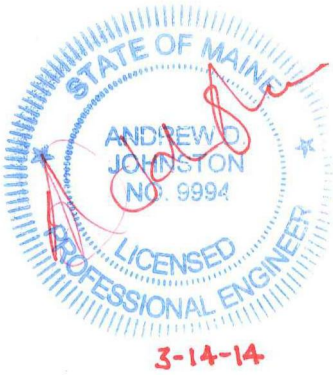
# Addendum Number 3 to
# STORM WATER MANAGEMENT REPORT

## The Town of York Police Department
## New Public Safety Building and Connector Road

1051 US Route 1, York, Maine

Prepared by:
SMRT, Inc
144 Fore Street
Portland, ME



Original Report Issued: February 2012

Addendum 3: March 2014

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## 1 ADDENDUM DESCRIPTION

This addendum covers minor revisions that have been made to the stormwater plan to accommodate the addition of a new communications tower on the police station site, and cover changes that resulted from unauthorized clearing of an area that was not shown on the original permitted plans. The addition of the tower results in a minor increase in the impervious area on the site. A substantial portion of the cleared area will be restored to the previous condition of mixed woods and scrub as part of a Vernal Pool Buffer Restoration Plan developed by Stantec. However, some of the area will not be restored to natural condition and will remain as grass lawn. The clearing also impacted the area previously approved for Stormwater Buffer #12, requiring revisions to the stormwater model and water quality treatment calculations.

All of the changes described in this Addendum are within Subcatchments 202C and 202D and impact the areas in the model that drain to Design Point 2. The model has been adjusted to reflect these changes and the pre-development and post-development analyses of areas contributing to Design Point 2 are included with this addendum.

The modifications to the cover conditions are small in relation to the overall affected subcatchment areas, and improved provisions are made for water quality treatment and detention of peak flows in the affected areas. As a result, the predicted peak flows under design storm conditions at Design Point 2 remain below the pre-development values for all of the analyzed storms. The updated values are shown in the revised table on the following page. Minor revisions have also been made to the water quality calculations to reflect these changes and updated calculation tables and plan sheets are included with this submission.

## 2 STORM WATER QUANTITY ANALYSIS

The revisions to the model include the following:

1. Addition of the new communications tower and 7,200 associated impervious (gravel) area at the base of the structure. An expanded bioretention cell is provided adjacent to the tower to provide adequate water quality treatment for the area. This expands Subcatchment 202C to encompass the added areas.
2. Addition of approximately 74,000sf of grass lawn area within Subcatchment 202D. The entire cleared area will be re-graded as part of the Buffer Restoration Plan, and all remaining areas (within 100-feet of the Vernal Pool and stream associated wetlands) will be restored to wooded/brush conditions.
3. Design Point 2 is moved to where runoff from this area joins Briley Brook, just under the covered bridge. This allows runoff from Design Point 3, some 250ft upstream to be added to determine the overall impact of on-site runoff to the stream, and allow comparison of the pre-development and post-development runoff rates to this point.

The calculations demonstrate that there will be no increase in peak runoff for any of the design storm events at Design Point 2. The results are summarized in the table below;

Table 1 - Peak Runoff Values – Design Point 2

| Design Storm | Peak Runoff (cfs) | |
|---|---|---|
| | Pre-Development | Post-Development |
| 2-Year | 25.51 | 25.43 |
| 10-Year | 60.15 | 52.74 |
| 25-Year | 79.20 | 62.46 |
| 50-Year | 88.98 | 66.81 |
| 100-Year | 109.00 | 74.71 |

## 3 STORM WATER QUALITY ANAYLSIS

Water quality treatment for runoff from the tower area is provided by and expanded bioretention cell (B-9) located just to the west of the area.

Water quality treatment for the majority of the cleared area that will remain as lawn in Subcatchment 202D, in addition to the area captured by the culvert under the roadway at the crest of the curve will be treated by a new Stormwater Buffer 12A, located in the restored wooded buffer area. These have been designed in accordance with State of Maine Chapter 500 Stormwater regulations and Stormwater Management for Maine – BMP Technical Design Manual.

The bioretention cell has been added to the overall water quality treatment table for the non-linear portions of the project. The Chapter 500 Stormwater General Standards require treatment of greater than 95% of contributing impervious area greater than 80% of the developed area of this part of the project. The calculations demonstrate that the project continues to meet the required standards.

The new buffer area has been added to the Road Treatment Areas table. . The Chapter 500 Stormwater General Standards require treatment of greater than 75% of contributing impervious area greater than 50% of the developed area of the linear portions of the project. The calculations demonstrate that the project continues to meet the required standards.

The changes are reflected in the table shown below, and in the calculations included in revised Appendix-2

**Site Development Areas**
**Water Quality Volume Summary**

| Subcatchment Area | Impervious | Landscaped | Developed | WQV required | WQV Provided | BMP |
|---|---|---|---|---|---|---|
| 204E | 6775 | 20325 | 27100 | 1863 | **2912** | B-100 |
| 204F | 12805 | 38415 | 51220 | 3521 | **3584** | B-101 |
| 211 | 1520 | 4280 | 5800 | 404 | **880** | B-14 |
| 212 | 5800 | 10340 | 16140 | 828 | **904** | B-12 |
| 213 | 8060 | 11740 | 19800 | 1063 | **1591** | B-6 |
| 214 | 225 | 5575 | 5800 | 205 | **680** | B-10 |
| 215 | 45600 | 26800 | 72400 | 4693 | **5300** | B-11 |
| 216 | 19200 | 0 | 19200 | 1600 | **1832** | DRIP STRIP |
| **202C** | **16650** | **10138** | **26788** | **1725** | **4901** | **B-9** |
| Untreated | 4580 | 6440 | 11020 | | | Untreated |
| TOTAL TREATED | **116635** | **127613** | **244248** | | | |

| **BMP General Standard Calculation** | | | |
|---|---|---|---|
| | Impervious | Landscaped | Developed |
| NEW DEVELOPED AREA | 121215 | 134053 | 255268 |
| TREATED AREAS | 116635 | 127613 | 244248 |
| **PERCENT TREATED** | **96.2%** | **95.2%** | **95.7%** |

## York Police Department - New Public Safety Facility and Connector Road
## Stormwater General Standard Calculation

| Road Treatment Areas | | | | | |
|---|---|---|---|---|---|
| Area | Treated impervious | Treated developed | BMP | Untreated impervious | Untreated developed |
| A-1 | 4600 | 5855 | B-3 | | |
| A-2 | 6200 | 10069 | Bioretention B-1 | 0 | 0 |
| E-1 | 0 | 0 | | | 2873 |
| A-3 | 10800 | 10800 | Filter Strip 1 | | |
| A-4 | 5300 | 7065 | B-2 | | |
| A-5 | 0 | 0 | | 2730 | 3930 |
| A-6 | 7900 | 8967 | B-3 | | |
| A-7 | 19600 | 19600 | Filter Strip 2 | | |
| E-2 | 0 | 0 | | | 5100 |
| A-8 | 2200 | 0 | B-3 | 0 | |
| A-9 | 5900 | 8296 | B-2 | | |
| A-10 | 5200 | 8458 | B-2 | | |
| A-11 | 0 | 0 | | 5720 | 7710 |
| A-12 | 0 | 0 | | 2470 | 3010 |
| A-13 | 5400 | 7776 | B-2 | | |
| A-14 | 3100 | 6400 | B-2 | | |
| A-15 | 3900 | 6844 | Bioretention B-4 | | |
| A-15A | 7900 | 7900 | Filter Strip 3 | | |
| A-16 | 0 | 0 | | 8300 | 11203 |
| A-17 | 13900 | 13900 | B-3 | | |
| A-18 | 4700 | 12283 | B-2 | | |
| E-3 | 0 | 0 | | | 2386 |
| A-19 | 8600 | 0 | Filter Strip 4 | 0 | |
| A-20 | 3960 | 5790 | B-2 | | |
| A-21 | 2650 | 5082 | B-2 | | |
| **A-22** | **7940** | **12059** | **B-1** | **0** | **0** |
| **A-23** | **0** | **0** | | **2840** | **4340** |
| **A-100** | **0** | **42257** | **B-1** | **0** | **0** |
| **A-101** | **0** | **0** | | **0** | **27829** |
| A-24 | 0 | 0 | B-3 | 8540 | |
| A-25 | 2900 | 2900 | Bioretention B-11 | | |
| A-26 | 4220 | 4220 | Bioretention B-12 | | |
| A-27 | 8100 | 8100 | Bioretention B-6 | | |
| A-28 | 0 | 0 | | 9040 | 12702 |
| A-29 | 7800 | 7800 | Filter Strip 5 | | |
| A-30 | 7160 | 9269 | Bioretention B-8 | | |
| **TOTAL** | **159930** | **231690** | | **39640** | **81083** |

| **%TREATED** | **IMPERVIOUS** | **DEVELOPED** |
|---|---|---|
| | **80.14%** | **74.08%** |

B1 = Buffer with Stone Bermed Level Lip Spreader
B2 = Ditch Turnout Buffer
B3 = Buffer Adjacent to Downhilll Side of Road

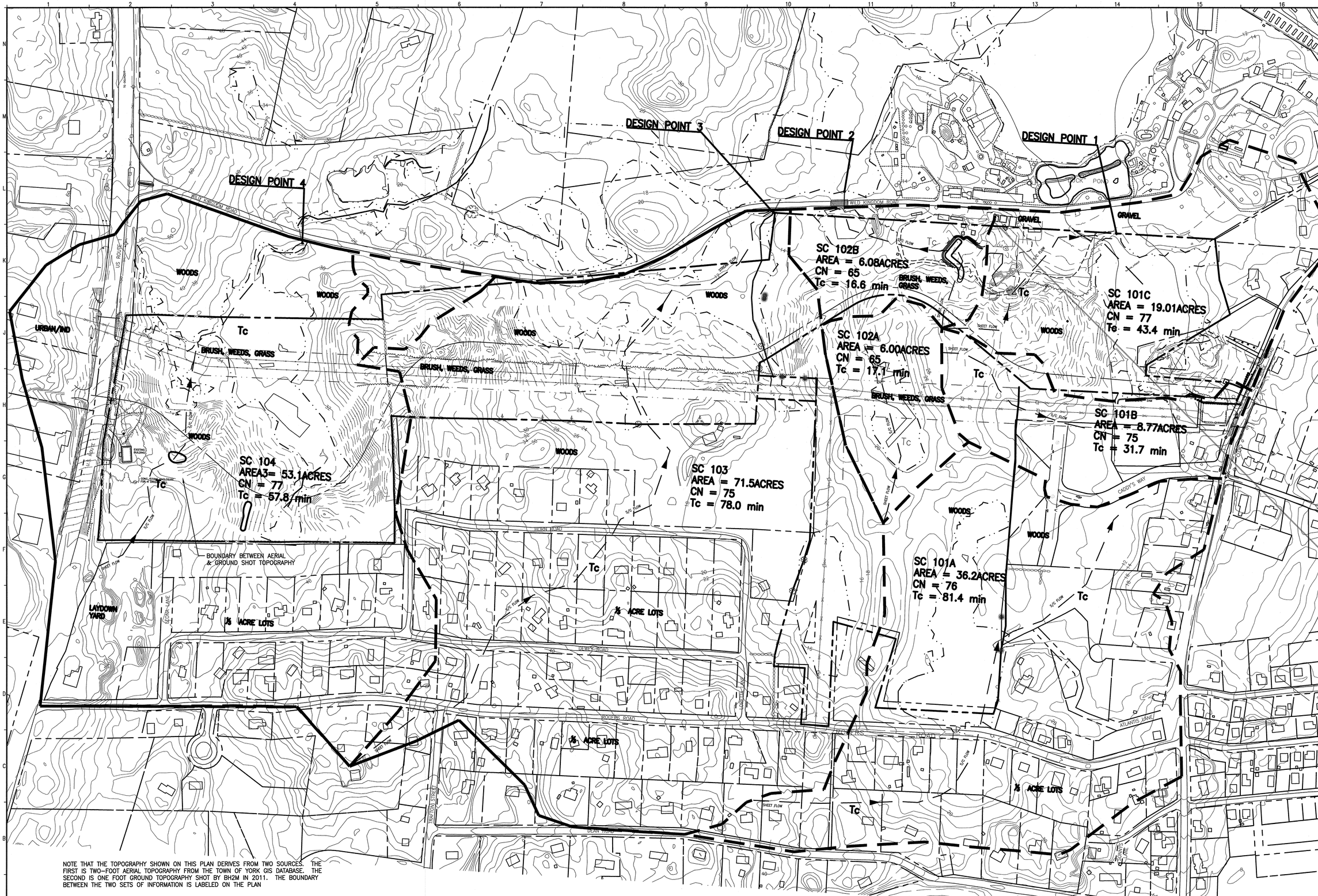
## 4 CONCLUSIONS

The modifications to the originally permitted project will have no significant impact on the water quality or water quantity analyses presented in the original stormwater report. The stormwater management system for the project will not result in an increase in peak runoff from the site under design storm conditions. Water quality treatment is provided in accordance with current local and state standards.

## 5 REFERENCES


- Stormwater Management for Maine: (MEDEP, January 2006, and as amended)
- The Soil Survey of Cumberland County, Maine
- Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices (CCSWCD/MEDEP)
- NRCS Technical Release 378
- NRCS Web Soil Survey

## Updated Figures




NOTE THAT THE TOPOGRAPHY SHOWN ON THIS PLAN DERIVES FROM TWO SOURCES. THE FIRST IS TWO-FOOT AERIAL TOPOGRAPHY FROM THE TOWN OF YORK GIS DATABASE. THE SECOND IS ONE FOOT GROUND TOPOGRAPHY SHOT BY BH2M IN 2011. THE BOUNDARY BETWEEN THE TWO SETS OF INFORMATION IS LABELED ON THE PLAN

## A1 PRE-DEVELOPMENT WATERSHED PLAN

SCALE 1" = 120'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fax. (207) 772-1070
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FOR NORTH

STATE OF MAINE
DAVID R. LEWIS
No. 9294
LICENSED
PROFESSIONAL ENGINEER
3-14-14

YORK POLICE DEPARTMENT
1051 US ROUTE 1
YORK, MAINE

ISSUED FOR PRELIMINARY REVIEW
3-14-14

CURRENT ISSUE STATUS:

| REV | DESCRIPTION | DATE |
|---|---|---|
| 2 | RE-ISSUED FOR PERMITTING | 03-14-14 |
| 1 | ADD DATE AND ISSUE STATUS | 05-03-12 |
| 0 | ISSUED FOR PERMITTING | 05-03-12 |

GRAPHIC SCALE: 0" 1"

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|---|---|
| SCALE: | 1" = 150' |
| PROJECT MANAGER: | DRL |
| JC/DRAWN BY: | WSM |
| A/E OF RECORD: | ADJ |
| CAD FILE: | C-120-06122 |
| PROJECT NO: | 06122 |
| DATE: | |

SHEET TITLE:
PREDEVELOPMENT WATERSHED PLAN

SHEET No.
C-120

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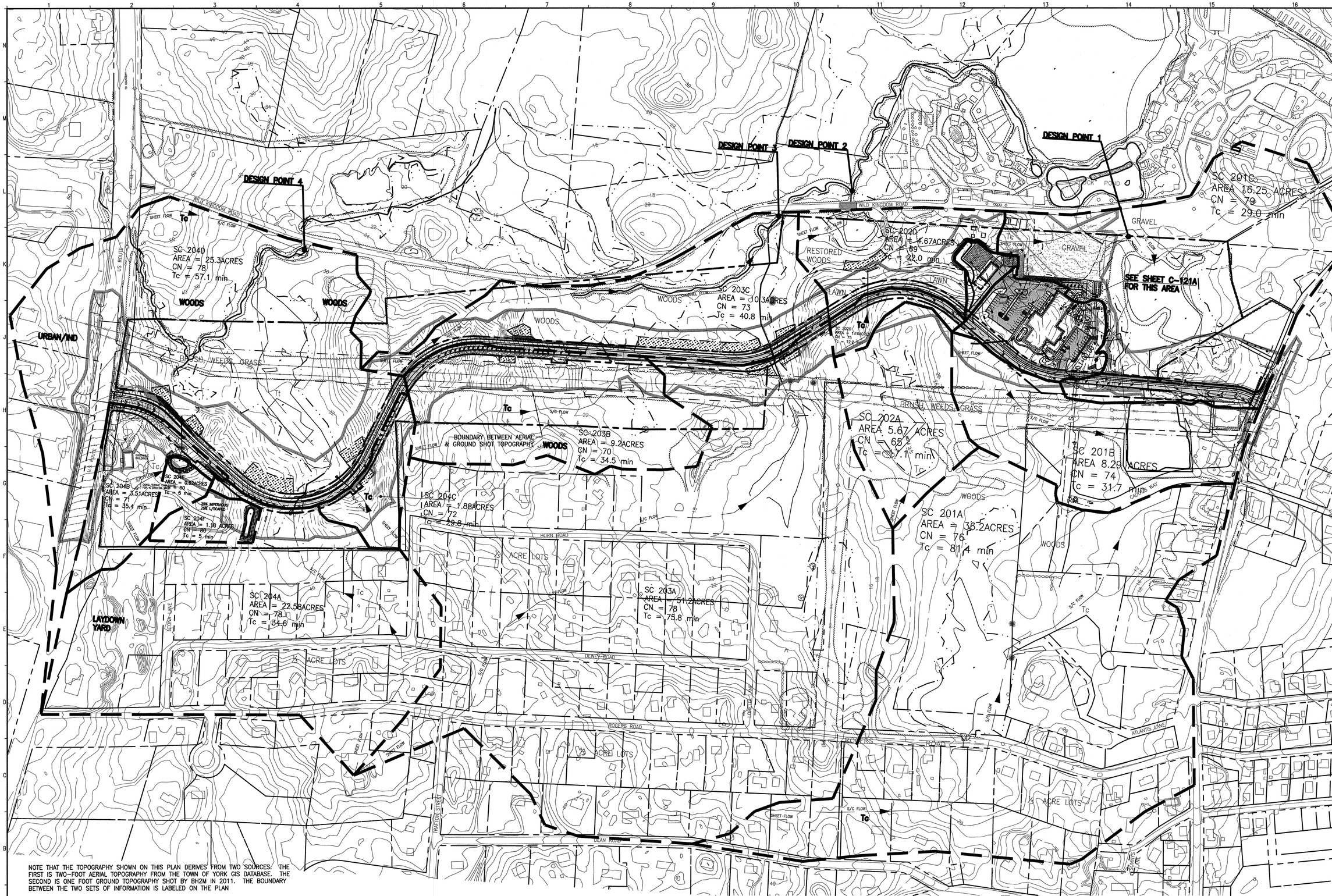


NOTE THAT THE TOPOGRAPHY SHOWN ON THIS PLAN DERIVES FROM TWO SOURCES. THE FIRST IS TWO-FOOT AERIAL TOPOGRAPHY FROM THE TOWN OF YORK GIS DATABASE. THE SECOND IS ONE FOOT GROUND TOPOGRAPHY SHOT BY BH2M IN 2011. THE BOUNDARY BETWEEN THE TWO SETS OF INFORMATION IS LABELED ON THE PLAN

## A1 POST-DEVELOPMENT WATERSHED PLAN

SCALE 1" = 120'


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# YORK POLICE DEPARTMENT

YORK, MAINE

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3-14-14

CURRENT ISSUE STATUS:

| REV | DESCRIPTION | DATE |
|---|---|---|
| 3 | REVISED FOR RE-PERMITTING | 03-14-14 |
| 2 | REVISED FOR ADDITIONAL CLEARING | 08-30-12 |
| 1 | ISSUED FOR FINAL APPROVAL | 06-12-12 |
| 0 | ISSUED FOR PERMITTING | 05-03-12 |

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| A/E OF RECORD: | ADJ |
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| PROJECT NO: | 06122 |
| DATE: | |

SHEET TITLE:

POST-DEVELOPMENT WATERSHED PLAN

SHEET No. C-121

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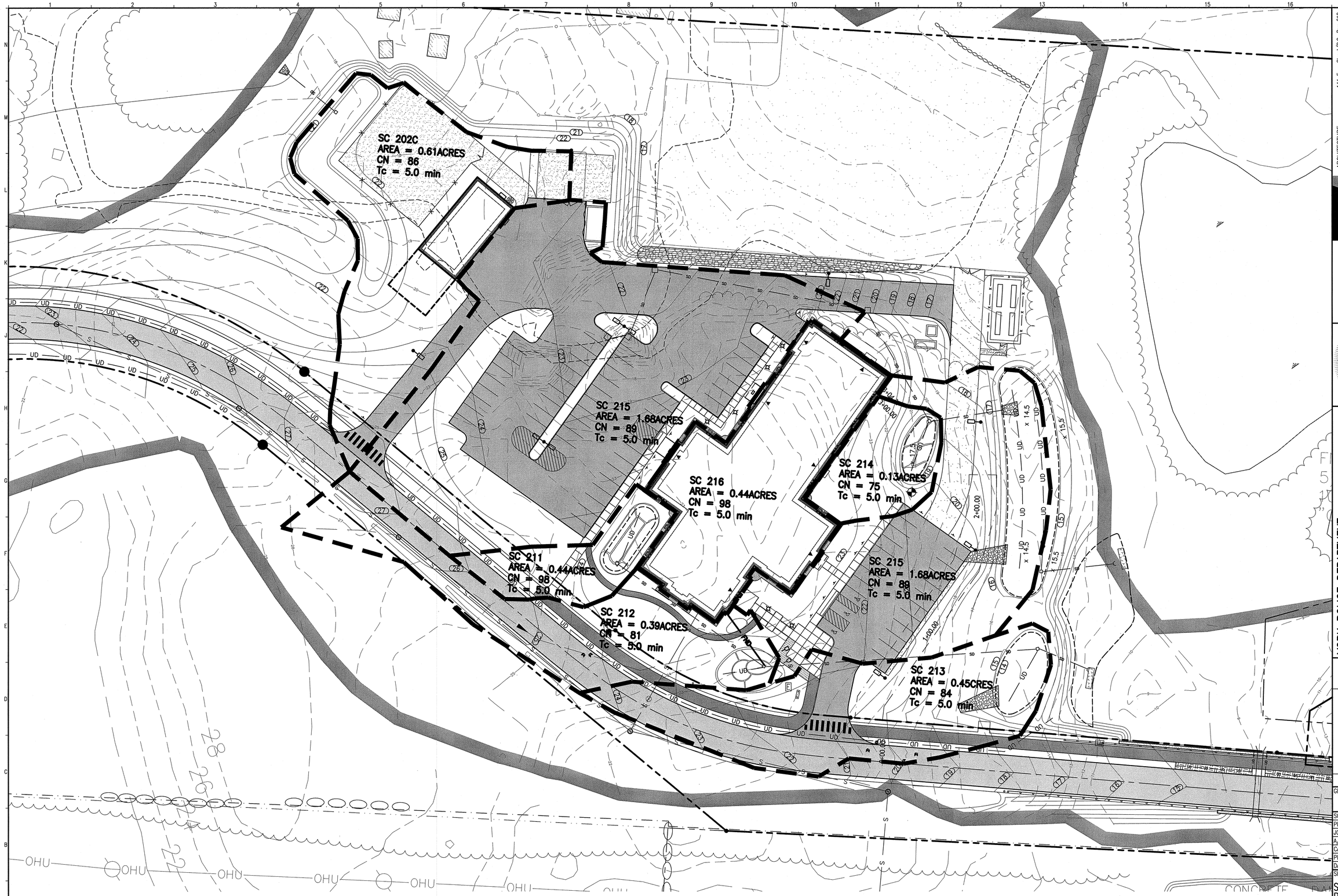


A1 **POST-DEVELOPMENT SITE AREAS WATERSHED PLAN**

SCALE 1" = 120'

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STATE OF MAINE — Albert R. Lord — PROFESSIONAL ENGINEER — 3-14-14

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| 0 | ISSUED FOR PERMITTING | 05-03-12 |

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| JC/DRAWN BY: | WSM |
| A/E OF RECORD: | ADJ |
| CAD FILE: | C-121-06122 |
| PROJECT NO: | 06122 |
| DATE: | |

SHEET TITLE:
SITE AREAS
POST-DEVELOPMENT
WATERSHED PLAN

SHEET No.
C-121A

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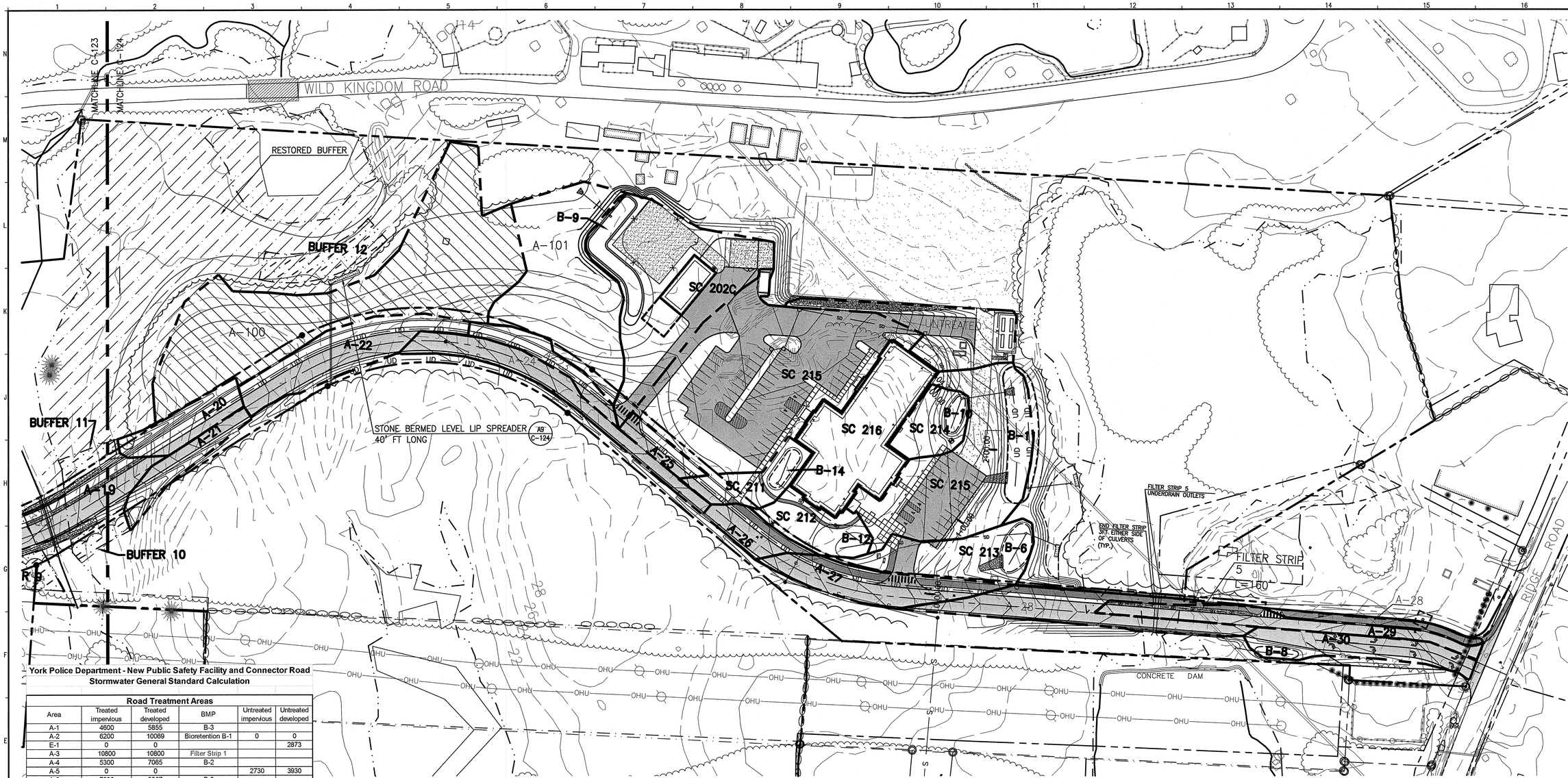


**York Police Department - New Public Safety Facility and Connector Road**
**Stormwater General Standard Calculation**

**Road Treatment Areas**

| Area | Treated impervious | Treated developed | BMP | Untreated impervious | Untreated developed |
|---|---|---|---|---|---|
| A-1 | 4600 | 5855 | B-3 | | |
| A-2 | 6200 | 10069 | Bioretention B-1 | 0 | 0 |
| E-1 | 0 | 0 | | | 2873 |
| A-3 | 10800 | 10800 | Filter Strip 1 | | |
| A-4 | 5300 | 7065 | B-2 | | |
| A-5 | 0 | 0 | | 2730 | 3930 |
| A-6 | 7900 | 8967 | B-3 | | |
| A-7 | 19600 | 19600 | Filter Strip 2 | | |
| E-2 | 0 | 0 | | | 5100 |
| A-8 | 2200 | 0 | B-3 | 0 | |
| A-9 | 5900 | 8296 | B-2 | | |
| A-10 | 5200 | 8458 | B-2 | | |
| A-11 | 0 | 0 | | 5720 | 7710 |
| A-12 | 0 | 0 | | 2470 | 3010 |
| A-13 | 5400 | 7776 | B-2 | | |
| A-14 | 3100 | 6400 | B-2 | | |
| A-15 | 3900 | 6844 | Bioretention B-4 | | |
| A-15A | 7900 | 7900 | Filter Strip 3 | | |
| A-16 | 0 | 0 | | 8300 | 11203 |
| A-17 | 13900 | 13900 | B-3 | | |
| A-18 | 4700 | 12283 | B-2 | | |
| E-3 | 0 | 0 | | | 2386 |
| A-19 | 8600 | 0 | Filter Strip 4 | 0 | |
| A-20 | 3960 | 5790 | B-2 | | |
| A-21 | 2650 | 5082 | B-2 | | |
| A-22 | 7940 | 12059 | B-1 | 0 | 0 |
| A-23 | 0 | 0 | | 2840 | 4340 |
| A-100 | 0 | 42257 | B-1 | 0 | 0 |
| A-101 | 0 | 0 | | 0 | 27829 |
| A-24 | 0 | 0 | B-3 | 8540 | |
| A-25 | 2900 | 2900 | Bioretention B-11 | | |
| A-26 | 4220 | 4220 | Bioretention B-12 | | |
| A-27 | 8100 | 8100 | Bioretention B-6 | | |
| A-28 | 0 | 0 | | 9040 | 12702 |
| A-29 | 7800 | 7800 | Filter Strip 5 | | |
| A-30 | 7160 | 9269 | Bioretention B-8 | | |
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| % TREATED | IMPERVIOUS | DEVELOPED |
|---|---|---|
| | 80.14% | 74.08% |

B1 = Buffer with Stone Bermed Level Lip Spreader
B2 = Ditch Turnout Buffer
B3 = Buffer Adjacent to Downhill Side of Road

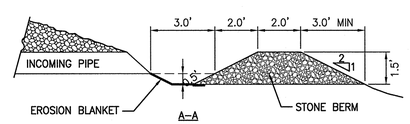
WQVROAD–REV 4 03–10–14.xls

**Site Development Areas**
**Water Quality Volume Summary**

| Subcatchment Area | Impervious | Landscaped | Developed | WQV required | WQV Provided | BMP |
|---|---|---|---|---|---|---|
| 204E | 6775 | 20325 | 27100 | 1863 | **2912** | B-100 |
| 204F | 12805 | 38415 | 51220 | 3521 | **3584** | B-101 |
| 211 | 1520 | 4280 | 5800 | 404 | **880** | B-14 |
| 212 | 5800 | 10340 | 16140 | 828 | **904** | B-12 |
| 213 | 8060 | 11740 | 19800 | 1063 | **1591** | B-6 |
| 214 | 225 | 5575 | 5800 | 205 | **680** | B-10 |
| 215 | 45600 | 26800 | 72400 | 4693 | **5300** | B-11 |
| 216 | 19200 | 0 | 19200 | 1600 | **1832** | DRIP STRIP |
| **202C** | **16650** | **10138** | **26788** | **1725** | **4901** | **B-9** |
| Untreated | 4580 | 6440 | 11020 | | | Untreated |
| TOTAL TREATED | **116635** | **127613** | **244248** | | | |

**BMP General Standard Calculation**

| | Impervious | Landscaped | Developed |
|---|---|---|---|
| NEW DEVELOPED AREA | 121215 | 134053 | 255268 |
| TREATED AREAS | 116635 | 127613 | 244248 |
| **PERCENT TREATED** | **96.2%** | **95.2%** | **95.7%** |

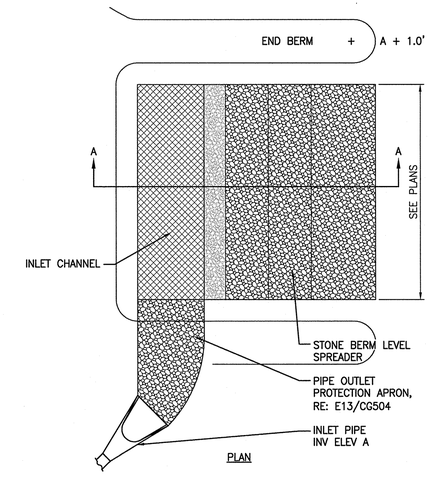



STONE FOR BERM SHALL MEET THE FOLLOWING GRADATION:

| STONE GRADATION | |
|---|---|
| SIZE | % PASSING BY WT |
| 6 IN | 84 – 100 |
| 3 IN | 68 – 83 |
| 1 IN | 42 – 55 |
| No 4 | 8 – 12 |

NOTE:

EROSION BLANKET SHALL COVER UPHILL SIDE IF INLET CHANNEL. TUCK 6" UNDER STONE BERM.




## A9 STONE BERMED LEVEL LIP SPREADER

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# YORK POLICE DEPARTMENT

YORK, MAINE

## ISSUED FOR PRELIMINARY REVIEW 3–14–14

CURRENT ISSUE STATUS:

| REV | DESCRIPTION | DATE |
|---|---|---|
| 3 | REVISED FOR RE–PERMITTING | 03–14–14 |
| 2 | REVISED FOR ADDITIONAL CLEARING | 08–30–12 |
| 1 | REVISED PER REVIEW COMMENTS | 05–03–12 |
| 0 | ISSUED FOR PERMITTING | 03–29–12 |

GRAPHIC SCALE: 0" 1"

| | |
|---|---|
| SCALE: | 1" = 60' |
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| JC/DRAWN BY: | WSM |
| A/E OF RECORD: | ADJ |
| CAD FILE: | C–124–06122 |
| PROJECT NO: | 06122 |
| DATE: | |

SHEET TITLE:

WATER QUALITY PLAN

SHEET No.

C–124

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PROGRESS PRINT

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Sim-Route method - Pond routing by Sim-Route method

**Reach 2R: Briley Brook** Avg. Flow Depth=1.37' Max Vel=2.47 fps Inflow=25.17 cfs 5.726 af
L=250.0' S=0.0050 '/' Capacity=90.70 cfs Outflow=25.01 cfs 5.726 af

**Link DP2: Design Point 2** Inflow=25.51 cfs 5.996 af
Primary=25.51 cfs 5.996 af

**Link DP3: Design Point 3** Inflow=25.17 cfs 5.726 af
Primary=25.17 cfs 5.726 af

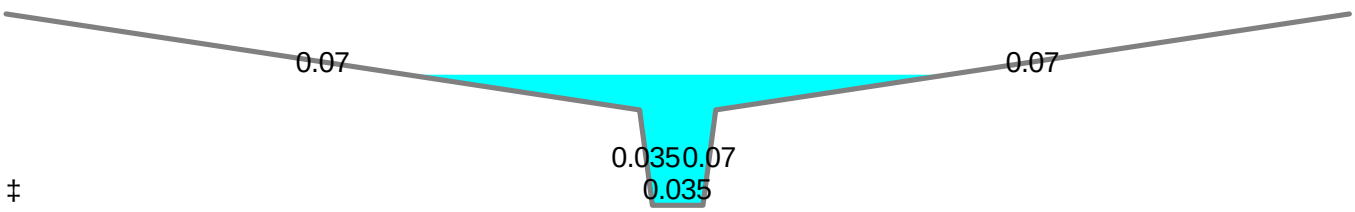
## Summary for Reach 2R: Briley Brook

Inflow Area = 71.511 ac, 15.22% Impervious, Inflow Depth = 0.96" for 2-Year Storm event
Inflow = 25.17 cfs @ 13.10 hrs, Volume= 5.726 af
Outflow = 25.01 cfs @ 13.19 hrs, Volume= 5.726 af, Atten= 1%, Lag= 5.1 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 0.61 fps, Avg. Travel Time= 6.8 min

Peak Storage= 3,482 cf @ 13.19 hrs
Average Depth at Peak Storage= 1.37'
Bank-Full Depth= 2.00' Flow Area= 61.0 sf, Capacity= 90.70 cfs

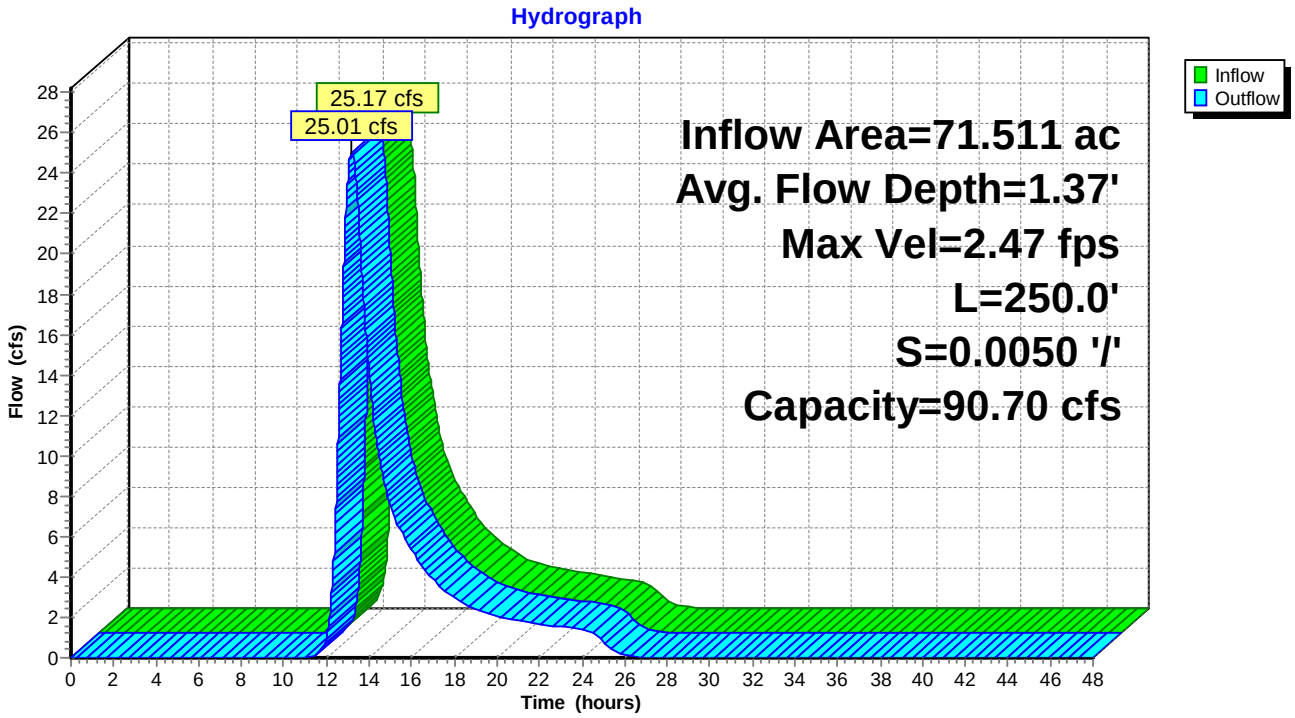
Custom cross-section, Length= 250.0' Slope= 0.0050 '/'
Flow calculated by Manning's Subdivision method
Inlet Invert= 13.25', Outlet Invert= 12.00'




| Offset (feet) | Elevation (feet) | Chan.Depth (feet) | n | Description |
|---|---|---|---|---|
| 0.00 | 2.00 | 0.00 | | |
| 50.00 | 1.00 | 1.00 | 0.070 | |
| 51.00 | 0.00 | 2.00 | 0.035 | |
| 55.00 | 0.00 | 2.00 | 0.035 | |
| 56.00 | 1.00 | 1.00 | 0.070 | |
| 106.00 | 2.00 | 0.00 | 0.070 | |

| Depth (feet) | End Area (sq-ft) | Perim. (feet) | Storage (cubic-feet) | Discharge (cfs) |
|---|---|---|---|---|
| 0.00 | 0.0 | 4.0 | 0 | 0.00 |
| 1.00 | 5.0 | 6.8 | 1,250 | 12.32 |
| 2.00 | 61.0 | 106.8 | 15,250 | 90.70 |

## Reach 2R: Briley Brook

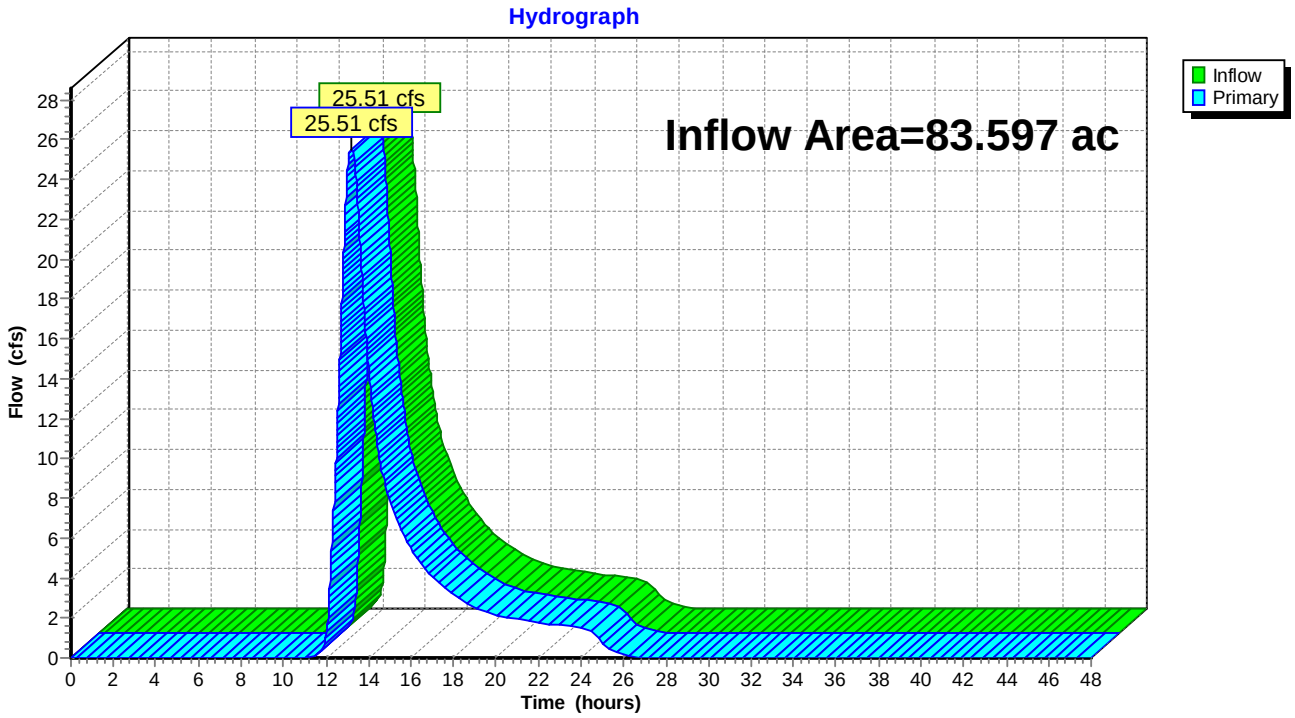


## Summary for Link DP2: Design Point 2

Inflow Area = 83.597 ac, 13.02% Impervious, Inflow Depth = 0.86" for 2-Year Storm event
Inflow = 25.51 cfs @ 13.18 hrs, Volume= 5.996 af
Primary = 25.51 cfs @ 13.19 hrs, Volume= 5.996 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP2: Design Point 2

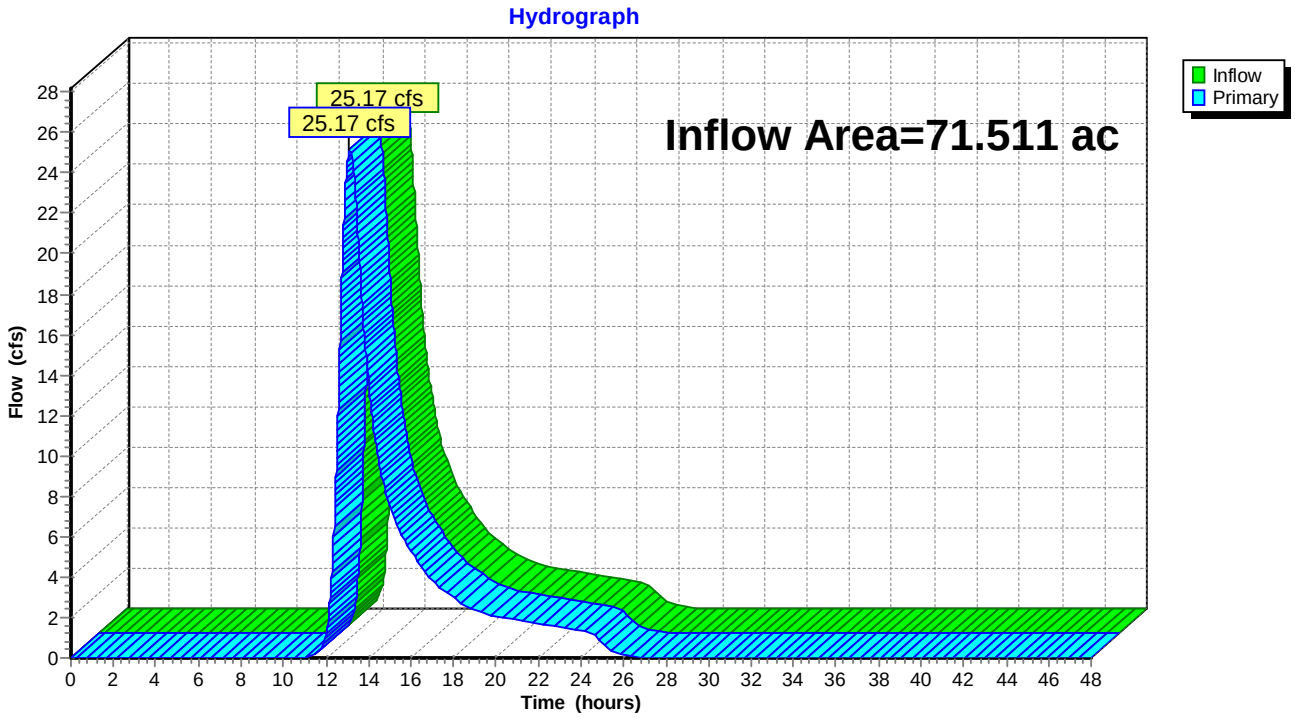


## Summary for Link DP3: Design Point 3

Inflow Area = 71.511 ac, 15.22% Impervious, Inflow Depth = 0.96" for 2-Year Storm event
Inflow = 25.17 cfs @ 13.09 hrs, Volume= 5.726 af
Primary = 25.17 cfs @ 13.10 hrs, Volume= 5.726 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP3: Design Point 3



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Sim-Route method - Pond routing by Sim-Route method

**Reach 2R: Briley Brook** Avg. Flow Depth=1.77' Max Vel=2.47 fps Inflow=59.15 cfs 12.687 af
L=250.0' S=0.0050 '/' Capacity=90.70 cfs Outflow=58.83 cfs 12.687 af

**Link DP2: Design Point 2** Inflow=60.15 cfs 13.433 af
Primary=60.15 cfs 13.433 af

**Link DP3: Design Point 3** Inflow=59.15 cfs 12.687 af
Primary=59.15 cfs 12.687 af

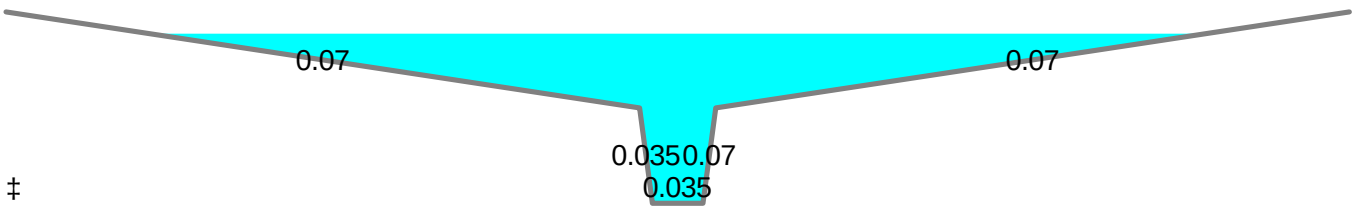
## Summary for Reach 2R: Briley Brook

Inflow Area = 71.511 ac, 15.22% Impervious, Inflow Depth = 2.13" for 10-Year Storm event
Inflow = 59.15 cfs @ 13.10 hrs, Volume= 12.687 af
Outflow = 58.83 cfs @ 13.13 hrs, Volume= 12.687 af, Atten= 1%, Lag= 2.0 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 0.72 fps, Avg. Travel Time= 5.8 min

Peak Storage= 9,891 cf @ 13.13 hrs
Average Depth at Peak Storage= 1.77'
Bank-Full Depth= 2.00' Flow Area= 61.0 sf, Capacity= 90.70 cfs

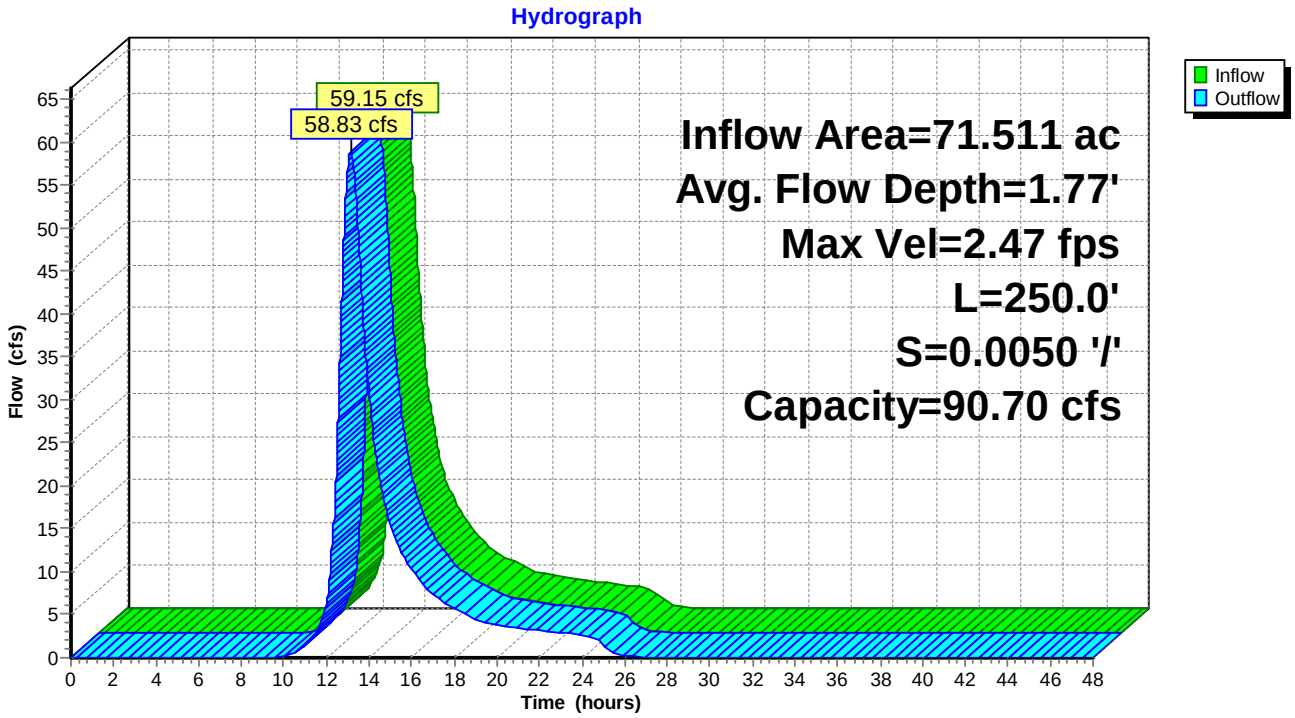
Custom cross-section, Length= 250.0' Slope= 0.0050 '/'
Flow calculated by Manning's Subdivision method
Inlet Invert= 13.25', Outlet Invert= 12.00'




| Offset (feet) | Elevation (feet) | Chan.Depth (feet) | n | Description |
|---|---|---|---|---|
| 0.00 | 2.00 | 0.00 | | |
| 50.00 | 1.00 | 1.00 | 0.070 | |
| 51.00 | 0.00 | 2.00 | 0.035 | |
| 55.00 | 0.00 | 2.00 | 0.035 | |
| 56.00 | 1.00 | 1.00 | 0.070 | |
| 106.00 | 2.00 | 0.00 | 0.070 | |

| Depth (feet) | End Area (sq-ft) | Perim. (feet) | Storage (cubic-feet) | Discharge (cfs) |
|---|---|---|---|---|
| 0.00 | 0.0 | 4.0 | 0 | 0.00 |
| 1.00 | 5.0 | 6.8 | 1,250 | 12.32 |
| 2.00 | 61.0 | 106.8 | 15,250 | 90.70 |

## Reach 2R: Briley Brook

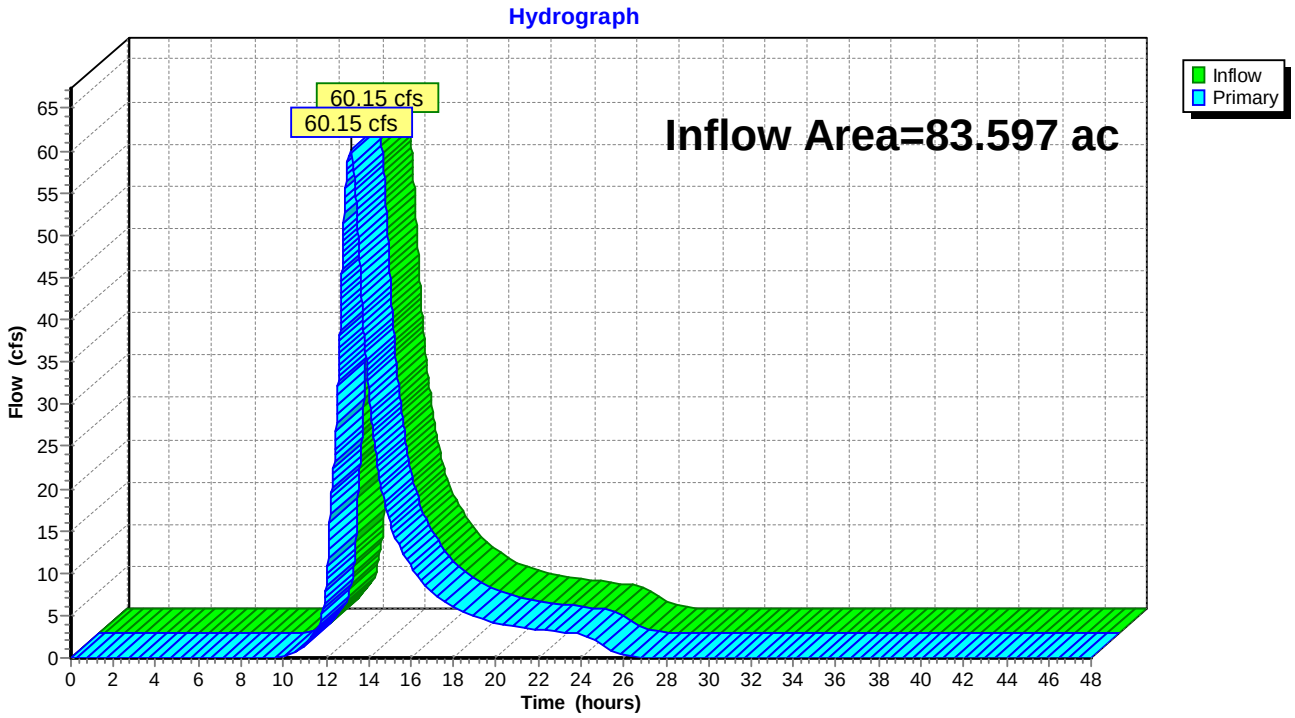


## Summary for Link DP2: Design Point 2

Inflow Area = 83.597 ac, 13.02% Impervious, Inflow Depth = 1.93" for 10-Year Storm event
Inflow = 60.15 cfs @ 13.12 hrs, Volume= 13.433 af
Primary = 60.15 cfs @ 13.13 hrs, Volume= 13.433 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP2: Design Point 2

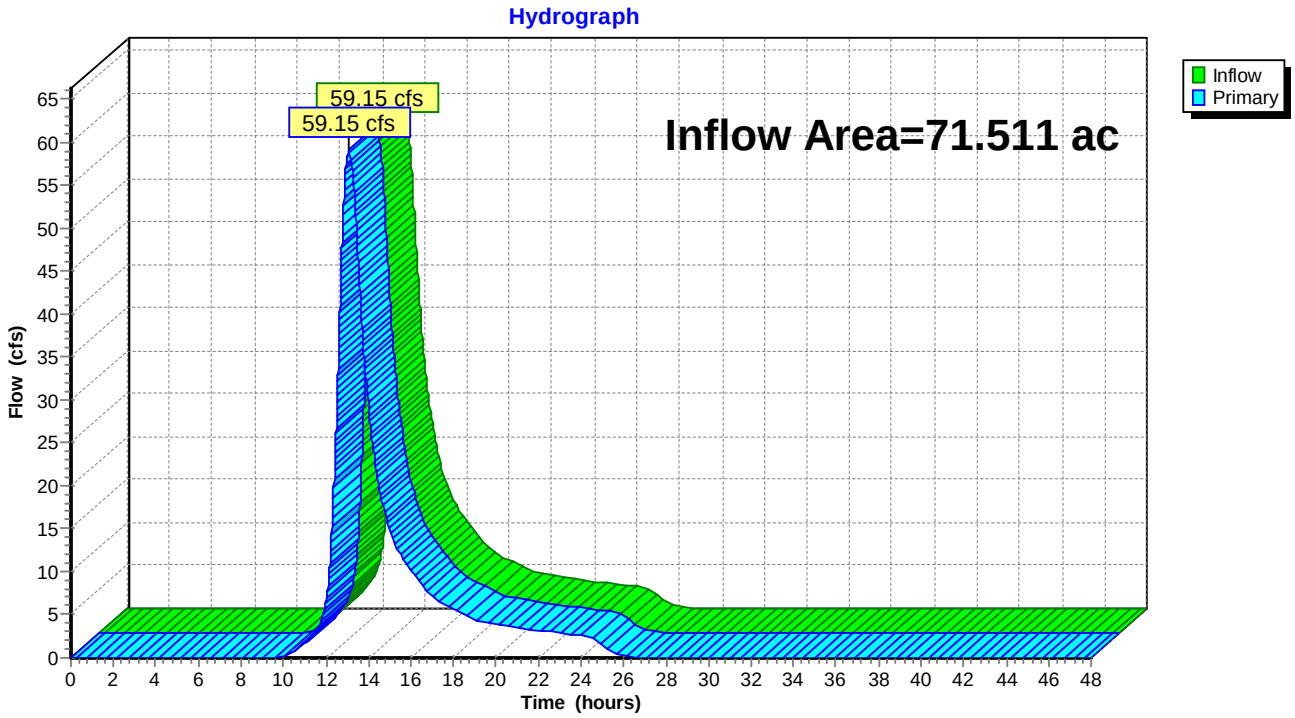


## Summary for Link DP3: Design Point 3

Inflow Area = 71.511 ac, 15.22% Impervious, Inflow Depth = 2.13" for 10-Year Storm event
Inflow = 59.15 cfs @ 13.09 hrs, Volume= 12.687 af
Primary = 59.15 cfs @ 13.10 hrs, Volume= 12.687 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP3: Design Point 3



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Sim-Route method - Pond routing by Sim-Route method

**Reach 2R: Briley Brook** Avg. Flow Depth=1.91' Max Vel=2.47 fps Inflow=77.75 cfs 16.551 af
L=250.0' S=0.0050 '/' Capacity=90.70 cfs Outflow=77.44 cfs 16.551 af

**Link DP2: Design Point 2** Inflow=79.20 cfs 17.581 af
Primary=79.20 cfs 17.581 af

**Link DP3: Design Point 3** Inflow=77.75 cfs 16.551 af
Primary=77.75 cfs 16.551 af

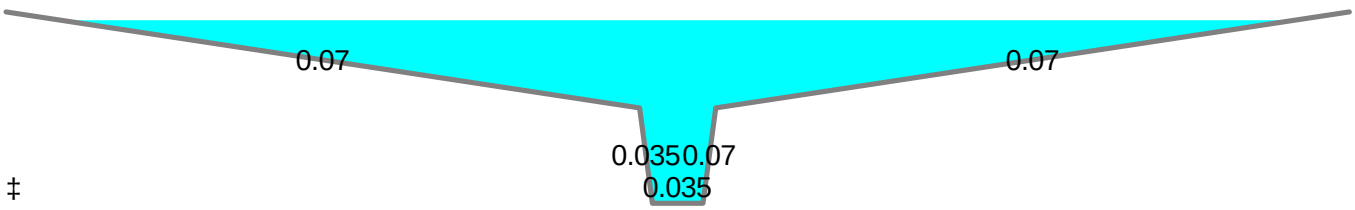
## Summary for Reach 2R: Briley Brook

Inflow Area = 71.511 ac, 15.22% Impervious, Inflow Depth = 2.78" for 25-Year Storm event
Inflow = 77.75 cfs @ 13.09 hrs, Volume= 16.551 af
Outflow = 77.44 cfs @ 13.12 hrs, Volume= 16.551 af, Atten= 0%, Lag= 1.6 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 0.76 fps, Avg. Travel Time= 5.5 min

Peak Storage= 13,082 cf @ 13.12 hrs
Average Depth at Peak Storage= 1.91'
Bank-Full Depth= 2.00' Flow Area= 61.0 sf, Capacity= 90.70 cfs

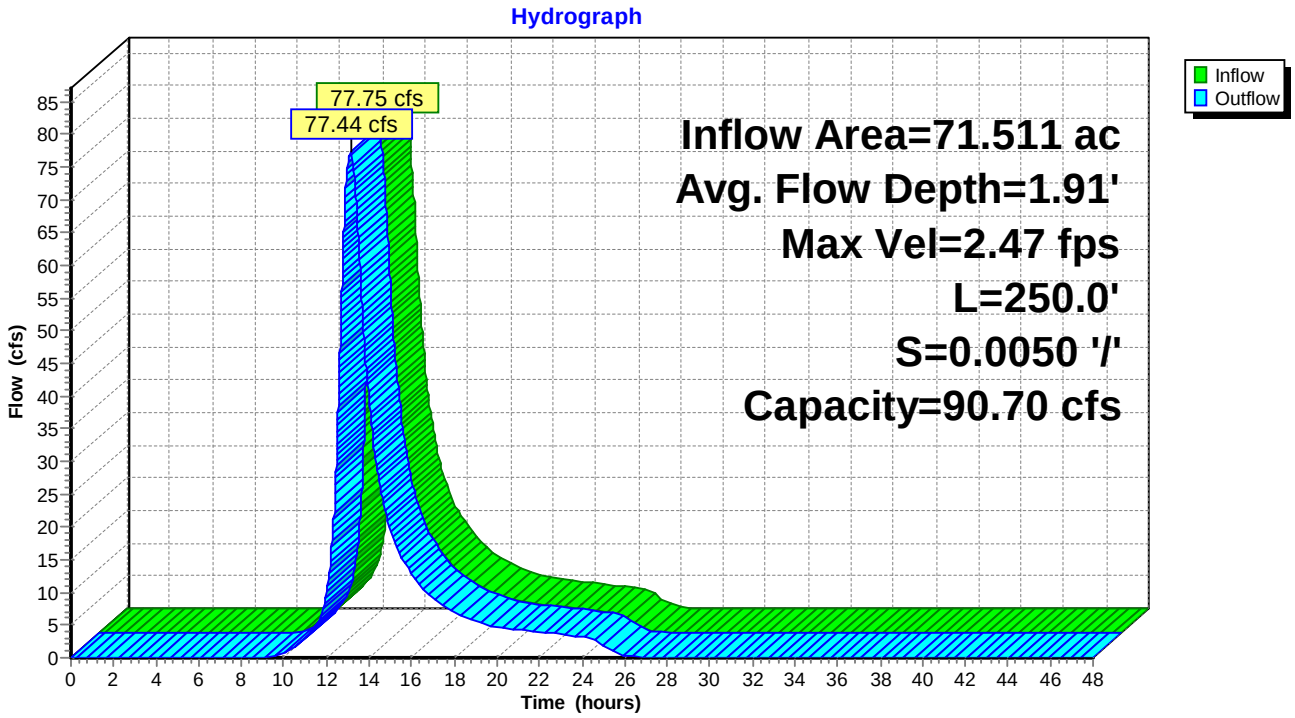
Custom cross-section, Length= 250.0' Slope= 0.0050 '/'
Flow calculated by Manning's Subdivision method
Inlet Invert= 13.25', Outlet Invert= 12.00'




| Offset (feet) | Elevation (feet) | Chan.Depth (feet) | n | Description |
|---|---|---|---|---|
| 0.00 | 2.00 | 0.00 | | |
| 50.00 | 1.00 | 1.00 | 0.070 | |
| 51.00 | 0.00 | 2.00 | 0.035 | |
| 55.00 | 0.00 | 2.00 | 0.035 | |
| 56.00 | 1.00 | 1.00 | 0.070 | |
| 106.00 | 2.00 | 0.00 | 0.070 | |

| Depth (feet) | End Area (sq-ft) | Perim. (feet) | Storage (cubic-feet) | Discharge (cfs) |
|---|---|---|---|---|
| 0.00 | 0.0 | 4.0 | 0 | 0.00 |
| 1.00 | 5.0 | 6.8 | 1,250 | 12.32 |
| 2.00 | 61.0 | 106.8 | 15,250 | 90.70 |

## Reach 2R: Briley Brook

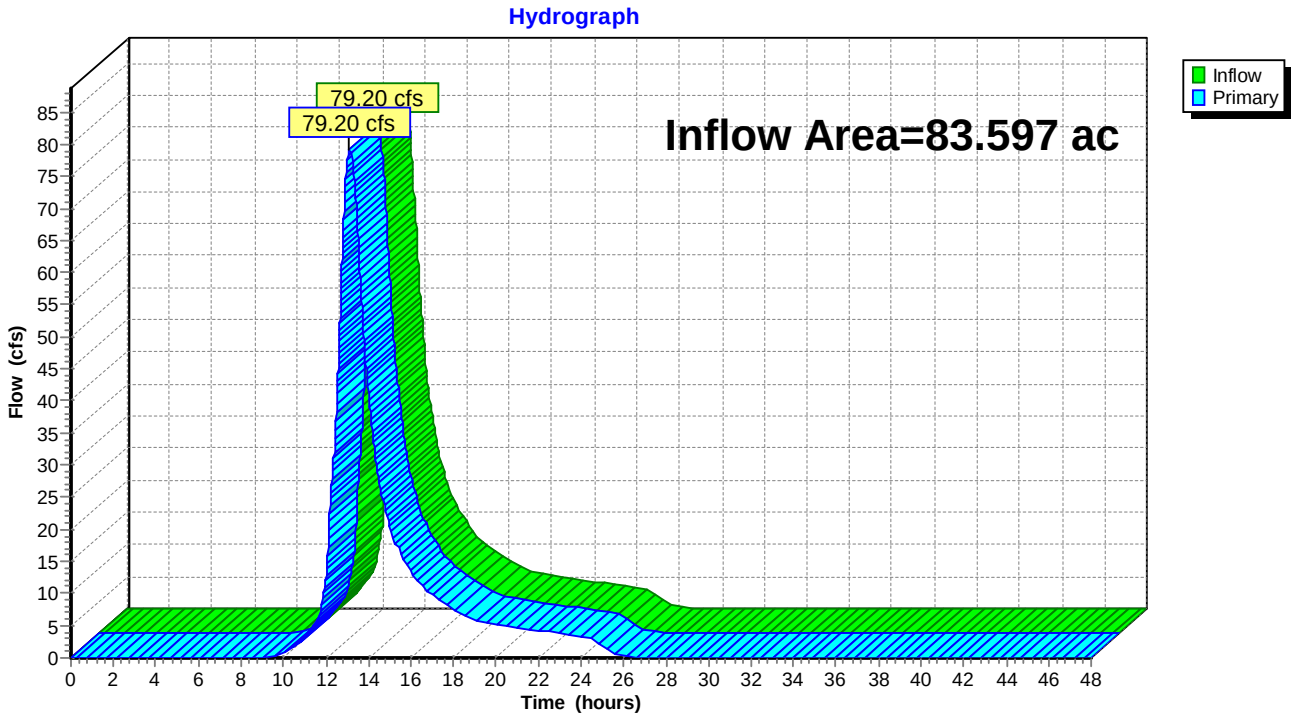


## Summary for Link DP2: Design Point 2

Inflow Area = 83.597 ac, 13.02% Impervious, Inflow Depth = 2.52" for 25-Year Storm event
Inflow = 79.20 cfs @ 13.12 hrs, Volume= 17.581 af
Primary = 79.20 cfs @ 13.13 hrs, Volume= 17.581 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP2: Design Point 2

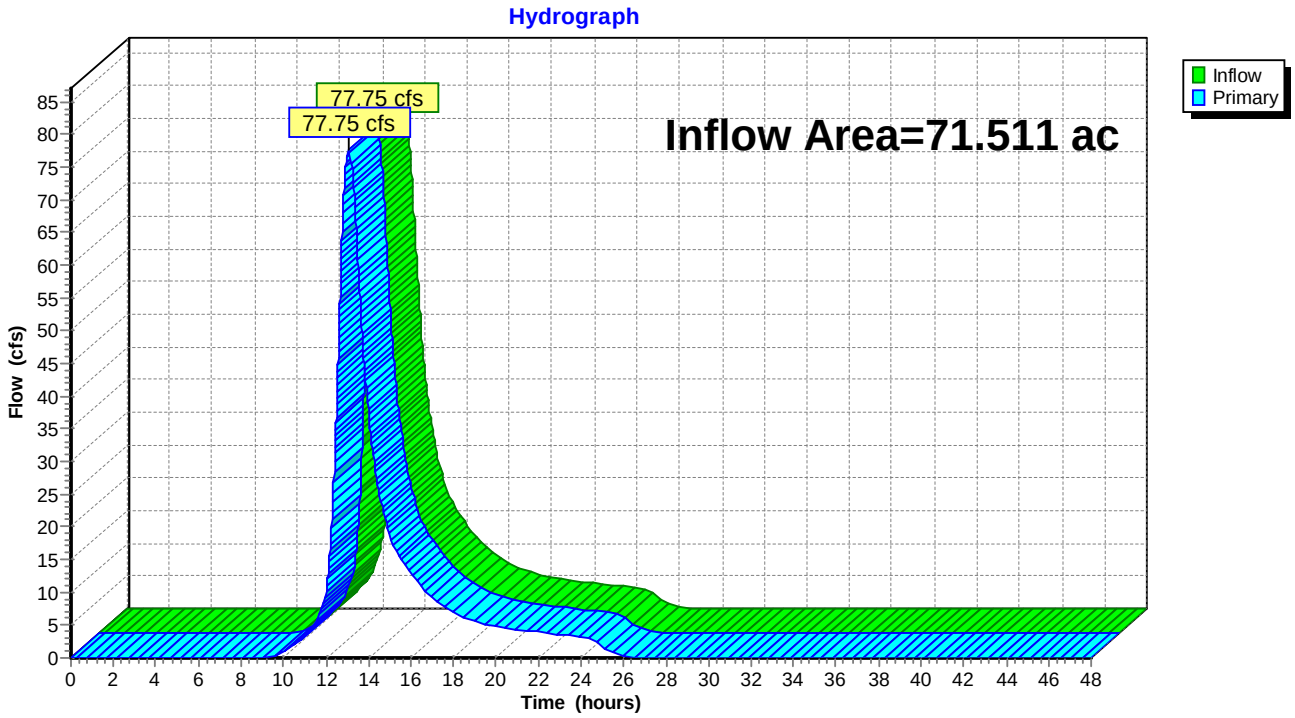


## Summary for Link DP3: Design Point 3

Inflow Area = 71.511 ac, 15.22% Impervious, Inflow Depth = 2.78" for 25-Year Storm event
Inflow = 77.75 cfs @ 13.08 hrs, Volume= 16.551 af
Primary = 77.75 cfs @ 13.09 hrs, Volume= 16.551 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP3: Design Point 3



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Sim-Route method - Pond routing by Sim-Route method

**Reach 2R: Briley Brook** Avg. Flow Depth=1.98' Max Vel=2.47 fps Inflow=87.28 cfs 18.547 af
L=250.0' S=0.0050 '/' Capacity=90.70 cfs Outflow=86.99 cfs 18.547 af

**Link DP2: Design Point 2** Inflow=88.98 cfs 19.728 af
Primary=88.98 cfs 19.728 af

**Link DP3: Design Point 3** Inflow=87.28 cfs 18.547 af
Primary=87.28 cfs 18.547 af

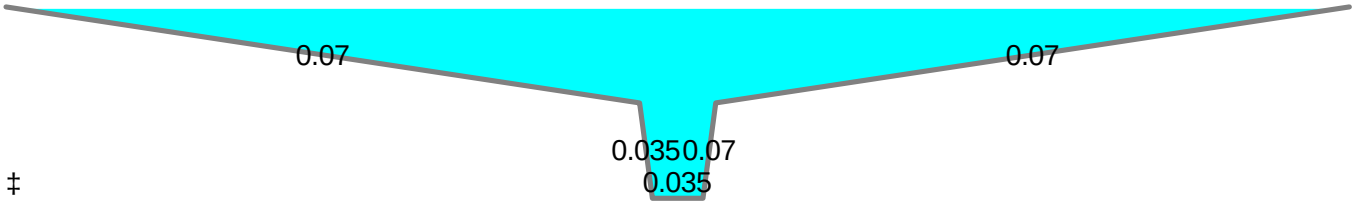
## Summary for Reach 2R: Briley Brook

Inflow Area = 71.511 ac, 15.22% Impervious, Inflow Depth = 3.11" for 50-Year Storm event
Inflow = 87.28 cfs @ 13.09 hrs, Volume= 18.547 af
Outflow = 86.99 cfs @ 13.12 hrs, Volume= 18.547 af, Atten= 0%, Lag= 1.5 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 0.78 fps, Avg. Travel Time= 5.4 min

Peak Storage= 14,652 cf @ 13.12 hrs
Average Depth at Peak Storage= 1.98'
Bank-Full Depth= 2.00' Flow Area= 61.0 sf, Capacity= 90.70 cfs

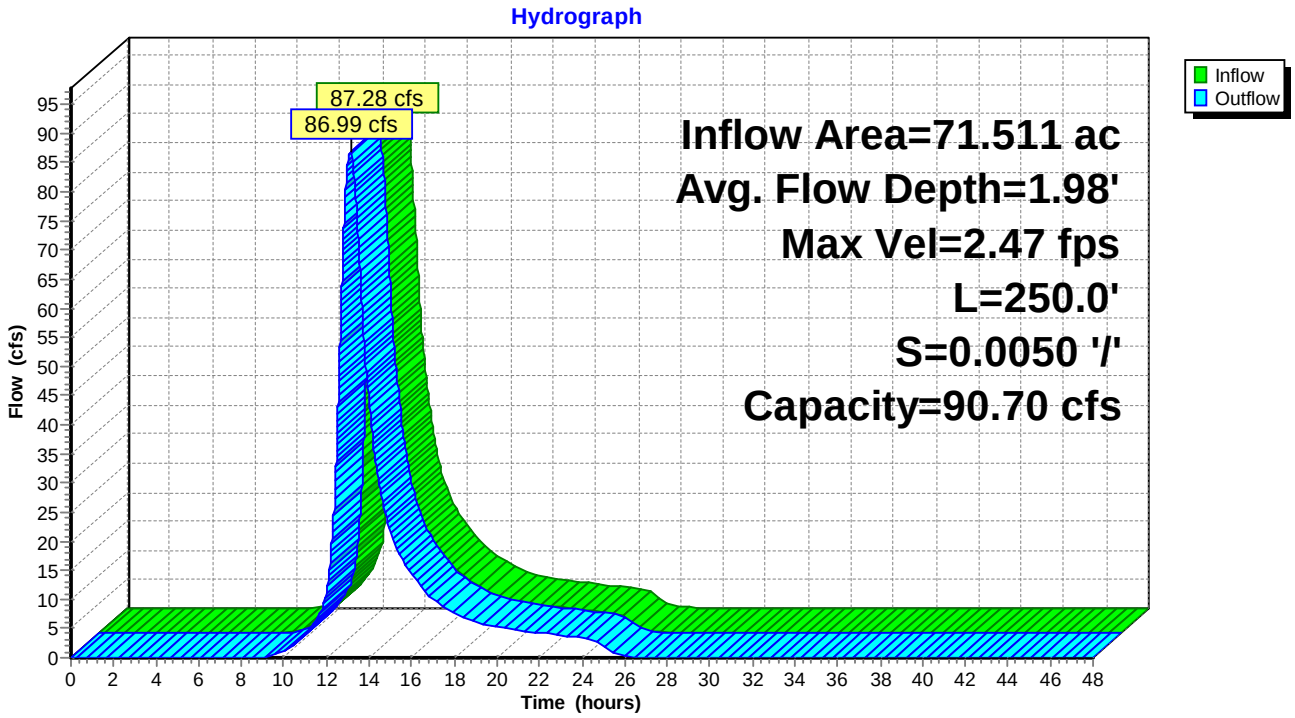
Custom cross-section, Length= 250.0' Slope= 0.0050 '/'
Flow calculated by Manning's Subdivision method
Inlet Invert= 13.25', Outlet Invert= 12.00'




| Offset (feet) | Elevation (feet) | Chan.Depth (feet) | n | Description |
|---|---|---|---|---|
| 0.00 | 2.00 | 0.00 | | |
| 50.00 | 1.00 | 1.00 | 0.070 | |
| 51.00 | 0.00 | 2.00 | 0.035 | |
| 55.00 | 0.00 | 2.00 | 0.035 | |
| 56.00 | 1.00 | 1.00 | 0.070 | |
| 106.00 | 2.00 | 0.00 | 0.070 | |

| Depth (feet) | End Area (sq-ft) | Perim. (feet) | Storage (cubic-feet) | Discharge (cfs) |
|---|---|---|---|---|
| 0.00 | 0.0 | 4.0 | 0 | 0.00 |
| 1.00 | 5.0 | 6.8 | 1,250 | 12.32 |
| 2.00 | 61.0 | 106.8 | 15,250 | 90.70 |

## Reach 2R: Briley Brook

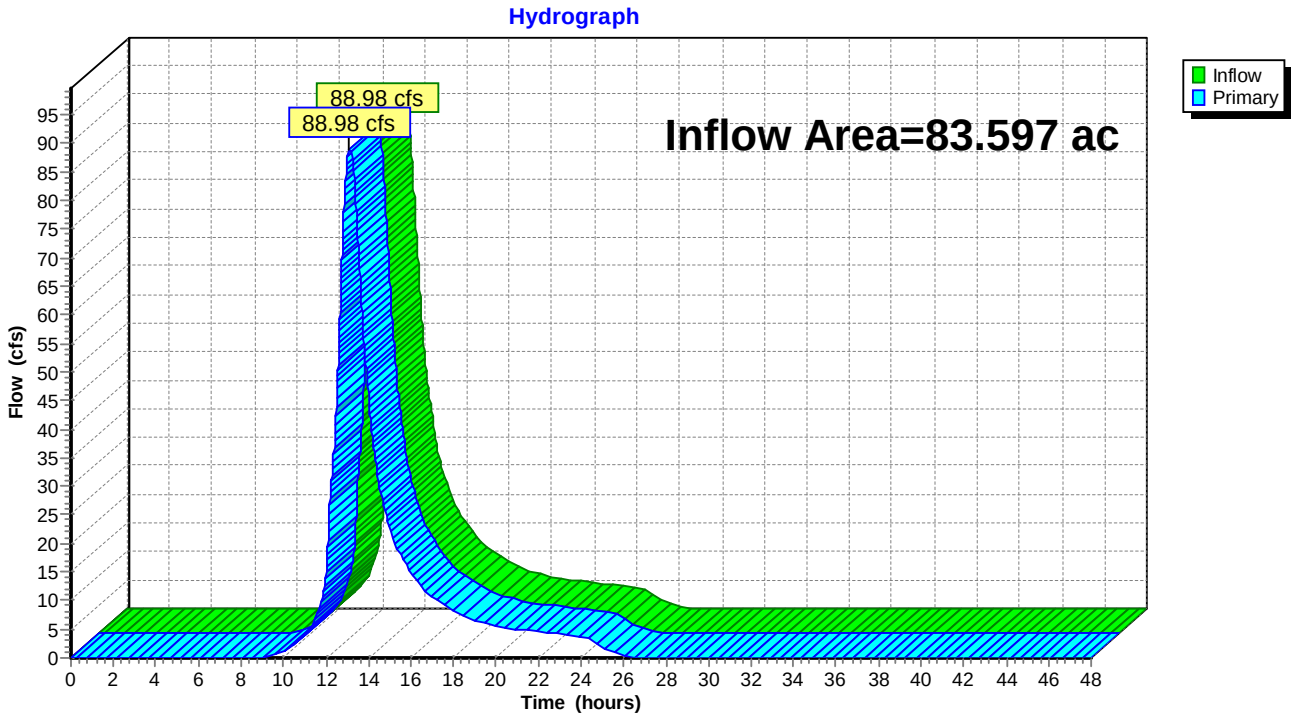


## Summary for Link DP2: Design Point 2

Inflow Area = 83.597 ac, 13.02% Impervious, Inflow Depth = 2.83" for 50-Year Storm event
Inflow = 88.98 cfs @ 13.11 hrs, Volume= 19.728 af
Primary = 88.98 cfs @ 13.12 hrs, Volume= 19.728 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP2: Design Point 2

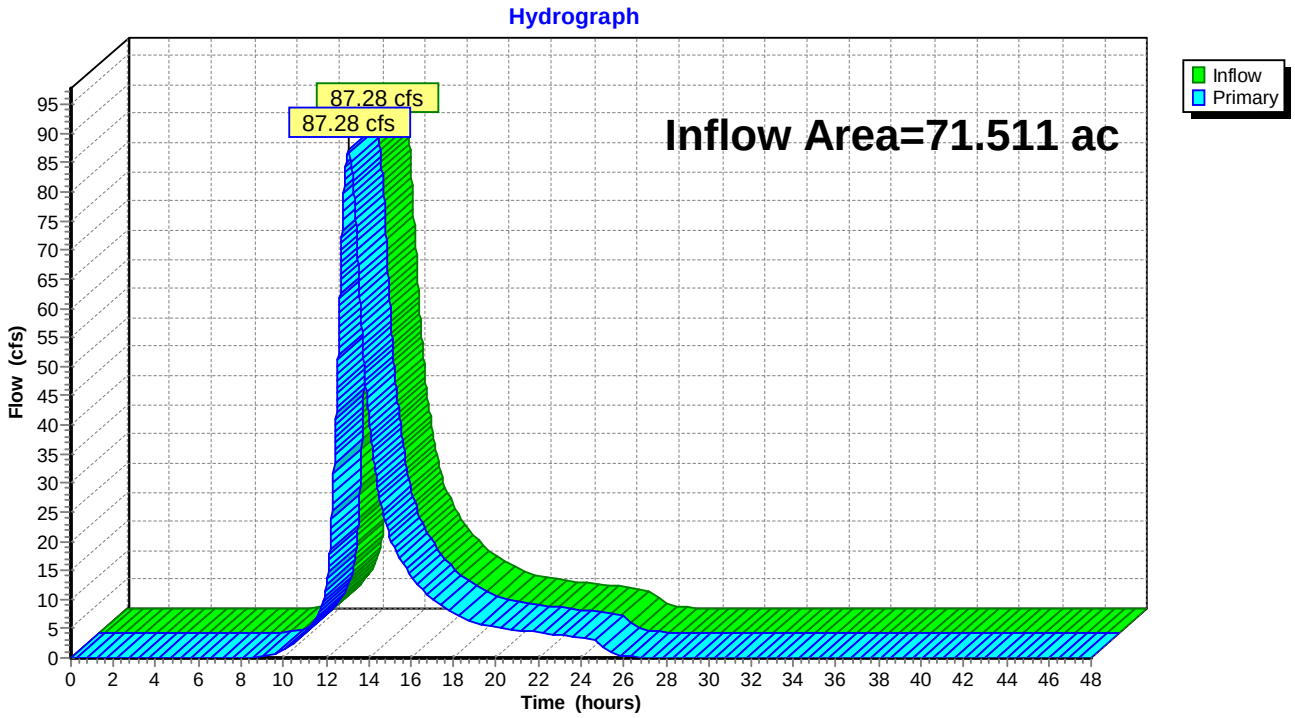


## Summary for Link DP3: Design Point 3

Inflow Area = 71.511 ac, 15.22% Impervious, Inflow Depth = 3.11" for 50-Year Storm event
Inflow = 87.28 cfs @ 13.08 hrs, Volume= 18.547 af
Primary = 87.28 cfs @ 13.09 hrs, Volume= 18.547 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP3: Design Point 3



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Sim-Route method - Pond routing by Sim-Route method

**Reach 2R: Briley Brook** Avg. Flow Depth=2.08' Max Vel=2.47 fps Inflow=106.70 cfs 22.639 af
L=250.0' S=0.0050 '/' Capacity=90.70 cfs Outflow=106.54 cfs 22.639 af

**Link DP2: Design Point 2** Inflow=109.00 cfs 24.146 af
Primary=109.00 cfs 24.146 af

**Link DP3: Design Point 3** Inflow=106.70 cfs 22.639 af
Primary=106.70 cfs 22.639 af

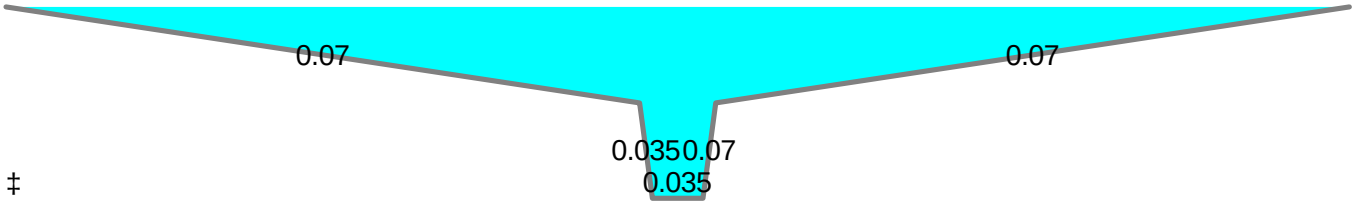
## Summary for Reach 2R: Briley Brook

Inflow Area = 71.511 ac, 15.22% Impervious, Inflow Depth = 3.80" for 100-Year Storm event
Inflow = 106.70 cfs @ 13.09 hrs, Volume= 22.639 af
Outflow = 106.54 cfs @ 13.11 hrs, Volume= 22.639 af, Atten= 0%, Lag= 1.1 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 0.81 fps, Avg. Travel Time= 5.2 min

Peak Storage= 17,272 cf @ 13.11 hrs
Average Depth at Peak Storage= 2.08'
Bank-Full Depth= 2.00' Flow Area= 61.0 sf, Capacity= 90.70 cfs

Custom cross-section, Length= 250.0' Slope= 0.0050 '/'
Flow calculated by Manning's Subdivision method
Inlet Invert= 13.25', Outlet Invert= 12.00'

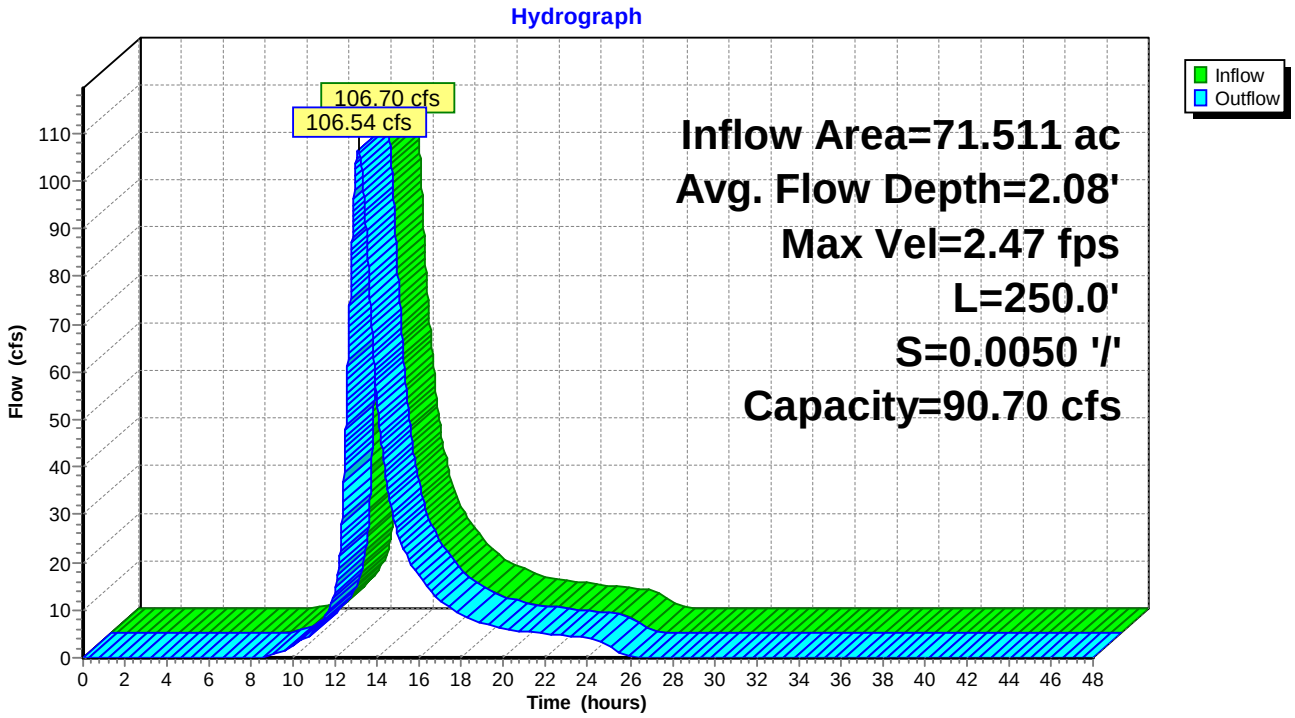



‡

| Offset (feet) | Elevation (feet) | Chan.Depth (feet) | n | Description |
|---|---|---|---|---|
| 0.00 | 2.00 | 0.00 | | |
| 50.00 | 1.00 | 1.00 | 0.070 | |
| 51.00 | 0.00 | 2.00 | 0.035 | |
| 55.00 | 0.00 | 2.00 | 0.035 | |
| 56.00 | 1.00 | 1.00 | 0.070 | |
| 106.00 | 2.00 | 0.00 | 0.070 | |

| Depth (feet) | End Area (sq-ft) | Perim. (feet) | Storage (cubic-feet) | Discharge (cfs) |
|---|---|---|---|---|
| 0.00 | 0.0 | 4.0 | 0 | 0.00 |
| 1.00 | 5.0 | 6.8 | 1,250 | 12.32 |
| 2.00 | 61.0 | 106.8 | 15,250 | 90.70 |

## Reach 2R: Briley Brook

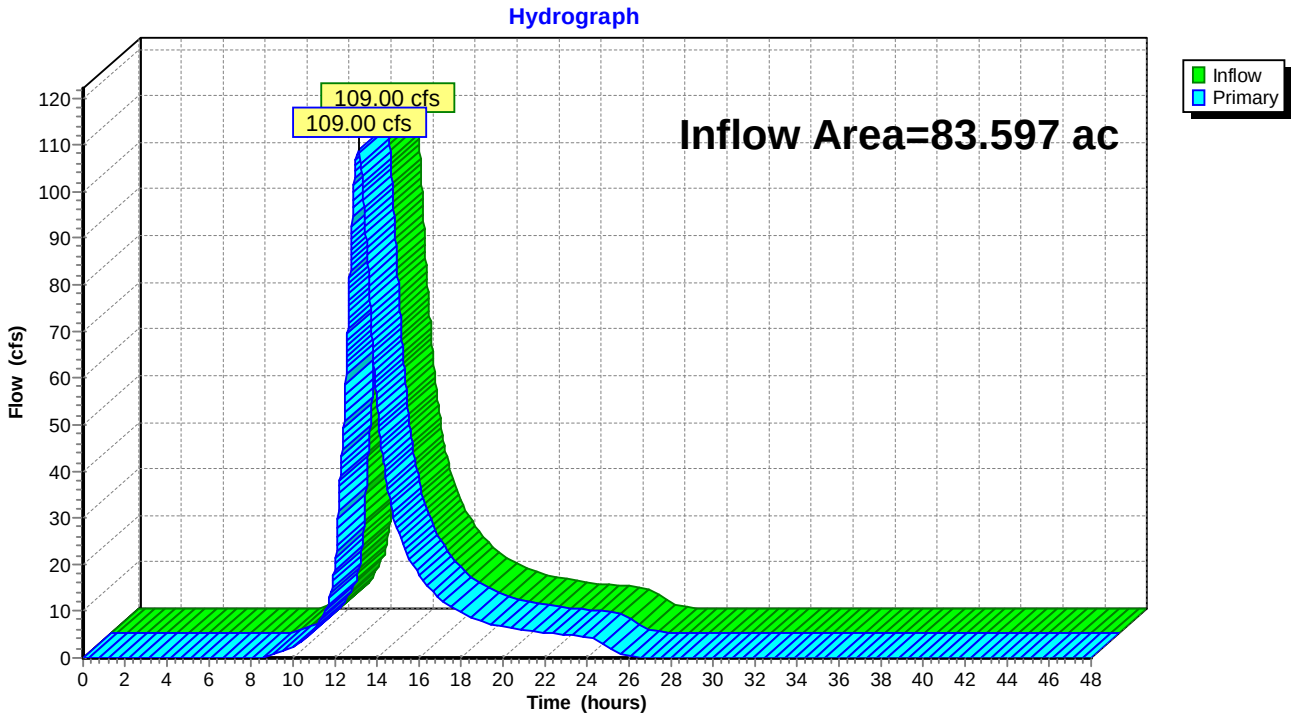


## Summary for Link DP2: Design Point 2

Inflow Area = 83.597 ac, 13.02% Impervious, Inflow Depth = 3.47" for 100-Year Storm event
Inflow = 109.00 cfs @ 13.11 hrs, Volume= 24.146 af
Primary = 109.00 cfs @ 13.12 hrs, Volume= 24.146 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP2: Design Point 2

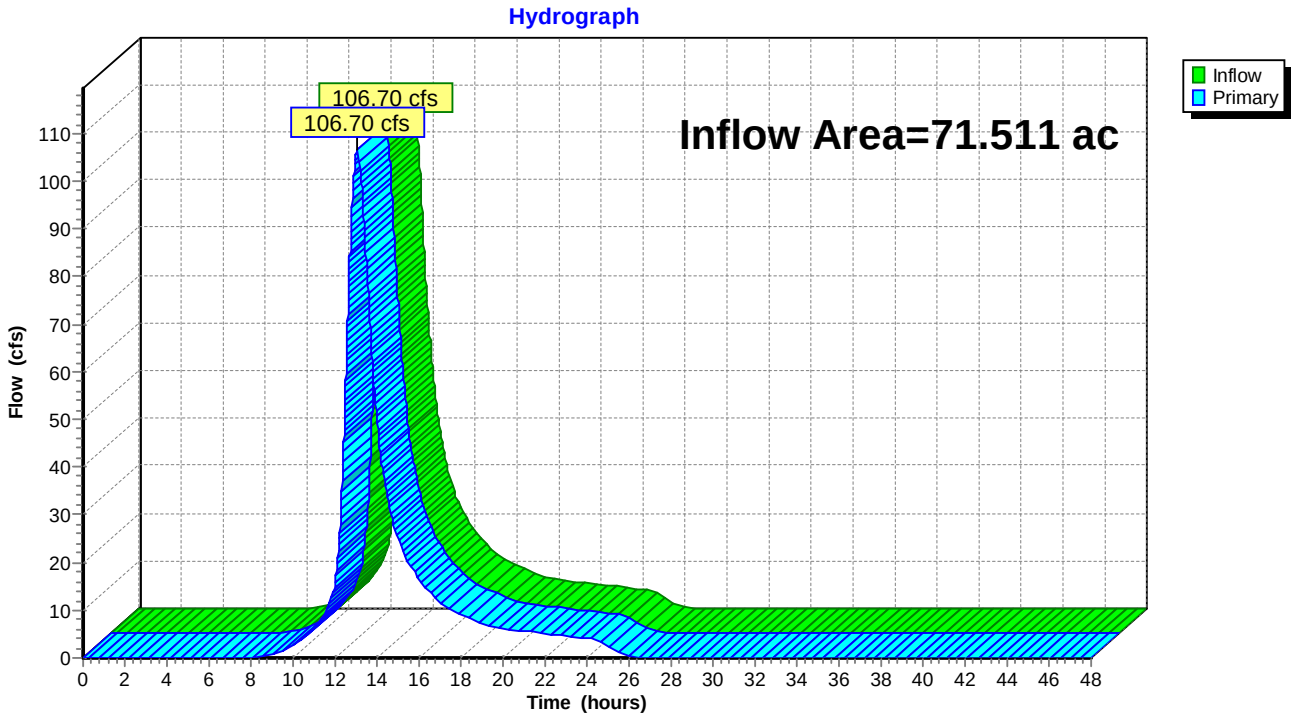


## Summary for Link DP3: Design Point 3

Inflow Area = 71.511 ac, 15.22% Impervious, Inflow Depth = 3.80" for 100-Year Storm event
Inflow = 106.70 cfs @ 13.08 hrs, Volume= 22.639 af
Primary = 106.70 cfs @ 13.09 hrs, Volume= 22.639 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP3: Design Point 3



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Sim-Route method - Pond routing by Sim-Route method

**Subcatchment 202A: Subcatchment 202A** Runoff Area=246,800 sf 0.00% Impervious Runoff Depth=0.51"
Flow Length=520' Tc=17.1 min CN=65 Runoff=1.76 cfs 0.239 af

**Subcatchment 202B: Subcatchment 202B** Runoff Area=42,400 sf 15.09% Impervious Runoff Depth=0.86"
Flow Length=250' Tc=12.2 min CN=73 Runoff=0.73 cfs 0.070 af

**Subcatchment 202C: Subcatchment 202C** Runoff Area=26,788 sf 30.61% Impervious Runoff Depth=1.66"
Tc=5.0 min CN=86 Runoff=1.24 cfs 0.085 af

**Subcatchment 202D: Subcatchment 202D** Runoff Area=203,303 sf 0.74% Impervious Runoff Depth=0.67"
Flow Length=160' Tc=22.0 min CN=69 Runoff=2.01 cfs 0.260 af

**Reach 2R: Briley Brook** Avg. Flow Depth=1.36' Max Vel=2.47 fps Inflow=24.77 cfs 6.131 af
L=250.0' S=0.0050 '/' Capacity=90.70 cfs Outflow=24.68 cfs 6.131 af

**Reach O-1: Overland Flow** Avg. Flow Depth=0.04' Max Vel=0.25 fps Inflow=0.63 cfs 0.066 af
n=0.140 L=100.0' S=0.0400 '/' Capacity=161.99 cfs Outflow=0.56 cfs 0.066 af

**Pond 202R: 15" Road Culvert** Peak Elev=17.94' Storage=407 cf Inflow=0.73 cfs 0.070 af
15.0" Round Culvert n=0.012 L=130.0' S=0.0038 '/' Outflow=0.63 cfs 0.066 af

**Pond B-9: B-9** Peak Elev=19.05' Storage=1,396 cf Inflow=1.24 cfs 0.085 af
Outflow=0.18 cfs 0.085 af

**Pond VP: Vernal Pool** Peak Elev=18.59' Storage=10,406 cf Inflow=1.76 cfs 0.239 af
Outflow=0.00 cfs 0.000 af

**Link DP2: Design Point 2** Inflow=25.43 cfs 6.542 af
Primary=25.43 cfs 6.542 af

**Link DP3: Design Point 3** Inflow=24.77 cfs 6.131 af
Primary=24.77 cfs 6.131 af

**Total Runoff Area = 11.921 ac Runoff Volume = 0.654 af Average Runoff Depth = 0.66"**
**96.90% Pervious = 11.552 ac 3.10% Impervious = 0.370 ac**

## Summary for Subcatchment 202A: Subcatchment 202A

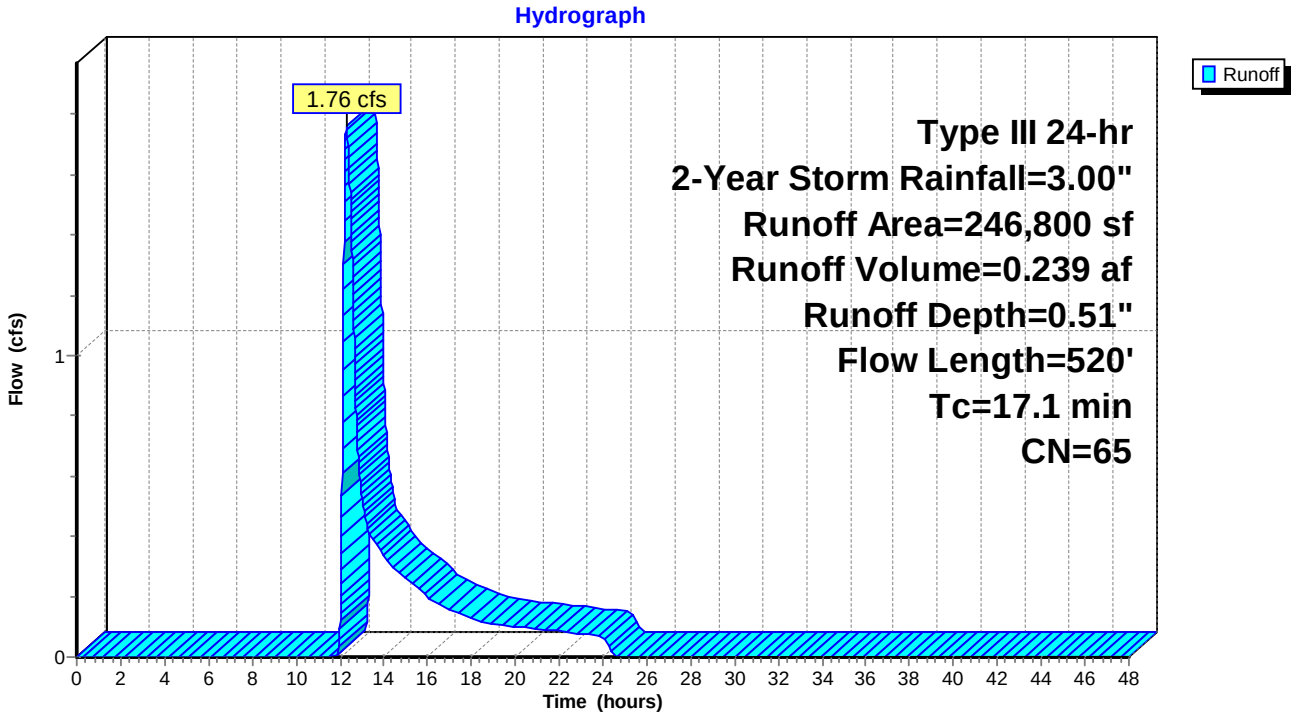
Runoff = 1.76 cfs @ 12.30 hrs, Volume= 0.239 af, Depth= 0.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Storm Rainfall=3.00"

| Area (sf) | CN | Description |
|---|---|---|
| 246,800 | 65 | Brush, Good, HSG C |
| 246,800 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.9 | 60 | 0.0100 | 0.08 | | **Sheet Flow, Grass**<br>Grass: Dense n= 0.240 P2= 3.00" |
| 4.2 | 460 | 0.0130 | 1.84 | | **Shallow Concentrated Flow, Grass, brush**<br>Unpaved Kv= 16.1 fps |
| 17.1 | 520 | Total | | | |

## Subcatchment 202A: Subcatchment 202A



## Summary for Subcatchment 202B: Subcatchment 202B

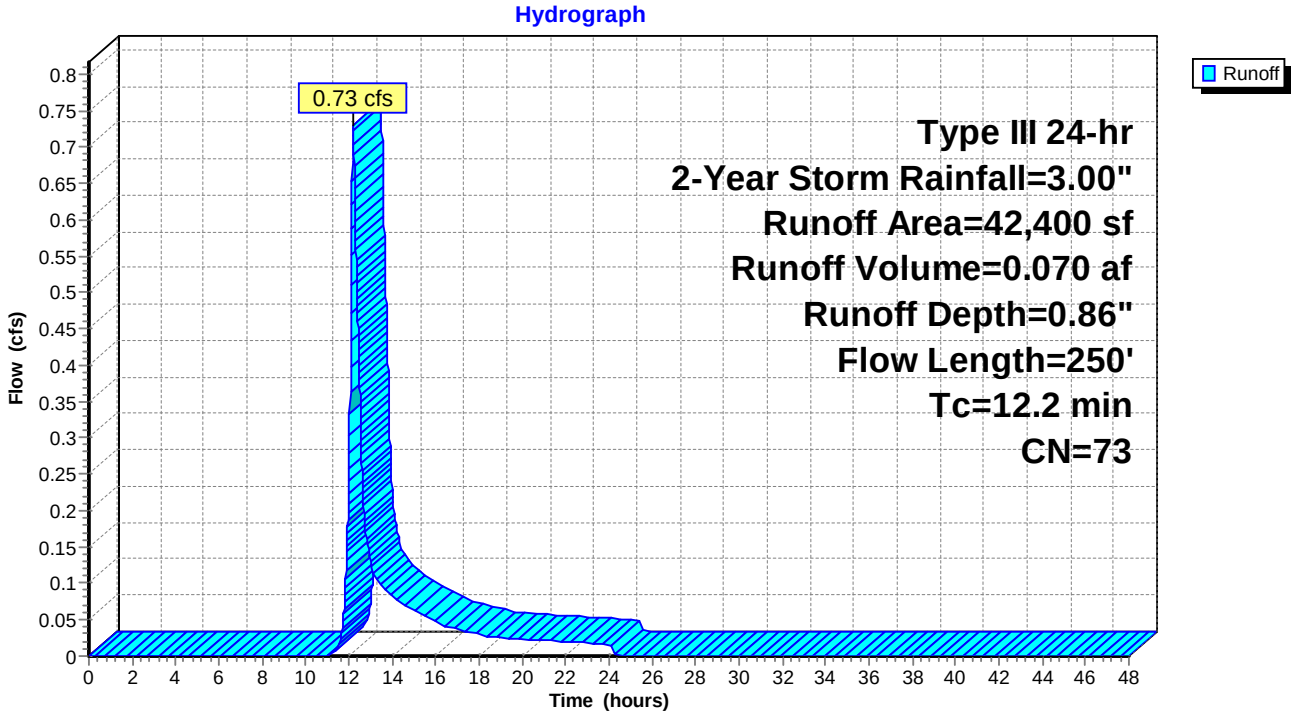
Runoff = 0.73 cfs @ 12.18 hrs, Volume= 0.070 af, Depth= 0.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Storm Rainfall=3.00"

| Area (sf) | CN | Description |
|---|---|---|
| 12,800 | 92 | Paved roads w/open ditches, 50% imp, HSG C |
| 29,600 | 65 | Brush, Good, HSG C |
| 42,400 | 73 | Weighted Average |
| 36,000 | | 84.91% Pervious Area |
| 6,400 | | 15.09% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.0 | 60 | 0.0150 | 0.09 | | **Sheet Flow, Brush, grass**<br>Grass: Dense n= 0.240 P2= 3.00" |
| 1.2 | 190 | 0.0260 | 2.60 | | **Shallow Concentrated Flow, Brush, grass**<br>Unpaved Kv= 16.1 fps |
| 12.2 | 250 | Total | | | |

## Subcatchment 202B: Subcatchment 202B



## Summary for Subcatchment 202C: Subcatchment 202C

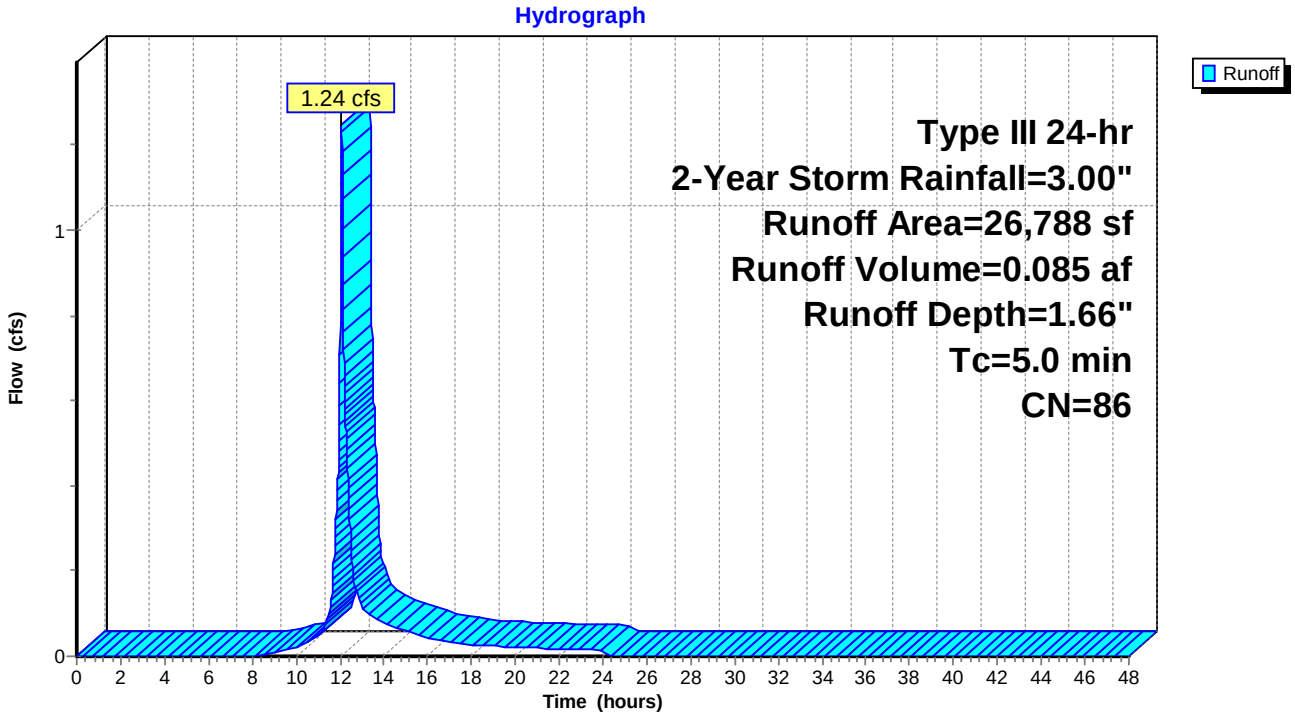
Runoff = 1.24 cfs @ 12.07 hrs, Volume= 0.085 af, Depth= 1.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Storm Rainfall=3.00"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 10,138 | 74 | >75% Grass cover, Good, HSG C |
| | 4,800 | 98 | Paved parking, HSG C |
| | 3,400 | 98 | Roofs, HSG C |
| * | 8,450 | 89 | Gravel Pad at Tower and Compound, HSG C |
| | 26,788 | 86 | Weighted Average |
| | 18,588 | | 69.39% Pervious Area |
| | 8,200 | | 30.61% Impervious Area |

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

## Subcatchment 202C: Subcatchment 202C



## Summary for Subcatchment 202D: Subcatchment 202D

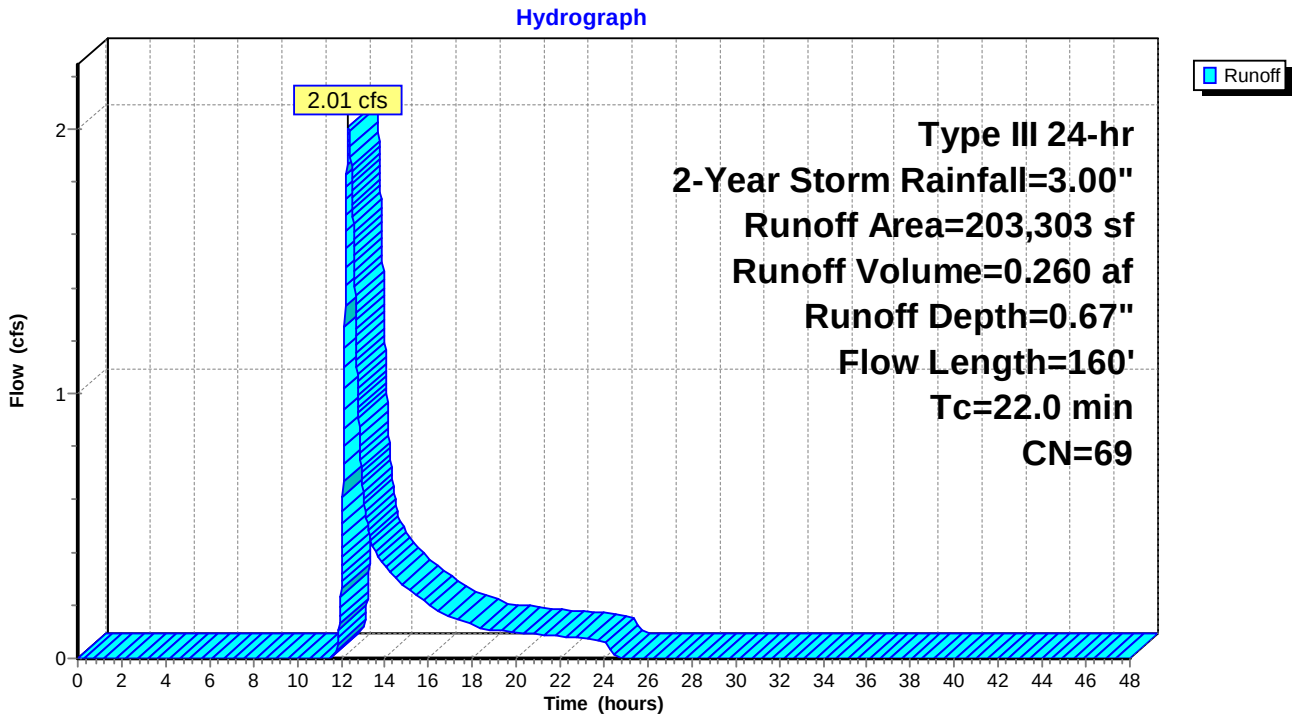
Runoff = 2.01 cfs @ 12.35 hrs, Volume= 0.260 af, Depth= 0.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Storm Rainfall=3.00"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 122,513 | 65 | Brush, Good, HSG C |
| * | 1,500 | 98 | Paved road, HSG C |
| | 5,100 | 87 | Dirt roads, HSG C |
| | 74,190 | 74 | >75% Grass cover, Good, HSG C |
| | 203,303 | 69 | Weighted Average |
| | 201,803 | | 99.26% Pervious Area |
| | 1,500 | | 0.74% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 21.3 | 60 | 0.0080 | 0.05 | | **Sheet Flow, Woods, brush**<br>Woods: Light underbrush n= 0.400 P2= 3.00" |
| 0.7 | 100 | 0.0220 | 2.39 | | **Shallow Concentrated Flow, Grass, brush**<br>Unpaved Kv= 16.1 fps |
| 22.0 | 160 | Total | | | |

## Subcatchment 202D: Subcatchment 202D



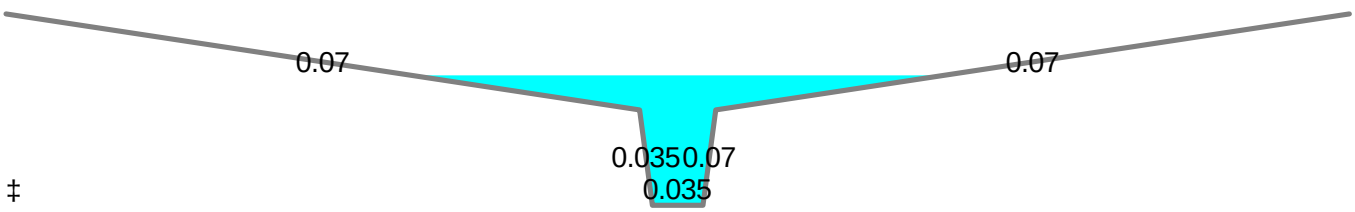
## Summary for Reach 2R: Briley Brook

Inflow Area = 71.488 ac, 17.11% Impervious, Inflow Depth = 1.03" for 2-Year Storm event
Inflow = 24.77 cfs @ 13.28 hrs, Volume= 6.131 af
Outflow = 24.68 cfs @ 13.33 hrs, Volume= 6.131 af, Atten= 0%, Lag= 3.3 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 0.70 fps, Avg. Travel Time= 5.9 min

Peak Storage= 3,415 cf @ 13.33 hrs
Average Depth at Peak Storage= 1.36'
Bank-Full Depth= 2.00' Flow Area= 61.0 sf, Capacity= 90.70 cfs

Custom cross-section, Length= 250.0' Slope= 0.0050 '/'
Flow calculated by Manning's Subdivision method
Inlet Invert= 13.25', Outlet Invert= 12.00'

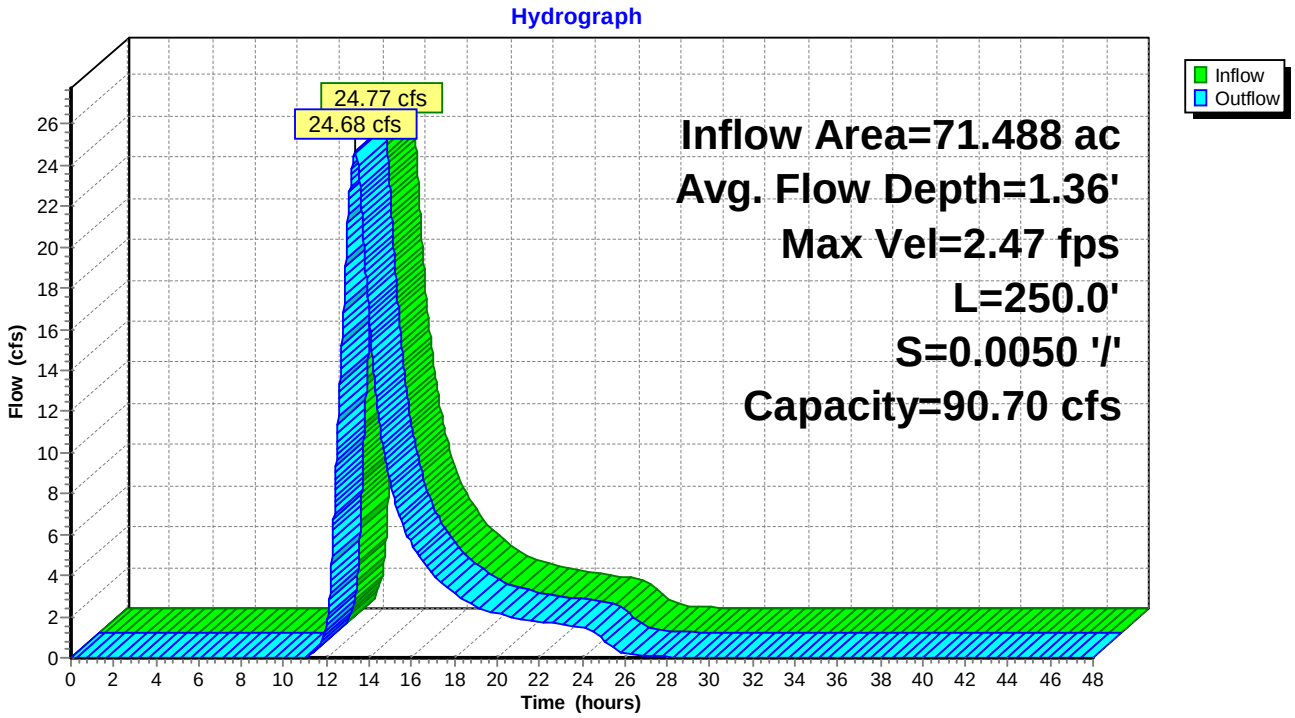



‡

| Offset (feet) | Elevation (feet) | Chan.Depth (feet) | n | Description |
|---|---|---|---|---|
| 0.00 | 2.00 | 0.00 | | |
| 50.00 | 1.00 | 1.00 | 0.070 | |
| 51.00 | 0.00 | 2.00 | 0.035 | |
| 55.00 | 0.00 | 2.00 | 0.035 | |
| 56.00 | 1.00 | 1.00 | 0.070 | |
| 106.00 | 2.00 | 0.00 | 0.070 | |

| Depth (feet) | End Area (sq-ft) | Perim. (feet) | Storage (cubic-feet) | Discharge (cfs) |
|---|---|---|---|---|
| 0.00 | 0.0 | 4.0 | 0 | 0.00 |
| 1.00 | 5.0 | 6.8 | 1,250 | 12.32 |
| 2.00 | 61.0 | 106.8 | 15,250 | 90.70 |

## Reach 2R: Briley Brook



## Summary for Reach O-1: Overland Flow

Inflow Area = 6.639 ac, 2.21% Impervious, Inflow Depth = 0.12" for 2-Year Storm event
Inflow = 0.63 cfs @ 12.28 hrs, Volume= 0.066 af
Outflow = 0.56 cfs @ 12.38 hrs, Volume= 0.066 af, Atten= 10%, Lag= 6.3 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.25 fps, Min. Travel Time= 6.6 min
Avg. Velocity = 0.04 fps, Avg. Travel Time= 41.9 min

Peak Storage= 223 cf @ 12.38 hrs
Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 1.00' Flow Area= 100.0 sf, Capacity= 161.99 cfs

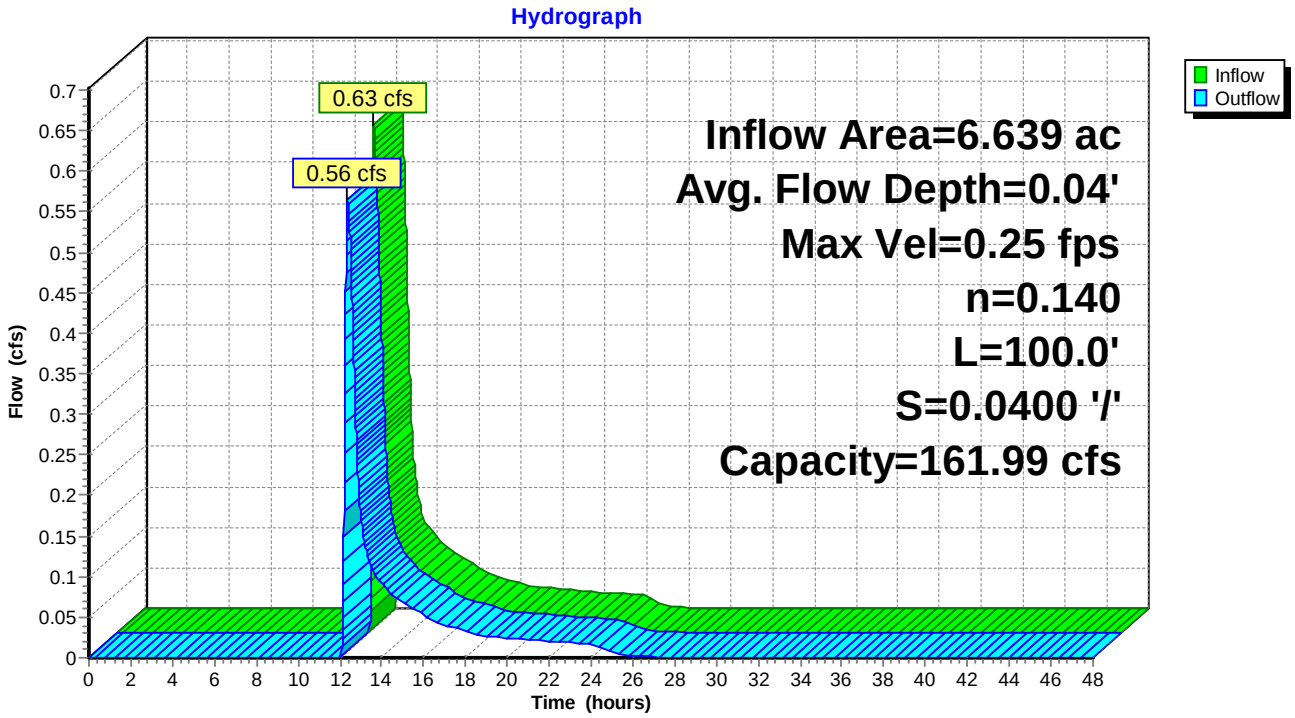
Custom cross-section, Length= 100.0' Slope= 0.0400 '/'
Constant n= 0.140 Earth, dense brush, high stage
Inlet Invert= 17.00', Outlet Invert= 13.00'

‡

| Offset (feet) | Elevation (feet) | Chan.Depth (feet) |
|---|---|---|
| 0.00 | 18.00 | 0.00 |
| 50.00 | 17.00 | 1.00 |
| 100.00 | 17.00 | 1.00 |
| 150.00 | 18.00 | 0.00 |

| Depth (feet) | End Area (sq-ft) | Perim. (feet) | Storage (cubic-feet) | Discharge (cfs) |
|---|---|---|---|---|
| 0.00 | 0.0 | 50.0 | 0 | 0.00 |
| 1.00 | 100.0 | 150.0 | 10,000 | 161.99 |

## Reach O-1: Overland Flow



## Summary for Pond 202R: 15" Road Culvert

Inflow Area = 6.639 ac, 2.21% Impervious, Inflow Depth = 0.13" for 2-Year Storm event
Inflow = 0.73 cfs @ 12.18 hrs, Volume= 0.070 af
Outflow = 0.63 cfs @ 12.28 hrs, Volume= 0.066 af, Atten= 14%, Lag= 5.4 min
Primary = 0.63 cfs @ 12.28 hrs, Volume= 0.066 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 17.94' @ 12.28 hrs Surf.Area= 729 sf Storage= 407 cf

Plug-Flow detention time= 51.9 min calculated for 0.066 af (95% of inflow)
Center-of-Mass det. time= 25.6 min ( 901.1 - 875.5 )

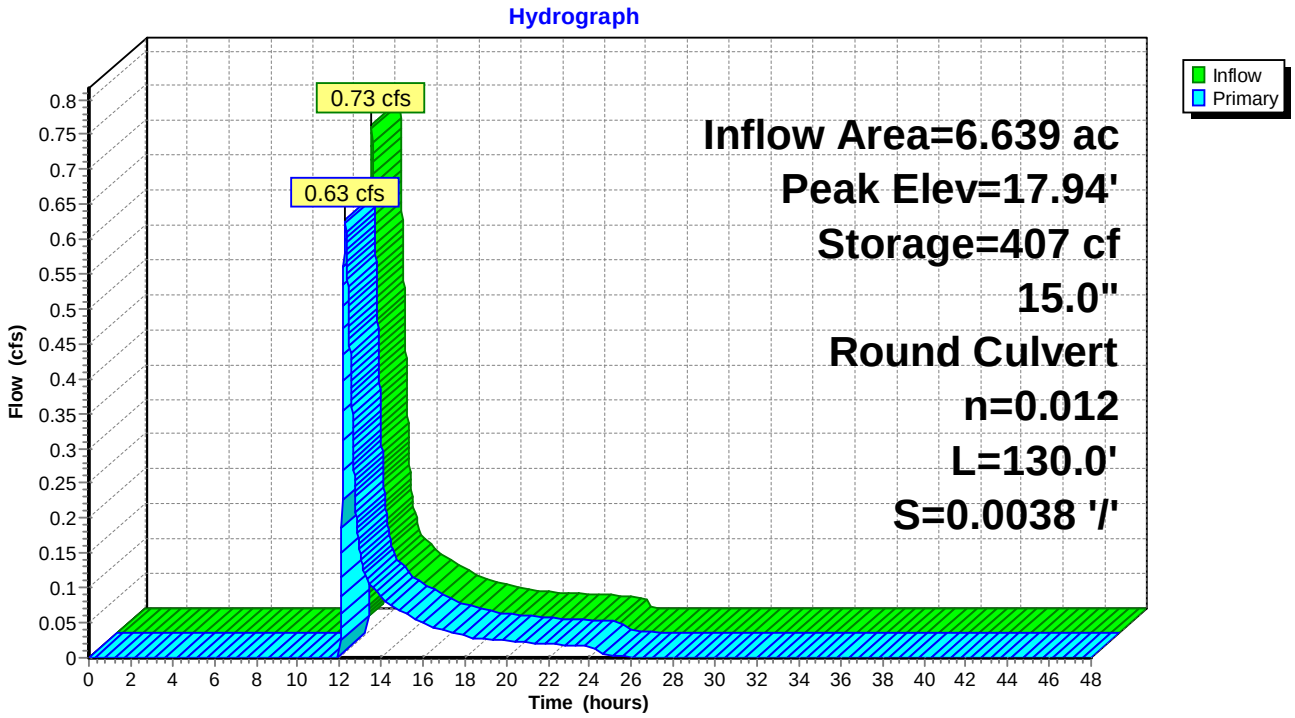
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 17.00' | 8,575 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 17.00 | 150 | 0 | 0 |
| 17.50 | 450 | 150 | 150 |
| 18.00 | 770 | 305 | 455 |
| 19.00 | 4,200 | 2,485 | 2,940 |
| 20.00 | 7,070 | 5,635 | 8,575 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 17.50' | **15.0" Round Culvert**<br>L= 130.0' CPP, end-section conforming to fill, Ke= 0.500<br>Inlet / Outlet Invert= 17.50' / 17.00' S= 0.0038 '/' Cc= 0.900<br>n= 0.012, Flow Area= 1.23 sf |

**Primary OutFlow** Max=0.63 cfs @ 12.28 hrs HW=17.94' TW=17.04' (Dynamic Tailwater)
↑└**1=Culvert** (Barrel Controls 0.63 cfs @ 2.46 fps)

## Pond 202R: 15" Road Culvert



## Summary for Pond B-9: B-9

Inflow Area = 0.615 ac, 30.61% Impervious, Inflow Depth = 1.66" for 2-Year Storm event
Inflow = 1.24 cfs @ 12.07 hrs, Volume= 0.085 af
Outflow = 0.18 cfs @ 11.90 hrs, Volume= 0.085 af, Atten= 86%, Lag= 0.0 min
Primary = 0.18 cfs @ 11.90 hrs, Volume= 0.085 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.05' @ 12.60 hrs Surf.Area= 2,995 sf Storage= 1,396 cf

Plug-Flow detention time= 89.2 min calculated for 0.085 af (100% of inflow)
Center-of-Mass det. time= 87.9 min ( 912.4 - 824.4 )

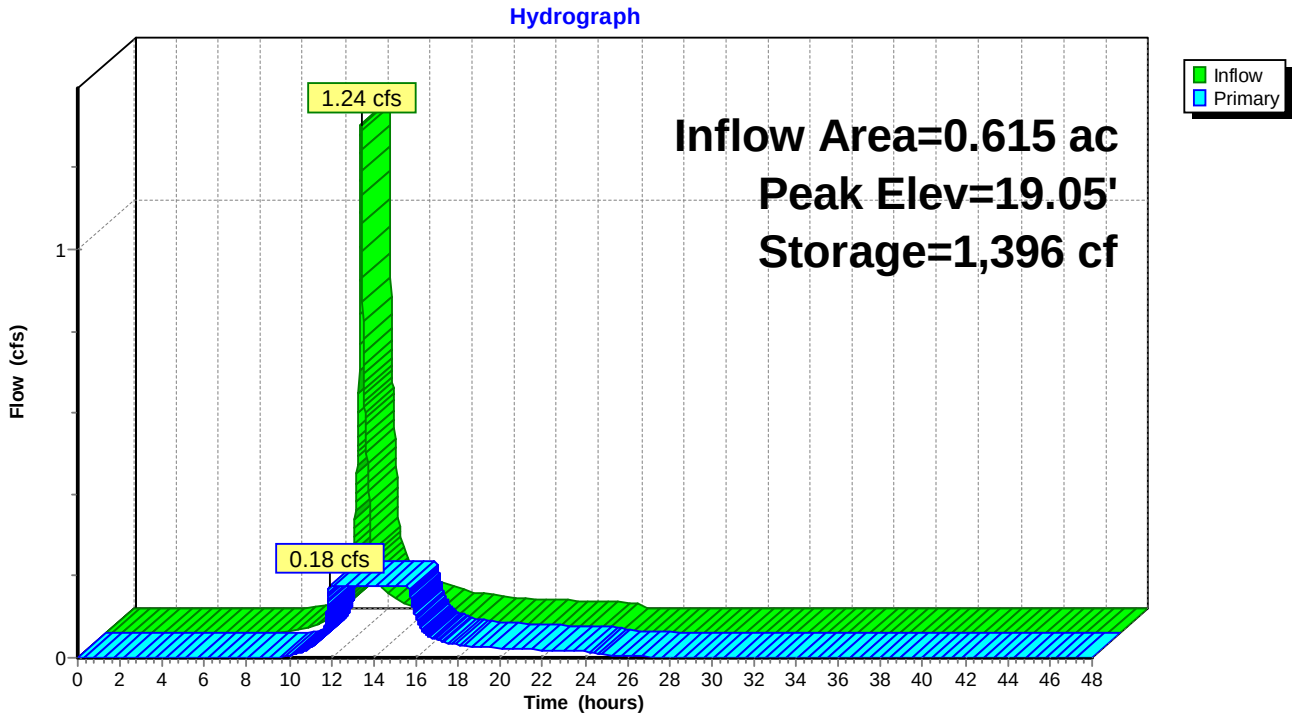
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 17.50' | 6,741 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Voids (%) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|---|
| 17.50 | 2,995 | 0.0 | 0 | 0 |
| 18.00 | 2,995 | 30.0 | 449 | 449 |
| 18.50 | 2,995 | 30.0 | 449 | 899 |
| 19.00 | 2,995 | 30.0 | 449 | 1,348 |
| 19.50 | 2,995 | 30.0 | 449 | 1,797 |
| 20.00 | 2,995 | 100.0 | 1,498 | 3,295 |
| 20.50 | 3,430 | 100.0 | 1,606 | 4,901 |
| 21.00 | 3,931 | 100.0 | 1,840 | 6,741 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 17.50' | **6.0" Round Culvert** L= 80.0' Ke= 0.500<br>Inlet / Outlet Invert= 17.50' / 17.40' S= 0.0013 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.20 sf |
| #2 | Primary | 17.40' | **12.0" Round Culvert** L= 30.0' Ke= 0.500<br>Inlet / Outlet Invert= 17.40' / 17.20' S= 0.0067 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf |
| #3 | Device 1 | 17.50' | **2.540 in/hr Exfiltration over Surface area** |
| #4 | Device 2 | 20.50' | **18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Primary OutFlow** Max=0.18 cfs @ 11.90 hrs HW=17.90' TW=0.00' (Dynamic Tailwater)
- **2=Culvert** (Passes 0.18 cfs of 0.78 cfs potential flow)
  - **1=Culvert** (Passes 0.18 cfs of 0.18 cfs potential flow)
    - **3=Exfiltration** (Exfiltration Controls 0.18 cfs)
  - **4=Orifice/Grate** ( Controls 0.00 cfs)

## Pond B-9: B-9


Hydrograph
Inflow
Primary
1.24 cfs
0.18 cfs
Inflow Area=0.615 ac
Peak Elev=19.05'
Storage=1,396 cf
Flow (cfs)
0
1
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
Time (hours)

## Summary for Pond VP: Vernal Pool

Inflow Area = 5.666 ac, 0.00% Impervious, Inflow Depth = 0.51" for 2-Year Storm event
Inflow = 1.76 cfs @ 12.30 hrs, Volume= 0.239 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 18.59' @ 24.98 hrs Surf.Area= 31,713 sf Storage= 10,406 cf

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

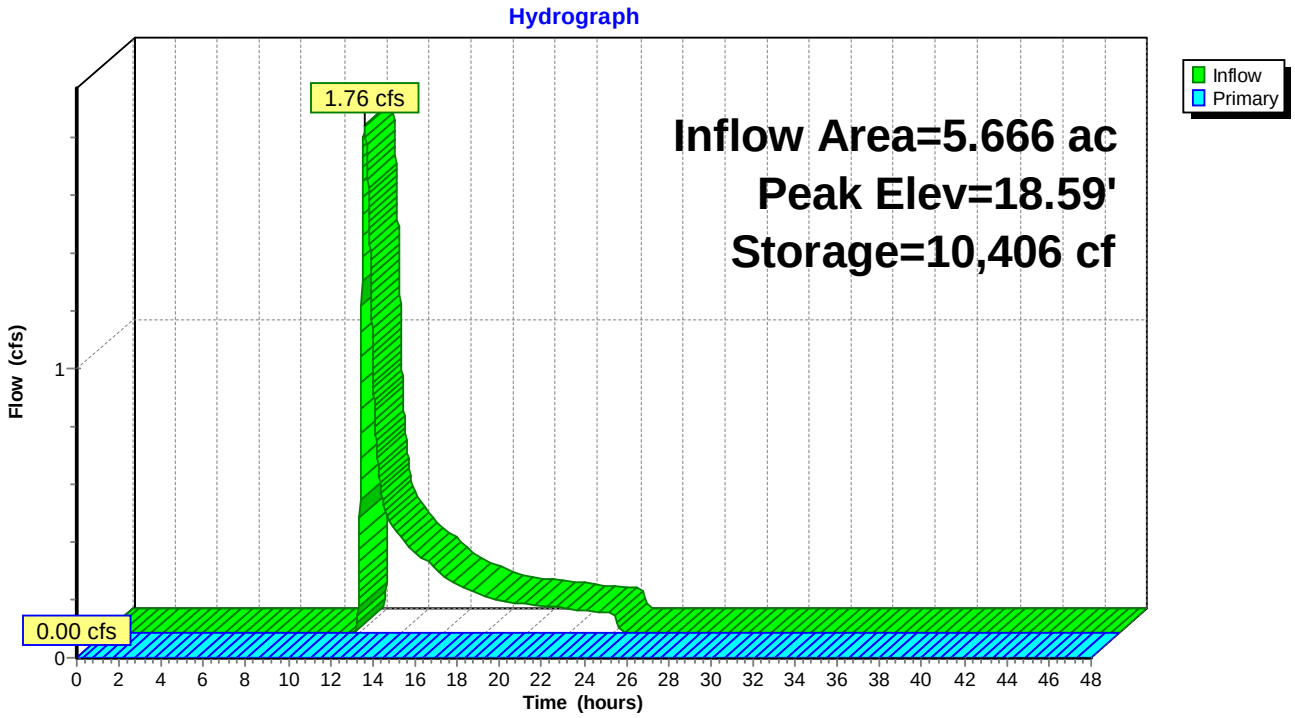
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 18.00' | 92,075 cf | **VP (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 18.00 | 3,300 | 0 | 0 |
| 19.00 | 51,100 | 27,200 | 27,200 |
| 19.50 | 68,200 | 29,825 | 57,025 |
| 20.00 | 72,000 | 35,050 | 92,075 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 19.50' | **20.0' long x 12.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=18.00' TW=17.00' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond VP: Vernal Pool

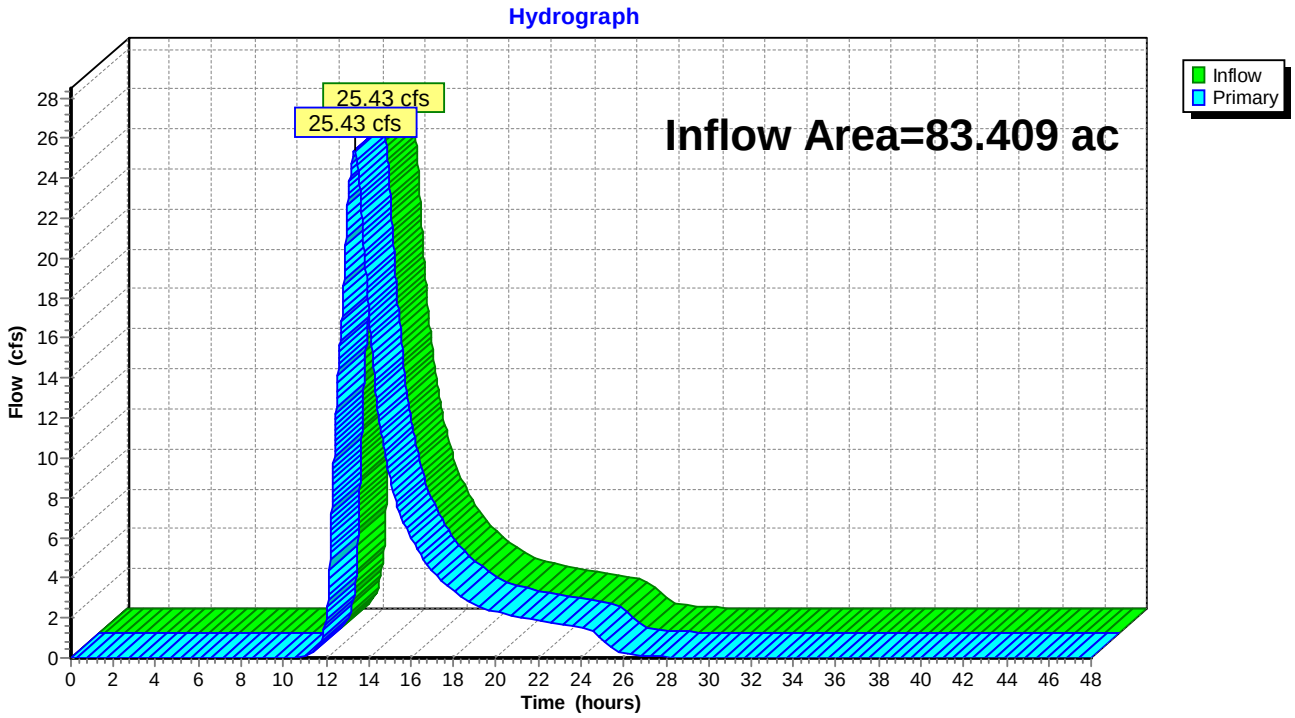


## Summary for Link DP2: Design Point 2

Inflow Area = 83.409 ac, 15.10% Impervious, Inflow Depth = 0.94" for 2-Year Storm event
Inflow = 25.43 cfs @ 13.33 hrs, Volume= 6.542 af
Primary = 25.43 cfs @ 13.34 hrs, Volume= 6.542 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP2: Design Point 2

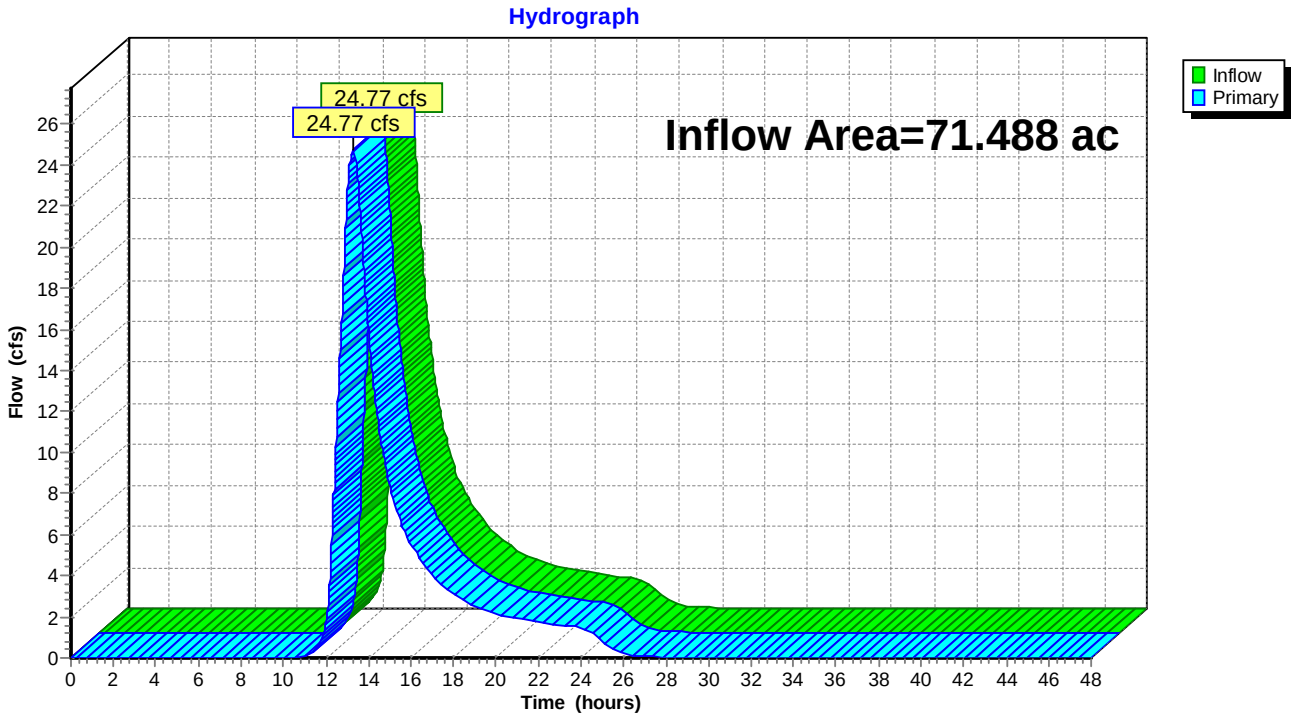


## Summary for Link DP3: Design Point 3

Inflow Area = 71.488 ac, 17.11% Impervious, Inflow Depth = 1.03" for 2-Year Storm event
Inflow = 24.77 cfs @ 13.27 hrs, Volume= 6.131 af
Primary = 24.77 cfs @ 13.28 hrs, Volume= 6.131 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP3: Design Point 3



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Sim-Route method - Pond routing by Sim-Route method

**Subcatchment 202A: Subcatchment 202A** Runoff Area=246,800 sf 0.00% Impervious Runoff Depth=1.39"
Flow Length=520' Tc=17.1 min CN=65 Runoff=6.16 cfs 0.658 af

**Subcatchment 202B: Subcatchment 202B** Runoff Area=42,400 sf 15.09% Impervious Runoff Depth=1.97"
Flow Length=250' Tc=12.2 min CN=73 Runoff=1.81 cfs 0.160 af

**Subcatchment 202C: Subcatchment 202C** Runoff Area=26,788 sf 30.61% Impervious Runoff Depth=3.10"
Tc=5.0 min CN=86 Runoff=2.29 cfs 0.159 af

**Subcatchment 202D: Subcatchment 202D** Runoff Area=203,303 sf 0.74% Impervious Runoff Depth=1.67"
Flow Length=160' Tc=22.0 min CN=69 Runoff=5.70 cfs 0.650 af

**Reach 2R: Briley Brook** Avg. Flow Depth=1.71' Max Vel=2.47 fps Inflow=51.36 cfs 13.279 af
L=250.0' S=0.0050 '/' Capacity=90.70 cfs Outflow=51.32 cfs 13.279 af

**Reach O-1: Overland Flow** Avg. Flow Depth=0.08' Max Vel=0.37 fps Inflow=1.57 cfs 0.156 af
n=0.140 L=100.0' S=0.0400 '/' Capacity=161.99 cfs Outflow=1.52 cfs 0.156 af

**Pond 202R: 15" Road Culvert** Peak Elev=18.21' Storage=697 cf Inflow=1.81 cfs 0.160 af
15.0" Round Culvert n=0.012 L=130.0' S=0.0038 '/' Outflow=1.57 cfs 0.156 af

**Pond B-9: B-9** Peak Elev=19.92' Storage=3,059 cf Inflow=2.29 cfs 0.159 af
Outflow=0.18 cfs 0.158 af

**Pond VP: Vernal Pool** Peak Elev=19.03' Storage=28,656 cf Inflow=6.16 cfs 0.658 af
Outflow=0.00 cfs 0.000 af

**Link DP2: Design Point 2** Inflow=52.74 cfs 14.244 af
Primary=52.74 cfs 14.244 af

**Link DP3: Design Point 3** Inflow=51.36 cfs 13.279 af
Primary=51.36 cfs 13.279 af

**Total Runoff Area = 11.921 ac Runoff Volume = 1.627 af Average Runoff Depth = 1.64"**
**96.90% Pervious = 11.552 ac 3.10% Impervious = 0.370 ac**

## Summary for Subcatchment 202A: Subcatchment 202A

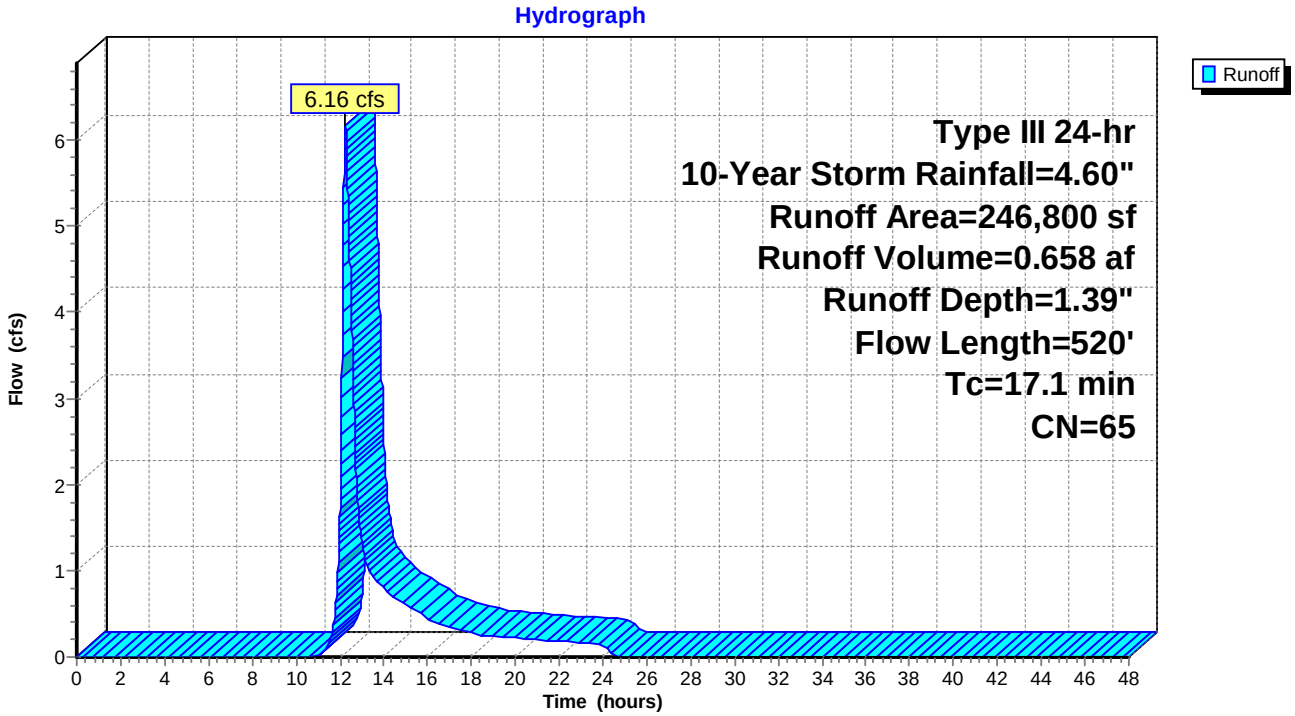
Runoff = 6.16 cfs @ 12.26 hrs, Volume= 0.658 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

| Area (sf) | CN | Description |
|---|---|---|
| 246,800 | 65 | Brush, Good, HSG C |
| 246,800 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.9 | 60 | 0.0100 | 0.08 | | **Sheet Flow, Grass**<br>Grass: Dense n= 0.240 P2= 3.00" |
| 4.2 | 460 | 0.0130 | 1.84 | | **Shallow Concentrated Flow, Grass, brush**<br>Unpaved Kv= 16.1 fps |
| 17.1 | 520 | Total | | | |

## Subcatchment 202A: Subcatchment 202A



## Summary for Subcatchment 202B: Subcatchment 202B

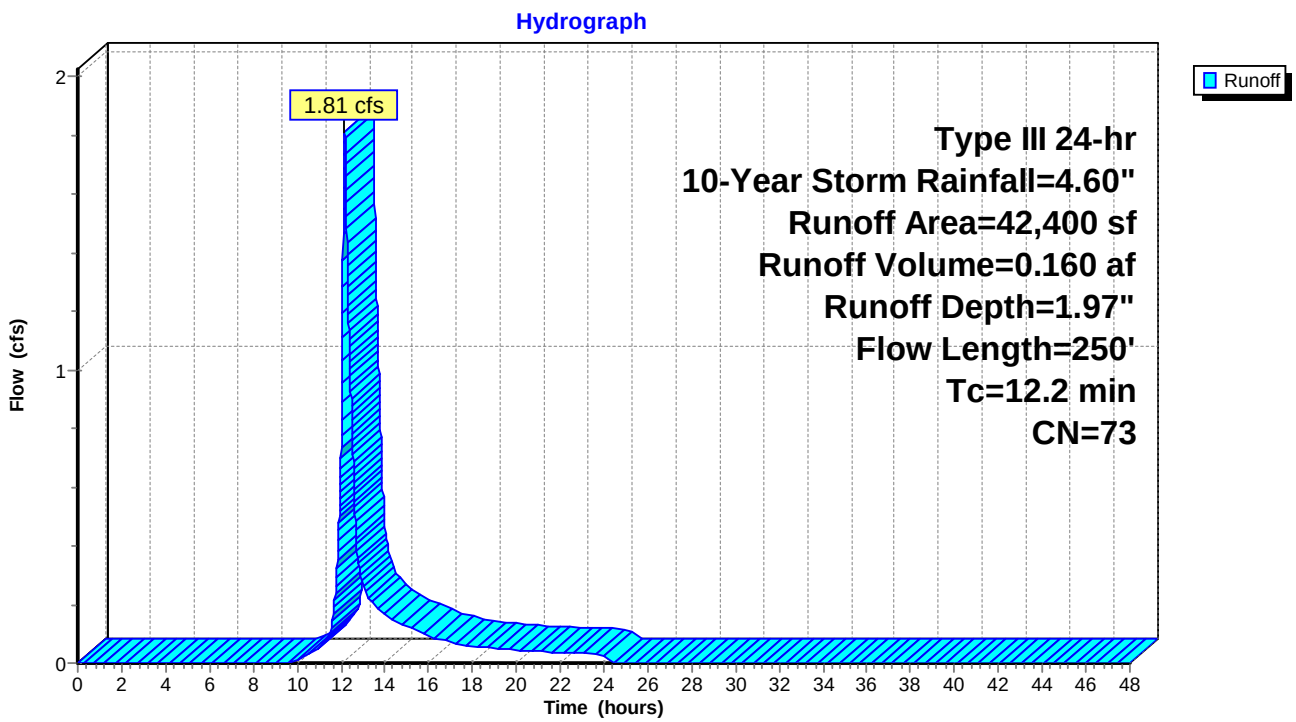
Runoff = 1.81 cfs @ 12.17 hrs, Volume= 0.160 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

| Area (sf) | CN | Description |
|---|---|---|
| 12,800 | 92 | Paved roads w/open ditches, 50% imp, HSG C |
| 29,600 | 65 | Brush, Good, HSG C |
| 42,400 | 73 | Weighted Average |
| 36,000 | | 84.91% Pervious Area |
| 6,400 | | 15.09% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.0 | 60 | 0.0150 | 0.09 | | **Sheet Flow, Brush, grass**<br>Grass: Dense n= 0.240 P2= 3.00" |
| 1.2 | 190 | 0.0260 | 2.60 | | **Shallow Concentrated Flow, Brush, grass**<br>Unpaved Kv= 16.1 fps |
| 12.2 | 250 | Total | | | |

## Subcatchment 202B: Subcatchment 202B



## Summary for Subcatchment 202C: Subcatchment 202C

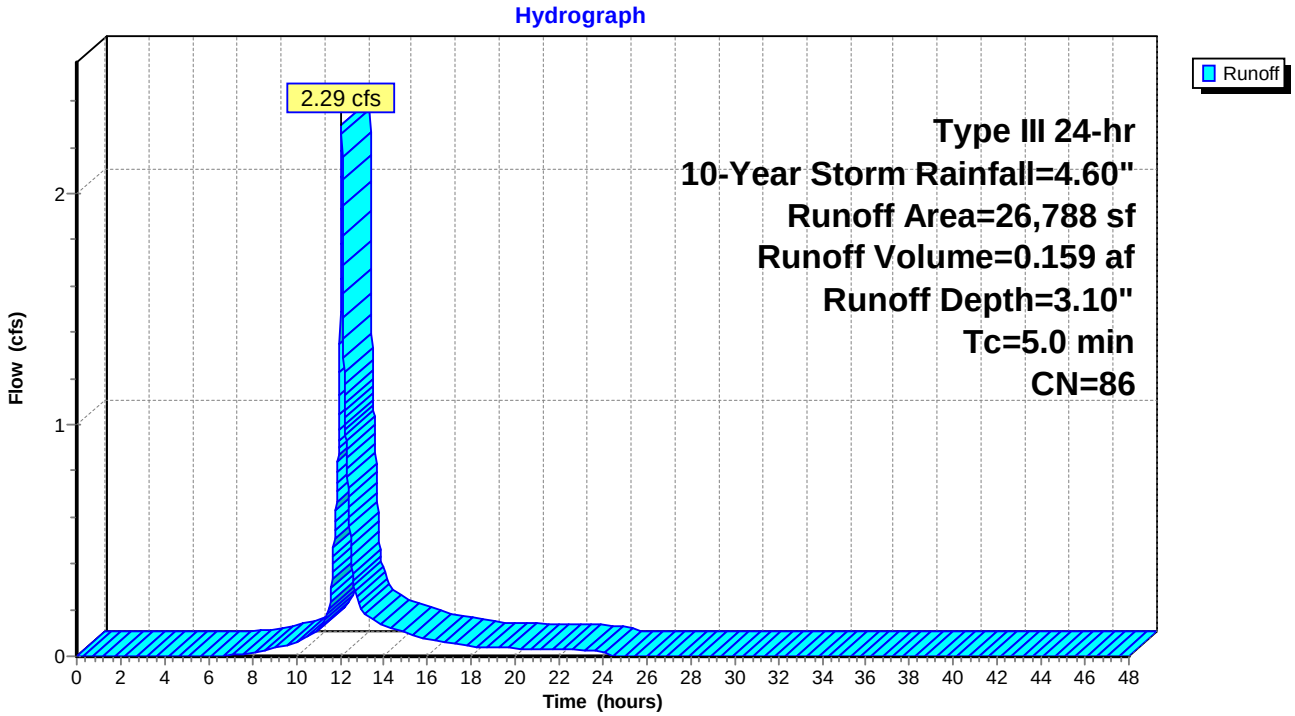
Runoff = 2.29 cfs @ 12.07 hrs, Volume= 0.159 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 10,138 | 74 | >75% Grass cover, Good, HSG C |
| | 4,800 | 98 | Paved parking, HSG C |
| | 3,400 | 98 | Roofs, HSG C |
| * | 8,450 | 89 | Gravel Pad at Tower and Compound, HSG C |
| | 26,788 | 86 | Weighted Average |
| | 18,588 | | 69.39% Pervious Area |
| | 8,200 | | 30.61% Impervious Area |

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

## Subcatchment 202C: Subcatchment 202C



## Summary for Subcatchment 202D: Subcatchment 202D

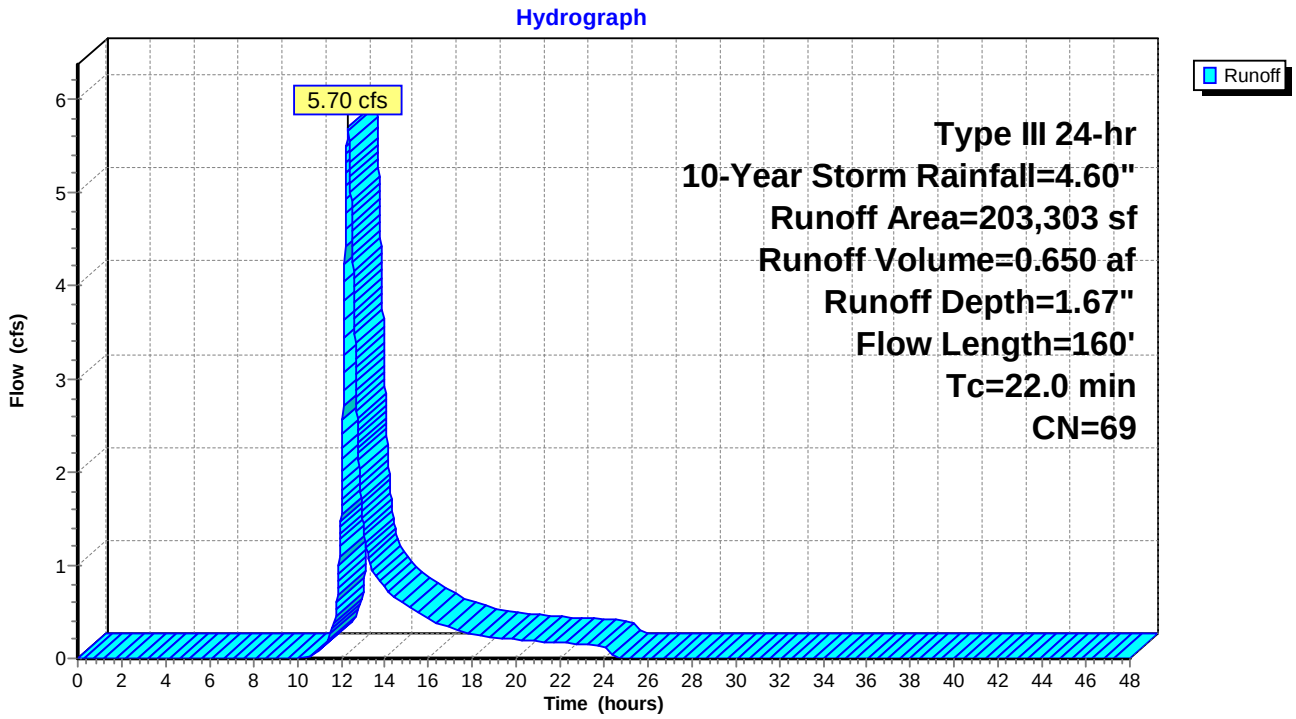
Runoff = 5.70 cfs @ 12.32 hrs, Volume= 0.650 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 122,513 | 65 | Brush, Good, HSG C |
| * | 1,500 | 98 | Paved road, HSG C |
| | 5,100 | 87 | Dirt roads, HSG C |
| | 74,190 | 74 | >75% Grass cover, Good, HSG C |
| | 203,303 | 69 | Weighted Average |
| | 201,803 | | 99.26% Pervious Area |
| | 1,500 | | 0.74% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 21.3 | 60 | 0.0080 | 0.05 | | **Sheet Flow, Woods, brush**<br>Woods: Light underbrush n= 0.400 P2= 3.00" |
| 0.7 | 100 | 0.0220 | 2.39 | | **Shallow Concentrated Flow, Grass, brush**<br>Unpaved Kv= 16.1 fps |
| 22.0 | 160 | Total | | | |

## Subcatchment 202D: Subcatchment 202D



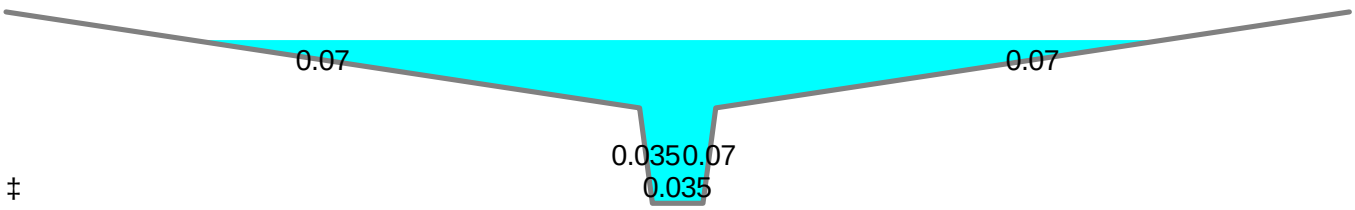
## Summary for Reach 2R: Briley Brook

Inflow Area = 71.488 ac, 17.11% Impervious, Inflow Depth = 2.23" for 10-Year Storm event
Inflow = 51.36 cfs @ 13.29 hrs, Volume= 13.279 af
Outflow = 51.32 cfs @ 13.34 hrs, Volume= 13.279 af, Atten= 0%, Lag= 3.0 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 0.80 fps, Avg. Travel Time= 5.2 min

Peak Storage= 8,542 cf @ 13.34 hrs
Average Depth at Peak Storage= 1.71'
Bank-Full Depth= 2.00' Flow Area= 61.0 sf, Capacity= 90.70 cfs

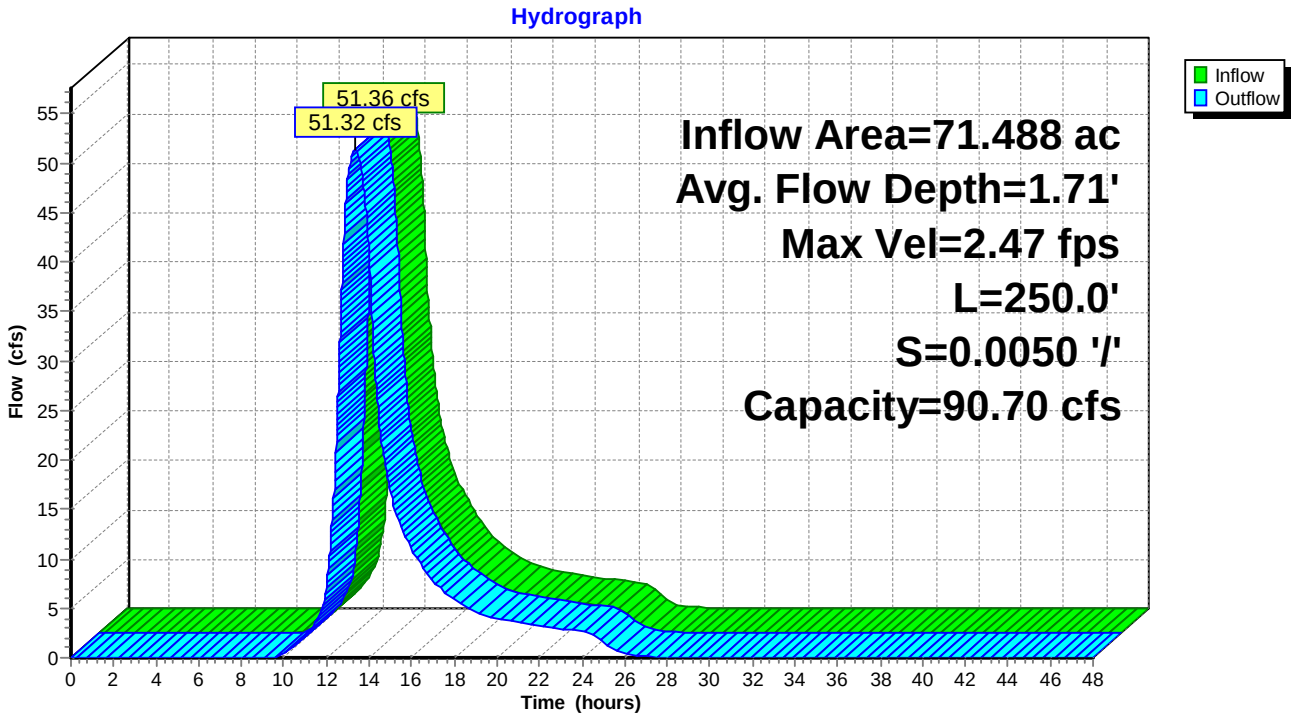
Custom cross-section, Length= 250.0' Slope= 0.0050 '/'
Flow calculated by Manning's Subdivision method
Inlet Invert= 13.25', Outlet Invert= 12.00'




| Offset (feet) | Elevation (feet) | Chan.Depth (feet) | n | Description |
|---|---|---|---|---|
| 0.00 | 2.00 | 0.00 | | |
| 50.00 | 1.00 | 1.00 | 0.070 | |
| 51.00 | 0.00 | 2.00 | 0.035 | |
| 55.00 | 0.00 | 2.00 | 0.035 | |
| 56.00 | 1.00 | 1.00 | 0.070 | |
| 106.00 | 2.00 | 0.00 | 0.070 | |

| Depth (feet) | End Area (sq-ft) | Perim. (feet) | Storage (cubic-feet) | Discharge (cfs) |
|---|---|---|---|---|
| 0.00 | 0.0 | 4.0 | 0 | 0.00 |
| 1.00 | 5.0 | 6.8 | 1,250 | 12.32 |
| 2.00 | 61.0 | 106.8 | 15,250 | 90.70 |

## Reach 2R: Briley Brook



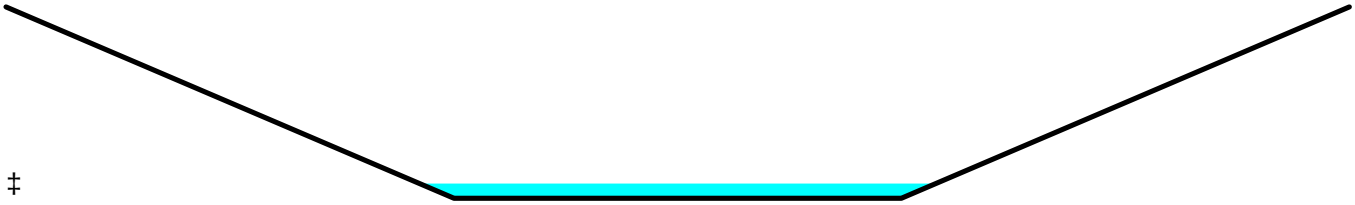
## Summary for Reach O-1: Overland Flow

Inflow Area = 6.639 ac, 2.21% Impervious, Inflow Depth = 0.28" for 10-Year Storm event
Inflow = 1.57 cfs @ 12.26 hrs, Volume= 0.156 af
Outflow = 1.52 cfs @ 12.31 hrs, Volume= 0.156 af, Atten= 3%, Lag= 3.3 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.37 fps, Min. Travel Time= 4.5 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 32.0 min

Peak Storage= 415 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 1.00' Flow Area= 100.0 sf, Capacity= 161.99 cfs

Custom cross-section, Length= 100.0' Slope= 0.0400 '/'
Constant n= 0.140 Earth, dense brush, high stage
Inlet Invert= 17.00', Outlet Invert= 13.00'

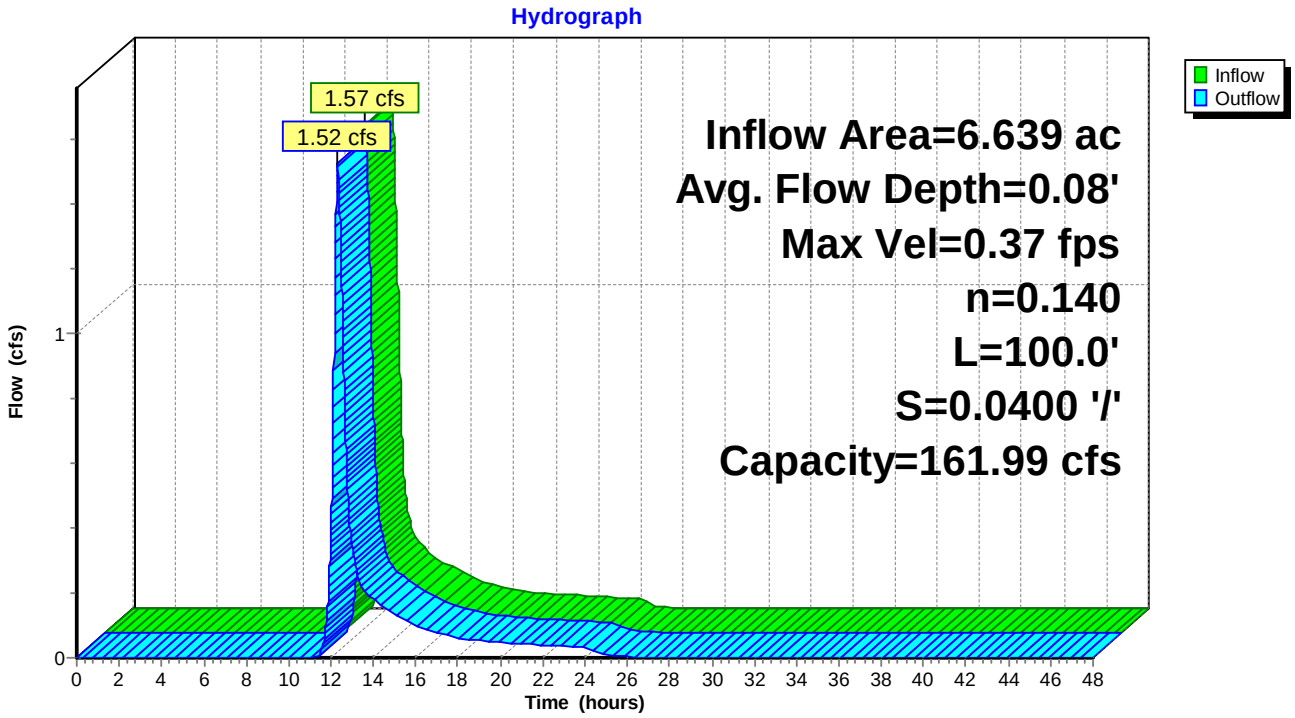


‡

| Offset (feet) | Elevation (feet) | Chan.Depth (feet) |
|---|---|---|
| 0.00 | 18.00 | 0.00 |
| 50.00 | 17.00 | 1.00 |
| 100.00 | 17.00 | 1.00 |
| 150.00 | 18.00 | 0.00 |

| Depth (feet) | End Area (sq-ft) | Perim. (feet) | Storage (cubic-feet) | Discharge (cfs) |
|---|---|---|---|---|
| 0.00 | 0.0 | 50.0 | 0 | 0.00 |
| 1.00 | 100.0 | 150.0 | 10,000 | 161.99 |

## Reach O-1: Overland Flow



## Summary for Pond 202R: 15" Road Culvert

Inflow Area = 6.639 ac, 2.21% Impervious, Inflow Depth = 0.29" for 10-Year Storm event
Inflow = 1.81 cfs @ 12.17 hrs, Volume= 0.160 af
Outflow = 1.57 cfs @ 12.26 hrs, Volume= 0.156 af, Atten= 13%, Lag= 4.9 min
Primary = 1.57 cfs @ 12.26 hrs, Volume= 0.156 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 18.21' @ 12.26 hrs Surf.Area= 1,500 sf Storage= 697 cf

Plug-Flow detention time= 28.2 min calculated for 0.156 af (98% of inflow)
Center-of-Mass det. time= 16.0 min ( 866.0 - 850.0 )

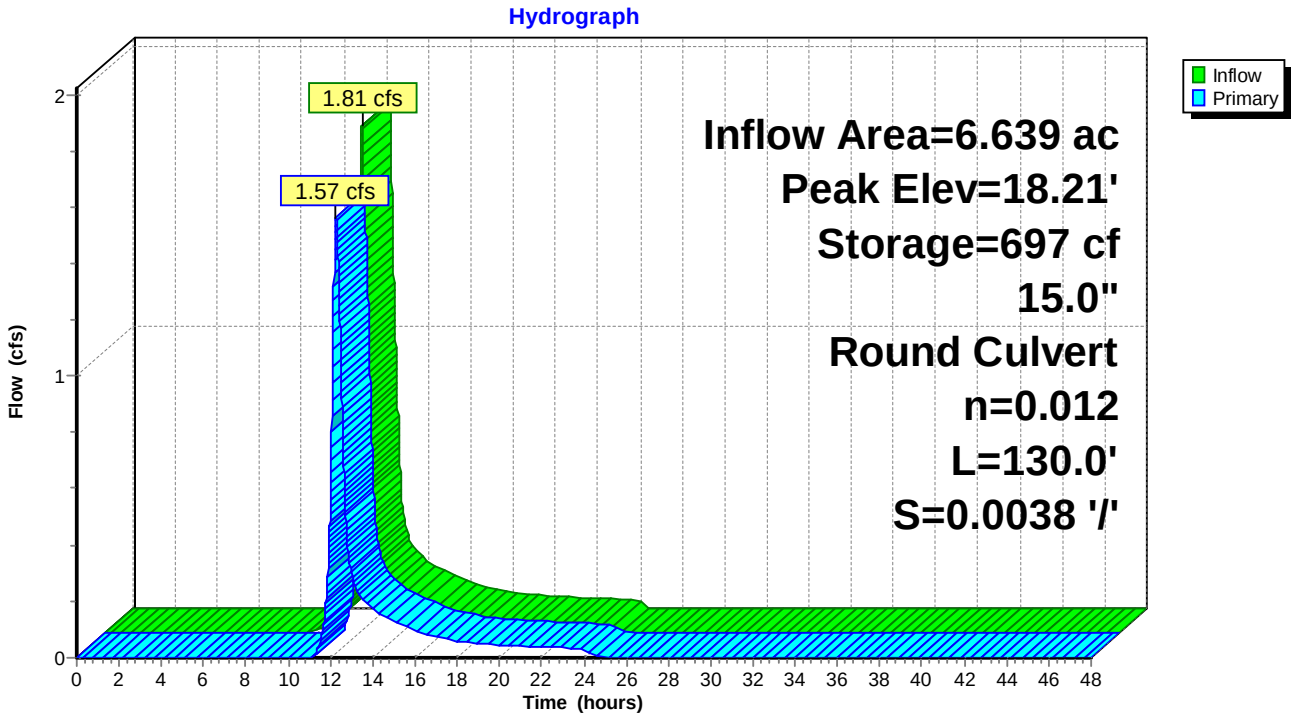
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 17.00' | 8,575 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 17.00 | 150 | 0 | 0 |
| 17.50 | 450 | 150 | 150 |
| 18.00 | 770 | 305 | 455 |
| 19.00 | 4,200 | 2,485 | 2,940 |
| 20.00 | 7,070 | 5,635 | 8,575 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 17.50' | **15.0" Round Culvert**<br>L= 130.0' CPP, end-section conforming to fill, Ke= 0.500<br>Inlet / Outlet Invert= 17.50' / 17.00' S= 0.0038 '/' Cc= 0.900<br>n= 0.012, Flow Area= 1.23 sf |

**Primary OutFlow** Max=1.57 cfs @ 12.26 hrs HW=18.21' TW=17.07' (Dynamic Tailwater)
↑└**1=Culvert** (Barrel Controls 1.57 cfs @ 3.12 fps)

## Pond 202R: 15" Road Culvert



## Summary for Pond B-9: B-9

Inflow Area = 0.615 ac, 30.61% Impervious, Inflow Depth = 3.10" for 10-Year Storm event
Inflow = 2.29 cfs @ 12.07 hrs, Volume= 0.159 af
Outflow = 0.18 cfs @ 11.65 hrs, Volume= 0.158 af, Atten= 92%, Lag= 0.0 min
Primary = 0.18 cfs @ 11.65 hrs, Volume= 0.158 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.92' @ 13.22 hrs Surf.Area= 2,995 sf Storage= 3,059 cf

Plug-Flow detention time= 168.1 min calculated for 0.158 af (100% of inflow)
Center-of-Mass det. time= 167.5 min ( 974.2 - 806.7 )

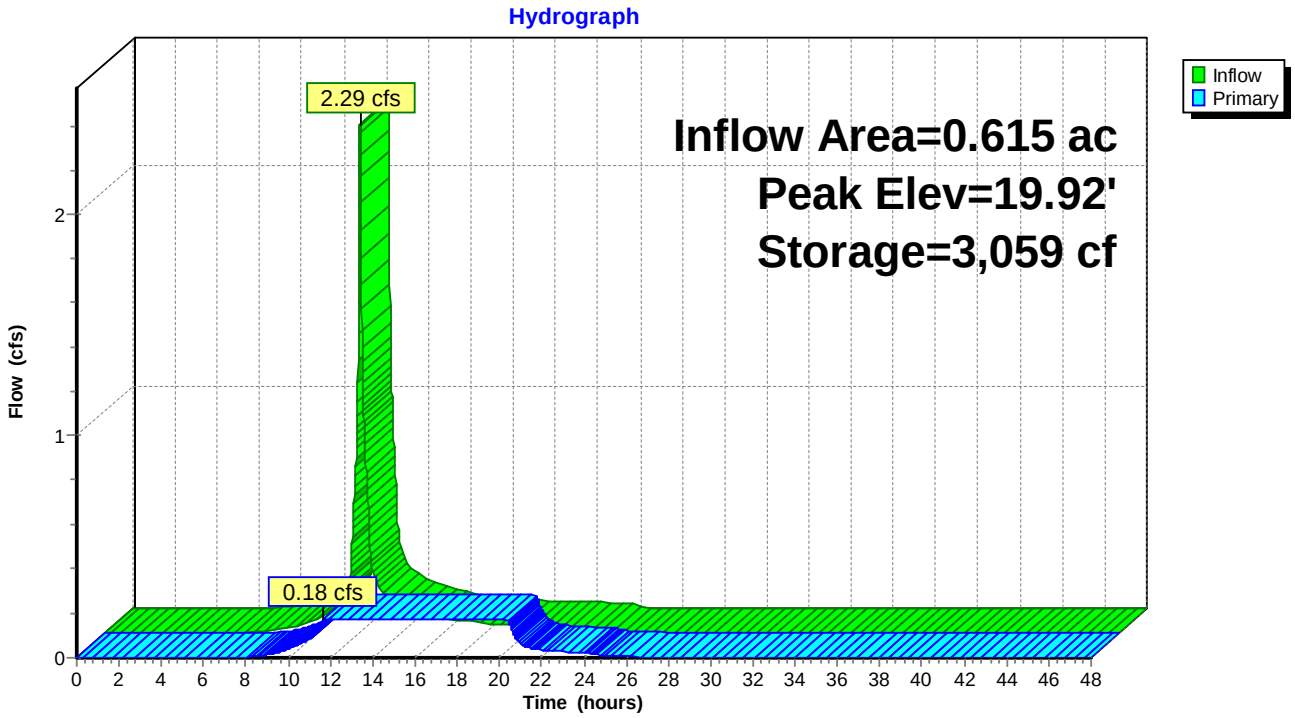
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 17.50' | 6,741 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Voids (%) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|---|
| 17.50 | 2,995 | 0.0 | 0 | 0 |
| 18.00 | 2,995 | 30.0 | 449 | 449 |
| 18.50 | 2,995 | 30.0 | 449 | 899 |
| 19.00 | 2,995 | 30.0 | 449 | 1,348 |
| 19.50 | 2,995 | 30.0 | 449 | 1,797 |
| 20.00 | 2,995 | 100.0 | 1,498 | 3,295 |
| 20.50 | 3,430 | 100.0 | 1,606 | 4,901 |
| 21.00 | 3,931 | 100.0 | 1,840 | 6,741 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 17.50' | **6.0" Round Culvert** L= 80.0' Ke= 0.500<br>Inlet / Outlet Invert= 17.50' / 17.40' S= 0.0013 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.20 sf |
| #2 | Primary | 17.40' | **12.0" Round Culvert** L= 30.0' Ke= 0.500<br>Inlet / Outlet Invert= 17.40' / 17.20' S= 0.0067 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf |
| #3 | Device 1 | 17.50' | **2.540 in/hr Exfiltration over Surface area** |
| #4 | Device 2 | 20.50' | **18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Primary OutFlow** Max=0.18 cfs @ 11.65 hrs HW=17.90' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 0.18 cfs of 0.78 cfs potential flow)
  └─**1=Culvert** (Passes 0.18 cfs of 0.18 cfs potential flow)
    └─**3=Exfiltration** (Exfiltration Controls 0.18 cfs)
  └─**4=Orifice/Grate** ( Controls 0.00 cfs)

## Pond B-9: B-9


Hydrograph
Inflow
Primary
2.29 cfs
0.18 cfs
Inflow Area=0.615 ac
Peak Elev=19.92'
Storage=3,059 cf
Flow (cfs)
0
1
2
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
Time (hours)

## Summary for Pond VP: Vernal Pool

Inflow Area = 5.666 ac, 0.00% Impervious, Inflow Depth = 1.39" for 10-Year Storm event
Inflow = 6.16 cfs @ 12.26 hrs, Volume= 0.658 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.03' @ 24.98 hrs Surf.Area= 52,065 sf Storage= 28,656 cf

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

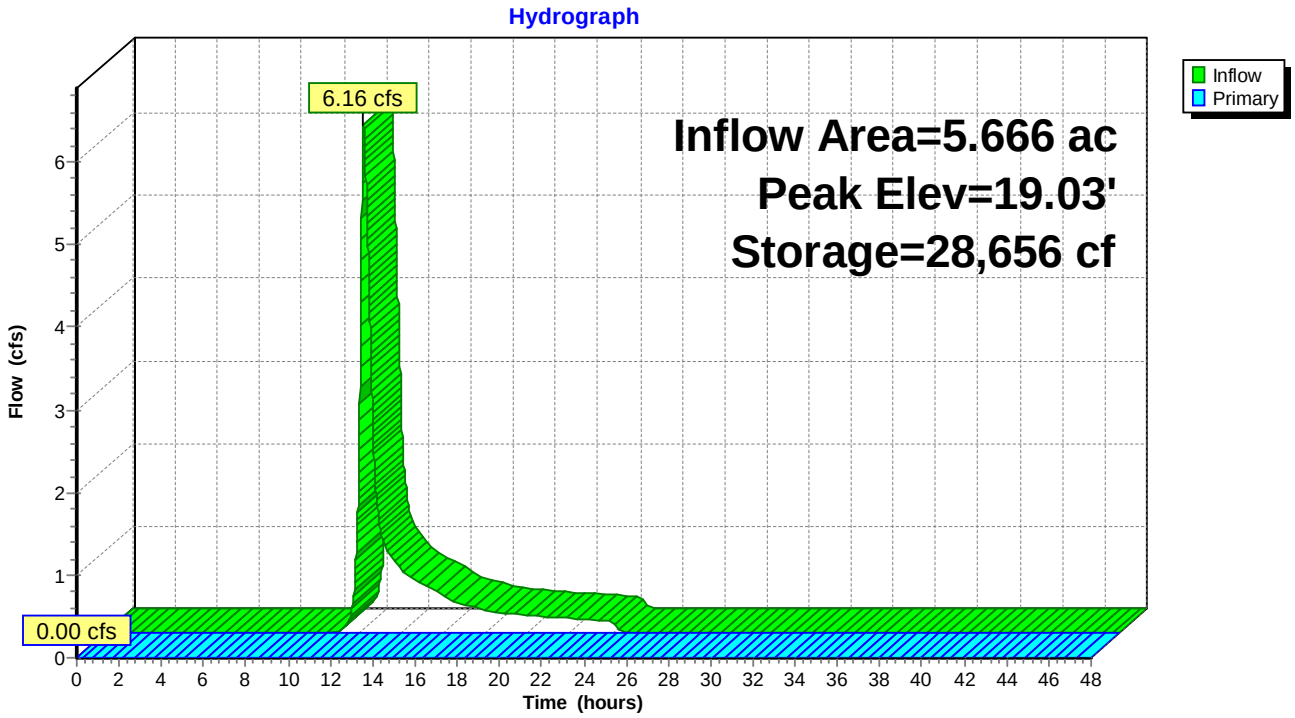
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 18.00' | 92,075 cf | **VP (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 18.00 | 3,300 | 0 | 0 |
| 19.00 | 51,100 | 27,200 | 27,200 |
| 19.50 | 68,200 | 29,825 | 57,025 |
| 20.00 | 72,000 | 35,050 | 92,075 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 19.50' | **20.0' long x 12.0' breadth Broad-Crested Rectangular Weir** |
| | | | Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 |
| | | | Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=18.00' TW=17.00' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond VP: Vernal Pool

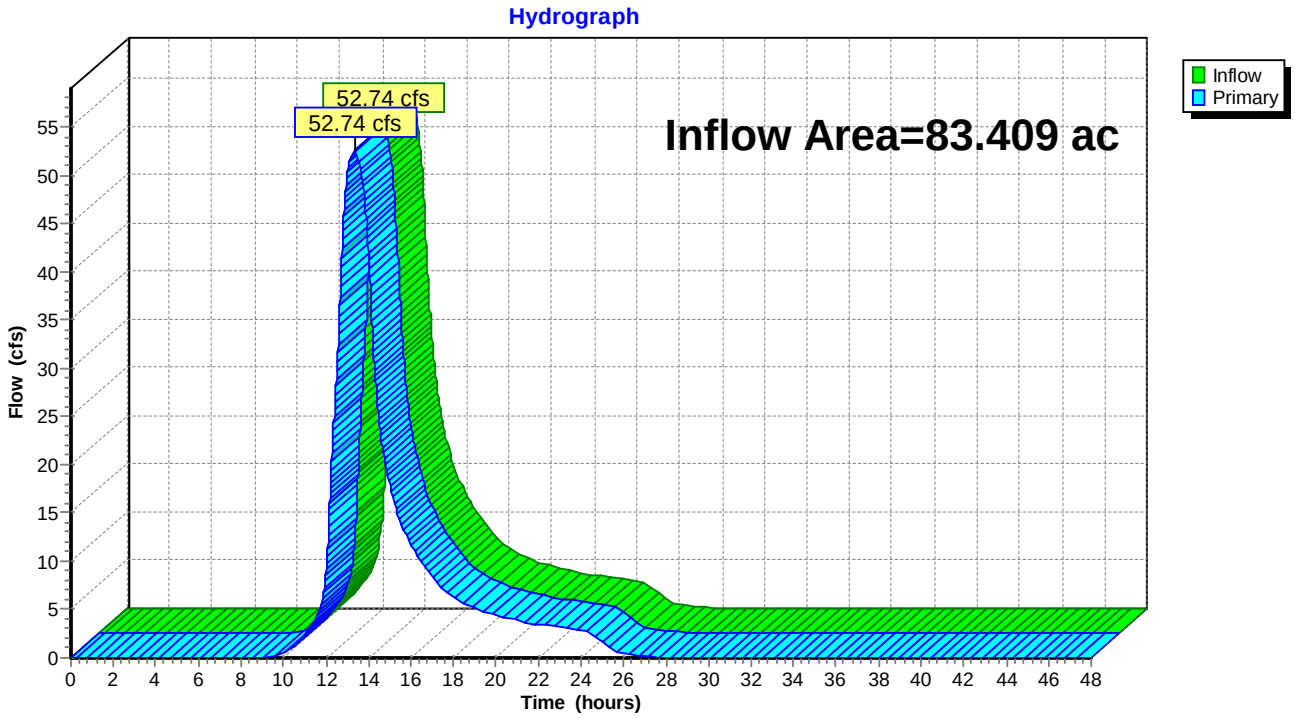


## Summary for Link DP2: Design Point 2

Inflow Area = 83.409 ac, 15.10% Impervious, Inflow Depth = 2.05" for 10-Year Storm event
Inflow = 52.74 cfs @ 13.32 hrs, Volume= 14.244 af
Primary = 52.74 cfs @ 13.33 hrs, Volume= 14.244 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP2: Design Point 2

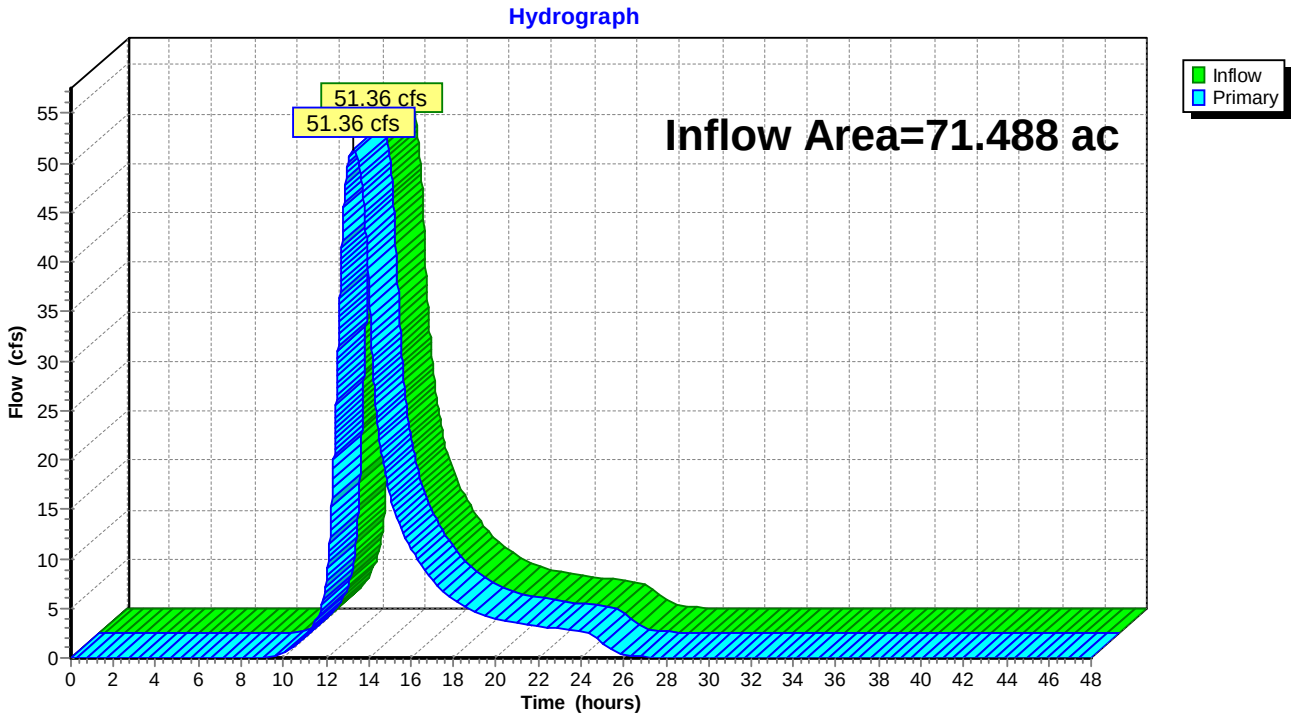


## Summary for Link DP3: Design Point 3

Inflow Area = 71.488 ac, 17.11% Impervious, Inflow Depth = 2.23" for 10-Year Storm event
Inflow = 51.36 cfs @ 13.28 hrs, Volume= 13.279 af
Primary = 51.36 cfs @ 13.29 hrs, Volume= 13.279 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP3: Design Point 3



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Sim-Route method - Pond routing by Sim-Route method

**Subcatchment 202A: Subcatchment 202A** Runoff Area=246,800 sf 0.00% Impervious Runoff Depth=1.93"
Flow Length=520' Tc=17.1 min CN=65 Runoff=8.80 cfs 0.909 af

**Subcatchment 202B: Subcatchment 202B** Runoff Area=42,400 sf 15.09% Impervious Runoff Depth=2.60"
Flow Length=250' Tc=12.2 min CN=73 Runoff=2.41 cfs 0.211 af

**Subcatchment 202C: Subcatchment 202C** Runoff Area=26,788 sf 30.61% Impervious Runoff Depth=3.84"
Tc=5.0 min CN=86 Runoff=2.82 cfs 0.197 af

**Subcatchment 202D: Subcatchment 202D** Runoff Area=203,303 sf 0.74% Impervious Runoff Depth=2.25"
Flow Length=160' Tc=22.0 min CN=69 Runoff=7.83 cfs 0.876 af

**Reach 2R: Briley Brook** Avg. Flow Depth=1.79' Max Vel=2.47 fps Inflow=60.71 cfs 17.212 af
L=250.0' S=0.0050 '/' Capacity=90.70 cfs Outflow=60.67 cfs 17.212 af

**Reach O-1: Overland Flow** Avg. Flow Depth=0.09' Max Vel=0.40 fps Inflow=2.03 cfs 0.207 af
n=0.140 L=100.0' S=0.0400 '/' Capacity=161.99 cfs Outflow=1.98 cfs 0.207 af

**Pond 202R: 15" Road Culvert** Peak Elev=18.33' Storage=891 cf Inflow=2.41 cfs 0.211 af
15.0" Round Culvert n=0.012 L=130.0' S=0.0038 '/' Outflow=2.03 cfs 0.207 af

**Pond B-9: B-9** Peak Elev=20.22' Storage=3,977 cf Inflow=2.82 cfs 0.197 af
Outflow=0.19 cfs 0.197 af

**Pond VP: Vernal Pool** Peak Elev=19.23' Storage=39,593 cf Inflow=8.80 cfs 0.909 af
Outflow=0.00 cfs 0.000 af

**Link DP2: Design Point 2** Inflow=62.46 cfs 18.492 af
Primary=62.46 cfs 18.492 af

**Link DP3: Design Point 3** Inflow=60.71 cfs 17.212 af
Primary=60.71 cfs 17.212 af

**Total Runoff Area = 11.921 ac Runoff Volume = 2.193 af Average Runoff Depth = 2.21"**
**96.90% Pervious = 11.552 ac 3.10% Impervious = 0.370 ac**

## Summary for Subcatchment 202A: Subcatchment 202A

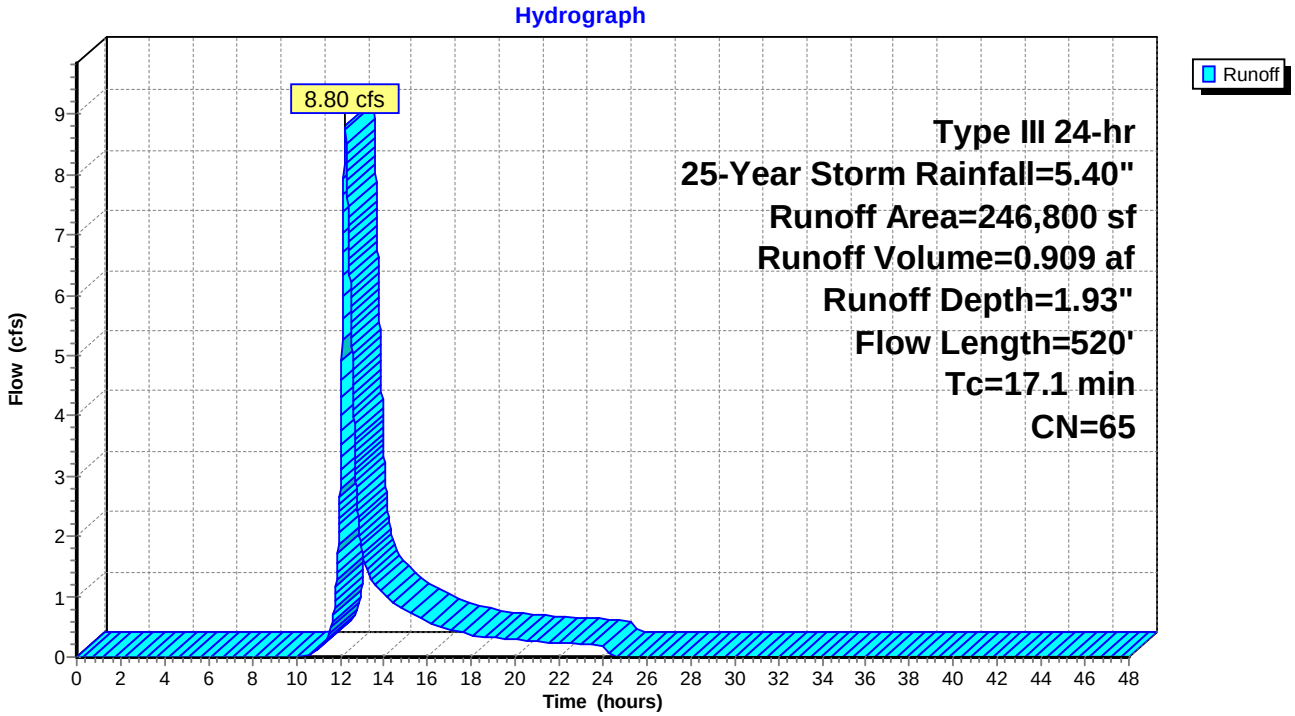
Runoff = 8.80 cfs @ 12.25 hrs, Volume= 0.909 af, Depth= 1.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Storm Rainfall=5.40"

| Area (sf) | CN | Description |
|---|---|---|
| 246,800 | 65 | Brush, Good, HSG C |
| 246,800 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.9 | 60 | 0.0100 | 0.08 | | **Sheet Flow, Grass**<br>Grass: Dense n= 0.240 P2= 3.00" |
| 4.2 | 460 | 0.0130 | 1.84 | | **Shallow Concentrated Flow, Grass, brush**<br>Unpaved Kv= 16.1 fps |
| 17.1 | 520 | Total | | | |

## Subcatchment 202A: Subcatchment 202A



## Summary for Subcatchment 202B: Subcatchment 202B

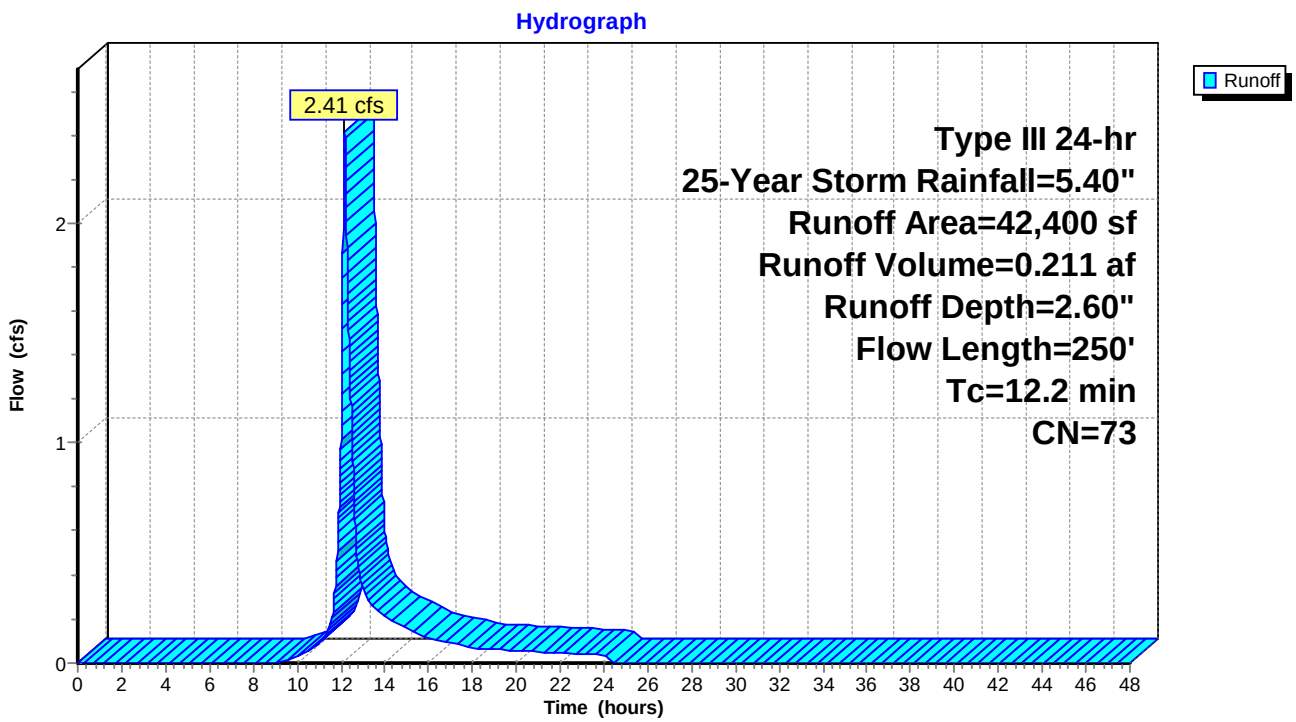
Runoff = 2.41 cfs @ 12.17 hrs, Volume= 0.211 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Storm Rainfall=5.40"

| Area (sf) | CN | Description |
|---|---|---|
| 12,800 | 92 | Paved roads w/open ditches, 50% imp, HSG C |
| 29,600 | 65 | Brush, Good, HSG C |
| 42,400 | 73 | Weighted Average |
| 36,000 | | 84.91% Pervious Area |
| 6,400 | | 15.09% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.0 | 60 | 0.0150 | 0.09 | | **Sheet Flow, Brush, grass**<br>Grass: Dense n= 0.240 P2= 3.00" |
| 1.2 | 190 | 0.0260 | 2.60 | | **Shallow Concentrated Flow, Brush, grass**<br>Unpaved Kv= 16.1 fps |
| 12.2 | 250 | Total | | | |

## Subcatchment 202B: Subcatchment 202B



## Summary for Subcatchment 202C: Subcatchment 202C

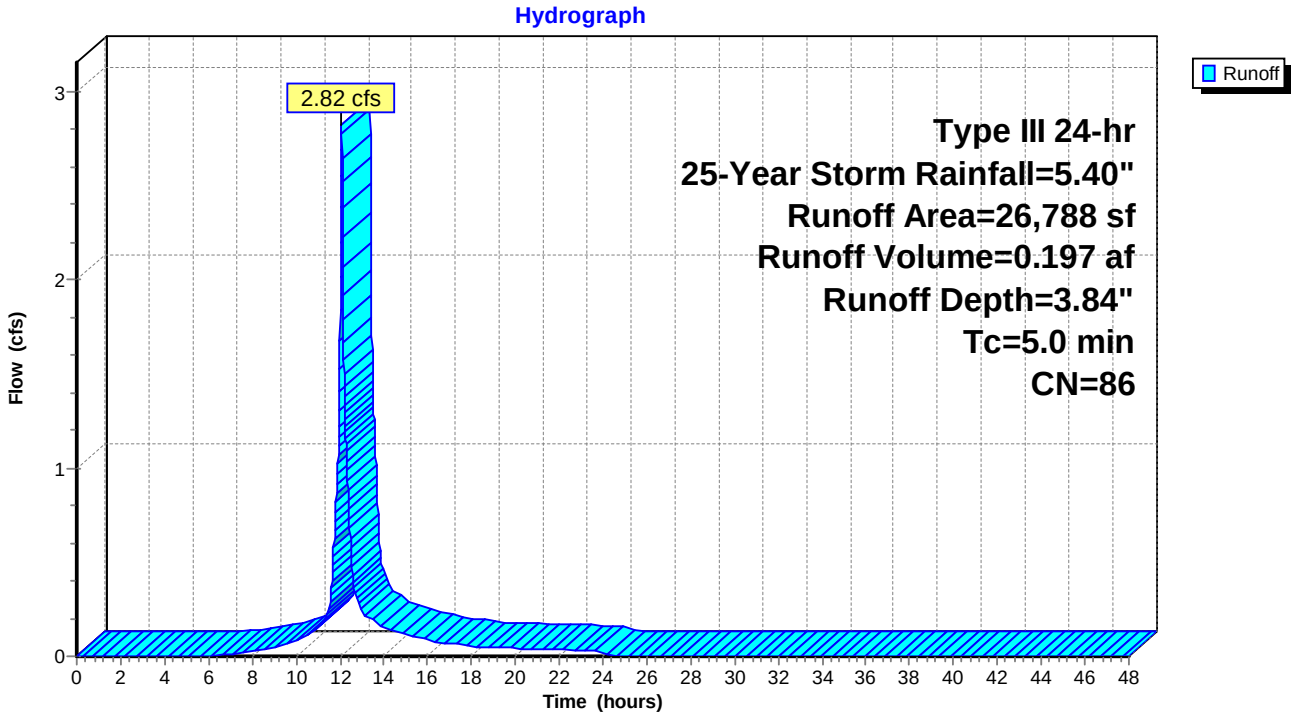
Runoff = 2.82 cfs @ 12.07 hrs, Volume= 0.197 af, Depth= 3.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Storm Rainfall=5.40"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 10,138 | 74 | >75% Grass cover, Good, HSG C |
| | 4,800 | 98 | Paved parking, HSG C |
| | 3,400 | 98 | Roofs, HSG C |
| * | 8,450 | 89 | Gravel Pad at Tower and Compound, HSG C |
| | 26,788 | 86 | Weighted Average |
| | 18,588 | | 69.39% Pervious Area |
| | 8,200 | | 30.61% Impervious Area |

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

## Subcatchment 202C: Subcatchment 202C



## Summary for Subcatchment 202D: Subcatchment 202D

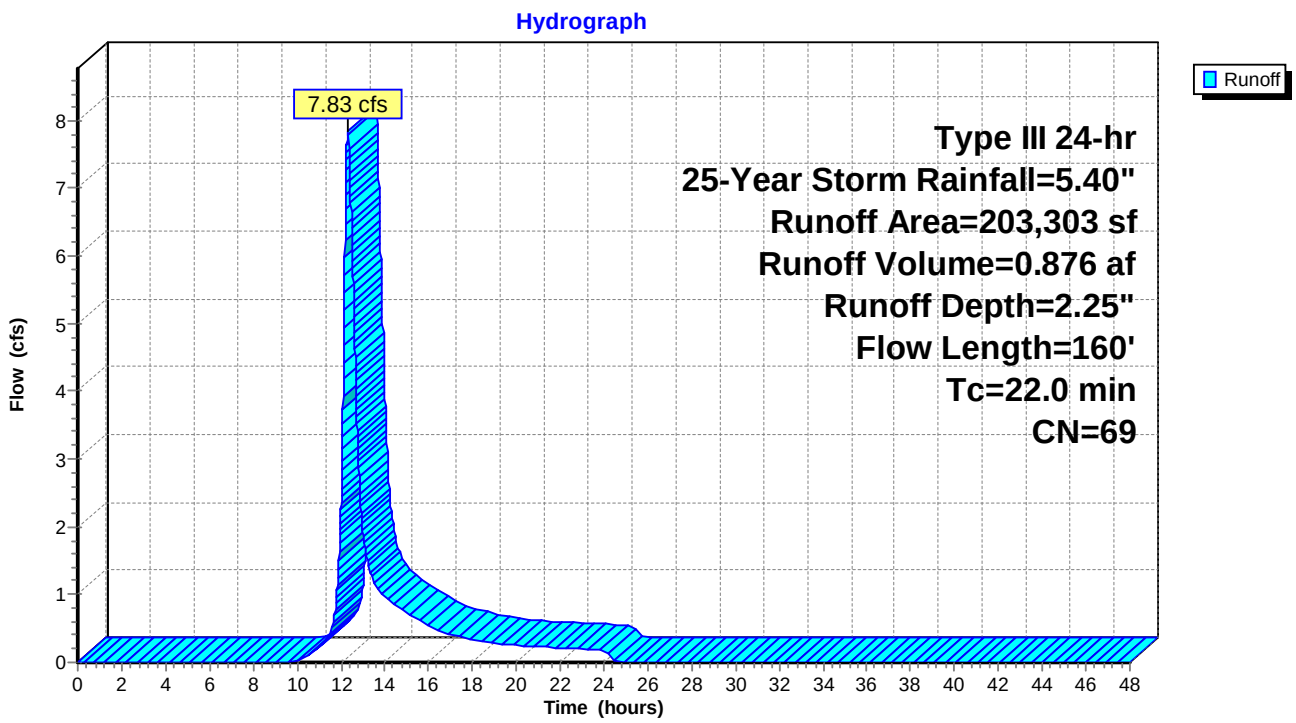
Runoff = 7.83 cfs @ 12.32 hrs, Volume= 0.876 af, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Storm Rainfall=5.40"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 122,513 | 65 | Brush, Good, HSG C |
| * | 1,500 | 98 | Paved road, HSG C |
| | 5,100 | 87 | Dirt roads, HSG C |
| | 74,190 | 74 | >75% Grass cover, Good, HSG C |
| | 203,303 | 69 | Weighted Average |
| | 201,803 | | 99.26% Pervious Area |
| | 1,500 | | 0.74% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 21.3 | 60 | 0.0080 | 0.05 | | **Sheet Flow, Woods, brush**<br>Woods: Light underbrush n= 0.400 P2= 3.00" |
| 0.7 | 100 | 0.0220 | 2.39 | | **Shallow Concentrated Flow, Grass, brush**<br>Unpaved Kv= 16.1 fps |
| 22.0 | 160 | Total | | | |

## Subcatchment 202D: Subcatchment 202D



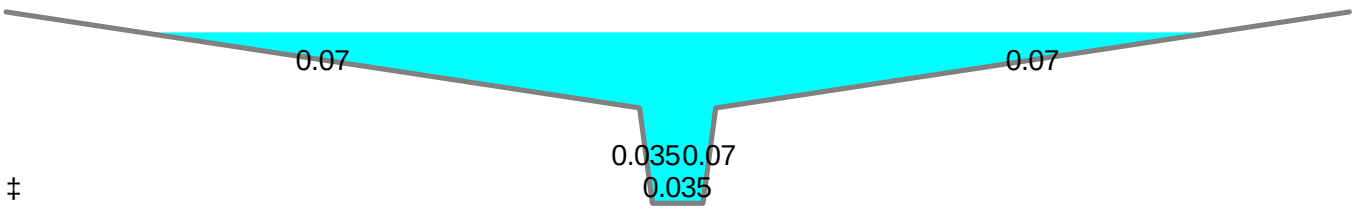
## Summary for Reach 2R: Briley Brook

Inflow Area = 71.488 ac, 17.11% Impervious, Inflow Depth = 2.89" for 25-Year Storm event
Inflow = 60.71 cfs @ 13.31 hrs, Volume= 17.212 af
Outflow = 60.67 cfs @ 13.36 hrs, Volume= 17.212 af, Atten= 0%, Lag= 3.2 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 0.84 fps, Avg. Travel Time= 5.0 min

Peak Storage= 10,215 cf @ 13.36 hrs
Average Depth at Peak Storage= 1.79'
Bank-Full Depth= 2.00' Flow Area= 61.0 sf, Capacity= 90.70 cfs

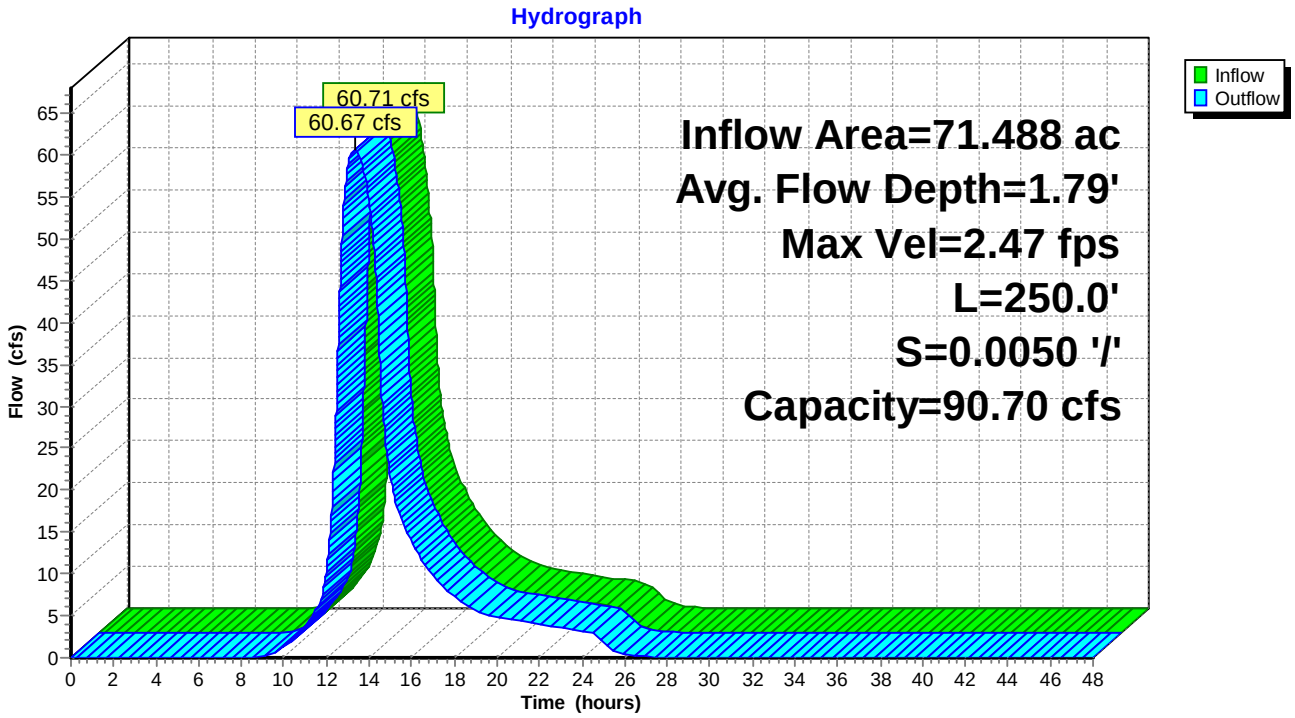
Custom cross-section, Length= 250.0' Slope= 0.0050 '/'
Flow calculated by Manning's Subdivision method
Inlet Invert= 13.25', Outlet Invert= 12.00'




| Offset (feet) | Elevation (feet) | Chan.Depth (feet) | n | Description |
|---|---|---|---|---|
| 0.00 | 2.00 | 0.00 | | |
| 50.00 | 1.00 | 1.00 | 0.070 | |
| 51.00 | 0.00 | 2.00 | 0.035 | |
| 55.00 | 0.00 | 2.00 | 0.035 | |
| 56.00 | 1.00 | 1.00 | 0.070 | |
| 106.00 | 2.00 | 0.00 | 0.070 | |

| Depth (feet) | End Area (sq-ft) | Perim. (feet) | Storage (cubic-feet) | Discharge (cfs) |
|---|---|---|---|---|
| 0.00 | 0.0 | 4.0 | 0 | 0.00 |
| 1.00 | 5.0 | 6.8 | 1,250 | 12.32 |
| 2.00 | 61.0 | 106.8 | 15,250 | 90.70 |

## Reach 2R: Briley Brook



## Summary for Reach O-1: Overland Flow

Inflow Area = 6.639 ac, 2.21% Impervious, Inflow Depth = 0.37" for 25-Year Storm event
Inflow = 2.03 cfs @ 12.26 hrs, Volume= 0.207 af
Outflow = 1.98 cfs @ 12.31 hrs, Volume= 0.207 af, Atten= 2%, Lag= 3.0 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.40 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 29.0 min

Peak Storage= 491 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.09'
Bank-Full Depth= 1.00' Flow Area= 100.0 sf, Capacity= 161.99 cfs

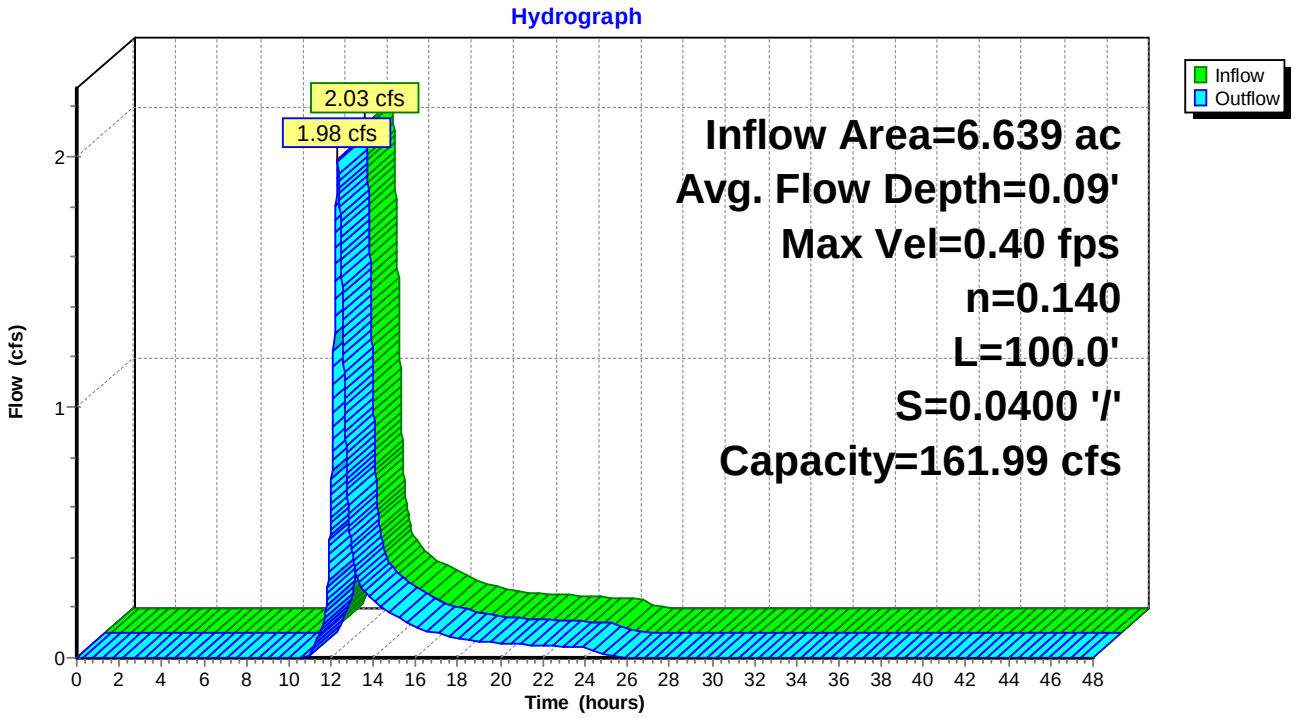
Custom cross-section, Length= 100.0' Slope= 0.0400 '/'
Constant n= 0.140 Earth, dense brush, high stage
Inlet Invert= 17.00', Outlet Invert= 13.00'

‡

| Offset (feet) | Elevation (feet) | Chan.Depth (feet) |
|---|---|---|
| 0.00 | 18.00 | 0.00 |
| 50.00 | 17.00 | 1.00 |
| 100.00 | 17.00 | 1.00 |
| 150.00 | 18.00 | 0.00 |

| Depth (feet) | End Area (sq-ft) | Perim. (feet) | Storage (cubic-feet) | Discharge (cfs) |
|---|---|---|---|---|
| 0.00 | 0.0 | 50.0 | 0 | 0.00 |
| 1.00 | 100.0 | 150.0 | 10,000 | 161.99 |

## Reach O-1: Overland Flow



## Summary for Pond 202R: 15" Road Culvert

Inflow Area = 6.639 ac, 2.21% Impervious, Inflow Depth = 0.38" for 25-Year Storm event
Inflow = 2.41 cfs @ 12.17 hrs, Volume= 0.211 af
Outflow = 2.03 cfs @ 12.26 hrs, Volume= 0.207 af, Atten= 16%, Lag= 5.4 min
Primary = 2.03 cfs @ 12.26 hrs, Volume= 0.207 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 18.33' @ 12.26 hrs Surf.Area= 1,893 sf Storage= 891 cf

Plug-Flow detention time= 24.0 min calculated for 0.207 af (98% of inflow)
Center-of-Mass det. time= 14.3 min ( 856.3 - 841.9 )

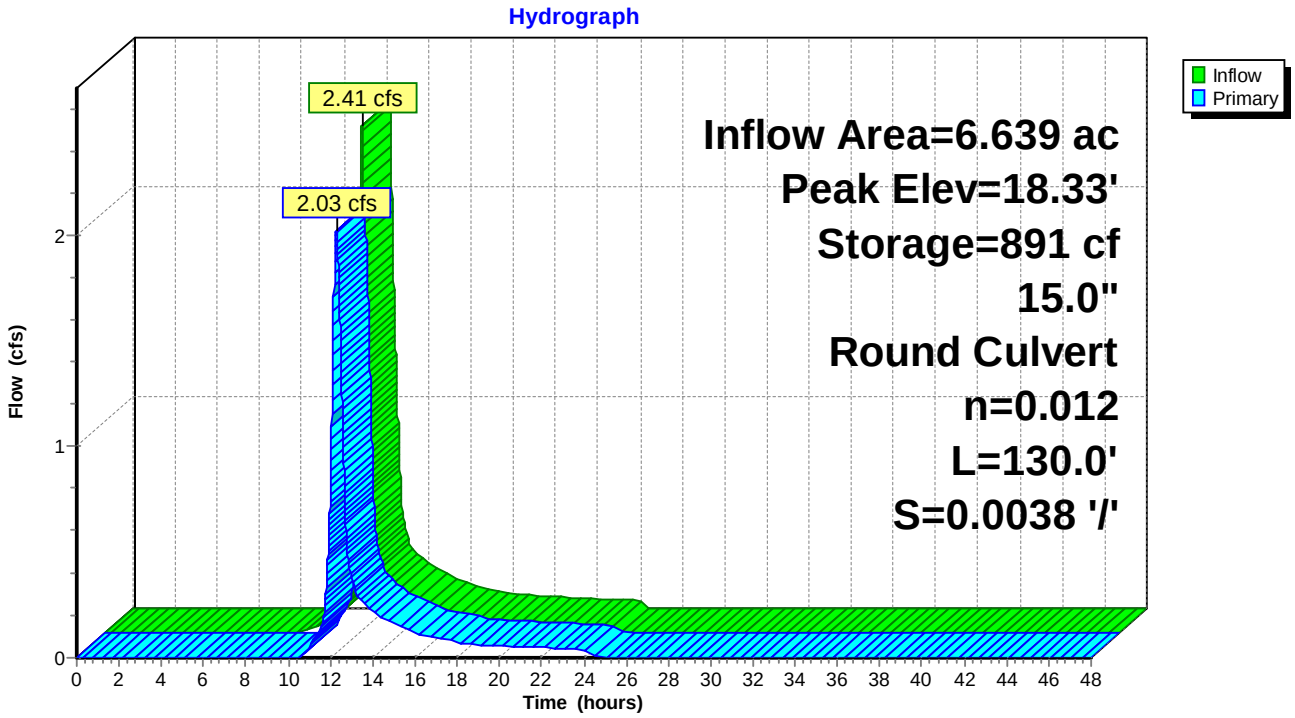
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 17.00' | 8,575 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 17.00 | 150 | 0 | 0 |
| 17.50 | 450 | 150 | 150 |
| 18.00 | 770 | 305 | 455 |
| 19.00 | 4,200 | 2,485 | 2,940 |
| 20.00 | 7,070 | 5,635 | 8,575 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 17.50' | **15.0" Round Culvert**<br>L= 130.0' CPP, end-section conforming to fill, Ke= 0.500<br>Inlet / Outlet Invert= 17.50' / 17.00' S= 0.0038 '/' Cc= 0.900<br>n= 0.012, Flow Area= 1.23 sf |

**Primary OutFlow** Max=2.03 cfs @ 12.26 hrs HW=18.33' TW=17.09' (Dynamic Tailwater)
↑└**1=Culvert** (Barrel Controls 2.03 cfs @ 3.33 fps)

## Pond 202R: 15" Road Culvert



## Summary for Pond B-9: B-9

Inflow Area = 0.615 ac, 30.61% Impervious, Inflow Depth = 3.84" for 25-Year Storm event
Inflow = 2.82 cfs @ 12.07 hrs, Volume= 0.197 af
Outflow = 0.19 cfs @ 13.57 hrs, Volume= 0.197 af, Atten= 93%, Lag= 89.9 min
Primary = 0.19 cfs @ 13.57 hrs, Volume= 0.197 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 20.22' @ 13.57 hrs Surf.Area= 3,187 sf Storage= 3,977 cf

Plug-Flow detention time= 211.7 min calculated for 0.197 af (100% of inflow)
Center-of-Mass det. time= 210.9 min ( 1,011.6 - 800.6 )

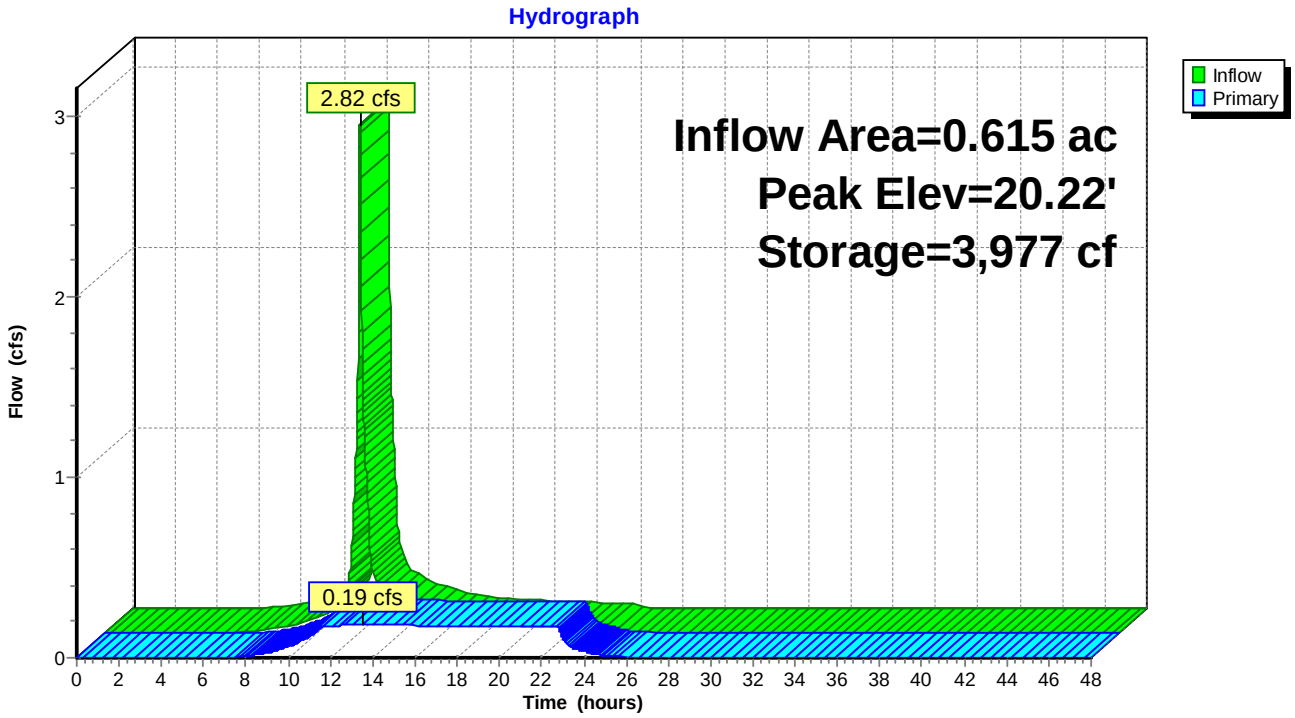
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 17.50' | 6,741 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Voids (%) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|---|
| 17.50 | 2,995 | 0.0 | 0 | 0 |
| 18.00 | 2,995 | 30.0 | 449 | 449 |
| 18.50 | 2,995 | 30.0 | 449 | 899 |
| 19.00 | 2,995 | 30.0 | 449 | 1,348 |
| 19.50 | 2,995 | 30.0 | 449 | 1,797 |
| 20.00 | 2,995 | 100.0 | 1,498 | 3,295 |
| 20.50 | 3,430 | 100.0 | 1,606 | 4,901 |
| 21.00 | 3,931 | 100.0 | 1,840 | 6,741 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 17.50' | **6.0" Round Culvert** L= 80.0' Ke= 0.500<br>Inlet / Outlet Invert= 17.50' / 17.40' S= 0.0013 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.20 sf |
| #2 | Primary | 17.40' | **12.0" Round Culvert** L= 30.0' Ke= 0.500<br>Inlet / Outlet Invert= 17.40' / 17.20' S= 0.0067 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf |
| #3 | Device 1 | 17.50' | **2.540 in/hr Exfiltration over Surface area** |
| #4 | Device 2 | 20.50' | **18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Primary OutFlow** Max=0.19 cfs @ 13.57 hrs HW=20.22' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 0.19 cfs of 5.76 cfs potential flow)
  └─**1=Culvert** (Passes 0.19 cfs of 0.91 cfs potential flow)
    └─**3=Exfiltration** (Exfiltration Controls 0.19 cfs)
  └─**4=Orifice/Grate** ( Controls 0.00 cfs)

## Pond B-9: B-9


Hydrograph
Inflow
Primary
2.82 cfs
0.19 cfs
Inflow Area=0.615 ac
Peak Elev=20.22'
Storage=3,977 cf
Flow (cfs)
Time (hours)
0
1
2
3
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

## Summary for Pond VP: Vernal Pool

Inflow Area = 5.666 ac, 0.00% Impervious, Inflow Depth = 1.93" for 25-Year Storm event
Inflow = 8.80 cfs @ 12.25 hrs, Volume= 0.909 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.23' @ 24.98 hrs Surf.Area= 58,812 sf Storage= 39,593 cf

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

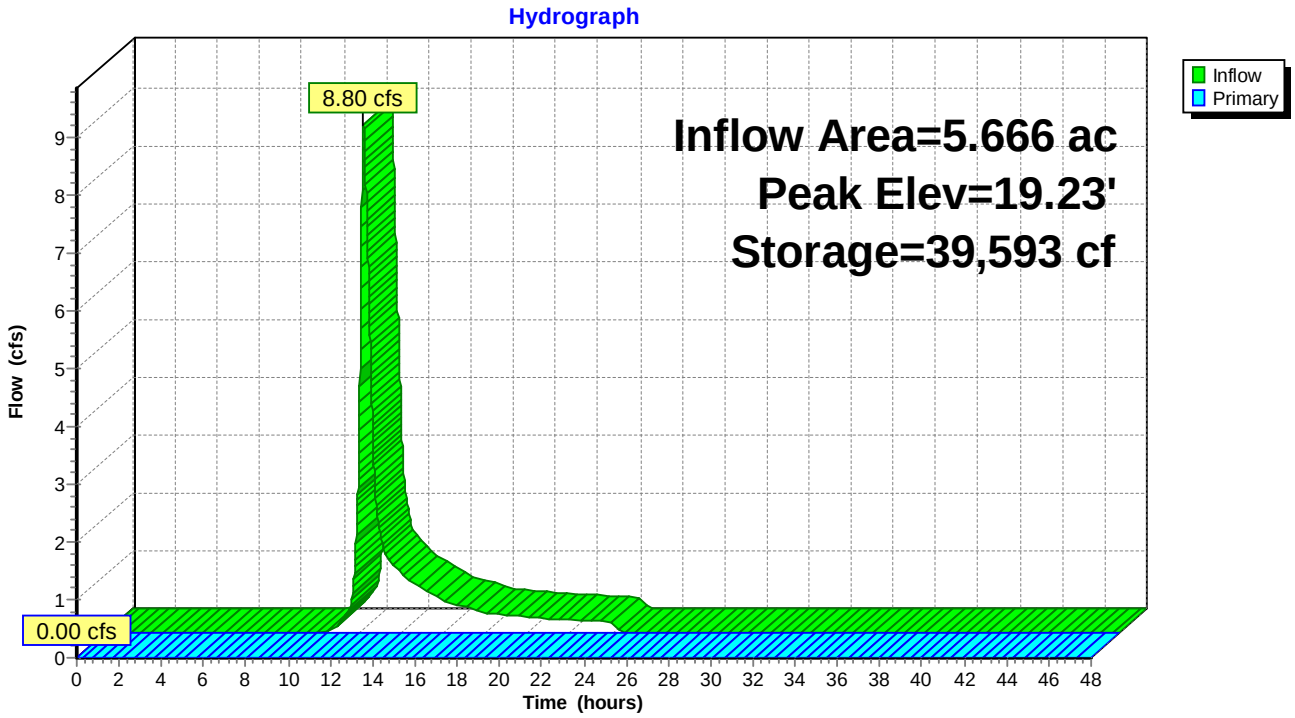
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 18.00' | 92,075 cf | **VP (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 18.00 | 3,300 | 0 | 0 |
| 19.00 | 51,100 | 27,200 | 27,200 |
| 19.50 | 68,200 | 29,825 | 57,025 |
| 20.00 | 72,000 | 35,050 | 92,075 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 19.50' | **20.0' long x 12.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=18.00' TW=17.00' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond VP: Vernal Pool

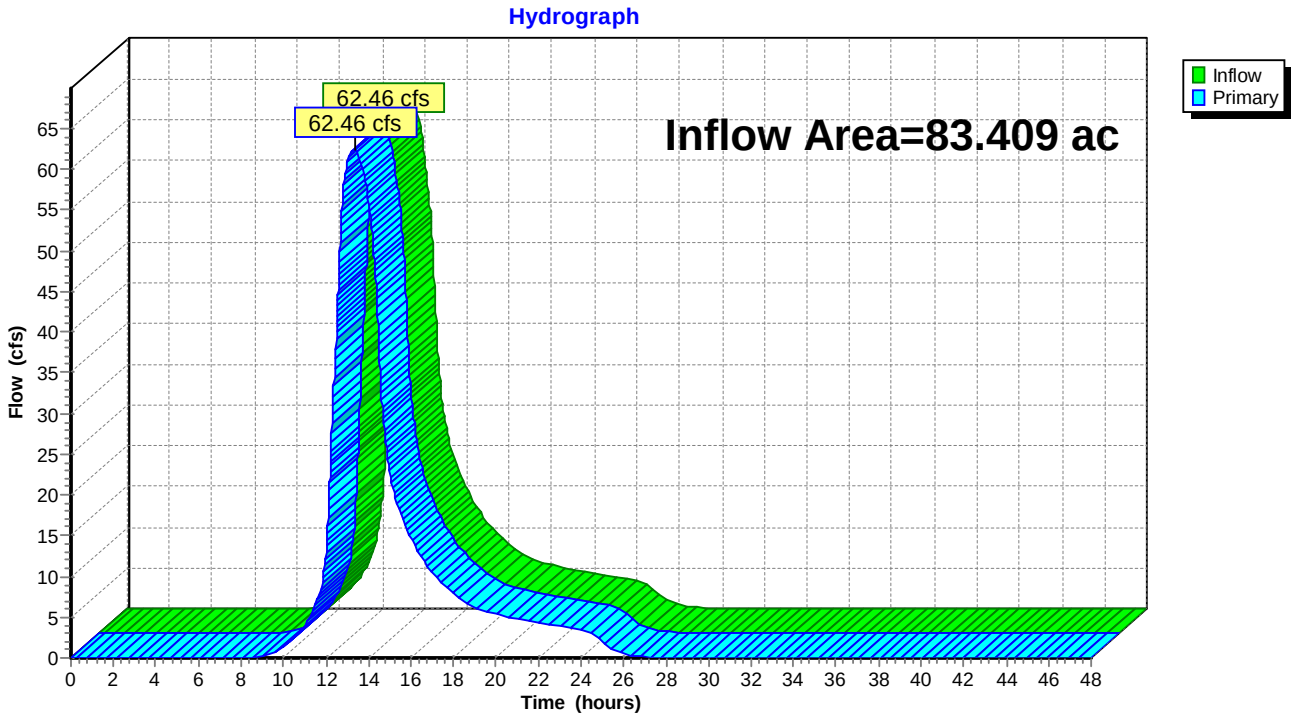


## Summary for Link DP2: Design Point 2

Inflow Area = 83.409 ac, 15.10% Impervious, Inflow Depth = 2.66" for 25-Year Storm event
Inflow = 62.46 cfs @ 13.32 hrs, Volume= 18.492 af
Primary = 62.46 cfs @ 13.33 hrs, Volume= 18.492 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP2: Design Point 2

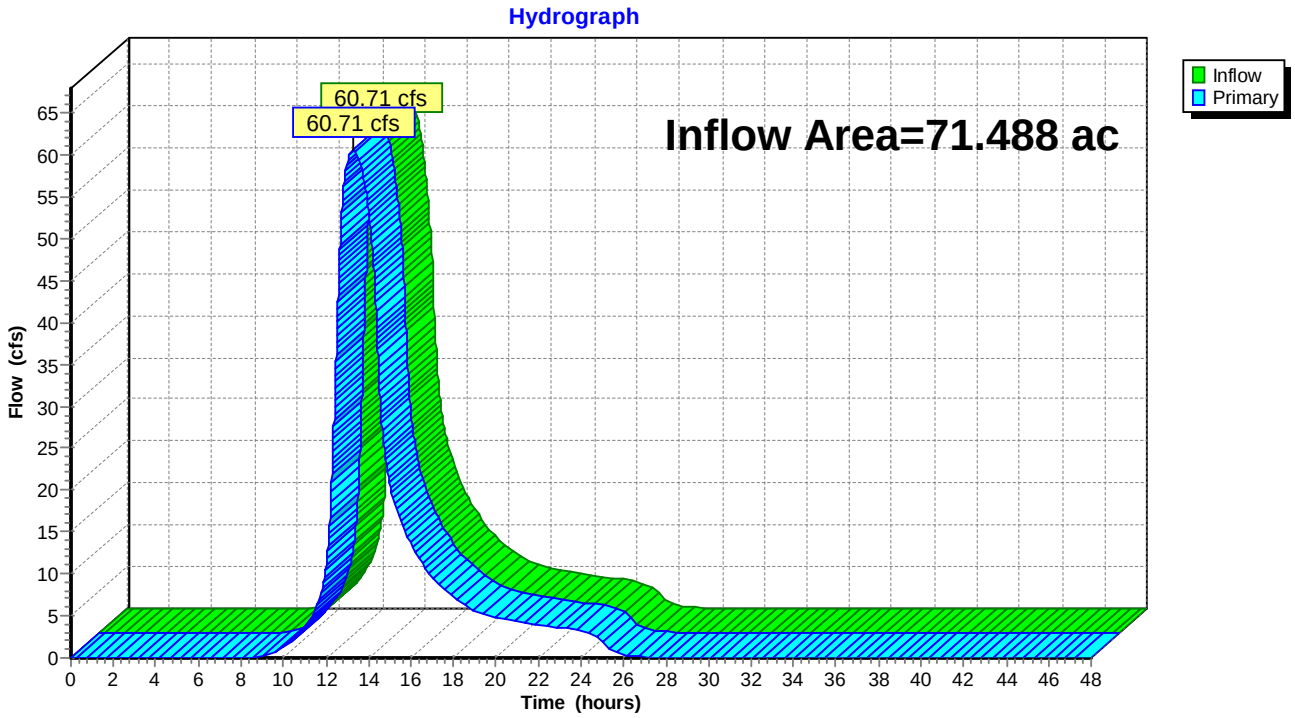


## Summary for Link DP3: Design Point 3

Inflow Area = 71.488 ac, 17.11% Impervious, Inflow Depth = 2.89" for 25-Year Storm event
Inflow = 60.71 cfs @ 13.30 hrs, Volume= 17.212 af
Primary = 60.71 cfs @ 13.31 hrs, Volume= 17.212 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP3: Design Point 3



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Sim-Route method - Pond routing by Sim-Route method

**Subcatchment 202A: Subcatchment 202A** Runoff Area=246,800 sf 0.00% Impervious Runoff Depth=2.21"
Flow Length=520' Tc=17.1 min CN=65 Runoff=10.20 cfs 1.042 af

**Subcatchment 202B: Subcatchment 202B** Runoff Area=42,400 sf 15.09% Impervious Runoff Depth=2.92"
Flow Length=250' Tc=12.2 min CN=73 Runoff=2.72 cfs 0.237 af

**Subcatchment 202C: Subcatchment 202C** Runoff Area=26,788 sf 30.61% Impervious Runoff Depth=4.22"
Tc=5.0 min CN=86 Runoff=3.09 cfs 0.216 af

**Subcatchment 202D: Subcatchment 202D** Runoff Area=203,303 sf 0.74% Impervious Runoff Depth=2.56"
Flow Length=160' Tc=22.0 min CN=69 Runoff=8.93 cfs 0.995 af

**Reach 2R: Briley Brook** Avg. Flow Depth=1.82' Max Vel=2.47 fps Inflow=64.87 cfs 19.238 af
L=250.0' S=0.0050 '/' Capacity=90.70 cfs Outflow=64.84 cfs 19.238 af

**Reach O-1: Overland Flow** Avg. Flow Depth=0.10' Max Vel=0.42 fps Inflow=2.26 cfs 0.234 af
n=0.140 L=100.0' S=0.0400 '/' Capacity=161.99 cfs Outflow=2.21 cfs 0.234 af

**Pond 202R: 15" Road Culvert** Peak Elev=18.38' Storage=1,000 cf Inflow=2.72 cfs 0.237 af
15.0" Round Culvert n=0.012 L=130.0' S=0.0038 '/' Outflow=2.26 cfs 0.234 af

**Pond B-9: B-9** Peak Elev=20.37' Storage=4,447 cf Inflow=3.09 cfs 0.216 af
Outflow=0.19 cfs 0.216 af

**Pond VP: Vernal Pool** Peak Elev=19.32' Storage=45,390 cf Inflow=10.20 cfs 1.042 af
Outflow=0.00 cfs 0.000 af

**Link DP2: Design Point 2** Inflow=66.81 cfs 20.682 af
Primary=66.81 cfs 20.682 af

**Link DP3: Design Point 3** Inflow=64.87 cfs 19.238 af
Primary=64.87 cfs 19.238 af

**Total Runoff Area = 11.921 ac Runoff Volume = 2.490 af Average Runoff Depth = 2.51"**
**96.90% Pervious = 11.552 ac 3.10% Impervious = 0.370 ac**

## Summary for Subcatchment 202A: Subcatchment 202A

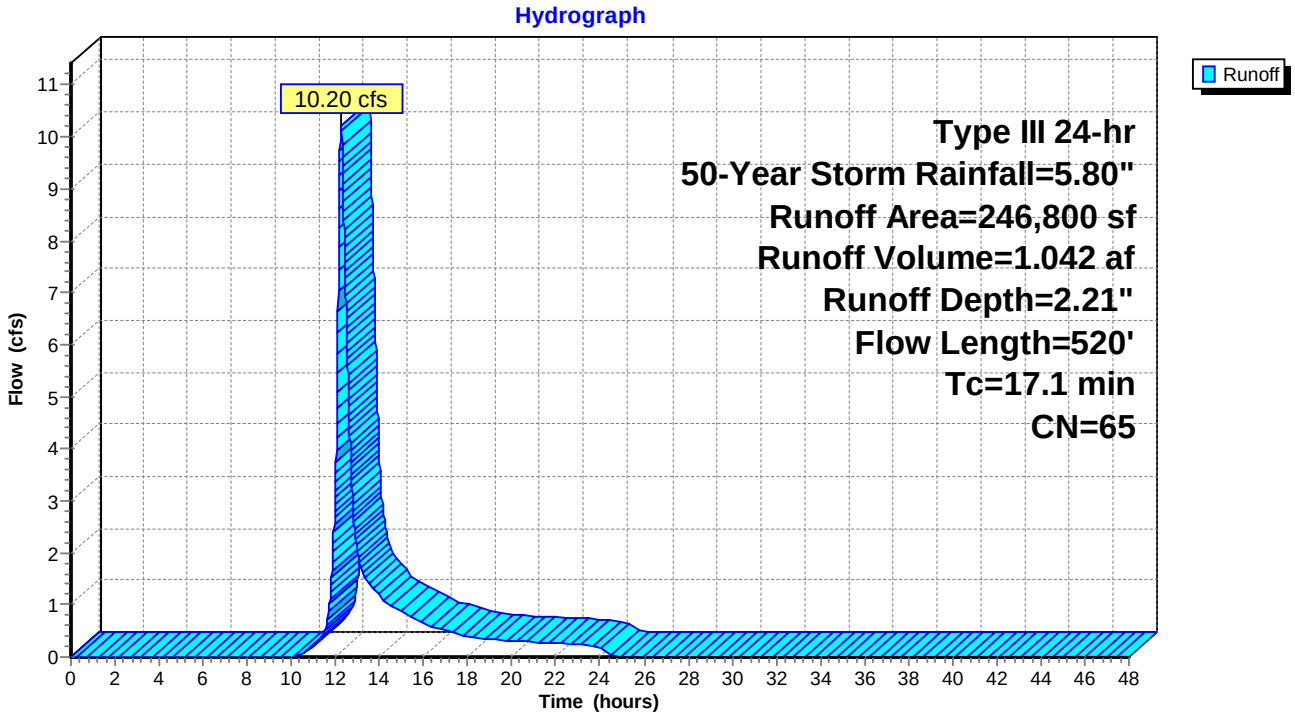
Runoff = 10.20 cfs @ 12.25 hrs, Volume= 1.042 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Storm Rainfall=5.80"

| Area (sf) | CN | Description |
|---|---|---|
| 246,800 | 65 | Brush, Good, HSG C |
| 246,800 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.9 | 60 | 0.0100 | 0.08 | | **Sheet Flow, Grass**<br>Grass: Dense n= 0.240 P2= 3.00" |
| 4.2 | 460 | 0.0130 | 1.84 | | **Shallow Concentrated Flow, Grass, brush**<br>Unpaved Kv= 16.1 fps |
| 17.1 | 520 | Total | | | |

## Subcatchment 202A: Subcatchment 202A



## Summary for Subcatchment 202B: Subcatchment 202B

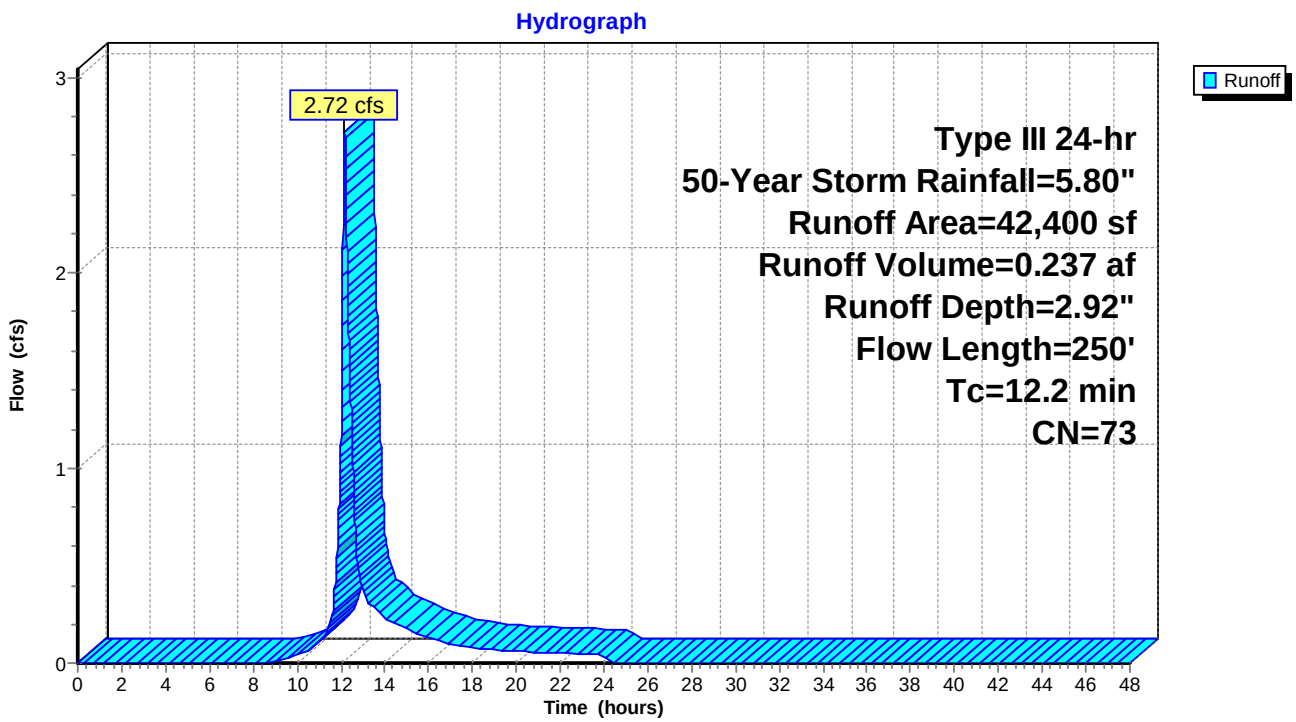
Runoff = 2.72 cfs @ 12.17 hrs, Volume= 0.237 af, Depth= 2.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Storm Rainfall=5.80"

| Area (sf) | CN | Description |
|---|---|---|
| 12,800 | 92 | Paved roads w/open ditches, 50% imp, HSG C |
| 29,600 | 65 | Brush, Good, HSG C |
| 42,400 | 73 | Weighted Average |
| 36,000 | | 84.91% Pervious Area |
| 6,400 | | 15.09% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.0 | 60 | 0.0150 | 0.09 | | **Sheet Flow, Brush, grass**<br>Grass: Dense n= 0.240 P2= 3.00" |
| 1.2 | 190 | 0.0260 | 2.60 | | **Shallow Concentrated Flow, Brush, grass**<br>Unpaved Kv= 16.1 fps |
| 12.2 | 250 | Total | | | |

## Subcatchment 202B: Subcatchment 202B



## Summary for Subcatchment 202C: Subcatchment 202C

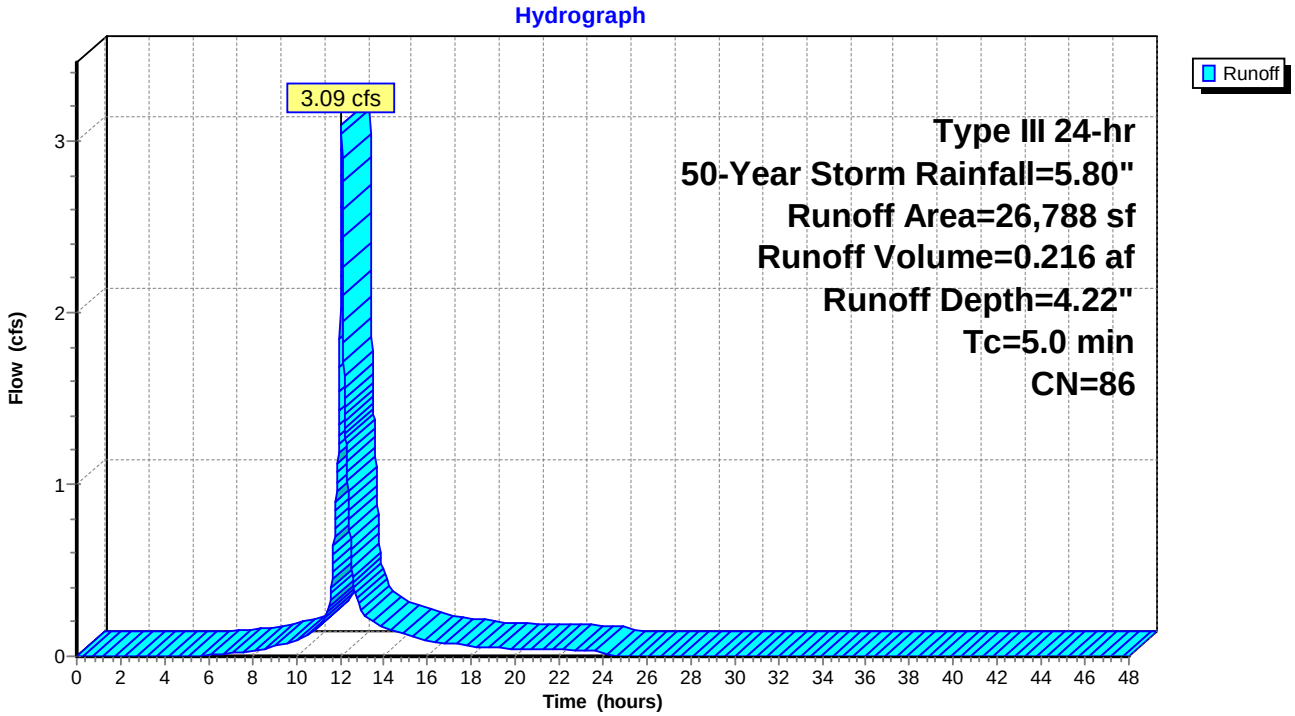
Runoff = 3.09 cfs @ 12.07 hrs, Volume= 0.216 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Storm Rainfall=5.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 10,138 | 74 | >75% Grass cover, Good, HSG C |
| | 4,800 | 98 | Paved parking, HSG C |
| | 3,400 | 98 | Roofs, HSG C |
| * | 8,450 | 89 | Gravel Pad at Tower and Compound, HSG C |
| | 26,788 | 86 | Weighted Average |
| | 18,588 | | 69.39% Pervious Area |
| | 8,200 | | 30.61% Impervious Area |

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

## Subcatchment 202C: Subcatchment 202C



## Summary for Subcatchment 202D: Subcatchment 202D

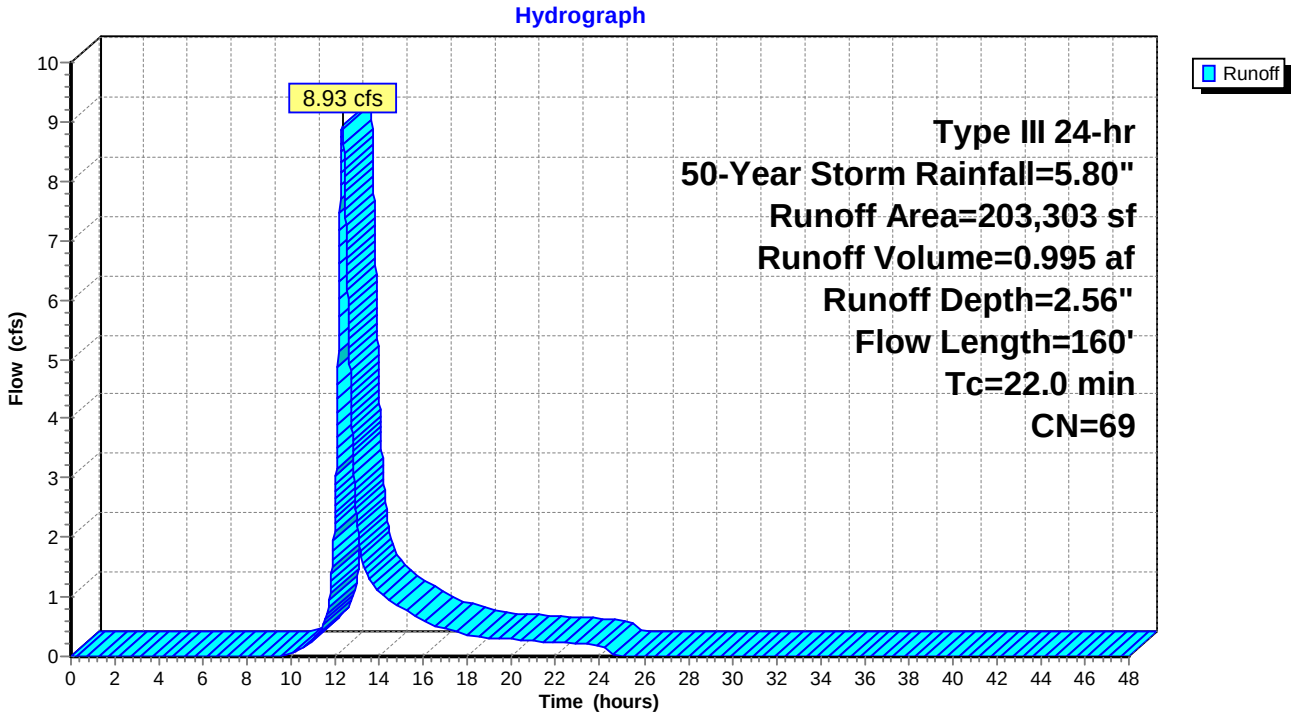
Runoff = 8.93 cfs @ 12.31 hrs, Volume= 0.995 af, Depth= 2.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Storm Rainfall=5.80"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 122,513 | 65 | Brush, Good, HSG C |
| * | 1,500 | 98 | Paved road, HSG C |
| | 5,100 | 87 | Dirt roads, HSG C |
| | 74,190 | 74 | >75% Grass cover, Good, HSG C |
| | 203,303 | 69 | Weighted Average |
| | 201,803 | | 99.26% Pervious Area |
| | 1,500 | | 0.74% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 21.3 | 60 | 0.0080 | 0.05 | | **Sheet Flow, Woods, brush**<br>Woods: Light underbrush n= 0.400 P2= 3.00" |
| 0.7 | 100 | 0.0220 | 2.39 | | **Shallow Concentrated Flow, Grass, brush**<br>Unpaved Kv= 16.1 fps |
| 22.0 | 160 | Total | | | |

## Subcatchment 202D: Subcatchment 202D



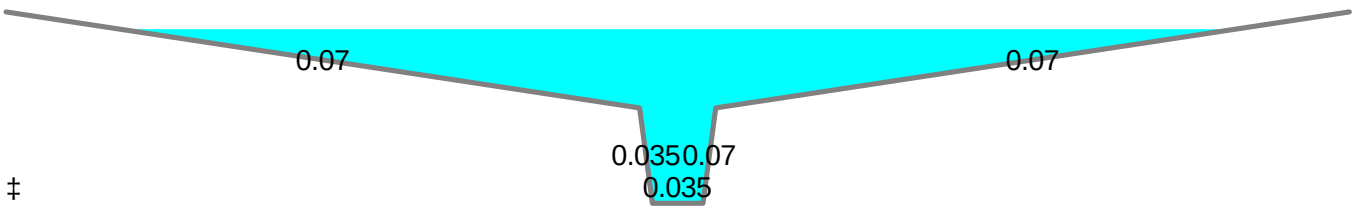
## Summary for Reach 2R: Briley Brook

Inflow Area = 71.488 ac, 17.11% Impervious, Inflow Depth = 3.23" for 50-Year Storm event
Inflow = 64.87 cfs @ 13.31 hrs, Volume= 19.238 af
Outflow = 64.84 cfs @ 13.37 hrs, Volume= 19.238 af, Atten= 0%, Lag= 3.3 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 0.86 fps, Avg. Travel Time= 4.9 min

Peak Storage= 10,941 cf @ 13.37 hrs
Average Depth at Peak Storage= 1.82'
Bank-Full Depth= 2.00' Flow Area= 61.0 sf, Capacity= 90.70 cfs

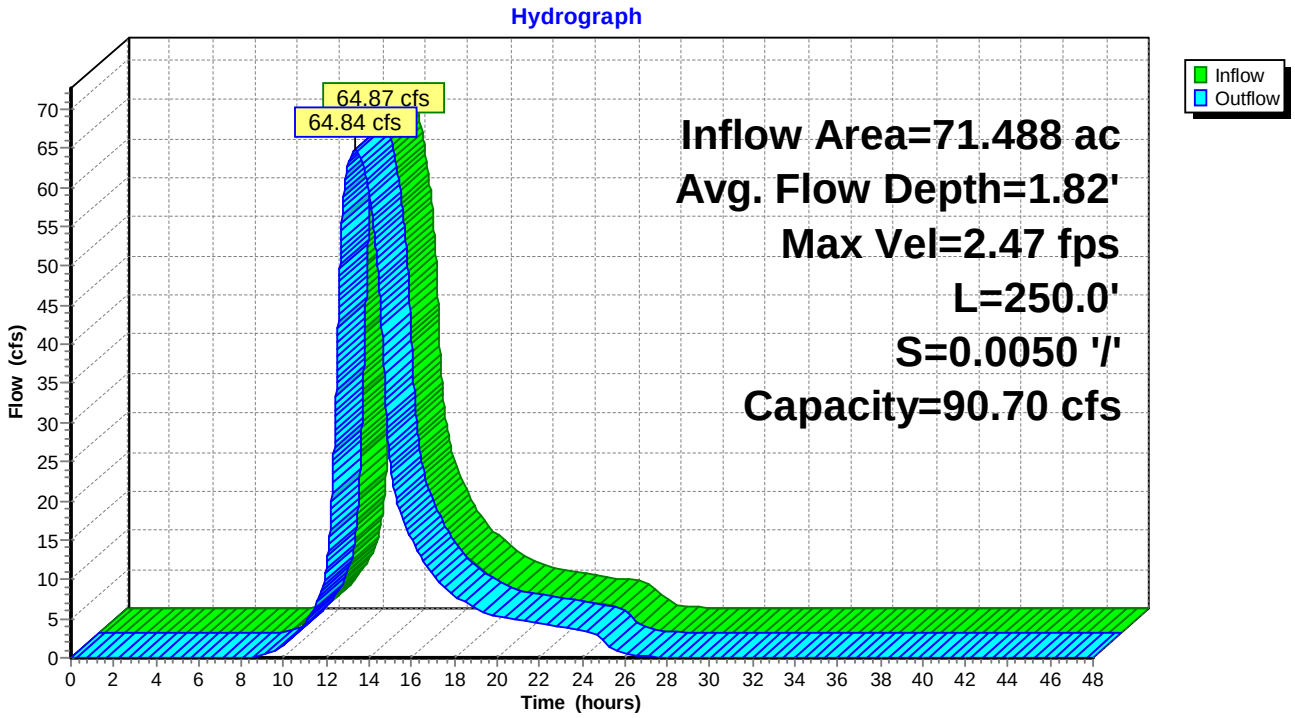
Custom cross-section, Length= 250.0' Slope= 0.0050 '/'
Flow calculated by Manning's Subdivision method
Inlet Invert= 13.25', Outlet Invert= 12.00'




| Offset (feet) | Elevation (feet) | Chan.Depth (feet) | n | Description |
|---|---|---|---|---|
| 0.00 | 2.00 | 0.00 | | |
| 50.00 | 1.00 | 1.00 | 0.070 | |
| 51.00 | 0.00 | 2.00 | 0.035 | |
| 55.00 | 0.00 | 2.00 | 0.035 | |
| 56.00 | 1.00 | 1.00 | 0.070 | |
| 106.00 | 2.00 | 0.00 | 0.070 | |

| Depth (feet) | End Area (sq-ft) | Perim. (feet) | Storage (cubic-feet) | Discharge (cfs) |
|---|---|---|---|---|
| 0.00 | 0.0 | 4.0 | 0 | 0.00 |
| 1.00 | 5.0 | 6.8 | 1,250 | 12.32 |
| 2.00 | 61.0 | 106.8 | 15,250 | 90.70 |

## Reach 2R: Briley Brook



## Summary for Reach O-1: Overland Flow

Inflow Area = 6.639 ac, 2.21% Impervious, Inflow Depth = 0.42" for 50-Year Storm event
Inflow = 2.26 cfs @ 12.26 hrs, Volume= 0.234 af
Outflow = 2.21 cfs @ 12.31 hrs, Volume= 0.234 af, Atten= 2%, Lag= 2.9 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.42 fps, Min. Travel Time= 4.0 min
Avg. Velocity = 0.06 fps, Avg. Travel Time= 27.7 min

Peak Storage= 526 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 1.00' Flow Area= 100.0 sf, Capacity= 161.99 cfs

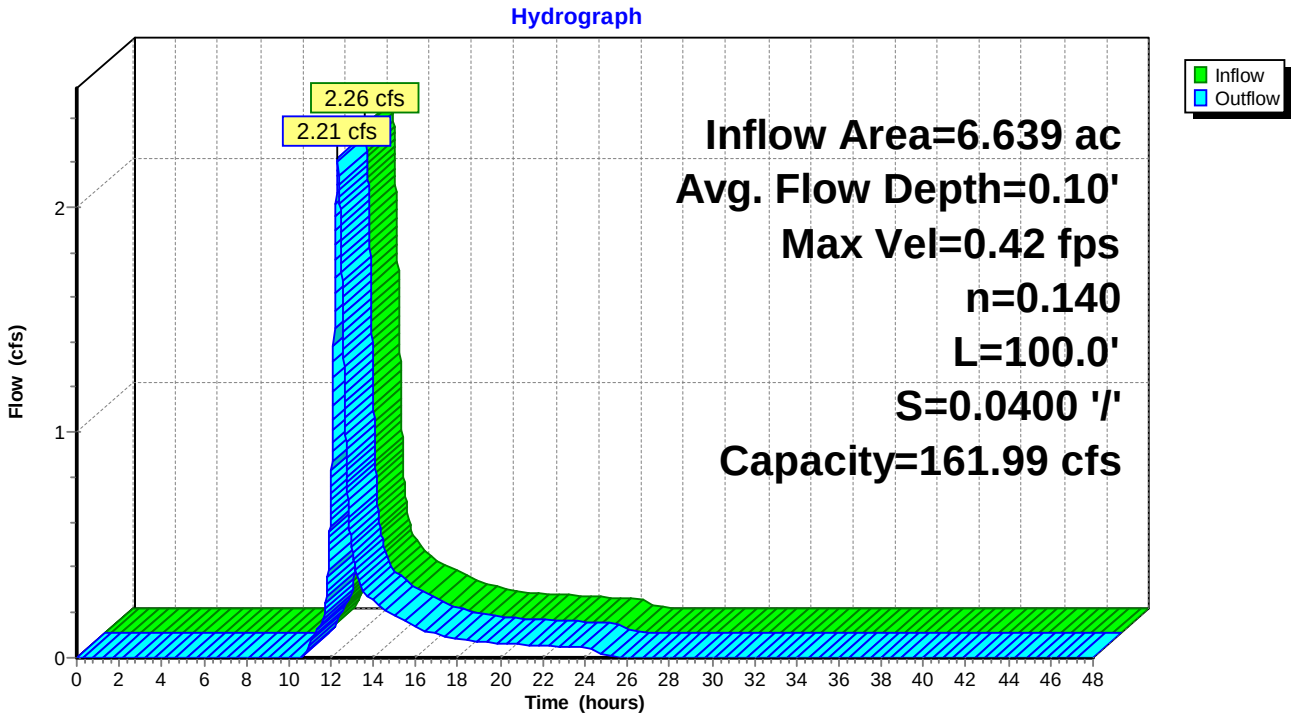
Custom cross-section, Length= 100.0' Slope= 0.0400 '/'
Constant n= 0.140 Earth, dense brush, high stage
Inlet Invert= 17.00', Outlet Invert= 13.00'

‡

| Offset (feet) | Elevation (feet) | Chan.Depth (feet) |
|---|---|---|
| 0.00 | 18.00 | 0.00 |
| 50.00 | 17.00 | 1.00 |
| 100.00 | 17.00 | 1.00 |
| 150.00 | 18.00 | 0.00 |

| Depth (feet) | End Area (sq-ft) | Perim. (feet) | Storage (cubic-feet) | Discharge (cfs) |
|---|---|---|---|---|
| 0.00 | 0.0 | 50.0 | 0 | 0.00 |
| 1.00 | 100.0 | 150.0 | 10,000 | 161.99 |

## Reach O-1: Overland Flow



## Summary for Pond 202R: 15" Road Culvert

Inflow Area = 6.639 ac, 2.21% Impervious, Inflow Depth = 0.43" for 50-Year Storm event
Inflow = 2.72 cfs @ 12.17 hrs, Volume= 0.237 af
Outflow = 2.26 cfs @ 12.26 hrs, Volume= 0.234 af, Atten= 17%, Lag= 5.7 min
Primary = 2.26 cfs @ 12.26 hrs, Volume= 0.234 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 18.38' @ 12.26 hrs Surf.Area= 2,081 sf Storage= 1,000 cf

Plug-Flow detention time= 22.4 min calculated for 0.234 af (99% of inflow)
Center-of-Mass det. time= 13.7 min ( 852.2 - 838.5 )

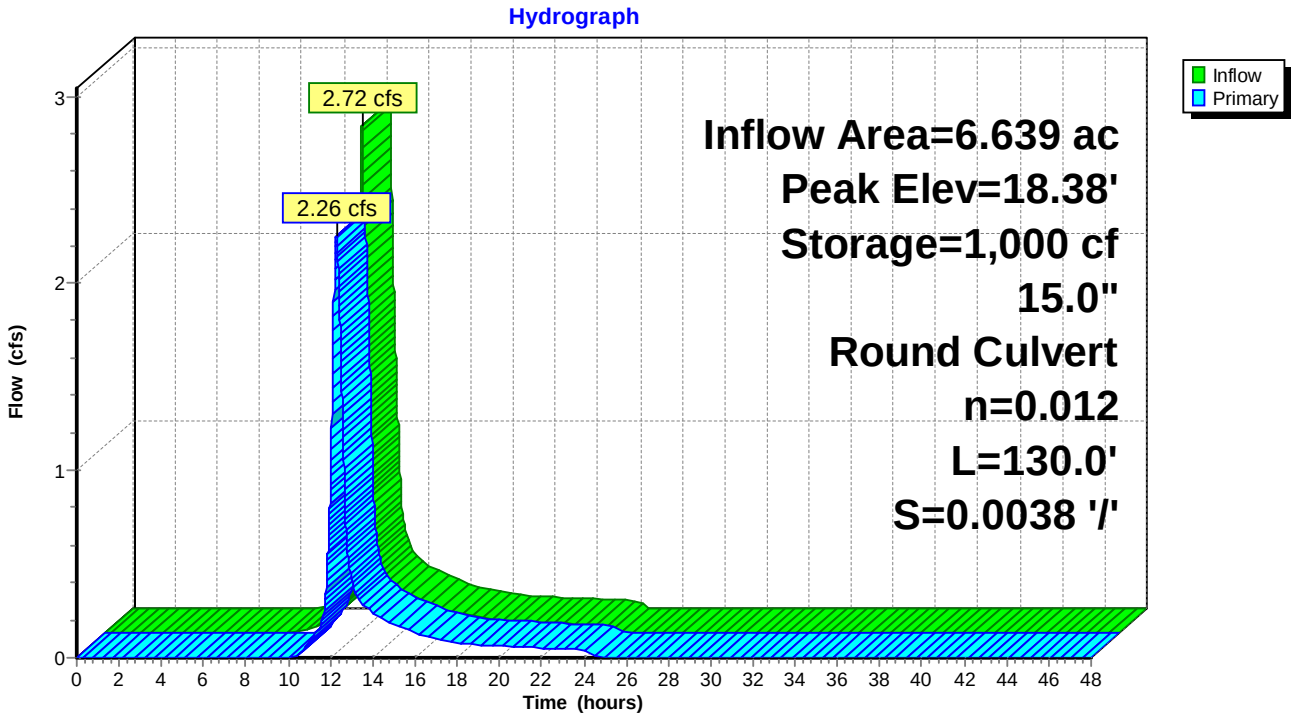
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 17.00' | 8,575 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 17.00 | 150 | 0 | 0 |
| 17.50 | 450 | 150 | 150 |
| 18.00 | 770 | 305 | 455 |
| 19.00 | 4,200 | 2,485 | 2,940 |
| 20.00 | 7,070 | 5,635 | 8,575 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 17.50' | **15.0" Round Culvert**<br>L= 130.0' CPP, end-section conforming to fill, Ke= 0.500<br>Inlet / Outlet Invert= 17.50' / 17.00' S= 0.0038 '/' Cc= 0.900<br>n= 0.012, Flow Area= 1.23 sf |

**Primary OutFlow** Max=2.26 cfs @ 12.26 hrs HW=18.38' TW=17.09' (Dynamic Tailwater)
↑└**1=Culvert** (Barrel Controls 2.26 cfs @ 3.42 fps)

## Pond 202R: 15" Road Culvert



## Summary for Pond B-9: B-9

Inflow Area = 0.615 ac, 30.61% Impervious, Inflow Depth = 4.22" for 50-Year Storm event
Inflow = 3.09 cfs @ 12.07 hrs, Volume= 0.216 af
Outflow = 0.19 cfs @ 13.68 hrs, Volume= 0.216 af, Atten= 94%, Lag= 96.5 min
Primary = 0.19 cfs @ 13.68 hrs, Volume= 0.216 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 20.37' @ 13.68 hrs Surf.Area= 3,313 sf Storage= 4,447 cf

Plug-Flow detention time= 231.2 min calculated for 0.216 af (100% of inflow)
Center-of-Mass det. time= 230.5 min ( 1,028.5 - 798.0 )

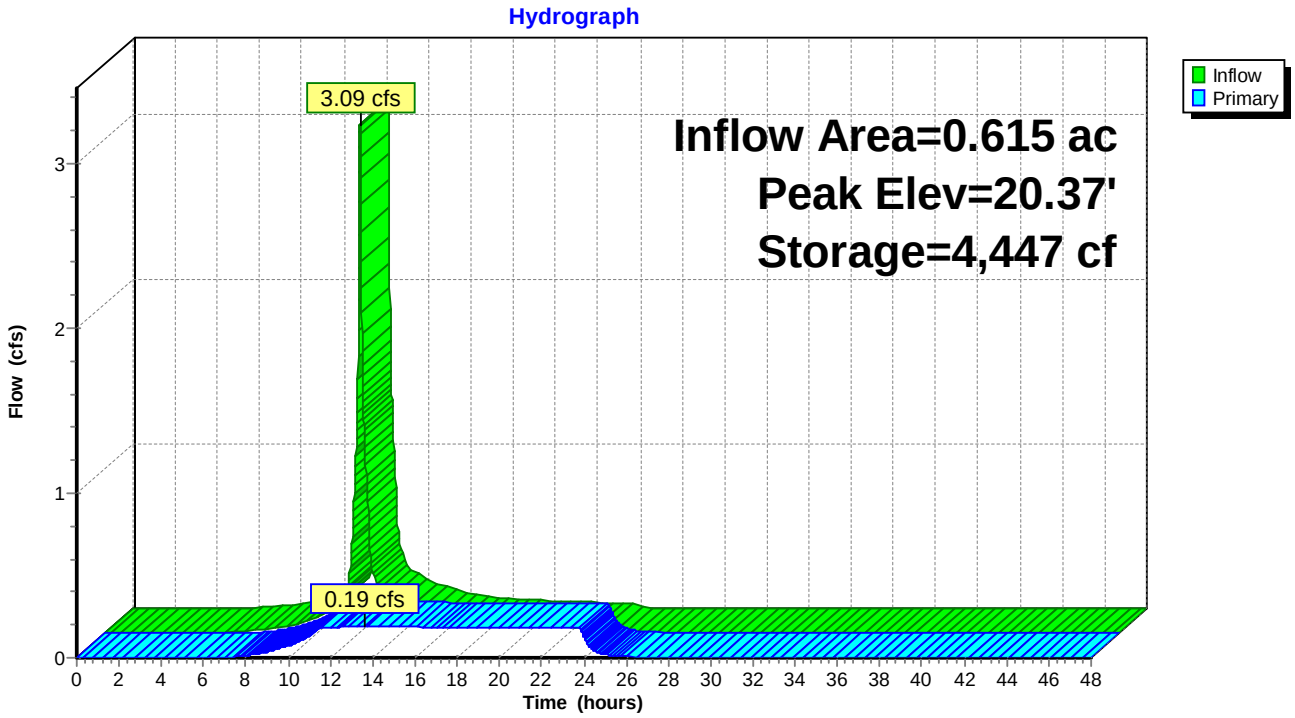
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 17.50' | 6,741 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Voids (%) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|---|
| 17.50 | 2,995 | 0.0 | 0 | 0 |
| 18.00 | 2,995 | 30.0 | 449 | 449 |
| 18.50 | 2,995 | 30.0 | 449 | 899 |
| 19.00 | 2,995 | 30.0 | 449 | 1,348 |
| 19.50 | 2,995 | 30.0 | 449 | 1,797 |
| 20.00 | 2,995 | 100.0 | 1,498 | 3,295 |
| 20.50 | 3,430 | 100.0 | 1,606 | 4,901 |
| 21.00 | 3,931 | 100.0 | 1,840 | 6,741 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 17.50' | **6.0" Round Culvert** L= 80.0' Ke= 0.500<br>Inlet / Outlet Invert= 17.50' / 17.40' S= 0.0013 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.20 sf |
| #2 | Primary | 17.40' | **12.0" Round Culvert** L= 30.0' Ke= 0.500<br>Inlet / Outlet Invert= 17.40' / 17.20' S= 0.0067 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf |
| #3 | Device 1 | 17.50' | **2.540 in/hr Exfiltration over Surface area** |
| #4 | Device 2 | 20.50' | **18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Primary OutFlow** Max=0.19 cfs @ 13.68 hrs HW=20.37' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 0.19 cfs of 5.94 cfs potential flow)
  └─**1=Culvert** (Passes 0.19 cfs of 0.94 cfs potential flow)
    └─**3=Exfiltration** (Exfiltration Controls 0.19 cfs)
  └─**4=Orifice/Grate** ( Controls 0.00 cfs)

## Pond B-9: B-9


Hydrograph
Inflow
Primary
3.09 cfs
0.19 cfs
Inflow Area=0.615 ac
Peak Elev=20.37'
Storage=4,447 cf
Flow (cfs)
Time (hours)
0
1
2
3
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

## Summary for Pond VP: Vernal Pool

Inflow Area = 5.666 ac, 0.00% Impervious, Inflow Depth = 2.21" for 50-Year Storm event
Inflow = 10.20 cfs @ 12.25 hrs, Volume= 1.042 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.32' @ 24.98 hrs Surf.Area= 62,092 sf Storage= 45,390 cf

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

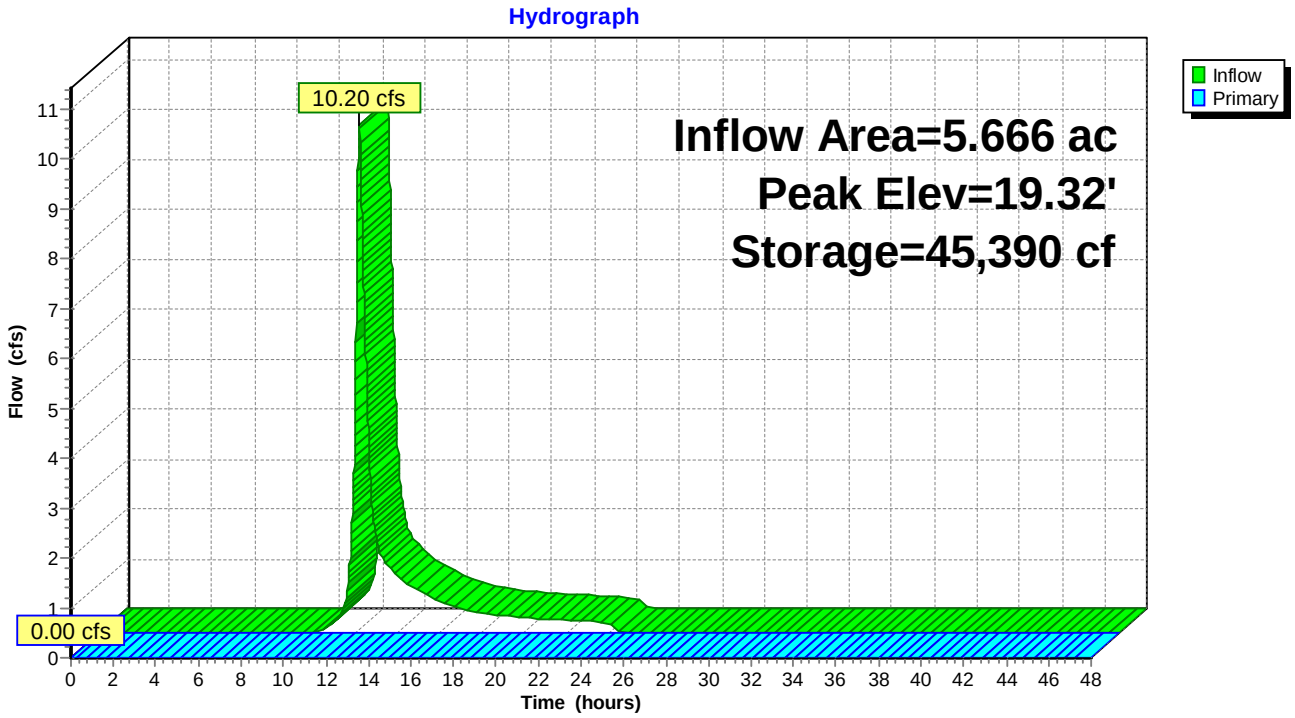
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 18.00' | 92,075 cf | **VP (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 18.00 | 3,300 | 0 | 0 |
| 19.00 | 51,100 | 27,200 | 27,200 |
| 19.50 | 68,200 | 29,825 | 57,025 |
| 20.00 | 72,000 | 35,050 | 92,075 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 19.50' | **20.0' long x 12.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64 |

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=18.00' TW=17.00' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond VP: Vernal Pool

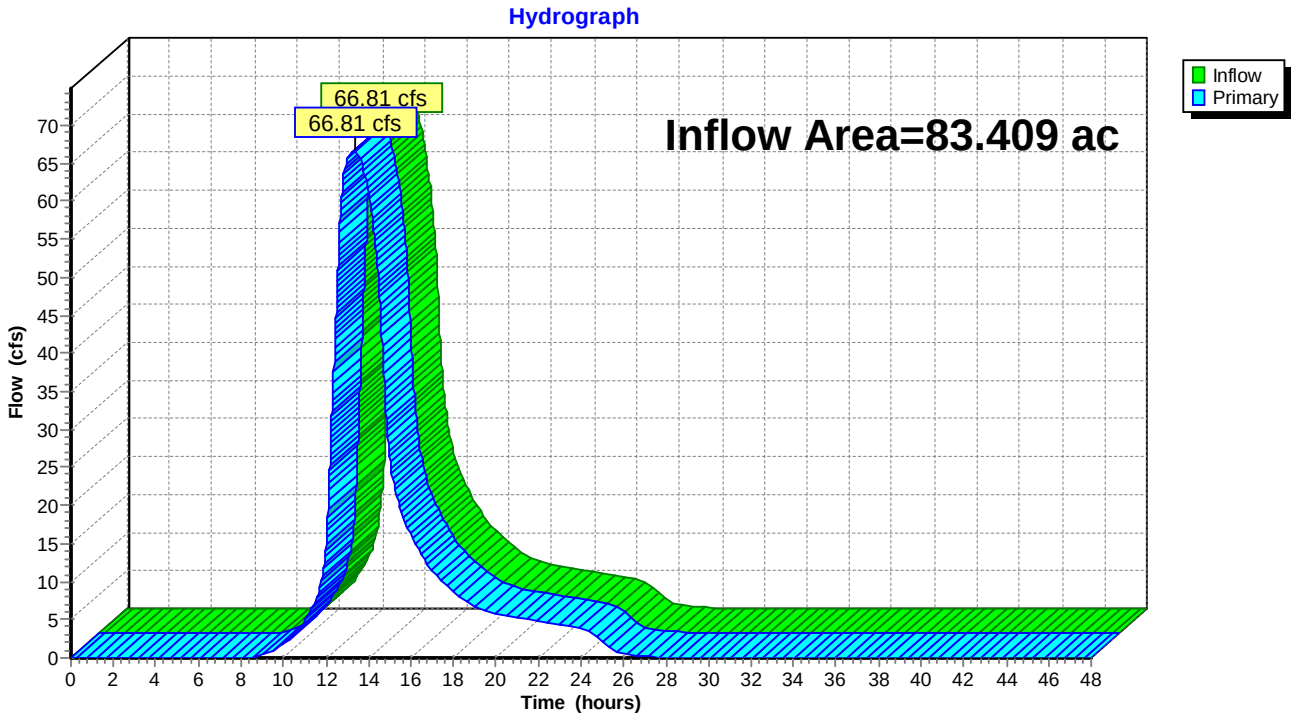


## Summary for Link DP2: Design Point 2

Inflow Area = 83.409 ac, 15.10% Impervious, Inflow Depth = 2.98" for 50-Year Storm event
Inflow = 66.81 cfs @ 13.32 hrs, Volume= 20.682 af
Primary = 66.81 cfs @ 13.33 hrs, Volume= 20.682 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP2: Design Point 2

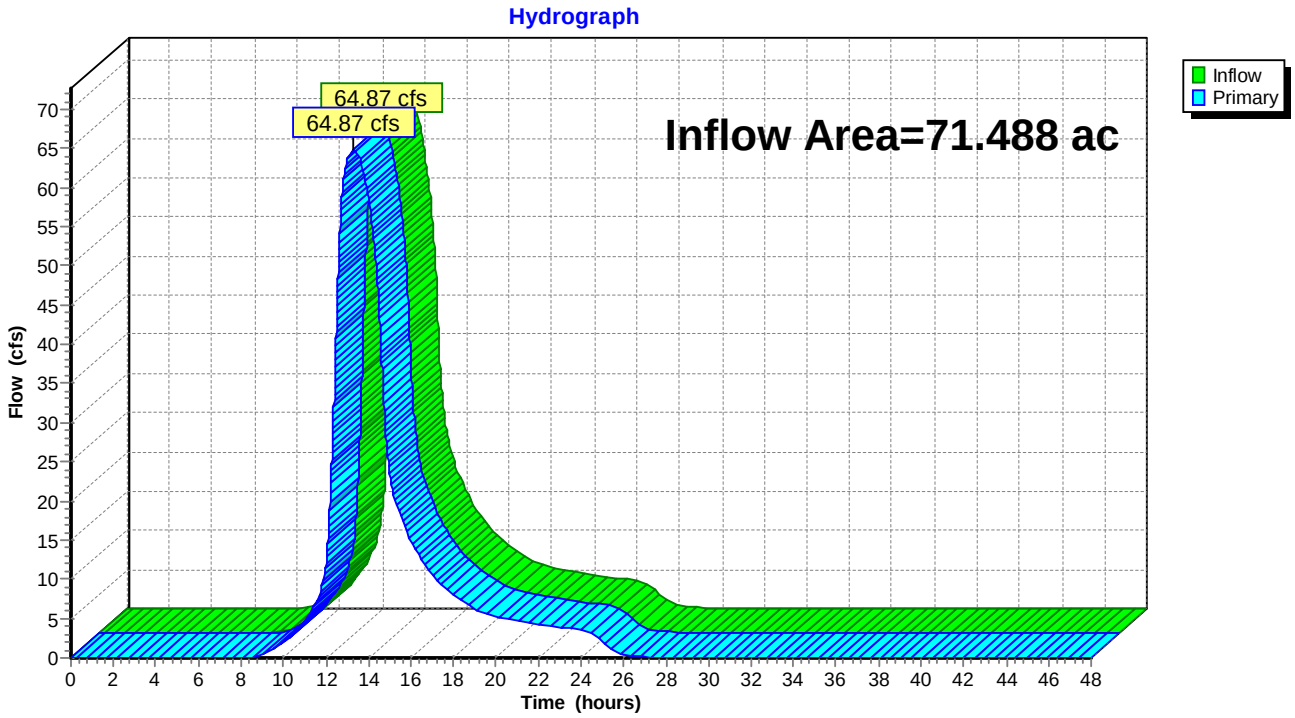


## Summary for Link DP3: Design Point 3

Inflow Area = 71.488 ac, 17.11% Impervious, Inflow Depth = 3.23" for 50-Year Storm event
Inflow = 64.87 cfs @ 13.30 hrs, Volume= 19.238 af
Primary = 64.87 cfs @ 13.31 hrs, Volume= 19.238 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP3: Design Point 3



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Sim-Route method - Pond routing by Sim-Route method

**Subcatchment 202A: Subcatchment 202A** Runoff Area=246,800 sf 0.00% Impervious Runoff Depth=2.80"
Flow Length=520' Tc=17.1 min CN=65 Runoff=13.11 cfs 1.320 af

**Subcatchment 202B: Subcatchment 202B** Runoff Area=42,400 sf 15.09% Impervious Runoff Depth=3.59"
Flow Length=250' Tc=12.2 min CN=73 Runoff=3.35 cfs 0.291 af

**Subcatchment 202C: Subcatchment 202C** Runoff Area=26,788 sf 30.61% Impervious Runoff Depth=4.98"
Tc=5.0 min CN=86 Runoff=3.61 cfs 0.255 af

**Subcatchment 202D: Subcatchment 202D** Runoff Area=203,303 sf 0.74% Impervious Runoff Depth=3.19"
Flow Length=160' Tc=22.0 min CN=69 Runoff=11.24 cfs 1.240 af

**Reach 2R: Briley Brook** Avg. Flow Depth=1.88' Max Vel=2.47 fps Inflow=72.23 cfs 23.384 af
L=250.0' S=0.0050 '/' Capacity=90.70 cfs Outflow=72.20 cfs 23.384 af

**Reach O-1: Overland Flow** Avg. Flow Depth=0.11' Max Vel=0.45 fps Inflow=2.71 cfs 0.298 af
n=0.140 L=100.0' S=0.0400 '/' Capacity=161.99 cfs Outflow=2.67 cfs 0.298 af

**Pond 202R: 15" Road Culvert** Peak Elev=18.49' Storage=1,238 cf Inflow=3.35 cfs 0.302 af
15.0" Round Culvert n=0.012 L=130.0' S=0.0038 '/' Outflow=2.71 cfs 0.298 af

**Pond B-9: B-9** Peak Elev=20.55' Storage=5,071 cf Inflow=3.61 cfs 0.255 af
Outflow=0.37 cfs 0.255 af

**Pond VP: Vernal Pool** Peak Elev=19.51' Storage=57,468 cf Inflow=13.11 cfs 1.320 af
Outflow=0.03 cfs 0.010 af

**Link DP2: Design Point 2** Inflow=74.71 cfs 25.177 af
Primary=74.71 cfs 25.177 af

**Link DP3: Design Point 3** Inflow=72.23 cfs 23.384 af
Primary=72.23 cfs 23.384 af

**Total Runoff Area = 11.921 ac Runoff Volume = 3.107 af Average Runoff Depth = 3.13"**
**96.90% Pervious = 11.552 ac 3.10% Impervious = 0.370 ac**

## Summary for Subcatchment 202A: Subcatchment 202A

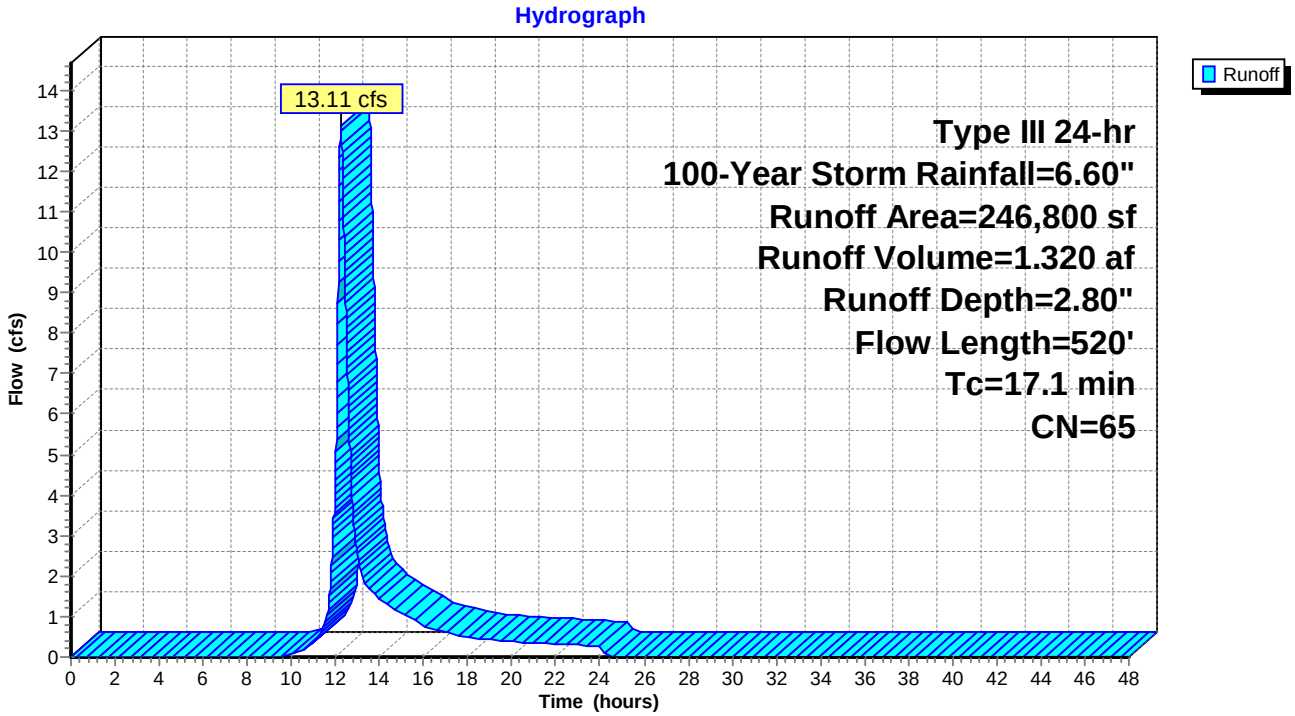
Runoff = 13.11 cfs @ 12.25 hrs, Volume= 1.320 af, Depth= 2.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Storm Rainfall=6.60"

| Area (sf) | CN | Description |
|---|---|---|
| 246,800 | 65 | Brush, Good, HSG C |
| 246,800 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 12.9 | 60 | 0.0100 | 0.08 | | **Sheet Flow, Grass**<br>Grass: Dense n= 0.240 P2= 3.00" |
| 4.2 | 460 | 0.0130 | 1.84 | | **Shallow Concentrated Flow, Grass, brush**<br>Unpaved Kv= 16.1 fps |
| 17.1 | 520 | Total | | | |

## Subcatchment 202A: Subcatchment 202A



## Summary for Subcatchment 202B: Subcatchment 202B

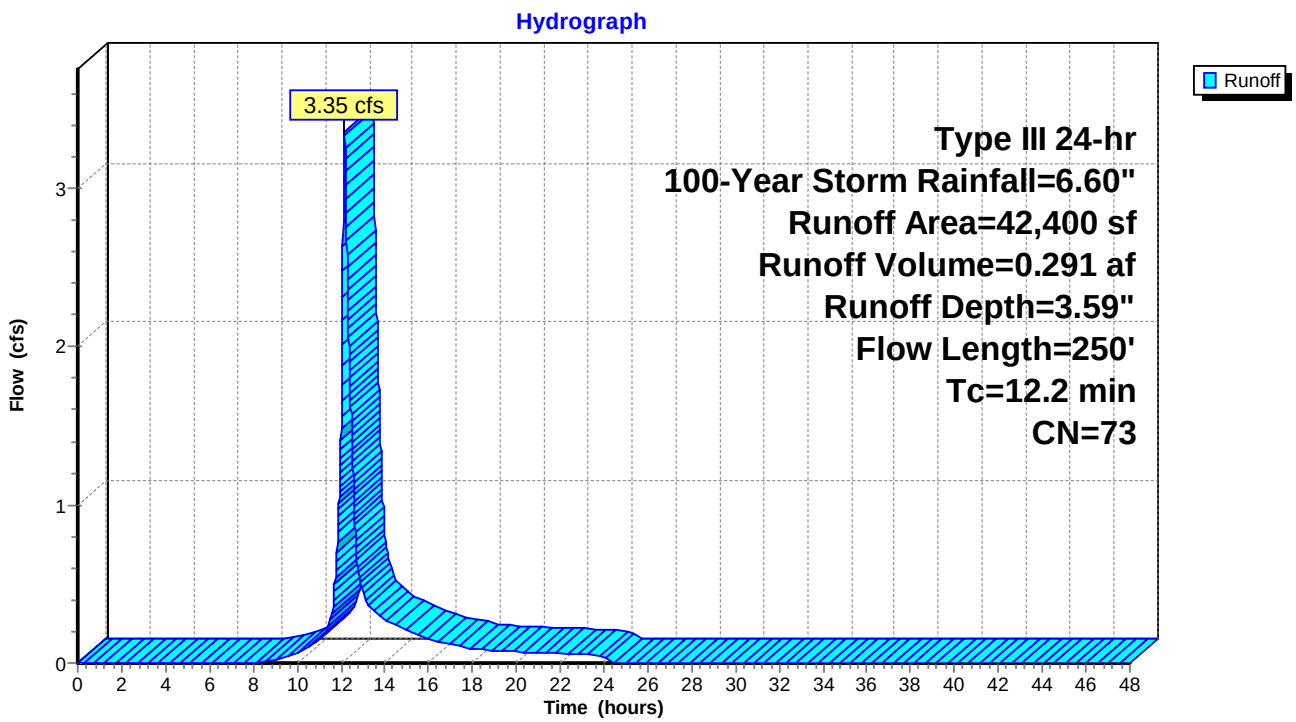
Runoff = 3.35 cfs @ 12.17 hrs, Volume= 0.291 af, Depth= 3.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Storm Rainfall=6.60"

| Area (sf) | CN | Description |
|---|---|---|
| 12,800 | 92 | Paved roads w/open ditches, 50% imp, HSG C |
| 29,600 | 65 | Brush, Good, HSG C |
| 42,400 | 73 | Weighted Average |
| 36,000 | | 84.91% Pervious Area |
| 6,400 | | 15.09% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.0 | 60 | 0.0150 | 0.09 | | **Sheet Flow, Brush, grass**<br>Grass: Dense n= 0.240 P2= 3.00" |
| 1.2 | 190 | 0.0260 | 2.60 | | **Shallow Concentrated Flow, Brush, grass**<br>Unpaved Kv= 16.1 fps |
| 12.2 | 250 | Total | | | |

## Subcatchment 202B: Subcatchment 202B



## Summary for Subcatchment 202C: Subcatchment 202C

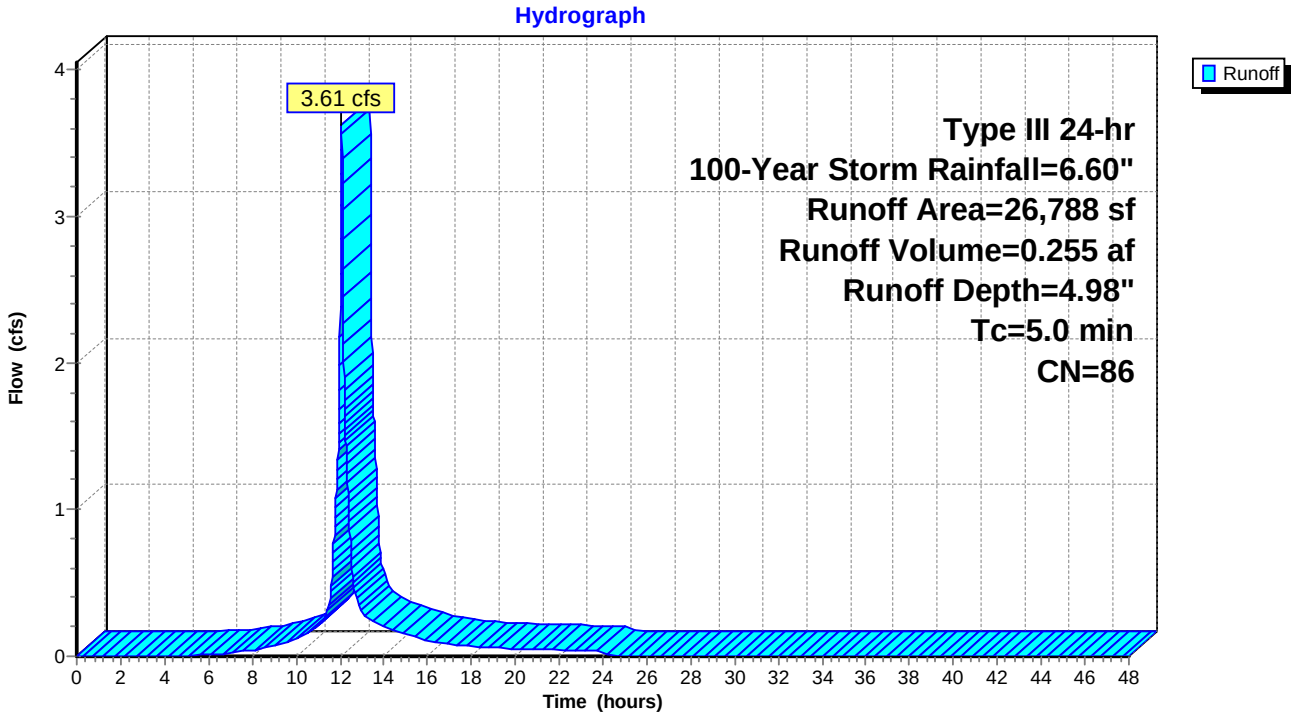
Runoff = 3.61 cfs @ 12.07 hrs, Volume= 0.255 af, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Storm Rainfall=6.60"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 10,138 | 74 | >75% Grass cover, Good, HSG C |
| | 4,800 | 98 | Paved parking, HSG C |
| | 3,400 | 98 | Roofs, HSG C |
| * | 8,450 | 89 | Gravel Pad at Tower and Compound, HSG C |
| | 26,788 | 86 | Weighted Average |
| | 18,588 | | 69.39% Pervious Area |
| | 8,200 | | 30.61% Impervious Area |

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

## Subcatchment 202C: Subcatchment 202C



## Summary for Subcatchment 202D: Subcatchment 202D

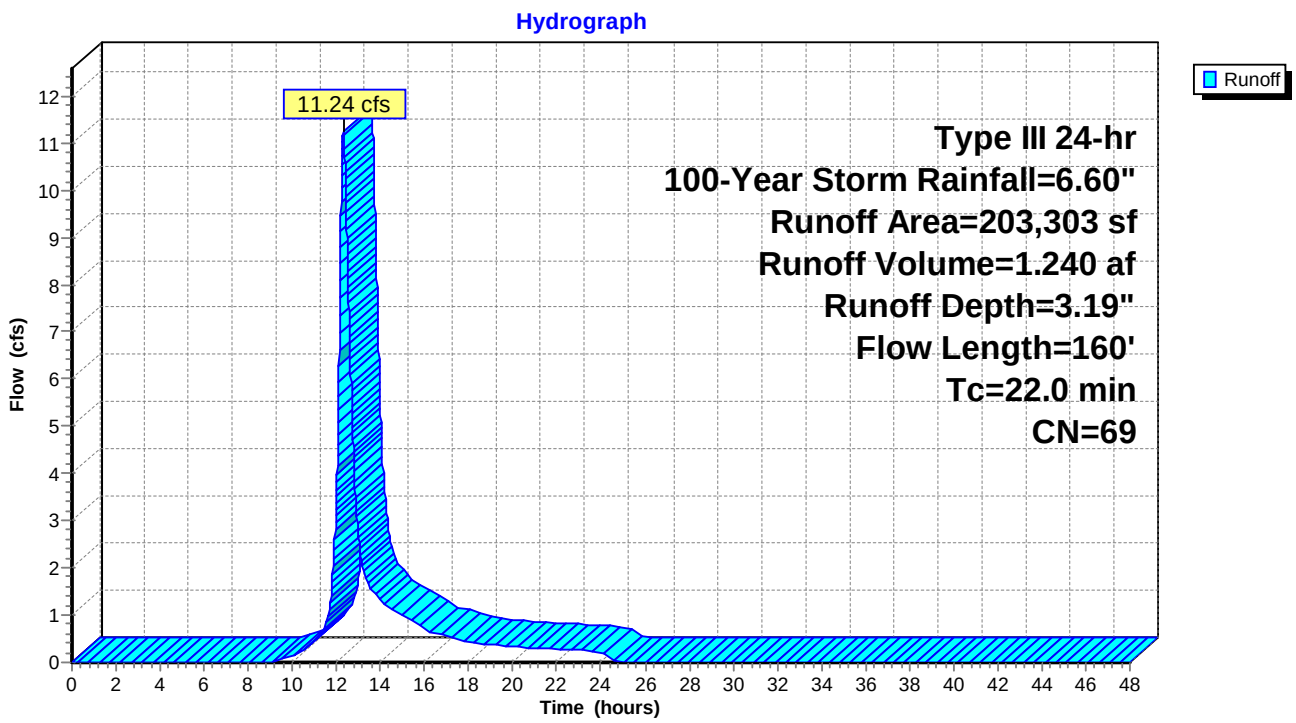
Runoff = 11.24 cfs @ 12.30 hrs, Volume= 1.240 af, Depth= 3.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Storm Rainfall=6.60"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 122,513 | 65 | Brush, Good, HSG C |
| * | 1,500 | 98 | Paved road, HSG C |
| | 5,100 | 87 | Dirt roads, HSG C |
| | 74,190 | 74 | >75% Grass cover, Good, HSG C |
| | 203,303 | 69 | Weighted Average |
| | 201,803 | | 99.26% Pervious Area |
| | 1,500 | | 0.74% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 21.3 | 60 | 0.0080 | 0.05 | | **Sheet Flow, Woods, brush**<br>Woods: Light underbrush n= 0.400 P2= 3.00" |
| 0.7 | 100 | 0.0220 | 2.39 | | **Shallow Concentrated Flow, Grass, brush**<br>Unpaved Kv= 16.1 fps |
| 22.0 | 160 | Total | | | |

## Subcatchment 202D: Subcatchment 202D



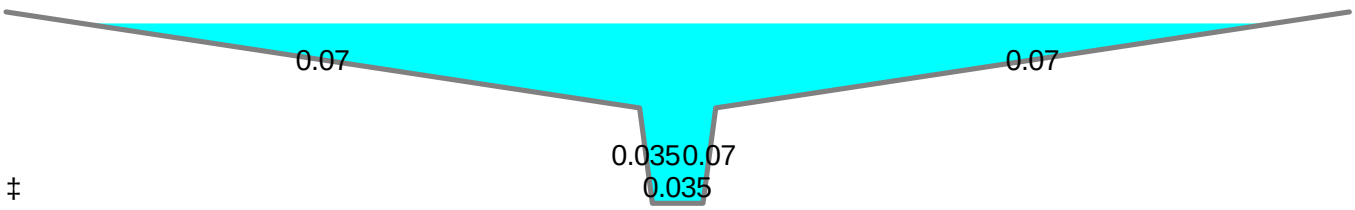
## Summary for Reach 2R: Briley Brook

Inflow Area = 71.488 ac, 17.11% Impervious, Inflow Depth = 3.93" for 100-Year Storm event
Inflow = 72.23 cfs @ 13.30 hrs, Volume= 23.384 af
Outflow = 72.20 cfs @ 13.34 hrs, Volume= 23.384 af, Atten= 0%, Lag= 2.3 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.47 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 0.89 fps, Avg. Travel Time= 4.7 min

Peak Storage= 12,203 cf @ 13.34 hrs
Average Depth at Peak Storage= 1.88'
Bank-Full Depth= 2.00' Flow Area= 61.0 sf, Capacity= 90.70 cfs

Custom cross-section, Length= 250.0' Slope= 0.0050 '/'
Flow calculated by Manning's Subdivision method
Inlet Invert= 13.25', Outlet Invert= 12.00'

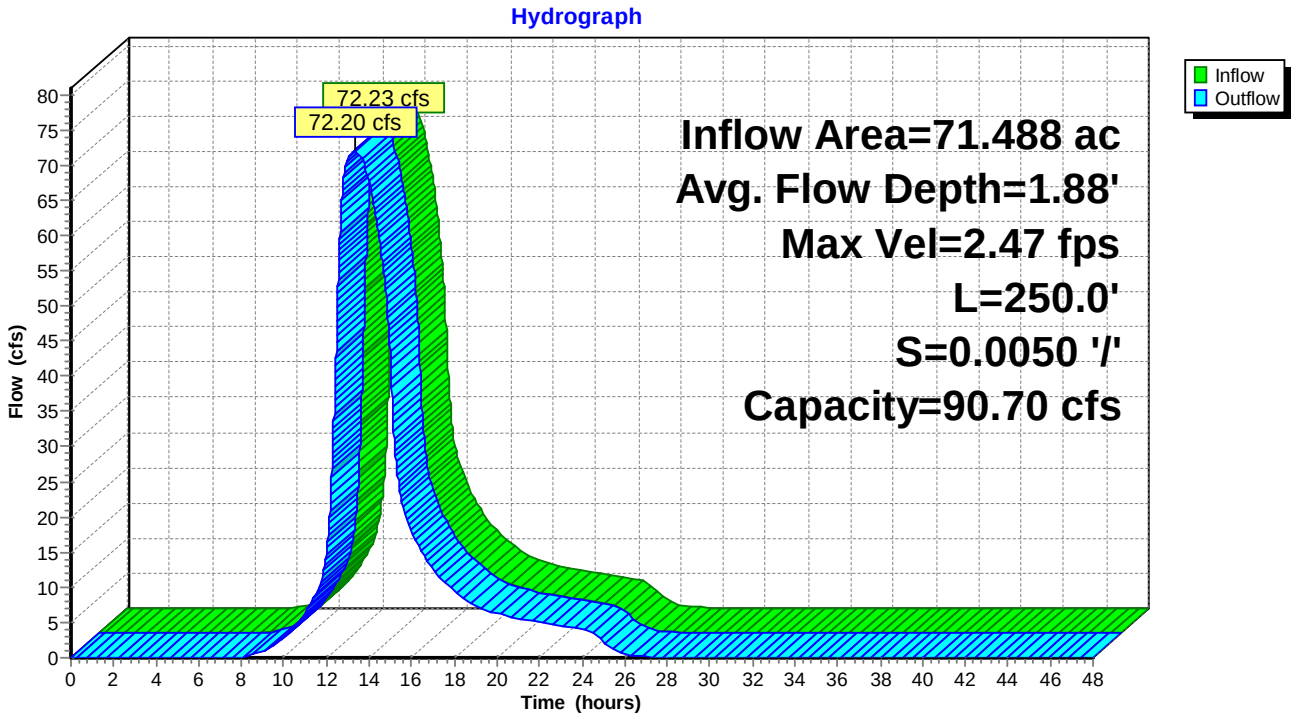



‡

| Offset (feet) | Elevation (feet) | Chan.Depth (feet) | n | Description |
|---|---|---|---|---|
| 0.00 | 2.00 | 0.00 | | |
| 50.00 | 1.00 | 1.00 | 0.070 | |
| 51.00 | 0.00 | 2.00 | 0.035 | |
| 55.00 | 0.00 | 2.00 | 0.035 | |
| 56.00 | 1.00 | 1.00 | 0.070 | |
| 106.00 | 2.00 | 0.00 | 0.070 | |

| Depth (feet) | End Area (sq-ft) | Perim. (feet) | Storage (cubic-feet) | Discharge (cfs) |
|---|---|---|---|---|
| 0.00 | 0.0 | 4.0 | 0 | 0.00 |
| 1.00 | 5.0 | 6.8 | 1,250 | 12.32 |
| 2.00 | 61.0 | 106.8 | 15,250 | 90.70 |

## Reach 2R: Briley Brook



## Summary for Reach O-1: Overland Flow

Inflow Area = 6.639 ac, 2.21% Impervious, Inflow Depth > 0.54" for 100-Year Storm event
Inflow = 2.71 cfs @ 12.27 hrs, Volume= 0.298 af
Outflow = 2.67 cfs @ 12.32 hrs, Volume= 0.298 af, Atten= 1%, Lag= 2.7 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.45 fps, Min. Travel Time= 3.7 min
Avg. Velocity = 0.08 fps, Avg. Travel Time= 20.7 min

Peak Storage= 593 cf @ 12.32 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 1.00' Flow Area= 100.0 sf, Capacity= 161.99 cfs

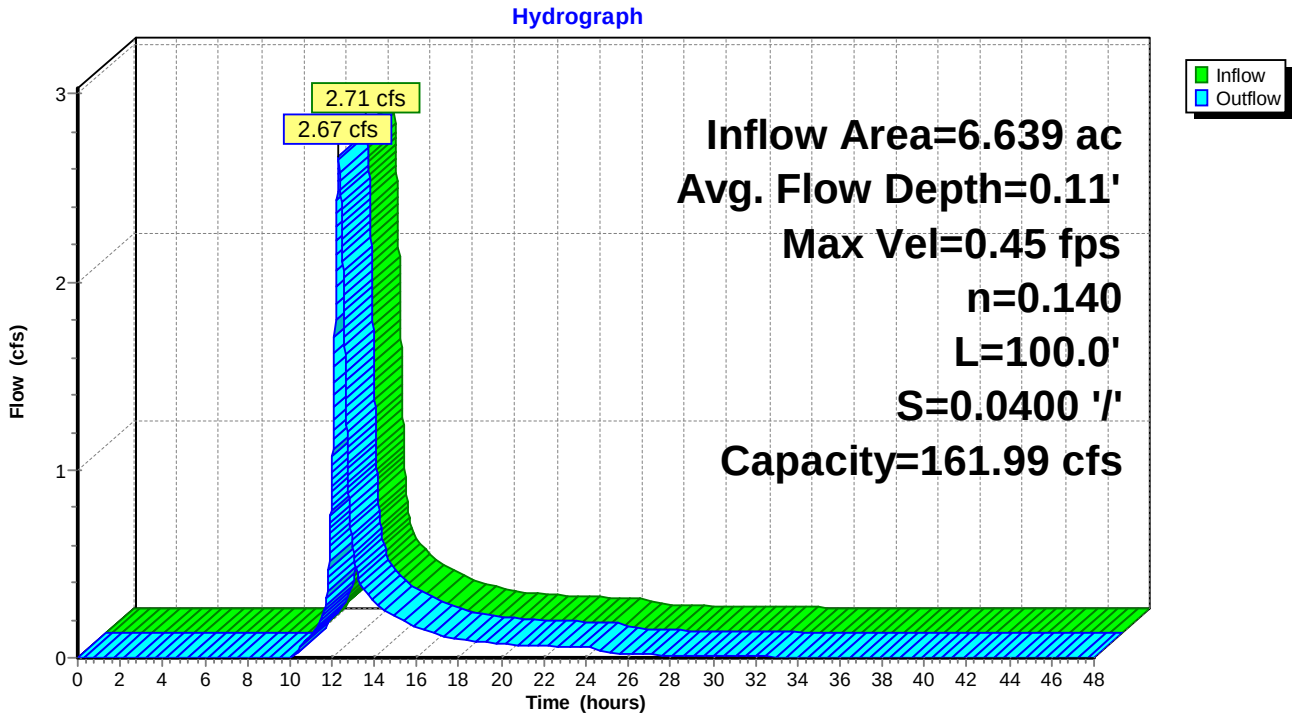
Custom cross-section, Length= 100.0' Slope= 0.0400 '/'
Constant n= 0.140 Earth, dense brush, high stage
Inlet Invert= 17.00', Outlet Invert= 13.00'

‡

| Offset (feet) | Elevation (feet) | Chan.Depth (feet) |
|---|---|---|
| 0.00 | 18.00 | 0.00 |
| 50.00 | 17.00 | 1.00 |
| 100.00 | 17.00 | 1.00 |
| 150.00 | 18.00 | 0.00 |

| Depth (feet) | End Area (sq-ft) | Perim. (feet) | Storage (cubic-feet) | Discharge (cfs) |
|---|---|---|---|---|
| 0.00 | 0.0 | 50.0 | 0 | 0.00 |
| 1.00 | 100.0 | 150.0 | 10,000 | 161.99 |

## Reach O-1: Overland Flow



## Summary for Pond 202R: 15" Road Culvert

Inflow Area = 6.639 ac, 2.21% Impervious, Inflow Depth > 0.55" for 100-Year Storm event
Inflow = 3.35 cfs @ 12.17 hrs, Volume= 0.302 af
Outflow = 2.71 cfs @ 12.27 hrs, Volume= 0.298 af, Atten= 19%, Lag= 6.1 min
Primary = 2.71 cfs @ 12.27 hrs, Volume= 0.298 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 18.49' @ 12.27 hrs Surf.Area= 2,443 sf Storage= 1,238 cf

Plug-Flow detention time= 28.2 min calculated for 0.298 af (99% of inflow)
Center-of-Mass det. time= 13.3 min ( 877.6 - 864.3 )

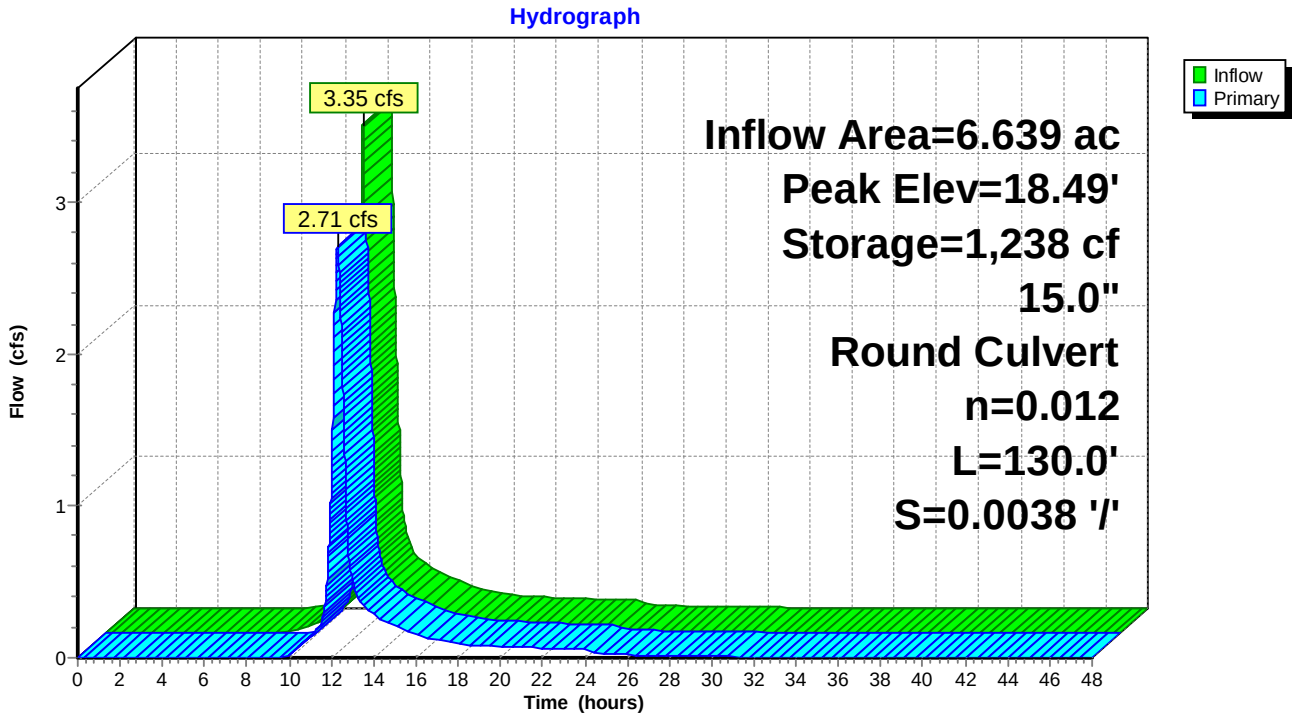
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 17.00' | 8,575 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 17.00 | 150 | 0 | 0 |
| 17.50 | 450 | 150 | 150 |
| 18.00 | 770 | 305 | 455 |
| 19.00 | 4,200 | 2,485 | 2,940 |
| 20.00 | 7,070 | 5,635 | 8,575 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 17.50' | **15.0" Round Culvert**<br>L= 130.0' CPP, end-section conforming to fill, Ke= 0.500<br>Inlet / Outlet Invert= 17.50' / 17.00' S= 0.0038 '/' Cc= 0.900<br>n= 0.012, Flow Area= 1.23 sf |

**Primary OutFlow** Max=2.71 cfs @ 12.27 hrs HW=18.49' TW=17.11' (Dynamic Tailwater)
↑└**1=Culvert** (Barrel Controls 2.71 cfs @ 3.57 fps)

## Pond 202R: 15" Road Culvert



## Summary for Pond B-9: B-9

Inflow Area = 0.615 ac, 30.61% Impervious, Inflow Depth = 4.98" for 100-Year Storm event
Inflow = 3.61 cfs @ 12.07 hrs, Volume= 0.255 af
Outflow = 0.37 cfs @ 12.81 hrs, Volume= 0.255 af, Atten= 90%, Lag= 44.3 min
Primary = 0.37 cfs @ 12.81 hrs, Volume= 0.255 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 20.55' @ 12.81 hrs Surf.Area= 3,479 sf Storage= 5,071 cf

Plug-Flow detention time= 241.3 min calculated for 0.255 af (100% of inflow)
Center-of-Mass det. time= 240.7 min ( 1,034.1 - 793.4 )

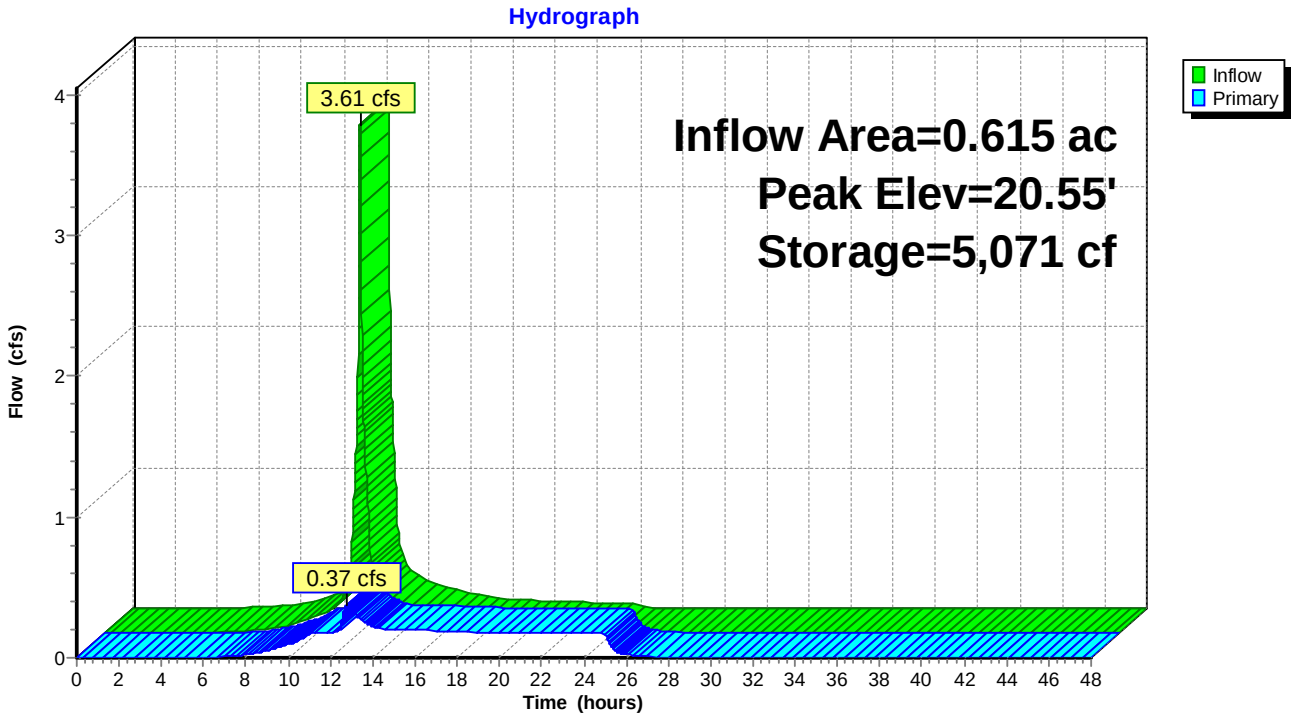
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 17.50' | 6,741 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Voids (%) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|---|
| 17.50 | 2,995 | 0.0 | 0 | 0 |
| 18.00 | 2,995 | 30.0 | 449 | 449 |
| 18.50 | 2,995 | 30.0 | 449 | 899 |
| 19.00 | 2,995 | 30.0 | 449 | 1,348 |
| 19.50 | 2,995 | 30.0 | 449 | 1,797 |
| 20.00 | 2,995 | 100.0 | 1,498 | 3,295 |
| 20.50 | 3,430 | 100.0 | 1,606 | 4,901 |
| 21.00 | 3,931 | 100.0 | 1,840 | 6,741 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Device 2 | 17.50' | **6.0" Round Culvert** L= 80.0' Ke= 0.500<br>Inlet / Outlet Invert= 17.50' / 17.40' S= 0.0013 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.20 sf |
| #2 | Primary | 17.40' | **12.0" Round Culvert** L= 30.0' Ke= 0.500<br>Inlet / Outlet Invert= 17.40' / 17.20' S= 0.0067 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf |
| #3 | Device 1 | 17.50' | **2.540 in/hr Exfiltration over Surface area** |
| #4 | Device 2 | 20.50' | **18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Primary OutFlow** Max=0.37 cfs @ 12.81 hrs HW=20.55' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 0.37 cfs of 6.16 cfs potential flow)
  ├─**1=Culvert** (Passes 0.20 cfs of 0.98 cfs potential flow)
  │ └─**3=Exfiltration** (Exfiltration Controls 0.20 cfs)
  └─**4=Orifice/Grate** (Weir Controls 0.17 cfs @ 0.73 fps)

## Pond B-9: B-9


Hydrograph
Inflow
Primary
3.61 cfs
0.37 cfs
Inflow Area=0.615 ac
Peak Elev=20.55'
Storage=5,071 cf
Flow (cfs)
Time (hours)
0
1
2
3
4
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

## Summary for Pond VP: Vernal Pool

| | | | | | |
|---|---|---|---|---|---|
| Inflow Area = | 5.666 ac, | 0.00% Impervious, | Inflow Depth = | 2.80" | for 100-Year Storm event |
| Inflow = | 13.11 cfs @ | 12.25 hrs, | Volume= | 1.320 af | |
| Outflow = | 0.03 cfs @ | 24.42 hrs, | Volume= | 0.010 af, | Atten= 100%, Lag= 730.7 min |
| Primary = | 0.03 cfs @ | 24.42 hrs, | Volume= | 0.010 af | |

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 19.51' @ 24.42 hrs Surf.Area= 68,249 sf Storage= 57,468 cf

Plug-Flow detention time= 1,120.0 min calculated for 0.010 af (1% of inflow)
Center-of-Mass det. time= 890.8 min ( 1,746.1 - 855.3 )

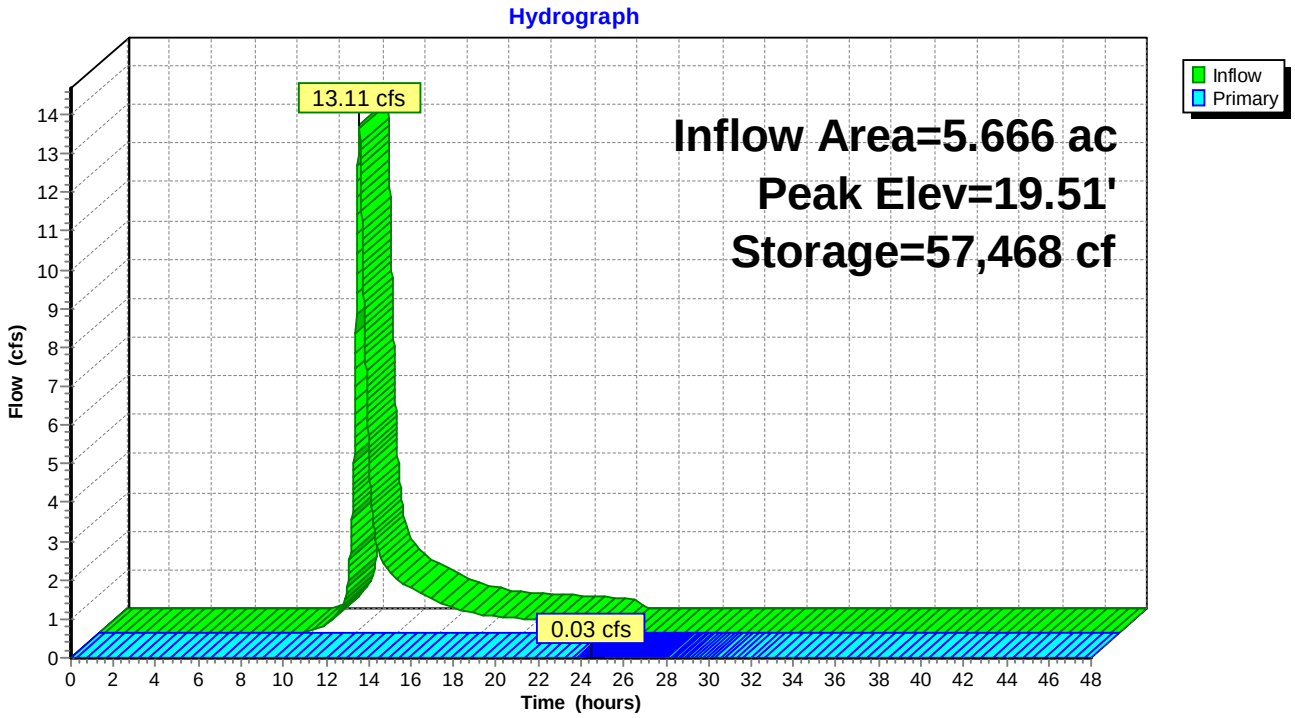
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 18.00' | 92,075 cf | **VP (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 18.00 | 3,300 | 0 | 0 |
| 19.00 | 51,100 | 27,200 | 27,200 |
| 19.50 | 68,200 | 29,825 | 57,025 |
| 20.00 | 72,000 | 35,050 | 92,075 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 19.50' | **20.0' long x 12.0' breadth Broad-Crested Rectangular Weir** |
| | | | Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 |
| | | | Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64 |

**Primary OutFlow** Max=0.03 cfs @ 24.42 hrs HW=19.51' TW=17.61' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 0.03 cfs @ 0.21 fps)

## Pond VP: Vernal Pool

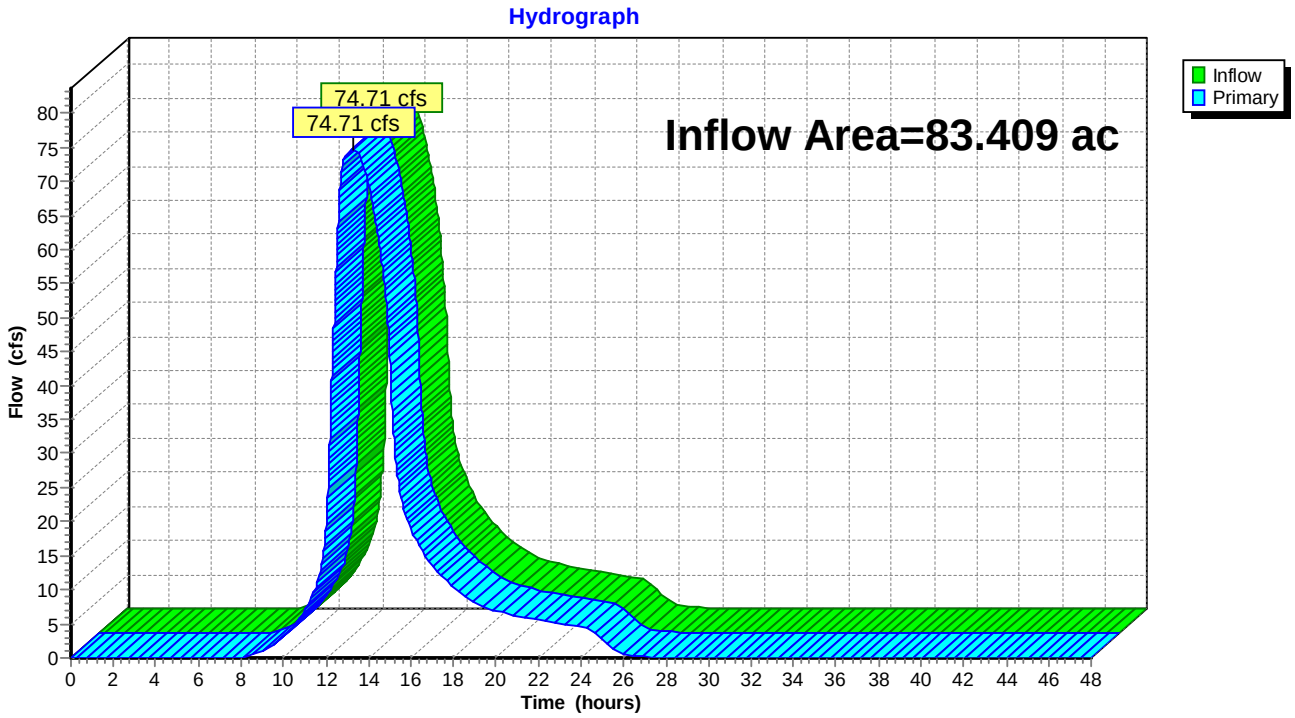


## Summary for Link DP2: Design Point 2

Inflow Area = 83.409 ac, 15.10% Impervious, Inflow Depth = 3.62" for 100-Year Storm event
Inflow = 74.71 cfs @ 13.23 hrs, Volume= 25.177 af
Primary = 74.71 cfs @ 13.24 hrs, Volume= 25.177 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP2: Design Point 2

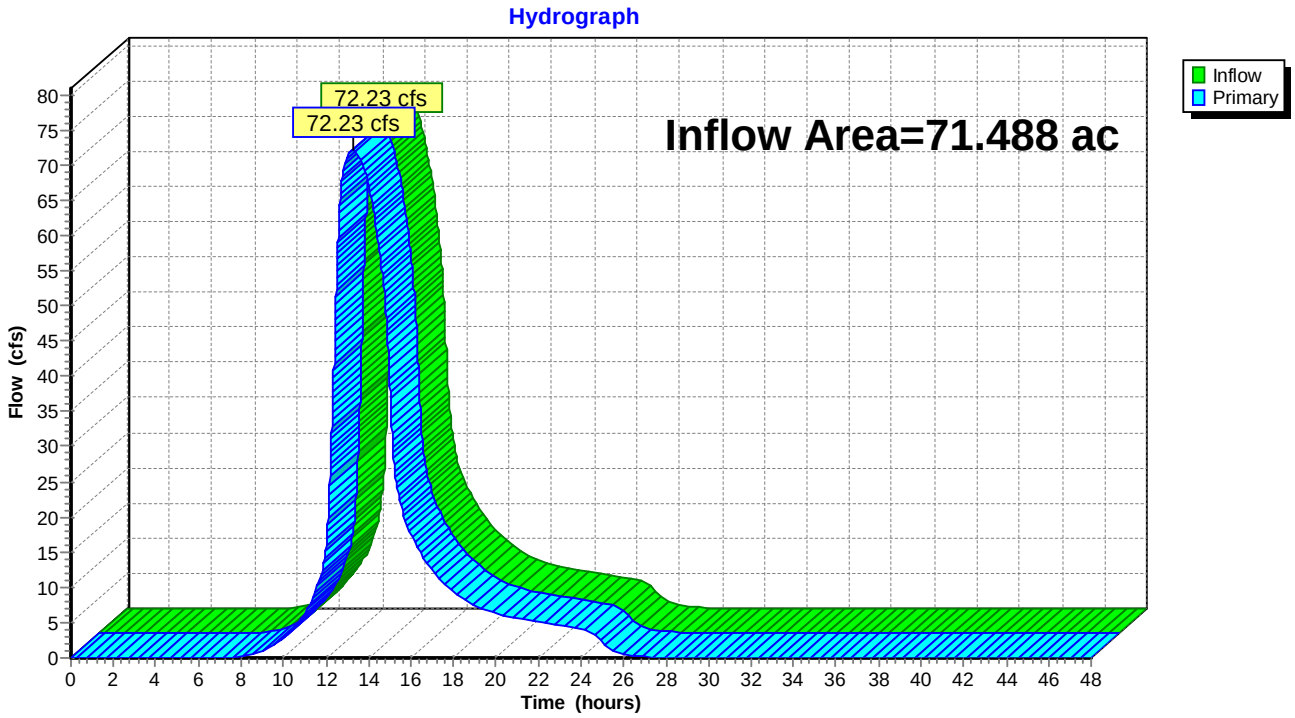


## Summary for Link DP3: Design Point 3

Inflow Area = 71.488 ac, 17.11% Impervious, Inflow Depth = 3.93" for 100-Year Storm event
Inflow = 72.23 cfs @ 13.29 hrs, Volume= 23.384 af
Primary = 72.23 cfs @ 13.30 hrs, Volume= 23.384 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Link DP3: Design Point 3



# York Police Department
# New Public Safety Facility and Connector Road

## Revised Water Quality Treatment Calculations

Two revisions have been made to the site plans that impact stormwater quality treatment. These are:

- The addition of a communications tower and the associated gravel compound area adjacent to the police station. This is in Subcatchment 202C.
- The unauthorized clearing, and subsequent proposal for restoration of the area to the west of the police station, adjacent to the vernal pool wetland.

1. Communications Tower

The newly proposed tower and gravel equipment compound adds approximately 7,200sf of impervious (gravel) cover to the site. The previously designed BMP for this area, Bioretention B-9 has been re-located slightly and expanded to provide additional storage and treatment of the water quality volume. The revised water quality calculations are summarized below:

**BIORETENTION CELL B-9**

| | | | |
|---|---|---|---|
| Contributing Impervious Area (s.f.) | 16650 | **Required WQV (cu.ft.)** | **1725** |
| Contributing Landscaped Area (s.f.) | 10138 | | |

WQV=1-inch of runoff over tributary impervious plus 0.4 inch of runoff over tributary landscaped area

**Pond Geometry**

| Elevation (feet) | Surface Area (Sq. Feet) | % Voids | Storage (cu. ft) | Cumulative Storage (cu.ft) |
|---|---|---|---|---|
| 17.5 | 2995 | 0 | 0 | 0 |
| 18.0 | 2995 | 30 | 449 | 449 |
| 18.5 | 2995 | 30 | 449 | 899 |
| 19.0 | 2995 | 30 | 449 | 1348 |
| 19.5 | 2995 | 30 | 449 | 1797 |
| 20.0 | 2995 | 100 | 1498 | 3295 |
| 20.5 | 3430 | 100 | 1606 | 4901 |
| 21.0 | 3931 | 100 | 1840 | 6741 |

| | | |
|---|---|---|
| Primary Outlet Elevation is | 20.5 | ft. |
| Channel Protection Volume is | 4901 | cu.ft. |

**284%** Of the required Water Quality Volume is Provided

**NOTES:**

**Subcatchment 202C is tributary to this basin**

**Area of filter must equal 5% contributing impervious plus 2% contributing landscaped**
**Area required = (16650 x 0.05) + (10138 x 0.02) = 1035 square feet**
**Area of filter = 2995 square feet**

**Exfiltration rate of 2.54in/hr is assumed through the soil filter media into the underdrain system**

2. Cleared Area to West of Police Station

The cleared area to the west of the police station includes previously design Stormwater Buffer B-12. The clearing is all within Subcatchment 202D. This area is the subject of a restoration plan that calls for re-forestation of some of this area, and stabilization as grass lawn for other areas. The area within 100-feet of the vernal pool wetland, and the stream associated wetland to the west will all be re-graded and re-forested.

Stormwater Buffer B-12 will be re-located to the restoration area and is designed as a forested buffer (0-8% slope), with a width of 100-feet. The majority of the cleared area that will remain as grass lawn will sheet flow directly to the buffer. This is labeled as Area A-100 on the updated water quality treatment plan (sheet C-124). The buffer meets the requirements of Table 5-1 in Stormwater Management for Maine- Volume III BMPs Technical Design Manual (BMP Manual).

A second area of mostly impervious surface drains to the buffer via the culvert under the Connector Road. This is labeled Area A-22 on the updated plan (sheet C-124). Since the flow for this area in concentrated in the pipe, the buffer at this location is designed as a Buffer with Stone Bermed Level Lip Spreader (Table 5-4 of the BMP Manual).

Area A-22 has 7,940sf impervious and 12059sf of developed area (4419sf lawn). Therefore, the required berm length is:

{(7,940/43,560) x 150} + {(4,119/43,560) x 45} = 32 feet – The berm is designed 40ft long.

The relevant buffer design tables are included on the following pages.

## Summary

The overall water quality treatment calculations have been updated to include the new areas and revised BMPs. These demonstrate that the project continues to exceed the requirements for the Chapter 500 General Standards for Water Quality Treatment. The updated tables are included on the following pages.

**Table 5-1**
**Required Buffer Flow Path Length Per Soil and Vegetative Cover Types with 0-8% Buffer Slope**

| Hydrologic Soil Group of Soil in Buffer | Length of Flow Path for a Forested Buffer (feet) | Length of Flow Path for a Meadow Buffer (feet) |
|---|---|---|
| A | 45 | 75 |
| B | 60 | 85 |
| C<br>Loamy Sand or Sandy Loam | 75 | 100 |
| C<br>Silt Loam, Clay Loam or Silty Clay Loam | 100 | 150 |
| D<br>Non-Wetland | 150 | Not Applicable |

**Table 5-2**
**Required Buffer Flow Path Length Per Soil and Vegetative Cover Types with 9-15% Buffer Slope**

| Hydrologic Soil Group of Soil in Buffer | Length of Flow Path for a Forested Buffer (feet) | Length of Flow Path for a Meadow Buffer (feet) |
|---|---|---|
| A | 54 | 90 |
| B | 72 | 102 |
| C<br>Loamy Sand or Sandy Loam | 90 | 120 |
| C<br>Silt Loam, Clay Loam or Silty Clay Loam | 120 | 180 |
| D<br>Non-Wetland | 180 | Not Applicable |

*NOTE: The following tables were developed using a 1.25 inch, 24 hour storm of type III distribution, giving a maximum unit flow rate of less than 0.009 cfs per foot.*

**Table 5-4**
**Required Berm and Flow Path Length of a Buffer with 0-8% Slope and a Stone Bermed Level Lip Spreader**

| Hydrologic Soil Group | Length of Flow Path through Buffer (feet) | Berm Length for a Forested Buffer (feet) | | Berm Length for a Meadow Buffer (feet) | |
|---|---|---|---|---|---|
| | | Per acre of impervious area | Per acre of lawn | Per acres of impervious area | Per acre of lawn |
| Soil Group A | 75 | 75 | 25 | 125 | 35 |
| | 100 | 65 | 20 | 75 | 25 |
| | 150 | 50 | 15 | 60 | 20 |
| Soil Group B | 75 | 100 | 30 | 150 | 45 |
| | 100 | 80 | 25 | 100 | 30 |
| | 150 | 65 | 20 | 75 | 25 |
| Soil Group C sandy loam or loamy sand | 75 | 125 | 35 | 150 | 45 |
| | 100 | 100 | 30 | 125 | 35 |
| | 150 | 75 | 25 | 100 | 30 |
| Soil Group C silt loam, clay loam or silty clay loam | 100 | 150 | 45 | 200 | 60 |
| | 150 | 100 | 30 | 150 | 45 |
| Soil Group D non-wetland | 150 | 150 | 45 | 200 | 60 |

| Table 5-3<br>Berm Stone Size | | |
|---|---|---|
| **Sieve Designation (Metric)** | **Sieve Designation (US Customary)** | **Percent By Weight Passing Square Mesh Sieves** |
| 300 mm | 12 in | 100 |
| 150 mm | 6 in | 84-100 |
| 75 mm | 3 in | 68-83 |
| 25.4 mm | 1 in | 42-55 |
| 4.75 mm | No. 4 | 8-12 |

3. **Slope:** A buffer meeting this standard is not allowed on natural slopes in excess of 15% unless a buffer has been evaluated using a site specific hydrologic buffer design model approved by the department, and measures have been included to ensure that runoff remains well-distributed as it passes through a buffer.

4. **Soil Restrictions:** A buffer meeting this stan-dard is not allowed on Hydrologic Soil Group D soils that are identified as wetland soils.

5. **Buffer sizing:** The required size of a buffer area below the stone bermed level lip spreader varies with the size and imperviousness of the developed area draining to a buffer, the type of soil in a buffer area, the slope of a buffer, and the vegetative cover type. Tables 5-4 and 5-5 indicate the required berm length per acre of impervious area and lawn draining to a buffer for a given length of flow path through a buffer. Required berm length varies by the Hydrologic Soil Group of the soils in a buffer and by the length of flow path through a buffer. If more than one soil type is found in a buffer, the required sizing of a buffer must be determined as weighted average, based on the percent of a buffer in each soil type, of the required sizing for each soil type buffer. Alternative sizing may be allowed if it is determined by a site-specific hydrologic buffer design model approved by the department.

## York Police Department - New Public Safety Facility and Connector Road
## Stormwater General Standard Calculation

| Road Treatment Areas | | | | | |
|---|---|---|---|---|---|
| Area | Treated impervious | Treated developed | BMP | Untreated impervious | Untreated developed |
| A-1 | 4600 | 5855 | B-3 | | |
| A-2 | 6200 | 10069 | Bioretention B-1 | 0 | 0 |
| E-1 | 0 | 0 | | | 2873 |
| A-3 | 10800 | 10800 | Filter Strip 1 | | |
| A-4 | 5300 | 7065 | B-2 | | |
| A-5 | 0 | 0 | | 2730 | 3930 |
| A-6 | 7900 | 8967 | B-3 | | |
| A-7 | 19600 | 19600 | Filter Strip 2 | | |
| E-2 | 0 | 0 | | | 5100 |
| A-8 | 2200 | 0 | B-3 | 0 | |
| A-9 | 5900 | 8296 | B-2 | | |
| A-10 | 5200 | 8458 | B-2 | | |
| A-11 | 0 | 0 | | 5720 | 7710 |
| A-12 | 0 | 0 | | 2470 | 3010 |
| A-13 | 5400 | 7776 | B-2 | | |
| A-14 | 3100 | 6400 | B-2 | | |
| A-15 | 3900 | 6844 | Bioretention B-4 | | |
| A-15A | 7900 | 7900 | Filter Strip 3 | | |
| A-16 | 0 | 0 | | 8300 | 11203 |
| A-17 | 13900 | 13900 | B-3 | | |
| A-18 | 4700 | 12283 | B-2 | | |
| E-3 | 0 | 0 | | | 2386 |
| A-19 | 8600 | 0 | Filter Strip 4 | 0 | |
| A-20 | 3960 | 5790 | B-2 | | |
| A-21 | 2650 | 5082 | B-2 | | |
| **A-22** | **7940** | **12059** | **B-1** | **0** | **0** |
| **A-23** | **0** | **0** | | **2840** | **4340** |
| **A-100** | **0** | **42257** | **B-1** | **0** | **0** |
| **A-101** | **0** | **0** | | **0** | **27829** |
| A-24 | 0 | 0 | B-3 | 8540 | |
| A-25 | 2900 | 2900 | Bioretention B-11 | | |
| A-26 | 4220 | 4220 | Bioretention B-12 | | |
| A-27 | 8100 | 8100 | Bioretention B-6 | | |
| A-28 | 0 | 0 | | 9040 | 12702 |
| A-29 | 7800 | 7800 | Filter Strip 5 | | |
| A-30 | 7160 | 9269 | Bioretention B-8 | | |
| **TOTAL** | **159930** | **231690** | | **39640** | **81083** |

| %TREATED | IMPERVIOUS | DEVELOPED |
|---|---|---|
| | 80.14% | 74.08% |

B1 = Buffer with Stone Bermed Level Lip Spreader
B2 = Ditch Turnout Buffer
B3 = Buffer Adjacent to Downhilll Side of Road

## NON-LINEAR PORTION OF PROJECT

### York Police Department New Public Safety Building, Maine
**Site Development Areas**
**Water Quality Volume Summary**

| Subcatchment Area | Impervious | Landscaped | Developed | WQV required | WQV Provided | BMP |
|---|---|---|---|---|---|---|
| 204E | 6775 | 20325 | 27100 | 1863 | **2912** | B-100 |
| 204F | 12805 | 38415 | 51220 | 3521 | **3584** | B-101 |
| 211 | 1520 | 4280 | 5800 | 404 | **880** | B-14 |
| 212 | 5800 | 10340 | 16140 | 828 | **904** | B-12 |
| 213 | 8060 | 11740 | 19800 | 1063 | **1591** | B-6 |
| 214 | 225 | 5575 | 5800 | 205 | **680** | B-10 |
| 215 | 45600 | 26800 | 72400 | 4693 | **5300** | B-11 |
| 216 | 19200 | 0 | 19200 | 1600 | **1832** | DRIP STRIP |
| **202C** | **16650** | **10138** | **26788** | **1725** | **4901** | **B-9** |
| Untreated | 4580 | 6440 | 11020 | | | Untreated |
| TOTAL TREATED | **116635** | **127613** | **244248** | | | |

| **BMP General Standard Calculation** | | | |
|---|---|---|---|
| | Impervious | Landscaped | Developed |
| NEW DEVELOPED AREA | 121215 | 134053 | 255268 |
| TREATED AREAS | 116635 | 127613 | 244248 |
| **PERCENT TREATED** | **96.2%** | **95.2%** | **95.7%** |