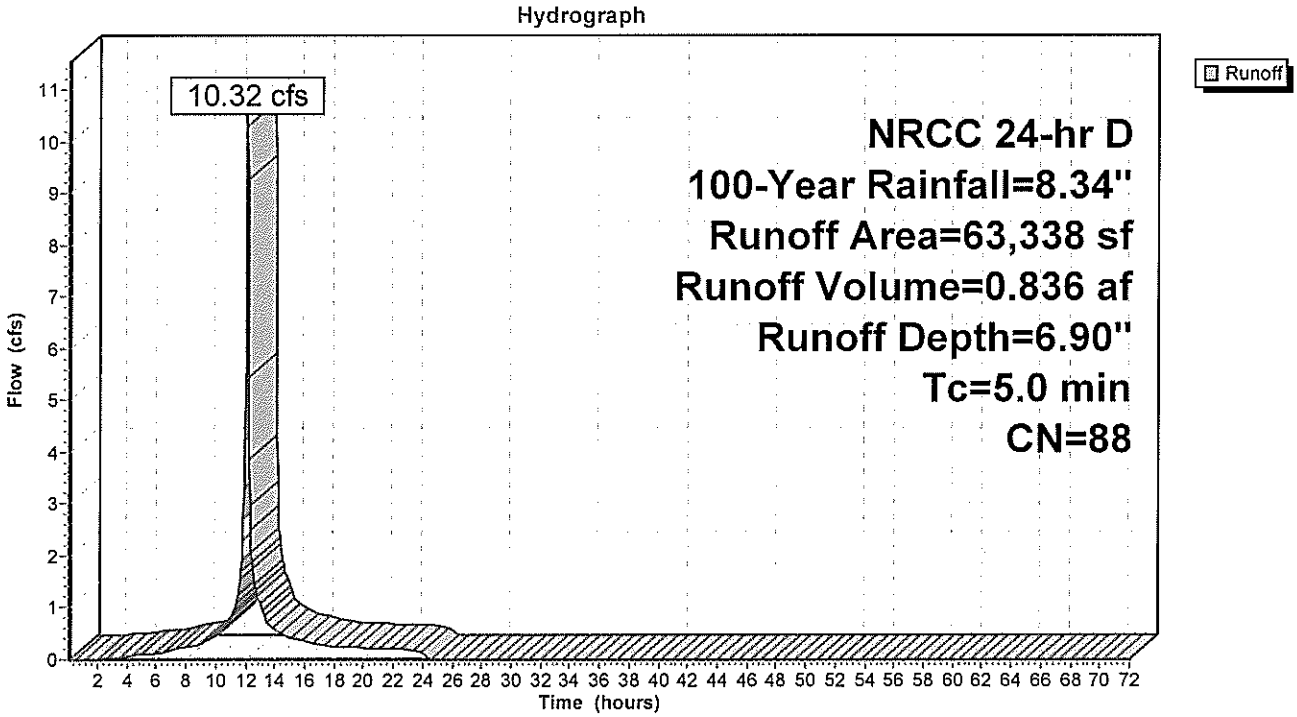
Runoff = 10.32 cfs @ 12.11 hrs, Volume= 0.836 af, Depth= 6.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=8.34"

	Area (sf)	CN	Description
*	52,309	98	Impervious drive & rroof
	11,029	39	>75% Grass cover, Good, HSG A
	63,338	88	Weighted Average
	11,029		17.41% Pervious Area
	52,309		82.59% Impervious Area

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

Subcatchment E-WS-A: Existing Conditions - Offsite To North



Summary for Subcatchment E-WS-B: Existing Conditions - To Onsite Existing Recharge Pits

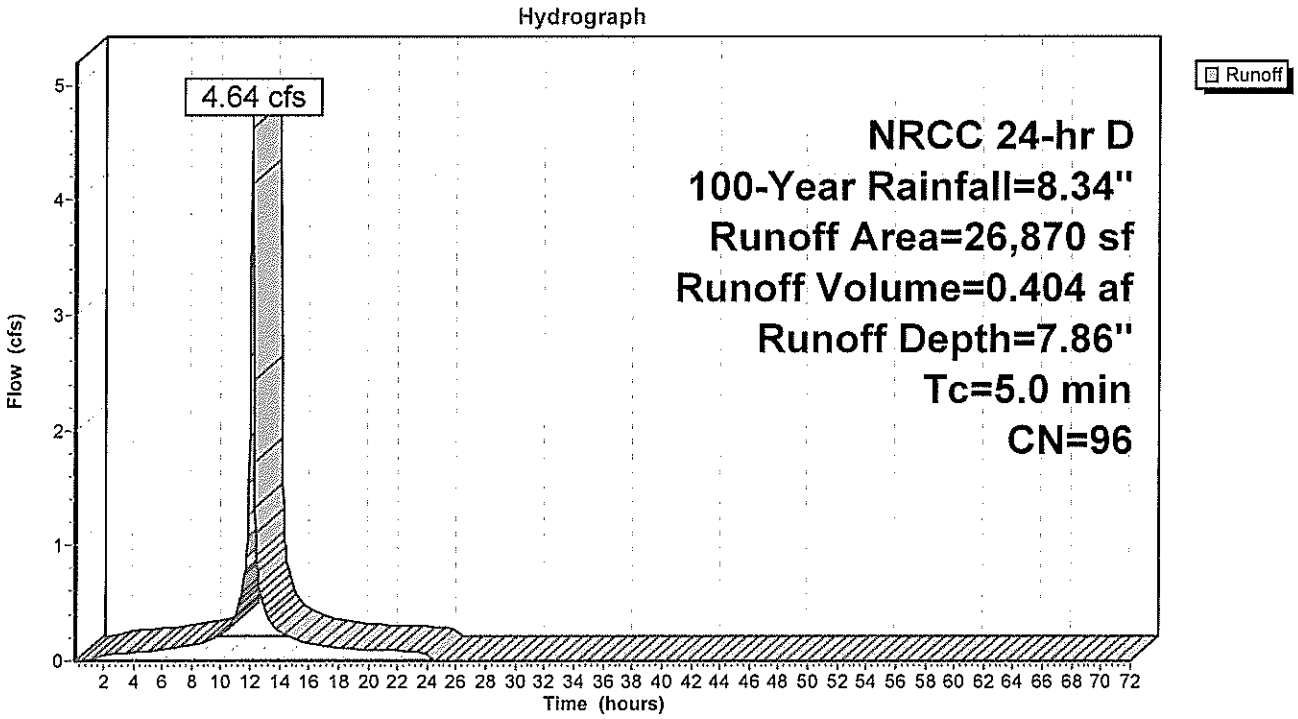
Runoff = 4.64 cfs @ 12.11 hrs, Volume= 0.404 af, Depth= 7.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=8.34"

	Area (sf)	CN	Description
*	26,090	98	Impervious drive & rroof
	780	39	>75% Grass cover, Good, HSG A
	26,870	96	Weighted Average
	780		2.90% Pervious Area
	26,090		97.10% Impervious Area

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

Subcatchment E-WS-B: Existing Conditions - To Onsite Existing Recharge Pits



Summary for Subcatchment E-WS-C: Existing Conditions Watershed C - Offsite To East

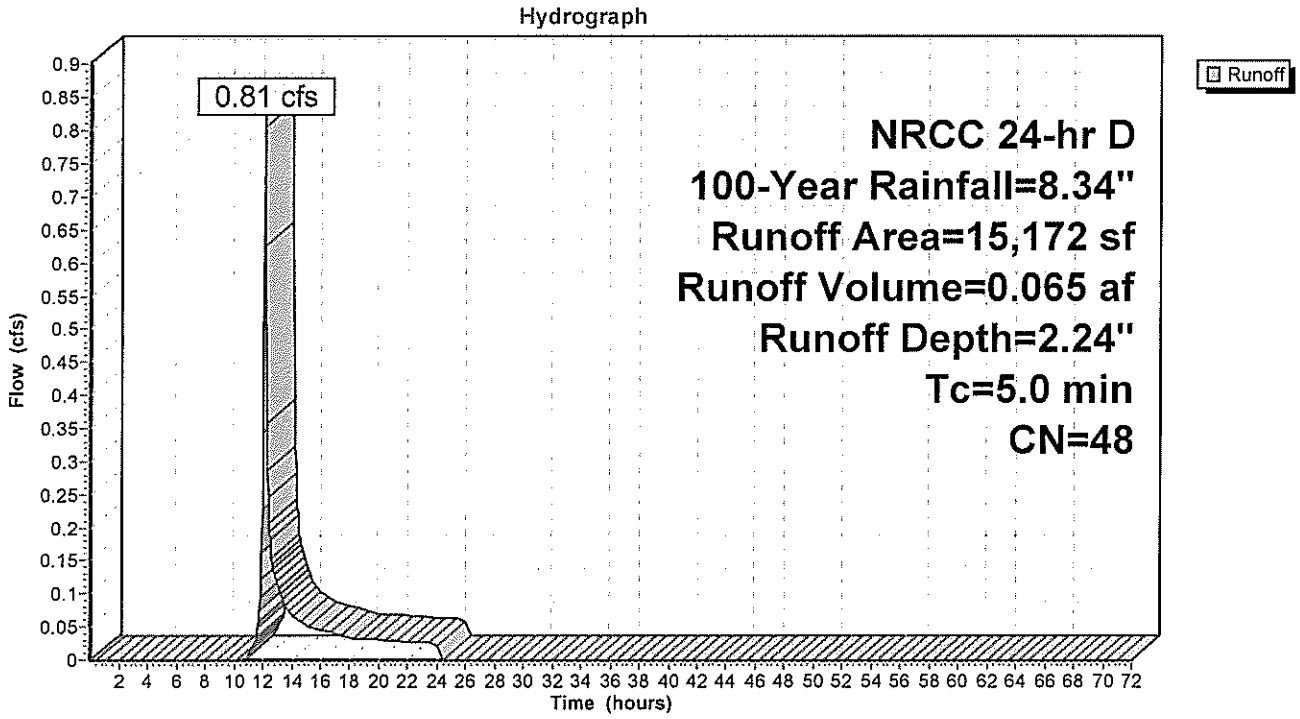
Runoff = 0.81 cfs @ 12.12 hrs, Volume= 0.065 af, Depth= 2.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=8.34"

Area (sf)	CN	Description
15,172	48	Brush, Poor, HSG A
15,172		100.00% Pervious Area

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

Subcatchment E-WS-C: Existing Conditions Watershed C - Offsite To East



ummary for Subcatchment P-WS-A1.1: Proposed Sub-Watershed A1.1 - East Section To Catch Basi

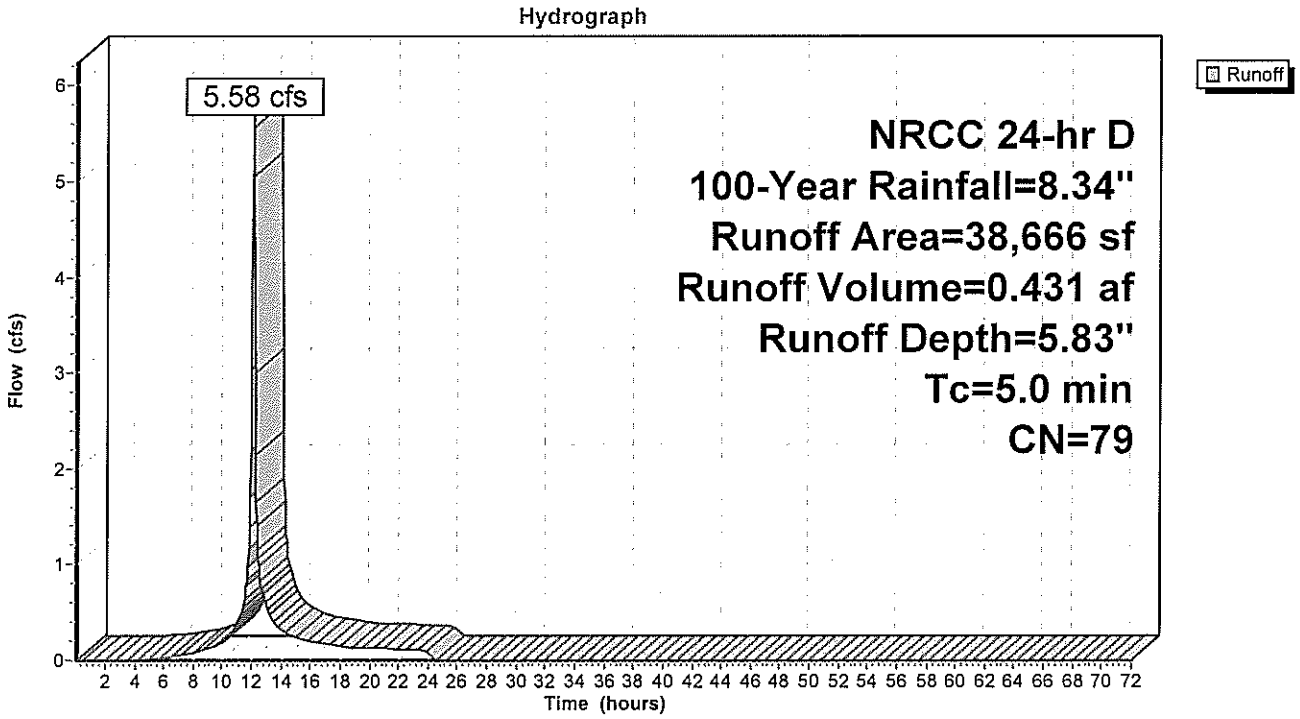
Runoff = 5.58 cfs @ 12.11 hrs, Volume= 0.431 af, Depth= 5.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=8.34"

Area (sf)	CN	Description
26,480	98	Paved parking, HSG A
12,186	39	>75% Grass cover, Good, HSG A
38,666	79	Weighted Average
12,186		31.52% Pervious Area
26,480		68.48% Impervious Area

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

Subcatchment P-WS-A1.1: Proposed Sub-Watershed A1.1 - East Section To Catch Basin A1



ımmary for Subcatchment P-WS-A1.2: Proposed Sub-Watershed A1.2 - Building Roof to Distributior

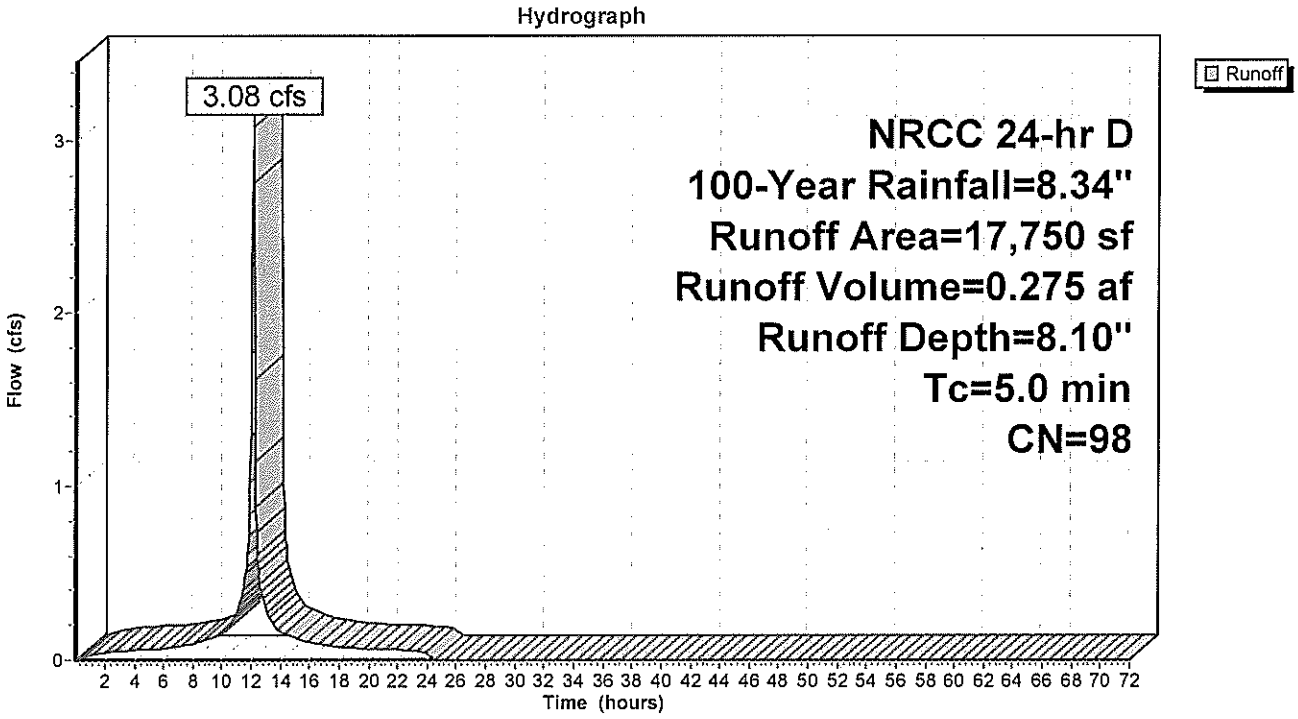
Runoff = 3.08 cfs @ 12.11 hrs, Volume= 0.275 af, Depth= 8.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=8.34"

	Area (sf)	CN	Description
*	17,750	98	Roof
	17,750		100.00% Impervious Area

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

Subcatchment P-WS-A1.2: Proposed Sub-Watershed A1.2 - Building Roof to Distribution Box



ummary for Subcatchment P-WS-A2: Proposed Sub-Watershed A2 - West Section To Infiltration Tre

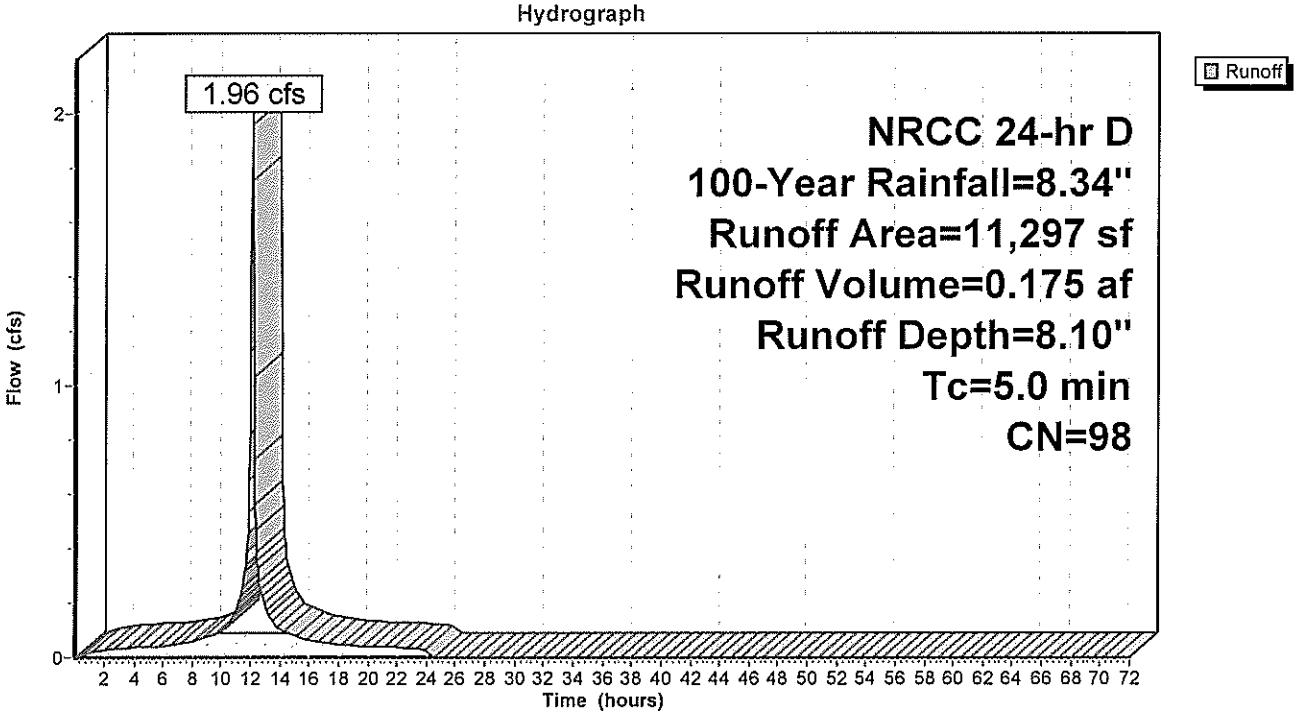
Runoff = 1.96 cfs @ 12.11 hrs, Volume= 0.175 af, Depth= 8.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=8.34"

Area (sf)	CN	Description
11,297	98	Paved parking, HSG A
11,297		100.00% Impervious Area

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

Subcatchment P-WS-A2: Proposed Sub-Watershed A2 - West Section To Infiltration Trench



Summary for Subcatchment P-WS-B: Proposed Conditions - To Onsite Existing Recharge Pits

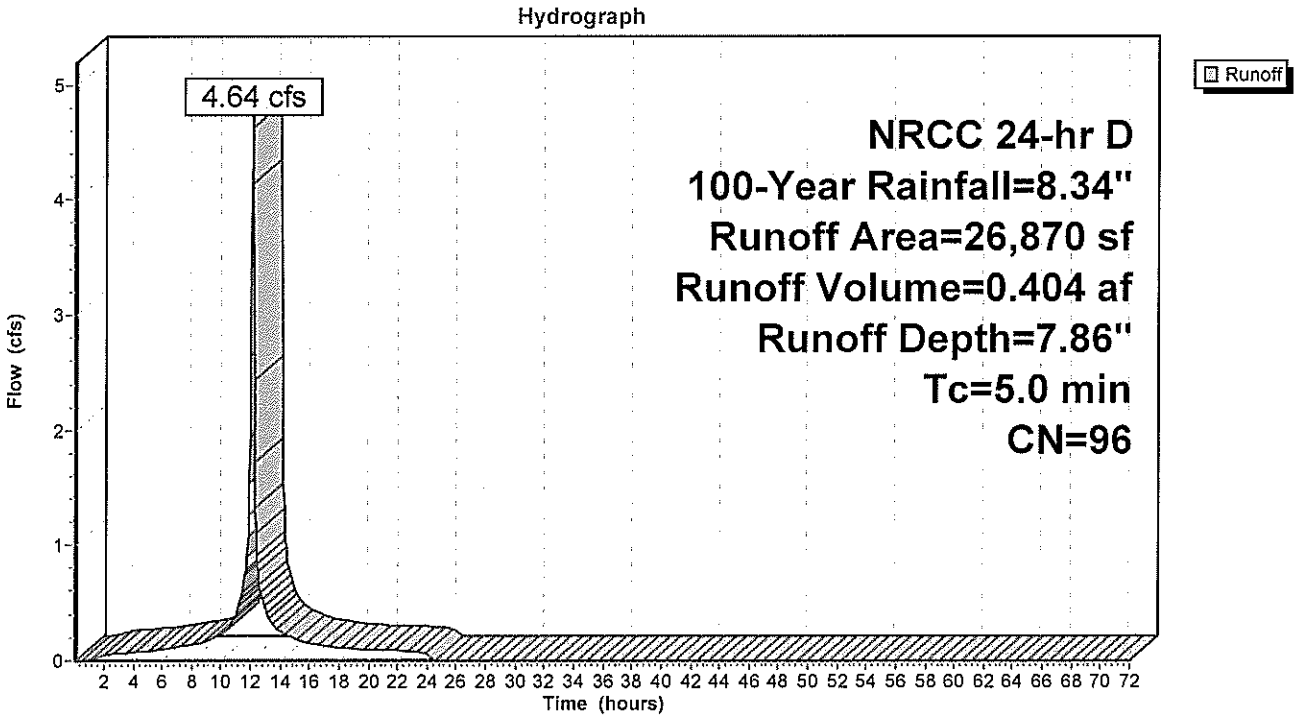
Runoff = 4.64 cfs @ 12.11 hrs, Volume= 0.404 af, Depth= 7.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=8.34"

	Area (sf)	CN	Description
*	26,090	98	Impervious drive & rroof
	780	39	>75% Grass cover, Good, HSG A
	26,870	96	Weighted Average
	780		2.90% Pervious Area
	26,090		97.10% Impervious Area

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

Subcatchment P-WS-B: Proposed Conditions - To Onsite Existing Recharge Pits



Summary for Subcatchment P-WS-C: Proposed Conditions Watershed C - Offsite to East

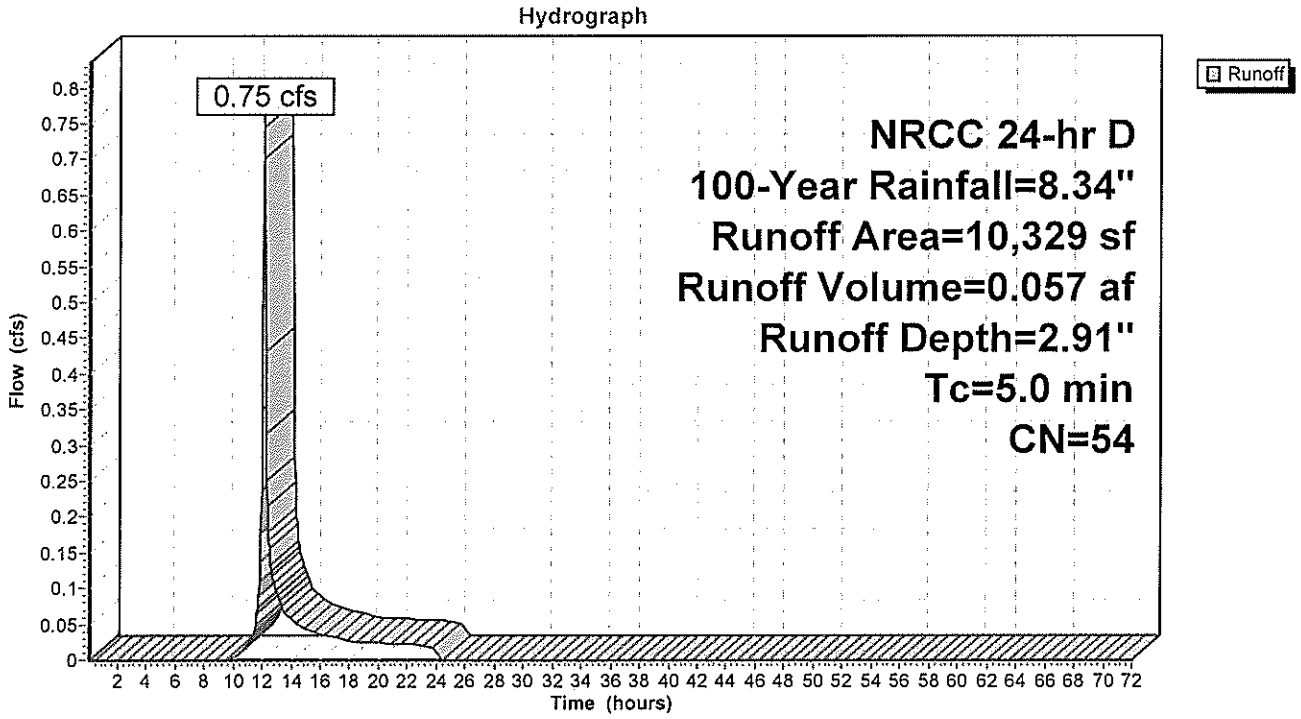
Runoff = 0.75 cfs @ 12.12 hrs, Volume= 0.057 af, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=8.34"

Area (sf)	CN	Description
9,113	48	Brush, Poor, HSG A
1,216	98	Paved parking, HSG A
10,329	54	Weighted Average
9,113		88.23% Pervious Area
1,216		11.77% Impervious Area

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

Subcatchment P-WS-C: Proposed Conditions Watershed C - Offsite to East



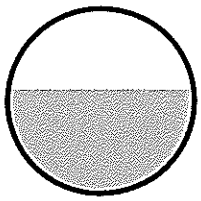
Summary for Reach R-A1.2: Roof Drain Leader

Inflow Area = 0.407 ac,100.00% Impervious, Inflow Depth = 8.10" for 100-Year event
Inflow = 3.08 cfs @ 12.11 hrs, Volume= 0.275 af
Outflow = 3.05 cfs @ 12.11 hrs, Volume= 0.275 af, Atten= 1%, Lag= 0.2 min

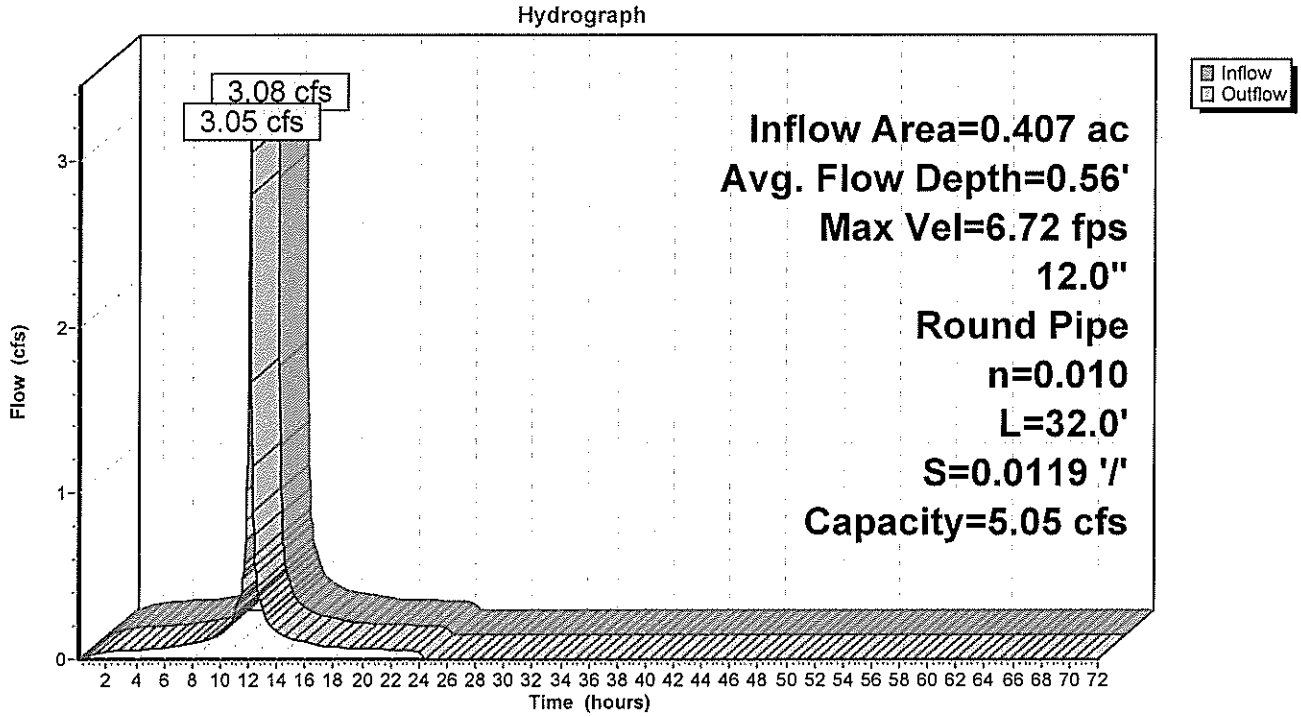
Routing by Stor-Ind+Trans method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.72 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.50 fps, Avg. Travel Time= 0.2 min

Peak Storage= 15 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.56' , Surface Width= 0.99'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.05 cfs

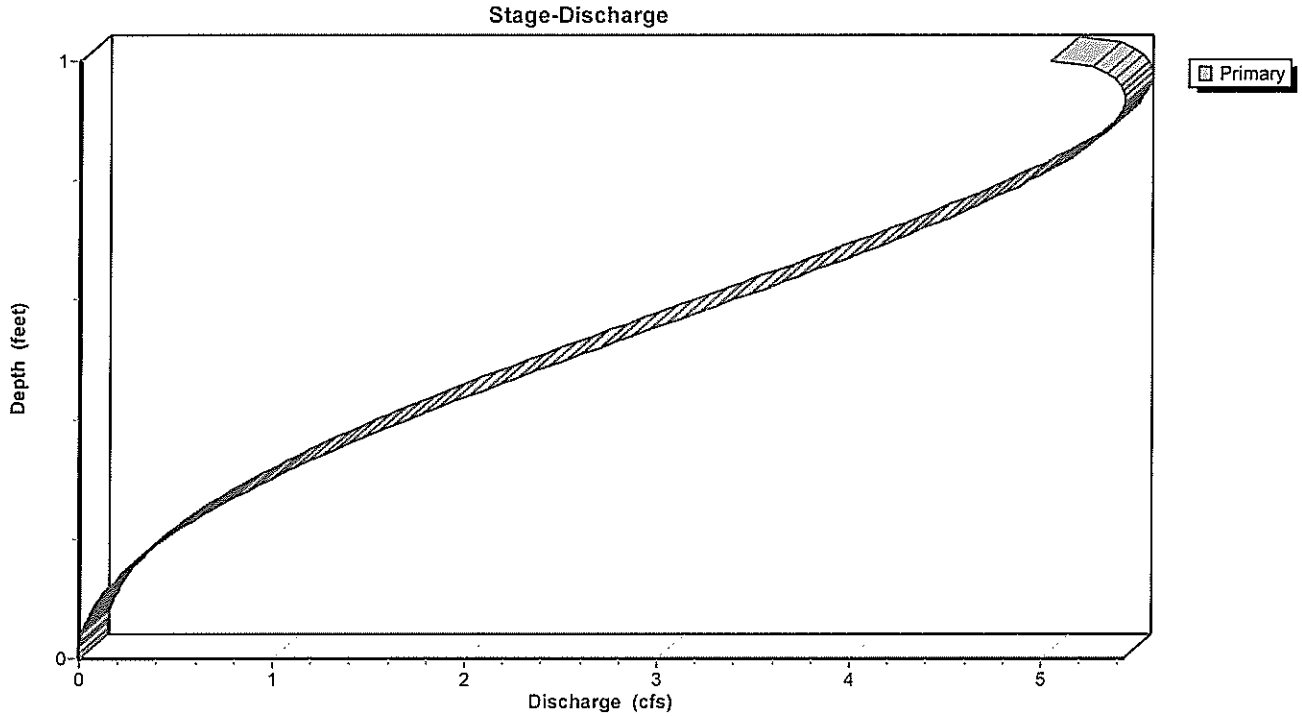
12.0" Round Pipe
n= 0.010
Length= 32.0' Slope= 0.0119 '/'
Inlet Invert= 412.88', Outlet Invert= 412.50'



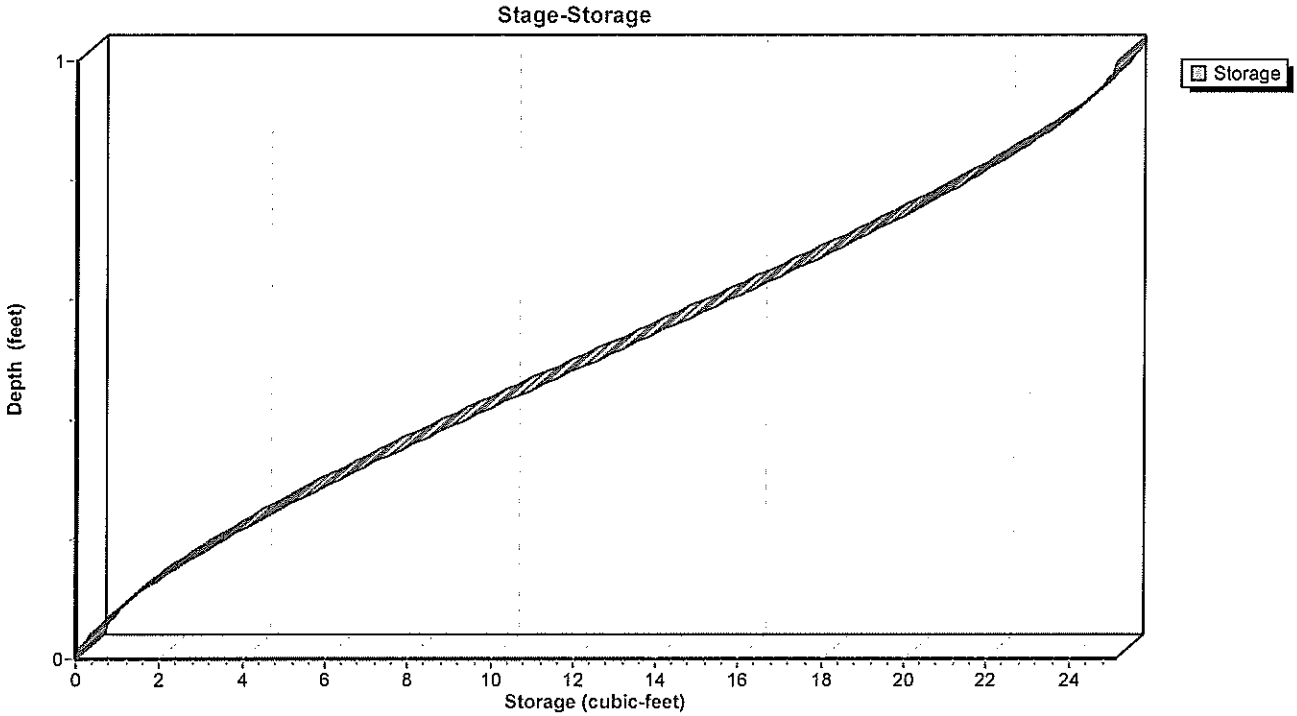
Reach R-A1.2: Roof Drain Leader



Reach R-A1.2: Roof Drain Leader



Reach R-A1.2: Roof Drain Leader



Summary for Pond CB-A1: Catch Basin A1

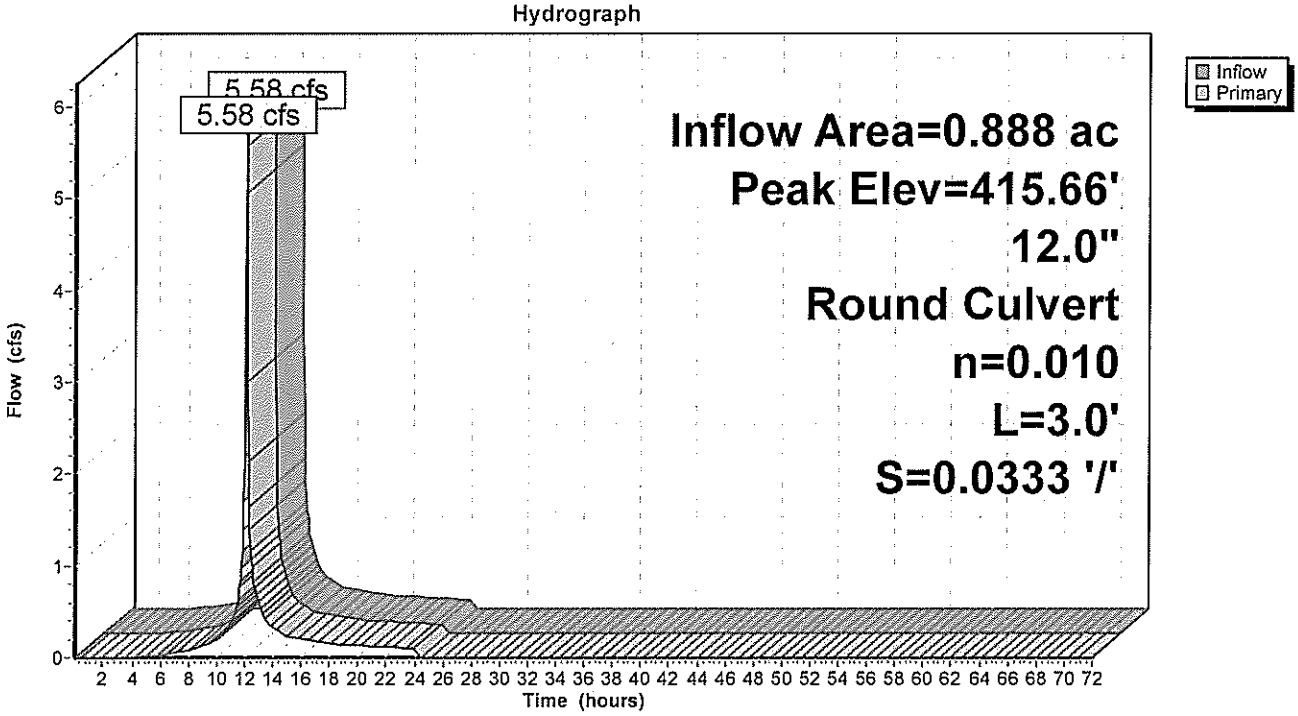
Inflow Area =	0.888 ac, 68.48% Impervious, Inflow Depth = 5.83" for 100-Year event				
Inflow =	5.58 cfs @ 12.11 hrs, Volume=	0.431 af			
Outflow =	5.58 cfs @ 12.11 hrs, Volume=	0.431 af, Atten= 0%, Lag= 0.0 min			
Primary =	5.58 cfs @ 12.11 hrs, Volume=	0.431 af			

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 415.66' @ 12.11 hrs

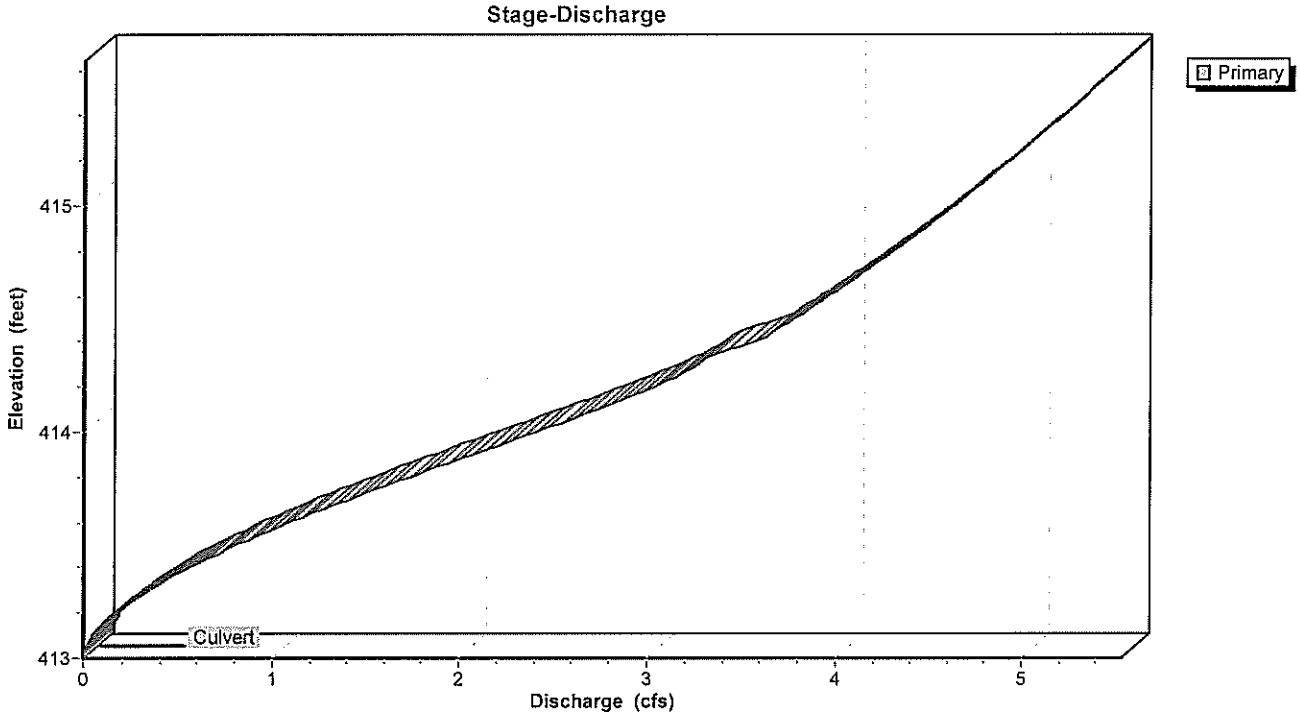
Device	Routing	Invert	Outlet Devices
#1	Primary	413.00'	**12.0" Round Culvert** L= 3.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 413.00' / 412.90' S= 0.0333 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=5.39 cfs @ 12.11 hrs HW=415.53' (Free Discharge)
└─**1=Culvert** (Inlet Controls 5.39 cfs @ 6.86 fps)

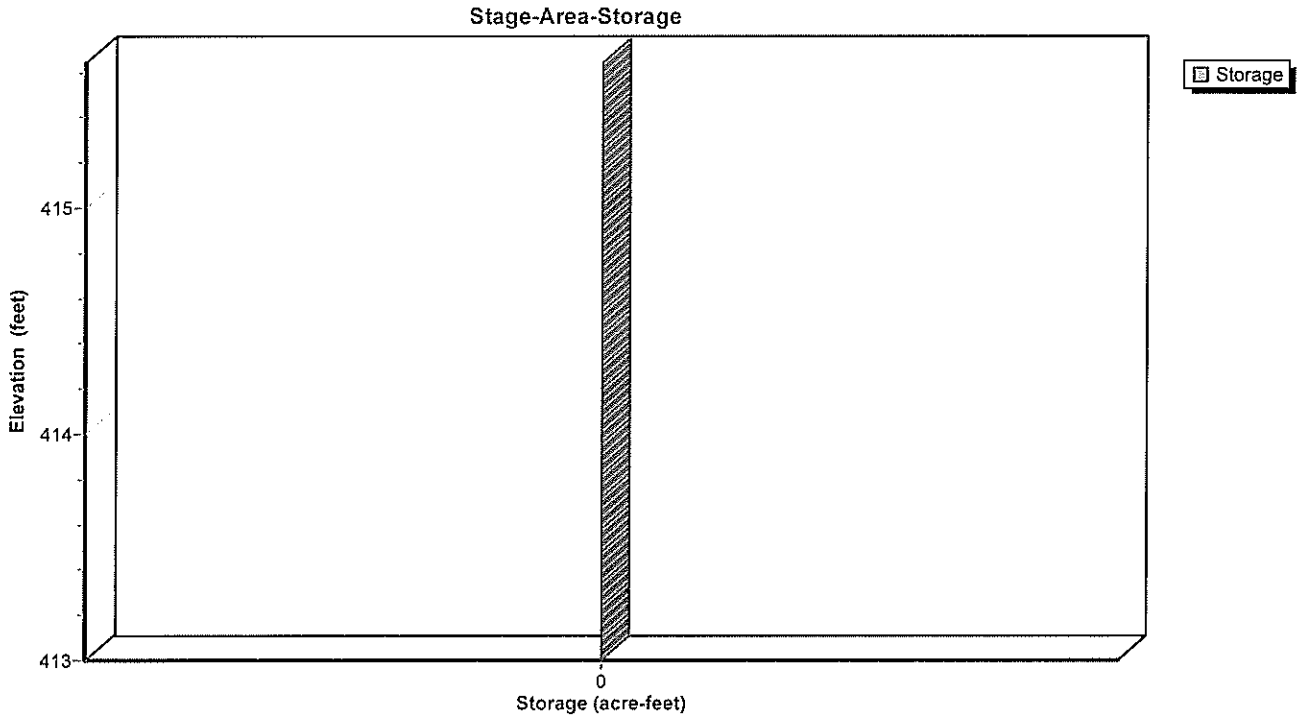
Pond CB-A1: Catch Basin A1



Pond CB-A1: Catch Basin A1



Pond CB-A1: Catch Basin A1



Summary for Pond CB-A2: Catch Basin A2

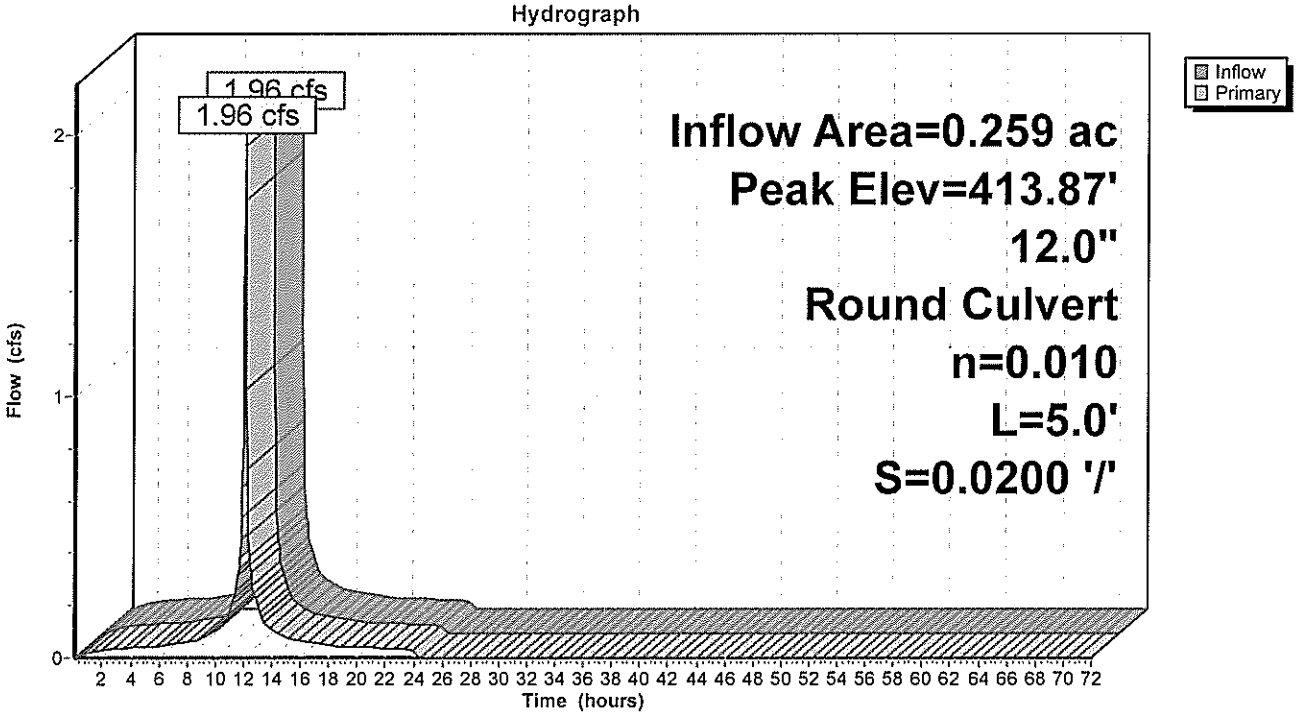
Inflow Area =	0.259 ac,100.00% Impervious, Inflow Depth = 8.10" for 100-Year event				
Inflow =	1.96 cfs @ 12.11 hrs, Volume=	0.175 af			
Outflow =	1.96 cfs @ 12.11 hrs, Volume=	0.175 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.96 cfs @ 12.11 hrs, Volume=	0.175 af			

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 413.87' @ 12.11 hrs

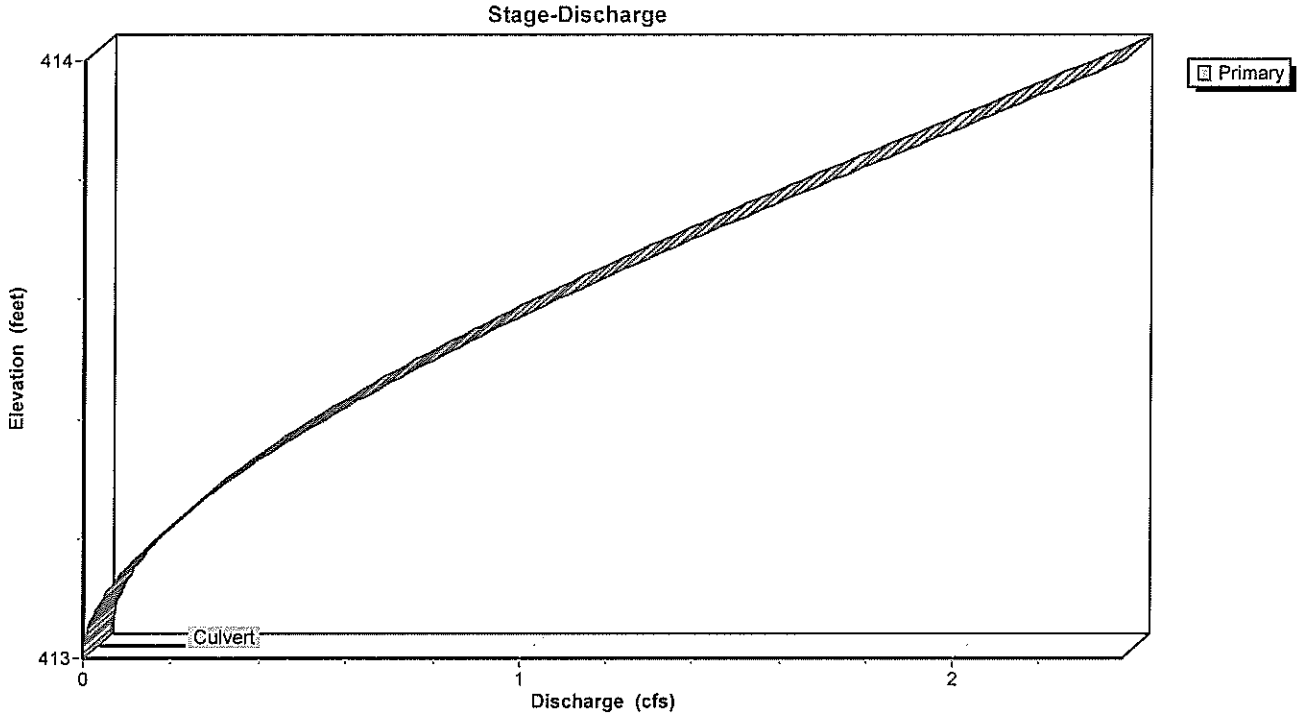
Device	Routing	Invert	Outlet Devices
#1	Primary	413.00'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 413.00' / 412.90' S= 0.0200 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=1.90 cfs @ 12.11 hrs HW=413.85' (Free Discharge)
└─**1=Culvert** (Barrel Controls 1.90 cfs @ 3.58 fps)

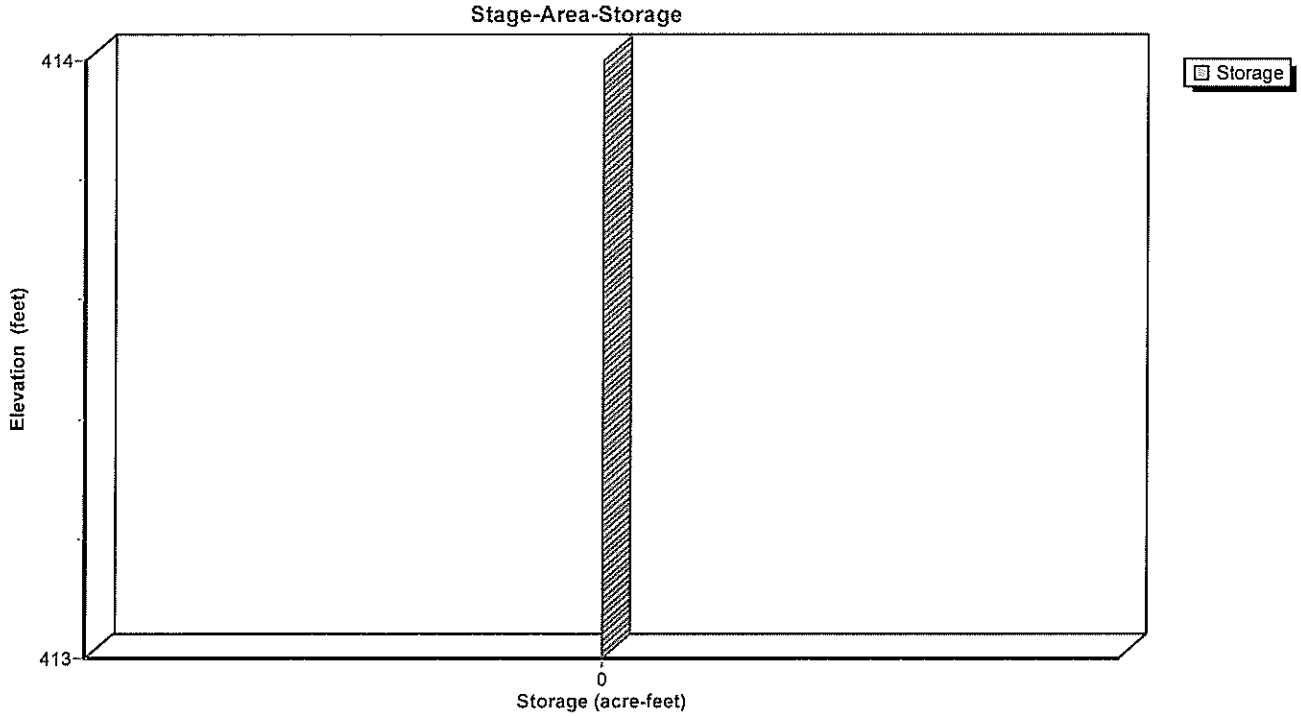
Pond CB-A2: Catch Basin A2



Pond CB-A2: Catch Basin A2



Pond CB-A2: Catch Basin A2



Summary for Pond DB-A1: Distribution Box 1

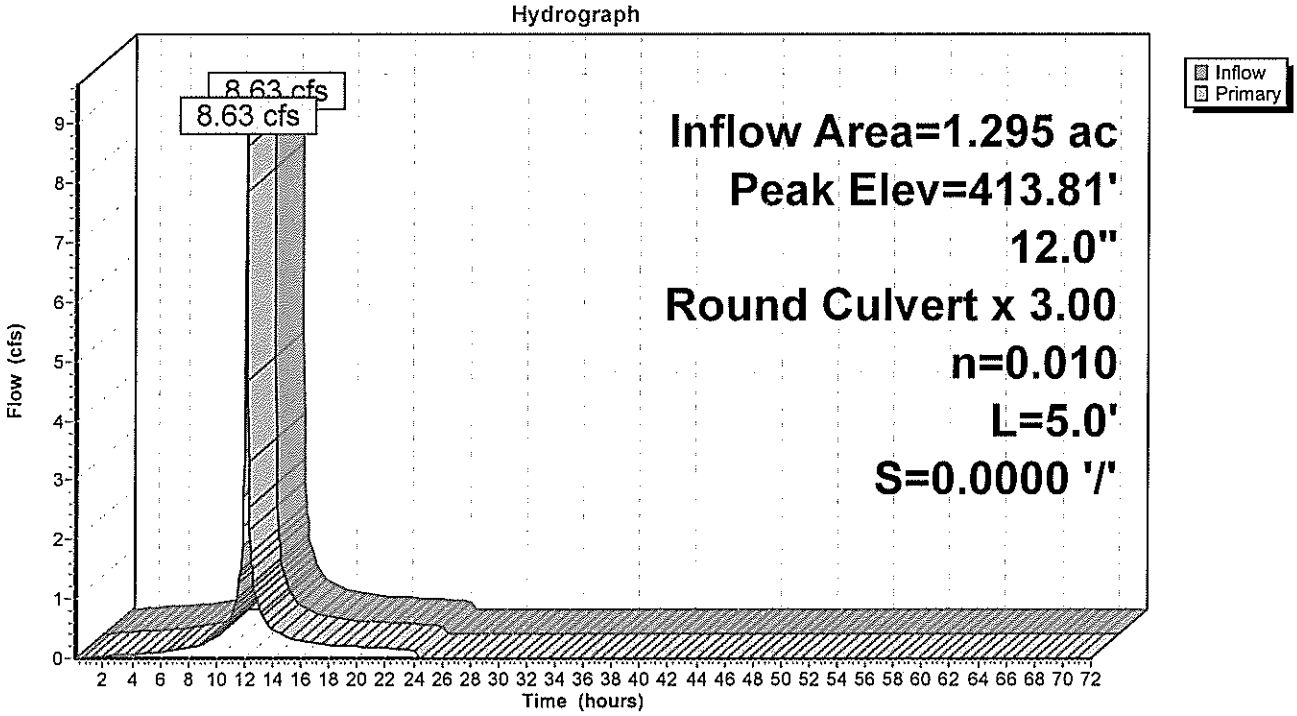
Inflow Area =	1.295 ac, 78.40% Impervious, Inflow Depth = 6.54" for 100-Year event				
Inflow =	8.63 cfs @ 12.11 hrs, Volume=	0.706 af			
Outflow =	8.63 cfs @ 12.11 hrs, Volume=	0.706 af, Atten= 0%, Lag= 0.0 min			
Primary =	8.63 cfs @ 12.11 hrs, Volume=	0.706 af			

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 413.81' @ 12.11 hrs

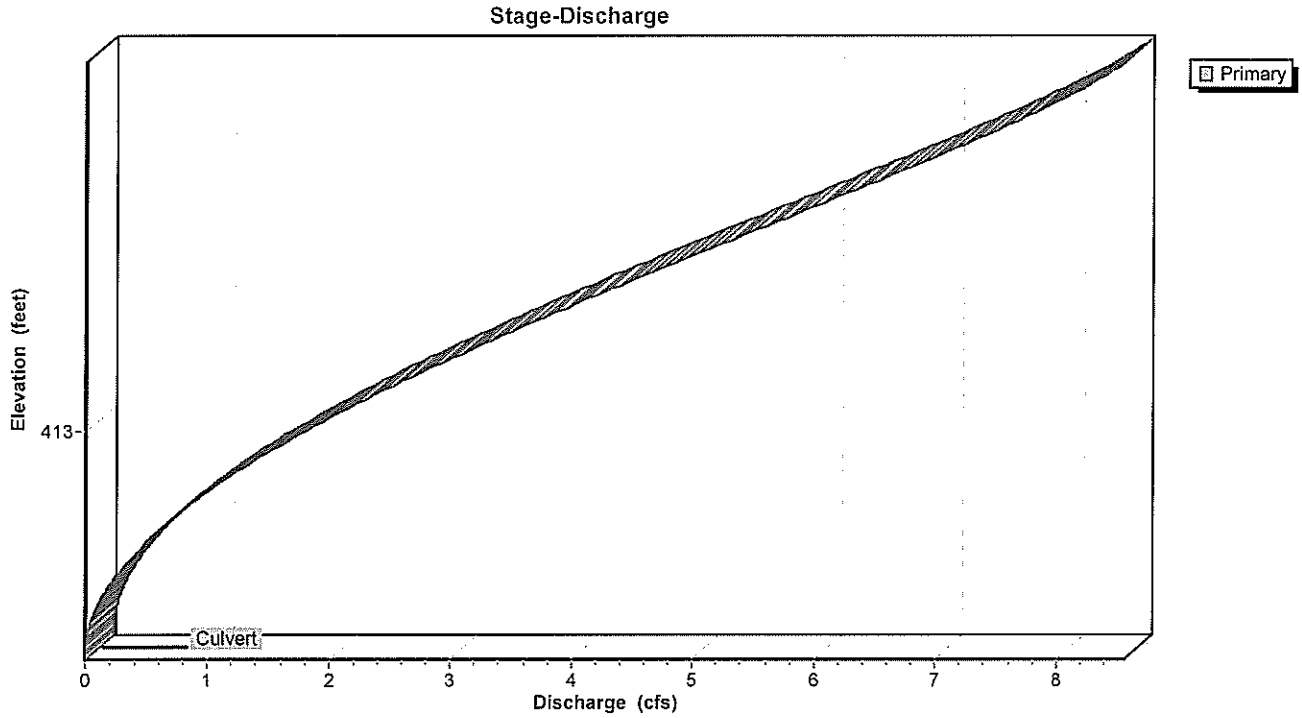
Device	Routing	Invert	Outlet Devices
#1	Primary	412.50'	**12.0" Round Culvert X 3.00** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 412.50' / 412.50' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=8.36 cfs @ 12.11 hrs HW=413.77' (Free Discharge)
└─**1=Culvert** (Barrel Controls 8.36 cfs @ 3.61 fps)

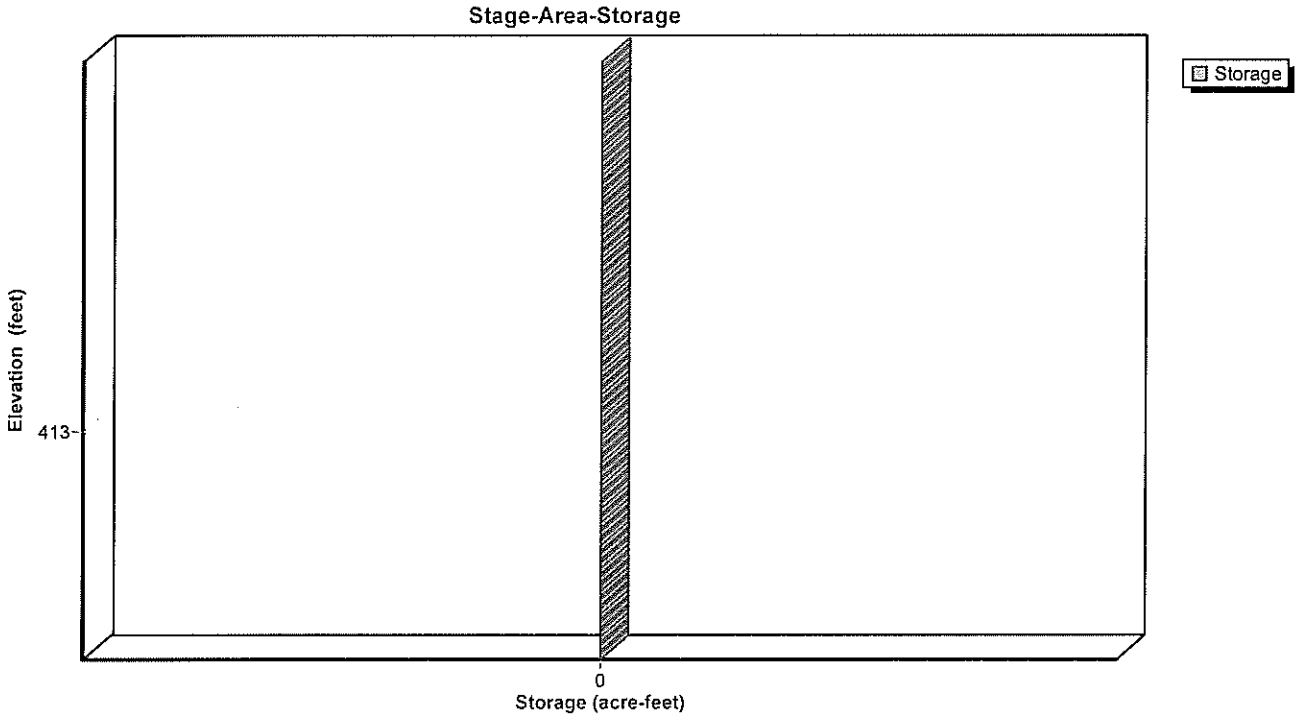
Pond DB-A1: Distribution Box 1



Pond DB-A1: Distribution Box 1



Pond DB-A1: Distribution Box 1



Summary for Pond DB-A2: Distribution Box 2

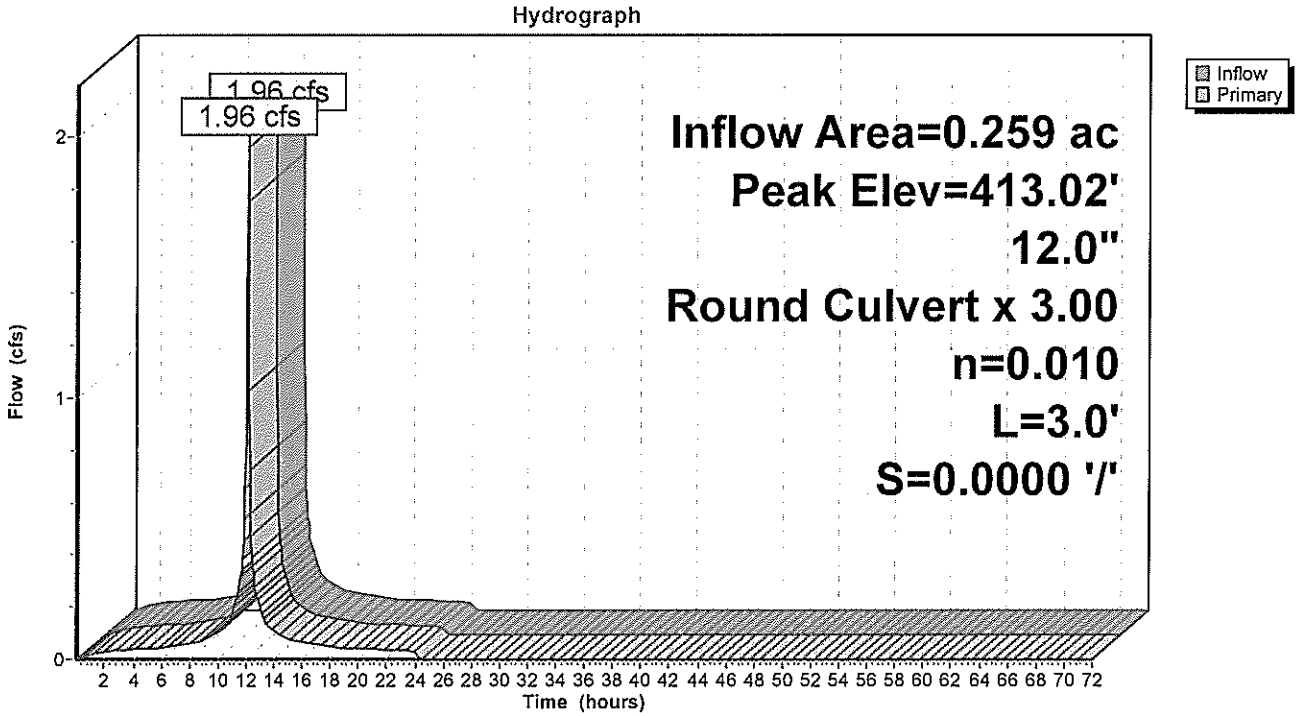
Inflow Area =	0.259 ac,100.00% Impervious, Inflow Depth = 8.10" for 100-Year event				
Inflow =	1.96 cfs @ 12.11 hrs, Volume=	0.175 af			
Outflow =	1.96 cfs @ 12.11 hrs, Volume=	0.175 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.96 cfs @ 12.11 hrs, Volume=	0.175 af			

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 413.02' @ 12.11 hrs

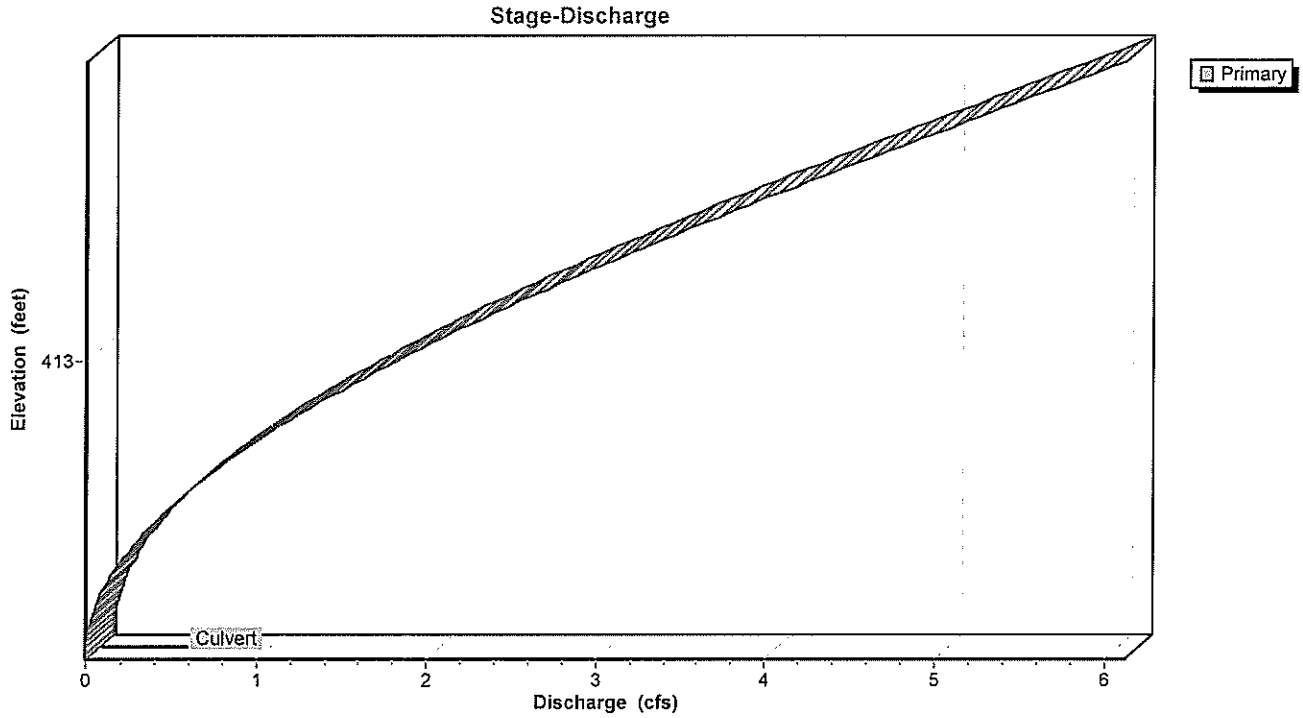
Device	Routing	Invert	Outlet Devices
#1	Primary	412.50'	**12.0" Round Culvert X 3.00** L= 3.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 412.50' / 412.50' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=1.90 cfs @ 12.11 hrs HW=413.01' (Free Discharge)
└─**1=Culvert** (Barrel Controls 1.90 cfs @ 2.29 fps)

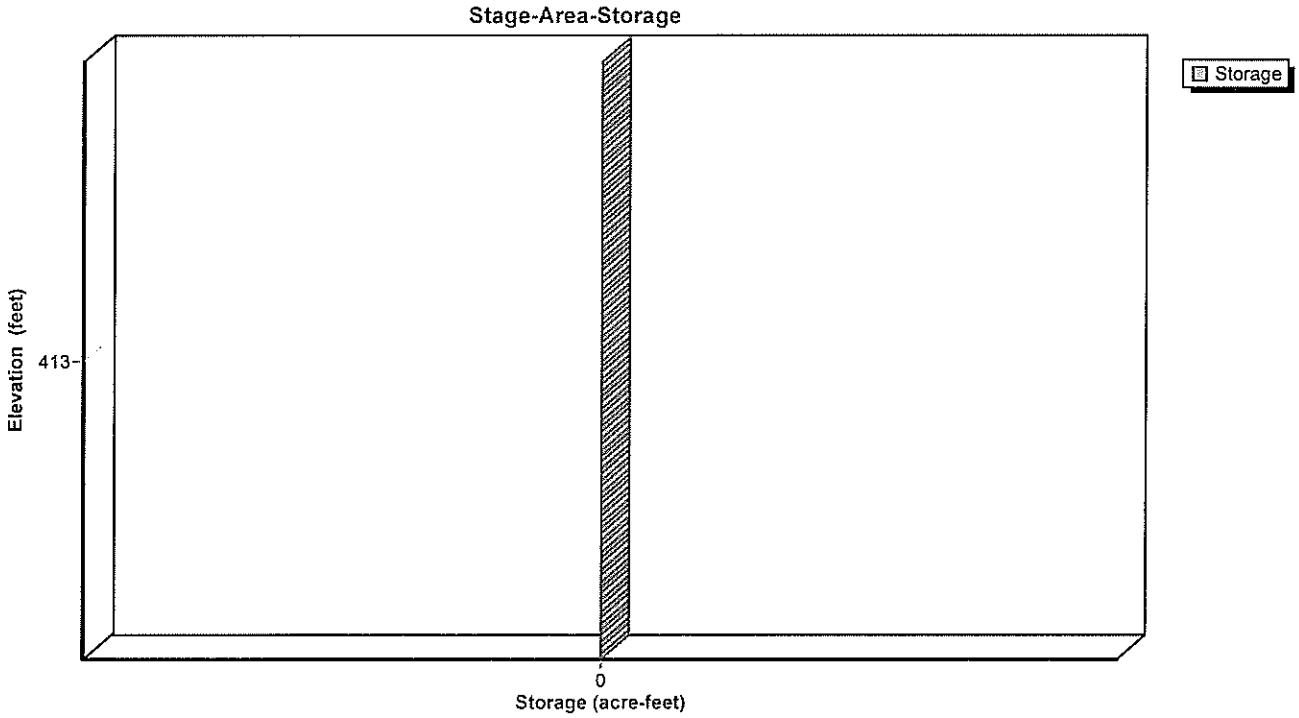
Pond DB-A2: Distribution Box 2



Pond DB-A2: Distribution Box 2



Pond DB-A2: Distribution Box 2



Summary for Pond RT: Recharge Trench

Inflow Area =	1.554 ac, 82.00% Impervious, Inflow Depth = 6.80" for 100-Year event				
Inflow =	10.59 cfs @ 12.11 hrs, Volume=	0.881 af			
Outflow =	1.53 cfs @ 11.65 hrs, Volume=	0.881 af, Atten= 86%, Lag= 0.0 min			
Discarded =	1.53 cfs @ 11.65 hrs, Volume=	0.881 af			

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 414.36' @ 12.61 hrs Surf.Area= 3,300 sf Storage= 8,400 cf

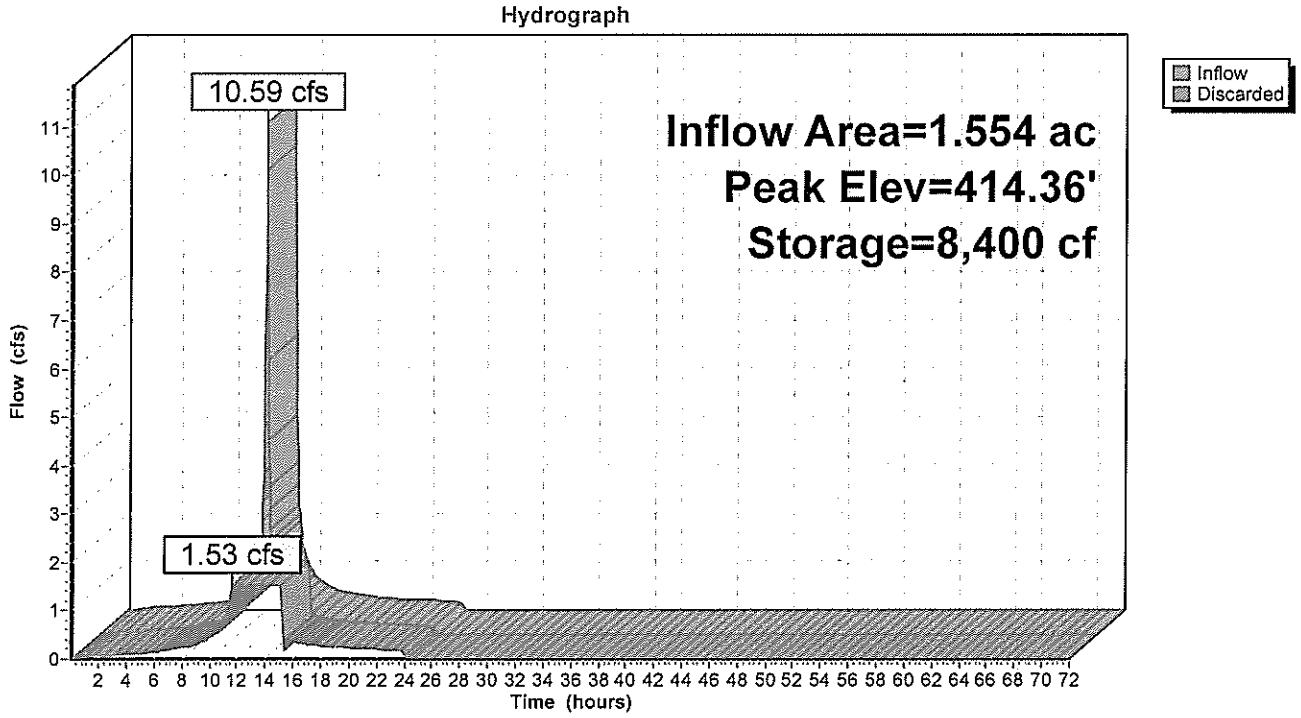
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 29.1 min (808.4 - 779.4)

Volume	Invert	Avail.Storage	Storage Description
#1	408.00'	9,240 cf	**30.00'W x 110.00'L x 7.00'H Prismatoid** 23,100 cf Overall x 40.0% Voids

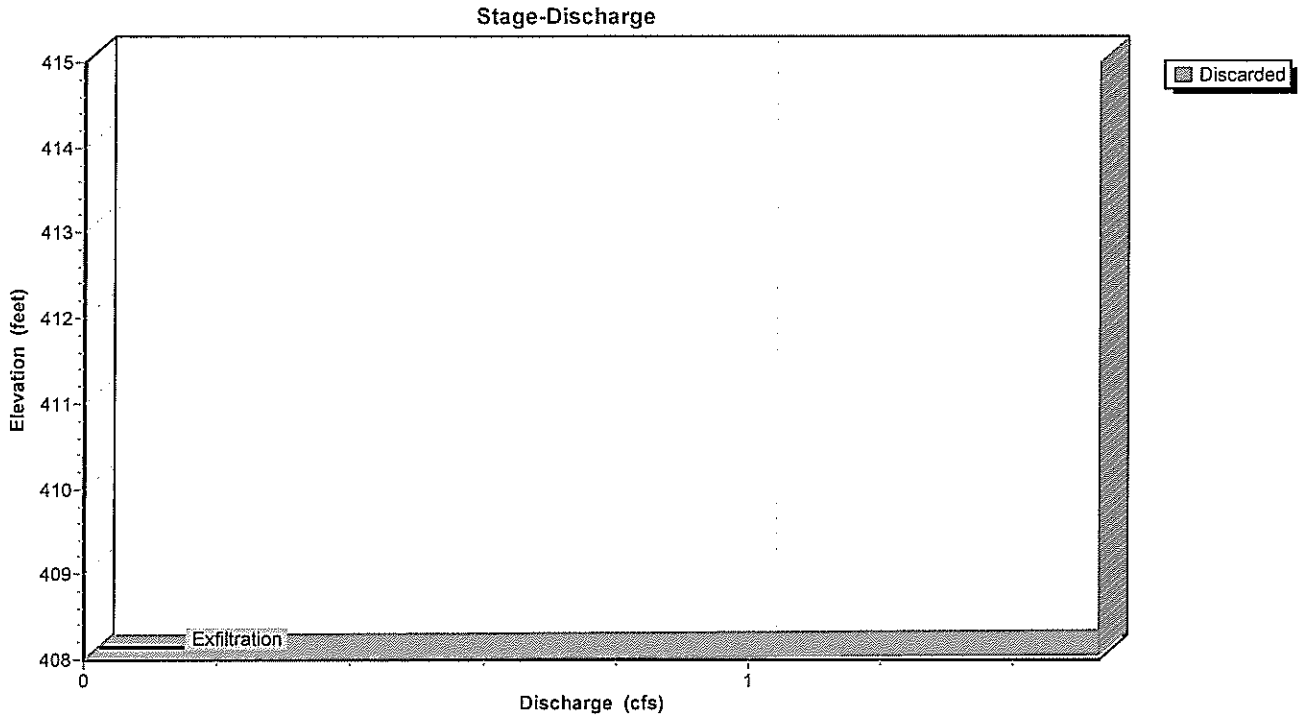
Device	Routing	Invert	Outlet Devices
#1	Discarded	408.00'	**20.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=1.53 cfs @ 11.65 hrs HW=408.08' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 1.53 cfs)

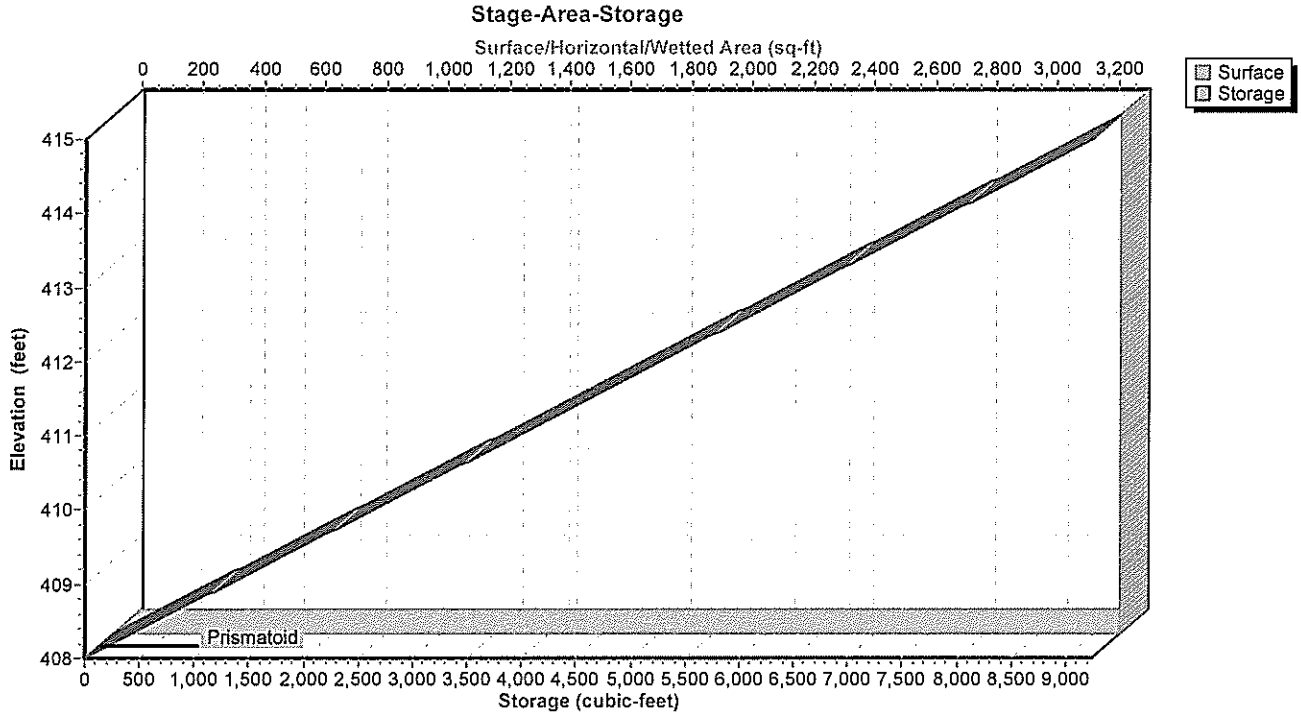
Pond RT: Recharge Trench



Pond RT: Recharge Trench



Pond RT: Recharge Trench



Summary for Pond WQU-2A: Storm Filter 330

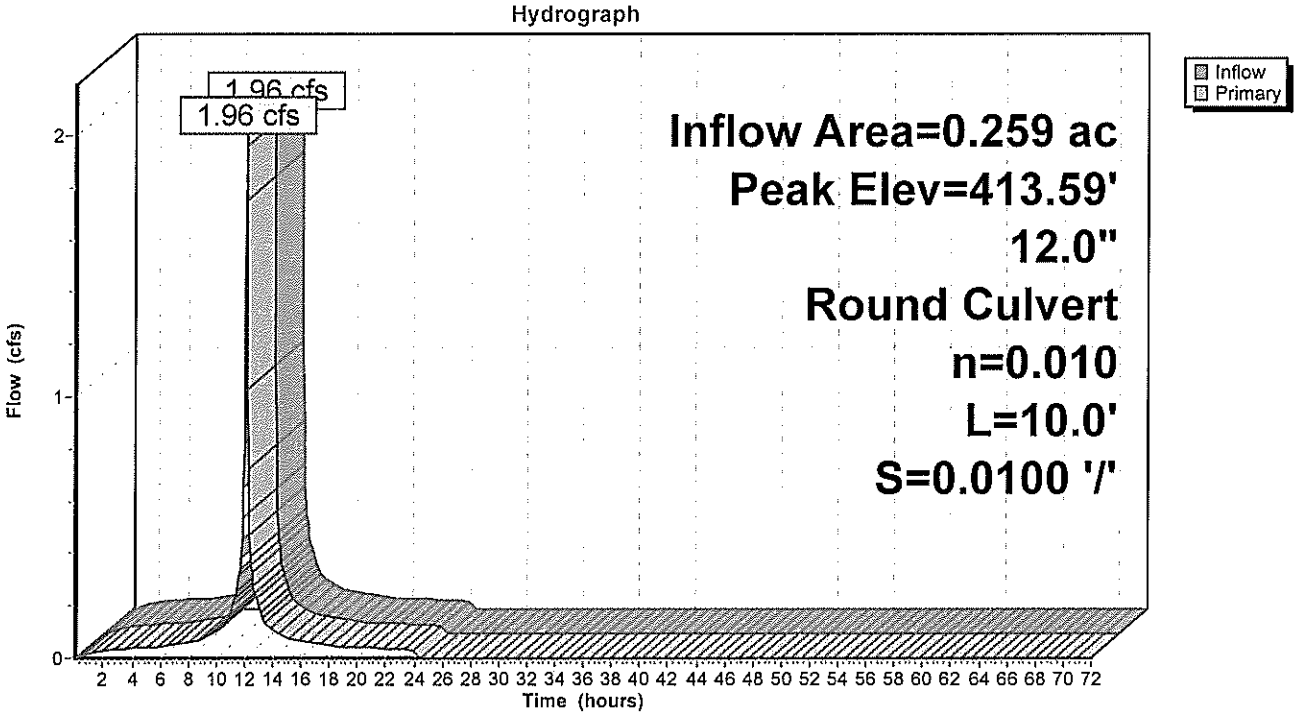
Inflow Area =	0.259 ac,100.00% Impervious, Inflow Depth = 8.10" for 100-Year event				
Inflow =	1.96 cfs @	12.11 hrs,	Volume=	0.175 af	
Outflow =	1.96 cfs @	12.11 hrs,	Volume=	0.175 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.96 cfs @	12.11 hrs,	Volume=	0.175 af	

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 413.59' @ 12.11 hrs

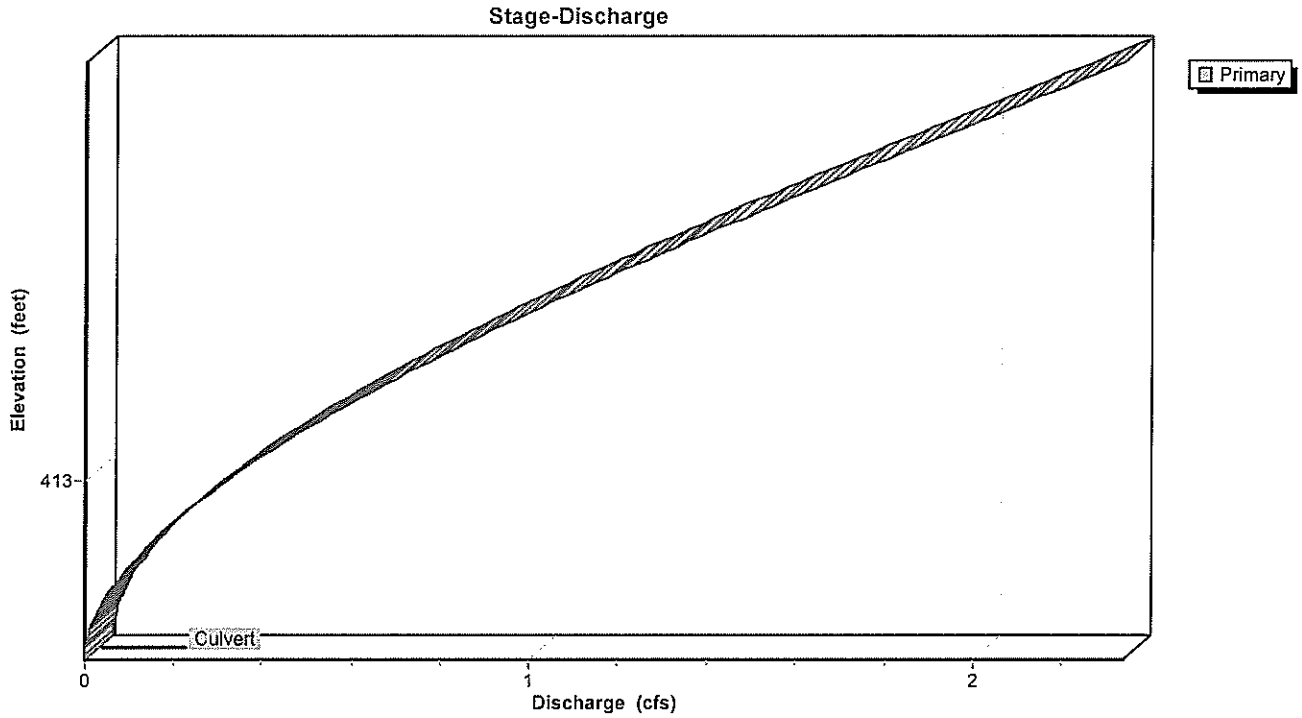
Device	Routing	Invert	Outlet Devices
#1	Primary	412.70'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 412.70' / 412.60' S= 0.0100 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=1.90 cfs @ 12.11 hrs HW=413.57' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.90 cfs @ 3.51 fps)

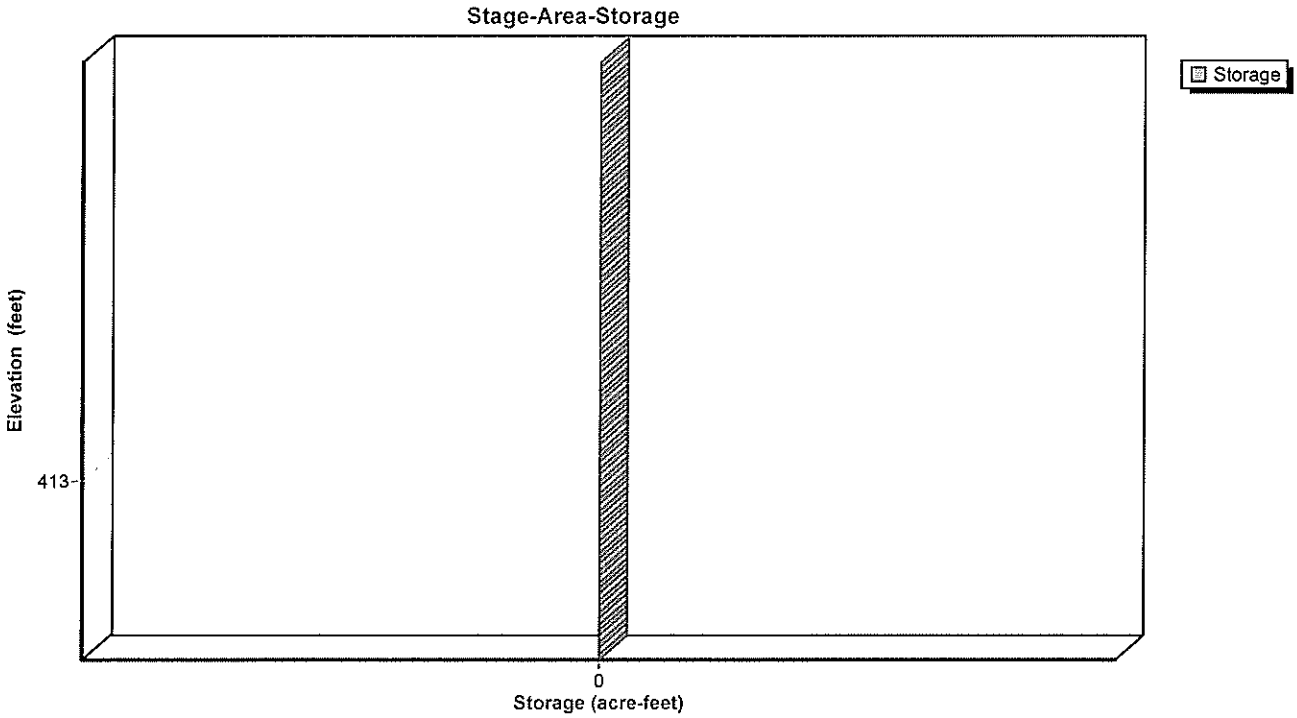
Pond WQU-2A: Storm Filter 330



Pond WQU-2A: Storm Filter 330



Pond WQU-2A: Storm Filter 330



Summary for Pond WQU-A1: Storm Filter 330

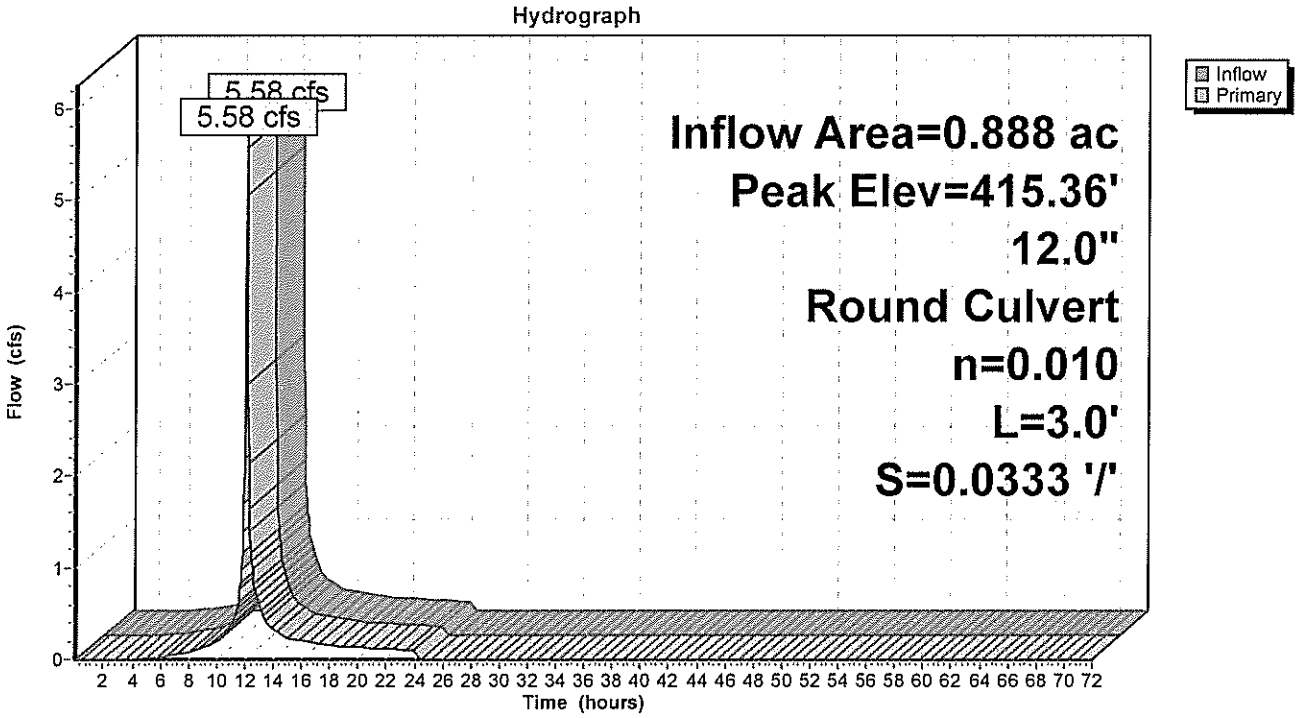
Inflow Area =	0.888 ac, 68.48% Impervious, Inflow Depth = 5.83" for 100-Year event				
Inflow =	5.58 cfs @ 12.11 hrs, Volume=	0.431 af			
Outflow =	5.58 cfs @ 12.11 hrs, Volume=	0.431 af, Atten= 0%, Lag= 0.0 min			
Primary =	5.58 cfs @ 12.11 hrs, Volume=	0.431 af			

Routing by Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Peak Elev= 415.36' @ 12.11 hrs

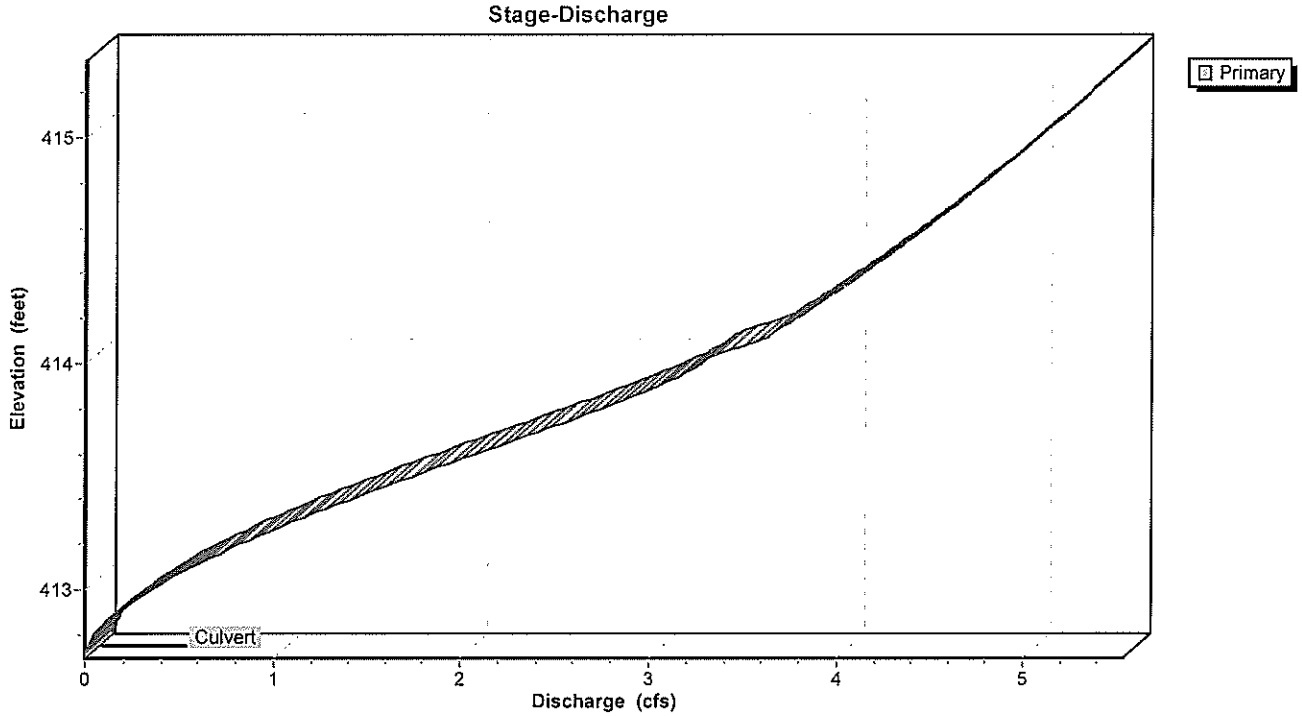
Device	Routing	Invert	Outlet Devices
#1	Primary	412.70'	**12.0" Round Culvert** L= 3.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 412.70' / 412.60' S= 0.0333 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=5.39 cfs @ 12.11 hrs HW=415.23' (Free Discharge)
└**1=Culvert** (Inlet Controls 5.39 cfs @ 6.86 fps)

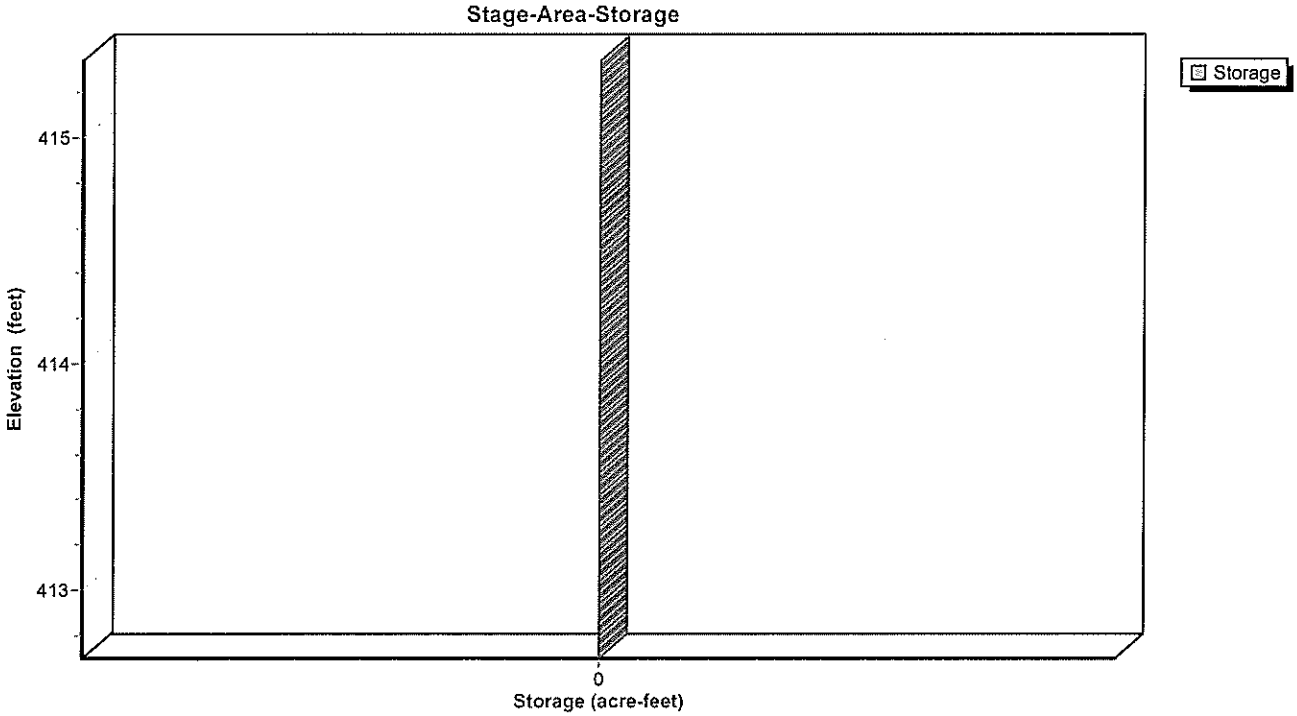
Pond WQU-A1: Storm Filter 330



Pond WQU-A1: Storm Filter 330



Pond WQU-A1: Storm Filter 330

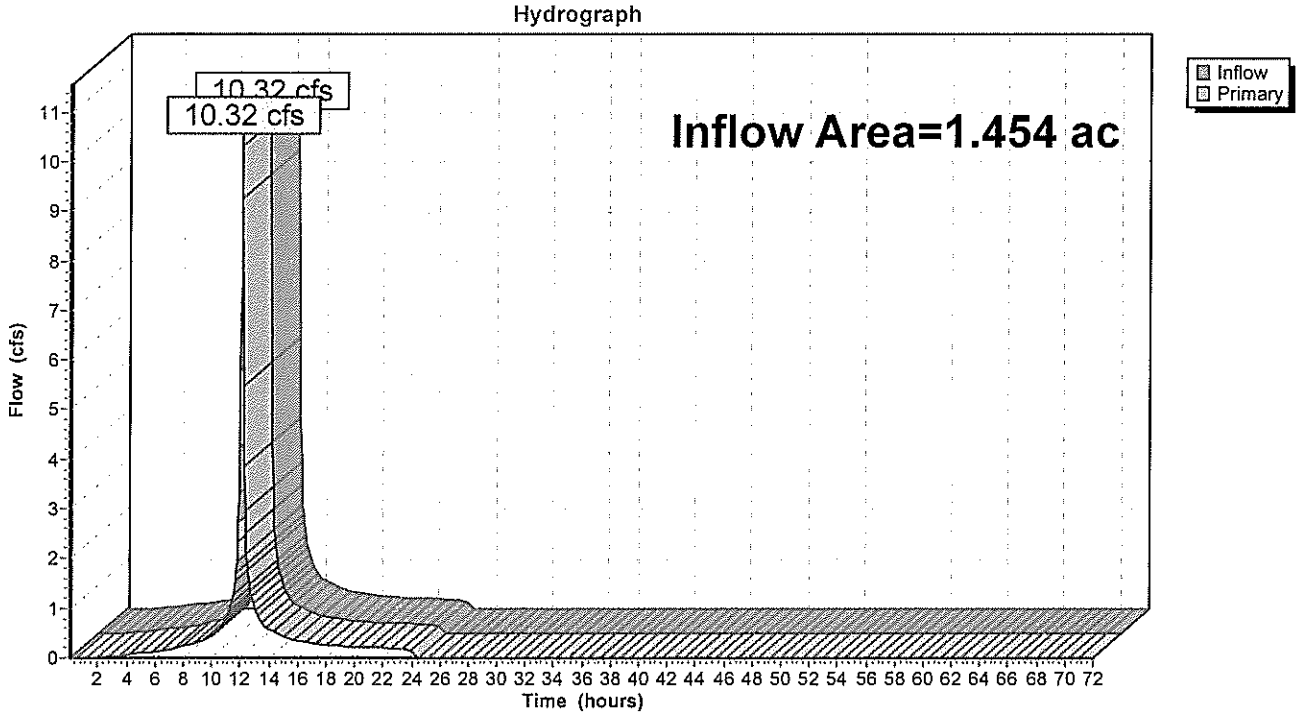


Summary for Link POA-A: Existing Qpeak Offsite to the North

Inflow Area = 1.454 ac, 82.59% Impervious, Inflow Depth = 6.90" for 100-Year event
Inflow = 10.32 cfs @ 12.11 hrs, Volume= 0.836 af
Primary = 10.32 cfs @ 12.11 hrs, Volume= 0.836 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link POA-A: Existing Qpeak Offsite to the North

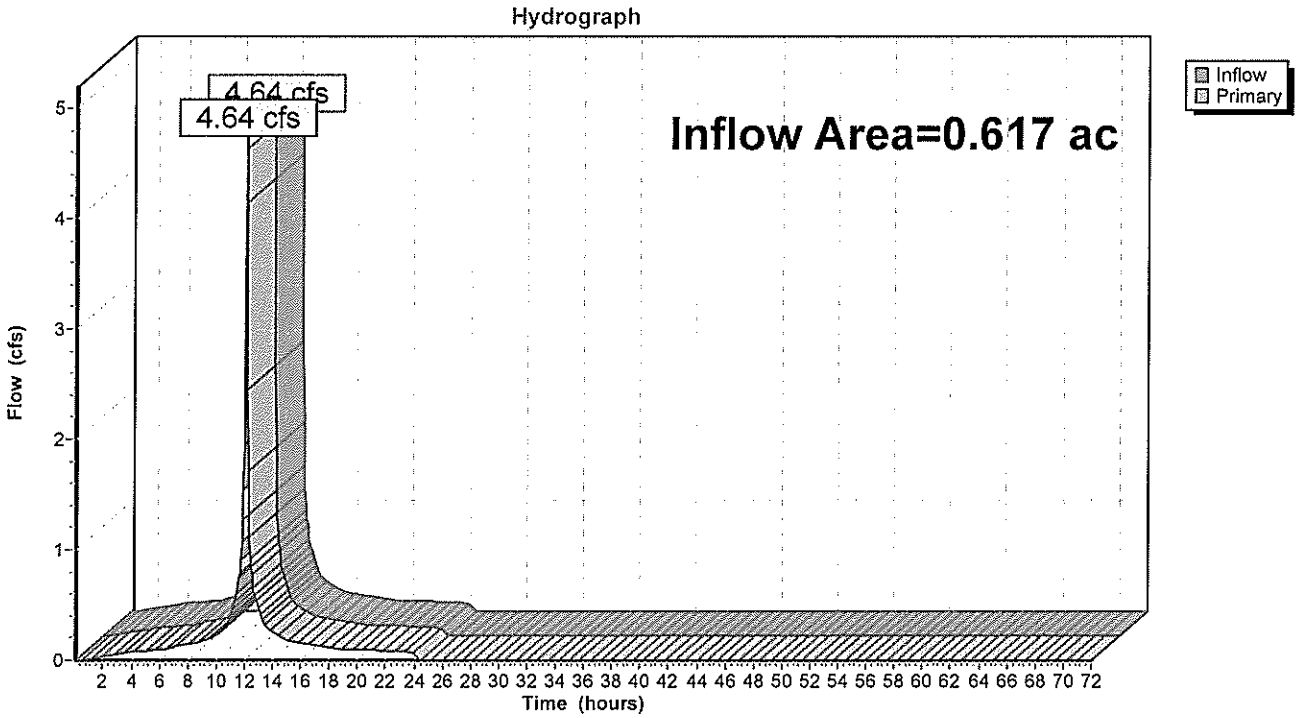


Summary for Link POA-B: Existing Qpeak Onsite To Existing Recharge Pits

Inflow Area = 0.617 ac, 97.10% Impervious, Inflow Depth = 7.86" for 100-Year event
Inflow = 4.64 cfs @ 12.11 hrs, Volume= 0.404 af
Primary = 4.64 cfs @ 12.11 hrs, Volume= 0.404 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link POA-B: Existing Qpeak Onsite To Existing Recharge Pits

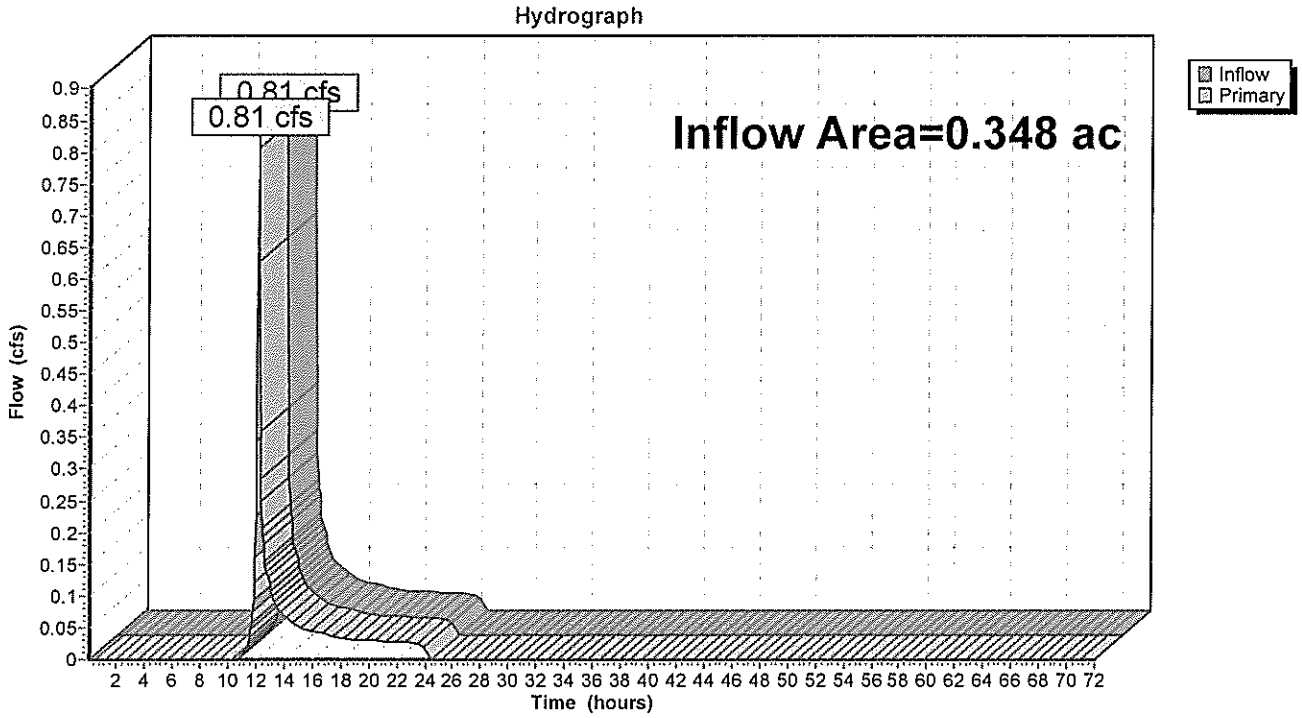


Summary for Link POA-C: Existing Qpeak Offsite To East

Inflow Area = 0.348 ac, 0.00% Impervious, Inflow Depth = 2.24" for 100-Year event
Inflow = 0.81 cfs @ 12.12 hrs, Volume= 0.065 af
Primary = 0.81 cfs @ 12.12 hrs, Volume= 0.065 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link POA-C: Existing Qpeak Offsite To East

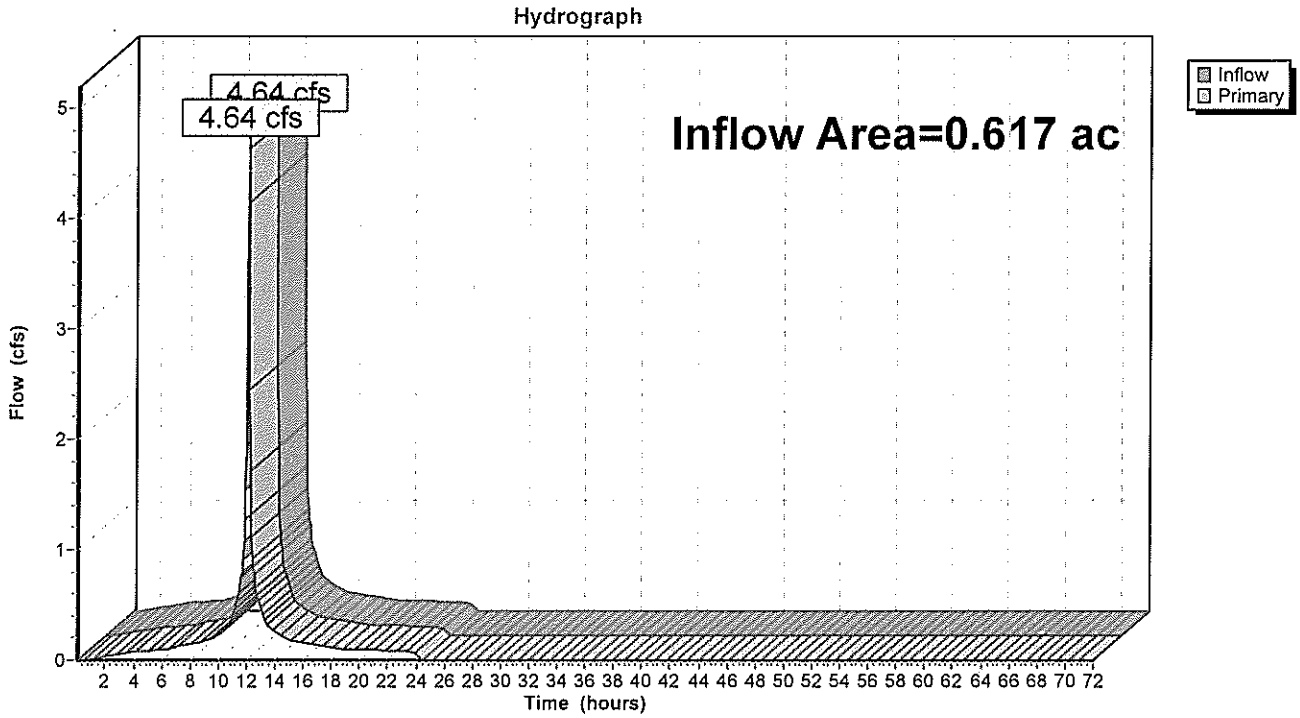


Summary for Link POA-P-B: Proposed Qpeak Onsite To Existing Recharge Pits

Inflow Area = 0.617 ac, 97.10% Impervious, Inflow Depth = 7.86" for 100-Year event
Inflow = 4.64 cfs @ 12.11 hrs, Volume= 0.404 af
Primary = 4.64 cfs @ 12.11 hrs, Volume= 0.404 af, Atten= 0%, Lag= 0.0 min

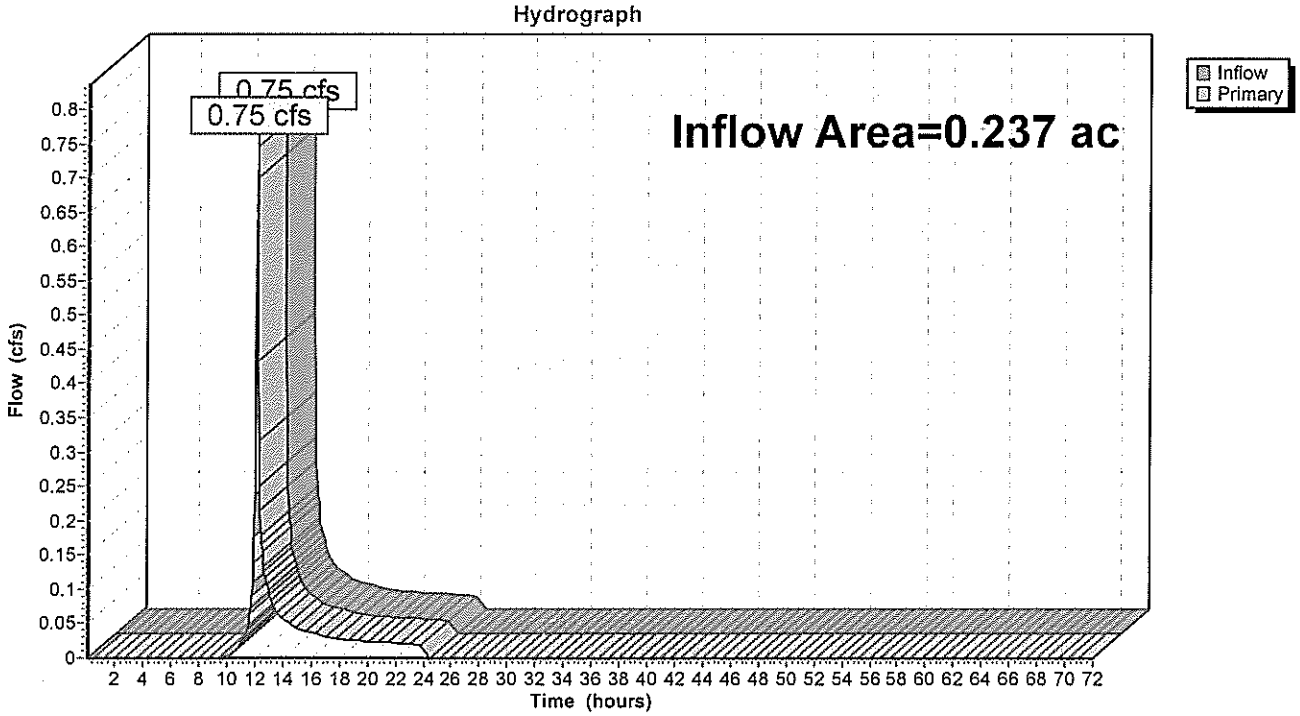
Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link POA-P-B: Proposed Qpeak Onsite To Existing Recharge Pits



Summary for Link POA-P-C: Proposed Qpeak Offsite to the East

Inflow Area = 0.237 ac, 11.77% Impervious, Inflow Depth = 2.91" for 100-Year event
Inflow = 0.75 cfs @ 12.12 hrs, Volume= 0.057 af
Primary = 0.75 cfs @ 12.12 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link POA-P-C: Proposed Qpeak Offsite to the East