The Residences at Coleridge Coast

East Boston, Massachusetts

Notice of Intent
#006-1606

originally submitted **August 1, 2018**

updated on **December 5, 2018**

submitted to **Boston Conservation Commission**

submitted by **Rock Development**

prepared by **Fort Point Associates, Inc.**

in association with:
Touloukian Touloukian Inc.
Highpoint Engineering
Halvorson Design Partnership
EcoTec, Inc.

Fort Point Associates, Inc.
Urban Planning Environmental Consulting Project Permitting

Fort Point Associates, Inc.
Urban Planning Environmental Consulting Project Permitting
A TETRA TECH COMPANY

December 5, 2018

Amelia Croteau
Executive Secretary
Boston Conservation Commission
1 City Hall Square, Room 709
Boston, MA 02201

Re: The Residences at Coleridge Coast; 181-183 Coleridge Street, East Boston, MA
Notice of Intent # 006-1606

Dear Ms. Croteau and Commissioners:

On behalf of Rock Development (the "Applicant"), we are pleased to submit the enclosed updated Notice of Intent (NOI) for the Residences at Coleridge Coast (the "Project") located at 181-183 Coleridge Street, East Boston, Massachusetts (the "Project Site"). The Applicant is proposing the construction of a new mixed-use building, a new publicly-accessible harborwalk, and associated landscape amenities.

The Project Site has been redesigned based on feedback from the Boston Conservation Commission (the "Commission"), Massachusetts Division of Marine Fisheries (MassDMF), Massachusetts Office of Coastal Zone Management (CZM), and Boston Harbor Now (BHN). The Harborwalk was relocated 2 to 5 feet landward in response to concerns about future sea level rise and to further avoid potential impacts to the Coastal Bank.

The following table provides additional information requested on August 13, 2018 and August 27, 2018 by the Commission regarding the NOI that was previously submitted on August 1, 2018. The requested material has been organized into three categories: Coastal Bank, Flood Control, and Landscaping. The comments and questions from the Commission are in bold and the Applicant's response to each item follows:

No.	Question/Response
A.	**Coastal Bank**
1.	**The determination of the coastal bank delineation, using the DEP Coastal Bank Delineation guidance document (MassDEP Policy 92-1).** *Response: The resource area delineation memo has been modified to include additional explanation and verification of the methodology used in delineating the Coastal Bank. Additionally, a Coastal Bank Delineation Plan that graphically represents MassDEP methodology and definition of slopes and slope changes has*

No.	Question/Response
	been included. The Supplemental Information provides additional information to confirm proper coastal bank delineation. See Attachment E – Wetland Resource Evaluation.
2.	**Include a narrative that details how the installation of the Harborwalk will or will not affect the stability of the bank and what will be done to ensure the longevity of the bank. The current plans show the Harborwalk located directly atop the edge of the Coastal Bank. Improving the existing natural features, like the coastal bank, will provide more natural and much-needed shoreline protection.** *Response: As requested by the Commission, MassDMF, CZM, and BHN, the edge of the Harborwalk closest to the Top of the Coastal Bank will be relocated farther landward of the originally proposed location by a minimum of 2 feet away from this delineation line, and in some portions farther away. There will now be native plantings that are compatible with flood conditions within a 2 to 5-foot wide zone between the raised Harborwalk and Coastal Bank. The Harborwalk will be supported by helical piles to minimize disturbance to the Coastal Bank. Furthermore, the center line of the helical piles closest to the Top of the Coastal Bank will be located 4 feet back from the edge of the Harborwalk, resulting in a minimum of 6-foot clearance between the center line of the piles and the Top of the Coastal Bank. The proposed construction of the Harborwalk will minimize any construction directly adjacent to the Coastal Bank and will increase shoreline protection with the inclusion of durable coastal plantings that have deep roots to help stabilize the Coastal Bank and protect it from erosion and flood waters. See Attachment F – Proposed Site Plan and Attachment G – Plans.*
3.	**As advised by Boston Harbor Now, the proponent should be cautious that enhancements like the creation of a new Harborwalk and rain garden do not disturb existing resource areas that are critical to improving resiliency at this site. There will need to be an explanation as to how the rain gardens won't destabilize the coastal bank and how viable they will be in that location.** *Response: The proposed rain garden has been removed from the site plan and will therefore not have any impact on the Coastal Bank. See response to No. 2 regarding the relocated Harborwalk.*
4.	**My recommendation to the Commission in agreement with the Division of Marine Fisheries comment letter, will be to recommend the Applicant shift the proposed Harborwalk landward to avoid impacts to the Coastal Bank. We remain**

No.	Question/Response
	unconvinced that the installation of the rain gardens and the Harborwalk will not impact the coastal bank in any way. Alternatives should be provided to the Commission or reasoning as to why the Harborwalk cannot be pulled back. The Commission will likely require that this be setback landward. *Response: The revised site plan includes shifting the Harborwalk landward and the removal of the rain garden as described in the responses to questions No. 2 and 3.*
5.	**How will critical vegetation that is good for bank stability survive with the shading of the overhang?** *Response: The Harborwalk is now set a minimum of 2 feet back from the Top of the Coastal Bank. Native plans with deep roots will be planted within the buffer strip between the Harborwalk and Coastal Bank. The top of the Harborwalk is 30 inches or less above the directly adjacent existing grade. In addition, the majority of the Harborwalk is south facing so shadows will be cast away from plantings adjacent to the Top of the Coastal Bank for most of the day. There will be some sun shadows cast a few hours per day only during the longest days of the year.*
6.	**Have helical pilings been explored for the Harborwalk?** *Response: Yes, we have altered the Harborwalk design to incorporate helical piles. See responses to questions No. 2 and 3.*
7.	**Figure 9 suggests you may be creating a vertical coastal bank.** *Response: Figure 9 is an old drawing that is no longer applicable to the design and should be disregarded. Please refer to revised Harborwalk detail in Attachment G – Plans.*
8.	**Information on invasive species removal techniques – will it be hand removal, herbicides, etc.?** *Response: The intent is to mechanically remove, with machine and manual labor assistance, plants in their entirety including root systems, which can be the source of horizontal invasive growth expansion.*

No.	Question/Response
9.	**[Provide] stamped plan that details how the installation of the Harborwalk will or will not affect the stability of the bank and what will be done to ensure the longevity of the bank.** **Provide stamped cross section plan of coastal bank and Harborwalk** **[Provide] stamped plan that shows where the coastal bank will be located with the proposed grading plan** *Response: No work to, or within, the Coastal Bank is currently proposed. Physical barriers (i.e., construction fencing) will be installed 2 to 5 feet inland of the coastal bank to minimize impacts and provide a visual and physical "no work" barrier during construction. No access or work will be performed from the Coastal Bank side of the Project Site. The helical piles will be installed a minimum of 6 feet from the Top of Coastal Bank and inside of the temporary construction fencing. The combination of during-construction protection of the Coastal Bank, the additional 2-foot setback from the Coastal Bank, and the 6-foot helical pile setback will minimize potential impacts and protect and maintain the existing condition of the Coastal Bank. See responses to questions No. 2 and 3.*
B.	**Flood Control**
10.	**During extreme flooding events, water will likely over top the retaining wall running adjacent to MHW. What happens when the rain gardens are infiltrated with sea water and cannot take on the runoff from the site. We will need a more detailed narrative including the answers to these questions. Perhaps a new location for the rain gardens should be explored. With sea level rise expected to be at least 3' by 2070, and the increase in storm intensity (as we have seen this past winter), how will these rain gardens be able to properly function when seawater gets into the system?** *Response: Due to space constraints at the Project Site resulting from the increased setback of the Harborwalk from the Coastal Bank, the proposed rain garden has been eliminated. The rain garden was not required to meet stormwater standards and was originally incorporated as an additional site amenity.*
11.	**How will proposed fill, grading, and structures within the coastal floodplain affect water flow and drainage patterns?** *Response: The proposed fill, grades, and structures will be constructed above the base flood elevation 10 feet NAVD88. The Harborwalk wall will provide additional*

No.	Question/Response
	protection. Tidal water flow will maintain its existing drainage patterns with receding flood waters receding away from the Project Site towards the coast. Additionally, the existing BWSC drainage system in Coleridge Street will assist with relief of coastal flood waters, as it does today. The BWSC drainage system will drain over time and outlets to Boston Harbor to the north of the Project Site.
12.	**Narrative for the proposed underground garage:** *Response: The building will be mixed use. The garage level, which is located below the design flood elevation, will be constructed of cast-in-place concrete and will be dry flood-proofed, at a minimum, according to the following codes, standards, and procedures:* • *ASCE 24-14: Flood Resilient Design and Construction* • *ASCE 7, Section 5.3: Minimum Design Loads for Buildings and Other Structures* • *Massachusetts Building Code, 780 CMR 1612.0 Flood Loads* • *Massachusetts Building Code, 780 CMR 120.G: Flood-Resistant Construction and Construction in Coastal Dunes* • *Boston Zoning Code, Article 80: Development Review* *Among the strategies that will be employed, walls will be sealed up to the design flood elevation. The structure will be designed to be able to withstand the required hydrostatic and hydrodynamic pressure. Water resistant materials will be used for any spaces below the design flood elevation.* *The entrance to the underground garage is accessed from Coleridge Street. This entrance ramps up to an elevation of 10 feet at the stair and driveway ramp before descending. This will prevent flood waters from entering the below-grade garage.*
13.	**The narrative for the NOI states that the project will be only residential. Will the project be asking for a LOMR-F?** *Response: The building will be mixed-use. The Applicant will consider seeking a LOMR-F.*
14.	**Provide spot elevations for the existing and proposed elevations.** *Response: The Grading and Drainage Plan (Sheet C-400) provides both existing and proposed grades for the Project Site and has been updated to improve readability when comparing existing and proposed grading.*

No.	Question/Response
C. Landscaping	
15.	**What type of plants will be used?** *Response: See Attachment F – Proposed Site Plan for the plant list and their proposed locations. All plants within the resource area and buffer zones are native species listed on the "Coastal Landscaping in Massachusetts Plant List" published by CZM.*
16.	**Submit landscaping plan, including detail on Harborwalk and retaining walls.** *Response: See Attachment F – Proposed Site Plan and Attachment G – Plans.*

If you need additional information, please contact me at (617) 357-7044 x207.

Sincerely,

Cara Pattullo, AICP
Environmental Planner

Cc: Ryan Acone, Rock Development

Encl: Updated Notice of Intent and Supplemental Information

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TRANSMITTAL FORM

Enter your transmittal number → X281172 (Transmittal Number)

Your unique Transmittal Number can be accessed online:
http://www.mass.gov/eea/agencies/massdep/service/approvals/transmittal-form-for-payment.html

Massachusetts Department of Environmental Protection

Transmittal Form for Permit Application and Payment

1. Please type or print. A separate Transmittal Form must be completed for each permit application.

2. Make your check payable to the Commonwealth of Massachusetts and mail it with a copy of this form to: MassDEP, P.O. Box 4062, Boston, MA 02211.

3. Three copies of this form will be needed.

Copy 1 - the original must accompany your permit application. **Copy 2** must accompany your fee payment. **Copy 3** should be retained for your records

4. Both fee-paying and exempt applicants must mail a copy of this transmittal form to:

MassDEP
P.O. Box 4062
Boston, MA
02211

*** Note:**
For BWSC Permits, enter the LSP.

A. Permit Information

1. Permit Code: 4 to 7 character code from permit instructions	2. Name of Permit Category
BRP WPA Form 3	Notice of Intent

3. Type of Project or Activity: Mixed-Use/Residential Construction

B. Applicant Information – Firm or Individual

1. Name of Firm - Or, if party needing this approval is an individual enter name below: Rock Development

2. **Last Name** of Individual	3. **First Name** of Individual	4. MI

5. Street Address: 11 Dorchester Street, #406

6. City/Town	7. State	8. Zip Code	9. Telephone #	10. Ext. #
Boston	MA	02127	(617) 236-7625	

11. Contact Person	12. e-mail address
Ryan Acone	ryan@builtbyrock.com

C. Facility, Site or Individual Requiring Approval

1. Name of Facility, Site Or Individual: Residences at Coleridge Coast

2. Street Address: 181-183 Coleridge Street

3. City/Town	4. State	5. Zip Code	6. Telephone #	7. Ext. #
East Boston	MA	02128		

8. DEP Facility Number (if Known)	9. Federal I.D. Number (if Known)	10. BWSC Tracking # (if Known)

D. Application Prepared by (if different from Section B)*

1. Name of Firm Or Individual: Fort Point Associates, Inc.

2. Address: 31 State Street

3. City/Town	4. State	5. Zip Code	6. Telephone #	7. Ext. #
Boston	MA	02109	(617) 357-7044	207

8. Contact Person	9. LSP Number (BWSC Permits only)
Cara Pattullo	

E. Permit - Project Coordination

1. Is this project subject to MEPA review? ☒ yes ☐ no
   If yes, enter the project's EOEA file number - assigned when an Environmental Notification Form is submitted to the MEPA unit: 15874 (EOEA File Number)

F. Amount Due

DEP Use Only

Permit No:

Rec'd Date:

Reviewer:

Special Provisions:

1. ☐ **Fee** Exempt (city, town or municipal housing authority)(state agency if fee is $100 or less).
   There are no fee exemptions for BWSC permits, regardless of applicant status.
2. ☐ Hardship Request - payment extensions according to 310 CMR 4.04(3)(c).
3. ☐ Alternative Schedule Project (according to 310 CMR 4.05 and 4.10).
4. ☐ Homeowner (according to 310 CMR 4.02).

Check Number	Dollar Amount	Date
1045	$512.50	7/31/18

HOLD TO LIGHT TO VIEW WATERMARK IN PAPER HEAT SENSITIVE RED IMAGE DISAPPEARS WITH HEAT DETECTION AREA REVEALS A LOCK WHEN TESTED

1046

ROCK DEVELOPMENT LLC
546 E BROADWAY
BOSTON, MA 02127-4407

DATE 7/31/18 5-7017/2110

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

Fifteen - Hundred DOLLARS

Citizens Bank

FOR 181-183 Coleridge NOI

"001046" :211070175: 1329594476"

Details on back

Security Features

HOLD TO LIGHT TO VIEW WATERMARK IN PAPER HEAT SENSITIVE RED IMAGE DISAPPEARS WITH HEAT DETECTION AREA REVEALS A LOCK WHEN TESTED

1045

ROCK DEVELOPMENT LLC
546 E BROADWAY
BOSTON, MA 02127-4407

PAY TO THE ORDER OF Commonwealth of Massachusetts $ 513.50

Five - Hundred and Thirteen DOLLARS

Citizens Bank

FOR 181-183 Coleridge NOI

"001045" :211070175: 1329594476"

DATE 7/31/18 5-7017/2110

Security Features

Details on back

APPLICATION FORM

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

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):

181-183 Coleridge Street — a. Street Address
East Boston — b. City/Town
02129 — c. Zip Code

Latitude and Longitude:
42° 22' 52.9" — d. Latitude
71° 00' 45.5" — e. Longitude

0104311000 and 0104312000 — f. Assessors Map/Plat Number
g. Parcel /Lot Number

2. Applicant:

Ryan — a. First Name
Acone — b. Last Name
Rock Development — c. Organization
11 Dorchester Street, #406 — d. Street Address
Boston — e. City/Town
MA — f. State
02127 — g. Zip Code
(617) 269-7625 — h. Phone Number
i. Fax Number
ryan@builtbyrock.com — j. Email Address

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

Joseph; Nancy — a. First Name
Tarantino; Tarantino — b. Last Name
c. Organization
1925 Old Burnt Store Road — d. Street Address
Cape Coral — e. City/Town
FL — f. State
33993 — g. Zip Code
h. Phone Number
i. Fax Number
j. Email address

4. Representative (if any):

Cara — a. First Name
Pattullo — b. Last Name
Fort Point Associates, Inc. — c. Company
31 State Street, 3rd Floor — d. Street Address
Boston — e. City/Town
MA — f. State
02109 — g. Zip Code
(617) 357-7044 x207 — h. Phone Number
i. Fax Number
cpattullo@fpa-inc.com — j. Email address

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

$2,012.50 — a. Total Fee Paid
$512.50 — b. State Fee Paid
$1,500.00 — c. City/Town Fee Paid

A. General Information (continued)

6. General Project Description:

The Project will construct a mixed-use, transit-oriented development that will include 19 units, 22 parking spaces, and approximately 1,784 square feet of community space. Additionally, there will be significant landscape and sidewalk improvements and new publicly accessible Harborwalk.

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	
c. Book	**d. Page Number**
9853	161

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.

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.

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	18,304 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

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

   August 1, 2017
   b. Date of map

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

   c. Submit Supplemental Information for Endangered Species Review*

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

         (a) within wetland Resource Area _____ percentage/acreage

         (b) outside Resource Area _____ percentage/acreage

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

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

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

   (b) ☒ Photographs representative of the site

* 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.

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
1213 Purchase Street – 3rd Floor
New Bedford, MA 02740-6694
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.

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.

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.

See Section A.9 in Attachment A - Supplemental Information
a. Plan Title

b. Prepared By

c. Signed and Stamped by

d. Final Revision Date

e. Scale

f. Additional Plan or Document Title

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:

1046
2. Municipal Check Number

7/31/18
3. Check date

1045
4. State Check Number

7/31/18
5. Check date

Rock Development, LLC
6. Payor name on check: First Name

7. Payor name on check: Last Name

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

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.

1. Signature of Applicant

2. Date 12/4/18

Nancy Tarantino 12/05/2018 02:24 PM EST

3. Signature of Property Owner (if different)

4. Date

5. Signature of Representative (if any)

6. Date 5December 2018

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.

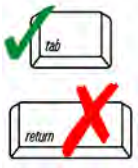
The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

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

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



A. Applicant Information

1. Location of Project:

181-183 Coleridge Street	East Boston
a. Street Address	b. City/Town
1045	$512.50
c. Check number	d. Fee amount

2. Applicant Mailing Address:

Ryan	Acone	
a. First Name	b. Last Name	
Rock Development		
c. Organization		
11 Dorchester Street #406		
d. Mailing Address		
Boston	MA	02127
e. City/Town	f. State	g. Zip Code
(617) 269-7625		ryan@builtbyrock.com
h. Phone Number	i. Fax Number	j. Email Address

3. Property Owner (if different):

Joseph	Tarantino	
a. First Name	b. Last Name	
c. Organization		
1925 Old Burnt Store Road		
d. Mailing Address		
Cape Coral	FL	33993
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.

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

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 - New Building	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:	$1,500.00 (Boston Fee) 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.)

ATTACHMENT A

SUPPLEMENTAL INFORMATION

ATTACHMENT A: SUPPLEMENTAL INFORMATION

A.1 OVERVIEW OF PROPOSED PROJECT

Rock Development (the "Applicant") is proposing to construct a mixed-use, transit-oriented development (the "Project") on an approximately 19,000 square foot (sf) lot at 181-183 Coleridge Street in East Boston, Massachusetts (the "Project Site"). The Project will include an approximately 19-unit mixed-use residential development with approximately 22 parking spaces and approximately 1,784 sf of new publicly accessible community space.

A.2 EXISTING CONDITIONS

The Project Site is located at 181-183 Coleridge Street in East Boston, Massachusetts. The property is bound by Coleridge Street to the north, Rice Street to the east, Boston Harbor to the south, and a residential parcel with a two-story wood frame house to the west. The adjacent Harborview/Orient Heights neighborhood is characterized by a mix of land uses including recreational, commercial, and industrial space and two to three-story single and multi-family residences on small urban lots. The Massachusetts Bay Transportation Authority (MBTA) Orient Heights and Wood Island Blue Line stations are located within a 15 to 20-minute walk (less than 1 mile) of the Project Site. The East Boston Greenway Connector and Bennington Street also serve as main neighborhood thoroughfares. The Project Site is proximate to the East Boston Yacht Club, Department of Conservation & Recreation (DCR) Constitution Beach Park, Porrazzo Skating Rink, and Wood Island Bay Edge Park. See Figure 1, Locus Map and Figure 2, Aerial View of Project Site and Surrounding Area.

Although located in a residential neighborhood, the Project Site has an industrial and commercial history. The Project Site was used as a cordage and twine manufacturing building from 1927-1950, followed by a commercial laundry building that was constructed around 1950 and has since been demolished.

The Project Site is accessed by an existing curb cut on Coleridge Street. Currently, the Project Site houses a small shed and approximately 5,094 sf of impervious paving. There is a mix of native and invasive species and the shoreline is supported by riprap in disrepair and is littered with debris. See Figures 3 and 4, Existing Conditions Photographs. Plant species observed in the lawn and in/near the eastern site edge include Norway maple, tree-of-heaven, common buckthorn, European privet, black nightshade, Japanese knotweed, common reed, and garlic mustard ground cover. A majority of the Project Site is located within the FEMA 100-year floodplain and has experienced flooding in the recent past during high-tide storm events. See Figure 5, Existing Conditions Plan.

A.3 PROJECT DESCRIPTION

The Applicant is proposing to redevelop a vacant parcel on Boston Harbor into a mixed-use, transit-oriented development with approximately 19 residential units, approximately 22 underground parking spaces, and approximately 1,784 sf of new publicly accessible community space. Additionally, there will be significant landscape and sidewalk improvements and a new publicly accessible Harborwalk on Boston Harbor. See Attachement F - Proposed Site Plan.

The Project will have a main entrance on Coleridge Street and run linearly along Rice Street. The above ground housing structure will be split into two masses with a courtyard between them. This design will provide space for an outdoor stair to bring pedestrians up to the elevated ground floor from the street level. Gently sloping rampways at less than 1:20 are also provided to maintain a more natural landscape at the water's edge. Each massing will have three stories. The larger will house eighteen units and the smaller will house the entrance to the underground parking garage at grade accessed from Coleridge Street with a two-story unit above. The ground floor of the larger massing will house approximately 1,784 sf of community space facing the Harborwalk and the water and will be accessible to the public from the street and the Harborwalk by outdoor ramps, walkways, and stairs.

Project Site improvements will include cleaning refuse and trash that has washed ashore, removing undergrowth, and providing a Harborwalk and facilities of public accommodation, which will be publicly accessible to the surrounding community.

A.3.1 STORMWATER MANAGEMENT

The Project Site consists of various hardscape and grass areas, including a small shed structure and unmaintained paved and gravel areas. Stormwater runoff from the Project Site generally flows overland in an easterly direction to the coastal beach. Currently, the Project Site does not include an existing drainage or stormwater management system. Under the existing conditions, approximately 1/3 of the Project Site, formerly developed at one time, flows overland toward Coleridge Street to existing catch basins in Coleridge Street and into an existing Boston Water and Sewer Commission (BWSC) 12" storm drain. The remaining 2/3's of the Project Site slope towards the coastal bank and coastal beach areas and Boston Harbor.

According to the Natural Resources Conservation Service's Soil Survey, the Project Site contains urban land developed in areas of Udorthents; wet substratum soils. These soils consist of filled areas that were previously tidal marshes or river flood plains, primarily comprised of rubble, refuse, and mixed soil material (sand and gravel). Permeability of these soils are slow (0.06 to 0.2 inches per hour) and water tends to pond on the surface after intensive rain.

As part of the Project, a new stormwater management system will be constructed. The stormwater system will consist of new drain manholes, pipes, two new underground infiltration areas, and permeable walkway surface treatments.

The new impervious areas, including roof and decking, will be collected internal to the building's plumbing system and conveyed to two new underground infiltration basins. The basins have been designed to retain and infiltrate the maximum amount of stormwater possible within the new landscaped areas proposed. The underground basins have been designed to retain and infiltrate the 1-inch storm event and below. A new drainage connection is proposed in Coleridge Street as overflow for storm events more than 1-inch. The Project will require Site Plan Approval with BWSC. As such, all BWSC stormwater requirements for new development sites will be incorporated and reviewed by BWSC. See Attachment B – Stormwater Report.

A.3.2 FUTURE SEA LEVEL RISE

The City of Boston has made preparing for future sea level rise a priority, especially in new waterfront developments. Due to the proximate location of the Project near the coast, the Applicant has considered and planned for how future sea level rise may affect the Project. The Project Site is within Flood Zone AE (9 and 10 NAVD88, or 15.5 and 16.5 BCB) as shown on the most recent FEMA Flood Insurance Rate Maps dated March 16, 2016. See Figure 7, FEMA Flood Insurance Rate Map.

The Project design includes many techniques to handle the potential impacts of future sea level rise. The floodproof design will be certified by a registered professional engineer and architect. Specifically, the proposed work will include the following:

- Elevating the first occupiable floor above the floodplain at 15.5 NAVD88, or 22 BCB;
- Dry floodproofing the underground garage, including waterproofing the base exterior walls so that the structure is watertight and substantially impermeable to the passage of water;
- Installation of the building's mechanical fixtures and critical building systems located above the floodplain;
- Planting native species and graded land forms to serve as nature-based protective flood barriers and stormwater management features; and
- Building a floodable waterfront area and Harborwalk that withstands recurrent storm surge.

See Attachment C – Climate Change Questionnaire.

A.4 WETLAND RESOURCE AREAS

The following sections provide information regarding the wetland resource areas located at the Project Site and describes potential impacts, alterations, and mitigation to these resources. See Figure 6, Wetland Resource Areas.

COASTAL BEACH

Coastal Beach resource area is defined under the Wetlands Regulations as "unconsolidated sediment subject to wave, tidal, and coastal storm action which forms the gently sloping shore of a body of salt water and includes tidal flats" (310 CMR 10.27). A tidal flat is further defined as: "any nearly level part of a coastal beach which usually extends from the mean low water line landward to the more steeply sloping face of the Coastal Beach or which may be separated from the beach by Land Under the Ocean."

Coastal Beach resources within the Project Site, classified as Tidal Flats, extends seaward from the lower limit of the Coastal Bank at approximately 5.0 NAVD88 on the southwest corner of the Project Site. Measurements based on the Project Site survey indicate that there is approximately 707 square feet (sf) of Coastal Beach at the Project Site.

COASTAL BANK

Coastal Bank resource area is defined under the Wetlands Regulations as "the seaward face or side of any elevated landform, other than a coastal dune, which lies at the landward edge of a coastal beach, land subject to tidal action, or other wetland" (310 CMR 10.30). A 100-foot Buffer Zone extends horizontally outward/upgradient from the upper boundary of the Coastal Bank.

The Coastal Bank resource within the Project Site is located in the southwest corner of the Project Site and consists of rock and riprap with debris throughout it. The upper and lower boundary of the Coastal Bank have been determined based upon grades surveyed at various transects from the lawn across the riprap and onto the Coastal Beach by a wetland scientist and land surveyor. Measurements based on the Project Site survey indicate that there is approximately 80 linear feet (lf) of Coastal Bank, measured at the top of the Bank, on the Project Site. See Attachment E, Wetland Resource Evaluation.

LAND SUBJECT TO COASTAL STORM FLOWAGE

Land Subject to Coastal Storm Flowage (LSCSF) resource area is defined under the Wetlands Regulations as "land subject to an 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."

At the Project Site, LSCSF was determined based on the 100-year flood data provided by the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for the

area (Community Panel No. 25025C0019J, Effective Date March 16, 2016). According to the FIRM, the 100-year floodplain (FEMA Zone AE) has a base elevation of 9.0 NAVD88 on the northeast half of the Project Site and an elevation of 10.0 NAVD88 on the southeast half of the Project Site. Approximately 18,304 sf of the Project Site is located within the FEMA Zone AE, which was measured by the actual site elevations. See Figure 7, FEMA Flood Insurance Rate Map.

SALT MARSH

Salt Marsh resource area is defined under the Wetlands Regulations as "a coastal wetland that extends landward up to the highest high tide line, that is, the highest spring tide of the year, and is characterized by plants that are well adapted to or prefer living in, saline soils" (310 CMR 10.32(2)). A 100-foot Buffer Zone extends horizontally outward/upgradient from the boundary of the Salt Marsh.

The extent of Salt Marsh at the Project Site was delineated by a professional wetlands scientist with blue ground flags based upon the extent of salt marsh plant species and the associated peat mat. See Attachment E, Wetland Resource Evaluation. The low marsh was dominated by moderate to sparse salt marsh cord grass (*Spartina alterniflora*). High marsh is not present at the Project Site. There is approximately 10 sf of Salt Marsh within the south corner of the Project Site bordering the Coastal Beach.

LAND CONTAINING SHELLFISH

Land Containing Shellfish resource area is defined under the Wetlands Regulations as "land under the ocean, tidal flats, rocky intertidal shores, salt marsh, and land under salt ponds when any such land contain shellfish" (310 CMR 10.34(2)).

This resource area may potentially exist southeast of the Coastal Bank and could include the Coastal Beach and Salt Marsh. The boundary of potential Land Containing Shellfish was determined by a wetland scientist based on visual evaluation. See Attachment E, Wetland Resource Evaluation.

BUFFER ZONE

A Buffer Zone to the Coastal Bank extends 100 feet inland on the Project Site. The land within the Buffer Zone is currently vacant with weeds, small trees, and debris. Currently, there are no stormwater controls in the Buffer Zone.

A.5 PROJECT IMPACTS AND MITIGATION

Potential Project impacts will be minimized to the greatest extent possible. Mitigation measures such as erosion control, hay bales, and silt fences will be used before and during construction to reduce sedimentation and alleviate any adverse impacts to wetland resource

areas and buffers. Project work and impacts within, or adjacent to, wetland resource areas are listed in Table 1.

Table 1: Alteration of Wetland Resource Areas

Resource Type	Existing Conditions	Project-Related Impact to Wetland Resource Area
Coastal Beach	707± sf	No Impact
Coastal Bank	682± sf	Debris removal – temporary
LSCSF	18,304± sf	• Construction of 6,298± sf of new building within resource area – permanent • Construction of 1,495± sf of new Harborwalk within resource area – permanent • Landscaping, walkways, and site improvements – permanent
Salt Marsh	10± sf	No Impact
Land Containing Shellfish	*Potentially located downgradient of Coastal Bank*	No Impact
Buffer Zone	12,550± sf	Building and walkways/landscaping – permanent

COASTAL BEACH

There will be no adverse project-related impacts to the Coastal Beach resource area.

COASTAL BANK

The Project will maintain and enhance the Coastal Bank resource area and its stability and function as a buffer or natural wall, which protects the upland areas from storm damage and flooding. During construction, the Applicant will implement best management practices to minimize possible negative impacts such as erosion or sedimentation to adjacent Coastal Bank structures. These impacts will be avoided via the use of controls such as fencing and siltation barriers along the shoreline, and construction entrance sedimentation management (e.g. matting, truck wash stations).

The Harborwalk will run parallel to the Coastal Bank but have no adverse project-related impacts on the resource area, because it will be offset a minimum of 2 feet from the Coastal

Bank and raised on helical pilings. By formally defining and maintaining pedestrian access, the Harborwalk will discourage widespread trampling of vegetation or erosion that may otherwise occur and destabilize the Coastal Bank. Additionally, the elevated pile-supported structure will allow for free and natural movement of sand and other sediments to stabilize and maintain the Coastal Bank that protects the Project Site from waves, storm surge, and flooding.

LAND SUBJECT TO COASTAL STORM FLOWAGE

The Project includes the construction of a new building and Harborwalk and associated landscaping and site improvements within the LSCSF resource area. Although there are no current performance standards associated with this resource area, the Applicant understands the importance of the resource for flood protection and climate change resiliency. Therefore, all occupiable space for the residential units, supporting communal areas, electrical utility areas, and Facility of Public Accommodation space are set above the sea level rise design flood elevation at 15.5 NAVD88, which is 5.5 feet above the floodplain. The below grade garage will be dry-floodproofed.

SALT MARSH

There will be no adverse project-related impacts to the Salt Marsh resource area.

LAND CONTAINING SHELLFISH

There will be no adverse project-related impacts to the potential Land Containing Shellfish resource area.

BUFFER ZONE

Activities within the 100-foot Coastal Bank and Salt Marsh buffer zone include the construction of a new building and Harborwalk and associated landscaping and Project Site improvements. The Project will not have adverse effects on the stability of the Coastal Bank. The Project activities will not destroy or have an adverse effect on the productivity of the Salt Marsh.

A.6 CONSTRUCTION METHODS AND SCHEDULE

Construction of the Project is anticipated to begin in March 2019 and be completed in approximately 16 months. Construction will not begin until all required preconstruction regulatory approvals have been obtained. Construction will be staged to minimize impacts on the wetland resources on and surrounding the Project Site. All temporary structures, including job trailers, portable bathroom facilities, and materials will be handled, stored, installed, cleaned, and protected in accordance with the best industry standards.

A.6.1 CONSTRUCTION PHASE AVOIDANCE AND MITIGATION METHODS

Construction will include the following methods for avoidance and mitigation:

- The Project Site will be prepared with appropriate erosion and siltation controls, and shall be stabilized by temporary seeding, hay bales, and silt fences or netting. The perimeter sedimentation controls will be in place at the end of each day and before rain events;

- Hay bales, crushed stone, or silt sacks shall be set around on-site catch basins to prevent sediment from washing into the drainage system until completion of the Project;

- Access for heavy equipment will be carefully planned to avoid destruction of existing vegetation, creation of ruts, and destabilization of the coastal bank;

- Topsoil on the Site will be stockpiled separately and the pile stabilized. All unvegetated areas that will remain unvegetated for greater than 14 days will be mulched or seeded;

- All equipment and unconsolidated materials will be removed from the floodplain prior to a significant coastal storm event;

- Hazardous material spill contaminants kit will be kept on-site at all times in case there is a release of oil, gasoline, or other toxic substances related to mechanical equipment;

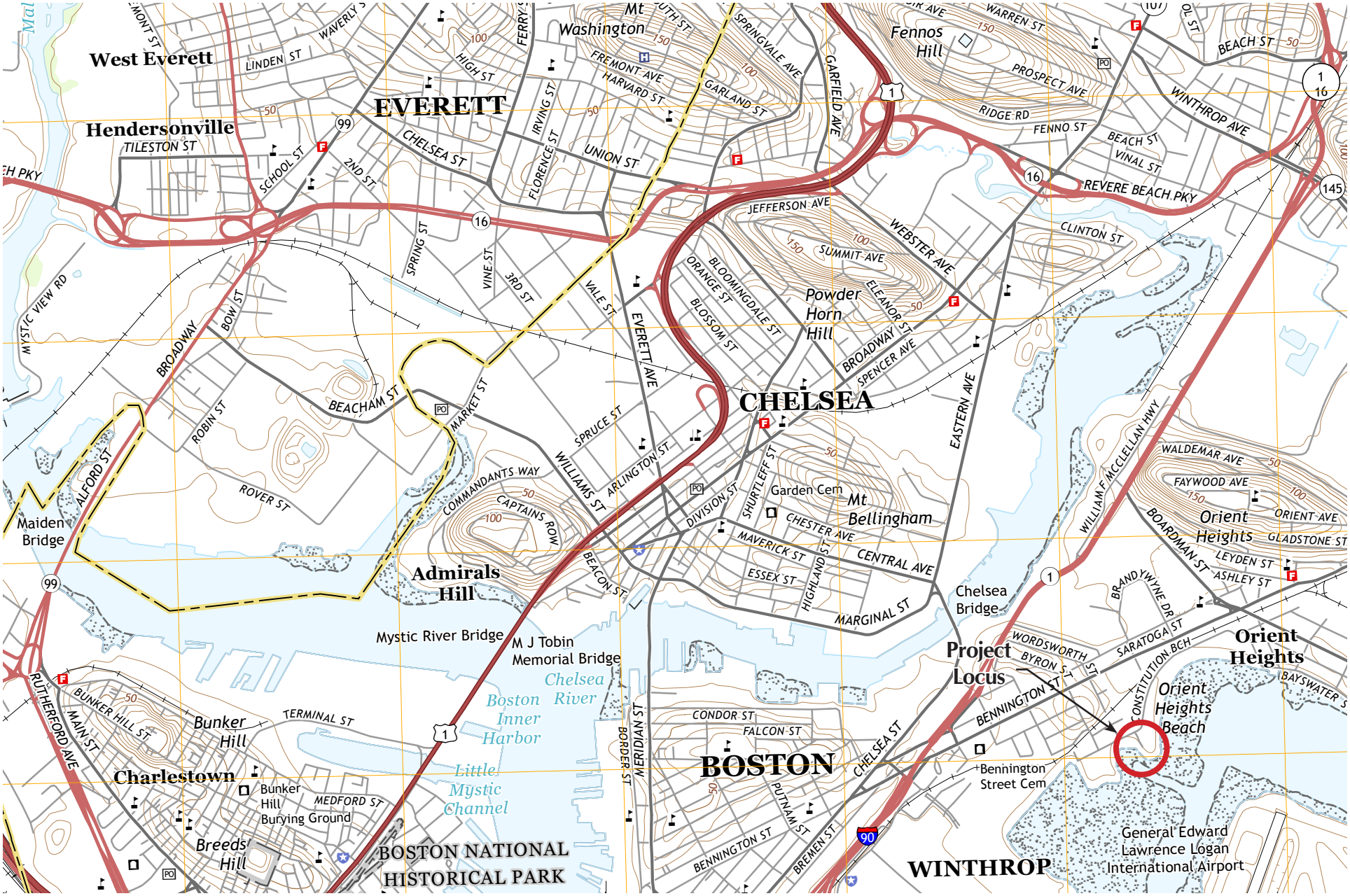
- Stockpiled soils at the Project Site will be properly contained and covered to prevent erosion during rain events; and

- Upon completion of the site work, stabilization of the landscape area and all erosion control measures will be removed and all structures will be cleaned of silt and debris. At that time, all construction related materials will be cleared from the Project Site.

A.7 NOI PLAN LIST

Title	Sheet Number	Date	Original Scale	Stamp and Signature
Title Sheet	T100	November 30, 2018	N/A	Derek B. Redgate
Existing Conditions Plan	EX01	July 31, 2018	1 inch = 20 feet	Stephen P. Deyer
Site Preparation & Erosion Control Plan	C200	November 30, 2018	1 inch = 10 feet	Derek B. Redgate
Layout and Materials Plan	C300	November 30, 2018	1 inch = 10 feet	Derek B. Redgate
Grading, Drainage & Utility Plan	C400	November 30, 2018	1 inch = 10 feet	Derek B. Redgate
Detail Sheet	C500	November 30, 2018	Not to Scale	Derek B. Redgate
Detail Sheet	C501	November 30, 2018	Not to Scale	Derek B. Redgate

FIGURES



East Boston, Massachusetts

Figure 1
Locus Map
Source: USGS; Fort Point Associates, Inc., 2018

East Boston, Massachusetts

Figure 2
Aerial View of Project Site and Surrounding Area
Source: Google Earth; Fort Point Associates, Inc., 2018

View 1: Project Site looking Southeast

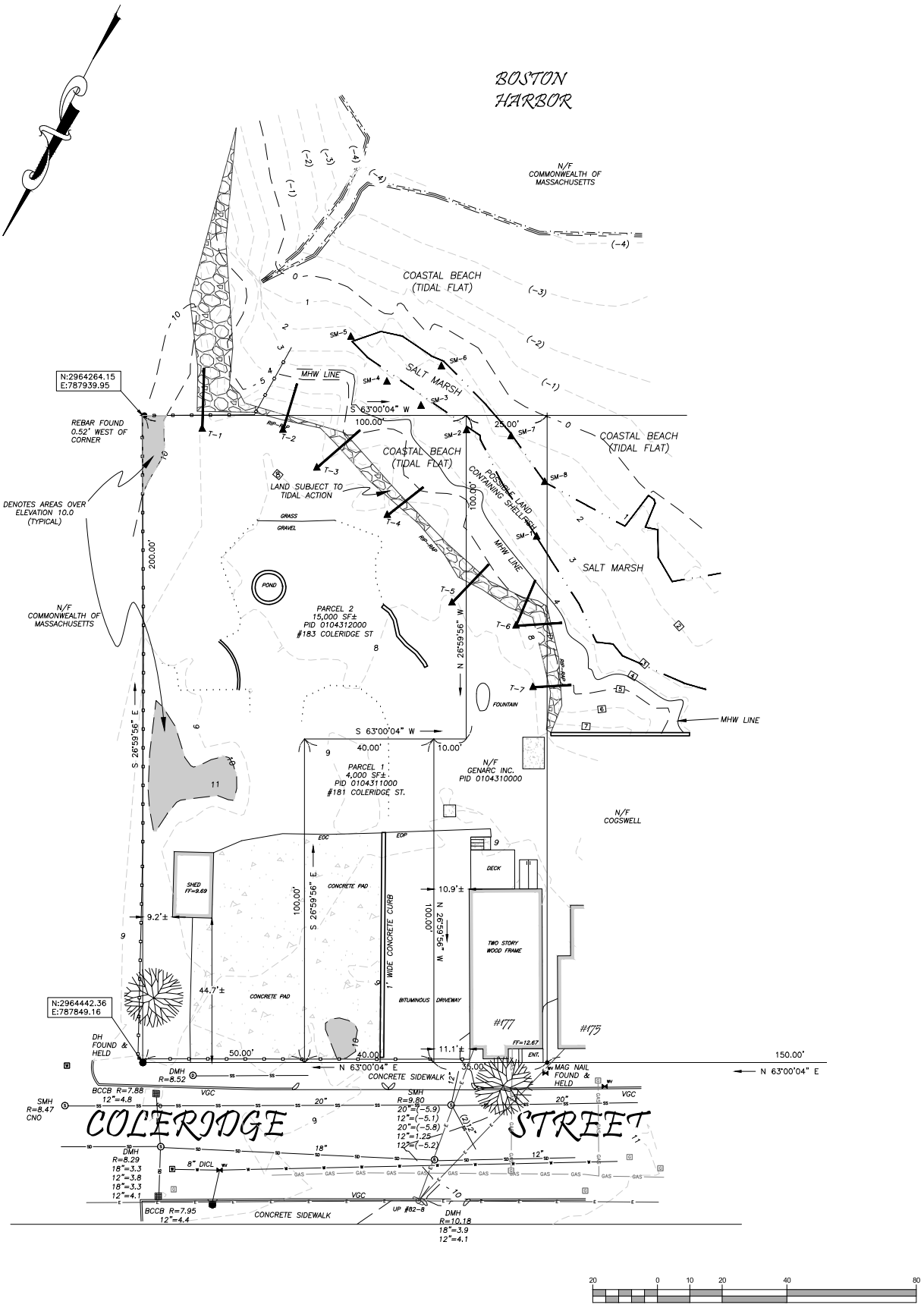
View 2: Northeast edge of Project Site on Rice Street

Figure 3
Existing Conditions Photographs
Source: Fort Point Associates, Inc., 2018

View 3: View of Project Site from water at high tide

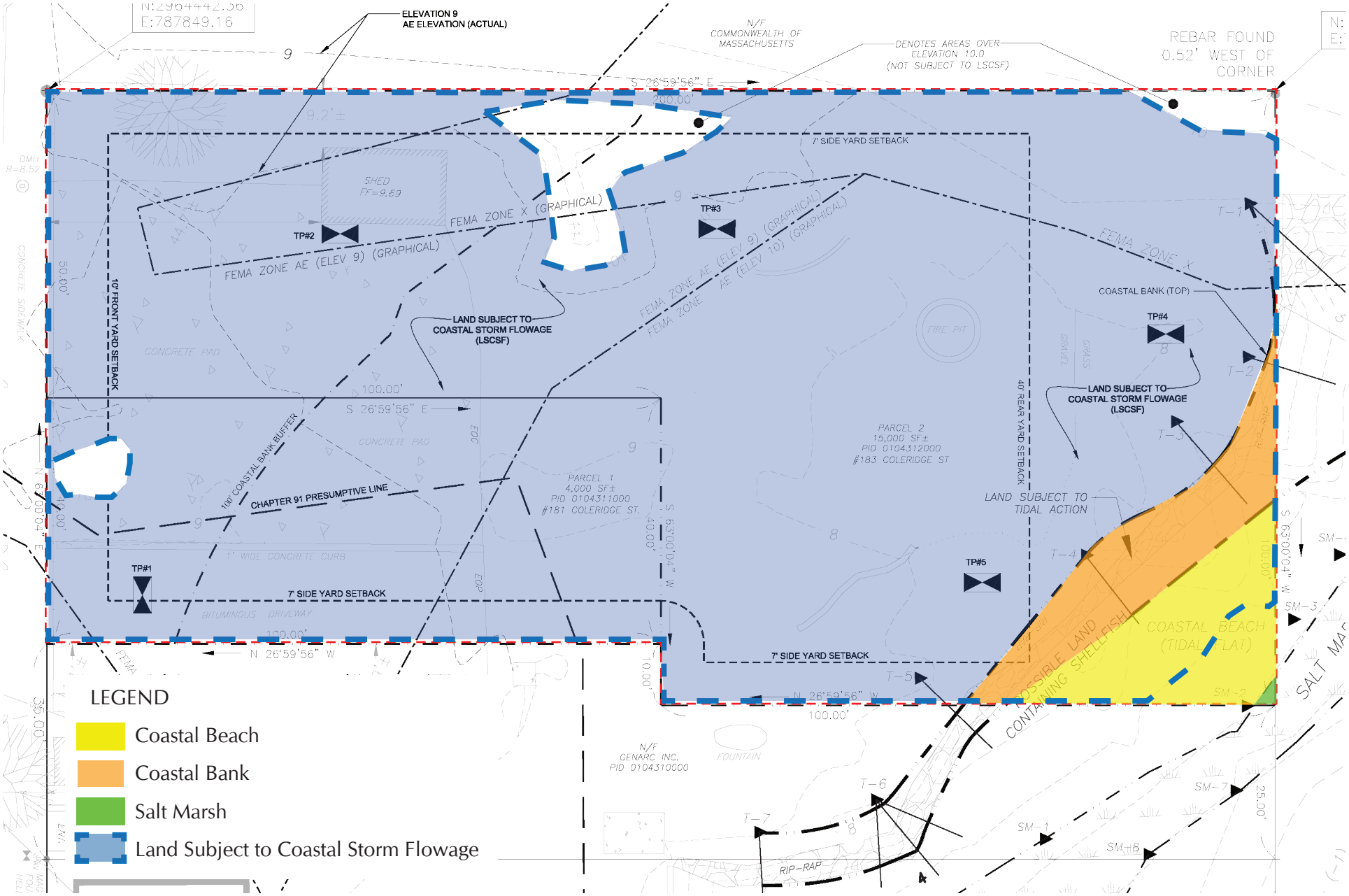
View 4: Shoreline at high tide looking East

Figure 4
Existing Conditions Photographs
Source: Touloukian Touloukian Inc., 2018



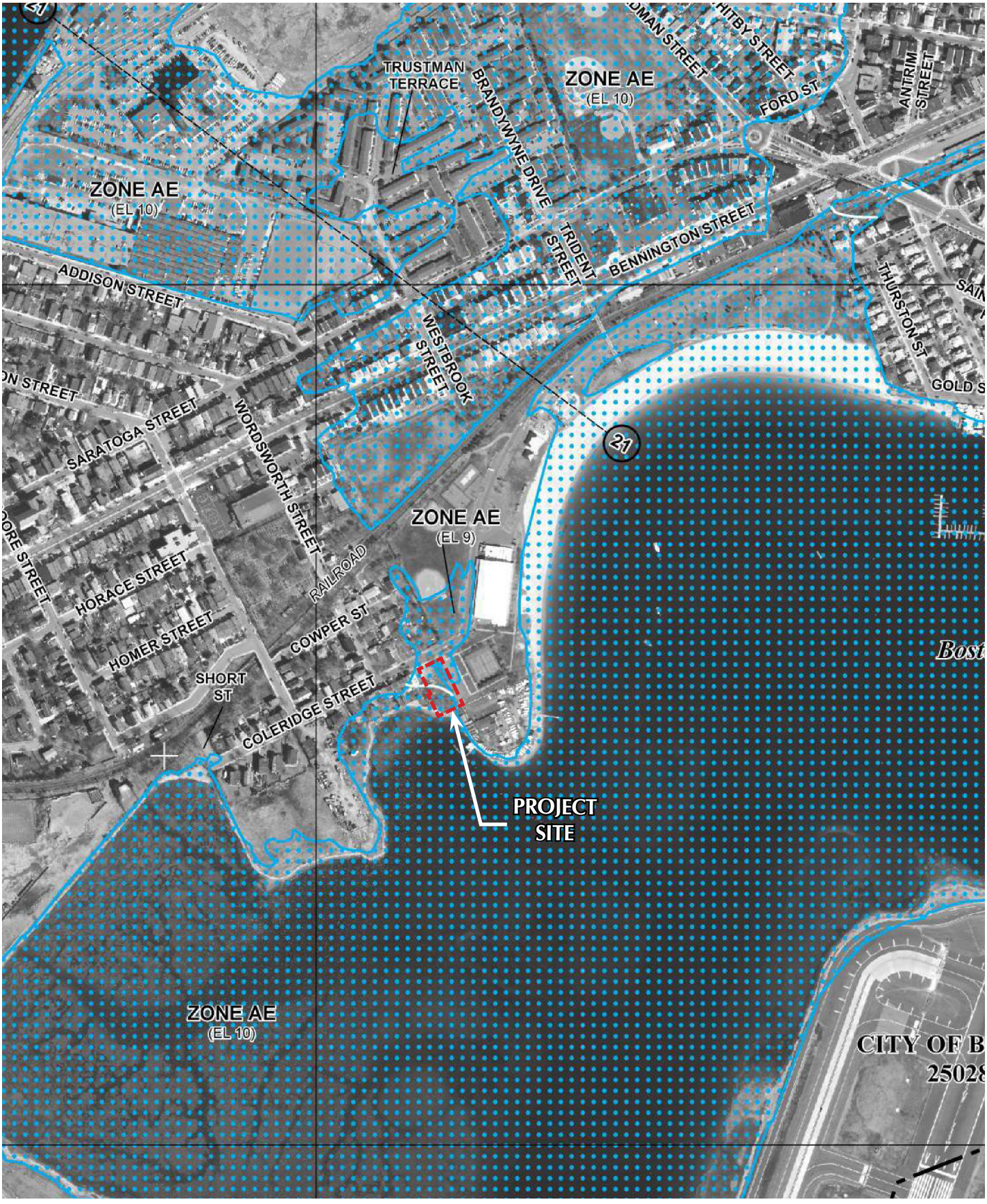
East Boston, Massachusetts

Figure 5
Existing Conditions Plan
Source: Highpoint Engineering, 2018



East Boston, Massachusetts

Figure 6
Wetland Resource Areas
Source: Highpoint Engineering; Fort Point Associates, Inc., 2018



East Boston, Massachusetts

Figure 7
FEMA Flood Insurance Rate Map
Source: FEMA, 2016; Fort Point Associates, Inc., 2018

ATTACHMENT B

STORMWATER REPORT

Stormwater Management Report

Residences at Coleridge Coast

Project Address:
181 – 183 Coleridge Street
East Boston, MA

Date:
November 30 2018

Prepared For:
Rock Development
546 E Broadway
Boston, MA 02127

Prepared by:

Canton Corporate Place
45 Dan Road, Suite 140
Canton, MA 02021
www.highpointeng.com

TABLE OF CONTENTS

INTRODUCTION

This report summarizes pre- and post-development stormwater impacts associated with a proposed multi-family residential building located at 181 – 183 Coleridge Street, East Boston, Massachusetts (the Project). The Project includes the construction of a mixed-use development including 19 new residential units in a 10,725± ft^2 single structure with multi-structure(2) appearance with an associated community space, harborwalk, landscape improvements and underground parking garage and stormwater management system.

The total lot size is 19,000 ft^2 and is bounded by Coleridge Street to the northwest, Rice Street to the northeast, Boston Harbor to the southeast, and a two-family residential parcel to the southwest. The adjacent Harborview/Orient Heights neighborhood is characterized by a mix of land uses including recreational, commercial, and industrial space and single and multi-family residences on small urban lots. A majority of the project site is located within the FEMA 100-Year Zone AE Land Subject to Coastal Flooding (LSCF).

The property is currently vacant, consisting of an existing concrete pad, gravel/open space areas, vegetative areas, salt marsh, and coastal beach and bank. A portion of the site topography slopes north across the site over the concrete pad to existing catch basins in Coleridge Street. The majority of the site flows south across the site over the coastal landscape to the existing coastal beach (Boston Harbor).

As part of the construction, no work, permanent or temporary, is proposed down gradient of the top of coastal bank. A new public accessible 12-ft harborkwalk is proposed as part of this project.

For detailed information regarding existing site conditions and engineering design for the proposed development, refer to the plans entitled, “The Residences at Coleridge Coast”, revised through November 30, 2018 prepared by Highpoint Engineering, Inc.

METHODOLOGY

The hydrologic analysis models the pre- and post-development stormwater characteristics for the site, and compares changes in peak rate of runoff and water quality associated with the proposed development. Where increases to peak rate of runoff or reductions in water quality are identified, Stormwater Best Management Practices (BMP's) and Low Impact Development (LID) techniques are considered. The analysis shall prove that post-development hydrologic conditions generally mimic pre-development The goal of the analysis is to demonstrate that post-development hydrologic conditions generally mimic pre-development hydrologic conditions, and any potential impacts to downstream properties, infrastructure, or environmentally sensitive areas are mitigated.

The pre-development hydrologic model establishes the limits of the study area and down-gradient Points of Analysis (POA's), which is dependent on topographic and environmental conditions. The model quantifies watershed stormwater runoff characteristics related to topography, land use/cover types and soil conditions, computing peak runoff rates for specific design storm frequencies under pre-development conditions at the POA's.

The post-development hydrologic model analyzes the same study area, and accounts for changes in the watershed area topography, and land use/cover types associated with the proposed development. The model computes the changes to the peak runoff rates at the same POAs, and BMP's are implemented to mitigate stormwater impacts due to development.

For this analysis two (2) POA's have been established including:

- POA A: Coleridge Street (BWSC Closed Drainage System)
- POA B: Boston Harbor

The hydrologic model, analysis, and proposed mitigation measures have been developed using the following resources:

- Hydrologic modeling techniques and methods established in NRCS - Technical Releases No. 20 and No. 55 (TR-20 and TR-55) using proprietary HydroCAD® stormwater modeling software.
- Massachusetts Department of Environmental Protection – Stormwater Handbook Volumes #1 and #2 (as amended).

Rainfall Data

Peak stormwater discharges are determined for total rainfall estimated for the 1, 2, 10, 25 and 100-year storm event recurrence intervals. For this analysis, the values to be used for the 24-hour rainfall calculations were taken from Appendix 1, Table A1.1, "Massachusetts rainfall data by town and county [inches]" of the Engineering Field Handbook – Chapter 2, March 2013 and are outlined in Table 1 below:

Table 1 – Summary of Rainfall Data

Rainfall Recurrence Interval	24 Hour Rainfall Depth
1 Year Storm	2.72 inches
2 Year Storm	3.26 inches
10 Year Storm	4.90 inches
25 Year Storm	6.19 inches
100 Year Storm	8.83 inches

Soils Data

Based upon the USDA – Natural Resources Conservation Service Soil Survey for Norfolk and Suffolk Counties, Massachusetts, soils underlying the site are classified as follows:

Table 2. – Summary of USDA Soil Classification

Soil Classification	Hydrologic Soil Group (HSG)
Udorthonts, Wet Substratum	Unclassified (D Soil)*

*Highpoint conducted on-site soil testing February, 2017. Urban fill material was encountered down to ground water level. Based on-site observation the existing soils were determined to be poorly drained with a HSG of D and an infiltration rate of 0.09 in/hr.

PRE-DEVELOPMENT CONDITIONS

The existing site is divided into two (2) watershed areas as described below, and analyzed at the two (2) POA's described in the "Methodology" section of this report. Existing watershed areas include:

- Ex Ws-1 – This area consists of the northern portion of the existing site. Runoff is generated from the concrete pad, portions of the unmaintained landscape area and bituminous driveway. Runoff flows overland and uncontrolled to the north to the city drainage system in Coleridge Street.
- EX Ws-2 – This area is a majority of the site to the south consisting of portions unmaintained landscape areas, bituminous driveway, coastal bank and beach. Runoff flows overland and uncontrolled to the south.

Refer to Figures - Pre-Development Watershed Plan for information and limits of the existing watershed areas.

For the pre-development watershed analysis, Table 3 presents a comparison of watershed areas, the weighted TR-55 runoff curve numbers (CN – based on ground cover types), and Time of Concentrations (T_c) for the existing Watershed Areas:

Table 3. – Pre-Development Watershed Area and Runoff Curve Number

	Ex Ws-1	Ex Ws-2
Area (ft²)	7,053 ft²	11,947 ft²
CN	95	81
Tc	5.0 min	5.0 min

POST-DEVELOPMENT CONDITIONS

The Project proposes to construct a mixed-use 10,725± ft^2 single structure with multi-structure(2) appearance with underground parking facilities, a public amenity community space, harborwalk, landscape/hardscape amenities, and a new stormwater management system. Pervious pavement walkways are proposed to provide accessible access to the public space and harborwalk.

Stormwater management system is proposed as part of the project to provide infiltration and control run-off. The project proposes the construction of new drain manholes and a subsurface detention/infiltration system R-Tank Units embedded in stone.

The developed site is divided into two (2) watershed areas as described below. The two (2) POA's remain unchanged.

- Pr Ws-1 – This watershed includes new buildings, new landscape areas, pedestrian decking and pedestrian walkways. The runoff from the roof areas, and from the impervious pedestrian decking will be conveyed to the underground detention/infiltration basins where the first 1" of runoff will be infiltrated. A new drainage connection to the city drainage system in Coleridge street will handle overflow. Runoff from pedestrian walkways will flow overland to Coleridge Street.
- Pr Ws-2 – This watershed includes landscape areas, pedestrian walkways/decking and pedestrian harborwalk. Runoff will flow overland to the south and into Boston Harbor.

Refer to Figures - Post-Development Watershed Plan for information and limits of the proposed watershed areas.

Table 4 presents a comparison of watershed area, the weighted TR-55 runoff curve number (CN – based on ground cover types), and Time of Concentration (T_c) for the proposed watersheds:

Table 4. – Post-Development Watershed Areas and Runoff Curve Numbers

	Pr Ws-1	Pr Ws-2
Area (ft^2)	11,255	7,745
CN	97	87
Tc	5.0 min.	5.0 min.

The new stormwater management system is designed to collect and direct the generated stormwater runoff from the development to the new stormwater collection system. The stormwater improvements were designed to provide infiltration for the first 1" of runoff generated by the impervious areas.

STORMWATER MITIGATION

The proposed stormwater system is designed to improve water quality and minimize impacts to the city system.

The following is a summary of the drainage infrastructure and BMPs selected for the project:

- Two drain manholes and HDPE pipe collection system to collect runoff generated from the roof area and decking.
- Subsurface detention/infiltration system

The following tables summarize the pre- and post-development peak rates of runoff and total runoff volumes for the project after implementation of the selected stormwater BMPs at the POA's:

Table 5. – Summary of Pre- and Post-Development Peak Rates of Runoff

Design Storm	**POA A (Coleridge Street)**		
	Pre-Dev	**Post-Dev**	**Change**
1 Year	0.65 cfs	0.00 cfs	-0.65 cfs
2 Year	0.78 cfs	0.02 cfs	-0.76 cfs
10 Year	1.19 cfs	0.85 cfs	-0.34 cfs
25 Year	1.51 cfs	1.47 cfs	-0.04 cfs
100 Year	2.16 cfs	2.11 cfs	-0.05 cfs

Design Storm	**POA B (Harbor/Ocean) – For Information Only – Not Required for Coastal Aras**		
	Pre-Dev	**Post-Dev**	**Change**
1 Year	0.50 cfs	0.45 cfs	-0.05 cfs
2 Year	0.70 cfs	0.60 cfs	-0.10 cfs
10 Year	1.33 cfs	1.04 cfs	-0.29 cfs
25 Year	1.85 cfs	1.39 cfs	-0.46 cfs
100 Year	2.92 cfs	2.10 cfs	-0.82 cfs

Construction Phase and Long-Term Stormwater Maintenance and Operation Plans (O&M Plans) have been included in Appendix C – Supporting Information of this report and include information on the responsible party for the O&M plan implementation, a project overview, and the structural and non-structural BMPs to be utilized on site.

CONCLUSION

Potential stormwater impacts associated with the site improvements will be mitigated as required by State and Municipal Regulations. The proposed project will comply with Standards outlined in the Massachusetts Stormwater Management Handbook as follows:

STANDARD **1**	No New Untreated Discharges	All existing discharge points are maintained.
STANDARD **2**	Peak Rate Attenuation	Peak discharge rates do not exceed pre-development rates for all four storm events at POA 2. Due to poorly drained soils and space constraints the peak discharge rate exceeds the pre-development rates for all four storm events at POA 1.
STANDARD **3**	Recharge	On-site testing of the underlying soils confirmed a Hydrologic Soil Group (HSG-D). The required Recharge volume has been provided within the subsurface detention/infiltration system for Watershed Areas Pr WS-1.
STANDARD **4**	Water Quality	The project proposes a subsurface infiltration system.
STANDARD **5**	Land Uses with Higher Potential Pollutant Loads	The proposed project is not a listed activity associated with a LUHPPL defined in the Handbook.
STANDARD **6**	Critical Areas	The project site is not located within a Critical Area.
STANDARD **7**	Redevelopments and Other Projects Subject to the Standards only to the Maximum Extent Practicable	The proposed project does not qualify as a redevelopment.
STANDARD **8**	Construction Period Pollution Prevention and Erosion and Sedimentation Control	The project is not required to obtain an EPA - NPDES Construction General Permit prior to construction. A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan will be provided prior to construction.
STANDARD **9**	Operation & Maintenance Plan	Both construction phase and long-term Operation and Maintenance Plans are included in the report.
STANDARD **10**	Prohibition of Illicit Discharges	A No Illicit Discharge Compliance Statement will be submitted by the Owner prior to the discharge of any stormwater to post-construction BMP's.

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.

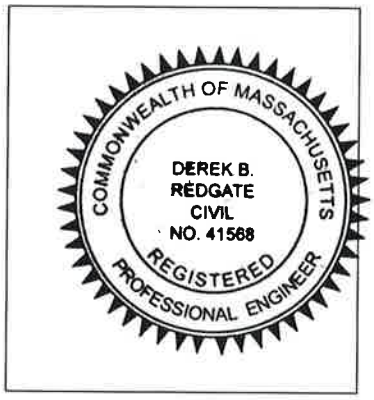
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the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



DBR 12/3/18
Signature and Date DEREK B. REDGATE LIC # #41568

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:

- ☐ 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
- ☒ Other (describe): Permeable Walkways

Standard 1: No New Untreated Discharges

- ☒ 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. INCLUDED AS FIGURE TP01 - SW REPORT

☒ 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) NOT APPLICABLE

☐ 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 NOT APPLICABLE

☐ 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 NOT APPLICABLE

☐ 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.

FIGURES

Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs

N

0 1,000 2,000 4,000 Feet

USGS Map
181-183 Coleridge Street
Residential Development
Boston, MA 02128

Prepared By

HIGHPOINT

P:\Rock Development\16038 (181-183 Coleridge)\04_Design\Dwg\@GIS\USGS.mxd
June 4, 2018

SOIL SUMMARY

1 Water (No HSG)
655 Udorthents, wet substratum (No HSG)

Source: "Soil Survey of Norfolk and Suffolk Counties," Thomas A. Peragallo, SCS, September 1989.

LEGEND

- Assesor's Parcels - Level 0

EOT-OTP Roads

Administrative Type

- Interstate
- U.S. Highway
- State Route
- Non-numbered route
- Norfolk/Suffolk County Soils

Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs

N

0 100 200 400 Feet

Soils Map

181-183 Coleridge Street
Residential Development
Boston, MA 02128

Prepared By

HIGHPOINT

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June 4, 2018

National Flood Hazard Layer FIRMette

FEMA

Feet

0 250 500 1,000 1,500 2,000

1:6,000

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
- Regulatory Floodway *Zone AE, AO, AH, VE, AR*

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- 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 D*

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
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

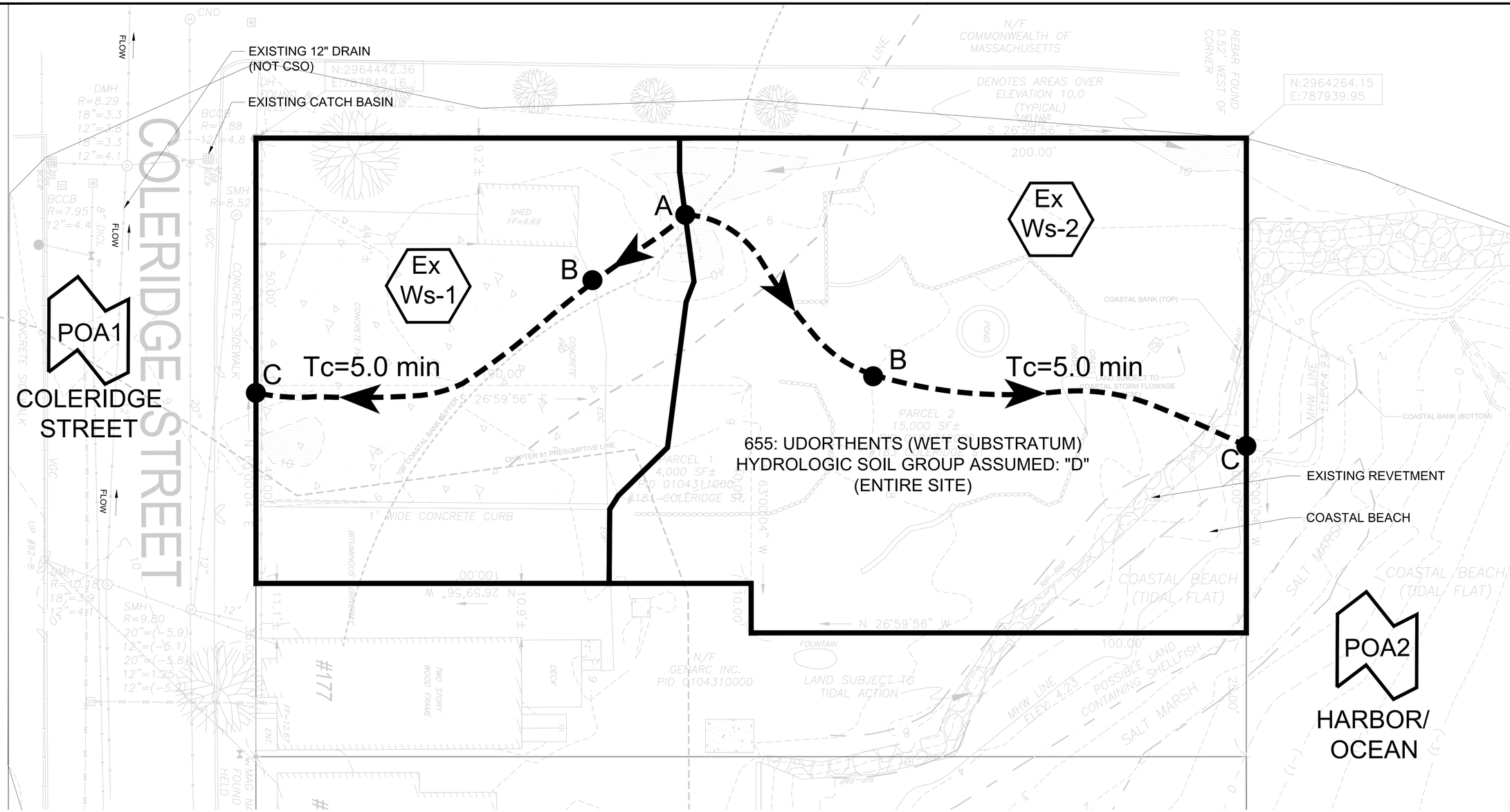
MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/8/2018 at 10:27:28 AM 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: base map 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.



SYMBOL LEGEND

▬▬	WATERSHED BOUNDARY
- - - -	TIME OF CONCENTRATION
➤	TIME OF CONCENTRATION FLOW PATH
POA B	POINT OF ANALYSIS DESIGNATION
Ex Ws-A	WATERSHED DESIGNATION

POINT OF ANALYSIS SUMMARY

POA 1	COLERIDGE ROAD
POA 2	HARBOR/OCEAN

PRE-DEVELOPMENT WATERSHED SUMMARY

WATERSHED AREA: Ex Ws-1
- TOTAL AREA = 7,403 S.F
- IMPERVIOUS AREA = 5,337 SF
- OPEN SPACE (POOR HSG:D) = 2,066SF
- CURVE NUMBER (CN) = 97
- TIME OF CONCENTRATION (Tc) = 5.0 MIN.

WATERSHED AREA: Ex Ws-2
- TOTAL AREA = 11,597 SF
- OPEN SPACE (POOR HSG:D) = 11,597 SF
- CURVE NUMBER (CN) = 80
- TIME OF CONCENTRATION (Tc) = 5.0 MIN.

10 0 5 10 20 40
GRAPHIC SCALE 1 inch = 10 ft.

HIGHPOINT
HIGHPOINT ENGINEERING, INC.
CANTON CORPORATE PLACE
45 DAN ROAD, SUITE 140 | CANTON, MA 02021
t 781.770.0970 | www.highpointeng.com

CLIENT:
ROCK DEVELOPMENT
546 E BROADWAY | EAST BOSTON, MA 02027
t 774.281.3165 | www.builtbyrock.com

CONSULTANT:

SEAL

181-183 COLERIDGE STREET
RESIDENTIAL DEVELOPMENT
181-183 COLERIDGE STREET
EAST BOSTON, MA

OWNER/APPLICANT: ROCK DEVELOPMENT

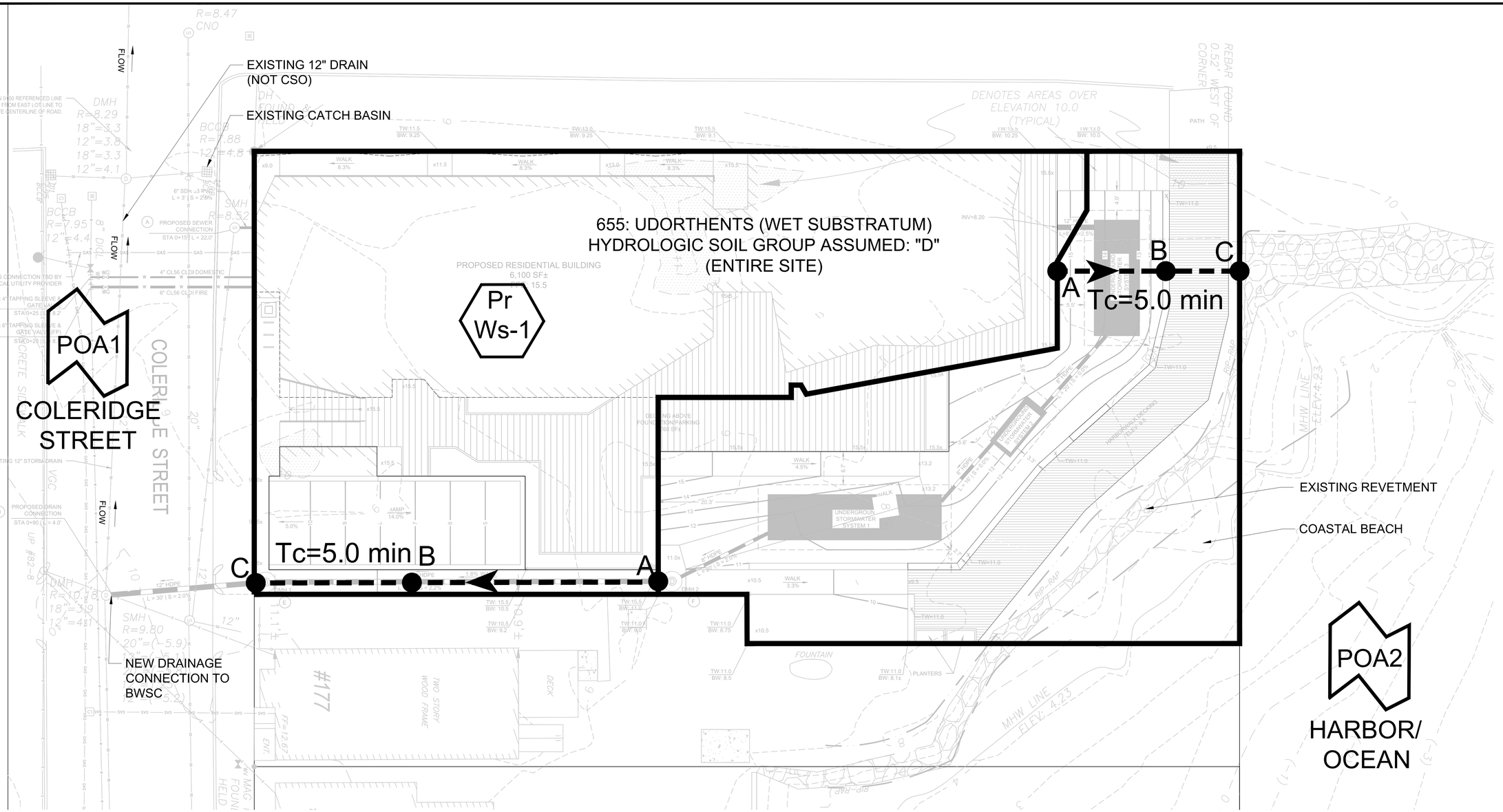
REV	DATE	DESCRIPTION
1	11.30.2018	BCC/NOI REVISIONS

ISSUE TYPE:
NOTICE OF INTENT
ISSUE DATE:
08.01.2018, REV 11.30.2018
PROJECT NUMBER:
16038

DRAWN BY: AK
CHECKED BY: DBR

SHEET TITLE:
PRE-
DEVELOPMENT
WATERSHED MAP

SHEET NUMBER:
PRE



SYMBOL LEGEND

▬▬▬	WATERSHED BOUNDARY
- - - - -	TIME OF CONCENTRATION
➤	TIME OF CONCENTRATION FLOW PATH
POA B	POINT OF ANALYSIS DESIGNATION
Ex Ws-A	WATERSHED DESIGNATION

POINT OF ANALYSIS SUMMARY

POA 1	COLERIDGE ROAD
POA 2	HARBOR/OCEAN

POST-DEVELOPMENT WATERSHED SUMMARY

WATERSHED AREA: Pr Ws-1
- TOTAL AREA = 11,255 S.F
- IMPERVIOUS AREA = 2,007 SF
- OPEN SPACE (GOOD HSG:D) = 365 SF
- ROOF AREA = 8,883 SF
- CURVE NUMBER (CN) = 97
- TIME OF CONCENTRATION (Tc) = 5.0 MIN.

WATERSHED AREA: Pr Ws-2
- TOTAL AREA = 7,745 S.F
- IMPERVIOUS AREA = 1,582 S.F
- OPEN SPACE (GOOD HSG:D) = 3,205 SF
- OPEN SPACE (POOR HSG:D) = 2,958 SF
- CURVE NUMBER (CN) = 87
- TIME OF CONCENTRATION (Tc) = 5.0 MIN.

10 0 5 10 20 40
GRAPHIC SCALE
1 inch = 10 ft.

HIGHPOINT
HIGHPOINT ENGINEERING, INC.
CANTON CORPORATE PLACE
45 DAN ROAD, SUITE 140 | CANTON, MA 02021
t 781.770.0970 | www.highpointeng.com

CLIENT:
ROCK DEVELOPMENT
546 E BROADWAY | EAST BOSTON, MA 02027
t 774.281.3165 | www.builtbyrock.com

CONSULTANT:

SEAL

181-183 COLERIDGE STREET
RESIDENTIAL DEVELOPMENT
181-183 COLERIDGE STREET
EAST BOSTON, MA
OWNER/APPLICANT: ROCK DEVELOPMENT

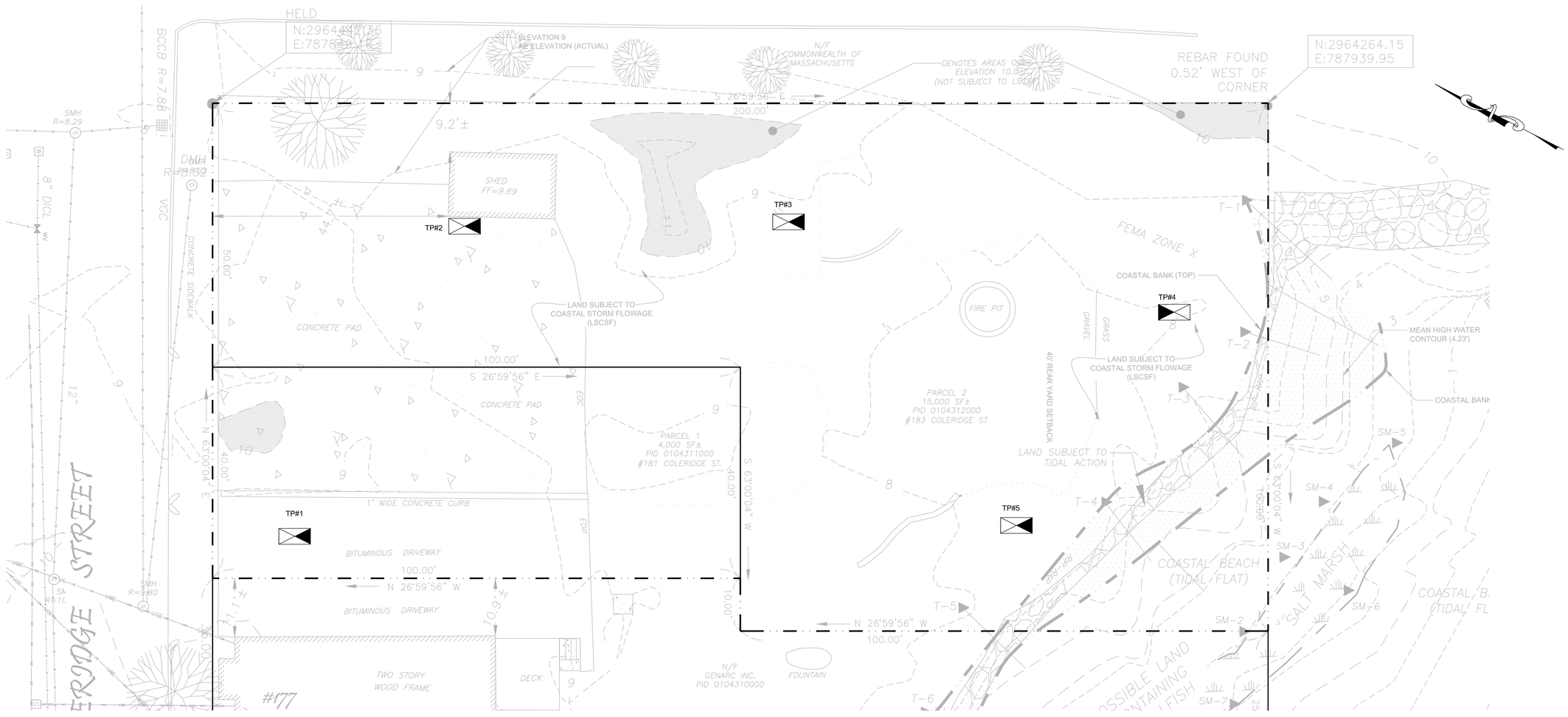
REV	DATE	DESCRIPTION
1	11.30.2018	BCC/NOI REVISIONS

ISSUE TYPE:
NOTICE OF INTENT
ISSUE DATE:
08.01.2018, REV 11.30.2018
PROJECT NUMBER:
16038

DRAWN BY: AK
CHECKED BY: DBR

SHEET TITLE:
POST-DEVELOPMENT WATERSHED MAP

SHEET NUMBER:
POST



DEEP OBSERVATION HOLE LOG

DEEP OBSERVATION HOLE NUMBER: TP-1 — GROUND ELEVATION: 9.5±

Depth (in)	Soil Horizon / Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments (Percent by Volume)		Soil Structure	Soil Consistence (Moist)	Other
			Depth (in)	Color	Percent		Gravel	Cobbles & Stones			
0 - 4	---	---	---	---	---	---	---	---	---	---	1
4 - 24	Fill	---	---	---	---	---	---	---	---	---	2
24-51	C	10 YR 4/6	---	---	---	SILT LOAM	---	---	GR	FIRM	3
51-80	Peat / Organic	---	---	---	---	---	---	---	---	---	4

ADDITIONAL NOTES:
1. CONCRETE PAD ON TOP. (4" THICK)
2. FILL MATERIAL OBSERVED.
3. SOIL WAS MOIST IN THE GROUND.
4. DARK BROWN ORGANIC MATERIAL WITH TRACES OF GRAY LOOKING SOIL.

DEEP OBSERVATION HOLE LOG

DEEP OBSERVATION HOLE NUMBER: TP-3 — GROUND ELEVATION: 8.8±

Depth (in)	Soil Horizon / Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments (Percent by Volume)		Soil Structure	Soil Consistence (Moist)	Other
			Depth (in)	Color	Percent		Gravel	Cobbles & Stones			
0 - 4	---	---	---	---	---	---	---	---	---	---	1
4-67	FILL	---	---	---	---	---	---	---	---	---	2,3

ADDITIONAL NOTES:
1. FIRST 4" WAS PEA GRAVEL.
2. FILL MATERIAL OBSERVED AS DEEP AS THE EXCAVATOR COULD GO BECAUSE OF WATER SEEPAGE CAUSED THE TRENCH TO COLLAPSE.
3. GROUNDWATER OBSERVED @ DEPTH OF 64"

DEEP OBSERVATION HOLE LOG

DEEP OBSERVATION HOLE NUMBER: TP-5 — GROUND ELEVATION: 7.5±

Depth (in)	Soil Horizon / Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments (Percent by Volume)		Soil Structure	Soil Consistence (Moist)	Other
			Depth (in)	Color	Percent		Gravel	Cobbles & Stones			
0 - 6	---	---	---	---	---	---	---	---	---	---	1
6 - 70	FILL	---	---	---	---	---	---	---	---	---	2,3

ADDITIONAL NOTES:
1. FIRST 6" WAS TOP SOIL.
2. FILL MATERIAL OBSERVED AS DEEP AS THE EXCAVATOR COULD GO BECAUSE OF WATER SEEPAGE CAUSED THE TRENCH TO COLLAPSE.
3. GROUNDWATER OBSERVED @ DEPTH OF 66"

DEEP OBSERVATION HOLE LOG

DEEP OBSERVATION HOLE NUMBER: TP-2 — GROUND ELEVATION: 9.0±

Depth (in)	Soil Horizon / Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments (Percent by Volume)		Soil Structure	Soil Consistence (Moist)	Other
			Depth (in)	Color	Percent		Gravel	Cobbles & Stones			
0 - 4	---	---	---	---	---	---	---	---	---	---	1
4 - 20	Fill	---	---	---	---	---	---	---	---	---	2
20 - 75	Peat / Organic	---	---	---	---	---	---	---	---	---	3,4

ADDITIONAL NOTES:
1. CONCRETE PAD ON TOP. (4" THICK)
2. FILL MATERIAL OBSERVED.
3. ALTERNATING LAYERS OF ORGANIC MATERIA (BLACK & GRAY)
4. GROUNDWATER OBSERVED @ DEPTH OF 74".

DEEP OBSERVATION HOLE LOG

DEEP OBSERVATION HOLE NUMBER: TP-4 — GROUND ELEVATION: 8.0±

Depth (in)	Soil Horizon / Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments (Percent by Volume)		Soil Structure	Soil Consistence (Moist)	Other
			Depth (in)	Color	Percent		Gravel	Cobbles & Stones			
0 - 6	---	---	---	---	---	---	---	---	---	---	1
6 - 70	FILL	---	---	---	---	---	---	---	---	---	2,3

ADDITIONAL NOTES:
1. FIRST 6" WAS TOP SOIL.
2. FILL MATERIAL OBSERVED AS DEEP AS THE EXCAVATOR COULD GO BECAUSE OF WATER SEEPAGE CAUSED THE TRENCH TO COLLAPSE.
3. GROUNDWATER OBSERVED @ DEPTH OF 66"

SYMBOL LEGEND	
⋈	TEST PIT LOCATIONS

GENERAL NOTES

1. TEST PITS DONE BY HIGHPOINT ENGINEERING, INC. CONDUCTED FEBRUARY 2017.

10 0 5 10 20 40

GRAPHIC SCALE 1 inch = 10 ft.

HIGHPOINT

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45 DAN ROAD, SUITE 140 | CANTON, MA 02021
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CONSULTANT:

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181-183 COLERIDGE STREET
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EAST BOSTON, MA

OWNER/APPLICANT: ROCK DEVELOPMENT

REV	DATE	DESCRIPTION
1	11.30.2018	BCC/NOI REVISIONS

ISSUE TYPE: NOTICE OF INTENT

ISSUE DATE: 08.01.2018, REV 11.30.2018

PROJECT NUMBER: 16038

DRAWN BY: MKM

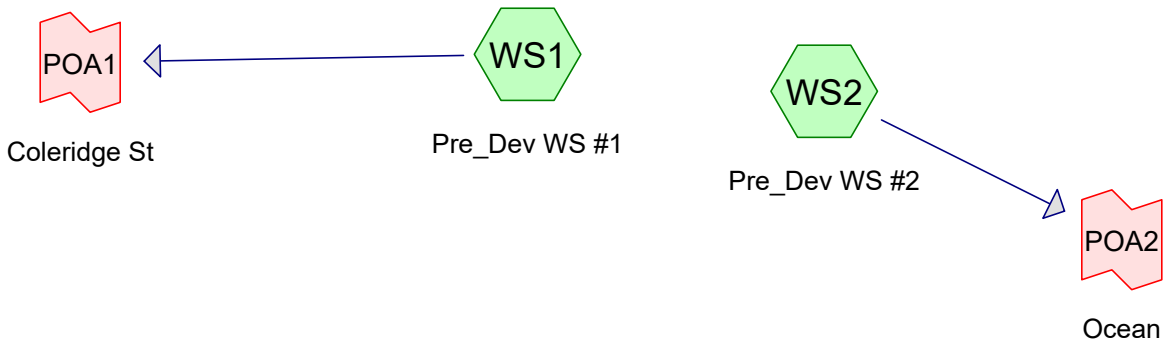
CHECKED BY: DBR

SHEET TITLE:

TEST PIT PLAN

SHEET NUMBER: TP01

APPENDIX A – HYDROLOGIC CALCULATIONS



Subcat Reach Pond Link

Routing Diagram for Pre_Dev

Prepared by {enter your company name here}, Printed 7/31/2018

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.266	80	>75% Grass cover, Good, HSG D (WS2)
0.047	96	Gravel surface, HSG D (WS1)
0.123	98	Paved parking, HSG D (WS1)
0.436	**87**	**TOTAL AREA**

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment WS1: Pre_Dev WS #1 Runoff Area=7,403 sf 72.09% Impervious Runoff Depth>2.22"
Flow Length=98' Tc=5.0 min CN=97 Runoff=0.65 cfs 0.031 af

Subcatchment WS2: Pre_Dev WS #2 Runoff Area=11,597 sf 0.00% Impervious Runoff Depth>0.95"
Flow Length=128' Tc=5.0 min CN=80 Runoff=0.50 cfs 0.021 af

Link POA1: Coleridge St Inflow=0.65 cfs 0.031 af
Primary=0.65 cfs 0.031 af

Link POA2: Ocean Inflow=0.50 cfs 0.021 af
Primary=0.50 cfs 0.021 af

Total Runoff Area = 0.436 ac Runoff Volume = 0.053 af Average Runoff Depth = 1.45"
71.91% Pervious = 0.314 ac 28.09% Impervious = 0.123 ac

Summary for Subcatchment WS1: Pre_Dev WS #1

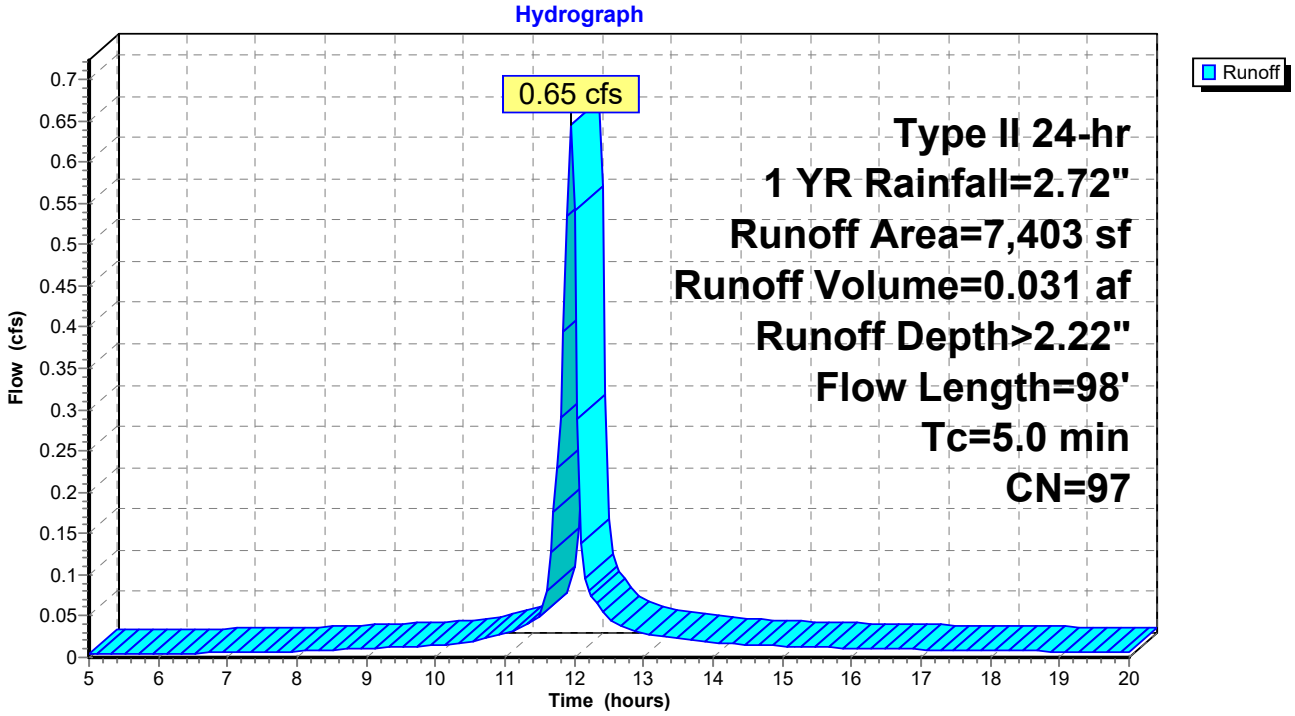
Runoff = 0.65 cfs @ 11.95 hrs, Volume= 0.031 af, Depth> 2.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 YR Rainfall=2.72"

Area (sf)	CN	Description
5,337	98	Paved parking, HSG D
2,066	96	Gravel surface, HSG D
7,403	97	Weighted Average
2,066		27.91% Pervious Area
5,337		72.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	23	0.0900	0.23		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.26"
0.7	75	0.0130	1.84		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
2.7					**Direct Entry, Direct**
5.0	98	Total			

Subcatchment WS1: Pre_Dev WS #1



Summary for Subcatchment WS2: Pre_Dev WS #2

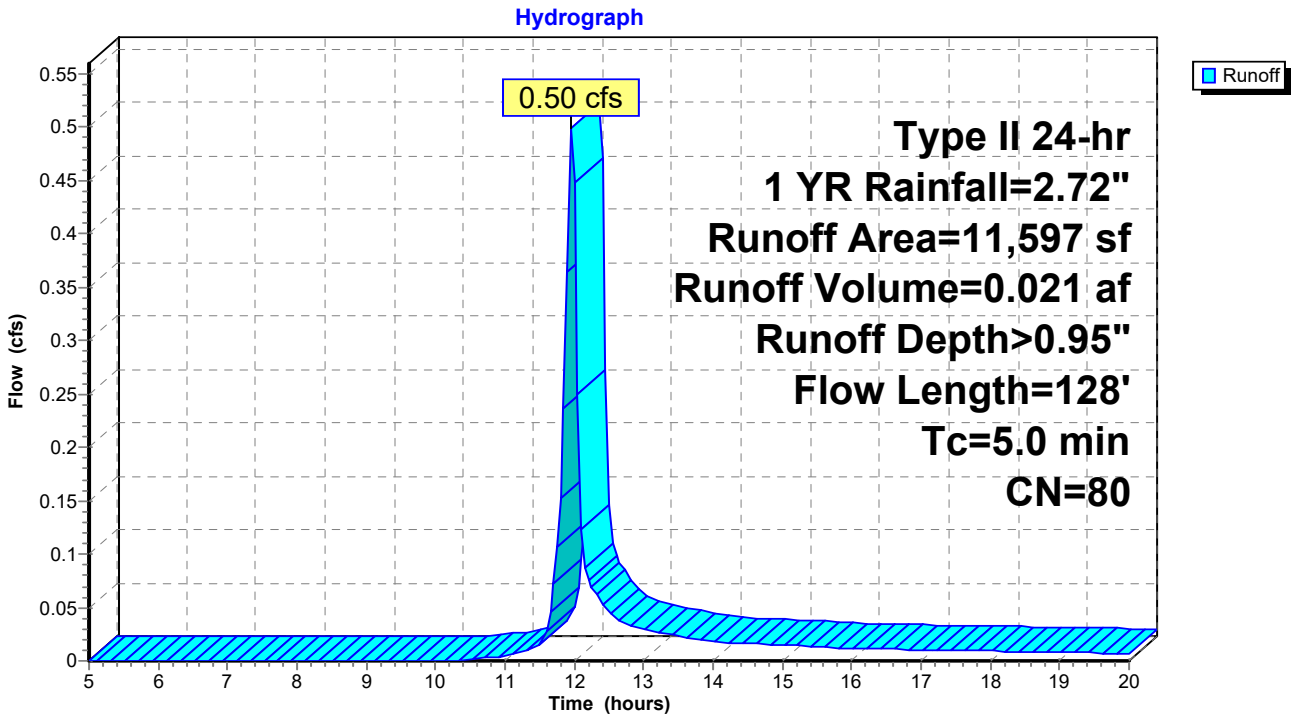
Runoff = 0.50 cfs @ 11.96 hrs, Volume= 0.021 af, Depth> 0.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 YR Rainfall=2.72"

Area (sf)	CN	Description
11,597	80	>75% Grass cover, Good, HSG D
11,597		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.26"
0.4	78	0.0380	3.14		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
1.0					**Direct Entry, Direct**
5.0	128	Total			

Subcatchment WS2: Pre_Dev WS #2

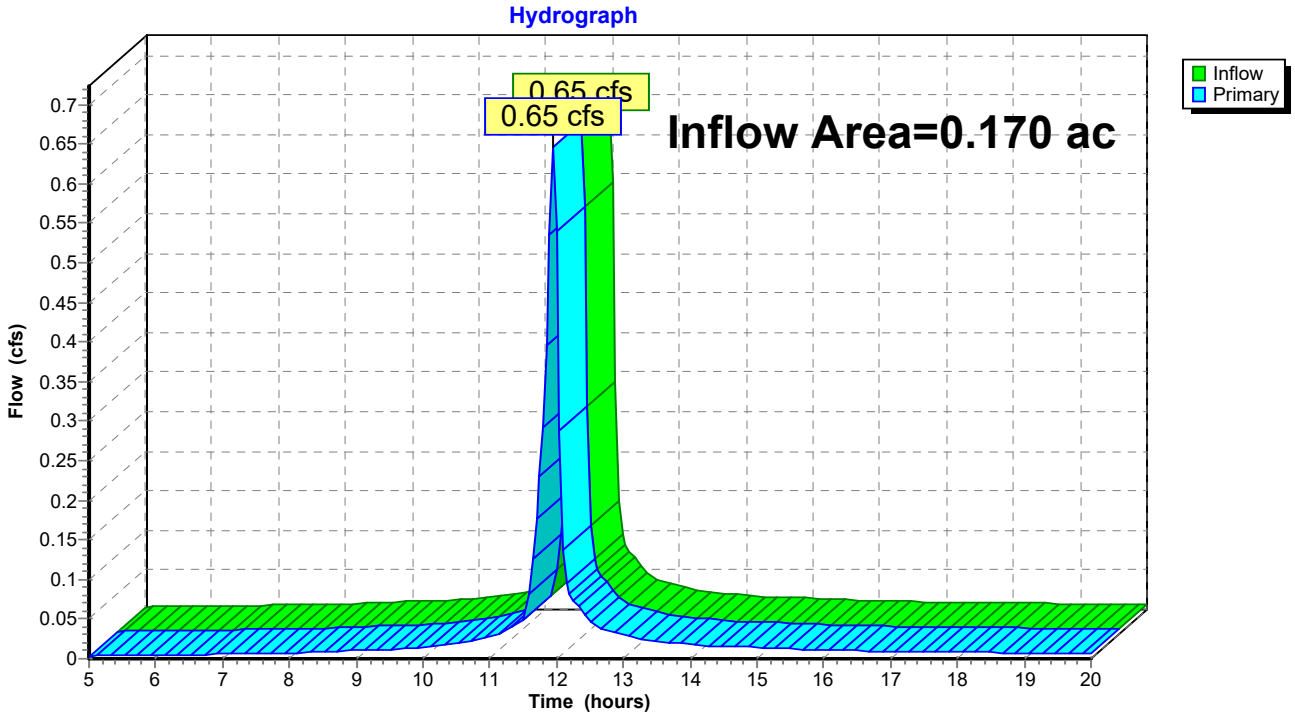


Summary for Link POA1: Coleridge St

Inflow Area = 0.170 ac, 72.09% Impervious, Inflow Depth > 2.22" for 1 YR event
Inflow = 0.65 cfs @ 11.95 hrs, Volume= 0.031 af
Primary = 0.65 cfs @ 11.95 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA1: Coleridge St

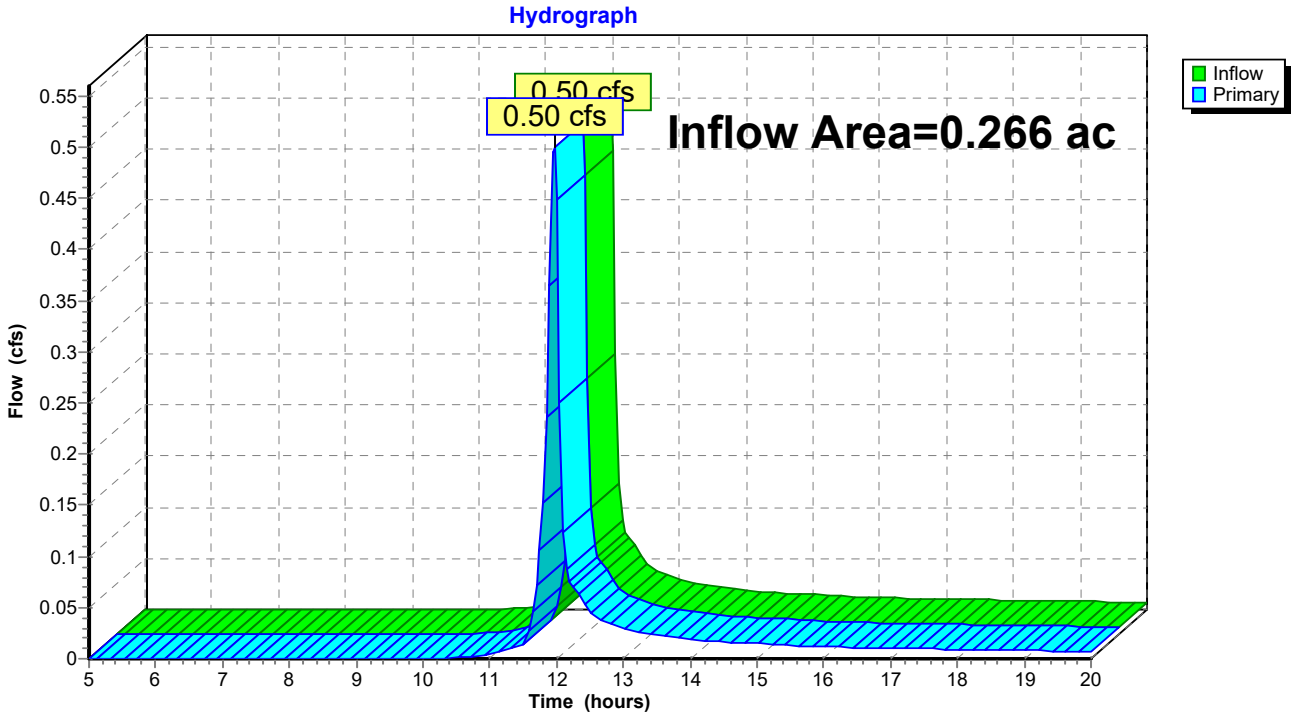


Summary for Link POA2: Ocean

Inflow Area = 0.266 ac, 0.00% Impervious, Inflow Depth > 0.95" for 1 YR event
Inflow = 0.50 cfs @ 11.96 hrs, Volume= 0.021 af
Primary = 0.50 cfs @ 11.96 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA2: Ocean



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment WS1: Pre_Dev WS #1 Runoff Area=7,403 sf 72.09% Impervious Runoff Depth>2.72"
Flow Length=98' Tc=5.0 min CN=97 Runoff=0.78 cfs 0.038 af

Subcatchment WS2: Pre_Dev WS #2 Runoff Area=11,597 sf 0.00% Impervious Runoff Depth>1.33"
Flow Length=128' Tc=5.0 min CN=80 Runoff=0.70 cfs 0.029 af

Link POA1: Coleridge St Inflow=0.78 cfs 0.038 af
Primary=0.78 cfs 0.038 af

Link POA2: Ocean Inflow=0.70 cfs 0.029 af
Primary=0.70 cfs 0.029 af

Total Runoff Area = 0.436 ac Runoff Volume = 0.068 af Average Runoff Depth = 1.87"
71.91% Pervious = 0.314 ac 28.09% Impervious = 0.123 ac

Summary for Subcatchment WS1: Pre_Dev WS #1

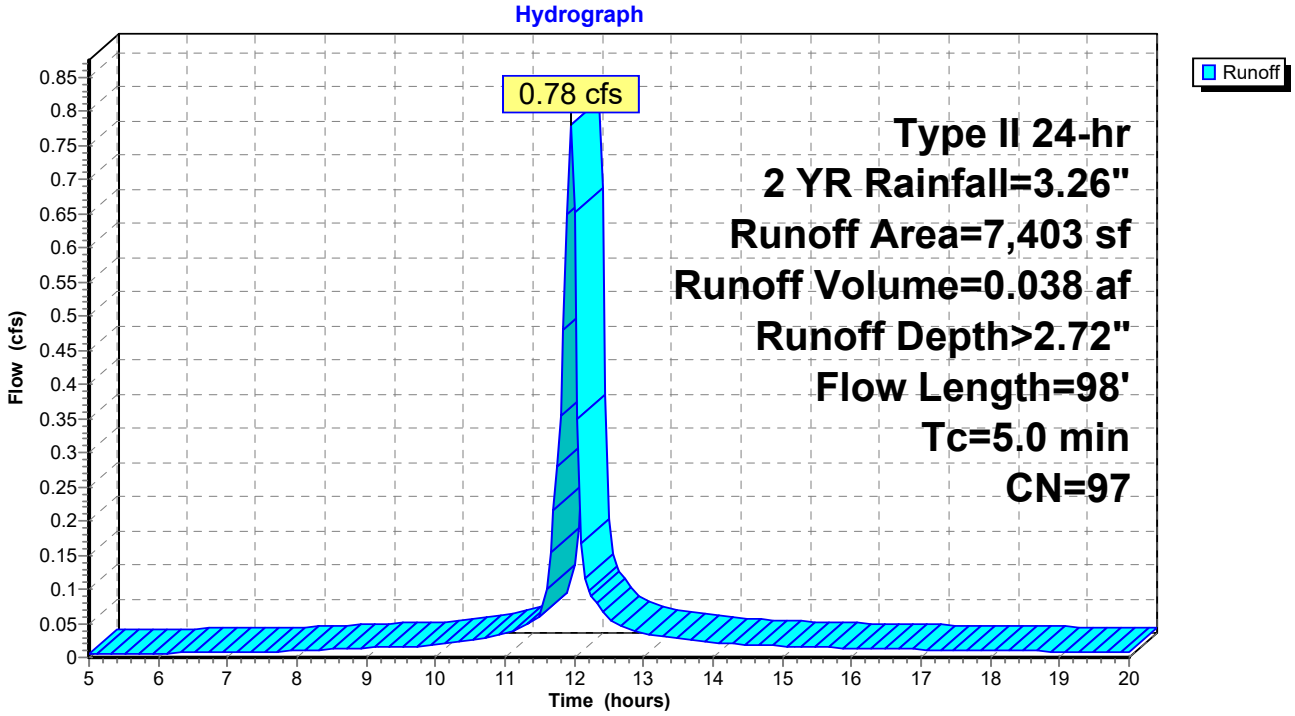
Runoff = 0.78 cfs @ 11.95 hrs, Volume= 0.038 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2 YR Rainfall=3.26"

Area (sf)	CN	Description
5,337	98	Paved parking, HSG D
2,066	96	Gravel surface, HSG D
7,403	97	Weighted Average
2,066		27.91% Pervious Area
5,337		72.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	23	0.0900	0.23		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.26"
0.7	75	0.0130	1.84		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
2.7					**Direct Entry, Direct**
5.0	98	Total			

Subcatchment WS1: Pre_Dev WS #1



Summary for Subcatchment WS2: Pre_Dev WS #2

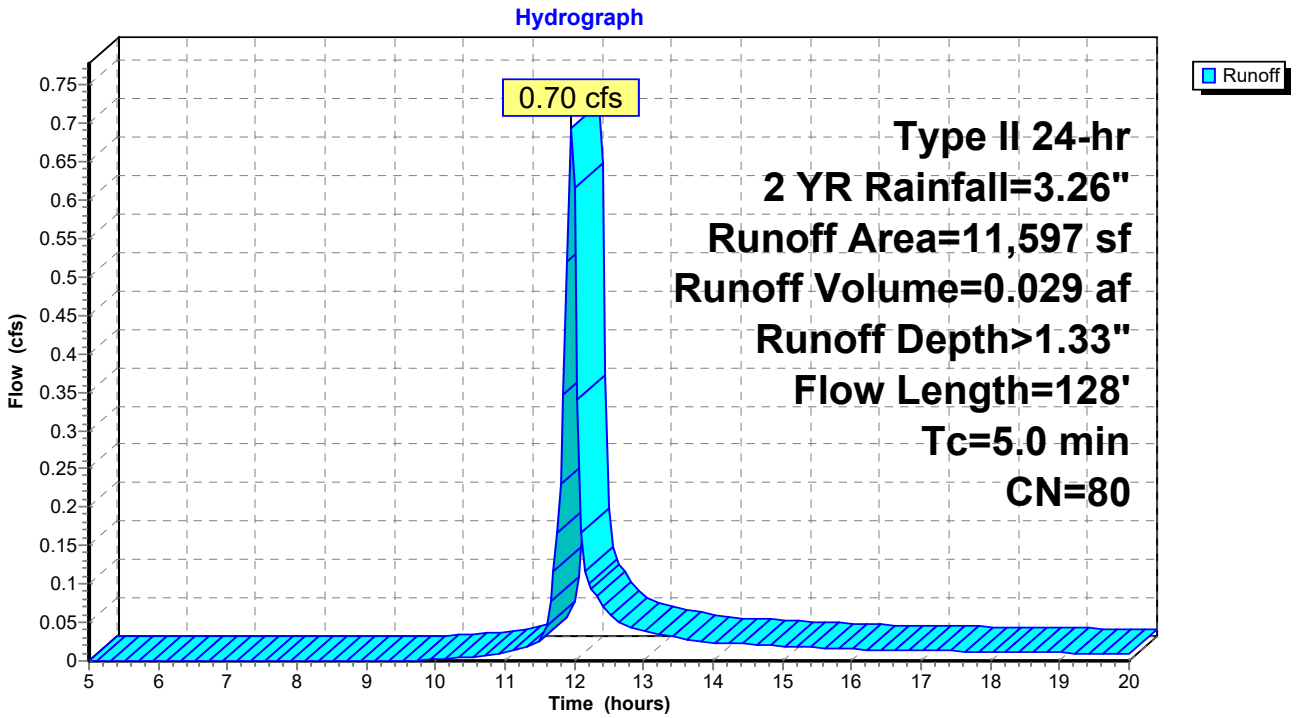
Runoff = 0.70 cfs @ 11.96 hrs, Volume= 0.029 af, Depth> 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2 YR Rainfall=3.26"

Area (sf)	CN	Description
11,597	80	>75% Grass cover, Good, HSG D
11,597		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.26"
0.4	78	0.0380	3.14		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
1.0					**Direct Entry, Direct**
5.0	128	Total			

Subcatchment WS2: Pre_Dev WS #2

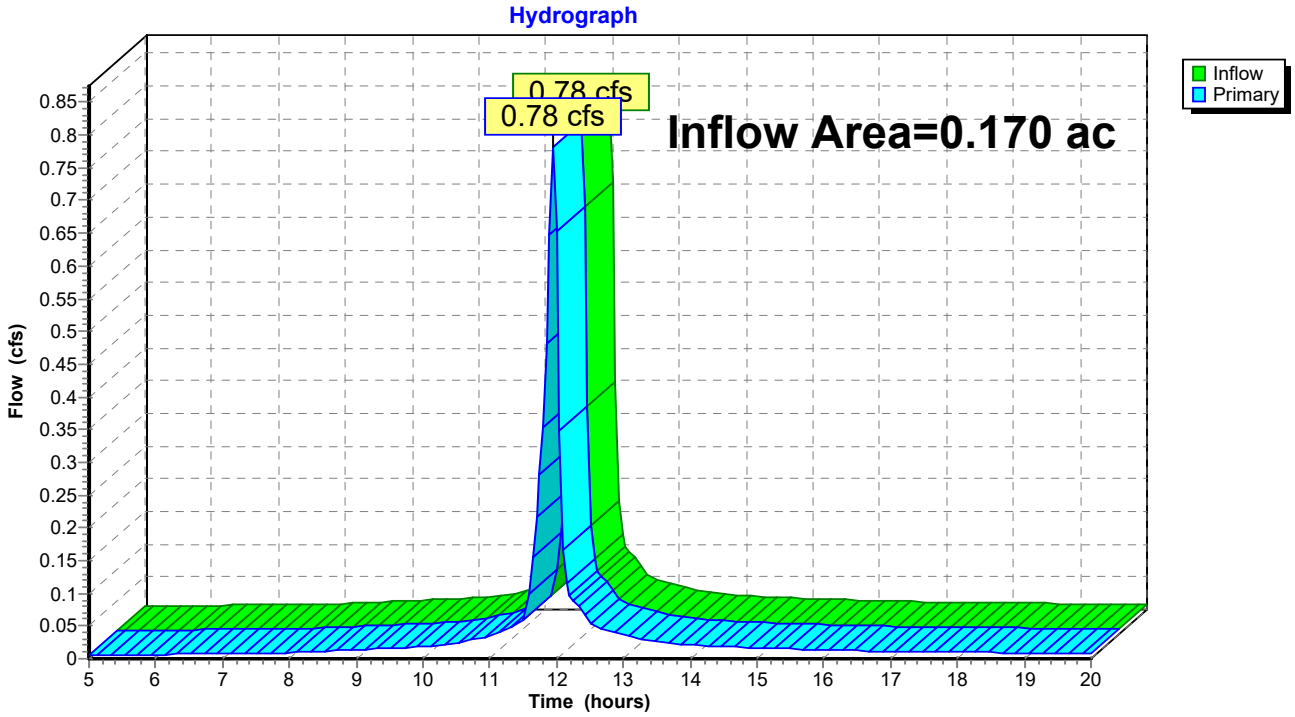


Summary for Link POA1: Coleridge St

Inflow Area = 0.170 ac, 72.09% Impervious, Inflow Depth > 2.72" for 2 YR event
Inflow = 0.78 cfs @ 11.95 hrs, Volume= 0.038 af
Primary = 0.78 cfs @ 11.95 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA1: Coleridge St

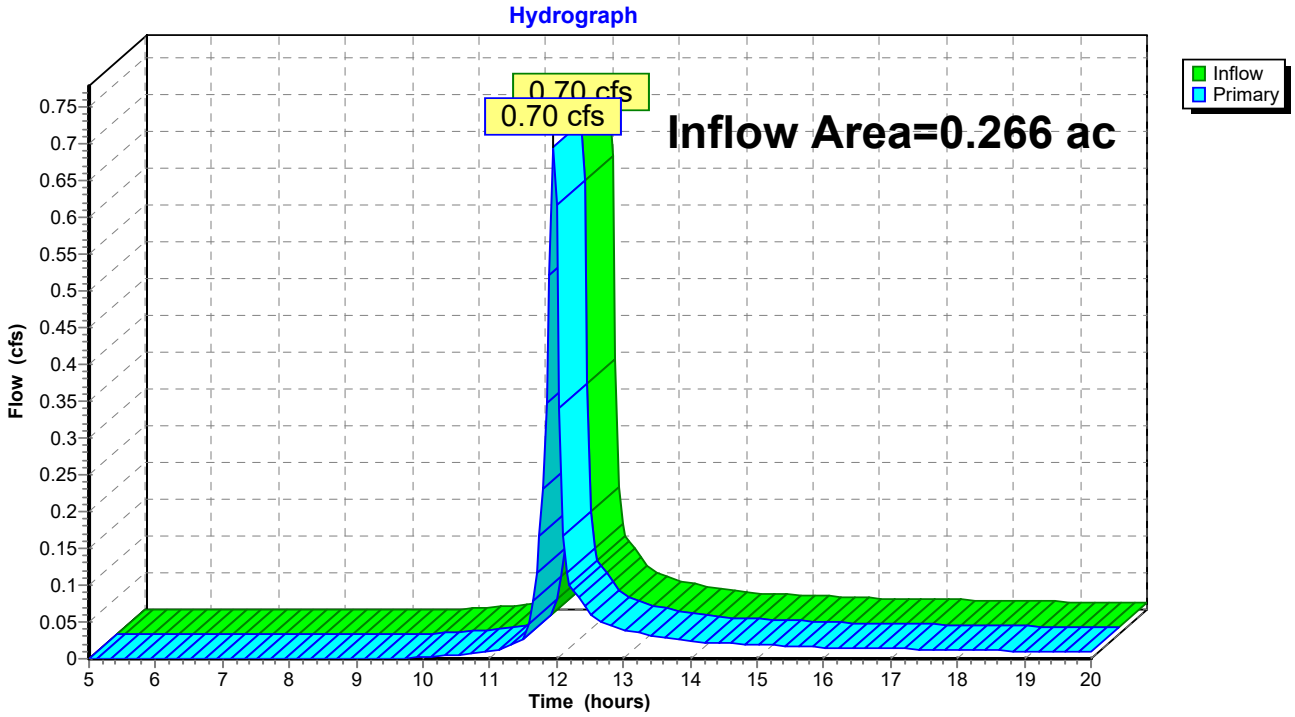


Summary for Link POA2: Ocean

Inflow Area = 0.266 ac, 0.00% Impervious, Inflow Depth > 1.33" for 2 YR event
Inflow = 0.70 cfs @ 11.96 hrs, Volume= 0.029 af
Primary = 0.70 cfs @ 11.96 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA2: Ocean



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment WS1: Pre_Dev WS #1 Runoff Area=7,403 sf 72.09% Impervious Runoff Depth>4.21"
Flow Length=98' Tc=5.0 min CN=97 Runoff=1.19 cfs 0.060 af

Subcatchment WS2: Pre_Dev WS #2 Runoff Area=11,597 sf 0.00% Impervious Runoff Depth>2.60"
Flow Length=128' Tc=5.0 min CN=80 Runoff=1.33 cfs 0.058 af

Link POA1: Coleridge St Inflow=1.19 cfs 0.060 af
Primary=1.19 cfs 0.060 af

Link POA2: Ocean Inflow=1.33 cfs 0.058 af
Primary=1.33 cfs 0.058 af

Total Runoff Area = 0.436 ac Runoff Volume = 0.117 af Average Runoff Depth = 3.23"
71.91% Pervious = 0.314 ac 28.09% Impervious = 0.123 ac

Summary for Subcatchment WS1: Pre_Dev WS #1

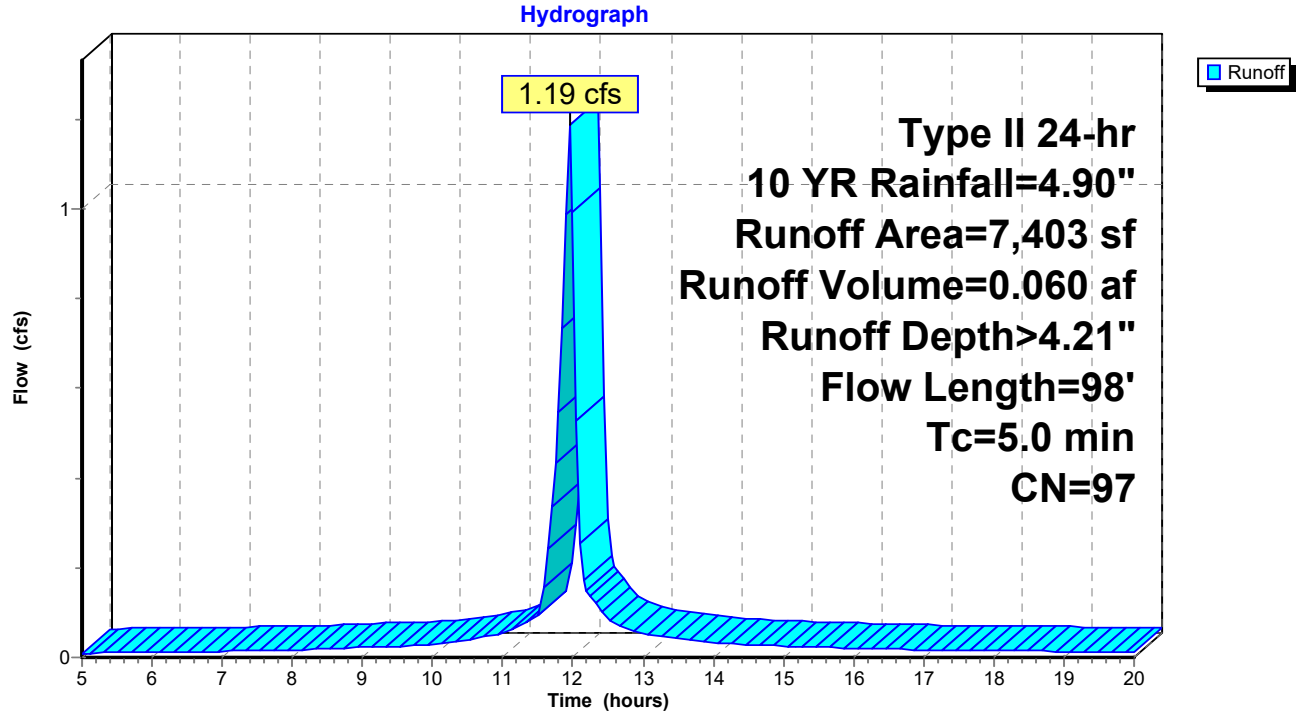
Runoff = 1.19 cfs @ 11.95 hrs, Volume= 0.060 af, Depth> 4.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 YR Rainfall=4.90"

Area (sf)	CN	Description
5,337	98	Paved parking, HSG D
2,066	96	Gravel surface, HSG D
7,403	97	Weighted Average
2,066		27.91% Pervious Area
5,337		72.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	23	0.0900	0.23		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.26"
0.7	75	0.0130	1.84		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
2.7					**Direct Entry, Direct**
5.0	98	Total			

Subcatchment WS1: Pre_Dev WS #1



Summary for Subcatchment WS2: Pre_Dev WS #2

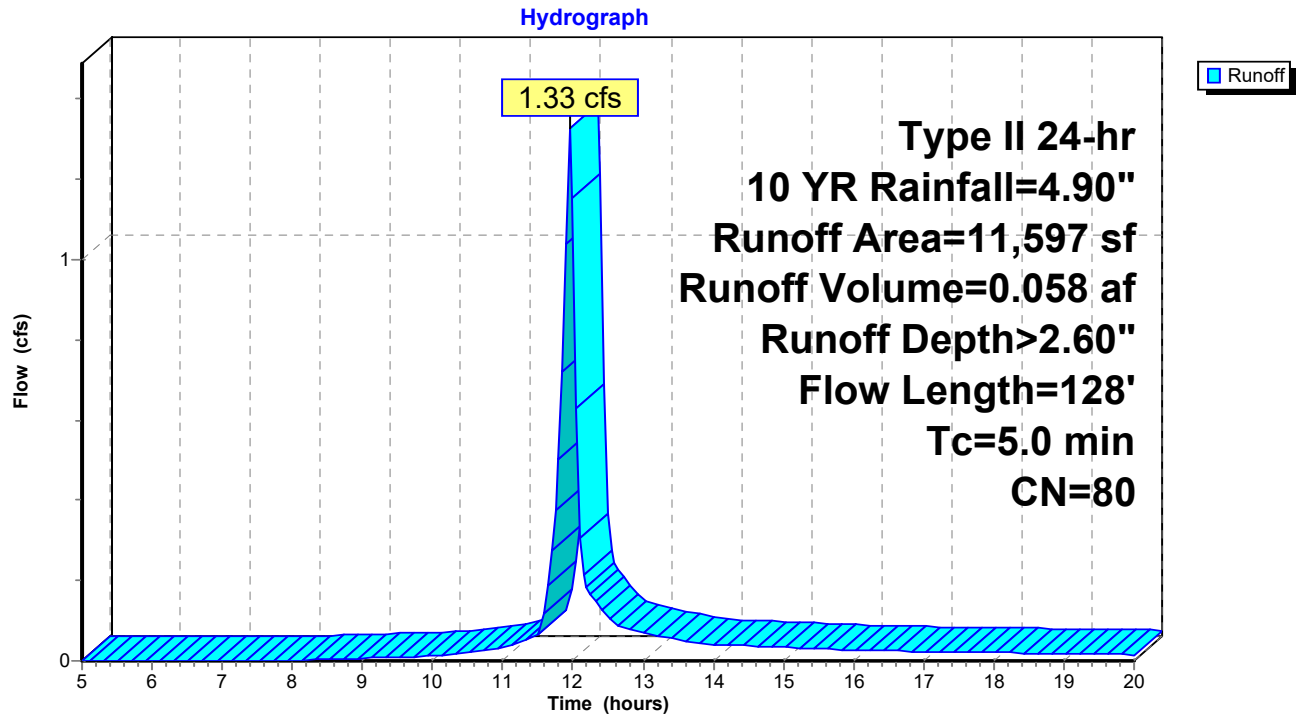
Runoff = 1.33 cfs @ 11.96 hrs, Volume= 0.058 af, Depth> 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 YR Rainfall=4.90"

Area (sf)	CN	Description
11,597	80	>75% Grass cover, Good, HSG D
11,597		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.26"
0.4	78	0.0380	3.14		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
1.0					**Direct Entry, Direct**
5.0	128	Total			

Subcatchment WS2: Pre_Dev WS #2

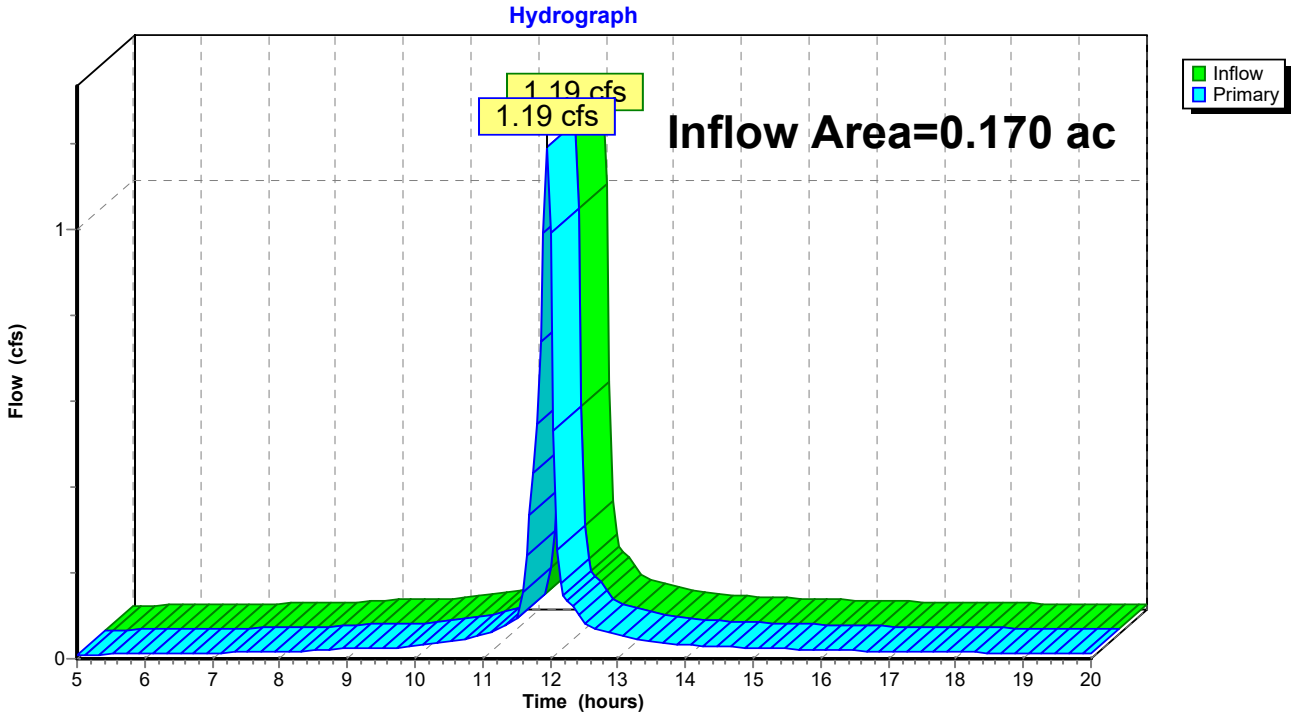


Summary for Link POA1: Coleridge St

Inflow Area = 0.170 ac, 72.09% Impervious, Inflow Depth > 4.21" for 10 YR event
Inflow = 1.19 cfs @ 11.95 hrs, Volume= 0.060 af
Primary = 1.19 cfs @ 11.95 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA1: Coleridge St

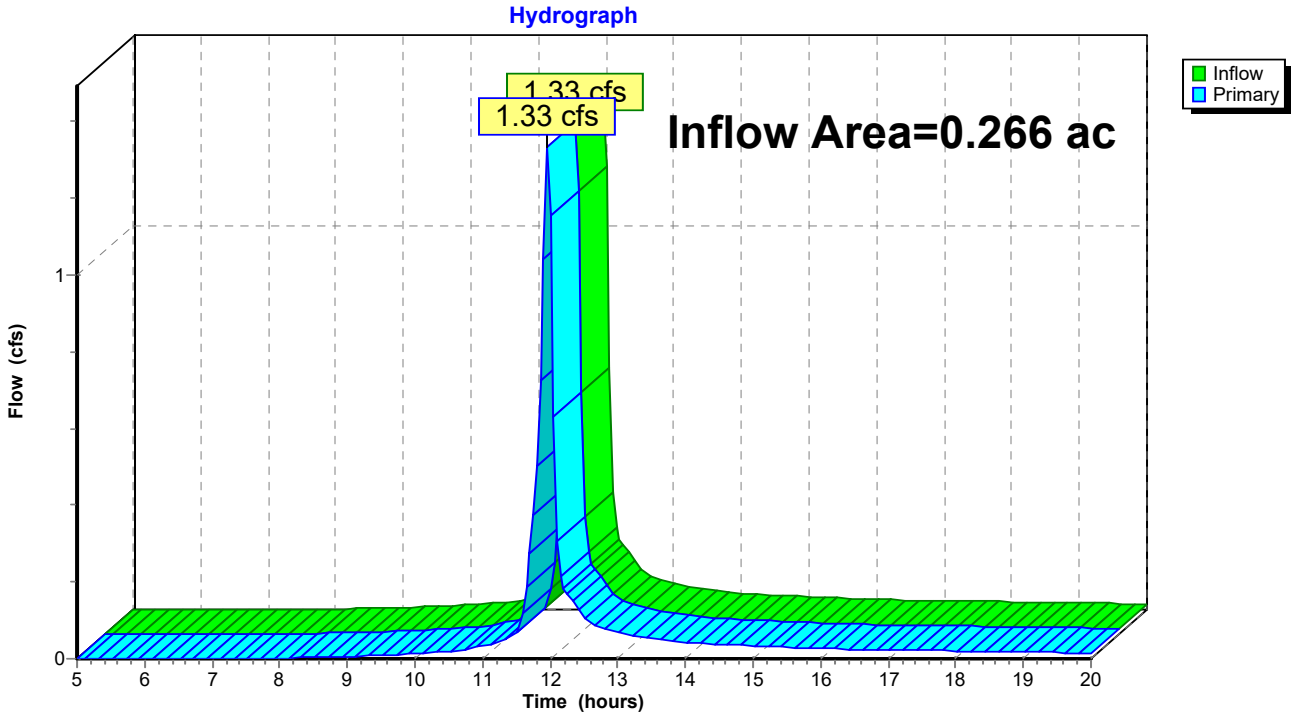


Summary for Link POA2: Ocean

Inflow Area = 0.266 ac, 0.00% Impervious, Inflow Depth > 2.60" for 10 YR event
Inflow = 1.33 cfs @ 11.96 hrs, Volume= 0.058 af
Primary = 1.33 cfs @ 11.96 hrs, Volume= 0.058 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA2: Ocean



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment WS1: Pre_Dev WS #1 Runoff Area=7,403 sf 72.09% Impervious Runoff Depth>5.37"
Flow Length=98' Tc=5.0 min CN=97 Runoff=1.51 cfs 0.076 af

Subcatchment WS2: Pre_Dev WS #2 Runoff Area=11,597 sf 0.00% Impervious Runoff Depth>3.68"
Flow Length=128' Tc=5.0 min CN=80 Runoff=1.85 cfs 0.082 af

Link POA1: Coleridge St Inflow=1.51 cfs 0.076 af
Primary=1.51 cfs 0.076 af

Link POA2: Ocean Inflow=1.85 cfs 0.082 af
Primary=1.85 cfs 0.082 af

Total Runoff Area = 0.436 ac Runoff Volume = 0.158 af Average Runoff Depth = 4.34"
71.91% Pervious = 0.314 ac 28.09% Impervious = 0.123 ac

Summary for Subcatchment WS1: Pre_Dev WS #1

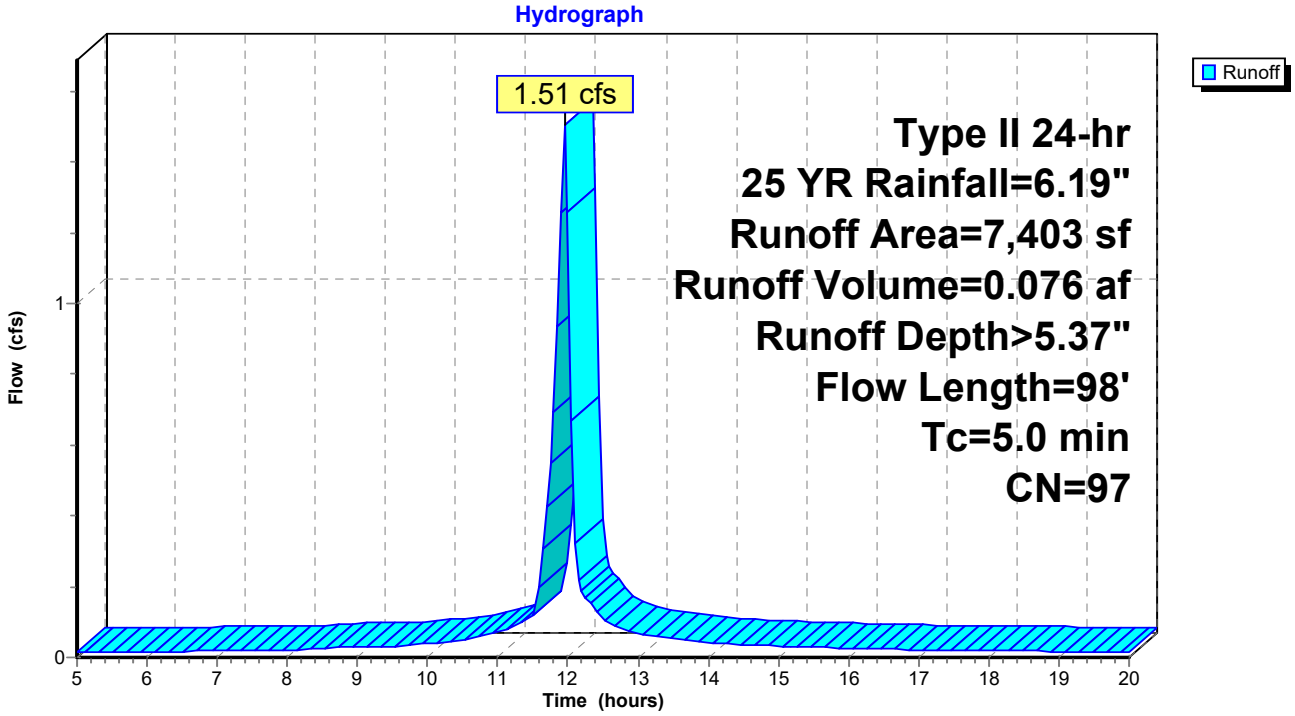
Runoff = 1.51 cfs @ 11.95 hrs, Volume= 0.076 af, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 YR Rainfall=6.19"

Area (sf)	CN	Description
5,337	98	Paved parking, HSG D
2,066	96	Gravel surface, HSG D
7,403	97	Weighted Average
2,066		27.91% Pervious Area
5,337		72.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	23	0.0900	0.23		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.26"
0.7	75	0.0130	1.84		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
2.7					**Direct Entry, Direct**
5.0	98	Total			

Subcatchment WS1: Pre_Dev WS #1



Summary for Subcatchment WS2: Pre_Dev WS #2

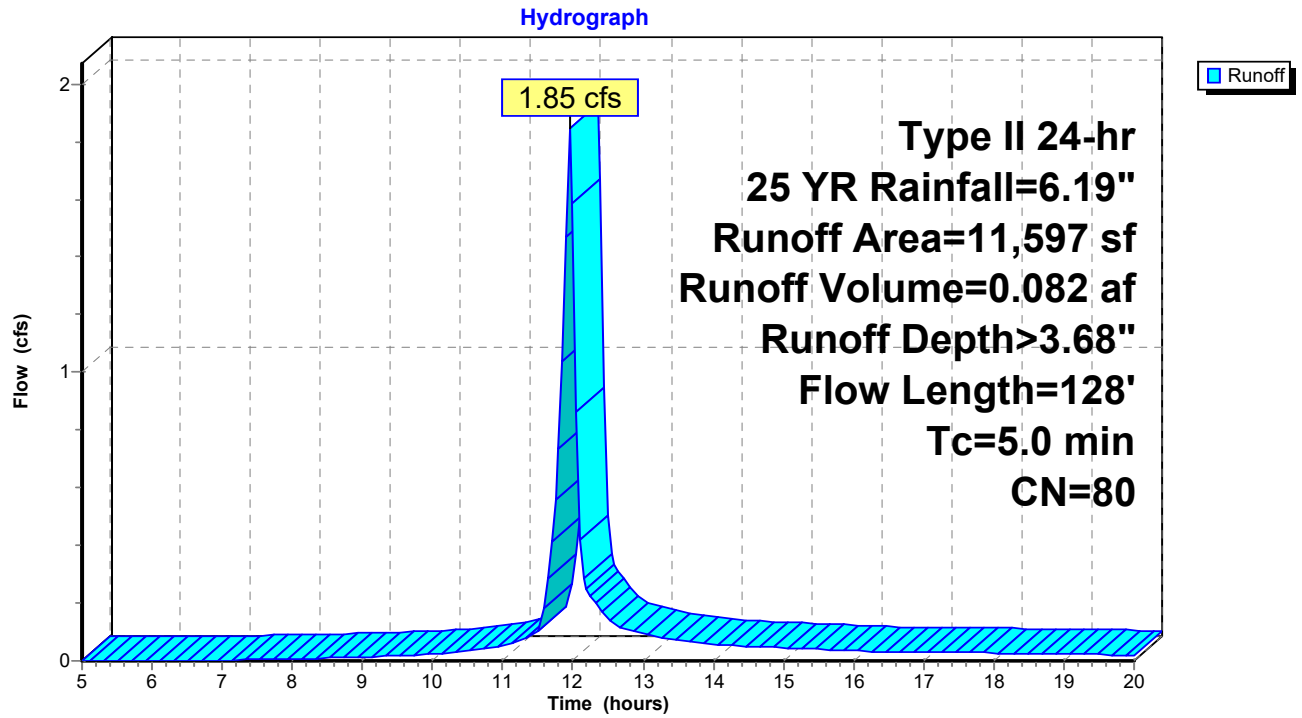
Runoff = 1.85 cfs @ 11.95 hrs, Volume= 0.082 af, Depth> 3.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 YR Rainfall=6.19"

Area (sf)	CN	Description
11,597	80	>75% Grass cover, Good, HSG D
11,597		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.26"
0.4	78	0.0380	3.14		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
1.0					**Direct Entry, Direct**
5.0	128	Total			

Subcatchment WS2: Pre_Dev WS #2

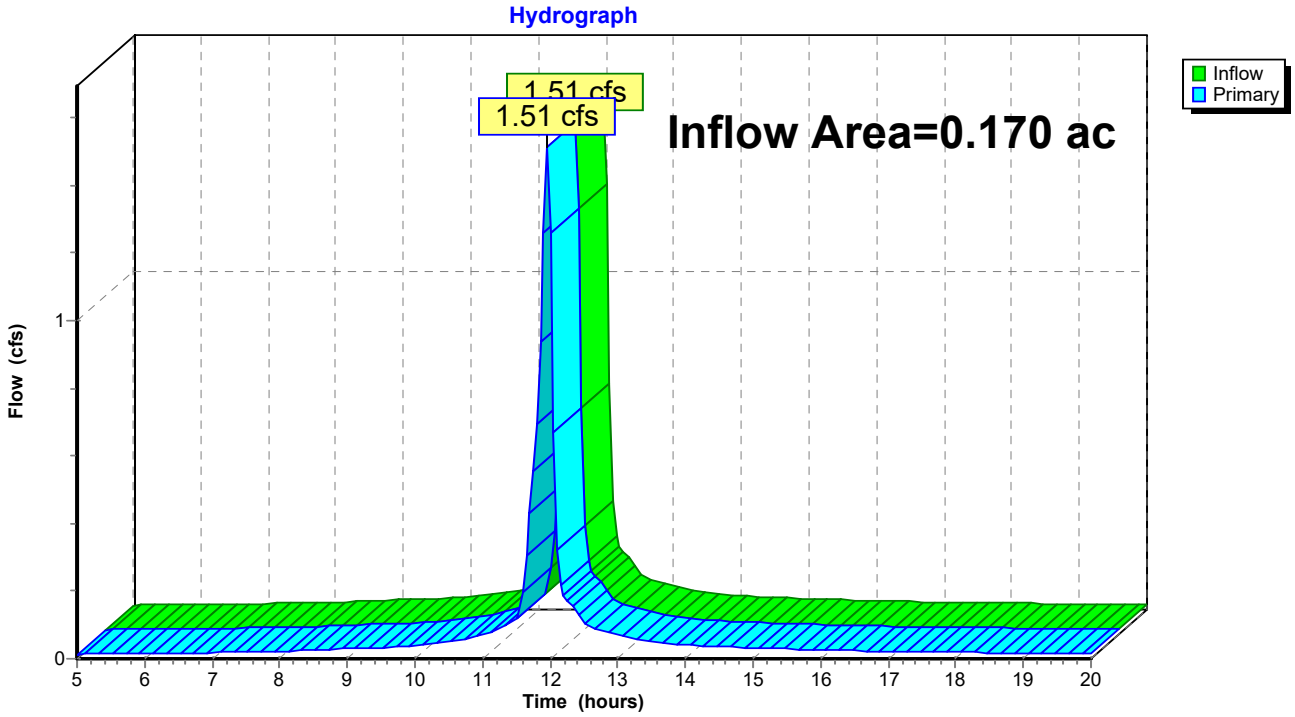


Summary for Link POA1: Coleridge St

Inflow Area = 0.170 ac, 72.09% Impervious, Inflow Depth > 5.37" for 25 YR event
Inflow = 1.51 cfs @ 11.95 hrs, Volume= 0.076 af
Primary = 1.51 cfs @ 11.95 hrs, Volume= 0.076 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA1: Coleridge St

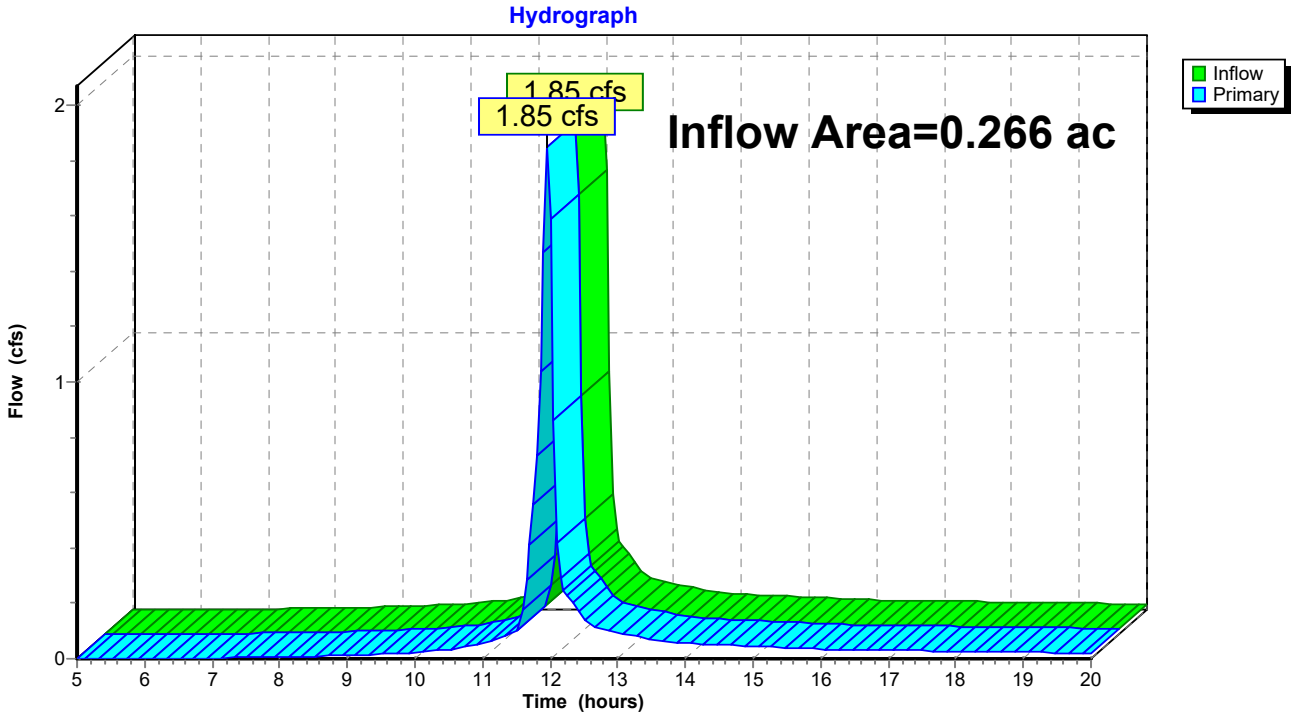


Summary for Link POA2: Ocean

Inflow Area = 0.266 ac, 0.00% Impervious, Inflow Depth > 3.68" for 25 YR event
Inflow = 1.85 cfs @ 11.95 hrs, Volume= 0.082 af
Primary = 1.85 cfs @ 11.95 hrs, Volume= 0.082 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA2: Ocean



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment WS1: Pre_Dev WS #1 Runoff Area=7,403 sf 72.09% Impervious Runoff Depth>7.75"
Flow Length=98' Tc=5.0 min CN=97 Runoff=2.16 cfs 0.110 af

Subcatchment WS2: Pre_Dev WS #2 Runoff Area=11,597 sf 0.00% Impervious Runoff Depth>6.00"
Flow Length=128' Tc=5.0 min CN=80 Runoff=2.92 cfs 0.133 af

Link POA1: Coleridge St Inflow=2.16 cfs 0.110 af
Primary=2.16 cfs 0.110 af

Link POA2: Ocean Inflow=2.92 cfs 0.133 af
Primary=2.92 cfs 0.133 af

Total Runoff Area = 0.436 ac Runoff Volume = 0.243 af Average Runoff Depth = 6.68"
71.91% Pervious = 0.314 ac 28.09% Impervious = 0.123 ac

Summary for Subcatchment WS1: Pre_Dev WS #1

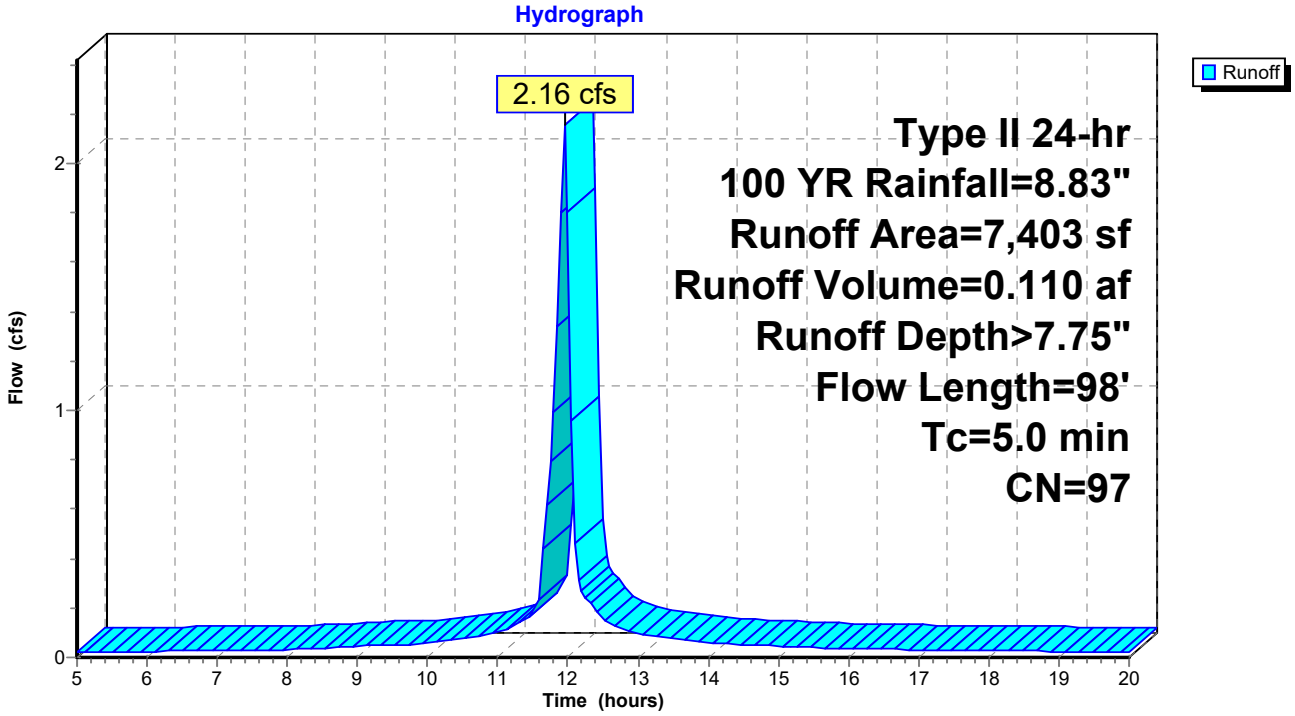
Runoff = 2.16 cfs @ 11.95 hrs, Volume= 0.110 af, Depth> 7.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 YR Rainfall=8.83"

Area (sf)	CN	Description
5,337	98	Paved parking, HSG D
2,066	96	Gravel surface, HSG D
7,403	97	Weighted Average
2,066		27.91% Pervious Area
5,337		72.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	23	0.0900	0.23		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.26"
0.7	75	0.0130	1.84		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
2.7					**Direct Entry, Direct**
5.0	98	Total			

Subcatchment WS1: Pre_Dev WS #1



Summary for Subcatchment WS2: Pre_Dev WS #2

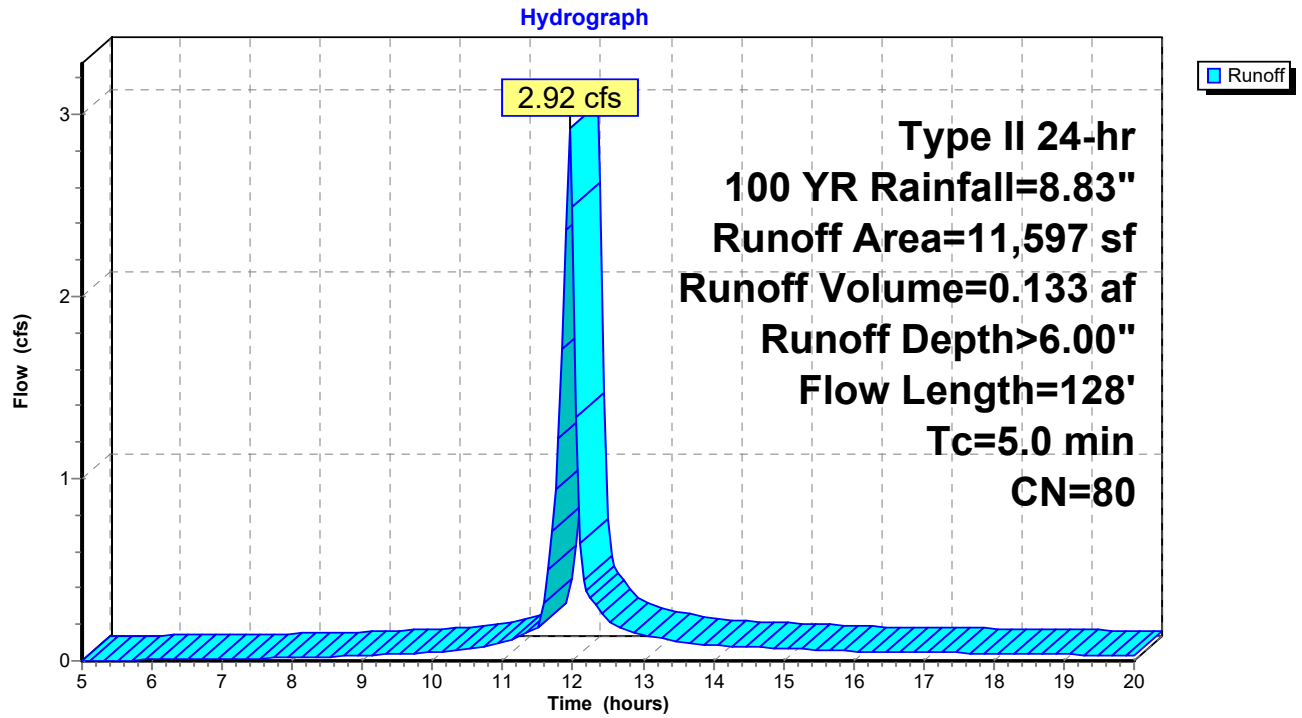
Runoff = 2.92 cfs @ 11.95 hrs, Volume= 0.133 af, Depth> 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 YR Rainfall=8.83"

Area (sf)	CN	Description
11,597	80	>75% Grass cover, Good, HSG D
11,597		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.0600	0.23		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.26"
0.4	78	0.0380	3.14		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
1.0					**Direct Entry, Direct**
5.0	128	Total			

Subcatchment WS2: Pre_Dev WS #2

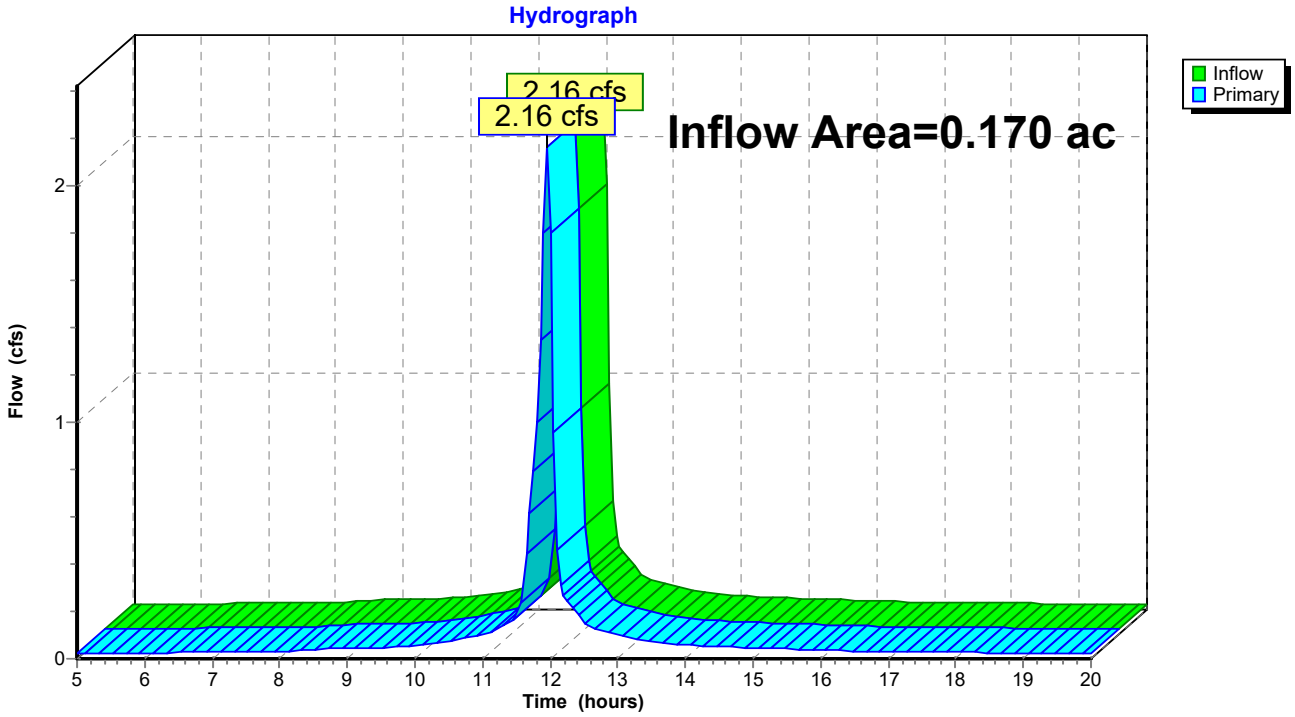


Summary for Link POA1: Coleridge St

Inflow Area = 0.170 ac, 72.09% Impervious, Inflow Depth > 7.75" for 100 YR event
Inflow = 2.16 cfs @ 11.95 hrs, Volume= 0.110 af
Primary = 2.16 cfs @ 11.95 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA1: Coleridge St

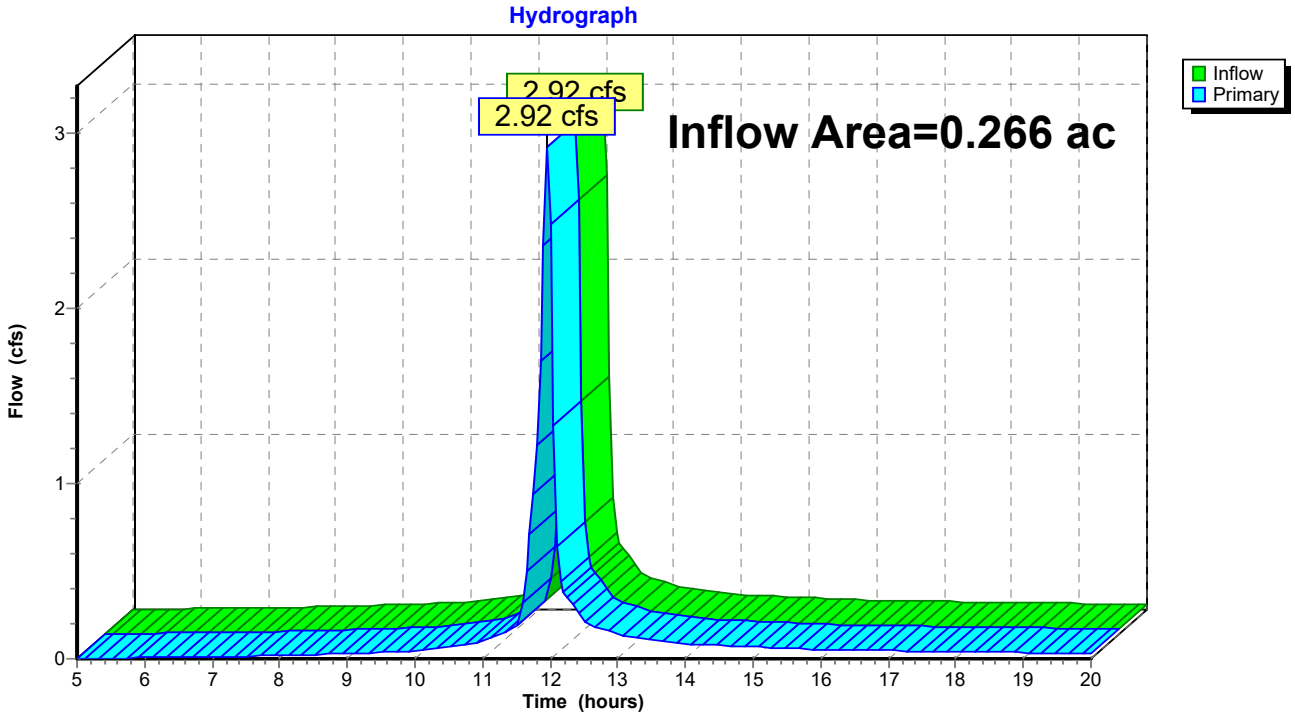


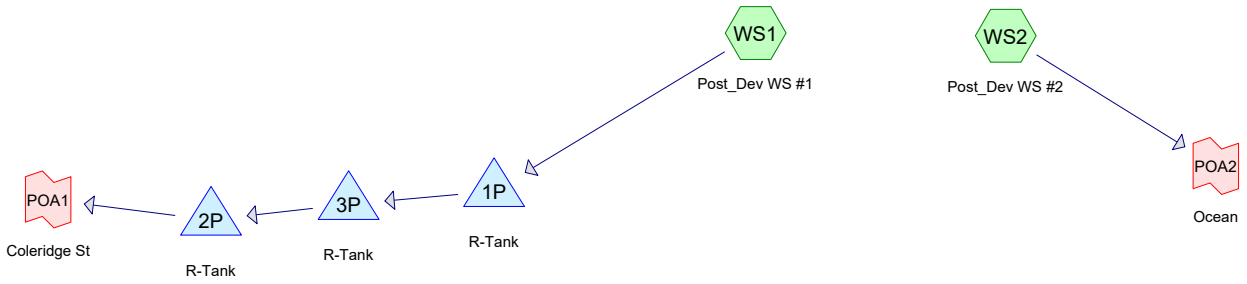
Summary for Link POA2: Ocean

Inflow Area = 0.266 ac, 0.00% Impervious, Inflow Depth > 6.00" for 100 YR event
Inflow = 2.92 cfs @ 11.95 hrs, Volume= 0.133 af
Primary = 2.92 cfs @ 11.95 hrs, Volume= 0.133 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA2: Ocean





Subcat Reach Pond Link

Routing Diagram for Post_Dev

Prepared by {enter your company name here}, Printed 11/30/2018

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.068	89	<50% Grass cover, Poor, HSG D (WS2)
0.066	80	>75% Grass cover, Good, HSG D (WS1, WS2)
0.082	98	Unconnected pavement, HSG D (WS1, WS2)
0.204	98	Unconnected roofs, HSG D (WS1)
0.421	**94**	**TOTAL AREA**

Time span=1.00-97.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment WS1: Post_Dev WS #1 Runoff Area=11,255 sf 96.76% Impervious Runoff Depth=2.38"
Flow Length=82' Tc=5.0 min CN=97 Runoff=0.98 cfs 0.051 af

Subcatchment WS2: Post_Dev WS #2 Runoff Area=7,067 sf 22.39% Impervious Runoff Depth=1.43"
Flow Length=37' Tc=5.0 min UI Adjusted CN=86 Runoff=0.41 cfs 0.019 af

Pond 1P: R-Tank Peak Elev=7.62' Storage=791 cf Inflow=0.98 cfs 0.051 af
Discarded=0.00 cfs 0.006 af Primary=0.90 cfs 0.035 af Outflow=0.90 cfs 0.041 af

Pond 2P: R-Tank Peak Elev=7.89' Storage=1,259 cf Inflow=1.10 cfs 0.030 af
Discarded=0.00 cfs 0.008 af Primary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.008 af

Pond 3P: R-Tank Peak Elev=7.75' Storage=291 cf Inflow=0.90 cfs 0.035 af
Discarded=0.00 cfs 0.002 af Primary=1.10 cfs 0.030 af Outflow=1.10 cfs 0.032 af

Link POA1: Coleridge St Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link POA2: Ocean Inflow=0.41 cfs 0.019 af
Primary=0.41 cfs 0.019 af

Total Runoff Area = 0.421 ac Runoff Volume = 0.071 af Average Runoff Depth = 2.01"
31.93% Pervious = 0.134 ac 68.07% Impervious = 0.286 ac

Summary for Subcatchment WS1: Post_Dev WS #1

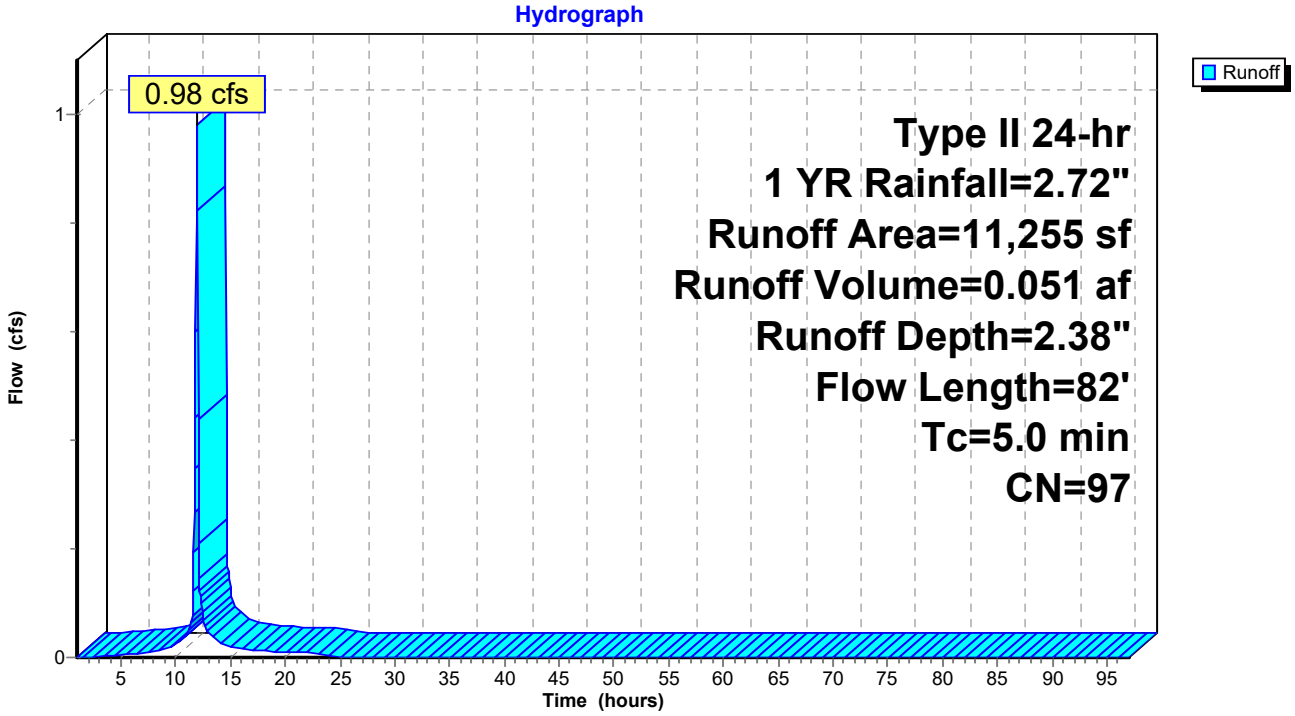
Runoff = 0.98 cfs @ 11.95 hrs, Volume= 0.051 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 YR Rainfall=2.72"

Area (sf)	CN	Description
365	80	>75% Grass cover, Good, HSG D
8,883	98	Unconnected roofs, HSG D
2,007	98	Unconnected pavement, HSG D
11,255	97	Weighted Average
365		3.24% Pervious Area
10,890		96.76% Impervious Area
10,890		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	50	0.0260	1.34		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.26"
0.2	32	0.0230	3.08		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
4.2					**Direct Entry, Direct**
5.0	82	Total			

Subcatchment WS1: Post_Dev WS #1



Summary for Subcatchment WS2: Post_Dev WS #2

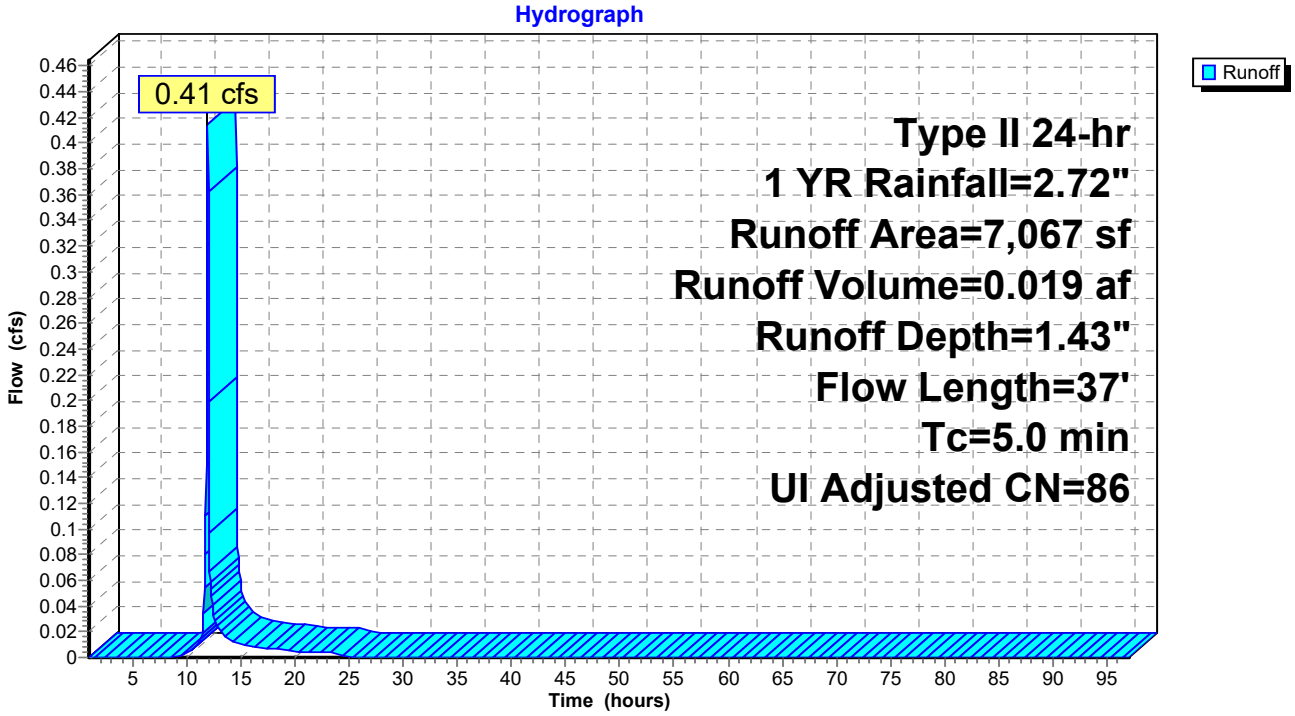
Runoff = 0.41 cfs @ 11.96 hrs, Volume= 0.019 af, Depth= 1.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 YR Rainfall=2.72"

Area (sf)	CN	Adj	Description
1,582	98		Unconnected pavement, HSG D
2,527	80		>75% Grass cover, Good, HSG D
2,958	89		<50% Grass cover, Poor, HSG D
7,067	88	86	Weighted Average, UI Adjusted
5,485			77.61% Pervious Area
1,582			22.39% Impervious Area
1,582			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	24	0.1250	0.27		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.26"
0.1	13	0.0360	3.05		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
3.4					**Direct Entry, Direct**
5.0	37	Total			

Subcatchment WS2: Post_Dev WS #2



Summary for Pond 1P: R-Tank

Inflow Area = 0.258 ac, 96.76% Impervious, Inflow Depth = 2.38" for 1 YR event
Inflow = 0.98 cfs @ 11.95 hrs, Volume= 0.051 af
Outflow = 0.90 cfs @ 11.98 hrs, Volume= 0.041 af, Atten= 8%, Lag= 2.0 min
Discarded = 0.00 cfs @ 3.95 hrs, Volume= 0.006 af
Primary = 0.90 cfs @ 11.98 hrs, Volume= 0.035 af

Routing by Stor-Ind method, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Peak Elev= 7.62' @ 11.98 hrs Surf.Area= 362 sf Storage= 791 cf

Plug-Flow detention time= 454.9 min calculated for 0.041 af (81% of inflow)
Center-of-Mass det. time= 378.6 min (1,144.4 - 765.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.50'	397 cf	**13.19'W x 27.46'L x 5.67'H Field A** 2,053 cf Overall - 1,060 cf Embedded = 993 cf x 40.0% Voids
#2A	4.75'	1,007 cf	**ACF R-Tank HD 3.5** x 70 Inside #1 Inside= 15.7"W x 59.1"H => 6.14 sf x 2.35'L = 14.4 cf Outside= 15.7"W x 59.1"H => 6.46 sf x 2.35'L = 15.1 cf 7 Rows of 10 Chambers
		1,405 cf	Total Available Storage

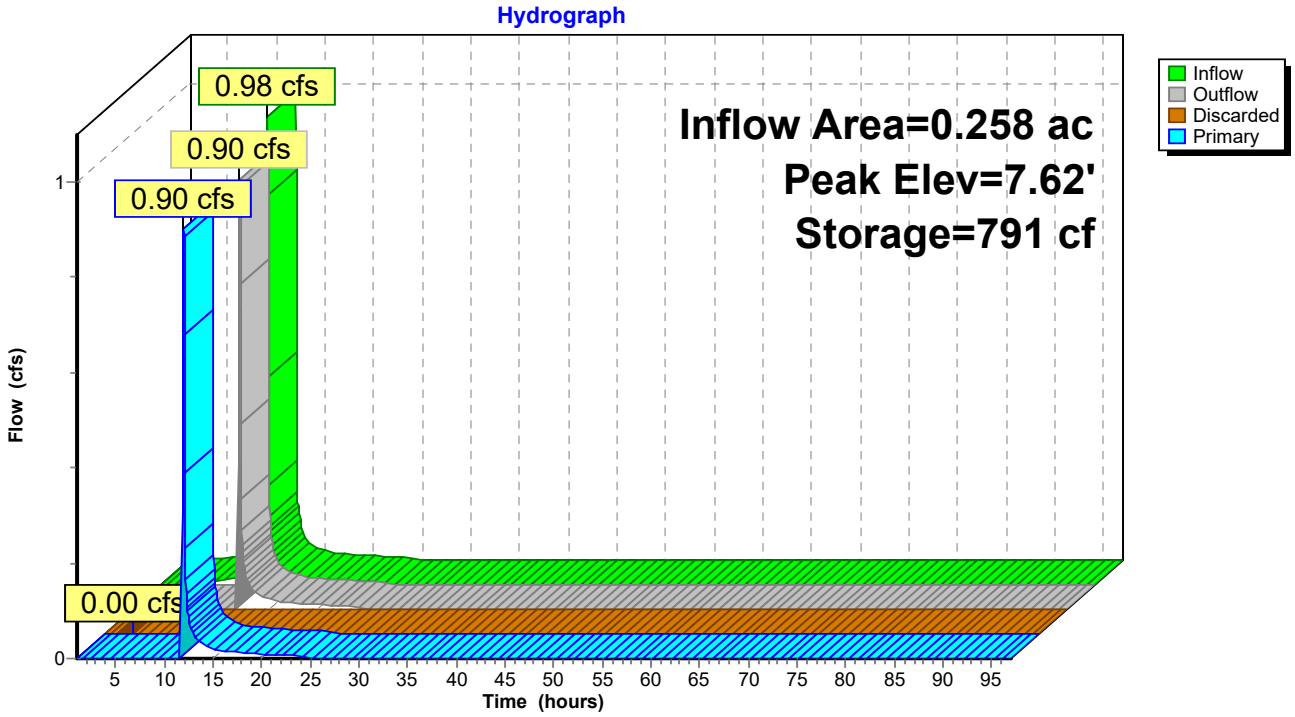
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.00'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	4.50'	**0.090 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 3.95 hrs HW=4.56' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.88 cfs @ 11.98 hrs HW=7.60' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.88 cfs @ 2.64 fps)

Pond 1P: R-Tank



Summary for Pond 2P: R-Tank

Inflow Area = 0.258 ac, 96.76% Impervious, Inflow Depth = 1.40" for 1 YR event
Inflow = 1.10 cfs @ 12.01 hrs, Volume= 0.030 af
Outflow = 0.00 cfs @ 12.00 hrs, Volume= 0.008 af, Atten= 100%, Lag= 0.0 min
Discarded = 0.00 cfs @ 12.00 hrs, Volume= 0.008 af
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Peak Elev= 7.89' @ 24.75 hrs Surf.Area= 517 sf Storage= 1,259 cf

Plug-Flow detention time= 2,546.6 min calculated for 0.008 af (25% of inflow)
Center-of-Mass det. time= 2,409.9 min (3,268.8 - 858.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.50'	536 cf	**13.19'W x 39.19'L x 5.67'H Field A** 2,931 cf Overall - 1,591 cf Embedded = 1,340 cf x 40.0% Voids
#2A	4.75'	1,511 cf	**ACF R-Tank HD 3.5** x 105 Inside #1 Inside= 15.7"W x 59.1"H => 6.14 sf x 2.35'L = 14.4 cf Outside= 15.7"W x 59.1"H => 6.46 sf x 2.35'L = 15.1 cf 7 Rows of 15 Chambers
		2,047 cf	Total Available Storage

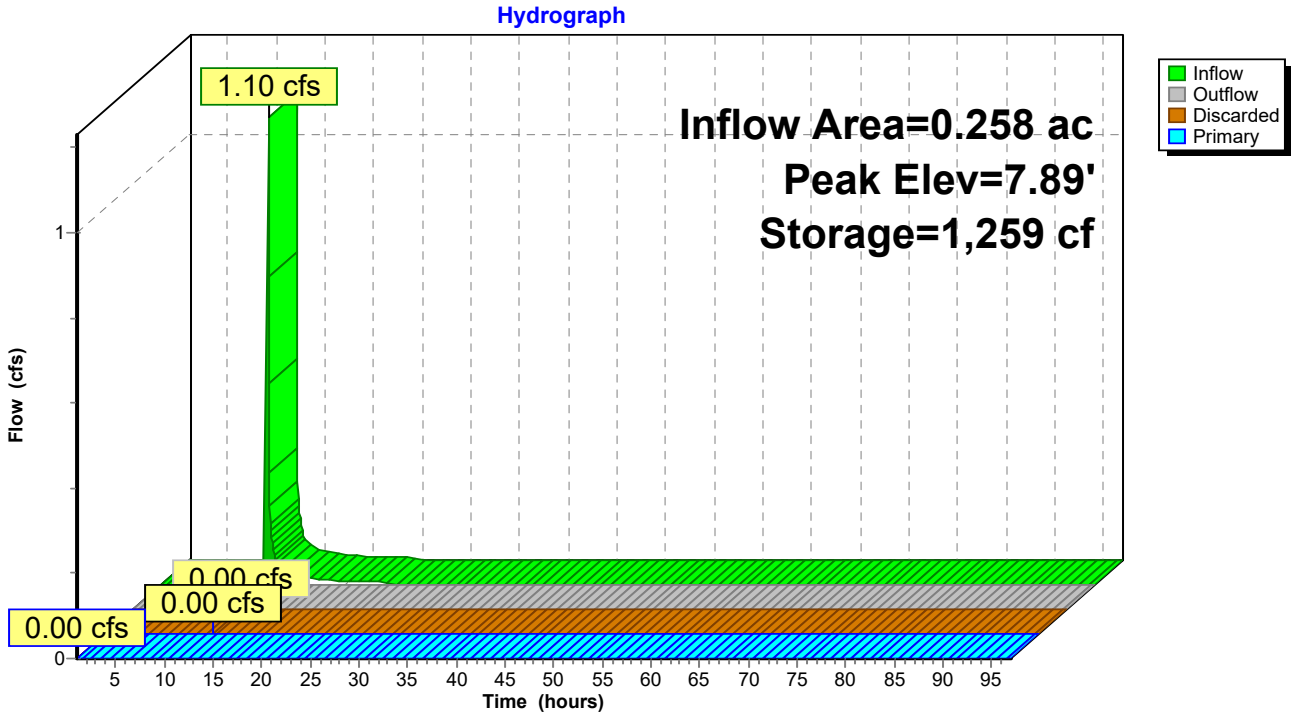
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	8.00'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	4.50'	**0.090 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 12.00 hrs HW=4.91' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=4.50' (Free Discharge)
↑—**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 2P: R-Tank



Summary for Pond 3P: R-Tank

Inflow Area = 0.258 ac, 96.76% Impervious, Inflow Depth = 1.65" for 1 YR event
Inflow = 0.90 cfs @ 11.98 hrs, Volume= 0.035 af
Outflow = 1.10 cfs @ 12.01 hrs, Volume= 0.032 af, Atten= 0%, Lag= 1.7 min
Discarded = 0.00 cfs @ 11.85 hrs, Volume= 0.002 af
Primary = 1.10 cfs @ 12.01 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Peak Elev= 7.75' @ 12.01 hrs Surf.Area= 145 sf Storage= 291 cf

Plug-Flow detention time= 229.0 min calculated for 0.032 af (91% of inflow)
Center-of-Mass det. time= 181.2 min (1,018.5 - 837.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.50'	209 cf	**9.25'W x 15.73'L x 5.67'H Field A** 825 cf Overall - 303 cf Embedded = 522 cf x 40.0% Voids
#2A	4.75'	288 cf	**ACF R-Tank HD 3.5** x 20 Inside #1 Inside= 15.7"W x 59.1"H => 6.14 sf x 2.35'L = 14.4 cf Outside= 15.7"W x 59.1"H => 6.46 sf x 2.35'L = 15.1 cf 4 Rows of 5 Chambers
		497 cf	Total Available Storage

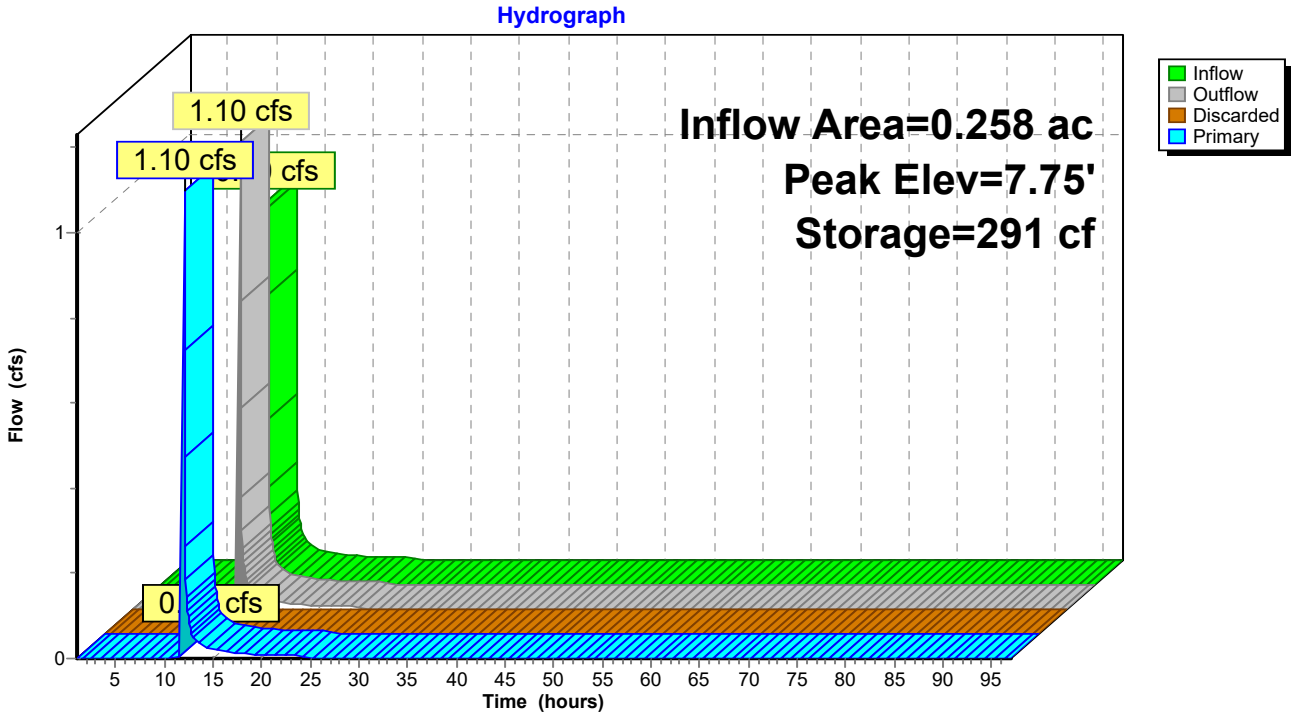
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.00'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	4.50'	**0.090 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 11.85 hrs HW=4.92' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.99 cfs @ 12.01 hrs HW=7.68' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.99 cfs @ 2.84 fps)

Pond 3P: R-Tank

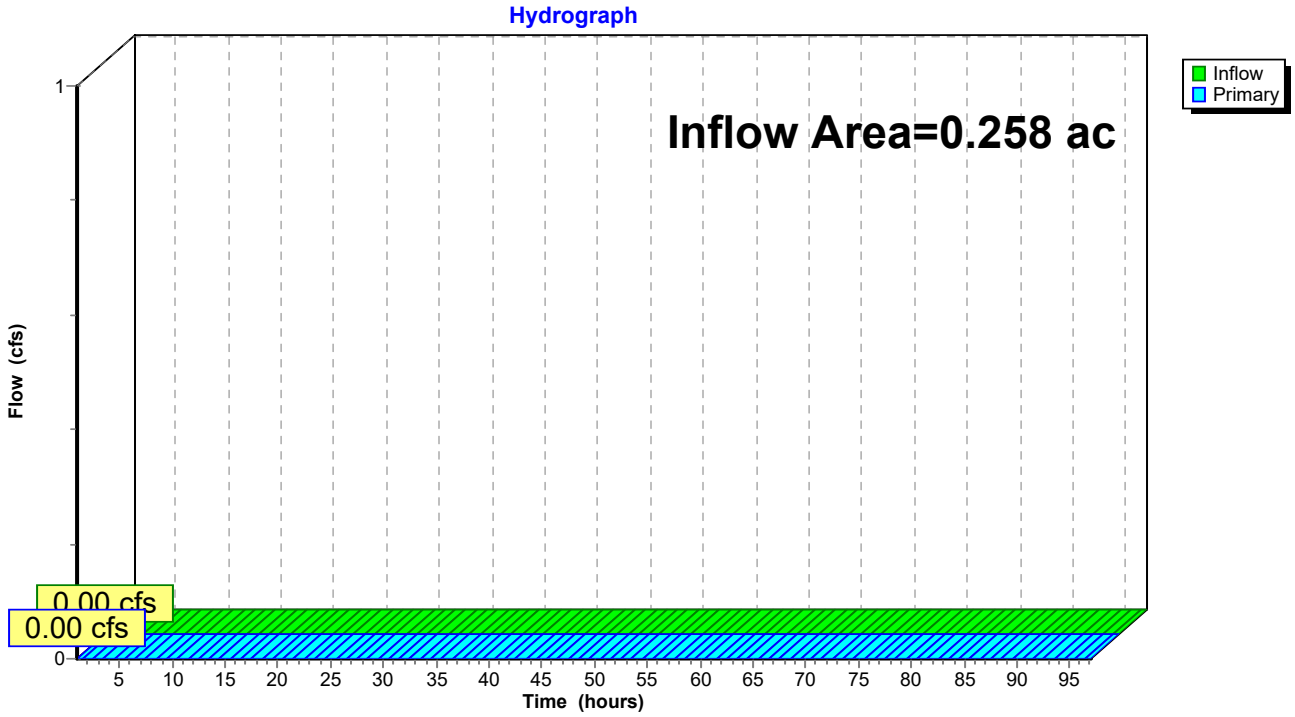


Summary for Link POA1: Coleridge St

Inflow Area = 0.258 ac, 96.76% Impervious, Inflow Depth = 0.00" for 1 YR event
Inflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs

Link POA1: Coleridge St

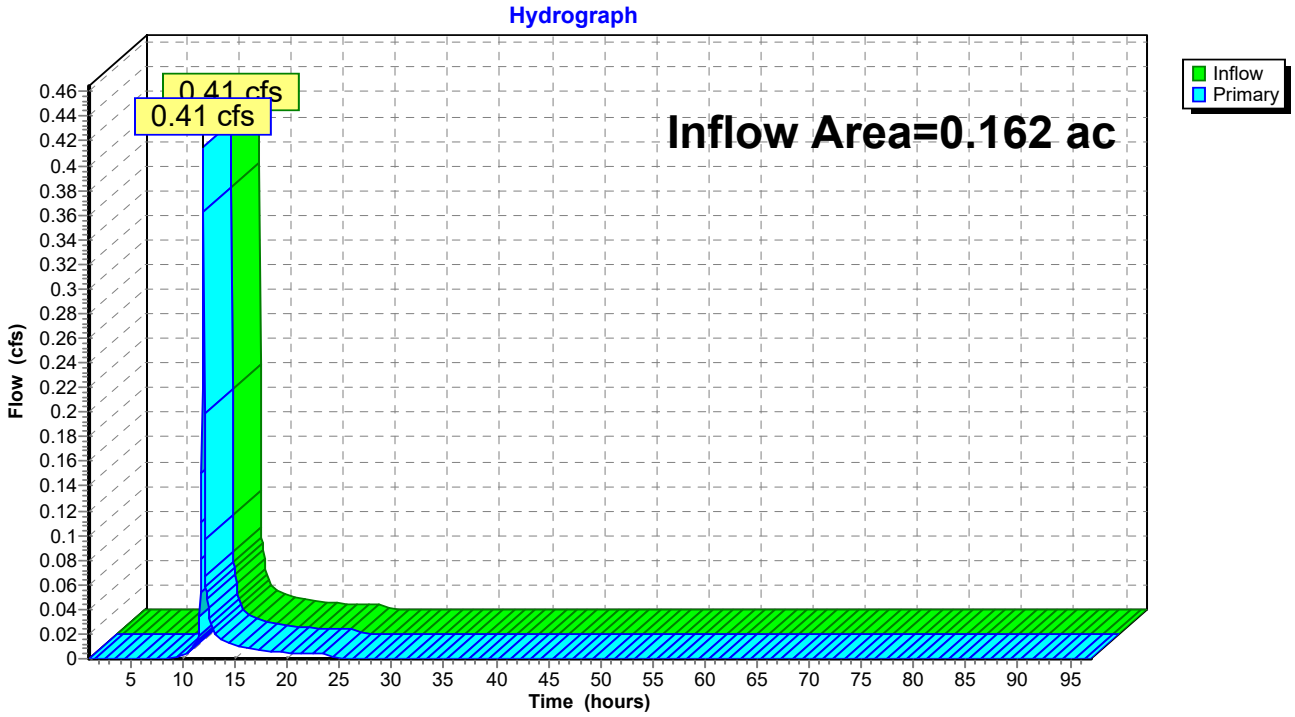


Summary for Link POA2: Ocean

Inflow Area = 0.162 ac, 22.39% Impervious, Inflow Depth = 1.43" for 1 YR event
Inflow = 0.41 cfs @ 11.96 hrs, Volume= 0.019 af
Primary = 0.41 cfs @ 11.96 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs

Link POA2: Ocean



Time span=1.00-97.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment WS1: Post_Dev WS #1 Runoff Area=11,255 sf 96.76% Impervious Runoff Depth=2.92"
Flow Length=82' Tc=5.0 min CN=97 Runoff=1.19 cfs 0.063 af

Subcatchment WS2: Post_Dev WS #2 Runoff Area=7,067 sf 22.39% Impervious Runoff Depth=1.89"
Flow Length=37' Tc=5.0 min UI Adjusted CN=86 Runoff=0.55 cfs 0.026 af

Pond 1P: R-Tank Peak Elev=7.74' Storage=823 cf Inflow=1.19 cfs 0.063 af
Discarded=0.00 cfs 0.006 af Primary=1.07 cfs 0.047 af Outflow=1.07 cfs 0.053 af

Pond 2P: R-Tank Peak Elev=8.08' Storage=1,332 cf Inflow=1.04 cfs 0.042 af
Discarded=0.00 cfs 0.008 af Primary=0.02 cfs 0.010 af Outflow=0.02 cfs 0.018 af

Pond 3P: R-Tank Peak Elev=7.71' Storage=287 cf Inflow=1.07 cfs 0.047 af
Discarded=0.00 cfs 0.002 af Primary=1.04 cfs 0.042 af Outflow=1.04 cfs 0.044 af

Link POA1: Coleridge St Inflow=0.02 cfs 0.010 af
Primary=0.02 cfs 0.010 af

Link POA2: Ocean Inflow=0.55 cfs 0.026 af
Primary=0.55 cfs 0.026 af

Total Runoff Area = 0.421 ac Runoff Volume = 0.088 af Average Runoff Depth = 2.52"
31.93% Pervious = 0.134 ac 68.07% Impervious = 0.286 ac

Summary for Subcatchment WS1: Post_Dev WS #1

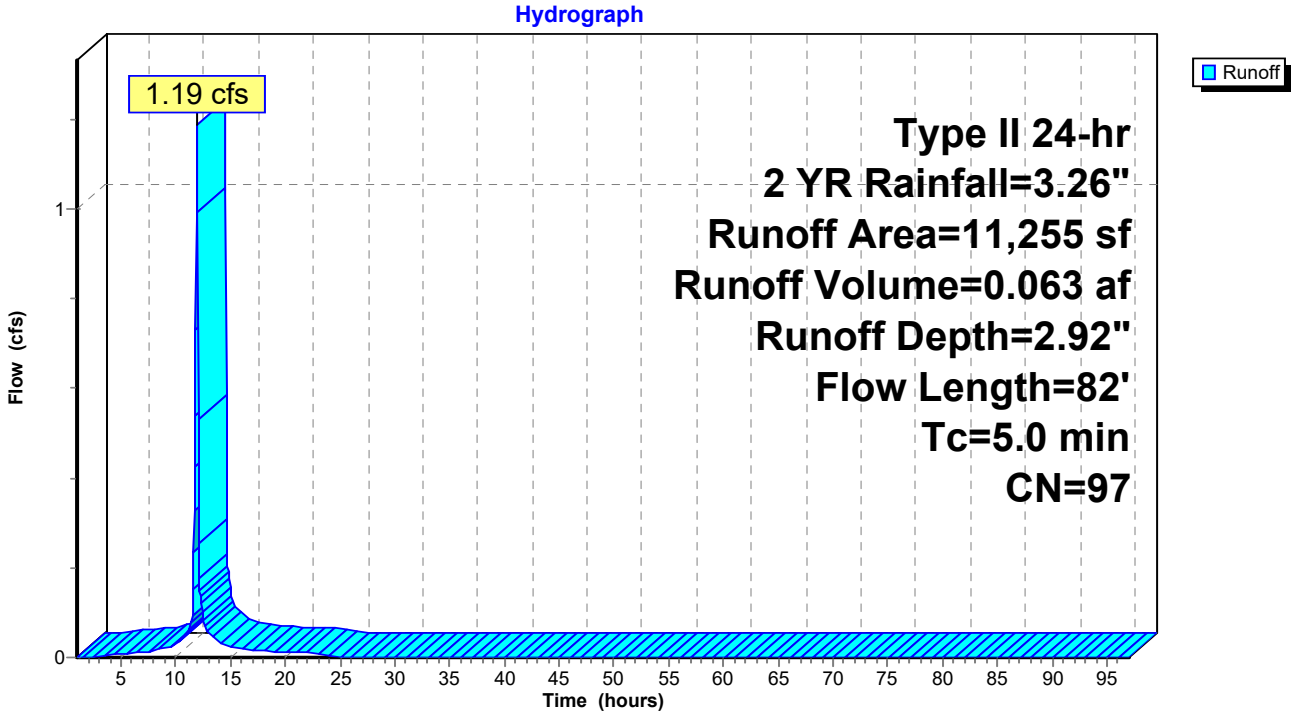
Runoff = 1.19 cfs @ 11.95 hrs, Volume= 0.063 af, Depth= 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Type II 24-hr 2 YR Rainfall=3.26"

Area (sf)	CN	Description
365	80	>75% Grass cover, Good, HSG D
8,883	98	Unconnected roofs, HSG D
2,007	98	Unconnected pavement, HSG D
11,255	97	Weighted Average
365		3.24% Pervious Area
10,890		96.76% Impervious Area
10,890		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	50	0.0260	1.34		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.26"
0.2	32	0.0230	3.08		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
4.2					**Direct Entry, Direct**
5.0	82	Total			

Subcatchment WS1: Post_Dev WS #1



Summary for Subcatchment WS2: Post_Dev WS #2

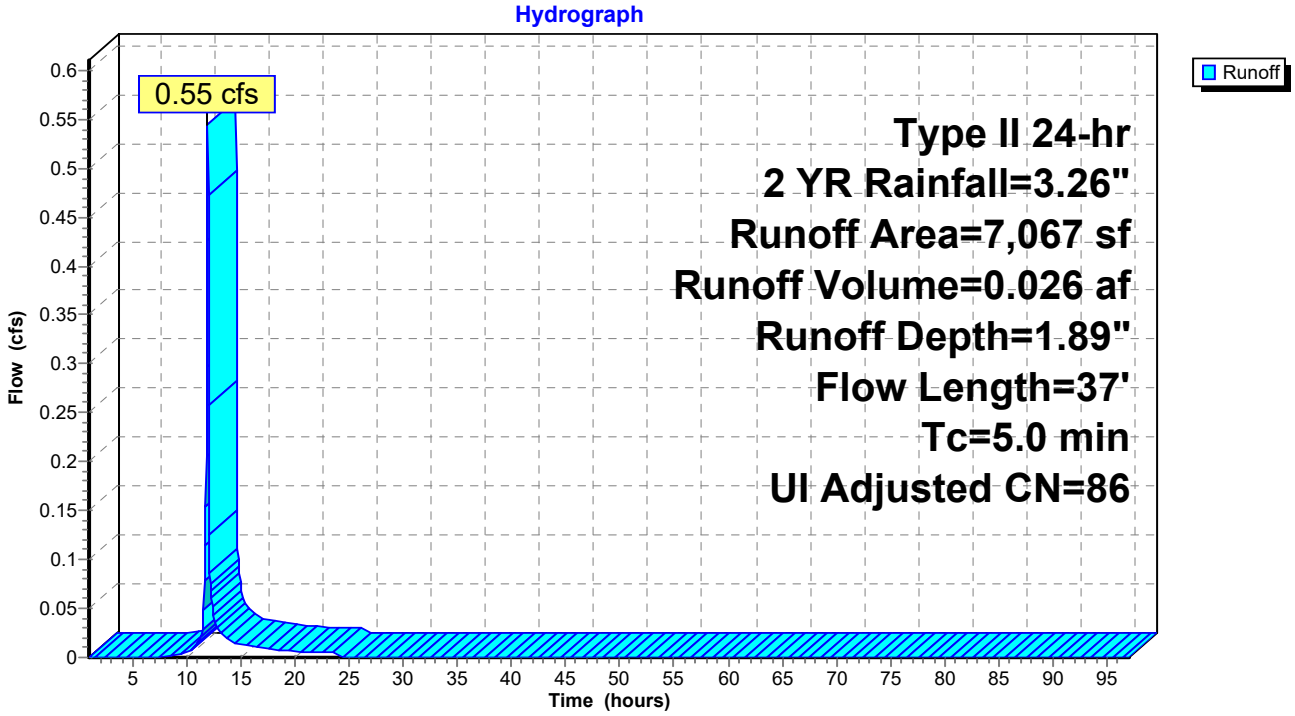
Runoff = 0.55 cfs @ 11.96 hrs, Volume= 0.026 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Type II 24-hr 2 YR Rainfall=3.26"

Area (sf)	CN	Adj	Description
1,582	98		Unconnected pavement, HSG D
2,527	80		>75% Grass cover, Good, HSG D
2,958	89		<50% Grass cover, Poor, HSG D
7,067	88	86	Weighted Average, UI Adjusted
5,485			77.61% Pervious Area
1,582			22.39% Impervious Area
1,582			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	24	0.1250	0.27		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.26"
0.1	13	0.0360	3.05		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
3.4					**Direct Entry, Direct**
5.0	37	Total			

Subcatchment WS2: Post_Dev WS #2



Summary for Pond 1P: R-Tank

Inflow Area = 0.258 ac, 96.76% Impervious, Inflow Depth = 2.92" for 2 YR event
Inflow = 1.19 cfs @ 11.95 hrs, Volume= 0.063 af
Outflow = 1.07 cfs @ 11.99 hrs, Volume= 0.053 af, Atten= 10%, Lag= 2.1 min
Discarded = 0.00 cfs @ 3.35 hrs, Volume= 0.006 af
Primary = 1.07 cfs @ 11.99 hrs, Volume= 0.047 af

Routing by Stor-Ind method, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Peak Elev= 7.74' @ 11.99 hrs Surf.Area= 362 sf Storage= 823 cf

Plug-Flow detention time= 374.4 min calculated for 0.053 af (84% of inflow)
Center-of-Mass det. time= 306.4 min (1,067.3 - 760.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.50'	397 cf	**13.19'W x 27.46'L x 5.67'H Field A** 2,053 cf Overall - 1,060 cf Embedded = 993 cf x 40.0% Voids
#2A	4.75'	1,007 cf	**ACF R-Tank HD 3.5** x 70 Inside #1 Inside= 15.7"W x 59.1"H => 6.14 sf x 2.35'L = 14.4 cf Outside= 15.7"W x 59.1"H => 6.46 sf x 2.35'L = 15.1 cf 7 Rows of 10 Chambers
		1,405 cf	Total Available Storage

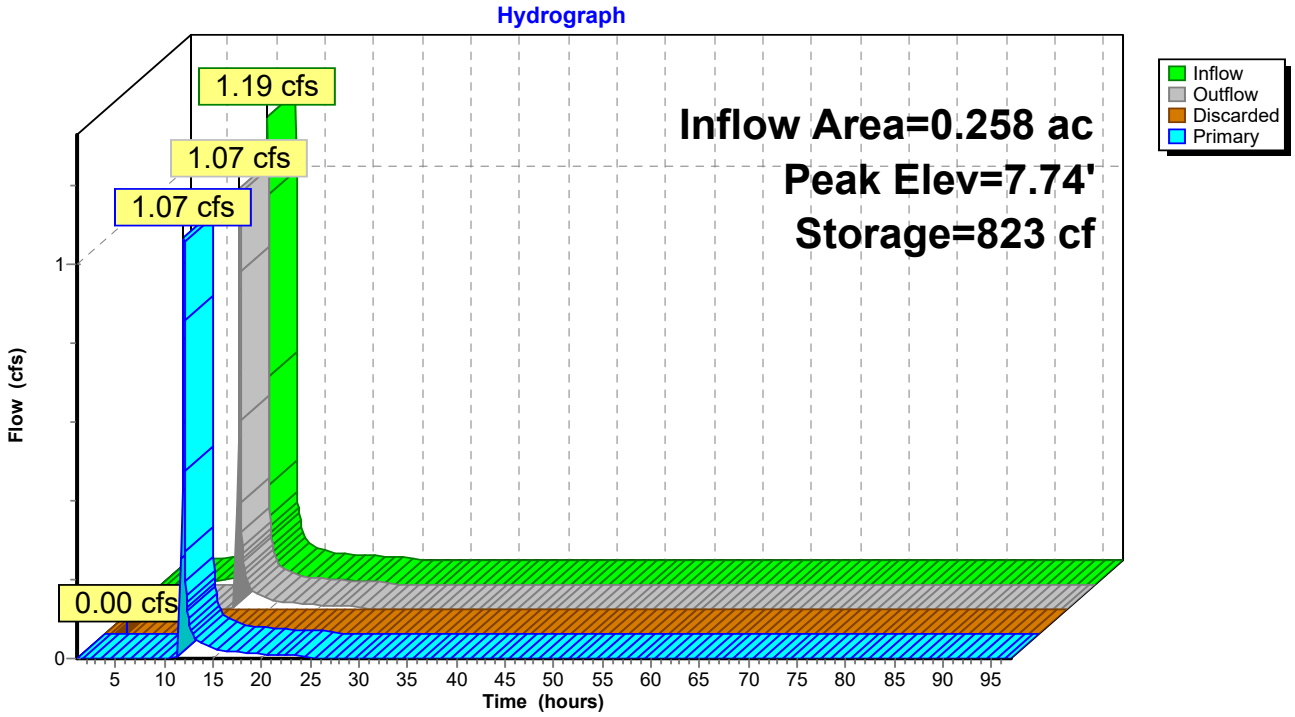
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.00'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	4.50'	**0.090 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 3.35 hrs HW=4.56' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=1.04 cfs @ 11.99 hrs HW=7.72' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.04 cfs @ 2.99 fps)

Pond 1P: R-Tank



Summary for Pond 2P: R-Tank

Inflow Area = 0.258 ac, 96.76% Impervious, Inflow Depth = 1.93" for 2 YR event
Inflow = 1.04 cfs @ 11.99 hrs, Volume= 0.042 af
Outflow = 0.02 cfs @ 15.22 hrs, Volume= 0.018 af, Atten= 98%, Lag= 193.9 min
Discarded = 0.00 cfs @ 11.90 hrs, Volume= 0.008 af
Primary = 0.02 cfs @ 15.22 hrs, Volume= 0.010 af

Routing by Stor-Ind method, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Peak Elev= 8.08' @ 15.22 hrs Surf.Area= 517 sf Storage= 1,332 cf

Plug-Flow detention time= 1,303.3 min calculated for 0.018 af (43% of inflow)
Center-of-Mass det. time= 1,182.1 min (2,023.7 - 841.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.50'	536 cf	**13.19'W x 39.19'L x 5.67'H Field A** 2,931 cf Overall - 1,591 cf Embedded = 1,340 cf x 40.0% Voids
#2A	4.75'	1,511 cf	**ACF R-Tank HD 3.5** x 105 Inside #1 Inside= 15.7"W x 59.1"H => 6.14 sf x 2.35'L = 14.4 cf Outside= 15.7"W x 59.1"H => 6.46 sf x 2.35'L = 15.1 cf 7 Rows of 15 Chambers
		2,047 cf	Total Available Storage

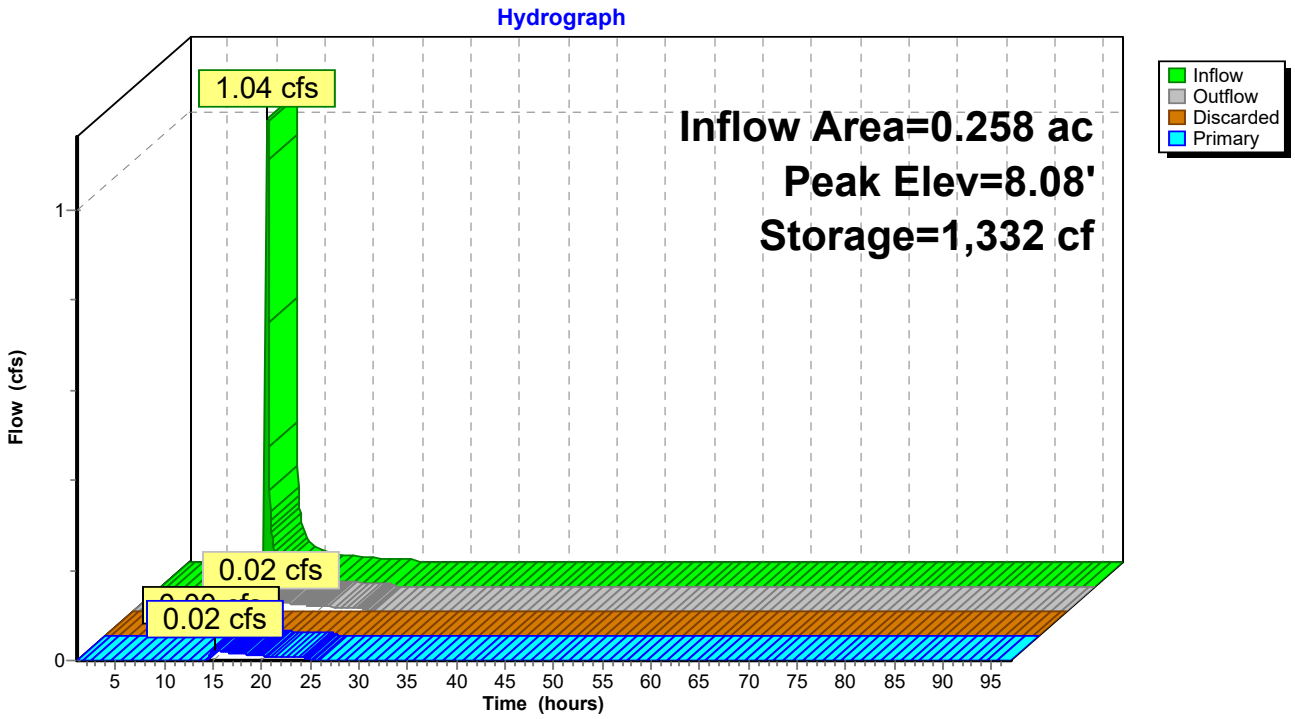
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	8.00'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	4.50'	**0.090 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 11.90 hrs HW=4.75' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.02 cfs @ 15.22 hrs HW=8.08' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.02 cfs @ 0.96 fps)

Pond 2P: R-Tank



Summary for Pond 3P: R-Tank

Inflow Area = 0.258 ac, 96.76% Impervious, Inflow Depth = 2.18" for 2 YR event
Inflow = 1.07 cfs @ 11.99 hrs, Volume= 0.047 af
Outflow = 1.04 cfs @ 11.99 hrs, Volume= 0.044 af, Atten= 3%, Lag= 0.2 min
Discarded = 0.00 cfs @ 11.70 hrs, Volume= 0.002 af
Primary = 1.04 cfs @ 11.99 hrs, Volume= 0.042 af

Routing by Stor-Ind method, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Peak Elev= 7.71' @ 11.99 hrs Surf.Area= 145 sf Storage= 287 cf

Plug-Flow detention time= 169.6 min calculated for 0.044 af (93% of inflow)
Center-of-Mass det. time= 133.8 min (960.1 - 826.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.50'	209 cf	**9.25'W x 15.73'L x 5.67'H Field A** 825 cf Overall - 303 cf Embedded = 522 cf x 40.0% Voids
#2A	4.75'	288 cf	**ACF R-Tank HD 3.5** x 20 Inside #1 Inside= 15.7"W x 59.1"H => 6.14 sf x 2.35'L = 14.4 cf Outside= 15.7"W x 59.1"H => 6.46 sf x 2.35'L = 15.1 cf 4 Rows of 5 Chambers
		497 cf	Total Available Storage

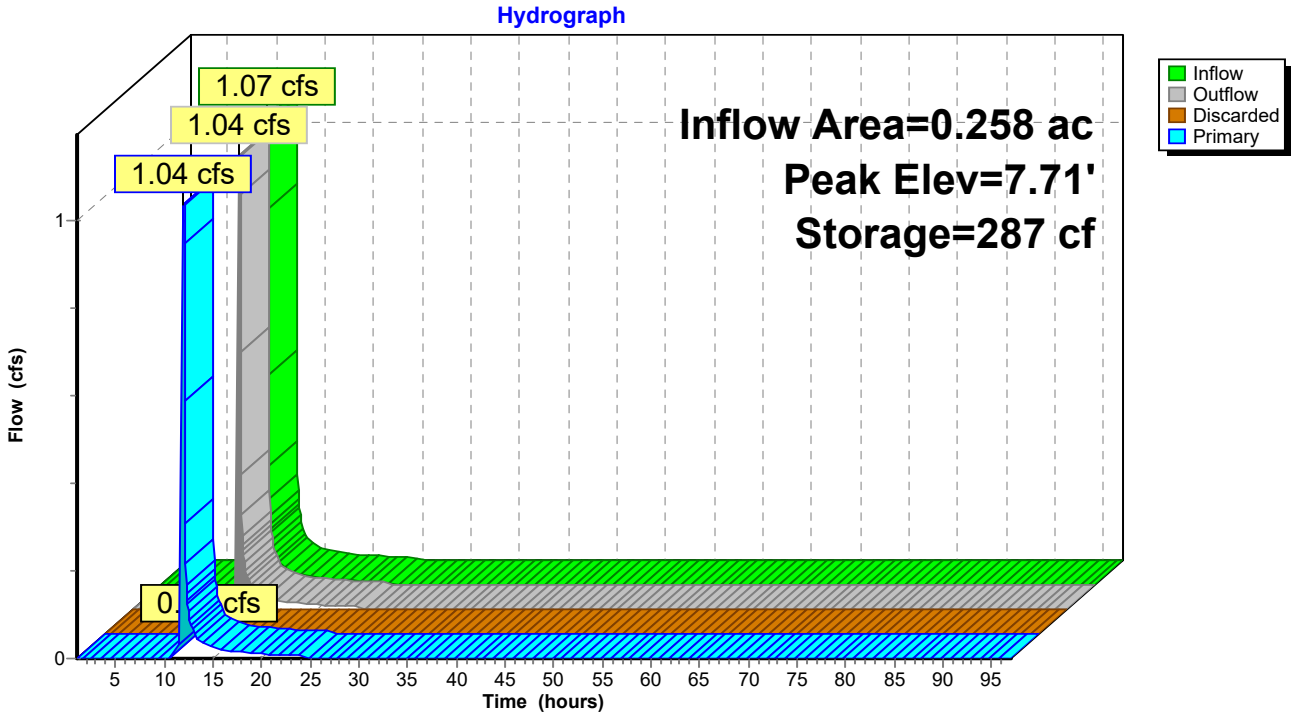
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.00'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	4.50'	**0.090 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 11.70 hrs HW=4.60' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=1.03 cfs @ 11.99 hrs HW=7.71' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.03 cfs @ 2.95 fps)

Pond 3P: R-Tank

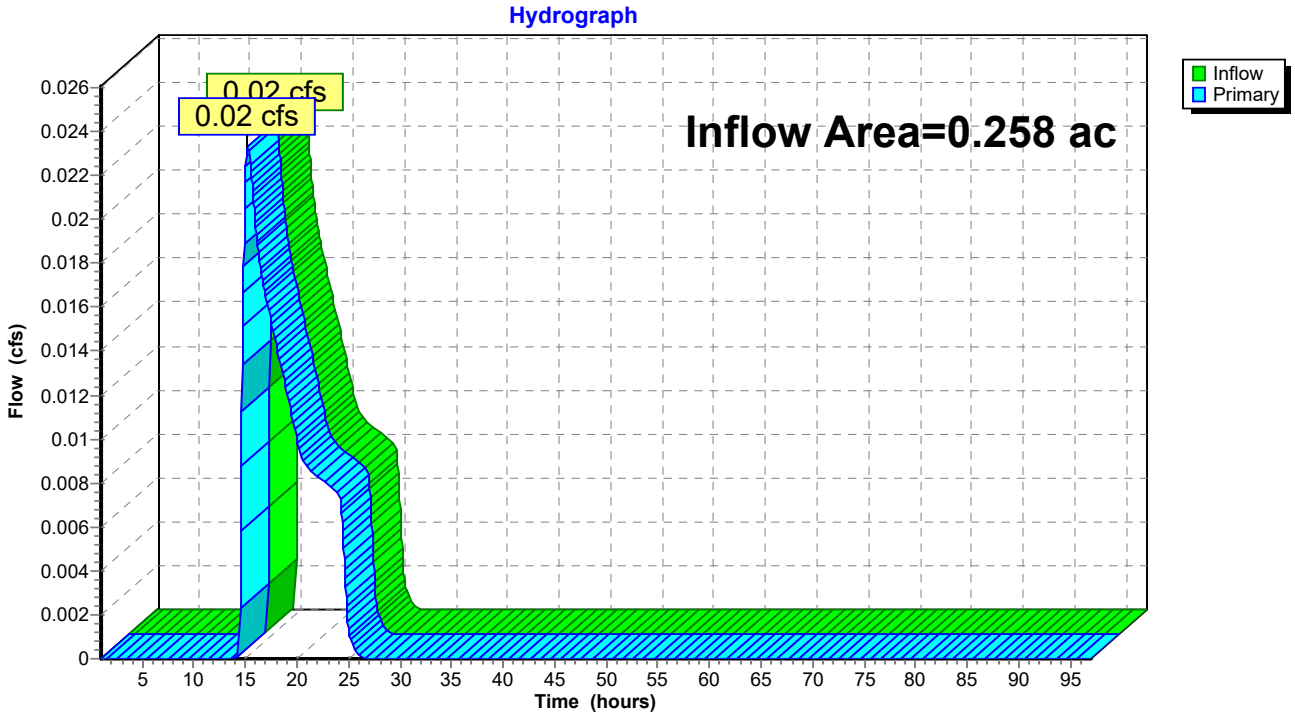


Summary for Link POA1: Coleridge St

Inflow Area = 0.258 ac, 96.76% Impervious, Inflow Depth = 0.48" for 2 YR event
Inflow = 0.02 cfs @ 15.22 hrs, Volume= 0.010 af
Primary = 0.02 cfs @ 15.22 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs

Link POA1: Coleridge St

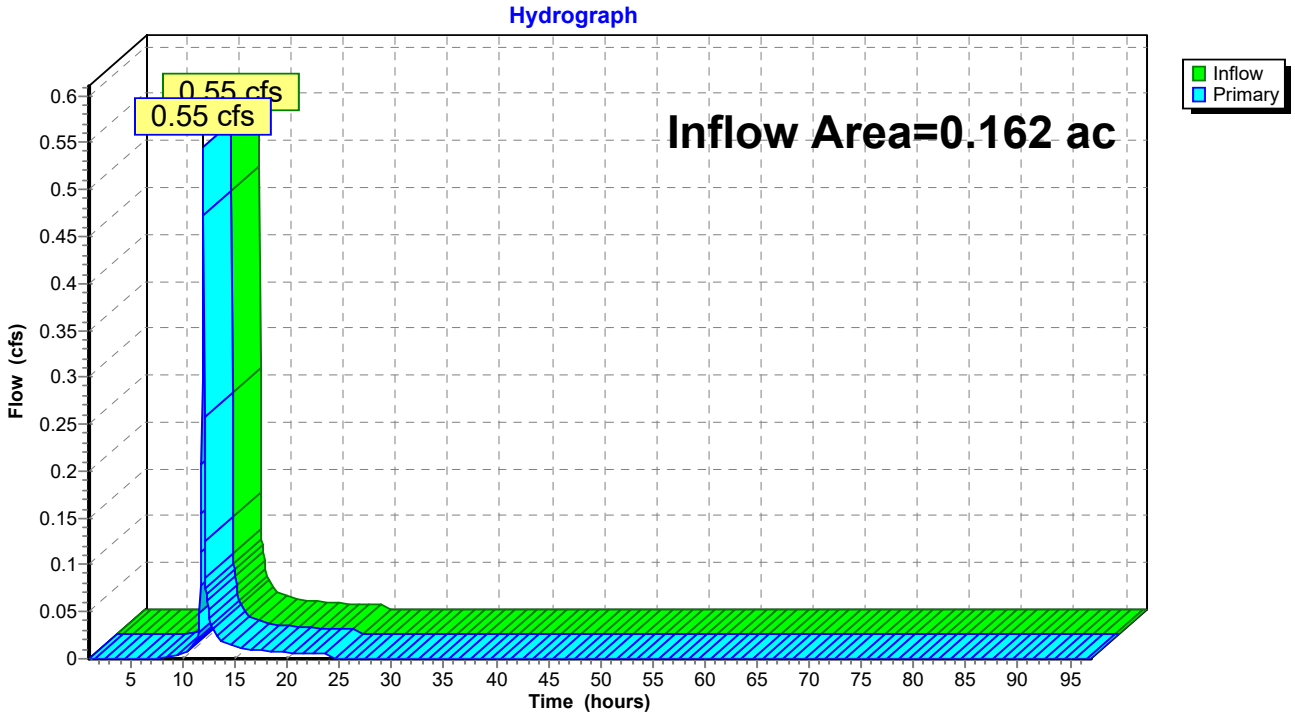


Summary for Link POA2: Ocean

Inflow Area = 0.162 ac, 22.39% Impervious, Inflow Depth = 1.89" for 2 YR event
Inflow = 0.55 cfs @ 11.96 hrs, Volume= 0.026 af
Primary = 0.55 cfs @ 11.96 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs

Link POA2: Ocean



Time span=1.00-97.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment WS1: Post_Dev WS #1 Runoff Area=11,255 sf 96.76% Impervious Runoff Depth=4.55"
Flow Length=82' Tc=5.0 min CN=97 Runoff=1.81 cfs 0.098 af

Subcatchment WS2: Post_Dev WS #2 Runoff Area=7,067 sf 22.39% Impervious Runoff Depth=3.37"
Flow Length=37' Tc=5.0 min UI Adjusted CN=86 Runoff=0.95 cfs 0.046 af

Pond 1P: R-Tank Peak Elev=8.18' Storage=939 cf Inflow=1.81 cfs 0.098 af
Discarded=0.00 cfs 0.006 af Primary=1.55 cfs 0.082 af Outflow=1.55 cfs 0.088 af

Pond 2P: R-Tank Peak Elev=8.59' Storage=1,526 cf Inflow=1.50 cfs 0.077 af
Discarded=0.00 cfs 0.008 af Primary=0.85 cfs 0.045 af Outflow=0.85 cfs 0.053 af

Pond 3P: R-Tank Peak Elev=8.12' Storage=325 cf Inflow=1.55 cfs 0.082 af
Discarded=0.00 cfs 0.002 af Primary=1.50 cfs 0.077 af Outflow=1.50 cfs 0.079 af

Link POA1: Coleridge St Inflow=0.85 cfs 0.045 af
Primary=0.85 cfs 0.045 af

Link POA2: Ocean Inflow=0.95 cfs 0.046 af
Primary=0.95 cfs 0.046 af

Total Runoff Area = 0.421 ac Runoff Volume = 0.144 af Average Runoff Depth = 4.09"
31.93% Pervious = 0.134 ac 68.07% Impervious = 0.286 ac

Summary for Subcatchment WS1: Post_Dev WS #1

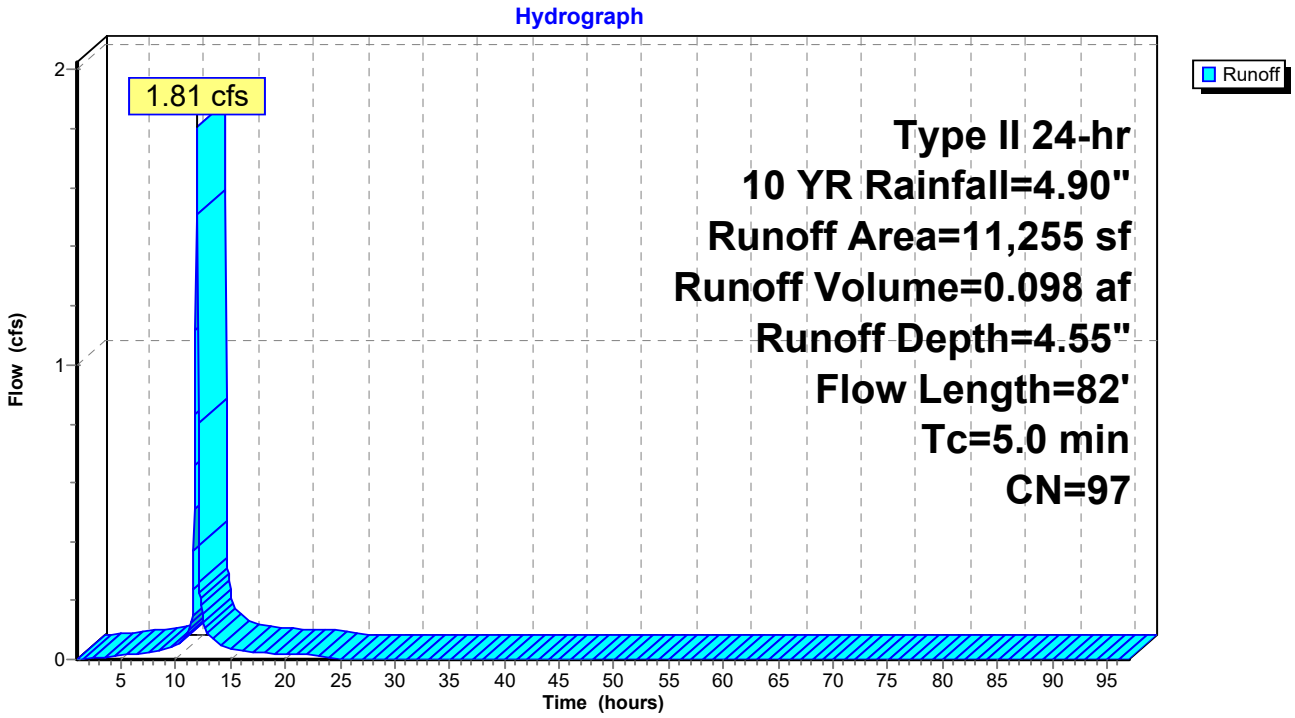
Runoff = 1.81 cfs @ 11.95 hrs, Volume= 0.098 af, Depth= 4.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 YR Rainfall=4.90"

Area (sf)	CN	Description
365	80	>75% Grass cover, Good, HSG D
8,883	98	Unconnected roofs, HSG D
2,007	98	Unconnected pavement, HSG D
11,255	97	Weighted Average
365		3.24% Pervious Area
10,890		96.76% Impervious Area
10,890		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	50	0.0260	1.34		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.26"
0.2	32	0.0230	3.08		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
4.2					**Direct Entry, Direct**
5.0	82	Total			

Subcatchment WS1: Post_Dev WS #1



Summary for Subcatchment WS2: Post_Dev WS #2

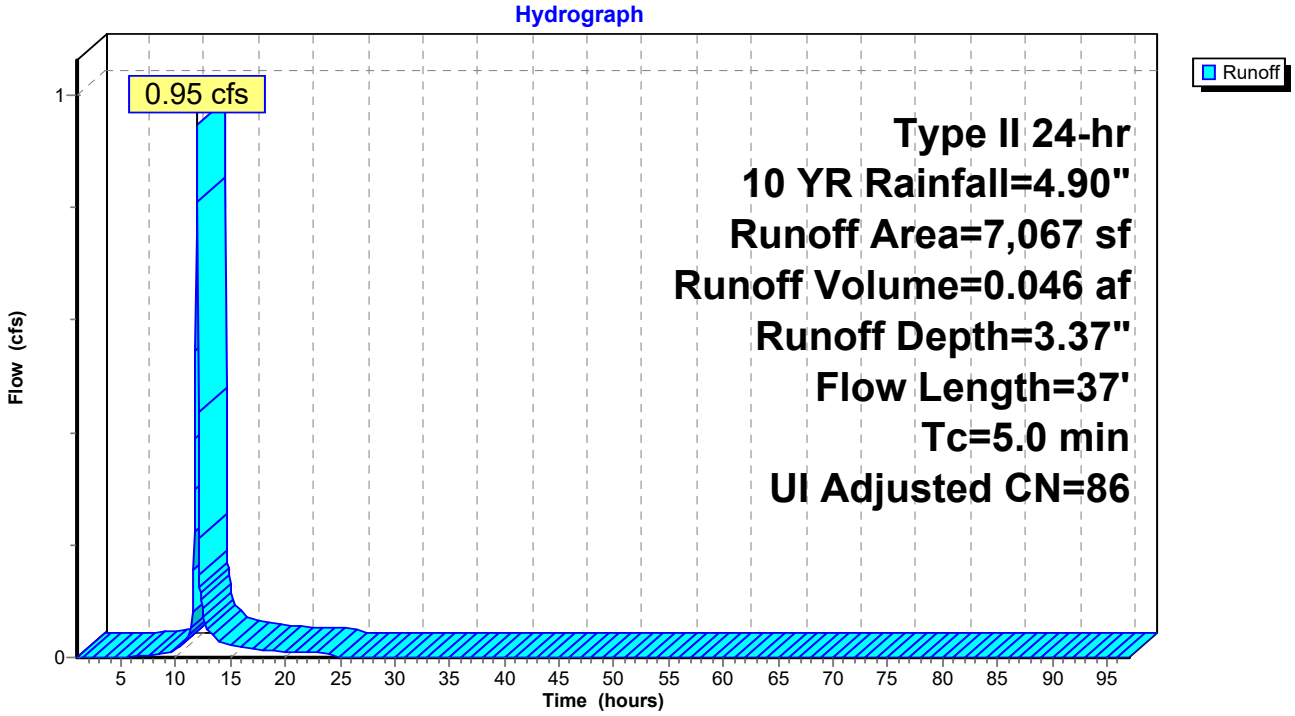
Runoff = 0.95 cfs @ 11.95 hrs, Volume= 0.046 af, Depth= 3.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 YR Rainfall=4.90"

Area (sf)	CN	Adj	Description
1,582	98		Unconnected pavement, HSG D
2,527	80		>75% Grass cover, Good, HSG D
2,958	89		<50% Grass cover, Poor, HSG D
7,067	88	86	Weighted Average, UI Adjusted
5,485			77.61% Pervious Area
1,582			22.39% Impervious Area
1,582			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	24	0.1250	0.27		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.26"
0.1	13	0.0360	3.05		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
3.4					**Direct Entry, Direct**
5.0	37	Total			

Subcatchment WS2: Post_Dev WS #2



Summary for Pond 1P: R-Tank

Inflow Area = 0.258 ac, 96.76% Impervious, Inflow Depth = 4.55" for 10 YR event
Inflow = 1.81 cfs @ 11.95 hrs, Volume= 0.098 af
Outflow = 1.55 cfs @ 11.99 hrs, Volume= 0.088 af, Atten= 15%, Lag= 2.6 min
Discarded = 0.00 cfs @ 2.35 hrs, Volume= 0.006 af
Primary = 1.55 cfs @ 11.99 hrs, Volume= 0.082 af

Routing by Stor-Ind method, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Peak Elev= 8.18' @ 11.99 hrs Surf.Area= 362 sf Storage= 939 cf

Plug-Flow detention time= 252.7 min calculated for 0.088 af (90% of inflow)
Center-of-Mass det. time= 202.1 min (953.5 - 751.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.50'	397 cf	**13.19'W x 27.46'L x 5.67'H Field A** 2,053 cf Overall - 1,060 cf Embedded = 993 cf x 40.0% Voids
#2A	4.75'	1,007 cf	**ACF R-Tank HD 3.5** x 70 Inside #1 Inside= 15.7"W x 59.1"H => 6.14 sf x 2.35'L = 14.4 cf Outside= 15.7"W x 59.1"H => 6.46 sf x 2.35'L = 15.1 cf 7 Rows of 10 Chambers
		1,405 cf	Total Available Storage

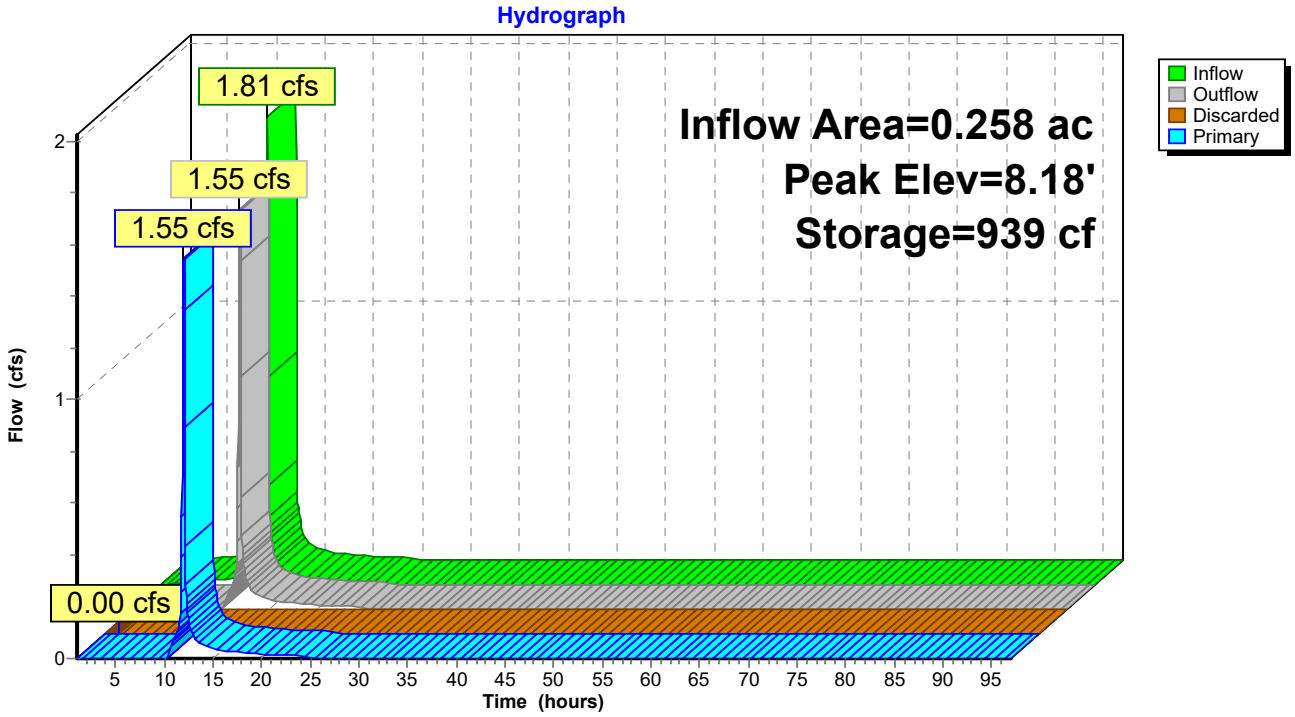
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.00'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	4.50'	**0.090 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 2.35 hrs HW=4.56' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=1.53 cfs @ 11.99 hrs HW=8.16' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.53 cfs @ 4.38 fps)

Pond 1P: R-Tank



Summary for Pond 2P: R-Tank

Inflow Area = 0.258 ac, 96.76% Impervious, Inflow Depth = 3.56" for 10 YR event
Inflow = 1.50 cfs @ 12.02 hrs, Volume= 0.077 af
Outflow = 0.85 cfs @ 12.13 hrs, Volume= 0.053 af, Atten= 43%, Lag= 6.7 min
Discarded = 0.00 cfs @ 11.50 hrs, Volume= 0.008 af
Primary = 0.85 cfs @ 12.13 hrs, Volume= 0.045 af

Routing by Stor-Ind method, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Peak Elev= 8.59' @ 12.13 hrs Surf.Area= 517 sf Storage= 1,526 cf

Plug-Flow detention time= 508.5 min calculated for 0.053 af (69% of inflow)
Center-of-Mass det. time= 413.9 min (1,232.4 - 818.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.50'	536 cf	**13.19'W x 39.19'L x 5.67'H Field A** 2,931 cf Overall - 1,591 cf Embedded = 1,340 cf x 40.0% Voids
#2A	4.75'	1,511 cf	**ACF R-Tank HD 3.5** x 105 Inside #1 Inside= 15.7"W x 59.1"H => 6.14 sf x 2.35'L = 14.4 cf Outside= 15.7"W x 59.1"H => 6.46 sf x 2.35'L = 15.1 cf 7 Rows of 15 Chambers
		2,047 cf	Total Available Storage

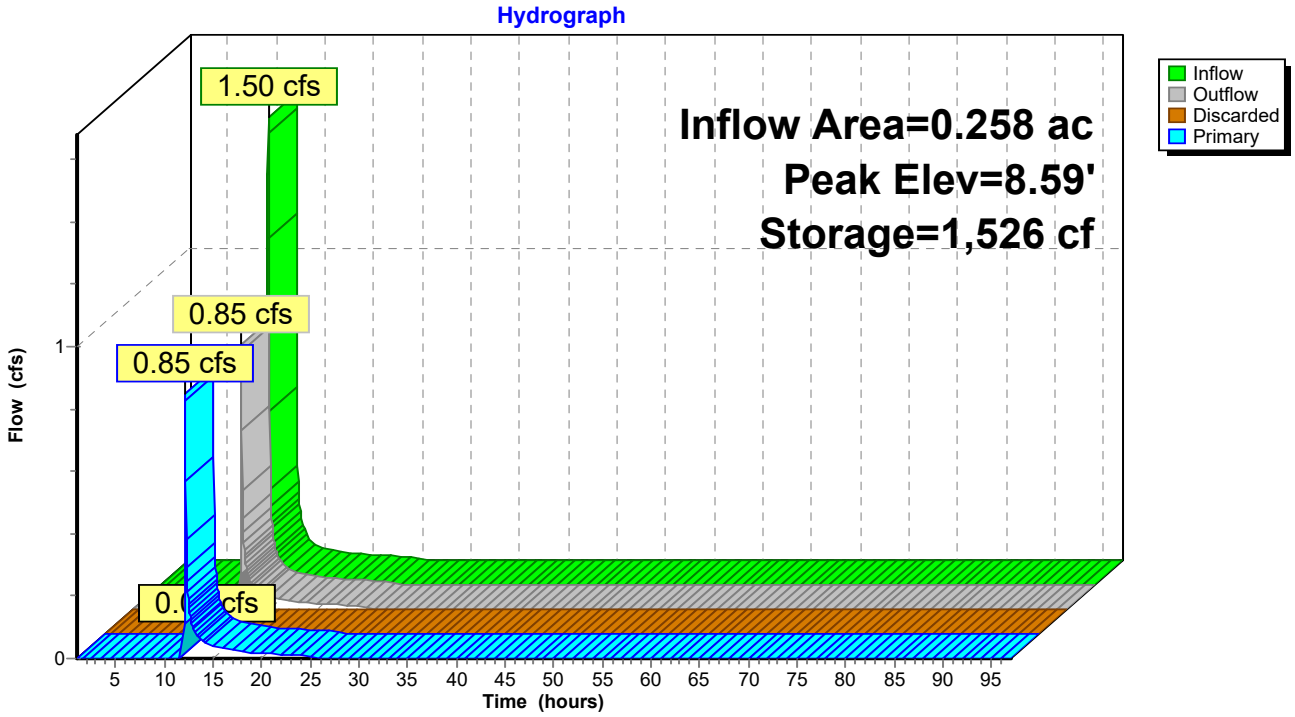
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	8.00'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	4.50'	**0.090 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 11.50 hrs HW=4.60' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.82 cfs @ 12.13 hrs HW=8.57' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.82 cfs @ 2.57 fps)

Pond 2P: R-Tank



Summary for Pond 3P: R-Tank

Inflow Area = 0.258 ac, 96.76% Impervious, Inflow Depth = 3.81" for 10 YR event
Inflow = 1.55 cfs @ 11.99 hrs, Volume= 0.082 af
Outflow = 1.50 cfs @ 12.02 hrs, Volume= 0.079 af, Atten= 3%, Lag= 1.4 min
Discarded = 0.00 cfs @ 10.65 hrs, Volume= 0.002 af
Primary = 1.50 cfs @ 12.02 hrs, Volume= 0.077 af

Routing by Stor-Ind method, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Peak Elev= 8.12' @ 12.02 hrs Surf.Area= 145 sf Storage= 325 cf

Plug-Flow detention time= 98.3 min calculated for 0.079 af (96% of inflow)
Center-of-Mass det. time= 76.9 min (884.8 - 807.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.50'	209 cf	**9.25'W x 15.73'L x 5.67'H Field A** 825 cf Overall - 303 cf Embedded = 522 cf x 40.0% Voids
#2A	4.75'	288 cf	**ACF R-Tank HD 3.5** x 20 Inside #1 Inside= 15.7"W x 59.1"H => 6.14 sf x 2.35'L = 14.4 cf Outside= 15.7"W x 59.1"H => 6.46 sf x 2.35'L = 15.1 cf 4 Rows of 5 Chambers
		497 cf	Total Available Storage

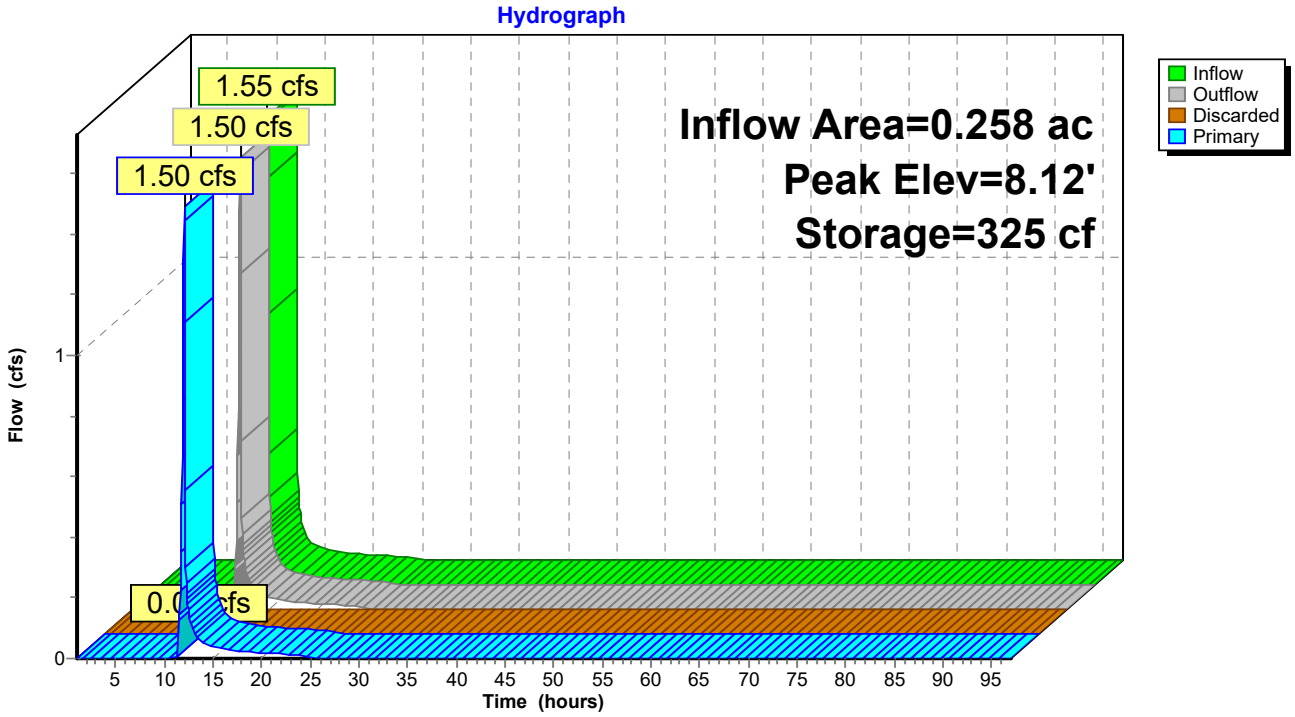
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.00'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	4.50'	**0.090 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 10.65 hrs HW=4.58' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=1.47 cfs @ 12.02 hrs HW=8.10' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.47 cfs @ 4.22 fps)

Pond 3P: R-Tank

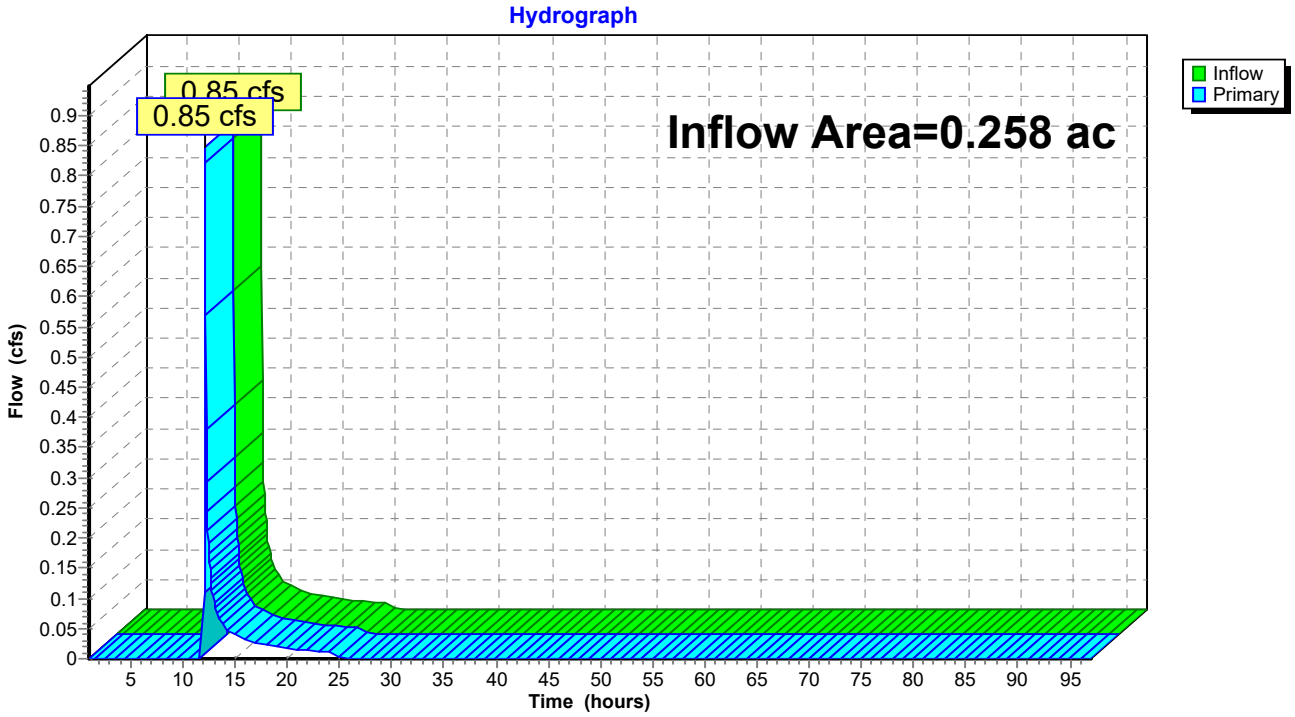


Summary for Link POA1: Coleridge St

Inflow Area = 0.258 ac, 96.76% Impervious, Inflow Depth = 2.11" for 10 YR event
Inflow = 0.85 cfs @ 12.13 hrs, Volume= 0.045 af
Primary = 0.85 cfs @ 12.13 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs

Link POA1: Coleridge St

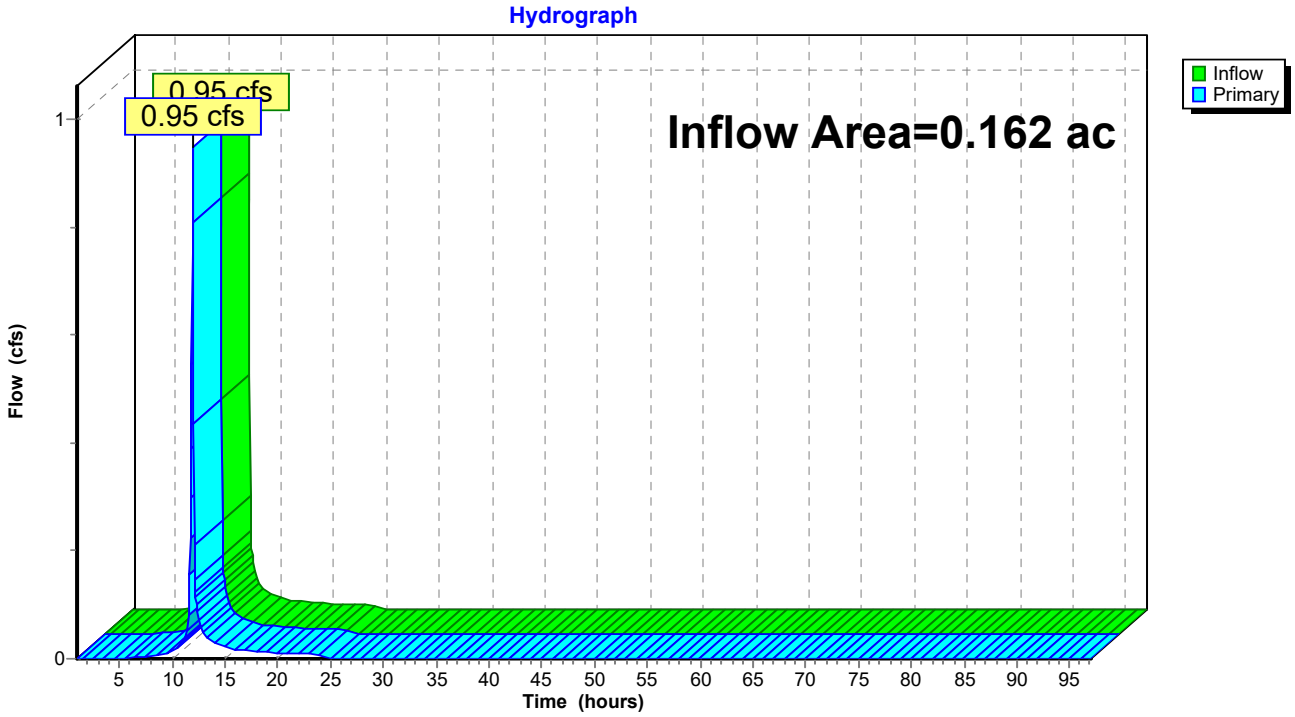


Summary for Link POA2: Ocean

Inflow Area = 0.162 ac, 22.39% Impervious, Inflow Depth = 3.37" for 10 YR event
Inflow = 0.95 cfs @ 11.95 hrs, Volume= 0.046 af
Primary = 0.95 cfs @ 11.95 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs

Link POA2: Ocean



Time span=1.00-97.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment WS1: Post_Dev WS #1 Runoff Area=11,255 sf 96.76% Impervious Runoff Depth>5.83"
Flow Length=82' Tc=5.0 min CN=97 Runoff=2.30 cfs 0.126 af

Subcatchment WS2: Post_Dev WS #2 Runoff Area=7,067 sf 22.39% Impervious Runoff Depth=4.59"
Flow Length=37' Tc=5.0 min UI Adjusted CN=86 Runoff=1.27 cfs 0.062 af

Pond 1P: R-Tank Peak Elev=8.60' Storage=1,051 cf Inflow=2.30 cfs 0.126 af
Discarded=0.00 cfs 0.006 af Primary=1.89 cfs 0.110 af Outflow=1.89 cfs 0.116 af

Pond 2P: R-Tank Peak Elev=9.10' Storage=1,723 cf Inflow=1.83 cfs 0.104 af
Discarded=0.00 cfs 0.008 af Primary=1.47 cfs 0.073 af Outflow=1.47 cfs 0.081 af

Pond 3P: R-Tank Peak Elev=8.52' Storage=362 cf Inflow=1.89 cfs 0.110 af
Discarded=0.00 cfs 0.002 af Primary=1.83 cfs 0.104 af Outflow=1.83 cfs 0.106 af

Link POA1: Coleridge St Inflow=1.47 cfs 0.073 af
Primary=1.47 cfs 0.073 af

Link POA2: Ocean Inflow=1.27 cfs 0.062 af
Primary=1.27 cfs 0.062 af

Total Runoff Area = 0.421 ac Runoff Volume = 0.188 af Average Runoff Depth = 5.35"
31.93% Pervious = 0.134 ac 68.07% Impervious = 0.286 ac

Summary for Subcatchment WS1: Post_Dev WS #1

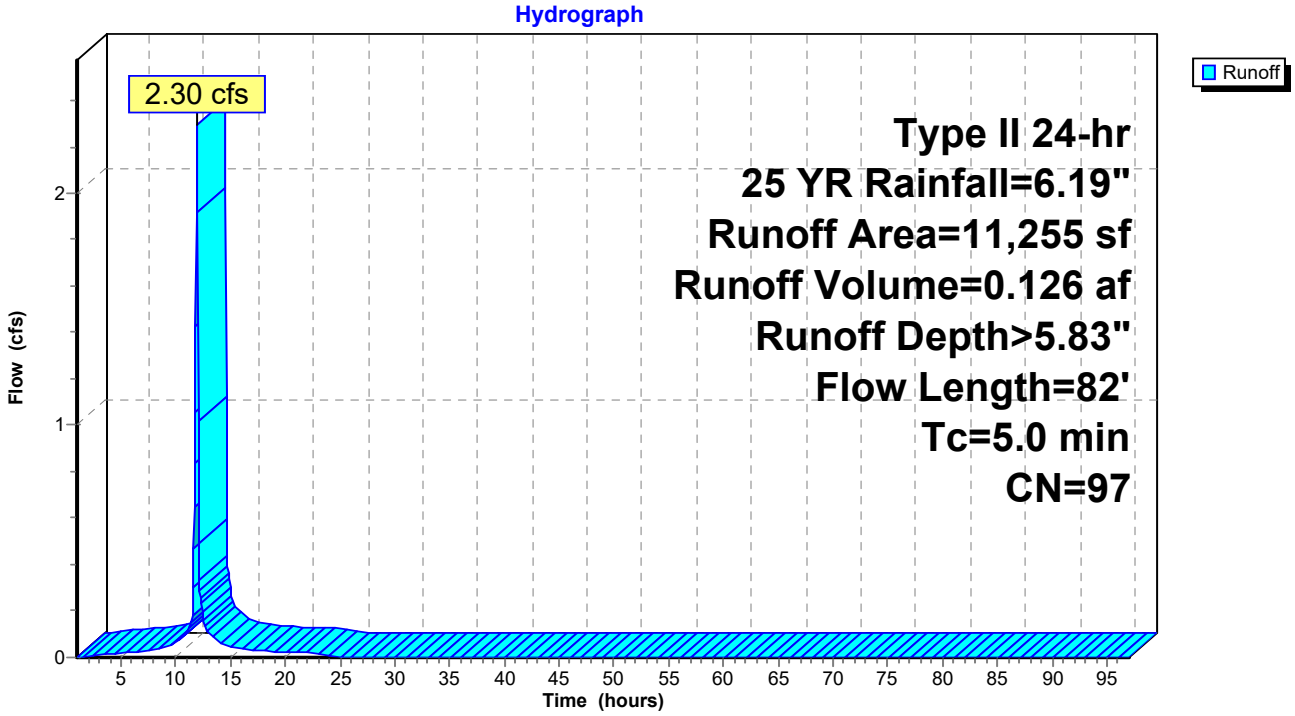
Runoff = 2.30 cfs @ 11.95 hrs, Volume= 0.126 af, Depth> 5.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 YR Rainfall=6.19"

Area (sf)	CN	Description
365	80	>75% Grass cover, Good, HSG D
8,883	98	Unconnected roofs, HSG D
2,007	98	Unconnected pavement, HSG D
11,255	97	Weighted Average
365		3.24% Pervious Area
10,890		96.76% Impervious Area
10,890		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	50	0.0260	1.34		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.26"
0.2	32	0.0230	3.08		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
4.2					**Direct Entry, Direct**
5.0	82	Total			

Subcatchment WS1: Post_Dev WS #1



Summary for Subcatchment WS2: Post_Dev WS #2

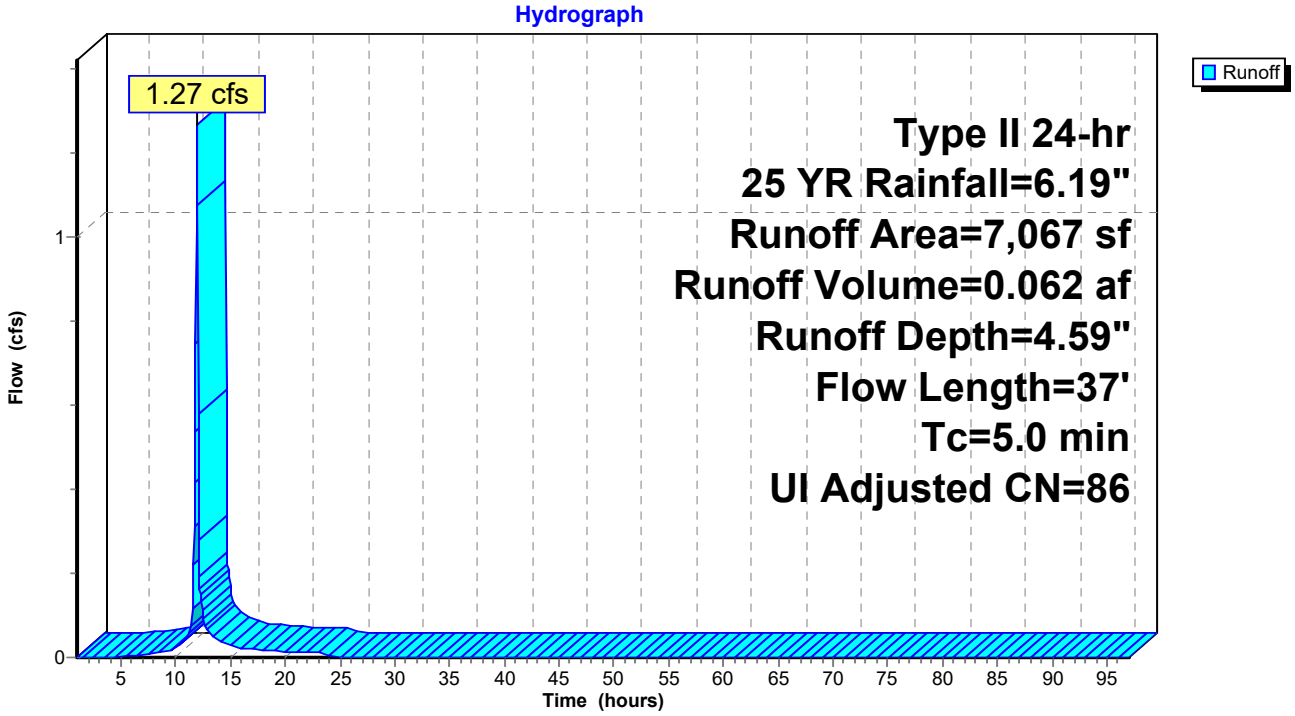
Runoff = 1.27 cfs @ 11.95 hrs, Volume= 0.062 af, Depth= 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 YR Rainfall=6.19"

Area (sf)	CN	Adj	Description
1,582	98		Unconnected pavement, HSG D
2,527	80		>75% Grass cover, Good, HSG D
2,958	89		<50% Grass cover, Poor, HSG D
7,067	88	86	Weighted Average, UI Adjusted
5,485			77.61% Pervious Area
1,582			22.39% Impervious Area
1,582			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	24	0.1250	0.27		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.26"
0.1	13	0.0360	3.05		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
3.4					**Direct Entry, Direct**
5.0	37	Total			

Subcatchment WS2: Post_Dev WS #2



Summary for Pond 1P: R-Tank

Inflow Area = 0.258 ac, 96.76% Impervious, Inflow Depth > 5.83" for 25 YR event
Inflow = 2.30 cfs @ 11.95 hrs, Volume= 0.126 af
Outflow = 1.89 cfs @ 12.00 hrs, Volume= 0.116 af, Atten= 18%, Lag= 2.9 min
Discarded = 0.00 cfs @ 1.90 hrs, Volume= 0.006 af
Primary = 1.89 cfs @ 12.00 hrs, Volume= 0.110 af

Routing by Stor-Ind method, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Peak Elev= 8.60' @ 12.00 hrs Surf.Area= 362 sf Storage= 1,051 cf

Plug-Flow detention time= 204.4 min calculated for 0.116 af (92% of inflow)
Center-of-Mass det. time= 162.6 min (909.2 - 746.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.50'	397 cf	**13.19'W x 27.46'L x 5.67'H Field A** 2,053 cf Overall - 1,060 cf Embedded = 993 cf x 40.0% Voids
#2A	4.75'	1,007 cf	**ACF R-Tank HD 3.5** x 70 Inside #1 Inside= 15.7"W x 59.1"H => 6.14 sf x 2.35'L = 14.4 cf Outside= 15.7"W x 59.1"H => 6.46 sf x 2.35'L = 15.1 cf 7 Rows of 10 Chambers
		1,405 cf	Total Available Storage

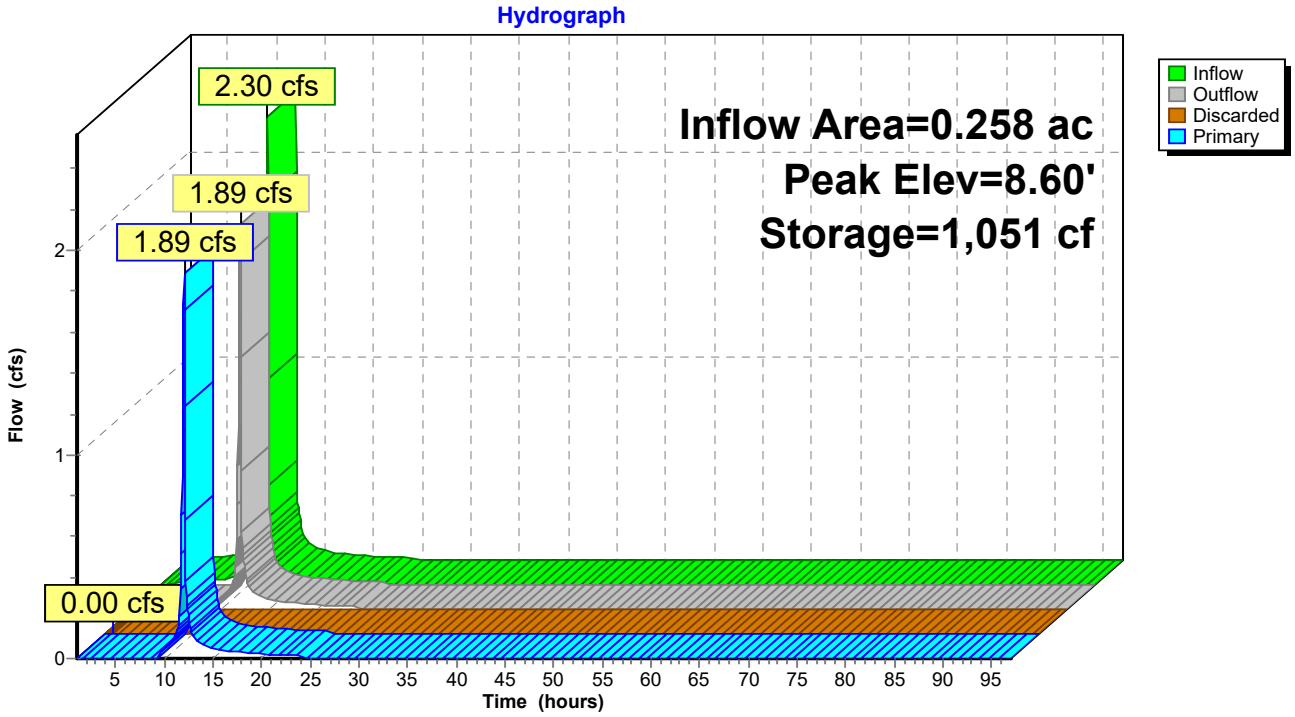
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.00'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	4.50'	**0.090 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 1.90 hrs HW=4.56' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=1.89 cfs @ 12.00 hrs HW=8.59' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.89 cfs @ 5.40 fps)

Pond 1P: R-Tank



Summary for Pond 2P: R-Tank

Inflow Area = 0.258 ac, 96.76% Impervious, Inflow Depth = 4.84" for 25 YR event
Inflow = 1.83 cfs @ 12.03 hrs, Volume= 0.104 af
Outflow = 1.47 cfs @ 12.10 hrs, Volume= 0.081 af, Atten= 20%, Lag= 4.5 min
Discarded = 0.00 cfs @ 10.75 hrs, Volume= 0.008 af
Primary = 1.47 cfs @ 12.10 hrs, Volume= 0.073 af

Routing by Stor-Ind method, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Peak Elev= 9.10' @ 12.10 hrs Surf.Area= 517 sf Storage= 1,723 cf

Plug-Flow detention time= 356.1 min calculated for 0.081 af (77% of inflow)
Center-of-Mass det. time= 276.4 min (1,085.0 - 808.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.50'	536 cf	**13.19'W x 39.19'L x 5.67'H Field A** 2,931 cf Overall - 1,591 cf Embedded = 1,340 cf x 40.0% Voids
#2A	4.75'	1,511 cf	**ACF R-Tank HD 3.5** x 105 Inside #1 Inside= 15.7"W x 59.1"H => 6.14 sf x 2.35'L = 14.4 cf Outside= 15.7"W x 59.1"H => 6.46 sf x 2.35'L = 15.1 cf 7 Rows of 15 Chambers
		2,047 cf	Total Available Storage

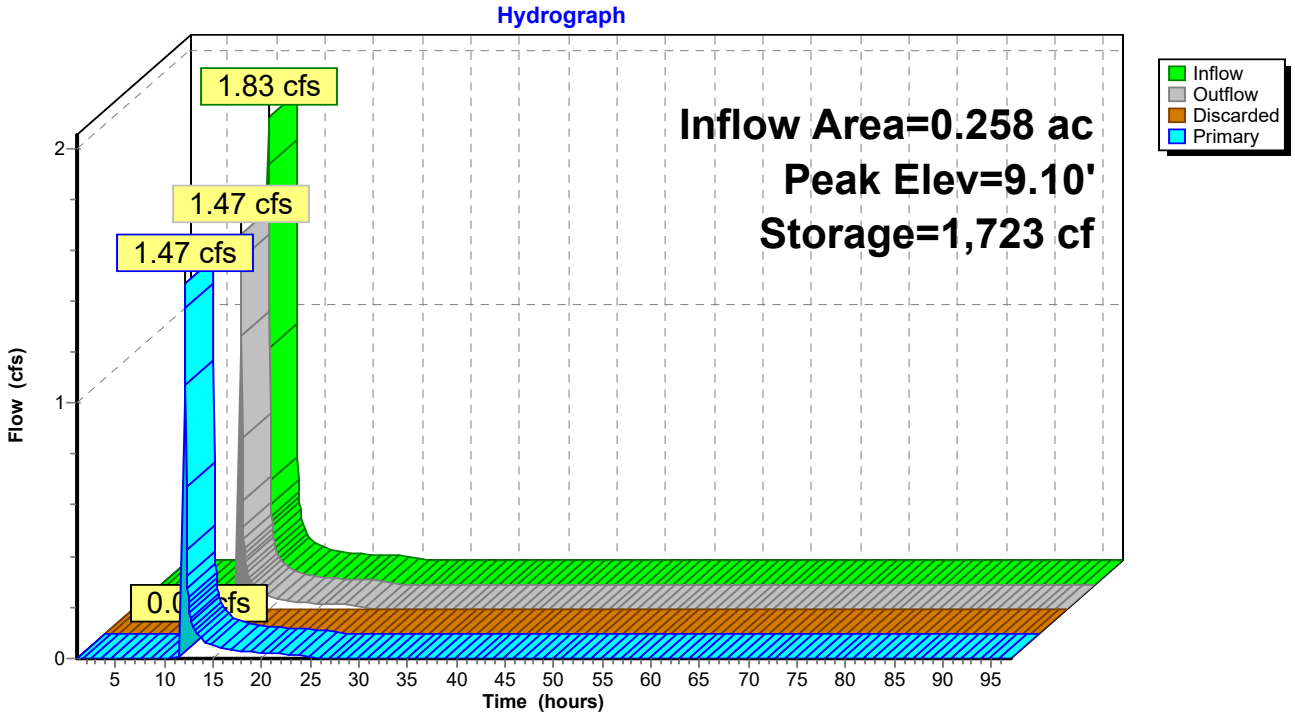
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	8.00'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	4.50'	**0.090 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 10.75 hrs HW=4.58' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=1.46 cfs @ 12.10 hrs HW=9.09' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.46 cfs @ 4.20 fps)

Pond 2P: R-Tank



Summary for Pond 3P: R-Tank

Inflow Area = 0.258 ac, 96.76% Impervious, Inflow Depth = 5.10" for 25 YR event
Inflow = 1.89 cfs @ 12.00 hrs, Volume= 0.110 af
Outflow = 1.83 cfs @ 12.03 hrs, Volume= 0.106 af, Atten= 3%, Lag= 1.7 min
Discarded = 0.00 cfs @ 9.60 hrs, Volume= 0.002 af
Primary = 1.83 cfs @ 12.03 hrs, Volume= 0.104 af

Routing by Stor-Ind method, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Peak Elev= 8.52' @ 12.03 hrs Surf.Area= 145 sf Storage= 362 cf

Plug-Flow detention time= 75.8 min calculated for 0.106 af (97% of inflow)
Center-of-Mass det. time= 59.7 min (857.8 - 798.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.50'	209 cf	**9.25'W x 15.73'L x 5.67'H Field A** 825 cf Overall - 303 cf Embedded = 522 cf x 40.0% Voids
#2A	4.75'	288 cf	**ACF R-Tank HD 3.5** x 20 Inside #1 Inside= 15.7"W x 59.1"H => 6.14 sf x 2.35'L = 14.4 cf Outside= 15.7"W x 59.1"H => 6.46 sf x 2.35'L = 15.1 cf 4 Rows of 5 Chambers
		497 cf	Total Available Storage

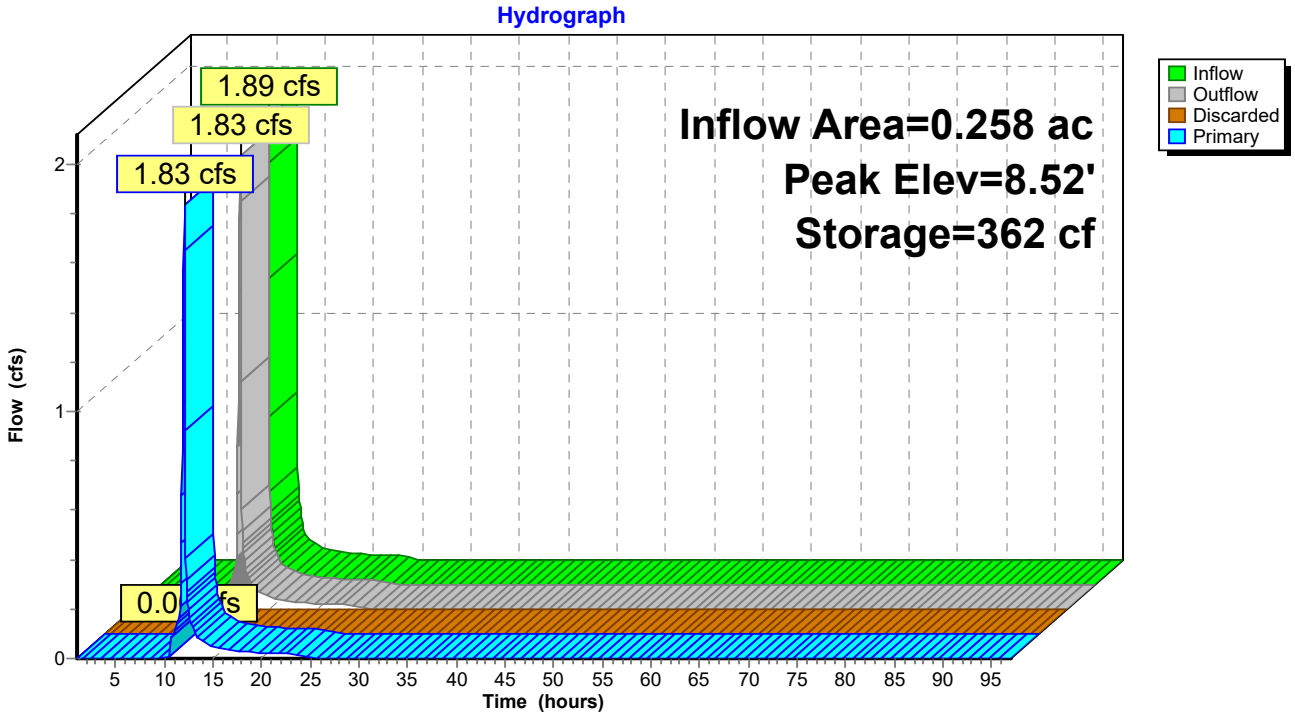
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.00'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	4.50'	**0.090 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 9.60 hrs HW=4.57' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=1.80 cfs @ 12.03 hrs HW=8.48' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.80 cfs @ 5.15 fps)

Pond 3P: R-Tank

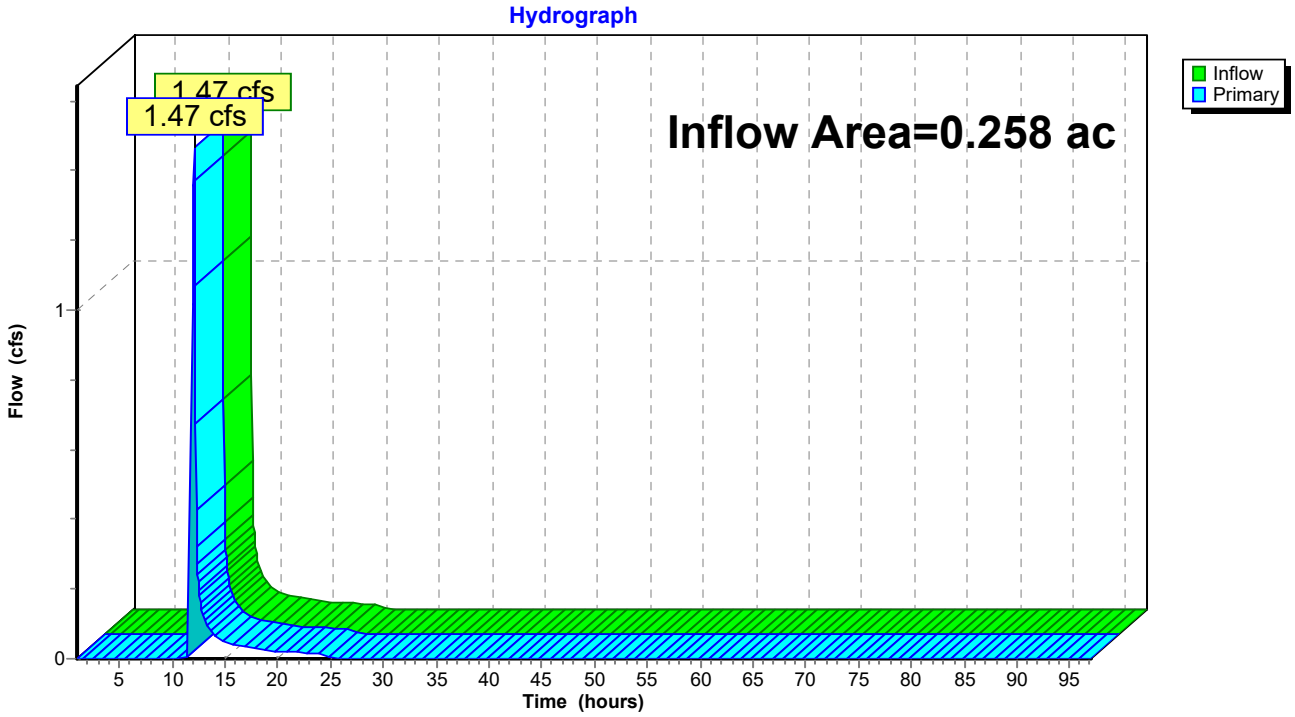


Summary for Link POA1: Coleridge St

Inflow Area = 0.258 ac, 96.76% Impervious, Inflow Depth = 3.39" for 25 YR event
Inflow = 1.47 cfs @ 12.10 hrs, Volume= 0.073 af
Primary = 1.47 cfs @ 12.10 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs

Link POA1: Coleridge St

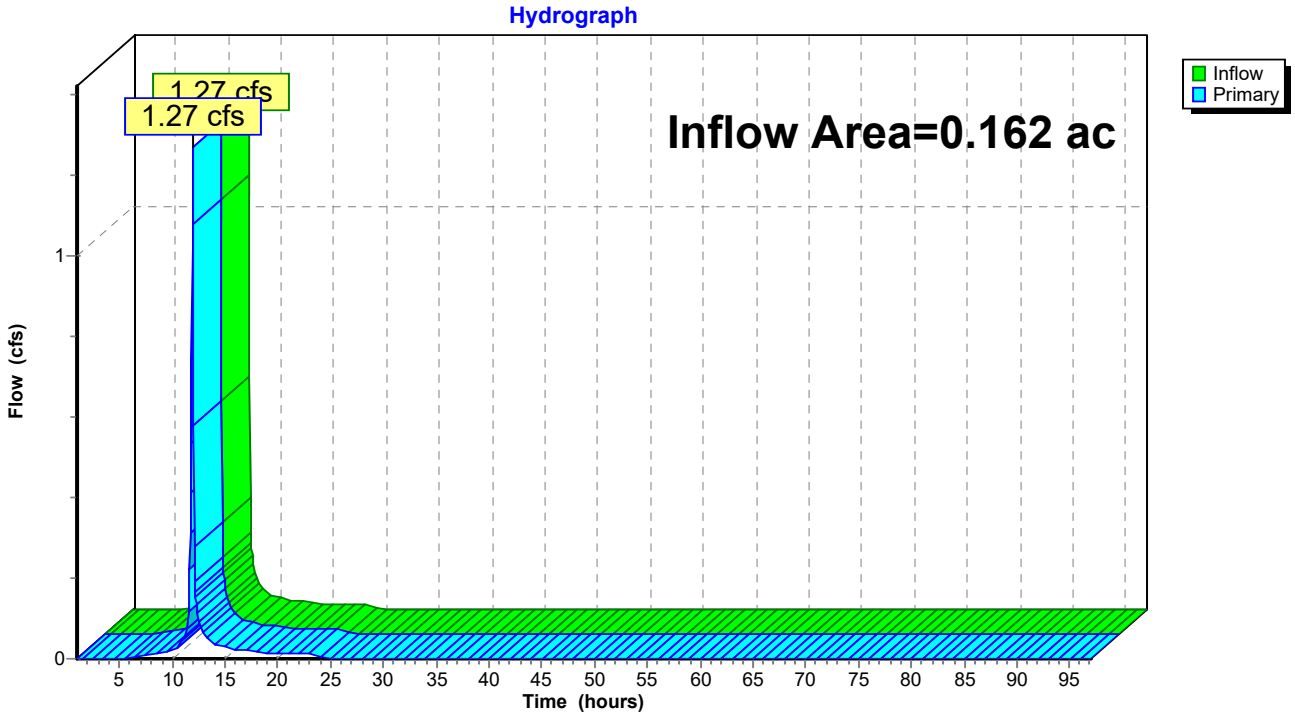


Summary for Link POA2: Ocean

Inflow Area = 0.162 ac, 22.39% Impervious, Inflow Depth = 4.59" for 25 YR event
Inflow = 1.27 cfs @ 11.95 hrs, Volume= 0.062 af
Primary = 1.27 cfs @ 11.95 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs

Link POA2: Ocean



Time span=1.00-97.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment WS1: Post_Dev WS #1 Runoff Area=11,255 sf 96.76% Impervious Runoff Depth>8.47"
Flow Length=82' Tc=5.0 min CN=97 Runoff=3.29 cfs 0.182 af

Subcatchment WS2: Post_Dev WS #2 Runoff Area=7,067 sf 22.39% Impervious Runoff Depth=7.14"
Flow Length=37' Tc=5.0 min UI Adjusted CN=86 Runoff=1.92 cfs 0.097 af

Pond 1P: R-Tank Peak Elev=9.63' Storage=1,322 cf Inflow=3.29 cfs 0.182 af
Discarded=0.00 cfs 0.006 af Primary=2.55 cfs 0.166 af Outflow=2.55 cfs 0.172 af

Pond 2P: R-Tank Peak Elev=9.91' Storage=1,994 cf Inflow=2.44 cfs 0.161 af
Discarded=0.00 cfs 0.008 af Primary=2.11 cfs 0.129 af Outflow=2.11 cfs 0.137 af

Pond 3P: R-Tank Peak Elev=9.44' Storage=447 cf Inflow=2.55 cfs 0.166 af
Discarded=0.00 cfs 0.002 af Primary=2.44 cfs 0.161 af Outflow=2.44 cfs 0.163 af

Link POA1: Coleridge St Inflow=2.11 cfs 0.129 af
Primary=2.11 cfs 0.129 af

Link POA2: Ocean Inflow=1.92 cfs 0.097 af
Primary=1.92 cfs 0.097 af

Total Runoff Area = 0.421 ac Runoff Volume = 0.279 af Average Runoff Depth = 7.96"
31.93% Pervious = 0.134 ac 68.07% Impervious = 0.286 ac

Summary for Subcatchment WS1: Post_Dev WS #1

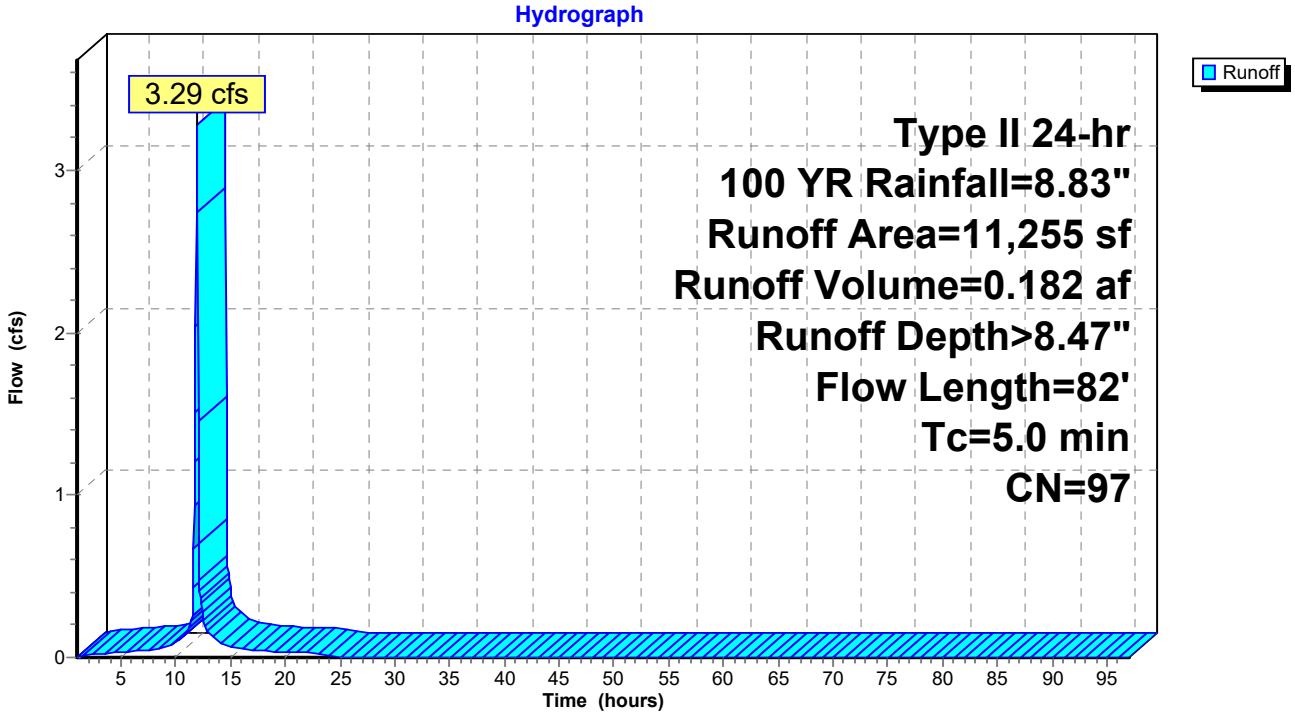
Runoff = 3.29 cfs @ 11.95 hrs, Volume= 0.182 af, Depth> 8.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 YR Rainfall=8.83"

Area (sf)	CN	Description
365	80	>75% Grass cover, Good, HSG D
8,883	98	Unconnected roofs, HSG D
2,007	98	Unconnected pavement, HSG D
11,255	97	Weighted Average
365		3.24% Pervious Area
10,890		96.76% Impervious Area
10,890		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	50	0.0260	1.34		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.26"
0.2	32	0.0230	3.08		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
4.2					**Direct Entry, Direct**
5.0	82	Total			

Subcatchment WS1: Post_Dev WS #1



Summary for Subcatchment WS2: Post_Dev WS #2

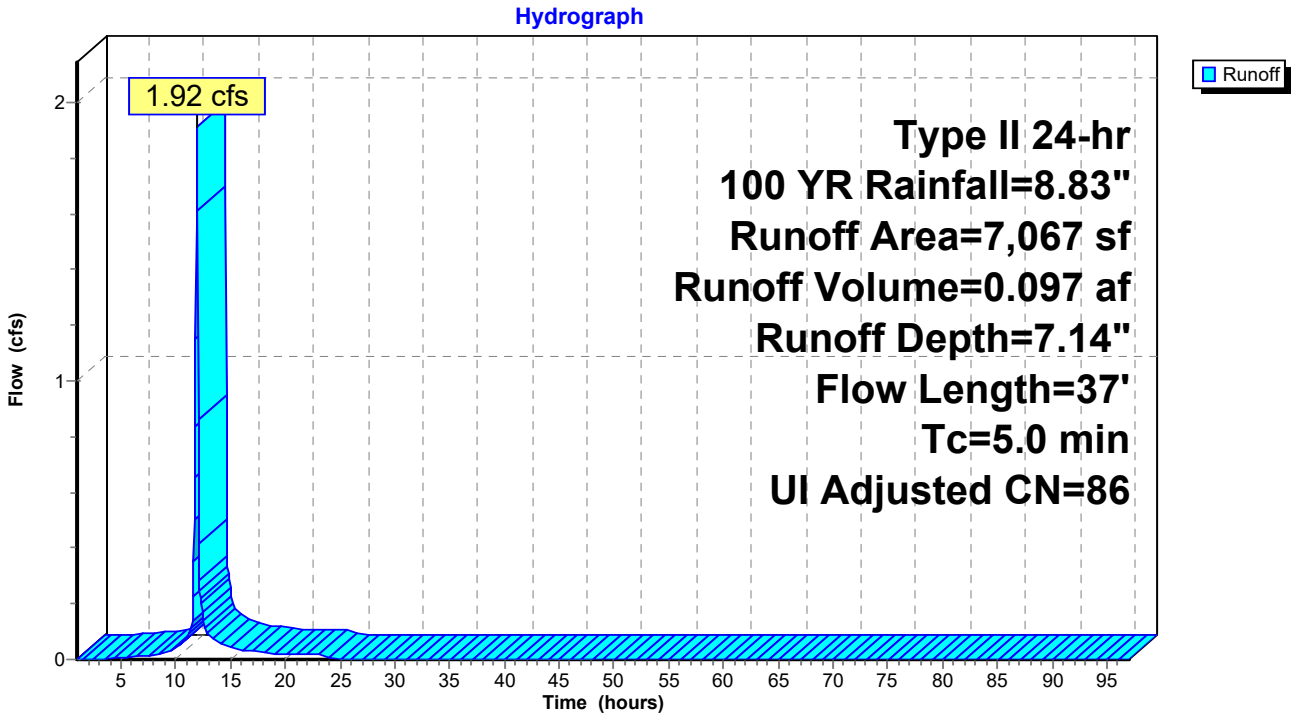
Runoff = 1.92 cfs @ 11.95 hrs, Volume= 0.097 af, Depth= 7.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 YR Rainfall=8.83"

Area (sf)	CN	Adj	Description
1,582	98		Unconnected pavement, HSG D
2,527	80		>75% Grass cover, Good, HSG D
2,958	89		<50% Grass cover, Poor, HSG D
7,067	88	86	Weighted Average, UI Adjusted
5,485			77.61% Pervious Area
1,582			22.39% Impervious Area
1,582			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	24	0.1250	0.27		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.26"
0.1	13	0.0360	3.05		**Shallow Concentrated Flow, B-C** Unpaved Kv= 16.1 fps
3.4					**Direct Entry, Direct**
5.0	37	Total			

Subcatchment WS2: Post_Dev WS #2



Summary for Pond 1P: R-Tank

Inflow Area = 0.258 ac, 96.76% Impervious, Inflow Depth > 8.47" for 100 YR event
Inflow = 3.29 cfs @ 11.95 hrs, Volume= 0.182 af
Outflow = 2.55 cfs @ 12.01 hrs, Volume= 0.172 af, Atten= 22%, Lag= 3.3 min
Discarded = 0.00 cfs @ 1.45 hrs, Volume= 0.006 af
Primary = 2.55 cfs @ 12.01 hrs, Volume= 0.166 af

Routing by Stor-Ind method, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Peak Elev= 9.63' @ 12.01 hrs Surf.Area= 362 sf Storage= 1,322 cf

Plug-Flow detention time= 151.0 min calculated for 0.172 af (95% of inflow)
Center-of-Mass det. time= 118.1 min (858.7 - 740.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.50'	397 cf	**13.19'W x 27.46'L x 5.67'H Field A** 2,053 cf Overall - 1,060 cf Embedded = 993 cf x 40.0% Voids
#2A	4.75'	1,007 cf	**ACF R-Tank HD 3.5** x 70 Inside #1 Inside= 15.7"W x 59.1"H => 6.14 sf x 2.35'L = 14.4 cf Outside= 15.7"W x 59.1"H => 6.46 sf x 2.35'L = 15.1 cf 7 Rows of 10 Chambers
		1,405 cf	Total Available Storage

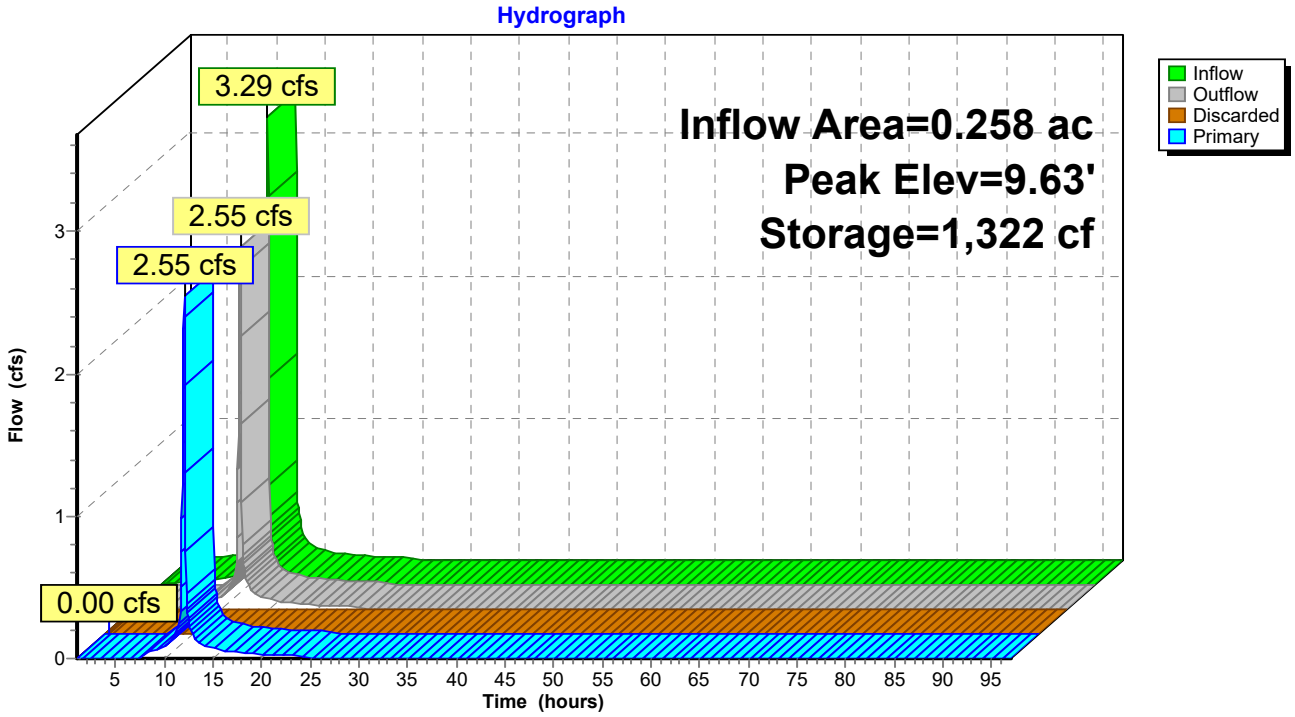
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.00'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	4.50'	**0.090 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 1.45 hrs HW=4.57' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=2.53 cfs @ 12.01 hrs HW=9.60' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 2.53 cfs @ 7.25 fps)

Pond 1P: R-Tank



Summary for Pond 2P: R-Tank

Inflow Area = 0.258 ac, 96.76% Impervious, Inflow Depth = 7.47" for 100 YR event
Inflow = 2.44 cfs @ 12.04 hrs, Volume= 0.161 af
Outflow = 2.11 cfs @ 12.11 hrs, Volume= 0.137 af, Atten= 13%, Lag= 4.3 min
Discarded = 0.00 cfs @ 9.15 hrs, Volume= 0.008 af
Primary = 2.11 cfs @ 12.11 hrs, Volume= 0.129 af

Routing by Stor-Ind method, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Peak Elev= 9.91' @ 12.11 hrs Surf.Area= 517 sf Storage= 1,994 cf

Plug-Flow detention time= 237.8 min calculated for 0.137 af (85% of inflow)
Center-of-Mass det. time= 172.7 min (966.8 - 794.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.50'	536 cf	**13.19'W x 39.19'L x 5.67'H Field A** 2,931 cf Overall - 1,591 cf Embedded = 1,340 cf x 40.0% Voids
#2A	4.75'	1,511 cf	**ACF R-Tank HD 3.5** x 105 Inside #1 Inside= 15.7"W x 59.1"H => 6.14 sf x 2.35'L = 14.4 cf Outside= 15.7"W x 59.1"H => 6.46 sf x 2.35'L = 15.1 cf 7 Rows of 15 Chambers
		2,047 cf	Total Available Storage

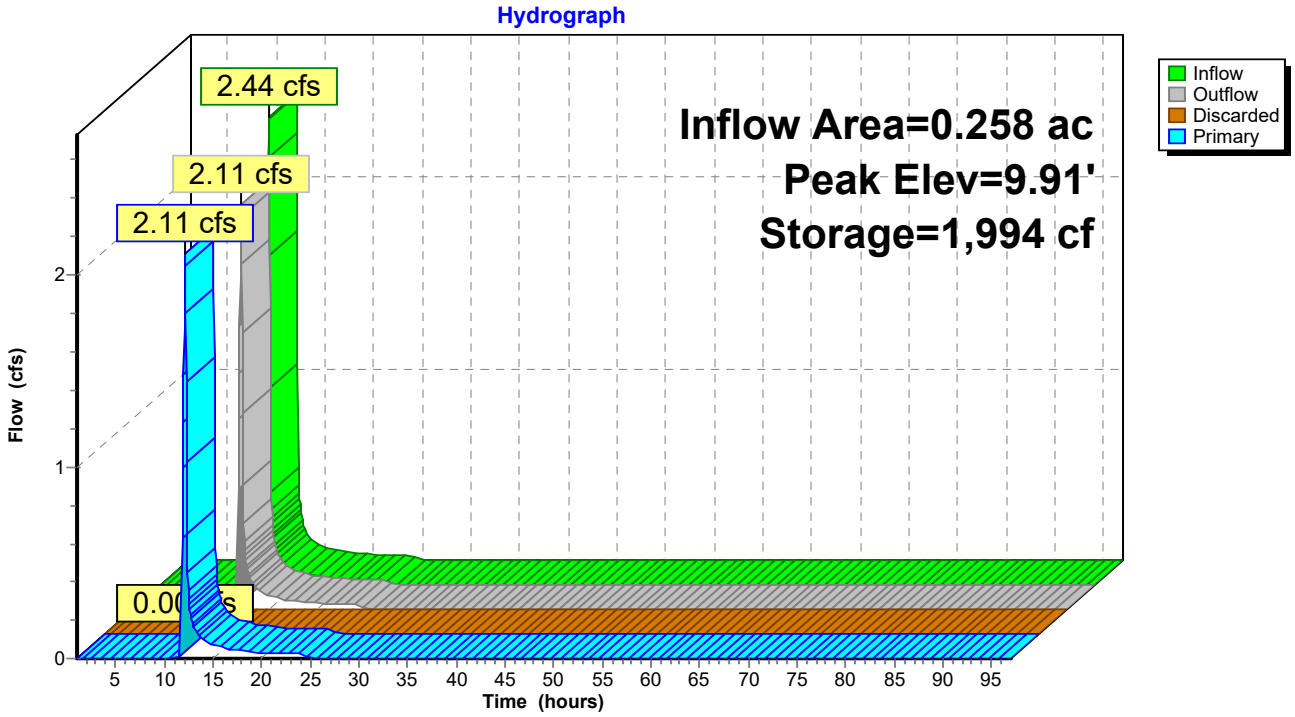
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	8.00'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	4.50'	**0.090 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 9.15 hrs HW=4.60' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=2.09 cfs @ 12.11 hrs HW=9.88' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 2.09 cfs @ 5.99 fps)

Pond 2P: R-Tank



Summary for Pond 3P: R-Tank

Inflow Area = 0.258 ac, 96.76% Impervious, Inflow Depth = 7.73" for 100 YR event
Inflow = 2.55 cfs @ 12.01 hrs, Volume= 0.166 af
Outflow = 2.44 cfs @ 12.04 hrs, Volume= 0.163 af, Atten= 4%, Lag= 2.1 min
Discarded = 0.00 cfs @ 7.85 hrs, Volume= 0.002 af
Primary = 2.44 cfs @ 12.04 hrs, Volume= 0.161 af

Routing by Stor-Ind method, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs
Peak Elev= 9.44' @ 12.04 hrs Surf.Area= 145 sf Storage= 447 cf

Plug-Flow detention time= 52.9 min calculated for 0.163 af (98% of inflow)
Center-of-Mass det. time= 42.5 min (826.2 - 783.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	4.50'	209 cf	**9.25'W x 15.73'L x 5.67'H Field A** 825 cf Overall - 303 cf Embedded = 522 cf x 40.0% Voids
#2A	4.75'	288 cf	**ACF R-Tank HD 3.5** x 20 Inside #1 Inside= 15.7"W x 59.1"H => 6.14 sf x 2.35'L = 14.4 cf Outside= 15.7"W x 59.1"H => 6.46 sf x 2.35'L = 15.1 cf 4 Rows of 5 Chambers
		497 cf	Total Available Storage

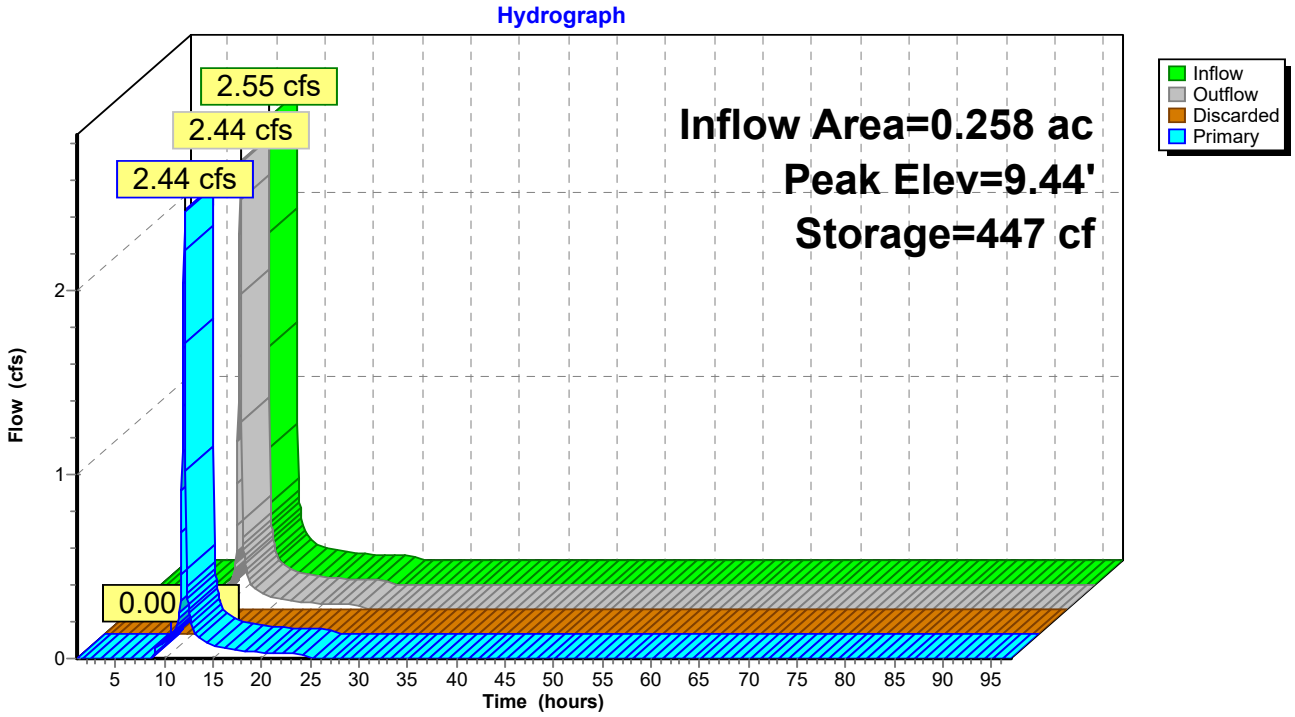
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.00'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	4.50'	**0.090 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 7.85 hrs HW=4.61' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=2.42 cfs @ 12.04 hrs HW=9.41' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 2.42 cfs @ 6.93 fps)

Pond 3P: R-Tank

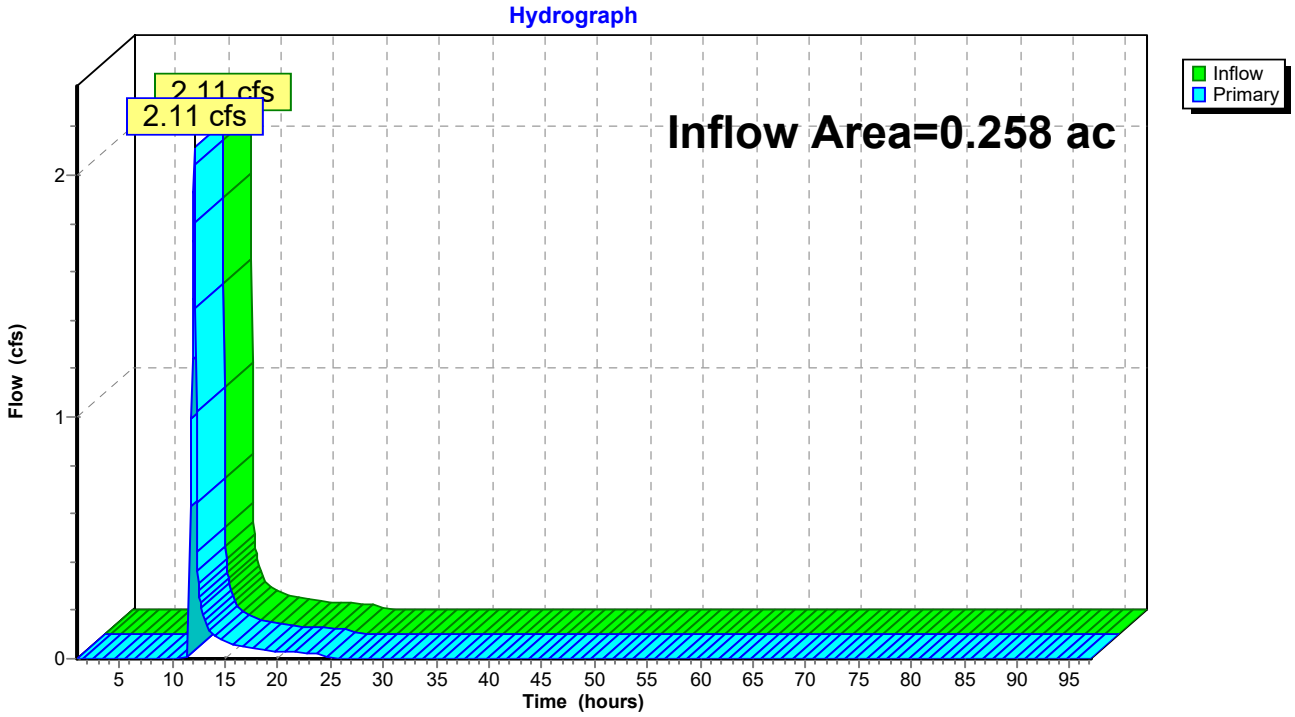


Summary for Link POA1: Coleridge St

Inflow Area = 0.258 ac, 96.76% Impervious, Inflow Depth = 6.01" for 100 YR event
Inflow = 2.11 cfs @ 12.11 hrs, Volume= 0.129 af
Primary = 2.11 cfs @ 12.11 hrs, Volume= 0.129 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs

Link POA1: Coleridge St

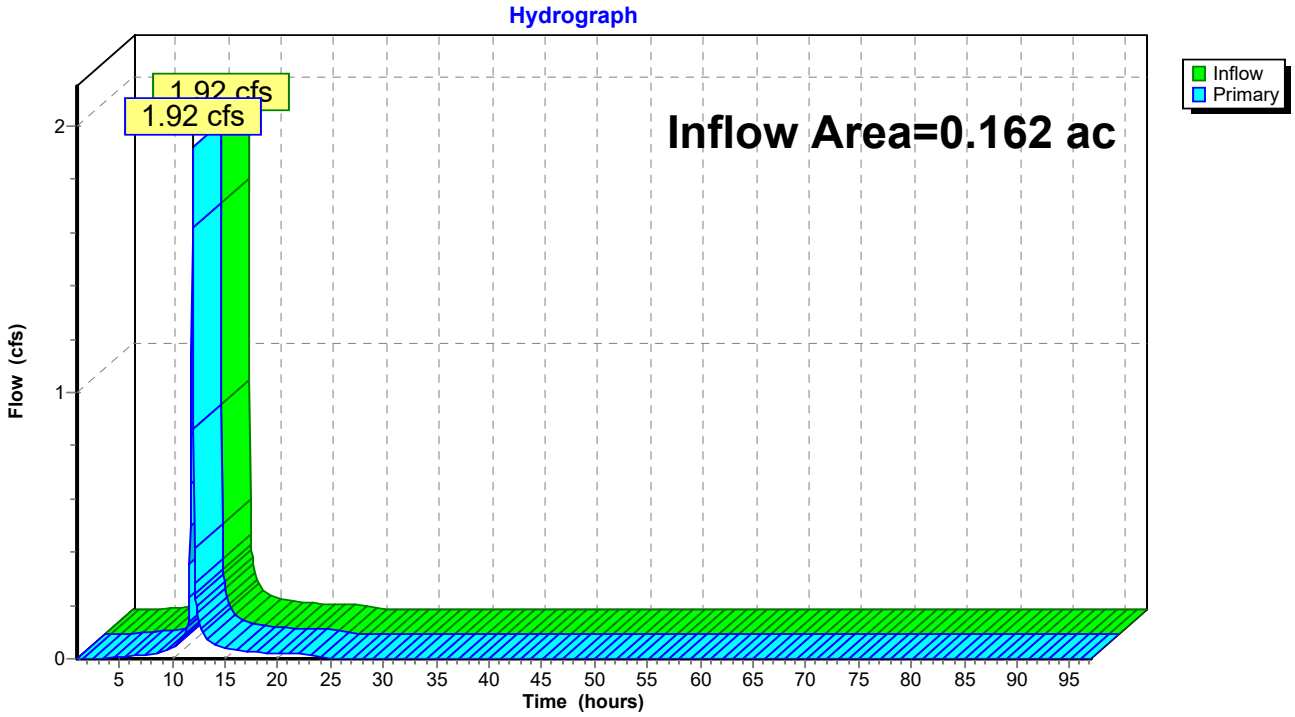


Summary for Link POA2: Ocean

Inflow Area = 0.162 ac, 22.39% Impervious, Inflow Depth = 7.14" for 100 YR event
Inflow = 1.92 cfs @ 11.95 hrs, Volume= 0.097 af
Primary = 1.92 cfs @ 11.95 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-97.00 hrs, dt= 0.05 hrs

Link POA2: Ocean



APPENDIX B – HYDRAULIC CALCULATIONS

Recharge Volume Calculation

The Residences at Coleridge Coast
181 -183 Coleridge Street
East Boston, MA

Recharge to Groundwater Required

Review of the United States Department of Agricultural (USDA) Natural Resources Conservation Service (NRCS) indicates that the parent soils within the development portion of the site consist of Udorthonts, Wet Substratum with an unclassified Hydrologic Soil Group assumed to be "D".

BWSC determines the required recharge volume using a calculation of 1.0 inches of runoff multiplied by the total contributing impervious cover of the next phase. The subsurface infiltration system will achieve the required recharge volume by collecting runoff from the impervious surfaces and roof areas throughout the new phase development watershed.

The total impervious cover of the new development watershed is equal to 12,472 ft², therefore;

BWSC Requirement
Required Recharge Volume = 1.0 inches x Total Impervious Area
= 1.0 inches x 11,472 ft² x (1/12 in/ft) = 1,039 ft³

Recharge to Groundwater Provided

1. The required recharge volume was achieved in the subsurface infiltration/detention system consisting of 195 - Stormwater® R-Tank® Chambers (See Post-Dev Hydrocad Report)

Total Recharge Volume provided in system = 1,767 ft³ > 1,039 ft³

APPENDIX C – SUPPORTING INFORMATION

CONSTRUCTION PHASE STORMWATER OPERATION AND MAINTENANCE PLAN

Residences at Coleridge Street
181 - 183 Coleridge Street
East Boston, Massachusetts

I. OWNER:

Rock Development
546 E Broadway
Boston, MA 02127

II. RESPONSIBLE PARTY:

Rock Development
546 E Broadway
Boston, MA 02127

III. PROJECT OVERVIEW:

Prevention of offsite flooding, improvement to water quality prior to leaving the property and promoting groundwater recharge are the main priorities of the project with respect to stormwater management. Also included in this plan is periodic sweeping to remove sand and sediment.

IV. CONSTRUCTION PERIOD – BEST MANAGEMENT PRACTICES:

a) MONITORING

During site clearing and grading phase, temporary erosion control and roadways will be inspected at least once every seven (7) calendar days and within twenty-four (24) hours after any storm event of one quarter inch (0.25") or greater. Sediment accumulation shall be removed once a depth of one-third the height of the erosion control device is achieved. Damaged erosion controls shall be replaced immediately.

b) WASTE DISPOSAL

Metal dumpsters for waste disposal will be located on-site. The Site will be monitored and maintained daily to ensure the site is free of trash and construction debris.

c) DUST MONITORING PLAN

A construction phase dust monitoring plan will be established and records maintained on site by the contractor. This will improve air quality and reduce impacts to the surrounding areas. Some recommended methods for controlling dust include:

- Provide a vegetative cover to disturbed areas at the end of earth disturbing activities as soon as practical, but no longer than 14 days.
- Apply a mulch layer to disturbed areas at the end of earth disturbing activities as soon as practical, but no longer than 14 days.
- Cover or sod stockpiles unused for a maximum of 7 days.
- Watering surface materials and soil stockpiles.
- Use covered trucks.
- Minimize spoils stockpiled on site.
- Monitor construction practices to minimize unnecessary disturbance and transfer of soil materials.
- Conduct periodic street cleaning along the site frontage during excavation and hauling of materials.
- Pave driveways and parking surfaces (where applicable and feasible).
- Assign a person to remove windblown debris daily.
- Limit the idling of engines or stopped vehicles (except for asphalt and cement concrete mixing trucks and equipment) to five minutes.

d) SPILL PREVENTION AND RESPONSE

Construction activities for this project will necessitate the use of equipment fuels, engine fluids, paints, and adhesives on the construction site and must be considered in the spill prevention and response practices for the project.

The general contractor will ensure that areas where potential pollutants can occur are well protected with erosion control barriers and clean up equipment to prevent discharge of waste water, fuels, and oil from vehicles and any other toxic or hazardous spills from the project site.

Should a spill occur, equipment necessary to attend to spills or leaks shall be stored on site in an equipment trailer and shall consist of the following:

- Safety goggles;
- Chemically resistant gloves and overshoe boots;
- Water and chemical fire extinguishers;
- Shovels;
- Absorbent materials;
- Containers suitable for storage of site specific materials; and
- First aid kits.

Spills and leaks shall be treated according to the type, volume, and location of the released material. Generally, mitigation shall consist of the following:

- Prevention of additional material storage;
- Containment of spilled material;
- Safe, thorough, and environmentally sound removal of spilled material; and
- Remediation of environmental damage.

The following describes specific preventative methods to be employed for materials to be used on site.

Fuels, Antifreeze, and Coolant for Construction Equipment and Generators:

In the case of a fuel spill on a pervious surface, the spill shall be contained and treated with absorbent polymer material immediately and the affected soil shall be excavated and stored in an impervious, bermed area for removal by a professional hazardous material removal company. In the case of a fuel spill on an impervious surface, the spill shall be contained to prevent runoff and treated with absorbent material.

Adhesive and Paints:

Adhesive and paint materials shall be transferred to the site on an as needed basis. Any containers to be stored on site shall be clearly labeled and stored in non-flammable lockers. Wash water from paints shall be containerized; washing of paints into the storm drainage system shall be prohibited. Water-based and latex paints shall either be recycled or dried up and thrown out with the regular household trash, and oil-based paints and thinners shall be removed from the site by a local professional hazardous material removal company.

City of Boston Emergency Contacts are as Follows:

- Emergency Management: (888) 304-1133 (MassDEP 24-Hour Spill Reporting)
- Police Department: 911
- Fire Department: (617) 343-3550 (All Divisions)

For spills of less than five (5) gallons of material, mitigation shall consist of source control, containment, and clean-up with absorbent materials, unless an imminent hazard necessitates that a local professional hazardous material removal company become involved to mitigate the spill.

For spills greater than five (5) gallons of material, the incident shall be reported immediately to the MassDEP Hazardous Waste Incident Response Group at (617)-792-7653 and a professional emergency response contractor. Information that shall be provided to the said contractor is as follows:

- Type of material spilled;
- Quantity of material spilled;
- Location of the spill; and

- Time of the spill.

The contractor shall then employ measures to prevent further spillage, contain and/or clean up the spill.

If a Reportable Quantity (RQ) of material is spilled during construction, the National Response Center (NRC) shall be notified immediately at (800) 424-8802. Reportable Quantities of hazardous material are available in 310 CMR 40: Massachusetts Contingency Plan Subpart P: Massachusetts Oil and Hazardous Material List. Within 14 days a report shall be submitted to the EPA New England Regional Office describing the following:

- Type of material released;
- Date and circumstances of the release; and
- Measures taken to prevent future releases.

The report shall be submitted to the EPA New England Regional Office at the following address:

EPA New England, Region 1
1 Congress Street, Suite 1100
Boston, MA 02114-2023

Frequent inspections of areas where potential spill could occur is key to prevention. Inspection shall take place, at a minimum of once a day and within 24 hours of the occurrence of a storm event of 0.25 inches or greater or the occurrence of runoff from snowmelt sufficient to cause discharge.

An inspection report must be completed within 24 hours of completing any site inspection. Each inspection report must include the following:

- The inspection date;
- Names and titles of personnel making the inspection;
- A summary of your inspection findings, covering the observations made in accordance with Part 4.6 of the 2017 Construction General Permit, including any necessary maintenance or corrective actions;
- If inspecting because of rainfall measuring 0.25 inches or greater, include the applicable rain gauge or weather station readings that triggered the inspection; and
- If determined that it is unsafe to inspect a portion of the site, describe the reason found to be unsafe and specify the locations to which the conditions apply.

e) STATE & LOCAL SANITARY LAWS

Portable sanitation units will be placed on-site during construction and will be serviced weekly.

V. POST CONSTRUCTION – BEST MANAGEMENT PRACTICES:

a) NON – STRUCTURAL BEST MANAGEMENT PRACTICES

Implementing source controls can aid in reducing the type and concentration of contaminants in stormwater runoff, and result in improved water quality. This method for pollution prevention and non-structural BMP's is to minimize contact of stormwater runoff with potential pollutants. Measures such as street sweeping, managing snow removal, and educating the owner/operator of good maintenance practices are examples of non-structural BMPs.

PUBLIC AWARENESS

The responsible party shall issue periodic reminders to the building tenants to avoid dumping or releasing pollutants into the storm drains and onto the ground.

i. STREET SWEEPING

Driveway and parking lot sweeping is an integral part of the storm water management plan as a fundamental component of source reduction efforts. Typically, parking lot and roadway sweeping activities will begin around April 1. However, sweeping should be performed in cases of winter thaw and the onset of early spring. It is important to remove accumulated sediment from parking areas and drive aisles prior to heavy and frequent spring precipitation.

Parking lot sweeping should be performed a minimum of two times annually (April 1 and September 1).

ii. SNOW AND SNOWMELT MANAGEMENT

It is suggested that during minor snowfall events resulting in accumulations of up to six (6) inches of snow, the snow be stockpiled in a designated area determined by the property owner. Some suggested snow stockpile locations include the landscape areas throughout the site.

During high snowfall events resulting in accumulations in excess of six (6) inches, it is suggested that additional snow be stockpiled in a second area to be designated by the property owner. The removal contractor shall avoid stockpiling snow directly on top of the catch basin grate. Stockpiled snow shall not extend more than 6 feet from the edge of pavement to allow normal vehicular travel.

It is the responsibility of the owner to make sure the snow removal contractor utilizes the designated areas according to the procedures described herein. The owner shall remove sediment from snow storage areas every spring.

It is suggested that no de-icing compounds, such as calcium chloride ($CaCl_2$), calcium magnesium acetate (CMA) or the like be used on the site. The snow removal contractor shall store all sand off-site. No quantities of sand compounds shall be stored on site.

iii. PUBLIC SAFETY FEATURES

The project has been designed with consideration for public safety and does not require any specific features as part of the stormwater management system.

b) STRUCTURAL BEST MANAGEMENT PRACTICES

Structural BMPs are those facilities that are designed to manage both stormwater quantity and quality. Proper maintenance of the proposed structural BMPs will ensure design performance and promote longevity of the structure and may decrease operator maintenance costs. The structural BMPs selected for the proposed site development include: straw wattles.

a) **STRAW WATTLES**

Straw wattles shall be installed as specified on the "Site Preparation & Erosion Control Plan", Sheet C200, revised through November 30, 2018, prior to commencing construction activities. The straw wattles shall be inspected daily and maintained throughout construction. Sediment shall be removed before it has accumulated to one-half of the above ground height. Any breach in the barrier shall be repaired within 24 hours. Wattles to remain in place for the duration of construction.

b) **R-TANK® UNDERGROUND INFILTRATION/DETENTION BASIN**

R-Tank© underground infiltration/detention basin is proposed to provide detention and recharge of the stormwater runoff collected from the roof, and decking areas. The system is composed of R-Tanks. The systems will be embedded in ¾" to 1½" double washed crushed stone. The system is equipped with multiple inspection ports located throughout the footprint of the system to provide access for non-invasive inspection and maintenance of the underground system.

Care shall be taken during construction to keep the stone bed and backfill below and around the chambers free of fines and organic matter. The contractor shall coordinate any necessary temporary diversion and/or retention measures of stormwater runoff to prevent migration of undesirable materials into the system prior to backfilling. After the systems have been installed the contractor shall keep construction equipment away from the

subsurface infiltration footprint until the area paved. The contractor shall stake the limit of the areas and place warning tape along the perimeter.

The systems are to be inspected once every fourteen (14) calendar days and after the occurrence of a storm event of a quarter inch (0.25") or greater. If inspections indicate accumulation of sediment within the systems, cleaning shall be conducted through the inspection ports via vacuum truck. Removed materials shall be hauled off site and disposed of in compliance with all local, state and federal guidelines.

END.

LONG-TERM STORMWATER OPERATION AND MAINTENANCE PLAN

Residences at Coleridge Street
181 - 183 Coleridge Street
East Boston, Massachusetts

I. OWNER:

Rock Development
546 E Broadway
Boston, MA 02127

II. RESPONSIBLE PARTY:

Rock Development
546 E Broadway
Boston, MA 02127

III. PROJECT OVERVIEW:

Prevention of offsite flooding and improvement to water quality prior to infiltration to groundwater are the main priorities of the project with respect to stormwater management. The project will significantly improve water quality within the property by installing Water quality BMPs to address the runoff generated by the redevelopment include a subsurface detention/infiltration system consisting of 195 R-Tank® chambers and periodic sweeping to remove sand and sediment.

The BMPs used in this design were chosen for their effectiveness and ease of maintenance with respect to redeveloped site conditions. Providing for maintenance requirements that are practical is essential to achieve the desired result of improved water quality of on-site stormwater runoff generation. This plan will be provided to the property owner, or property manager to educate them on the recommendations of this plan and the DEP Stormwater Management Guidelines.

IV. POST CONSTRUCTION – BEST MANAGEMENT PRACTICES:

a) NON_STRUCTURAL BEST MANAGEMENT PRACTICES

Implementing source controls can aid in reducing the types and concentrations of contaminants in stormwater runoff, which in turn can result in improved water quality. This principal for pollution prevention and non-structural controls, or BMP's, is to minimize the volume of runoff and to minimize contact with stormwater and potential pollutants. Measures such as street sweeping, managing snow removal, and educating the owner/operator of good maintenance practices are examples of non-structural BMP's.

i. PUBLIC AWARENESS

The responsible party shall issue periodic reminders to the building tenants to avoid dumping or releasing pollutants into the storm drains and onto the ground.

ii. STREET SWEEPING

Driveway and parking lot sweeping is an integral part of the stormwater management plan as a fundamental component of source reduction efforts. Typically, parking lot and roadway sweeping activities will begin around April 1. However, sweeping may be done after winter thaw and the onset of early spring. It is critical to remove the accumulated sediment in the parking areas from the winter months as soon as possible before heavy and frequent spring precipitation.

Parking lot sweeping should be performed a minimum of two times annually (April 1 and September 1).

iii. SNOW AND SNOWMELT MANAGEMENT

It is suggested that during minor snowfall events resulting in accumulations of up to six (6) inches of snow, the snow be stockpiled in a designated area determined by the property owner. Some suggested snow stockpile locations include the landscape areas throughout the site.

During high snowfall events resulting in accumulations in excess of six (6) inches, it is suggested that additional snow be stockpiled in a second area to be designated by the property owner. The removal contractor shall avoid stockpiling snow directly on top of the catch basin grate. Stockpiled snow shall not extend more than 6 feet from the edge of pavement to allow normal vehicular travel.

It is the responsibility of the owner to make sure the snow removal contractor utilizes the designated areas according to the procedures described herein. The owner shall remove sediment from snow storage areas every spring.

It is suggested that no de-icing compounds, such as calcium chloride ($CaCl_2$), calcium magnesium acetate (CMA) or the like be used on the site. The snow removal contractor shall store all sand off-site. No quantities of sand compounds shall be stored on site.

iv. SPILL PREVENTION AND RESPONSE

Post-construction, the possibility of hazardous spills from the engine fluids of the tenant vehicles and paints, adhesives, etc, associated with regular building/site maintenance.

The property manager will ensure areas where potential pollutants can occur are well protected and clean up equipment is available to prevent discharge of waste water, fuels, and oil from vehicles and any other toxic or hazardous spills from the property.

Should a spill occur, equipment necessary to attend to spills or leaks shall be stored on site and shall consist of the following:

- Safety goggles;
- Chemically resistant gloves and overshoe boots;
- Water and chemical fire extinguishers;
- Shovels;
- Absorbent materials;
- Containers suitable for storage of site specific materials; and
- First aid kits.

Spills and leaks shall be treated according to the type, volume, and location of the released material. Generally, mitigation shall consist of the following:

- Prevention of additional material storage;
- Containment of spilled material;
- Safe, thorough, and environmentally sound removal of spilled material; and
- Remediation of environmental damage.

The following describes specific preventative methods to be employed for materials to be used on site.

Fuels, Antifreeze, and Coolant from Parked Vehicles:

In the case of a fuel spill on a pervious surface, the spill shall be contained and treated with absorbent polymer material immediately and the affected soil shall be excavated and stored in an impervious, bermed area for removal by a professional hazardous material removal company. In the case of a fuel spill on an impervious surface, the spill shall be contained to prevent runoff and treated with absorbent material.

Adhesive and Paints:

Adhesive and paint materials shall be transferred to the site on an as needed basis for building and site maintenance. Wash water from paints shall be containerized; washing of paints into the storm drainage system shall be prohibited. Water-based and latex paints shall either be recycled or dried up and thrown out with the regular household trash, and oil-based paints and thinners shall be removed from the site by a local professional hazardous material removal company.

City of Boston Emergency Contacts are as Follows:

- Emergency Management: (888) 304-1133 (MassDEP 24-Hour Spill Reporting)
- Police Department: 911
- Fire Department: (617) 343-3550 (All Divisions)

v. PUBLIC SAFETY FEATURES

The project has been designed with consideration for public safety and does not require any specific features as part of the stormwater management system.

b) STRUCTURAL BEST MANAGEMENT PRACTICES

Structural BMPs are those physical facilities that are designed to manage both stormwater quantity and quality. Proper maintenance of the proposed structural BMPs will ensure design performance and promote longevity of the structure and may decrease operator maintenance costs. The structural BMPs selected for the proposed site development include: subsurface detention/infiltration system consisting of 195 R-Tank® chambers and periodic sweeping to remove sand and sediment.

i. R-TANK® UNDERGROUND INFILTRATION/DETENTION BASIN

R-Tank© underground infiltration/detention basin is proposed to provide detention and recharge of the stormwater runoff collected from the roof, and paved areas. The system is composed of R-Tanks. The systems will be embedded in ¾" to 1½" double washed crushed stone. The system is equipped with multiple inspection ports located throughout the footprint of the system to provide access for non-invasive inspection and maintenance of the underground system. The system is designed to recharge the required recharge volume and drain completely within 72 hours for all design storms

It is anticipated that maintenance of these systems will be limited. However, during post-construction, the systems will be inspected two times a year, at the beginning of July and late October/early November to determine if any loss of infiltration or capacity has occurred. The systems will also be inspected 24 hours after a rainstorm of over one-half inch in a 24-hour period to ensure that the systems are free of extraneous debris and fines

and are draining adequately. If inspections indicate accumulation of sediment within any system, cleaning shall be conducted through the inspection ports via vacuum truck. Removed materials shall be hauled off site and disposed of in compliance with all local, state and federal guidelines.

END

ATTACHMENT C

CLIMATE CHANGE QUESTIONNAIRE

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:	The Residences at Coleridge Coast			
Project Address:	181-183 Coleridge Street			
Project Address Additional:	East Boston, Massachusetts			
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		*Date*	

A.3 - Project Team

Owner / Developer:	Ryan Acone, Rock Development
Architect:	Touloukian Touloukian Inc.
Engineer:	Civil Engineer: Highpoint Engineering
Sustainability / LEED:	Touloukian Touloukian Inc.
Permitting:	Fort Point Associates, Inc.
Construction Management:	TBD

A.3 - Project Description and Design Conditions

List the principal Building Uses:	Residential (R-2), FPA Space (Assembly), Parking (S-2)
List the First Floor Uses:	Residential (R-2), FPA Space (Assembly)
List any Critical Site Infrastructure and or Building Uses:	

Site and Building:

Site Area:	19,000 *SF*	Building Area:	34,112 G*SF*
Building Height:	45-47 *Ft*	Building Height:	3 *Stories*
Existing Site Elevation – Low:	15.46 *Ft BCB*	Existing Site Elevation – High:	16.46 *Ft BCB*
Proposed Site Elevation – Low:	11.46 *Ft BCB*	Proposed Site Elevation – High:	21.96 *Ft BCB*
Proposed First Floor Elevation:	21.96 *Ft BCB*	Below grade levels:	1 *Stories*

Article 37 Green Building:

LEED Version - Rating System :		LEED Certification:	*Yes / No*
Proposed LEED rating:	*Certified/Silver/ Gold/Platinum*	Proposed LEED point score:	*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-30 *(R)*
Foundation Wall:	R-21 *(R)*	Slab Edge (at or below grade):	R-10 *(R)*

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

Area of Opaque Curtain Wall & Spandrel Assembly:	0 *(%)*	Wall & Spandrel Assembly Value:	*(U)*
Area of Framed & Insulated / Standard Wall:	78.6 *(%)*	Wall Value	R-18 *(R)*
Area of Vision Window:	21.4 %	Window Glazing Assembly Value:	0.30 *(U)*
		Window Glazing SHGC:	0.56 *(SHGC)*
Area of Doors:	4.8 %	Door Assembly Value:	0.30 *(U)*

Energy Loads and Performance

For this filing – describe how energy loads & performance were determined	See attached.		
Annual Electric:	*(kWh)*	Peak Electric:	*(kW)*
Annual Heating:	454 *(MMbtu/hr)*	Peak Heating:	*(MMbtu)*
Annual Cooling:	407 *(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:	0 %	Energy Use Intensity:	57.9 *(kBtu/SF)*

Back-up / Emergency Power System

Electrical Generation Output:	N/A *(kW)*	Number of Power Units:	N/A
System Type:	N/A *(kW)*	Fuel Source:	N/A

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

Electric:	N/A *(kW)*	Heating:	N/A *(MMbtu/hr)*
		Cooling:	N/A *(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: Not yet determined. *(Tons)*

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

See attached.

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

See attached.

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

See attached.

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

See attached.

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

N/A

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

See attached.

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):

See attached.

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:	*Deg.*	Temperature Range - High:	*Deg.*
Annual Heating Degree Days:		Annual Cooling Degree Days	

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

Days - Above 90°:	#	Days – Above 100°:	#
Number of Heatwaves / Year:	#	Average Duration of Heatwave (Days):	#

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

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:

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:

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: 5.25 *In.* Type 3

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

On-site retention and infiltration of up to 1" of rainfall for all new impervious surfaces. Meet all BWSC site plan approval requirements for on-site retention.

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):

Site grading and plantings, on-site stormwater detention/infiltration and low impact development site features, including pervious pavers and planted depression areas.

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:	15.46/16.46 *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:	19.3 *Ft BCB*		
Sea Level Rise - Design Flood Elevation:	21.3 *Ft BCB*	First Floor Elevation:	21.96 *Ft BCB*
Site Elevations at Building:	21.96 *Ft BCB*	Accessible Route Elevation:	15.46-21.96 *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.:

See attached.

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.:

See attached.

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:

See attached.

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

See attached.

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.:

See attached.

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

See attached.

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

Energy Loads and Performance
For this filing – describe how energy loads & performance were determined:

Schematic Design Energy Modeling was performed for the proposed project using NREL's Energy-10 modeling program. TMY weather files for Boston, MA were used. Three sessions were run in the model. The first represented a "code-compliant" building, a second with improved "as-proposed" design measures, and a third to determine what is necessary to get the building near net zero energy.

B.1
For this filing – describe how building energy performance has been integrated into project planning, design and engineering and any supporting analysis or modeling:

Building energy performance modeling is currently being used in the schematic design phase to evaluate options and determine energy efficiency standards for the next phases of the design.

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

Operable windows, overhangs at large expanses of glass to assist with solar shading, and deep set entrances. R and U values for the roof, walls, windows and doors are to be further determined through the energy model iterative design process.

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

Energy efficient lighting (LED), occupancy sensors, multiple thermostats per unit with zoning (where applicable) is being evaluated for the future design phases.

Describe building specific active energy efficiency measures including on-site renewable, clean, and energy storage systems:

A PV-ready roof structure and membrane are being evaluated for the future design phases.

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

We are considering applying for solar array grant assistance, if applicable.

B.2
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:

Integrating passive design strategies, including a high performance building envelope, and specifying energy efficient HVAC systems will continue to reduce the amount of GHC emissions over time. We are planning a solar ready roof design to support the opportunity to provide renewable energy on site in the future.

C

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

- Over 20% of site covered in grass with 50% of the site as open space.
- The main building, approximately 40% of site, is proposed to be covered in a high SRI reflective, white PVC roof system. This will help keep the building cooler during summer months to reduce energy needed for cooling and help prevent overheating during potential summer brown-out and power outage scenarios.

E.1

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.:

All of the occupiable space for the residential units and supporting common areas, and the Facility of Public Accommodation space are set above the sea level rise (SLR) design flood elevation. The entry points to the underground parking garage are elevated one foot above the FEMA floodplain. During the flood events, occupants in the main buildings can egress to the exterior plaza space (elevated site areas) set above the SLR design flood elevation. One of the primary site egress stairs leads form the SLR design flood elevation to the adjacent property in the FEMA Flood Zone X. There are hard barriers, such as the foundation walls for the below grade parking garage, set around the entire elevated site area. There are soft barriers, such as planting and berms, set intermittently around the perimeter leading from the elevation of the public way and coastal bank to the elevated site areas.

Roof stormwater pipes will also divert storm water to a groundwater infiltration system. Outdoor plaza areas set above the base flood design elevation to include positive drainage to a groundwater infiltration system. The harborwalk consists of open decking between which there is positive drainage to the ground conditions below.

The electrical utility room is raised above the SLR design flood elevation so that it will be protected during extreme flooding.

The coastal bank will include minor clean-up of miscellaneous debris. The site will be planted with drought-resistant plants and native species.

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.:

Construction of the perimeter of the below grade parking structure will be set above the SLR-BFE elevation and will be designed by a structural engineer. The below grade parking structure will be designed to meet floodproofing code requirements.

Critical systems and electrical utilities will not be located below the SLR-BFE elevation.

The entry points to the underground parking garage such as the garage doors and pedestrian doors are to be designed as required by the flood proofing code requirements.

Waste and drain, and water back flow prevention are to be designed as required by code.

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:
No information at this time.

Describe any strategies that would support rapid recovery after a weather event:
No information at this time.

E.2
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.:

Expected sea level rise may affect the site depending on its severity. Potential adaptation strategies include the uses of flood planks at the garage and pedestrian entrances, which would be put in place prior to a storm event. Other stormwater and utility systems have been designed to accommodate future sea level rise.

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

The building has been designed to be accommodate future sea level rise by raising its critical systems by either putting them on the roof or raising them several feet above the SLR-FHA height. See also Section E.1.

ATTACHMENT D

ABUTTER NOTIFICATION

ATTACHMENT D: ABUTTER NOTIFICATION

The following table outlines abutters of the Project within 100 feet of the property line as gathered from the City of Boston Assessing Department.

Property	**Owner**	**Owner Address**	**Parcel ID**
177 Coleridge Street East Boston, MA 02129	Genarc LLC	90 Spencer Street Chelsea, MA 02150	0104310000
175 Coleridge Street East Boston, MA 02128	Mary E Cogswell	175 Coleridge Street East Boston, MA 02128	0104309000
173 Coleridge Street East Boston, MA 02128	Mary J Anderson	173 Coleridge Street East Boston, MA 02128	0104308000
171 Coleridge Street East Boston, MA 02128	John Andrew Morrissey	171 Coleridge Street East Boston, MA 02128	0104307000
186 Wordsworth Street East Boston, MA 02128	John Cavicchi	2001 SE 16th Street Cape Coral, FL 33990	0104312004
Coleridge Street	Richard I Nugent	176 Coleridge Street East Boston, MA 02128	0104312001
Coleridge Street	Richard I Nugent	176 Coleridge Street East Boston, MA 02128	0104312002
Coleridge Street	Richard I Nugent	176 Coleridge Street East Boston, MA 02128	0104312003
Barnes Avenue East Boston, MA	Commonwealth of Massachusetts (*under the care, custody, and control of Department of Conservation and Recreation*)	251 Causeway Street, Suite 900, Boston, MA 02114	0104387002

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

B. The address of the lot where the activity is proposed is **181-183 Coleridge Street, East Boston, Massachusetts 02128.**

C. Copies of the notice of Intent may be examined at **Boston City Hall** between the hours of **9 AM and 5 PM** on the following days of the weeks: **Monday through Friday.** For more information, call Boston City Hall at **(617) 635-3850.**

D. Copies of the Notice of Intent may be obtained from the applicant's representative by calling this telephone number (**617) 357-7044 x 207** between the hours of **9 AM and 5 PM** on the following days of the week: **Monday through Friday**

E. Information regarding the date, time, and place of the public hearing may be obtained from **Boston Conservation Commission** by calling this telephone number: **(617) 635-4416** between the hours of and on the following days of the week: **9 AM to 5 PM, Monday through Friday.**

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, tine, 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 Wetlands Protection Act. To contact DEP, call: the Northeast Region: (978) 694-3200.

ATTACHMENT E

WETLAND RESOURCE EVALUATION

EcoTec, Inc.

ENVIRONMENTAL CONSULTING SERVICES
102 Grove Street
Worcester, MA 01605-2629
508-752-9666 – Fax: 508-752-9494

December 21, 2016 – Revised 9/7/2018

Mr. Michael Fabbiano
Highpoint Engineering, Inc.
Canton Corporate Center
45 Dan Road, Suite 140
Canton, MA 02021

RE: Wetland Resource Evaluation, 181 to 183 Coleridge Street, Boston, Massachusetts

Dear Mr. Fabbiano:

On November 14, 2016, EcoTec, Inc. inspected the above-referenced property for the presence of wetland resources as defined by: (1) the Massachusetts Wetlands Protection Act (M.G.L. Ch. 131, § 40; the "Act") and its implementing regulations (310 CMR 10.00 *et seq.*; the "Regulations"); and (2) the U.S. Clean Water Act. The City of Boston does not have a local wetlands protection ordinance. John P. Rockwood, Ph.D., PWS and Paul J. McManus, LSP, PWS conducted the inspection.

The subject site consists of two parcels totaling 0.6657± acres located south of Coleridge Street in East Boston, Massachusetts. The subject site is developed with pavement and concrete areas and a shed in the northern portion of the site, various retaining walls, and associated lawn and landscaping. Plant species observed in the lawn and in/near the eastern site periphery include Norway maple (*Acer platanoides*) and tree-of-heaven (*Ailanthus altissima*) trees, saplings, and/or shrubs; common buckthorn (*Rhamnus cathartica*) and European privet (*Ligustrum vulgare*) shrubs; and black nightshade (*Solanum americanum*), Japanese knotweed (*Polygonum cuspidatum*), common reed (*Phragmites australis*), and garlic mustard (*Alliaria petiolata*) ground cover. Inland wetland resource areas (i.e., Land Under Water, Inland Bank, Bordering Vegetated Wetlands, Land Subject to Flooding, and Riverfront Area, were not observed to occur on the site. The coastal wetland resources which were identified and/or delineated on or near the subject site are described below.

Methodology

The site was inspected, and areas suspected to qualify as wetland resources were identified. As noted above, Bordering Vegetated Wetlands and Inland Bank were not observed on the site. The boundary of Salt Marsh on and near the site was delineated based upon the extent of salt marsh plant species and the associated peat mat with blue ground flags. The remaining coastal resources are identified and determined based in large part upon elevation or slope. The plant taxonomy used in this report is based on the *National List of Plant Species that Occur in Wetlands: Massachusetts* (Fish and Wildlife Service, U.S. Department of the Interior, 1988). Federal wetlands were presumed to occur seaward of the High Tide Line. As Bordering Vegetated Wetlands were not observed on the site, Bordering Vegetated Wetlands Field Delineation Forms were not completed. The table below

provides the Flag Numbers, Flag Type, and Wetland Types and Locations for the delineated wetland resources.

Flag Numbers	Flag Type	Wetland Types and Locations
Start SM1 to SM8 Stop	Blue Ground Flags	Extent of Salt Marsh in the southern portion of the site and off-site to the south. The boundary is based upon the extent of *Spartina alterniflora* and its associated peat mat.

NOTE that additional jurisdictional wetland resources occur on the site, as outlined below, and are delineated based upon site-specific topographic survey.

Findings
The following coastal wetland resource areas occur on or near the subject site:

- ***Land Under the Ocean*** is defined at 310 CMR 10.25(2) as "…*land extending from the mean low water line seaward to the boundary of the municipality's jurisdiction and includes land under estuaries*." "*Nearshore Areas of land under the ocean means that land extending from the mean low water line to the seaward limit of a municipality's jurisdiction, but in no case beyond the point where the land is 80 feet below the level of the ocean at mean low water*…." The **Mean Low Water Line** is defined at 310 CMR 10.23 as "…the line where the arithmetic mean of the low water heights observed over a specific 19-year metonic cycle (the National Tidal Datum Epoch) meets the shore and shall be determined using hydrographic survey data of the National Ocean Survey of the U.S. Department of Commerce."

  Land Under the Ocean would be located completely off-site to the south/southeast.

  Coastal Beach is defined at 310 CMR 10.27(2) as "…*unconsolidated sediment subject to wave, tidal and coastal storm action which forms the gently sloping shore of a body of salt water and includes tidal flats. Coastal beaches extend from the mean low water line landward to the dune line, coastal bankline or the seaward edge of existing man-made structures, when these structures replace one of the above lines, whichever is closest to the ocean*." ***Tidal Flat*** is also defined at 310 CMR 10.27(2) as "…*any nearly level part of a coastal beach which usually extends from the mean low water line landward to the more steeply sloping face of the coastal beach or which may be separated from the beach by land under the ocean*." A 100-foot Buffer Zone extends horizontally outward/upgradient from the boundary of Coastal Beach.

  On and near the site, Coastal Beach, including Tidal Flat, would extend seaward from the lower limit of the Coastal Bank (described below) and would exclude the area delineated as Salt Marsh.

- ***Salt Marsh*** is defined at 310 CMR 10.32(2) as "…*a coastal wetland that extends landward up to the highest high tide line, that is, the highest spring tide of the year, and is characterized by plants that are well adapted to or prefer living in, saline soils. Dominant plants within salt*

marshes are salt meadow cord grass (Spartina patens) and/or salt marsh cord grass (Spartina alterniflora). A salt marsh may contain tidal creeks, ditches and pools." A 100-foot Buffer Zone extends horizontally outward/upgradient from the boundary of Salt Marsh.

The extent of the Salt Marsh at/near the site was delineated with Blue Ground flags, as noted in the table above. The salt marsh at the site consists of a regularly inundated (i.e., during most or all high tides) area of salt marsh described as "low marsh" which was dominated by moderate to sparse salt marsh cord grass (*Spartina alterniflora*) with an obvious peat mat; high marsh was not present.

- ***Coastal Bank*** is defined at 310 CMR 10.30(2) as "…the seaward face or side of any elevated landform, other than a coastal dune, which lies at the landward edge of a coastal beach, land subject to tidal action, or other wetland." The Regulations note that Coastal Banks consist of two types: vertical or near-vertical Banks that provide a barrier to protect upland areas from flooding; and unconsolidated banks that contribute sediment like Coastal Dunes. At the site, the Coastal Bank that is present consists of man-made rip-rap stone slope at the edge of the existing lawn area. The site Bank does not serve significantly as a source of beach sediment.

  The lower boundary of the Coastal Bank is the upper limit of the Coastal Beach.

  The delineation of Coastal Bank is further explained in MADEP Policy 92-1" Coastal Banks (appended). Policy 92-1 identifies a series of topographic conditions (with referenced schematic figures) that determine the upper boundary of the Coastal Bank:
  A) The slope of a coastal bank must be greater than or equal to 10:1 (see Figure 1);
  B) For a coastal bank with a slope greater than or equal to 4:1 the "top of coastal bank" is that point above the 100-year flood elevation where the slope becomes less than 4:1 (see Figure 2);
  C) For a coastal bank with a slope greater than or equal to 10:1 but less than 4:1, the top of coastal bank is the 100-year flood elevation. (see Figure 3);
  D) A "top of coastal bank" will fall below the 100-year flood elevation and is the point where the slope ceases to be greater than or equal to 10:1. (see Figure 4).

  At the site, the low gradient Coastal Beach transitions abruptly to the existing steep rip-rap slope. At the top of the rip-rap slope, the topography transitions sharply to a nearly level (slope less than 10:1) lawn area. Therefore, in EcoTec's opinion, scenario D (Figure 4) of MADEP Policy 92-1 applies to the delineation of Coastal Bank at the site, and the upper limit of the rip-rap slope serves as the upper boundary of Coastal Bank in accordance with the Regulations and MADEP Policy 92-1.

  A 100-foot Buffer Zone extends horizontally outward/upgradient from the upper boundary of Coastal Bank.

- ***Land Subject to Coastal Storm Flowage*** ("LSCSF") is defined at 310 CMR 10.04 as "…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." The limits of LSCSF include all areas upgradient of the above wetland resources subject to the 100-year frequency flood, as determined by reference to the most current FEMA Flood Insurance Rate Map and site survey on the same datum.

- ***Land Subject to Tidal Action*** is defined at 310 CMR 10.04 as which is simply defined as land subject to the periodic rise and fall of a coastal water body, including spring tides. **Spring Tides** are defined at 310 CMR 10.04 as "…those tides which occur with new and full moons, and which are perceptibly higher and lower than other tides."

  On the site, the Land Subject to Tidal Action would generally be limited to those areas seaward of the upper boundary of the Coastal Bank.

- ***Land Containing Shellfish*** is defined at 310 CMR 10.34(2) as "…means land under the ocean, tidal flats, rocky intertidal shores, salt marsh and land under salt ponds when any such lands contain shellfish."

  This resource would be downgradient of the Coastal Bank, potentially including the Coastal Beach and Salt Marsh, and would extend off-site to the south/southeast. A detailed evaluation for the presence of shellfish was not conducted, however EcoTec notes that it may be present in the potential areas noted.

The following coastal wetland resource areas do not appear to be located on or near the site:

- Designated Port Areas;
- Coastal Dunes;
- Barrier Beaches;
- Rocky Intertidal Shores;
- Land Under Salt Ponds; and
- Banks of or Land Under the Ocean or River that Underlie an Anadromous/Catadromous Fish Run.

Rare Species and Certified Vernal Pools: The Regulations require that no project may be permitted that will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures set forth at 310 CMR 10.59. Based upon a review of the *Massachusetts Natural Heritage Atlas*, 14th edition, Priority Habitats and Estimated Habitats, Boston North Quadrangle, reviewed on September 7, 2018 (attached), there are no Estimated Habitats [for use with the Act and Regulations (310 CMR 10.00 *et seq*.)], Priority Habitats [for use with Massachusetts Endangered Species Act (M.G.L. Ch. 131A; "MESA") and MESA Regulations (321 CMR 10.00 *et seq*.)], or Certified Vernal Pools on or in the immediate vicinity of the site.

The reader should be aware that the regulatory authority for determining wetland jurisdiction rests with local, state, and federal authorities. Brief descriptions of our experience and qualifications are attached. If you have any questions, please feel free to contact the undersigned at any time.

Cordially,
ECOTEC, INC.

Paul J. McManus, LSP, PWS
President

Attachments:

- USGS Locus map
- Natural Heritage Atlas output
- MADEP Policy 92-1 Coastal Bank

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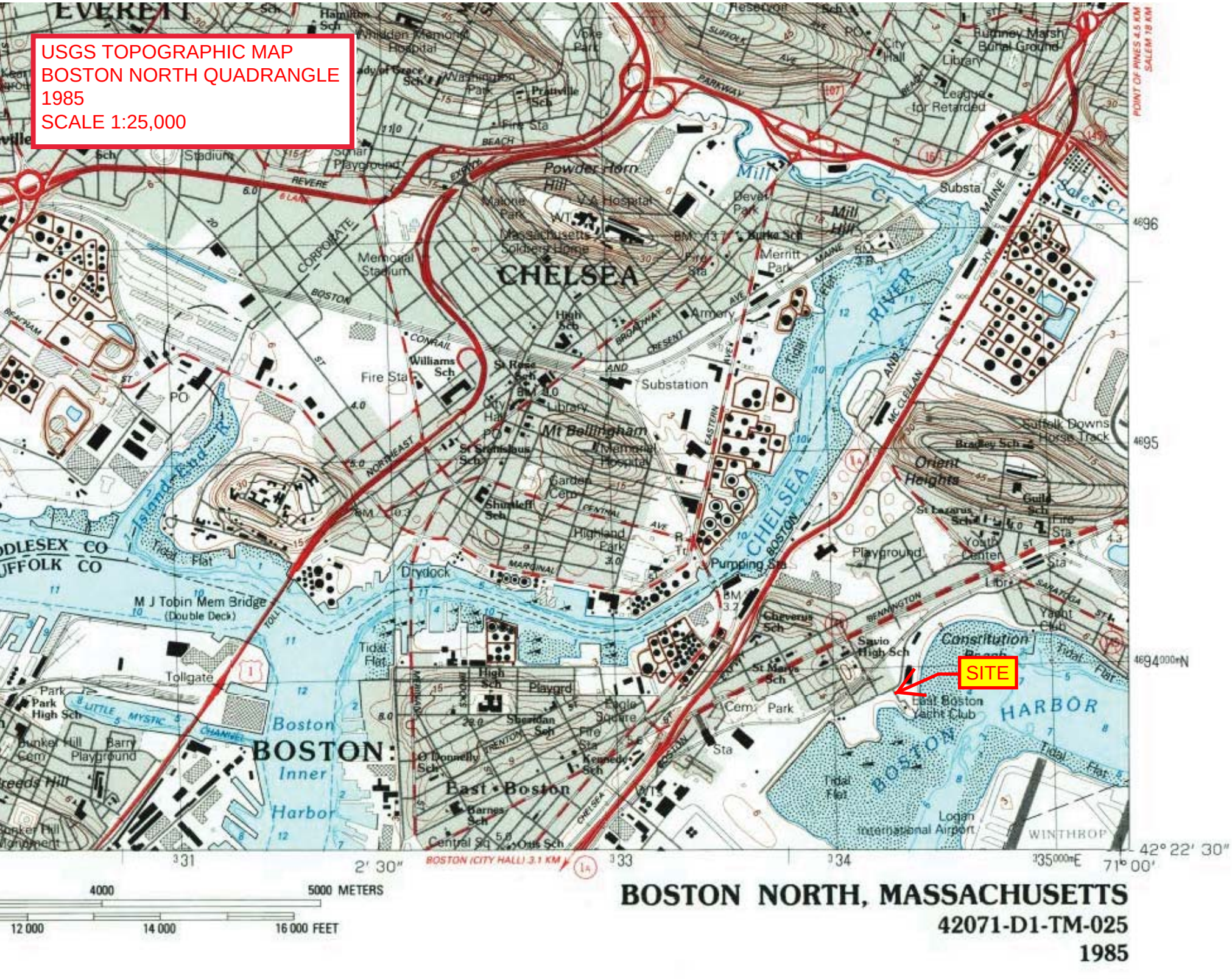


BOSTON NORTH, MASSACHUSETTS

42071-D1-TM-025

1985

NATURAL HERITAGE ATLAS

Wetlands Program Policy 92-1: Coastal Banks

Coastal Banks: Definition and Delineation Criteria for Coastal Bank (DWW Policy 92-1) Issued: March 3, 1992

Purpose The purpose of this policy is to clarify the definition of coastal bank contained in the Wetlands Regulations, 310 CMR 10.00, by providing guidance for identifying 'top of coastal bank'. Regulatory Standards Coastal wetlands are defined in the Wetlands Protection Act (MGL c. 131, s.40) as:

> "any bank, marsh, swamp, meadow, flat or other lowland subject to tidal action or coastal storm flowage".

Coastal banks are defined at 310 CMR 10.30(2) as:

> "the seaward face or side of any elevated landform, other than a coastal dune, which lies at the landward edge of a coastal beach, land subject to tidal action, or other wetland".

When these two definitions are read together, coastal banks can be inferred to be associated with lowlands subject to tidal action or subject to coastal storm flowage. Coastal banks, therefore, can occur around non-tidal ponds, lakes and streams provided that these elevated landforms confine water associated with coastal storm events, up to the 100-year storm elevation or storm of record. Land Subject to Coastal Storm Flowage, in turn, is defined at 310 CMR 10.04 as:

> "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".

The Department uses the 100-year coastal flooding event as defined and mapped by the Federal Emergency Management Agency (FEMA) per the National Flood Insurance Program, as the maximum flood elevation associated with land subject to coastal storm flowage, unless recorded storm data reveals a higher flood elevation (which is the storm of record). Analysis Top of Coastal Bank Delineation The phrase "top of coastal bank" is used to establish the landward edge of the coastal bank (310 CMR 10.30). There is no definition for "top of coastal bank" provided in the Act or the Regulations. A Guide to the Coastal Wetlands Regulations, prepared by the Massachusetts Coastal Zone Management Office, upon which Conservation Commissions and the Department have relied for guidance, states that the landward boundary of a coastal bank is "the top of, or first major break in, the face of the coastal bank", and implies that it is easily identified using United States Geologic Survey topographic quadrangles. However, the scale of topographic quadrangle maps generally do not allow for parcel specific analysis. No further definition of "top of" and "major break" is provided. The following standards should be used to delineate the "top of coastal bank" [refer to figures 1-7 for a graphic presentation of the information below]:

A) The slope of a coastal bank must be greater than or equal to 10:1 (see Figure 1).

B) For a coastal bank with a slope greater than or equal to 4:1 the "top of coastal bank" is that point above the 100-year flood elevation where the slope becomes less than 4:1. (see Figure 2).

C) For a coastal bank with a slope greater than or equal to 10:1 but less than 4:1, the top of coastal bank is the 100-year flood elevation. (see Figure 3).

D) A "top of coastal bank" will fall below the 100-year flood elevation and is the point where the slope ceases to be greater than or equal to 10:1. (see Figure 4).

E) There can be multiple coastal banks within the same site. This can occur where the coastal banks are separated by land subject to coastal storm flowage [an area less than 10:1]. (See Figures 5 and 6).

When a landform, other than a coastal dune, has a slope that is so gentle and continuous that it does not act as a vertical buffer and confine elevated storm waters, that landform does not qualify as a coastal bank. Rather, gently sloping landforms at or below the 100-year flood elevation which have a slope less than 10:1 shall be regulated as "land subject to coastal storm flowage" and not as coastal bank (see Figure 7). Land subject to coastal storm flowage may overlap other wetland resource areas such as coastal beaches and dunes. Information Requirements for Project Review Due to the complex topography associated with coastal banks, the following requirements are intended to promote consistent delineations. In order to accurately delineate a coastal bank, the following information should be submitted, at a minimum,, to the Conservation Commission and the Department of Environmental Protection: the coastal bank should be delineated and mapped on a plan(s) to a scale of not greater than 1 inch = 50 feet, including a plan view and a cross section(s) of the area being delineated showing the slope profile, the linear distance used to calculate the slope profile, and the location of this linear distance. In addition, there must be an indication which of the five diagrams mentioned above is (are) representative of the site. Averaging and/or interpolating contours on plans can result in inaccurate delineations. Therefore, it is strongly recommended that follow-up field observations be made to verify delineations made from engineering plan data and as shown on the submitted plans. The final approval of resource boundary delineations rests with the issuing authority (Conservation Commission or Department of Environmental Protection).

Figures 1, 2, and 3

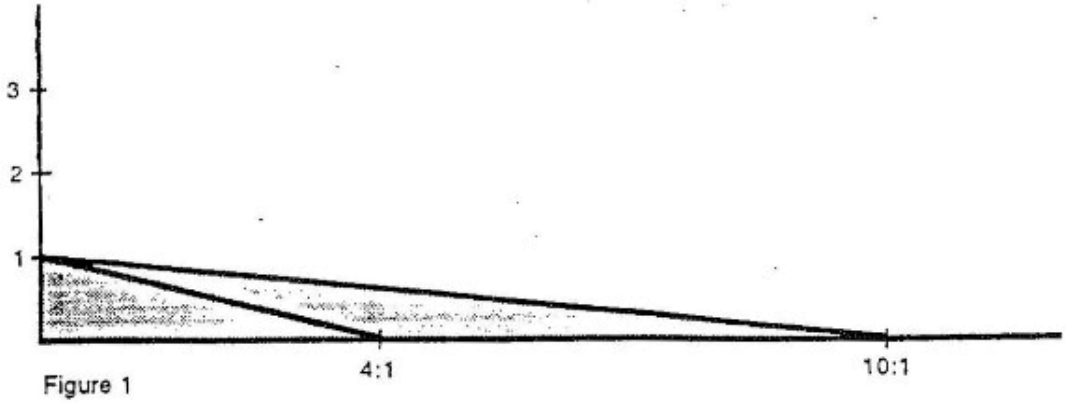


Figure 1

Note that 4:1 slope is greater than (steeper than) 10:1 slope.
- 4:1 is equivalent to 14 degrees or 25 percent.
- 10:1 is equivalent to 6 degrees or 10 percent.

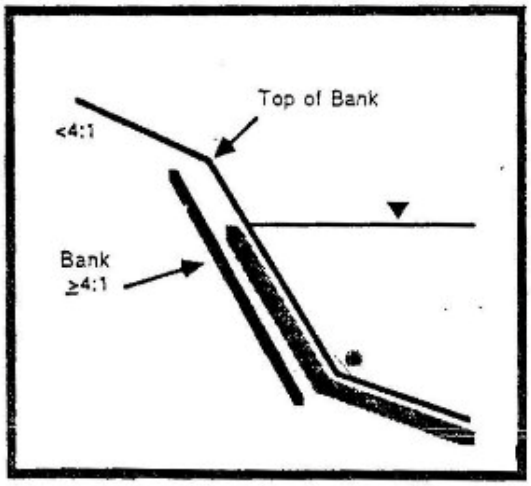


Figure 2

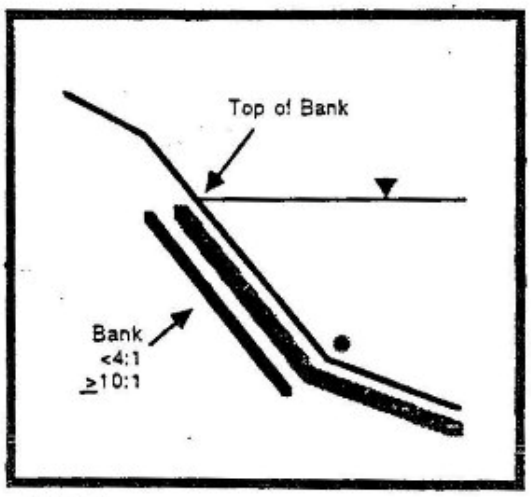


Figure 3

Legend - Figures 2 and 3 are not to scale

- 100 year flood elevation (as shown on community FIRM) or storm of record
- Land subject to coastal storm flowage (LSCSF)
- Coastal Bank
- Toe of bank which lies at the landward edge of a coastal beach, land subject to tidal action, or other wetland

Figures 4, 5, 6, and 7

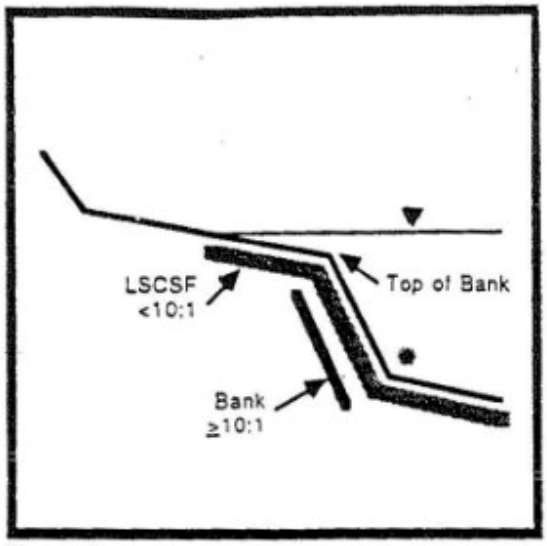


Figure 4

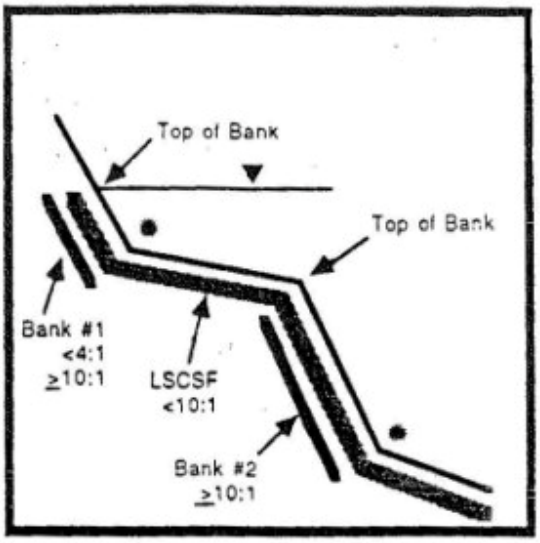


Figure 5

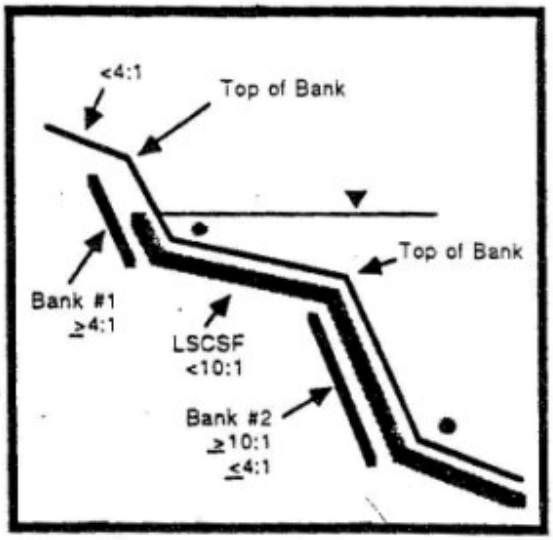


Figure 6

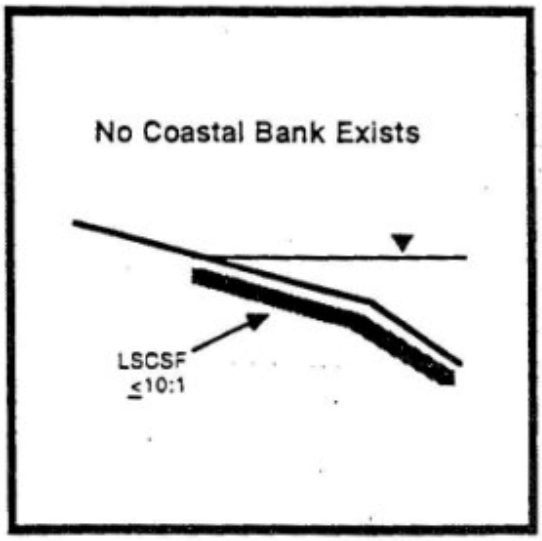


Figure 7

Legend - Figures 4, 5, 6, and 7 are not to scale

- 100 year flood elevation (as shown on community FIRM) or storm of record
- Land subject to coastal storm flowage (LSCSF)
- Coastal Bank
- Toe of bank which lies at the landward edge of a coastal beach, land subject to tidal action, or other wetland

EcoTec, Inc.

ENVIRONMENTAL CONSULTING SERVICES
102 Grove Street
Worcester, MA 01605-2629
508-752-9666 – Fax: 508-752-9494

John P. Rockwood, Ph.D., PWS
Chief Environmental Scientist

Dr. John P. Rockwood has been with EcoTec, Inc. since October 1999. Dr. Rockwood was previously a Chief Environmental Scientist at Sanford Ecological Services, Inc. of Southborough, Massachusetts from September 1990 to October 1999. Dr. Rockwood was certified in August 2002 and recertified in March 2008 and January 2013 as a Professional Wetland Scientist (PWS) by the Society of Wetland Scientists, the leading professional organization in the field. His project experience includes wetland resource evaluation, delineation, and permitting at the local, state, and federal levels; wildlife habitat evaluation; pond and stream evaluation; vernal pool evaluation, certification, construction/replication, and monitoring; rare species habitat and impact assessment; wetland replacement, replication, and restoration area design, construction, and monitoring; and expert testimony preparation. He has served as a consultant to municipalities, conservation commissions, the development community, engineering and survey firms, industry, and citizen's groups. He has managed and participated in a wide variety of wetlands-related projects ranging in scope from single-family house lots to subdivisions, commercial developments, golf courses, a water park, and a regional mall. He has assessed the potential impacts of stormwater runoff, landfill leachate, and/or hazardous waste disposal sites on rare vertebrate and/or invertebrate species, and has conducted and/or directed surveys, delineated actual habitat, conducted habitat evaluations, and/or developed mitigation strategies necessary to protect rare vertebrate, invertebrate, and plant species and their habitats from proposed development-related impacts. He has conducted a drift fence study for the marbled salamander. He has conducted and led preconstruction sweeps for the spotted turtle, wood turtle, and eastern box turtle. He has filed MESA Project Review Checklists and has prepared applications for Conservation and Management Permits under MESA. He has conducted environmental impact assessments, and has prepared MEPA documentation related to an office park, an MBTA commuter train station, a water park, residential subdivisions, a landfill, and a regional mall. Dr. Rockwood also has extensive experience in environmental site assessment related to possible oil and/or hazardous material contamination. He has conducted numerous environmental assessments, several including subsurface investigations, for sites located in Massachusetts, and has conducted preliminary environmental assessments for properties located in New York, New Hampshire, and Rhode Island. He has conducted ecological risk assessments (i.e., Stage I Environmental Screenings and Stage II Environmental Risk Characterizations) for a number of disposal sites in Massachusetts, including several disposal sites that had the potential to affect state-listed vertebrate and invertebrate species, and has utilized the EPA Rapid Bioassessment Protocol for macroinvertebrates to assess potential impacts of disposal sites and hazardous material releases on streams and rivers in Massachusetts and New York. He has served as the environmental contractor to the Franklin Consolidated Office of the Federal Deposit Insurance Corporation (FDIC-FCO) for 16 months, where he reviewed environmental reports, prepared scopes-of-work for site assessments, and provided technical advice to FDIC employees related to environmentally compromised assets. Dr. Rockwood has designed, conducted, and evaluated numerous surface water and groundwater monitoring programs. His prior research includes a laboratory study of the effects of low pH and aluminum on dragonfly nymphs and a field survey of the impact of chlorinated sewerage effluent of algal periphyton community dynamics. Dr. Rockwood is the co-author of a text book on aquatic biology, and is the principal author of three peer-reviewed research publications in the field of aquatic toxicology that address the effect of low pH and aluminum on nymphs of the dragonfly *Libellula julia*. Dr. Rockwood has served as the as the Editor of the AMWS Newsletter from November 2004 to October 2010 and as Assistant Editor from May 2003 to November 2004 and October 2010 to January 2012. He has served as President of the Association of Massachusetts Wetland Scientists from November 2013 to December 2015 and as Immediate Past President from December 2015 to December 2017.

Education:
Doctor of Philosophy (Ph.D.): Aquatic Pollution Biology – Plant and Soil Sciences
University of Massachusetts at Amherst, 1989
Bachelor of Science (B.S.): Environmental Sciences, *Summa Cum Laude*
University of Massachusetts at Amherst, 1984

Professional Affiliations:
Society for Freshwater Science
Sigma Xi, Full Member
Association of Massachusetts Wetland Scientists, Voting Member
Society of Wetland Scientists
Massachusetts Association of Conservation Commissions

Certifications:
Society of Wetlands Scientists Professional Wetland Scientist, Certification Number 1349
OSHA Health and Safety Training, 40-Hour Training, 29 CFR 1910.120
OSHA Health and Safety Training, 8-Hour Supervisor Training
OSHA Health and Safety Training, 8-Hour Refresher Training

EcoTec, Inc.

ENVIRONMENTAL CONSULTING SERVICES
102 Grove Street
Worcester, MA 01605-2629

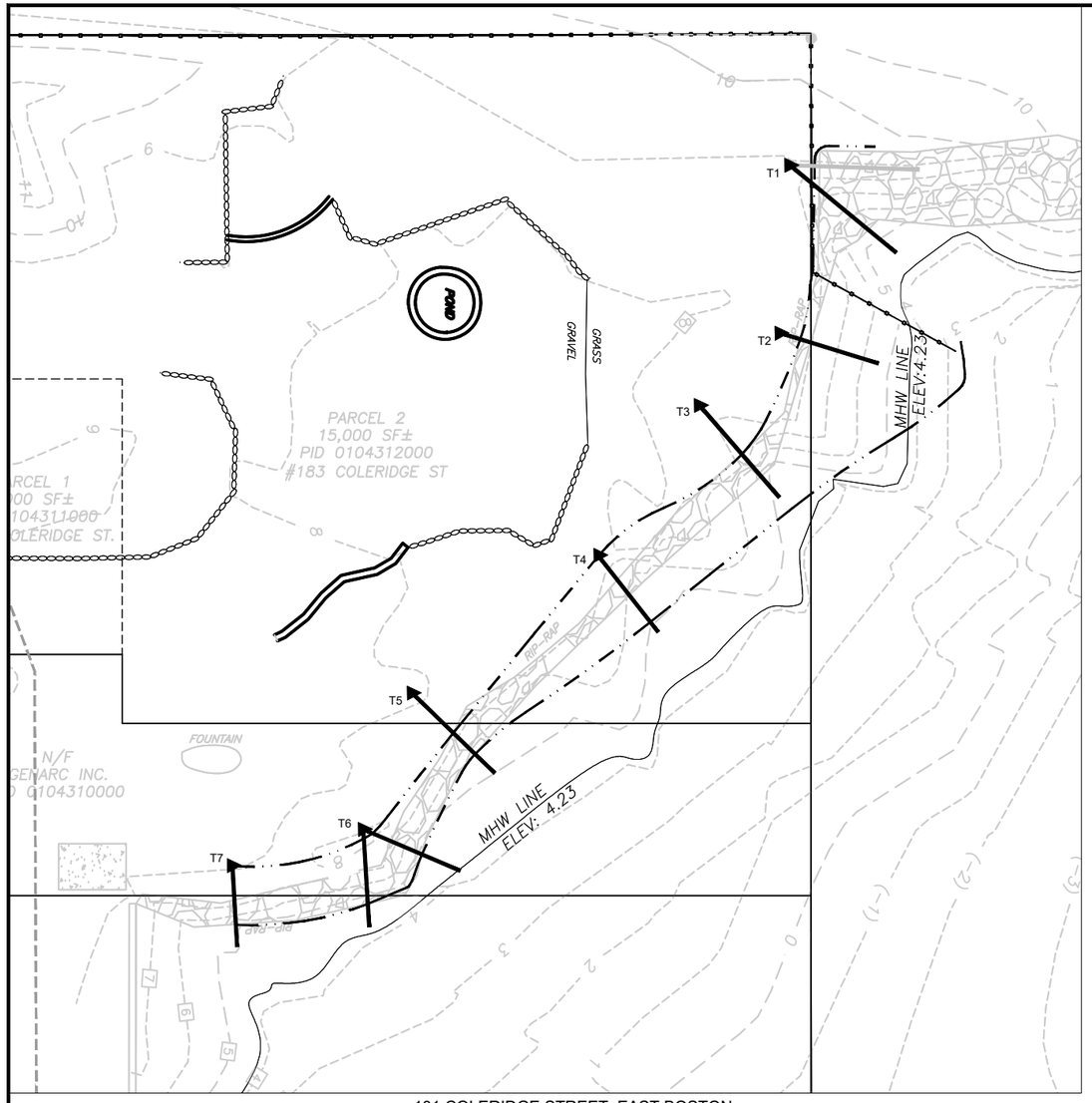
Paul J. McManus, LSP, PWS
President

Paul McManus is the President and owner of EcoTec, Inc., which he founded in 1990. He has received certification as a Professional Wetlands Scientist ("PWS") from the Society of Wetlands Scientists Professional Certification Program, the leading professional organization in the field. Mr. McManus is also a Massachusetts-certified Licensed Site Professional ("LSP") with experience in the assessment and remediation of contamination by oil or hazardous materials. His work in this field has included a wide range of site assessment and remediation projects, but has focused on ecological risk assessment at contaminated sites, including Massachusetts Contingency Plan Stage I Environmental Risk Screenings and Stage II Environmental Risk Characterizations at sites of oil and hazardous materials releases to a variety of marine and fresh water environments, including rare species habitats. Environmental risk assessments have included evaluations of terrestrial, wetland, stream, lake, marine harbor, and salt marsh resources contaminated by heavy metals, PCBs, and a variety of petroleum products. Environmental risk assessments have included biological sampling and community analysis, toxicity testing, food chain modelling, and other methodologies. Prior to the founding of EcoTec, Mr. McManus was employed as the Senior Scientist at Harborline Engineering Inc. of New Bedford, MA and served for several years as a project manager at the Gulf of Maine Research Center Inc. in Salem, MA. His experience also includes employment as an aquatic ecologist at the Massachusetts DEQE Division of Water Pollution Control. Mr. McManus has a wide variety of environmental consulting experience, including lake and stream assessment, wildlife habitat evaluation including state-listed species, wetland evaluation, delineation, permitting, and mitigation design, and a variety of other types of environmental impact assessment. Included among the major wetland permitting projects he has completed and directed are detailed wetland community surveys and impact restoration specifications for large linear utility projects, including designated "Area of Critical Environmental Concern" (ACEC) wetlands and rare species habitats. He was the project wetland scientist at the MWRA's Norumbega Reservoir project in Weston, where he managed the town-wide off-site vernal pool mitigation evaluation, and authored the project's wetland and vernal pool mitigation program. He has directed hundreds of other wetlands projects at sites including large and small residential and commercial developments. These projects included all phases of wetlands work: delineation, permitting, as well as mitigation design/ implementation, and monitoring. Additional projects he has directed include major biological and chemical sampling programs in Boston and Salem Harbors. Mr. McManus has served as consultant on behalf of government, industry, major utility companies, the development community, conservation commissions, and concerned citizens' groups. He presently serves on a regular basis as technical wetlands consultant for the Town of Dover Conservation Commission, and other Commissions when project scale or complexity necessitates expertise beyond that generally available to the Commissions.

Education: Master of Science: Applied Marine Ecology
University of Massachusetts/Boston, 1988
Bachelor of Arts: Biology (Ecology emphasis)
Holy Cross College, Worcester, MA, 1984
U.S. Fish and Wildlife Service: Habitat Evaluation Procedure (HEP) Certification
Massachusetts Division of Water Pollution Control: Algal Assay (eutrophication) Short Course

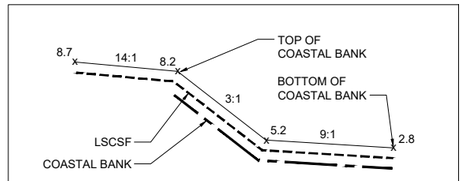
Professional Affiliations: Society of Environmental Toxicology and Chemistry (SETAC)
Society of Wetland Scientists (Treasurer and Past President of the New England Chapter)
Massachusetts Association of Conservation Commissioners: Board of Directors
Association of Massachusetts Wetlands Scientists

Certifications: Society of Wetlands Scientists Professional Wetlands Scientist # 962
Commonwealth of Massachusetts Licensed Site Professional # 5711
OSHA Health & Safety Hazardous Waste Safety Training, 29 CFR 1910.120 (40 hr & refreshers)

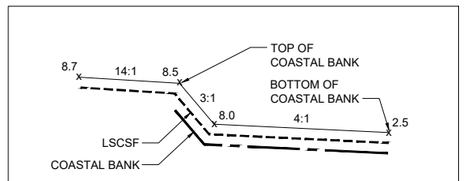


181 COLERIDGE STREET, EAST BOSTON

SYMBOL LEGEND	
	TRANSECT
	LAND SUBJECT TO COASTAL STORM FLOWAGE (LSCSF)
	LIMITS OF COASTAL BANK



TRANSECT 1 | T1



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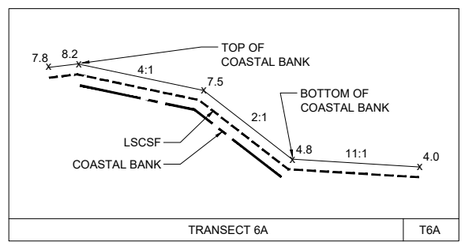

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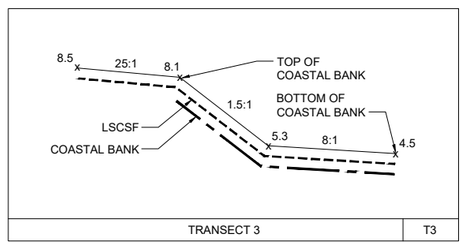

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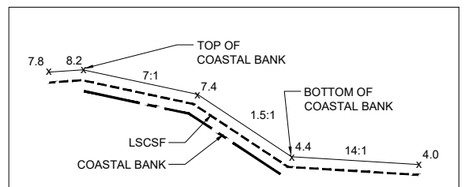

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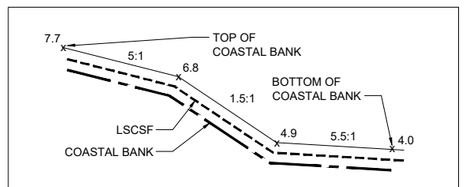

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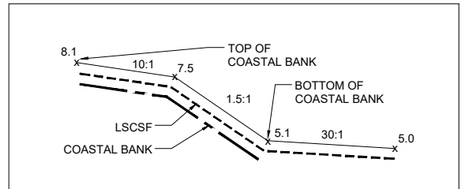

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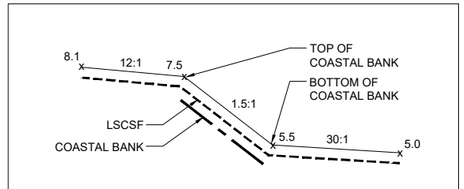


TRANSECT 5 | T5

HIGHPOINT ENGINEERING, INC.
CANTON CORPORATE PLACE
45 DAN ROAD, SUITE 140 | CANTON, MA 02021
t 781.770.0970 | www.highpointeng.com

CLIENT:

ROCK DEVELOPMENT
546 E BROADWAY | EAST BOSTON, MA 02027
t 774.281.3165 | www.builtbyrock.com

CONSULTANT:

SEAL

181-183 COLERIDGE STREET
RESIDENTIAL DEVELOPMENT

181-183 COLERIDGE STREET
EAST BOSTON, MA

OWNER/APPLICANT: ROCK DEVELOPMENT

REV	DATE	DESCRIPTION

ISSUE TYPE:
NOTICE OF INTENT

ISSUE DATE:
10.31.2018

PROJECT NUMBER:
16038

DRAWN BY: MKM

CHECKED BY: DBR

SHEET TITLE:

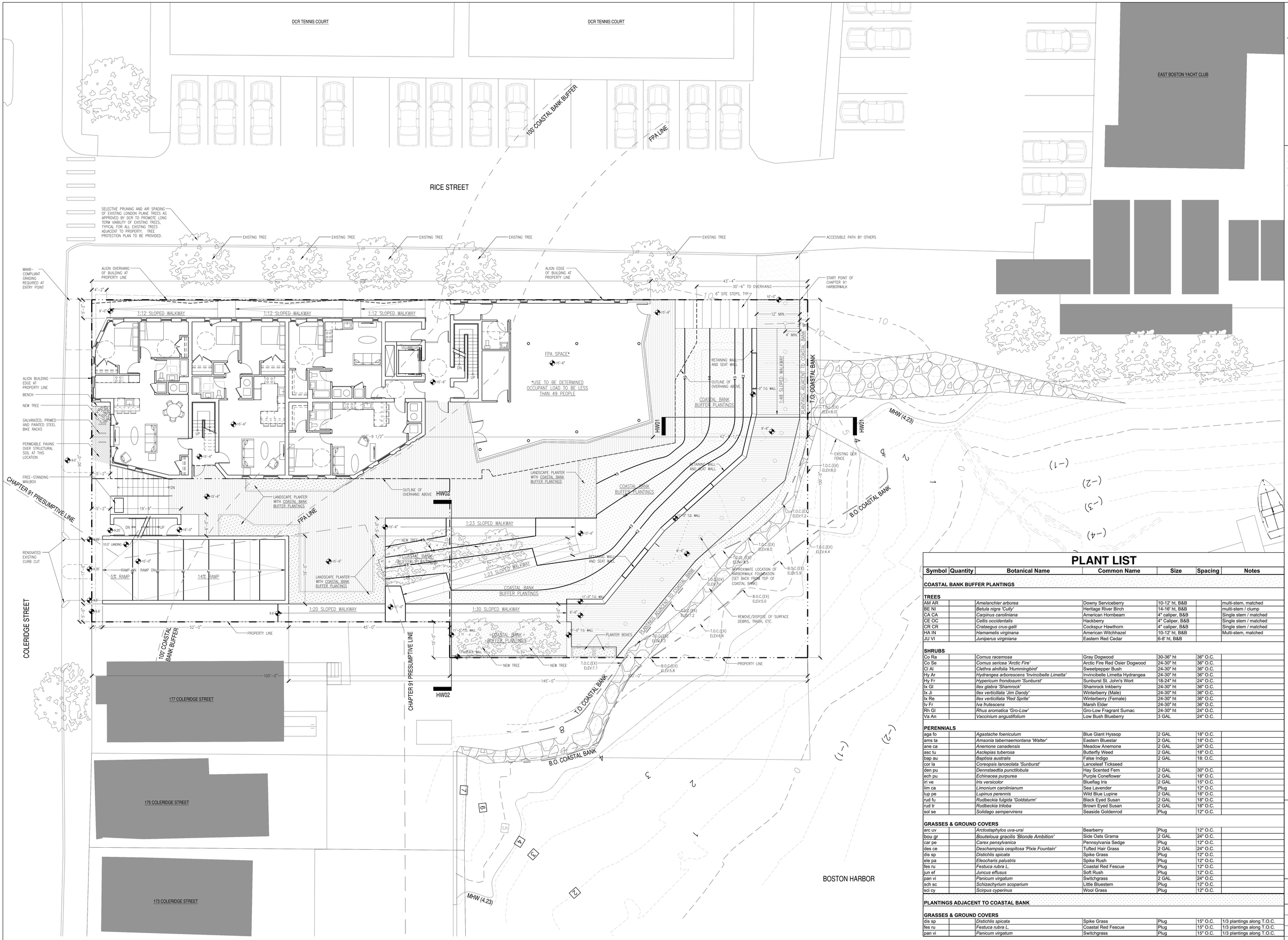
COASTAL BANK DELINEATION PLAN

SHEET NUMBER:

DEL01

ATTACHMENT F

PROPOSED SITE PLAN



A: PROPOSED SITE PLAN

Scale 1/8" = 1'-0"

PLANT LIST

Symbol	Quantity	Botanical Name	Common Name	Size	Spacing	Notes
COASTAL BANK BUFFER PLANTINGS						
TREES						
AM AR		*Amelanchier arborea*	Downy Serviceberry	10-12' ht, B&B		multi-stem, matched
BE NI		*Betula nigra 'Cully'*	Heritage River Birch	14-16' ht, B&B		multi-stem / clump
CA CA		*Carpinus caroliniana*	American Hornbeam	4" caliper, B&B		Single stem / matched
CE OC		*Celtis occidentalis*	Hackberry	4" Caliper, B&B		Single stem / matched
CR CR		*Crataegus crus-galli*	Cockspur Hawthorn	4" caliper, B&B		Single stem / matched
HA IN		*Hamamelis virginana*	American Witchhazel	10-12' ht, B&B		Multi-stem, matched
JU VI		*Juniperus virginiana*	Eastern Red Cedar	6-8' ht, B&B		
SHRUBS						
Co Ra		*Cornus racemosa*	Gray Dogwood	30-36" ht	36" O.C.	
Co Se		*Cornus sericea 'Arctic Fire'*	Arctic Fire Red Osier Dogwood	24-30" ht	36" O.C.	
Cl Al		*Clethra alnifolia 'Hummingbird'*	Sweetpepper Bush	24-30" ht	36" O.C.	
Hy Ar		*Hydrangea arborescens 'Invincibelle Limetta Hydrangea*	Invincibelle Limetta Hydrangea	24-30" ht	36" O.C.	
Hy Fr		*Hypericum frondosum 'Sunburst'*	Sunburst St. John's Wort	18-24" ht	24" O.C.	
Ix Gl		*Ilex glabra 'Shamrock'*	Shamrock Inkberry	24-30" ht	36" O.C.	
Ix Ji		*Ilex verticillata 'Jim Dandy'*	Winterberry (Male)	24-30" ht	36" O.C.	
Ix Re		*Ilex verticillata 'Red Sprite'*	Winterberry (Female)	24-30" ht	36" O.C.	
Iv Fr		*Iva frutescens*	Marsh Elder	24-30" ht	36" O.C.	
Rh Gl		*Rhus aromatica 'Gro-Low'*	Gro-Low Fragrant Sumac	24-30" ht	24" O.C.	
Va An		*Vaccinium angustifolium*	Low Bush Blueberry	3 GAL	24" O.C.	
PERENNIALS						
aga fo		*Agastache foeniculum*	Blue Giant Hyssop	2 GAL	18" O.C.	
ams ta		*Amsonia tabernaemontana 'Walter'*	Eastern Bluestar	2 GAL	18" O.C.	
ane ca		*Anemone canadensis*	Meadow Anemone	2 GAL	24" O.C.	
asc tu		*Asclepias tuberosa*	Butterfly Weed	2 GAL	18" O.C.	
bap au		*Baptisia australis*	False Indigo	2 GAL	18: O.C.	
cor la		*Coreopsis lanceolata 'Sunburst'*	Lanceleaf Tickseed			
den pu		*Dennstaedtia punctilobula*	Hay Scented Fern	2 GAL	30" O.C.	
ech pu		*Echinacea purpurea*	Purple Coneflower	2 GAL	18" O.C.	
iri ve		*Iris versicolor*	Blueflag Iris	2 GAL	15" O.C.	
lim ca		*Limonium carolinianum*	Sea Lavender	Plug	12" O.C.	
lup pe		*Lupinus perennis*	Wild Blue Lupine	2 GAL	18" O.C.	
rud fu		*Rudbeckia fulgida 'Goldsturm'*	Black Eyed Susan	2 GAL	18" O.C.	
rud tr		*Rudbeckia triloba*	Brown Eyed Susan	2 GAL	18" O.C.	
sol se		*Solidago sempervirens*	Seaside Goldenrod	Plug	12" O.C.	
GRASSES & GROUND COVERS						
arc uv		*Arctostaphylos uva-ursi*	Bearberry	Plug	12" O.C.	
bou gr		*Bouteloua gracilis 'Blonde Ambition'*	Side Oats Grama	2 GAL	24" O.C.	
car pe		*Carex pensylvanica*	Pennsylvania Sedge	Plug	12" O.C.	
des ce		*Deschampsia cespitosa 'Pixie Fountain'*	Tufted Hair Grass	2 GAL	24" O.C.	
dis sp		*Distichlis spicata*	Spike Grass	Plug	12" O.C.	
ele pa		*Eleocharis palustris*	Spike Rush	Plug	12" O.C.	
fes ru		*Festuca rubra L.*	Coastal Red Fescue	Plug	12" O.C.	
jun ef		*Juncus effusus*	Soft Rush	Plug	12" O.C.	
pan vi		*Panicum virgatum*	Switchgrass	2 GAL	24" O.C.	
sch sc		*Schizachyrium scoparium*	Little Bluestem	Plug	12" O.C.	
sci cy		*Scirpus cyperinus*	Wool Grass	Plug	12" O.C.	
PLANTINGS ADJACENT TO COASTAL BANK						
GRASSES & GROUND COVERS						
dis sp		*Distichlis spicata*	Spike Grass	Plug	15" O.C.	1/3 plantings along T.O.C.
fes ru		*Festuca rubra L.*	Coastal Red Fescue	Plug	15" O.C.	1/3 plantings along T.O.C.
pan vi		*Panicum virgatum*	Switchgrass	Plug	15" O.C.	1/3 plantings along T.O.C.

DRAFT NOT FOR CONSTRUCTION

SEE A0.0 AND A.0.1 FOR ADDITIONAL INFORMATION

THE RESIDENCES AT COLERIDGE COAST

181-183 Coleridge Street
East Boston, MA

Architect:
Touloukian Touloukian Inc.
151 Pearl Street, 2nd Floor
Boston, MA 02110
Tel: (617) 526-0884

Date: 11 NOVEMBER 2018
Scale: AS NOTED

REVISIONS

NO.	DATE

DRAWING NO.

PROPOSED SITE PLAN

A 0.2

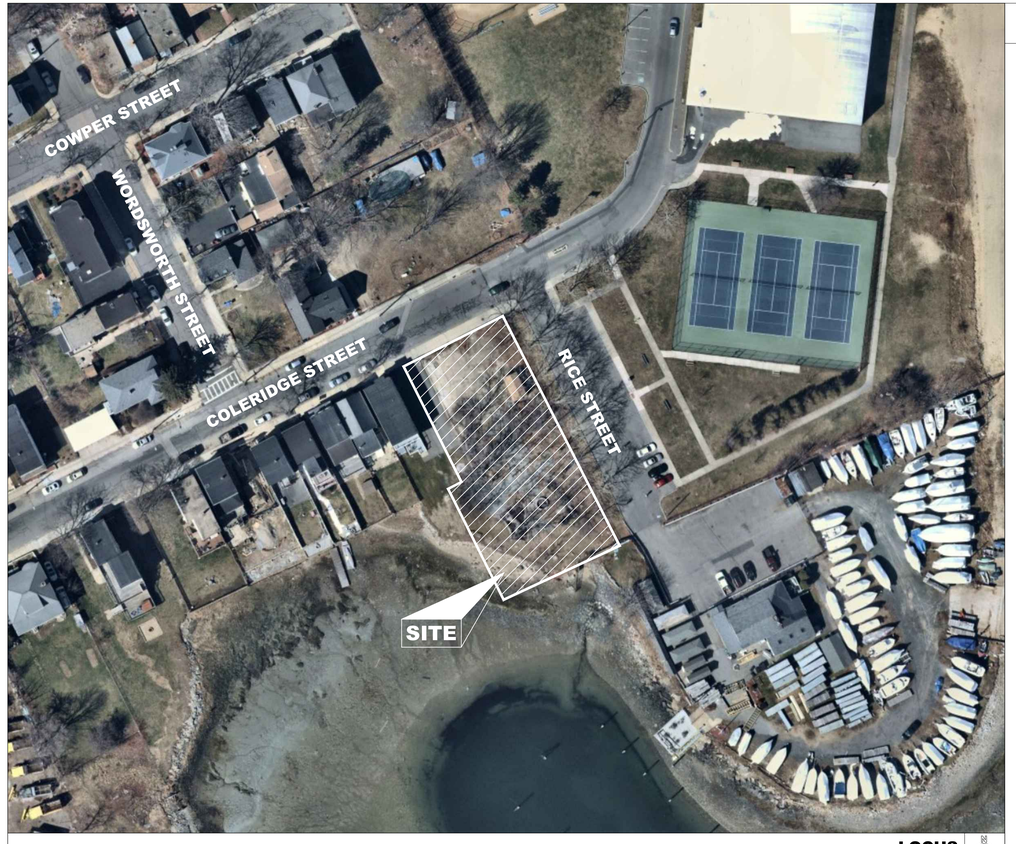
ATTACHMENT G

PLANS

THE RESIDENCES AT COLERIDGE COAST
SITE DEVELOPMENT PLANS

181 - 183 COLERIDGE STREET
BOSTON, MASSACHUSETTS

ISSUED FOR NOTICE OF INTENT: NOVEMBER 30, 2018



LOCUS
SCALE: N.T.S.

PROJECT TEAM

OWNER/APPLICANT: **ROCK DEVELOPMENT**
546 E BROADWAY
BOSTON, MA 02127
TEL: (774) 281-3165

CIVIL ENGINEER: **HIGHPOINT ENGINEERING, INC.**
45 DAN ROAD, SUITE 140
CANTON, MA 02021
TEL: (781) 770-0970
www.highpointeng.com

ARCHITECT: **TOULOUKIAN TOULOUKIAN INC.**
151 PEARL STREET | 2ND FLOOR
BOSTON, MA 02110
TEL: (617) 526-0884

ENVIRONMENTAL CONSULTANT: **FORT POINT ASSOCIATES, INC.**
31 STATE STREET | 3RD FLOOR
BOSTON, MA 02109
TEL: (617) 357-7044

SURVEYOR: **FIELDSTONE SURVEYING SERVICES**
45 MELIX AVENUE
PLYMOUTH, MA 02360
TEL: (774) 283-2172

INDEX OF DRAWINGS

ISSUE HISTORY:

		ISSUED FOR NOTICE OF INTENT AUGUST 1, 2018	ISSUED FOR NOTICE OF INTENT - REVISIONS NOVEMBER 30, 2018						
GENERAL									
T100	TITLE SHEET	●	●						
EX01	EXISTING CONDITIONS PLAN (BY OTHERS) - DATED 7.31.2018	●	●						
C200	SITE PREPARATION & EROSION CONTROL PLAN	●	●						
C300	LAYOUT & MATERIALS PLAN	●	●						
C400	GRADING, DRAINAGE & UTILITY PLAN	●	●						
C500	DETAIL SHEET	●	●						
C501	DETAIL SHEET	●	●						

HIGHPOINT
HIGHPOINT ENGINEERING, INC.
CANTON CORPORATE PLACE
45 DAN ROAD, SUITE 140 | CANTON, MA 02021
t 781.770.0970 | www.highpointeng.com

CLIENT:
ROCK DEVELOPMENT
546 E BROADWAY | EAST BOSTON, MA 02027
t 774.281.3165 | www.builtbyrock.com

CONSULTANT:

SEAL
COMMONWEALTH OF MASSACHUSETTS
DEREK B. REDGATE
CIVIL
NO. 41568
REGISTERED PROFESSIONAL ENGINEER
11-30-18

181-183 COLERIDGE STREET
RESIDENTIAL DEVELOPMENT
181-183 COLERIDGE STREET
EAST BOSTON, MA
OWNER/APPLICANT: ROCK DEVELOPMENT

REV	DATE	DESCRIPTION
1	11.30.2018	BCC/NOI REVISIONS

ISSUE TYPE:
NOTICE OF INTENT
ISSUE DATE:
08.01.2018, REV 11.30.2018
PROJECT NUMBER:
16038

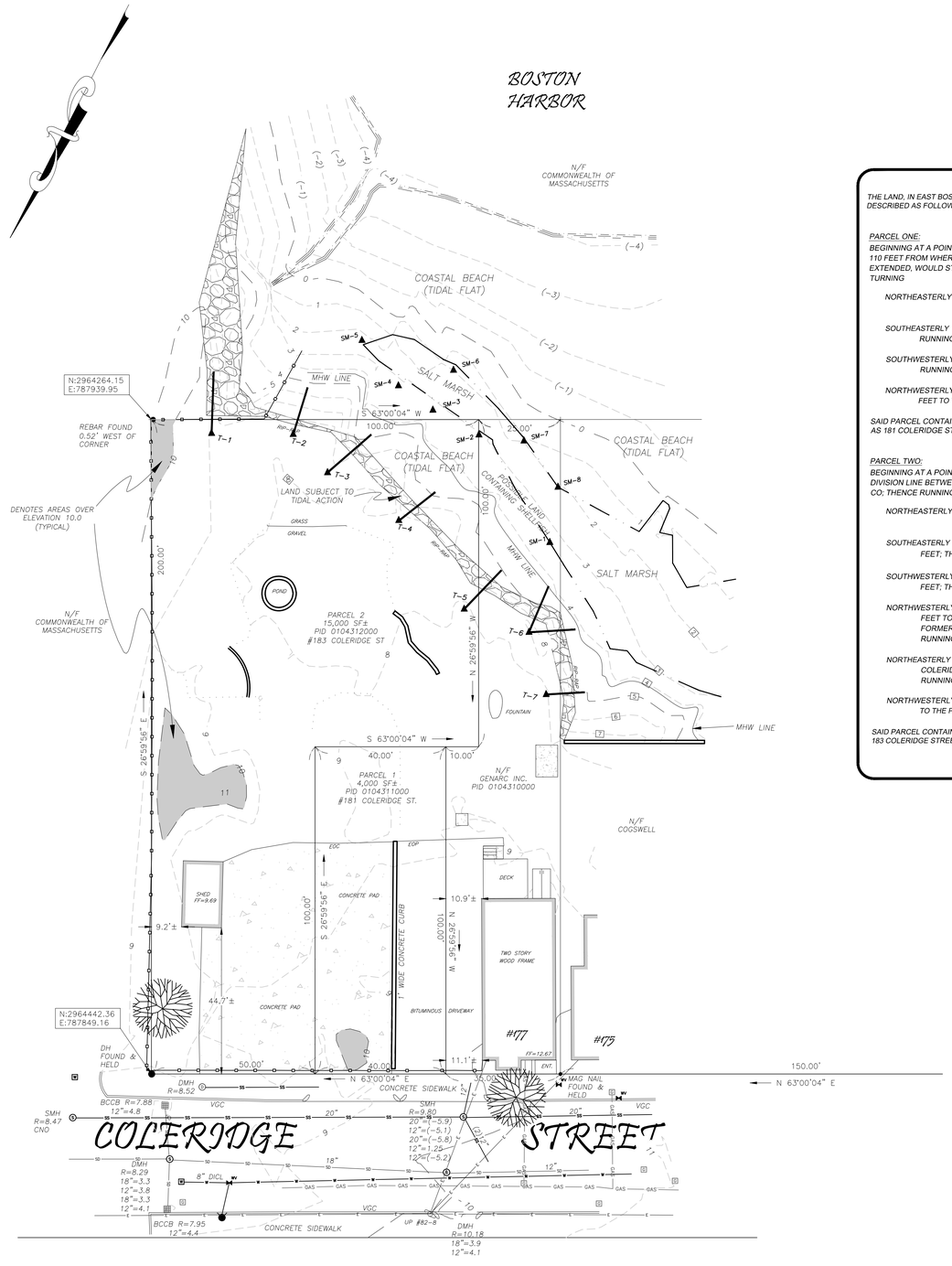
DRAWN BY: MKM
CHECKED BY: DBR

SHEET TITLE:
TITLE SHEET

SHEET NUMBER:
T100

P:\Rock Development\16038 (181-183 Coleridge)\04_Design\Dwg\03_DD\NOI Set\16038_TS01.dwg

PERMITTING NOT FOR CONSTRUCTION



LEGAL DESCRIPTION

THE LAND, IN EAST BOSTON, SUFFOLK COUNTY, MASSACHUSETTS, BOUNDED AND DESCRIBED AS FOLLOWS:

PARCEL ONE:
BEGINNING AT A POINT ON THE SOUTHEASTERLY LINE OF COLERIDGE STREET, DISTANT 110 FEET FROM WHERE THE NORTHEASTERLY LINE OF WORDSWORTH STREET, IF EXTENDED, WOULD STRIKE THE SOUTHEASTERLY LINE OF COLERIDGE STREET; THENCE TURNING

NORTHEASTERLY — ON SAID LINE OF COLERIDGE STREET, 40 FEET; THENCE TURNING AT A RIGHT ANGLE AND RUNNING

SOUTHEASTERLY — 100 FEET; THENCE TURNING AT A RIGHT ANGLE AND RUNNING

SOUTHWESTERLY — 40 FEET; THENCE TURNING AT A RIGHT ANGLE AND RUNNING

NORTHWESTERLY — ON A LINE PARALLEL WITH THE SECOND BOUNDARY LINE, 100 FEET TO THE POINT OF BEGINNING ON COLERIDGE STREET.

SAID PARCEL CONTAINS 4,000 SQUARE FEET, MORE OR LESS, AND IS COMMONLY KNOWN AS 181 COLERIDGE STREET.

PARCEL TWO:
BEGINNING AT A POINT ON THE SOUTHEASTERLY SIDE OF COLERIDGE STREET IN THE DIVISION LINE BETWEEN LAND NOW OR FORMERLY OF J.B. PEEL AND THE EAST BOSTON CO; THENCE RUNNING

NORTHEASTERLY — ALONG THE LINE OF SAID COLERIDGE STREET, 50 FEET; THENCE TURNING AND RUNNING

SOUTHEASTERLY — AT A RIGHT ANGLE WITH SAID COLERIDGE STREET, 200 FEET; THENCE TURNING AND RUNNING

SOUTHWESTERLY — ON A LINE PARALLEL WITH SAID COLERIDGE STREET, 100 FEET; THENCE TURNING AND RUNNING

NORTHWESTERLY — AT A RIGHT ANGLE WITH SAID COLERIDGE STREET, 100 FEET TO THE DIVISION LINE OF THE LAND NOW OR FORMERLY OF T.J. CANTWELL; THENCE TURNING AND RUNNING

NORTHEASTERLY — ALONG SAID DIVISION LINE AND PARALLEL WITH SAID COLERIDGE STREET, 50 FEET; THENCE TURNING AND RUNNING

NORTHWESTERLY — AT A RIGHT ANGLE WITH SAID COLERIDGE STREET, 100 FEET TO THE POINT OF BEGINNING.

SAID PARCEL CONTAINS 15,000 SQUARE FEET, MORE OR LESS AND IS COMMONLY KNOWN AS 183 COLERIDGE STREET.

GENERAL NOTES

1. THE PROPERTY IS SHOWN ON THE CITY OF BOSTON ASSESSORS RECORDS AS PARCEL ID's 0104311000 AND 0104312000 THEREON.

2. TITLE IS RECORDED AT THE SUFFOLK REGISTRY OF DEEDS AS FOLLOWS:

- *181-183 COLERIDGE STREET: DEED BOOK 9853, PAGE 161*
  (SEE JUDGEMENT IN DEED BOOK 39292, PAGE 276)
  (PARCELS ONE AND TWO)
  JOSEPH & NANCY TARANTINO TRUST
  P. O. BOX 151284
  CAPE CORAL, FL 33915

3. SURVEY REFERENCES:
- STREET LAYOUT L-2147 (COLERIDGE STREET 05-05-1885)
- STREET LAYOUT L-6873 (COLERIDGE STREET 10-19-1933)
- STREET LAYOUT L-7643 (COLERIDGE STREET 10-23-1933)
- PLAN BY MEDFORD ENGINEERING & SURVEY, THOMAS KILLION, PLS (2011)

4. PROPERTY LINE CONFIGURATION AS SHOWN HEREON WAS COMPILED FROM THE ABOVE NOTED PLANS, AND SUPPLEMENTED BY ON-THE-GROUND FIELD SURVEY BY THIS FIRM. BEARING SYSTEM IN USE ON THIS PLAN REFERENCE THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, 2001 MA MAINLAND NAD83, BY ON-SITE GPS OBSERVATIONS.

5. EXISTING CONDITIONS DETAIL AS SHOWN HEREON WAS DERIVED FROM ON-THE-GROUND FIELD SURVEY BY THIS FIRM CONDUCTED ON NOVEMBER 23, 2016. ELEVATIONS SHOWN ARE REFERENCED TO NAVD88 BY ON-SITE GPS OBSERVATIONS.

6. PRIOR TO CONSTRUCTION OR ANY RELIANCE HEREON, THE LOCATION OF ANY REMAINING EXISTING DETAIL WITH RESPECT TO THE DATA SHOWN HEREON MUST BE VERIFIED BY A COMPREHENSIVE REVIEW BY HIGHPOINT ENGINEERING, INC.

7. LOCATION AND DEPTH OF UNDERGROUND UTILITIES IS APPROXIMATE ONLY, AND IS NOT WARRANTED TO BE CORRECT. UNDERGROUND UTILITIES ARE SHOWN BASED ON RECORD DATA PROVIDED BY THE OPERATING AUTHORITIES, AND HAVE BEEN FIELD INSPECTED WHERE POSSIBLE. INVERTS ARE SHOWN OUTLET FIRST, THEN CLOCKWISE AROUND THE STRUCTURE. ADDITIONAL UTILITIES MAY EXIST WHICH ARE NOT INDICATED ON THESE PLANS. ALL EXISTING UTILITIES SHALL BE VERIFIED FOR SERVICE, SIZE, INVERT ELEVATION, LOCATIONS, ETC. PRIOR TO NEW CONNECTIONS TO OR RELOCATION OF SAME. CONTRACTOR MUST NOTIFY DIG-SAFE AT 1-888-344-7233 AT LEAST 72 HOURS PRIOR TO ANY CONSTRUCTION. NOTIFY THIS FIRM IN WRITING OF ANY AND ALL DISCREPANCIES PRIOR TO COMMENCING ANY WORK.

8. THIS PLANS CONFORMS WITH PROCEDURAL AND TECHNICAL STANDARDS FOR THE PRACTICE OF LAND SURVEYING AS INTERPRETED FROM 250 CMR SECTIONS 6.01 AND 6.02.

9. THE WORD "CERTIFY" IS UNDERSTOOD TO BE AN EXPRESSION OF PROFESSIONAL OPINION BY THE LAND SURVEYOR WHICH IS BASED ON HIS BEST KNOWLEDGE, INFORMATION, AND BELIEF, FORMULATED IN ACCORDANCE WITH COMMONLY ACCEPTED PROCEDURES CONSISTENT WITH APPLICABLE STANDARDS OF PRACTICE, AND AS SUCH IT CONSTITUTES NEITHER A GUARANTEE NOR WARRANTY, EITHER EXPRESS OR IMPLIED. THE CERTIFICATIONS SHOWN ARE NOT CERTIFICATIONS TO THE TITLE OR OWNERSHIP OF THE PROPERTIES SHOWN.

10. THE SUBJECT PARCEL IS LOCATED WITHIN ZONE "X" (AREA OF MINIMAL FLOODING) AS DESIGNATED ON FEMA COMMUNITY PANEL NUMBER 25025C0019J EFFECTIVE DATE MARCH 16, 2016 FOR COMMUNITY NUMBER 255286.

11. SURVEY IS BASED ON A TITLE REPORT PREPARED BY RAINEN LAW OFFICE, P.C. DATED 10/26/2016.

12. WETLAND RESOURCE AREA PIN FLAGS SHOWN AS WERE ESTABLISHED ON THE GROUND BY ECOTEC, INC. ON OR NEAR NOVEMBER 14, 2016.

13. ACCORDING TO INFORMATION SUPPLIED BY ECOTEC, INC., THE FOLLOWING RESOURCE AREAS DO NOT OCCUR ON THE SITE PARCELS:

- *LAND UNDER THE OCEAN*
- *DESIGNATED PORT AREAS*
- *COASTAL DUNE*
- *BARRIER BEACHES*
- *ROCKY INTERTIDAL SHORES*
- *LAND UNDER SALT PONDS*
- *BANKS OF OR LAND UNDER THE OCEAN OR RIVER THAT UNDERLIE AN ANADROMOUS/CATADROMOUS FISH RUN*

ZONING REQUIREMENTS PER ARTICLE 53

ZONING DISTRICT: EAST BOSTON NEIGHBORHOOD DISTRICT
SUBDISTRICT: 2F-4000 (TWO FAMILY RESIDENTIAL)
CURRENT PROPERTY USE: VACANT

MINIMUM LOT AREA	*= 4,000 SF PER UNIT*
MINIMUM FRONTAGE	*= 40 FT*
MINIMUM FRONT YARD	*= 10 FT*
MINIMUM SIDE YARD	*= 7 FT*
MINIMUM REAR YARD	*= 40 FT*
MINIMUM OPEN SPACE	*= 750 SF PER UNIT*
MAXIMUM BUILDING HEIGHT	*= 2.5 STORIES OR 35 FEET*
FLOOR AREA RATIO	*= 0.8*

20 0 10 20 40 80
GRAPHIC SCALE 1 inch = 20 ft.

HIGHPOINT
HIGHPOINT ENGINEERING, INC.
CANTON CORPORATE PLACE
45 DAN ROAD, SUITE 140 | CANTON, MA 02021
t 781.770.0970 | www.highpointeng.com

CLIENT:
ROCK DEVELOPMENT
546 E BROADWAY | EAST BOSTON, MA 02027
t 774.281.3165 | www.builtbyrock.com

CONSULTANT:
FIELDSTONE SURVEY SERVICES
45 MELI= AVENUE
PLYMOUTH, MA 02360
774-283-2172
sdyer@fieldstonesurvey.com

SEAL
COMMONWEALTH OF MASSACHUSETTS
STEPHEN P. DYER
No. 32742
PROFESSIONAL LAND SURVEYOR
7/31/18

181-183 COLERIDGE STREET
RESIDENTIAL DEVELOPMENT
181-183 COLERIDGE STREET
EAST BOSTON, MA
OWNER/APPLICANT: ROCK DEVELOPMENT

REV	DATE	DESCRIPTION
1	07.16.2018	REVISED

ISSUE TYPE: NOTICE OF INTENT
ISSUE DATE: 07.31.2018
PROJECT NUMBER: 16038
DRAWN BY:
CHECKED BY:

SHEET TITLE:
EXISTING CONDITIONS PLAN

SHEET NUMBER:
EX01

MAINTAIN AND PROTECT EXISTING TREES ALONG RICE STREET(TYP. 5)

R&D EXISTING FENCE

INSTALL SILTSACK® INLET PROTECTION DEVICE IN EXISTING CATCH BASIN. DEVICE TO REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE.

R&D EXISTING TREE

MAINTAIN AND PROTECT EXISTING SEWER MANHOLE

R&D EXISTING FENCE

TEMPORARY CONSTRUCTION FENCE TO BE INSTALLED AT LIMIT OF WORK

REMOVE AND STOCKPILE EXISTING CURB STONE

CONSTRUCTION ENTRANCE & ANTI-TRACKING PAD 50' MIN.

REMOVE AND STOCKPILE EXISTING CURB STONES

R&D EXISTING CONCRETE CURB

TEMPORARY CONSTRUCTION FENCE

R&D EXISTING SHED

R&D EXISTING CONCRETE PAD

SOIL STOCKPILE AREA

MATERIAL STOCKPILE AREA

R&D EXISTING RETAINING WALL

R&D EXISTING ROCK LANDSCAPING

R&D EXISTING DECORATIVE LANDSCAPE FEATURE

CONSTRUCTION FENCING & STRAW WATTLE UPLAND OF COASTAL BANK

COLERIDGE STREET

SYMBOL LEGEND

	STRAW WATTLE EROSION CONTROL BARRIER
	SILTSACK® INLET PROTECTION DEVICE
	ANTI-TRACKING PAD / CONSTRUCTION ENTRANCE
R&D	REMOVE AND DISPOSE
X	CONSTRUCTION FENCE
	CONCRETE REMOVAL
X	DENOTES REMOVAL OF OBJECT
	DENOTES FENCE REMOVAL

10 0 5 10 20 40

GRAPHIC SCALE 1 inch = 10 ft.

EROSION CONTROL NOTES

1. DISTURBANCE OF SOIL SURFACES SHALL CONFORM TO STATE LAW/REGULATIONS. ALL WORK SHALL COMPLY WITH THE CRITERIA OUTLINED TO PREVENT OR MINIMIZE SOIL EROSION.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TIMELY INSTALLATION, INSPECTION, REPAIR AND REPLACEMENT OF ALL EROSION CONTROL DEVICES TO ENSURE PROPER OPERATION.

3. THE CONTRACTOR SHALL COMPLY WITH ALL CITY OF BOSTON, STATE OF MASSACHUSETTS AND FEDERAL REGULATIONS IN CONSTRUCTING THE EROSION AND SEDIMENTATION CONTROLS INDICATED ON THESE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION OF TEMPORARY DRAINAGE SWALES, TEMPORARY SEDIMENT BASINS AND OTHER METHODS TO MANAGE THE STORMWATER RUNOFF FROM THE SITE THROUGHOUT THE DURATION OF CONSTRUCTION.

4. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CLEAN ROADS, CONTROL DUST, AND TAKE WHATEVER MEASURES NECESSAIRY TO ENSURE THAT ALL ROADS ARE MAINTAINED IN A CLEAN, MUD AND DUST FREE CONDITION AT ALL TIMES.

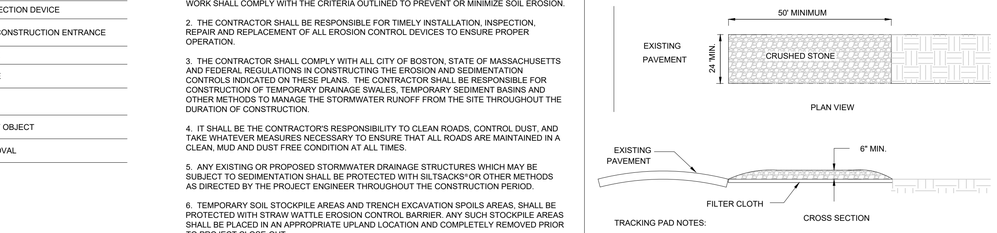
5. ANY EXISTING OR PROPOSED STORMWATER DRAINAGE STRUCTURES WHICH MAY BE SUBJECT TO SEDIMENTATION SHALL BE PROTECTED WITH SILTSACKS® OR OTHER METHODS AS DIRECTED BY THE PROJECT ENGINEER THROUGHOUT THE CONSTRUCTION PERIOD.

6. TEMPORARY SOIL STOCKPILE AREAS AND TRENCH EXCAVATION SPOILS AREAS, SHALL BE PROTECTED WITH STRAW WATTLE EROSION CONTROL BARRIER. ANY SUCH STOCKPILE AREAS SHALL BE PLACED IN AN APPROPRIATE UPLAND LOCATION AND COMPLETELY REMOVED PRIOR TO PROJECT CLOSE-OUT.

7. THE CONTRACTOR SHALL KEEP ON SITE, AT ALL TIMES, ADDITIONAL EROSION CONTROL BARRIER MATERIALS FOR EMERGENCY INSTALLATION OR FOR INSTALLATION AT THE DIRECTION OF THE OWNER'S REPRESENTATIVE, OR THE ENGINEER.

8. THE CONTRACTOR SHALL INSPECT THE EROSION CONTROL BARRIER ON A DAILY BASIS, REMOVING WITH HAND TOOLS AND WITHIN THE SAME WORKING DAY ANY DISPLACED TOPSOIL, SUBSOIL OR SEDIMENT THAT HAS ACCUMULATED AT THEIR BASE OR MIGRATED BEYOND THIS LINE. THESE EROSION CONTROL BARRIERS SHALL ALSO BE INSPECTED BOTH PRIOR TO, AND WITHIN A WEEK AFTER, ANY FORECASTED RAINFALL EVENT OF SIGNIFICANT DURATION OR INTENSITY, THE CONTRACTOR AGAIN MAKING REPAIRS AND REMOVING ANY ACCUMULATED SEDIMENT AS NEEDED.

9. EROSION CONTROL MATERIALS SHALL REMAIN IN PLACE UNTIL ALL WORK HAS BEEN COMPLETED AND SOILS COMPLETELY STABILIZED.



TRACKING PAD NOTES:

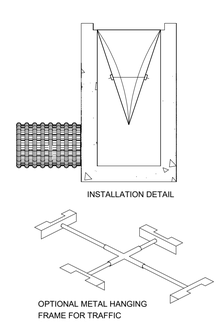
STONE SIZE - USE 2" CRUSHED STONE

FILTER CLOTH - SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.

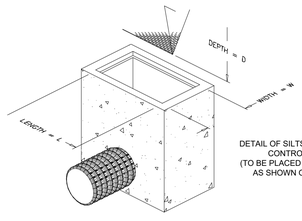
SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHOULD BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM SHOULD BE PERMITTED.

MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH PREVENTS TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANING OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.

ANTI-TRACKING PAD
NOT TO SCALE **A3**



FOR APPROVAL SUBMIT TYPE OF SILTSACK® DEPENDING ON THE APPLICATION, THESILTSACK CAN BE MADE FROM EITHER ONE OF THE ABOVE FABRICS WITH AN OIL-ABSORBANT PILLOW INSERT OR, MADE COMPLETELY FROM AN OIL-ABSORBANT SILTSACK®, WITH A WOVEN PILLOW INSERT.



DETAIL OF SILTSACK® SEDIMENT CONTROL DEVICE (TO BE PLACED IN CATCH BASIN AS SHOWN ON THE PLAN)

SILTSACK® SPECIFICATIONS

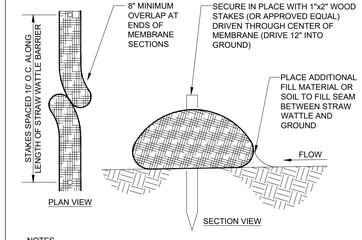
NOTE: THE SILTSACK WILL BE MANUFACTURED FROM A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS.

REGULAR FLOW SILTSACK®

(FOR AREAS OF LOW TO MODERATE PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	120 LBS
MULLEN BURST	ASTM D-3786	800 PSI
TRAPEZOID TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4355	80 %
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	0.55 SEC -1

SILTSACK® INLET PROTECTION DEVICE
NOT TO SCALE **A2**



NOTES
1. WATTLES SHALL BE 8" MINIMUM DIAMETER.
2. WATTLES SHALL BE INSTALLED PRIOR TO START OF CONSTRUCTION ACTIVITIES AND LEFT IN PLACE TO BIODEGRADE AFTER FINAL STABILIZATION.

STRAW WATTLE BARRIER
NOT TO SCALE **A1**

HIGHPOINT ENGINEERING, INC.
CANTON CORPORATE PLACE
45 DAN ROAD, SUITE 140 | CANTON, MA 02021
t 781.770.0970 | www.highpointeng.com

CLIENT:
ROCK DEVELOPMENT
546 E BROADWAY | EAST BOSTON, MA 02027
t 774.281.3165 | www.builtbyrock.com

CONSULTANT:

SEAL

COMMONWEALTH OF MASSACHUSETTS
DEREK B. REGGIATE
CIVIL
NO. 41566
REGISTERED PROFESSIONAL ENGINEER
11-30-18

181-183 COLERIDGE STREET
RESIDENTIAL DEVELOPMENT

181-183 COLERIDGE STREET
EAST BOSTON, MA

OWNER/APPLICANT: ROCK DEVELOPMENT

REV	DATE	DESCRIPTION
1	11.30.2018	BCC/NOI REVISIONS

ISSUE TYPE:
NOTICE of INTENT

ISSUE DATE:
08.01.2018, REV 11.30.2018

PROJECT NUMBER:
16038

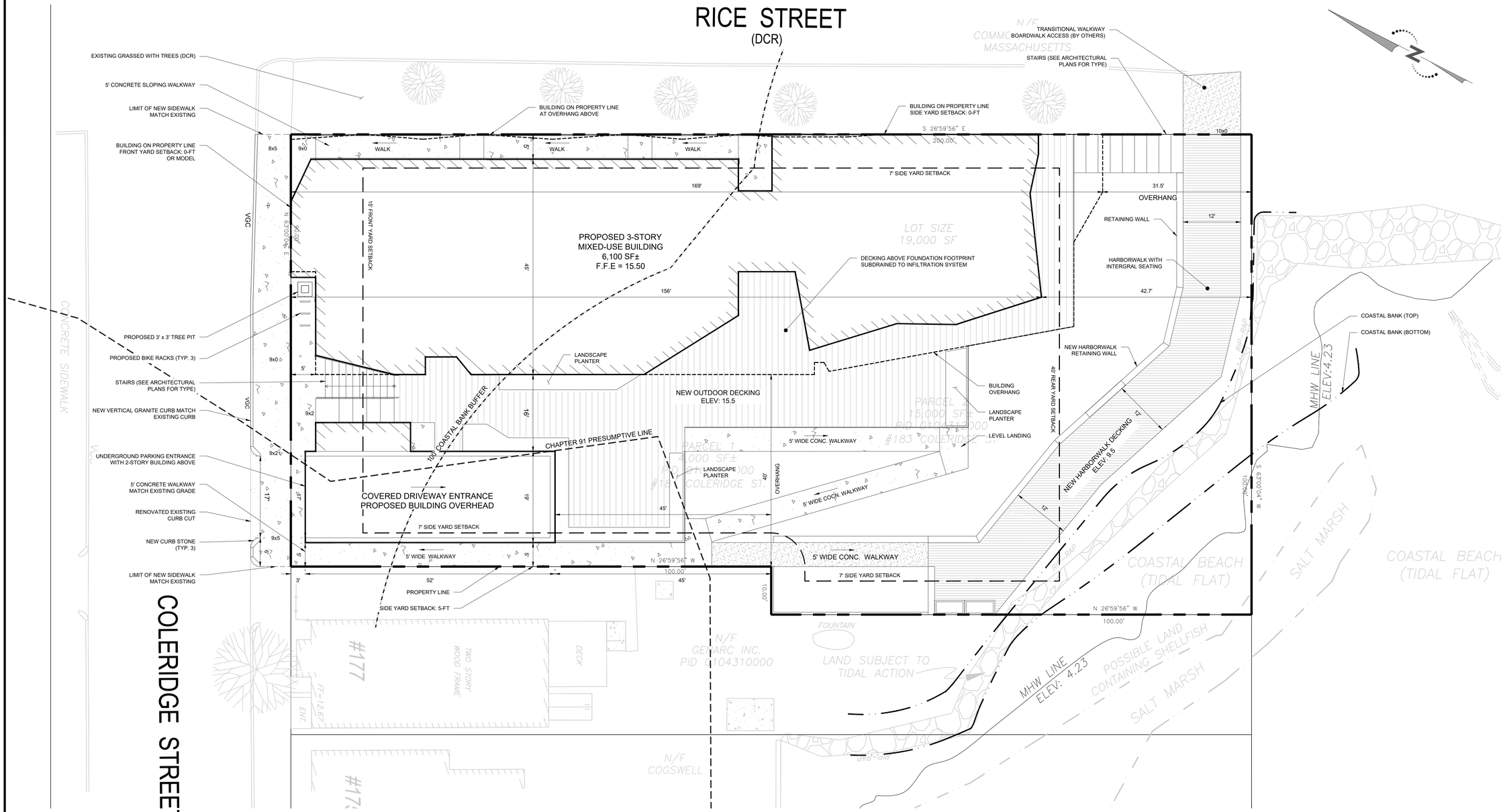
DRAWN BY: SMW

CHECKED BY: DBR

SHEET TITLE:
SITE PREPARATION & EROSION CONTROL PLAN

SHEET NUMBER:
C200

PERMITTING NOT FOR CONSTRUCTION



SYMBOL LEGEND	
VGC	VERTICAL GRANITE CURB
9x5	PROPOSED SPOT GRADE
	TOP OF COASTAL BANK
	COASTAL BANK BUFFER
	SETBACK LINE
	CHAPTER 91 PRESUMPTIVE LINE
	FPA LINE

GENERAL NOTES

1. EXISTING CONDITIONS SHOWN HEREON ARE BASED ON A PLAN ENTITLED "EXISTING CONDITIONS SURVEY 181-183 COLERIDGE STREET" PREPARED BY FIELDSTONE SURVEY SERVICES, DATED DECEMBER 28, 2016.
2. PROPERTY LINE INFORMATION SHOWN HEREON IS BASED ON AN ON-THE-GROUND SURVEY CONDUCTED BY FIELDSTONE SURVEY SERVICES IN DECEMBER 28, 2016.

10 0 5 10 20 40
GRAPHIC SCALE 1 inch = 10 ft.

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HIGHPOINT ENGINEERING, INC.
CANTON CORPORATE PLACE
45 DAN ROAD, SUITE 140 | CANTON, MA 02021
t 781.770.0970 | www.highpointeng.com

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546 E BROADWAY | EAST BOSTON, MA 02027
t 774.281.3165 | www.builtbyrock.com

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REGISTERED PROFESSIONAL ENGINEER
11-30-18

181-183 COLERIDGE STREET
RESIDENTIAL DEVELOPMENT
181-183 COLERIDGE STREET
EAST BOSTON, MA
OWNER/APPLICANT: ROCK DEVELOPMENT

REV	DATE	DESCRIPTION
1	11.30.2018	BCC/NOI REVISIONS

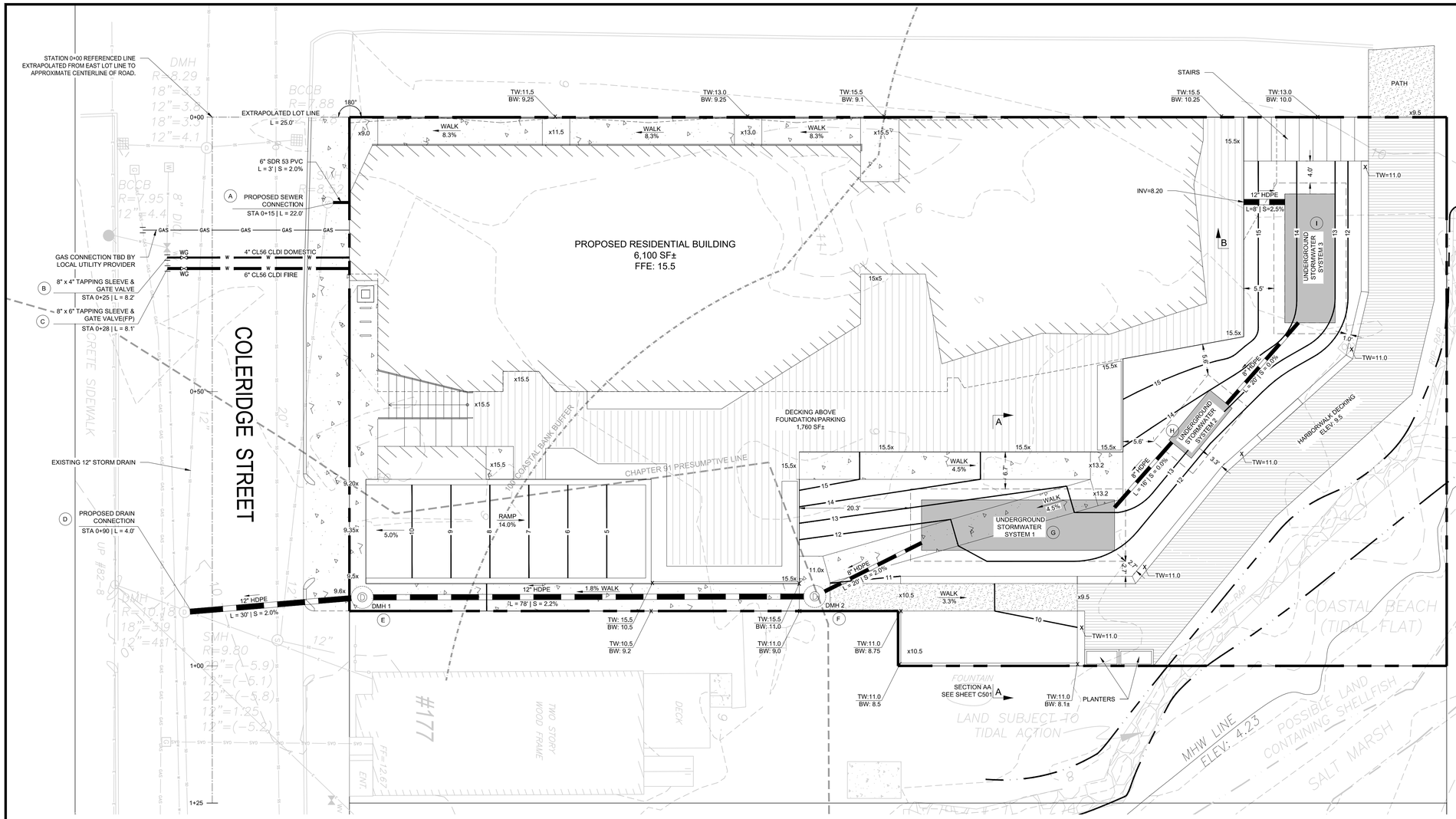
ISSUE TYPE:
NOTICE OF INTENT
ISSUE DATE:
08.01.2018, REV 11.30.2018
PROJECT NUMBER:
16038

DRAWN BY: SMW
CHECKED BY: DBR

SHEET TITLE:
LAYOUT & MATERIALS PLAN

SHEET NUMBER:
C300

PERMITTING NOT FOR CONSTRUCTION



FOR BWSC USE ONLY

10 0 5 10 20 40

GRAPHIC SCALE 1 inch = 10 ft.

PROJECT NAME:
THE RESIDENCES AT COLERIDGE COAST
181-183 COLERIDGE STREET (EAST BOSTON)
BOSTON, MA 02128

WARD AND PARCEL:
181 COLERIDGE ST: 01 - 0431 - 10
183 COLERIDGE ST: 01 - 0431 - 20

BWSC ACCOUNT NO:
181-183 COLERIDGE ST: 18339

OWNER:
ROCK DEVELOPMENT
546 EAST BROADWAY
BOSTON, MA 02127
TEL: (617) 269-7625

BWSC INSPECTION SIGN-OFF		INSPECTOR	DATE	COMMENT	DYE TEST
A	6" SEWER CONNECTION				
B	4" TAPPING SLEEVE / WATER GATE				
C	6" TAPPING SLEEVE / WATER GATE				
D	12" DRAIN CONNECTION				
E	DRAIN MANHOLE				
F	DRAIN MANHOLE				
G	UNDERGROUND INFILTRATION SYSTEM 1				
H	UNDERGROUND INFILTRATION SYSTEM 2				
I	UNDERGROUND INFILTRATION SYSTEM 3				

SITE UTILITY NOTES

1. THE LOCATION OF UNDERGROUND UTILITIES AS REPRESENTED ON THESE PLANS IS BASED UPON EXISTING CONDITIONS PLAN BY FIELDSTONE SURVEY SERVICES DATED NOVEMBER 2016 REVISED THROUGH JULY 18, 2018 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 NOTIFY DIG SAFE AT B-1-1 AT LEAST 72 HOURS PRIOR TO COMMENCEMENT OF ANY DEMOLITION OR CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER OF ANY DISCREPANCIES BETWEEN THESE PLANS AND OBSERVED EXISTING CONDITIONS PRIOR TO PROCEEDING WITH WORK.
2. THE CONTRACTOR SHALL VERIFY THE LOCATION, SIZE AND DEPTH OF EXISTING UTILITIES PRIOR TO TAPPING INTO, CROSSING, EXTENDING OR RELOCATING THEM. IF THE NEW WORK POSES A CONFLICT WITH EXISTING UTILITIES, THE ENGINEER IS TO BE NOTIFIED PRIOR TO THE CONTRACTOR CONTINUING.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ANY AND ALL REQUIRED INSPECTIONS ASSOCIATED WITH THE WORK SHOWN HEREON WITH THE CITY OF BOSTON PUBLIC WORKS, FIRE DEPARTMENT, BOSTON WATER AND SEWER COMMISSION, OR ANY OTHER MUNICIPAL AUTHORITY AS REQUIRED BY LOCAL REGULATIONS.
4. FILL MATERIAL SHALL BE AS SPECIFIED BY THE ARCHITECT/ ENGINEER AND SELECTED FROM ON-SITE EXCAVATION MATERIAL WHERE POSSIBLE.
5. MATERIAL FOR BACKFILL SHALL NOT INCLUDE UNSUITABLE MATERIAL SUCH AS PEAT, TRASH, STUMPS, DEBRIS OR HAZARDOUS WASTE.
6. BOSTON WATER AND SEWER COMMISSION, DEPARTMENT OF PUBLIC WORKS, AND FIRE DEPARTMENT SHALL BE NOTIFIED PRIOR TO THE START OF ANY WORK ON THE WATER SYSTEM.
7. UNLESS OTHERWISE SPECIFIED ON THE PLANS AND SPECIFICATIONS ALL SITE CONSTRUCTION MATERIALS AND METHODOLOGIES ARE TO CONFORM TO THE BOSTON WATER AND SEWER COMMISSION CONSTRUCTION SPECIFICATIONS AND THE COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION, AS APPLICABLE.
8. THE CONTRACTOR SHALL ENSURE THAT ALL ABANDONED AND/OR INACTIVE WATER, SEWER, DRAIN, FIRE PIPES AND RELATED APPURTENANCES INCLUDING BUT NOT LIMITED TO ITEMS SUCH AS METERS, METER PITS, SIDEWALK CONTROL TUBES, MAIN TUBE SHOES AND MAIN CONTROL BOXES ARE REMOVED.
9. CONTRACTOR TO VERIFY LOCATION AND SIZE OF EXISTING WATER MAIN IN FIELD PRIOR TO ORDERING VALVES AND FITTINGS AND INSTALLING WATER CONNECTIONS.
10. FOR THIS PROJECT IT IS REQUIRED THAT AN AS-BUILT PLAN BE PRODUCED. THIS AS-BUILT WILL CONTAIN THE LOCATIONS OF ANY ABANDONED UTILITIES THAT ARE SITUATED IN THE ROADWAY.
11. THE LOCATION OF ALL NEW INSTALLATIONS ARE TO BE LOCATED AND THERE SHOULD BE TIE MEASUREMENTS FROM EXISTING STRUCTURES, PROPERTY LINES AND CORNERS.
12. PLANS SHOWING DEPTHS OF WATER PIPE ARE REQUIRED AT ALL GATES, BENDS AND CONNECTIONS, SIZE AND TYPE OF ALL PIPES & VALVES.
13. INSTALL WATER LINE WITH A MINIMUM OF FIVE FEET OF COVER AND A MAXIMUM OF SEVEN FEET OF COVER WITH ALL FINAL DESIGN GRADES.
14. CONTRACTOR TO VERIFY SEWER INVERTS IN FIELD PRIOR TO INSTALLING SEWER CONNECTION. NOTIFY ENGINEER IF DESIGN ASSUMPTIONS CONFLICT WITH FIELD CONDITIONS.
15. CONTRACTOR TO VERIFY LOCATIONS OF GAS SERVICE IN FIELD. GAS DISTRIBUTION LAYOUT TO BE PROVIDED BY LOCAL UTILITY.
16. ELECTRICAL SERVICE TO BE PROVIDED BY PRIVATE SERVICE COMPANY.

DRAIN SCHEDULE

EXISTING DMH
RIM = 10.18
INV(O) = 3.9 (18" EXISTING)
INV(I) = 5.0 (12" NEW HDPE)
INV(I) = 4.1 (12" EXISTING)

DMH 1
RIM = 9.60
INV(O) = 5.60 (12" HDPE)
INV(I) = 5.75 (12" HDPE)

DMH 2
RIM = 11.05
INV(O) = 7.50 (12" HDPE)
INV(I) = 7.60 (8" HDPE)

UNDERGROUND STORMWATER INFILTRATION/ DETENTION BASIN #1
105 STONE-EMBEDDED R-TANK 3.5 CHAMBERS
TOP OF STONE = 10.15
TOP OF CHAMBERS = 9.65
BOTTOM OF CHAMBERS = 4.75
BOTTOM OF STONE = 4.50
INV(I-8" HDPE) = 7.00
INV(O-8" HDPE) = 8.00

UNDERGROUND STORMWATER INFILTRATION/ DETENTION BASIN #2
20 STONE-EMBEDDED R-TANK 3.5 CHAMBERS
TOP OF STONE = 10.15
TOP OF CHAMBERS = 9.65
BOTTOM OF CHAMBERS = 4.75
BOTTOM OF STONE = 4.50
INV(I-8" HDPE) = 7.00
INV(O-8" HDPE) = 7.00

UNDERGROUND STORMWATER INFILTRATION/ DETENTION BASIN #3
70 STONE-EMBEDDED R-TANK 3.5 CHAMBERS
TOP OF STONE = 10.15
TOP OF CHAMBERS = 9.65
BOTTOM OF CHAMBERS = 4.75
BOTTOM OF STONE = 4.50
INV(I-12" HDPE) = 8.00
INV(O-8" HDPE) = 7.00

SYMBOL LEGEND

W W	PROPOSED WATER SERVICE
SS	PROPOSED GRAVITY SEWER
GAS GAS	PROPOSED GAS LINE
	PROPOSED DRAIN PIPE
	PROPOSED WATER GATE
	PROPOSED DRAIN MANHOLE
11	PROPOSED ELEVATION CONTOUR
x11.5	PROPOSED SPOT ELEVATION

PERMITTING NOT FOR CONSTRUCTION

HIGHPOINT
HIGHPOINT ENGINEERING, INC.
CANTON CORPORATE PLACE
45 DAN ROAD, SUITE 140 | CANTON, MA 02021
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11-30-18

181-183 COLERIDGE STREET
RESIDENTIAL DEVELOPMENT
181-183 COLERIDGE STREET
EAST BOSTON, MA

OWNER/APPLICANT: ROCK DEVELOPMENT

REV	DATE	DESCRIPTION
1	11.30.2018	BCC / NOI REVISIONS

ISSUE TYPE:
NOTICE OF INTENT

ISSUE DATE:
08.01.2018, REV 11.30.2018

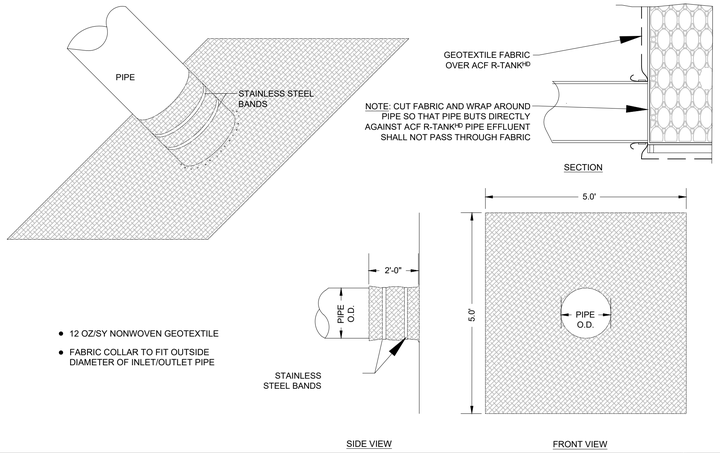
PROJECT NUMBER:
16038

DRAWN BY: MKM

CHECKED BY: DBR

SHEET TITLE:
GRADING, DRAINAGE & UTILITY PLAN

SHEET NUMBER:
C400

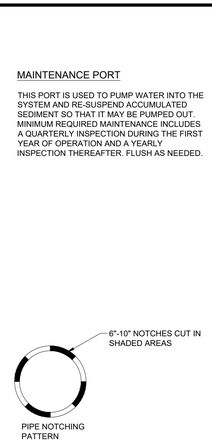


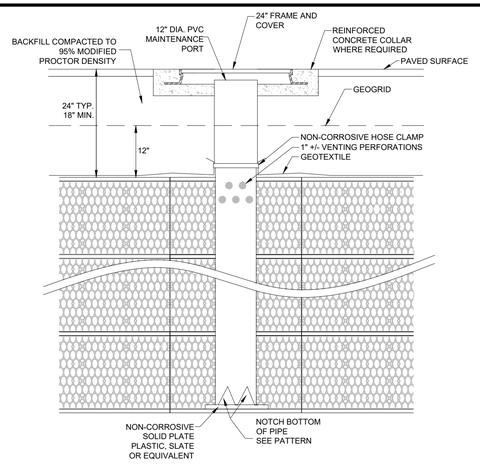
- 12 OZ/SY NONWOVEN GEOTEXTILE
- FABRIC COLLAR TO FIT OUTSIDE DIAMETER OF INLET/OUTLET PIPE

R-TANK[HD] PIPE CONNECTION
NOT TO SCALE **C3**

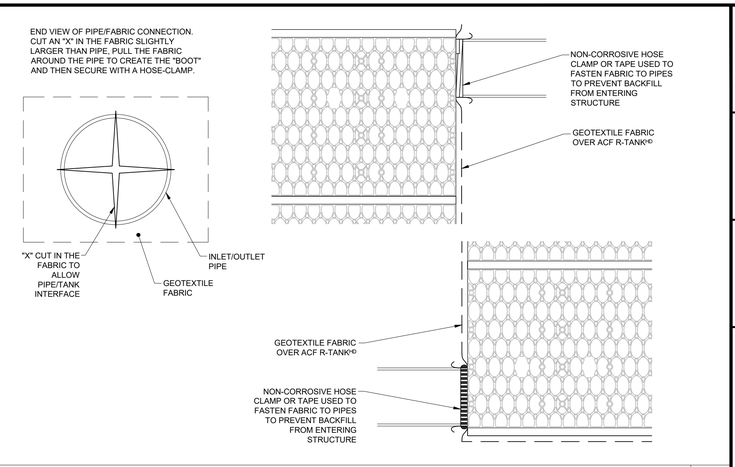
MAINTENANCE PORT

THIS PORT IS USED TO PUMP WATER INTO THE SYSTEM AND RE-SUSPEND ACCUMULATED SEDIMENT SO THAT IT MAY BE PUMPED OUT. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION DURING THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER. FLUSH AS NEEDED.

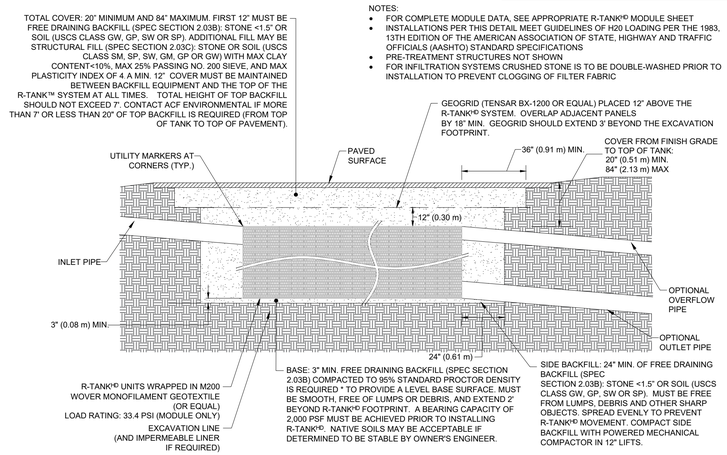




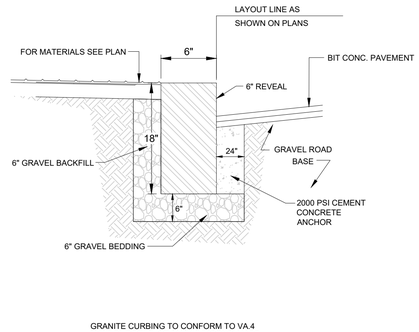
R-TANK[HD] TYPICAL MAINTENANCE PORT
NOT TO SCALE **C2**



R-TANK[HD] TYPICAL TANK INLET/OUTLET DETAIL
NOT TO SCALE **C1**

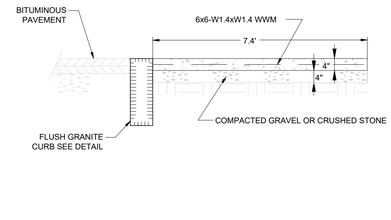


R-TANK[HD] - HS-20 LOADS
NOT TO SCALE **B3**

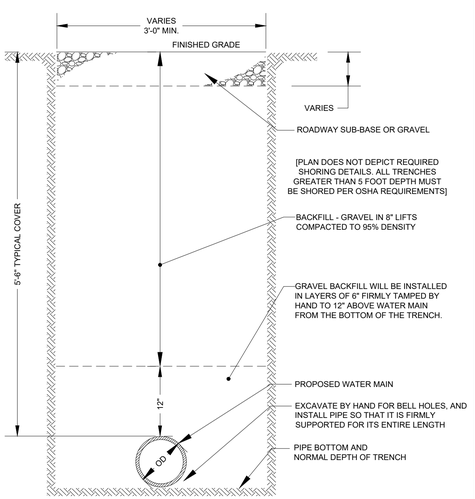


GRANITE CURBING TO CONFORM TO VA.4 TYPE PER DEPT. OF PUBLIC WORKS, MASS. STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES: M6-03-1

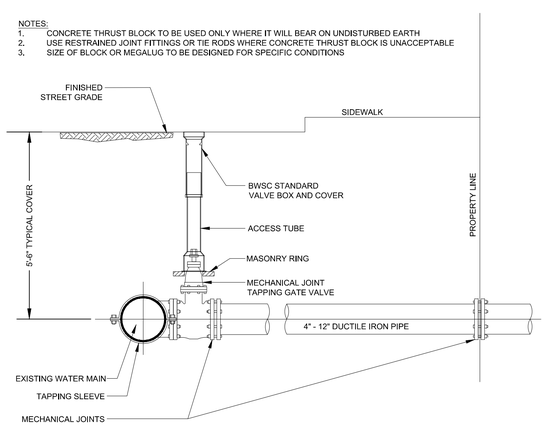
VERTICAL GRANITE CURB
NOT TO SCALE **B2**



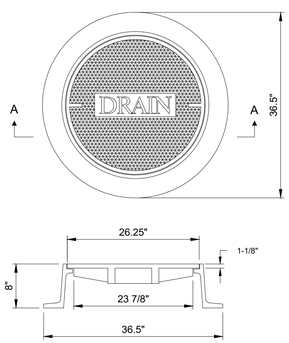
CONCRETE SIDEWALK
NOT TO SCALE **B1**



WATER TRENCH
NOT TO SCALE **A4**



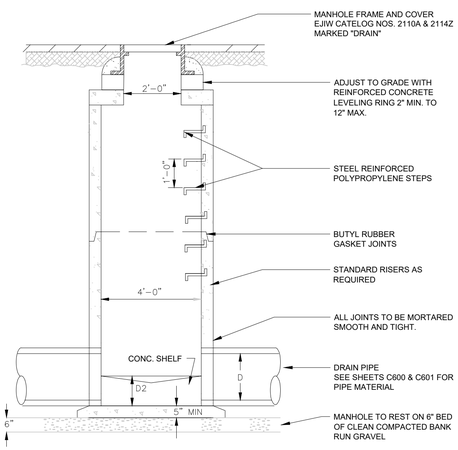
WATER PIPE CONNECTION & TAPPING SLEEVE
NOT TO SCALE **A3**



NOTE:

FRAME AND COVER SHALL BE EAST JORDAN IRON WORKS CATALOG NOS. 2110A & 2114Z MARKED "DRAIN", OR APPROVED EQUAL.

DRAIN MANHOLE FRAME AND COVER
NOT TO SCALE **A2**



PRECAST DRAIN MANHOLE
NOT TO SCALE **A1**

HIGHPOINT
HIGHPOINT ENGINEERING, INC.
CANTON CORPORATE PLACE
45 DAN ROAD, SUITE 140 | CANTON, MA 02021
t 781.770.0970 | www.highpointeng.com

CLIENT:

ROCK DEVELOPMENT
546 E BROADWAY | EAST BOSTON, MA 02027
t 774.281.3165 | www.builtbyrock.com

CONSULTANT:

SEAL

COMMONWEALTH OF MASSACHUSETTS
DEREK B. REGGIATE
CIVIL
NO. 41566
REGISTERED PROFESSIONAL ENGINEER
11-30-18

181-183 COLERIDGE STREET
RESIDENTIAL DEVELOPMENT

181-183 COLERIDGE STREET
EAST BOSTON, MA

OWNER/APPLICANT: ROCK DEVELOPMENT

REV	DATE	DESCRIPTION
1	11.30.2018	BCC/NOI REVISIONS

ISSUE TYPE:
NOTICE OF INTENT
ISSUE DATE:
08.01.2018, REV 11.30.2018
PROJECT NUMBER:
16038

DRAWN BY: MKM
CHECKED BY: DBR

SHEET TITLE:
DETAIL SHEET

SHEET NUMBER:
C500

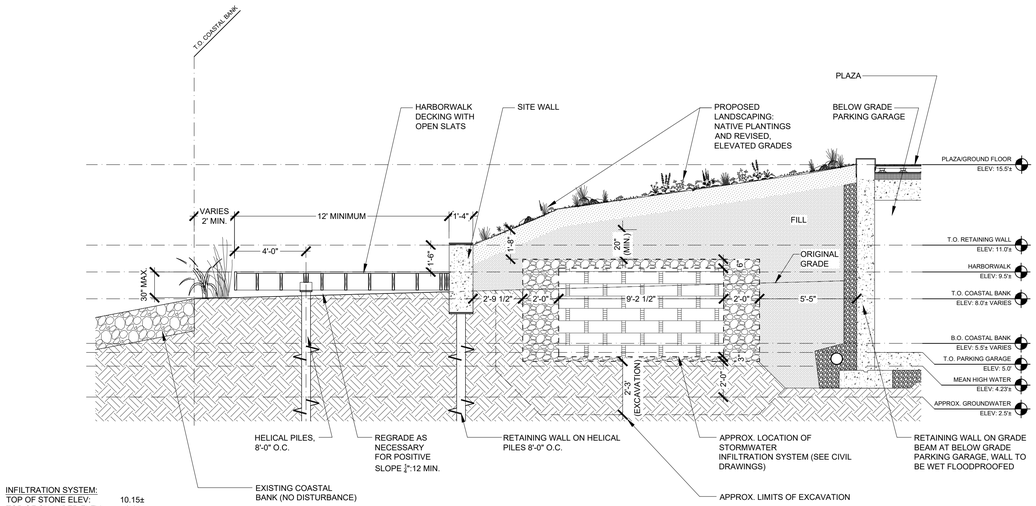
PERMITTING NOT FOR CONSTRUCTION

--- NOT TO SCALE **C4**

--- NOT TO SCALE **C3**

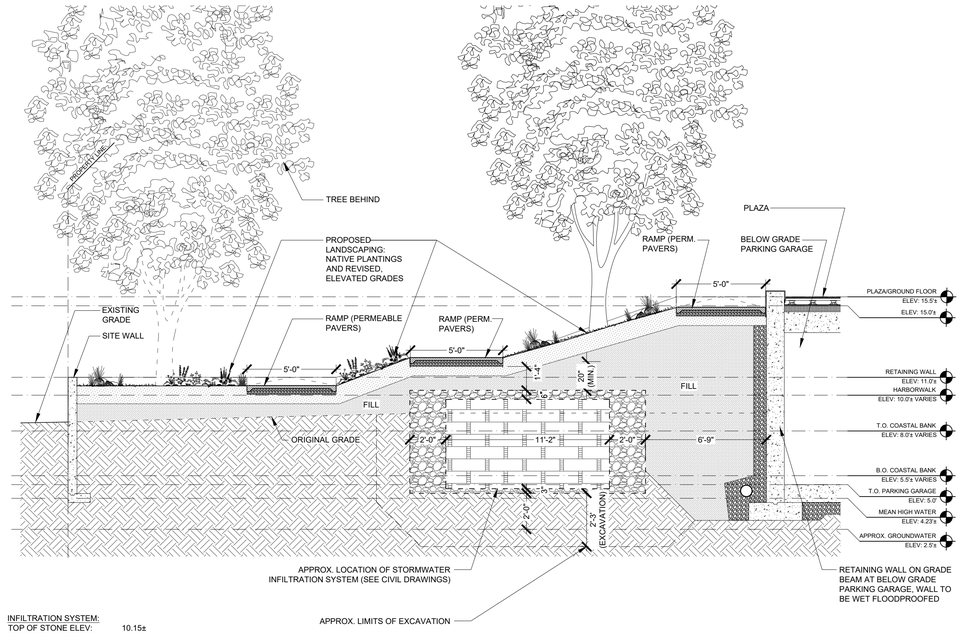
--- NOT TO SCALE **C2**

--- NOT TO SCALE **C1**



INFILTRATION SYSTEM:
TOP OF STONE ELEV: 10.15±
TOP OF CHAMBER ELEV: 9.65±
BOTTOM OF CHAMBER ELEV: 4.75±
BOTTOM OF STONE ELEV: 4.50±

BB SITE SECTION AT HARBORWALK
SCALE 1/4" = 1' - 0" **BB**



INFILTRATION SYSTEM:
TOP OF STONE ELEV: 10.15±
TOP OF CHAMBER ELEV: 9.65±
BOTTOM OF CHAMBER ELEV: 4.75±
BOTTOM OF STONE ELEV: 4.50±

AA SITE SECTION AT RAMPS
SCALE 1/4" = 1' - 0" **AA**

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CHECKED BY: DBR

SHEET TITLE:

DETAIL SHEET

SHEET NUMBER:

C501

PERMITTING NOT FOR CONSTRUCTION