



Civil • Survey • Structural • Environmental • Design  
3102 East Main Road, Portsmouth RI 02871  
Tel. 401.683.6630 www.nei-cds.com

February 9, 2024

To:

Town of Bristol  
Planning Board  
10 Court Street, Bristol, RI 02809  
Director of Community Development: Diane Williamson  
E: [dwilliamson@bristolri.gov](mailto:dwilliamson@bristolri.gov)  
T: 401-253-7000 x126

CC: Zoning Enforcement Officer: Edward Tanner  
E: [etanner@bristolri.gov](mailto:etanner@bristolri.gov)  
T: 401-253-7000 x128

**Subject: Agostini Minor Subdivision – 68 Magnolia St Bristol, RI [Plat: 23, Lot: 185, 189, 192]  
(NEI job 23.0144) REV.1**

## Minor Subdivision – Preliminary Stage

This package includes the following:

5 copies of each unless stated otherwise:

- Minor Subdivision Narrative (REV.1)(8.5 x 11)
- Response to Comments (8.5 x 11)
- Site/Civil Plans (REV.1) by Narragansett Engineering dated 1/3/24 – 4 Sheets (24 x 36 and 11 x 17 – 5 copies of each size)
- RIDEM Appendix A LID Site Planning Checklist (8.5 x 11)(1 copy)
- Stormwater Report By Narragansett Engineering (8.5 x 11) (1 copy)

If you need additional information or have any questions or concerns, please do not hesitate to contact my office at (401)683-6630 or email [cbarry@nei-cds.com](mailto:cbarry@nei-cds.com)

Dropped off by NEI staff on 2/9/24



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T: 401-253-7000 x126

### Response to Preliminary Application Comments

RE: Agostini Minor Subdivision  
68 Magnolia St Bristol RI  
Tax Assessor's Plat: 23  
Tax Assessor's Lot: 185,189,192

Comments in Black (comments from 1-12-24)  
[Responses in Blue](#)

#### Comments from Planning Office

1. Plans must include a notation with the Flood Zone Designation (B19)

[A FEMA Flood map has been added to sheet SV-100 and note 11 in survey notes has been updated to designate the flood zone. This site is not in a flood zone.](#)

2. Plans must show trees with a 12" or larger caliper (B17)

[Trees with larger than 12 caliper have been added to the plans.](#)

3. Proposed use of existing building (B16)

[The proposed use of the building is to remain a single family 2-bedroom structure. This note has been added to the plans.](#)

4. The adjacent lots not indicated on the GIS have been merged with Lot 186 owned by Jose Amaral, please update the plans.

[The abutting lots have been updated accordingly](#)

5. The LID Site Planning and Design Checklist. (D4)

[An LID site planning and design checklist will be submitted in this response to comments along with a full stormwater report.](#)

If you have any question do not hesitate to reach out to my office 401.683.6630 or email [cbarry@nei-cds.com](mailto:cbarry@nei-cds.com).



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January 25, 2024

Town of Bristol RI  
Planning Board  
10 Court St  
Bristol RI 02908

**Subject: Minor Subdivision - Agostini 68 Magnolia St Bristol RI 02809 [Plat: 23, Lot:  
185,189,192] (NEI job 23.0144) REV.1**

## Minor Subdivision Narrative

### Existing Conditions

Three parcels (Plat 23 Lot 185,189,192) that are known as 68 Magnolia St are merged into 1 lot by section 28-221-C-2 (Land Non-conforming by Area) of the Bristol Zoning Ordinance where;

*Adjacent lawfully established undeveloped lots, or adjacent lawfully established developed and undeveloped lots, in the same ownership in the OS, EI, R-15, R-10, R-10SW, R-8 and R-6 zones which have less than the minimum area or frontage requirements shall be deemed to be merged together as one lot by operation of this chapter. Any such merged lot shall not be divided except as follows:*

*Any such division shall be deemed to be a subdivision and subject to all requirements of the subdivision regulations of the town, including without limitation the requirement for planning board approval; and*

*All resulting lots must meet all dimensional requirements of this chapter, including without limitation, the minimum lot area and frontage requirements, or obtain a dimensional variance from the zoning board of review. The zoning board may grant a dimensional variance for previously merged lots from the requirements of this merger provision wherein the zoning board may make a specific finding of fact that lots, as unmerged, will be of a size generally in conformance with the area of developed lots in the surrounding vicinity.*

*Such lots shall further have the minimum width requirement of lots in that zone generally or at the very least shall have a lot width of not less than 80 percent of the lot width required for the underlying zone.*

This existing lot conforms to the Bristol RI dimensional zoning regulations for an R-6 zone except for the rear setback which is a pre-existing non-conforming condition. There is currently a single-family, 2-bedroom residence located on this lot with sewer and water connection in Magnolia St.

### **Proposed Minor Subdivision**

We would like to perform a minor subdivision on this merged lot and create 2 lots of record, lot 189 and 192.

Lot 192 will contain the existing structure. The square footage of this lot will be 9,600 sq ft. This lot will require a variance for the side setback. See below. This lot conforms to all other dimensional setbacks except for the rear setback which was pre-existing non-conforming condition.

Lot 189 will be a vacant lot with plans for a conforming structure in the future.

### **Side Setback (Lot 192)**

Required – 10 ft

**Provided – 8.2 ft**

**Variance Requested – 1.8 ft**

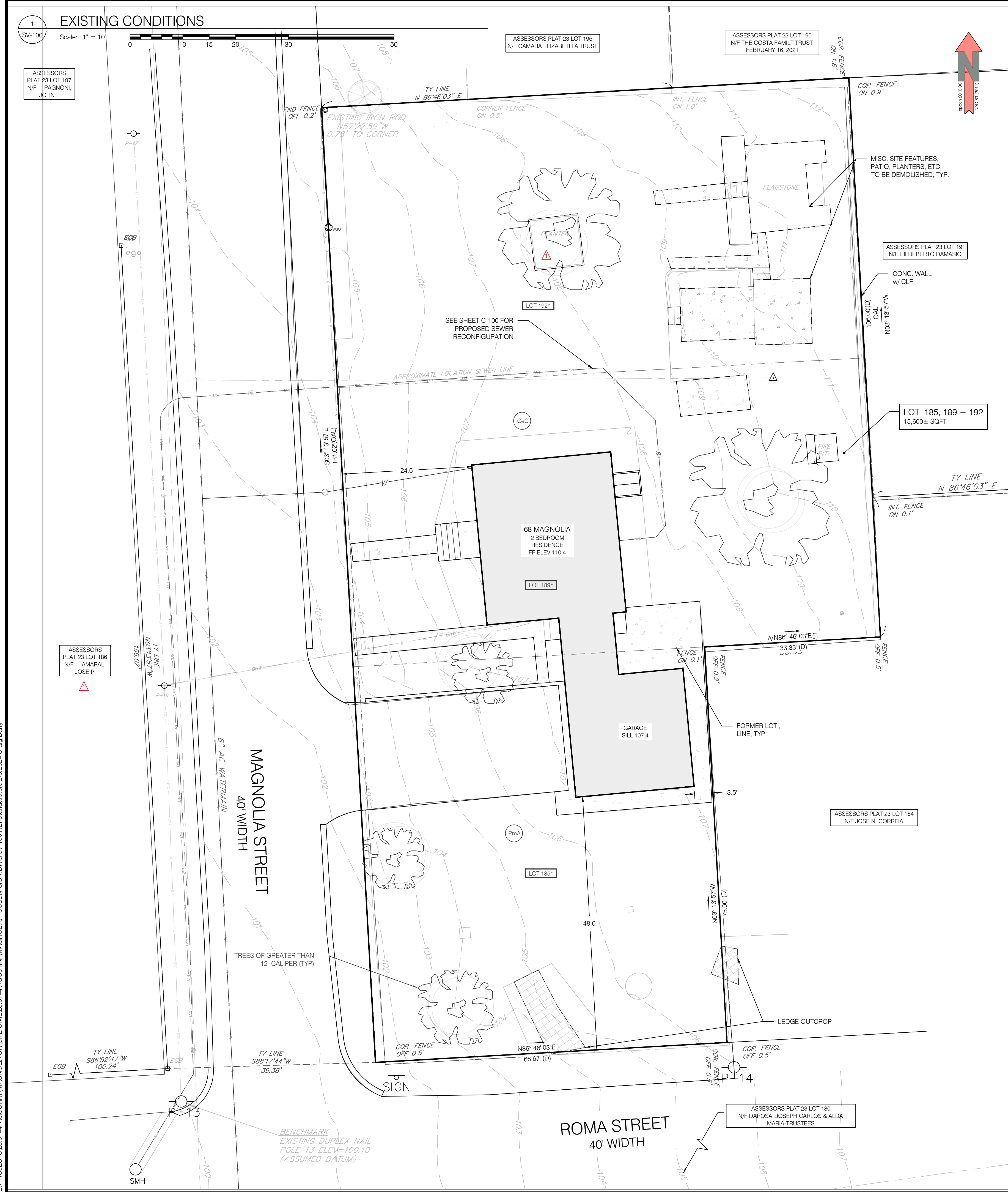
Under the new land use laws that went into effect on January 1<sup>st</sup>, 2024, this project will fall under unified development review and the planning board will be able to act as the zoning board and be able to review and approve these variances.

### **Proposed Site Plan (Lot 189)**

The proposed structure on lot 189 will conform to all zoning regulations. The proposed property will have a permeable driveway and walkway. The proposed structure will also include a garage and deck. The utility connections include water, sewer, and overhead electric. The water and sewer authority has confirmed that there is enough capacity to handle these proposed connections. The existing sewer connection will have to be reconfigured to avoid an easement between these two lots. Stormwater mitigation has been designed with 2 drywells. Stormwater design and calculations are being submitted at this stage and conform to Chapter 29 of the Bristol Town Code.

Should you have any questions please do not hesitate to reach out to our office 401.683.6630 or email [cbarry@nei-cds.com](mailto:cbarry@nei-cds.com).

Narragansett Engineering Inc  
401-683-6630 – Neal Hingorany, PLS



**SURVEY NOTES:**

- ZONING INFORMATION SHOW FROM RECORD INFORMATION, MAPS AND / OR GIS. ZONING DATA MAY VARY BASED ON USE, LOT SIZE, ORIENTATION AND OTHER FACTORS AND IS SHOWN FOR REFERENCE INFORMATION ONLY.
- ZONING DATA MUST BE CONFIRMED WITH ZONING OFFICIAL AND / OR LEGAL COUNSEL FOR USE IN DESIGN OR PERMITTING.
- COORDINATE SYSTEM IS NAD83 / NAVD 88.
- PLAN ELEMENTS ARE IN U.S. SURVEY FEET.
- TOPOGRAPHY IS MIX OF ON GROUND SHOTS, RECORD DATA AND RI SPRING 2011 LIDAR.
- ORTHOPHOTOGRAPHY NOT SHOWN.
- ELEVATIONS SHOWN WITH \* PER UVA DATA.
- ALL PROPOSED ITEMS MUST BE LAID OUT BY REGISTERED SURVEYOR AS NOTED.
- PLAN IS NOT AS-BUILT UTILITY PLAN.
- ABUTTING PROPERTY LINES SHOWN APPROXIMATELY PER TOWN GIS OR BEST AVAILABLE INFORMATION.
- FLOOD ZONE LINE IS SHOWN PER GRAPHIC PLOTTING ONLY, UNLESS OTHERWISE NOTED ON PLAN. THIS SITE IS NOT IN A FLOOD ZONE PER FEMA NATIONAL FLOOD HAZARD LAYER.
- THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT OF PROBATE SEARCH, AND IS SUBJECT TO THE RESTRICTIONS, COVENANTS AND/OR EASEMENTS THAT MAY BE CONTAINED THEREIN.
- LOCATION OF SUBSURFACE MAINS, SURFACE FEATURES, AND LATERALS ARE OMITTED. CONTRACTOR TO CALL DIG SAFE AND/OR APPLICABLE UTILITY COMPANIES PRIOR TO ANY CONSTRUCTION. DIG SAFE TEL: 1-800-344-7233 (1-800-DIG-SAFE).

A WATER - SHOWN PER PLAN REFERENCE #1  
 B SEPTIC - SEWER - PER FIELD CARD + SURFACE ELEMENTS  
 C GAS - PER SURVEY REF.  
 D ELECTRIC - SHOWN PER PLAN REFERENCE #1  
 E STORM DRAIN - NOT SHOWN

ALL UTILITIES DEPICTED AT ASCE QUALITY LEVEL D.

**REFERENCES**

PLAT BOOK B PAGE 55  
 BRISTOL COUNTY REALTY COMPANY INC...  
 1940... SCALE 1"=40'... H.S. JEWELL

REFERENCE SURVEY PROVIDED BY OTHERS:  
 PLAN BY ALPHA ASSOCIATES  
 EXISTING CONDITIONS SURVEY PLAN  
 AP 23 LOT 185, 189, & 192  
 68 MAGNOLIA ST BRISTOL RI  
 SCALE 1" = 10' DATE AUG 13, 2021  
 SHOWN AS XREF (SCREENED)

Zone	R-6
Minimum lot area	6,000 s.f.
Minimum lot area per dwelling unit	6,000 s.f. for first dwelling unit, plus 4,000 s.f. for each additional dwelling unit
Minimum lot area per rooming unit	2,000 s.f.
Minimum lot width	60 ft. for 1 dwelling unit, 80 ft. for 2 dwelling units, 100 ft. for all other uses
Minimum frontage	60 ft.
Maximum lot coverage by structures	30% for residential, 35% for any other use
Minimum front yard setback	Average setback of the block or 20 ft., whichever is less
Minimum side yard setback	10 ft.
Minimum rear yard setback	20 ft.
Maximum height of principal structures (**)	35 ft. or average of block whichever is greater
Maximum height of accessory structures (4)	20 ft.
Maximum height of accessory structures (4)	20 ft.
Maximum size of accessory structures (4)	22 ft. x 24 ft.

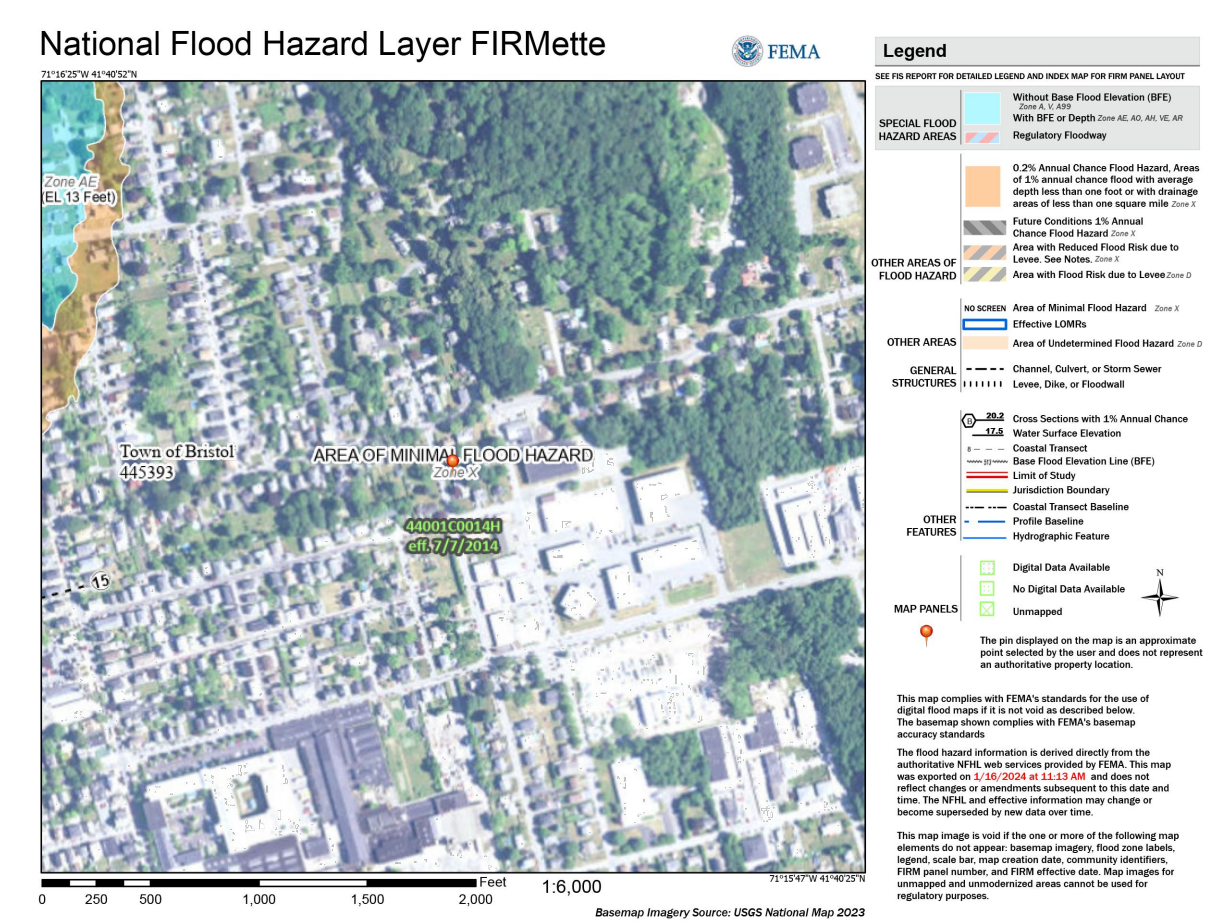
**EXISTING LOT COVERAGE COMBINED LOTS**

No	LOT	DESCRIPTION	AREA	UNITS
1	189, 185, 192	EXISTING AREA	15,600	S.F.
2		EXISTING STRUCTURE	1,428	S.F.
3				S.F.
9		TOTAL LOT COVERAGE AREA	1,428	S.F.
10		LOT COVERAGE	9.2%	
		MAXIMUM LOT COVERAGE	30%	

**BRISTOL ZONING ORDINANCE SECTION 28-221:**

(2) Adjacent lawfully established undeveloped lots, or adjacent lawfully established developed and undeveloped lots, in the same ownership in the OS, R-1, R-1S, R-10, R-10SV, R-8 and R-8D zones which have less than the minimum area or frontage requirements shall be deemed to be merged together as one lot by operation of this chapter. Any such merged lot shall not be divided except as follows:

- Any such division shall be deemed to be a subdivision and subject to all requirements of the subdivision regulations of the town, including without limitation the requirement for planning board approval; and
- All resulting lots must meet all dimensional requirements of this chapter, including without limitation, the minimum lot area and frontage requirements, or obtain a dimensional variance from the zoning board of review. The zoning board may grant a dimensional variance for previously merged lots from the requirements of this merger provision wherein the zoning board may make a specific finding of fact that lots, as merged, will be of a size generally in conformance with the area of developed lots in the surrounding vicinity. Such lots shall further have the minimum width requirement of lots in that zone generally or at the very least shall have a lot width of not less than 80 percent of the lot width required for the underlying zone.



**SHEET INDEX:**

SV100: EXISTING CONDITIONS  
 SV101: PROPOSED SUBDIVISION  
 C100: PROPOSED SITE PLAN (GRADING + UTILITIES)  
 C101: DETAILS AND NOTES

**LEGEND**

100.00'	DIMENSION - EXISTING
100.00'	DIMENSION - PROPOSED
100.00' (D)	PLAN / DEED DIMENSION
100.00' (S)	SURVEY DIMENSION
---	PROPERTY LINE - ABUTTING
---	PROPERTY LINE - EXISTING
---	PROPERTY LINE - PROPOSED
---	SETBACKS
---	GRADE CONTOUR - EXISTING
---	GRADE CONTOUR - PROPOSED
---	ELECTRIC - OVERHEAD (OHE)
---	ELECTRIC - TELEPHONE - CABLE (ETC)
---	ELECTRIC - UNDERGROUND (UGE)
---	GAS (G)
---	SANITARY SEWER (S)
---	STORM DRAIN (SD)
---	WATER
---	LIMIT OF DISTURBANCE (LOD)
---	SEDIMENT CONTROL (SED)
---	LOD / SED
---	EDGE OF PAVEMENT - EXISTING
---	FENCE - METAL
---	FENCE - WOOD
---	STONE WALL
---	BRUSH LINE (APPROXIMATE)
---	WETLAND LIMIT
---	STRUCTURE, EXISTING
---	STRUCTURE, PROPOSED
---	SPOT GRADE - EXISTING
---	SPOT GRADE - PROPOSED
---	TREE
---	DRILL HOLE
---	GRANITE BOUND
---	REBAR / STEEL PIPE FOUND
---	SPIKE
---	WETLAND FLAG
---	COASTAL FEATURE FLAG
---	COASTAL BUFFER POST
---	FLOW ARROW
---	SOIL EVALUATION
---	CATCH BASIN
---	DRAINAGE MANHOLE
---	SANITARY MANHOLE
---	ELECTRICAL MANHOLE
---	TELEPHONE MANHOLE
---	WELL
---	GATE VALVE
---	WATER SHUT OFF
---	FIRE HYDRANT
---	ELECTRIC BOX (ETC)
---	UTILITY POLE
---	DOWNSPOUT
---	BENCHMARK
---	CURB INLET

**NEI**  
**Narragansett**  
**Engineering Inc.**

Civil - Survey Structural Environmental Design  
 3102 East Main Road, Portsmouth RI 02871  
 Tel. 401.683.6630 www.nei-cds.com

**SHEET TITLE**  
 AGOSTINI SUBDIVISION  
 EXISTING CONDITIONS

Josh Agostini  
 58 Magnolia St  
 Bristol, RI 02809  
 T. 774-991-2406  
 E. josh@ettebuildingteam.com

Property Records  
 68 Magnolia St, Bristol, RI 02809  
 Plat: 23, Lot: 189  
 Zone: R-6, Area: 0.122 Acres  
 N/F: Magnolia Improvements LLC  
 Year Built: 1950  
 Book/Page: 2082-255

Roma St, Bristol, RI 02809  
 Plat: 23, Lot: 185  
 Zone: R-6, Area: 0.103 Acres  
 N/F: Magnolia Improvements LLC  
 Year Built: 1950  
 Book/Page: 2082-255

Magnolia St, Bristol, RI 02809  
 Plat: 23, Lot: 192  
 Zone: R-6, Area: 0.122 Acres  
 N/F: Magnolia Improvements LLC  
 Year Built: 1950  
 Book/Page: 2082-255

**CERTIFICATION**  
 THIS SURVEY HAS BEEN CONDUCTED AND THE PLAN HAS BEEN PREPARED PURSUANT TO 435-RICR00-00-1.9 OF THE RULES AND REGULATIONS ADOPTED BY THE RHODE ISLAND STATE BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS ON DECEMBER 31, 2020 (EFFECTIVE DATE), AS FOLLOWS:  
 THE PURPOSE FOR THE CONDUCT OF THE SURVEY AND FOR THE PREPARATION OF THE PLAN IS AS FOLLOWS: FOR USE IN SUBDIVISION PLANNING AND DESIGN

LIMITED CONTENT BOUNDARY SURVEY - CLASS I  
 DATA ACCUMULATION SURVEY - CLASS III

TOPO T-2

**NEAL K. HINGORANY**  
 No. 2515  
 PROFESSIONAL LAND SURVEYOR

02.06.24  
 2.1

NEAL HINGORANY REG. 2515  
 COA: A38

PROJECT #	DATE	DRAWN	CHECK
23.0144	01/03/24	CB	NKH

No	DATE	REVISIONS/DESCRIPTION	BY
1	1/16/24	MINOR SUB. COMMENTS & TRC MEETING	CB

**PURPOSE + GOALS**

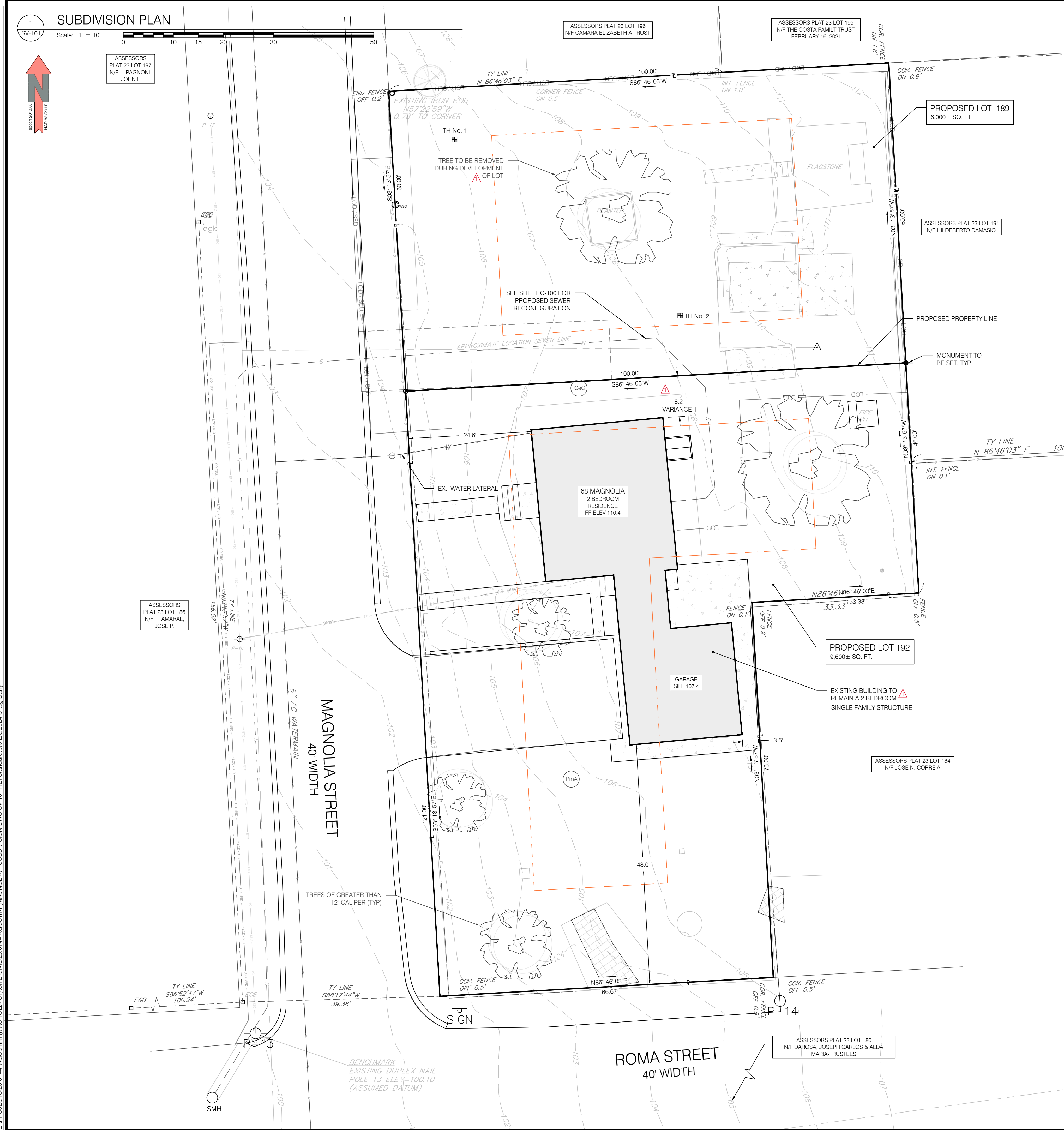
LOTS 185 + 192 + 189 ARE A SINGLE LOT OF RECORD (MERGED)  
 THESE LOTS SHALL BE SUBDIVIDED INTO TWO PARCELS OF RECORD  
 LOT 189 (68 MAGNOLIA)  
 LOT 192

**DRAWINGS MUST BE PRINTED IN COLOR TO BE VALID. THIS NOTE SHOULD BE BLUE. IF THIS NOTE IS NOT BLUE, PLEASE REPRINT IN COLOR OR CONTACT NEI.**

**LOCUS MAP**

**SCALE**  
 1" = 10'

**SV-100**



- SURVEY NOTES:**
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 C. GAS - PER SURVEY REF.  
 D. ELECTRIC - SHOWN PER PLAN REFERENCE # 1  
 E. STORM DRAIN - NOT SHOWN  
 ALL UTILITIES DEPICTED AT ASCE QUALITY LEVEL D.

Zone	R-6
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Minimum frontage	60 ft.
Maximum lot coverage by structures	30% for residential, 35% for any other use
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Maximum size of accessory structures (4)	22 ft. x 24 ft.

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3				S.F.
9		TOTAL LOT COVERAGE AREA	1,428	S.F.
10		LOT COVERAGE	9.2%	
		MAXIMUM LOT COVERAGE	30%	

**PROPOSED LOT 192 COVERAGE**

No	LOT	DESCRIPTION	AREA	UNITS
1	192	PROPOSED LOT AREA	9,600	S.F.
2		EXISTING STRUCTURE	1,428	S.F.
3				S.F.
9		TOTAL LOT COVERAGE AREA	1,428	S.F.
10		LOT COVERAGE	14.9%	
		MAXIMUM LOT COVERAGE	30%	

**VARIANCE REQUEST TABLE**

No.	Lot	Regulation	Description	Prescribed	Provided	Request	Units
1	192	28-111	Side Setback	10	8.2	1.8	Feet

\*Rear setback for proposed lot 192 is a pre-existing nonconformity



**SHEET TITLE**  
 AGOSTINI SUBDIVISION  
 PROPOSED SUBDIVISION

Josh Agostini  
 58 Magnolia St  
 Bristol, RI 02809  
 T. 774-991-2406  
 E. josh@ettebuildingteam.com

**Property Records**  
 68 Magnolia St, Bristol, RI 02809  
 Plat: 23, Lot: 189  
 Zone: R-6, Area: 0.122 Acres  
 N/F: Magnolia Improvements LLC  
 Year Built: 1950  
 Book/Page: 2082-255

Roma St, Bristol, RI 02809  
 Plat: 23, Lot: 185  
 Zone: R-6, Area: 0.103 Acres  
 N/F: Magnolia Improvements LLC  
 Year Built: 1950  
 Book/Page: 2082-255

Magnolia St, Bristol, RI 02809  
 Plat: 23, Lot: 192  
 Zone: R-6, Area: 0.122 Acres  
 N/F: Magnolia Improvements LLC  
 Year Built: 1950  
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**CERTIFICATION**  
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LIMITED CONTENT BOUNDARY SURVEY - CLASS I  
 DATA ACCUMULATION SURVEY - CLASS III  
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NEAL HINGORANY REG. 2515  
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PROJECT #	DATE	DRAWN	CHECK
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No	DATE	REVISIONS/DESCRIPTION	BY
1	1/16/24	MINOR SUBD. COMMENTS & TRC MEETING	CB

**PURPOSE + GOALS**

LOTS 185 + 192 + 189 ARE A SINGLE LOT OF RECORD (MERGED)  
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DRAWINGS MUST BE PRINTED IN COLOR TO BE VALID.  
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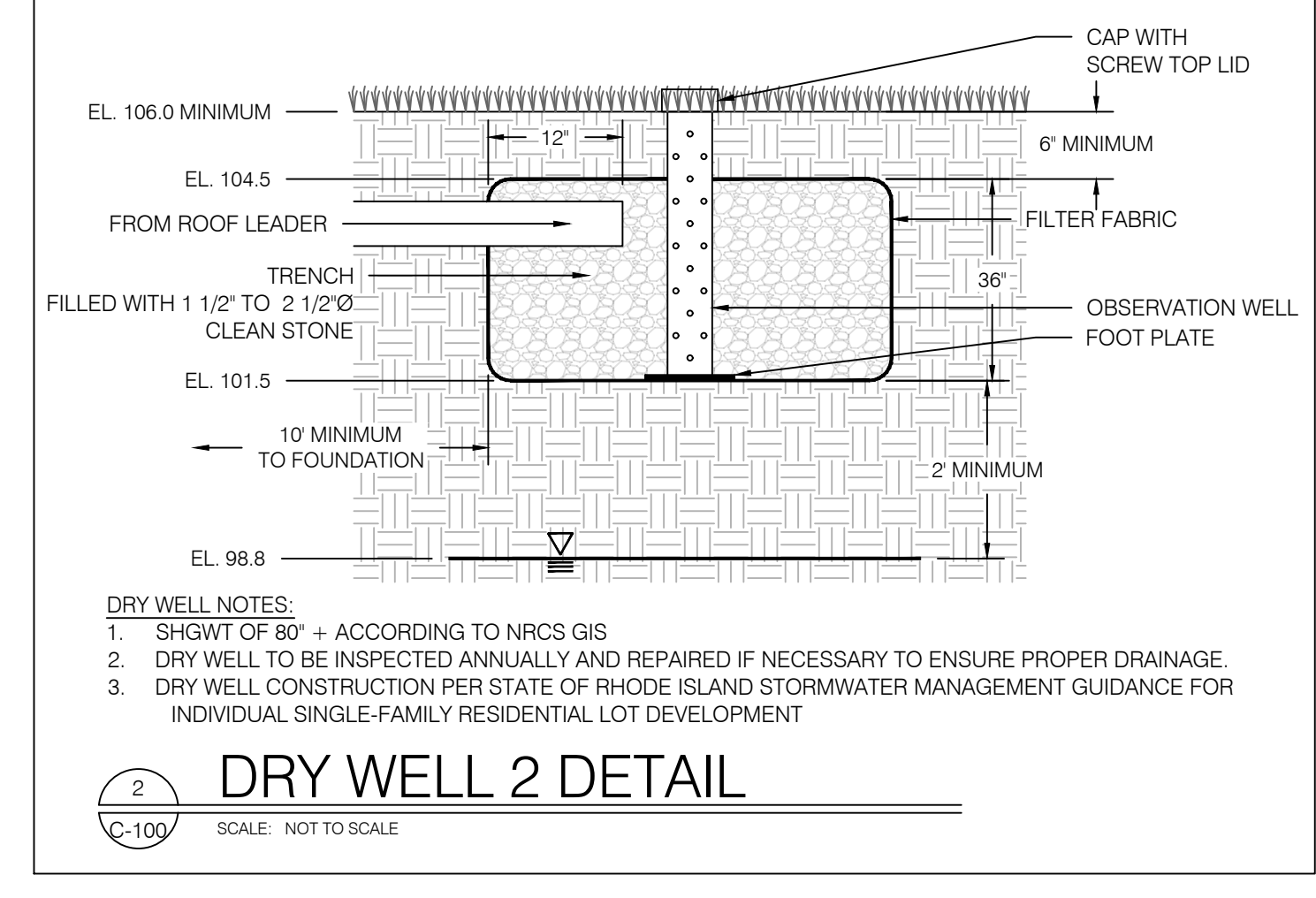
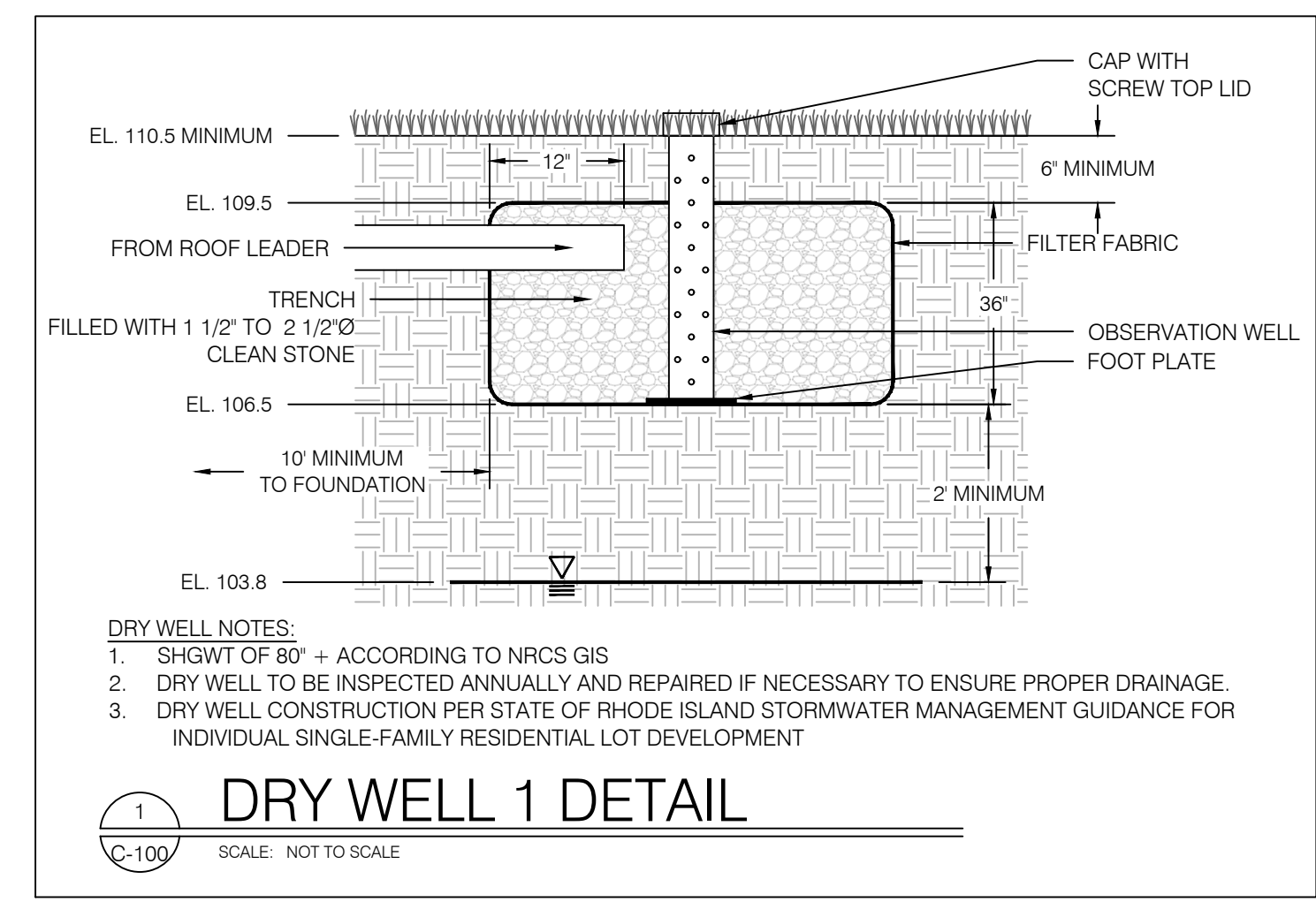
**STORMWATER NOTE:**  
PER AN EMAIL FROM EDWARD M TANNER, PRINCIPAL PLANNER/ZONING OFFICER ON JAN 26, 2023, THE PROPERTY IS LOCATED OUTSIDE OF THE TANYARD BROOK WATERSHED AND IS SUBJECT ONLY TO CHAPTER 29 OF THE BRISTOL TOWN CODE

**SOILS DATA PER NRCS:**  
CC—Canton-Urban land complex, very rocky

**Typical profile**  
0- 0 to 1 inches: moderately decomposed plant material  
A - 1 to 3 inches: gravelly fine sandy loam  
Bw1 - 3 to 15 inches: gravelly loam  
Bw2 - 15 to 24 inches: gravelly loam  
Bw3 - 24 to 30 inches: gravelly loam  
2C - 30 to 60 inches: very gravelly loamy sand

**Properties and qualities**  
Slope: 0 to 15 percent  
Surface area covered with cobbles, stones or boulders: 1.6 percent  
Depth to restrictive feature: More than 80 inches  
Drainage class: Well drained  
Runoff class: Low  
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)  
Depth to water table: More than 80 inches  
Frequency of flooding: None  
Frequency of ponding: None  
Available water supply: 0 to 60 inches: Low (about 5.6 inches)

**UTILITY NOTE:**  
ALL UTILITIES SHALL CONFORM TO AHJ REQUIREMENTS. THESE ARE SHOWN SCHEMATICALLY FOR SUBDIVISION PERMITTING ONLY. SEWER LINES ARE DISPLAYED PER EMAIL DISCUSSION WITH JOSE DASILVA, SUPERINTENDENT ON AND AROUND NOV. 9 2023. SEWER LINE AS SHOWN IS CONCEPTUALLY ACCEPTABLE



**PROPOSED LOT 189 COVERAGE**

No	LOT	DESCRIPTION	AREA	UNITS
1	189	LOT AREA	6,000	S.F.
2		PROPOSED STRUCTURE	1,456	S.F.
3		incl. decks + garage		S.F.
4				S.F.
8		TOTAL LOT COVERAGE AREA	1,456	S.F.
9				
10		LOT COVERAGE	24.3%	
		MAXIMUM LOT COVERAGE	30%	

**NEI**  
Narragansett Engineering Inc.  
Civil - Survey Structural Environmental Design  
3102 East Main Road, Portsmouth RI 02871  
Tel. 401.683.6630 www.nei-cds.com

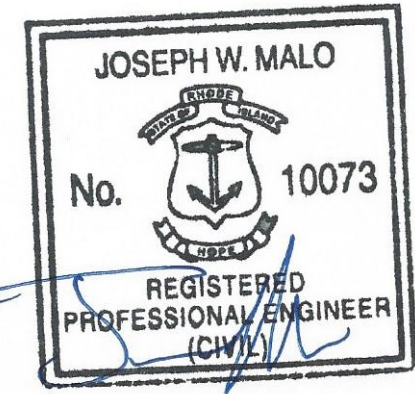
**SHEET TITLE**  
AGOSTINI SUBDIVISION  
PROPOSED SITE/CIVIL PLAN  
GRADING AND UTILITIES

Josh Agostini  
58 Magnolia St  
Bristol, RI 02809  
T: 774-991-2406  
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Magnolia St, Bristol, RI 02809  
Plat: 23 Lot: 192  
Zone: R-6, Area: 0.122 Acres  
N/F: Magnolia Improvements LLC  
Year Built: 1950  
Book/Page: 2082-255



2/8/24

PROJECT #	DATE	DRAWN	CHECK
23.0144	01/03/24	CB	NKH

No	DATE	REVISIONS/DESCRIPTION	BY
1	1/16/24	MINOR SUBD. COMMENTS & TRC MEETING	CB

**PURPOSE + GOALS**  
LOTS 185 + 192 + 189 ARE A SINGLE LOT OF RECORD (MERGED)  
THESE LOTS SHALL BE SUBDIVIDED INTO TWO PARCELS OF RECORD  
LOT 189 (68 MAGNOLIA)  
LOT 192

DRAWINGS MUST BE PRINTED IN COLOR TO BE VALID. THIS NOTE SHOULD BE BLUE. IF THIS NOTE IS NOT BLUE, PLEASE REPRINT IN COLOR OR CONTACT NEI.



SCALE  
1" = 10'

**C-100**

E:\PROJECTS\23.0144\_AGOSTINI\MAGNOLIA SITE\CIVIL\23.0144\_AGOSTINI (MAGNOLIA) - SUBDIVISION.DWG C-100 NEI-Standard.ctb 2/8/2024 Craig Barry

**SITE DESIGN NOTES**

- BUILDINGS, UTILITIES AND GRADING SHOWN ARE SCHEMATIC ONLY
- UTILITY SERVICE LINES SHALL BE CONSTRUCTED IN CONFORMANCE WITH AHJ REQUIREMENTS.
- BMP'S SHOWN ARE SCHEMATIC, SHOWING THE APPROXIMATE LOCATION AND SIZE FOR MASTER PRELIMINARY
- PATIOS SHALL BE CONSTRUCTED ON GRADE IN CONFORMANCE WITH ZONING ORDINANCE TO AVOID REQUIRING AREAS TO BE ADDED TO LOT COVER
- A DRIVEWAY/CURB CUT APPLICATION AND PHYSICAL ALTERATION/EXCAVATION PERMIT MUST BE SUBMITTED BY THE NEW OWNER WHEN HOME CONSTRUCTION IS BEING PLANNED.

**DESIGN NOTE:**  
FOUNDATION AND DAMP PROOFING MAY BE REQUIRED SUBJECT TO ARCHITECTURAL DESIGN. ARCHITECT / CONTRACTOR TO COORDINATE ANY SUBDRAINS AND SUMP PUMPS LOCATIONS AND CONSTITUENCY

**GENERAL NOTES:**

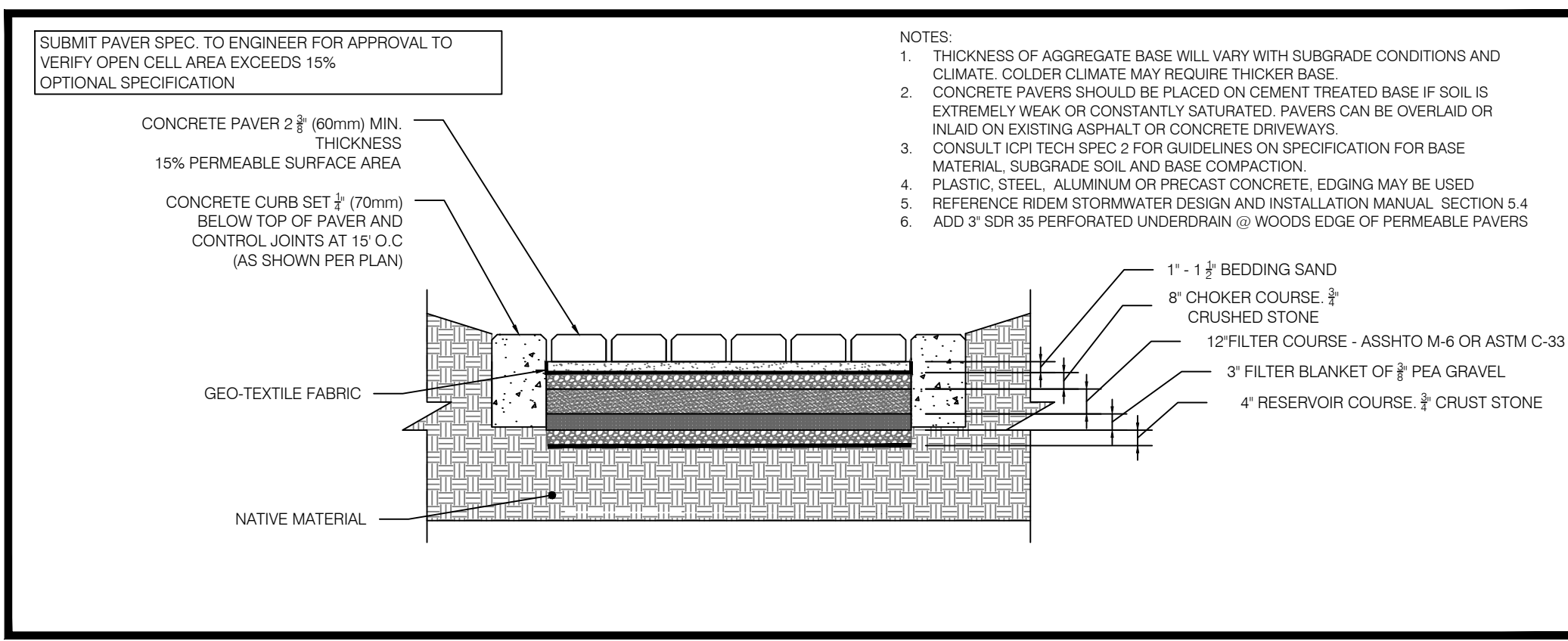
- THE STATE OF RHODE ISLAND STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION, 2004 EDITION, AND THE RHODE ISLAND STANDARD DETAILS ARE MADE A PART HEREOF AS FULLY AND COMPLETELY AS IF ATTACHED HERETO. ALL WORK SHALL CONFORM TO RHODE ISLAND STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION 2004 EDITION OR LATEST REVISION. THE 2004 EDITION OF THE STANDARD SPECIFICATION MAY BE OBTAINED AT THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION.
- IT SHALL BE THE CONTRACTORS SOLE RESPONSIBILITY TO APPLY FOR AND OBTAIN ANY AND ALL NECESSARY PERMITS, PAY ALL FEES AND POST ALL BONDS ASSOCIATED WITH THE SAME, AND COORDINATE WITH ARCHITECT OR ENGINEER AS NECESSARY
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE SAFETY OF THE JOB SITE. THE CONTRACTOR SHALL PROVIDE TEMPORARY FENCING AND/OR BARRIERS AROUND ANY EXPOSED EXCAVATED AREAS IN ACCORDANCE WITH OSHA STANDARDS.
- IN THE CASE THAT ANY DEVIATION / ALTERATION / OR IMPROVEMENT FROM THE APPROVED PLANS IS NECESSARY THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE ENGINEER AND OWNER PRIOR TO OCCURRENCE OF DEVIATION
- ALL WORK SHALL BE LIMITED TO THE AREAS WITHIN THE LIMIT OF DISTURBANCE DISPLAYED ON THESE PLANS OR PROPERTY LINE IF LIMIT OF DISTURBANCE IS UNCLEAR. ANY AREA DISTURBED OUTSIDE OF THE LIMIT OF DISTURBANCE SHALL BE REPAIRED AND RESTORED TO ITS ORIGINAL CONDITION AT NO COST TO THE OWNER OR ENGINEER, AND PERFORMED TO THE ENGINEERS SATISFACTION
- ALL SITE WORK SHALL MEET OR EXCEED THE SITE WORK SPECIFICATION SHOWN ON THESE PLANS AND/OR ACCOMPANYING SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING IF ANY CONFLICTS WITH EXISTING CONDITIONS OR PROPOSED CONDITIONS EXIST. IF ANY CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER PRIOR TO INSTALLATION OF ANY PORTION OF THE SITE WORK THAT WOULD BE AFFECTED
- EXCAVATED ROCK SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED OF UNLESS OTHER ARRANGEMENTS ARE MADE WITH THE OWNER. SUITABLE ROCK MAY BE UTILIZED IN FILL AREAS WITH WRITTEN PERMISSION OF THE OWNERS REPRESENTATIVES
- DEBRIS, ORGANICS AND OTHER UNSUITABLE MATERIALS UNCOVERED DURING THE COURSE OF SITE EXCAVATION SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY
- THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF ALL EXISTING UTILITIES THAT SERVICE THE SITE AND NEIGHBORING AREAS. IF ANY DAMAGE OCCURS TO EXISTING UTILITIES IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO PAY ALL COSTS ASSOCIATED WITH REPAIR OF UTILITIES AS DIRECTED BY THE ENGINEER, UTILITY OWNER, OR GOVERNING AGENCY
- THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR QUANTITY TAKE-OFF IN COMPUTING ANY ESTIMATES
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL TEMPORARY SEDIMENTATION AND EROSION CONTROLS.
- THE LOCATION OF EXISTING UTILITIES AS SHOWN ARE APPROXIMATE AND SHALL BE VERIFIED BY THE CONTRACTOR. 'DIG SAFE' SHALL BE CONTACTED BY THE CONTRACTOR AS PART OF THIS VERIFICATION
- NO EXCAVATION SHALL PROCEED UNTIL UTILITY COMPANIES ARE NOTIFIED IN ADVANCE
- ALL TREE PROTECTION BY OTHERS UNLESS OTHERWISE NOTED
- CONTRACTOR TO LOAM AND SEED ALL DISTURBED AREAS WITH APPROPRIATE SEED MIXTURES

**GRADING AND UTILITIES NOTES:**

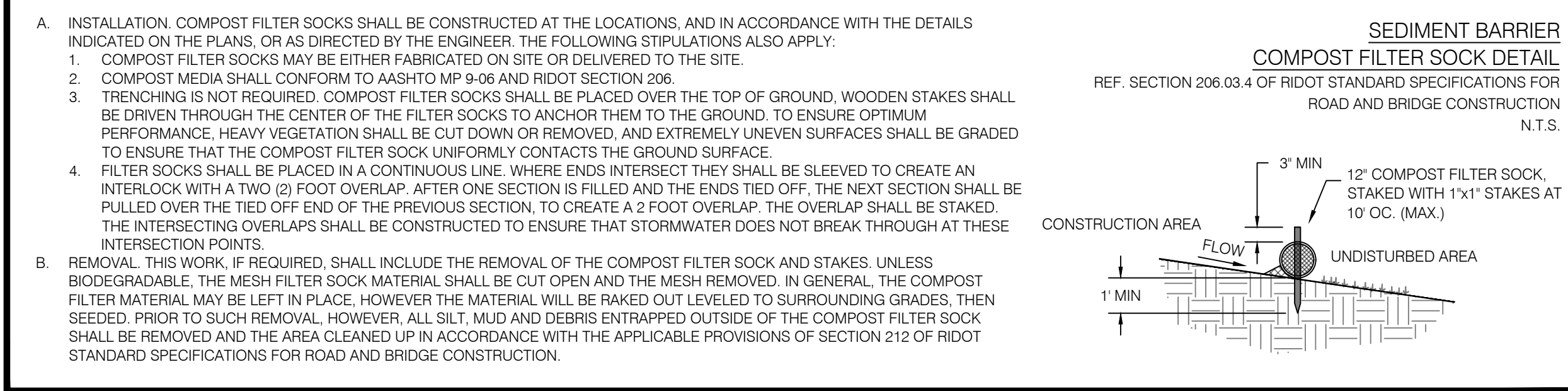
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE PROPOSED WORK SHOWN ON THESE PLANS DO NOT CONFLICT WITH ANY EXISTING CONDITIONS OR OTHER PROPOSED WORK. IF CONFLICTS ARISE, THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER PRIOR TO INSTALLATION OF ANY PORTION OF THE SITE WORK WHICH WOULD BE AFFECTED. NO FIELD ADJUSTMENTS IN THE LOCATION OF SITE ELEMENTS SHALL BE MADE WITHOUT THE ENGINEERS APPROVAL
- WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH WORK, THE LOCATION, ELEVATION, SIZE AND MATERIAL SHALL BE ACCURATELY DETERMINED BY THE CONTRACTOR IMMEDIATELY AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION. THE CONTRACTOR SHALL NOT CONTINUE WORK ON AFFECTED UTILITIES UNTIL THE CONFLICT IS RESOLVED
- ALL WORK PERFORMED AND ALL MATERIALS FURNISHED SHALL CONFORM WITH THE LINE AND GRADES ON THE PLANS AND SITE WORK SPECIFICATIONS
- AT ALL LOCATIONS WHERE EXISTING CURBING OR PAVEMENT ABOUT NEW CONSTRUCTION, THE EDGE OF THE EXISTING CURB OR PAVEMENT SHALL BE SAW CUT TO A CLEAN, SMOOTH EDGE. BLEND NEW PAVEMENT AND CURBS SMOOTHLY INTO EXISTING BY MATCHING LINES, GRADES AND JOINTS
- ALL UTILITY COVERS, GRATES, AND THE LIKE SHALL BE FLUSH WITH THE SURROUNDING SURFACE OR PAVEMENT FINISH. RIM ELEVATIONS ARE APPROXIMATE. AND FINAL ELEVATIONS ARE TO BE SET FLUSH AND CONSISTENT WITH GRADING
- THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION OF PRIVATE UTILITIES BY THE UTILITY COMPANY, AS REQUIRED.
- THE CONTRACTOR SHALL PROTECT ALL UNDERGROUND UTILITY FACILITIES FROM EXCESSIVE VEHICULAR LOADING. ANY DAMAGE RESULTING TO THESE FACILITIES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT THE CONTRACTORS EXPENSE
- ALL WATER WORKS SHALL HAVE 5 FEET OF COVER
- GAS, ELECTRIC, AND COMMUNICATIONS ROUTING ARE SUBJECT TO REVIEW AND APPROVAL BY UTILITY COMPANY
- EXCAVATION REQUIRED WITHIN THE PROXIMITY OF EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINE OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATION AT NO COST TO THE OWNER
- PITCH EVENLY BETWEEN ALL SPOT GRADES.
- THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND DISPOSAL OF ANY ROCKS, DEBRIS, ORGANICS, OR THE LIKE UNCOVERED IN THE COURSE OF WORK
- REFER TO RECORDS BY CITY OF NEWPORT UTILITIES FOR LATERAL INFORMATION
- ANY EXISTING UNKNOWN UTILITIES SHALL BE ALLOWED TO REMAIN IN THEIR PRESENT LOCATION UNLESS OTHER PROVISIONS ARE MADE FOR EASEMENTS

**EROSION AND SEDIMENT CONTROL NOTES:**

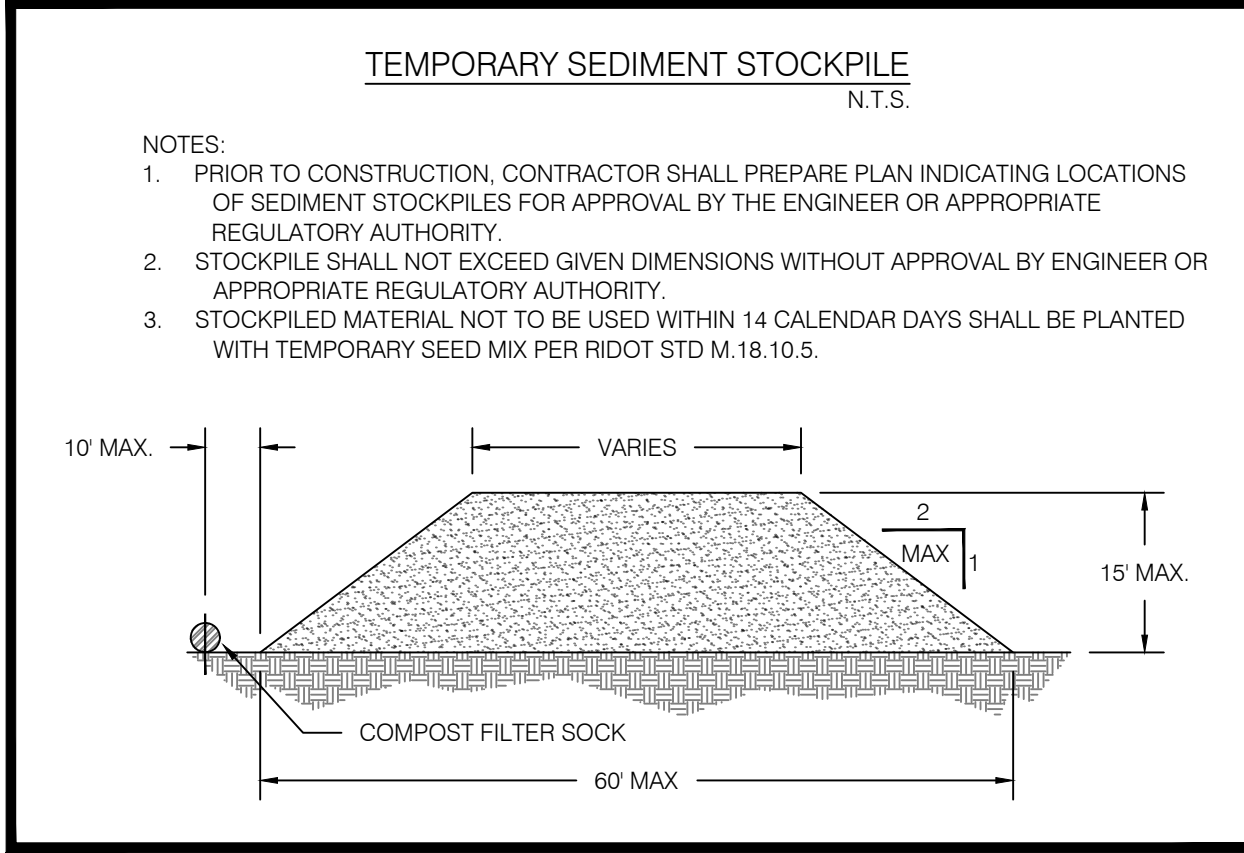
- ALL EROSION CONTROL SHALL BE IN ACCORDANCE WITH RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST REVISION
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION AND MAINTENANCE OF ALL SEDIMENT AND EROSION CONTROL MEASURES SHOWN ON THESE PLANS
- EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED ONCE WEEKLY OR AFTER EVERY RAINFALL EVENT GREATER THAN 0.25 INCHES.
- SEDIMENT BUILD UP GREATER THAN ONE-HALF THE BARRIER HEIGHT SHALL BE REMOVED AND DISPOSED OF PROPERLY AS REQUIRED. ANY SEDIMENT BUILD UP OUTSIDE OF THE SEDIMENT BARRIER SHALL BE REMOVED IMMEDIATELY
- CONTRACTOR SHALL MAINTAIN A RESERVE OF EROSION CONTROL MATERIALS FOR EMERGENCY USE AND ROUTINE MAINTENANCE
- THE CONTROLS SHOWN ON THESE PLANS ARE INTENDED AS MINIMUM MEASURES. ADDITIONAL MEASURES MAY BE REQUIRED AND SHALL BE IMPLEMENTED BY THE CONTRACTOR IF WARRANTED OR REQUESTED BY THE OWNER, OWNERS REPRESENTATIVE, ENGINEER, OR ANY APPLICABLE REGULATING AGENCY.
- PRIOR TO THE START OF ANY LAND CLEARING / GRUBBING OR OTHER CONSTRUCTION ACTIVITY THE PERIMETER CONTROLS SHALL BE PLACED, PROPERLY CONSTRUCTED AND CLEARLY VISIBLE. THESE CONTROLS SHALL REPRESENT THE LIMITS OF WORK AND WORKERS SHALL BE NOTIFIED THAT NO CONSTRUCTION ACTIVITY IS ALLOWED BEYOND THESE CONTROLS
- IF OR AS POSSIBLE CONSTRUCTION SHALL BE PHASED TO LIMIT TO THE MAXIMUM EXTENT PRACTICABLE THE AMOUNT OF EXPOSED SOILS. ALL DISTURBED AREAS SHALL BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 14 DAYS OF COMPLETION OF GRADING ACTIVITIES
- THE CONTRACTOR SHALL SCHEDULE WORK IN A WAY TO ALLOW POSITIVE DRAINAGE OF SUBGRADE THROUGHOUT CONSTRUCTION
- CONSTRUCTION ENTRANCES PER RIDOT STANDARD DETAIL 9.9.0 SHALL BE EMPLOYED AT ALL POINTS OF INGRESS AND EGRESS FROM THE SITE
- TEMPORARY DIVERSIONS, SEDIMENT BASINS, AND TEMPORARY SWALES MAY BE USED AND SHALL BE SIZED ACCORDING TO THE RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK
- CATCH BASINS AND STORM DRAINS SHALL BE PROTECTED PER RIDOT STANDARD DETAIL 9.8.0 IN GRASSED AREAS OR SEDIMENT BAGS IN PAVED AREAS
- TEMPORARY SEDIMENT STOCK PILES SHALL BE KEPT MOIST AND COVERED AT ALL TIMES. CALCIUM CHLORIDE SHALL ONLY BE USED IF AN APPROVAL FROM THE TOWN/CITY OR OTHER APPLICABLE AGENCY HAS BEEN GRANTED
- DEWATERING FROM EXCAVATIONS WILL BE CONVEYED BY HOSE TO AN UPLAND AREAS AND DISCHARGED INTO A DEWATERING BASIN PER RIDOT STANDARD 9.7.0. HAYBALE CORRALS, OR SEDIMENTATION BAGS. THE CONTRACTOR SHALL ENSURE THAT NO CONTAMINATE IS PRESENT IN ANY WATERS PRIOR TO DISCHARGE FROM SITE AND IS RESPONSIBLE FOR ALL ENGINEERING, EQUIPMENT, MATERIAL AND LABOR REQUIRED FOR THE SITE WATER REMOVAL DURING CONSTRUCTION
- CONSTRUCTION WASTE MATERIALS SHALL BE KEPT ON-SITE AND DISPOSED OF IN AN APPROVED AND APPROPRIATE MANNER IN ACCORDANCE WITH ALL APPLICABLE REGULATORY AGENCIES.
- RIPRAP SHALL BE USED WHERE NECESSARY TO CONTROL EXIT VELOCITIES
- NON MOBILE (I.E. TRACKED MACHINERY) SHALL BE MAINTAINED WITHIN THE LIMIT OF DISTURBANCE DEFINED BY SEDIMENT BARRIER
- NEWLY VEGETATED AREAS SHALL BE REGULARLY INSPECTED AND MAINTAINED TO ENSURE ESTABLISHMENT OF APPROPRIATE VEGETATION
- THE CONTRACTOR SHALL NOT REMOVE ANY EROSION AND SEDIMENTATION CONTROL MEASURES UNTIL FINAL ACCEPTANCE OF THE SITE HAS OCCURRED
- ALL DRAINAGE STRUCTURES SHALL BE CLEARED OF ACCUMULATED SEDIMENT PRIOR TO THE FINAL SITE ACCEPTANCE



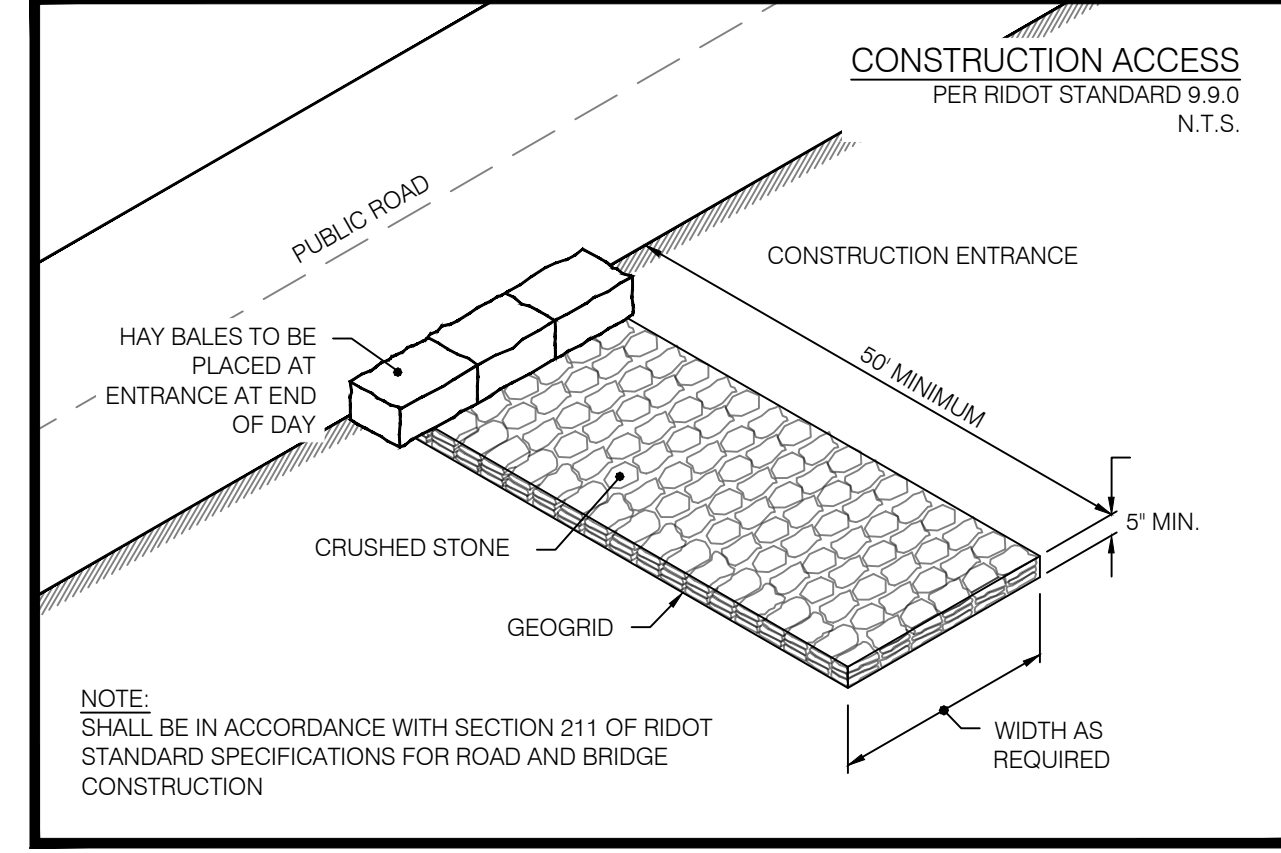
**1 PERVIOUS PAVER DETAIL** ALTERNATE TO CRUSHED STONE DRIVE  
SCALE: NOT TO SCALE



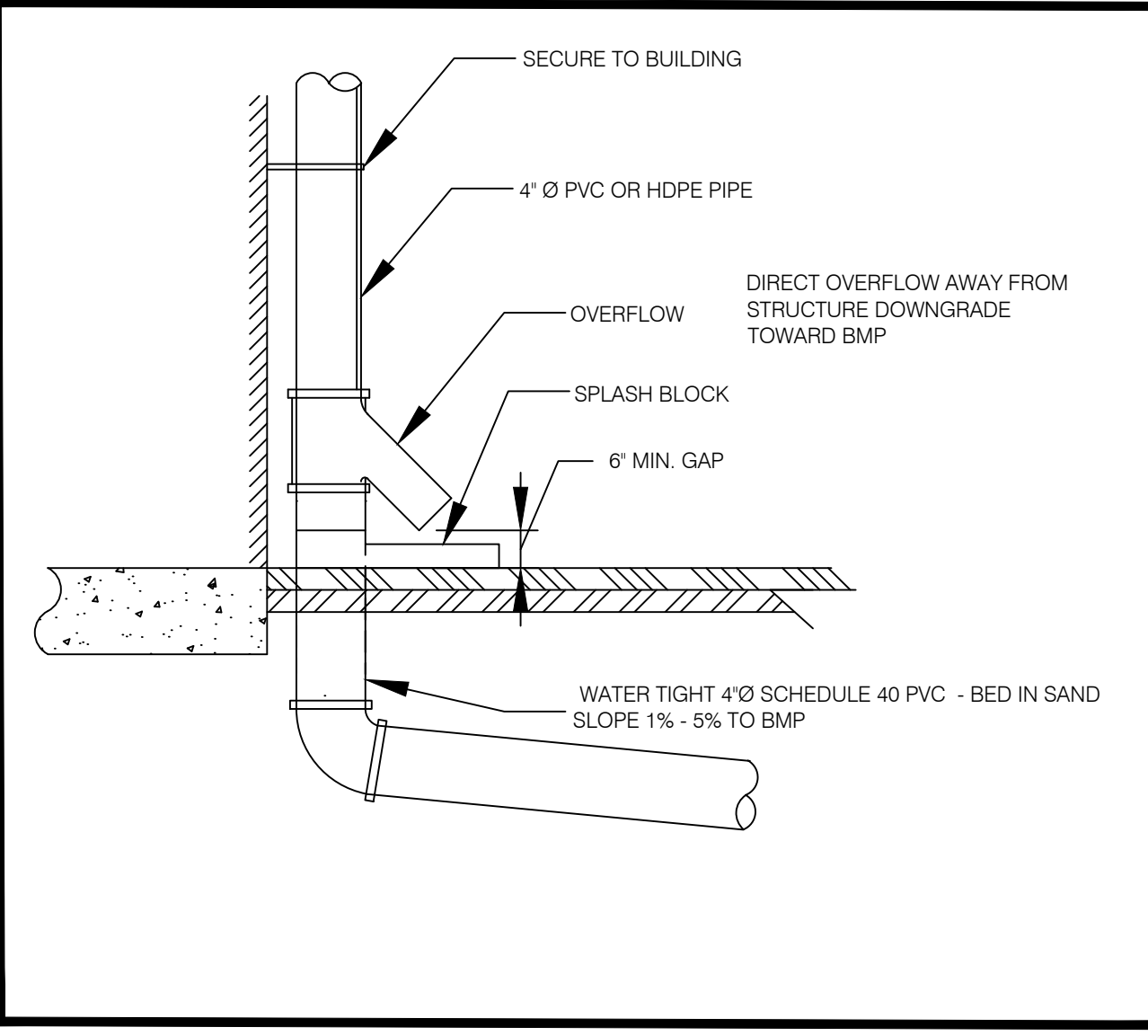
**2 COMPOST FILTER SOCK (SED)**  
SCALE: NOT TO SCALE



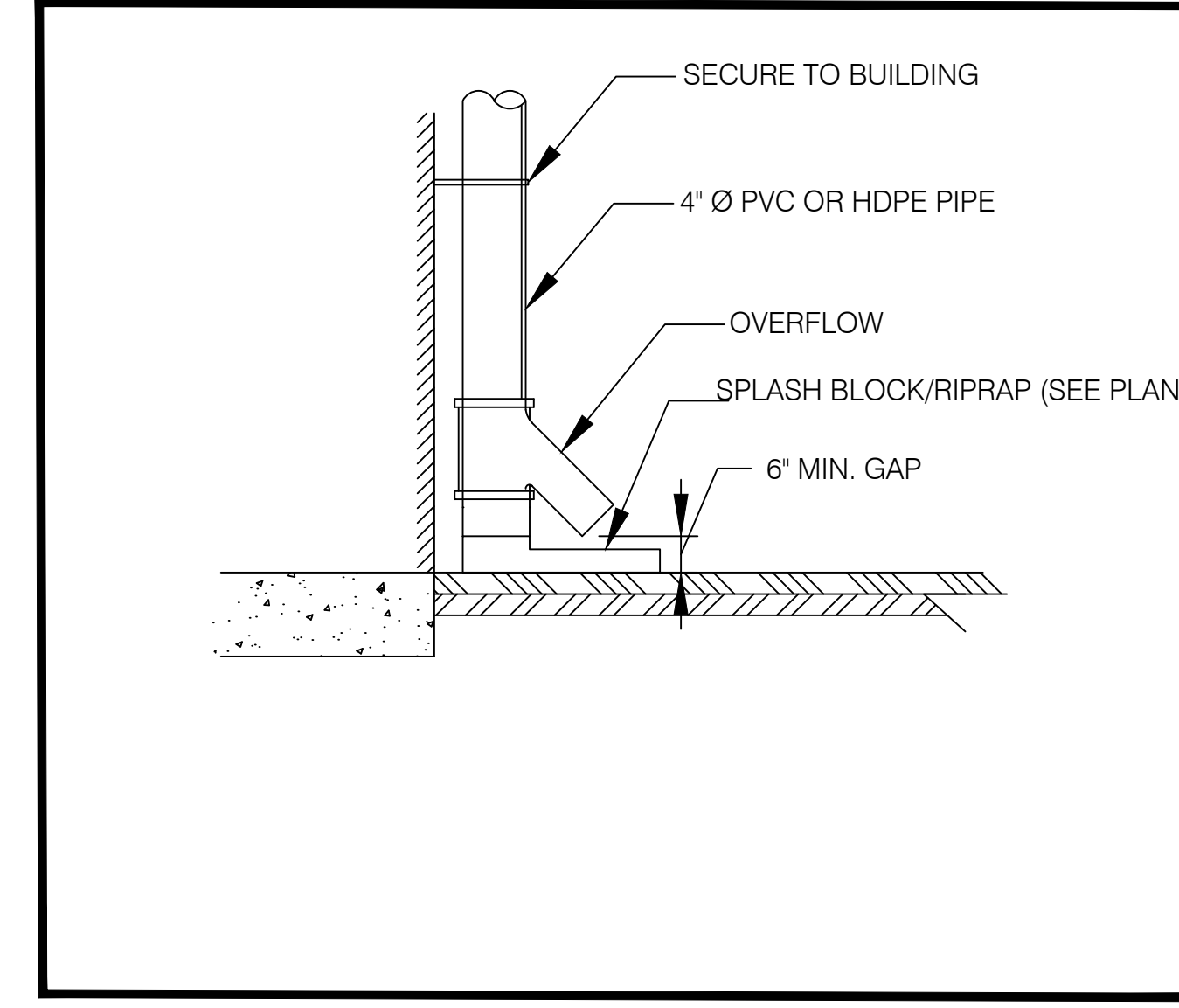
**3 STOCKPILE DETAIL**  
SCALE: NOT TO SCALE



**4 CONSTRUCTION ENTRANCE**  
SCALE: NOT TO SCALE



**5 ROOF DRAIN TYPE C**  
SCALE: NOT TO SCALE



**6 ROOF DRAIN (A)**  
SCALE: NOT TO SCALE

**NEI**  
**Narragansett Engineering Inc.**  
Civil - Survey Structural Environmental Design  
3102 East Main Road, Portsmouth RI 02871  
Tel. 401.683.6630 www.nei-cds.com

**SHEET TITLE**  
AGOSTINI SUBDIVISION  
PROPOSED SITE/CIVIL PLAN  
GRADING AND UTILITIES

Josh Agostini  
58 Magnolia St  
Bristol, RI 02809  
T: 774-991-2406  
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Property Records  
68 Magnolia St, Bristol, RI 02809  
Plat: 23, Lot: 189  
Zone: R-6, Area: 0.122 Acres  
N/F: Magnolia Improvements LLC  
Year Built: 1950  
Book/Page: 2082-255

Magna St, Bristol, RI 02809  
Plat: 23, Lot: 185  
Zone: R-6, Area: 0.103 Acres  
N/F: Magnolia Improvements LLC  
Year Built: 1950  
Book/Page: 2082-255

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**PURPOSE + GOALS**

LOTS 185 + 192 + 189 ARE A SINGLE LOT OF RECORD (MERGED)  
THESE LOTS SHALL BE SUBDIVIDED INTO TWO PARCELS OF RECORD  
LOT 189 (68 MAGNOLIA)  
LOT 192

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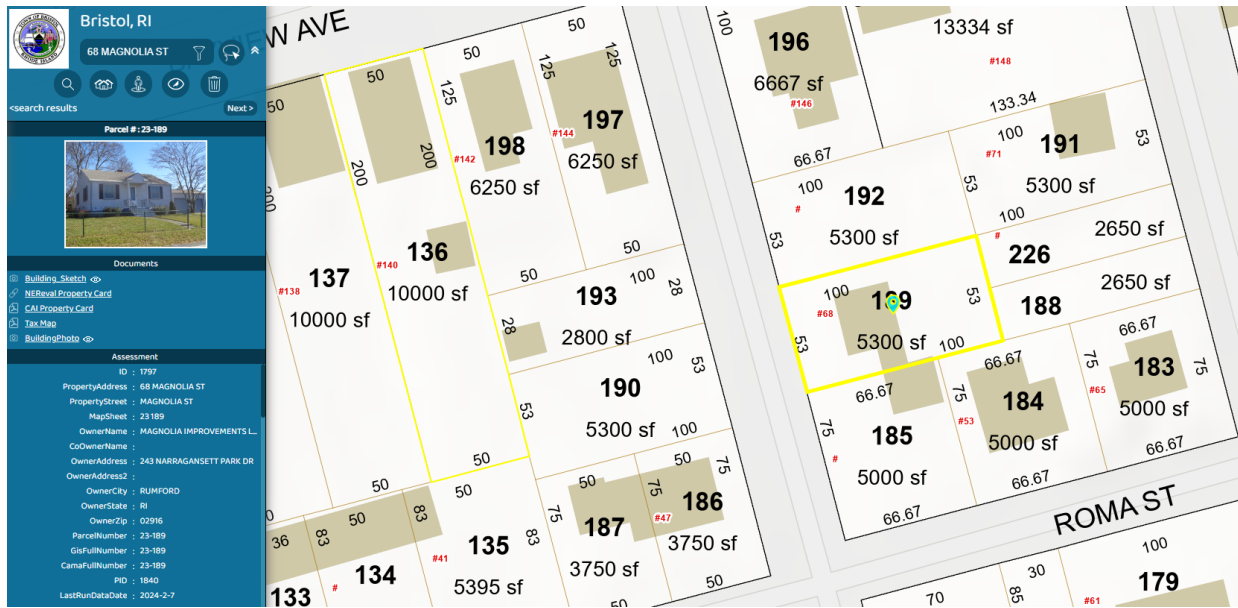




Civil • Survey • Structural • Environmental • Design  
3102 East Main Road, Portsmouth RI 02871  
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# Stormwater Report, Operations and Maintenance

68 Magnolia St, Bristol RI AP 23-185, 189, 192



## Property Owner:

Josh Agostini  
58 Magnolia St  
Bristol, RI 02809  
T. 774-991-2406  
E. josha@litebuildingteam.com



2/8/24

NEI Job Number: 23.0144

N:\PROJECTS\23.0144\_AGOSTINI (MAGNOLIA ST)\SITE-CIVIL\Stormwater

Prepared by: Narragansett Engineering, Inc. 3102 East Main St, Portsmouth, RI 02871

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2. EXISTING CONDITIONS..... 3  
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4. HYDROLOGIC ANALYSIS ..... 5  
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**1. INTRODUCTION**

Narragansett Engineering, Inc. (NEI) has prepared this Stormwater Management Report in support of a proposed minor subdivision and new construction located at 68 Magnolia St, Bristol RI.

The includes a proposed single-family dwelling with an attached garage and deck (1,456 sq ft) along with associated infrastructure. This proposed structure will incorporate a crushed stone driveway for access to Magnolia St.

The project includes a number of stormwater best management practices (BMPs) to control stormwater quality and quantity for the development. The BMPs proposed for the project include 2 dry wells.

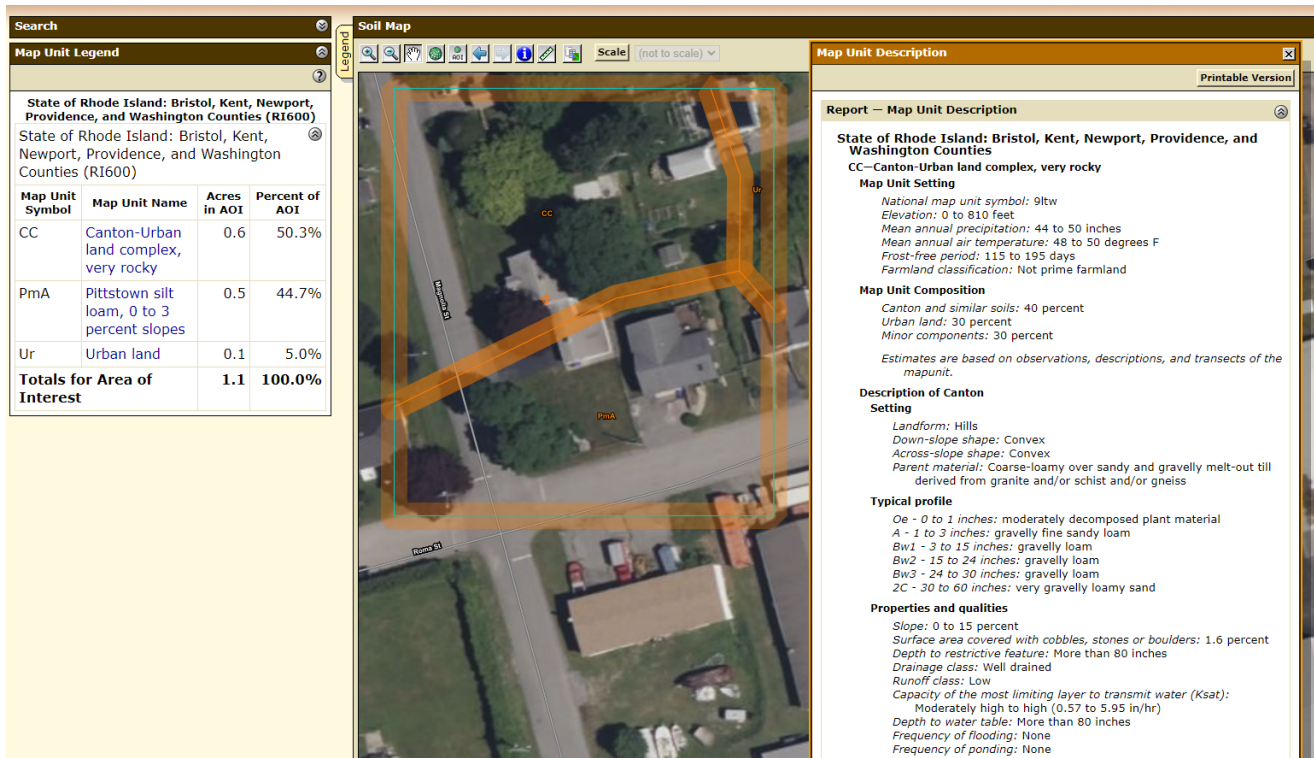
This Stormwater Management Report provides supporting evaluation, documentation, analysis, and calculations to confirm that all components of the stormwater management system have been designed to comply with the requirements outlined in the latest edition of the “Rhode Island Stormwater Design and Installation Manual (RISDISM).” And the Town of Bristol’s “Chapter 29 – Soil Erosion, Runoff, and Sediment Control” ordinance.

## 2. EXISTING CONDITIONS

Under existing conditions, the newly subdivided property is a vacant grassed lot with some impervious landscaped features towards the east side of the lot.

The topography of the site slopes predominantly from east to west, and to aid in the simplicity of the model, the watershed limits are just past the site's east and west property line. Currently, there is no stormwater mitigation or treatment on the site.

## GROUNDWATER AND SOIL EVALUATION



Based on NRCS mapping (see Appendix A.2: NRCS Soils Map), soils within the development areas of the Site are: gravelly sandy loams with a more than 80" water table.

Two soil evaluations were also performed on this site to confirm the sandy loam and a more than 80" water table. See appendix for soil evaluations forms.

Based on the "RISDISM" Table 5-3, Design Infiltration Rates for Different Soil Textures (Rawls et al., 1982), an infiltration rate of 1.02 inches per hour for sandy loam was used for designing the drywells.

### DESIGN POINT

As determined by NEI, based on existing site condition and topography along with the proposed development program, one design point has been used for the stormwater analysis.

- The design point for both existing and proposed is the pavement edge of Magnolia St.

### PRE and POST DEVELOPMENT ANALYSIS

Under pre-development conditions, the site stormwater runoff travels to the above-described Design Point, where peak discharge rates were evaluated for Water Quality, the 2-year, 10-year, and 25-year storm events.

The overall post-watershed boundaries are the same as the pre-developed, but they were broken into sub-watersheds to separate the impervious areas being directed toward the designed BMPs.

The proposed time of concentrations (Tc) were below the 6-minute minimum standard per the RISDSM, as such, a 6-minute TC was used for all the proposed watershed paths.

## **3. PROPOSED CONDITIONS**

The site as proposed, will go from a vacant lot to a lot that contains a single-family residence with associated infrastructure. The site will also incorporate a permeable crushed stone driveway to reduce the newly created impervious areas.

The architectural design of the structure is still under development. In the HydroCAD model, we increased the area of the structure by 12% to factor in any increases to the roof area of the structure.

## **4. HYDROLOGIC ANALYSIS**

The hydrologic analysis was performed using HydroCAD software for a 24-hour, Type III rainfall event for Bristol County (Water Quality: 1.2 inches, 2-year: 3.3 inches, 10-Year: 4.9 inches, and 25-year: 6.1 inches)

Table 1 provides a summary of this analysis, which shows that post-development peak discharge rates will be less than pre-development peak discharge rates for all storms.

Table 1: Hydrologic Analysis Summary (See additional details in Appendix C)

<b>Design Point - Overall</b>			
<b>Peak Flow Rate (cfs)</b>			
<b>Design Storm</b>	<b>Existing</b>	<b>Proposed</b>	<b>Change</b>
WQ Storm (1.2")	0.02	0.02	0.00
2 - Year	0.11	0.11	0.00
10 - Year	0.28	0.26	-0.02
25 - Year	0.44	0.39	-0.05
<b>Peak Volume (cf)</b>			
<b>Design Storm</b>	<b>Existing</b>	<b>Proposed</b>	<b>Change</b>
WQ Storm (1.2")	63	79	16
2 - Year	451	440	-11
10 - Year	987	899	-88
25 - Year	1,466	1,373	-93

The HydroCAD model analysis shows that the proposed conditions yield a rate reduction in the proposed storm events for the 2, 10, and 25, year storms from the existing. The water quality storm shows a slight increase but the HydroCAD model did not include the proposed permeable driveway to be conservative. Stormwater flow continues past the site, along the westerly side of Magnolia St.

Stormwater mitigation is achieved via 2 drywell BMP's. These 2 drywells mitigate the roof runoff of the proposed structure and achieve the required amount of the water quality volume. See appendix for the water quality calculation.

## **5. CONCLUSIONS**

This project has been designed in accordance with Bristol RI Chapter 29, Post Development Discharge has been reduced below pre-development rates for the 2-, 10-, and 25-year (Type III) Frequency Storm. The design is in substantial conformance with the Rhode Island Stormwater Design and Installation Standards Manual (RISDISM )

## **6. OPERATIONS AND MAINTENANCE**

### Short-term Requirements

Once construction has been completed, more frequent inspections and required maintenance shall be performed during the first growing season. These inspections shall be performed weekly during the first month after construction is completed and monthly for the remainder of the first growing season. The goal of these inspections is to ensure that no erosion of the partially stabilized soils is occurring. Any erosion that is observed shall be remedied quickly by repairing and reseeding as necessary.

### **OPERATION AND MAINTENANCE PLAN**

The stormwater management system, including all structural stormwater controls and conveyances, must have an operation and management plan to ensure that it continues to function as designed. The plan shall identify measures for implementing maintenance activities in a manner that minimizes stormwater runoff impacts. The owners of the lot will be responsible for the operation and maintenance of the site, the estimated budget, and the funding for the activities and equipment required. A legally binding and enforceable maintenance agreement shall be executed between the facility owner and the responsible authority to ensure the following:

### **REQUIRED ELEMENTS**

#### Dry Well Maintenance

##### Monthly

- Inspect your gutters after storms to make sure that rainwater drains properly to the dry well
- Ensure caps on observation wells are fastened

##### Seasonally

- Remove leaves and tree debris from roof gutters from April through November
- To prevent damage to your mower or the observation well cap do not mow over the caps
- Repair any damage to gutters/downspouts from winter snow or ice

##### As needed

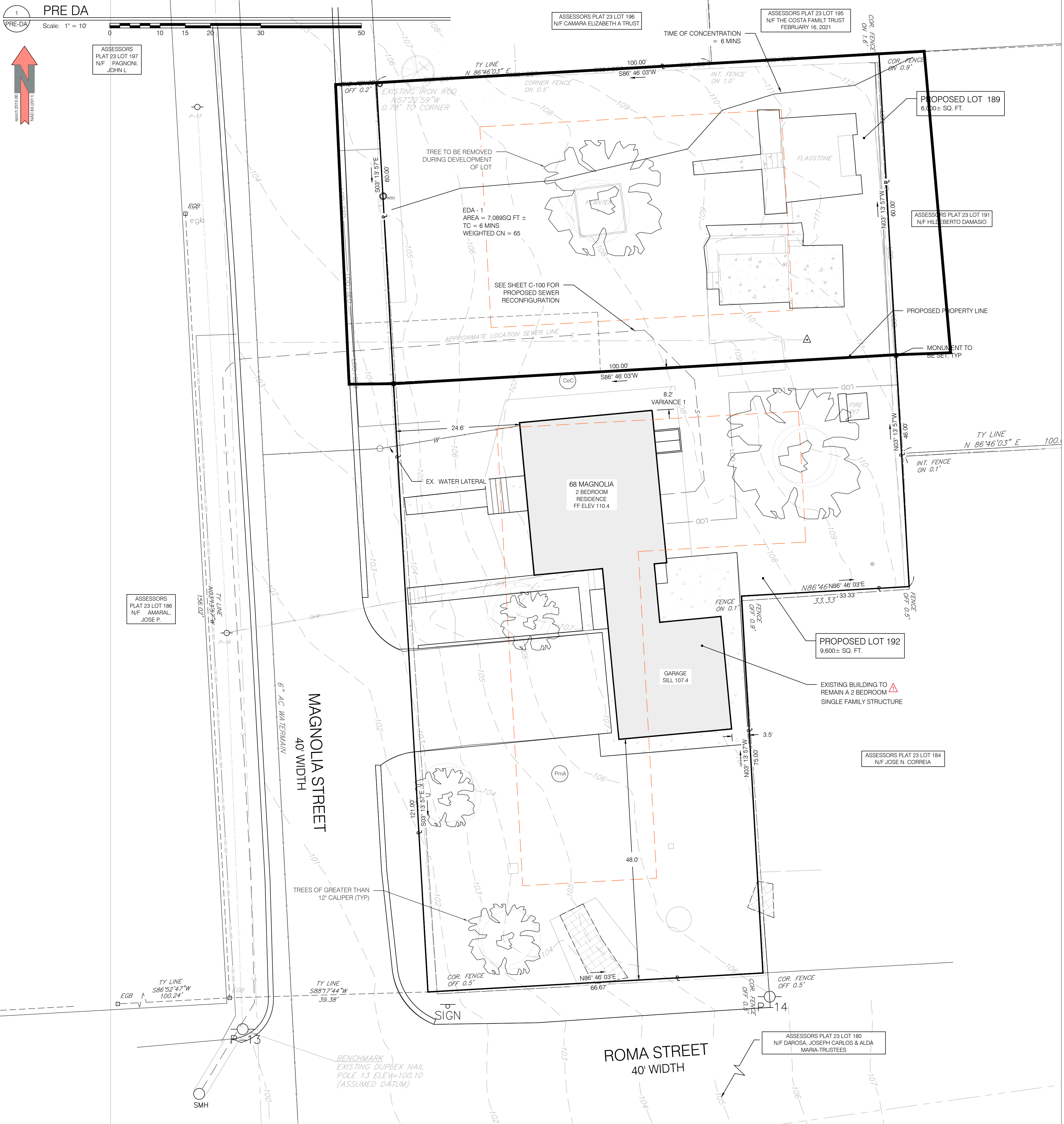
- Inform contractors working on your property of the drywell locations to prevent damaging the drywell
- Place gutter guards or screens on top of roof downspouts to filter out leaves and sediment before the rainwater reaches the drywell

#### Long-Term Maintenance of Non-Stormwater Related Activities

**Snow Disposal:** Snow shall be removed from all drives, parking areas, fire access drive, and sidewalks whenever an accumulation of snow occurs by the owner/operator or a private licensed subcontractor. No snow shall be plowed in or adjacent to catch basins or stormwater areas.

**Lawn and Landscape Management:** The Owner shall employ the standards for ground management specified in Appendix G (G.7) of the RISDISM to the extent practicable. This includes mowing to a height of no less than two inches during the growing season, and minimization of fertilizers, pesticides, and irrigation. All landscaping and landscaping maintenance shall be performed by a licensed subcontractor or property owner and all materials removed from the premises shall be in conformance with all applicable regulatory standards.

**Appendix A:  
Pre and Post Drainage Area Maps:**



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**SHEET TITLE**  
 AGOSTINI SUBDIVISION  
 PRE DA

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 58 Magnolia St  
 Bristol, RI 02809  
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No	DATE	REVISIONS/DESCRIPTION	BY
1	1/16/24	MINOR SUBD. COMMENTS	CB

**PURPOSE + GOALS**  
 ALLOW PROPOSED LOT "192" TO REMAIN > 10,000 SQFT TO PRESERVE A MULTI-FAMILY DWELLING (AND AVOID FURTHER RELIEF).  
 AS SUCH, PROPOSED LOT "189" IS LIMITED TO ~56' WIDTH AND 5,998 SQFT. REQUISITE VARIANCES ARE REQUESTED.  
 A SINGLE FAMILY DWELLING IS PROPOSED ON LOT "189"

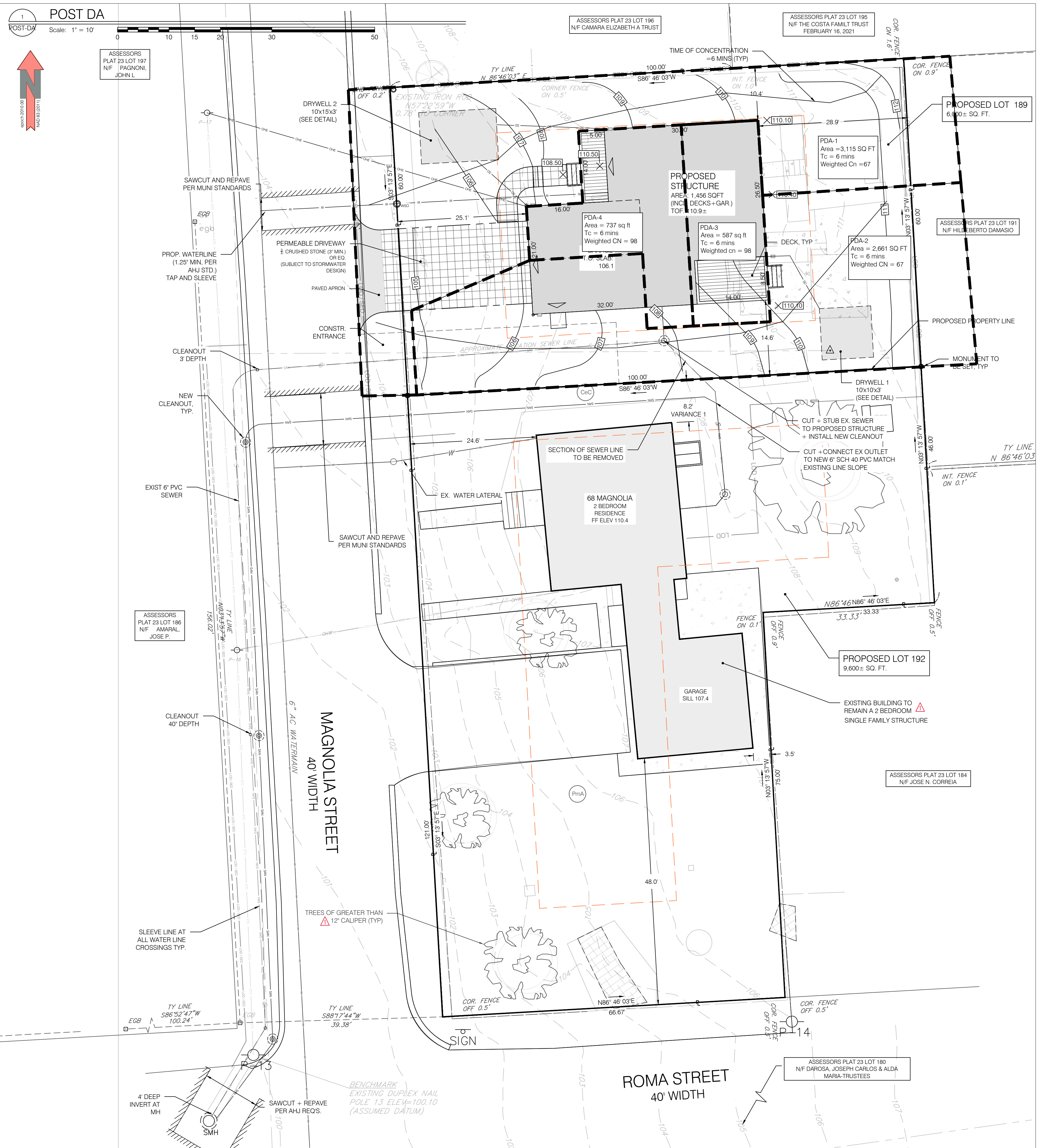
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 LOT 189 (68 MAGNOLIA)  
 LOT 192

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SCALE  
 1" = 10'  
**PRE-DA**





POST-DA  
 Scale: 1" = 10'

**NEI**  
**Narragansett Engineering Inc.**  
 Civil - Survey Structural Environmental Design  
 3102 East Main Road, Portsmouth RI 02871  
 Tel. 401.683.6630 www.nei-cds.com

**SHEET TITLE**  
 AGOSTINI SUBDIVISION  
 POST-DA

Josh Agostini  
 58 Magnolia St  
 Bristol, RI 02809  
 T. 774-991-2406  
 E. josh@ettebuildingteam.com

**Property Records**  
 68 Magnolia St, Bristol, RI 02809  
 Plat: 23, Lot: 189  
 Zone: R-6, Area: 0.122 Acres  
 N/F: Magnolia Improvements LLC  
 Year Built: 1950  
 Book/Page: 2082-255

Roma St, Bristol, RI 02809  
 Plat: 23, Lot: 185  
 Zone: R-6, Area: 0.103 Acres  
 N/F: Magnolia Improvements LLC  
 Year Built: 1950  
 Book/Page: 2082-255

Magnolia St, Bristol, RI 02809  
 Plat: 23, Lot: 192  
 Zone: R-6, Area: 0.122 Acres  
 N/F: Magnolia Improvements LLC  
 Year Built: 1950  
 Book/Page: 2082-255

PROJECT #	DATE	DRAWN	CHECK
23.0144	01/03/24	CB	NKH
No	DATE	REVISIONS/DESCRIPTION	BY
1	1/16/24	MINOR SUBD. COMMENTS	CB

**PURPOSE + GOALS**  
 ALLOW PROPOSED LOT 192 TO REMAIN > 10,000 SQFT TO PRESERVE A MULTI-FAMILY DWELLING (AND AVOID FURTHER RELIEF). AS SUCH, PROPOSED LOT 189 IS LIMITED TO -56' WIDTH AND 5,998 SQFT. REQUISITE VARIANCES ARE REQUESTED. A SINGLE FAMILY DWELLING IS PROPOSED ON LOT 189.

LOTS 185 + 192 + 189 ARE A SINGLE LOT OF RECORD (MERGED)  
 THESE LOTS SHALL BE SUBDIVIDED INTO TWO PARCELS OF RECORD  
 LOT 189 (68 MAGNOLIA)  
 LOT 192

**DRAWINGS MUST BE PRINTED IN COLOR TO BE VALID. THIS NOTE SHOULD BE BLUE. IF THIS NOTE IS NOT BLUE, PLEASE REPRINT IN COLOR OR CONTACT NEI.**



SCALE  
 1" = 10'

**POST-DA**

E:\PROJECTS\23.0144 AGOSTINI (MAGNOLIA ST)\SITE\CIVIL\23.0144 AGOSTINI (MAGNOLIA) - SUBDIVISION.DWG POST-DA NEI-Standard.ctb 2/8/2024 Chris Barry

**Appendix B:**  
**SEV Data.**



STATE OF RHODE ISLAND  
Department of Environmental Management

Office of Water Resources  
Email: dem.OWTS@dem.ri.gov  
Site Evaluation Form

\*for stormwater purposes  
only



Part A – Soil Profile Description

Application Number \_\_\_\_\_

Property Owner: **Josh Agostini**

Property Location: **68 Magnolia St Bristol RI** Plat: **23** Lot: **185,189,192**

Date of Test Hole: **2/7/24** Weather: **Sunny** Shaded: Yes  No  Time: **11 am**

Soil Evaluator: **Craig Barry** License Number: \_\_\_\_\_

Soil Evaluator email address: **cbarry@nei-cds.com**

TH 1 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox		Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S. Contr.				
Fill	24-0	-	-	-	-	-	-	-	-	-	-
Bw2	0-24	C	S	5yr 3/2	-	-	-	sl	Gr	Vfr	
Bw3	24-30	C	S	5yr 3/2	-	-	-	sl	Gr	Fr	
2C	30-56	C	S	7.5yr 2.5/1	-	-	-	sl	Gr	Fr	
TH 2 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox		Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S. Contr.				
Fill	24-0	-	-	-	-	-	-	-	-	-	-
Bw2	0-24	C	S	5yr 3/2	-	-	-	sl	Gr	Vfr	
Bw3	24-30	C	S	5yr 3/2	-	-	-	sl	Gr	Fr	
2C	30-56	C	S	7.5yr 2.5/1	-	-	-	sl	Gr	Fr	

TH 1 Soil Class **B** Total Depth **56"** Impervious/Limiting Layer Depth **>56"** (og) GW Seepage Depth **-** SHWT **56"** (og)  
 TH 2 Soil Class **B** Total Depth **56"** Impervious/Limiting Layer Depth **>56"** (og) GW Seepage Depth **-** SHWT **56"** (og)

Comments: **NRCS soils map shows a more than 80" water table. The soil evaluation confirmed this water table but found 2' of fill on this site.**





**Part B**

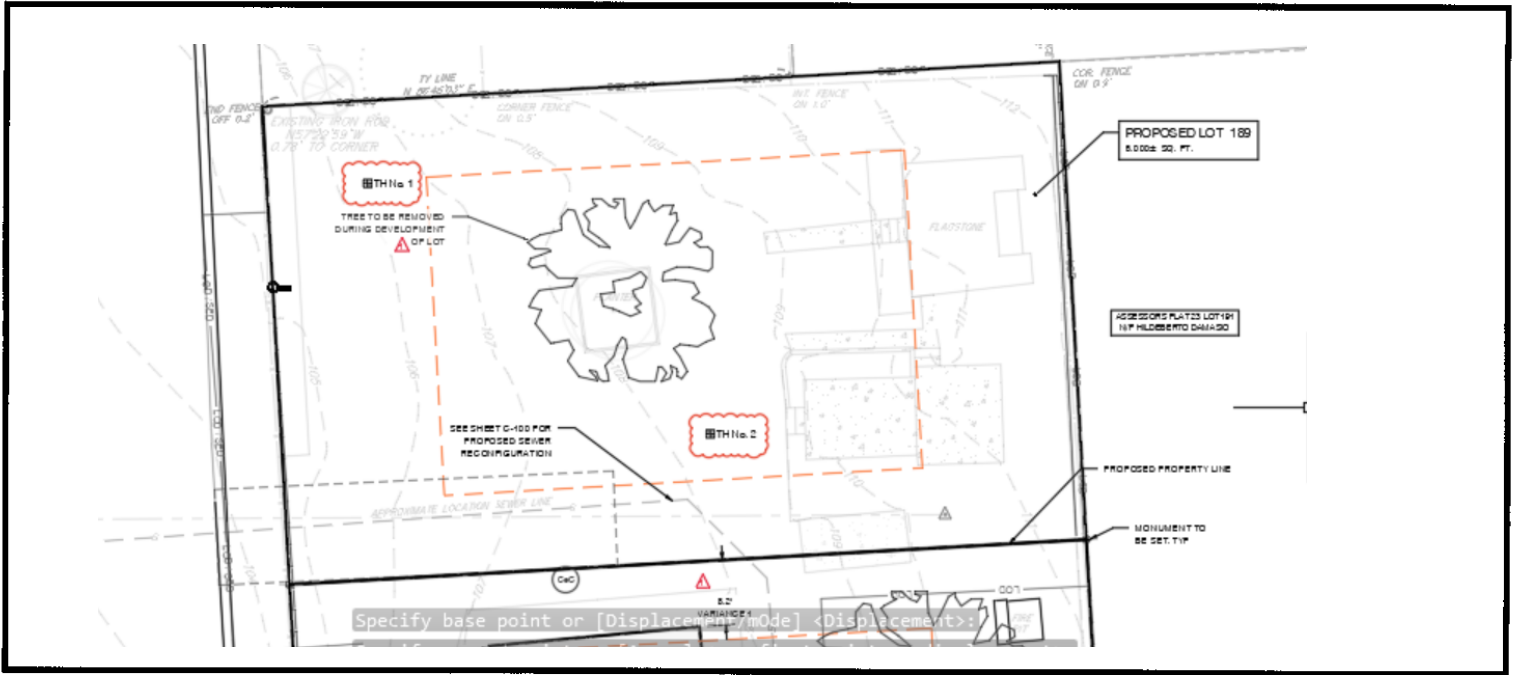
**Site Evaluation** – to be completed by Soil Evaluator or Class II or III Designer

**Please use the area below to locate:**

1. Test holes and bedrock test holes,
2. Approximate direction of due north
3. Offsets from test holes to fixed points such as street, utility pole, or other permanent, marked object\*  
**\*OFFSETS MUST BE SHOWN**

**Key:**

-  Approximate location of test holes
-  Approximate location of bedrock test holes
-  Estimated gradient and direction of slope
-  Approximate direction of due north



1. Relief and Slope: 1%
2. Presence of any watercourse, wetlands or surface water bodies, within 200 feet of test holes: NO  YES
3. Restrictive Layer or Bedrock within 4' below original ground within 25 feet of test hole. Provide all test hole locations & depths above. NO  YES
4. Presence of existing or proposed private drinking water wells within 200 feet of test holes? If yes, locate on above sketch. NO  YES
5. Public drinking water wells within 500 feet of test holes? If yes, locate on above sketch. NO  YES
6. Is site within the watershed of a public drinking water reservoir or other critical area defined in Rule 6.42? NO  YES
7. Has soil been excavated from or fill deposited on site? If yes, locate on above sketch. NO  YES
8. Site's potential for flooding or ponding: NONE  SLIGHT  MODERATE  SEVERE
9. Landscape position: Shoulder
10. Vegetation: Grassy
11. Indicate approximate location of property lines and roadways.
12. Additional comments, site constraints or additional information regarding site: \_\_\_\_\_

**Certification**

The undersigned hereby certifies that all information on this application and accompanying forms, submittals and sketches are true and accurate and that I have been authorized by the owner(s) to conduct these necessary field investigations and submit this request.

Part A prepared by: \_\_\_\_\_ Signature \_\_\_\_\_ License # \_\_\_\_\_ Part B prepared by: \_\_\_\_\_ Signature \_\_\_\_\_

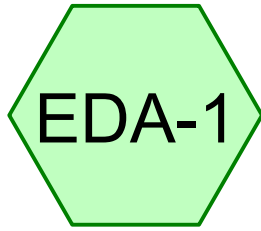
**DO NOT WRITE IN THIS SPACE**

**Witnessed Soil Evaluation Decision:** Concur  Inconclusive  Disclaim   
**Unwitnessed Soil Evaluation Decision:** Accept  Inconclusive  Disclaim

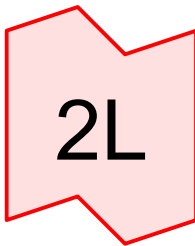
**Wet Season Determination required**  **Additional Field Review Required**

Explanatoin: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 Signature Authorized Agent \_\_\_\_\_ Date \_\_\_\_\_

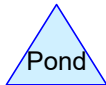
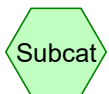
**Appendix C:**  
**HYDROCAD Report:**



EDA-1



Magnolia St



**Routing Diagram for 23.0144 PRE DA**

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**23.0144 PRE DA**

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**Area Listing (all nodes)**

Area (sq-ft)	CN	Description (subcatchment-numbers)
6,324	61	>75% Grass cover, Good, HSG B (EDA-1)
765	98	Impervious Landscape Features (EDA-1)
<b>7,089</b>	<b>65</b>	<b>TOTAL AREA</b>

**23.0144 PRE DA**

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23.0144 PRE DA

Type III 24-hr 0\_Stormwater Rainfall=1.20"

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**Summary for Subcatchment EDA-1: EDA-1**

Runoff = 0.02 cfs @ 12.08 hrs, Volume= 63 cf, Depth= 0.11"  
Routed to Link 2L : Magnolia St

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 0\_Stormwater Rainfall=1.20"

	Area (sf)	CN	Description
*	765	98	Impervious Landscape Features
	6,324	61	>75% Grass cover, Good, HSG B
	7,089	65	Weighted Average
	6,324	61	89.21% Pervious Area
	765	98	10.79% Impervious Area

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

**Summary for Link 2L: Magnolia St**

Inflow Area = 7,089 sf, 10.79% Impervious, Inflow Depth = 0.11" for 0\_Stormwater event

Inflow = 0.02 cfs @ 12.08 hrs, Volume= 63 cf

Primary = 0.02 cfs @ 12.08 hrs, Volume= 63 cf, Atten= 0%, Lag= 0.0 min

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



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23.0144 PRE DA  
Type III 24-hr 2-year Rainfall=3.30"  
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Page 4

**Summary for Subcatchment EDA-1: EDA-1**

Runoff = 0.11 cfs @ 12.10 hrs, Volume= 451 cf, Depth= 0.76"  
Routed to Link 2L : Magnolia St

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.30"

	Area (sf)	CN	Description
*	765	98	Impervious Landscape Features
	6,324	61	>75% Grass cover, Good, HSG B
	7,089	65	Weighted Average
	6,324	61	89.21% Pervious Area
	765	98	10.79% Impervious Area

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

**Summary for Link 2L: Magnolia St**

Inflow Area = 7,089 sf, 10.79% Impervious, Inflow Depth = 0.76" for 2-year event  
Inflow = 0.11 cfs @ 12.10 hrs, Volume= 451 cf  
Primary = 0.11 cfs @ 12.10 hrs, Volume= 451 cf, Atten= 0%, Lag= 0.0 min

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

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Type III 24-hr 10-year Rainfall=4.90"  
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Page 5

**Summary for Subcatchment EDA-1: EDA-1**

Runoff = 0.28 cfs @ 12.09 hrs, Volume= 987 cf, Depth= 1.67"  
Routed to Link 2L : Magnolia St

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-year Rainfall=4.90"

	Area (sf)	CN	Description
*	765	98	Impervious Landscape Features
	6,324	61	>75% Grass cover, Good, HSG B
	7,089	65	Weighted Average
	6,324	61	89.21% Pervious Area
	765	98	10.79% Impervious Area

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

**Summary for Link 2L: Magnolia St**

Inflow Area = 7,089 sf, 10.79% Impervious, Inflow Depth = 1.67" for 10-year event  
Inflow = 0.28 cfs @ 12.09 hrs, Volume= 987 cf  
Primary = 0.28 cfs @ 12.09 hrs, Volume= 987 cf, Atten= 0%, Lag= 0.0 min

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

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Type III 24-hr 25-year Rainfall=6.10"  
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**Summary for Subcatchment EDA-1: EDA-1**

Runoff = 0.44 cfs @ 12.09 hrs, Volume= 1,466 cf, Depth= 2.48"  
Routed to Link 2L : Magnolia St

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.10"

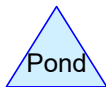
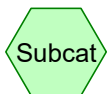
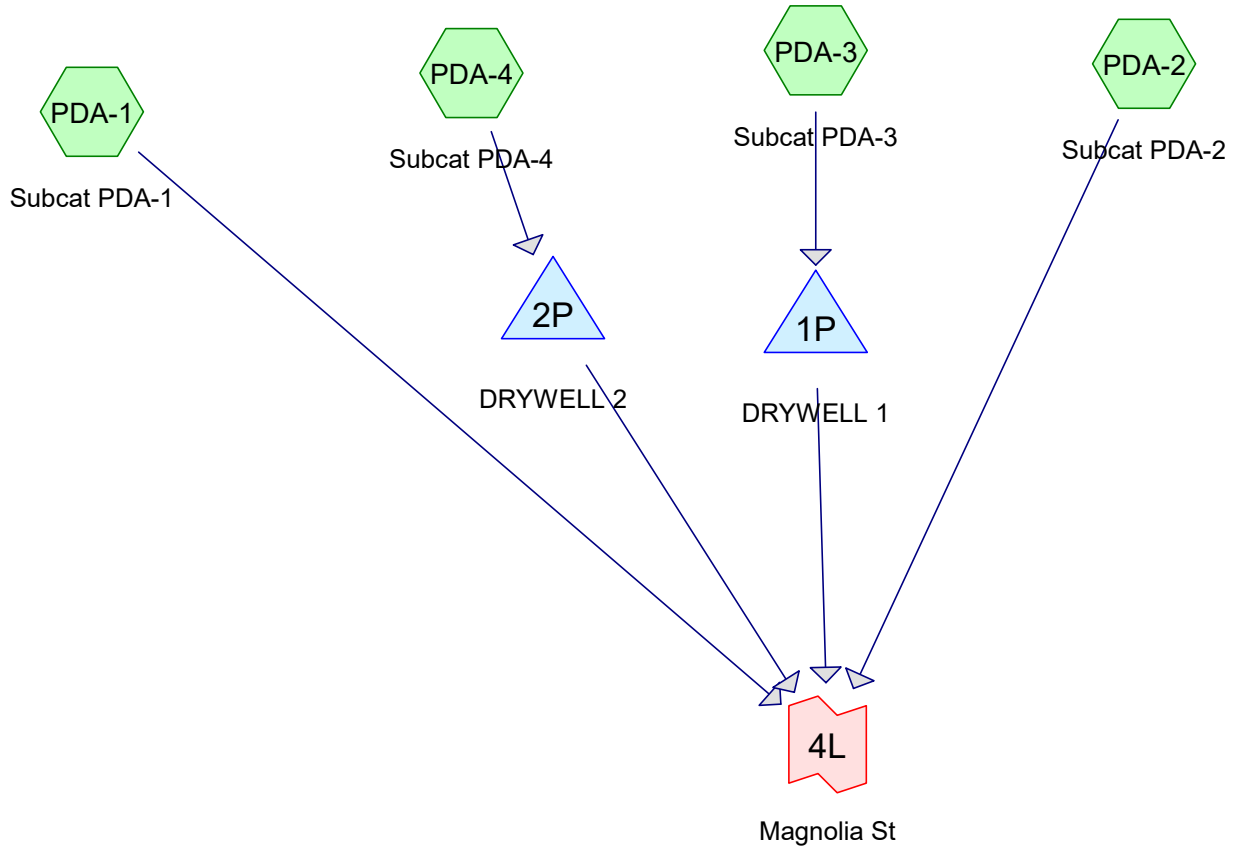
	Area (sf)	CN	Description
*	765	98	Impervious Landscape Features
	6,324	61	>75% Grass cover, Good, HSG B
	7,089	65	Weighted Average
	6,324	61	89.21% Pervious Area
	765	98	10.79% Impervious Area

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

**Summary for Link 2L: Magnolia St**

Inflow Area = 7,089 sf, 10.79% Impervious, Inflow Depth = 2.48" for 25-year event  
Inflow = 0.44 cfs @ 12.09 hrs, Volume= 1,466 cf  
Primary = 0.44 cfs @ 12.09 hrs, Volume= 1,466 cf, Atten= 0%, Lag= 0.0 min

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



**Routing Diagram for 23.0144 POST DA**  
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**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	0_Stormwater	Type III 24-hr		Default	24.00	1	1.20	2
2	2-year	Type III 24-hr		Default	24.00	1	3.30	2
3	10-year	Type III 24-hr		Default	24.00	1	4.90	2
4	25-year	Type III 24-hr		Default	24.00	1	6.10	2

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**Area Listing (all nodes)**

Area (sq-ft)	CN	Description (subcatchment-numbers)
4,817	61	>75% Grass cover, Good, HSG B (PDA-1, PDA-2, PDA-4)
642	98	Paved parking, HSG B (PDA-1, PDA-2)
1,643	98	Roofs, HSG B (PDA-1, PDA-2, PDA-3, PDA-4)
<b>7,102</b>	<b>73</b>	<b>TOTAL AREA</b>

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23.0144 POST DA  
 Type III 24-hr 0\_Stormwater Rainfall=1.20"

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 Page 4

**Summary for Subcatchment PDA-1: Subcat PDA-1**

Runoff = 0.01 cfs @ 12.08 hrs, Volume= 45 cf, Depth= 0.17"  
 Routed to Link 4L : Magnolia St

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 0\_Stormwater Rainfall=1.20"

Area (sf)	CN	Description
0	98	Roofs, HSG B
468	98	Paved parking, HSG B
76	98	Paved parking, HSG B
157	61	>75% Grass cover, Good, HSG B
48	61	>75% Grass cover, Good, HSG B
2,367	61	>75% Grass cover, Good, HSG B
3,116	67	Weighted Average
2,572	61	82.55% Pervious Area
544	98	17.45% Impervious Area

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

**Summary for Subcatchment PDA-2: Subcat PDA-2**

Runoff = 0.01 cfs @ 12.08 hrs, Volume= 34 cf, Depth= 0.15"  
 Routed to Link 4L : Magnolia St

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 0\_Stormwater Rainfall=1.20"

Area (sf)	CN	Description
318	98	Roofs, HSG B
98	98	Paved parking, HSG B
2,245	61	>75% Grass cover, Good, HSG B
2,661	67	Weighted Average
2,245	61	84.36% Pervious Area
416	98	15.64% Impervious Area

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

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Type III 24-hr 0\_Stormwater Rainfall=1.20"

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#### Summary for Subcatchment PDA-3: Subcat PDA-3

Runoff = 0.01 cfs @ 12.08 hrs, Volume= 48 cf, Depth= 0.99"  
Routed to Pond 1P : DRYWELL 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 0\_Stormwater Rainfall=1.20"

Area (sf)	CN	Description
588	98	Roofs, HSG B
588	98	100.00% Impervious Area

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

#### Summary for Subcatchment PDA-4: Subcat PDA-4

Runoff = 0.02 cfs @ 12.08 hrs, Volume= 61 cf, Depth= 0.99"  
Routed to Pond 2P : DRYWELL 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 0\_Stormwater Rainfall=1.20"

Area (sf)	CN	Description
737	98	Roofs, HSG B
0	61	>75% Grass cover, Good, HSG B
737	98	Weighted Average
0	61	0.05% Pervious Area
737	98	99.95% Impervious Area

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

#### Summary for Pond 1P: DRYWELL 1

Inflow Area = 588 sf, 100.00% Impervious, Inflow Depth = 0.99" for 0\_Stormwater event  
Inflow = 0.01 cfs @ 12.08 hrs, Volume= 48 cf  
Outflow = 0.00 cfs @ 12.53 hrs, Volume= 48 cf, Atten= 82%, Lag= 26.9 min  
Discarded = 0.00 cfs @ 12.53 hrs, Volume= 48 cf  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
Routed to Link 4L : Magnolia St

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 106.89' @ 12.53 hrs Surf.Area= 100 sf Storage= 13 cf

Plug-Flow detention time= 29.6 min calculated for 48 cf (100% of inflow)  
Center-of-Mass det. time= 29.6 min ( 811.6 - 782.0 )



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Volume	Invert	Avail.Storage	Storage Description			
#1	106.49'	99 cf	<b>Custom Stage Data (Conic)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
106.49	100	0.0	0	0	100	
106.50	100	33.0	0	0	100	
109.50	100	33.0	99	99	207	
109.51	100	0.0	0	99	207	
110.50	100	0.0	0	99	242	

Device	Routing	Invert	Outlet Devices
#1	Discarded	106.49'	<b>1.020 in/hr Exfiltration over Wetted area</b>
#2	Primary	110.49'	<b>4.0" Horiz. Orifice/Grate</b> C= 0.600 in 4.0" Grate (100% open area) Limited to weir flow at low heads

**Discarded OutFlow** Max=0.00 cfs @ 12.53 hrs HW=106.89' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=106.49' (Free Discharge)

↑**2=Orifice/Grate** ( Controls 0.00 cfs)

### Summary for Pond 2P: DRYWELL 2

Inflow Area = 737 sf, 99.95% Impervious, Inflow Depth = 0.99" for 0\_Stormwater event  
 Inflow = 0.02 cfs @ 12.08 hrs, Volume= 61 cf  
 Outflow = 0.00 cfs @ 11.73 hrs, Volume= 61 cf, Atten= 81%, Lag= 0.0 min  
 Discarded = 0.00 cfs @ 11.73 hrs, Volume= 61 cf  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
 Routed to Link 4L : Magnolia St

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 101.80' @ 12.52 hrs Surf.Area= 150 sf Storage= 15 cf

Plug-Flow detention time= 24.6 min calculated for 61 cf (100% of inflow)  
 Center-of-Mass det. time= 24.6 min ( 806.6 - 782.0 )

Volume	Invert	Avail.Storage	Storage Description			
#1	101.49'	149 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
101.49	150	0.0	0	0		
101.50	150	33.0	0	0		
104.50	150	33.0	149	149		
104.51	150	0.0	0	149		
106.00	150	0.0	0	149		

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23.0144 POST DA  
Type III 24-hr 0\_Stormwater Rainfall=1.20"

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Page 7

Device	Routing	Invert	Outlet Devices
#1	Discarded	101.49'	<b>1.020 in/hr Exfiltration over Surface area</b>
#2	Primary	107.00'	<b>4.0" Horiz. Orifice/Grate</b> C= 0.600 in 4.0" Grate (100% open area) Limited to weir flow at low heads

**Discarded OutFlow** Max=0.00 cfs @ 11.73 hrs HW=101.50' (Free Discharge)  
↑**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=101.49' (Free Discharge)  
↑**2=Orifice/Grate** ( Controls 0.00 cfs)

**Summary for Link 4L: Magnolia St**

Inflow Area = 7,102 sf, 32.17% Impervious, Inflow Depth = 0.13" for 0\_Stormwater event  
 Inflow = 0.02 cfs @ 12.08 hrs, Volume= 79 cf  
 Primary = 0.02 cfs @ 12.08 hrs, Volume= 79 cf, Atten= 0%, Lag= 0.0 min

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

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**Summary for Subcatchment PDA-1: Subcat PDA-1**

Runoff = 0.06 cfs @ 12.10 hrs, Volume= 243 cf, Depth= 0.94"  
Routed to Link 4L : Magnolia St

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.30"

Area (sf)	CN	Description
0	98	Roofs, HSG B
468	98	Paved parking, HSG B
76	98	Paved parking, HSG B
157	61	>75% Grass cover, Good, HSG B
48	61	>75% Grass cover, Good, HSG B
2,367	61	>75% Grass cover, Good, HSG B
3,116	67	Weighted Average
2,572	61	82.55% Pervious Area
544	98	17.45% Impervious Area

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

**Summary for Subcatchment PDA-2: Subcat PDA-2**

Runoff = 0.05 cfs @ 12.10 hrs, Volume= 197 cf, Depth= 0.89"  
Routed to Link 4L : Magnolia St

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-year Rainfall=3.30"

Area (sf)	CN	Description
318	98	Roofs, HSG B
98	98	Paved parking, HSG B
2,245	61	>75% Grass cover, Good, HSG B
2,661	67	Weighted Average
2,245	61	84.36% Pervious Area
416	98	15.64% Impervious Area

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

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**Summary for Subcatchment PDA-3: Subcat PDA-3**

Runoff = 0.04 cfs @ 12.08 hrs, Volume= 150 cf, Depth= 3.07"  
 Routed to Pond 1P : DRYWELL 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-year Rainfall=3.30"

Area (sf)	CN	Description
588	98	Roofs, HSG B
588	98	100.00% Impervious Area

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

**Summary for Subcatchment PDA-4: Subcat PDA-4**

Runoff = 0.05 cfs @ 12.08 hrs, Volume= 188 cf, Depth= 3.07"  
 Routed to Pond 2P : DRYWELL 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-year Rainfall=3.30"

Area (sf)	CN	Description
737	98	Roofs, HSG B
0	61	>75% Grass cover, Good, HSG B
737	98	Weighted Average
0	61	0.05% Pervious Area
737	98	99.95% Impervious Area

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

**Summary for Pond 1P: DRYWELL 1**

Inflow Area = 588 sf, 100.00% Impervious, Inflow Depth = 3.07" for 2-year event  
 Inflow = 0.04 cfs @ 12.08 hrs, Volume= 150 cf  
 Outflow = 0.00 cfs @ 12.95 hrs, Volume= 150 cf, Atten= 91%, Lag= 52.0 min  
 Discarded = 0.00 cfs @ 12.95 hrs, Volume= 150 cf  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
 Routed to Link 4L : Magnolia St

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 108.26' @ 12.95 hrs Surf.Area= 100 sf Storage= 58 cf

Plug-Flow detention time= 127.6 min calculated for 150 cf (100% of inflow)  
 Center-of-Mass det. time= 127.6 min ( 883.4 - 755.8 )

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Volume	Invert	Avail.Storage	Storage Description			
#1	106.49'	99 cf	<b>Custom Stage Data (Conic)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
106.49	100	0.0	0	0	100	
106.50	100	33.0	0	0	100	
109.50	100	33.0	99	99	207	
109.51	100	0.0	0	99	207	
110.50	100	0.0	0	99	242	

Device	Routing	Invert	Outlet Devices
#1	Discarded	106.49'	<b>1.020 in/hr Exfiltration over Wetted area</b>
#2	Primary	110.49'	<b>4.0" Horiz. Orifice/Grate</b> C= 0.600 in 4.0" Grate (100% open area) Limited to weir flow at low heads

**Discarded OutFlow** Max=0.00 cfs @ 12.95 hrs HW=108.26' (Free Discharge)  
 ↳ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=106.49' (Free Discharge)  
 ↳ **2=Orifice/Grate** ( Controls 0.00 cfs)

**Summary for Pond 2P: DRYWELL 2**

Inflow Area = 737 sf, 99.95% Impervious, Inflow Depth = 3.07" for 2-year event  
 Inflow = 0.05 cfs @ 12.08 hrs, Volume= 188 cf  
 Outflow = 0.00 cfs @ 10.85 hrs, Volume= 188 cf, Atten= 93%, Lag= 0.0 min  
 Discarded = 0.00 cfs @ 10.85 hrs, Volume= 188 cf  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
 Routed to Link 4L : Magnolia St

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 103.01' @ 13.50 hrs Surf.Area= 150 sf Storage= 75 cf

Plug-Flow detention time= 164.0 min calculated for 188 cf (100% of inflow)  
 Center-of-Mass det. time= 164.0 min ( 919.8 - 755.8 )

Volume	Invert	Avail.Storage	Storage Description			
#1	101.49'	149 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
101.49	150	0.0	0	0		
101.50	150	33.0	0	0		
104.50	150	33.0	149	149		
104.51	150	0.0	0	149		
106.00	150	0.0	0	149		

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Device	Routing	Invert	Outlet Devices
#1	Discarded	101.49'	<b>1.020 in/hr Exfiltration over Surface area</b>
#2	Primary	107.00'	<b>4.0" Horiz. Orifice/Grate</b> C= 0.600 in 4.0" Grate (100% open area) Limited to weir flow at low heads

**Discarded OutFlow** Max=0.00 cfs @ 10.85 hrs HW=101.50' (Free Discharge)  
↑**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=101.49' (Free Discharge)  
↑**2=Orifice/Grate** ( Controls 0.00 cfs)

**Summary for Link 4L: Magnolia St**

Inflow Area = 7,102 sf, 32.17% Impervious, Inflow Depth = 0.74" for 2-year event  
 Inflow = 0.11 cfs @ 12.10 hrs, Volume= 440 cf  
 Primary = 0.11 cfs @ 12.10 hrs, Volume= 440 cf, Atten= 0%, Lag= 0.0 min

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

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**Summary for Subcatchment PDA-1: Subcat PDA-1**

Runoff = 0.14 cfs @ 12.09 hrs, Volume= 492 cf, Depth= 1.89"  
 Routed to Link 4L : Magnolia St

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
0	98	Roofs, HSG B
468	98	Paved parking, HSG B
76	98	Paved parking, HSG B
157	61	>75% Grass cover, Good, HSG B
48	61	>75% Grass cover, Good, HSG B
2,367	61	>75% Grass cover, Good, HSG B
3,116	67	Weighted Average
2,572	61	82.55% Pervious Area
544	98	17.45% Impervious Area

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

**Summary for Subcatchment PDA-2: Subcat PDA-2**

Runoff = 0.12 cfs @ 12.09 hrs, Volume= 407 cf, Depth= 1.83"  
 Routed to Link 4L : Magnolia St

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
318	98	Roofs, HSG B
98	98	Paved parking, HSG B
2,245	61	>75% Grass cover, Good, HSG B
2,661	67	Weighted Average
2,245	61	84.36% Pervious Area
416	98	15.64% Impervious Area

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

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**Summary for Subcatchment PDA-3: Subcat PDA-3**

Runoff = 0.06 cfs @ 12.08 hrs, Volume= 228 cf, Depth= 4.66"  
 Routed to Pond 1P : DRYWELL 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
588	98	Roofs, HSG B
588	98	100.00% Impervious Area

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

**Summary for Subcatchment PDA-4: Subcat PDA-4**

Runoff = 0.08 cfs @ 12.08 hrs, Volume= 286 cf, Depth= 4.66"  
 Routed to Pond 2P : DRYWELL 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-year Rainfall=4.90"

Area (sf)	CN	Description
737	98	Roofs, HSG B
0	61	>75% Grass cover, Good, HSG B
737	98	Weighted Average
0	61	0.05% Pervious Area
737	98	99.95% Impervious Area

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

**Summary for Pond 1P: DRYWELL 1**

Inflow Area = 588 sf, 100.00% Impervious, Inflow Depth = 4.66" for 10-year event  
 Inflow = 0.06 cfs @ 12.08 hrs, Volume= 228 cf  
 Outflow = 0.00 cfs @ 13.11 hrs, Volume= 228 cf, Atten= 92%, Lag= 61.6 min  
 Discarded = 0.00 cfs @ 13.11 hrs, Volume= 228 cf  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
 Routed to Link 4L : Magnolia St

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 109.49' @ 13.11 hrs Surf.Area= 100 sf Storage= 99 cf

Plug-Flow detention time= 194.2 min calculated for 228 cf (100% of inflow)  
 Center-of-Mass det. time= 194.1 min ( 942.5 - 748.4 )



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Volume	Invert	Avail.Storage	Storage Description
#1	106.49'	99 cf	<b>Custom Stage Data (Conic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
106.49	100	0.0	0	0	100
106.50	100	33.0	0	0	100
109.50	100	33.0	99	99	207
109.51	100	0.0	0	99	207
110.50	100	0.0	0	99	242

Device	Routing	Invert	Outlet Devices
#1	Discarded	106.49'	<b>1.020 in/hr Exfiltration over Wetted area</b>
#2	Primary	110.49'	<b>4.0" Horiz. Orifice/Grate</b> C= 0.600 in 4.0" Grate (100% open area) Limited to weir flow at low heads

**Discarded OutFlow** Max=0.00 cfs @ 13.11 hrs HW=109.49' (Free Discharge)  
 ↳ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=106.49' (Free Discharge)  
 ↳ **2=Orifice/Grate** ( Controls 0.00 cfs)

**Summary for Pond 2P: DRYWELL 2**

Inflow Area = 737 sf, 99.95% Impervious, Inflow Depth = 4.66" for 10-year event  
 Inflow = 0.08 cfs @ 12.08 hrs, Volume= 286 cf  
 Outflow = 0.00 cfs @ 9.72 hrs, Volume= 286 cf, Atten= 96%, Lag= 0.0 min  
 Discarded = 0.00 cfs @ 9.72 hrs, Volume= 286 cf  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
 Routed to Link 4L : Magnolia St

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 104.23' @ 14.66 hrs Surf.Area= 150 sf Storage= 136 cf

Plug-Flow detention time= 317.8 min calculated for 286 cf (100% of inflow)  
 Center-of-Mass det. time= 317.8 min ( 1,066.2 - 748.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	101.49'	149 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
101.49	150	0.0	0	0
101.50	150	33.0	0	0
104.50	150	33.0	149	149
104.51	150	0.0	0	149
106.00	150	0.0	0	149

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Device	Routing	Invert	Outlet Devices
#1	Discarded	101.49'	<b>1.020 in/hr Exfiltration over Surface area</b>
#2	Primary	107.00'	<b>4.0" Horiz. Orifice/Grate</b> C= 0.600 in 4.0" Grate (100% open area) Limited to weir flow at low heads

**Discarded OutFlow** Max=0.00 cfs @ 9.72 hrs HW=101.50' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=101.49' (Free Discharge)

↑**2=Orifice/Grate** ( Controls 0.00 cfs)

### Summary for Link 4L: Magnolia St

Inflow Area = 7,102 sf, 32.17% Impervious, Inflow Depth = 1.52" for 10-year event

Inflow = 0.26 cfs @ 12.09 hrs, Volume= 899 cf

Primary = 0.26 cfs @ 12.09 hrs, Volume= 899 cf, Atten= 0%, Lag= 0.0 min

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

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**Summary for Subcatchment PDA-1: Subcat PDA-1**

Runoff = 0.21 cfs @ 12.09 hrs, Volume= 710 cf, Depth= 2.73"  
 Routed to Link 4L : Magnolia St

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-year Rainfall=6.10"

Area (sf)	CN	Description
0	98	Roofs, HSG B
468	98	Paved parking, HSG B
76	98	Paved parking, HSG B
157	61	>75% Grass cover, Good, HSG B
48	61	>75% Grass cover, Good, HSG B
2,367	61	>75% Grass cover, Good, HSG B
3,116	67	Weighted Average
2,572	61	82.55% Pervious Area
544	98	17.45% Impervious Area

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

**Summary for Subcatchment PDA-2: Subcat PDA-2**

Runoff = 0.18 cfs @ 12.09 hrs, Volume= 591 cf, Depth= 2.67"  
 Routed to Link 4L : Magnolia St

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 25-year Rainfall=6.10"

Area (sf)	CN	Description
318	98	Roofs, HSG B
98	98	Paved parking, HSG B
2,245	61	>75% Grass cover, Good, HSG B
2,661	67	Weighted Average
2,245	61	84.36% Pervious Area
416	98	15.64% Impervious Area

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

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### Summary for Subcatchment PDA-3: Subcat PDA-3

Runoff = 0.08 cfs @ 12.08 hrs, Volume= 287 cf, Depth= 5.86"  
Routed to Pond 1P : DRYWELL 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.10"

Area (sf)	CN	Description
588	98	Roofs, HSG B
588	98	100.00% Impervious Area

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

### Summary for Subcatchment PDA-4: Subcat PDA-4

Runoff = 0.10 cfs @ 12.08 hrs, Volume= 360 cf, Depth= 5.86"  
Routed to Pond 2P : DRYWELL 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-year Rainfall=6.10"

Area (sf)	CN	Description
737	98	Roofs, HSG B
0	61	>75% Grass cover, Good, HSG B
737	98	Weighted Average
0	61	0.05% Pervious Area
737	98	99.95% Impervious Area

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

### Summary for Pond 1P: DRYWELL 1

Inflow Area = 588 sf, 100.00% Impervious, Inflow Depth = 5.86" for 25-year event  
Inflow = 0.08 cfs @ 12.08 hrs, Volume= 287 cf  
Outflow = 0.08 cfs @ 12.21 hrs, Volume= 287 cf, Atten= 4%, Lag= 7.6 min  
Discarded = 0.01 cfs @ 12.20 hrs, Volume= 254 cf  
Primary = 0.07 cfs @ 12.21 hrs, Volume= 33 cf  
Routed to Link 4L : Magnolia St

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 110.56' @ 12.21 hrs Surf.Area= 100 sf Storage= 99 cf

Plug-Flow detention time= 176.2 min calculated for 287 cf (100% of inflow)  
Center-of-Mass det. time= 176.1 min ( 921.0 - 744.9 )

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Volume	Invert	Avail.Storage	Storage Description
#1	106.49'	99 cf	<b>Custom Stage Data (Conic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
106.49	100	0.0	0	0	100
106.50	100	33.0	0	0	100
109.50	100	33.0	99	99	207
109.51	100	0.0	0	99	207
110.50	100	0.0	0	99	242

Device	Routing	Invert	Outlet Devices
#1	Discarded	106.49'	<b>1.020 in/hr Exfiltration over Wetted area</b>
#2	Primary	110.49'	<b>4.0" Horiz. Orifice/Grate</b> C= 0.600 in 4.0" Grate (100% open area) Limited to weir flow at low heads

**Discarded OutFlow** Max=0.01 cfs @ 12.20 hrs HW=110.50' (Free Discharge)  
 ↳ **1=Exfiltration** (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=0.07 cfs @ 12.21 hrs HW=110.56' (Free Discharge)  
 ↳ **2=Orifice/Grate** (Weir Controls 0.07 cfs @ 0.89 fps)

**Summary for Pond 2P: DRYWELL 2**

Inflow Area = 737 sf, 99.95% Impervious, Inflow Depth = 5.86" for 25-year event  
 Inflow = 0.10 cfs @ 12.08 hrs, Volume= 360 cf  
 Outflow = 0.05 cfs @ 12.40 hrs, Volume= 360 cf, Atten= 46%, Lag= 19.0 min  
 Discarded = 0.00 cfs @ 8.96 hrs, Volume= 321 cf  
 Primary = 0.05 cfs @ 12.40 hrs, Volume= 39 cf  
 Routed to Link 4L : Magnolia St

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 107.06' @ 12.40 hrs Surf.Area= 150 sf Storage= 149 cf

Plug-Flow detention time= 319.4 min calculated for 360 cf (100% of inflow)  
 Center-of-Mass det. time= 319.5 min ( 1,064.4 - 744.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	101.49'	149 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
101.49	150	0.0	0	0
101.50	150	33.0	0	0
104.50	150	33.0	149	149
104.51	150	0.0	0	149
106.00	150	0.0	0	149

**23.0144 POST DA**

Prepared by Narragansett Engineering Inc

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23.0144 POST DA

Type III 24-hr 25-year Rainfall=6.10"

Printed 2/8/2024

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Device	Routing	Invert	Outlet Devices
#1	Discarded	101.49'	<b>1.020 in/hr Exfiltration over Surface area</b>
#2	Primary	107.00'	<b>4.0" Horiz. Orifice/Grate</b> C= 0.600 in 4.0" Grate (100% open area) Limited to weir flow at low heads

**Discarded OutFlow** Max=0.00 cfs @ 8.96 hrs HW=101.50' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

**Primary OutFlow** Max=0.05 cfs @ 12.40 hrs HW=107.06' (Free Discharge)

↑**2=Orifice/Grate** (Weir Controls 0.05 cfs @ 0.80 fps)

**Summary for Link 4L: Magnolia St**

Inflow Area = 7,102 sf, 32.17% Impervious, Inflow Depth = 2.32" for 25-year event

Inflow = 0.39 cfs @ 12.09 hrs, Volume= 1,373 cf

Primary = 0.39 cfs @ 12.09 hrs, Volume= 1,373 cf, Atten= 0%, Lag= 0.0 min

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

**Appendix D:**  
**Water Quality Volume Calcs:**



Civil • Survey • Structural • Environmental • Design  
 3102 East Main Road, Portsmouth RI 02871  
 Tel. 401.683.6630 www.nei-cds.com

PROJECT Agostini PROJECT NUMBER 23.0144  
 SUBJECT Drywell Calculations

COMPUTATIONS BY CJB DATE 2/8/2024

CHECK BY JWM DATE 2/8/2024

**Total Site Area**

Total Watershed Area of site 7,102 SF  
 Total Impervious Area of site 1,547 SF

**Water Quality Volume of entire site (WQV)**

WQV = Total Impervious Area x 1 inches = 129 CF

**Required WQV Volume = 129 CF**

Provided Water Quality Volume (drywell 1) = 99 10'x10'x3'x(33% void space)

Provided Water Quality Volume (drywell 2) = 149 10'x15'x3'x(33% void space)

**Total WQv Volume Provided (drywell 1 and 2) 248 CF**

**Water quality volume provided is greater than required. See below for individual drywell WQv calculations**

**Drywell 1**

Total Area to Drywell 1 (1P) = 587 SF

Total Impervious Area to Drywell 1 (1P) = 587 SF



Impervious Area treated by Drywell 1 =	587	SF
Water Quality Volume (WQV) for drywell 1		
WQV = Total Impervious Area x 1 inches =	49	CF
<b>Required WQV Volume =</b>	<b>49</b>	<b>CF</b>
Provided Water Quality Volume (drywell 1) =	99	10'x10'x3'x(33% void space)
<b>Total Volume Provided by drywell 1 =</b>	<b>99</b>	<b>CF</b>

### Drywell 2

Total Area to Drywell 2 (1P) =	737	SF
Total Impervious Area to Drywell 2 (1P) =	737	SF
Impervious Area treated by Drywell 2 =	737	SF
Water Quality Volume (WQV) for drywell		
WQV = Total Impervious Area x 1 inches =	61	CF
<b>Required WQV Volume =</b>	<b>61</b>	<b>CF</b>
Provided Water Quality Volume (drywell 2) =	148.5	10'x15'x3'x(33% void space)
<b>Total Volume Provided by drywell 2 =</b>	<b>148.5</b>	<b>CF</b>

## **APPENDIX A: STORMWATER MANAGEMENT PLAN CHECKLIST AND LID PLANNING REPORT – STORMWATER DESIGN SUMMARY**

<b>PROJECT NAME</b> Agostini Subdivision	<b>(RIDEM USE ONLY)</b>
<b>TOWN</b> Bristol RI	STW/WQC File #:
<b>BRIEF PROJECT DESCRIPTION:</b> To subdivide 1 lot of record into 2 lots of record and develop the new vacant lot with a single family structure	Date Received:

### Stormwater Management Plan (SMP) Elements – Minimum Standards

When submitting a SMP,<sup>1</sup> submit **four separately bound** documents: Appendix A Checklist; Stormwater Site Planning, Analysis and Design Report with Plan Set/Drawings; Soil Erosion and Sediment Control (SESC) Plan, and Post Construction Operations and Maintenance (O&M) Plan. Please refer to [Suggestions to Promote Brevity](#).

**Note:** All stormwater construction projects must create a Stormwater Management Plan (SMP). However, not every element listed below is required per the [RIDEM Stormwater Rules](#) and the [RIPDES Construction General Permit \(CGP\)](#). This checklist will help identify the required elements to be submitted with an Application for Stormwater Construction Permit & Water Quality Certification.

### **PART 1. PROJECT AND SITE INFORMATION**

#### **PROJECT TYPE** (Check all that apply)

<input checked="" type="checkbox"/> Residential	<input type="checkbox"/> Commercial	<input type="checkbox"/> Federal	<input type="checkbox"/> Retrofit	<input type="checkbox"/> Restoration
<input type="checkbox"/> Road	<input type="checkbox"/> Utility	<input type="checkbox"/> Fill	<input type="checkbox"/> Dredge	<input type="checkbox"/> Mine
<input type="checkbox"/> Other (specify):				

#### **SITE INFORMATION**

Vicinity Map

**INITIAL DISCHARGE LOCATION(S):** The WQv discharges to: (You may choose more than one answer if several discharge points are associated with the project.)

<input checked="" type="checkbox"/> <b>Groundwater</b>	<input type="checkbox"/> <b>Surface Water</b>	<input type="checkbox"/> <b>MS4</b>
<input type="checkbox"/> GAA	<input type="checkbox"/> Isolated Wetland	<input type="checkbox"/> RIDOT
<input type="checkbox"/> GA	<input type="checkbox"/> Named Waterbody	<input type="checkbox"/> RIDOT Alteration Permit is Approved
<input checked="" type="checkbox"/> GB	<input type="checkbox"/> Unnamed Waterbody Connected to Named Waterbody	<input type="checkbox"/> Town
<input type="checkbox"/> Other (specify):		

**ULTIMATE RECEIVING WATERBODY LOCATION(S):** Include pertinent information that applies to both WQv and flow from larger storm events including overflows. Choose all that apply, and repeat table for each waterbody.

<input checked="" type="checkbox"/> Groundwater or Disconnected Wetland	<input type="checkbox"/> SRWP
<input checked="" type="checkbox"/> Waterbody Name: Bristol Harbor	<input type="checkbox"/> Coldwater <input type="checkbox"/> Warmwater <input type="checkbox"/> Unassessed
<input checked="" type="checkbox"/> Waterbody ID: RI0007026E-01C	<input type="checkbox"/> 4 <sup>th</sup> order stream of pond 50 acres or more
<input type="checkbox"/> TMDL for: n/a	<input type="checkbox"/> Watershed of flood prone river (e.g., Pocasset River)
<input type="checkbox"/> Contributes to a priority outfall listed in the TMDL	<input type="checkbox"/> Contributes stormwater to a public beach

<sup>1</sup> Applications for a Construction General Permit that do not require any other permits from RIDEM and will disturb less than 5 acres over the entire course of the project do not need to submit a SMP. The Appendix A checklist must still be submitted.

<b>PROJECT HISTORY</b>		
<input type="checkbox"/> RIDEM Pre- Application Meeting n/a	Meeting Date:	<input type="checkbox"/> Minutes Attached
<input type="checkbox"/> Municipal Master Plan Approval n/a	Approval Date:	<input type="checkbox"/> Minutes Attached
<input checked="" type="checkbox"/> Subdivision Suitability Required TRC meeting Bristol RI	Approval #:	
<input type="checkbox"/> Previous Enforcement Action has been taken on the property	Enforcement #:	
<b>FLOODPLAIN &amp; FLOODWAY See <a href="#">Guidance Pertaining to Floodplain and Floodways</a></b>		
<input type="checkbox"/> Riverine 100-year floodplain: <b>FEMA FLOODPLAIN FIRMETTE</b> has been reviewed and the 100-year floodplain is on site		
<input checked="" type="checkbox"/> Delineated from FEMA Maps n/a		
<b>NOTE:</b> Per Rule 250-RICR-150-10-8-1.1(B)(5)(d)(3), provide volumetric floodplain compensation calculations for cut and fill/displacement calculated by qualified professional		
<input type="checkbox"/> Calculated by Professional Engineer		
<input type="checkbox"/> Calculations are provided for cut vs. fill/displacement volumes proposed within the 100-year floodplain	Amount of Fill (CY):	
	Amount of Cut (CY):	
<input type="checkbox"/> Restrictions or modifications are proposed to the flow path or velocities in a floodway		
<input type="checkbox"/> Floodplain storage capacity is impacted		
<input type="checkbox"/> Project area is not within 100-year floodplain as defined by RIDEM		

<b>CRMC JURISDICTION</b>
<input checked="" type="checkbox"/> CRMC Assent required n/a
<input type="checkbox"/> Property subject to a Special Area Management Plan (SAMP). If so, specify which SAMP:
<input type="checkbox"/> Sea level rise mitigation has been designed into this project

<b>LUHPPL IDENTIFICATION - MINIMUM STANDARD 8: n/a</b>		
<b>1. OFFICE OF Land Revitalization and Sustainable Materials Management (OLRSMM)</b>		
n/a	<input type="checkbox"/> Known or suspected releases of HAZARDOUS MATERIAL are present at the site (Hazardous Material is defined in Rule 1.4(A)(33) of 250-140-30-1 of the RIDEM Rules and Regulations for Investigation and Remediation of Hazardous Materials (the Remediation Regulations))	<b>RIDEM CONTACT:</b>
n/a	<input type="checkbox"/> Known or suspected releases of PETROLEUM PRODUCT are present at the site (Petroleum Product as defined in Rule 1.5(A)(84) of 250-140-25-1 of the RIDEM Rules and Regulations for Underground Storage Facilities Used for Regulated Substances and Hazardous Materials)	
n/a	<input type="checkbox"/> This site is identified on the <a href="#">RIDEM Environmental Resources Map</a> as one of the following regulated facilities	<b>SITE ID#:</b>
	<input type="checkbox"/> CERCLIS/Superfund (NPL)	
	<input type="checkbox"/> State Hazardous Waste Site (SHWS)	
	<input type="checkbox"/> Environmental Land Usage Restriction (ELUR)	
	<input type="checkbox"/> Leaking Underground Storage Tank (LUST)	
	<input type="checkbox"/> Closed Landfill	
<b>Note:</b> If any boxes in 1 above are checked, the applicant must contact the RIDEM OLRSM Project Manager associated with the Site to determine if subsurface infiltration of stormwater is allowable for the project. Indicate if the infiltration corresponds to “Red,” “Yellow” or “Green” as described in Section 3.2.8 of the RISDISM Guidance (Subsurface Contamination Guidance). Also, note and reference approval in PART 3, Minimum Standard 2: Groundwater Recharge/Infiltration.		
<b>2. PER MINIMUM STANDARD 8 of RICR 8.14.C.1-6 “LUHPPLS,” THE SITE IS/HAS:</b>		
n/a	<input type="checkbox"/> Industrial Site with RIPDES MSGP, except where No Exposure Certification exists. <a href="http://www.dem.ri.gov/programs/water/permits/ripdes/stormwater/status.php">http://www.dem.ri.gov/programs/water/permits/ripdes/stormwater/status.php</a>	
	<input type="checkbox"/> Auto Fueling Facility (e.g., gas station)	
	<input type="checkbox"/> Exterior Vehicles Service, Maintenance, or Equipment Cleaning Area	

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

	<input type="checkbox"/> Road Salt Storage and Loading Areas (exposed to rainwater)	
	<input type="checkbox"/> Outdoor Storage and Loading/Unloading of Hazardous Substances	
<b>3. STORMWATER INDUSTRIAL PERMITTING</b>		
n/a	<input type="checkbox"/> The site is associated with existing or proposed activities that are considered Land Uses with Higher Potential Pollutant Loads (LUHPPLS) (see RICR 8.14.C)	Activities: Sector:
	<input type="checkbox"/> Construction is proposed on a site that is subject to <a href="#">THE MULTI-SECTOR GENERAL PERMIT (MSGP) UNDER RULE 31(B)15 OF THE RIPDES REGULATIONS.</a>	MSGP permit #
	<input type="checkbox"/> Additional stormwater treatment is required by the MSGP Explain:	

<b>REDEVELOPMENT STANDARD – MINIMUM STANDARD 6 n/a</b>		
<input checked="" type="checkbox"/> Pre Construction Impervious Area		
	<input type="checkbox"/> Total Pre-Construction Impervious Area (TIA) 765 sq ft	
	<input type="checkbox"/> Total Site Area (TSA) 7,102 sq ft	
	<input type="checkbox"/> Jurisdictional Wetlands (JW) n/a	
	<input type="checkbox"/> Conservation Land (CL) n/a	
<input checked="" type="checkbox"/> Calculate the Site Size (defined as contiguous properties under same ownership)		
	<input type="checkbox"/> Site Size (SS) = (TSA) – (JW) – (CL) 7,102 sq ft	
	<input type="checkbox"/> (TIA) / (SS) = .1077	<input checked="" type="checkbox"/> (TIA) / (SS) >0.4? No
<input checked="" type="checkbox"/> YES, Redevelopment Not a redevelopment		

**PART 2. LOW IMPACT DEVELOPMENT ASSESSMENT – MINIMUM STANDARD 1**  
(NOT REQUIRED FOR REDEVELOPMENT OR RETROFITS)  
This section may be deleted if not required.

**Note:** A written description must be provided specifying why each method is not being used or is not applicable at the Site. Appropriate answers may include:

- Town requires ... (state the specific local requirement)
- Meets Town’s dimensional requirement of ...
- Not practical for site because ...
- Applying for waiver/variance to achieve this (pending/approved/denied)
- Applying for wavier/variance to seek relief from this (pending/approved/denied)

<p><b>A) PRESERVATION OF UNDISTURBED AREAS, BUFFERS, AND FLOODPLAINS</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Sensitive resource areas and site constraints are identified (required)</li> <li><input checked="" type="checkbox"/> Local development regulations have been reviewed (required)</li> <li><input checked="" type="checkbox"/> All vegetated buffers and coastal and freshwater wetlands will be protected during and after construction</li> <li><input checked="" type="checkbox"/> Conservation Development or another site design technique has been incorporated to protect open space and pre-development hydrology. <b>Note:</b> If Conservation Development has been used, check box and skip to Subpart C</li> <li><input checked="" type="checkbox"/> As much natural vegetation and pre-development hydrology as possible has been maintained</li> </ul>	<p><b>IF NOT IMPLEMENTED, EXPLAIN HERE</b></p>
--	--

<p><b>B) LOCATE DEVELOPMENT IN LESS SENSITIVE AREAS AND WORK WITH THE NATURAL LANDSCAPE CONDITIONS, HYDROLOGY, AND SOILS</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Development sites and building envelopes have been appropriately distanced from wetlands and waterbodies</li> <li><input checked="" type="checkbox"/> Development and stormwater systems have been located in areas with greatest infiltration capacity (e.g., soil groups A and B)</li> <li><input checked="" type="checkbox"/> Plans show measures to prevent soil compaction in areas designated as Qualified Pervious Areas (QPA's)</li> <li><input checked="" type="checkbox"/> Development sites and building envelopes have been positioned outside of floodplains</li> <li><input checked="" type="checkbox"/> Site design positions buildings, roadways and parking areas in a manner that avoids impacts to surface water features</li> <li><input checked="" type="checkbox"/> Development sites and building envelopes have been located to minimize impacts to steep slopes (<math>\geq 15\%</math>)</li> <li><input checked="" type="checkbox"/> Other (describe):</li> </ul>	
<p><b>C) MINIMIZE CLEARING AND GRADING</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Site clearing has been restricted to <u>minimum area needed</u> for building footprints, development activities, construction access, and safety.</li> <li><input checked="" type="checkbox"/> Site has been designed to position buildings, roadways, and parking areas in a manner that minimizes grading (cut and fill quantities)</li> <li><input checked="" type="checkbox"/> Protection for stands of trees and individual trees and their root zones to be preserved has been specified, and such protection extends at least to the tree canopy drip line(s)</li> <li><input checked="" type="checkbox"/> Plan notes specify that public trees removed or damaged during construction shall be replaced with equivalent</li> </ul>	
<p><b>D) REDUCE IMPERVIOUS COVER</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Reduced roadway widths (<math>\leq 22</math> feet for ADT <math>\leq 400</math>; <math>\leq 26</math> feet for ADT 400 - 2,000)</li> <li><input checked="" type="checkbox"/> Reduced driveway areas (length minimized via reduced ROW width (<math>\leq 45</math> ft.) and/or reduced (or absolute minimum) front yard setback; width minimized to <math>\leq 9</math> ft. wide one lane; <math>\leq 18</math> ft. wide two lanes; shared driveways; pervious surface)</li> <li><input checked="" type="checkbox"/> Reduced building footprint: Explain approach:</li>   <li><input checked="" type="checkbox"/> Reduced sidewalk area (<math>\leq 4</math> ft. wide; one side of the street; unpaved path; pervious surface)</li> <li><input checked="" type="checkbox"/> Reduced cul-de-sacs (radius <math>&lt; 45</math> ft; vegetated island; alternative turn-around)</li> <li><input checked="" type="checkbox"/> Reduced parking lot area: Explain approach</li> <li><input checked="" type="checkbox"/> Use of pervious surfaces for driveways, sidewalks, parking areas/overflow parking areas, etc.</li> <li><input checked="" type="checkbox"/> Minimized impervious surfaces (project meets or is less than maximum specified by Zoning Ordinance)</li> <li><input type="checkbox"/> Other (describe):</li> </ul>	
<p><b>E) DISCONNECT IMPERVIOUS AREA</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Impervious surfaces have been disconnected, and runoff has been diverted to QPAs to the maximum extent possible</li> <li><input checked="" type="checkbox"/> Residential street edges allow side-of-the-road drainage into vegetated open swales</li> <li><input checked="" type="checkbox"/> Parking lot landscaping breaks up impervious expanse AND accepts runoff</li> <li><input checked="" type="checkbox"/> Other (describe):</li> </ul>	
<p><b>F) MITIGATE RUNOFF AT THE POINT OF GENERATION</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Small-scale BMPs have been designated to treat runoff as close as possible to the source</li> </ul>	

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

<p><b>G) PROVIDE LOW-MAINTENANCE NATIVE VEGETATION</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Low-maintenance landscaping has been proposed using native species and cultivars</li> <li><input checked="" type="checkbox"/> Plantings of native trees and shrubs in areas previously cleared of native vegetation are shown on site plan</li> <li><input checked="" type="checkbox"/> Lawn areas have been limited/minimized, and yards have been kept undisturbed to the maximum extent practicable on residential lots</li> </ul>	
<p><b>H) RESTORE STREAMS/WETLANDS</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Historic drainage patterns have been restored by removing closed drainage systems, daylighting buried streams, and/or restoring degraded stream channels and/or wetlands</li> <li><input checked="" type="checkbox"/> Removal of invasive species</li> <li><input checked="" type="checkbox"/> Other</li> </ul>	

**PART 3. SUMMARY OF REMAINING STANDARDS**

GROUNDWATER RECHARGE – MINIMUM STANDARD 2		
YES	NO	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	The project has been designed to meet the groundwater recharge standard.
<input type="checkbox"/>	<input type="checkbox"/>	If “No,” the justification for groundwater recharge criterion waiver has been explained in the Narrative (e.g., threat of groundwater contamination or physical limitation), if applicable (see RICR 8.8.D);
<input type="checkbox"/>	<input type="checkbox"/>	Your waiver request has been explained in the Narrative, if applicable.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Is this site identified as a Regulated Facility in Part 1, Minimum Standard 8: LUHPPL Identification?
<input type="checkbox"/>	<input type="checkbox"/>	If “Yes,” has approval for infiltration by the OLRSM Site Project Manager, per Part 1, Minimum Standard 8, been requested?

TABLE 2-1: Summary of Recharge (see RISDISM Section 3.3.2) (Add or Subtract Rows as Necessary)					
Design Point	Impervious Area Treated (sq ft)	Total Re <sub>v</sub> Required (cu ft)	LID Stormwater Credits (see RISDISM Section 4.6.1)	Recharge Required by Remaining BMPs (cu ft)	Recharge Provided by BMPs (cu ft)
			Portion of Re <sub>v</sub> directed to a QPA (cu ft)		
DP-1:	1,324	38	0	38	248
DP-2:					
DP-3:					
DP-4:					
<b>TOTALS:</b>	1,324	38	0	38	248
<p><u>Notes:</u></p> <ol style="list-style-type: none"> <li>Only BMPs listed in RISDISM Table 3-5 “List of BMPs Acceptable for Recharge” may be used to meet the recharge requirement.</li> <li>Recharge requirement must be satisfied for each waterbody ID.</li> </ol> <p><input checked="" type="checkbox"/> Indicate where the pertinent calculations and/or information for the above items are provided (i.e., name of report/document, page numbers, appendices, etc.): See appendix of stormwater report for WQv calcs</p>					

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

<b>WATER QUALITY – MINIMUM STANDARD 3</b>		
<b>YES</b>	<b>NO</b>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Does this project meet or exceed the required water quality volume WQv (see RICR 8.9.E-I)?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Is the proposed final impervious cover greater than 20% of the disturbed area (see RICR 8.9.E-I)?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	If “Yes,” either the Modified Curve Number Method or the Split Pervious/Impervious method in Hydro-CAD was used to calculate WQv; or,
<input checked="" type="checkbox"/>	<input type="checkbox"/>	If “Yes,” either TR-55 or TR-20 was used to calculate WQv; and,
<input type="checkbox"/>	<input type="checkbox"/>	If “No,” the project meets the minimum WQv of 0.2 watershed inches over the entire disturbed area.
<input type="checkbox"/>	<input type="checkbox"/>	Not Applicable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Does this project meet or exceed the ability to treat required water quality flow WQf (see RICR 8.9.I.1-3)?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Does this project propose an increase of impervious cover to a receiving water body with impairments? If “Yes,” please indicate below the method that was used to address the water quality requirements of no further degradation to a low-quality water.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	RICR 8.36. A Pollutant Loading Analysis is needed and has been completed.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	The Water Quality Guidance Document ( <a href="#">Water Quality Goals and Pollutant Loading Analysis Guidance for Discharges to Impaired Waters</a> ) has been followed as applicable.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	BMPs are proposed that are on the <a href="#">approved technology list</a> . If “Yes,” please provide all required worksheets from the manufacturer.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Additional pollutant-specific requirements and/or pollutant removal efficiencies are applicable to the site as the result of a TMDL, SAMP, or other watershed-specific requirements. If “Yes,” please describe:

<b>TABLE 3-1: Summary of Water Quality (see RICR 8.9)</b>					
<b>Design Point and WB ID</b>	<b>Impervious area treated (sq ft)</b>	<b>Total WQv Required (cu ft)</b>	<b>LID Stormwater Credits (see RICR 8.18)</b>	<b>Water Quality Treatment Remaining (cu ft)</b>	<b>Water Quality Provided by BMPs (cu ft)</b>
			<b>WQv directed to a QPA (cu ft)</b>		
DP-1:	1,324	129	0	129	248
DP-2:					
DP-3:					
DP-4:					
<b>TOTALS:</b>	1,324	129	0	129	248
<b>Notes:</b>					
1. Only BMPs listed in RICR 8.20 and 8.25 or the Approved Technologies List of BMPs is Acceptable for Water Quality treatment.					
2. For each Design Point, the Water Quality Volume Standard must be met for each Waterbody ID.					
<input checked="" type="checkbox"/> YES	This project has met the setback requirements for each BMP.				
<input type="checkbox"/> NO	If “No,” please explain:				
<input type="checkbox"/>	Indicate where the pertinent calculations and/or information for the above items are provided (i.e., name of report/document, page numbers, appendices, etc.): See appendix of stormwater report WQv calcs				

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

<b>CONVEYANCE AND NATURAL CHANNEL PROTECTION (RICR 8.10) – MINIMUM STANDARD 4</b>		
<b>YES</b>	<b>NO</b>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Is this standard waived? If “Yes,” please indicate one or more of the reasons below:
		<input type="checkbox"/> The project directs discharge to a large river (i.e., 4th-order stream or larger. See RISDISM Appendix I for State-wide list and map of stream orders), bodies of water >50.0 acres in surface area (i.e., lakes, ponds, reservoirs), or tidal waters. <input checked="" type="checkbox"/> The project is a small facility with impervious cover of less than or equal to 1 acre. <input checked="" type="checkbox"/> The project has a post-development peak discharge rate from the facility that is less than 2 cfs for the 1-year, 24-hour Type III design storm event (prior to any attenuation). ( <u>Note</u> : LID design strategies can greatly reduce the peak discharge rate).
<input type="checkbox"/>	<input type="checkbox"/>	Conveyance and natural channel protection for the site have been met. If “No,” explain why:

**TABLE 4-1: Summary of Channel Protection Volumes (see RICR 8.10) N/A**

<b>Design Point</b>	<b>Receiving Water Body Name</b>	<b>Coldwater Fishery? (Y/N)</b>	<b>Total CPv Required (cu ft)</b>	<b>Total CPv Provided (cu ft)</b>	<b>Average Release Rate Modeled in the 1-yr storm (cfs)</b>
DP-1:	Not Applicable				
DP-2:					
DP-3:					
DP-4:					
<b>TOTALS:</b>					
<u>Note</u> : The Channel Protection Volume Standard must be met in each waterbody ID.					
<input type="checkbox"/> YES <input type="checkbox"/> NO	The CPv is released at roughly a uniform rate over a 24-hour duration (see examples of sizing calculations in Appendix D of the RISDISM).				
<input type="checkbox"/> YES <input type="checkbox"/> NO	Do additional design restrictions apply resulting from any discharge to cold-water fisheries; If “Yes,” please indicate restrictions and solutions below.				
<input type="checkbox"/>	Indicate below where the pertinent calculations and/or information for the above items are provided (i.e., name of report/document, page numbers, appendices, etc.).				



Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

<b>OVERBANK FLOOD PROTECTION (RICR 8.11) AND OTHER POTENTIAL HIGH FLOWS – MINIMUM STANDARD 5</b>		
<b>YES</b>	<b>NO</b>	<b>Not Applicable</b>
<input type="checkbox"/>	<input type="checkbox"/>	Is this standard waived? If yes, please indicate one or more of the reasons below:
		<input type="checkbox"/> The project directs discharge to a large river (i.e., 4th-order stream or larger. See Appendix I for state-wide list and map of stream orders), bodies of water >50.0 acres in surface area (i.e., lakes, ponds, reservoirs), or tidal waters. <input type="checkbox"/> A Downstream Analysis (see RICR 8.11.D and E) indicates that peak discharge control would not be beneficial or would exacerbate peak flows in a downstream tributary of a particular site (e.g., through coincident peaks).
<input type="checkbox"/>	<input type="checkbox"/>	Does the project flow to an MS4 system or subject to other stormwater requirements? If “Yes,” indicate as follows:
		<input type="checkbox"/> RIDOT <input type="checkbox"/> Other (specify):
<p><u>Note:</u> The project could be approved by RIDEM but not meet RIDOT or Town standards. RIDOT’s regulations indicate that post-volumes must be <b>less</b> than pre-volumes for the 10-yr storm at the design point entering the RIDOT system. If you have not already received approval for the discharge to an MS4, please explain below your strategy to comply with RIDEM and the MS4.</p>		
		Indicate below which model was used for your analysis. <input type="checkbox"/> TR-55 <input type="checkbox"/> TR-20 <input type="checkbox"/> HydroCAD <input type="checkbox"/> Bentley/Haestad <input type="checkbox"/> Intellisolve <input type="checkbox"/> Other (Specify):
<b>YES</b>	<b>NO</b>	<b>Not Applicable</b>
<input type="checkbox"/>	<input type="checkbox"/>	Does the drainage design demonstrate that flows from the 100-year storm event through a BMP will safely manage and convey the 100-year storm? If “No,” please explain briefly below and reference where in the application further documentation can be found (i.e., name of report/document, page numbers, appendices, etc.):
<input type="checkbox"/>	<input type="checkbox"/>	Do off-site areas contribute to the sub-watersheds and design points? If “Yes,”
<input type="checkbox"/>	<input type="checkbox"/>	Are the areas modeled as “present condition” for both pre- and post-development analysis?
<input type="checkbox"/>	<input type="checkbox"/>	Are the off-site areas shown on the subwatershed maps?
<input type="checkbox"/>	<input type="checkbox"/>	Does the drainage design confirm safe passage of the 100-year flow through the site for off-site runoff?
<input type="checkbox"/>	<input type="checkbox"/>	Is a Downstream Analysis required (see RICR 8.11.E.1)?
<input type="checkbox"/>	<input type="checkbox"/>	Calculate the following:
		<input type="checkbox"/> Area of disturbance within the sub-watershed (areas)
		<input type="checkbox"/> Impervious cover (%)
<input type="checkbox"/>	<input type="checkbox"/>	Is a dam breach analysis required (earthen embankments over six (6) feet in height, or a capacity of 15 acre-feet or more, and contributes to a significant or high hazard dam)?
<input type="checkbox"/>	<input type="checkbox"/>	Does this project meet the overbank flood protection standard?

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

Table 5-1 Hydraulic Analysis Summary								
Subwatershed (Design Point)	1.2" Peak Flow (cfs) **		1-yr Peak Flow (cfs)		10-yr Peak Flow (cfs)		100-yr Peak Flow (cfs)	
	Pre (cfs)	Post (cfs)	Pre (cfs)	Post (cfs)	Pre (cfs)	Post (cfs)	Pre (cfs)	Post (cfs)
DP-1:	0.02	0.02	0.06	0.07	0.28	0.26	0.82	1.03
DP-2:								
DP-3:								
DP-4:								
<b>TOTALS:</b>								

\*\* Utilize modified curve number method or split pervious /impervious method in HydroCAD.

Note: The hydraulic analysis must demonstrate no impact to each individual subwatershed DP unless each DP discharges to the same wetland or water resource.

Indicate as follows where the pertinent calculations and/or information for the items above are provided	Name of report/document, page numbers, appendices, etc.
Existing conditions analysis for each subwatershed, including curve numbers, times of concentration, runoff rates, volumes, and water surface elevations showing methodologies used and supporting calculations.	See stormwater report by NEI
Proposed conditions analysis for each subwatershed, including curve numbers, times of concentration, runoff rates, volumes, water surface elevations, and routing showing the methodologies used and supporting calculations.	
Final sizing calculations for structural stormwater BMPs, including contributing drainage area, storage, and outlet configuration.	
Stage-storage, inflow and outflow hydrographs for storage facilities (e.g., detention, retention, or infiltration facilities).	

Table 5-2 Summary of Best Management Practices											
BMP ID	DP #	BMP Type (e.g., bioretention, tree filter)	BMP Functions					Bypass Type	Horizontal Setback Criteria are met per RICR 8.21.B.10, 8.22.D.11, and 8.35.B.4		
			Pre-Treatment (Y/N/NA)	Re <sub>v</sub>	WQ <sub>v</sub>	CP <sub>v</sub> (Y/N/NA)	Overbank Flood Reduction (Y/N/NA)		External (E) Internal (I) or NA	Yes/No	Technical Justification (Design Report page number)
1	1	Drywell 1	NA	17	49	NA	NA	NA	Yes		>10'
2	1	Drywell 2	NA	21	61	NA	NA	NA	Yes		>10'
		<b>TOTALS:</b>		38	110						

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

<b>Table 5.3 Summary of Soils to Evaluate Each BMP</b>									
DP #	BMP ID	BMP Type (e.g., bioretention, tree filter)	Soils Analysis for Each BMP						
			Test Pit ID# and Ground Elevation		SHWT Elevation (ft)	Bottom of Practice Elevation* (ft)	Separation Distance Provided (ft)	Hydrologic Soil Group (A, B, C, D)	Exfiltration Rate Applied (in/hr)
			Primary	Secondary					
1	1	Drywell 1	110.5'		103.8'	106.5'	2.7	B	1.02
1	2	Drywell 2	105.5'		98.8'	101.5'	2.7	B	1.02
		<b>TOTALS:</b>							

\* For underground infiltration systems (UICs) bottom equals bottom of stone, for surface infiltration basins bottom equals bottom of basin, for filters bottom equals interface of storage and top of filter layer

<b>LAND USES WITH HIGHER POTENTIAL POLLUTANTS LOADS (LUHPPLs) – MINIMUM STANDARD 8</b>			
YES	NO	N/A	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Describe any LUHPPLs identified in Part 1, Minimum Standard 8, Section 2. If not applicable, continue to Minimum Standard 9.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Are these activities already covered under an MSGP? If “No,” please explain if you have applied for an MSGP or intend to do so?
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	List the specific BMPs that are proposed for this project that receive stormwater from LUHPPL drainage areas. These BMP types must be listed in RISDISM Table 3-3, “Acceptable BMPs for Use at LUHPPLs.” Please list BMPs:
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Additional BMPs, or additional pretreatment BMP’s if any, that meet RIPDES MSGP requirements; Please list BMPs:
			Indicate below where the pertinent calculations and/or information for the above items are provided (i.e., name of report/document, page numbers, appendices, etc.).

<b>ILLCIT DISCHARGES – MINIMUM STANDARD 9</b>			
Illicit discharges are defined as unpermitted discharges to Waters of the State that do not consist entirely of stormwater or uncontaminated groundwater, except for certain discharges identified in the RIPDES Phase II Stormwater General Permit.			
YES	NO	N/A	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Have you checked for illicit discharges?
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Have any been found and/or corrected? If “Yes,” please identify.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Does your report explain preventative measures that keep non-stormwater discharges out of the Waters of the State (during and after construction)?

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

SOIL EROSION AND SEDIMENT CONTROL (SESC) – MINIMUM STANDARD 10		
YES	NO	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<p>Have you included a Soil Erosion and Sediment Control Plan Set and/or Complete Construction Plan Set?</p> <p>Have you provided a <b>separately-bound</b> document based upon the <a href="#">SESC Template</a>? If yes, proceed to Minimum Standard 11 (the following items can be assumed to be addressed).</p> <p>If “No,” include a document with your submittal that addresses the following elements of an SESC Plan:</p>
<input checked="" type="checkbox"/>		Soil Erosion and Sediment Control Plan Project Narrative, including a description of how the fifteen (15) Performance Criteria have been met:
<input checked="" type="checkbox"/>		Provide Natural Buffers and Maintain Existing Vegetation
<input checked="" type="checkbox"/>		Minimize Area of Disturbance
<input checked="" type="checkbox"/>		Minimize the Disturbance of Steep Slopes
<input checked="" type="checkbox"/>		Preserve Topsoil
<input checked="" type="checkbox"/>		Stabilize Soils
<input checked="" type="checkbox"/>		Protect Storm Drain Inlets
<input checked="" type="checkbox"/>		Protect Storm Drain Outlets
<input checked="" type="checkbox"/>		Establish Temporary Controls for the Protection of Post-Construction Stormwater Control Measures
<input checked="" type="checkbox"/>		Establish Perimeter Controls and Sediment Barriers
<input checked="" type="checkbox"/>		Divert or Manage Run-On from Up-Gradient Areas
<input checked="" type="checkbox"/>		Properly Design Constructed Stormwater Conveyance Channels
<input checked="" type="checkbox"/>		Retain Sediment On-Site
<input checked="" type="checkbox"/>		Control Temporary Increases in Stormwater Velocity, Volume, and Peak Flows
<input checked="" type="checkbox"/>		Apply Construction Activity Pollution Prevention Control Measures
<input checked="" type="checkbox"/>		Install, Inspect, and Maintain Control Measures and Take Corrective Actions
<input checked="" type="checkbox"/>		Qualified SESC Plan Preparer’s Information and Certification
<input checked="" type="checkbox"/>		Operator’s Information and Certification; if not known at the time of application, the Operator must certify the SESC Plan upon selection and prior to initiating site activities
<input checked="" type="checkbox"/>		Description of Control Measures, such as Temporary Sediment Trapping and Conveyance Practices, including design calculations and supporting documentation, as required

STORMWATER MANAGEMENT SYSTEM OPERATION, MAINTENANCE, AND POLLUTION PREVENTION PLAN – MINIMUM STANDARDS 7 AND 9		
Operation and Maintenance Section		
YES	NO	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Have you minimized all sources of pollutant contact with stormwater runoff, to the maximum extent practicable?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Have you provided a <b>separately-bound</b> Operation and Maintenance Plan for the site and for all of the BMPs, and does it address each element of RICR 8.17 and RISDISM Appendix C and E?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lawn, Garden, and Landscape Management meet the requirements of RISDISM Section G.7? If “No,” why not?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Is the property owner or homeowner’s association responsible for the stormwater maintenance of all BMP’s? If “No,” you must provide a legally binding and enforceable maintenance agreement (see RISDISM Appendix E, page 26) that identifies the entity that will be responsible for maintenance of the stormwater. Indicate where this agreement can be found in your report (i.e., name of report/document, page numbers, appendices, etc.).
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Do you anticipate that you will need legal agreements related to the stormwater structures? (e.g. off-site easements, deed restrictions, covenants, or ELUR per the Remediation Regulations). If “Yes,” have you obtained them? Or please explain your plan to obtain them:

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

<input type="checkbox"/>	<input checked="" type="checkbox"/>	Is stormwater being directed from public areas to private property? If "Yes," note the following: <u>Note:</u> This is not allowed unless a funding mechanism is in place to provide the finances for the long-term maintenance of the BMP and drainage, or a funding mechanism is demonstrated that can guarantee the long-term maintenance of a stormwater BMP by an individual homeowner.
<b>Pollution Prevention Section</b>		
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Designated snow stockpile locations?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Trash racks to prevent floatables, trash, and debris from discharging to Waters of the State?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Asphalt-only based sealants?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Pet waste stations? ( <u>Note:</u> If a receiving water has a bacterial impairment, and the project involves housing units, then this could be an important part of your pollution prevention plan).
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Regular sweeping? Please describe:
<input type="checkbox"/>	<input checked="" type="checkbox"/>	De-icing specifications, in accordance with RISDISM Appendix G. (NOTE: If the groundwater is GAA, or this area contributes to a drinking water supply, then this could be an important part of your pollution prevention plan).
<input type="checkbox"/>	<input checked="" type="checkbox"/>	A prohibition of phosphate-based fertilizers? ( <u>Note:</u> If the site discharges to a phosphorus impaired waterbody, then this could be an important part of your pollution prevention plan).

**PART 4. SUBWATERSHED MAPPING AND SITE-PLAN DETAILS**

Existing and Proposed Subwatershed Mapping (REQUIRED)		
YES	NO	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Existing and proposed drainage area delineations
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Locations of all streams and drainage swales
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Drainage flow paths, mapped according to the DEM <i>Guidance for Preparation of Drainage Area Maps</i> (included in RISDISM Appendix K)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Complete drainage area boundaries; include off-site areas in both mapping and analyses, as applicable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Logs of borings and/or test pit investigations along with supporting soils/geotechnical report
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Mapped seasonal high-water-table test pit locations
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Mapped locations of the site-specific borings and/or test pits and soils information from the test pits at the locations of the BMPs
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Mapped locations of the BMPs, with the BMPs consistently identified on the Site Construction Plans
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Mapped bedrock outcrops adjacent to any infiltration BMP
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Soils were logged by a: NEI Staff Engineer
	<input type="checkbox"/>	DEM-licensed Class IV soil evaluator Name:
	<input type="checkbox"/>	RI-registered P.E. Name:

Subwatershed and Impervious Area Summary				
Subwatershed (area to each design point)	First Receiving Water ID or MS4	Area Disturbed (units)	Existing Impervious (units)	Proposed Impervious (units)
DP-1:	NA	7,102 sq ft	765 sq ft	2,284 sq ft
DP-2:				
DP-3:				
DP-4:				
<b>TOTALS:</b>				

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

<b>Site Construction Plans (Indicate that the following applicable specifications are provided)</b>		
<b>YES</b>	<b>NO</b>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Existing and proposed plans (scale not greater than 1" = 40') with North arrow
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Existing and proposed site topography (with 1 or 2-foot contours); 10-foot contours accepted for off-site areas
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Boundaries of existing predominant vegetation and proposed limits of clearing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Site Location clarification
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Location and field-verified boundaries of resource protection areas such as: <ul style="list-style-type: none"> <li>▶ freshwater and coastal wetlands, including lakes and ponds</li> <li>▶ coastal shoreline features</li> </ul> Perennial and intermittent streams, in addition to Areas Subject to Storm Flowage (ASSFs)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	All required setbacks (e.g., buffers, water-supply wells, septic systems)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Representative cross-section and profile drawings, and notes and details of structural stormwater management practices and conveyances (i.e., storm drains, open channels, swales, etc.), which include: <ul style="list-style-type: none"> <li>▶ Location and size of the stormwater treatment practices (type of practice, depth, area). Stormwater treatment practices (BMPs) must have labels that correspond to RISDISM Table 5-2;</li> <li>▶ Design water surface elevations (applicable storms);</li> <li>▶ Structural details of outlet structures, embankments, spillways, stilling basins, grade-control structures, conveyance channels, etc.;</li> <li>▶ Existing and proposed structural elevations (e.g., inverts of pipes, manholes, etc.);</li> <li>▶ Location of floodplain and, if applicable, floodway limits and relationship of site to upstream and downstream properties or drainage that could be affected by work in the floodplain;</li> <li>▶ Planting plans for structural stormwater BMPs, including species, size, planting methods, and maintenance requirements of proposed planting</li> </ul>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Logs of borings and/or test pit investigations along with supporting soils/geotechnical report and corresponding water tables
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Mapping of any OLRSM-approv ed remedial actions/systems (including ELURs)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Location of existing and proposed roads, buildings, and other structures including limits of disturbance; <ul style="list-style-type: none"> <li>▶ Existing and proposed utilities (e.g., water, sewer, gas, electric) and easements;</li> <li>▶ Location of existing and proposed conveyance systems, such as grass channels, swales, and storm drains, and location(s) of final discharge point(s) (wetland, waterbody, etc.);</li> <li>▶ Cross sections of roadways, with edge details such as curbs and sidewalks;</li> <li>▶ Location and dimensions of channel modifications, such as bridge or culvert crossings</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	Locations, cross sections, and profiles of all stream or wetland crossings and their method of stabilization