

# **SUMMERWOOD SPORTS GYM #3**

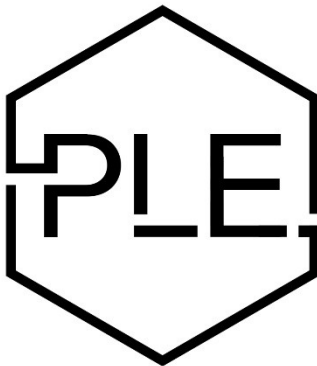
## **DRAINAGE REPORT**

***Date: 01-10-2024***

***Located in: Bryant, Arkansas***

***Prepared for:***  
**City of Bryant, Arkansas**

**Prepared by:**



**PHILLIP LEWIS ENGINEERING**


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Structural + Civil Consultants

23620 Interstate 30 | Bryant, AR  
PH: 501-350-9840

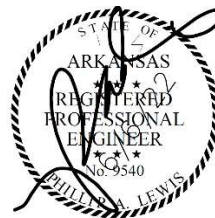
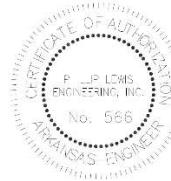
# CERTIFICATION

I hereby state that this Final Drainage has been prepared by me or under my supervision and meets the standard of care and expertise which is usual and customary in this community of professional engineers. The analysis has been prepared utilizing procedures and practices by the City of Bryant and within the standard accepted practices.



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Phillip A. Lewis, PE.



DATE: 01-10-2024

## PROJECT LOCATION MAP



## DESCRIPTION OF PROPERTY

The proposed project is for the construction of the third gymnasium of the Summerwood Sports Complex located along Bryant Parkway and Hwy 5. The proposed development is a 19,000 sq. ft. building and parking lot.

The intent of this drainage analysis is to reevaluate the previous drainage design and ensure that the completion of this development still meets the design intent and capacity of the previous constructed onsite detention facilities.

The existing ground coverage for the entire development drainage basin consisted of and partially still consists of natural vegetation (3%-8% slope), hydrologic soil group C/D (C = 0.50).

According to FEMA Flood Insurance Rate Map, Panel 05125C0240E, this property lies within Zone X, areas determined to be outside the 0.2% annual chance floodplain. A copy of the map can be found in the appendix.

## DRAINAGE CRITERIA

In accordance with the requirements of the City of Bryant, the proposed developments drainage plan and this drainage report were developed with the criteria established in the Bryant Stormwater Management & Drainage Manual provided on [cityofbryant.com](http://cityofbryant.com).

All drainage calculations were performed using HydroCAD software to determine and analyze the changes in storm runoff volume, flow rates, and design the outlet release structure. Hydraflow Express software was used to appropriately design and size all storm sewer inlets, pipes and channels.

Calculations were performed using the Rational Method, using NOAA rainfall data, and the pond volume and outlet structure was determined by the 100-year storm event while

the outlet structure is designed to match or reduce pre-development flow rates for all storm events: 2-yr, 10-yr, 25-yr, and 100-yr storms.

Detention Basin Design Specifications:

- *3:1 maximum side slopes*
- *Outlet structures designed to reduce flow rate to match or reduce the pre-development runoff rates for the 2-yr, 5-yr, 10-yr, 25-yr and 100-yr storms.*
- *The pond bottom and side is to be solid sod to prevent erosion*
- *The basins are located and designed to allow access for continued maintenance after construction is completed*

## **DESCRIPTION OF PREVIOUS DETENTION FACILITIES**

Phillip Lewis Engineering has evaluated the previously supplied drainage analysis and made site investigations to fully understand the current drainage situation.

The previous drainage analysis studied the pre vs. post scenarios as a single 6 acre node. Post development was studied as one node routing through the detention pond that is now constructed on the site. Due to the nature of how phase one construction evolved, some areas were not routed to this detention pond. Some of these areas ultimately discharge to other detention facilities located elsewhere on the site, and some are freely discharged to the adjacent eastern parcel.

This drainage study is intended to account for these discrepancies and ensure that the detention basin is throttling appropriately to offset the free discharges from the previous phase and this new proposed phase.

## **PROPOSED DRAINAGE SYSTEM**

This development is designed to capture the majority of runoff within the parking lot curb and gutter, collecting stormwater with “Nyloplast” area inlets, and downspout collector pipes. The existing storm sewer network will remain, with the addition of two area grates along the frontage of gym #3. The existing detention basin that was constructed for the first two gymnasiums will remain as planned previously with the development of gym 1 and 2. This drainage analysis will provide supporting evidence to validate the previously constructed detention basin’s functionality.

While the pond footprint will remain as constructed, current design plans detail for this pond rim to be reestablished at the intended 400.00’ elevation, and for adequate trickle channels to be constructed within the pond bottom (per city of Bryant Requirements).

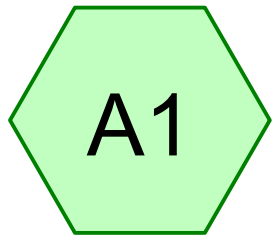
The detention pond was designed to detain stormwater volumes based off the 100-yr storm events with a concrete overflow spillway to release water if a rainfall event were to exceed the 100-yr storm event. The outlet control structures are detailed within this report.

Overall Pre-development and Post-development runoff/discharge rates are compared below:

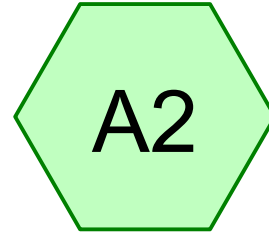
<b>Storm Event</b>	<b>Pre-development Discharge (cfs)</b>	<b>Post-development Discharge (cfs)</b>
2-yr	10.33	10.14
5-yr	12.27	12.27
10-yr	13.82	13.74
25-yr	15.94	15.69
100-yr	18.93	18.25

Overall pre development and post development discharge rates are displayed in the following hydrographs. A final discharge link has been added to each to show one comparable discharge number. This final discharge will verify that the design detention basin should offset any bypassing watershed within the development.

## PRE DEVELOPMENT HYDROGRAPHS



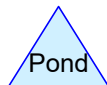
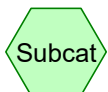
Drainage Basin A1



Drainage Basin A2



Pre Dev Runoff



### Summerwood Gym 3

Prepared by Phillip Lewis Engineering

HydroCAD® 10.20-2f s/n 12520 © 2022 HydroCAD Software Solutions LLC

AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Printed 1/11/2024

### Summary for Subcatchment A1: Drainage Basin A1

Runoff = 5.31 cfs @ 0.17 hrs, Volume= 3,242 cf, Depth= 0.36"  
Routed to Link Pre-Dev : Pre Dev Runoff

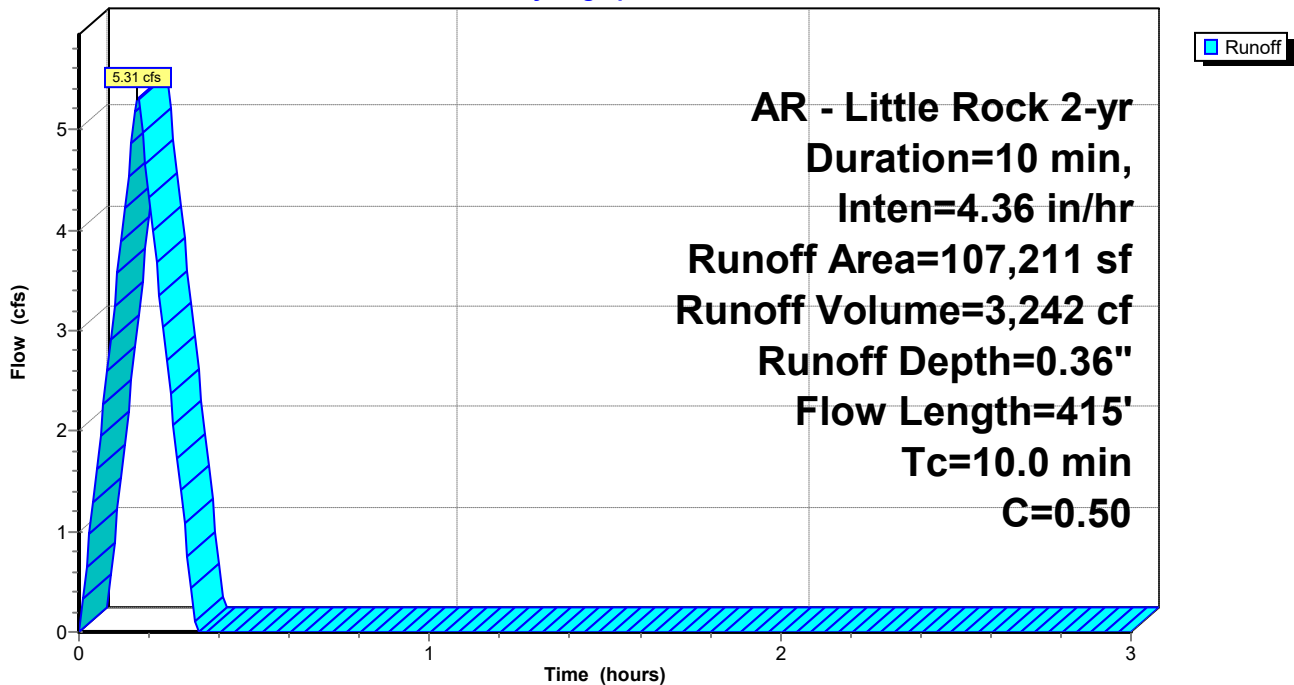
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Area (sf)	C	Description
107,211	0.50	Existing Natural Vegetation
107,211		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		Direct Entry, Overland Concentrated Flow (Min)

### Subcatchment A1: Drainage Basin A1

Hydrograph





### Summerwood Gym 3

Prepared by Phillip Lewis Engineering

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AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

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### Summary for Subcatchment A2: Drainage Basin A2

Runoff = 5.02 cfs @ 0.17 hrs, Volume= 3,065 cf, Depth= 0.36"  
Routed to Link Pre-Dev : Pre Dev Runoff

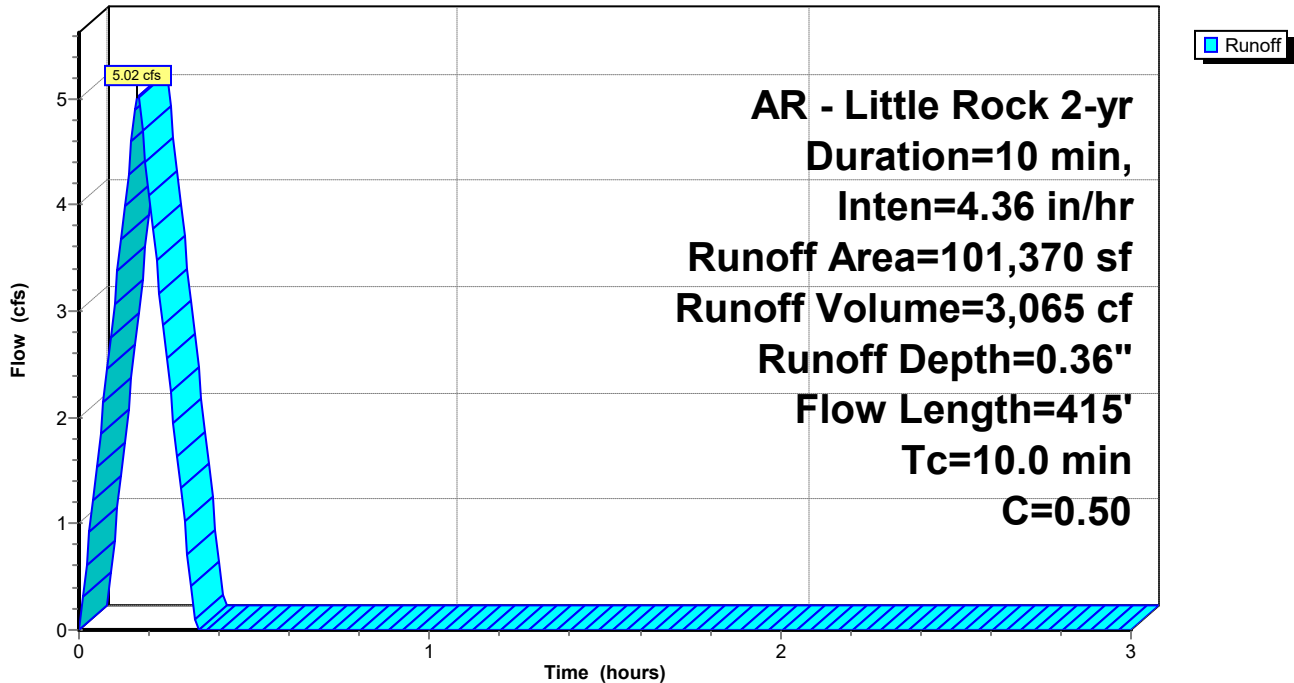
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Area (sf)	C	Description
101,370	0.50	Existing Natural Vegetation
101,370		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		Direct Entry, Overland Concentrated Flow (Min)

### Subcatchment A2: Drainage Basin A2

Hydrograph



# Summerwood Gym 3

AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Prepared by Phillip Lewis Engineering

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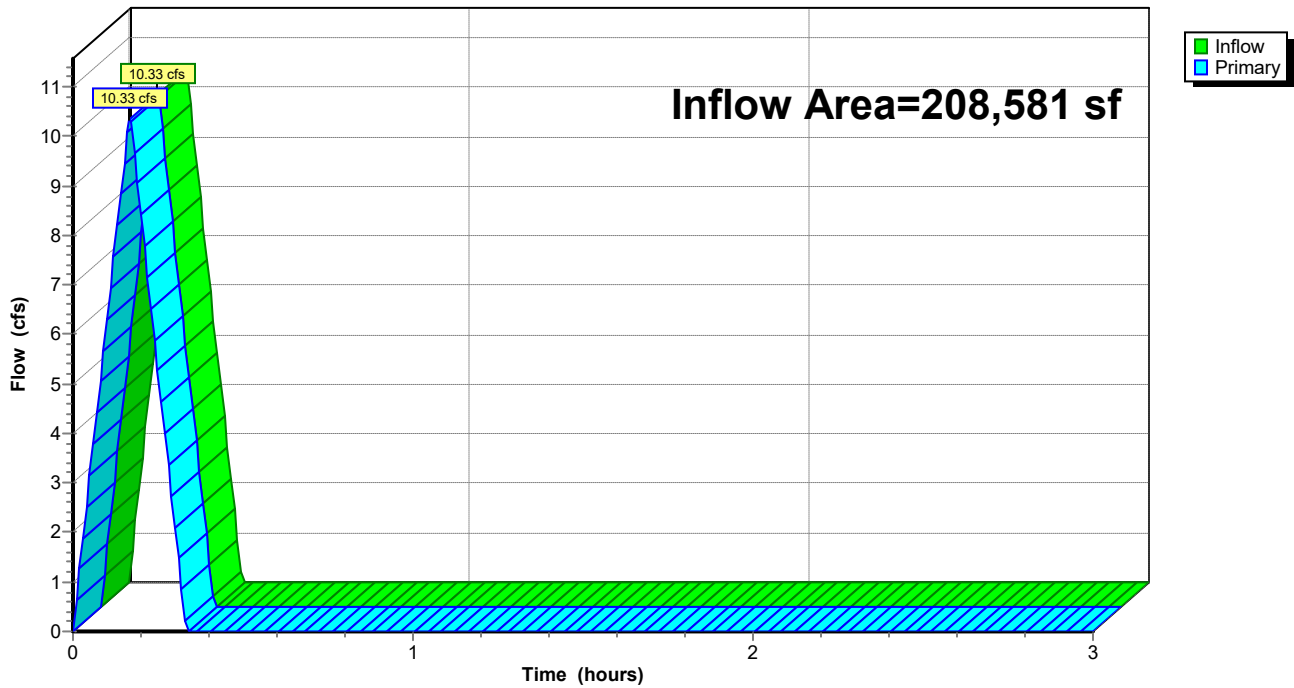
## Summary for Link Pre-Dev: Pre Dev Runoff

Inflow Area = 208,581 sf, 0.00% Impervious, Inflow Depth = 0.36" for 2-yr event  
Inflow = 10.33 cfs @ 0.17 hrs, Volume= 6,307 cf  
Primary = 10.33 cfs @ 0.17 hrs, Volume= 6,307 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

## Link Pre-Dev: Pre Dev Runoff

Hydrograph



### Summerwood Gym 3

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AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

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### Summary for Subcatchment A1: Drainage Basin A1

Runoff = 6.31 cfs @ 0.17 hrs, Volume= 3,849 cf, Depth= 0.43"  
Routed to Link Pre-Dev : Pre Dev Runoff

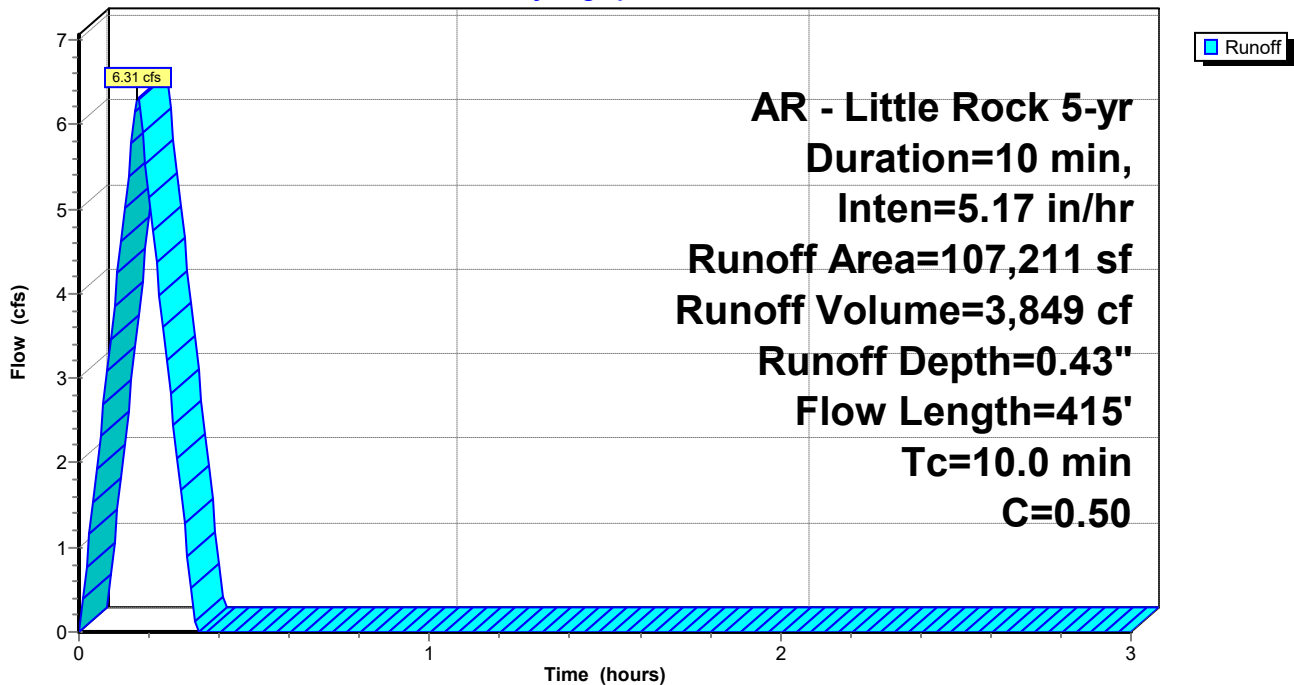
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

Area (sf)	C	Description
107,211	0.50	Existing Natural Vegetation
107,211		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		Direct Entry, Overland Concentrated Flow (Min)

### Subcatchment A1: Drainage Basin A1

Hydrograph



### Summerwood Gym 3

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AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

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### Summary for Subcatchment A2: Drainage Basin A2

Runoff = 5.96 cfs @ 0.17 hrs, Volume= 3,639 cf, Depth= 0.43"

Routed to Link Pre-Dev : Pre Dev Runoff

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

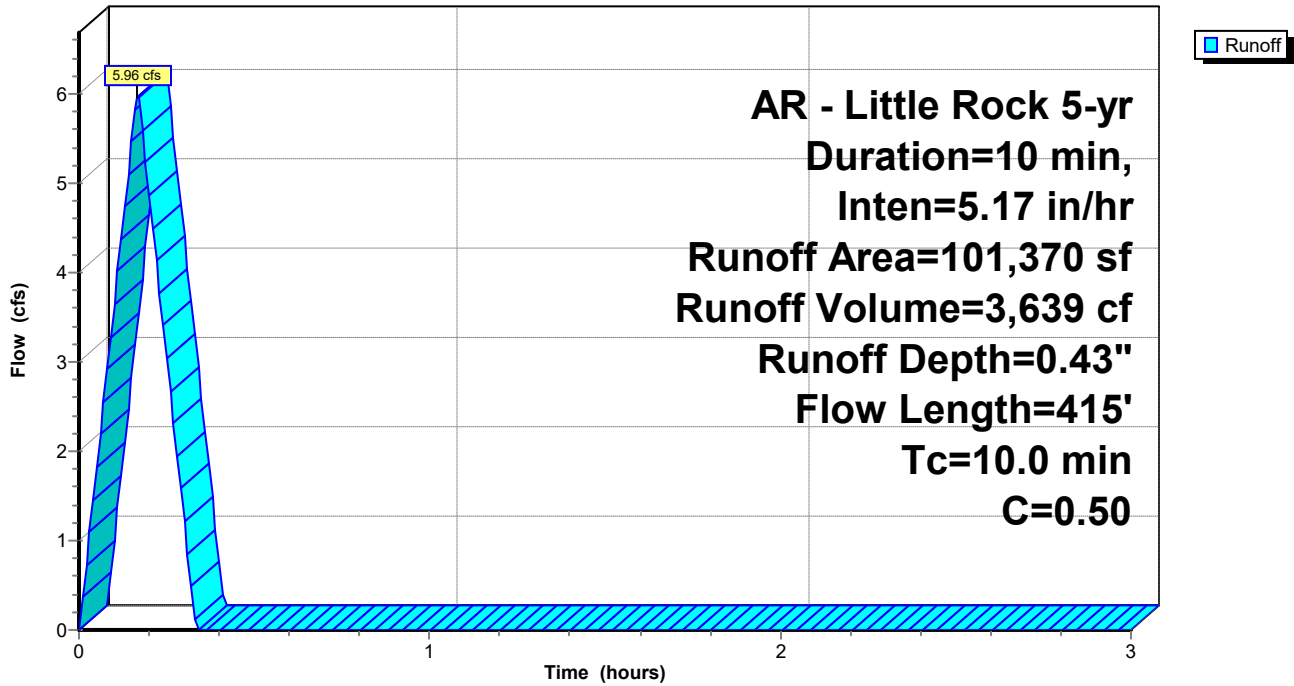
AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

Area (sf)	C	Description
101,370	0.50	Existing Natural Vegetation
101,370		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		Direct Entry, Overland Concentrated Flow (Min)

### Subcatchment A2: Drainage Basin A2

Hydrograph



# Summerwood Gym 3

AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

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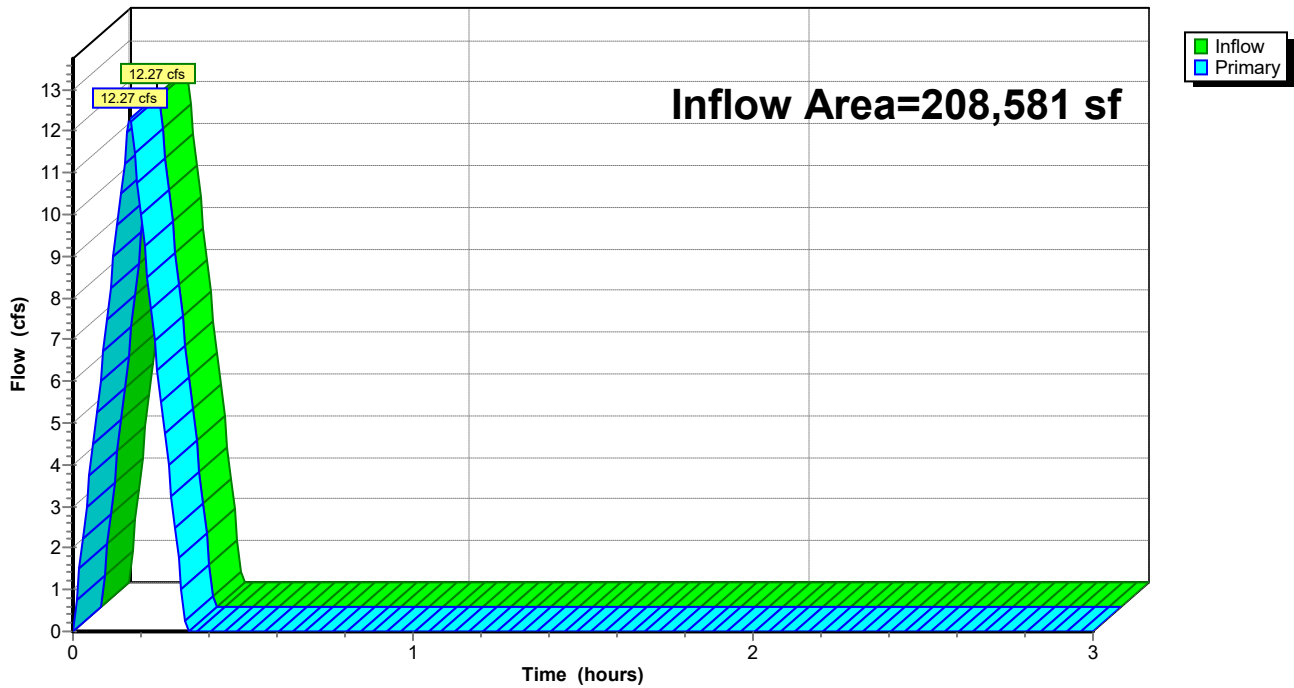
## Summary for Link Pre-Dev: Pre Dev Runoff

Inflow Area = 208,581 sf, 0.00% Impervious, Inflow Depth = 0.43" for 5-yr event  
Inflow = 12.27 cfs @ 0.17 hrs, Volume= 7,489 cf  
Primary = 12.27 cfs @ 0.17 hrs, Volume= 7,489 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

## Link Pre-Dev: Pre Dev Runoff

Hydrograph



# Summerwood Gym 3

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AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

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## Summary for Subcatchment A1: Drainage Basin A1

Runoff = 7.10 cfs @ 0.17 hrs, Volume= 4,336 cf, Depth= 0.49"  
Routed to Link Pre-Dev : Pre Dev Runoff

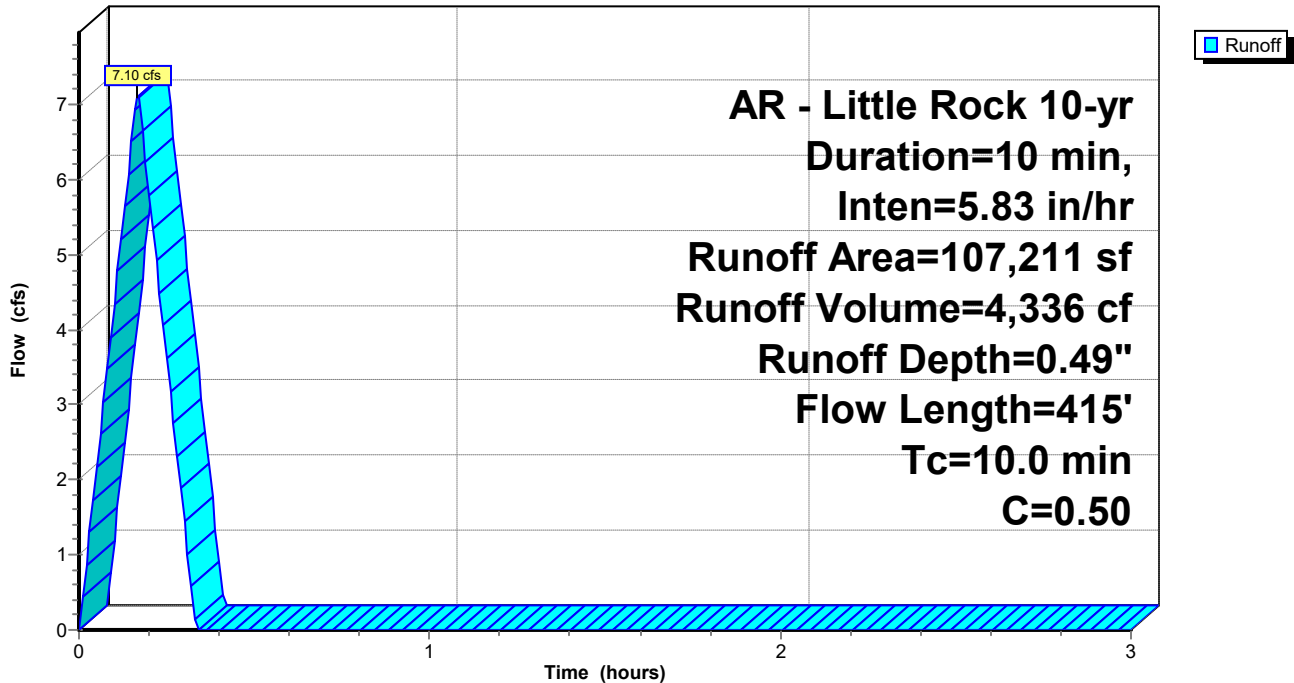
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

Area (sf)	C	Description
107,211	0.50	Existing Natural Vegetation
107,211		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		Direct Entry, Overland Concentrated Flow (Min)

## Subcatchment A1: Drainage Basin A1

Hydrograph



### Summerwood Gym 3

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AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

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### Summary for Subcatchment A2: Drainage Basin A2

Runoff = 6.72 cfs @ 0.17 hrs, Volume= 4,100 cf, Depth= 0.49"  
Routed to Link Pre-Dev : Pre Dev Runoff

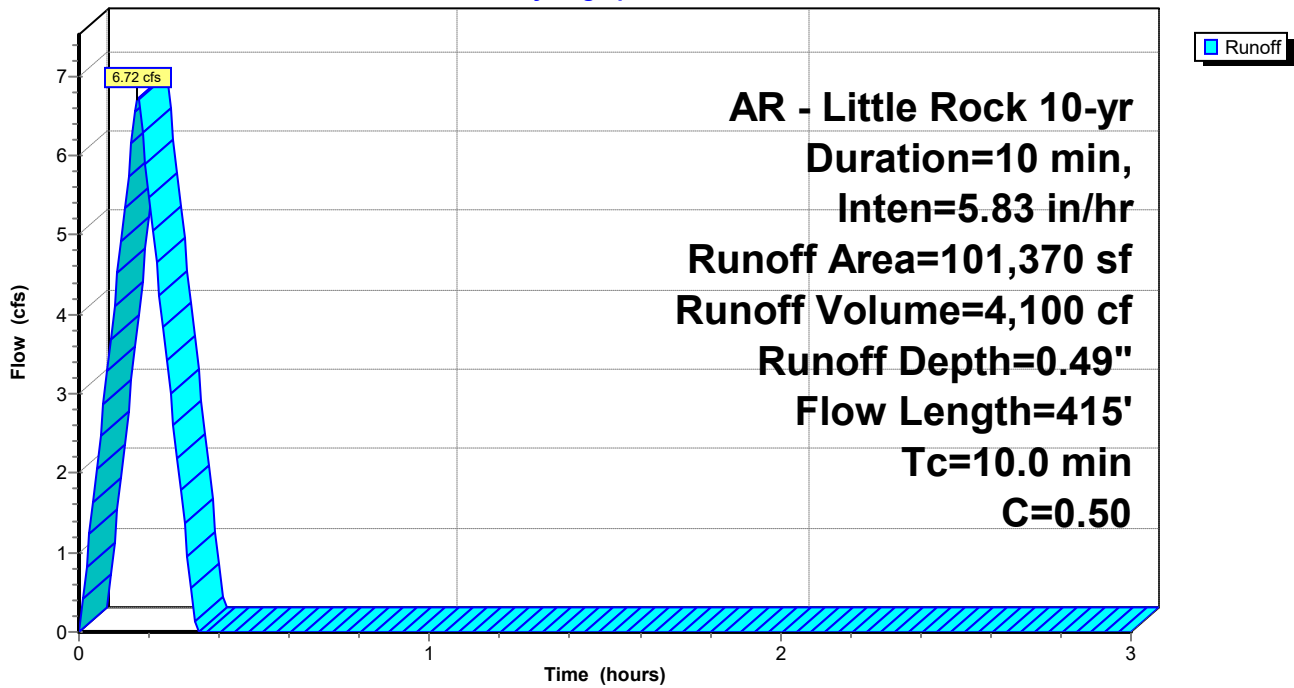
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

Area (sf)	C	Description
101,370	0.50	Existing Natural Vegetation
101,370		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		Direct Entry, Overland Concentrated Flow (Min)

### Subcatchment A2: Drainage Basin A2

Hydrograph



# Summerwood Gym 3

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AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

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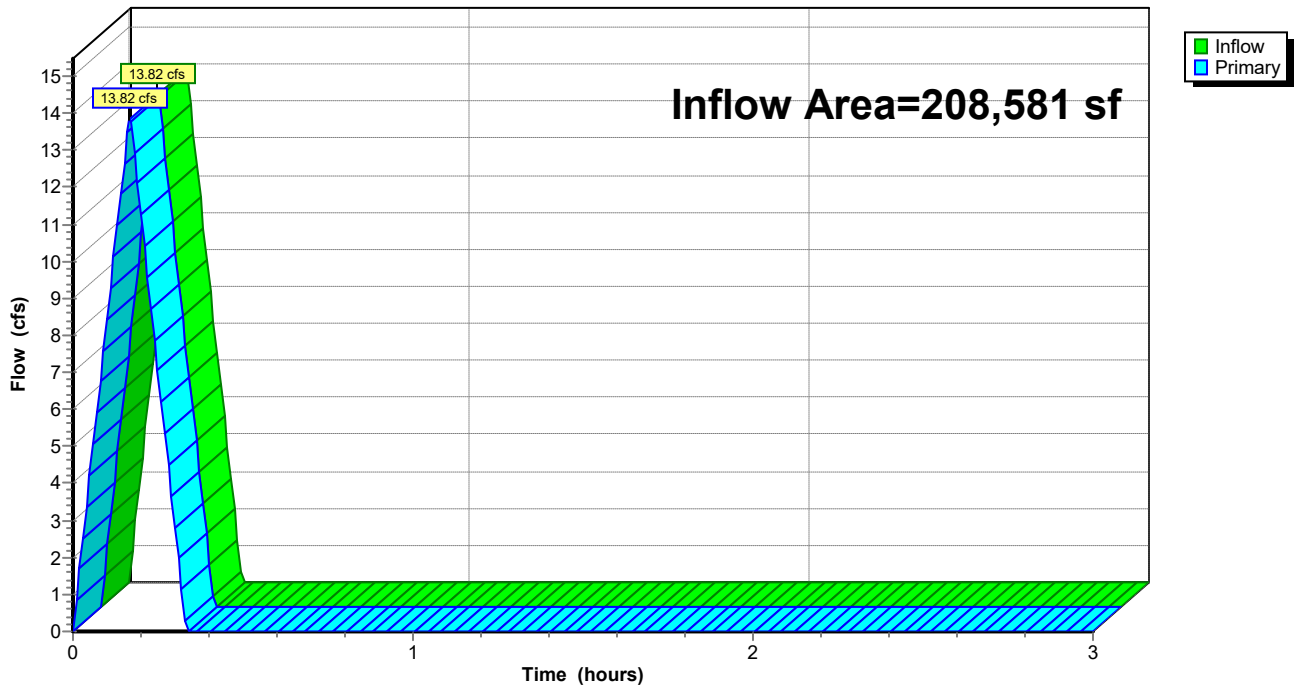
## Summary for Link Pre-Dev: Pre Dev Runoff

Inflow Area = 208,581 sf, 0.00% Impervious, Inflow Depth = 0.49" for 10-yr event  
Inflow = 13.82 cfs @ 0.17 hrs, Volume= 8,435 cf  
Primary = 13.82 cfs @ 0.17 hrs, Volume= 8,435 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

## Link Pre-Dev: Pre Dev Runoff

Hydrograph





# Summerwood Gym 3

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AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

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## Summary for Subcatchment A1: Drainage Basin A1

Runoff = 8.19 cfs @ 0.17 hrs, Volume= 5,001 cf, Depth= 0.56"  
Routed to Link Pre-Dev : Pre Dev Runoff

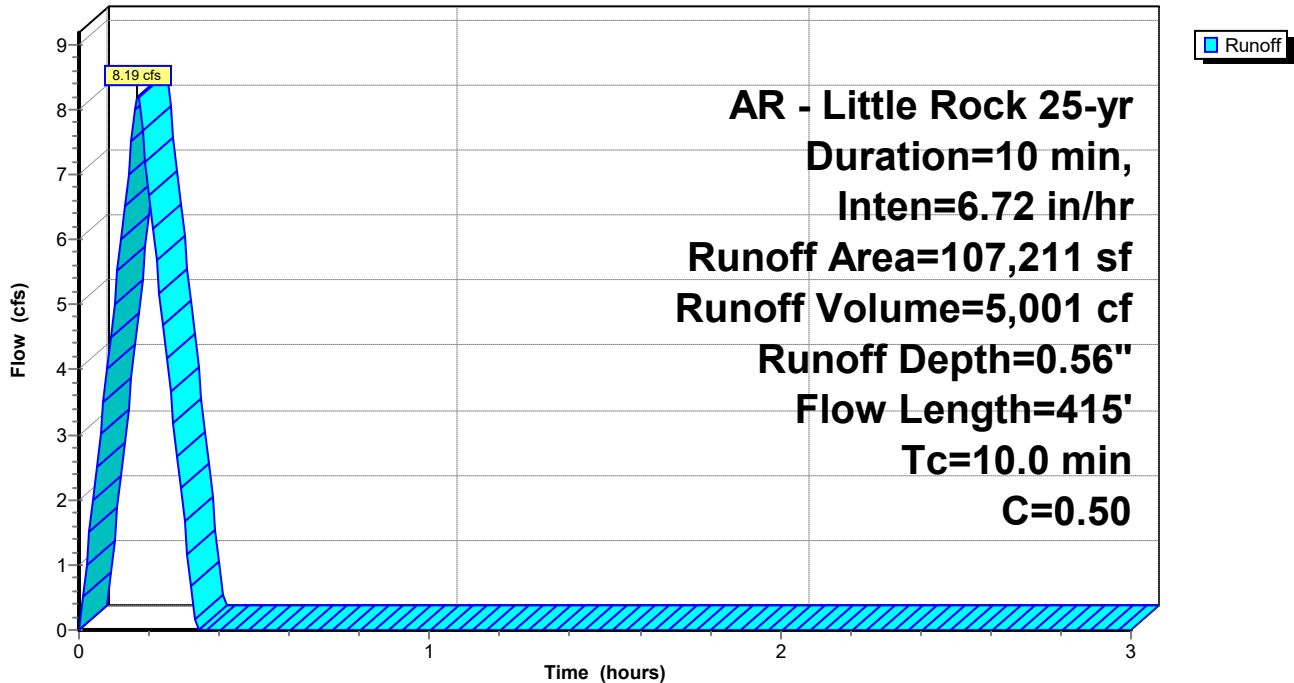
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

Area (sf)	C	Description
107,211	0.50	Existing Natural Vegetation
107,211		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		Direct Entry, Overland Concentrated Flow (Min)

## Subcatchment A1: Drainage Basin A1

Hydrograph



# Summerwood Gym 3

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AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

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## Summary for Subcatchment A2: Drainage Basin A2

Runoff = 7.75 cfs @ 0.17 hrs, Volume= 4,729 cf, Depth= 0.56"  
Routed to Link Pre-Dev : Pre Dev Runoff

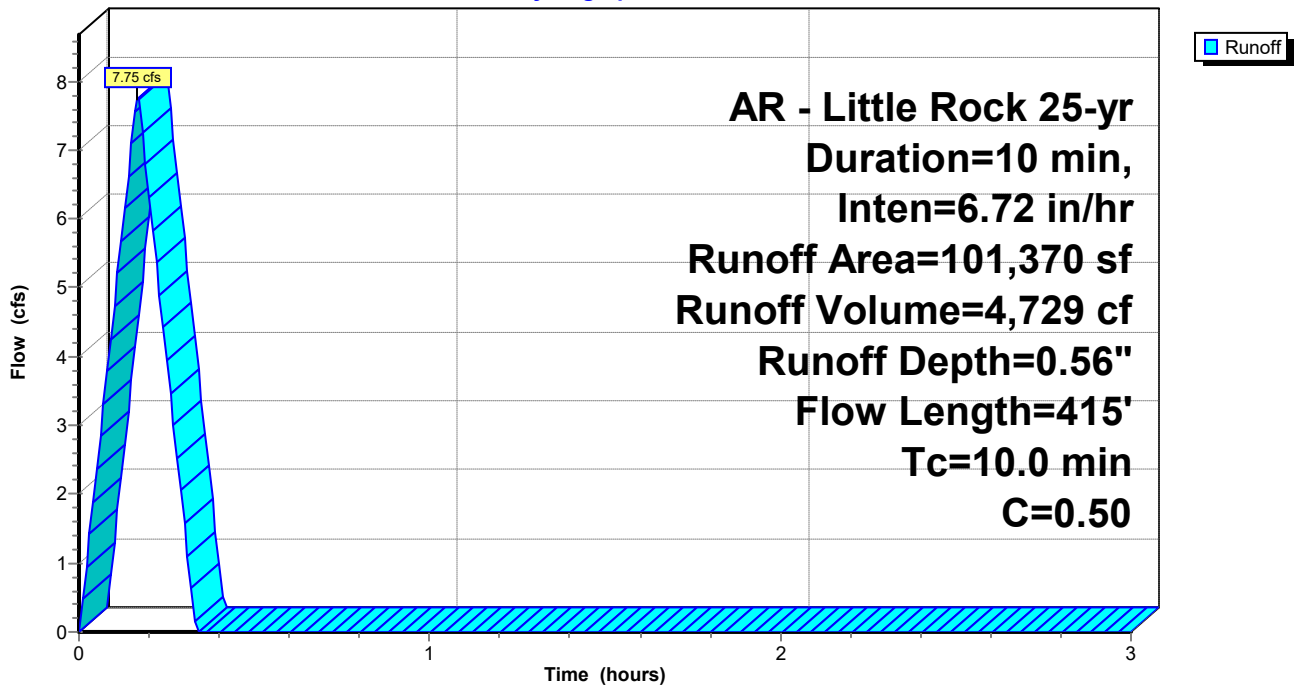
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

Area (sf)	C	Description
101,370	0.50	Existing Natural Vegetation
101,370		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		Direct Entry, Overland Concentrated Flow (Min)

## Subcatchment A2: Drainage Basin A2

Hydrograph



# Summerwood Gym 3

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AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

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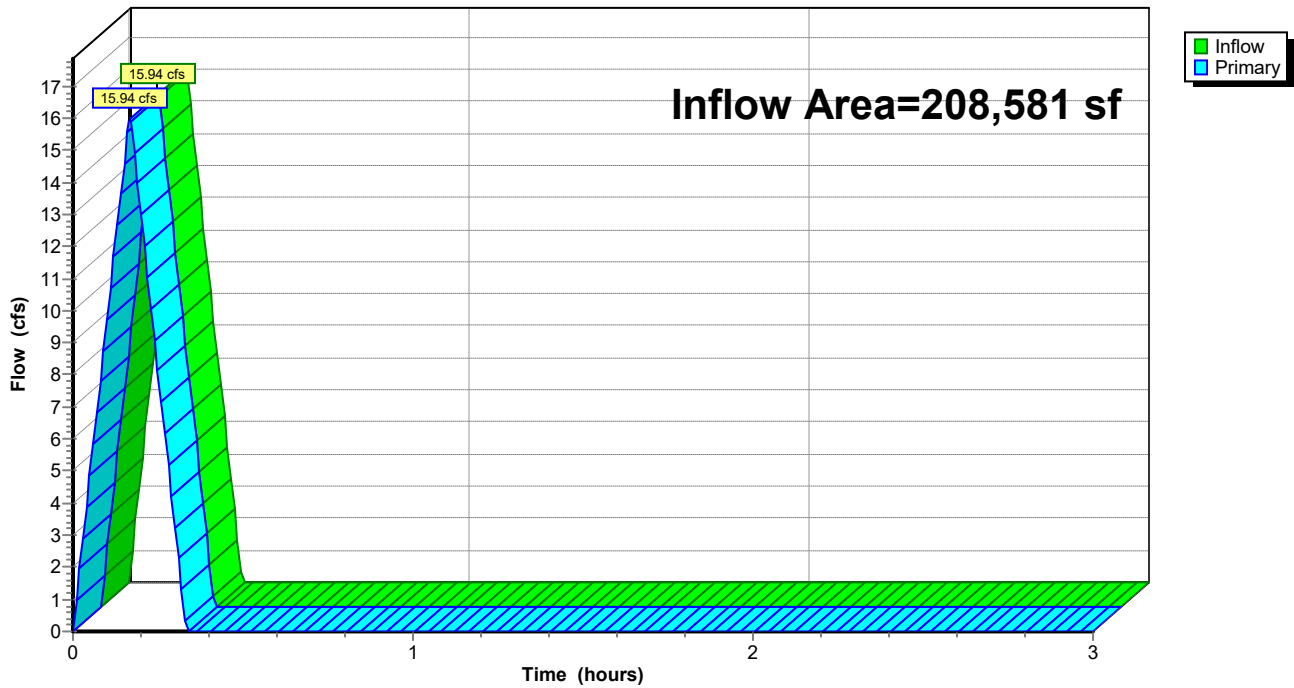
## Summary for Link Pre-Dev: Pre Dev Runoff

Inflow Area = 208,581 sf, 0.00% Impervious, Inflow Depth = 0.56" for 25-yr event  
Inflow = 15.94 cfs @ 0.17 hrs, Volume= 9,730 cf  
Primary = 15.94 cfs @ 0.17 hrs, Volume= 9,730 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

## Link Pre-Dev: Pre Dev Runoff

Hydrograph



### Summerwood Gym 3

AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

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### Summary for Subcatchment A1: Drainage Basin A1

Runoff = 9.73 cfs @ 0.17 hrs, Volume= 5,939 cf, Depth= 0.66"  
Routed to Link Pre-Dev : Pre Dev Runoff

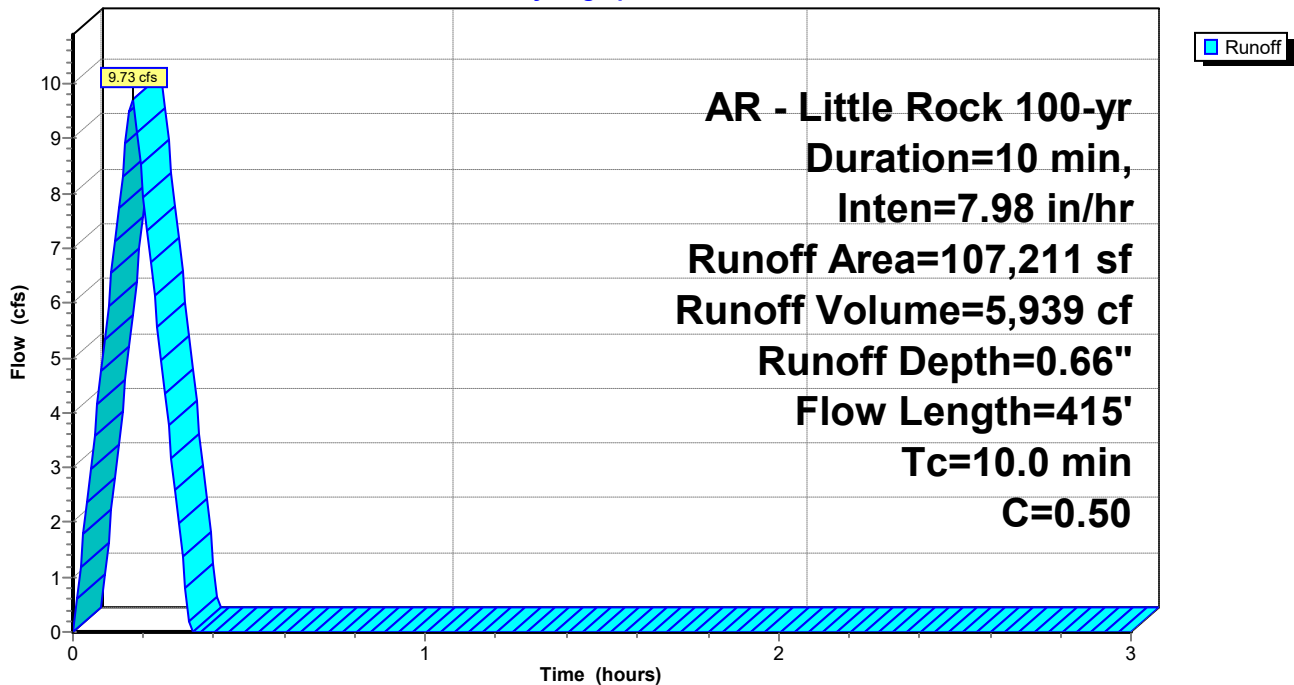
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Area (sf)	C	Description
107,211	0.50	Existing Natural Vegetation
107,211		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		Direct Entry, Overland Concentrated Flow (Min)

### Subcatchment A1: Drainage Basin A1

Hydrograph



**Summerwood Gym 3**

AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Prepared by Phillip Lewis Engineering

Printed 1/11/2024

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**Summary for Subcatchment A2: Drainage Basin A2**

Runoff = 9.20 cfs @ 0.17 hrs, Volume= 5,615 cf, Depth= 0.66"  
 Routed to Link Pre-Dev : Pre Dev Runoff

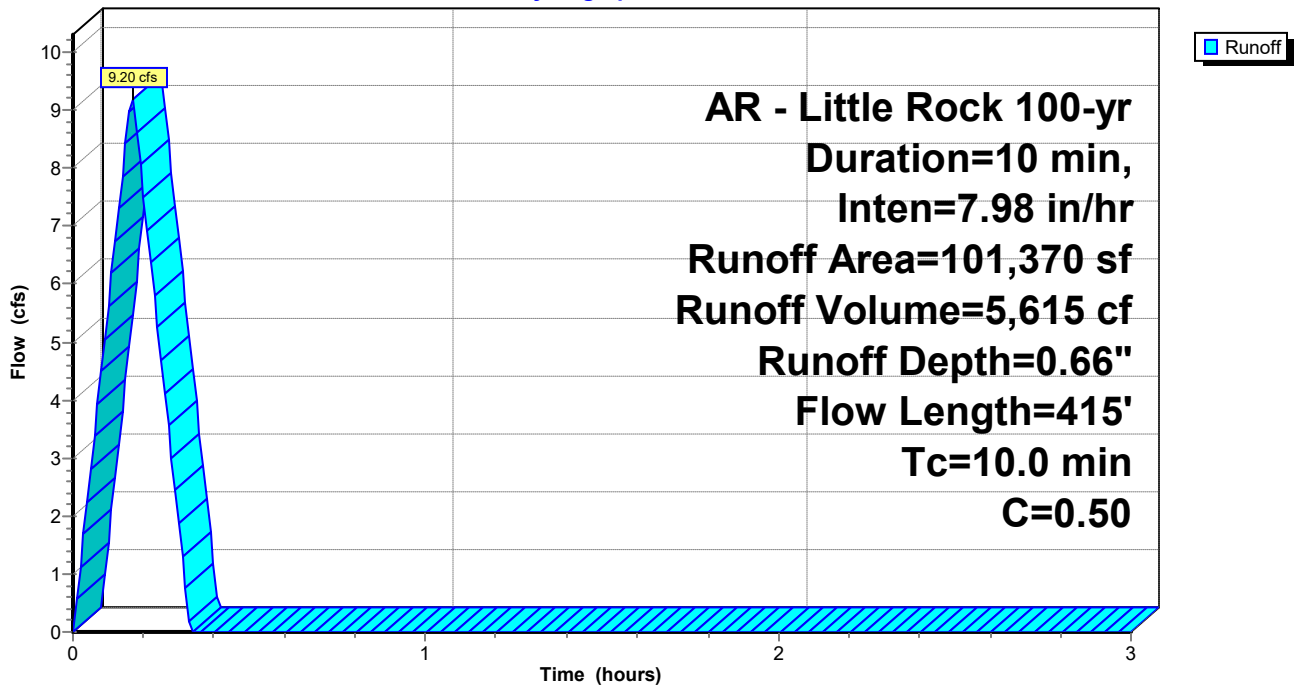
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
 AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Area (sf)	C	Description
101,370	0.50	Existing Natural Vegetation
101,370		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment A2: Drainage Basin A2**

Hydrograph



# Summerwood Gym 3

AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

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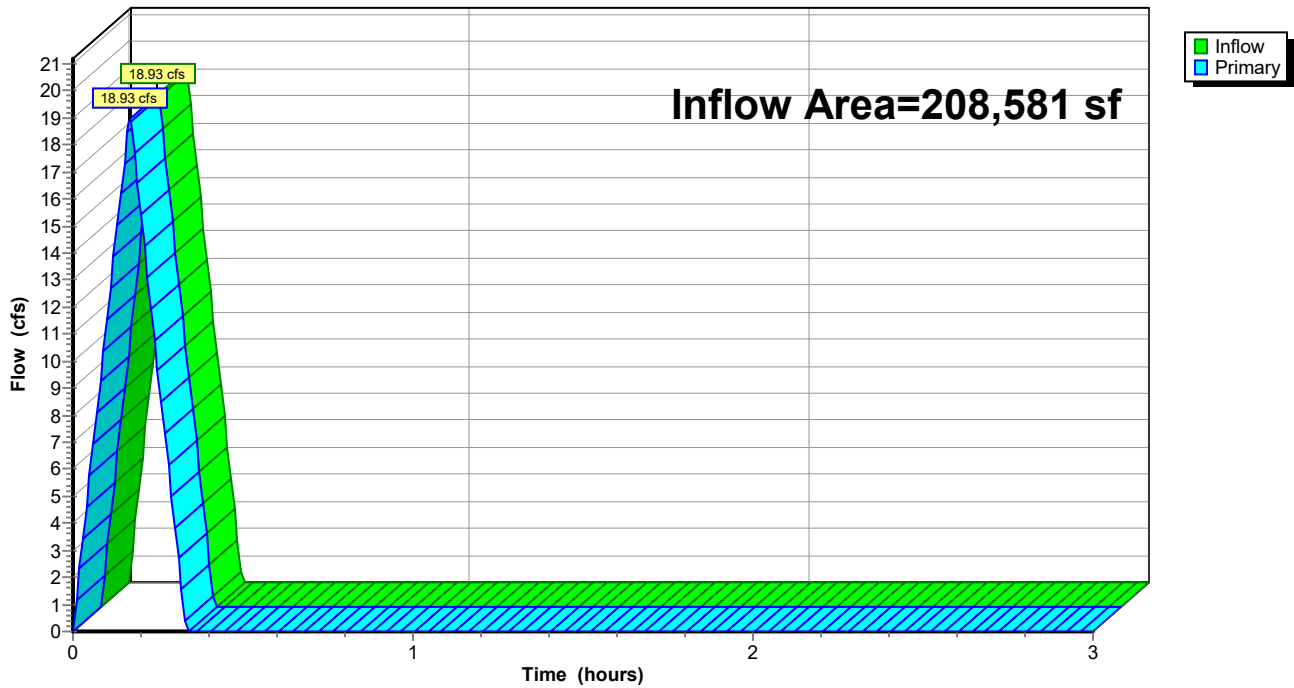
## Summary for Link Pre-Dev: Pre Dev Runoff

Inflow Area = 208,581 sf, 0.00% Impervious, Inflow Depth = 0.66" for 100-yr event  
Inflow = 18.93 cfs @ 0.17 hrs, Volume= 11,554 cf  
Primary = 18.93 cfs @ 0.17 hrs, Volume= 11,554 cf, Atten= 0%, Lag= 0.0 min

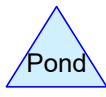
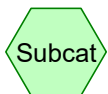
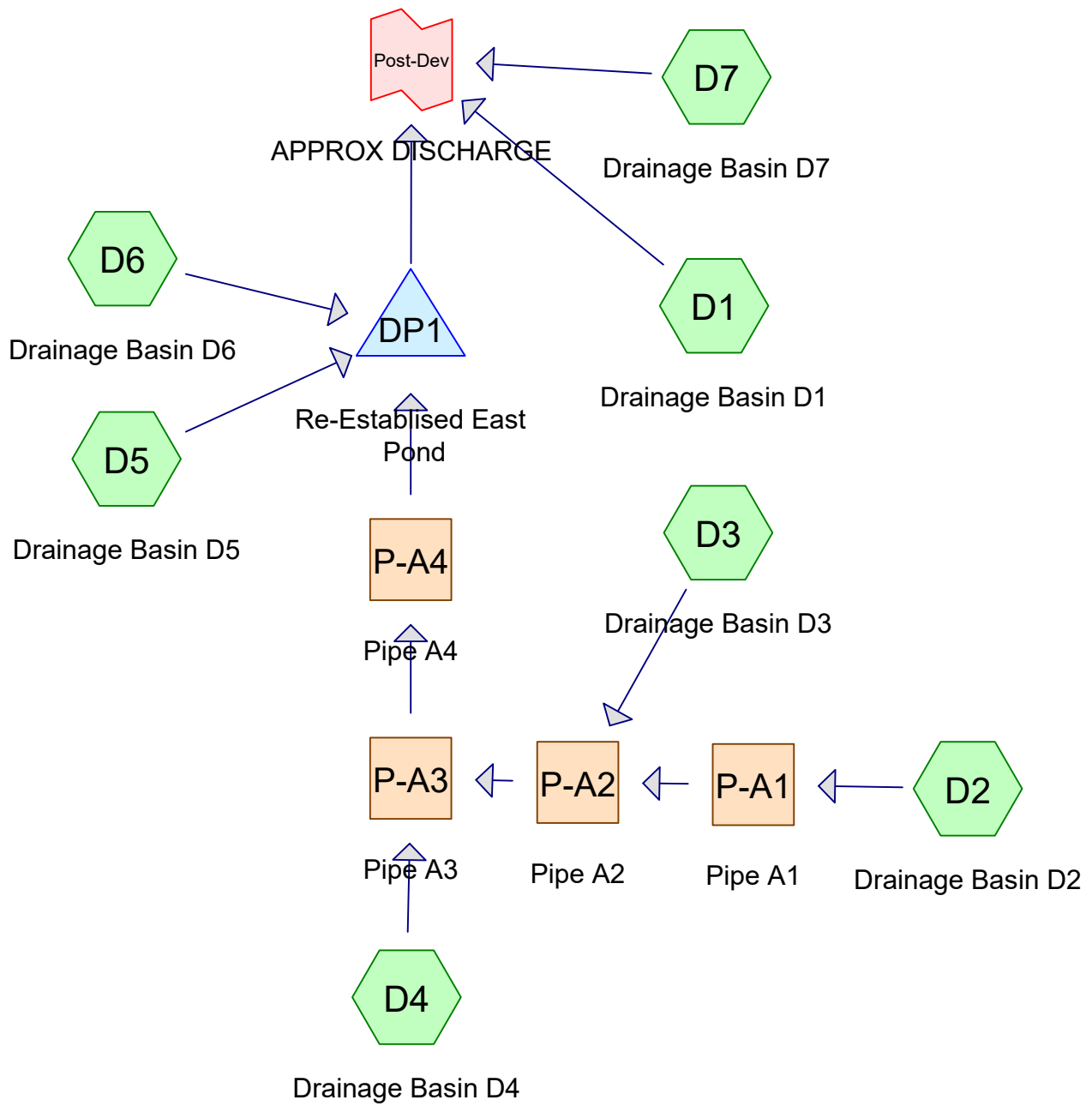
Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

## Link Pre-Dev: Pre Dev Runoff

Hydrograph



## POST DEVELOPMENT HYDROGRAPHS



**Routing Diagram for Summerwood Gym 3 2-yr**  
 Prepared by Phillip Lewis Engineering, Printed 1/11/2024  
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# Summerwood Gym 3 2-yr

Prepared by Phillip Lewis Engineering

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AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Printed 1/11/2024

## Summary for Subcatchment D1: Drainage Basin D1

Runoff = 4.32 cfs @ 0.09 hrs, Volume= 2,586 cf, Depth= 0.64"  
Routed to Link Post-Dev : APPROX DISCHARGE

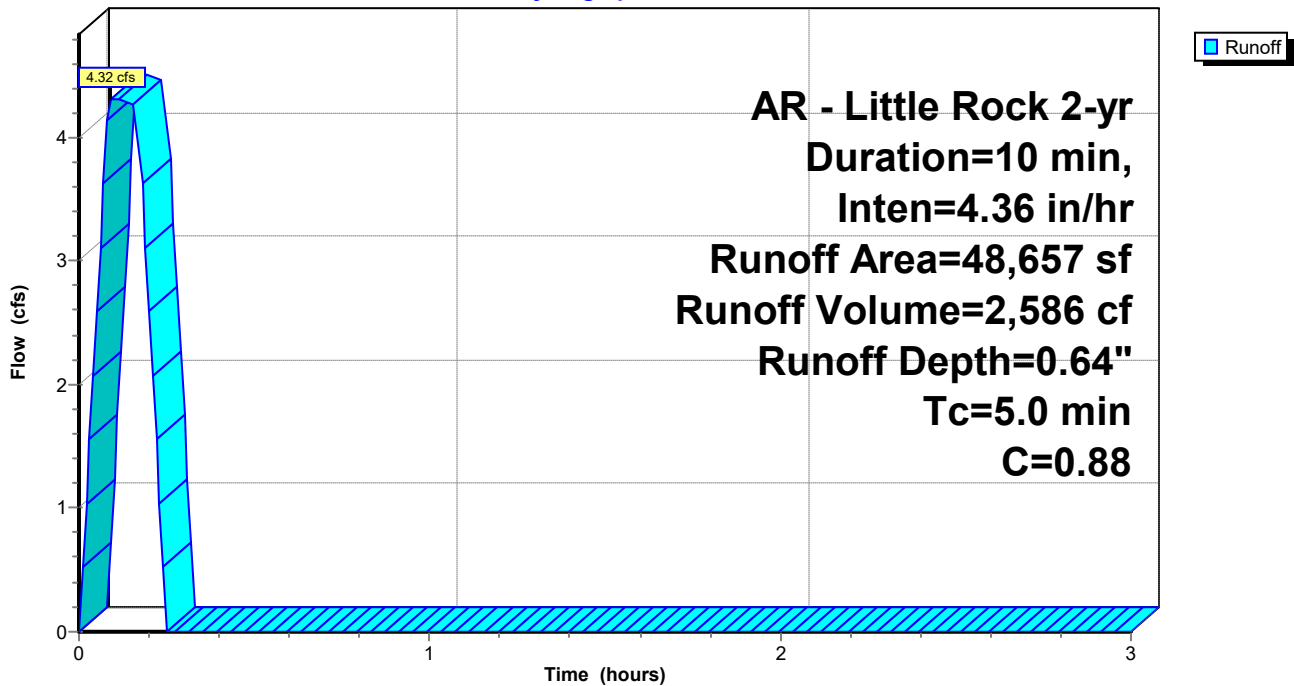
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Area (sf)	C	Description
3,421	0.40	Sod Yard
45,236	0.92	Road, Drives, Sidewalks
48,657	0.88	Weighted Average
48,657		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Overland Concentrated Flow (Min)

## Subcatchment D1: Drainage Basin D1

Hydrograph



# Summerwood Gym 3 2-yr

Prepared by Phillip Lewis Engineering

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AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

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## Summary for Subcatchment D2: Drainage Basin D2

Runoff = 1.85 cfs @ 0.09 hrs, Volume= 1,106 cf, Depth= 0.54"

Routed to Reach P-A1 : Pipe A1

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

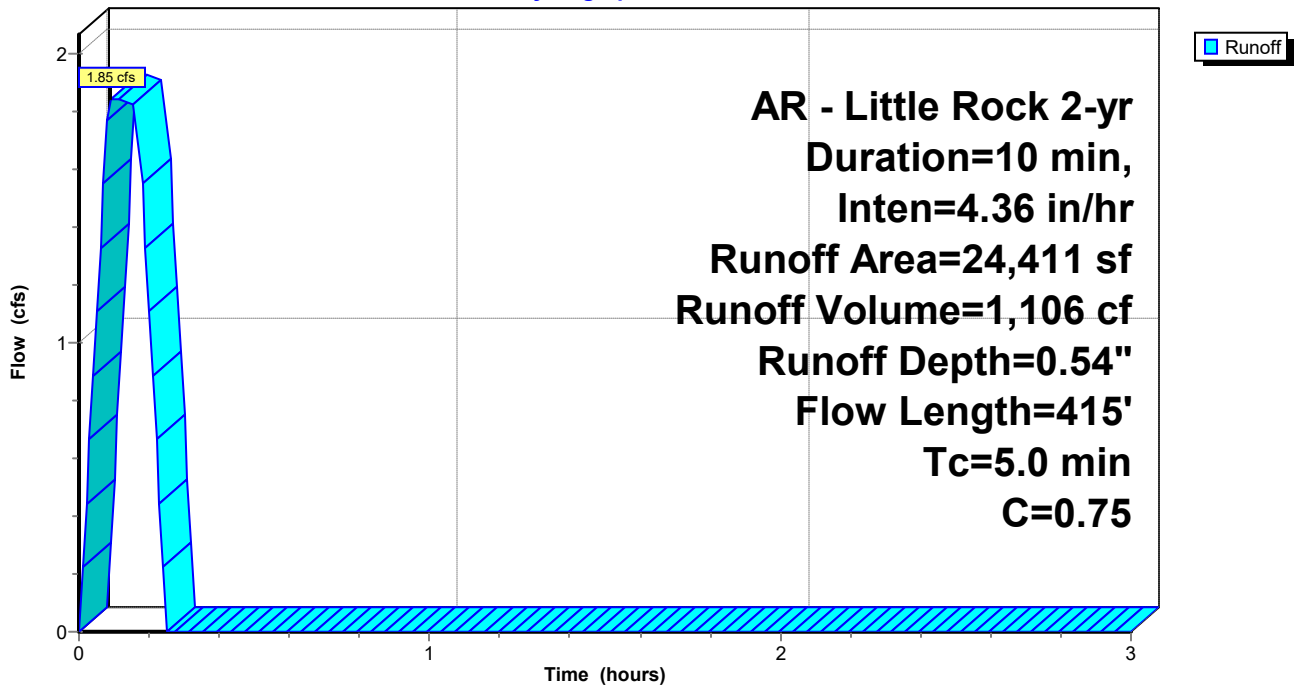
AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Area (sf)	C	Description
8,845	0.45	Rip Rap Embankment
15,566	0.92	Roof, Drives, Sidewalks
24,411	0.75	Weighted Average
24,411		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	415		1.38		Direct Entry, Overland Concentrated Flow (Min)

## Subcatchment D2: Drainage Basin D2

Hydrograph



# Summerwood Gym 3 2-yr

Prepared by Phillip Lewis Engineering

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AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

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## Summary for Subcatchment D3: Drainage Basin D3

Runoff = 1.36 cfs @ 0.09 hrs, Volume= 813 cf, Depth= 0.64"

Routed to Reach P-A2 : Pipe A2

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

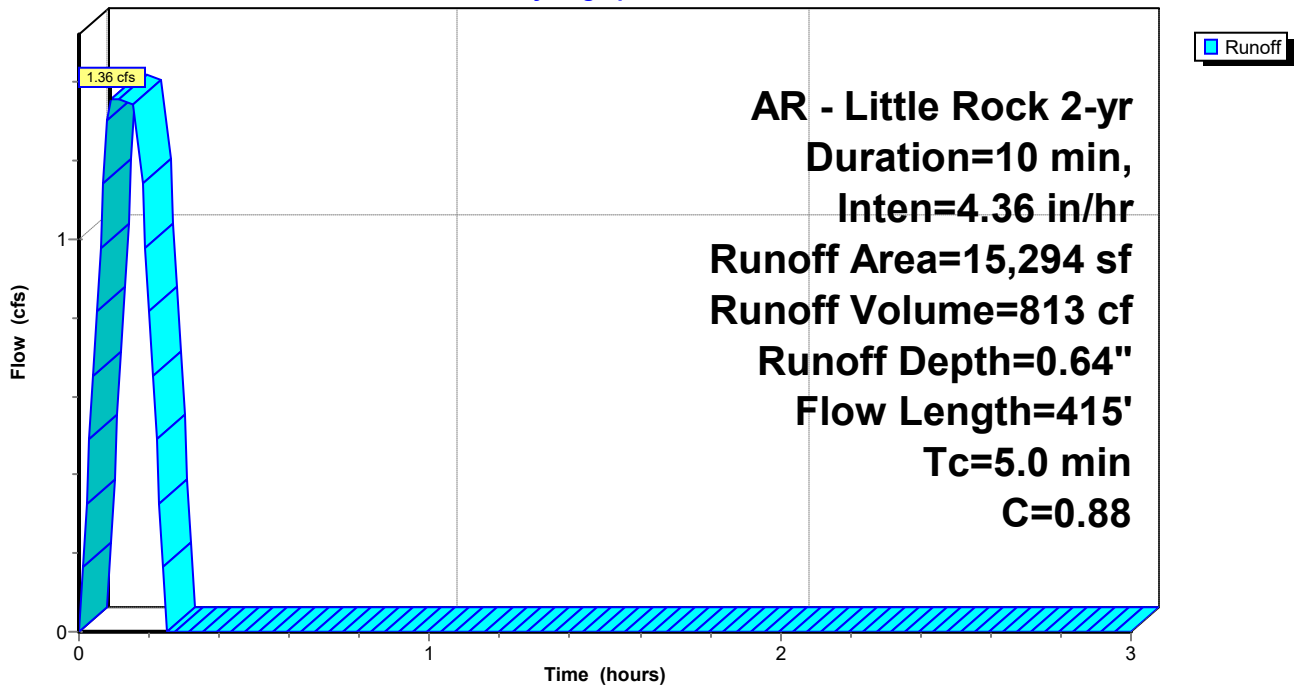
AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Area (sf)	C	Description
1,065	0.40	Sod Yard
14,229	0.92	Paving, Sidewalks
15,294	0.88	Weighted Average
15,294		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	415		1.38		Direct Entry, Overland Concentrated Flow (Min)

## Subcatchment D3: Drainage Basin D3

Hydrograph



# Summerwood Gym 3 2-yr

Prepared by Phillip Lewis Engineering

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AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

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## Summary for Subcatchment D4: Drainage Basin D4

Runoff = 1.91 cfs @ 0.17 hrs, Volume= 1,163 cf, Depth= 0.44"

Routed to Reach P-A3 : Pipe A3

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

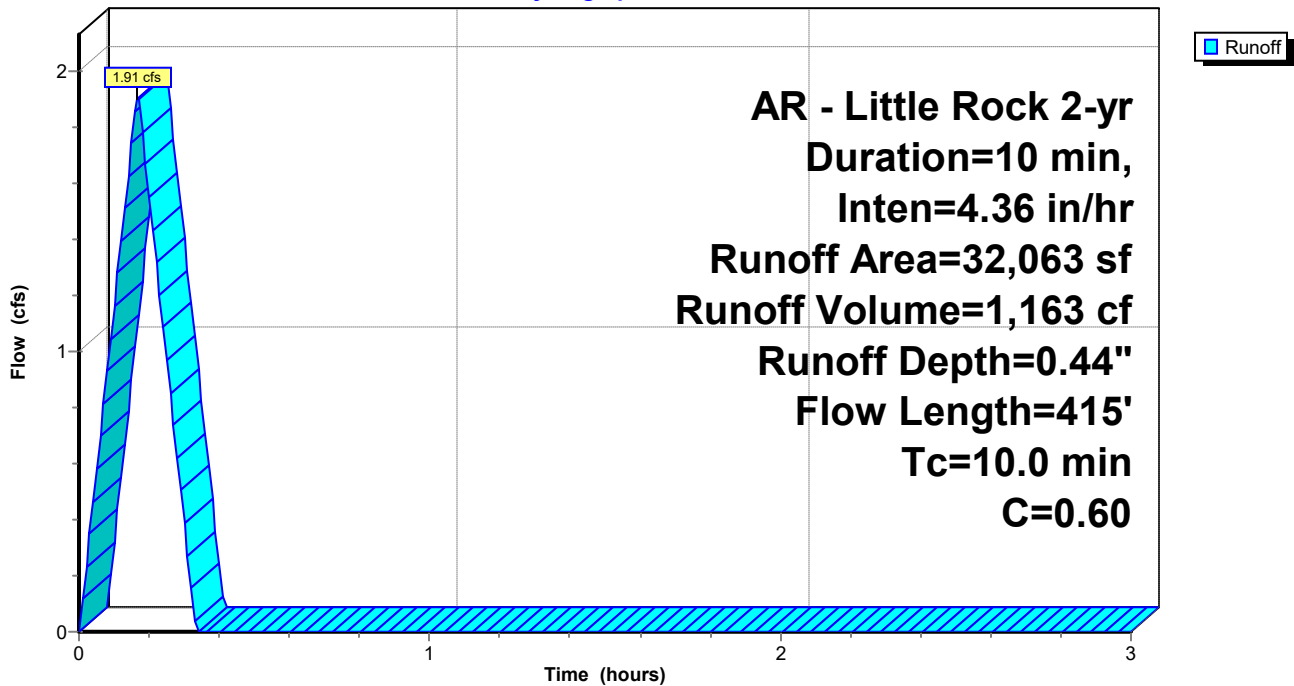
AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Area (sf)	C	Description
20,032	0.40	
12,031	0.92	
32,063	0.60	Weighted Average
32,063		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		Direct Entry, Overland Concentrated Flow (Min)

## Subcatchment D4: Drainage Basin D4

Hydrograph



# Summerwood Gym 3 2-yr

Prepared by Phillip Lewis Engineering

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AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

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## Summary for Subcatchment D5: Drainage Basin D5

Runoff = 2.77 cfs @ 0.09 hrs, Volume= 1,660 cf, Depth= 0.48"  
Routed to Pond DP1 : Re-Established East Pond

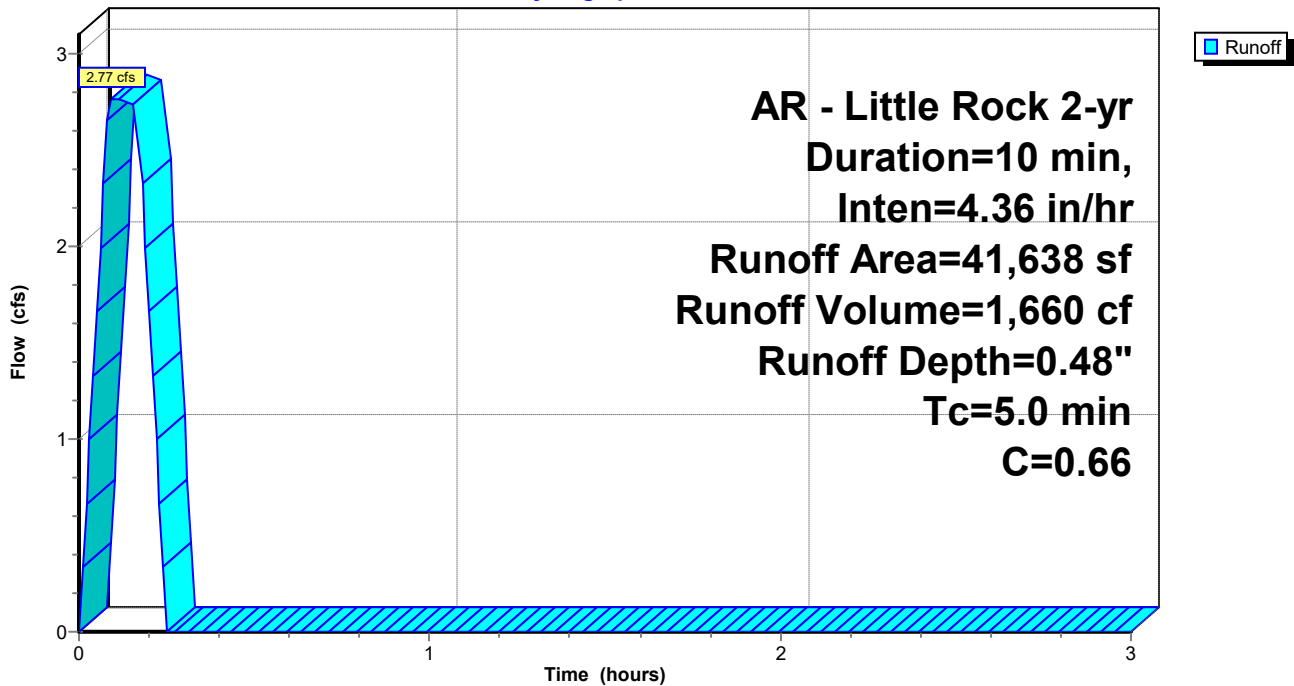
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Area (sf)	C	Description
21,201	0.40	Sod Yard, Natural Vegetation
20,437	0.92	Paving, Sidewalks
41,638	0.66	Weighted Average
41,638		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Overland Concentrated Flow (Min)

## Subcatchment D5: Drainage Basin D5

Hydrograph



# Summerwood Gym 3 2-yr

Prepared by Phillip Lewis Engineering

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AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

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## Summary for Subcatchment D6: Drainage Basin D6

Runoff = 1.77 cfs @ 0.09 hrs, Volume= 1,062 cf, Depth= 0.67"

Routed to Pond DP1 : Re-Established East Pond

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

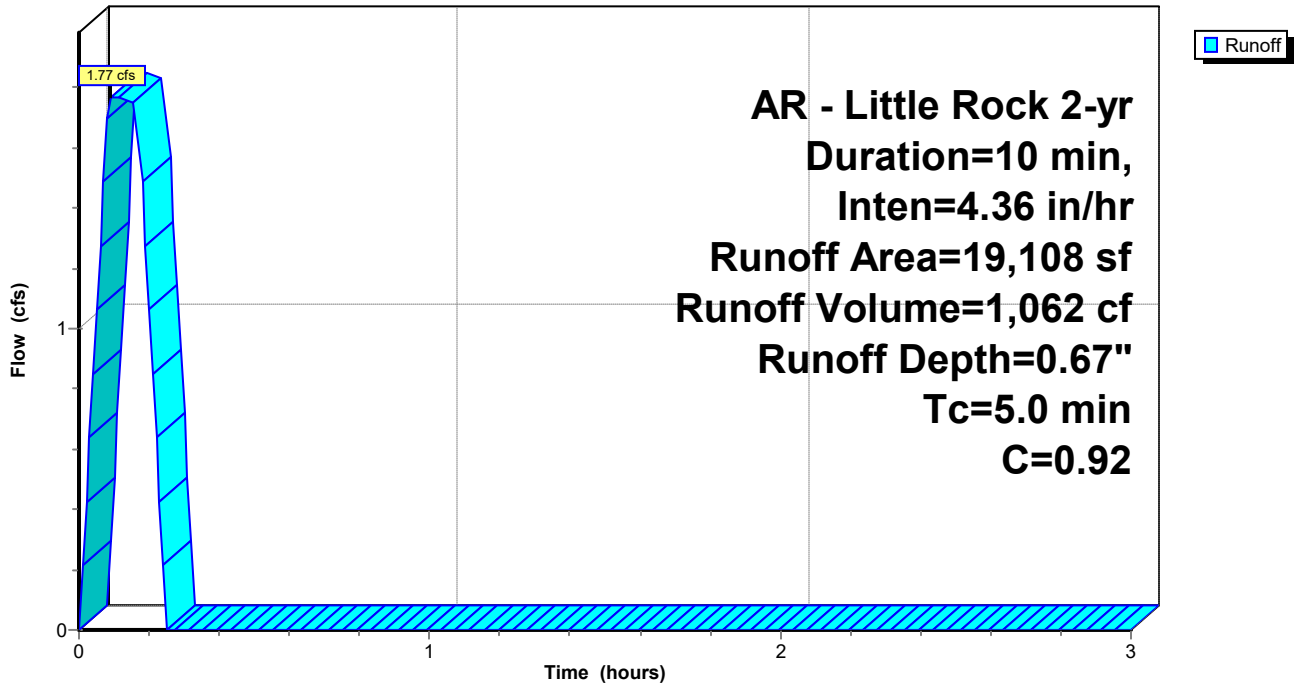
AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Area (sf)	C	Description
19,108	0.92	Roof
19,108		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Overland Concentrated Flow (Min)

## Subcatchment D6: Drainage Basin D6

Hydrograph



# Summerwood Gym 3 2-yr

Prepared by Phillip Lewis Engineering

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AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

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## Summary for Subcatchment D7: Drainage Basin D7

Runoff = 1.34 cfs @ 0.09 hrs, Volume= 800 cf, Depth= 0.38"  
Routed to Link Post-Dev : APPROX DISCHARGE

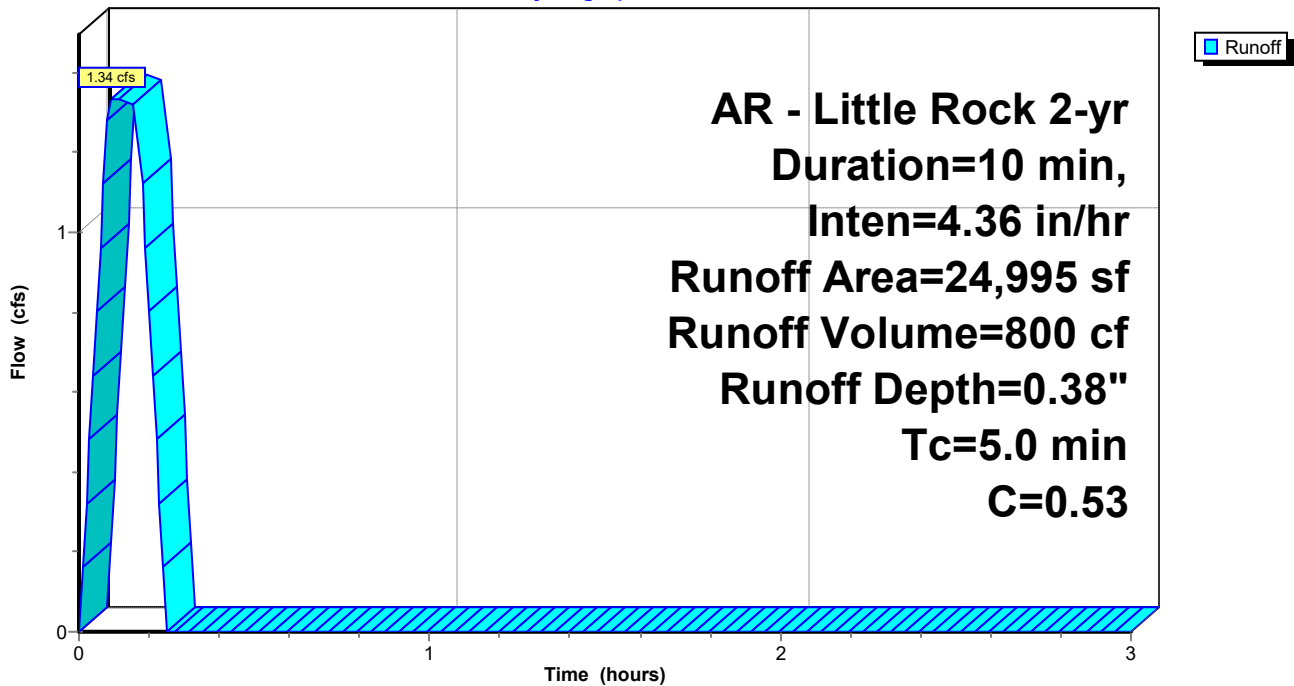
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Area (sf)	C	Description
18,798	0.40	Sod Yard, Natural Vegetation
6,197	0.92	Paving, Sidewalks
24,995	0.53	Weighted Average
24,995		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Overland Concentrated Flow (Min)

## Subcatchment D7: Drainage Basin D7

Hydrograph



# Summerwood Gym 3 2-yr

Prepared by Phillip Lewis Engineering

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AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

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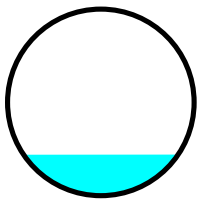
## Summary for Reach P-A1: Pipe A1

Inflow Area = 24,411 sf, 0.00% Impervious, Inflow Depth = 0.54" for 2-yr event  
Inflow = 1.85 cfs @ 0.09 hrs, Volume= 1,106 cf  
Outflow = 1.85 cfs @ 0.11 hrs, Volume= 1,106 cf, Atten= 0%, Lag= 1.2 min  
Routed to Reach P-A2 : Pipe A2

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Max. Velocity= 6.38 fps, Min. Travel Time= 0.1 min  
Avg. Velocity= 4.53 fps, Avg. Travel Time= 0.2 min

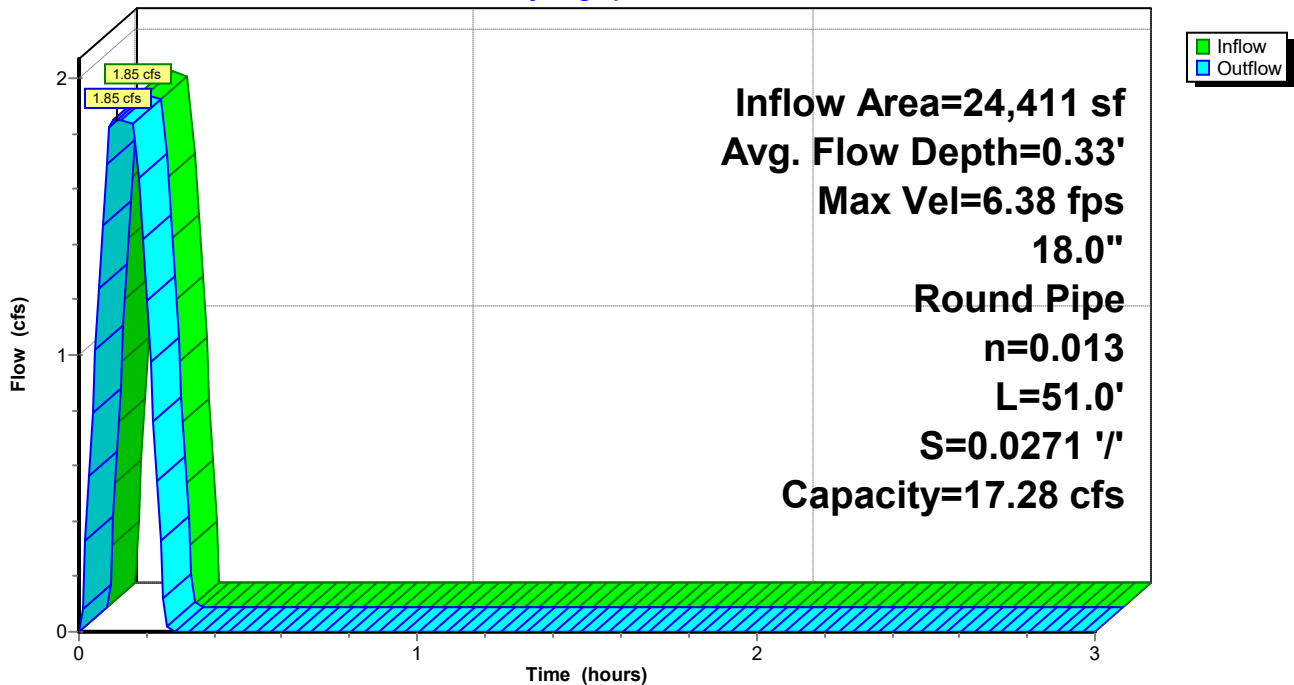
Peak Storage= 15 cf @ 0.09 hrs  
Average Depth at Peak Storage= 0.33' , Surface Width= 1.24'  
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.28 cfs

18.0" Round Pipe  
n= 0.013 Corrugated PE, smooth interior  
Length= 51.0' Slope= 0.0271 '/'  
Inlet Invert= 408.33', Outlet Invert= 406.95'



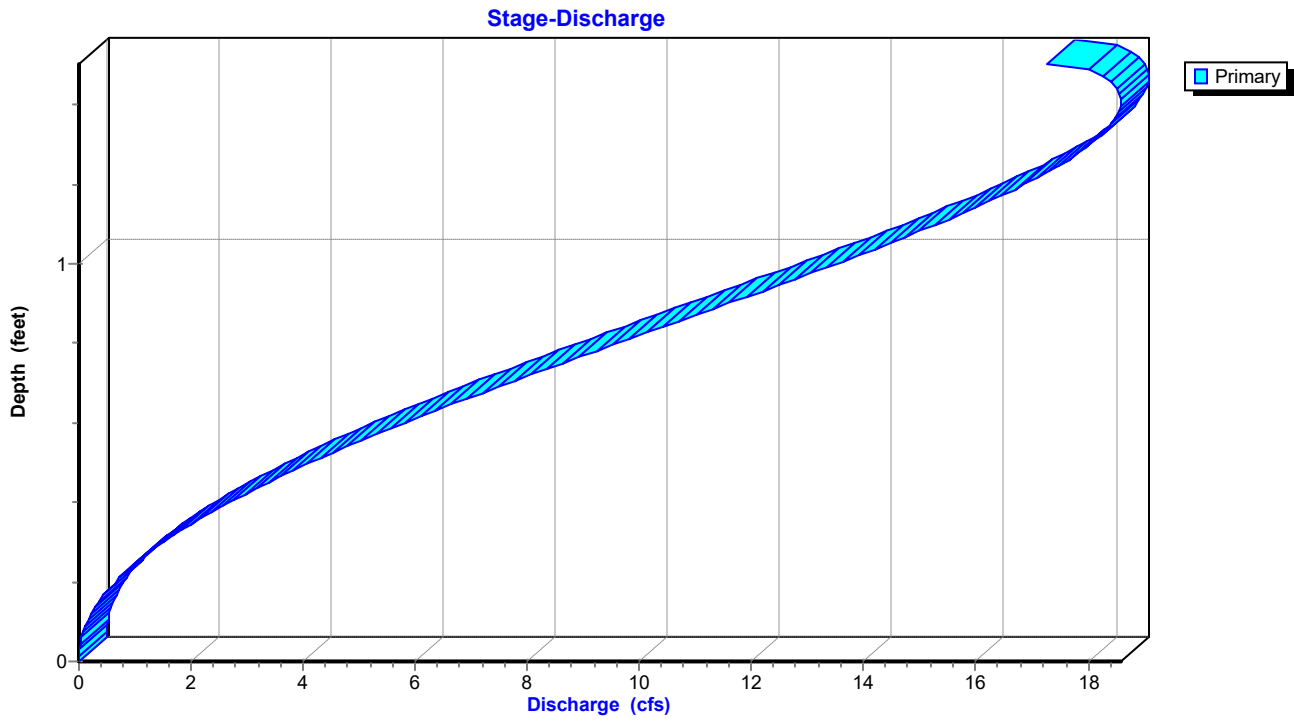
## Reach P-A1: Pipe A1

Hydrograph





### Reach P-A1: Pipe A1



**Summerwood Gym 3 2-yr***AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr*

Prepared by Phillip Lewis Engineering

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**Stage-Area-Storage for Reach P-A1: Pipe A1**

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
408.33	0.0	0	409.37	1.3	67
408.35	0.0	0	409.39	1.3	68
408.37	0.0	1	409.41	1.4	69
408.39	0.0	1	409.43	1.4	71
408.41	0.0	2	409.45	1.4	72
408.43	0.1	3	409.47	1.4	73
408.45	0.1	3	409.49	1.5	75
408.47	0.1	4	409.51	1.5	76
408.49	0.1	5	409.53	1.5	77
408.51	0.1	6	409.55	1.5	78
408.53	0.1	7	409.57	1.6	80
408.55	0.2	8	409.59	1.6	81
408.57	0.2	9	409.61	1.6	82
408.59	0.2	10	409.63	1.6	83
408.61	0.2	12	409.65	1.6	84
408.63	0.3	13	409.67	1.7	85
408.65	0.3	14	409.69	1.7	86
408.67	0.3	15	409.71	1.7	87
408.69	0.3	17	409.73	1.7	88
408.71	0.4	18	409.75	1.7	88
408.73	0.4	19	409.77	1.7	89
408.75	0.4	21	409.79	1.8	89
408.77	0.4	22	409.81	1.8	90
408.79	0.5	23	409.83	<b>1.8</b>	<b>90</b>
408.81	0.5	25			
408.83	0.5	26			
408.85	0.5	28			
408.87	0.6	29			
408.89	0.6	31			
408.91	0.6	32			
408.93	0.7	34			
408.95	0.7	35			
408.97	0.7	37			
408.99	0.7	38			
409.01	0.8	40			
409.03	0.8	41			
409.05	0.8	43			
409.07	0.9	44			
409.09	0.9	46			
409.11	0.9	47			
409.13	1.0	49			
409.15	1.0	50			
409.17	1.0	52			
409.19	1.0	53			
409.21	1.1	55			
409.23	1.1	56			
409.25	1.1	58			
409.27	1.2	59			
409.29	1.2	61			
409.31	1.2	62			
409.33	1.3	64			
409.35	1.3	65			

# Summerwood Gym 3 2-yr

Prepared by Phillip Lewis Engineering

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AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Printed 1/11/2024

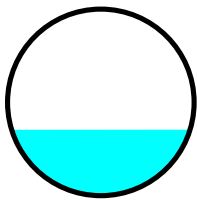
## Summary for Reach P-A2: Pipe A2

Inflow Area = 39,705 sf, 0.00% Impervious, Inflow Depth = 0.58" for 2-yr event  
Inflow = 3.20 cfs @ 0.11 hrs, Volume= 1,919 cf  
Outflow = 3.20 cfs @ 0.16 hrs, Volume= 1,919 cf, Atten= 0%, Lag= 3.0 min  
Routed to Reach P-A3 : Pipe A3

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Max. Velocity= 5.73 fps, Min. Travel Time= 0.5 min  
Avg. Velocity = 2.32 fps, Avg. Travel Time= 1.3 min

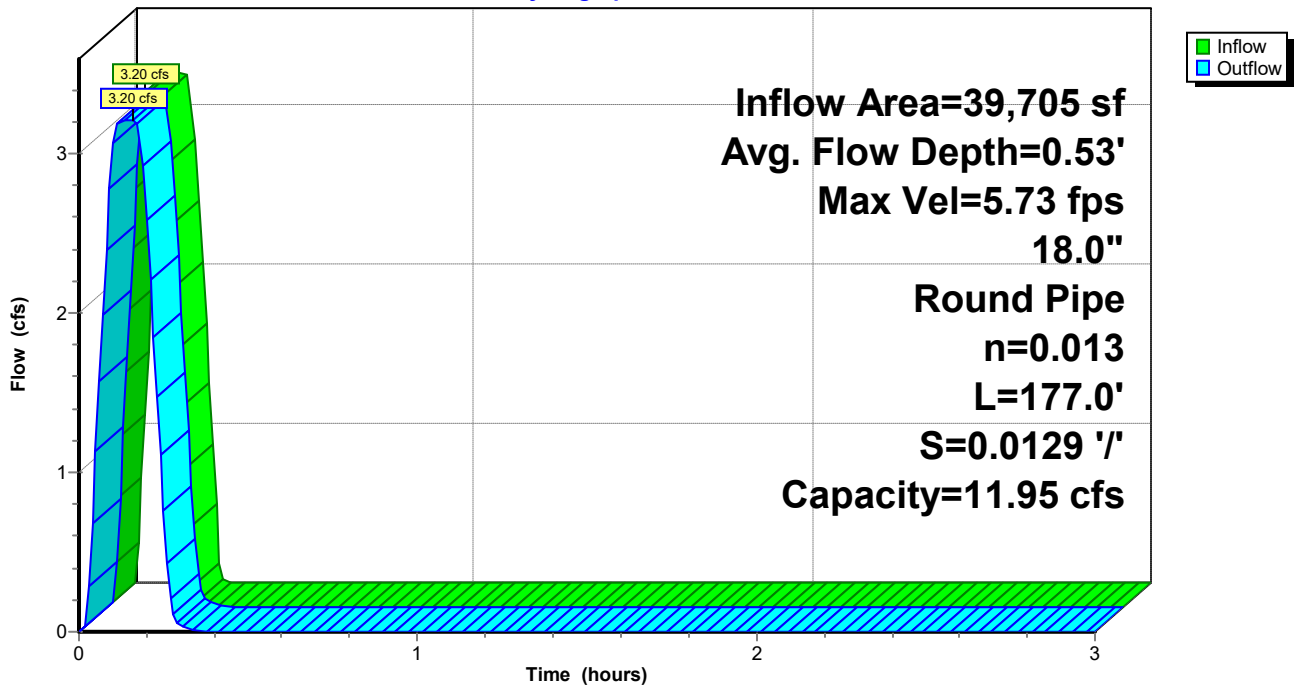
Peak Storage= 99 cf @ 0.16 hrs  
Average Depth at Peak Storage= 0.53' , Surface Width= 1.43'  
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 11.95 cfs

18.0" Round Pipe  
n= 0.013 Corrugated PE, smooth interior  
Length= 177.0' Slope= 0.0129 '/'  
Inlet Invert= 406.85', Outlet Invert= 404.56'

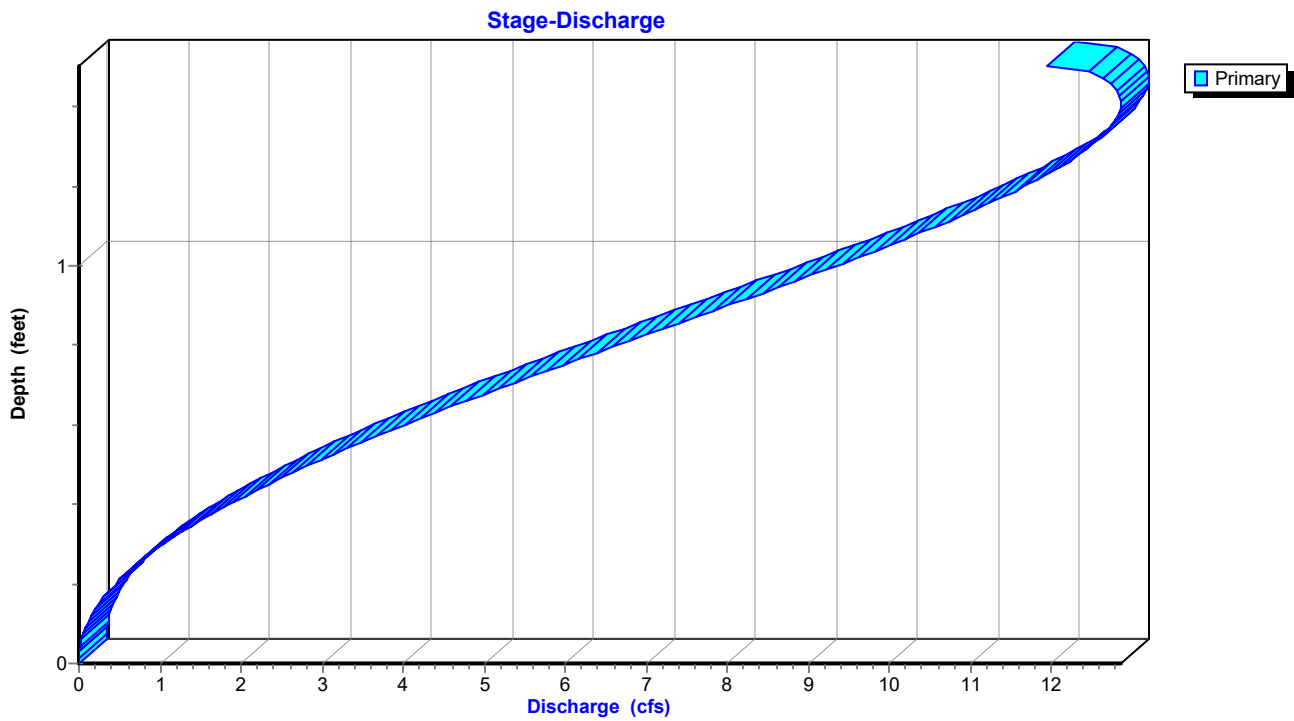


## Reach P-A2: Pipe A2

Hydrograph



### Reach P-A2: Pipe A2



**Summerwood Gym 3 2-yr***AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr*

Prepared by Phillip Lewis Engineering

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**Stage-Area-Storage for Reach P-A2: Pipe A2**

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
406.85	0.0	0	407.89	1.3	231
406.87	0.0	1	407.91	1.3	236
406.89	0.0	2	407.93	1.4	241
406.91	0.0	4	407.95	1.4	246
406.93	0.0	6	407.97	1.4	250
406.95	0.1	9	407.99	1.4	255
406.97	0.1	12	408.01	1.5	260
406.99	0.1	15	408.03	1.5	264
407.01	0.1	18	408.05	1.5	268
407.03	0.1	21	408.07	1.5	272
407.05	0.1	25	408.09	1.6	277
407.07	0.2	28	408.11	1.6	280
407.09	0.2	32	408.13	1.6	284
407.11	0.2	36	408.15	1.6	288
407.13	0.2	40	408.17	1.6	292
407.15	0.3	45	408.19	1.7	295
407.17	0.3	49	408.21	1.7	298
407.19	0.3	53	408.23	1.7	301
407.21	0.3	58	408.25	1.7	304
407.23	0.4	62	408.27	1.7	306
407.25	0.4	67	408.29	1.7	309
407.27	0.4	72	408.31	1.8	310
407.29	0.4	76	408.33	1.8	312
407.31	0.5	81	408.35	<b>1.8</b>	<b>313</b>
407.33	0.5	86			
407.35	0.5	91			
407.37	0.5	96			
407.39	0.6	101			
407.41	0.6	106			
407.43	0.6	112			
407.45	0.7	117			
407.47	0.7	122			
407.49	0.7	127			
407.51	0.7	133			
407.53	0.8	138			
407.55	0.8	143			
407.57	0.8	148			
407.59	0.9	154			
407.61	0.9	159			
407.63	0.9	164			
407.65	1.0	170			
407.67	1.0	175			
407.69	1.0	180			
407.71	1.0	185			
407.73	1.1	191			
407.75	1.1	196			
407.77	1.1	201			
407.79	1.2	206			
407.81	1.2	211			
407.83	1.2	216			
407.85	1.3	222			
407.87	1.3	226			

# Summerwood Gym 3 2-yr

Prepared by Phillip Lewis Engineering

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AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

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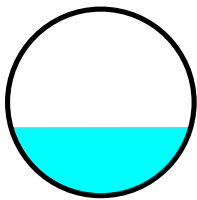
## Summary for Reach P-A3: Pipe A3

Inflow Area = 71,768 sf, 0.00% Impervious, Inflow Depth = 0.52" for 2-yr event  
Inflow = 5.11 cfs @ 0.17 hrs, Volume= 3,082 cf  
Outflow = 5.07 cfs @ 0.17 hrs, Volume= 3,082 cf, Atten= 1%, Lag= 0.3 min  
Routed to Reach P-A4 : Pipe A4

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Max. Velocity= 8.64 fps, Min. Travel Time= 0.2 min  
Avg. Velocity= 3.61 fps, Avg. Travel Time= 0.5 min

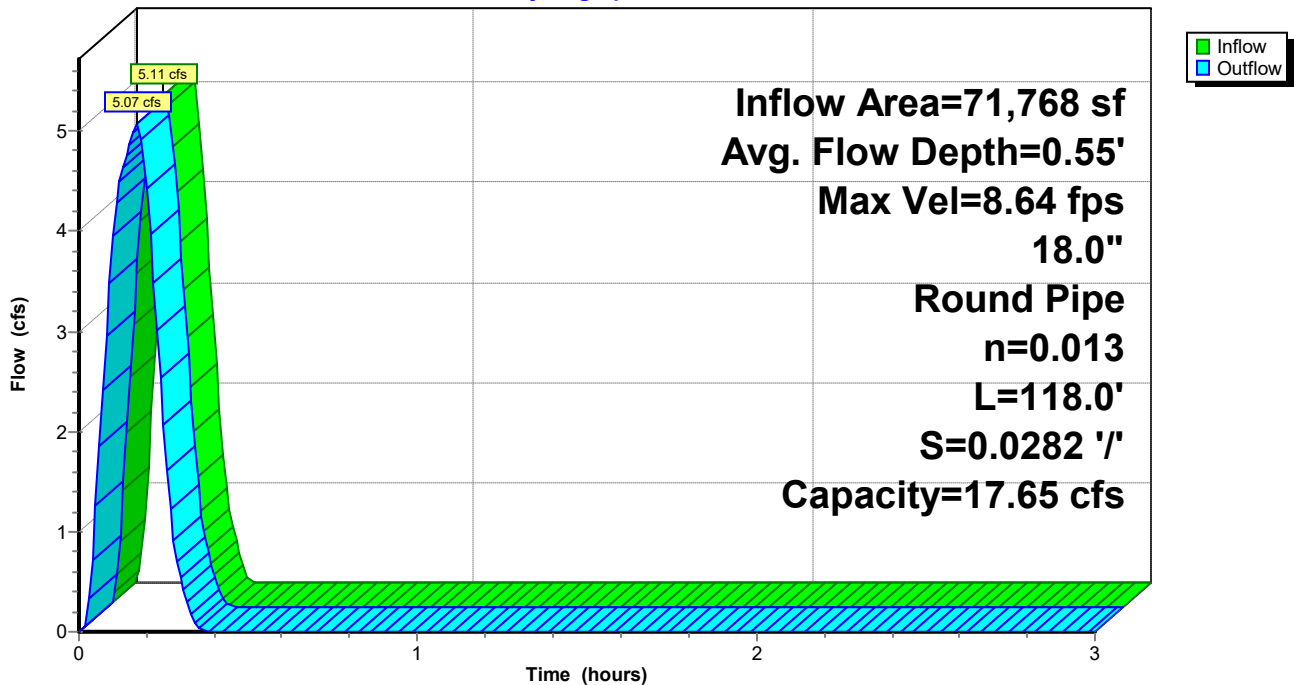
Peak Storage= 70 cf @ 0.17 hrs  
Average Depth at Peak Storage= 0.55' , Surface Width= 1.45'  
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.65 cfs

18.0" Round Pipe  
n= 0.013 Corrugated PE, smooth interior  
Length= 118.0' Slope= 0.0282 '/'  
Inlet Invert= 404.46', Outlet Invert= 401.13'

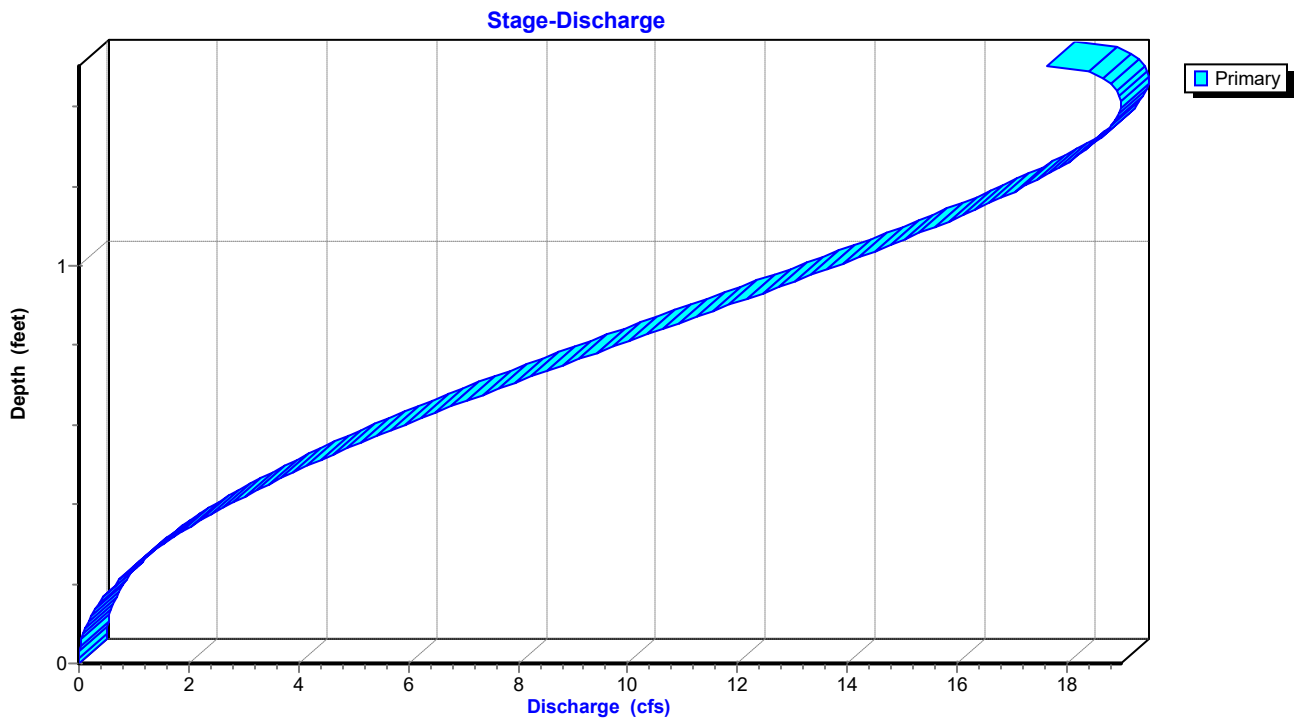


## Reach P-A3: Pipe A3

### Hydrograph



### Reach P-A3: Pipe A3



**Summerwood Gym 3 2-yr***AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr*

Prepared by Phillip Lewis Engineering

Printed 1/11/2024

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**Stage-Area-Storage for Reach P-A3: Pipe A3**

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
404.46	0.0	0	405.50	1.3	154
404.48	0.0	1	405.52	1.3	158
404.50	0.0	2	405.54	1.4	161
404.52	0.0	3	405.56	1.4	164
404.54	0.0	4	405.58	1.4	167
404.56	0.1	6	405.60	1.4	170
404.58	0.1	8	405.62	1.5	173
404.60	0.1	10	405.64	1.5	176
404.62	0.1	12	405.66	1.5	179
404.64	0.1	14	405.68	1.5	182
404.66	0.1	17	405.70	1.6	184
404.68	0.2	19	405.72	1.6	187
404.70	0.2	22	405.74	1.6	190
404.72	0.2	24	405.76	1.6	192
404.74	0.2	27	405.78	1.6	194
404.76	0.3	30	405.80	1.7	197
404.78	0.3	33	405.82	1.7	199
404.80	0.3	35	405.84	1.7	201
404.82	0.3	38	405.86	1.7	203
404.84	0.4	42	405.88	1.7	204
404.86	0.4	45	405.90	1.7	206
404.88	0.4	48	405.92	1.8	207
404.90	0.4	51	405.94	1.8	208
404.92	0.5	54	405.96	<b>1.8</b>	<b>209</b>
404.94	0.5	58			
404.96	0.5	61			
404.98	0.5	64			
405.00	0.6	68			
405.02	0.6	71			
405.04	0.6	74			
405.06	0.7	78			
405.08	0.7	81			
405.10	0.7	85			
405.12	0.7	88			
405.14	0.8	92			
405.16	0.8	95			
405.18	0.8	99			
405.20	0.9	102			
405.22	0.9	106			
405.24	0.9	110			
405.26	1.0	113			
405.28	1.0	117			
405.30	1.0	120			
405.32	1.0	124			
405.34	1.1	127			
405.36	1.1	131			
405.38	1.1	134			
405.40	1.2	138			
405.42	1.2	141			
405.44	1.2	144			
405.46	1.3	148			
405.48	1.3	151			



# Summerwood Gym 3 2-yr

Prepared by Phillip Lewis Engineering

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AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

Printed 1/11/2024

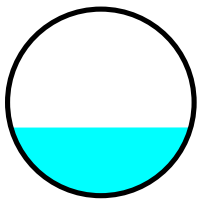
## Summary for Reach P-A4: Pipe A4

Inflow Area = 71,768 sf, 0.00% Impervious, Inflow Depth = 0.52" for 2-yr event  
Inflow = 5.07 cfs @ 0.17 hrs, Volume= 3,082 cf  
Outflow = 5.05 cfs @ 0.18 hrs, Volume= 3,082 cf, Atten= 0%, Lag= 0.4 min  
Routed to Pond DP1 : Re-Established East Pond

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Max. Velocity= 8.62 fps, Min. Travel Time= 0.3 min  
Avg. Velocity = 3.43 fps, Avg. Travel Time= 0.6 min

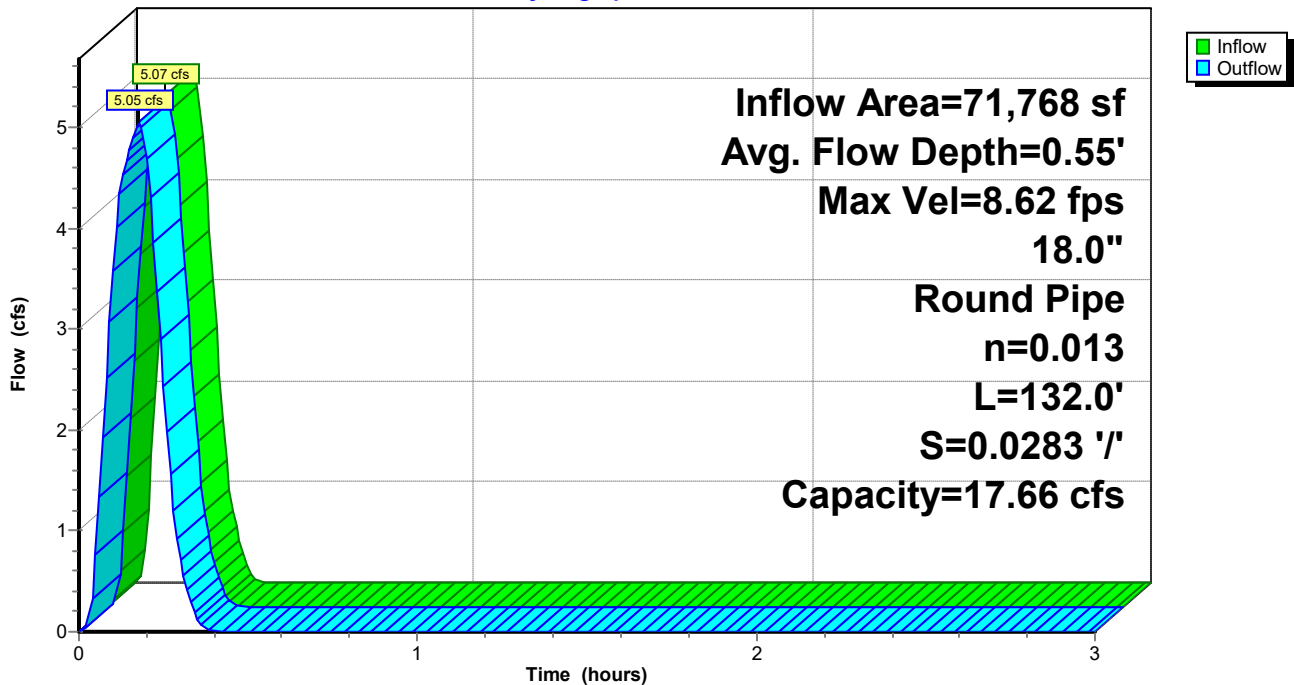
Peak Storage= 77 cf @ 0.17 hrs  
Average Depth at Peak Storage= 0.55' , Surface Width= 1.45'  
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.66 cfs

18.0" Round Pipe  
n= 0.013 Corrugated PE, smooth interior  
Length= 132.0' Slope= 0.0283 '/'  
Inlet Invert= 401.03', Outlet Invert= 397.30'



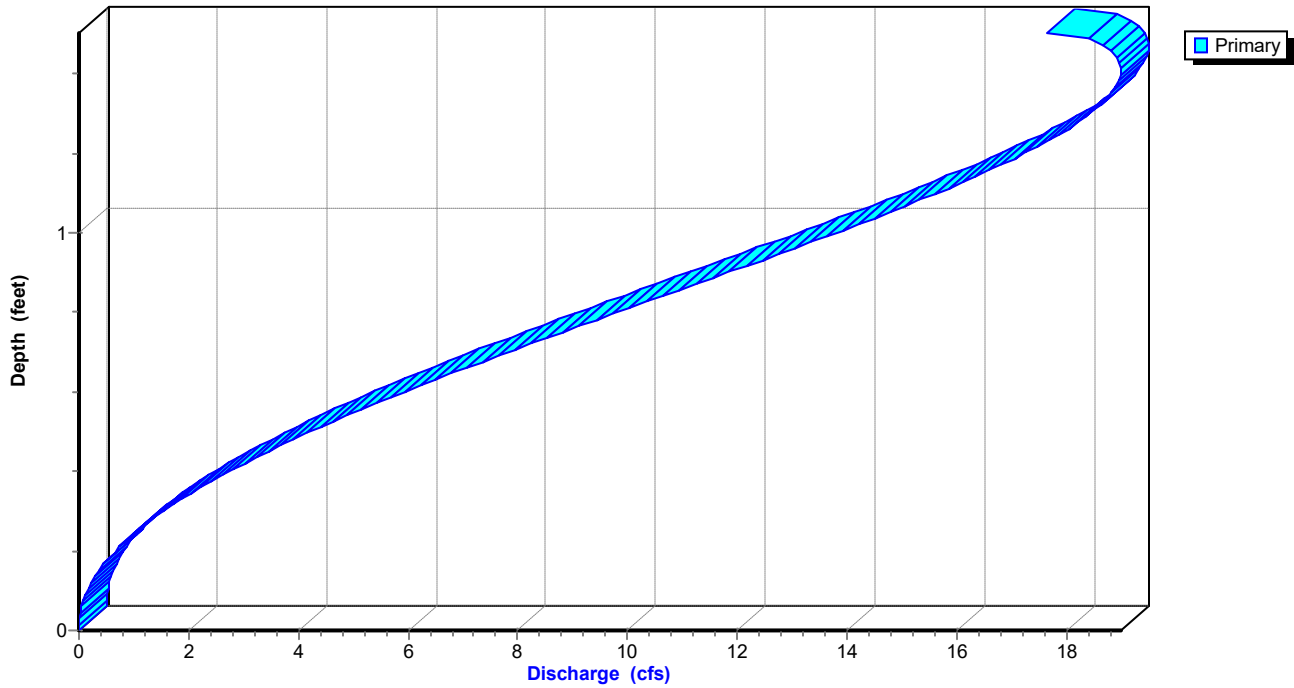
## Reach P-A4: Pipe A4

### Hydrograph



### Reach P-A4: Pipe A4

Stage-Discharge



**Summerwood Gym 3 2-yr***AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr*

Prepared by Phillip Lewis Engineering

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**Stage-Area-Storage for Reach P-A4: Pipe A4**

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
401.03	0.0	0	402.07	1.3	173
401.05	0.0	1	402.09	1.3	176
401.07	0.0	2	402.11	1.4	180
401.09	0.0	3	402.13	1.4	183
401.11	0.0	5	402.15	1.4	187
401.13	0.1	7	402.17	1.4	190
401.15	0.1	9	402.19	1.5	194
401.17	0.1	11	402.21	1.5	197
401.19	0.1	13	402.23	1.5	200
401.21	0.1	16	402.25	1.5	203
401.23	0.1	18	402.27	1.6	206
401.25	0.2	21	402.29	1.6	209
401.27	0.2	24	402.31	1.6	212
401.29	0.2	27	402.33	1.6	215
401.31	0.2	30	402.35	1.6	217
401.33	0.3	33	402.37	1.7	220
401.35	0.3	36	402.39	1.7	222
401.37	0.3	40	402.41	1.7	225
401.39	0.3	43	402.43	1.7	227
401.41	0.4	46	402.45	1.7	228
401.43	0.4	50	402.47	1.7	230
401.45	0.4	53	402.49	1.8	232
401.47	0.4	57	402.51	1.8	233
401.49	0.5	61	402.53	<b>1.8</b>	<b>233</b>
401.51	0.5	64			
401.53	0.5	68			
401.55	0.5	72			
401.57	0.6	76			
401.59	0.6	79			
401.61	0.6	83			
401.63	0.7	87			
401.65	0.7	91			
401.67	0.7	95			
401.69	0.7	99			
401.71	0.8	103			
401.73	0.8	107			
401.75	0.8	111			
401.77	0.9	115			
401.79	0.9	119			
401.81	0.9	123			
401.83	1.0	127			
401.85	1.0	130			
401.87	1.0	134			
401.89	1.0	138			
401.91	1.1	142			
401.93	1.1	146			
401.95	1.1	150			
401.97	1.2	154			
401.99	1.2	158			
402.01	1.2	161			
402.03	1.3	165			
402.05	1.3	169			

**Summerwood Gym 3 2-yr**

AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

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**Summary for Pond DP1: Re-Established East Pond**

Inflow Area = 132,514 sf, 0.00% Impervious, Inflow Depth = 0.53" for 2-yr event  
 Inflow = 9.45 cfs @ 0.16 hrs, Volume= 5,804 cf  
 Outflow = 5.39 cfs @ 0.22 hrs, Volume= 5,804 cf, Atten= 43%, Lag= 3.6 min  
 Primary = 5.39 cfs @ 0.22 hrs, Volume= 5,804 cf  
 Routed to Link Post-Dev : APPROX DISCHARGE

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
 Peak Elev= 397.63' @ 0.22 hrs Storage= 2,855 cf

Plug-Flow detention time= 7.8 min calculated for 5,804 cf (100% of inflow)  
 Center-of-Mass det. time= 7.7 min ( 16.7 - 9.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	396.00'	8,557 cf	<b>Custom Stage Data</b> Listed below

Elevation (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
396.00	0	0
396.50	250	250
397.00	1,092	1,342
398.00	2,387	3,729
399.00	2,405	6,134
400.00	2,423	8,557

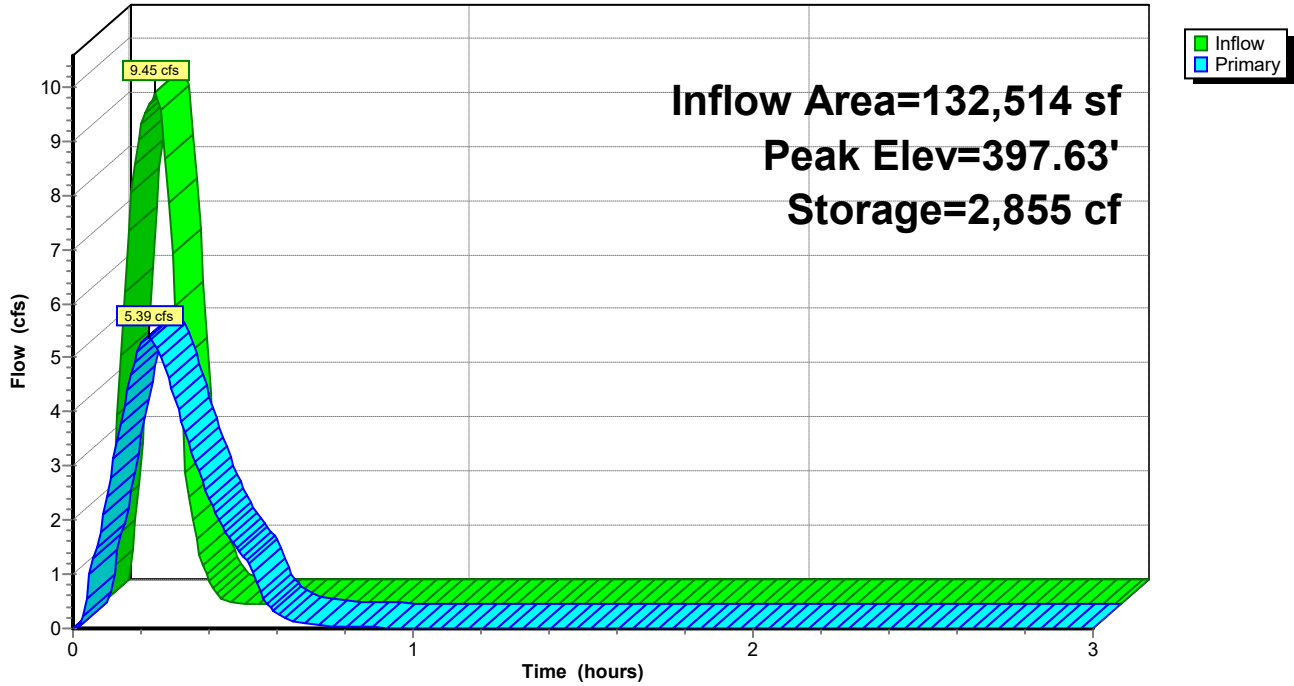
Device	Routing	Invert	Outlet Devices
#1	Primary	399.00'	<b>5.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#2	Primary	396.00'	<b>1.1' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s) 10.0' Crest Height

**Primary OutFlow** Max=5.38 cfs @ 0.22 hrs HW=397.63' (Free Discharge)

↑ **1=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)  
 ↓ **2=Sharp-Crested Rectangular Weir** (Weir Controls 5.38 cfs @ 4.26 fps)

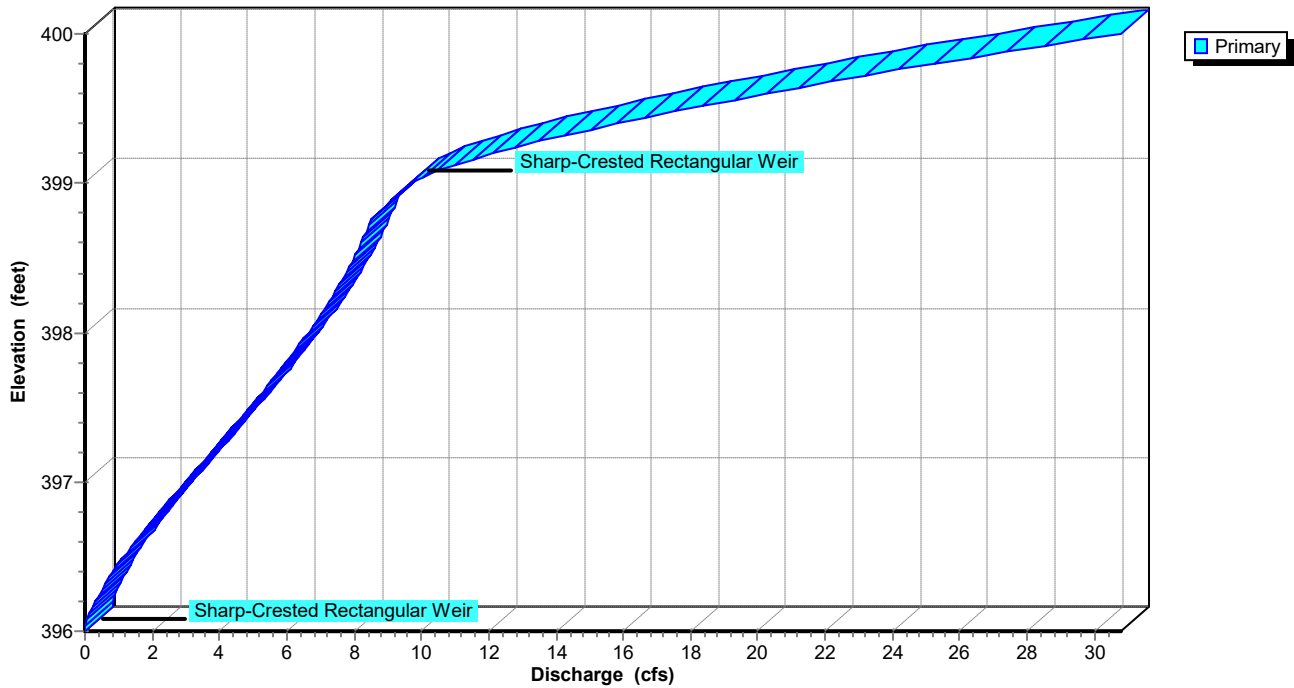
### Pond DP1: Re-Established East Pond

Hydrograph



### Pond DP1: Re-Established East Pond

Stage-Discharge



**Summerwood Gym 3 2-yr***AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr*

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**Stage-Area-Storage for Pond DP1: Re-Established East Pond**

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
396.00	0	398.60	5,172
396.05	25	398.65	5,292
396.10	50	398.70	5,412
396.15	75	398.75	5,533
396.20	100	398.80	5,653
396.25	125	398.85	5,773
396.30	150	398.90	5,893
396.35	175	398.95	6,014
396.40	200	399.00	6,134
396.45	225	399.05	6,255
396.50	250	399.10	6,376
396.55	359	399.15	6,497
396.60	468	399.20	6,619
396.65	578	399.25	6,740
396.70	687	399.30	6,861
396.75	796	399.35	6,982
396.80	905	399.40	7,103
396.85	1,014	399.45	7,224
396.90	1,124	399.50	7,346
396.95	1,233	399.55	7,467
397.00	1,342	399.60	7,588
397.05	1,461	399.65	7,709
397.10	1,581	399.70	7,830
397.15	1,700	399.75	7,951
397.20	1,819	399.80	8,072
397.25	1,939	399.85	8,194
397.30	2,058	399.90	8,315
397.35	2,177	399.95	8,436
397.40	2,297	400.00	<b>8,557</b>
397.45	2,416		
397.50	2,536		
397.55	2,655		
397.60	2,774		
397.65	2,894		
397.70	3,013		
397.75	3,132		
397.80	3,252		
397.85	3,371		
397.90	3,490		
397.95	3,610		
398.00	3,729		
398.05	3,849		
398.10	3,970		
398.15	4,090		
398.20	4,210		
398.25	4,330		
398.30	4,451		
398.35	4,571		
398.40	4,691		
398.45	4,811		
398.50	4,932		
398.55	5,052		

# Summerwood Gym 3 2-yr

AR - Little Rock 2-yr Duration=10 min, Inten=4.36 in/hr

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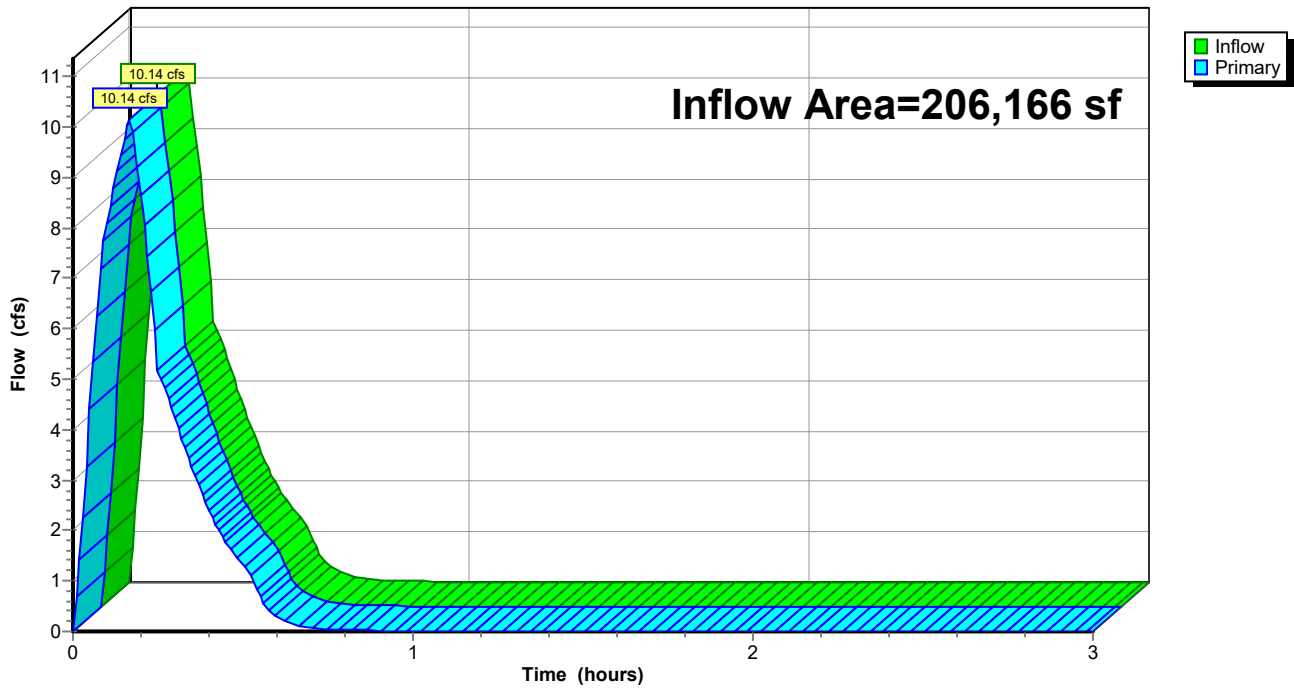
## Summary for Link Post-Dev: APPROX DISCHARGE

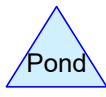
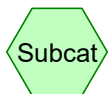
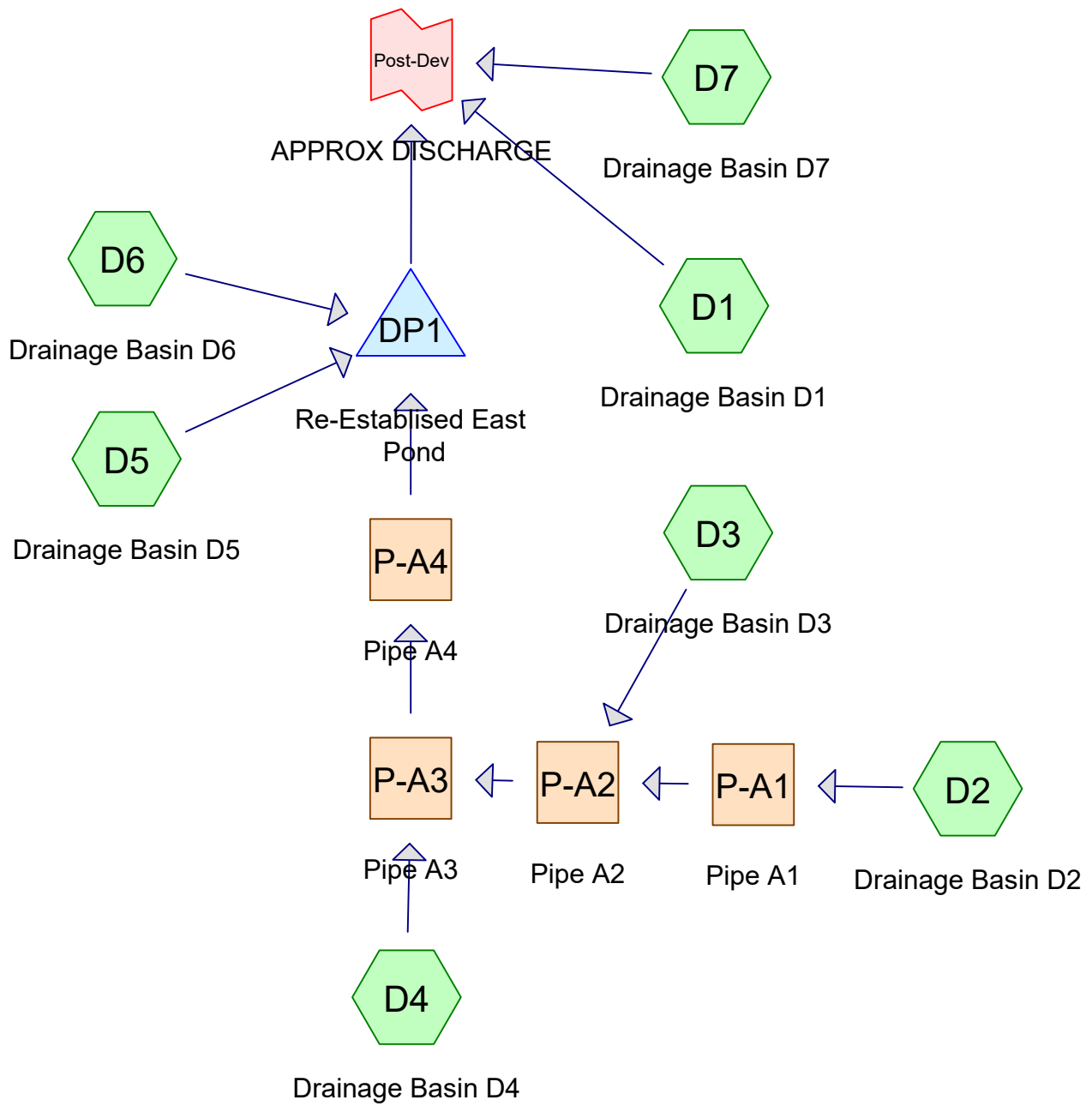
Inflow Area = 206,166 sf, 0.00% Impervious, Inflow Depth = 0.53" for 2-yr event  
Inflow = 10.14 cfs @ 0.17 hrs, Volume= 9,191 cf  
Primary = 10.14 cfs @ 0.17 hrs, Volume= 9,191 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

## Link Post-Dev: APPROX DISCHARGE

Hydrograph





**Routing Diagram for Summerwood Gym 3**  
 Prepared by Phillip Lewis Engineering, Printed 1/11/2024  
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**Summerwood Gym 3**

Prepared by Phillip Lewis Engineering

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AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

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**Summary for Subcatchment D1: Drainage Basin D1**

Runoff = 5.30 cfs @ 0.09 hrs, Volume= 3,176 cf, Depth= 0.78"  
 Routed to Link Post-Dev : APPROX DISCHARGE

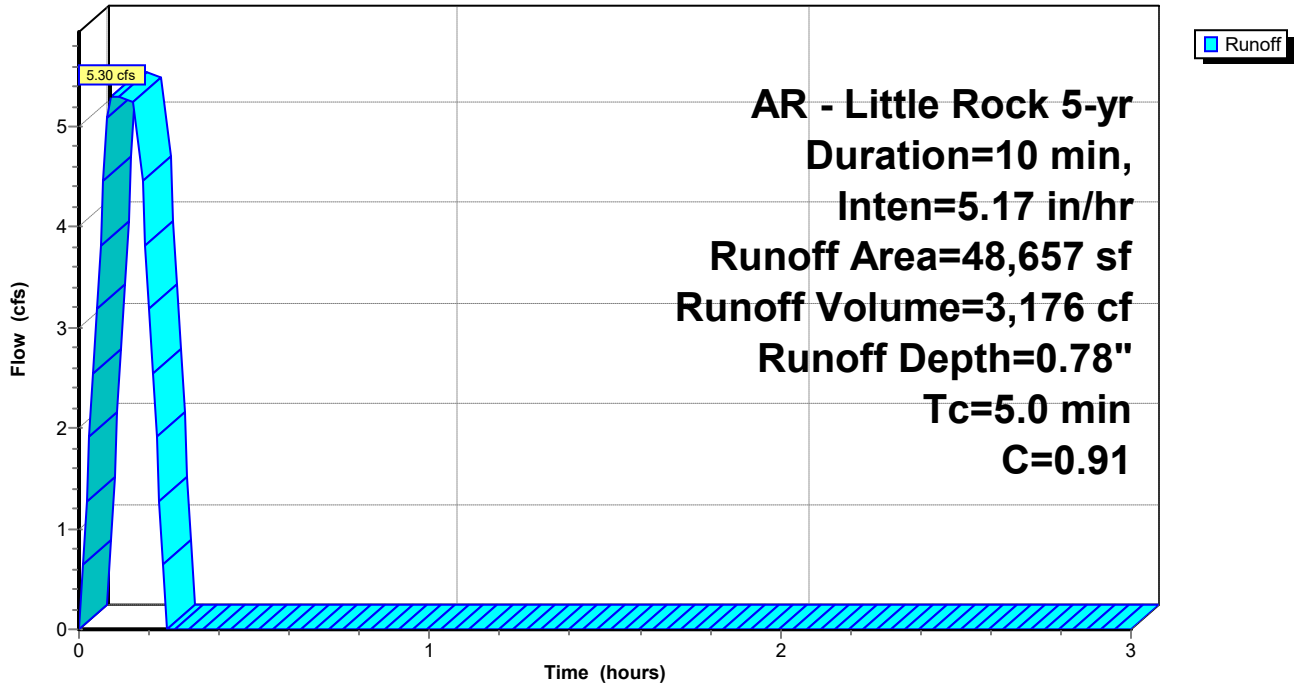
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
 AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

Area (sf)	C	Description
3,421	0.40	Sod Yard
45,236	0.95	Road, Drives, Sidewalks
48,657	0.91	Weighted Average
3,421		7.03% Pervious Area
45,236		92.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D1: Drainage Basin D1**

Hydrograph



**Summerwood Gym 3**

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AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

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**Summary for Subcatchment D2: Drainage Basin D2**

Runoff = 2.25 cfs @ 0.09 hrs, Volume= 1,348 cf, Depth= 0.66"

Routed to Reach P-A1 : Pipe A1

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

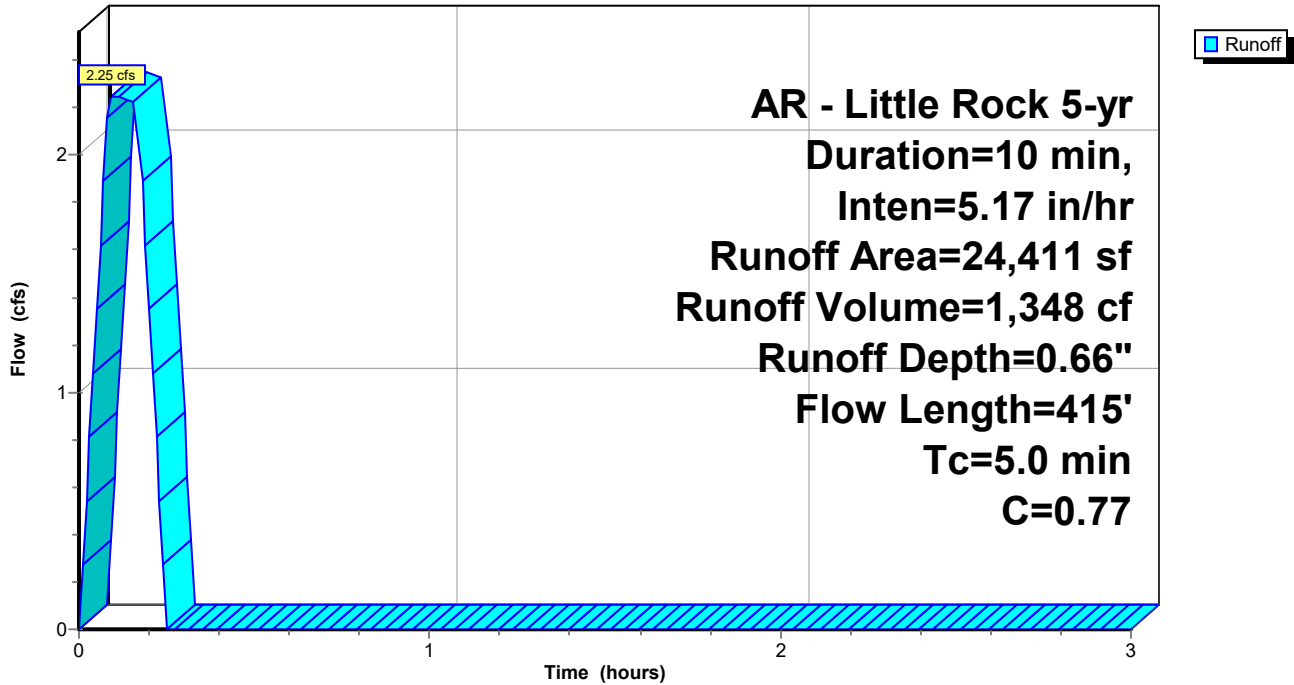
AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

Area (sf)	C	Description
8,845	0.45	Rip Rap Embankment
15,566	0.95	Roof, Drives, Sidewalks
24,411	0.77	Weighted Average
8,845		36.23% Pervious Area
15,566		63.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	415		1.38		Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D2: Drainage Basin D2**

Hydrograph



**Summerwood Gym 3**

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AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

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**Summary for Subcatchment D3: Drainage Basin D3**

Runoff = 1.67 cfs @ 0.09 hrs, Volume= 998 cf, Depth= 0.78"

Routed to Reach P-A2 : Pipe A2

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

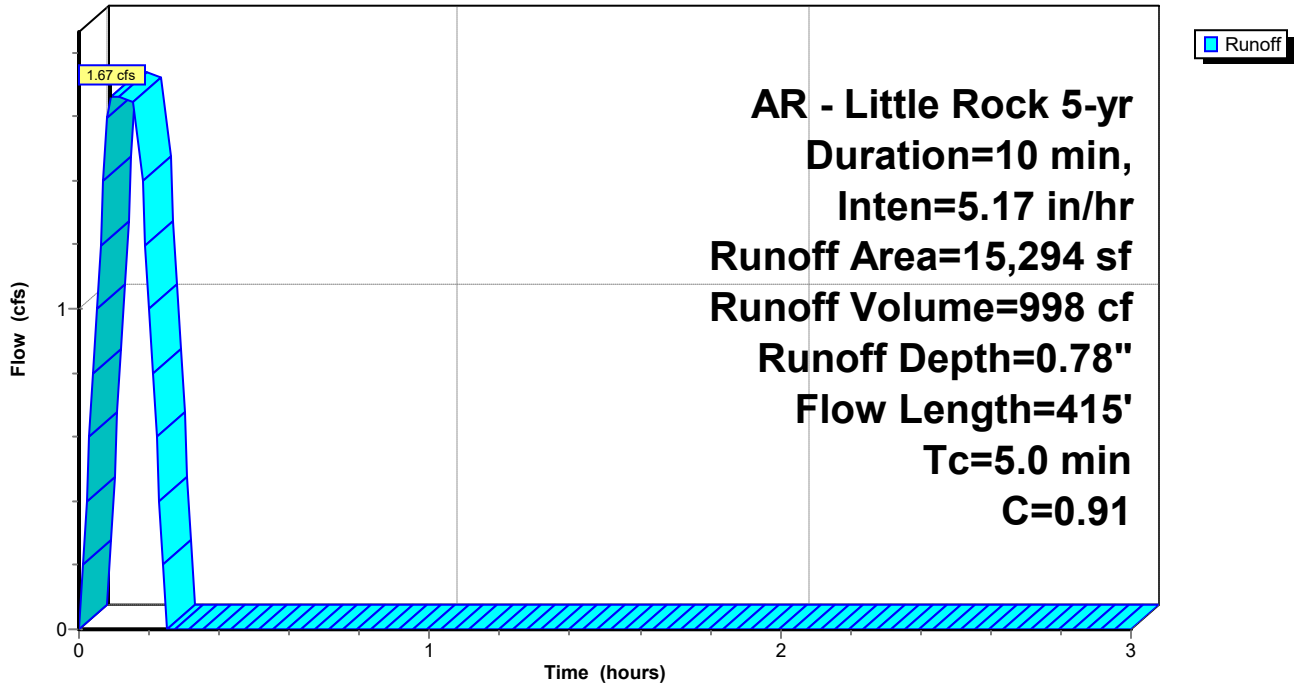
AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

Area (sf)	C	Description
1,065	0.40	Sod Yard
14,229	0.95	Paving, Sidewalks
15,294	0.91	Weighted Average
1,065		6.96% Pervious Area
14,229		93.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	415		1.38		Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D3: Drainage Basin D3**

Hydrograph



**Summerwood Gym 3**

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AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

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**Summary for Subcatchment D4: Drainage Basin D4**

Runoff = 2.30 cfs @ 0.17 hrs, Volume= 1,404 cf, Depth= 0.53"

Routed to Reach P-A3 : Pipe A3

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

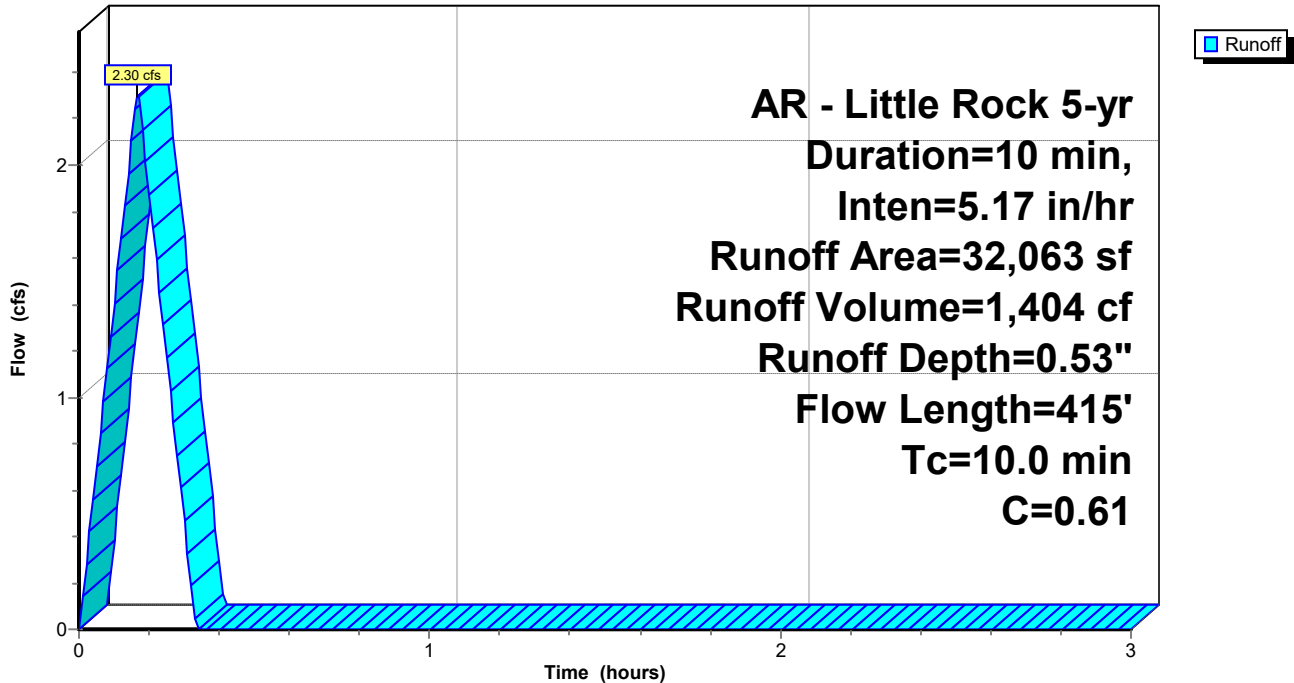
AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

Area (sf)	C	Description
20,032	0.40	
12,031	0.95	
32,063	0.61	Weighted Average
20,032		62.48% Pervious Area
12,031		37.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D4: Drainage Basin D4**

Hydrograph



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AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

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**Summary for Subcatchment D5: Drainage Basin D5**

Runoff = 3.34 cfs @ 0.09 hrs, Volume= 2,001 cf, Depth= 0.58"  
 Routed to Pond DP1 : Re-Established East Pond

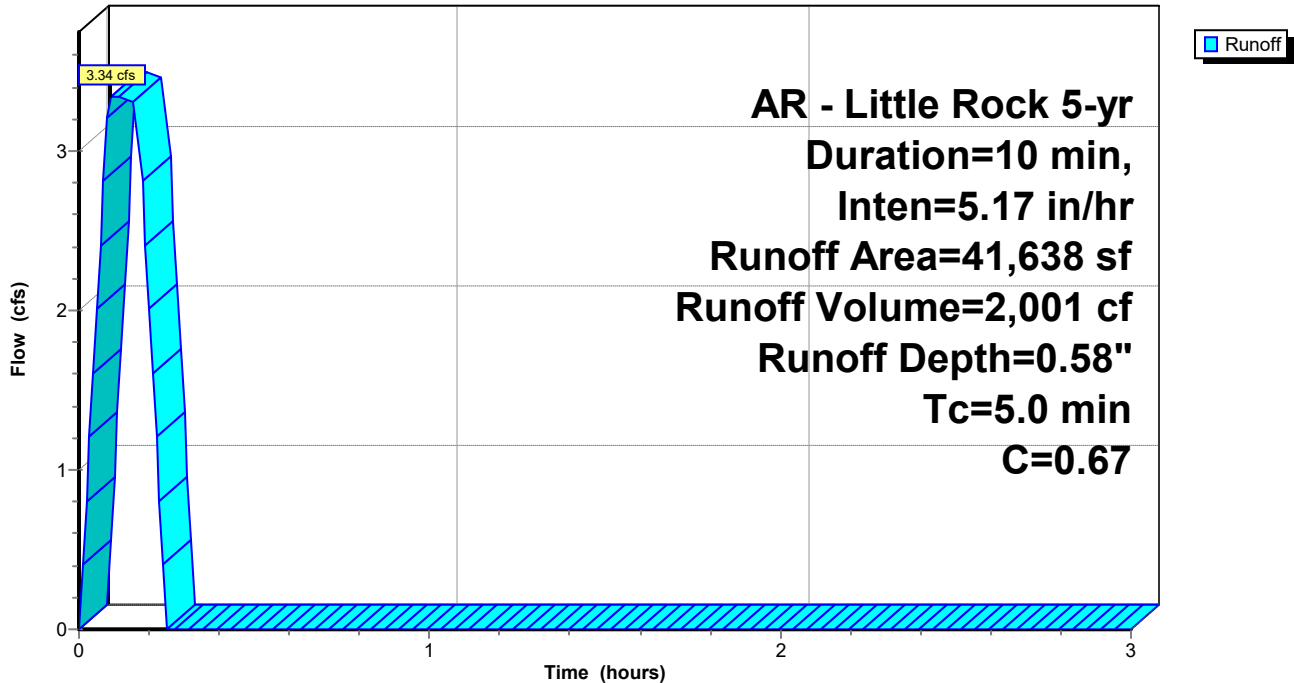
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
 AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

Area (sf)	C	Description
21,201	0.40	Sod Yard, Natural Vegetation
20,437	0.95	Paving, Sidewalks
41,638	0.67	Weighted Average
21,201		50.92% Pervious Area
20,437		49.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D5: Drainage Basin D5**

Hydrograph



**Summerwood Gym 3**

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AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

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**Summary for Subcatchment D6: Drainage Basin D6**

Runoff = 2.17 cfs @ 0.09 hrs, Volume= 1,302 cf, Depth= 0.82"  
 Routed to Pond DP1 : Re-Established East Pond

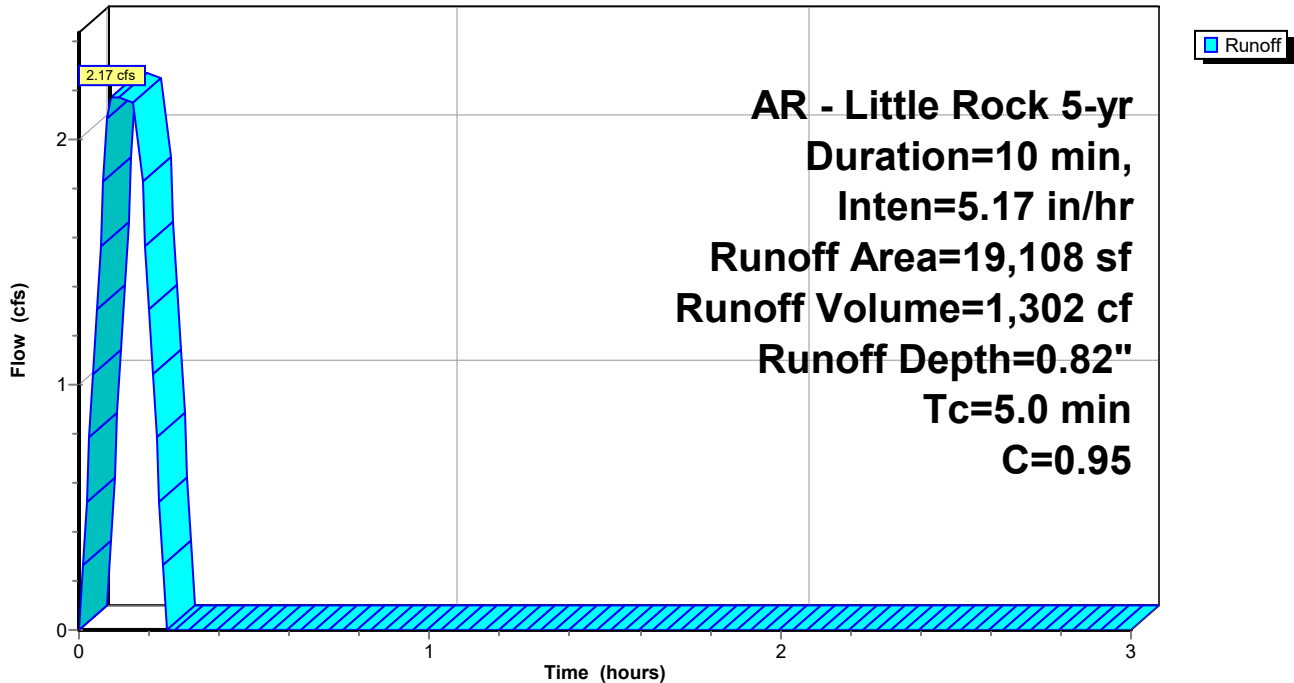
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
 AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

Area (sf)	C	Description
19,108	0.95	Roof
19,108		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D6: Drainage Basin D6**

Hydrograph



**Summerwood Gym 3**

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AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

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**Summary for Subcatchment D7: Drainage Basin D7**

Runoff = 1.62 cfs @ 0.09 hrs, Volume= 968 cf, Depth= 0.46"  
 Routed to Link Post-Dev : APPROX DISCHARGE

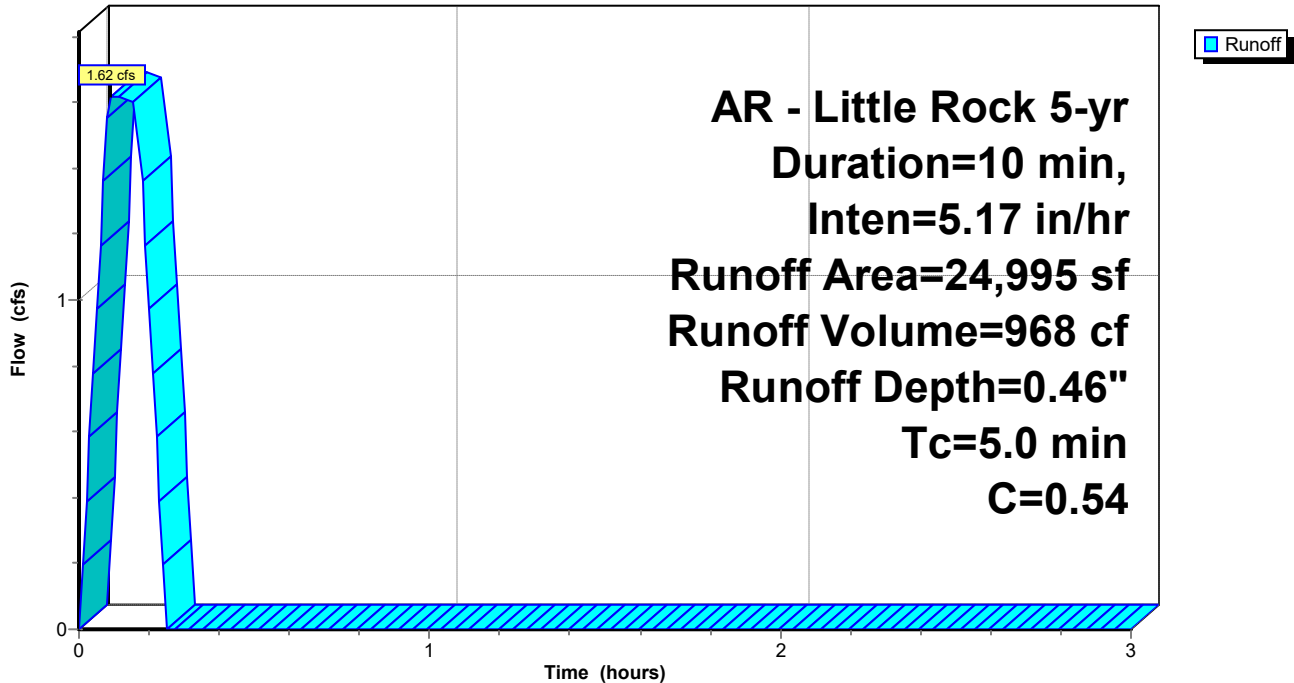
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
 AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

Area (sf)	C	Description
18,798	0.40	Sod Yard, Natural Vegetation
6,197	0.95	Paving, Sidewalks
24,995	0.54	Weighted Average
18,798		75.21% Pervious Area
6,197		24.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D7: Drainage Basin D7**

Hydrograph



# Summerwood Gym 3

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AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

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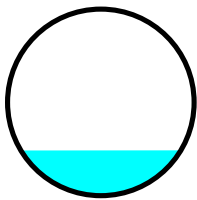
## Summary for Reach P-A1: Pipe A1

Inflow Area = 24,411 sf, 63.77% Impervious, Inflow Depth = 0.66" for 5-yr event  
Inflow = 2.25 cfs @ 0.09 hrs, Volume= 1,348 cf  
Outflow = 2.25 cfs @ 0.11 hrs, Volume= 1,348 cf, Atten= 0%, Lag= 1.2 min  
Routed to Reach P-A2 : Pipe A2

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Max. Velocity= 6.75 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 4.79 fps, Avg. Travel Time= 0.2 min

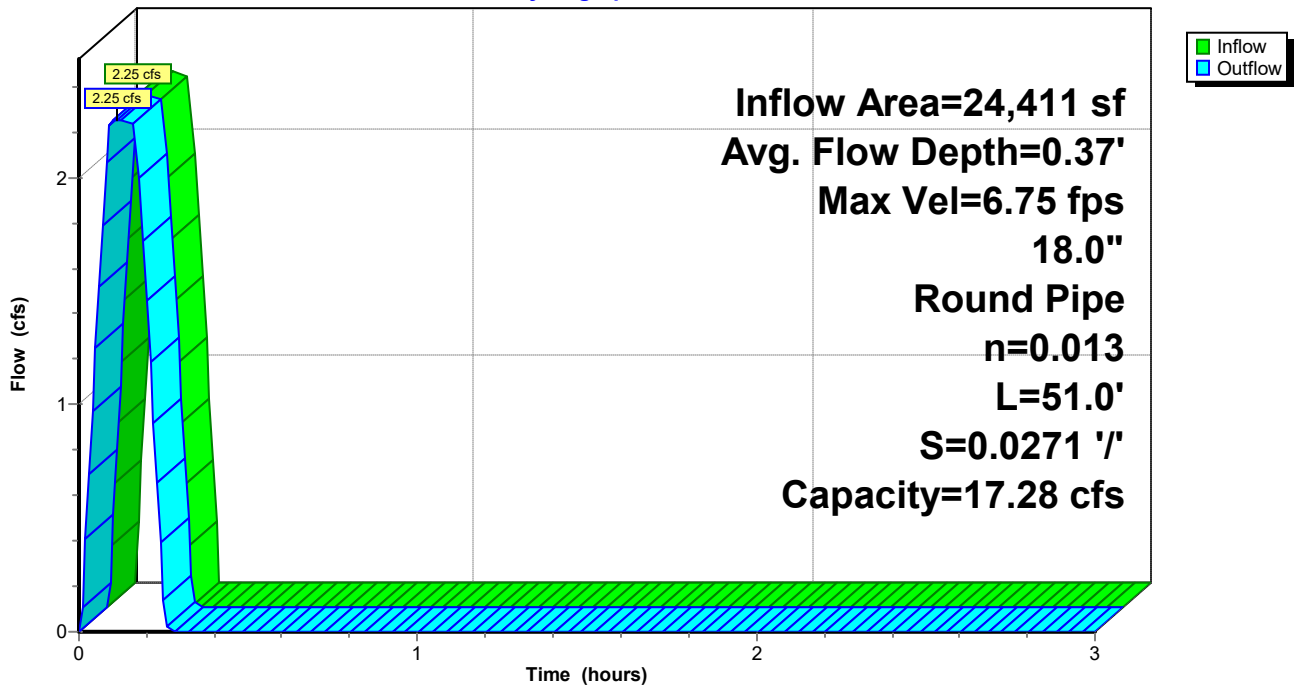
Peak Storage= 17 cf @ 0.09 hrs  
Average Depth at Peak Storage= 0.37' , Surface Width= 1.29'  
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.28 cfs

18.0" Round Pipe  
n= 0.013 Corrugated PE, smooth interior  
Length= 51.0' Slope= 0.0271 '/'  
Inlet Invert= 408.33', Outlet Invert= 406.95'



## Reach P-A1: Pipe A1

Hydrograph





# Summerwood Gym 3

Prepared by Phillip Lewis Engineering

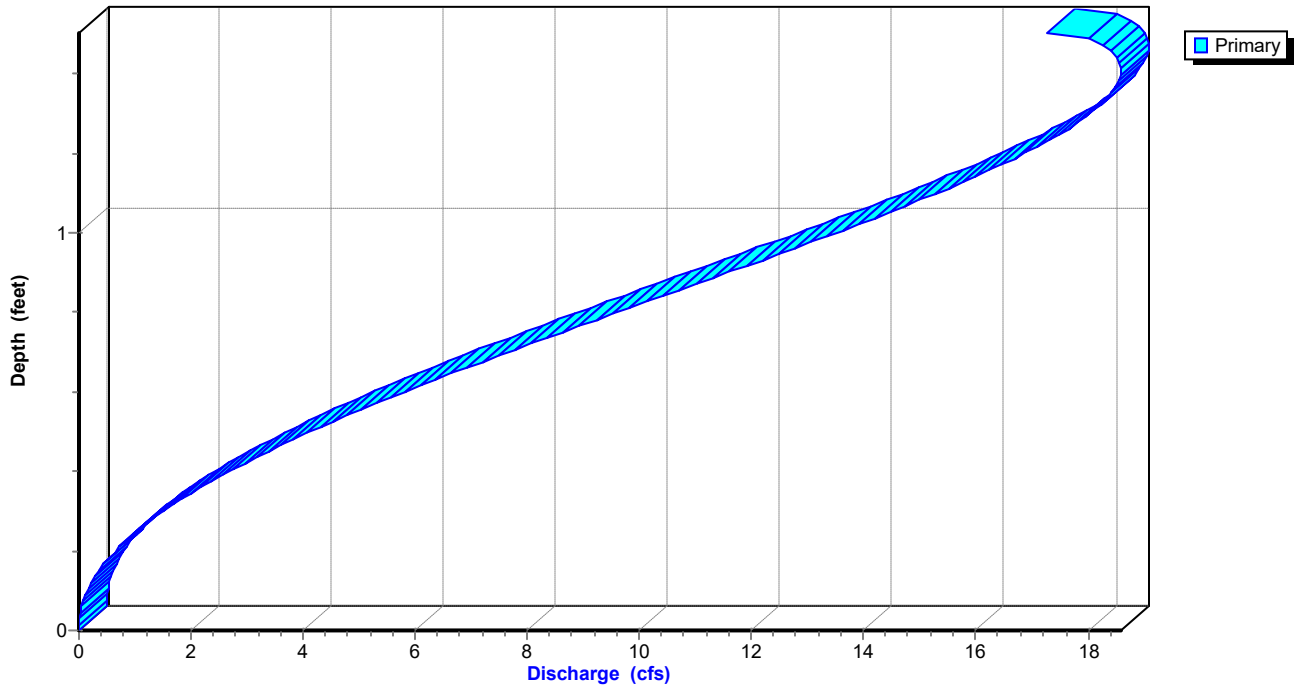
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AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

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## Reach P-A1: Pipe A1

Stage-Discharge



**Summerwood Gym 3***AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr*

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**Stage-Area-Storage for Reach P-A1: Pipe A1**

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
408.33	0.0	0	409.37	1.3	67
408.35	0.0	0	409.39	1.3	68
408.37	0.0	1	409.41	1.4	69
408.39	0.0	1	409.43	1.4	71
408.41	0.0	2	409.45	1.4	72
408.43	0.1	3	409.47	1.4	73
408.45	0.1	3	409.49	1.5	75
408.47	0.1	4	409.51	1.5	76
408.49	0.1	5	409.53	1.5	77
408.51	0.1	6	409.55	1.5	78
408.53	0.1	7	409.57	1.6	80
408.55	0.2	8	409.59	1.6	81
408.57	0.2	9	409.61	1.6	82
408.59	0.2	10	409.63	1.6	83
408.61	0.2	12	409.65	1.6	84
408.63	0.3	13	409.67	1.7	85
408.65	0.3	14	409.69	1.7	86
408.67	0.3	15	409.71	1.7	87
408.69	0.3	17	409.73	1.7	88
408.71	0.4	18	409.75	1.7	88
408.73	0.4	19	409.77	1.7	89
408.75	0.4	21	409.79	1.8	89
408.77	0.4	22	409.81	1.8	90
408.79	0.5	23	409.83	<b>1.8</b>	<b>90</b>
408.81	0.5	25			
408.83	0.5	26			
408.85	0.5	28			
408.87	0.6	29			
408.89	0.6	31			
408.91	0.6	32			
408.93	0.7	34			
408.95	0.7	35			
408.97	0.7	37			
408.99	0.7	38			
409.01	0.8	40			
409.03	0.8	41			
409.05	0.8	43			
409.07	0.9	44			
409.09	0.9	46			
409.11	0.9	47			
409.13	1.0	49			
409.15	1.0	50			
409.17	1.0	52			
409.19	1.0	53			
409.21	1.1	55			
409.23	1.1	56			
409.25	1.1	58			
409.27	1.2	59			
409.29	1.2	61			
409.31	1.2	62			
409.33	1.3	64			
409.35	1.3	65			

# Summerwood Gym 3

AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

Prepared by Phillip Lewis Engineering

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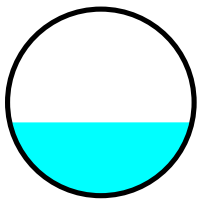
## Summary for Reach P-A2: Pipe A2

Inflow Area = 39,705 sf, 75.04% Impervious, Inflow Depth = 0.71" for 5-yr event  
Inflow = 3.92 cfs @ 0.11 hrs, Volume= 2,346 cf  
Outflow = 3.92 cfs @ 0.15 hrs, Volume= 2,346 cf, Atten= 0%, Lag= 2.4 min  
Routed to Reach P-A3 : Pipe A3

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Max. Velocity= 6.05 fps, Min. Travel Time= 0.5 min  
Avg. Velocity = 2.43 fps, Avg. Travel Time= 1.2 min

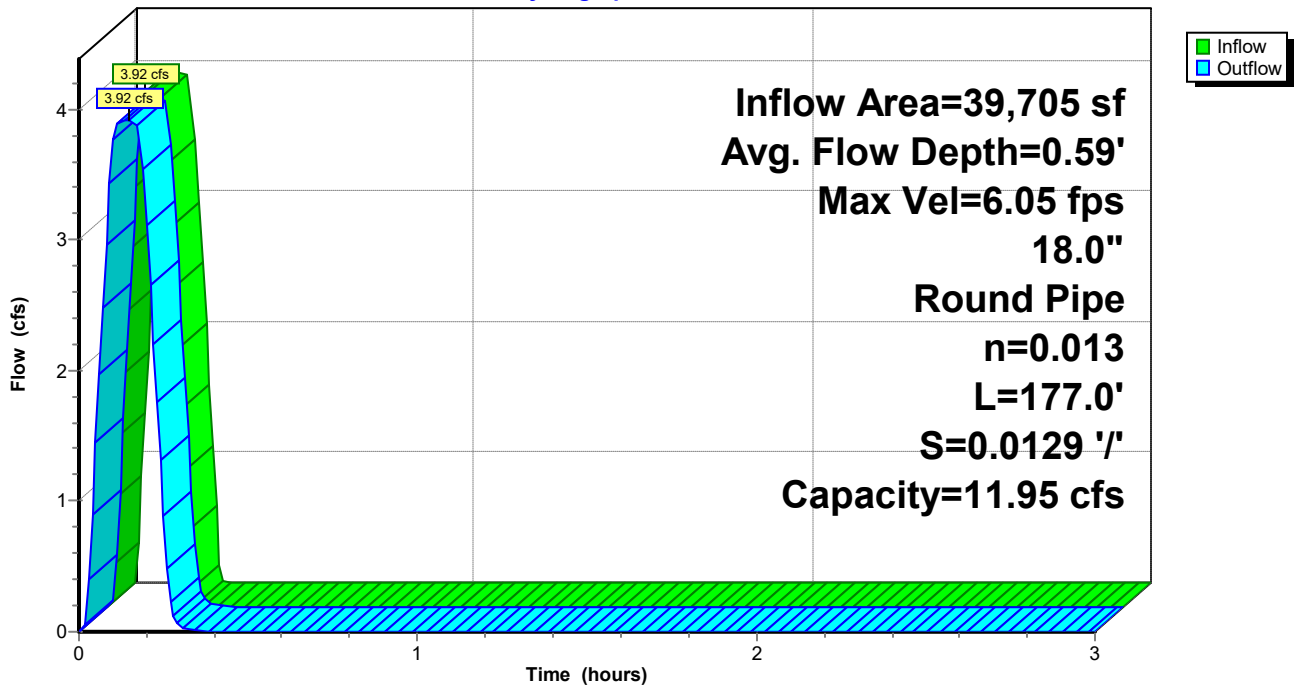
Peak Storage= 114 cf @ 0.14 hrs  
Average Depth at Peak Storage= 0.59' , Surface Width= 1.47'  
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 11.95 cfs

18.0" Round Pipe  
n= 0.013 Corrugated PE, smooth interior  
Length= 177.0' Slope= 0.0129 '/'  
Inlet Invert= 406.85', Outlet Invert= 404.56'



## Reach P-A2: Pipe A2

Hydrograph



**Summerwood Gym 3**

Prepared by Phillip Lewis Engineering

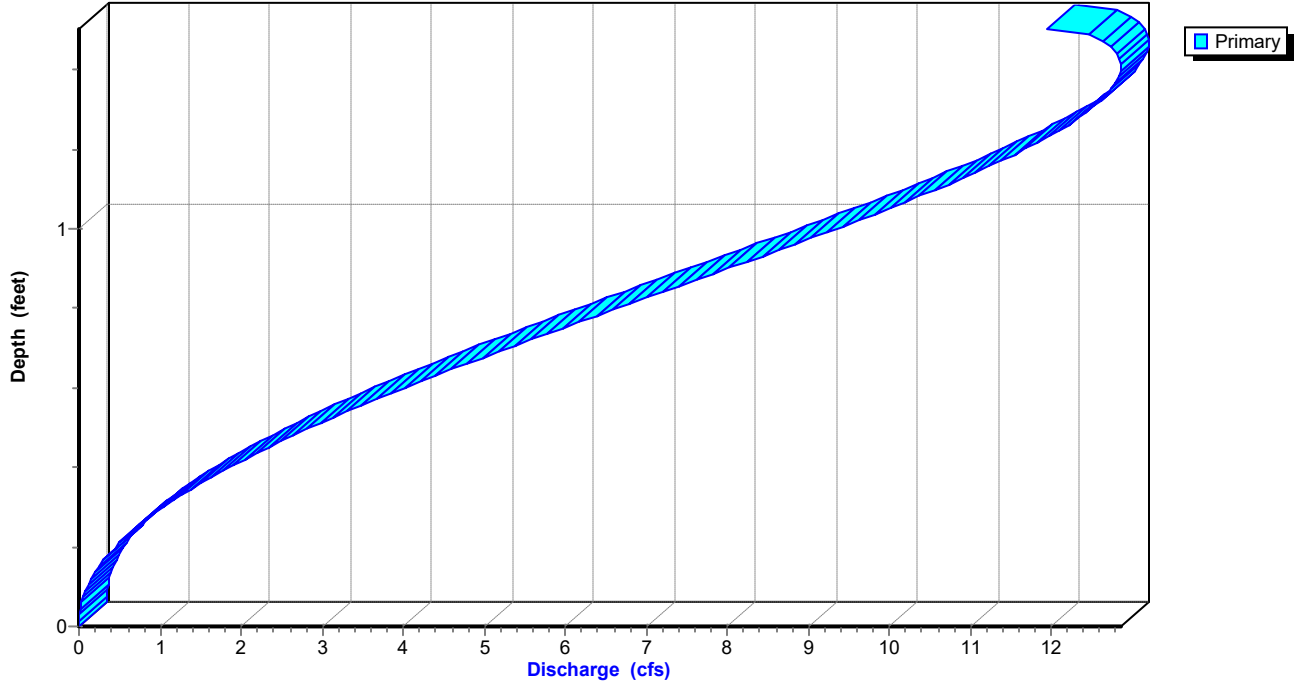
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**Reach P-A2: Pipe A2**

Stage-Discharge



**Summerwood Gym 3***AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr*

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**Stage-Area-Storage for Reach P-A2: Pipe A2**

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
406.85	0.0	0	407.89	1.3	231
406.87	0.0	1	407.91	1.3	236
406.89	0.0	2	407.93	1.4	241
406.91	0.0	4	407.95	1.4	246
406.93	0.0	6	407.97	1.4	250
406.95	0.1	9	407.99	1.4	255
406.97	0.1	12	408.01	1.5	260
406.99	0.1	15	408.03	1.5	264
407.01	0.1	18	408.05	1.5	268
407.03	0.1	21	408.07	1.5	272
407.05	0.1	25	408.09	1.6	277
407.07	0.2	28	408.11	1.6	280
407.09	0.2	32	408.13	1.6	284
407.11	0.2	36	408.15	1.6	288
407.13	0.2	40	408.17	1.6	292
407.15	0.3	45	408.19	1.7	295
407.17	0.3	49	408.21	1.7	298
407.19	0.3	53	408.23	1.7	301
407.21	0.3	58	408.25	1.7	304
407.23	0.4	62	408.27	1.7	306
407.25	0.4	67	408.29	1.7	309
407.27	0.4	72	408.31	1.8	310
407.29	0.4	76	408.33	1.8	312
407.31	0.5	81	408.35	<b>1.8</b>	<b>313</b>
407.33	0.5	86			
407.35	0.5	91			
407.37	0.5	96			
407.39	0.6	101			
407.41	0.6	106			
407.43	0.6	112			
407.45	0.7	117			
407.47	0.7	122			
407.49	0.7	127			
407.51	0.7	133			
407.53	0.8	138			
407.55	0.8	143			
407.57	0.8	148			
407.59	0.9	154			
407.61	0.9	159			
407.63	0.9	164			
407.65	1.0	170			
407.67	1.0	175			
407.69	1.0	180			
407.71	1.0	185			
407.73	1.1	191			
407.75	1.1	196			
407.77	1.1	201			
407.79	1.2	206			
407.81	1.2	211			
407.83	1.2	216			
407.85	1.3	222			
407.87	1.3	226			

### Summerwood Gym 3

Prepared by Phillip Lewis Engineering

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AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

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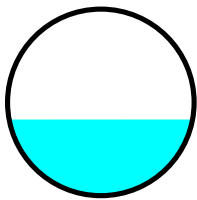
### Summary for Reach P-A3: Pipe A3

Inflow Area = 71,768 sf, 58.28% Impervious, Inflow Depth = 0.63" for 5-yr event  
Inflow = 6.22 cfs @ 0.17 hrs, Volume= 3,751 cf  
Outflow = 6.17 cfs @ 0.17 hrs, Volume= 3,751 cf, Atten= 1%, Lag= 0.3 min  
Routed to Reach P-A4 : Pipe A4

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Max. Velocity= 9.11 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 3.79 fps, Avg. Travel Time= 0.5 min

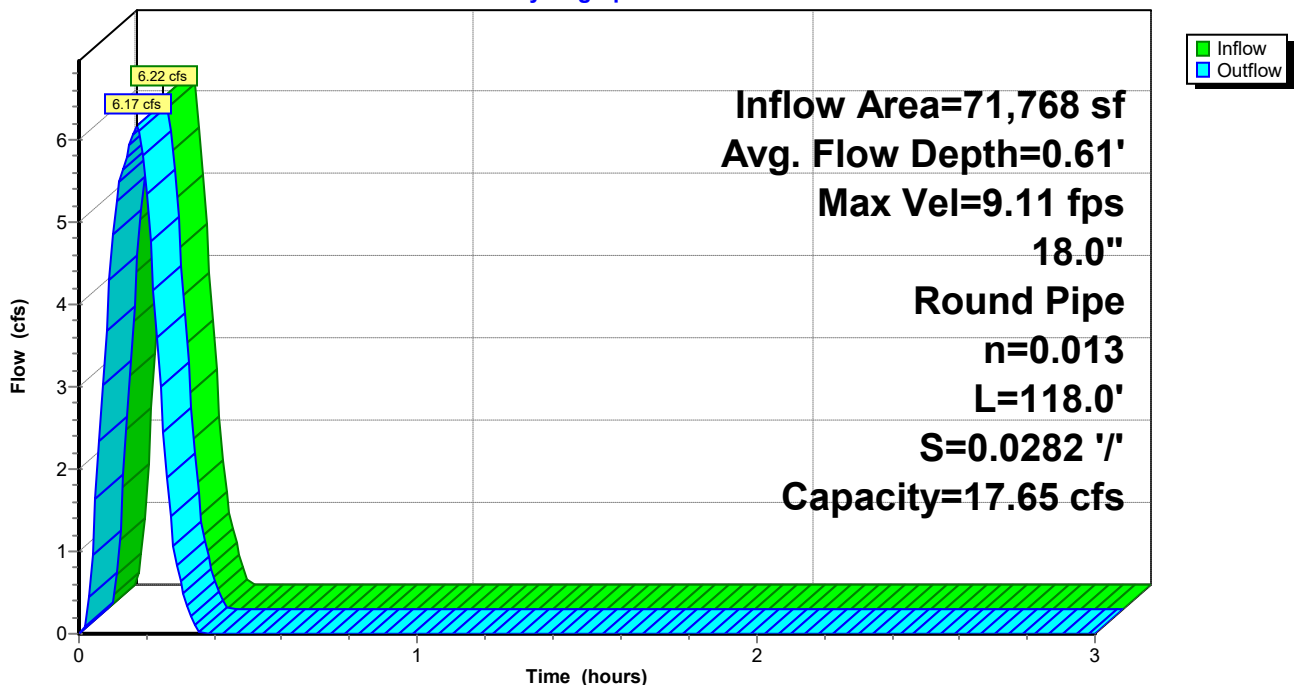
Peak Storage= 80 cf @ 0.17 hrs  
Average Depth at Peak Storage= 0.61' , Surface Width= 1.48'  
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.65 cfs

18.0" Round Pipe  
n= 0.013 Corrugated PE, smooth interior  
Length= 118.0' Slope= 0.0282 '/'  
Inlet Invert= 404.46', Outlet Invert= 401.13'



### Reach P-A3: Pipe A3

Hydrograph



**Summerwood Gym 3**

Prepared by Phillip Lewis Engineering

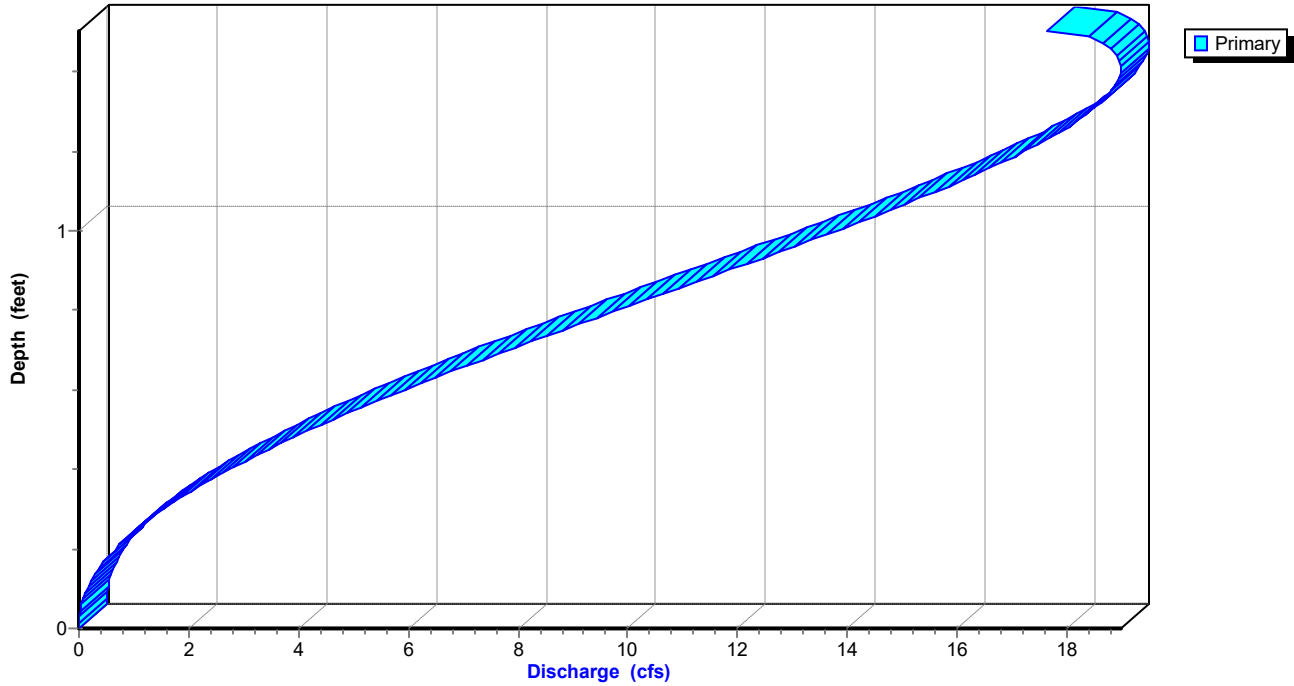
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AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

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**Reach P-A3: Pipe A3**

Stage-Discharge



**Summerwood Gym 3***AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr*

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**Stage-Area-Storage for Reach P-A3: Pipe A3**

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
404.46	0.0	0	405.50	1.3	154
404.48	0.0	1	405.52	1.3	158
404.50	0.0	2	405.54	1.4	161
404.52	0.0	3	405.56	1.4	164
404.54	0.0	4	405.58	1.4	167
404.56	0.1	6	405.60	1.4	170
404.58	0.1	8	405.62	1.5	173
404.60	0.1	10	405.64	1.5	176
404.62	0.1	12	405.66	1.5	179
404.64	0.1	14	405.68	1.5	182
404.66	0.1	17	405.70	1.6	184
404.68	0.2	19	405.72	1.6	187
404.70	0.2	22	405.74	1.6	190
404.72	0.2	24	405.76	1.6	192
404.74	0.2	27	405.78	1.6	194
404.76	0.3	30	405.80	1.7	197
404.78	0.3	33	405.82	1.7	199
404.80	0.3	35	405.84	1.7	201
404.82	0.3	38	405.86	1.7	203
404.84	0.4	42	405.88	1.7	204
404.86	0.4	45	405.90	1.7	206
404.88	0.4	48	405.92	1.8	207
404.90	0.4	51	405.94	1.8	208
404.92	0.5	54	405.96	<b>1.8</b>	<b>209</b>
404.94	0.5	58			
404.96	0.5	61			
404.98	0.5	64			
405.00	0.6	68			
405.02	0.6	71			
405.04	0.6	74			
405.06	0.7	78			
405.08	0.7	81			
405.10	0.7	85			
405.12	0.7	88			
405.14	0.8	92			
405.16	0.8	95			
405.18	0.8	99			
405.20	0.9	102			
405.22	0.9	106			
405.24	0.9	110			
405.26	1.0	113			
405.28	1.0	117			
405.30	1.0	120			
405.32	1.0	124			
405.34	1.1	127			
405.36	1.1	131			
405.38	1.1	134			
405.40	1.2	138			
405.42	1.2	141			
405.44	1.2	144			
405.46	1.3	148			
405.48	1.3	151			



### Summerwood Gym 3

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AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

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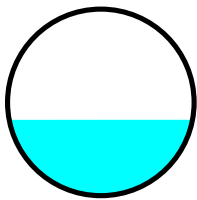
### Summary for Reach P-A4: Pipe A4

Inflow Area = 71,768 sf, 58.28% Impervious, Inflow Depth = 0.63" for 5-yr event  
Inflow = 6.17 cfs @ 0.17 hrs, Volume= 3,751 cf  
Outflow = 6.15 cfs @ 0.18 hrs, Volume= 3,751 cf, Atten= 0%, Lag= 0.4 min  
Routed to Pond DP1 : Re-Established East Pond

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Max. Velocity= 9.09 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 3.60 fps, Avg. Travel Time= 0.6 min

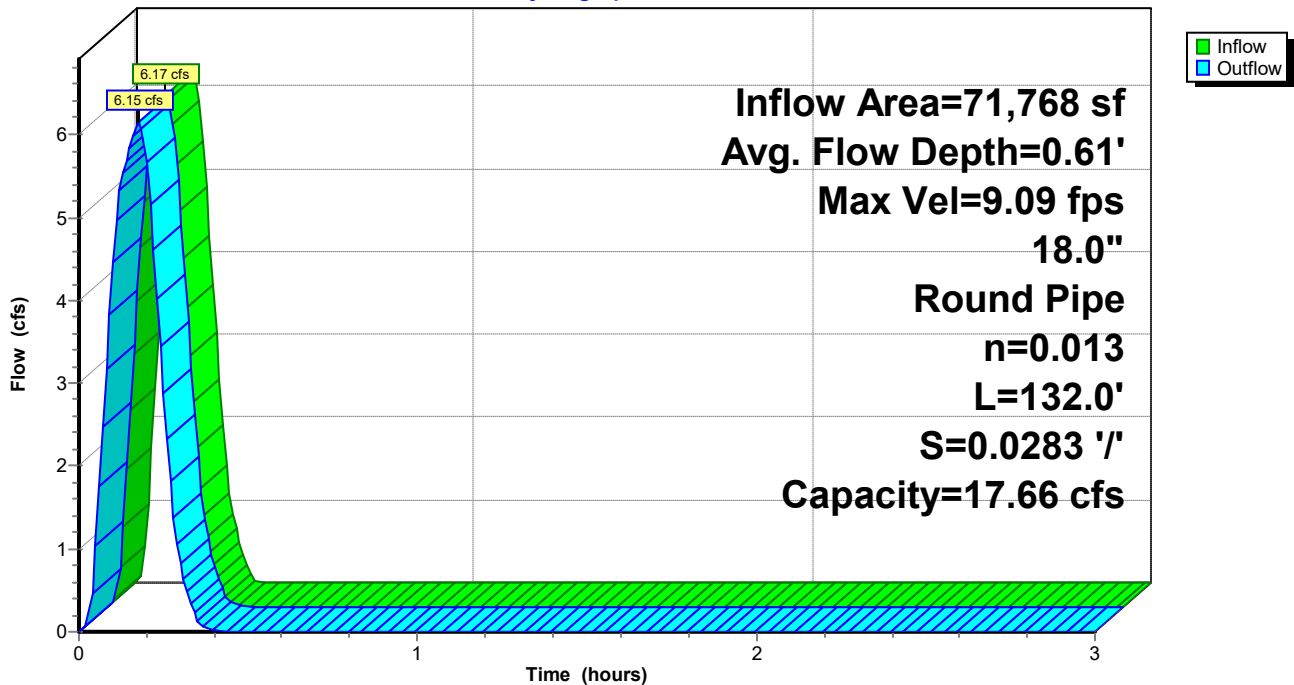
Peak Storage= 89 cf @ 0.17 hrs  
Average Depth at Peak Storage= 0.61' , Surface Width= 1.47'  
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.66 cfs

18.0" Round Pipe  
n= 0.013 Corrugated PE, smooth interior  
Length= 132.0' Slope= 0.0283 '/'  
Inlet Invert= 401.03', Outlet Invert= 397.30'



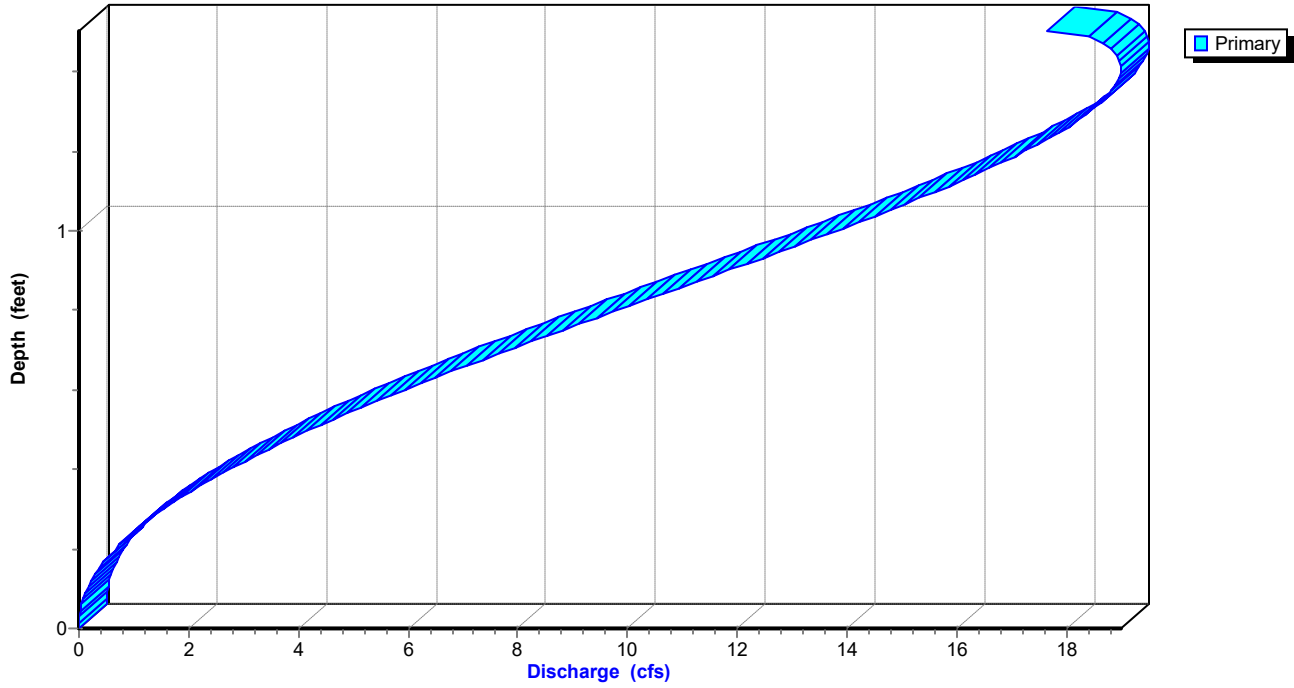
### Reach P-A4: Pipe A4

Hydrograph



### Reach P-A4: Pipe A4

Stage-Discharge



**Summerwood Gym 3***AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr*

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**Stage-Area-Storage for Reach P-A4: Pipe A4**

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
401.03	0.0	0	402.07	1.3	173
401.05	0.0	1	402.09	1.3	176
401.07	0.0	2	402.11	1.4	180
401.09	0.0	3	402.13	1.4	183
401.11	0.0	5	402.15	1.4	187
401.13	0.1	7	402.17	1.4	190
401.15	0.1	9	402.19	1.5	194
401.17	0.1	11	402.21	1.5	197
401.19	0.1	13	402.23	1.5	200
401.21	0.1	16	402.25	1.5	203
401.23	0.1	18	402.27	1.6	206
401.25	0.2	21	402.29	1.6	209
401.27	0.2	24	402.31	1.6	212
401.29	0.2	27	402.33	1.6	215
401.31	0.2	30	402.35	1.6	217
401.33	0.3	33	402.37	1.7	220
401.35	0.3	36	402.39	1.7	222
401.37	0.3	40	402.41	1.7	225
401.39	0.3	43	402.43	1.7	227
401.41	0.4	46	402.45	1.7	228
401.43	0.4	50	402.47	1.7	230
401.45	0.4	53	402.49	1.8	232
401.47	0.4	57	402.51	1.8	233
401.49	0.5	61	402.53	<b>1.8</b>	<b>233</b>
401.51	0.5	64			
401.53	0.5	68			
401.55	0.5	72			
401.57	0.6	76			
401.59	0.6	79			
401.61	0.6	83			
401.63	0.7	87			
401.65	0.7	91			
401.67	0.7	95			
401.69	0.7	99			
401.71	0.8	103			
401.73	0.8	107			
401.75	0.8	111			
401.77	0.9	115			
401.79	0.9	119			
401.81	0.9	123			
401.83	1.0	127			
401.85	1.0	130			
401.87	1.0	134			
401.89	1.0	138			
401.91	1.1	142			
401.93	1.1	146			
401.95	1.1	150			
401.97	1.2	154			
401.99	1.2	158			
402.01	1.2	161			
402.03	1.3	165			
402.05	1.3	169			

### Summerwood Gym 3

AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

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### Summary for Pond DP1: Re-Established East Pond

Inflow Area = 132,514 sf, 61.41% Impervious, Inflow Depth = 0.64" for 5-yr event  
Inflow = 11.49 cfs @ 0.16 hrs, Volume= 7,053 cf  
Outflow = 6.40 cfs @ 0.22 hrs, Volume= 7,053 cf, Atten= 44%, Lag= 3.6 min  
Primary = 6.40 cfs @ 0.22 hrs, Volume= 7,053 cf  
Routed to Link Post-Dev : APPROX DISCHARGE

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Peak Elev= 397.93' @ 0.22 hrs Storage= 3,558 cf

Plug-Flow detention time= 8.2 min calculated for 7,053 cf (100% of inflow)  
Center-of-Mass det. time= 8.1 min ( 17.0 - 8.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	396.00'	8,557 cf	<b>Custom Stage Data</b> Listed below

Elevation (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
396.00	0	0
396.50	250	250
397.00	1,092	1,342
398.00	2,387	3,729
399.00	2,405	6,134
400.00	2,423	8,557

Device	Routing	Invert	Outlet Devices
#1	Primary	399.00'	<b>5.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#2	Primary	396.00'	<b>1.1' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s) 10.0' Crest Height

**Primary OutFlow** Max=6.40 cfs @ 0.22 hrs HW=397.93' (Free Discharge)

1=Sharp-Crested Rectangular Weir ( Controls 0.00 cfs)

2=Sharp-Crested Rectangular Weir (Weir Controls 6.40 cfs @ 4.65 fps)

# Summerwood Gym 3

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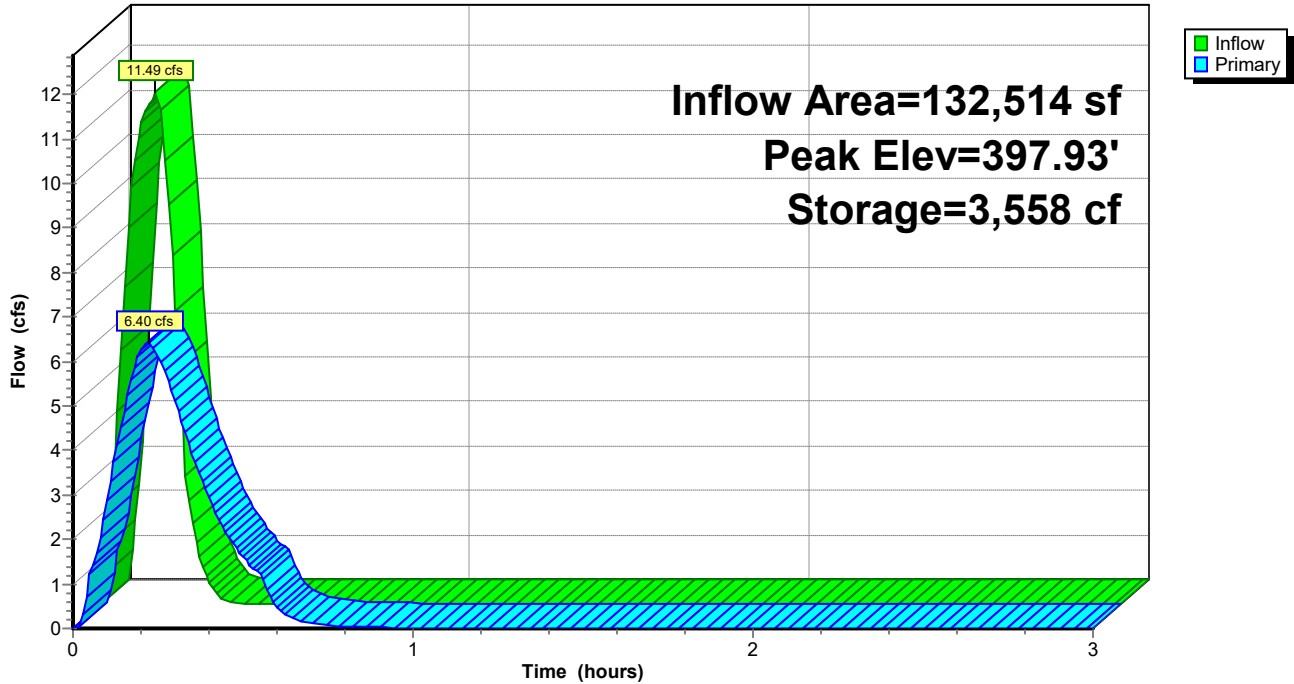
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AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

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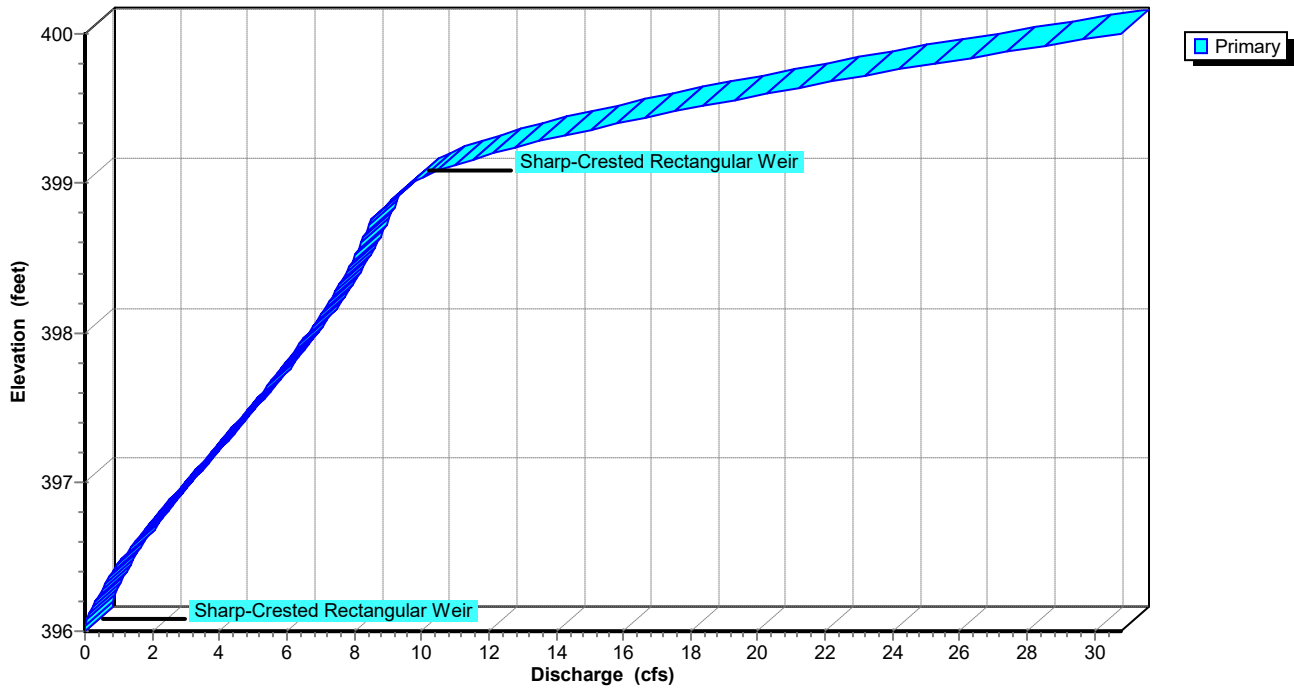
## Pond DP1: Re-Established East Pond

Hydrograph



## Pond DP1: Re-Established East Pond

Stage-Discharge



**Summerwood Gym 3***AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr*

Prepared by Phillip Lewis Engineering

Printed 1/11/2024

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**Stage-Area-Storage for Pond DP1: Re-Established East Pond**

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
396.00	0	398.60	5,172
396.05	25	398.65	5,292
396.10	50	398.70	5,412
396.15	75	398.75	5,533
396.20	100	398.80	5,653
396.25	125	398.85	5,773
396.30	150	398.90	5,893
396.35	175	398.95	6,014
396.40	200	399.00	6,134
396.45	225	399.05	6,255
396.50	250	399.10	6,376
396.55	359	399.15	6,497
396.60	468	399.20	6,619
396.65	578	399.25	6,740
396.70	687	399.30	6,861
396.75	796	399.35	6,982
396.80	905	399.40	7,103
396.85	1,014	399.45	7,224
396.90	1,124	399.50	7,346
396.95	1,233	399.55	7,467
397.00	1,342	399.60	7,588
397.05	1,461	399.65	7,709
397.10	1,581	399.70	7,830
397.15	1,700	399.75	7,951
397.20	1,819	399.80	8,072
397.25	1,939	399.85	8,194
397.30	2,058	399.90	8,315
397.35	2,177	399.95	8,436
397.40	2,297	400.00	<b>8,557</b>
397.45	2,416		
397.50	2,536		
397.55	2,655		
397.60	2,774		
397.65	2,894		
397.70	3,013		
397.75	3,132		
397.80	3,252		
397.85	3,371		
397.90	3,490		
397.95	3,610		
398.00	3,729		
398.05	3,849		
398.10	3,970		
398.15	4,090		
398.20	4,210		
398.25	4,330		
398.30	4,451		
398.35	4,571		
398.40	4,691		
398.45	4,811		
398.50	4,932		
398.55	5,052		

# Summerwood Gym 3

AR - Little Rock 5-yr Duration=10 min, Inten=5.17 in/hr

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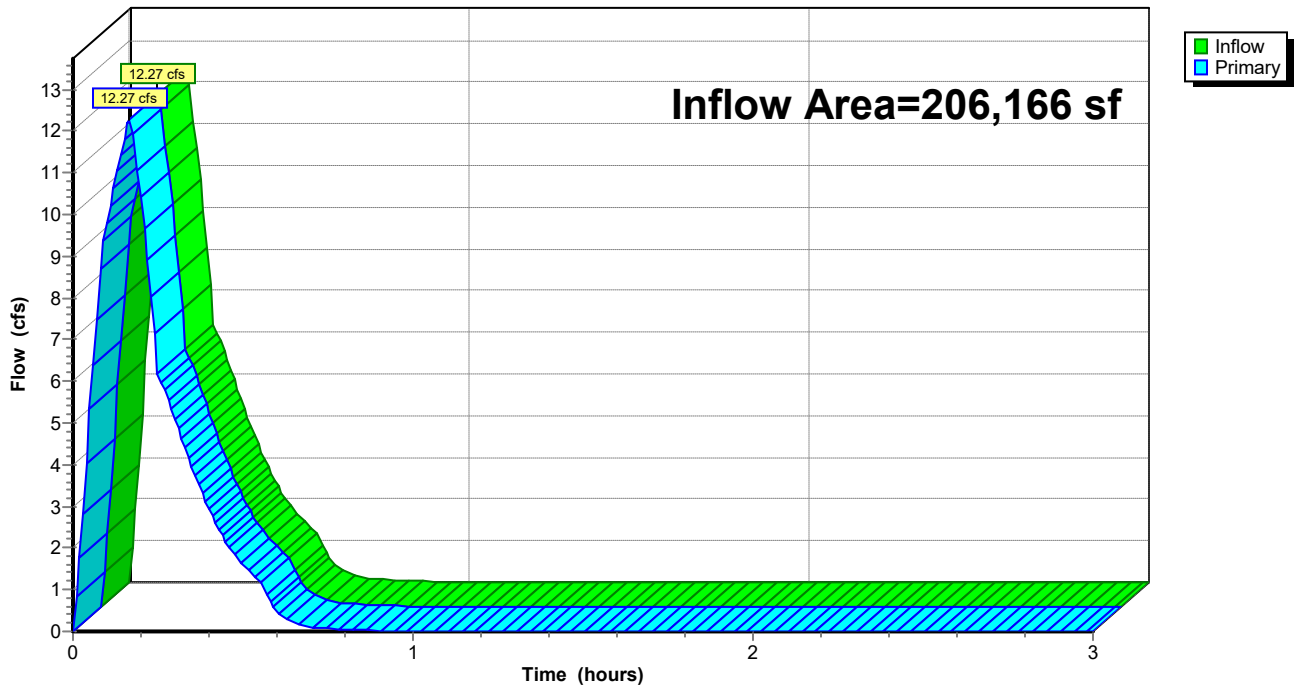
## Summary for Link Post-Dev: APPROX DISCHARGE

Inflow Area = 206,166 sf, 64.42% Impervious, Inflow Depth = 0.65" for 5-yr event  
Inflow = 12.27 cfs @ 0.17 hrs, Volume= 11,197 cf  
Primary = 12.27 cfs @ 0.17 hrs, Volume= 11,197 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

## Link Post-Dev: APPROX DISCHARGE

Hydrograph



**Summerwood Gym 3**

Prepared by Phillip Lewis Engineering

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AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

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**Summary for Subcatchment D1: Drainage Basin D1**

Runoff = 5.97 cfs @ 0.09 hrs, Volume= 3,577 cf, Depth= 0.88"  
 Routed to Link Post-Dev : APPROX DISCHARGE

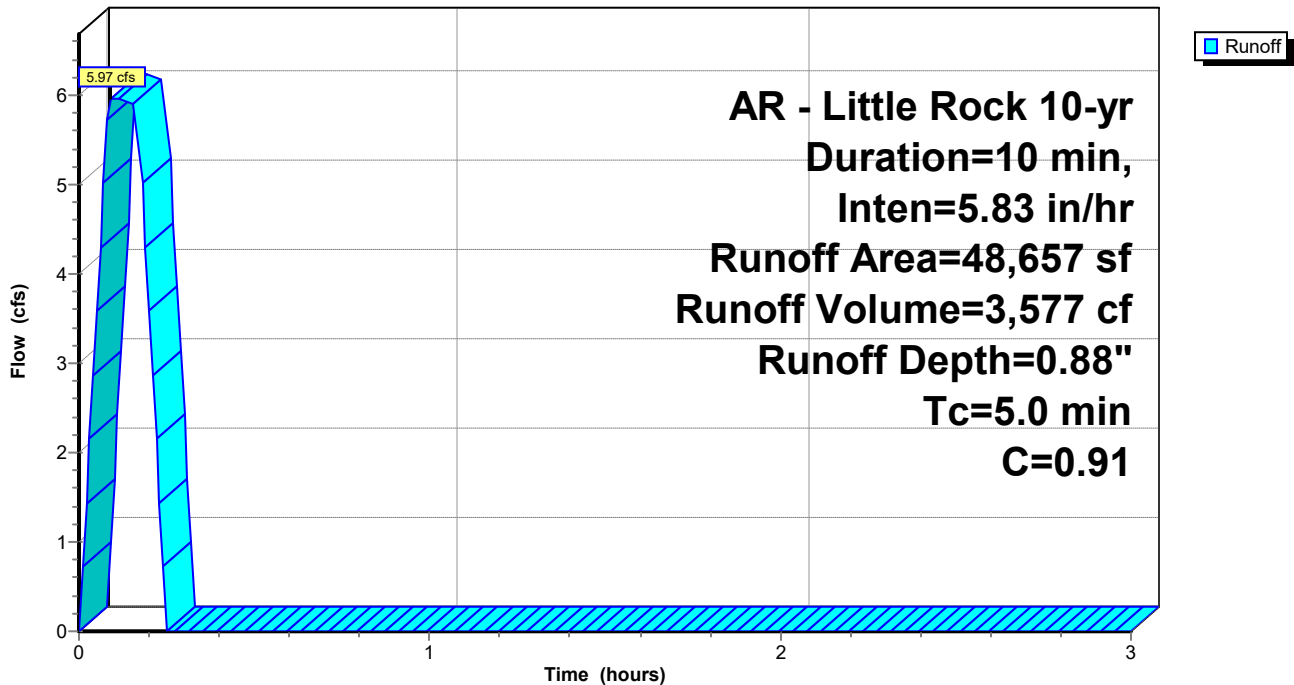
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
 AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

Area (sf)	C	Description
3,421	0.40	Sod Yard
45,236	0.95	Road, Drives, Sidewalks
48,657	0.91	Weighted Average
3,421		7.03% Pervious Area
45,236		92.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D1: Drainage Basin D1**

Hydrograph





**Summerwood Gym 3**

Prepared by Phillip Lewis Engineering

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AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

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**Summary for Subcatchment D2: Drainage Basin D2**

Runoff = 2.53 cfs @ 0.09 hrs, Volume= 1,519 cf, Depth= 0.75"

Routed to Reach P-A1 : Pipe A1

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

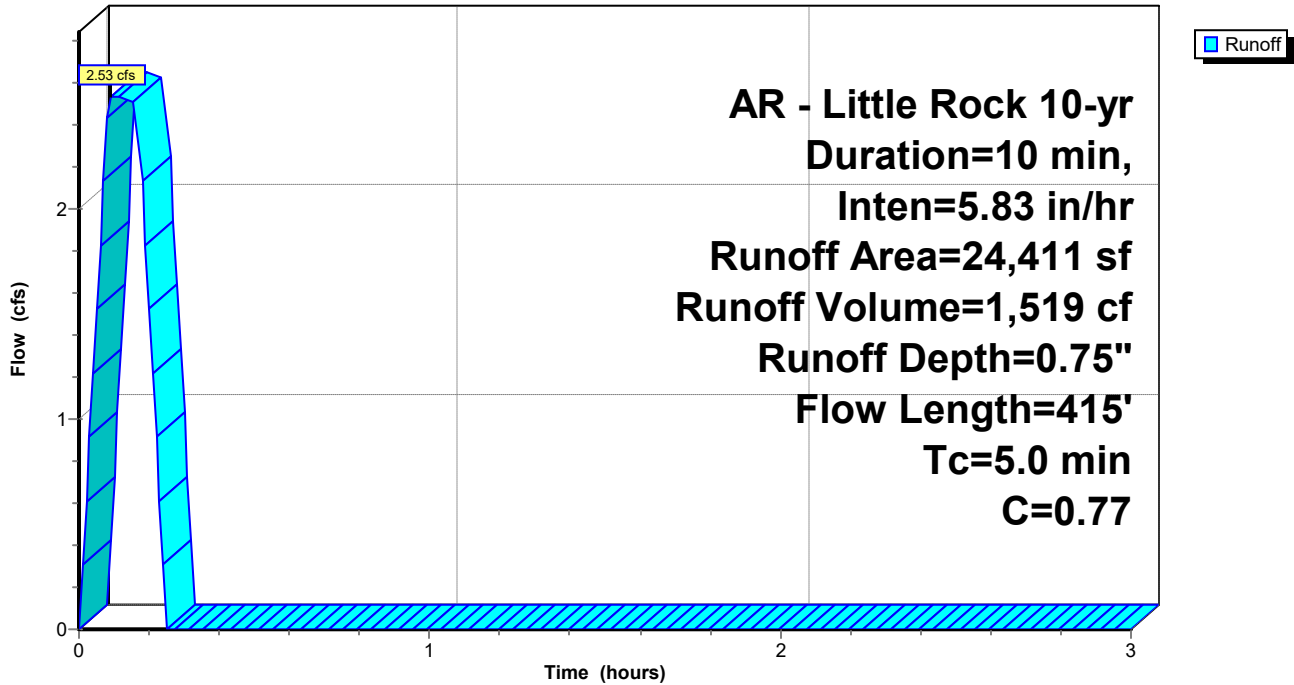
AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

Area (sf)	C	Description
8,845	0.45	Rip Rap Embankment
15,566	0.95	Roof, Drives, Sidewalks
24,411	0.77	Weighted Average
8,845		36.23% Pervious Area
15,566		63.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	415		1.38		Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D2: Drainage Basin D2**

Hydrograph



**Summerwood Gym 3**

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AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

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**Summary for Subcatchment D3: Drainage Basin D3**

Runoff = 1.88 cfs @ 0.09 hrs, Volume= 1,124 cf, Depth= 0.88"

Routed to Reach P-A2 : Pipe A2

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

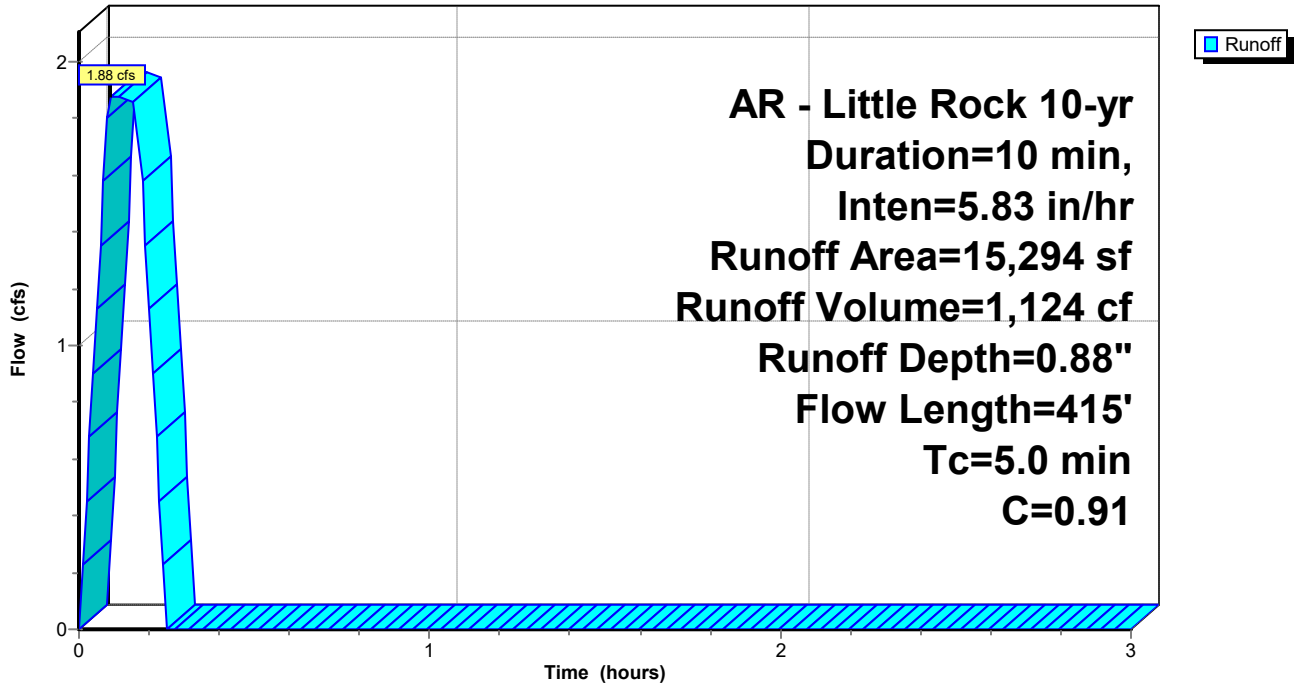
AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

Area (sf)	C	Description
1,065	0.40	Sod Yard
14,229	0.95	Paving, Sidewalks
15,294	0.91	Weighted Average
1,065		6.96% Pervious Area
14,229		93.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	415		1.38		Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D3: Drainage Basin D3**

Hydrograph



**Summerwood Gym 3**

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AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

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**Summary for Subcatchment D4: Drainage Basin D4**

Runoff = 2.59 cfs @ 0.17 hrs, Volume= 1,582 cf, Depth= 0.59"

Routed to Reach P-A3 : Pipe A3

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

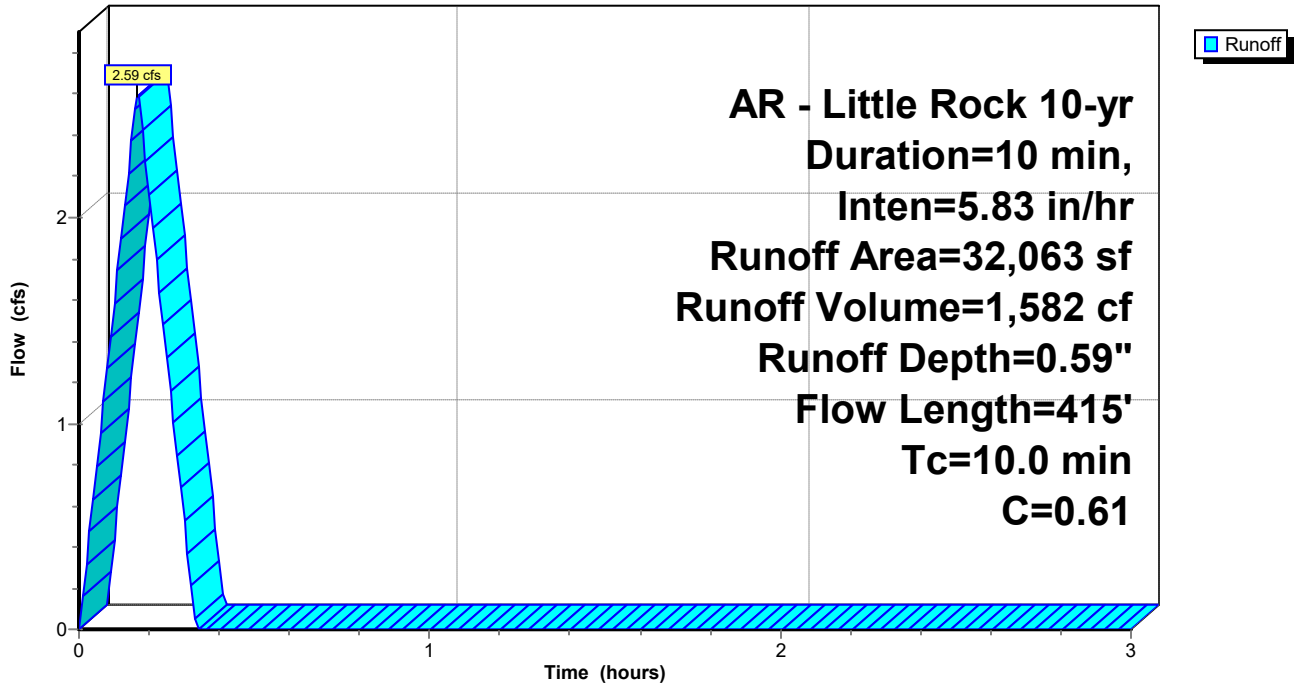
AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

Area (sf)	C	Description
20,032	0.40	
12,031	0.95	
32,063	0.61	Weighted Average
20,032		62.48% Pervious Area
12,031		37.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D4: Drainage Basin D4**

Hydrograph



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AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

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**Summary for Subcatchment D5: Drainage Basin D5**

Runoff = 3.76 cfs @ 0.09 hrs, Volume= 2,254 cf, Depth= 0.65"  
 Routed to Pond DP1 : Re-Established East Pond

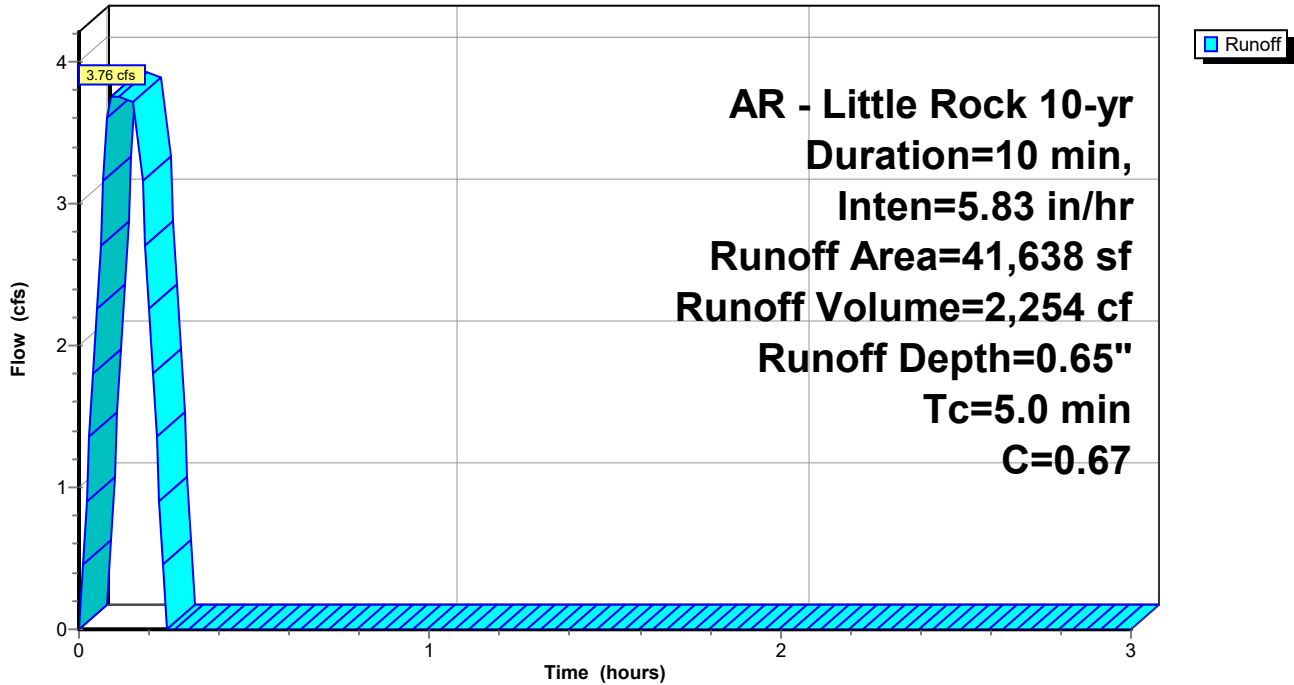
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
 AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

Area (sf)	C	Description
21,201	0.40	Sod Yard, Natural Vegetation
20,437	0.95	Paving, Sidewalks
41,638	0.67	Weighted Average
21,201		50.92% Pervious Area
20,437		49.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D5: Drainage Basin D5**

Hydrograph



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AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

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### Summary for Subcatchment D6: Drainage Basin D6

Runoff = 2.45 cfs @ 0.09 hrs, Volume= 1,466 cf, Depth= 0.92"

Routed to Pond DP1 : Re-Established East Pond

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

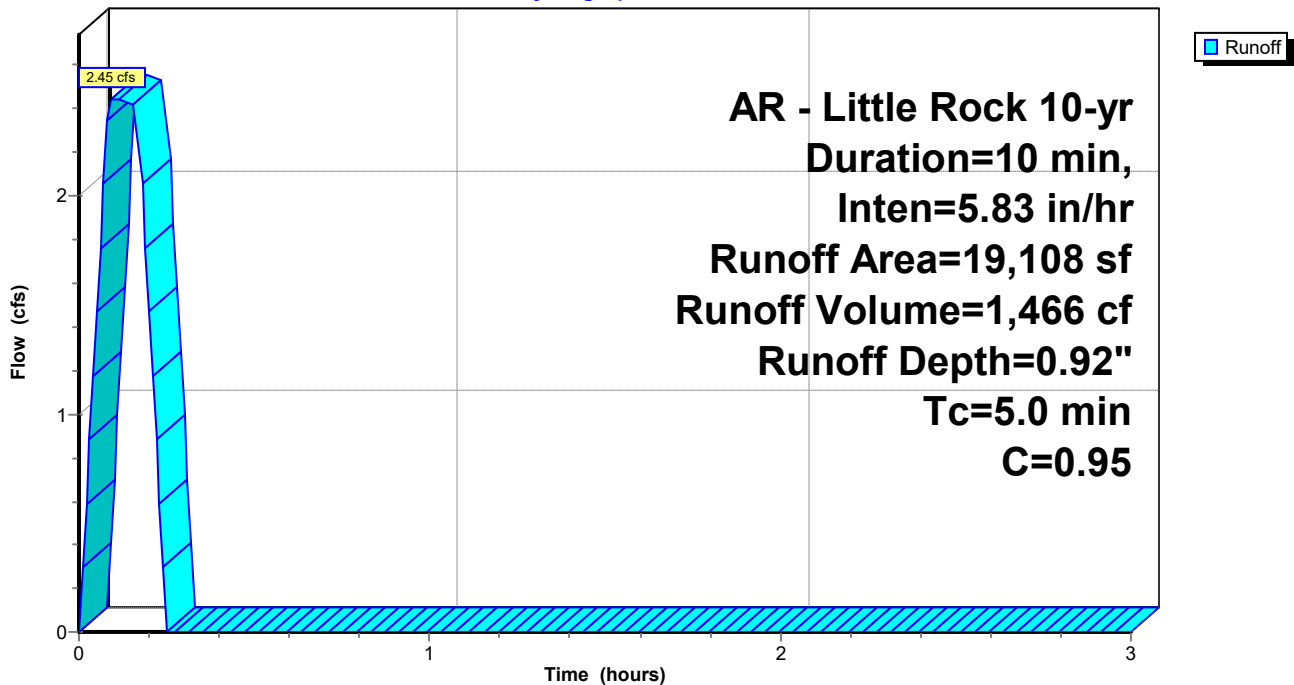
AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

Area (sf)	C	Description
19,108	0.95	Roof
19,108		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Overland Concentrated Flow (Min)

### Subcatchment D6: Drainage Basin D6

Hydrograph



**Summerwood Gym 3**

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AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

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**Summary for Subcatchment D7: Drainage Basin D7**

Runoff = 1.82 cfs @ 0.09 hrs, Volume= 1,090 cf, Depth= 0.52"  
 Routed to Link Post-Dev : APPROX DISCHARGE

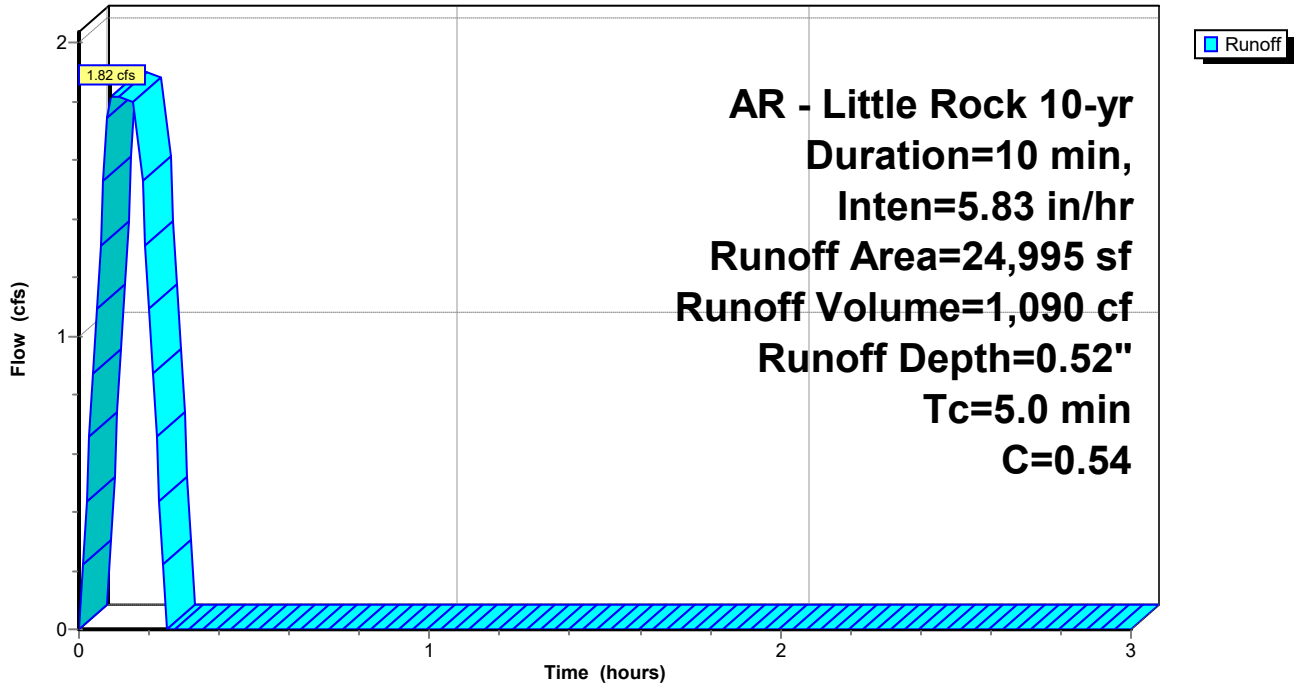
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
 AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

Area (sf)	C	Description
18,798	0.40	Sod Yard, Natural Vegetation
6,197	0.95	Paving, Sidewalks
24,995	0.54	Weighted Average
18,798		75.21% Pervious Area
6,197		24.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D7: Drainage Basin D7**

Hydrograph



# Summerwood Gym 3

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AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

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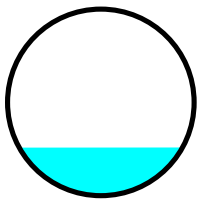
## Summary for Reach P-A1: Pipe A1

Inflow Area = 24,411 sf, 63.77% Impervious, Inflow Depth = 0.75" for 10-yr event  
Inflow = 2.53 cfs @ 0.09 hrs, Volume= 1,519 cf  
Outflow = 2.54 cfs @ 0.11 hrs, Volume= 1,519 cf, Atten= 0%, Lag= 1.2 min  
Routed to Reach P-A2 : Pipe A2

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Max. Velocity= 6.99 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 5.09 fps, Avg. Travel Time= 0.2 min

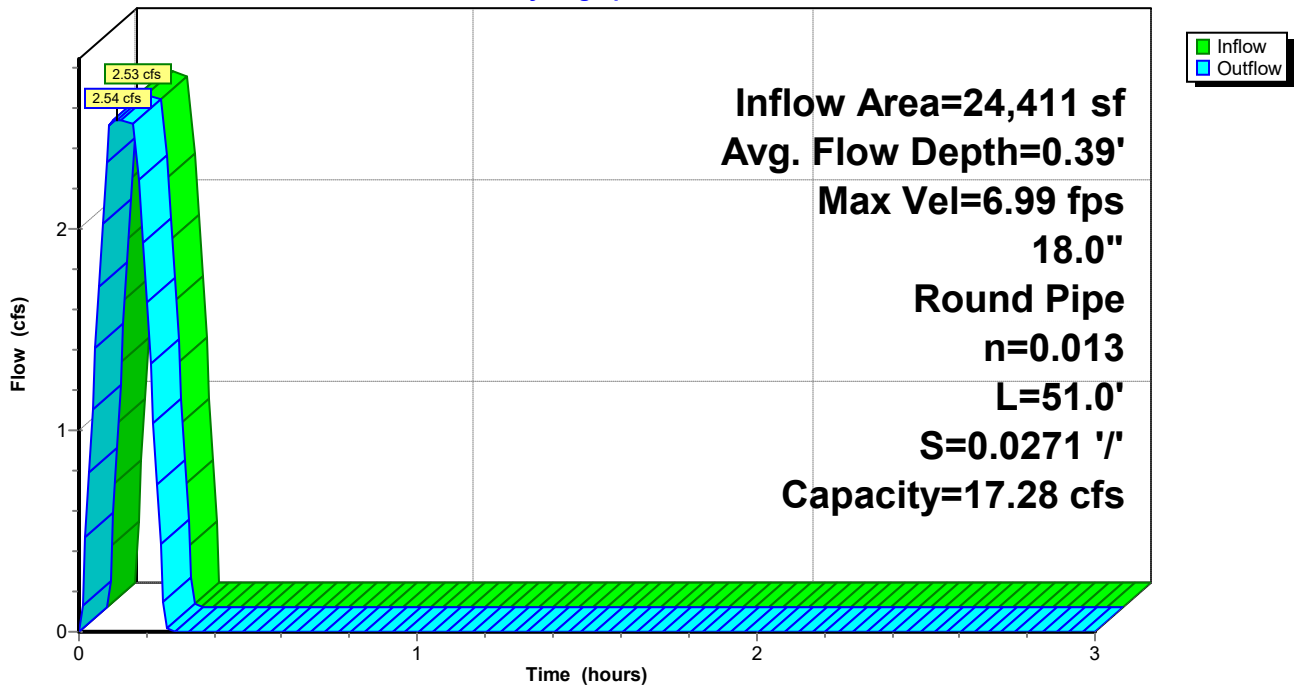
Peak Storage= 19 cf @ 0.09 hrs  
Average Depth at Peak Storage= 0.39' , Surface Width= 1.31'  
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.28 cfs

18.0" Round Pipe  
n= 0.013 Corrugated PE, smooth interior  
Length= 51.0' Slope= 0.0271 '/'  
Inlet Invert= 408.33', Outlet Invert= 406.95'



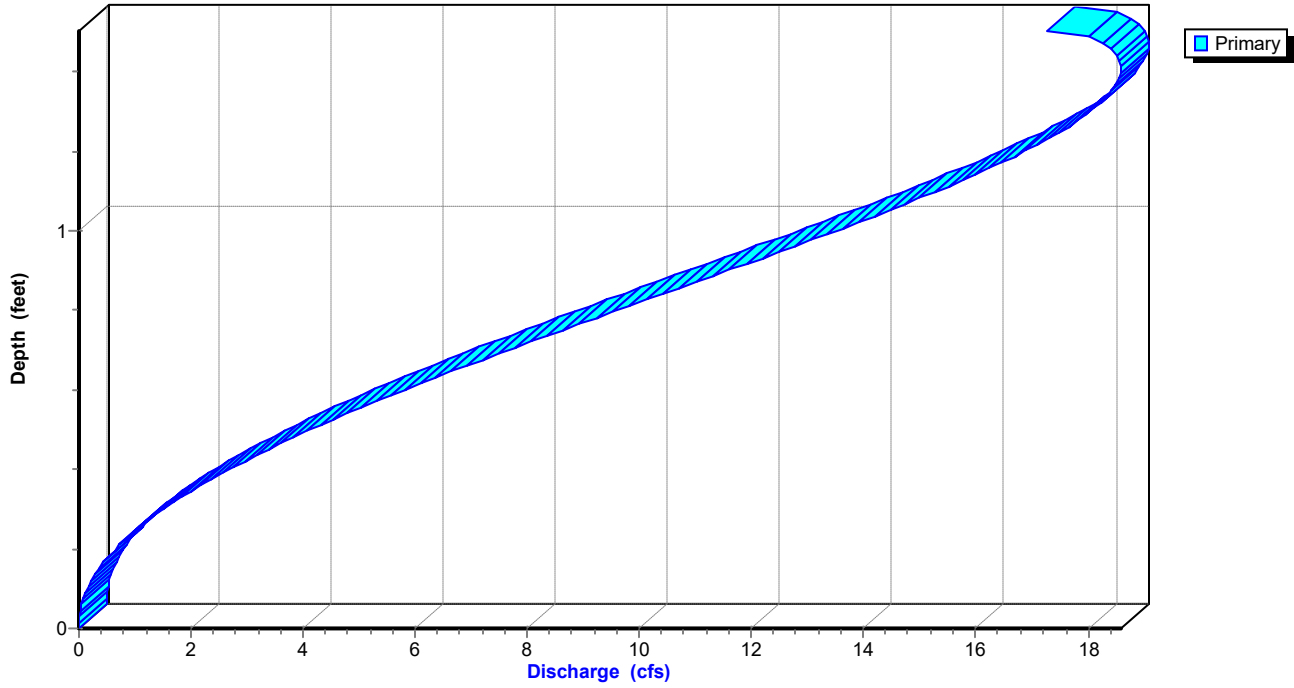
## Reach P-A1: Pipe A1

Hydrograph



### Reach P-A1: Pipe A1

Stage-Discharge





**Summerwood Gym 3**

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AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

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**Stage-Area-Storage for Reach P-A1: Pipe A1**

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
408.33	0.0	0	409.37	1.3	67
408.35	0.0	0	409.39	1.3	68
408.37	0.0	1	409.41	1.4	69
408.39	0.0	1	409.43	1.4	71
408.41	0.0	2	409.45	1.4	72
408.43	0.1	3	409.47	1.4	73
408.45	0.1	3	409.49	1.5	75
408.47	0.1	4	409.51	1.5	76
408.49	0.1	5	409.53	1.5	77
408.51	0.1	6	409.55	1.5	78
408.53	0.1	7	409.57	1.6	80
408.55	0.2	8	409.59	1.6	81
408.57	0.2	9	409.61	1.6	82
408.59	0.2	10	409.63	1.6	83
408.61	0.2	12	409.65	1.6	84
408.63	0.3	13	409.67	1.7	85
408.65	0.3	14	409.69	1.7	86
408.67	0.3	15	409.71	1.7	87
408.69	0.3	17	409.73	1.7	88
408.71	0.4	18	409.75	1.7	88
408.73	0.4	19	409.77	1.7	89
408.75	0.4	21	409.79	1.8	89
408.77	0.4	22	409.81	1.8	90
408.79	0.5	23	409.83	<b>1.8</b>	<b>90</b>
408.81	0.5	25			
408.83	0.5	26			
408.85	0.5	28			
408.87	0.6	29			
408.89	0.6	31			
408.91	0.6	32			
408.93	0.7	34			
408.95	0.7	35			
408.97	0.7	37			
408.99	0.7	38			
409.01	0.8	40			
409.03	0.8	41			
409.05	0.8	43			
409.07	0.9	44			
409.09	0.9	46			
409.11	0.9	47			
409.13	1.0	49			
409.15	1.0	50			
409.17	1.0	52			
409.19	1.0	53			
409.21	1.1	55			
409.23	1.1	56			
409.25	1.1	58			
409.27	1.2	59			
409.29	1.2	61			
409.31	1.2	62			
409.33	1.3	64			
409.35	1.3	65			

### Summerwood Gym 3

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AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

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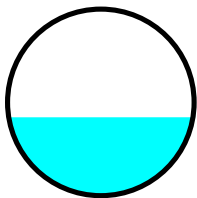
### Summary for Reach P-A2: Pipe A2

Inflow Area = 39,705 sf, 75.04% Impervious, Inflow Depth = 0.80" for 10-yr event  
Inflow = 4.41 cfs @ 0.11 hrs, Volume= 2,643 cf  
Outflow = 4.41 cfs @ 0.15 hrs, Volume= 2,643 cf, Atten= 0%, Lag= 2.4 min  
Routed to Reach P-A3 : Pipe A3

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Max. Velocity= 6.25 fps, Min. Travel Time= 0.5 min  
Avg. Velocity = 2.50 fps, Avg. Travel Time= 1.2 min

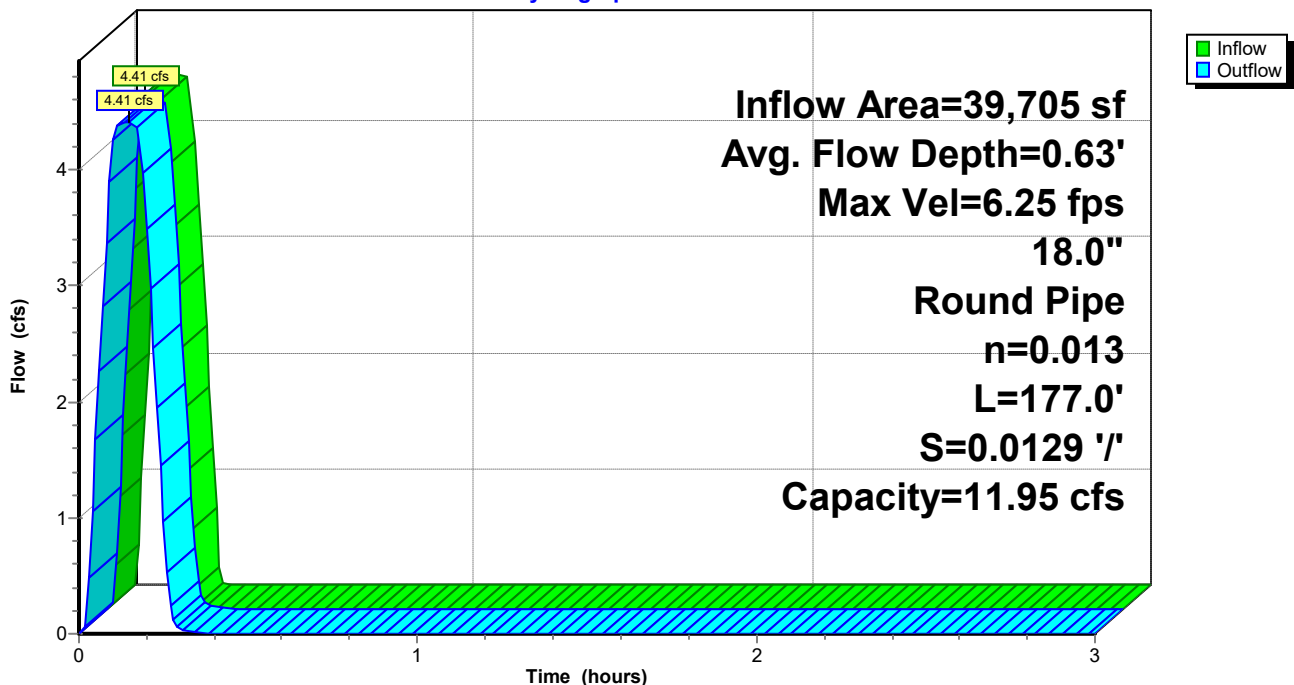
Peak Storage= 125 cf @ 0.14 hrs  
Average Depth at Peak Storage= 0.63' , Surface Width= 1.48'  
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 11.95 cfs

18.0" Round Pipe  
n= 0.013 Corrugated PE, smooth interior  
Length= 177.0' Slope= 0.0129 '/'  
Inlet Invert= 406.85', Outlet Invert= 404.56'



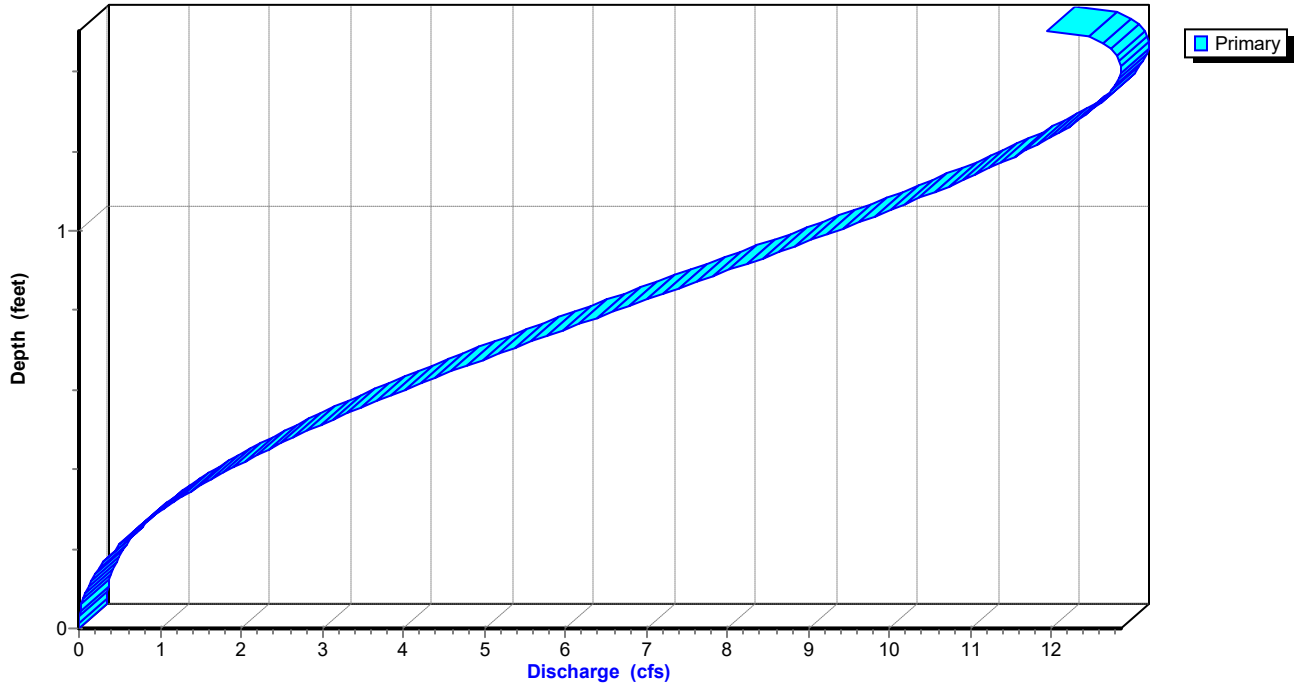
### Reach P-A2: Pipe A2

#### Hydrograph



### Reach P-A2: Pipe A2

Stage-Discharge



**Summerwood Gym 3***AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr*

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**Stage-Area-Storage for Reach P-A2: Pipe A2**

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
406.85	0.0	0	407.89	1.3	231
406.87	0.0	1	407.91	1.3	236
406.89	0.0	2	407.93	1.4	241
406.91	0.0	4	407.95	1.4	246
406.93	0.0	6	407.97	1.4	250
406.95	0.1	9	407.99	1.4	255
406.97	0.1	12	408.01	1.5	260
406.99	0.1	15	408.03	1.5	264
407.01	0.1	18	408.05	1.5	268
407.03	0.1	21	408.07	1.5	272
407.05	0.1	25	408.09	1.6	277
407.07	0.2	28	408.11	1.6	280
407.09	0.2	32	408.13	1.6	284
407.11	0.2	36	408.15	1.6	288
407.13	0.2	40	408.17	1.6	292
407.15	0.3	45	408.19	1.7	295
407.17	0.3	49	408.21	1.7	298
407.19	0.3	53	408.23	1.7	301
407.21	0.3	58	408.25	1.7	304
407.23	0.4	62	408.27	1.7	306
407.25	0.4	67	408.29	1.7	309
407.27	0.4	72	408.31	1.8	310
407.29	0.4	76	408.33	1.8	312
407.31	0.5	81	408.35	<b>1.8</b>	<b>313</b>
407.33	0.5	86			
407.35	0.5	91			
407.37	0.5	96			
407.39	0.6	101			
407.41	0.6	106			
407.43	0.6	112			
407.45	0.7	117			
407.47	0.7	122			
407.49	0.7	127			
407.51	0.7	133			
407.53	0.8	138			
407.55	0.8	143			
407.57	0.8	148			
407.59	0.9	154			
407.61	0.9	159			
407.63	0.9	164			
407.65	1.0	170			
407.67	1.0	175			
407.69	1.0	180			
407.71	1.0	185			
407.73	1.1	191			
407.75	1.1	196			
407.77	1.1	201			
407.79	1.2	206			
407.81	1.2	211			
407.83	1.2	216			
407.85	1.3	222			
407.87	1.3	226			

### Summerwood Gym 3

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AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

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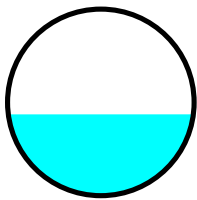
### Summary for Reach P-A3: Pipe A3

Inflow Area = 71,768 sf, 58.28% Impervious, Inflow Depth = 0.71" for 10-yr event  
Inflow = 7.00 cfs @ 0.17 hrs, Volume= 4,225 cf  
Outflow = 6.96 cfs @ 0.17 hrs, Volume= 4,225 cf, Atten= 1%, Lag= 0.3 min  
Routed to Reach P-A4 : Pipe A4

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Max. Velocity= 9.40 fps, Min. Travel Time= 0.2 min  
Avg. Velocity= 3.90 fps, Avg. Travel Time= 0.5 min

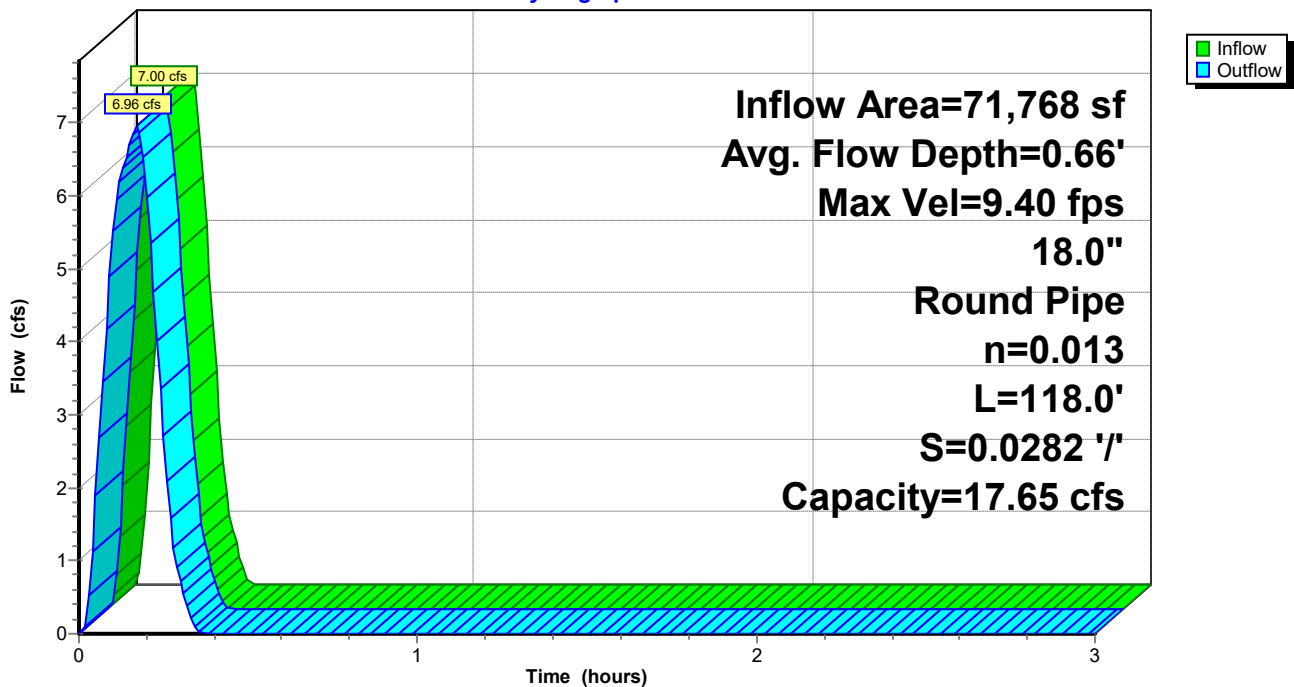
Peak Storage= 88 cf @ 0.17 hrs  
Average Depth at Peak Storage= 0.66' , Surface Width= 1.49'  
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.65 cfs

18.0" Round Pipe  
n= 0.013 Corrugated PE, smooth interior  
Length= 118.0' Slope= 0.0282 '/'  
Inlet Invert= 404.46', Outlet Invert= 401.13'



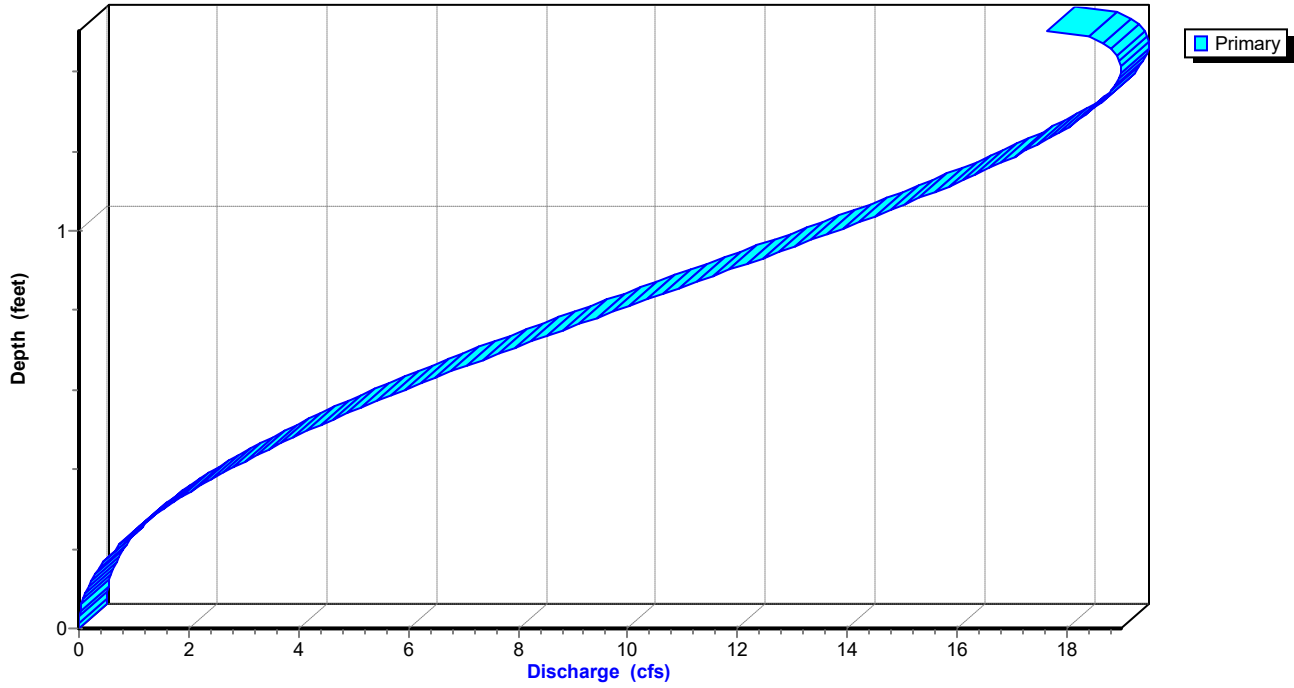
### Reach P-A3: Pipe A3

#### Hydrograph



### Reach P-A3: Pipe A3

Stage-Discharge



**Summerwood Gym 3***AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr*

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**Stage-Area-Storage for Reach P-A3: Pipe A3**

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
404.46	0.0	0	405.50	1.3	154
404.48	0.0	1	405.52	1.3	158
404.50	0.0	2	405.54	1.4	161
404.52	0.0	3	405.56	1.4	164
404.54	0.0	4	405.58	1.4	167
404.56	0.1	6	405.60	1.4	170
404.58	0.1	8	405.62	1.5	173
404.60	0.1	10	405.64	1.5	176
404.62	0.1	12	405.66	1.5	179
404.64	0.1	14	405.68	1.5	182
404.66	0.1	17	405.70	1.6	184
404.68	0.2	19	405.72	1.6	187
404.70	0.2	22	405.74	1.6	190
404.72	0.2	24	405.76	1.6	192
404.74	0.2	27	405.78	1.6	194
404.76	0.3	30	405.80	1.7	197
404.78	0.3	33	405.82	1.7	199
404.80	0.3	35	405.84	1.7	201
404.82	0.3	38	405.86	1.7	203
404.84	0.4	42	405.88	1.7	204
404.86	0.4	45	405.90	1.7	206
404.88	0.4	48	405.92	1.8	207
404.90	0.4	51	405.94	1.8	208
404.92	0.5	54	405.96	<b>1.8</b>	<b>209</b>
404.94	0.5	58			
404.96	0.5	61			
404.98	0.5	64			
405.00	0.6	68			
405.02	0.6	71			
405.04	0.6	74			
405.06	0.7	78			
405.08	0.7	81			
405.10	0.7	85			
405.12	0.7	88			
405.14	0.8	92			
405.16	0.8	95			
405.18	0.8	99			
405.20	0.9	102			
405.22	0.9	106			
405.24	0.9	110			
405.26	1.0	113			
405.28	1.0	117			
405.30	1.0	120			
405.32	1.0	124			
405.34	1.1	127			
405.36	1.1	131			
405.38	1.1	134			
405.40	1.2	138			
405.42	1.2	141			
405.44	1.2	144			
405.46	1.3	148			
405.48	1.3	151			

### Summerwood Gym 3

Prepared by Phillip Lewis Engineering

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AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

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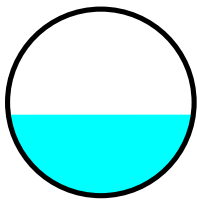
### Summary for Reach P-A4: Pipe A4

Inflow Area = 71,768 sf, 58.28% Impervious, Inflow Depth = 0.71" for 10-yr event  
Inflow = 6.96 cfs @ 0.17 hrs, Volume= 4,225 cf  
Outflow = 6.93 cfs @ 0.18 hrs, Volume= 4,225 cf, Atten= 0%, Lag= 0.4 min  
Routed to Pond DP1 : Re-Established East Pond

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Max. Velocity= 9.39 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 3.71 fps, Avg. Travel Time= 0.6 min

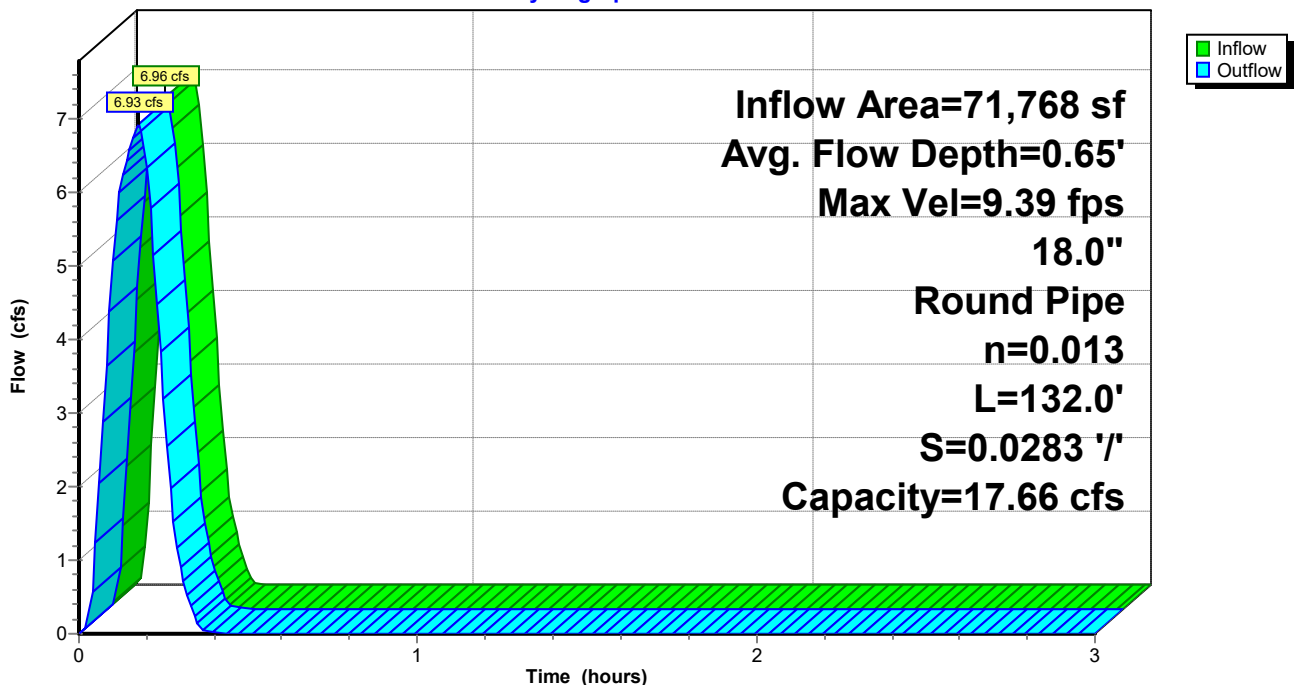
Peak Storage= 98 cf @ 0.17 hrs  
Average Depth at Peak Storage= 0.65' , Surface Width= 1.49'  
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.66 cfs

18.0" Round Pipe  
n= 0.013 Corrugated PE, smooth interior  
Length= 132.0' Slope= 0.0283 '/'  
Inlet Invert= 401.03', Outlet Invert= 397.30'



### Reach P-A4: Pipe A4

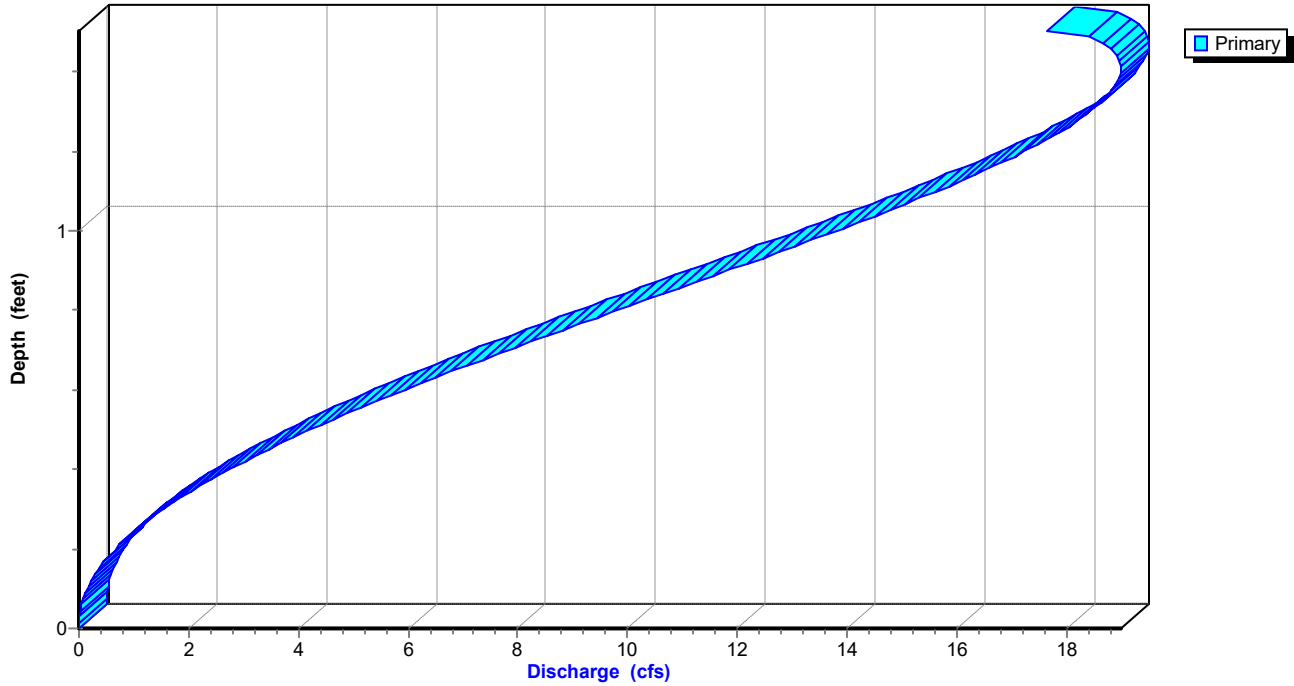
#### Hydrograph





### Reach P-A4: Pipe A4

Stage-Discharge



**Summerwood Gym 3***AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr*

Prepared by Phillip Lewis Engineering

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**Stage-Area-Storage for Reach P-A4: Pipe A4**

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
401.03	0.0	0	402.07	1.3	173
401.05	0.0	1	402.09	1.3	176
401.07	0.0	2	402.11	1.4	180
401.09	0.0	3	402.13	1.4	183
401.11	0.0	5	402.15	1.4	187
401.13	0.1	7	402.17	1.4	190
401.15	0.1	9	402.19	1.5	194
401.17	0.1	11	402.21	1.5	197
401.19	0.1	13	402.23	1.5	200
401.21	0.1	16	402.25	1.5	203
401.23	0.1	18	402.27	1.6	206
401.25	0.2	21	402.29	1.6	209
401.27	0.2	24	402.31	1.6	212
401.29	0.2	27	402.33	1.6	215
401.31	0.2	30	402.35	1.6	217
401.33	0.3	33	402.37	1.7	220
401.35	0.3	36	402.39	1.7	222
401.37	0.3	40	402.41	1.7	225
401.39	0.3	43	402.43	1.7	227
401.41	0.4	46	402.45	1.7	228
401.43	0.4	50	402.47	1.7	230
401.45	0.4	53	402.49	1.8	232
401.47	0.4	57	402.51	1.8	233
401.49	0.5	61	402.53	<b>1.8</b>	<b>233</b>
401.51	0.5	64			
401.53	0.5	68			
401.55	0.5	72			
401.57	0.6	76			
401.59	0.6	79			
401.61	0.6	83			
401.63	0.7	87			
401.65	0.7	91			
401.67	0.7	95			
401.69	0.7	99			
401.71	0.8	103			
401.73	0.8	107			
401.75	0.8	111			
401.77	0.9	115			
401.79	0.9	119			
401.81	0.9	123			
401.83	1.0	127			
401.85	1.0	130			
401.87	1.0	134			
401.89	1.0	138			
401.91	1.1	142			
401.93	1.1	146			
401.95	1.1	150			
401.97	1.2	154			
401.99	1.2	158			
402.01	1.2	161			
402.03	1.3	165			
402.05	1.3	169			

### Summerwood Gym 3

AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

Prepared by Phillip Lewis Engineering

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### Summary for Pond DP1: Re-Established East Pond

Inflow Area = 132,514 sf, 61.41% Impervious, Inflow Depth = 0.72" for 10-yr event  
Inflow = 12.95 cfs @ 0.16 hrs, Volume= 7,945 cf  
Outflow = 7.07 cfs @ 0.22 hrs, Volume= 7,945 cf, Atten= 45%, Lag= 3.7 min  
Primary = 7.07 cfs @ 0.22 hrs, Volume= 7,945 cf  
Routed to Link Post-Dev : APPROX DISCHARGE

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Peak Elev= 398.14' @ 0.22 hrs Storage= 4,074 cf

Plug-Flow detention time= 8.2 min calculated for 7,919 cf (100% of inflow)  
Center-of-Mass det. time= 8.3 min ( 17.2 - 8.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	396.00'	8,557 cf	<b>Custom Stage Data</b> Listed below

Elevation (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
396.00	0	0
396.50	250	250
397.00	1,092	1,342
398.00	2,387	3,729
399.00	2,405	6,134
400.00	2,423	8,557

Device	Routing	Invert	Outlet Devices
#1	Primary	399.00'	<b>5.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#2	Primary	396.00'	<b>1.1' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s) 10.0' Crest Height

**Primary OutFlow** Max=7.06 cfs @ 0.22 hrs HW=398.14' (Free Discharge)

└─1=Sharp-Crested Rectangular Weir ( Controls 0.00 cfs)

└─2=Sharp-Crested Rectangular Weir (Weir Controls 7.06 cfs @ 4.91 fps)

# Summerwood Gym 3

Prepared by Phillip Lewis Engineering

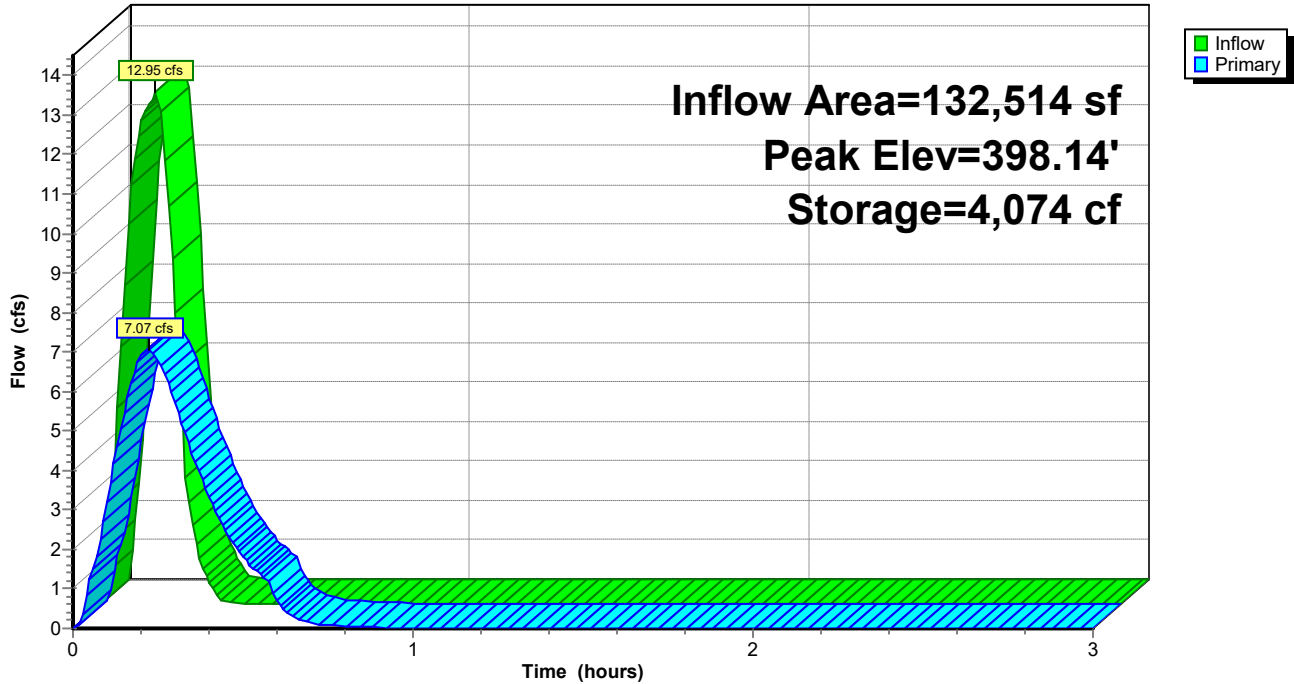
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AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

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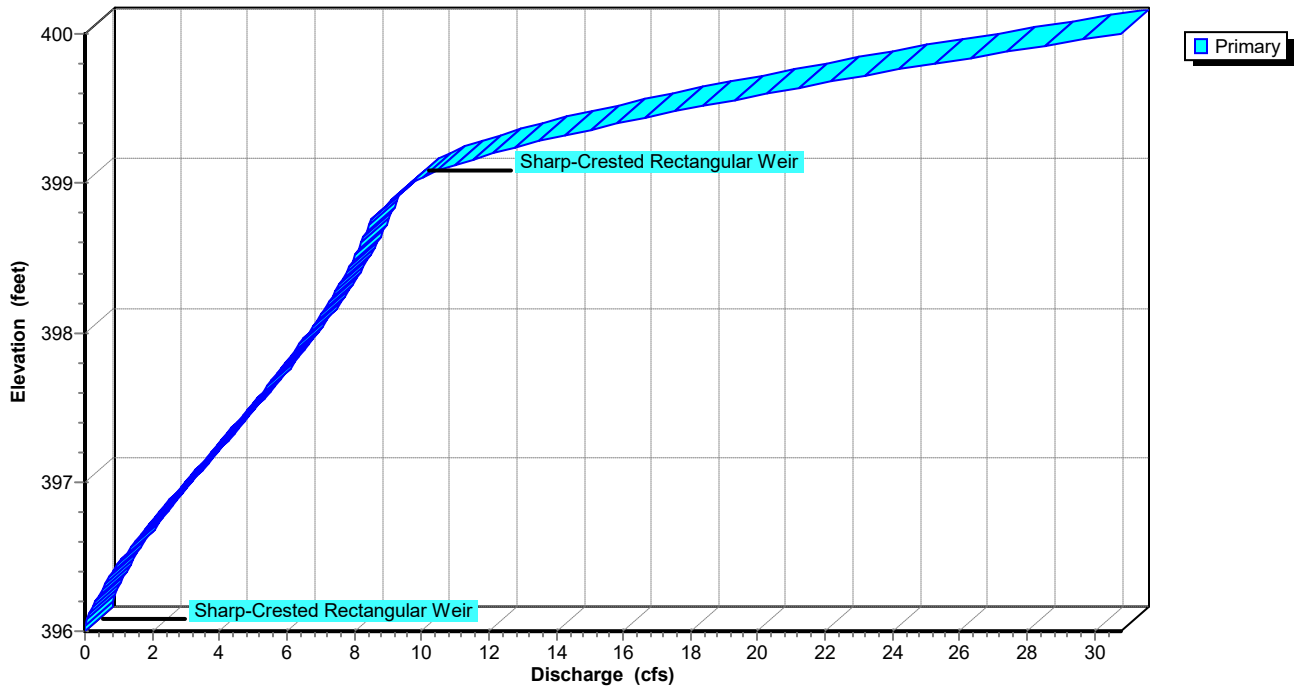
## Pond DP1: Re-Established East Pond

Hydrograph



## Pond DP1: Re-Established East Pond

Stage-Discharge



**Summerwood Gym 3**

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*AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr*

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**Stage-Area-Storage for Pond DP1: Re-Established East Pond**

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
396.00	0	398.60	5,172
396.05	25	398.65	5,292
396.10	50	398.70	5,412
396.15	75	398.75	5,533
396.20	100	398.80	5,653
396.25	125	398.85	5,773
396.30	150	398.90	5,893
396.35	175	398.95	6,014
396.40	200	399.00	6,134
396.45	225	399.05	6,255
396.50	250	399.10	6,376
396.55	359	399.15	6,497
396.60	468	399.20	6,619
396.65	578	399.25	6,740
396.70	687	399.30	6,861
396.75	796	399.35	6,982
396.80	905	399.40	7,103
396.85	1,014	399.45	7,224
396.90	1,124	399.50	7,346
396.95	1,233	399.55	7,467
397.00	1,342	399.60	7,588
397.05	1,461	399.65	7,709
397.10	1,581	399.70	7,830
397.15	1,700	399.75	7,951
397.20	1,819	399.80	8,072
397.25	1,939	399.85	8,194
397.30	2,058	399.90	8,315
397.35	2,177	399.95	8,436
397.40	2,297	400.00	<b>8,557</b>
397.45	2,416		
397.50	2,536		
397.55	2,655		
397.60	2,774		
397.65	2,894		
397.70	3,013		
397.75	3,132		
397.80	3,252		
397.85	3,371		
397.90	3,490		
397.95	3,610		
398.00	3,729		
398.05	3,849		
398.10	3,970		
398.15	4,090		
398.20	4,210		
398.25	4,330		
398.30	4,451		
398.35	4,571		
398.40	4,691		
398.45	4,811		
398.50	4,932		
398.55	5,052		

# Summerwood Gym 3

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AR - Little Rock 10-yr Duration=10 min, Inten=5.83 in/hr

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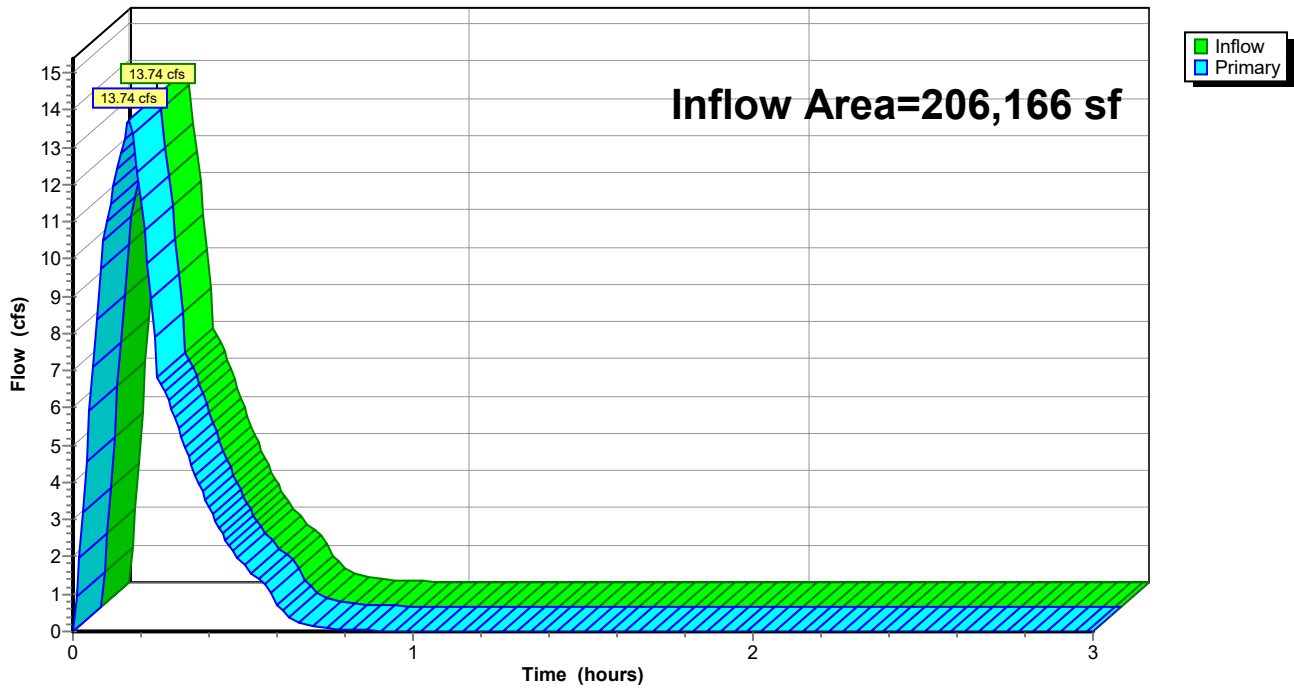
## Summary for Link Post-Dev: APPROX DISCHARGE

Inflow Area = 206,166 sf, 64.42% Impervious, Inflow Depth = 0.73" for 10-yr event  
Inflow = 13.74 cfs @ 0.17 hrs, Volume= 12,613 cf  
Primary = 13.74 cfs @ 0.17 hrs, Volume= 12,613 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

## Link Post-Dev: APPROX DISCHARGE

Hydrograph



**Summerwood Gym 3**

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AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

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**Summary for Subcatchment D1: Drainage Basin D1**

Runoff = 6.89 cfs @ 0.09 hrs, Volume= 4,126 cf, Depth= 1.02"  
 Routed to Link Post-Dev : APPROX DISCHARGE

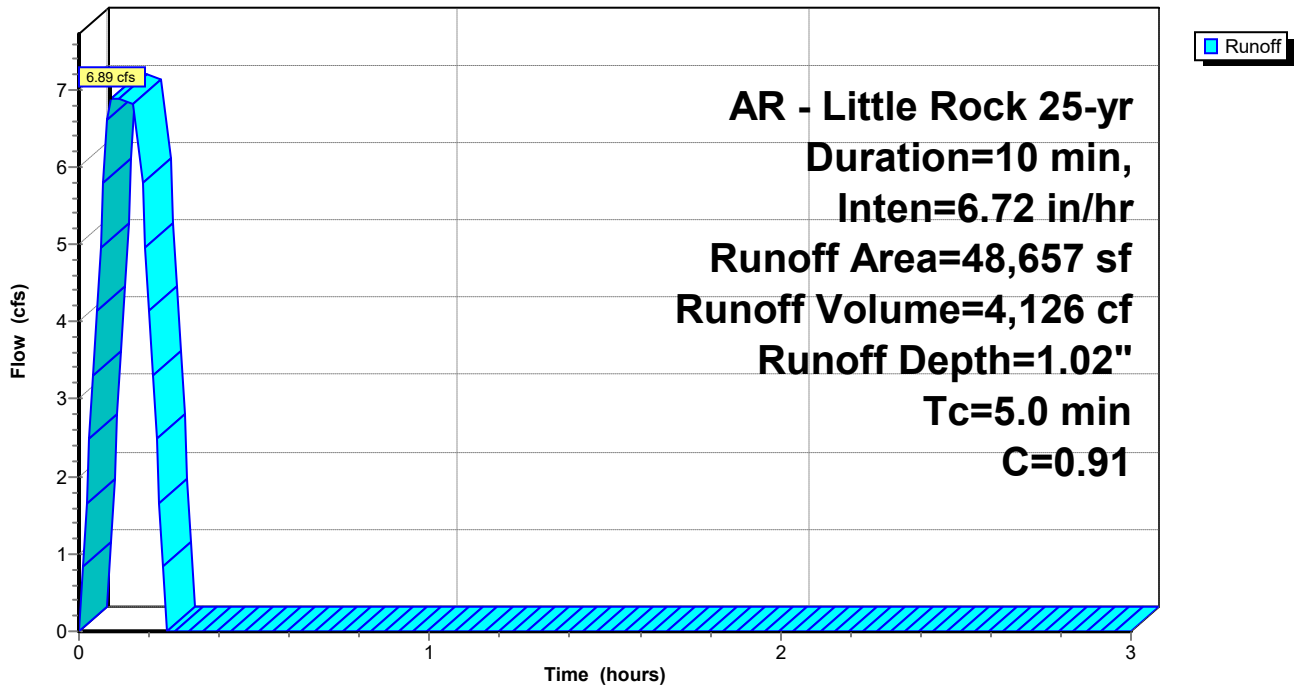
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
 AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

Area (sf)	C	Description
3,421	0.40	Sod Yard
45,236	0.95	Rood, Drives, Sidewalks
48,657	0.91	Weighted Average
3,421		7.03% Pervious Area
45,236		92.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D1: Drainage Basin D1**

Hydrograph



**Summerwood Gym 3**

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AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

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**Summary for Subcatchment D2: Drainage Basin D2**

Runoff = 2.92 cfs @ 0.09 hrs, Volume= 1,752 cf, Depth= 0.86"

Routed to Reach P-A1 : Pipe A1

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

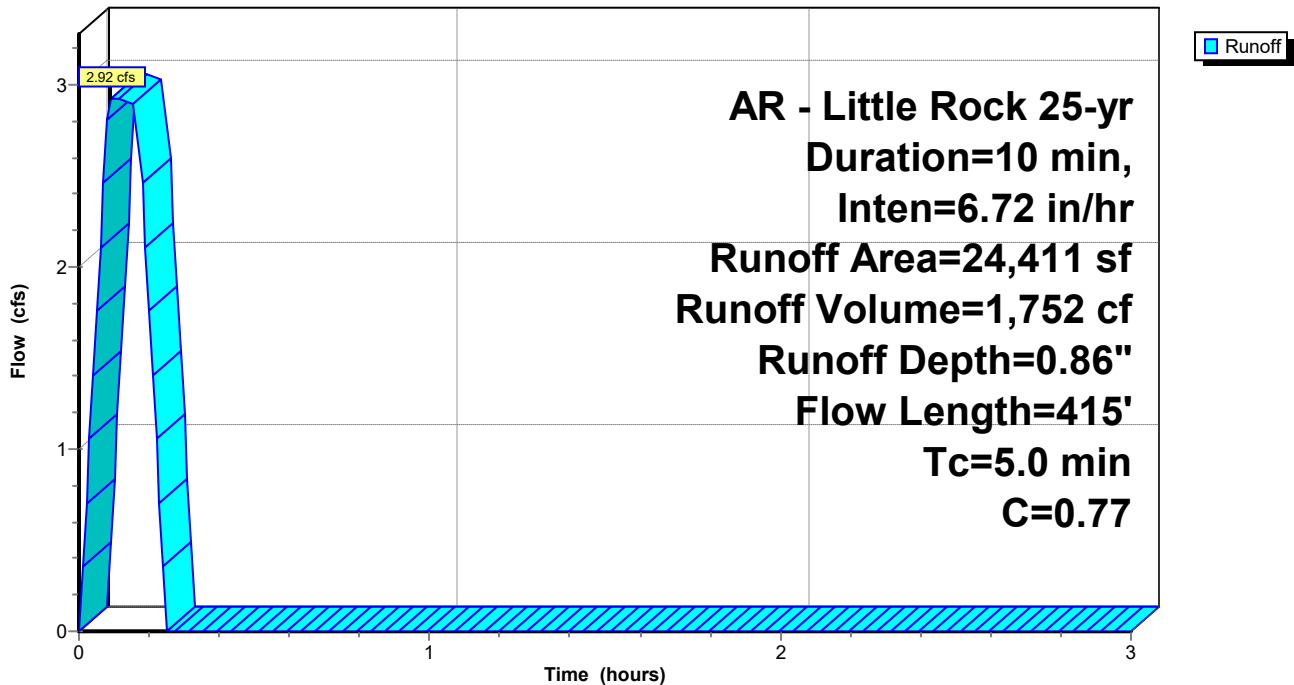
AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

Area (sf)	C	Description
8,845	0.45	Rip Rap Embankment
15,566	0.95	Roof, Drives, Sidewalks
24,411	0.77	Weighted Average
8,845		36.23% Pervious Area
15,566		63.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	415		1.38		Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D2: Drainage Basin D2**

Hydrograph





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AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

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**Summary for Subcatchment D3: Drainage Basin D3**

Runoff = 2.16 cfs @ 0.09 hrs, Volume= 1,297 cf, Depth= 1.02"

Routed to Reach P-A2 : Pipe A2

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

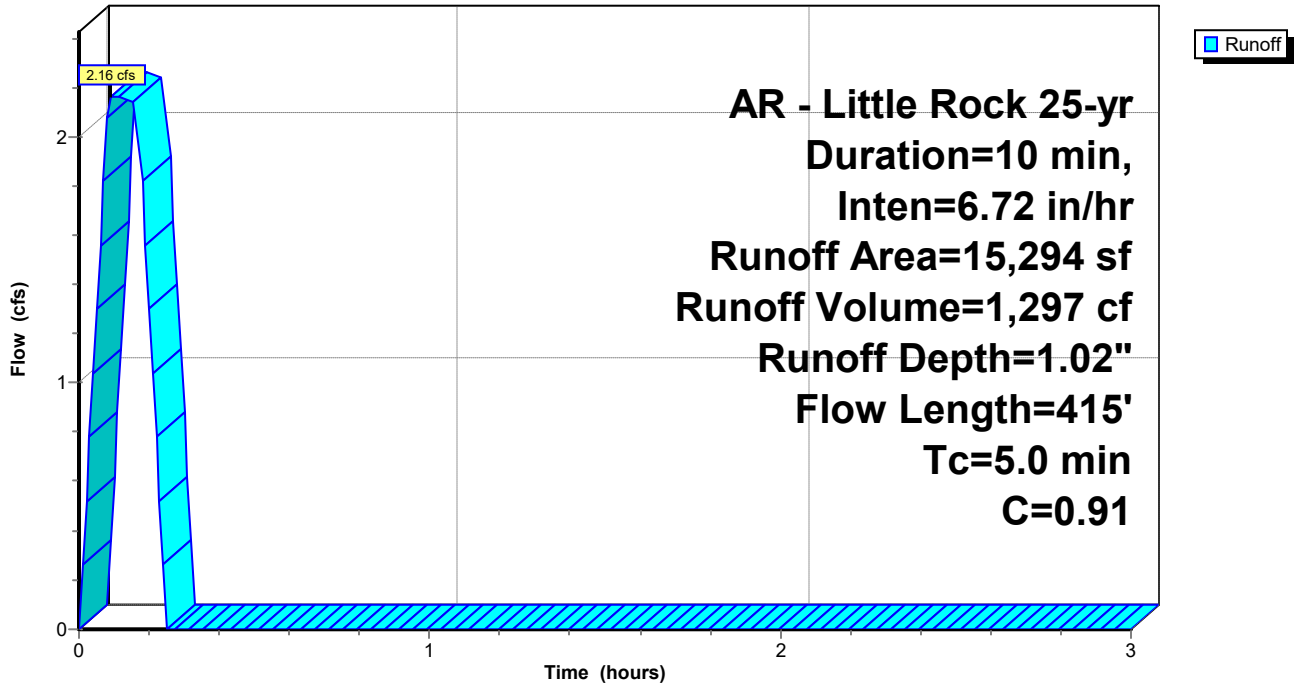
AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

Area (sf)	C	Description
1,065	0.40	Sod Yard
14,229	0.95	Paving, Sidewalks
15,294	0.91	Weighted Average
1,065		6.96% Pervious Area
14,229		93.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	415		1.38		Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D3: Drainage Basin D3**

Hydrograph



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AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

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**Summary for Subcatchment D4: Drainage Basin D4**

Runoff = 2.99 cfs @ 0.17 hrs, Volume= 1,825 cf, Depth= 0.68"

Routed to Reach P-A3 : Pipe A3

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

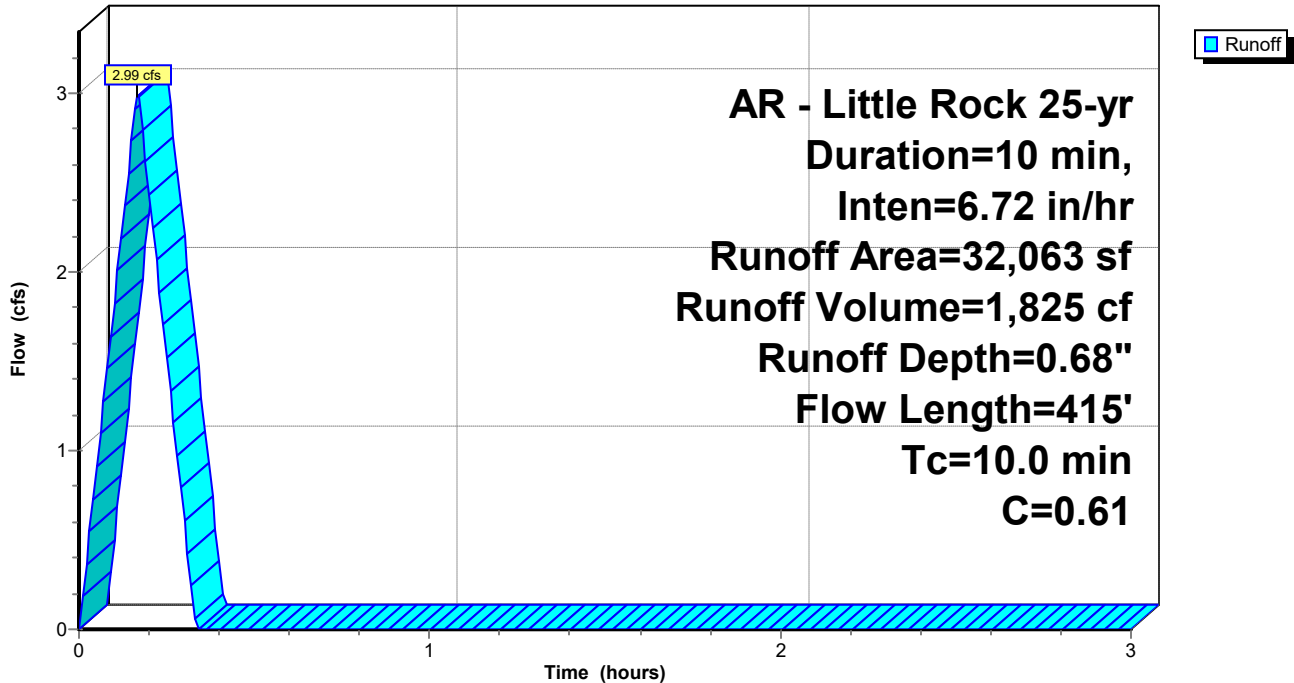
AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

Area (sf)	C	Description
20,032	0.40	
12,031	0.95	
32,063	0.61	Weighted Average
20,032		62.48% Pervious Area
12,031		37.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D4: Drainage Basin D4**

Hydrograph



**Summerwood Gym 3**

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AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

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**Summary for Subcatchment D5: Drainage Basin D5**

Runoff = 4.34 cfs @ 0.09 hrs, Volume= 2,600 cf, Depth= 0.75"  
 Routed to Pond DP1 : Re-Established East Pond

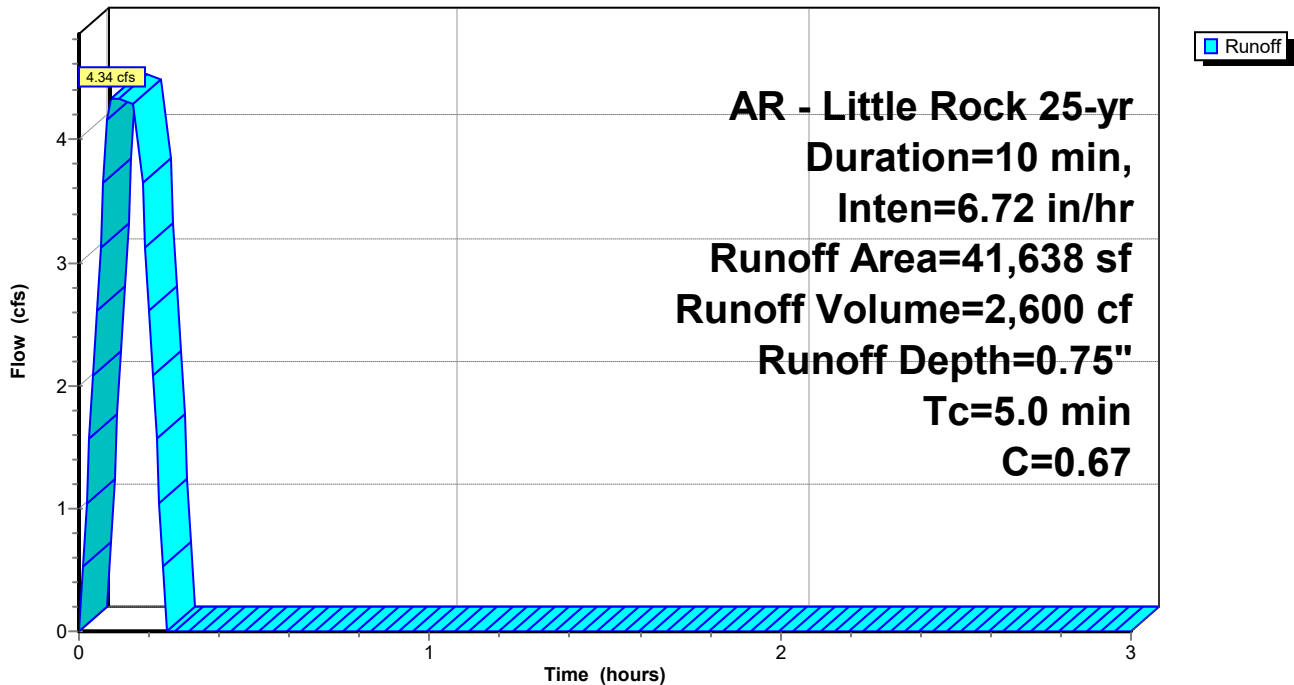
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
 AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

Area (sf)	C	Description
21,201	0.40	Sod Yard, Natural Vegetation
20,437	0.95	Paving, Sidewalks
41,638	0.67	Weighted Average
21,201		50.92% Pervious Area
20,437		49.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D5: Drainage Basin D5**

Hydrograph



# Summerwood Gym 3

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AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

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## Summary for Subcatchment D6: Drainage Basin D6

Runoff = 2.82 cfs @ 0.09 hrs, Volume= 1,692 cf, Depth= 1.06"  
Routed to Pond DP1 : Re-Established East Pond

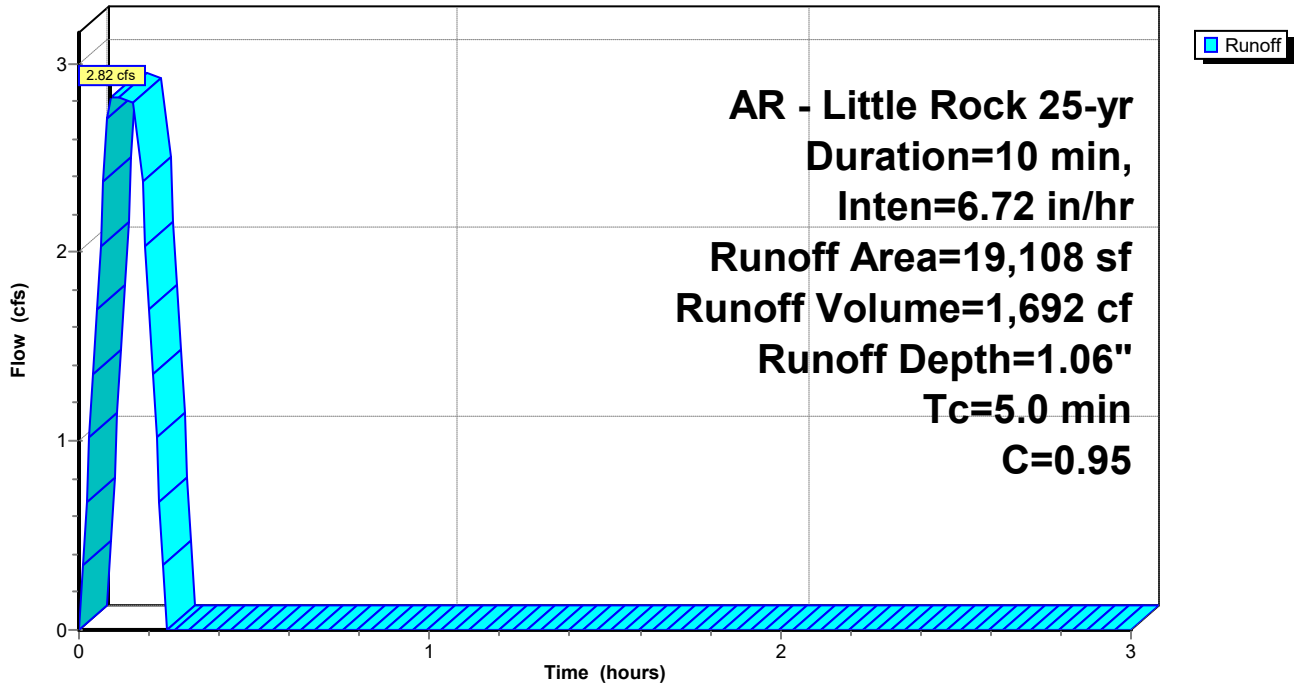
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

Area (sf)	C	Description
19,108	0.95	Roof
19,108		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Overland Concentrated Flow (Min)

## Subcatchment D6: Drainage Basin D6

Hydrograph



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AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

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**Summary for Subcatchment D7: Drainage Basin D7**

Runoff = 2.10 cfs @ 0.09 hrs, Volume= 1,258 cf, Depth= 0.60"  
 Routed to Link Post-Dev : APPROX DISCHARGE

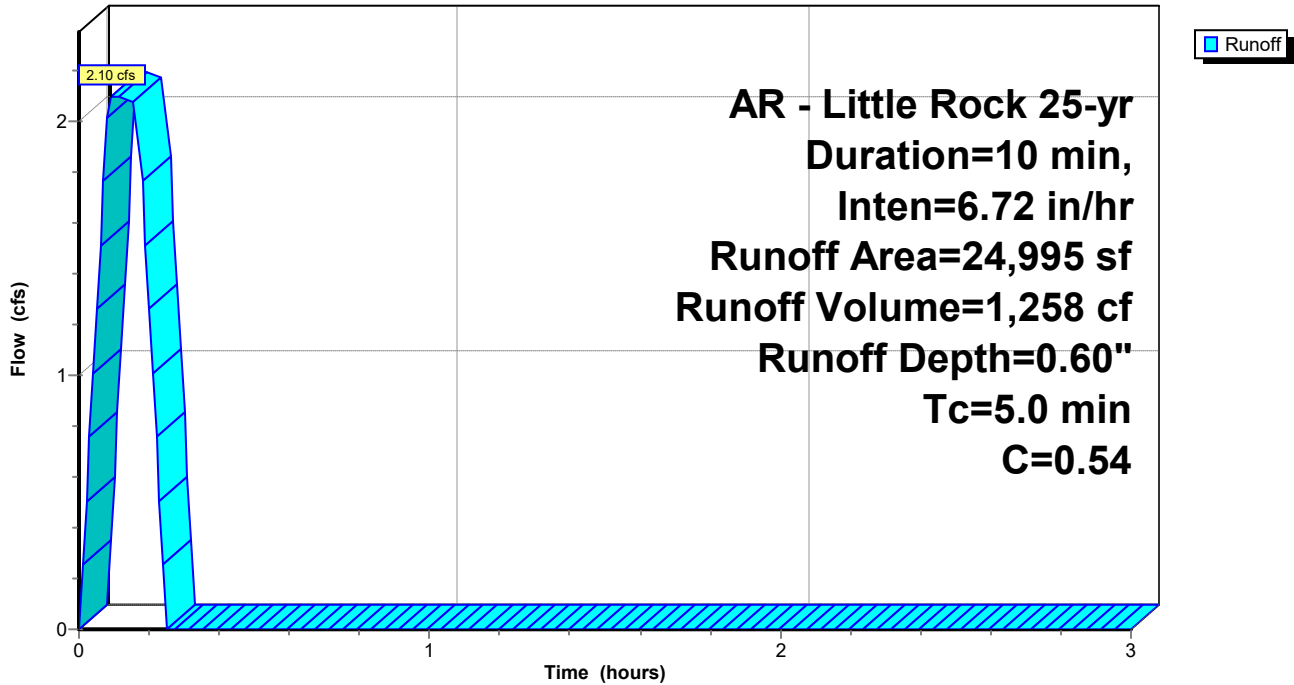
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
 AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

Area (sf)	C	Description
18,798	0.40	Sod Yard, Natural Vegetation
6,197	0.95	Paving, Sidewalks
24,995	0.54	Weighted Average
18,798		75.21% Pervious Area
6,197		24.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D7: Drainage Basin D7**

Hydrograph



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AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

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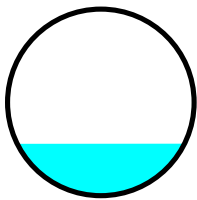
## Summary for Reach P-A1: Pipe A1

Inflow Area = 24,411 sf, 63.77% Impervious, Inflow Depth = 0.86" for 25-yr event  
Inflow = 2.92 cfs @ 0.09 hrs, Volume= 1,752 cf  
Outflow = 2.92 cfs @ 0.11 hrs, Volume= 1,752 cf, Atten= 0%, Lag= 1.2 min  
Routed to Reach P-A2 : Pipe A2

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Max. Velocity= 7.28 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 5.29 fps, Avg. Travel Time= 0.2 min

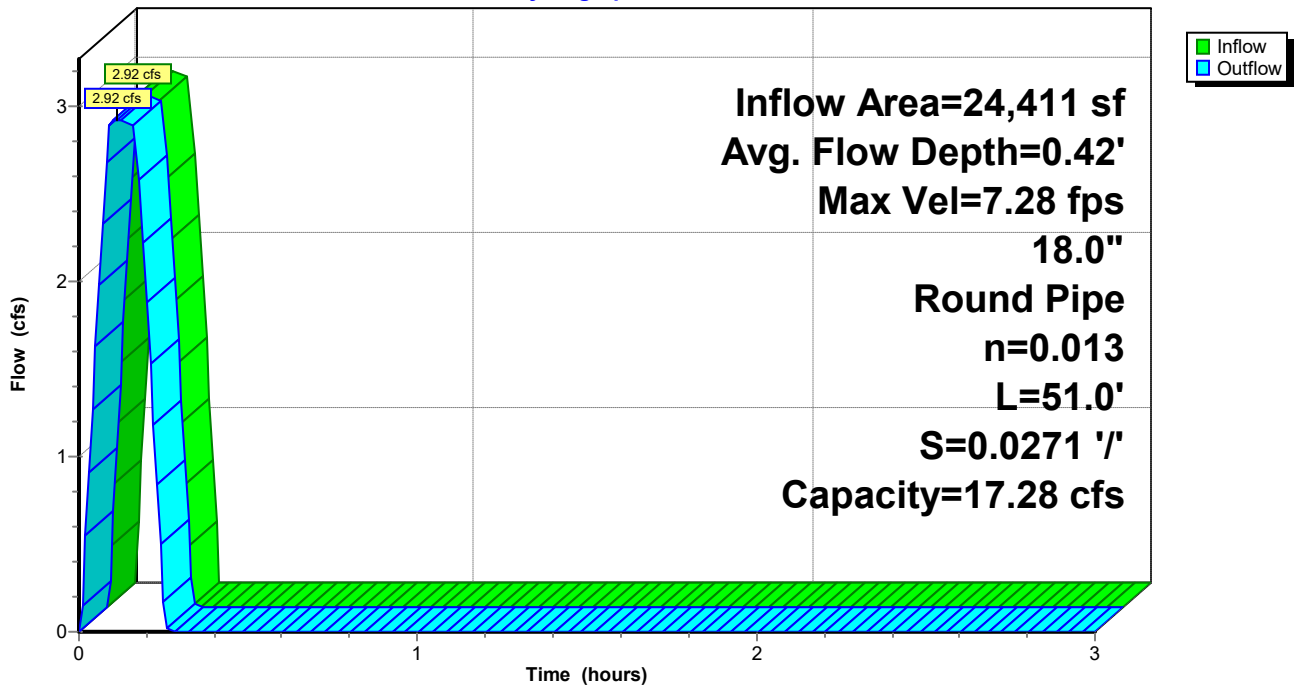
Peak Storage= 20 cf @ 0.09 hrs  
Average Depth at Peak Storage= 0.42' , Surface Width= 1.34'  
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.28 cfs

18.0" Round Pipe  
n= 0.013 Corrugated PE, smooth interior  
Length= 51.0' Slope= 0.0271 '/'  
Inlet Invert= 408.33', Outlet Invert= 406.95'



## Reach P-A1: Pipe A1

Hydrograph



**Summerwood Gym 3**

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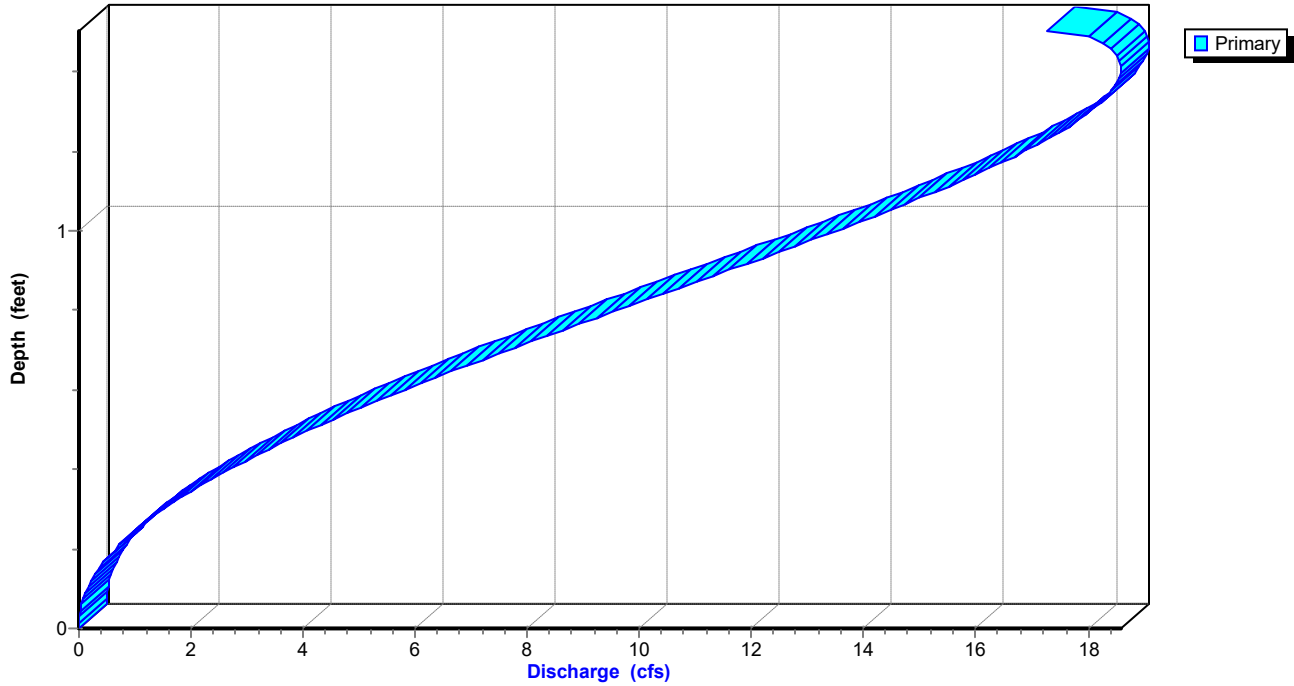
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AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

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**Reach P-A1: Pipe A1**

Stage-Discharge



**Summerwood Gym 3***AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr*

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**Stage-Area-Storage for Reach P-A1: Pipe A1**

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
408.33	0.0	0	409.37	1.3	67
408.35	0.0	0	409.39	1.3	68
408.37	0.0	1	409.41	1.4	69
408.39	0.0	1	409.43	1.4	71
408.41	0.0	2	409.45	1.4	72
408.43	0.1	3	409.47	1.4	73
408.45	0.1	3	409.49	1.5	75
408.47	0.1	4	409.51	1.5	76
408.49	0.1	5	409.53	1.5	77
408.51	0.1	6	409.55	1.5	78
408.53	0.1	7	409.57	1.6	80
408.55	0.2	8	409.59	1.6	81
408.57	0.2	9	409.61	1.6	82
408.59	0.2	10	409.63	1.6	83
408.61	0.2	12	409.65	1.6	84
408.63	0.3	13	409.67	1.7	85
408.65	0.3	14	409.69	1.7	86
408.67	0.3	15	409.71	1.7	87
408.69	0.3	17	409.73	1.7	88
408.71	0.4	18	409.75	1.7	88
408.73	0.4	19	409.77	1.7	89
408.75	0.4	21	409.79	1.8	89
408.77	0.4	22	409.81	1.8	90
408.79	0.5	23	409.83	<b>1.8</b>	<b>90</b>
408.81	0.5	25			
408.83	0.5	26			
408.85	0.5	28			
408.87	0.6	29			
408.89	0.6	31			
408.91	0.6	32			
408.93	0.7	34			
408.95	0.7	35			
408.97	0.7	37			
408.99	0.7	38			
409.01	0.8	40			
409.03	0.8	41			
409.05	0.8	43			
409.07	0.9	44			
409.09	0.9	46			
409.11	0.9	47			
409.13	1.0	49			
409.15	1.0	50			
409.17	1.0	52			
409.19	1.0	53			
409.21	1.1	55			
409.23	1.1	56			
409.25	1.1	58			
409.27	1.2	59			
409.29	1.2	61			
409.31	1.2	62			
409.33	1.3	64			
409.35	1.3	65			



# Summerwood Gym 3

Prepared by Phillip Lewis Engineering

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AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

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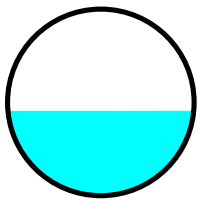
## Summary for Reach P-A2: Pipe A2

Inflow Area = 39,705 sf, 75.04% Impervious, Inflow Depth = 0.92" for 25-yr event  
Inflow = 5.09 cfs @ 0.11 hrs, Volume= 3,048 cf  
Outflow = 5.09 cfs @ 0.15 hrs, Volume= 3,048 cf, Atten= 0%, Lag= 2.4 min  
Routed to Reach P-A3 : Pipe A3

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Max. Velocity= 6.49 fps, Min. Travel Time= 0.5 min  
Avg. Velocity = 2.58 fps, Avg. Travel Time= 1.1 min

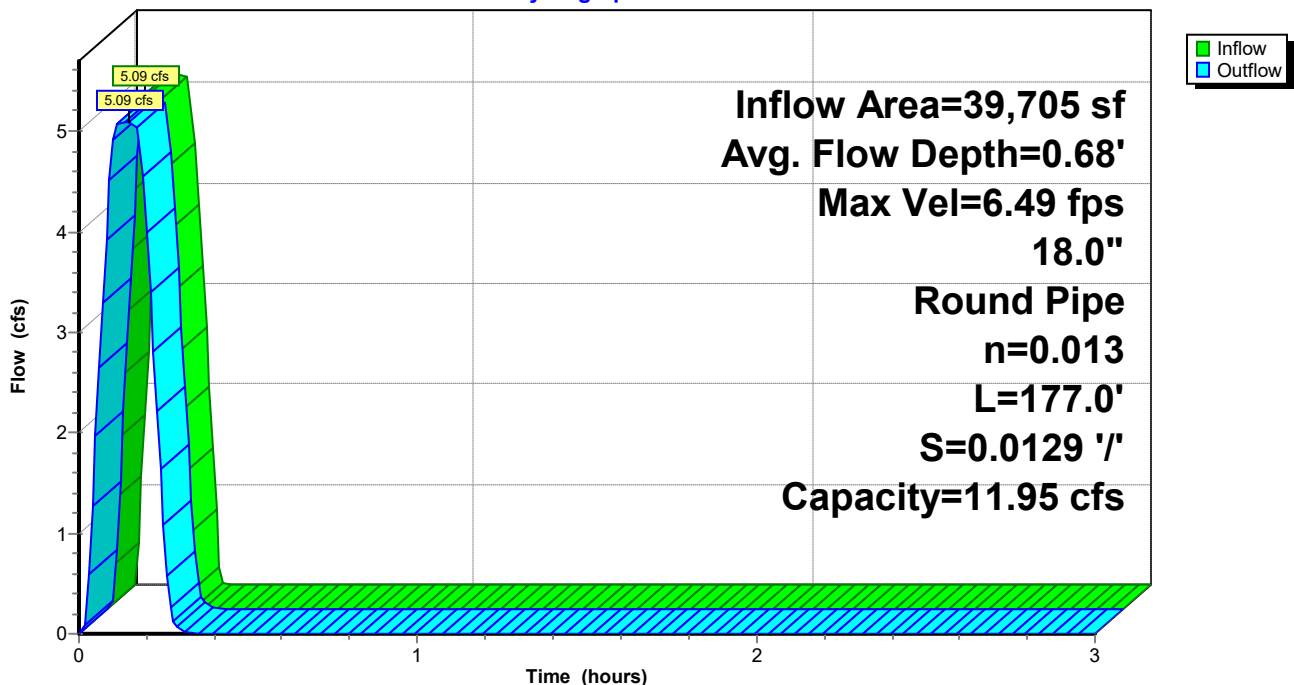
Peak Storage= 139 cf @ 0.14 hrs  
Average Depth at Peak Storage= 0.68' , Surface Width= 1.49'  
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 11.95 cfs

18.0" Round Pipe  
n= 0.013 Corrugated PE, smooth interior  
Length= 177.0' Slope= 0.0129 '/'  
Inlet Invert= 406.85', Outlet Invert= 404.56'



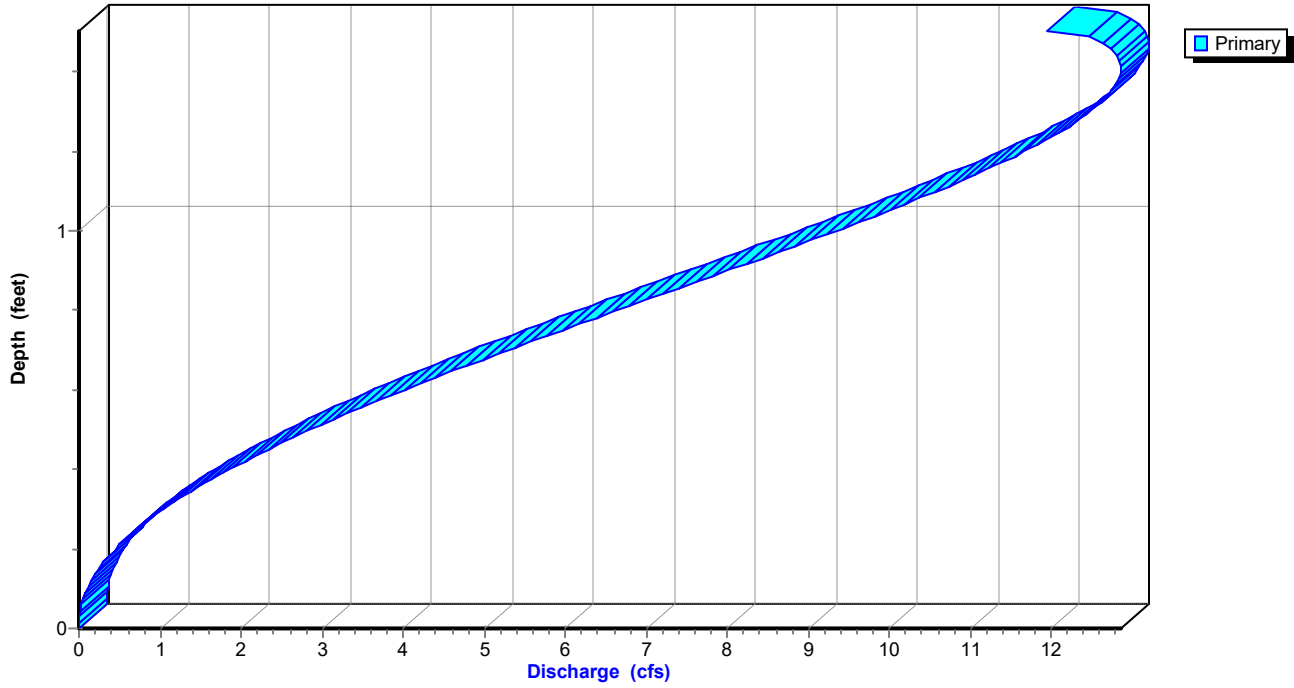
## Reach P-A2: Pipe A2

Hydrograph



### Reach P-A2: Pipe A2

Stage-Discharge



**Summerwood Gym 3***AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr*

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**Stage-Area-Storage for Reach P-A2: Pipe A2**

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
406.85	0.0	0	407.89	1.3	231
406.87	0.0	1	407.91	1.3	236
406.89	0.0	2	407.93	1.4	241
406.91	0.0	4	407.95	1.4	246
406.93	0.0	6	407.97	1.4	250
406.95	0.1	9	407.99	1.4	255
406.97	0.1	12	408.01	1.5	260
406.99	0.1	15	408.03	1.5	264
407.01	0.1	18	408.05	1.5	268
407.03	0.1	21	408.07	1.5	272
407.05	0.1	25	408.09	1.6	277
407.07	0.2	28	408.11	1.6	280
407.09	0.2	32	408.13	1.6	284
407.11	0.2	36	408.15	1.6	288
407.13	0.2	40	408.17	1.6	292
407.15	0.3	45	408.19	1.7	295
407.17	0.3	49	408.21	1.7	298
407.19	0.3	53	408.23	1.7	301
407.21	0.3	58	408.25	1.7	304
407.23	0.4	62	408.27	1.7	306
407.25	0.4	67	408.29	1.7	309
407.27	0.4	72	408.31	1.8	310
407.29	0.4	76	408.33	1.8	312
407.31	0.5	81	408.35	<b>1.8</b>	<b>313</b>
407.33	0.5	86			
407.35	0.5	91			
407.37	0.5	96			
407.39	0.6	101			
407.41	0.6	106			
407.43	0.6	112			
407.45	0.7	117			
407.47	0.7	122			
407.49	0.7	127			
407.51	0.7	133			
407.53	0.8	138			
407.55	0.8	143			
407.57	0.8	148			
407.59	0.9	154			
407.61	0.9	159			
407.63	0.9	164			
407.65	1.0	170			
407.67	1.0	175			
407.69	1.0	180			
407.71	1.0	185			
407.73	1.1	191			
407.75	1.1	196			
407.77	1.1	201			
407.79	1.2	206			
407.81	1.2	211			
407.83	1.2	216			
407.85	1.3	222			
407.87	1.3	226			

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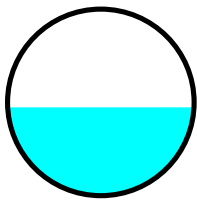
### Summary for Reach P-A3: Pipe A3

Inflow Area = 71,768 sf, 58.28% Impervious, Inflow Depth = 0.81" for 25-yr event  
Inflow = 8.08 cfs @ 0.17 hrs, Volume= 4,873 cf  
Outflow = 8.02 cfs @ 0.17 hrs, Volume= 4,873 cf, Atten= 1%, Lag= 0.2 min  
Routed to Reach P-A4 : Pipe A4

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Max. Velocity= 9.76 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 4.04 fps, Avg. Travel Time= 0.5 min

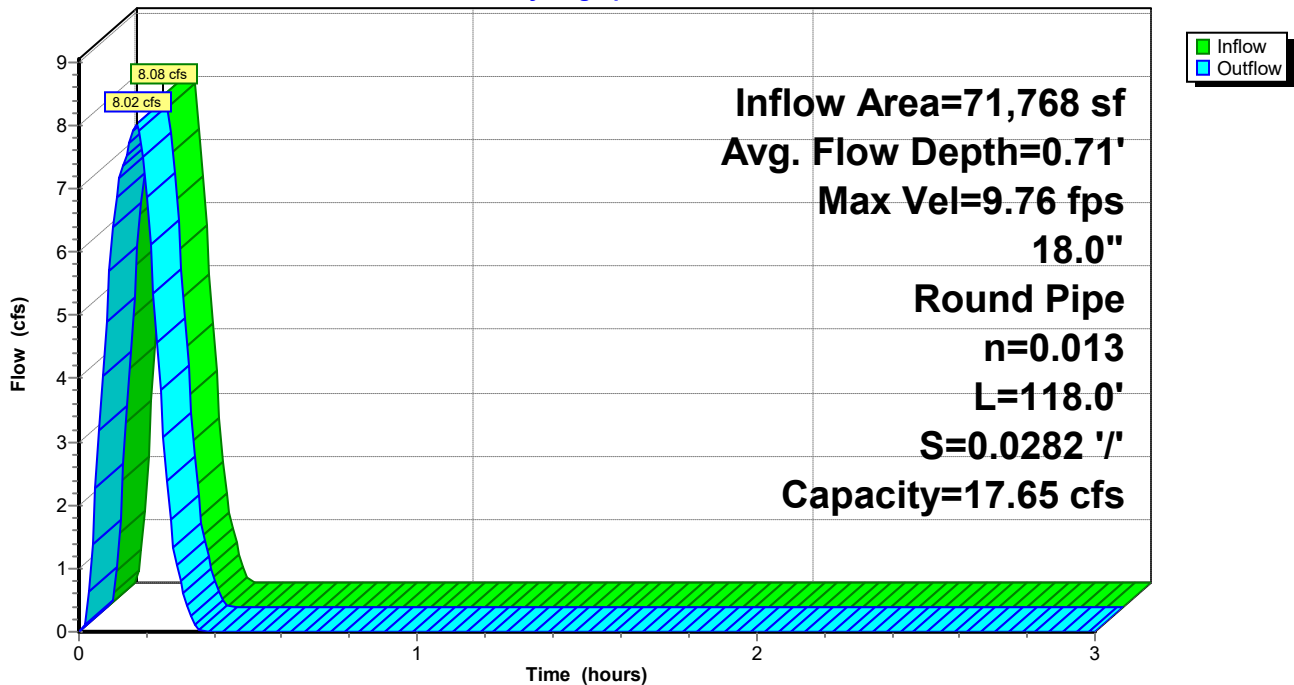
Peak Storage= 97 cf @ 0.17 hrs  
Average Depth at Peak Storage= 0.71' , Surface Width= 1.50'  
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.65 cfs

18.0" Round Pipe  
n= 0.013 Corrugated PE, smooth interior  
Length= 118.0' Slope= 0.0282 '/'  
Inlet Invert= 404.46', Outlet Invert= 401.13'



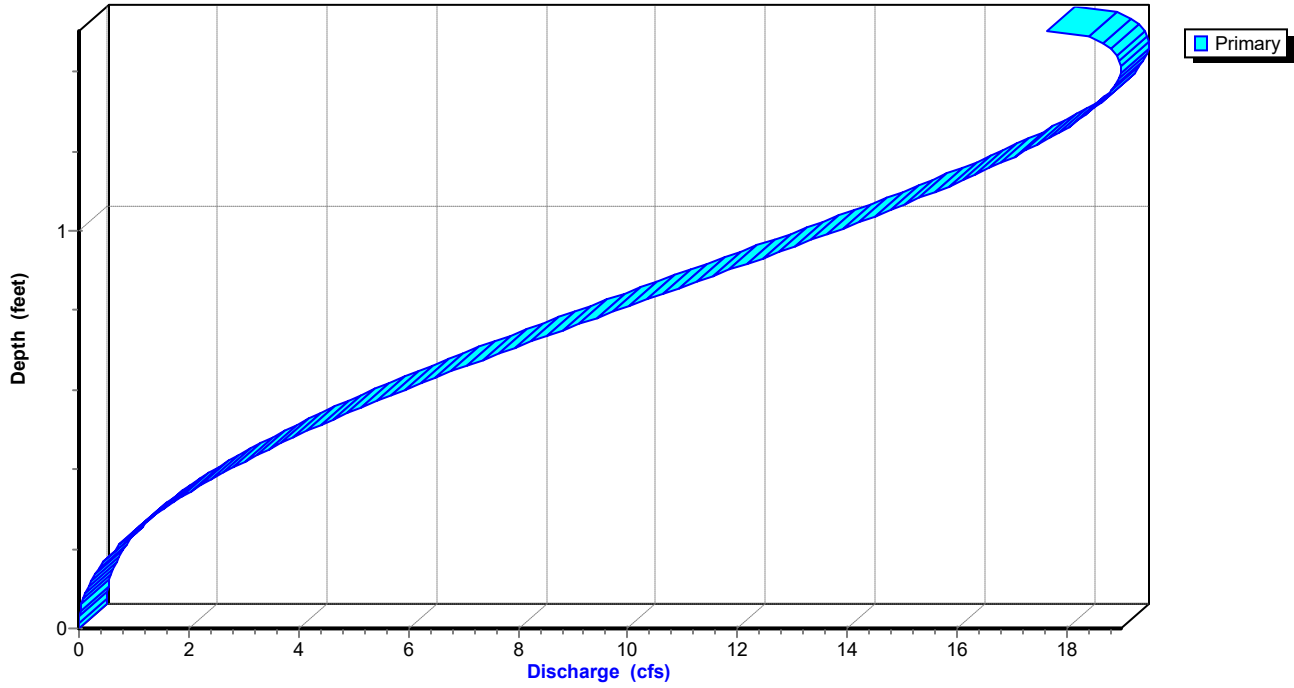
### Reach P-A3: Pipe A3

Hydrograph



### Reach P-A3: Pipe A3

Stage-Discharge



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**Stage-Area-Storage for Reach P-A3: Pipe A3**

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
404.46	0.0	0	405.50	1.3	154
404.48	0.0	1	405.52	1.3	158
404.50	0.0	2	405.54	1.4	161
404.52	0.0	3	405.56	1.4	164
404.54	0.0	4	405.58	1.4	167
404.56	0.1	6	405.60	1.4	170
404.58	0.1	8	405.62	1.5	173
404.60	0.1	10	405.64	1.5	176
404.62	0.1	12	405.66	1.5	179
404.64	0.1	14	405.68	1.5	182
404.66	0.1	17	405.70	1.6	184
404.68	0.2	19	405.72	1.6	187
404.70	0.2	22	405.74	1.6	190
404.72	0.2	24	405.76	1.6	192
404.74	0.2	27	405.78	1.6	194
404.76	0.3	30	405.80	1.7	197
404.78	0.3	33	405.82	1.7	199
404.80	0.3	35	405.84	1.7	201
404.82	0.3	38	405.86	1.7	203
404.84	0.4	42	405.88	1.7	204
404.86	0.4	45	405.90	1.7	206
404.88	0.4	48	405.92	1.8	207
404.90	0.4	51	405.94	1.8	208
404.92	0.5	54	405.96	<b>1.8</b>	<b>209</b>
404.94	0.5	58			
404.96	0.5	61			
404.98	0.5	64			
405.00	0.6	68			
405.02	0.6	71			
405.04	0.6	74			
405.06	0.7	78			
405.08	0.7	81			
405.10	0.7	85			
405.12	0.7	88			
405.14	0.8	92			
405.16	0.8	95			
405.18	0.8	99			
405.20	0.9	102			
405.22	0.9	106			
405.24	0.9	110			
405.26	1.0	113			
405.28	1.0	117			
405.30	1.0	120			
405.32	1.0	124			
405.34	1.1	127			
405.36	1.1	131			
405.38	1.1	134			
405.40	1.2	138			
405.42	1.2	141			
405.44	1.2	144			
405.46	1.3	148			
405.48	1.3	151			

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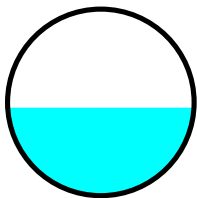
## Summary for Reach P-A4: Pipe A4

Inflow Area = 71,768 sf, 58.28% Impervious, Inflow Depth = 0.81" for 25-yr event  
Inflow = 8.02 cfs @ 0.17 hrs, Volume= 4,873 cf  
Outflow = 7.99 cfs @ 0.18 hrs, Volume= 4,873 cf, Atten= 0%, Lag= 0.4 min  
Routed to Pond DP1 : Re-Established East Pond

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Max. Velocity= 9.74 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 3.84 fps, Avg. Travel Time= 0.6 min

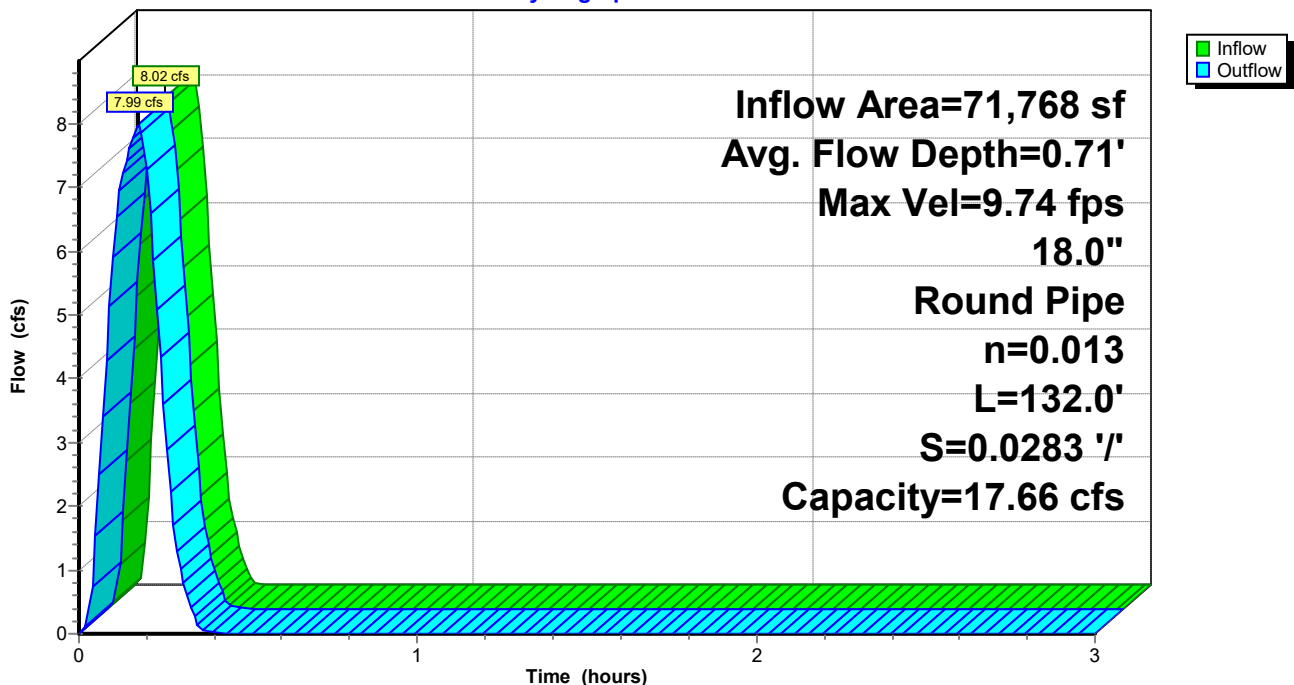
Peak Storage= 108 cf @ 0.17 hrs  
Average Depth at Peak Storage= 0.71' , Surface Width= 1.50'  
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.66 cfs

18.0" Round Pipe  
n= 0.013 Corrugated PE, smooth interior  
Length= 132.0' Slope= 0.0283 '/'  
Inlet Invert= 401.03', Outlet Invert= 397.30'



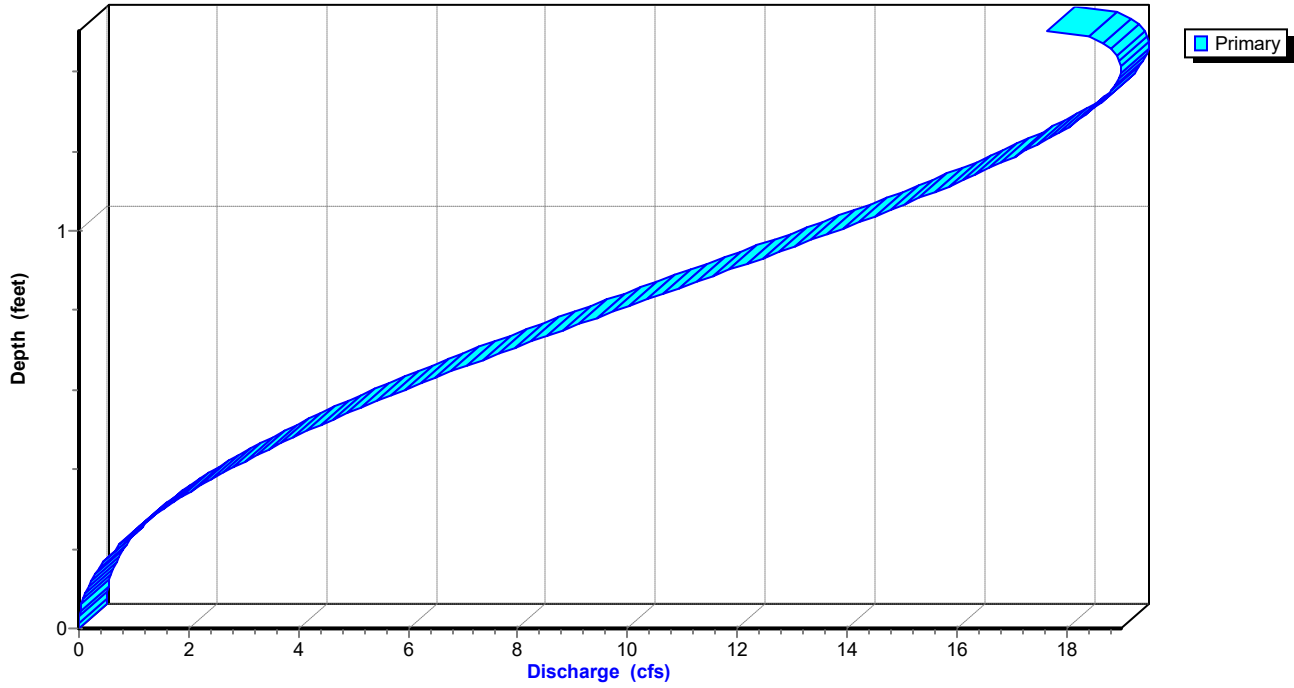
## Reach P-A4: Pipe A4

Hydrograph



### Reach P-A4: Pipe A4

Stage-Discharge





**Summerwood Gym 3***AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr*

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**Stage-Area-Storage for Reach P-A4: Pipe A4**

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
401.03	0.0	0	402.07	1.3	173
401.05	0.0	1	402.09	1.3	176
401.07	0.0	2	402.11	1.4	180
401.09	0.0	3	402.13	1.4	183
401.11	0.0	5	402.15	1.4	187
401.13	0.1	7	402.17	1.4	190
401.15	0.1	9	402.19	1.5	194
401.17	0.1	11	402.21	1.5	197
401.19	0.1	13	402.23	1.5	200
401.21	0.1	16	402.25	1.5	203
401.23	0.1	18	402.27	1.6	206
401.25	0.2	21	402.29	1.6	209
401.27	0.2	24	402.31	1.6	212
401.29	0.2	27	402.33	1.6	215
401.31	0.2	30	402.35	1.6	217
401.33	0.3	33	402.37	1.7	220
401.35	0.3	36	402.39	1.7	222
401.37	0.3	40	402.41	1.7	225
401.39	0.3	43	402.43	1.7	227
401.41	0.4	46	402.45	1.7	228
401.43	0.4	50	402.47	1.7	230
401.45	0.4	53	402.49	1.8	232
401.47	0.4	57	402.51	1.8	233
401.49	0.5	61	402.53	<b>1.8</b>	<b>233</b>
401.51	0.5	64			
401.53	0.5	68			
401.55	0.5	72			
401.57	0.6	76			
401.59	0.6	79			
401.61	0.6	83			
401.63	0.7	87			
401.65	0.7	91			
401.67	0.7	95			
401.69	0.7	99			
401.71	0.8	103			
401.73	0.8	107			
401.75	0.8	111			
401.77	0.9	115			
401.79	0.9	119			
401.81	0.9	123			
401.83	1.0	127			
401.85	1.0	130			
401.87	1.0	134			
401.89	1.0	138			
401.91	1.1	142			
401.93	1.1	146			
401.95	1.1	150			
401.97	1.2	154			
401.99	1.2	158			
402.01	1.2	161			
402.03	1.3	165			
402.05	1.3	169			

### Summerwood Gym 3

AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

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### Summary for Pond DP1: Re-Established East Pond

Inflow Area = 132,514 sf, 61.41% Impervious, Inflow Depth = 0.83" for 25-yr event  
Inflow = 14.95 cfs @ 0.16 hrs, Volume= 9,164 cf  
Outflow = 7.87 cfs @ 0.22 hrs, Volume= 9,164 cf, Atten= 47%, Lag= 3.8 min  
Primary = 7.87 cfs @ 0.22 hrs, Volume= 9,164 cf  
Routed to Link Post-Dev : APPROX DISCHARGE

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Peak Elev= 398.45' @ 0.22 hrs Storage= 4,803 cf

Plug-Flow detention time= 8.8 min calculated for 9,164 cf (100% of inflow)  
Center-of-Mass det. time= 8.7 min ( 17.5 - 8.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	396.00'	8,557 cf	<b>Custom Stage Data</b> Listed below

Elevation (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
396.00	0	0
396.50	250	250
397.00	1,092	1,342
398.00	2,387	3,729
399.00	2,405	6,134
400.00	2,423	8,557

Device	Routing	Invert	Outlet Devices
#1	Primary	399.00'	<b>5.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#2	Primary	396.00'	<b>1.1' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s) 10.0' Crest Height

**Primary OutFlow** Max=7.86 cfs @ 0.22 hrs HW=398.44' (Free Discharge)

1=Sharp-Crested Rectangular Weir ( Controls 0.00 cfs)

2=Sharp-Crested Rectangular Weir (Weir Controls 7.86 cfs @ 5.26 fps)

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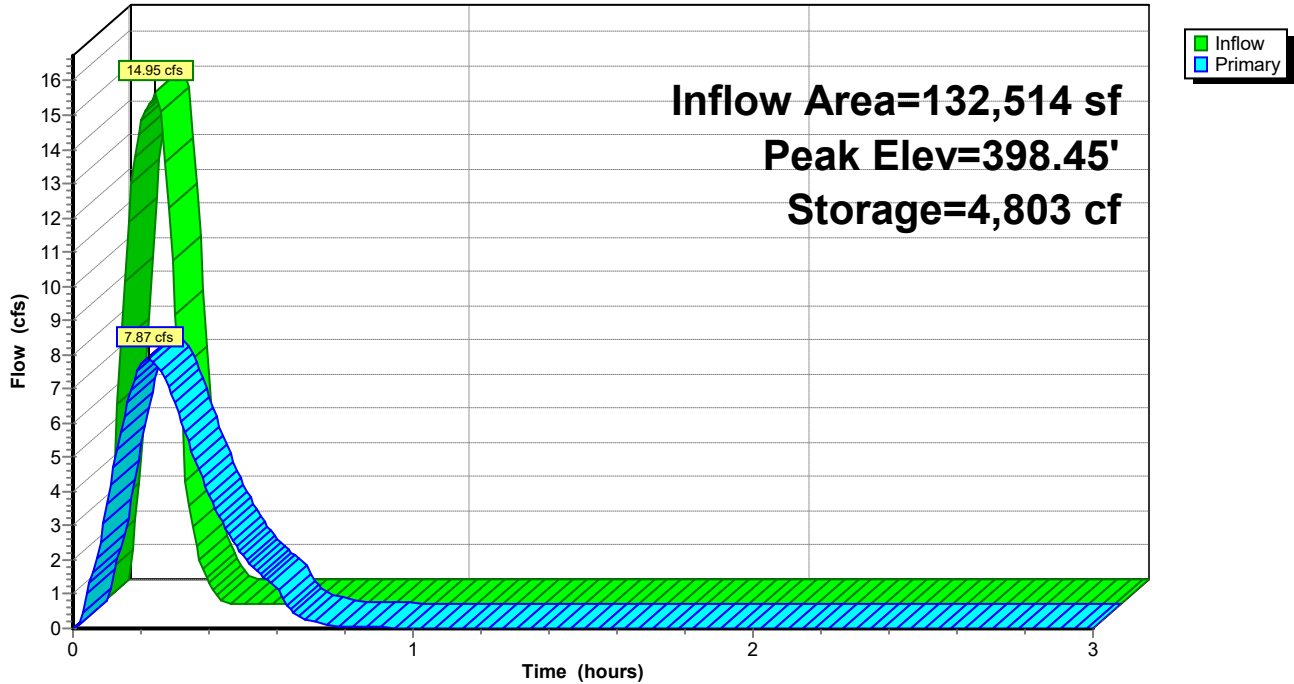
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AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr

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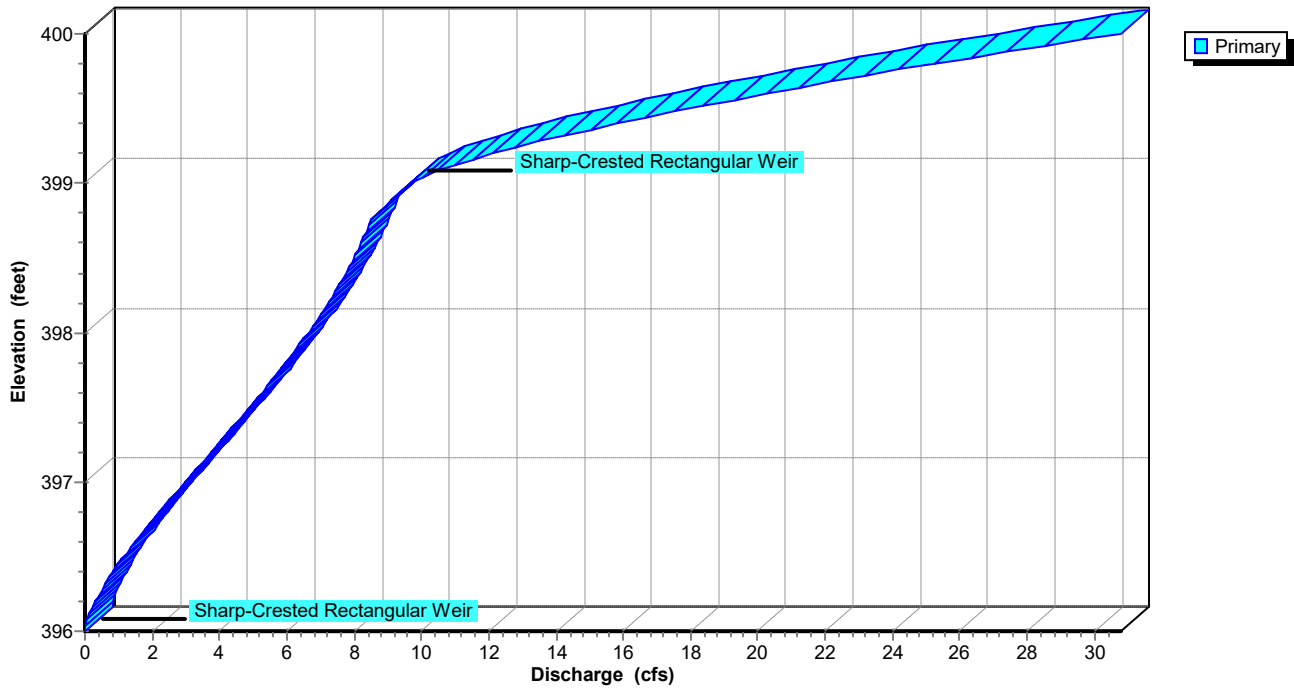
## Pond DP1: Re-Established East Pond

Hydrograph



## Pond DP1: Re-Established East Pond

Stage-Discharge



**Summerwood Gym 3**

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*AR - Little Rock 25-yr Duration=10 min, Inten=6.72 in/hr*

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**Stage-Area-Storage for Pond DP1: Re-Established East Pond**

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
396.00	0	398.60	5,172
396.05	25	398.65	5,292
396.10	50	398.70	5,412
396.15	75	398.75	5,533
396.20	100	398.80	5,653
396.25	125	398.85	5,773
396.30	150	398.90	5,893
396.35	175	398.95	6,014
396.40	200	399.00	6,134
396.45	225	399.05	6,255
396.50	250	399.10	6,376
396.55	359	399.15	6,497
396.60	468	399.20	6,619
396.65	578	399.25	6,740
396.70	687	399.30	6,861
396.75	796	399.35	6,982
396.80	905	399.40	7,103
396.85	1,014	399.45	7,224
396.90	1,124	399.50	7,346
396.95	1,233	399.55	7,467
397.00	1,342	399.60	7,588
397.05	1,461	399.65	7,709
397.10	1,581	399.70	7,830
397.15	1,700	399.75	7,951
397.20	1,819	399.80	8,072
397.25	1,939	399.85	8,194
397.30	2,058	399.90	8,315
397.35	2,177	399.95	8,436
397.40	2,297	400.00	<b>8,557</b>
397.45	2,416		
397.50	2,536		
397.55	2,655		
397.60	2,774		
397.65	2,894		
397.70	3,013		
397.75	3,132		
397.80	3,252		
397.85	3,371		
397.90	3,490		
397.95	3,610		
398.00	3,729		
398.05	3,849		
398.10	3,970		
398.15	4,090		
398.20	4,210		
398.25	4,330		
398.30	4,451		
398.35	4,571		
398.40	4,691		
398.45	4,811		
398.50	4,932		
398.55	5,052		

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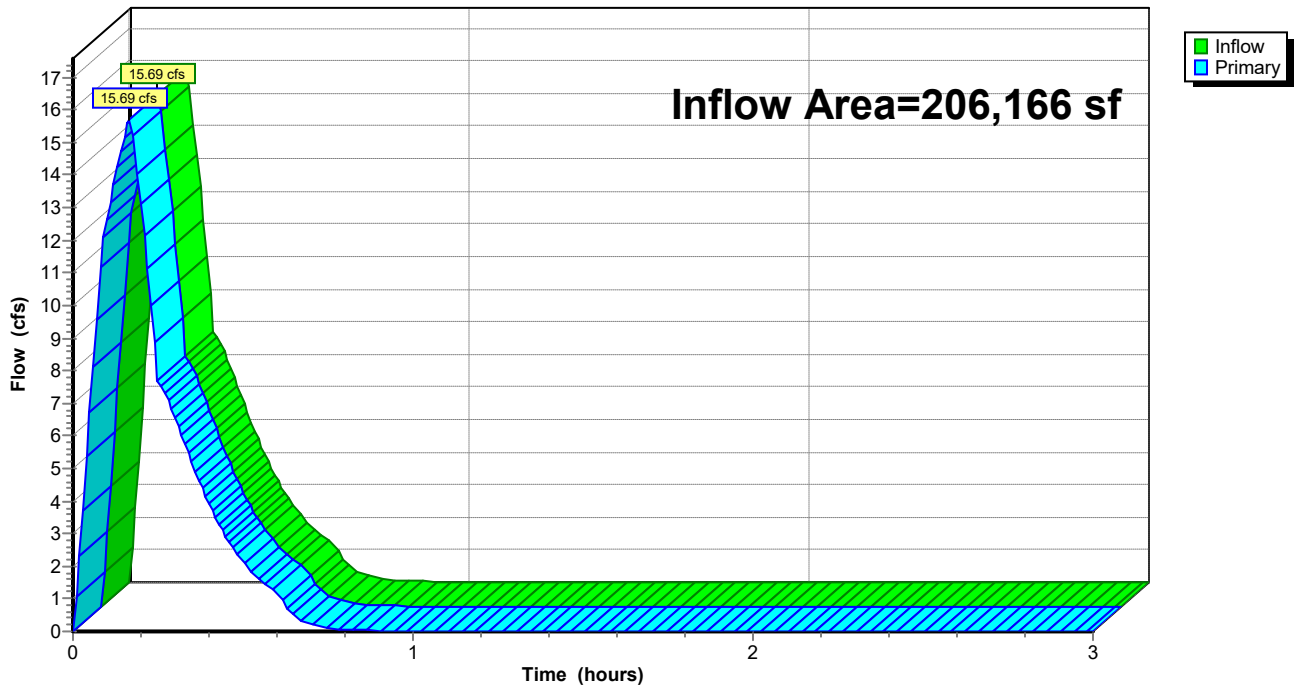
## Summary for Link Post-Dev: APPROX DISCHARGE

Inflow Area = 206,166 sf, 64.42% Impervious, Inflow Depth = 0.85" for 25-yr event  
Inflow = 15.69 cfs @ 0.17 hrs, Volume= 14,548 cf  
Primary = 15.69 cfs @ 0.17 hrs, Volume= 14,548 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

## Link Post-Dev: APPROX DISCHARGE

Hydrograph



**Summerwood Gym 3**

AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

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**Summary for Subcatchment D1: Drainage Basin D1**

Runoff = 8.18 cfs @ 0.09 hrs, Volume= 4,900 cf, Depth= 1.21"  
 Routed to Link Post-Dev : APPROX DISCHARGE

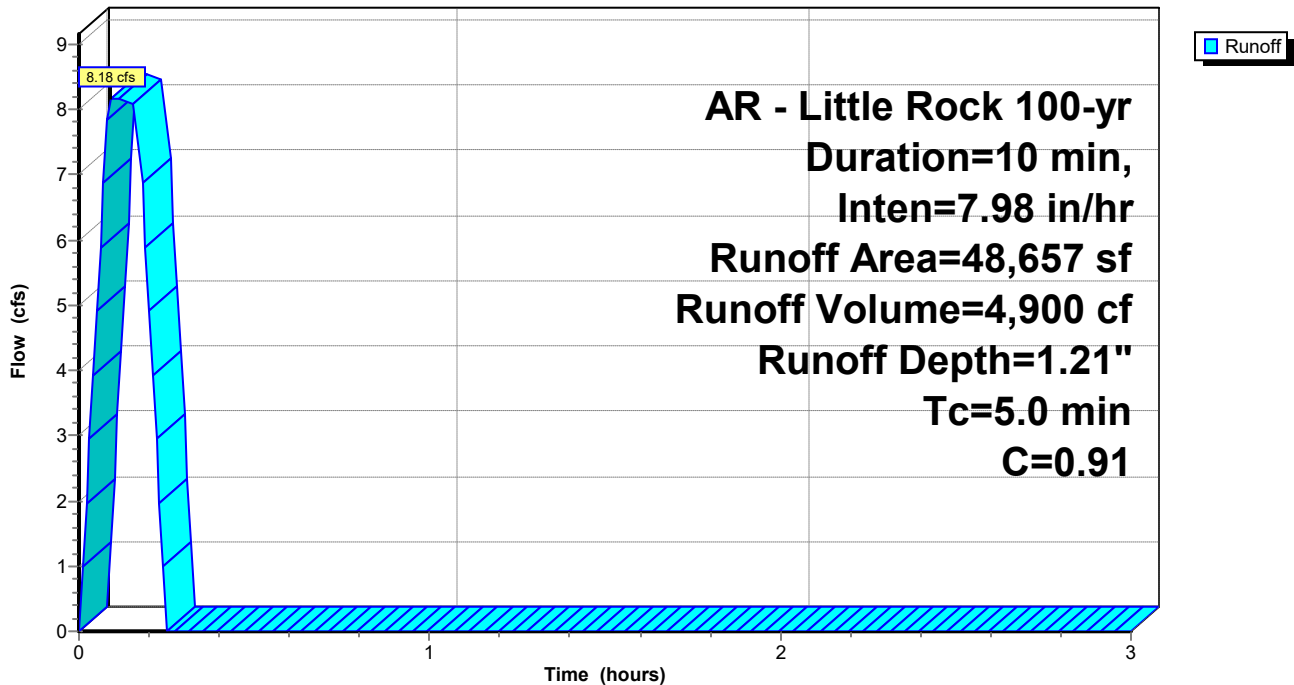
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
 AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Area (sf)	C	Description
3,421	0.40	Sod Yard
45,236	0.95	Road, Drives, Sidewalks
48,657	0.91	Weighted Average
3,421		7.03% Pervious Area
45,236		92.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D1: Drainage Basin D1**

Hydrograph



**Summerwood Gym 3**

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AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

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**Summary for Subcatchment D2: Drainage Basin D2**

Runoff = 3.47 cfs @ 0.09 hrs, Volume= 2,080 cf, Depth= 1.02"

Routed to Reach P-A1 : Pipe A1

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

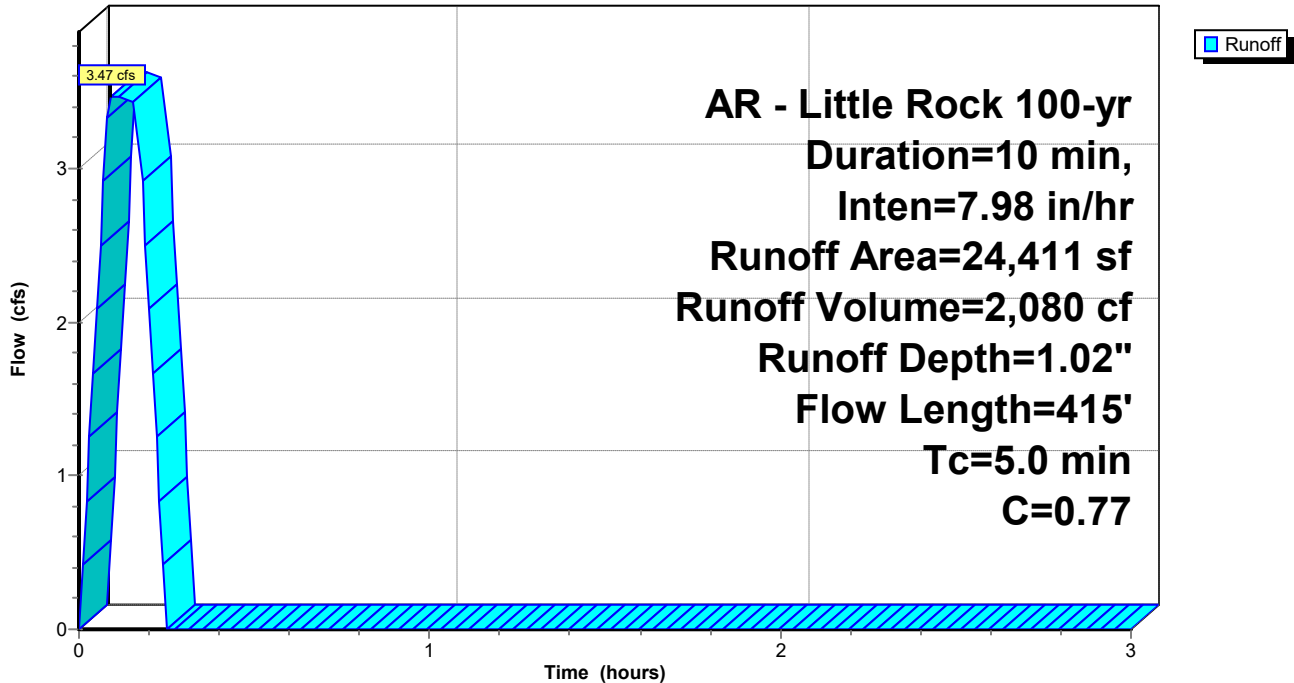
AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Area (sf)	C	Description
8,845	0.45	Rip Rap Embankment
15,566	0.95	Roof, Drives, Sidewalks
24,411	0.77	Weighted Average
8,845		36.23% Pervious Area
15,566		63.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	415		1.38		Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D2: Drainage Basin D2**

Hydrograph



**Summerwood Gym 3**

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AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

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**Summary for Subcatchment D3: Drainage Basin D3**

Runoff = 2.57 cfs @ 0.09 hrs, Volume= 1,540 cf, Depth= 1.21"

Routed to Reach P-A2 : Pipe A2

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

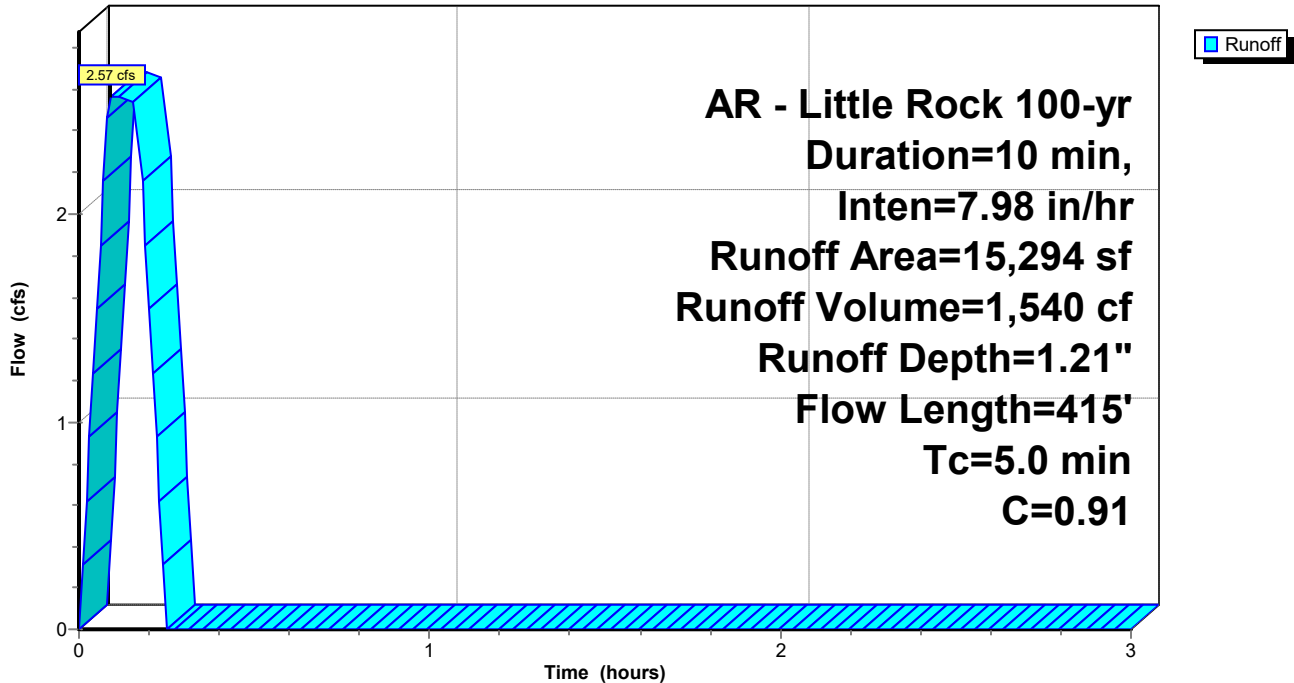
AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Area (sf)	C	Description
1,065	0.40	Sod Yard
14,229	0.95	Paving, Sidewalks
15,294	0.91	Weighted Average
1,065		6.96% Pervious Area
14,229		93.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	415		1.38		Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D3: Drainage Basin D3**

Hydrograph





**Summerwood Gym 3**

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AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

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**Summary for Subcatchment D4: Drainage Basin D4**

Runoff = 3.55 cfs @ 0.17 hrs, Volume= 2,167 cf, Depth= 0.81"

Routed to Reach P-A3 : Pipe A3

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

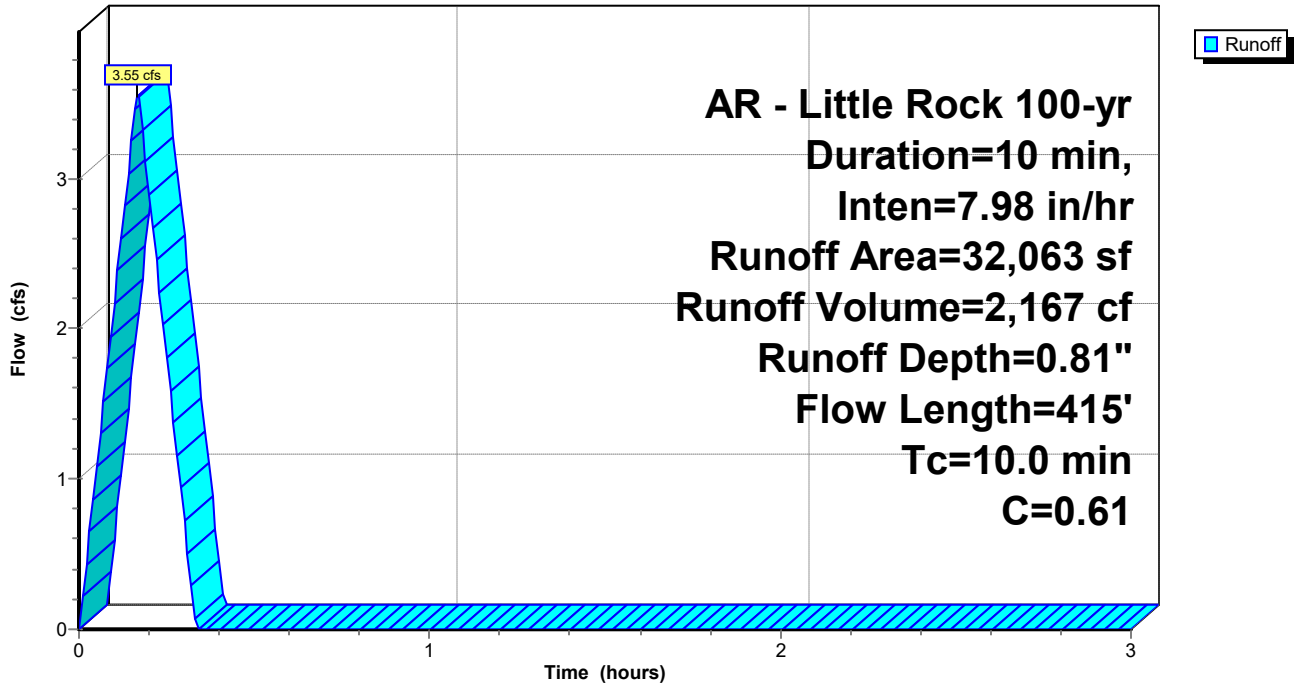
AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Area (sf)	C	Description
20,032	0.40	
12,031	0.95	
32,063	0.61	Weighted Average
20,032		62.48% Pervious Area
12,031		37.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	415		0.69		Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D4: Drainage Basin D4**

Hydrograph



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AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

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**Summary for Subcatchment D5: Drainage Basin D5**

Runoff = 5.15 cfs @ 0.09 hrs, Volume= 3,087 cf, Depth= 0.89"  
 Routed to Pond DP1 : Re-Established East Pond

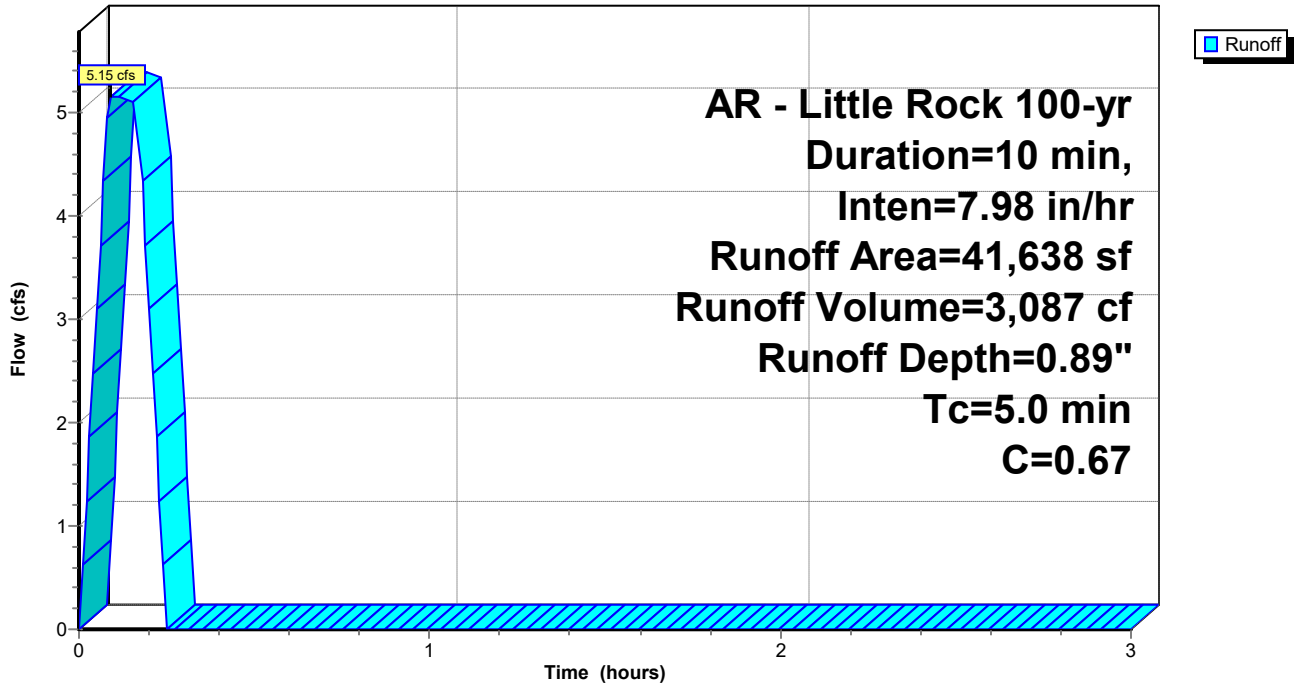
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
 AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Area (sf)	C	Description
21,201	0.40	Sod Yard, Natural Vegetation
20,437	0.95	Paving, Sidewalks
41,638	0.67	Weighted Average
21,201		50.92% Pervious Area
20,437		49.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D5: Drainage Basin D5**

Hydrograph



### Summerwood Gym 3

AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

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### Summary for Subcatchment D6: Drainage Basin D6

Runoff = 3.35 cfs @ 0.09 hrs, Volume= 2,009 cf, Depth= 1.26"  
Routed to Pond DP1 : Re-Established East Pond

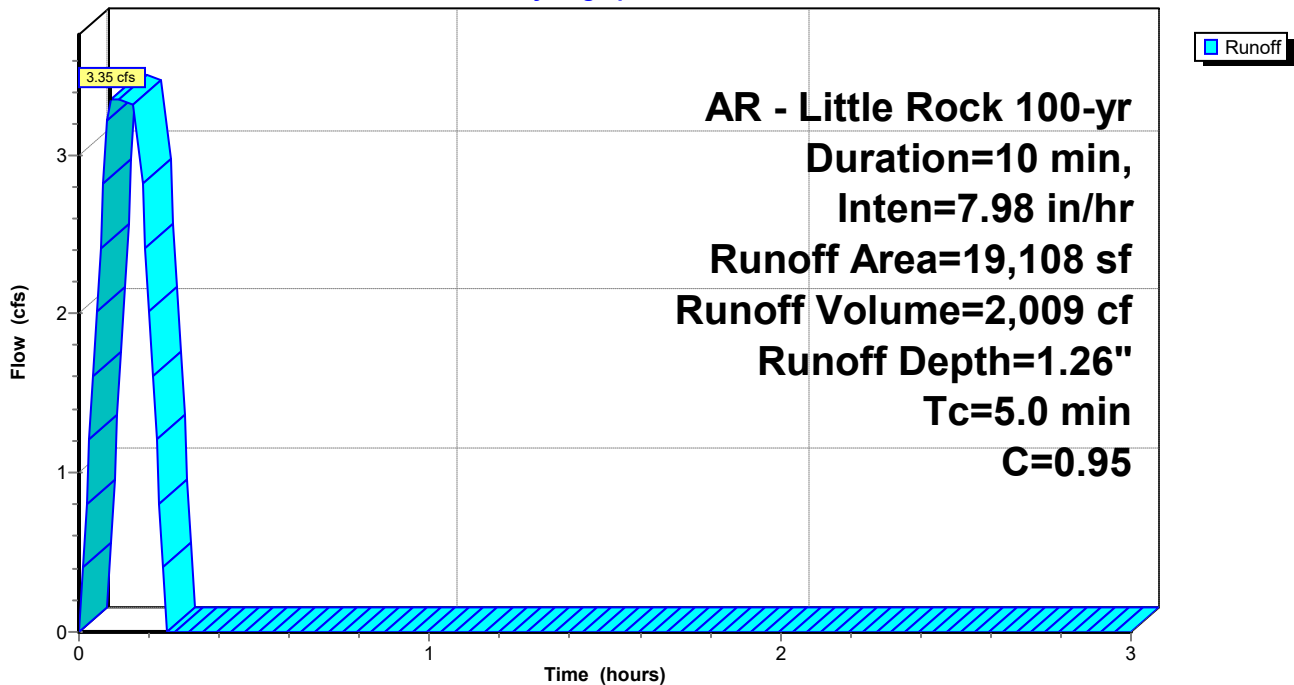
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Area (sf)	C	Description
19,108	0.95	Roof
19,108		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Overland Concentrated Flow (Min)

### Subcatchment D6: Drainage Basin D6

Hydrograph



**Summerwood Gym 3**

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AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

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**Summary for Subcatchment D7: Drainage Basin D7**

Runoff = 2.49 cfs @ 0.09 hrs, Volume= 1,494 cf, Depth= 0.72"  
 Routed to Link Post-Dev : APPROX DISCHARGE

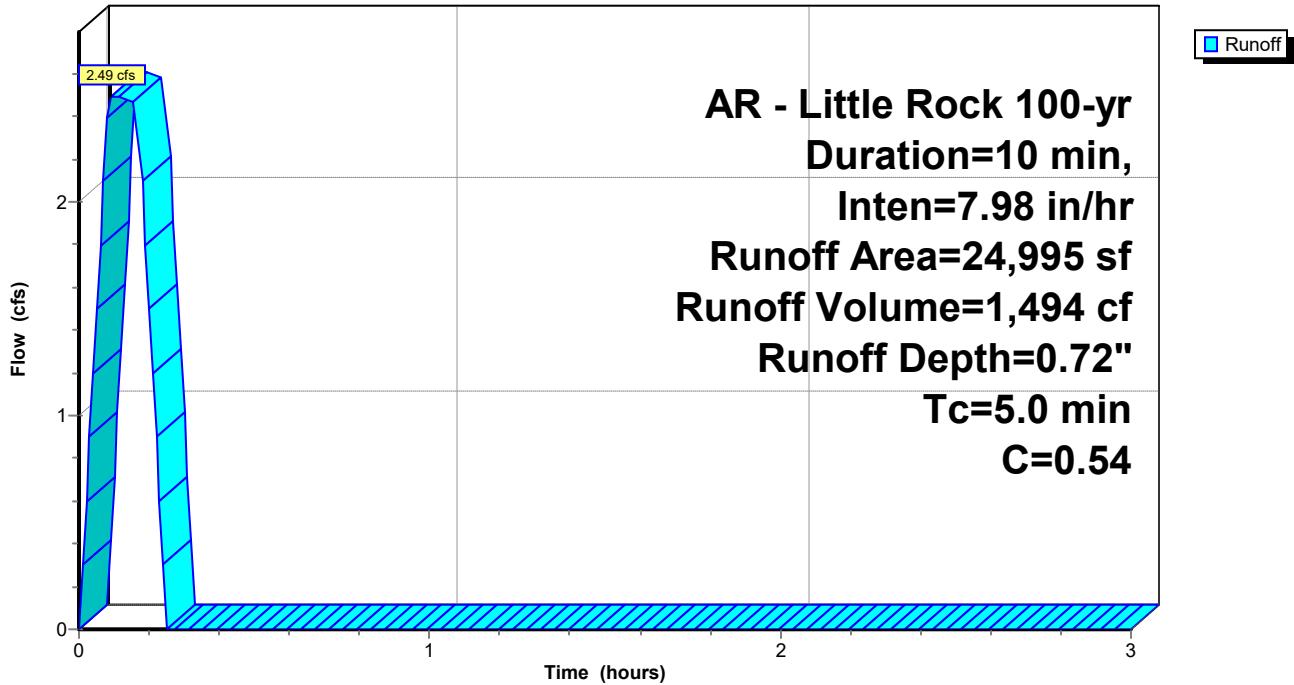
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
 AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Area (sf)	C	Description
18,798	0.40	Sod Yard, Natural Vegetation
6,197	0.95	Paving, Sidewalks
24,995	0.54	Weighted Average
18,798		75.21% Pervious Area
6,197		24.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Overland Concentrated Flow (Min)

**Subcatchment D7: Drainage Basin D7**

Hydrograph



# Summerwood Gym 3

AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

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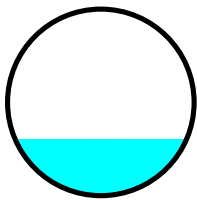
## Summary for Reach P-A1: Pipe A1

Inflow Area = 24,411 sf, 63.77% Impervious, Inflow Depth = 1.02" for 100-yr event  
Inflow = 3.47 cfs @ 0.09 hrs, Volume= 2,080 cf  
Outflow = 3.47 cfs @ 0.11 hrs, Volume= 2,080 cf, Atten= 0%, Lag= 1.2 min  
Routed to Reach P-A2 : Pipe A2

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Max. Velocity= 7.65 fps, Min. Travel Time= 0.1 min  
Avg. Velocity= 6.08 fps, Avg. Travel Time= 0.1 min

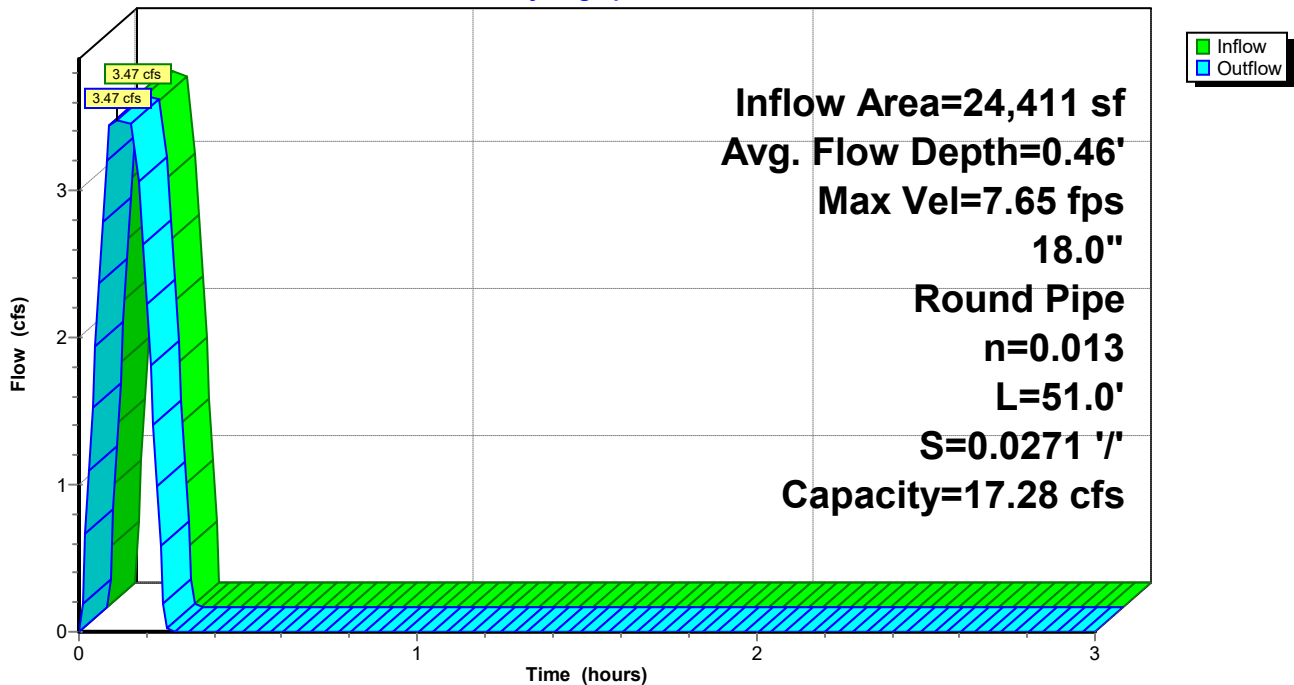
Peak Storage= 23 cf @ 0.09 hrs  
Average Depth at Peak Storage= 0.46' , Surface Width= 1.38'  
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.28 cfs

18.0" Round Pipe  
n= 0.013 Corrugated PE, smooth interior  
Length= 51.0' Slope= 0.0271 '/'  
Inlet Invert= 408.33', Outlet Invert= 406.95'



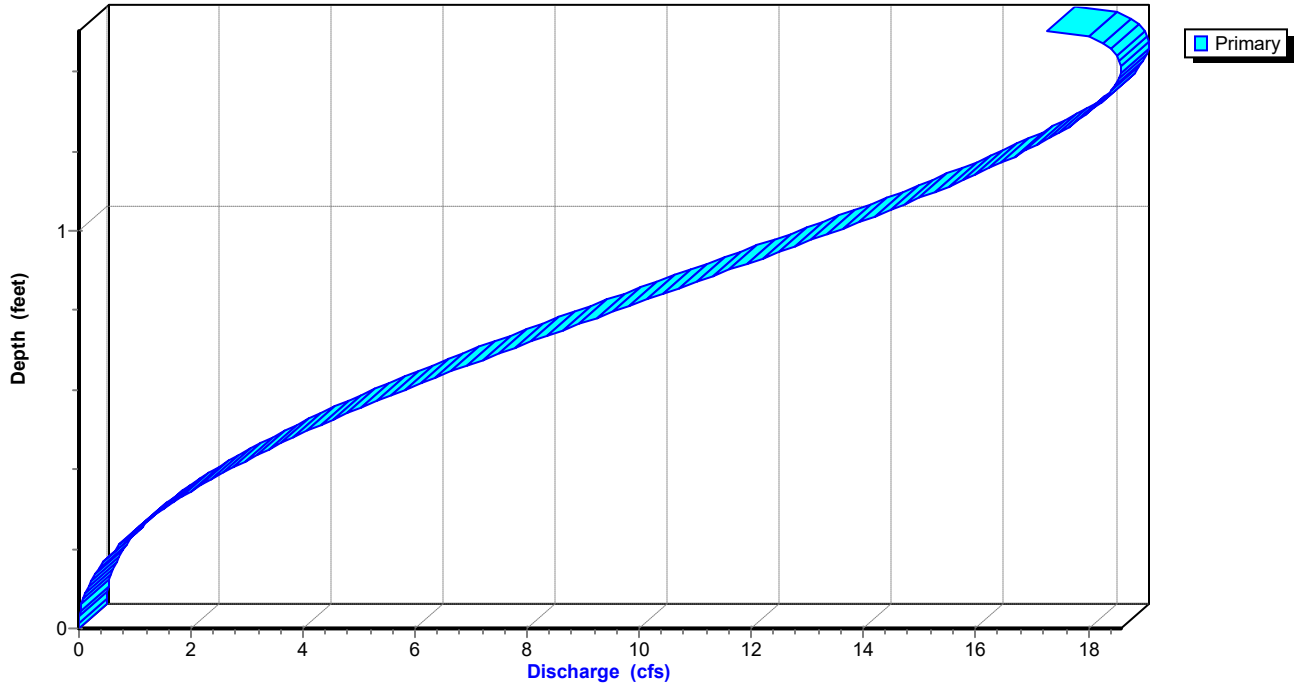
## Reach P-A1: Pipe A1

Hydrograph



### Reach P-A1: Pipe A1

Stage-Discharge



**Summerwood Gym 3***AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr*

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**Stage-Area-Storage for Reach P-A1: Pipe A1**

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
408.33	0.0	0	409.37	1.3	67
408.35	0.0	0	409.39	1.3	68
408.37	0.0	1	409.41	1.4	69
408.39	0.0	1	409.43	1.4	71
408.41	0.0	2	409.45	1.4	72
408.43	0.1	3	409.47	1.4	73
408.45	0.1	3	409.49	1.5	75
408.47	0.1	4	409.51	1.5	76
408.49	0.1	5	409.53	1.5	77
408.51	0.1	6	409.55	1.5	78
408.53	0.1	7	409.57	1.6	80
408.55	0.2	8	409.59	1.6	81
408.57	0.2	9	409.61	1.6	82
408.59	0.2	10	409.63	1.6	83
408.61	0.2	12	409.65	1.6	84
408.63	0.3	13	409.67	1.7	85
408.65	0.3	14	409.69	1.7	86
408.67	0.3	15	409.71	1.7	87
408.69	0.3	17	409.73	1.7	88
408.71	0.4	18	409.75	1.7	88
408.73	0.4	19	409.77	1.7	89
408.75	0.4	21	409.79	1.8	89
408.77	0.4	22	409.81	1.8	90
408.79	0.5	23	409.83	<b>1.8</b>	<b>90</b>
408.81	0.5	25			
408.83	0.5	26			
408.85	0.5	28			
408.87	0.6	29			
408.89	0.6	31			
408.91	0.6	32			
408.93	0.7	34			
408.95	0.7	35			
408.97	0.7	37			
408.99	0.7	38			
409.01	0.8	40			
409.03	0.8	41			
409.05	0.8	43			
409.07	0.9	44			
409.09	0.9	46			
409.11	0.9	47			
409.13	1.0	49			
409.15	1.0	50			
409.17	1.0	52			
409.19	1.0	53			
409.21	1.1	55			
409.23	1.1	56			
409.25	1.1	58			
409.27	1.2	59			
409.29	1.2	61			
409.31	1.2	62			
409.33	1.3	64			
409.35	1.3	65			

# Summerwood Gym 3

AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

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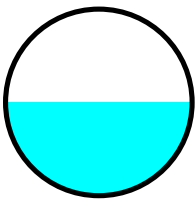
## Summary for Reach P-A2: Pipe A2

Inflow Area = 39,705 sf, 75.04% Impervious, Inflow Depth = 1.09" for 100-yr event  
Inflow = 6.04 cfs @ 0.11 hrs, Volume= 3,620 cf  
Outflow = 6.04 cfs @ 0.15 hrs, Volume= 3,620 cf, Atten= 0%, Lag= 2.4 min  
Routed to Reach P-A3 : Pipe A3

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Max. Velocity= 6.78 fps, Min. Travel Time= 0.4 min  
Avg. Velocity = 2.68 fps, Avg. Travel Time= 1.1 min

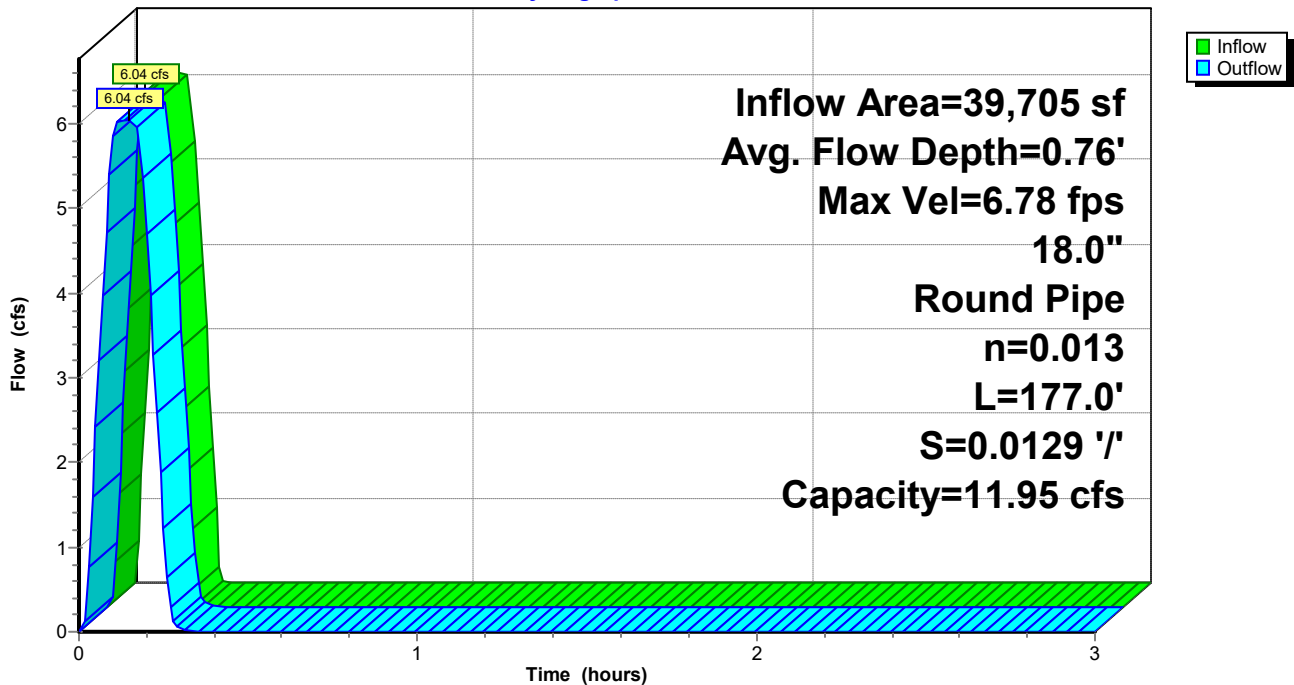
Peak Storage= 158 cf @ 0.12 hrs  
Average Depth at Peak Storage= 0.76' , Surface Width= 1.50'  
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 11.95 cfs

18.0" Round Pipe  
n= 0.013 Corrugated PE, smooth interior  
Length= 177.0' Slope= 0.0129 '/'  
Inlet Invert= 406.85', Outlet Invert= 404.56'



## Reach P-A2: Pipe A2

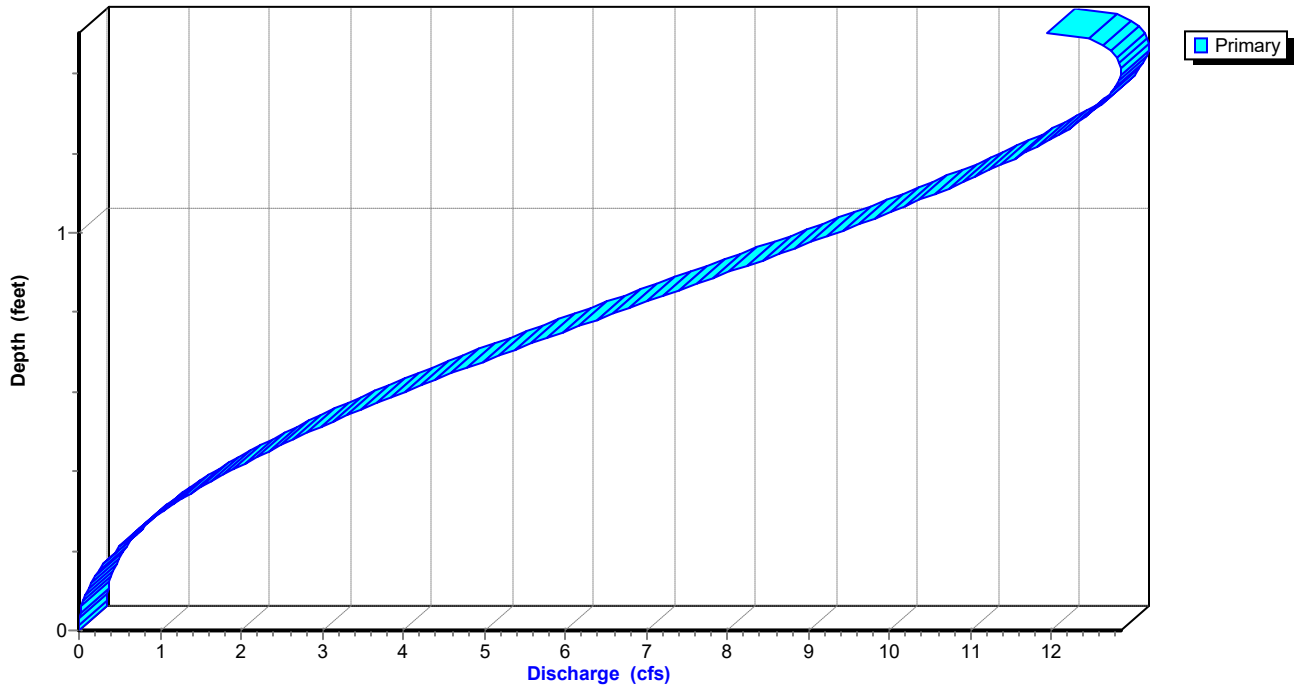
Hydrograph





### Reach P-A2: Pipe A2

Stage-Discharge



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**Stage-Area-Storage for Reach P-A2: Pipe A2**

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
406.85	0.0	0	407.89	1.3	231
406.87	0.0	1	407.91	1.3	236
406.89	0.0	2	407.93	1.4	241
406.91	0.0	4	407.95	1.4	246
406.93	0.0	6	407.97	1.4	250
406.95	0.1	9	407.99	1.4	255
406.97	0.1	12	408.01	1.5	260
406.99	0.1	15	408.03	1.5	264
407.01	0.1	18	408.05	1.5	268
407.03	0.1	21	408.07	1.5	272
407.05	0.1	25	408.09	1.6	277
407.07	0.2	28	408.11	1.6	280
407.09	0.2	32	408.13	1.6	284
407.11	0.2	36	408.15	1.6	288
407.13	0.2	40	408.17	1.6	292
407.15	0.3	45	408.19	1.7	295
407.17	0.3	49	408.21	1.7	298
407.19	0.3	53	408.23	1.7	301
407.21	0.3	58	408.25	1.7	304
407.23	0.4	62	408.27	1.7	306
407.25	0.4	67	408.29	1.7	309
407.27	0.4	72	408.31	1.8	310
407.29	0.4	76	408.33	1.8	312
407.31	0.5	81	408.35	<b>1.8</b>	<b>313</b>
407.33	0.5	86			
407.35	0.5	91			
407.37	0.5	96			
407.39	0.6	101			
407.41	0.6	106			
407.43	0.6	112			
407.45	0.7	117			
407.47	0.7	122			
407.49	0.7	127			
407.51	0.7	133			
407.53	0.8	138			
407.55	0.8	143			
407.57	0.8	148			
407.59	0.9	154			
407.61	0.9	159			
407.63	0.9	164			
407.65	1.0	170			
407.67	1.0	175			
407.69	1.0	180			
407.71	1.0	185			
407.73	1.1	191			
407.75	1.1	196			
407.77	1.1	201			
407.79	1.2	206			
407.81	1.2	211			
407.83	1.2	216			
407.85	1.3	222			
407.87	1.3	226			

### Summerwood Gym 3

AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

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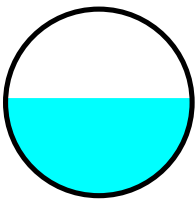
### Summary for Reach P-A3: Pipe A3

Inflow Area = 71,768 sf, 58.28% Impervious, Inflow Depth = 0.97" for 100-yr event  
Inflow = 9.59 cfs @ 0.17 hrs, Volume= 5,787 cf  
Outflow = 9.53 cfs @ 0.17 hrs, Volume= 5,787 cf, Atten= 1%, Lag= 0.2 min  
Routed to Reach P-A4 : Pipe A4

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Max. Velocity= 10.19 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 4.21 fps, Avg. Travel Time= 0.5 min

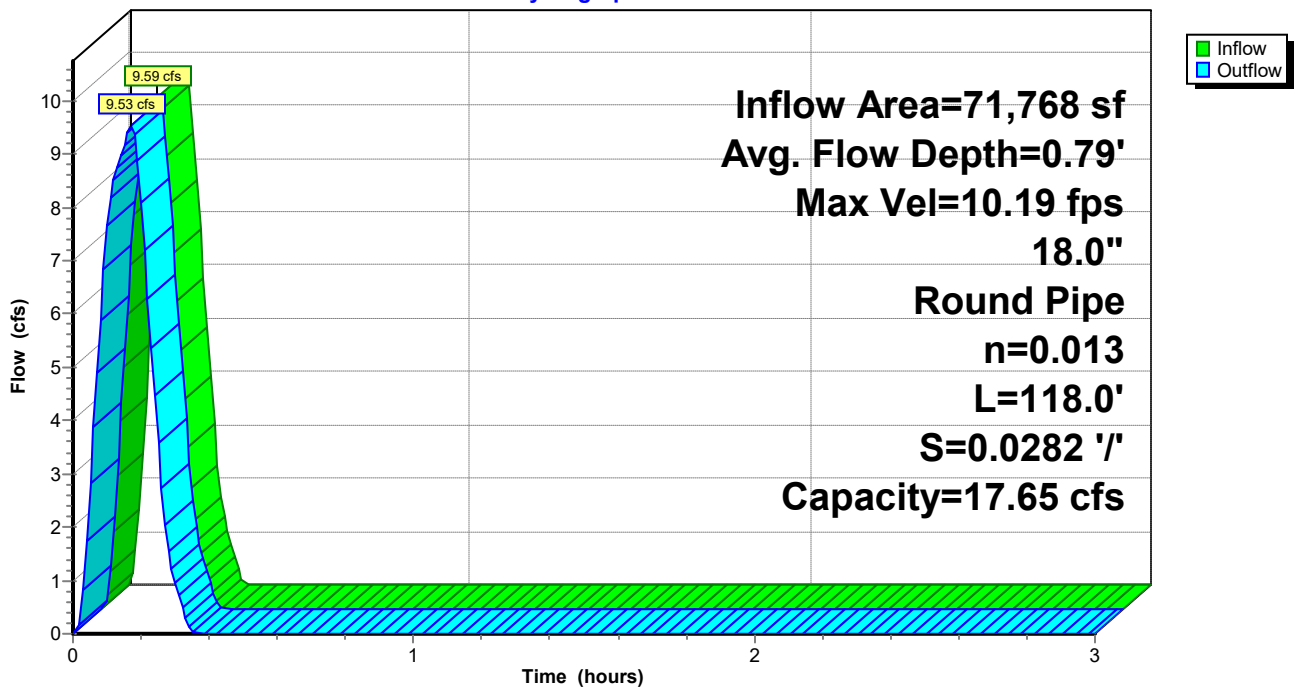
Peak Storage= 111 cf @ 0.17 hrs  
Average Depth at Peak Storage= 0.79' , Surface Width= 1.50'  
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.65 cfs

18.0" Round Pipe  
n= 0.013 Corrugated PE, smooth interior  
Length= 118.0' Slope= 0.0282 '/'  
Inlet Invert= 404.46', Outlet Invert= 401.13'



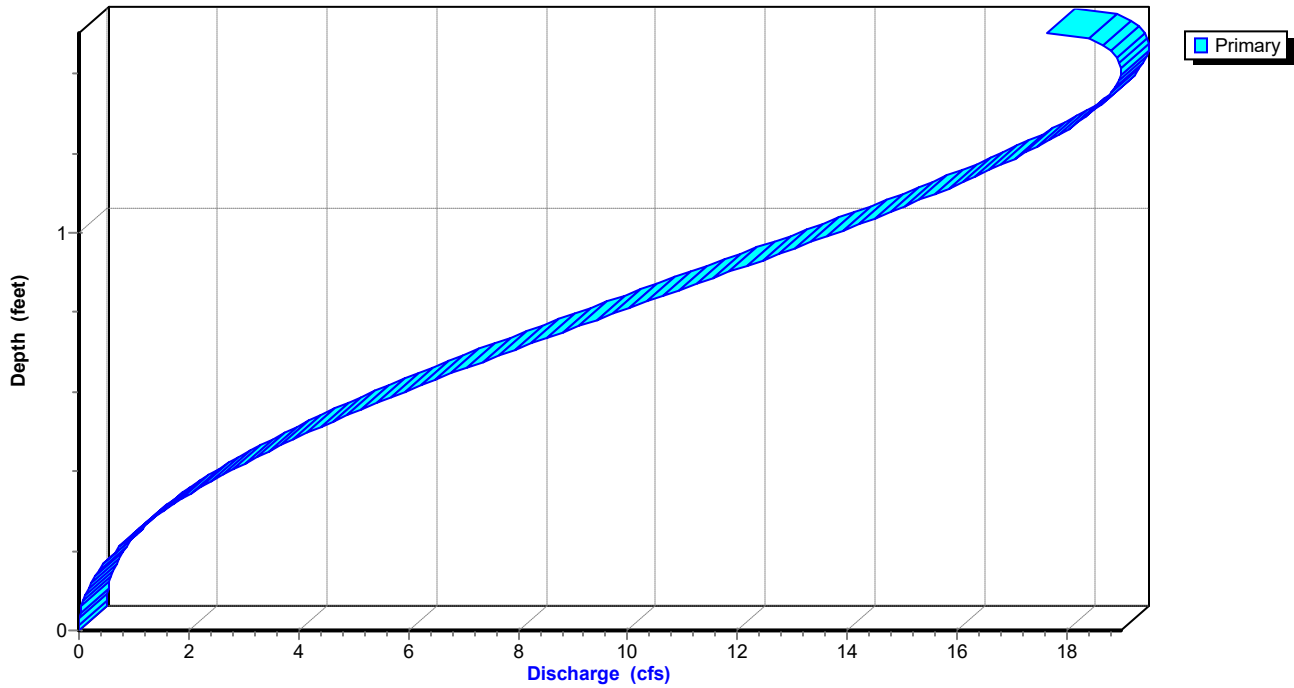
### Reach P-A3: Pipe A3

Hydrograph



### Reach P-A3: Pipe A3

Stage-Discharge



**Summerwood Gym 3***AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr*

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**Stage-Area-Storage for Reach P-A3: Pipe A3**

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
404.46	0.0	0	405.50	1.3	154
404.48	0.0	1	405.52	1.3	158
404.50	0.0	2	405.54	1.4	161
404.52	0.0	3	405.56	1.4	164
404.54	0.0	4	405.58	1.4	167
404.56	0.1	6	405.60	1.4	170
404.58	0.1	8	405.62	1.5	173
404.60	0.1	10	405.64	1.5	176
404.62	0.1	12	405.66	1.5	179
404.64	0.1	14	405.68	1.5	182
404.66	0.1	17	405.70	1.6	184
404.68	0.2	19	405.72	1.6	187
404.70	0.2	22	405.74	1.6	190
404.72	0.2	24	405.76	1.6	192
404.74	0.2	27	405.78	1.6	194
404.76	0.3	30	405.80	1.7	197
404.78	0.3	33	405.82	1.7	199
404.80	0.3	35	405.84	1.7	201
404.82	0.3	38	405.86	1.7	203
404.84	0.4	42	405.88	1.7	204
404.86	0.4	45	405.90	1.7	206
404.88	0.4	48	405.92	1.8	207
404.90	0.4	51	405.94	1.8	208
404.92	0.5	54	405.96	<b>1.8</b>	<b>209</b>
404.94	0.5	58			
404.96	0.5	61			
404.98	0.5	64			
405.00	0.6	68			
405.02	0.6	71			
405.04	0.6	74			
405.06	0.7	78			
405.08	0.7	81			
405.10	0.7	85			
405.12	0.7	88			
405.14	0.8	92			
405.16	0.8	95			
405.18	0.8	99			
405.20	0.9	102			
405.22	0.9	106			
405.24	0.9	110			
405.26	1.0	113			
405.28	1.0	117			
405.30	1.0	120			
405.32	1.0	124			
405.34	1.1	127			
405.36	1.1	131			
405.38	1.1	134			
405.40	1.2	138			
405.42	1.2	141			
405.44	1.2	144			
405.46	1.3	148			
405.48	1.3	151			

# Summerwood Gym 3

AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

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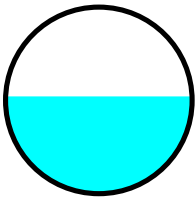
## Summary for Reach P-A4: Pipe A4

Inflow Area = 71,768 sf, 58.28% Impervious, Inflow Depth = 0.97" for 100-yr event  
Inflow = 9.53 cfs @ 0.17 hrs, Volume= 5,787 cf  
Outflow = 9.49 cfs @ 0.18 hrs, Volume= 5,787 cf, Atten= 0%, Lag= 0.4 min  
Routed to Pond DP1 : Re-Established East Pond

Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
Max. Velocity= 10.17 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 4.00 fps, Avg. Travel Time= 0.6 min

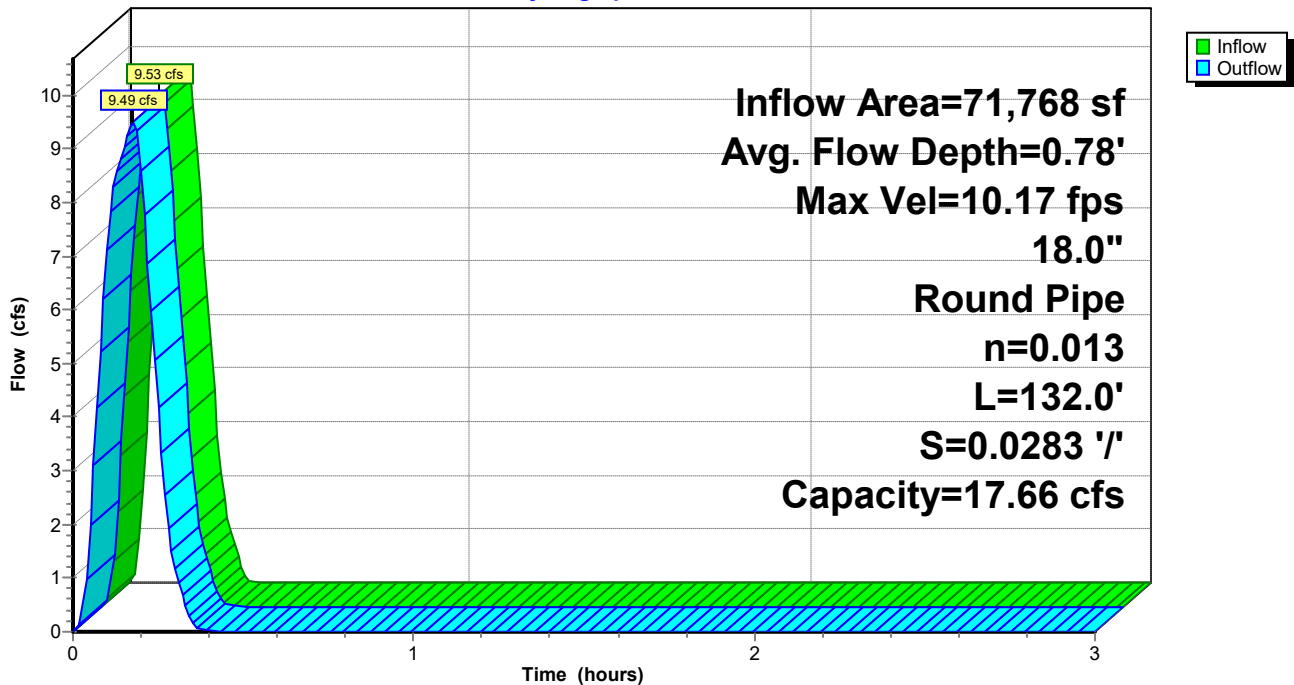
Peak Storage= 123 cf @ 0.17 hrs  
Average Depth at Peak Storage= 0.78' , Surface Width= 1.50'  
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 17.66 cfs

18.0" Round Pipe  
n= 0.013 Corrugated PE, smooth interior  
Length= 132.0' Slope= 0.0283 '/'  
Inlet Invert= 401.03', Outlet Invert= 397.30'



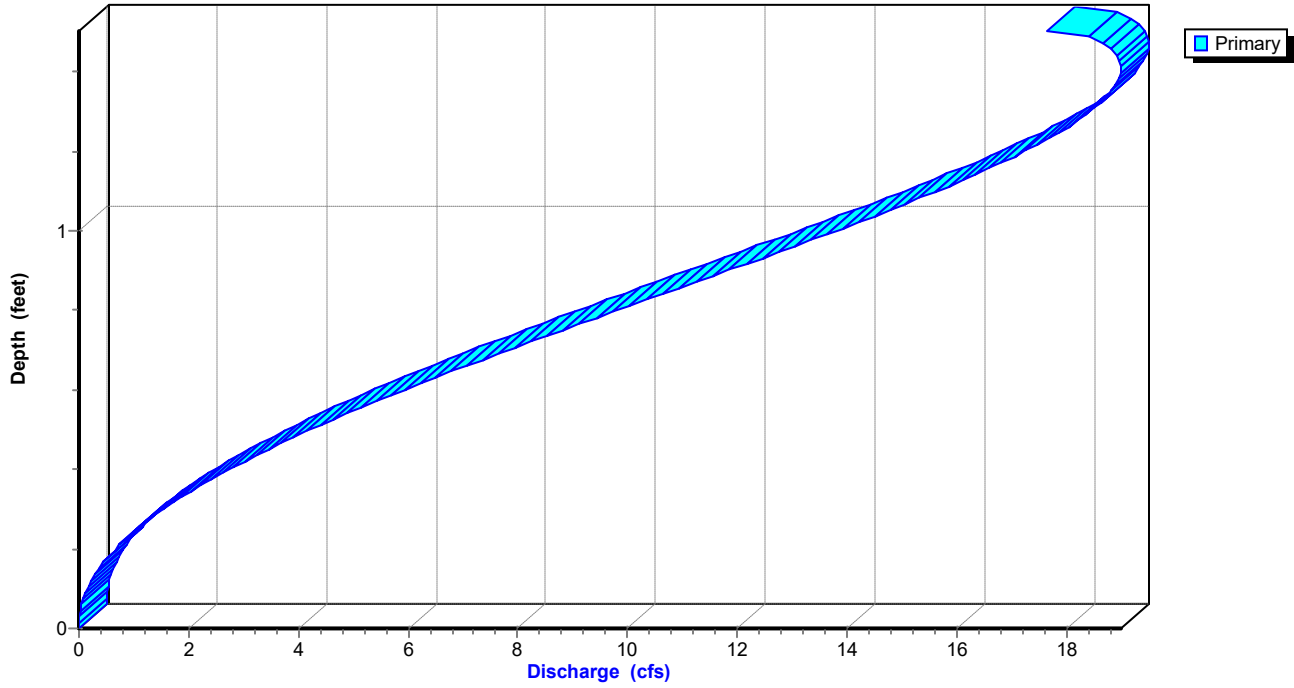
## Reach P-A4: Pipe A4

Hydrograph



### Reach P-A4: Pipe A4

Stage-Discharge



**Summerwood Gym 3***AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr*

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**Stage-Area-Storage for Reach P-A4: Pipe A4**

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
401.03	0.0	0	402.07	1.3	173
401.05	0.0	1	402.09	1.3	176
401.07	0.0	2	402.11	1.4	180
401.09	0.0	3	402.13	1.4	183
401.11	0.0	5	402.15	1.4	187
401.13	0.1	7	402.17	1.4	190
401.15	0.1	9	402.19	1.5	194
401.17	0.1	11	402.21	1.5	197
401.19	0.1	13	402.23	1.5	200
401.21	0.1	16	402.25	1.5	203
401.23	0.1	18	402.27	1.6	206
401.25	0.2	21	402.29	1.6	209
401.27	0.2	24	402.31	1.6	212
401.29	0.2	27	402.33	1.6	215
401.31	0.2	30	402.35	1.6	217
401.33	0.3	33	402.37	1.7	220
401.35	0.3	36	402.39	1.7	222
401.37	0.3	40	402.41	1.7	225
401.39	0.3	43	402.43	1.7	227
401.41	0.4	46	402.45	1.7	228
401.43	0.4	50	402.47	1.7	230
401.45	0.4	53	402.49	1.8	232
401.47	0.4	57	402.51	1.8	233
401.49	0.5	61	402.53	<b>1.8</b>	<b>233</b>
401.51	0.5	64			
401.53	0.5	68			
401.55	0.5	72			
401.57	0.6	76			
401.59	0.6	79			
401.61	0.6	83			
401.63	0.7	87			
401.65	0.7	91			
401.67	0.7	95			
401.69	0.7	99			
401.71	0.8	103			
401.73	0.8	107			
401.75	0.8	111			
401.77	0.9	115			
401.79	0.9	119			
401.81	0.9	123			
401.83	1.0	127			
401.85	1.0	130			
401.87	1.0	134			
401.89	1.0	138			
401.91	1.1	142			
401.93	1.1	146			
401.95	1.1	150			
401.97	1.2	154			
401.99	1.2	158			
402.01	1.2	161			
402.03	1.3	165			
402.05	1.3	169			



### Summerwood Gym 3

AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Prepared by Phillip Lewis Engineering

Printed 1/11/2024

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### Summary for Pond DP1: Re-Established East Pond

Inflow Area = 132,514 sf, 61.41% Impervious, Inflow Depth = 0.99" for 100-yr event  
 Inflow = 17.76 cfs @ 0.16 hrs, Volume= 10,883 cf  
 Outflow = 9.14 cfs @ 0.22 hrs, Volume= 10,883 cf, Atten= 49%, Lag= 3.8 min  
 Primary = 9.14 cfs @ 0.22 hrs, Volume= 10,883 cf  
 Routed to Link Post-Dev : APPROX DISCHARGE

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs  
 Peak Elev= 398.89' @ 0.22 hrs Storage= 5,867 cf

Plug-Flow detention time= 9.3 min calculated for 10,883 cf (100% of inflow)  
 Center-of-Mass det. time= 9.1 min ( 18.0 - 8.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	396.00'	8,557 cf	<b>Custom Stage Data</b> Listed below

Elevation (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
396.00	0	0
396.50	250	250
397.00	1,092	1,342
398.00	2,387	3,729
399.00	2,405	6,134
400.00	2,423	8,557

Device	Routing	Invert	Outlet Devices
#1	Primary	399.00'	<b>5.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)
#2	Primary	396.00'	<b>1.1' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s) 10.0' Crest Height

**Primary OutFlow** Max=9.13 cfs @ 0.22 hrs HW=398.89' (Free Discharge)  
 1=Sharp-Crested Rectangular Weir ( Controls 0.00 cfs)  
 2=Sharp-Crested Rectangular Weir (Weir Controls 9.13 cfs @ 5.75 fps)

# Summerwood Gym 3

Prepared by Phillip Lewis Engineering

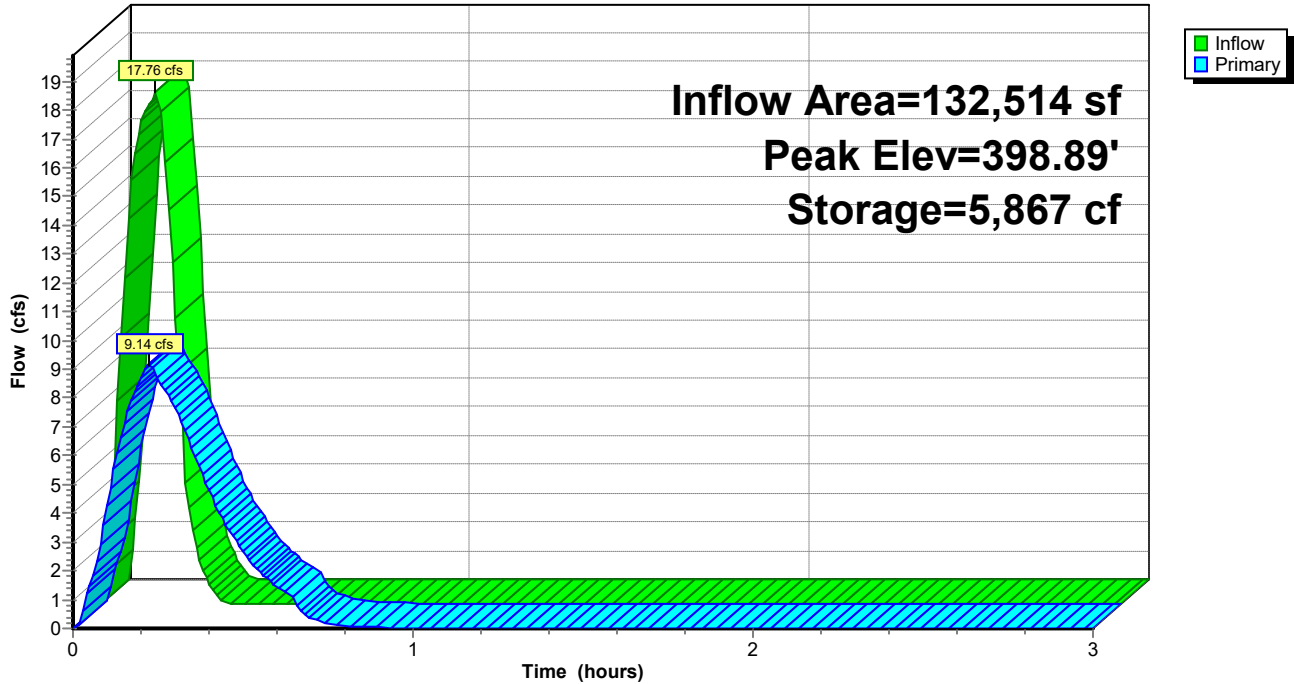
HydroCAD® 10.20-2f s/n 12520 © 2022 HydroCAD Software Solutions LLC

AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Printed 1/11/2024

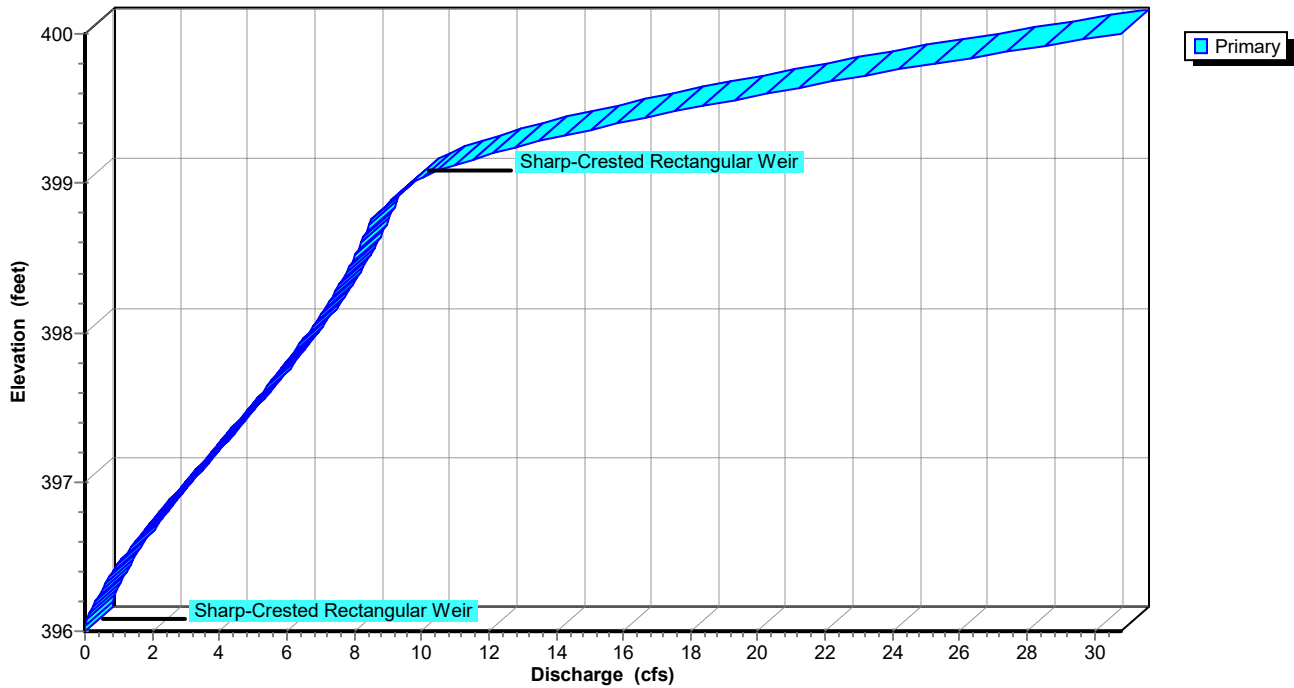
## Pond DP1: Re-Established East Pond

Hydrograph



## Pond DP1: Re-Established East Pond

Stage-Discharge



**Summerwood Gym 3**

AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

Prepared by Phillip Lewis Engineering

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**Stage-Area-Storage for Pond DP1: Re-Established East Pond**

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
396.00	0	398.60	5,172
396.05	25	398.65	5,292
396.10	50	398.70	5,412
396.15	75	398.75	5,533
396.20	100	398.80	5,653
396.25	125	398.85	5,773
396.30	150	398.90	5,893
396.35	175	398.95	6,014
396.40	200	399.00	6,134
396.45	225	399.05	6,255
396.50	250	399.10	6,376
396.55	359	399.15	6,497
396.60	468	399.20	6,619
396.65	578	399.25	6,740
396.70	687	399.30	6,861
396.75	796	399.35	6,982
396.80	905	399.40	7,103
396.85	1,014	399.45	7,224
396.90	1,124	399.50	7,346
396.95	1,233	399.55	7,467
397.00	1,342	399.60	7,588
397.05	1,461	399.65	7,709
397.10	1,581	399.70	7,830
397.15	1,700	399.75	7,951
397.20	1,819	399.80	8,072
397.25	1,939	399.85	8,194
397.30	2,058	399.90	8,315
397.35	2,177	399.95	8,436
397.40	2,297	400.00	<b>8,557</b>
397.45	2,416		
397.50	2,536		
397.55	2,655		
397.60	2,774		
397.65	2,894		
397.70	3,013		
397.75	3,132		
397.80	3,252		
397.85	3,371		
397.90	3,490		
397.95	3,610		
398.00	3,729		
398.05	3,849		
398.10	3,970		
398.15	4,090		
398.20	4,210		
398.25	4,330		
398.30	4,451		
398.35	4,571		
398.40	4,691		
398.45	4,811		
398.50	4,932		
398.55	5,052		

# Summerwood Gym 3

AR - Little Rock 100-yr Duration=10 min, Inten=7.98 in/hr

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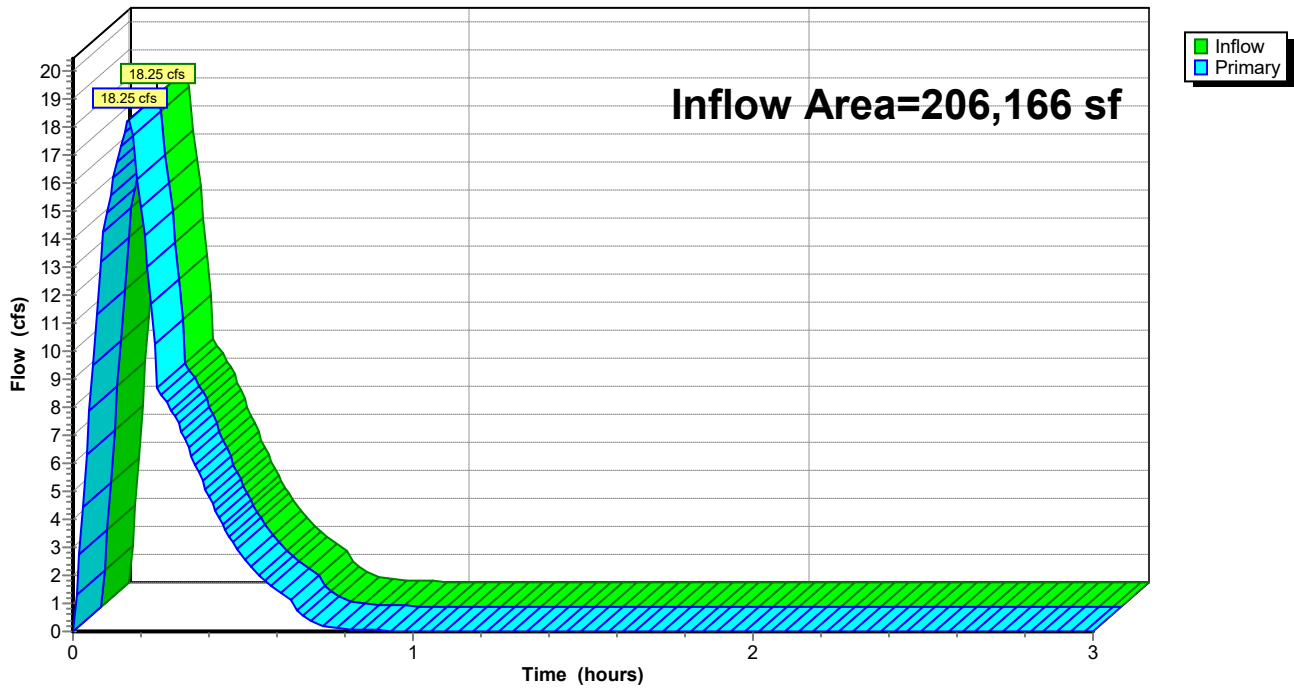
## Summary for Link Post-Dev: APPROX DISCHARGE

Inflow Area = 206,166 sf, 64.42% Impervious, Inflow Depth = 1.01" for 100-yr event  
Inflow = 18.25 cfs @ 0.16 hrs, Volume= 17,276 cf  
Primary = 18.25 cfs @ 0.16 hrs, Volume= 17,276 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs

## Link Post-Dev: APPROX DISCHARGE

Hydrograph



## STROM SEWER SIZING

# Inlet Report

## AI-A2

### Drop Grate Inlet

Location	= Sag
Curb Length (ft)	= -0-
Throat Height (in)	= -0-
Grate Area (sqft)	= 2.00
Grate Width (ft)	= 2.00
Grate Length (ft)	= 2.00

### Gutter

Slope, Sw (ft/ft)	= 0.050
Slope, Sx (ft/ft)	= 0.050
Local Depr (in)	= -0-
Gutter Width (ft)	= 2.00
Gutter Slope (%)	= -0-
Gutter n-value	= -0-

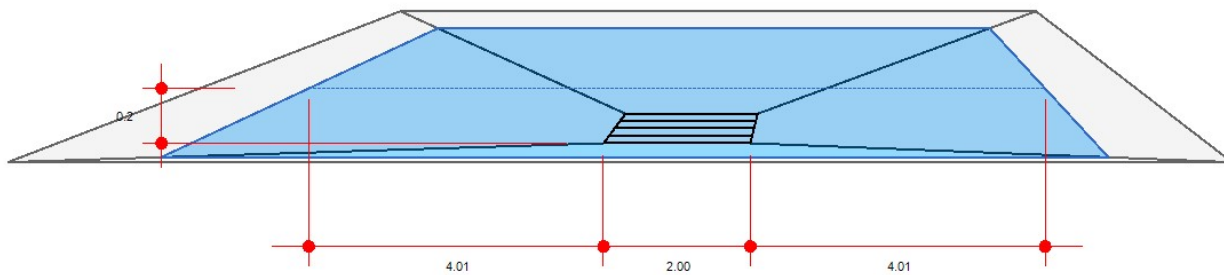
### Calculations

Compute by:	Known Q
Q (cfs)	= 2.16

### Highlighted

Q Total (cfs)	= 2.16
Q Capt (cfs)	= 2.16
Q Bypass (cfs)	= -0-
Depth at Inlet (in)	= 2.41
Efficiency (%)	= 100
Gutter Spread (ft)	= 10.03
Gutter Vel (ft/s)	= -0-
Bypass Spread (ft)	= -0-
Bypass Depth (in)	= -0-

All dimensions in feet



# Inlet Report

## AI-A3

### Drop Grate Inlet

Location	= Sag
Curb Length (ft)	= -0-
Throat Height (in)	= -0-
Grate Area (sqft)	= 2.00
Grate Width (ft)	= 2.00
Grate Length (ft)	= 2.00

### Gutter

Slope, Sw (ft/ft)	= 0.050
Slope, Sx (ft/ft)	= 0.050
Local Depr (in)	= -0-
Gutter Width (ft)	= 2.00
Gutter Slope (%)	= -0-
Gutter n-value	= -0-

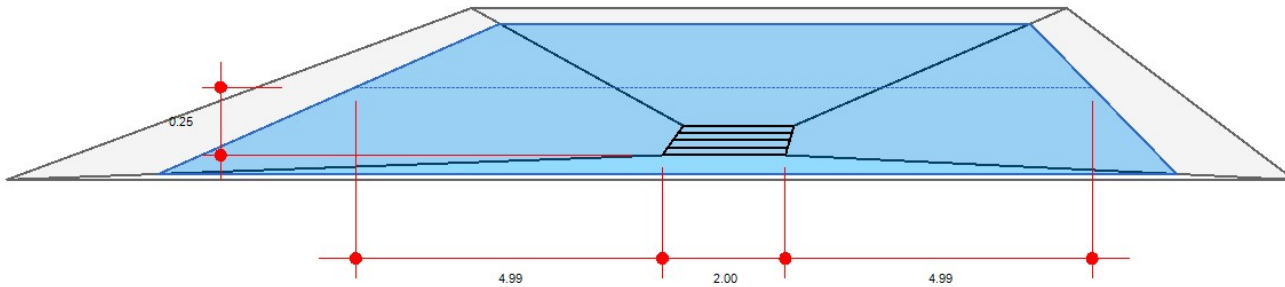
### Calculations

Compute by:	Known Q
Q (cfs)	= 2.99

### Highlighted

Q Total (cfs)	= 2.99
Q Capt (cfs)	= 2.99
Q Bypass (cfs)	= -0-
Depth at Inlet (in)	= 2.99
Efficiency (%)	= 100
Gutter Spread (ft)	= 11.97
Gutter Vel (ft/s)	= -0-
Bypass Spread (ft)	= -0-
Bypass Depth (in)	= -0-

All dimensions in feet



# Channel Report

## Pipe A1

### Circular

Diameter (ft) = 1.50

Invert Elev (ft) = 408.33

Slope (%) = 2.70

N-Value = 0.015

### Calculations

Compute by: Known Q

Known Q (cfs) = 2.92

### Highlighted

Depth (ft) = 0.45

Q (cfs) = 2.920

Area (sqft) = 0.45

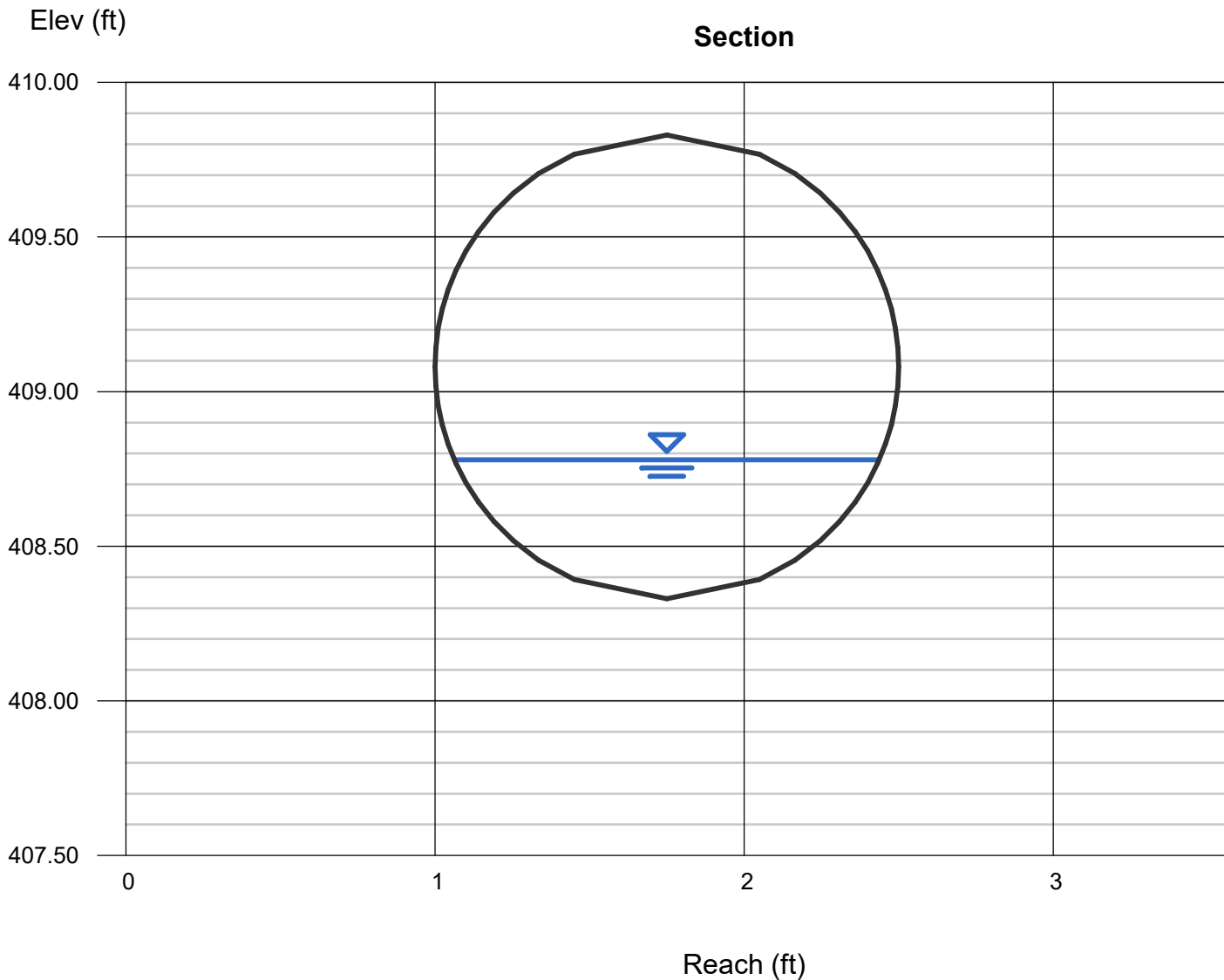
Velocity (ft/s) = 6.54

Wetted Perim (ft) = 1.74

Crit Depth,  $Y_c$  (ft) = 0.65

Top Width (ft) = 1.38

EGL (ft) = 1.11





# Channel Report

## Pipe A2

### Circular

Diameter (ft) = 1.50

Invert Elev (ft) = 406.85

Slope (%) = 1.30

N-Value = 0.015

### Calculations

Compute by: Known Q

Known Q (cfs) = 5.09

### Highlighted

Depth (ft) = 0.74

Q (cfs) = 5.090

Area (sqft) = 0.87

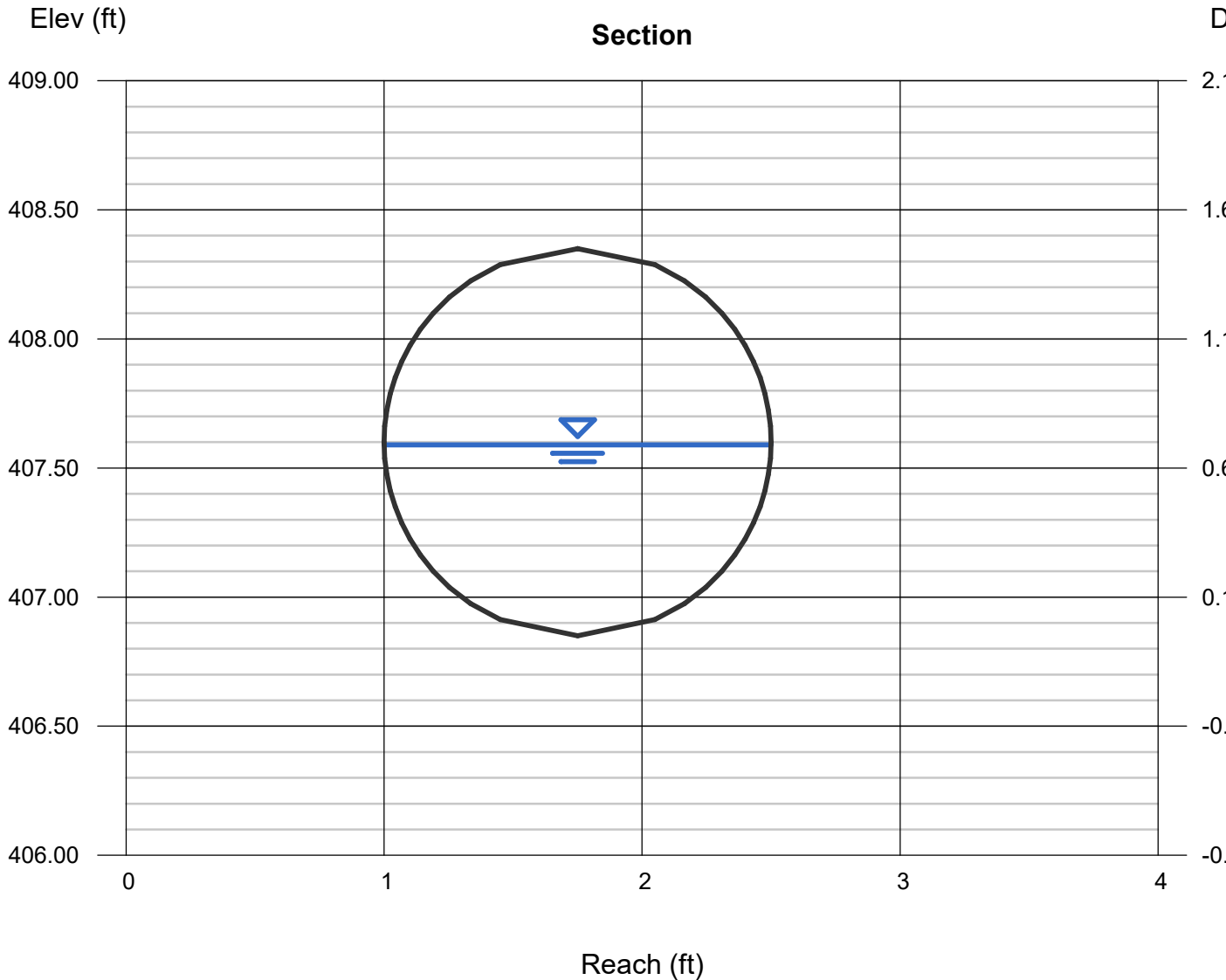
Velocity (ft/s) = 5.84

Wetted Perim (ft) = 2.34

Crit Depth,  $Y_c$  (ft) = 0.87

Top Width (ft) = 1.50

EGL (ft) = 1.27



# Channel Report

## Pipe A3

### Circular

Diameter (ft) = 1.50

Invert Elev (ft) = 404.46

Slope (%) = 2.80

N-Value = 0.015

### Calculations

Compute by: Known Q

Known Q (cfs) = 8.02

### Highlighted

Depth (ft) = 0.78

Q (cfs) = 8.020

Area (sqft) = 0.93

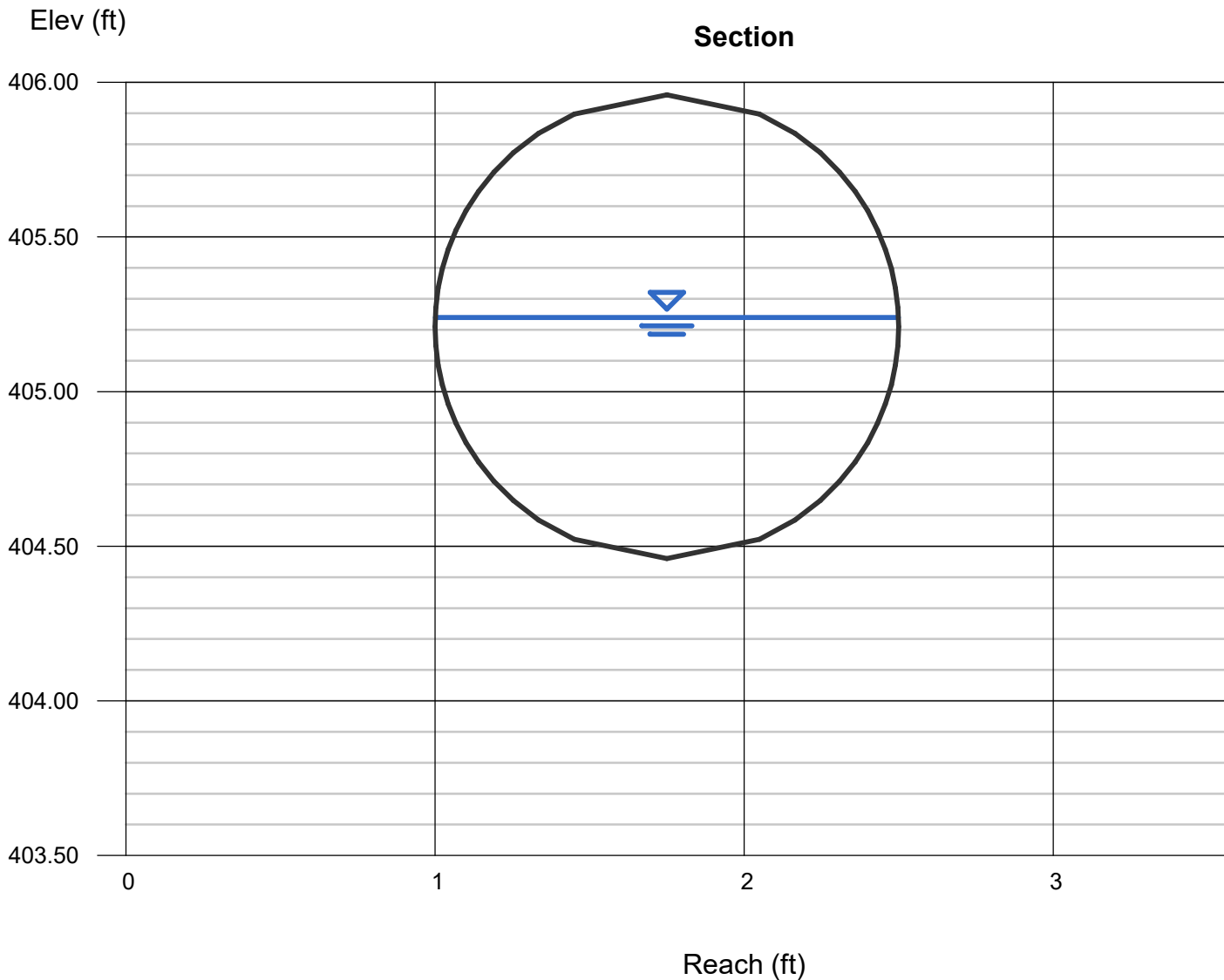
Velocity (ft/s) = 8.59

Wetted Perim (ft) = 2.42

Crit Depth,  $Y_c$  (ft) = 1.10

Top Width (ft) = 1.50

EGL (ft) = 1.93



# Channel Report

## Pipe A4

### Circular

Diameter (ft) = 1.50

Invert Elev (ft) = 401.03

Slope (%) = 2.83

N-Value = 0.013

### Calculations

Compute by: Known Q

Known Q (cfs) = 8.02

### Highlighted

Depth (ft) = 0.71

Q (cfs) = 8.020

Area (sqft) = 0.83

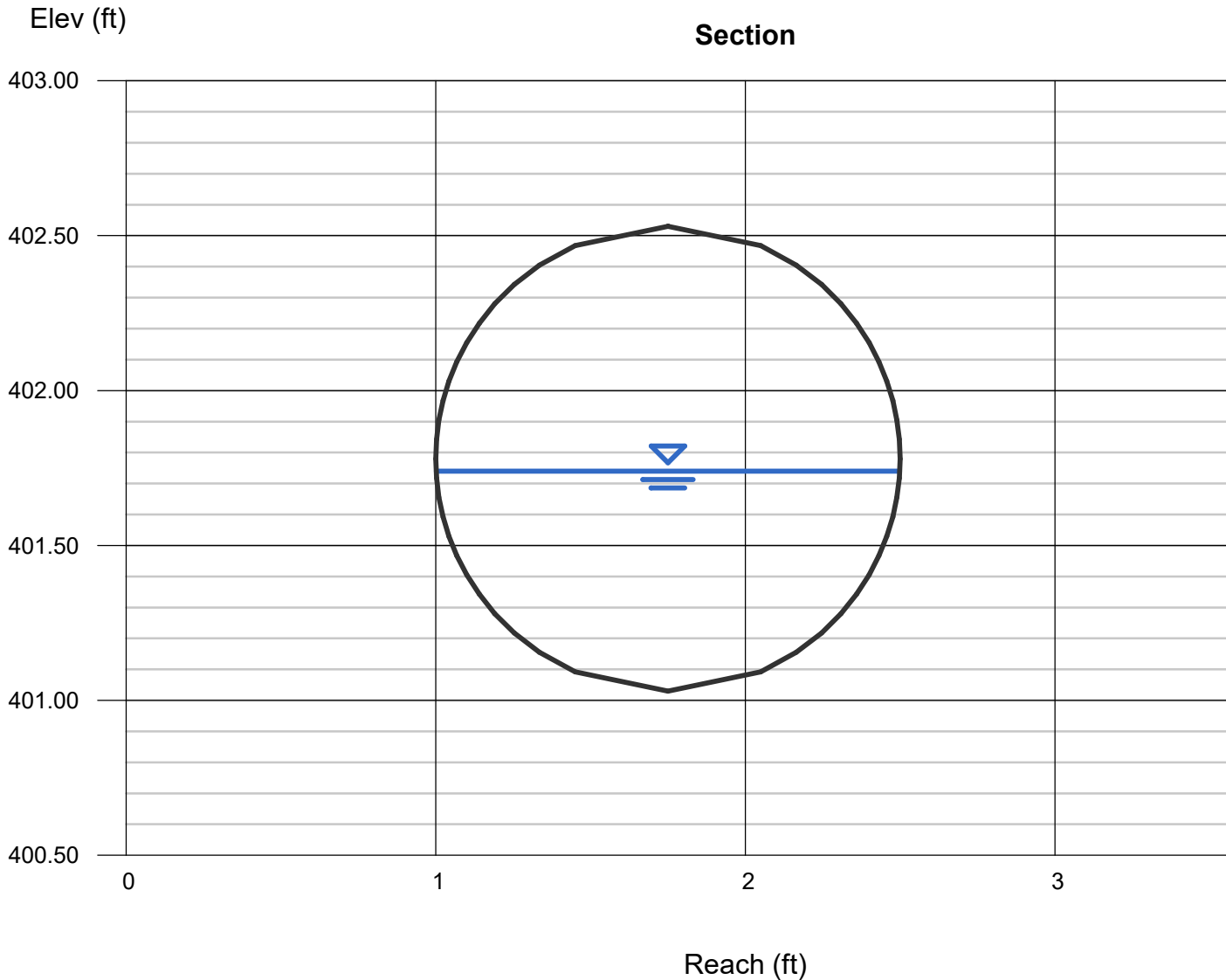
Velocity (ft/s) = 9.70

Wetted Perim (ft) = 2.28

Crit Depth,  $Y_c$  (ft) = 1.10

Top Width (ft) = 1.50

EGL (ft) = 2.17



# Channel Report

## 5' Curb Cut & Flume to Pond

### Rectangular

Bottom Width (ft) = 5.00

Total Depth (ft) = 0.50

Invert Elev (ft) = 401.50

Slope (%) = 15.00

N-Value = 0.015

### Calculations

Compute by: Known Q

Known Q (cfs) = 5.15

### Highlighted

Depth (ft) = 0.12

Q (cfs) = 5.150

Area (sqft) = 0.60

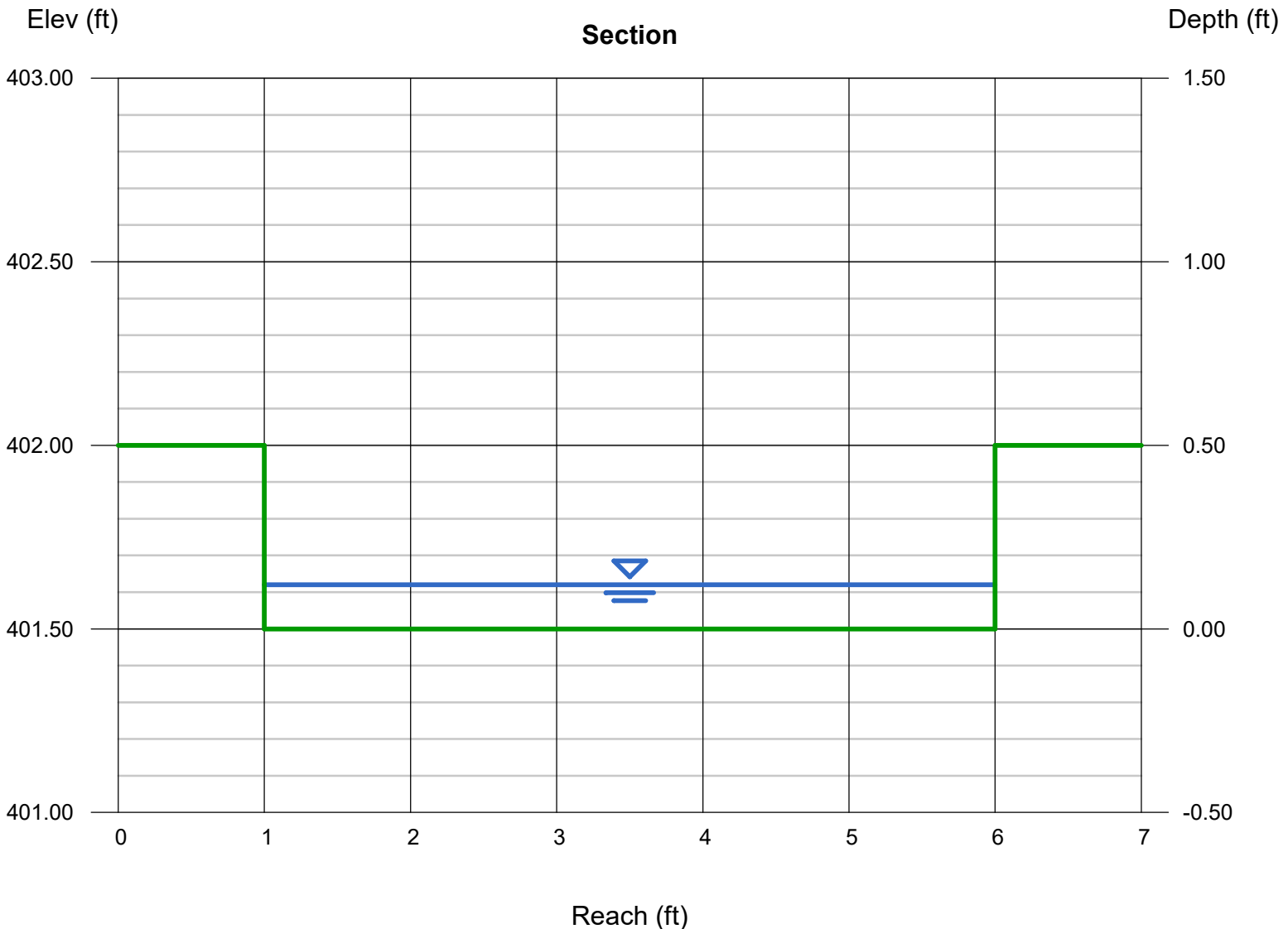
Velocity (ft/s) = 8.58

Wetted Perim (ft) = 5.24

Crit Depth,  $Y_c$  (ft) = 0.33

Top Width (ft) = 5.00

EGL (ft) = 1.27



# Channel Report

## Curb Cut by Dumpster Pad

### Rectangular

Bottom Width (ft) = 4.00  
Total Depth (ft) = 0.50

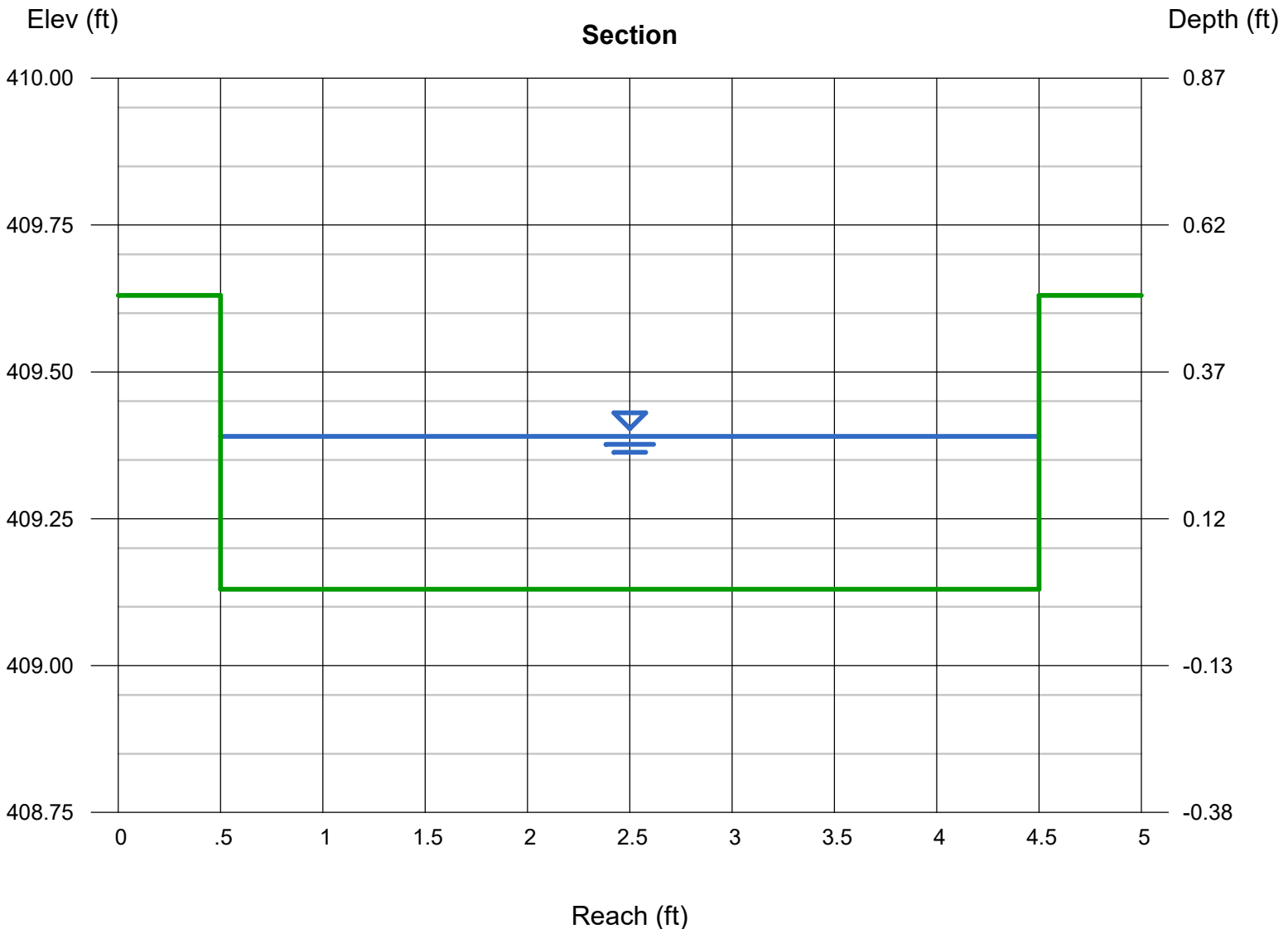
Invert Elev (ft) = 409.13  
Slope (%) = 5.00  
N-Value = 0.015

### Calculations

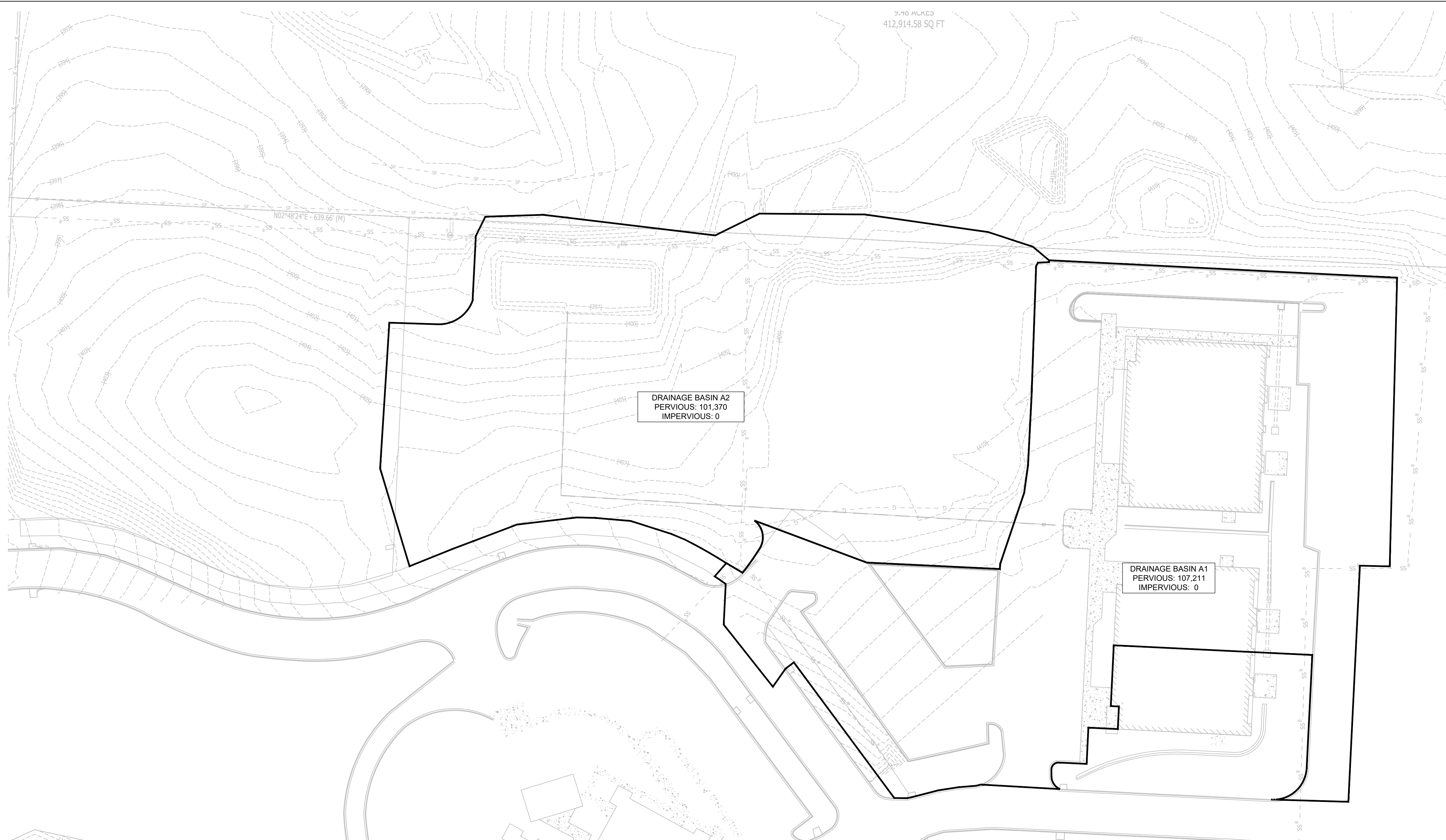
Compute by: Known Q  
Known Q (cfs) = 8.18

### Highlighted

Depth (ft) = 0.26  
Q (cfs) = 8.180  
Area (sqft) = 1.04  
Velocity (ft/s) = 7.87  
Wetted Perim (ft) = 4.52  
Crit Depth, Yc (ft) = 0.50  
Top Width (ft) = 4.00  
EGL (ft) = 1.22



# DRAINAGE BASIN MAPS



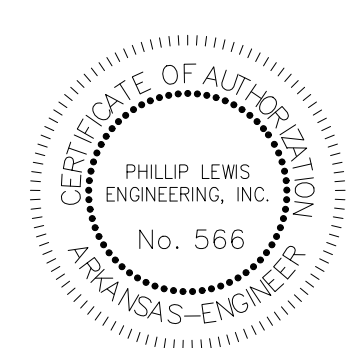
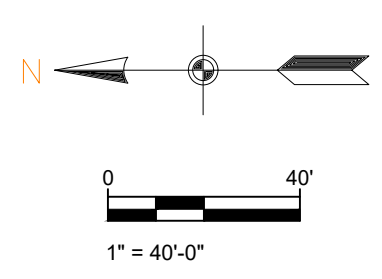
3.40 ALKED  
412,914.58 SQ FT

DRAINAGE BASIN A2  
PERVIOUS: 101,370  
IMPERVIOUS: 0

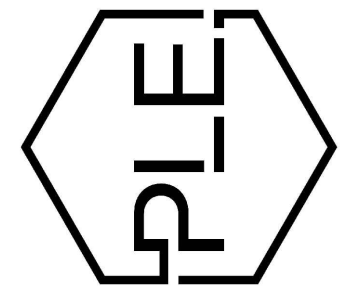
DRAINAGE BASIN A1  
PERVIOUS: 107,211  
IMPERVIOUS: 0

PRE DRAINAGE MAP

SCALE 1" = 40'

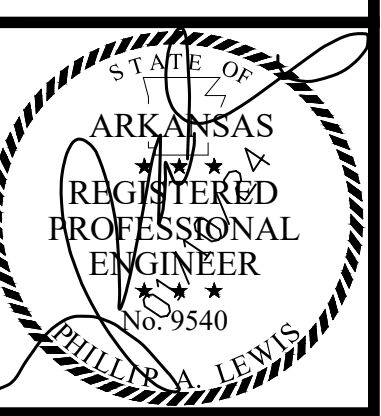


PHILLIP LEWIS ENGINEERING, INC.  
Structural + Civil Consultants  
23620 Interstate 30 | Bryant, Arkansas  
PH: 501-350-9840



REVISION:

**SUMMERWOOD SPORTS GYMNASIUM #3**  
7817 Hwy 5 N  
Bryant, Arkansas



PROJECT NUMBER:

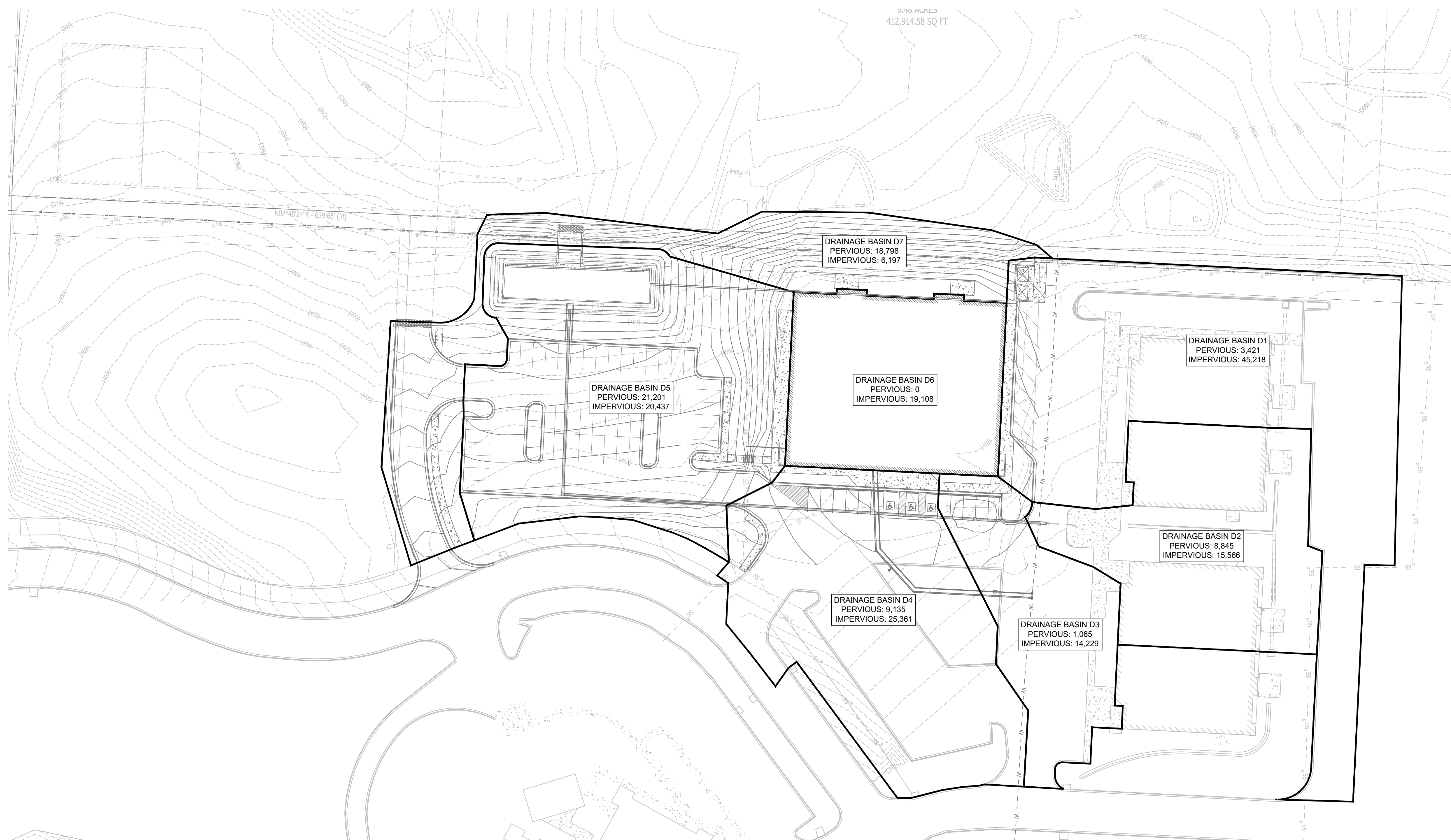
SHEET ISSUE DATE:  
1/10/2024

PAGE TITLE:

PRE DRAINAGE MAP

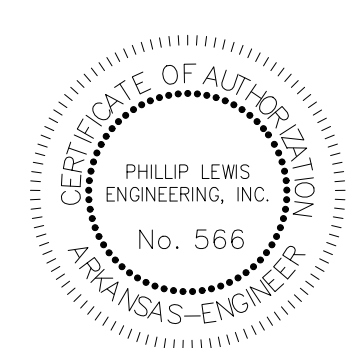
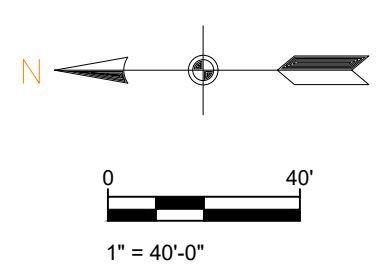
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C1.5



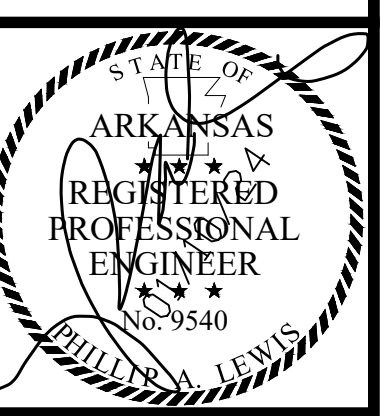
POST DRAINAGE MAP

SCALE 1" = 40'



REVISION:

**SUMMERWOOD SPORTS GYMNASIUM #3**  
7817 Hwy 5 N  
Bryant, Arkansas



PROJECT NUMBER:

SHEET ISSUE DATE:  
1/10/2024

PAGE TITLE:

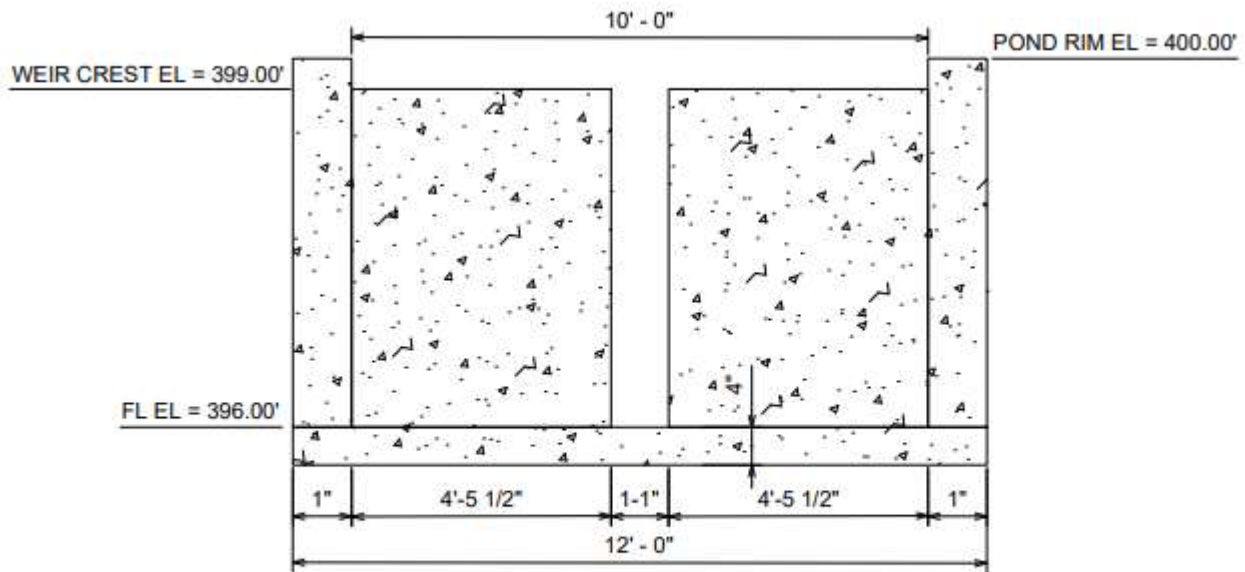
POST DRAINAGE MAP

SHEET NUMBER:

C1.6



## DETENTION BASIN OUTLET STRUCTURES



EXISTING DETENTION POND OUTLET STRUCTURE DETAIL

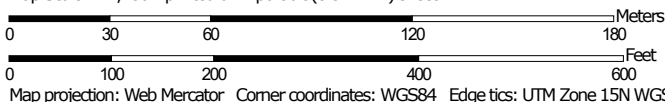
NOT TO SCALE

## SOIL CLASSIFICATION MAPS

# Custom Soil Resource Report Soil Map



Map Scale: 1:2,250 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

## Saline County, Arkansas

### 29—Tiak silt loam, 3 to 8 percent slopes

#### Map Unit Setting

*National map unit symbol:* m06q  
*Elevation:* 70 to 570 feet  
*Mean annual precipitation:* 44 to 61 inches  
*Mean annual air temperature:* 49 to 74 degrees F  
*Frost-free period:* 185 to 230 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Tiak and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Tiak

##### Setting

*Landform:* Interfluves  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Parent material:* Loamy and clayey marine deposits

##### Typical profile

*A - 0 to 7 inches:* silt loam  
*E - 7 to 9 inches:* loam  
*Bt1 - 9 to 32 inches:* clay  
*Bt2 - 32 to 72 inches:* clay

##### Properties and qualities

*Slope:* 3 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Moderately well drained  
*Runoff class:* Very high  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* About 12 to 24 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* High (about 9.3 inches)

##### Interpretive groups

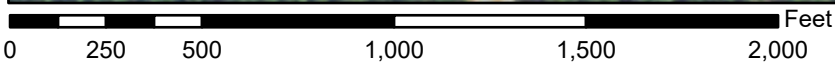
*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* C/D  
*Ecological site:* F133BY002TX - Seasonally Wet Upland  
*Hydric soil rating:* No

# FEMA FLOOD INSURANCE RATE MAP

# National Flood Hazard Layer FIRMMette



92°28'37"W 34°38'34"N



1:6,000

92°28'W 34°38'4"N

Basemap Imagery Source: USGS National Map 2023

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

- |                                    |  |  |
|------------------------------------|--|--|
| <b>SPECIAL FLOOD HAZARD AREAS</b>  |  | Without Base Flood Elevation (BFE)<br><i>Zone A, V, A99</i>  |
|                                    |  | With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>   |
| <b>OTHER AREAS OF FLOOD HAZARD</b> |  | 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i> |
|                                    |  | Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>  |
|                                    |  | Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>  |
|                                    |  | Area with Flood Risk due to Levee <i>Zone D</i>  |
| <b>OTHER AREAS</b>                 |  | NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>   |
|                                    |  | Effective LOMRs  |
| <b>GENERAL STRUCTURES</b>          |  | Area of Undetermined Flood Hazard <i>Zone D</i>  |
|                                    |  | Channel, Culvert, or Storm Sewer   |
| <b>OTHER FEATURES</b>              |  | Levee, Dike, or Floodwall  |
|                                    |  | 20.2 Cross Sections with 1% Annual Chance Water Surface Elevation  |
| <b>MAP PANELS</b>                  |  | 17.5 Coastal Transect  |
|                                    |  | Base Flood Elevation Line (BFE)  |
|                                    |  | Limit of Study   |
|                                    |  | Jurisdiction Boundary  |
|                                    |  | Coastal Transect Baseline  |
|                                    |  | Profile Baseline   |
| <b>MAP PANELS</b>                  |  | Digital Data Available   |
|                                    |  | No Digital Data Available  |
|                                    |  | Unmapped   |
|                                    |  | The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.                                     |



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **1/10/2024 at 5:31 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.