

180-G-12

2005-0110

129 Ludlow St.

DHS Memorial field

ERD Specialty Stands

on Spreadsheet

**CITY OF PORTLAND, MAINE  
DEVELOPMENT REVIEW APPLICATION  
PLANNING DEPARTMENT PROCESSING FORM  
Planning Copy**

2005-0110  
Application I. D. Number  
  
5/31/2005  
Application Date

**ERD Speciality Stands, Inc.**  
Applicant  
**2091 Franklin Street, North Collins, NY**  
Applicant's Mailing Address

**DHS Memorial Field**  
Project Name/Description

Consultant/Agent  
**Agent Ph:** \_\_\_\_\_ **Agent Fax:** \_\_\_\_\_  
Applicant or Agent Daytime Telephone, Fax

**129 - 129 Ludlow St, Portland, Maine**  
Address of Proposed Site  
**180 G012001**  
Assessor's Reference: Chart-Block-Lot

Proposed Development (check all that apply):  New Building  Building Addition  Change Of Use  Residential  Office  Retail  
 Manufacturing  Warehouse/Distribution  Parking Lot  Other (specify) \_\_\_\_\_

**65,000 s.f.**  
Proposed Building square Feet or # of Units \_\_\_\_\_ Acreage of Site \_\_\_\_\_ Zoning \_\_\_\_\_

**Check Review Required:**

- |  |   |  |  |
|--|---|--|--|
| <input checked="" type="checkbox"/> Site Plan<br>(major/minor) | <input type="checkbox"/> Subdivision<br># of lots _____ | <input type="checkbox"/> PAD Review            | <input type="checkbox"/> 14-403 Streets Review   |
| <input type="checkbox"/> Flood Hazard                          | <input type="checkbox"/> Shoreland                      | <input type="checkbox"/> Historic Preservation | <input type="checkbox"/> DEP Local Certification |
| <input type="checkbox"/> Zoning Conditional<br>Use (ZBA/PB)    | <input type="checkbox"/> Zoning Variance                | <input type="checkbox"/> Other _____           |  |

Fees Paid: Site Pla \_\_\_\_\_ Subdivision \_\_\_\_\_ Engineer Review \_\_\_\_\_ Date \_\_\_\_\_

**Planning Approval Status:**

Reviewer \_\_\_\_\_

- Approved**  **Approved w/Conditions**  **Denied**  
See Attached

Approval Date \_\_\_\_\_ Approval Expiration \_\_\_\_\_ Extension to \_\_\_\_\_  Additional Sheets Attached

OK to Issue Building Permit \_\_\_\_\_  
signature date

**Performance Guarantee**  **Required\***  **Not Required**

\* No building permit may be issued until a performance guarantee has been submitted as indicated below

- |   |                |  |                 |
|---|----------------|--|-----------------|
| <input type="checkbox"/> Performance Guarantee Accepted     | _____          | _____  | _____           |
|   | date           | amount   | expiration date |
| <input type="checkbox"/> Inspection Fee Paid                | _____          | _____  |                 |
|   | date           | amount   |                 |
| <input type="checkbox"/> Building Permit Issue              | _____          |  |                 |
|   | date           |  |                 |
| <input type="checkbox"/> Performance Guarantee Reduced      | _____          | _____  | _____           |
|   | date           | remaining balance                                  | signature       |
| <input type="checkbox"/> Temporary Certificate of Occupancy | _____          | <input type="checkbox"/> Conditions (See Attached) | _____           |
|   | date           |  | expiration date |
| <input type="checkbox"/> Final Inspection                   | _____          | _____  |                 |
|   | date           | signature  |                 |
| <input type="checkbox"/> Certificate Of Occupancy           | _____          |  |                 |
|   | date           |  |                 |
| <input type="checkbox"/> Performance Guarantee Released     | _____          | _____  |                 |
|   | date           | signature  |                 |
| <input type="checkbox"/> Defect Guarantee Submitted         | _____          | _____  | _____           |
|   | submitted date | amount   | expiration date |
| <input type="checkbox"/> Defect Guarantee Released          | _____          | _____  |                 |
|   | date           | signature  |                 |





# City of Portland Site Plan Application

If you or the property owner owes real estate or personal property taxes or user charges on any property within the City, payment arrangements must be made before permits of any kind are accepted.

Address of Proposed Development: <b>DEERING HIGH SCHOOL (LEELAND &amp; LUDLOW)</b> Zone:		
Total Square Footage of Proposed Structure: <b>6500 SF +/- (HOME) , 4500 SF +/- (VISITOR)</b>	Square Footage of Lot: <b>UNKNOWN</b>	
Tax Assessor's Chart, Block & Lot: Chart# <b>180</b> Block# <b>G</b> Lot# <b>12</b> <b>181</b> <b>G</b> <b>1</b>	Property owner's mailing address: <b>DEPT</b> <b>PORTLAND PARKS &amp; RECREATION</b> <b>17 ARBOUR STREET</b> <b>PORTLAND, ME. 04103</b>	Telephone #: <b>207-874-8793</b>
Consultant/Agent, mailing address, phone # & contact person: <b>SEBAGO TECHNICS, INC</b> <b>ONE CHABOT STREET</b> <b>WESTBROOK, MAINE 48098</b> <b>207-856-0277</b> <b>CHRISTOPHER DIMATTED</b>	Applicant's name, mailing address, telephone #/Fax#/Pager#: <b>ERD SPECIALTY STAMPS, INC.</b> <b>2081 FRANKLIN ST.</b> <b>NORTH COLLINS, NEW YORK</b> <b>1-800-525-8515</b> <b>GERALD P. SULLIVAN</b>	Project name: <b>MEMORIAL FIELD,</b> <b>DEERING HIGH SCHOOL</b>
<b>Proposed Development (check all that apply)</b> <input checked="" type="checkbox"/> New Building ___ Building Addition ___ Change of Use ___ Residential ___ Office ___ Retail ___ Manufacturing ___ Warehouse/Distribution ___ Parking lot ___ Subdivision (\$500.00) + amount of lots ___ (\$25.00 per lot) \$ _____ ___ Site Location of Development (\$3,000.00) (except for residential projects which shall be \$200.00 per lot _____ ) ___ Traffic Movement (\$1,000.00) ___ Stormwater Quality (\$250.00) ___ Section 14-403 Review (\$400.00 + \$25.00 per lot) ___ Other _____		
<b>Major Development (more than 10,000 sq. ft.)</b> ___ Under 50,000 sq. ft. (\$500.00) ___ 50,000 - 100,000 sq. ft. (\$1,000.00) ___ Parking Lots over 100 spaces (\$1,000.00) ___ 100,000 - 200,000 sq. ft. (\$2,000.00) ___ 200,000 - 300,000 sq. ft. (\$3,000.00) ___ Over 300,000 sq. ft. (\$5,000.00) ___ After-the-fact Review (\$1,000.00 + applicable application fee)		
<b>Minor Site Plan Review</b> ___ Less than 10,000 sq. ft. (\$400.00) ___ After-the-fact Review (\$1,000.00 + applicable application fee)		
<b>Plan Amendments</b> ___ Planning Staff Review (\$250.00) ___ Planning Board Review (\$500.00)		

**FEE WAIVED PER TIM GALLIVAN,  
GALLIVAN COMPANY**

- Please see next page -

Who billing will be sent to: (Company, Contact Person, Address, Phone #)

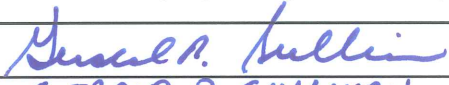
Submittals shall include (9) separate folded packets of the following:

- a. copy of application
- b. cover letter stating the nature of the project
- c. site plan containing the information found in the attached sample plans check list

**Amendment to Plans:** Amendment applications should include 6 separate packets of the above (a, b, & c)  
**ALL PLANS MUST BE FOLDED NEATLY AND IN PACKET FORM**

Section 14-522 of the Zoning Ordinance outlines the process; copies are available at the counter at .50 per page (8.5 x11) you may also visit the web site: [ci.portland.me.us](http://ci.portland.me.us) chapter 14

*I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Code Official's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.*

Signature of applicant:  GERALD P. SULLIVAN	Date: 5/23/05
---	---------------

This application is for site review ONLY, a building Permit application and associated fees will be required prior to construction.

## Development in Portland

The City of Portland has instituted the following fees to recover the costs of reviewing development proposals under the Site Plan and Subdivision ordinances: application fee; engineering fee; and inspection fee. Performance and defect guarantees are also required by ordinance to cover all site work proposed.

The **Application Fee** covers general planning and administrative processing costs, and is paid at the time of application.

The Planning Division is required to send notices to neighbors upon receipt of an application and prior to public meetings. The applicant will be billed for mailing and advertisement costs. Applicants for development will be charged an **Engineering Review Fee**. This fee is charged by the Planning Division for review of on-site improvements of a civil engineering nature, such as storm water management as well as the engineering analysis of related improvements within the public right-of-way, such as public streets and utility connections, as assessed by the Department of Public Works. The Engineering Review fee must be paid before a building permit can be issued. Monthly invoices are sent out by the Planning Division on a monthly basis to cover engineering costs.

A **Performance Guarantee** will be required following approval of development plans. This guarantee covers all required improvements within the public right-of-way, plus certain site improvements such as landscaping, paving, and drainage improvements. The Planning Division will provide a cost estimate form for figuring the amount of the performance guarantee, as well as sample form letters to be filled out by a financial institution.

An **Inspection Fee** must also be submitted to cover inspections to ensure that sites are developed in accordance with the approved plan. The inspection fee is 2.0% of the performance guarantee amount, or as assessed by the planning or public works engineer. The minimum inspection fee is \$300 for development, unless no site improvements are proposed. Public Works inspects work within the City right-of-way and Planning inspects work within the site including pipe-laying and connections. (The contractor must work with inspectors to coordinate timely inspections, and should provide adequate notice before inspections, especially in the case of final inspection.)

Upon completion of a development project, the performance guarantee is released, and a **Defect Guarantee** in the amount of 10% of the performance guarantee must be provided. The Defect Guarantee will be released after a year.

Other reimbursements to the City include actual or apportioned costs for advertising and mailed notices. All fees shall be paid prior to the issuance of any building permit.

For more information on the fees or review process, please call the Planning Division at 874-8719 or 874-8721.



# City Of Portland Site Plan Checklist

MEMORIAL FIELD, DEERING HIGH SCHOOL (LEELAND & LUDLOW)

Project Name, Address of Project

Application Number

Submitted ( ) & Date	Item	Required Information	Section 14-525 (b,c)
	(1)	Standard boundary survey (stamped by a registered surveyor, at a scale of not less than 1 inch to 100 feet and including:	1
✓	(2)	Name and address of applicant and name of proposed development	a
✗	(3)	Scale and north points	b
✗	(4)	Boundaries of the site	c
	(5)	Total land area of site	d
✓	(6)	Topography - existing and proposed (2 feet intervals or less)	e
	(7)	Plans based on the boundary survey including:	2
	(8)	Existing soil conditions	a
	(9)	Location of water courses, marshes, rock outcroppings and wooded areas	b
✓	(10)	Location, ground floor area and grade elevations of building and other structures existing and proposed, elevation drawings of exterior facades, and materials to be used	c
✗	(11)	Approx location of buildings or other structures on parcels abutting the site	d
	(12)	Location of on-site waste receptacles	e
✓	(13)	Public utilities	e
✗	(14)	Water and sewer mains	e
✓	(15)	Culverts, drains, existing and proposed, showing size and directions of flows	e
✗	(16)	Location and dimensions, and ownership of easements, public or private rights-of-way, both existing and proposed	f
✓	(17)	Location and dimensions of on-site pedestrian and vehicular access ways	
	(18)	Parking areas	g
	(19)	Loading facilities	g
	(20)	Design of ingress and egress of vehicles to and from the site onto public streets	g
✗	(21)	Curb and sidewalks	g
✓	(22)	Landscape plan showing:	h
✓	(23)	Location of existing proposed vegetation	h
	(24)	Type of vegetation	h
✗	(25)	Quantity of plantings	h
	(26)	Size of proposed landscaping	h
	(27)	Existing areas to be preserved	h
	(28)	Preservation measures to be employed	h
	(29)	Details of planting and preservation specifications	h
✗	(30)	Location and dimensions of all fencing and screening	i
	(31)	Location and intensity of outdoor lighting system	j
✓	(32)	Location of fire hydrants, existing and proposed	k
	(33)	Written statement	c
✗	(34)	Description of proposed uses to be located on site	1
	(35)	Quantity and type of residential, if any	1
	(36)	Total land area of the site	b2
	(37)	Total floor area and ground coverage of each proposed building and structure	b2
	(38)	General summary of existing and proposed easements or other burdens	c3
	(39)	Method of handling solid waste disposal	4
	(40)	Applicant's evaluation of availability of off-site public facilities, including sewer, water and streets	5
	(41)	Description of any problems of drainage or topography, or a representation that there are none	6
	(42)	An estimate of the time period required for completion of the development	



**CITY OF PORTLAND, MAINE  
DEVELOPMENT REVIEW APPLICATION  
PLANNING DEPARTMENT PROCESSING FORM**

**Fire Copy**

**2005-0110**

Application I. D. Number

**5/31/2005**

Application Date

**DHS Memorial Field**

Project Name/Description

**ERD Speciality Stands, Inc.**

Applicant

**2091 Franklin Street, North Collins, NY**

Applicant's Mailing Address

**129 - 129 Ludlow St, Portland, Maine**

Address of Proposed Site

**180 G012001**

Assessor's Reference: Chart-Block-Lot

Consultant/Agent

**Agent Ph:** \_\_\_\_\_ **Agent Fax:** \_\_\_\_\_

Applicant or Agent Daytime Telephone, Fax

Proposed Development (check all that apply):  New Building  Building Addition  Change Of Use  Residential  Office  Retail  
 Manufacturing  Warehouse/Distribution  Parking Lot  Other (specify) \_\_\_\_\_

**65,000 s.f.**

Proposed Building square Feet or # of Units

Acreeage of Site

Zoning

**Check Review Required:**

- |  |   |  |  |
|--|---|--|--|
| <input checked="" type="checkbox"/> Site Plan<br>(major/minor) | <input type="checkbox"/> Subdivision<br># of lots _____ | <input type="checkbox"/> PAD Review            | <input type="checkbox"/> 14-403 Streets Review   |
| <input type="checkbox"/> Flood Hazard                          | <input type="checkbox"/> Shoreland                      | <input type="checkbox"/> Historic Preservation | <input type="checkbox"/> DEP Local Certification |
| <input type="checkbox"/> Zoning Conditional<br>Use (ZBA/PB)    | <input type="checkbox"/> Zoning Variance                | <input type="checkbox"/> Other _____           |  |

Fees Paid: Site Pla \_\_\_\_\_ Subdivision \_\_\_\_\_ Engineer Review \_\_\_\_\_ Date \_\_\_\_\_

**Fire Approval Status:**

Reviewer *Jero Proventia*

- Approved**  **Approved w/Conditions**  
See Attached  **Denied**

Approval Date 6-1-05 Approval Expiration \_\_\_\_\_ Extension to \_\_\_\_\_  Additional Sheets Attached

Condition Compliance *Capt. Greg Cass* signature \_\_\_\_\_ date \_\_\_\_\_

**Performance Guarantee**  **Required\***  **Not Required**

\* No building permit may be issued until a performance guarantee has been submitted as indicated below

- |   |                |  |                 |
|---|----------------|--|-----------------|
| <input type="checkbox"/> Performance Guarantee Accepted     | _____          | _____  | _____           |
|   | date           | amount   | expiration date |
| <input type="checkbox"/> Inspection Fee Paid                | _____          | _____  |                 |
|   | date           | amount   |                 |
| <input type="checkbox"/> Building Permit Issue              | _____          |  |                 |
|   | date           |  |                 |
| <input type="checkbox"/> Performance Guarantee Reduced      | _____          | _____  | _____           |
|   | date           | remaining balance                                  | signature       |
| <input type="checkbox"/> Temporary Certificate of Occupancy | _____          | <input type="checkbox"/> Conditions (See Attached) | _____           |
|   | date           |  | expiration date |
| <input type="checkbox"/> Final Inspection                   | _____          | _____  |                 |
|   | date           | signature  |                 |
| <input type="checkbox"/> Certificate Of Occupancy           | _____          |  |                 |
|   | date           |  |                 |
| <input type="checkbox"/> Performance Guarantee Released     | _____          | _____  |                 |
|   | date           | signature  |                 |
| <input type="checkbox"/> Defect Guarantee Submitted         | _____          | _____  | _____           |
|   | submitted date | amount   | expiration date |
| <input type="checkbox"/> Defect Guarantee Released          | _____          | _____  |                 |
|   | date           | signature  |                 |





# PORTLAND MAINE

*Strengthening a Remarkable City, Building a Community for Life* • [www.portlandmaine.gov](http://www.portlandmaine.gov)

**Planning & Development Department**  
Lee D. Urban, Director

**Planning Division**  
Alexander Jaegerman, Director

June 9, 2005

Joel St. Pierre  
City of Portland  
Department of Parks and Recreation  
17 Arbor Street  
Portland, ME 04103

RE: 129 Ludlow Street: Deering High School Bleacher Replacement  
CBL: 180 G012001

Dear Mr. St. Pierre:

On June 9, 2005, the Portland Planning Authority approved the installation of replacement bleachers as shown on the approved plan dated May 23, 2005.

The approval is based on the submitted site plan. If you need to make any modifications to the approved site plan, you must submit a revised site plan for staff review and approval.

Please note the following provisions and requirements for all site plan approvals:

1. Where submission drawings are available in electronic form, the applicant shall submit any available electronic Autocad files (\*.dwg), release 14 or greater, with seven (7) sets of the final plans.
2. No performance guarantee, inspection fee or defect guarantee will be required for this project.
3. The site plan approval will be deemed to have expired unless work in the development has commenced within one (1) year of the approval or within a time period agreed upon in writing by the City and the applicant. Requests to extend approvals must be received before the expiration date.
4. Prior to construction, a pre-construction meeting shall be held at the project site with the contractor, development review coordinator, Public Work's representative and owner to review the construction schedule and critical aspects of the site work. At that time, the site/building contractor shall provide three (3) copies of a detailed construction schedule to the attending City representatives. It shall be the contractor's responsibility to arrange a mutually agreeable time for the pre-construction meeting.

5. If work will occur within the public right-of-way such as utilities, curb, sidewalk and driveway construction, a street opening permit(s) is required for your site. Please contact Carol Merritt at 874-8300, ext. 8828. (Only excavators licensed by the City of Portland are eligible.)

The Development Review Coordinator must be notified five (5) working days prior to date required for final site inspection. The Development Review Coordinator can be reached at the Planning Division at 874-8632. Please make allowances for completion of site plan requirements determined to be incomplete or defective during the inspection. This is essential as all site plan requirements must be completed and approved by the Development Review Coordinator prior to issuance of a Certificate of Occupancy. Please schedule any property closing with these requirements in mind.

If there are any questions, please contact Sarah Hopkins at 874-8720.

Sincerely,



Alexander Jaegerman  
Planning Division Director

cc: Lee D. Urban, Planning and Development Department Director  
Alexander Jaegerman, Planning Division Director  
Sarah Hopkins, Development Review Services Manager  
Jay Reynolds, Development Review Coordinator  
Marge Schmuckal, Zoning Administrator  
Inspections  
Michael Bobinsky, Public Works Director  
Traffic Division  
Eric Labelle, City Engineer  
Jeff Tarling, City Arborist  
Penny Littell, Associate Corporation Counsel  
Fire Prevention  
Assessor's Office  
Approval Letter File

**CITY OF PORTLAND, MAINE  
DEVELOPMENT REVIEW APPLICATION  
PLANNING DEPARTMENT PROCESSING FORM  
Planning Copy**

2007-0013  
Application I. D. Number  
  
1/22/2007  
Application Date

**Parks and Recreation Department**  
Applicant  
17 Arbor Street, Portland, ME 04103  
Applicant's Mailing Address

**Memorial Field Improvements**  
Project Name/Description

Consultant/Agent  
**Applicant Ph: (207) 874-8793 Agent Fax:**  
Applicant or Agent Daytime Telephone, Fax

**129 - 129 Ludlow Street, Portland, Maine**  
Address of Proposed Site  
**180 G012001**  
Assessor's Reference: Chart-Block-Lot

Proposed Development (check all that apply):  New Building  Building Addition  Change Of Use  Residential  Office  Retail  
 Manufacturing  Warehouse/Distribution  Parking Lot  Apt 0  Condo 0  Other (specify) **Athletic Field Improvements**

Proposed Building square Feet or # of Units \_\_\_\_\_ Acreage of Site \_\_\_\_\_ Zoning **ROS**

**Check Review Required:**

- Site Plan (major/minor)  Zoning Conditional - PB  Subdivision # of lots \_\_\_\_\_
- Amendment to Plan - Board Review  Zoning Conditional - ZBA  Shoreland  Historic Preservation  DEP Local Certification
- Amendment to Plan - Staff Review  Zoning Variance  Flood Hazard  Site Location
- After the Fact - Major  Stormwater  Traffic Movement  Other \_\_\_\_\_
- After the Fact - Minor  PAD Review  14-403 Streets Review

Fees Paid: Site Plan \_\_\_\_\_ Subdivision \_\_\_\_\_ Engineer Review \_\_\_\_\_ Date \_\_\_\_\_

**Planning Approval Status:**

Reviewer \_\_\_\_\_

- Approved  Approved w/Conditions See Attached  Denied

Approval Date \_\_\_\_\_ Approval Expiration \_\_\_\_\_ Extension to \_\_\_\_\_  Additional Sheets Attached

OK to Issue Building Permit \_\_\_\_\_  
signature \_\_\_\_\_ date \_\_\_\_\_

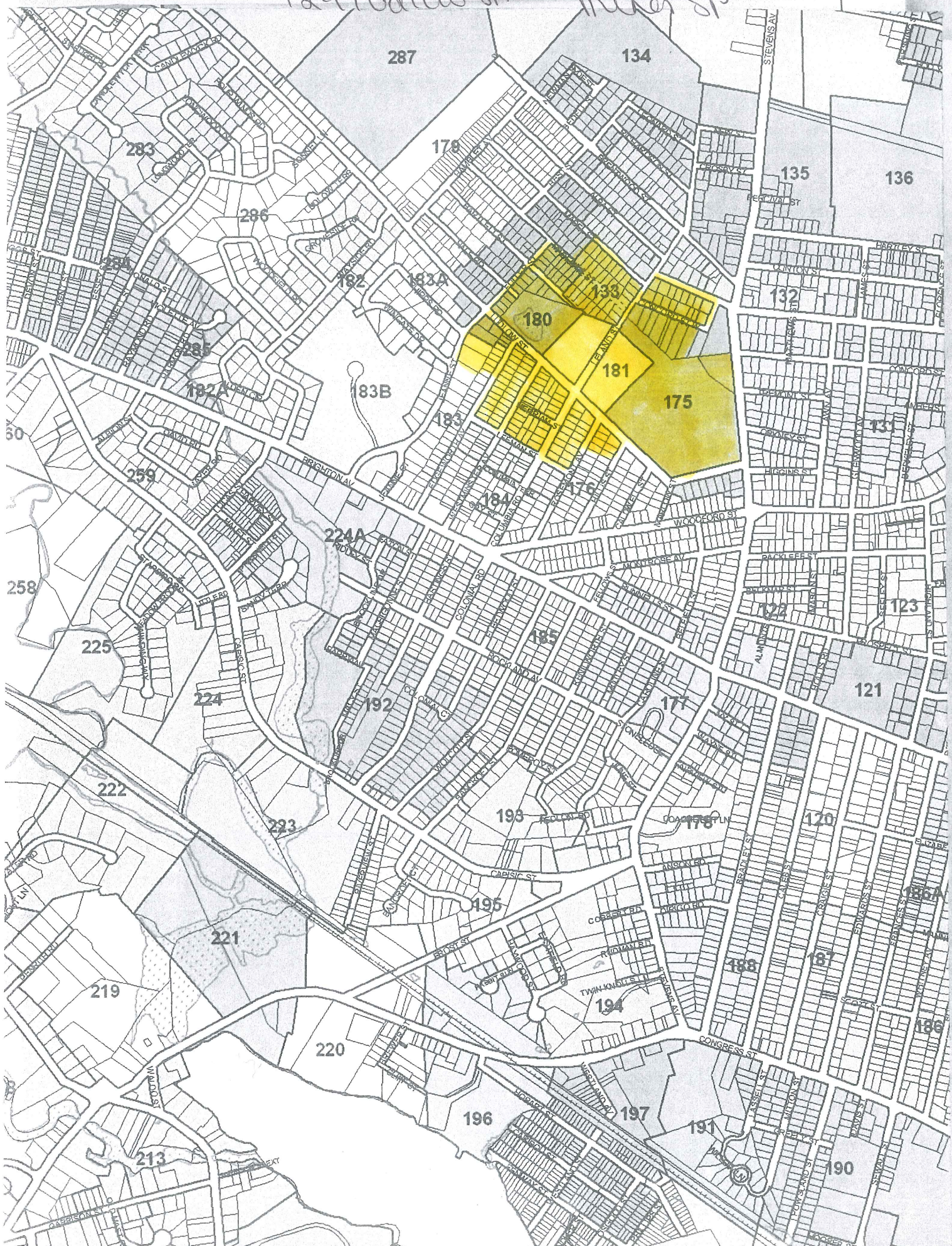
**Performance Guarantee**  Required\*  Not Required

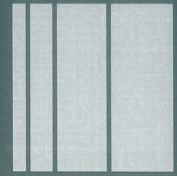
\* No building permit may be issued until a performance guarantee has been submitted as indicated below

- Performance Guarantee Accepted \_\_\_\_\_  
date \_\_\_\_\_ amount \_\_\_\_\_ expiration date \_\_\_\_\_
- Inspection Fee Paid \_\_\_\_\_  
date \_\_\_\_\_ amount \_\_\_\_\_
- Building Permit Issue \_\_\_\_\_  
date \_\_\_\_\_
- Performance Guarantee Reduced \_\_\_\_\_  
date \_\_\_\_\_ remaining balance \_\_\_\_\_ signature \_\_\_\_\_
- Temporary Certificate of Occupancy \_\_\_\_\_  
date \_\_\_\_\_  Conditions (See Attached) \_\_\_\_\_  
expiration date \_\_\_\_\_
- Final Inspection \_\_\_\_\_  
date \_\_\_\_\_ signature \_\_\_\_\_
- Certificate Of Occupancy \_\_\_\_\_  
date \_\_\_\_\_
- Performance Guarantee Released \_\_\_\_\_  
date \_\_\_\_\_ signature \_\_\_\_\_
- Defect Guarantee Submitted \_\_\_\_\_  
submitted date \_\_\_\_\_ amount \_\_\_\_\_ expiration date \_\_\_\_\_
- Defect Guarantee Released \_\_\_\_\_  
date \_\_\_\_\_ signature \_\_\_\_\_

#2007-0013  
129 Ludlow St.

Notice Sent 500'  
Murray SP





February 5, 2007  
03245

Barbara Barhydt, Senior Planner  
Planning Division  
City of Portland  
389 Congress St. City Hall, 4<sup>th</sup> Floor  
Portland, ME 04101

sebagotechnics.com  
One Chabot Street  
P.O. Box 1339  
Westbrook, Maine  
04098-1339  
Ph. 207-856-0277  
Fax 856-2206

**Minor Site Plan Submission for Deering High School  
Memorial Field Artificial Turf Replacement and Facility Improvement Project  
Ludlow and Leland Street, Portland, Maine**

Dear Barbara:

Please find 12 copies of the Site/Layout Plans, and Application Form for Minor Site Plan review that we have prepared for the proposed Deering High School - Memorial Field artificial turf replacement and facility improvement project on behalf of the City of Portland's Park and Recreation Department. The project, to be located on the existing football field located on the Deering High campus at Ludlow and Leland Streets, will include replacement of the natural grass surface to artificial turf. The existing field is poorly graded, has saturation issues, and the general site has poor access and pedestrian circulation. Along with the turf replacement, existing gravel pathways, sidewalks/trails, and bare soil entrances driveways will be paved with new landscaped islands. Based on discussions with the Maine Department of Environmental Protection, field replacements constitute the requirement for a Stormwater Permit due to the artificial surface being "of a non-vegetated material in excess of 1 acre". Since the field will incorporate approximately 100,000 square feet of artificial turf, or non-vegetated area, we will be filing for a Stormwater Permit application for review and approval as soon as possible.

The field replacement of Memorial Field will have little demands on utilities, and we expect no burden on existing utilities. The field is currently served by public water supply and electricity. Both new bleacher additions and lighting improvements have been previously made to improve the facilities. The field replacement and walking/practice track will be a substantial improvement for controlling public access and use for football and other spectator sports

Stormwater treatment for the removal of sediment is proposed through a combination of Best Management Practices. The field surface will be designed with an extensive underdrain infrastructure, and discharge directly to the municipal drainage system located in Ludlow Street. Because the runoff from the field is clean of sediment and involves some filtration prior to entering the underdrain system, we feel discharge to the storm drain system, which eventually feeds Capisc Brook, is appropriate. The remainder of the project that includes upgraded paved walking/practice track areas, driveways, and service entrances will be collected and discharged to an existing retention/skating pond behind the field. This pond currently discharges to the same street drainage system. The Pond is seasonally controlled by the City and is used for skating and winter recreation. We have attached stormwater calculations for your review.

Construction will include installation of some minor utilities to be incorporated for field use, such as underground power for internal lights and a water service from an existing line serving the concession stand. The service will be available for routine washing or for team use during events in the warmer periods of the year. A sewer service to Leland Street will be shown for future consideration, if and when a concession stand is to be built on the visitor's side. No exact location has been accepted and is not included with construction.

The field improvements will also include improvements to Leland Street. Currently, there are no sidewalks or curbing along the Leland Street frontage. This project will include approximately 520 feet of new 6-foot wide bituminous sidewalk, granite curbing and new drainage structures along this section as well. We have also included improvements to the entrances at the Ludlow and Leland corner as well as the rear entrance to the facility opposite the entrance to the tennis courts. Both of these have been designed to address both large crowd control/access and emergency access for ambulances and maintenance vehicles.

For this project to move forward, we have formally submitted a Minor Site Plan to determine and review the requirements of an athletic field with the Planning Department and we are additionally scheduling a Neighborhood Meeting to review the increase of field use and general site impacts with the community. The Parks and Recreation Department is anxious to start the permitting process as soon as possible to maintain a spring 2007 start for construction. It is imperative that the project begins by mid-April in order to have the field ready for the fall sport season. The City Council has appropriated the necessary funds and both the Parks and Recreation Department and Deering High School are eager to construct over spring and early summer.

We look forward to cooperating with you to discuss the application process for this new project for Deering High School and the City of Portland. We will be available at any time to address the items of concern or questions you may have, to assist in a timely review.

Sincerely,

SEBAGO TECHNICS, INC.



James R. Seymour, P.E.  
Project Manager



JRS:jrs/kn  
Enc.

cc: Denise Clavette City of Portland – Director of Parks and Recreation



# City of Portland Site Plan Application

If you or the property owner owes real estate taxes, personal property taxes or user charges on any property within the City, payment arrangements must be made before permit applications can be received by the Inspections Division.

Address of Proposed Development: <b>129 LUDLOW ST.</b>		Zone: <b>ROS</b>
Existing Building Size: <b>NA</b> sq. ft.	Proposed Building Size: <b>NONE</b> sq. ft.	
Existing Acreage of Site: <b>296,860 SF 6.815 AC</b> sq. ft.	Proposed Acreage of Site: <b>SAME</b> sq. ft.	
Tax Assessor's Chart, Block & Lot: Chart# <b>180</b> Block# <b>G</b> Lot# <b>12</b> <b>181</b> <b>G</b> <b>1</b>	Property owner's mailing address: <b>389 CONGRESS ST. PORTLAND, ME 04101</b>	Telephone #: <b>874-8793</b>
Consultant/Agent, mailing address, phone # & contact person: <b>SEBAGO TECHNIKS INC 40 JAMES SEYMOUR, 1 CHABOT ST WESTBROOK, ME 04092</b>	Applicant's name, mailing address, telephone #/Fax#/Pager#: <b>PARKS &amp; RECREATION DEPT 17 ARBOR ST. PORTLAND, ME 04103 c/o DENISE CLAVETTE-Director</b>	Project name: <b>MEMORIAL FIELD IMPROVEMENTS</b>

# **856-0277**      TEL **874-8793** FAX **756-8390**

Fee For Service Deposit (all applications) \_\_\_\_\_ (\$200.00)

**Proposed Development (check all that apply)**

- New Building     Building Addition     Change of Use     Residential     Office     Retail
- Manufacturing     Warehouse/Distribution     Parking lot
- Subdivision (\$500.00) + amount of lots \_\_\_\_\_ (\$25.00 per lot) \$ \_\_\_\_\_ + major site plan fee if applicable
- Site Location of Development (\$3,000.00)  
(except for residential projects which shall be \$200.00 per lot \_\_\_\_\_ )
- Traffic Movement (\$1,000.00)     Storm water Quality (\$250.00)
- Section 14-403 Review (\$400.00 + \$25.00 per lot)
- Other: **Athletic Field Improvements**

**Major Development (more than 10,000 sq. ft.)**

- Under 50,000 sq. ft. (\$500.00)
- 50,000 - 100,000 sq. ft. (\$1,000.00)
- Parking Lots over 100 spaces (\$1,000.00)
- 100,000 - 200,000 sq. ft. (\$2,000.00)
- 200,000 - 300,000 sq. ft. (\$3,000.00)
- Over 300,000 sq. ft. (\$5,000.00)
- After-the-fact Review (\$1,000.00 + applicable application fee)

**Minor Site Plan Review**

- Less than 10,000 sq. ft. (\$400.00)
- After-the-fact Review (\$1,000.00 + applicable application fee)

**Plan Amendments**

- Planning Staff Review (\$250.00)
- Planning Board Review (\$500.00)

~ Please see next page ~

Who billing will be sent to: (Company, Contact Person, Address, Phone #)

PORTLAND PARKS & RECREATION DEPT  
17 ARBOR STREET  
PORTLAND, ME 04103

CO DENISE CLAVETTE  
# 874-8793

Submittals shall include (9) separate **folded** packets of the following:

- a. copy of application
- b. cover letter stating the nature of the project
- c. site plan containing the information found in the attached sample plans checklist
- d. 1 set of 11 x 17 plans

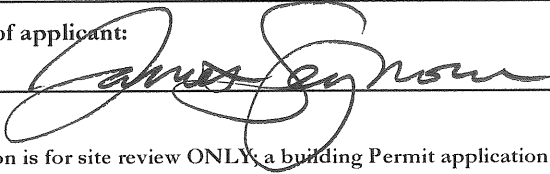
Amendment to Plans: **Amendment applications should include 9 separate packets of the above (a, b, & c)**

ALL PLANS MUST BE FOLDED NEATLY AND IN PACKET FORM

Section 14-522 of the Zoning Ordinance outlines the process which is available on our web site: [portlandmaine.gov](http://portlandmaine.gov)

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Code Official's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

Signature of applicant:



Date:

2-5-07

This application is for site review **ONLY**; a building Permit application and associated fees will be required prior to construction.



# THE FIELDTurf SYSTEM<sup>®</sup>



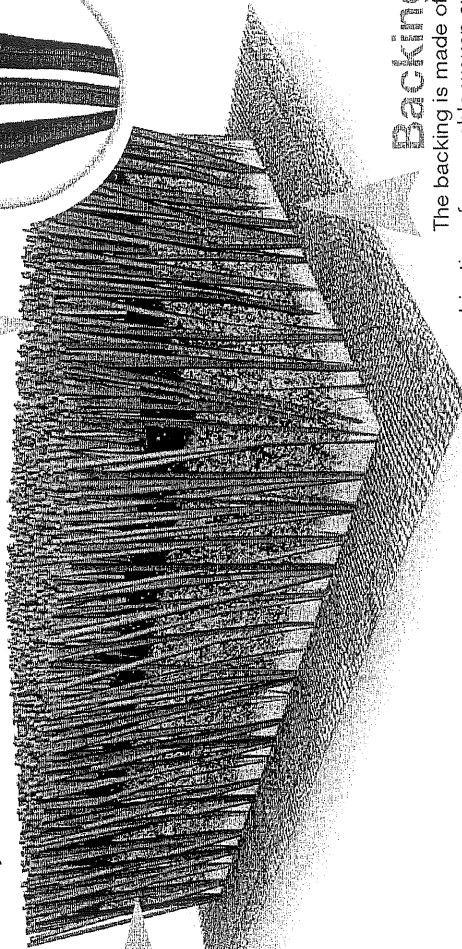
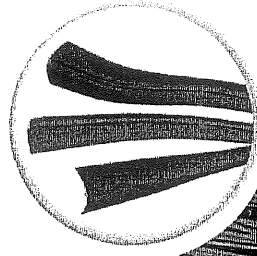
The greatest turf on earth.™

## Fiber

A durable "spine" runs vertically through the center of each fiber providing unmatched "memory" and resistance to matting. Treated with UV inhibitors, the fiber is more resistant to foot traffic yet remains silky and non-abrasive.

## Infill

A durable "spine" runs vertically through the center of each fiber providing unmatched "memory" and resistance to matting. Treated with UV inhibitors, the fiber is more resistant to foot traffic yet remains silky and non-abrasive.



## Backing

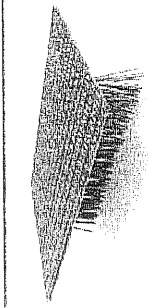
The backing is made of a combination of permeable woven and non-woven polypropylene fabrics to provide exceptional strength and unmatched vertical drainage.



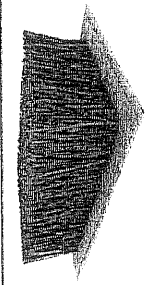
Silica Sand

Cryogenic Rubber

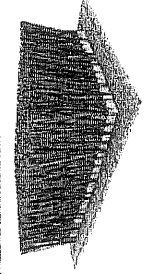
Nike Grind



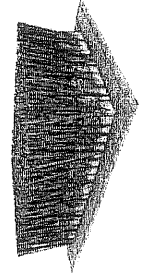
THE PATENTED FINGER UNIT COATS JUST THE TUFTED FIBER ROWS. THIS PROVIDES SUPERIOR STRENGTH AND LEAVES THE REST OF THE BACKING FULLY POROUS FOR UNMATCHED DRAINAGE.



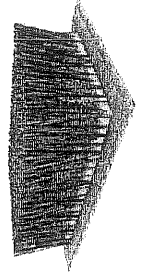
THE FINISHED CARPET SECTIONS ARE LAID ON THE FIELD AND SEWN TOGETHER. ONCE ALL NUMBERS, MARKINGS AND LOGOS HAVE BEEN INSTALLED, THE TURF IS READY FOR INFILLING.



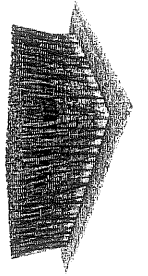
THE PATENTED INFILL LAYERING BEGINS WITH SEVERAL LAYERS OF CLEAN, WASHED SILICA SAND. THIS STABILIZES AND SUPPORTS THE ENTIRE SYSTEM. THIS IS FOLLOWED BY MIXED INFILL LAYERS.



A MIX OF CRYOGENIC RUBBER AND SILICA SAND IS LAYERED INTO THE SYSTEM. THE RUBBER AND SAND PARTICLES ARE A SIMILAR SIZE TO STAY IN SUSPENSION, NEITHER SEGREGATING NOR COMPACTING.



UP TO TWENTY ONE PASSES OF THE CRYOGENIC RUBBER AND SILICA SAND MIX ARE CAREFULLY ADDED. OVER 900,000 LBS OF INFILL IS LAYERED INTO A TYPICAL, FULL SIZE SPORTS FIELD.



LARGER SIZED CRYOGENIC RUBBER TOP LAYERS ENSURE THAT THE RUBBER REMAINS ON TOP, PROVIDING A SAFE, FORGIVING SURFACE.

## Fiber

The arched profile of this monofilament fiber is based on similar structures found in nature. Extruded through a "spinnerette," this "true" monofilament fiber delivers unmatched durability, especially resistance to wear. Tests indicate that although this fiber is far more durable, it remains silky and lush, just like nature intended. The monofilament system is available in over 20 colors.

## Infill

The washed silica sand does not break down from use or heavy traffic. The cryogenic rubber is recycled rubber, frozen and shattered, creating smooth-sided spherical particles. As compared to 3 pounds of ambient rubber found in most other artificial turf, each square foot of FieldTurf contains 7 pounds of silica sand plus 3 pounds of cryogenic rubber. A base layer of silica sand is followed by up to 21 individual layers of mixed silica sand and cryogenic rubber and then topped with a final layer of specially graded cryogenic rubber which stays on the top of the infill system.

## Backing

The fibers are tufted (stitched) into the backing material in rows according to a patented wide gauge spacing formula that enables cleats to penetrate the infill material rather than the surface fiber. This provides excellent traction and very low torsion resistance that prevents injuries. Our patented "finger unit system" adds an impermeable coating over the back of each row of stitching, creating a chemical and mechanical bond for enhanced "tuft bind," leaving the rest of the backing material totally permeable and creating rows of superior drainage channels.

THE COMPANY THAT REVOLUTIONIZED AN INDUSTRY.

UNITED IN SPORT

UNITED IN SPORT

Project 03245  
 Memorial Field Improvements, Portland  
 Stormwater Model Results  
 HydroCAD Rev.6

Sub-Catchment Data - Summary Table						
Sub-Catchment	Pre-Development			Post-Development		
	Area (ac)	CN	Tc (min)	Area (ac)	CN	Tc (min)
1	2.617	83	41.6	2.310	74	10.0
2	0.350	83	23.1	0.092	74	11.4
3(.1)	1.473	84	41.0	0.196	85	4.9
3.2				0.460	90	2.8
3.3				0.176	90	12.1
3.4				0.112	85	18.9
3.5				0.028	89	0.2
3.6				0.103	86	3.4
3.7				0.090	90	5.3
3.8				0.178	92	10.3
3.9				0.162	86	6.2
3.10				0.107	87	6.7
3.11				0.141	98	0.8
3.12	-	-	-	0.258	95	0.6
<b>Total:</b>	4.440			4.413		

Rainfall Data		
Type III Rainfall Distribution	P(2)	3.0
24 hr. Duration Event	P(10)	4.7
	P(25)	5.5

Stormwater Runoff - Summary Table						
Analysis Point	Peak Runoff Rate					
	Pre-Development			Post-Development		
	2-yr	10-yr	25-yr	2-yr	10-yr	25-yr
SP-1	2.20	4.43	5.52	1.42	1.51	1.51
SP-2	0.40	0.80	1.00	0.08	0.19	0.25
SP-3	1.28	2.53	3.13	3.34	5.94	6.88
<b>Total</b>	3.88	7.76	9.65	4.84	7.64	8.64



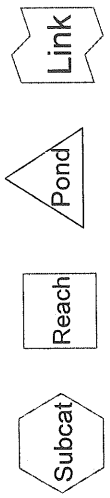
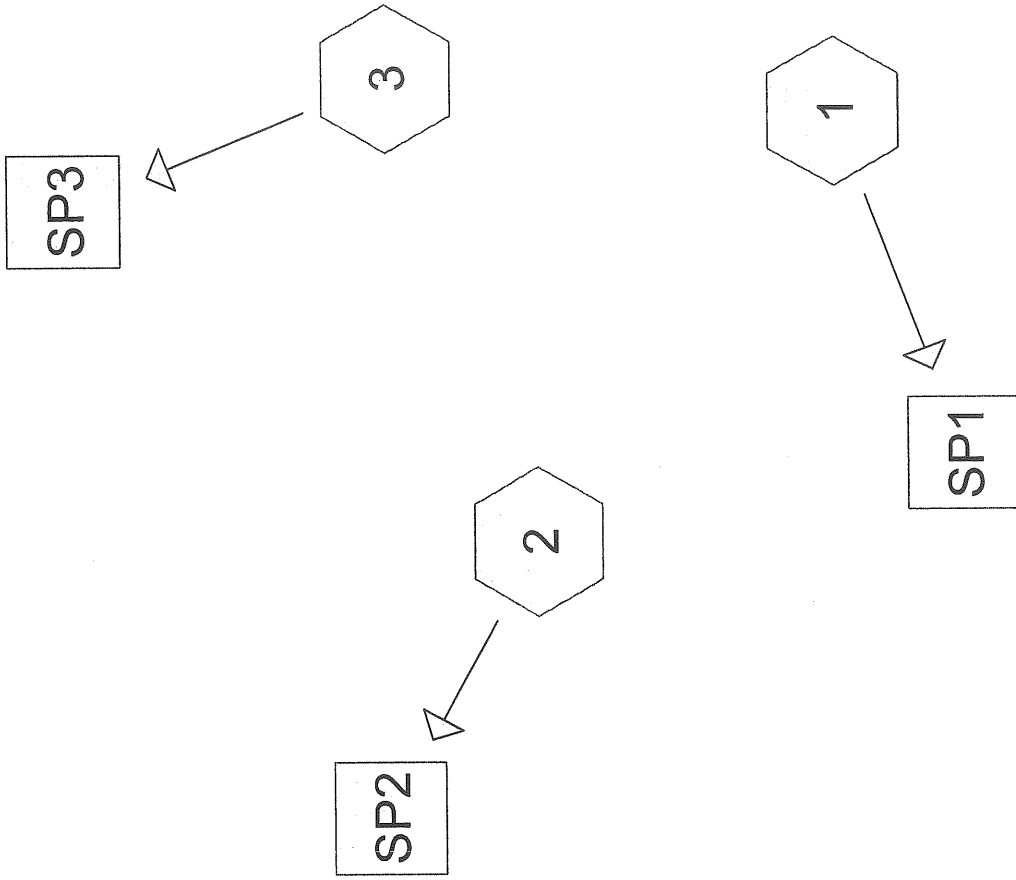
Project 03245  
 Memorial Field Improvements, Portland  
 Stormwater Model Results  
 HydroCAD Rev.6

Sub-Catchment Data - Summary Table						
Sub-Catchment	Pre-Development			Post-Development		
	Area (ac)	CN	Tc (min)	Area (ac)	CN	Tc (min)
1	2.617	83	41.6	2.310	74	10.0
2	0.350	83	23.1	0.092	74	11.4
3(.1)	1.473	84	41.0	0.196	85	4.9
3.2				0.460	90	2.8
3.3				0.176	90	12.1
3.4				0.112	85	18.9
3.5				0.028	89	0.2
3.6				0.103	86	3.4
3.7				0.090	90	5.3
3.8				0.178	92	10.3
3.9				0.162	86	6.2
3.10				0.107	87	6.7
3.11				0.141	98	0.8
3.12	-	-	-	0.258	95	0.6
<b>Total:</b>	4.440			4.413		

Rainfall Data		
Type III Rainfall Distribution	P(2)	3.0
24 hr. Duration Event	P(10)	4.7
	P(25)	5.5

Stormwater Runoff - Summary Table						
Analysis Point	Peak Runoff Rate					
	Pre-Development			Post-Development		
	2-yr	10-yr	25-yr	2-yr	10-yr	25-yr
SP-1	2.20	4.43	5.52	1.42	1.51	1.51
SP-2	0.40	0.80	1.00	0.08	0.19	0.25
SP-3	1.28	2.53	3.13	3.34	5.94	6.88
<b>Total</b>	3.88	7.76	9.65	4.84	7.64	8.64





**Drainage Diagram for 03245PRE**  
 Prepared by Sebago Technics, Inc. 2/5/2007  
 HydroCAD® 6.00 s/n 001856 © 1986-2001 Applied Microcomputer Systems

Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points  
Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=3.00"  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1: Easterly Subcatchment**

Tc=39.1 min CN=83 Area=2.617 ac Runoff= 2.20 cfs 0.315 af

**Subcatchment 2: Southwest Corner**

Tc=20.1 min CN=83 Area=0.350 ac Runoff= 0.40 cfs 0.042 af

**Subcatchment 3: Westerly Subcatchment**

Tc=40.3 min CN=84 Area=1.473 ac Runoff= 1.28 cfs 0.186 af

**Reach SP1: (new node)**

Inflow= 2.20 cfs 0.315 af  
Outflow= 2.20 cfs 0.315 af

**Reach SP2: (new node)**

Inflow= 0.40 cfs 0.042 af  
Outflow= 0.40 cfs 0.042 af

**Reach SP3: (new node)**

Inflow= 1.28 cfs 0.186 af  
Outflow= 1.28 cfs 0.186 af

**Runoff Area = 4.440 ac Volume = 0.544 af Average Depth = 1.47"**

**Subcatchment 1: Easterly Subcatchment**

Runoff = 2.20 cfs @ 12.55 hrs, Volume= 0.315 af

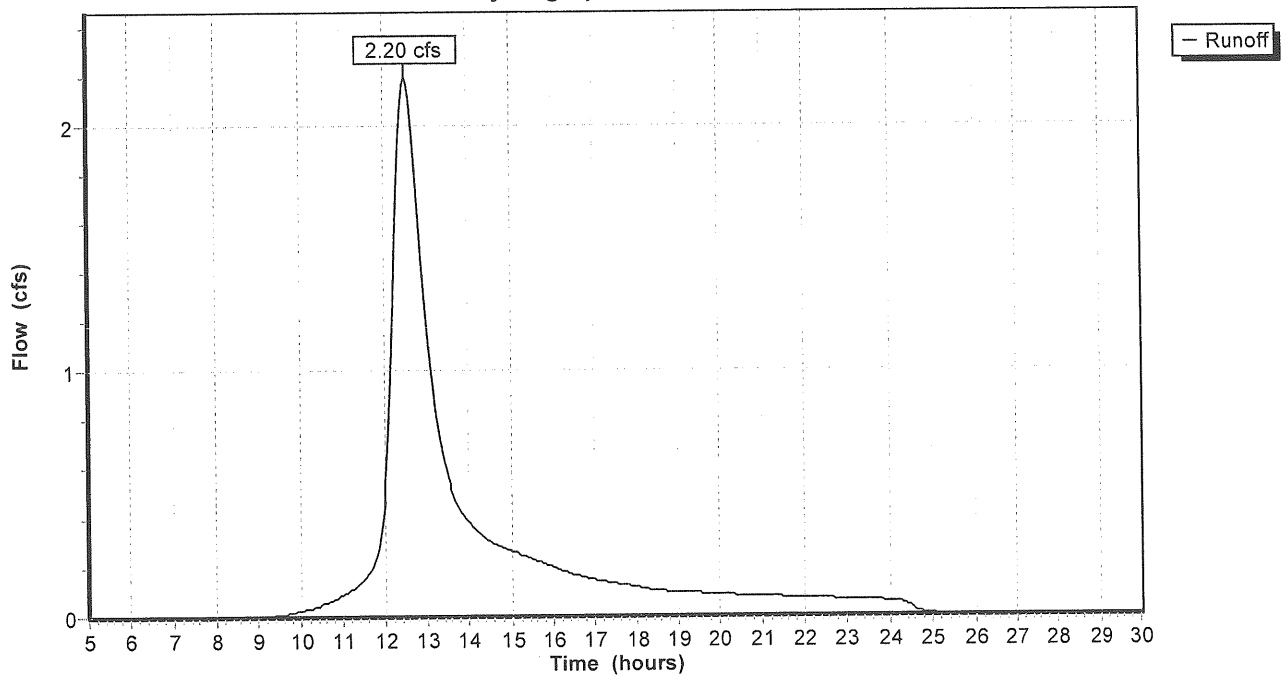
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.350	98	Impervious, unpaved, HSG D
0.023	98	Pavement & roofs
2.244	80	>75% Grass cover, Good, HSG D
2.617	83	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
31.9	100	0.0085	0.1		<b>Sheet Flow, A-B</b> Grass: Bermuda n= 0.410 P2= 3.00"
5.8	330	0.0040	0.9		<b>Shallow Concentrated Flow, B-C</b> Grassed Waterway Kv= 15.0 fps
1.4	90	0.0050	1.1		<b>Shallow Concentrated Flow, C-D</b> Grassed Waterway Kv= 15.0 fps
39.1	520	Total			

**Subcatchment 1: Easterly Subcatchment**

Hydrograph Plot



**Subcatchment 2: Southwest Corner**

Runoff = 0.40 cfs @ 12.29 hrs, Volume= 0.042 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=3.00"

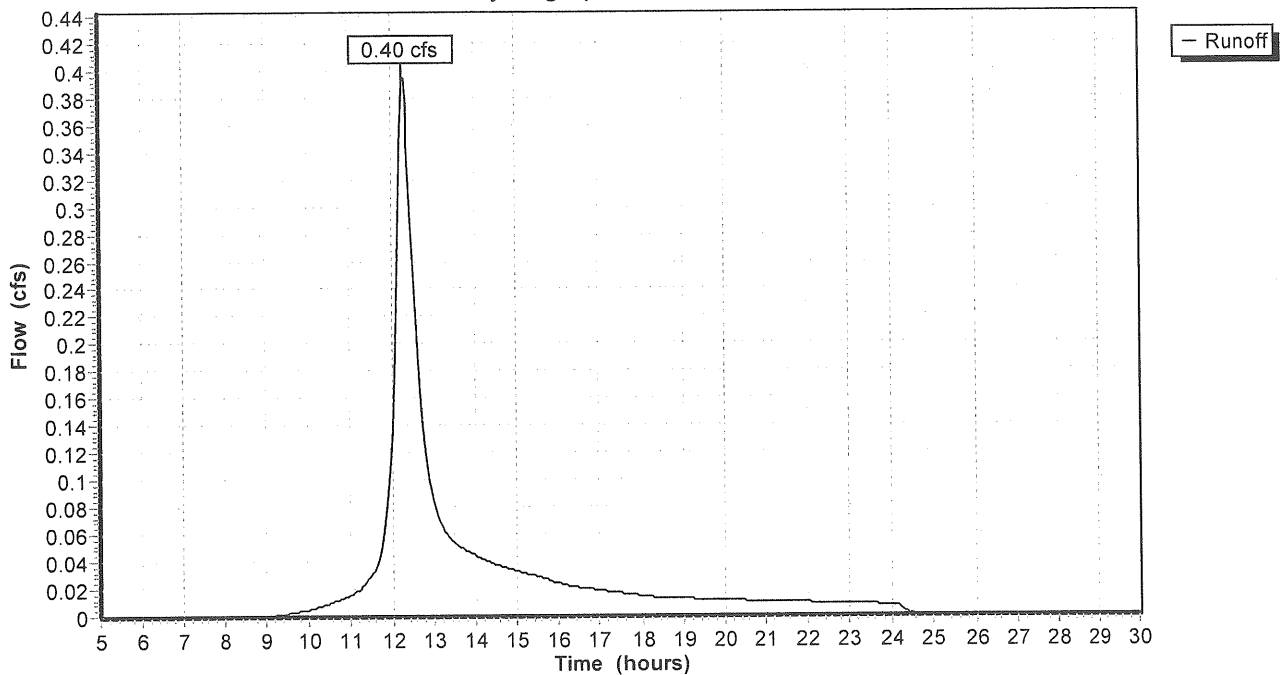
Area (ac)	CN	Description
0.054	98	Impervious, unpaved, HSG D
0.296	80	>75% Grass cover, Good, HSG D
0.350	83	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7	65	0.0120	0.1		<b>Sheet Flow, A-B</b> Grass: Bermuda n= 0.410 P2= 3.00"
0.4	55	0.0300	2.6		<b>Shallow Concentrated Flow, B-C</b> Grassed Waterway Kv= 15.0 fps
20.1	120	Total			

**Subcatchment 2: Southwest Corner**

Hydrograph Plot



**Subcatchment 3: Westerly Subcatchment**

Runoff = 1.28 cfs @ 12.57 hrs, Volume= 0.186 af

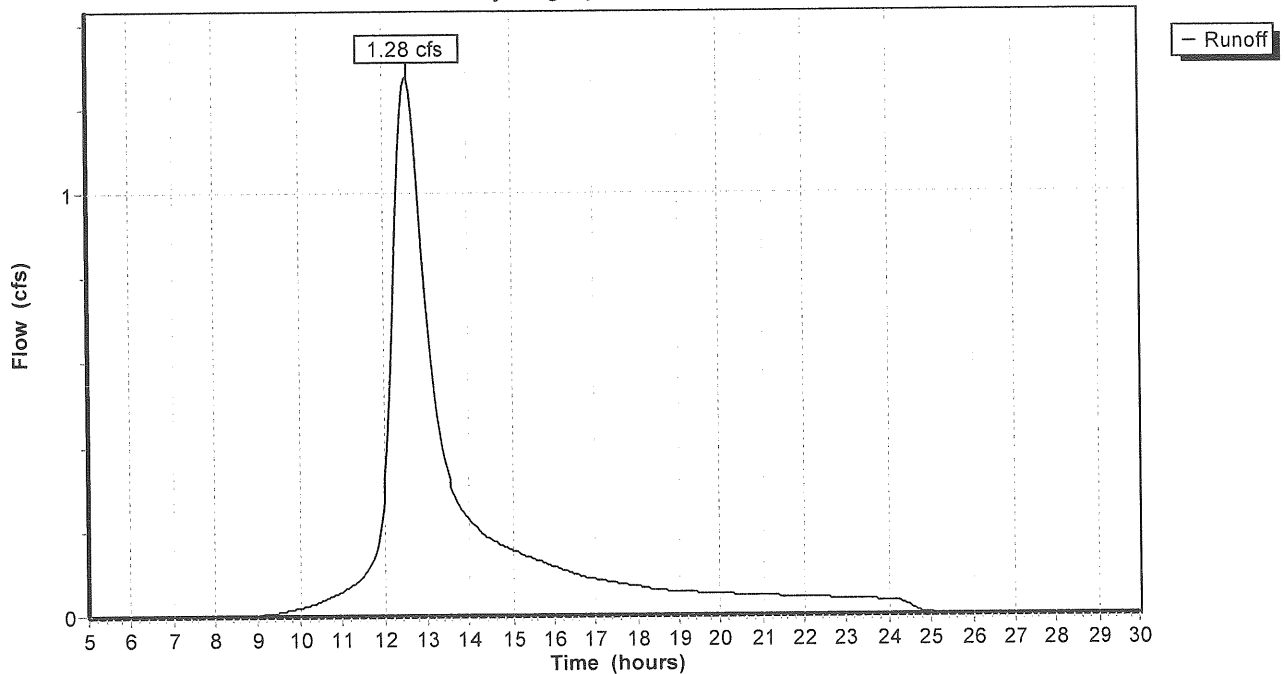
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.327	98	Impervious, unpaved, HSG D
0.034	98	Paved areas & roofs
1.112	80	>75% Grass cover, Good, HSG D
1.473	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.1	140	0.0100	0.1		<b>Sheet Flow, A-B</b> Grass: Bermuda n= 0.410 P2= 3.00"
1.2	100	0.0080	1.4		<b>Shallow Concentrated Flow, B-C</b> Unpaved Kv= 16.1 fps
40.3	240	Total			

**Subcatchment 3: Westerly Subcatchment**

Hydrograph Plot





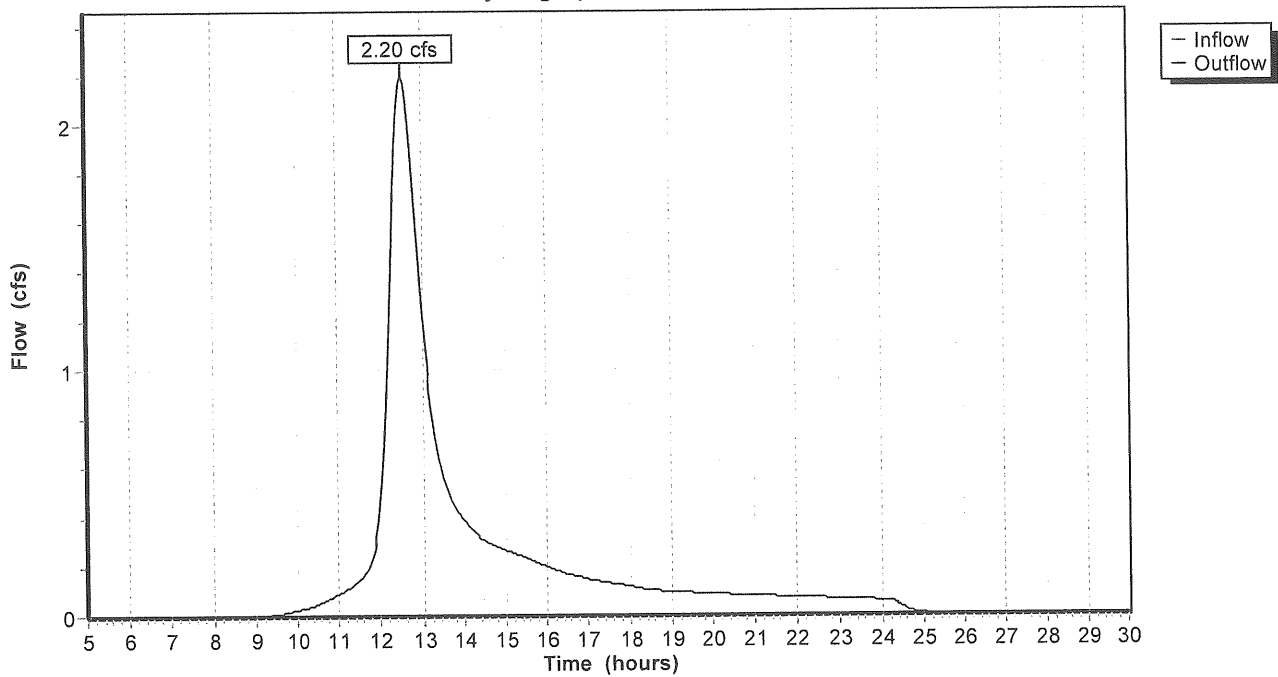
**Reach SP1: (new node)**

Inflow = 2.20 cfs @ 12.55 hrs, Volume= 0.315 af  
Outflow = 2.20 cfs @ 12.55 hrs, Volume= 0.315 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

**Reach SP1: (new node)**

Hydrograph Plot



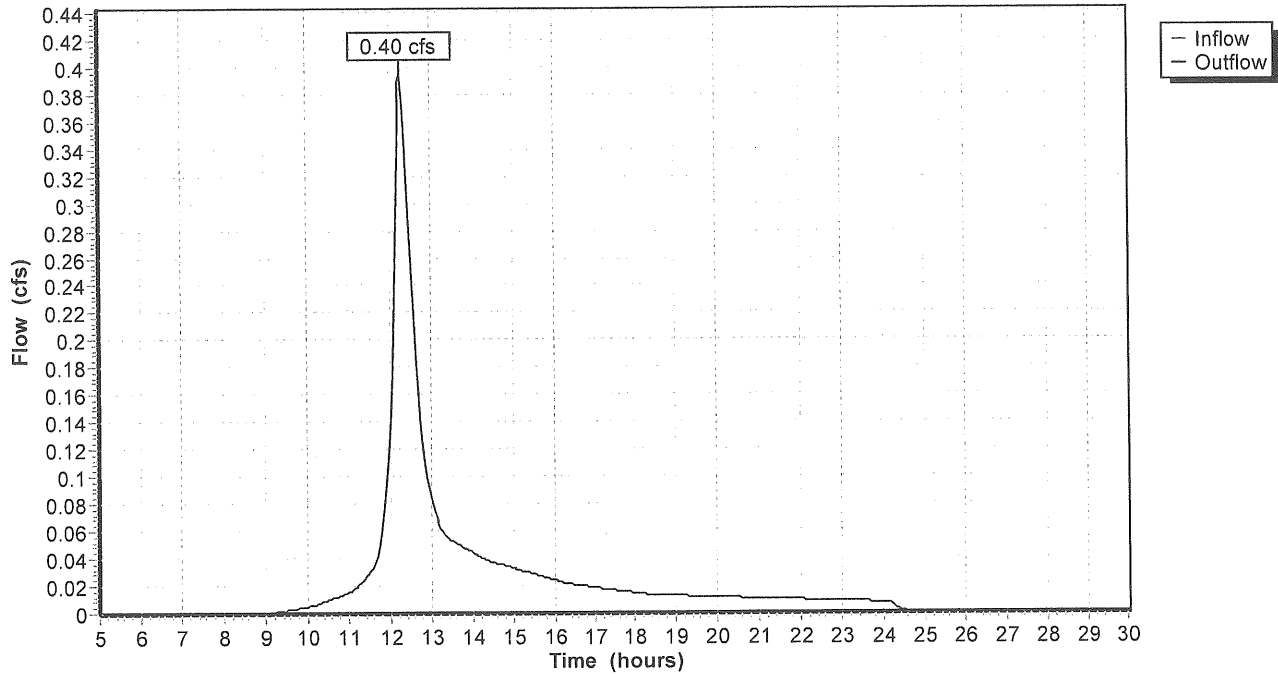
**Reach SP2: (new node)**

Inflow = 0.40 cfs @ 12.29 hrs, Volume= 0.042 af  
Outflow = 0.40 cfs @ 12.29 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

**Reach SP2: (new node)**

Hydrograph Plot



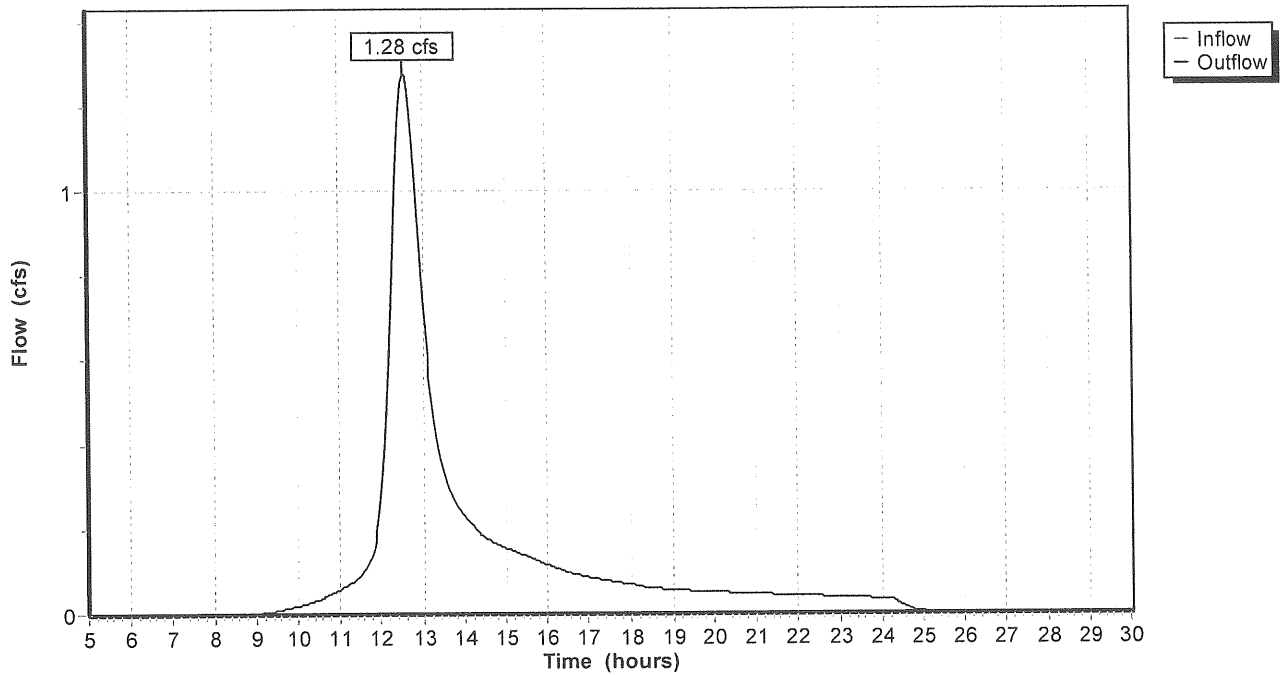
**Reach SP3: (new node)**

Inflow = 1.28 cfs @ 12.57 hrs, Volume= 0.186 af  
Outflow = 1.28 cfs @ 12.57 hrs, Volume= 0.186 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

**Reach SP3: (new node)**

Hydrograph Plot



03245PRE

Type III 24-hr Rainfall=5.50"

Prepared by Sebago Technics, Inc.

Page 1

HydroCAD® 6.00 s/n 001856 © 1986-2001 Applied Microcomputer Systems

2/5/2007

Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points  
Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=5.50"  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1: Easterly Subcatchment**

Tc=39.1 min CN=83 Area=2.617 ac Runoff= 5.52 cfs 0.792 af

**Subcatchment 2: Southwest Corner**

Tc=20.1 min CN=83 Area=0.350 ac Runoff= 1.00 cfs 0.106 af

**Subcatchment 3: Westerly Subcatchment**

Tc=40.3 min CN=84 Area=1.473 ac Runoff= 3.13 cfs 0.458 af

**Reach SP1: (new node)**

Inflow= 5.52 cfs 0.792 af  
Outflow= 5.52 cfs 0.792 af

**Reach SP2: (new node)**

Inflow= 1.00 cfs 0.106 af  
Outflow= 1.00 cfs 0.106 af

**Reach SP3: (new node)**

Inflow= 3.13 cfs 0.458 af  
Outflow= 3.13 cfs 0.458 af

**Runoff Area = 4.440 ac Volume = 1.355 af Average Depth = 3.66"**

**Subcatchment 1: Easterly Subcatchment**

Runoff = 5.52 cfs @ 12.53 hrs, Volume= 0.792 af

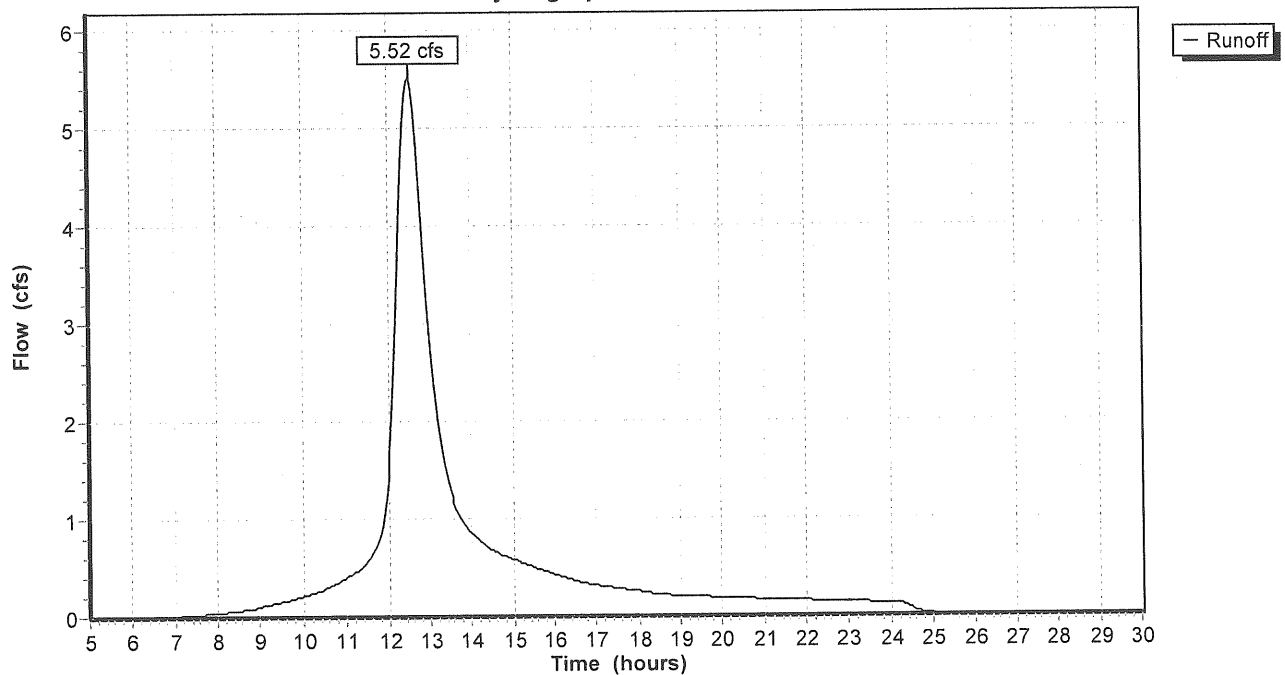
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.350	98	Impervious, unpaved, HSG D
0.023	98	Pavement & roofs
2.244	80	>75% Grass cover, Good, HSG D
2.617	83	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
31.9	100	0.0085	0.1		<b>Sheet Flow, A-B</b> Grass: Bermuda n= 0.410 P2= 3.00"
5.8	330	0.0040	0.9		<b>Shallow Concentrated Flow, B-C</b> Grassed Waterway Kv= 15.0 fps
1.4	90	0.0050	1.1		<b>Shallow Concentrated Flow, C-D</b> Grassed Waterway Kv= 15.0 fps
39.1	520	Total			

**Subcatchment 1: Easterly Subcatchment**

Hydrograph Plot



**Subcatchment 2: Southwest Corner**

Runoff = 1.00 cfs @ 12.27 hrs, Volume= 0.106 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs  
Type III 24-hr Rainfall=5.50"

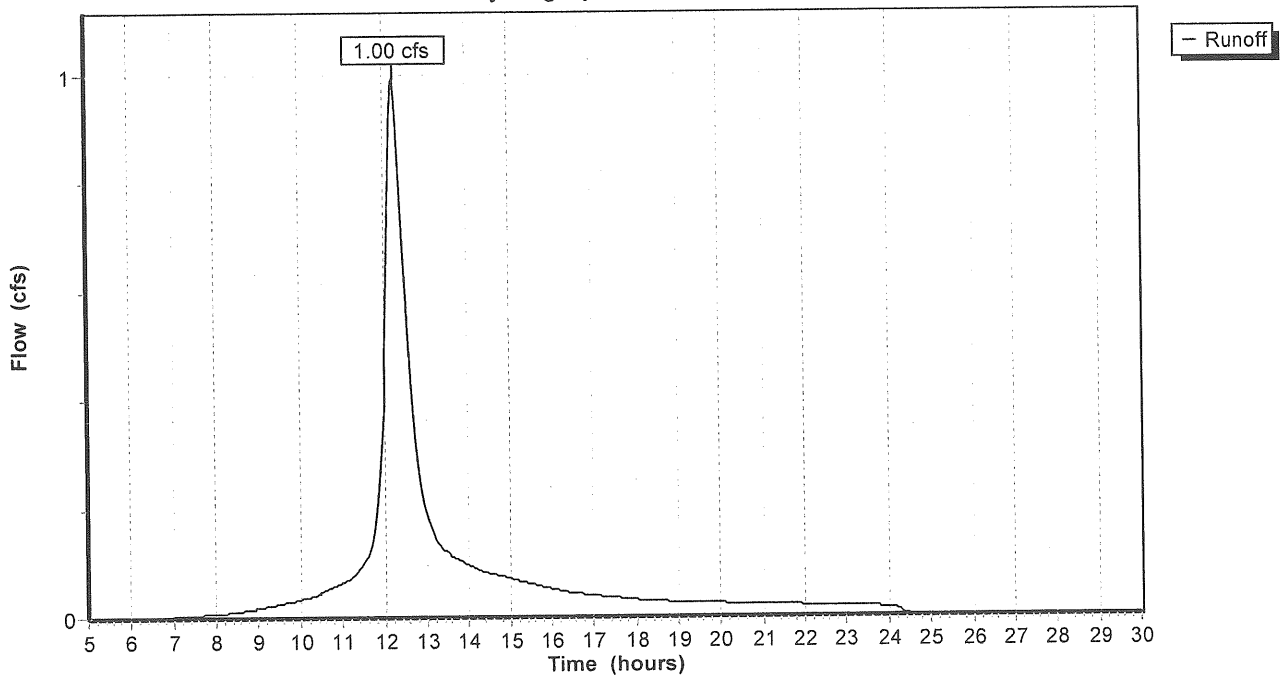
Area (ac)	CN	Description
0.054	98	Impervious, unpaved, HSG D
0.296	80	>75% Grass cover, Good, HSG D
0.350	83	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7	65	0.0120	0.1		<b>Sheet Flow, A-B</b> Grass: Bermuda n= 0.410 P2= 3.00"
0.4	55	0.0300	2.6		<b>Shallow Concentrated Flow, B-C</b> Grassed Waterway Kv= 15.0 fps
20.1	120	Total			

**Subcatchment 2: Southwest Corner**

Hydrograph Plot



**Subcatchment 3: Westerly Subcatchment**

Runoff = 3.13 cfs @ 12.55 hrs, Volume= 0.458 af

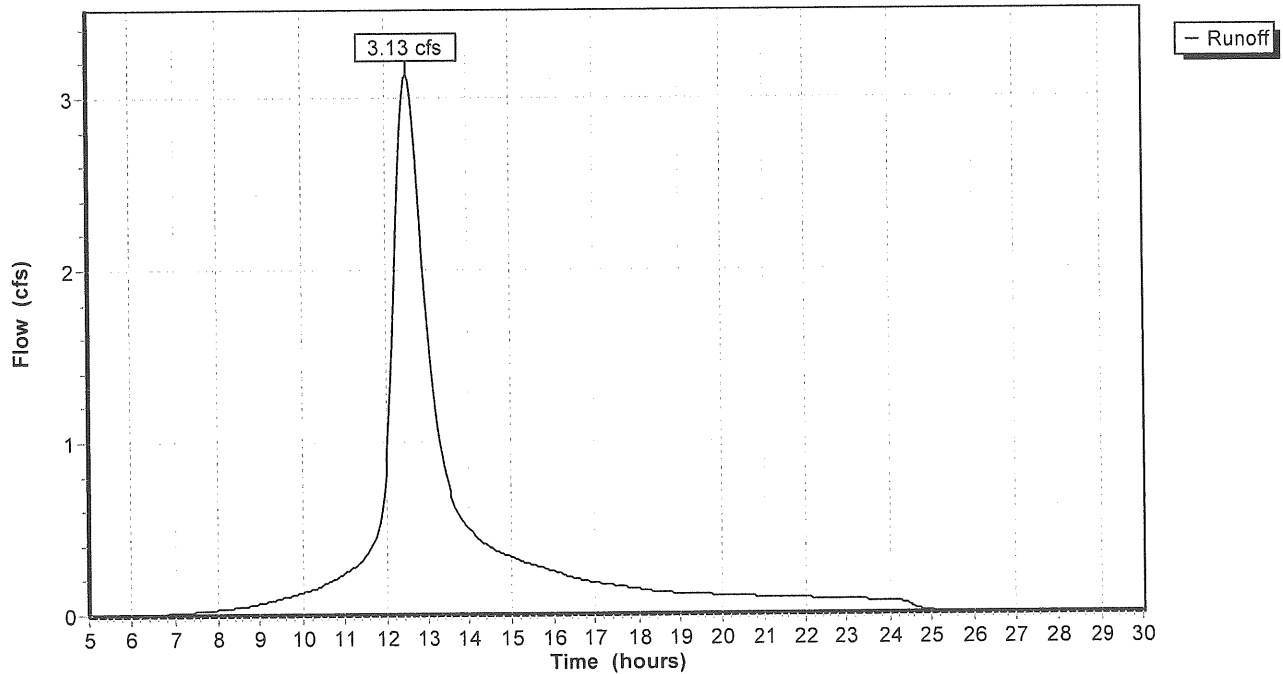
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.327	98	Impervious, unpaved, HSG D
0.034	98	Paved areas & roofs
1.112	80	>75% Grass cover, Good, HSG D
1.473	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.1	140	0.0100	0.1		<b>Sheet Flow, A-B</b> Grass: Bermuda n= 0.410 P2= 3.00"
1.2	100	0.0080	1.4		<b>Shallow Concentrated Flow, B-C</b> Unpaved Kv= 16.1 fps
40.3	240	Total			

**Subcatchment 3: Westerly Subcatchment**

Hydrograph Plot



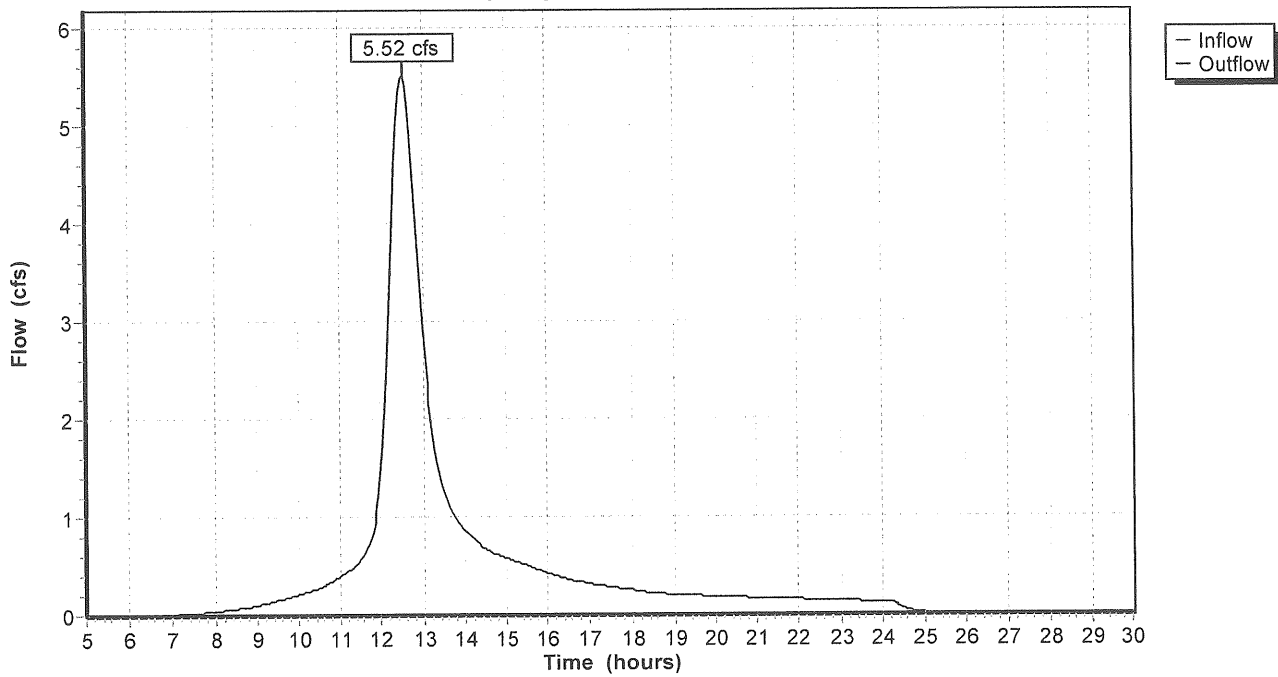
**Reach SP1: (new node)**

Inflow = 5.52 cfs @ 12.53 hrs, Volume= 0.792 af  
Outflow = 5.52 cfs @ 12.53 hrs, Volume= 0.792 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

**Reach SP1: (new node)**

Hydrograph Plot





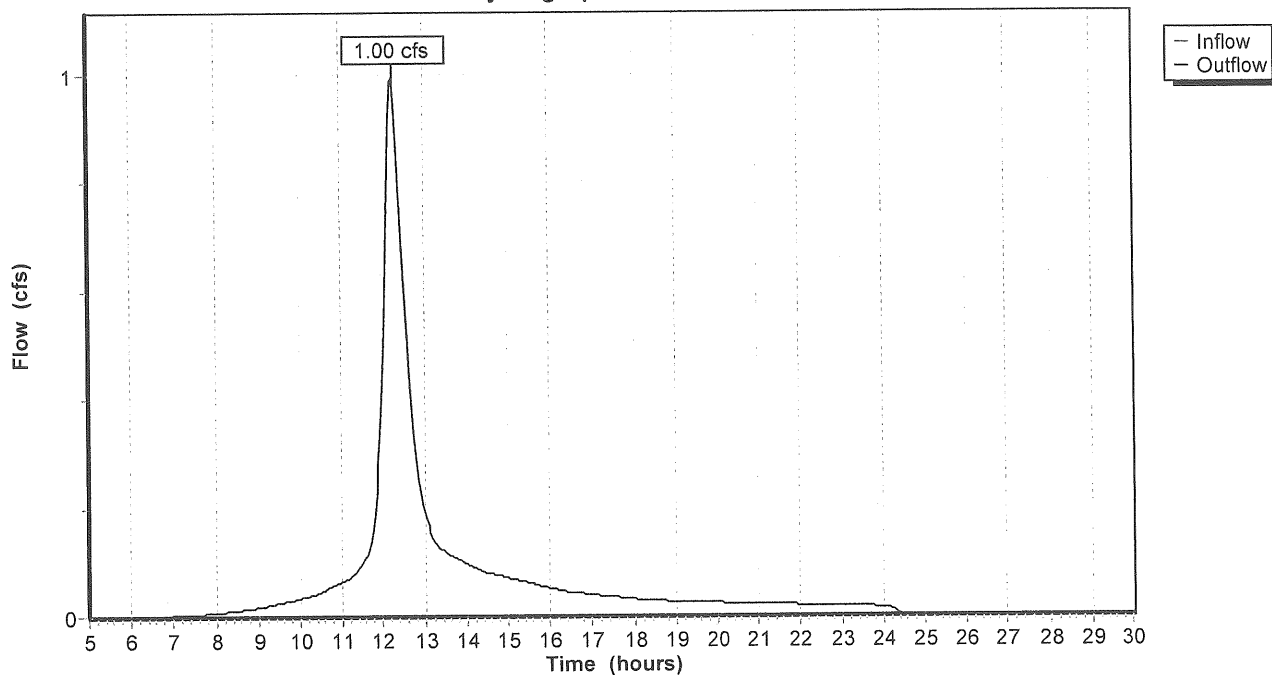
**Reach SP2: (new node)**

Inflow = 1.00 cfs @ 12.27 hrs, Volume= 0.106 af  
Outflow = 1.00 cfs @ 12.27 hrs, Volume= 0.106 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

**Reach SP2: (new node)**

Hydrograph Plot



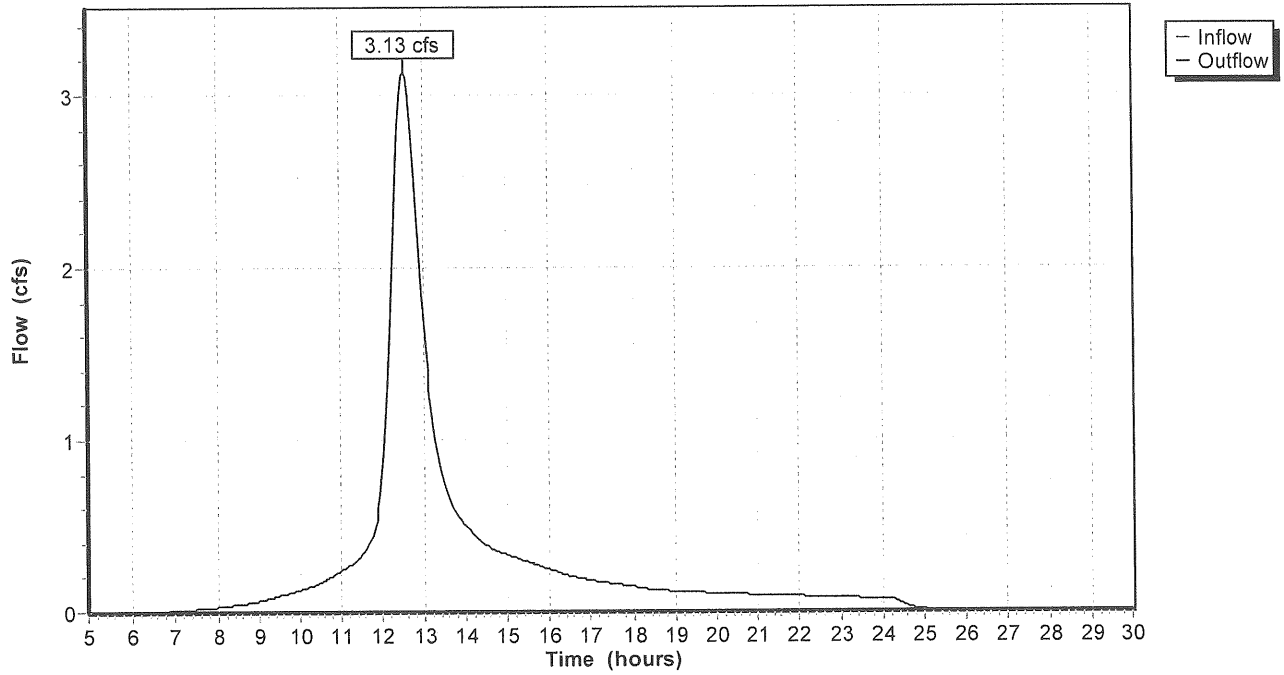
**Reach SP3: (new node)**

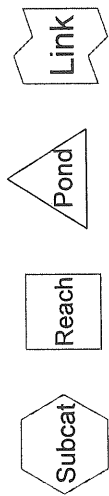
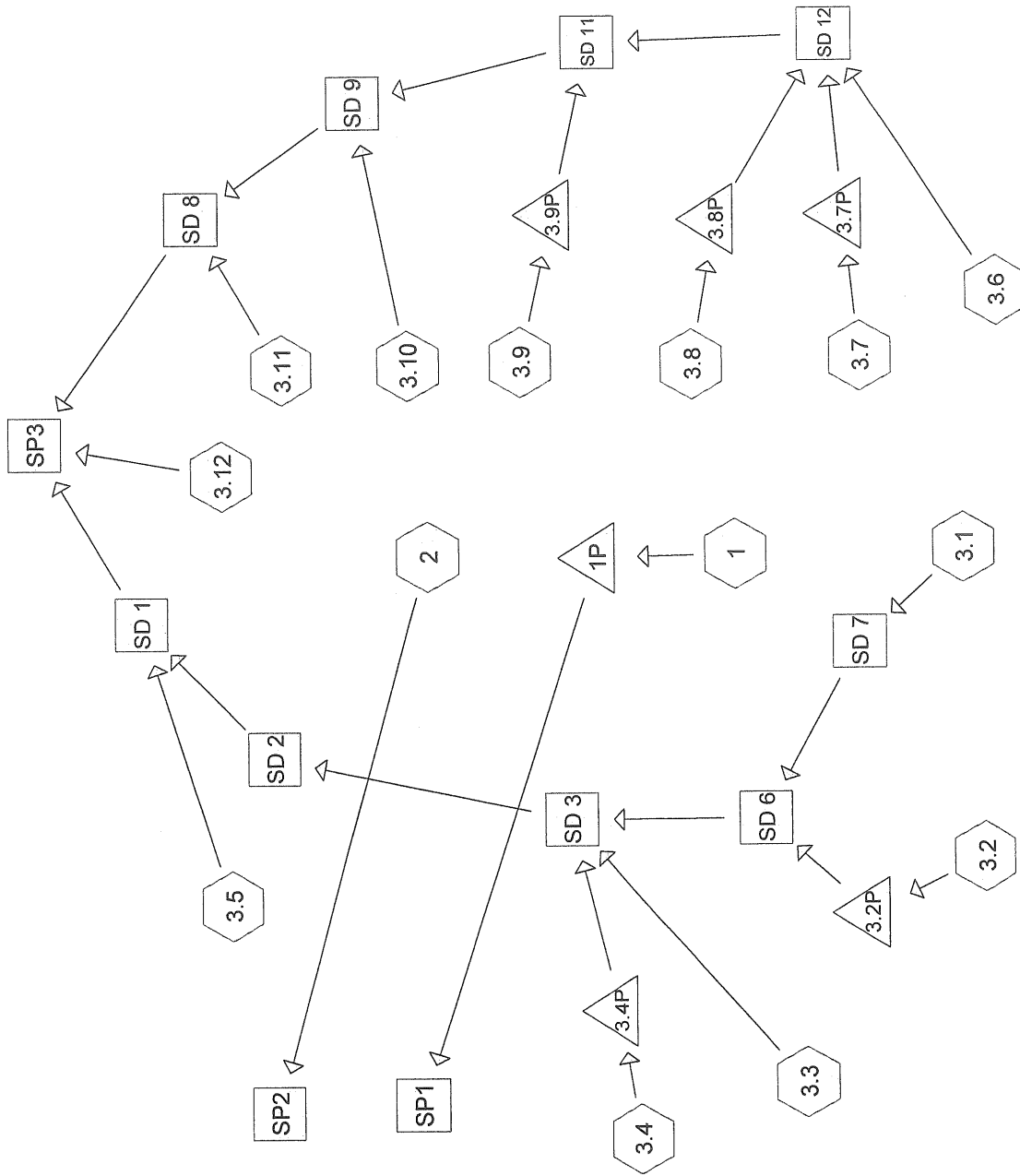
Inflow = 3.13 cfs @ 12.55 hrs, Volume= 0.458 af  
Outflow = 3.13 cfs @ 12.55 hrs, Volume= 0.458 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

**Reach SP3: (new node)**

Hydrograph Plot





**Drainage Diagram for 03245POST2**  
 Prepared by Sebago Technics, Inc. 2/2/2007  
 HydroCAD® 6.00 s/n 001856 © 1986-2001 Applied Microcomputer Systems

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points  
 Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=3.00"  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1: Playing Field**

Tc=10.0 min CN=74 Area=2.310 ac Runoff= 1.98 cfs 0.175 af

**Subcatchment 2: (new node)**

Tc=11.4 min CN=74 Area=0.092 ac Runoff= 0.08 cfs 0.007 af

**Subcatchment 3.1:**

Tc=4.9 min CN=85 Area=0.196 ac Runoff= 0.37 cfs 0.026 af

**Subcatchment 3.10:**

Tc=6.7 min CN=87 Area=0.107 ac Runoff= 0.21 cfs 0.016 af

**Subcatchment 3.11:**

Tc=0.8 min CN=98 Area=0.141 ac Runoff= 0.46 cfs 0.033 af

**Subcatchment 3.12:**

Tc=0.6 min CN=95 Area=0.258 ac Runoff= 0.80 cfs 0.053 af

**Subcatchment 3.2:**

Tc=2.8 min CN=90 Area=0.460 ac Runoff= 1.16 cfs 0.076 af

**Subcatchment 3.3:**

Tc=12.1 min CN=90 Area=0.176 ac Runoff= 0.33 cfs 0.029 af

**Subcatchment 3.4:**

Tc=18.9 min CN=85 Area=0.112 ac Runoff= 0.14 cfs 0.015 af

**Subcatchment 3.5:**

Tc=0.2 min CN=89 Area=0.028 ac Runoff= 0.07 cfs 0.004 af

**Subcatchment 3.6:**

Tc=3.4 min CN=86 Area=0.103 ac Runoff= 0.22 cfs 0.014 af

**Subcatchment 3.7:**

Tc=5.3 min CN=90 Area=0.090 ac Runoff= 0.21 cfs 0.015 af

**Subcatchment 3.8:**

Tc=10.3 min CN=92 Area=0.178 ac Runoff= 0.38 cfs 0.032 af

**Subcatchment 3.9:**

Tc=6.2 min CN=86 Area=0.162 ac Runoff= 0.31 cfs 0.022 af

**Reach SD 1: SD 1**

Inflow= 1.68 cfs 0.150 af  
 Length= 85.0' Max Vel= 3.8 fps Capacity= 5.37 cfs Outflow= 1.65 cfs 0.150 af

**03245POST**

Type III 24-hr Rainfall=3.00"

Prepared by Sebago Technics, Inc.

Page 2

HydroCAD® 6.00 s/n 001856 © 1986-2001 Applied Microcomputer Systems

2/5/2007

<b>Reach SD 11: SD 11</b>		Inflow= 1.03 cfs 0.084 af
	Length= 187.0' Max Vel= 3.4 fps Capacity= 2.99 cfs	Outflow= 0.99 cfs 0.084 af
<b>Reach SD 12: SD 12</b>		Inflow= 0.73 cfs 0.061 af
	Length= 122.5' Max Vel= 3.1 fps Capacity= 2.97 cfs	Outflow= 0.72 cfs 0.061 af
<b>Reach SD 2: SD 2</b>		Inflow= 1.66 cfs 0.146 af
	Length= 42.0' Max Vel= 3.9 fps Capacity= 2.98 cfs	Outflow= 1.65 cfs 0.146 af
<b>Reach SD 3: SD 3</b>		Inflow= 1.70 cfs 0.146 af
	Length= 228.0' Max Vel= 3.9 fps Capacity= 2.98 cfs	Outflow= 1.66 cfs 0.146 af
<b>Reach SD 6: SD 6</b>		Inflow= 1.45 cfs 0.102 af
	Length= 125.0' Max Vel= 3.8 fps Capacity= 2.99 cfs	Outflow= 1.39 cfs 0.102 af
<b>Reach SD 7: SD 7</b>		Inflow= 0.37 cfs 0.026 af
	Length= 144.0' Max Vel= 2.6 fps Capacity= 0.47 cfs	Outflow= 0.35 cfs 0.026 af
<b>Reach SD 8: SD 8</b>		Inflow= 1.36 cfs 0.132 af
	Length= 110.0' Max Vel= 4.7 fps Capacity= 7.63 cfs	Outflow= 1.36 cfs 0.132 af
<b>Reach SD 9: SD 9</b>		Inflow= 1.18 cfs 0.099 af
	Length= 95.0' Max Vel= 3.5 fps Capacity= 5.43 cfs	Outflow= 1.17 cfs 0.099 af
<b>Reach SP1: Existing system</b>		Inflow= 1.42 cfs 0.175 af
		Outflow= 1.42 cfs 0.175 af
<b>Reach SP2: Existing Pond</b>		Inflow= 0.08 cfs 0.007 af
		Outflow= 0.08 cfs 0.007 af
<b>Reach SP3: Existing Pond</b>		Inflow= 3.34 cfs 0.335 af
		Outflow= 3.34 cfs 0.335 af
<b>Pond 1P: Base Stone</b>	Peak Storage= 840 cf	Inflow= 1.98 cfs 0.175 af
	Primary= 1.42 cfs 0.175 af	Outflow= 1.42 cfs 0.175 af
<b>Pond 3.2P: (new node)</b>	Peak Storage= 3 cf	Inflow= 1.16 cfs 0.076 af
	Primary= 1.16 cfs 0.076 af	Outflow= 1.16 cfs 0.076 af
<b>Pond 3.4P: (new node)</b>	Peak Storage= 3 cf	Inflow= 0.14 cfs 0.015 af
	Primary= 0.14 cfs 0.015 af	Outflow= 0.14 cfs 0.015 af
<b>Pond 3.7P: 3.7P</b>	Peak Storage= 3 cf	Inflow= 0.21 cfs 0.015 af
	Primary= 0.20 cfs 0.015 af	Outflow= 0.20 cfs 0.015 af
<b>Pond 3.8P: 3.8P</b>	Peak Storage= 1 cf	Inflow= 0.38 cfs 0.032 af
	Primary= 0.38 cfs 0.032 af	Outflow= 0.38 cfs 0.032 af

**Subcatchment 1: Playing Field**

Runoff = 1.98 cfs @ 12.16 hrs, Volume= 0.175 af

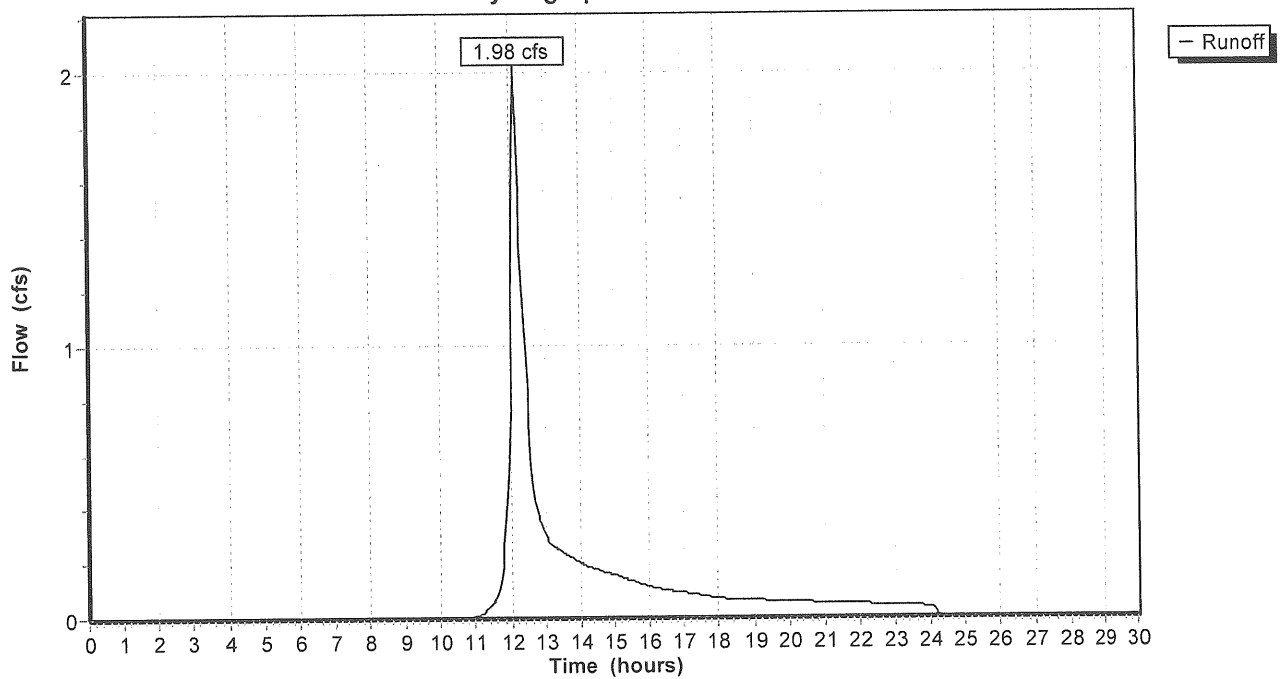
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
2.310	74	>75% Grass cover, Good, HSG C

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

**Subcatchment 1: Playing Field**

Hydrograph Plot



**Subcatchment 2: (new node)**

Runoff = 0.08 cfs @ 12.17 hrs, Volume= 0.007 af

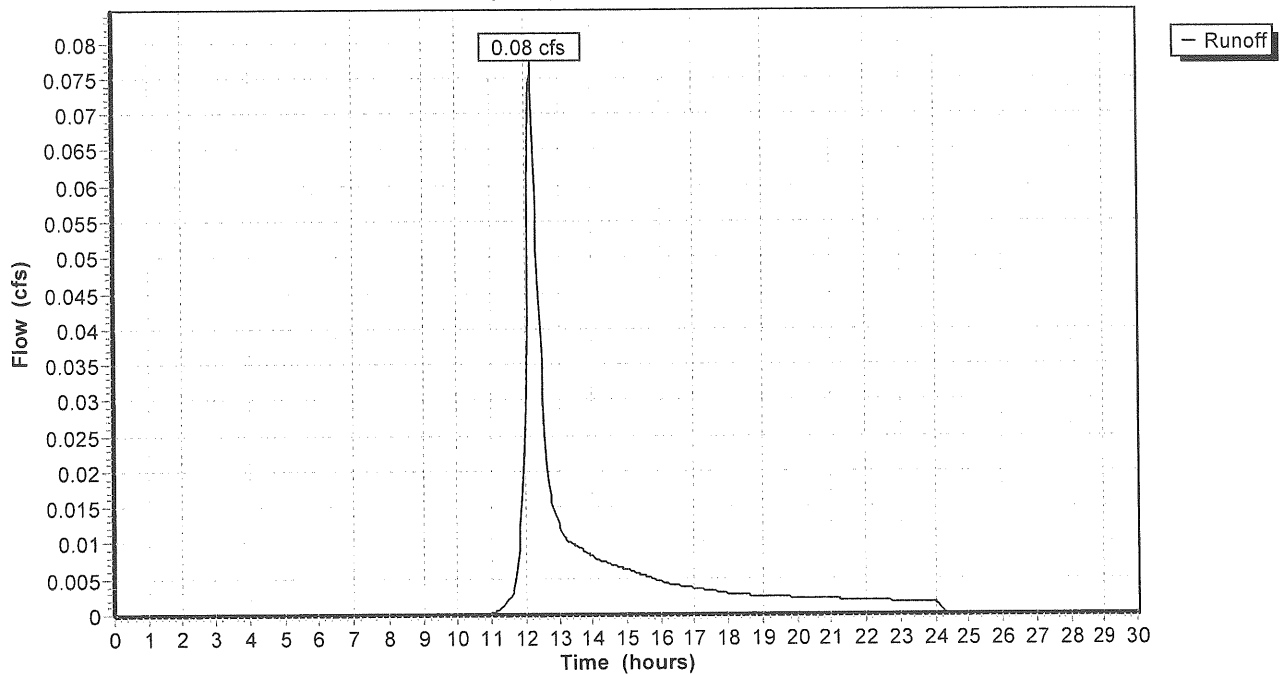
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.092	74	>75% Grass cover, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	60	0.0400	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"

**Subcatchment 2: (new node)**

Hydrograph Plot



**Subcatchment 3.1:**

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.026 af

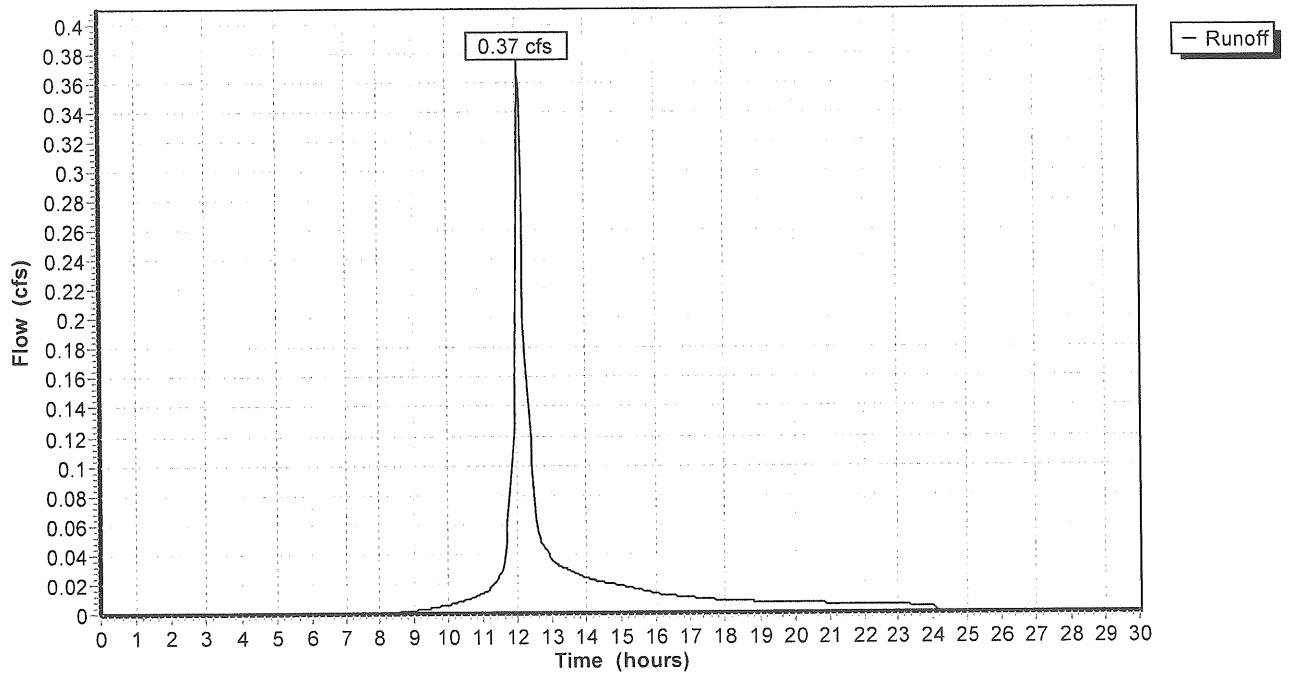
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.055	98	Pavement & roofs
0.141	80	>75% Grass cover, Good, HSG D
0.196	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	30	0.1300	0.1		<b>Sheet Flow, A-B</b> Grass: Bermuda n= 0.410 P2= 3.00"
0.8	80	0.0120	1.6		<b>Shallow Concentrated Flow, B-C</b> Grassed Waterway Kv= 15.0 fps
4.9	110	Total			

**Subcatchment 3.1:**

Hydrograph Plot





**Subcatchment 3.10:**

Runoff = 0.21 cfs @ 12.10 hrs, Volume= 0.016 af

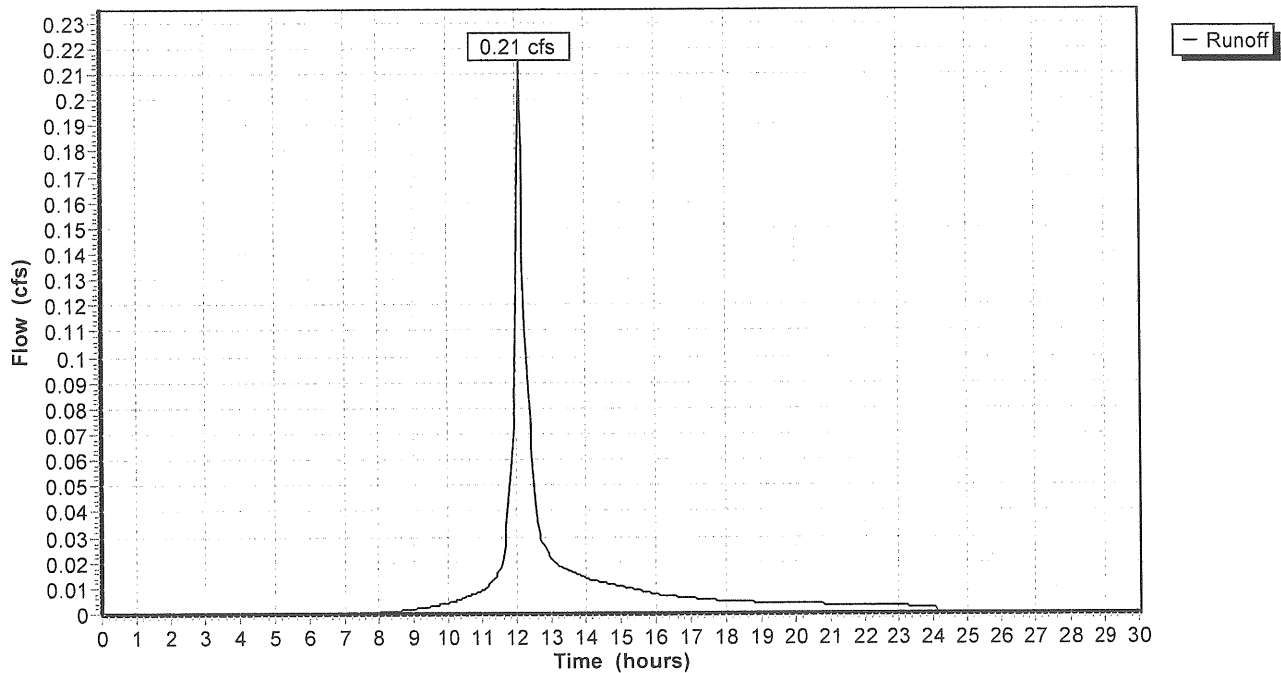
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.040	98	Pavement & roofs
0.067	80	>75% Grass cover, Good, HSG D
0.107	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	20	0.0500	0.1		<b>Sheet Flow, A-B</b> Grass: Bermuda n= 0.410 P2= 3.00"
2.4	150	0.0050	1.1		<b>Shallow Concentrated Flow, B-C</b> Grassed Waterway Kv= 15.0 fps
6.7	170	Total			

**Subcatchment 3.10:**

Hydrograph Plot



**Subcatchment 3.11:**

Runoff = 0.46 cfs @ 12.01 hrs, Volume= 0.033 af

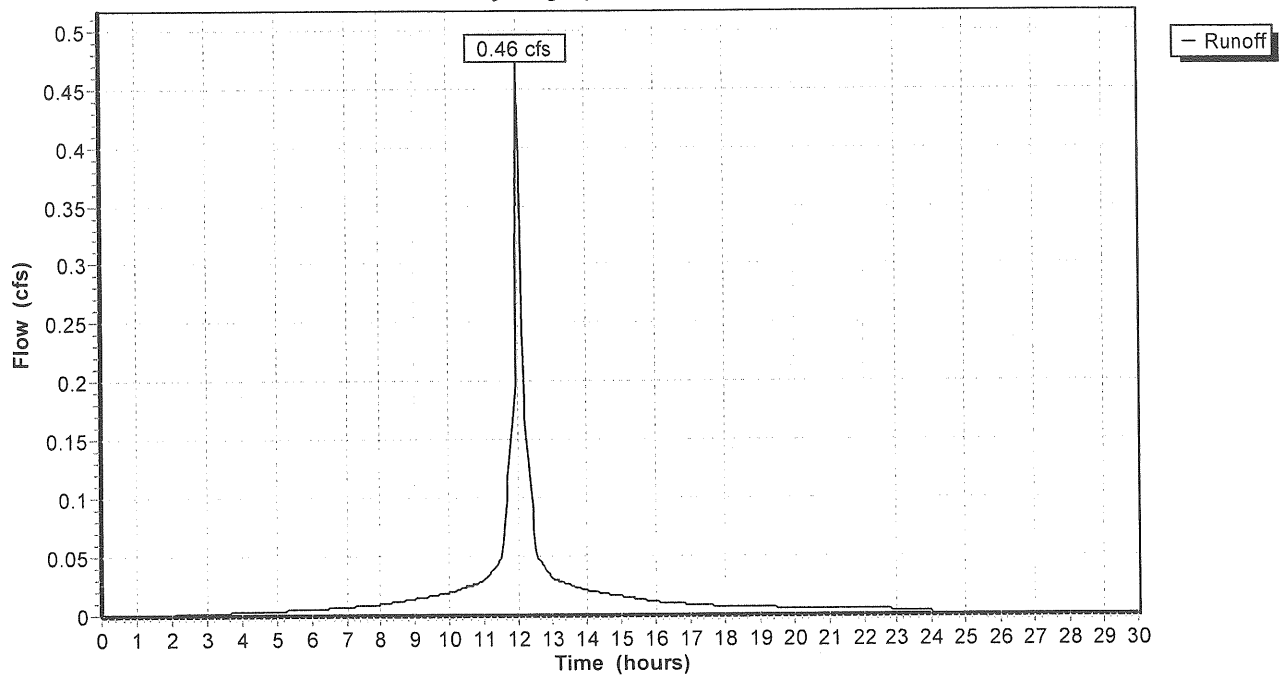
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.141	98	Pavement & roofs

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	65	0.0300	1.4		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 3.00"

**Subcatchment 3.11:**

Hydrograph Plot



**Subcatchment 3.12:**

Runoff = 0.80 cfs @ 12.01 hrs, Volume= 0.053 af

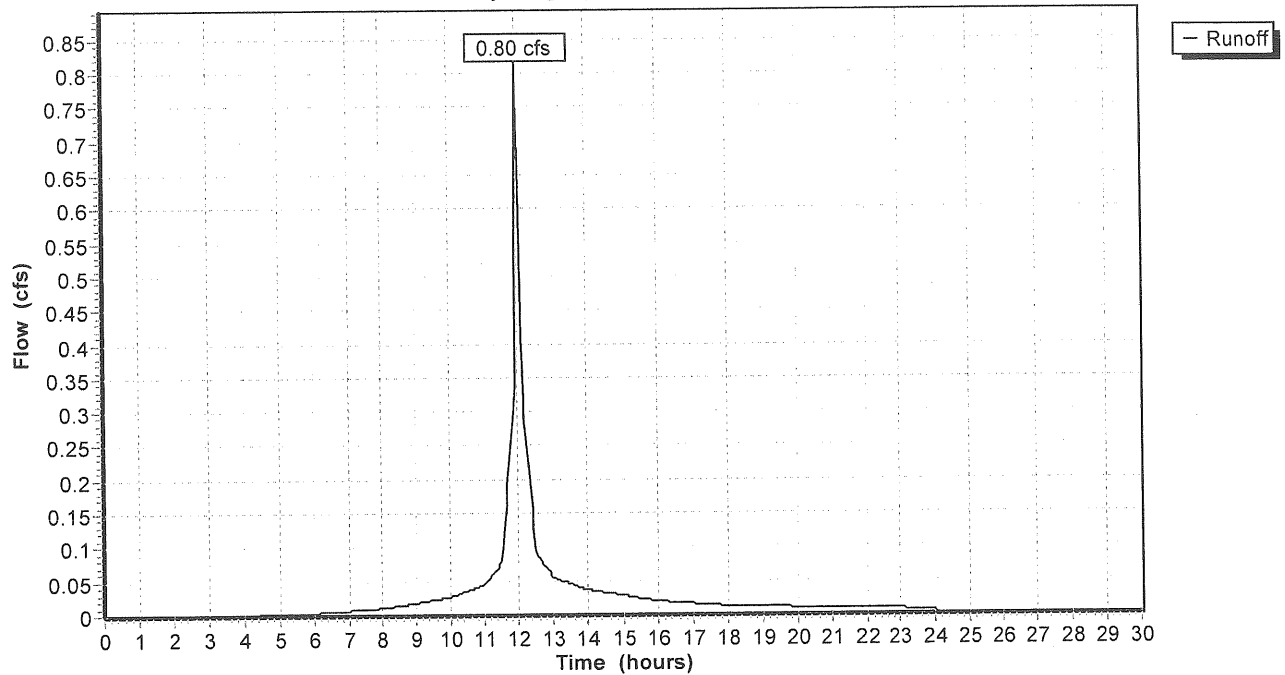
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.230	98	Pavement & roofs
0.028	74	>75% Grass cover, Good, HSG C
0.258	95	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	55	0.0400	1.6		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 3.00"

**Subcatchment 3.12:**

Hydrograph Plot



**Subcatchment 3.2:**

Runoff = 1.16 cfs @ 12.05 hrs, Volume= 0.076 af

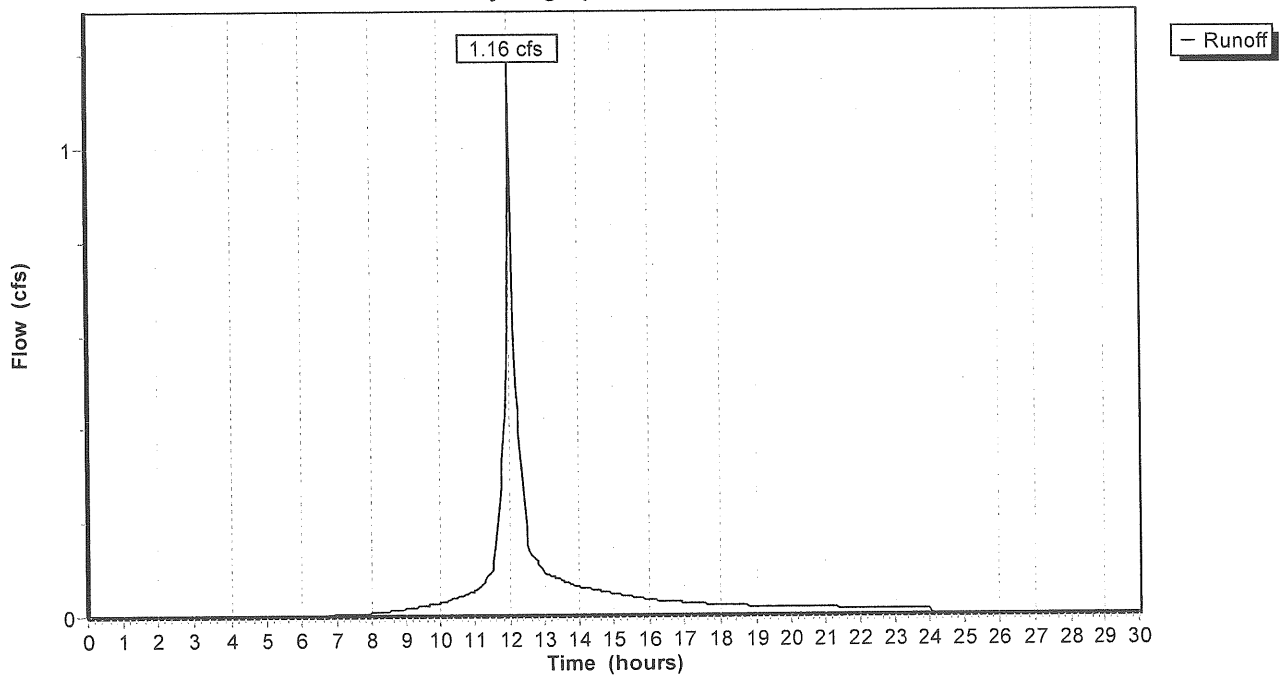
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.264	98	Pavement & roofs
0.196	80	>75% Grass cover, Good, HSG D
0.460	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	40	0.0150	1.0		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 3.00"
2.1	145	0.0050	1.1		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
2.8	185	Total			

**Subcatchment 3.2:**

Hydrograph Plot



Type III 24-hr Rainfall=3.00"

**Subcatchment 3.3:**

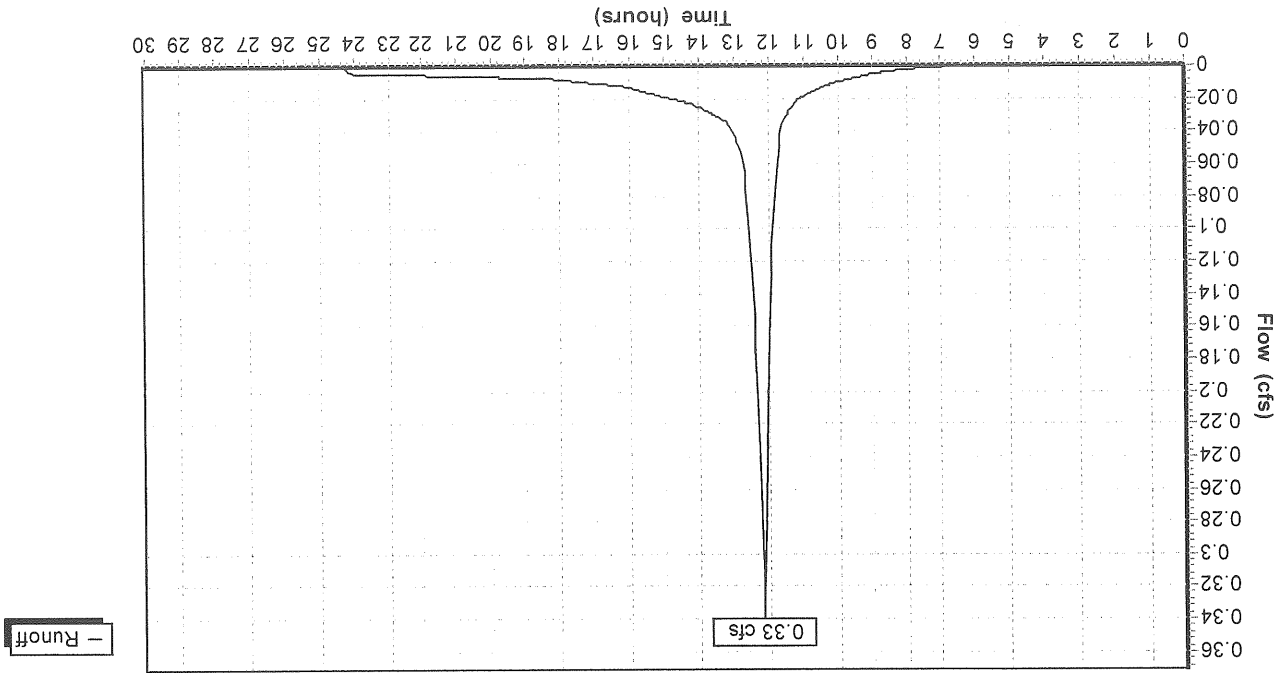
Runoff = 0.33 cfs @ 12.17 hrs, Volume= 0.029 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description		
0.108	98	Pavement & roofs		
0.028	74	>75% Grass cover, Good, HSG C		
0.040	80	>75% Grass cover, Good, HSG D		
0.176	90	Weighted Average		
Tc Length (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	50	0.0300	0.1	Sheet Flow, A-B
0.6	50	0.0100	1.5	Grass: Bermuda n=0.410 P2=3.00"
0.5	110	0.0050	3.8	Shallow Concentrated Flow, B-C
			2.98	Grassed Waterway Kv= 15.0 fps
				Circular Channel (pipe), C-D
12.1	Total			Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011

**Subcatchment 3.3:**

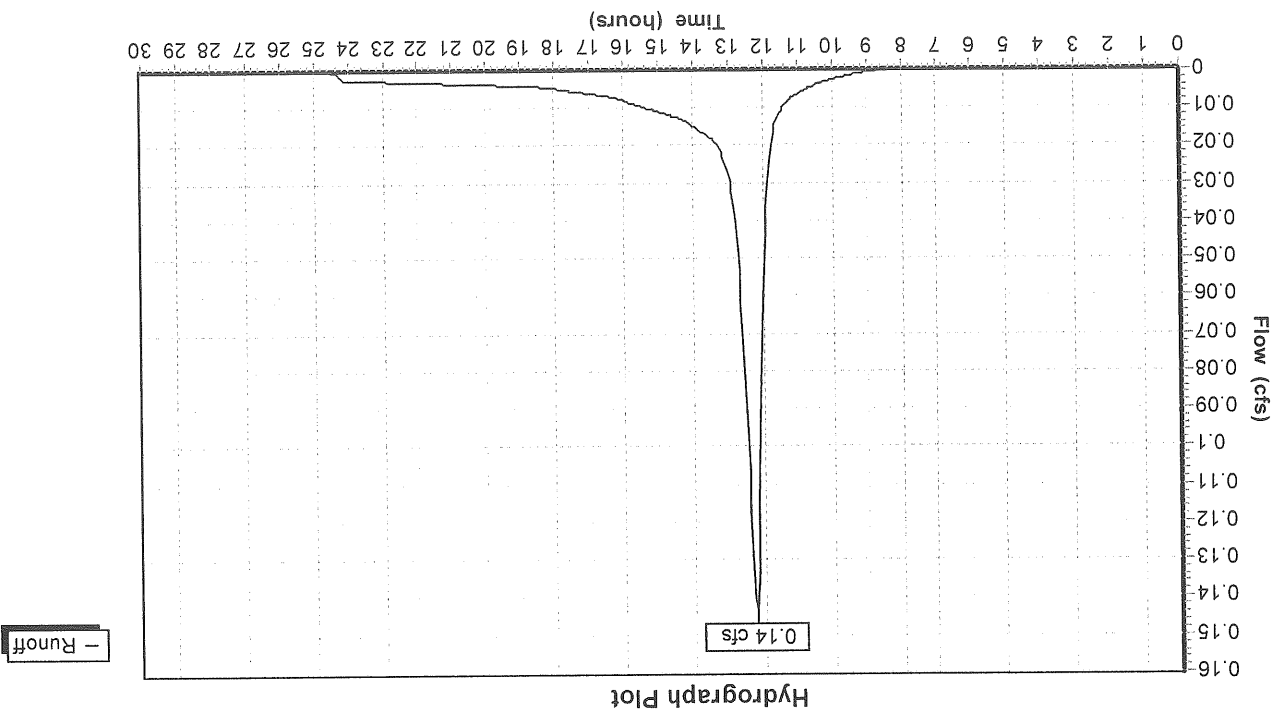
Hydrograph Plot



Subcatchment 3.4:  
 Runoff = 0.14 cfs @ 12.26 hrs, Volume= 0.015 af  
 Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.049	98	Pavement & roots
0.063	74	>75% Grass cover, Good, HSG C
0.112	85	Weighted Average
Tc Length (min)	Slope (ft/ft)	Velocity (ft/sec)
18.9	80	0.0200
Sheet Flow, A-B		
Grass: Bermuda n= 0.410 P2= 3.00"		

Subcatchment 3.4:



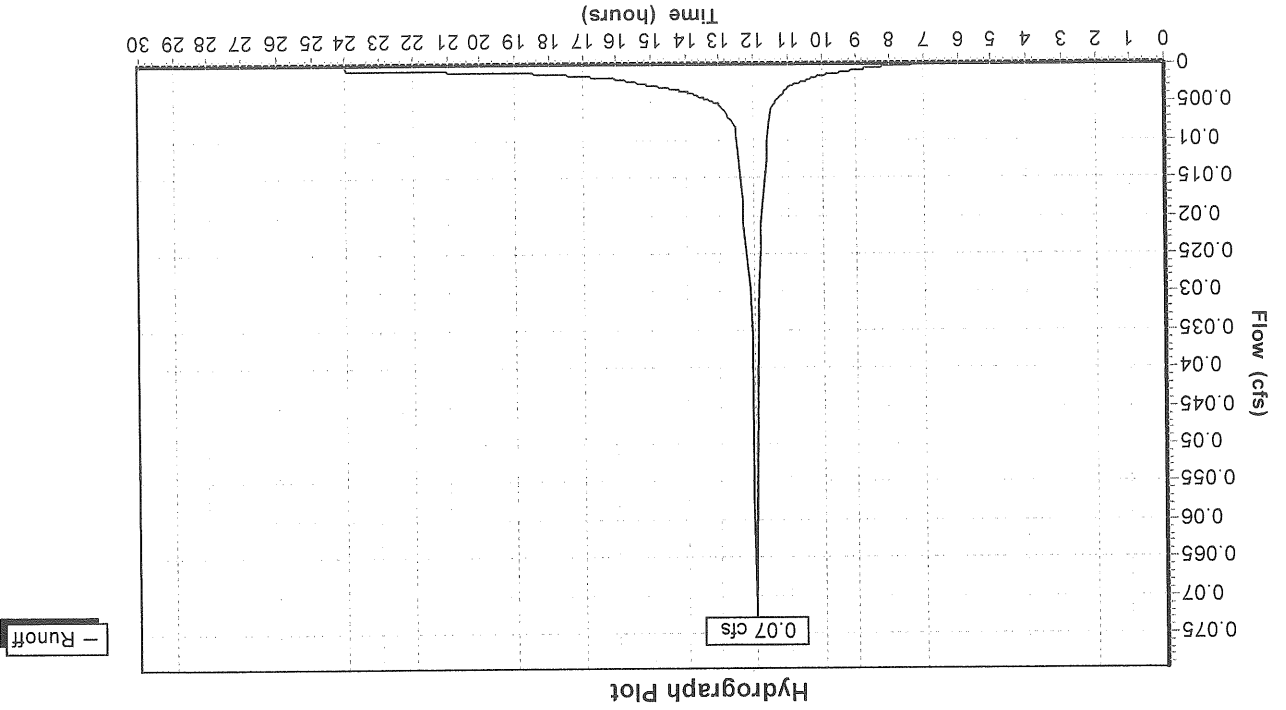
**Subcatchment 3.5:**

Runoff = 0.07 cfs @ 12.01 hrs, Volume= 0.004 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.018	98	Pavement & roots
0.010	74	>75% Grass cover, Good, HSG C
0.028	89	Weighted Average
Tc Length (min)	Slope (ft/ft)	Velocity (ft/sec)
0.2	15	0.0500
Sheet Flow, A-B		
Smooth surfaces n= 0.011 P2= 3.00"		

**Subcatchment 3.5:**



**Subcatchment 3.6:**

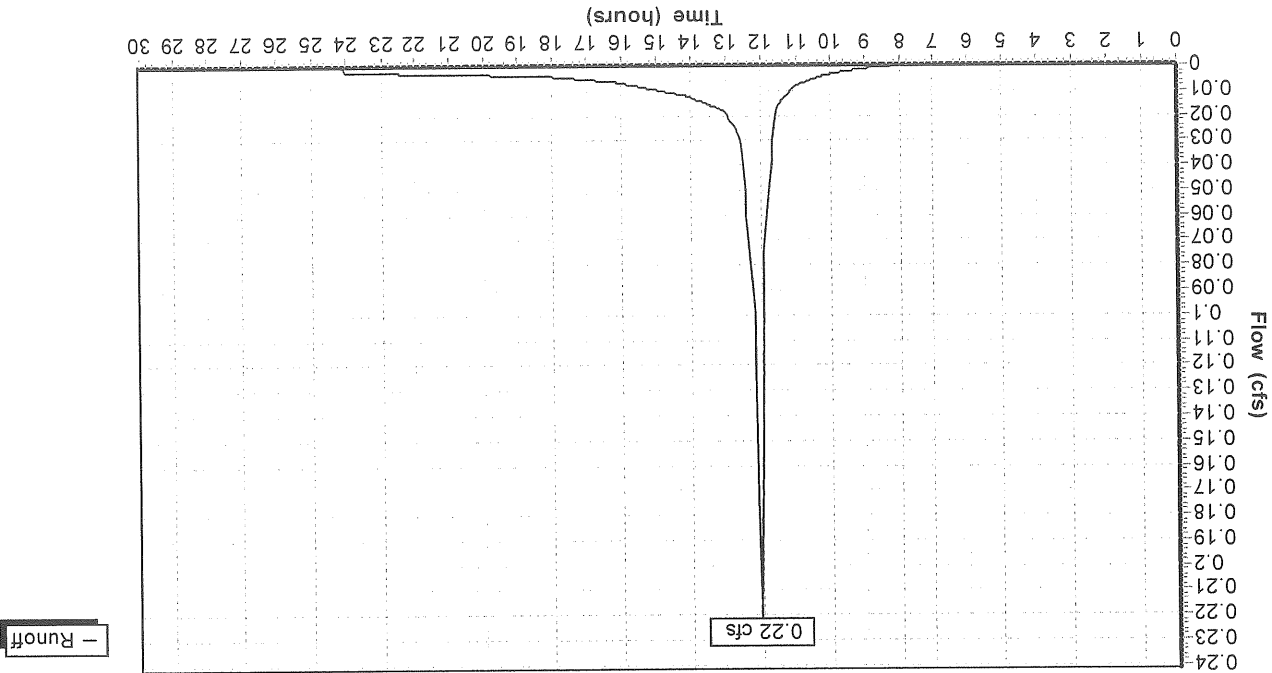
Runoff = 0.22 cfs @ 12.06 hrs, Volume= 0.014 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description		
0.035	98	Pavement & roofs		
0.068	80	>75% Grass cover, Good, HSG D		
0.103	86	Weighted Average		
Tc Length (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	20	0.1500	0.1	Sheet Flow, A-B
0.3	35	0.0200	2.1	Grass: Bermuda n=0.410 P2=3.00"
0.3	35	0.0200	2.1	Shallow Concentrated Flow, B-C
				Grassed Waterway Kv=15.0 fps
0.3	72	0.0050	3.8	Circular Channel (pipe), C-D
			2.98	Diam=12.0" Area=0.8 sf Perim=3.1' r=0.25' n=0.011
3.4	127	Total		

**Subcatchment 3.6:**

Hydrograph Plot





**Subcatchment 3.7:**

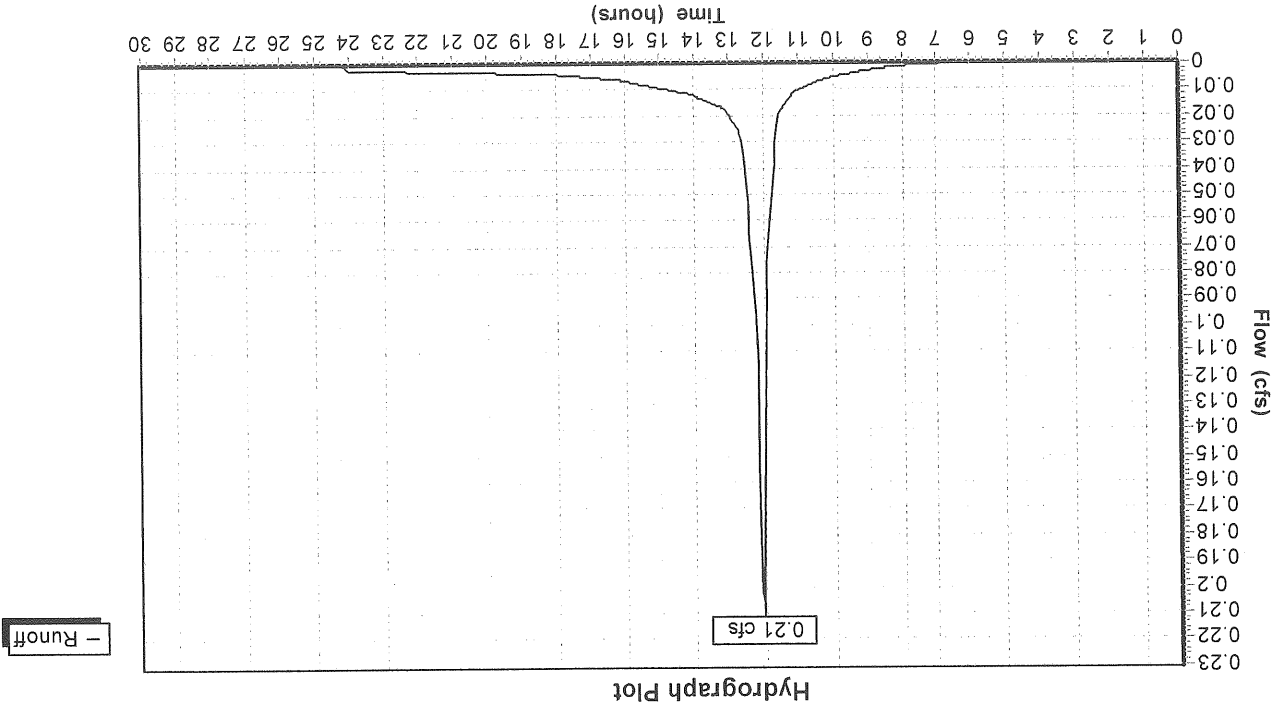
Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.015 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.050	98	Pavement & roots
0.040	80	>75% Grass cover, Good, HSG D
0.090	90	Weighted Average

Tc Length (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	30	0.0670	0.1	Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"

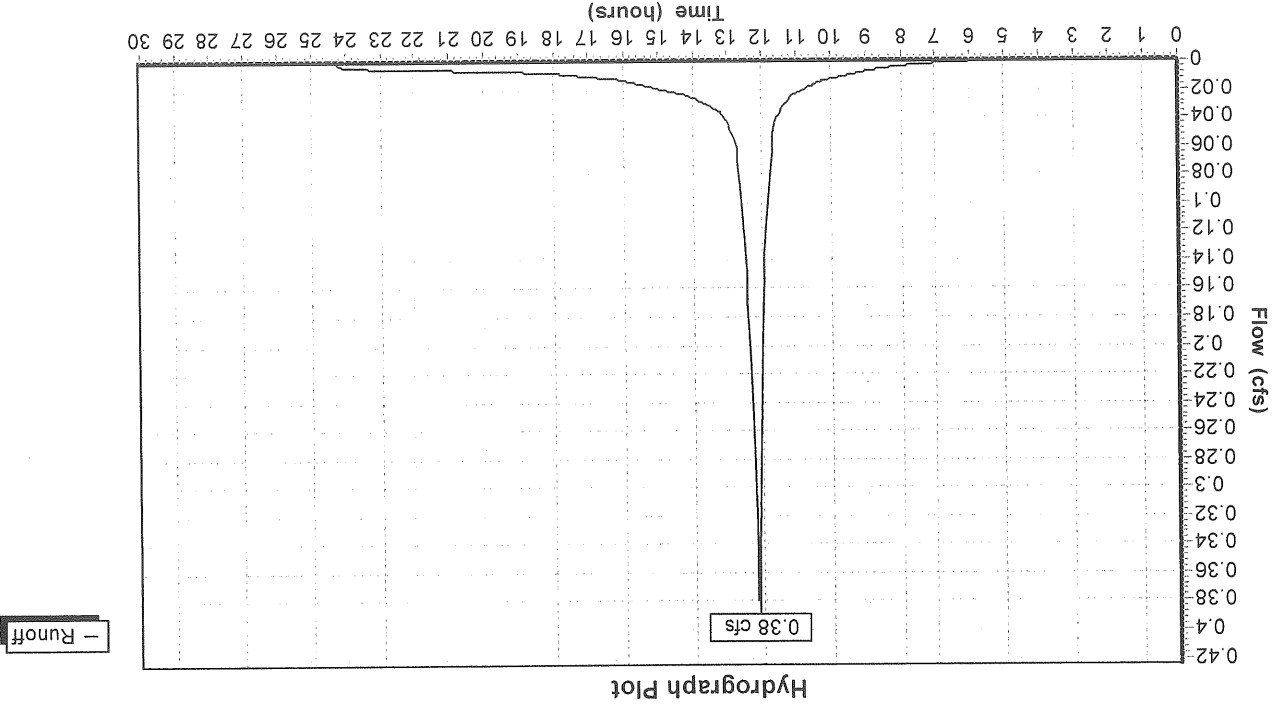
**Subcatchment 3.7:**



Runoff = 0.38 cfs @ 12.14 hrs, Volume = 0.032 af  
 Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.114	98	Pavement & roots
0.064	80	>75% Grass cover, Good, HSG D
0.178	92	Weighted Average
Tc Length (min)	Slope (ft/ft)	Velocity (ft/sec)
0.5	25	0.0150
Sheet Flow, A-B	n = 0.011	P2 = 3.00"
Smooth surfaces	n = 0.011	P2 = 3.00"
Sheet Flow, B-C	n = 0.410	P2 = 3.00"
Grass: Bermuda	n = 0.410	P2 = 3.00"
60	Total	
10.3		

Subcatchment 3.8:

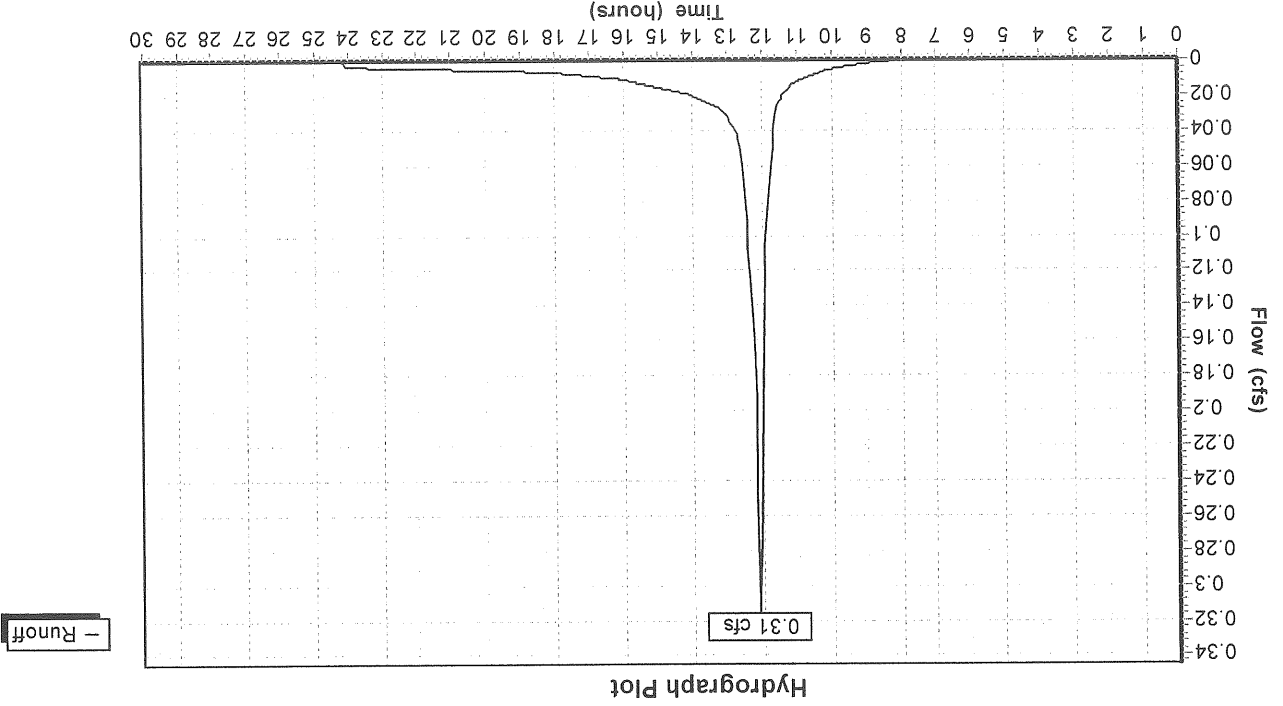


**Subcatchment 3.9:**

Runoff = 0.31 cfs @ 12.10 hrs, Volume = 0.022 af  
 Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.055	98	Pavement & roofs
0.107	80	>75% Grass cover, Good, HSG D
0.162	86	Weighted Average
Tc Length (min)	Slope (ft/ft)	Velocity (ft/sec)
5.7	0.0400	0.1
Sheet Flow, A-B		
Grass: Bermuda n=0.410 P2=3.00"		
0.5	195	0.0250
33.45	6.7	33.45
Trap/Vee/Rect Channel Flow, B-C		
Bot.W=2.00' D=1.00' Z=3.0' n=0.025		
6.2	220	Total

**Subcatchment 3.9:**



**Reach SD 1: SD 1**

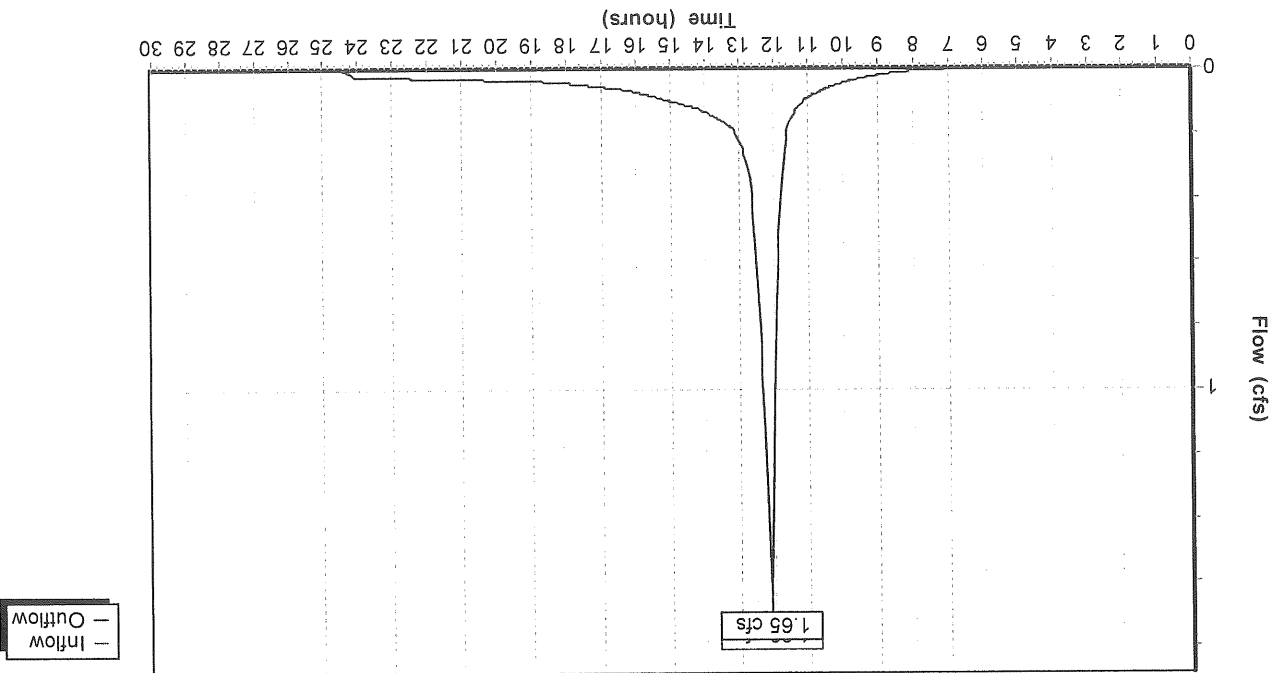
Inflow	=	1.68 cfs @ 12.12 hrs, Volume=	0.150 af
Outflow	=	1.65 cfs @ 12.13 hrs, Volume=	0.150 af, Atten= 2%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.8 fps, Min. Travel Time= 0.4 min  
 Avg. Velocity = 1.4 fps, Avg. Travel Time= 1.0 min

Peak Depth= 0.48'  
 Capacity at bank full= 5.37 cfs  
 Inlet Invert= 71.22', Outlet Invert= 70.80'  
 15.0" Diameter Pipe n= 0.011 Length= 85.0' Slope= 0.0049 %

**Reach SD 1: SD 1**

Hydrograph Plot



**Reach SD 11: SD 11**

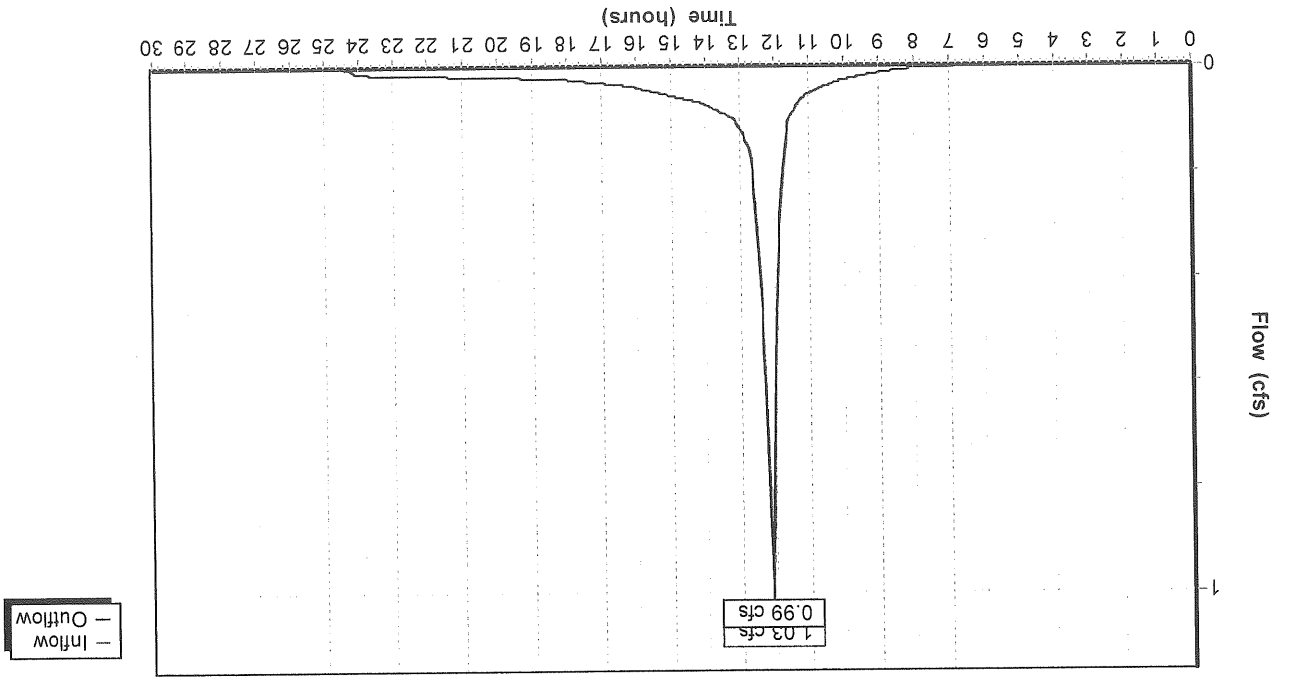
Inflow = 1.03 cfs @ 12.11 hrs, Volume = 0.084 af  
 Outflow = 0.99 cfs @ 12.14 hrs, Volume = 0.084 af, Atten= 4%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.4 fps, Min. Travel Time= 0.9 min  
 Avg. Velocity = 1.2 fps, Avg. Travel Time= 2.7 min

Peak Depth= 0.40'  
 Capacity at bank full= 2.99 cfs  
 Inlet Invert= 73.47', Outlet Invert= 72.53'  
 12.0" Diameter Pipe n= 0.011 Length= 187.0' Slope= 0.0050 %

**Reach SD 11: SD 11**

Hydrograph Plot



**Reach SD 12: SD 12**

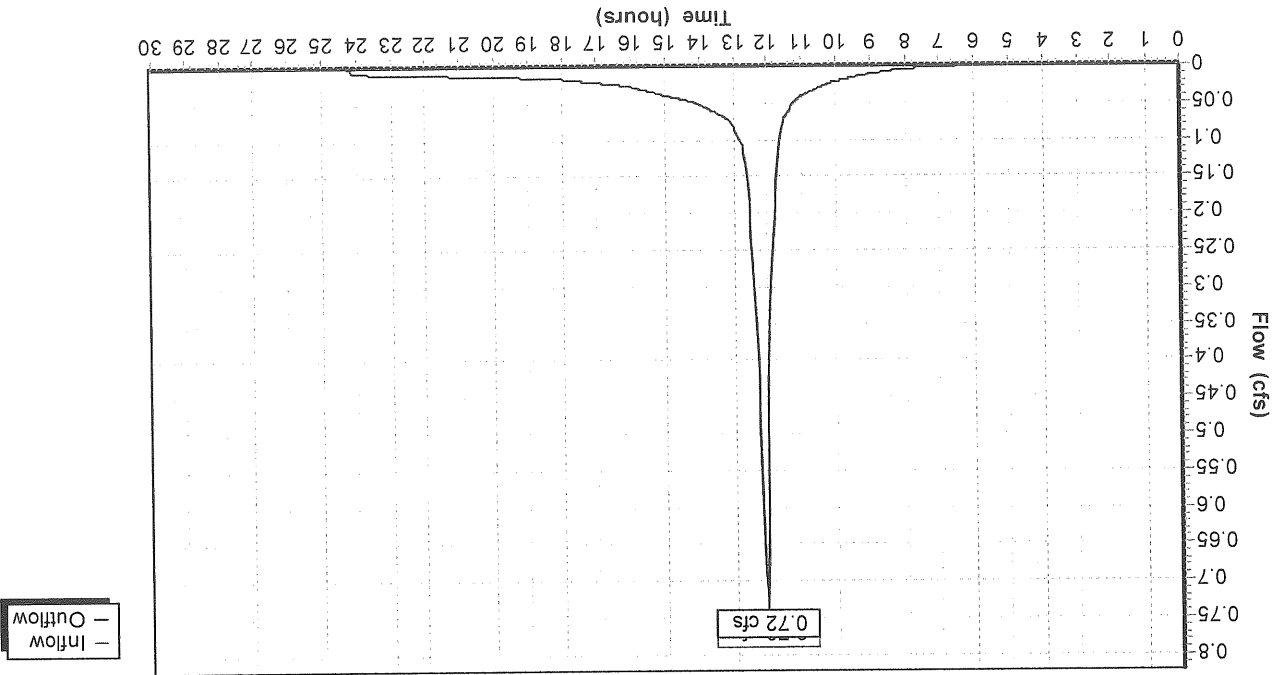
Inflow = 0.73 cfs @ 12.10 hrs, Volume= 0.061 af  
 Outflow = 0.72 cfs @ 12.11 hrs, Volume= 0.061 af, Atten= 2%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.1 fps, Min. Travel Time= 0.7 min  
 Avg. Velocity = 1.1 fps, Avg. Travel Time= 1.9 min

Peak Depth= 0.34'  
 Capacity at bank full= 2.97 cfs  
 Inlet Invert= 74.18', Outlet Invert= 73.57'  
 12.0" Diameter Pipe n= 0.011 Length= 122.5' Slope= 0.0050 %

**Reach SD 12: SD 12**

Hydrograph Plot



**Reach SD 2: SD 2**

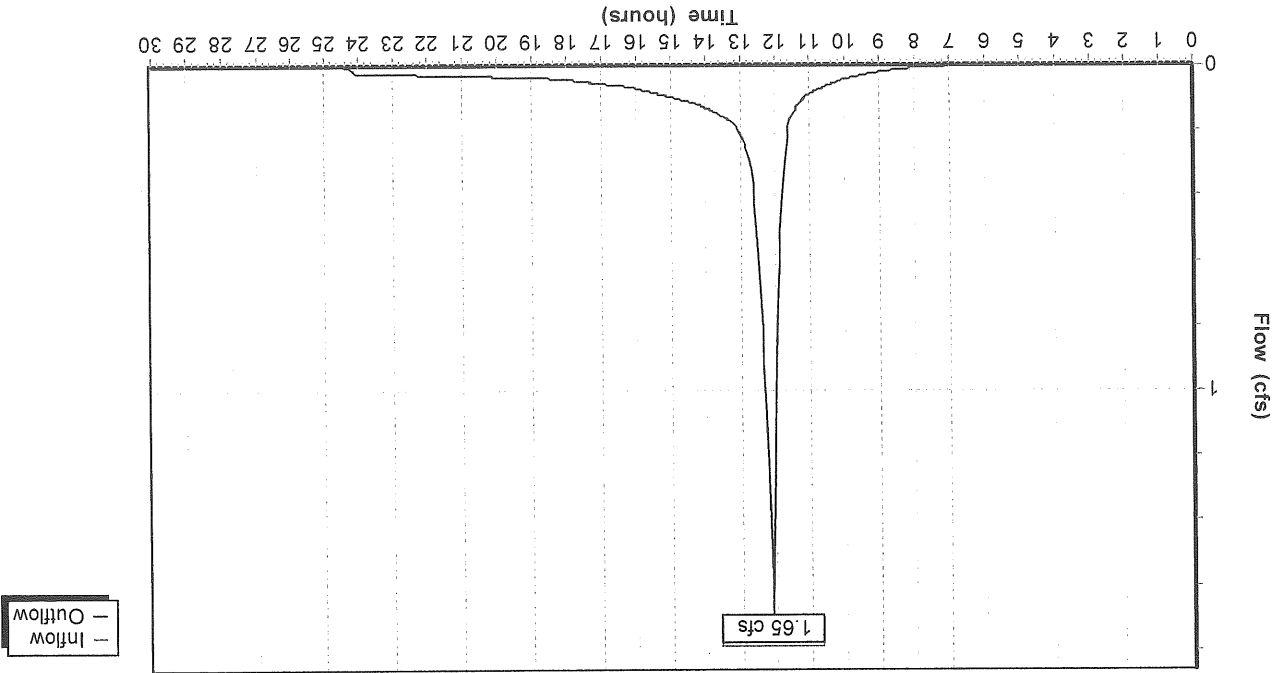
Inflow	=	1.66 cfs @ 12.12 hrs, Volume=	0.146 af
Outflow	=	1.65 cfs @ 12.12 hrs, Volume=	0.146 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.9 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 1.4 fps, Avg. Travel Time= 0.5 min

Peak Depth= 0.53'  
 Capacity at bank full= 2.98 cfs  
 Inlet Invert= 71.53', Outlet Invert= 71.32'  
 12.0" Diameter Pipe n= 0.011 Length= 42.0' Slope= 0.0050 %

**Reach SD 2: SD 2**

Hydrograph Plot



**Reach SD 3: SD 3**

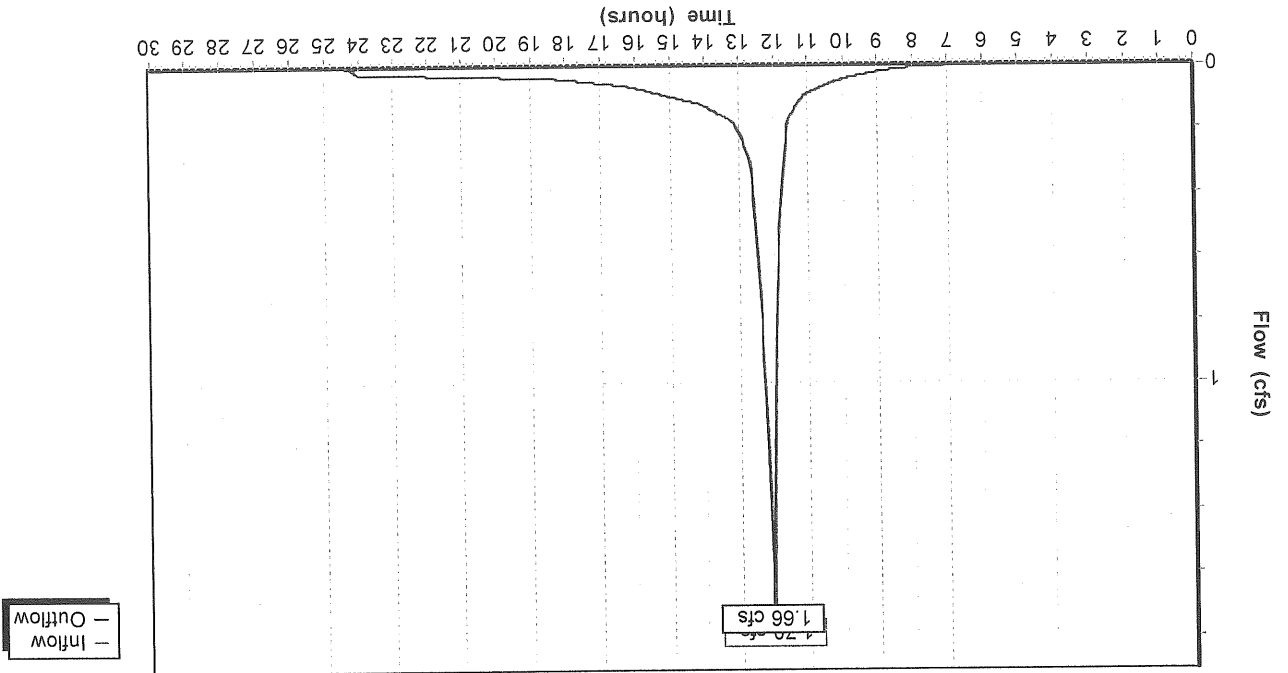
Inflow = 1.70 cfs @ 12.09 hrs, Volume= 0.146 af  
 Outflow = 1.66 cfs @ 12.12 hrs, Volume= 0.146 af, Atten= 2%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.9 fps, Min. Travel Time= 1.0 min  
 Avg. Velocity = 1.4 fps, Avg. Travel Time= 2.7 min

Peak Depth= 0.54'  
 Capacity at bank full= 2.98 cfs  
 Inlet Invert= 72.77', Outlet Invert= 71.63'  
 12.0" Diameter Pipe n= 0.011 Length= 228.0' Slope= 0.0050 %

**Reach SD 3: SD 3**

Hydrograph Plot





Reach SD 6: SD 6

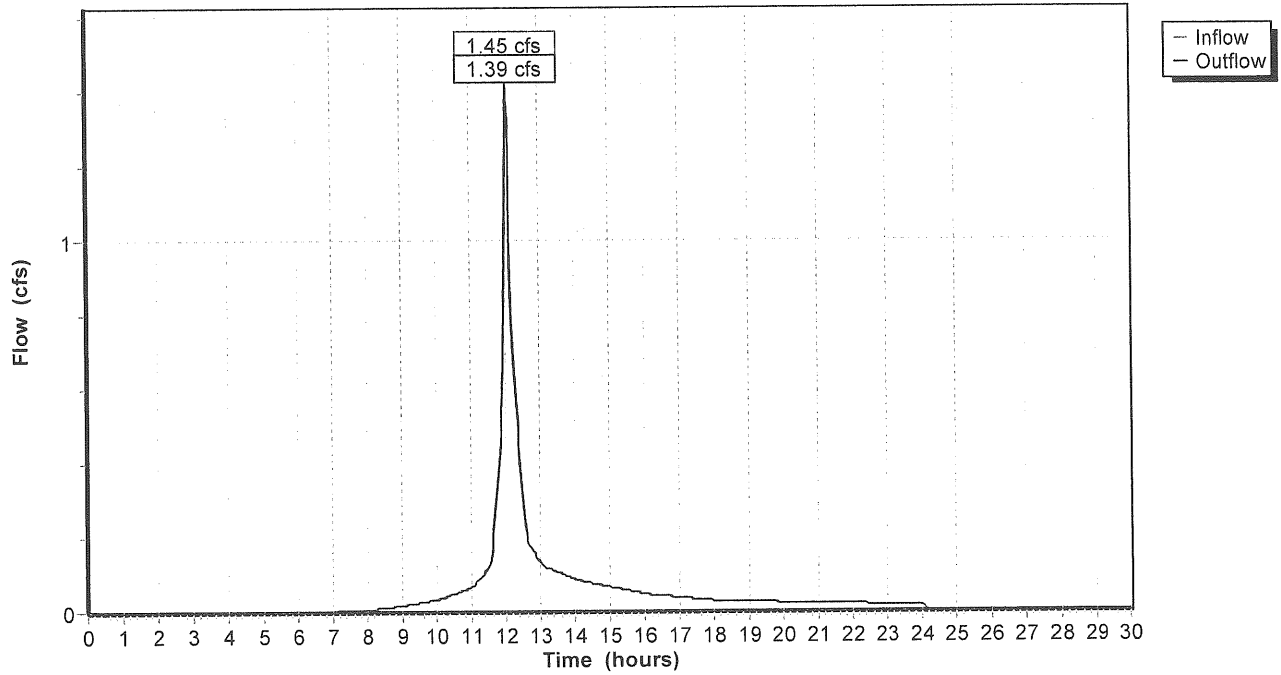
Inflow = 1.45 cfs @ 12.06 hrs, Volume= 0.102 af  
Outflow = 1.39 cfs @ 12.07 hrs, Volume= 0.102 af, Atten= 4%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
Max. Velocity= 3.8 fps, Min. Travel Time= 0.6 min  
Avg. Velocity = 1.3 fps, Avg. Travel Time= 1.6 min

Peak Depth= 0.49'  
Capacity at bank full= 2.99 cfs  
Inlet Invert= 73.50', Outlet Invert= 72.87'  
12.0" Diameter Pipe n= 0.011 Length= 125.0' Slope= 0.0050 '/'

Reach SD 6: SD 6

Hydrograph Plot



Reach SD 7: SD 7

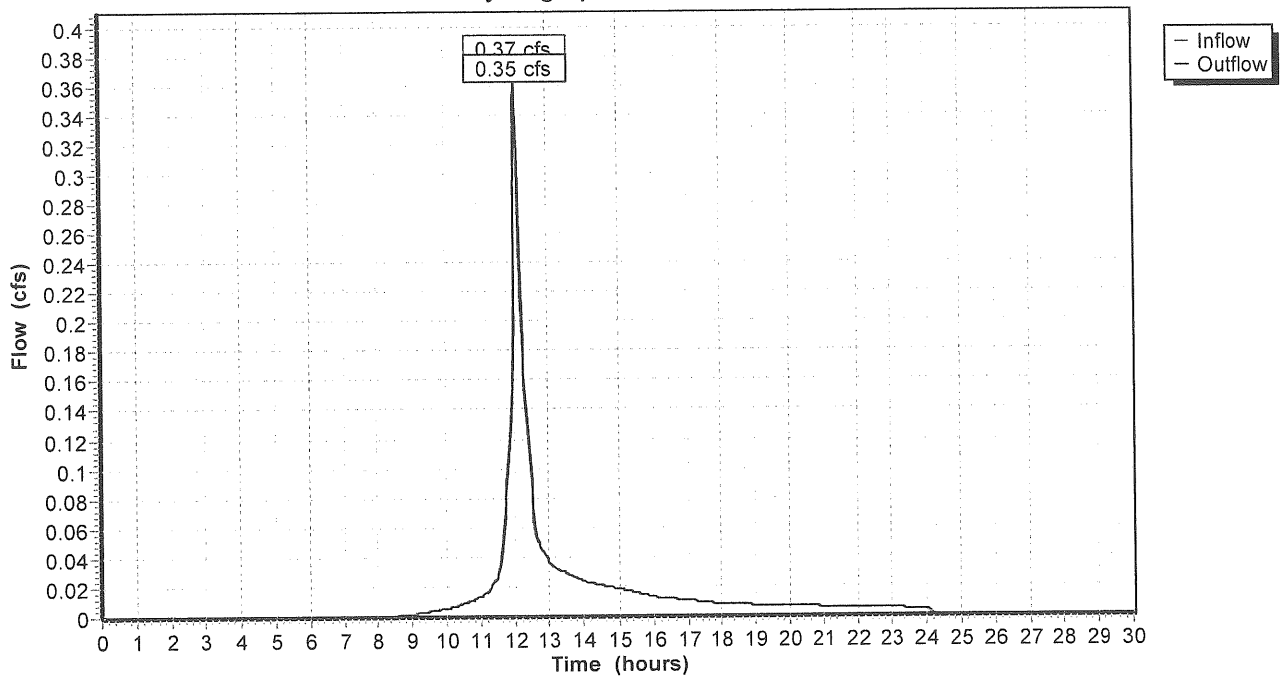
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.026 af  
Outflow = 0.35 cfs @ 12.11 hrs, Volume= 0.026 af, Atten= 4%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
Max. Velocity= 2.6 fps, Min. Travel Time= 0.9 min  
Avg. Velocity = 1.0 fps, Avg. Travel Time= 2.5 min

Peak Depth= 0.33'  
Capacity at bank full= 0.47 cfs  
Inlet Invert= 74.72', Outlet Invert= 74.00'  
6.0" Diameter Pipe n= 0.011 Length= 144.0' Slope= 0.0050 '/

Reach SD 7: SD 7

Hydrograph Plot



Reach SD 8: SD 8

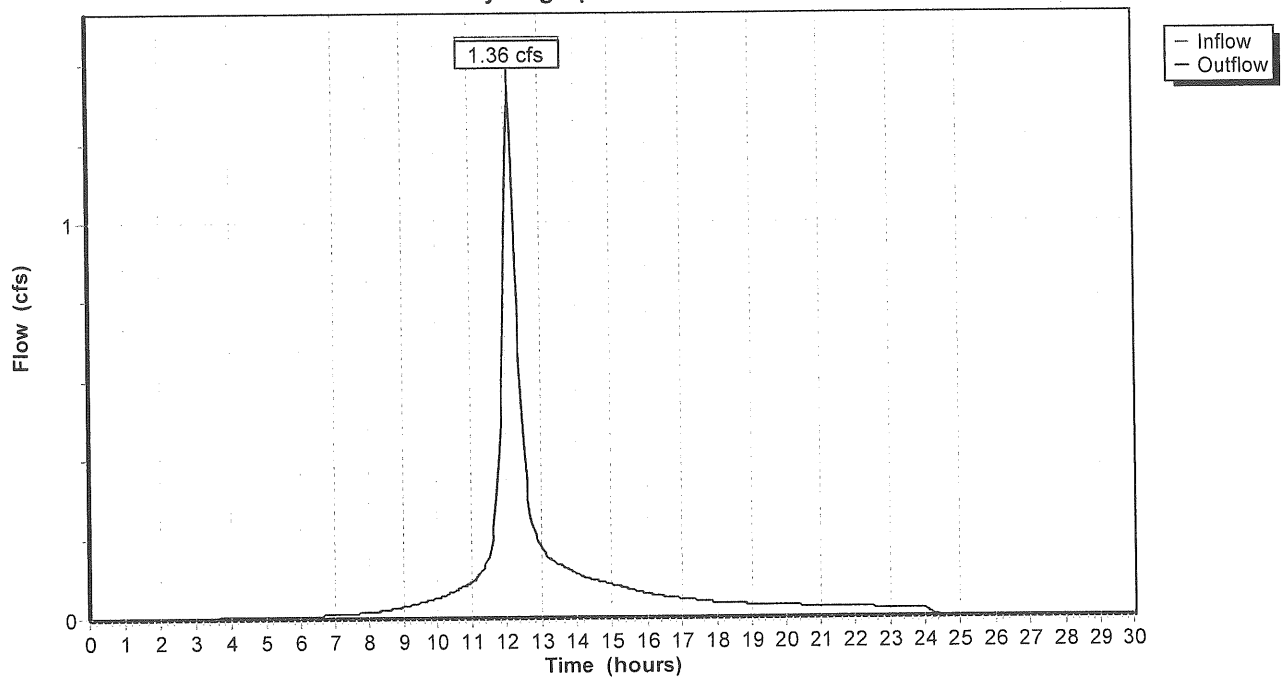
Inflow = 1.36 cfs @ 12.13 hrs, Volume= 0.132 af  
Outflow = 1.36 cfs @ 12.14 hrs, Volume= 0.132 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.7 fps, Min. Travel Time= 0.4 min  
Avg. Velocity = 1.5 fps, Avg. Travel Time= 1.2 min

Peak Depth= 0.36'  
Capacity at bank full= 7.63 cfs  
Inlet Invert= 71.85', Outlet Invert= 70.75'  
15.0" Diameter Pipe n= 0.011 Length= 110.0' Slope= 0.0100 1'

Reach SD 8: SD 8

Hydrograph Plot



Reach SD 9: SD 9

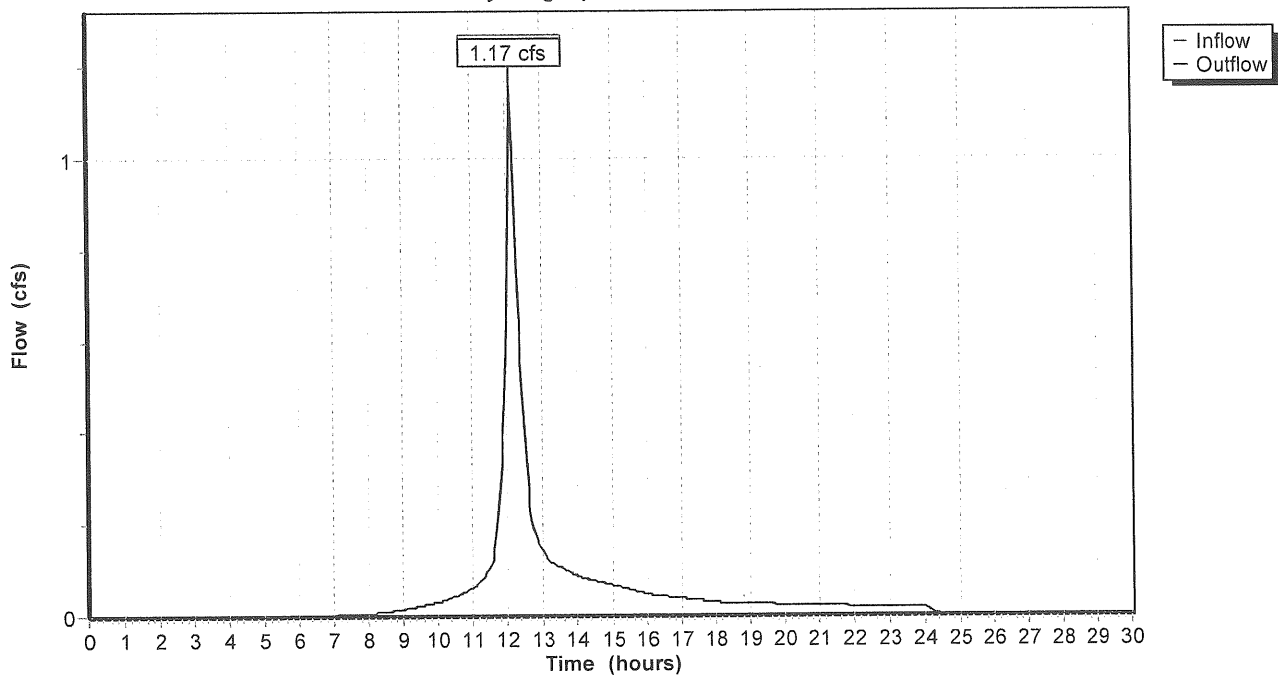
Inflow = 1.18 cfs @ 12.13 hrs, Volume= 0.099 af  
Outflow = 1.17 cfs @ 12.14 hrs, Volume= 0.099 af, Atten= 1%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
Max. Velocity= 3.5 fps, Min. Travel Time= 0.4 min  
Avg. Velocity = 1.2 fps, Avg. Travel Time= 1.3 min

Peak Depth= 0.40'  
Capacity at bank full= 5.43 cfs  
Inlet Invert= 72.43', Outlet Invert= 71.95'  
15.0" Diameter Pipe n= 0.011 Length= 95.0' Slope= 0.0051 1'

Reach SD 9: SD 9

Hydrograph Plot



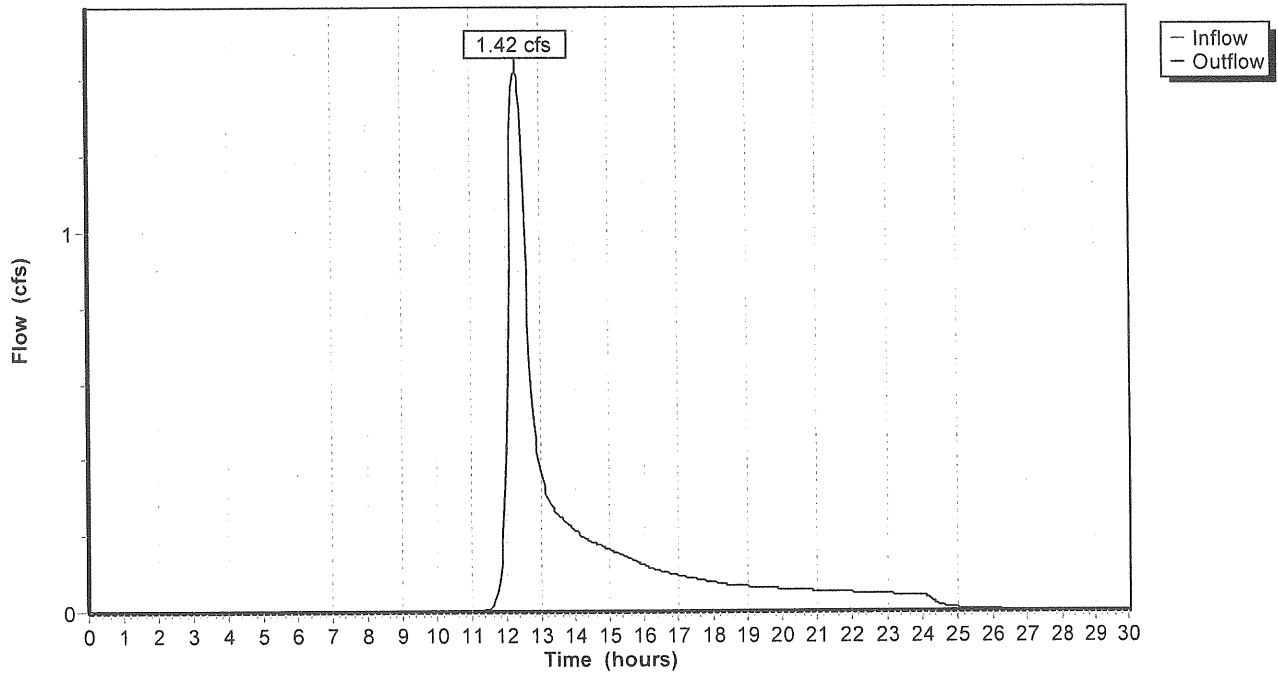
Reach SP1: Existing system

Inflow = 1.42 cfs @ 12.29 hrs, Volume= 0.175 af  
Outflow = 1.42 cfs @ 12.29 hrs, Volume= 0.175 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach SP1: Existing system

Hydrograph Plot



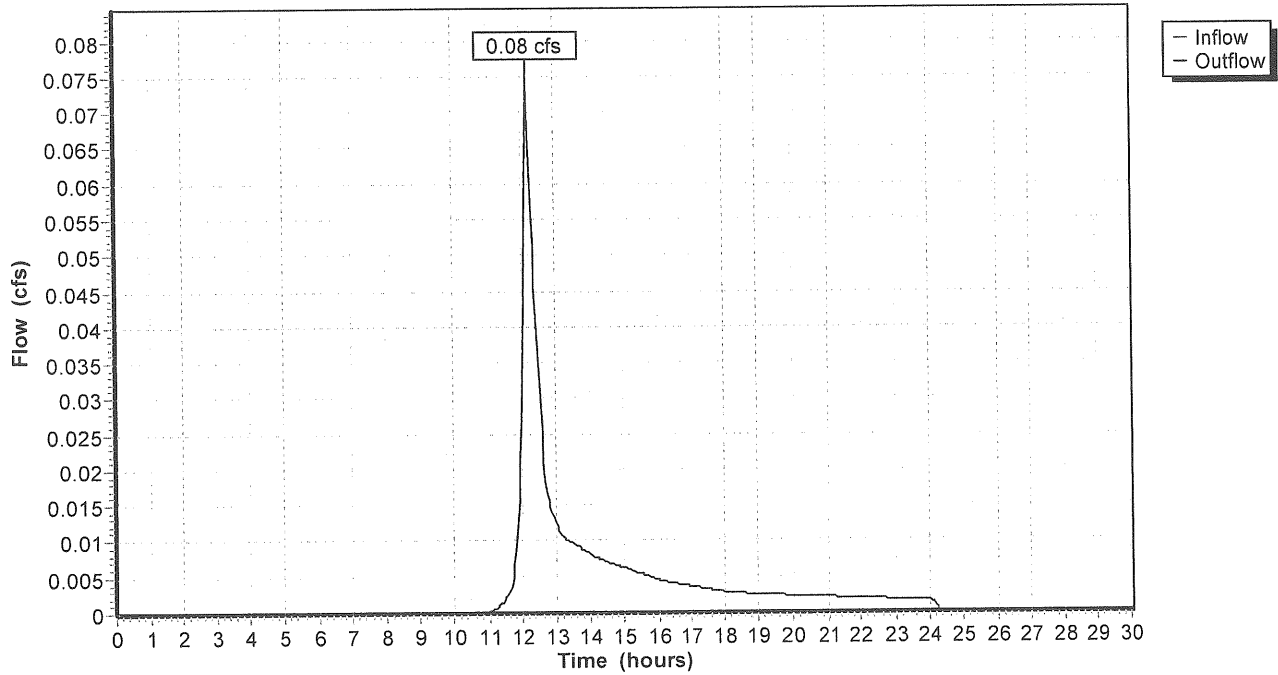
### Reach SP2: Existing Pond

Inflow = 0.08 cfs @ 12.17 hrs, Volume= 0.007 af  
Outflow = 0.08 cfs @ 12.17 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

### Reach SP2: Existing Pond

Hydrograph Plot



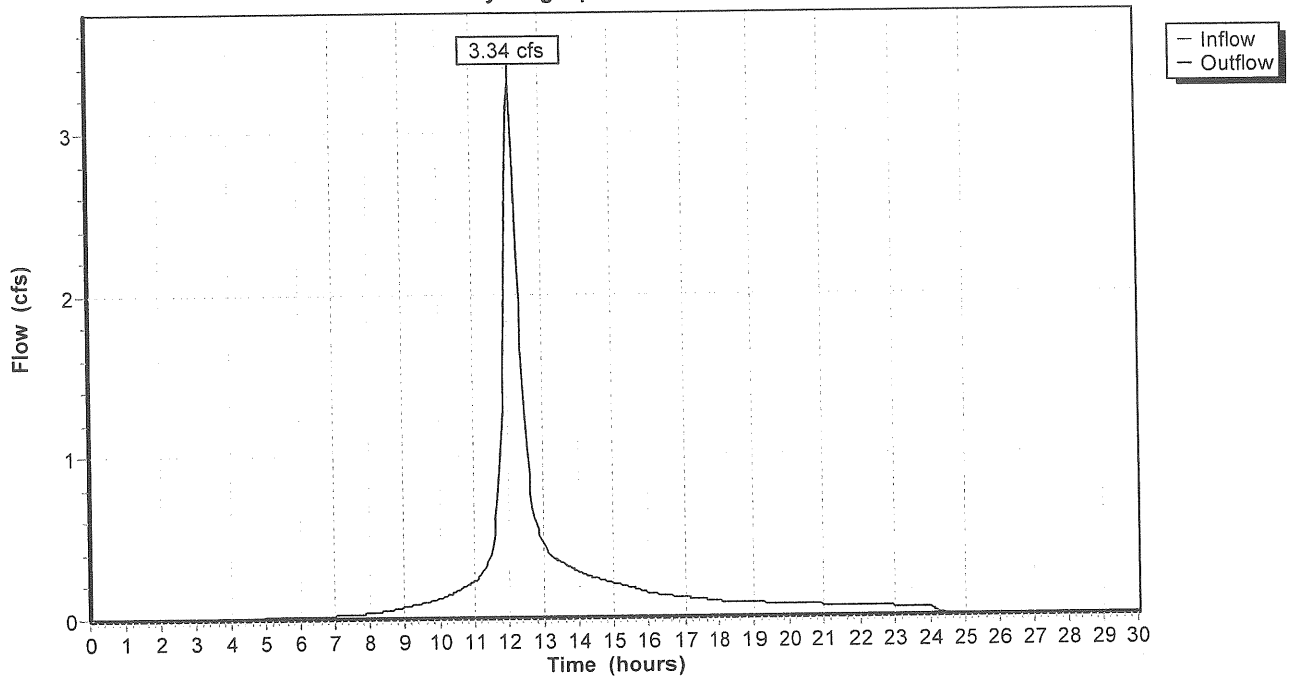
### Reach SP3: Existing Pond

Inflow = 3.34 cfs @ 12.12 hrs, Volume= 0.335 af  
Outflow = 3.34 cfs @ 12.12 hrs, Volume= 0.335 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

### Reach SP3: Existing Pond

Hydrograph Plot



**Pond 3.2P: (new node)**

Inflow = 1.16 cfs @ 12.05 hrs, Volume= 0.076 af  
 Outflow = 1.16 cfs @ 12.05 hrs, Volume= 0.076 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.16 cfs @ 12.05 hrs, Volume= 0.076 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs / 5

Peak Elev= 74.16' Storage= 3 cf  
 Plug-Flow detention time= 0.1 min calculated for 0.076 af (100% of inflow)  
 Storage and wetted areas determined by Irregular sections

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
73.50	4	8.0	0	0	4
75.75	4	8.0	9	9	22
76.00	545	110.0	50	59	980
76.30	1,450	150.0	288	347	1,808

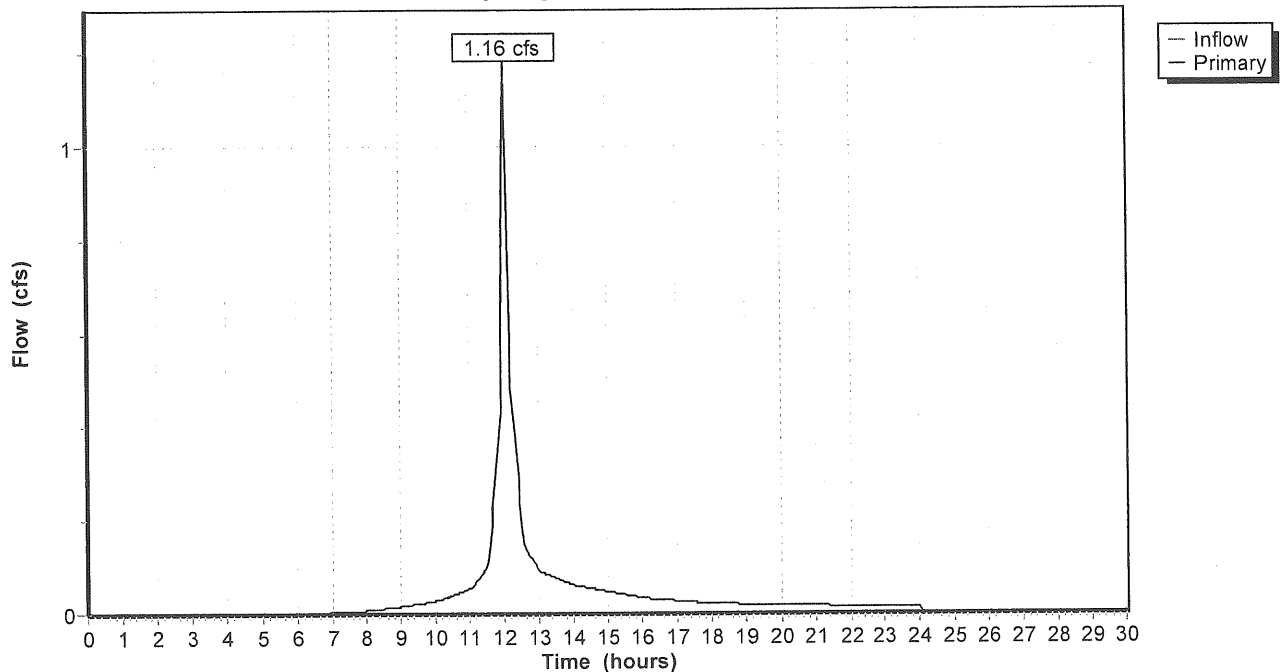
**Primary OutFlow (Free Discharge)**

↑1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	73.50'	<b>12.0" x 1.0' long Culvert</b> RCP, groove end projecting, Ke= 0.200 Outlet Invert= 73.50' S= 0.0000 '/' n= 0.011 Cc= 0.900

**Pond 3.2P: (new node)**

Hydrograph Plot





**Pond 3.4P: (new node)**

Inflow = 0.14 cfs @ 12.26 hrs, Volume= 0.015 af  
 Outflow = 0.14 cfs @ 12.27 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.2 min  
 Primary = 0.14 cfs @ 12.27 hrs, Volume= 0.015 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs / 5

Peak Elev= 72.99' Storage= 3 cf

Plug-Flow detention time= 1.3 min calculated for 0.015 af (100% of inflow)

Storage and wetted areas determined by Irregular sections

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
72.75	13	12.6	0	0	13
76.25	13	12.6	46	46	57
76.50	270	92.0	29	74	718

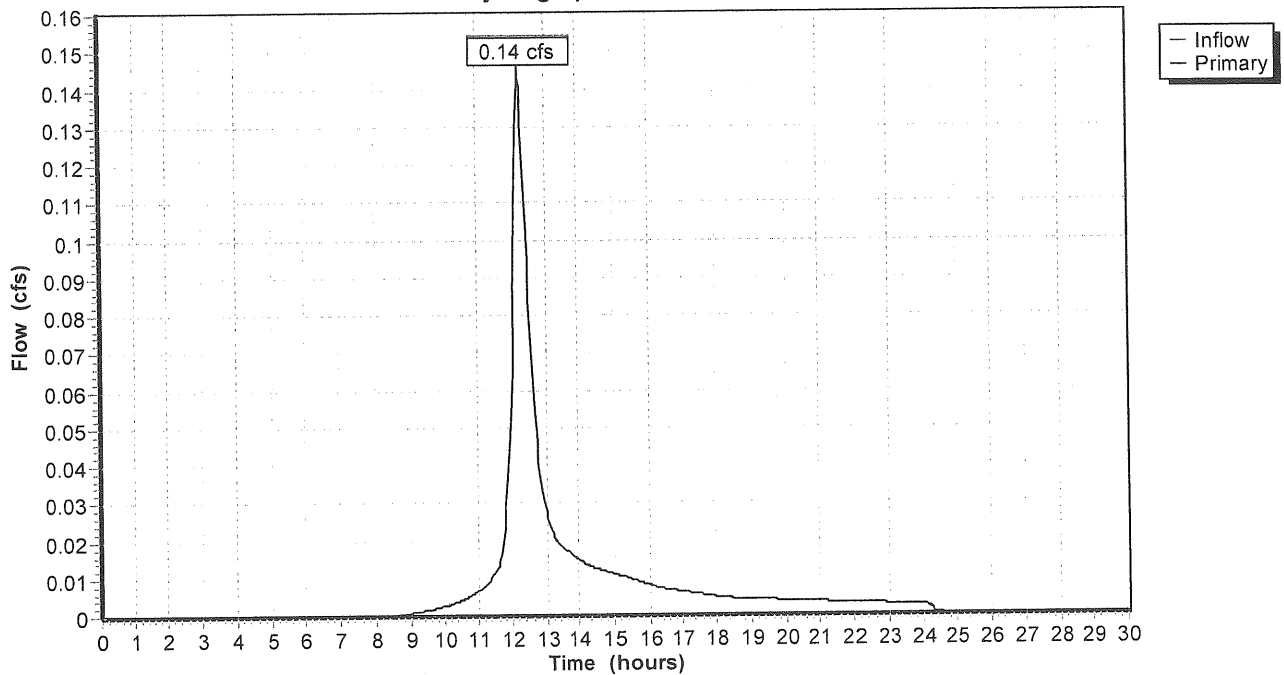
**Primary OutFlow (Free Discharge)**

↑ 1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	72.77'	<b>12.0" x 1.0' long Culvert</b> RCP, groove end projecting, Ke= 0.200 Outlet Invert= 72.77' S= 0.0000 ' /' n= 0.011 Cc= 0.900

**Pond 3.4P: (new node)**

Hydrograph Plot



**Pond 3.8P: 3.8P**

Inflow = 0.38 cfs @ 12.14 hrs, Volume= 0.032 af  
 Outflow = 0.38 cfs @ 12.14 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.38 cfs @ 12.14 hrs, Volume= 0.032 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs / 5

Peak Elev= 74.83' Storage= 1 cf  
 Plug-Flow detention time= 0.2 min calculated for 0.032 af (100% of inflow)  
 Storage and wetted areas determined by Irregular sections

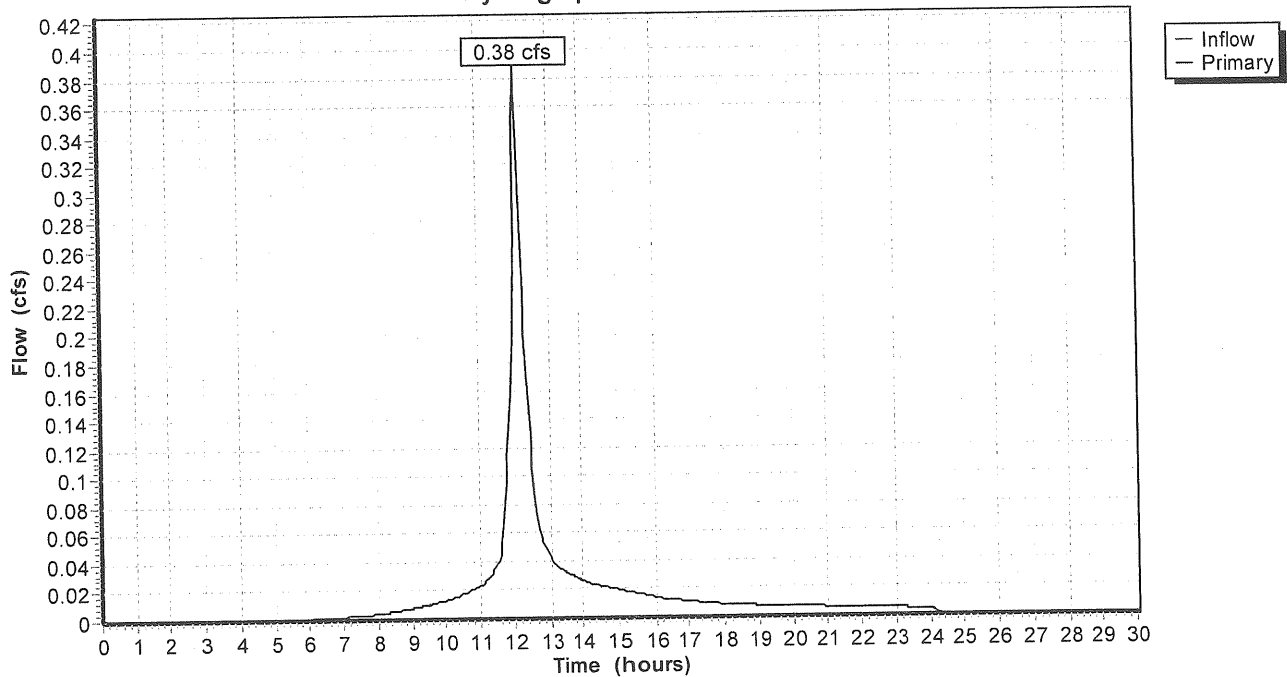
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
74.50	4	8.0	0	0	4
76.25	4	8.0	7	7	18
76.50	875	120.0	78	85	1,159

Primary OutFlow (Free Discharge)  
 ←1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	74.50'	12.0" x 44.5' long Culvert RCP, groove end projecting, Ke= 0.200 Outlet Invert= 74.28' S= 0.0049 '/ n= 0.011 Cc= 0.900

**Pond 3.8P: 3.8P**

Hydrograph Plot



**03245POST**

Type III 24-hr Rainfall=5.50"

Prepared by Sebago Technics, Inc.

Page 2

HydroCAD® 6.00 s/n 001856 © 1986-2001 Applied Microcomputer Systems

2/5/2007

<b>Reach SD 11: SD 11</b>		Inflow= 2.26 cfs 0.188 af
	Length= 187.0' Max Vel= 4.2 fps Capacity= 2.99 cfs	Outflow= 2.19 cfs 0.188 af
<b>Reach SD 12: SD 12</b>		Inflow= 1.56 cfs 0.134 af
	Length= 122.5' Max Vel= 3.8 fps Capacity= 2.97 cfs	Outflow= 1.55 cfs 0.134 af
<b>Reach SD 2: SD 2</b>		Inflow= 3.07 cfs 0.329 af
	Length= 42.0' Max Vel= 4.3 fps Capacity= 2.98 cfs	Outflow= 3.06 cfs 0.329 af
<b>Reach SD 3: SD 3</b>		Inflow= 3.51 cfs 0.329 af
	Length= 228.0' Max Vel= 4.3 fps Capacity= 2.98 cfs	Outflow= 3.07 cfs 0.329 af
<b>Reach SD 6: SD 6</b>		Inflow= 2.92 cfs 0.230 af
	Length= 125.0' Max Vel= 4.3 fps Capacity= 2.99 cfs	Outflow= 2.82 cfs 0.230 af
<b>Reach SD 7: SD 7</b>		Inflow= 0.88 cfs 0.063 af
	Length= 144.0' Max Vel= 2.7 fps Capacity= 0.47 cfs	Outflow= 0.47 cfs 0.063 af
<b>Reach SD 8: SD 8</b>		Inflow= 2.99 cfs 0.285 af
	Length= 110.0' Max Vel= 5.8 fps Capacity= 7.63 cfs	Outflow= 2.97 cfs 0.285 af
<b>Reach SD 9: SD 9</b>		Inflow= 2.65 cfs 0.224 af
	Length= 95.0' Max Vel= 4.4 fps Capacity= 5.43 cfs	Outflow= 2.60 cfs 0.224 af
<b>Reach SP1: Existing system</b>		Inflow= 1.51 cfs 0.533 af
		Outflow= 1.51 cfs 0.533 af
<b>Reach SP2: Existing Pond</b>		Inflow= 0.25 cfs 0.021 af
		Outflow= 0.25 cfs 0.021 af
<b>Reach SP3: Existing Pond</b>		Inflow= 6.88 cfs 0.730 af
		Outflow= 6.88 cfs 0.730 af
<b>Pond 1P: Base Stone</b>	Peak Storage= 6,455 cf	Inflow= 6.46 cfs 0.533 af
	Primary= 1.51 cfs 0.533 af	Outflow= 1.51 cfs 0.533 af
<b>Pond 3.2P: (new node)</b>	Peak Storage= 4 cf	Inflow= 2.45 cfs 0.167 af
	Primary= 2.45 cfs 0.167 af	Outflow= 2.45 cfs 0.167 af
<b>Pond 3.4P: (new node)</b>	Peak Storage= 5 cf	Inflow= 0.34 cfs 0.036 af
	Primary= 0.34 cfs 0.036 af	Outflow= 0.34 cfs 0.036 af
<b>Pond 3.7P: 3.7P</b>	Peak Storage= 5 cf	Inflow= 0.44 cfs 0.033 af
	Primary= 0.44 cfs 0.033 af	Outflow= 0.44 cfs 0.033 af
<b>Pond 3.8P: 3.8P</b>	Peak Storage= 2 cf	Inflow= 0.77 cfs 0.068 af
	Primary= 0.77 cfs 0.068 af	Outflow= 0.77 cfs 0.068 af

**03245POST**

*Type III 24-hr Rainfall=5.50"*

Prepared by Sebago Technics, Inc.

Page 3

HydroCAD® 6.00 s/n 001856 © 1986-2001 Applied Microcomputer Systems

2/5/2007

**Pond 3.9P: (new node)**

Peak Storage= 7 cf Inflow= 0.71 cfs 0.053 af

Primary= 0.71 cfs 0.053 af Outflow= 0.71 cfs 0.053 af

**Runoff Area = 4.413 ac Volume = 1.285 af Average Depth = 3.49"**

### Subcatchment 1: Playing Field

Runoff = 6.46 cfs @ 12.15 hrs, Volume= 0.533 af

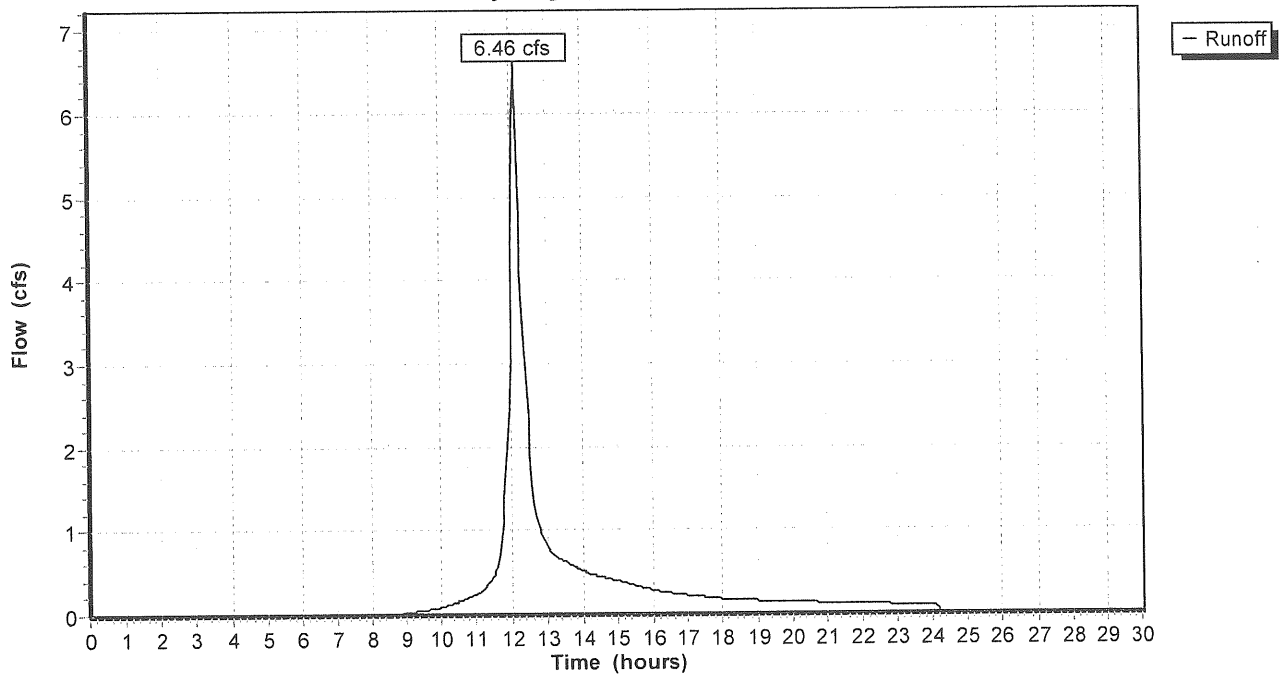
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
2.310	74	>75% Grass cover, Good, HSG C

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

### Subcatchment 1: Playing Field

Hydrograph Plot



**Subcatchment 2: (new node)**

Runoff = 0.25 cfs @ 12.16 hrs, Volume= 0.021 af

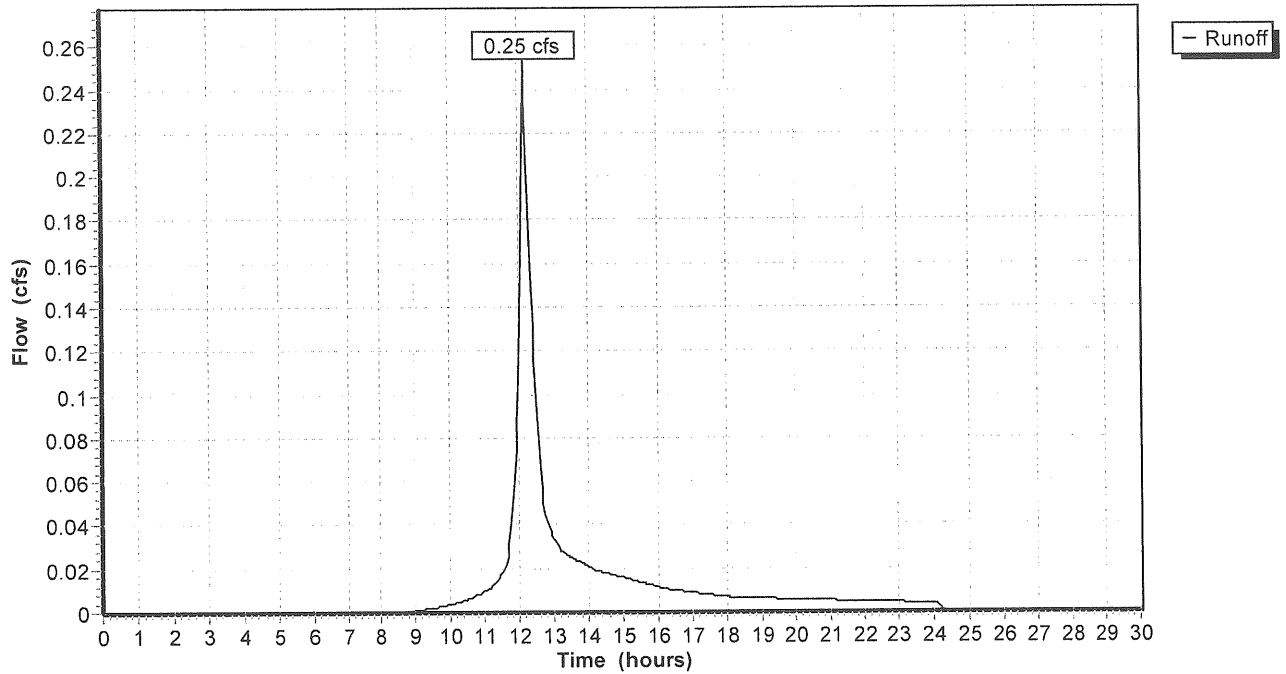
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.092	74	>75% Grass cover, Good, HSG C

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	60	0.0400	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"

**Subcatchment 2: (new node)**

Hydrograph Plot



**Subcatchment 3.1:**

Runoff = 0.88 cfs @ 12.07 hrs, Volume= 0.063 af

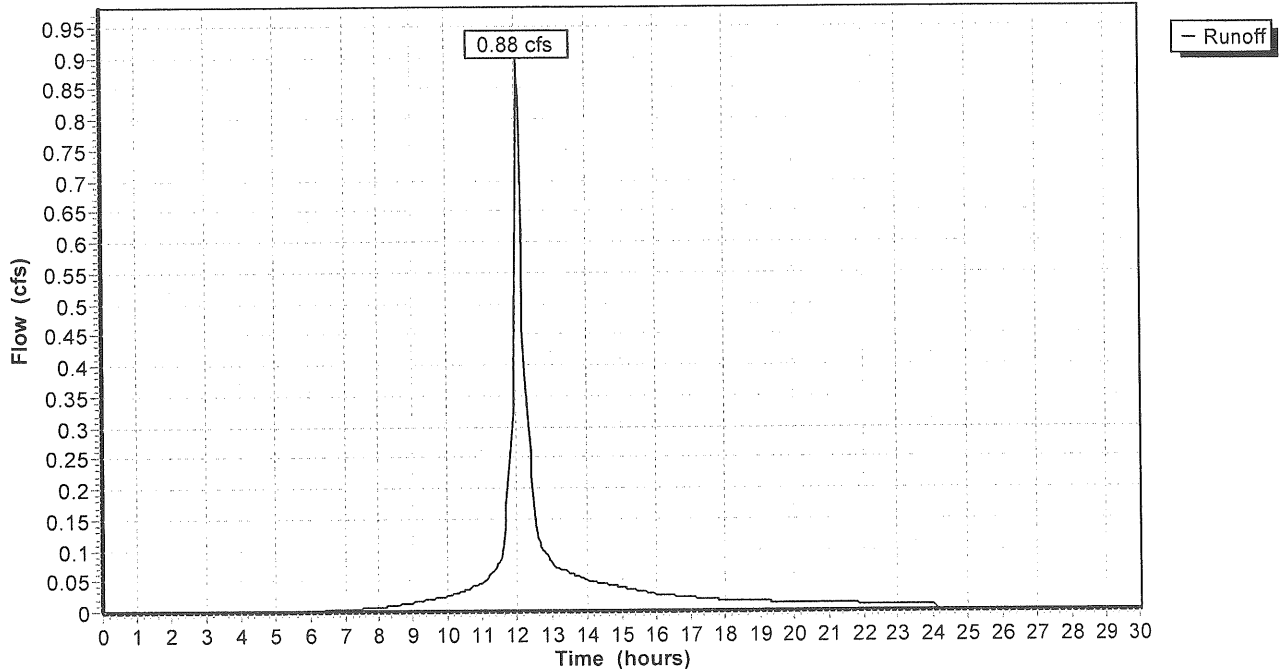
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.055	98	Pavement & roofs
0.141	80	>75% Grass cover, Good, HSG D
0.196	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	30	0.1300	0.1		<b>Sheet Flow, A-B</b> Grass: Bermuda n= 0.410 P2= 3.00"
0.8	80	0.0120	1.6		<b>Shallow Concentrated Flow, B-C</b> Grassed Waterway Kv= 15.0 fps
4.9	110	Total			

**Subcatchment 3.1:**

Hydrograph Plot



**Subcatchment 3.10:**

Runoff = 0.48 cfs @ 12.10 hrs, Volume= 0.036 af

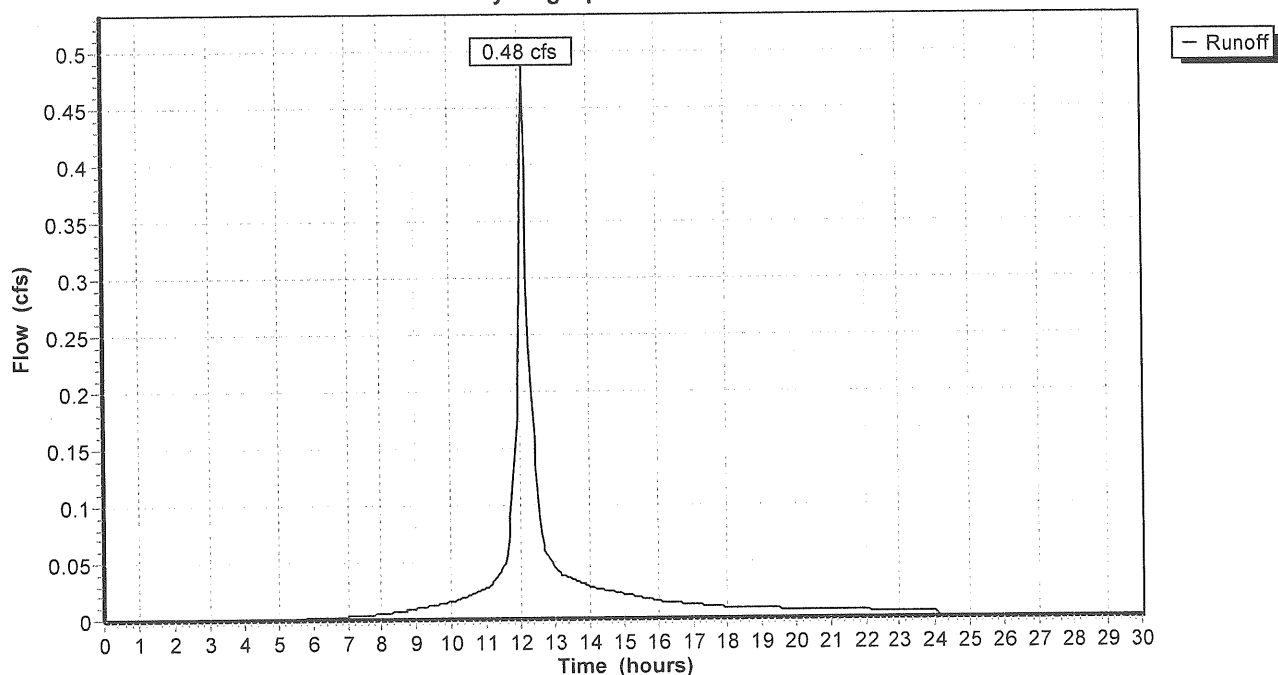
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.040	98	Pavement & roofs
0.067	80	>75% Grass cover, Good, HSG D
0.107	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	20	0.0500	0.1		<b>Sheet Flow, A-B</b> Grass: Bermuda n= 0.410 P2= 3.00"
2.4	150	0.0050	1.1		<b>Shallow Concentrated Flow, B-C</b> Grassed Waterway Kv= 15.0 fps
6.7	170	Total			

**Subcatchment 3.10:**

Hydrograph Plot





**Subcatchment 3.11:**

Runoff = 0.85 cfs @ 12.01 hrs, Volume= 0.062 af

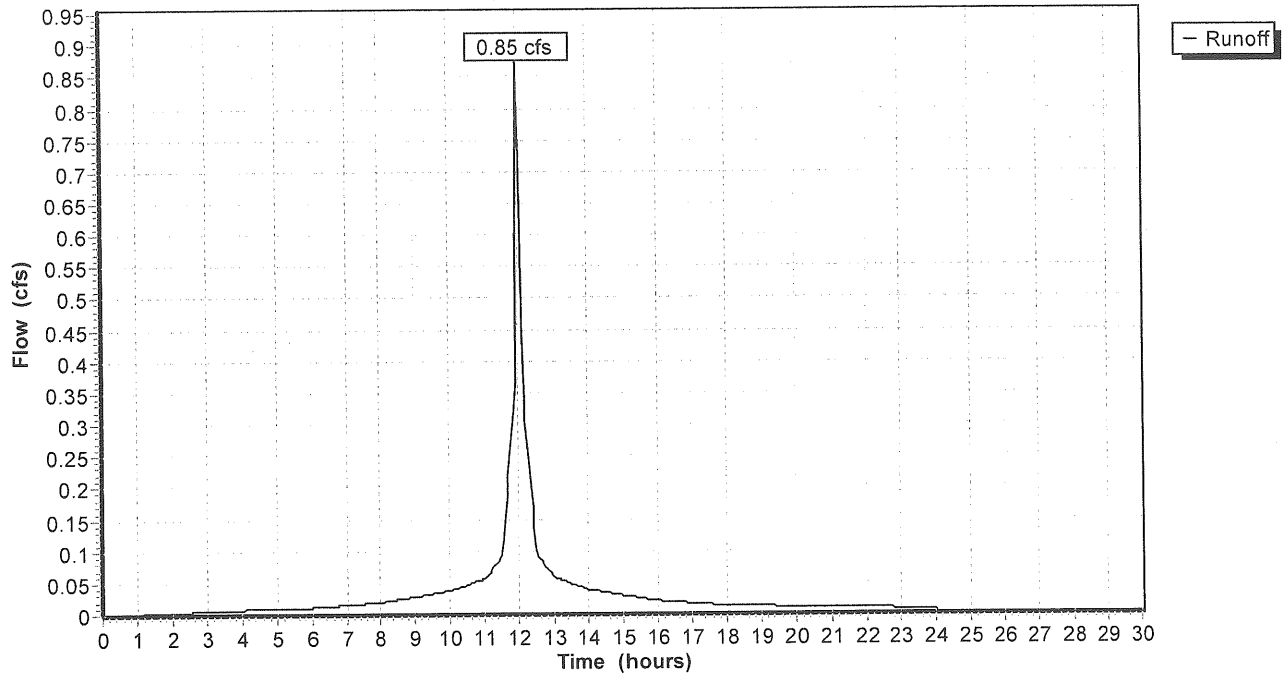
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.141	98	Pavement & roofs

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	65	0.0300	1.4		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 3.00"

**Subcatchment 3.11:**

Hydrograph Plot



**Subcatchment 3.12:**

Runoff = 1.54 cfs @ 12.01 hrs, Volume= 0.106 af

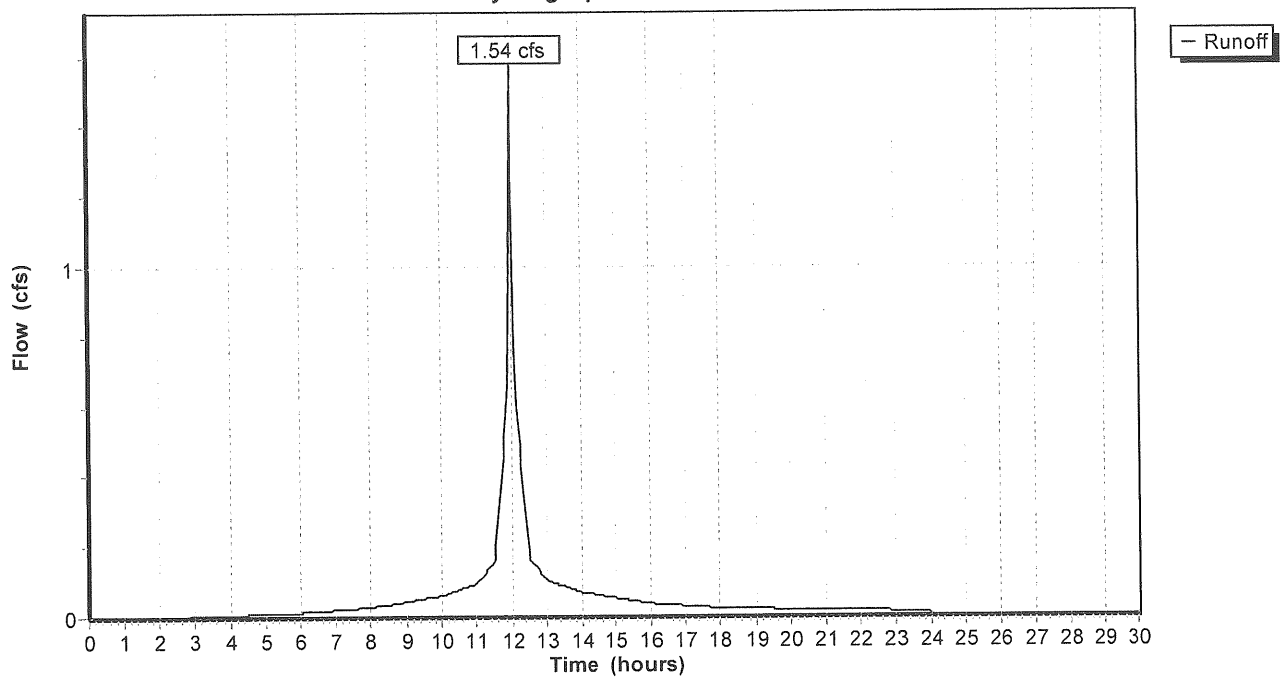
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.230	98	Pavement & roofs
0.028	74	>75% Grass cover, Good, HSG C
0.258	95	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	55	0.0400	1.6		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 3.00"

**Subcatchment 3.12:**

Hydrograph Plot



**Subcatchment 3.2:**

Runoff = 2.45 cfs @ 12.05 hrs, Volume= 0.167 af

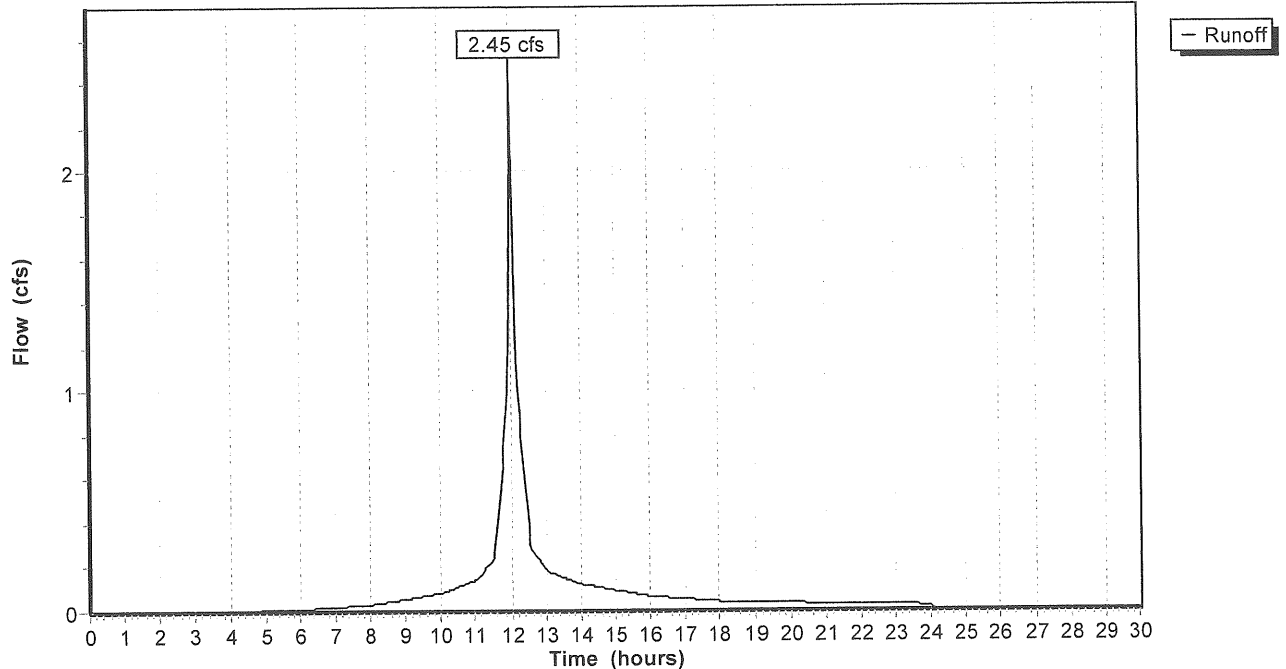
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.264	98	Pavement & roofs
0.196	80	>75% Grass cover, Good, HSG D
0.460	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	40	0.0150	1.0		<b>Sheet Flow, A-B</b> Smooth surfaces n= 0.011 P2= 3.00"
2.1	145	0.0050	1.1		<b>Shallow Concentrated Flow, B-C</b> Unpaved Kv= 16.1 fps
2.8	185	Total			

**Subcatchment 3.2:**

Hydrograph Plot



**Subcatchment 3.3:**

Runoff = 0.71 cfs @ 12.16 hrs, Volume= 0.064 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=5.50"

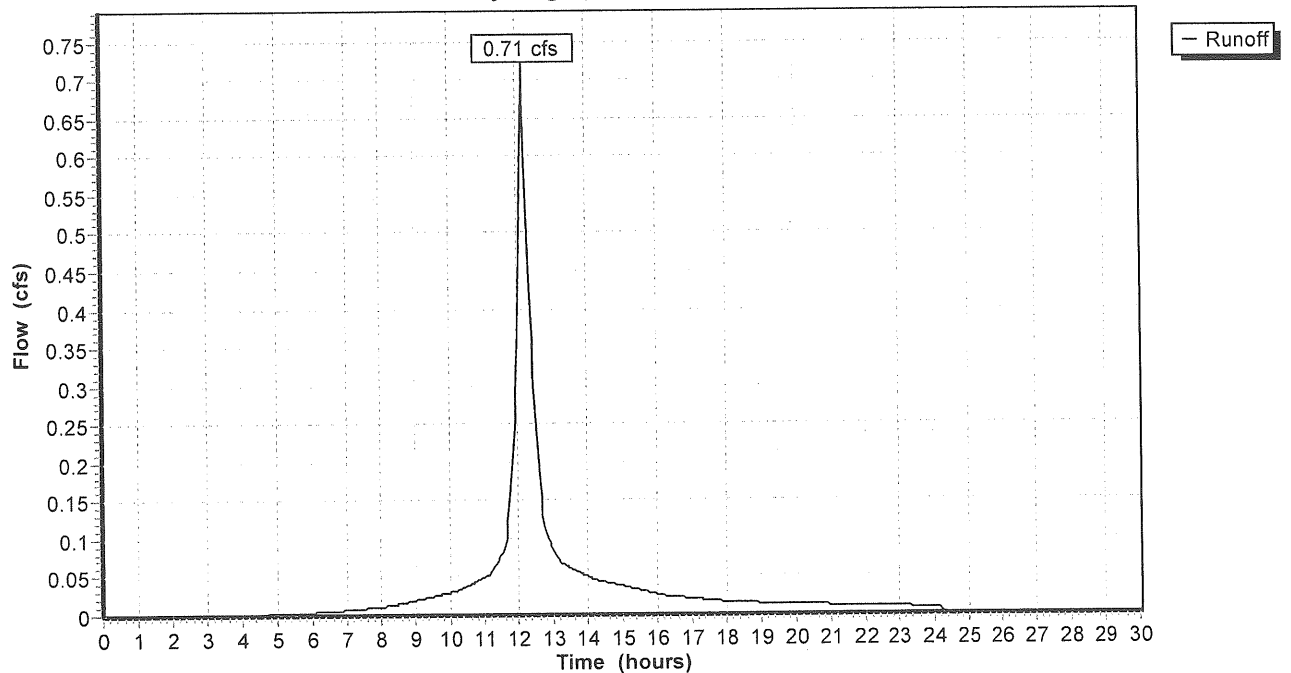
Area (ac)	CN	Description
0.108	98	Pavement & roofs
0.028	74	>75% Grass cover, Good, HSG C
0.040	80	>75% Grass cover, Good, HSG D
0.176	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	50	0.0300	0.1		<b>Sheet Flow, A-B</b> Grass: Bermuda n= 0.410 P2= 3.00"
0.6	50	0.0100	1.5		<b>Shallow Concentrated Flow, B-C</b> Grassed Waterway Kv= 15.0 fps
0.5	110	0.0050	3.8	2.98	<b>Circular Channel (pipe), C-D</b> Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
12.1	210	Total			

**Subcatchment 3.3:**

Hydrograph Plot



**Subcatchment 3.4:**

Runoff = 0.34 cfs @ 12.26 hrs, Volume= 0.036 af

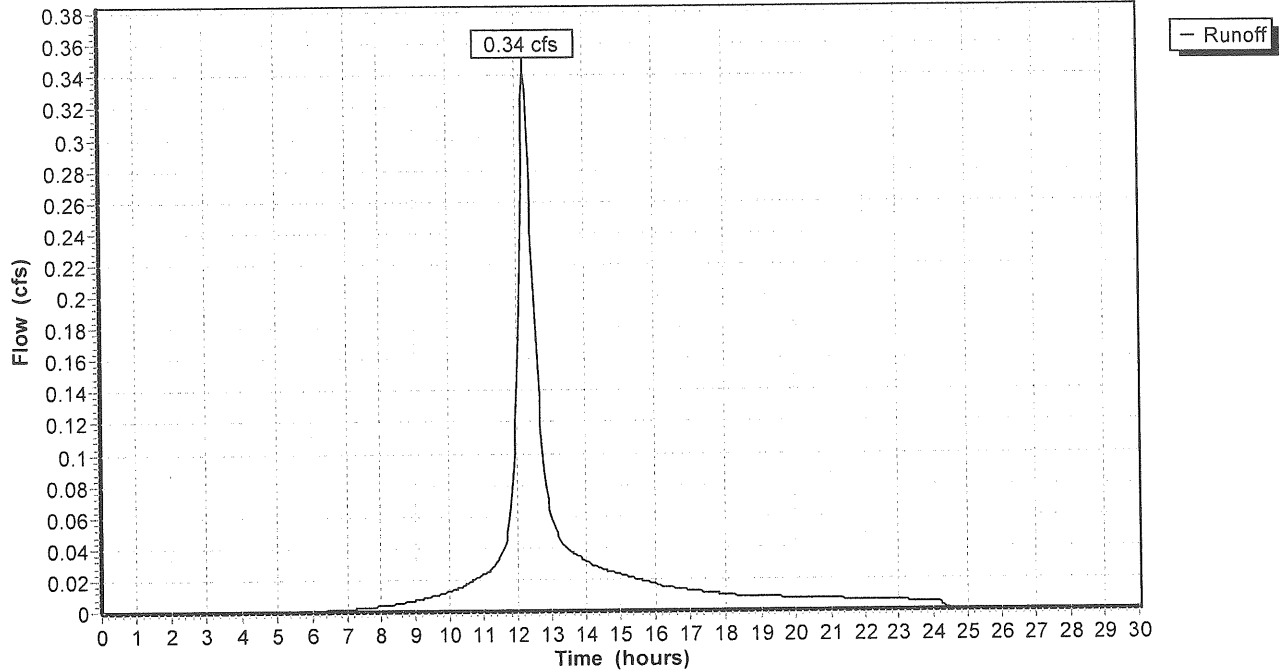
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.049	98	Pavement & roofs
0.063	74	>75% Grass cover, Good, HSG C
0.112	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.9	80	0.0200	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"

**Subcatchment 3.4:**

Hydrograph Plot



**Subcatchment 3.5:**

Runoff = 0.15 cfs @ 12.00 hrs, Volume= 0.010 af

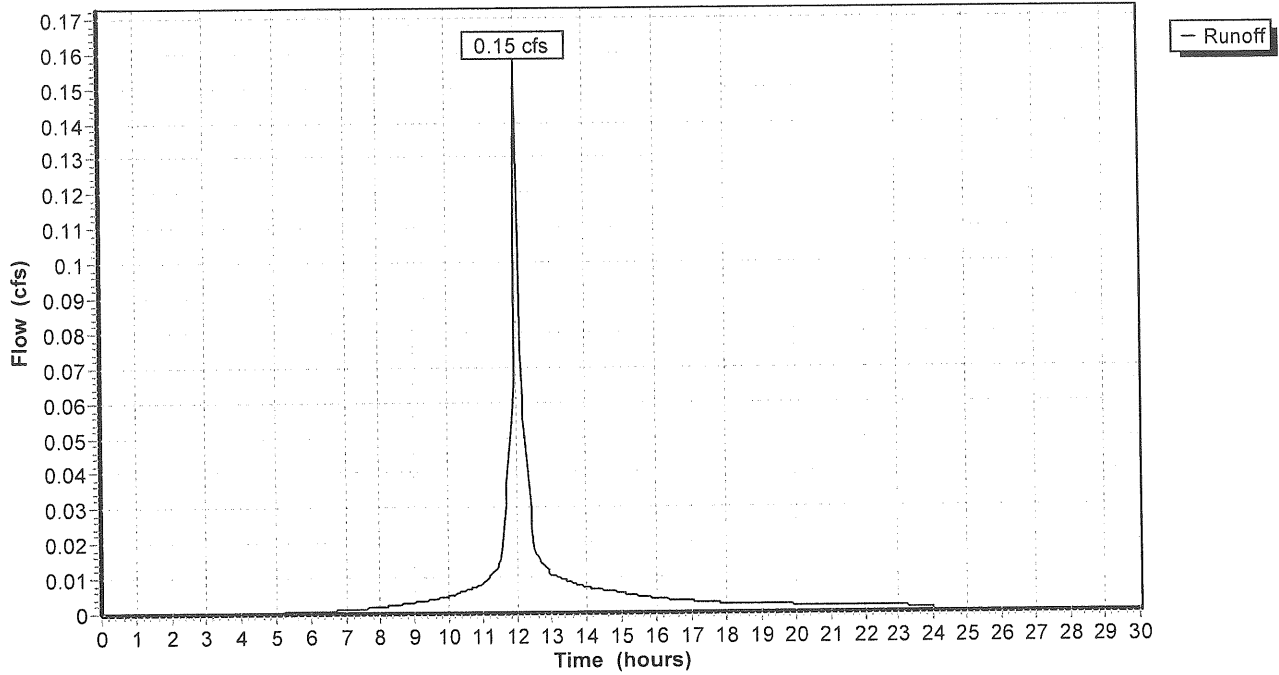
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.018	98	Pavement & roofs
0.010	74	>75% Grass cover, Good, HSG C
0.028	89	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	15	0.0500	1.3		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 3.00"

**Subcatchment 3.5:**

Hydrograph Plot



**Subcatchment 3.6:**

Runoff = 0.50 cfs @ 12.05 hrs, Volume= 0.034 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=5.50"

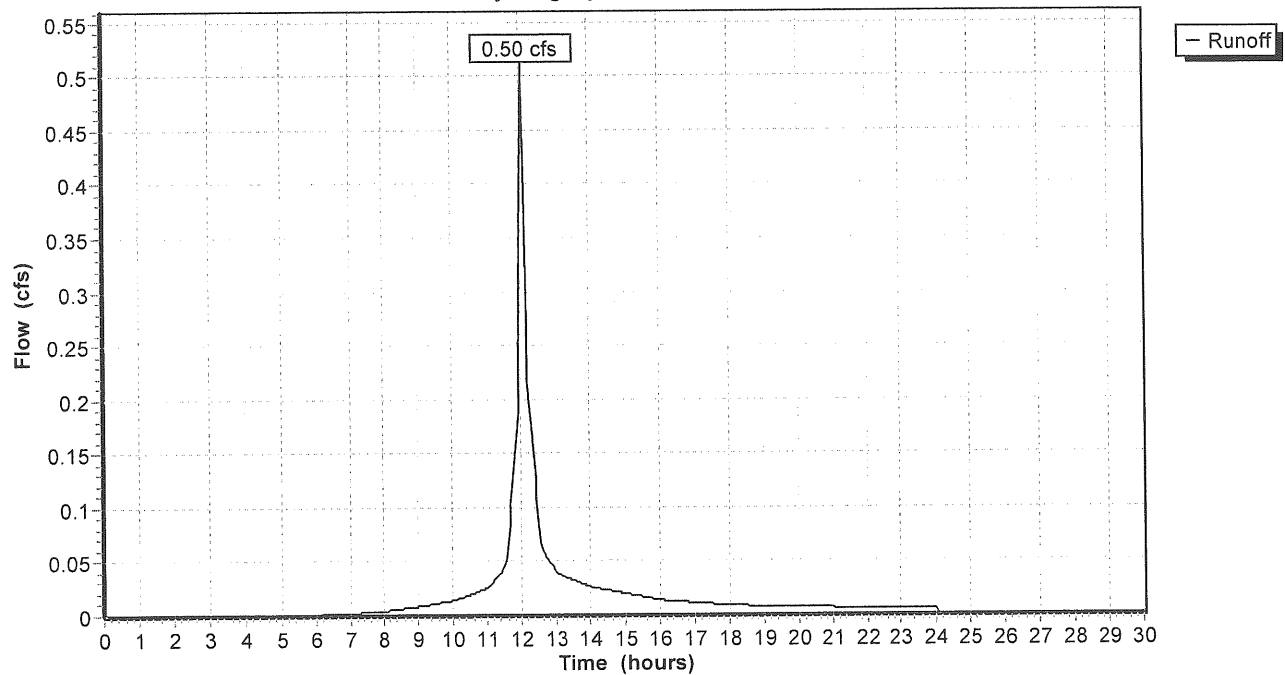
Area (ac)	CN	Description
0.035	98	Pavement & roofs
0.068	80	>75% Grass cover, Good, HSG D
0.103	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	20	0.1500	0.1		<b>Sheet Flow, A-B</b> Grass: Bermuda n= 0.410 P2= 3.00"
0.3	35	0.0200	2.1		<b>Shallow Concentrated Flow, B-C</b> Grassed Waterway Kv= 15.0 fps
0.3	72	0.0050	3.8	2.98	<b>Circular Channel (pipe), C-D</b> Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
3.4	127	Total			

**Subcatchment 3.6:**

Hydrograph Plot



**Subcatchment 3.7:**

Runoff = 0.44 cfs @ 12.08 hrs, Volume= 0.033 af

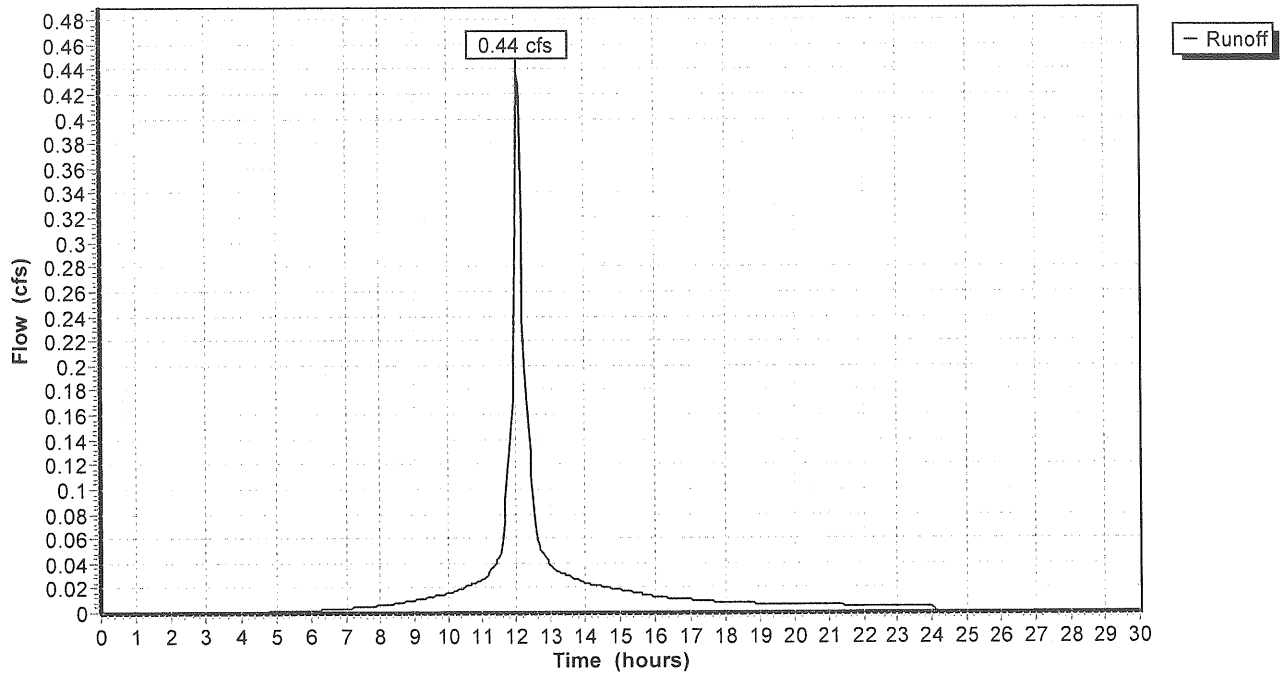
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.050	98	Pavement & roofs
0.040	80	>75% Grass cover, Good, HSG D
0.090	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	30	0.0670	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"

**Subcatchment 3.7:**

Hydrograph Plot





**Subcatchment 3.8:**

Runoff = 0.77 cfs @ 12.14 hrs, Volume= 0.068 af

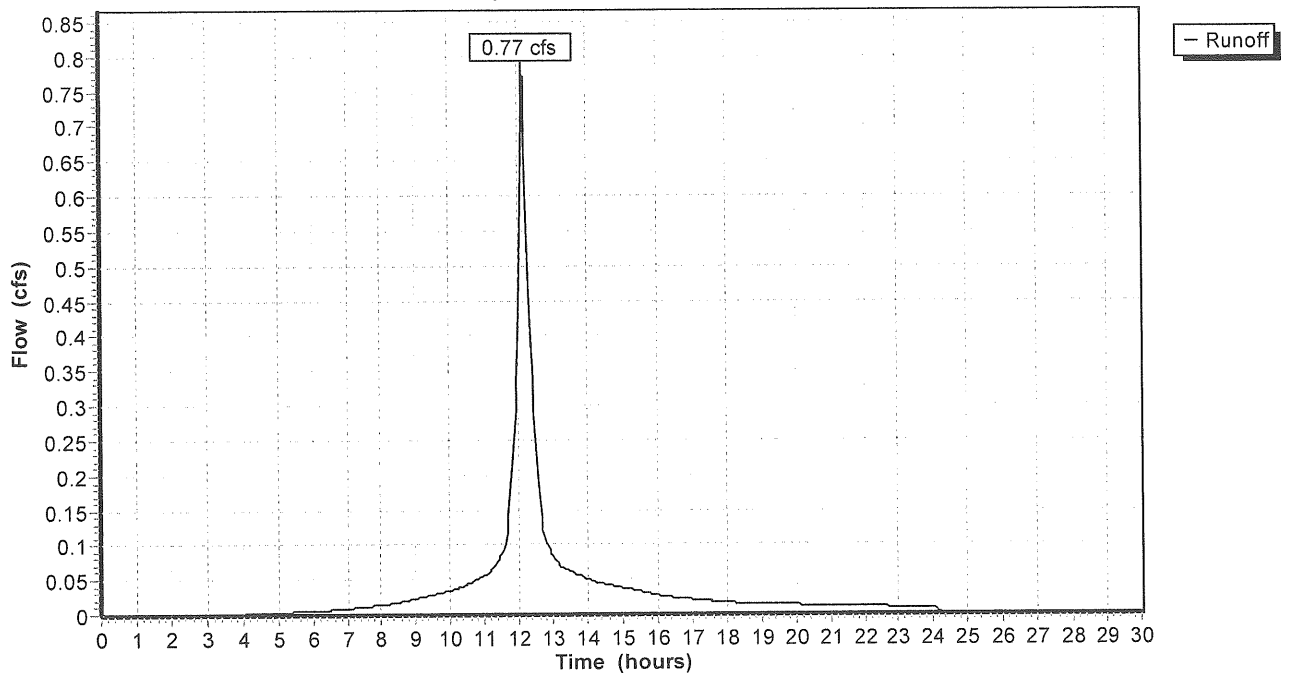
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.114	98	Pavement & roofs
0.064	80	>75% Grass cover, Good, HSG D
0.178	92	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	25	0.0150	0.9		<b>Sheet Flow, A-B</b> Smooth surfaces n= 0.011 P2= 3.00"
9.8	35	0.0200	0.1		<b>Sheet Flow, B-C</b> Grass: Bermuda n= 0.410 P2= 3.00"
10.3	60	Total			

**Subcatchment 3.8:**

Hydrograph Plot



**Subcatchment 3.9:**

Runoff = 0.71 cfs @ 12.09 hrs, Volume= 0.053 af

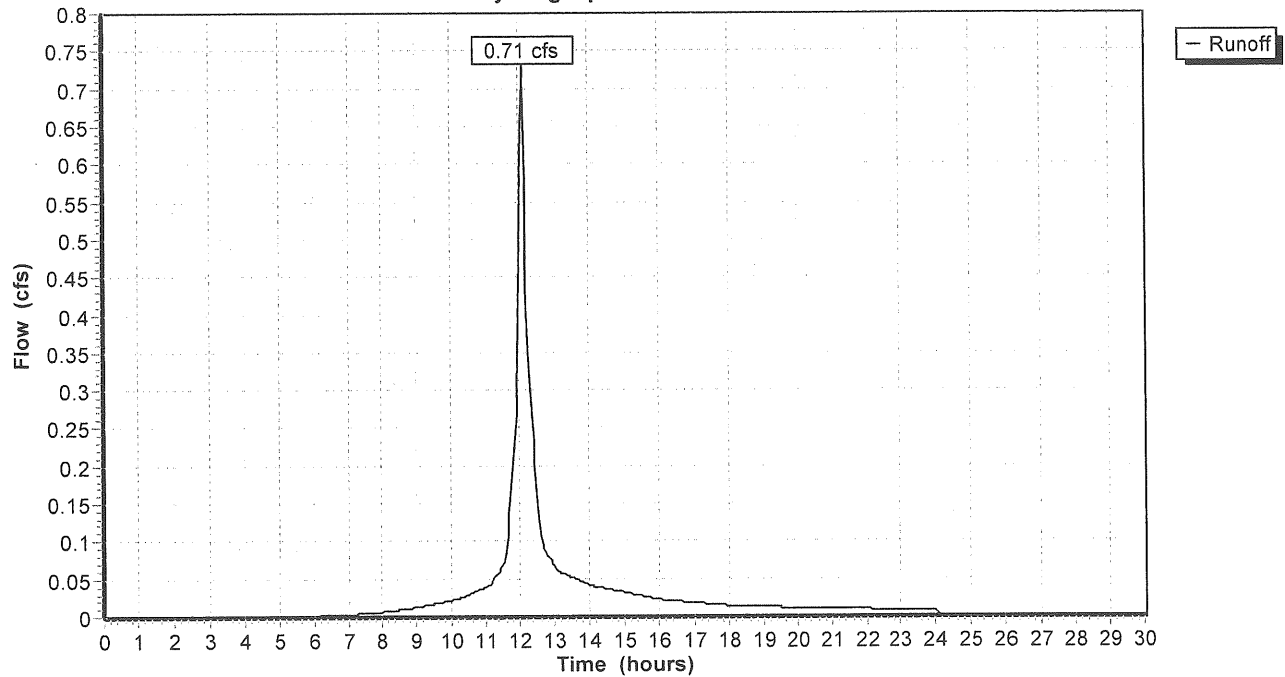
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.055	98	Pavement & roofs
0.107	80	>75% Grass cover, Good, HSG D
0.162	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	25	0.0400	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"
0.5	195	0.0250	6.7	33.45	Trap/Vee/Rect Channel Flow, B-C Bot.W=2.00' D=1.00' Z= 3.0 ' n= 0.025
6.2	220	Total			

**Subcatchment 3.9:**

Hydrograph Plot



Reach SD 1: SD 1

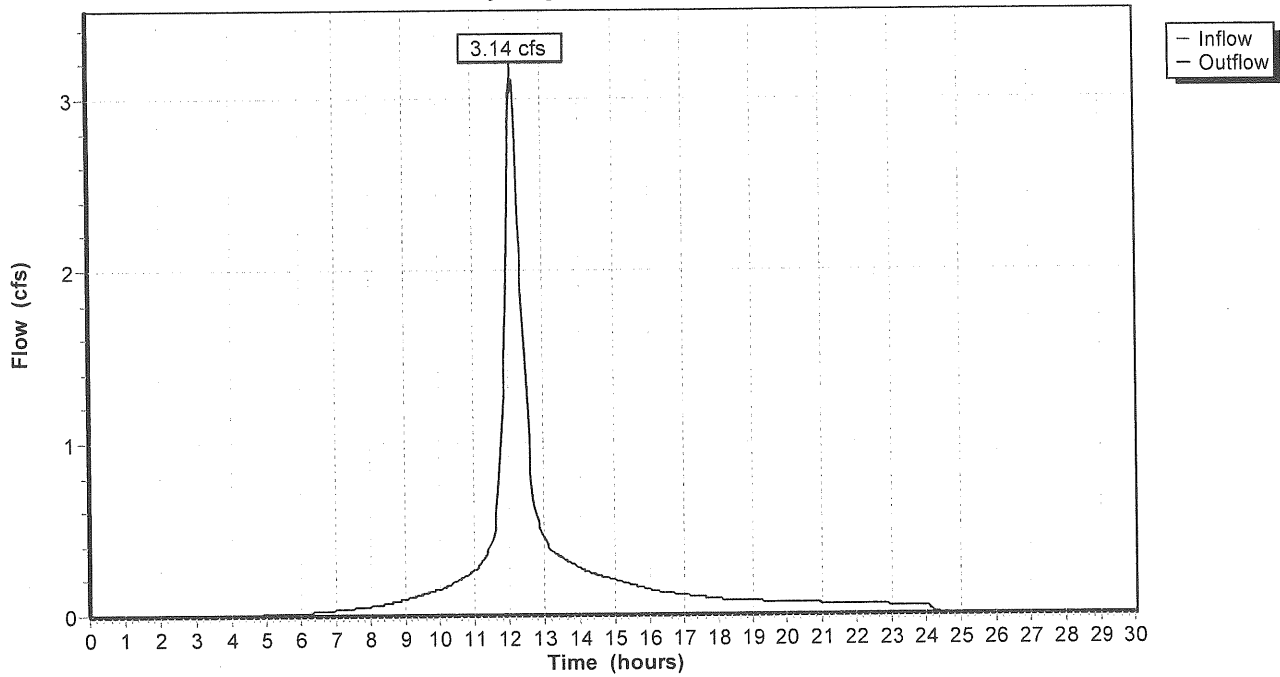
Inflow = 3.13 cfs @ 12.10 hrs, Volume= 0.339 af  
Outflow = 3.14 cfs @ 12.10 hrs, Volume= 0.339 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.5 fps, Min. Travel Time= 0.3 min  
Avg. Velocity = 1.7 fps, Avg. Travel Time= 0.9 min

Peak Depth= 0.69'  
Capacity at bank full= 5.37 cfs  
Inlet Invert= 71.22', Outlet Invert= 70.80'  
15.0" Diameter Pipe n= 0.011 Length= 85.0' Slope= 0.0049 '/'

Reach SD 1: SD 1

Hydrograph Plot



Reach SD 11: SD 11

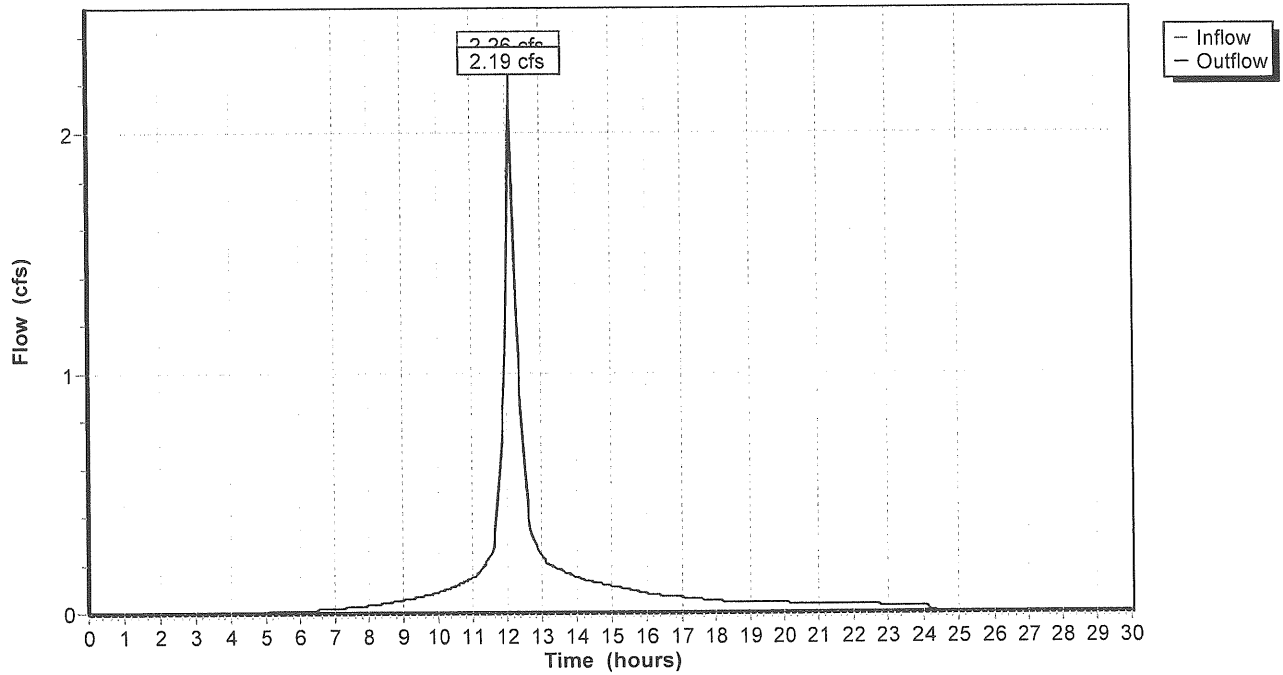
Inflow = 2.26 cfs @ 12.10 hrs, Volume= 0.188 af  
Outflow = 2.19 cfs @ 12.12 hrs, Volume= 0.188 af, Atten= 3%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.2 fps, Min. Travel Time= 0.7 min  
Avg. Velocity = 1.4 fps, Avg. Travel Time= 2.2 min

Peak Depth= 0.65'  
Capacity at bank full= 2.99 cfs  
Inlet Invert= 73.47', Outlet Invert= 72.53'  
12.0" Diameter Pipe n= 0.011 Length= 187.0' Slope= 0.0050 '/'

Reach SD 11: SD 11

Hydrograph Plot



### Reach SD 12: SD 12

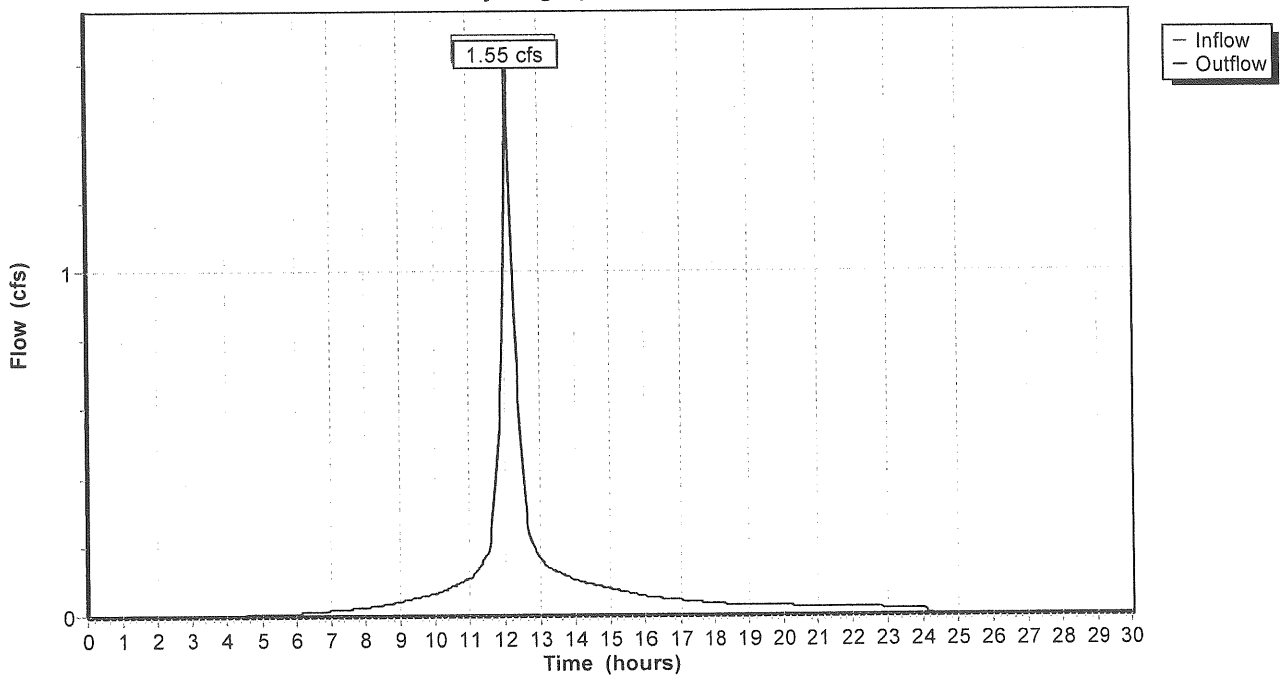
Inflow = 1.56 cfs @ 12.09 hrs, Volume= 0.134 af  
Outflow = 1.55 cfs @ 12.11 hrs, Volume= 0.134 af, Atten= 1%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
Max. Velocity= 3.8 fps, Min. Travel Time= 0.5 min  
Avg. Velocity = 1.3 fps, Avg. Travel Time= 1.6 min

Peak Depth= 0.52'  
Capacity at bank full= 2.97 cfs  
Inlet Invert= 74.18', Outlet Invert= 73.57'  
12.0" Diameter Pipe n= 0.011 Length= 122.5' Slope= 0.0050 '/

### Reach SD 12: SD 12

Hydrograph Plot



Reach SD 3: SD 3

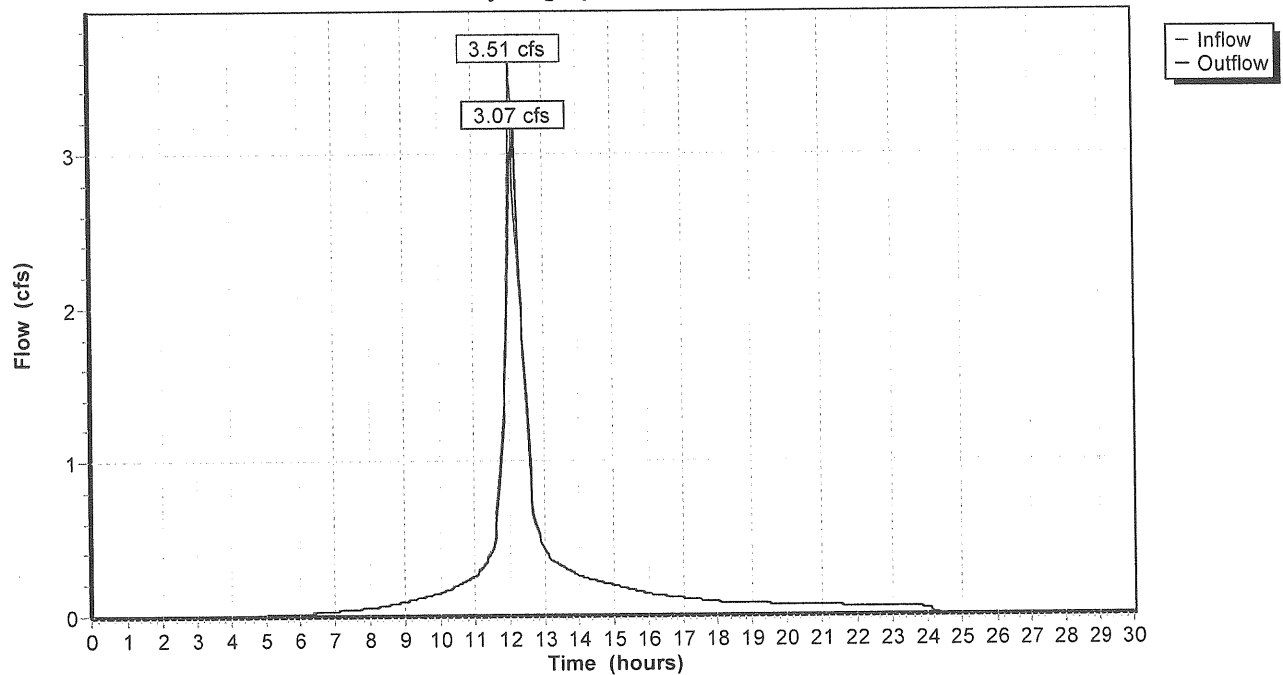
Inflow = 3.51 cfs @ 12.07 hrs, Volume= 0.329 af  
Outflow = 3.07 cfs @ 12.20 hrs, Volume= 0.329 af, Atten= 12%, Lag= 7.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.3 fps, Min. Travel Time= 0.9 min  
Avg. Velocity = 1.7 fps, Avg. Travel Time= 2.3 min

Peak Depth= 1.00'  
Capacity at bank full= 2.98 cfs  
Inlet Invert= 72.77', Outlet Invert= 71.63'  
12.0" Diameter Pipe n= 0.011 Length= 228.0' Slope= 0.0050 '/'

Reach SD 3: SD 3

Hydrograph Plot



Reach SD 6: SD 6

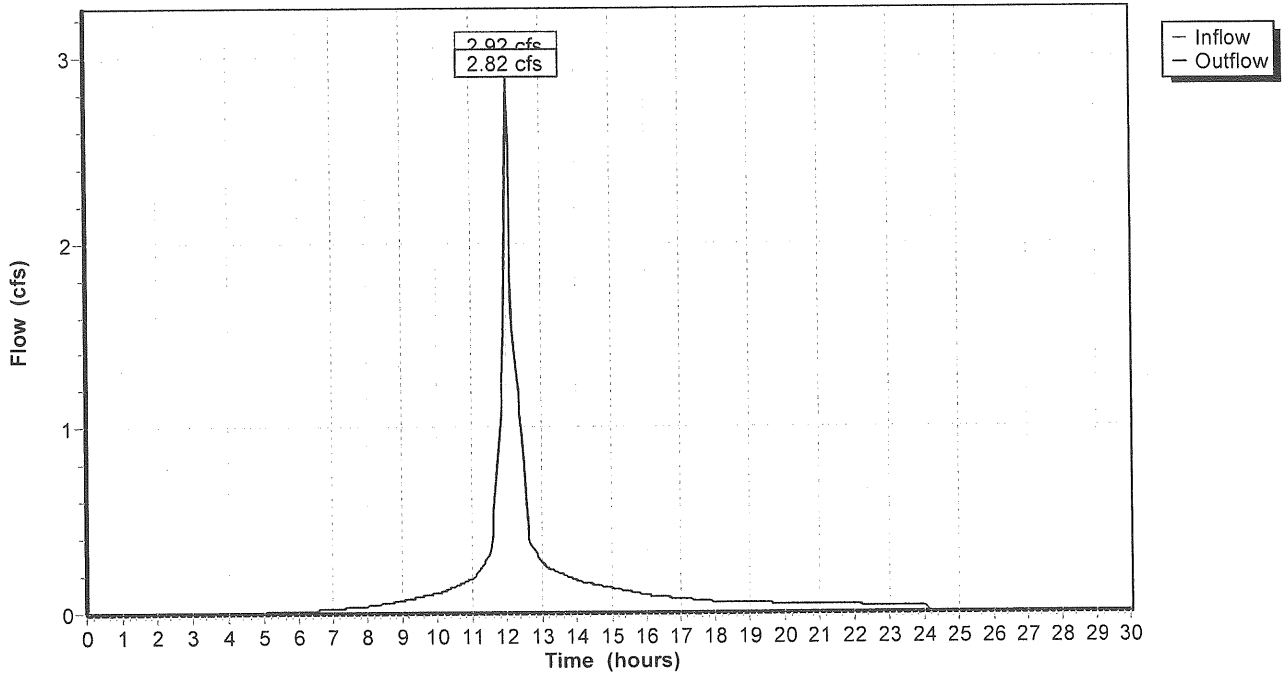
Inflow = 2.92 cfs @ 12.05 hrs, Volume= 0.230 af  
Outflow = 2.82 cfs @ 12.06 hrs, Volume= 0.230 af, Atten= 3%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.3 fps, Min. Travel Time= 0.5 min  
Avg. Velocity = 1.6 fps, Avg. Travel Time= 1.3 min

Peak Depth= 0.79'  
Capacity at bank full= 2.99 cfs  
Inlet Invert= 73.50', Outlet Invert= 72.87'  
12.0" Diameter Pipe n= 0.011 Length= 125.0' Slope= 0.0050 '/'

Reach SD 6: SD 6

Hydrograph Plot



### Reach SD 7: SD 7

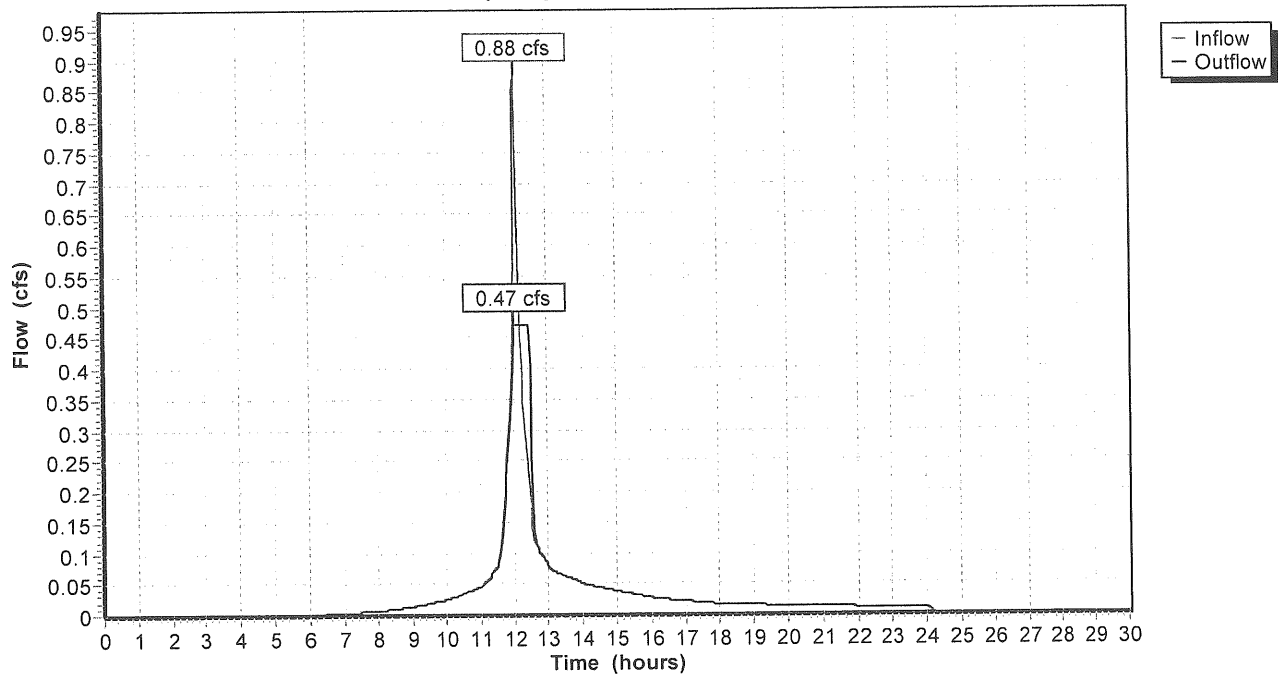
Inflow = 0.88 cfs @ 12.07 hrs, Volume= 0.063 af  
Outflow = 0.47 cfs @ 12.05 hrs, Volume= 0.063 af, Atten= 47%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
Max. Velocity= 2.7 fps, Min. Travel Time= 0.9 min  
Avg. Velocity = 1.2 fps, Avg. Travel Time= 2.0 min

Peak Depth= 0.50'  
Capacity at bank full= 0.47 cfs  
Inlet Invert= 74.72', Outlet Invert= 74.00'  
6.0" Diameter Pipe n= 0.011 Length= 144.0' Slope= 0.0050 1'

### Reach SD 7: SD 7

Hydrograph Plot





Reach SD 8: SD 8

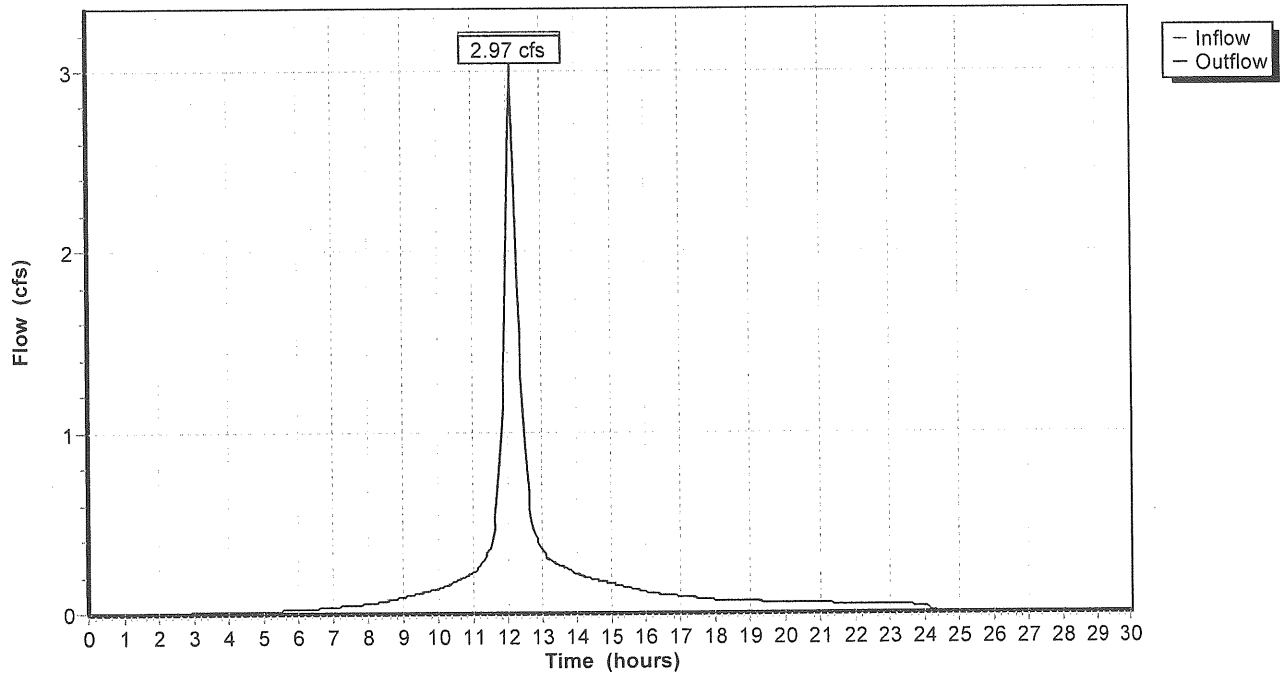
Inflow = 2.99 cfs @ 12.11 hrs, Volume= 0.285 af  
Outflow = 2.97 cfs @ 12.12 hrs, Volume= 0.285 af, Atten= 1%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
Max. Velocity= 5.8 fps, Min. Travel Time= 0.3 min  
Avg. Velocity = 1.9 fps, Avg. Travel Time= 1.0 min

Peak Depth= 0.54'  
Capacity at bank full= 7.63 cfs  
Inlet Invert= 71.85', Outlet Invert= 70.75'  
15.0" Diameter Pipe n= 0.011 Length= 110.0' Slope= 0.0100 '/'

Reach SD 8: SD 8

Hydrograph Plot



Reach SD 9: SD 9

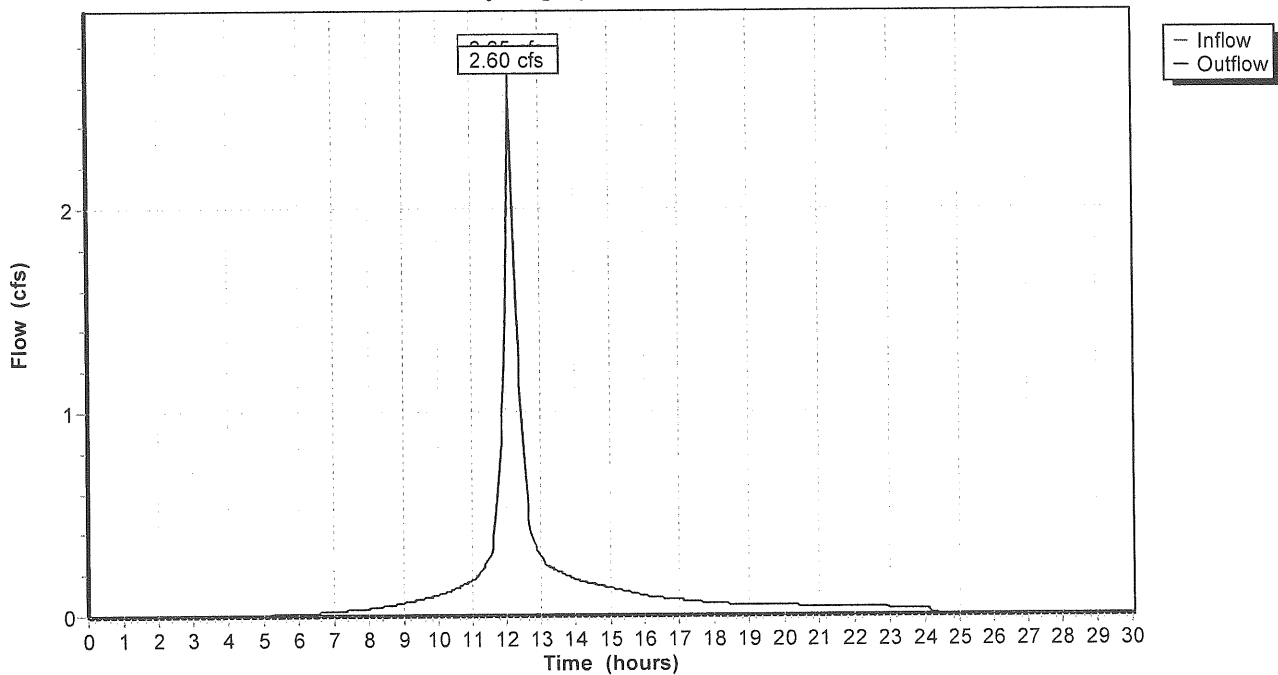
Inflow = 2.65 cfs @ 12.12 hrs, Volume= 0.224 af  
Outflow = 2.60 cfs @ 12.13 hrs, Volume= 0.224 af, Atten= 2%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.4 fps, Min. Travel Time= 0.4 min  
Avg. Velocity = 1.5 fps, Avg. Travel Time= 1.1 min

Peak Depth= 0.62'  
Capacity at bank full= 5.43 cfs  
Inlet Invert= 72.43', Outlet Invert= 71.95'  
15.0" Diameter Pipe n= 0.011 Length= 95.0' Slope= 0.0051 1'

Reach SD 9: SD 9

Hydrograph Plot



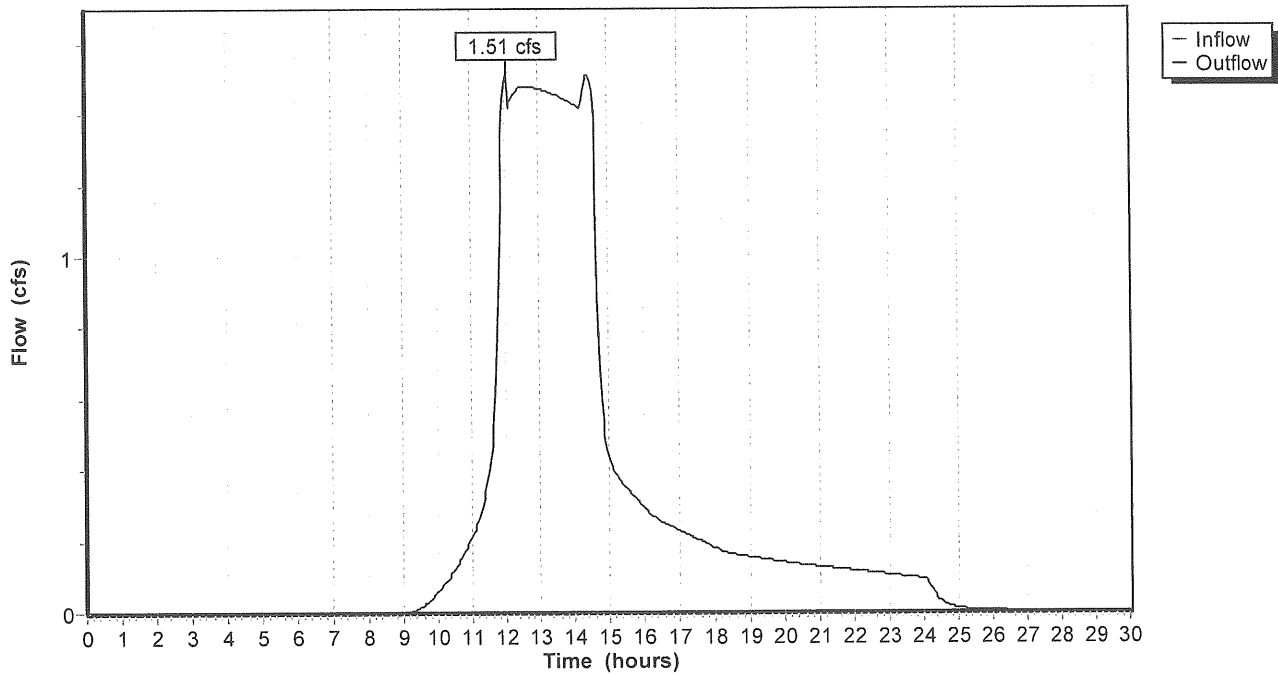
**Reach SP1: Existing system**

Inflow = 1.51 cfs @ 12.03 hrs, Volume= 0.533 af  
Outflow = 1.51 cfs @ 12.03 hrs, Volume= 0.533 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

**Reach SP1: Existing system**

Hydrograph Plot



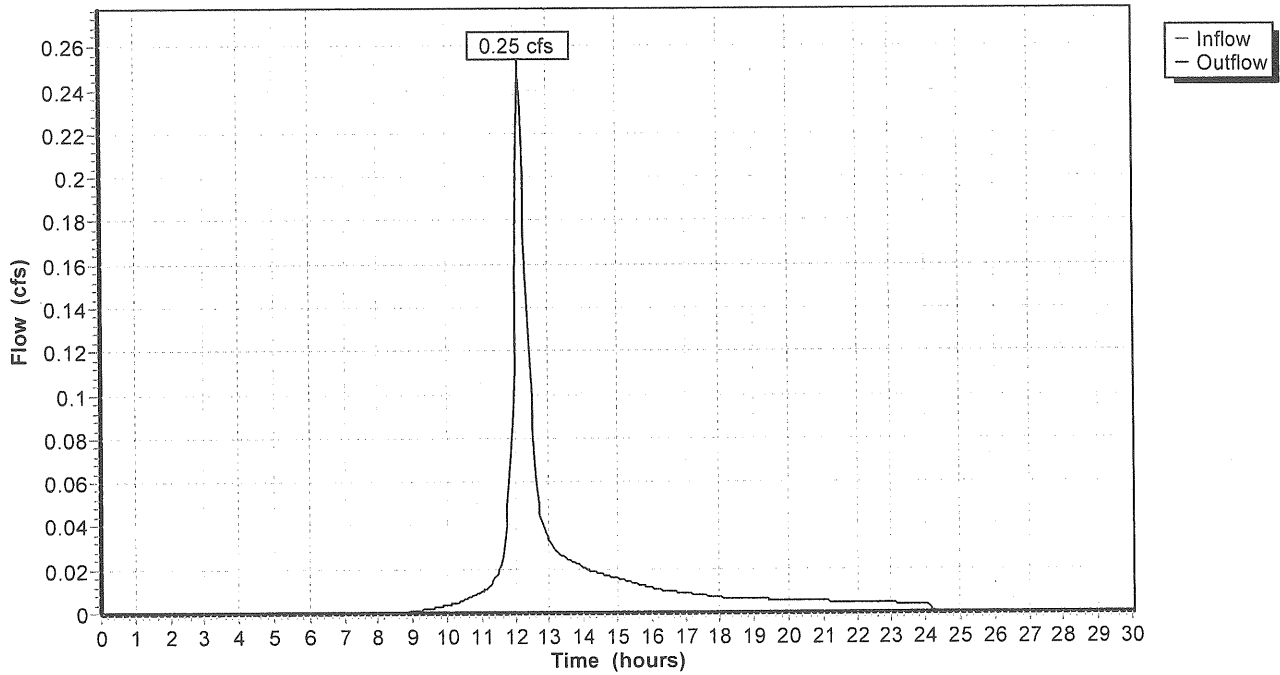
### Reach SP2: Existing Pond

Inflow = 0.25 cfs @ 12.16 hrs, Volume= 0.021 af  
Outflow = 0.25 cfs @ 12.16 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

### Reach SP2: Existing Pond

Hydrograph Plot



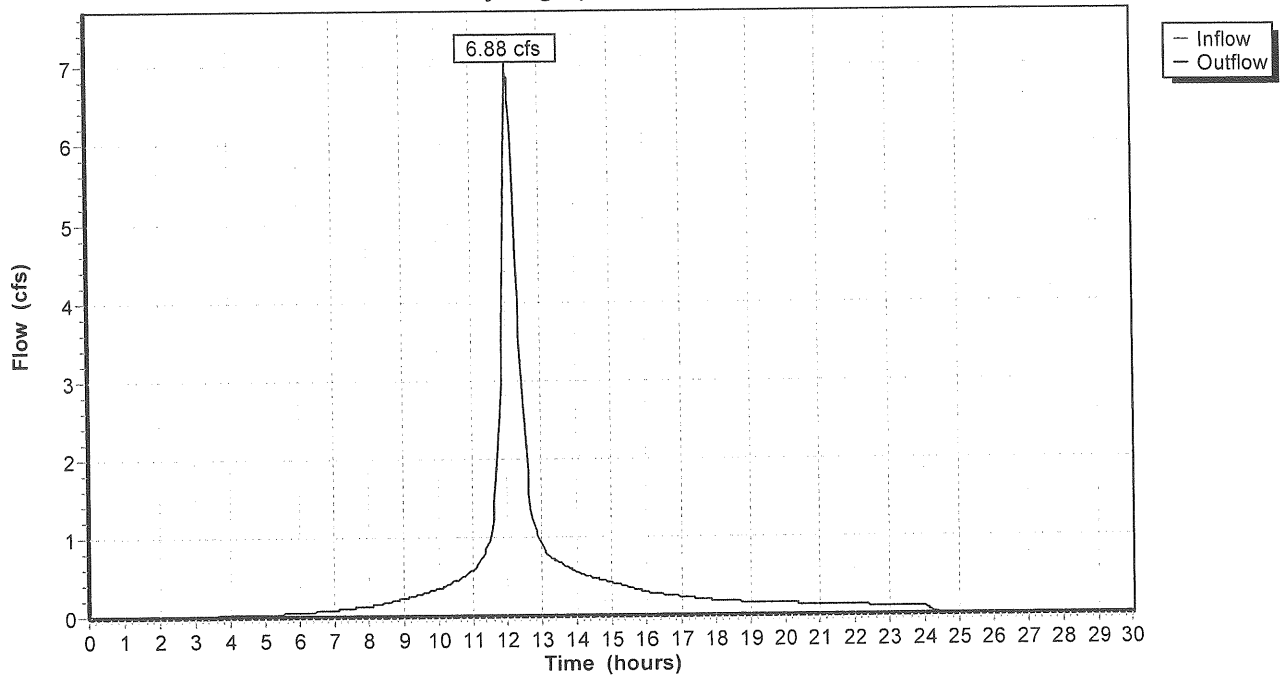
**Reach SP3: Existing Pond**

Inflow = 6.88 cfs @ 12.08 hrs, Volume= 0.730 af  
Outflow = 6.88 cfs @ 12.08 hrs, Volume= 0.730 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

**Reach SP3: Existing Pond**

Hydrograph Plot



**Pond 1P: Base Stone**

Inflow = 6.46 cfs @ 12.15 hrs, Volume= 0.533 af  
 Outflow = 1.51 cfs @ 12.03 hrs, Volume= 0.533 af, Atten= 77%, Lag= 0.0 min  
 Primary = 1.51 cfs @ 12.03 hrs, Volume= 0.533 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs / 9

Peak Elev= 76.90' Storage= 6,455 cf  
 Plug-Flow detention time= 35.4 min calculated for 0.533 af (100% of inflow)

Elevation (feet)	Cum.Store (cubic-feet)
75.25	0
75.30	32
75.40	96
75.50	163
75.60	230
75.70	298
75.80	365
75.90	435
76.00	506
76.10	576
76.20	646
76.30	720
76.40	886
76.50	1,370
76.60	2,170
76.70	3,293
76.80	4,736
76.90	6,499
77.00	8,582
77.10	10,989
77.20	13,715
77.30	16,762
77.40	20,128
77.50	23,488
77.60	26,365
77.70	28,602
77.80	30,195
77.90	31,149
78.00	31,459

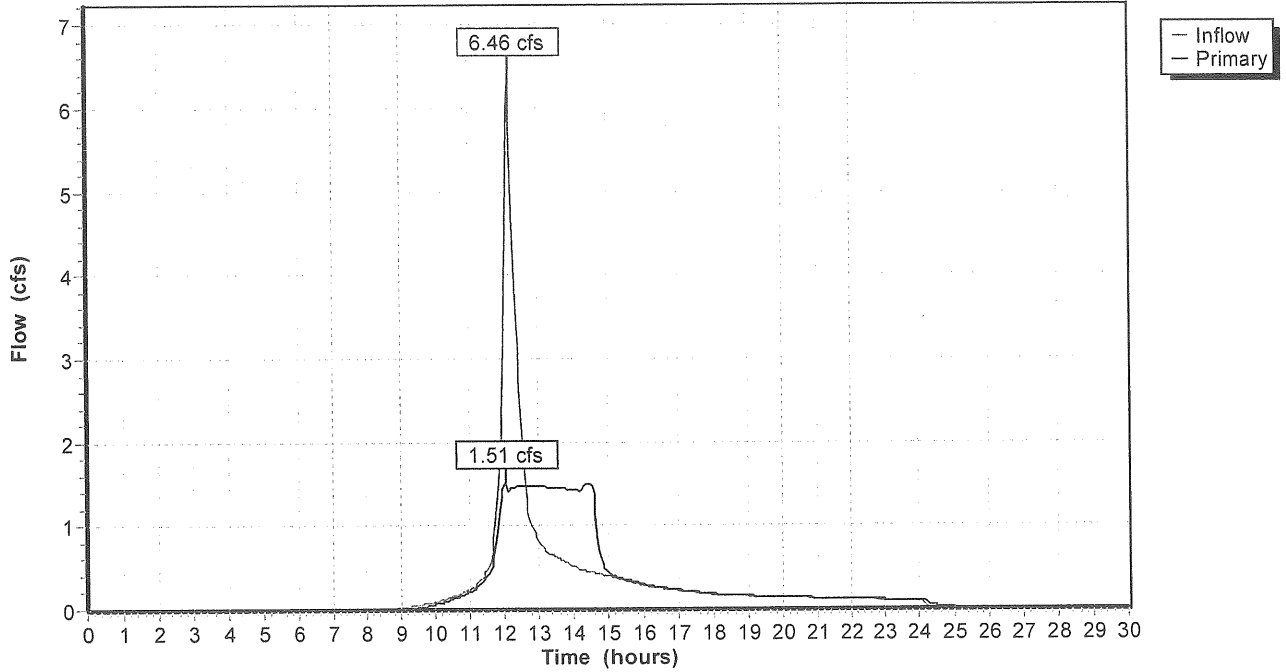
**Primary OutFlow (Free Discharge)**

↑ 1=Perimeter Underdrain

#	Routing	Invert	Outlet Devices
1	Primary	75.25'	<b>12.0" x 589.0' long Perimeter Underdrain</b> CMP, projecting, no headwall, Ke= 0.900 Outlet Invert= 72.33' S= 0.0050 '/' n= 0.024 Cc= 0.900

### Pond 1P: Base Stone

Hydrograph Plot



**Pond 3.2P: (new node)**

Inflow = 2.45 cfs @ 12.05 hrs, Volume= 0.167 af  
 Outflow = 2.45 cfs @ 12.05 hrs, Volume= 0.167 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.45 cfs @ 12.05 hrs, Volume= 0.167 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs / 5

Peak Elev= 74.54' Storage= 4 cf

Plug-Flow detention time= 0.1 min calculated for 0.167 af (100% of inflow)

Storage and wetted areas determined by Irregular sections

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
73.50	4	8.0	0	0	4
75.75	4	8.0	9	9	22
76.00	545	110.0	50	59	980
76.30	1,450	150.0	288	347	1,808

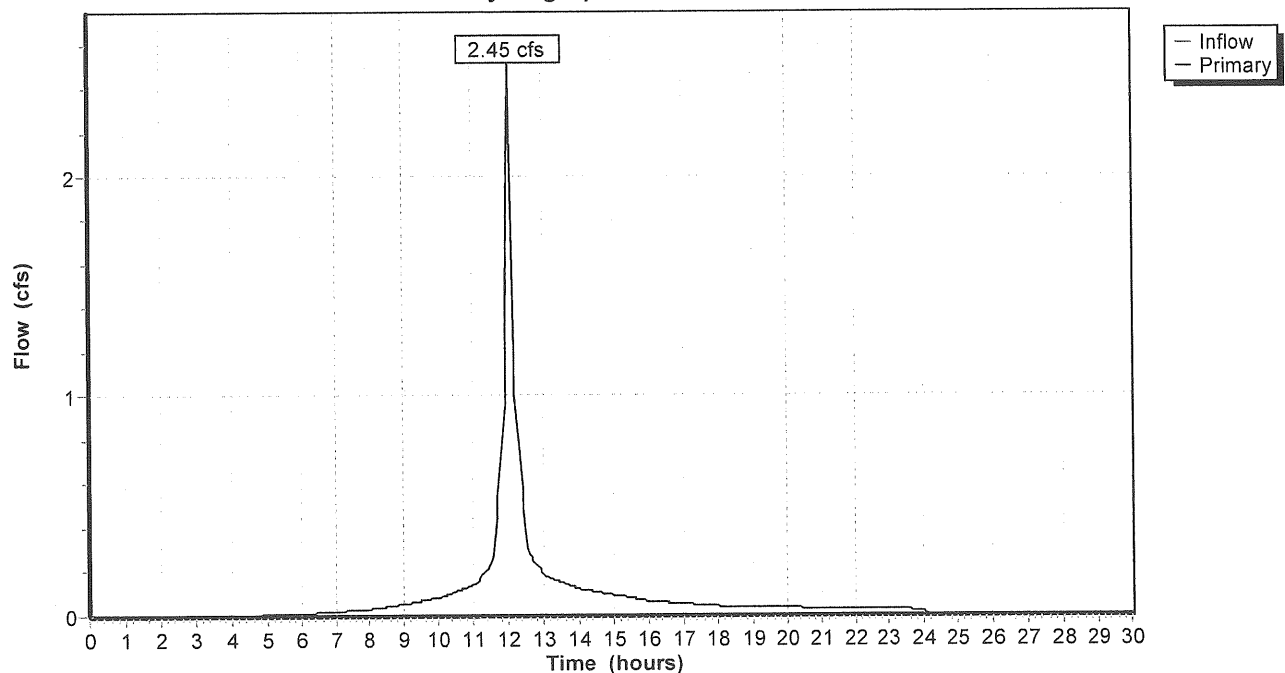
**Primary OutFlow (Free Discharge)**

↳1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	73.50'	12.0" x 1.0' long Culvert RCP, groove end projecting, Ke= 0.200 Outlet Invert= 73.50' S= 0.0000 '/' n= 0.011 Cc= 0.900

**Pond 3.2P: (new node)**

Hydrograph Plot





**Pond 3.4P: (new node)**

Inflow = 0.34 cfs @ 12.26 hrs, Volume= 0.036 af  
 Outflow = 0.34 cfs @ 12.26 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.1 min  
 Primary = 0.34 cfs @ 12.26 hrs, Volume= 0.036 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs / 5

Peak Elev= 73.12' Storage= 5 cf  
 Plug-Flow detention time= 0.9 min calculated for 0.036 af (100% of inflow)  
 Storage and wetted areas determined by Irregular sections

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
72.75	13	12.6	0	0	13
76.25	13	12.6	46	46	57
76.50	270	92.0	29	74	718

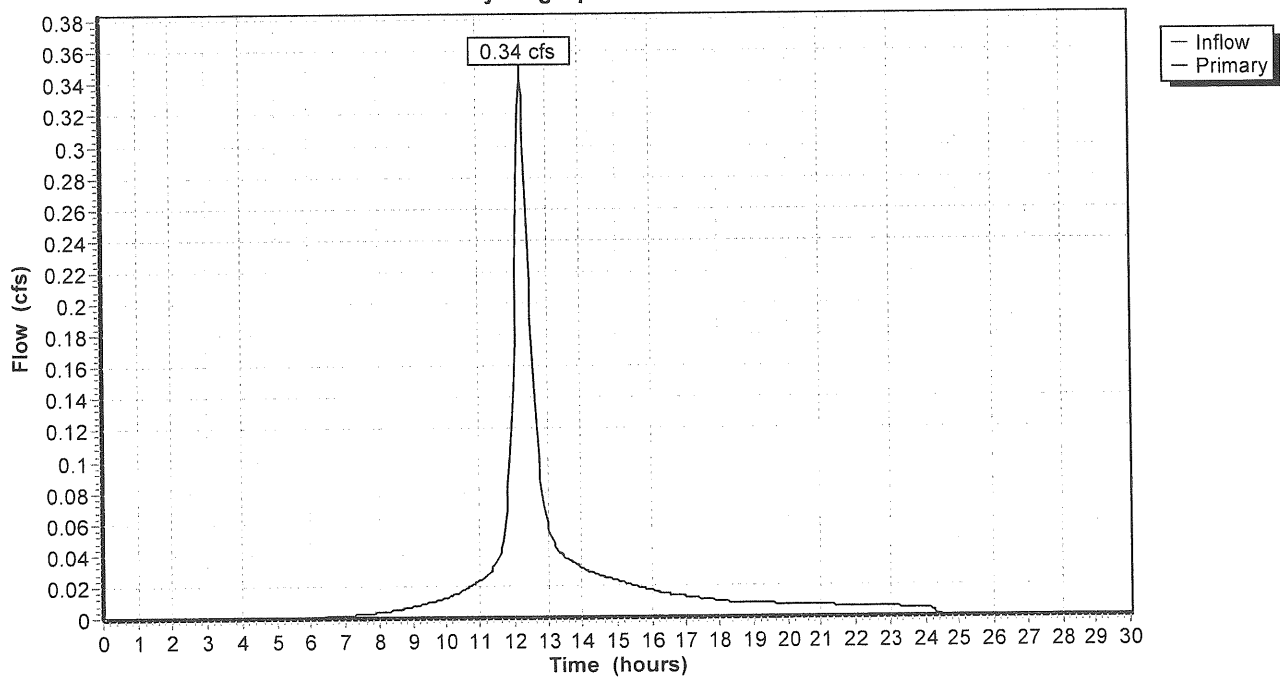
**Primary OutFlow (Free Discharge)**

↑1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	72.77'	<b>12.0" x 1.0' long Culvert</b> RCP, groove end projecting, Ke= 0.200 Outlet Invert= 72.77' S= 0.0000 ' / n= 0.011 Cc= 0.900

**Pond 3.4P: (new node)**

Hydrograph Plot



**Pond 3.7P: 3.7P**

Inflow = 0.44 cfs @ 12.08 hrs, Volume= 0.033 af  
 Outflow = 0.44 cfs @ 12.08 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.1 min  
 Primary = 0.44 cfs @ 12.08 hrs, Volume= 0.033 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs / 5

Peak Elev= 74.57' Storage= 5 cf

Plug-Flow detention time= 0.5 min calculated for 0.033 af (100% of inflow)

Storage and wetted areas determined by Irregular sections

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
74.18	13	12.6	0	0	13
76.50	13	12.6	30	30	42
77.00	425	90.0	85	116	675
77.25	740	115.0	144	259	1,083

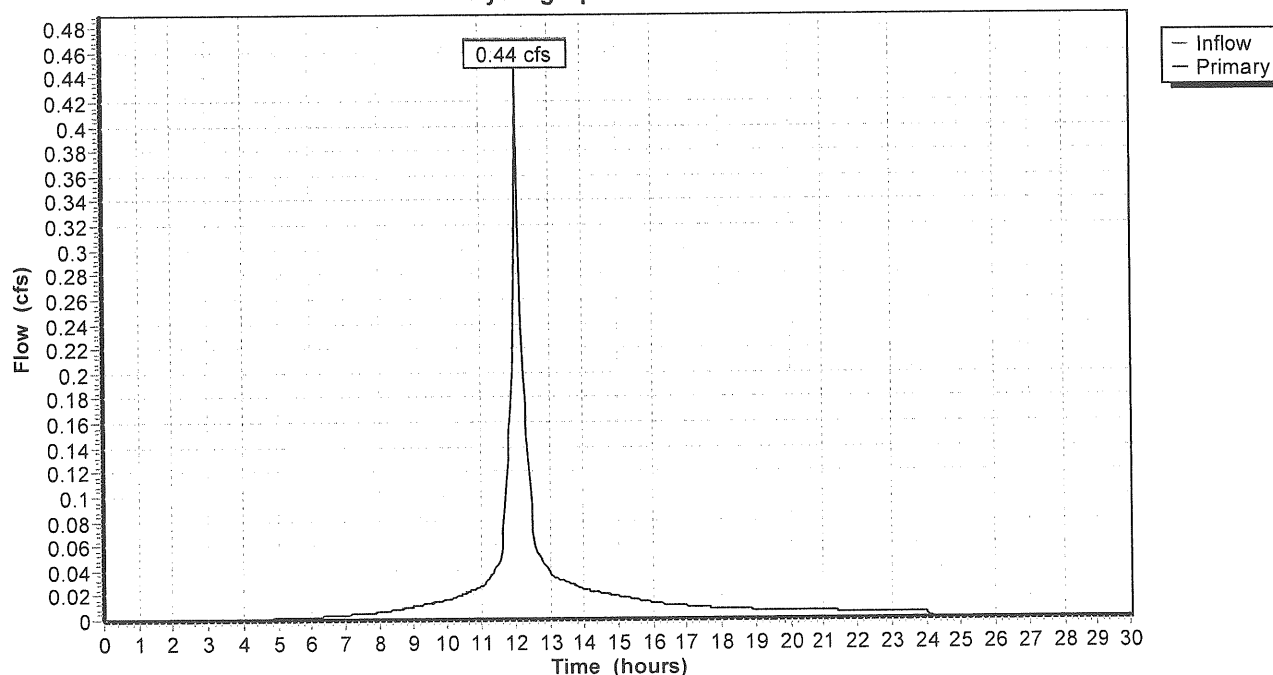
**Primary OutFlow (Free Discharge)**

↑1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	74.18'	12.0" x 1.0' long Culvert RCP, groove end projecting, Ke= 0.200 Outlet Invert= 74.18' S= 0.0000 '/' n= 0.011 Cc= 0.900

**Pond 3.7P: 3.7P**

Hydrograph Plot



**Pond 3.8P: 3.8P**

Inflow = 0.77 cfs @ 12.14 hrs, Volume= 0.068 af  
 Outflow = 0.77 cfs @ 12.14 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.77 cfs @ 12.14 hrs, Volume= 0.068 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs / 5

Peak Elev= 74.99' Storage= 2 cf  
 Plug-Flow detention time= 0.1 min calculated for 0.068 af (100% of inflow)  
 Storage and wetted areas determined by Irregular sections

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
74.50	4	8.0	0	0	4
76.25	4	8.0	7	7	18
76.50	875	120.0	78	85	1,159

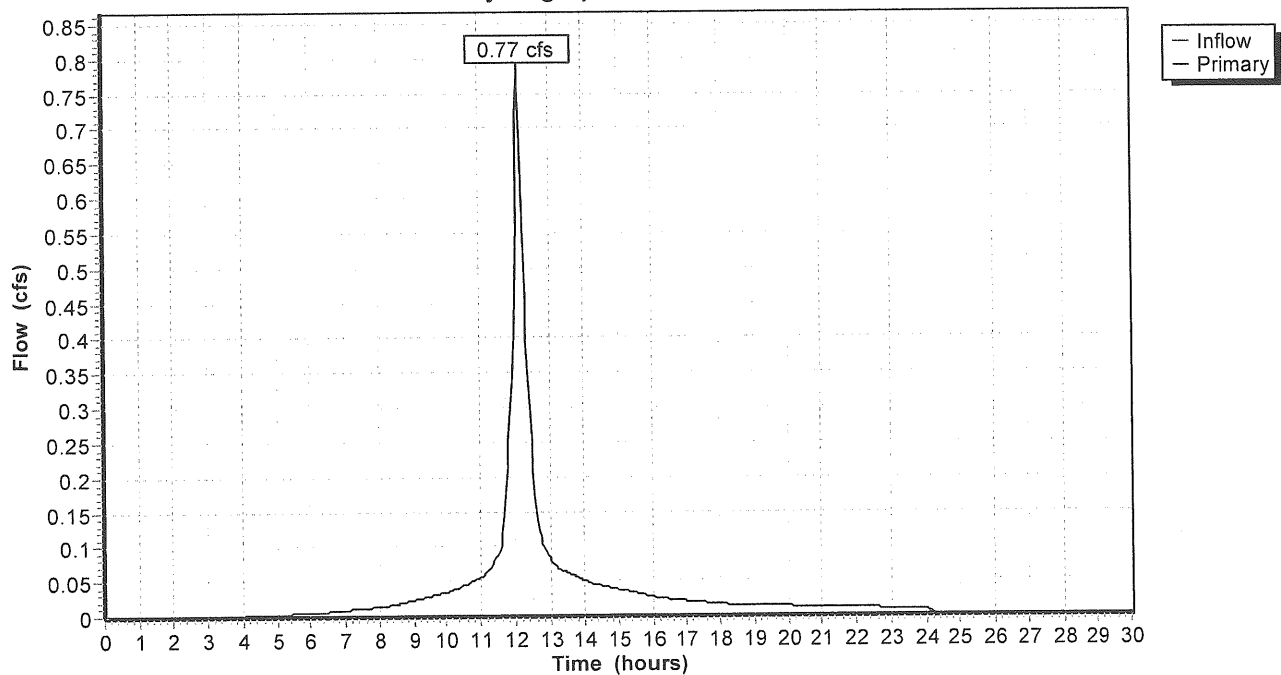
**Primary OutFlow (Free Discharge)**

↑=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	74.50'	12.0" x 44.5' long Culvert RCP, groove end projecting, Ke= 0.200 Outlet Invert= 74.28' S= 0.0049 '/ n= 0.011 Cc= 0.900

**Pond 3.8P: 3.8P**

Hydrograph Plot



**Pond 3.9P: (new node)**

Inflow = 0.71 cfs @ 12.09 hrs, Volume= 0.053 af  
 Outflow = 0.71 cfs @ 12.09 hrs, Volume= 0.053 af, Atten= 0%, Lag= 0.1 min  
 Primary = 0.71 cfs @ 12.09 hrs, Volume= 0.053 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 73.99' Storage= 7 cf

Plug-Flow detention time= 0.5 min calculated for 0.053 af (100% of inflow)

Storage and wetted areas determined by Irregular sections

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
73.47	13	12.6	0	0	13
76.50	13	12.6	39	39	51
77.00	300	157.0	63	102	2,001
77.25	550	200.0	105	207	3,223

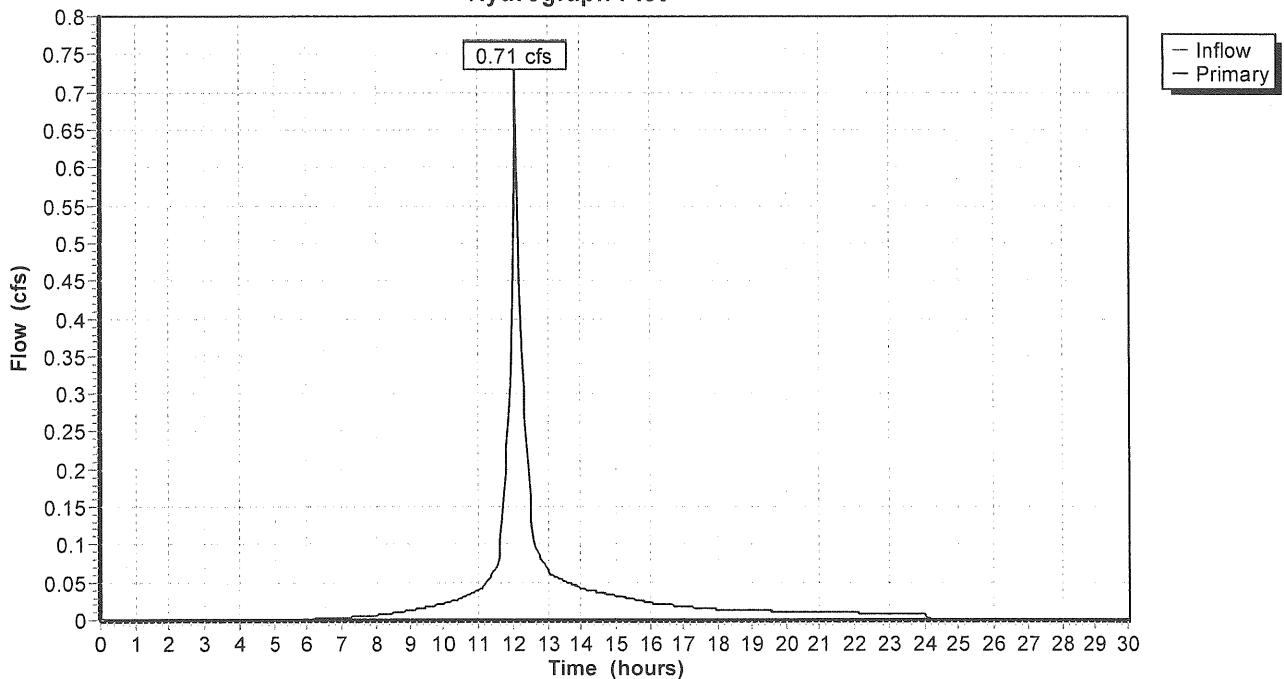
**Primary OutFlow (Free Discharge)**

↑1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	73.47'	12.0" x 1.0' long Culvert RCP, groove end projecting, Ke= 0.200 Outlet Invert= 73.47' S= 0.0000 ' / ' n= 0.024 Cc= 0.900

**Pond 3.9P: (new node)**

Hydrograph Plot



**Stormwater Runoff Analysis**  
to  
**City of Portland**

for  
**The Memorial Field Athletic Facility  
Improvements**

In  
**Portland, Maine**

Prepared for  
**Portland Parks & Recreation**

Prepared by  
**Sebago Technics, Inc.**

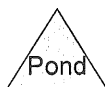
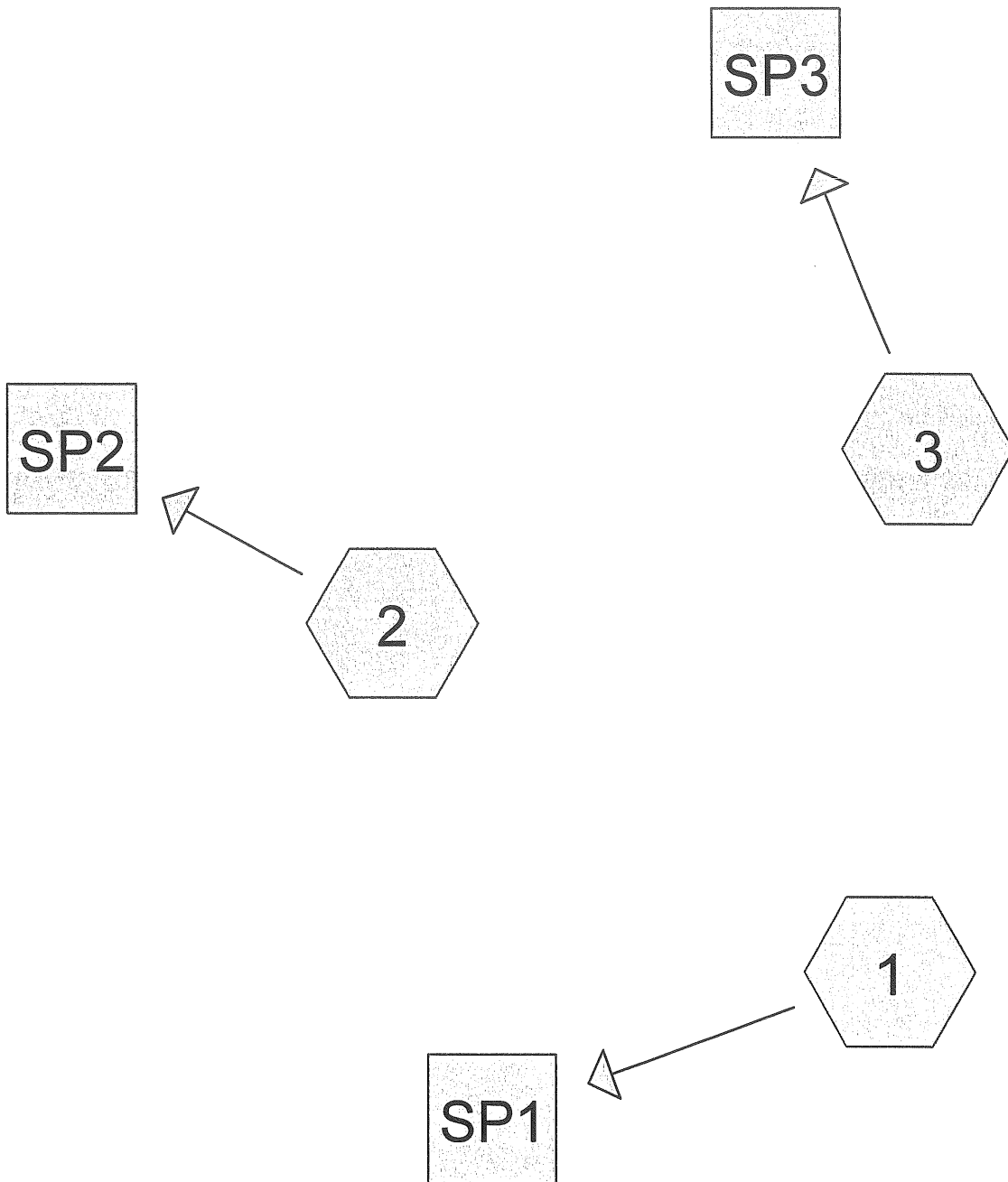
**April 2007**

Sub-Catchment Data - Summary Table						
Sub-Catchment	Pre-Development			Post-Development		
	Area (ac)	CN	Tc (min)	Area (ac)	CN	Tc (min)
1	2.617	83	41.6	2.310	74	10.0
2	0.350	83	23.1	0.119	85	15.1
3(.1)	1.473	84	41.0	0.137	83	21.2
3.2				0.116	89	3.7
3.3				0.558	87	30.8
3.4				0.208	81	2.0
3.5				0.328	91	8.2
3.6				0.266	96	0.6
3.7				0.150	98	1.0
3.8				0.108	87	6.7
3.9				0.162	86	6.2
<b>Total:</b>	4.440			4.462		

Rainfall Data		
Type III Rainfall Distribution	P(2)	3.0
24 hr. Duration Event	P(10)	4.7
	P(25)	5.5

Stormwater Runoff - Summary Table						
Study Point	Peak Runoff Rate					
	Pre-Development			Post-Development		
	2-yr	10-yr	25-yr	2-yr	10-yr	25-yr
SP-1	2.20	4.43	5.52	2.09	3.43	4.17
SP-2	0.40	0.80	1.00	0.17	0.32	0.40
SP-3	1.28	2.53	3.13	1.59	2.66	3.16
<b>Total</b>	3.88	7.76	9.65	3.85	6.41	7.73

Stormwater Runoff - Summary Table			
Pond	Peak Water Surface Elev. (ft)		
	2-yr	10-yr	25-yr
3.1P	76.04	76.07	76.08
3.3P (Rim=76.00)	76.05	76.14	76.17
3.5P (Rim=76.50)	76.56	76.65	76.67
3.9P	76.57	76.61	76.62



Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points

Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=3.00"

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1: Easterly Subcatchment**

Tc=39.1 min CN=83 Area=2.617 ac Runoff= 2.20 cfs 0.315 af

**Subcatchment 2: Southwest Corner**

Tc=20.1 min CN=83 Area=0.350 ac Runoff= 0.40 cfs 0.042 af

**Subcatchment 3: Westerly Subcatchment**

Tc=40.3 min CN=84 Area=1.473 ac Runoff= 1.28 cfs 0.186 af

**Reach SP1: (new node)**

Inflow= 2.20 cfs 0.315 af  
Outflow= 2.20 cfs 0.315 af

**Reach SP2: (new node)**

Inflow= 0.40 cfs 0.042 af  
Outflow= 0.40 cfs 0.042 af

**Reach SP3: (new node)**

Inflow= 1.28 cfs 0.186 af  
Outflow= 1.28 cfs 0.186 af

**Runoff Area = 4.440 ac Volume = 0.544 af Average Depth = 1.47"**



### Subcatchment 1: Easterly Subcatchment

Runoff = 2.20 cfs @ 12.55 hrs, Volume= 0.315 af

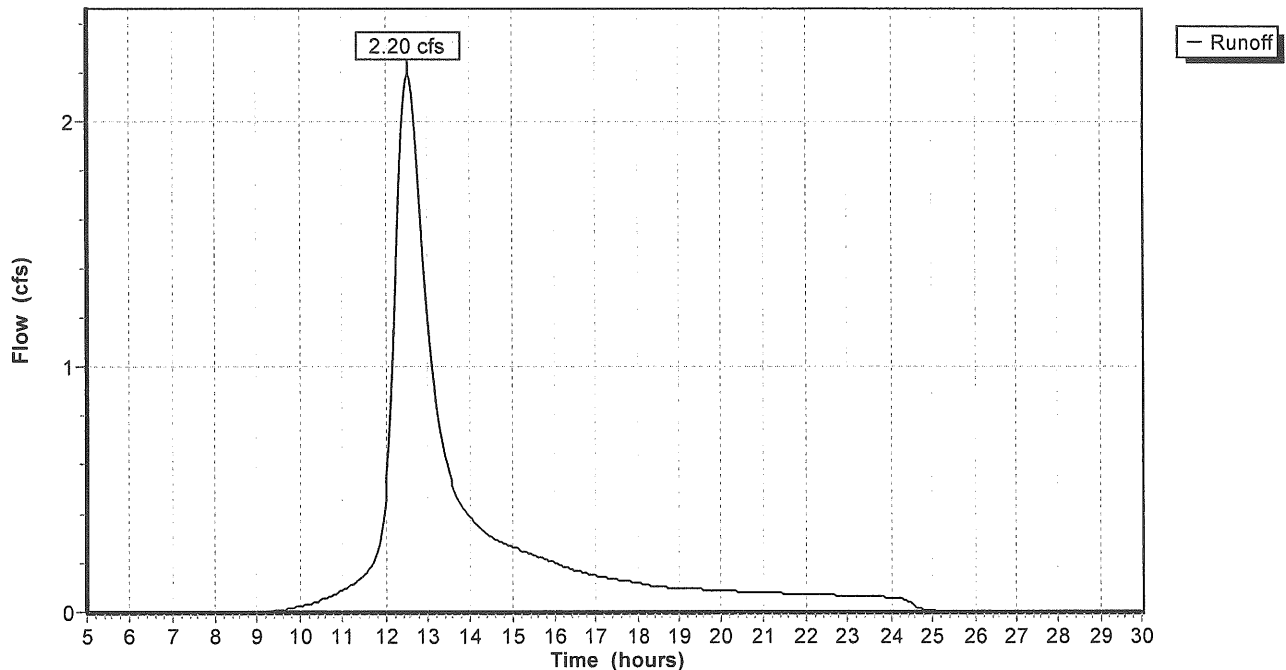
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.350	98	Impervious, unpaved, HSG D
0.023	98	Pavement & roofs
2.244	80	>75% Grass cover, Good, HSG D
2.617	83	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
31.9	100	0.0085	0.1		<b>Sheet Flow, A-B</b> Grass: Bermuda n= 0.410 P2= 3.00"
5.8	330	0.0040	0.9		<b>Shallow Concentrated Flow, B-C</b> Grassed Waterway Kv= 15.0 fps
1.4	90	0.0050	1.1		<b>Shallow Concentrated Flow, C-D</b> Grassed Waterway Kv= 15.0 fps
39.1	520	Total			

### Subcatchment 1: Easterly Subcatchment

Hydrograph Plot



**Subcatchment 2: Southwest Corner**

Runoff = 0.40 cfs @ 12.29 hrs, Volume= 0.042 af

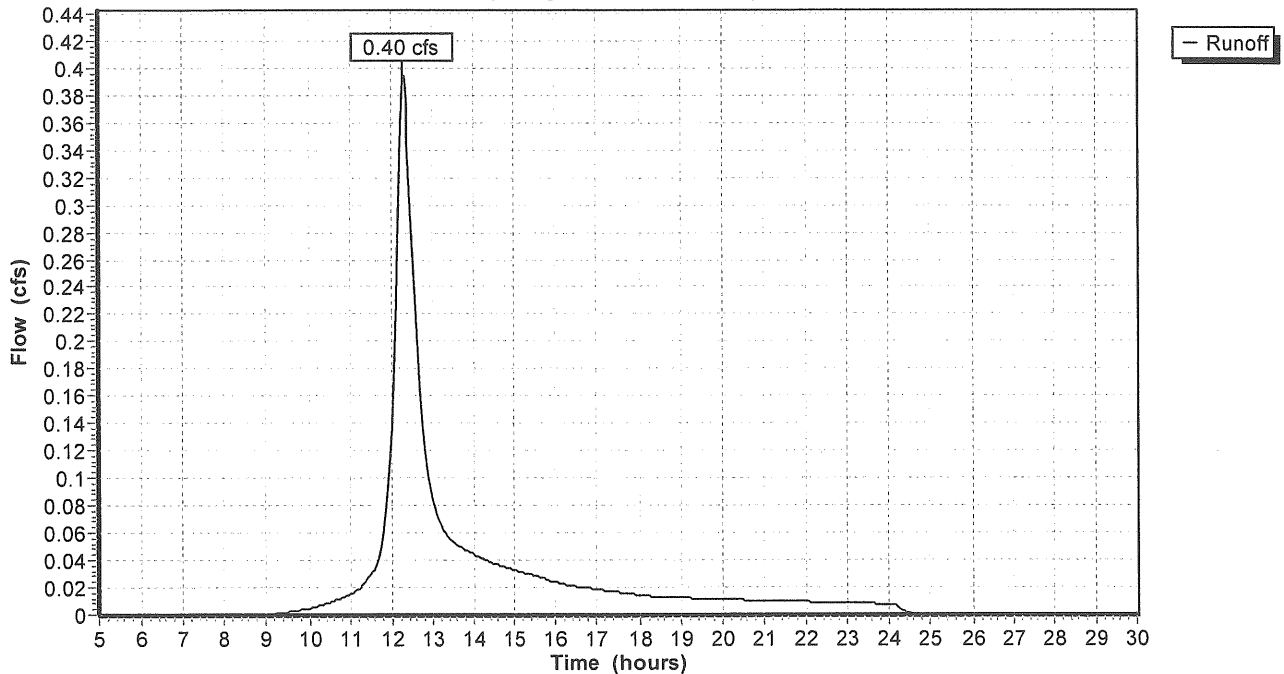
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.054	98	Impervious, unpaved, HSG D
0.296	80	>75% Grass cover, Good, HSG D
0.350	83	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7	65	0.0120	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"
0.4	55	0.0300	2.6		Shallow Concentrated Flow, B-C Grassed Waterway Kv= 15.0 fps
20.1	120	Total			

**Subcatchment 2: Southwest Corner**

Hydrograph Plot



**Subcatchment 3: Westerly Subcatchment**

Runoff = 1.28 cfs @ 12.57 hrs, Volume= 0.186 af

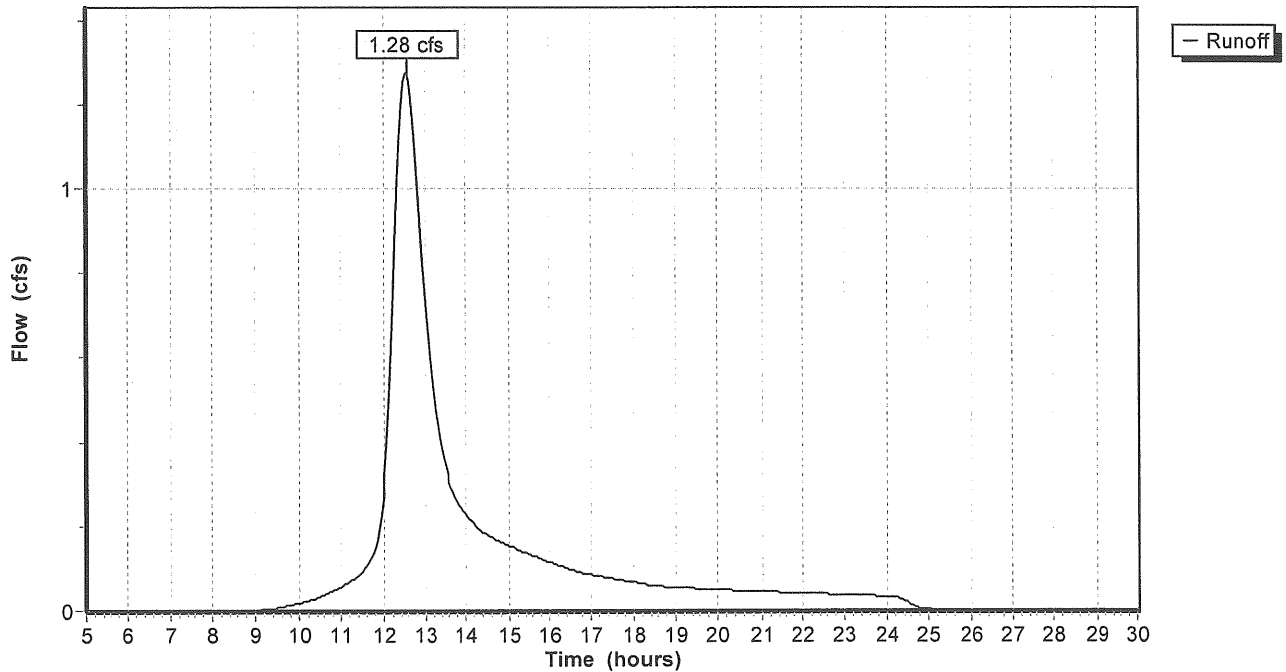
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.327	98	Impervious, unpaved, HSG D
0.034	98	Paved areas & roofs
1.112	80	>75% Grass cover, Good, HSG D
1.473	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.1	140	0.0100	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"
1.2	100	0.0080	1.4		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
40.3	240	Total			

**Subcatchment 3: Westerly Subcatchment**

Hydrograph Plot



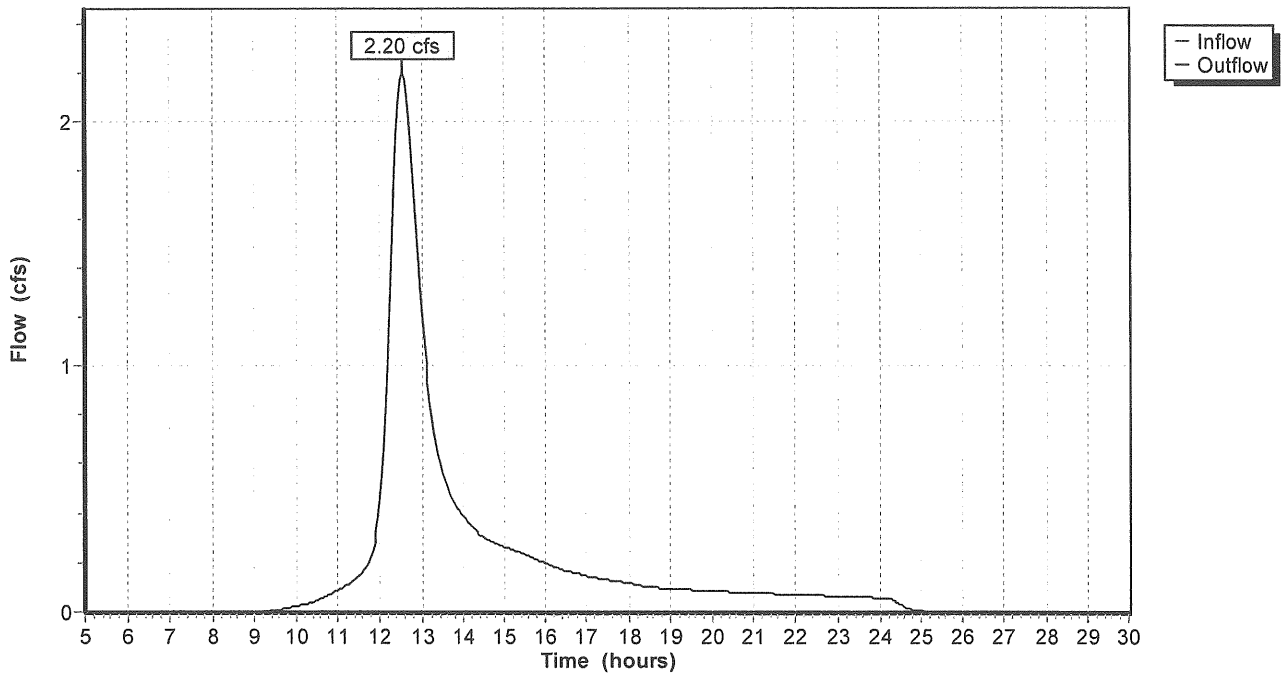
**Reach SP1: (new node)**

Inflow = 2.20 cfs @ 12.55 hrs, Volume= 0.315 af  
Outflow = 2.20 cfs @ 12.55 hrs, Volume= 0.315 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

**Reach SP1: (new node)**

Hydrograph Plot



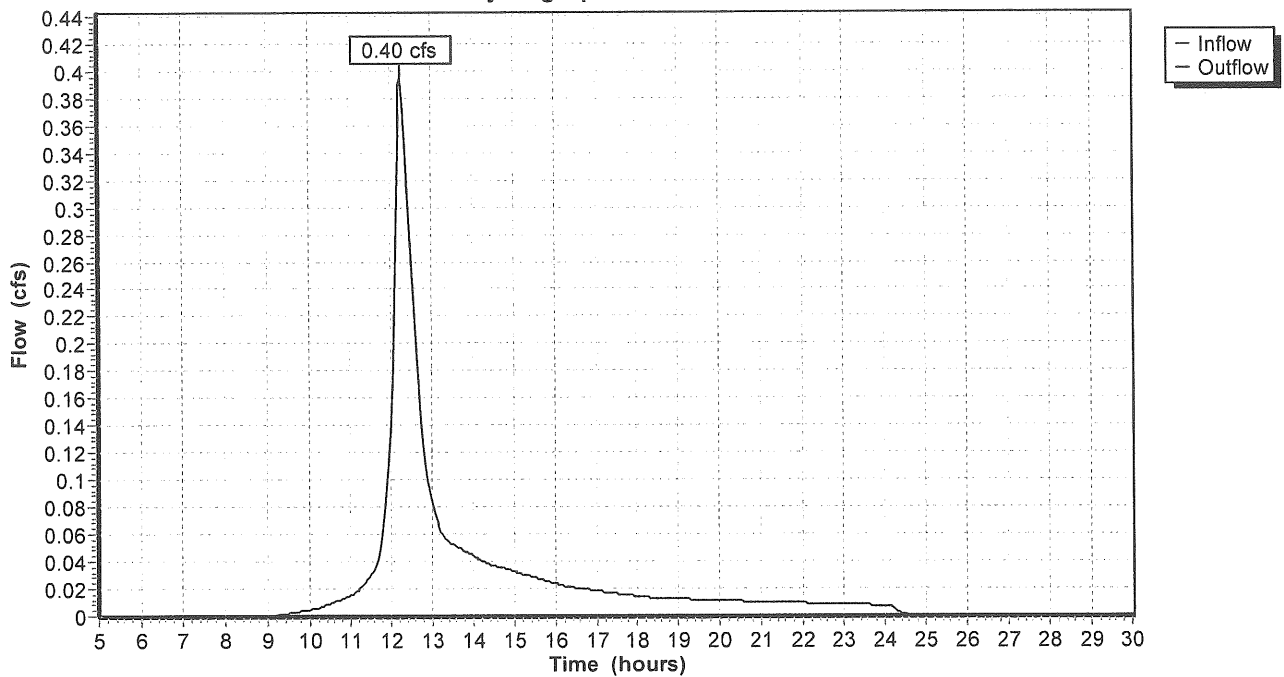
Reach SP2: (new node)

Inflow = 0.40 cfs @ 12.29 hrs, Volume= 0.042 af  
Outflow = 0.40 cfs @ 12.29 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Reach SP2: (new node)

Hydrograph Plot



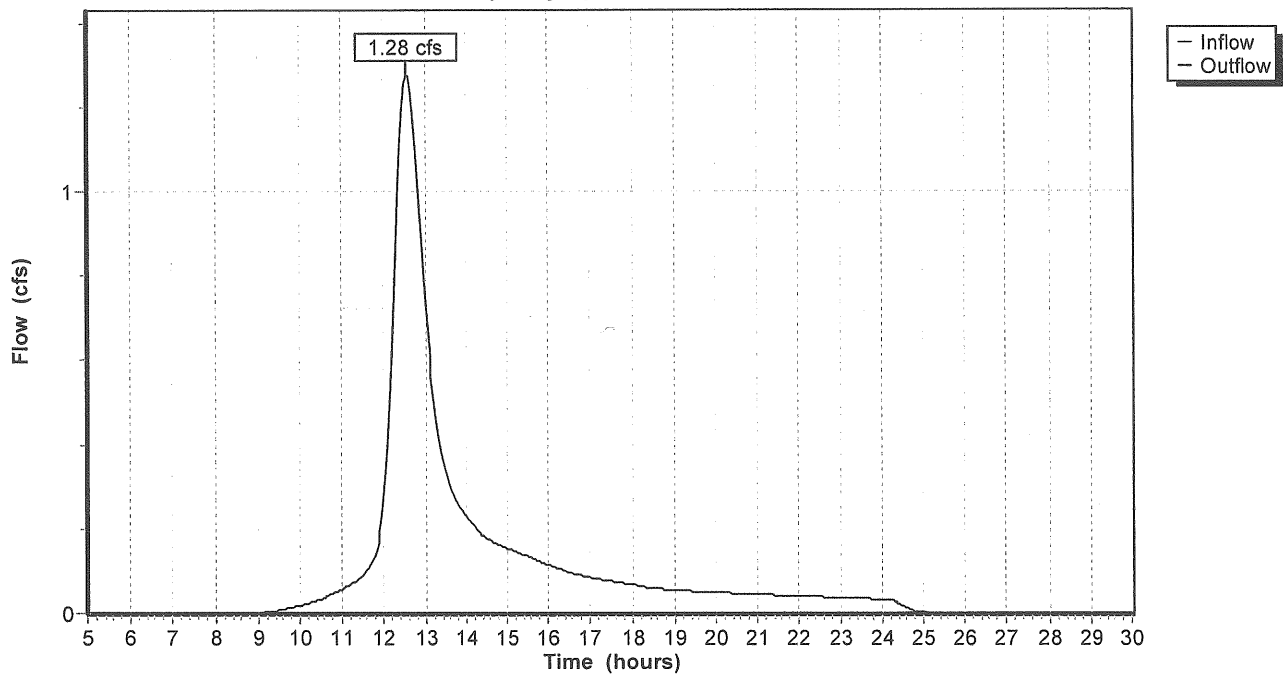
**Reach SP3: (new node)**

Inflow = 1.28 cfs @ 12.57 hrs, Volume= 0.186 af  
Outflow = 1.28 cfs @ 12.57 hrs, Volume= 0.186 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

**Reach SP3: (new node)**

Hydrograph Plot



03245PRE

Type III 24-hr Rainfall=4.70" - 10 yr event

Prepared by Sebago Technics, Inc.

Page 1

HydroCAD® 6.00 s/n 001856 © 1986-2001 Applied Microcomputer Systems

4/4/2007

Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points

Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=4.70"

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1: Easterly Subcatchment**

Tc=39.1 min CN=83 Area=2.617 ac Runoff= 4.43 cfs 0.633 af

**Subcatchment 2: Southwest Corner**

Tc=20.1 min CN=83 Area=0.350 ac Runoff= 0.80 cfs 0.085 af

**Subcatchment 3: Westerly Subcatchment**

Tc=40.3 min CN=84 Area=1.473 ac Runoff= 2.53 cfs 0.368 af

**Reach SP1: (new node)**

Inflow= 4.43 cfs 0.633 af

Outflow= 4.43 cfs 0.633 af

**Reach SP2: (new node)**

Inflow= 0.80 cfs 0.085 af

Outflow= 0.80 cfs 0.085 af

**Reach SP3: (new node)**

Inflow= 2.53 cfs 0.368 af

Outflow= 2.53 cfs 0.368 af

**Runoff Area = 4.440 ac Volume = 1.086 af Average Depth = 2.93"**

**Subcatchment 1: Easterly Subcatchment**

Runoff = 4.43 cfs @ 12.54 hrs, Volume= 0.633 af

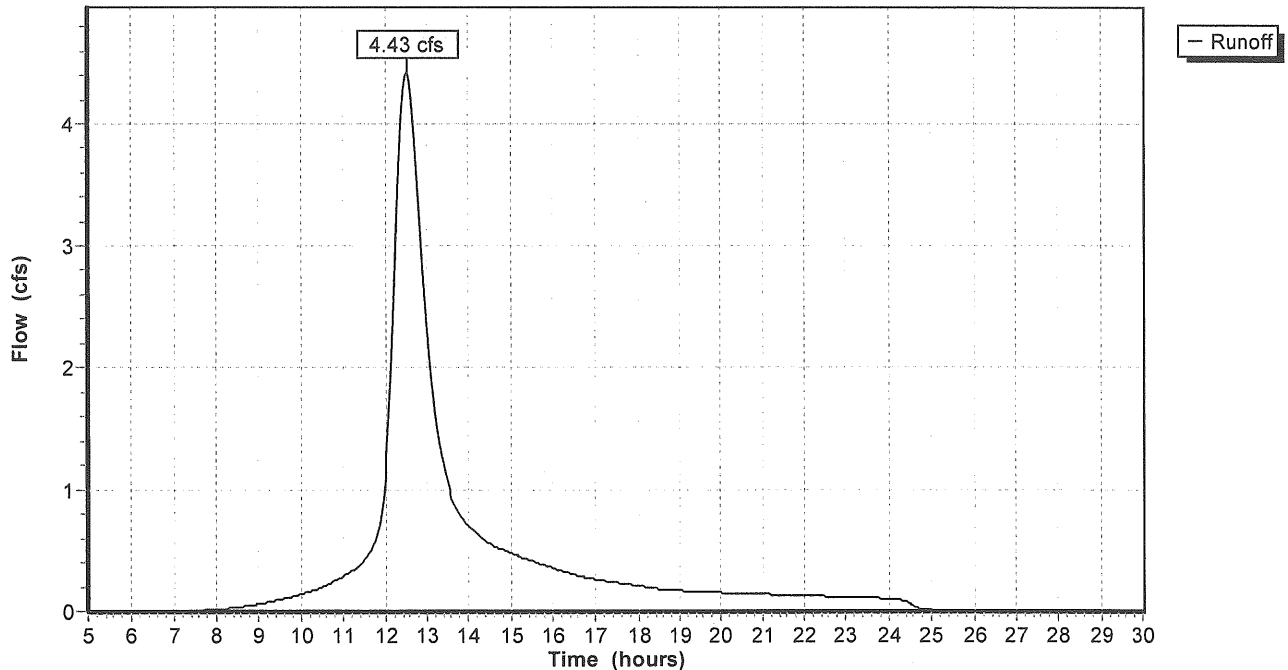
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=4.70"

Area (ac)	CN	Description
0.350	98	Impervious, unpaved, HSG D
0.023	98	Pavement & roofs
2.244	80	>75% Grass cover, Good, HSG D
2.617	83	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
31.9	100	0.0085	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"
5.8	330	0.0040	0.9		Shallow Concentrated Flow, B-C Grassed Waterway Kv= 15.0 fps
1.4	90	0.0050	1.1		Shallow Concentrated Flow, C-D Grassed Waterway Kv= 15.0 fps
39.1	520	Total			

**Subcatchment 1: Easterly Subcatchment**

Hydrograph Plot





**Subcatchment 2: Southwest Corner**

Runoff = 0.80 cfs @ 12.27 hrs, Volume= 0.085 af

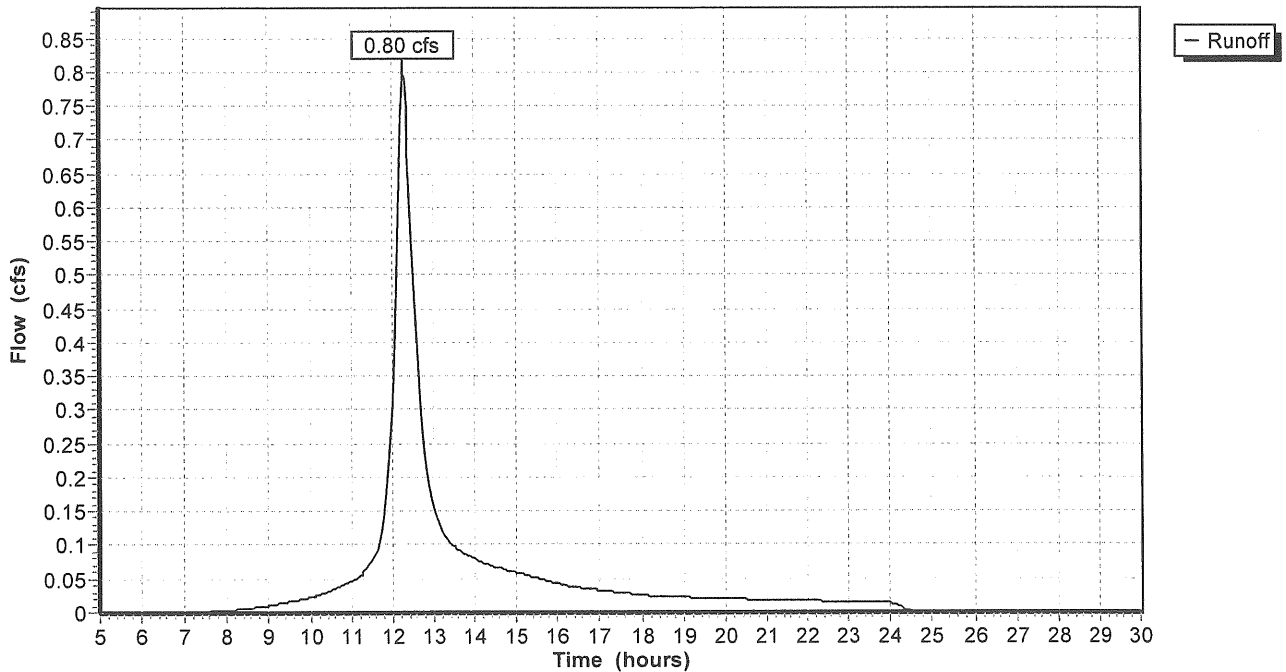
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=4.70"

Area (ac)	CN	Description
0.054	98	Impervious, unpaved, HSG D
0.296	80	>75% Grass cover, Good, HSG D
0.350	83	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7	65	0.0120	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"
0.4	55	0.0300	2.6		Shallow Concentrated Flow, B-C Grassed Waterway Kv= 15.0 fps
20.1	120	Total			

**Subcatchment 2: Southwest Corner**

Hydrograph Plot



### Subcatchment 3: Westerly Subcatchment

Runoff = 2.53 cfs @ 12.55 hrs, Volume= 0.368 af

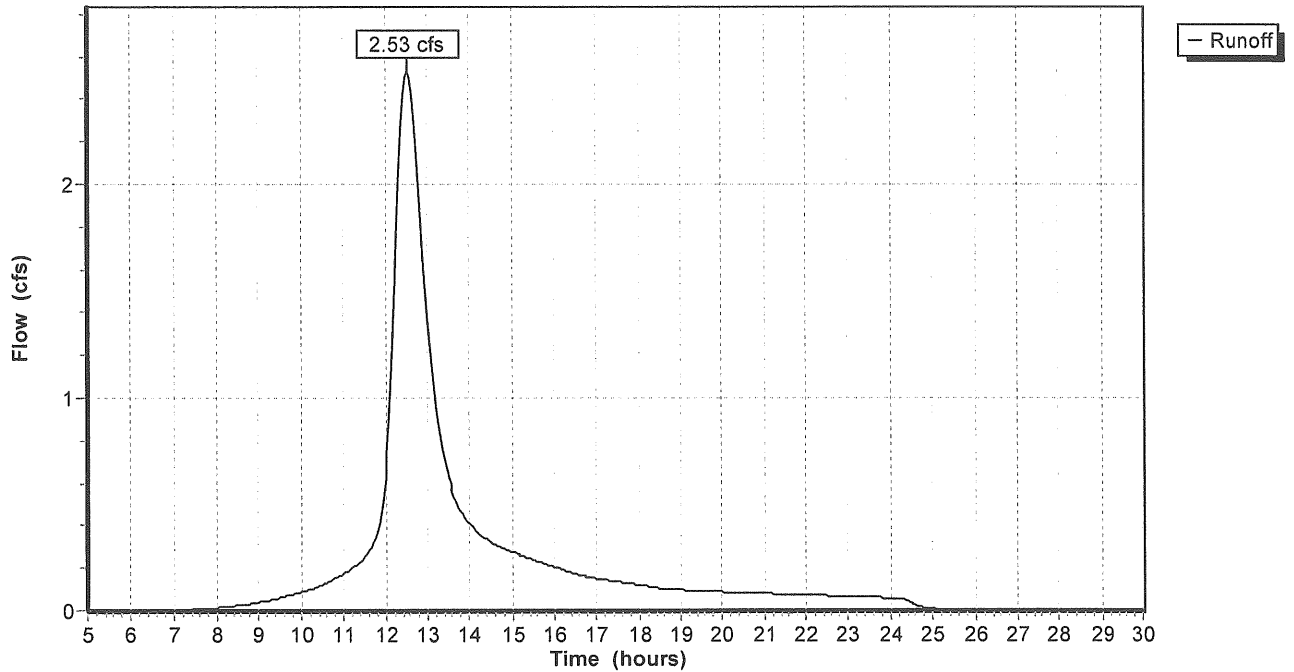
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=4.70"

Area (ac)	CN	Description
0.327	98	Impervious, unpaved, HSG D
0.034	98	Paved areas & roofs
1.112	80	>75% Grass cover, Good, HSG D
1.473	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.1	140	0.0100	0.1		<b>Sheet Flow, A-B</b> Grass: Bermuda n= 0.410 P2= 3.00"
1.2	100	0.0080	1.4		<b>Shallow Concentrated Flow, B-C</b> Unpaved Kv= 16.1 fps
40.3	240	Total			

### Subcatchment 3: Westerly Subcatchment

Hydrograph Plot



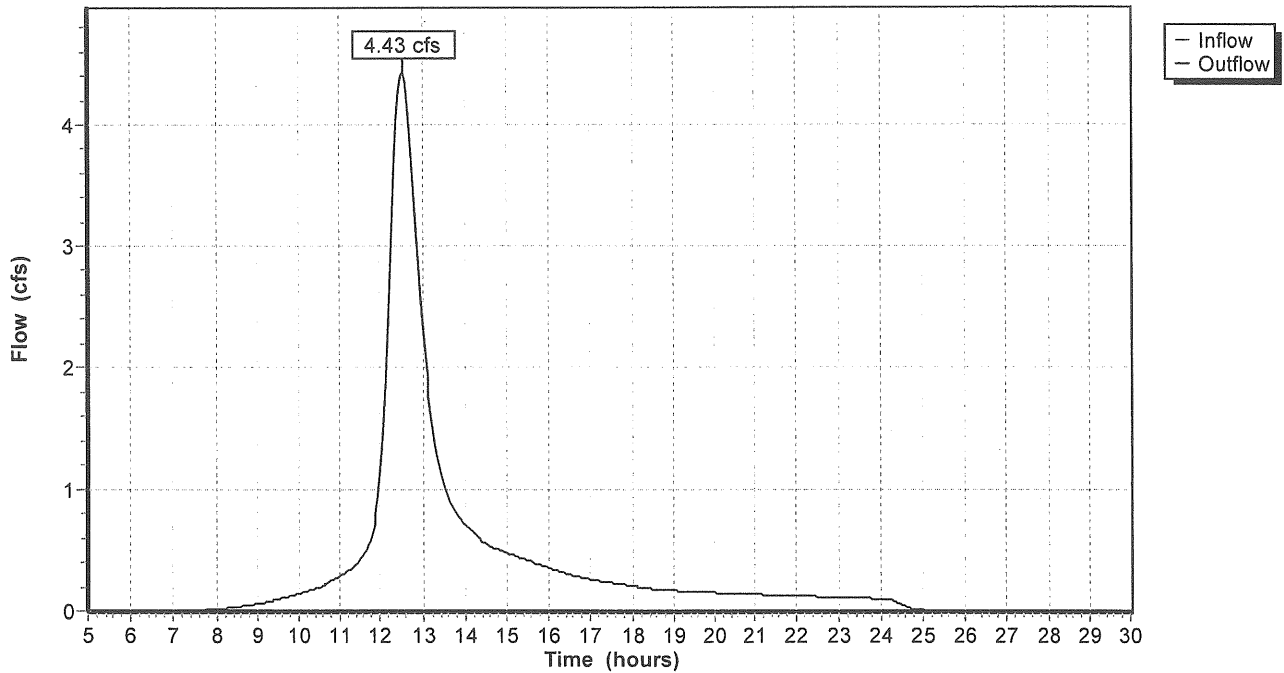
**Reach SP1: (new node)**

Inflow = 4.43 cfs @ 12.54 hrs, Volume= 0.633 af  
Outflow = 4.43 cfs @ 12.54 hrs, Volume= 0.633 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

**Reach SP1: (new node)**

Hydrograph Plot



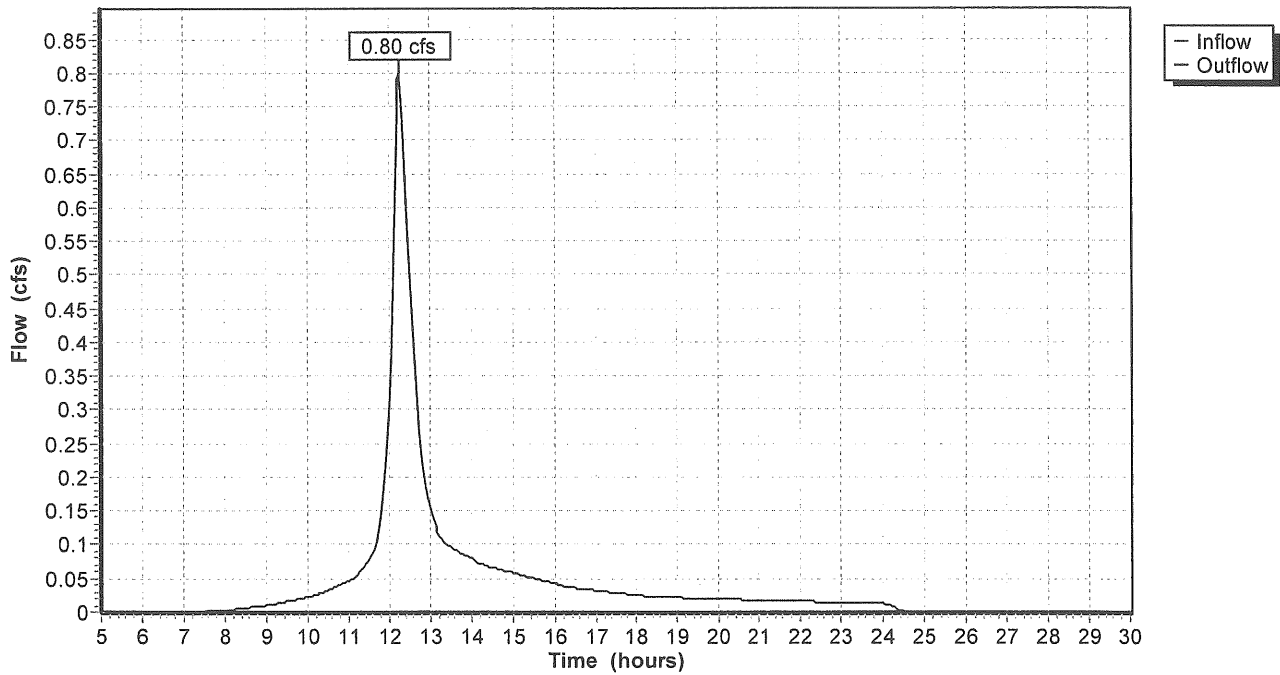
**Reach SP2: (new node)**

Inflow = 0.80 cfs @ 12.27 hrs, Volume= 0.085 af  
Outflow = 0.80 cfs @ 12.27 hrs, Volume= 0.085 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

**Reach SP2: (new node)**

Hydrograph Plot



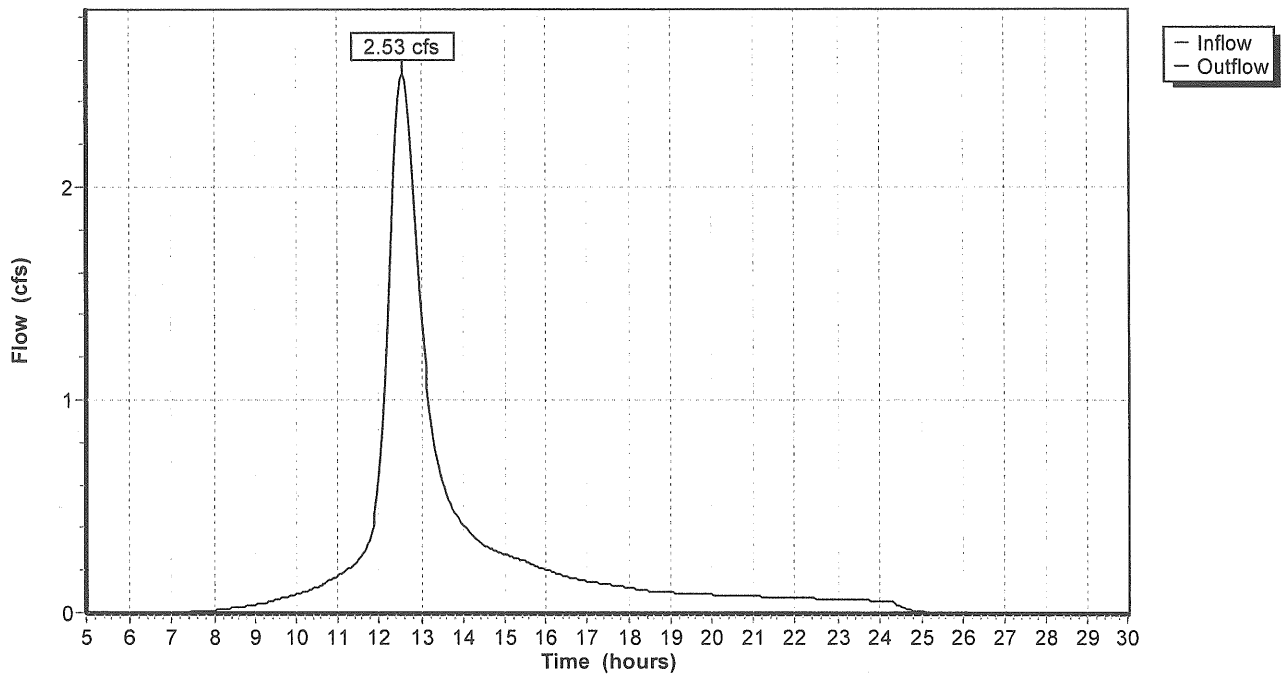
**Reach SP3: (new node)**

Inflow = 2.53 cfs @ 12.55 hrs, Volume= 0.368 af  
Outflow = 2.53 cfs @ 12.55 hrs, Volume= 0.368 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

**Reach SP3: (new node)**

Hydrograph Plot



**03245PRE**

*Type III 24-hr Rainfall=5.50" - 25 yr event*

Prepared by Sebago Technics, Inc.

Page 1

HydroCAD® 6.00 s/n 001856 © 1986-2001 Applied Microcomputer Systems

4/4/2007

Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points

Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=5.50"

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1: Easterly Subcatchment**

Tc=39.1 min CN=83 Area=2.617 ac Runoff= 5.52 cfs 0.792 af

**Subcatchment 2: Southwest Corner**

Tc=20.1 min CN=83 Area=0.350 ac Runoff= 1.00 cfs 0.106 af

**Subcatchment 3: Westerly Subcatchment**

Tc=40.3 min CN=84 Area=1.473 ac Runoff= 3.13 cfs 0.458 af

**Reach SP1: (new node)**

Inflow= 5.52 cfs 0.792 af

Outflow= 5.52 cfs 0.792 af

**Reach SP2: (new node)**

Inflow= 1.00 cfs 0.106 af

Outflow= 1.00 cfs 0.106 af

**Reach SP3: (new node)**

Inflow= 3.13 cfs 0.458 af

Outflow= 3.13 cfs 0.458 af

**Runoff Area = 4.440 ac Volume = 1.355 af Average Depth = 3.66"**

### Subcatchment 1: Easterly Subcatchment

Runoff = 5.52 cfs @ 12.53 hrs, Volume= 0.792 af

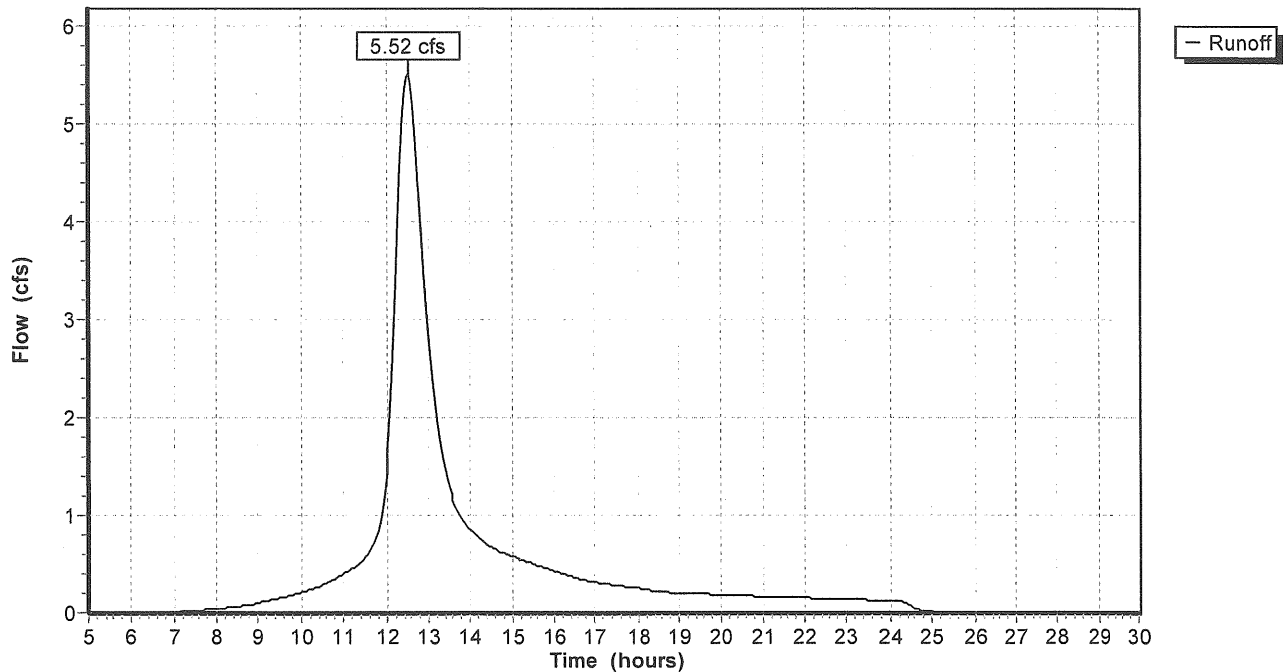
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.350	98	Impervious, unpaved, HSG D
0.023	98	Pavement & roofs
2.244	80	>75% Grass cover, Good, HSG D
2.617	83	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
31.9	100	0.0085	0.1		<b>Sheet Flow, A-B</b> Grass: Bermuda n= 0.410 P2= 3.00"
5.8	330	0.0040	0.9		<b>Shallow Concentrated Flow, B-C</b> Grassed Waterway Kv= 15.0 fps
1.4	90	0.0050	1.1		<b>Shallow Concentrated Flow, C-D</b> Grassed Waterway Kv= 15.0 fps
39.1	520	Total			

### Subcatchment 1: Easterly Subcatchment

Hydrograph Plot



**Subcatchment 2: Southwest Corner**

Runoff = 1.00 cfs @ 12.27 hrs, Volume= 0.106 af

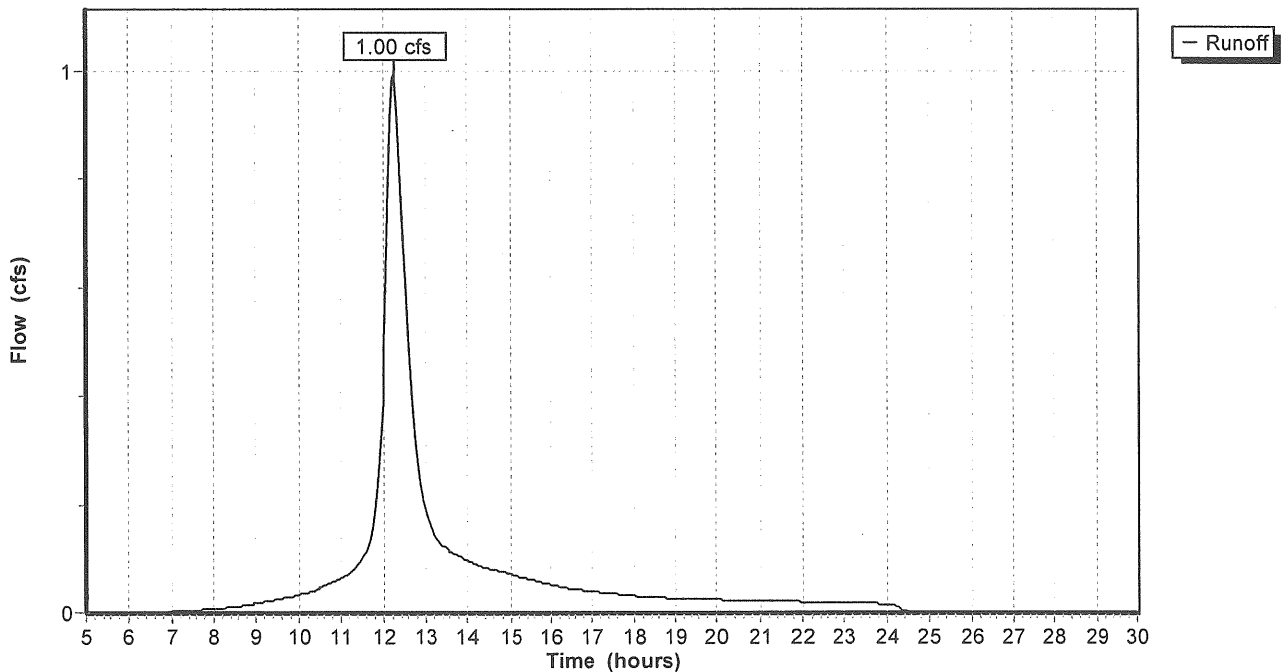
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.054	98	Impervious, unpaved, HSG D
0.296	80	>75% Grass cover, Good, HSG D
0.350	83	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.7	65	0.0120	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"
0.4	55	0.0300	2.6		Shallow Concentrated Flow, B-C Grassed Waterway Kv= 15.0 fps
20.1	120	Total			

**Subcatchment 2: Southwest Corner**

Hydrograph Plot





**Subcatchment 3: Westerly Subcatchment**

Runoff = 3.13 cfs @ 12.55 hrs, Volume= 0.458 af

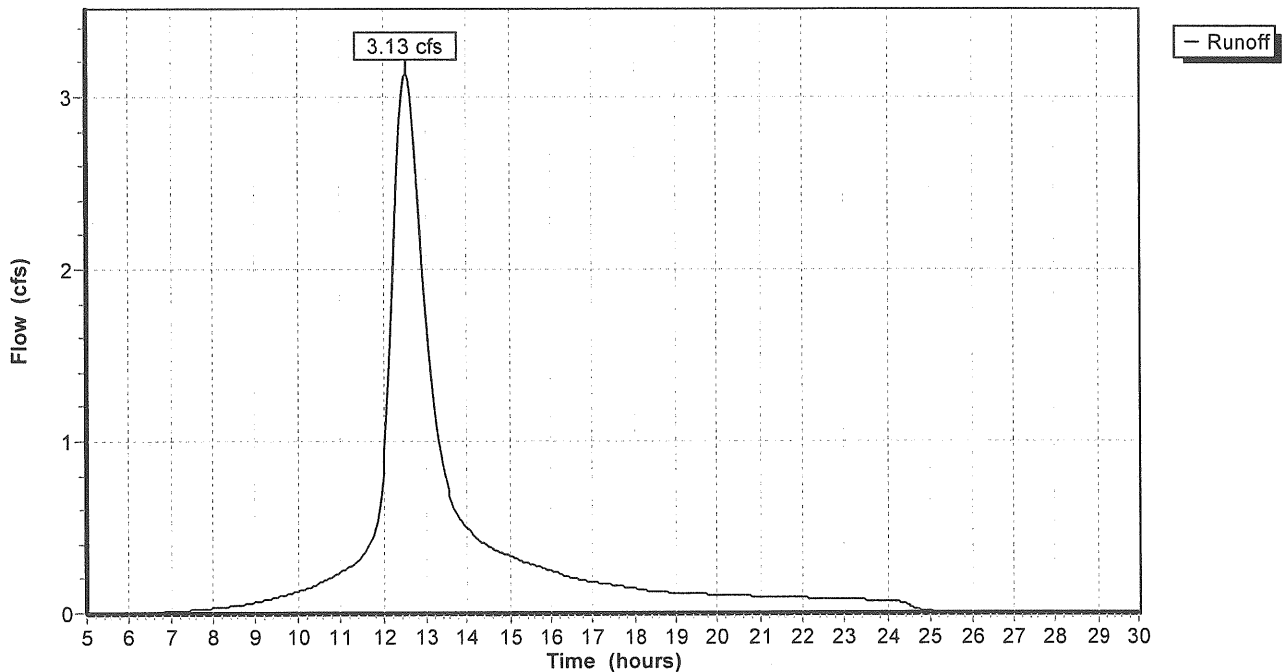
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.327	98	Impervious, unpaved, HSG D
0.034	98	Paved areas & roofs
1.112	80	>75% Grass cover, Good, HSG D
1.473	84	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.1	140	0.0100	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"
1.2	100	0.0080	1.4		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
40.3	240	Total			

**Subcatchment 3: Westerly Subcatchment**

Hydrograph Plot



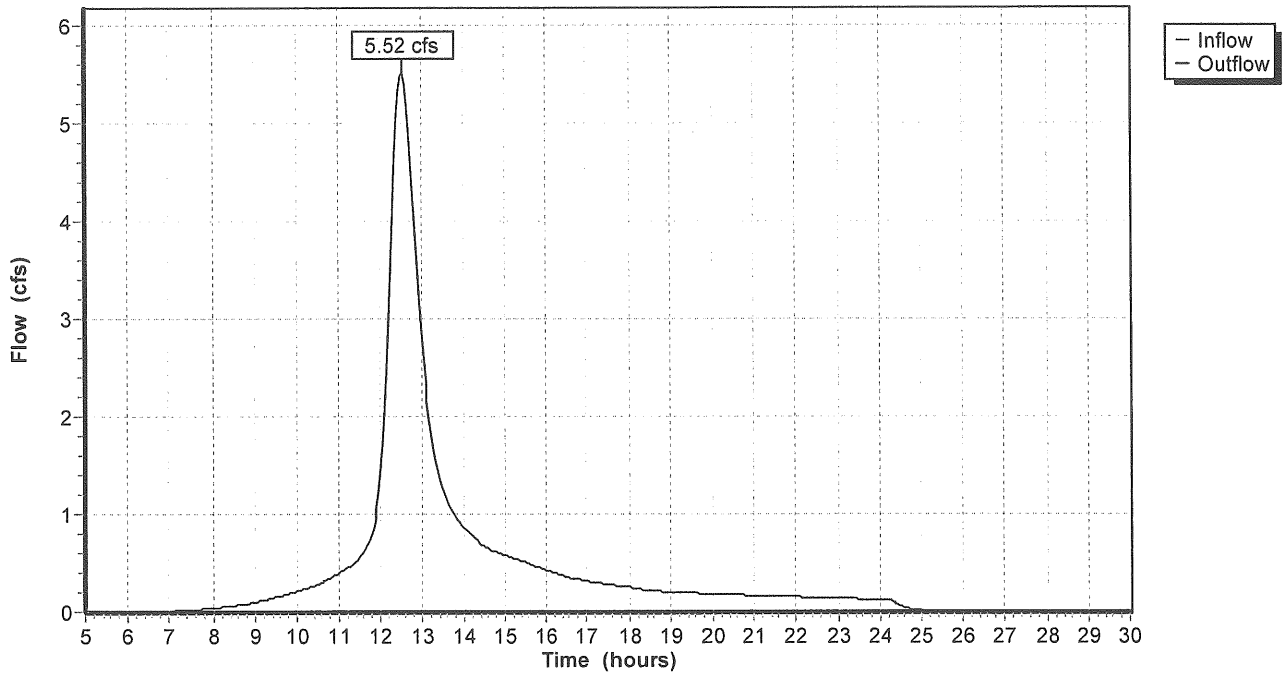
**Reach SP1: (new node)**

Inflow = 5.52 cfs @ 12.53 hrs, Volume= 0.792 af  
Outflow = 5.52 cfs @ 12.53 hrs, Volume= 0.792 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

**Reach SP1: (new node)**

Hydrograph Plot



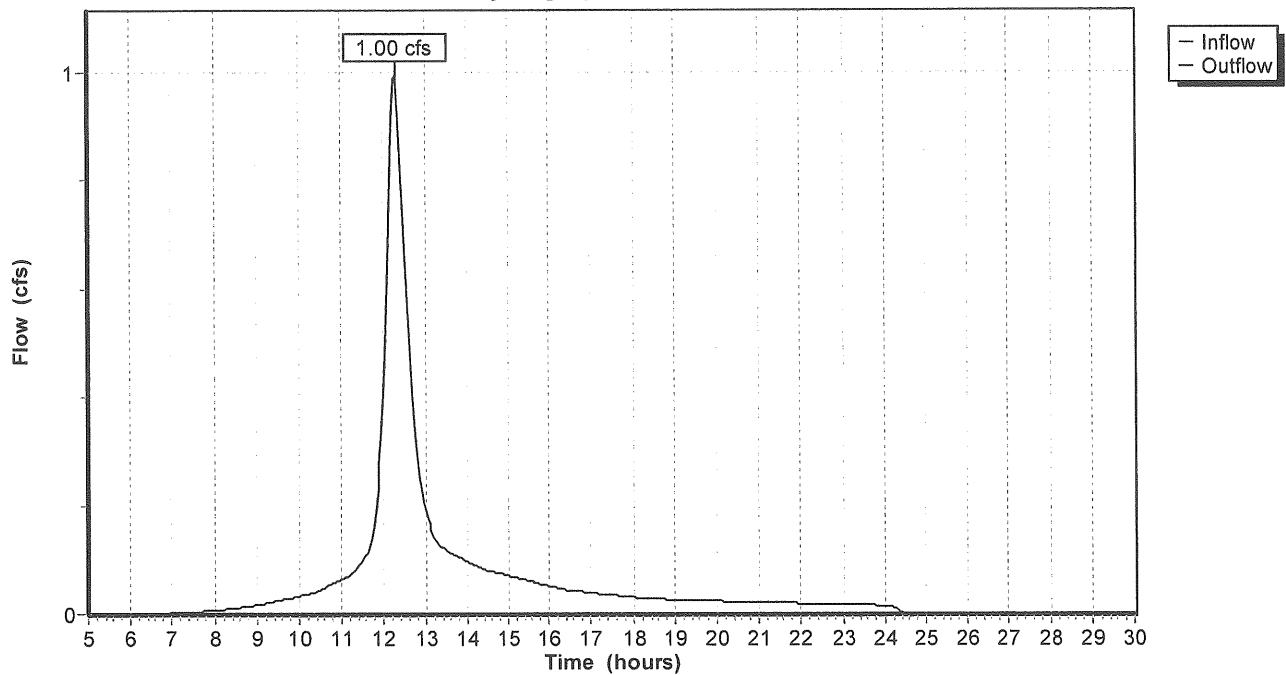
**Reach SP2: (new node)**

Inflow = 1.00 cfs @ 12.27 hrs, Volume= 0.106 af  
Outflow = 1.00 cfs @ 12.27 hrs, Volume= 0.106 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

**Reach SP2: (new node)**

Hydrograph Plot



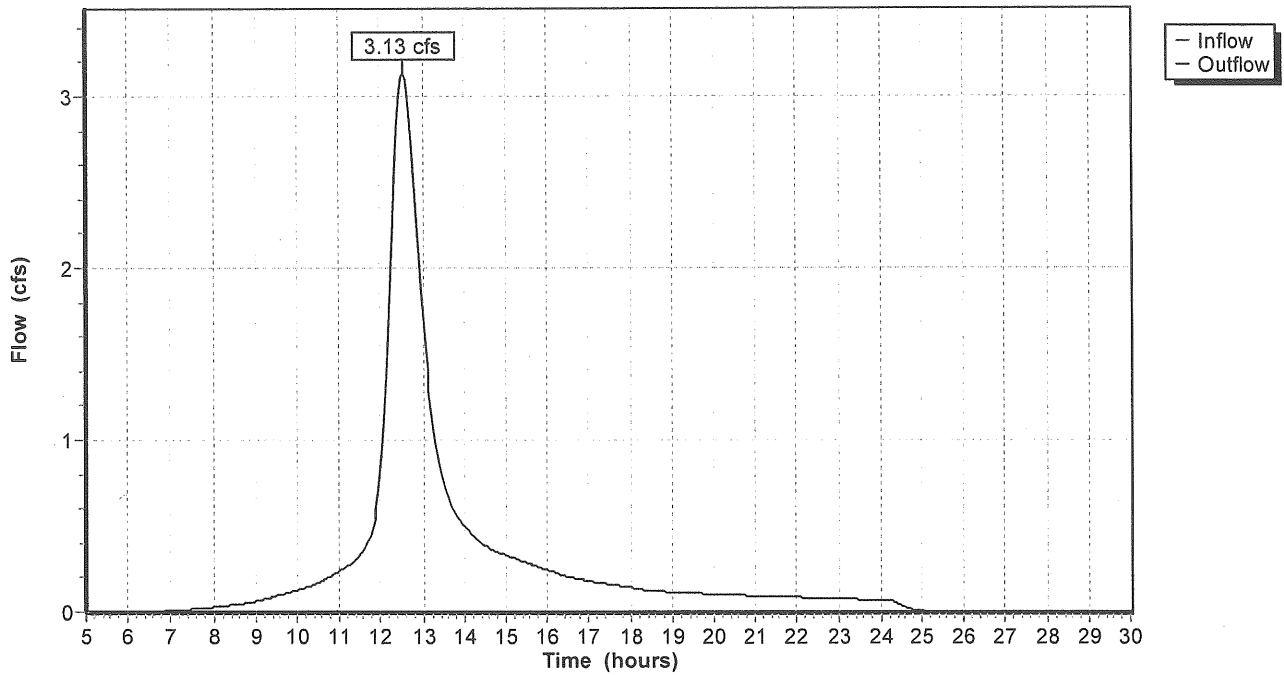
**Reach SP3: (new node)**

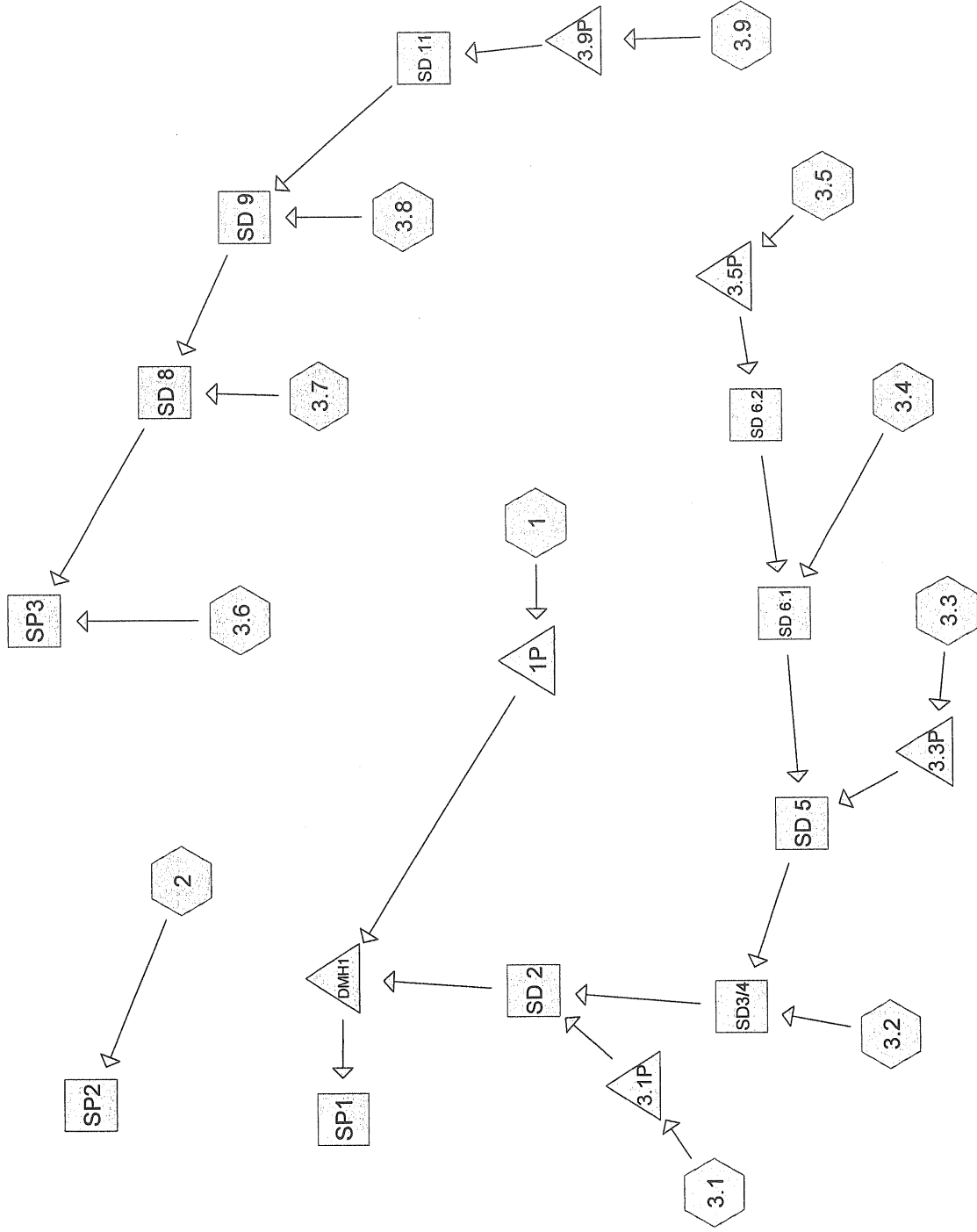
Inflow = 3.13 cfs @ 12.55 hrs, Volume= 0.458 af  
Outflow = 3.13 cfs @ 12.55 hrs, Volume= 0.458 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

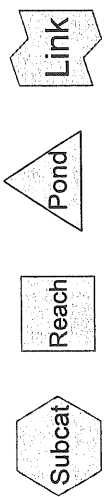
**Reach SP3: (new node)**

Hydrograph Plot





**Drainage Diagram for 03245POST**  
 Prepared by Sebago Technics, Inc. 4/4/2007  
 HydroCAD® 6.00 s/n 001856 © 1986-2001 Applied Microcomputer Systems



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points  
 Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=3.00"  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1: Playing Field**

Tc=10.0 min CN=74 Area=2.310 ac Runoff= 1.99 cfs 0.175 af

**Subcatchment 2:**

Tc=15.1 min CN=85 Area=0.119 ac Runoff= 0.17 cfs 0.016 af

**Subcatchment 3.1: Along Ludlow St**

Tc=21.2 min CN=83 Area=0.137 ac Runoff= 0.15 cfs 0.017 af

**Subcatchment 3.2: Main Entrance**

Tc=3.7 min CN=89 Area=0.116 ac Runoff= 0.28 cfs 0.018 af

**Subcatchment 3.3:**

Tc=30.8 min CN=87 Area=0.558 ac Runoff= 0.64 cfs 0.081 af

**Subcatchment 3.4:**

Tc=2.0 min CN=81 Area=0.208 ac Runoff= 0.37 cfs 0.023 af

**Subcatchment 3.5: Entrance - Leland St**

Tc=8.2 min CN=91 Area=0.328 ac Runoff= 0.73 cfs 0.057 af

**Subcatchment 3.6:**

Tc=0.6 min CN=96 Area=0.267 ac Runoff= 0.90 cfs 0.057 af

**Subcatchment 3.7:**

Tc=1.0 min CN=98 Area=0.150 ac Runoff= 0.52 cfs 0.035 af

**Subcatchment 3.8:**

Tc=6.7 min CN=87 Area=0.107 ac Runoff= 0.21 cfs 0.016 af

**Subcatchment 3.9:**

Tc=6.2 min CN=86 Area=0.162 ac Runoff= 0.31 cfs 0.022 af

**Reach SD 11: SD 11**

Inflow= 0.31 cfs 0.022 af  
 Length= 187.0' Max Vel= 2.5 fps Capacity= 2.99 cfs Outflow= 0.31 cfs 0.022 af

**Reach SD 2: SD 2**

Inflow= 0.83 cfs 0.195 af  
 Length= 220.0' Max Vel= 3.2 fps Capacity= 5.40 cfs Outflow= 0.82 cfs 0.195 af

**Reach SD 5: SD 5**

Inflow= 0.51 cfs 0.160 af  
 Length= 61.5' Max Vel= 2.8 fps Capacity= 5.42 cfs Outflow= 0.51 cfs 0.160 af

**Reach SD 6.1: SD 6**

Inflow= 0.43 cfs 0.079 af  
 Length= 175.0' Max Vel= 2.7 fps Capacity= 2.97 cfs Outflow= 0.42 cfs 0.079 af

### Subcatchment 1: Playing Field

Runoff = 1.99 cfs @ 12.15 hrs, Volume= 0.175 af

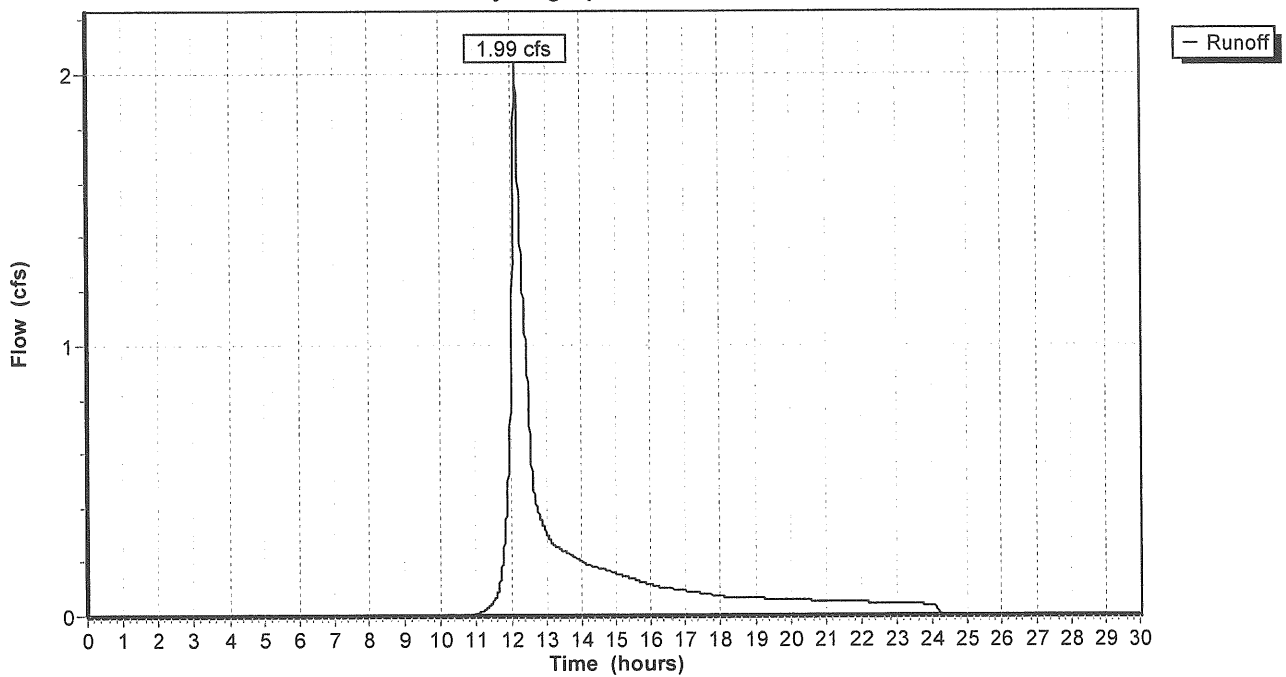
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
2.310	74	>75% Grass cover, Good, HSG C

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

### Subcatchment 1: Playing Field

Hydrograph Plot



**Subcatchment 2:**

Runoff = 0.17 cfs @ 12.21 hrs, Volume= 0.016 af

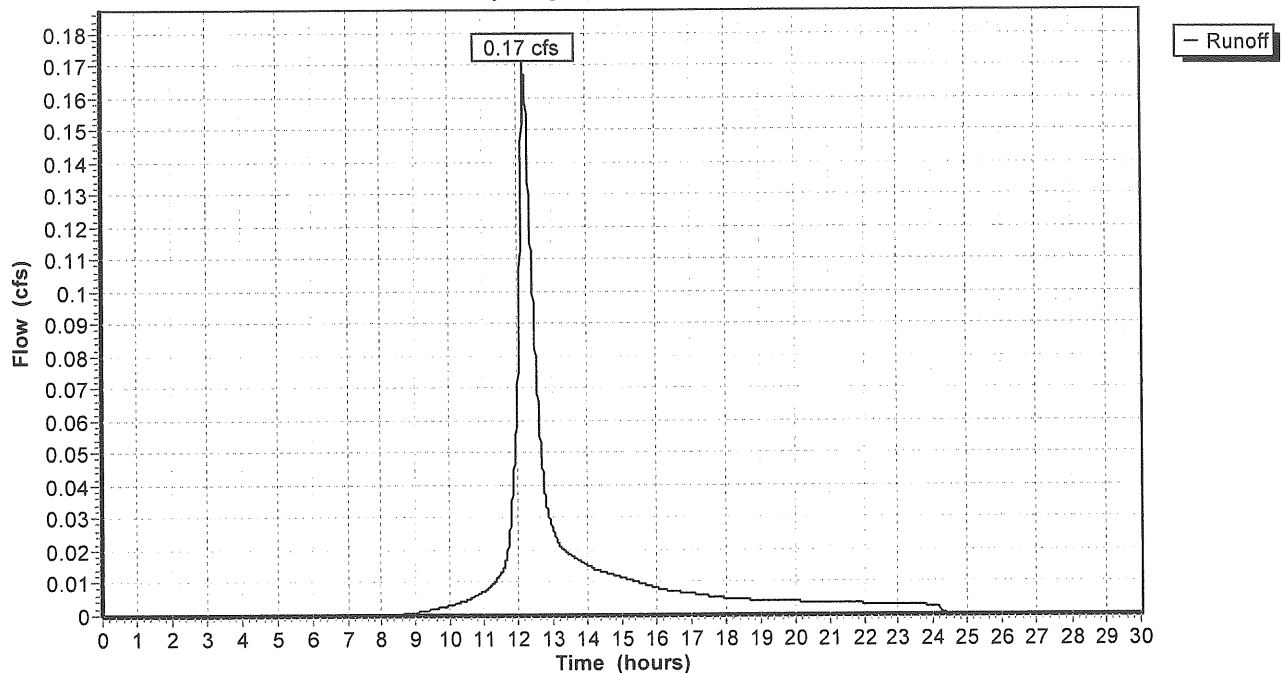
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.056	98	Pavement
0.063	74	>75% Grass cover, Good, HSG C
0.119	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	85	0.0400	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"

**Subcatchment 2:**

Hydrograph Plot





**Subcatchment 3.1: Along Ludlow St**

Runoff = 0.15 cfs @ 12.30 hrs, Volume= 0.017 af

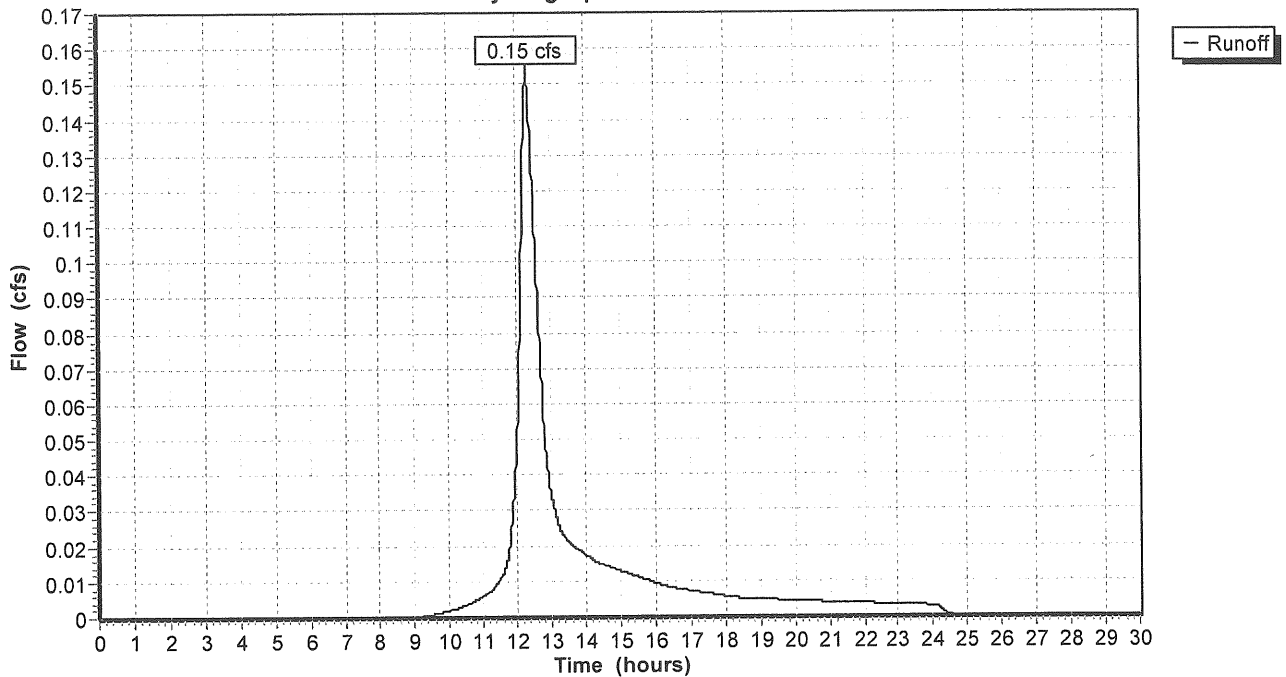
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.023	98	Pavement
0.114	80	>75% Grass cover, Good, HSG D
0.137	83	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.2	80	0.0150	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"

**Subcatchment 3.1: Along Ludlow St**

Hydrograph Plot



**Subcatchment 3.2: Main Entrance**

Runoff = 0.28 cfs @ 12.06 hrs, Volume= 0.018 af

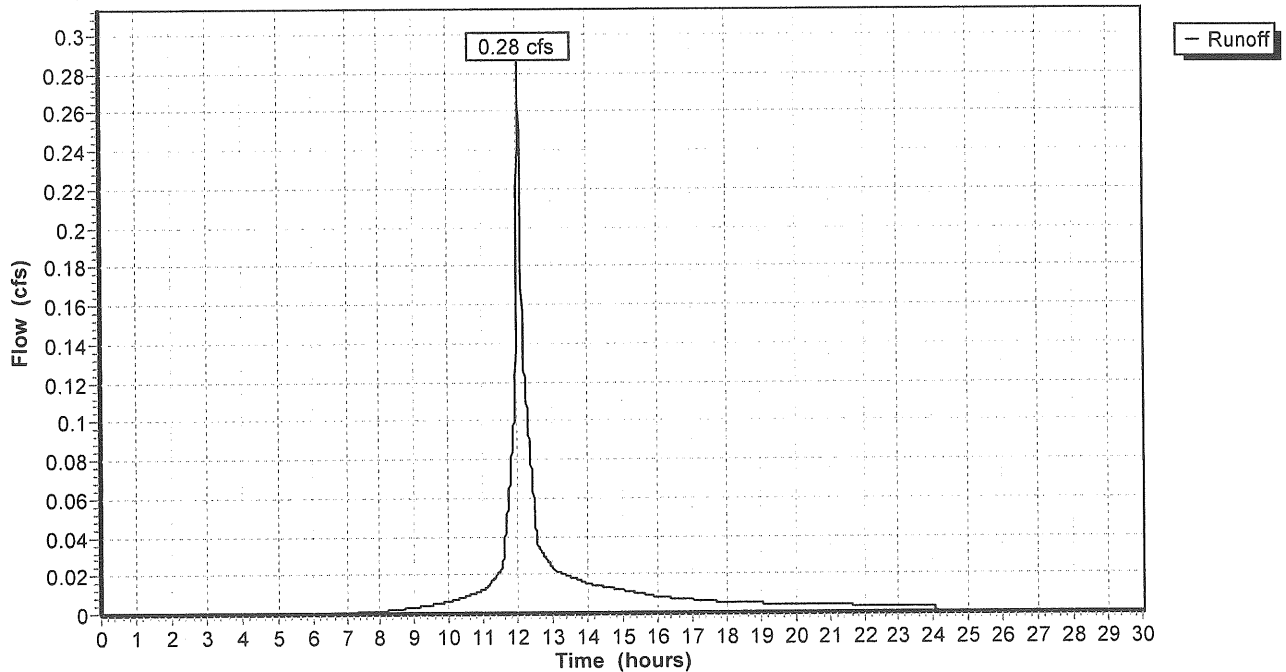
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.056	98	Pavement & roofs
0.060	80	>75% Grass cover, Good, HSG D
0.116	89	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	10	0.0300	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"
0.7	100	0.0150	2.5		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
3.7	110	Total			

**Subcatchment 3.2: Main Entrance**

Hydrograph Plot



**Subcatchment 3.3:**

Runoff = 0.64 cfs @ 12.42 hrs, Volume= 0.081 af

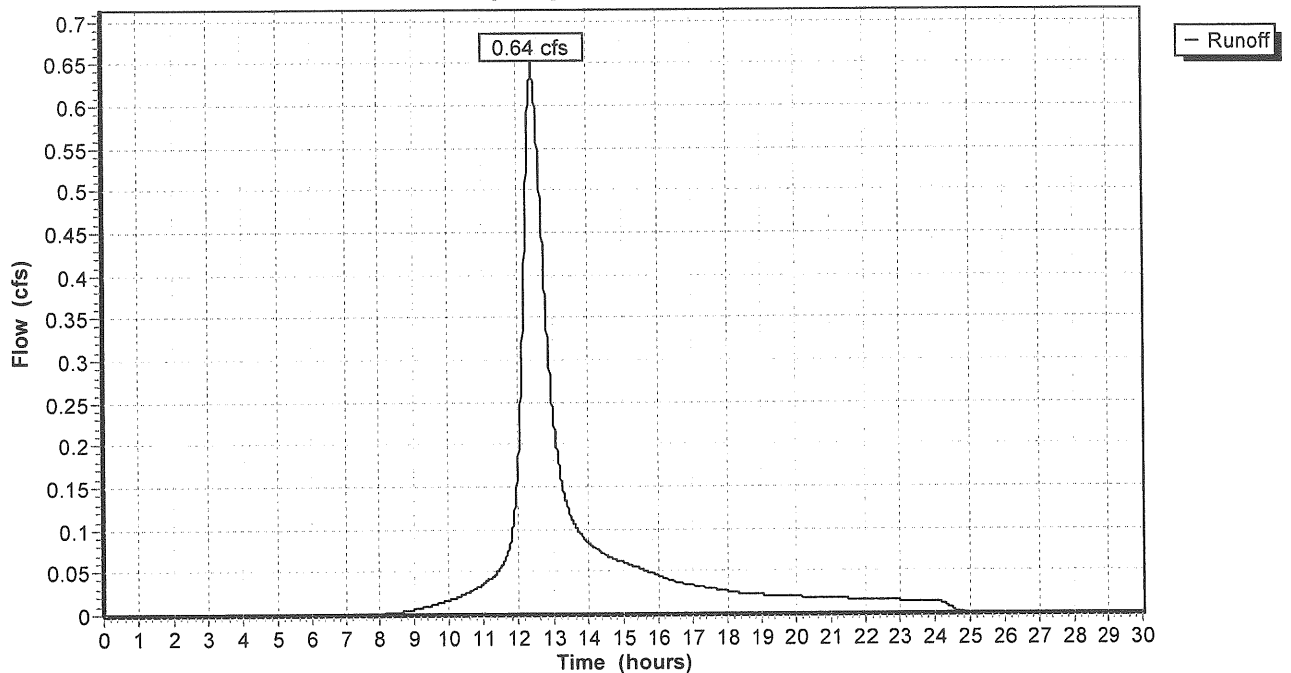
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.220	98	Pavement & roofs
0.338	80	>75% Grass cover, Good, HSG D
0.558	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.8	90	0.0075	0.0		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"

**Subcatchment 3.3:**

Hydrograph Plot



**Subcatchment 3.4:**

Runoff = 0.37 cfs @ 12.03 hrs, Volume= 0.023 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=3.00"

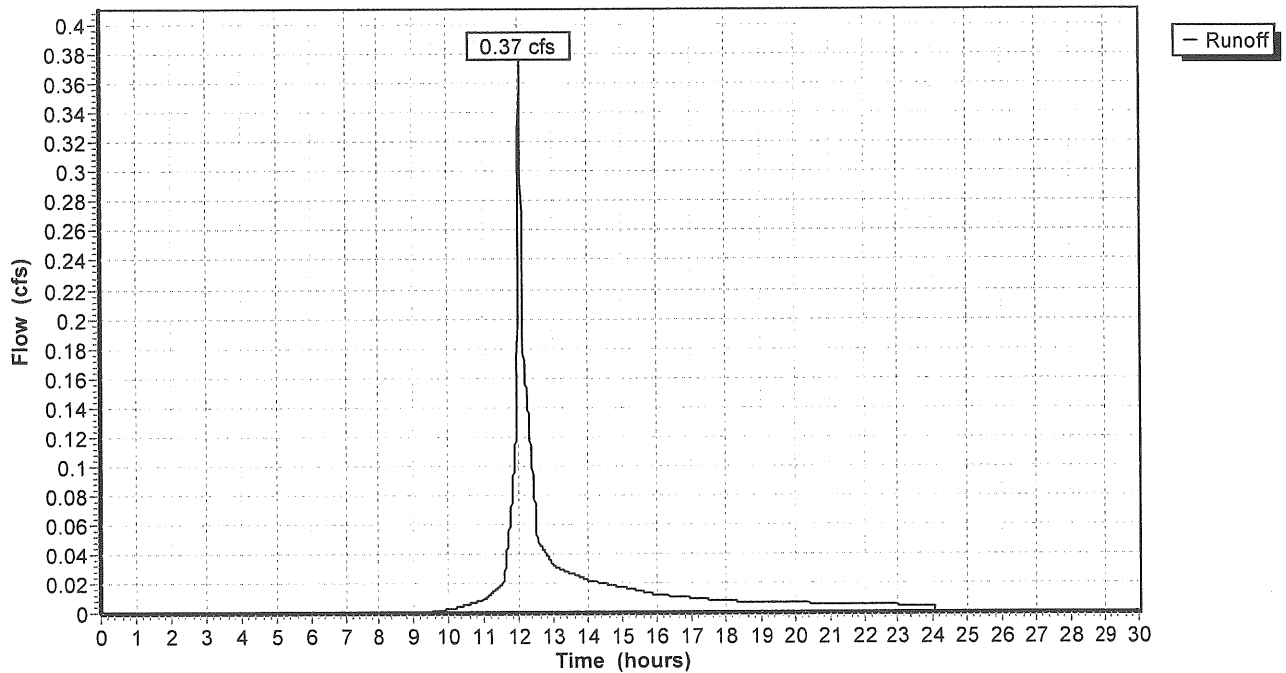
Area (ac)	CN	Description
0.012	98	Pavement & roofs
0.196	80	>75% Grass cover, Good, HSG D
0.208	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	80	0.0600	3.7		Shallow Concentrated Flow, B-C Grassed Waterway Kv= 15.0 fps
1.5	115	0.0070	1.3		Shallow Concentrated Flow, B-C Grassed Waterway Kv= 15.0 fps
0.1	35	0.0100	5.4	4.21	Circular Channel (pipe), C-D Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
2.0	230	Total			

**Subcatchment 3.4:**

Hydrograph Plot



**Subcatchment 3.5: Entrance - Leland St**

Runoff = 0.73 cfs @ 12.11 hrs, Volume= 0.057 af

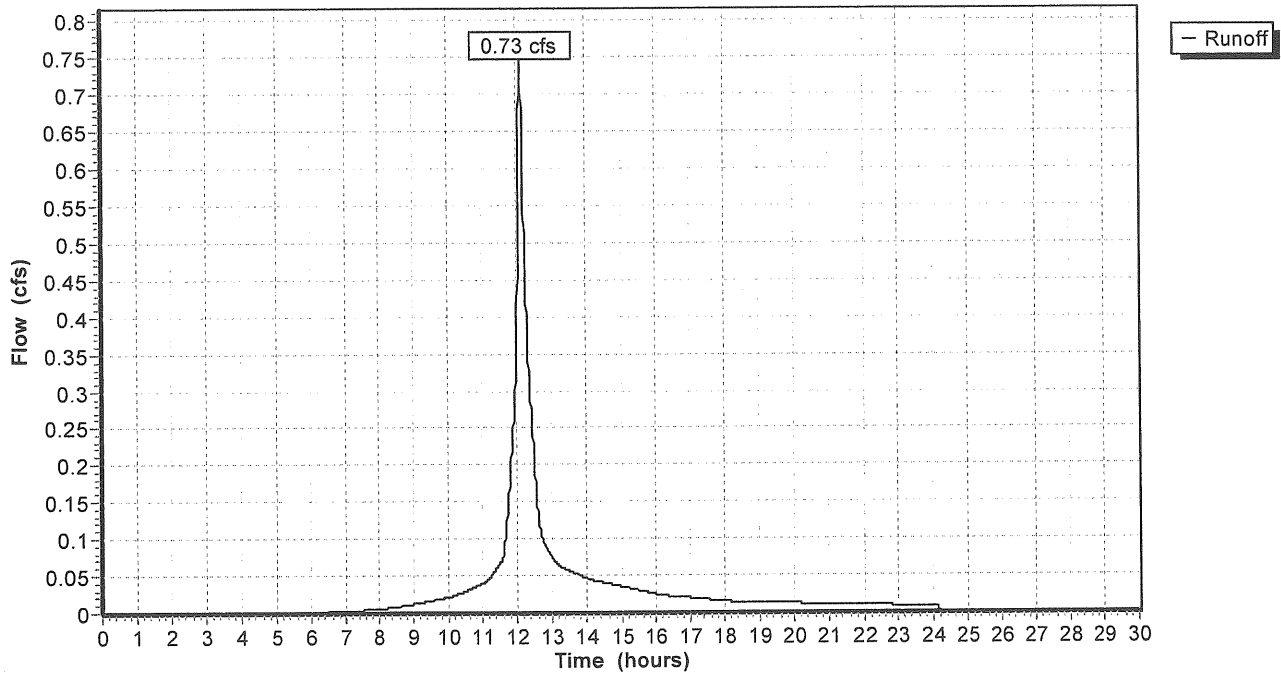
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.202	98	Pavement & roofs
0.126	80	>75% Grass cover, Good, HSG D
0.328	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	70	0.0400	1.6		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 3.00"
7.5	45	0.0650	0.1		Sheet Flow, B-C Grass: Bermuda n= 0.410 P2= 3.00"
8.2	115	Total			

**Subcatchment 3.5: Entrance - Leland St**

Hydrograph Plot



**Subcatchment 3.6:**

Runoff = 0.90 cfs @ 12.01 hrs, Volume= 0.057 af

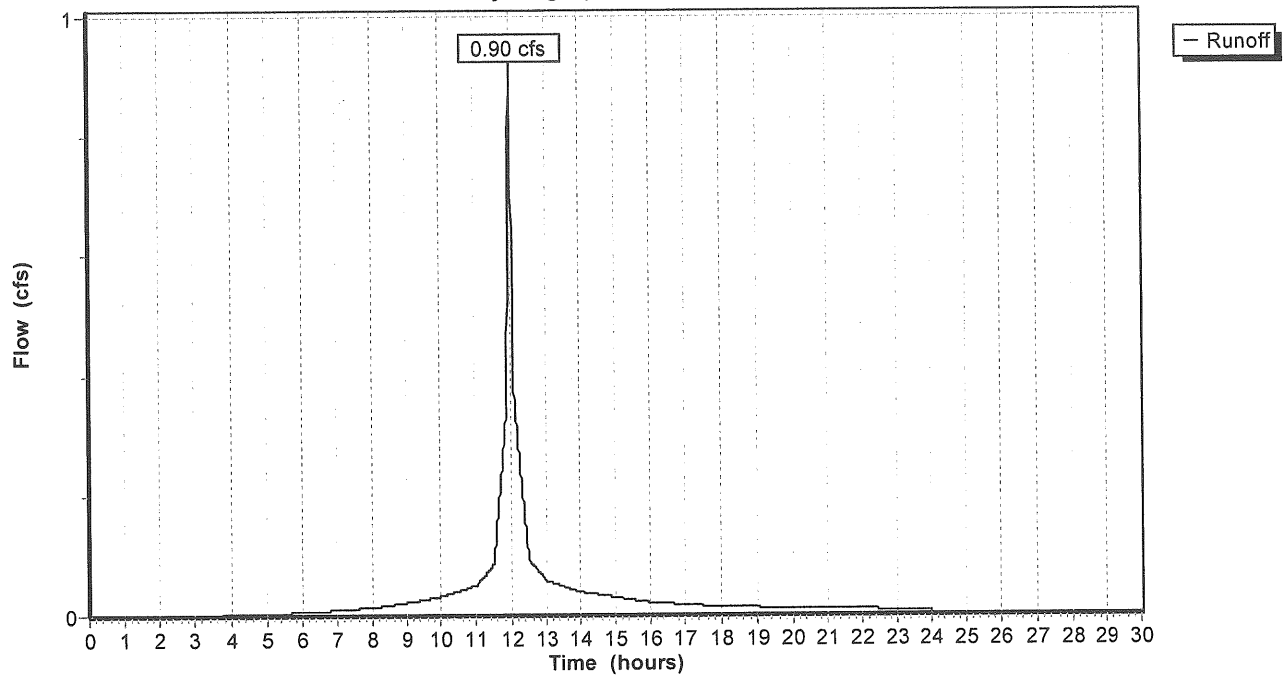
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.241	98	Pavement & roofs
0.026	80	>75% Grass cover, Good, HSG D
0.267	96	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	55	0.0400	1.6		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 3.00"

**Subcatchment 3.6:**

Hydrograph Plot



**Subcatchment 3.7:**

Runoff = 0.52 cfs @ 12.01 hrs, Volume= 0.035 af

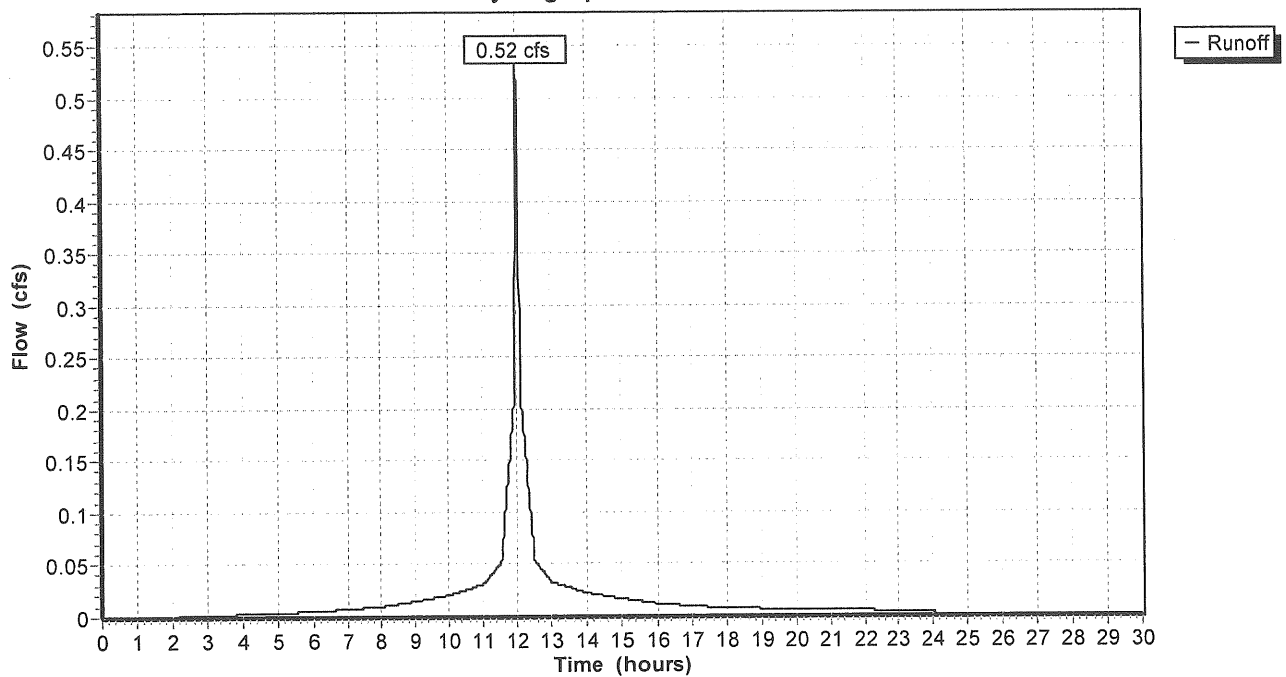
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.150	98	Pavement & roofs

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	80	0.0200	1.3		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 3.00"

**Subcatchment 3.7:**

Hydrograph Plot



**Subcatchment 3.8:**

Runoff = 0.21 cfs @ 12.10 hrs, Volume= 0.016 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=3.00"

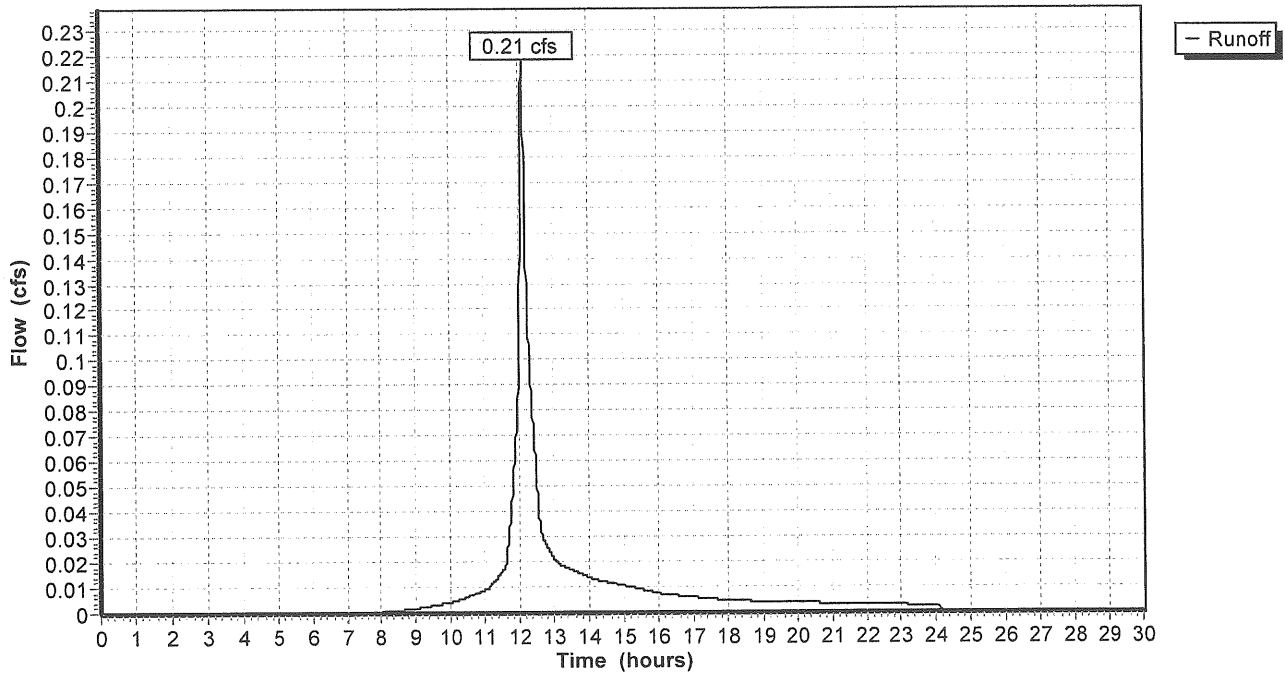
Area (ac)	CN	Description
0.040	98	Pavement & roofs
0.067	80	>75% Grass cover, Good, HSG D
0.107	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	20	0.0500	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"
2.4	150	0.0050	1.1		Shallow Concentrated Flow, B-C Grassed Waterway Kv= 15.0 fps
6.7	170	Total			

**Subcatchment 3.8:**

Hydrograph Plot





**Subcatchment 3.9:**

Runoff = 0.31 cfs @ 12.09 hrs, Volume= 0.022 af

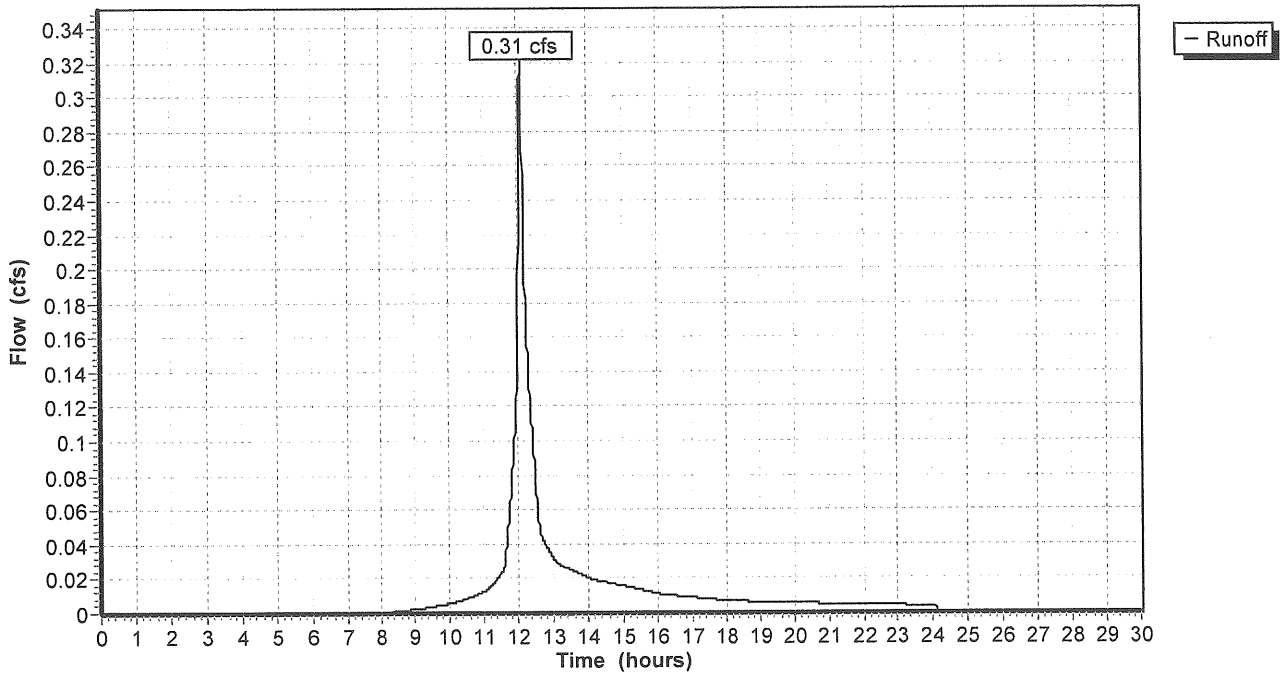
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.055	98	Pavement & roofs
0.107	80	>75% Grass cover, Good, HSG D
0.162	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	25	0.0400	0.1		<b>Sheet Flow, A-B</b> Grass: Bermuda n= 0.410 P2= 3.00"
0.5	195	0.0250	6.7	33.45	<b>Trap/Vee/Rect Channel Flow, B-C</b> Bot.W=2.00' D=1.00' Z= 3.0 ' / ' n= 0.025
6.2	220	Total			

**Subcatchment 3.9:**

Hydrograph Plot



Reach SD 11: SD 11

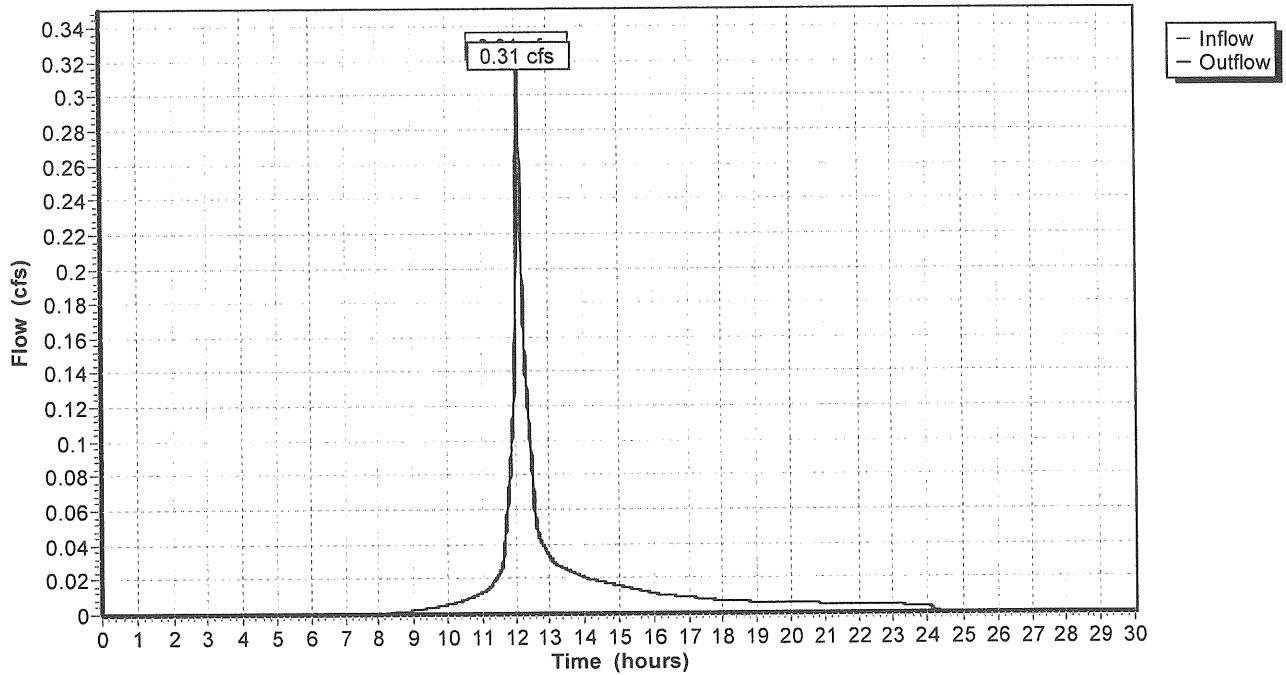
Inflow = 0.31 cfs @ 12.10 hrs, Volume= 0.022 af  
Outflow = 0.31 cfs @ 12.13 hrs, Volume= 0.022 af, Atten= 2%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 2.5 fps, Min. Travel Time= 1.3 min  
Avg. Velocity = 0.9 fps, Avg. Travel Time= 3.6 min

Peak Depth= 0.22'  
Capacity at bank full= 2.99 cfs  
Inlet Invert= 72.97', Outlet Invert= 72.03'  
12.0" Diameter Pipe n= 0.011 Length= 187.0' Slope= 0.0050 '/'

Reach SD 11: SD 11

Hydrograph Plot



Reach SD 2: SD 2

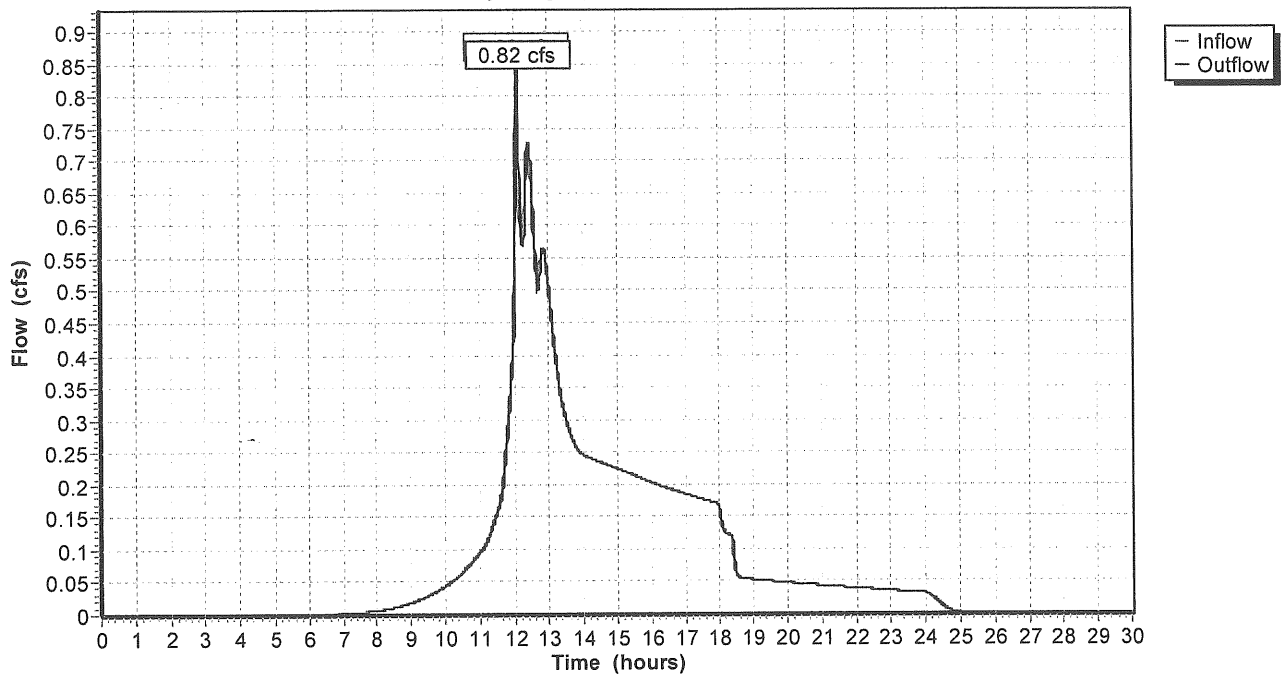
Inflow = 0.83 cfs @ 12.09 hrs, Volume= 0.195 af  
Outflow = 0.82 cfs @ 12.12 hrs, Volume= 0.195 af, Atten= 1%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 3.2 fps, Min. Travel Time= 1.2 min  
Avg. Velocity = 1.5 fps, Avg. Travel Time= 2.4 min

Peak Depth= 0.33'  
Capacity at bank full= 5.40 cfs  
Inlet Invert= 69.48', Outlet Invert= 68.38'  
15.0" Diameter Pipe n= 0.011 Length= 220.0' Slope= 0.0050 '/'

Reach SD 2: SD 2

Hydrograph Plot



Reach SD 5: SD 5

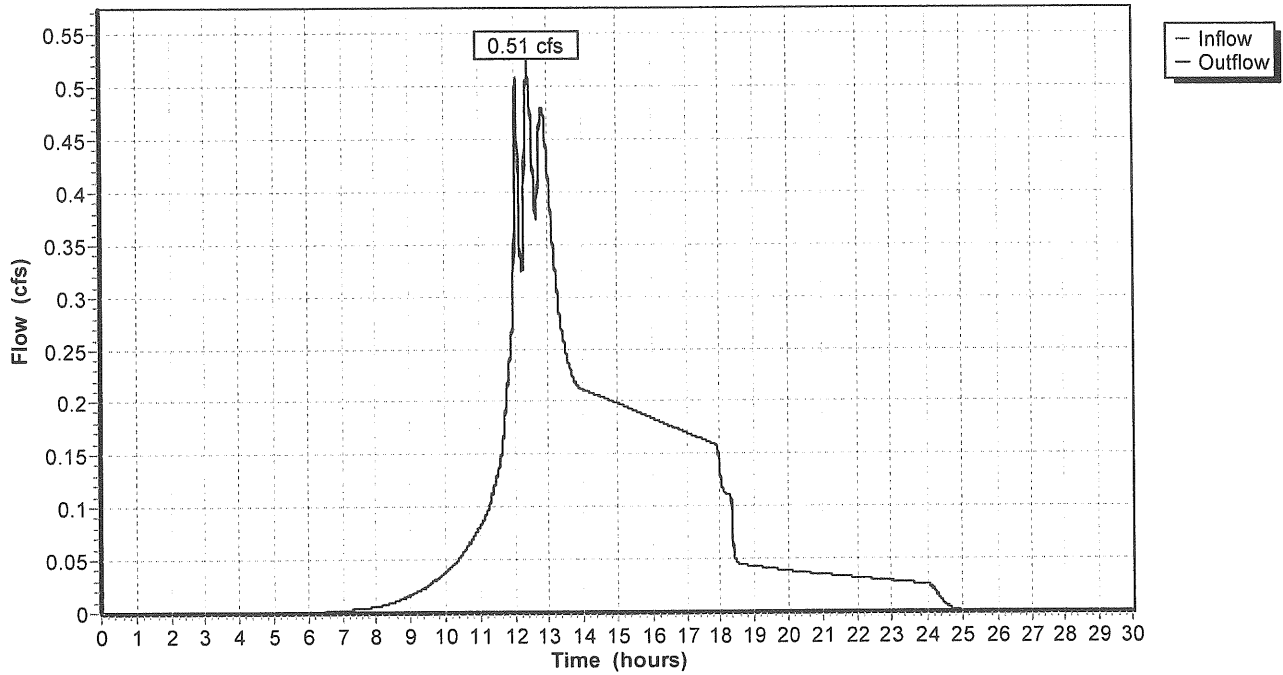
Inflow = 0.51 cfs @ 12.40 hrs, Volume= 0.160 af  
Outflow = 0.51 cfs @ 12.41 hrs, Volume= 0.160 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 2.8 fps, Min. Travel Time= 0.4 min  
Avg. Velocity = 1.4 fps, Avg. Travel Time= 0.7 min

Peak Depth= 0.26'  
Capacity at bank full= 5.42 cfs  
Inlet Invert= 70.65', Outlet Invert= 70.34'  
15.0" Diameter Pipe n= 0.011 Length= 61.5' Slope= 0.0050 '/'

Reach SD 5: SD 5

Hydrograph Plot



Reach SD 6.1: SD 6

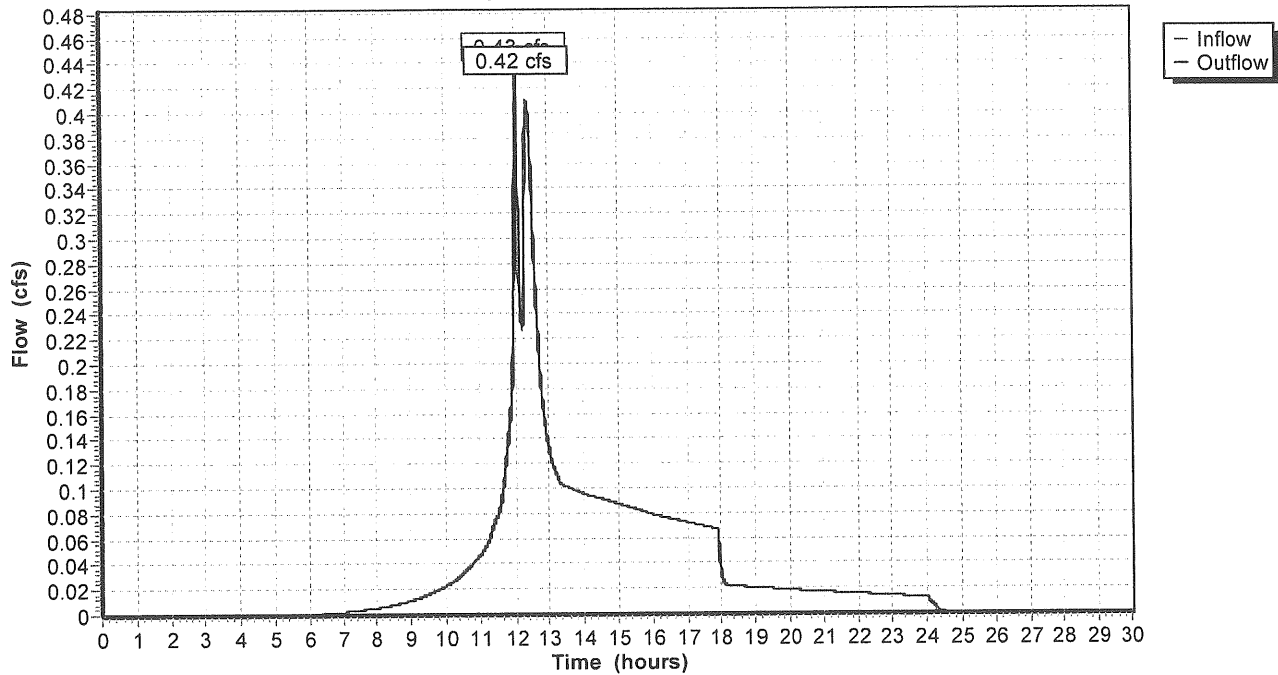
Inflow = 0.43 cfs @ 12.03 hrs, Volume= 0.079 af  
Outflow = 0.42 cfs @ 12.07 hrs, Volume= 0.079 af, Atten= 2%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 2.7 fps, Min. Travel Time= 1.1 min  
Avg. Velocity = 1.2 fps, Avg. Travel Time= 2.4 min

Peak Depth= 0.25'  
Capacity at bank full= 2.97 cfs  
Inlet Invert= 71.77', Outlet Invert= 70.90'  
12.0" Diameter Pipe n= 0.011 Length= 175.0' Slope= 0.0050 '/'

Reach SD 6.1: SD 6

Hydrograph Plot



Reach SD 6.2: SD 6

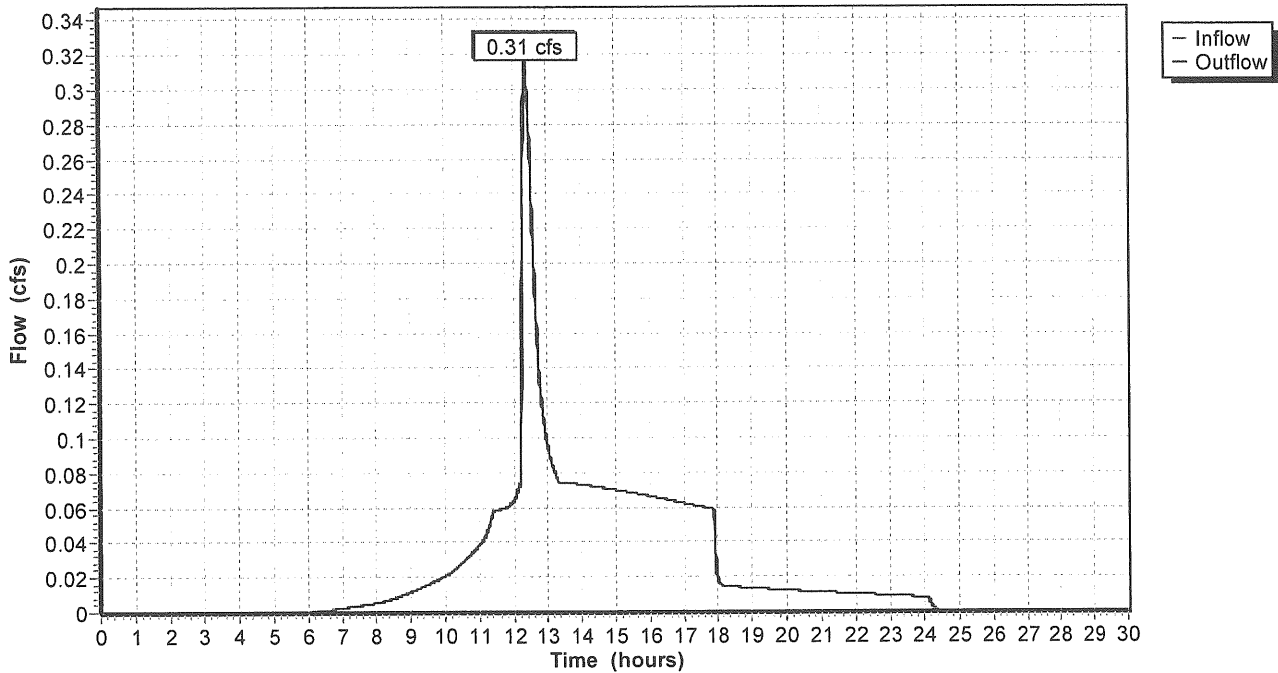
Inflow = 0.31 cfs @ 12.36 hrs, Volume= 0.057 af  
Outflow = 0.31 cfs @ 12.39 hrs, Volume= 0.057 af, Atten= 0%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 2.5 fps, Min. Travel Time= 1.0 min  
Avg. Velocity = 1.1 fps, Avg. Travel Time= 2.2 min

Peak Depth= 0.22'  
Capacity at bank full= 2.98 cfs  
Inlet Invert= 72.50', Outlet Invert= 71.77'  
12.0" Diameter Pipe n= 0.011 Length= 146.0' Slope= 0.0050 '/'

Reach SD 6.2: SD 6

Hydrograph Plot



Reach SD 8: SD 8

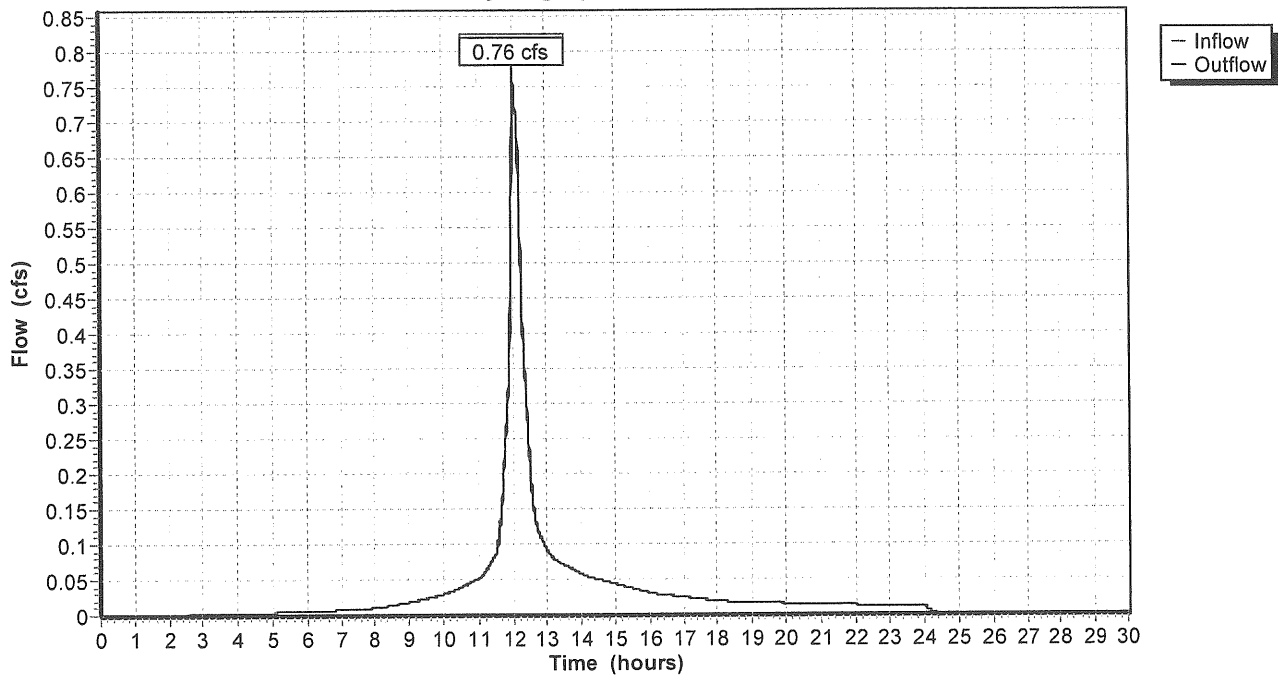
Inflow = 0.77 cfs @ 12.02 hrs, Volume= 0.073 af  
Outflow = 0.76 cfs @ 12.04 hrs, Volume= 0.073 af, Atten= 1%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 3.1 fps, Min. Travel Time= 0.6 min  
Avg. Velocity = 1.0 fps, Avg. Travel Time= 1.8 min

Peak Depth= 0.32'  
Capacity at bank full= 5.40 cfs  
Inlet Invert= 71.35', Outlet Invert= 70.80'  
15.0" Diameter Pipe n= 0.011 Length= 110.0' Slope= 0.0050 '/'

Reach SD 8: SD 8

Hydrograph Plot



Reach SD 9: SD 9

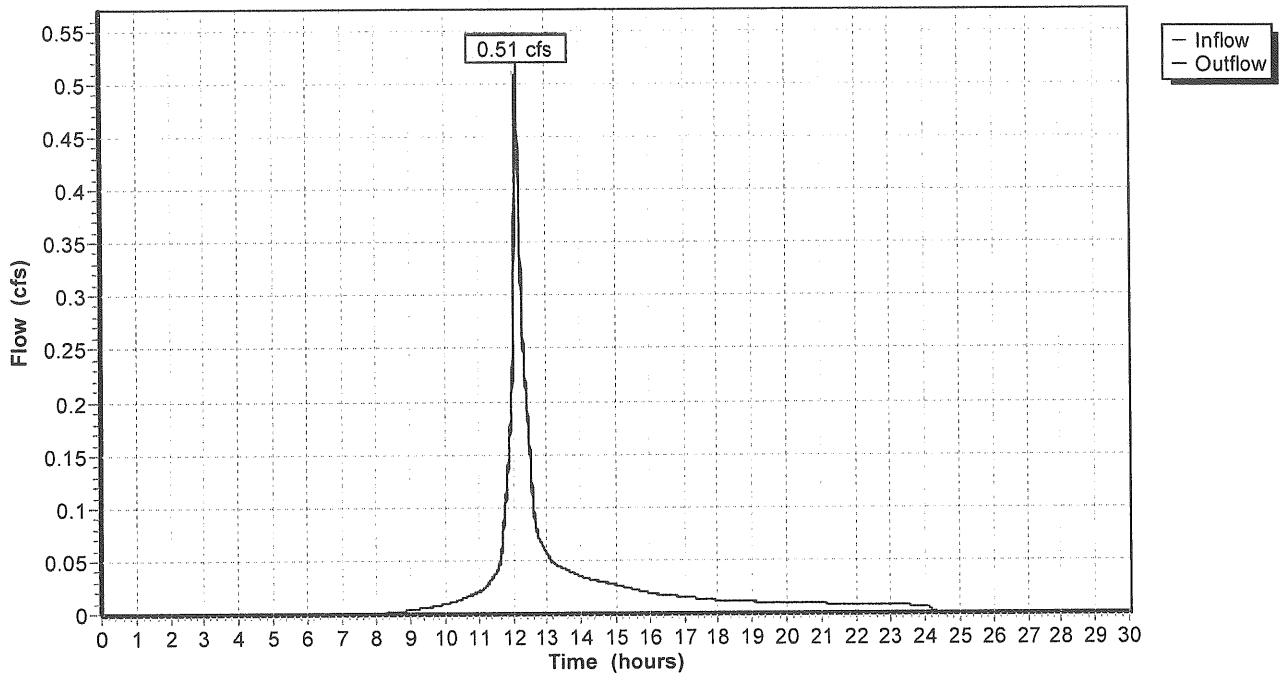
Inflow = 0.51 cfs @ 12.12 hrs, Volume= 0.038 af  
Outflow = 0.51 cfs @ 12.14 hrs, Volume= 0.038 af, Atten= 0%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 2.8 fps, Min. Travel Time= 0.6 min  
Avg. Velocity = 1.0 fps, Avg. Travel Time= 1.6 min

Peak Depth= 0.26'  
Capacity at bank full= 5.43 cfs  
Inlet Invert= 71.93', Outlet Invert= 71.45'  
15.0" Diameter Pipe n= 0.011 Length= 95.0' Slope= 0.0051 '/'

Reach SD 9: SD 9

Hydrograph Plot





Reach SD3/4: SD 3&4

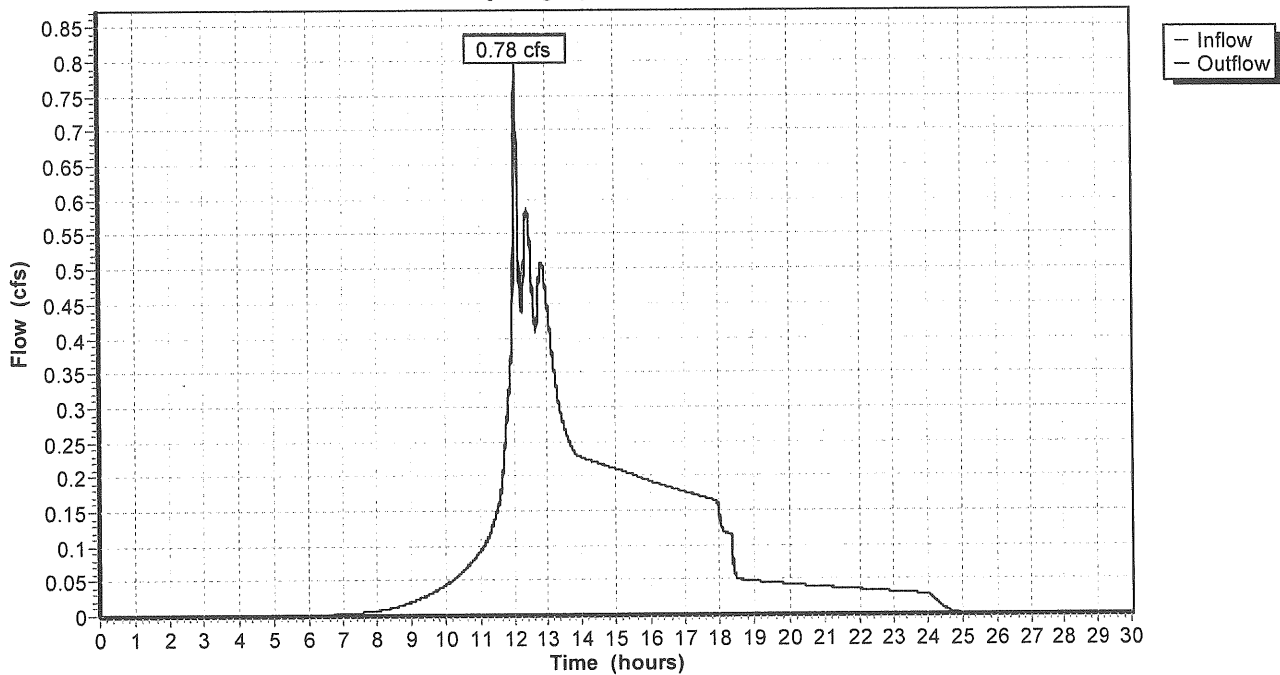
Inflow = 0.78 cfs @ 12.07 hrs, Volume= 0.179 af  
Outflow = 0.78 cfs @ 12.09 hrs, Volume= 0.179 af, Atten= 0%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 3.3 fps, Min. Travel Time= 0.6 min  
Avg. Velocity = 1.6 fps, Avg. Travel Time= 1.2 min

Peak Depth= 0.31'  
Capacity at bank full= 5.90 cfs  
Inlet Invert= 70.24', Outlet Invert= 69.58'  
15.0" Diameter Pipe n= 0.011 Length= 110.5' Slope= 0.0060 '/'

Reach SD3/4: SD 3&4

Hydrograph Plot



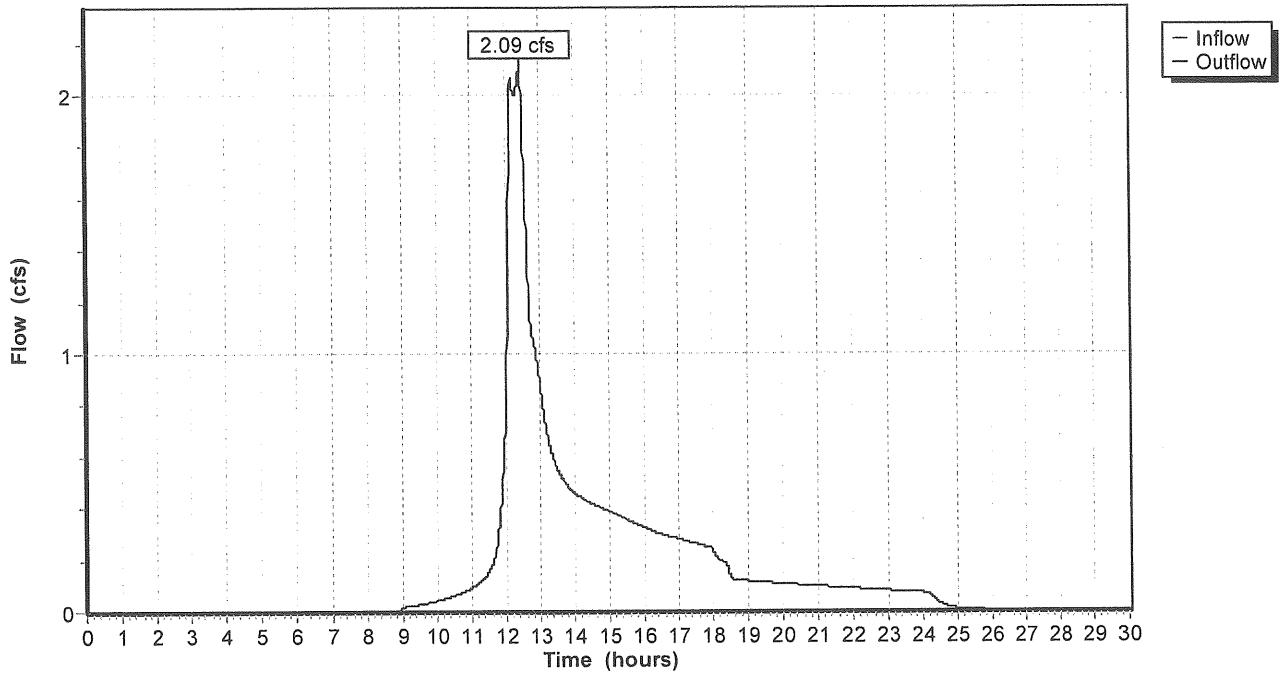
**Reach SP1: Existing system**

Inflow = 2.09 cfs @ 12.41 hrs, Volume= 0.369 af  
Outflow = 2.09 cfs @ 12.41 hrs, Volume= 0.369 af, Atten= 0%, Lag= 0.0 min

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

**Reach SP1: Existing system**

Hydrograph Plot



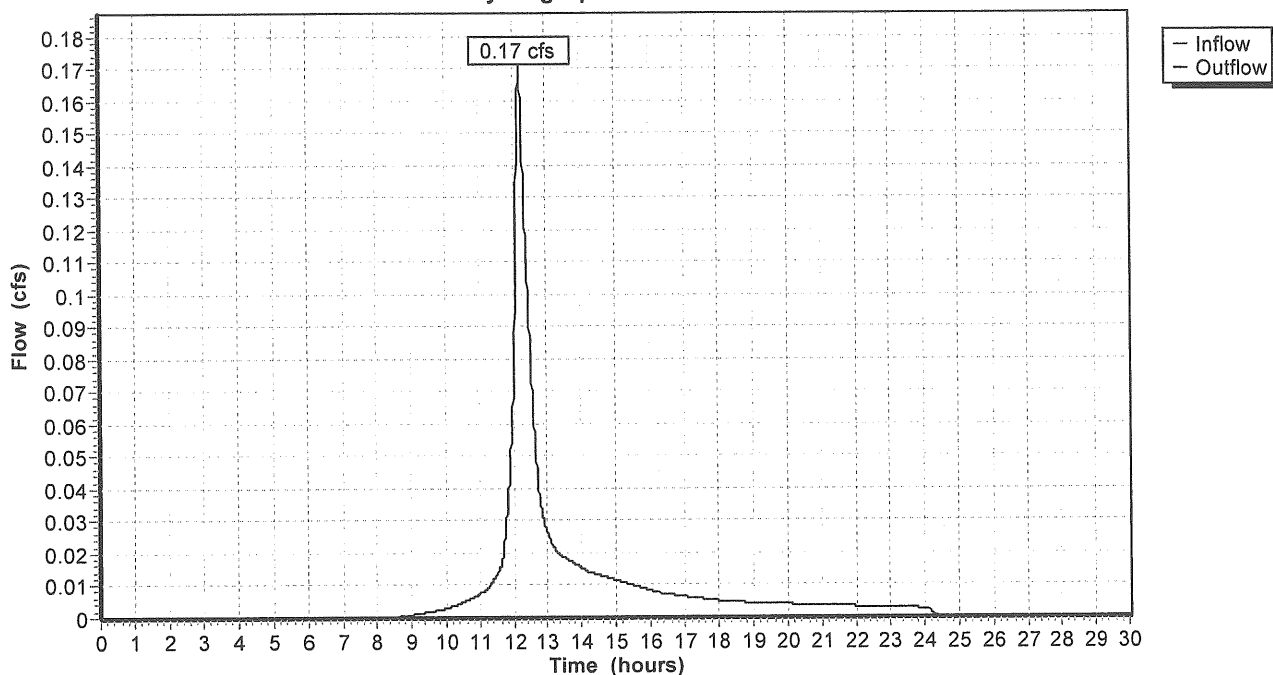
### Reach SP2: Existing Pond

Inflow = 0.17 cfs @ 12.21 hrs, Volume= 0.016 af  
Outflow = 0.17 cfs @ 12.21 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min

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

### Reach SP2: Existing Pond

Hydrograph Plot



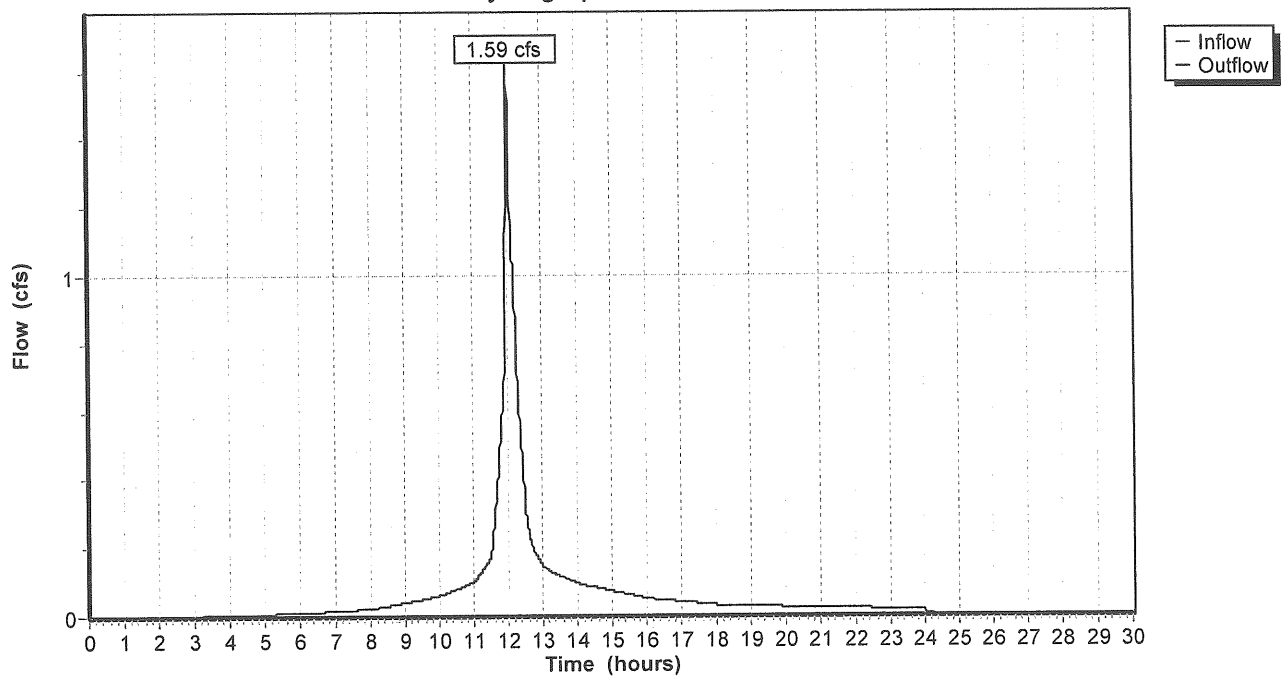
### Reach SP3: Existing Pond

Inflow = 1.59 cfs @ 12.02 hrs, Volume= 0.129 af  
Outflow = 1.59 cfs @ 12.02 hrs, Volume= 0.129 af, Atten= 0%, Lag= 0.0 min

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

### Reach SP3: Existing Pond

Hydrograph Plot



**Pond 1P: Base Stone**

Inflow = 1.99 cfs @ 12.15 hrs, Volume= 0.175 af  
 Outflow = 1.43 cfs @ 12.28 hrs, Volume= 0.175 af, Atten= 28%, Lag= 7.9 min  
 Primary = 1.43 cfs @ 12.28 hrs, Volume= 0.175 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 76.38' Storage= 848 cf

Plug-Flow detention time= 19.1 min calculated for 0.175 af (100% of inflow)

Elevation (feet)	Cum.Store (cubic-feet)
75.25	0
75.30	32
75.40	96
75.50	163
75.60	230
75.70	298
75.80	365
75.90	435
76.00	506
76.10	576
76.20	646
76.30	720
76.40	886
76.50	1,370
76.60	2,170
76.70	3,293
76.80	4,736
76.90	6,499
77.00	8,582
77.10	10,989
77.20	13,715
77.30	16,762
77.40	20,128
77.50	23,488
77.60	26,365
77.70	28,602
77.80	30,195
77.90	31,149
78.00	31,459

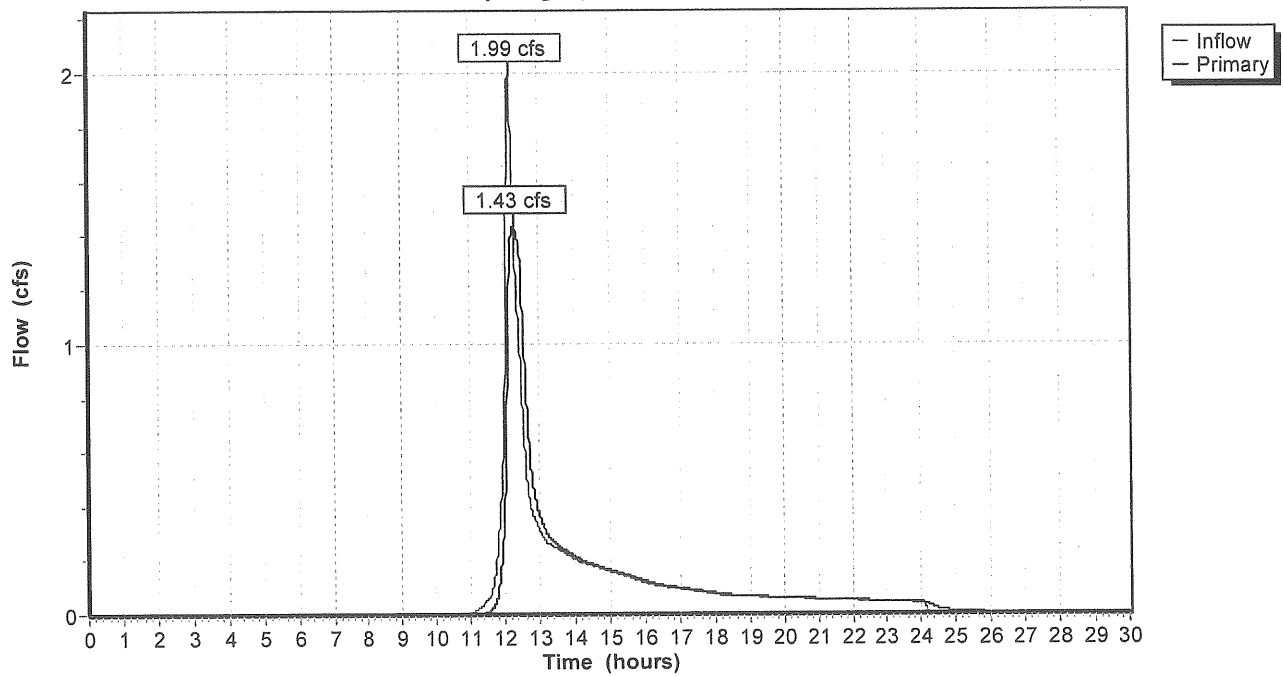
**Primary OutFlow (Free Discharge)**

←1=Perimeter Underdrain

#	Routing	Invert	Outlet Devices
1	Primary	75.25'	<b>12.0" x 589.0' long Perimeter Underdrain</b> CMP, projecting, no headwall, Ke= 0.900 Outlet Invert= 72.33' S= 0.0050 '/ n= 0.024 Cc= 0.900

### Pond 1P: Base Stone

Hydrograph Plot



**Pond 3.1P: Pond 3.1P**

Inflow = 0.15 cfs @ 12.30 hrs, Volume= 0.017 af  
 Outflow = 0.15 cfs @ 12.35 hrs, Volume= 0.017 af, Atten= 3%, Lag= 3.1 min  
 Primary = 0.15 cfs @ 12.35 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 5

Peak Elev= 76.04' Storage= 38 cf

Plug-Flow detention time= 7.9 min calculated for 0.017 af (100% of inflow)

Storage and wetted areas determined by Irregular sections

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	650	120.0	0	0	650
76.50	1,200	160.0	456	456	1,544

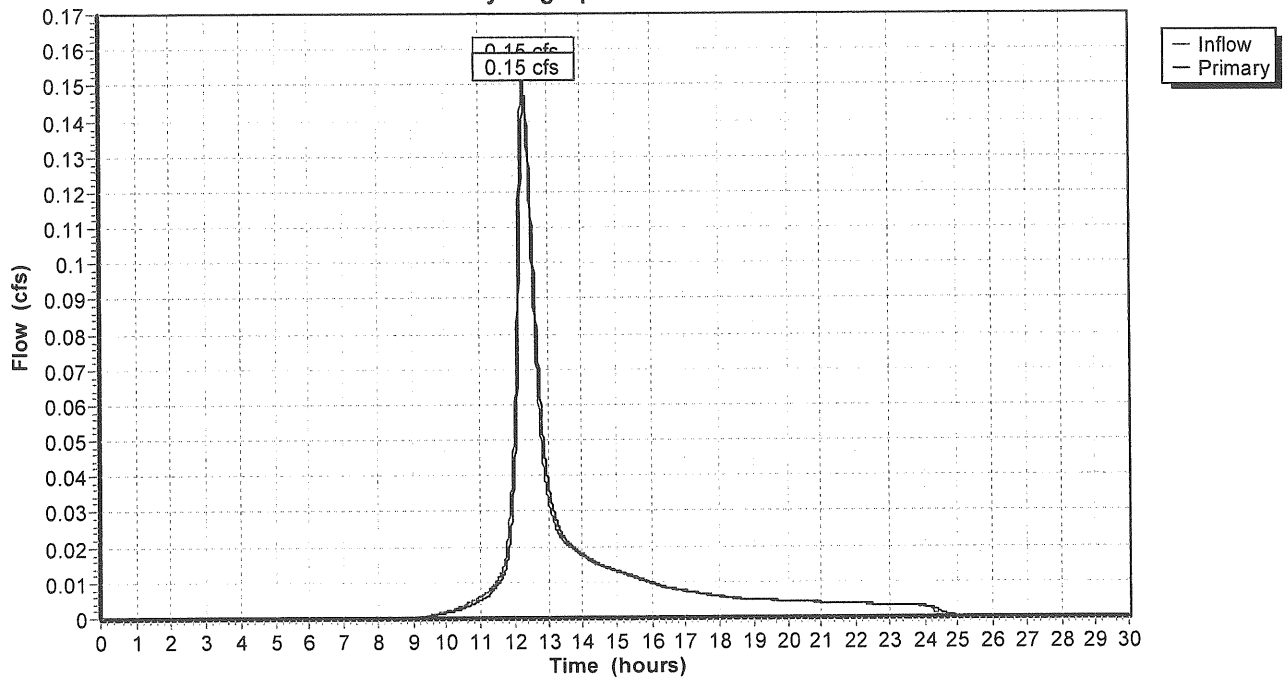
**Primary OutFlow (Free Discharge)**

↑1=Orifice/Grate

#	Routing	Invert	Outlet Devices
1	Primary	76.00'	1.30' x 1.30' Horiz. Orifice/Grate Limited to weir flow C= 0.600

**Pond 3.1P: Pond 3.1P**

Hydrograph Plot



**Pond 3.3P: Bioretention Cell 1**

Inflow = 0.64 cfs @ 12.42 hrs, Volume= 0.081 af  
 Outflow = 0.31 cfs @ 12.86 hrs, Volume= 0.081 af, Atten= 51%, Lag= 26.0 min  
 Primary = 0.31 cfs @ 12.86 hrs, Volume= 0.081 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 5

Peak Elev= 76.05' Storage= 1,041 cf  
 Plug-Flow detention time= 63.6 min calculated for 0.081 af (100% of inflow)  
 Storage and wetted areas determined by Irregular sections

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
75.50	1,580	235.0	0	0	1,580
76.00	2,075	250.0	911	911	2,171
76.25	3,250	320.0	660	1,571	5,347

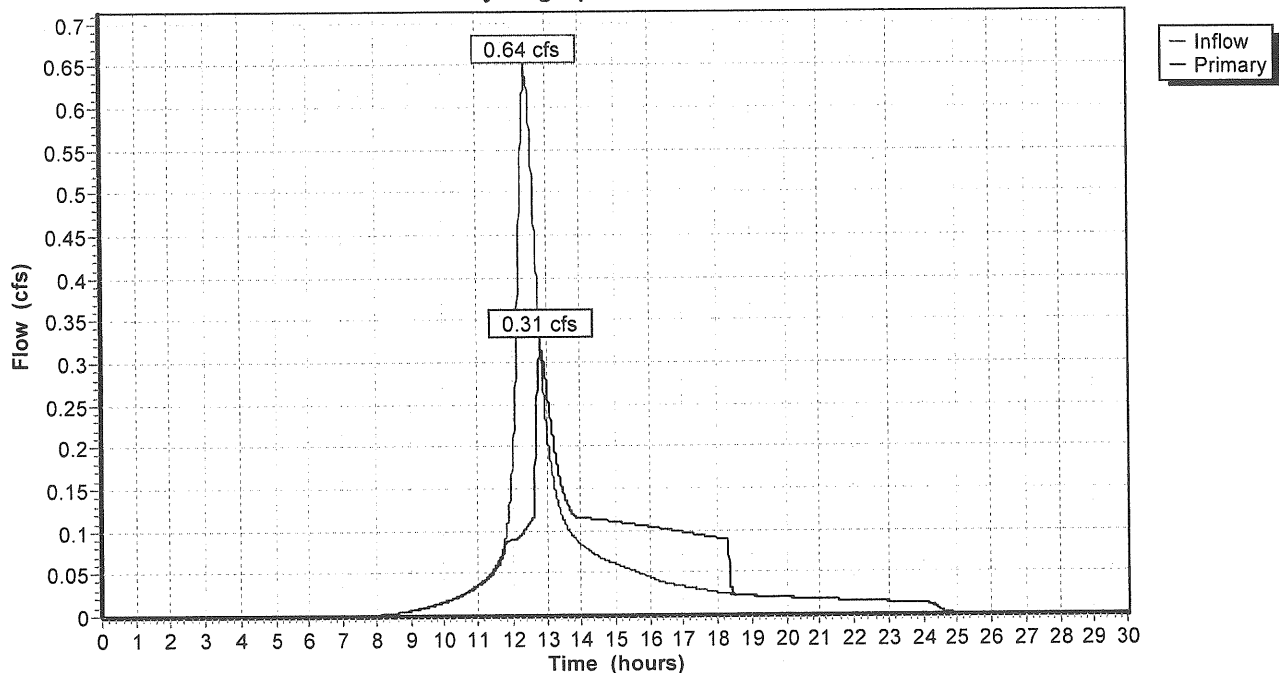
**Primary OutFlow (Free Discharge)**

- 1=Exfiltration
- 2=Orifice/Grate

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	0.003350 fpm Exfiltration over entire Surface area
2	Primary	76.00'	1.30' x 1.30' Horiz. Orifice/Grate Limited to weir flow C= 0.600

**Pond 3.3P: Bioretention Cell 1**

Hydrograph Plot





**Pond 3.5P: Bioretention Cell 2**

Inflow = 0.73 cfs @ 12.11 hrs, Volume= 0.057 af  
 Outflow = 0.31 cfs @ 12.36 hrs, Volume= 0.057 af, Atten= 57%, Lag= 14.9 min  
 Primary = 0.31 cfs @ 12.36 hrs, Volume= 0.057 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 5

Peak Elev= 76.55' Storage= 698 cf  
 Plug-Flow detention time= 57.8 min calculated for 0.057 af (100% of inflow)  
 Storage and wetted areas determined by Irregular sections

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	1,050	130.0	0	0	1,050
76.50	1,335	145.0	595	595	1,385
76.65	2,600	190.0	290	885	2,585

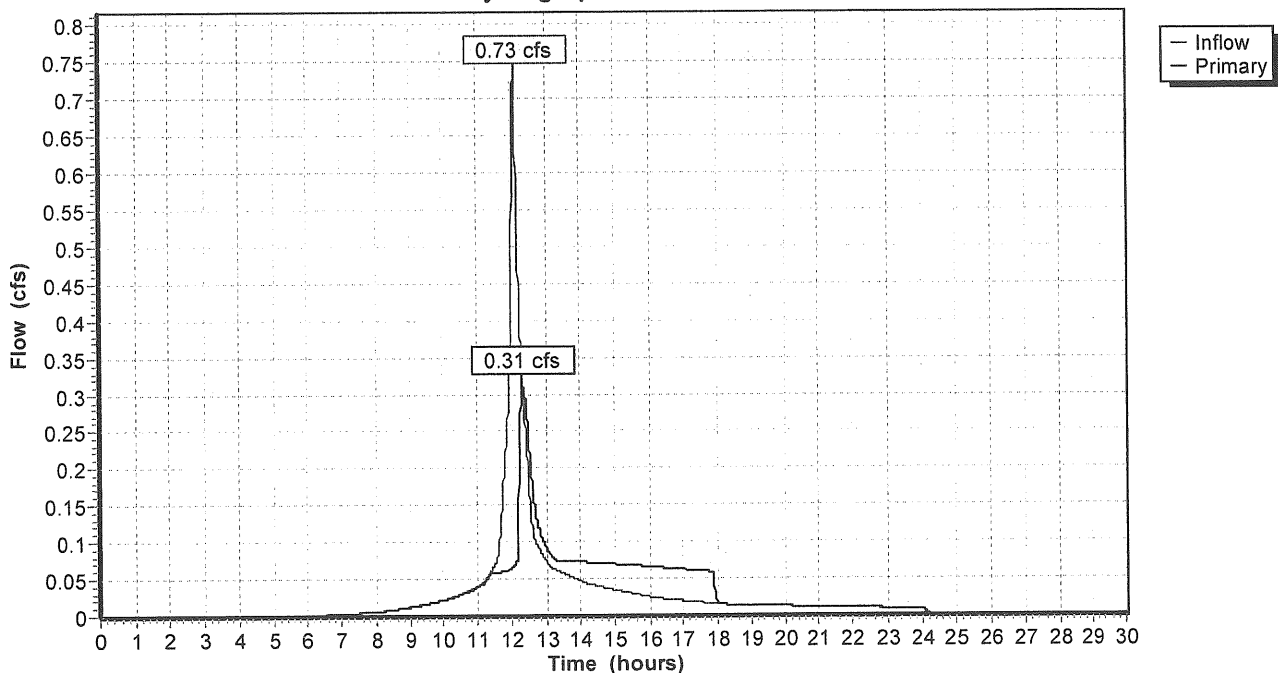
**Primary OutFlow (Free Discharge)**

- 1=Exfiltration
- 2=Orifice/Grate

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	0.003350 fpm Exfiltration over entire Surface area
2	Primary	76.50'	1.30' x 1.30' Horiz. Orifice/Grate Limited to weir flow C= 0.600

**Pond 3.5P: Bioretention Cell 2**

Hydrograph Plot



**Pond 3.9P: Pond 3.9P**

Inflow = 0.31 cfs @ 12.09 hrs, Volume= 0.022 af  
 Outflow = 0.31 cfs @ 12.10 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.3 min  
 Primary = 0.31 cfs @ 12.10 hrs, Volume= 0.022 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 76.57' Storage= 10 cf  
 Plug-Flow detention time= 1.0 min calculated for 0.022 af (100% of inflow)  
 Storage and wetted areas determined by Irregular sections

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.50	25	10.0	0	0	25
77.00	300	157.0	69	69	1,979
77.25	550	200.0	105	173	3,201

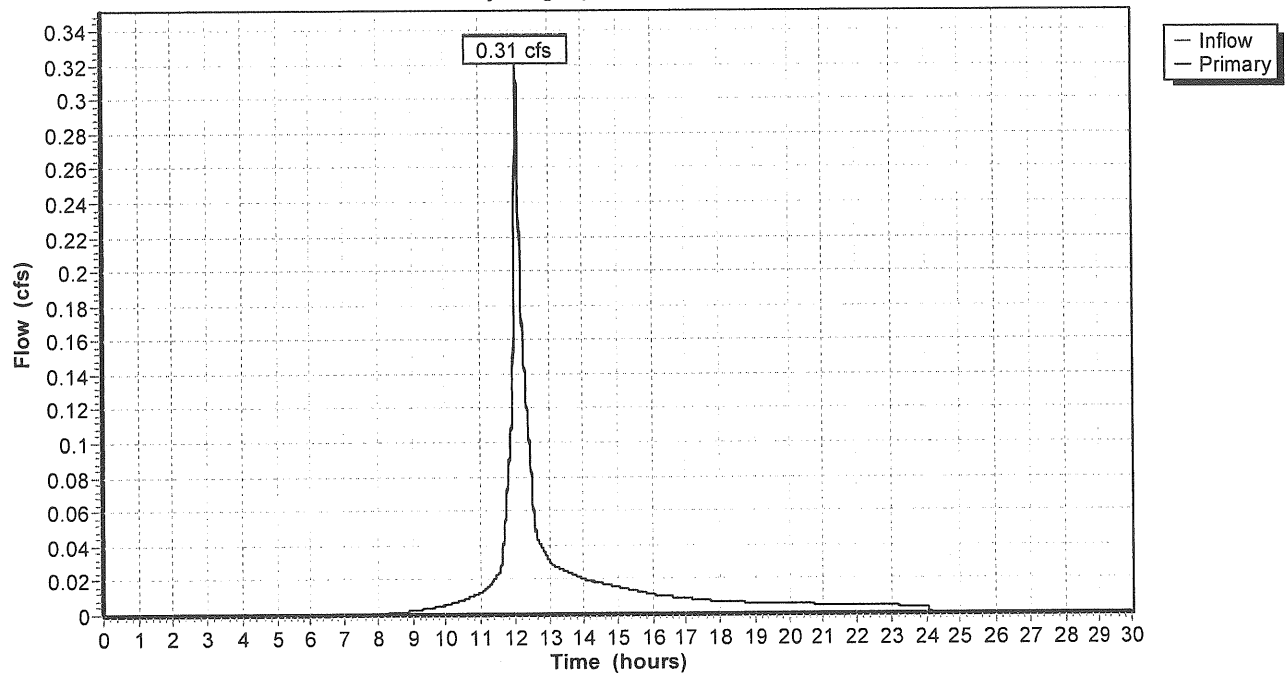
**Primary OutFlow (Free Discharge)**

←1=Orifice/Grate

#	Routing	Invert	Outlet Devices
1	Primary	76.50'	1.30' x 1.30' Horiz. Orifice/Grate Limited to weir flow C= 0.600

**Pond 3.9P: Pond 3.9P**

Hydrograph Plot



**Pond DMH1: DMH-1**

Inflow = 2.09 cfs @ 12.41 hrs, Volume= 0.370 af  
 Outflow = 2.09 cfs @ 12.41 hrs, Volume= 0.369 af, Atten= 0%, Lag= 0.1 min  
 Primary = 2.09 cfs @ 12.41 hrs, Volume= 0.369 af

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

Peak Elev= 68.96' Storage= 63 cf  
 Plug-Flow detention time= 3.5 min calculated for 0.369 af (100% of inflow)  
 Storage and wetted areas determined by Conic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
65.80	20	0	0	20
76.50	20	214	214	190

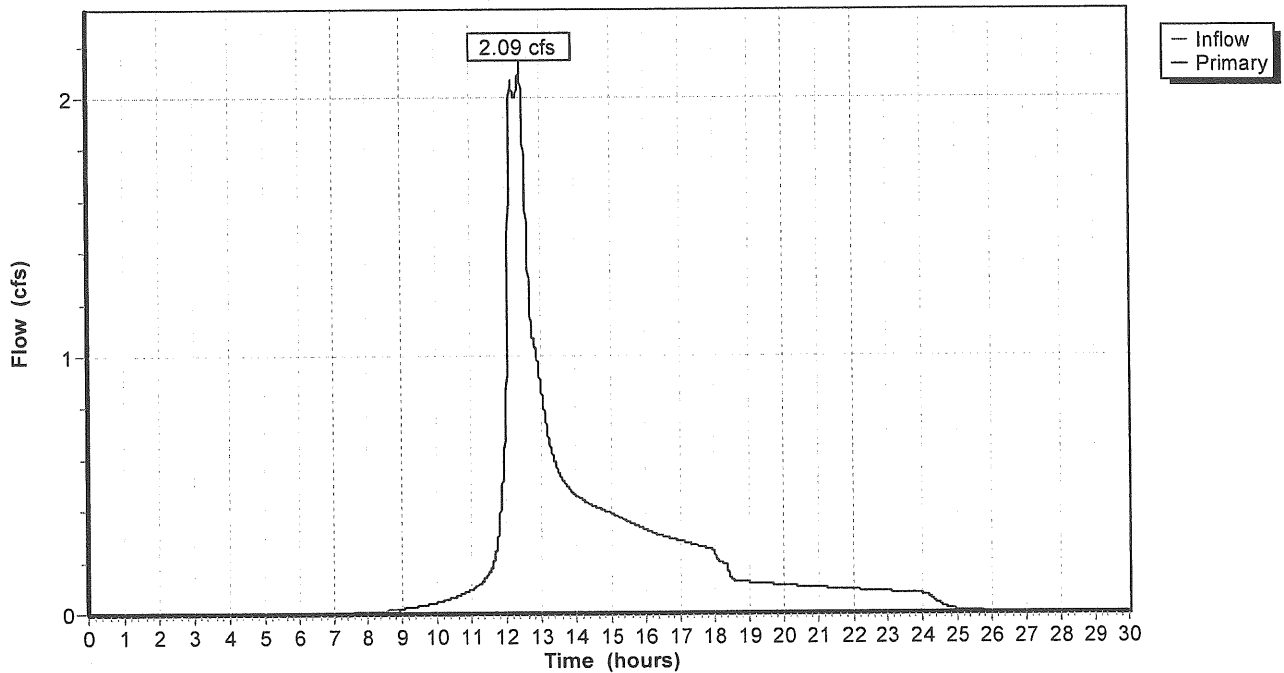
**Primary OutFlow (Free Discharge)**

↳1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	68.25'	15.0" x 44.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 64.00' S= 0.0966 '/' n= 0.011 Cc= 0.900

**Pond DMH1: DMH-1**

Hydrograph Plot



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points  
 Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=4.70"  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1: Playing Field**

Tc=10.0 min CN=74 Area=2.310 ac Runoff= 4.99 cfs 0.410 af

**Subcatchment 2:**

Tc=15.1 min CN=85 Area=0.119 ac Runoff= 0.32 cfs 0.031 af

**Subcatchment 3.1: Along Ludlow St**

Tc=21.2 min CN=83 Area=0.137 ac Runoff= 0.31 cfs 0.033 af

**Subcatchment 3.2: Main Entrance**

Tc=3.7 min CN=89 Area=0.116 ac Runoff= 0.50 cfs 0.034 af

**Subcatchment 3.3:**

Tc=30.8 min CN=87 Area=0.558 ac Runoff= 1.19 cfs 0.153 af

**Subcatchment 3.4:**

Tc=2.0 min CN=81 Area=0.208 ac Runoff= 0.77 cfs 0.047 af

**Subcatchment 3.5: Entrance - Leland St**

Tc=8.2 min CN=91 Area=0.328 ac Runoff= 1.27 cfs 0.101 af

**Subcatchment 3.6:**

Tc=0.6 min CN=96 Area=0.267 ac Runoff= 1.45 cfs 0.094 af

**Subcatchment 3.7:**

Tc=1.0 min CN=98 Area=0.150 ac Runoff= 0.82 cfs 0.056 af

**Subcatchment 3.8:**

Tc=6.7 min CN=87 Area=0.107 ac Runoff= 0.40 cfs 0.029 af

**Subcatchment 3.9:**

Tc=6.2 min CN=86 Area=0.162 ac Runoff= 0.59 cfs 0.043 af

**Reach SD 11: SD 11**

Inflow= 0.59 cfs 0.043 af  
 Length= 187.0' Max Vel= 3.0 fps Capacity= 2.99 cfs Outflow= 0.59 cfs 0.043 af

**Reach SD 2: SD 2**

Inflow= 1.99 cfs 0.368 af  
 Length= 220.0' Max Vel= 4.1 fps Capacity= 5.40 cfs Outflow= 1.98 cfs 0.368 af

**Reach SD 5: SD 5**

Inflow= 1.65 cfs 0.301 af  
 Length= 61.5' Max Vel= 3.9 fps Capacity= 5.42 cfs Outflow= 1.65 cfs 0.301 af

**Reach SD 6.1: SD 6**

Inflow= 1.36 cfs 0.148 af  
 Length= 175.0' Max Vel= 3.7 fps Capacity= 2.97 cfs Outflow= 1.36 cfs 0.148 af

**03245POST**

Type III 24-hr Rainfall=4.70" - 10 yr event

Prepared by Sebago Technics, Inc.

Page 2

HydroCAD® 6.00 s/n 001856 © 1986-2001 Applied Microcomputer Systems

4/4/2007

**Reach SD 6.2: SD 6**

Inflow= 1.06 cfs 0.101 af  
 Length= 146.0' Max Vel= 3.5 fps Capacity= 2.98 cfs Outflow= 1.05 cfs 0.101 af

**Reach SD 8: SD 8**

Inflow= 1.35 cfs 0.128 af  
 Length= 110.0' Max Vel= 3.7 fps Capacity= 5.40 cfs Outflow= 1.34 cfs 0.128 af

**Reach SD 9: SD 9**

Inflow= 0.97 cfs 0.072 af  
 Length= 95.0' Max Vel= 3.3 fps Capacity= 5.43 cfs Outflow= 0.96 cfs 0.072 af

**Reach SD3/4: SD 3&4**

Inflow= 1.74 cfs 0.335 af  
 Length= 110.5' Max Vel= 4.2 fps Capacity= 5.90 cfs Outflow= 1.74 cfs 0.335 af

**Reach SP1: Existing system**

Inflow= 3.43 cfs 0.776 af  
 Outflow= 3.43 cfs 0.776 af

**Reach SP2: Existing Pond**

Inflow= 0.32 cfs 0.031 af  
 Outflow= 0.32 cfs 0.031 af

**Reach SP3: Existing Pond**

Inflow= 2.66 cfs 0.222 af  
 Outflow= 2.66 cfs 0.222 af

**Pond 1P: Base Stone**

Peak Storage= 4,235 cf Inflow= 4.99 cfs 0.410 af  
 Primary= 1.51 cfs 0.409 af Outflow= 1.51 cfs 0.409 af

**Pond 3.1P: Pond 3.1P**

Peak Storage= 62 cf Inflow= 0.31 cfs 0.033 af  
 Primary= 0.30 cfs 0.033 af Outflow= 0.30 cfs 0.033 af

**Pond 3.3P: Bioretention Cell 1**

Peak Storage= 1,286 cf Inflow= 1.19 cfs 0.153 af  
 Primary= 1.06 cfs 0.153 af Outflow= 1.06 cfs 0.153 af

**Pond 3.5P: Bioretention Cell 2**

Peak Storage= 870 cf Inflow= 1.27 cfs 0.101 af  
 Primary= 1.06 cfs 0.101 af Outflow= 1.06 cfs 0.101 af

**Pond 3.9P: Pond 3.9P**

Peak Storage= 15 cf Inflow= 0.59 cfs 0.043 af  
 Primary= 0.59 cfs 0.043 af Outflow= 0.59 cfs 0.043 af

**Pond DMH1: DMH-1**

Peak Storage= 68 cf Inflow= 3.43 cfs 0.777 af  
 Primary= 3.43 cfs 0.776 af Outflow= 3.43 cfs 0.776 af

**Runoff Area = 4.462 ac Volume = 1.030 af Average Depth = 2.77"**

### Subcatchment 1: Playing Field

Runoff = 4.99 cfs @ 12.14 hrs, Volume= 0.410 af

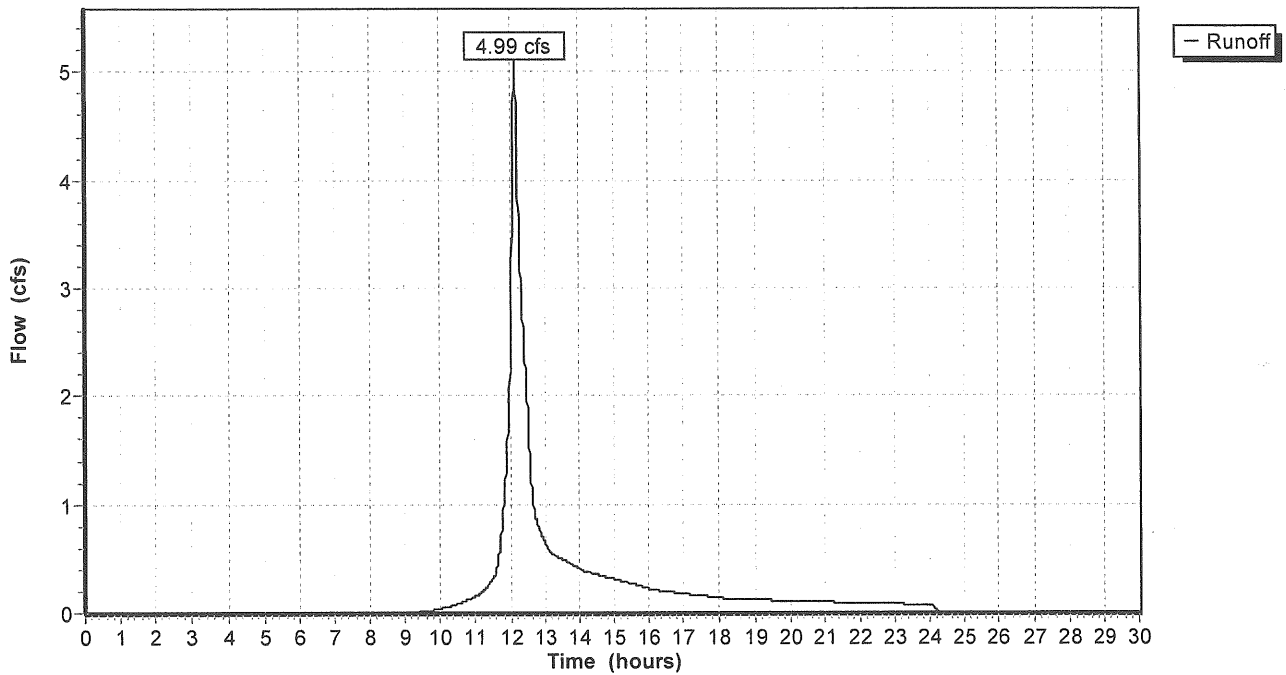
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr Rainfall=4.70"

Area (ac)	CN	Description
2.310	74	>75% Grass cover, Good, HSG C

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

### Subcatchment 1: Playing Field

Hydrograph Plot



**Subcatchment 2:**

Runoff = 0.32 cfs @ 12.20 hrs, Volume= 0.031 af

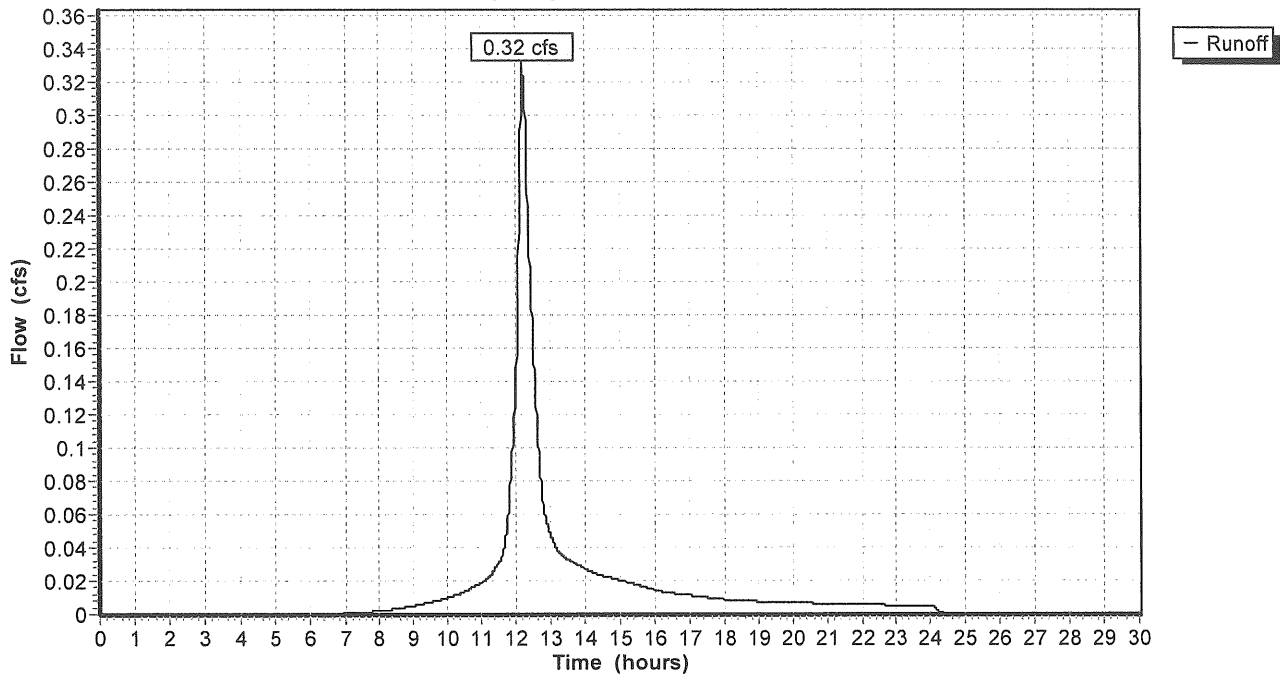
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=4.70"

Area (ac)	CN	Description
0.056	98	Pavement
0.063	74	>75% Grass cover, Good, HSG C
0.119	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	85	0.0400	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"

**Subcatchment 2:**

Hydrograph Plot



**Subcatchment 3.1: Along Ludlow St**

Runoff = 0.31 cfs @ 12.28 hrs, Volume= 0.033 af

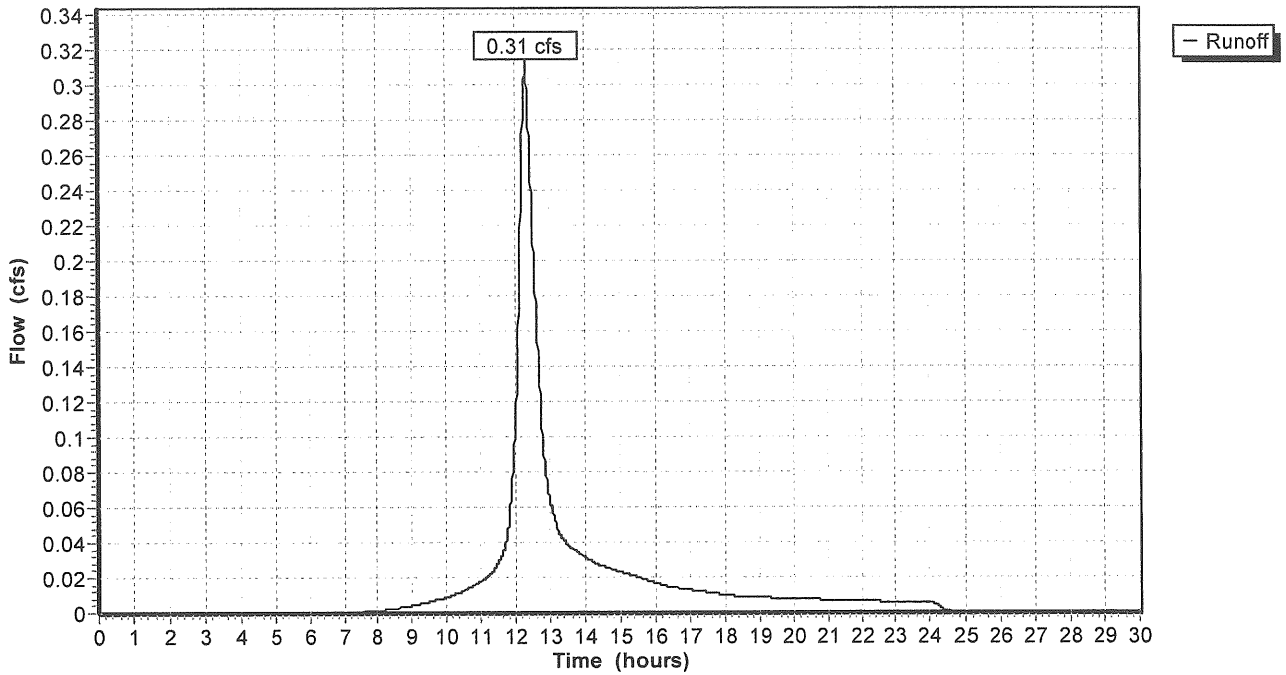
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=4.70"

Area (ac)	CN	Description
0.023	98	Pavement
0.114	80	>75% Grass cover, Good, HSG D
0.137	83	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.2	80	0.0150	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"

**Subcatchment 3.1: Along Ludlow St**

Hydrograph Plot





**Subcatchment 3.2: Main Entrance**

Runoff = 0.50 cfs @ 12.05 hrs, Volume= 0.034 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=4.70"

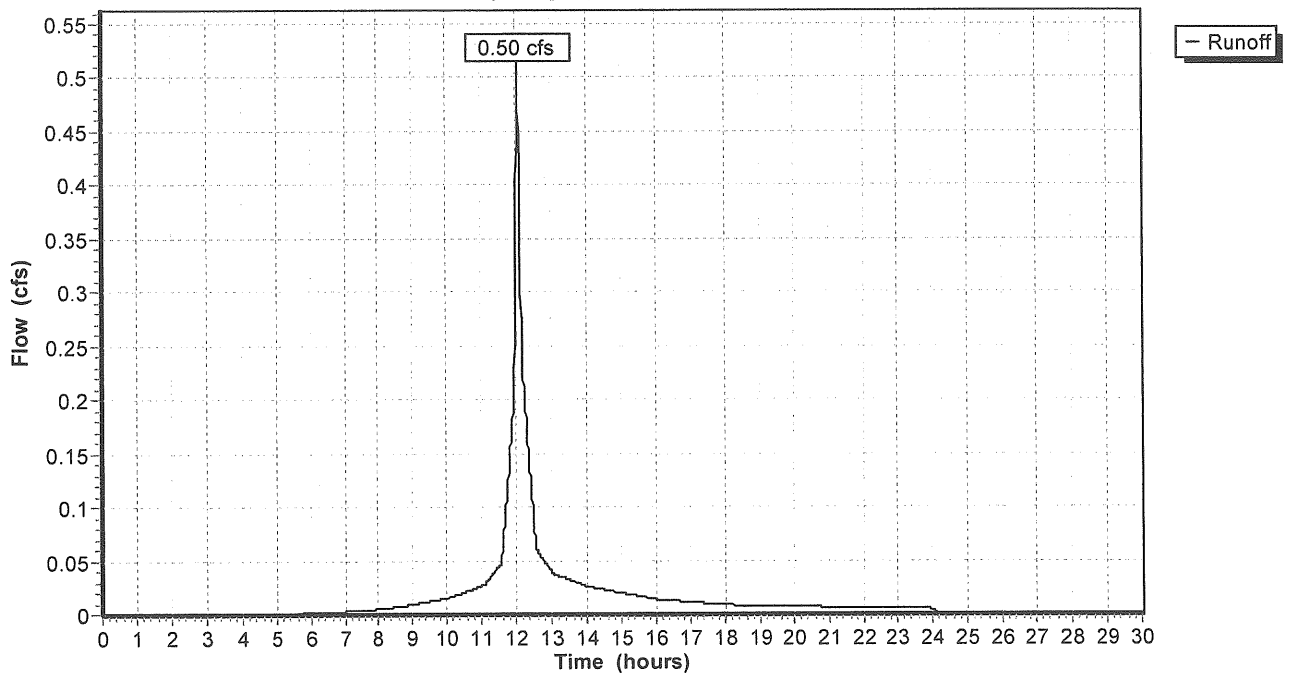
Area (ac)	CN	Description
0.056	98	Pavement & roofs
0.060	80	>75% Grass cover, Good, HSG D
0.116	89	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	10	0.0300	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"
0.7	100	0.0150	2.5		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
3.7	110	Total			

**Subcatchment 3.2: Main Entrance**

Hydrograph Plot



**Subcatchment 3.3:**

Runoff = 1.19 cfs @ 12.42 hrs, Volume= 0.153 af

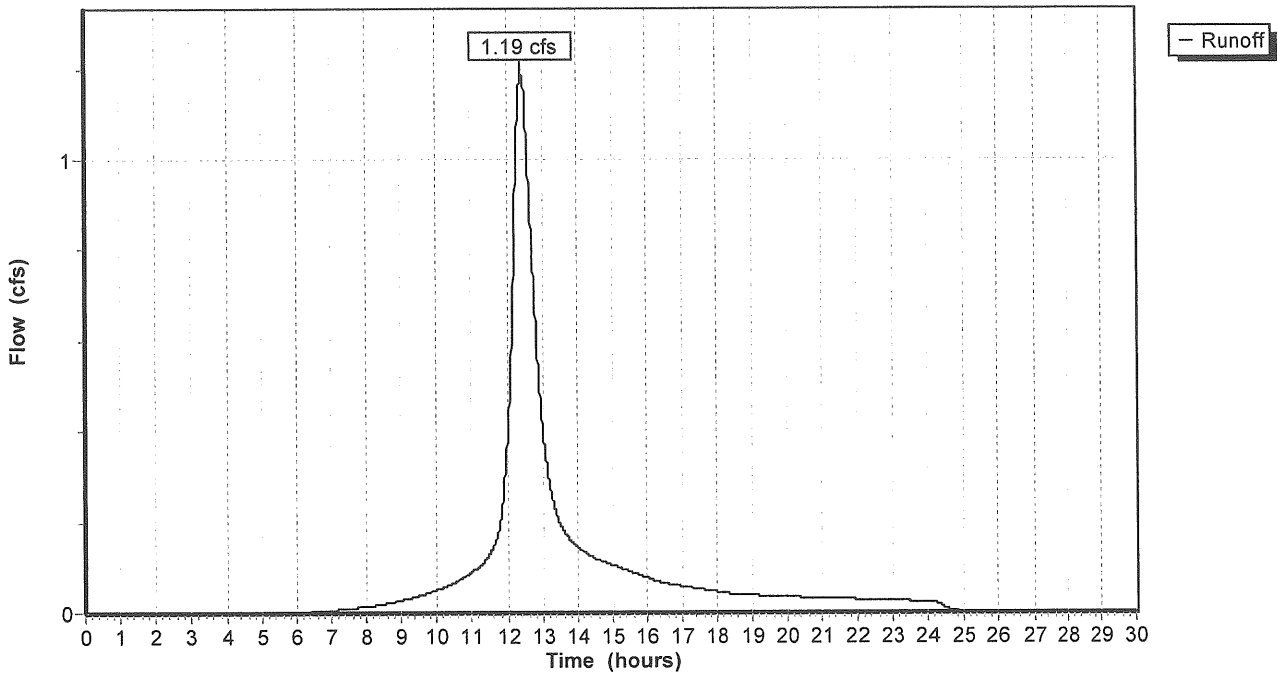
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=4.70"

Area (ac)	CN	Description
0.220	98	Pavement & roofs
0.338	80	>75% Grass cover, Good, HSG D
0.558	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.8	90	0.0075	0.0		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"

**Subcatchment 3.3:**

Hydrograph Plot



**Subcatchment 3.4:**

Runoff = 0.77 cfs @ 12.03 hrs, Volume= 0.047 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=4.70"

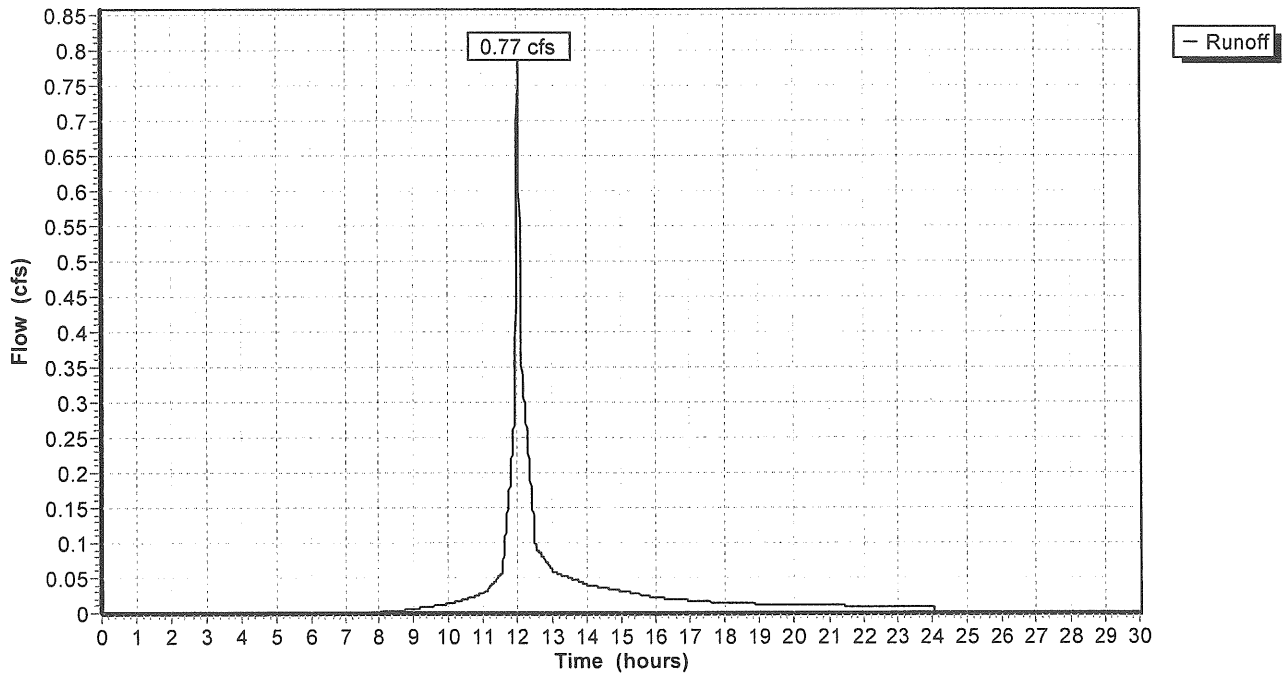
Area (ac)	CN	Description
0.012	98	Pavement & roofs
0.196	80	>75% Grass cover, Good, HSG D
0.208	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	80	0.0600	3.7		Shallow Concentrated Flow, B-C Grassed Waterway Kv= 15.0 fps
1.5	115	0.0070	1.3		Shallow Concentrated Flow, B-C Grassed Waterway Kv= 15.0 fps
0.1	35	0.0100	5.4	4.21	Circular Channel (pipe), C-D Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
2.0	230	Total			

**Subcatchment 3.4:**

Hydrograph Plot



**Subcatchment 3.5: Entrance - Leland St**

Runoff = 1.27 cfs @ 12.11 hrs, Volume= 0.101 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=4.70"

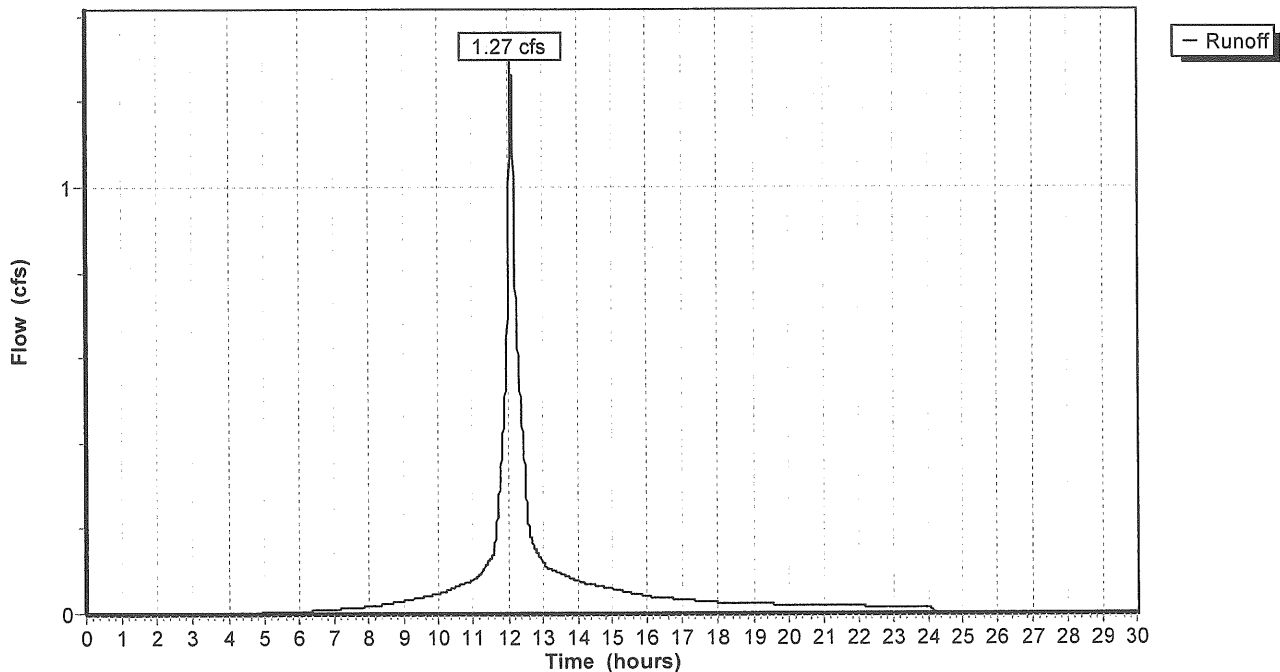
Area (ac)	CN	Description
0.202	98	Pavement & roofs
0.126	80	>75% Grass cover, Good, HSG D
0.328	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	70	0.0400	1.6		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 3.00"
7.5	45	0.0650	0.1		Sheet Flow, B-C Grass: Bermuda n= 0.410 P2= 3.00"
8.2	115	Total			

**Subcatchment 3.5: Entrance - Leland St**

Hydrograph Plot



**Subcatchment 3.6:**

Runoff = 1.45 cfs @ 12.01 hrs, Volume= 0.094 af

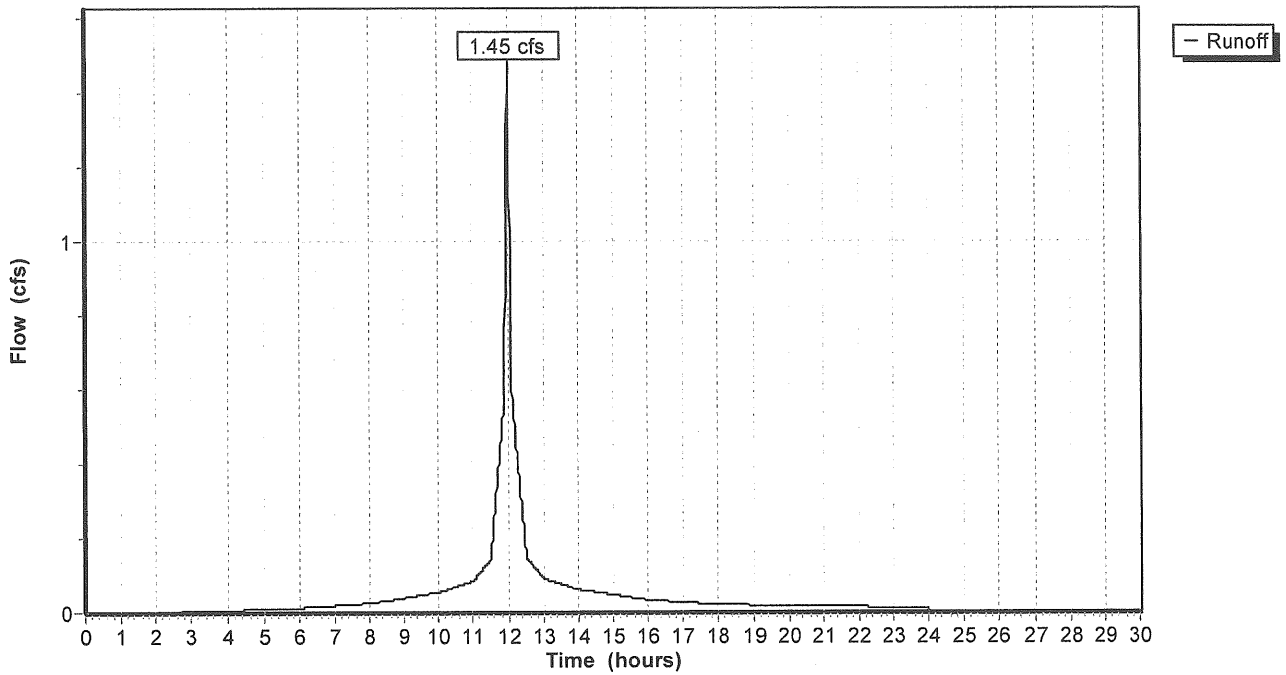
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=4.70"

Area (ac)	CN	Description
0.241	98	Pavement & roofs
0.026	80	>75% Grass cover, Good, HSG D
0.267	96	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	55	0.0400	1.6		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 3.00"

**Subcatchment 3.6:**

Hydrograph Plot



**Subcatchment 3.7:**

Runoff = 0.82 cfs @ 12.01 hrs, Volume= 0.056 af

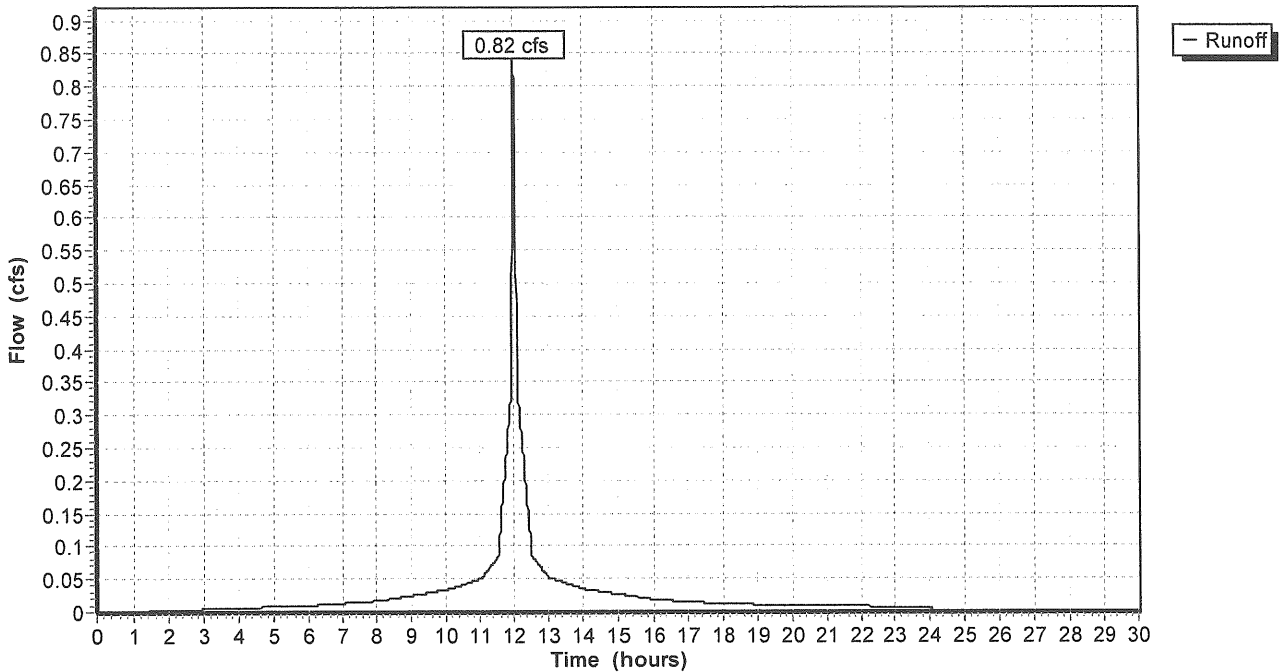
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr Rainfall=4.70"

Area (ac)	CN	Description
0.150	98	Pavement & roofs

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	80	0.0200	1.3		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 3.00"

**Subcatchment 3.7:**

Hydrograph Plot



**Subcatchment 3.8:**

Runoff = 0.40 cfs @ 12.10 hrs, Volume= 0.029 af

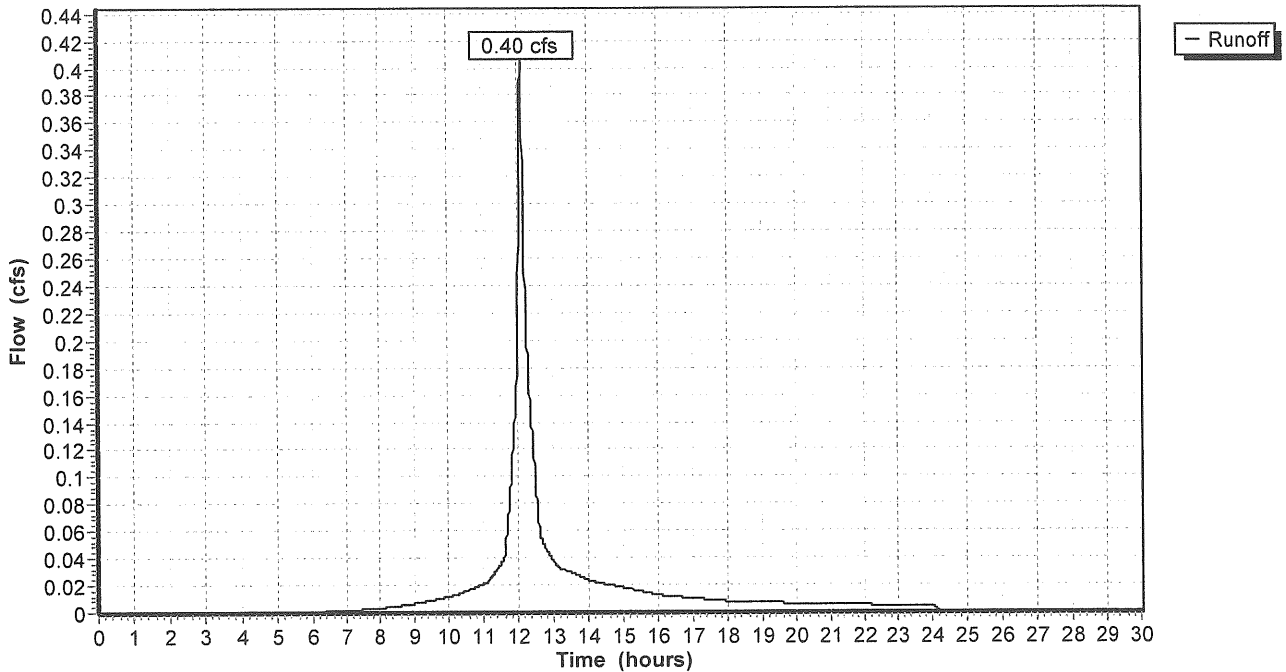
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=4.70"

Area (ac)	CN	Description
0.040	98	Pavement & roofs
0.067	80	>75% Grass cover, Good, HSG D
0.107	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	20	0.0500	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"
2.4	150	0.0050	1.1		Shallow Concentrated Flow, B-C Grassed Waterway Kv= 15.0 fps
6.7	170	Total			

**Subcatchment 3.8:**

Hydrograph Plot



**Subcatchment 3.9:**

Runoff = 0.59 cfs @ 12.09 hrs, Volume= 0.043 af

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=4.70"

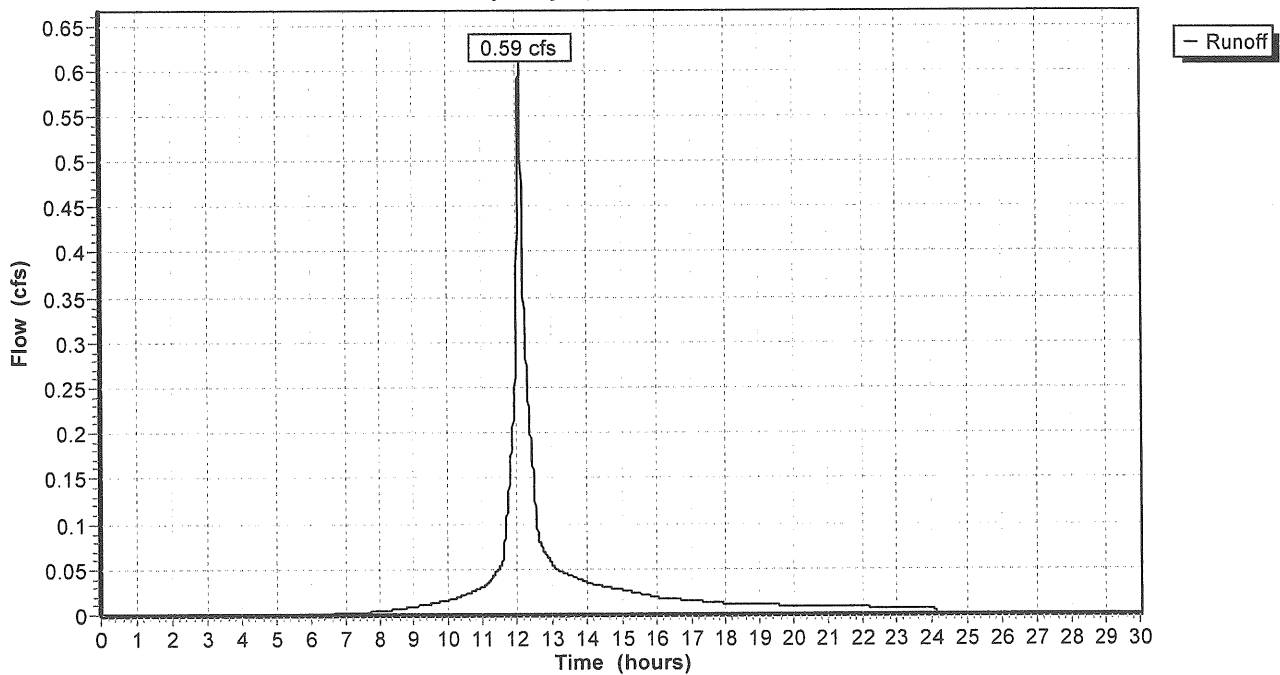
Area (ac)	CN	Description
0.055	98	Pavement & roofs
0.107	80	>75% Grass cover, Good, HSG D
0.162	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	25	0.0400	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"
0.5	195	0.0250	6.7	33.45	Trap/Vee/Rect Channel Flow, B-C Bot.W=2.00' D=1.00' Z= 3.0 ' n= 0.025
6.2	220	Total			

**Subcatchment 3.9:**

Hydrograph Plot





Reach SD 11: SD 11

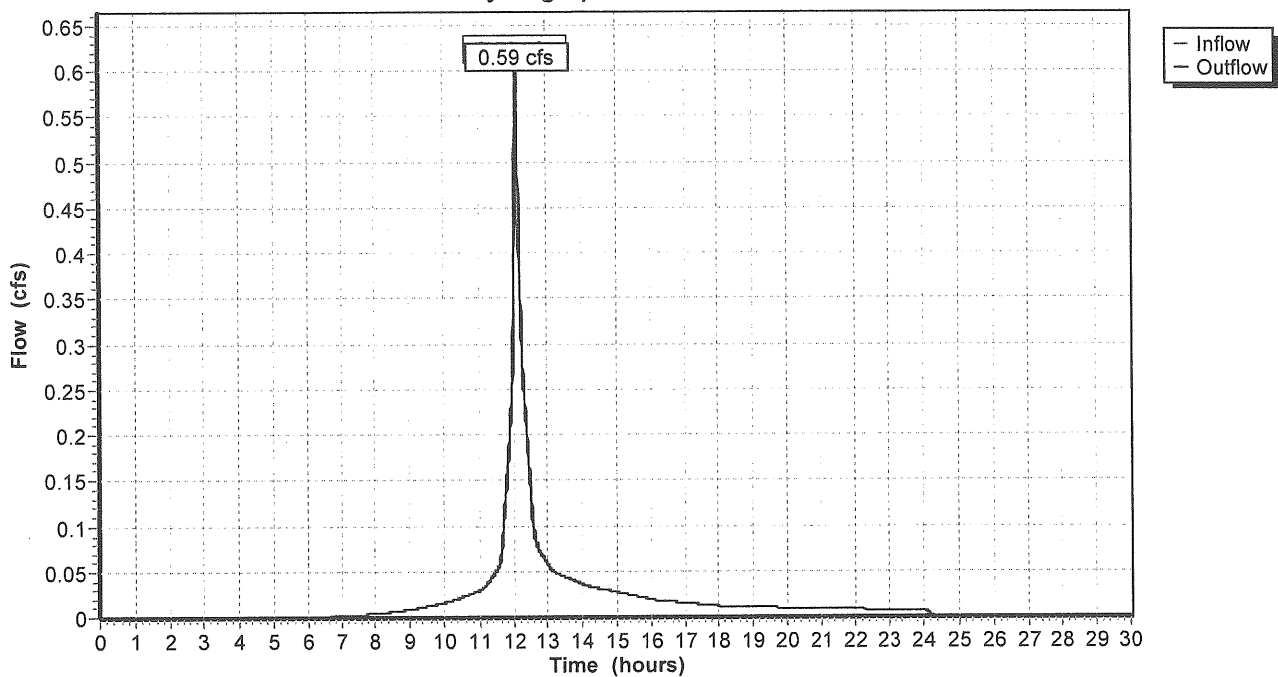
Inflow = 0.59 cfs @ 12.09 hrs, Volume= 0.043 af  
Outflow = 0.59 cfs @ 12.12 hrs, Volume= 0.043 af, Atten= 1%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 3.0 fps, Min. Travel Time= 1.1 min  
Avg. Velocity = 1.0 fps, Avg. Travel Time= 3.2 min

Peak Depth= 0.30'  
Capacity at bank full= 2.99 cfs  
Inlet Invert= 72.97', Outlet Invert= 72.03'  
12.0" Diameter Pipe n= 0.011 Length= 187.0' Slope= 0.0050 '/'

Reach SD 11: SD 11

Hydrograph Plot



Reach SD 2: SD 2

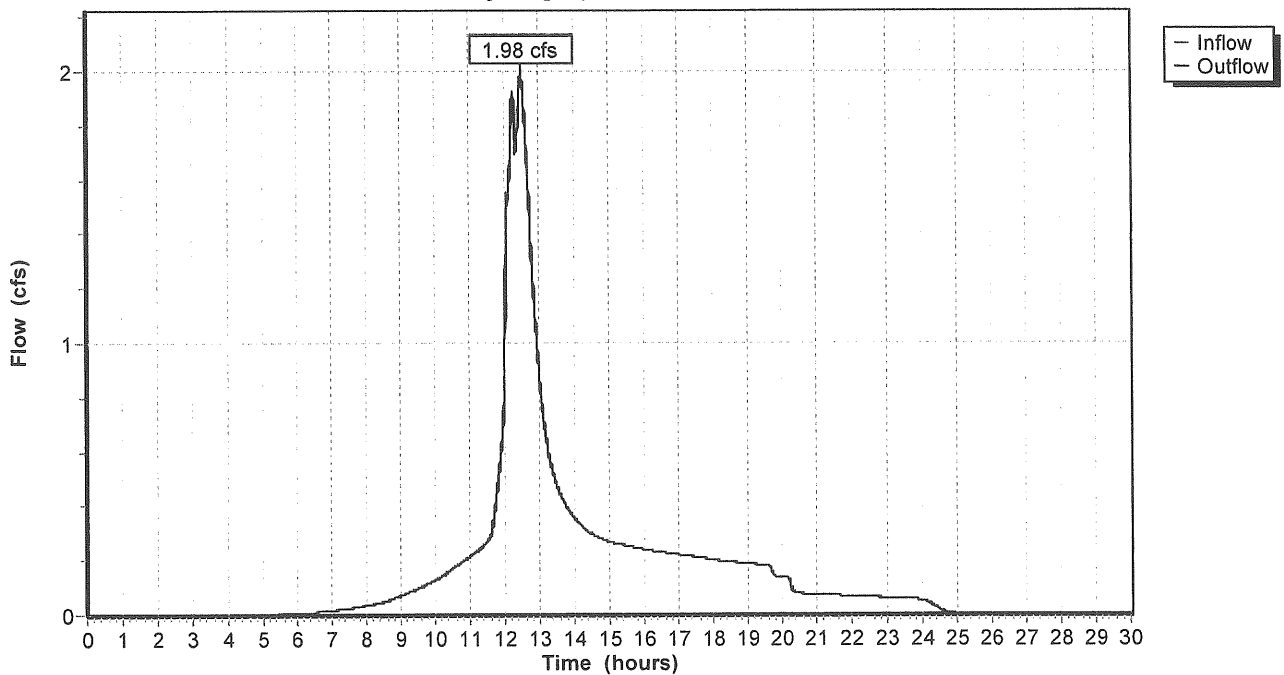
Inflow = 1.99 cfs @ 12.48 hrs, Volume= 0.368 af  
Outflow = 1.98 cfs @ 12.51 hrs, Volume= 0.368 af, Atten= 0%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 4.1 fps, Min. Travel Time= 0.9 min  
Avg. Velocity = 1.7 fps, Avg. Travel Time= 2.1 min

Peak Depth= 0.52'  
Capacity at bank full= 5.40 cfs  
Inlet Invert= 69.48', Outlet Invert= 68.38'  
15.0" Diameter Pipe n= 0.011 Length= 220.0' Slope= 0.0050 '/'

Reach SD 2: SD 2

Hydrograph Plot



### Reach SD 5: SD 5

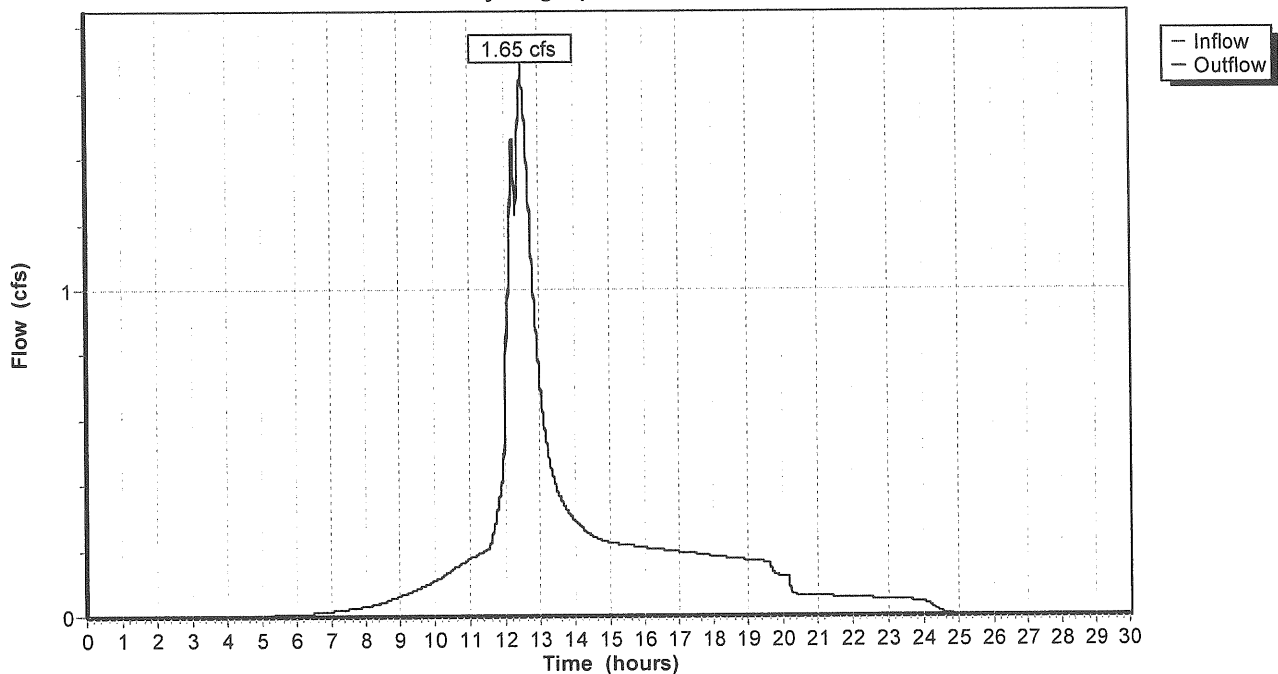
Inflow = 1.65 cfs @ 12.49 hrs, Volume= 0.301 af  
Outflow = 1.65 cfs @ 12.49 hrs, Volume= 0.301 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 3.9 fps, Min. Travel Time= 0.3 min  
Avg. Velocity = 1.7 fps, Avg. Travel Time= 0.6 min

Peak Depth= 0.47'  
Capacity at bank full= 5.42 cfs  
Inlet Invert= 70.65', Outlet Invert= 70.34'  
15.0" Diameter Pipe n= 0.011 Length= 61.5' Slope= 0.0050 1'

### Reach SD 5: SD 5

Hydrograph Plot



**Reach SD 6.1: SD 6**

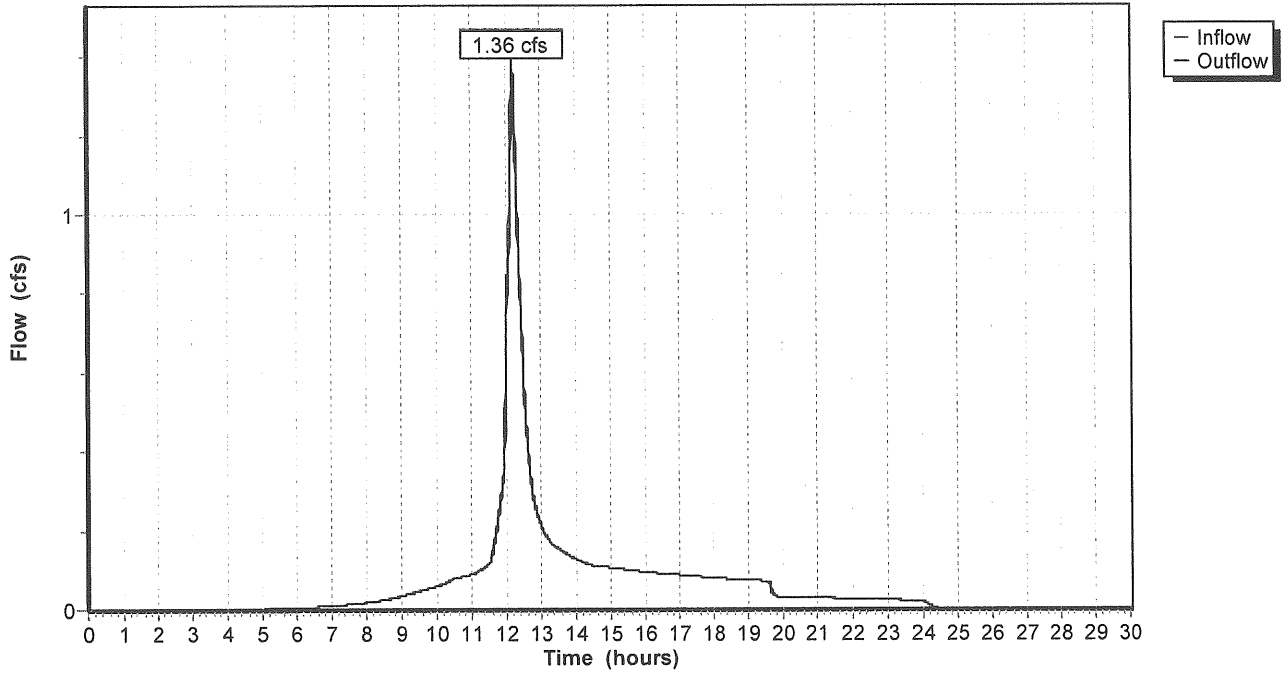
Inflow = 1.36 cfs @ 12.19 hrs, Volume= 0.148 af  
Outflow = 1.36 cfs @ 12.21 hrs, Volume= 0.148 af, Atten= 0%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 3.7 fps, Min. Travel Time= 0.8 min  
Avg. Velocity = 1.4 fps, Avg. Travel Time= 2.1 min

Peak Depth= 0.47'  
Capacity at bank full= 2.97 cfs  
Inlet Invert= 71.77', Outlet Invert= 70.90'  
12.0" Diameter Pipe n= 0.011 Length= 175.0' Slope= 0.0050 '/'

**Reach SD 6.1: SD 6**

Hydrograph Plot



**Reach SD 6.2: SD 6**

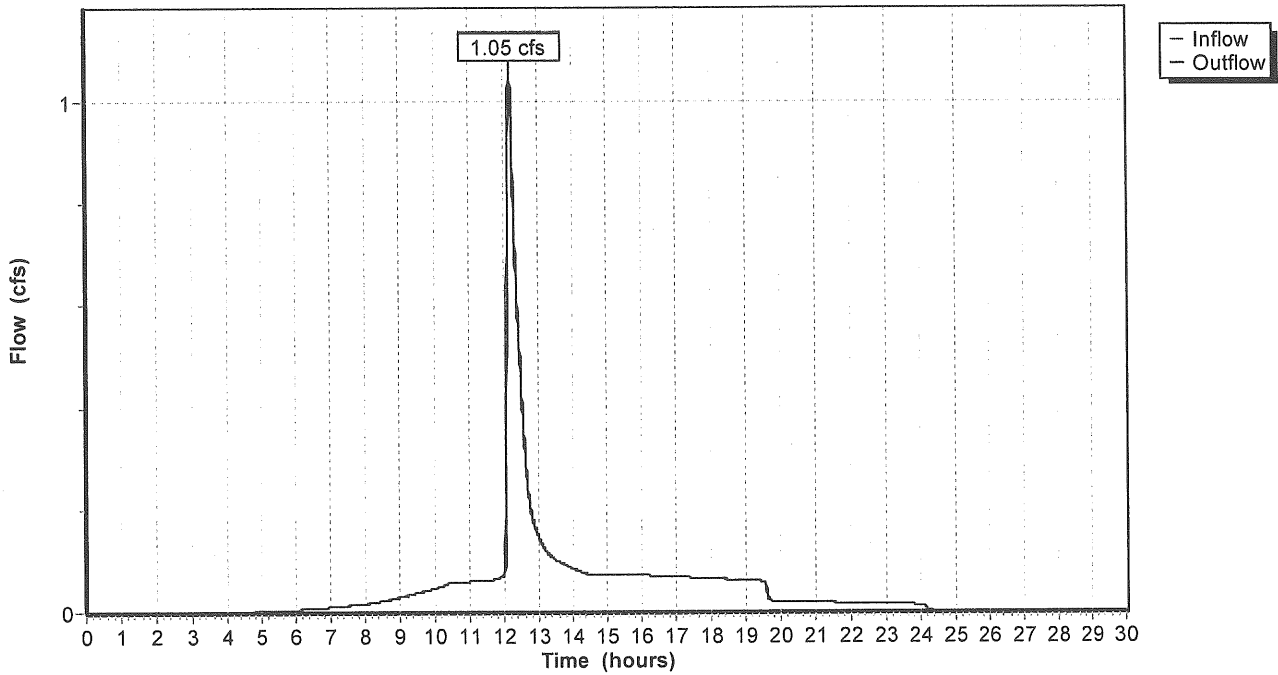
Inflow = 1.06 cfs @ 12.17 hrs, Volume= 0.101 af  
Outflow = 1.05 cfs @ 12.20 hrs, Volume= 0.101 af, Atten= 0%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 3.5 fps, Min. Travel Time= 0.7 min  
Avg. Velocity = 1.3 fps, Avg. Travel Time= 1.9 min

Peak Depth= 0.41'  
Capacity at bank full= 2.98 cfs  
Inlet Invert= 72.50', Outlet Invert= 71.77'  
12.0" Diameter Pipe n= 0.011 Length= 146.0' Slope= 0.0050 1'

**Reach SD 6.2: SD 6**

Hydrograph Plot



Reach SD 8: SD 8

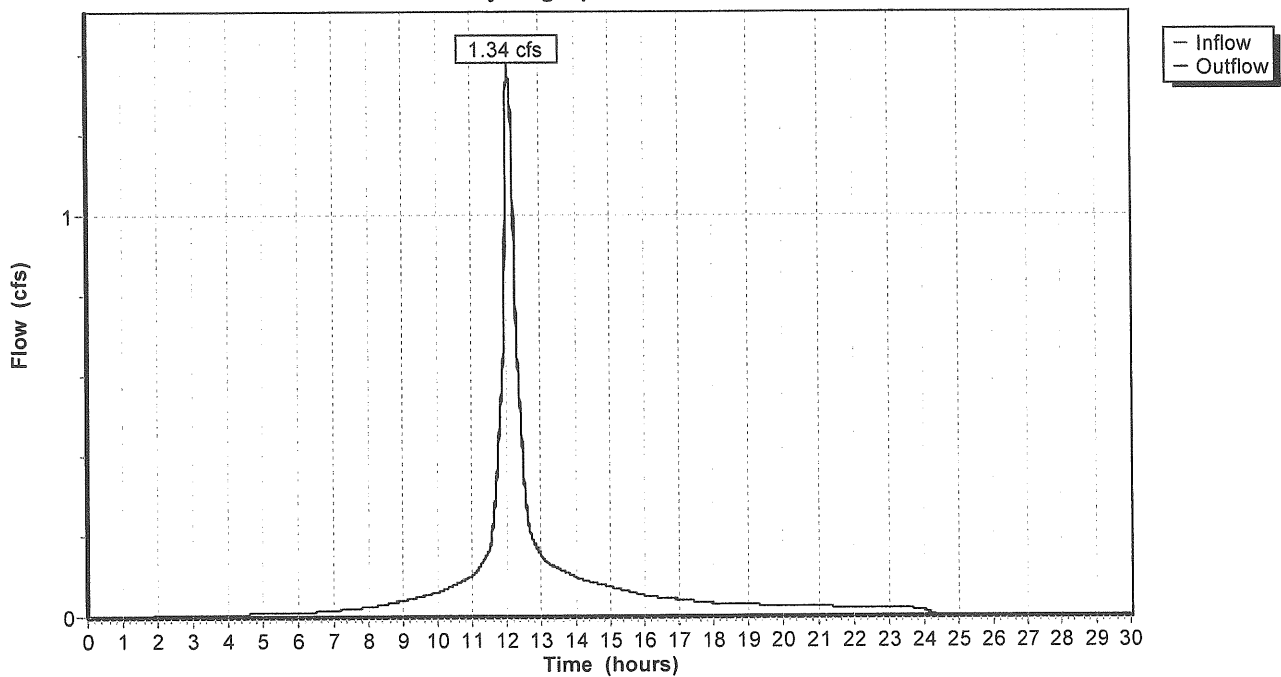
Inflow = 1.35 cfs @ 12.08 hrs, Volume= 0.128 af  
Outflow = 1.34 cfs @ 12.09 hrs, Volume= 0.128 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 3.7 fps, Min. Travel Time= 0.5 min  
Avg. Velocity= 1.2 fps, Avg. Travel Time= 1.5 min

Peak Depth= 0.43'  
Capacity at bank full= 5.40 cfs  
Inlet Invert= 71.35', Outlet Invert= 70.80'  
15.0" Diameter Pipe n= 0.011 Length= 110.0' Slope= 0.0050 1'

Reach SD 8: SD 8

Hydrograph Plot



Reach SD 9: SD 9

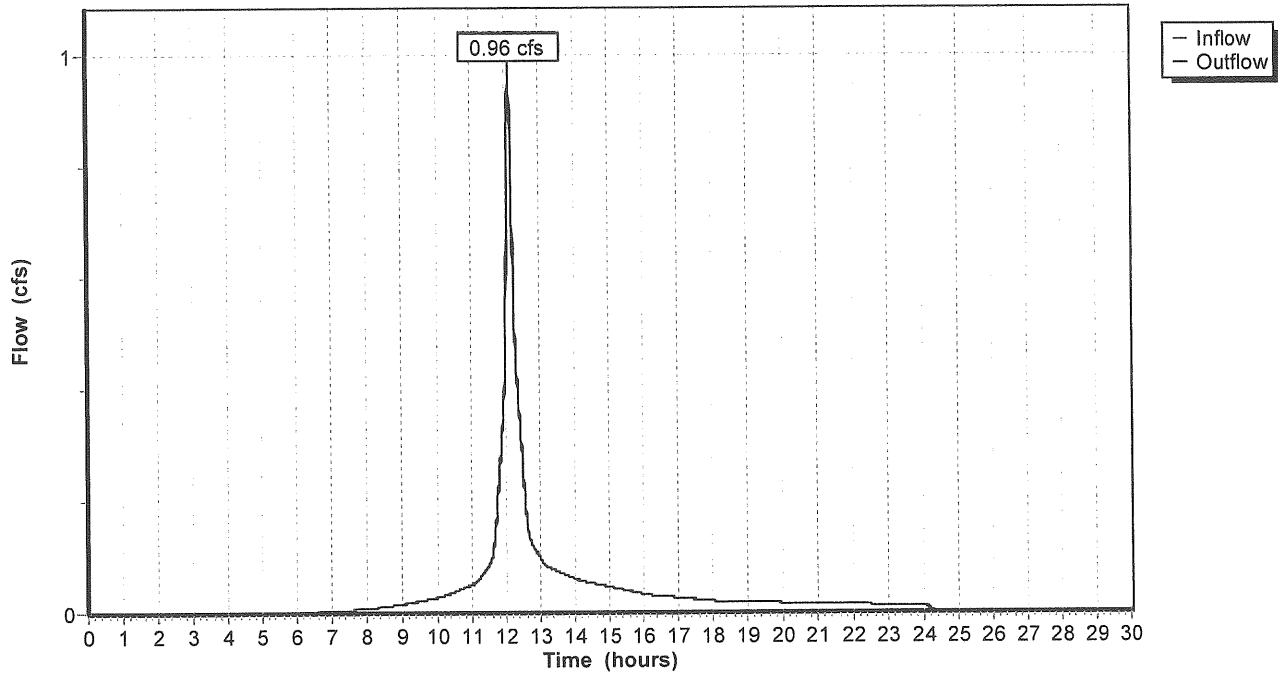
Inflow = 0.97 cfs @ 12.11 hrs, Volume= 0.072 af  
Outflow = 0.96 cfs @ 12.13 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 3.3 fps, Min. Travel Time= 0.5 min  
Avg. Velocity = 1.1 fps, Avg. Travel Time= 1.4 min

Peak Depth= 0.36'  
Capacity at bank full= 5.43 cfs  
Inlet Invert= 71.93', Outlet Invert= 71.45'  
15.0" Diameter Pipe n= 0.011 Length= 95.0' Slope= 0.0051 1'

Reach SD 9: SD 9

Hydrograph Plot



**Reach SD3/4: SD 3&4**

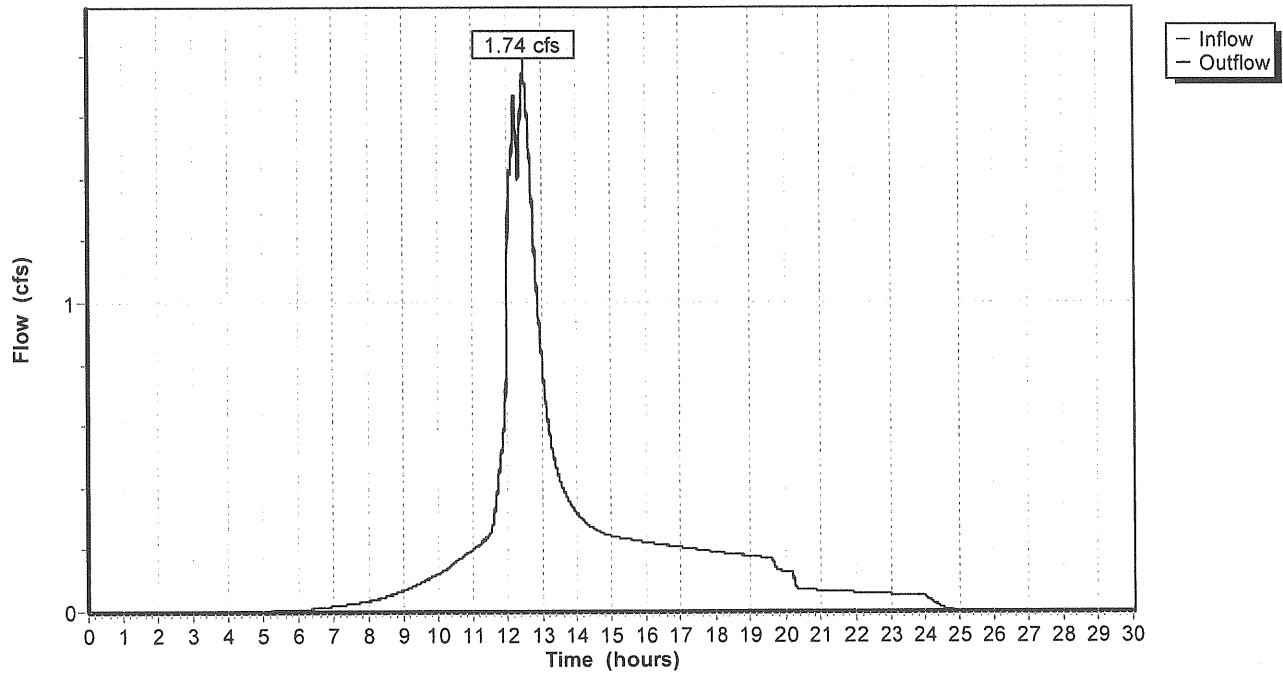
Inflow = 1.74 cfs @ 12.48 hrs, Volume= 0.335 af  
Outflow = 1.74 cfs @ 12.49 hrs, Volume= 0.335 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 4.2 fps, Min. Travel Time= 0.4 min  
Avg. Velocity = 1.8 fps, Avg. Travel Time= 1.0 min

Peak Depth= 0.47'  
Capacity at bank full= 5.90 cfs  
Inlet Invert= 70.24', Outlet Invert= 69.58'  
15.0" Diameter Pipe n= 0.011 Length= 110.5' Slope= 0.0060 '/'

**Reach SD3/4: SD 3&4**

Hydrograph Plot





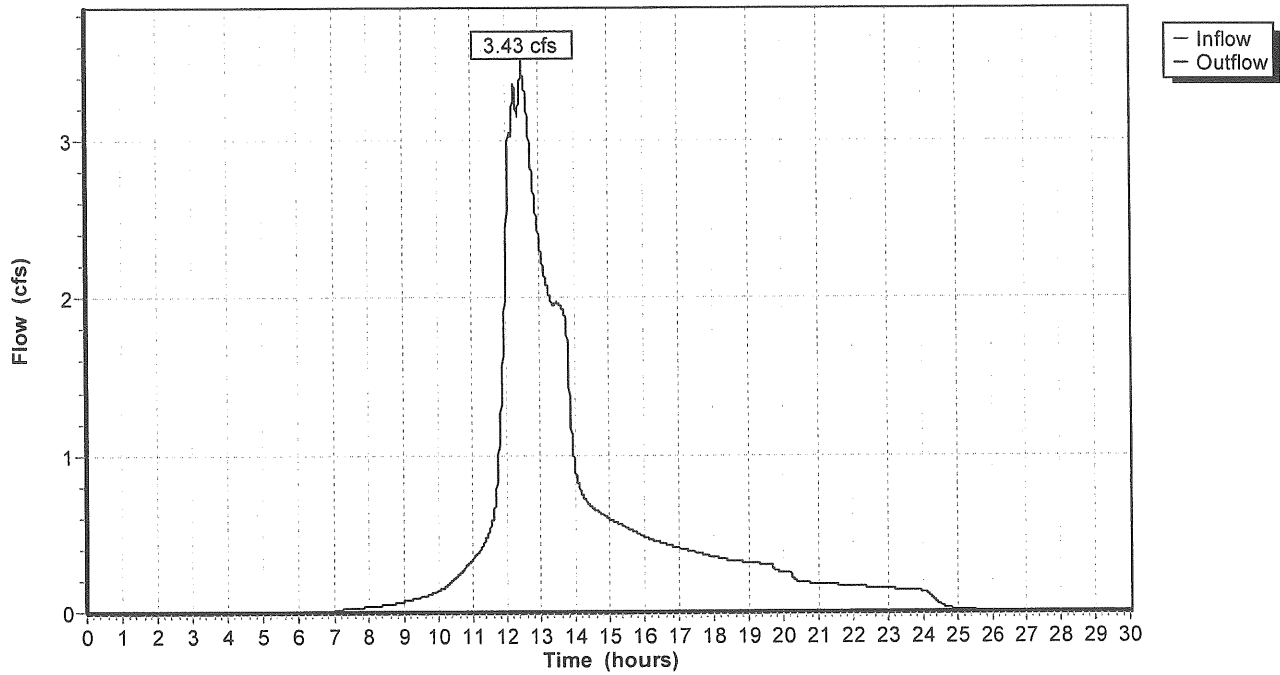
**Reach SP1: Existing system**

Inflow = 3.43 cfs @ 12.51 hrs, Volume= 0.776 af  
Outflow = 3.43 cfs @ 12.51 hrs, Volume= 0.776 af, Atten= 0%, Lag= 0.0 min

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

**Reach SP1: Existing system**

Hydrograph Plot



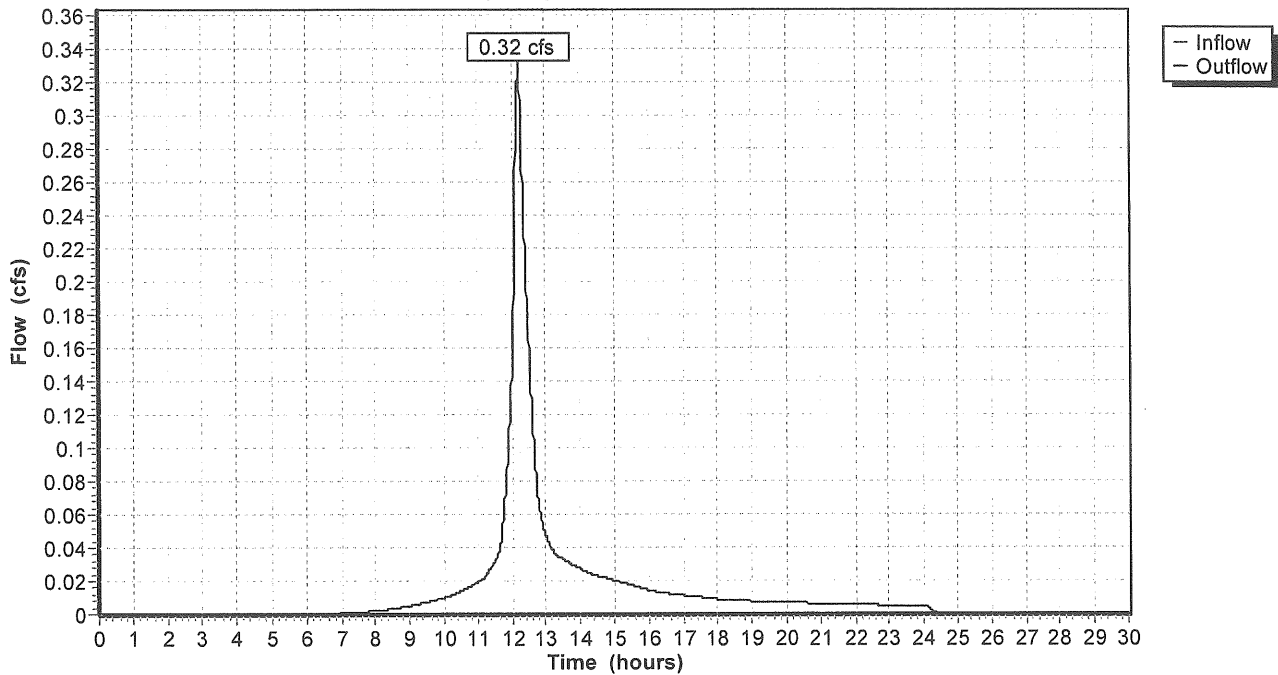
### Reach SP2: Existing Pond

Inflow = 0.32 cfs @ 12.20 hrs, Volume= 0.031 af  
Outflow = 0.32 cfs @ 12.20 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min

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

### Reach SP2: Existing Pond

Hydrograph Plot



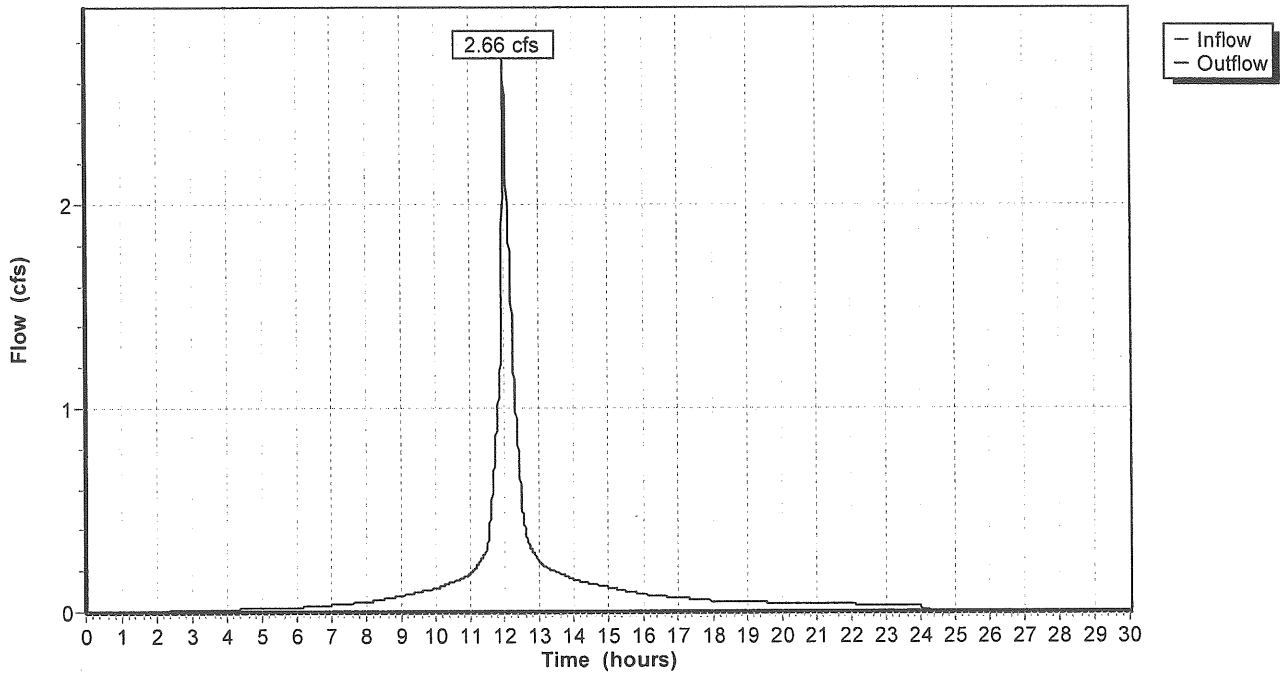
### Reach SP3: Existing Pond

Inflow = 2.66 cfs @ 12.02 hrs, Volume= 0.222 af  
Outflow = 2.66 cfs @ 12.02 hrs, Volume= 0.222 af, Atten= 0%, Lag= 0.0 min

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

### Reach SP3: Existing Pond

Hydrograph Plot



**Pond 1P: Base Stone**

Inflow = 4.99 cfs @ 12.14 hrs, Volume= 0.410 af  
 Outflow = 1.51 cfs @ 13.58 hrs, Volume= 0.409 af, Atten= 70%, Lag= 86.3 min  
 Primary = 1.51 cfs @ 13.58 hrs, Volume= 0.409 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 76.77' Storage= 4,235 cf

Plug-Flow detention time= 25.8 min calculated for 0.409 af (100% of inflow)

Elevation (feet)	Cum.Store (cubic-feet)
75.25	0
75.30	32
75.40	96
75.50	163
75.60	230
75.70	298
75.80	365
75.90	435
76.00	506
76.10	576
76.20	646
76.30	720
76.40	886
76.50	1,370
76.60	2,170
76.70	3,293
76.80	4,736
76.90	6,499
77.00	8,582
77.10	10,989
77.20	13,715
77.30	16,762
77.40	20,128
77.50	23,488
77.60	26,365
77.70	28,602
77.80	30,195
77.90	31,149
78.00	31,459

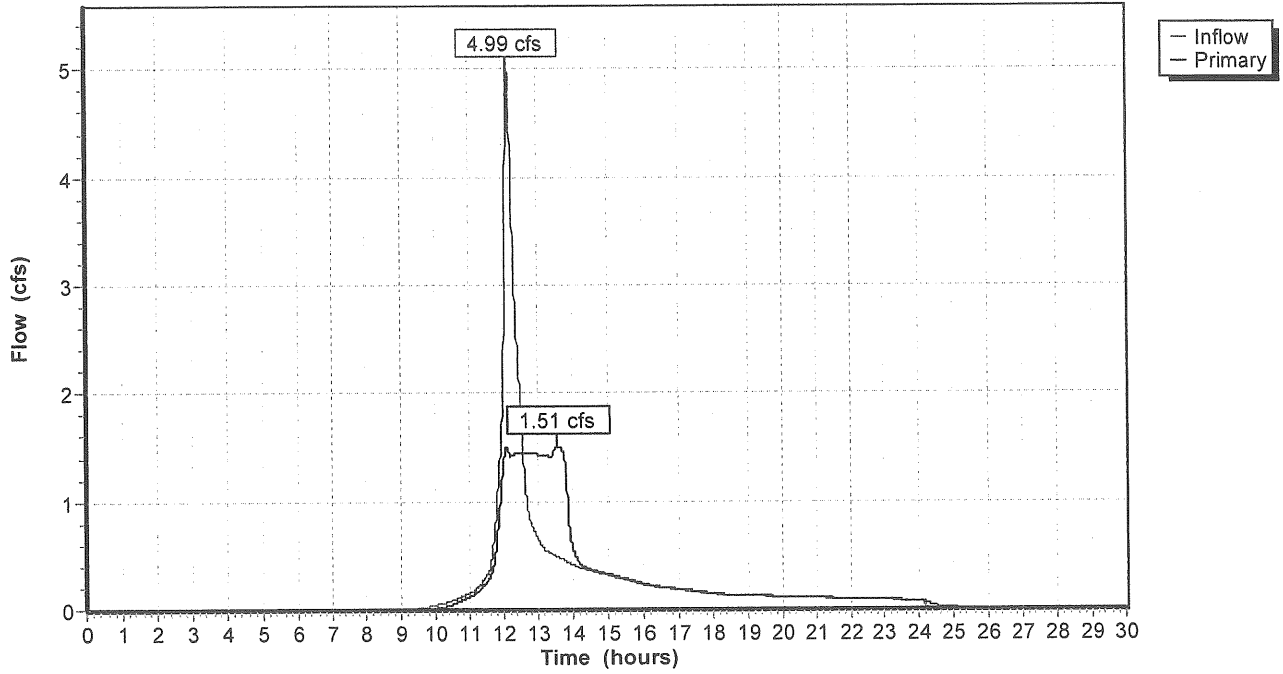
**Primary OutFlow (Free Discharge)**

↑1=Perimeter Underdrain

#	Routing	Invert	Outlet Devices
1	Primary	75.25'	<b>12.0" x 589.0' long Perimeter Underdrain</b> CMP, projecting, no headwall, Ke= 0.900 Outlet Invert= 72.33' S= 0.0050 '/ n= 0.024 Cc= 0.900

### Pond 1P: Base Stone

Hydrograph Plot



**Pond 3.1P: Pond 3.1P**

Inflow = 0.31 cfs @ 12.28 hrs, Volume= 0.033 af  
 Outflow = 0.30 cfs @ 12.33 hrs, Volume= 0.033 af, Atten= 2%, Lag= 2.7 min  
 Primary = 0.30 cfs @ 12.33 hrs, Volume= 0.033 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 5

Peak Elev= 76.07' Storage= 62 cf

Plug-Flow detention time= 6.5 min calculated for 0.033 af (100% of inflow)

Storage and wetted areas determined by Irregular sections

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	650	120.0	0	0	650
76.50	1,200	160.0	456	456	1,544

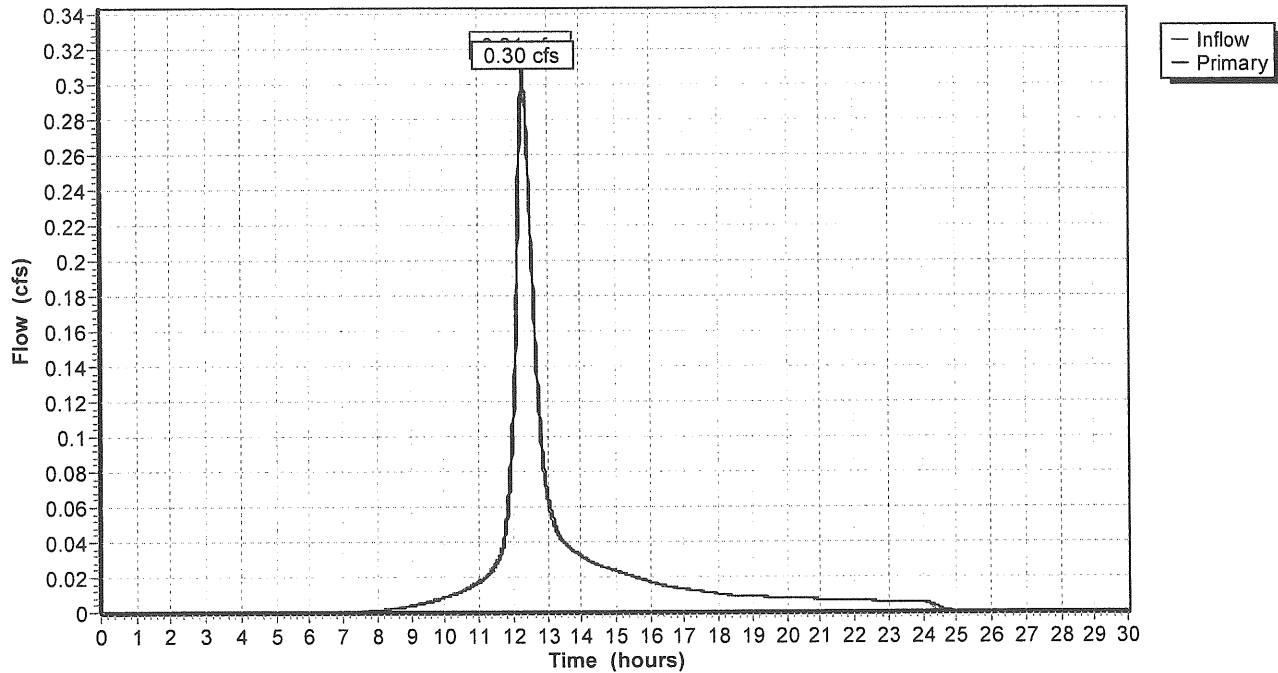
**Primary OutFlow (Free Discharge)**

↳1=Orifice/Grate

#	Routing	Invert	Outlet Devices
1	Primary	76.00'	1.30' x 1.30' Horiz. Orifice/Grate Limited to weir flow C= 0.600

**Pond 3.1P: Pond 3.1P**

Hydrograph Plot



**Pond 3.3P: Bioretention Cell 1**

Inflow = 1.19 cfs @ 12.42 hrs, Volume= 0.153 af  
 Outflow = 1.06 cfs @ 12.56 hrs, Volume= 0.153 af, Atten= 11%, Lag= 8.2 min  
 Primary = 1.06 cfs @ 12.56 hrs, Volume= 0.153 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 5

Peak Elev= 76.14' Storage= 1,286 cf  
 Plug-Flow detention time= 51.8 min calculated for 0.153 af (100% of inflow)  
 Storage and wetted areas determined by Irregular sections

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
75.50	1,580	235.0	0	0	1,580
76.00	2,075	250.0	911	911	2,171
76.25	3,250	320.0	660	1,571	5,347

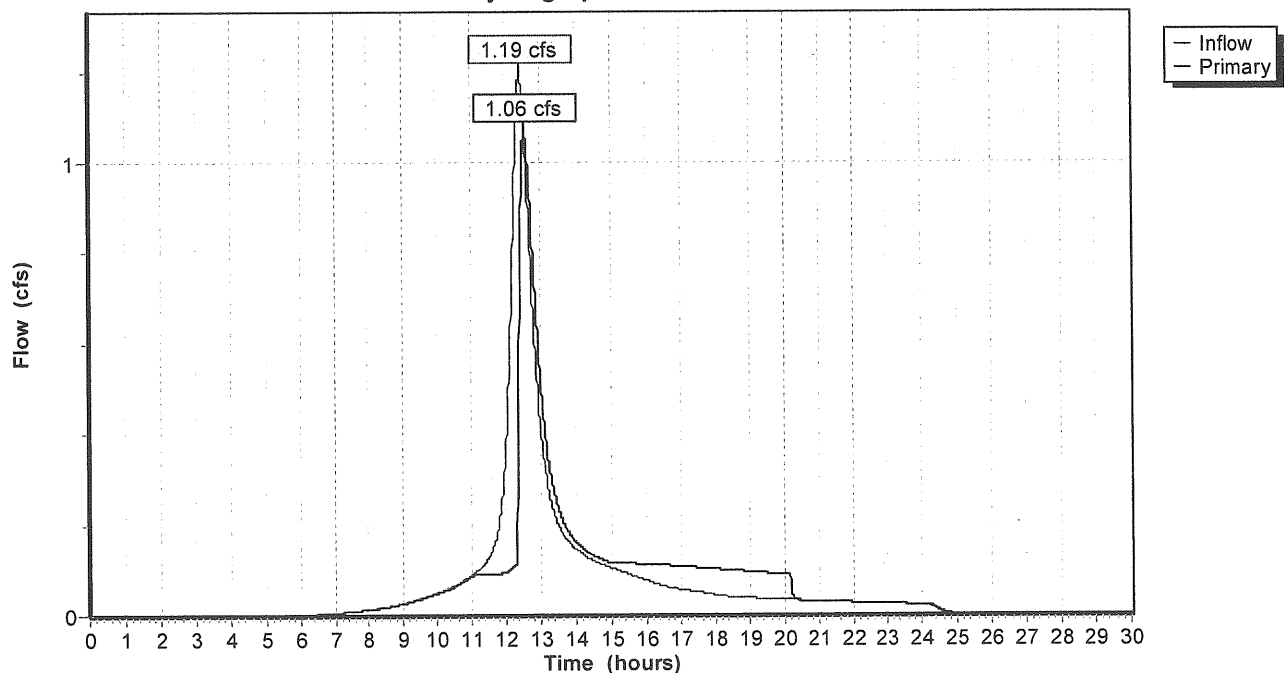
**Primary OutFlow (Free Discharge)**

- 1=Exfiltration
- 2=Orifice/Grate

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	0.003350 fpm Exfiltration over entire Surface area
2	Primary	76.00'	1.30' x 1.30' Horiz. Orifice/Grate Limited to weir flow C= 0.600

**Pond 3.3P: Bioretention Cell 1**

Hydrograph Plot



**Pond 3.9P: Pond 3.9P**

Inflow = 0.59 cfs @ 12.09 hrs, Volume= 0.043 af  
 Outflow = 0.59 cfs @ 12.09 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.3 min  
 Primary = 0.59 cfs @ 12.09 hrs, Volume= 0.043 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 76.61' Storage= 15 cf  
 Plug-Flow detention time= 0.9 min calculated for 0.043 af (100% of inflow)  
 Storage and wetted areas determined by Irregular sections

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.50	25	10.0	0	0	25
77.00	300	157.0	69	69	1,979
77.25	550	200.0	105	173	3,201

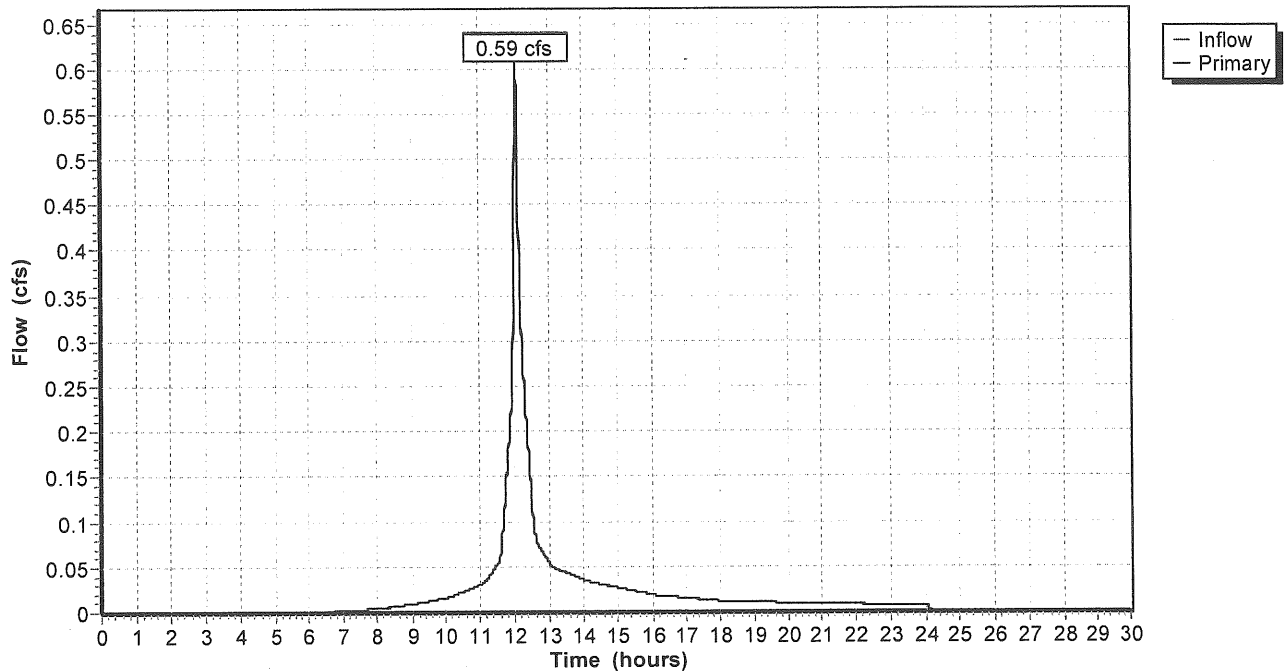
**Primary OutFlow (Free Discharge)**

↑1=Orifice/Grate

#	Routing	Invert	Outlet Devices
1	Primary	76.50'	1.30' x 1.30' Horiz. Orifice/Grate Limited to weir flow C= 0.600

**Pond 3.9P: Pond 3.9P**

Hydrograph Plot





**Pond DMH1: DMH-1**

Inflow = 3.43 cfs @ 12.51 hrs, Volume= 0.777 af  
 Outflow = 3.43 cfs @ 12.51 hrs, Volume= 0.776 af, Atten= 0%, Lag= 0.1 min  
 Primary = 3.43 cfs @ 12.51 hrs, Volume= 0.776 af

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

Peak Elev= 69.22' Storage= 68 cf  
 Plug-Flow detention time= 1.9 min calculated for 0.776 af (100% of inflow)  
 Storage and wetted areas determined by Conic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
65.80	20	0	0	20
76.50	20	214	214	190

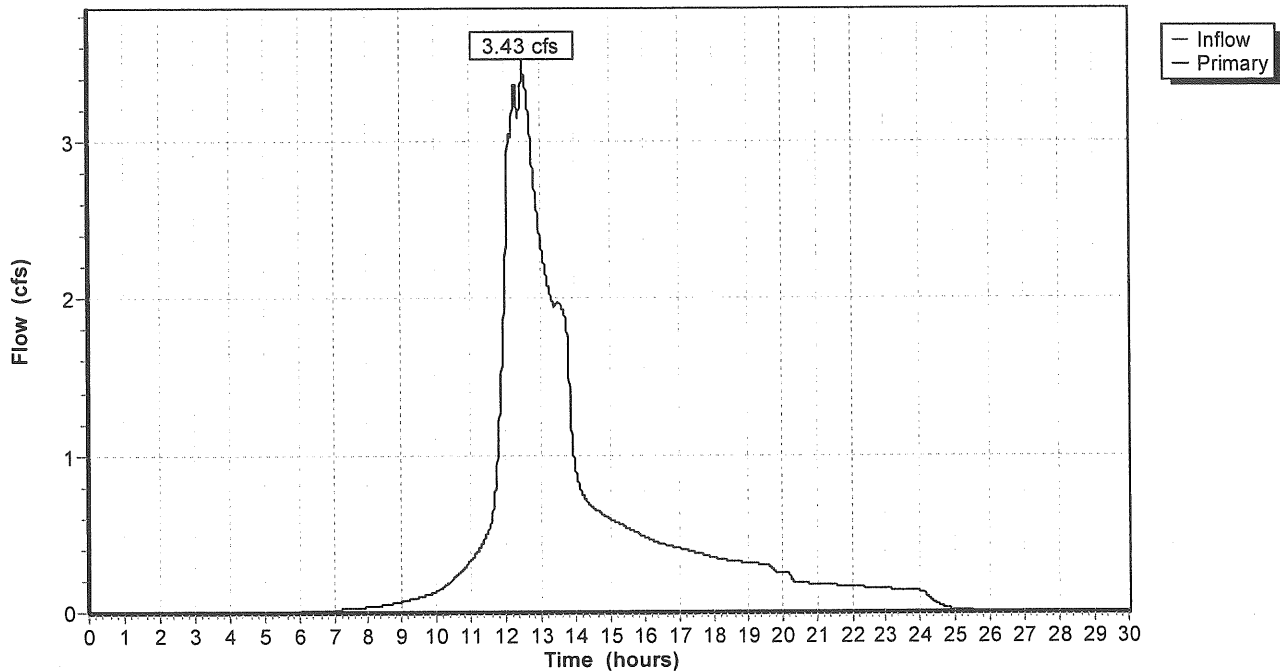
**Primary OutFlow (Free Discharge)**

↑1=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	68.25'	15.0" x 44.0' long Culvert RCP, square edge headwall, Ke= 0.500 Outlet Invert= 64.00' S= 0.0966 '/' n= 0.011 Cc= 0.900

**Pond DMH1: DMH-1**

Hydrograph Plot



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points  
 Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=5.50"  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1: Playing Field**

Tc=10.0 min CN=74 Area=2.310 ac Runoff= 6.54 cfs 0.533 af

**Subcatchment 2:**

Tc=15.1 min CN=85 Area=0.119 ac Runoff= 0.40 cfs 0.038 af

**Subcatchment 3.1: Along Ludlow St**

Tc=21.2 min CN=83 Area=0.137 ac Runoff= 0.38 cfs 0.041 af

**Subcatchment 3.2: Main Entrance**

Tc=3.7 min CN=89 Area=0.116 ac Runoff= 0.61 cfs 0.041 af

**Subcatchment 3.3:**

Tc=30.8 min CN=87 Area=0.558 ac Runoff= 1.45 cfs 0.188 af

**Subcatchment 3.4:**

Tc=2.0 min CN=81 Area=0.208 ac Runoff= 0.96 cfs 0.059 af

**Subcatchment 3.5: Entrance - Leland St**

Tc=8.2 min CN=91 Area=0.328 ac Runoff= 1.52 cfs 0.122 af

**Subcatchment 3.6:**

Tc=0.6 min CN=96 Area=0.267 ac Runoff= 1.71 cfs 0.112 af

**Subcatchment 3.7:**

Tc=1.0 min CN=98 Area=0.150 ac Runoff= 0.96 cfs 0.066 af

**Subcatchment 3.8:**

Tc=6.7 min CN=87 Area=0.107 ac Runoff= 0.48 cfs 0.036 af

**Subcatchment 3.9:**

Tc=6.2 min CN=86 Area=0.162 ac Runoff= 0.73 cfs 0.053 af

**Reach SD 11: SD 11**

Inflow= 0.73 cfs 0.053 af  
 Length= 187.0' Max Vel= 3.1 fps Capacity= 2.99 cfs Outflow= 0.72 cfs 0.053 af

**Reach SD 2: SD 2**

Inflow= 2.70 cfs 0.452 af  
 Length= 220.0' Max Vel= 4.4 fps Capacity= 5.40 cfs Outflow= 2.69 cfs 0.452 af

**Reach SD 5: SD 5**

Inflow= 2.21 cfs 0.369 af  
 Length= 61.5' Max Vel= 4.2 fps Capacity= 5.42 cfs Outflow= 2.20 cfs 0.369 af

**Reach SD 6.1: SD 6**

Inflow= 1.74 cfs 0.182 af  
 Length= 175.0' Max Vel= 3.9 fps Capacity= 2.97 cfs Outflow= 1.74 cfs 0.182 af

**03245POST**

Type III 24-hr Rainfall=5.50"

Prepared by Sebago Technics, Inc.

Page 2

HydroCAD® 6.00 s/n 001856 © 1986-2001 Applied Microcomputer Systems

4/4/2007

<b>Reach SD 6.2: SD 6</b>	Inflow= 1.35 cfs 0.122 af
Length= 146.0' Max Vel= 3.7 fps Capacity= 2.98 cfs	Outflow= 1.35 cfs 0.122 af
<b>Reach SD 8: SD 8</b>	Inflow= 1.64 cfs 0.155 af
Length= 110.0' Max Vel= 3.9 fps Capacity= 5.40 cfs	Outflow= 1.63 cfs 0.155 af
<b>Reach SD 9: SD 9</b>	Inflow= 1.19 cfs 0.089 af
Length= 95.0' Max Vel= 3.5 fps Capacity= 5.43 cfs	Outflow= 1.18 cfs 0.089 af
<b>Reach SD3/4: SD 3&amp;4</b>	Inflow= 2.35 cfs 0.411 af
Length= 110.5' Max Vel= 4.5 fps Capacity= 5.90 cfs	Outflow= 2.35 cfs 0.411 af
<b>Reach SP1: Existing system</b>	Inflow= 4.17 cfs 0.984 af
	Outflow= 4.17 cfs 0.984 af
<b>Reach SP2: Existing Pond</b>	Inflow= 0.40 cfs 0.038 af
	Outflow= 0.40 cfs 0.038 af
<b>Reach SP3: Existing Pond</b>	Inflow= 3.16 cfs 0.267 af
	Outflow= 3.16 cfs 0.267 af
<b>Pond 1P: Base Stone</b>	Peak Storage= 6,466 cf Inflow= 6.54 cfs 0.533 af
	Primary= 1.51 cfs 0.533 af Outflow= 1.51 cfs 0.533 af
<b>Pond 3.1P: Pond 3.1P</b>	Peak Storage= 72 cf Inflow= 0.38 cfs 0.041 af
	Primary= 0.38 cfs 0.041 af Outflow= 0.38 cfs 0.041 af
<b>Pond 3.3P: Bioretention Cell 1</b>	Peak Storage= 1,364 cf Inflow= 1.45 cfs 0.188 af
	Primary= 1.37 cfs 0.188 af Outflow= 1.37 cfs 0.188 af
<b>Pond 3.5P: Bioretention Cell 2</b>	Peak Storage= 926 cf Inflow= 1.52 cfs 0.122 af
	Primary= 1.35 cfs 0.122 af Outflow= 1.35 cfs 0.122 af
<b>Pond 3.9P: Pond 3.9P</b>	Peak Storage= 17 cf Inflow= 0.73 cfs 0.053 af
	Primary= 0.73 cfs 0.053 af Outflow= 0.73 cfs 0.053 af
<b>Pond DMH1: DMH-1</b>	Peak Storage= 71 cf Inflow= 4.17 cfs 0.985 af
	Primary= 4.17 cfs 0.984 af Outflow= 4.17 cfs 0.984 af

**Runoff Area = 4.462 ac Volume = 1.290 af Average Depth = 3.47"**

### Subcatchment 1: Playing Field

Runoff = 6.54 cfs @ 12.14 hrs, Volume= 0.533 af

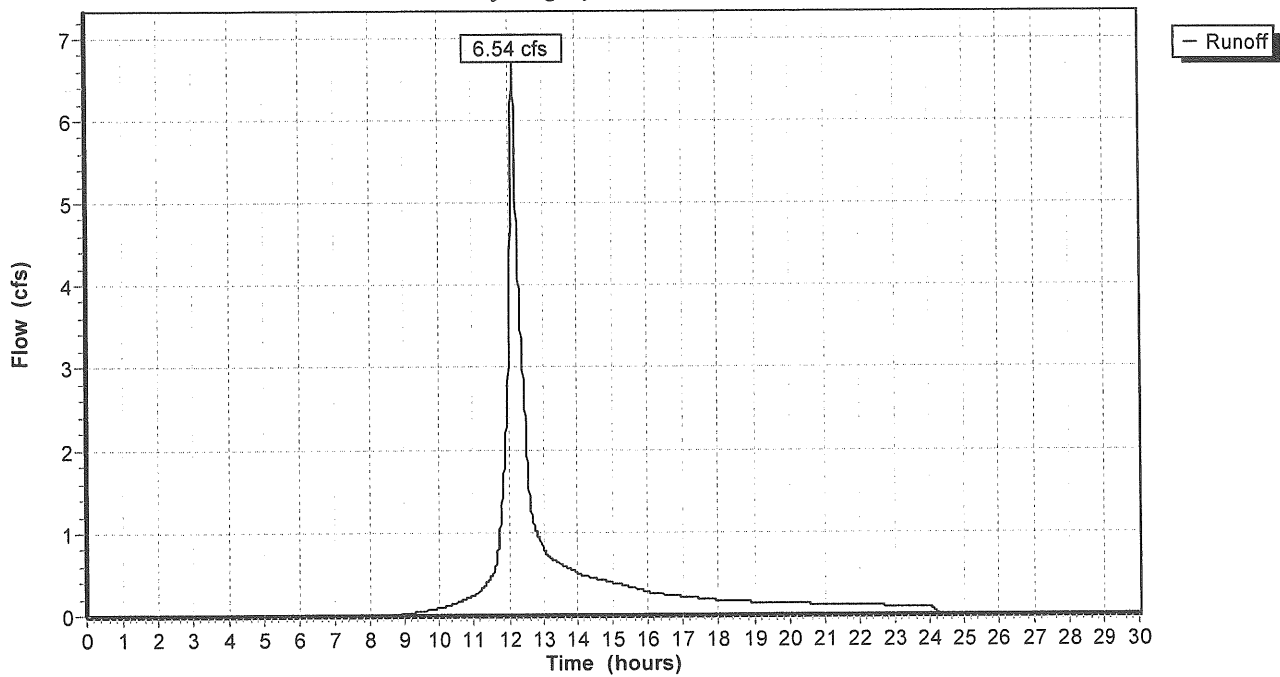
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
2.310	74	>75% Grass cover, Good, HSG C

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

### Subcatchment 1: Playing Field

Hydrograph Plot



**Subcatchment 2:**

Runoff = 0.40 cfs @ 12.20 hrs, Volume= 0.038 af

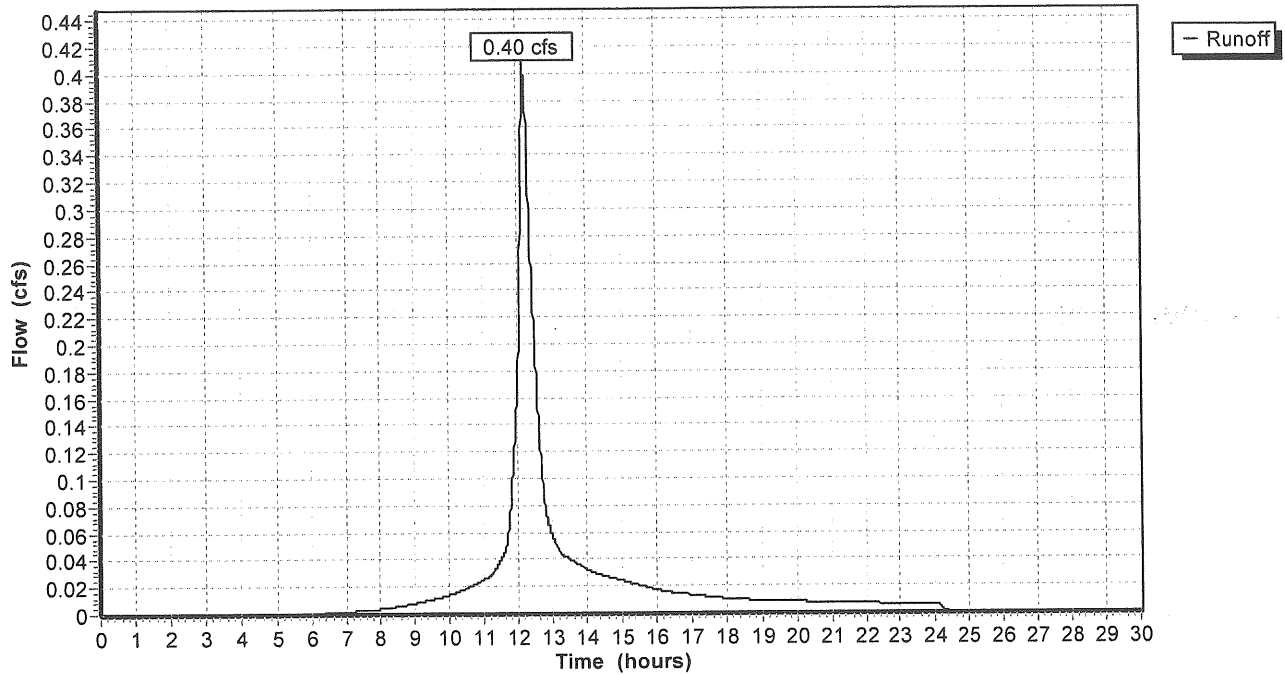
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.056	98	Pavement
0.063	74	>75% Grass cover, Good, HSG C
0.119	85	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	85	0.0400	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"

**Subcatchment 2:**

Hydrograph Plot



**Subcatchment 3.1: Along Ludlow St**

Runoff = 0.38 cfs @ 12.28 hrs, Volume= 0.041 af

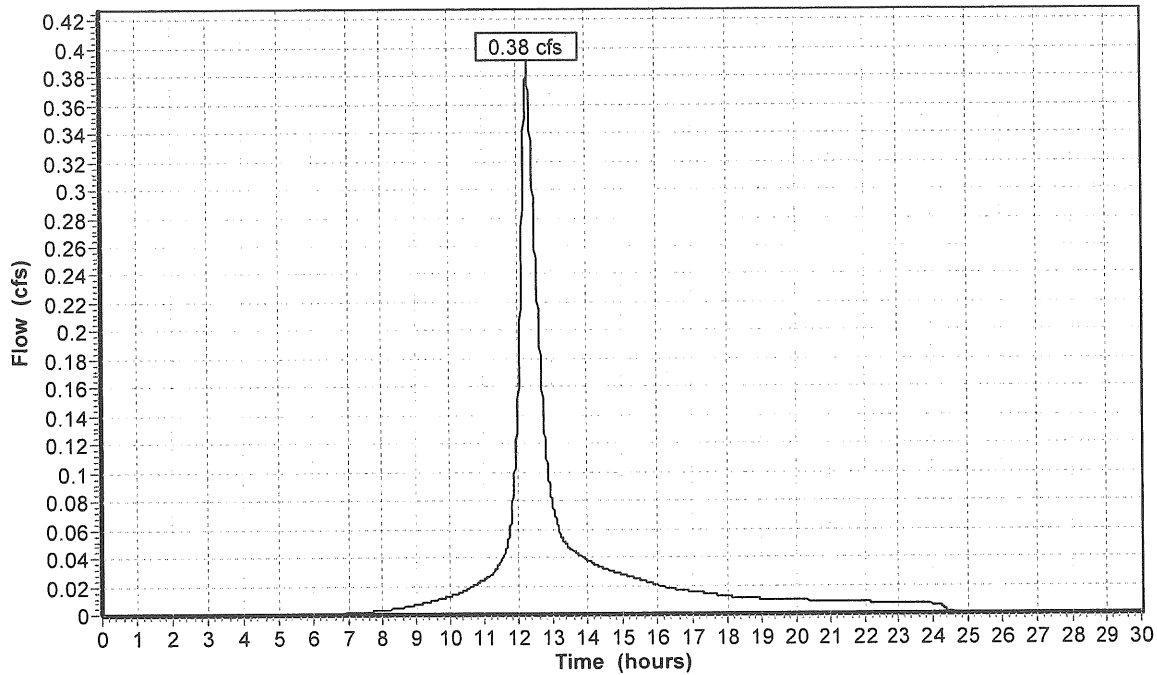
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.023	98	Pavement
0.114	80	>75% Grass cover, Good, HSG D
0.137	83	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.2	80	0.0150	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"

**Subcatchment 3.1: Along Ludlow St**

Hydrograph Plot



**Subcatchment 3.2: Main Entrance**

Runoff = 0.61 cfs @ 12.05 hrs, Volume= 0.041 af

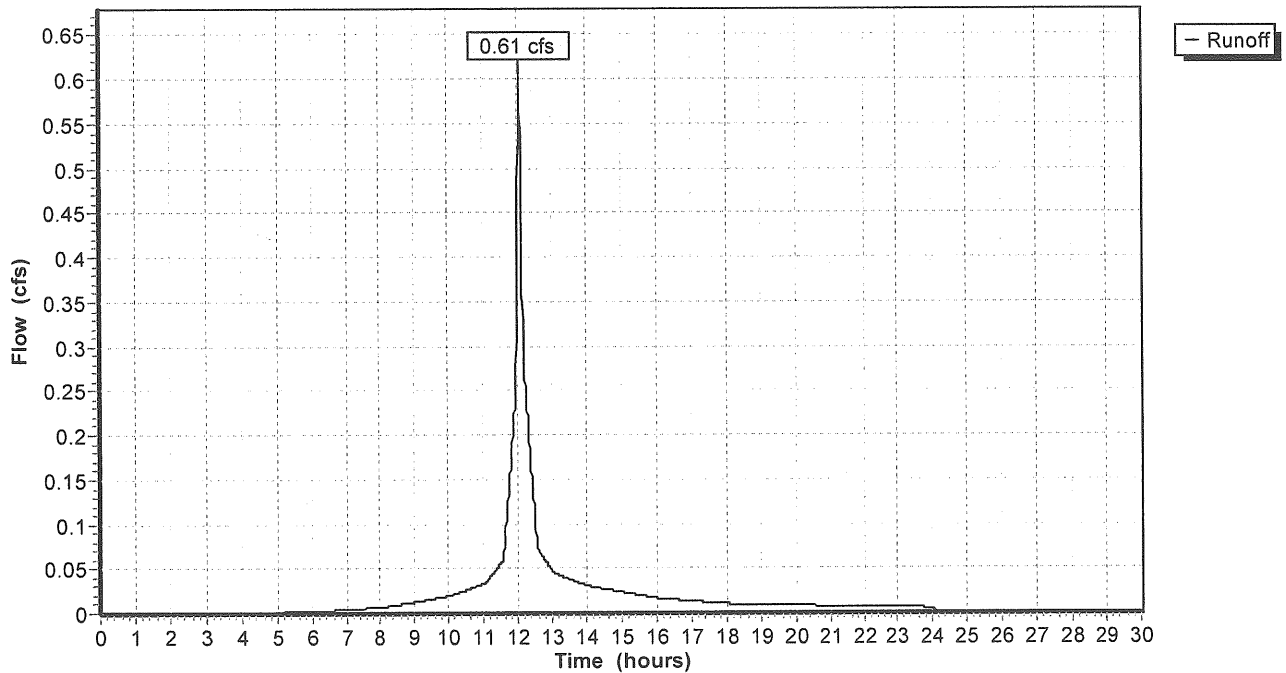
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.056	98	Pavement & roofs
0.060	80	>75% Grass cover, Good, HSG D
0.116	89	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	10	0.0300	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"
0.7	100	0.0150	2.5		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
3.7	110	Total			

**Subcatchment 3.2: Main Entrance**

Hydrograph Plot



**Subcatchment 3.3:**

Runoff = 1.45 cfs @ 12.42 hrs, Volume= 0.188 af

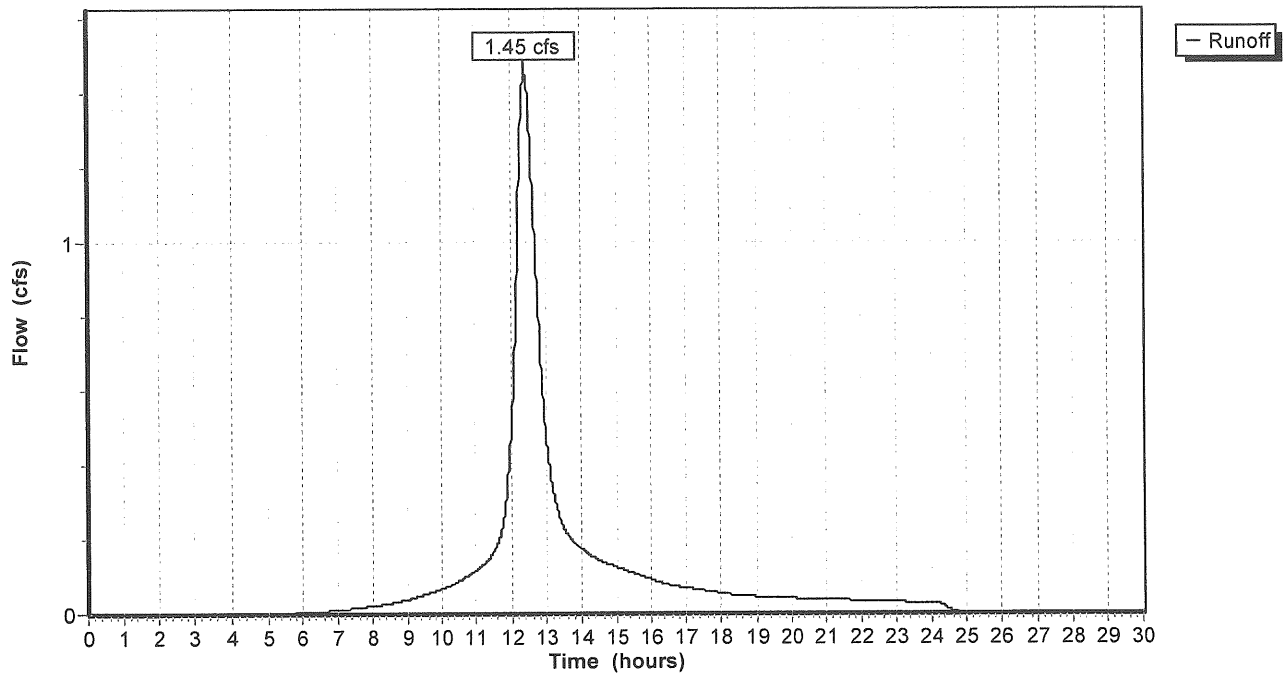
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.220	98	Pavement & roofs
0.338	80	>75% Grass cover, Good, HSG D
0.558	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.8	90	0.0075	0.0		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"

**Subcatchment 3.3:**

Hydrograph Plot





**Subcatchment 3.4:**

Runoff = 0.96 cfs @ 12.03 hrs, Volume= 0.059 af

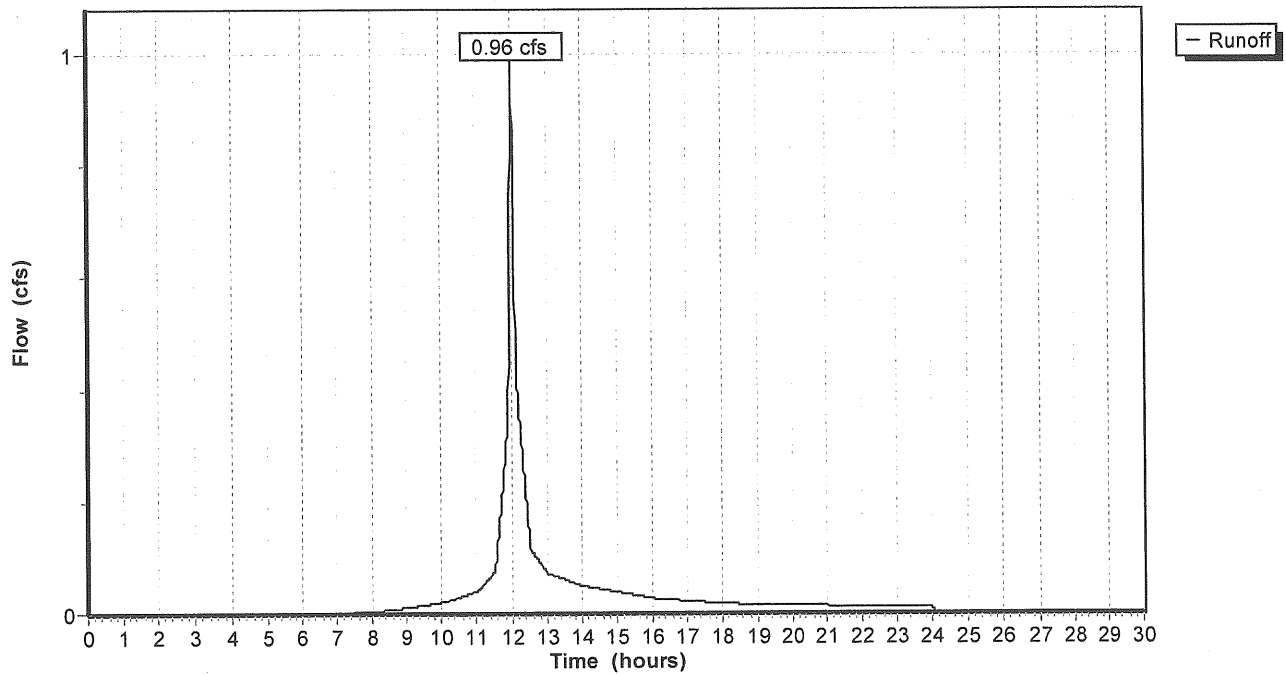
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.012	98	Pavement & roofs
0.196	80	>75% Grass cover, Good, HSG D
0.208	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	80	0.0600	3.7		<b>Shallow Concentrated Flow, B-C</b> Grassed Waterway Kv= 15.0 fps
1.5	115	0.0070	1.3		<b>Shallow Concentrated Flow, B-C</b> Grassed Waterway Kv= 15.0 fps
0.1	35	0.0100	5.4	4.21	<b>Circular Channel (pipe), C-D</b> Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
2.0	230	Total			

**Subcatchment 3.4:**

Hydrograph Plot



**Subcatchment 3.5: Entrance - Leland St**

Runoff = 1.52 cfs @ 12.11 hrs, Volume= 0.122 af

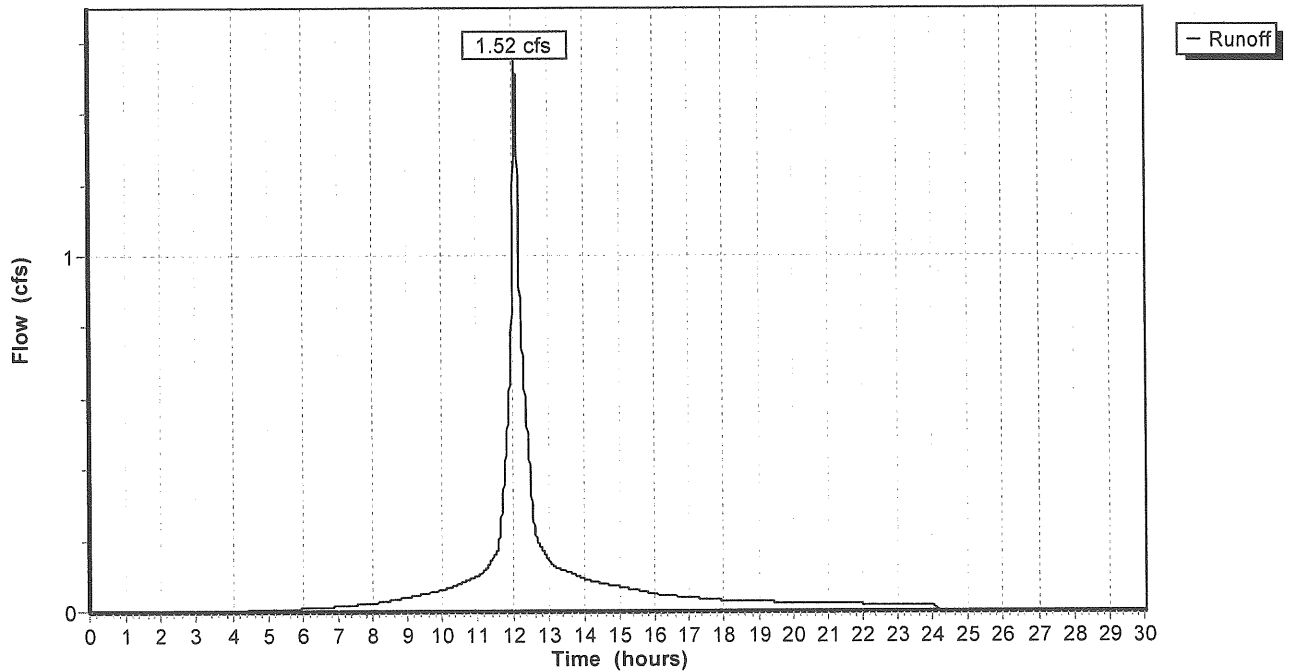
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.202	98	Pavement & roofs
0.126	80	>75% Grass cover, Good, HSG D
0.328	91	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	70	0.0400	1.6		<b>Sheet Flow, A-B</b> Smooth surfaces n= 0.011 P2= 3.00"
7.5	45	0.0650	0.1		<b>Sheet Flow, B-C</b> Grass: Bermuda n= 0.410 P2= 3.00"
8.2	115	Total			

**Subcatchment 3.5: Entrance - Leland St**

Hydrograph Plot



**Subcatchment 3.6:**

Runoff = 1.71 cfs @ 12.01 hrs, Volume= 0.112 af

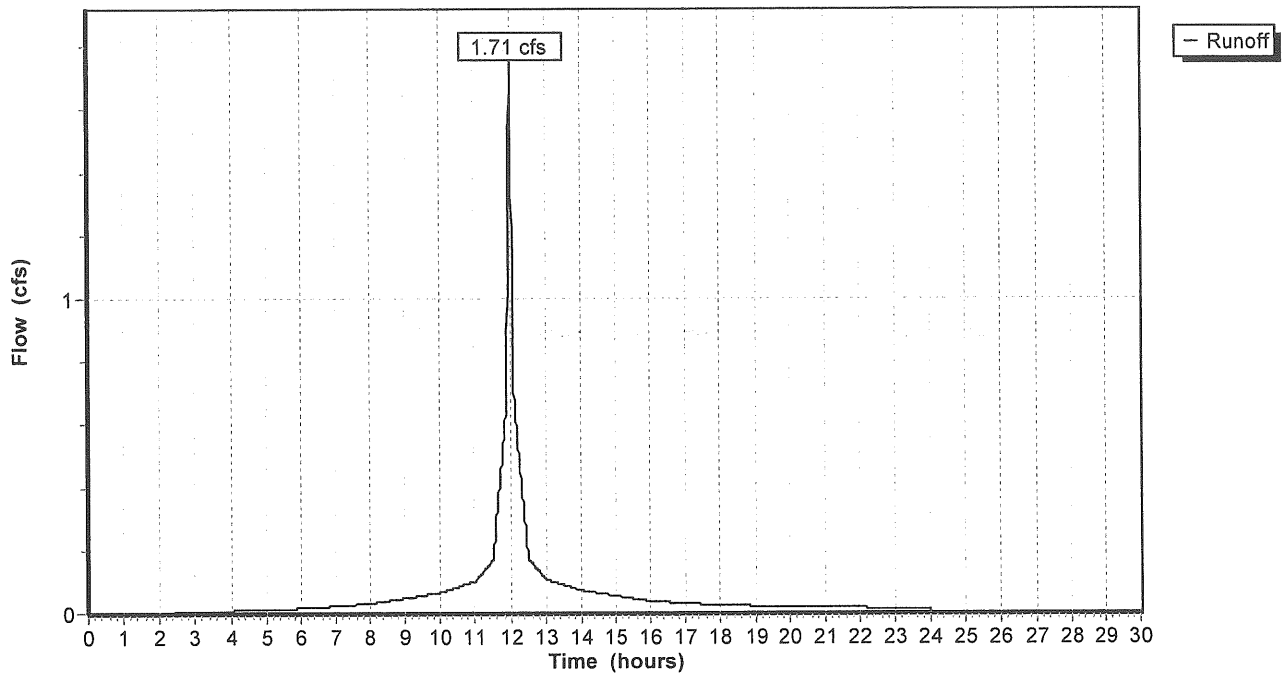
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.241	98	Pavement & roofs
0.026	80	>75% Grass cover, Good, HSG D
0.267	96	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	55	0.0400	1.6		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 3.00"

**Subcatchment 3.6:**

Hydrograph Plot



**Subcatchment 3.7:**

Runoff = 0.96 cfs @ 12.01 hrs, Volume= 0.066 af

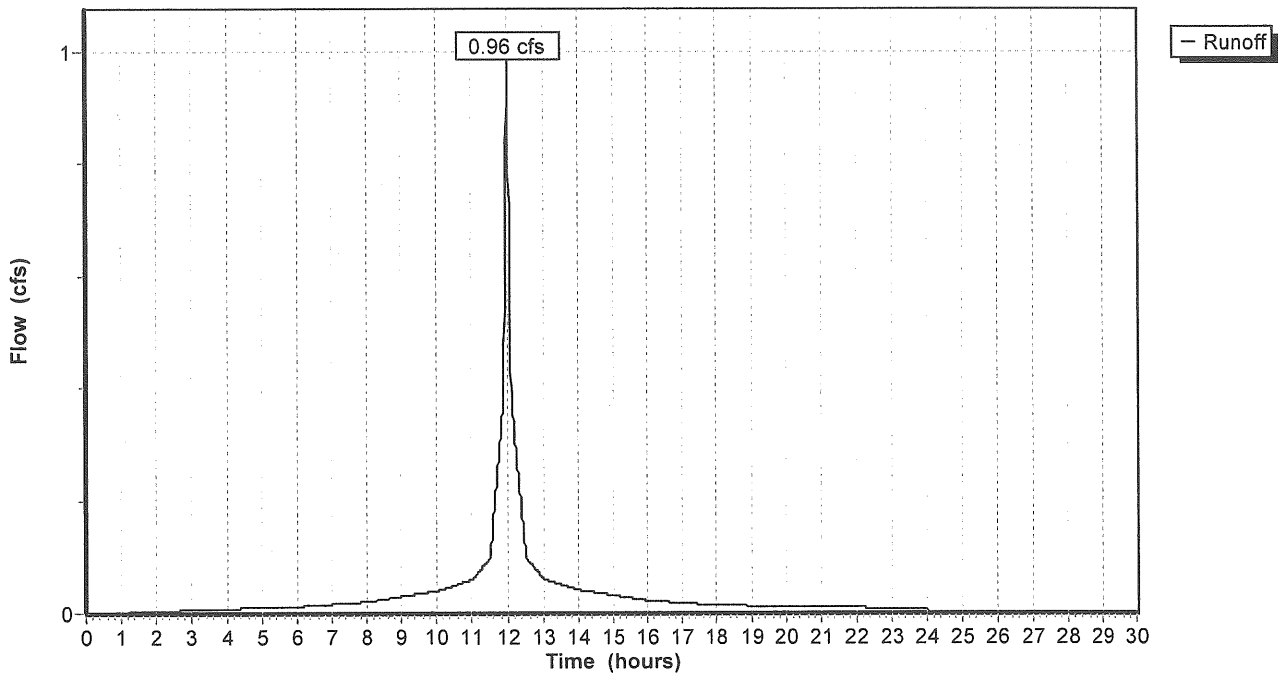
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.150	98	Pavement & roofs

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	80	0.0200	1.3		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 3.00"

**Subcatchment 3.7:**

Hydrograph Plot



**Subcatchment 3.8:**

Runoff = 0.48 cfs @ 12.09 hrs, Volume= 0.036 af

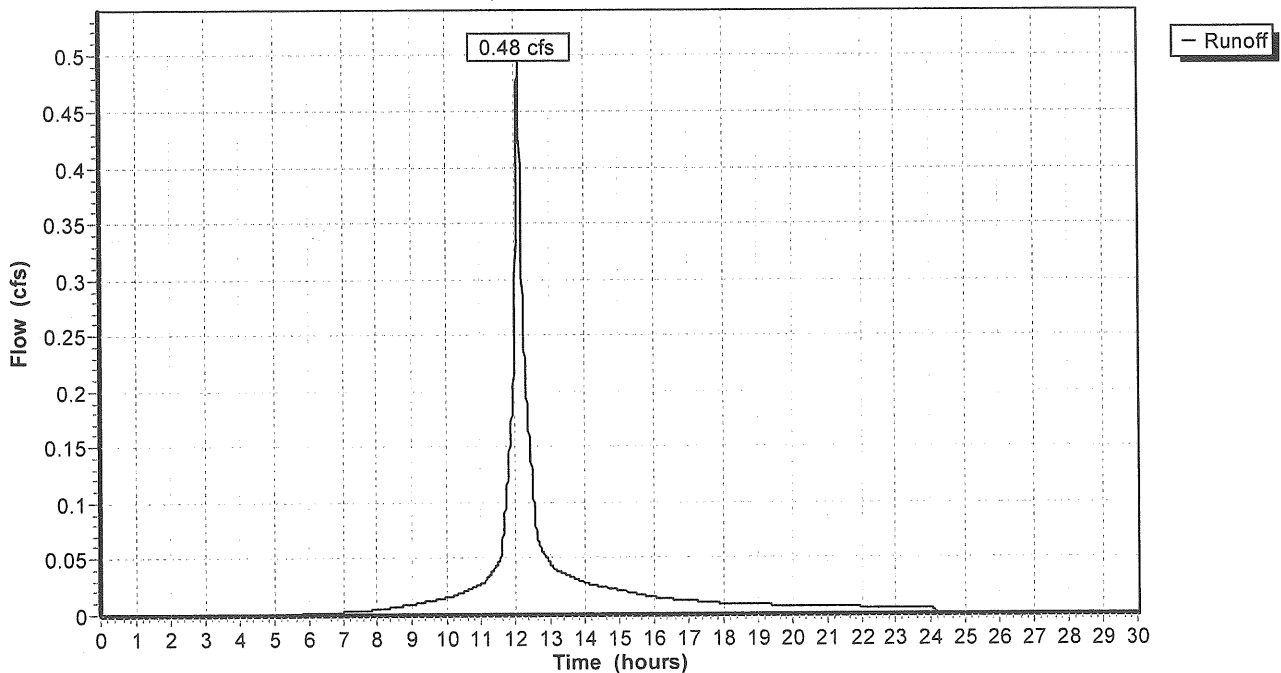
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.040	98	Pavement & roofs
0.067	80	>75% Grass cover, Good, HSG D
0.107	87	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	20	0.0500	0.1		<b>Sheet Flow, A-B</b> Grass: Bermuda n= 0.410 P2= 3.00"
2.4	150	0.0050	1.1		<b>Shallow Concentrated Flow, B-C</b> Grassed Waterway Kv= 15.0 fps
6.7	170	Total			

**Subcatchment 3.8:**

Hydrograph Plot



**Subcatchment 3.9:**

Runoff = 0.73 cfs @ 12.09 hrs, Volume= 0.053 af

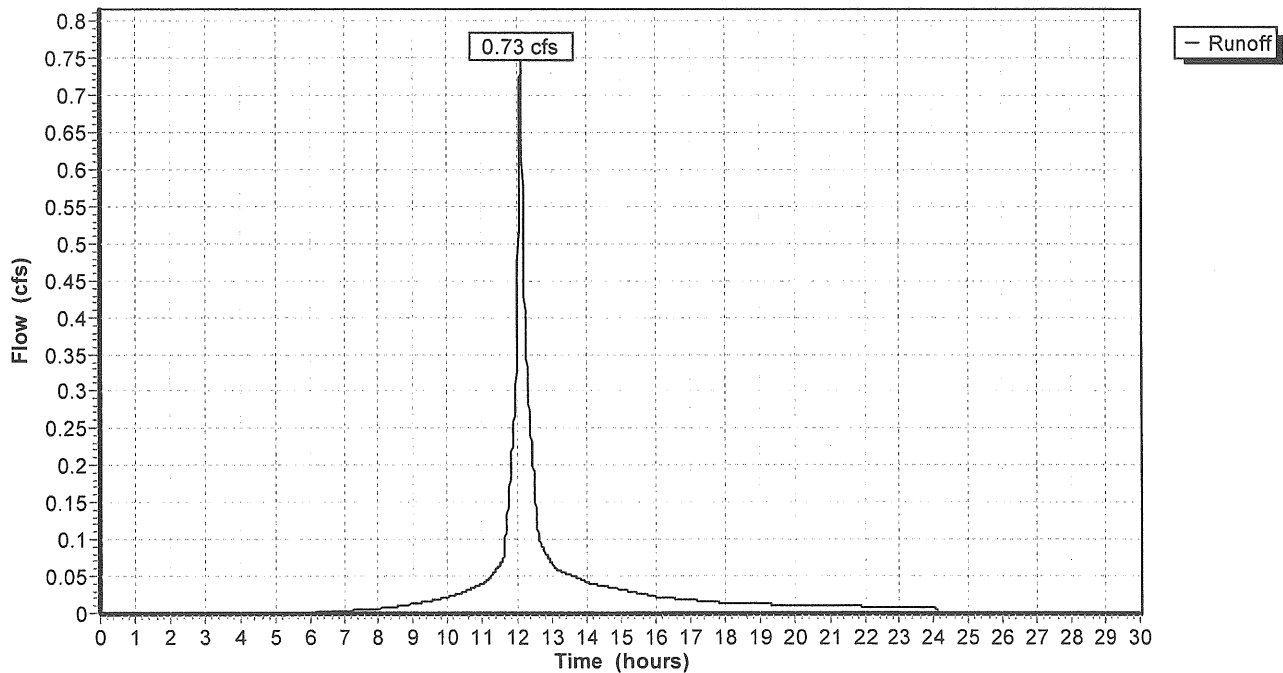
Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.055	98	Pavement & roofs
0.107	80	>75% Grass cover, Good, HSG D
0.162	86	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	25	0.0400	0.1		Sheet Flow, A-B Grass: Bermuda n= 0.410 P2= 3.00"
0.5	195	0.0250	6.7	33.45	Trap/Vee/Rect Channel Flow, B-C Bot.W=2.00' D=1.00' Z= 3.0 '!' n= 0.025
6.2	220	Total			

**Subcatchment 3.9:**

Hydrograph Plot



Reach SD 11: SD 11

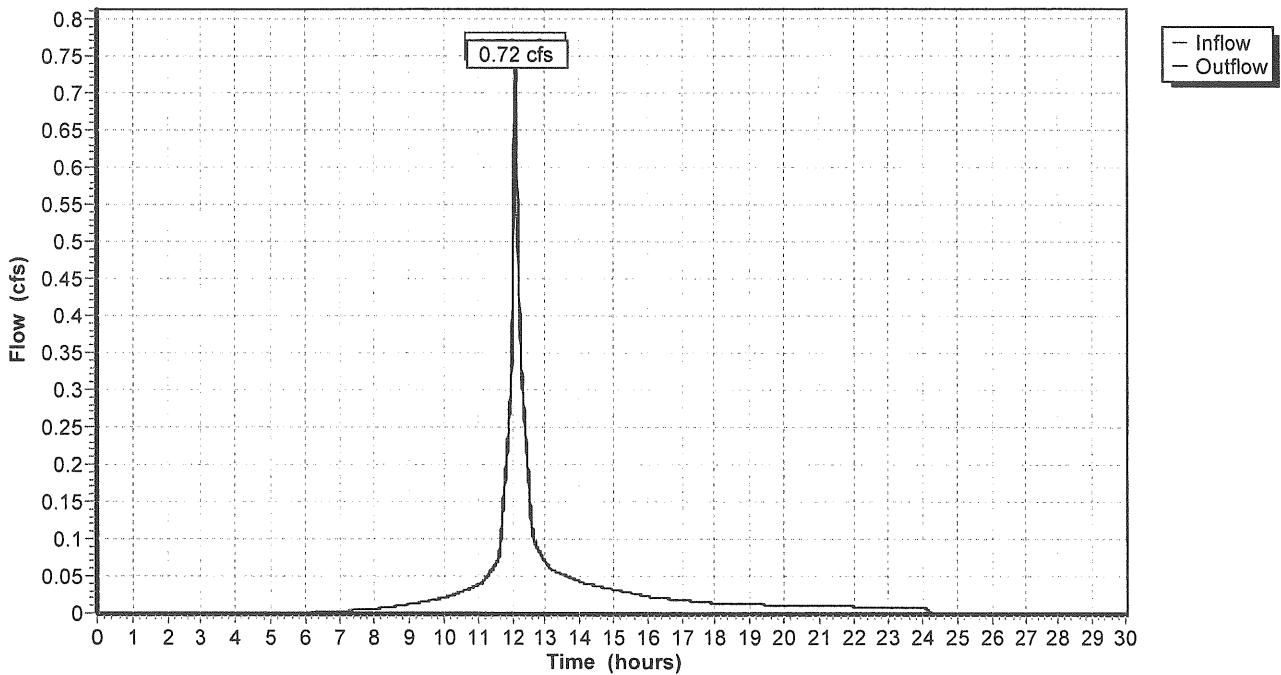
Inflow = 0.73 cfs @ 12.09 hrs, Volume= 0.053 af  
Outflow = 0.72 cfs @ 12.12 hrs, Volume= 0.053 af, Atten= 1%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 3.1 fps, Min. Travel Time= 1.0 min  
Avg. Velocity = 1.0 fps, Avg. Travel Time= 3.0 min

Peak Depth= 0.33'  
Capacity at bank full= 2.99 cfs  
Inlet Invert= 72.97', Outlet Invert= 72.03'  
12.0" Diameter Pipe n= 0.011 Length= 187.0' Slope= 0.0050 '/'

Reach SD 11: SD 11

Hydrograph Plot



Reach SD 2: SD 2

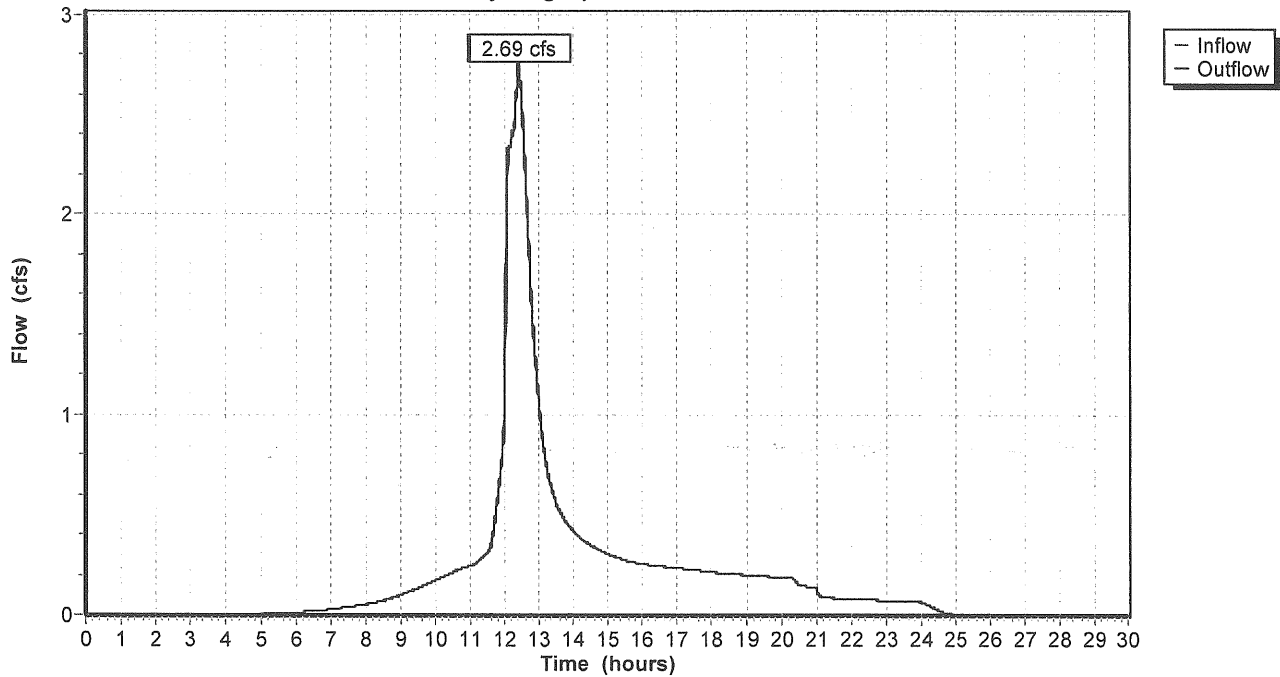
Inflow = 2.70 cfs @ 12.40 hrs, Volume= 0.452 af  
Outflow = 2.69 cfs @ 12.43 hrs, Volume= 0.452 af, Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 4.4 fps, Min. Travel Time= 0.8 min  
Avg. Velocity = 1.8 fps, Avg. Travel Time= 2.0 min

Peak Depth= 0.62'  
Capacity at bank full= 5.40 cfs  
Inlet Invert= 69.48', Outlet Invert= 68.38'  
15.0" Diameter Pipe n= 0.011 Length= 220.0' Slope= 0.0050 '/'

Reach SD 2: SD 2

Hydrograph Plot





Reach SD 5: SD 5

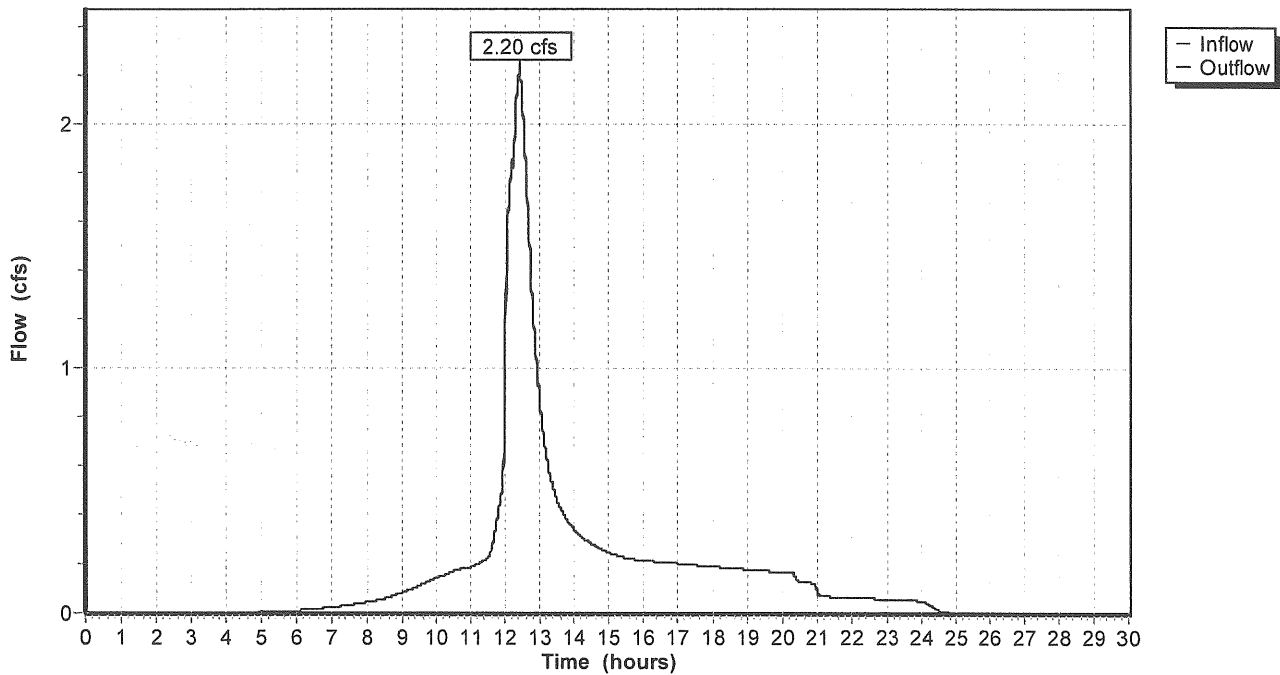
Inflow = 2.21 cfs @ 12.42 hrs, Volume= 0.369 af  
Outflow = 2.20 cfs @ 12.42 hrs, Volume= 0.369 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 4.2 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 1.7 fps, Avg. Travel Time= 0.6 min

Peak Depth= 0.56'  
Capacity at bank full= 5.42 cfs  
Inlet Invert= 70.65', Outlet Invert= 70.34'  
15.0" Diameter Pipe n= 0.011 Length= 61.5' Slope= 0.0050 '/'

Reach SD 5: SD 5

Hydrograph Plot



Reach SD 6.1: SD 6

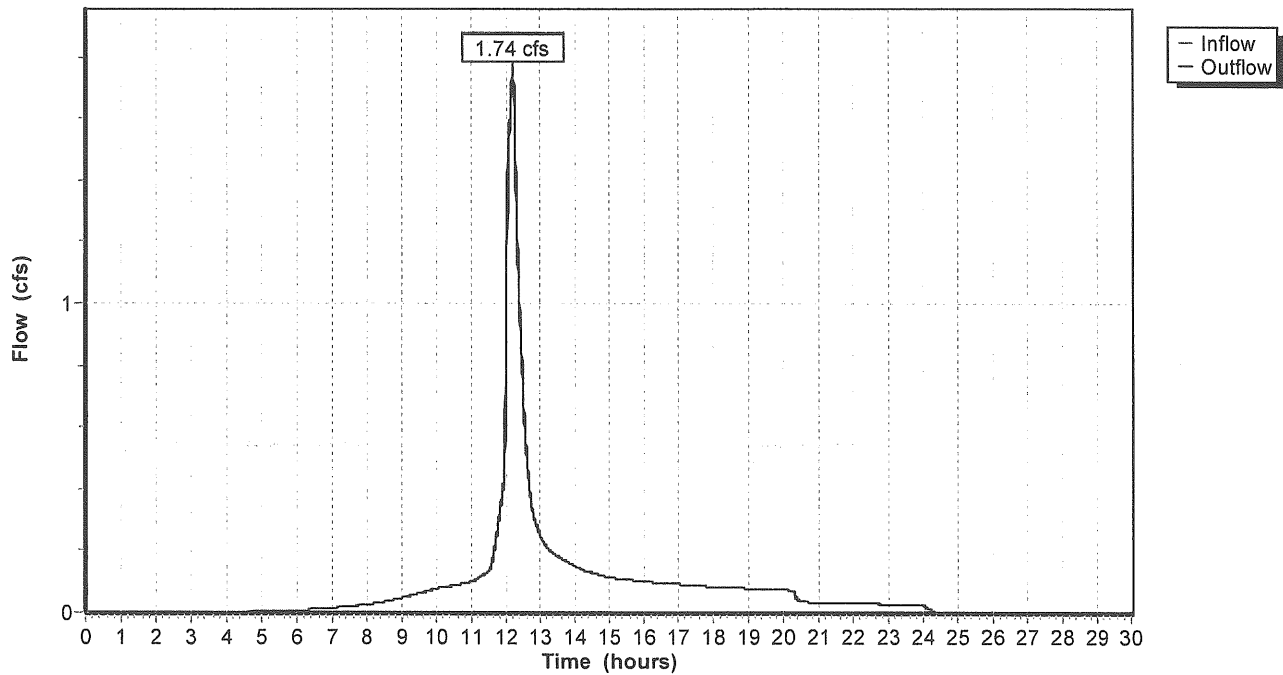
Inflow = 1.74 cfs @ 12.17 hrs, Volume= 0.182 af  
Outflow = 1.74 cfs @ 12.19 hrs, Volume= 0.182 af, Atten= 0%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 3.9 fps, Min. Travel Time= 0.7 min  
Avg. Velocity = 1.5 fps, Avg. Travel Time= 2.0 min

Peak Depth= 0.55'  
Capacity at bank full= 2.97 cfs  
Inlet Invert= 71.77', Outlet Invert= 70.90'  
12.0" Diameter Pipe n= 0.011 Length= 175.0' Slope= 0.0050 '/'

Reach SD 6.1: SD 6

Hydrograph Plot



Reach SD 6.2: SD 6

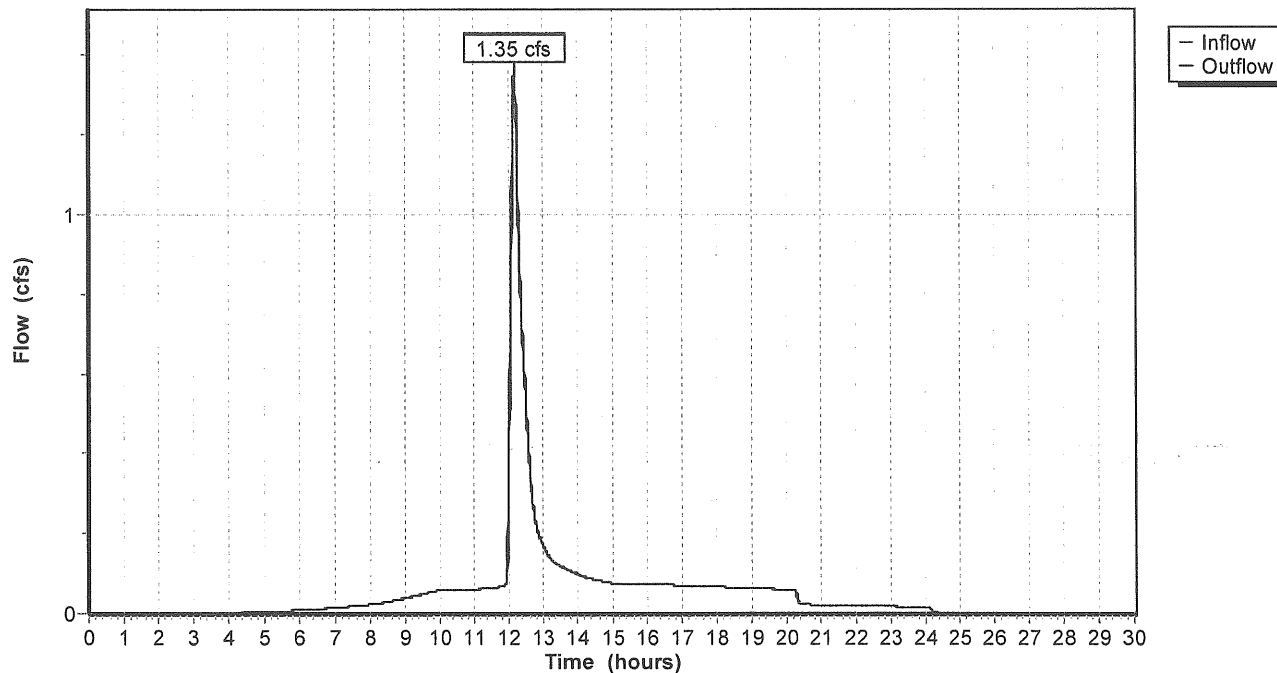
Inflow = 1.35 cfs @ 12.16 hrs, Volume= 0.122 af  
Outflow = 1.35 cfs @ 12.18 hrs, Volume= 0.122 af, Atten= 0%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 3.7 fps, Min. Travel Time= 0.7 min  
Avg. Velocity = 1.3 fps, Avg. Travel Time= 1.8 min

Peak Depth= 0.47'  
Capacity at bank full= 2.98 cfs  
Inlet Invert= 72.50', Outlet Invert= 71.77'  
12.0" Diameter Pipe n= 0.011 Length= 146.0' Slope= 0.0050 '/'

Reach SD 6.2: SD 6

Hydrograph Plot



Reach SD 8: SD 8

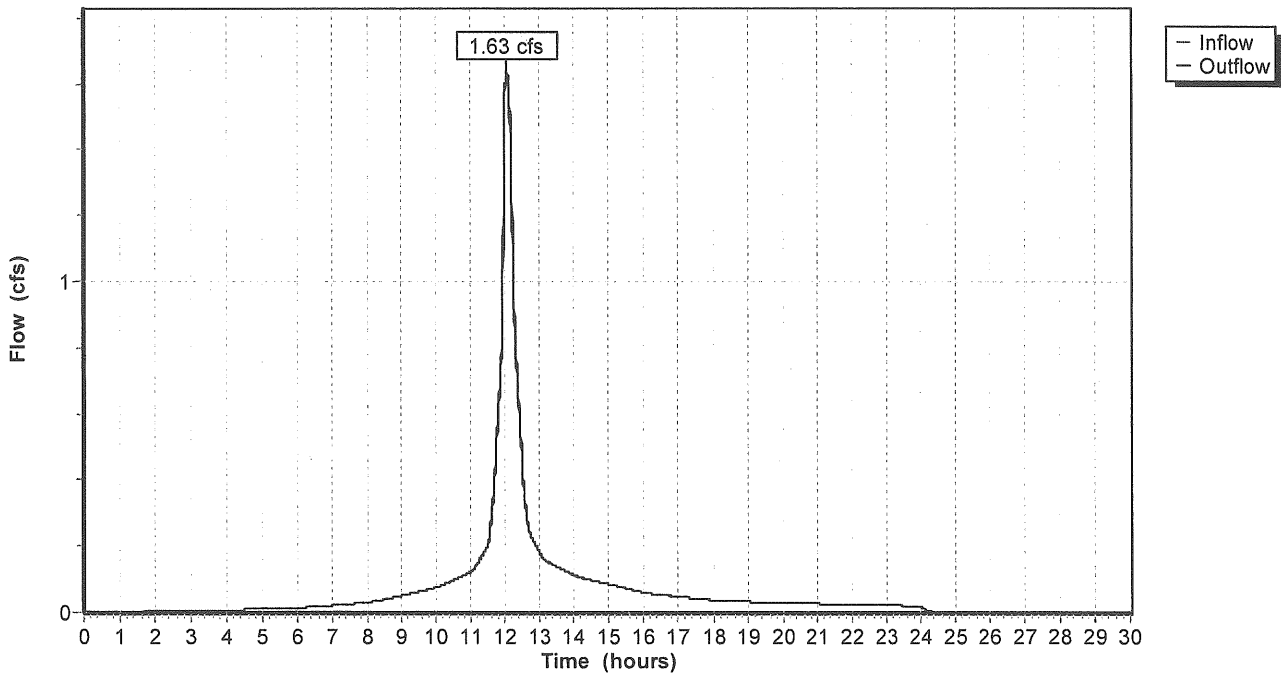
Inflow = 1.64 cfs @ 12.08 hrs, Volume= 0.155 af  
Outflow = 1.63 cfs @ 12.09 hrs, Volume= 0.155 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 3.9 fps, Min. Travel Time= 0.5 min  
Avg. Velocity = 1.3 fps, Avg. Travel Time= 1.4 min

Peak Depth= 0.47'  
Capacity at bank full= 5.40 cfs  
Inlet Invert= 71.35', Outlet Invert= 70.80'  
15.0" Diameter Pipe n= 0.011 Length= 110.0' Slope= 0.0050 '/'

Reach SD 8: SD 8

Hydrograph Plot



Reach SD 9: SD 9

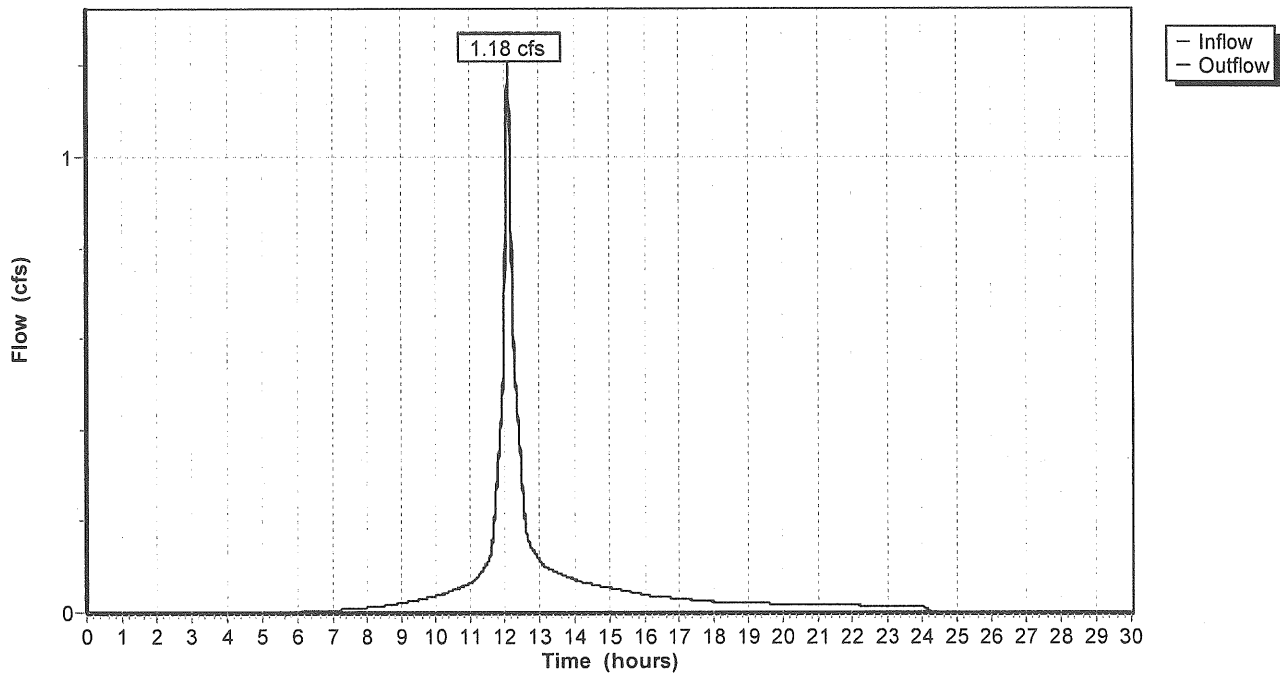
Inflow = 1.19 cfs @ 12.11 hrs, Volume= 0.089 af  
Outflow = 1.18 cfs @ 12.12 hrs, Volume= 0.089 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 3.5 fps, Min. Travel Time= 0.4 min  
Avg. Velocity = 1.2 fps, Avg. Travel Time= 1.4 min

Peak Depth= 0.40'  
Capacity at bank full= 5.43 cfs  
Inlet Invert= 71.93', Outlet Invert= 71.45'  
15.0" Diameter Pipe n= 0.011 Length= 95.0' Slope= 0.0051 1'

Reach SD 9: SD 9

Hydrograph Plot



**Reach SD3/4: SD 3&4**

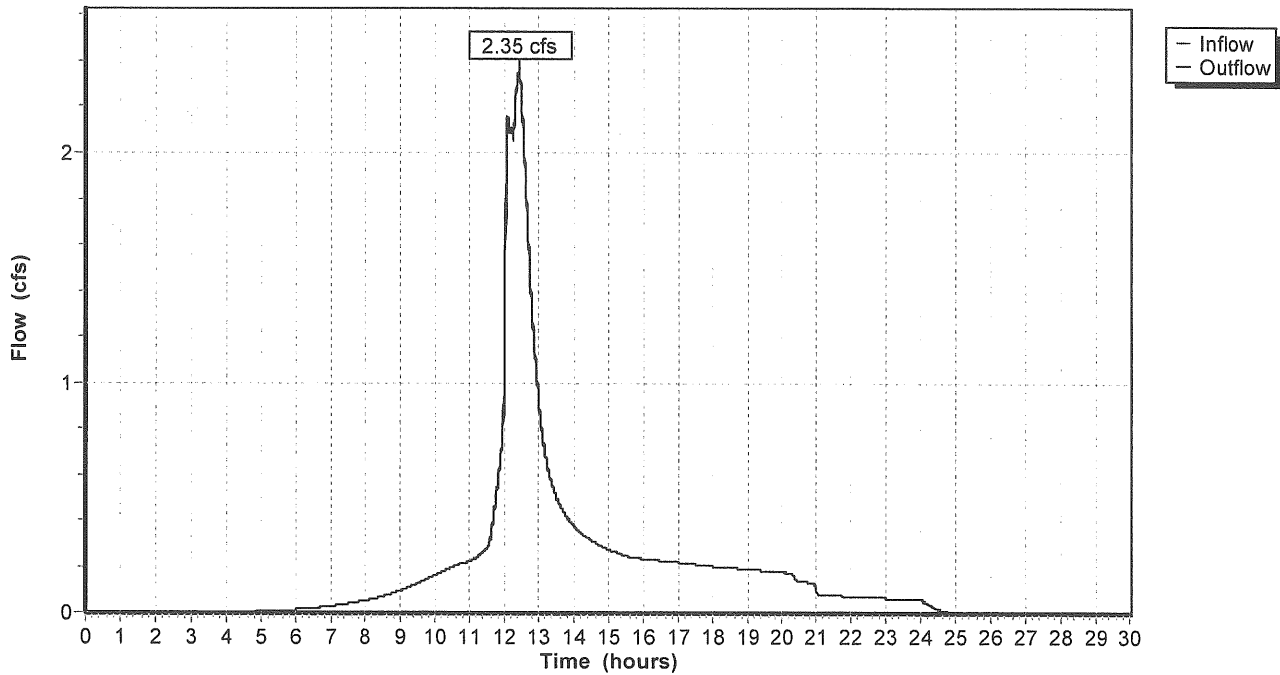
Inflow = 2.35 cfs @ 12.41 hrs, Volume= 0.411 af  
Outflow = 2.35 cfs @ 12.42 hrs, Volume= 0.411 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 4.5 fps, Min. Travel Time= 0.4 min  
Avg. Velocity = 1.9 fps, Avg. Travel Time= 1.0 min

Peak Depth= 0.55'  
Capacity at bank full= 5.90 cfs  
Inlet Invert= 70.24', Outlet Invert= 69.58'  
15.0" Diameter Pipe n= 0.011 Length= 110.5' Slope= 0.0060 '/'

**Reach SD3/4: SD 3&4**

Hydrograph Plot



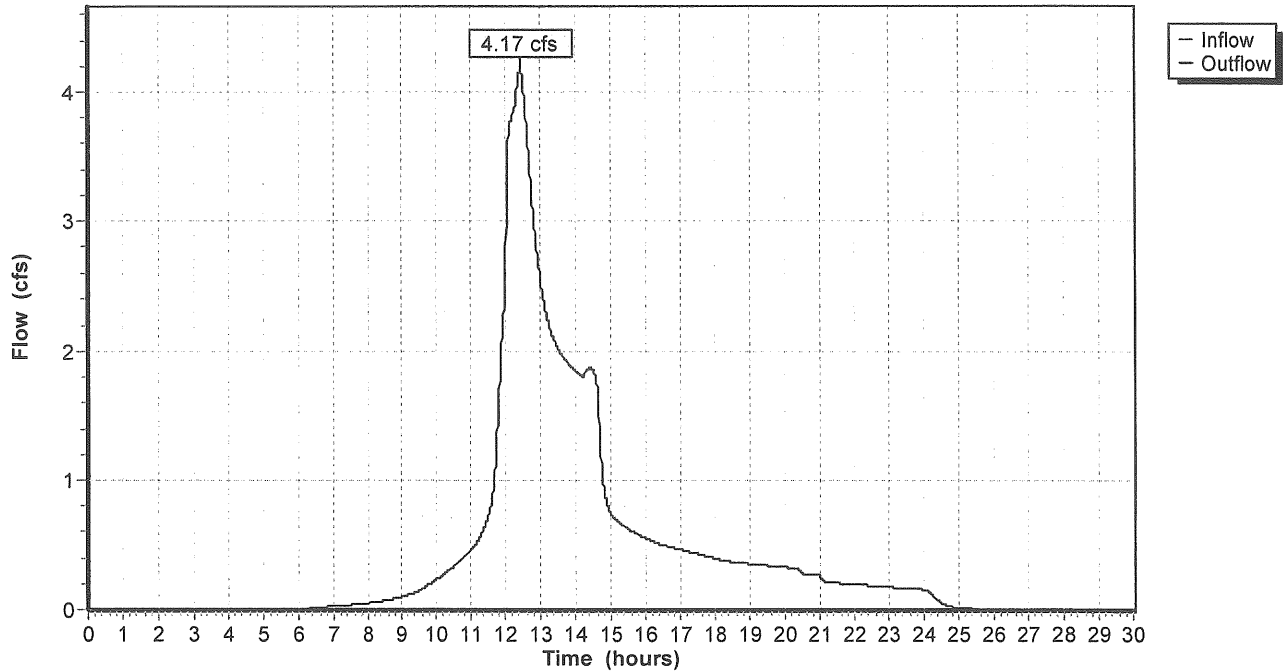
**Reach SP1: Existing system**

Inflow = 4.17 cfs @ 12.43 hrs, Volume= 0.984 af  
Outflow = 4.17 cfs @ 12.43 hrs, Volume= 0.984 af, Atten= 0%, Lag= 0.0 min

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

**Reach SP1: Existing system**

Hydrograph Plot



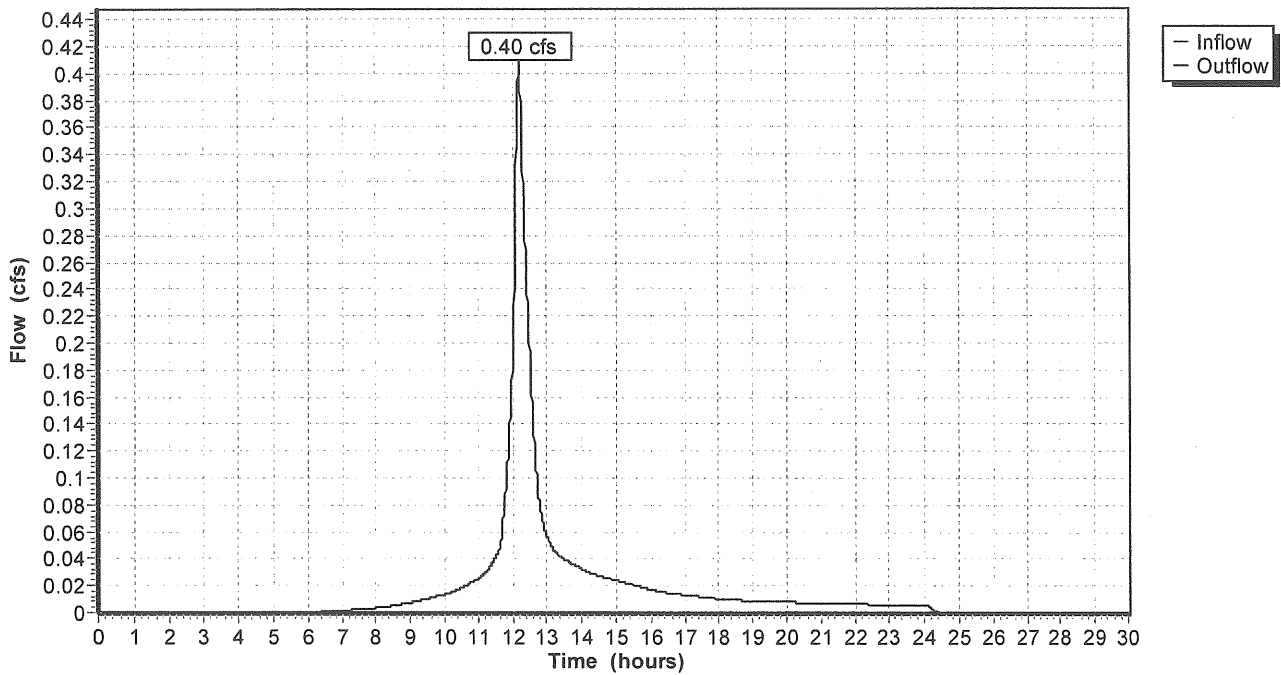
### Reach SP2: Existing Pond

Inflow = 0.40 cfs @ 12.20 hrs, Volume= 0.038 af  
Outflow = 0.40 cfs @ 12.20 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min

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

### Reach SP2: Existing Pond

Hydrograph Plot





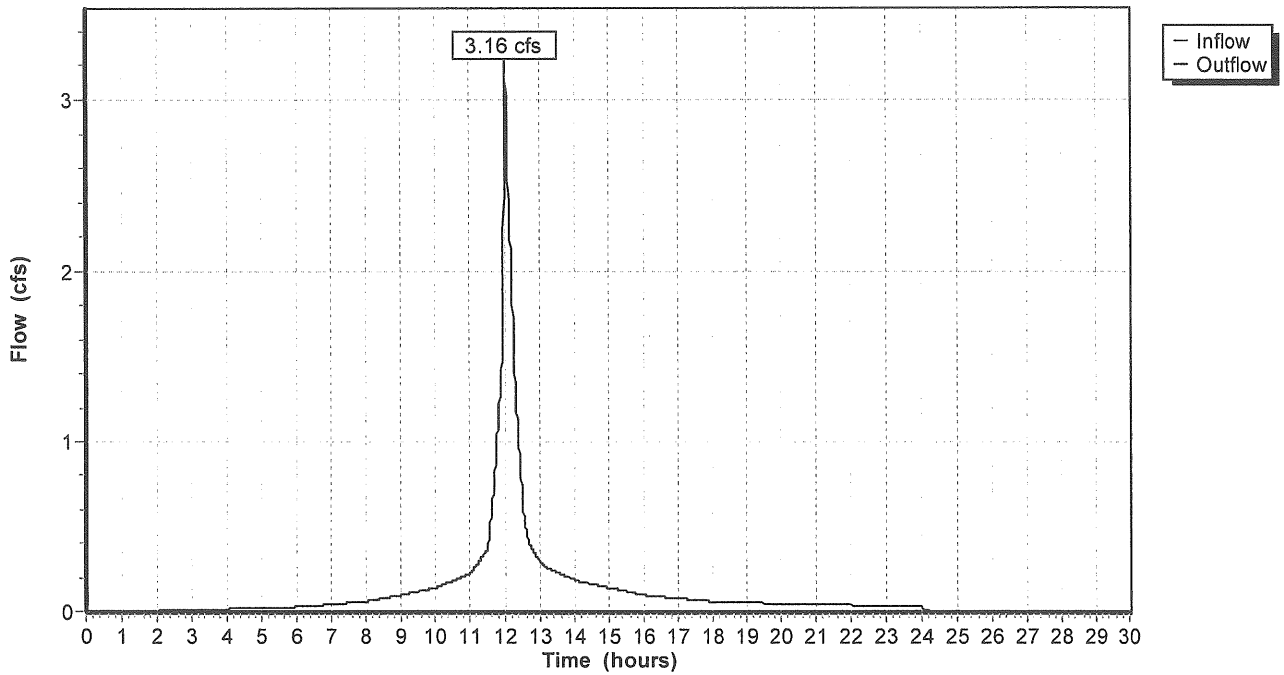
### Reach SP3: Existing Pond

Inflow = 3.16 cfs @ 12.02 hrs, Volume= 0.267 af  
Outflow = 3.16 cfs @ 12.02 hrs, Volume= 0.267 af, Atten= 0%, Lag= 0.0 min

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

### Reach SP3: Existing Pond

Hydrograph Plot



**Pond 1P: Base Stone**

Inflow = 6.54 cfs @ 12.14 hrs, Volume= 0.533 af  
 Outflow = 1.51 cfs @ 14.41 hrs, Volume= 0.533 af, Atten= 77%, Lag= 136.3 min  
 Primary = 1.51 cfs @ 14.41 hrs, Volume= 0.533 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 9

Peak Elev= 76.90' Storage= 6,466 cf

Plug-Flow detention time= 35.2 min calculated for 0.533 af (100% of inflow)

Elevation (feet)	Cum.Store (cubic-feet)
75.25	0
75.30	32
75.40	96
75.50	163
75.60	230
75.70	298
75.80	365
75.90	435
76.00	506
76.10	576
76.20	646
76.30	720
76.40	886
76.50	1,370
76.60	2,170
76.70	3,293
76.80	4,736
76.90	6,499
77.00	8,582
77.10	10,989
77.20	13,715
77.30	16,762
77.40	20,128
77.50	23,488
77.60	26,365
77.70	28,602
77.80	30,195
77.90	31,149
78.00	31,459

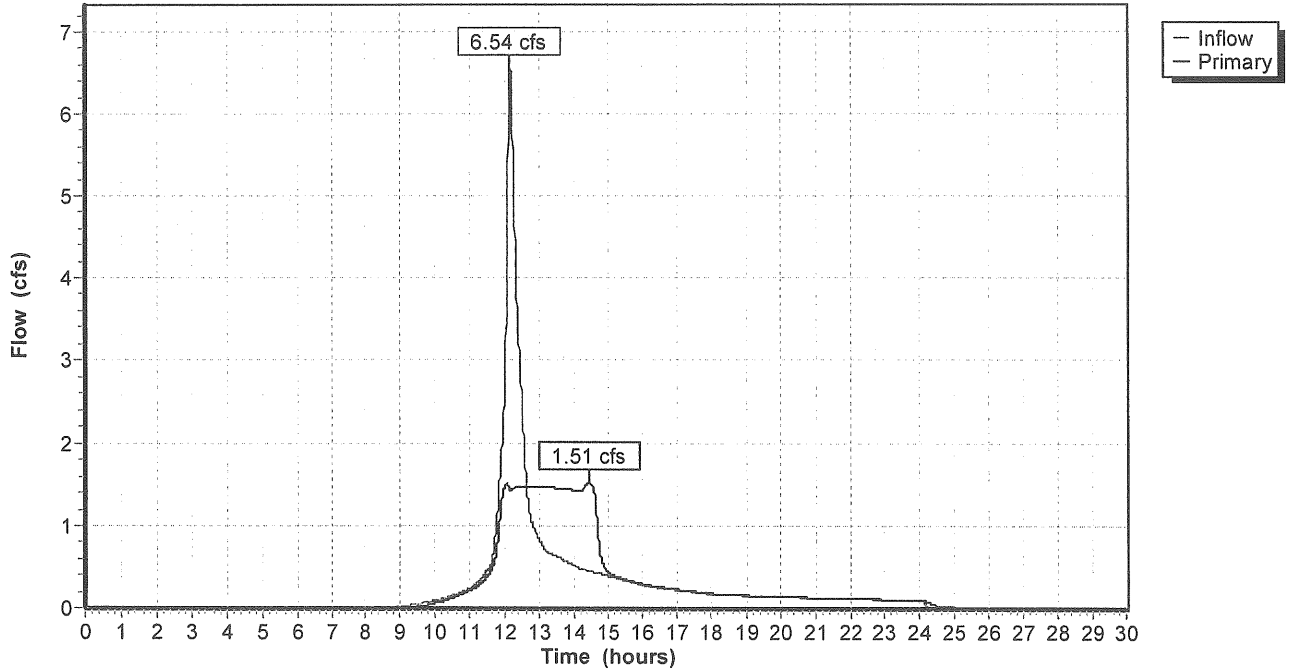
**Primary OutFlow (Free Discharge)**

↑ 1=Perimeter Underdrain

#	Routing	Invert	Outlet Devices
1	Primary	75.25'	12.0" x 589.0' long Perimeter Underdrain CMP, projecting, no headwall, Ke= 0.900 Outlet Invert= 72.33' S= 0.0050 ' / n= 0.024 Cc= 0.900

### Pond 1P: Base Stone

Hydrograph Plot



**Pond 3.1P: Pond 3.1P**

Inflow = 0.38 cfs @ 12.28 hrs, Volume= 0.041 af  
 Outflow = 0.38 cfs @ 12.33 hrs, Volume= 0.041 af, Atten= 2%, Lag= 2.6 min  
 Primary = 0.38 cfs @ 12.33 hrs, Volume= 0.041 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 5

Peak Elev= 76.08' Storage= 72 cf

Plug-Flow detention time= 6.1 min calculated for 0.041 af (100% of inflow)

Storage and wetted areas determined by Irregular sections

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	650	120.0	0	0	650
76.50	1,200	160.0	456	456	1,544

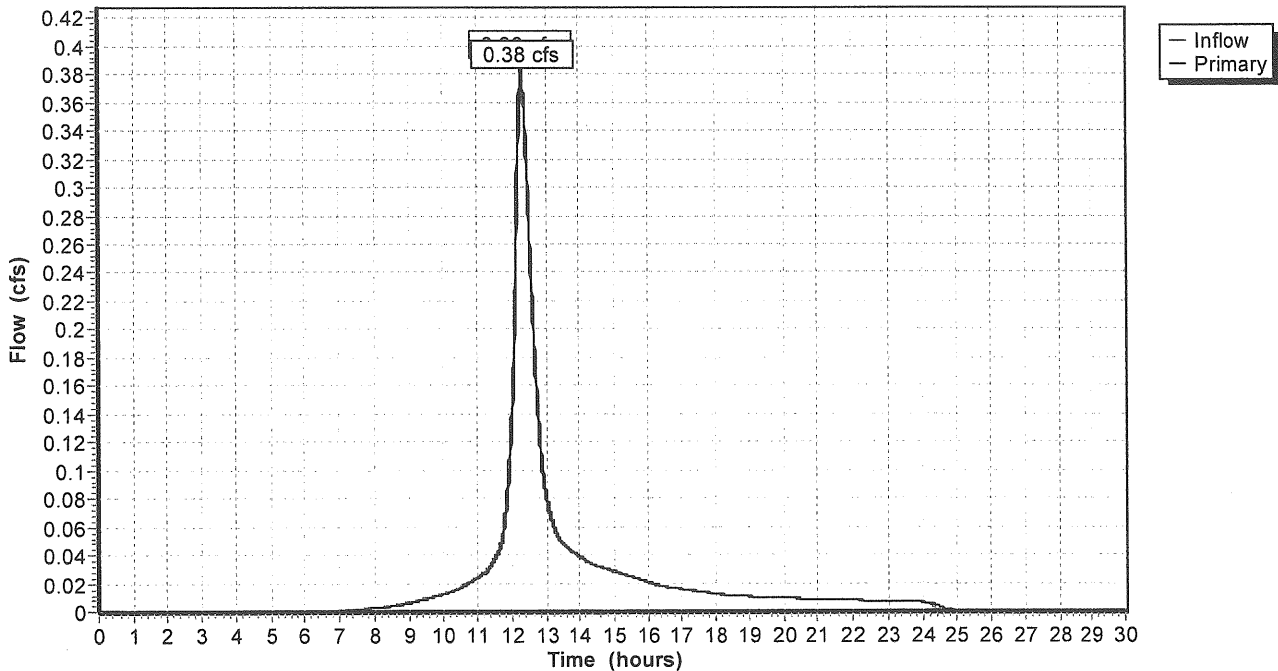
**Primary OutFlow (Free Discharge)**

↑1=Orifice/Grate

#	Routing	Invert	Outlet Devices
1	Primary	76.00'	1.30' x 1.30' Horiz. Orifice/Grate Limited to weir flow C= 0.600

**Pond 3.1P: Pond 3.1P**

Hydrograph Plot



**Pond 3.3P: Bioretention Cell 1**

Inflow = 1.45 cfs @ 12.42 hrs, Volume= 0.188 af  
 Outflow = 1.37 cfs @ 12.51 hrs, Volume= 0.188 af, Atten= 6%, Lag= 5.5 min  
 Primary = 1.37 cfs @ 12.51 hrs, Volume= 0.188 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 5

Peak Elev= 76.17' Storage= 1,364 cf

Plug-Flow detention time= 48.4 min calculated for 0.188 af (100% of inflow)

Storage and wetted areas determined by Irregular sections

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
75.50	1,580	235.0	0	0	1,580
76.00	2,075	250.0	911	911	2,171
76.25	3,250	320.0	660	1,571	5,347

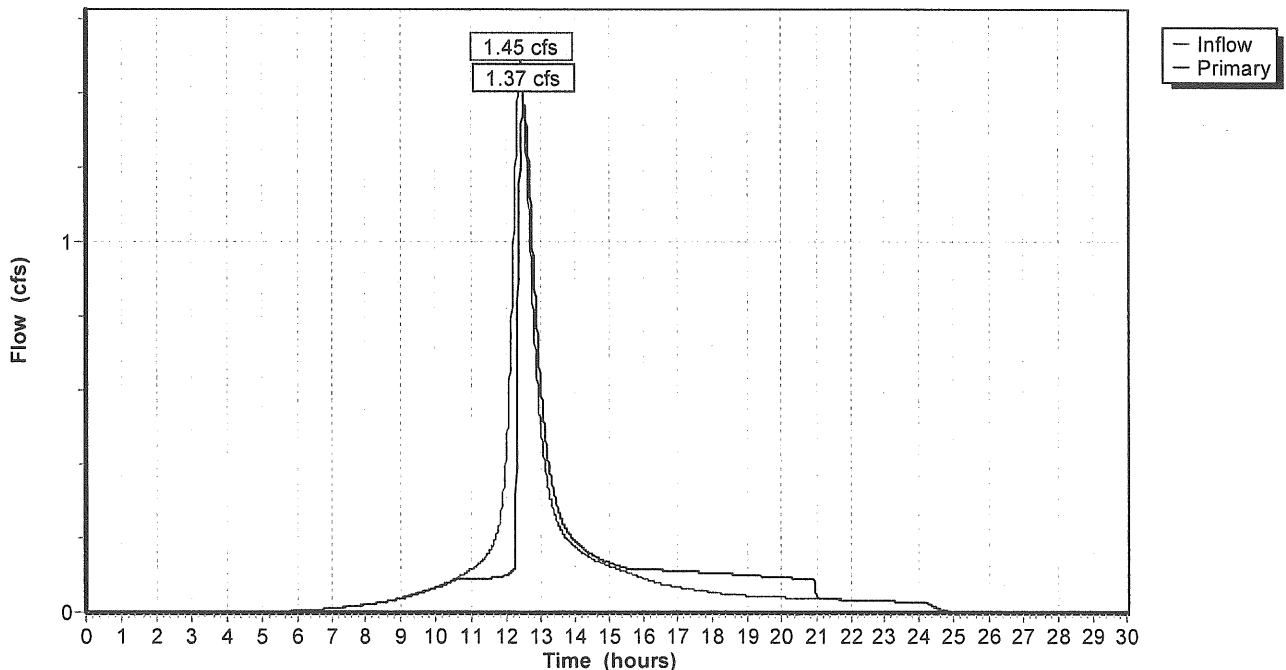
**Primary OutFlow (Free Discharge)**

- 1=Exfiltration
- 2=Orifice/Grate

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	0.003350 fpm Exfiltration over entire Surface area
2	Primary	76.00'	1.30' x 1.30' Horiz. Orifice/Grate Limited to weir flow C= 0.600

**Pond 3.3P: Bioretention Cell 1**

Hydrograph Plot



**Pond 3.5P: Bioretention Cell 2**

Inflow = 1.52 cfs @ 12.11 hrs, Volume= 0.122 af  
 Outflow = 1.35 cfs @ 12.16 hrs, Volume= 0.122 af, Atten= 11%, Lag= 2.9 min  
 Primary = 1.35 cfs @ 12.16 hrs, Volume= 0.122 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 5

Peak Elev= 76.67' Storage= 926 cf  
 Plug-Flow detention time= 46.2 min calculated for 0.122 af (100% of inflow)  
 Storage and wetted areas determined by Irregular sections

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.00	1,050	130.0	0	0	1,050
76.50	1,335	145.0	595	595	1,385
76.65	2,600	190.0	290	885	2,585

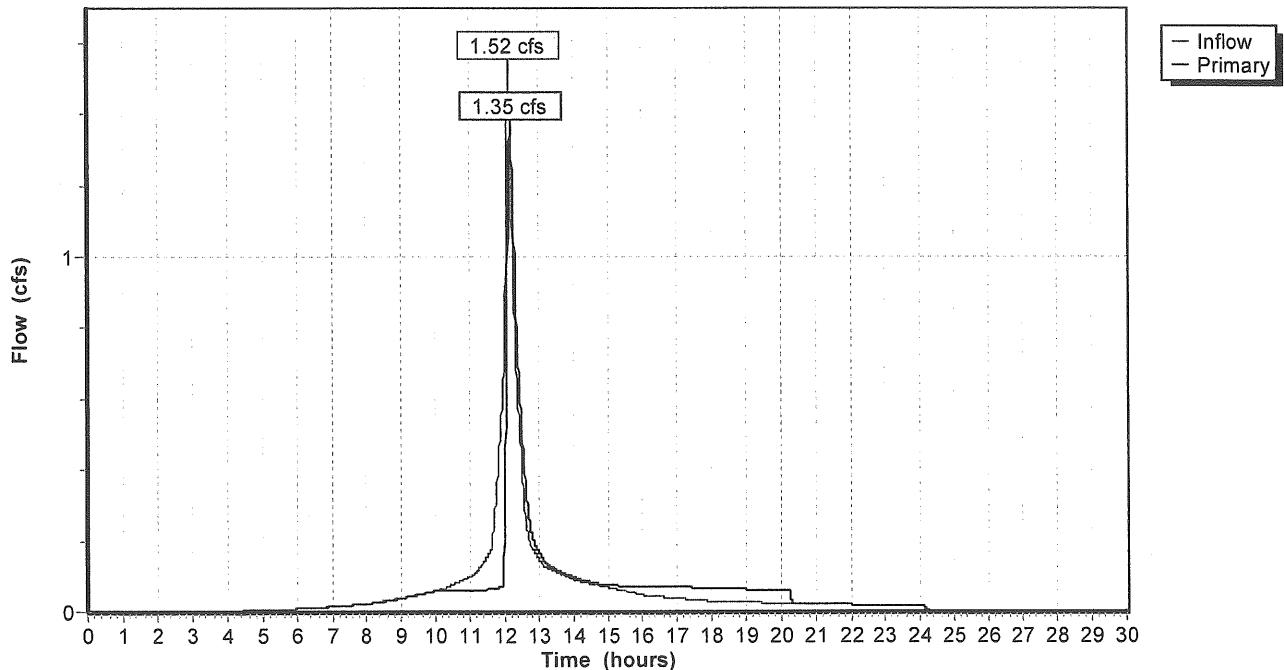
**Primary OutFlow (Free Discharge)**

- 1=Exfiltration
- 2=Orifice/Grate

#	Routing	Invert	Outlet Devices
1	Primary	0.00'	0.003350 fpm Exfiltration over entire Surface area
2	Primary	76.50'	1.30' x 1.30' Horiz. Orifice/Grate Limited to weir flow C= 0.600

**Pond 3.5P: Bioretention Cell 2**

Hydrograph Plot



**Pond 3.9P: Pond 3.9P**

Inflow = 0.73 cfs @ 12.09 hrs, Volume= 0.053 af  
 Outflow = 0.73 cfs @ 12.09 hrs, Volume= 0.053 af, Atten= 0%, Lag= 0.3 min  
 Primary = 0.73 cfs @ 12.09 hrs, Volume= 0.053 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 76.62' Storage= 17 cf  
 Plug-Flow detention time= 0.8 min calculated for 0.053 af (100% of inflow)  
 Storage and wetted areas determined by Irregular sections

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
76.50	25	10.0	0	0	25
77.00	300	157.0	69	69	1,979
77.25	550	200.0	105	173	3,201

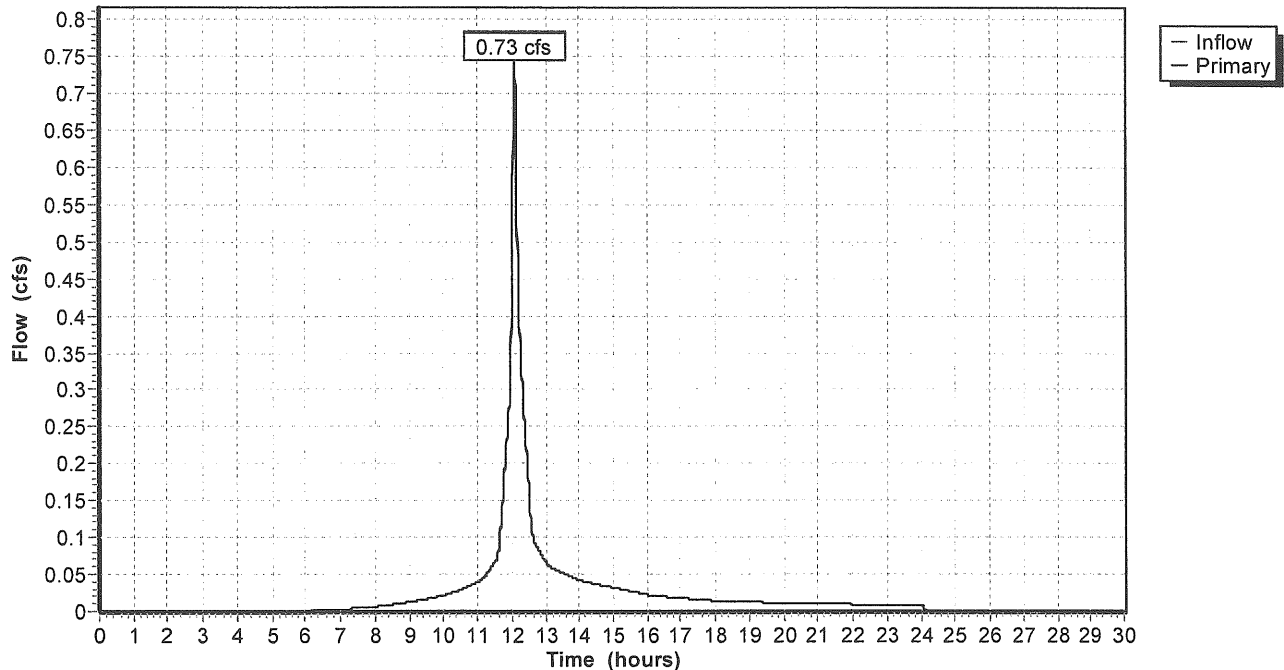
**Primary OutFlow (Free Discharge)**

←1=Orifice/Grate

#	Routing	Invert	Outlet Devices
1	Primary	76.50'	1.30' x 1.30' Horiz. Orifice/Grate Limited to weir flow C= 0.600

**Pond 3.9P: Pond 3.9P**

Hydrograph Plot



**Pond DMH1: DMH-1**

Inflow = 4.17 cfs @ 12.43 hrs, Volume= 0.985 af  
 Outflow = 4.17 cfs @ 12.43 hrs, Volume= 0.984 af, Atten= 0%, Lag= 0.1 min  
 Primary = 4.17 cfs @ 12.43 hrs, Volume= 0.984 af

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

Peak Elev= 69.37' Storage= 71 cf

Plug-Flow detention time= 1.5 min calculated for 0.983 af (100% of inflow)

Storage and wetted areas determined by Conic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
65.80	20	0	0	20
76.50	20	214	214	190

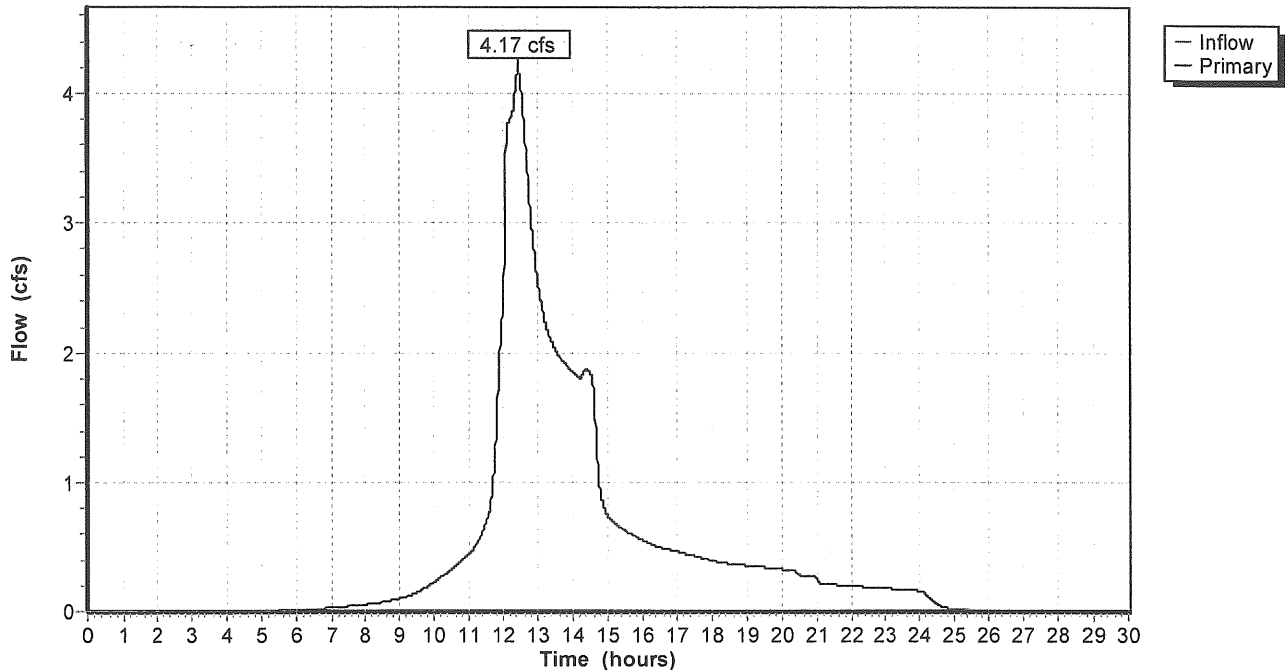
**Primary OutFlow (Free Discharge)**

↑=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	68.25'	<b>15.0" x 44.0' long Culvert</b> RCP, square edge headwall, Ke= 0.500 Outlet Invert= 64.00' S= 0.0966 ' / ' n= 0.011 Cc= 0.900

**Pond DMH1: DMH-1**

Hydrograph Plot





## Penny Littell - Steven Brett

---

**From:** "mary brett" <bretkity@maine.rr.com>  
**To:** <jcoyne@portlandmaine.gov>  
**Date:** 5/3/2010 11:56 PM  
**Subject:** Steven Brett  
**CC:** "Steven Brett" <sbrett2@maine.rr.com>

---

Hi John,

Hope all is well with you. Steven apparently called you tonight, but Patty said you were attending a meeting.

I am writing to you because you had told Steven that if we had any problems with the proposed building being added on at 140 Ludlow Street, to contact you, and perhaps you could assist us.

I don't know where to begin; it is indeed a story, so here goes:

In July, when Steven was in the process of purchasing his home at 140 Ludlow Street, the broker and I went to the Zoning Department at City Hall to find if adding or/building was feasible with the amount of footage of land and parking that he had. We were told by Ann Machado that the zoning was acceptable and there should be no problem with set-backs, etc. Unfortunately, we have nothing in writing. A boundary survey had been performed by Royal River Survey Company by the previous owner. We went back to the Zoning Department after he purchased the home in September to get started. We were told then that the little building had to be connected to his home in order for this to be a duplex addition/home.

In September, our builder went to see about obtaining a permit and he was told, I believe by Barbara Barhydt, that we would probably need to have a full land survey performed because the Boundary Survey was not sufficient, and he was given the "New Residential Single Family Permit Application Checklist," for a total of EIGHTEEN PAGES. Due to the complexity of the form and all the rules and regulations, our builder was advised that we should seek the services of an engineer, which we did. His name is Lester Berry of BH2M Engineers. Mr. Berry performed the complete survey in the late Fall or early December and he developed a site plan. He made blueprints (large sheets) and we met with him twice to critique them.

He then submitted the plans to City Hall. I believe he was going to send 15 copies to various departments in City Hall, i.e.

sewer, water, lighting, foundation, etc. for their approval, but he held them until he met with Barbara Barhydt and now another person (I don't remember her name); Ann Machado is no longer mentioned at all. I believe he was told that if the various departments spend a lot of time on this, Ralph and I might have to compensate the various departments monetarily. At that time that he met with Barbara Barhydt and ?, the following stipulations were now made:

1. ? it will be considered a new building or an addition to an existing one. According to the ordinances, one requires 4 parking spaces, and one requires 3 ½ parking spaces with so many feet from the street and each parking spot requires certain dimensions. In any event, we are short footage, I think. Barbara and ? suggested tearing down the existing shed and slab, which measures 15.3' by 13.3' by our builder's measurements, and building a garage in its place to provide one more parking space. Mr. Berry was told there would be no problem after taking the building down, to replace it with a garage. I question if there is exactly enough footage, and if we had it taken down, would we now be told that there isn't enough footage to build a garage. I would not remove even a nail without this being in writing.
2. The existing water pipe is 1 inch in diameter. The new dwelling would require a whole new water pipe from the street to the shut-off in Steven's home of 1 ½ inches in diameter and a very rough estimate cost of \$5000.00, or maybe \$6000.00 or more.
3. New Sewer line required from the street to the new dwelling at approximate cost of \$5000.00, or maybe \$6000.00 or more.

4. Sidewalk required at cost to us, ? why because that side of Ludlow Street has NO sidewalk at all from beginning to end. Mr. Berry was immediately told that we could probably get a waiver for the sidewalk, but that would be at an additional cost to us.
5. A tree will need to be planted on the front of Steven's property on the Ludlow or street side at the opposite end.

Steven purchased the home on Ludlow Street with the preconceived notion that he could build an addition on for Ralph and I, as per City Hall in July/August 2009. I have heard that Portland is very difficult to work with, but never experienced it first hand until now. Walls and barriers have been put up everywhere. We have already spent several thousand dollars and it looks like we are going to have to spend several or many more thousands before the building even begins. We feel that we are being harassed and that Portland is not at all friendly to new construction being built. I saw the book of ordinances and you would have to be a California lawyer to keep them straight. And, if these stipulations are just by Barbara and ?, how many other changes will need to be made and how many more thousands are we going to have to spend when the plans are distributed to the other (more than 10) various departments.

John, we have tried to remember the series of events, many from memory, as we didn't think it would be necessary to dot all the I's and cross all the T's for every little detail of this endeavor, as we were naïve enough to believe what was told to us back in July/August. Unfortunately, since we are not germane to all of the terminology, I'm sure there are some facts that we don't understand. I work in the medical field, so if I speak to someone who doesn't understand what I am saying, I have to adjust my responses to what they understand. I honestly don't think that this is practiced in City Hall.

Ralph and I would like to thank you for taking the time to read this and would welcome any suggestions that you might have.

Sincerely,

Ralph and Mary Brett  
(207)854-2792  
17 Roosevelt Street, Westbrook, ME 04092

DWG. NO: M199-04-3	DATE: 12/1/04	CHK. BY: GJK	DATE: 12/1/04
NO. 1 CHECK CHANGES - 8/13/04	NO. 2 CUSTOMER APPROVED CHANGES - 8/13/04	NO. 3 COLOR CORRECTIONS - 8/13/04	NO. 4 CORRECTED CHANGES - 8/13/04
NOTE: Return approved drawing as soon as possible, so that production can be scheduled. Manufacturer not responsible for local permits and occupancy requirements.			

APPROVED FOR PRODUCTION

DATE

DATE

**CUSTOMER: PORTLAND PARKS & RECREATION DEPT**

**PROJECT: 830 PRESSBOX**

**ATTN:**

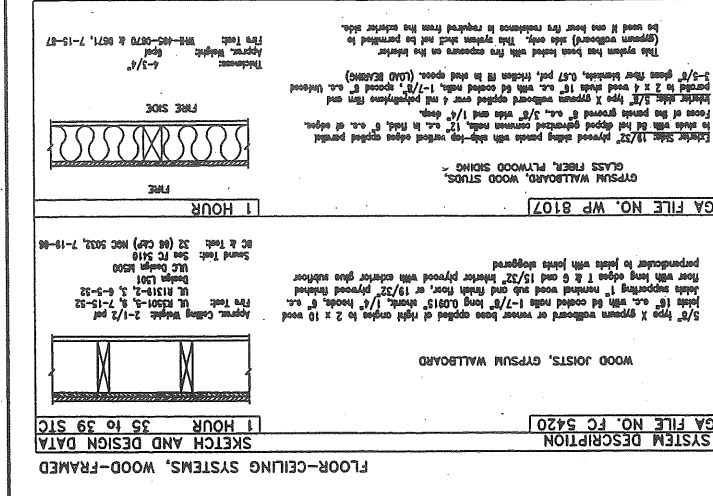
**ADDRESS: PORTLAND, ME.**

**MOBILE OFFICES AND MODULAR BUILDINGS**

**MFE SINCE 1962**

306 W. STATE STREET - CASSIDOWAY, MICHIGAN 49311 - PHONE: 616/445-8888 - FAX: 616/445-2521

www.mfebuilding.com



**SKETCH AND DESIGN DATA**

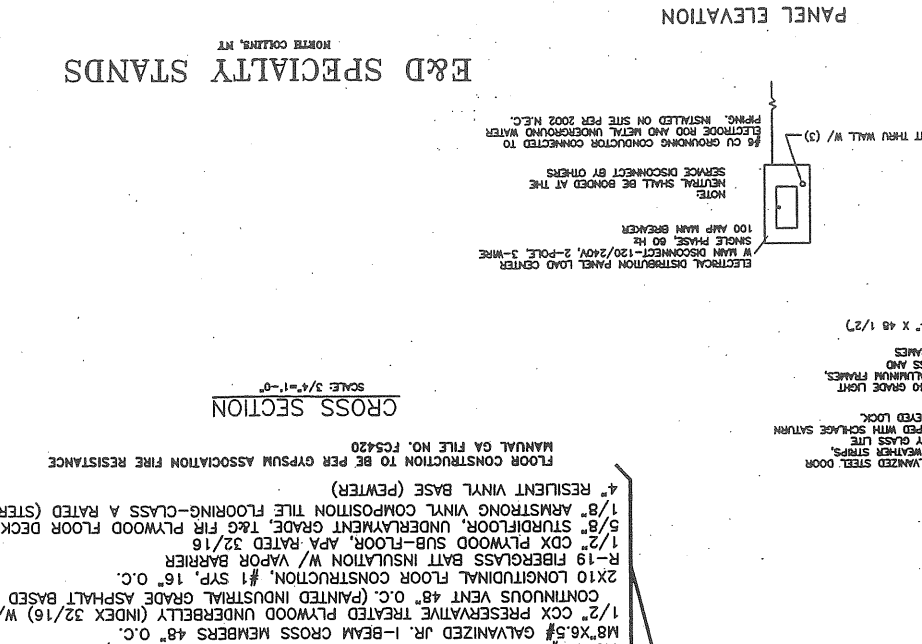
**SYSTEM DESCRIPTION**

WOOD JOISTS, GYPSUM WALLBOARD

GYPSUM WALLBOARD, WOOD STUDS

GLASS PANEL, PLYWOOD SKINS

1 HOUR

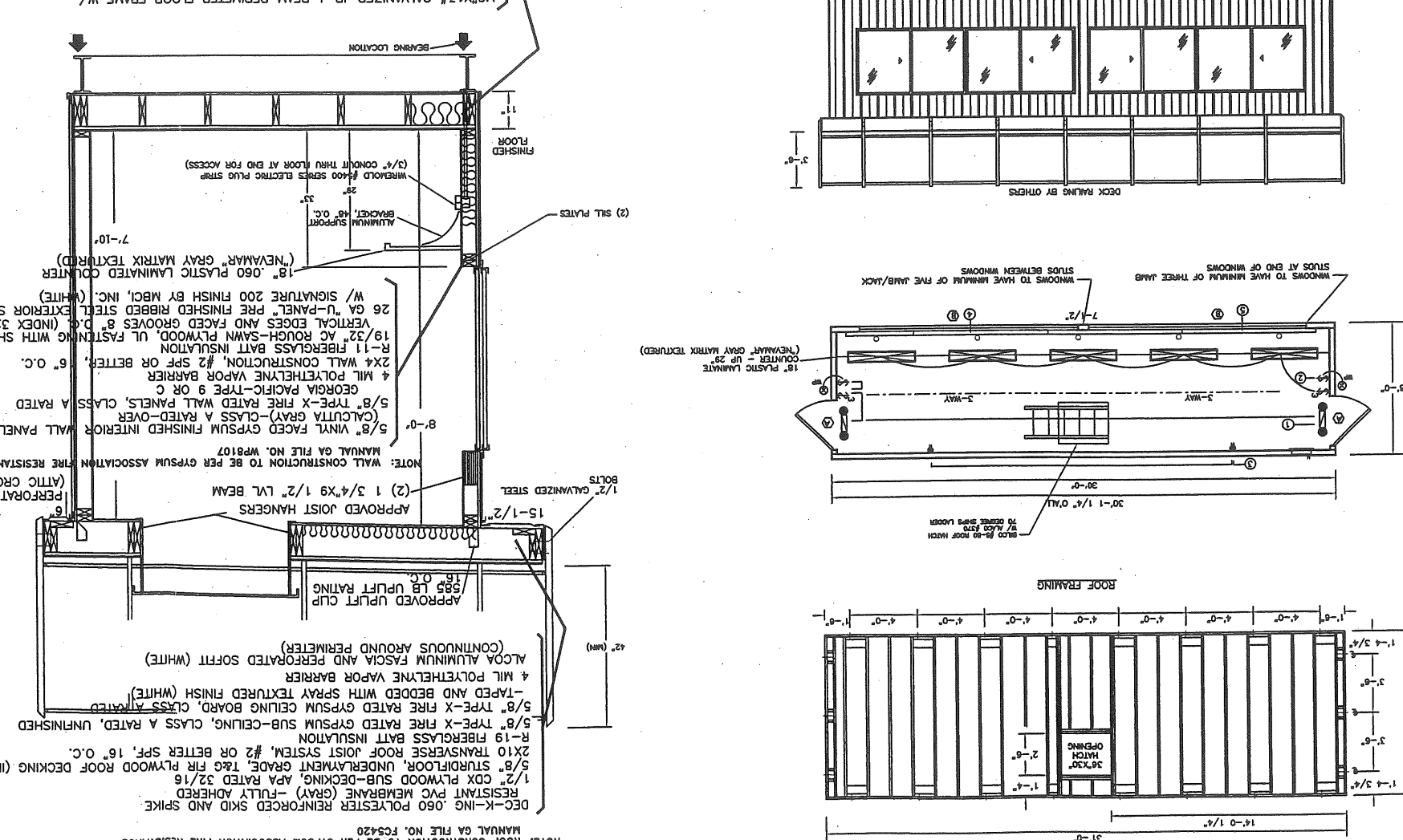


**DOOR/WINDOW SCHEDULE**

No.	MAP	VOLT	WIRE	DESCRIPTION	WATTS
1-2	20	120	12 THHN	GENERAL LIGHTING	1050
3	20	12 THHN	GENERAL RECEPES	250	
4-5	20	120	12 THHN	FLUO STRIPS	1440

**ROOF FRAMING**

**ELEVATION**



**NOTE:** ALL NUMBERS ON ELECTRICAL CIRCUITS DESIGNATE FEED SIDE OF CIRCUIT UNLESS OTHERWISE SHOWN IN THIS WALL EMT CONDUIT. MIN 12 THHN WIRE SHALL BE INSTALLED IN THIS WALL EMT CONDUIT. MIN 12 THHN WIRE SHALL BE USED IN THIS WALL EMT CONDUIT. MIN 12 THHN WIRE SHALL BE USED IN THIS WALL EMT CONDUIT.

**ELECTRICAL:** ALL ELECTRICAL WORK SHALL BE PER NFPA 70E AND ALL NECA/IBEW STANDARDS. ALL ELECTRICAL WORK SHALL BE PER NFPA 70E AND ALL NECA/IBEW STANDARDS.

**GENERAL/STRUCTURAL:** ALL CONSTRUCTION SHALL BE PER IBC 2003 AND ALL LOCAL ORDINANCES. ALL CONSTRUCTION SHALL BE PER IBC 2003 AND ALL LOCAL ORDINANCES.

**DESIGN SPECIFICATIONS:** ALL DESIGN SHALL BE PER IBC 2003 AND ALL LOCAL ORDINANCES. ALL DESIGN SHALL BE PER IBC 2003 AND ALL LOCAL ORDINANCES.

**DESIGN CODES:** ALL DESIGN SHALL BE PER IBC 2003 AND ALL LOCAL ORDINANCES. ALL DESIGN SHALL BE PER IBC 2003 AND ALL LOCAL ORDINANCES.

