NORSE ENVIRONMENTAL SERVICES, INC.
92 Middlesex Road, Unit 4
Tyngsboro, MA 01879
TEL. (978) 649-9932 • FAX (978) 649-7582
Website: www.norseenvironmental.com

NOTICE OF INTENT

FOR

337 CHELSEA STREET

WARD 1 PARCEL 06903000

EAST BOSTON, MA

APPLICANT: 337 CHELSEA STREET LLC

NOVEMBER 2019

PROJECT: 337 CHELSEA STREET - EAST BOSTON

APPLICANT: 337 CHELSEA STREET LLC

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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

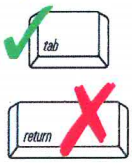
Provided by MassDEP:

MassDEP File Number

Document Transaction Number

East Boston
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):

337 Chelsea Street — a. Street Address
East Boston — b. City/Town
02128 — c. Zip Code

Latitude and Longitude:
42 22' 40.33" N — d. Latitude
71 01' 45.12" W — e. Longitude

Ward 1 — f. Assessors Map/Plat Number
Parcel 06903000 — g. Parcel /Lot Number

2. Applicant:

Fernando — a. First Name
Dalfior, Manager — b. Last Name
337 Chelsea Street LLC — c. Organization
One City Hall Square - Suite 2 — d. Street Address
Medford — e. City/Town
MA — f. State
02155 — g. Zip Code
617-721-7946 — h. Phone Number
i. Fax Number
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):

Steven — a. First Name
Eriksen — b. Last Name
Norse Environmental Services, Inc. — c. Company
92 Middlesex Road, Unit 4 — d. Street Address
Tyngsborough — e. City/Town
MA — f. State
01879 — g. Zip Code
978-649-9932 — h. Phone Number
i. Fax Number
norseenvironmental@verizon.net — j. Email address

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

$1,050.00 — a. Total Fee Paid
$512.50 — b. State Fee Paid
$537.50 — c. City/Town Fee Paid

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A. General Information (continued)

6. General Project Description:

The applicant is proposing to raze an existing 2-story residential dwelling, pool, remove fence and brick pavers, to construct a new 4-story residential dwelling, pervious pavers, lawn area, infiltration chambers system, associated utilities and grading within Land Subject to Coastal Storm Flowage (LSCSF).

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:

a. County	b. Certificate # (if registered land)
Suffolk County Registry of Deeds	
c. Book	d. Page Number
59488	317

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

Resource Area	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	1,619.4 +/- s.f. 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

   10/2019
   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

* 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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Provided by MassDEP:

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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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City/Town

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.

337 Chelsea Street East Boston, Massachusetts
a. Plan Title

Peter Nolan & Associates & Spruhan Eng.
b. Prepared By

Peter Nolan & Edmund Spruhan
c. Signed and Stamped by

11/5/2019
d. Final Revision Date

1"=10'
e. Scale

Architectural Plans
f. Additional Plan or Document Title

8/9/19
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:

City of Boston Check #2724
2. Municipal Check Number

10/25/2019
3. Check date

Commonwealth of MA Check #2723
4. State Check Number

10/25/2019
5. Check date

Fernando
6. Payor name on check: First Name

Dalfior
7. Payor name on check: Last Name

Massachusetts Department of Environmental Protection
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Provided by MassDEP:
MassDEP File Number
Document Transaction Number
East Boston
City/Town

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.

Fernando DaSilva
1. Signature of Applicant

10/25/2019
2. Date

3. Signature of Property Owner (if different)

4. Date

Maureen Herald
5. Signature of Representative (if any)

10/31/19
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.

Dalfior Development, Inc.
1 City Hall Mall - Suite 2
Medford, MA 02155
617 661-2000
dalfiordevelopment.com

East Boston Savings Bank
Medford, MA 02155
5-7012/2110

2723

10/25/2019

PAY TO THE ORDER OF Commonwealth of Massachusetts $ **512.50

Five hundred twelve and 50/100********** DOLLARS

Commonwealth of Massachusetts

MEMO 337 Chelsea st- Wetland NOI

⑈002723⑈ ⑆211070120⑆ ?? ?763495⑈

CASH ONLY IF ALL CheckLock™ SECURITY FEATURES LISTED ON BACK INDICATE NO TAMPERING OR COPYING

Dalfior Development, Inc.
1 City Hall Mall - Suite 2
Medford, MA 02155
617 661-2000
dalfiordevelopment.com

East Boston Savings Bank
Medford, MA 02155
5-7012/2110

2724

10/25/2019

PAY TO THE ORDER OF City of Boston $ **1,500.00

One thousand five hundred and 00/100********** DOLLARS

City of Boston
1010 Mass Ave FL 4
Boston, MA 02118
United States

MEMO 337 Chelsea st- Wetland NOI

⑈002724⑈ ⑆211070120⑆ ?? ?763495⑈

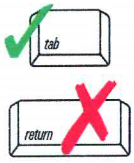
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

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

A. Applicant Information

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



1. Location of Project:

337 Chelsea Street	East Boston
a. Street Address	b. City/Town
Check #2723	$512.50
c. Check number	d. Fee amount

2. Applicant Mailing Address:

Fernando	Dalfior, Manager	
a. First Name	b. Last Name	
337 Chelsea Street LLC		
c. Organization		
One City Hall Mall - Suite 2		
d. Mailing Address		
Medford	MA	02155
e. City/Town	f. State	g. Zip Code
617-721-7946		
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

B. Fees

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

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
Category 3(b)	1	$1,050.00	$1,050.00

Step 5/Total Project Fee: $1,050.00

Step 6/Fee Payments:

Total Project Fee:	$1,050.00 a. Total Fee from Step 5
State share of filing Fee:	$512.50 b. 1/2 Total Fee **less** $12.50
City/Town share of filling Fee:	$537.50 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.)

Notification to Abutters Under the Massachusetts Wetlands Protection Act

In accordance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40 you are hereby notified of the following.

A. The name of the applicant is 337 Chelsea Street LLC

B. The applicant has filed a Notice of Intent with the Conservation Commission for the municipality of Boston, seeking permission to remove, fill, dredge, or alter an Area Subject to Protection under the Wetlands Protection Act (General Laws Chapter 131, Section 40).

C. The address where the activity is proposed is 337 Chelsea Street - East Boston Ward 1 Parcel 06903000.

Proposing to raze an existing 2-story residential dwelling, above ground pool, remove fence and brick pavers to construct a new 4-story residential dwelling, pervious pavers, lawn area, infiltration chambers system, associated utilities and grading within Land Subject to Coastal Storm Flowage (LSCSF).

D. Copies of the Notice of Intent may be examined at: Boston Conservation Commission located at Boston City Hall, 1 City Hall Square, Room 709 Boston, MA 02201 between the hours of 9:00 a.m. to 5:00 p.m. on the following days of the week: Monday through Friday. For more information, call: 617-635-3850.

E. Copies of the Notice of Intent may also be examined at Norse Environmental Services by calling this telephone number 978-649-9932 between the hours of 8:00 a.m. and 6:00 p.m. on the following days of the week: Monday thru Thursday/ Friday until 12:00 p.m.

F. Information regarding the date, time, and place of the public hearing may be obtained from the Boston Conservation Commission by calling this telephone number 617-635-3850 between the hours of 9:00 a.m. to 5:00 p.m. on the following days of the week: Monday thru Friday. For more information, call: 617-635-3850.

A public hearing will take place at 6 p.m. on November 20, 2019 at Boston City Hall, 1 City Hall Square in the Piemonte Room, 5th floor.

The following is a link to view the Public Notice Page to confirm hearing date and agenda items: **https://www.boston.gov/public-notices**

Note: Notice of the public hearing, including its date, time, and place, will be published at least five (5) days in advance in the Boston Herald.

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

Note: You also may contact your local Conservation Commission or the nearest Department of Environmental Protection Regional Office for more information about this application or the Wetland Protection Act. To contact DEP Call: **Northeast Region:** 978-694-3200.

If you have any further questions please call Steven Eriksen at Norse Environmental Services, Inc., 978-649-9932.

ADDRESSEE	MLG_ADDRESS	MLG_CITYSTATE	MLG_ZIPCODE	LOC_ADDRESS	LOC_CITY	LOC_ZIPCODE
SCHIRRIPA FRANK TS	84 JUNIPER DR	SAUGUS MA	1906	343 345 CHELSEA ST	EAST BOSTON	2128
50 LEBANON STREET REALTY	282 BENNINGTON ST	EAST BOSTON MA	2128	98 PRESCOTT ST	EAST BOSTON	2128
CHELSEA BREMEN LLC	50 FRANKLIN ST #400	BOSTON MA	2110	319 327 CHELSEA ST	EAST BOSTON	2128
331 CHELSEA STREET LLC	431 E 3RD ST #3	BOSTON MA	2127	331 CHELSEA ST	EAST BOSTON	2128
FALLAVOLLITA JEANNETTE	333 CHELSEA ST	E BOSTON MA	2128	333 CHELSEA ST	EAST BOSTON	2128
HUYNH LINNA	335 CHELSEA ST	EAST BOSTON MA	2128	335 CHELSEA ST	EAST BOSTON	2128
AGUILAR JOSE	1 PARK LANE	BOSTON MA	2210	337 CHELSEA ST	EAST BOSTON	2128
SITU KEVIN X	339 CHELSEA ST	EAST BOSTON MA	2128	339 CHELSEA ST	EAST BOSTON	2128
ROBERTO LOUIE TS	282 BENNINGTON ST	EAST BOSTON MA	2128	341 CHELSEA ST	EAST BOSTON	2128
LAR PROPERTY MGMT LLC	282 BENNINGTON ST	E BOSTON MA	2128	93 PRESCOTT ST	EAST BOSTON	2128
687 SARATOGA STREET REALTY	282 BENNINGTON ST	EAST BOSTON MA	2128	95 PRESCOTT ST	EAST BOSTON	2128
ROBERTO LOUIE TS	282 BENNINGTON ST	EAST BOSTON MA	2128	97 PRESCOTT ST	EAST BOSTON	2128
ROBERTO LOUIE	282 BENNINGTON ST	EAST BOSTON MA	2128	350 BREMEN ST	EAST BOSTON	2128
ROBERTO LOUIE TS	282 BENNINGTON ST	EAST BOSTON MA	2128	348 BREMEN ST	EAST BOSTON	2128
ROBERTO LOUIE TS	282 BENNINGTON ST	EAST BOSTON MA	2128	BREMEN ST	EAST BOSTON	2128
LOGAN AUTOMOTIVE INC	344 BREMEN ST	E BOSTON MA	2128	BREMEN ST	EAST BOSTON	2128
LOGAN AUTOMOTIVE INC	344 BREMEN ST	E BOSTON MA	2128	344 BREMEN ST	EAST BOSTON	2128
DAMICO RENATA V JR	154 ST ANDREW RD	EAST BOSTON MA	2128	259 BENNINGTON ST	EAST BOSTON	2128
GUADRON RAMON DE JESUS	358 CHELSEA ST	EAST BOSTON MA	2128	358 CHELSEA ST	EAST BOSTON	2128
TRUONG ROBERT	356 CHELSEA ST	EAST BOSTON MA	2128	356 CHELSEA ST	EAST BOSTON	2128
PEREZ CONCEPCION	24 HIGH ST	EVERETT MA	2149	354 CHELSEA ST	EAST BOSTON	2128
PEREZ CONCEPCION	24 HIGH ST	EVERETT MA	2149	352 CHELSEA ST	EAST BOSTON	2128
THREE FORTY EIGHT CHELSEA	50 FRANKLIN ST #400	BOSTON MA	2110	348 CHELSEA ST	EAST BOSTON	2128
THREE FORTY EIGHT CHELSEA	1495 HANCOCK ST	QUINCY MA	2169	346 CHELSEA ST	EAST BOSTON	2128

AFFIDAVIT OF SERVICE

Under the Massachusetts Wetlands Protection Act

(to be submitted to the Massachusetts Department of Environmental Protection and the Conservation Commission when filing a Notice of Intent)

I, Steven Eriksen, hereby certify to the best of my knowledge, under the pains and penalties of perjury that on November 6, 2019 I gave notification to the abutters in compliance with the second paragraph of Massachusetts General Law Chapter 131, Section 40, and the DEP Guide to Abutter Notification dated April 8, 1994, in connection with the following matter:

A Notice of Intent filed under the Massachusetts Wetlands Protection Act by 337 Chelsea Street LLC with the Boston Conservation Commission on November 6 , 2019 for property located at 337 Chelsea Street – East Boston Ward 1 Parcel 0106903000.

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

Name

11-6-19

Date

NORSE ENVIRONMENTAL SERVICES, INC.
92 Middlesex Road, Unit 4
Tyngsboro, MA 01879
TEL. (978) 649-9932 • FAX (978) 649-7582
Website: www.norseenvironmental.com

Notice of Intent Report

For

337 Chelsea Street
East Boston, MA

Prepared For

337 Chelsea Street LLC
One City Hall Mall – Suite 2
Medford, MA 02155

Prepared By

Norse Environmental Services, Inc.
92 Middlesex Road, Unit 4
Tyngsborough, MA 01879

November 2019

Narrative

The applicant is proposing to raze an existing 2-story residential dwelling, wood fence and brick pavers to construct a 4-story residential dwelling, pervious pavers, lawn area, infiltration system, grading and associated utilities within Land Subject to Coastal Storm Flowage (LSCSF) per 310 CMR 10.04. The dwelling is proposed on a slab foundation and the site will be serviced by city sewer and water. Erosion controls will be set and maintained for the duration of the project.

Site Description

The parcel consists of 1,875 +/- s.f. of land located on the northerly side of Chelsea Street in East Boston, MA. An existing 2-story residential dwelling, above ground swimming pool, wood fence and brick pavers are located on the parcel. A 10 ft. wide, raised, gravel passageway is located at the rear of the lot.

Soils

The Web Soil Survey Norfolk and Suffolk County maps this site as Urban land, wet substratum. Urban land, wet substratum consists of areas where 85 percent of the land surface is covered by structures or impervious surfaces such as buildings, pavement, industrial sites, and railroad yards, and where the underlying soil is dominated by fill material overlying wet soils. The underlying wet soils may include Freetown, Saco, Scarboro, and Swansea. The areas are irregular in shape range from 6 to 2,100 acres in size. A water table may be present in the lower substratum. Included with this unit in mapping are areas of Udorthents, loamy soils and Udorthents, wet substratum soils where the soil is exposed.

Resource Area

Approximately 1,619.4 +/- s.f. of the site is located within LSCSF. 310 CMR 10.04 Land Subject to Coastal Storm Flowage means, "land subject to any inundation caused by coastal storms up to and including that caused by the 100-year storm, surge of record or storm of record, whichever is greater". According to the FEMA Flood Insurance Rate Map the portion of the site in LSCSF is designated as Zone AE, elevation 10 ft., or 16.46 ft. Boston City Base (BCB).

310 CMR 10.00 The Massachusetts Wetland Protection Act presently has no performance standards for work within LSCSF. However, the Commonwealth of Massachusetts, "Applying the Massachusetts Coastal Wetlands Regulations" provides guidance for work within LSCSF.

The project proposes to disturb 1,619.4 +/- s.f. in LSCSF. Per the Massachusetts Building Code section 780 CMR 120G Flood-Resistant Construction and Construction in Coastal Dunes, requires construction at or above the Base Food Elevation. The first-floor elevation and utility elevation are proposed at 18.00 +/- ft. (BCB) and the living area will be 1.54 ft above the base flood elevation (see enclosed Climate Resiliency Checklist).

The existing structure within LSCSF is 545.7 +/- s.f. and the applicant is proposing a slightly larger structure or 845.8 +/- s.f. As a result, the applicant is proposing to fill 1,009.8 +/- c.f. (37.4 +/- c.y.) within LSCSF. To mitigate the alteration the applicant is proposing to improve the existing conditions by decreasing the net impervious area of the site. The existing impervious area is 1,442.4 +/- s.f. and the applicant is proposing 845.8 +/- s.f. or 596.6 +/- s.f. of less impervious area. The applicant is decreasing the impervious area by 59% and incorporating 550 s.f of green space, lawn area, and 250 s.f. of pervious pavers.

Stormwater

The project has been designed to meet the stormwater standards to the maximum extent practicable. The applicant has incorporated infiltration chambers and pervious pavers to reduce the impervious area on site. 100% of roof runoff will be captured and directed into the infiltration chambers at the rear of the dwelling. Larger less frequent storms will overflow to the street and combined sewer within Chelsea Street approved by Boston Water and Sewer Department.

Straw wattles for erosion controls will be installed around the perimeter of the site prior to construction. The project site will be maintained and there will be no discharge of any pollutants during construction (see enclosed Operation and Maintenance Plan).

Priority Habitat

There is no Priority Habitat, or Estimated Habitat for Rare or Endangered Species located at the proposed project according to MassGIS (map enclosed).

Area of Critical Environmental Concern

The project is not located within an Area of Critical Environmental Concern (ACEC) according to the MassGIS (map enclosed).

Outstanding Resource Water

The project is not located within an Outstanding Resource Water (ORW).

Abutter Mailing List Generator --- City of Boston Assessing Department

Enter/Select a Street Name:

CHELSEA

Find Addresses

Click an Address to find a Parcel:

57 CHELSEA ST #B-57, 02129
1 CHELSEA TE, 02128
10 10A CHELSEA ST, 02128
101 CHELSEA ST, 02128
102 CHELSEA ST, 02128
103 CHELSEA ST, 02128
104 CHELSEA ST, 02128
105 CHELSEA ST, 02128
106 CHELSEA ST #1A, 02128
106 CHELSEA ST #1B, 02128

Enter a Parcel ID:

0106903000

Find a Parcel

When you can see Parcels:

Click Here to Select a Parcel

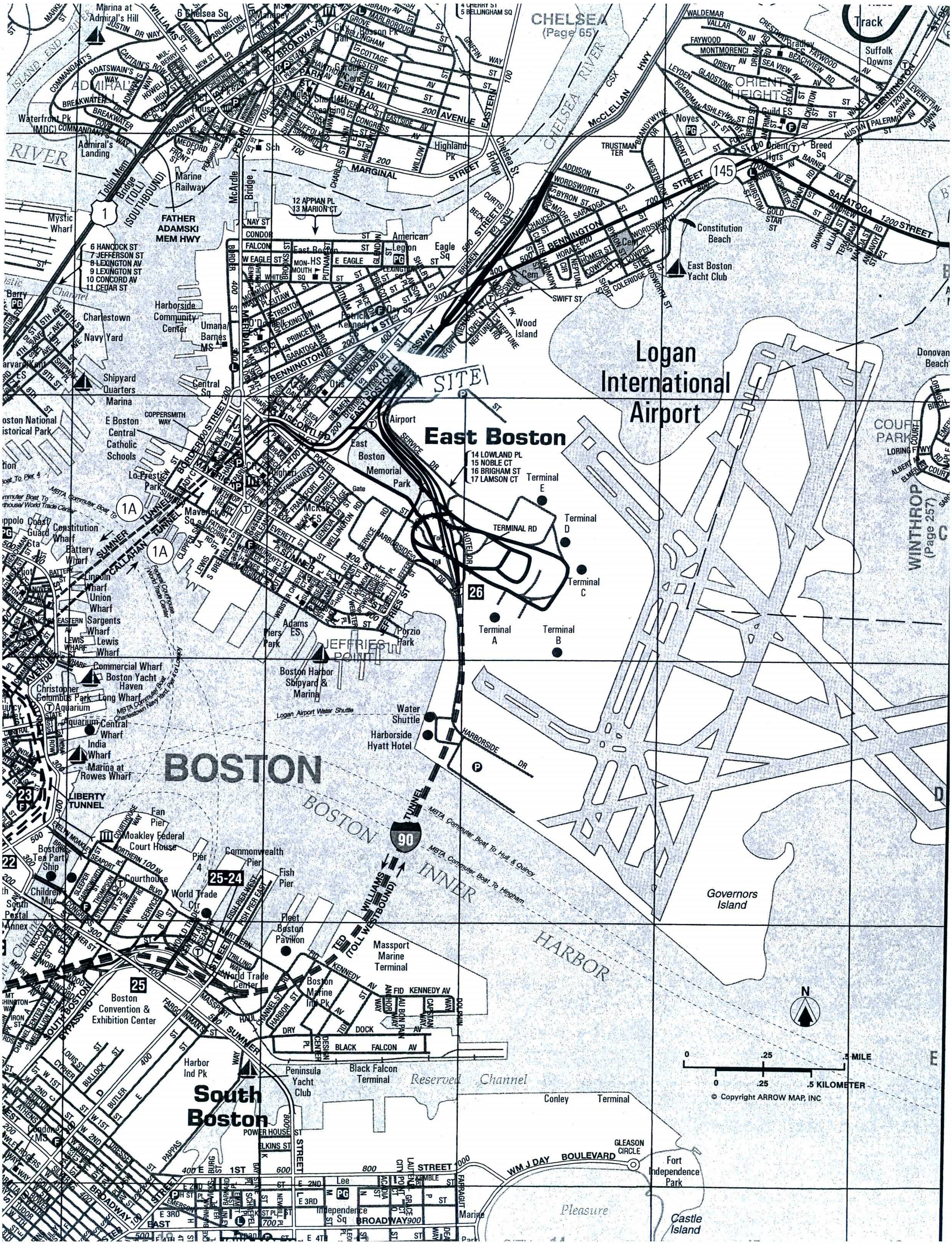
Buffer Parameters:

Distance: 100 Feet

Buffer and Select

Click here to download a CSV file (Open in Notepad, not in Excel) for Mailing list.
Click here for an instruction to convert a CSV file to Mailing Labels using MS Word.

Note: Use newer versions of browser to view this site such as IE 11+ or Chrome 47+ etc.


CHELSEA
(Page 65)
ORIENT HEIGHTS
Suffolk Downs
Track
ADMIRAL'S HILL
Marina at Admiral's Hill
Waterfront Pk (MDC)
Admiral's Landing
Tobin Mem Bridge (TOLL) (SOUTHBOUND)
Mystic Wharf
FATHER ADAMSKI MEM HWY
Marine Railway
Highland Pk
Chelsea St Bridge
McArdle Bridge
McCLELLAN HWY
CHELSEA RIVER
Noyes
Orient Hgts
Breed Sq
Constitution Beach
East Boston Yacht Club
Wood Island
Eagle Sq
American Legion
Day Sq
Charlestown
Navy Yard
Shipyard Quarters Marina
Harborside Community Center
Umana Barnes MS
Central Sq
Boston National Historical Park
E Boston Central Catholic Schools
Lo Presti Park
East Boston Memorial Park
East Boston
Airport
Logan International Airport
Terminal A
Terminal B
Terminal C
Terminal D
Terminal E
TERMINAL RD
SERVICE DR
HARBORSIDE DR
Water Shuttle
Harborside Hyatt Hotel
Boston Harbor Shipyard & Marina
JEFFRIES POINT
Piers Park
Porzio Park
Adams ES
Maverick Sq
SUMNER TUNNEL
CALLAHAN TUNNEL
Constitution Wharf
Battery Wharf
Lincoln Wharf
Union Wharf
Sargents Wharf
Lewis Wharf
Commercial Wharf
Boston Yacht Haven
Long Wharf
Christopher Columbus Park
Aquarium
Central Wharf
India Wharf
Marina at Rowes Wharf
Logan Airport Water Shuttle
BOSTON
BOSTON INNER HARBOR
LIBERTY TUNNEL
Fan Pier
Moakley Federal Court House
Boston Tea Party Ship
Children's Mus
Commonwealth Pier
Fish Pier
World Trade Ctr
Fleet Boston Pavilion
Courthouse
TED WILLIAMS TUNNEL (TOLL WESTBOUND)
MBTA Commuter Boat To Hull & Quincy
MBTA Commuter Boat To Hingham
Massport Marine Terminal
Boston Marine Ind Pk
Boston Convention & Exhibition Center
SOUTH BOSTON BYPASS RD
Harbor Ind Pk
Peninsula Yacht Club
Black Falcon Terminal
Reserved Channel
Conley Terminal
South Boston
GLEASON CIRCLE
Fort Independence Park
Castle Island
Pleasure
WM J DAY BOULEVARD
Governors Island
WINTHROP (Page 257)
COURT PARK
Donovan Beach
14 LOWLAND PL
15 NOBLE CT
16 BRIGHAM ST
17 LAMSON CT
6 HANCOCK ST
7 JEFFERSON ST
8 LEXINGTON AV
9 LEXINGTON ST
10 CONCORD AV
11 CEDAR ST
12 APPIAN PL
13 MARION CT
HARBOR
0 .25 .5 MILE
0 .25 .5 KILOMETER
© Copyright ARROW MAP, INC

USGS Topographic Quadrangle Maps

USGS 1:25,000 Topographic Maps for Massachusetts

Massport, City of Boston, MassGIS, Esri Canada, Esri, HERE, Garmin, INCREMENT P, USGS, EPA, USDA | USGS, MassGIS

Soil Map—Norfolk and Suffolk Counties, Massachusetts
(337 Chelsea Street - East Boston)

Map Scale: 1:275 if printed on A landscape (11" x 8.5") sheet.

N

0 4 8 16 24 Meters

0 10 20 40 60 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

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: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 15, Sep 12, 2019

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

Date(s) aerial images were photographed: Aug 10, 2014—Aug 25, 2014

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
603	Urban land, wet substratum, 0 to 3 percent slopes	0.1	100.0%
Totals for Area of Interest		**0.1**	**100.0%**

National Flood Hazard Layer FIRMette

FEMA

Legend

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

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Area of 1% annual chance flood with average depth less than one foot or with drainag areas of less than one square mile *Zone*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 — Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

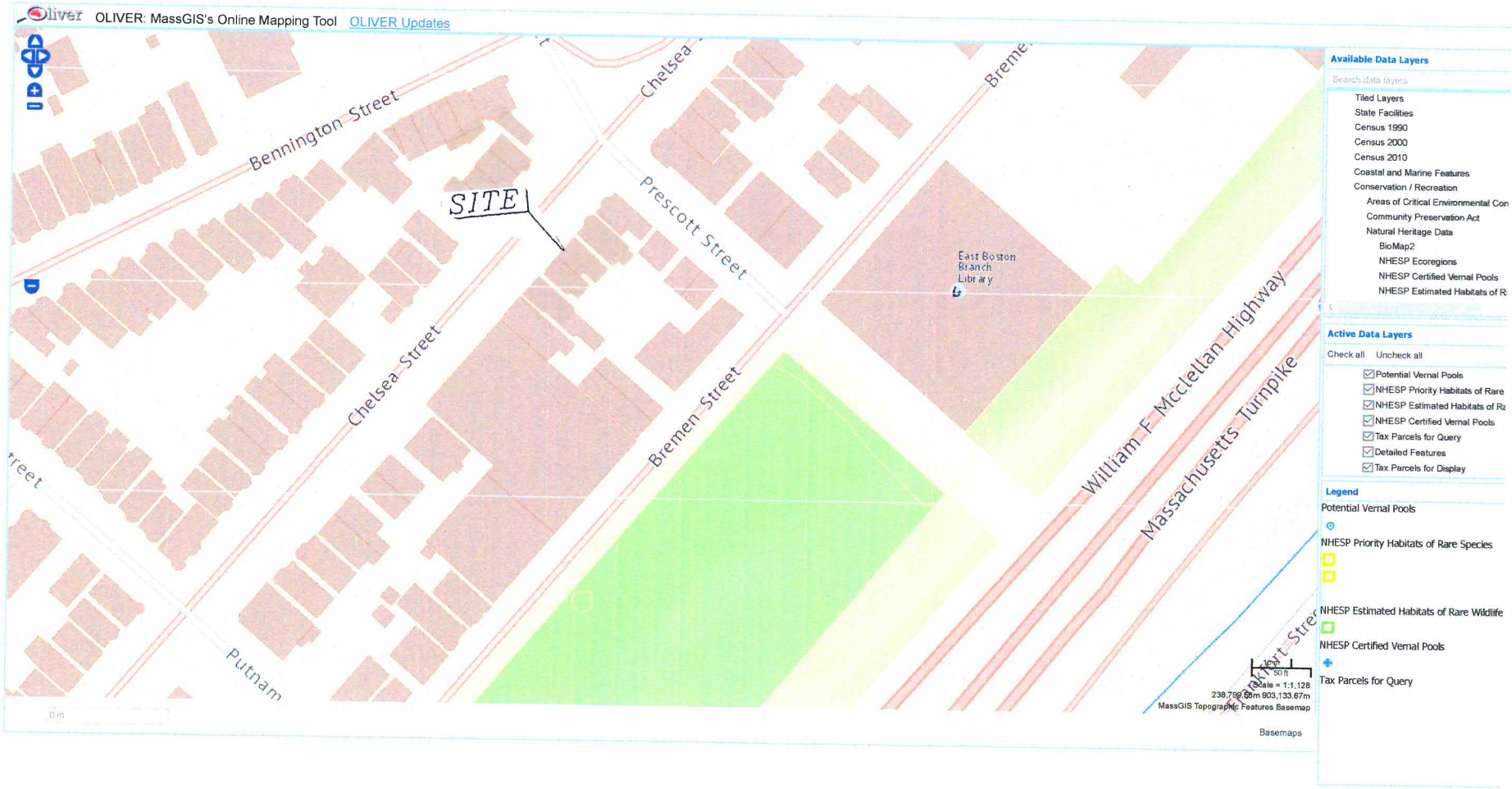
N

The pin displayed on the map is an approximate point selected by the user and does not represen an authoritative property location.

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/7/2019 at 1:41:53 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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


OLIVER: MassGIS's Online Mapping Tool
OLIVER Updates
Bennington Street
Chelsea Street
Prescott Street
Bremen Street
SITE
East Boston Branch Library
William F. Mcclellan Highway
Massachusetts Turnpike
Putnam
Available Data Layers
Search data layers
Tiled Layers
State Facilities
Census 1990
Census 2000
Census 2010
Coastal and Marine Features
Conservation / Recreation
Areas of Critical Environmental Con
Community Preservation Act
Natural Heritage Data
BioMap2
NHESP Ecoregions
NHESP Certified Vernal Pools
NHESP Estimated Habitats of R
Active Data Layers
Check all
Uncheck all
Potential Vernal Pools
NHESP Priority Habitats of Rare
NHESP Estimated Habitats of Ra
NHESP Certified Vernal Pools
Tax Parcels for Query
Detailed Features
Tax Parcels for Display
Legend
Potential Vernal Pools
NHESP Priority Habitats of Rare Species
NHESP Estimated Habitats of Rare Wildlife
NHESP Certified Vernal Pools
Tax Parcels for Query
Scale = 1:1,128
238,799.68m 903,133.67m
MassGIS Topographic Features Basemap
Basemaps

boston planning & development agency

Climate Resiliency Checklist

NOTE: Project filings should be prepared and submitted using the online Climate Resiliency Checklist.

A.1 - Project Information

Project Name:	337 Chelsea St.			
Project Address:	East Boston, MA			
Project Address Additional:				
Filing Type (*select*)	*Initial (PNF, EPNF, NPC or other substantial filing)* *Design / Building Permit (prior to final design approval), or* *Construction / Certificate of Occupancy (post construction completion)*			
Filing Contact	*Name*	*Company*	*Email*	*Phone*
Is MEPA approval required	*Yes/no* No		*Date*	

A.3 - Project Team

Owner / Developer:	Fernando Dalfior and Brad Cangiamila
Architect:	Joy Street Design
Engineer:	Peter Nolan & Associates LLC
Sustainability / LEED:	N/A
Permitting:	N/A
Construction Management:	N/A

A.3 - Project Description and Design Conditions

List the principal Building Uses:	Residential
List the First Floor Uses:	Residential
List any Critical Site Infrastructure and or Building Uses:	None

Site and Building:

Site Area:	1875	*SF*	Building Area:	4241	*SF*
Building Height:	37'-6"	*Ft*	Building Height:	4	*Stories*
Existing Site Elevation – Low:	13.40	*Ft BCB*	Existing Site Elevation – High:	18.03	*Ft BCB*
Proposed Site Elevation – Low:	13.70	*Ft BCB*	Proposed Site Elevation – High:	18.03	*Ft BCB*
Proposed First Floor Elevation:	18.00	*Ft BCB*	Below grade levels:	0	*Stories*

Article 37 Green Building:

LEED Version - Rating System :	N/A	LEED Certification:	No *Yes / No*
Proposed LEED rating:	*Certified/Silver/ Gold/Platinum*	Proposed LEED point score:	N/A *Pts.*

Building Envelope

When reporting R values, differentiate between R discontinuous and R continuous. For example, use "R13" to show R13 discontinuous and use R10c.i. to show R10 continuous. When reporting U value, report total assembly U value including supports and structural elements.

Roof:	R-38 (R)	Exposed Floor:	R-15 (R)
Foundation Wall:	N/A (R)	Slab Edge (at or below grade):	R-15 (R)

Vertical Above-grade Assemblies (%'s are of total vertical area and together should total 100%):

Area of Opaque Curtain Wall & Spandrel Assembly:	N/A (%)	Wall & Spandrel Assembly Value:	N/A (U)
Area of Framed & Insulated / Standard Wall:	92% (%)	Wall Value	R-21 (R)
Area of Vision Window:	8% %	Window Glazing Assembly Value:	0.3 (U)
		Window Glazing SHGC:	0.29 (SHGC)
Area of Doors:	1% %	Door Assembly Value:	0.2 (U)

Energy Loads and Performance

For this filing – describe how energy loads & performance were determined	HERS rating		
Annual Electric:	(kWh)	Peak Electric:	(kW)
Annual Heating:	(MMbtu/hr)	Peak Heating:	(MMbtu)
Annual Cooling:	(Tons/hr)	Peak Cooling:	(Tons)
Energy Use - Below ASHRAE 90.1 - 2013:	%	Have the local utilities reviewed the building energy performance?:	Yes / no
Energy Use - Below Mass. Code:	%	Energy Use Intensity:	(kBtu/SF)

Back-up / Emergency Power System

Electrical Generation Output:	None (kW)	Number of Power Units:	NA
System Type:	None (kW)	Fuel Source:	NA

Emergency and Critical System Loads (in the event of a service interruption)

Electric:	None (kW)	Heating:	(MMbtu/hr)
		Cooling:	(Tons/hr)

B – Greenhouse Gas Reduction and Net Zero / Net Positive Carbon Building Performance

Reducing GHG emissions is critical to avoiding more extreme climate change conditions. To achieve the City's goal of carbon neutrality by 2050 new buildings performance will need to progressively improve to net carbon zero and positive.

B.1 – GHG Emissions - Design Conditions

For this Filing - Annual Building GHG Emissions: *(Tons)*

For this filing - describe how building energy performance has been integrated into project planning, design, and engineering and any supporting analysis or modeling:

The building was designed with a thermally insulated envelope and efficient systems.

Describe building specific passive energy efficiency measures including orientation, massing, envelop, and systems:

Windows are provided on three sides to facilitate cross ventilation.

Describe building specific active energy efficiency measures including equipment, controls, fixtures, and systems:

NA

Describe building specific load reduction strategies including on-site renewable, clean, and energy storage systems:

NA

Describe any area or district scale emission reduction strategies including renewable energy, central energy plants, distributed energy systems, and smart grid infrastructure:

NA

Describe any energy efficiency assistance or support provided or to be provided to the project:

HERS rating and review

B.2 - GHG Reduction - Adaptation Strategies

Describe how the building and its systems will evolve to further reduce GHG emissions and achieve annual carbon net zero and net positive performance (e.g. added efficiency measures, renewable energy, energy storage, etc.) and the timeline for meeting that goal (by 2050):

No changes are anticipated.

C - Extreme Heat Events

Annual average temperature in Boston increased by about 2˚F in the past hundred years and will continue to rise due to climate change. By the end of the century, the average annual temperature could be 56° (compared to 46° now) and the number of days above 90° (currently about 10 a year) could rise to 90.

C.1 – Extreme Heat - Design Conditions

Temperature Range - Low:	9 *Deg.*	Temperature Range - High:	88 *Deg.*
Annual Heating Degree Days:	5634	Annual Cooling Degree Days	899

What Extreme Heat Event characteristics will be / have been used for project planning

Days - Above 90°:	Not used in #	Days – Above 100°:	Not used in #
Number of Heatwaves / Year:	project planning #	Average Duration of Heatwave (Days):	project planning #

Describe all building and site measures to reduce heat-island effect at the site and in the surrounding area:

The building footprint was minimized and back yard will be grass. Fourth floor deck will use light colored materials

C.2 - Extreme Heat – Adaptation Strategies

Describe how the building and its systems will be adapted to efficiently manage future higher average temperatures, higher extreme temperatures, additional annual heatwaves, and longer heatwaves:

Units have been designed with windows on three sides to facilitate cross-ventilation.

Describe all mechanical and non-mechanical strategies that will support building functionality and use during extended interruptions of utility services and infrastructure including proposed and future adaptations:

None

D - Extreme Precipitation Events

From 1958 to 2010, there was a 70 percent increase in the amount of precipitation that fell on the days with the heaviest precipitation. Currently, the 10-Year, 24-Hour Design Storm precipitation level is 5.25". There is a significant probability that this will increase to at least 6" by the end of the century. Additionally, fewer, larger storms are likely to be accompanied by more frequent droughts.

D.1 – Extreme Precipitation - Design Conditions

10 Year, 24 Hour Design Storm: 5.55 *In.*

Describe all building and site measures for reducing storm water run-off:

The rear yard is permeable. Roof drains lead to a stormwater recharge system

D.2 - Extreme Precipitation - Adaptation Strategies

Describe how site and building systems will be adapted to efficiently accommodate future more significant rain events (e.g. rainwater harvesting, on-site storm water retention, bio swales, green roofs):

The rear yard is permeable. Roof drains lead to a stormwater recharge system

---

E – Sea Level Rise and Storms

Under any plausible greenhouse gas emissions scenario, sea levels in Boston will continue to rise throughout the century. This will increase the number of buildings in Boston susceptible to coastal flooding and the likely frequency of flooding for those already in the floodplain.

Is any portion of the site in a FEMA SFHA?	*Yes* / *No*	What Zone:	A, AE, AH, AO, AR, A99, V, VE
Current FEMA SFHA Zone Base Flood Elevation:			10 *Ft BCB*

Is any portion of the site in a BPDA Sea Level Rise - Flood Hazard Area? Use the online BPDA SLR-FHA Mapping Tool to assess the susceptibility of the project site.	*Yes* / *No*

If you answered YES to either of the above questions, please complete the following questions.
Otherwise you have completed the questionnaire; thank you!

E.1 – Sea Level Rise and Storms – Design Conditions

Proposed projects should identify immediate and future adaptation strategies for managing the flooding scenario represented on the BPDA Sea Level Rise - Flood Hazard Area (SLR-FHA) map, which depicts a modeled 1% annual chance coastal flood event with 40 inches of sea level rise (SLR). Use the online BPDA SLR-FHA Mapping Tool to identify the highest Sea Level Rise - Base Flood Elevation for the site. The Sea Level Rise - Design Flood Elevation is determined by adding either 24" of freeboard for critical facilities and infrastructure and any ground floor residential units OR 12" of freeboard for other buildings and uses.

Sea Level Rise - Base Flood Elevation:	16.46 *Ft BCB*		
Sea Level Rise - Design Flood Elevation:	18.00 *Ft BCB*	First Floor Elevation:	18.00 *Ft BCB*
Site Elevations at Building:	13.70-17.50 *Ft BCB*	Accessible Route Elevation:	18.00 *Ft BCB*

Describe site design strategies for adapting to sea level rise including building access during flood events, elevated site areas, hard and soft barriers, wave / velocity breaks, storm water systems, utility services, etc.:

N/A

Describe how the proposed Building Design Flood Elevation will be achieved including dry / wet flood proofing, critical systems protection, utility service protection, temporary flood barriers, waste and drain water back flow prevention, etc.:

All finished spaces and utility equipment will be above the FEMA base flood elevation. Backflow preventers will be provided on sewer and drain lines

Describe how occupants might shelter in place during a flooding event including any emergency power, water, and waste water provisions and the expected availability of any such measures:

Residents can shelter in place inside their units. No emergency services are provided.

Describe any strategies that would support rapid recovery after a weather event:

None

E.2 – Sea Level Rise and Storms – Adaptation Strategies

Describe future site design and or infrastructure adaptation strategies for responding to sea level rise including future elevating of site areas and access routes, barriers, wave / velocity breaks, storm water systems, utility services, etc.:

No changes anticipated

Describe future building adaptation strategies for raising the Sea Level Rise Design Flood Elevation and further protecting critical systems, including permanent and temporary measures:

No changes anticipated

A pdf and word version of the Climate Resiliency Checklist is provided for informational use and off-line preparation of a project submission. NOTE: Project filings should be prepared and submitted using the online Climate Resiliency Checklist.

For questions or comments about this checklist or Climate Change best practices, please contact: John.Dalzell@boston.gov

OPERATION AND MAINTENANCE PLAN
337 CHELSEA STREET
EAST BOSTON, MASSACHUSETTS

30-Oct-19

Prepared by Spruhan Engineering, P.C.

The proposed project includes stormwater runoff controls associated with the redevelopment of the site from a two story house to a four-family building that will require continued maintenance by the proponent and then homeowner(s) upon sale. The component associate with maintenance needs is an infiltration system. This will need to be inspected and cleaned periodically as noted below. Cleaning of these structures shall be contracted by the proponent and then homeowner(s) upon sale via a specialty contractor with hydraulic cleaning ability. In addition to the facilities noted below, the homeowners should maintain any roof gutters/drains on a regular basis to prevent clogging and carry over of debris into the drainage systems. The following outlines the major maintenance issues associated with the project:

Maintenance Responsibilities:

The maintenance of the stormwater runoff controls is the responsibility of the proponent until the property is sold; after any sale, the responsibility shifts to the homeowner(s) or successive homeowner(s).

The actual work to inspect and clean infiltration systems shall be subcontracted to a company that specializes in the cleaning of infiltration systems.

Infiltration System:

The storage/infiltration system should be inspected after completion of construction to assure that all debris has been removed and construction material will not cause the systems to clog.

The storage/infiltration system should be inspected two times over the first year of operation to determine the level of required maintenance. This inspection should be performed by the proponent's/homeowner's engineer. As a preliminary schedule, the system piping should be cleaned once a year to remove any accumulated sediments and sediments in the infiltration chambers should be removed when they reach two inches in depth.

Other Activities:

Lawn and Landscape Repairs: The lawn and landscaped areas on the site shall be inspected in the spring and fall of each year and the areas shall be restabilized as needed by seeding as lawn or mulching of landscaped areas.

OPERATION & MAINTENANCE PLAN
337 CHELSEA STREET
EAST BOSTON, MASSACHUSETTS

INSPECTION REPORT:

Inspection Firm: _____

Inspector's Name:_____Date:_____

Components Inspected:_____

_____

Signed: _____

SYSTEM MAINTENANCE:

Maintenance Firm:_____Date:_____

Drain Lines Inspected: Yes_____No_____Comments:_____

_____

Infiltration System Cleaned: Yes_____No_____Comments:_____

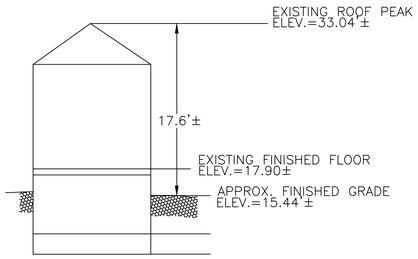
_____

Estimate of Material Removed: _____

Other Comments: _____

_____

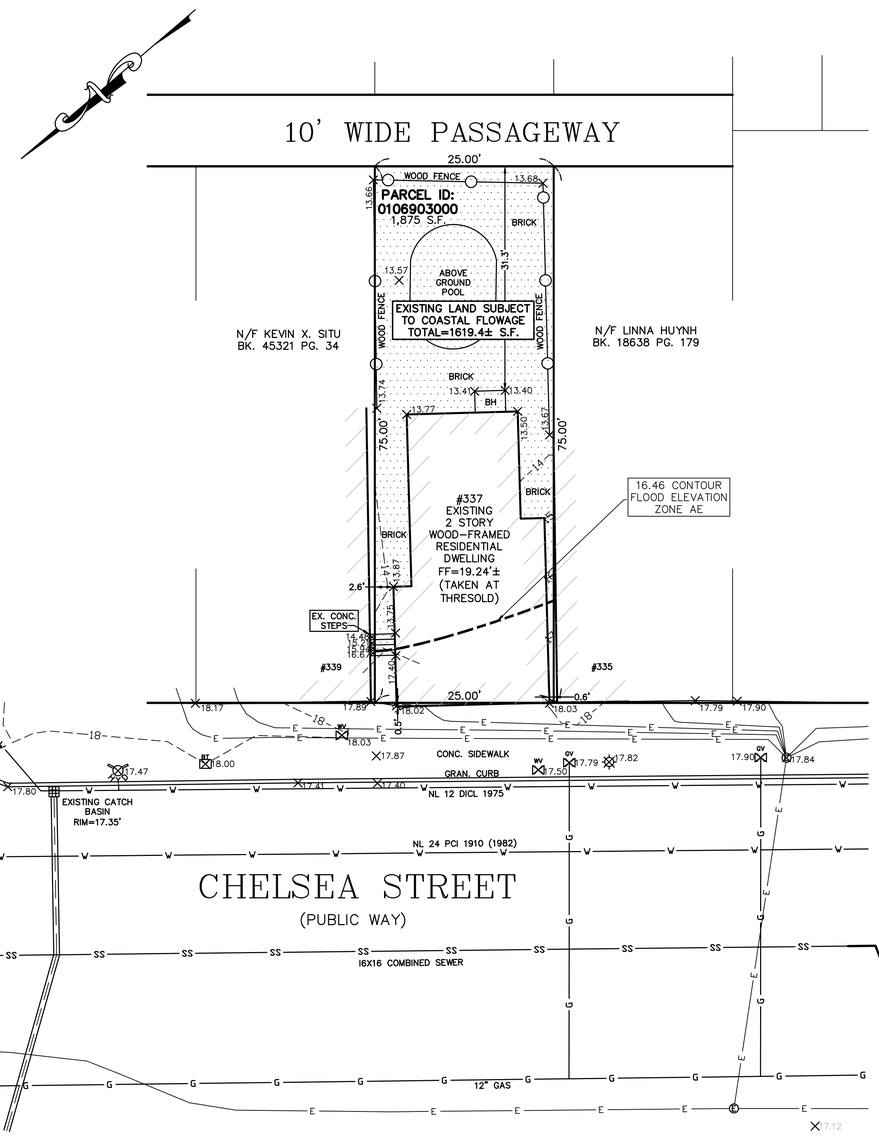
Signed: _____

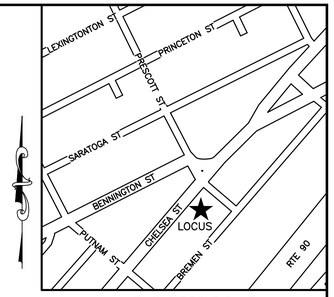


EXISTING PROFILE
NOT TO SCALE

EXISTING LEGEND

	EXISTING BUILDING
—o—	FENCE
×18.00	SPOT GRADE
S	SEWER MANHOLE
	CATCH BASIN
	HYDRANT
W	WATER VALVE
GV	GAS VALVE
	LIGHT POLE
E	ELECTRIC MANHOLE
	"BT" COVER
145	CONTOUR LINE (MJR)
146	CONTOUR LINE (MNR)
SS	SEWER LINE
	DRAIN LINE
W	WATER LINE
G	GAS LINE
E	UNDERGROUND ELECTRIC LINE





LOCUS MAP
(NOT TO SCALE)

EXISTING LOT COVERAGE
*PERVIOUS CRUSHED STONE= 177± S.F.
TOTAL PERVIOUS= 177± S.F.
*IMPERVIOUS WITHIN LSCF BRICK PATIO= 896.7± S.F. BUILDING= 545.7± S.F.
TOTAL IMPERVIOUS WITHIN LSCF= 1,442.4±S.F.

EXISTING LAND SUBJECT TO COASTAL FLOWAGE
PATIO=1,073.7± S.F.
BUILDING=545.7± S.F.
TOTAL=1619.4± S.F.

ZONING LEGEND

ZONING DISTRICT: 3F–2000

	REQUIRED	EXISTING
MIN. AREA	FOR 1 UNIT 1,000 S.F.	1,875 S.F.
ADDITIONAL AREA FOR EACH ADDITIONAL DWELL. UNIT	FOR 1 UNIT 1,000 S.F.	–
MIN. LOT WIDTH	20'	25'
MIN. FRONTAGE	20'	25'
MAX. F.A.R.	1	–
MAX. STORIES	3	2
MAX. BLDG. HEIGHT	35	17.6'
MIN. OPEN SPACE	300 S.F.	–
MIN. YARD FRONT	4'	0.5' OVER
SIDE (RIGHT)	2.5'	0.6'
REAR	20'	31.3'
MAX. REAR YARD OCCUPANCY BY ACCESSORY BLDG.	25%	–

NOTES:

1. INFORMATION SHOWN ON THIS PLAN IS THE RESULT OF A FIELD SURVEY PERFORMED BY PETER NOLAN & ASSOCIATES LLC AS OF 4–13–2018.

2. DEED REFERENCE BOOK: 59488 PAGE 317
PLAN REFERENCE: END OF BOOK 492
SUFFOLK COUNTY REGISTRY OF DEEDS.

3. THIS PLAN IS NOT INTENDED TO BE RECORDED.

4. I CERTIFY THAT THE DWELLING SHOWN IS LOCATED WITHIN A SPECIAL FLOOD HAZARD ZONE. IT IS LOCATED IN ZONE AE. ON FLOOD HAZARD BOUNDARY MAP NUMBER 25025C0019J, PANEL NUMBER 0019J, COMMUNITY NUMBER: 250286, DATED MARCH 16, 2016.

5. THIS PLAN DOES NOT SHOW ANY UNRECORDED OR UNWRITTEN EASEMENTS WHICH MAY EXIST. A REASONABLE AND DILIGENT ATTEMPT HAS BEEN MADE TO OBSERVE ANY APPARENT USES OF THE LAND; HOWEVER THIS NOT CONSTITUTE A GUARANTEE THAN NO SUCH EASEMENTS EXIST.

6. FIRST FLOOR ELEVATIONS ARE TAKEN AT THRESHOLD.

7. NO RESPONSIBILITY IS TAKEN FOR ZONING TABLE AS PETER NOLAN & ASSOCIATES LLC ARE NOT ZONING EXPERTS. TABLE IS TAKEN FROM TABLE PROVIDED BY LOCAL ZONING ORDINANCE. CLIENT AND/OR ARCHITECT TO VERIFY THE ACCURACY OF ZONING ANALYSIS.

8. THE ELEVATIONS SHOWN ARE ON BOSTON CITY BASE.

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

SCALE 1"=10'	B	11/05/2019	REVISED PER WETLAND SPECIALIST COMMENTS	GP
DATE 4/17/2018	A	10/14/19	REVISED FLOOD LINE	HM
	REV	DATE	REVISION	BY
SHEET 1	337 CHELSEA STREET EAST BOSTON MASSACHUSETTS			
PLAN NO. 1 OF 1				
CLIENT:	EXISTING CONDITIONS			
DRAWN BY MGC				
CHKD BY PJN				
APPD BY PJN				

COMMONWEALTH OF MASSACHUSETTS
PETER J. NOLAN 49185 REGISTERED PROFESSIONAL LAND SURVEYOR

SHEET NO. 1

PETER NOLAN & ASSOCIATES LLC
LAND SURVEYORS/CIVIL ENGINEERING CONSULTANTS
697 CAMBRIDGE STREET, SUITE 103 BRIGHTON MA 02135
PHONE: 857 891 7478/617 782 1533 FAX: 617 202 5691
EMAIL: pnolan@pnasurveyors.com

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8. THE ELEVATIONS SHOWN ARE ON BOSTON CITY BASE.

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

RESERVED FOR BWSC USE ONLY

CONSTRUCTION NOTES

1. THE CONTRACTOR SHALL REPORT TO THE OWNER AND ENGINEER OF ANY SIGNIFICANT VARIATIONS IN EXISTING SITE CONDITIONS FROM THOSE SHOWN ON THESE PLANS. ANY PROPOSED REVISIONS TO THE WORK, IF REQUIRED BY THESE SITE CONDITIONS, SHALL NOT BE UNDERTAKEN UNTIL REVIEWED AND APPROVED BY THE OWNER AND THE ENGINEER.

2. IN ORDER TO PROTECT THE PUBLIC SAFETY DURING CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING AT ALL TIMES ALL NECESSARY SAFETY DEVICES AND PERSONNEL, WARNING LIGHTS, BARRICADES, AND POLICE OFFICERS.

3. ALL WORK SHALL CONFORM TO CITY OF BOSTON GENERAL CONSTRUCTION STANDARDS.

4. THE CONTRACTOR SHALL REGULARLY INSPECT THE PERIMETER OF THE PROPERTY TO CLEAN UP AND REMOVE LOOSE CONSTRUCTION DEBRIS BEFORE IT LEAVES THE SITE. ALL DEMOLITION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE SITE TO A LEGAL DUMP SITE. ALL TRUCKS LEAVING THE SHALL BE COVERED.

5. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSTITUTE EROSION CONTROL MEASURES ON AN AS NECESSARY BASIS, SUCH THAT EXCESSIVE SOIL EROSION DOES NOT OCCUR.

6. THE LOCATION OF UNDERGROUND UTILITIES AS REPRESENTED ON THESE PLANS IS BASED UPON PLANS AND INFORMATION PROVIDED BY THE RESPECTIVE UTILITY COMPANIES OR MUNICIPAL DEPARTMENTS SUPPLEMENTED BY FIELD IDENTIFICATION WHEREVER POSSIBLE. NO WARRANTY IS MADE AS TO THE ACCURACY OF THESE LOCATIONS OR THAT ALL UNDERGROUND UTILITIES ARE SHOWN. THE CONTRACTOR SHALL CONTRACT DIG SAFE AT LEAST 72 HOURS PRIOR TO THE START OF CONSTRUCTION. DIG SAFE TELEPHONE NUMBER IS 1–800–322–4844.

7. THE CONTRACTOR SHALL VERIFY THE LOCATION, SIZE AND DEPTH OF EXISTING UTILITIES PRIOR TO TAPPING INTO, CROSSING OR EXTENDING THEM. IF THE NEW WORK POSES A CONFLICT WITH EXISTING UTILITIES, THE ENGINEER SHALL BE NOTIFIED PRIOR TO THE CONTRACTOR CONTINUING.

8. NO LEDGE, BOULDERS, OR OTHER UNYIELDING MATERIALS ARE TO BE LEFT WITHIN 6" OF THE WATER IN THE TRENCH, NOR ARE THEY TO BE USED FOR BACKFILL FOR THE FIRST 12" ABOVE THE PIPES.

9. PAVEMENT AREA SHALL BE PAVED TO A THICKNESS AS SHOWN ON THE PLANS MEASURED AFTER COMPACTION, WITH A BINDER COURSE AND TOP COURSE OF CLASS I BITUMINOUS CONCRETE PAVEMENT, TYPE I–1.

10. BASE MATERIAL SHALL BE CLEAN BANK RUN GRAVEL, CONFORMING TO M.D.P.W. M1.03.1, WITH NO STONES LARGER THAN THREE (3) INCHES IN DIAMETER AND SHALL BE PLACED AND ROLLED WITH AT LEAST A TEN TON ROLLER. THE SURFACES SHALL BE WET DURING ROLLING TO BIND THE MATERIAL. ALL STONES OF 4" DIAMETER OR LARGER SHALL BE REMOVED FROM THE SUB–BASE PRIOR TO PLACING BASE MATERIAL.

11. ALL EXISTING PAVING TO BE DISTURBED SHALL BE CUT ALONG A STRAIGHT LINE THROUGH ITS ENTIRE THICKNESS. BUTT THE NEW PAVING INTO THE EXISTING PAVEMENT TO REMAIN.

12. ANY PAVEMENT REMOVED FOR UTILITY TRENCH EXCAVATION OR OTHERWISE DAMAGED DURING CONSTRUCTION SHALL BE REPLACED WITH A PAVEMENT SECTION CONSISTING OF 1 1/2" WEAR COURSE OVERLYING A 1/2" BINDER COURSE OVERLYING A 12" COMPACTED GRAVEL BASE COURSE.

13. THE CONTRACTOR SHALL APPLY FOR A STREET OPENING AND UTILITY CONNECTION PERMITS AND SIDEWALK CROSSING PERMIT WITH THE CITY OF BOSTON DPW.

14. A PREREQUISITE FOR FILING A GENERAL SERVICE APPLICATION WITH THE BOSTON WATER AND SEWER COMMISSION FOR NEW CONSTRUCTION IS THE ROUGH CONSTRUCTION SIGN–OFF DOCUMENT FROM THE CITY OF BOSTON'S INSPECTIONAL SERVICES DEPARTMENT.

15. THE OWNER IS RESPONSIBLE TO MAINTAIN THE DRAINAGE SYSTEM FOR PROPER OPERATION INCLUDING KEEPING THE DRAIN FREE FROM DEBRIS AND ICE BLOCKAGE.

INSPECTIONS

(1) INFILTRATION SYSTEM
DATE: _____
INSPECTOR:_____

(2) 6" DRAIN OVERFLOW CONNECTION
DATE: _____
INSPECTOR:_____

(3) 4" FIRE LINE
DATE: _____
INSPECTOR:_____

(4) 5/8" WATER METER
DATE: _____
INSPECTOR:_____

(5) 1.5" WATER LINE
DATE: _____
INSPECTOR:_____

(6) 6" PVC SEWER LINE
DATE: _____
INSPECTOR:_____

(7) CUT & CAP SEWER LINE
DATE: _____
INSPECTOR:_____

(8) CUT & CAP WATER LINE
DATE: _____
INSPECTOR:_____

(9) DRAIN CLEAN OUT #1 & #2
DATE: _____
INSPECTOR:_____

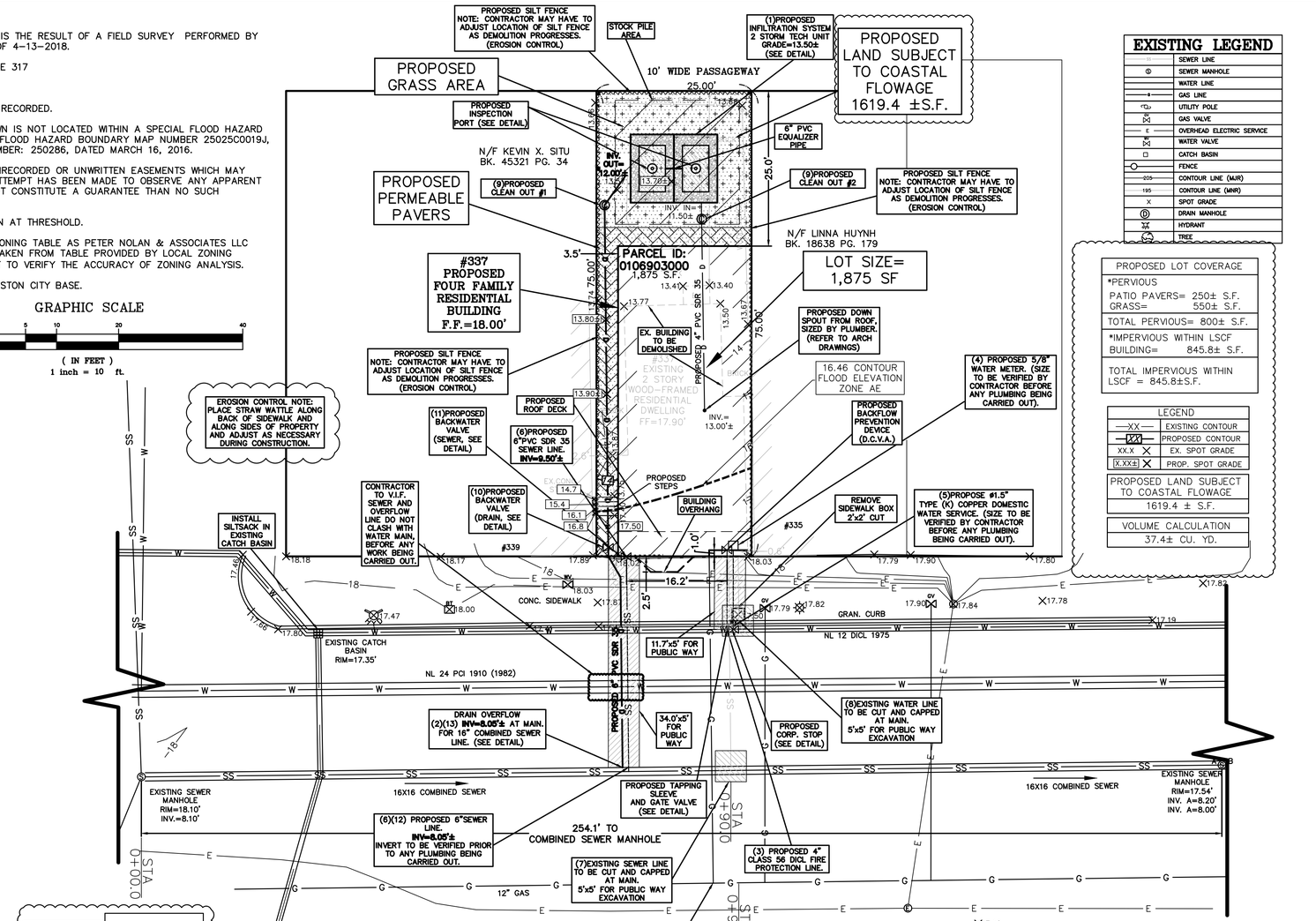
(10) BACK WATER VALVE (DRAIN OVERFLOW)
DATE: _____
INSPECTOR:_____

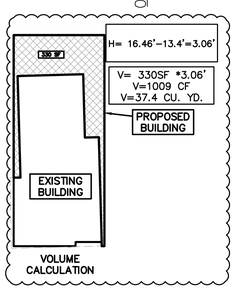
(11) BACK WATER VALVE (SEWER OVERFLOW)
DATE: _____
INSPECTOR:_____

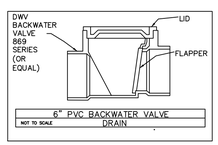
(12) DYE TEST (SEWER)
DATE: _____
INSPECTOR:_____

(13) DYE TEST (DRAIN)
DATE: _____
INSPECTOR:_____

(14) AS–BUILT PREPARATION FEE
DATE: _____
INSPECTOR:_____







Calculations by: HM
Date: July 11th, 2019

STORMWATER MANAGEMENT CALCULATIONS

Design Criteria:
Roof Area = 1,075 S.F.

Total Impervious Area = 1,075 SF

Design For 1" Rainstorm

Storage Volume Required:
$V_R = (1"/12) (1,075 SF) = 89.58 CF$

CAPACITY OF PROPOSED STORM TECH SYSTEM

Storage Capacity of single Storm Tech UNIT = 49 CF

Void Ratio =0.3

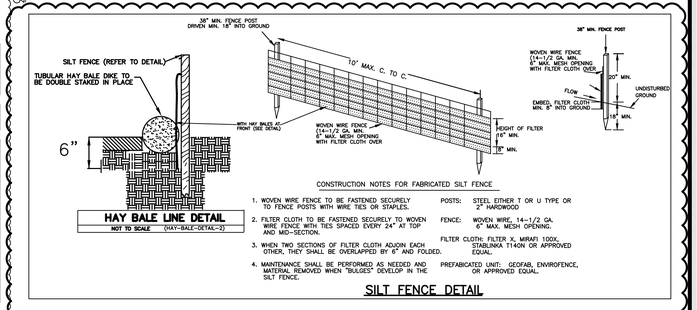
Total Volume= (11'x 3' x 4' depth (1.5ft for Storm Tech unit) x 2 unit) =616 CF

Capacity for 2 UNIT = 98 CF

Storage Capacity in Crushed Stone = (Total Volume – Capacity of Units) x Void Ratio = (616 - 98) x 0.3 = 155.4 CF

Total Storage Provided = Capacity in Crushed Stone + Total Capacity in Units = 155.4 CF + 98 CF = 253.4 CF

Since Total Storage Provided (253.40 CF) > Total Storage Required (89.58 CF/D)
Therefore, utilize 2-Storm-Tech Chamber with 1 ft. of Crushed Stone Beneath to Contain 1" Storm Event



SITE PLAN #: 19377

OWNERS INFORMATION:

FERNANDO DALFIOR: 617–721–7946
DALFIOR DEVELOPMENT INC
1 CITY HALL MALL
MEDFORD MA, 02155

PARCEL ID= 0106903000
ASSESSORS PLAN WARD: 01
LAND USE CODE: R4 (4 UNITS)
WATER ACCOUNT NUMBER: 318100000

* PER TITLE V, SEWER FLOW
RESIDENTIAL
770 G.P.D, (7 BEDROOMS x 110 G.P.D.)

=770 G.P.D. (TOTAL SEWER FLOW)

EXISTING LEGEND

S	SEWER LINE
S	SEWER MANHOLE
W	WATER LINE
G	GAS LINE
UP	UTILITY POLE
GV	GAS VALVE
E	OVERHEAD ELECTRIC SERVICE
WV	WATER VALVE
CB	CATCH BASIN
	FENCE
205	CONTOUR LINE (MJR)
195	CONTOUR LINE (MNR)
x	SPOT GRADE
D	DRAIN MANHOLE
	HYDRANT
	TREE

PROPOSED LOT COVERAGE	
*PERVIOUS	
PATIO PAVERS=	250± S.F.
GRASS=	550± S.F.
TOTAL PERVIOUS=	800± S.F.
*IMPERVIOUS WITHIN LSCF	
BUILDING=	845.8± S.F.
TOTAL IMPERVIOUS WITHIN LSCF =	845.8±S.F.

LEGEND	
XX	EXISTING CONTOUR
XX	PROPOSED CONTOUR
XX.X	EX. SPOT GRADE
(X.XX±)	PROP. SPOT GRADE

PROPOSED LAND SUBJECT TO COASTAL FLOWAGE
1619.4 ± S.F.

VOLUME CALCULATION
37.4± CU. YD.

PETER NOLAN & ASSOCIATES, LLC
LAND SURVEYORS/CIVIL ENGINEERING CONSULTANTS
697 CAMBRIDGE STREET, (SUITI03), BRIGHTON, MA 02135
Tel:857–891–7478
617–782–1533
Fax:617–2025691

SPRUHAN ENGINEERING, P.C.
80 JEWETT ST, (SUITE 1)
NEWTON, MA 02458
Tel: 617–816–0722
Email:edmond@spruhaneng.com

COMMONWEALTH OF MASSACHUSETTS — PETER J. NOLAN — No. 49185 — REGISTERED PROFESSIONAL LAND SURVEYOR

COMMONWEALTH OF MASSACHUSETTS — EDMOND SPRUHAN — No. 43316 — REGISTERED PROFESSIONAL ENGINEER

337 CHELSEA STREET, EAST BOSTON, MASSACHUSETTS

REVISION BLOCK

DESCRIPTION	DATE	REV
REVISED AS PER BWSC COMMENTS	8/5/19	HM
REVISED AS PER BWSC COMMENTS	9/5/19	HM
REVISED FLOOD ELEVATION	10/14/19	HM
REVISED AS PER WETLAND SPECIALIST COMMENTS	11/05/19	GP

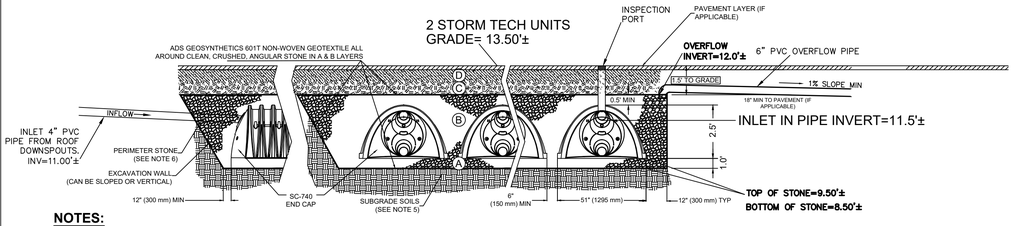
PLAN TO ACCOMPANY BWSC APPLICATION

PLAN:	1 OF 2
SCALE:	1" = 10'
DATE:	07-16-19
DRAWN BY:	HM
CHECKED BY:	PN
APPROVED BY:	ES

SHEET: 001

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4-2 INCH (20-50 mm)	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4-2 INCH (20-50 mm)	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. [2]



NOTE: CONTRACTOR TO NOTIFY ENGINEER IF GROUNDWATER IS FOUND TO BE WITHIN 2' OF PROPOSED CRUSHED STONE

NOTES:

1. SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE "SITE DESIGN ENGINEER" REFERS TO THE ENGINEER RESPONSIBLE FOR THE DESIGN AND LAYOUT OF THE STORMTECH CHAMBERS FOR THIS PROJECT.
5. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
6. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
7. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

STORMTECH GENERAL NOTES

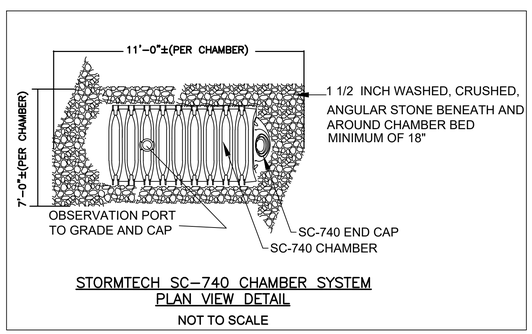
1. STORMTECH LLC ("STORMTECH") REQUIRES INSTALLING CONTRACTORS TO USE AND UNDERSTAND STORMTECH'S LATEST INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING SYSTEM INSTALLATION.
2. STORMTECH'S REQUIREMENTS FOR SYSTEMS WITH PAVEMENT DESIGN (ASPHALT, CONCRETE PAVERS, ETC.): MINIMUM COVER IS 18 INCHES NOT INCLUDING PAVEMENT; MAXIMUM COVER IS 96 INCHES INCLUDING PAVEMENT. FOR INSTALLATIONS THAT DO NOT INCLUDE PAVEMENT, WHERE RUTTING FROM VEHICLES MAY OCCUR, MINIMUM REQUIRED COVER IS 24 INCHES, MAXIMUM COVER IS 96 INCHES.
3. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE DESIGN ENGINEER.
4. AASHTO M288 CLASS 2 NON-WOVEN GEOTEXTILE (FILTER FABRIC) MUST BE USED AS INDICATED IN THE PROJECT PLANS.

STONE PLACEMENT BETWEEN CHAMBERS ROWS AND AROUND PERIMETER MUST FOLLOW INSTRUCTIONS AS INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.

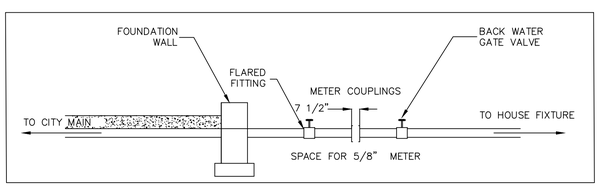
BACKFILLING OVER THE CHAMBERS MUST FOLLOW REQUIREMENTS AS INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.

THE CONTRACTOR MUST REFER TO STORMTECH'S INSTALLATION INSTRUCTIONS FOR A TABLE OF ACCEPTABLE VEHICLE LOADS AT VARIOUS DEPTHS OF COVER. THIS INFORMATION IS ALSO AVAILABLE AT STORMTECH'S WEBSITE. CONTRACTOR IS RESPONSIBLE FOR PREVENTING VEHICLES THAT EXCEED STORMTECH'S REQUIREMENTS FROM TRAVELING ACROSS OR PARKING OVER THE STORMWATER SYSTEM. TEMPORARY FENCING, WARNING TAPE AND APPROPRIATELY LOCATED SIGNS ARE COMMONLY USED TO PREVENT UNAUTHORIZED VEHICLES FROM ENTERING SENSITIVE CONSTRUCTION AREAS.

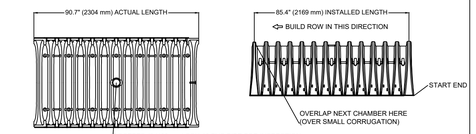
THE CONTRACTOR MUST APPLY EROSION AND SEDIMENT CONTROL MEASURES TO PROTECT THE STORMWATER SYSTEM DURING ALL PHASES OF SITE CONSTRUCTION PER LOCAL CODES AND DESIGN ENGINEER'S SPECIFICATIONS.



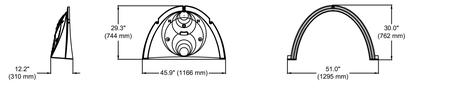
STORMTECH SC-740 CHAMBER SYSTEM PLAN VIEW DETAIL
NOT TO SCALE



SC-740 TECHNICAL SPECIFICATION
NTS



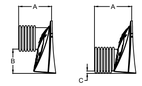
ACCEPTS 4" (100 mm) SCH 40 PVC PIPE FOR INSPECTION PORT. FOR PIPE SIZES LARGER THAN 4" (100 mm) UP TO 10" (250 mm) USE INSERTA TEE CONNECTION CENTERED ON A CHAMBER CREST CORRUGATION



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 30.0" X 85.4"	(1295 mm X 762 mm X 2169 mm)
CHAMBER STORAGE	45.9 CUBIC FEET	(1.30 m³)
MINIMUM INSTALLED STORAGE*	74.9 CUBIC FEET	(2.12 m³)
WEIGHT	75.0 lbs.	(33.6 kg)

*ASSUMES 6" (152 mm) STONE ABOVE, BELOW, AND BETWEEN CHAMBERS



STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"

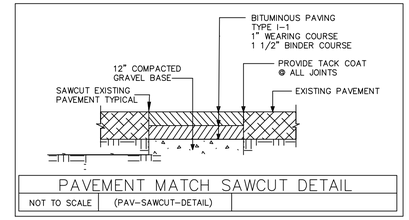
PART #	STUB	A	B	C
SC740EPE06T / SC740EPE06TPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	---
SC740EPE06B / SC740EPE06BPC			---	0.5" (13 mm)
SC740EPE08T /SC740EPE08TPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	---
SC740EPE08B / SC740EPE08BPC			---	0.6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	13.4" (340 mm)	14.5" (368 mm)	---
SC740EPE10B / SC740EPE10BPC			---	0.7" (18 mm)
SC740EPE12T / SC740EPE12TPC	12" (300 mm)	14.7" (373 mm)	12.5" (318 mm)	---
SC740EPE12B / SC740EPE12BPC			---	1.2" (30 mm)
SC740EPE15T / SC740EPE15TPC	15" (375 mm)	18.4" (467 mm)	9.0" (229 mm)	---
SC740EPE15B / SC740EPE15BPC			---	1.3" (33 mm)
SC740EPE18T / SC740EPE18TPC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	---
SC740EPE18B / SC740EPE18BPC			---	1.6" (41 mm)
SC740EPE24B*	24" (600 mm)	18.5" (470 mm)	---	0.1" (3 mm)

ALL STUBS, EXCEPT FOR THE SC740EPE24B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC740EPE24B THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

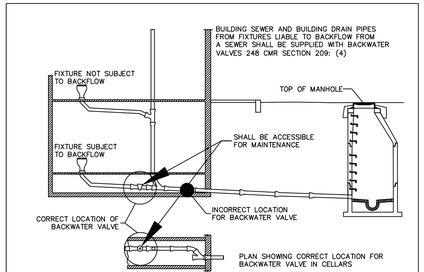
NOTE: ALL DIMENSIONS ARE NOMINAL

SC-740 INSPECTION PORT DETAIL
NTS



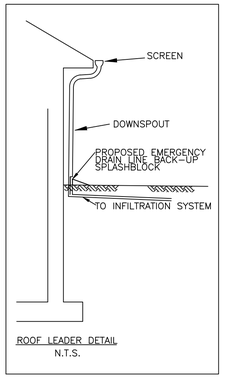
PAVEMENT MATCH SAWCUT DETAIL

NOT TO SCALE	(PAV-SAWCUT-DETAIL)	



NOTE:
ALL PLUMBING FIXTURES BELOW THE LEVEL OF THE TOP OF THE MANHOLE OF THE SEWER SERVICING THE FIXTURE(S) SHALL BE CONSIDERED AS BEING SUBJECT TO BACKFLOW AND SHALL BE SUPPLIED WITH BACKWATER VALVES.

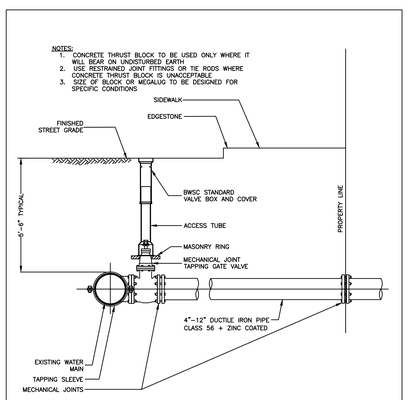
Boston Water and Sewer Commission (980 HARRISON AVE., BOSTON, MA 02119, (617) 989-7000, www.bwsc.org)	LOCATION OF BACKWATER VALVES Scale: Not To Scale		



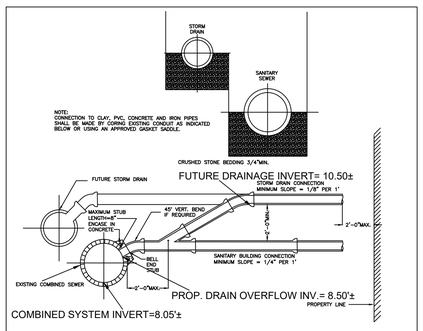
NOTES:
1. FULL PVC OR IRON SADDLE MAY BE USED TO CONNECT TO EXISTING PVC, CLAY, CONCRETE, OR IRON PIPE.
2. SADDLES MUST HAVE RUBBER GASKETS AND SHALL BE TIGHTENED WITH STRAPS. SADDLES WILL NOT BE CEMENTED ONTO THE PIPE.
3. FULL WYE CONNECTION FITTINGS MAY BE USED
4. PIPE SHALL BE CUT TO CONFORM TO THE OPENING IN THE SADDLE.
5. CONNECTIONS DIRECTLY INTO THE EXISTING PIPE WITHOUT A SADDLE OR A FULL WYE FITTING ARE NOT ALLOWED.

Boston Water and Sewer Commission (980 HARRISON AVE., BOSTON, MA 02119, (617) 989-7000, www.bwsc.org)	TYPICAL SADDLE CONNECTION TO EXISTING SEWER OR DRAIN Scale: Not To Scale	DATE: Sept. 30, 2012	DETAIL NO. B-12b

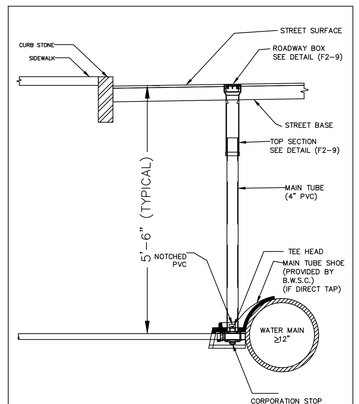
ROOF LEADER DETAIL
N.T.S.



Boston Water and Sewer Commission (980 HARRISON AVE., BOSTON, MA 02119, (617) 989-7000, www.bwsc.org)	TYPICAL WATER PIPE CONNECTION WITH TAPPING SLEEVE AND GATE VALVE Scale: Not To Scale	DATE: June 30, 2012	DETAIL NO. MODEL



Boston Water and Sewer Commission (980 HARRISON AVE., BOSTON, MA 02119, (617) 989-7000, www.bwsc.org)	TYPICAL CONNECTION TO EXISTING COMBINED SEWER Scale: Not To Scale	DATE: June 30, 2012	DETAIL NO. Model



Boston Water and Sewer Commission (980 HARRISON AVE., BOSTON, MA 02119, (617) 989-7000, www.bwsc.org)	TYPICAL WATER CONNECTION FOR 1-1/2 AND 2-INCH SERVICE PIPES TO 12"-16" WATER MAINS Scale: Not To Scale	DATE:	DETAIL NO. Model

PETER NOLAN & ASSOCIATES, LLC
LAND SURVEYORS/CIVIL ENGINEERING CONSULTANTS
697 CAMBRIDGE STREET, (SUITI03),
BRIGHTON, MA 02135
Tel:857-891-7478
617-782-1533
Fax:617-2025691

SPRUHAN ENGINEERING, P.C.
80 JEWETT ST, (SUITE 1)
NEWTON, MA 02458
Tel: 617-816-0722
Email:edmond@spruhaneng.com

COMMONWEALTH OF MASSACHUSETTS
EDMOND SPRUHAN
CIVIL
No. 45331
REGISTERED PROFESSIONAL ENGINEER

337 CHELSEA STREET, EAST BOSTON, MASSACHUSETTS

REVISION BLOCK

DESCRIPTION	DATE	REV
REVISED AS PER BWSC COMMENTS	8/5/19	HM
REVISED AS PER BWSC COMMENTS	9/5/19	HM
REVISED FLOOD ELEVATION	10/14/19	HM

DETAIL SHEET

PLAN:	2 OF 2
SCALE:	N/A
DATE:	07-16-19
DRAWN BY:	HM
CHECKED BY:	PN
APPROVED BY:	ES

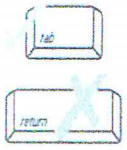
SHEET:
002

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

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



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certificatcn must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

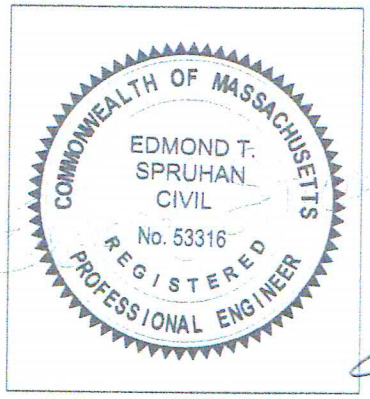
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



Signature and Date 10/23/19

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☐ New development

☒ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- [x] No disturbance to any Wetland Resource Areas
- [ ] Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- [ ] Reduced Impervious Area (Redevelopment Only)
- [ ] Minimizing disturbance to existing trees and shrubs
- [ ] LID Site Design Credit Requested:
  - [ ] Credit 1
  - [ ] Credit 2
  - [ ] Credit 3
- [ ] Use of "country drainage" versus curb and gutter conveyance and pipe
- [ ] Bioretention Cells (includes Rain Gardens)
- [ ] Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- [ ] Treebox Filter
- [ ] Water Quality Swale
- [ ] Grass Channel
- [ ] Green Roof
- [x] Other (describe): Storm-Tech units with crushed stone bed

Standard 1: No New Untreated Discharges

- [x] No new untreated discharges
- [ ] Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- [ ] Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☒ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☐ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☐ Soil Analysis provided.

☐ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☐ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☐ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☒ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

☐ Site is comprised solely of C and D soils and/or bedrock at the land surface

☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000

☐ Solid Waste Landfill pursuant to 310 CMR 19.000

☒ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☐ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☒ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☐ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☐ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☒ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☒ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☒ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☒ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☐ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☐ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☐ Name of the stormwater management system owners;
- ☐ Party responsible for operation and maintenance;
- ☐ Schedule for implementation of routine and non-routine maintenance tasks;
- ☐ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☐ Description and delineation of public safety features;
- ☐ Estimated operation and maintenance budget; and
- ☐ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☐ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☒ An Illicit Discharge Compliance Statement is attached;

☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

ILLICIT DISCHARGE COMPLIANCE STATEMENT

I verify that no illicit discharges exist from the 337 Chelsea Street - East Boston residential building. Through the implementation of the Operation and Maintenance Plan, measures are set forth to prevent illicit discharges from entering the stormwater management drainage system.

Fernando Dalfior

Signature | Print Name | Date

Title | Company

Signature | Print Name | Date

Title | Company

Note: This certification must be signed before stormwater is conveyed to the proposed stormwater drainage system in accordance with Standard 10 of the Massachusetts Stormwater Management Standards.

SPRUHAN ENGINEERING, P.C.

STORMWATER REPORT

337 Chelsea Street, East Boston, MA

Prepared By: Spruhan Engineering, P.C.

10/22/2019

Contents

1.0 Introduction

Spruhan Engineering, P.C. has prepared this Storm water Report for the proposed redevelopment project located at 337 Chelsea Street, East Boston, Massachusetts.

The proposed development consists of three 4 family residential dwellings and proposed landscaped area at the backyard. The purpose of this report is to show the proposed and existing hydrological conditions and the efficiency of the proposed infiltration system.

The proposed infiltration system consists of 2 stormtech chambers and is sized for a 1 inch storm event for all the proposed impervious area per BWSC requirements.

2.0 Existing Conditions

The existing property is located at 337 Chelsea Street, East Boston, Massachusetts. The site is bounded by residential dwellings on both sides, by Chelsea Street at the front and by a 10' wide passageway at the rear. The property is located at Chelsea Street between Putnam Street and Prescott Street. The existing roof area on the lot is 767 S.F., the existing brick patio area is 931 S.F., and the existing crushed stone area on the lot is 177 S.F.

2.1 Existing Topography and Drainage Infrastructure.

In general, the back yard is fairly flat, it slopes from south to north side approximately at 0.7%. As there is no drainage system currently installed, all storm water scours across the surface at grade.

3.0 Proposed Conditions

3.1 Project Description

The proposed development consists of a 4-family new residential dwelling 4 story height and a small backyard patio. The total proposed area of the roof will have an area of 1,075 S.F. The proposed landscaped backyard and walkways will have an area of 800 S.F.

3.2 Storm Water Runoff

HydroCAD was used to model the site for the existing and proposed conditions for the 10-year, 25-year, and 100-year type III storm events based on Atlas-14 Rain information for Middlesex County Central Area (Refer to Chapter 5 of this report for further information on rainfall data of the site). HydroCAD calculations can be seen in Appendix A. The following table shows a summary of the existing and proposed conditions on the site as they relate to flowrate and volume of storm water runoff for each of the storm events.

	Summary Table			
	Rainfall Intensity		Volume of Runoff	
	EXISTING	PROPOSED	EXISTING	PROPOSED
2 Year Storm	0.14 cfs	0.04 cfs	461 cf	211 cf
10 Year Storm	0.22 cfs	0.20 cfs	764 cf	500 cf
25 Year Storm	0.28 cfs	0.25 cfs	948 cf	679 cf
100 Year Storm	0.36 cfs	0.32 cfs	1,231 cf	958 cf

4.0 Soil Information

The NRCS Web Soil Survey provides one Map Unit on the area of the project. This is listed next:

- Map unit symbol: 603; Name: Urban land, wet substratum, 0 to 3 percent slopes.
- Map unit symbol: 655; Name: Udorthents, wet substratum.

The NRCS Web Soil Survey does not show any Hydrologic Soil Group in this case. Therefore, a geological report was used to establish the Hydrologic soil group, showing silty clay which has the NRCS “D” properties and these properties were applied to the HydroCAD software calcs.

Further detailed information is described in Appendix B.

5.0 NOAA’s Atlas Precipitation Data

The NOAA’s National Weather Service contains in its website rainfall depth information necessary for the hydrological calculations performed in the chosen software for this report in its section called Precipitation Frequency Data Server.

The results for a 2 year,10 year, 25 year and 100 year, 24-hr storm are shown in the next table.

NOAA Atlas 14, Volume 10, Version 2
Location name: Dorchester, Massachusetts, USA*
Latitude: 42.2899°, Longitude: -71.0469°
Elevation: 7.88 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.302** (0.248-0.368)	**0.374** (0.307-0.456)	**0.492** (0.402-0.602)	**0.590** (0.478-0.727)	**0.725** (0.564-0.949)	**0.829** (0.630-1.12)	**0.932** (0.685-1.32)	**1.08** (0.736-1.56)	**1.27** (0.829-1.92)	**1.42** (0.899-2.20)
10-min	**0.428** (0.351-0.521)	**0.530** (0.434-0.646)	**0.698** (0.569-0.853)	**0.836** (0.677-1.03)	**1.03** (0.800-1.34)	**1.17** (0.892-1.58)	**1.32** (0.971-1.87)	**1.53** (1.04-2.21)	**1.80** (1.17-2.73)	**2.01** (1.27-3.11)
15-min	**0.504** (0.413-0.613)	**0.624** (0.511-0.760)	**0.821** (0.669-1.00)	**0.984** (0.797-1.21)	**1.21** (0.941-1.58)	**1.38** (1.05-1.86)	**1.55** (1.14-2.20)	**1.80** (1.23-2.60)	**2.12** (1.38-3.21)	**2.37** (1.50-3.66)
30-min	**0.689** (0.565-0.837)	**0.854** (0.700-1.04)	**1.13** (0.918-1.38)	**1.35** (1.09-1.66)	**1.66** (1.29-2.17)	**1.90** (1.44-2.56)	**2.14** (1.57-3.03)	**2.48** (1.69-3.58)	**2.93** (1.90-4.42)	**3.27** (2.07-5.05)
60-min	**0.873** (0.716-1.06)	**1.08** (0.888-1.32)	**1.43** (1.17-1.75)	**1.72** (1.39-2.11)	**2.11** (1.64-2.76)	**2.41** (1.84-3.25)	**2.72** (2.00-3.85)	**3.15** (2.15-4.56)	**3.73** (2.43-5.63)	**4.16** (2.64-6.44)
2-hr	**1.12** (0.922-1.35)	**1.41** (1.16-1.70)	**1.88** (1.54-2.28)	**2.27** (1.85-2.77)	**2.80** (2.20-3.65)	**3.22** (2.46-4.32)	**3.63** (2.69-5.13)	**4.25** (2.91-6.10)	**5.07** (3.31-7.59)	**5.70** (3.62-8.72)
3-hr	**1.30** (1.08-1.56)	**1.64** (1.35-1.97)	**2.19** (1.80-2.64)	**2.64** (2.16-3.22)	**3.27** (2.57-4.24)	**3.76** (2.89-5.02)	**4.24** (3.16-5.96)	**4.97** (3.41-7.10)	**5.95** (3.89-8.84)	**6.68** (4.25-10.2)
6-hr	**1.70** (1.42-2.03)	**2.12** (1.76-2.54)	**2.81** (2.33-3.37)	**3.38** (2.78-4.09)	**4.16** (3.29-5.35)	**4.77** (3.68-6.31)	**5.37** (4.01-7.48)	**6.28** (4.33-8.87)	**7.48** (4.91-11.0)	**8.39** (5.35-12.6)
12-hr	**2.21** (1.85-2.62)	**2.72** (2.28-3.23)	**3.54** (2.96-4.23)	**4.23** (3.50-5.08)	**5.17** (4.11-6.59)	**5.90** (4.58-7.73)	**6.63** (4.96-9.11)	**7.69** (5.32-10.7)	**9.09** (5.99-13.2)	**10.1** (6.49-15.1)
24-hr	**2.69** (2.27-3.17)	**3.32** (2.80-3.92)	**4.35** (3.65-5.15)	**5.20** (4.34-6.21)	**6.38** (5.11-8.07)	**7.29** (5.69-9.48)	**8.20** (6.18-11.2)	**9.56** (6.64-13.2)	**11.4** (7.52-16.4)	**12.7** (8.18-18.8)
2-day	**3.05** (2.60-3.58)	**3.85** (3.27-4.52)	**5.16** (4.36-6.08)	**6.25** (5.24-7.40)	**7.74** (6.24-9.76)	**8.89** (7.00-11.5)	**10.0** (7.66-13.7)	**11.9** (8.31-16.4)	**14.4** (9.55-20.6)	**16.3** (10.5-23.8)
3-day	**3.35** (2.86-3.91)	**4.22** (3.59-4.92)	**5.63** (4.78-6.60)	**6.80** (5.73-8.03)	**8.41** (6.81-10.6)	**9.66** (7.64-12.5)	**10.9** (8.35-14.8)	**13.0** (9.06-17.7)	**15.7** (10.4-22.3)	**17.8** (11.5-25.8)
4-day	**3.63** (3.11-4.23)	**4.53** (3.87-5.27)	**5.98** (5.09-6.99)	**7.19** (6.07-8.46)	**8.85** (7.19-11.1)	**10.1** (8.03-13.0)	**11.4** (8.77-15.5)	**13.6** (9.49-18.4)	**16.4** (10.9-23.2)	**18.6** (12.0-26.8)
7-day	**4.42** (3.80-5.11)	**5.34** (4.59-6.18)	**6.84** (5.85-7.95)	**8.09** (6.86-9.46)	**9.80** (8.00-12.2)	**11.1** (8.86-14.2)	**12.5** (9.58-16.7)	**14.7** (10.3-19.8)	**17.6** (11.7-24.6)	**19.8** (12.8-28.3)
10-day	**5.14** (4.43-5.92)	**6.08** (5.24-7.01)	**7.62** (6.54-8.82)	**8.89** (7.57-10.4)	**10.7** (8.71-13.1)	**12.0** (9.57-15.2)	**13.4** (10.3-17.7)	**15.5** (10.9-20.8)	**18.4** (12.3-25.6)	**20.6** (13.3-29.2)
20-day	**7.20** (6.26-8.24)	**8.23** (7.14-9.43)	**9.90** (8.56-11.4)	**11.3** (9.68-13.1)	**13.2** (10.8-16.0)	**14.7** (11.7-18.2)	**16.2** (12.3-20.9)	**18.1** (12.8-23.9)	**20.7** (13.9-28.4)	**22.6** (14.7-31.7)
30-day	**8.90** (7.77-10.1)	**9.99** (8.71-11.4)	**11.8** (10.2-13.5)	**13.3** (11.4-15.3)	**15.3** (12.6-18.4)	**16.9** (13.4-20.7)	**18.5** (14.0-23.4)	**20.2** (14.4-26.5)	**22.5** (15.2-30.6)	**24.2** (15.8-33.8)
45-day	**11.0** (9.66-12.5)	**12.2** (10.7-13.9)	**14.1** (12.3-16.1)	**15.7** (13.6-18.0)	**17.9** (14.7-21.3)	**19.6** (15.6-23.7)	**21.2** (16.1-26.6)	**22.8** (16.3-29.7)	**24.8** (16.8-33.6)	**26.4** (17.2-36.5)
60-day	**12.8** (11.3-14.5)	**14.0** (12.3-15.9)	**16.0** (14.0-18.2)	**17.7** (15.3-20.2)	**20.0** (16.5-23.6)	**21.7** (17.3-26.2)	**23.5** (17.7-29.1)	**24.9** (17.9-32.3)	**26.8** (18.2-36.1)	**28.2** (18.5-38.9)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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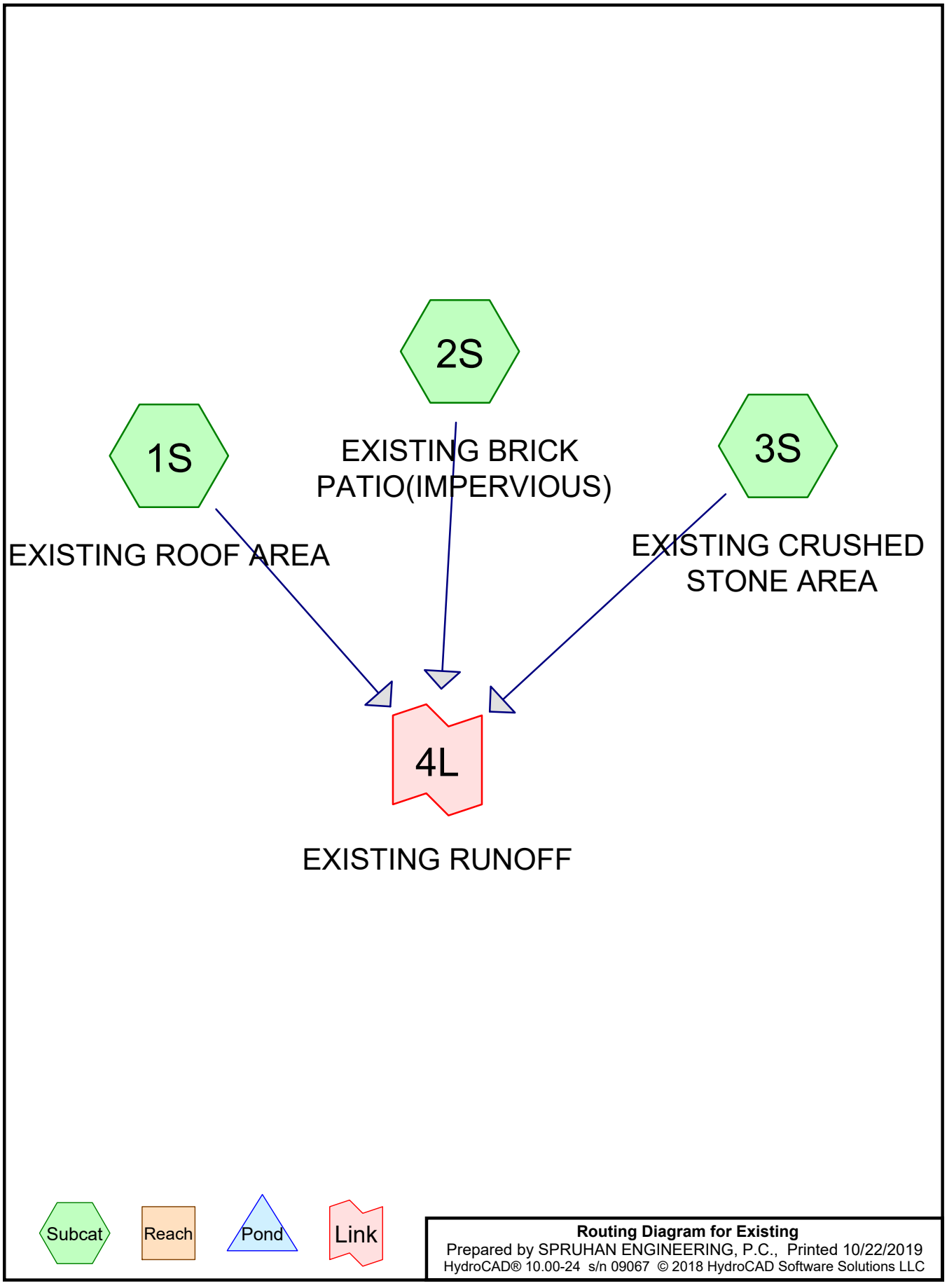
PF graphical

Appendix A – HydroCAD Calculations



Routing Diagram for Existing

Prepared by SPRUHAN ENGINEERING, P.C., Printed 10/22/2019

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
177	91	Gravel roads, HSG D (3S)
931	98	Paved roads w/curbs & sewers, HSG D (2S)
767	98	Roofs, HSG D (1S)
1,875	**97**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
0	HSG C	
1,875	HSG D	1S, 2S, 3S
0	Other	
1,875		**TOTAL AREA**

Summary for Subcatchment 1S: EXISTING ROOF AREA

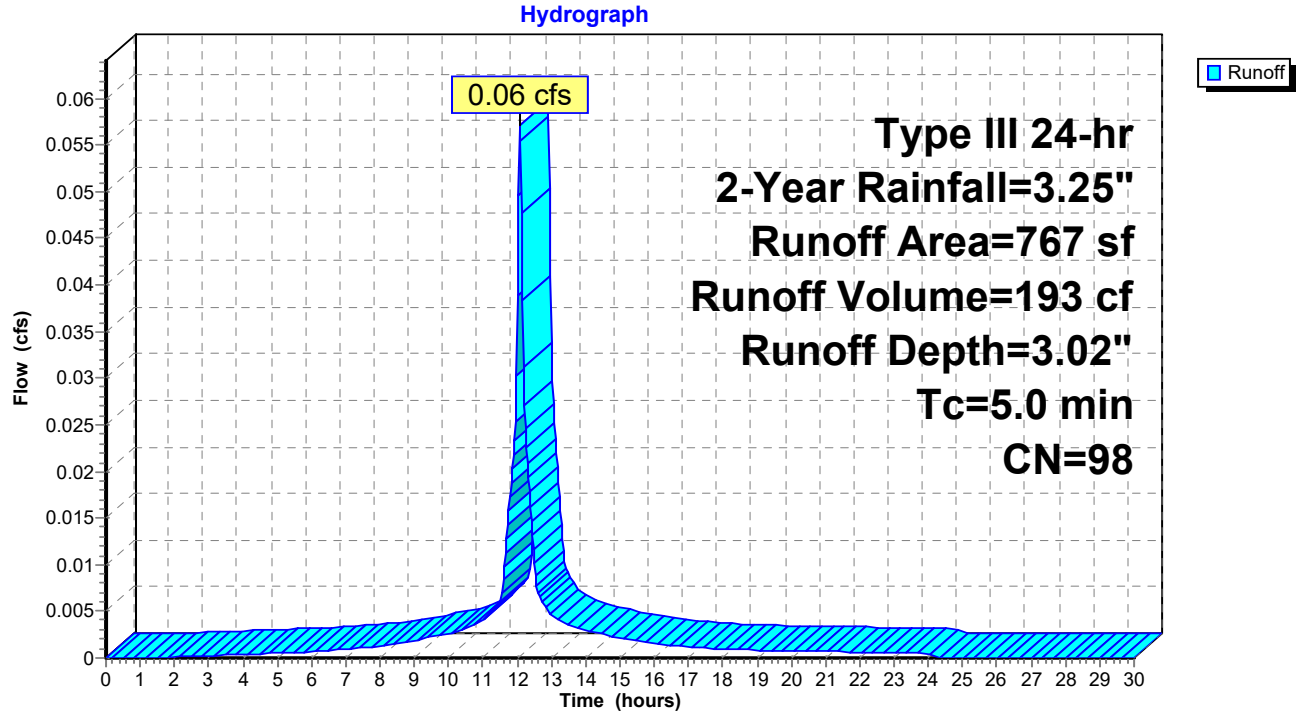
Runoff = 0.06 cfs @ 12.07 hrs, Volume= 193 cf, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=3.25"

Area (sf)	CN	Description
767	98	Roofs, HSG D
767		100.00% Impervious Area

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

Subcatchment 1S: EXISTING ROOF AREA



Summary for Subcatchment 2S: EXISTING BRICK PATIO(IMPERVIOUS)

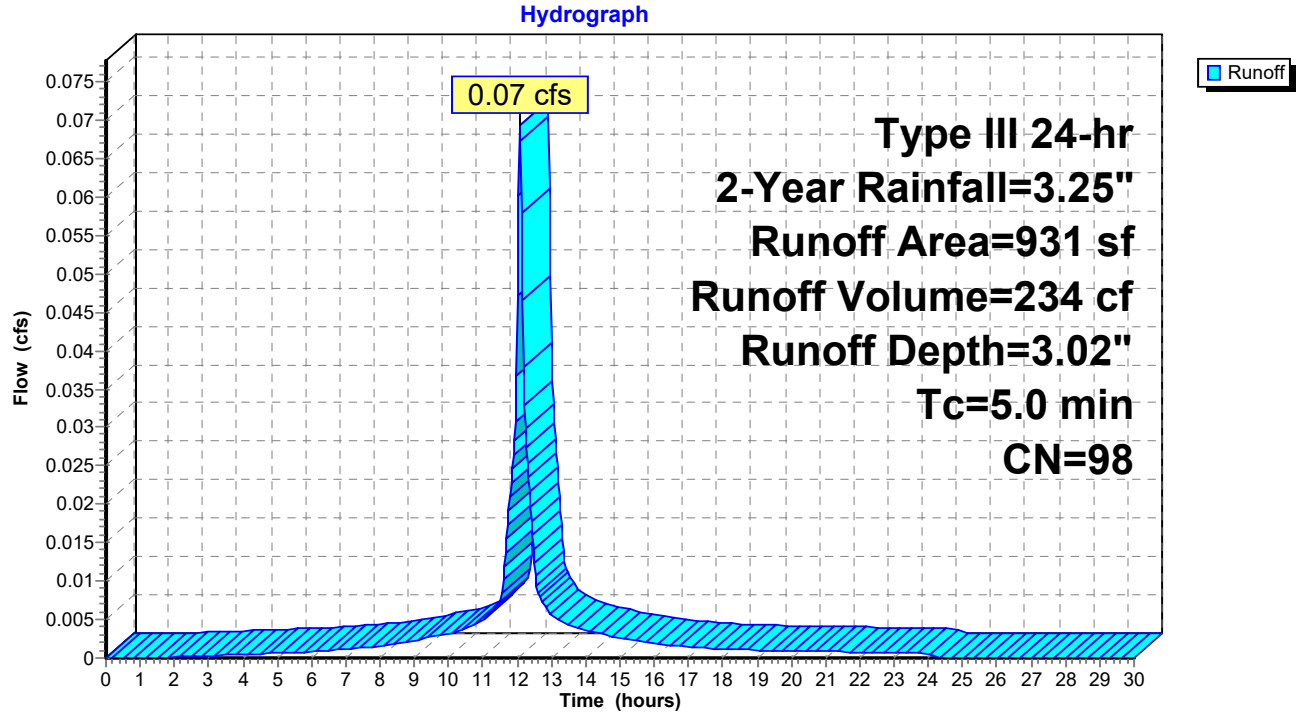
Runoff = 0.07 cfs @ 12.07 hrs, Volume= 234 cf, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=3.25"

Area (sf)	CN	Description
931	98	Paved roads w/curbs & sewers, HSG D
931		100.00% Impervious Area

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

Subcatchment 2S: EXISTING BRICK PATIO(IMPERVIOUS)



Summary for Subcatchment 3S: EXISTING CRUSHED STONE AREA

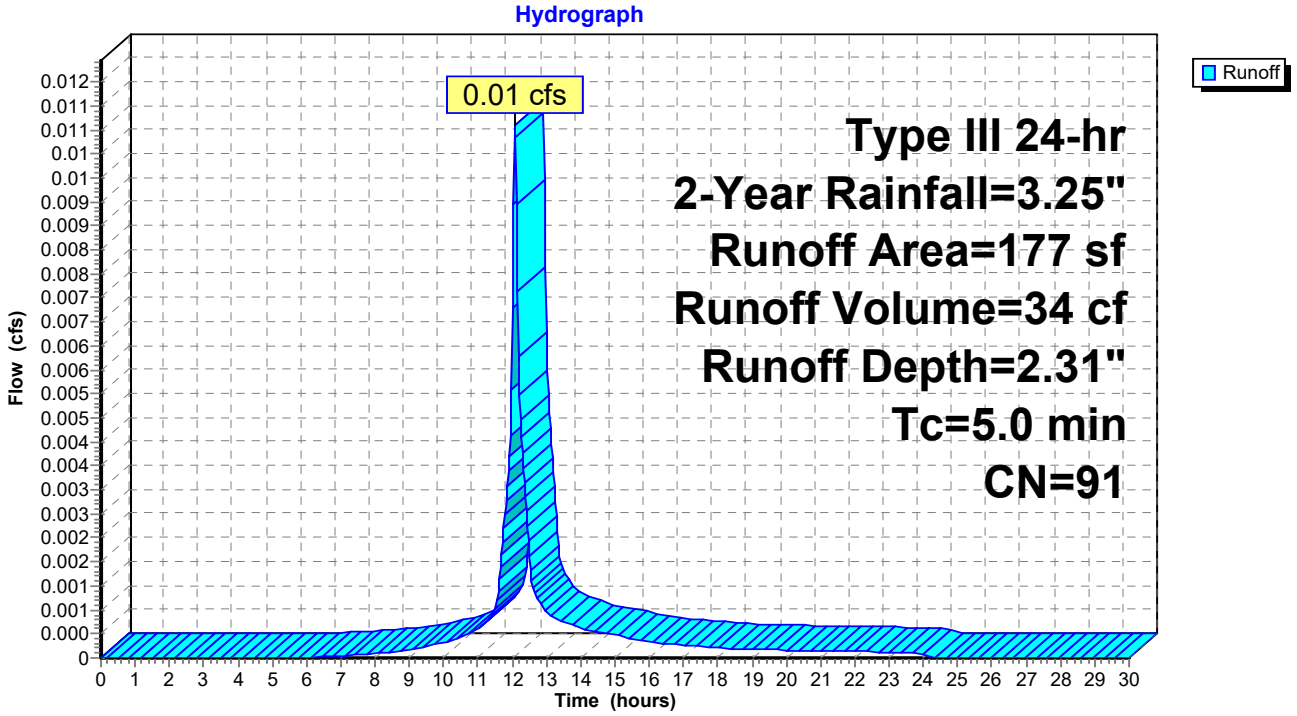
Runoff = 0.01 cfs @ 12.07 hrs, Volume= 34 cf, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=3.25"

Area (sf)	CN	Description
177	91	Gravel roads, HSG D
177		100.00% Pervious Area

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

Subcatchment 3S: EXISTING CRUSHED STONE AREA

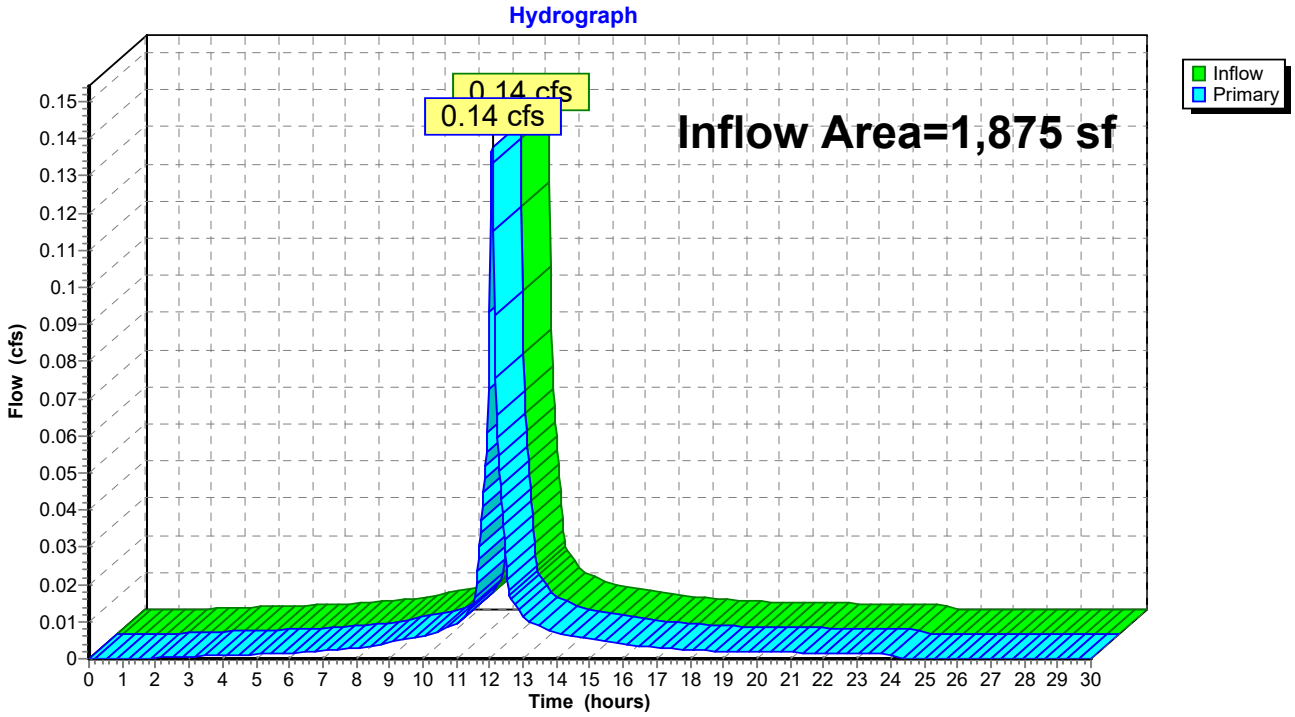


Summary for Link 4L: EXISTING RUNOFF

Inflow Area = 1,875 sf, 90.56% Impervious, Inflow Depth = 2.95" for 2-Year event
Inflow = 0.14 cfs @ 12.07 hrs, Volume= 461 cf
Primary = 0.14 cfs @ 12.07 hrs, Volume= 461 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Link 4L: EXISTING RUNOFF



Summary for Subcatchment 1S: EXISTING ROOF AREA

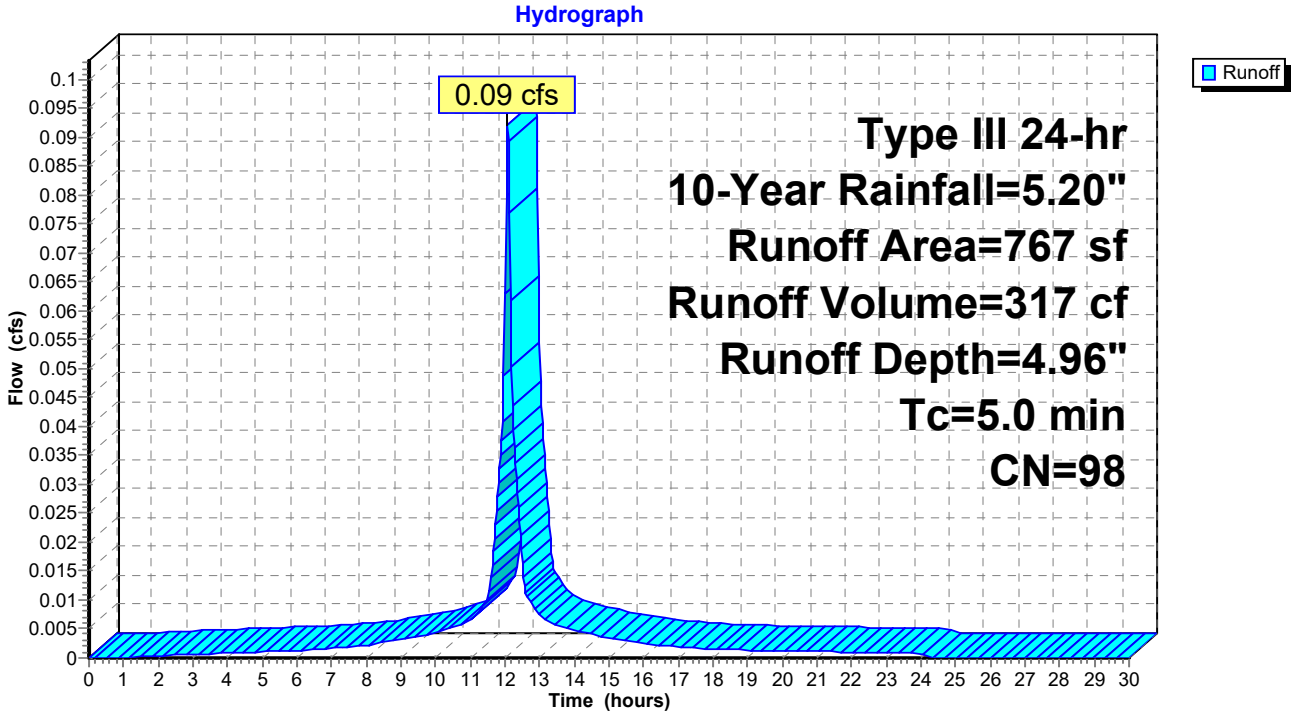
Runoff = 0.09 cfs @ 12.07 hrs, Volume= 317 cf, Depth= 4.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Year Rainfall=5.20"

Area (sf)	CN	Description
767	98	Roofs, HSG D
767		100.00% Impervious Area

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

Subcatchment 1S: EXISTING ROOF AREA



Summary for Subcatchment 2S: EXISTING BRICK PATIO(IMPERVIOUS)

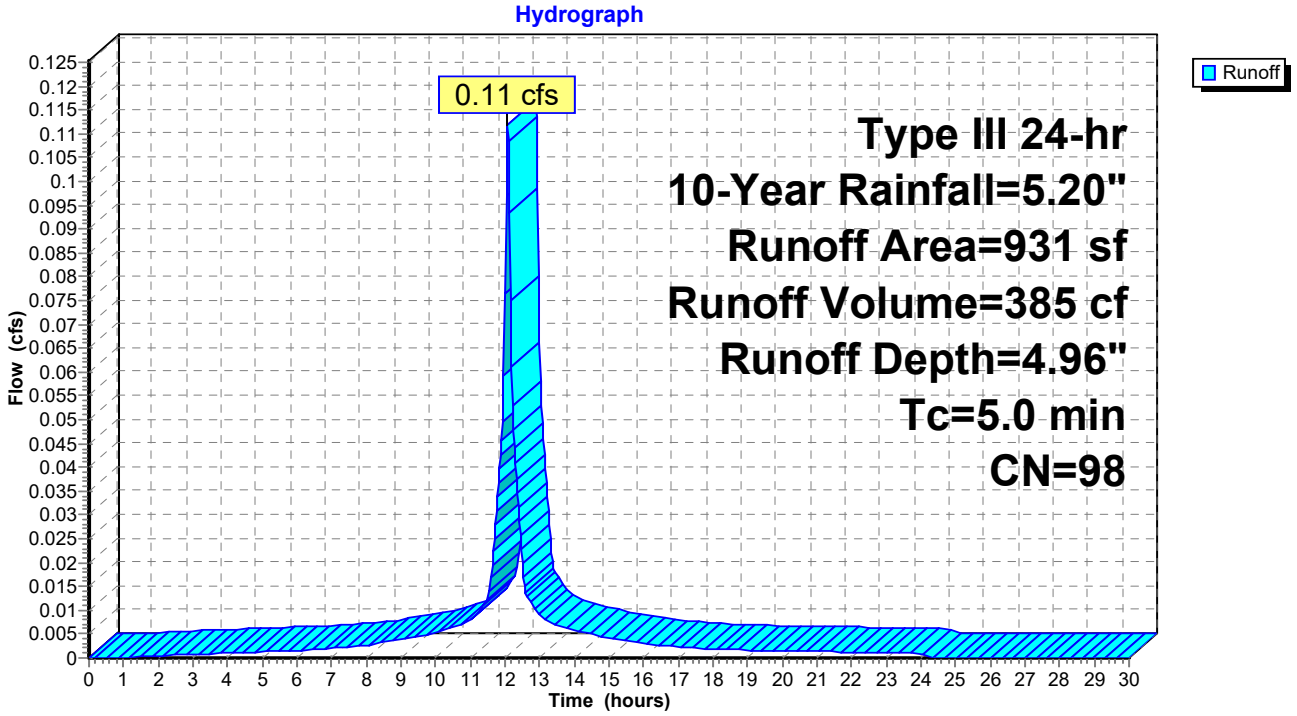
Runoff = 0.11 cfs @ 12.07 hrs, Volume= 385 cf, Depth= 4.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Year Rainfall=5.20"

Area (sf)	CN	Description
931	98	Paved roads w/curbs & sewers, HSG D
931		100.00% Impervious Area

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

Subcatchment 2S: EXISTING BRICK PATIO(IMPERVIOUS)



Summary for Subcatchment 3S: EXISTING CRUSHED STONE AREA

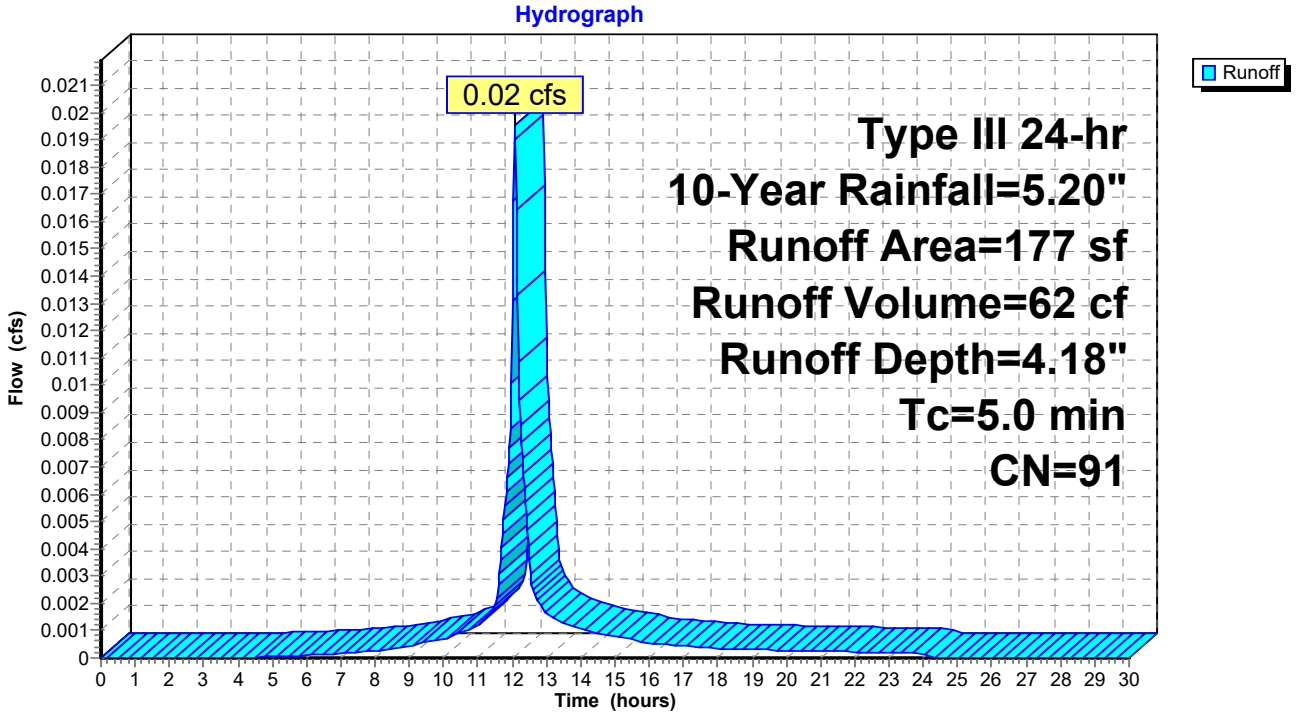
Runoff = 0.02 cfs @ 12.07 hrs, Volume= 62 cf, Depth= 4.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Year Rainfall=5.20"

Area (sf)	CN	Description
177	91	Gravel roads, HSG D
177		100.00% Pervious Area

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

Subcatchment 3S: EXISTING CRUSHED STONE AREA

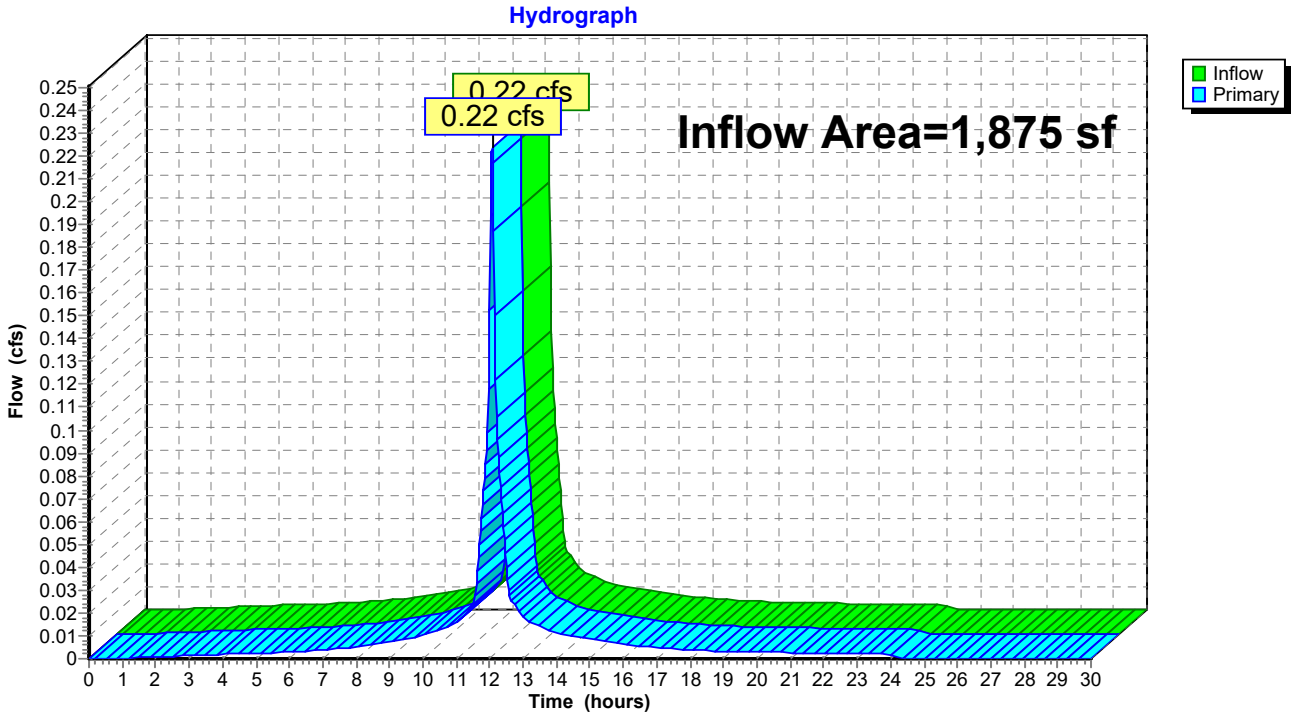


Summary for Link 4L: EXISTING RUNOFF

Inflow Area = 1,875 sf, 90.56% Impervious, Inflow Depth = 4.89" for 10-Year event
Inflow = 0.22 cfs @ 12.07 hrs, Volume= 764 cf
Primary = 0.22 cfs @ 12.07 hrs, Volume= 764 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Link 4L: EXISTING RUNOFF



Summary for Subcatchment 1S: EXISTING ROOF AREA

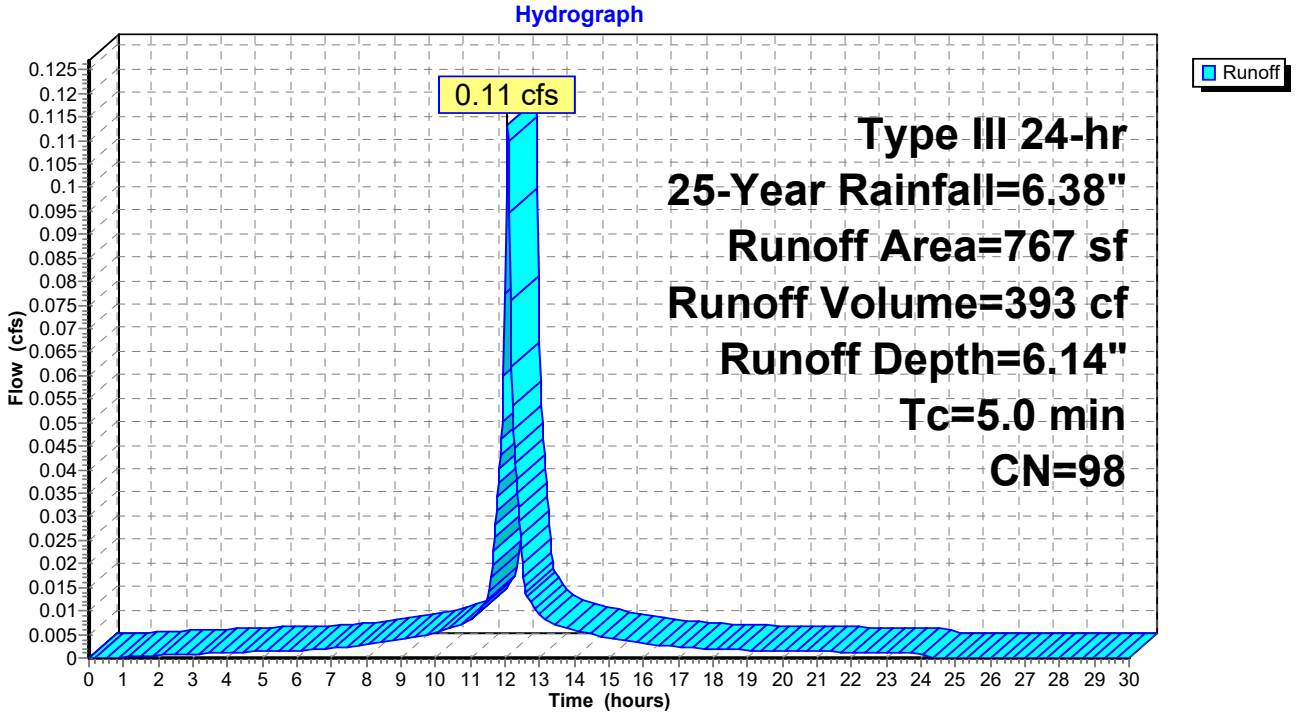
Runoff = 0.11 cfs @ 12.07 hrs, Volume= 393 cf, Depth= 6.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-Year Rainfall=6.38"

Area (sf)	CN	Description
767	98	Roofs, HSG D
767		100.00% Impervious Area

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

Subcatchment 1S: EXISTING ROOF AREA



Summary for Subcatchment 2S: EXISTING BRICK PATIO(IMPERVIOUS)

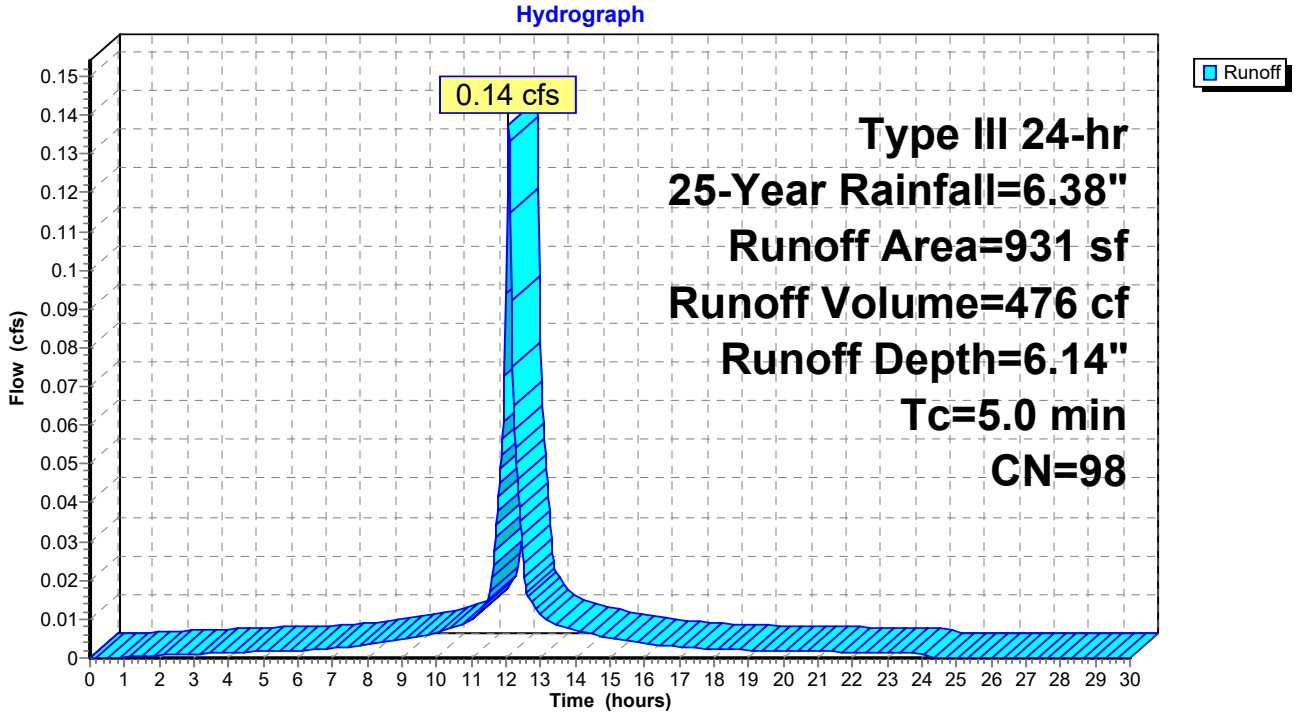
Runoff = 0.14 cfs @ 12.07 hrs, Volume= 476 cf, Depth= 6.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-Year Rainfall=6.38"

Area (sf)	CN	Description
931	98	Paved roads w/curbs & sewers, HSG D
931		100.00% Impervious Area

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

Subcatchment 2S: EXISTING BRICK PATIO(IMPERVIOUS)



Summary for Subcatchment 3S: EXISTING CRUSHED STONE AREA

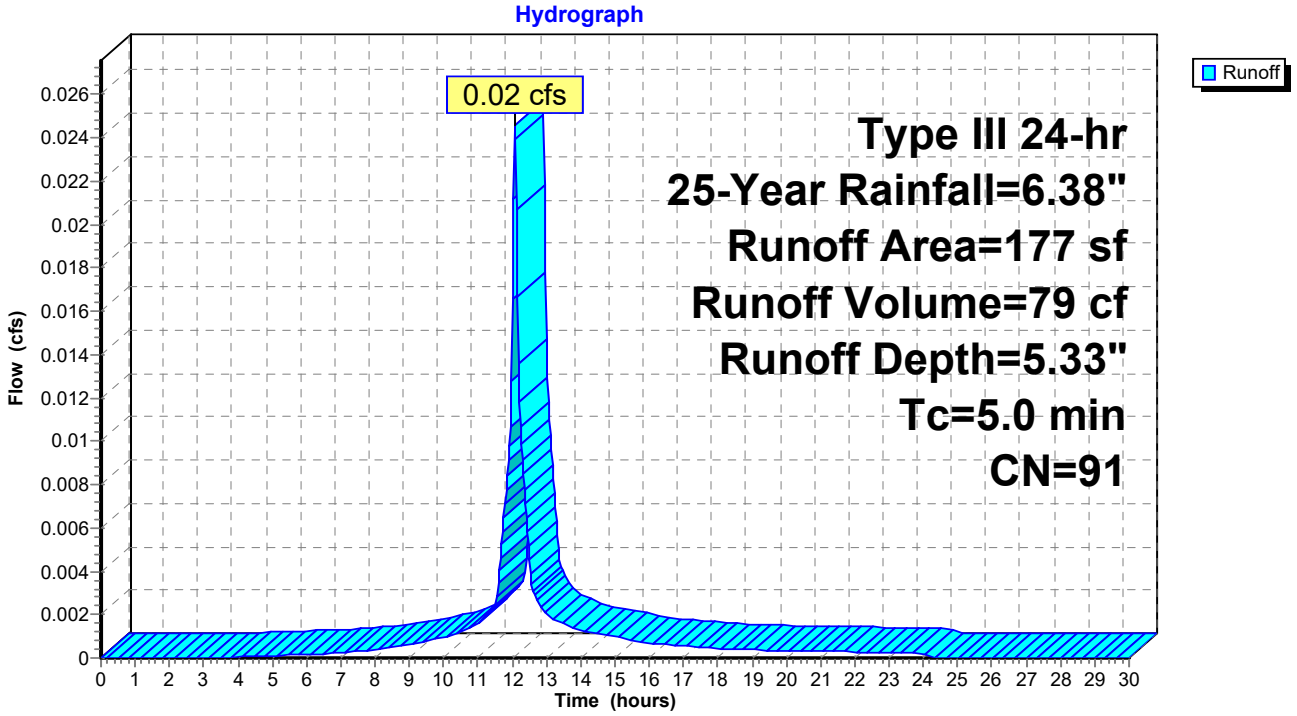
Runoff = 0.02 cfs @ 12.07 hrs, Volume= 79 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-Year Rainfall=6.38"

Area (sf)	CN	Description
177	91	Gravel roads, HSG D
177		100.00% Pervious Area

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

Subcatchment 3S: EXISTING CRUSHED STONE AREA

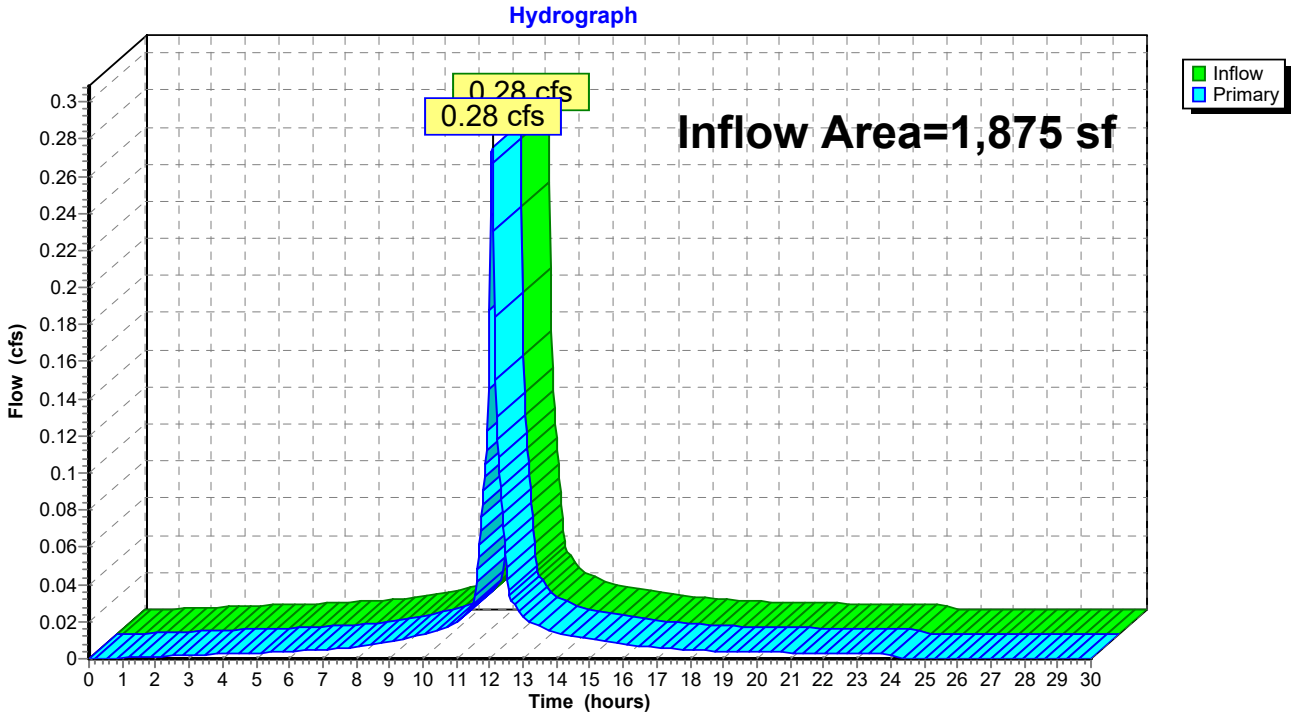


Summary for Link 4L: EXISTING RUNOFF

Inflow Area = 1,875 sf, 90.56% Impervious, Inflow Depth = 6.06" for 25-Year event
Inflow = 0.28 cfs @ 12.07 hrs, Volume= 948 cf
Primary = 0.28 cfs @ 12.07 hrs, Volume= 948 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Link 4L: EXISTING RUNOFF



Summary for Subcatchment 1S: EXISTING ROOF AREA

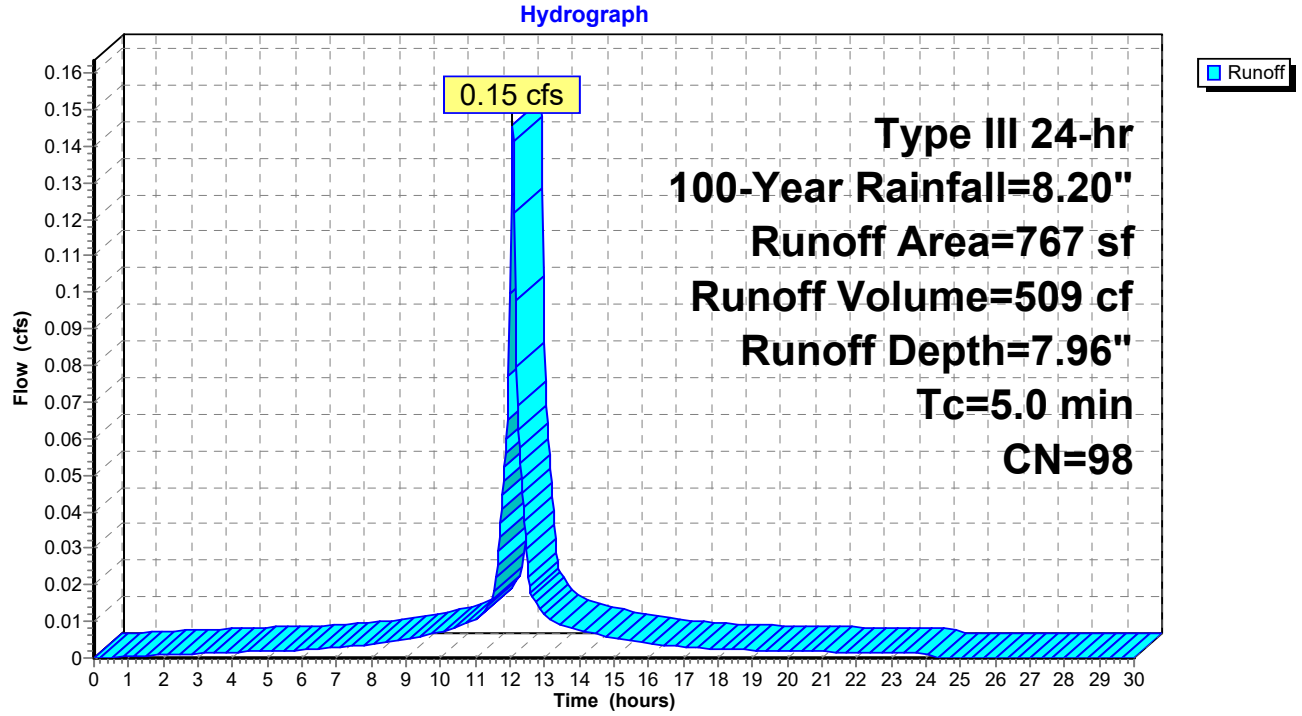
Runoff = 0.15 cfs @ 12.07 hrs, Volume= 509 cf, Depth= 7.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Rainfall=8.20"

Area (sf)	CN	Description
767	98	Roofs, HSG D
767		100.00% Impervious Area

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

Subcatchment 1S: EXISTING ROOF AREA



Summary for Subcatchment 2S: EXISTING BRICK PATIO(IMPERVIOUS)

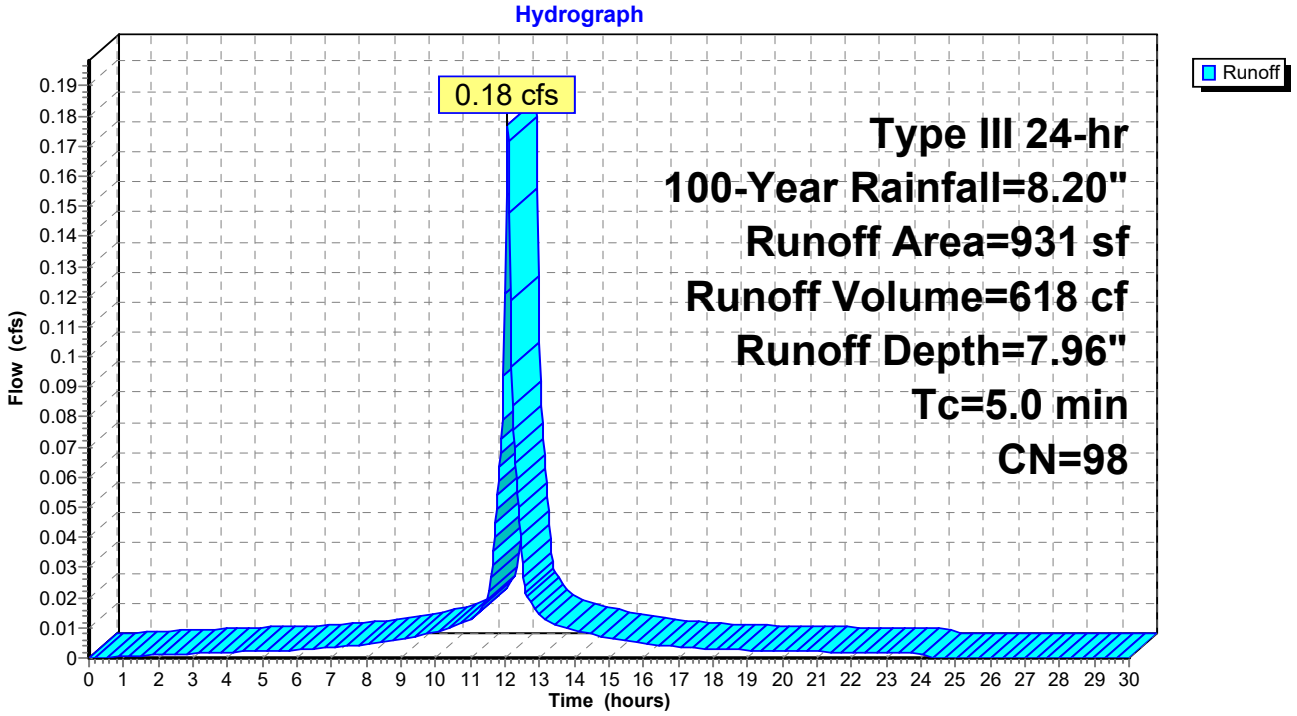
Runoff = 0.18 cfs @ 12.07 hrs, Volume= 618 cf, Depth= 7.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Rainfall=8.20"

Area (sf)	CN	Description
931	98	Paved roads w/curbs & sewers, HSG D
931		100.00% Impervious Area

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

Subcatchment 2S: EXISTING BRICK PATIO(IMPERVIOUS)



Summary for Subcatchment 3S: EXISTING CRUSHED STONE AREA

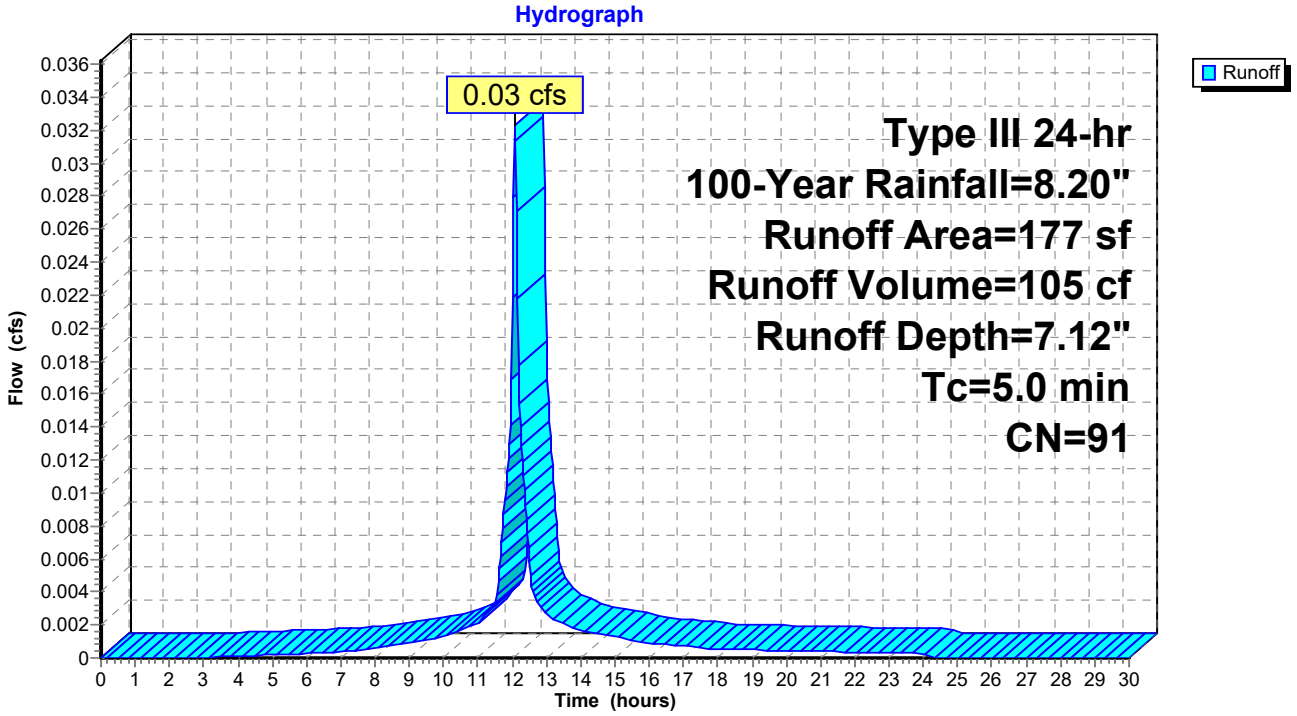
Runoff = 0.03 cfs @ 12.07 hrs, Volume= 105 cf, Depth= 7.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Rainfall=8.20"

Area (sf)	CN	Description
177	91	Gravel roads, HSG D
177		100.00% Pervious Area

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

Subcatchment 3S: EXISTING CRUSHED STONE AREA

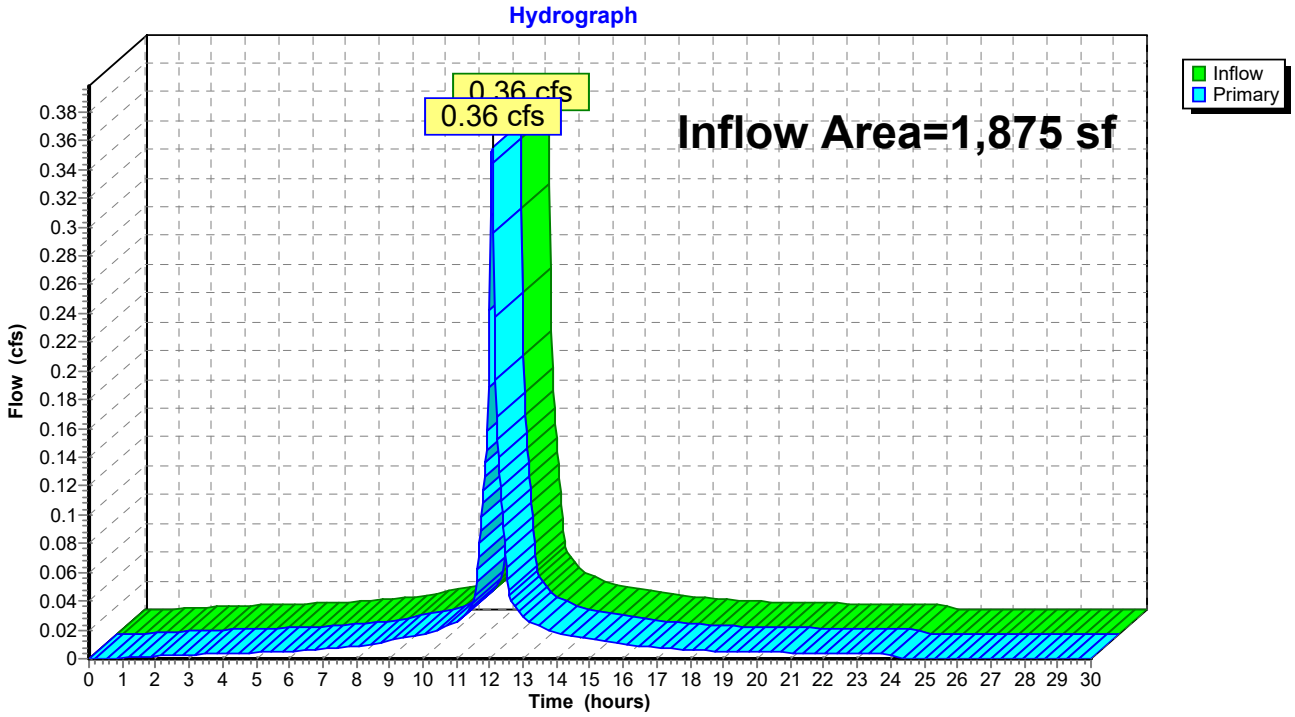


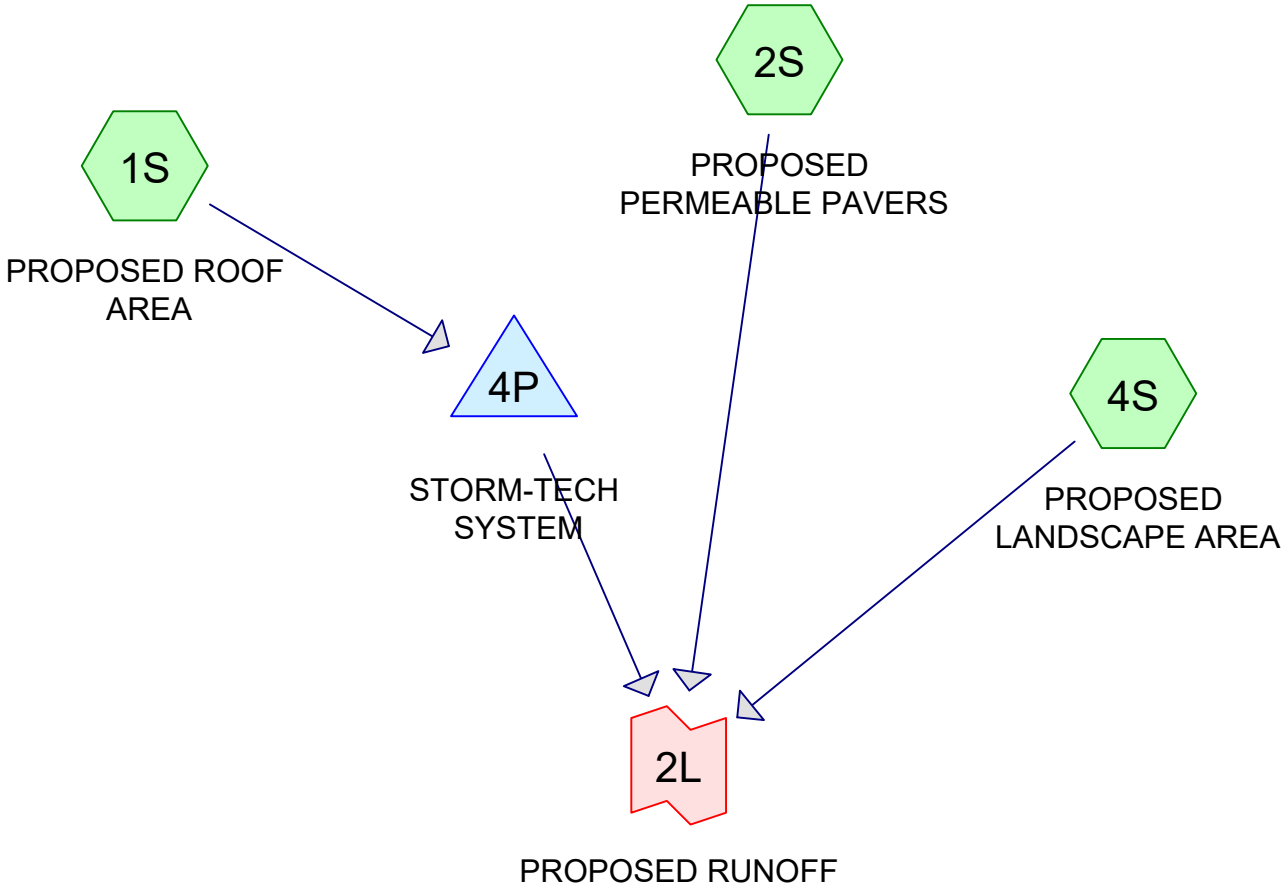
Summary for Link 4L: EXISTING RUNOFF

Inflow Area = 1,875 sf, 90.56% Impervious, Inflow Depth = 7.88" for 100-Year event
Inflow = 0.36 cfs @ 12.07 hrs, Volume= 1,231 cf
Primary = 0.36 cfs @ 12.07 hrs, Volume= 1,231 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Link 4L: EXISTING RUNOFF





Subcat Reach Pond Link

Routing Diagram for Proposed
Prepared by SPRUHAN ENGINEERING, P.C., Printed 10/22/2019

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
550	84	50-75% Grass cover, Fair, HSG D (4S)
250	85	Permeable Pavers (2S)
1,075	98	Roofs, HSG D (1S)
1,875	**92**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
0	HSG C	
1,625	HSG D	1S, 4S
250	Other	2S
1,875		**TOTAL AREA**

Summary for Subcatchment 1S: PROPOSED ROOF AREA

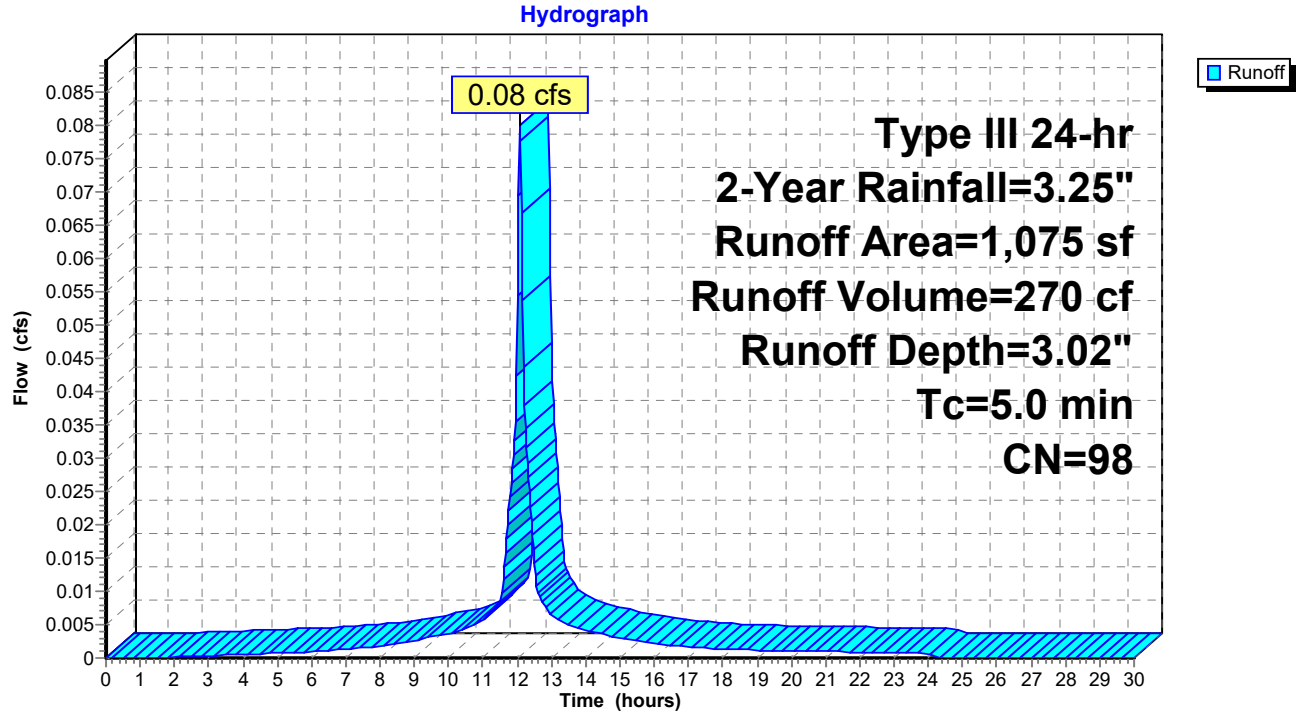
Runoff = 0.08 cfs @ 12.07 hrs, Volume= 270 cf, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=3.25"

Area (sf)	CN	Description
1,075	98	Roofs, HSG D
1,075		100.00% Impervious Area

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

Subcatchment 1S: PROPOSED ROOF AREA



Summary for Subcatchment 2S: PROPOSED PERMEABLE PAVERS

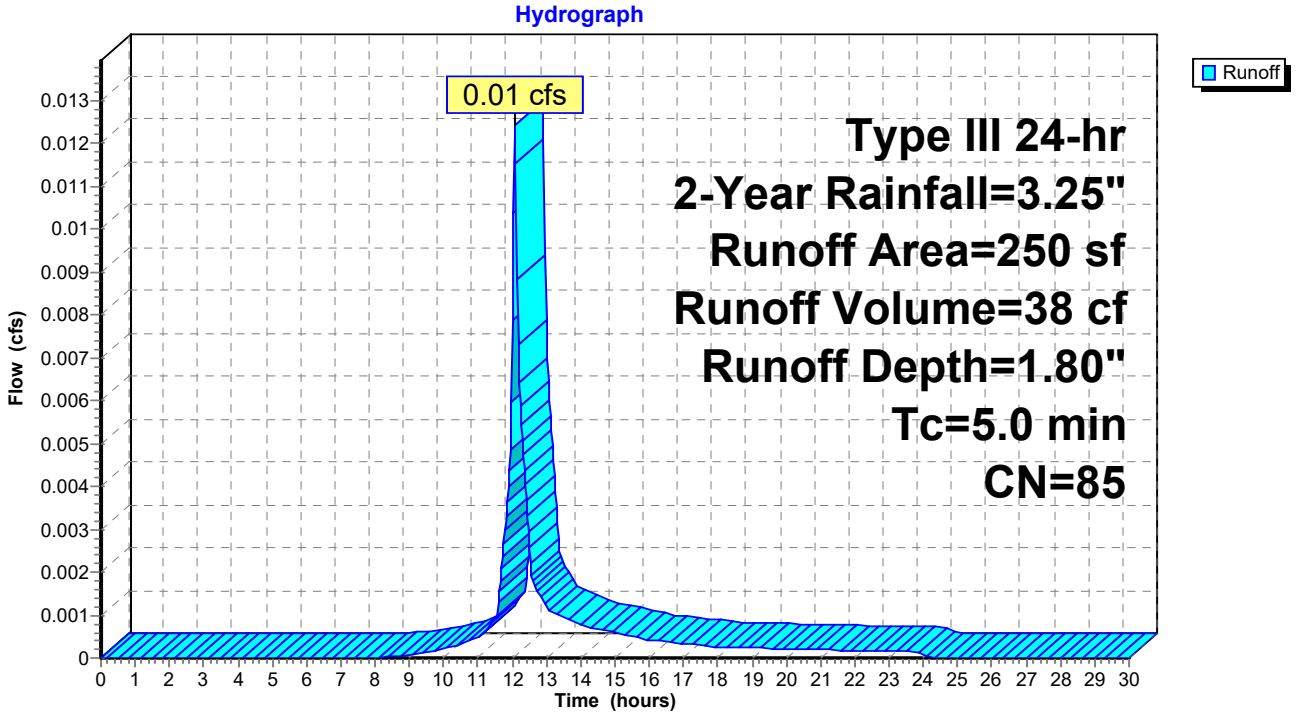
Runoff = 0.01 cfs @ 12.08 hrs, Volume= 38 cf, Depth= 1.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=3.25"

	Area (sf)	CN	Description
*	250	85	Permeable Pavers
	250		100.00% Pervious Area

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

Subcatchment 2S: PROPOSED PERMEABLE PAVERS



Summary for Subcatchment 4S: PROPOSED LANDSCAPE AREA

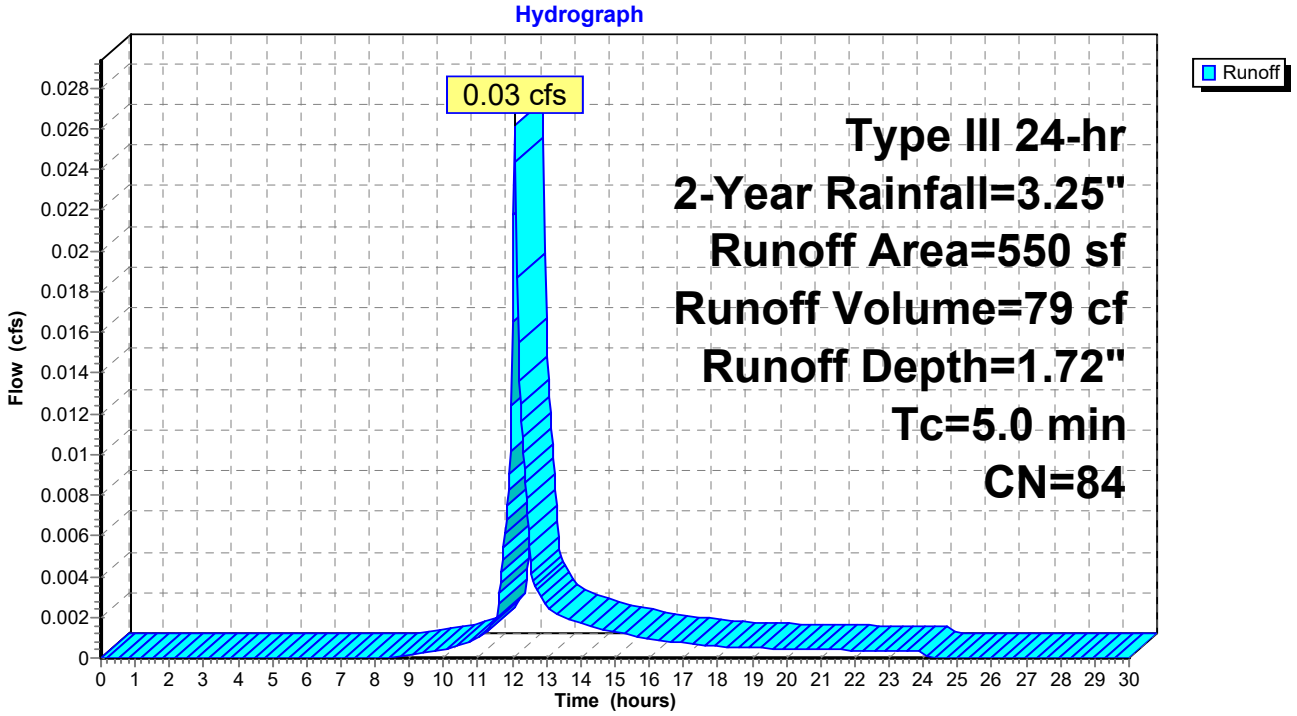
Runoff = 0.03 cfs @ 12.08 hrs, Volume= 79 cf, Depth= 1.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=3.25"

Area (sf)	CN	Description
550	84	50-75% Grass cover, Fair, HSG D
550		100.00% Pervious Area

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

Subcatchment 4S: PROPOSED LANDSCAPE AREA



Summary for Pond 4P: STORM-TECH SYSTEM

Inflow Area = 1,075 sf,100.00% Impervious, Inflow Depth = 3.02" for 2-Year event
Inflow = 0.08 cfs @ 12.07 hrs, Volume= 270 cf
Outflow = 0.02 cfs @ 12.43 hrs, Volume= 108 cf, Atten= 74%, Lag= 21.6 min
Discarded = 0.00 cfs @ 3.90 hrs, Volume= 14 cf
Primary = 0.02 cfs @ 12.43 hrs, Volume= 94 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs / 2
Peak Elev= 12.03' @ 12.43 hrs Surf.Area= 155 sf Storage= 167 cf

Plug-Flow detention time= 325.4 min calculated for 108 cf (40% of inflow)
Center-of-Mass det. time= 177.5 min (932.7 - 755.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.50'	158 cf	**13.97'W x 11.07'L x 4.00'H Field A** 618 cf Overall - 92 cf Embedded = 527 cf x 30.0% Voids
#2A	10.50'	92 cf	**ADS_StormTech SC-740 +Cap** x 2 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Chambers in 2 Rows
#3	12.70'	10 cf	**PONDING** Listed below -Impervious
		260 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Cum.Store (cubic-feet)
12.70	0
13.70	5
13.90	10

Device	Routing	Invert	Outlet Devices
#1	Discarded	9.50'	**0.040 in/hr Exfiltration over Horizontal area**
#2	Primary	12.00'	**4.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 3.90 hrs HW=9.54' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.02 cfs @ 12.43 hrs HW=12.03' (Free Discharge)
↑**2=Orifice/Grate** (Weir Controls 0.02 cfs @ 0.55 fps)

Pond 4P: STORM-TECH SYSTEM - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 33.6" Spacing = 84.6" C-C Row Spacing

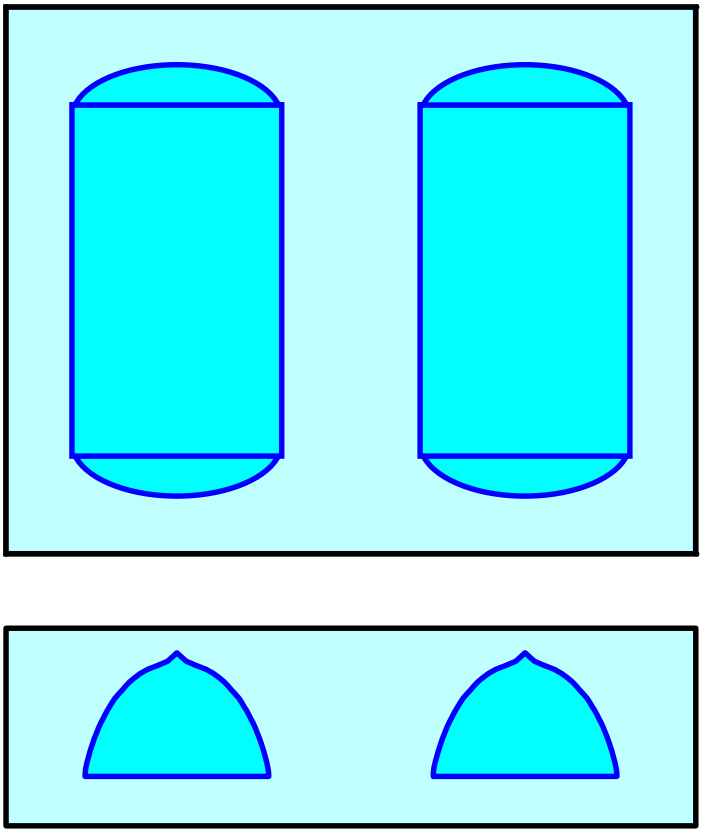
1 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 8.74' Row Length +14.0" End Stone x 2 = 11.07' Base Length
2 Rows x 51.0" Wide + 33.6" Spacing x 1 + 16.0" Side Stone x 2 = 13.97' Base Width
12.0" Base + 30.0" Chamber Height + 6.0" Cover = 4.00' Field Height

2 Chambers x 45.9 cf = 91.9 cf Chamber Storage

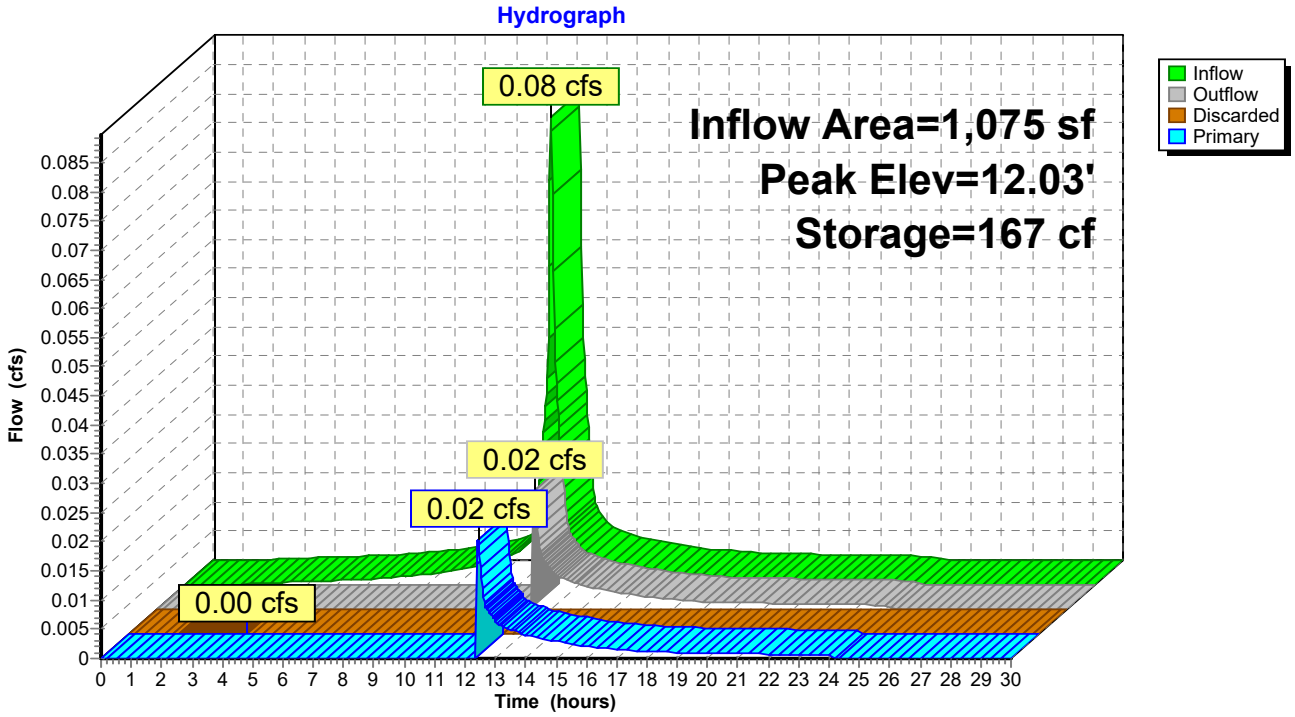
618.4 cf Field - 91.9 cf Chambers = 526.6 cf Stone x 30.0% Voids = 158.0 cf Stone Storage

Chamber Storage + Stone Storage = 249.8 cf = 0.006 af
Overall Storage Efficiency = 40.4%
Overall System Size = 11.07' x 13.97' x 4.00'

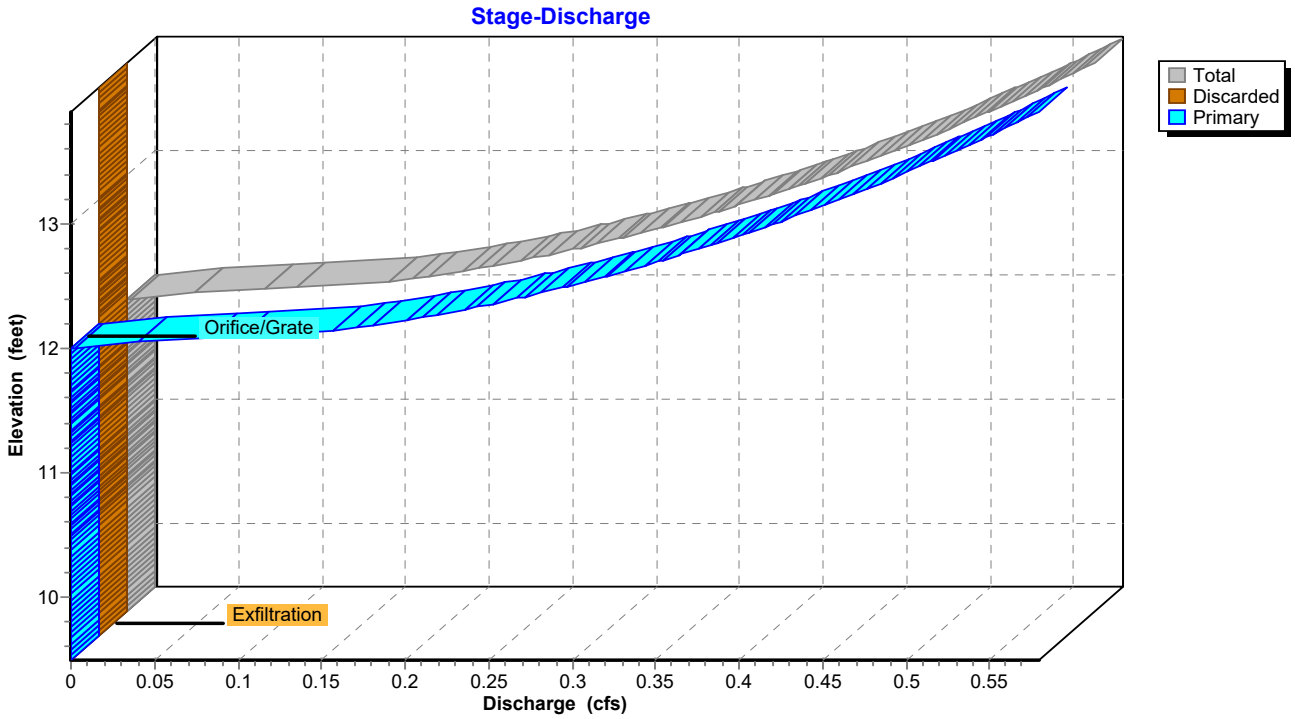
2 Chambers
22.9 cy Field
19.5 cy Stone



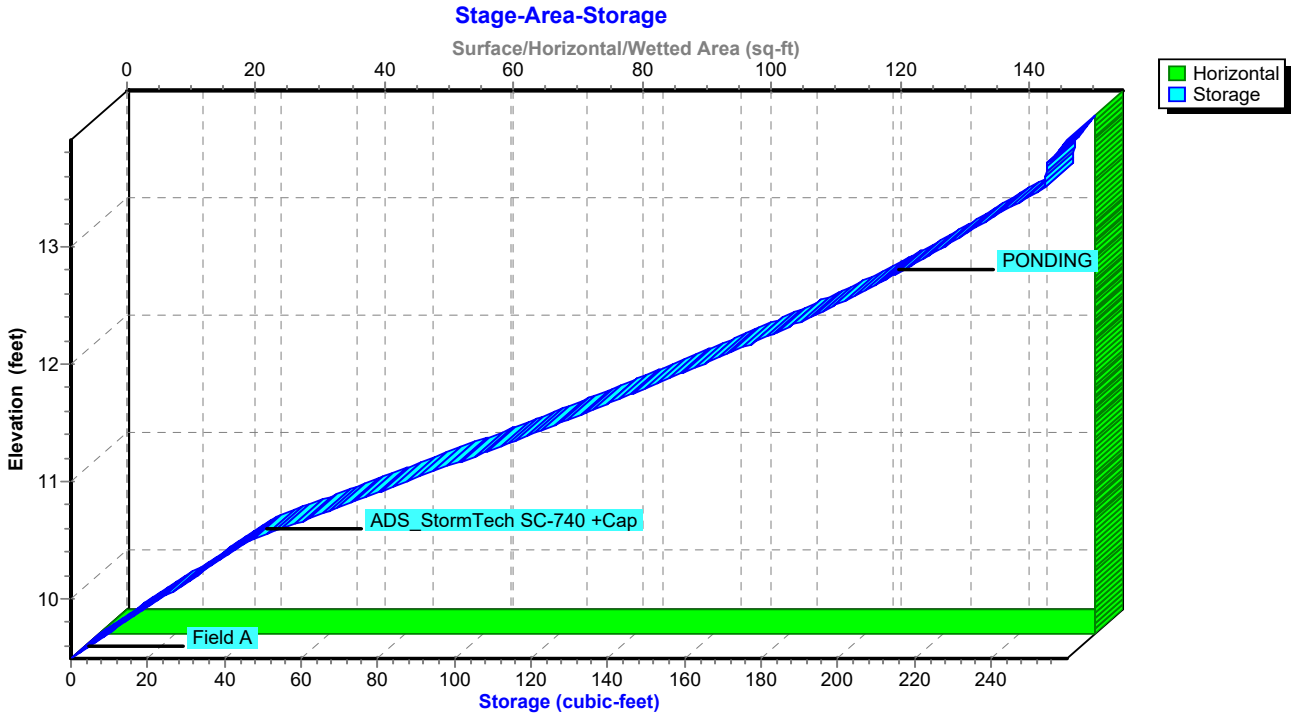
Pond 4P: STORM-TECH SYSTEM



Pond 4P: STORM-TECH SYSTEM



Pond 4P: STORM-TECH SYSTEM

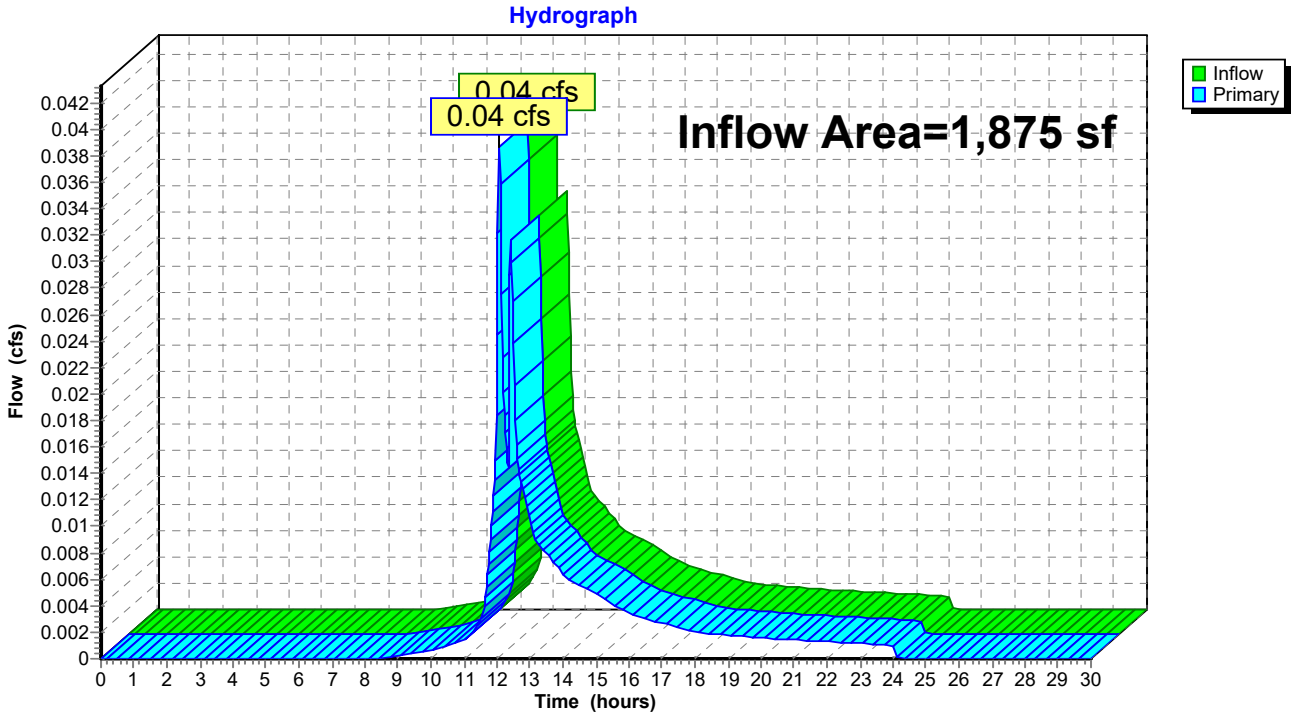


Summary for Link 2L: PROPOSED RUNOFF

Inflow Area = 1,875 sf, 57.33% Impervious, Inflow Depth = 1.35" for 2-Year event
Inflow = 0.04 cfs @ 12.08 hrs, Volume= 211 cf
Primary = 0.04 cfs @ 12.08 hrs, Volume= 211 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Link 2L: PROPOSED RUNOFF



Summary for Subcatchment 1S: PROPOSED ROOF AREA

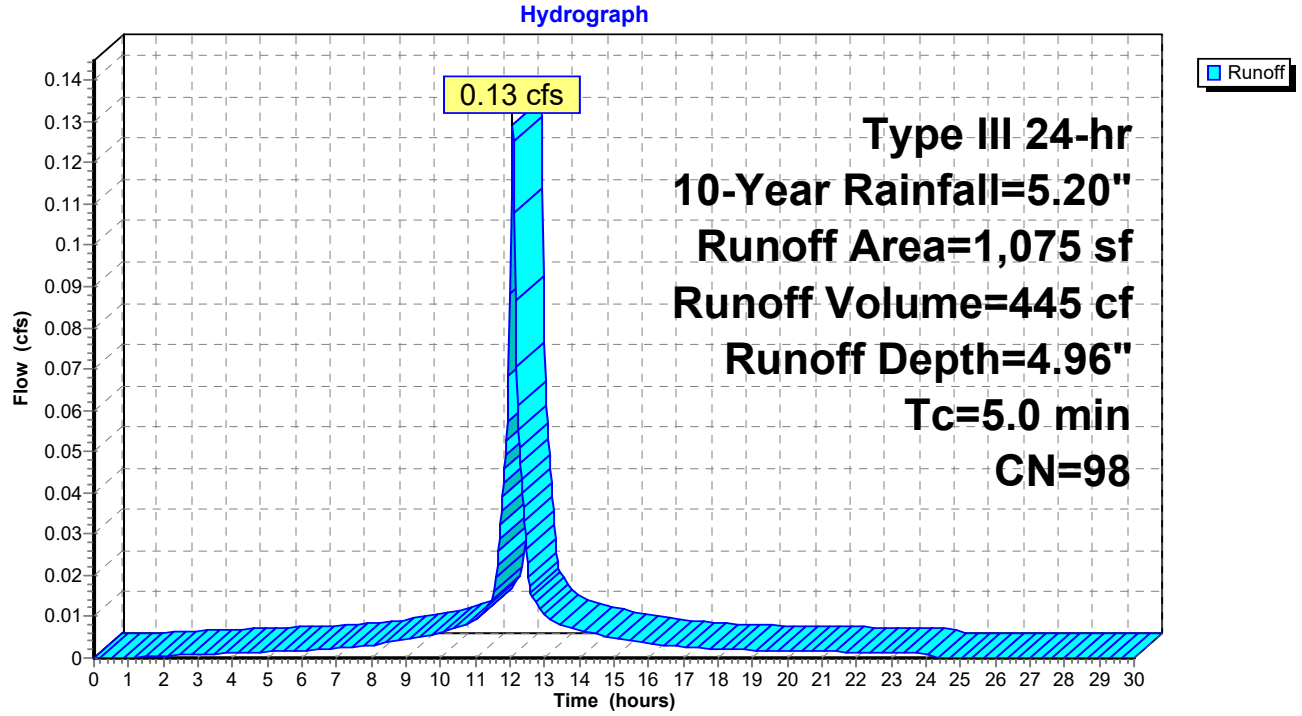
Runoff = 0.13 cfs @ 12.07 hrs, Volume= 445 cf, Depth= 4.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Year Rainfall=5.20"

Area (sf)	CN	Description
1,075	98	Roofs, HSG D
1,075		100.00% Impervious Area

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

Subcatchment 1S: PROPOSED ROOF AREA



Summary for Subcatchment 2S: PROPOSED PERMEABLE PAVERS

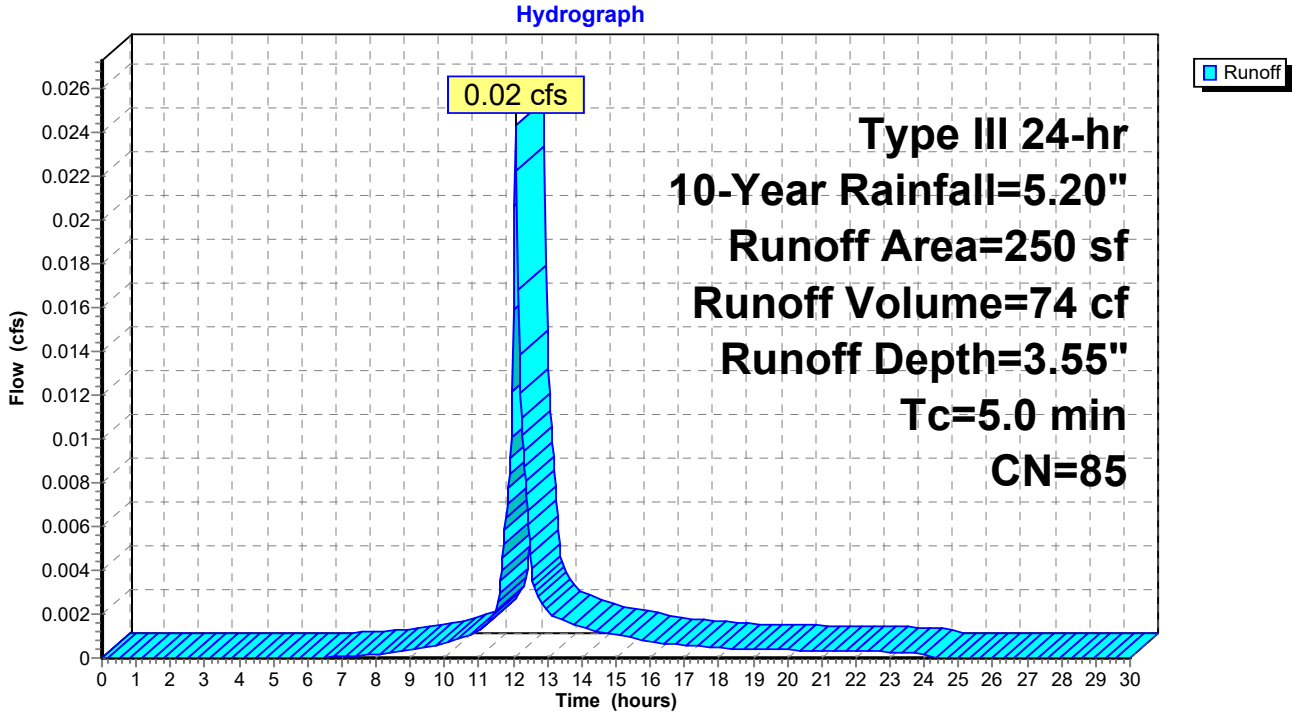
Runoff = 0.02 cfs @ 12.07 hrs, Volume= 74 cf, Depth= 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Year Rainfall=5.20"

	Area (sf)	CN	Description
*	250	85	Permeable Pavers
	250		100.00% Pervious Area

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

Subcatchment 2S: PROPOSED PERMEABLE PAVERS



Summary for Subcatchment 4S: PROPOSED LANDSCAPE AREA

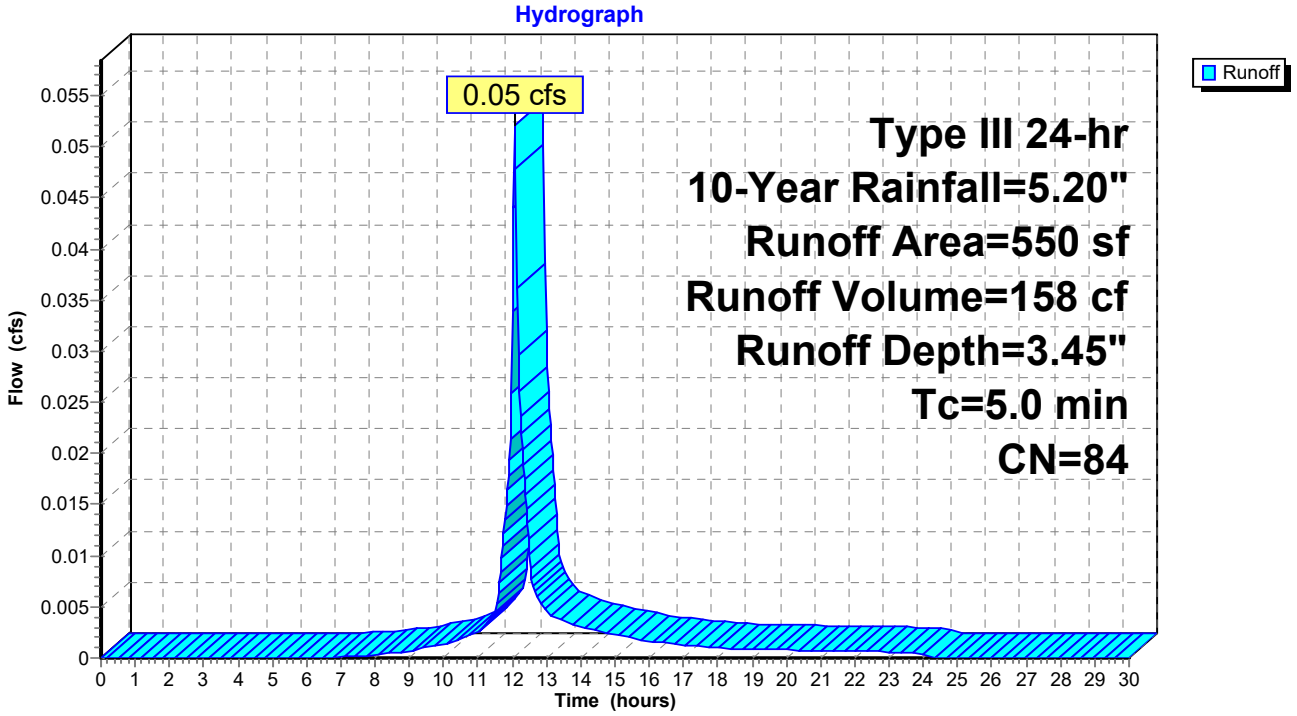
Runoff = 0.05 cfs @ 12.07 hrs, Volume= 158 cf, Depth= 3.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Year Rainfall=5.20"

Area (sf)	CN	Description
550	84	50-75% Grass cover, Fair, HSG D
550		100.00% Pervious Area

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

Subcatchment 4S: PROPOSED LANDSCAPE AREA



Summary for Pond 4P: STORM-TECH SYSTEM

Inflow Area = 1,075 sf,100.00% Impervious, Inflow Depth = 4.96" for 10-Year event
Inflow = 0.13 cfs @ 12.07 hrs, Volume= 445 cf
Outflow = 0.13 cfs @ 12.09 hrs, Volume= 282 cf, Atten= 3%, Lag= 1.0 min
Discarded = 0.00 cfs @ 2.55 hrs, Volume= 14 cf
Primary = 0.13 cfs @ 12.09 hrs, Volume= 268 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs / 2
Peak Elev= 12.11' @ 12.09 hrs Surf.Area= 155 sf Storage= 174 cf

Plug-Flow detention time= 207.6 min calculated for 282 cf (63% of inflow)
Center-of-Mass det. time= 103.0 min (849.5 - 746.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.50'	158 cf	**13.97'W x 11.07'L x 4.00'H Field A** 618 cf Overall - 92 cf Embedded = 527 cf x 30.0% Voids
#2A	10.50'	92 cf	**ADS_StormTech SC-740 +Cap** x 2 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Chambers in 2 Rows
#3	12.70'	10 cf	**PONDING** Listed below -Impervious
		260 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Cum.Store (cubic-feet)
12.70	0
13.70	5
13.90	10

Device	Routing	Invert	Outlet Devices
#1	Discarded	9.50'	**0.040 in/hr Exfiltration over Horizontal area**
#2	Primary	12.00'	**4.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 2.55 hrs HW=9.54' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.13 cfs @ 12.09 hrs HW=12.11' (Free Discharge)
↑**2=Orifice/Grate** (Weir Controls 0.13 cfs @ 1.10 fps)

Pond 4P: STORM-TECH SYSTEM - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 33.6" Spacing = 84.6" C-C Row Spacing

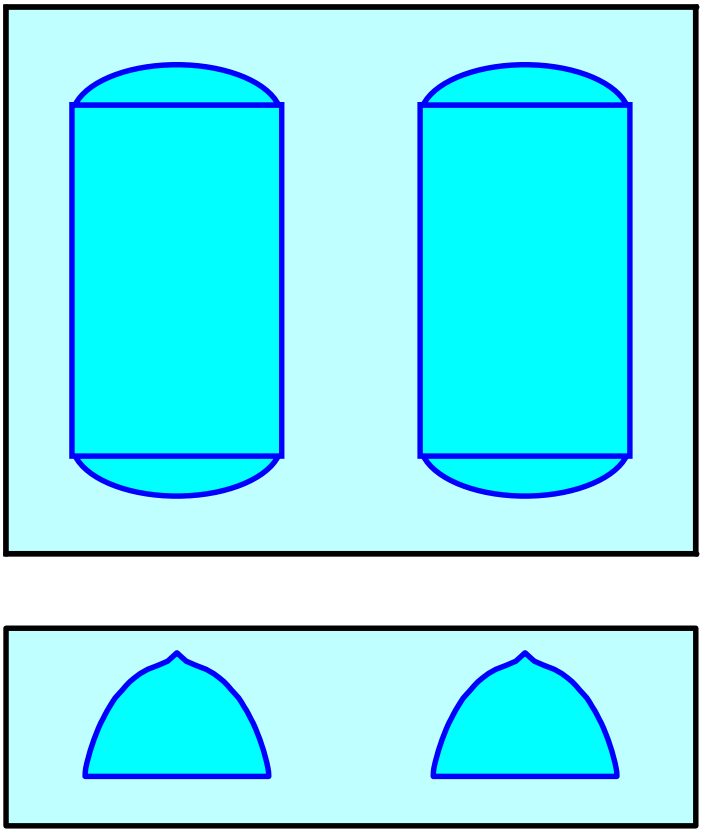
1 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 8.74' Row Length +14.0" End Stone x 2 = 11.07' Base Length
2 Rows x 51.0" Wide + 33.6" Spacing x 1 + 16.0" Side Stone x 2 = 13.97' Base Width
12.0" Base + 30.0" Chamber Height + 6.0" Cover = 4.00' Field Height

2 Chambers x 45.9 cf = 91.9 cf Chamber Storage

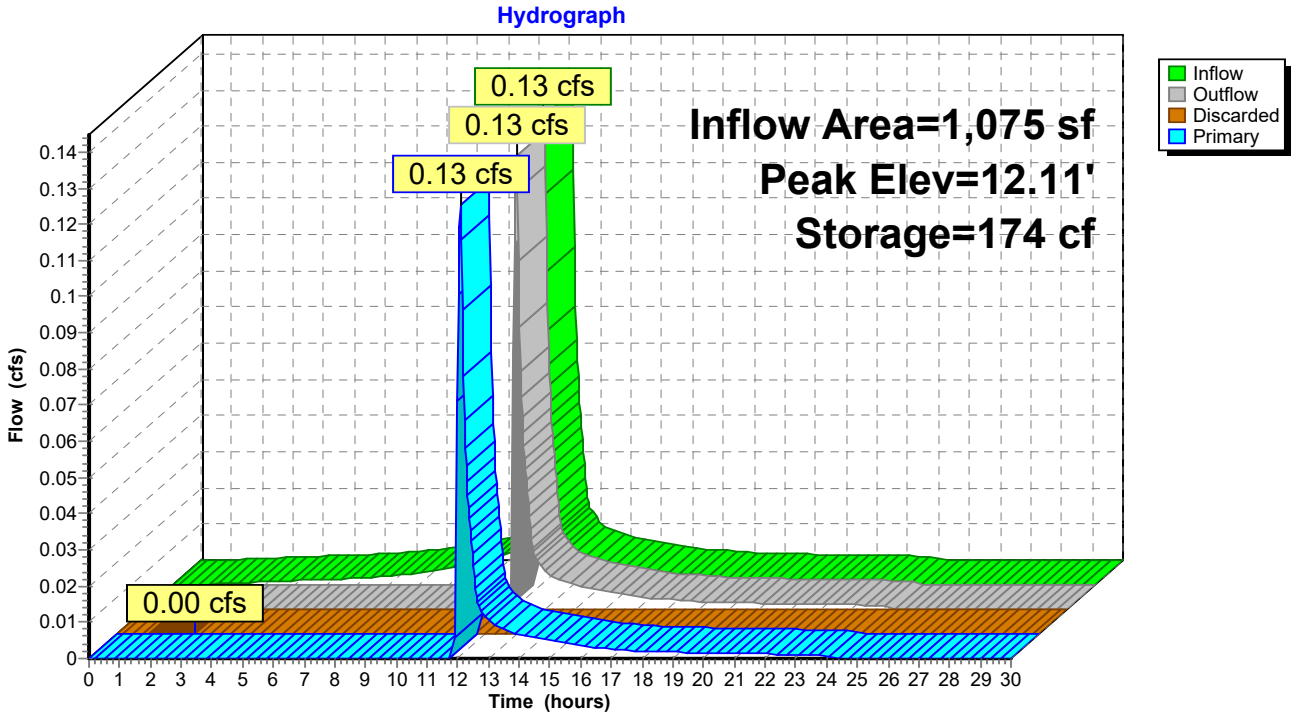
618.4 cf Field - 91.9 cf Chambers = 526.6 cf Stone x 30.0% Voids = 158.0 cf Stone Storage

Chamber Storage + Stone Storage = 249.8 cf = 0.006 af
Overall Storage Efficiency = 40.4%
Overall System Size = 11.07' x 13.97' x 4.00'

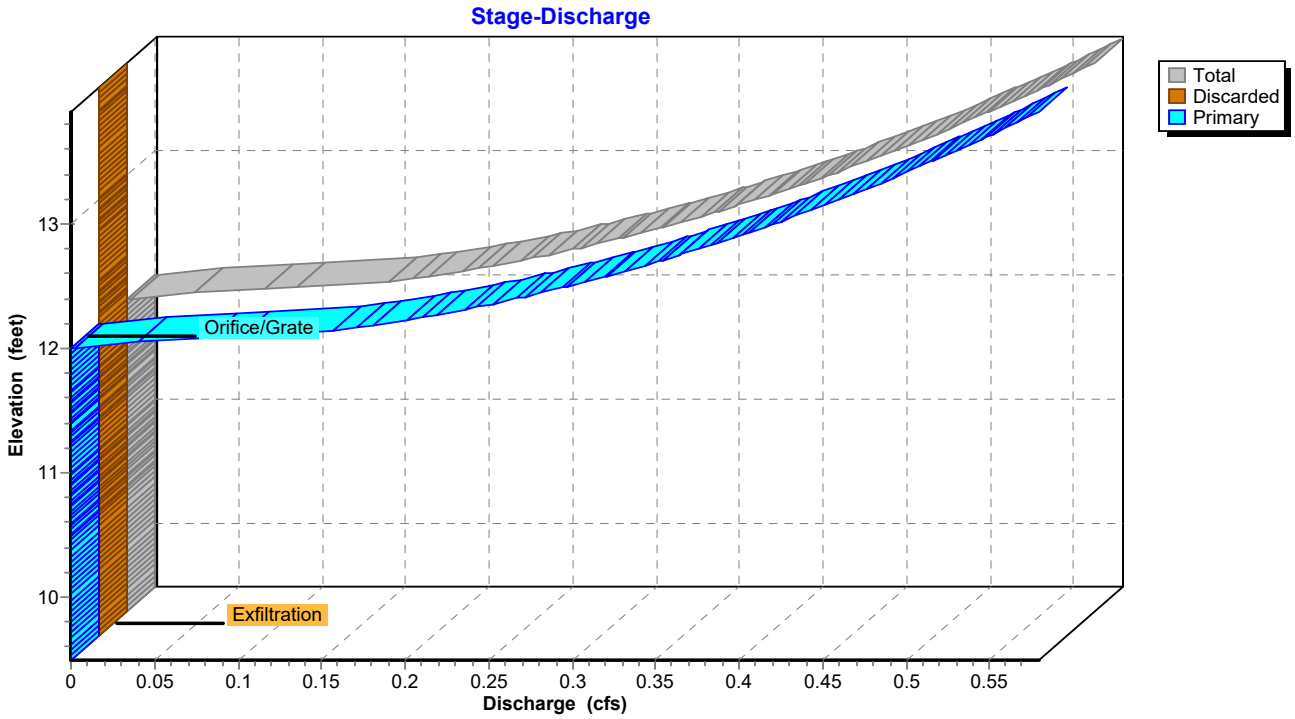
2 Chambers
22.9 cy Field
19.5 cy Stone



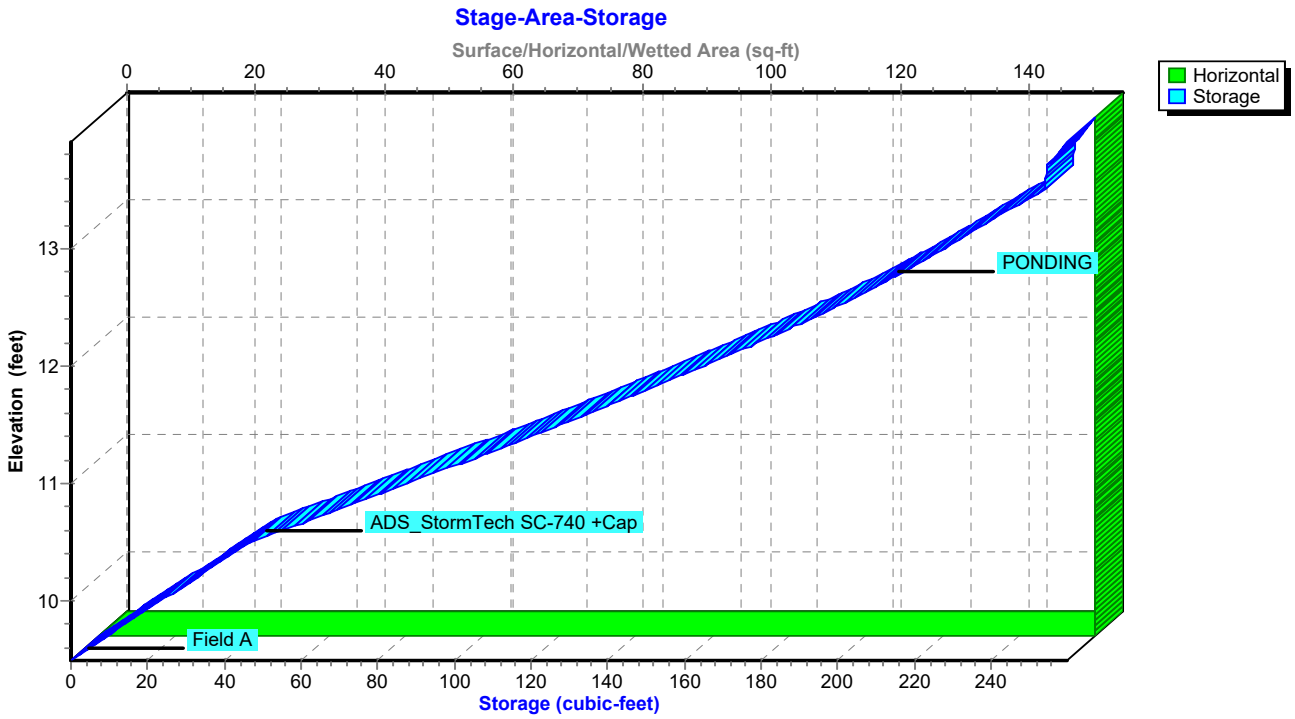
Pond 4P: STORM-TECH SYSTEM



Pond 4P: STORM-TECH SYSTEM



Pond 4P: STORM-TECH SYSTEM

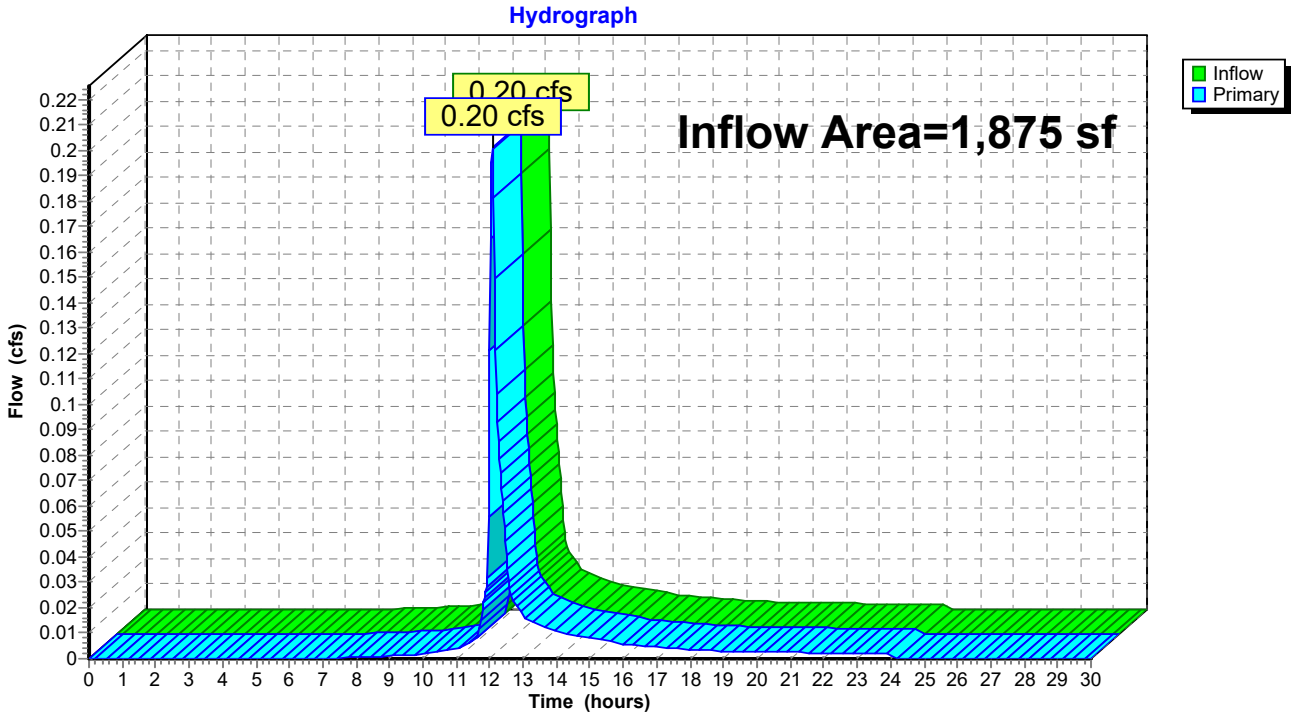


Summary for Link 2L: PROPOSED RUNOFF

Inflow Area = 1,875 sf, 57.33% Impervious, Inflow Depth = 3.20" for 10-Year event
Inflow = 0.20 cfs @ 12.08 hrs, Volume= 500 cf
Primary = 0.20 cfs @ 12.08 hrs, Volume= 500 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Link 2L: PROPOSED RUNOFF



Summary for Subcatchment 1S: PROPOSED ROOF AREA

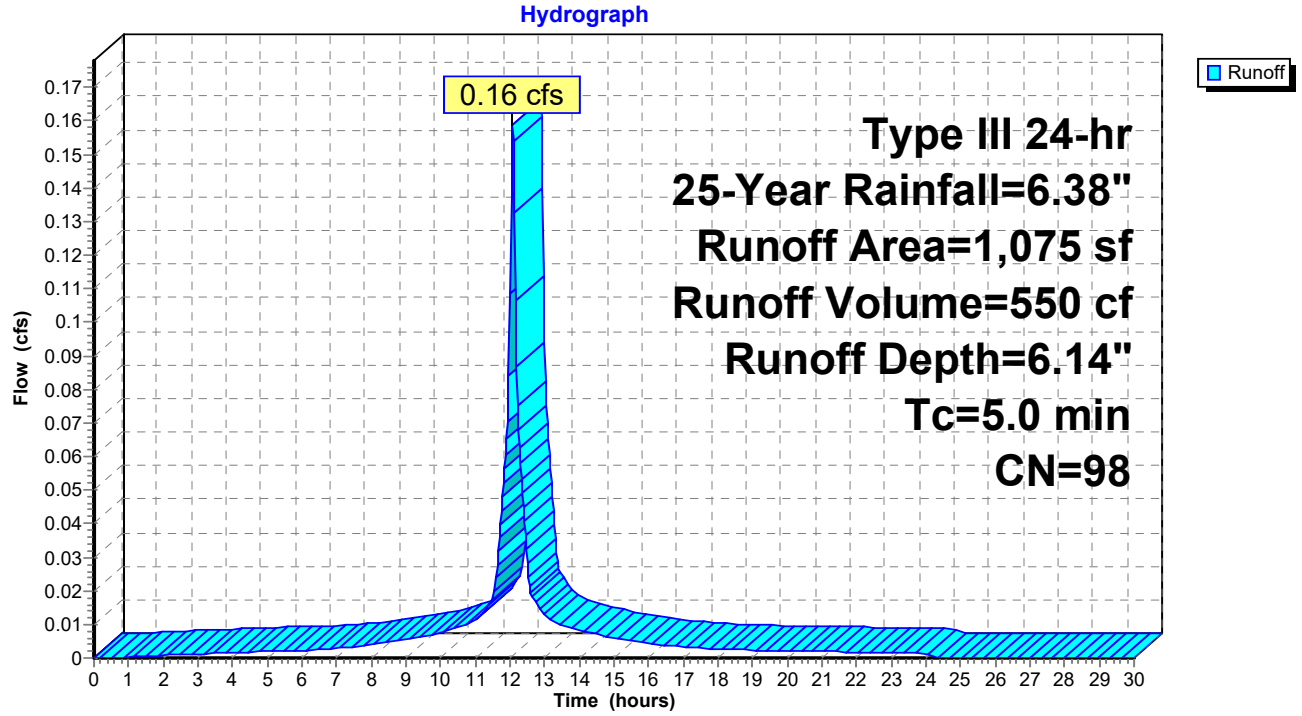
Runoff = 0.16 cfs @ 12.07 hrs, Volume= 550 cf, Depth= 6.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-Year Rainfall=6.38"

Area (sf)	CN	Description
1,075	98	Roofs, HSG D
1,075		100.00% Impervious Area

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

Subcatchment 1S: PROPOSED ROOF AREA



Summary for Subcatchment 2S: PROPOSED PERMEABLE PAVERS

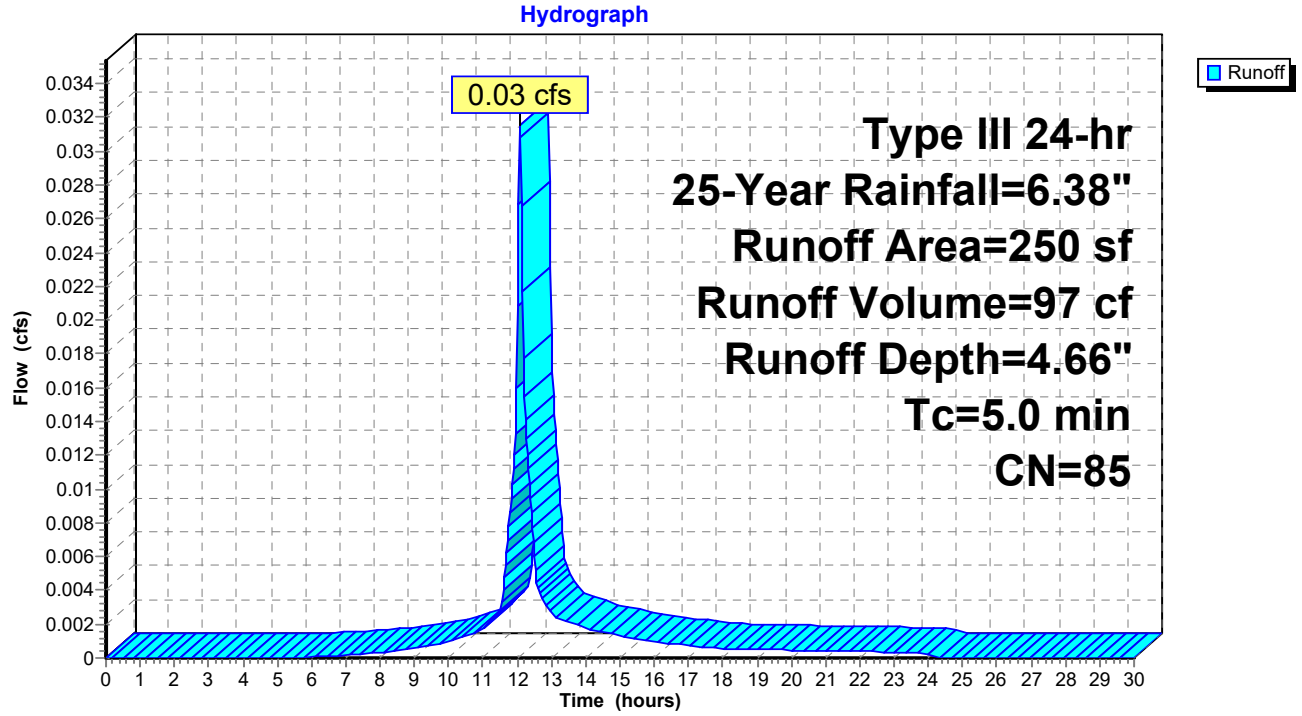
Runoff = 0.03 cfs @ 12.07 hrs, Volume= 97 cf, Depth= 4.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-Year Rainfall=6.38"

	Area (sf)	CN	Description
*	250	85	Permeable Pavers
	250		100.00% Pervious Area

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

Subcatchment 2S: PROPOSED PERMEABLE PAVERS



Summary for Subcatchment 4S: PROPOSED LANDSCAPE AREA

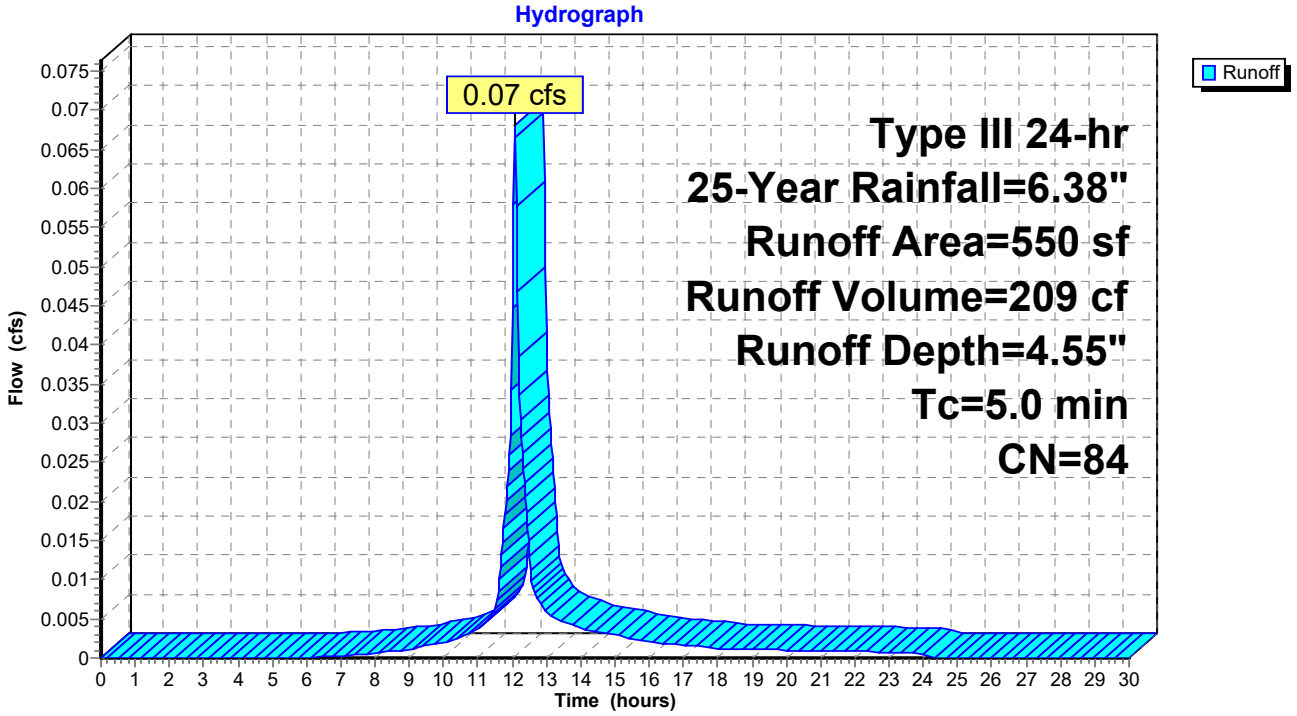
Runoff = 0.07 cfs @ 12.07 hrs, Volume= 209 cf, Depth= 4.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-Year Rainfall=6.38"

Area (sf)	CN	Description
550	84	50-75% Grass cover, Fair, HSG D
550		100.00% Pervious Area

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

Subcatchment 4S: PROPOSED LANDSCAPE AREA



Summary for Pond 4P: STORM-TECH SYSTEM

Inflow Area = 1,075 sf,100.00% Impervious, Inflow Depth = 6.14" for 25-Year event
Inflow = 0.16 cfs @ 12.07 hrs, Volume= 550 cf
Outflow = 0.15 cfs @ 12.09 hrs, Volume= 388 cf, Atten= 3%, Lag= 1.0 min
Discarded = 0.00 cfs @ 2.10 hrs, Volume= 15 cf
Primary = 0.15 cfs @ 12.09 hrs, Volume= 373 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs / 2
Peak Elev= 12.14' @ 12.09 hrs Surf.Area= 155 sf Storage= 175 cf

Plug-Flow detention time= 186.1 min calculated for 388 cf (70% of inflow)
Center-of-Mass det. time= 90.8 min (834.1 - 743.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.50'	158 cf	**13.97'W x 11.07'L x 4.00'H Field A** 618 cf Overall - 92 cf Embedded = 527 cf x 30.0% Voids
#2A	10.50'	92 cf	**ADS_StormTech SC-740 +Cap** x 2 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Chambers in 2 Rows
#3	12.70'	10 cf	**PONDING** Listed below -Impervious
		260 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Cum.Store (cubic-feet)
12.70	0
13.70	5
13.90	10

Device	Routing	Invert	Outlet Devices
#1	Discarded	9.50'	**0.040 in/hr Exfiltration over Horizontal area**
#2	Primary	12.00'	**4.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 2.10 hrs HW=9.55' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.16 cfs @ 12.09 hrs HW=12.14' (Free Discharge)
↑**2=Orifice/Grate** (Orifice Controls 0.16 cfs @ 1.78 fps)

Pond 4P: STORM-TECH SYSTEM - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 33.6" Spacing = 84.6" C-C Row Spacing

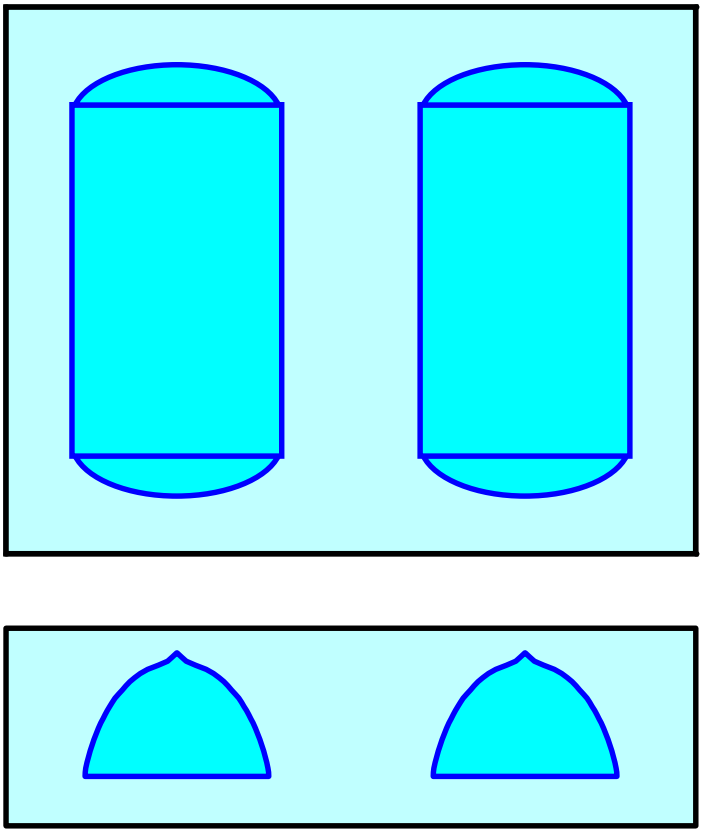
1 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 8.74' Row Length +14.0" End Stone x 2 = 11.07' Base Length
2 Rows x 51.0" Wide + 33.6" Spacing x 1 + 16.0" Side Stone x 2 = 13.97' Base Width
12.0" Base + 30.0" Chamber Height + 6.0" Cover = 4.00' Field Height

2 Chambers x 45.9 cf = 91.9 cf Chamber Storage

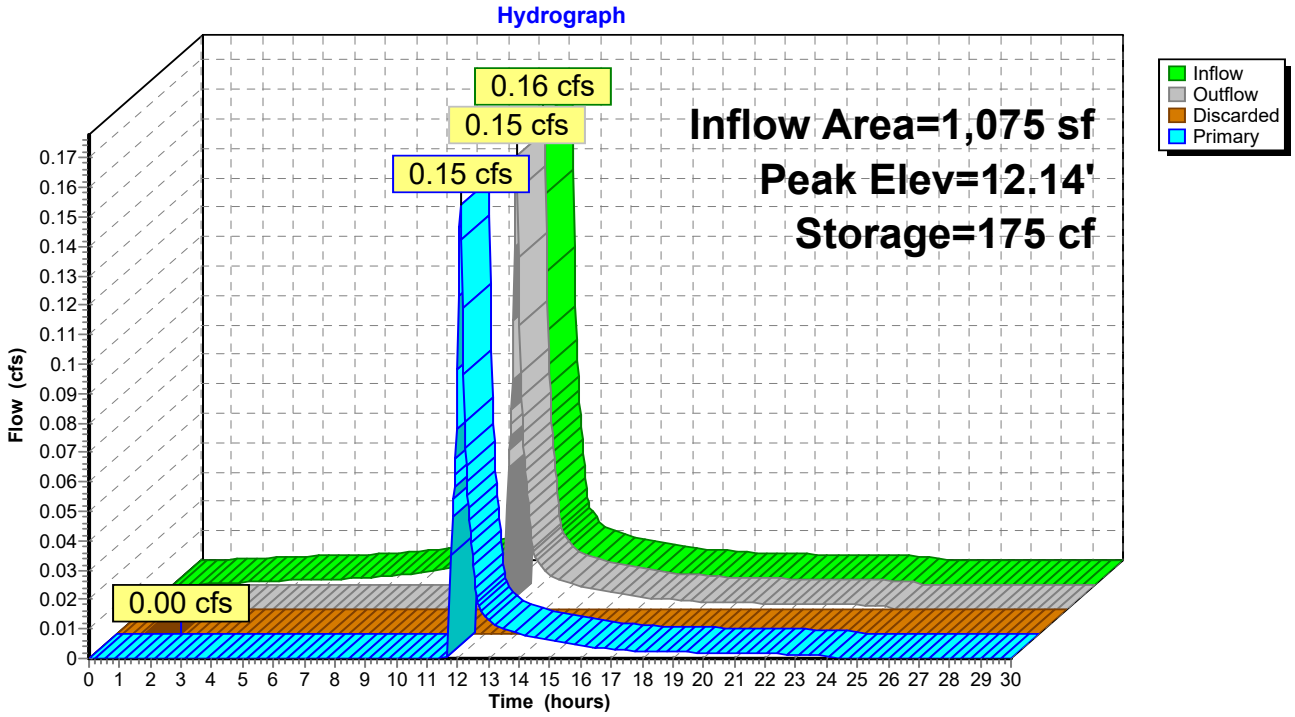
618.4 cf Field - 91.9 cf Chambers = 526.6 cf Stone x 30.0% Voids = 158.0 cf Stone Storage

Chamber Storage + Stone Storage = 249.8 cf = 0.006 af
Overall Storage Efficiency = 40.4%
Overall System Size = 11.07' x 13.97' x 4.00'

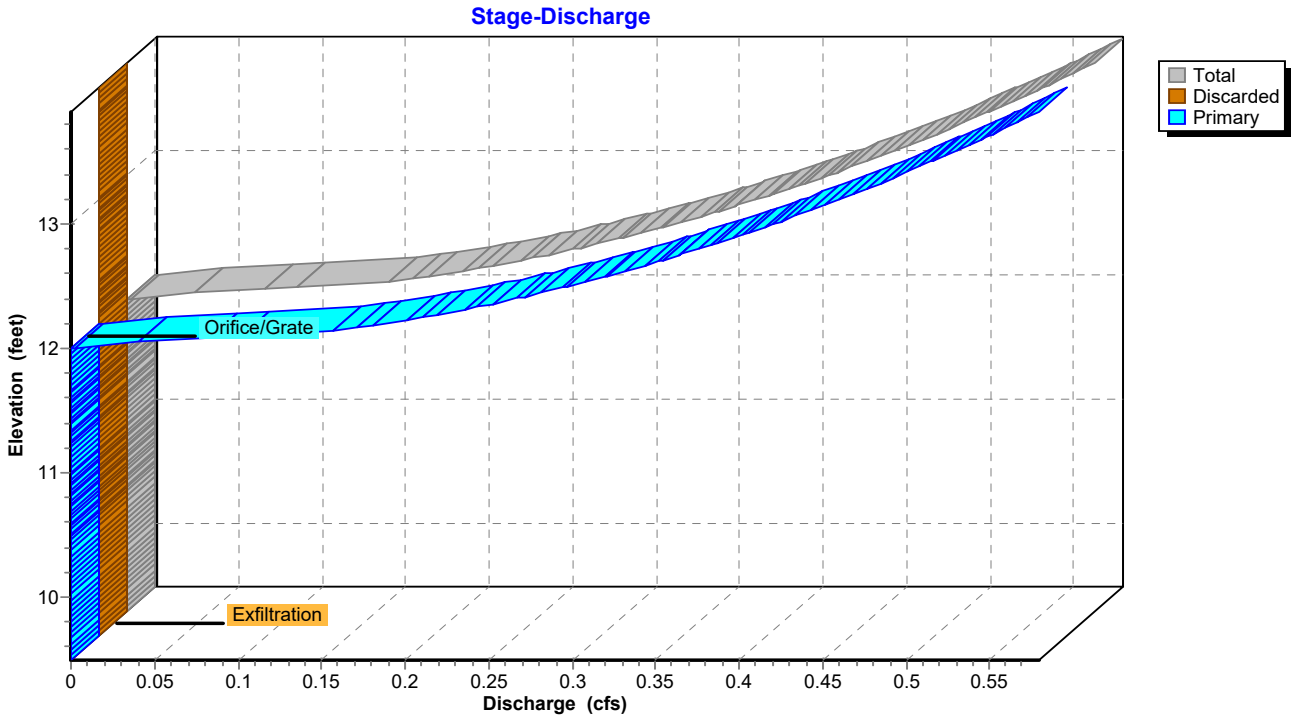
2 Chambers
22.9 cy Field
19.5 cy Stone



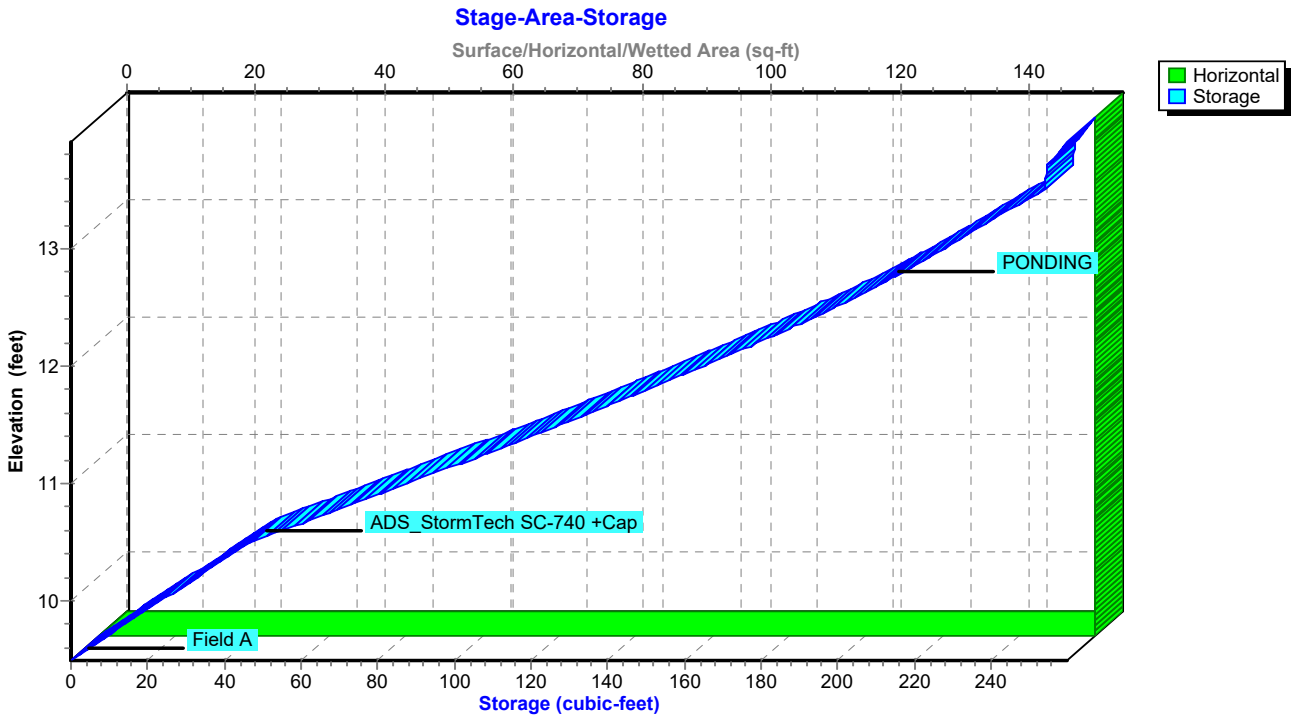
Pond 4P: STORM-TECH SYSTEM



Pond 4P: STORM-TECH SYSTEM



Pond 4P: STORM-TECH SYSTEM

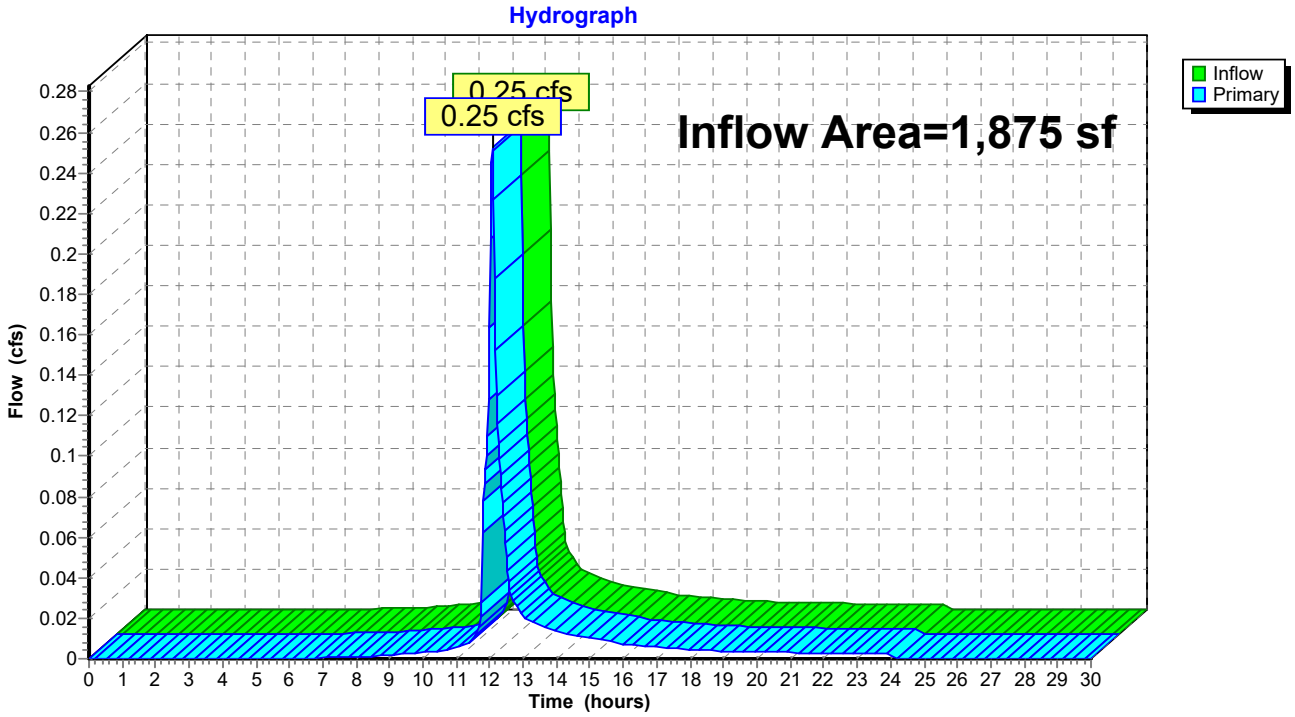


Summary for Link 2L: PROPOSED RUNOFF

Inflow Area = 1,875 sf, 57.33% Impervious, Inflow Depth = 4.34" for 25-Year event
Inflow = 0.25 cfs @ 12.08 hrs, Volume= 679 cf
Primary = 0.25 cfs @ 12.08 hrs, Volume= 679 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Link 2L: PROPOSED RUNOFF



Summary for Subcatchment 1S: PROPOSED ROOF AREA

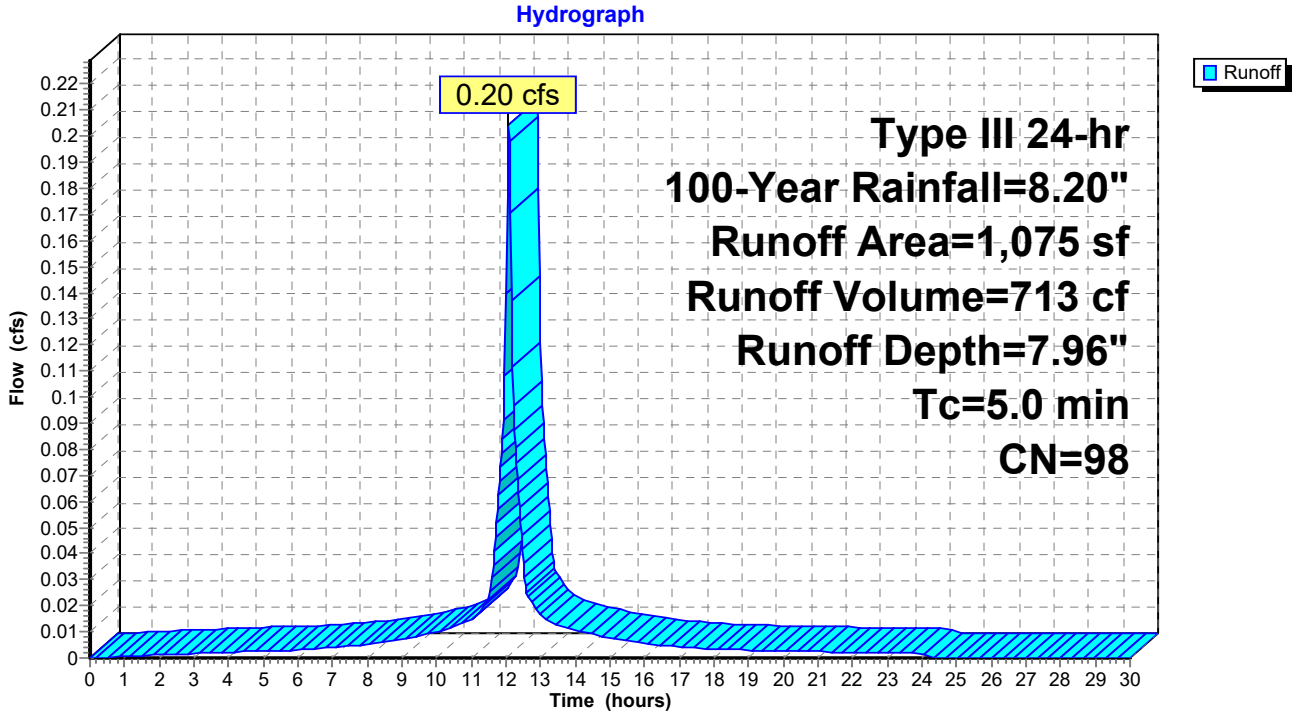
Runoff = 0.20 cfs @ 12.07 hrs, Volume= 713 cf, Depth= 7.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Rainfall=8.20"

Area (sf)	CN	Description
1,075	98	Roofs, HSG D
1,075		100.00% Impervious Area

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

Subcatchment 1S: PROPOSED ROOF AREA



Summary for Subcatchment 2S: PROPOSED PERMEABLE PAVERS

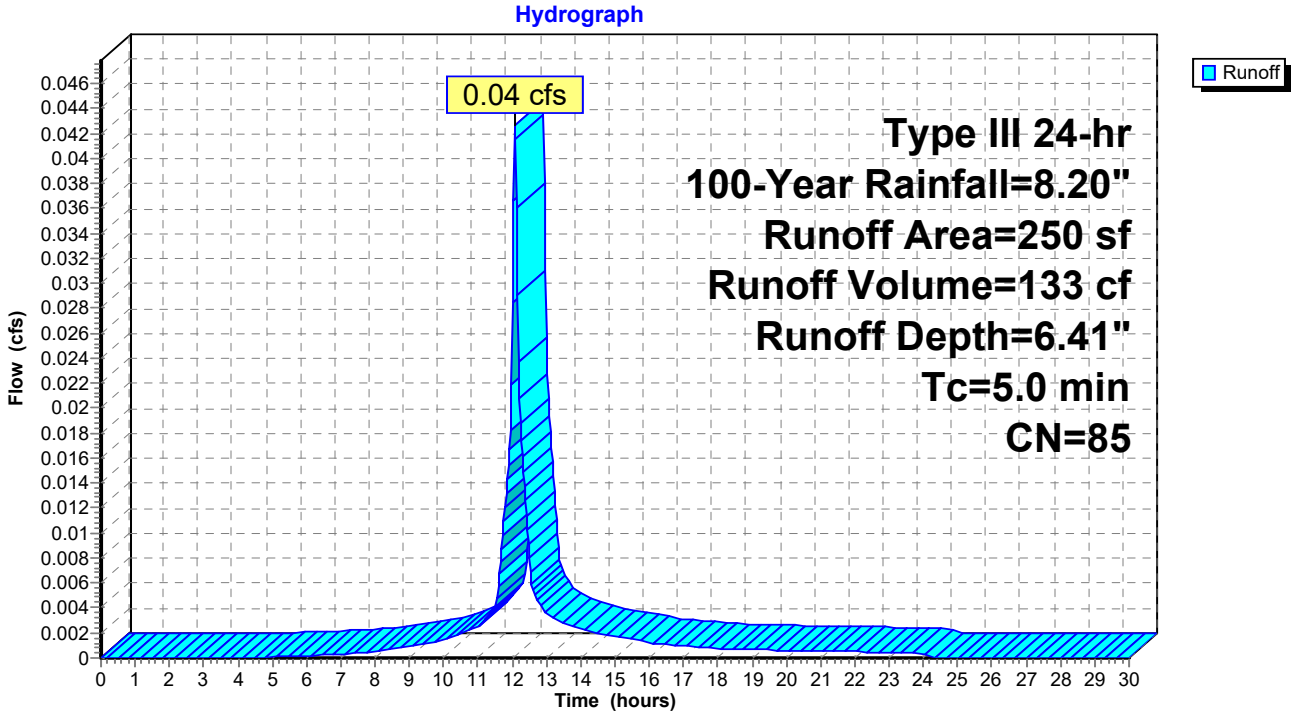
Runoff = 0.04 cfs @ 12.07 hrs, Volume= 133 cf, Depth= 6.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Rainfall=8.20"

	Area (sf)	CN	Description
*	250	85	Permeable Pavers
	250		100.00% Pervious Area

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

Subcatchment 2S: PROPOSED PERMEABLE PAVERS



Summary for Subcatchment 4S: PROPOSED LANDSCAPE AREA

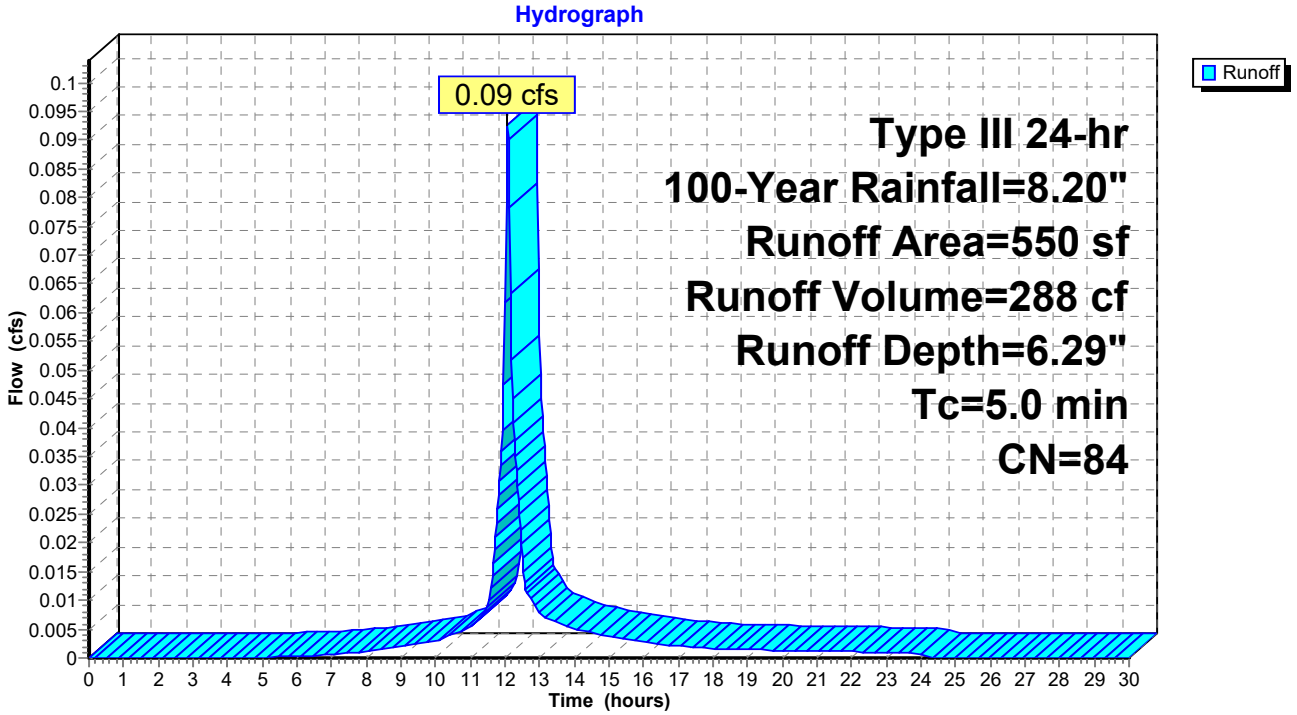
Runoff = 0.09 cfs @ 12.07 hrs, Volume= 288 cf, Depth= 6.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Rainfall=8.20"

Area (sf)	CN	Description
550	84	50-75% Grass cover, Fair, HSG D
550		100.00% Pervious Area

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

Subcatchment 4S: PROPOSED LANDSCAPE AREA



Summary for Pond 4P: STORM-TECH SYSTEM

Inflow Area = 1,075 sf,100.00% Impervious, Inflow Depth = 7.96" for 100-Year event
Inflow = 0.20 cfs @ 12.07 hrs, Volume= 713 cf
Outflow = 0.19 cfs @ 12.10 hrs, Volume= 551 cf, Atten= 7%, Lag= 1.7 min
Discarded = 0.00 cfs @ 1.62 hrs, Volume= 15 cf
Primary = 0.19 cfs @ 12.10 hrs, Volume= 536 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs / 2
Peak Elev= 12.20' @ 12.10 hrs Surf.Area= 155 sf Storage= 180 cf

Plug-Flow detention time= 163.6 min calculated for 551 cf (77% of inflow)
Center-of-Mass det. time= 79.8 min (819.8 - 740.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.50'	158 cf	**13.97'W x 11.07'L x 4.00'H Field A** 618 cf Overall - 92 cf Embedded = 527 cf x 30.0% Voids
#2A	10.50'	92 cf	**ADS_StormTech SC-740 +Cap** x 2 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Chambers in 2 Rows
#3	12.70'	10 cf	**PONDING** Listed below -Impervious
		260 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Cum.Store (cubic-feet)
12.70	0
13.70	5
13.90	10

Device	Routing	Invert	Outlet Devices
#1	Discarded	9.50'	**0.040 in/hr Exfiltration over Horizontal area**
#2	Primary	12.00'	**4.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 1.62 hrs HW=9.54' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.19 cfs @ 12.10 hrs HW=12.20' (Free Discharge)
↑**2=Orifice/Grate** (Orifice Controls 0.19 cfs @ 2.16 fps)

Pond 4P: STORM-TECH SYSTEM - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 33.6" Spacing = 84.6" C-C Row Spacing

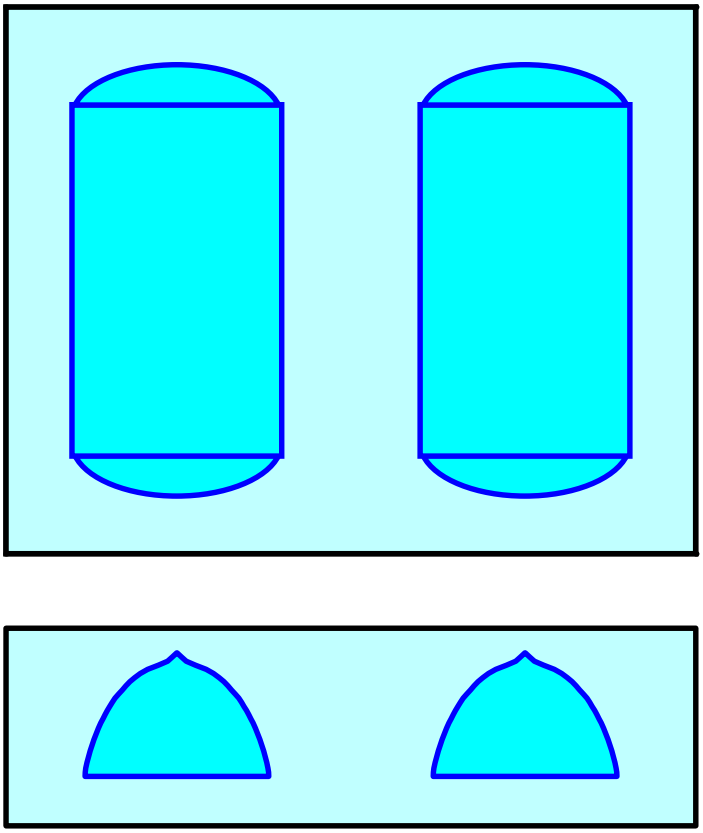
1 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 8.74' Row Length +14.0" End Stone x 2 = 11.07' Base Length
2 Rows x 51.0" Wide + 33.6" Spacing x 1 + 16.0" Side Stone x 2 = 13.97' Base Width
12.0" Base + 30.0" Chamber Height + 6.0" Cover = 4.00' Field Height

2 Chambers x 45.9 cf = 91.9 cf Chamber Storage

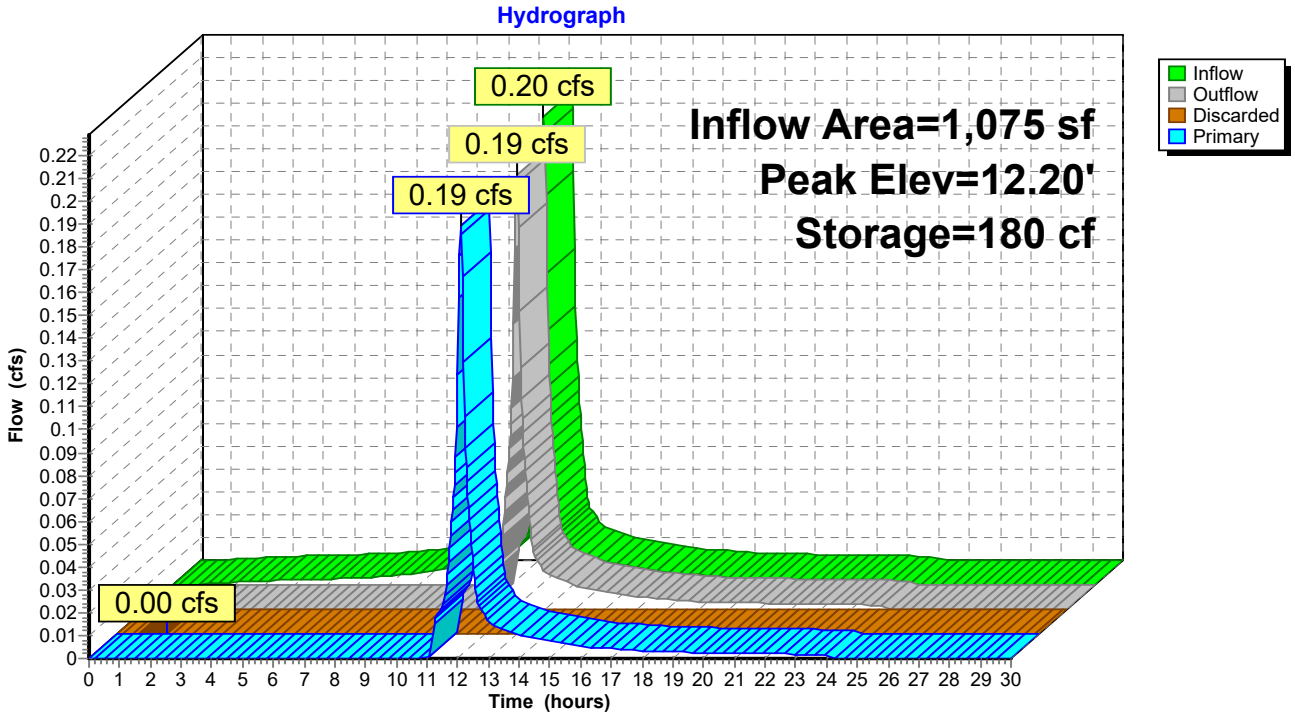
618.4 cf Field - 91.9 cf Chambers = 526.6 cf Stone x 30.0% Voids = 158.0 cf Stone Storage

Chamber Storage + Stone Storage = 249.8 cf = 0.006 af
Overall Storage Efficiency = 40.4%
Overall System Size = 11.07' x 13.97' x 4.00'

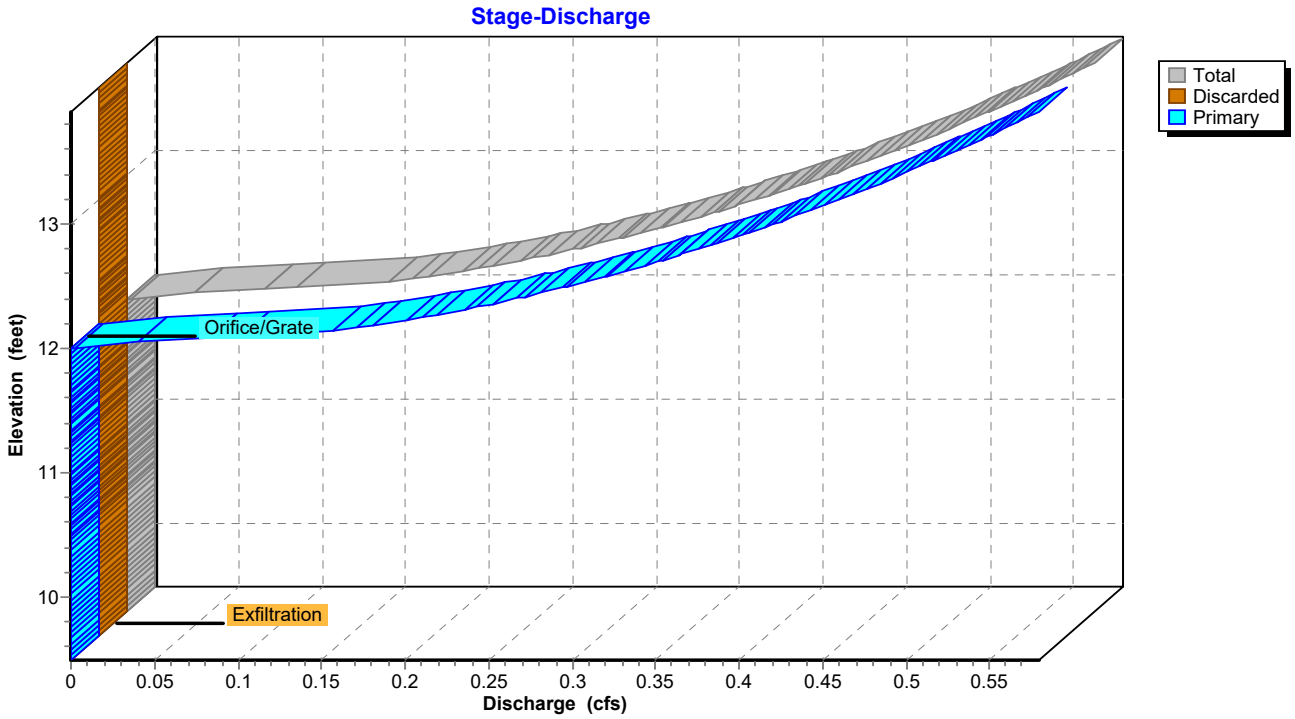
2 Chambers
22.9 cy Field
19.5 cy Stone



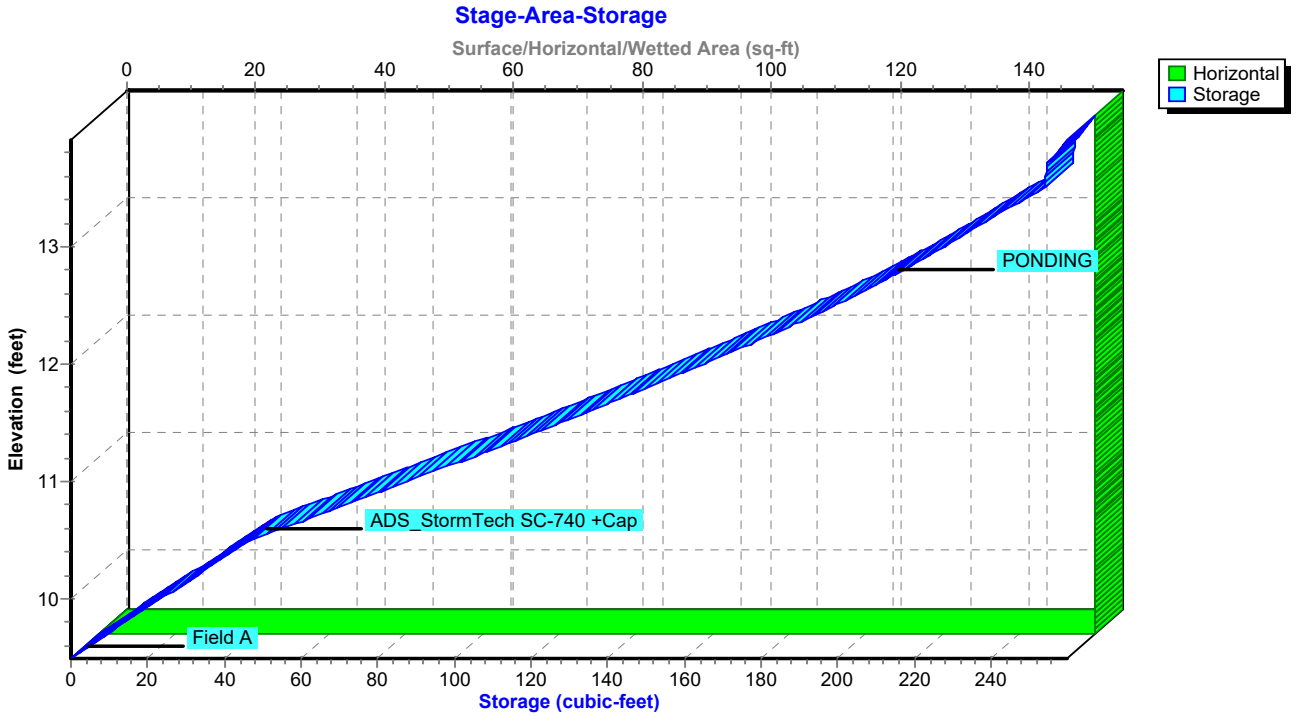
Pond 4P: STORM-TECH SYSTEM



Pond 4P: STORM-TECH SYSTEM



Pond 4P: STORM-TECH SYSTEM

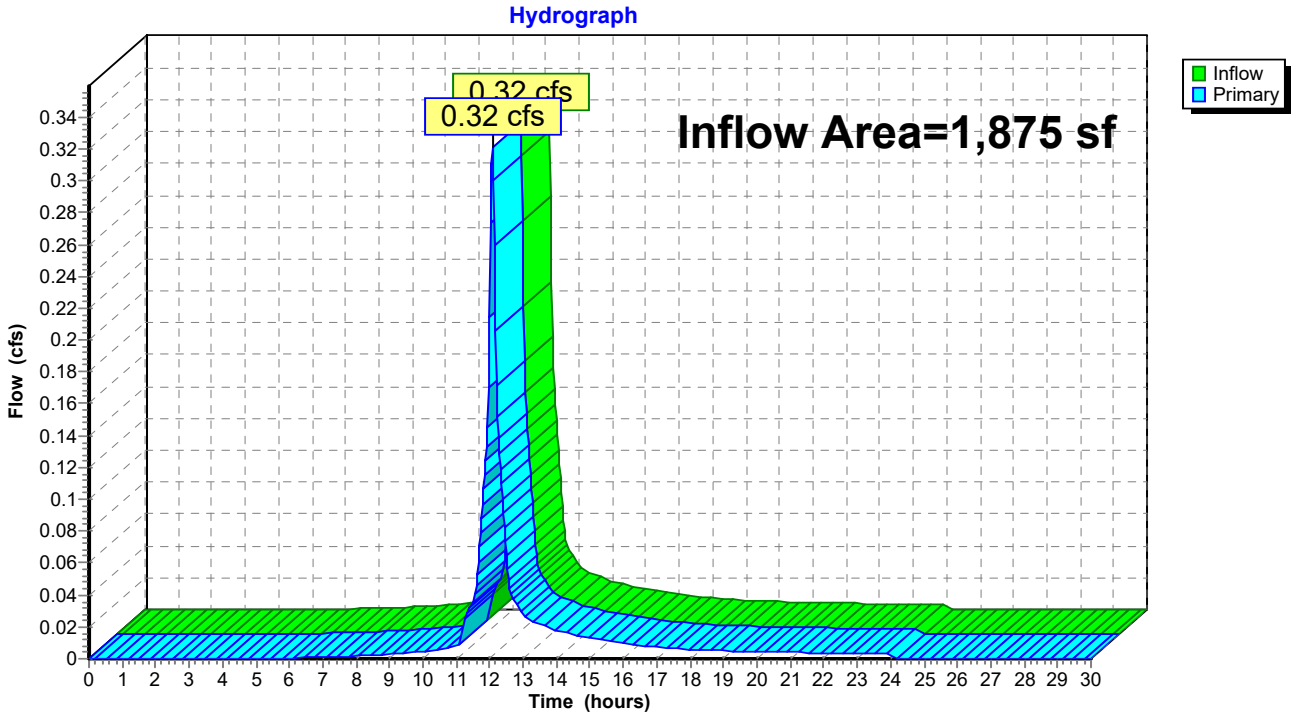


Summary for Link 2L: PROPOSED RUNOFF

Inflow Area = 1,875 sf, 57.33% Impervious, Inflow Depth = 6.13" for 100-Year event
Inflow = 0.32 cfs @ 12.09 hrs, Volume= 958 cf
Primary = 0.32 cfs @ 12.09 hrs, Volume= 958 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Link 2L: PROPOSED RUNOFF



Appendix B – Soils Information

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,940 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

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: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 15, Sep 12, 2019

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

Date(s) aerial images were photographed: Aug 10, 2014—Aug 25, 2014

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
603	Urban land, wet substratum, 0 to 3 percent slopes	10.1	67.7%
655	Udorthents, wet substratum	4.8	32.3%
Totals for Area of Interest		**14.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Norfolk and Suffolk Counties, Massachusetts

603—Urban land, wet substratum, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: vkyl
Mean annual precipitation: 32 to 50 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Parent material: Excavated and filled land over herbaceous organic material and/or alluvium and/or marine deposits

Minor Components

Udorthents

Percent of map unit: 13 percent
Hydric soil rating: Unranked

Beaches

Percent of map unit: 2 percent
Hydric soil rating: Unranked

655—Udorthents, wet substratum

Map Unit Setting

National map unit symbol: vkyd
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Landform position (two-dimensional): Shoulder, footslope

Landform position (three-dimensional): Riser, tread
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Excavated and filled sandy and gravelly human transported material over highly-decomposed herbaceous organic material

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Minor Components

Urban land

Percent of map unit: 3 percent
Hydric soil rating: Unranked

Ipswich

Percent of map unit: 2 percent
Landform: Marshes
Hydric soil rating: Yes

NORSE ENVIRONMENTAL SERVICES, INC.
92 Middlesex Road, Unit 4
Tyngsboro, MA 01879
TEL. (978) 649-9932 • FAX (978) 649-7582
Website: www.norseenvironmental.com

OIL SPILL PREVENTION, CONTROL & COUNTERMEASURE PLAN

337 CHELSEA STREET
EAST BOSTON, MA

Prepared For:
337 Chelsea Street LLC
One City Hall Mall – Suite 2
Medford, MA 02155

Prepared By:
Norse Environmental Services
92 Middlesex Road, Suite 4
Tyngsboro, MA 01879
978-649-9932

November 2019

Introduction

The purpose of the Oil Spill Prevention, Control and Countermeasure Plan is to prepare our subcontractors and employees for emergency situations which may occur. Typical emergencies for which we need to be prepared include spills and leaks, personal injuries, fires, weather-related emergencies and other situations which require operational response.

This plan has been developed because we recognize that even the safest operations can experience accidents and emergencies. We care about our employees, contractors, visitors, and the community in which we operate and aspire to be prepared to mitigate the effects of any emergency, should one arise.

The content of the Oil Spill Prevention, Control and Countermeasure Plan includes:

- Descriptions of expected emergencies, their hazards, and the recommended plan of action to combat their effects.
- Procedures for reporting employee injuries, motor vehicle accidents, spills, product contamination or any other emergencies which may occur.
- Emergency contact phone numbers.
- Decision making infrastructure with defined action steps that can be executed quickly.

Plan Maintenance and Distribution

a) The plan will be reviewed annually or more frequently as required. Copies of the Oil Spill Prevention, Control and Countermeasure Plan will be distributed as follows:

- All Management
- Field Managers
- Office Employees

b) Designated recipients of the Oil Spill Prevention, Control and Countermeasure Plan will be offered training in the plan, and their respective responsibilities, at least annually.

c) Requests for changes to the Oil Spill Prevention, Control and Countermeasure Plan should be submitted in writing to the Director of Safety & Compliance.

If there are any questions concerning changes to the plan, or if other revisions are required, contact the Director of Safety & Compliance.

Motor Vehicle Accidents

Immediate action steps:

a) Determine extent of the accident and any injuries.

b) If spill response assistance is required due to the size of the spill, location, or inability to immediately control it, or there is potential for the spill to impact the environment, immediately notify the Director of Safety & Compliance who will then make the determination to contact our Insurance and/or Environmental Response Vendor.

c) Determine if immediate assistance is required at the accident scene that has not already been initiated (e.g. ambulance, police, tow truck, agency reporting, other vehicle to transfer cargo, etc.).

d) Verbally report accident to the Director of Safety & Compliance.

e) Provide periodic feedback and/or status reports as often as required or necessary.

f) Should a motor vehicle accident result in a personal injury, fatality, or any vehicle being towed or a product release to the ground, sewer, or navigable waterway, the Director of Safety & Compliance will make an immediate verbal report to ownership. If the accident is DOT "recordable" the Director of Safety & Compliance is responsible to complete and maintain the fleet's DOT Accident File.

Hazmat Incident Reporting

A "Hazardous Material Reportable Incident" is an occurrence during transporting a hazardous material by truck, rail or air (including during loading, unloading and temporary storage) in which, as a direct result of the hazardous material:

- A person is killed;
- A person receives injuries requiring hospitalization;
- Estimated carrier or other property damage exceeds $50,000 (excluding vehicle/property damage unless caused by the material/product itself);
- An evacuation of the general public occurs lasting one or more hours;
- One or more major transportation arteries or facilities are closed or shut down for one hour or more; or
- The operation, flight pattern or routine of an aircraft is altered

Or

- A situation exists of such a nature (i.e., a continuing danger to life at the scene) that, in the judgment of the Director of Safety & Compliance, should be reported even though it does not meet the criteria above.

Or

- An unintentional release of a hazardous material from a container (i.e., tank truck) caused by failure of the container or operator.

Incidents meeting the above definition(s) must be reported to the Director of Safety. If the incident meets any of the criteria in the first two paragraphs above, reporting must be immediate by telephone to the National Response Center (800-424-8802). The Director of Safety will make the report which will include the following information:

- Name of reporter;
- Name and address of the carrier represented by the reporter;
- Phone number where the reporter can be contacted;
- Date, time and location of the incident;
- Extent of injuries if any;
- Classification, name and quantity of hazardous material involved; and
- Type of incident and whether a continuing danger to life exists at the scene.

In the case of property damage greater than $50,000, it may take some time to obtain estimates that are reliable and accurate enough to determine the total cost. If that's the only trigger for "immediate" reporting; telephonic notification, even days later, is acceptable. A telephone report must be followed within 30 days by a written report (DOT Form 5800.1). If the incident meets only the third item above, the report does not need to be immediate, but must be submitted in writing (DOT Form 5800.1) within 30 days of the incident.

Local Procedures

Field Staff must notify the Director of Safety & Compliance for the following examples but not limited to these examples. Product spills, all motor vehicle accidents involving injuries significant property damage over one thousand dollars or if either vehicle is towed or if any party is taken to the hospital or if you are issued a citation, and any personal injury.

Regardless:
All spills regardless of quantity, must be reported immediately to the Director of Safety & Compliance.

The Applicant must inform the Commission of any violation of this Order and any other project related spill or accident that may impact wetland resource areas as soon as possible and at least by the end of the business day and must take appropriate action to mitigate impacts from such spill or accident. The Applicant or site supervisor must notify the City of any emergency by calling Commission staff at 617-635-3850 from 9:00 AM - 5:00 PM, Monday - Friday and, at all other times, by calling the Mayor's Office's 24-hour Hotline at 617-635-4500. On the date of the issuance of this Order, the appropriate contact is Amelia Croteau, Conservation Agent: cc@boston.gov

EMERGENCY RESPONSE FLOW CHART

INCIDENT OCCURS

Operator controls incident,
calls
Director of Safety & Compliance
If directed, call 911

Director of Safety & Compliance
contacts Ownership if needed.

Ownership reviews all actions taken monitoring progress and corporate liability through Director of Safety & Compliance.

Director of Safety & Compliance makes determination to involve the Emergency Response Contractor, verifying all Regulatory Agencies have been notified.

Operations Manager contacts customer & dispatches additional equipment and/or personnel as warranted.

Director of Safety & Compliance collects all reports and verifies them for accuracy and completeness, submitting a copy to the customer if required.

Director of Safety & Compliance assesses cause of the incident and makes recommendation for prevention in the future.

Director of Safety & Compliance assures all reports are filed with appropriate agencies and insurance matters are handled properly.

Reports and recommendations are submitted to Ownership for review and final disposition

Injuries & Illnesses

Immediate action steps:

a) Determine extent of injuries or illness;

b) Determine if immediate assistance is required at the scene, which has not already been initiated (e.g. ambulance, police, agency reporting etc.);

c) Do Not attempt any treatment unless trained to do so;
   - Be aware of the location of the First Aid Kit (use only if trained);
   - Take appropriate precautions to avoid exposure to blood/bodily fluids

d) Verbally report incident to Director of Safety & Compliance

e) In the case of a serious injury or illness requiring hospitalization, arrangements to provide family transportation to the hospital/treating facility should be considered.

f) Provide periodic feedback and/or status reports on-line as often as required or necessary.

Fuel & Oil Spills

Immediate action steps:

a) If an oil or fuel release occurs, act quickly to ensure the following has been completed as appropriate:
   - Deactivate equipment;
   - Stop Work in area of Spill;
   - Deploy a bucket to catch oil or fuel;
   - Deploy sorbents to ground surface; and
   - Bag spent sorbents.

b) As appropriate, coordinate contractor pump-out and Emergency Response with Director of Safety & Compliance

c) Provide periodic feedback and/or status reports on-line as often as required

Fire

In the case of Fire immediate action steps:

In a fire emergency, primary concern is for the safety of all employees, followed by protection of physical assets. The role of terminal/fleet employees is:

- Extinguish minor fires;
- Promptly notify the local Fire Department;
- Assist in the orderly and safe evacuation of the facility;
- Render assistance to the Fire Department, as required; and
- Notify appropriate management personnel.

a) If an employee observes or discovers a fire, or sees visible smoke, their first action is to alert employees, evacuate the building and notify the Fire Department.

Do not attempt to fight a fire if you are alone!

If an employee has been trained in the use of hand-portable fire extinguishers, attempt to extinguish the fire, or investigate the cause of smoke. In no event should the employee put themselves in jeopardy!

If an employee has not been trained in the use of fire extinguishers, remain at a safe distance and direct the responding response team or local Fire Department to the location of the fire or smoke.

If evacuation is required, all employees should immediately leave the building via the nearest emergency exit and proceed away from the facility.

b) Verbally report incident to:

- Ownership
- Operations Manager
- Director of Safety & Compliance

c) Provide periodic feedback and/or status reports as often as required.

Weather

- During severe weather conditions, it is ultimately the Field Staff's decision whether it is safe to drive during icy and or snowy conditions.

- If the Field Staff makes a determination that it is unsafe to enter or drive into the Site, they must continue to the closest area available that they determine is safe to stop and call the Director of Safety & Compliance.

- When inclement weather conditions are forecast that may ultimately result in unsafe conditions (ice, snow, hurricane, etc.) it is the responsibility of the Operations Manager to constantly stay updated with these conditions through local weather reports.

- The Operations Manager may ultimately make different decisions pertaining to different geographical areas that we service, it will ultimately be the Operations Manager and/or Ownership determining what areas will be serviced.

Other Emergencies (Security, Bomb Threat, Civil Disturbance, Etc.)

At the Facility:

In an emergency as listed above, the primary concern is for the safety of all employees, followed by protection of physical assets. The role of the employees is to:

- Secure the premises immediately;
- Promptly notify the local Fire and/or Police Departments;
- Assist in the orderly and safe evacuation of the facility/premises;
- Render assistance to the Civil Departments responding; and
- Notify appropriate management personnel.

In no event should the employee put himself or herself at jeopardy!

In the Field:

In an emergency as listed above, the primary concern is for the safety of all employees, subcontractors and protection of physical assets. The role of the employee is:

- Avoid situations that have a potential to become an emergency;
- Contact dispatch using your cellphone providing them with your location and description of your emergency;
- Contact the local authorities; and
- Once you have located a safe haven, call the Operations Manager, Ownership and/or Director of Safety & Compliance.

Employee Responsibilities

In the event of an emergency, immediately (or as soon as practical and necessary) notify management who will assist employees handling the incident. Management will be responsible for directing corrective actions, coordinating clean-up operations and/or monitoring the use of emergency equipment by outside services, as required. Additional Responsibilities:

1. Assure that local police, fire, ambulance, National Response Center, EPA and Coast Guard, if dictated by the emergency, have been notified of the following:

    - Exact location of the incident
    - Nature and extent of injuries, if any
    - Specific products on board
    - Apparent condition of the vehicle
    - Need to apply foam (if volatile products have been released)
    - Any other real or potential hazards that are known at that time

2. Contact the Director of Safety & Compliance for emergency information/assistance regarding Federal/State reporting requirements, environmental remediation and/or employee safety and health issues.

Training

Training on the Emergency Response Plan, including a review of potential emergency situations, individual roles/responsibilities, reporting requirements and appropriate sections of this Plan should be conducted for all employees immediately upon assignment. Refresher training will be required on an annual basis, or whenever changes or updates to the Plan are made.

Emergency Telephone Numbers

Director of Safety & Compliance: (617) 721-7946 Dalfior Development, Fernando Dalfior
Owner: (617) 721-7946
Operations: (617) 721-7946
Fire & Police: 911
National Response Center: (800) 424-8802

City of Boston Notification Procedure

The Applicant must inform the Commission of any violation of this Order and any other project related spill or accident that may impact wetland resource areas as soon as possible and at least by the end of the business day and must take appropriate action to mitigate impacts from such spill or accident. The Applicant or site supervisor must notify the City of any emergency by calling Commission staff at 617-635-3850 from 9:00 AM - 5:00 PM, Monday - Friday and, at all other times, by calling the Mayor's Office's 24-hour Hotline at 617-635-4500. On the date of the issuance of this Order, the appropriate contact is Amelia Croteau, Conservation Agent: cc@boston.gov

Accident, Spill and Containment Reporting Form

Purpose

To provide managers and field staff with a procedure to properly report an accident, spill/contamination and safety incident and eliminate the need for personal decisions regarding the reporting procedures. This procedure helps ensure uniformity throughout the organization regarding accurate, timely and complete safety incident reporting. The procedure is written to maximize safety response and minimize injury.

Scope

The safety incident report must be completed each time an/accident, spill/contamination or work injury occurs within the organization. This includes the reporting requirements from initial notification to the completion of the report.

Responsibility

The field staff is responsible to call the Director of Safety's 24-hour cell phone number immediately to accurately report information regarding all aspects of the safety incident. The

CITY OF BOSTION NOTIFICATION PROCEDURE

The Applicant must inform the Commission of any violation of this Order and any other project related spill or accident that may impact wetland resource areas as soon as possible and at least by the end of the business day and must take appropriate action to mitigate impacts from such spill or accident. The Applicant or site supervisor must notify the City of any emergency by calling Commission staff at 617-635-3850 from 9:00 AM - 5:00 PM, Monday - Friday and, at all other times, by calling the Mayor's Office's 24-hour Hotline at 617-635-4500. On the date of the issuance of this Order, the appropriate contact is Amelia Croteau, Conservation Agent: cc@boston.gov

Management Phone Numbers

Director of Safety & Compliance: (617) 721-7946 Dalfior Development, Fernando Dalfior
Owner: (617) 721-7946
Operations: (617) 721-7946
Fire & Police: 911
National Response Center: (800) 424-8802

Depending on the nature of the release; the Director of Safety & Compliance will report the incident to all appropriate authorities including the PHMSA's National Response Center and will need the following information:

1. Name, address and telephone number of the company and call back number.
2. Location of spill (physical address, country and state).
3. Time and duration of release.
4. Cause of release.
5. Chemical identity of material released/ DOT identification number.
6. Estimated amount of release (gallons, pounds).
7. Medium or media into which the release occurred.
8. Hazard classification of released material.
9. Containment efforts.
10. Distance to nearest water body or storm drain.
11. Name of cleanup contractor called and estimated time of arrival.
12. Shipper and consignee information.
13. Manufacturer, if known.
14. Bill of lading number/waybill number.