Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Winchester
City/Town

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

Note: Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

A. General Information

1. Project Location (**Note:** electronic filers will click on button to locate project site):

23 Kenwin Road — a. Street Address
Winchester — b. City/Town
01890 — c. Zip Code

Latitude and Longitude:
42.465340 — d. Latitude
-71.126560 — e. Longitude

Map 22 — f. Assessors Map/Plat Number
63 — g. Parcel /Lot Number

2. Applicant:

Timothy — Matthews
Gregory — Sawicki

c. Organization

23 Kenwin Road — d. Street Address

Winchester — e. City/Town
MA — f. State
01890 — g. Zip Code

(617) 763-4343 — h. Phone Number
- — i. Fax Number
timothy.matthews@gmail.com — j. Email Address

3. Property owner (required if different from applicant): ☐ Check if more than one owner

a. First Name
b. Last Name

c. Organization

d. Street Address

e. City/Town
f. State
g. Zip Code

h. Phone Number
i. Fax Number
j. Email address

4. Representative (if any):

Al — a. First Name
Gala — b. Last Name

Gala Simon Associates, Inc — c. Company

394 Lowell Street, Suite 18 — d. Street Address

Lexington — e. City/Town
MA — f. State
02420 — g. Zip Code

7816762962 — h. Phone Number
- — i. Fax Number
gala@gsadesign.com — j. Email address

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

$110 — a. Total Fee Paid
$42.50 — b. State Fee Paid
$67.50 — c. City/Town Fee Paid

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A. General Information (continued)

6. General Project Description:

To construct an addition to an existing single-family dwelling that extends into the 100 foot buffer zone from the stream channel on the back of the subject property.

7a. Project Type Checklist: (Limited Project Types see Section A. 7b.)

1. ☒ Single Family Home
2. ☐ Residential Subdivision
3. ☐ Commercial/Industrial
4. ☐ Dock/Pier
5. ☐ Utilities
6. ☐ Coastal engineering Structure
7. ☐ Agriculture (e.g., cranberries, forestry)
8. ☐ Transportation
9. ☐ Other

7b. Is any portion of the proposed activity eligible to be treated as a limited project (including Ecological Restoration Limited Project) subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

1. ☐ Yes ☒ No

If yes, describe which limited project applies to this project. (See 310 CMR 10.24 and 10.53 for a complete list and description of limited project types)

2. Limited Project Type

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR10.24(8), 310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restoration Limited Project Checklist and Signed Certification.

8. Property recorded at the Registry of Deeds for:

Middlesex So	
a. County	b. Certificate # (if registered land)
71813	551
c. Book	d. Page Number

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

1. ☒ Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.
2. ☐ Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal Resource Areas).

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

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B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Bank	1. linear feet	2. linear feet
b. ☐ Bordering Vegetated Wetland	1. square feet	2. square feet
c. ☐ Land Under Waterbodies and Waterways	1. square feet 3. cubic yards dredged	2. square feet

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. ☐ Bordering Land Subject to Flooding	1. square feet 3. cubic feet of flood storage lost	2. square feet 4. cubic feet replaced
e. ☐ Isolated Land Subject to Flooding	1. square feet 2. cubic feet of flood storage lost	3. cubic feet replaced

f. ☐ Riverfront Area

1. Name of Waterway (if available) - **specify coastal or inland**

2. Width of Riverfront Area (check one):

☐ 25 ft. - Designated Densely Developed Areas only

☐ 100 ft. - New agricultural projects only

☐ 200 ft. - All other projects

3. Total area of Riverfront Area on the site of the proposed project: _____ square feet

4. Proposed alteration of the Riverfront Area:

a. total square feet _____ b. square feet within 100 ft. _____ c. square feet between 100 ft. and 200 ft. _____

5. Has an alternatives analysis been done and is it attached to this NOI? ☐ Yes ☐ No

6. Was the lot where the activity is proposed created prior to August 1, 1996? ☐ Yes ☐ No

3. ☐ Coastal Resource Areas: (See 310 CMR 10.25-10.35)

Note: for coastal riverfront areas, please complete **Section B.2.f**. above.

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B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

Check all that apply below. Attach narrative and supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. ☐ Land Under the Ocean	1. square feet 2. cubic yards dredged	
c. ☐ Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. ☐ Coastal Beaches	1. square feet	2. cubic yards beach nourishment
e. ☐ Coastal Dunes	1. square feet	2. cubic yards dune nourishment

	Size of Proposed Alteration	Proposed Replacement (if any)
f. ☐ Coastal Banks	1. linear feet	
g. ☐ Rocky Intertidal Shores	1. square feet	
h. ☐ Salt Marshes	1. square feet	2. sq ft restoration, rehab., creation
i. ☐ Land Under Salt Ponds	1. square feet 2. cubic yards dredged	
j. ☐ Land Containing Shellfish	1. square feet	
k. ☐ Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above 1. cubic yards dredged	
l. ☐ Land Subject to Coastal Storm Flowage	1. square feet	

4. ☐ Restoration/Enhancement
If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b or B.3.h above, please enter the additional amount here.

a. square feet of BVW

b. square feet of Salt Marsh

5. ☐ Project Involves Stream Crossings

a. number of new stream crossings

b. number of replacement stream crossings

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C. Other Applicable Standards and Requirements

☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section C and complete Appendix A: Ecological Restoration Limited Project Checklists – Required Actions (310 CMR 10.11).

Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the *Massachusetts Natural Heritage Atlas* or go to http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm.

   a. ☐ Yes ☒ No

   If yes, include proof of mailing or hand delivery of NOI to:

   Natural Heritage and Endangered Species Program
   Division of Fisheries and Wildlife
   1 Rabbit Hill Road
   Westborough, MA 01581

   2017
   b. Date of map

   If *yes*, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.c, and include requested materials with this Notice of Intent (NOI); *OR* complete Section C.2.f, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

   c. Submit Supplemental Information for Endangered Species Review*

   1. ☐ Percentage/acreage of property to be altered:

      (a) within wetland Resource Area _____ percentage/acreage

      (b) outside Resource Area _____ percentage/acreage

   2. ☐ Assessor's Map or right-of-way plan of site

2. ☐ Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work **

   (a) ☐ Project description (including description of impacts outside of wetland resource area & buffer zone)

   (b) ☐ Photographs representative of the site

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* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review/). Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

** MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.

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C. Other Applicable Standards and Requirements (cont'd)

(c) ☐ MESA filing fee (fee information available at http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/mesa/mesa_fee_schedule.htm). Make check payable to "Commonwealth of Massachusetts - NHESP" and ***mail to NHESP*** at above address

*Projects altering **10 or more acres** of land, also submit:*

(d) ☐ Vegetation cover type map of site

(e) ☐ Project plans showing Priority & Estimated Habitat boundaries

(f) OR Check One of the Following

1. ☐ Project is exempt from MESA review.
Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/mesa/mesa_exemptions.htm; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

2. ☐ Separate MESA review ongoing. a. NHESP Tracking # b. Date submitted to NHESP

3. ☐ Separate MESA review completed.
Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

3. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?

a. ☐ Not applicable – project is in inland resource area only b. ☐ Yes ☐ No

If yes, include proof of mailing, hand delivery, or electronic delivery of NOI to either:

South Shore - Cohasset to Rhode Island border, and the Cape & Islands:

Division of Marine Fisheries -
Southeast Marine Fisheries Station
Attn: Environmental Reviewer
836 South Rodney French Blvd.
New Bedford, MA 02744
Email: DMF.EnvReview-South@state.ma.us

North Shore - Hull to New Hampshire border:

Division of Marine Fisheries -
North Shore Office
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930
Email: DMF.EnvReview-North@state.ma.us

Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please contact MassDEP's Southeast Regional Office.

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C. Other Applicable Standards and Requirements (cont'd)

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

4. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?

   a. ☐ Yes ☒ No If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.

   b. ACEC

5. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?

   a. ☐ Yes ☒ No

6. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?

   a. ☐ Yes ☒ No

7. Is this project subject to provisions of the MassDEP Stormwater Management Standards?

   a. ☐ Yes. Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:

      1. ☐ Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)

      2. ☐ A portion of the site constitutes redevelopment

      3. ☐ Proprietary BMPs are included in the Stormwater Management System.

   b. ☒ No. Check why the project is exempt:

      1. ☒ Single-family house

      2. ☐ Emergency road repair

      3. ☐ Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

D. Additional Information

☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section D and complete Appendix A: Ecological Restoration Notice of Intent – Minimum Required Documents (310 CMR 10.12).

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

Online Users: Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department.

1. ☒ USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)

2. ☒ Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.

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D. Additional Information (cont'd)

3. ☒ Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.

4. ☒ List the titles and dates for all plans and other materials submitted with this NOI.

Drainage/Grading Plan
a. Plan Title

Gala Simon Associates
b. Prepared By

Al Gala
c. Signed and Stamped by

9/23/20
d. Final Revision Date

1"=20'-0"
e. Scale

-
f. Additional Plan or Document Title

10/01/20
g. Date

5. ☐ If there is more than one property owner, please attach a list of these property owners not listed on this form.

6. ☐ Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.

7. ☐ Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.

8. ☒ Attach NOI Wetland Fee Transmittal Form

9. ☒ Attach Stormwater Report, if needed.

E. Fees

1. ☐ Fee Exempt: No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

565
2. Municipal Check Number

9/30/20
3. Check date

564
4. State Check Number

9/30/20
5. Check date

Timothy
6. Payor name on check: First Name

Matthews
7. Payor name on check: Last Name

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F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

Timothy J Matthews	9/30/20
1. Signature of Applicant	2. Date
3. Signature of Property Owner (if different)	4. Date
(A. GOLA)	9/30/20
5. Signature of Representative (if any)	6. Date

For Conservation Commission:
Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

For MassDEP:
One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

Other:
If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.

Affidavit of Service

Under the Massachusetts Wetlands Protection Act and the Winchester Wetlands Bylaw I, Gregory Sawicki / Timothy Matthews hereby certify under the pains and penalties of perjury that on October 6, 2020, I gave notification to abutters in compliance with the second paragraph of Massachusetts General Laws Chapter 131, section 40, the DEP Guide to Abutter Notification dated April 8, 1994, and the Winchester Wetlands Bylaw, in connection with the following matter: Construction of an addition and storm water management structure to a single family home at 23 Kenwin Rd., Winchester

The form of notification, and a list of the abutters to whom it was given and their addresses, are attached to this Affidavit of Service.

Gregory Sawicki 10-1-20

Timothy Matthews Timothy J. Matthews 10-1-20

Name (signature) Date

Notification to Abutters Under the Massachusetts Wetlands Protection Act and the Winchester Wetlands Bylaw

In accordance with the second paragraph of the Massachusetts General Laws Chapter 131, Section 40, and the Winchester Wetlands Bylaw, you are hereby notified of the following:

A. The name of the Applicants are: *Timothy Matthews and Gregory Sawicki.*

B. The Applicants have filed a Notice of Intent with the Winchester Conservation Commission seeking to *construct an addition, plus storm water management, to an existing single family home*

C. The address of the lot where activity is proposed is: *23 Kenwin Road.*

D. Electronic copies of the Notice of Intent may be examined upon request to the Conservation office. Please contact Elaine Vreeland at: Evreeland@winchester.us. A copy of the Notice of Intent will also be posted on the town website.

F. A public hearing will be held on *Tuesday, October 13, 2020, at 7:30 PM, via remote access. Information regarding remote access will be posted on the Conservation Commission agenda, located on the town of Winchester website.*

Note: Notice of the public hearing, including its date, time and place, will be published at least five (5) days in advance in the ***Woburn Daily Times Chronicle***.

Note: Notice of the public hearing, including its date, time and place, will be posted on the Town Hall website not less than forty eight (48) hours in advance of the public hearing.

Note: You may also contact your local Conservation Commission or the nearest Department of Environmental Protection Regional office for more information about this application or the Wetlands Protection Act.

To contact DEP call: Northeast Region: 617-292-5500

LIST OF ABUTTERS FOR 23 KENWIN RD, WINCHESTER, MA 01890

Loc: 18 GRAYSON RD PID #: 2 46 0
LUC: 101

BAEK THOMAS SEUNG

18 GRAYSON RD

WINCHESTER MA 01890

Loc: 20 GRAYSON RD PID #: 2 47 0
LUC: 101

PELLERITI GERTRUDE M

20 GRAYSON ROAD

WINCHESTER MA 01890

Loc: 22 GRAYSON RD PID #: 2 48 0
LUC: 101

ELIASSEN A H + W WYATT OSWALD

22 GRAYSON ROAD

WINCHESTER MA 01890

Loc: 26 GRAYSON RD PID #: 2 49 0
LUC: 101

KNOWLES DONALD A + ANDREA S

26 GRAYSON ROAD

WINCHESTER MA 01890

Loc: 28 GRAYSON RD PID #: 2 50 0
LUC: 101

OBRIEN ROBERT H + DEBORAH A

28 GRAYSON ROAD

WINCHESTER MA 01890

Loc: 32 GRAYSON RD PID #: 2 51 0
LUC: 101

ZUBER STEPHEN M + JILL A BELL

32 GRAYSON ROAD

WINCHESTER MA 01890

Loc: 29 KENWIN RD PID #: 2 61 0
LUC: 101

BIRD RAYMOND A + JOAN L

29 KENWIN ROAD

WINCHESTER MA 01890

Loc: 27 KENWIN RD PID #: 2 62 0
LUC: 101

LOPEZ JORGE + M DAKUBU

27 KENWIN ROAD

WINCHESTER MA 01890

Loc: 23 KENWIN RD PID #: 2 63 0
LUC: 101

SAWICKI GREGORY S + TIMOTHY J

23 KENWIN ROAD

WINCHESTER MA 01890

Loc: 21 KENWIN RD PID #: 2 64 0
LUC: 101

KIM B TRACY PROKOS REV TR OF 2
KIM TRACY PROKOS + JOHN PROKOS
21 KENWIN ROAD

WINCHESTER MA 01890

Loc: 19 KENWIN RD PID #: 2 65 0
LUC: 101

HEINOLD DAVID W + JERILYN W

19 KENWIN ROAD

WINCHESTER MA 01890

Loc: 18 KENWIN RD PID #: 2 78 0
LUC: 101

HOU RUNHUA + WEISHI MIAO

18 KENWIN ROAD

WINCHESTER MA 01890

Loc: 20 KENWIN RD PID #: 2 79 0
LUC: 101

MANNING HARLEY J + KATHERINE L

20 KENWIN ROAD

WINCHESTER MA 01890

Loc: 22 KENWIN RD PID #: 2 80 0
LUC: 101

DEERING ROBERT F + DIANA M

22 KENWIN ROAD

WINCHESTER MA 01890

Loc: 26 KENWIN RD PID #: 2 81 0

LUC: 101

REILLY JOHN P + MOLLY S

26 KENWIN ROAD

WINCHESTER MA 01890

Loc: 28 KENWIN RD PID #: 2 82 0

LUC: 101

MUKAI VERDICCHIO FAM REV TRUST
SHIZUO MUKAI +SUSAN VERDICCHIO
28 KENWIN ROAD

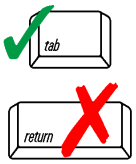
WINCHESTER MA 01890

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A. Applicant Information

1. Location of Project:

23 Kenwin Road	Winchester
a. Street Address	b. City/Town
c. Check number	d. Fee amount

2. Applicant Mailing Address:

Timothy Gregory	Matthews Sawicki

c. Organization

23 Kenwin Road
d. Mailing Address

Winchester	MA	01890
e. City/Town	f. State	g. Zip Code

(617)763-4343		timothy.matthews@gmail.com
h. Phone Number	i. Fax Number	j. Email Address

3. Property Owner (if different):

a. First Name	b. Last Name

c. Organization

d. Mailing Address

e. City/Town	f. State	g. Zip Code

h. Phone Number	i. Fax Number	j. Email Address

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).

B. Fees

Fee should be calculated using the following process & worksheet. ***Please see Instructions before filling out worksheet.***

Step 1/Type of Activity: Describe each type of activity that will occur in wetland resource area and buffer zone.

Step 2/Number of Activities: Identify the number of each type of activity.

Step 3/Individual Activity Fee: Identify each activity fee from the six project categories listed in the instructions.

Step 4/Subtotal Activity Fee: Multiply the number of activities (identified in Step 2) times the fee per category (identified in Step 3) to reach a subtotal fee amount. Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

Step 5/Total Project Fee: Determine the total project fee by adding the subtotal amounts from Step 4.

Step 6/Fee Payments: To calculate the state share of the fee, divide the total fee in half and subtract $12.50. To calculate the city/town share of the fee, divide the total fee in half and add $12.50.

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B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
Addition to Single-Family Home	1	1	$110

Step 5/Total Project Fee: _____

Step 6/Fee Payments:

Total Project Fee:	$110 a. Total Fee from Step 5
State share of filing Fee:	$42.50 b. 1/2 Total Fee **less $**12.50
City/Town share of filling Fee:	$67.50 c. 1/2 Total Fee **plus** $12.50

C. Submittal Requirements

a.) Complete pages 1 and 2 and send with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts.

Department of Environmental Protection
Box 4062
Boston, MA 02211

b.) **To the Conservation Commission:** Send the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and the city/town fee payment.

To MassDEP Regional Office (see Instructions): Send a copy of the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and a **copy** of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)

TIMOTHY J. MATTHEWS
~~5 MULLINS CT.~~ 23 Kenwin Rd
~~CAMBRIDGE, MA 02141~~ Winchester MA 01890

53-8173 / 2113

No. 564

DATE 30 September 2020

Pay to the order of Massachusetts Dept. of Environmental Protection $ 42.50

Forty two and 50/100 DOLLARS

HARVARD UNIVERSITY
EMPLOYEES CREDIT UNION
Cambridge, MA

MEMO NOI Wetland Fee

Timothy J. Matthews

⑆211381738⑆ 00 25 351340⑈ 0564

TIMOTHY J. MATTHEWS
~~3 MULLINS CT.~~ 23 Kenwin Rd
~~CAMBRIDGE, MA 02141~~ Winchester MA 01890

53-8173 / 2113 5

No. 565

Date 30 September 2020

Pay to the order of Town of Winchester $ 67.50

Sixty seven and 50/100 Dollars

Security Features Included. Details on Back.

HARVARD UNIVERSITY
EMPLOYEES CREDIT UNION
Cambridge, MA

Memo WPA Fee

Timothy J. Matthews MP

⑆211381738⑆ 00 25 351340⑈ 0565

© DELUXE WALLET OR DUPLICATE

ANTIQUE

TIMOTHY J. MATTHEWS
~~5 MULLINS CT.~~ 23 Kenwin Rd
~~CAMBRIDGE, MA 02141~~ Winchester MA 01890

53-8173 / 2113

No. 566

DATE 30 September 2020

Pay to the order of Town of Winchester $ 200.00

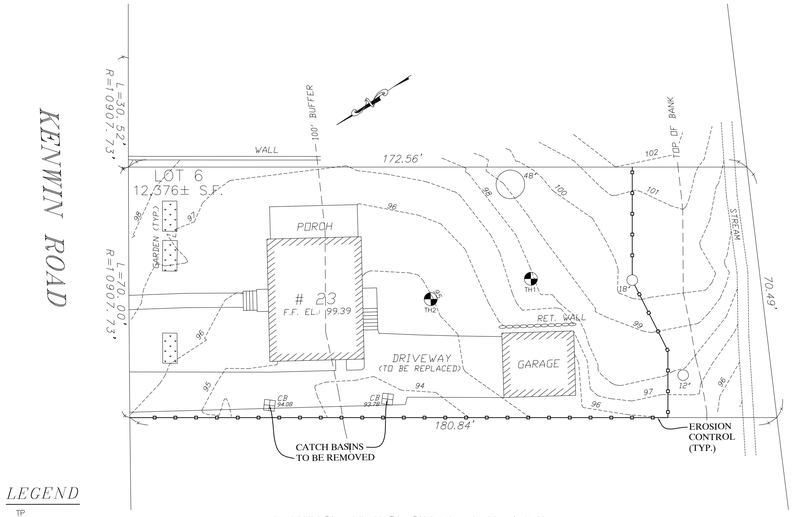
Two hundred and xx/100 DOLLARS

HARVARD UNIVERSITY
EMPLOYEES CREDIT UNION
Cambridge, MA

MEMO bylaw fee

Timothy J. Matthews

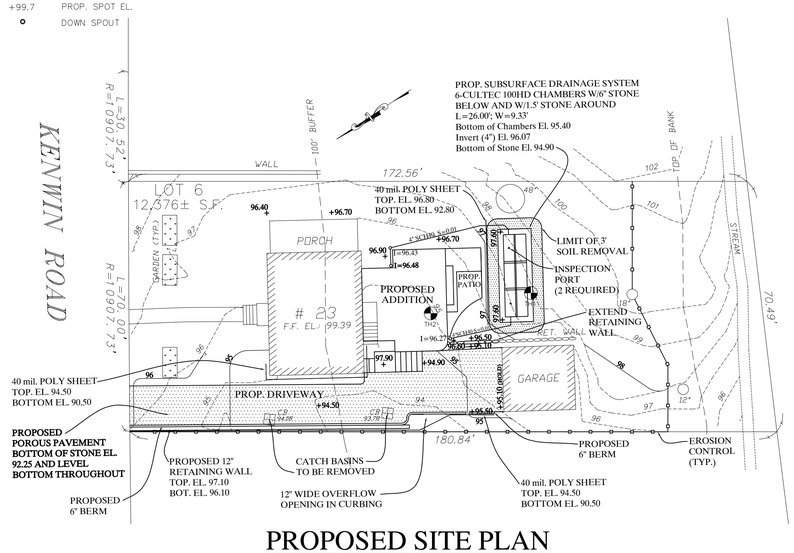
⑈211381738⑈ 00 25 351340⑈ 0566



LEGEND

TP	SOIL TEST PIT
R	RIM
I	INVERT
98	PROP. CONTOUR
+99.7	PROP. SPOT EL.
o	DOWN SPOUT

EXISTING SITE PLAN
SCALE: 1" = 20'



PROPOSED SITE PLAN
SCALE: 1" = 20'

GENERAL NOTES

1. EXISTING CONDITIONS SURVEY AND PROPERTY LINE INFORMATION OBTAINED FROM EDWARD J. FARRELL, PROFESSIONAL LAND SURVEYOR, WOBURN, MA. OWNER/CLIENT ASSUMES ALL RESPONSIBILITY FOR SOURCES AND AUTHORIZATION TO USE ELECTRONIC AND RECORD FILES.
2. THE CONTRACTOR SHALL VERIFY ALL EXISTING INFORMATION ON THE GROUND AND SHALL REPORT ALL DISCREPANCIES TO THE ENGINEER IMMEDIATELY FOR A DECISION PRIOR TO CONSTRUCTION.
3. ALL AREAS OUTSIDE OF THE LIMIT OF WORK LINES SHALL NOT BE DISTURBED IN ANY MANNER BY THE CONTRACT OPERATIONS. THE CONTRACTOR SHALL KEEP OUT OF THESE AREAS AND PRESERVE THEIR EXISTING CHARACTER.
4. INSTALL TEMPORARY EROSION CONTROL MEASURES PRIOR TO CONSTRUCTION FOR APPROVAL BY THE DESIGN ENGINEER.
5. PROVIDE SMOOTH TRANSITION AT CHANGES IN GRADE EXCEPT AS INDICATED ON THE DRAWINGS AND AS DIRECTED BY THE ENGINEER.
6. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL UNDERGROUND UTILITY LINES; ACTIVE OR NOT, AND SHALL MAINTAIN A CLOSE AND CONSTANT CONTACT WITH ALL UTILITY COMPANIES INVOLVED. CALL DIG-SAFE 888-344-7233 AND WINCHESTER DPW.
7. CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS, PERMITTING, AND LICENSES ISSUED AT THE FEDERAL, STATE AND LOCAL AGENCIES.
8. CONTRACTOR SHALL COORDINATE ALL SITE UTILITY IMPROVEMENTS WITH THE TOWN OF WINCHESTER OFFICIALS.
9. ENGINEER IS TO BE CONTACTED BY CONTRACTOR TO PERFORM AS BUILT MEASUREMENTS.
10. OWNER/DEVELOPER IS TO COMPLY WITH ALL OF MASSACHUSETTS DEP SITE DEVELOPMENT REGULATIONS.

LAYOUT & GRADING NOTES

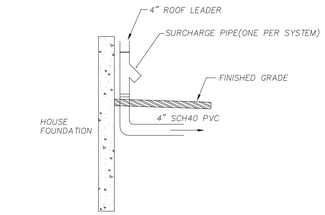
1. CONSULT ALL DRAWINGS AND SPECIFICATIONS FOR COORDINATION REQUIREMENTS BETWEEN ALL TRADES PRIOR TO COMMENCING NEW CONSTRUCTION.
2. LOCATION OF EXISTING UTILITIES SHOWN ARE DIAGRAMMATIC ONLY. CONTRACTOR SHALL CONTACT THE PROPER AUTHORITIES IN WRITING TO CONFIRM THE LOCATIONS OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. ANY DAMAGE INCURRED DURING CONSTRUCTION TO ANY UTILITY SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.
3. CONTRACTOR TO REFER TO A SURVEYOR PLOT PLAN FOR ACCURATE OFFSETS TO TO PROPERTY LINE.
4. ALL DRAINAGE PIPING IS SCH40 PVC.

DRAINAGE NOTES

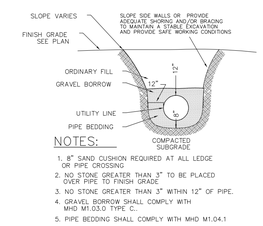
1. CONTRACTOR IS RESPONSIBLE FOR THE VERTICAL AND HORIZONTAL CONTROLS OF THE PROJECT.
2. INSTALLATION OF THE POROUS PAVERS IS TO BE PERFORMED ACCORDING TO RECOMMENDATIONS FROM THE MANUFACTURER.
3. THE MINIMUM CLEARANCE FROM THE BOTTOM OF THE POROUS PAVER STONE BED TO REFUSAL OR GROUNDWATER IS 24 INCHES. IN THE EVENT THAT THIS CLEARANCE CANNOT BE MAINTAINED, ENGINEER IS TO BE NOTIFIED.
4. BITUMINOUS POROUS PAVEMENT SYSTEM WILL REQUIRE PERIODIC MAINTENANCE.

UTILITY NOTES

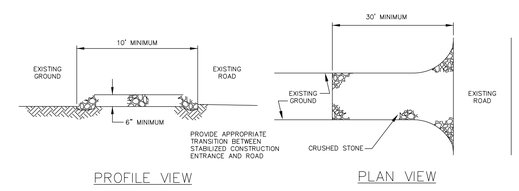
THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THIS PLAN, PRIOR TO ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION BEFORE PROCEEDING WITH THE WORK. THE LOCATION OF ALL UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED ON THE FIELD LOCATION OF ALL VISIBLE STRUCTURES SUCH AS CATCH BASINS, MANHOLES, WATERGATES, ETC. AND COMPILED FROM PLANS SUPPLIED BY VARIOUS UTILITY COMPANIES AND GOVERNMENT AGENCIES. ALL CONTRACTORS SHOULD NOTIFY, IN WRITING, ALL UTILITY COMPANIES OR AGENCIES PRIOR TO ANY EXCAVATION WORK. CALL DIGSAFE AT 1-888-344-7233.



1 C-0 ROOF LEADER W/DOWN SPOUT
SCALE: NTS



2 C-0 TYP. UTILITY TRENCH
SCALE: NTS



THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO EXISTING ROAD. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO EXISTING ROAD SHALL BE REMOVED IMMEDIATELY.

3 C-0 STABILIZED CONSTRUCTION ENTRANCE
SCALE: NTS

SOIL TEST DATA
Performed by Gala Simon Associates
Performed on 9/8/2020

TH1 (EL. 97.8)

Horizon	Depth	Texture	Mottles	Color	Other	Elevation
A	10"	FSL	–	10YR3/2	–	97.0
B	22"	FSL	–	10YR5/6	–	96.0
C	60"	SL	–	10YR4/3	–	92.8

NO WATER
NO MOTTLING
REFUSAL @ 60" EL. 92.8

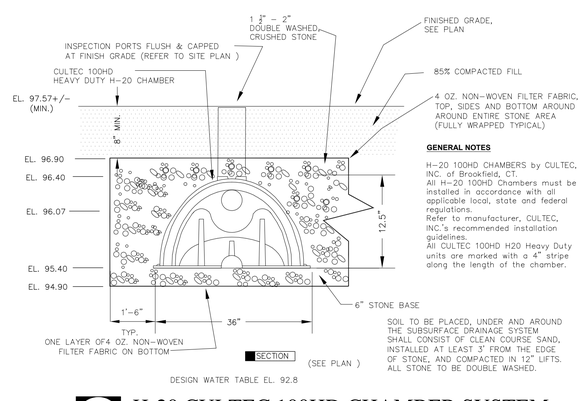
TH2 (EL. 94.9)

Horizon	Depth	Texture	Mottles	Color	Other	Elevation
C1	14"	Fill	–	N/A	–	93.7
A/B	24"	FSL	–	10YR3/2	–	92.9
C	83"	SL	–	10YR4/3	–	88.0

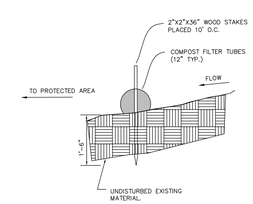
WATER @ 67" EL. 89.3
MOTTLING @ 58" EL. 90.1
REFUSAL @ 83" EL. 88.0

AS BUILT NOTES

CONTRACTOR IS TO CONTACT ENGINEER FOR AS-BUILT MEASUREMENTS PRIOR TO BACK FILLING DRAINAGE SYSTEMS.
CONTRACTOR IS TO CONTACT SURVEYOR TO VERIFY ELEVATION OF SUBSURFACE DRAINAGE SYSTEM PRIOR TO BACKFILLING

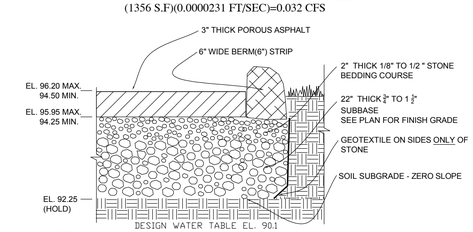


4 C-0 H-20 CULTEC 100HD CHAMBER SYSTEM
SCALE: NTS



5 C-0 EROSION CONTROL
SCALE: NTS

SYSTEM EXFILTRATION (BOTTOM ONLY)
BOTTOM AREA=1356 S.F.
USE RAWLS 1.02 IN/HR OR 0.000055 FT/SEC
(1356 S.F)(0.0000231 FT/SEC)=0.032 CFS



NOTES:
1. FINISH DRIVEWAY GRADES VARY.
2. ALL STONE TO BE DOUBLE WASHED.

6 C-0 BITUMINOUS POROUS PAVEMENT (DRIVEWAY)
SCALE: NTS

Gala Simon Associates Inc.
394 LOWELL STREET, SUITE 18
LEXINGTON, MA 02420
Tel: (781) 676-2962
Gala Simon Associates GSA
Civil Engineers

DRAINAGE/GRADING PLAN

23 KENWIN ROAD
WINCHESTER, MASSACHUSETTS

Job No. 2022		Date: 9/23/20
Drawn By: PC		Scale: AS SHOWN
Rev#	Date:	Description:

COMMONWEALTH OF MASSACHUSETTS
ALBERTO M. GALA
CIVIL
No. 39484
REGISTERED PROFESSIONAL ENGINEER

C–0

Engineering Drainage Calculations
for
23 Kenwin Road
Winchester, Massachusetts

Prepared by

Gala Simon Associates, Inc.
394 Lowell Street, Suite 18
Lexington, MA 02420
781-676-2962

September 30, 2020

Project: 23 Kenwin Road, Winchester, MA

Date: September 30, 2020

Project Narrative:

The project consists of the construction of an addition and replacement of the driveway. One subsurface drainage system is proposed in the back yard, consisting of 6 Cultec 100HD chambers, to capture runoff from the proposed partial roof area. Porous pavement is proposed for the portion of driveway to be replaced.

Soils on the site are considered Hydrological Soil Type A per USDA soil maps. On-site soil testing performed by Gala Simon Associates, Inc., on September 8, 2020 indicate sandy loam soils (group B) on-site.

The 24-hour rainfall amounts used in the hydrological calculations were obtained from the Northeast Regional Climate Center's, "Atlas of Precipitation Extremes for the Northeastern United States and Southeastern Canada."

Summary of Results:

The following table summarizes the peak flows and volumes from the property under Existing and Proposed Conditions.

Summary of Stormwater Runoff and Volume

Storm Event	***Existing Conditions Peak***		***Proposed Conditions Peak***		***Δ***	
	Runoff (cfs)	*Volume (af)*	*Runoff (cfs)*	*Volume (af)*	*Runoff (cfs)*	*Volume (af)*
2-Year (3.24 in)	0.25	0.018	0.05	0.004	-0.20	-0.014
10-Year (4.90 in)	0.63	0.043	0.16	0.011	-0.47	-0.032
25-Year (6.22 in)	0.97	0.065	0.40	0.029	-0.57	-0.036
100-Year (8.93 in)	1.72	0.117	1.65	0.071	-0.07	-0.046

Conclusions:

1. As analyzed, the peak rates of runoff and volumes will be maintained for the 2, 10, 25 and 100 year storm events.

Project: ***23 Kenwin Road, Winchester***

Date: ***September 30, 2020***

<u>Existing Conditions</u>

Total Area:	12,376 s.f.
Total Impervious Area:	3,050 s.f.
Total Lawn Area:	9,326 s.f.

<u>Hydrocad Model for Existing Conditions:</u>

Total Area:	12,376 s.f.
Impervious:	3,050 s.f.
Lawn Area:	9,326 s.f.

<u>Proposed Conditions</u>

Total Area:	12,376 s.f.
Total Impervious Area:	3,883 s.f.
Total Lawn Area:	8,493 s.f.

<u>Hydrocad Model for Proposed Conditions</u>

Total Area:	12,376 s.f.
Area into drainage system:	597 s.f.
Area into permeable pavers (total):	7,588 s.f.
Impervious:	2,925 s.f.
Lawn:	4,663 s.f.
Remainder of Land (total):	4,191 s.f.
Impervious:	361 s.f.
Lawn:	3,830 s.f.

The storm values were compared using the Existing Conditions node and the Proposed Conditions Remainder of Land node.

USDA
Soil Mapping

Hydrologic Soil Group—Middlesex County, Massachusetts

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 20, Jun 9, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 11, 2019—Oct 5, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	A	1.5	3.7%
629C	Canton-Charlton-Urban land complex, 3 to 15 percent slopes	A	21.8	54.8%
631C	Charlton-Urban land-Hollis complex, 3 to 15 percent slopes, rocky	A	16.2	40.7%
653	Udorthents, sandy		0.3	0.8%
Totals for Area of Interest			**39.9**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

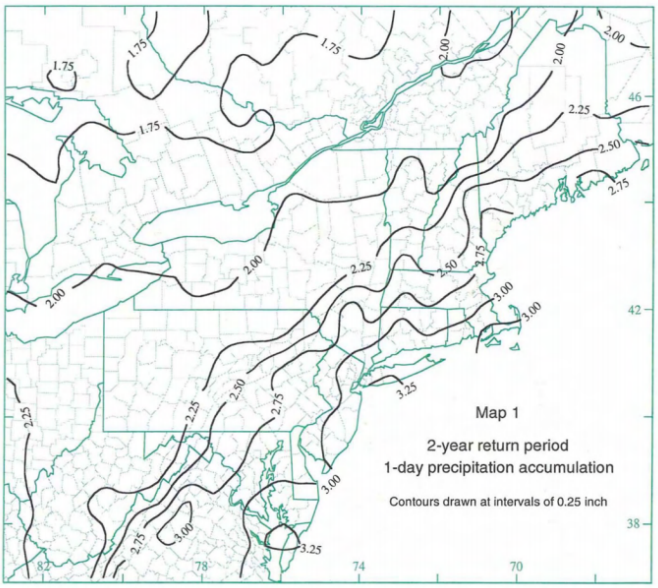
Component Percent Cutoff: None Specified

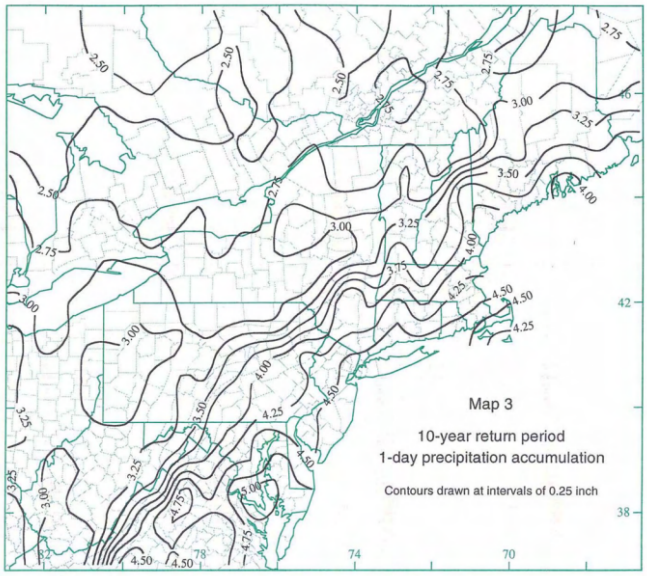
Tie-break Rule: Higher

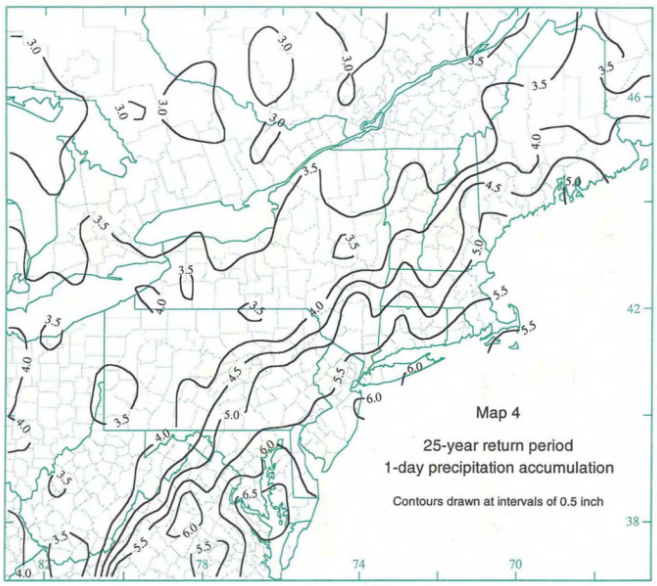
Atlas of Precipitation Extremes

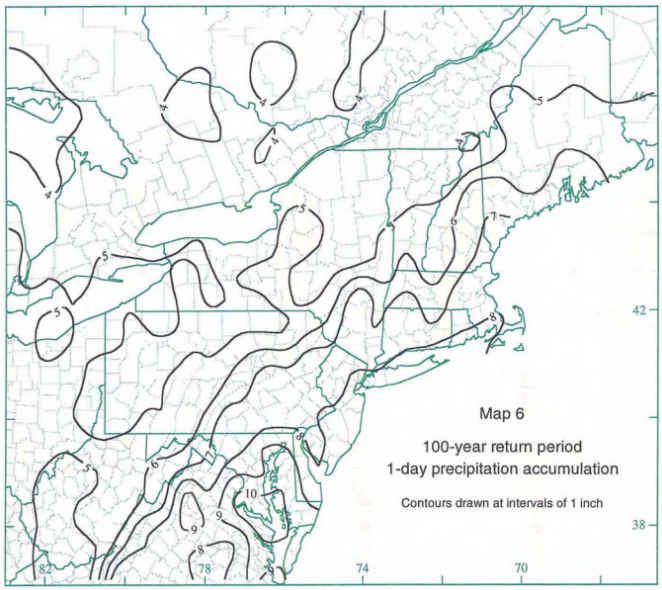
24-hour rainfall amounts obtained from the Northeast Regional Climate Center, “Atlas of Precipitation Extremes for the Northeastern United States and Southeastern Canada.”

24-Hour Storm Event	Rainfall (inches)
2-year	3.24
10-year	4.90
25-year	6.22
100-year	8.93









Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	Massachusetts
Location	
Longitude	71.124 degrees West
Latitude	42.465 degrees North
Elevation	0 feet
Date/Time	Tue, 22 Sep 2020 12:08:15 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.69	0.87	1.10	**1yr**	0.75	1.03	1.27	1.63	2.08	2.69	2.95	**1yr**	2.38	2.84	3.27	3.97	4.64	**1yr**
2yr	0.35	0.53	0.66	0.88	1.10	1.39	**2yr**	0.95	1.27	1.61	2.03	2.56	3.24	3.58	**2yr**	2.86	3.44	3.95	4.69	5.35	**2yr**
5yr	0.41	0.64	0.80	1.07	1.37	1.75	**5yr**	1.19	1.60	2.04	2.58	3.25	4.10	4.55	**5yr**	3.63	4.38	4.99	5.96	6.69	**5yr**
10yr	0.46	0.73	0.92	1.25	1.62	2.09	**10yr**	1.40	1.90	2.44	3.09	3.90	4.90	5.46	**10yr**	4.34	5.25	5.97	7.14	7.94	**10yr**
25yr	0.55	0.87	1.11	1.53	2.02	2.63	**25yr**	1.75	2.38	3.09	3.93	4.96	6.22	6.95	**25yr**	5.51	6.68	7.56	9.08	9.95	**25yr**
50yr	0.61	0.99	1.27	1.78	2.40	3.15	**50yr**	2.07	2.84	3.71	4.73	5.96	7.45	8.35	**50yr**	6.59	8.03	9.05	10.89	11.81	**50yr**
100yr	0.71	1.15	1.48	2.09	2.84	3.76	**100yr**	2.45	3.38	4.44	5.66	7.14	8.93	10.04	**100yr**	7.90	9.65	10.83	13.06	14.03	**100yr**
200yr	0.81	1.32	1.70	2.44	3.37	4.49	**200yr**	2.91	4.02	5.31	6.80	8.57	10.70	12.07	**200yr**	9.47	11.60	12.97	15.68	16.67	**200yr**
500yr	0.97	1.60	2.08	3.02	4.23	5.68	**500yr**	3.65	5.07	6.74	8.64	10.91	13.61	15.41	**500yr**	12.04	14.82	16.46	19.98	20.95	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.25	0.38	0.46	0.62	0.77	0.85	**1yr**	0.66	0.83	1.15	1.41	1.76	2.38	2.42	**1yr**	2.11	2.32	2.91	3.53	3.85	**1yr**
2yr	0.33	0.51	0.62	0.85	1.04	1.25	**2yr**	0.90	1.22	1.44	1.90	2.46	3.12	3.45	**2yr**	2.77	3.32	3.79	4.53	5.17	**2yr**
5yr	0.38	0.59	0.74	1.01	1.29	1.50	**5yr**	1.11	1.47	1.71	2.22	2.85	3.75	4.13	**5yr**	3.32	3.97	4.56	5.43	6.15	**5yr**
10yr	0.43	0.66	0.81	1.14	1.47	1.72	**10yr**	1.27	1.68	1.95	2.50	3.20	4.30	4.78	**10yr**	3.80	4.60	5.22	6.21	7.01	**10yr**
25yr	0.49	0.75	0.93	1.33	1.75	2.04	**25yr**	1.51	2.00	2.31	2.93	3.73	5.13	5.77	**25yr**	4.54	5.55	6.25	7.38	8.32	**25yr**
50yr	0.54	0.83	1.03	1.48	1.99	2.34	**50yr**	1.72	2.29	2.63	3.31	4.18	5.82	6.65	**50yr**	5.15	6.39	7.14	8.38	9.45	**50yr**
100yr	0.61	0.92	1.15	1.66	2.28	2.67	**100yr**	1.97	2.61	2.99	3.71	4.69	6.66	7.68	**100yr**	5.89	7.39	8.18	9.47	10.73	**100yr**
200yr	0.68	1.03	1.30	1.88	2.62	3.06	**200yr**	2.26	2.99	3.39	4.18	5.28	7.57	8.89	**200yr**	6.70	8.55	9.37	10.67	12.17	**200yr**
500yr	0.79	1.18	1.52	2.21	3.14	3.65	**500yr**	2.71	3.57	4.02	4.90	6.17	8.97	10.81	**500yr**	7.94	10.40	11.20	12.45	14.35	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.31	0.47	0.58	0.78	0.96	1.12	**1yr**	0.83	1.09	1.30	1.74	2.22	2.87	3.21	**1yr**	2.54	3.09	3.53	4.35	5.06	**1yr**
2yr	0.36	0.56	0.68	0.93	1.14	1.35	**2yr**	0.99	1.32	1.56	2.05	2.65	3.38	3.75	**2yr**	2.99	3.61	4.11	4.90	5.55	**2yr**
5yr	0.45	0.69	0.86	1.18	1.50	1.76	**5yr**	1.29	1.72	2.03	2.63	3.35	4.49	5.03	**5yr**	3.98	4.84	5.49	6.49	7.26	**5yr**
10yr	0.55	0.84	1.04	1.45	1.88	2.17	**10yr**	1.62	2.12	2.50	3.19	4.02	5.60	6.31	**10yr**	4.95	6.07	6.82	8.06	8.91	**10yr**
25yr	0.71	1.08	1.34	1.92	2.52	2.84	**25yr**	2.18	2.78	3.31	4.11	5.10	7.48	8.51	**25yr**	6.62	8.18	9.12	10.78	11.72	**25yr**
50yr	0.86	1.31	1.63	2.35	3.16	3.50	**50yr**	2.72	3.42	4.08	4.99	6.12	9.34	10.65	**50yr**	8.27	10.24	11.36	13.44	14.43	**50yr**
100yr	1.06	1.60	2.00	2.89	3.96	4.31	**100yr**	3.42	4.21	5.04	6.11	7.34	11.66	13.34	**100yr**	10.32	12.83	14.16	16.81	17.80	**100yr**
200yr	1.29	1.94	2.46	3.56	4.96	5.30	**200yr**	4.28	5.19	6.24	7.42	8.80	14.57	16.71	**200yr**	12.89	16.07	17.66	21.03	21.98	**200yr**
500yr	1.68	2.51	3.22	4.68	6.66	6.98	**500yr**	5.75	6.82	8.28	9.59	11.19	19.58	22.51	**500yr**	17.33	21.64	23.64	28.33	29.08	**500yr**

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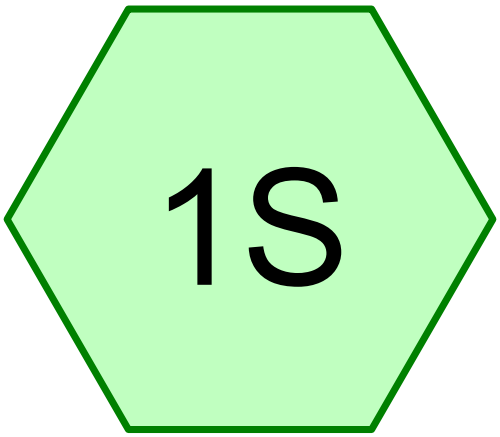
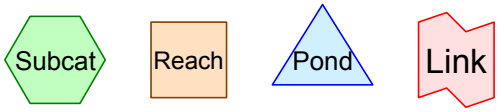
Existing Conditions
2, 10, 25 and 100 Year Storm Events



Existing Conditions



Drainage Diagram for [2022] Existing Conditions
Prepared by Gala Simon Associates 9/30/2020
HydroCAD® 8.00 s/n 004688 © 2006 HydroCAD Software Solutions LLC

Subcatchment 1S: Existing Conditions

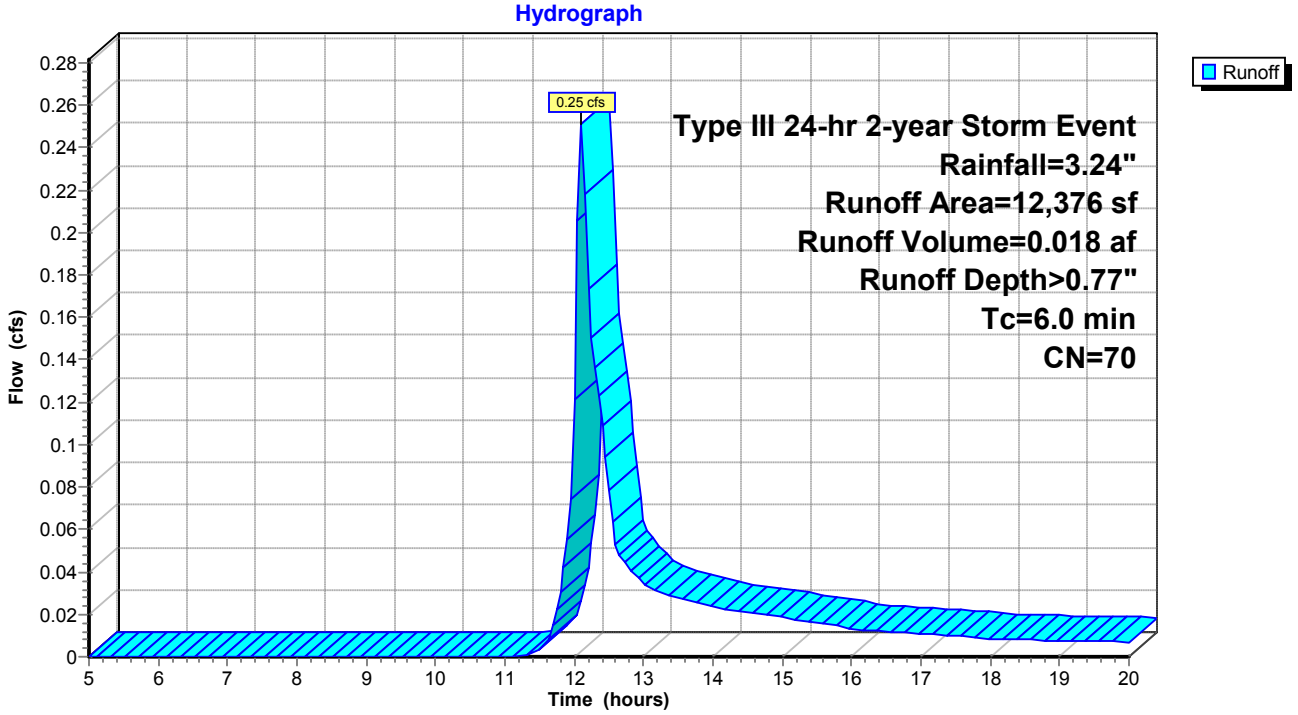
Runoff = 0.25 cfs @ 12.10 hrs, Volume= 0.018 af, Depth> 0.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Storm Event Rainfall=3.24"

Area (sf)	CN	Description
3,050	98	Paved parking & roofs
9,326	61	>75% Grass cover, Good, HSG B
12,376	70	Weighted Average
9,326		Pervious Area
3,050		Impervious Area

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

Subcatchment 1S: Existing Conditions



Subcatchment 1S: Existing Conditions

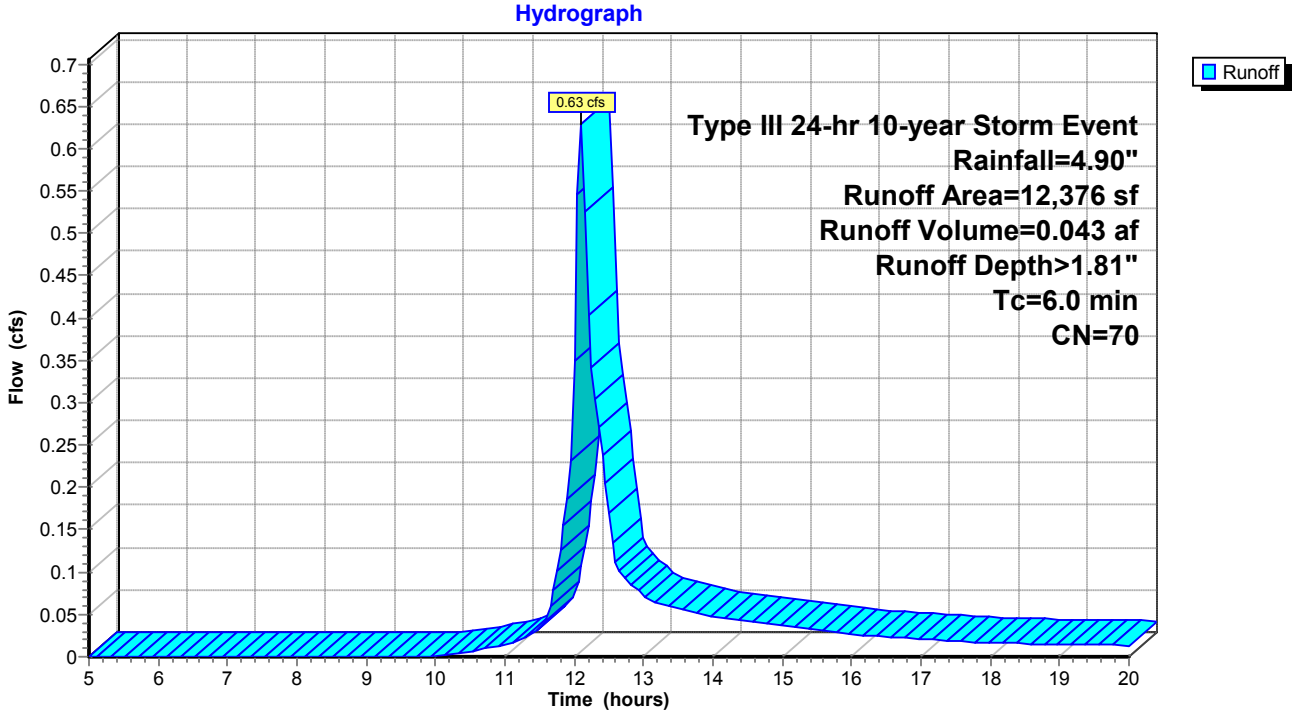
Runoff = 0.63 cfs @ 12.10 hrs, Volume= 0.043 af, Depth> 1.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Storm Event Rainfall=4.90"

Area (sf)	CN	Description
3,050	98	Paved parking & roofs
9,326	61	>75% Grass cover, Good, HSG B
12,376	70	Weighted Average
9,326		Pervious Area
3,050		Impervious Area

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

Subcatchment 1S: Existing Conditions



Subcatchment 1S: Existing Conditions

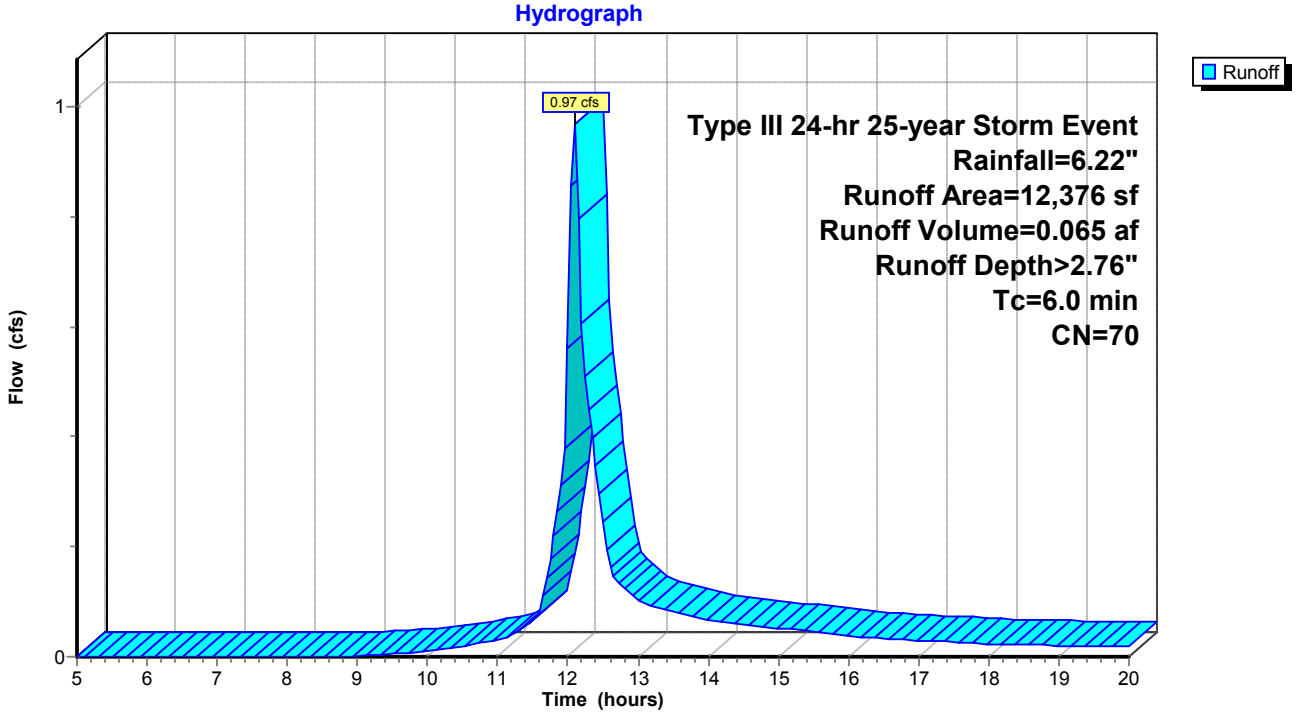
Runoff = 0.97 cfs @ 12.09 hrs, Volume= 0.065 af, Depth> 2.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Storm Event Rainfall=6.22"

Area (sf)	CN	Description
3,050	98	Paved parking & roofs
9,326	61	>75% Grass cover, Good, HSG B
12,376	70	Weighted Average
9,326		Pervious Area
3,050		Impervious Area

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

Subcatchment 1S: Existing Conditions



Subcatchment 1S: Existing Conditions

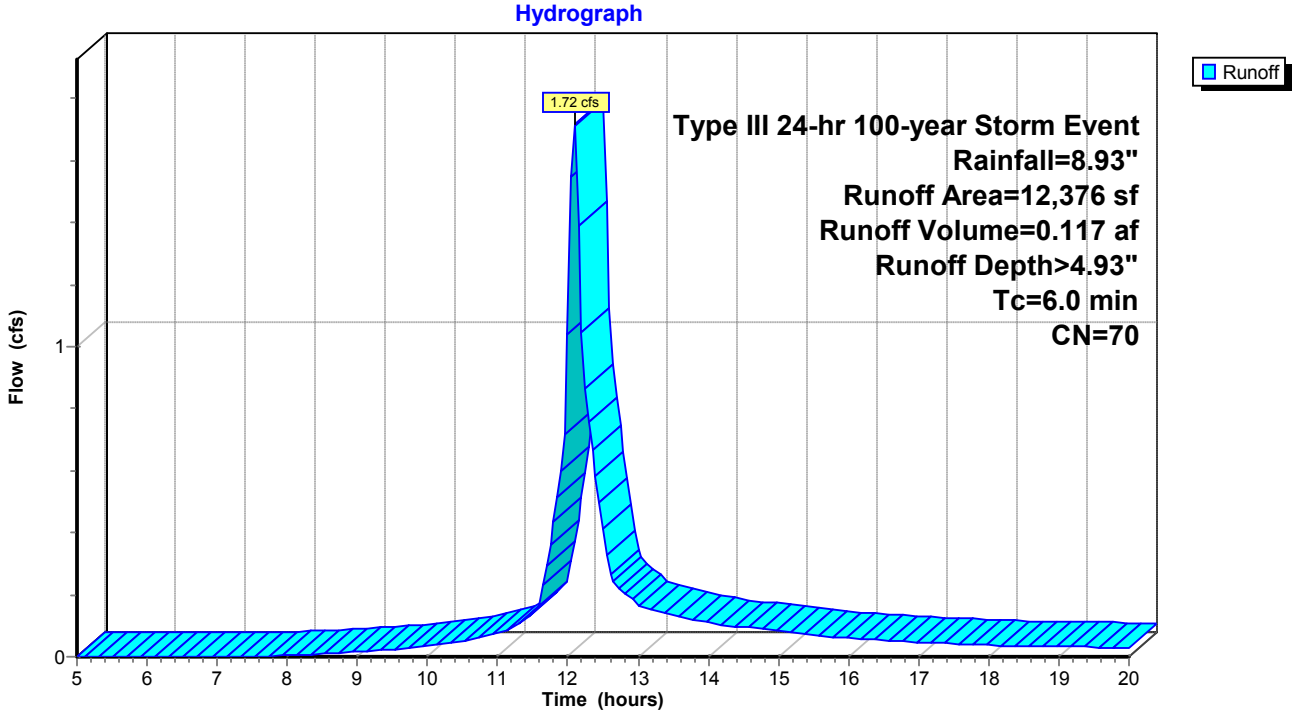
Runoff = 1.72 cfs @ 12.09 hrs, Volume= 0.117 af, Depth> 4.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Storm Event Rainfall=8.93"

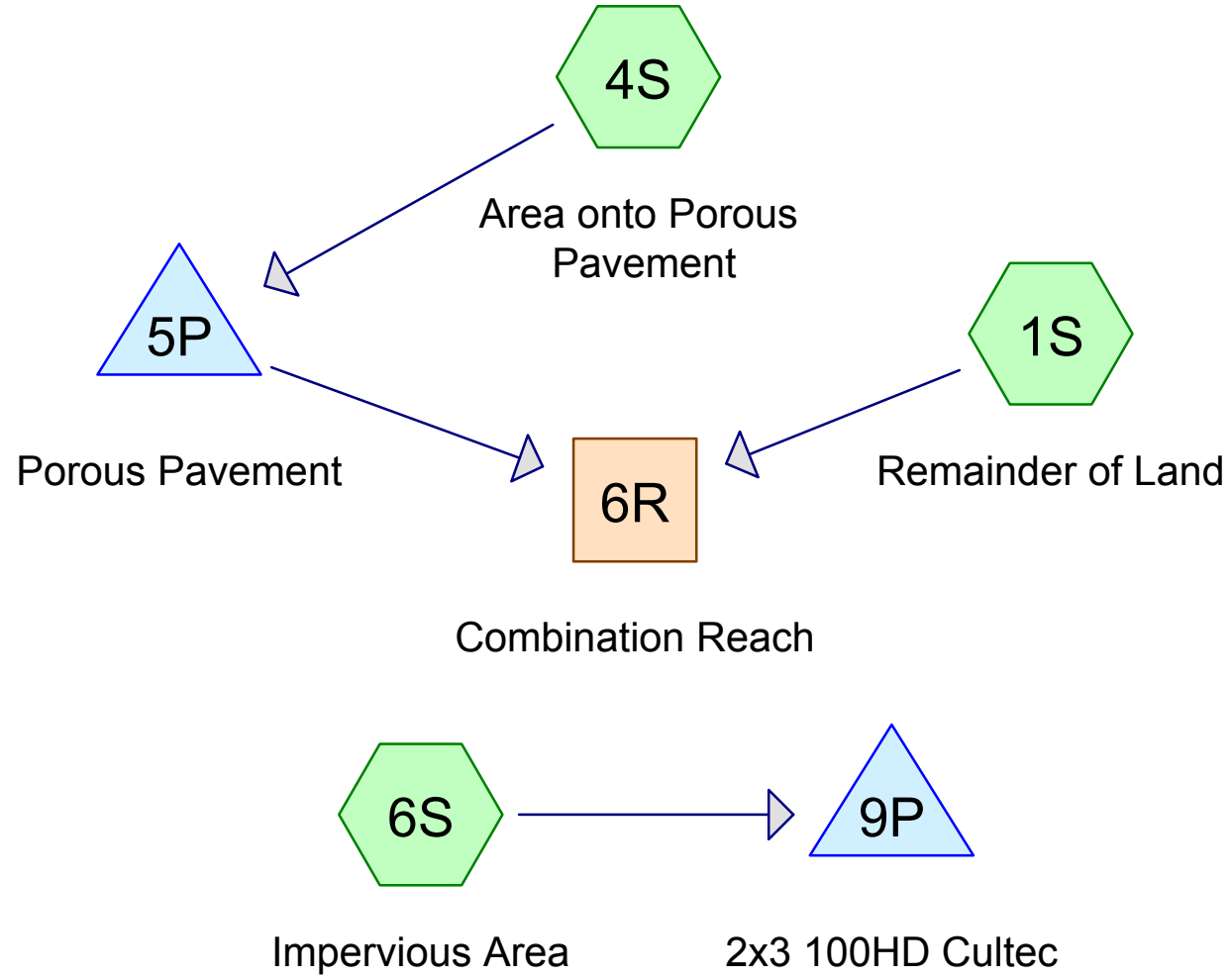
Area (sf)	CN	Description
3,050	98	Paved parking & roofs
9,326	61	>75% Grass cover, Good, HSG B
12,376	70	Weighted Average
9,326		Pervious Area
3,050		Impervious Area

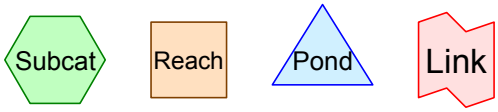
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: Existing Conditions



Proposed Conditions
2, 10, 25 and 100 Year Storm Events





Drainage Diagram for [2022] Proposed Conditions
Prepared by Gala Simon Associates 9/30/2020
HydroCAD® 8.00 s/n 004688 © 2006 HydroCAD Software Solutions LLC

Subcatchment 1S: Remainder of Land

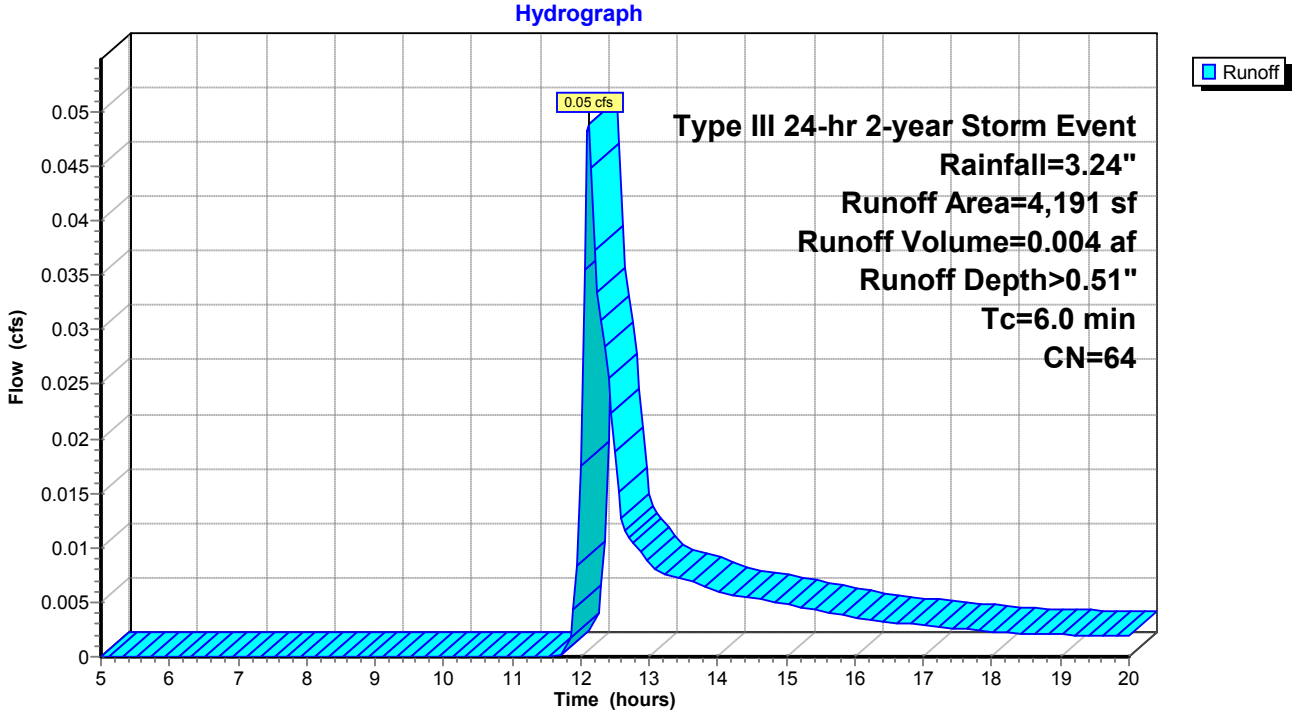
Runoff = 0.05 cfs @ 12.11 hrs, Volume= 0.004 af, Depth> 0.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Storm Event Rainfall=3.24"

Area (sf)	CN	Description
361	98	Paved parking & roofs
3,830	61	>75% Grass cover, Good, HSG B
4,191	64	Weighted Average
3,830		Pervious Area
361		Impervious Area

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

Subcatchment 1S: Remainder of Land



Subcatchment 4S: Area onto Porous Pavement

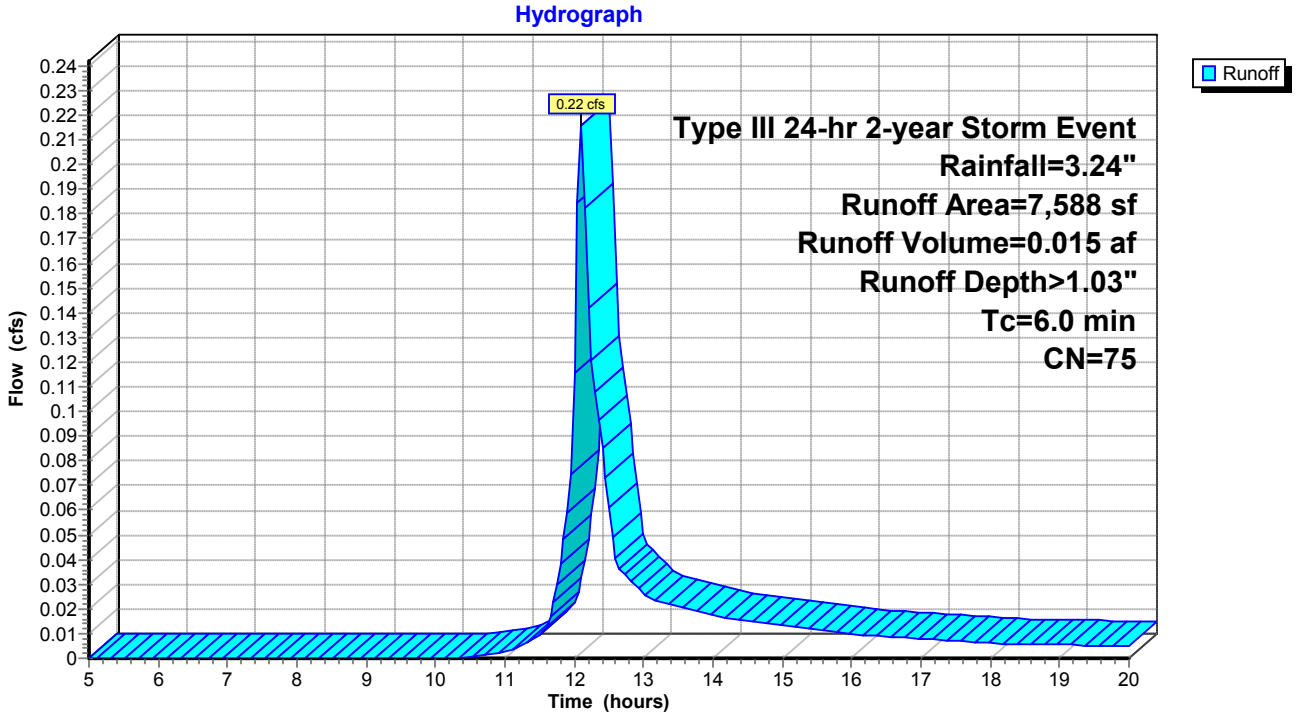
Runoff = 0.22 cfs @ 12.10 hrs, Volume= 0.015 af, Depth> 1.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Storm Event Rainfall=3.24"

Area (sf)	CN	Description
1,335	98	Driveway
4,663	61	>75% Grass cover, Good, HSG B
1,590	98	Existing Dwelling, Walkways
7,588	75	Weighted Average
4,663		Pervious Area
2,925		Impervious Area

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

Subcatchment 4S: Area onto Porous Pavement



Subcatchment 6S: Impervious Area

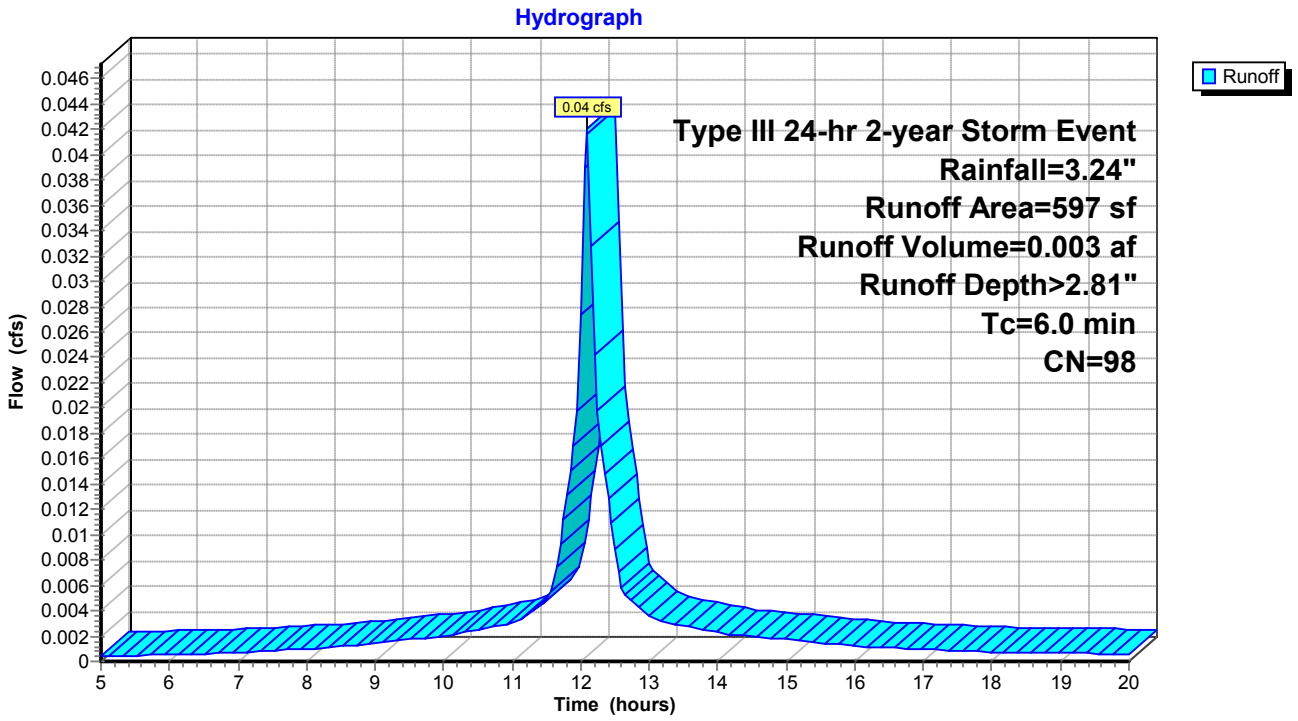
Runoff = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af, Depth> 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Storm Event Rainfall=3.24"

Area (sf)	CN	Description
597	98	Proposed Addition
597		Impervious Area

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

Subcatchment 6S: Impervious Area

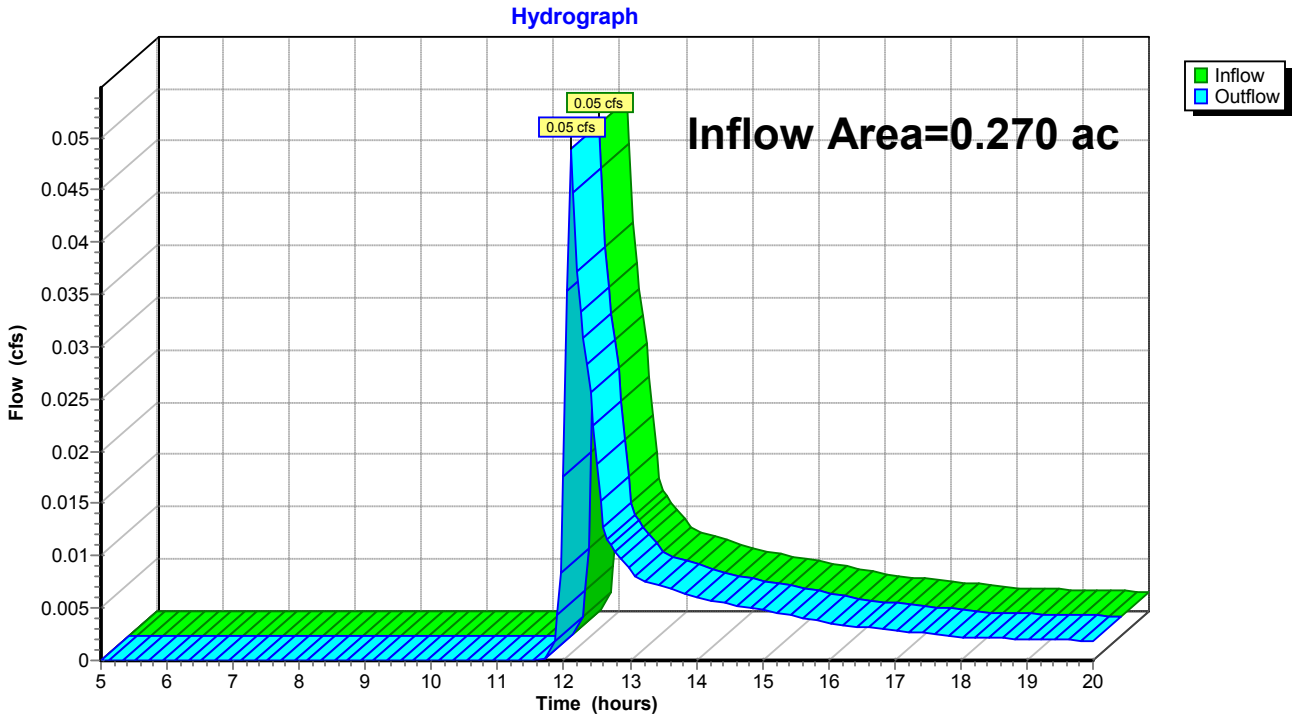


Reach 6R: Combination Reach

Inflow Area = 0.270 ac, Inflow Depth > 0.18" for 2-year Storm Event event
Inflow = 0.05 cfs @ 12.11 hrs, Volume= 0.004 af
Outflow = 0.05 cfs @ 12.11 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

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

Reach 6R: Combination Reach



Pond 5P: Porous Pavement

Inflow Area =	0.174 ac,	Inflow Depth >	1.03"	for	2-year Storm Event event
Inflow =	0.22 cfs @	12.10 hrs,	Volume=	0.015 af	
Outflow =	0.03 cfs @	11.80 hrs,	Volume=	0.015 af,	Atten= 85%, Lag= 0.0 min
Discarded =	0.03 cfs @	11.80 hrs,	Volume=	0.015 af	
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 93.12' @ 12.79 hrs Surf.Area= 0 sf Storage= 211 cf

Plug-Flow detention time= 54.9 min calculated for 0.015 af (100% of inflow)
Center-of-Mass det. time= 54.6 min (870.0 - 815.3)

Volume	Invert	Avail.Storage	Storage Description
#1	92.25'	895 cf	**Custom Stage Data** Listed below

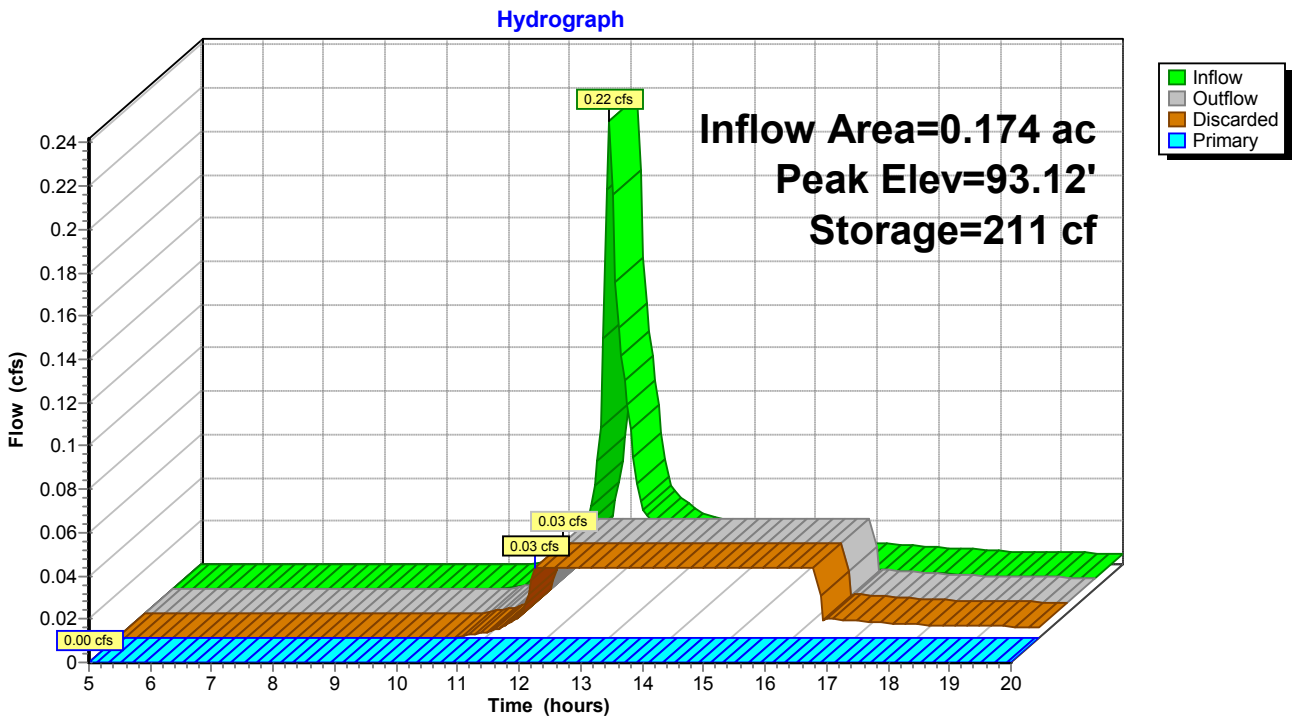
Elevation (feet)	Cum.Store (cubic-feet)
92.25	0
95.95	895

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**Special & User-Defined** Elev. (feet) 92.25 92.26 95.95 Disch. (cfs) 0.000 0.032 0.032
#2	Primary	95.00'	**1.00' W x 0.50' H Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.03 cfs @ 11.80 hrs HW=92.26' (Free Discharge)
└─**1=Special & User-Defined** (Custom Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=92.25' (Free Discharge)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 5P: Porous Pavement



Pond 9P: 2x3 100HD Cultec

Inflow Area = 0.014 ac, Inflow Depth > 2.81" for 2-year Storm Event event
Inflow = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af
Outflow = 0.01 cfs @ 11.65 hrs, Volume= 0.003 af, Atten= 86%, Lag= 0.0 min
Discarded = 0.01 cfs @ 11.65 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 95.42' @ 12.60 hrs Surf.Area= 0 sf Storage= 43 cf

Plug-Flow detention time= 45.8 min calculated for 0.003 af (100% of inflow)
Center-of-Mass det. time= 45.2 min (783.7 - 738.4)

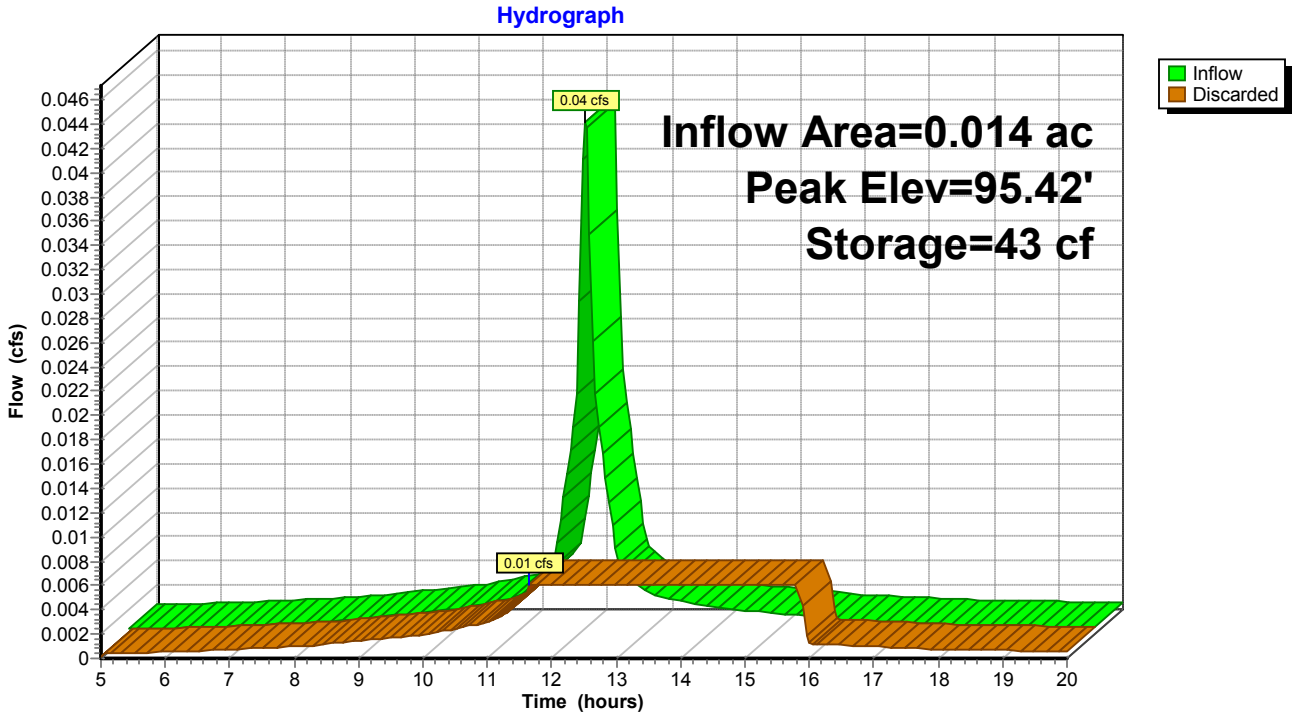
Volume	Invert	Avail.Storage	Storage Description
#1	94.90'	220 cf	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (cubic-feet)
94.90	0
95.40	40
95.90	119
96.40	180
96.90	220

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**Special & User-Defined** Elev. (feet) 94.90 94.91 96.90 Disch. (cfs) 0.000 0.006 0.006

Discarded OutFlow Max=0.01 cfs @ 11.65 hrs HW=94.91' (Free Discharge)
└─**1=Special & User-Defined** (Custom Controls 0.01 cfs)

Pond 9P: 2x3 100HD Cultec



Subcatchment 1S: Remainder of Land

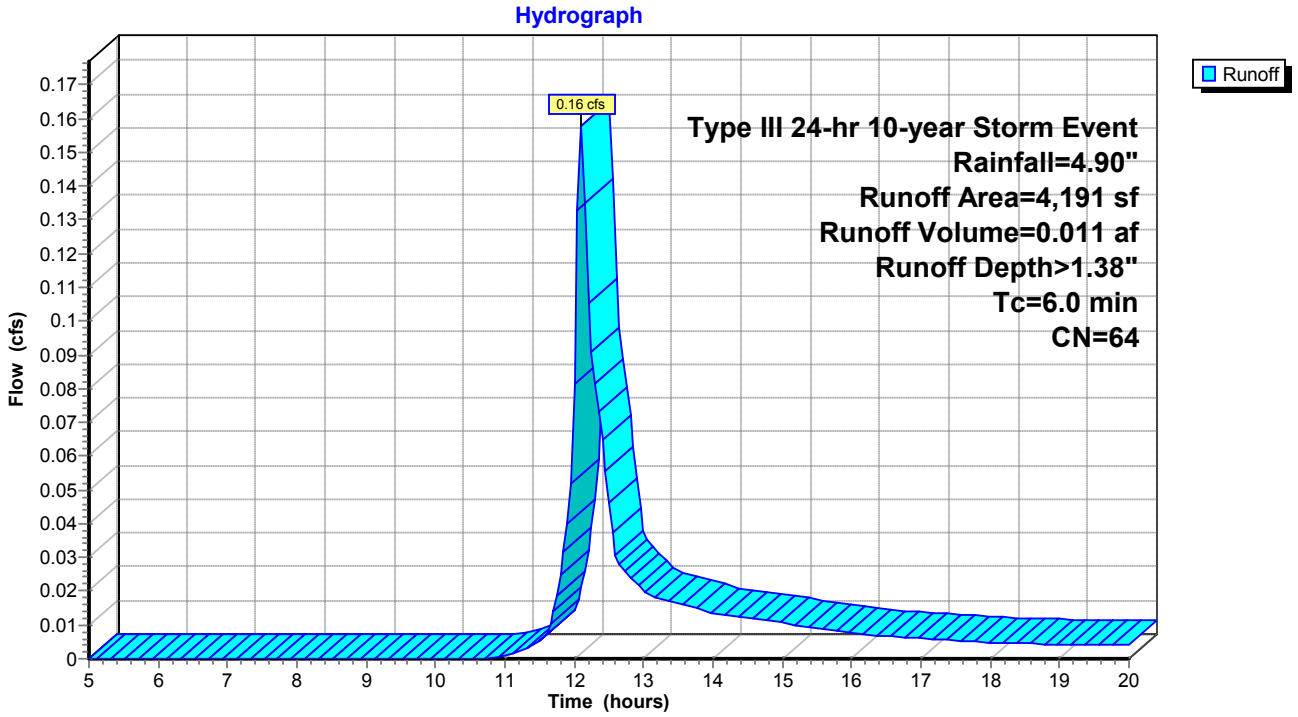
Runoff = 0.16 cfs @ 12.10 hrs, Volume= 0.011 af, Depth> 1.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Storm Event Rainfall=4.90"

Area (sf)	CN	Description
361	98	Paved parking & roofs
3,830	61	>75% Grass cover, Good, HSG B
4,191	64	Weighted Average
3,830		Pervious Area
361		Impervious Area

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

Subcatchment 1S: Remainder of Land



Subcatchment 4S: Area onto Porous Pavement

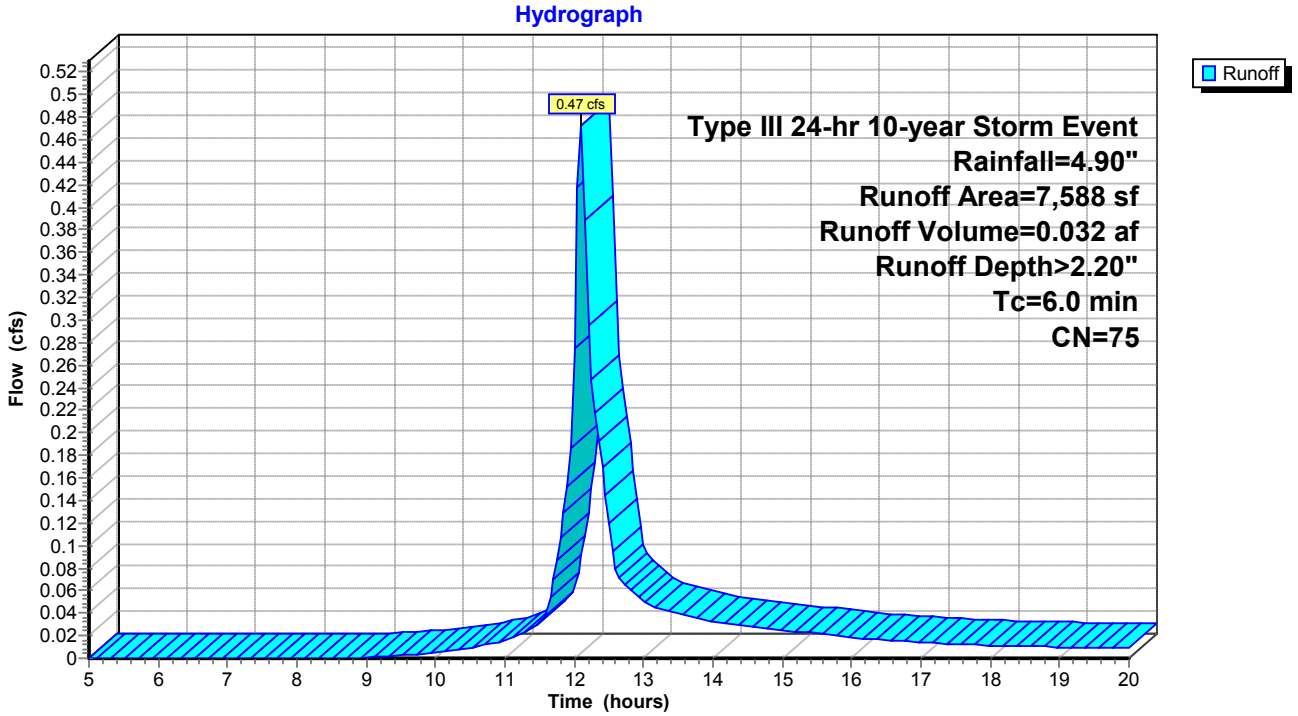
Runoff = 0.47 cfs @ 12.09 hrs, Volume= 0.032 af, Depth> 2.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Storm Event Rainfall=4.90"

Area (sf)	CN	Description
1,335	98	Driveway
4,663	61	>75% Grass cover, Good, HSG B
1,590	98	Existing Dwelling, Walkways
7,588	75	Weighted Average
4,663		Pervious Area
2,925		Impervious Area

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

Subcatchment 4S: Area onto Porous Pavement



Subcatchment 6S: Impervious Area

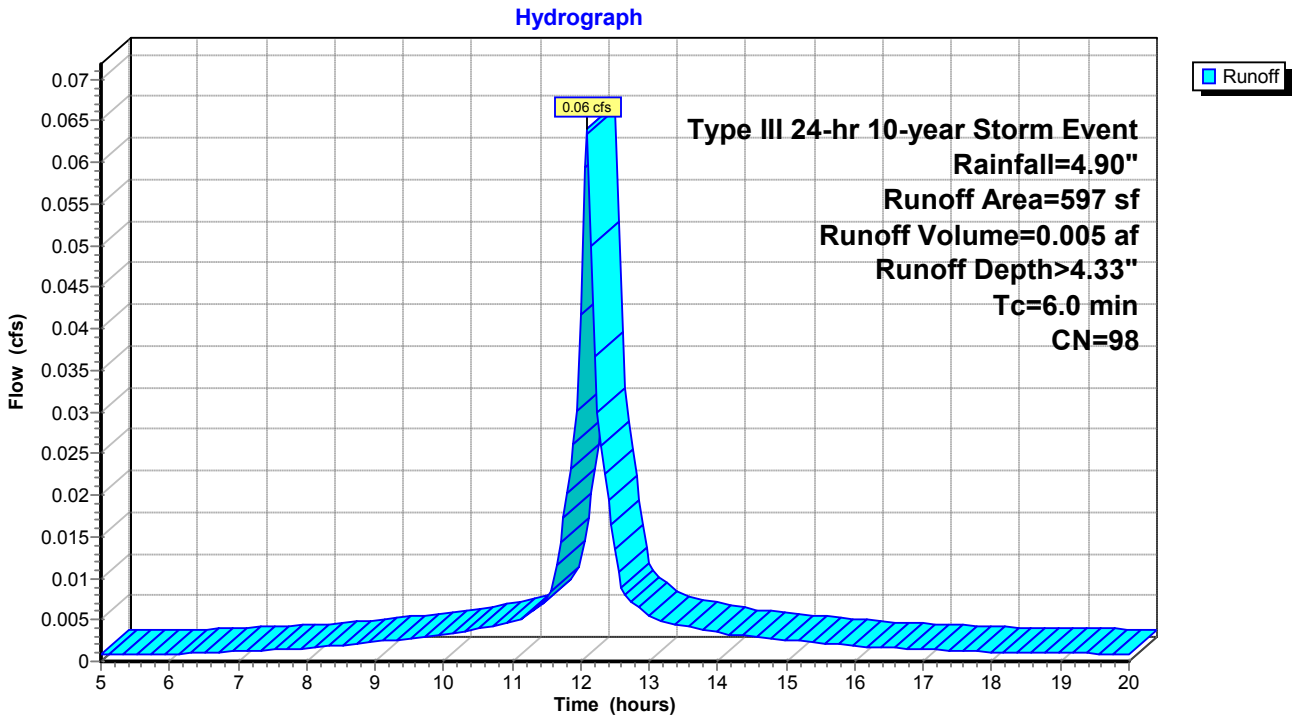
Runoff = 0.06 cfs @ 12.09 hrs, Volume= 0.005 af, Depth> 4.33"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Storm Event Rainfall=4.90"

Area (sf)	CN	Description
597	98	Proposed Addition
597		Impervious Area

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

Subcatchment 6S: Impervious Area

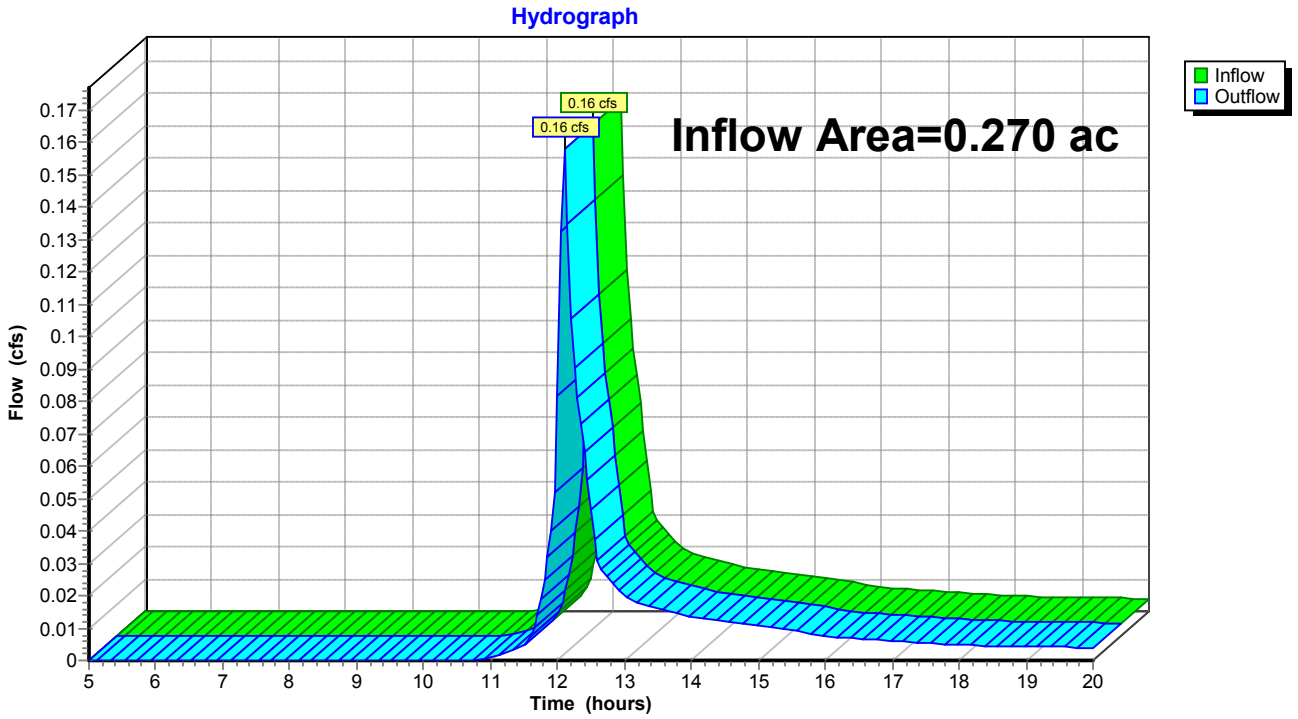


Reach 6R: Combination Reach

Inflow Area = 0.270 ac, Inflow Depth > 0.49" for 10-year Storm Event event
Inflow = 0.16 cfs @ 12.10 hrs, Volume= 0.011 af
Outflow = 0.16 cfs @ 12.10 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min

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

Reach 6R: Combination Reach



Pond 5P: Porous Pavement

Inflow Area =	0.174 ac,	Inflow Depth >	2.20"	for	10-year Storm Event event
Inflow =	0.47 cfs @	12.09 hrs,	Volume=	0.032 af	
Outflow =	0.03 cfs @	11.55 hrs,	Volume=	0.024 af,	Atten= 93%, Lag= 0.0 min
Discarded =	0.03 cfs @	11.55 hrs,	Volume=	0.024 af	
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 94.98' @ 14.07 hrs Surf.Area= 0 sf Storage= 660 cf

Plug-Flow detention time= 183.3 min calculated for 0.024 af (77% of inflow)
Center-of-Mass det. time= 124.2 min (922.5 - 798.3)

Volume	Invert	Avail.Storage	Storage Description
#1	92.25'	895 cf	**Custom Stage Data** Listed below

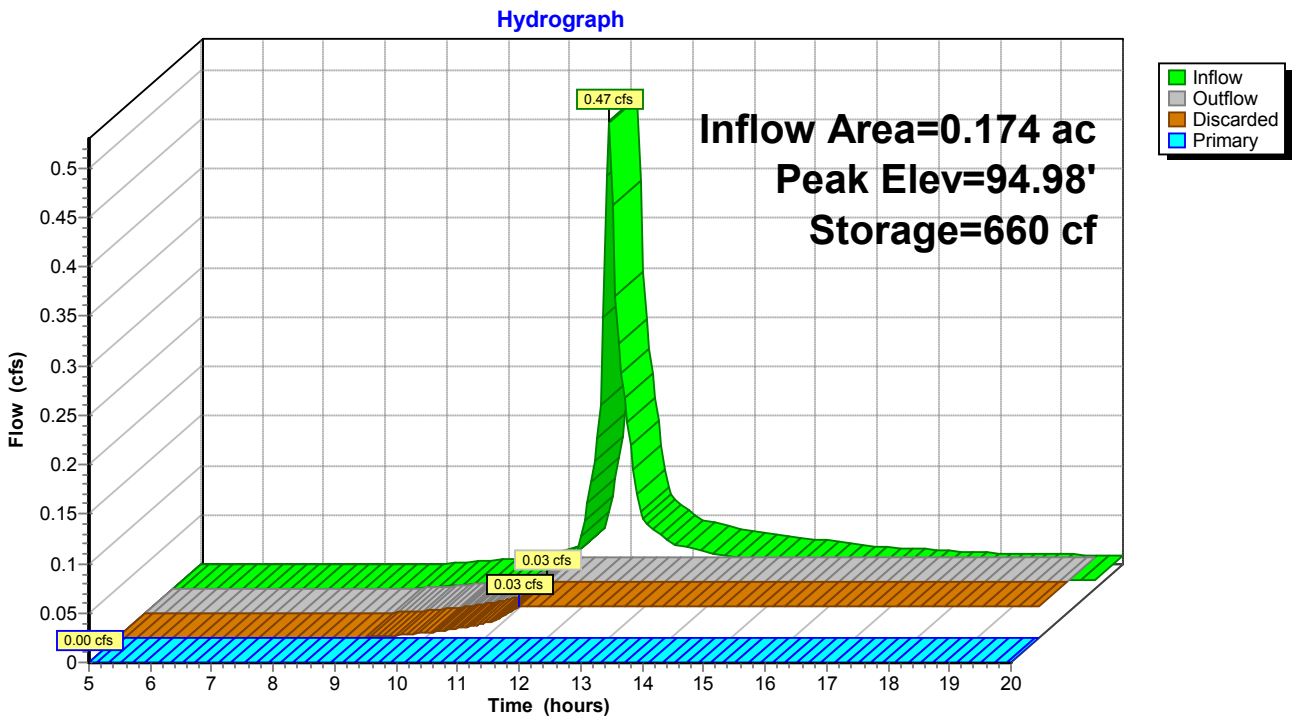
Elevation (feet)	Cum.Store (cubic-feet)
92.25	0
95.95	895

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**Special & User-Defined** Elev. (feet) 92.25 92.26 95.95 Disch. (cfs) 0.000 0.032 0.032
#2	Primary	95.00'	**1.00' W x 0.50' H Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.03 cfs @ 11.55 hrs HW=92.26' (Free Discharge)
└─**1=Special & User-Defined** (Custom Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=92.25' (Free Discharge)
└─**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 5P: Porous Pavement



Pond 9P: 2x3 100HD Cultec

Inflow Area = 0.014 ac, Inflow Depth > 4.33" for 10-year Storm Event event
Inflow = 0.06 cfs @ 12.09 hrs, Volume= 0.005 af
Outflow = 0.01 cfs @ 11.35 hrs, Volume= 0.005 af, Atten= 91%, Lag= 0.0 min
Discarded = 0.01 cfs @ 11.35 hrs, Volume= 0.005 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 95.65' @ 12.92 hrs Surf.Area= 0 sf Storage= 79 cf

Plug-Flow detention time= 97.1 min calculated for 0.005 af (100% of inflow)
Center-of-Mass det. time= 96.4 min (831.6 - 735.2)

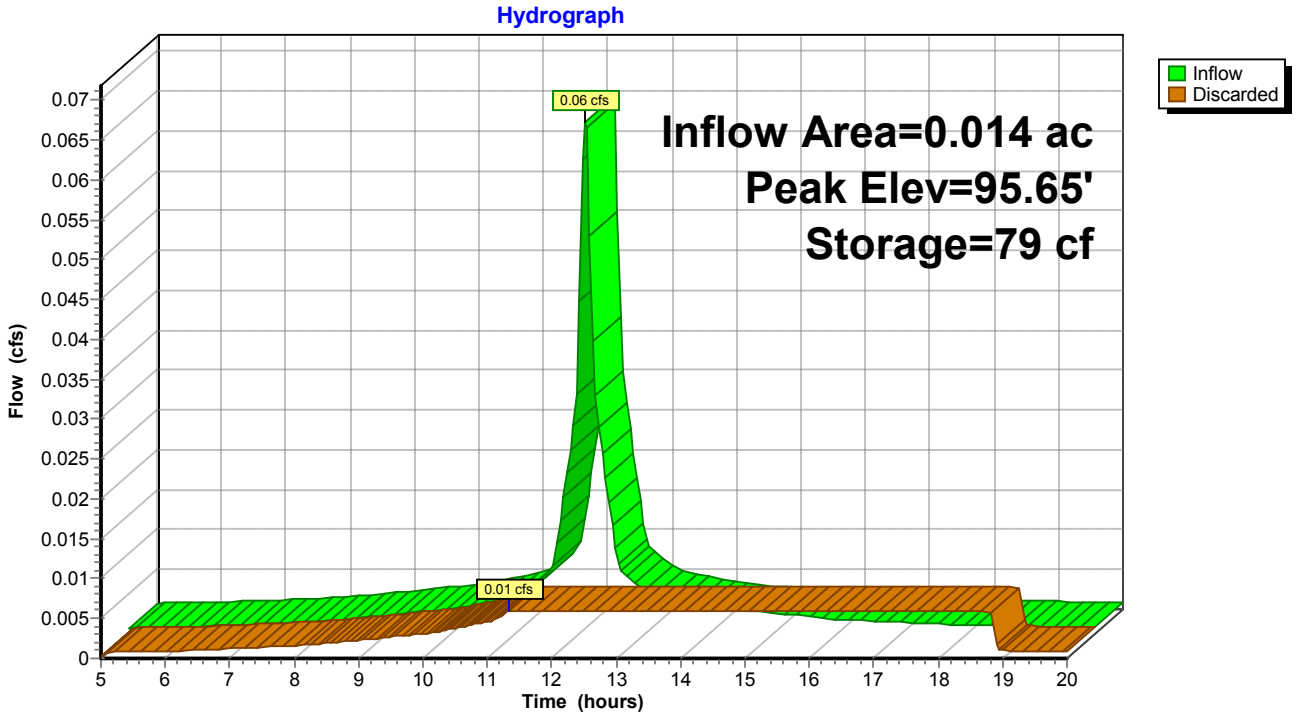
Volume	Invert	Avail.Storage	Storage Description
#1	94.90'	220 cf	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (cubic-feet)
94.90	0
95.40	40
95.90	119
96.40	180
96.90	220

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**Special & User-Defined** Elev. (feet) 94.90 94.91 96.90 Disch. (cfs) 0.000 0.006 0.006

Discarded OutFlow Max=0.01 cfs @ 11.35 hrs HW=94.91' (Free Discharge)
└─**1=Special & User-Defined** (Custom Controls 0.01 cfs)

Pond 9P: 2x3 100HD Cultec



Subcatchment 1S: Remainder of Land

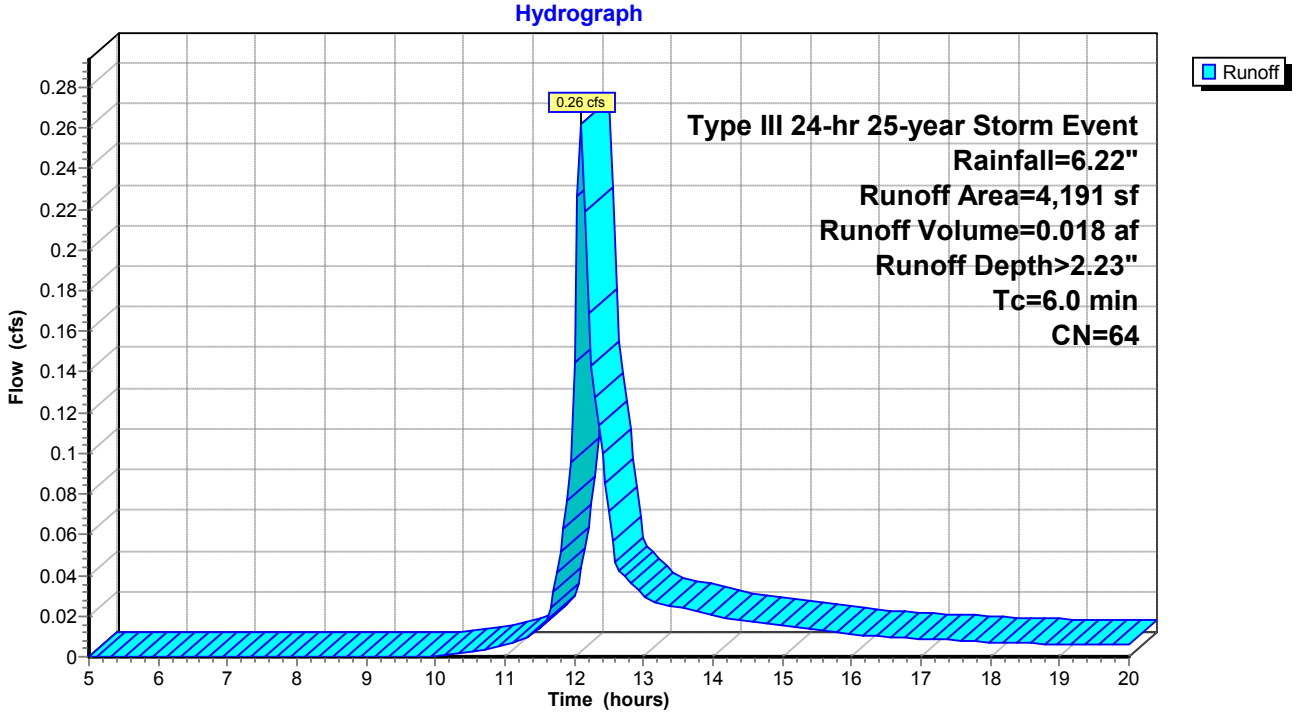
Runoff = 0.26 cfs @ 12.10 hrs, Volume= 0.018 af, Depth> 2.23"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Storm Event Rainfall=6.22"

Area (sf)	CN	Description
361	98	Paved parking & roofs
3,830	61	>75% Grass cover, Good, HSG B
4,191	64	Weighted Average
3,830		Pervious Area
361		Impervious Area

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

Subcatchment 1S: Remainder of Land



Subcatchment 4S: Area onto Porous Pavement

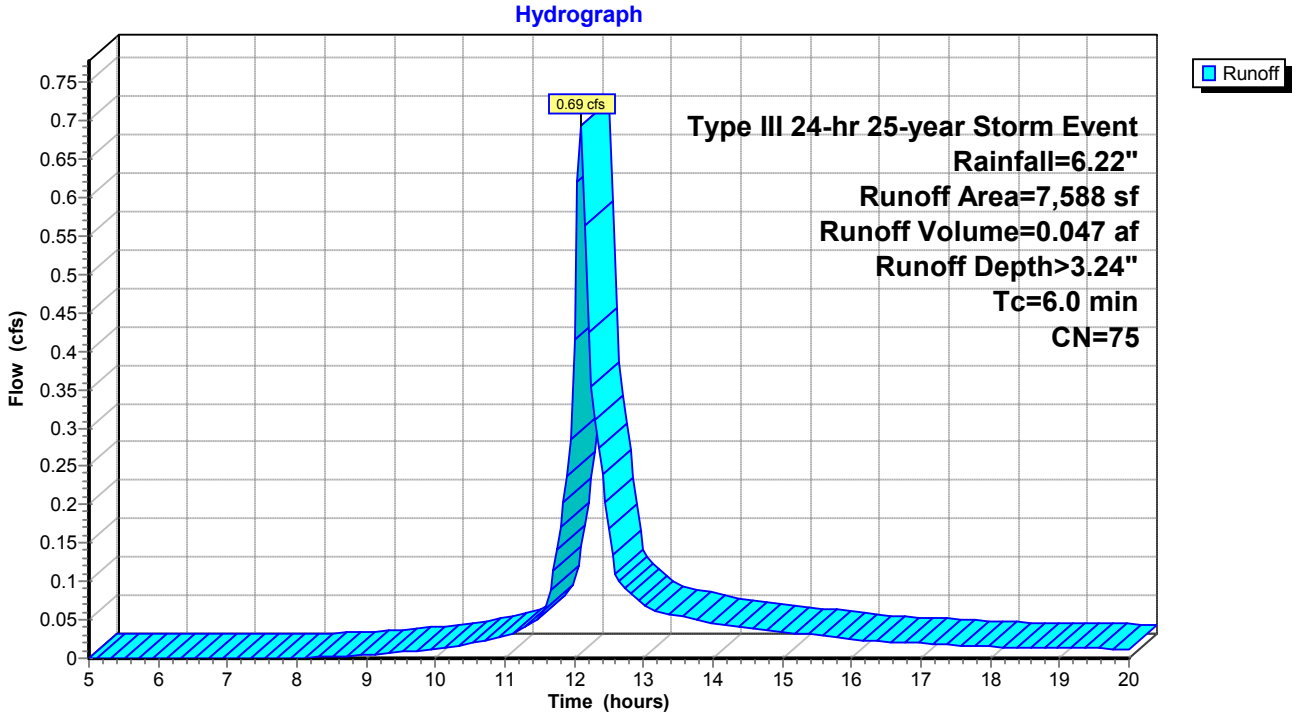
Runoff = 0.69 cfs @ 12.09 hrs, Volume= 0.047 af, Depth> 3.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Storm Event Rainfall=6.22"

Area (sf)	CN	Description
1,335	98	Driveway
4,663	61	>75% Grass cover, Good, HSG B
1,590	98	Existing Dwelling, Walkways
7,588	75	Weighted Average
4,663		Pervious Area
2,925		Impervious Area

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

Subcatchment 4S: Area onto Porous Pavement



Subcatchment 6S: Impervious Area

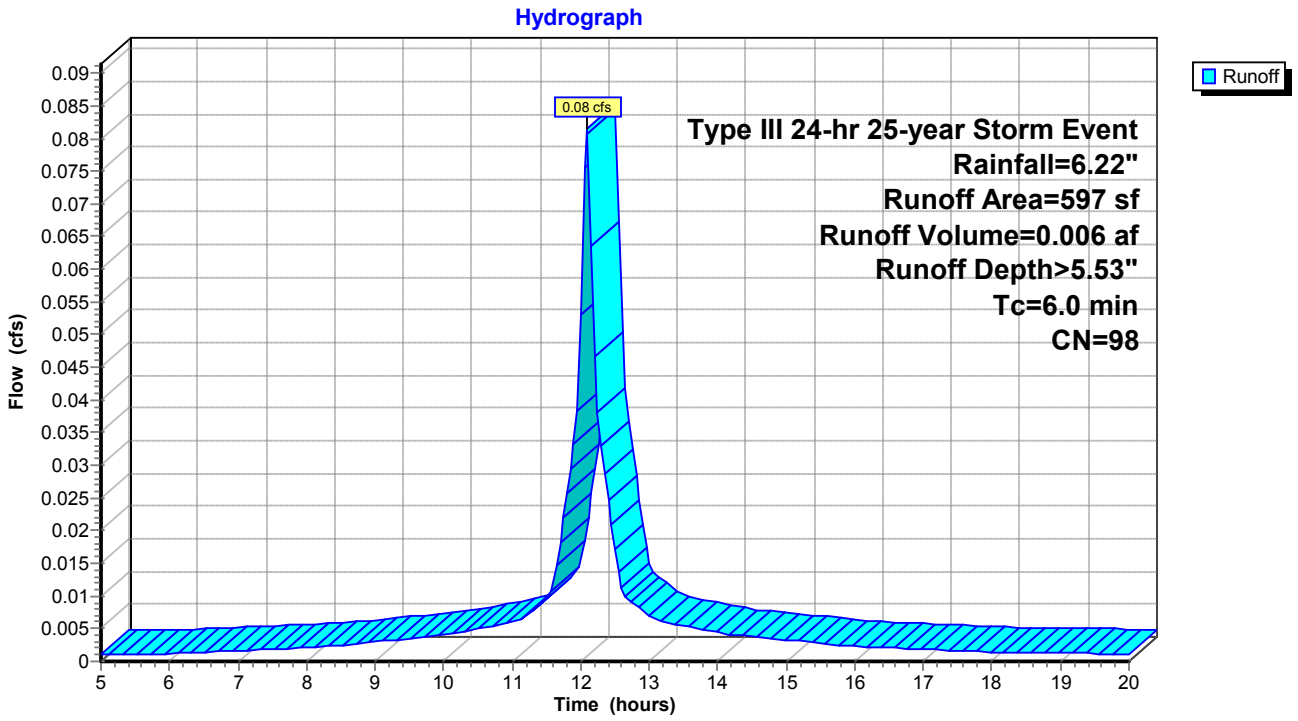
Runoff = 0.08 cfs @ 12.09 hrs, Volume= 0.006 af, Depth> 5.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Storm Event Rainfall=6.22"

Area (sf)	CN	Description
597	98	Proposed Addition
597		Impervious Area

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

Subcatchment 6S: Impervious Area

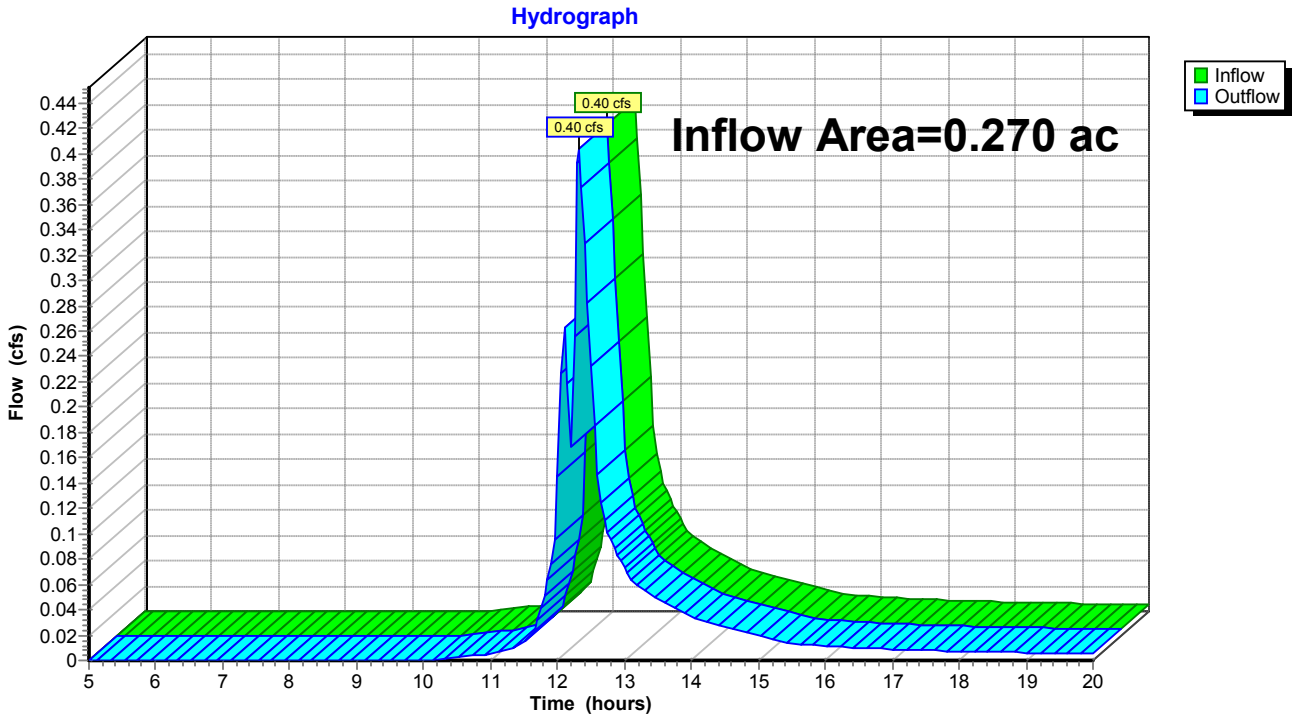


Reach 6R: Combination Reach

Inflow Area = 0.270 ac, Inflow Depth > 1.27" for 25-year Storm Event event
Inflow = 0.40 cfs @ 12.32 hrs, Volume= 0.029 af
Outflow = 0.40 cfs @ 12.32 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min

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

Reach 6R: Combination Reach



Pond 5P: Porous Pavement

Inflow Area =	0.174 ac,	Inflow Depth >	3.24"	for	25-year Storm Event event
Inflow =	0.69 cfs @	12.09 hrs,	Volume=	0.047 af	
Outflow =	0.31 cfs @	12.32 hrs,	Volume=	0.037 af,	Atten= 55%, Lag= 13.8 min
Discarded =	0.03 cfs @	11.15 hrs,	Volume=	0.026 af	
Primary =	0.28 cfs @	12.32 hrs,	Volume=	0.011 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 95.20' @ 12.32 hrs Surf.Area= 0 sf Storage= 713 cf

Plug-Flow detention time= 127.9 min calculated for 0.037 af (79% of inflow)
Center-of-Mass det. time= 73.4 min (862.9 - 789.5)

Volume	Invert	Avail.Storage	Storage Description
#1	92.25'	895 cf	**Custom Stage Data** Listed below

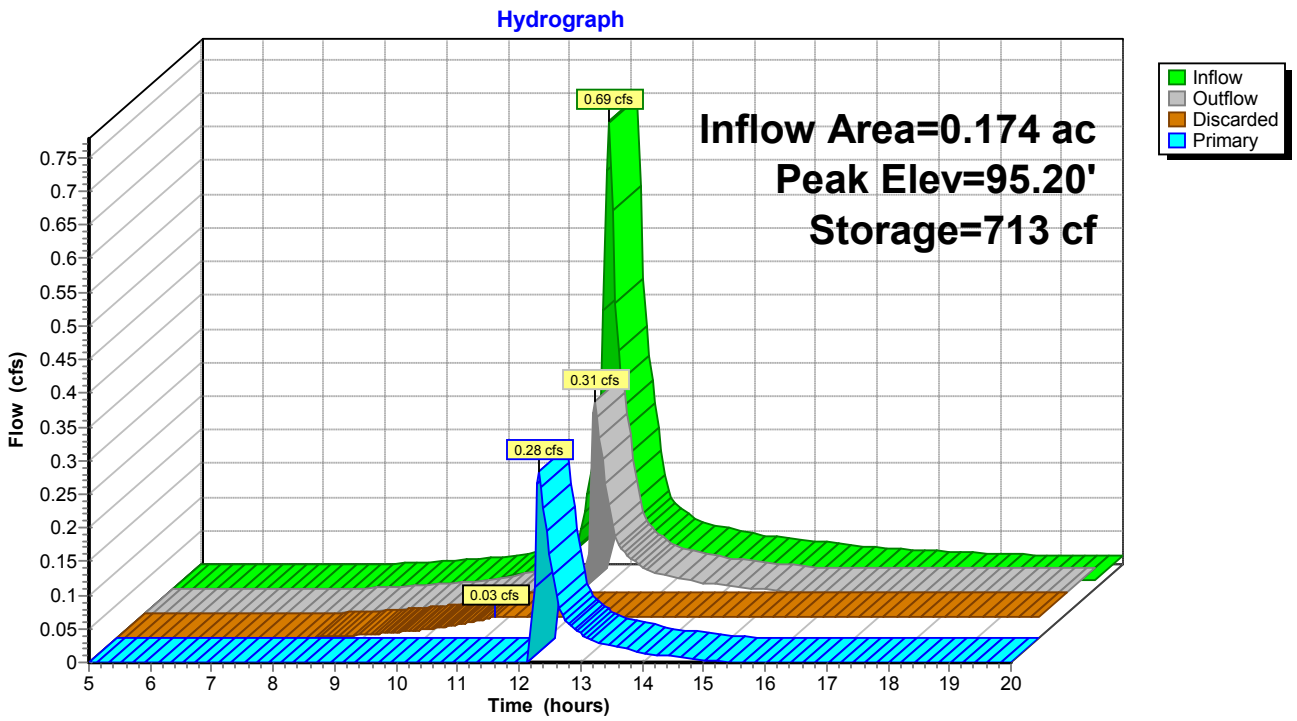
Elevation (feet)	Cum.Store (cubic-feet)
92.25	0
95.95	895

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**Special & User-Defined** Elev. (feet) 92.25 92.26 95.95 Disch. (cfs) 0.000 0.032 0.032
#2	Primary	95.00'	**1.00' W x 0.50' H Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.03 cfs @ 11.15 hrs HW=92.26' (Free Discharge)
└─**1=Special & User-Defined** (Custom Controls 0.03 cfs)

Primary OutFlow Max=0.26 cfs @ 12.32 hrs HW=95.19' (Free Discharge)
└─**2=Orifice/Grate** (Orifice Controls 0.26 cfs @ 1.39 fps)

Pond 5P: Porous Pavement



Pond 9P: 2x3 100HD Cultec

Inflow Area = 0.014 ac, Inflow Depth > 5.53" for 25-year Storm Event event
Inflow = 0.08 cfs @ 12.09 hrs, Volume= 0.006 af
Outflow = 0.01 cfs @ 11.05 hrs, Volume= 0.006 af, Atten= 93%, Lag= 0.0 min
Discarded = 0.01 cfs @ 11.05 hrs, Volume= 0.006 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 95.85' @ 13.22 hrs Surf.Area= 0 sf Storage= 112 cf

Plug-Flow detention time= 141.9 min calculated for 0.006 af (90% of inflow)
Center-of-Mass det. time= 109.7 min (843.7 - 734.0)

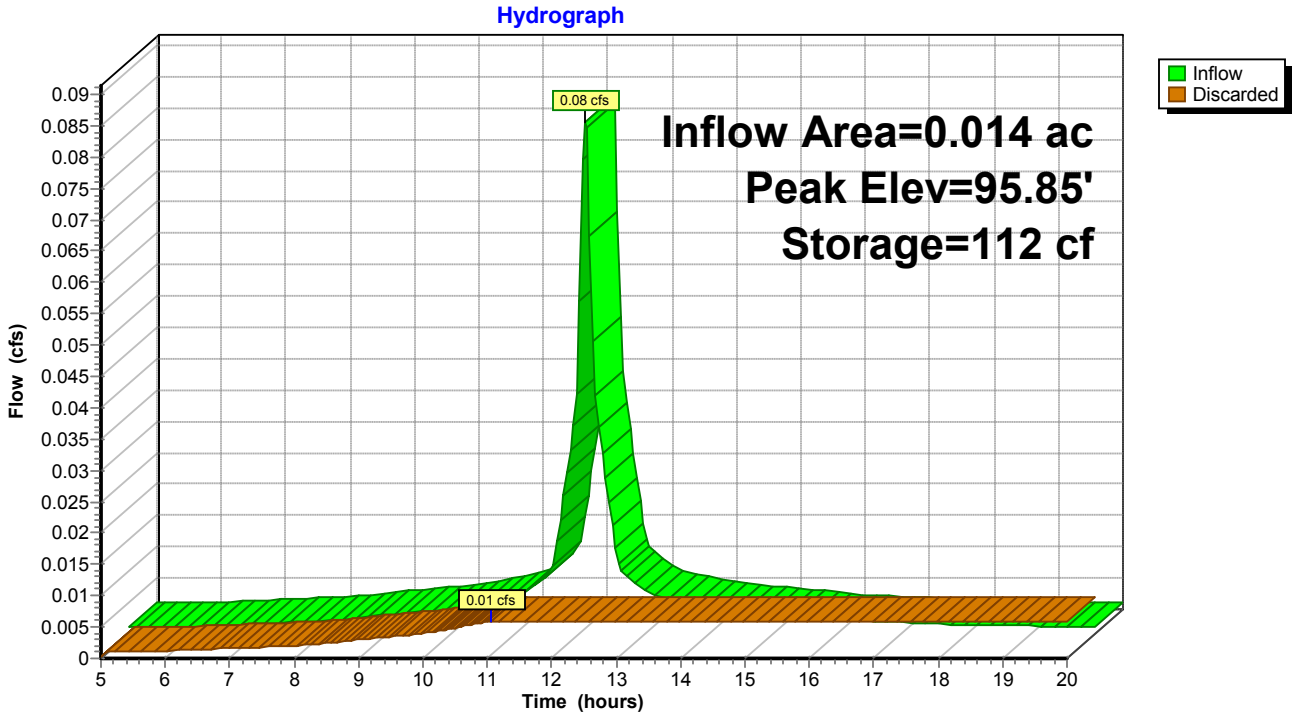
Volume	Invert	Avail.Storage	Storage Description
#1	94.90'	220 cf	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (cubic-feet)
94.90	0
95.40	40
95.90	119
96.40	180
96.90	220

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**Special & User-Defined** Elev. (feet) 94.90 94.91 96.90 Disch. (cfs) 0.000 0.006 0.006

Discarded OutFlow Max=0.01 cfs @ 11.05 hrs HW=94.91' (Free Discharge)
└─**1=Special & User-Defined** (Custom Controls 0.01 cfs)

Pond 9P: 2x3 100HD Cultec



Subcatchment 1S: Remainder of Land

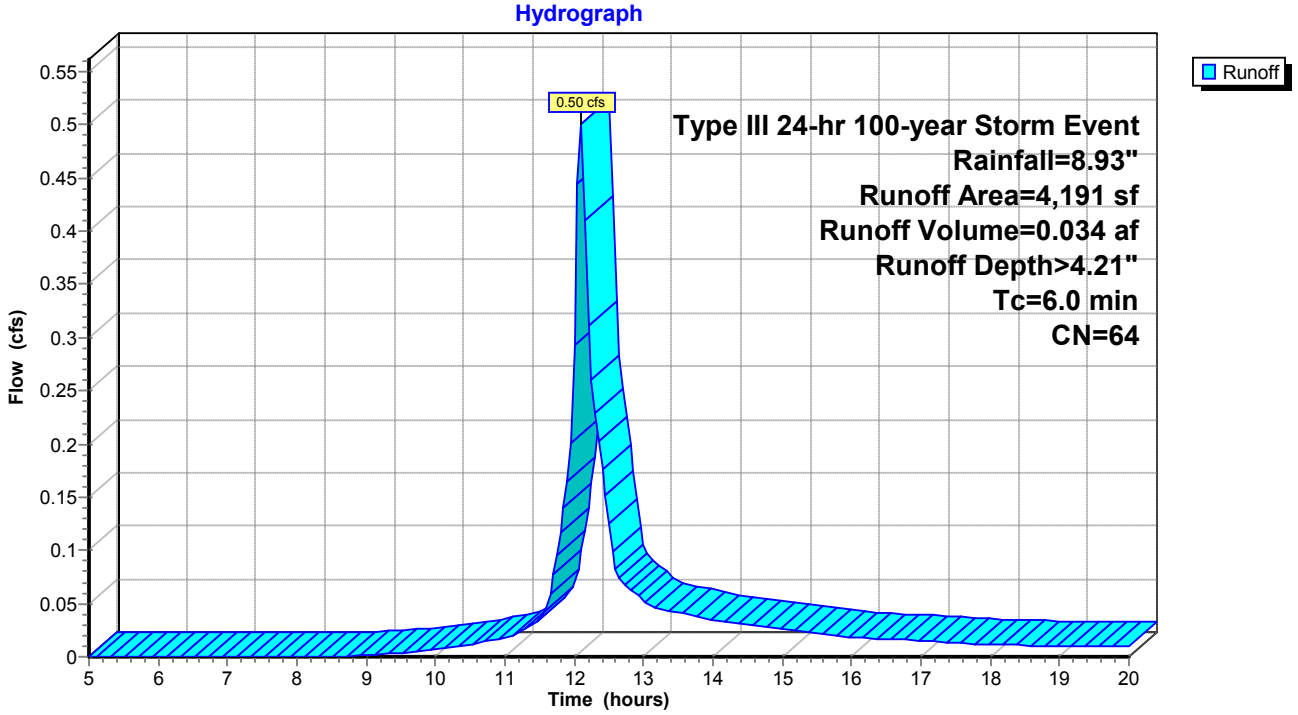
Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.034 af, Depth> 4.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Storm Event Rainfall=8.93"

Area (sf)	CN	Description
361	98	Paved parking & roofs
3,830	61	>75% Grass cover, Good, HSG B
4,191	64	Weighted Average
3,830		Pervious Area
361		Impervious Area

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

Subcatchment 1S: Remainder of Land



Subcatchment 4S: Area onto Porous Pavement

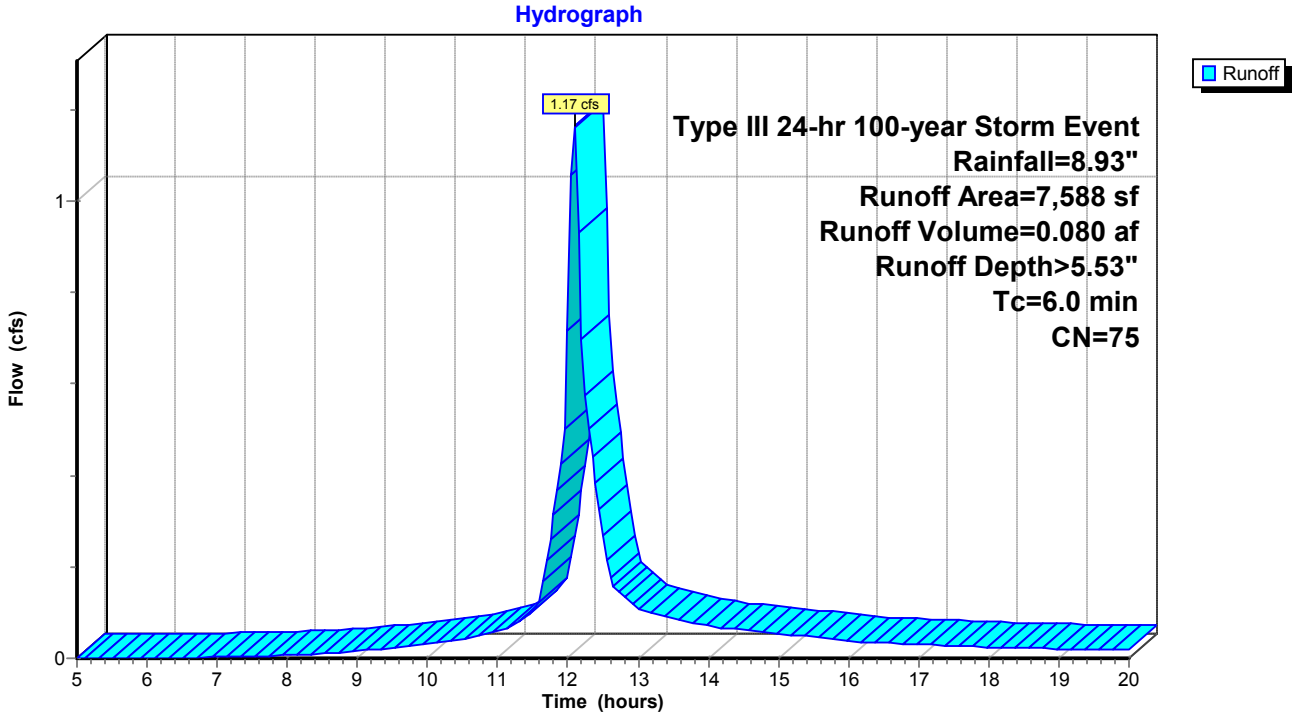
Runoff = 1.17 cfs @ 12.09 hrs, Volume= 0.080 af, Depth> 5.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Storm Event Rainfall=8.93"

Area (sf)	CN	Description
1,335	98	Driveway
4,663	61	>75% Grass cover, Good, HSG B
1,590	98	Existing Dwelling, Walkways
7,588	75	Weighted Average
4,663		Pervious Area
2,925		Impervious Area

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

Subcatchment 4S: Area onto Porous Pavement



Subcatchment 6S: Impervious Area

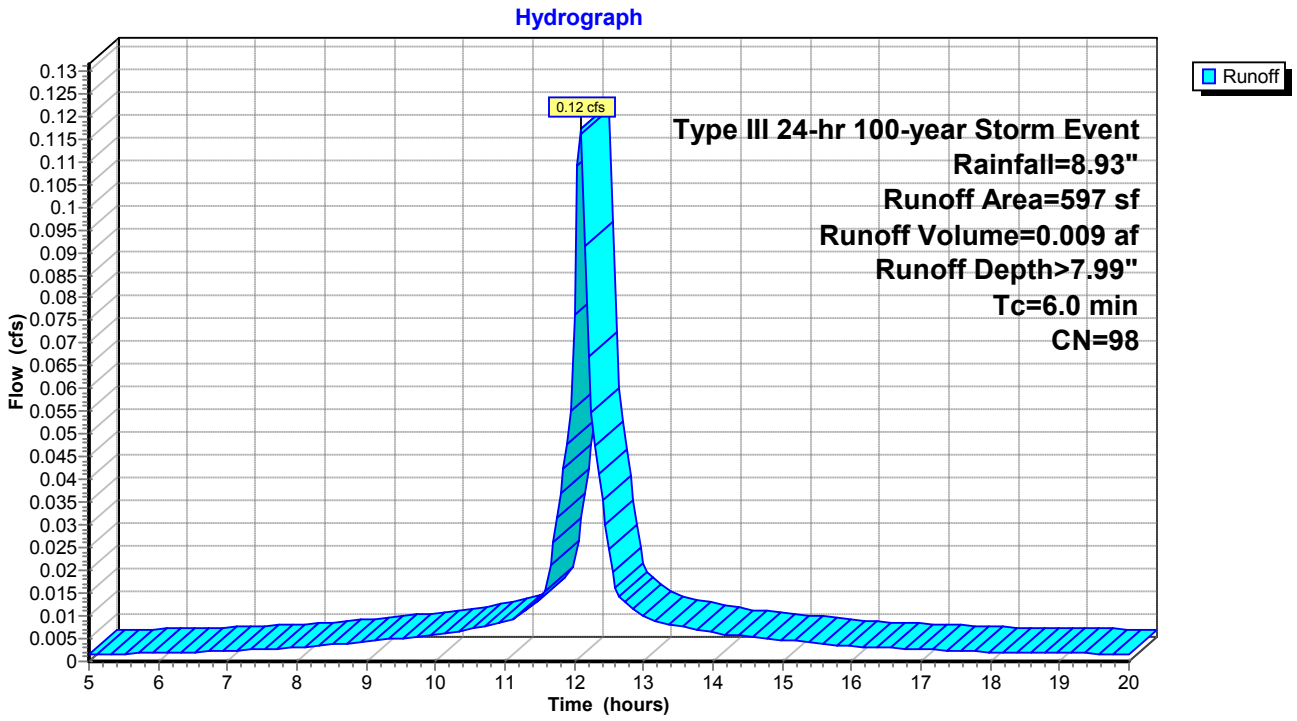
Runoff = 0.12 cfs @ 12.09 hrs, Volume= 0.009 af, Depth> 7.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Storm Event Rainfall=8.93"

Area (sf)	CN	Description
597	98	Proposed Addition
597		Impervious Area

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

Subcatchment 6S: Impervious Area

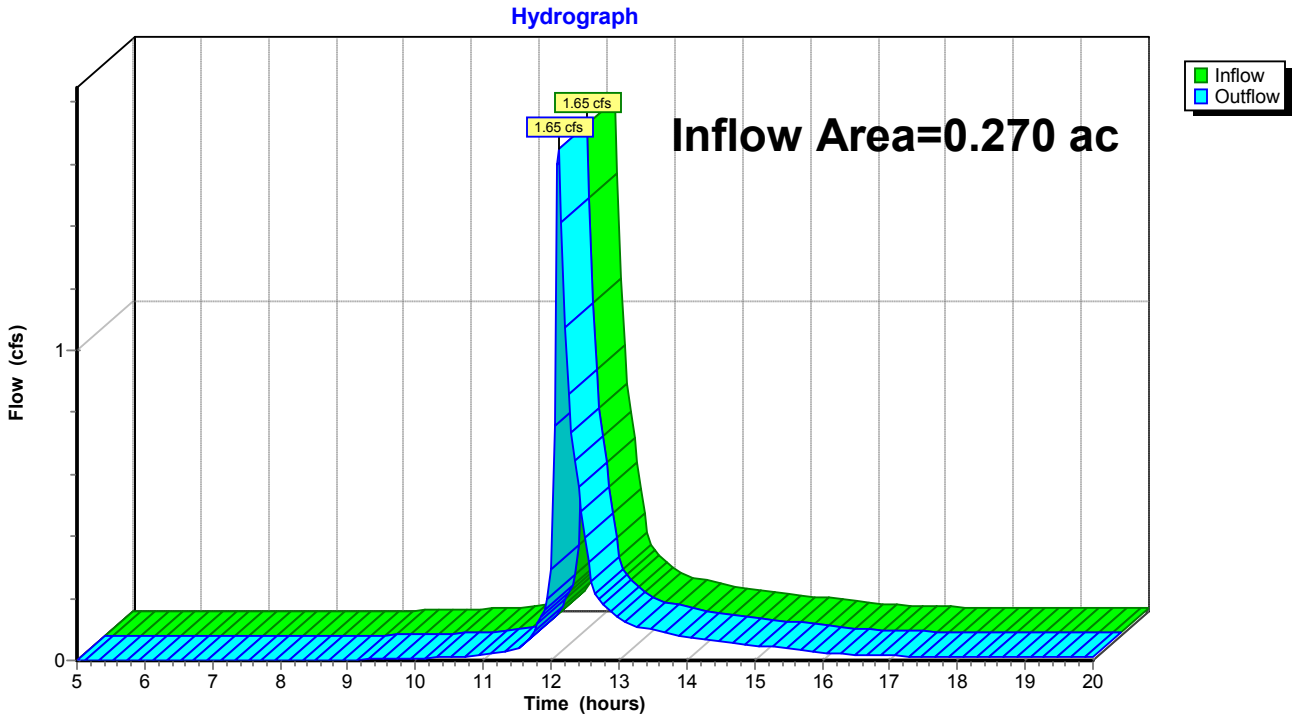


Reach 6R: Combination Reach

Inflow Area = 0.270 ac, Inflow Depth > 3.17" for 100-year Storm Event event
Inflow = 1.65 cfs @ 12.12 hrs, Volume= 0.071 af
Outflow = 1.65 cfs @ 12.12 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min

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

Reach 6R: Combination Reach



Pond 5P: Porous Pavement

Inflow Area =	0.174 ac,	Inflow Depth >	5.53"	for	100-year Storm Event event
Inflow =	1.17 cfs @	12.09 hrs,	Volume=	0.080 af	
Outflow =	1.20 cfs @	12.12 hrs,	Volume=	0.067 af,	Atten= 0%, Lag= 1.8 min
Discarded =	0.03 cfs @	10.15 hrs,	Volume=	0.030 af	
Primary =	1.17 cfs @	12.12 hrs,	Volume=	0.038 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 95.51' @ 12.12 hrs Surf.Area= 0 sf Storage= 790 cf

Plug-Flow detention time= 76.9 min calculated for 0.067 af (84% of inflow)
Center-of-Mass det. time= 30.6 min (807.6 - 777.0)

Volume	Invert	Avail.Storage	Storage Description
#1	92.25'	895 cf	**Custom Stage Data** Listed below

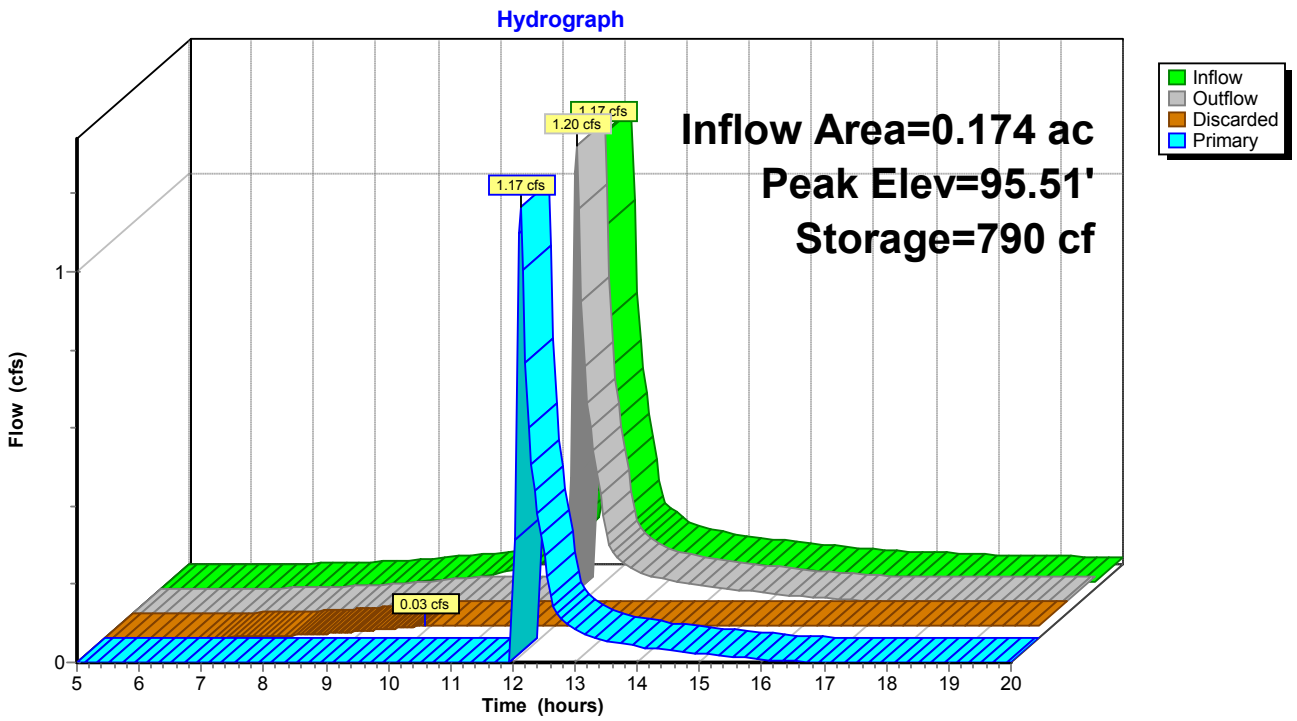
Elevation (feet)	Cum.Store (cubic-feet)
92.25	0
95.95	895

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**Special & User-Defined** Elev. (feet) 92.25 92.26 95.95 Disch. (cfs) 0.000 0.032 0.032
#2	Primary	95.00'	**1.00' W x 0.50' H Vert. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.03 cfs @ 10.15 hrs HW=92.26' (Free Discharge)
└─**1=Special & User-Defined** (Custom Controls 0.03 cfs)

Primary OutFlow Max=1.06 cfs @ 12.12 hrs HW=95.48' (Free Discharge)
└─**2=Orifice/Grate** (Orifice Controls 1.06 cfs @ 2.22 fps)

Pond 5P: Porous Pavement



Pond 9P: 2x3 100HD Cultec

Inflow Area = 0.014 ac, Inflow Depth > 7.99" for 100-year Storm Event event
Inflow = 0.12 cfs @ 12.09 hrs, Volume= 0.009 af
Outflow = 0.01 cfs @ 10.15 hrs, Volume= 0.006 af, Atten= 95%, Lag= 0.0 min
Discarded = 0.01 cfs @ 10.15 hrs, Volume= 0.006 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 96.52' @ 14.13 hrs Surf.Area= 0 sf Storage= 190 cf

Plug-Flow detention time= 154.1 min calculated for 0.006 af (68% of inflow)
Center-of-Mass det. time= 84.0 min (816.8 - 732.7)

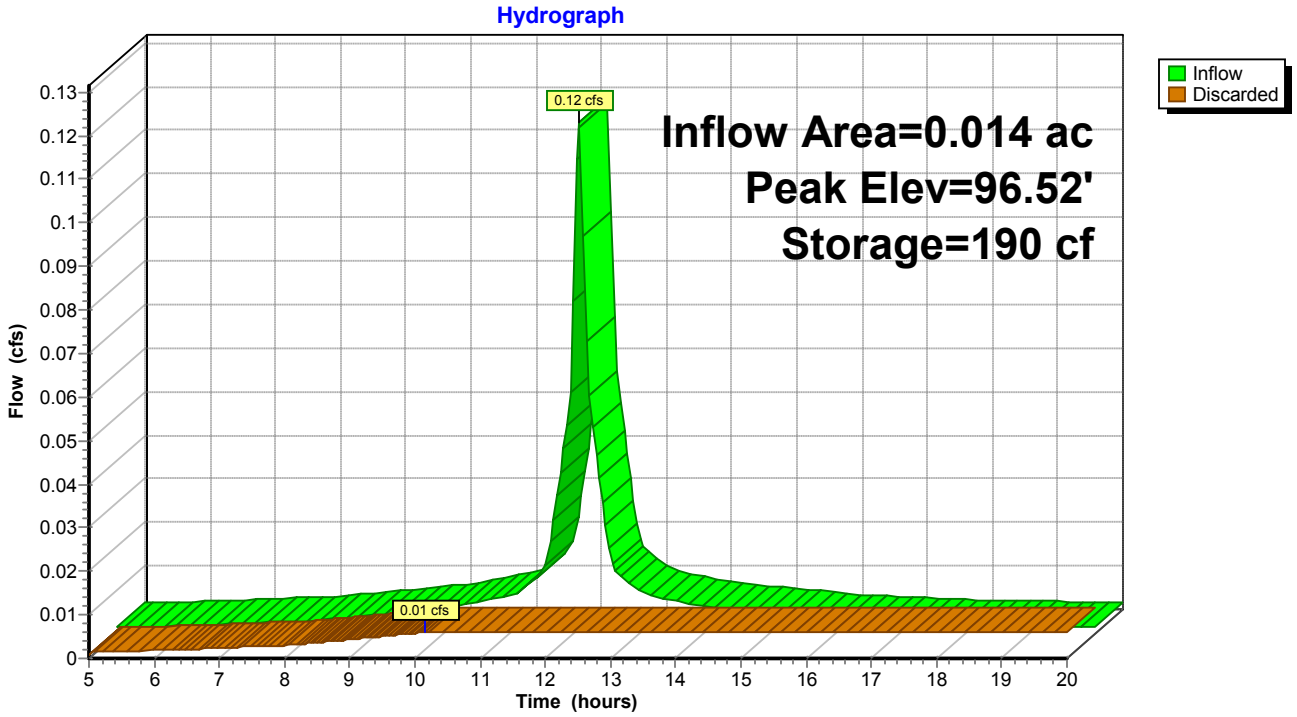
Volume	Invert	Avail.Storage	Storage Description
#1	94.90'	220 cf	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (cubic-feet)
94.90	0
95.40	40
95.90	119
96.40	180
96.90	220

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**Special & User-Defined** Elev. (feet) 94.90 94.91 96.90 Disch. (cfs) 0.000 0.006 0.006

Discarded OutFlow Max=0.01 cfs @ 10.15 hrs HW=94.91' (Free Discharge)
└─**1=Special & User-Defined** (Custom Controls 0.01 cfs)

Pond 9P: 2x3 100HD Cultec



Operation and Maintenance of Drainage Systems & Construction Period Erosion and Sediment Control

Operation and Maintenance Plan for Drainage Systems

Project Name: 23 Kenwin Road, Winchester, MA

Date: September 30, 2020

Site Location: 23 Kenwin Road
Winchester, Massachusetts

Site Operator:
Owner: Timothy Matthews
Address: 23 Kenwin Road
Winchester, MA 01890

The following Operation and Maintenance Plan (O & M Plan) has been developed to comply with DEP's Stormwater Management Policy. The responsibilities outlined in the O&M Plan run with ownership of the property.

Subsurface Infiltration Systems

Infiltration systems are to be inspected by the homeowner at least twice per year and after every major storm event. The inspections will occur following the 3.2", 24 hour storm event.
To perform an inspection of the infiltration system, the observation port caps need to be removed. Once the caps are removed, the depth of sediment inside the system is measured and if the depth of sediment exceeds 3" then the system needs to be professionally cleaned. The subsurface system should only be cleaned by a professional drain/sewer company that is equipped with a vacuum type truck.
The typical cleaning process consists of flooding the system with clean water and allowing the deposited sediment to suspend, then pumping the water out via one of the inspection ports back into the vacuum truck.

Ensure proper operation of Subsurface Infiltration System:

- During construction, the contractor is to observe and inspect the drainage system on a weekly basis.
- The homeowner is to note how long water remains standing in drainage structures after storm events and how well the water infiltrates over a period of 48 to 72 hours. If water remains in the system after 72 hours then the system is probably clogged and in need of cleaning. Contact a professional drain cleaner.
- The contractor is to repair items such as upland sediment erosion during the construction process. The homeowner is to maintain the property landscaped.

Semiannually inspection of systems for proper functioning and look for:

- Subsidence
- Cracking of structures
- Depth of sediment inside system

Scheduled Maintenance:

- Remove sediment from subsurface systems at least once every 2 years; The Cultec systems are to be maintained according to manufacturer recommendations.
- Dispose and transport accumulated sediment off-site in accordance with local, state and federal guidelines and regulations; Sediment is typically removed by filling the Cultec Systems with water and then removing it using a vacuum truck. See above for inspection criteria.

Pervious Pavement

- Control of sediment is important to maintain the permeability of pervious pavements.
- The performance of the pavements shall be verified by the in-field test methodology described in ASTM C-1701 upon completion of paving activities.

Ensure proper operation of Porous Pavements

- Keep silt and debris from entering onto the pervious pavements
- Pavements shall not be sealed under any circumstances
- Sand or other abrasives for snow or ice conditions shall not be used as they reduce permeability of the pavements
- Observe the pavement surface for signs of sediment or organic debris accumulation
- Use high performance, regenerative air vacuum equipment to clean surfaces. Mechanical brooms shall not be used.

Semiannually inspection for proper functioning and look for:

- Standing water on pavement surface.
- Ruts or deformations in pavement exceeding ½”.
- Small random cracks should not be sealed.
- Surrounding vegetation is to be well kept to prevent sedimentation to runoff onto pavements.

Construction Period Erosion and Sediment Control

Prior to start of construction the following measures will need to be in place:

- Stake erosion control barrier on the locations shown on the site plan.

- Install the stabilized construction entrance at the beginning of the driveway to prevent sediment from entering the roadway. Sweep roadway daily during the site construction period and end of day activities. No sediment shall be left on roadway.

- After every major storm event and on a weekly basis, verify erosion control barrier is held in place properly and sediment is retained. Remove accumulated sediment and replace barrier as needed.