Planning Board
AGENDA

Thursday, May 7, 2026 - 6:00 PM

Regular Meeting
Agawam Senior Center
954 Main Street
Agawam, MA 01001

A. Planning Board

1) 6:00PM Public Hearing-Zone Change-1399 Suffield Street & Parcel 2 Suffield Street-Charles Garden Park

2) Amended Site Plan-223 Garden Street-MBNZ Holding Co

3) Approval of MInutes-April 16, 2026

4) Correspondences

Town of Agawam

Building Department

1000 Suffield Street, Agawam, Massachusetts 01001

Telephone - (413) 821-0632

April 9, 2026

To: Office of Planning and Community Development:

Re: Zone Change- Overlay Mixed-Use Business C District- Review Comments- 1399 Suffield Street and PAR 2 Suffield Street Agawam, MA:

The Building Department has no zoning issues or concerns at this time for the proposed zone change for the above referenced properties.

Respectfully,

Kevin Duquette

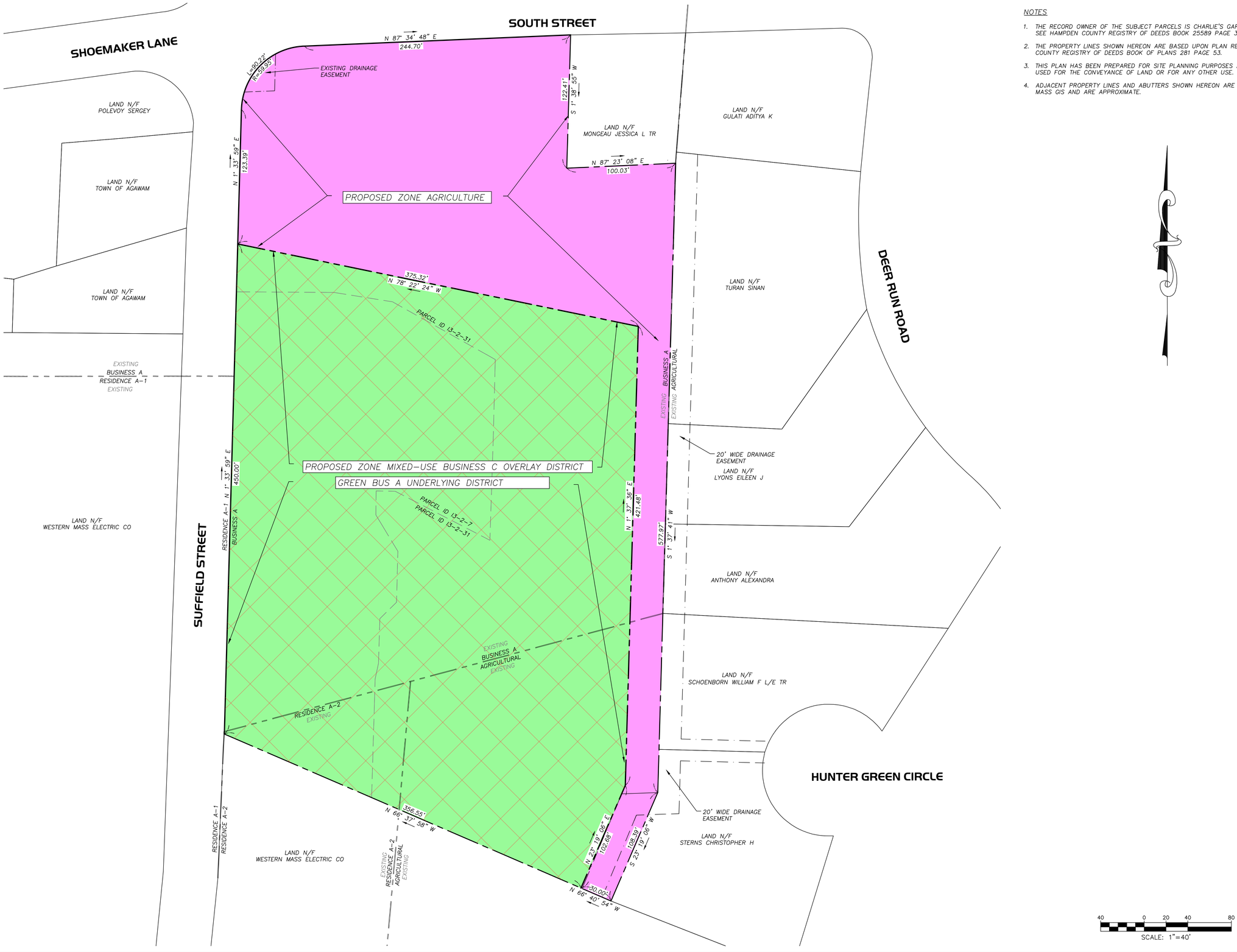
Kevin Duquette
Inspector of Buildings- Town of Agawam

R LEVESQUE ASSOCIATES INC

Landscape Architects
Civil Engineers - Land Surveyors
Environmental Consultants



RLA



NOTES

1. THE RECORD OWNER OF THE SUBJECT PARCELS IS CHARLIE'S GARDEN PARK L.L.L.C.. SEE HAMPDEN COUNTY REGISTRY OF DEEDS BOOK 25589 PAGE 309.
2. THE PROPERTY LINES SHOWN HEREON ARE BASED UPON PLAN RECORDED IN HAMPDEN COUNTY REGISTRY OF DEEDS BOOK OF PLANS 281 PAGE 53.
3. THIS PLAN HAS BEEN PREPARED FOR SITE PLANNING PURPOSES AND SHALL NOT BE USED FOR THE CONVEYANCE OF LAND OR FOR ANY OTHER USE.
4. ADJACENT PROPERTY LINES AND ABUTTERS SHOWN HEREON ARE REFERENCED FROM MASS GIS AND ARE APPROXIMATE.

RLA
R LEVESQUE ASSOCIATES INC
Landscape Architects
Civil Engineers · Land Surveyors
Environmental Consultants
ph: 413.568.0985 fax: 413.568.0986
40 School Street
Westfield, MA 01085
rlaland.com

PLAN FOR ZONING MAP AMENDMENT

1399 Suffield Street & Par 2 Suffield Street
Agawam, Massachusetts
Parcel IDs : 13-2-7 & 13-2-31

COMMONWEALTH OF MASSACHUSETTS
MARC E. SHUTE
No. 33610
PROFESSIONAL LAND SURVEYOR

PREPARED FOR:

Charlie's Garden Park, LLC
c/o Clark Dore, Manager
1775 Main Street
Agawam, MA

ISSUANCE DATE: 3-17-2026

REVISIONS:	DATE:

DRAFTED BY: t.a.

UNAUTHORIZED ALTERATION OF THIS DOCUMENT IS A VIOLATION OF MASSACHUSETTS STATE LAW

SCALE: As Noted

RLA PROJ. NUMBER: 260116

DRAWING#	REV.
Z-1	-

S:\Projects\2026\260116 - Dore - 1399 Suffield St. (Twin Silos), Agawam\05 Civil 3D\260116 - Zone Change Plan.dwg

Request for Zoning Map Amendment

Under Town of Agawam Zoning Ordinance Section 180-3 – Building Zone Map.

Proposed Underlying & Overlay District Zoning Map Amendment

Project Location:

1399 Suffield Street & Parcel 2 Suffield Street
Agawam, Massachusetts 01001
(Parcel IDs: I3-2-7 & I3-2-31)

Submitted To:

Town of Agawam City Council
36 Main Street
Agawam, Massachusetts 01001

Applicant & Property Owner:

Charlie's Garden Park, LLC
c/o Clark Dore, Manager
1775 Main Street
Agawam, Massachusetts 01001

RLA Project File No. 260116

March 23, 2026

R LEVESQUE ASSOCIATES, INC.

A LAND PLANNING SERVICES COMPANY

40 School Street, Westfield, MA 01085

p 413.568.0985 · f 413.568.0986 · www.rlaland.com

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I. PETITION LETTER

R LEVESQUE ASSOCIATES, INC.
40 School Street, P.O. BOX 640, Westfield, MA 01085
p 413.568.0985 · f 413.568.0986 · www.rlaland.com

March 23, 2026

Anthony J. Russo, Council President
Town of Agawam City Council
36 Main Street
Agawam, Massachusetts 01001

RE: Request for Zoning Map Amendment
1399 Suffield Street & Parcel 2 Suffield Street
Agawam, Massachusetts 01001
(Parcel IDs: I3-2-7 & I3-2-31)
RLA Project File No. 260116

Dear President Russo and Councilors:

On behalf of the applicant and property owner, Charlie's Garden Park, LLC c/o Clark Dore, Manager, R Levesque Associates, Inc. is submitting this Request for Zoning Map Amendment for the above-referenced properties in Agawam, Massachusetts.

PROPERTY DESCRIPTION

The subject properties are located on the corner of Suffield Street and South Street and consist of approximately 6.28 ± cumulative acres. The subject properties are owned by Charlie's Garden Park, LLC and are recorded under the Hampden County Registry of Deeds in Book 25589, Page 309. A copy of the deed reference is included within this petition packet under Section 3. According to the Town of Agawam Zoning Map, 1399 Suffield Street is split zoned between Business A and Residence A-2, and Parcel 2 Suffield Street is split zoned between Business A, Residence A-2, and Agricultural. A Locus Map depicting the properties' location and current zoning is included within this petition packet under Section 2.

ZONING MAP AMENDMENT PETITION

The petitioner respectfully requests that the Town of Agawam grant the above-referenced Zoning Map Amendment under the Massachusetts General Laws Chapter 40A Section 5 to amend the Town of Agawam Building Zone Map to allow for underlying zoning of Business A (2.17 ± acres) and Agricultural (4.11 ± acres), with the application of the Business C Mixed-Use Overlay District over the proposed Business A portion of the properties. Please see the accompanying filing plan for demarcation of the proposed zone lines.

R LEVESQUE ASSOCIATES, INC.
40 School Street, P.O. BOX 640, Westfield, MA 01085
p 413.568.0985 · f 413.568.0986 · www.rlaland.com

STATEMENT OF PURPOSE

The proposed zoning amendment is intended to allow for mixed light commercial and residential development on the site appropriate to the neighborhood. The proposed application of the Mixed-Use Business C overlay would support mixed-uses on the subject property that aligns with the transition from commercial to residential.

STATEMENT OF JUSTIFICATION

Facts to support a finding that the proposed Zoning Map Amendment will be desirable and without substantial detriment to the public good:

1. Rezoning the property will create opportunities for residential and mixed-use development that can make efficient use of the site while supporting the availability of housing and neighborhood-serving uses.
2. The requested amendment will not result in a substantial detriment to the public good, as the surrounding area already contains residential neighborhoods and a mix of uses similar to those allowed within the Mixed-Use Business C overlay. The overlay is specifically designed to ensure that commercial and residential activities are compatible with one another and with surrounding properties.
3. The site contains sufficient area and configuration to accommodate residential or mixed-use development while providing appropriate circulation, open space, and site design elements consistent with the district's development standards.
4. The Mixed-Use Business C overlay encourages development that integrates residential uses with small-scale commercial or service uses in a manner that supports pedestrian activity, neighborhood services, and a high-quality built environment. Allowing this overlay at the subject properties will promote a more appropriate transition between residential areas and nearby commercial activity while supporting future development that is compatible with the surrounding neighborhood.
5. The underlying zoning of Business A, with Agricultural zoning along the north and east property lines, establishes a framework that preserves the existing development pattern and character of the area. The proposed Mixed-Use Business C overlay builds upon this foundation by allowing for context-sensitive infill and redevelopment, rather than introducing uses or intensities that would be inconsistent with the surrounding environment.

R LEVESQUE ASSOCIATES, INC.
40 School Street, P.O. BOX 640, Westfield, MA 01085
p 413.568.0985 · f 413.568.0986 · www.rlaland.com

CONCLUSION

Understanding the above, the proposed Zoning Map Amendment is not detrimental to the public good and does not substantially derogate from the intent of and purpose of the Town of Agawam Zoning Ordinance. Based on the foregoing, and all the supplemental information attached, the applicant respectfully requests that the Town of Agawam City Council grant the requested Zoning Map Amendment under the Town of Agawam Zoning Ordinance.

Property Owner Signature: _____
Clark Dore, Manager on behalf of Charlie's Garden Park, LLC

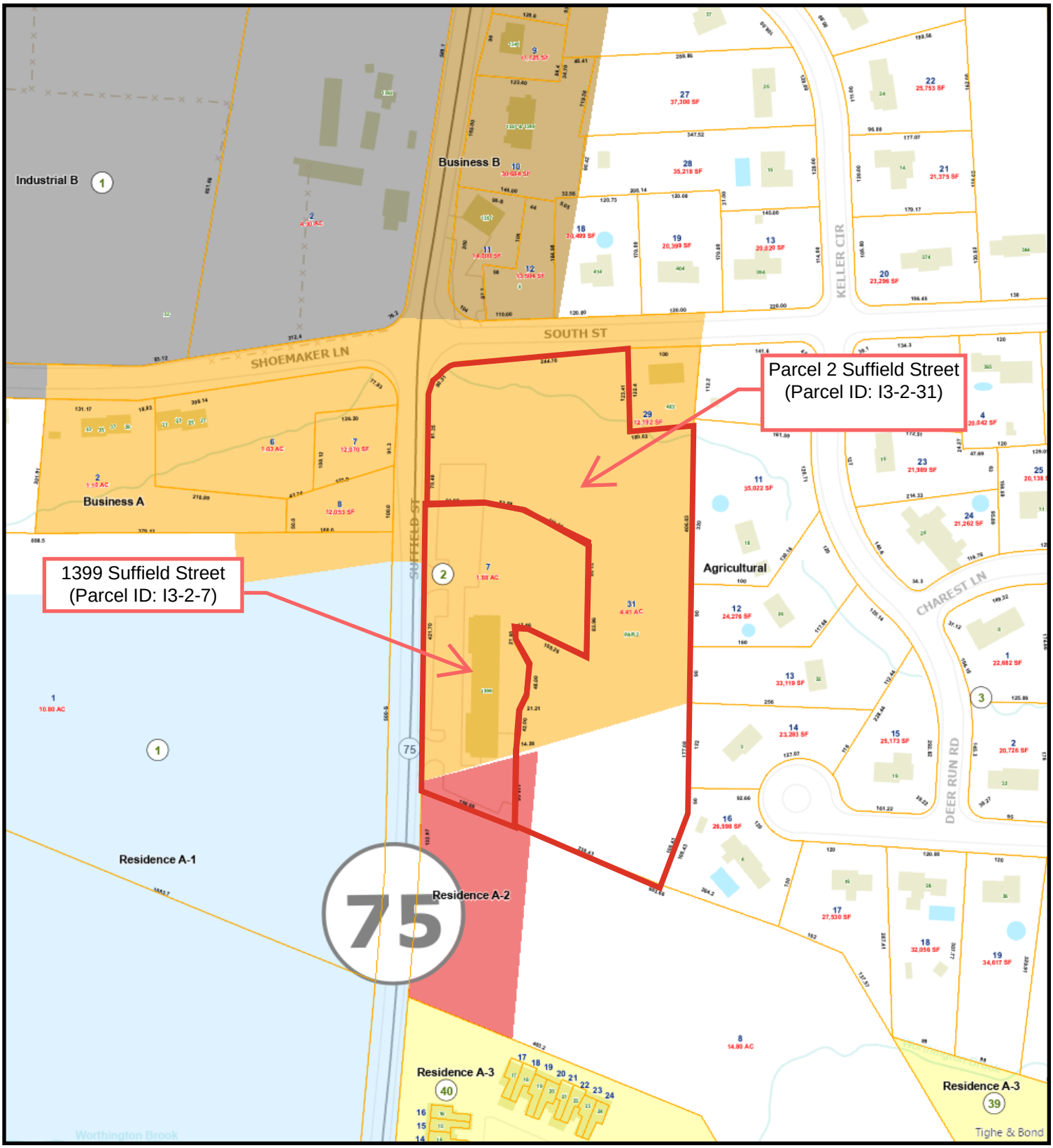
As required, a copy of this submission has been provided electronically via email to the Town of Agawam City Council and Planning Board. We are requesting to be placed on the City Council's next available agenda. Should you have any questions or comments regarding this submission, please do not hesitate to contact our office at your earliest convenience.

Sincerely,
R LEVESQUE ASSOCIATES, INC.

Nina Fazio
Permitting Coordinator

2. LOCUS MAP

(SOURCE: TOWN OF AGAWAM GIS)



Locus Map

3/16/2026 9:32:33 AM

Scale: 1"=200'

Scale is approximate

The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.

3. DEED REFERENCE

(SOURCE: HAMPDEN COUNTY REGISTRY OF DEEDS)

MASSACHUSETTS STATE EXCISE TAX
HAMPDEN COUNTY REGISTRY OF DEEDS
Date: 09-27-2024 @ 11:23am
Ctl#: 117 Doc#: 44861
Fee: $2,394.00 Cons: $525,000.00

Bk 25589 Pg309 #44861
09-27-2024 @ 11:23a

AFFECTED PREMISES:
1399 Suffield Street
Agawam, Massachusetts

QUITCLAIM DEED

BRIARWOOD TWELVE, LLC, a Massachusetts limited liability company with an address of 1380 Main Street, Springfield, Massachusetts 01103

For consideration paid of **FIVE HUNDRED TWENTY-FIVE THOUSAND and 00/100 Dollars ($525,000.00)**

grants **CHARLIE'S GARDEN PARK, L.L.C.,** a Massachusetts limited liability company of 1775 Main Street, Agawam, Massachusetts 01001

with **Quitclaim Covenants**

The land and buildings in Agawam, Hampden County, Massachusetts, bounded and described as follows:

Beginning at a point on the easterly line of Suffield Street said point being the point of intersection of the northerly boundary of land now or formerly of Western Massachusetts Electric Company and Suffield Street, thence

N. 15° 35' 16" E. along the easterly boundary of Suffield Street a distance if FIVE HUNDRED SEVENTY-THREE and 72/100ths (573.72) feet to a point; thence

NORTHEASTERLY along a curved line at the intersection of Suffield Street and South Street having a radius of SIXTY and 00/100ths (60.00) feet an arc distance of NINETY and 21/100ths (90.21) feet to a point on the southerly lien of South Street; thence

S. 78° 23' 55" E. along the southerly boundary of South Street a distance of THREE HUNDRED FORTY-FOUR and 70/100ths (344.70) feet to a point; thence

S. 15° 40' 12" W. along the westerly boundary of land now or formerly of Bressett a distance of ONE HUNDRED TWELVE and 7/100ths (112.07) feet to a point; thence

S. 15° 38' 53" W. along land now or formerly of Hunters Greene, Inc. a distance of FIVE HUNDRED EIGHTY-SEVEN and 93/100ths (587.93) feet to a point;

S. 37° 20′ 23" W. along the westerly boundary of Lot six (6) of Hunters Greene Estatees as shown on a plan of land of Ralph DePalma and Joseph A. Pacella recorded herewith in Book of Plans 281, Page 53 ONE HUNDRED

EIGHT and 43/100ths (108.43) feet to a point on the northerly boundary of land now or formerly of Western Massachusetts Electric Company; thence

N. 52° 39′ 37" W. along the northerly boundary of land now or formerly of Western Massachusetts Electric Company a distance of THREE HUNDRED EIGHTY-SIX and 43/100 (386.43) feet to the point of beginning.

Together with a twenty (20) foot grading and landscaping easement along the easterly boundary of the premises to be conveyed across the westerly portion of Lots numbered one (1); two (2); three (3); four (4) and six (6) of Hunters Greene Estates as shown on a plan of land entitled "Definitive plan – Hunters Green Estates – Agawam, Massachusetts" drawn by Foresight Land Services, dated September 16, 1987 and recorded in the Hampden County Registry of Deeds in Book of Plans 256, Page 59.

Together with the utility easement for the benefit of the parcel conveyed more accurately bounded and described as follows:

Beginning at a point on the westerly end of Hunter's Greene Circle which point also marks a corner of Lot Number Six (6) and a corner of Lot Number Four (4) as shown on said plan; thence

N. 74° 21′ 07" W. along the common boundary between said Lot Number Six (6) and Lot Number Four (4) a distance of NINETY-TWO and 66/100 (92.66) feet to a point in the easterly line of the benefited land now or formerly owned by Ralph DePalma and Joseph A. Pacella;

N. 15° 38′ 53" E. along the easterly boundary of land now or formerly of DePalma and Pacella a distance of TWENTY and 00/100 (20.00) feet to a point; thence

S. 74° 21′ 07" E. through Lot Number Four (4) a distance of ONE HUNDED TWO and 88/100 (102.88) feet to a point in the westerly end of Hunter's Greene Circle; thence

SOUTHWESTERLY along westerly line of Hunter's Greene Circle by a curve to the left having a radius of SIXTY and 00/100 (60.00) feet; an arc distance of TWENTY-TWO and 46/100 (22.46) feet to the point of beginning.

Together with the utility easement for the benefit of the parcel conveyed more accurately bounded and described as follows:

Beginning at a point on the westerly end of Hunter's Green Circle which point also marks a corner of Lot Number Six (6) and a corner of Lot Number Four (4) as shown on said Plan; thence

N. 74° 21′ 07" W.	along the common boundary between said Lot Number Six (6) and Lot Number Four (4) a distance of NINETY-TWO and 66/100 (92.66) feet to a point in the easterly line of land owned by Ralph DePalma and Joseph A Pacella; thence
S. 15° 38′ 53" E.	along the land of DePalma/Pacella a distance of ten and 00/100 (10.00) feet to a point; thence
S. 74° 21′ 07" E.	through Lot Number Six (6) a distance of NINETY and 64/100 (90.64) feet to a point in the westerly end of Hunter's Greene Circle; thence
NORTHEASTERLY	along westerly line of Hunter's Greene Circle by a curve to the right having a radius of SIXTY and 00/100 (60.00) feet, an arc distance of TEN and 21/100 (10.21) to the point of beginning.

Being the same premises conveyed to Briarwood Twelve, LLC by Foreclosure Deed of Hampden Bank dated March 15, 2010 and recorded with the Hampden County Registry of Deeds in Book 18217, Page 24.

Grantor hereby certifies that it is not classified for the current taxable year as a corporation for federal income tax purposes.

[Remainder of page intentionally left blank]

WITNESS the execution hereof under seal this 27 day of September, 2024.

BRIARWOOD TWELVE, LLC

By: Estate of Lester Seidman, Manager

By: _____
Name: Susan A. McCoy,
Title: Co-Administrator

THE COMMONWEALTH OF MASSACHUSETTS

COUNTY OF HAMPDEN, ss

On this 27 day of September, 2024, before me, the undersigned notary public, personally appeared Susan A. McCoy, as Co-Administrator of the Estate of Lester Seidman, as Manager of Briarwood Twelve, LLC and proved to me through satisfactory evidence of identification, which was personal knowledge, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that she signed it voluntarily for its stated purpose as Co-Administrator of the Estate of Lester Seidman as the voluntary act of the Estate as the Manager of Briarwood Twelve, LLC, a limited liability company as the voluntary act of the limited liability company.

_____
Audrey L. Rome
My commission expires _____

AUDREY ROME
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
August 10, 2029

[Additional signature page below]

WITNESS the execution hereof under seal this 26th day of September, 2024.

BRIARWOOD TWELVE, LLC

By: The Estate of Lester Seidman

By: _____
Name: Adam Lazaros
Title: Co-Administrator

STATE OF NEW JERSEY

COUNTY OF BERGEN

On this 26th day of September, 2024, before me, the undersigned notary public, personally appeared Adam Lazaros, as Co-Administrator of the Estate of Lester Seidman, as Manager of Briarwood Twelve LLC and proved to me through satisfactory evidence of identification, which was personal knowledge, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that she signed it voluntarily for its stated purpose as Co-Administrator of the Estate of Lester Seidman as the voluntary act of the Estate as the Manager of Briarwood Twelve, LLC, a limited liability company as the voluntary act of the limited liability company.

_____
[official signature and seal of notary]
My commission expires 01/27/2027

Morgan Shortell
Notary Public of New Jersey
Registration No. 50183818
Commission Expires 01/27/2027

CHERYL A. COAKLEY-RIVERA, REGISTER
HAMPDEN COUNTY REGISTRY OF DEEDS
E-RECORDED

APPENDIX A: SITE PLAN

SITE PLAN ENTITLED “PROPOSED ZONING MAP AMENDMENT”

PREPARED FOR CHARLIE’S GARDEN PARK, LLC

PREPARED BY R LEVESQUE ASSOCIATES, INC.

DATED MARCH 17, 2026

APPENDIX B: COLOR RENDERING

PREPARED BY R LEVESQUE ASSOCIATES, INC.

Town of Agawam
36 Main Street
Agawam, Massachusetts 01001-1801
Tel. 413-786-0400 Fax 413-786-9927

MEMO

To: Assessor
Building Inspector
Conservation Commission
Engineering/DPW
Fire Department
Health Department
Safety Officer
School Committee
Town Solicitor
Zoning Board of Appeals

From: Planning Board

Subject: Zone Change – 1399 Suffield Street

Date: April 9, 2026

The Planning Board has received the attached Zone Change application for 1399 Suffield Street submitted by Charlies Garden Park. The Planning Board will hold a public hearing on May 7, 2026. Please provide any comments you may have prior to the hearing.

Site Plan Approval (Amendment) Application

Under the Town of Agawam Zoning Ordinance Section 180-13 Site Plans

Proposed Building Addition

Project Location:

223 Garden Street
Feeding Hills, Massachusetts 01030
(Parcel ID: G8-2-3)

Submitted To:

Town of Agawam Planning Board
1000 Suffield Street
Agawam, Massachusetts 01001

Applicant & Property Owner:

MBNZ Holding Co.
c/o Mr. Nasser Zebian
223 Garden Street
Feeding Hills, Massachusetts 01030

RLA Project File No. 250214

March 24, 2026

R LEVESQUE ASSOCIATES, INC.

A LAND PLANNING SERVICES COMPANY

40 School Street, Westfield, MA 01085

p 413.568.0985 · f 413.568.0986 · www.rlaland.com

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    - 2.2 SITE PLAN APPROVAL APPLICATION – FORM D
    - 2.3 COPY OF EXISTING APPROVAL
3. PROJECT NARRATIVE
4. LOCUS MAP
5. DEED REFERENCE

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APPENDICES

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APPENDIX B: STORMWATER REPORT

APPENDIX C: ARCHITECTURAL DRAWINGS

I. COVER LETTER

R LEVESQUE ASSOCIATES, INC.
40 School Street, P.O. BOX 640, Westfield, MA 01085
p 413.568.0985 · f 413.568.0986 · www.rlaland.com

March 24, 2026

Violet Baldwin, Chairperson
Town of Agawam Planning Board
1000 Suffield Street
Agawam, Massachusetts 01001

RE: Site Plan Approval (Amendment)
223 Garden Street
Feeding Hills, Massachusetts 01030
(Parcel ID: G8-2-3)
RLA Project File No. 250214

Dear Chairperson Baldwin and Board Members:

On behalf of the applicant and property owner, MBNZ Holding Co. c/o Mr. Nasser Zebian, please find the requisite number of copies of a Site Plan Approval Amendment application and supporting documentation. The applicant received Site Plan Approval from the Planning Board in July 2025 for a Proposed Building Addition with associated site improvements to be located at the above-referenced property. The applicant respectfully requests to amend the Site Plan Approval to reflect a revised site layout.

As required, a copy of this applicant has been submitted electronically via email to the Town of Agawam Planning Department.

We are requesting to be placed on the Planning Board's next available agenda. Should you have any questions or comments regarding this submission, please do not hesitate to contact our office at your earliest convenience.

Sincerely,
R LEVESQUE ASSOCIATES, INC.

Nina Fazio
Permitting Coordinator

2. ADMINISTRATIVE FORMS

2.1 ZONING DETERMINATION

2.2 SITE PLAN APPROVAL APPLICATION – FORM D

2.3 COPY OF EXISTING APPROVAL

The Commonwealth of Massachusetts

Town of Agawam

Inspection Services - Building Department

1000 Suffield Street, Agawam MA 01001 – (413) 821-0632

OFFICE ONLY
Date Filed:
RECEIVED BY BUILDING DEPARTMENT
MAR 18 2026
TOWN OF AGAWAM

Application for Zoning Determination

FILING INSTRUCTIONS: Deliver this form (no fee required) to Inspection Services.
For digital submissions, please confirm receipt. A *complete* application will be processed within 30 days.
The applicant must pick-up, or arrange for the receipt of, this processed form.

1) PROPERTY INFORMATION			
a. Street Address	223 Garden Street	**b. Zoning District**	Business B
c. Assessor's Map	G8-2	**d. Lot(s)**	3
e. Registry of Deeds Book	24996	**f. Page**	11
g. Overlay Districts	☐Historic Preservation ☐ Mixed-Use Business C		
h. Previous Special Permits, Site Plan Approvals, Findings or Variances Issued for this Site			
ZBA Special Permit, PB Site Plan Approval, ConCom DOA			

2) APPLICANT & OWNER INFORMATION			
a. Applicant Name	MBNZ Holding Co. c/o Nasser Zebian	**b. Applicant Phone**	413-427-2766
c. Applicant Email	nasserzebian@hotmail.com		
d. Applicant Mailing Address	223 Garden Street, Agawam, MA 01001		
e. Applicant Relationship to Property	☑Owner ☐ Agent ☐Other:		
f. Representative Name *(if any)*	R Levesque Associates, Inc.	**g. Rep. Phone**	413-568-0985
h. Rep. Email	NinaF@rlaland.com		
i. Owner Mailing Address			
j. Owner Name *(if different)*	Same as applicant	**k. Owner Phone**	
l. Owner Email			
m.Owner Mailing Address			

3) PROJECT & SITE DETAILS
NOTE: Any omission of requested information may result in an INCOMPLETE determination

	Existing	*Proposed* ☐ *No changes to building, site or lot*	-FOR BUILDING DEPT. REVIEW- REQUIRED / NCU
a. Lot Size	73,961 SF	73,961 SF	LOT SIZE ☐
b. Frontage	254.36 (0' per SP) FT	254.36 (0' per SP) FT	FRONTAGE ☐
c. Front Lot Line	75.6 FT	75.6 FT	FRONT SB ☐
d. Side Lot Line (Left/Right)	L: FT 61.0 R: 48.6 FT	L: 29.8 FT R: 48.6 FT	SIDE SB ☐
e. Rear Lot Line	126.5 FT	89.7 FT	REAR SB ☐
f. Building Height	1.5 stories FT	1.5 stories FT	BLDG HT ☐
g. Total BLDG/Res Area	5090 SF 0 SF	10290 SF 0 SF	AREA LIM ☐
h. BLDG Coverage (Footprint)	5070 SF 7.8 % of lot	10270 SF 13.8 % of lot	LOT COVER ☐
i. Impervious Coverage	26800 SF 36.2 % of lot	30170 SF 40.7 % of lot	IMPERVIOUS ☐
j. Parking/Loading Spaces	P: 33 L:	P: 43 L:	PARKING ☐
k. Bicycle/EV Charge Spaces	B: 0 EV: 0	B: 0 EV: 0	BIKE/EV ☐
l. Signs (Size & Type)	x T: Freestanding	x T: No change	SIGNS ☐
m. Fence (Size & Type)	LIN FT T: None	LIN FT T: No change	
n. Wetland Area	00 SF	00 SF	
o. Utility Services	☑ Town Water ☑ Town Sewer	☑ Town Water ☑ Town Sewer	NON-CONFORMING USE ☐

p. Current Use of Property	Vermette Autobody
q. Proposed Use of Property	Vermette Autobody
r. Project Description	
The applicant proposes a 5,200 SF building addition to be utilized by the existing on-site business	
s. I have attached additional narrative, plans or supporting materials *(any oversize plans should also be included in an 8.5 x 11" format)*	☑ Yes ☐ No
t. Work is proposed in or within 100' of a wetland or 200' of a stream/river, or construction will occur within the Floodplain district. *If so, CONSERVATION COMMISSION review is required.*	☐ Yes ☑ No ☐ Unsure
u. The following projects shall be required to comply with the requirements of a STORM DRAIN PERMIT: **[1] Any alteration to sites on parcels of one acre or greater.** **[2] Any alteration to individual lots less than one acre, but which are contiguous or are deemed part of a common project which is one acre or greater.**	☐ Yes ☑ No ☐ Unsure
v. The project will affect at least one of the following; additional gross floor area by 2,000 square feet, any change of use, changes to parking and/ or curb cuts.	☑ Yes ☐ No

4) CERTIFICATION

This determination is based only on the information provided, which I represent as accurate. The issuance of a Zoning Determination does not relieve the Applicant of the responsibility to obtain other zoning or non-zoning permits, as may be required, and this determination is based on the zoning in effect at the issue date and grants no protection from any pending or future zoning changes. Additional information may be requested and required to properly process this form. Any non-zoning related comments provided are cursory in nature; Applicants should follow-up with appropriate Town Departments. ***Sec. 1-7 of the Town of Agawam's General Ordinances authorizes the denial of a license or permit where an outstanding debt or obligation to the Town exists.***

Signature	- R. Levesque Assoc	**Date**	3/18/26

☐ Applicant ☑ Applicant's Representative

ZONING DETERMINATION - OFFICE USE ONLY

☐ Approved ☐ Denied: ☐ The proposed use is not permitted in the subject zoning district
☐ Only permissible with variance relief from the Zoning Board of Appeals

☒ Approved ***Pending additional approval:***

Per Zoning Ordinance Section(s)	Required Permit(s)	Approval Required	Permitting Authority
180-13-B-(1)(4) - Site Plan	☒ Building Permit(s)	☒ Special Permit(s)	☒ Planning Board
	☒ Electrical Permit(s)	☒ Site Plan Review	☒ Board of Appeals
180-11 - Special Permit Amendment	☒ Plumbing/Gas Permit(s)	☐ Variance	☐ City Council

Town Building Official		**Issue Date**	3/18/2026

This determination may be appealable to the Zoning Board of Appeals under the provisions of MGL Ch. 40A Sec. 8.
Revised 09/08/2022

TOWN OF AGAWAM, MASSACHUSETTS

FORM D

Application for Site Plan Approval

Please complete the following form and electronically submit with site plans, completed Zoning Determination and Storm Water Management Report to: siteplan@agawam.ma.us in addition to sending four (4) hard copies of the Site Plan and one (1) hard copy of the Storm Water Management Report and completed Zoning Determination to:

Agawam Planning Department

36 Main Street

Agawam, MA 01001

March 24 20 26

1. Name of Business Vermette Auto Body

   Address 223 Garden Street, Feeding Hills, MA 01030

   Phone # 413-427-2766 email nasserzebian@hotmail.com

2. Name of Applicant/Owner MBNZ Holding Co. c/o Mr. Nasser Zebian

   Address 223 Garden Street, Feeding Hills, MA 01030

   Phone # 413-427-2766 email nasserzebian@hotmail.com

3. Name of Engineer/Architect R Levesque Associates, Inc.

   Address 40 School Street, Westfield, MA 01085

   Phone # (413) 568-0985 email ninaf@rlaland.com

4. Please give a brief description of the proposed project:

The applicant received Site Plan Approval from the Planning Board in July 2025 for a Proposed Building Addition with associated site improvements to be located at the above-referenced property. The applicant respectfully requests to amend the Site Plan Approval to reflect a revised site layout.Please refer to the attached project narrative for greater detail.

Town of Agawam
Planning & Community Development

36 Main Street
Agawam, MA 01001
Telephone:
413-786-0400 ext. 8245
Fax: 413-786-9927

PLANNING BOARD

July 3, 2025

MBNZ Holding Co
c/o Nasser Zebian
223 Garden Street
Feeding Hills, MA 01030

Dear Mr. Zebian:

At its duly called meeting held on July 2, 2025, the Agawam Planning Board approved the site plan entitled "Proposed Building Addition 223 Garden Street Agawam, MA Parcel ID: G8-2-3"; prepared by R. Levesque Associates, Inc., dated June 25, 2025.

If you have any questions, please contact this office at 786-0400, extension 8245.

Sincerely,

Violet Baldwin, Chairperson
Agawam Planning Board

Cc: R. Levesque Associates, Inc
Engineering Department
Inspection Services
Town Clerk & File

3. PROJECT NARRATIVE

PROJECT NARRATIVE

For

PROPOSED BUILDING ADDITION
223 GARDEN STREET
FEEDING HILLS, MASSACHUSETTS 01030
(PARCEL ID: G8-2-3)

INTRODUCTION

On behalf of the applicant and property owner, MBNZ Holding Co. c/o Mr. Nasser Zebian, R Levesque Associates, Inc. is providing this project narrative as a supplement to the Site Plan Approval Amendment application. The applicant received Site Plan Approval from the Planning Board in July 2025 for a Proposed Building Addition with associated site improvements to be located at the above-referenced property. The applicant respectfully requests to amend the Site Plan Approval to reflect a revised site layout.

In accordance with Section 180-13(B)(1), the applicant requests Site Plan Approval from the Planning Board for the construction of a new commercial structure.

PROPERTY DESCRIPTION

The subject property is located north of Garden Street and consists of approximately 1.6 ± acres as shown on the associated site plan set prepared by R Levesque Associates, Inc. Said property is recorded in the Hampden County Registry of Deeds in Book 24996, Page 11. A copy of the deed reference is included within this application packet under Section 5. According to the Town of Agawam Zoning Map, the subject property is located within the Business B (BB) zoning district. A Locus Map is included within this application packet under Section 4.

EXISTING CONDITIONS & SURROUNDING LAND USES

The subject property currently operates as an auto body / repair shop, Vermette Auto Body, with associated parking, access drives, and site improvements.

The subject property is bound to the north by parcels in the Industrial B (IB) zoning district, to the east by parcels in the Business B (BB) zoning district, to the south by Garden Street, and to the west by a Route 57 on-ramp. The abutting parcels are utilized mostly for commercial and industrial uses, with some residential uses in the surrounding area.

DETAILED PROJECT DESCRIPTION

The proposed project includes a building addition with associated site improvements. Associated site improvements include, but are not limited to site grading, relocation of existing sheds, stormwater management and extension of utilities.

The proposed project work will proceed in the following general sequence:

1. Installation of erosion controls;
2. Relocation/removal of existing sheds;
3. Clearing, grubbing within the permitted limit of work;
4. Construction of a stormwater management system;
5. Installation of a 65' x 80' (5,200 SF) building addition;
6. Restriping of existing parking spaces;
7. Extension of exiting utility connections;
8. Removal of erosion controls at the direction of the Town of Agawam.

STORMWATER MANAGEMENT

The proposed stormwater management system has been designed to mitigate the impacts of both the previously constructed site improvements as well as the newly proposed site improvements by providing a control for runoff water quality and water quantity. Implementation of stormwater best management practices such as a deep-sump hooded catch basin, a proprietary sedimentation device, and a surface infiltration allow for a stormwater drainage design that is in conformance with the criteria set forth in the Town of Agawam Stormwater Management requirements and the Massachusetts Department of Environmental Protection Stormwater Management Handbook. Please refer to the accompanying Stormwater Drainage Report for greater detail.

PARKING & SITE CIRCULATION

The following parking regulation is taken directly from the Town of Agawam Parking Guidelines:

Land Use	Parking Guideline	Parking Calculation
Automotive Repair Garage	One (1) parking space for each three hundred (300) square feet of gross floor area and one (1) parking space for each employee	10,290 SF x 1 space/300 SF = 35 spaces 8 employees x 1 space/employee = 8 spaces 35 + 8 = 43 spaces

The site layout provides 43 parking spaces, including one (1) of which is handicap and van accessible. There are no proposed changes to the existing curb cut along Garden Street.

UTILITIES

Utility connections for the proposed building addition will mostly be extended from the existing structure, with water connection via Garden Street. Final utility layouts and connection details will be coordinated with the final architectural and mechanical plans and may be adjusted as necessary during final design and construction coordination.

LANDSCAPING & LIGHTING

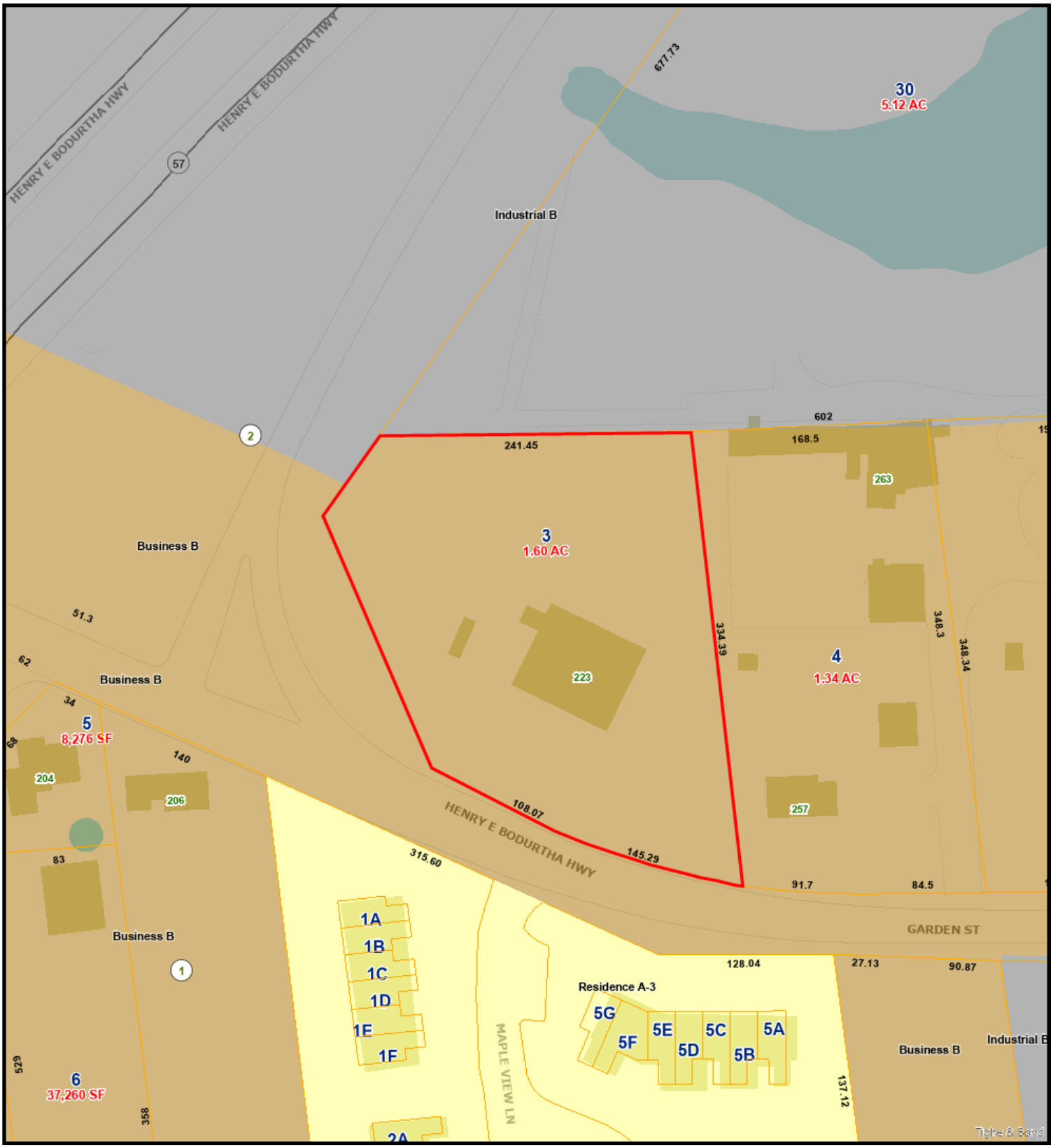
Existing landscaped areas will remain as currently maintained, and no modifications to the established planting areas are proposed as part of this application. Disturbed lawn areas associated with site improvements will be restored through placement of loam and seed to promote stabilization.

The proposed building addition is not anticipated to require modifications to the existing site lighting layout or overall illumination levels on the property. Wall-mounted lighting fixtures may be installed on the building addition as needed to maintain adequate site illumination and building access lighting. The location and design of any wall pack fixtures will be coordinated with the final architectural plans and reviewed as part of the building permit process to ensure compliance with applicable local requirements.

[END OF PROJECT NARRATIVE]

4. LOCUS MAP

(SOURCE: TOWN OF AGAWAM GIS)



Locus Map

2/27/2025 2:15:38 PM

Scale: 1"=100'

Scale is approximate

The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.

5. DEED REFERENCE

(SOURCE: HAMPDEN COUNTY REGISTRY OF DEEDS)

Bk 24996 Pg11 #20527
05-05-2023 @ 02:21p

MASSACHUSETTS STATE EXCISE TAX
HAMPDEN COUNTY REGISTRY OF DEEDS
Date: 05-05-2023 @ 02:21pm
Ctl#: 262 Doc#: 20527
Fee: $2,964.00 Cons: $650,000.00

QUITCLAIM DEED

KNOW ALL MEN BY THESE PRESENTS THAT DONALD J. VERMETTE a/k/a DONALD H. VERMETTE and REBECCA A. VERMETTE, individuals residing at 119 Hamilton Circle, Feeding Hills, Hampden County, Massachusetts, in consideration of Six Hundred Fifty Thousand and 00/100 Dollars ($650,000.00) paid, grants to MBNZ HOLDING CO., a Massachusetts corporation with an address of 223 Garden Street, Feeding Hills, Hampden County, Massachusetts, with quitclaim covenants, the land in Agawam, Hampden County, Massachusetts, being more particularly bounded and described as follows:

See Exhibit A attached hereto and incorporated herein.

[SIGNATURE PAGE TO FOLLOW]

Property address: 223 Garden Street, Agawam, Massachusetts

Witness our hands and seals this 5th day of May, 2023.

Witness

Witness

Donald J. Vermette a/k/a Donald H. Vermette

Rebecca A. Vermette

COMMONWEALTH OF MASSACHUSETTS

HAMPDEN, ss.

On this 5th day of May, 2023, before me, the undersigned notary public, personally appeared Donald J. Vermette a/k/a Donald H. Vermette, proved to me through satisfactory evidence of identification, which was ☒ photographic identification with signature issued by a federal or state governmental agency, namely a Massachusetts driver's license, ☐ personal knowledge of the undersigned, ☐ oath or affirmation of a credible witness, to be the person whose name is signed on the preceding or attached document, and who swore, subscribed and affirmed to me that the contents of the document are truthful and accurate to the best of his knowledge and belief and that he signed the document voluntarily for its stated purpose.

MICHAEL R. SIDDALL
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
July 12, 2024

Michael R. Siddall
Notary Public
My Commission Expires: July 12, 2024

COMMONWEALTH OF MASSACHUSETTS

HAMPDEN, ss.

On this 5th day of May, 2023, before me, the undersigned notary public, personally appeared Rebecca A. Vermette, proved to me through satisfactory evidence of identification, which was ☒ photographic identification with signature issued by a federal or state governmental agency, namely a Massachusetts driver's license, ☐ personal knowledge of the undersigned, ☐ oath or affirmation of a credible witness, to be the person whose name is signed on the preceding or attached document, and who swore, subscribed and affirmed to me that the contents of the document are truthful and accurate to the best of her knowledge and belief and that she signed the document voluntarily for its stated purpose.

MICHAEL R. SIDDALL
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
July 12, 2024

Michael R. Siddall
Notary Public
My Commission Expires: July 12, 2024

EXHIBIT A

The land in Agawam, Hampden County, Massachusetts, known as Garden Street, more particularly described as Parcel A on a plan of land entitled "Plan of Land in the Town of Agawam – Massachusetts, Hampden County Owned by Jerry L. Zerra and Rose Z. Dyke", prepared by Durkee, White, Towne & Chapdelaine, Civil Engineers & Land Surveyors, dated July 20, 1988 and recorded in the Hampden County Registry of Deeds in Book 319, Page 43, and more particularly bounded and described as follows:

Beginning at a point on the northerly side of Garden Street on the southwesterly corner of land now or formerly of Norman J. McMahon and Joan M. McMahon, thence N 64° 13' 39" W along a curve having a radius of 570.00, a length of one hundred forty-five and 29/100 (145.29) feet to a found GSB; thence continuing along Garden Street a distance of one hundred eight and 07/100 (108.07) feet to a found GSB, thence N 22° 51' 14" W, along land identified as Parcel No. 3 – 71, as shown on said plan a distance of one hundred ninety-eight and 26/100 (198.26) feet to a GSB found; thence N 36° 04' 36" E, along Route 57, 120-7192 L O, Layout No. 6562 as shown on said plan a distance of sixty-seven and 56/100 (67.56) feet to a point, thence turning N 88° 33' 06" E a distance of two hundred forty-one and 45/100 (241.45) feet to an iron pin found; thence S 05° 26' 15" E , a distance of three hundred thirty-four and 39/100 (334.39) feet to the place of beginning.

Being the same premises conveyed to Donald H. Vermette and Rebecca A. Vermette by deed of Rose Z. Dyke, Paul Zerra, Valrye Zerra and W.C. Conlin, dated June 2, 2000 and recorded in the Hampden County Registry of Deeds in Book 11413, Page 415.

APPENDIX A: SITE PLAN SET

SITE PLAN ENTITLED “PROPOSED BUILDING ADDITION”

PREPARED FOR VERMETTE AUTO BODY

PREPARED BY R LEVESQUE ASSOCIATES, INC.

DATED JUNE 25, 2025; REVISED MARCH 19, 2026

APPENDIX B: STORMWATER REPORT

STORMWATER DRAINAGE REPORT

PREPARED FOR VERMETTE AUTO BODY

PREPARED BY R LEVESQUE ASSOCIATES, INC.

DATED APRIL 25, 2025; REVISED MARCH 19, 2026

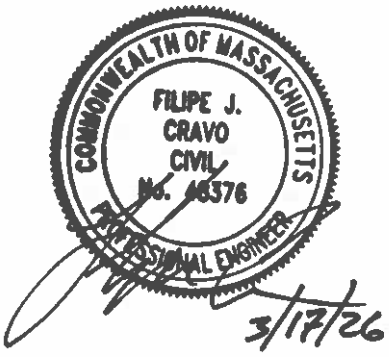
APPENDIX C: ARCHITECTURAL DRAWINGS

Stormwater Drainage Report

Proposed Building Addition

Project Location:
223 Garden Street
Feeding Hills, Massachusetts 01030
(Parcel ID: G8-2-3)

Applicant & Property Owner:
MBNZ Holding Co.
c/o Mr. Nasser Zebian
223 Garden Street
Feeding Hills, Massachusetts 01030



RLA Project File No. 250214
April 25, 2025
Revised: March 17, 2026

R LEVESQUE ASSOCIATES, INC
A LAND PLANNING SERVICES COMPANY
40 School Street · Westfield, MA 01085
p 413.568.0985 · f 413.568.0986 · www.rlaland.com

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APPENDIX B: SOILS INFORMATION
APPENDIX C: PRE- AND POST- DEVELOPMENT HYDROLOGIC ANALYSIS (2, 10, & 100 YEAR STORM EVENTS)
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APPENDIX I: LOW IMPACT DEVELOPMENT CONSIDERATIONS

I. INTRODUCTION

The applicant, MBNZ Holding Co. Mr. Nasser Zebian, proposes to expand the existing building located at 223 Garden Street. The parcel is identified as parcel G8-2-3 by the Town of Agawam assessor's office. The proposed project will include the construction of a building addition and associated site improvements including re-paved parking areas and a new stormwater management system. The existing site improvements were approved through a special permit in April of 2000. Since the approval, the site improvements were expanded to include an additional paved parking area along the easterly side of the site and a gravel area on the northerly side of the site. Since these areas were not accounted for in the original site design, the proposed stormwater management system has been designed with best management practices (BMP) to mitigate for the additional improved areas. The proposed improvements will generally maintain the existing drainage patterns of the site and direct treated stormwater towards the same design points as in pre-development conditions.

The proposed project includes the following:

1. Demolition and removal of existing paved areas,
2. Construction of a new building addition (5,200+/- SF)
3. Re-paving of impacted asphalt areas,
4. Construction of a new stormwater management system including a deep sump hooded catch basin, proprietary sedimentation device, and a surface infiltration basin with sediment forebay.

The purpose of this report is to present information regarding the technical aspects of the stormwater management system for the proposed project. All work is intended to be in full compliance with the Town of Agawam Stormwater Management requirements as well as the Massachusetts Department of Environmental Protection Stormwater Management Handbook.

2. SITE DESCRIPTION

2.1 Predevelopment Conditions

The property to be developed is located at 223 Garden Street and is listed as Parcel G8-2-3 by the Town of Agawam Assessor's Office. The property is currently zoned Business B as referenced from Agawam GIS. The property is bounded to the north by undeveloped land owned by the Commonwealth of Massachusetts, Route 57 right-of-way to the west, Garden Street to the south, and commercially utilized property to the east. The parcel to be redeveloped is approximately 1.60 acres in size. Figure 1 – USGS Map illustrates the location of the project.

The project site is currently occupied by a commercial building with associated site improvements including paved parking area, a gravel parking area, and stormwater management features. The existing topography of the site can be described as moderately sloped from east to west toward the stormwater swale. The vegetated portions of the parcel around the perimeter exist outside of the parking areas and slope off-site to the respective adjacent parcels. The highest elevation onsite is along the Easterly property line at approximately elevation 192. The frontage along Garden Street is relatively flat and ranges from about elevation 191 at the southwest corner to about 190 at the southeast corner. Along the rear of the property, the elevations range from about elevation 189 at the northwest corner of the property to about elevation 185 along the treeline running parallel to the northerly property line. The grades drop off significantly from the treeline toward the northeast corner of the site. Runoff follows the existing topography and is either conveyed via surface flow within the paved areas or in front of the building in the grassed area toward the shallow stormwater basin. All other areas sheet flow offsite along the edges of the parcel. Please refer to the existing conditions plan submitted herewith for more detailed topographical information and Figure 4 "Pre-Development Watershed Plan" for sub-catchment area boundaries.

2.2 Resource Areas

The existing site consists of historically developed commercial land. No wetland jurisdictional areas were identified within the site boundaries. However, a perennial stream was delineated off-site to the northeast in which the associated 200-foot riverfront area setback extends partially onto the site in the northeast corner. No improvements are proposed within jurisdictional area and a Request for Determination of Applicability has been submitted with the Conservation Commission.

2.2.1 Floodplain

R. Levesque Associates, Inc. performed due diligence research on the property in regard to FEMA flood zone mapping. As demonstrated by the most recent FEMA Flood Insurance Rate Maps, the property is not located within any flood hazard areas, see Figure 2 – FEMA FIRM Map.

2.2.2 Natural Heritage and Endangered Species Program

R. Levesque Associates, Inc. performed due diligence research on the property in regard to the Natural Heritage and Endangered Species Program (NHESP) areas. The property is not located within any NHESP estimated or priority habitats of endangered species, see Figure 3 – NHESP Map.

2.2.3 Aquifer Protection District

R. Levesque Associates, Inc. performed due diligence research on the property in regard to wellhead protection overlay districts. The property is not located within a Zone II Wellhead Protection Area; see Figure 3 – NHESP & Zone II Map.

2.3 Soils

R. Levesque Associates, Inc. researched the soils located on site with information readily available by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). Based on a review of the USDA Soil Survey of Hampden County, Massachusetts, Central Part, the site is comprised of the following soil types:

Table 2.4: Hydrologic Soil Group Classification

Soil Description	Map Unit Symbol	Hydrologic Soil Group
Merrimac fine sandy loam	254A	A

A total of five (5) test pits were conducted by Filipe Cravo SE# 12839 to verify the existing site soil characteristics and evaluate the ability of the site to support the proposed stormwater drainage system components. The test pits were spread out across the westerly side of the property in the areas of the proposed surface infiltration basin to establish the elevation of the estimated seasonal high groundwater and soil conditions. Ground water conditions varied across the site with some test pits demonstrating evidence of groundwater while others had no evidence of groundwater. The proposed surface infiltration basin has been designed according to the test pit data in the immediate vicinity which had evidence of groundwater approximately 37" down. The depth of the test pits ranged from 118 to 132 inches. In general, the soil evaluations confirmed the NRCS mapping. See Appendix B for additional soils information.

2.4 Post Development Conditions

The proposed site improvements include a number of stormwater management features to properly meet the requirements set forth by the Town of Agawam Stormwater Management requirements. The proposed stormwater features include:

- A deep-sump hooded catch basin
- A proprietary sedimentation device
- A surface infiltration basin with sediment forebay

The existing site improvements including the commercial building and the majority of the paved areas were approved through a special permit in April of 2000. Since the original approval, the site improvements were expanded to include an additional paved parking area along the easterly side of the site and a gravel area on the northerly side of the site. These additional site improvement areas were not accounted for in the original stormwater management system design. In addition, the existing stormwater management system was designed under previous regulations and would not meet the current MassDEP Stormwater Management Handbook Standards. As such, the site improvements include a new stormwater management system that has been designed to mitigate for the entirety of the site, including the additional improved areas, that meet the current stormwater management standards.

Under existing conditions, stormwater runoff from the paved parking areas is generally conveyed on the surface toward the existing swale on the western side of the site. The gravel area to the north generally sheet flows off site to the north. The roof area is either collected via an underground header on the north side of the building or discharges on-grade on the south side of the building, both areas tributary to the existing swale on the western side of the site. Under proposed conditions, the gravel area will be re-graded to convey runoff toward the pavement where it will flow toward a new deep-sump hooded catch basin inlet structure for initial water quality treatment. The runoff will then be conveyed via underground infrastructure to a proprietary sedimentation device for additional water quality treatment. Ultimately, the runoff will be conveyed to the sediment forebay within the surface infiltration basin. The infiltration basin has been designed to provide peak discharge rate attenuation for storm events up to and including the 100-year 24-hour storm event and provide groundwater recharge. The basin has also been designed with an outlet control structure that will connect to the existing outfall pipe, discharging to the same location as existing conditions.

Overall, the proposed site improvements will maintain the general drainage patterns of the site while improving water quality and reducing/maintaining peak discharge rates. See Figure 5 – Post-Development Watershed Plan for delineation of sub-catchment areas.

3. STORMWATER MANAGEMENT SYSTEM

R. Levesque Associates, Inc. has prepared the following drainage system calculations for the proposed project site. These calculations were performed to document compliance with the guidelines set forth by the Town of Agawam Stormwater Management requirements and the Massachusetts Department of Environmental Protection Stormwater Management Handbook (MassDEP Handbook). A detailed hydrologic analysis of the system was completed in order to evaluate the performance of the stormwater management system components, see Appendix C – Pre- and Post-Development Hydrologic Analysis. The proposed stormwater management system will collect runoff from on-site impervious areas and utilize stormwater best management practices to provide water quality treatment, groundwater recharge, and peak discharge rate attenuation.

3.1 Drainage Calculations

R. Levesque Associates, Inc. utilized the HydroCAD software program, Version 10.20, developed by HydroCAD Software Solutions LLC, in order to create and analyze the site hydrology. The HydroCAD software is based upon the Soil Conservation Service (SCS) "Technical Release 20 – Urban Hydrology for Small Watersheds" and "Technical Release 55 – Urban Hydrology for small Watersheds" which are generally accepted industry standard methodologies. The analysis was conducted in order to establish the peak discharge rates and estimated run-off volume from the project site. This was accomplished to properly evaluate pre- and post-development conditions during various storm events. Contributing drainage areas were identified and soils, surface cover, watershed slope, and flow paths were evaluated to develop the necessary HydroCAD model input parameters.

Drainage calculations were performed for the Pre- and Post-Development conditions for the 24-hour, 2, 10, and 100-year Type III storm events. The total rainfall for each of the storm events was based upon data provided by the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 point precipitation frequency estimates. The total rainfall values used in the hydrologic modeling for each event are shown in the following table:

Table 3.1: Design Rainfall Data – Hampden County		
2-year, 24-hour storm	10-year, 24-hour storm	100-year, 24-hour storm
3.22 inches	5.21 inches	8.36 inches

3.1.1 Design Points

In order to compare the difference between pre- and post-development peak flows, existing and proposed watersheds were delineated. Multiple Design Points (DP) were established with flow paths representing the longest time of concentration of run-off in each tributary watershed. For this analysis, the design points were determined as follows:

- DP-1 – Off Site to the North: This design point represents runoff from the project area which flows off site toward the northerly property line.
- DP-2 – Garden Street: This design point represents runoff from the project area which flows off site toward Garden Street.

3.1.2 Pre-Development Hydrology

The project area under existing conditions contains three sub-catchments tributary to the design points described above. The sub-catchments were delineated based on the existing developed areas of the parcel and as approved by the special permit issued in April of 2000. The areas that were expanded beyond the approved site plan were modeled as proposed in the original site plan, not as they currently are. I.E., the paved parking and gravel area were modeled as a grassed surface, not impervious. Additionally, the existing stormwater management system was modeled utilizing current software to estimate the peak discharge rates of the site in addition to the topography of the parcel and surrounding areas. The existing watershed areas are shown on the attached Figure 4 entitled "Pre-Development Watershed Plan". Peak discharge rates for the design points are depicted in Table 3.1.4 on the following page.

3.1.3 Post-Development Hydrology

The project area under proposed conditions was broken down into three sub-catchments discharging to the design points as described above. The proposed watershed areas are shown on the attached Figure 5 entitled "Post-Development Watershed Plan". Peak discharge rates for the design points are depicted in Table 3.1.4 on the following page.

3.1.4 Peak Discharge Rates

The table below summarizes the Pre- and Post-Development peak discharge rates for each Design Point:

Table 3.1.4 Pre- and Post-Development Peak Discharge Rates						
	2-year storm (cfs)		10-year storm (cfs)		100-year storm (cfs)	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Design Point 1	0.7	0.1	0.9	0.7	1.9	1.7
Design Point 2	0.1	0.1	0.2	0.2	0.4	0.4

As depicted in table 3.1.4, the post-development peak discharge rates do not increase over pre-development peak discharge rates for each of the storm events presented. This is accomplished by providing onsite attenuation and recharge through the proposed surface infiltration basin.

3.2 Hydraulic Analysis

R. Levesque Associates, Inc. utilized the Hydraflow Storm Sewer Extension for AutoCAD Civil 3D 2020 software program, developed by Autodesk, Inc., to analyze the hydraulic capacity of the proposed underground infrastructure. The analysis was conducted to verify that the proposed conveyance piping has sufficient capacity to convey up to and including the 24-hour, 100-year storm event. The data from the analysis was used to properly size the conveyance piping such that there is no or minimal surcharge of stormwater above the rim elevations within the paved areas. As part of the input parameters required for the hydraulic analysis, the tributary inlet areas were delineated based on topography, any additional connected discharges, characteristic land use coverages and flow paths, see Figure 6 – Inlet Area Plan. A minimum Time of Concentration (Tc) of (6) minutes was used in the calculations. Please refer to Appendix D for the hydraulic analysis of the proposed stormwater management system.

3.3 MassDEP Stormwater Management Standards

R. Levesque Associates, Inc. has designed the proposed stormwater management system to be in compliance with the MassDEP Stormwater Management Standards. Chapter 1, Volume 3 of the MassDEP Handbook outlines specific calculations, and other information, that must be submitted

with each report to document compliance. The following summary highlights elements of the proposed project and how they apply to each standard.

- *Standard #1 - No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*

  The proposed project provides best management practices designed to the guidelines of the MassDEP Handbook. Therefore, no new untreated stormwater is discharged.

- *Standard #2 – Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04.*

  The proposed stormwater management system has been designed such that the post-development peak discharge rates do not exceed the pre-development peak discharge rates for the 2-year, 10-year, and 100-year 24-hour storms. See Appendix C for the Hydrologic Analysis.

- *Standard #3 - Loss of annual recharge to groundwater shall be eliminated or minimized through the use of environmentally sensitive site design, low impact development techniques, stormwater BMPs, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required volume as determined in accordance with the Massachusetts Stormwater Handbook.*

  The proposed surface infiltration basin has been designed with the capacity to infiltrate the required recharge volume for the tributary impervious areas. See Appendix E for the Required Recharge Volume Calculations.

- *Standard #4 – Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of TSS. It is presumed that this standard is met when:*

  a. Suitable practices for source control and pollution prevention are identified in a long term pollution prevention plan, and thereafter are implemented and maintained;

  b. Structural stormwater BMPs practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and

  c. Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook

  The proposed stormwater management system has been designed to provide the required total suspended solids pre-treatment prior to discharge to the surface infiltration basin. See Appendix E for the Water Quality and Total Suspended Solids Removal Calculations.

- *Standard #5 - For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by MassDEP to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.*

  Since the site is an auto body repair shop, the stormwater management system has been designed to the applicable standards associated with a LUHPPL.

- *Standard #6 – Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area, require the use of the specific source control and pollution prevention measures and the specific structural stormwater BMPs determined by MassDEP to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area if there is a strong likelihood of a significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters and Special Resource Waters shall be removed and set back from the receiving water or wetland and receive the highest and best practical method of treatment. A "storm water discharge" as defined in 314 CMR 3.04(2)(a)1 or (b) to an Outstanding Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00. Stormwater discharges to a Zone I or Zone A are prohibited unless essential to the operation of a public water supply.*

  This standard is not applicable.

- *Standard #7 – A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural BMPs requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.*

  This standard is not applicable.

- *Standard #8 – A plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention) shall be developed and implemented.*

  A Construction Period Erosion Control Plan has been provided in Appendix F.

- *Standard #9 – A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed.*

  A Long-term Operation & Maintenance Plan has been provided in Appendix G.

- *Standard #10 - All illicit discharges to the stormwater management system are prohibited.*

  An illicit discharge statement will be provided prior to discharge of stormwater to post-construction BMPs. See Appendix H for a copy of the Illicit Discharge Statement.

3.4 Stormwater Best Management Practices

The proposed stormwater management system was designed utilizing stormwater best management practices (BMP) as set forth by the MassDEP Handbook. The BMPs utilized as part of the stormwater management system include a deep-sump hooded catch basin, proprietary sedimentation device, and a surface infiltration basin with sediment forebay. All the BMPs were designed to meet the requirements of the MassDEP Handbook and will provide water quality treatment, groundwater recharge, and peak rate attenuation in order to mitigate the impacts of the proposed site improvements. See Appendix E – MassDEP Calculations for the calculations required to document compliance. The following section provides a description of the best management practices (BMPs) being utilized on site.

3.4.1 Deep Sump Catch Basins

Deep-sump catch basins equipped with oil/gas hoods are being utilized as structural pretreatment devices within the proposed stormwater management system. The catch basins will be constructed with a 4'-0" deep sump to function as a settling chamber and allow for adequate storage of collected sediments. Catch basins are typically first in the line of water quality treatment.

3.4.2 Proprietary Sedimentation Devices

Proprietary sedimentation devices are being utilized on site for the pretreatment of stormwater runoff, in addition to the catch basins, prior to conveyance to the subsurface infiltration basin. Due to the stormwater management system utilizing a surface infiltration basin, pretreatment of the stormwater runoff is essential to providing higher water quality prior to infiltration. As much sediment, floatables, and hydrocarbons should be removed from the stormwater runoff as

possible to avoid contamination of the infiltration media. Maintenance of the proprietary devices is crucial to the long-term effectiveness of the stormwater management system.

3.4.3 Surface Infiltration Basin with Sediment Forebay

A surface infiltration basin accompanied by a sediment forebay is well suited to meet the water quality and quantity requirements from watershed areas within this project. An infiltration basin with associated sediment forebay mitigates the impact of the proposed site improvements by attenuating the peak discharge rates and retaining the stormwater volume over a period of time. The proposed infiltration basin has been designed to mimic the existing drainage patterns of the site by discharge runoff to the same point in post-development conditions as pre-development. Additionally, the basin is equipped with an emergency spillway to mitigate runoff during larger storm events.

3.5 Protection of Stormwater Best Management Practices during Construction

Protection of the stormwater best management practices during construction will ensure the proper functioning of the stormwater management system and provide protection to the undisturbed areas until the site has been stabilized. Certain specific erosion and sedimentation controls and good practices to be performed by the site contractor have been documented in a Construction Period Erosion Control Plan. See Appendix F – Construction Period Erosion Control Plan.

3.6 Inspection and Maintenance of Stormwater Best Management Practices

Frequent maintenance of the stormwater best management practices is essential to ensuring that the stormwater management system will function properly long-term. MassDEP provides guidelines for the regular inspection and maintenance of the proposed stormwater best management practices. A Long-Term Stormwater Operation and Maintenance Plan has been prepared which dictates the inspection frequency and maintenance operations for each BMP. See Appendix G – Long-Term Operation and Maintenance Plan.

3.7 Illicit Discharge Compliance Statement

RLA has prepared an Illicit Discharge Compliance Statement to document compliance with the Massachusetts Department of Environmental Protection Stormwater Management Handbook, see Appendix H.

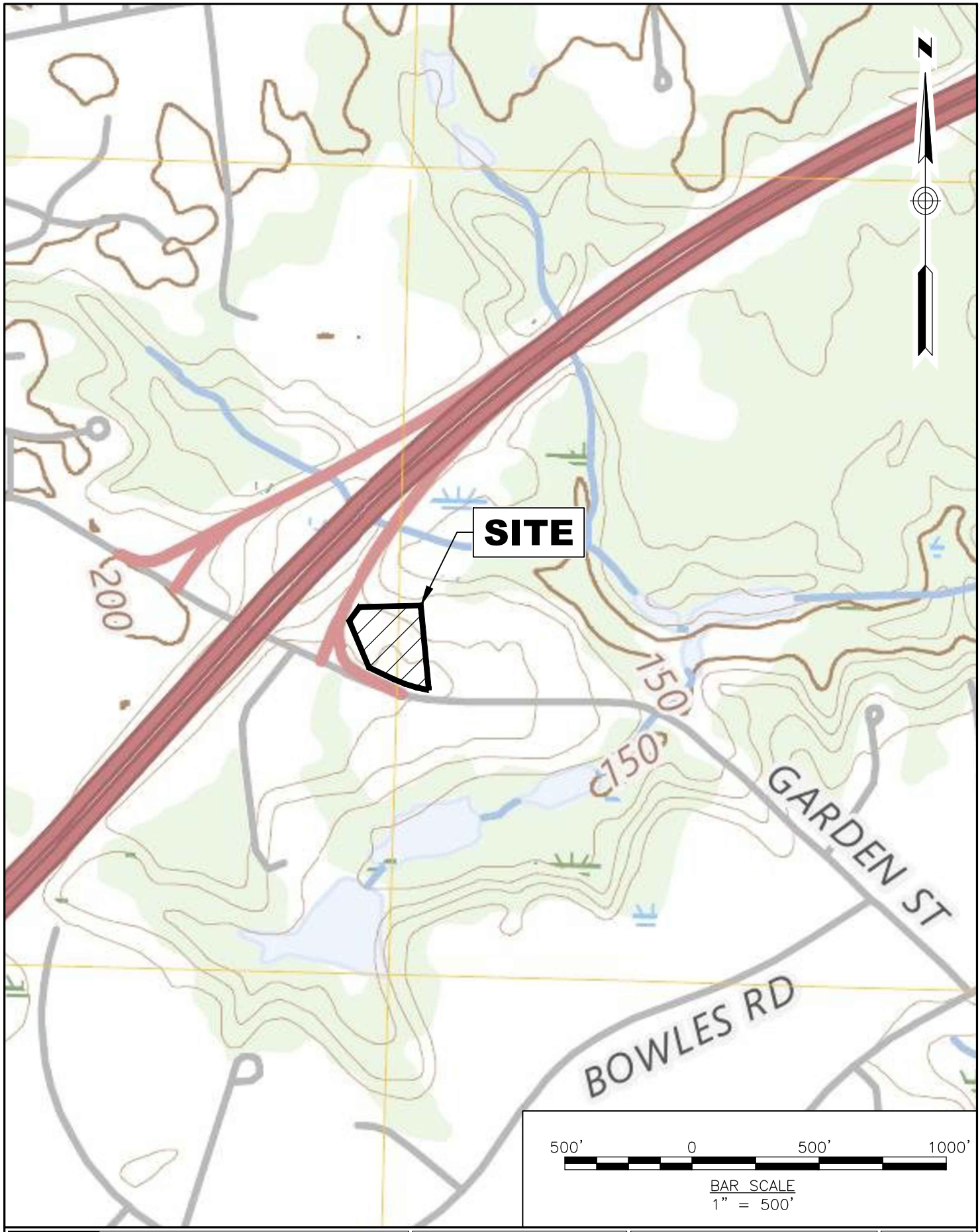
3.8 Low-Impact Development Alternatives Analysis Narrative

RLA has prepared a Low-Impact Development Alternatives Analysis Narrative as part of the Stormwater Drainage Report, see Appendix I.

4. CONCLUSION

The proposed stormwater management system has been designed to mitigate the impacts of both the previously constructed site improvements as well as the newly proposed site improvements by providing a control for runoff water quality and water quantity. Implementation of stormwater best management practices such as a deep-sump hooded catch basin, a proprietary sedimentation device, and a surface infiltration allow for a stormwater drainage design that is in conformance with the criteria set forth in the Town of Agawam Stormwater Management requirements and the Massachusetts Department of Environmental Protection Stormwater Management Handbook.

Figure 1: Site Locus – USGS Map



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A Land Planning Services Company
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ph: 413.568.0985 fax: 413.568.0986 rlaland.com

SITE LOCUS
USGS MAP

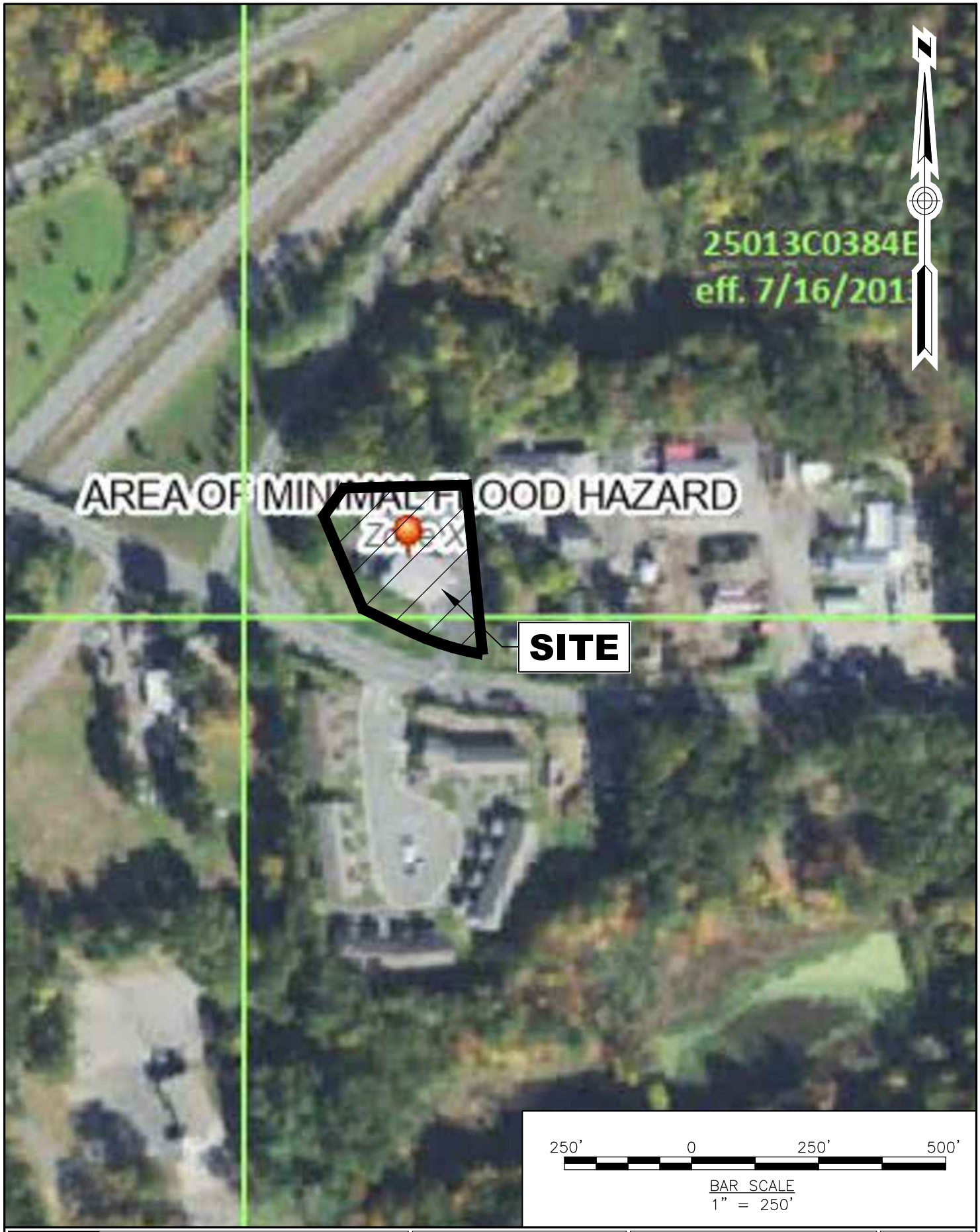
MBNZ Holding Co.
223 Garden Street
Agawam, MA 01030

Proposed Building Addition
223 Garden Street
Agawam, MA

JOB NO: 250214
DATE: 6/24/2025
SCALE: AS NOTED

FIG-1

Figure 2: FEMA Flood Map



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FEMA
FLOOD MAP

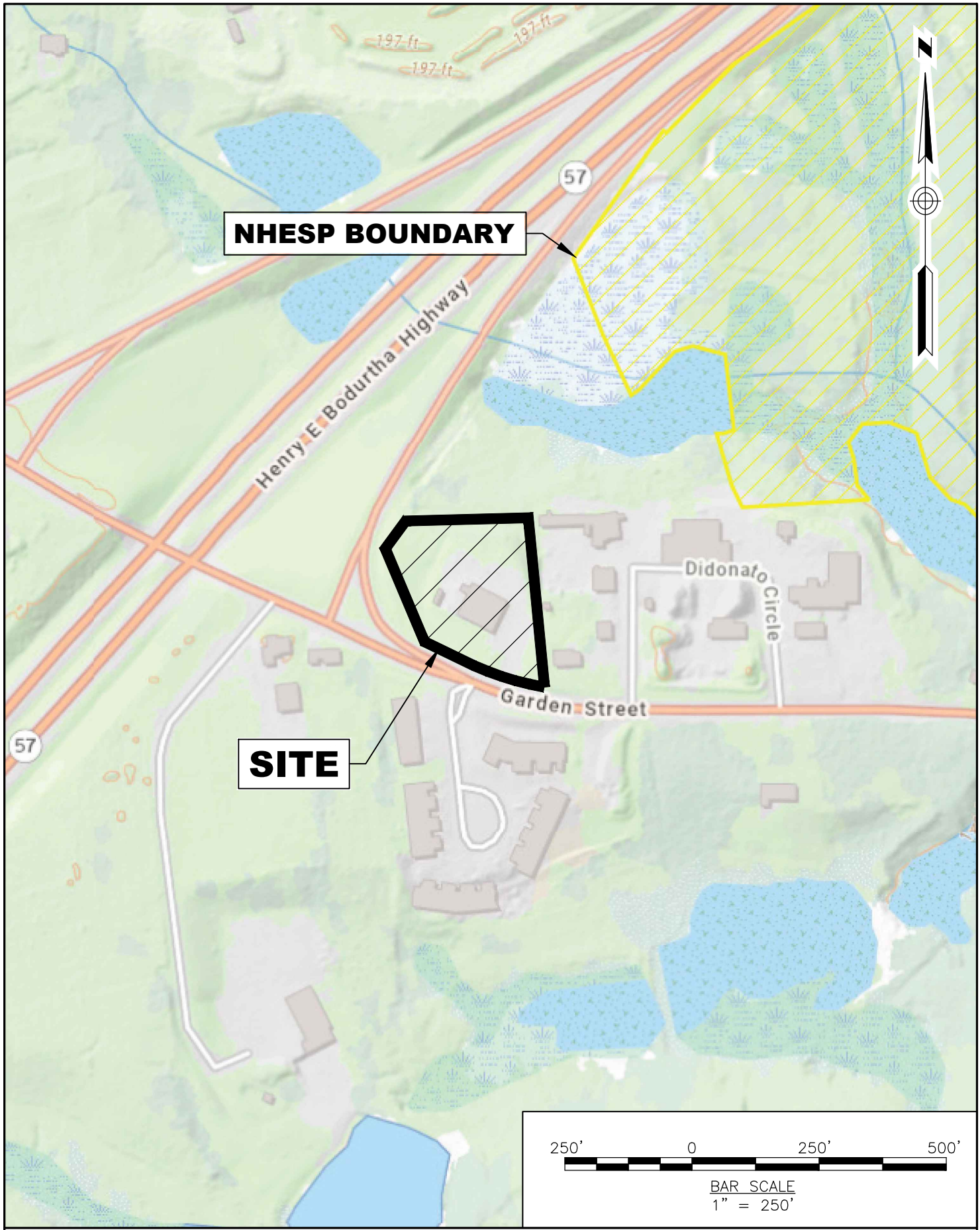
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FIG-2

Figure 3: NHESP Map



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NHESP & Zone II Map

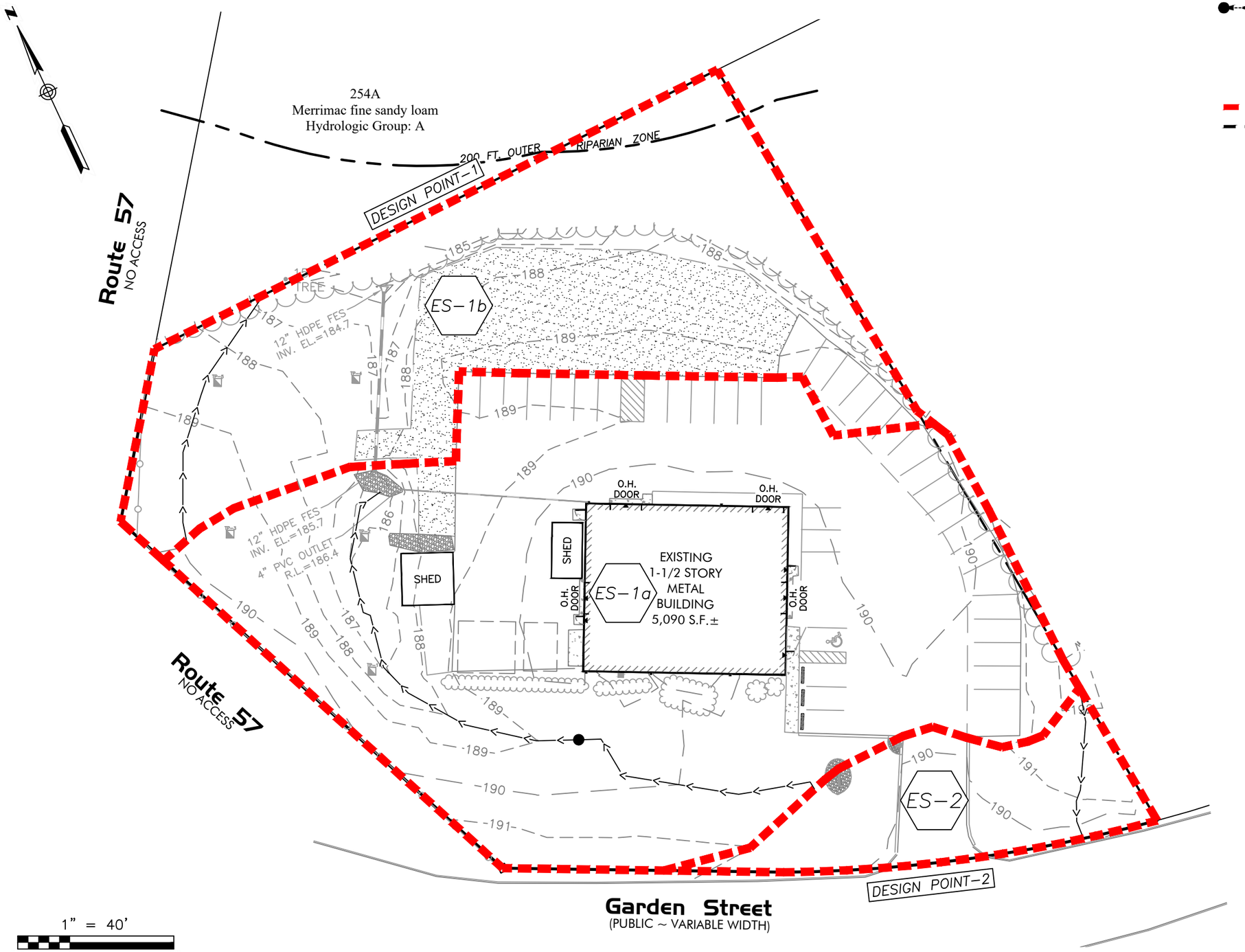
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Agawam, MA 01030

Proposed Building Addition
223 Garden Street
Agawam, MA

JOB NO: 250214
DATE: 6/24/2025
SCALE: AS NOTED

FIG-3

Figure 4: Pre-Development Watershed Plan



LEGEND

- TIME OF CONC. FLOW PATH
- ES-1 — SUBCATCHMENT NAME
- SUB WATERSHED
- SOIL BOUNDARY

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Pre-Development Watershed Plan

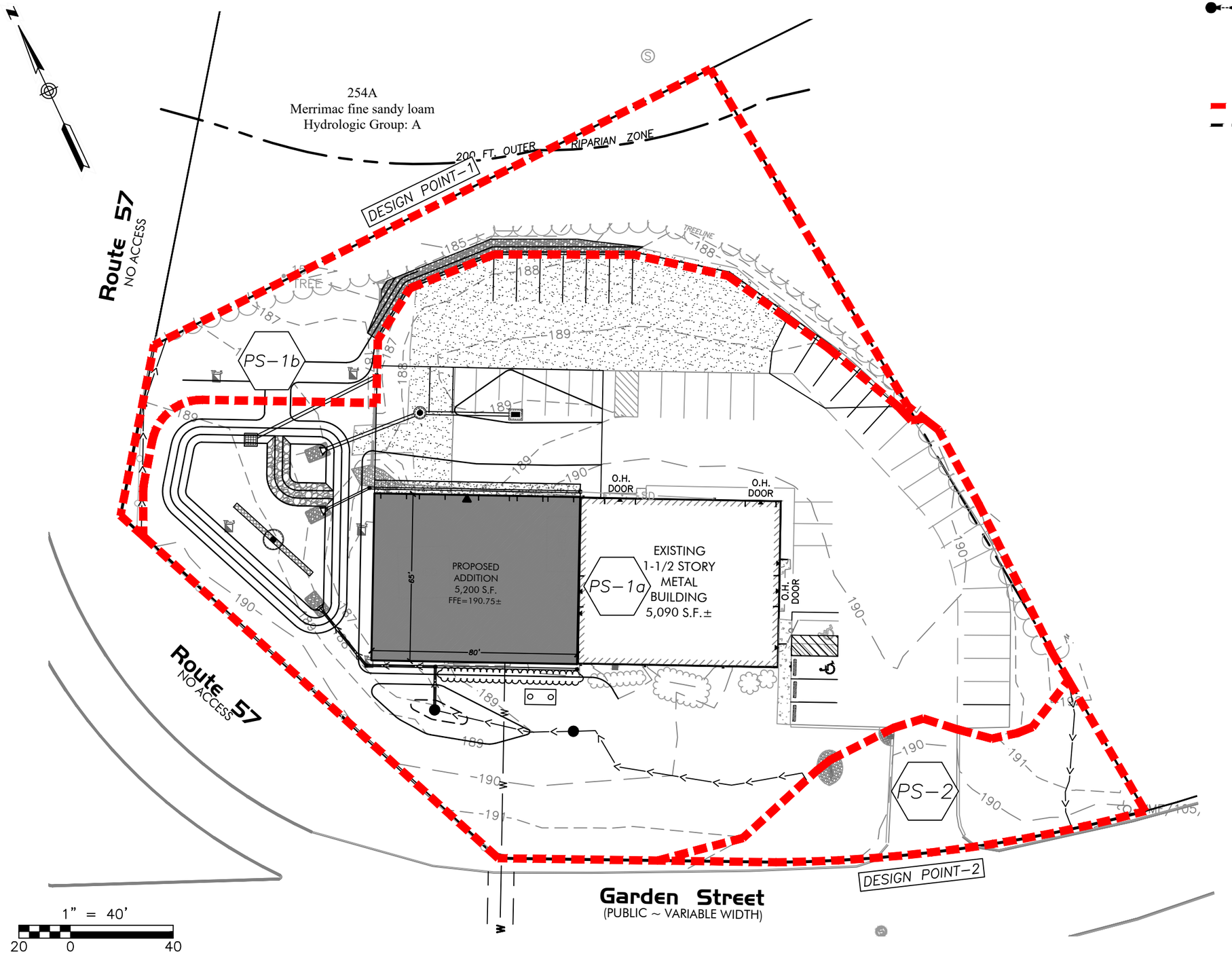
223 Garden Street
Agawam, MA
Parcel ID: G8-2-3

MBNZ Holding Co.
223 Garden Street
Agawam, MA. 01030

JOB NO.: 250214
DATE: 6/24/25
SCALE: As Noted

FIG-4

Figure 5: Post-Development Watershed Plan



LEGEND

- TIME OF CONC. FLOW PATH
- PS–1 — SUBCATCHMENT NAME
- SUB WATERSHED
- SOIL BOUNDARY

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Post-Development Watershed Plan

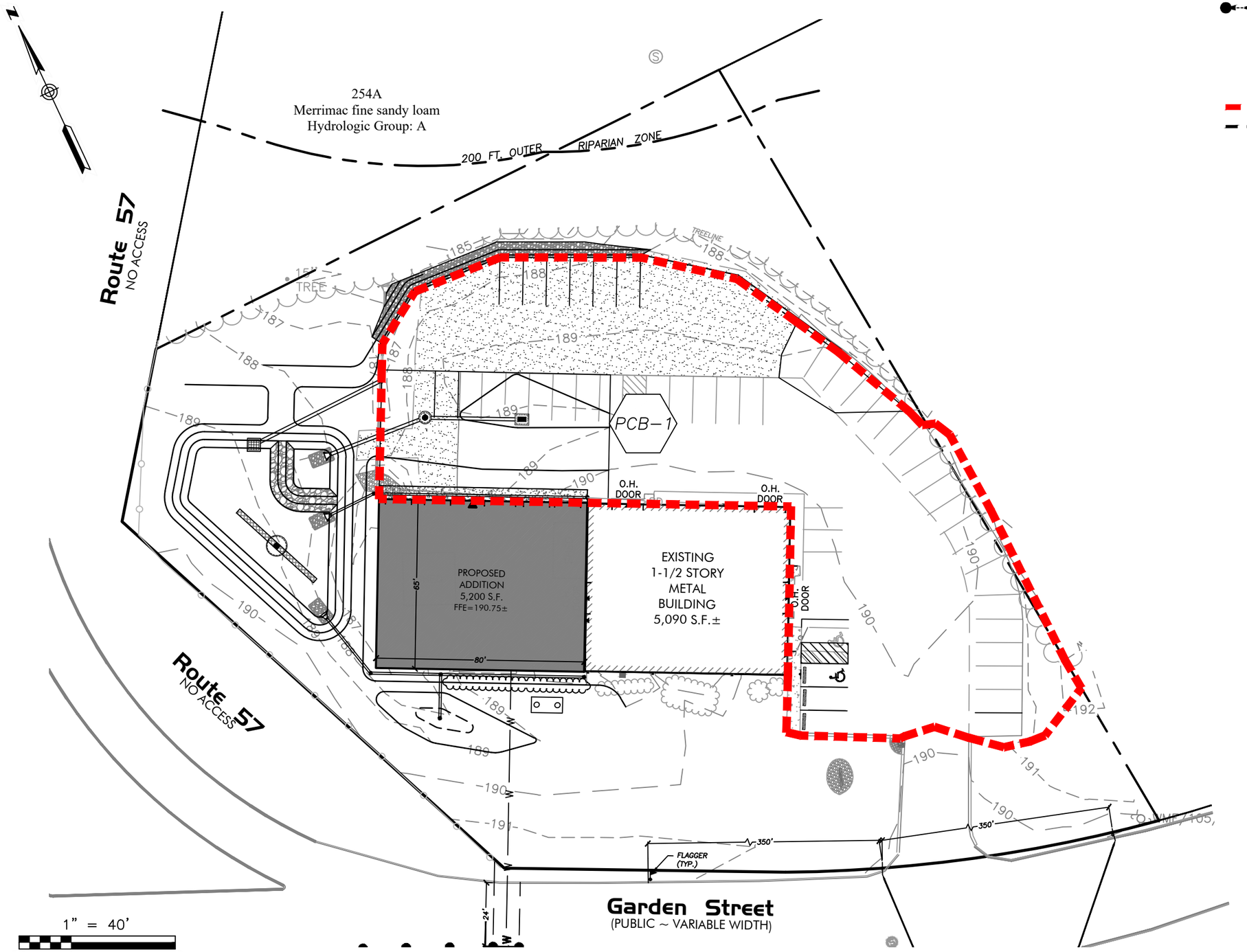
223 Garden Street
Agawam, MA
Parcel ID: G8-2-3

MBNZ Holding Co.
223 Garden Street
Agawam, MA. 01030

JOB NO.: 250214
DATE: 3/17/26
SCALE: As Noted

FIG-5

Figure 6: Inlet Area Plan



LEGEND

- TIME OF CONC. FLOW PATH
- ES-1 — SUBCATCHMENT NAME
- SUB WATERSHED
- SOIL BOUNDARY

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Inlet Area Plan

223 Garden Street
Agawam, MA
Parcel ID: G8-2-3

MBNZ Holding Co.
223 Garden Street
Agawam, MA. 01030

JOB NO.: 250214
DATE: 3/17/26
SCALE: As Noted

FIG-6

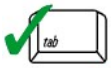
Appendix A: Checklist for Stormwater Report

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

Checklist for Stormwater Report

A. Introduction

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





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

The Stormwater Report must include:

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

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

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

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

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

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

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

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

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

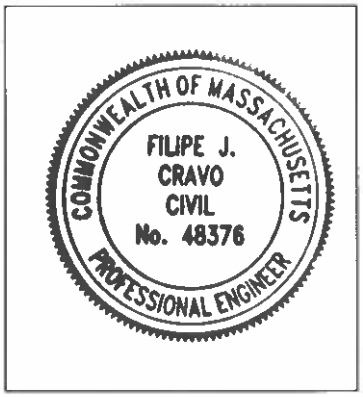
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the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

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

Registered Professional Engineer's Certification

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

Registered Professional Engineer Block and Signature



3/17/26

Signature and Date

Checklist

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

☒ New development

☐ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

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

☒ No disturbance to any Wetland Resource Areas

☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)

☐ Reduced Impervious Area (Redevelopment Only)

☐ Minimizing disturbance to existing trees and shrubs

☐ LID Site Design Credit Requested:

- ☐ Credit 1
- ☐ Credit 2
- ☐ Credit 3

☐ Use of "country drainage" versus curb and gutter conveyance and pipe

☐ Bioretention Cells (includes Rain Gardens)

☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)

☐ Treebox Filter

☐ Water Quality Swale

☐ Grass Channel

☐ Green Roof

☒ Other (describe): Propietary Sedimentation Device, Deep Sump Catch Basins, Subsurface Infiltration Basin

Standard 1: No New Untreated Discharges

☒ No new untreated discharges

☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth

☒ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

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

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

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

Standard 3: Recharge

☒ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

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

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

☒ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

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

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

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

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

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

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

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

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

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

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

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

Standard 4: Water Quality

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

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

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

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

☐ is within the Zone II or Interim Wellhead Protection Area

☐ is near or to other critical areas

☒ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)

☒ involves runoff from land uses with higher potential pollutant loads.

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

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

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

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

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

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

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

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

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

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

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

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

☐ All exposure has been eliminated.

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

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

Standard 6: Critical Areas

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

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

Checklist for Stormwater Report

Checklist (continued)

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

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

☐ Limited Project

☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.

☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area

☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff

☐ Bike Path and/or Foot Path

☐ Redevelopment Project

☐ Redevelopment portion of mix of new and redevelopment.

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

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

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

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

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

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

Checklist for Stormwater Report

Checklist (continued)

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

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

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

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

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

Standard 9: Operation and Maintenance Plan

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

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

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

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

Standard 10: Prohibition of Illicit Discharges

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

☒ An Illicit Discharge Compliance Statement is attached;

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

Appendix B: Soils Information

- NRCS Soils Report
- Soil Evaluation Logs

United States Department of Agriculture

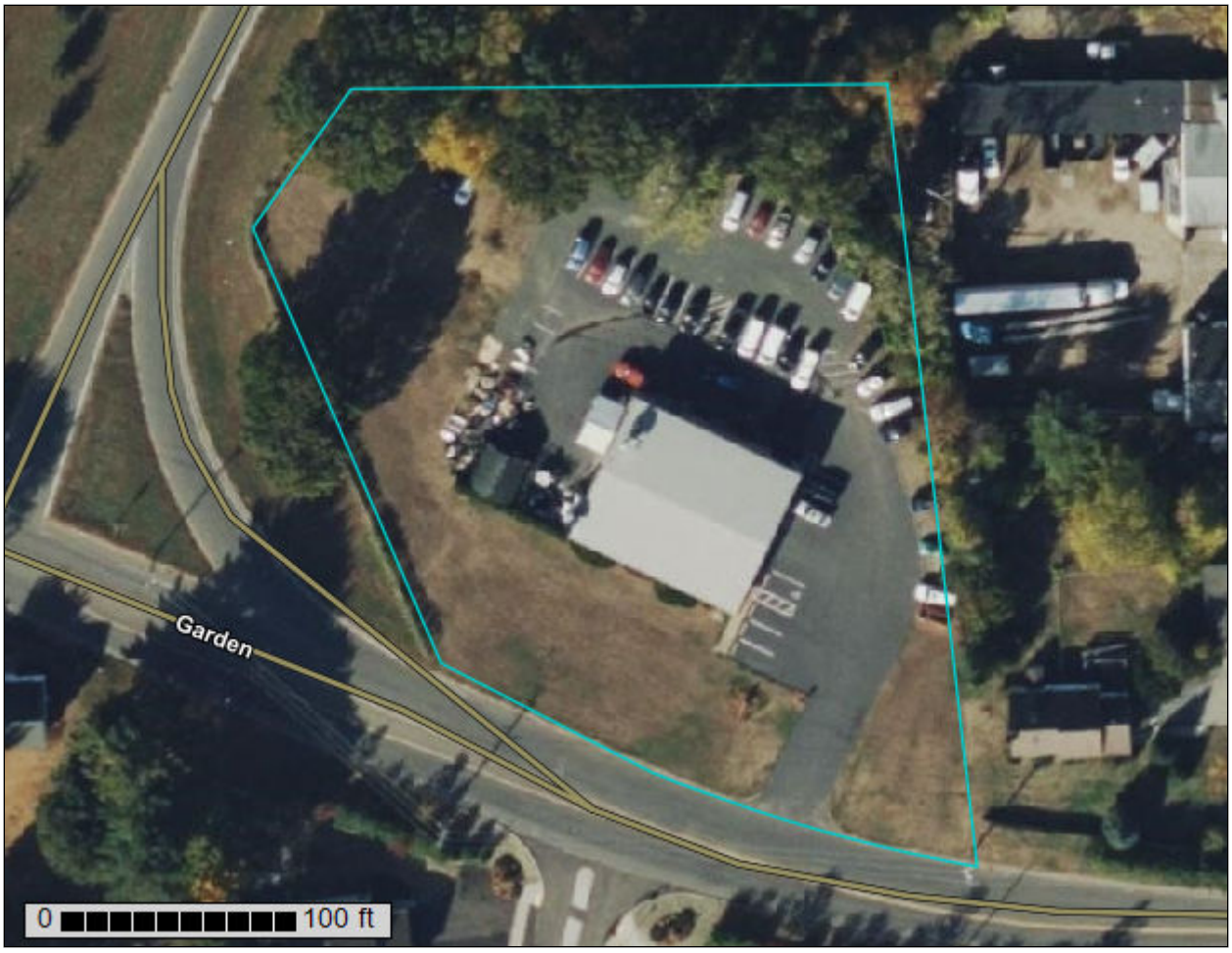
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Hampden County, Massachusetts, Central Part

223 Garden Street, Agawam MA



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



Map Scale: 1:726 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 10 20 40 60

Feet
0 35 70 140 210

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

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

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

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

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

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

Soil Survey Area: Hampden County, Massachusetts, Central Part
Survey Area Data: Version 18, Aug 27, 2024

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

Date(s) aerial images were photographed: Oct 15, 2020—Oct 31, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND	MAP INFORMATION
	imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
254A	Merrimac fine sandy loam, 0 to 3 percent slopes	1.7	100.0%
Totals for Area of Interest		**1.7**	**100.0%**

Map Unit Descriptions

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

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

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

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

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

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

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

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

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

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

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

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

Hampden County, Massachusetts, Central Part

254A—Merrimac fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tyqr
Elevation: 0 to 1,100 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Merrimac and similar soils: 86 percent
Minor components: 14 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Merrimac

Setting

Landform: Outwash plains, outwash terraces, moraines, eskers, kames
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Side slope, crest, riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss

Typical profile

Ap - 0 to 10 inches: fine sandy loam
Bw1 - 10 to 22 inches: fine sandy loam
Bw2 - 22 to 26 inches: stratified gravel to gravelly loamy sand
2C - 26 to 65 inches: stratified gravel to very gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 1.4 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: A
Ecological site: F145XY008MA - Dry Outwash

Hydric soil rating: No

Minor Components

Sudbury

Percent of map unit: 5 percent
Landform: Deltas, terraces, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Hinckley

Percent of map unit: 5 percent
Landform: Deltas, kames, eskers, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Windsor

Percent of map unit: 3 percent
Landform: Dunes, deltas, outwash terraces, outwash plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, riser
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Hydric soil rating: No

Walpole

Percent of map unit: 1 percent
Landform: Depressions
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F144AY028MA - Wet Outwash
Hydric soil rating: Yes

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RLA#: 250214
Vermette Auto Body
223 Garden Street

Commonwealth of Massachusetts
City/Town of Agawam

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-1 (Hole #) | 6/10/25 (Date) | 8:45am (Time) | Overcast 62 (Weather) | - (Latitude) | - (Longitude)

1. Land Use: Lawn area (e.g., woodland, agricultural field, vacant lot, etc.) | Grassed (Vegetation) | N/A (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3% (Slope (%))

Description of Location: Grassed area on west side of lot

2. Soil Parent Material: Loamy glaciofluvial deposits | Outwash plain (Landform) | SH (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body - feet | Drainage Way - feet | Wetlands >100 feet
Property Line >10 feet | Drinking Water Well - feet | Other - feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: - Depth to Weeping in Hole - Depth to Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-3	Ap	LS	10YR 3/4		Cnc : Dpl:				M	G	Roots
3-18	Bw	LS	10YR 4/6		Cnc : Dpl:				M	F	
18-118	C1	S	10YR 4/4		Cnc : Dpl: None				SG	L	Medium Sand
					Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes: Hit irrigation line

RLA#: 250214
Vermette Auto Body
223 Garden Street

Commonwealth of Massachusetts
City/Town of Agawam

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-2 (Hole #) | 6/10/25 (Date) | 9:15am (Time) | Overcast 62 (Weather) | - (Latitude) | - (Longitude)

1. Land Use: Lawn area (e.g., woodland, agricultural field, vacant lot, etc.) | Grassed (Vegetation) | N/A (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3% (Slope (%))

Description of Location: Grassed area on west side of lot

2. Soil Parent Material: Loamy glaciofluvial deposits | Outwash plain (Landform) | SH (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body - feet | Drainage Way - feet | Wetlands >100 feet
Property Line >10 feet | Drinking Water Well - feet | Other - feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: - Depth to Weeping in Hole - Depth to Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-6	Ap	LS	10YR 3/4		Cnc : Dpl:				M	G	Roots
6-18	Bw	LS	10YR 4/6		Cnc : Dpl:				M	F	
18-40	C1	S	10YR 4/4	37"	Cnc : 5YR 3/3 Dpl: 10YR 4/3	>7%			SG	L	Medium Sand
40-120	C2	SL	10YR 4/2		Cnc : Dpl:				M	F	
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

RLA#: 250214
Vermette Auto Body
223 Garden Street

Commonwealth of Massachusetts
City/Town of Agawam

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-3 (Hole #) | 6/10/25 (Date) | 9:45am (Time) | Overcast 62 (Weather) | - (Latitude) | - (Longitude)

1. Land Use: Lawn area (e.g., woodland, agricultural field, vacant lot, etc.) | Grassed (Vegetation) | N/A (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3% (Slope (%))

Description of Location: Grassed area on west side of lot

2. Soil Parent Material: Loamy glaciofluvial deposits | Outwash plain (Landform) | SH (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body - feet | Drainage Way - feet | Wetlands >100 feet
Property Line >10 feet | Drinking Water Well - feet | Other - feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: - Depth to Weeping in Hole - Depth to Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-6	Ap	LS	10YR 3/4		Cnc : Dpl:				M	G	Roots
15-28	Bw	LS	10YR 4/6		Cnc : Dpl:				M	F	
28-132	C1	S	10YR 4/4		Cnc : Dpl: None				SG	L	Medium Sand
					Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

RLA#: 250214
Vermette Auto Body
223 Garden Street

Commonwealth of Massachusetts
City/Town of Agawam

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-4 (Hole #) | 6/10/25 (Date) | 10:15am (Time) | Overcast 62 (Weather) | - (Latitude) | - (Longitude)

1. Land Use: Lawn area (e.g., woodland, agricultural field, vacant lot, etc.) | Grassed (Vegetation) | N/A (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3% (Slope (%))

Description of Location: Grassed area on west side of lot

2. Soil Parent Material: Loamy glaciofluvial deposits | Outwash plain (Landform) | SH (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body - feet | Drainage Way - feet | Wetlands >100 feet
Property Line >10 feet | Drinking Water Well - feet | Other - feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: - Depth to Weeping in Hole - Depth to Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-9	Fill	-	-		Cnc : Dpl:				-	-	Clean, sandy fill
9-18	Ap	LS	10YR 3/4		Cnc : Dpl:				M	G	
18-28	Bw	LS	10YR 4/6		Cnc : Dpl:				M	F	
28-64	C1	S	10YR 4/4	62"	Cnc : 5YR 3/3 Dpl: 10YR 4/3	>7%			SG	L	Medium Sand
64-120	C2	SL	10YR 4/2		Cnc : Dpl:				M	F	
					Cnc : Dpl:						

Additional Notes:

RLA#: 250214
Vermette Auto Body
223 Garden Street

Commonwealth of Massachusetts
City/Town of Agawam

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-5 (Hole #) | 6/10/25 (Date) | 10:45am (Time) | Overcast 62 (Weather) | - (Latitude) | - (Longitude)

1. Land Use: Lawn area (e.g., woodland, agricultural field, vacant lot, etc.) | Grassed (Vegetation) | N/A (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3% (Slope (%))

Description of Location: Grassed area on west side of lot

2. Soil Parent Material: Loamy glaciofluvial deposits | Outwash plain (Landform) | SH (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body - feet | Drainage Way - feet | Wetlands >100 feet
Property Line >10 feet | Drinking Water Well - feet | Other - feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: - Depth to Weeping in Hole - Depth to Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-12	Ap	LS	10YR 3/4		Cnc : Dpl:				M	G	
12-28	Bw	LS	10YR 4/6		Cnc : Dpl:				M	F	
28-92	C1	S	10YR 4/4	92"	Cnc : 5YR 3/3 Dpl: 10YR 4/3	>7%			SG	L	Medium Sand
92-132	C2	SL	10YR 4/2		Cnc : Dpl:				M	F	
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Appendix C: Pre- and Post- Development Hydrologic Analysis (2, 10, 100 Year Storm Events)

NOAA Atlas 14, Volume 10, Version 3
Location name: Feeding Hills, Massachusetts, USA*
Latitude: 42.0627°, Longitude: -72.6554°
Elevation: 191 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.341 (0.263-0.438)	0.410 (0.316-0.527)	0.523 (0.401-0.675)	0.616 (0.471-0.800)	0.744 (0.551-1.01)	0.841 (0.611-1.17)	0.941 (0.665-1.36)	1.05 (0.707-1.56)	1.21 (0.784-1.87)	1.34 (0.847-2.11)
10-min	0.483 (0.373-0.621)	0.581 (0.448-0.746)	0.740 (0.569-0.955)	0.872 (0.666-1.13)	1.05 (0.781-1.43)	1.19 (0.865-1.66)	1.33 (0.942-1.93)	1.49 (1.00-2.22)	1.72 (1.11-2.65)	1.90 (1.20-2.99)
15-min	0.568 (0.439-0.730)	0.683 (0.527-0.878)	0.870 (0.669-1.12)	1.02 (0.784-1.33)	1.24 (0.918-1.69)	1.40 (1.02-1.95)	1.57 (1.11-2.27)	1.76 (1.18-2.61)	2.02 (1.31-3.12)	2.23 (1.41-3.52)
30-min	0.768 (0.593-0.986)	0.925 (0.713-1.19)	1.18 (0.908-1.52)	1.39 (1.06-1.81)	1.69 (1.25-2.29)	1.91 (1.38-2.65)	2.14 (1.51-3.09)	2.39 (1.61-3.56)	2.75 (1.78-4.25)	3.04 (1.92-4.80)
60-min	0.968 (0.747-1.24)	1.17 (0.900-1.50)	1.49 (1.15-1.92)	1.76 (1.35-2.29)	2.13 (1.58-2.90)	2.41 (1.75-3.36)	2.70 (1.91-3.92)	3.03 (2.03-4.50)	3.48 (2.26-5.38)	3.85 (2.44-6.08)
2-hr	1.24 (0.964-1.58)	1.49 (1.16-1.90)	1.89 (1.46-2.43)	2.23 (1.72-2.88)	2.69 (2.01-3.65)	3.04 (2.23-4.22)	3.41 (2.43-4.94)	3.84 (2.59-5.68)	4.47 (2.90-6.88)	5.01 (3.18-7.87)
3-hr	1.42 (1.11-1.81)	1.71 (1.33-2.18)	2.18 (1.69-2.79)	2.57 (1.98-3.30)	3.11 (2.33-4.21)	3.50 (2.58-4.87)	3.93 (2.83-5.72)	4.45 (3.01-6.58)	5.24 (3.41-8.04)	5.91 (3.76-9.27)
6-hr	1.78 (1.40-2.25)	2.16 (1.70-2.74)	2.79 (2.18-3.54)	3.31 (2.57-4.23)	4.03 (3.04-5.44)	4.55 (3.38-6.32)	5.13 (3.73-7.47)	5.85 (3.97-8.61)	6.99 (4.56-10.7)	7.98 (5.09-12.5)
12-hr	2.18 (1.72-2.73)	2.70 (2.13-3.39)	3.55 (2.79-4.47)	4.25 (3.33-5.40)	5.22 (3.98-7.03)	5.93 (4.44-8.22)	6.72 (4.93-9.79)	7.73 (5.25-11.3)	9.34 (6.11-14.2)	10.8 (6.88-16.7)
24-hr	2.56 (2.04-3.19)	3.22 (2.56-4.02)	4.31 (3.41-5.39)	5.21 (4.10-6.56)	6.45 (4.95-8.65)	7.35 (5.55-10.2)	8.36 (6.19-12.2)	9.69 (6.61-14.1)	11.8 (7.77-17.9)	13.8 (8.83-21.3)
2-day	2.90 (2.33-3.59)	3.70 (2.96-4.58)	4.99 (3.98-6.20)	6.06 (4.80-7.58)	7.54 (5.82-10.1)	8.60 (6.54-11.9)	9.81 (7.33-14.3)	11.4 (7.83-16.6)	14.1 (9.29-21.3)	16.5 (10.6-25.5)
3-day	3.18 (2.55-3.91)	4.04 (3.24-4.98)	5.45 (4.36-6.75)	6.63 (5.27-8.26)	8.24 (6.39-11.0)	9.41 (7.18-12.9)	10.7 (8.05-15.6)	12.5 (8.59-18.1)	15.5 (10.2-23.3)	18.2 (11.7-27.9)
4-day	3.42 (2.76-4.20)	4.34 (3.50-5.34)	5.85 (4.69-7.22)	7.10 (5.66-8.82)	8.82 (6.86-11.7)	10.1 (7.70-13.8)	11.5 (8.62-16.6)	13.4 (9.20-19.3)	16.6 (10.9-24.9)	19.4 (12.5-29.8)
7-day	4.09 (3.32-5.00)	5.13 (4.16-6.28)	6.83 (5.51-8.39)	8.24 (6.61-10.2)	10.2 (7.95-13.4)	11.6 (8.90-15.8)	13.2 (9.91-19.0)	15.3 (10.6-22.0)	18.8 (12.4-28.1)	21.9 (14.2-33.4)
10-day	4.76 (3.87-5.79)	5.86 (4.76-7.14)	7.66 (6.20-9.37)	9.16 (7.37-11.3)	11.2 (8.77-14.7)	12.7 (9.76-17.2)	14.4 (10.8-20.5)	16.6 (11.5-23.7)	20.1 (13.4-30.0)	23.3 (15.1-35.5)
20-day	6.84 (5.60-8.27)	8.00 (6.55-9.68)	9.90 (8.07-12.0)	11.5 (9.29-14.0)	13.6 (10.7-17.6)	15.2 (11.7-20.3)	17.0 (12.7-23.7)	19.1 (13.3-27.2)	22.5 (15.0-33.3)	25.4 (16.5-38.5)
30-day	8.60 (7.07-10.3)	9.78 (8.04-11.8)	11.7 (9.59-14.2)	13.3 (10.8-16.2)	15.5 (12.2-19.9)	17.2 (13.2-22.6)	19.0 (14.1-26.1)	21.0 (14.7-29.7)	24.0 (16.1-35.4)	26.6 (17.3-40.2)
45-day	10.8 (8.90-12.9)	12.0 (9.91-14.4)	14.0 (11.5-16.9)	15.7 (12.8-19.0)	18.0 (14.1-22.8)	19.7 (15.1-25.7)	21.5 (15.9-29.1)	23.4 (16.4-33.0)	26.0 (17.5-38.2)	28.1 (18.3-42.3)
60-day	12.6 (10.4-15.1)	13.9 (11.5-16.6)	16.0 (13.2-19.2)	17.7 (14.5-21.4)	20.1 (15.8-25.4)	22.0 (16.8-28.4)	23.8 (17.5-31.9)	25.6 (18.0-35.9)	27.8 (18.7-40.7)	29.5 (19.3-44.3)

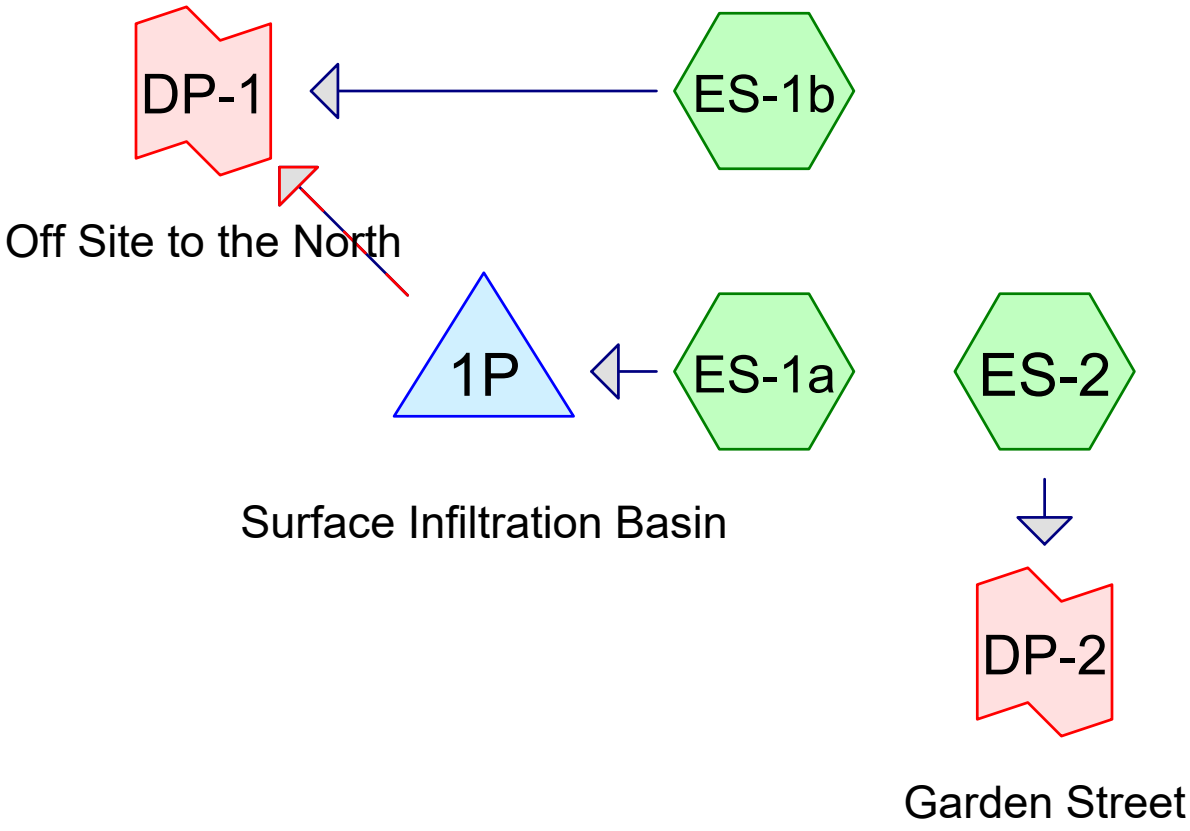
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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

Please refer to NOAA Atlas 14 document for more information.

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PF graphical



Subcat Reach Pond Link

Routing Diagram for 250214 - PRE
Prepared by R Levesque Associates, Printed 6/24/2025
HydroCAD® 10.20-7a s/n 13073 © 2025 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	3.22	2
2	10-Year	Type III 24-hr		Default	24.00	1	5.21	2
3	100-Year	Type III 24-hr		Default	24.00	1	8.36	2

Time span=0.00-48.00 hrs, dt=0.03 hrs, 1601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ES-1a: Runoff Area=43,841 sf 50.56% Impervious Runoff Depth=1.55"
Flow Length=258' Tc=12.6 min CN=WQ Runoff=1.3 cfs 5,655 cf

Subcatchment ES-1b: Runoff Area=24,308 sf 0.32% Impervious Runoff Depth=0.01"
Flow Length=103' Slope=0.0300 '/' Tc=8.8 min CN=WQ Runoff=0.0 cfs 20 cf

Subcatchment ES-2: Runoff Area=6,161 sf 23.03% Impervious Runoff Depth=0.72"
Flow Length=59' Slope=0.0500 '/' Tc=6.0 min CN=WQ Runoff=0.1 cfs 370 cf

Pond 1P: Surface Infiltration Basin Peak Elev=186.63' Storage=396 cf Inflow=1.3 cfs 5,655 cf
Discarded=0.2 cfs 1,258 cf Primary=0.7 cfs 4,397 cf Secondary=0.0 cfs 0 cf Outflow=0.9 cfs 5,655 cf

Link DP-1: Off Site to the North Inflow=0.7 cfs 4,417 cf
Primary=0.7 cfs 4,417 cf

Link DP-2: Garden Street Inflow=0.1 cfs 370 cf
Primary=0.1 cfs 370 cf

Total Runoff Area = 74,310 sf Runoff Volume = 6,046 cf Average Runoff Depth = 0.98"
68.16% Pervious = 50,646 sf 31.84% Impervious = 23,664 sf

Summary for Subcatchment ES-1a:

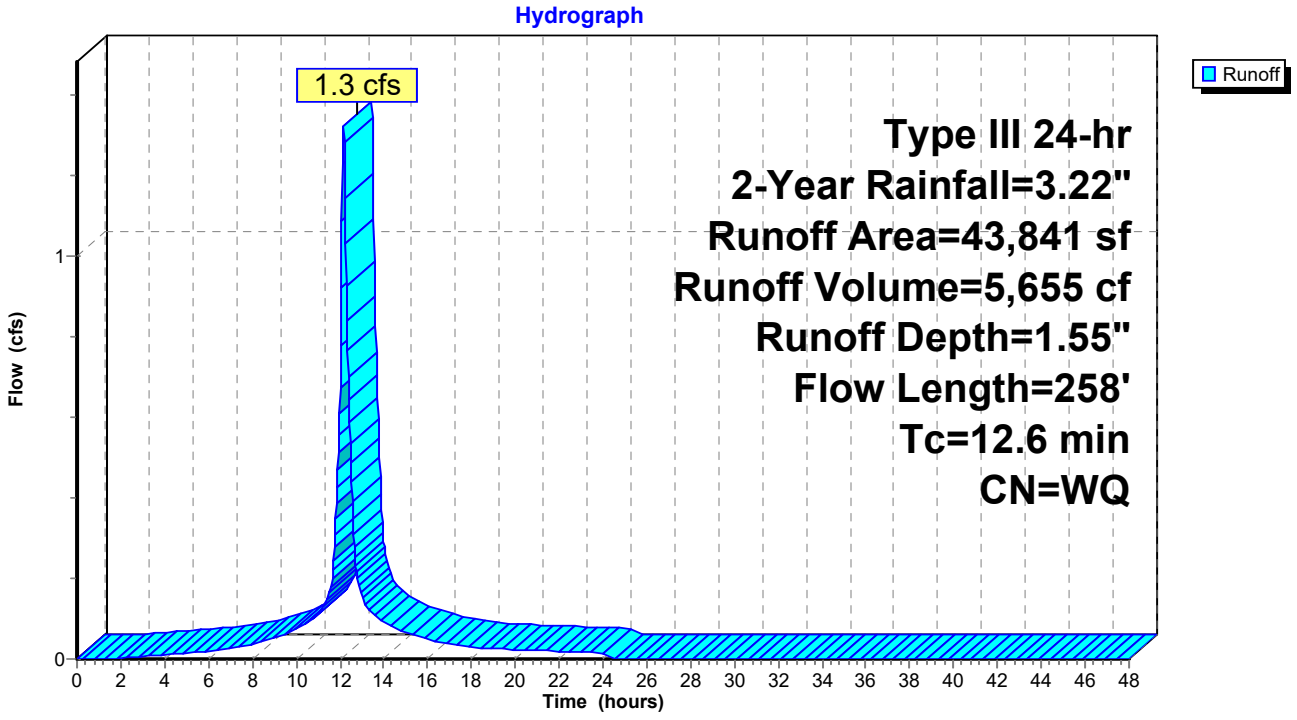
Runoff = 1.3 cfs @ 12.17 hrs, Volume= 5,655 cf, Depth= 1.55"
Routed to Pond 1P : Surface Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=3.22"

Area (sf)	CN	Description
20,844	39	>75% Grass cover, Good, HSG A
589	96	Gravel surface, HSG A
16,405	98	Paved parking, HSG A
5,762	98	Roofs, HSG A
241	30	Woods, Good, HSG A
43,841		Weighted Average
21,674	40	49.44% Pervious Area
22,167	98	50.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
1.2	158	0.0230	2.27		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
12.6	258	Total			

Subcatchment ES-1a:



Summary for Subcatchment ES-1b:

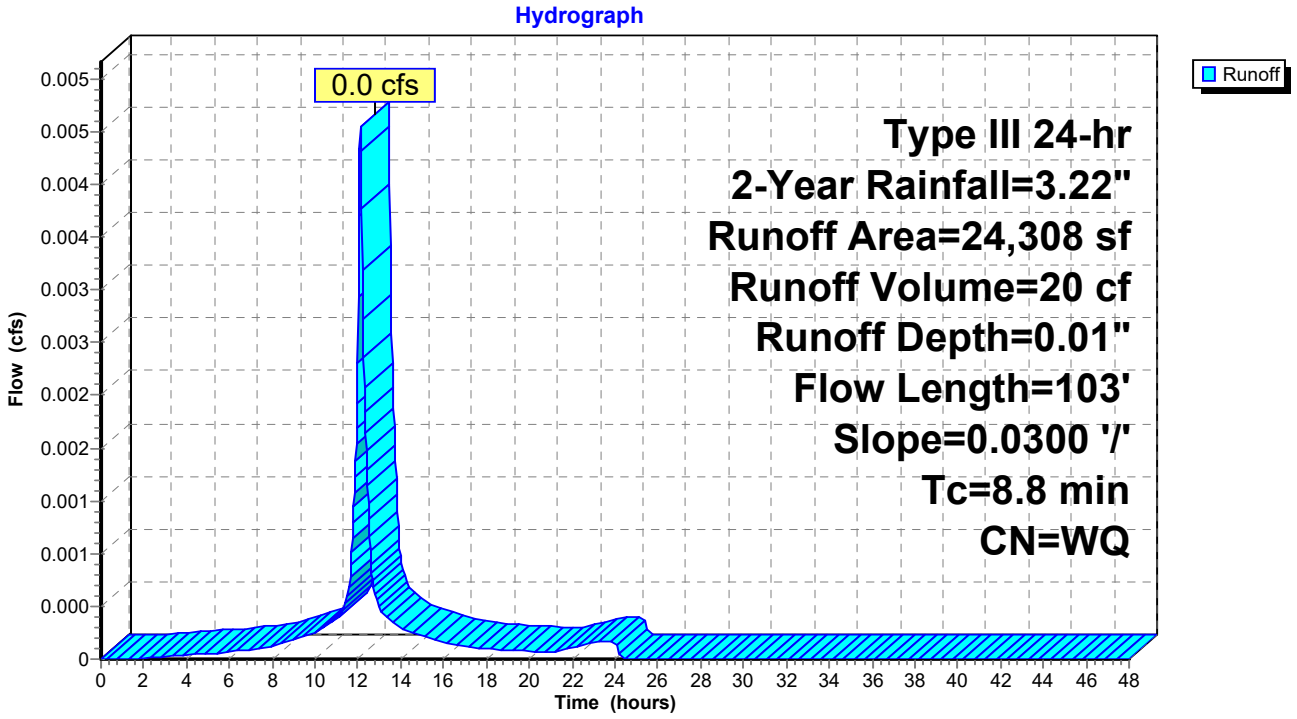
Runoff = 0.0 cfs @ 12.12 hrs, Volume= 20 cf, Depth= 0.01"
Routed to Link DP-1 : Off Site to the North

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=3.22"

Area (sf)	CN	Description
17,576	39	>75% Grass cover, Good, HSG A
78	98	Paved parking, HSG A
6,654	30	Woods, Good, HSG A
24,308		Weighted Average
24,231	37	99.68% Pervious Area
78	98	0.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	103	0.0300	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"

Subcatchment ES-1b:



Summary for Subcatchment ES-2:

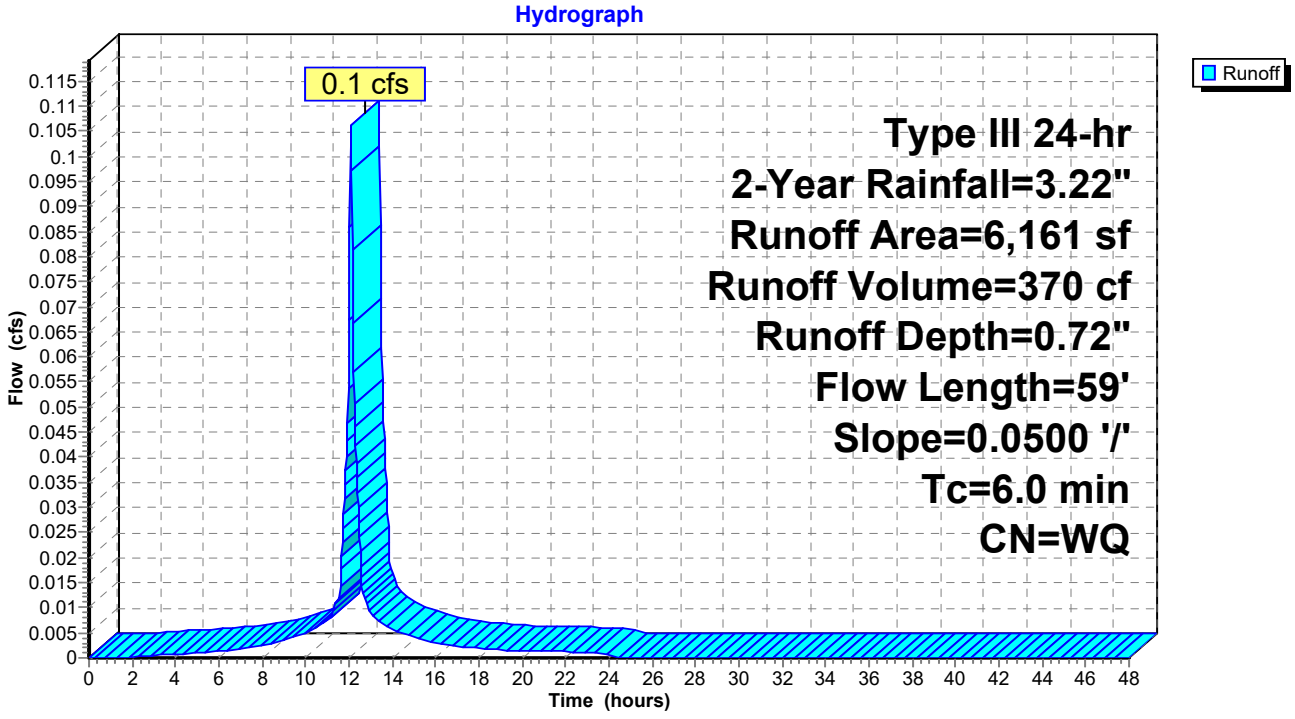
Runoff = 0.1 cfs @ 12.08 hrs, Volume= 370 cf, Depth= 0.72"
Routed to Link DP-2 : Garden Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=3.22"

Area (sf)	CN	Description
4,668	39	>75% Grass cover, Good, HSG A
74	96	Gravel surface, HSG A
1,419	98	Paved parking, HSG A
6,161		Weighted Average
4,742	40	76.97% Pervious Area
1,419	98	23.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	59	0.0500	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
4.6	59	Total, Increased to minimum Tc = 6.0 min			

Subcatchment ES-2:



Summary for Pond 1P: Surface Infiltration Basin

Inflow Area = 43,841 sf, 50.56% Impervious, Inflow Depth = 1.55" for 2-Year event
Inflow = 1.3 cfs @ 12.17 hrs, Volume= 5,655 cf
Outflow = 0.9 cfs @ 12.31 hrs, Volume= 5,655 cf, Atten= 31%, Lag= 8.4 min
Discarded = 0.2 cfs @ 12.31 hrs, Volume= 1,258 cf
Primary = 0.7 cfs @ 12.31 hrs, Volume= 4,397 cf
Routed to Link DP-1 : Off Site to the North
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP-1 : Off Site to the North

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Peak Elev= 186.63' @ 12.31 hrs Surf.Area= 947 sf Storage= 396 cf

Plug-Flow detention time= 2.8 min calculated for 5,655 cf (100% of inflow)
Center-of-Mass det. time= 2.7 min (765.7 - 762.9)

Volume	Invert	Avail.Storage	Storage Description
#1	185.70'	3,165 cf	**Surface Infiltration Basin (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
185.70	14	26.0	0	0	14
186.00	271	86.0	35	35	549
187.00	1,537	187.0	818	852	2,747
188.00	3,187	256.0	2,312	3,165	5,190

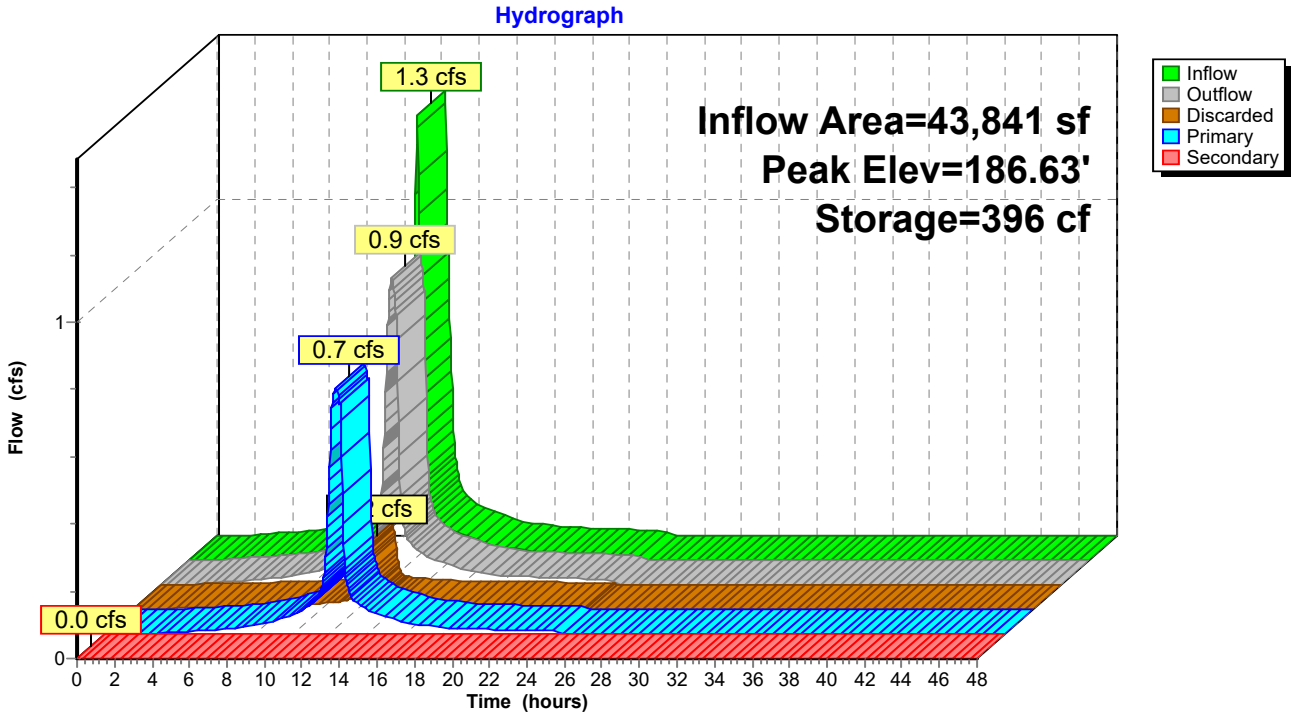
Device	Routing	Invert	Outlet Devices
#1	Primary	185.70'	**6.0" Round Culvert** L= 69.0' Ke= 0.200 Inlet / Outlet Invert= 185.70' / 184.70' S= 0.0145 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Secondary	187.80'	**20.0' long x 15.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Discarded	185.70'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.2 cfs @ 12.31 hrs HW=186.63' (Free Discharge)
3=Exfiltration (Exfiltration Controls 0.2 cfs)

Primary OutFlow Max=0.7 cfs @ 12.31 hrs HW=186.63' (Free Discharge)
1=Culvert (Barrel Controls 0.7 cfs @ 3.72 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=185.70' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Pond 1P: Surface Infiltration Basin

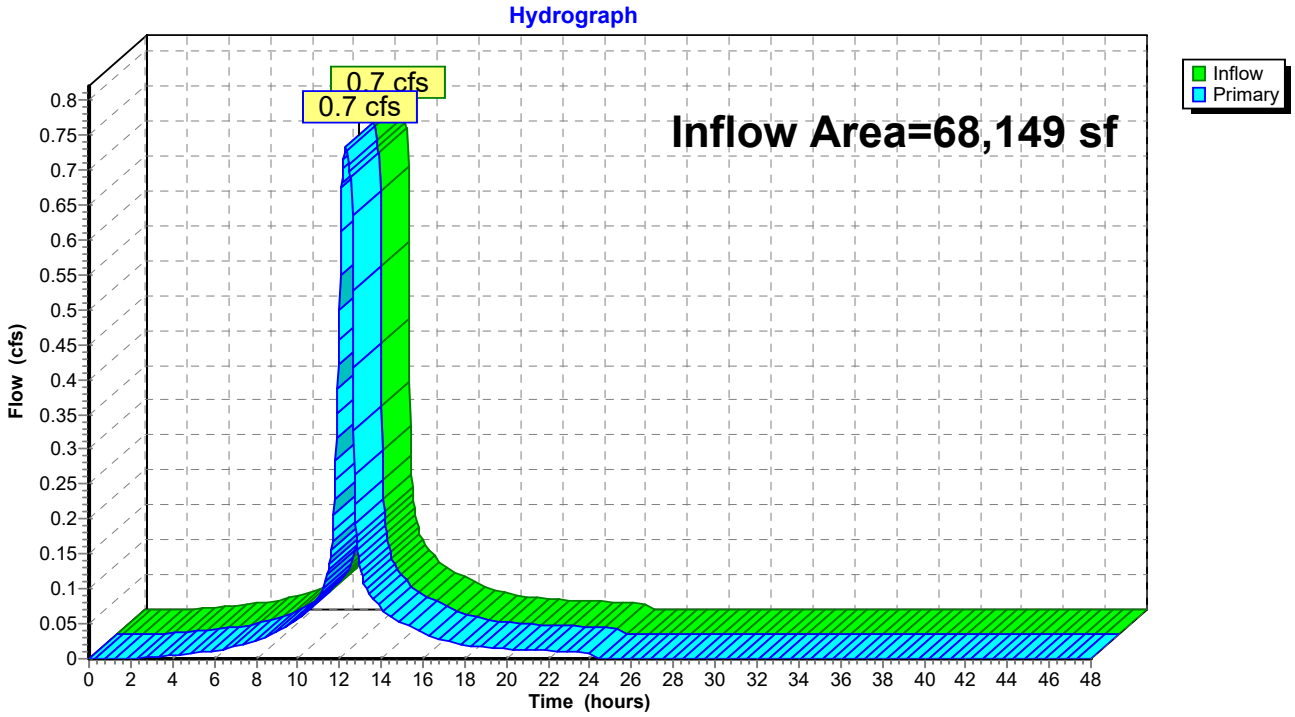


Summary for Link DP-1: Off Site to the North

Inflow Area = 68,149 sf, 32.64% Impervious, Inflow Depth = 0.78" for 2-Year event
Inflow = 0.7 cfs @ 12.30 hrs, Volume= 4,417 cf
Primary = 0.7 cfs @ 12.30 hrs, Volume= 4,417 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-1: Off Site to the North

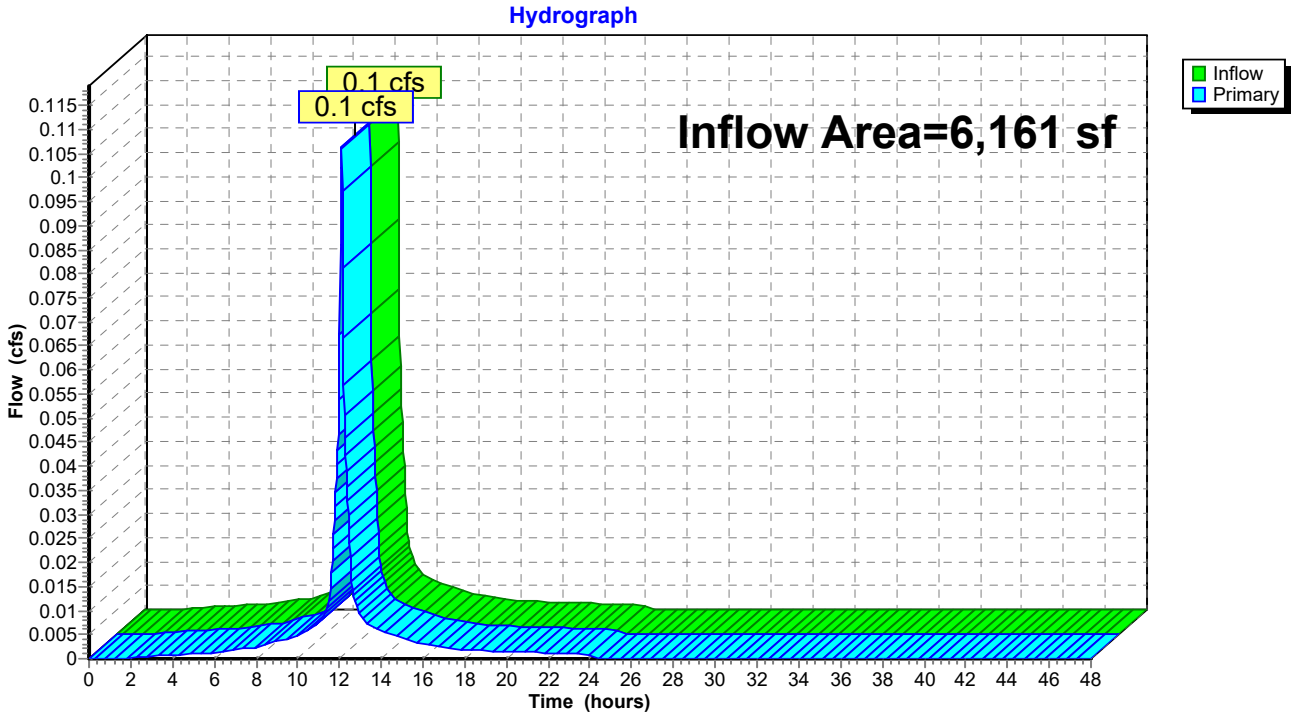


Summary for Link DP-2: Garden Street

Inflow Area = 6,161 sf, 23.03% Impervious, Inflow Depth = 0.72" for 2-Year event
Inflow = 0.1 cfs @ 12.08 hrs, Volume= 370 cf
Primary = 0.1 cfs @ 12.08 hrs, Volume= 370 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-2: Garden Street



Time span=0.00-48.00 hrs, dt=0.03 hrs, 1601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ES-1a: Runoff Area=43,841 sf 50.56% Impervious Runoff Depth=2.69"
Flow Length=258' Tc=12.6 min CN=WQ Runoff=2.2 cfs 9,844 cf

Subcatchment ES-1b: Runoff Area=24,308 sf 0.32% Impervious Runoff Depth=0.20"
Flow Length=103' Slope=0.0300 '/' Tc=8.8 min CN=WQ Runoff=0.0 cfs 397 cf

Subcatchment ES-2: Runoff Area=6,161 sf 23.03% Impervious Runoff Depth=1.39"
Flow Length=59' Slope=0.0500 '/' Tc=6.0 min CN=WQ Runoff=0.2 cfs 712 cf

Pond 1P: Surface Infiltration Basin Peak Elev=187.14' Storage=1,075 cf Inflow=2.2 cfs 9,844 cf
Discarded=0.3 cfs 2,187 cf Primary=0.8 cfs 7,657 cf Secondary=0.0 cfs 0 cf Outflow=1.2 cfs 9,844 cf

Link DP-1: Off Site to the North Inflow=0.9 cfs 8,054 cf
Primary=0.9 cfs 8,054 cf

Link DP-2: Garden Street Inflow=0.2 cfs 712 cf
Primary=0.2 cfs 712 cf

Total Runoff Area = 74,310 sf Runoff Volume = 10,954 cf Average Runoff Depth = 1.77"
68.16% Pervious = 50,646 sf 31.84% Impervious = 23,664 sf

Summary for Subcatchment ES-1a:

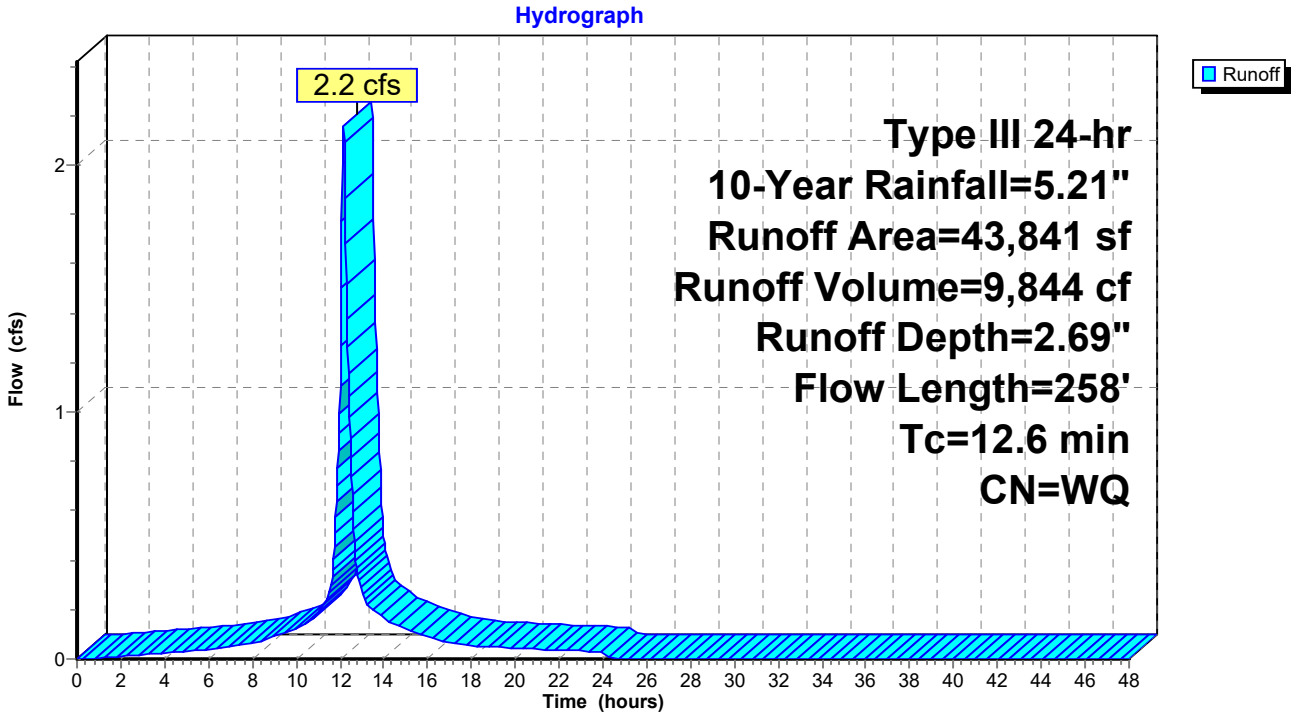
Runoff = 2.2 cfs @ 12.17 hrs, Volume= 9,844 cf, Depth= 2.69"
Routed to Pond 1P : Surface Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Year Rainfall=5.21"

Area (sf)	CN	Description
20,844	39	>75% Grass cover, Good, HSG A
589	96	Gravel surface, HSG A
16,405	98	Paved parking, HSG A
5,762	98	Roofs, HSG A
241	30	Woods, Good, HSG A
43,841		Weighted Average
21,674	40	49.44% Pervious Area
22,167	98	50.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
1.2	158	0.0230	2.27		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
12.6	258	Total			

Subcatchment ES-1a:



Summary for Subcatchment ES-1b:

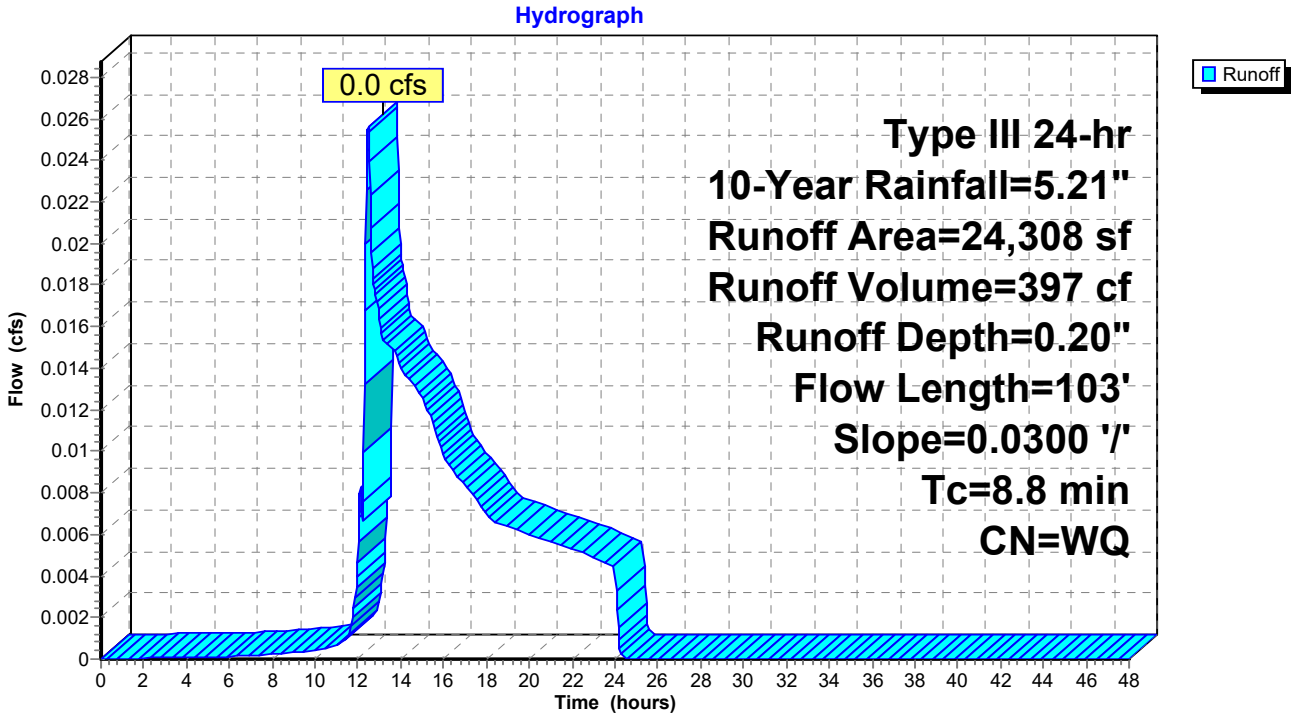
Runoff = 0.0 cfs @ 12.47 hrs, Volume= 397 cf, Depth= 0.20"
Routed to Link DP-1 : Off Site to the North

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Year Rainfall=5.21"

Area (sf)	CN	Description
17,576	39	>75% Grass cover, Good, HSG A
78	98	Paved parking, HSG A
6,654	30	Woods, Good, HSG A
24,308		Weighted Average
24,231	37	99.68% Pervious Area
78	98	0.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	103	0.0300	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"

Subcatchment ES-1b:



Summary for Subcatchment ES-2:

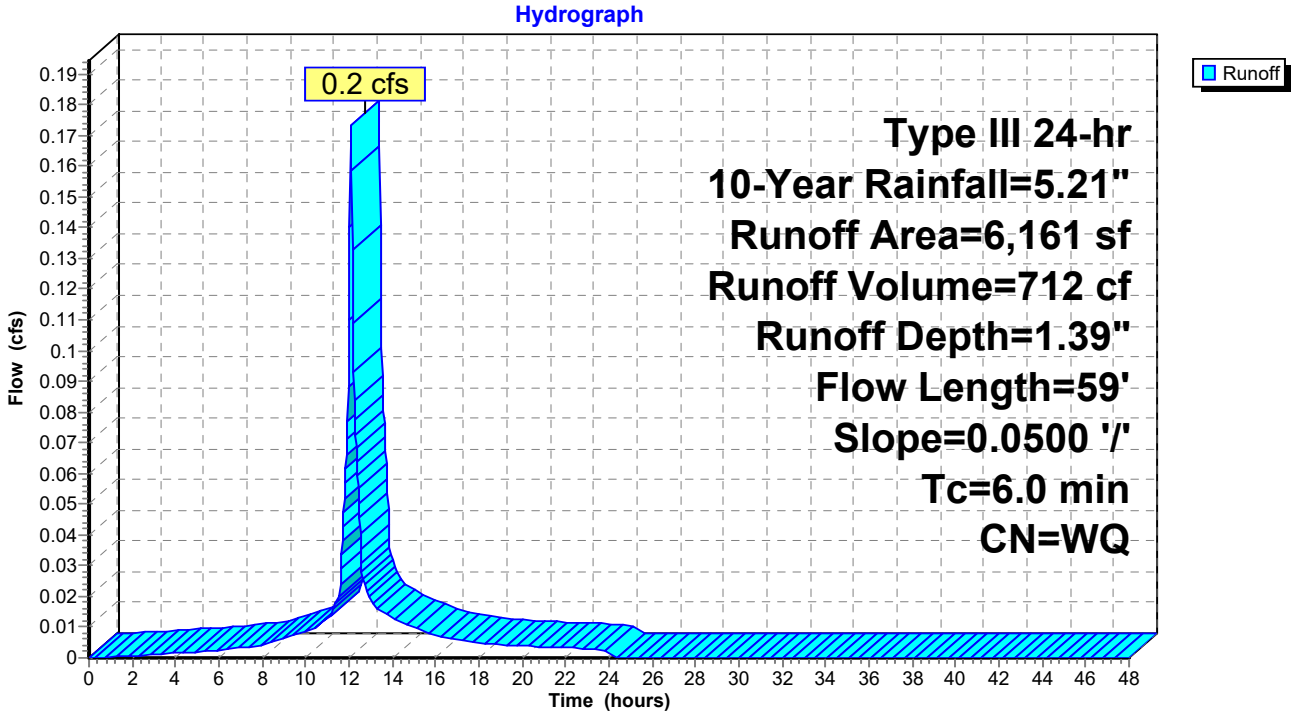
Runoff = 0.2 cfs @ 12.08 hrs, Volume= 712 cf, Depth= 1.39"
Routed to Link DP-2 : Garden Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Year Rainfall=5.21"

Area (sf)	CN	Description
4,668	39	>75% Grass cover, Good, HSG A
74	96	Gravel surface, HSG A
1,419	98	Paved parking, HSG A
6,161		Weighted Average
4,742	40	76.97% Pervious Area
1,419	98	23.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	59	0.0500	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
4.6	59	Total, Increased to minimum Tc = 6.0 min			

Subcatchment ES-2:



Summary for Pond 1P: Surface Infiltration Basin

Inflow Area = 43,841 sf, 50.56% Impervious, Inflow Depth = 2.69" for 10-Year event
Inflow = 2.2 cfs @ 12.17 hrs, Volume= 9,844 cf
Outflow = 1.2 cfs @ 12.38 hrs, Volume= 9,844 cf, Atten= 45%, Lag= 13.1 min
Discarded = 0.3 cfs @ 12.38 hrs, Volume= 2,187 cf
Primary = 0.8 cfs @ 12.38 hrs, Volume= 7,657 cf
Routed to Link DP-1 : Off Site to the North
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP-1 : Off Site to the North

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Peak Elev= 187.14' @ 12.38 hrs Surf.Area= 1,727 sf Storage= 1,075 cf

Plug-Flow detention time= 5.0 min calculated for 9,838 cf (100% of inflow)
Center-of-Mass det. time= 5.0 min (769.6 - 764.6)

Volume	Invert	Avail.Storage	Storage Description
#1	185.70'	3,165 cf	**Surface Infiltration Basin (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
185.70	14	26.0	0	0	14
186.00	271	86.0	35	35	549
187.00	1,537	187.0	818	852	2,747
188.00	3,187	256.0	2,312	3,165	5,190

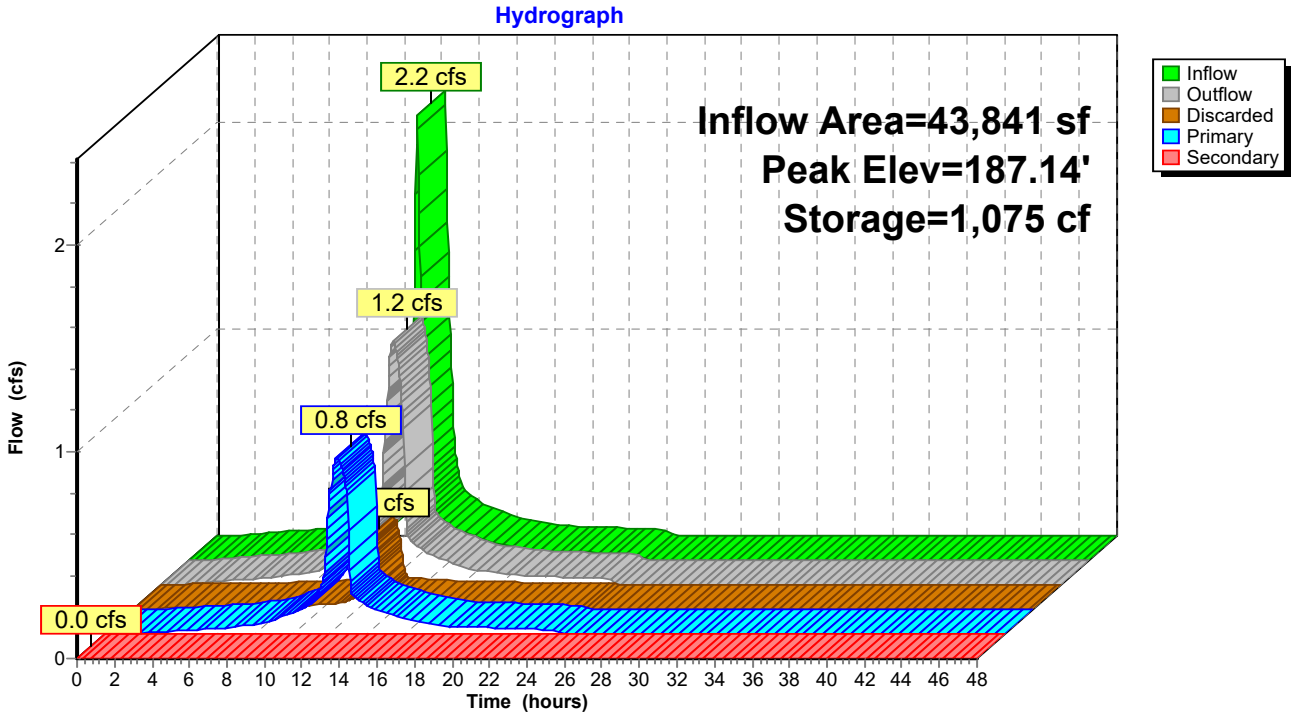
Device	Routing	Invert	Outlet Devices
#1	Primary	185.70'	**6.0" Round Culvert** L= 69.0' Ke= 0.200 Inlet / Outlet Invert= 185.70' / 184.70' S= 0.0145 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Secondary	187.80'	**20.0' long x 15.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Discarded	185.70'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.3 cfs @ 12.38 hrs HW=187.14' (Free Discharge)
3=Exfiltration (Exfiltration Controls 0.3 cfs)

Primary OutFlow Max=0.8 cfs @ 12.38 hrs HW=187.14' (Free Discharge)
1=Culvert (Barrel Controls 0.8 cfs @ 4.33 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=185.70' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Pond 1P: Surface Infiltration Basin

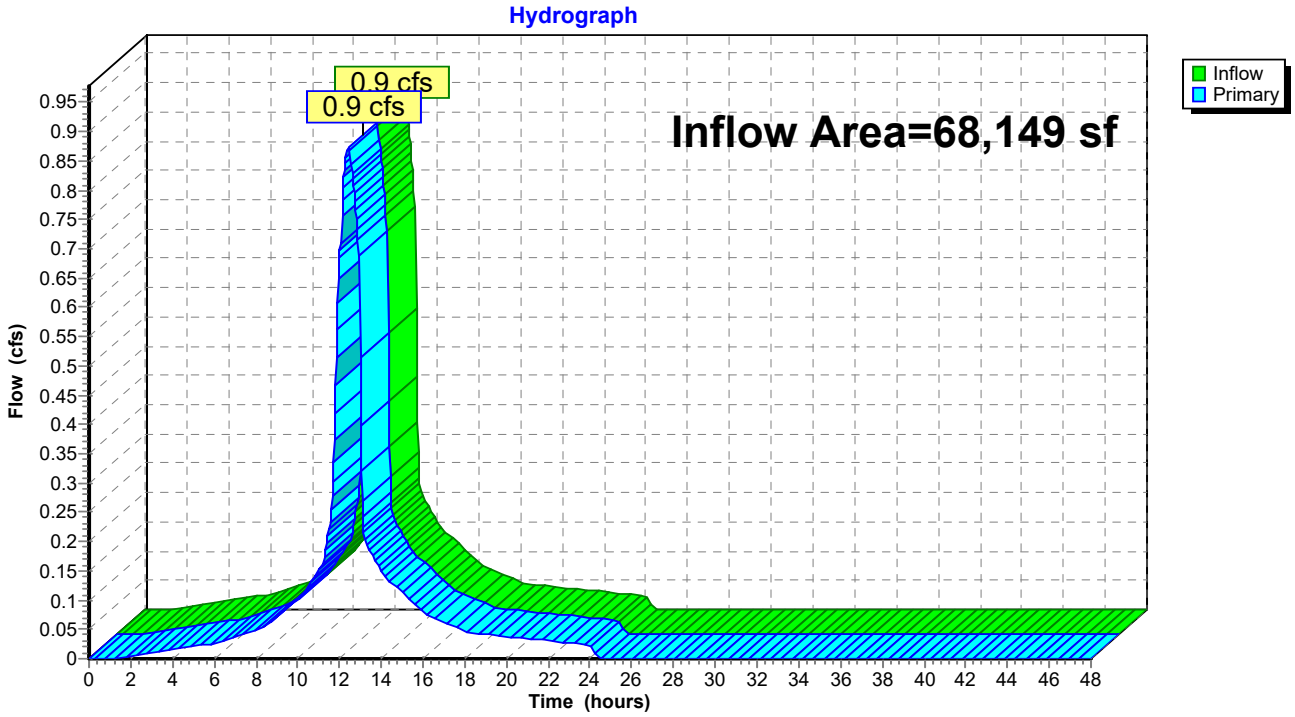


Summary for Link DP-1: Off Site to the North

Inflow Area = 68,149 sf, 32.64% Impervious, Inflow Depth = 1.42" for 10-Year event
Inflow = 0.9 cfs @ 12.42 hrs, Volume= 8,054 cf
Primary = 0.9 cfs @ 12.42 hrs, Volume= 8,054 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-1: Off Site to the North

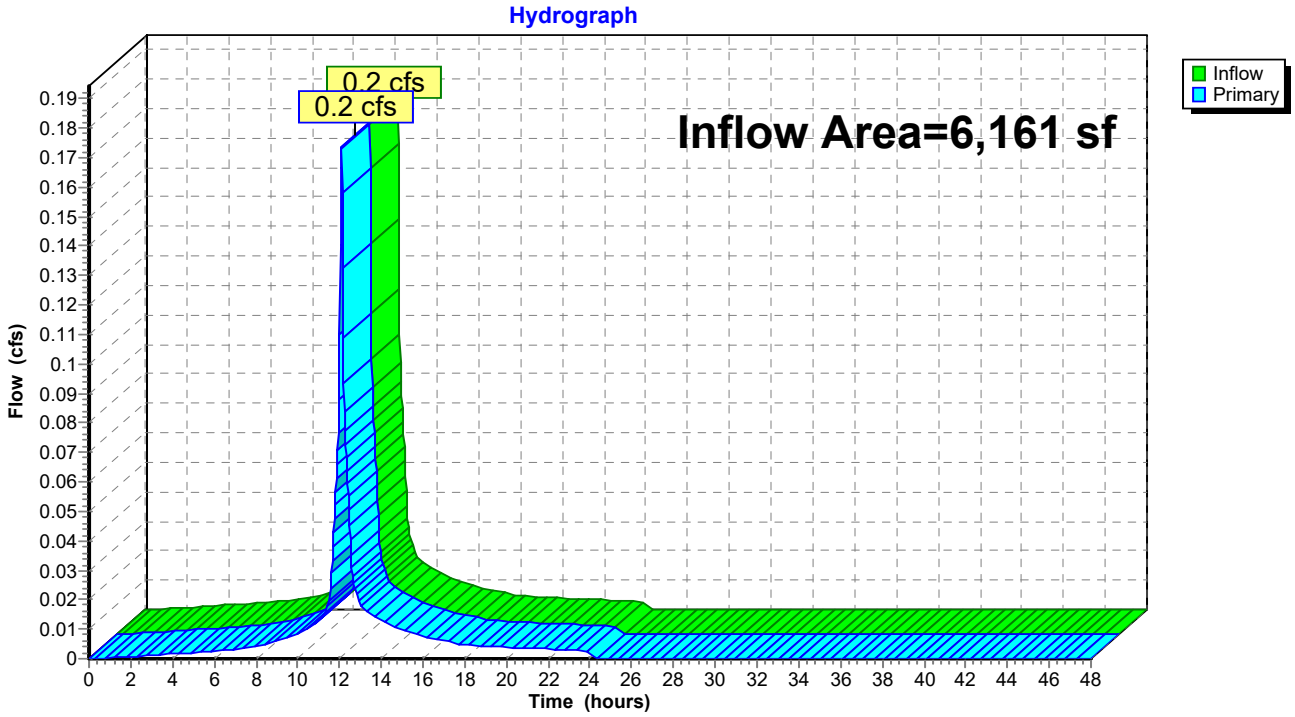


Summary for Link DP-2: Garden Street

Inflow Area = 6,161 sf, 23.03% Impervious, Inflow Depth = 1.39" for 10-Year event
Inflow = 0.2 cfs @ 12.08 hrs, Volume= 712 cf
Primary = 0.2 cfs @ 12.08 hrs, Volume= 712 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-2: Garden Street



Time span=0.00-48.00 hrs, dt=0.03 hrs, 1601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ES-1a: Runoff Area=43,841 sf 50.56% Impervious Runoff Depth=4.84"
Flow Length=258' Tc=12.6 min CN=WQ Runoff=3.8 cfs 17,675 cf

Subcatchment ES-1b: Runoff Area=24,308 sf 0.32% Impervious Runoff Depth=1.11"
Flow Length=103' Slope=0.0300 '/' Tc=8.8 min CN=WQ Runoff=0.4 cfs 2,253 cf

Subcatchment ES-2: Runoff Area=6,161 sf 23.03% Impervious Runoff Depth=2.96"
Flow Length=59' Slope=0.0500 '/' Tc=6.0 min CN=WQ Runoff=0.4 cfs 1,519 cf

Pond 1P: Surface Infiltration Basin Peak Elev=187.85' Storage=2,712 cf Inflow=3.8 cfs 17,675 cf
Discarded=0.6 cfs 4,133 cf Primary=1.0 cfs 13,188 cf Secondary=0.6 cfs 353 cf Outflow=2.2 cfs 17,675 cf

Link DP-1: Off Site to the North Inflow=1.9 cfs 15,795 cf
Primary=1.9 cfs 15,795 cf

Link DP-2: Garden Street Inflow=0.4 cfs 1,519 cf
Primary=0.4 cfs 1,519 cf

Total Runoff Area = 74,310 sf Runoff Volume = 21,447 cf Average Runoff Depth = 3.46"
68.16% Pervious = 50,646 sf 31.84% Impervious = 23,664 sf

Summary for Subcatchment ES-1a:

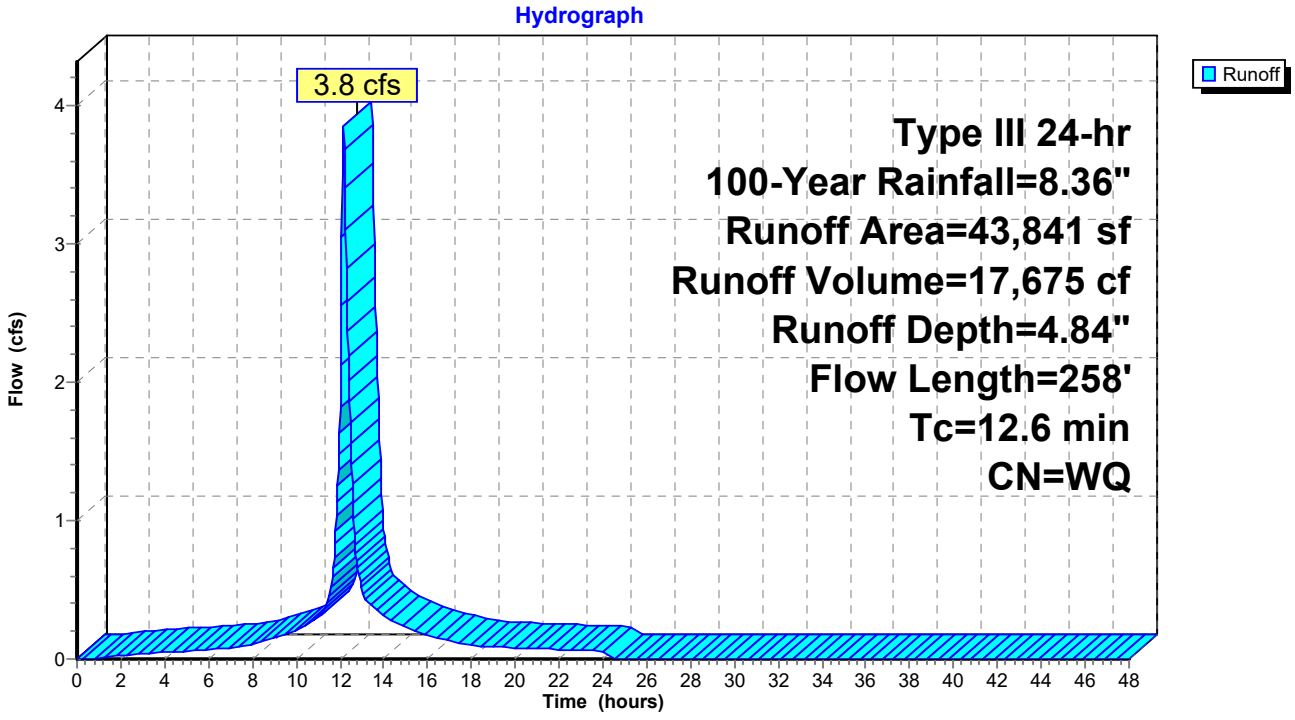
Runoff = 3.8 cfs @ 12.17 hrs, Volume= 17,675 cf, Depth= 4.84"
Routed to Pond 1P : Surface Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Rainfall=8.36"

Area (sf)	CN	Description
20,844	39	>75% Grass cover, Good, HSG A
589	96	Gravel surface, HSG A
16,405	98	Paved parking, HSG A
5,762	98	Roofs, HSG A
241	30	Woods, Good, HSG A
43,841		Weighted Average
21,674	40	49.44% Pervious Area
22,167	98	50.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
1.2	158	0.0230	2.27		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
12.6	258	Total			

Subcatchment ES-1a:



Summary for Subcatchment ES-1b:

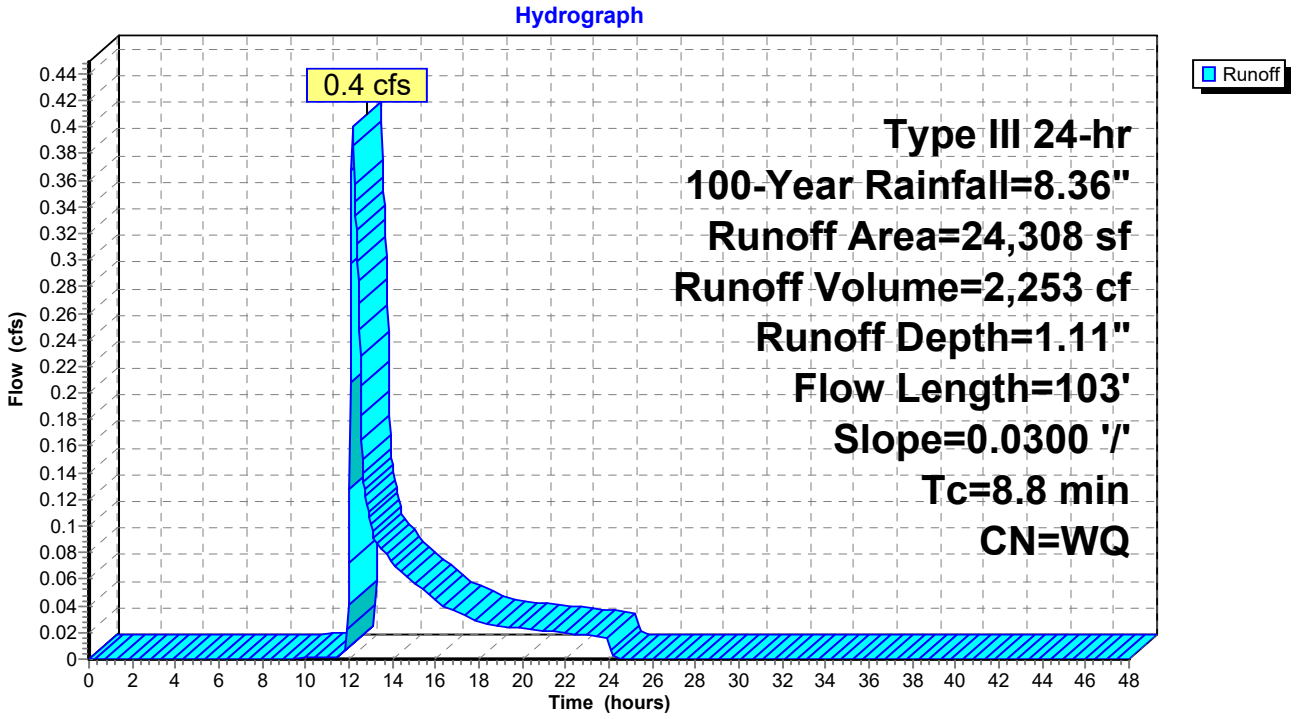
Runoff = 0.4 cfs @ 12.16 hrs, Volume= 2,253 cf, Depth= 1.11"
Routed to Link DP-1 : Off Site to the North

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Rainfall=8.36"

Area (sf)	CN	Description
17,576	39	>75% Grass cover, Good, HSG A
78	98	Paved parking, HSG A
6,654	30	Woods, Good, HSG A
24,308		Weighted Average
24,231	37	99.68% Pervious Area
78	98	0.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	103	0.0300	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"

Subcatchment ES-1b:



Summary for Subcatchment ES-2:

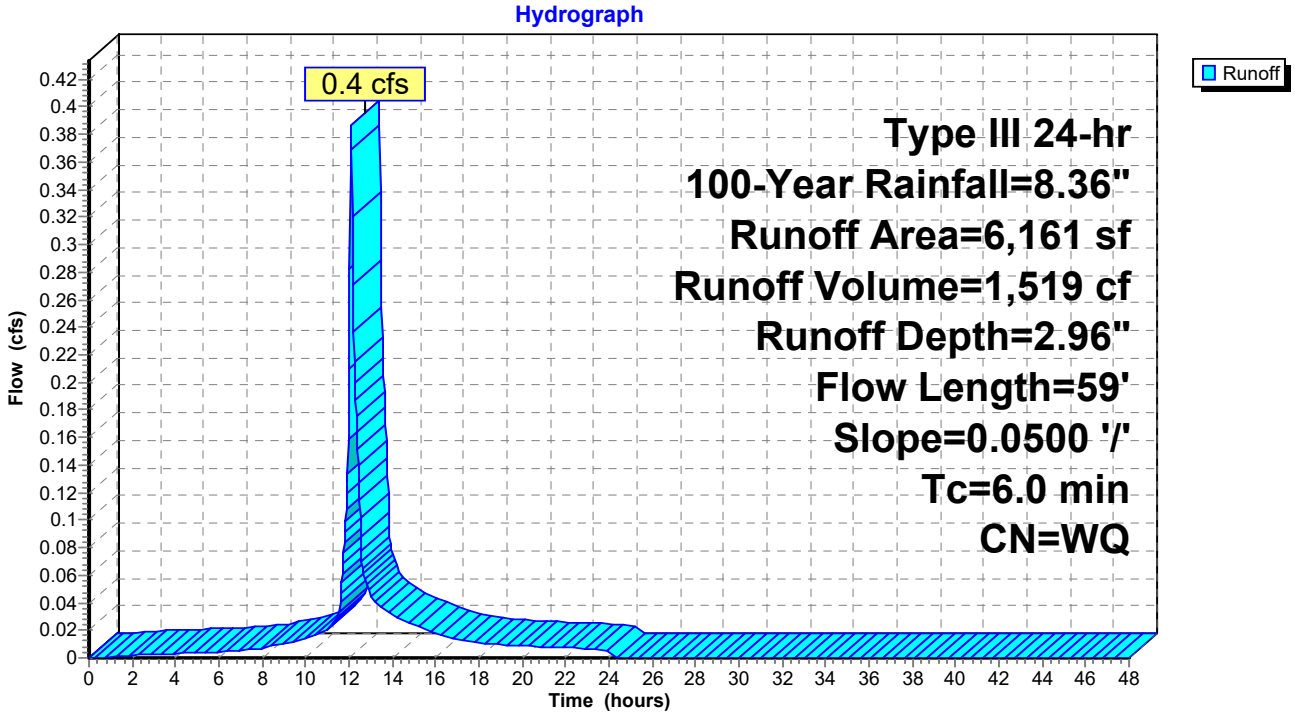
Runoff = 0.4 cfs @ 12.09 hrs, Volume= 1,519 cf, Depth= 2.96"
Routed to Link DP-2 : Garden Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Rainfall=8.36"

Area (sf)	CN	Description
4,668	39	>75% Grass cover, Good, HSG A
74	96	Gravel surface, HSG A
1,419	98	Paved parking, HSG A
6,161		Weighted Average
4,742	40	76.97% Pervious Area
1,419	98	23.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	59	0.0500	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
4.6	59	Total, Increased to minimum Tc = 6.0 min			

Subcatchment ES-2:



Summary for Pond 1P: Surface Infiltration Basin

Inflow Area = 43,841 sf, 50.56% Impervious, Inflow Depth = 4.84" for 100-Year event
Inflow = 3.8 cfs @ 12.17 hrs, Volume= 17,675 cf
Outflow = 2.2 cfs @ 12.40 hrs, Volume= 17,675 cf, Atten= 43%, Lag= 13.4 min
Discarded = 0.6 cfs @ 12.40 hrs, Volume= 4,133 cf
Primary = 1.0 cfs @ 12.40 hrs, Volume= 13,188 cf
Routed to Link DP-1 : Off Site to the North
Secondary = 0.6 cfs @ 12.40 hrs, Volume= 353 cf
Routed to Link DP-1 : Off Site to the North

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Peak Elev= 187.85' @ 12.40 hrs Surf.Area= 2,904 sf Storage= 2,712 cf

Plug-Flow detention time= 9.6 min calculated for 17,664 cf (100% of inflow)
Center-of-Mass det. time= 9.6 min (778.1 - 768.6)

Volume	Invert	Avail.Storage	Storage Description
#1	185.70'	3,165 cf	**Surface Infiltration Basin (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
185.70	14	26.0	0	0	14
186.00	271	86.0	35	35	549
187.00	1,537	187.0	818	852	2,747
188.00	3,187	256.0	2,312	3,165	5,190

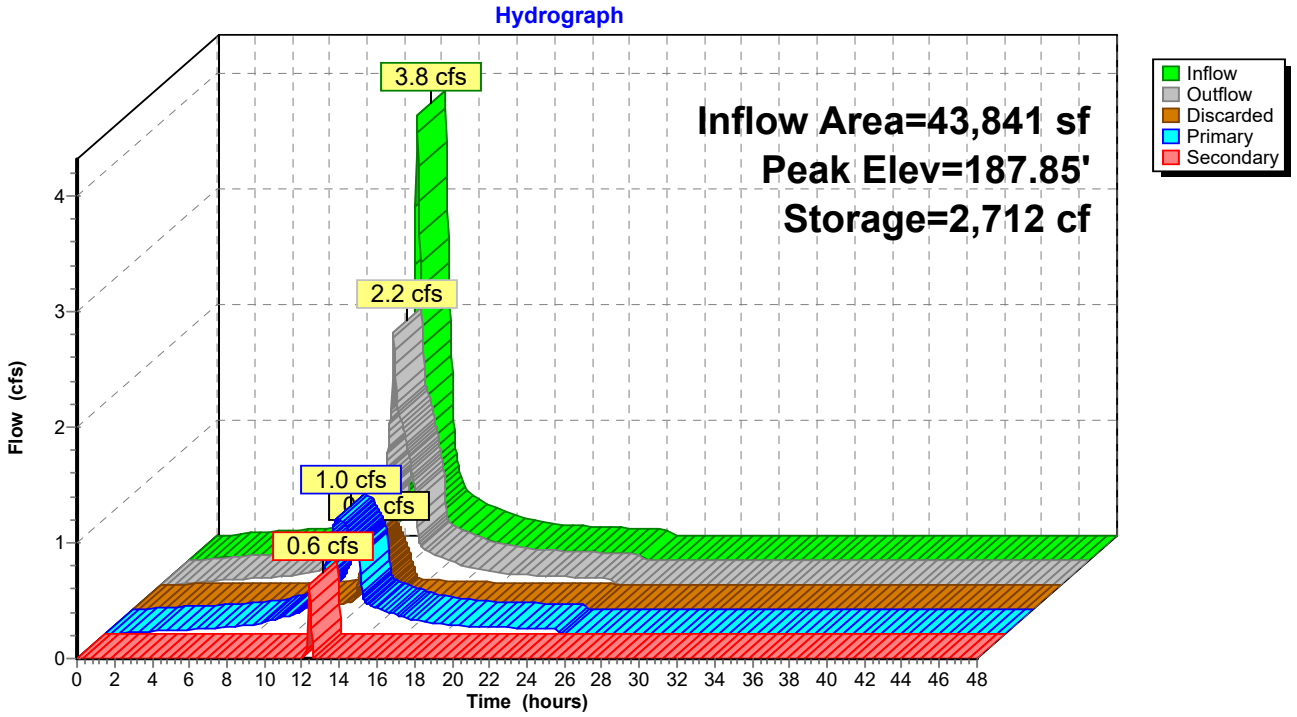
Device	Routing	Invert	Outlet Devices
#1	Primary	185.70'	**6.0" Round Culvert** L= 69.0' Ke= 0.200 Inlet / Outlet Invert= 185.70' / 184.70' S= 0.0145 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Secondary	187.80'	**20.0' long x 15.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Discarded	185.70'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.6 cfs @ 12.40 hrs HW=187.85' (Free Discharge)
↑**3=Exfiltration** (Exfiltration Controls 0.6 cfs)

Primary OutFlow Max=1.0 cfs @ 12.40 hrs HW=187.85' (Free Discharge)
↑**1=Culvert** (Barrel Controls 1.0 cfs @ 5.06 fps)

Secondary OutFlow Max=0.6 cfs @ 12.40 hrs HW=187.85' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.6 cfs @ 0.60 fps)

Pond 1P: Surface Infiltration Basin

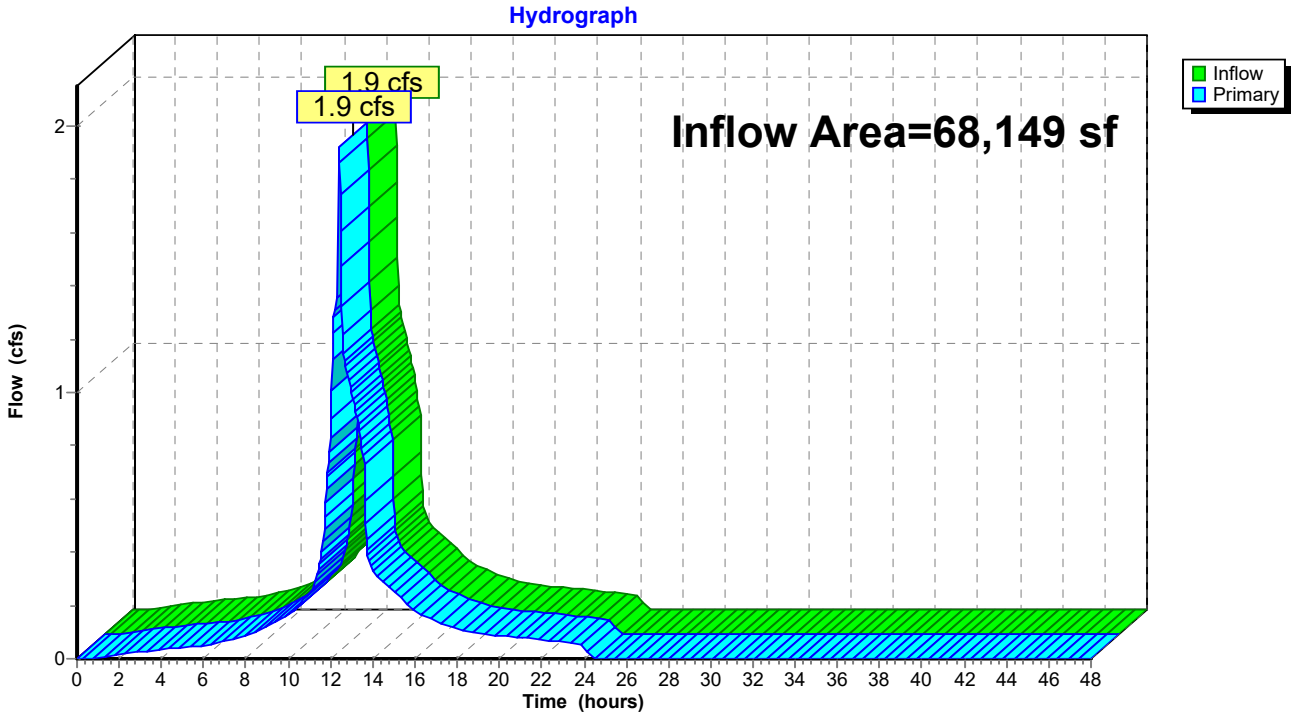


Summary for Link DP-1: Off Site to the North

Inflow Area = 68,149 sf, 32.64% Impervious, Inflow Depth = 2.78" for 100-Year event
Inflow = 1.9 cfs @ 12.39 hrs, Volume= 15,795 cf
Primary = 1.9 cfs @ 12.39 hrs, Volume= 15,795 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-1: Off Site to the North

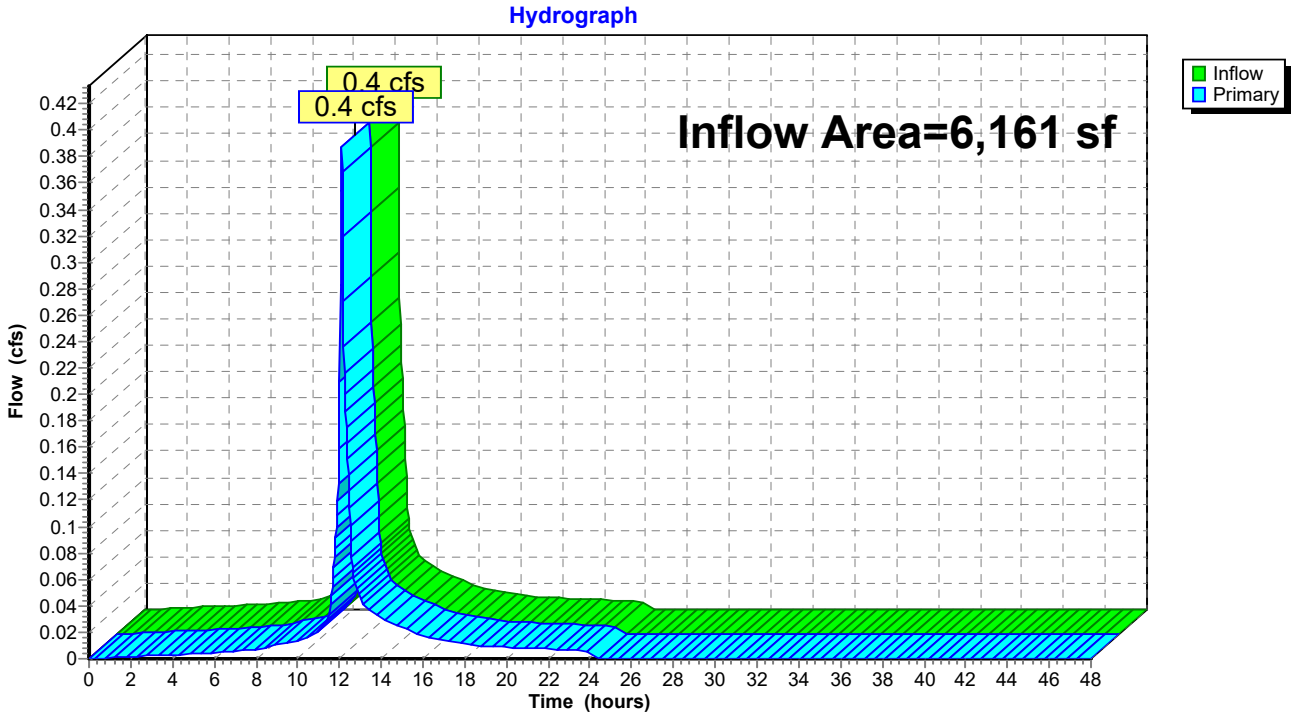


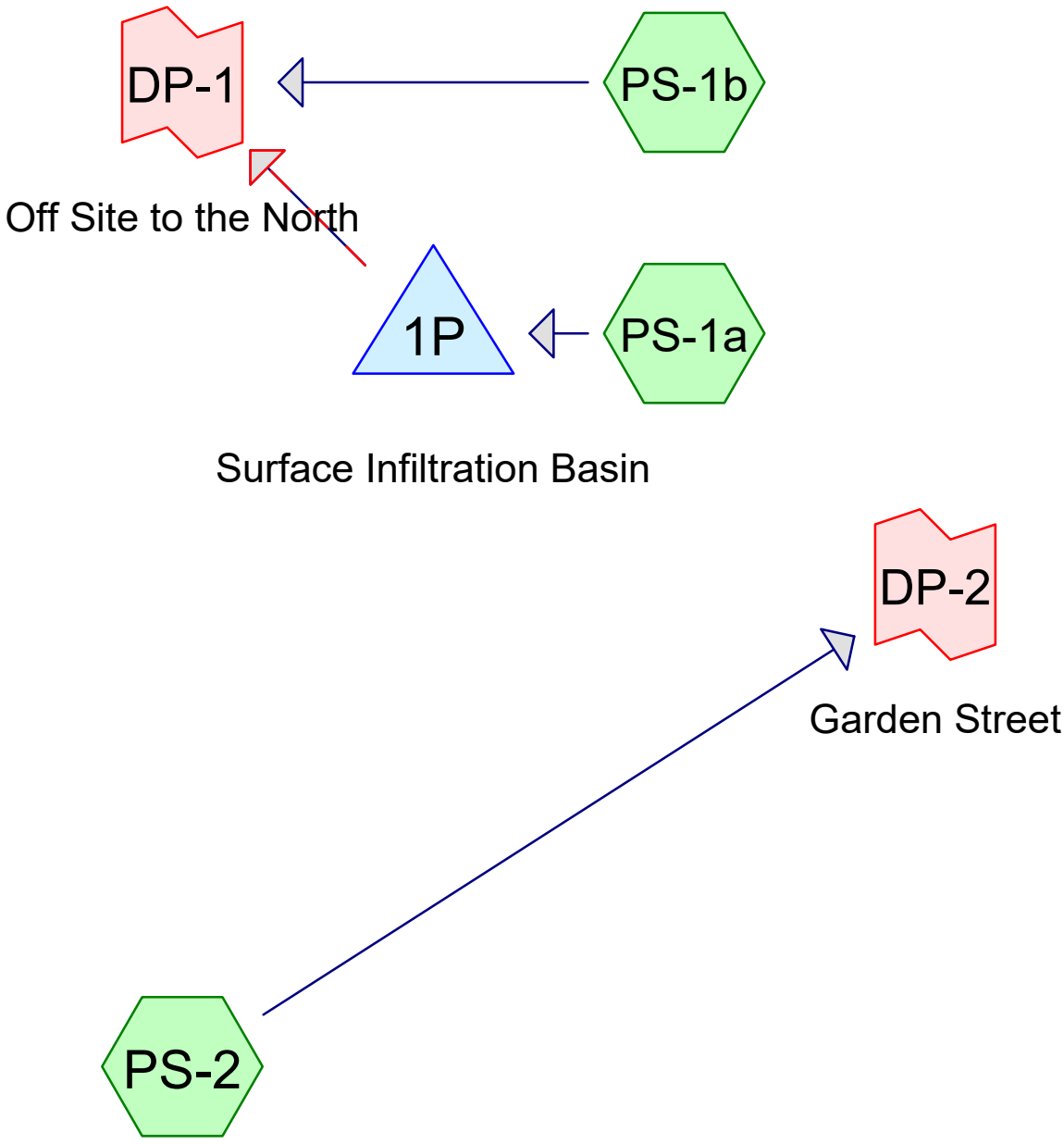
Summary for Link DP-2: Garden Street

Inflow Area = 6,161 sf, 23.03% Impervious, Inflow Depth = 2.96" for 100-Year event
Inflow = 0.4 cfs @ 12.09 hrs, Volume= 1,519 cf
Primary = 0.4 cfs @ 12.09 hrs, Volume= 1,519 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-2: Garden Street





Subcat Reach Pond Link

Routing Diagram for 250214 - POST
Prepared by R Levesque Associates
HydroCAD® 10.20-8a s/n 13073 © 2025 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	3.22	2
2	10-Year	Type III 24-hr		Default	24.00	1	5.21	2
3	100-Year	Type III 24-hr		Default	24.00	1	8.36	2

Time span=0.00-48.00 hrs, dt=0.03 hrs, 1601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PS-1a: Runoff Area=55,191 sf 52.10% Impervious Runoff Depth=1.86"
Flow Length=227' Tc=12.5 min CN=WQ Runoff=2.0 cfs 8,554 cf

Subcatchment PS-1b: Runoff Area=12,959 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=77' Slope=0.0130 '/' Tc=9.8 min CN=WQ Runoff=0.0 cfs 0 cf

Subcatchment PS-2: Runoff Area=6,161 sf 23.03% Impervious Runoff Depth=0.72"
Flow Length=59' Slope=0.0500 '/' Tc=6.0 min CN=WQ Runoff=0.1 cfs 370 cf

Pond 1P: Surface Infiltration Basin Peak Elev=186.91' Storage=2,197 cf Inflow=2.0 cfs 8,554 cf
Discarded=0.5 cfs 8,473 cf Primary=0.1 cfs 81 cf Secondary=0.0 cfs 0 cf Outflow=0.5 cfs 8,554 cf

Link DP-1: Off Site to the North Inflow=0.1 cfs 82 cf
Primary=0.1 cfs 82 cf

Link DP-2: Garden Street Inflow=0.1 cfs 370 cf
Primary=0.1 cfs 370 cf

Total Runoff Area = 74,310 sf Runoff Volume = 8,925 cf Average Runoff Depth = 1.44"
59.40% Pervious = 44,139 sf 40.60% Impervious = 30,171 sf

Summary for Subcatchment PS-1a:

[47] Hint: Peak is 237% of capacity of segment #3

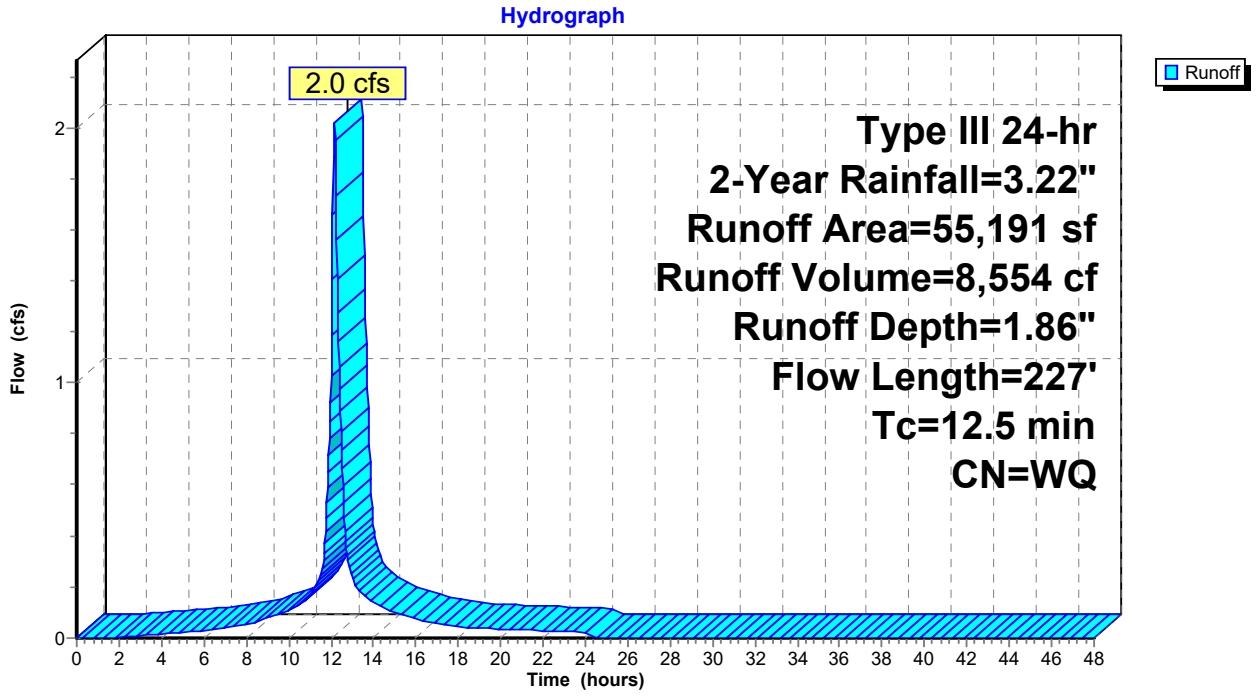
Runoff = 2.0 cfs @ 12.16 hrs, Volume= 8,554 cf, Depth= 1.86"
Routed to Pond 1P : Surface Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=3.22"

Area (sf)	CN	Description
20,151	39	>75% Grass cover, Good, HSG A
6,047	96	Gravel surface, HSG A
18,462	98	Paved parking, HSG A
10,290	98	Roofs, HSG A
241	30	Woods, Good, HSG A
55,191		Weighted Average
26,439	52	47.90% Pervious Area
28,752	98	52.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
0.6	55	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.5	72	0.0050	2.45	0.85	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013
12.5	227	Total			

Subcatchment PS-1a:



Summary for Subcatchment PS-1b:

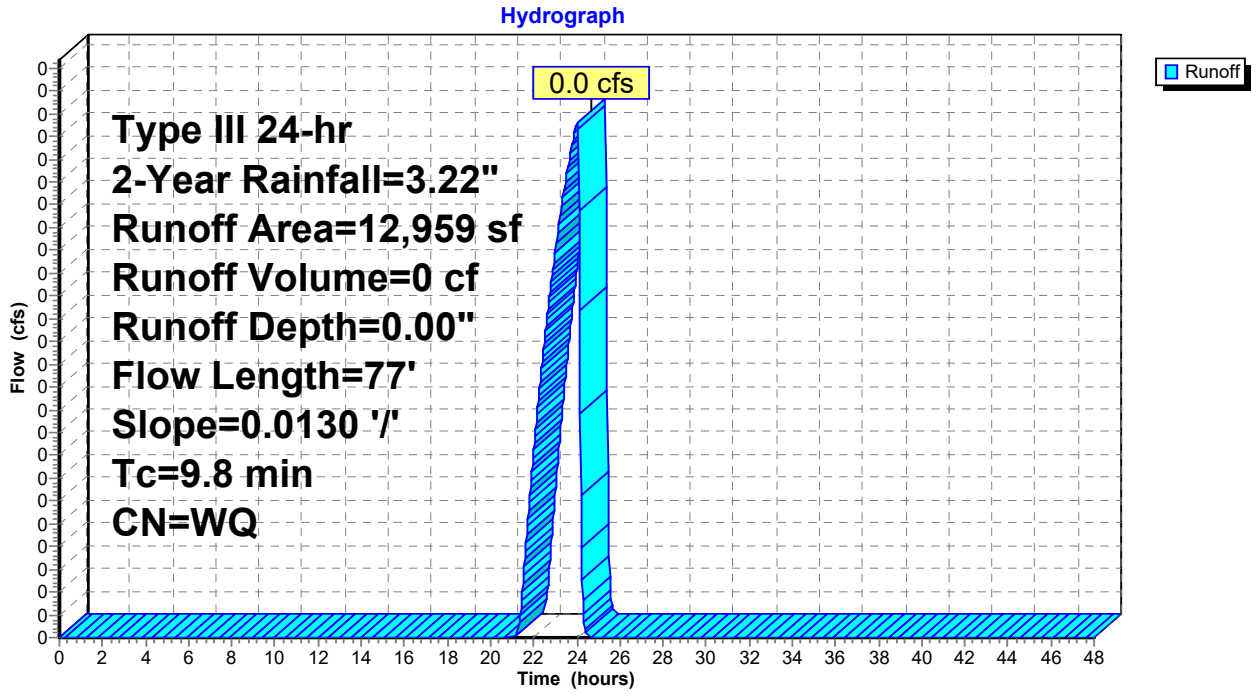
Runoff = 0.0 cfs @ 24.01 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Link DP-1 : Off Site to the North

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=3.22"

Area (sf)	CN	Description
6,304	39	>75% Grass cover, Good, HSG A
6,654	30	Woods, Good, HSG A
12,959		Weighted Average
12,959	34	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	77	0.0130	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"

Subcatchment PS-1b:



Summary for Subcatchment PS-2:

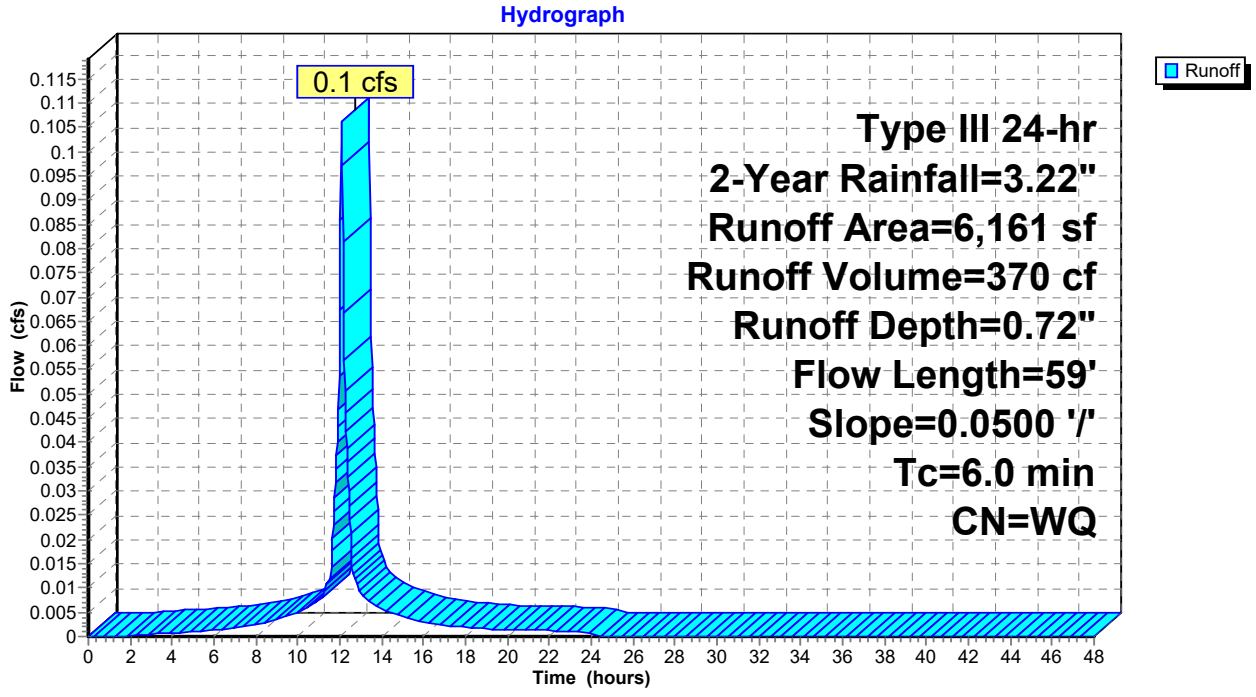
Runoff = 0.1 cfs @ 12.08 hrs, Volume= 370 cf, Depth= 0.72"
Routed to Link DP-2 : Garden Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=3.22"

Area (sf)	CN	Description
4,668	39	>75% Grass cover, Good, HSG A
74	96	Gravel surface, HSG A
1,419	98	Paved parking, HSG A
6,161		Weighted Average
4,742	40	76.97% Pervious Area
1,419	98	23.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	59	0.0500	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
4.6	59	Total, Increased to minimum Tc = 6.0 min			

Subcatchment PS-2:



Summary for Pond 1P: Surface Infiltration Basin

Inflow Area = 55,191 sf, 52.10% Impervious, Inflow Depth = 1.86" for 2-Year event
Inflow = 2.0 cfs @ 12.16 hrs, Volume= 8,554 cf
Outflow = 0.5 cfs @ 12.60 hrs, Volume= 8,554 cf, Atten= 74%, Lag= 26.4 min
Discarded = 0.5 cfs @ 12.60 hrs, Volume= 8,473 cf
Primary = 0.1 cfs @ 12.60 hrs, Volume= 81 cf
Routed to Link DP-1 : Off Site to the North
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP-1 : Off Site to the North

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Peak Elev= 186.91' @ 12.60 hrs Surf.Area= 2,417 sf Storage= 2,197 cf

Plug-Flow detention time= 28.3 min calculated for 8,549 cf (100% of inflow)
Center-of-Mass det. time= 28.3 min (793.5 - 765.2)

Volume	Invert	Avail.Storage	Storage Description
#1	186.00'	8,344 cf	**Surface Infiltration Basin (Irregular)** Listed below (Recalc)
#2	186.00'	299 cf	**Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
#3	187.00'	1,163 cf	**Above Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
		9,806 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
186.00	1,847	199.0	0	0	1,847
187.00	2,478	221.0	2,155	2,155	2,612
188.00	3,105	241.0	2,786	4,940	3,382
189.00	3,712	262.0	3,404	8,344	4,260

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
186.00	206	55.0	0	0	206
187.00	404	76.0	299	299	435

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
187.00	404	76.0	0	0	404
188.00	595	92.0	496	496	634
189.00	740	103.0	666	1,163	830

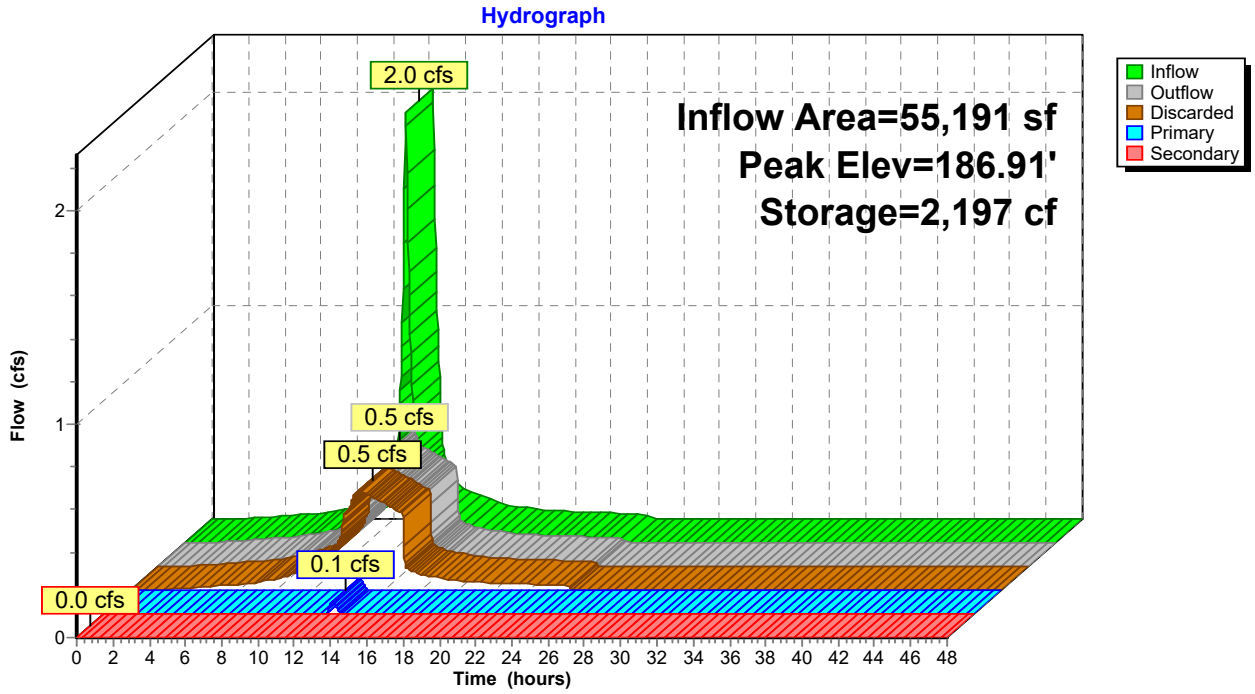
Device	Routing	Invert	Outlet Devices
#1	Primary	185.50'	**12.0" Round Culvert** L= 69.0' Ke= 0.200 Inlet / Outlet Invert= 185.50' / 184.70' S= 0.0116 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	188.20'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	186.80'	**6.0" W x 8.0" H Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#4	Secondary	188.50'	**10.0' long x 15.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#5	Discarded	186.00'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.5 cfs @ 12.60 hrs HW=186.91' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.5 cfs)

Primary OutFlow Max=0.1 cfs @ 12.60 hrs HW=186.91' (Free Discharge)
└**1=Culvert** (Passes 0.1 cfs of 3.8 cfs potential flow)
└**2=Grate** (Controls 0.0 cfs)
└**3=Orifice** (Orifice Controls 0.1 cfs @ 1.06 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=186.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 1P: Surface Infiltration Basin

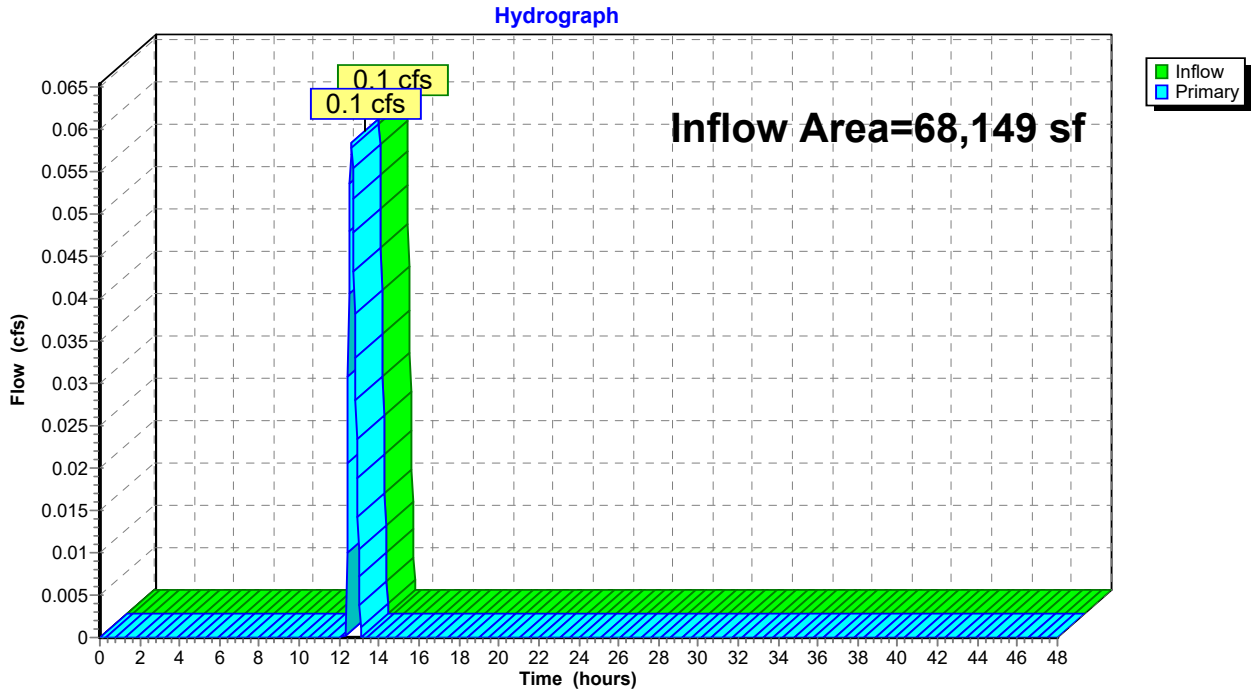


Summary for Link DP-1: Off Site to the North

Inflow Area = 68,149 sf, 42.19% Impervious, Inflow Depth = 0.01" for 2-Year event
Inflow = 0.1 cfs @ 12.60 hrs, Volume= 82 cf
Primary = 0.1 cfs @ 12.60 hrs, Volume= 82 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-1: Off Site to the North

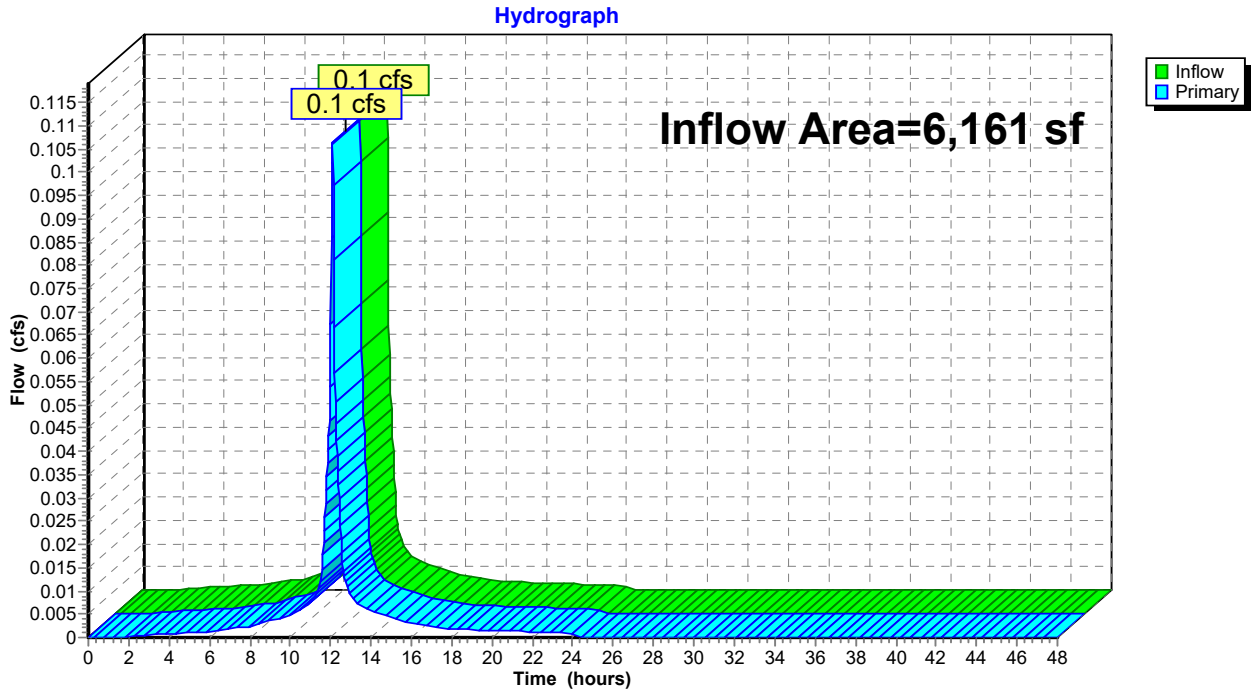


Summary for Link DP-2: Garden Street

Inflow Area = 6,161 sf, 23.03% Impervious, Inflow Depth = 0.72" for 2-Year event
Inflow = 0.1 cfs @ 12.08 hrs, Volume= 370 cf
Primary = 0.1 cfs @ 12.08 hrs, Volume= 370 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-2: Garden Street



Time span=0.00-48.00 hrs, dt=0.03 hrs, 1601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PS-1a: Runoff Area=55,191 sf 52.10% Impervious Runoff Depth=3.20"
Flow Length=227' Tc=12.5 min CN=WQ Runoff=3.3 cfs 14,715 cf

Subcatchment PS-1b: Runoff Area=12,959 sf 0.00% Impervious Runoff Depth=0.13"
Flow Length=77' Slope=0.0130 '/' Tc=9.8 min CN=WQ Runoff=0.0 cfs 135 cf

Subcatchment PS-2: Runoff Area=6,161 sf 23.03% Impervious Runoff Depth=1.39"
Flow Length=59' Slope=0.0500 '/' Tc=6.0 min CN=WQ Runoff=0.2 cfs 712 cf

Pond 1P: Surface Infiltration Basin Peak Elev=187.39' Storage=3,637 cf Inflow=3.3 cfs 14,715 cf
Discarded=0.5 cfs 12,697 cf Primary=0.7 cfs 2,018 cf Secondary=0.0 cfs 0 cf Outflow=1.2 cfs 14,715 cf

Link DP-1: Off Site to the North Inflow=0.7 cfs 2,153 cf
Primary=0.7 cfs 2,153 cf

Link DP-2: Garden Street Inflow=0.2 cfs 712 cf
Primary=0.2 cfs 712 cf

Total Runoff Area = 74,310 sf Runoff Volume = 15,563 cf Average Runoff Depth = 2.51"
59.40% Pervious = 44,139 sf 40.60% Impervious = 30,171 sf

Summary for Subcatchment PS-1a:

[47] Hint: Peak is 387% of capacity of segment #3

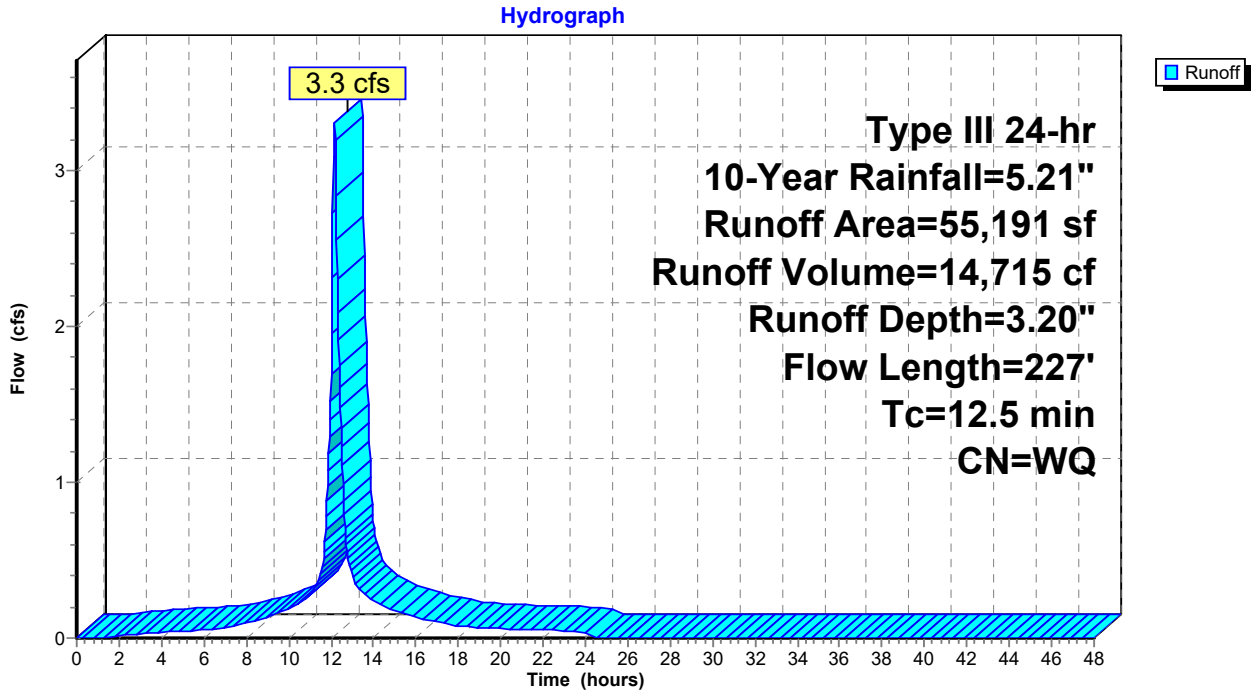
Runoff = 3.3 cfs @ 12.16 hrs, Volume= 14,715 cf, Depth= 3.20"
Routed to Pond 1P : Surface Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Year Rainfall=5.21"

Area (sf)	CN	Description
20,151	39	>75% Grass cover, Good, HSG A
6,047	96	Gravel surface, HSG A
18,462	98	Paved parking, HSG A
10,290	98	Roofs, HSG A
241	30	Woods, Good, HSG A
55,191		Weighted Average
26,439	52	47.90% Pervious Area
28,752	98	52.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
0.6	55	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.5	72	0.0050	2.45	0.85	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013
12.5	227	Total			

Subcatchment PS-1a:



Summary for Subcatchment PS-1b:

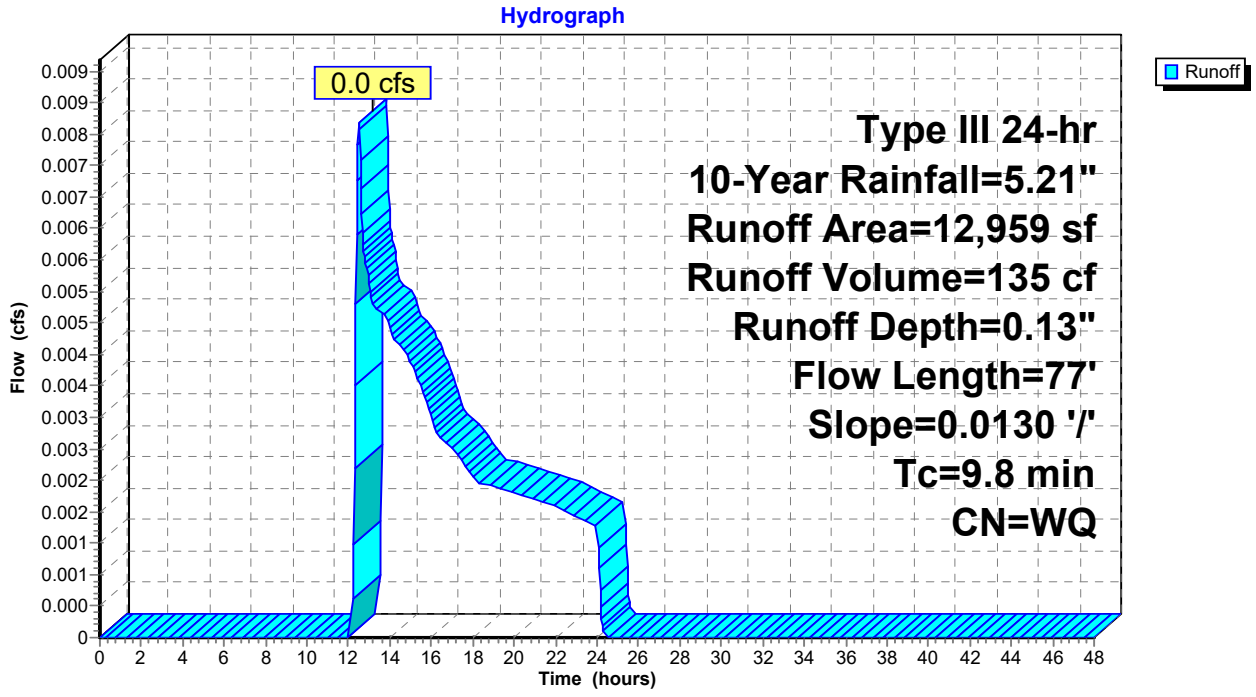
Runoff = 0.0 cfs @ 12.50 hrs, Volume= 135 cf, Depth= 0.13"
Routed to Link DP-1 : Off Site to the North

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Year Rainfall=5.21"

Area (sf)	CN	Description
6,304	39	>75% Grass cover, Good, HSG A
6,654	30	Woods, Good, HSG A
12,959		Weighted Average
12,959	34	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	77	0.0130	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"

Subcatchment PS-1b:



Summary for Subcatchment PS-2:

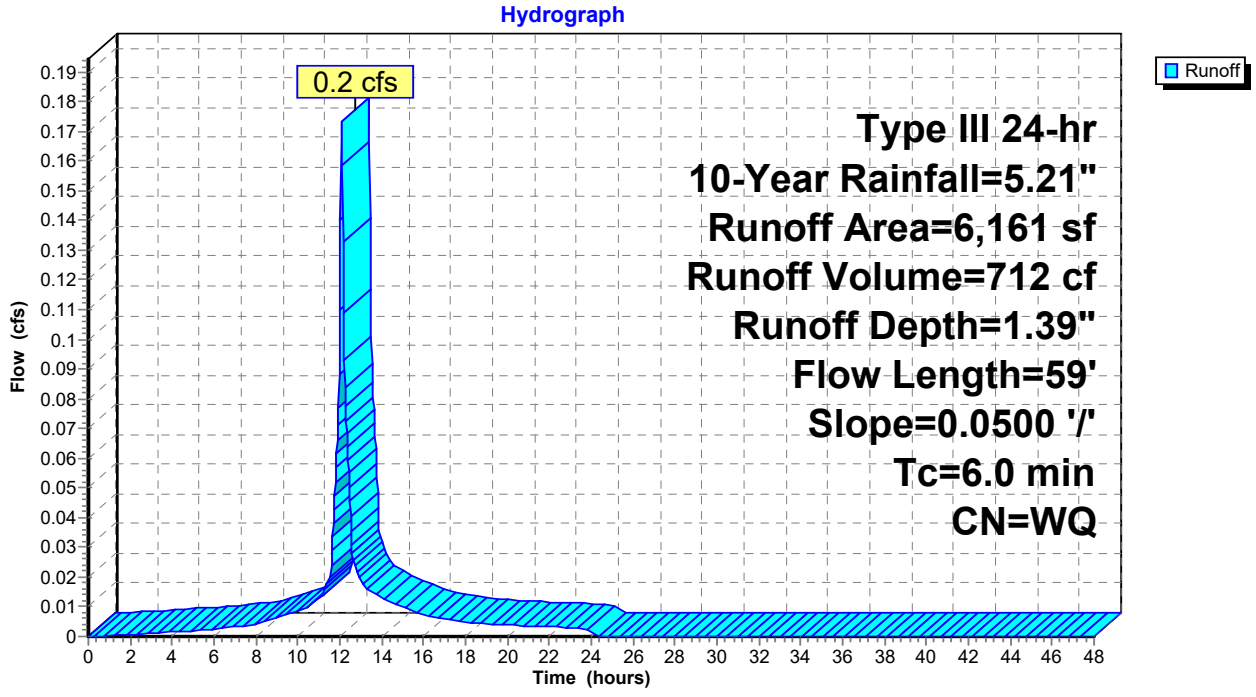
Runoff = 0.2 cfs @ 12.08 hrs, Volume= 712 cf, Depth= 1.39"
Routed to Link DP-2 : Garden Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Year Rainfall=5.21"

Area (sf)	CN	Description
4,668	39	>75% Grass cover, Good, HSG A
74	96	Gravel surface, HSG A
1,419	98	Paved parking, HSG A
6,161		Weighted Average
4,742	40	76.97% Pervious Area
1,419	98	23.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	59	0.0500	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
4.6	59	Total, Increased to minimum Tc = 6.0 min			

Subcatchment PS-2:



Summary for Pond 1P: Surface Infiltration Basin

Inflow Area = 55,191 sf, 52.10% Impervious, Inflow Depth = 3.20" for 10-Year event
Inflow = 3.3 cfs @ 12.16 hrs, Volume= 14,715 cf
Outflow = 1.2 cfs @ 12.51 hrs, Volume= 14,715 cf, Atten= 62%, Lag= 20.5 min
Discarded = 0.5 cfs @ 12.51 hrs, Volume= 12,697 cf
Primary = 0.7 cfs @ 12.51 hrs, Volume= 2,018 cf
Routed to Link DP-1 : Off Site to the North
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP-1 : Off Site to the North

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Peak Elev= 187.39' @ 12.51 hrs Surf.Area= 2,714 sf Storage= 3,637 cf

Plug-Flow detention time= 32.3 min calculated for 14,706 cf (100% of inflow)
Center-of-Mass det. time= 32.3 min (794.9 - 762.6)

Volume	Invert	Avail.Storage	Storage Description
#1	186.00'	8,344 cf	**Surface Infiltration Basin (Irregular)** Listed below (Recalc)
#2	186.00'	299 cf	**Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
#3	187.00'	1,163 cf	**Above Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
		9,806 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
186.00	1,847	199.0	0	0	1,847
187.00	2,478	221.0	2,155	2,155	2,612
188.00	3,105	241.0	2,786	4,940	3,382
189.00	3,712	262.0	3,404	8,344	4,260

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
186.00	206	55.0	0	0	206
187.00	404	76.0	299	299	435

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
187.00	404	76.0	0	0	404
188.00	595	92.0	496	496	634
189.00	740	103.0	666	1,163	830

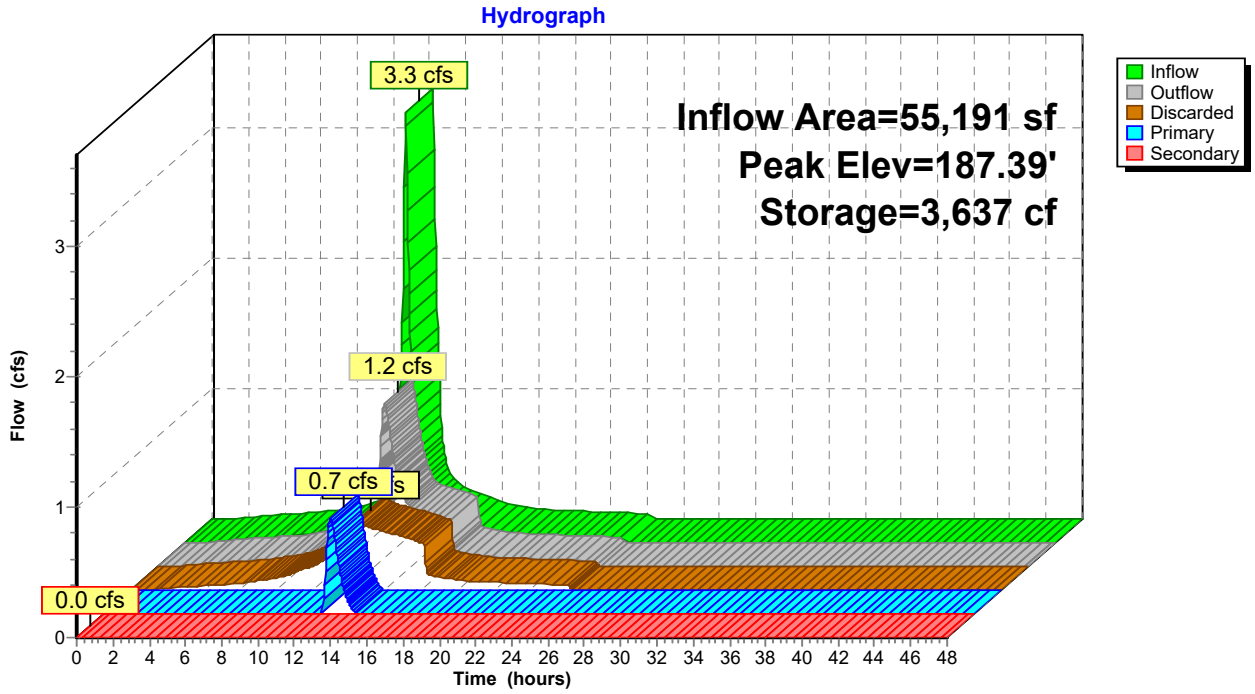
Device	Routing	Invert	Outlet Devices
#1	Primary	185.50'	**12.0" Round Culvert** L= 69.0' Ke= 0.200 Inlet / Outlet Invert= 185.50' / 184.70' S= 0.0116 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	188.20'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	186.80'	**6.0" W x 8.0" H Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#4	Secondary	188.50'	**10.0' long x 15.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#5	Discarded	186.00'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.5 cfs @ 12.51 hrs HW=187.39' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.5 cfs)

Primary OutFlow Max=0.7 cfs @ 12.51 hrs HW=187.39' (Free Discharge)
└**1=Culvert** (Passes 0.7 cfs of 4.5 cfs potential flow)
└**2=Grate** (Controls 0.0 cfs)
└**3=Orifice** (Orifice Controls 0.7 cfs @ 2.46 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=186.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 1P: Surface Infiltration Basin

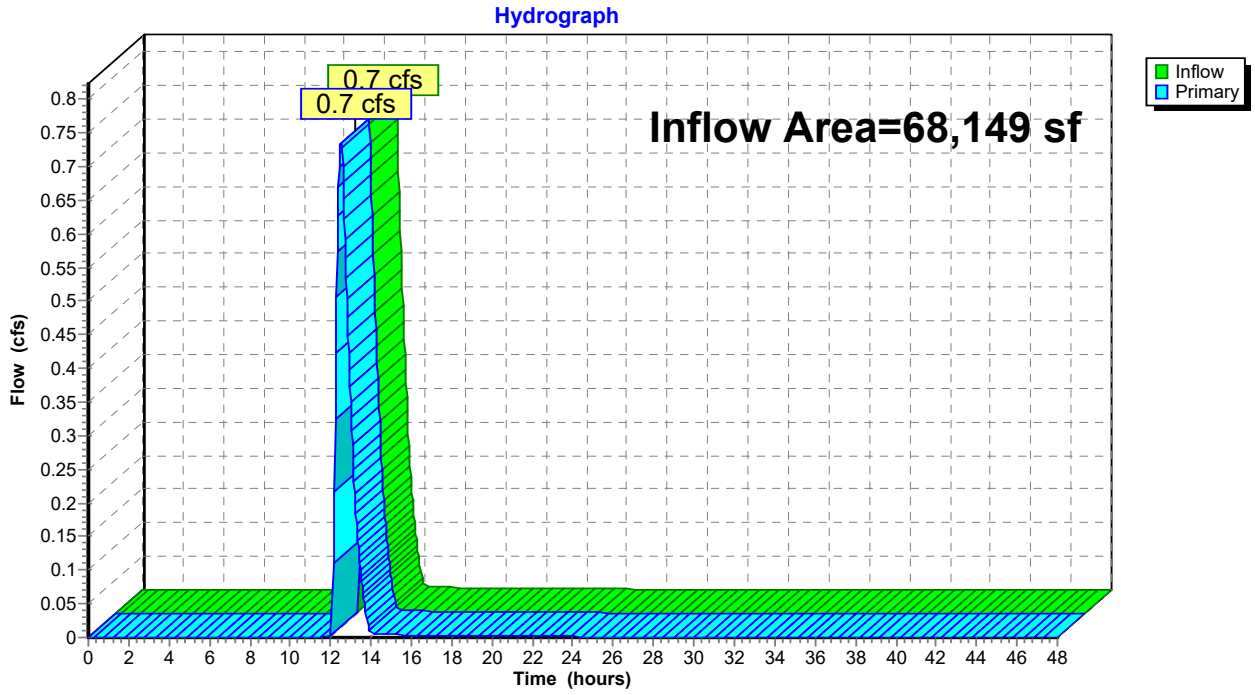


Summary for Link DP-1: Off Site to the North

Inflow Area = 68,149 sf, 42.19% Impervious, Inflow Depth = 0.38" for 10-Year event
Inflow = 0.7 cfs @ 12.51 hrs, Volume= 2,153 cf
Primary = 0.7 cfs @ 12.51 hrs, Volume= 2,153 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-1: Off Site to the North

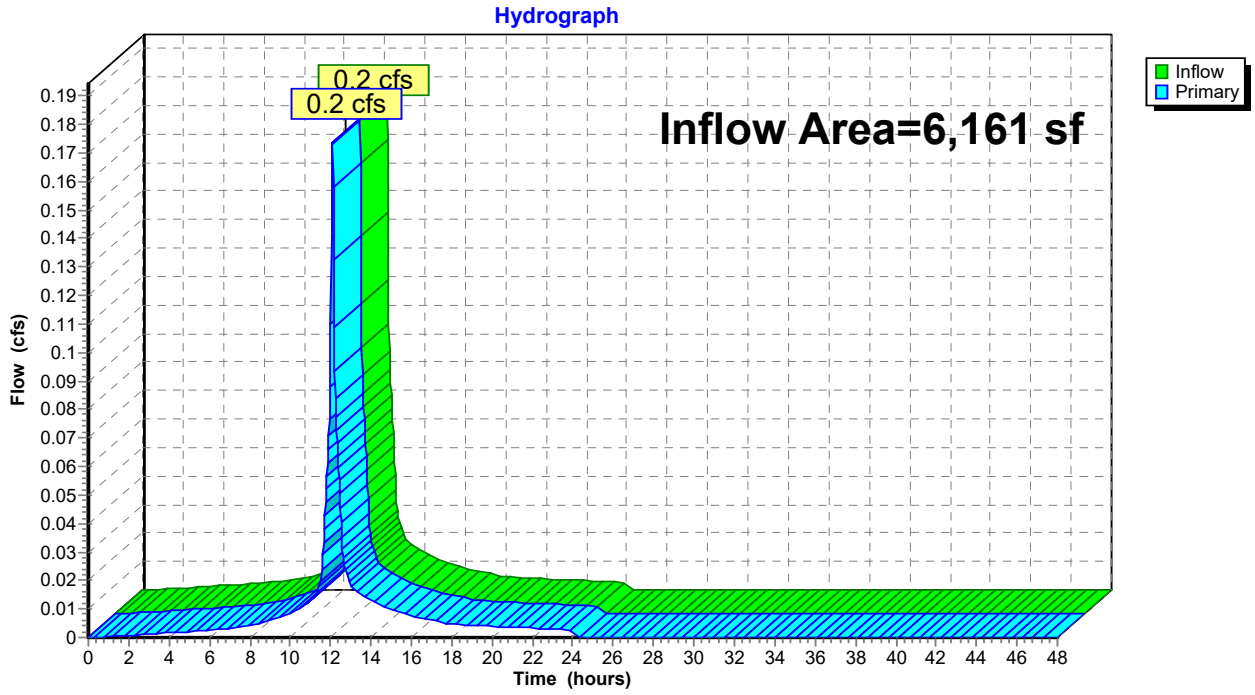


Summary for Link DP-2: Garden Street

Inflow Area = 6,161 sf, 23.03% Impervious, Inflow Depth = 1.39" for 10-Year event
Inflow = 0.2 cfs @ 12.08 hrs, Volume= 712 cf
Primary = 0.2 cfs @ 12.08 hrs, Volume= 712 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-2: Garden Street



Time span=0.00-48.00 hrs, dt=0.03 hrs, 1601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PS-1a: Runoff Area=55,191 sf 52.10% Impervious Runoff Depth=5.57"
Flow Length=227' Tc=12.5 min CN=WQ Runoff=5.7 cfs 25,639 cf

Subcatchment PS-1b: Runoff Area=12,959 sf 0.00% Impervious Runoff Depth=0.90"
Flow Length=77' Slope=0.0130 '/' Tc=9.8 min CN=WQ Runoff=0.1 cfs 969 cf

Subcatchment PS-2: Runoff Area=6,161 sf 23.03% Impervious Runoff Depth=2.96"
Flow Length=59' Slope=0.0500 '/' Tc=6.0 min CN=WQ Runoff=0.4 cfs 1,519 cf

Pond 1P: Surface Infiltration Basin Peak Elev=188.18' Storage=6,395 cf Inflow=5.7 cfs 25,639 cf
Discarded=0.6 cfs 18,376 cf Primary=1.6 cfs 7,263 cf Secondary=0.0 cfs 0 cf Outflow=2.2 cfs 25,639 cf

Link DP-1: Off Site to the North Inflow=1.7 cfs 8,232 cf
Primary=1.7 cfs 8,232 cf

Link DP-2: Garden Street Inflow=0.4 cfs 1,519 cf
Primary=0.4 cfs 1,519 cf

Total Runoff Area = 74,310 sf Runoff Volume = 28,126 cf Average Runoff Depth = 4.54"
59.40% Pervious = 44,139 sf 40.60% Impervious = 30,171 sf

Summary for Subcatchment PS-1a:

[47] Hint: Peak is 665% of capacity of segment #3

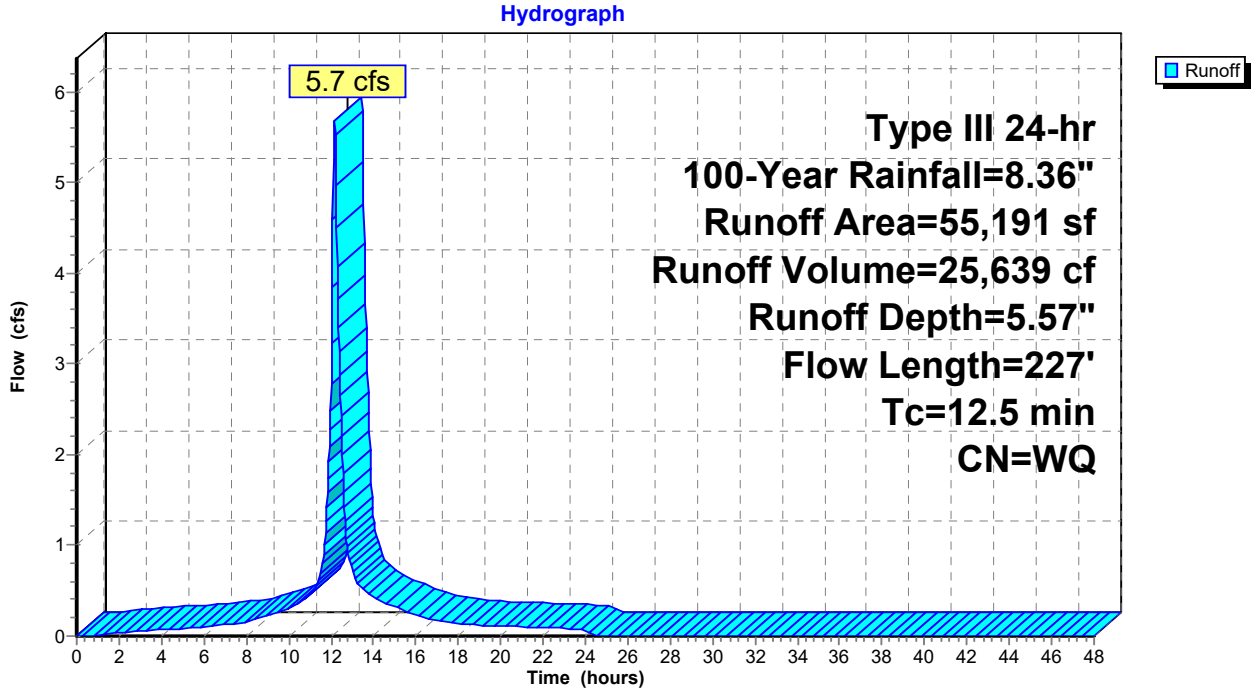
Runoff = 5.7 cfs @ 12.17 hrs, Volume= 25,639 cf, Depth= 5.57"
Routed to Pond 1P : Surface Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Rainfall=8.36"

Area (sf)	CN	Description
20,151	39	>75% Grass cover, Good, HSG A
6,047	96	Gravel surface, HSG A
18,462	98	Paved parking, HSG A
10,290	98	Roofs, HSG A
241	30	Woods, Good, HSG A
55,191		Weighted Average
26,439	52	47.90% Pervious Area
28,752	98	52.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
0.6	55	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.5	72	0.0050	2.45	0.85	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013
12.5	227	Total			

Subcatchment PS-1a:



Summary for Subcatchment PS-1b:

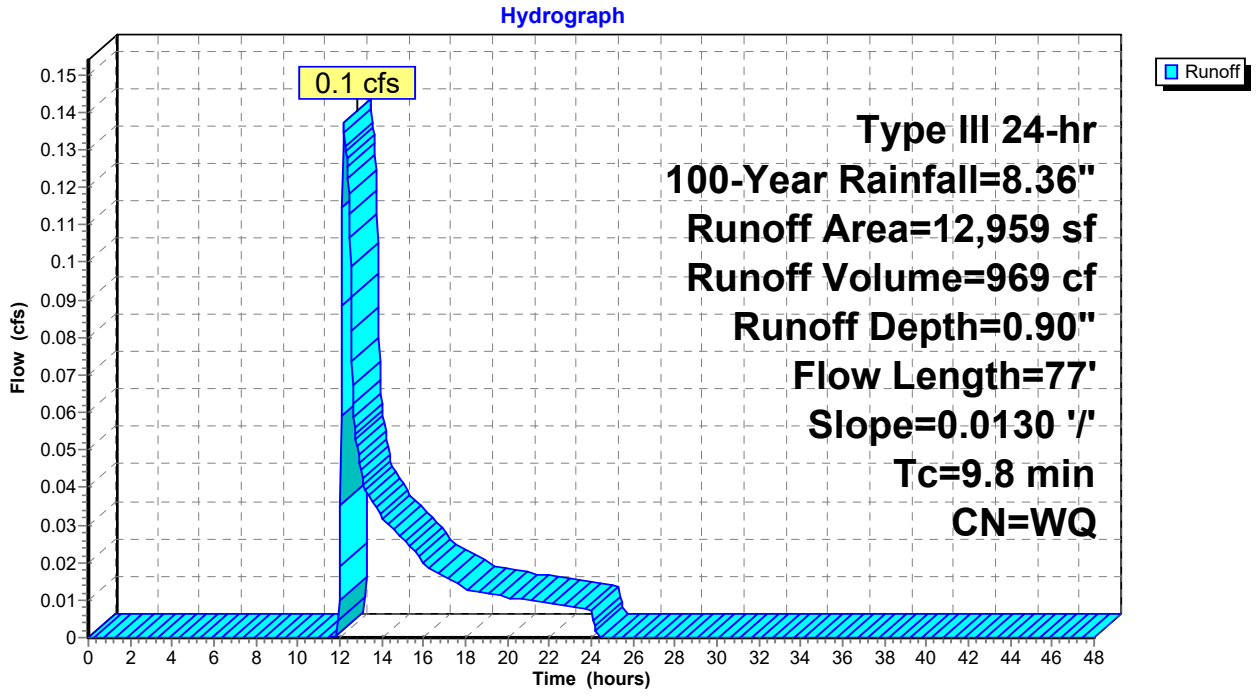
Runoff = 0.1 cfs @ 12.19 hrs, Volume= 969 cf, Depth= 0.90"
Routed to Link DP-1 : Off Site to the North

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Rainfall=8.36"

Area (sf)	CN	Description
6,304	39	>75% Grass cover, Good, HSG A
6,654	30	Woods, Good, HSG A
12,959		Weighted Average
12,959	34	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	77	0.0130	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"

Subcatchment PS-1b:



Summary for Subcatchment PS-2:

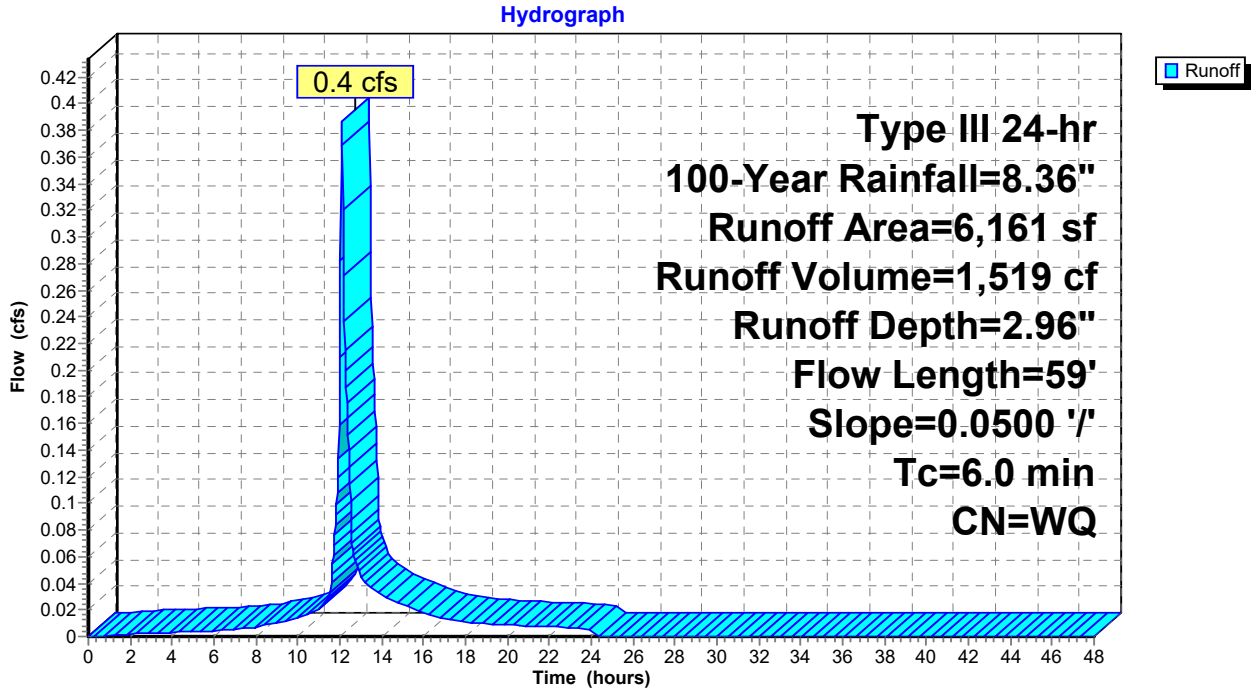
Runoff = 0.4 cfs @ 12.09 hrs, Volume= 1,519 cf, Depth= 2.96"
Routed to Link DP-2 : Garden Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Rainfall=8.36"

Area (sf)	CN	Description
4,668	39	>75% Grass cover, Good, HSG A
74	96	Gravel surface, HSG A
1,419	98	Paved parking, HSG A
6,161		Weighted Average
4,742	40	76.97% Pervious Area
1,419	98	23.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	59	0.0500	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
4.6	59	Total, Increased to minimum Tc = 6.0 min			

Subcatchment PS-2:



Summary for Pond 1P: Surface Infiltration Basin

Inflow Area = 55,191 sf, 52.10% Impervious, Inflow Depth = 5.57" for 100-Year event
Inflow = 5.7 cfs @ 12.17 hrs, Volume= 25,639 cf
Outflow = 2.2 cfs @ 12.50 hrs, Volume= 25,639 cf, Atten= 61%, Lag= 20.2 min
Discarded = 0.6 cfs @ 12.50 hrs, Volume= 18,376 cf
Primary = 1.6 cfs @ 12.50 hrs, Volume= 7,263 cf
Routed to Link DP-1 : Off Site to the North
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP-1 : Off Site to the North

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Peak Elev= 188.18' @ 12.50 hrs Surf.Area= 3,207 sf Storage= 6,395 cf

Plug-Flow detention time= 35.3 min calculated for 25,623 cf (100% of inflow)
Center-of-Mass det. time= 35.3 min (798.1 - 762.7)

Volume	Invert	Avail.Storage	Storage Description
#1	186.00'	8,344 cf	**Surface Infiltration Basin (Irregular)** Listed below (Recalc)
#2	186.00'	299 cf	**Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
#3	187.00'	1,163 cf	**Above Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
		9,806 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
186.00	1,847	199.0	0	0	1,847
187.00	2,478	221.0	2,155	2,155	2,612
188.00	3,105	241.0	2,786	4,940	3,382
189.00	3,712	262.0	3,404	8,344	4,260

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
186.00	206	55.0	0	0	206
187.00	404	76.0	299	299	435

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
187.00	404	76.0	0	0	404
188.00	595	92.0	496	496	634
189.00	740	103.0	666	1,163	830

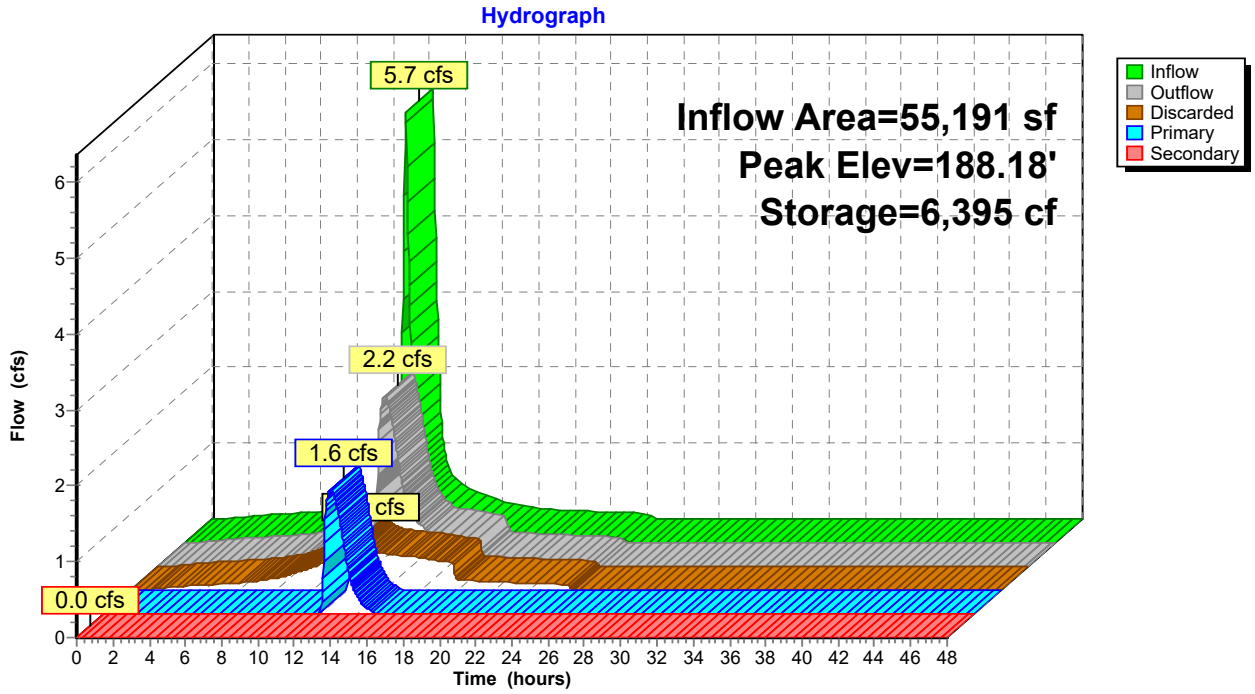
Device	Routing	Invert	Outlet Devices
#1	Primary	185.50'	**12.0" Round Culvert** L= 69.0' Ke= 0.200 Inlet / Outlet Invert= 185.50' / 184.70' S= 0.0116 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	188.20'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	186.80'	**6.0" W x 8.0" H Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#4	Secondary	188.50'	**10.0' long x 15.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#5	Discarded	186.00'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.6 cfs @ 12.50 hrs HW=188.17' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.6 cfs)

Primary OutFlow Max=1.6 cfs @ 12.50 hrs HW=188.17' (Free Discharge)
└**1=Culvert** (Passes 1.6 cfs of 5.4 cfs potential flow)
└**2=Grate** (Controls 0.0 cfs)
└**3=Orifice** (Orifice Controls 1.6 cfs @ 4.89 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=186.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 1P: Surface Infiltration Basin

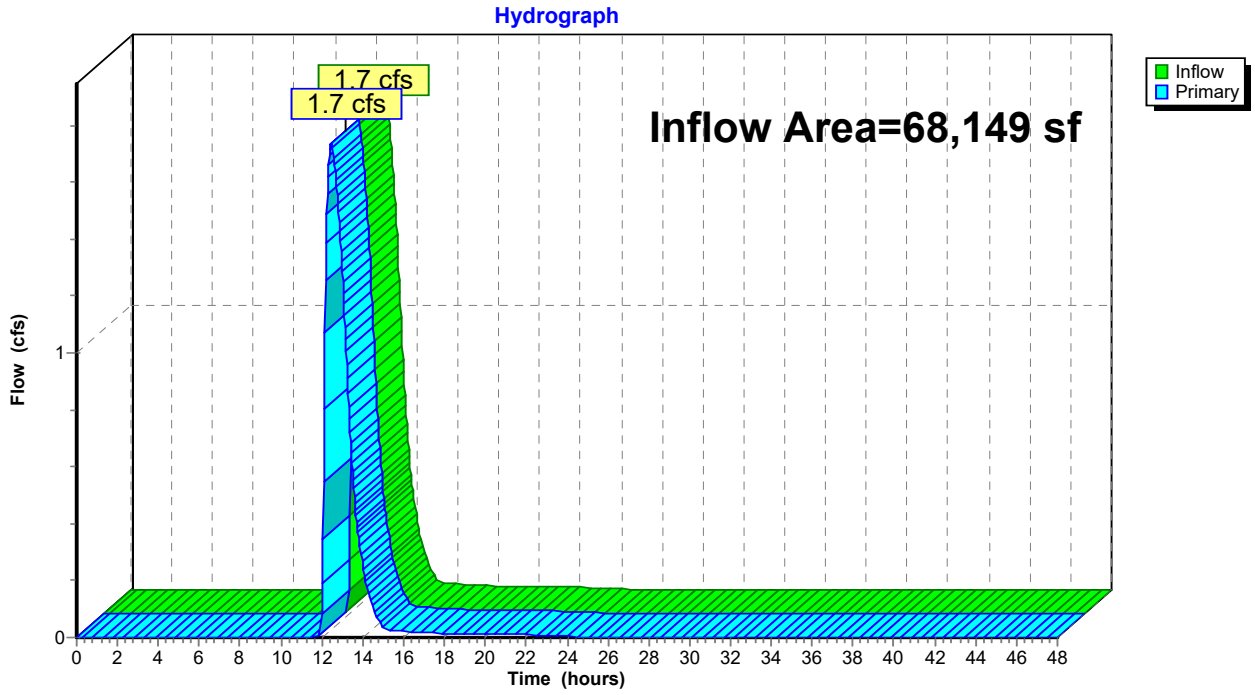


Summary for Link DP-1: Off Site to the North

Inflow Area = 68,149 sf, 42.19% Impervious, Inflow Depth = 1.45" for 100-Year event
Inflow = 1.7 cfs @ 12.47 hrs, Volume= 8,232 cf
Primary = 1.7 cfs @ 12.47 hrs, Volume= 8,232 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-1: Off Site to the North

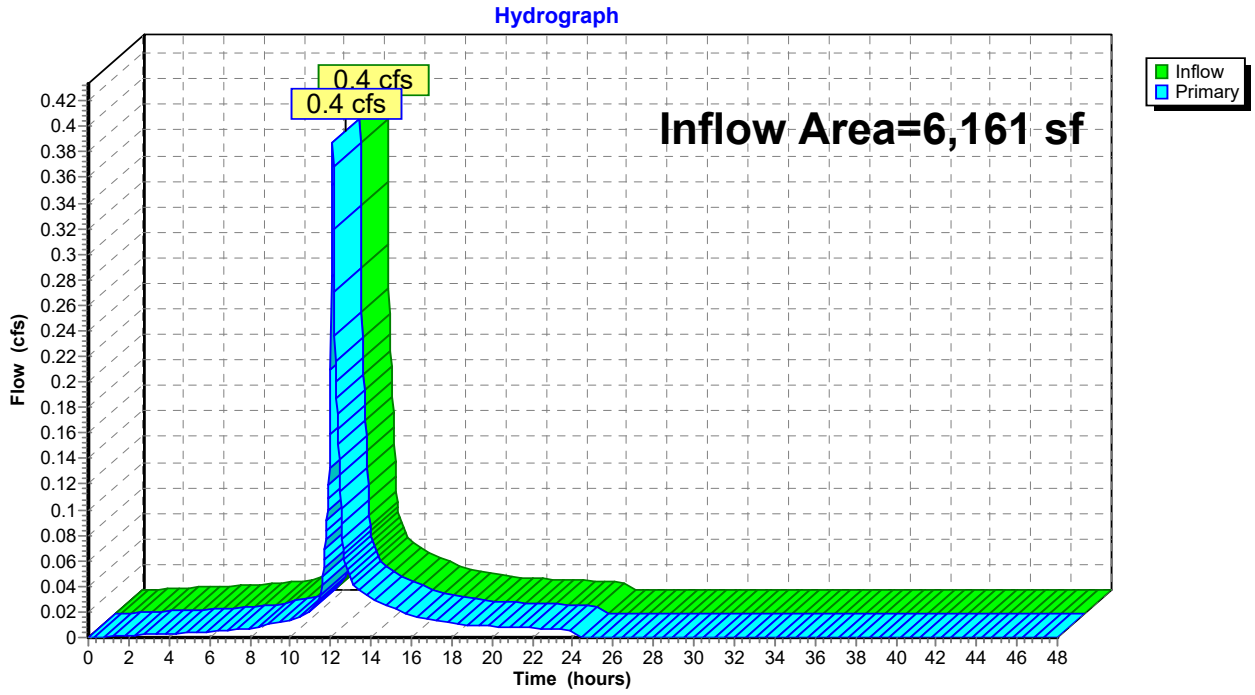


Summary for Link DP-2: Garden Street

Inflow Area = 6,161 sf, 23.03% Impervious, Inflow Depth = 2.96" for 100-Year event
Inflow = 0.4 cfs @ 12.09 hrs, Volume= 1,519 cf
Primary = 0.4 cfs @ 12.09 hrs, Volume= 1,519 cf, Atten= 0%, Lag= 0.0 min

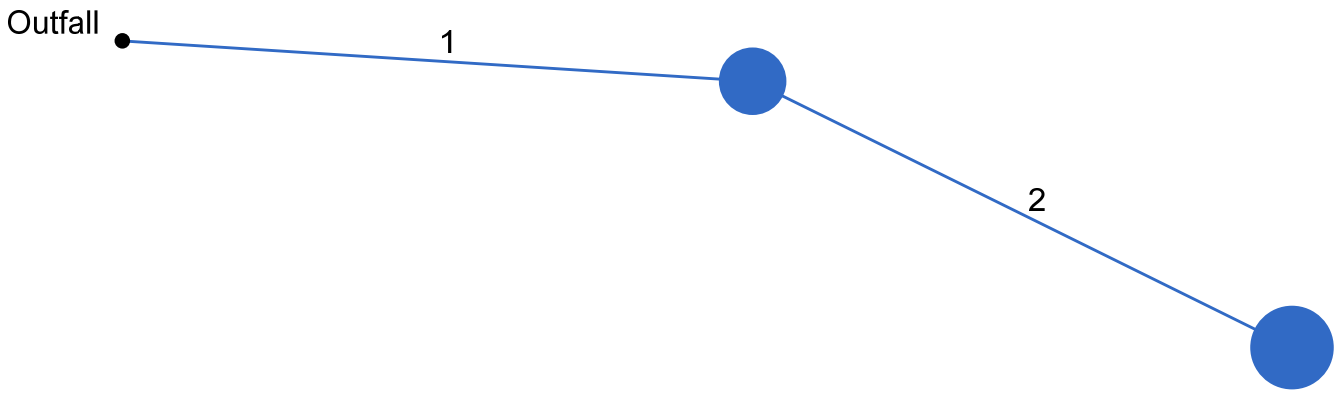
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-2: Garden Street



Appendix D: Hydraulic Analysis

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



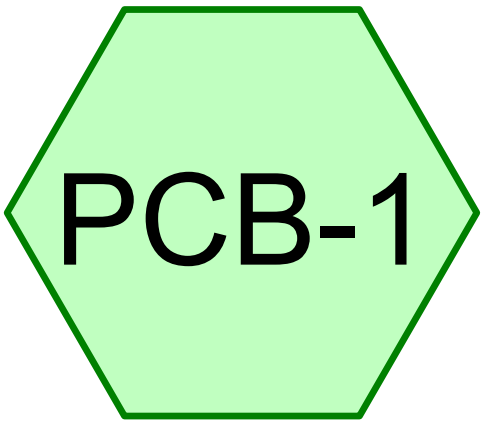
Project File: 250214 - STORM.stm	Number of lines: 2	Date: 3/17/2026

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	39.121	0.00	0.00	0.00	0.00	0.00	0.0	0.1	0.0	4.60	2.62	5.92	12	0.54	186.00	186.21	186.95	187.58	187.19	189.15	P-D-PIPE-(2)
2	1	37.191	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.60	2.55	5.86	12	0.51	186.31	186.50	187.81	188.43	189.15	188.80	P-D-PIPE-(1)

Project File: 250214 - STORM.stm | Number of lines: 2 | Run Date: 3/17/2026

NOTES:Intensity = 80.27 / (Inlet time + 12.00) ^ 0.78; Return period =Yrs. 100 ; c = cir e = ellip b = box



Subcat Reach Pond Link

Routing Diagram for 250214 - INLET
Prepared by R Levesque Associates
HydroCAD® 10.20-8a s/n 13073 © 2025 HydroCAD Software Solutions LLC

Summary for Subcatchment PCB-1:

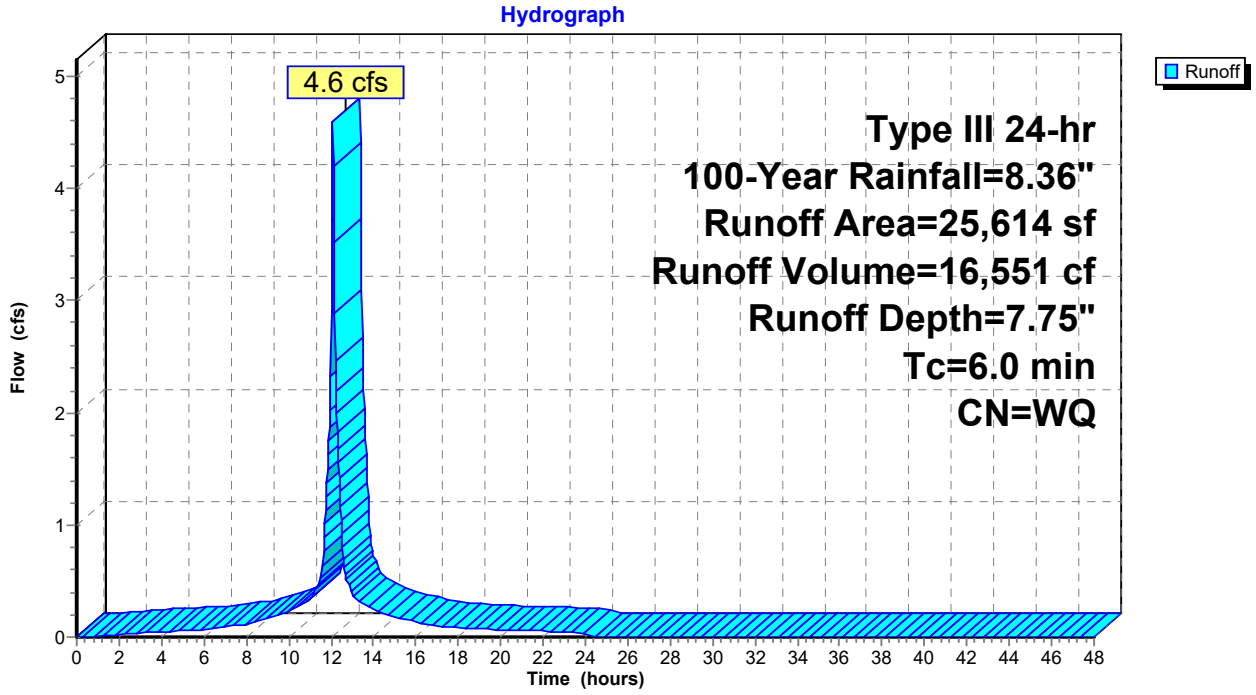
Runoff = 4.6 cfs @ 12.08 hrs, Volume= 16,551 cf, Depth= 7.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Rainfall=8.36"

Area (sf)	CN	Description
894	39	>75% Grass cover, Good, HSG A
6,016	96	Gravel surface, HSG A
18,462	98	Paved parking, HSG A
241	30	Woods, Good, HSG A
25,614		Weighted Average
7,151	87	27.92% Pervious Area
18,462	98	72.08% Impervious Area

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

Subcatchment PCB-1:



Appendix E: MassDEP Calculations

- Impervious Area Calculations
- Recharge Calculation
- Stage Storage Chart – Surface Infiltration Basin
- Water Quality Flow Rate Calculations – PWQU-1
- TSS Removal Worksheet – Surface Infiltration Basin
- Drawdown Calculation
- Barracuda Max Info Sheet
- Barracuda Max Maintenance Guide

Standard 3: Recharge Calculations

Impervious Area Calculations

Existing Total Impervious Area

Sub-Catchment	Roof (sf)	Other Impervious (sf)	Sum (sf)
ES-1a	5762	16405	22,167
ES-1b	0	78	78
ES-2	0	1419	1,419
			23,664

Proposed Total Impervious Area

Sub-Catchment	Roof (sf)	Other Impervious (sf)	Sum (sf)	
PS-1a	10290	18462	28752	Tributary to surface basin
PS-1b	0	0	0	
PS-2	0	1419	1419	
			30,171	

Summary Table

Total Existing Impervious Area	23,664	SF
Total Proposed Impervious Area	30,171	SF
Total New Impervious Area	6,507	SF
Total Impervious Area Tributary to Basin	28,752	SF

Standard 3: Recharge Calculations - Surface Infiltration Basin

R_V (required) = F x Impervious Area

where: R_V = Required Recharge Volume (cu. ft.)

F = Target Depth Factor

0.60 inch	(A-soils)
0.35 inch	(B-soils)
0.25 inch	(C-soils)
0.10 inch	(D-soils)

New Impervious Area by Hydrologic Soil Type

Impervious Area (A-soils)	6,507 sq. ft.	100.0%
Impervious Area (B-soils)	0 sq. ft.	0.0%
Impervious Area (C-soils)	0 sq. ft.	0.0%
Impervious Area (D-soils)	0 sq. ft.	0.0%
Total Impervious area	6,507 sq. ft.	100.0%

Required Recharge Volume Sizing (R_V)

R_v (required) = $\sum$ [$F_{Soil\ Type}$ x Impervious $Area_{Soil\ Type}$] x 1 ft./12 in.

R_v (required) = 325 cu. ft.

Capture Area Adjustment

Total Imperv. To Recharge Facilities =	28,752	sq. ft.
Percent Imperv. To Recharge Facilities* =	100%	
Adjustment Factor =	1.00	
Adjusted R_V (required) =	325	cu. ft.

*Impervious Area tributary to recharge facilities must be greater than 65%

Storage Volume Provided

Recharge Facility	Volume Provided	
Surface Infiltration Basin	1,896 cu. ft.**	
	1,896 cu. ft. >	325 cu. ft.

**Volume represents the available storage in the surface infiltration basin below orifice (El. 186.80')

Stage-Area-Storage for Pond 1P: Surface Infiltration Basin

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
186.00	1,847	0
186.05	1,876	104
186.10	1,906	209
186.15	1,936	316
186.20	1,966	426
186.25	1,996	537
186.30	2,027	650
186.35	2,057	766
186.40	2,088	883
186.45	2,119	1,002
186.50	2,151	1,124
186.55	2,183	1,247
186.60	2,214	1,372
186.65	2,247	1,500
186.70	2,279	1,630
186.75	2,312	1,762
186.80	2,344	1,896
186.85	2,377	2,032
186.90	2,411	2,171
186.95	2,444	2,311
187.00	2,478	2,454
187.05	2,508	2,599
187.10	2,538	2,746
187.15	2,568	2,895
187.20	2,598	3,046
187.25	2,628	3,199
187.30	2,659	3,354
187.35	2,689	3,511
187.40	2,720	3,669
187.45	2,751	3,830
187.50	2,783	3,993
187.55	2,814	4,158
187.60	2,846	4,325
187.65	2,878	4,494
187.70	2,909	4,665
187.75	2,942	4,838
187.80	2,974	5,014
187.85	3,006	5,191
187.90	3,039	5,371
187.95	3,072	5,552
188.00	3,105	5,736
188.05	3,134	5,922
188.10	3,163	6,110
188.15	3,193	6,299
188.20	3,222	6,491
188.25	3,252	6,684
188.30	3,281	6,879
188.35	3,311	7,076
188.40	3,341	7,274
188.45	3,371	7,475
188.50	3,402	7,677
188.55	3,432	7,882
188.60	3,463	8,088
188.65	3,493	8,296
188.70	3,524	8,506
188.75	3,555	8,718
188.80	3,586	8,932
188.85	3,617	9,148
188.90	3,649	9,365
188.95	3,680	9,585
189.00	**3,712**	**9,806**



Standard 4: Water Quality - PWQU-I

Water Quality Volume Conversion to Flow Rate

Note: Required water quality volume based on 1.0-inch of runoff

$$Q = (qu)\,(A)\,(WQV)$$

where: **Q** = peak flow rate associated with first 1.0-inch of runoff (c.f.s.)

qu = unit peak discharge (csm/in) - value taken from table based on t_c

A = impervious surface drainage area (sq. mi.)

WQV = water quality volume in watershed inches

Proposed Water Quality Unit (PWQU-1)

t_c =	0.100	hrs	
qu =	774	csm/in	(from table)
A =	0.00103	sq. mi.*	
WQV =	1.0	inch **	

$Q_{1.0}$ = **0.80 c.f.s**

The Baracuda Max Model S4 provides treatment of flows up to 1.52 c.f.s.

* Only inlcudes impervious area tributary to PWQU-1

** Water quality depth shall equal 1-inch for discharges within a Zone II or Interim Wellhead Protection Area, to or near another critical area, runoff from a LUHPPL, or exfiltration to soils with infiltration rate greater than 2.4-inches/hour or greater; 1/2-inch for discharges near to to other areas

Figure 4: for First 1-inch Runoff, Table of qu values for Ia/P Curve = 0.034, listed by tc, for Type III Storm Distribution

Tc (Hours)	qu (csm/in)
0.01	835
0.03	835
0.05	831
0.067	814
0.083	795
0.1	774
0.116	755
0.133	736
0.15	717
0.167	700
0.183	685
0.2	669
0.217	654
0.233	641
0.25	628
0.3	593
0.333	572
0.35	563
0.4	536
0.416	528
0.5	491
0.583	460
0.6	454
0.667	433
0.7	424
0.8	398
0.9	376
1	356
1.1	339
1.2	323
1.3	309
1.4	296
1.5	285
1.6	274
1.7	264
1.8	255
1.9	247
2	239
2.1	232
2.2	225
2.3	219
2.4	213
2.5	207
2.6	202
2.7	197
2.8	192
2.9	187
3	183
3.1	179
3.2	175
3.3	171
3.4	168
3.5	164
3.6	161
3.7	158
3.8	155
3.9	152
4	149
4.1	146
4.2	144
4.3	141
4.4	139
4.5	137
4.6	134
4.7	132
4.8	130
4.9	128
5	126
5.1	124
5.2	122
5.3	120
5.4	119
5.5	117
5.6	115
5.7	114
5.8	112
5.9	111
6	109
6.1	108
6.2	106
6.3	105
6.4	104
6.5	102
6.6	101
6.7	100
6.8	99
6.9	98
7	96
7.1	95
7.2	94
7.3	93
7.4	92
7.5	91
7.6	90
7.7	89
7.8	88
7.9	87
8	86
8.1	85
8.2	84
8.3	84
8.4	83
8.5	82
8.6	81
8.7	80
8.8	79
8.9	79
9	78
9.1	77
9.2	76
9.3	76
9.4	75
9.5	74
9.6	74
9.7	73
9.8	72
9.9	72
10	71

TSS Removal Form - Surface Infiltration Basin

Pre-Treatment

BMP	TSS Removal Rate	Starting TSS Load	Amount Removed	Remaining Load
Deep-Sump Hooded Catch Basins	0.25	1.00	0.25	0.75
Proprietary Sedimentation Device	0.80	0.75	0.60	0.15

Pre-Treatment TSS Removal = 85%

Total Removal

BMP	TSS Removal Rate	Starting TSS Load	Amount Removed	Remaining Load
Deep-Sump Hooded Catch Basins	0.25	1.00	0.25	0.75
Propietary Sdimentation Device	0.80	0.75	0.60	0.15
Surface Infiltration Basin	0.80	0.15	0.12	0.03

Total TSS Removal = 97%

Drawdown Analysis

$$T_{DRAWDOWN} = \frac{R_V}{KA}$$

where: $T_{DRAWDOWN}$ = time in hours

R_V = required recharge volume **(cu. ft.)**

K = Rawls rate
- **8.27 inches/hour** (A-soils)**
- **0.52 inches/hour** (B-soils)**
- **0.27 inches/hour** (C-soils)**

A = bottom area of recharge facility **(sq. ft.)**

** Most conservative Rawls rate values for given soil type used for analysis purposes

Surface Infiltration Basin

R_V*= 1,896 cu. ft.

A = 1,847 sq. ft.

$T_{DRAWDOWN}$ = **1.5 hours** < **72 hours** **(A-soils)**

*Volume represents the available storage in the surface infiltration basin below orifice (El. 186.80')

Sediment Forebay Sizing - Surface Infiltration Basin

$$V_{SF}\ (\text{required}) = \frac{0.1\text{-inch}}{\text{Impervious Acre}}$$

where: V_{SF} (required) = required volume of the sediment forebay (cu. ft.)

Impervious Acre = 0.66 acres

V_{SF} (required) = 240 cu.ft.

V_{SF} (provided) = 299 cu. ft.

Barracuda® Max

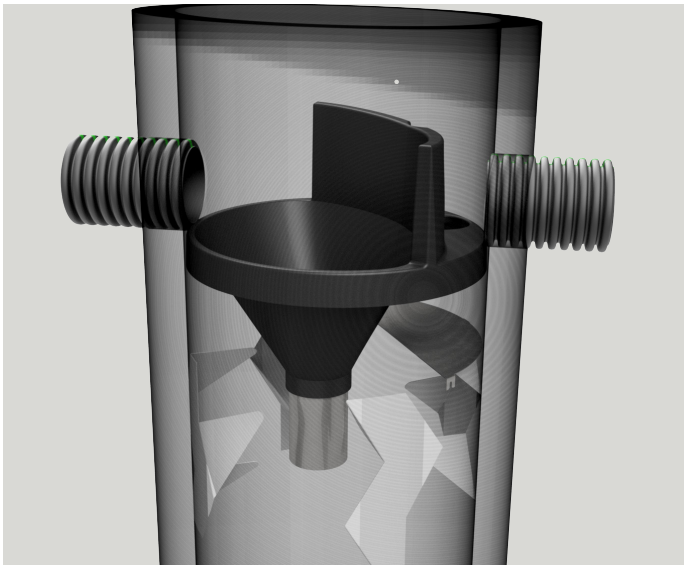
The Barracuda Max is market-changing stormwater quality technology. This high-performance vortex hydrodynamic separator is designed to remove total suspended solids in order to protect our precious receiving waters. The Barracuda Max is also an outstanding value that offers multiple pipe configurations, and quick installation. The “Max” version of the Barracuda is built on the base platform of the original ADS Barracuda with improved removal efficiencies and installation components.

Features

- Single manhole design
- No elevation loss between the inlet and outlet
- Variable inlet/outlet angle configurations (not just 180 degree orientation)
- Internal bypass for inline installation (where applicable)
- Revolutionary, patent pending “teeth” mitigate turbulence in the sump area to prevent resuspension of captured contaminants
- Available with grated drop inlet configuration
- Available with trash and/or oil capture add-ons

Benefits

- Internal components are in stock for quick delivery
- The S3, S4, S6, and S8 can be installed in a standard 36” (900 mm), 48” (1200 m), 72” (1800 m), and 96” (2400 m) precast manhole, respectively
- The S3 & S4 can be provided factory installed within a 36” (900 mm) and 48” (1200 mm) ADS HP manhole and delivered to the jobsite
- The Barracuda Max “teeth” and deflector plate apparatus are fabricated and designed for quick and easy field assembly
- Designed for easy maintenance using a vacuum truck or similar equipment.
- Inspection and maintenance are performed from the surface with no confined space entry





ADS™

Barrucuda Specification

Materials and Design

- Concrete Structures: Designed for H-20 traffic loading and applicable soil loads or as otherwise determined by a Licensed Professional Engineer. The materials and structural design of the devices shall be per ASTM C857 and ASTM C858.
- 36” (900 mm) and 48” (1200 mm) HP Manhole Structures: Made from an impact modified copolymer polypropylene meeting the material requirements of ASTM F2764. The eccentric cone reducer shall be manufactured from polyethylene material meeting ASTM D3350 cell class 213320C. Gaskets shall be made of material meeting the requirements of ASTM F477.
- Separator internals shall be substantially constructed of stainless steel, polyethylene or other thermoplastic material approved by the manufacturer.

Performance

- The stormwater treatment unit shall be an inline unit capable of conveying 100% of the design peak flow. If peak flow rates exceed maximum hydraulic rate, the unit shall be installed offline.
- The Barracuda Max unit shall be designed to remove at least 80% of the suspended solids on an annual aggregate removal basis. Said removal shall be based on full-scale third party testing using OK-110 media gradation or equivalent and 300 mg/L influent concentration. Said full scale testing shall have included sediment capture based on actual total mass collected by the stormwater treatment unit.

  - OR -

  The Barracuda Max unit shall be designed to remove at least 50% of TSS using a media mix with d_{50}=75 micron and 200 mg/L influent concentration.

  - OR -

  The Barracuda Max unit shall be designed to remove at least 50% of TSS per current NJDEP/NJCAT HDS protocol.
- The stormwater treatment unit internals shall consist of (1) separator cone assembly, and (1) sump assembly, which includes the “teeth”.

Barracuda Max Model	Manhole Diameter	OK-110 (80% removal)	Pretreatment for Infiltration[1]
S3	36” (900 mm)	0.86 CFS (24.1 L/s)	1.65 CFS (46.7 L/s)
S4	48” (1200 mm)	1.52 CFS (43.0 L/s)	2.94 CFS (83.3 L/s)
S6	72” (1800 mm)	3.42 CFS (96.8 L/s)	6.62 CFS (187.5 L/s)
S8	96” (2400 mm)	6.08 CFS (172.2 L/s)	11.76 CFS (333.0 L/s)

* Peak bypass flows are dependent on final design

[1] 50% removal of OK-110.

Installation

Installation of the stormwater treatment unit(s) shall be performed per manufacturer’s installation instructions. Such instructions can be obtained by calling Advanced Drainage Systems at 800-821-6710 or by logging on to www.adspipe.com.

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Barracuda® Max & Barracuda Maintenance Guide

One of Barracuda's advantages is the ease of maintenance. Like any system that collects pollutants, the Barracuda must be maintained for continued effectiveness. Maintenance is a simple procedure performed using a vacuum truck or similar equipment. The systems were designed to minimize the volume of water removed during routine maintenance, reducing disposal costs.

Contractors can access the pollutants stored in the manhole through the manhole cover. This allows them to gain vacuum hose access to the bottom of the manhole to remove sediment and trash. There is no confined space entry necessary for inspection or maintenance.

The entire maintenance procedure typically takes 2 to 4 hours, depending on the system's size, the captured material, and the vacuum truck's capacity.

Local regulations may apply to the maintenance procedure. Safe and legal disposal of pollutants is the responsibility of the maintenance contractor. Maintenance should be performed only by a qualified contractor.

Inspection and Cleaning Cycle

Periodic inspection is needed to determine the need for and frequency of maintenance. You should begin inspecting as soon as construction is complete and then on an annual basis. Typically, the system needs to be cleaned every 1-3 years.

Excessive oils, fuels or sediments may reduce the maintenance cycle. Periodic inspection is important.

Determining When to Clean

To determine the sediment depth, the maintenance contractor should lower a stadia rod into the manhole until it contacts the top of the captured sediment and mark that spot on the rod. Then push the probe through to the bottom of the sump and mark that spot to determine sediment depth.

Maintenance should occur when the sediment has reached the levels indicated in the Storage Capacity Chart.

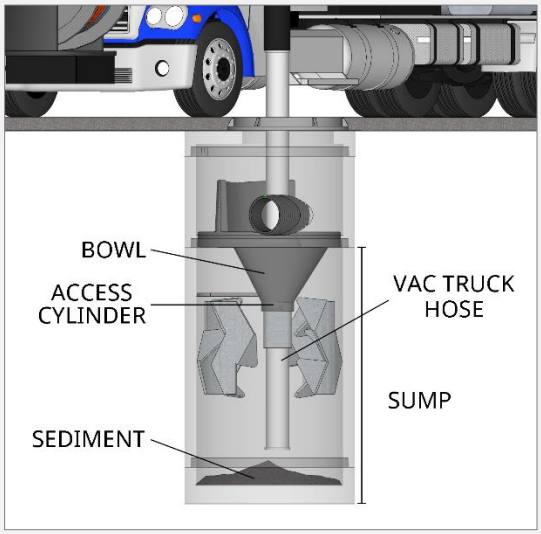
Barracuda Storage Capacities

Model	Manhole Diameter in. (mm)	Total System Volume Gallons (Liters)	Treatment Chamber Capacity Gallons (Liters)	Standard Sediment Capacity (20" depth) Yards^3 (meters^3)	NJDEP Sediment Capacity (50% of standard depth) Yards^3 (meters^3)
S3	36 (900)	264 (999)	212 (803)	0.44 (0.34)	0.22 (0.17)
S4	48 (1200)	665 (2517)	564 (2135)	0.78 (0.60)	0.39 (0.30)
S6	72 (1800)	1497 (5667)	1269 (4804)	1.75 (1.34)	0.88 (0.67)
S8	96 (2400)	4196 (15884)	3835 (14517)	3.10 (2.37)	1.55 (1.19)

Maintenance Instructions

1. Remove the manhole cover to provide access to the pollutant storage. Pollutants are stored in the sump, below the bowl assembly visible from the surface. Access this area through the 8" (200 mm), 10" (250 mm), 15" (375 mm) or 20" (500 mm) diameter access cylinder.
2. Use a vacuum truck or other similar equipment to remove all water, debris, oils and sediment. See figure 1.
3. Use a high pressure hose to clean the manhole of all the remaining sediment and debris. Then, use the vacuum truck to remove the water.
4. Fill the cleaned manhole with water until the level reaches the invert of the outlet pipe.
5. Replace the manhole cover.
6. Dispose of the polluted water, oils, sediment and trash at an approved facility.
    a. Local regulations prohibit the discharge of solid material into the sanitary system. Check with the local sewer authority for authority to discharge the liquid.
    b. Some localities treat the pollutants as leachate. Check with local regulators about disposal requirements.
    c. Additional local regulations may apply to the maintenance procedure.

Figure 1



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Appendix F: Construction Period Erosion Control Plan

Construction Period Erosion Control Plan

Proposed Building Addition

223 Garden Street
Agawam, MA
(Parcel ID: G8-2-3)

Owner/Applicant:

MBNZ Holding Co.
c/o Nasser Zebian
223 Garden Street
Agawam, MA 01030

RLA Project File: 250214

June 25, 2025

R LEVESQUE ASSOCIATES, INC
A LAND PLANNING SERVICES COMPANY
40 School Street · Westfield, MA 01085
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The project shall implement a construction period erosion control plan. The following provides descriptions and guidelines to ensure that the areas surrounding the project site will be protected from excessive sedimentation and runoff during construction.

1.1 Construction Period Pollution Prevention And Erosion Control Measures

1.1.1 Preconstruction Notifications And Meetings

Prior to the start of construction, the contractor shall call together a pre-construction meeting including a representative from the City, the design engineer, contractor, and any pertinent persons that should be in attendance. These requirements shall be the responsibility of the Contractor to arrange, attend, and document.

1.1.2 Sediment Barrier And Work Limit

Before installation of the sediment barriers, the location shall be staked in the field for review and approval by the owner or their representative. To facilitate sediment barrier installation, woody vegetation may then be removed and any required trench may be cut by machine, provided all other ground cover is left intact. No excavation, grading, filling, or removal of vegetative ground cover shall begin until sediment barriers have been installed as shown on the plans and have been inspected by the owner or their representative.

1.1.3 Silt Fence

The bottom of the fence shall be trenched into the ground a minimum of 6" and back-filled with compacted soil. Where trenching is not feasible, silt fence skirt shall be covered with compacted soil or crushed stone. The top of the fabric shall be stretched as tightly as is practical, with intermediate stakes added to correct excessive sags. Stakes shall be driven at least 12" into the ground. Splices between sections shall be made by rolling end stakes together one complete turn and driving into the ground together.

1.1.4 Straw Bales

Straw bales may be used as temporary and moveable control measures, temporary check dams, or as reinforcement for silt fence in areas of concentrated runoff or high fills. Bales shall be tightly butted and staked 12" into the ground. Where used without silt fence in front, the bales shall be trenched 4" into the ground, back-filled with compacted soil, and the spaces between bales shall be chinked with loose straw.

1.1.5 Filter Sock (Filtrexx Or Equivalent)

In areas of expected sheet flow, filter sock may be placed directly on the ground without trenching or stakes. In areas of expected concentrated flow, mulch or crushed stone shall be placed along the up-slope face to control and filter underflow. Additional layers of Filter Sock may be required for adequate freeboard. The filter sock shall be staked at 10 feet on-center or in cases where they cannot be staked, utilize heavy concrete blocks to hold in place.

1.1.6 Temporary Sedimentation Basins

Temporary sediment basins may be excavations or bermed stormwater detention structures (depending on grading) that will retain runoff for a sufficient period of time to allow suspended soil particles to settle out prior to discharge. These temporary basins will be located based on construction needs as determined by the contractor and outlet devices will be designed to control velocity and sediment. Points of discharge from sediment basins will be stabilized to minimize erosion. If the temporary basin is to be located within an area of future infiltration as part of the stormwater management system, the excavation for the temporary sedimentation basin shall be limited to one foot above final grade of the infiltration structure.

1.1.7 Stocking Additional Materials

A stock of additional erosion control materials shall be available on the site for emergency repairs and temporary measures. Stock shall be replenished when decreased to 50% of the numbers below. Stock shall include:

Straw Bales – 10 (kept dry) with 20 oak stakes

Or

Silt Fence – 30 Linear feet.

Or

Filter Sock – 4 – 8 foot sections (kept dry)

Washed Stone – One (1) cubic yard, ¾" to 2" diameter

1.1.8 Trench Protection

Open trenches shall be protected from accumulation of surface water or groundwater that could result in erosion of the trench and discharge of sediment. Where feasible, spoil shall be stockpiled on the up-slope side of the trench to prevent entrance of surface runoff. Backfill shall be crowned to allow for settlement and to avoid concentration of runoff on top of the trench.

1.1.9 Site Stabilization – Temporary

Where a portion of the site will not be subject to construction activity for over 14 days, measures shall be taken to provide temporary stabilization of that inactive portion of the site, within 14 days of the cessation of construction activity. Stabilization measures may include seeding for temporary cover, mulching, or other measures to protect exposed soil from erosion and prevent sediment movement.

1.1.10 Site Stabilization – Permanent

Within 14 days of completion of loaming and finish grading on any portion of the site, that area shall be seeded or planted for permanent cover (season permitting) in accordance with USDA NRCS guidelines or equivalent.

1.1.11 Roadway Sweeping

The entrance to the site and affected portions of the access drive or paved project areas shall be swept as needed to control sediment runoff into storm drains or waterways and to control blowing dust.

1.2 Short-Term Erosion Control Maintenance

The following provides short-term erosion control maintenance guidelines and requirements.

1. The contractor or subcontractor will be responsible for implementing each control shown on the sedimentation and erosion control plan.
2. All erosion and sediment control devices shall be properly maintained during all phases of construction until the completion of all construction activities and all disturbed areas have been stabilized. Additional control measures will be installed during construction in order to control erosion and/or off-site sedimentation if deemed necessary by on-site inspection.
3. Effective erosion control measures shall be initiated prior to the commencement of clearing, grading, excavation, or other operations that will disturb the natural protection.
4. All sediment and erosion control devices shall be inspected at least once every seven (7) calendar days and after any storm event greater than 0.5 inches of precipitation during any 24-hour period, and the inspection shall be documented in writing. Damaged or ineffective devices shall be repaired or replaced, as necessary.
5. The contractor shall take all reasonable precautions to avoid excess erosion of the site due to the construction of this project.
6. Silt shall be removed from behind barriers if greater than 6-inches deep or as needed. Sediment that is collected in structures shall be disposed of properly and covered if stored on-site
7. Damaged or deteriorated items will be repaired immediately after identification.
8. All ditches shall be stabilized as soon as is practicable to minimize erosion.
9. The contractor shall maintain all erosion control devices in a good, working state of repair. Upon complete stabilization of any tributary areas, the erosion control devices shall be removed and disposed of so as to cause no off-site siltation.
10. Inspect and maintain construction entrance stone such that sediment does not track onto the street. Any sediment tracked onto the street shall be swept daily.
11. After catch basins have been constructed, the contractor shall protect the inlets by constructing inlet protection as shown on the plans.
12. Once the site has been paved, all catch basin inlets shall receive a silt sack type protection.

13. Erosion control measures shall remain in place until all disturbed earth has been substantially stabilized. After removal of structures, disturbed areas shall be regraded and stabilized as necessary.

Appendix G: Long-Term Operation and Maintenance Plan

- Long-Term Operation & Maintenance Plan Narrative
- Barracuda Concrete Installation Guide
- Barracuda Max Maintenance Guide
- O&M Checklist

Long-Term Operation & Maintenance Plan

Proposed Building Addition

223 Garden Street
Agawam, MA
(Parcel ID: G8-2-3)

Owner/Applicant:

MBNZ Holding Co.
c/o Nasser Zebian
223 Garden Street
Agawam, MA 01030

RLA Project File: 250214

June 25, 2025

R LEVESQUE ASSOCIATES, INC
A LAND PLANNING SERVICES COMPANY
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I. Long-Term Stormwater Maintenance Program:

This Long-Term Operation and Maintenance Plan (O&M) identifies inspection and maintenance requirements for the proposed stormwater management system. The O&M references guidelines set forth by the Stormwater Management Handbook developed by the Massachusetts Department of Environmental Protection.

Owner/Responsible Party*:

MBNZ Holding Co.
c/o Nasser Zebian
223 Garden Street
Agawam, MA 01030

*The party listed shall be responsible for implementation and record keeping of the requirements listed in this operation and maintenance plan. Upon sale of property or any other transition of ownership, the responsible party shall be reinstated as the new owner or any other group created as determined by the owner.

Signature of Responsible Party Representative

Date

2. Inspection and Maintenance Program:

Regular inspection and routine maintenance are necessary to ensure that the stormwater management system continues to control and treat runoff. The following lists the inspection schedule and maintenance procedures for the proposed stormwater Best Management Practices:

BMP	Inspection Schedule	Maintenance Schedule	Maintenance Procedures
Bituminous Concrete Pavement	Four times per year	Twice per year	• Roadway to be swept in March or April following snow melt and again in late November or early December to remove fallen leaves and debris
Deep-Sump Catch Basins	Four times per year	Four times per year	• Remove sediment once deposits reach one half the depth from the bottom sump to the lowest invert
Stormwater Piping	Once per year	Once per year	• Inspect pipe entrances in catch basins and manholes and remove any blockages
Water Quality Unit*	As specified by the manufacturer	As specified by the manufacturer	• Clean the unit using the method specified by the manufacturer. Vactor trucks are typically used to clean these units
Surface Infiltration Basin	After every major storm for the first three months. Twice per year thereafter.	Twice per year	• Check for signs of differential settlement, cracking, erosion, leakage in the embankments, tree growth, riprap condition, sediment accumulation, and health of the turf • Mow side slopes and basin bottom and remove clippings • Remove accumulated trash and debris
Sediment Forebay	Monthly	Four times per year	• Remove sediment when it reaches one foot • Mow the grass to no less than 3 inches and no greater than 6 inches • Replace vegetation damaged during sediment removal
Flared End Section	Four times per year	As Needed	• Remove any debris or vegetation around the flared end section such that flow out of the structure is not impeded
Roof Leaders	Once per year	Once per year	• Inspect downspout connections at grade and remove any blockages. • Open and inspect cleanout locations and remove any blockages.

*See attached Device Operation and Maintenance Guides

See the attached Long-Term O&M Inspection Checklist for record keeping purposes.

3. Additional Long-Term Operation and Maintenance Items

The following is a list of additional operation and maintenance items to be implemented by the owner/governing group to maintain the features proposed in this project.

A. Proper storage, use, and disposal of hazardous chemicals, including automobile fluids, pesticides, paints, solvents, etc. shall be required. Information should be provided on chemicals of concern, proper use, and disposal options. Recycling programs for used motor oil, antifreeze, and other products should be developed.

B. Vehicle Washing. This management measure involves educating the owner on the water quality impacts of the outdoor washing of vehicles and how to avoid allowing polluted runoff to enter the storm drain system. Outdoor vehicle washing has the potential to result in high loads of nutrients, metals, and hydrocarbons which is conveyed by the detergent-rich water into storm drains.

C. Recycling, spill prevention and response plans, and proper material storage and disposal of potentially hazardous materials shall be implemented. It will be the responsibility of the owner to contain and legally remove any materials that are spilled onsite. The use of dry floor cleaners and absorbent materials and limiting the use of water to clean pavement is encouraged. Care should be taken to avoid accidental disposal of hazardous materials.

D. Provisions for storing trash and waste products shall be implemented. The waste materials shall be collected by the owner and all materials shall be properly disposed of.

E. Requirements for routine inspections and maintenance of stormwater best management practices. Routine inspections shall be performed to ensure the correct functioning of stormwater best management practices. See the specific maintenance criteria for detail regarding inspections and maintenance frequency.

F. Requirements for Storage and Use of Fertilizers, Herbicides, and Pesticides. Fertilizers, pesticides, herbicides, lawn care chemicals, or other leachable materials shall be used in accordance with the Lawn Care Regulations of the Massachusetts Pesticide Board, 33 CMR 10.03 (30,31), as amended, with manufacturer's label instructions and all other necessary precautions to minimize adverse impacts on surface and groundwater. The storage of any such materials shall be within structures designed to prevent the escape of contaminated runoff or leachate.

G. Provisions for prevention of illicit discharges to the stormwater management system shall be implemented. Any illicit discharges to the stormwater management system shall be prohibited. It will be the owner's responsibility to ensure compliance with the legal disposal of all materials and containment/cleanup of any illicit discharges.

H. Training for staff or personnel involved with implementation of the Long-Term Pollution Prevention Plan shall be required. The owner/governing group will be responsible for the implementation of the measures set forth in the Long-Term Pollution Prevention Plan. Documentation that personnel and owners involved with the implementation of the Long-Term Pollution Prevention Plan have been trained to conduct such tasks shall be documented.

4. Winter and Snow Conditions

The following is a list of additional operation and maintenance items to be implemented by the owner during winter and snow conditions.

A. Snowfall shall be stored on the grassed areas surrounding the pavement areas, excluding any areas utilized for stormwater management practices. As needed, any snow that cannot be stored on site shall be trucked off site and disposed of properly.

B. Winter road salt and/or sand use and storage restrictions shall be implemented based on any restrictions issued for the project. Sodium chloride for ice control shall be used at the minimum salt to sand ratio which is consistent with the Massachusetts Department of Environmental Protections guidelines. Sodium chloride, calcium chloride, chemically treated abrasives or other chemicals used for the removal of ice and snow on roads/drives shall not be stored on site.

5. Public Safety Features

The proposed site design utilizes the following features which have been incorporated to ensure the safety of the public:

A. Control and collection of stormwater runoff through positive drainage and curbing directing it towards the drainage inlets;

B. Heavy-duty stormwater drain manhole covers and catch basin grates have been designed to withstand H20 loading;

C. Reduction of peak discharge rates from the site in the post-development condition as compared to the pre-developed conditions;

D. Development and implementation of an Operations & Maintenance Plan to ensure the stormwater management system continues to function as designed.

6. Estimated Cost of Maintenance

The following budget was prepared as an estimate of inspection and maintenance costs for the stormwater management system. The budget is an estimate only as the costs may vary depending on the level of sediment accumulation and frequency of maintenance tasks required.

BMP Inspections	Number of Occurrences	Inspection Cost*	Number of Structures	Sum*
Catch Basin	4/year	$50	1	$200
Water Quality Unit	2/year	$100	1	$200
Sediment Forebay	2/year	$50	1	$100
Surface Infiltration Basin	2/year	$100	1	$200
Total Estimated Annual Cost of Inspections				$700

BMP Maintenance	Number of Occurrences	Maintenance Cost*	Number of Structures	Sum*
Catch Basin	4/year	$100	1	$400
Water Quality Unit	2/year	$500	1	$1,000
Sediment Forebay	4/year	$300	1	$1,200
Surface Infiltration Basin	2/year	$300	1	$600
Total Estimated Annual Cost of Maintenance				$3,200

*All above costs are estimates to be used for permitting purposes only. Actual maintenance costs are to be ascertained by the responsible party.

ADS® Barracuda® Concrete

Installation Guide

ADS Barracuda Max & Barracuda S4, S6, S8 Concrete Installation Guide

This installation guide is reference for installing the Barracuda Max S4, S6, S8 Water Quality Units into a precast concrete structure in the field.



(1) Deflector Plate



(1) Center Funnel Extender



(2) A/C Stainless Steel Tooth Set



(2) B/D Stainless Steel Tooth Set



(1) Barracuda Max Plastic Funnel

S4	 (4) Stainless Steel Funnel Mounting Flanges	 (1) Roll of Conseal®	 (16) Concrete Anchor ¼ x 2¼"
S6	 (4) Stainless Steel Funnel Mounting Flanges	 (3) Roll of Conseal®	 (16) Concrete Anchor ¼ x 2¼"
S8	 (8) Stainless Steel Funnel Mounting Flanges	 (4) Roll of Conseal®	 (22) Concrete Anchor ¼ x 2¼"

Please check that all components are on site. Below is a list of tools that may be required for installation.

- □ 1/4" Diameter Carbide Tipped Concrete Bit
- □ Standard Electrical or Battery Operated Drill
- □ Adjustable Wrench
- □ Marker for writing on the concrete wall
- □ Hammer Drill for Concrete (Fits the 1/4" Diameter Concrete Drill Bit)
- □ 7/16" Driver or deep socket for installation of provided ¼" Concrete Wedge Anchors
- □ Hammer
- □ Level
- □ Ladder that will extend to bottom of the structure
- □ Safety Glasses
- □ Hard Hat
- □ Protective Gloves
- □ Site Drawings
- □ ADS Design Layout

Installation Instructions (These directions assume the manhole base and riser have been assembled, but that the top slab/cone has not been set).

*Do not insert the inlet or outlet pipes until after the Barracuda Max internals have been installed. If pipes must be inserted in advance, the pipes should not protrude into the structure as they will interfere with installation of the bowl.

1. Install mounting flanges for the Barracuda Max plastic funnel. These flanges need to be installed at the same height, as indicated by model in Table 1. For example, the anchor holes for S4 flanges should be drilled 77" (1925 mm) from the sump floor. S4 and S6 models have four flanges and they need to be evenly spaced at 12, 3, 6, and 9 o'clock positions. S8 funnels require eight flanges that also need to be evenly spaced (i.e., forty-five degrees on a circle) around the inside of the manhole. This flange points are typically located in the third manhole section from the sump and also contain the pipe openings for the Barracuda Max unit. Use the same anchor procedure as you will when mounting the teeth (see step #4 below), using the ¼" (6.25 mm) concrete drill bit to drill 1¼" (31.25 mm) deep holes. Do not over drill the depth of the anchors. Lightly hammer the anchors in place and use locking nuts to firmly secure the flanges (Figure 1).
2. Next, mount the four sets of teeth vertically inside the manhole sump. Using the engineer's plans or the ADS layout, determine the correct orientation for the plastic funnel outlet hole in relation to the outlet pipe (Figures 2 and 5). The first set of teeth (marked as "A" on the teeth part) will be mounted under the center of the outlet hole from the Bowl. Mark that location with a plumb vertical line, this will serve as the "12 o' clock" landmark in the manhole (Figure 3). Repeat this process to mark lines at the 3, 6, and 9 o' clock positions for a total of four.
3. Each kit includes four sets of teeth. Two of these sets are stamped with the letters A and C. The other two sets are stamped B and D. The ADS shop drawing layout will label the teeth letters and all designs will be the A/B configuration (Figure 5). You will install each set of teeth in the correct location, with the indicated letter facing up (Figure 4). See Table 1 for the correct elevation for the top anchor location of each tooth set, measured from the sump floor for each Barracuda Max Unit. The teeth anchors are all at the same elevation. For example, for an S4 Barracuda the top anchor of an A or B indicated set of teeth will be 60" (1500 mm) off the sump floor. Mark the top anchor elevations on each of your four vertical lines (Figure 3), noting that A and B sets of teeth will be at the same height.



Figure 1



Figure 2



Figure 3

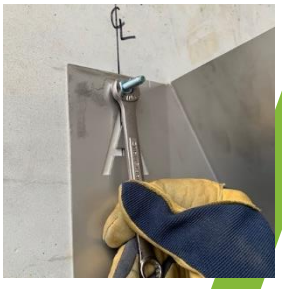
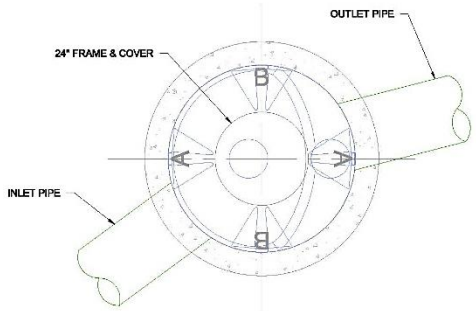


Figure 5

Figure 4



4. To fasten the sets of the teeth to the manhole, use the ¼" concrete drill bit and drill holes approximately 1¼" (31.25 mm) deep at your marked top anchor locations. Do not over drill into the concrete wall. Using a hammer, lightly tap the concrete anchors into the drilled holes (Figure 4). Hang the tooth set on the top anchor with the correct letter facing up and use a locking nut to loosely secure the tooth set to the wall (do not fully tighten the locking nut at this point). With the set of teeth hanging from the top anchor, line up and mark the bottom anchor location and drill the hole. Then hammer the bottom anchor in place and secure the teeth with a lock nut. Use an adjustable or socket wrench to tighten all the top and bottom locking nuts, except for the top nut on the outlet set of teeth (see step #5 below for the deflector plate installation, which will share the top anchor post), so that the teeth are firmly secured to the wall.
5. To attach the deflector plate to the concrete manhole you will use the exit tooth's top concrete anchor and share that linking point with the center tab of the deflector plate. Place the center tab of the deflector plate over the anchor bolt "post" on the outlet set of teeth and hand tighten the nut. Ideally, the plate will be held in place by this center point. Mark the location of the additional mounting tabs for the deflector plate while holding the plate relatively level. All deflector plate concrete anchors will be at the same elevation as the top tooth linking points and the anchors will be installed like the description in step #4. Once the two outer deflector plate linking points have been located, the installer can draw a vertical line and measure the exact location corresponding to the "high" teeth anchoring elevation. Once the deflector plate concrete anchors are installed tighten the nuts to complete the fastening of the deflector plate to the wall of the structure. See Figure 6 to show this more clearly.
6. Lower the plastic funnel into the structure (Figure 7), orienting the weir and outlet hole as depicted in the ADS layout (as identified in step 1). S6 and S8 units have eyebolts threaded holes on the top of the funnel to assist in lifting, and the eyebolts are provided in the equipment kit. If the eyebolts are misplaced, S6 units have ⅜" (9 mm) -16 threads and S8 units utilize ½" (12 mm) -13 threads. After the bowl is in place, install the center funnel extender through the hole and seat it until the tabs of the extender touch the bowl itself (Figure 8). This is a friction-based attachment and no fasteners are needed.
7. Next, you'll use Conseal to fill any gaps around the funnel. S6 and S8 units are provided with a metal funnel plug. This plug is placed in the funnel opening for worker safety and must be utilized ANYTIME SOMEONE ENTERS THE STRUCTURE. Unroll the Conseal and wedge it between the funnel and manhole to create a seal (Figure 9). Conseal should also be used to seal between the vertical edges of the weir wall and the manhole. The plastic funnel can expand with high temperature. Install the funnel during cooler parts of the day, or keep the funnel shaded until installation can mitigate fitment issues. Once the Conseal is installed, the internal component installation is complete. The funnel plug may be discarded (if applicable), and the top slab can be set. If the application calls for a grated inlet, orient the slab so the grate is above the inlet (large bowl) side of the plastic funnel.

For maintenance details, please refer to the Barracuda Max Maintenance Manual. If the application requires a trash rack or oil boom, reference the appropriate supplementary installation instructions.



Figure 6



Figure 7



Figure 8

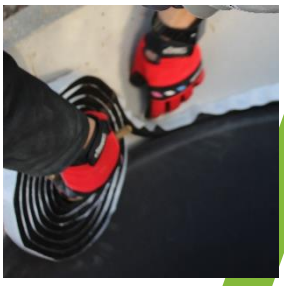


Figure 9

Table 1

	S4	S6	S8
Top Anchor Elevation from Sump Floor (A and B tooth indication)	60” (1270 mm)	68” (1475 mm)	90” (1880 mm)
Funnel Flange Anchor Elevation from Sump Floor	77” (1960 mm)	77” (1960 mm)	127” (3220 mm)

Note: Distances can be +/- 1-2 inches (25-50 mm) from these locations for the A, and B teeth, but flange elevations should be adhered to as much as possible and can only be lowered a maximum of 1 inch (25 mm) from these values listed above.
This guide is intended for field installations of Barracuda Max S4, S6, and S8 water quality units into precast manholes. For pre-casters installing internal components prior to job site delivery, contact ADS for possible modifications to component elevations.

ADS “Terms and Conditions of Sale” are available on the ADS website, www.ads-pipe.com
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Conseal is a registered trademark of Concrete Sealants, Inc.
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Barracuda® Max & Barracuda Maintenance Guide

One of Barracuda's advantages is the ease of maintenance. Like any system that collects pollutants, the Barracuda must be maintained for continued effectiveness. Maintenance is a simple procedure performed using a vacuum truck or similar equipment. The systems were designed to minimize the volume of water removed during routine maintenance, reducing disposal costs.

Contractors can access the pollutants stored in the manhole through the manhole cover. This allows them to gain vacuum hose access to the bottom of the manhole to remove sediment and trash. There is no confined space entry necessary for inspection or maintenance.

The entire maintenance procedure typically takes 2 to 4 hours, depending on the system's size, the captured material, and the vacuum truck's capacity.

Local regulations may apply to the maintenance procedure. Safe and legal disposal of pollutants is the responsibility of the maintenance contractor. Maintenance should be performed only by a qualified contractor.

Inspection and Cleaning Cycle

Periodic inspection is needed to determine the need for and frequency of maintenance. You should begin inspecting as soon as construction is complete and then on an annual basis. Typically, the system needs to be cleaned every 1-3 years.

Excessive oils, fuels or sediments may reduce the maintenance cycle. Periodic inspection is important.

Determining When to Clean

To determine the sediment depth, the maintenance contractor should lower a stadia rod into the manhole until it contacts the top of the captured sediment and mark that spot on the rod. Then push the probe through to the bottom of the sump and mark that spot to determine sediment depth.

Maintenance should occur when the sediment has reached the levels indicated in the Storage Capacity Chart.

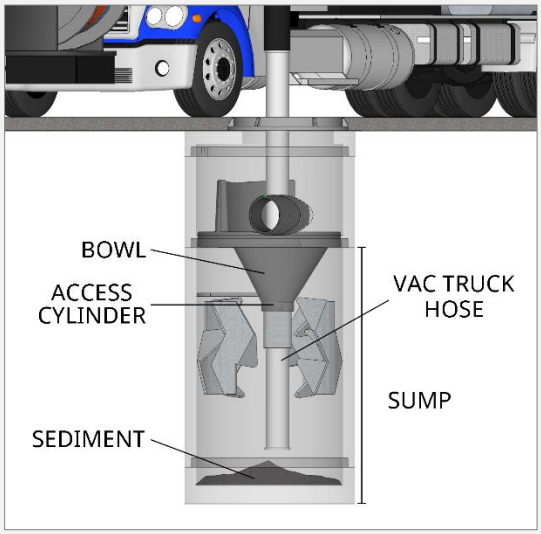
Barracuda Storage Capacities

Model	Manhole Diameter in. (mm)	Total System Volume Gallons (Liters)	Treatment Chamber Capacity Gallons (Liters)	Standard Sediment Capacity (20" depth) Yards^3 (meters^3)	NJDEP Sediment Capacity (50% of standard depth) Yards^3 (meters^3)
S3	36 (900)	264 (999)	212 (803)	0.44 (0.34)	0.22 (0.17)
S4	48 (1200)	665 (2517)	564 (2135)	0.78 (0.60)	0.39 (0.30)
S6	72 (1800)	1497 (5667)	1269 (4804)	1.75 (1.34)	0.88 (0.67)
S8	96 (2400)	4196 (15884)	3835 (14517)	3.10 (2.37)	1.55 (1.19)

Maintenance Instructions

1. Remove the manhole cover to provide access to the pollutant storage. Pollutants are stored in the sump, below the bowl assembly visible from the surface. Access this area through the 8" (200 mm), 10" (250 mm), 15" (375 mm) or 20" (500 mm) diameter access cylinder.
2. Use a vacuum truck or other similar equipment to remove all water, debris, oils and sediment. See figure 1.
3. Use a high pressure hose to clean the manhole of all the remaining sediment and debris. Then, use the vacuum truck to remove the water.
4. Fill the cleaned manhole with water until the level reaches the invert of the outlet pipe.
5. Replace the manhole cover.
6. Dispose of the polluted water, oils, sediment and trash at an approved facility.
    a. Local regulations prohibit the discharge of solid material into the sanitary system. Check with the local sewer authority for authority to discharge the liquid.
    b. Some localities treat the pollutants as leachate. Check with local regulators about disposal requirements.
    c. Additional local regulations may apply to the maintenance procedure.

Figure 1



ADS "Terms and Conditions of Sale" are available on the ADS website, www.ads-pipe.com
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Project: Proposed Building Addition

Address: 223 Garden Street, Agawam, MA

BPM Name:

Responsible Party:

Date:

Page: 1 of 1

Operation & Maintenance Inspection Checklist

BMP Element:	Potential Problem:	Resolution:	Pass	Fail	Recommended Remediation
Bituminous Concrete Roadway	Build-up of sediment over the winter months and collection of leaves during the fall months.	Sweep roadway using a high-efficiency street sweeper.			
Deep-Sump Catch Basins	Sediment has accumulated to a depth greater than the original design depth for sediment storage, approximately 2-feet of sediment.	Remove the sediment and dispose of in accordance with local and state regulations.			
Stormwater Piping	Blockage of inlet/outlet pipes due to debris or sediment accumulation.	Remove any debris and sediment via proper means. Dispose of debris/sediment in accordance with local & state regulations			
Flared End Sections	Vegetation has started to grow within the riprap area.	Remove vegetation immediately.			
	Accumulation of sediment/debris at the culvert inlet.	Remove sediment or debris such that the culvert has free flow.			
	Erosion is occuring where riprap has been dislodged.	Remedy scoured area and replace riprap immediately.			
Surface Infiltration Basin	Standing water inside basin.	Verify that sediment is not entering the basin. Remove collected sediment and scour basin bottom. Replace damaged vegetation			
	Erosion is occuring on the side slope or around the flared end section.	Remedy scoured area and replace vegetation.			
	Trees/Shrubs are starting to grow within the basin.	Remove trees/shrubs and vegetate with grass.			
	Debris has collected inside the basin.	Remove debris and remedy any damage caused.			
Sediment Forebay	Excessive sediment accumulation.	Remove sediment and debris.			
	Erosion is occurring on the side slope or around the flared end section.	Remedy scoured area and/or replace riprap immediately.			
	Debris has collected inside the basin.	Remove debris and remedy any damage caused.			
	Sediment has accumulated to 6" or above.	Remove the sediment and re-establish the sediment forebay with vegetation to the original bottom elevation			
Water Quality Units	Sediment has accumulated to a depth greater that the original design depth for sediment storage.	Remove sediment and disposed of in accordance with local and state regulations.			

Inspector's Signature

Date

Appendix H: Illicit Discharge Compliance Statement

Illicit Discharge Compliance Statement

The owners of the land/responsible party will be responsible for prohibiting illicit discharges to the stormwater management system during construction and during its life of operation. The stormwater management system is comprised of the components for conveying, treating, and infiltrating stormwater runoff on-site, including stormwater best management practices and any pipes intended to transport stormwater to the groundwater, a surface water, or municipal separate storm sewer system. An illicit discharge shall constitute any connection or discharge to the stormwater management system including, but not limited to, wastewater discharges, discharge of stormwater contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease.

Responsible Party*:
MBNZ Holding Co.
c/o Nasser Zebian
223 Garden Street
Agawam, MA 01030

*The party listed shall be responsible for implementation and record keeping of the requirements listed in this operation and maintenance plan. Upon sale of property or any other transition of ownership, the responsible party shall be reinstated as the new owner or any other group created as determined by the owner.

_____ _____

Signature of Responsible Party Representative Date

Appendix I: Low Impact Development Considerations

Low Impact Development Considerations

Proposed Building Addition

223 Garden Street
Agawam, MA
(Parcel ID: G8-2-3)

Owner/Applicant:

MBNZ Holding Co.
c/o Nasser Zebian
223 Garden Street
Agawam, MA 01030

RLA Project File: 250214

June 25, 2025

R LEVESQUE ASSOCIATES, INC
A LAND PLANNING SERVICES COMPANY
40 School Street · Westfield, MA 01085
p 413.568.0985 · f 413.568.0986 · www.rlaland.com

Introduction

Per the Massachusetts Stormwater Handbook, project proponents must consider environmentally sensitive site design and low impact development techniques to effectively manage stormwater. As a part of the proposed project, the proponent has considered a number of environmentally sensitive, low impact development techniques to prevent the generation of stormwater and non-point source pollution.

The following is a detailed description of the considerations for each low impact development measure. For ease of review, RLA has provided the consideration of each measure as detailed in the Massachusetts Stormwater Report Checklist.

Low Impact Development (Lid) Measures

1. Environmentally Sensitive Project Approach
   The applicant is proposing to improve the existing property by constructing a building addition and stormwater management system to mitigate the impacts of the proposed project and to bring previously constructed site expansion into compliance with stormwater management regulations. All work is proposed within historically cleared and developed areas and will provide an improvement over existing conditions.

2. No disturbance to any Wetland Resource Areas
   No wetland resource areas are located within or adjacent to the property therefore no disturbance is proposed to wetland resource areas.

3. Site Design Practices (e.g. clustered development, reduced frontage setbacks)
   This LID is not applicable for this project. The proposed project does not include any changes to existing property lines therefore no cluster or reduced frontage options are available.

4. Reduced Impervious Area (Redevelopment Only)
   The proposed project is not part of a redevelopment project. Impervious areas have been reduced to functional minimums required for applicant needs and town requirements.

5. Minimizing disturbance to existing trees and shrubs
   The proposed site improvements have been designed within the historically developed and cleared portions of the property. The existing tree line will not be disturbed as part of the proposed site improvements and any disturbed landscaped area will be restored.

6. LID Site Design Credit Requested
   No LID Site Design Credit is requested for the proposed project.

7. Use of "country drainage" versus curb and gutter conveyance and pipe
   Country drainage conveyance requires a larger footprint than curb and gutter conveyance and creates areas with undulating terrain. Due to pre-existing constraints and limitations of the project site, country drainage was not utilized.

8. Bioretention Cells (includes Rain Gardens)
   Due to stormwater burdens from the 100-year storm event, a surface infiltration basin was determined to be the only BMP capable of meeting required town regulations.

9. Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
   Constructed stormwater wetlands require very specific design scenarios such as large tributary areas and high groundwater conditions to support wetland characteristics among others. The sub-catchment drainage area and the on-site soil conditions for this project site is not large enough to incorporate a constructed stormwater wetland.

10. Treebox Filter
    The extensive costs associated with treebox filters, along with the climatic conditions of the area over the winter, present unique circumstances that would only provide a maintenance problem and a potential hazard for the owner. Additionally, the proposed stormwater management system is a substantial improvement over existing conditions providing water quality treatment and groundwater recharge that currently do no exist. Treebox filters were not selected as a viable option to incorporate as a stormwater BMP.

11. Water Quality Swale
    Water quality swales are best management practices that require a greater footprint of development in order to facilitate the grading of the swale. Due to the limited available developable area within the historically developed portions of the site, water quality swales were not utilized.

12. Grass Channel
    Grassed channels are best management practices that require a greater footprint of development in order to facilitate the grading of the swale. Due to the limited available developable area within the historically developed portions of the site, grass channels were not utilized.

13. Green Roof
    Based on project size and scope, green roofs were not selected as a cost-effective BMP for this project.

14. Other
    Please see the Stormwater Report for more information.

Town of Agawam

Building Department
1000 Suffield Street, Agawam, Massachusetts 01001
Telephone - (413) 821-0632

April 8, 2026

To: Office of Planning and Community Development:

Re: Revised Site Plan Review Comments- 223 Garden Street Feeding Hills, MA- Vermette Auto Body;

The Building Department has the following comments at this time for the revised site plan dated March 19, 2026 for the above referenced address:

- Special Permit on file (Case #2030) would need to be amended with the Zoning Board of Appeals for the revised site plan.

- Previously granted Special Permit (Case #2030) appears to have never been recorded with the Hampden Registry of Deeds.

Respectfully,

Kevin Duquette
Kevin Duquette
Inspector of Buildings
Town of Agawam

DPW
1000 Suffield Street
Agawam, MA 01001
Phone: 413-821-0600
Fax: 413-821-0631

Town of Agawam
Department Of Public Works

MEMORANDUM

To:	Planning Department
CC:	File
From:	Engineering Division
Date:	April 16, 2026
Subject:	SP 353 – #223 Garden Street – Revised Building Addition

The Agawam Engineering Division has reviewed the revised Site Plans and Stormwater Drainage Report for the proposed building addition to be located at #223 Garden Street; prepared by R Levesque Associates, Inc; dated March 19, 2026. Based on our review, we have the following comments:

1. Since there are forty-three (43) spaces proposed for the project site, two (2) accessible parking spaces will be required, as per ADA regulations.

2. Engineering requests clarification as to how the parking spaces proposed within the gravel area will be delineated. If more of the gravel area is utilized for parking than is shown on the site plans, that could increase the total number of parking spaces on the property to more than fifty (50), triggering the necessity of another accessible space (total of 3).

3. The Bituminous Concrete Paving Detail should show the thickness of the asphalt binder course as three (3) inches, as per Agawam Standards.

4. The proposed gravel parking area and riprap slope appears to have expanded such that their western side is now located directly over the section of the existing 12" HDPE drainage outfall pipe to remain in use. Engineering recommends the outfall of the infiltration basin be redesigned so that the pipe will be outside of the gravel and riprap areas.

5. Engineering recommends the pipe systems for collecting the roof runoff be combined so that there is only one invert discharging into the infiltration basin instead of two.

6. According to the HydroCAD calculations, the peak water elevation within the infiltration basin during the 100-year storm event will be 188.18 FT. The highest elevation of the basin is listed as 189 FT. This does not provide the required one (1) foot of freeboard between the peak water elevation and the top of the basin.

7. On Sheet C-5, the rim elevation of PYD-1 is shown as 186.80. However, the nearest grades indicate a proposed ground surface at that location between 189 - 189.35. Engineering recommends the Developer install a manhole in this location rather than a yard drain. Based on the proposed grades, it appears most of the runoff in that area will be collected by PCB-1.

Town of Agawam
Department Of Public Works

DPW
1000 Suffield Street
Agawam, MA 01001
Phone: 413-821-0600
Fax: 413-821-0631

8. Contractor will need to acquire all necessary State and Town permits before work in the roadway.

Engineering reserves the right to make additional comments as new information is submitted. If you have any questions, please do not hesitate to contact this division.

Sincerely,

Michelle C. Chase, P.E.
Town Engineer

Benjamin D. Ashley Jr., P.E.
Civil Engineer II

Michael F. Albro, P.E.
Assistant Town Engineer

Taryn Egerton

From: Brian Machos
Sent: Friday, April 17, 2026 7:36 AM
To: Taryn Egerton
Subject: RE: Amended Site Plan - 223 Garden Street

I apologize but I was out yesterday attending a funeral, so I am just seeing this now. I submitted a memo to the planning board on the initial proposal to the addition, with no issues. I still do not have any concerns with this project.

Brian

From: Taryn Egerton <TEgerton@agawam.ma.us>
Sent: Wednesday, April 15, 2026 3:22 PM
To: Brian Machos <BMachos@agawam.ma.us>
Subject: FW: Amended Site Plan - 223 Garden Street

Hi Brian,
Just checking to see if you have any comments on this.

Just an FYI - The last sheet of the plan set has a temporary traffic control plan that wasn't included in the previous submittal. I don't know if that's something you need to approve at this stage or during construction.

Thanks in advance!

Taryn Egerton
Planning Director & Conservation Agent
Planning Department

413.726.9737 | tegerton@agawam.ma.us

TOWN OF Agawam MASSACHUSETTS

Please be aware that applications approved by the Town of Agawam are considered public information. Unfortunately, email spammers often monitor municipal records and attempt to compromise communications by sending fraudulent emails, many of which appear to be invoices from the town to applicants.

To avoid confusion or potential scams, please note that the Planning Office including the Planning Board, Zoning Board of Appeals, and Conservation Commission requires all application fees to be submitted at the time of application.

If you receive an invoice after submitting your application, we recommend you to contact our office at 413-726-9737 to determine the authenticity of the invoice.

Site Plans

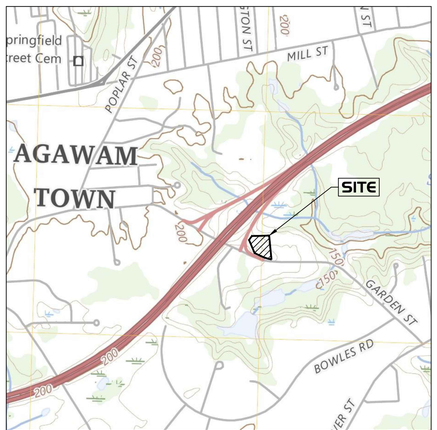
Proposed Building Addition

223 Garden Street
Agawam, MA
Parcel ID: G8-2-3

AS PREPARED FOR

MBNZ Holding Co.
c/o Nasser Zebian

223 Garden Street
Feeding Hills, MA 01030



SOURCE: USGS

NORTH

June 25, 2025
Rev: April 29, 2026

DRAWING INDEX			
SHEET NO.	SHEET NAME	ISSUE DATE	REVISION DATE
T-1	TITLE SHEET	6/25/25	4/29/26
EX-1	EXISTING CONDITIONS PLAN	6/24/25	
C-1	NOTES, SYMBOL & LINE LEGEND, AND ABBREVIATIONS	6/25/25	
C-2	CONSTRUCTION NOTES	6/25/25	
C-3	DEMOLITION AND REMOVALS PLAN	6/25/25	3/19/26
C-4	LAYOUT AND MATERIALS PLAN	6/25/25	4/29/26
C-5	GRADING, DRAINAGE, EROSION & SEDIMENTATION CONTROL PLAN	6/25/25	4/29/26
TM-1	TEMPORARY TRAFFIC CONTROL PLAN	11/19/25	3/19/26
D-1	DETAILS	6/25/25	4/29/26
D-2	DETAILS	6/25/25	
D-3	DETAILS	6/25/25	4/29/26

BY

R LEVESQUE ASSOCIATES INC
A LAND PLANNING SERVICES COMPANY

40 School Street · Westfield, MA · 01085
ph 413.568.0985 · fax 413.568.0986
www.rlaland.com

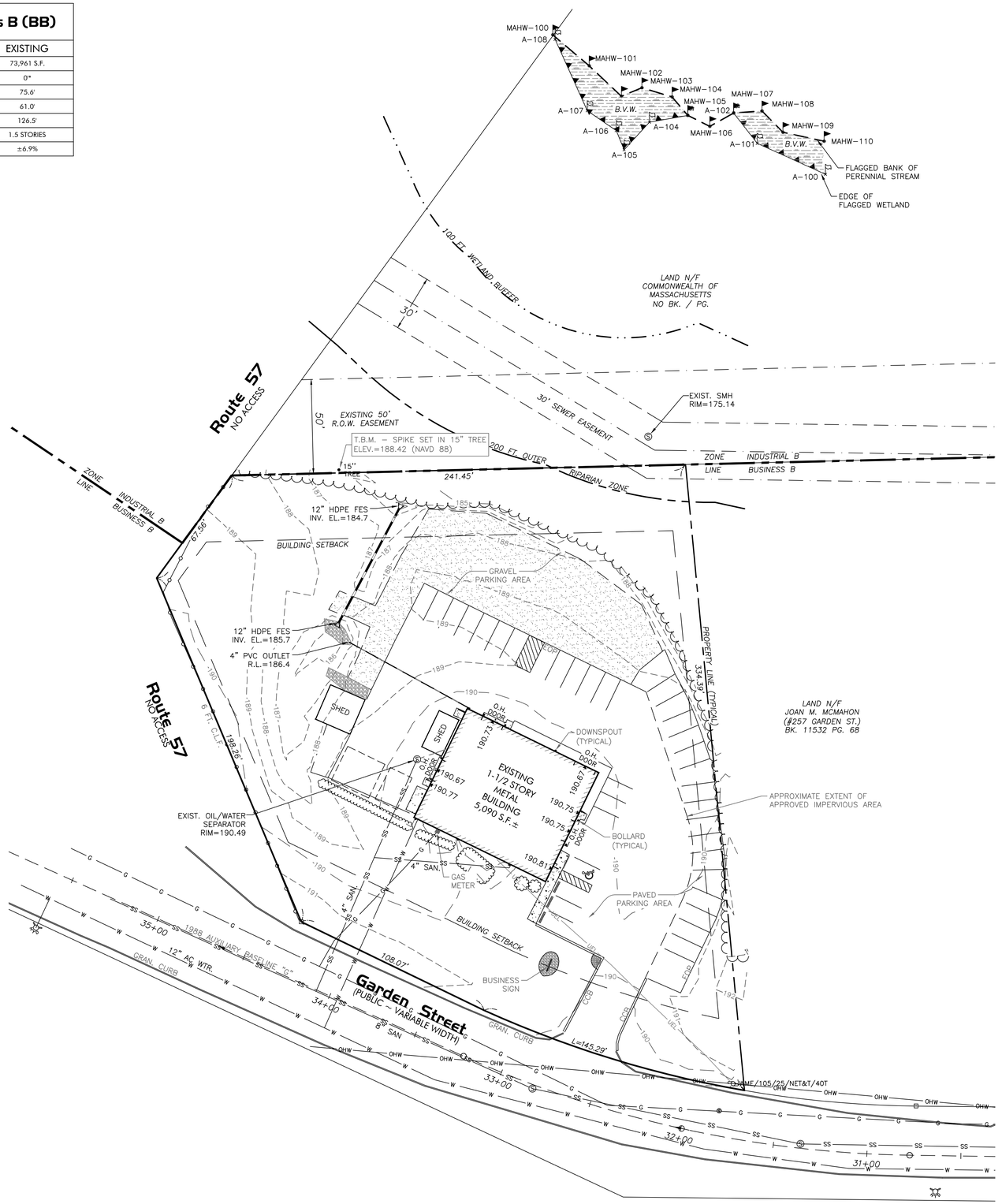
RLA Project Number: 250214

PERMITTING
NOT FOR CONSTRUCTION

ZONING REVIEW - Business B (BB)

TYPE (MINIMUM)	REQUIRED	EXISTING
AREA	10,000 S.F.	73,961 S.F.
FRONTAGE	100 FT	0*
FRONT YARD	35 FT	75.6'
SIDE YARD	10 FT	61.0'
REAR YARD	35 FT	126.5'
HEIGHT (MAX)	45 FT (3 STORIES)	1.5 STORIES
BUILDING COVERAGE (MAX)	50%	±6.9%

* ELUSORY FRONTAGE DUE TO 1988 STATE HIGHWAY LAYOUT



NOTES

1. THE RECORD OWNER OF THE SUBJECT PARCEL IS MBNZ HOLDING CO. SEE HAMPDEN COUNTY REGISTRY OF DEEDS BOOK 24996 PAGE 11.
2. THE PROPERTY LINES SHOWN HEREON ARE BASED UPON A PLAN RECORDED IN THE HAMPDEN COUNTY REGISTRY OF DEEDS IN PLAN BOOK 319 PAGE 43.
3. THE EXISTING BUILDING(S) SHOWN HEREON ARE BASED ON AN APPROXIMATE MEASUREMENT OF THE OUTSIDE PERIMETER OF THE EXISTING STRUCTURES. THE ACTUAL LOCATION OF THE EXISTING BUILDING WALLS AND CORNERS SHOULD BE VERIFIED IN THE FIELD PRIOR TO ANY CONSTRUCTION WORK THAT WOULD ABUT OR TAKE PLACE ADJACENT TO THE EXISTING BUILDING(S). IF THE PLAN HEREON IS USED FOR CONSTRUCTION LAYOUT PURPOSES, THE PARTIES CONDUCTING LAYOUT SHALL CONTACT R. LEVESQUE ASSOCIATES INC. PRIOR TO SAID LAYOUT TO DETERMINE PROPER CONTROL. PLEASE NOTE WHILE THE BUILDING(S) ARE SHOWN TO BE SQUARE, IT SHOULD NOT BE ASSUMED THAT THE WALLS ARE SQUARE OR PLUMB. R. LEVESQUE ASSOCIATES TAKES NO RESPONSIBILITY FOR THIRD PARTY LAYOUT OF THE PLAN SHOWN HEREON.
4. THIS PLAN HAS BEEN PREPARED FOR SITE PLANNING PURPOSES AND SHALL NOT BE USED FOR THE CONVEYANCE OF LAND OR FOR ANY OTHER USE.
5. SUBJECT PARCEL CONTAINS 73,961 S.F.
6. THE SUBJECT PROPERTIES SHOWN HEREON MAY BE SUBJECT TO RIGHTS AND EASEMENTS AS CONTAINED IN THE VARIOUS DEEDS OF RECORD DESCRIBING SAID PROPERTIES. THE LOCATION AND EXTENT OF ANY SUCH RIGHTS AND EASEMENTS IS NOT THE SUBJECT OF THIS PLAN.
7. THE OFFSITE BORDERING VEGETATED WETLANDS AND PERENNIAL STREAM DEPICTED HEREON WERE FLAGGED BY R LEVESQUE ASSOCIATES INC. AND LOCATED VIA RTK GPS SURVEY ON APRIL 14, 2025.
8. THE EXISTING CONDITIONS INFORMATION SHOWN IS BASED UPON A TOPOGRAPHIC SURVEY PERFORMED BY R LEVESQUE ASSOCIATES, INC. ON MARCH 12, 2025.
9. THE UNDERGROUND UTILITIES SHOWN HEREON HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION, DIGSAFE MARKINGS AND AVAILABLE RECORD DATA. R LEVESQUE ASSOCIATES, INC. MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN HEREON COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. R LEVESQUE ASSOCIATES, INC. FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN HERE ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM AVAILABLE INFORMATION.
10. ABUTTERS DEPICTED HEREON ARE TAKEN FROM THE TOWN OF AGAWAM MUNICIPAL GIS WEBSITE
11. SUBJECT PARCEL IS ZONED BUSINESS B ACCORDING TO THE TOWN OF AGAWAM ZONING MAP.
12. THE SUBJECT PARCEL IS NOT LOCATED WITHIN A SPECIAL FLOOD ZONE AREA ACCORDING TO FLOOD INSURANCE RATE MAP NUMBER 25013C0383E – EFFECTIVE DATE: JULY 16, 2013.
13. THE SUBJECT PROPERTY IS NOT LOCATED WITHIN NATURAL HERITAGE & ENDANGERED SPECIES PROGRAM (NHESP) JURISDICTION.

RLA
R LEVESQUE ASSOCIATES INC
Landscape Architects
Civil Engineers · Land Surveyors
Environmental Consultants
ph: 413.568.0985 fax: 413.568.0986
40 School Street
Westfield, MA 01085
rlaland.com

EXISTING CONDITIONS PLAN

223 GARDEN STREET - PARCEL G8 2 3
AGAWAM, MASS.

COMMONWEALTH OF MASSACHUSETTS
MARC E. SHUTE
No. 33610
PROFESSIONAL LAND SURVEYOR

PREPARED FOR:

Vermette Auto Body
c/o Mr. Nasser Zebian
223 Garden Street
Agawam, MA 01030

ISSUANCE DATE: June 24, 2025

REVISIONS:	DATE:

DRAFTED BY: J.L. & J.W.M.

UNAUTHORIZED ALTERATION OF THIS DOCUMENT IS A VIOLATION OF MASSACHUSETTS STATE LAW

SCALE: 1" = 30'

RLA PROJ. NUMBER: 250214

DRAWING#	REV.
EX-1	-

S:\Projects\2025\250214 - Zebian - 223 Garden St., Vermette Auto Body, Feeding Hills\05 Civil 3D\250214 - EXIST.dwg

SYMBOL & LINE LEGEND

- IRON PIPE FOUND
- IRON PIPE TO BE SET
- CONCRETE BOUND FOUND
- CONCRETE BOUND TO BE SET
- COMPUTED POINT
- EXISTING SIGN
- EXISTING MAILBOX
- MW EXISTING MONITORING WELL
- EXISTING LIGHT POLE
- UTILITY POLE
- GUY ANCHOR
- EXISTING ELECTRIC MANHOLE
- EXISTING TELEPHONE MANHOLE
- EXISTING CABLE TV BOX
- EXISTING WELL LOCATION
- WV EXISTING WATER VALVE
- EXISTING WATER SHUT-OFF
- EXISTING HYDRANT
- PROPOSED WATER VALVE
- PROPOSED HYDRANT
- EXISTING GAS VALVE
- EXISTING SANITARY SEWER MANHOLE
- EXISTING CATCH BASIN
- EXISTING DRAIN MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED MANHOLE
- SB-1 SOIL BORING LOCATION
- TP-1 TEST PIT LOCATION
- P-1 PERC TEST LOCATION
- WF-1 WETLAND FLAG LOCATION
- R-1 M.A.H.W. FLAG LOCATION
- EXISTING STONE WALL
- TREE LINE
- × 102.4 EXISTING SPOT GRADE
- 219 EXISTING CONTOUR
- × 94.7 PROPOSED SPOT GRADE
- 214 PROPOSED CONTOUR
- EDGE OF WETLAND
- FENCE LINE
- GUARDRAIL
- OHW OHW EXISTING OVERHEAD WIRES
- UEL UEL EXISTING UNDERGROUND ELECTRIC
- TEL TEL EXISTING TELEPHONE LINE
- G G EXISTING GAS LINE
- W W EXISTING WATER LINE
- SD SD EXISTING STORM DRAIN
- SS SS EXISTING SANITARY SEWER
- LOW LOW LIMIT OF WORK LINE
- SF SF SF SILT FENCE LINE

ABBREVIATIONS

A.F.F.	–	ABOVE FINISHED FLOOR
A.F.S.	–	ABOVE FINISHED SLAB
APPROX.	–	APPROXIMATE
A.T.F.	–	ABOVE TOP OF FOUNDATION
BLDG.	–	BUILDING
BLK.	–	BLOCK
BOT.	–	BOTTOM
B.O.W.	–	BOTTOM OF WALL
BRG.	–	BEARING
CB.	–	CATCH BASIN
CL	–	CENTERLINE
C.I.	–	CAST IRON
CLR.	–	CLEAR
CONC.	–	CONCRETE
CONT.	–	CONTINUOUS
CONTR.	–	CONTRACTOR
DBL.	–	DOUBLE
DET.	–	DETAIL
D.I.	–	DUCTILE IRON
DIA.	–	DIAMETER
DIM.	–	DIMENSION
DT'L.	–	DETAIL
DWG.	–	DRAWING
EA.	–	EACH
ELEC.	–	ELECTRIC
ELEV.	–	ELEVATION
EXIST.	–	EXISTING
EXT.	–	EXTERIOR
FFE	–	FINISH FLOOR ELEVATION
FIN.	–	FINISH
FLR.	–	FLOOR
FOUND.	–	FOUNDATION
FT.	–	FOOT OR FEET
INSTL.	–	INSTALLED
LT.	–	LIGHT
MAX.	–	MAXIMUM
M.A.H.W.	–	MEAN ANNUAL HIGH WATER
MH.	–	MANHOLE
MIN.	–	MINIMUM
MISC.	–	MISCELLANEOUS
N.T.S.	–	NOT TO SCALE
O.A.	–	OVERALL
O.C.	–	ON CENTER
PCB	–	PROPOSED CATCH BASIN
PDMH	–	PROPOSED DRAIN MANHOLE
PFES	–	PROP. FLARED END SECTION
POCS	–	PROP. OUTLET CONTROL STRUCT.
PROP.	–	PROPOSED
PSMH	–	PROP. SANITARY SEWER MANHOLE
PWQU	–	PROP. WATER QUALITY UNIT
P.S.I.	–	POUNDS PER SQUARE INCH
REINF.	–	REINFORCING
R.H.	–	RIGHT HAND
SHT.	–	SHEET
SPEC.	–	SPECIAL OR SPECIFICATIONS
SQ.	–	SQUARE
ST.	–	STEEL
STA.	–	STATION
T.O.F.	–	TOP OF FOUNDATION
T.O.W.	–	TOP OF WALL
T.S.	–	TOP OF STEEL
TYP.	–	TYPICAL
W/	–	WITH
WTR.	–	WATER
W.W.M.	–	WELDED WIRE MESH

EROSION & SEDIMENT CONTROL NOTES

MANAGEMENT STRATEGIES

1. CONSTRUCTION TRAFFIC SHALL BE LIMITED TO THE CONSTRUCTION ENTRANCE.
2. CONSTRUCTION SEQUENCE SHALL BE PHASED TO AVOID LEAVING LARGE AREAS EXPOSED FOR LONG PERIODS OF TIME.
3. TEMPORARY SEED AND MULCH SHALL BE APPLIED IMMEDIATELY FOLLOWING ROUGH GRADING.
4. SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED CONTINUOUSLY, ESPECIALLY FOLLOWING STORM EVENTS TO LOCATE FAILING CONTROL MEASURES AND CONDUCT ROUTINE MAINTENANCE OPERATIONS.
5. THE CONSTRUCTION SUPERINTENDENT SHALL INFORM ALL ON-SITE WORKERS OF THE SEDIMENTATION CONTROL PROGRAM.

VEGETATIVE CONTROL PRACTICES

1. TOPSOIL STOCKPILING: TOPSOIL SHALL BE STRIPPED FROM AREAS TO BE DISTURBED AND STOCKPILED FOR LATER USE. STOCKPILE LOCATION SHALL BE APPROVED BY THE OWNER AND ENGINEER AND BE WITHIN LIMIT OF WORK.
2. TEMPORARY SEEDING: THE TEMPORARY SEDIMENT BASIN, TOPSOIL STOCKPILE AND ROUGH GRADED AREAS SHALL BE SEEDED WITH WINTER RYE AT A RATE OF 30 LBS. PER ACRE ANY SOILS THAT ARE LEFT EXPOSED AND UNDISTURBED FOR MORE THAN 30 DAYS SHALL BE TEMPORARILY SEEDED.

A. SITE PREPARATION
- COMPLETE ALL ROUGH GRADING ACTIVITIES
- REMOVE ALL ROCKS AND DEBRIS LARGER THAN 3" IN DIAMETER FROM AREAS TO BE TEMPORARILY SEEDED. -EVENLY APPLY LIME TO ACHIEVE A PH VALUE OF 6.0.
- EVENLY APPLY 14 LBS. OF 5-10-10 ANALYSIS FERTILIZER TO A DEPTH OF 4" USING SUITABLE EQUIPMENT.
- SEEDBED IS TO BE LEFT IN FIRM AND SMOOTH CONDITION.
- THE LAST TILLAGE OPERATION SHALL BE PERFORMED ACROSS THE SLOPE.

B. ESTABLISHMENT
- EVENLY APPLY SEED IN ACCORDANCE WITH THE SPECIES AND RATE INDICATED ABOVE BY MEANS OF BROADCASTING OR HYDROSEEDING.
- UNLESS HYDROSEEDED, COVER SEED WITH 1/4" TO 1/2" OF TOPSOIL
- APPLY MULCH OR EROSION CONTROL BLANKET IMMEDIATELY FOLLOWING SEEDING.
- VERIFY SEEDING DATES WITH ENGINEER/LANDSCAPE ARCHITECT. IF ENGINEER/LANDSCAPE ARCHITECT DETERMINES THAT SEED CANNOT BE APPLIED DUE TO CLIMATE, TOPSOIL SHALL NOT BE SPREAD AND MULCHING SHALL BE APPLIED TO THE EXPOSED SURFACE TO STABILIZE SOILS UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.
- PERMANENT SEEDING SHALL BE APPLIED BETWEEN APRIL 15 AND SEPTEMBER 30. TEMPORARY SEEDING SHALL BE APPLIED TO ALL DISTURBED AREAS OUTSIDE THIS TIME FRAME, UPON APPROVAL BY THE ENGINEER/LANDSCAPE ARCHITECT.

C. MAINTENANCE
- ALL SEEDED/MULCHED AREAS SHALL BE INSPECTED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHALL BE REPAIRED AS NECESSARY.

NONSTRUCTURAL CONTROL PRACTICES

1. SCARIFICATION: EXPOSED SLOPES EXCEEDING 4:1 SHALL BE SCARIFIED AT RIGHT ANGLES TO THE SLOPE. PROVIDE PERIODIC UPGRADING OF SERRATIONS DURING EXPOSED PERIOD UNTIL VEGETATION IS ESTABLISHED. PROVIDE VEGETATIVE COVER AS SOON AS POSSIBLE.
2. STRAW MULCH: STRAW MULCH SHALL BE APPLIED IN CONJUNCTION WITH TEMPORARY/PERMANENT SEEDING AND TO GRADED AREAS WHICH REMAIN EXPOSED OUTSIDE OF RECOMMENDED SEEDING DATES. MULCH SHALL BE APPLIED AT 90 LBS. PER 1000 S.F. CONTRACTOR SHALL PERIODICALLY INSPECT AND REAPPLY AS NECESSARY, PARTICULARLY FOLLOWING SIGNIFICANT STORM EVENTS.
3. TOPSOIL: DISTURBED AREAS SHALL BE TOPSOILED PRIOR TO SEED APPLICATION. APPLICATION STANDARDS:
   - REMOVE ALL ROCKS AND DEBRIS OVER 1"-1 1/2" IN DIAMETER.
   - SCARIFY SURFACE PRIOR TO SEED APPLICATION.
   - APPLY 6" DEPTH OF TOPSOIL.
4. SILT FENCE: SILT FENCE SHALL BE INSTALLED AROUND THE PERIMETER OF THE SITE, AT CULVERT OUTLET LOCATIONS, OR AS INDICATED ON THE DRAWINGS. SILT FENCE SHALL BE INSPECTED AND REPAIRED ROUTINELY, ESPECIALLY FOLLOWING STORM EVENTS UNTIL THE SITE HAS BEEN STABILIZED (COVER > 70%) BY VEGETATION.

STRUCTURAL CONTROL PRACTICES

1. RIP-RAP OUTLET PROTECTION: RIP-RAP SHALL BE PROVIDED AT ALL PIPE OUTLETS. MATERIAL SHALL BE HARD, DURABLE FIELD OR QUARRY STONE WHICH IS ANGULAR AND RESISTS BREAKING DOWN WHEN EXPOSED TO WATER OR WEATHERING.
2. CONSTRUCTION ENTRANCE: CONSTRUCTION ENTRANCE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DRAWINGS.
3. DUST CONTROL: A WATER TRUCK SHOULD BE LOCATED ON-SITE FOR DUST CONTROL WHILE WORK IS PROCEEDING. MAINTENANCE SEDIMENTATION CONTROL MEASURES SHALL BE CHECKED WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL EVENT. THE FOLLOWING ITEMS SHALL BE CHECKED IN PARTICULAR:
   A. RIP-RAP OUTLET PROTECTION SHALL BE CHECKED REGULARLY FOR SEDIMENT ACCUMULATION. IF SIGNIFICANT AMOUNTS OF SEDIMENT ACCUMULATE, RIP-RAP SHALL BE REMOVED AND REPLACED.
   B. SILT FENCING SHALL BE INSPECTED REGULARLY FOR UNDERMINING AND DETERIORATION. REMOVE SEDIMENT FROM BEHIND FENCE WHEN IT BECOMES 6 INCHES DEEP.
   C. SEEDED/MULCHED AREAS SHALL BE INSPECTED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHALL BE REPAIRED AS NECESSARY.

SILT FENCE INSTALLATION NOTES

1. THIS SEDIMENT BARRIER UTILIZES MIRAFI ENVIROFENCE (100X) OR EQUAL. IT IS DESIGNED FOR SITUATIONS IN WHICH ONLY SHEET OR OVERLAND FLOWS ARE EXPECTED.
2. THE HEIGHT OF THE BARRIER SHALL NOT EXCEED 36 INCHES (HIGHER BARRIERS MAY IMPOUND VOLUMES OF WATER SUFFICIENT TO CAUSE FAILURE OF THE STRUCTURE). IDEALLY THE FILTER FENCE SHALL BE PLACED 10 FEET AWAY FROM THE TOE OF SLOPE.
3. WHEN JOINTS ARE NECESSARY, FILTER FABRICS SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT STAKES WITH A MINIMUM 6-INCH OVERLAP, AND SECURELY SEALED. SEE MANUFACTURER'S RECOMMENDATION.
4. STAKES SHALL BE SPACED A MAXIMUM OF 10 FEET APART AT THE BARRIER LOCATION AND DRIVEN SECURELY INTO THE GROUND (MINIMUM OF 12 INCHES). IN APPLICATIONS WHERE HEAVY FLOWS ARE EXPECTED SUCH AS IN-STREAM INSTALLATIONS STAKE SPACING SHALL BE PER MANUFACTURER'S RECOMMENDATIONS AND/OR THE ENGINEERS RECOMMENDATIONS.
5. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 6 INCHES WIDE AND 6 INCHES DEEP ALONG THE LINE OF STAKES AND UPSLOPE FROM THE BARRIER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
6. THE PRE ASSEMBLED SILT FENCE SYSTEM SHALL BE UNROLLED, POSITION THE STAKES ON THE DOWNHILL SIDE OF THE TRENCH AND HAMMER THE STAKES AT LEAST 12 INCHES INTO THE GROUND.
7. THE BOTTOM SIX (6) INCHES OF THE FABRIC SHALL BE LAID INTO THE TRENCH TO PREVENT UNDERMINING BY STORM WATER RUNOFF.
8. BACKFILL THE TRENCH OVER THE FILTER FABRIC AND COMPACT SUFFICIENTLY TO PREVENT THE RUNOFF FROM ERODING THE BACKFILL.
9. THE FABRIC SHALL NOT EXTEND MORE THAT 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE. FILTER FABRIC SHALL NOT BE STAPLED TO EXISTING TREES OR SUPPORTS OTHER THAN THE STANDARD STAKES.
10. INSTALLED SILT FENCE BARRIERS SHALL BE MAINTAINED ON A REGULAR SCHEDULE WHICH MAY BE PRESCRIBED BY THE LOCAL, STATE OF FEDERAL REGULATORY AUTHORITY; BUT, AT MINIMUM SHALL BE CHECKED WEEKLY AS WELL AS AFTER EACH STORM EVENT. MAINTENANCE SHALL CONSIST OF AN INSPECTION OF THE ENTIRE LENGTH OF THE BARRIER TO DETERMINE IF IT IS FUNCTIONING AS INTENDED. ALL BREAKS, DETACHED FABRIC, SLUMPED FABRIC, CLOGGED FABRIC, AND UNDERMINED AREAS SHALL BE FIXED THE DAY THAT THEY ARE DISCOVERED.
11. WHEN A MAXIMUM OF SIX (6) INCHES OF SEDIMENT HAS ACCUMULATED BEHIND THE SILT FENCE THIS SEDIMENT SHALL BE REMOVED AND THE FENCE SHALL BE INSPECTED FOR TEARS, CLOGGING OF BREAKS. ALL DEFICIENCIES SHALL BE CORRECTED IMMEDIATELY EITHER BY REPAIR OF REPLACEMENT OF THE SILT FENCE BARRIER AND/OR STAKES AS NEEDED.
12. SILT FENCE BARRIERS SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN CLEANED OF SILT AND PERMANENTLY STABILIZED.

STRAW BALE INSTALLATION & MAINTENANCE (AS REQ'D)

1. STRAW BALES SHALL BE PLACED IN A SINGLE ROW, LENGTHWISE ON THE CONTOUR, WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER.
2. ALL BALES SHALL BE EITHER WIRE BOUND OR STRING TIES. BALES SHALL BE INSTALLED SO THAT BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES TO PREVENT DETERIORATION OF THE BINDINGS.
3. THE BARRIER SHALL BE ENTRENCHED AND BACKFILLED. A TRENCH SHALL BE EXCAVATED THE WIDTH OF A BALE AND THE LENGTH OF THE PROPOSED BARRIER TO A MINIMUM DEPTH OF FOUR (4) INCHES AND A MAXIMUM DEPTH OF SIX (6) INCHES. AFTER THE BALES ARE STAKED AND CHINKED, THE EXCAVATED SOIL SHALL BE BACKFILLED AGAINST THE BARRIER. BACKFILL SOIL SHALL CONFORM TO THE GROUND LEVEL ON THE DOWNHILL SIDE AND SHALL BE BUILT UP TO FOUR (4) INCHES AGAINST THE UPHILL SIDE OF THE BARRIER.
4. EACH BALE SHALL BE SECURELY ANCHORED BY AT LEAST TWO (2) STAKES OR REBARS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER. STAKES OR REBARS SHALL BE DRIVEN DEEP ENOUGH INTO THE GROUND TO SECURELY ANCHOR THE BALES.
5. THE GAPS BETWEEN BALES SHALL BE CHINKED (FILLED BY WEDGING) WITH STRAW TO PREVENT WATER FROM ESCAPING BETWEEN THE BALES. (LOOSE STRAW SCATTERED OVER THE AREA IMMEDIATELY UPHILL FROM A STRAW BALE BARRIER TENDS TO INCREASE BARRIER EFFICIENCY.)
6. STRAW BALES GENERALLY DETERIORATE IN 2-6 MONTHS AND THUS NEED REPLACEMENT.
7. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
8. BALE BARRIERS SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS, BUT NOT BEFORE THE UPSLOPE AREAS HAVE BEEN PERMANENTLY STABILIZED.

SITE PREP

1. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELOCATION, INCLUDING BUT NOT LIMITED TO, ALL UTILITIES, STORM DRAINAGE, SIGNS, TRAFFIC SIGNALS & POLES, ETC. AS REQUIRED. ALL WORK SHALL BE IN ACCORDANCE WITH GOVERNING AUTHORITIES SPECIFICATIONS AND SHALL BE APPROVED BY SUCH.
2. CONTRACTOR SHALL ERECT AND MAINTAIN SAFETY BARRICADES AND POST PROPER NOTICES PRIOR TO THE COMMENCEMENT OF WORK.
3. CONTRACTOR SHALL PROTECT EXISTING SITE IMPROVEMENTS, APPURTENANCES, AND LANDSCAPING TO REMAIN.
4. CONTRACTOR SHALL MAINTAIN EXISTING UTILITIES TO REMAIN IN SERVICE AND PROTECT THEM FROM DAMAGE DURING DEMOLITION OPERATIONS.
5. DO NOT DAMAGE EXISTING UTILITIES TO REMAIN WITHIN PROJECT AREA. ALL DAMAGE TO EXISTING UTILITIES TO REMAIN SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE UTILITY OWNER.
6. THERE SHALL BE NO BURNING OF DEMOLISHED MATERIAL ALLOWED ON SITE.
7. CONTRACTOR SHALL COORDINATE WITH OWNER FOR ANY ITEMS TO BE TURNED OVER TO OWNER.
8. DEMOLISH AND REMOVE ALL PAVEMENT, SLABS, FOOTINGS, SUBSURFACE ELEMENTS, MISCELLANEOUS DEBRIS, ETC. WITHIN PROPERTY LINES UNLESS NOTED OTHERWISE.
9. CONTRACTOR IS RESPONSIBLE FOR CONTROLLING DUST SO THAT DUST DOES NOT CREATE A NUISANCE ON ADJACENT ROADS OR PROPERTIES. SITE CONTRACTOR SHALL BE RESPONSIBLE FOR STREET SWEEPING AND CATCH BASIN CLEANING AFTER EACH PHASE OF CONSTRUCTION AND AS NEED IS DETERMINED BY THE ENGINEER.
10. CONTRACTOR SHALL REMOVE AND DISPOSE OF ANY ABANDONED SUBSURFACE SOIL ABSORPTION SYSTEM (SAS) AND MISCELLANEOUS DEBRIS.
11. NO ACTIVITY OTHER THAN NORMAL MAINTENANCE SHALL OCCUR OUTSIDE OF LIMIT OF WORK LINES AS SHOWN ON PLAN WITHOUT THE APPROVAL OF THE ENGINEER.
12. THE CONTRACTOR SHALL NOTIFY DIG SAFE @ 1-888-344-7233 PRIOR TO COMMENCEMENT OF ANY DEMOLITION/CONSTRUCTION ACTIVITY.

LANDSCAPE NOTES

1. THE CONTRACTOR SHALL VERIFY FINAL SELECTION OF PLANT MATERIALS WITH THE LANDSCAPE ARCHITECT AND OWNER PRIOR TO INSTALLATION.
2. NO PLANT MATERIAL WILL BE ACCEPTED WHICH DISPLAYS MAJOR IRREGULARITIES OR DAMAGE. THE OWNER/LANDSCAPE ARCHITECT RETAINS THE RIGHT TO REJECT ANY PLANT MATERIAL DEEMED UNFIT.
3. WARRANTEE: FOR A PERIOD OF TWO GROWING SEASONS FROM THE DATE THAT THE WORK UNDER THIS CONTRACT IS CERTIFIED AS SUBSTANTIALLY COMPLETE, THE CONTRACTOR SHALL: 1) WARRANTEE ALL PLANTS AND SEEDED AREAS UNDER THIS CONTRACT; 2)REMOVE AND REPLACE DURING THIS GUARANTEE PERIOD PLANTS WHICH DIE OR ARE IN POOR CONDITION AS DETERMINED BY THE OWNER; 3) REPLANT WITH STOCK OF SAME SIZE AND QUALITY AS ORIGINALLY SPECIFIED; 4) GUY AND MAINTAIN AS SPECIFIED HEREIN AT NO ADDITIONAL COST TO THE OWNER.
4. ALL NEW LAWN AREAS SHALL RECEIVE A MINIMUM OF 4 INCHES TOPSOIL OF THE PROPER pH AND ORGANIC CONTENT SUITABLE FOR THE HEALTHY GROWTH OF LAWNS. THESE AREAS SHALL BE SEEDED WITH A FINE BLADE LAWN GRASS SEED OR SODDED. ADDITIONAL OFF-SITE TOPSOIL MAY BE REQUIRED.
5. ALL AREAS TO BE MULCHED SHALL RECEIVE 4 INCHES MINIMUM 100% SHREDDED BARK MULCH WITHIN 48 HOURS OF PLANTING UNLESS OTHERWISE NOTED IN PLANTING DETAILS.
6. ALL TREE AND SHRUB PITS SHALL BE AT LEAST 2 FEET WIDER AND 1 FOOT DEEPER THAN THE TREE OR SHRUB ROOT BALL TO BE PLANTED IN IT. BACKFILL SHALL BE HIGH QUALITY LOAM OF THE PROPER pH AND ORGANIC CONTENT SUITABLE FOR THE HEALTHY GROWTH OF PLANT MATERIALS.
7. ALL PLANTS SHALL BE NURSERY GROWN AND CONFORM TO THE LATEST EDITION OF "ANSI Z60.1, AMERICAN STANDARD FOR NURSERY STOCK".
8. EACH PLANT TO BE FREE FROM DISEASE, INSECT INFESTATION, MECHANICAL INJURIES, AND IN ALL RESPECTS BE SUITABLE FOR FIELD PLANTING.
9. EACH PLANT TO BE IN THE TOP OF ITS SIZE CLASS AFTER SHEARING AND PRUNING.
10. ADJACENT TO THE TOP OF ANY WALLS OVER 36" A FENCE OR WALL SHALL BE CONSTRUCTED PER PLAN THAT MEETS LOCAL BUILDING CODE AND ALL OTHER APPLICABLE STATE AND FEDERAL LAWS.
11. SEE DETAIL SHEETS FOR ADDITIONAL DETAILS & SPECIFICATIONS.
12. SHOULD GC OR ANY SUBCONTRACTOR ENCOUNTER A DISCREPANCE/CONFLICT IN THE PLAN AN THE ACTUAL LOCATION OF A SITE FEATURE, THE CONTRACTOR SHALL CONTACT THE LANDSCAPE ARCHITECT/ENGINEER AND OWNER IMMEDIATELY.
13. ALL AREAS DISTURBED DURING CONSTRUCTION NOT DESIGNATED TO RECEIVE OTHER TREATMENT SHALL BE LOAMED TO A MINIMUM DEPTH OF 4" AND SEEDED IN ACCORDANCE WITH THE FOLLOWING:
   A. INCORPORATE GROUND LIMESTONE INTO ALL AREAS TO BE SEEDED AT A RATE OF 50 LBS/1,000 S.F.
   B. APPLY 10-6-4 FERTILIZER TO ALL AREAS TO BE SEEDED AT A RATE OF 2 LBS/1,000 S.F.
   C. THOROUGHLY INCORPORATE LIME AND FERTILIZER INTO SEED BED TO DEPTH OF 3" BY DISCING OR OTHER APPROVED METHOD.
   D. SEED WITH THE FOLLOWING MIXTURE, APPLIED AT A RATE OF 10 LBS/1,000 S.F. SEED MIX:

NAME OF SEED	% BY WEIGHT IN MIXTURE	MIN. % PURITY	MIN. GERMINATION
POS PRETENSES "BARON" BARON BLUEGRASS	50	90	75
FESTUCA RUBRA "PENNLAWN" PENNLAWN FESCUE	25	95	85
LOLIUM PERENNE "PENNFINE" PENNFINE	25	98	95

   E. MULCH ALL SEEDED AREAS WITH STRAW AT A RATE OF 5 LBS/1,000 S.F.UNLESS HYDROSEEDING WAS USED.
   F. ALL SLOPES OF 3:1 OR GREATER AFTER BEING LOAMED, SEEDED AND MULCHED IN ACCORDANCE WITH THE ABOVE SHALL SECURED WITH EROSION CONTROL BLANKETS (NO. AMERICAN GREEN S150 OR EQUAL). OVERLAP ALL NETTING JOINTS A MINIMUM OF 6" AND SECURE WITH DOUBLE ROW OF STAPLES.

PERMITTING
NOT FOR CONSTRUCTION

RLA
R LEVESQUE ASSOCIATES INC
Landscape Architects
Civil Engineers · Land Surveyors
Environmental Consultants
ph: 413.568.0985 fax: 413.568.0986
40 School Street
Westfield, MA 01085
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NOTES, SYMBOL & LINE LEGEND AND ABBREVIATIONS

223 Garden Street
Agawam, MA
Parcel ID: G8-2-3

COMMONWEALTH OF MASSACHUSETTS
ROBERT LEVESQUE
NO. 19867
REGISTERED LANDSCAPE ARCHITECT
6/27/25

PREPARED FOR:
Vermette Auto Body
c/o Mr. Nasser Zebian
223 Garden Street
Agawam, MA 01030

ISSUANCE DATE: June 25, 2025

REVISIONS:	DATE:

DRAFTED BY: J.L. & J.W.M.

UNAUTHORIZED ALTERATION OF THIS DOCUMENT IS A VIOLATION OF MASSACHUSETTS STATE LAW

SCALE: As Noted

RLA PROJ. NUMBER: 250214

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GENERAL CONSTRUCTION NOTES

1. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR OR HIS AUTHORIZED REPRESENTATIVE SHALL CONVENE A PRE-CONSTRUCTION CONFERENCE BETWEEN THE CITY/TOWN REPRESENTATIVES, CONSULTING ENGINEER/LANDSCAPE ARCHITECT, UTILITY COMPANY REPRESENTATIVES, AND ANY OTHER AFFECTED PARTIES.
2. THE OWNER, R LEVESQUE ASSOCIATES, INC., AND/OR THEIR REPRESENTATIVES, IN PREPARING THESE PLANS HAVE ATTEMPTED TO LOCATE ALL EXISTING UTILITIES IN THE PROJECT AREA. HOWEVER, THERE MAY BE UTILITIES THAT WERE NOT OR COULD NOT BE LOCATED. UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE IN APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR SHALL CALL ALL APPROPRIATE UTILITY COMPANIES FOR LOCATIONS OF THEIR UTILITIES AT LEAST 48 HOURS BEFORE COMMENCING EXCAVATION. IN THE EVENT THAT A UTILITY IS SITUATED SUCH THAT CONSTRUCTION CANNOT PROCEED AS SHOWN ON THE PLANS, THE PROJECT ENGINEER/LANDSCAPE ARCHITECT AND OWNER SHALL BE NOTIFIED IMMEDIATELY.
3. THE SITE CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH OCCUR DUE TO HIS FAILURE TO LOCATE AND PRESERVE ANY AND ALL UTILITIES.
4. ALL FILL WORK REQUIRED TO BRING THE PROPOSED ROADWAY UP TO SUB-GRADE LEVEL SHALL CONFORM TO MHD SPECIFICATIONS SECTION 150.
5. CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE GOVERNING CODES AND BE CONSTRUCTED TO SAME.
6. ALL WORK IN THE CITY/TOWN RIGHT-OF-WAY AND EASEMENTS SHALL BE IN ACCORDANCE WITH THE CITY/TOWN SPECIFICATIONS AND MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.
7. THE CONTRACTOR SHALL GIVE THE CITY/TOWN A MINIMUM OF 48 HOURS NOTICE BEFORE BEGINNING EACH PHASE OF CONSTRUCTION.
8. CONTRACTOR IS RESPONSIBLE FOR REPAIRS OF DAMAGE TO ANY EXISTING IMPROVEMENTS DURING CONSTRUCTION, SUCH AS, BUT NOT LIMITED TO, DRAINAGE, UTILITIES, PAVEMENT, STRIPING, CURB, ETC. REPAIRS SHALL BE EQUAL TO OR BETTER THAN EXISTING CONDITIONS.
9. ALL WORK SHALL BE PERFORMED IN CONFORMANCE WITH THE CONDITIONS OF APPROVAL OUTLINED IN ALL STATE AND LOCAL PERMITS. COPIES OF THE CONDITIONS ARE INCLUDED WITHIN THE PROJECTS TECHNICAL SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING THIS INFORMATION PRIOR TO CONSTRUCTION AND CONFORMING TO THE CONDITIONS AS REQUIRED DURING CONSTRUCTION.
10. THE CONTRACTOR SHALL MAINTAIN THE JOB CLEAR OF TRASH AND DEBRIS. THE WORK AREAS ARE TO BE PICKED UP AT THE END OF EACH WORK DAY.
11. ANY TEMPORARY FACILITIES FOR THE STORAGE OR PROTECTION OF TOOLS, EQUIPMENT OR MATERIALS SHALL CONFORM TO LOCAL REGULATIONS AND SHALL BE THE GENERAL CONTRACTORS RESPONSIBILITY. THESE DOCUMENTS DO NOT INCLUDE THE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. SAFETY, CARE OF ADJACENT PROPERTIES DURING CONSTRUCTION, AND COMPLIANCE WITH STATE AND FEDERAL REGULATIONS REGARDING SAFETY SHALL BE THE GENERAL CONTRACTORS RESPONSIBILITY.
12. THE GENERAL CONTRACTOR AND HIS SUBCONTRACTORS SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL CONDITIONS PRIOR TO SUBMITTING HIS PROPOSAL. NO EXTRAS DUE TO UNFAMILIARITY WITH THE EXISTING SITE OR WORKING CONDITIONS WILL BE ALLOWED.
13. CONTRACTOR SHALL BE REQUIRED TO PERFORM FINAL CLEANUP CONSISTING OF CLEANING THE PROPOSED DRAINAGE AND SEWER SYSTEMS OF ALL DEBRIS PRIOR TO THE ACCEPTANCE BY THE OWNER. ADDITIONALLY, THE PROPOSED ROADWAY SHALL BE CLEANED AND SWEPT BY THE CONTRACTOR PRIOR TO ACCEPTANCE.
14. ALL EXCAVATION SHALL COMPLY WITH OSHA'S LATEST STANDARDS. ALL REQUIREMENTS OF OSHA'S EXCAVATION STANDARDS SHALL BE PROVIDED BY THE CONTRACTOR INCLUDING, BUT NOT LIMITED TO, THE PROVISION FOR A COMPETENT PERSON ON SITE MANAGER AND ANY REQUIRED DOCUMENTATION THAT MAY REQUIRE CERTIFICATION BY A PROFESSIONAL ENGINEER. THE OWNER, THROUGH ITS ENGINEER, SHALL EXPRESSLY NOT PROVIDE ANY OF THE ABOVE REQUIREMENTS DESIGNATED BY OSHA'S EXCAVATION STANDARD.
15. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE COST OF LAYING OUT ALL ITEMS OF THE WORK BASED ON CERTAIN HORIZONTAL CONTROL AND BENCHMARK SUPPLIED BY THE SURVEYOR OF RECORD. ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER.
16. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR, EQUIPMENT, PERMITS AND APPURTENANCES NECESSARY TO PROVIDE A COMPLETE PROJECT AS INDICATED ON THE PLANS AND IN THESE SPECIFICATIONS.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR A THOROUGH SITE EXAMINATION IN ORDER TO PREPARE SITE FOR CONSTRUCTION.
18. ANY AND ALL DEMOLISHED TREES, STRUCTURES AND OTHER RUBBLE MATERIAL PERTAINING TO THIS PROJECT SHALL BE DISPOSED OF BY THE CONTRACTOR OFF-SITE AT HIS EXPENSE IN ACCORDANCE WITH ALL OF THE CITY/TOWN ORDINANCES AND ALL APPLICABLE STATE AND FEDERAL ENVIRONMENTAL REGULATIONS.
19. ALL PAVEMENT DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPLACED IN ACCORDANCE WITH THE SPECIFICATIONS AND AS SHOWN ON THE DRAWINGS.
20. ALL STREET EXCAVATIONS SHALL BE COMPLETELY CLOSED AT THE END OF EACH WORKING DAY BY BACKFILLING OR COVERING WITH STEEL PLATES.
21. ALL MATERIALS AND METHODS ARE TO COMPLY WITH THE CITY/TOWN DPW STANDARDS OR MASSACHUSETTS DEPARTMENT OF TRANSPORTATION (MASSDOT) (WHERE APPLICABLE), UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
22. PERMITS WILL BE REQUIRED BY CONTRACTOR WHEN WORKING WITHIN OR OCCUPYING PUBLIC WAY. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED WORK PERMITS AND MAINTAINING A COPY OF ALL PERMITS IN A THREE RING BINDER OR PROJECT BOOK AND ON-SITE AT ALL TIMES.
23. BACKFILL WILL BE PLACED IN SUCCESSIVE LAYERS NOT MORE THAN TWELVE INCHES IN THICKNESS AND SHALL BE COMPACTED TO 95% OF MAXIMUM DRY DENSITY DETERMINED BY STANDARD PROCTOR TEST (ASTM 698) FOR ALL APPLICABLE TYPES OF BACKFILL MATERIAL. NO FROZEN MATERIAL SHALL BE USED AS BACKFILL. IF, IN THE OPINION OF THE ENGINEER OR THE DPW, THE EXCAVATED MATERIAL IS UNSUITABLE, THE ENTIRE MATERIAL FOR BACKFILLING SHALL CONSIST OF APPROVED GRAVEL OR APPROVED BORROW, AS DIRECTED. AFTER THOROUGH TAMPING AROUND AND BENEATH THE UTILITY, A SIX-INCH LAYER OF BACKFILL WILL BE THOROUGHLY COMPACTED AS FOLLOWS: IF DRY, SHALL BE MOISTENED AND THEN COMPACTED WITH MECHANICAL TAMPERS OR BY HAND TAMPERS HAVING A TAMPING FACE NOT EXCEEDING 25 SQUARE INCHES IN AREA. THE FINAL TWELVE INCHES OF FILLING WILL, IN ALL CASES, CONSIST OF APPROVED GRAVEL THOROUGHLY TAMPED.
24. CONTRACTOR SHALL PROVIDE FIELD COMPACTION VERIFICATION UTILIZING ASTM D5195-02, STANDARD TEST METHOD FOR DENSITY OF SOIL & ROCK IN-PLACE AT DEPTHS BELOW THE SURFACE BY NUCLEAR METHODS.
25. CONTRACTOR SHALL PROVIDE FIELD COMPACTION RESULTS TO ENGINEER WITHIN 24-HOURS PRIOR TO PLACEMENT OF INFRASTRUCTURE OR BITUMINOUS BINDER.
26. ALL FILL TO BRING PROPOSED ROADWAY UP TO THE SUB-GRADE LEVEL SHALL EXTEND PAST THE EDGE OF THE RIGHT-OF-WAY AT A 2:1 SLOPE. THIS IS TO PROVIDE ADEQUATE SUPPORT FOR THE RIGHT-OF-WAY.

LAYOUT NOTES

1. ALL CONSTRUCTION IN CITY/TOWN RIGHT-OF-WAYS AND/OR EASEMENTS SHALL BE IN ACCORDANCE WITH THE CITY/TOWN STANDARD SPECIFICATIONS.
2. IN THE EVENT OF DISCREPANCIES BETWEEN LOCAL SPECIFICATIONS AND SITE SPECIFICATIONS, THE MORE STRINGENT REQUIREMENT SHALL GOVERN.
3. SITE CONTRACTOR SHALL PROTECT ALL BENCHMARKS AND PROPERTY MONUMENTATION AND SHALL REPLACE OR REPAIR, AT HIS OWN EXPENSE, BENCHMARKS AND MONUMENTATION DISTURBED DURING CONSTRUCTION.
4. ALL STRIPING, PAVEMENT MARKINGS, AND TRAFFIC SIGNAGE SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, UNLESS OTHERWISE NOTED ON THE PLANS.
5. ALL WORK SHALL COMPLY WITH FEDERAL, STATE AND LOCAL CODES AND ORDINANCES INCLUDING BUT NOT LIMITED TO: AASHTO, OSHA, EPA, DEP, MASSDOT , ETC. THE GENERAL CONTRACTOR SHALL APPLY FOR ALL PERMITS AND SHALL PAY ALL PERMIT RELATED FEES. ALL NECESSARY PERMITS SHALL BE OBTAINED PRIOR TO THE START OF WORK.
6. ALL DIMENSIONS AND CONDITIONS SHOWN ON THE DRAWINGS ARE TO BE VERIFIED BY THE CONTRACTOR. IF FIELD CONDITIONS VARY SIGNIFICANTLY ENOUGH TO REQUIRE A CHANGE TO THE CONTRACT DOCUMENTS, THE PROJECT PROPONENT AND ENGINEER SHALL BE NOTIFIED IMMEDIATELY.
7. THE SITE/GENERAL CONTRACTOR AND SUBCONTRACTORS SHALL CONTACT THE OWNER AND ENGINEER SHOULD HE FIND ANY CONFLICT OR INCONSISTENCY BETWEEN THE WORK SHOWN ON THE DRAWINGS AND NORMAL ACCEPTED CONSTRUCTION PRACTICES, OR HE SHALL ASSUME RESPONSIBILITY FOR ALL CORRECTIONS.
8. ANY CORRECTIONS REQUIRED FOR REVISIONS TO THE CONTRACT DRAWINGS INITIATED BY THE GENERAL CONTRACTOR OR SUBCONTRACTORS WITHOUT PRIOR APPROVAL OF THE OWNER AND OR THE ENGINEER SHALL BE ACCOMPLISHED AT THE CONTRACTORS RISK.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL & LEGAL DISPOSAL OF ALL MATERIAL NECESSARY TO PREPARE THE SITE FOR THE NEW CONSTRUCTION AS SHOWN ON THE SITE DRAWINGS.
10. REPAIR DAMAGED CITY/TOWN ROADS AND CURBS IN ACCORDANCE WITH MASSDOT AND/OR THE CITY/TOWN REGULATIONS.
11. CONTRACTOR SHALL SAWCUT PAVEMENT EDGE WHERE PAVEMENT TO REMAIN IS ADJACENT TO PAVEMENT TO BE REMOVED.
12. CONTRACTOR SHALL PREPARE SITE AS NECESSARY FOR CONSTRUCTION SHOWN ON THE PLANS.

EARTHWORK NOTES

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
2. ALL CUT OR FILL SLOPES SHALL BE 3:1 OR FLATTER UNLESS OTHERWISE NOTED.
3. STORM PIPE SHALL BE AS NOTED ON PLANS.
4. EXISTING DRAINAGE STRUCTURES TO BE INSPECTED AND REPAIRED AS NEEDED, AND EXISTING PIPES TO BE CLEANED OUT TO REMOVE ALL SILT AND DEBRIS.
5. EXISTING GRADE CONTOUR INTERVALS SHOWN AT 1 FOOT INTERVALS.
6. PROPOSED GRADE CONTOUR INTERVALS SHOWN AT 1 FOOT INTERVALS.
7. IF ANY EXISTING STRUCTURES TO REMAIN ARE DAMAGED DURING CONSTRUCTION IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO REPAIR AND/OR REPLACE THE EXISTING STRUCTURE AS NECESSARY TO RETURN IT TO EXISTING CONDITIONS OR BETTER.
8. ALL STORM PIPE ENTERING STRUCTURES SHALL BE SEALED TO ASSURE CONNECTION AT STRUCTURE IS WATERTIGHT.
9. ALL STORM SEWER MANHOLES FRAMES AND GRATES ARE TO BE SET EQUAL TO FINISH GRADES, AND SHALL HAVE TRAFFIC BEARING RING & COVERS (H20).
10. CONTRACTOR SHALL ADJUST AND/OR CUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A SMOOTH FIT AND CONTINUOUS GRADE.
11. CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS.
12. ALL UNSURFACED AREAS DISTURBED BY GRADING OPERATION SHALL RECEIVE 4 INCHES OF TOPSOIL. CONTRACTOR SHALL APPLY STABILIZATION FABRIC TO ALL SLOPES 3H:1V OR STEEPER. CONTRACTOR SHALL GRASS DISTURBED AREAS IN ACCORDANCE WITH THE SPECIFICATIONS UNTIL A HEALTHY STAND OF GRASS IS OBTAINED.
13. CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE GOVERNING CODES AND BE CONSTRUCTED TO SAME.
14. IF CONTRACTOR RELOCATES OR SETS NEW BENCHMARKS, THE VERTICAL ELEVATIONS OF THE BENCHMARKS SHALL BE SET WITHIN A TOLERANCE OF 0.010 FT.
15. CONTRACTOR SHALL LEAVE GRADE BEHIND CURB IN ALL PLANTER AREAS A MINIMUM OF 4" LOW FOR THE PLACEMENT OF SUITABLE TOPSOIL OR PLANTING MIX.

SITE UTILITY NOTES

GENERAL:

1. ALL FILL MATERIAL IS TO BE IN PLACE, AND COMPACTED BEFORE INSTALLATION OF PROPOSED UTILITIES.
2. TOPS OF EXISTING MANHOLES SHALL BE SET EQUAL TO FINISH GRADE. IN GRASSED LANDSCAPED AREAS WITH WATER TIGHT LIDS.
3. ALL CONCRETE FOR ENCASEMENTS SHALL HAVE A MINIMUM 28 DAY COMPRESSION STRENGTH AT 3000 P.S.I.
4. DRAWINGS DO NOT PURPORT TO SHOW ALL EXISTING UTILITIES.
5. EXISTING UTILITIES SHALL BE VERIFIED IN FIELD PRIOR TO INSTALLATION OF ANY NEW LINES.
6. SITE/GENERAL CONTRACTOR IS RESPONSIBLE FOR COMPLYING TO THE SPECIFICATIONS OF THE LOCAL AUTHORITIES AT THE CITY WITH REGARD TO MATERIALS AND INSTALLATION OF THE WATER AND SEWER LINES.
7. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
8. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES FOR INSTALLATION REQUIREMENTS AND SPECIFICATIONS.
9. CONTRACTOR SHALL COORDINATE INSPECTION OF UTILITY LINES WITH APPROPRIATE AUTHORITIES PRIOR TO BACKFILLING TRENCHES.
10. CONTRACTOR SHALL COMPLY WITH THE LATEST OSHA STANDARDS OR DIRECTIVES OR ANY OTHER AGENCY HAVING JURISDICTION FOR EXCAVATION AND TRENCHING PROCEDURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND MAINTENANCE OF ALL SUPPORT SYSTEMS, SLOPING, BENCHING, AND OTHER MEANS OF PROTECTION.
11. CONTRACTOR SHALL COORDINATE INSTALLATION OF UTILITIES WITH LOCAL COMPANIES TO AVOID CONFLICTS AND TO ASSURE THAT PROPER DEPTHS ARE ACHIEVED. CONTRACTOR SHALL COORDINATE WITH LOCAL UTILITY COMPANIES FOR EXACT LOCATION AND SCHEDULING OF CONNECTIONS TO THEIR FACILITIES.
12. THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. DUE TO THE LACK OF AVAILABLE DOCUMENTATION. ALL UTILITIES, INCLUDING CURB BOXES, MAY NOT BE SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL CALL THE "DIG SAFE CENTER" TO HAVE ALL UTILITIES MARKED ON THE GROUND PRIOR TO THE START OF CONSTRUCTION
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH OCCUR DUE TO HIS FAILURE TO LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
14. DO NOT INTERRUPT EXISTING UTILITIES WITHOUT AUTHORIZATION FROM THE OWNER, OWNERS OF ADJACENT PROPERTIES, AND THE CORRESPONDING UTILITY OWNER. CONTRACTOR SHALL ARRANGE TO SHUT OFF UTILITIES, AS REQUIRED, WITH THE UTILITY OWNERS.
15. COORDINATE UTILITY TERMINATION WITH UTILITY OWNERS.

SEWER:

1. SANITARY SEWER MAINS AND LATERALS SHALL BE PVC PIPE CONFORMING TO ASTM D 3034-SDR35. THE MINIMUM SIZE FOR SEWER MAINS SHAL BE 8"; SEWER LATERALS SHALL BE 4" MIN.
2. ALL SANITARY SEWERS, SEWER FORCE MAINS, AND SEWER LATERALS SHALL BE INSTALLED IN FIRST-CLASS BEDDING AND IN ACCORDANCE WITH THE DEPARTMENT OF PUBLIC WORKS SPECIFICATIONS. SEWERS SHALL BE INSTALLED TO THE LINE AND GRADE INDICATED ON THE PLANS.
3. ONLY PRECAST CONCRETE MANHOLES OF A DESIGN APPROVED BY THE TOWN ENGINEER SHALL BE INSTALLED ON A SANITARY SEWER MAIN.
4. NO GROUNDWATER OR SURFACE WATER SHALL BE DISCHARGED INTO THE SANITARY SEWER.
5. WHERE ROCK IS ENCOUNTERED, IT SHALL BE REMOVED TO A DEPTH OF ONE FOOT BELOW THE FLOWLINE OF THE SEWER AND THE PIPE LAID IN A PROPERLY COMPACTED GRANULAR MATERIAL APPROVED BY THE TOWN ENGINEER.
6. ONLY GRANULAR MATERIAL APPROVED BY THE TOWN ENGINEER SHALL BE USED AS BACKFILL IN ANY TRENCH EXCAVATION.

WATER:

1. CONTRACTOR SHALL CONTACT THE CITY/TOWN WATER DEPARTMENT FOR SPECIFICATIONS AND MAKE OF VALVES, VALVE BOXES, FIRE HYDRANTS AND ALL OTHER WATER LINE APPURTENANCES.
2. WATER LINE TESTING AND STERILIZATION SHALL BE PERFORMED IN ACCORDANCE WITH LOCAL DPW SPECIFICATIONS AND WATER DISTRIBUTION SYSTEM. CONTRACTOR SHALL COORDINATE TESTING WITH THE CITY WATER DEPARTMENT.
3. ALL WATER MAIN SHALL BE DUCTILE IRON (D.I.), CLASS 52, AWWA C-151 (ANSI A21.40). D.I. PIPE SHALL BE DOUBLE CEMENT LINED WITH A SEAL COAT CONFORMING TO AWWA C-104 (ANSI A-21.4).
4. JOINTS FOR D.I. PIPE SHALL BE PUSH-ON OR OTHERWISE APPROVED, AWWA C151(ANSI A-21.51) WITH GASKETS CONFORMING TO AWWA C-111 (ANSI A-21.11) MAXIMUM LENGTH OF PIPE TO BE 20 L.F.
5. ALL FITTINGS SHALL BE DUCTILE IRON CLASS 53 WITH PRESSURE RATING OF 350 PSI AND MECHANICAL JOINTS CONFORMING TO AWWA C-151 (ANSI A21.51).
6. RETAINER GLANDS: RETAINER GLANDS SHALL BE DESIGNED TO IMPART MULTIPLE WEDGING ACTION AGAINST THE PIPE, INCREASE ITS RESISTANCE AS THE PRESSURE INCREASES. GLANDS SHALL BE MANUFACTURED OF DUCTILE IRON CONFORMING TO ASTM A536-80. RESTRAINING DEVICES SHALL BE DUCTILE IRON HEAT-TREATED TO A MINIMUM HARNESS OF 370 BHN. TWIST-OFF NUTS SHALL BE USED TO INSURE PROPER ACTUATING OF THE RETAINER GLAND. DIMENSIONS OF THE GLAND SHALL BE SUCH THAT IT CAN BE USED WITH THE STANDARD MECHANICAL JOINT BELL AND TEE-HEADED BOLTS CONFORMING TO ANSI/AWWA A21.1 AND ANSI/WWA 153/A21.5. THE RETAINER GLAND SHALL HAVE A WORKING PRESSURE OF 250 PSI WITH A MINIMUM SAFETY FACTOR OF 2:1 AND SHALL BE CERTIFIED BY THE MANUFACTURER TO BE COMPATIBLE WITH THE PIPE CLASS AND PIPE MANUFACTURER FOR ALL SIZES PROVIDED ON THE JOB. THE RETAINER GLAND SHALL BE MEGA-LUG AS MANUFACTURED EBAA IRON, INC., OR APPROVED EQUAL.
7. ALL WATER MAINS, UNLESS OTHERWISE NOTED, SHALL BE INSTALLED WITH A MINIMUM FIVE FEET OF COVER. WHEN CROSSING ABOVE OR BELOW WATER PIPELINES, A MINIMUM VERTICAL SEPARATION OF SIX INCHES SHALL BE PROVIDED. WHEN CROSSING SANITARY SEWERS, A MINIMUM OF 18" SHALL BE PROVIDED.

SITE UTILITY NOTES (CONTINUED)

8. THE INSTALLED WATER MAIN SHALL BE PRESSURE TESTED, FLUSHED AND DISINFECTED BY CONTRACTOR IN ACCORDANCE WITH AWWA C-600 AND AWWA C-651 OR PER CITY/TOWN WATER DEPARTMENT STANDARDS.
9. DUCTILE IRON PIPES SHALL BE INSTALLED IN ACCORDANCE WITH AWWA C-600.
10. ALL MECHANICAL JOINTS ARE TO BE RESTRAINED. FITTINGS SHALL BE RESTRAINED BY MECHANICAL JOINT RESTRAINTS. THE PIPE CONNECTED TO THE FITTING SHALL BE RESTRAINED PER THE MANUFACTURER'S SCHEDULE.
11. THE CONTRACTOR SHALL MARK THE LOCATION OF THE PROPOSED WATER MAIN AT LEAST 48 HOURS PRIOR TO EXCAVATING. EXCAVATION SHALL NOT PROCEED WITHOUT AUTHORIZATION BY THE ENGINEER.
12. ALL WATER MAINS, HYDRANT BRANCHES, AND SERVICES SHALL HAVE UTILITY WARNING TAPE. THE TAPE SHALL BE BURIED APPROXIMATELY 2 FEET BELOW FINISHED GRADE.
13. BACKFILL SHALL BE COMPACTED TO 95 PERCENT OF THE STANDARD PROCTOR DENSITY AS DETERMINED BY ASTM D698. COMPACTION EQUIPMENT USED MUST BE SPECIFICALLY DESIGNED FOR COMPACTION. TAMPING WITH THE BACK OF THE BACK HOE BUCKET IS UNACCEPTABLE COMPACTION.
14. ALL WATER SERVICES SHALL BE 1" DIA. COPPER TUBING TYPE K, SOFT TEMPER CONFORMING TO ASTM B88 UNLESS OTHERWISE NOTED.
15. DEPRESS WATER MAIN UNDER EXISTING SERVICES AND HYDRANT BRANCHES TO MAINTAIN 5'-0" OF COVER.
16. ALL WATER MAINS SHALL BE LAID PER THE PLANS TO MAINTAIN THE MAXIMUM SEPARATION FROM EXISTING OR PROPOSED SANITARY SEWER. DISTANCE SHALL BE MEASURED EDGE TO EDGE.
17. IDENTIFY EACH PIPE LENGTH & FITTING CLEARLY WITH MANUFACTURE'S NAME & TRADEMARK. NOMINAL PIPE SIZE & MATERIAL DESIGNATION.
18. ALL WATER MAINS & SERVICE PIPES SHALL BE LAID IN A TRENCH SEPARATE FROM ANY OTHER UTILITY (GAS, ELECTRIC, TELEPHONE, ETC.) SHALL BE A MINIMUM NO LESS THAN FIVE (5) FEET FROM ANOTHER UTILITY.
19. ALL MATERIAL SHALL BE IN ACCORDANCE WITH CITY/TOWN WATER DEPARTMENT "RULES & REGULATIONS". ALL WORK TO BE PERFORMED IN ACCORDANCE WITH CITY/TOWN WATER DEPARTMENT "SPECIFICATIONS". CITY/TOWN WATER DEPARTMENT STANDARDS SHALL TAKE PRECEDENCE OVER ANY REQUIREMENTS LISTED ABOVE.

PERMITTING
NOT FOR CONSTRUCTION

RLA
R LEVESQUE ASSOCIATES INC
Landscape Architects
Civil Engineers · Land Surveyors
Environmental Consultants
ph: 413.568.0985 fax: 413.568.0986
40 School Street
Westfield, MA 01085
rlaland.com

CONSTRUCTION NOTES

223 Garden Street
Agawam, MA
Parcel ID: G8-2-3

COMMONWEALTH OF MASSACHUSETTS
ROBERT J. LEVESQUE
NO. 1981
REGISTERED LANDSCAPE ARCHITECT
6/27/25

PREPARED FOR:
Vermette Auto Body
c/o Mr. Nasser Zebian
223 Garden Street
Agawam, MA 01030

ISSUANCE DATE: June 25, 2025

REVISIONS:	DATE:

DRAFTED BY: J.L. & J.W.M.

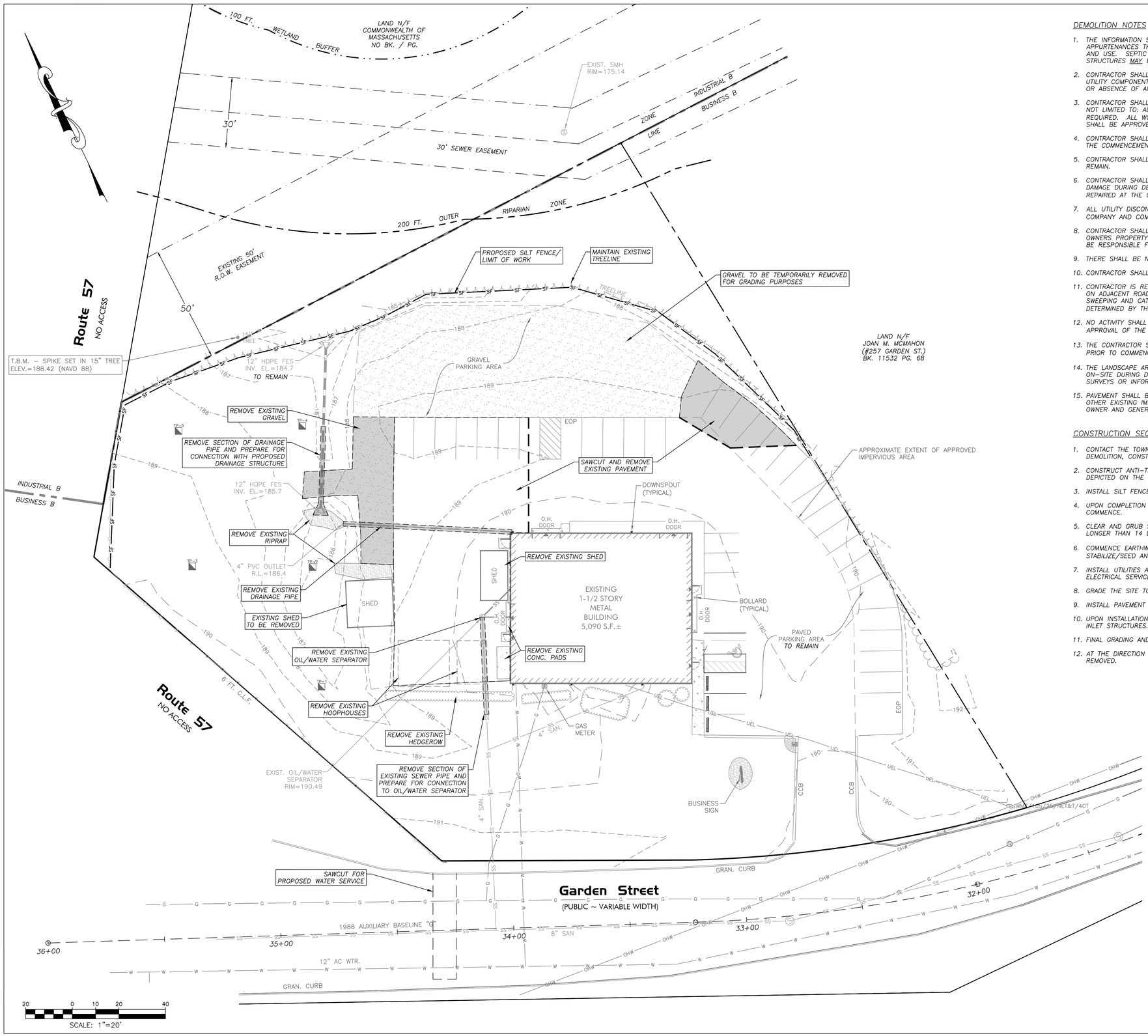
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DEMOLITION NOTES

1. THE INFORMATION SHOWN HEREON IS NOT INTENDED TO BE AN EXHAUSTIVE SURVEY OF ALL APPURTENANCES THAT MAY OR MAY NOT BE IN PLACE TO SERVE THE EXISTING ON–SITE STRUCTURES AND USE. SEPTIC SYSTEM COMPONENTS, UNDERGROUND TANKS, AND OTHER SUB–SURFACE STRUCTURES MAY BE IN PLACE AND MAY REQUIRE ATTENTION BEFORE CONSTRUCTION MAY PROCEED.
2. CONTRACTOR SHALL CONDUCT A PRE–DEMOLITION SURVEY TO IDENTIFY ANY AND ALL UTILITIES AND UTILITY COMPONENTS TO BE DISCONTINUED, REMOVED, OR DEMOLISHED IN PLACE AND THE PRESENCE OR ABSENCE OF ANY HAZARDOUS MATERIALS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION, REMOVAL OR RELOCATION, INCLUDING BUT NOT LIMITED TO: ALL UTILITIES, STORM DRAINAGE, SIGNS, TRAFFIC SIGNALS & POLES, ETC. AS REQUIRED. ALL WORK SHALL BE IN ACCORDANCE WITH GOVERNING AUTHORITIES' SPECIFICATIONS AND SHALL BE APPROVED BY SUCH. ALL COSTS SHALL BE INCLUDED IN BASE BID.
4. CONTRACTOR SHALL ERECT AND MAINTAIN SAFETY BARRICADES AND POST PROPER NOTICES PRIOR TO THE COMMENCEMENT OF WORK.
5. CONTRACTOR SHALL PROTECT EXISTING SITE IMPROVEMENTS, APPURTENANCES AND LANDSCAPING TO REMAIN.
6. CONTRACTOR SHALL MAINTAIN EXISTING UTILITIES TO REMAIN IN SERVICE AND PROTECT THEM FROM DAMAGE DURING DEMOLITION OPERATIONS. ANY DAMAGE TO EXISTING UTILITIES TO REMAIN SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE UTILITY OWNER.
7. ALL UTILITY DISCONNECTION SHALL BE PERFORMED TO THE SATISFACTION OF THE RELEVANT UTILITY COMPANY AND COMPLY WITH ANY LOCAL, STATE AND/OR FEDERAL REGULATORY AGENCIES.
8. CONTRACTOR SHALL PROMPTLY TRANSPORT AND LEGALLY DISPOSE OF DEMOLISHED MATERIALS OFF OWNERS PROPERTY. DO NOT ALLOW DEMOLISHED MATERIAL TO COLLECT ON SITE. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DISPOSAL.
9. THERE SHALL BE NO BURNING OF DEMOLISHED MATERIAL ALLOWED ON SITE.
10. CONTRACTOR SHALL COORDINATE WITH OWNER FOR ANY ITEMS TO BE TURNED OVER TO OWNER.
11. CONTRACTOR IS RESPONSIBLE FOR CONTROLLING DUST SO THAT DUST DOES NOT CREATE A NUISANCE ON ADJACENT ROADS OR PROPERTIES. SITE CONTRACTOR SHALL BE RESPONSIBLE FOR STREET SWEEPING AND CATCH BASIN CLEANING AFTER EACH PHASE OF CONSTRUCTION AND AS NEED IS DETERMINED BY THE LANDSCAPE ARCHITECT/ENGINEER.
12. NO ACTIVITY SHALL OCCUR OUTSIDE OF LIMIT OF WORK LINE AS SHOWN ON PLAN WITHOUT THE APPROVAL OF THE LANDSCAPE ARCHITECT/ENGINEER AND LANDOWNER.
13. THE CONTRACTOR SHALL NOTIFY DIG SAFE @ 1–888–344–7233 A MINIMUM OF 72 HOURS (M–F) PRIOR TO COMMENCEMENT OF ANY DEMOLITION/CONSTRUCTION ACTIVITY.
14. THE LANDSCAPE ARCHITECT/ENGINEER IS NOT RESPONSIBLE FOR ANY ITEMS THAT MAY BE DISCOVERED ON–SITE DURING DEMOLITION OR CONSTRUCTION THAT WAS NOT PREVIOUSLY INDICATED ON THE SURVEYS OR INFORMATION PROVIDED.
15. PAVEMENT SHALL BE SAWCUT AT THE LIMIT OF WORK. ALL PAVING, FOOTINGS, UTILITIES, CURBING AND OTHER EXISTING IMPROVEMENTS SHALL BE REMOVED OR SUITABLY MILLED TO THE SATISFACTION OF THE OWNER AND GENERAL CONTRACTOR.

CONSTRUCTION SEQUENCE

1. CONTACT THE TOWN OF AGAWAM AT LEAST FORTY–EIGHT HOURS PRIOR TO COMMENCEMENT OF ANY DEMOLITION, CONSTRUCTION, OR EARTHWORK ACTIVITY ON THIS PROJECT.
2. CONSTRUCT ANTI–TRACKING PAD AT ENTRANCE AND INSTALL ANY REQUIRED INLET PROTECTION AS DEPICTED ON THE PLAN.
3. INSTALL SILT FENCE AS SHOWN ON THE PLANS.
4. UPON COMPLETION OF EROSION CONTROL MEASURES, CLEARING AND GRUBBING AND EARTHWORK MAY COMMENCE.
5. CLEAR AND GRUB SITE. STOCKPILE ANY CHIPPING OR TOPSOIL MATERIAL TO REMAIN ON SITE FOR LONGER THAN 14 DAYS AND INSTALL SILT FENCE AROUND THE PERIMETER OF THE STOCKPILE.
6. COMMENCE EARTHWORK BY EXCAVATING FOR THE CUT/FILL SLOPES AS SHOWN ON THE PLANS. STABILIZE/SEED ANY SLOPES THAT HAVE ACHIEVED FINAL GRADE.
7. INSTALL UTILITIES AS SHOWN ON PLANS INCLUDING WATER SERVICE, SEWER SERVICE, GAS SERVICE, ELECTRICAL SERVICE AND STORMWATER MANAGEMENT SYSTEM.
8. GRADE THE SITE TO ACCEPT PAVEMENT SECTION MATERIALS.
9. INSTALL PAVEMENT AS SPECIFIED ON THE PLANS.
10. UPON INSTALLATION OF PAVEMENT SURFACE, INSTALL INLET PROTECTION AS REQUIRED ON ANY NEW INLET STRUCTURES.
11. FINAL GRADING AND STABILIZATION OF ANY REMAINING EXPOSED AREAS.
12. AT THE DIRECTION OF THE TOWN OF AGAWAM, EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED.

PERMITTING
NOT FOR CONSTRUCTION

RLA
R LEVESQUE ASSOCIATES INC
Landscape Architects
Civil Engineers · Land Surveyors
Environmental Consultants
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40 School Street
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rlaland.com

DEMOLITION & REMOVALS PLAN

223 Garden Street
Agawam, MA
Parcel ID: G8-2-3

COMMONWEALTH OF MASSACHUSETTS ROBERT J. LEVESQUE NO. 1306 REGISTERED LANDSCAPE ARCHITECT
3/19/26

PREPARED FOR:
Vermette Auto Body
c/o Mr. Nasser Zebian
223 Garden Street
Agawam, MA 01030

ISSUANCE DATE: June 25, 2025

REVISIONS:	DATE:
A. Added water service	11/19/25
B. Parking & addition revision	3/19/26

DRAFTED BY: J.L. & J.W.M.

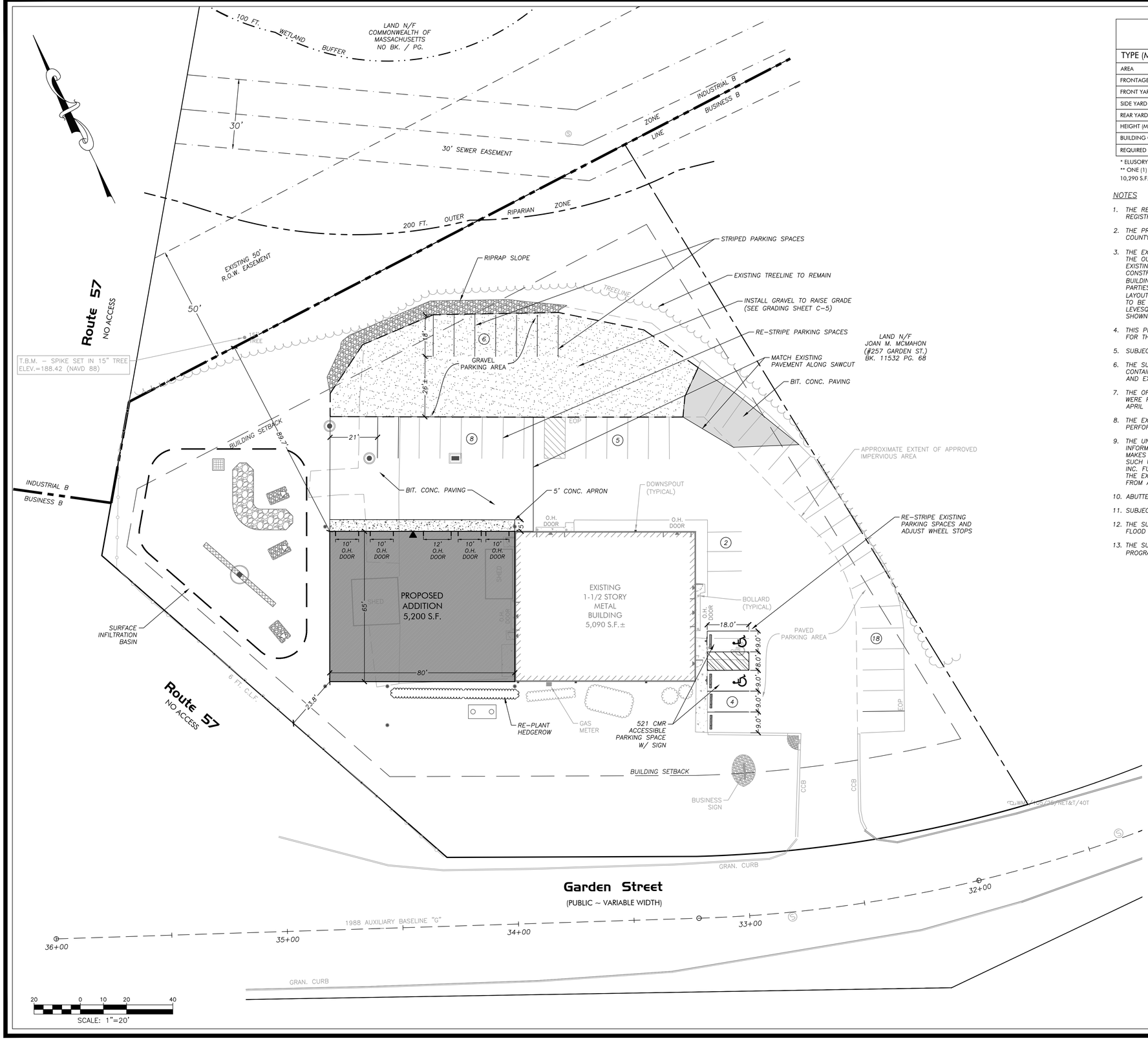
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SCALE: As Noted

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ZONING REVIEW - Business B (BB)

TYPE (MINIMUM)	REQUIRED	EXISTING	PROPOSED
AREA	10,000 S.F.	73,961 S.F.	73,961 S.F.
FRONTAGE	100 FT	0' *	0' *
FRONT YARD	35 FT	75.6'	75.6'
SIDE YARD	10 FT	61.0'	23.8'
REAR YARD	35 FT	126.5'	89.7'
HEIGHT (MAX)	45 FT (3 STORIES)	1.5 STORIES	1.5 STORIES
BUILDING COVERAGE (MAX)	50%	±7.8%	±13.9%
REQUIRED PARKING **	43	36	43

* ELUSORY FORNTAGE DUE TO 1988 STATE HIGHWAY LAYOUT
** ONE (1) SPACE PER 300 S.F. OF GROSS FLOOR AREA PLUS ONE (1) SPACE PER EMPLOYEE
10,290 S.F. / 300 = 34.3 (OR 35) + 8 (EMPLOYEE SPACES) = 43 REQUIRED

NOTES

1. THE RECORD OWNER OF THE SUBJECT PARCEL IS MBNZ HOLDING CO. SEE HAMPDEN COUNTY REGISTRY OF DEEDS BOOK 24996 PAGE 11.
2. THE PROPERTY LINES SHOWN HEREON ARE BASED UPON A PLAN RECORDED IN THE HAMPDEN COUNTY REGISTRY OF DEEDS IN PLAN BOOK 319 PAGE 43.
3. THE EXISTING BUILDING(S) SHOWN HEREON ARE BASED ON AN APPROXIMATE MEASUREMENT OF THE OUTSIDE PERIMETER OF THE EXISTING STRUCTURES. THE ACTUAL LOCATION OF THE EXISTING BUILDING WALLS AND CORNERS SHOULD BE VERIFIED IN THE FIELD PRIOR TO ANY CONSTRUCTION WORK THAT WOULD ABUT OR TAKE PLACE ADJACENT TO THE EXISTING BUILDING(S). IF THE PLAN HEREON IS USED FOR CONSTRUCTION LAYOUT PURPOSES, THE PARTIES CONDUCTING LAYOUT SHALL CONTACT R. LEVESQUE ASSOCIATES INC. PRIOR TO SAID LAYOUT TO DETERMINE PROPER CONTROL. PLEASE NOTE WHILE THE BUILDING(S) ARE SHOWN TO BE SQUARE, IT SHOULD NOT BE ASSUMED THAT THE WALLS ARE SQUARE OR PLUMB. R. LEVESQUE ASSOCIATES TAKES NO RESPONSIBILITY FOR THIRD PARTY LAYOUT OF THE PLAN SHOWN HEREON.
4. THIS PLAN HAS BEEN PREPARED FOR SITE PLANNING PURPOSES AND SHALL NOT BE USED FOR THE CONVEYANCE OF LAND OR FOR ANY OTHER USE.
5. SUBJECT PARCEL CONTAINS 73,961 S.F.
6. THE SUBJECT PROPERTIES SHOWN HEREON MAY BE SUBJECT TO RIGHTS AND EASEMENTS AS CONTAINED IN THE VARIOUS DEEDS OF RECORD DESCRIBING SAID PROPERTIES. THE LOCATION AND EXTENT OF ANY SUCH RIGHTS AND EASEMENTS IS NOT THE SUBJECT OF THIS PLAN.
7. THE OFFSITE BORDERING VEGETATED WETLANDS AND PERENNIAL STREAM DEPICTED HEREON WERE FLAGGED BY R LEVESQUE ASSOCIATES INC. AND LOCATED VIA RTK GPS SURVEY ON APRIL 14, 2025.
8. THE EXISTING CONDITIONS INFORMATION SHOWN IS BASED UPON A TOPOGRAPHIC SURVEY PERFORMED BY R LEVESQUE ASSOCIATES, INC. ON MARCH 12, 2025.
9. THE UNDERGROUND UTILITIES SHOWN HEREON HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION, DIGSAFE MARKINGS AND AVAILABLE RECORD DATA. R LEVESQUE ASSOCIATES, INC. MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN HEREON COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. R LEVESQUE ASSOCIATES, INC. FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN HERE ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM AVAILABLE INFORMATION.
10. ABUTTERS DEPICTED HEREON ARE TAKEN FROM THE TOWN OF AGAWAM MUNICIPAL GIS WEBSITE
11. SUBJECT PARCEL IS ZONED BUSINESS B ACCORDING TO THE TOWN OF AGAWAM ZONING MAP.
12. THE SUBJECT PARCEL IS NOT LOCATED WITHIN A SPECIAL FLOOD ZONE AREA ACCORDING TO FLOOD INSURANCE RATE MAP NUMBER 25013C0383E – EFFECTIVE DATE: JULY 16, 2013.
13. THE SUBJECT PROPERTY IS NOT LOCATED WITHIN NATURAL HERITAGE & ENDANGERED SPECIES PROGRAM (NHESP) JURISDICTION.

LAYOUT NOTES

1. SITE CONTRACTOR SHALL REFER TO REMAINING PLAN SET FOR INFORMATION REGARDING SITE LAYOUT.
2. IT SHALL BE THE SITE CONTRACTORS RESPONSIBILITY TO CROSS REFERENCE INFORMATION CONTAINED IN OTHER SHEETS WITH SITE INFORMATION SHOWN HEREON.
3. PRIOR TO SUBMITTING THEIR BID FOR CONSTRUCTION, THE SITE CONTRACTOR SHALL COMMUNICATE ANY DISCREPANCIES BETWEEN THE PROPOSED DESIGN AND THE SAID SPECIFICATIONS WITH THE PROJECT PROPONENT AND LANDSCAPE ARCHITECT/ENGINEER. SHOULD THE SITE CONTRACTOR FAIL TO COMMUNICATE ANY DISCREPANCIES, HE/SHE SHALL BE RESPONSIBLE FOR ANY COSTS RESULTING FROM SAID DISCREPANCY.

SIGNAGE AND PAVEMENT MARKING NOTES

1. STRIPE ALL PARKING AREAS AS SHOWN, INCLUDING PARKING SPACES, STOP BARS, CROSSWALKS, AND ACCESSIBLE ROUTE MARKINGS AND SYMBOLS USING WHITE TRAFFIC PAINT. PAINTED ISLANDS, FIRE LANES, AND TRAVEL WAY CENTERLINES SHALL BE PAINTED USING YELLOW TRAFFIC PAINT. ALL TRAFFIC PAINT SHALL CONFORM TO AASHTO M248 TYPE "N".
2. STOP BARS SHALL BE 12" WIDE (WHITE).
3. ALL PARKING STALL LINES SHALL BE 4" WIDE (WHITE).
4. ALL PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS", MASSDOT, STATE BUILDING CODE AND ADA REQUIREMENTS, AND AS SHOWN ON THE PLANS & DETAILS.

ACCESSIBILITY NOTES

1. ALL ACCESSIBLE ROUTES, TRANSITIONS, AND ACCESSIBLE PARKING/LOADING AREAS, INCLUDING ALL ENTRANCES TO BUILDING, SHALL ADHERE TO 521 CMR.
2. SHOULD THE ARCHITECT PROVIDE ADDITIONAL ENTRANCES OR MEANS OF EGRESS, ADDITIONAL ACCESSIBLE ROUTES MAY BE REQUIRED.
3. IT IS THE RESPONSIBILITY OF THE ARCHITECT AND CONTRACTOR TO NOTIFY THE ENGINEER AND LANDSCAPE ARCHITECT OF ANY CHANGES TO THE PROPOSED BUILDING THAT WOULD AFFECT THE ACCESSIBILITY REQUIREMENTS OF THE PROPOSED SITE.
4. THE CONTRACTOR SHALL REVIEW IN DETAIL THE REQUIREMENTS OF 521 CMR AND SHALL BE RESPONSIBLE FOR CONFORMANCE WITH SAID REGULATIONS.

PERMITTING
NOT FOR CONSTRUCTION

RLA
R LEVESQUE ASSOCIATES INC
Landscape Architects
Civil Engineers · Land Surveyors
Environmental Consultants
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40 School Street
Westfield, MA 01085
rlaland.com

LAYOUT & MATERIALS PLAN

223 Garden Street
Agawam, MA
Parcel ID: G8-2-3

ROBERT S. LEVESQUE NO. 1395 COMMONWEALTH OF MASSACHUSETTS REGISTERED LANDSCAPE ARCHITECT
4/29/26

PREPARED FOR:
Vermette Auto Body
c/o Mr. Nasser Zebian
223 Garden Street
Agawam, MA 01030

ISSUANCE DATE: June 25, 2025

REVISIONS:	DATE:
A. Parking & addition revision	3/19/26
B. Engineering review comments	4/29/26

DRAFTED BY: J.L. & J.W.M.

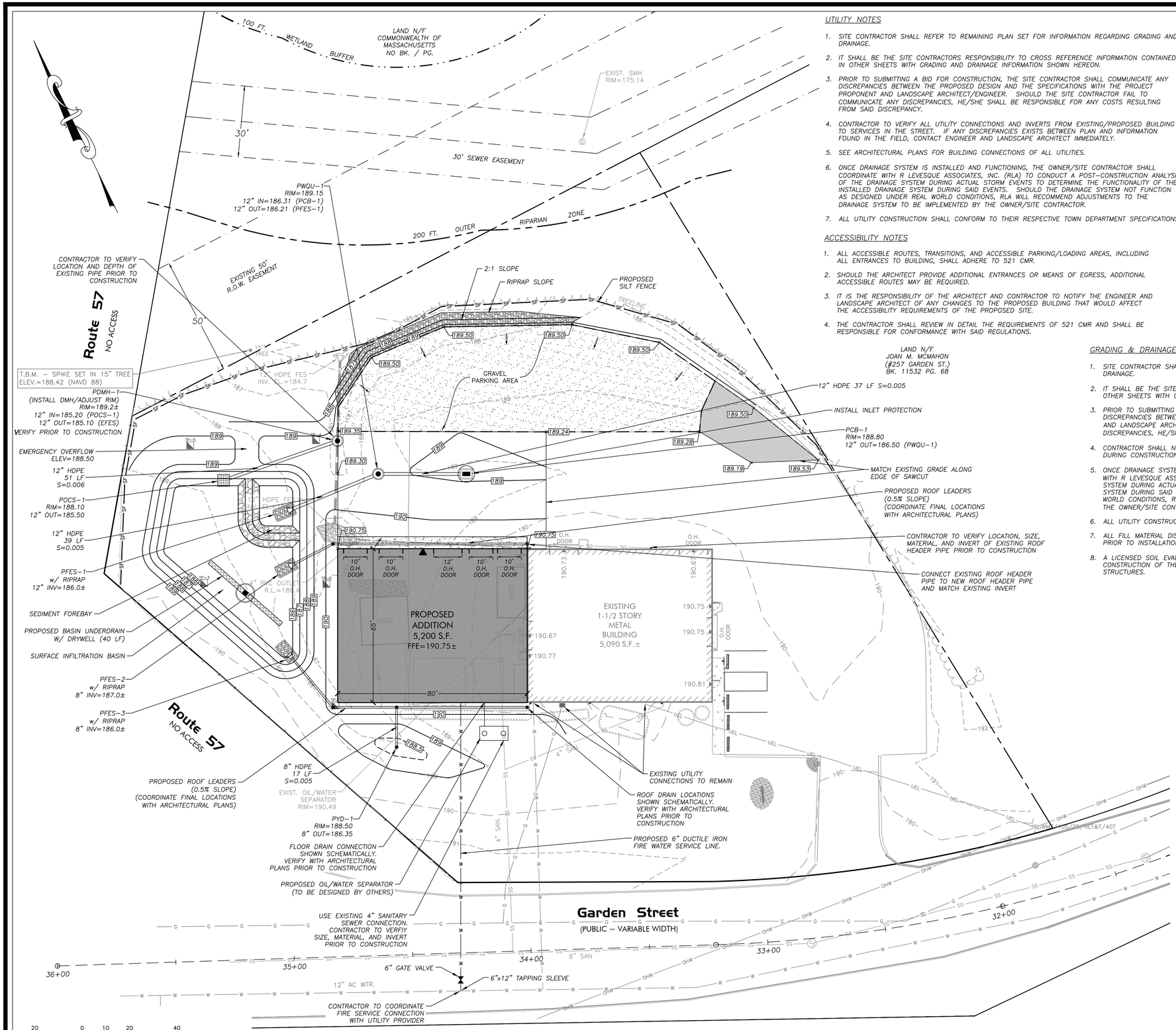
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SCALE: As Noted

RLA PROJ. NUMBER: 250214

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UTILITY NOTES

1. SITE CONTRACTOR SHALL REFER TO REMAINING PLAN SET FOR INFORMATION REGARDING GRADING AND DRAINAGE.
2. IT SHALL BE THE SITE CONTRACTORS RESPONSIBILITY TO CROSS REFERENCE INFORMATION CONTAINED IN OTHER SHEETS WITH GRADING AND DRAINAGE INFORMATION SHOWN HEREON.
3. PRIOR TO SUBMITTING A BID FOR CONSTRUCTION, THE SITE CONTRACTOR SHALL COMMUNICATE ANY DISCREPANCIES BETWEEN THE PROPOSED DESIGN AND THE SPECIFICATIONS WITH THE PROJECT PROPONENT AND LANDSCAPE ARCHITECT/ENGINEER. SHOULD THE SITE CONTRACTOR FAIL TO COMMUNICATE ANY DISCREPANCIES, HE/SHE SHALL BE RESPONSIBLE FOR ANY COSTS RESULTING FROM SAID DISCREPANCY.
4. CONTRACTOR TO VERIFY ALL UTILITY CONNECTIONS AND INVERTS FROM EXISTING/PROPOSED BUILDING TO SERVICES IN THE STREET. IF ANY DISCREPANCIES EXISTS BETWEEN PLAN AND INFORMATION FOUND IN THE FIELD, CONTACT ENGINEER AND LANDSCAPE ARCHITECT IMMEDIATELY.
5. SEE ARCHITECTURAL PLANS FOR BUILDING CONNECTIONS OF ALL UTILITIES.
6. ONCE DRAINAGE SYSTEM IS INSTALLED AND FUNCTIONING, THE OWNER/SITE CONTRACTOR SHALL COORDINATE WITH R LEVESQUE ASSOCIATES, INC. (RLA) TO CONDUCT A POST-CONSTRUCTION ANALYSIS OF THE DRAINAGE SYSTEM DURING ACTUAL STORM EVENTS TO DETERMINE THE FUNCTIONALITY OF THE INSTALLED DRAINAGE SYSTEM DURING SAID EVENTS. SHOULD THE DRAINAGE SYSTEM NOT FUNCTION AS DESIGNED UNDER REAL WORLD CONDITIONS, RLA WILL RECOMMEND ADJUSTMENTS TO THE DRAINAGE SYSTEM TO BE IMPLEMENTED BY THE OWNER/SITE CONTRACTOR.
7. ALL UTILITY CONSTRUCTION SHALL CONFORM TO THEIR RESPECTIVE TOWN DEPARTMENT SPECIFICATIONS.

ACCESSIBILITY NOTES

1. ALL ACCESSIBLE ROUTES, TRANSITIONS, AND ACCESSIBLE PARKING/LOADING AREAS, INCLUDING ALL ENTRANCES TO BUILDING, SHALL ADHERE TO 521 CMR.
2. SHOULD THE ARCHITECT PROVIDE ADDITIONAL ENTRANCES OR MEANS OF EGRESS, ADDITIONAL ACCESSIBLE ROUTES MAY BE REQUIRED.
3. IT IS THE RESPONSIBILITY OF THE ARCHITECT AND CONTRACTOR TO NOTIFY THE ENGINEER AND LANDSCAPE ARCHITECT OF ANY CHANGES TO THE PROPOSED BUILDING THAT WOULD AFFECT THE ACCESSIBILITY REQUIREMENTS OF THE PROPOSED SITE.
4. THE CONTRACTOR SHALL REVIEW IN DETAIL THE REQUIREMENTS OF 521 CMR AND SHALL BE RESPONSIBLE FOR CONFORMANCE WITH SAID REGULATIONS.

CONSTRUCTION NOTES

1. UNDERGROUND UTILITIES SHOWN HEREON ARE BASED UPON SURFACE FEATURES AS LOCATED BY SURVEY AND AVAILABLE RECORD DATA AND ARE APPROXIMATE. ACTUAL FIELD LOCATIONS SHOULD BE VERIFIED WITH THE APPROPRIATE UTILITY COMPANY AND/OR MUNICIPAL DEPARTMENT PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO NOTIFY DIG SAFE A MINIMUM OF 72 HOURS PRIOR TO START OF CONSTRUCTION ACCORDING TO MA GENERAL LAWS.
3. APPROVED PLANS TO BE ON SITE AT ALL TIMES.
4. CHANGES TO THIS PLAN MAY OCCUR AS UNFORESEEN CONDITIONS ARISE. ALL CHANGES TO BE APPROVED BY DESIGN ENGINEER, FIELD INSPECTOR AND CITY/TOWN ENGINEER.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND SAFETY OF TRAFFIC ON THE PUBLIC AND PRIVATE WAYS AFFECTED BY THE CONSTRUCTION OF THIS PROJECT.
6. CONTRACTOR SHALL PROTECT ALL SLOPES, VEGETATION, PAVING, WALKS, AND IMPROVEMENTS OUTSIDE THE AREAS TO BE AFFECTED BY THE CONSTRUCTION OF THIS PROJECT.
7. TREES, BRUSH AND STUMPS REMOVED BY CLEARING AND GRUBBING OPERATIONS SHALL BE TRANSPORTED OFF THE PROJECT SITE TO AN APPROVED DISPOSAL LOCATION.
8. CALCIUM CHLORIDE/WATER FOR DUST CONTROL TO BE AVAILABLE AT ALL TIMES.
9. ALL PAVEMENT MARKINGS CHANGED, ALTERED OR REMOVED SHALL BE REAPPLIED.
10. ALL CONSTRUCTION METHODS TO CONFORM TO AGAWAM PLANNING BOARD REGULATIONS AND BOARD OF PUBLIC WORKS SPECIFICATIONS.
11. AGAWAM DEPARTMENT OF PUBLIC WORKS APPROVAL IS NOT TO BE CONSTRUED AS AN ALL INCLUSIVE APPROVAL AS OTHER APPROVALS MAY BE NECESSARY, I.E. TOWN ENGINEER, CONSERVATION, FIRE DEPARTMENT, WATER DEPARTMENT, ETC.
12. ALL CATCH BASINS TO HAVE 48" SEALED SUMPS AND HOODS.
13. EROSION CONTROL MEASURES TO BE IN PLACE PRIOR TO START OF CONSTRUCTION.

GRADING & DRAINAGE NOTES

1. SITE CONTRACTOR SHALL REFER TO REMAINING PLAN SET FOR INFORMATION REGARDING GRADING AND DRAINAGE.
2. IT SHALL BE THE SITE CONTRACTOR'S RESPONSIBILITY TO CROSS REFERENCE INFORMATION CONTAINED IN OTHER SHEETS WITH GRADING AND DRAINAGE INFORMATION SHOWN HEREON.
3. PRIOR TO SUBMITTING A BID FOR CONSTRUCTION, THE SITE CONTRACTOR SHALL COMMUNICATE ANY DISCREPANCIES BETWEEN THE PROPOSED DESIGN AND THE SPECIFICATIONS WITH THE PROJECT PROPONENT AND LANDSCAPE ARCHITECT/ENGINEER. SHOULD THE SITE CONTRACTOR FAIL TO COMMUNICATE ANY DISCREPANCIES, HE/SHE SHALL BE RESPONSIBLE FOR ANY COSTS RESULTING FROM SAID DISCREPANCY.
4. CONTRACTOR SHALL NOTIFY DESIGNER/ENGINEER OF ANY UNEXPECTED CONDITIONS THAT ARE ENCOUNTERED DURING CONSTRUCTION.
5. ONCE DRAINAGE SYSTEM IS INSTALLED AND FUNCTIONING, THE OWNER/SITE CONTRACTOR SHALL COORDINATE WITH R LEVESQUE ASSOCIATES, INC. (RLA) TO CONDUCT A POST-CONSTRUCTION ANALYSIS OF THE DRAINAGE SYSTEM DURING ACTUAL STORM EVENTS TO DETERMINE THE FUNCTIONALITY OF THE INSTALLED DRAINAGE SYSTEM DURING SAID EVENTS. SHOULD THE DRAINAGE SYSTEM NOT FUNCTION AS DESIGNED UNDER REAL WORLD CONDITIONS, RLA WILL RECOMMEND ADJUSTMENTS TO THE DRAINAGE SYSTEM TO BE IMPLEMENTED BY THE OWNER/SITE CONTRACTOR.
6. ALL UTILITY CONSTRUCTION SHALL CONFORM TO THEIR RESPECTIVE AGAWAM DEPARTMENT SPECIFICATIONS.
7. ALL FILL MATERIAL DISCOVERED UNDER INFILTRATION SITES SHALL BE REMOVED AND PROPERLY DISPOSED OF PRIOR TO INSTALLATION OF INFILTRATION STRUCTURE.
8. A LICENSED SOIL EVALUATOR AND/OR PROFESSIONAL ENGINEER MUST BE PRESENT DURING GRADING AND CONSTRUCTION OF THE SURFACE INFILTRATION SYSTEM TO ENSURE NATIVE OR SIMILAR SOILS UNDERLAY THE STRUCTURES.

SHORT-TERM EROSION CONTROL MAINTENANCE

1. THE CONTRACTOR OR SUBCONTRACTOR WILL BE RESPONSIBLE FOR IMPLEMENTING EACH CONTROL SHOWN ON THE SEDIMENTATION AND EROSION CONTROL PLAN.
2. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN STABILIZED. ADDITIONAL CONTROL MEASURES WILL BE INSTALLED DURING CONSTRUCTION IN ORDER TO CONTROL EROSION AND/OR OFF-SITE SEDIMENTATION IF DEEMED NECESSARY BY ON-SITE INSPECTION.
3. EFFECTIVE EROSION CONTROL MEASURES SHALL BE INITIATED PRIOR TO THE COMMENCEMENT OF CLEARING, GRADING, EXCAVATION, OR OTHER OPERATIONS THAT WILL DISTURB THE NATURAL PROTECTION.
4. ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND AFTER ANY STORM EVENT GREATER THAN 0.5 INCHES OF PRECIPITATION DURING ANY 24-HOUR PERIOD, AND THE INSPECTION SHALL BE DOCUMENTED IN WRITING. DAMAGED OR INEFFECTIVE DEVICES SHALL BE REPAIRED OR REPLACED, AS NECESSARY.
5. THE CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO AVOID EXCESS EROSION OF THE SITE DUE TO THE CONSTRUCTION OF THIS PROJECT.
6. SILT SHALL BE REMOVED FROM BEHIND BARRIERS IF GREATER THAN 6-INCHES DEEP OR AS NEEDED. SEDIMENT THAT IS COLLECTED IN STRUCTURES SHALL BE DISPOSED OF PROPERLY AND COVERED IF STORED ON-SITE.
7. DAMAGED OR DETERIORATED ITEMS WILL BE REPAIRED IMMEDIATELY AFTER IDENTIFICATION.
8. ALL DITCHES SHALL BE STABILIZED AS SOON AS IS PRACTICABLE TO MINIMIZE EROSION.
9. THE CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL DEVICES IN A GOOD, WORKING STATE OF REPAIR UNTIL THEIR USE IS NO LONGER WARRANTED. AT THAT TIME, THE EROSION CONTROL DEVICES SHALL BE REMOVED AND DISPOSED OF SO AS TO CAUSE NO OFF-SITE SILTATION.
10. INSPECT AND MAINTAIN CONSTRUCTION ENTRANCE STONE SUCH THAT SEDIMENT DOES NOT TRACK ONTO THE STREET. ANY SEDIMENT TRACKED ONTO THE STREET SHALL BE CLEANED DAILY.
11. AFTER CATCH BASINS HAVE BEEN CONSTRUCTED AND THE SITE HAS BEEN PAVED, THE CONTRACTOR SHALL PROTECT THE INLETS BY CONSTRUCTING INLET PROTECTION AS SHOWN ON THE PLANS. INLET PROTECTION TO REMAIN IN PLACE AND MAINTAINED UNTIL DISTURBED AREAS HAVE BEEN STABILIZED, LOAMED AND SEEDED.
12. EROSION CONTROL MEASURES SHALL REMAIN IN PLACE UNTIL ALL DISTURBED EARTH HAS BEEN SUBSTANTIALLY STABILIZED. AFTER REMOVAL OF MEASURES, DISTURBED AREAS SHALL BE REGRADED AND STABILIZED AS NECESSARY.
13. THIS PLAN IS PROVIDED AS A BASIS FOR THE INITIAL SEDIMENTATION AND EROSION CONTROL MEASURES. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UPDATE AND EXPAND THIS PLAN AS SITE CONDITIONS DICTATE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PREVENT THE OCCURRENCE OF SILTATION TO WETLAND RESOURCE AREAS AND THE MOVEMENT OF SEDIMENT BEYOND THE SITE BOUNDARIES.

PERMITTING
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R LEVESQUE ASSOCIATES INC
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40 School Street
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GRADING, DRAINAGE, EROSION & SEDIMENTATION CONTROL PLAN

223 Garden Street
Agawam, MA
Parcel ID: G8-2-3

COMMONWEALTH OF MASSACHUSETTS
FILIPE J. CRAVO
CIVIL
No. 48376
PROFESSIONAL ENGINEER
4/29/26

PREPARED FOR:

Vermette Auto Body
c/o Mr. Nasser Zebian

223 Garden Street
Agawam, MA 01030

ISSUANCE DATE: June 25, 2025

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DRAFTED BY: J.L. & J.W.M.

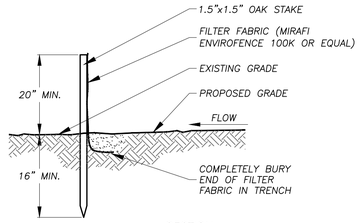
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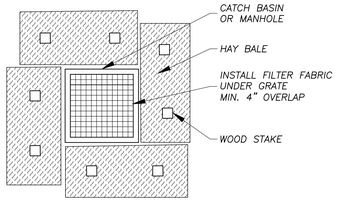
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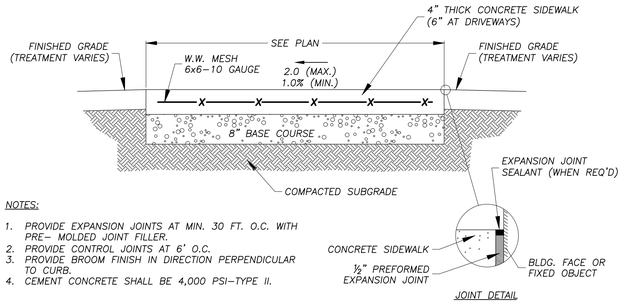


SILT FENCE DETAIL
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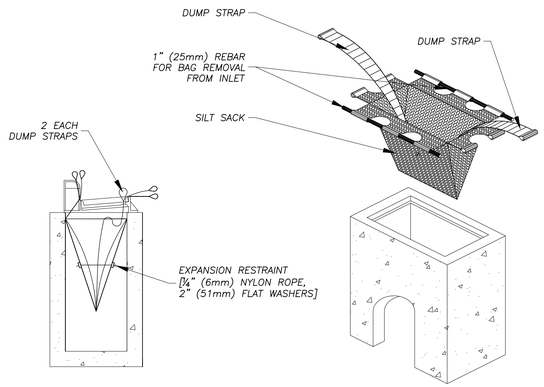
NOTE
INSTALL BARRIER AT EACH CATCH BASIN AND DRAINAGE BASIN. CATCH BASINS IN PAVEMENT AREAS ARE TO RECEIVE ONLY THE FILTER FABRIC TREATMENT.

INLET PROTECTION - HAY BALES
NO SCALE

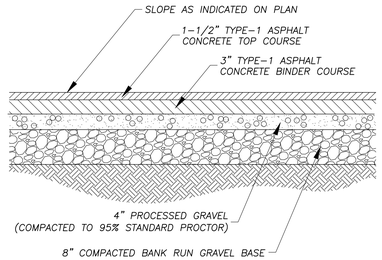


NOTES:
1. PROVIDE EXPANSION JOINTS AT MIN. 30 FT. O.C. WITH PRE– MOLDED JOINT FILLER.
2. PROVIDE CONTROL JOINTS AT 6' O.C.
3. PROVIDE BROOM FINISH IN DIRECTION PERPENDICULAR TO CURB.
4. CEMENT CONCRETE SHALL BE 4,000 PSI–TYPE II.

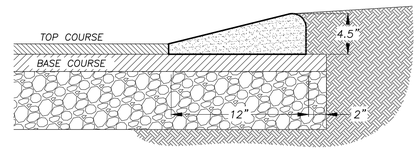
REINFORCED CONCRETE SIDEWALK SECTION
NO SCALE



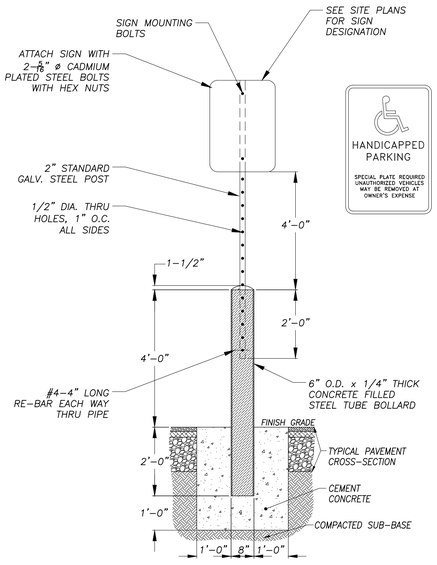
INLET PROTECTION - SEDIMENT FILTER SACK
NO SCALE



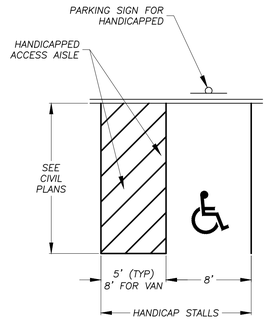
BITUMINOUS CONCRETE PAVING DETAIL
NO SCALE



BITUMINOUS CONCRETE BERM (CAPE COD)
NO SCALE

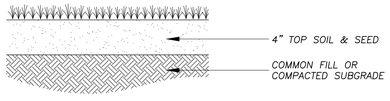


STEEL BOLLARD WITH SIGN DETAIL
NO SCALE

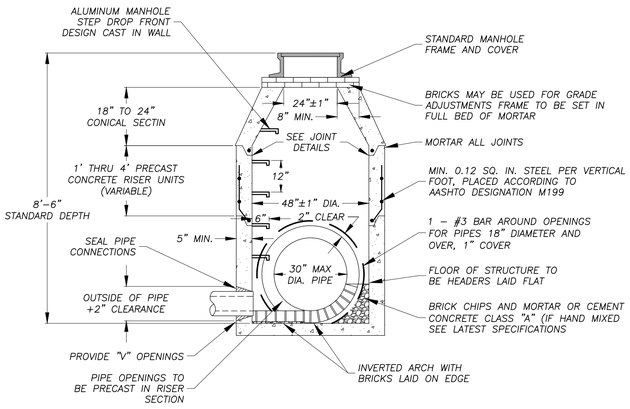


NOTES:
1. ALL DIMENSIONS TO CENTER OF 4" PAVEMENT STRIPING.
2. ALL STRIPING SHALL BE 4" SOLID WHITE PAVEMENT MARKING PAINT UNLESS OTHERWISE NOTED.
3. CONTRACTOR TO ENSURE HANDICAP ACCESSIBLE PARKING SPACE SHALL HAVE A SLOPE OF 2% OR LESS IN ALL DIRECTIONS.
4. SEE AAB 521 CMR 23.00 FOR REQUIRED NUMBER AND PROPORTION OF VAN ACCESSIBLE SPACES.

HANDICAP PARKING STALL
NO SCALE



GRASSED AREA REPAIR
NO SCALE



PRECAST CONCRETE MANHOLE
NO SCALE

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DETAILS

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Parcel ID: G8-2-3

COMMONWEALTH OF MASSACHUSETTS
FILIPE J. CRAVO
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No. 48376
PROFESSIONAL ENGINEER
4/29/26

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c/o Mr. Nasser Zebian
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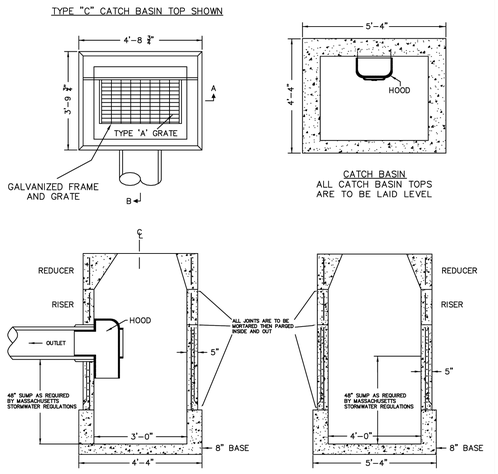
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SCALE: As Noted

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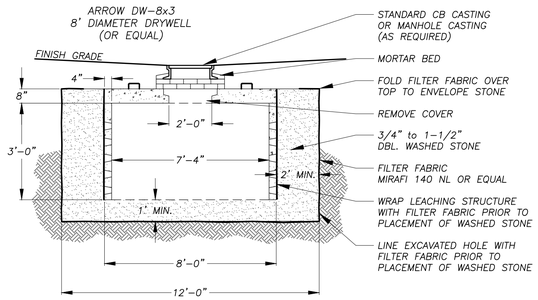
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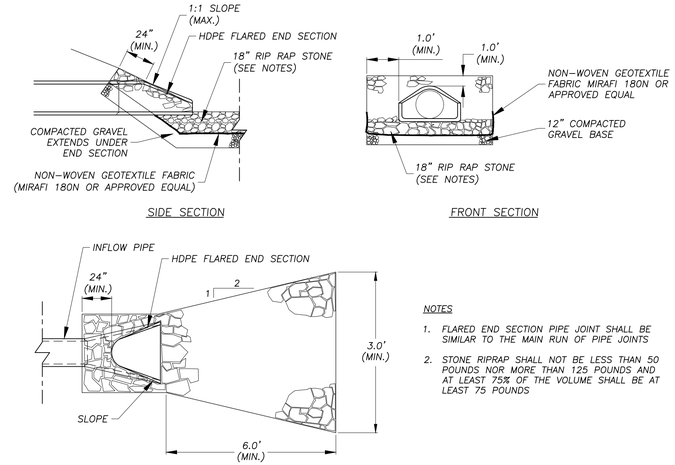


PRECAST CATCH BASIN
'TYPE C'
N.T.S.

DRAWN BY: DMD REV. BY: VC	PROJECT	SHT. NAME	SHT. NO.
DATE: 12-5-96 REV.: 5/5/2016	TOWN OF AGAWAM CONSTRUCTION STANDARDS	CATCH BASIN WITH HOOD	D-3
DWG. NO.: 1			
APPROVED BY: JTD, MCC			



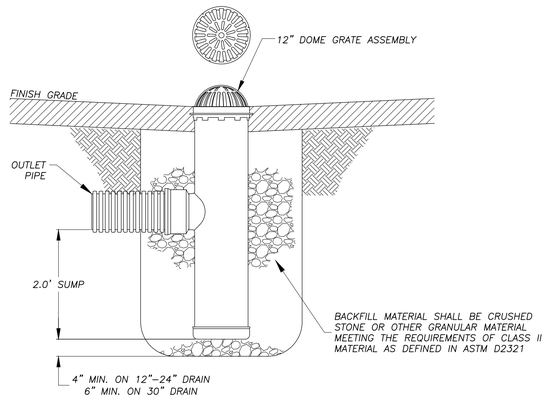
PRECAST CONCRETE DRYWELL DETAIL
NO SCALE



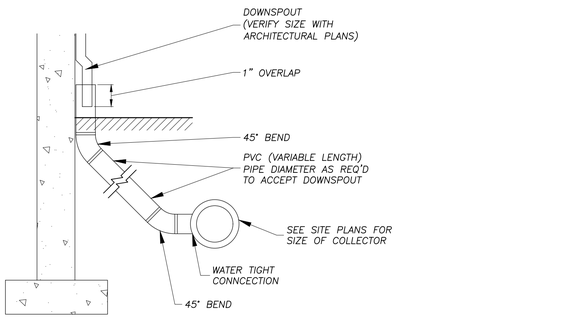
NOTES

1. FLARED END SECTION PIPE JOINT SHALL BE SIMILAR TO THE MAIN RUN OF PIPE JOINTS
2. STONE RIPRAP SHALL NOT BE LESS THAN 50 POUNDS NOR MORE THAN 125 POUNDS AND AT LEAST 75% OF THE VOLUME SHALL BE AT LEAST 75 POUNDS

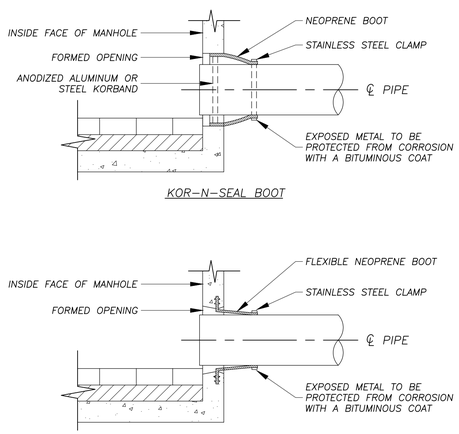
STANDARD RIP RAP PIPE OUTLET
NO SCALE



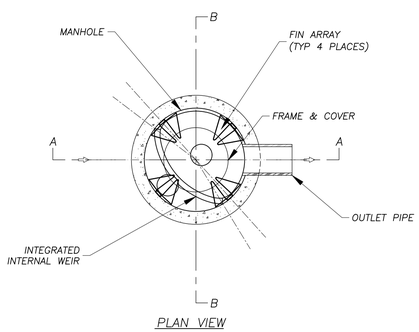
ADS NYLOPLAST YARD DRAIN BASIN
NO SCALE

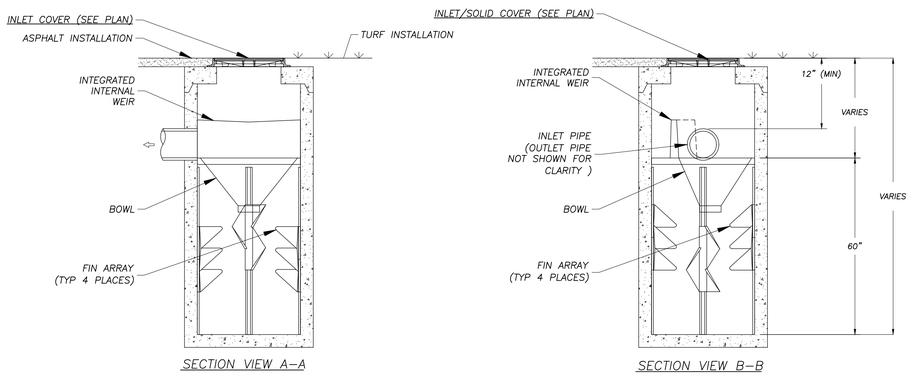


DOWNSPOUT COLLECTOR DETAIL
NO SCALE



PIPE CONNECTION DETAILS
NO SCALE





WATER QUALITY UNIT - BARRACUDA MAX S4
NO SCALE

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FILIPE J. CRAVO
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c/o Mr. Nasser Zebian

223 Garden Street
Agawam, MA 01030

ISSUANCE DATE: June 25, 2025

REVISIONS:	DATE:

DRAFTED BY: J.L. & J.W.M.

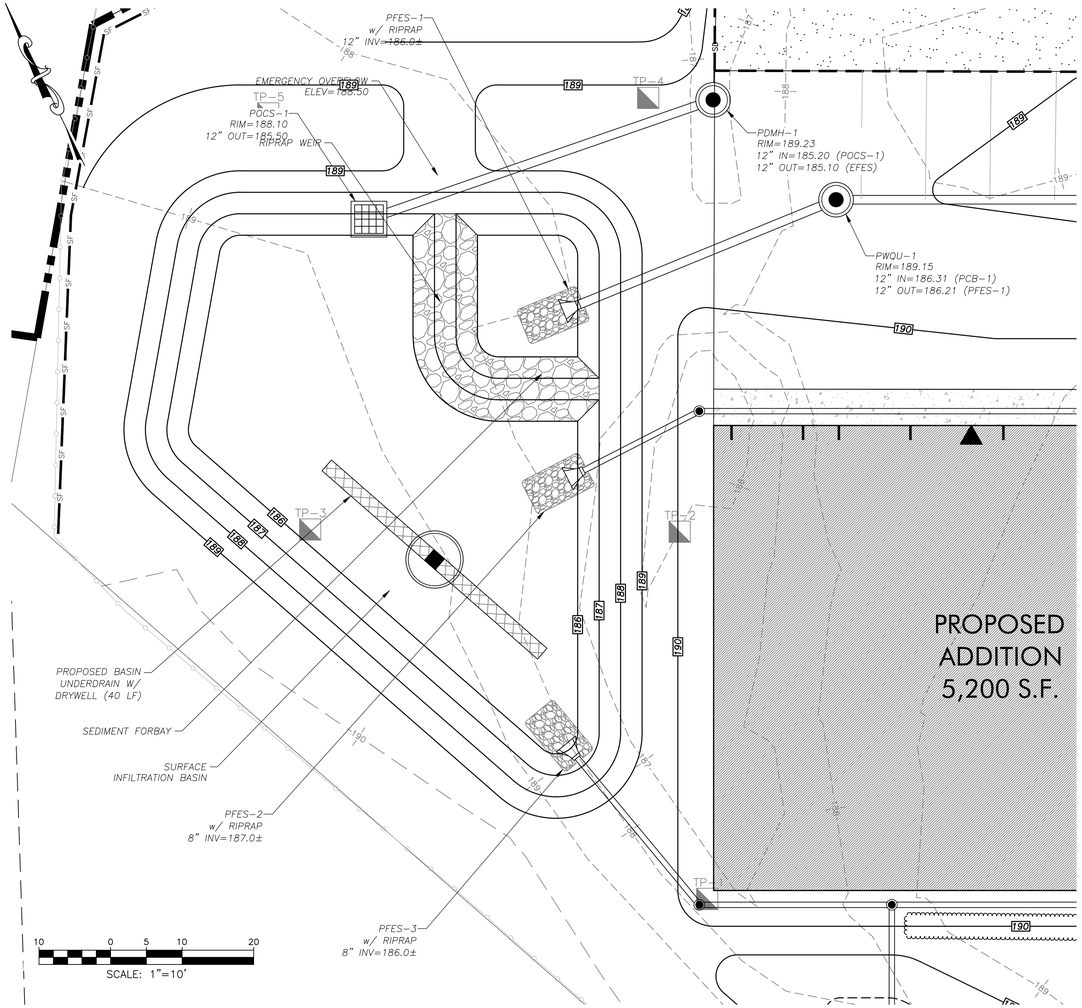
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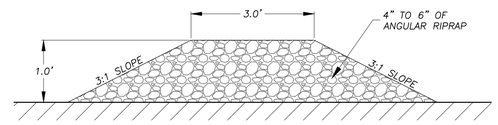
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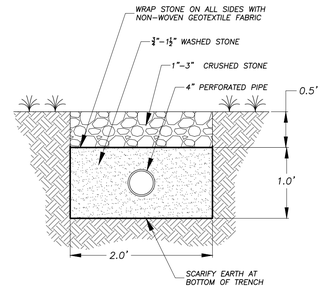
SURFACE INFILTRATION BASIN DETAIL

SCALE: 1"=10'



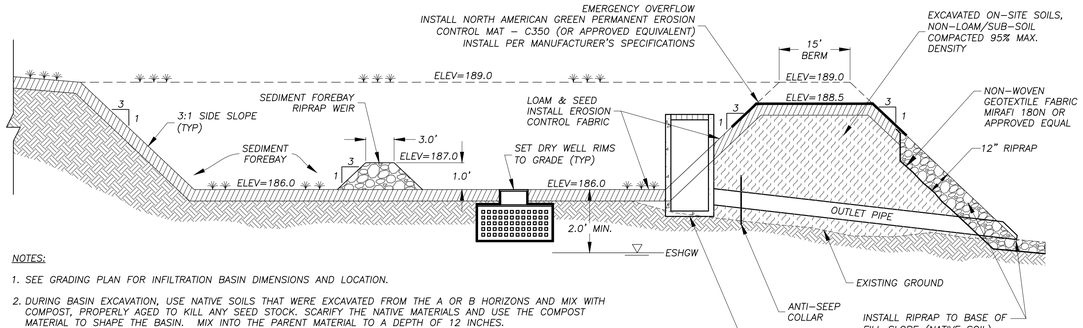
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UNDERDRAIN DETAIL

NO SCALE

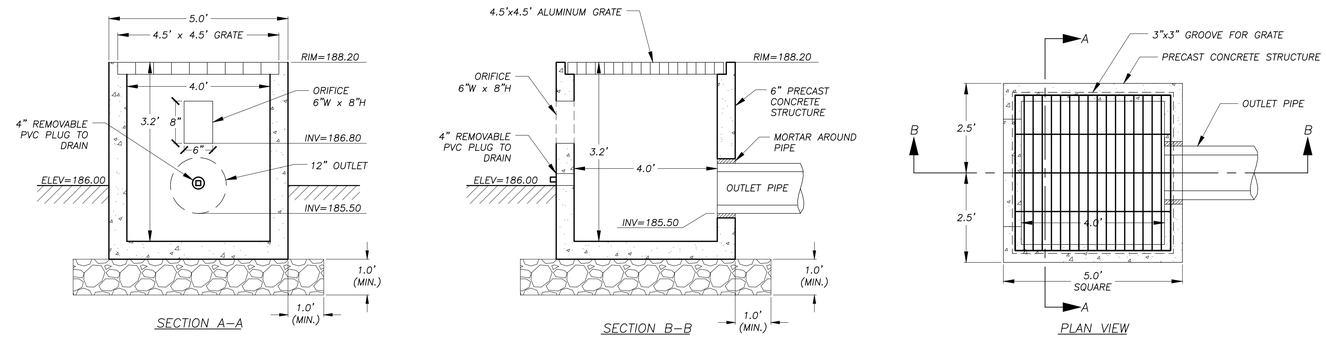


SECTION THROUGH SURFACE INFILTRATION BASIN

NO SCALE

NOTES:

1. SEE GRADING PLAN FOR INFILTRATION BASIN DIMENSIONS AND LOCATION.
2. DURING BASIN EXCAVATION, USE NATIVE SOILS THAT WERE EXCAVATED FROM THE A OR B HORIZONS AND MIX WITH COMPOST, PROPERLY AGED TO KILL ANY SEED STOCK. SCARIFY THE NATIVE MATERIALS AND USE THE COMPOST MATERIAL TO SHAPE THE BASIN. MIX INTO THE PARENT MATERIAL TO A DEPTH OF 12 INCHES.
3. IMMEDIATELY AFTER CONSTRUCTING THE BASIN, STABILIZE THE BOTTOM AND SIDE SLOPES WITH WATER-TOLERANT GRASS.
4. INFILTRATION BASIN BOTTOM TO BE A MINIMUM 2.0' ABOVE ESTIMATED SEASONAL HIGH GROUNDWATER (ESHGW) AS DETERMINED BY SOIL EVALUATIONS LOCATED WITHIN THE EXTENTS OF THE BASIN.



OUTLET CONTROL STRUCTURE DETAIL (POCS-1)

NO SCALE

SURFACE INFILTRATION BASIN CONSTRUCTION NOTE

THE ENGINEER SHALL INSPECT THE CONSTRUCTION OF THE BASIN AT THE MILESTONES LISTED BELOW. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 24 HOURS PRIOR TO BEGINNING CONSTRUCTION ON THE FOLLOWING:

1. COMPLETION OF EXCAVATION FOR THE INFILTRATION BASIN AREA TO SUBGRADE
2. AFTER SPREADING OF WATER-TOLERANT, FESCUE GRASS.

PERMITTING
NOT FOR CONSTRUCTION

RLA
R LEVESQUE ASSOCIATES INC
Landscape Architects
Civil Engineers · Land Surveyors
Environmental Consultants
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40 School Street
Westfield, MA 01085
rlaland.com

DETAILS

223 Garden Street
Agawam, MA
Parcel ID: G8-2-3

COMMONWEALTH OF MASSACHUSETTS
FILIPE J. CRAVO
CIVIL
No. 48376
PROFESSIONAL ENGINEER
4/29/26

PREPARED FOR:

Vermette Auto Body
c/o Mr. Nasser Zebian
223 Garden Street
Agawam, MA 01030

ISSUANCE DATE: June 25, 2025

REVISIONS:	DATE:
A. Parking & addition revision	3/19/26
B. Engineering review comments	4/29/26

DRAFTED BY: J.L. & J.W.M.

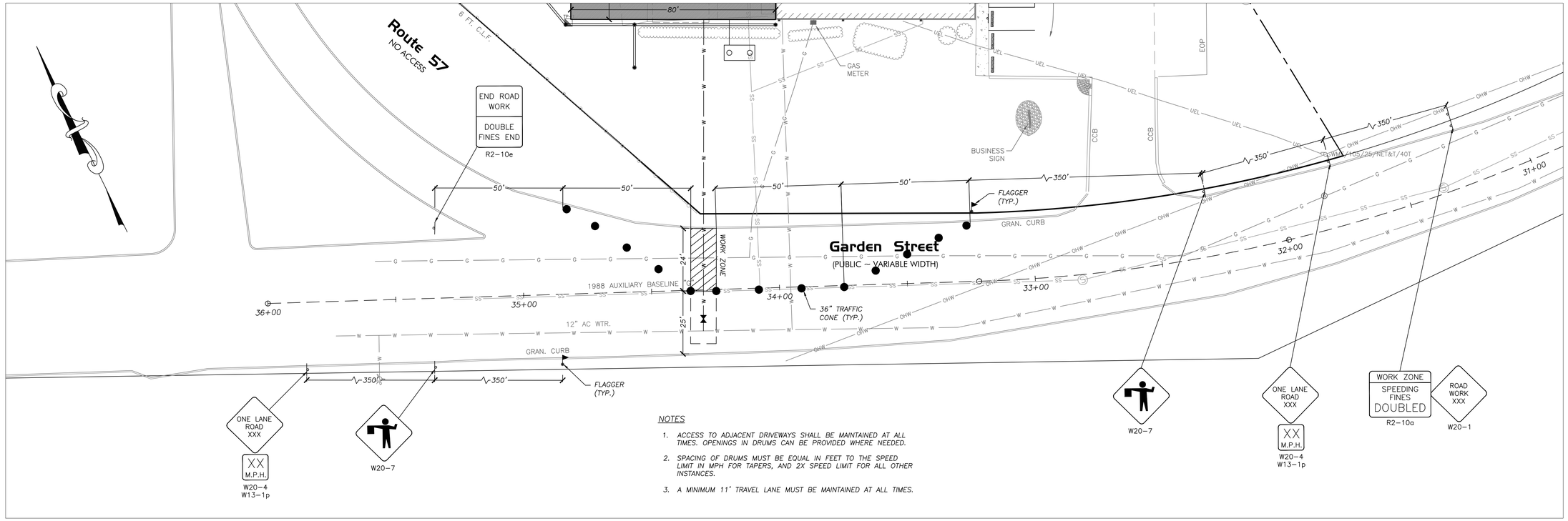
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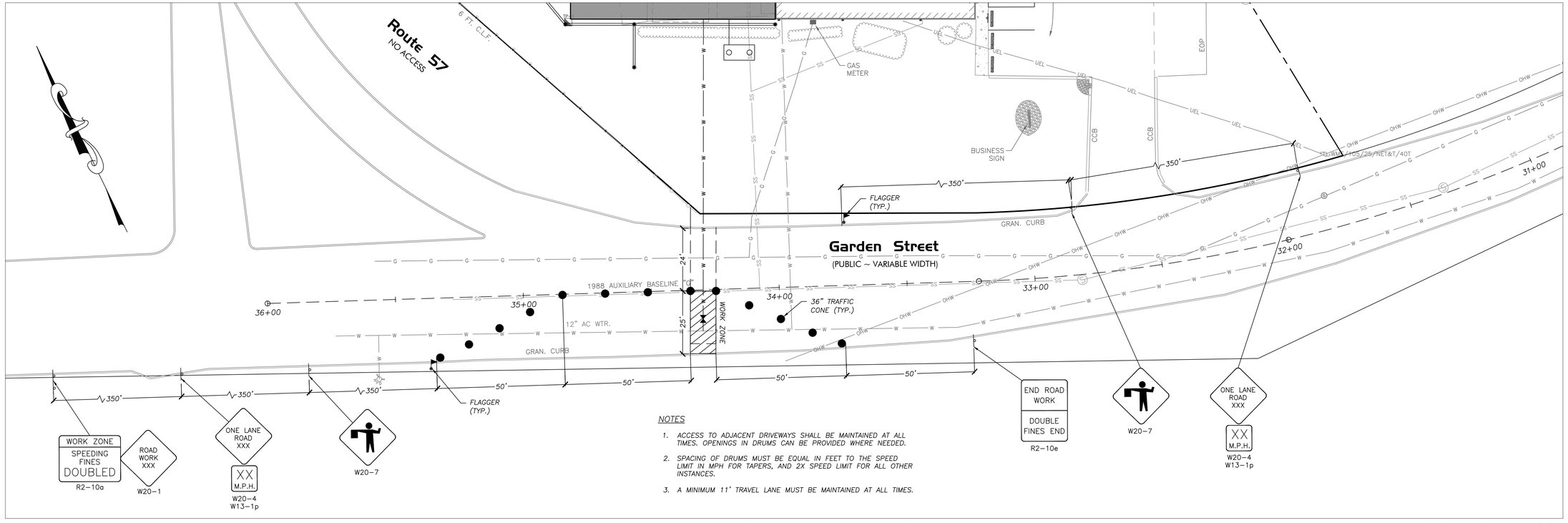
1. ACCESS TO ADJACENT DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES. OPENINGS IN DRUMS CAN BE PROVIDED WHERE NEEDED.
2. SPACING OF DRUMS MUST BE EQUAL IN FEET TO THE SPEED LIMIT IN MPH FOR TAPERS, AND 2X SPEED LIMIT FOR ALL OTHER INSTANCES.
3. A MINIMUM 11' TRAVEL LANE MUST BE MAINTAINED AT ALL TIMES.

Phase I (Westbound Lane)

Scale: 1"=20'

20 0 10 20 40

SCALE: 1"=20'



NOTES

1. ACCESS TO ADJACENT DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES. OPENINGS IN DRUMS CAN BE PROVIDED WHERE NEEDED.
2. SPACING OF DRUMS MUST BE EQUAL IN FEET TO THE SPEED LIMIT IN MPH FOR TAPERS, AND 2X SPEED LIMIT FOR ALL OTHER INSTANCES.
3. A MINIMUM 11' TRAVEL LANE MUST BE MAINTAINED AT ALL TIMES.

Phase 2 (Eastbound Lane)

Scale: 1"=20'

20 0 10 20 40

SCALE: 1"=20'

PERMITTING
NOT FOR CONSTRUCTION

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Civil Engineers · Land Surveyors
Environmental Consultants
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40 School Street
Westfield, MA 01085
rlaland.com

TEMPORARY TRAFFIC CONTROL PLAN

223 Garden Street
Agawam, MA
Parcel ID: G8-2-3

COMMONWEALTH OF MASSACHUSETTS
FILIPE J. CRAVO
CIVIL
No. 48376
REGISTERED PROFESSIONAL ENGINEER
3/19/26

PREPARED FOR:

Vermette Auto Body
c/o Mr. Nasser Zebian

223 Garden Street
Agawam, MA 01030

ISSUANCE DATE: November 19, 2025	
REVISIONS:	**DATE:**
A. Parking & addition revision	3/19/26

DRAFTED BY: J.L. & J.W.M.

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SCALE: As Noted

RLA PROJ. NUMBER: 250214

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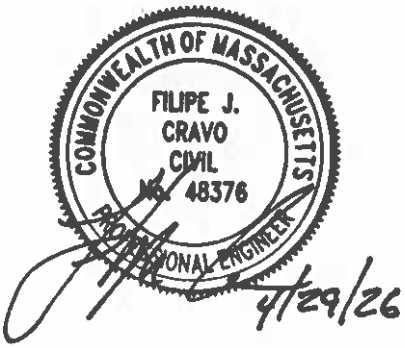
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Stormwater Drainage Report

Proposed Building Addition

Project Location:
223 Garden Street
Feeding Hills, Massachusetts 01030
(Parcel ID: G8-2-3)

Applicant & Property Owner:
MBNZ Holding Co.
c/o Mr. Nasser Zebian
223 Garden Street
Feeding Hills, Massachusetts 01030



RLA Project File No. 250214
April 25, 2025
Revised: April 29, 2026

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APPENDIX B: SOILS INFORMATION
APPENDIX C: PRE- AND POST- DEVELOPMENT HYDROLOGIC ANALYSIS (2, 10, & 100 YEAR STORM EVENTS)
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APPENDIX E: MASSDEP CALCULATIONS
APPENDIX F: CONSTRUCTION PERIOD EROSION CONTROL PLAN
APPENDIX G: LONG-TERM OPERATION AND MAINTENANCE PLAN
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I. INTRODUCTION

The applicant, MBNZ Holding Co. Mr. Nasser Zebian, proposes to expand the existing building located at 223 Garden Street. The parcel is identified as parcel G8-2-3 by the Town of Agawam assessor's office. The proposed project will include the construction of a building addition and associated site improvements including re-paved parking areas and a new stormwater management system. The existing site improvements were approved through a special permit in April of 2000. Since the approval, the site improvements were expanded to include an additional paved parking area along the easterly side of the site and a gravel area on the northerly side of the site. Since these areas were not accounted for in the original site design, the proposed stormwater management system has been designed with best management practices (BMP) to mitigate for the additional improved areas. The proposed improvements will generally maintain the existing drainage patterns of the site and direct treated stormwater towards the same design points as in pre-development conditions.

The proposed project includes the following:

1. Demolition and removal of existing paved areas,
2. Construction of a new building addition (5,200+/- SF)
3. Re-paving of impacted asphalt areas,
4. Construction of a new stormwater management system including a deep sump hooded catch basin, proprietary sedimentation device, and a surface infiltration basin with sediment forebay.

The purpose of this report is to present information regarding the technical aspects of the stormwater management system for the proposed project. All work is intended to be in full compliance with the Town of Agawam Stormwater Management requirements as well as the Massachusetts Department of Environmental Protection Stormwater Management Handbook.

2. SITE DESCRIPTION

2.1 Predevelopment Conditions

The property to be developed is located at 223 Garden Street and is listed as Parcel G8-2-3 by the Town of Agawam Assessor's Office. The property is currently zoned Business B as referenced from Agawam GIS. The property is bounded to the north by undeveloped land owned by the Commonwealth of Massachusetts, Route 57 right-of-way to the west, Garden Street to the south, and commercially utilized property to the east. The parcel to be redeveloped is approximately 1.60 acres in size. Figure 1 – USGS Map illustrates the location of the project.

The project site is currently occupied by a commercial building with associated site improvements including paved parking area, a gravel parking area, and stormwater management features. The existing topography of the site can be described as moderately sloped from east to west toward the stormwater swale. The vegetated portions of the parcel around the perimeter exist outside of the parking areas and slope off-site to the respective adjacent parcels. The highest elevation onsite is along the Easterly property line at approximately elevation 192. The frontage along Garden Street is relatively flat and ranges from about elevation 191 at the southwest corner to about 190 at the southeast corner. Along the rear of the property, the elevations range from about elevation 189 at the northwest corner of the property to about elevation 185 along the treeline running parallel to the northerly property line. The grades drop off significantly from the treeline toward the northeast corner of the site. Runoff follows the existing topography and is either conveyed via surface flow within the paved areas or in front of the building in the grassed area toward the shallow stormwater basin. All other areas sheet flow offsite along the edges of the parcel. Please refer to the existing conditions plan submitted herewith for more detailed topographical information and Figure 4 "Pre-Development Watershed Plan" for sub-catchment area boundaries.

2.2 Resource Areas

The existing site consists of historically developed commercial land. No wetland jurisdictional areas were identified within the site boundaries. However, a perennial stream was delineated off-site to the northeast in which the associated 200-foot riverfront area setback extends partially onto the site in the northeast corner. No improvements are proposed within jurisdictional area and a Request for Determination of Applicability has been submitted with the Conservation Commission.

2.2.1 Floodplain

R. Levesque Associates, Inc. performed due diligence research on the property in regard to FEMA flood zone mapping. As demonstrated by the most recent FEMA Flood Insurance Rate Maps, the property is not located within any flood hazard areas, see Figure 2 – FEMA FIRM Map.

2.2.2 Natural Heritage and Endangered Species Program

R. Levesque Associates, Inc. performed due diligence research on the property in regard to the Natural Heritage and Endangered Species Program (NHESP) areas. The property is not located within any NHESP estimated or priority habitats of endangered species, see Figure 3 – NHESP Map.

2.2.3 Aquifer Protection District

R. Levesque Associates, Inc. performed due diligence research on the property in regard to wellhead protection overlay districts. The property is not located within a Zone II Wellhead Protection Area; see Figure 3 – NHESP & Zone II Map.

2.3 Soils

R. Levesque Associates, Inc. researched the soils located on site with information readily available by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). Based on a review of the USDA Soil Survey of Hampden County, Massachusetts, Central Part, the site is comprised of the following soil types:

Table 2.4: Hydrologic Soil Group Classification

Soil Description	Map Unit Symbol	Hydrologic Soil Group
Merrimac fine sandy loam	254A	A

A total of five (5) test pits were conducted by Filipe Cravo SE# 12839 to verify the existing site soil characteristics and evaluate the ability of the site to support the proposed stormwater drainage system components. The test pits were spread out across the westerly side of the property in the areas of the proposed surface infiltration basin to establish the elevation of the estimated seasonal high groundwater and soil conditions. Ground water conditions varied across the site with some test pits demonstrating evidence of groundwater while others had no evidence of groundwater. The proposed surface infiltration basin has been designed according to the test pit data in the immediate vicinity which had evidence of groundwater approximately 37" down. The depth of the test pits ranged from 118 to 132 inches. In general, the soil evaluations confirmed the NRCS mapping. See Appendix B for additional soils information.

2.4 Post Development Conditions

The proposed site improvements include a number of stormwater management features to properly meet the requirements set forth by the Town of Agawam Stormwater Management requirements. The proposed stormwater features include:

- A deep-sump hooded catch basin
- A proprietary sedimentation device
- A surface infiltration basin with sediment forebay

The existing site improvements including the commercial building and the majority of the paved areas were approved through a special permit in April of 2000. Since the original approval, the site improvements were expanded to include an additional paved parking area along the easterly side of the site and a gravel area on the northerly side of the site. These additional site improvement areas were not accounted for in the original stormwater management system design. In addition, the existing stormwater management system was designed under previous regulations and would not meet the current MassDEP Stormwater Management Handbook Standards. As such, the site improvements include a new stormwater management system that has been designed to mitigate for the entirety of the site, including the additional improved areas, that meet the current stormwater management standards.

Under existing conditions, stormwater runoff from the paved parking areas is generally conveyed on the surface toward the existing swale on the western side of the site. The gravel area to the north generally sheet flows off site to the north. The roof area is either collected via an underground header on the north side of the building or discharges on-grade on the south side of the building, both areas tributary to the existing swale on the western side of the site. Under proposed conditions, the gravel area will be re-graded to convey runoff toward the pavement where it will flow toward a new deep-sump hooded catch basin inlet structure for initial water quality treatment. The runoff will then be conveyed via underground infrastructure to a proprietary sedimentation device for additional water quality treatment. Ultimately, the runoff will be conveyed to the sediment forebay within the surface infiltration basin. The infiltration basin has been designed to provide peak discharge rate attenuation for storm events up to and including the 100-year 24-hour storm event and provide groundwater recharge. The basin has also been designed with an outlet control structure that will connect to the existing outfall pipe, discharging to the same location as existing conditions.

Overall, the proposed site improvements will maintain the general drainage patterns of the site while improving water quality and reducing/maintaining peak discharge rates. See Figure 5 – Post-Development Watershed Plan for delineation of sub-catchment areas.

3. STORMWATER MANAGEMENT SYSTEM

R. Levesque Associates, Inc. has prepared the following drainage system calculations for the proposed project site. These calculations were performed to document compliance with the guidelines set forth by the Town of Agawam Stormwater Management requirements and the Massachusetts Department of Environmental Protection Stormwater Management Handbook (MassDEP Handbook). A detailed hydrologic analysis of the system was completed in order to evaluate the performance of the stormwater management system components, see Appendix C – Pre- and Post-Development Hydrologic Analysis. The proposed stormwater management system will collect runoff from on-site impervious areas and utilize stormwater best management practices to provide water quality treatment, groundwater recharge, and peak discharge rate attenuation.

3.1 Drainage Calculations

R. Levesque Associates, Inc. utilized the HydroCAD software program, Version 10.20, developed by HydroCAD Software Solutions LLC, in order to create and analyze the site hydrology. The HydroCAD software is based upon the Soil Conservation Service (SCS) "Technical Release 20 – Urban Hydrology for Small Watersheds" and "Technical Release 55 – Urban Hydrology for small Watersheds" which are generally accepted industry standard methodologies. The analysis was conducted in order to establish the peak discharge rates and estimated run-off volume from the project site. This was accomplished to properly evaluate pre- and post-development conditions during various storm events. Contributing drainage areas were identified and soils, surface cover, watershed slope, and flow paths were evaluated to develop the necessary HydroCAD model input parameters.

Drainage calculations were performed for the Pre- and Post-Development conditions for the 24-hour, 2, 10, and 100-year Type III storm events. The total rainfall for each of the storm events was based upon data provided by the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 point precipitation frequency estimates. The total rainfall values used in the hydrologic modeling for each event are shown in the following table:

Table 3.1: Design Rainfall Data – Hampden County		
2-year, 24-hour storm	10-year, 24-hour storm	100-year, 24-hour storm
3.22 inches	5.21 inches	8.36 inches

3.1.1 Design Points

In order to compare the difference between pre- and post-development peak flows, existing and proposed watersheds were delineated. Multiple Design Points (DP) were established with flow paths representing the longest time of concentration of run-off in each tributary watershed. For this analysis, the design points were determined as follows:

- DP-1 – Off Site to the North: This design point represents runoff from the project area which flows off site toward the northerly property line.
- DP-2 – Garden Street: This design point represents runoff from the project area which flows off site toward Garden Street.

3.1.2 Pre-Development Hydrology

The project area under existing conditions contains three sub-catchments tributary to the design points described above. The sub-catchments were delineated based on the existing developed areas of the parcel and as approved by the special permit issued in April of 2000. The areas that were expanded beyond the approved site plan were modeled as proposed in the original site plan, not as they currently are. I.E., the paved parking and gravel area were modeled as a grassed surface, not impervious. Additionally, the existing stormwater management system was modeled utilizing current software to estimate the peak discharge rates of the site in addition to the topography of the parcel and surrounding areas. The existing watershed areas are shown on the attached Figure 4 entitled "Pre-Development Watershed Plan". Peak discharge rates for the design points are depicted in Table 3.1.4 on the following page.

3.1.3 Post-Development Hydrology

The project area under proposed conditions was broken down into three sub-catchments discharging to the design points as described above. The proposed watershed areas are shown on the attached Figure 5 entitled "Post-Development Watershed Plan". Peak discharge rates for the design points are depicted in Table 3.1.4 on the following page.

3.1.4 Peak Discharge Rates

The table below summarizes the Pre- and Post-Development peak discharge rates for each Design Point:

Table 3.1.4 Pre- and Post-Development Peak Discharge Rates						
	2-year storm (cfs)		10-year storm (cfs)		100-year storm (cfs)	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Design Point 1	0.7	0.0	0.9	0.5	1.9	1.5
Design Point 2	0.1	0.1	0.2	0.2	0.4	0.4

As depicted in table 3.1.4, the post-development peak discharge rates do not increase over pre-development peak discharge rates for each of the storm events presented. This is accomplished by providing onsite attenuation and recharge through the proposed surface infiltration basin.

3.2 Hydraulic Analysis

R. Levesque Associates, Inc. utilized the Hydraflow Storm Sewer Extension for AutoCAD Civil 3D 2020 software program, developed by Autodesk, Inc., to analyze the hydraulic capacity of the proposed underground infrastructure. The analysis was conducted to verify that the proposed conveyance piping has sufficient capacity to convey up to and including the 24-hour, 100-year storm event. The data from the analysis was used to properly size the conveyance piping such that there is no or minimal surcharge of stormwater above the rim elevations within the paved areas. As part of the input parameters required for the hydraulic analysis, the tributary inlet areas were delineated based on topography, any additional connected discharges, characteristic land use coverages and flow paths, see Figure 6 – Inlet Area Plan. A minimum Time of Concentration (Tc) of (6) minutes was used in the calculations. Please refer to Appendix D for the hydraulic analysis of the proposed stormwater management system.

3.3 MassDEP Stormwater Management Standards

R. Levesque Associates, Inc. has designed the proposed stormwater management system to be in compliance with the MassDEP Stormwater Management Standards. Chapter 1, Volume 3 of the MassDEP Handbook outlines specific calculations, and other information, that must be submitted

with each report to document compliance. The following summary highlights elements of the proposed project and how they apply to each standard.

- *Standard #1 - No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*

  The proposed project provides best management practices designed to the guidelines of the MassDEP Handbook. Therefore, no new untreated stormwater is discharged.

- *Standard #2 – Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04.*

  The proposed stormwater management system has been designed such that the post-development peak discharge rates do not exceed the pre-development peak discharge rates for the 2-year, 10-year, and 100-year 24-hour storms. See Appendix C for the Hydrologic Analysis.

- *Standard #3 - Loss of annual recharge to groundwater shall be eliminated or minimized through the use of environmentally sensitive site design, low impact development techniques, stormwater BMPs, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required volume as determined in accordance with the Massachusetts Stormwater Handbook.*

  The proposed surface infiltration basin has been designed with the capacity to infiltrate the required recharge volume for the tributary impervious areas. See Appendix E for the Required Recharge Volume Calculations.

- *Standard #4 – Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of TSS. It is presumed that this standard is met when:*

  a. Suitable practices for source control and pollution prevention are identified in a long term pollution prevention plan, and thereafter are implemented and maintained;

  b. Structural stormwater BMPs practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and

  c. Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook

  The proposed stormwater management system has been designed to provide the required total suspended solids pre-treatment prior to discharge to the surface infiltration basin. See Appendix E for the Water Quality and Total Suspended Solids Removal Calculations.

- *Standard #5 - For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by MassDEP to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.*

  Since the site is an auto body repair shop, the stormwater management system has been designed to the applicable standards associated with a LUHPPL.

- *Standard #6 – Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area, require the use of the specific source control and pollution prevention measures and the specific structural stormwater BMPs determined by MassDEP to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area if there is a strong likelihood of a significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters and Special Resource Waters shall be removed and set back from the receiving water or wetland and receive the highest and best practical method of treatment. A "storm water discharge" as defined in 314 CMR 3.04(2)(a)1 or (b) to an Outstanding Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00. Stormwater discharges to a Zone I or Zone A are prohibited unless essential to the operation of a public water supply.*

  This standard is not applicable.

- *Standard #7 – A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural BMPs requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.*

  This standard is not applicable.

- *Standard #8 – A plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention) shall be developed and implemented.*

  A Construction Period Erosion Control Plan has been provided in Appendix F.

- *Standard #9 – A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed.*

  A Long-term Operation & Maintenance Plan has been provided in Appendix G.

- *Standard #10 - All illicit discharges to the stormwater management system are prohibited.*

  An illicit discharge statement will be provided prior to discharge of stormwater to post-construction BMPs. See Appendix H for a copy of the Illicit Discharge Statement.

3.4 Stormwater Best Management Practices

The proposed stormwater management system was designed utilizing stormwater best management practices (BMP) as set forth by the MassDEP Handbook. The BMPs utilized as part of the stormwater management system include a deep-sump hooded catch basin, proprietary sedimentation device, and a surface infiltration basin with sediment forebay. All the BMPs were designed to meet the requirements of the MassDEP Handbook and will provide water quality treatment, groundwater recharge, and peak rate attenuation in order to mitigate the impacts of the proposed site improvements. See Appendix E – MassDEP Calculations for the calculations required to document compliance. The following section provides a description of the best management practices (BMPs) being utilized on site.

3.4.1 Deep Sump Catch Basins

Deep-sump catch basins equipped with oil/gas hoods are being utilized as structural pretreatment devices within the proposed stormwater management system. The catch basins will be constructed with a 4'-0" deep sump to function as a settling chamber and allow for adequate storage of collected sediments. Catch basins are typically first in the line of water quality treatment.

3.4.2 Proprietary Sedimentation Devices

Proprietary sedimentation devices are being utilized on site for the pretreatment of stormwater runoff, in addition to the catch basins, prior to conveyance to the subsurface infiltration basin. Due to the stormwater management system utilizing a surface infiltration basin, pretreatment of the stormwater runoff is essential to providing higher water quality prior to infiltration. As much sediment, floatables, and hydrocarbons should be removed from the stormwater runoff as

possible to avoid contamination of the infiltration media. Maintenance of the proprietary devices is crucial to the long-term effectiveness of the stormwater management system.

3.4.3 Surface Infiltration Basin with Sediment Forebay

A surface infiltration basin accompanied by a sediment forebay is well suited to meet the water quality and quantity requirements from watershed areas within this project. An infiltration basin with associated sediment forebay mitigates the impact of the proposed site improvements by attenuating the peak discharge rates and retaining the stormwater volume over a period of time. The proposed infiltration basin has been designed to mimic the existing drainage patterns of the site by discharge runoff to the same point in post-development conditions as pre-development. Additionally, the basin is equipped with an emergency spillway to mitigate runoff during larger storm events.

3.5 Protection of Stormwater Best Management Practices during Construction

Protection of the stormwater best management practices during construction will ensure the proper functioning of the stormwater management system and provide protection to the undisturbed areas until the site has been stabilized. Certain specific erosion and sedimentation controls and good practices to be performed by the site contractor have been documented in a Construction Period Erosion Control Plan. See Appendix F – Construction Period Erosion Control Plan.

3.6 Inspection and Maintenance of Stormwater Best Management Practices

Frequent maintenance of the stormwater best management practices is essential to ensuring that the stormwater management system will function properly long-term. MassDEP provides guidelines for the regular inspection and maintenance of the proposed stormwater best management practices. A Long-Term Stormwater Operation and Maintenance Plan has been prepared which dictates the inspection frequency and maintenance operations for each BMP. See Appendix G – Long-Term Operation and Maintenance Plan.

3.7 Illicit Discharge Compliance Statement

RLA has prepared an Illicit Discharge Compliance Statement to document compliance with the Massachusetts Department of Environmental Protection Stormwater Management Handbook, see Appendix H.

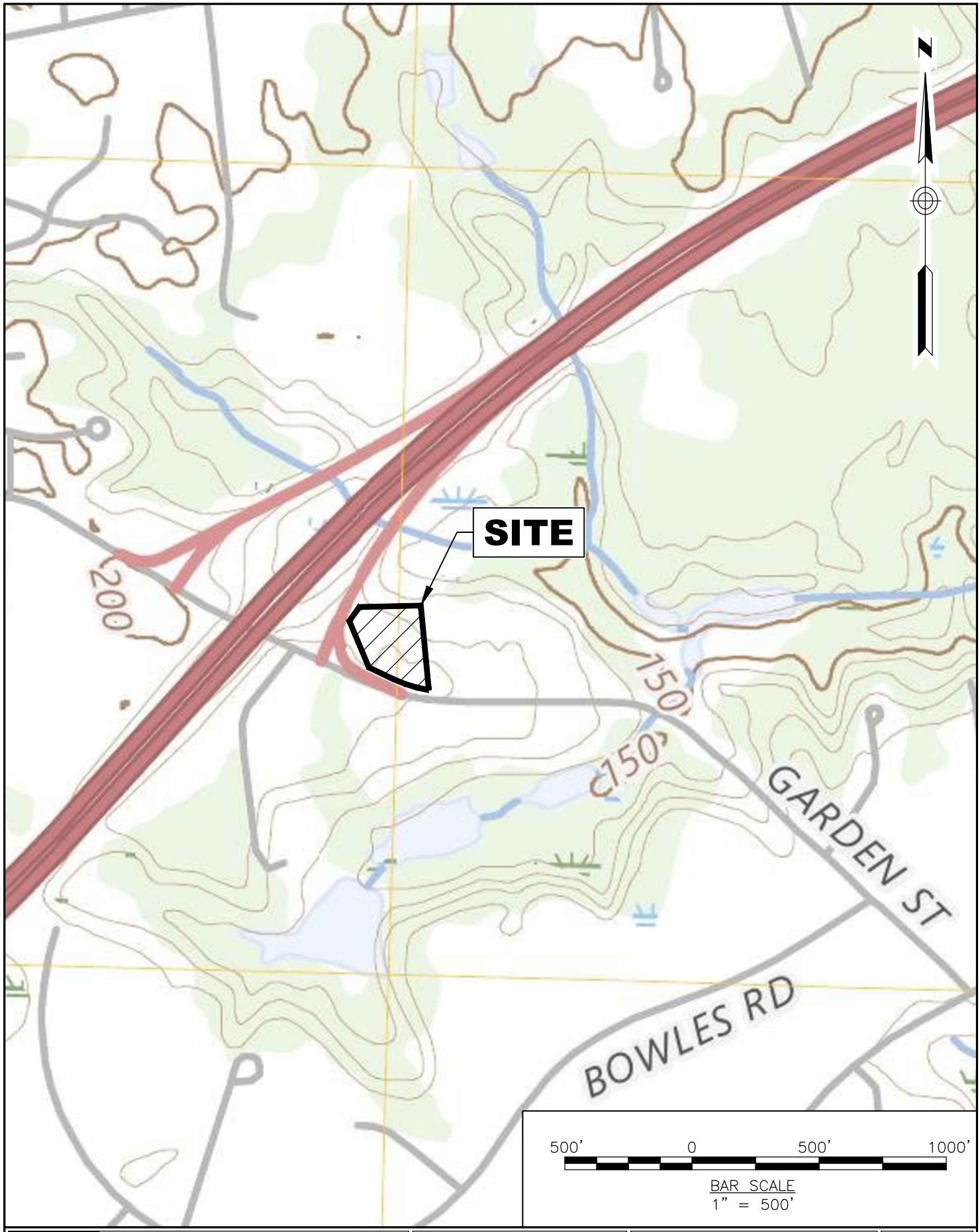
3.8 Low-Impact Development Alternatives Analysis Narrative

RLA has prepared a Low-Impact Development Alternatives Analysis Narrative as part of the Stormwater Drainage Report, see Appendix I.

4. CONCLUSION

The proposed stormwater management system has been designed to mitigate the impacts of both the previously constructed site improvements as well as the newly proposed site improvements by providing a control for runoff water quality and water quantity. Implementation of stormwater best management practices such as a deep-sump hooded catch basin, a proprietary sedimentation device, and a surface infiltration allow for a stormwater drainage design that is in conformance with the criteria set forth in the Town of Agawam Stormwater Management requirements and the Massachusetts Department of Environmental Protection Stormwater Management Handbook.

Figure 1: Site Locus – USGS Map



R LEVESQUE ASSOCIATES, INC
A Land Planning Services Company
40 School Street · P.O. Box 640 · Westfield, MA 01086
ph: 413.568.0985 fax: 413.568.0986 rlaland.com

SITE LOCUS
USGS MAP

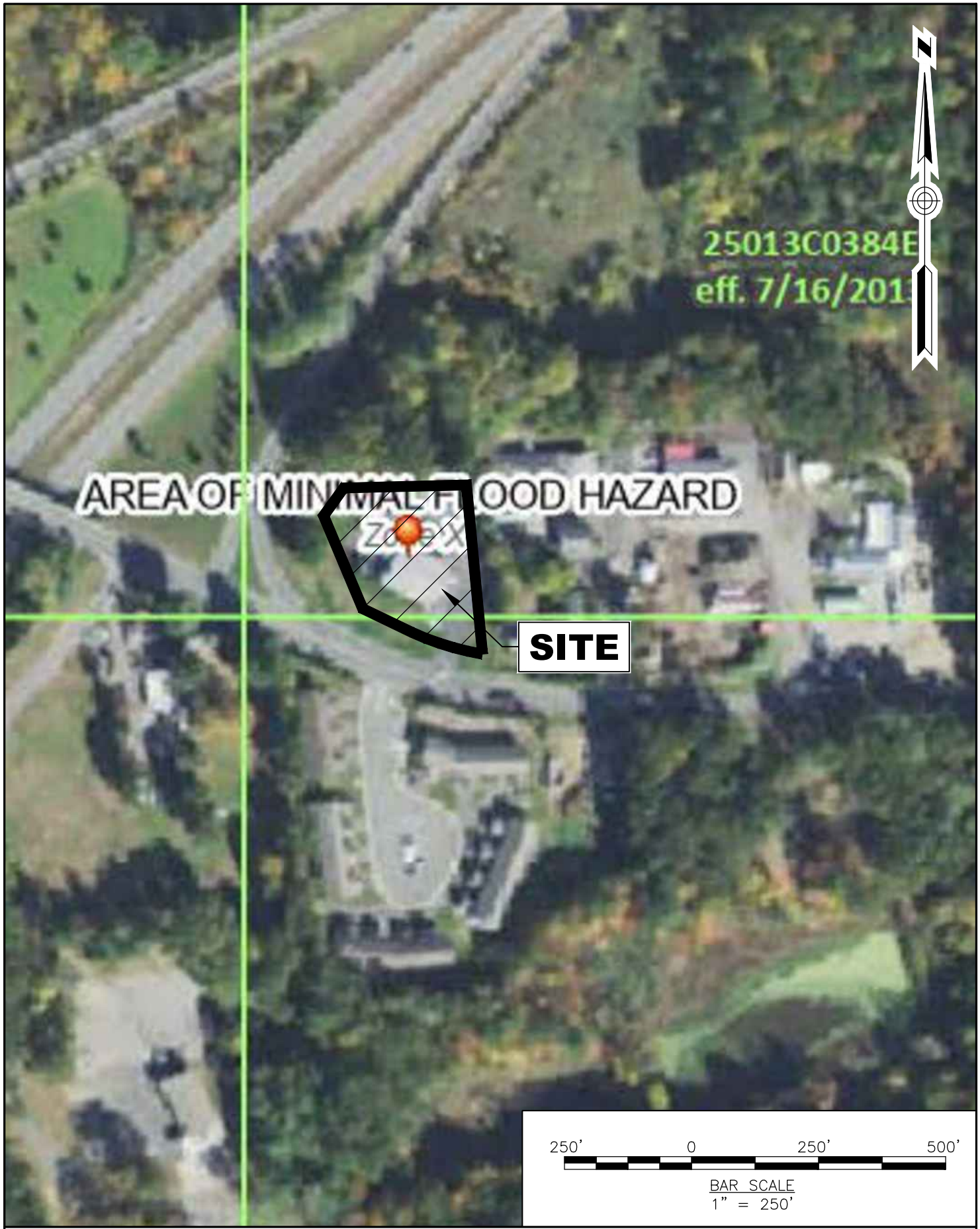
MBNZ Holding Co.
223 Garden Street
Agawam, MA 01030

Proposed Building Addition
223 Garden Street
Agawam, MA

JOB NO: 250214
DATE: 6/24/2025
SCALE: AS NOTED

FIG-1

Figure 2: FEMA Flood Map



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ph: 413.568.0985 fax: 413.568.0986 rlaland.com

FEMA
FLOOD MAP

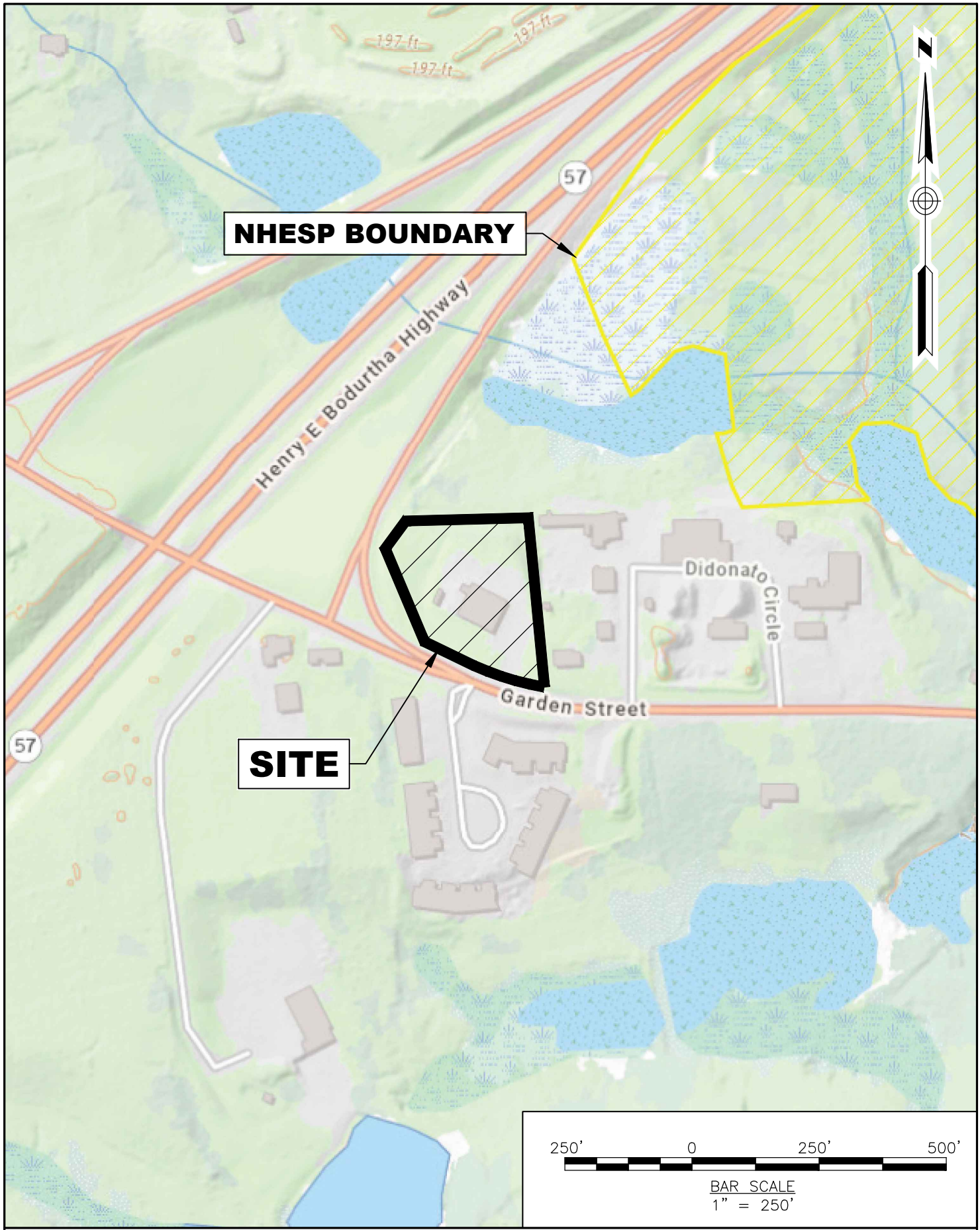
MBNZ Holding Co.
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Agawam, MA 01030

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223 Garden Street
Agawam, MA

JOB NO: 250214
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FIG-2

Figure 3: NHESP Map



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NHESP &
Zone II Map

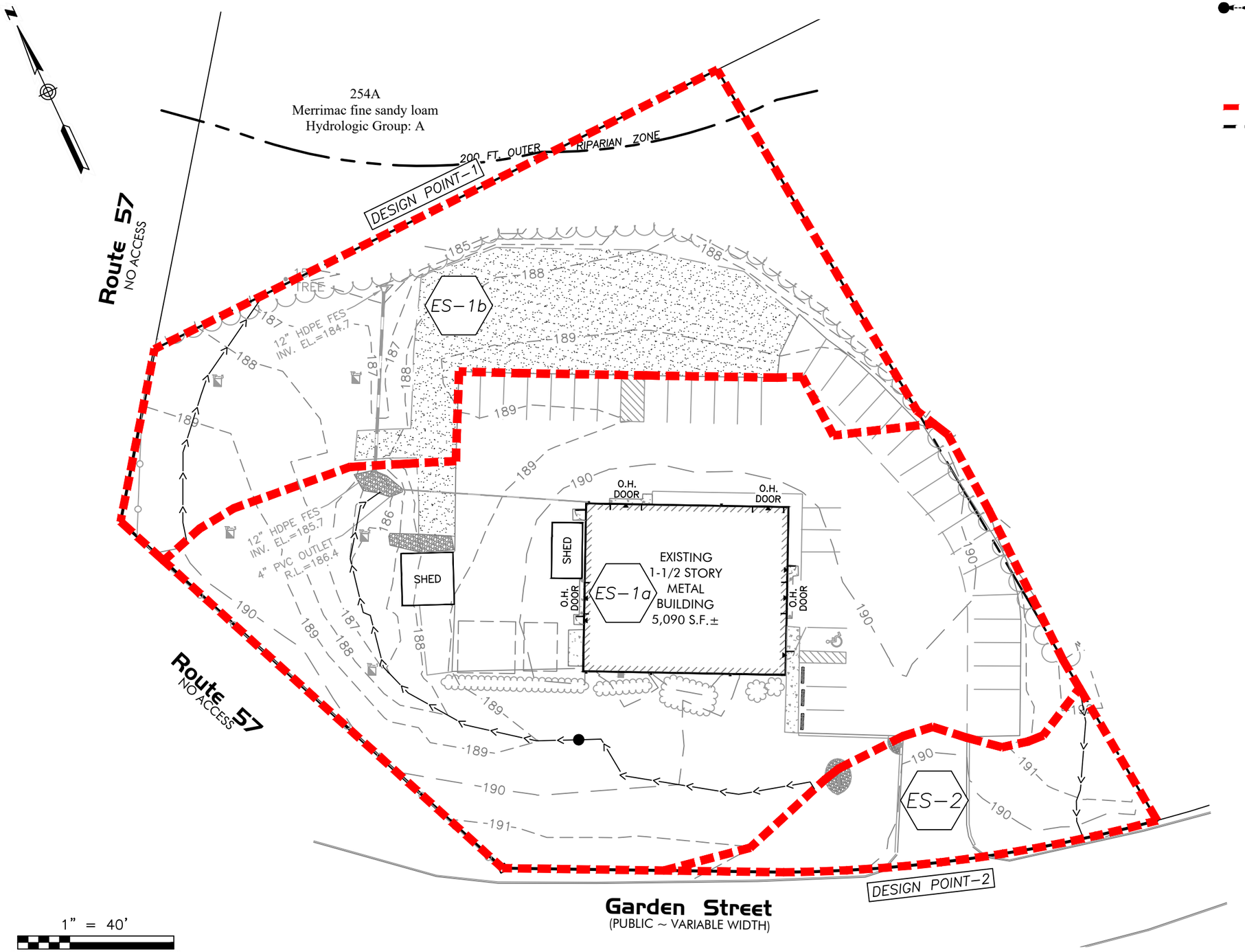
MBNZ Holding Co.
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Agawam, MA 01030

Proposed Building Addition
223 Garden Street
Agawam, MA

JOB NO: 250214
DATE: 6/24/2025
SCALE: AS NOTED

FIG-3

Figure 4: Pre-Development Watershed Plan



LEGEND

- TIME OF CONC. FLOW PATH
- ES-1 — SUBCATCHMENT NAME
- SUB WATERSHED
- SOIL BOUNDARY

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Pre-Development Watershed Plan

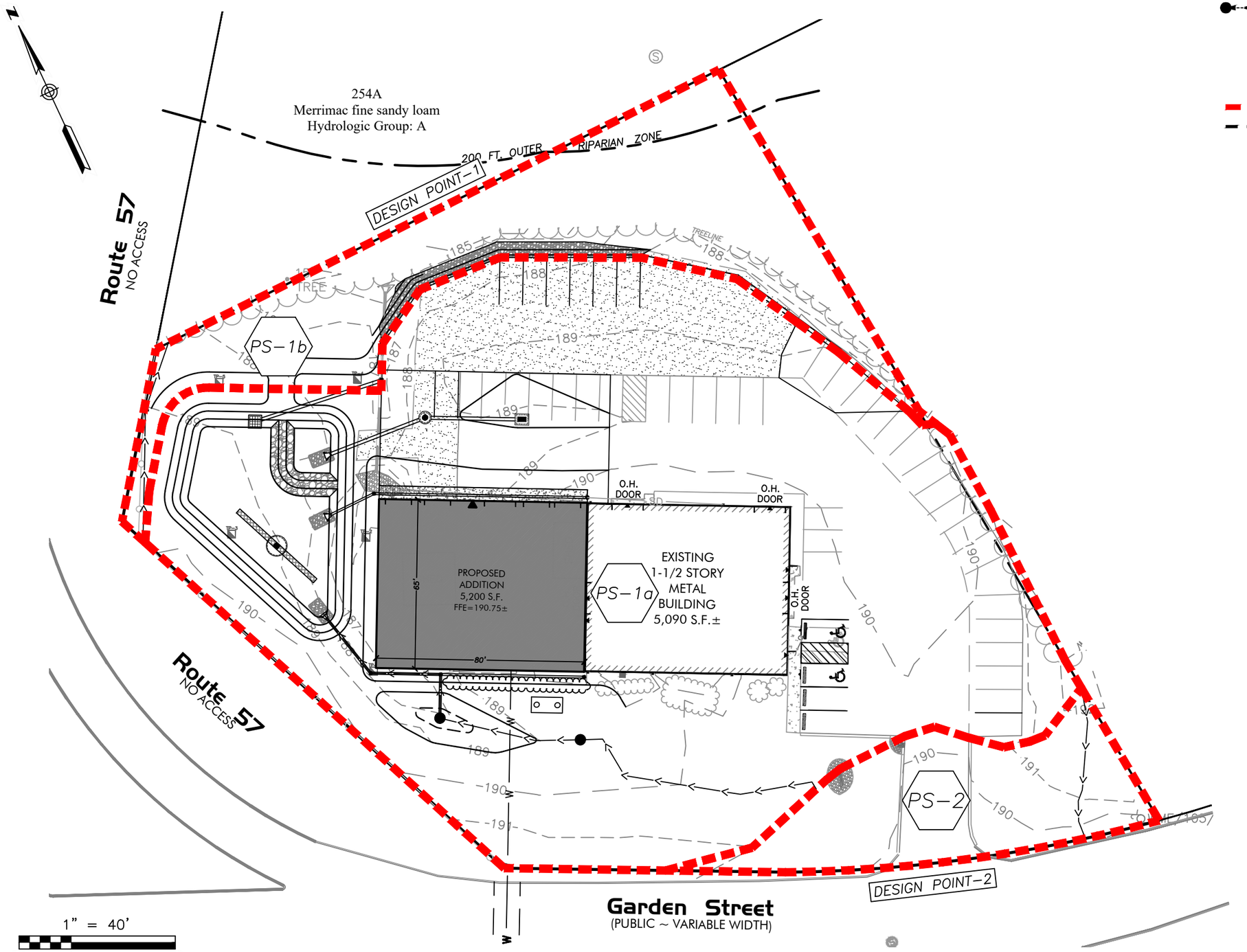
223 Garden Street
Agawam, MA
Parcel ID: G8-2-3

MBNZ Holding Co.
223 Garden Street
Agawam, MA. 01030

JOB NO.: 250214
DATE: 6/24/25
SCALE: As Noted

FIG-4

Figure 5: Post-Development Watershed Plan



LEGEND

- TIME OF CONC. FLOW PATH
- PS-1 — SUBCATCHMENT NAME
- SUB WATERSHED
- SOIL BOUNDARY

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ph: 413.568.0985 fax: 413.568.0986 rlaland.com

Post-Development Watershed Plan

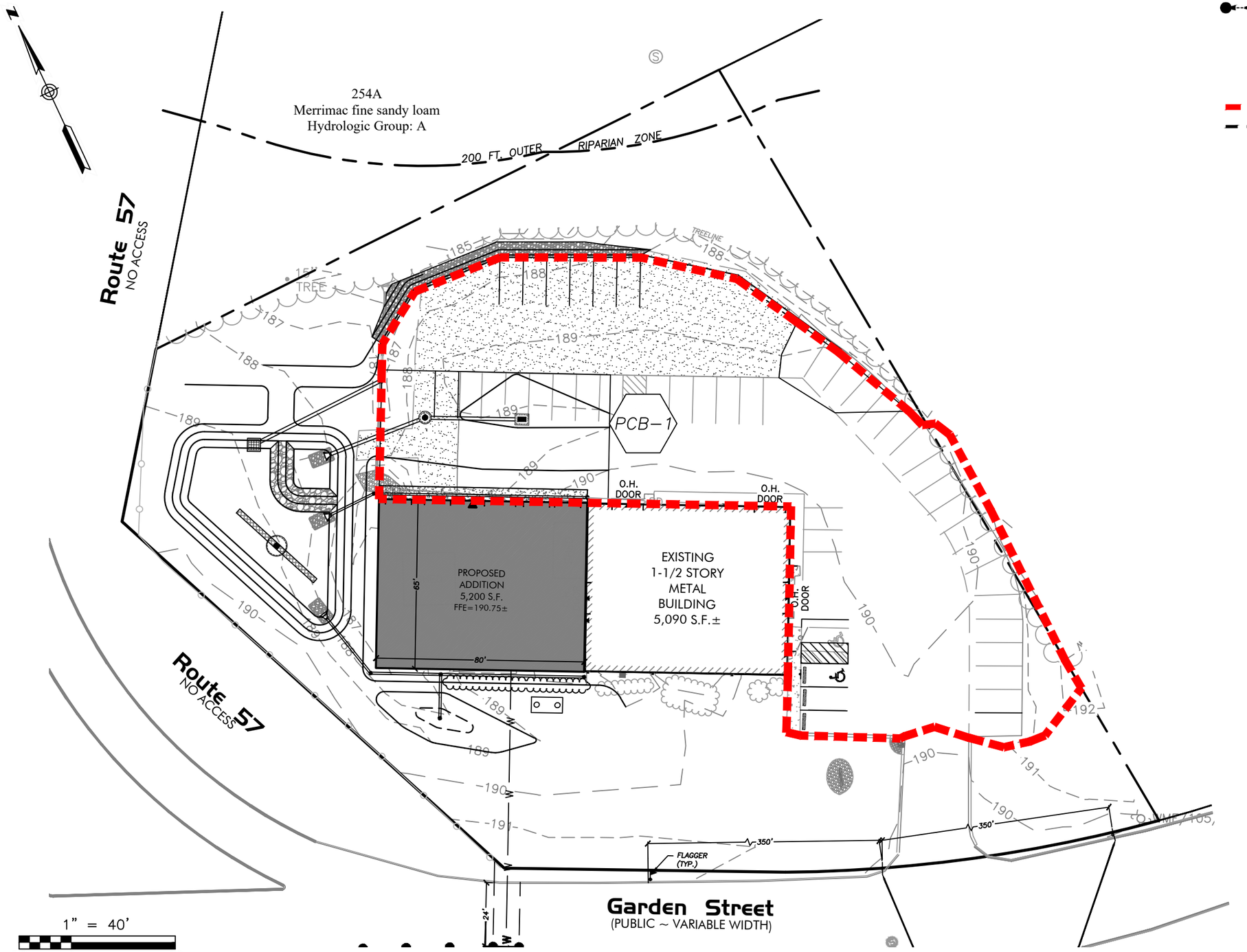
223 Garden Street
Agawam, MA
Parcel ID: G8-2-3

MBNZ Holding Co.
223 Garden Street
Agawam, MA. 01030

JOB NO.: 250214
DATE: 4/21/26
SCALE: As Noted

FIG-5

Figure 6: Inlet Area Plan



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Inlet Area Plan

223 Garden Street
Agawam, MA
Parcel ID: G8-2-3

MBNZ Holding Co.
223 Garden Street
Agawam, MA. 01030

JOB NO.: 250214
DATE: 3/17/26
SCALE: As Noted

FIG-6

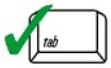
Appendix A: Checklist for Stormwater Report

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

Checklist for Stormwater Report

A. Introduction

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





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

The Stormwater Report must include:

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

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

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

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

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

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

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

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

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

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

Registered Professional Engineer's Certification

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

Registered Professional Engineer Block and Signature



Signature and Date 4/29/26

Checklist

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

☒ New development

☐ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

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

☒ No disturbance to any Wetland Resource Areas

☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)

☐ Reduced Impervious Area (Redevelopment Only)

☐ Minimizing disturbance to existing trees and shrubs

☐ LID Site Design Credit Requested:

- ☐ Credit 1
- ☐ Credit 2
- ☐ Credit 3

☐ Use of "country drainage" versus curb and gutter conveyance and pipe

☐ Bioretention Cells (includes Rain Gardens)

☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)

☐ Treebox Filter

☐ Water Quality Swale

☐ Grass Channel

☐ Green Roof

☒ Other (describe): Propietary Sedimentation Device, Deep Sump Catch Basins, Subsurface Infiltration Basin

Standard 1: No New Untreated Discharges

☒ No new untreated discharges

☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth

☒ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

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

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

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

Standard 3: Recharge

☒ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

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

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

☒ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

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

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

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

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

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

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

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

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

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

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

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

Standard 4: Water Quality

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

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

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

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

☐ is within the Zone II or Interim Wellhead Protection Area

☐ is near or to other critical areas

☒ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)

☒ involves runoff from land uses with higher potential pollutant loads.

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

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

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

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

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

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

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

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

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

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

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

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

☐ All exposure has been eliminated.

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

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

Standard 6: Critical Areas

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

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

Checklist for Stormwater Report

Checklist (continued)

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

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

☐ Limited Project

☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.

☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area

☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff

☐ Bike Path and/or Foot Path

☐ Redevelopment Project

☐ Redevelopment portion of mix of new and redevelopment.

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

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

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

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

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

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

Checklist for Stormwater Report

Checklist (continued)

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

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

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

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

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

Standard 9: Operation and Maintenance Plan

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

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

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

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

Standard 10: Prohibition of Illicit Discharges

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

☒ An Illicit Discharge Compliance Statement is attached;

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

Appendix B: Soils Information

- NRCS Soils Report
- Soil Evaluation Logs

United States Department of Agriculture

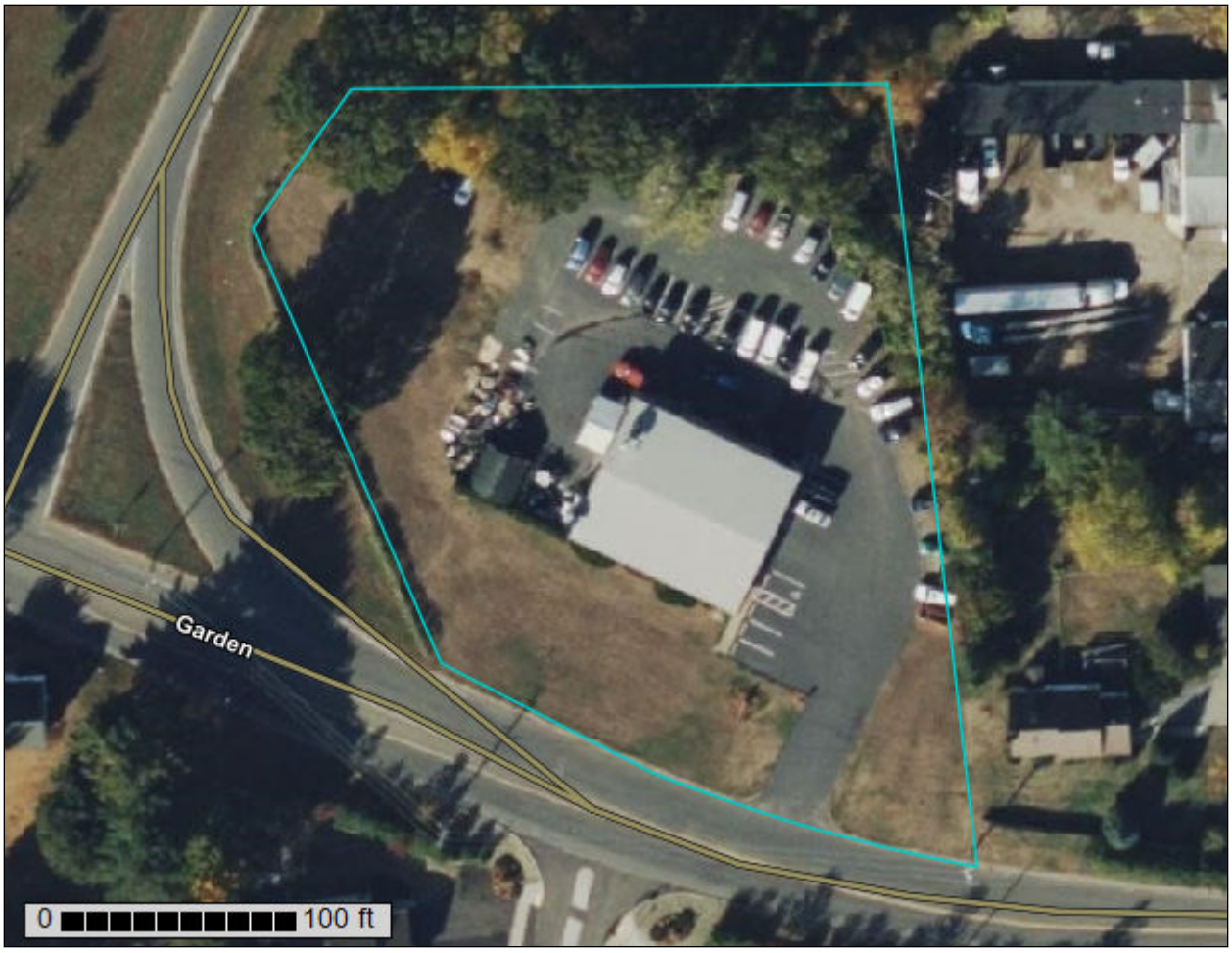
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Hampden County, Massachusetts, Central Part

223 Garden Street, Agawam MA



June 20, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



Map Scale: 1:726 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 10 20 40 60

Feet
0 35 70 140 210

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

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

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

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

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

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

Soil Survey Area: Hampden County, Massachusetts, Central Part
Survey Area Data: Version 18, Aug 27, 2024

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

Date(s) aerial images were photographed: Oct 15, 2020—Oct 31, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND	MAP INFORMATION
	imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
254A	Merrimac fine sandy loam, 0 to 3 percent slopes	1.7	100.0%
Totals for Area of Interest		**1.7**	**100.0%**

Map Unit Descriptions

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

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

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

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

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

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

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

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

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

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

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

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

Hampden County, Massachusetts, Central Part

254A—Merrimac fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tyqr
Elevation: 0 to 1,100 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Merrimac and similar soils: 86 percent
Minor components: 14 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Merrimac

Setting

Landform: Outwash plains, outwash terraces, moraines, eskers, kames
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Side slope, crest, riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss

Typical profile

Ap - 0 to 10 inches: fine sandy loam
Bw1 - 10 to 22 inches: fine sandy loam
Bw2 - 22 to 26 inches: stratified gravel to gravelly loamy sand
2C - 26 to 65 inches: stratified gravel to very gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 1.4 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: A
Ecological site: F145XY008MA - Dry Outwash

Hydric soil rating: No

Minor Components

Sudbury

Percent of map unit: 5 percent
Landform: Deltas, terraces, outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Hinckley

Percent of map unit: 5 percent
Landform: Deltas, kames, eskers, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Windsor

Percent of map unit: 3 percent
Landform: Dunes, deltas, outwash terraces, outwash plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, riser
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Hydric soil rating: No

Walpole

Percent of map unit: 1 percent
Landform: Depressions
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F144AY028MA - Wet Outwash
Hydric soil rating: Yes

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RLA#: 250214
Vermette Auto Body
223 Garden Street

Commonwealth of Massachusetts
City/Town of Agawam

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-1 (Hole #) | 6/10/25 (Date) | 8:45am (Time) | Overcast 62 (Weather) | - (Latitude) | - (Longitude)

1. Land Use: Lawn area (e.g., woodland, agricultural field, vacant lot, etc.) | Grassed (Vegetation) | N/A (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3% (Slope (%))

Description of Location: Grassed area on west side of lot

2. Soil Parent Material: Loamy glaciofluvial deposits | Outwash plain (Landform) | SH (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body - feet | Drainage Way - feet | Wetlands >100 feet
Property Line >10 feet | Drinking Water Well - feet | Other - feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: - Depth to Weeping in Hole - Depth to Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-3	Ap	LS	10YR 3/4		Cnc : Dpl:				M	G	Roots
3-18	Bw	LS	10YR 4/6		Cnc : Dpl:				M	F	
18-118	C1	S	10YR 4/4		Cnc : Dpl: None				SG	L	Medium Sand
					Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes: Hit irrigation line

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Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-2 (Hole #) | 6/10/25 (Date) | 9:15am (Time) | Overcast 62 (Weather) | - (Latitude) | - (Longitude)

1. Land Use: Lawn area (e.g., woodland, agricultural field, vacant lot, etc.) | Grassed (Vegetation) | N/A (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3% (Slope (%))

Description of Location: Grassed area on west side of lot

2. Soil Parent Material: Loamy glaciofluvial deposits | Outwash plain (Landform) | SH (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body - feet | Drainage Way - feet | Wetlands >100 feet
Property Line >10 feet | Drinking Water Well - feet | Other - feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: - Depth to Weeping in Hole - Depth to Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-6	Ap	LS	10YR 3/4		Cnc : Dpl:				M	G	Roots
6-18	Bw	LS	10YR 4/6		Cnc : Dpl:				M	F	
18-40	C1	S	10YR 4/4	37"	Cnc : 5YR 3/3 Dpl: 10YR 4/3	>7%			SG	L	Medium Sand
40-120	C2	SL	10YR 4/2		Cnc : Dpl:				M	F	
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

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223 Garden Street

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Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-3 (Hole #) | 6/10/25 (Date) | 9:45am (Time) | Overcast 62 (Weather) | - (Latitude) | - (Longitude)

1. Land Use: Lawn area (e.g., woodland, agricultural field, vacant lot, etc.) | Grassed (Vegetation) | N/A (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3% (Slope (%))

Description of Location: Grassed area on west side of lot

2. Soil Parent Material: Loamy glaciofluvial deposits | Outwash plain (Landform) | SH (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body - feet | Drainage Way - feet | Wetlands >100 feet
Property Line >10 feet | Drinking Water Well - feet | Other - feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: - Depth to Weeping in Hole - Depth to Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-6	Ap	LS	10YR 3/4		Cnc : Dpl:				M	G	Roots
15-28	Bw	LS	10YR 4/6		Cnc : Dpl:				M	F	
28-132	C1	S	10YR 4/4		Cnc : Dpl: None				SG	L	Medium Sand
					Cnc : Dpl:						
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

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Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-4 (Hole #) | 6/10/25 (Date) | 10:15am (Time) | Overcast 62 (Weather) | - (Latitude) | - (Longitude)

1. Land Use: Lawn area (e.g., woodland, agricultural field, vacant lot, etc.) | Grassed (Vegetation) | N/A (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3% (Slope (%))

Description of Location: Grassed area on west side of lot

2. Soil Parent Material: Loamy glaciofluvial deposits | Outwash plain (Landform) | SH (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body - feet | Drainage Way - feet | Wetlands >100 feet
Property Line >10 feet | Drinking Water Well - feet | Other - feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: - Depth to Weeping in Hole - Depth to Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-9	Fill	-	-		Cnc : Dpl:				-	-	Clean, sandy fill
9-18	Ap	LS	10YR 3/4		Cnc : Dpl:				M	G	
18-28	Bw	LS	10YR 4/6		Cnc : Dpl:				M	F	
28-64	C1	S	10YR 4/4	62"	Cnc : 5YR 3/3 Dpl: 10YR 4/3	>7%			SG	L	Medium Sand
64-120	C2	SL	10YR 4/2		Cnc : Dpl:				M	F	
					Cnc : Dpl:						

Additional Notes:

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Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: TP-5 (Hole #) | 6/10/25 (Date) | 10:45am (Time) | Overcast 62 (Weather) | - (Latitude) | - (Longitude)

1. Land Use: Lawn area (e.g., woodland, agricultural field, vacant lot, etc.) | Grassed (Vegetation) | N/A (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3% (Slope (%))

Description of Location: Grassed area on west side of lot

2. Soil Parent Material: Loamy glaciofluvial deposits | Outwash plain (Landform) | SH (Position on Landscape (SU, SH, BS, FS, TS, Plain))

3. Distances from: Open Water Body - feet | Drainage Way - feet | Wetlands >100 feet
Property Line >10 feet | Drinking Water Well - feet | Other - feet

4. Unsuitable Materials Present: ☐ Yes ☒ No If Yes: ☐ Disturbed Soil/Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: - Depth to Weeping in Hole - Depth to Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-12	Ap	LS	10YR 3/4		Cnc : Dpl:				M	G	
12-28	Bw	LS	10YR 4/6		Cnc : Dpl:				M	F	
28-92	C1	S	10YR 4/4	92"	Cnc : 5YR 3/3 Dpl: 10YR 4/3	>7%			SG	L	Medium Sand
92-132	C2	SL	10YR 4/2		Cnc : Dpl:				M	F	
					Cnc : Dpl:						
					Cnc : Dpl:						

Additional Notes:

Appendix C: Pre- and Post- Development Hydrologic Analysis (2, 10, 100 Year Storm Events)

NOAA Atlas 14, Volume 10, Version 3
Location name: Feeding Hills, Massachusetts, USA*
Latitude: 42.0627°, Longitude: -72.6554°
Elevation: 191 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.341 (0.263-0.438)	0.410 (0.316-0.527)	0.523 (0.401-0.675)	0.616 (0.471-0.800)	0.744 (0.551-1.01)	0.841 (0.611-1.17)	0.941 (0.665-1.36)	1.05 (0.707-1.56)	1.21 (0.784-1.87)	1.34 (0.847-2.11)
10-min	0.483 (0.373-0.621)	0.581 (0.448-0.746)	0.740 (0.569-0.955)	0.872 (0.666-1.13)	1.05 (0.781-1.43)	1.19 (0.865-1.66)	1.33 (0.942-1.93)	1.49 (1.00-2.22)	1.72 (1.11-2.65)	1.90 (1.20-2.99)
15-min	0.568 (0.439-0.730)	0.683 (0.527-0.878)	0.870 (0.669-1.12)	1.02 (0.784-1.33)	1.24 (0.918-1.69)	1.40 (1.02-1.95)	1.57 (1.11-2.27)	1.76 (1.18-2.61)	2.02 (1.31-3.12)	2.23 (1.41-3.52)
30-min	0.768 (0.593-0.986)	0.925 (0.713-1.19)	1.18 (0.908-1.52)	1.39 (1.06-1.81)	1.69 (1.25-2.29)	1.91 (1.38-2.65)	2.14 (1.51-3.09)	2.39 (1.61-3.56)	2.75 (1.78-4.25)	3.04 (1.92-4.80)
60-min	0.968 (0.747-1.24)	1.17 (0.900-1.50)	1.49 (1.15-1.92)	1.76 (1.35-2.29)	2.13 (1.58-2.90)	2.41 (1.75-3.36)	2.70 (1.91-3.92)	3.03 (2.03-4.50)	3.48 (2.26-5.38)	3.85 (2.44-6.08)
2-hr	1.24 (0.964-1.58)	1.49 (1.16-1.90)	1.89 (1.46-2.43)	2.23 (1.72-2.88)	2.69 (2.01-3.65)	3.04 (2.23-4.22)	3.41 (2.43-4.94)	3.84 (2.59-5.68)	4.47 (2.90-6.88)	5.01 (3.18-7.87)
3-hr	1.42 (1.11-1.81)	1.71 (1.33-2.18)	2.18 (1.69-2.79)	2.57 (1.98-3.30)	3.11 (2.33-4.21)	3.50 (2.58-4.87)	3.93 (2.83-5.72)	4.45 (3.01-6.58)	5.24 (3.41-8.04)	5.91 (3.76-9.27)
6-hr	1.78 (1.40-2.25)	2.16 (1.70-2.74)	2.79 (2.18-3.54)	3.31 (2.57-4.23)	4.03 (3.04-5.44)	4.55 (3.38-6.32)	5.13 (3.73-7.47)	5.85 (3.97-8.61)	6.99 (4.56-10.7)	7.98 (5.09-12.5)
12-hr	2.18 (1.72-2.73)	2.70 (2.13-3.39)	3.55 (2.79-4.47)	4.25 (3.33-5.40)	5.22 (3.98-7.03)	5.93 (4.44-8.22)	6.72 (4.93-9.79)	7.73 (5.25-11.3)	9.34 (6.11-14.2)	10.8 (6.88-16.7)
24-hr	2.56 (2.04-3.19)	3.22 (2.56-4.02)	4.31 (3.41-5.39)	5.21 (4.10-6.56)	6.45 (4.95-8.65)	7.35 (5.55-10.2)	8.36 (6.19-12.2)	9.69 (6.61-14.1)	11.8 (7.77-17.9)	13.8 (8.83-21.3)
2-day	2.90 (2.33-3.59)	3.70 (2.96-4.58)	4.99 (3.98-6.20)	6.06 (4.80-7.58)	7.54 (5.82-10.1)	8.60 (6.54-11.9)	9.81 (7.33-14.3)	11.4 (7.83-16.6)	14.1 (9.29-21.3)	16.5 (10.6-25.5)
3-day	3.18 (2.55-3.91)	4.04 (3.24-4.98)	5.45 (4.36-6.75)	6.63 (5.27-8.26)	8.24 (6.39-11.0)	9.41 (7.18-12.9)	10.7 (8.05-15.6)	12.5 (8.59-18.1)	15.5 (10.2-23.3)	18.2 (11.7-27.9)
4-day	3.42 (2.76-4.20)	4.34 (3.50-5.34)	5.85 (4.69-7.22)	7.10 (5.66-8.82)	8.82 (6.86-11.7)	10.1 (7.70-13.8)	11.5 (8.62-16.6)	13.4 (9.20-19.3)	16.6 (10.9-24.9)	19.4 (12.5-29.8)
7-day	4.09 (3.32-5.00)	5.13 (4.16-6.28)	6.83 (5.51-8.39)	8.24 (6.61-10.2)	10.2 (7.95-13.4)	11.6 (8.90-15.8)	13.2 (9.91-19.0)	15.3 (10.6-22.0)	18.8 (12.4-28.1)	21.9 (14.2-33.4)
10-day	4.76 (3.87-5.79)	5.86 (4.76-7.14)	7.66 (6.20-9.37)	9.16 (7.37-11.3)	11.2 (8.77-14.7)	12.7 (9.76-17.2)	14.4 (10.8-20.5)	16.6 (11.5-23.7)	20.1 (13.4-30.0)	23.3 (15.1-35.5)
20-day	6.84 (5.60-8.27)	8.00 (6.55-9.68)	9.90 (8.07-12.0)	11.5 (9.29-14.0)	13.6 (10.7-17.6)	15.2 (11.7-20.3)	17.0 (12.7-23.7)	19.1 (13.3-27.2)	22.5 (15.0-33.3)	25.4 (16.5-38.5)
30-day	8.60 (7.07-10.3)	9.78 (8.04-11.8)	11.7 (9.59-14.2)	13.3 (10.8-16.2)	15.5 (12.2-19.9)	17.2 (13.2-22.6)	19.0 (14.1-26.1)	21.0 (14.7-29.7)	24.0 (16.1-35.4)	26.6 (17.3-40.2)
45-day	10.8 (8.90-12.9)	12.0 (9.91-14.4)	14.0 (11.5-16.9)	15.7 (12.8-19.0)	18.0 (14.1-22.8)	19.7 (15.1-25.7)	21.5 (15.9-29.1)	23.4 (16.4-33.0)	26.0 (17.5-38.2)	28.1 (18.3-42.3)
60-day	12.6 (10.4-15.1)	13.9 (11.5-16.6)	16.0 (13.2-19.2)	17.7 (14.5-21.4)	20.1 (15.8-25.4)	22.0 (16.8-28.4)	23.8 (17.5-31.9)	25.6 (18.0-35.9)	27.8 (18.7-40.7)	29.5 (19.3-44.3)

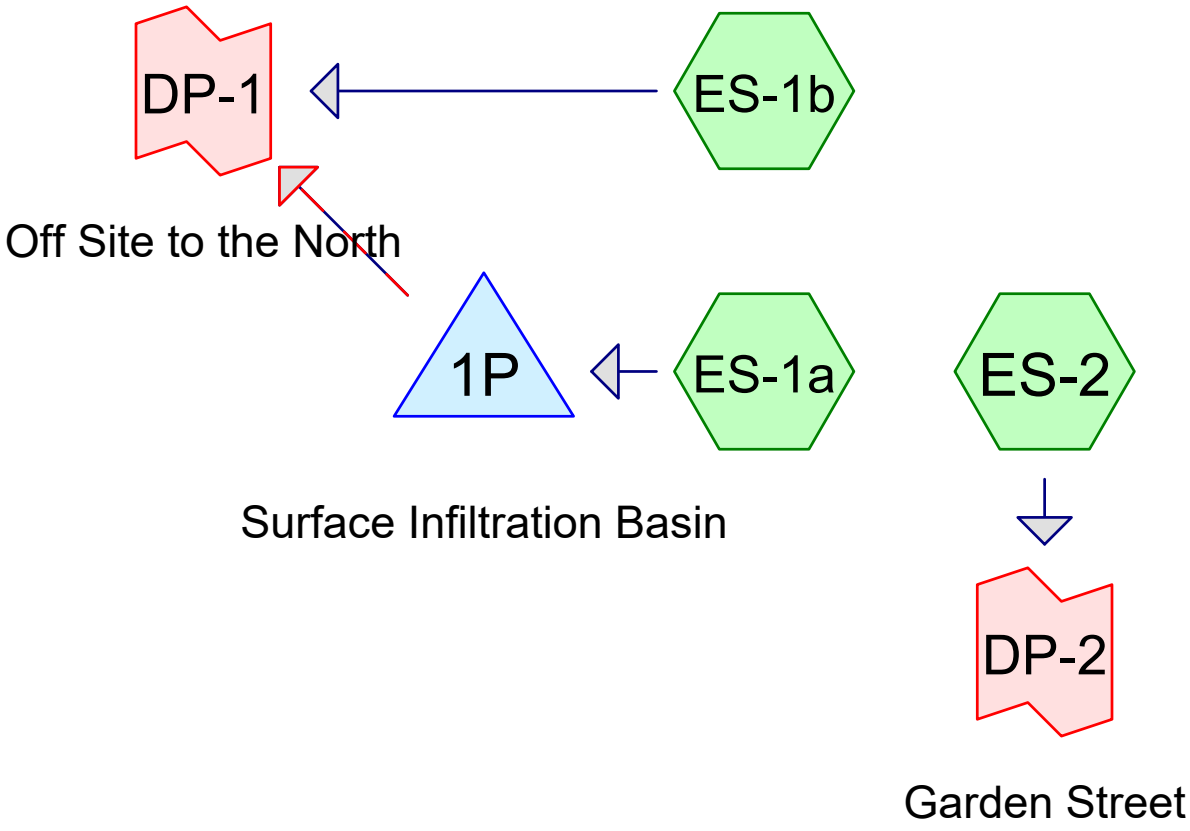
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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

Please refer to NOAA Atlas 14 document for more information.

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PF graphical



Subcat Reach Pond Link

Routing Diagram for 250214 - PRE
Prepared by R Levesque Associates, Printed 6/24/2025
HydroCAD® 10.20-7a s/n 13073 © 2025 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	3.22	2
2	10-Year	Type III 24-hr		Default	24.00	1	5.21	2
3	100-Year	Type III 24-hr		Default	24.00	1	8.36	2

Time span=0.00-48.00 hrs, dt=0.03 hrs, 1601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ES-1a: Runoff Area=43,841 sf 50.56% Impervious Runoff Depth=1.55"
Flow Length=258' Tc=12.6 min CN=WQ Runoff=1.3 cfs 5,655 cf

Subcatchment ES-1b: Runoff Area=24,308 sf 0.32% Impervious Runoff Depth=0.01"
Flow Length=103' Slope=0.0300 '/' Tc=8.8 min CN=WQ Runoff=0.0 cfs 20 cf

Subcatchment ES-2: Runoff Area=6,161 sf 23.03% Impervious Runoff Depth=0.72"
Flow Length=59' Slope=0.0500 '/' Tc=6.0 min CN=WQ Runoff=0.1 cfs 370 cf

Pond 1P: Surface Infiltration Basin Peak Elev=186.63' Storage=396 cf Inflow=1.3 cfs 5,655 cf
Discarded=0.2 cfs 1,258 cf Primary=0.7 cfs 4,397 cf Secondary=0.0 cfs 0 cf Outflow=0.9 cfs 5,655 cf

Link DP-1: Off Site to the North Inflow=0.7 cfs 4,417 cf
Primary=0.7 cfs 4,417 cf

Link DP-2: Garden Street Inflow=0.1 cfs 370 cf
Primary=0.1 cfs 370 cf

Total Runoff Area = 74,310 sf Runoff Volume = 6,046 cf Average Runoff Depth = 0.98"
68.16% Pervious = 50,646 sf 31.84% Impervious = 23,664 sf

Summary for Subcatchment ES-1a:

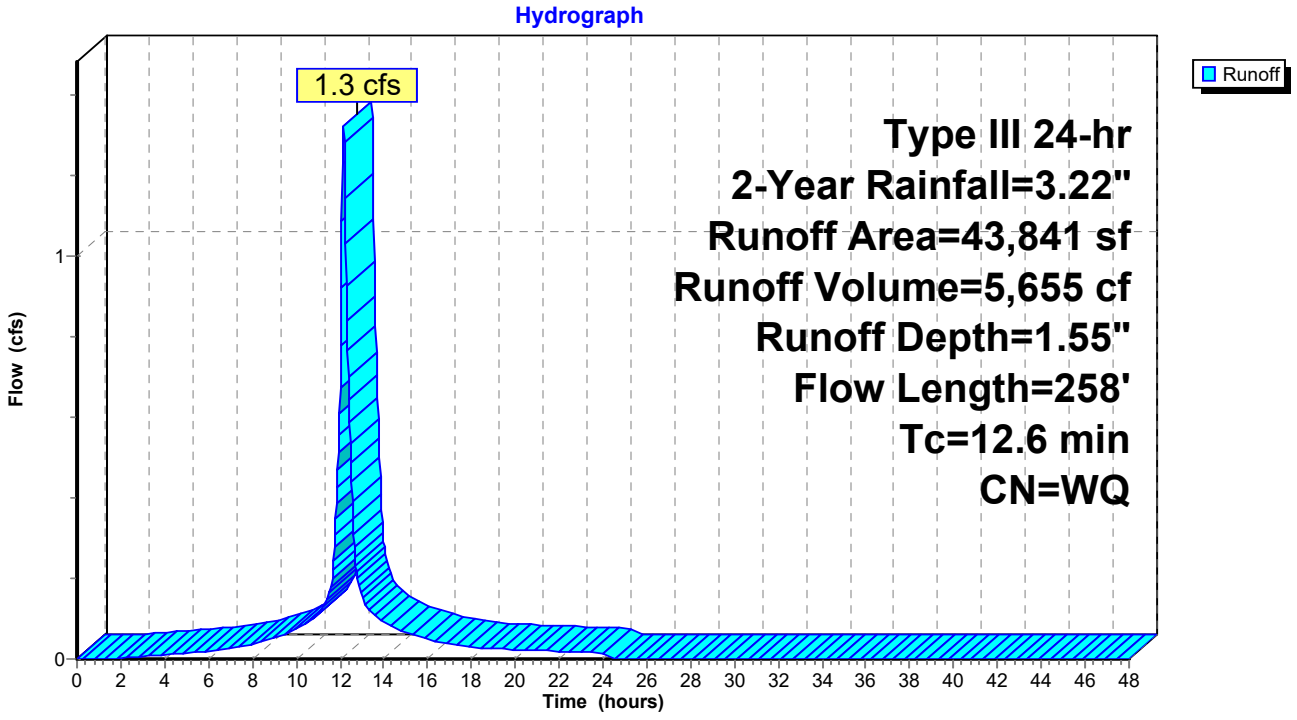
Runoff = 1.3 cfs @ 12.17 hrs, Volume= 5,655 cf, Depth= 1.55"
Routed to Pond 1P : Surface Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=3.22"

Area (sf)	CN	Description
20,844	39	>75% Grass cover, Good, HSG A
589	96	Gravel surface, HSG A
16,405	98	Paved parking, HSG A
5,762	98	Roofs, HSG A
241	30	Woods, Good, HSG A
43,841		Weighted Average
21,674	40	49.44% Pervious Area
22,167	98	50.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
1.2	158	0.0230	2.27		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
12.6	258	Total			

Subcatchment ES-1a:



Summary for Subcatchment ES-1b:

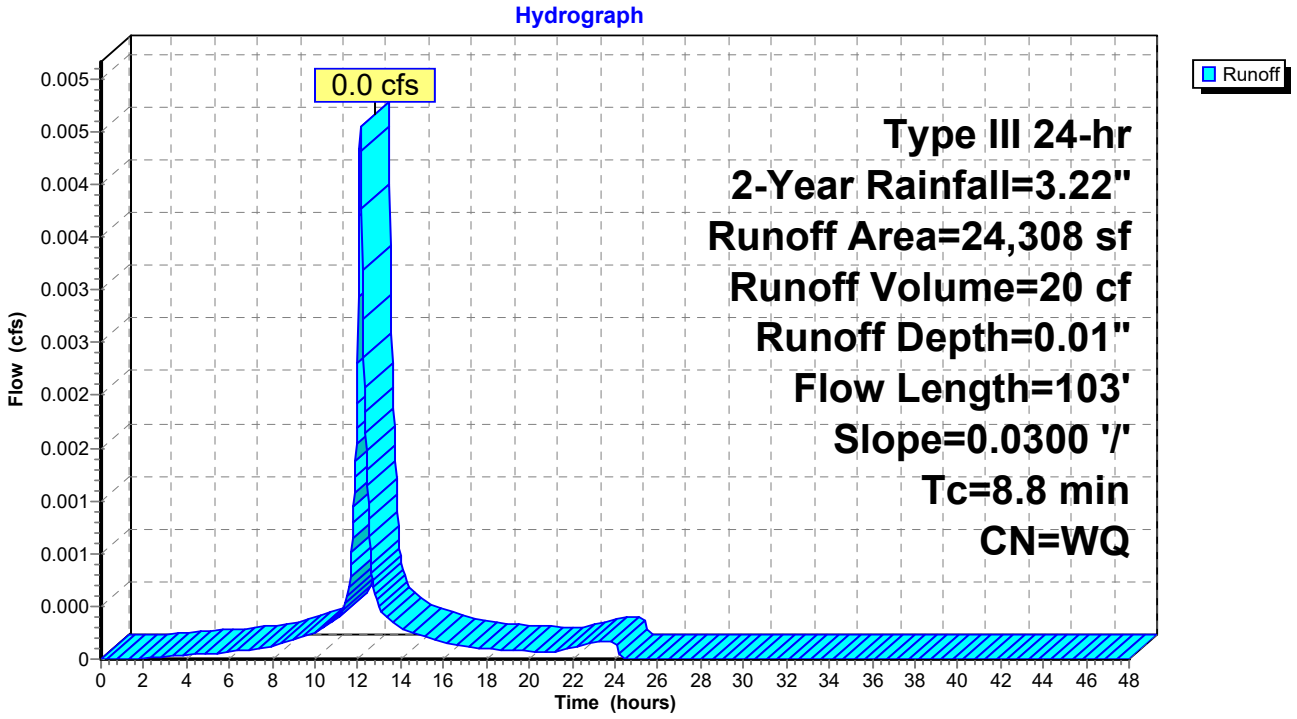
Runoff = 0.0 cfs @ 12.12 hrs, Volume= 20 cf, Depth= 0.01"
Routed to Link DP-1 : Off Site to the North

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=3.22"

Area (sf)	CN	Description
17,576	39	>75% Grass cover, Good, HSG A
78	98	Paved parking, HSG A
6,654	30	Woods, Good, HSG A
24,308		Weighted Average
24,231	37	99.68% Pervious Area
78	98	0.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	103	0.0300	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"

Subcatchment ES-1b:



Summary for Subcatchment ES-2:

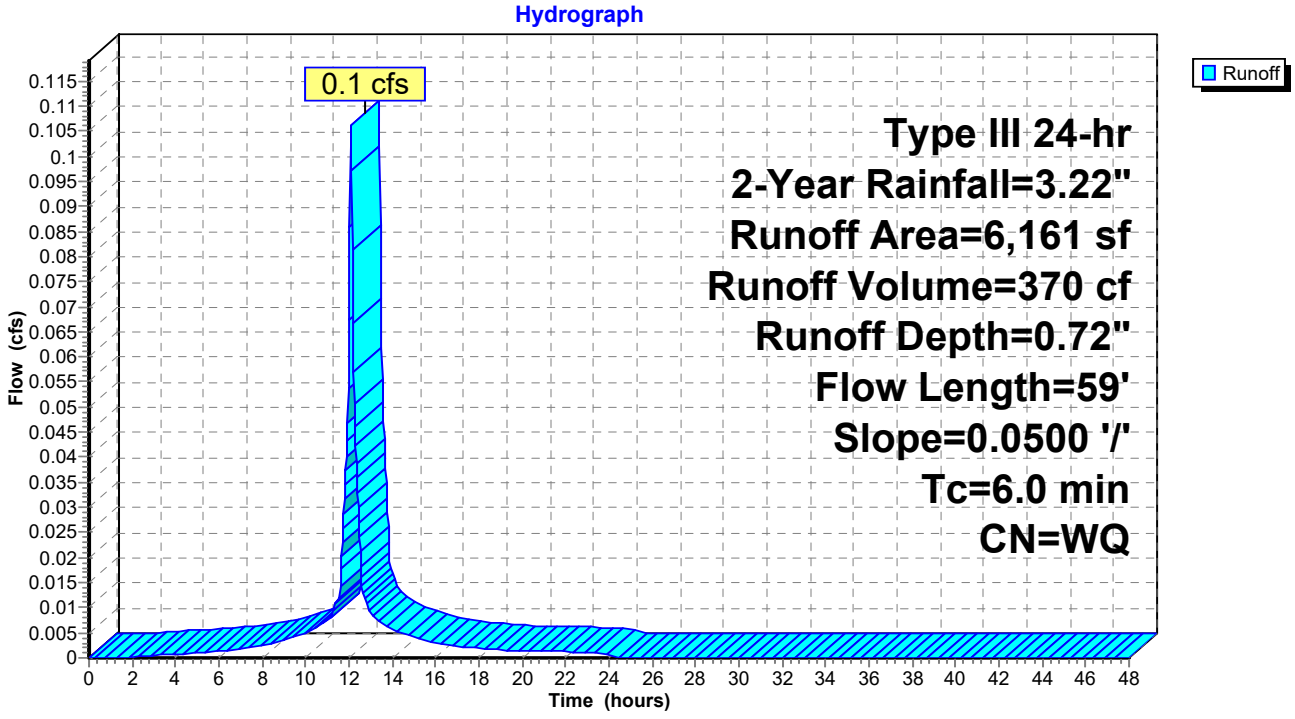
Runoff = 0.1 cfs @ 12.08 hrs, Volume= 370 cf, Depth= 0.72"
Routed to Link DP-2 : Garden Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=3.22"

Area (sf)	CN	Description
4,668	39	>75% Grass cover, Good, HSG A
74	96	Gravel surface, HSG A
1,419	98	Paved parking, HSG A
6,161		Weighted Average
4,742	40	76.97% Pervious Area
1,419	98	23.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	59	0.0500	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
4.6	59	Total, Increased to minimum Tc = 6.0 min			

Subcatchment ES-2:



Summary for Pond 1P: Surface Infiltration Basin

Inflow Area = 43,841 sf, 50.56% Impervious, Inflow Depth = 1.55" for 2-Year event
Inflow = 1.3 cfs @ 12.17 hrs, Volume= 5,655 cf
Outflow = 0.9 cfs @ 12.31 hrs, Volume= 5,655 cf, Atten= 31%, Lag= 8.4 min
Discarded = 0.2 cfs @ 12.31 hrs, Volume= 1,258 cf
Primary = 0.7 cfs @ 12.31 hrs, Volume= 4,397 cf
Routed to Link DP-1 : Off Site to the North
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP-1 : Off Site to the North

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Peak Elev= 186.63' @ 12.31 hrs Surf.Area= 947 sf Storage= 396 cf

Plug-Flow detention time= 2.8 min calculated for 5,655 cf (100% of inflow)
Center-of-Mass det. time= 2.7 min (765.7 - 762.9)

Volume	Invert	Avail.Storage	Storage Description
#1	185.70'	3,165 cf	**Surface Infiltration Basin (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
185.70	14	26.0	0	0	14
186.00	271	86.0	35	35	549
187.00	1,537	187.0	818	852	2,747
188.00	3,187	256.0	2,312	3,165	5,190

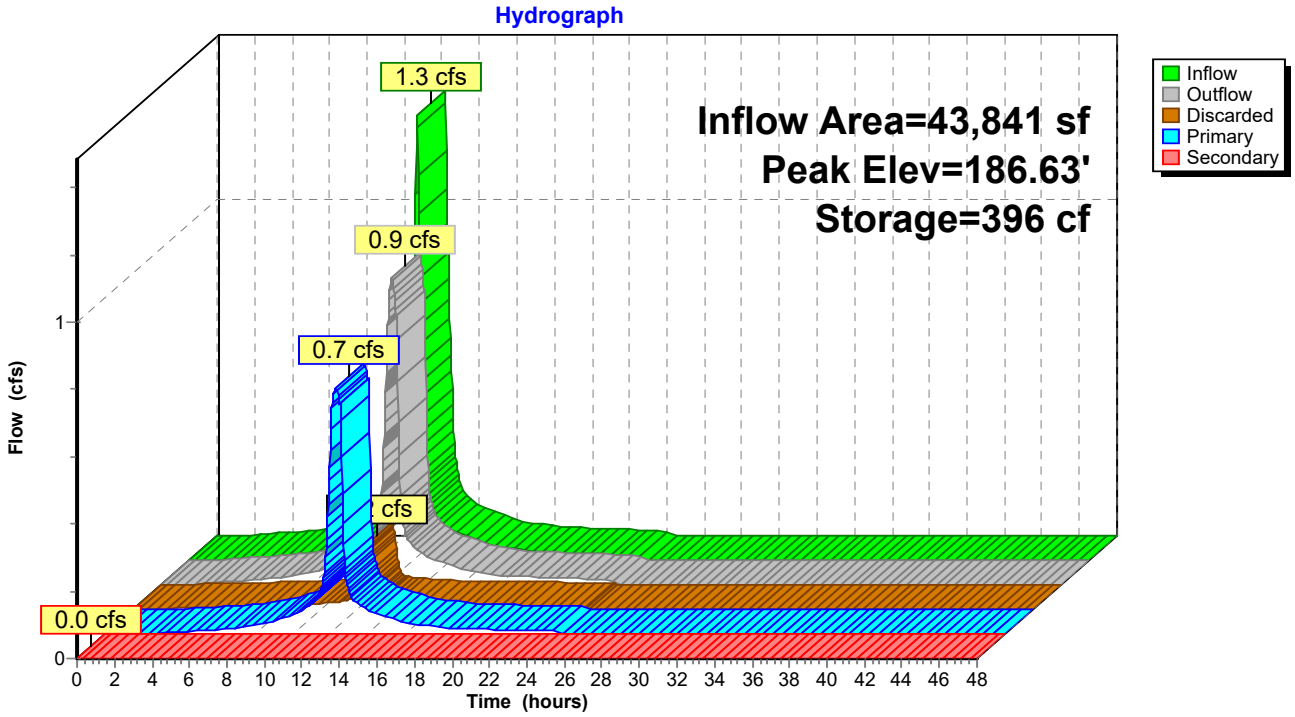
Device	Routing	Invert	Outlet Devices
#1	Primary	185.70'	**6.0" Round Culvert** L= 69.0' Ke= 0.200 Inlet / Outlet Invert= 185.70' / 184.70' S= 0.0145 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Secondary	187.80'	**20.0' long x 15.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Discarded	185.70'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.2 cfs @ 12.31 hrs HW=186.63' (Free Discharge)
3=Exfiltration (Exfiltration Controls 0.2 cfs)

Primary OutFlow Max=0.7 cfs @ 12.31 hrs HW=186.63' (Free Discharge)
1=Culvert (Barrel Controls 0.7 cfs @ 3.72 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=185.70' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Pond 1P: Surface Infiltration Basin

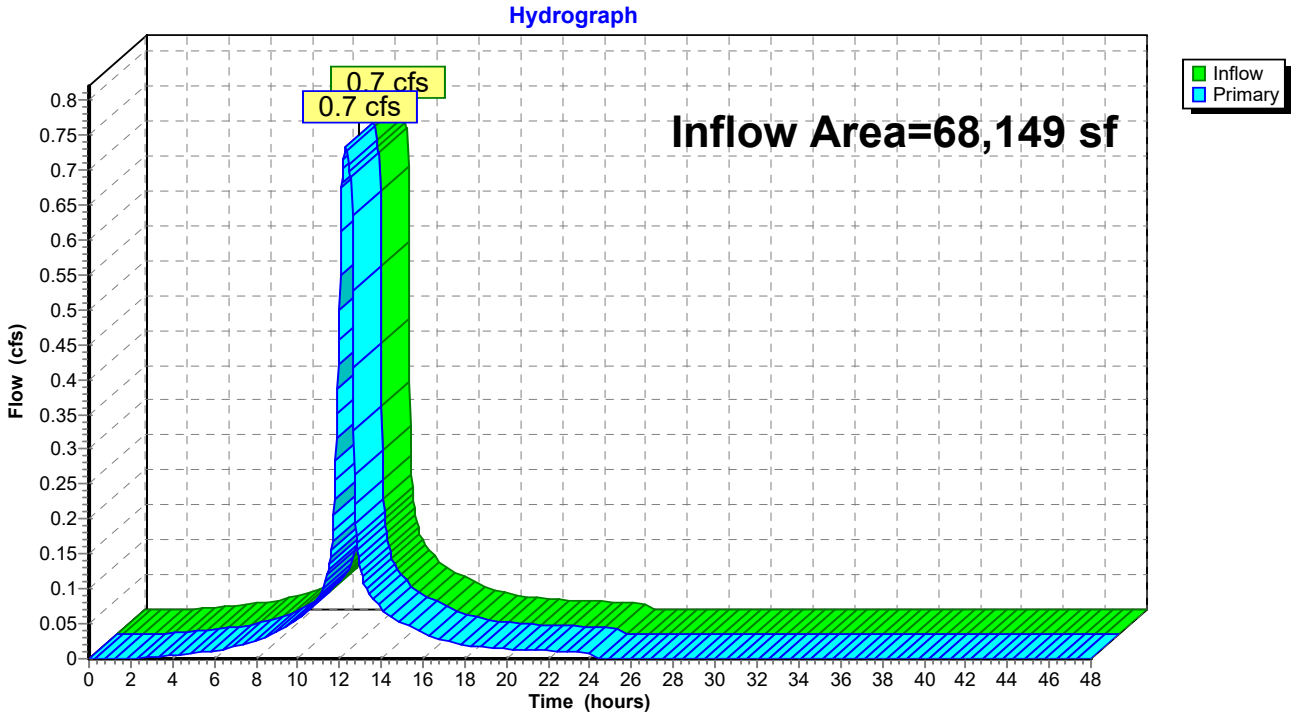


Summary for Link DP-1: Off Site to the North

Inflow Area = 68,149 sf, 32.64% Impervious, Inflow Depth = 0.78" for 2-Year event
Inflow = 0.7 cfs @ 12.30 hrs, Volume= 4,417 cf
Primary = 0.7 cfs @ 12.30 hrs, Volume= 4,417 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-1: Off Site to the North

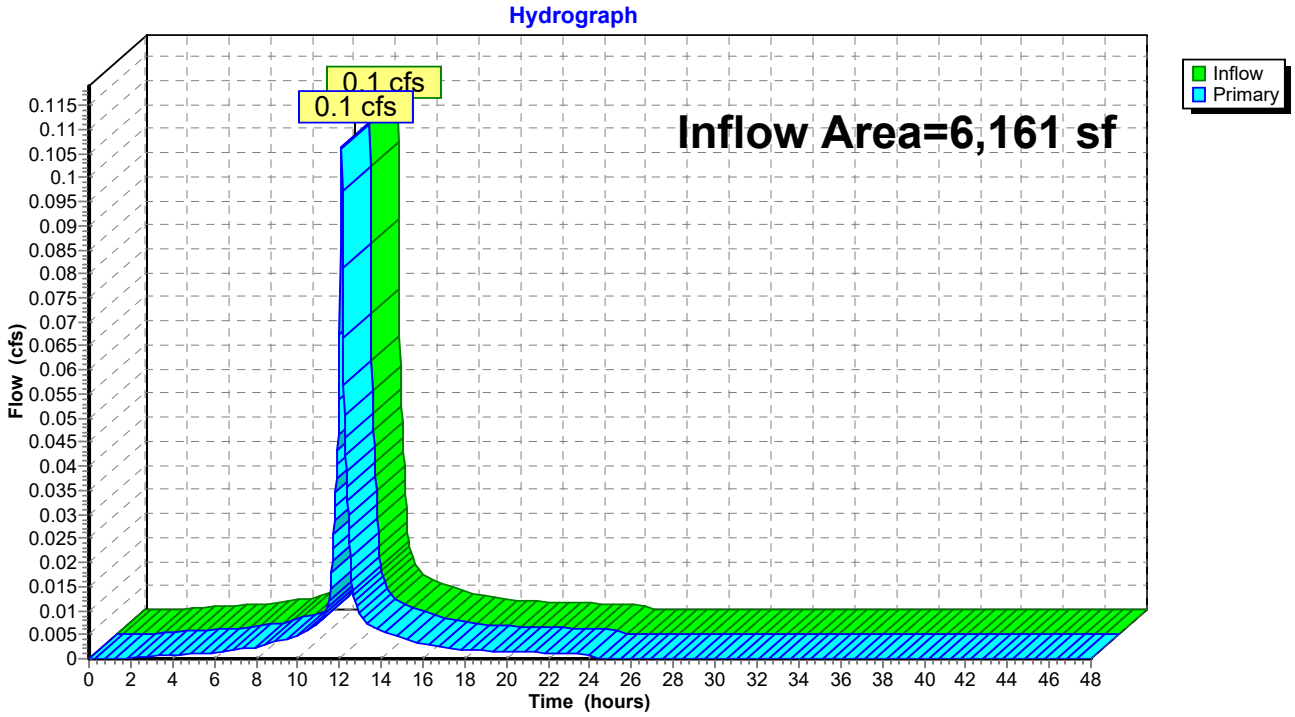


Summary for Link DP-2: Garden Street

Inflow Area = 6,161 sf, 23.03% Impervious, Inflow Depth = 0.72" for 2-Year event
Inflow = 0.1 cfs @ 12.08 hrs, Volume= 370 cf
Primary = 0.1 cfs @ 12.08 hrs, Volume= 370 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-2: Garden Street



Time span=0.00-48.00 hrs, dt=0.03 hrs, 1601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ES-1a: Runoff Area=43,841 sf 50.56% Impervious Runoff Depth=2.69"
Flow Length=258' Tc=12.6 min CN=WQ Runoff=2.2 cfs 9,844 cf

Subcatchment ES-1b: Runoff Area=24,308 sf 0.32% Impervious Runoff Depth=0.20"
Flow Length=103' Slope=0.0300 '/' Tc=8.8 min CN=WQ Runoff=0.0 cfs 397 cf

Subcatchment ES-2: Runoff Area=6,161 sf 23.03% Impervious Runoff Depth=1.39"
Flow Length=59' Slope=0.0500 '/' Tc=6.0 min CN=WQ Runoff=0.2 cfs 712 cf

Pond 1P: Surface Infiltration Basin Peak Elev=187.14' Storage=1,075 cf Inflow=2.2 cfs 9,844 cf
Discarded=0.3 cfs 2,187 cf Primary=0.8 cfs 7,657 cf Secondary=0.0 cfs 0 cf Outflow=1.2 cfs 9,844 cf

Link DP-1: Off Site to the North Inflow=0.9 cfs 8,054 cf
Primary=0.9 cfs 8,054 cf

Link DP-2: Garden Street Inflow=0.2 cfs 712 cf
Primary=0.2 cfs 712 cf

Total Runoff Area = 74,310 sf Runoff Volume = 10,954 cf Average Runoff Depth = 1.77"
68.16% Pervious = 50,646 sf 31.84% Impervious = 23,664 sf

Summary for Subcatchment ES-1a:

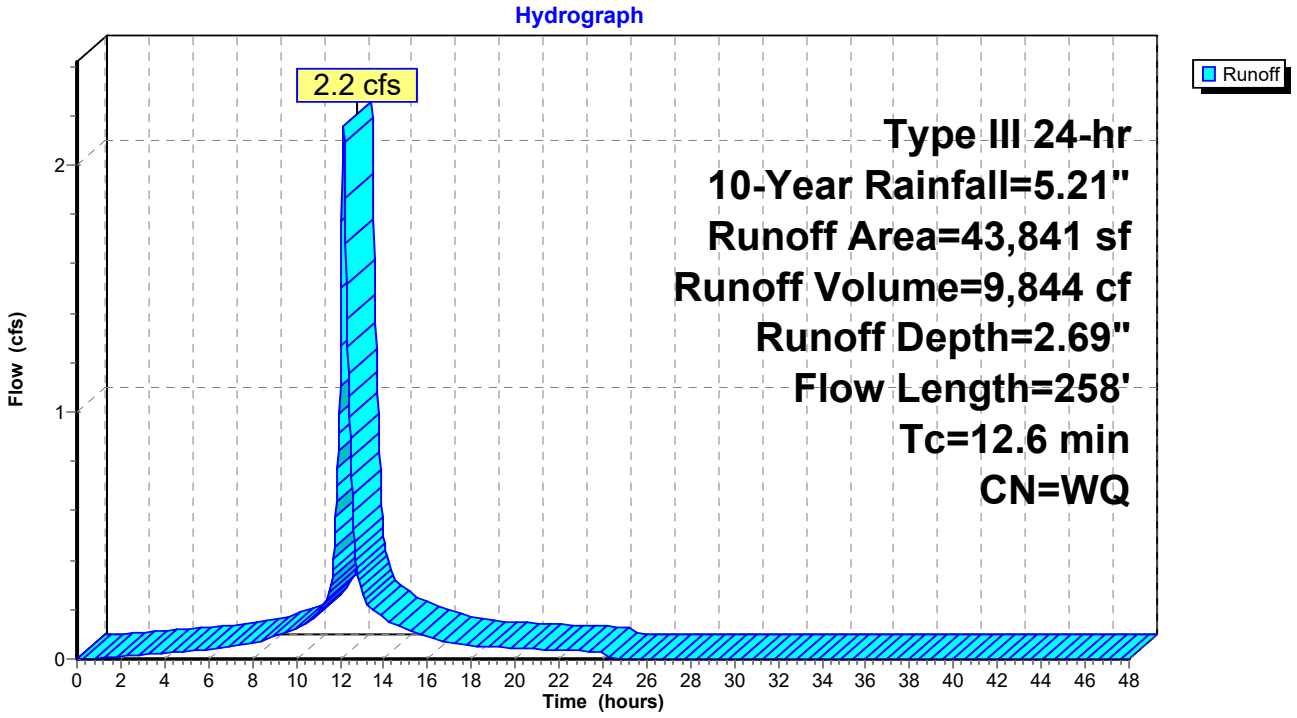
Runoff = 2.2 cfs @ 12.17 hrs, Volume= 9,844 cf, Depth= 2.69"
Routed to Pond 1P : Surface Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Year Rainfall=5.21"

Area (sf)	CN	Description
20,844	39	>75% Grass cover, Good, HSG A
589	96	Gravel surface, HSG A
16,405	98	Paved parking, HSG A
5,762	98	Roofs, HSG A
241	30	Woods, Good, HSG A
43,841		Weighted Average
21,674	40	49.44% Pervious Area
22,167	98	50.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
1.2	158	0.0230	2.27		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
12.6	258	Total			

Subcatchment ES-1a:



Summary for Subcatchment ES-1b:

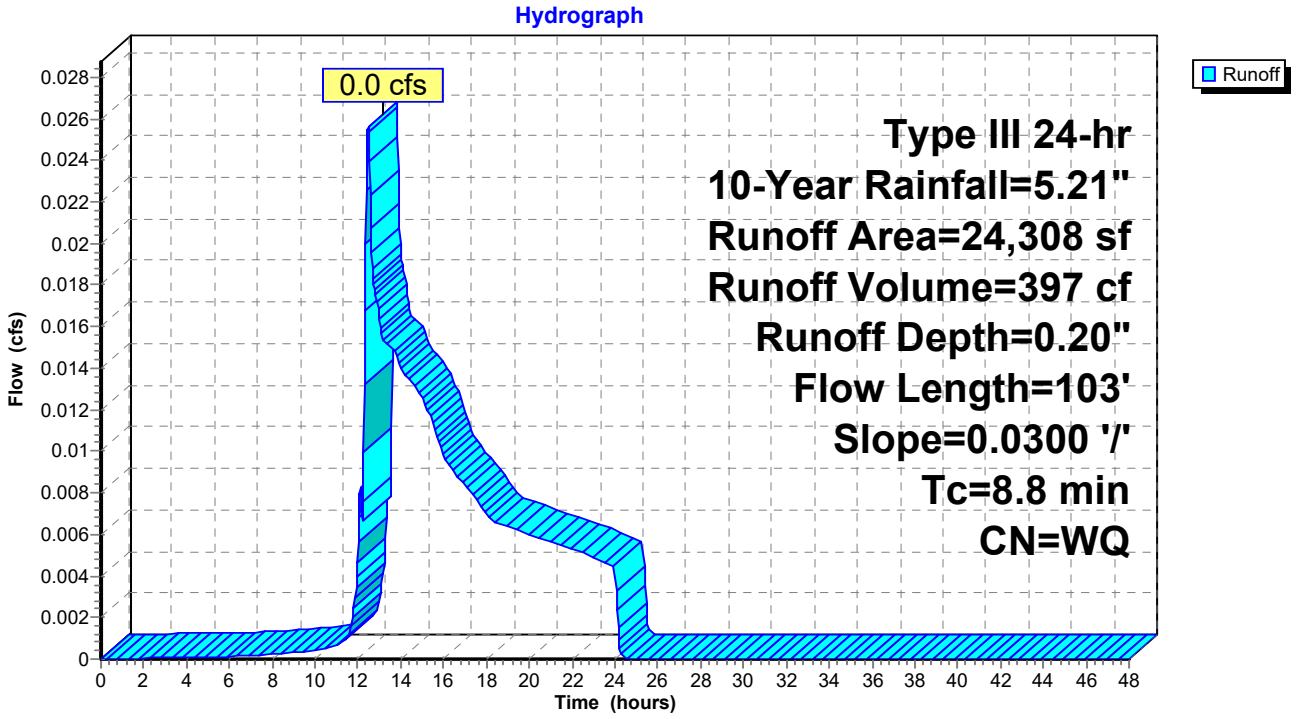
Runoff = 0.0 cfs @ 12.47 hrs, Volume= 397 cf, Depth= 0.20"
Routed to Link DP-1 : Off Site to the North

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Year Rainfall=5.21"

Area (sf)	CN	Description
17,576	39	>75% Grass cover, Good, HSG A
78	98	Paved parking, HSG A
6,654	30	Woods, Good, HSG A
24,308		Weighted Average
24,231	37	99.68% Pervious Area
78	98	0.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	103	0.0300	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"

Subcatchment ES-1b:



Summary for Subcatchment ES-2:

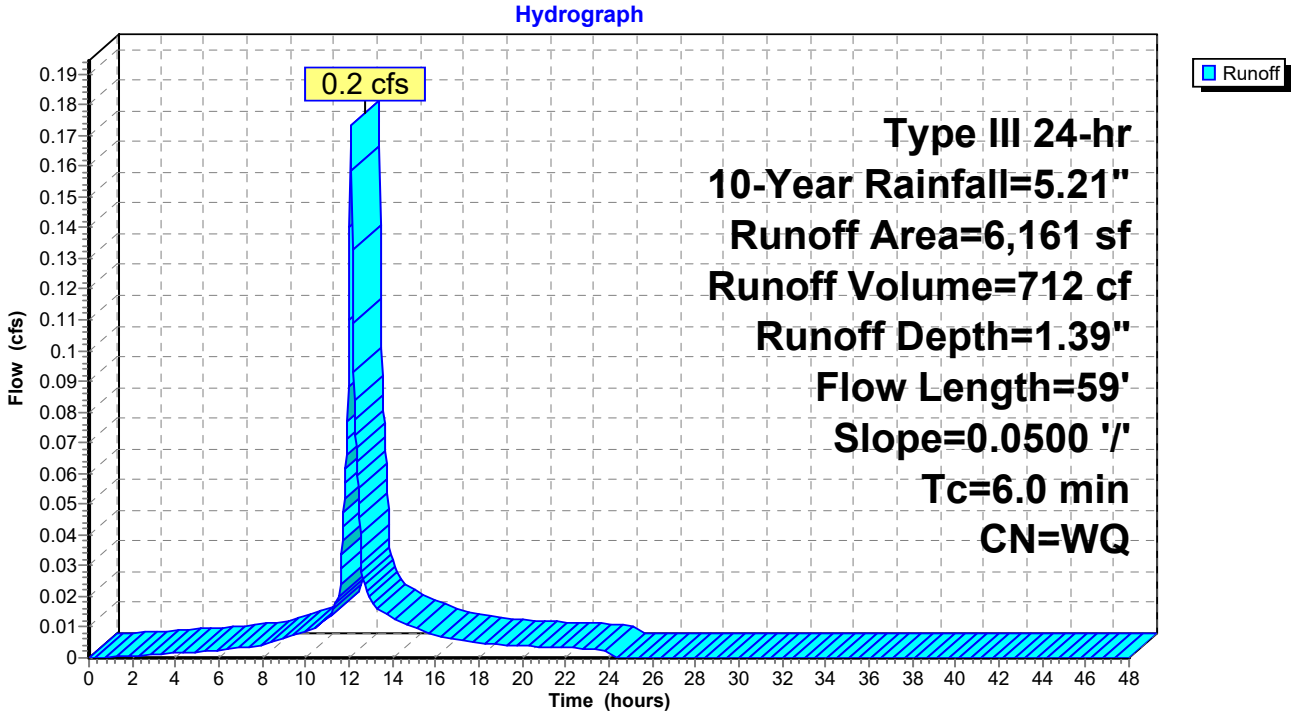
Runoff = 0.2 cfs @ 12.08 hrs, Volume= 712 cf, Depth= 1.39"
Routed to Link DP-2 : Garden Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Year Rainfall=5.21"

Area (sf)	CN	Description
4,668	39	>75% Grass cover, Good, HSG A
74	96	Gravel surface, HSG A
1,419	98	Paved parking, HSG A
6,161		Weighted Average
4,742	40	76.97% Pervious Area
1,419	98	23.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	59	0.0500	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
4.6	59	Total, Increased to minimum Tc = 6.0 min			

Subcatchment ES-2:



Summary for Pond 1P: Surface Infiltration Basin

Inflow Area = 43,841 sf, 50.56% Impervious, Inflow Depth = 2.69" for 10-Year event
Inflow = 2.2 cfs @ 12.17 hrs, Volume= 9,844 cf
Outflow = 1.2 cfs @ 12.38 hrs, Volume= 9,844 cf, Atten= 45%, Lag= 13.1 min
Discarded = 0.3 cfs @ 12.38 hrs, Volume= 2,187 cf
Primary = 0.8 cfs @ 12.38 hrs, Volume= 7,657 cf
Routed to Link DP-1 : Off Site to the North
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP-1 : Off Site to the North

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Peak Elev= 187.14' @ 12.38 hrs Surf.Area= 1,727 sf Storage= 1,075 cf

Plug-Flow detention time= 5.0 min calculated for 9,838 cf (100% of inflow)
Center-of-Mass det. time= 5.0 min (769.6 - 764.6)

Volume	Invert	Avail.Storage	Storage Description
#1	185.70'	3,165 cf	**Surface Infiltration Basin (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
185.70	14	26.0	0	0	14
186.00	271	86.0	35	35	549
187.00	1,537	187.0	818	852	2,747
188.00	3,187	256.0	2,312	3,165	5,190

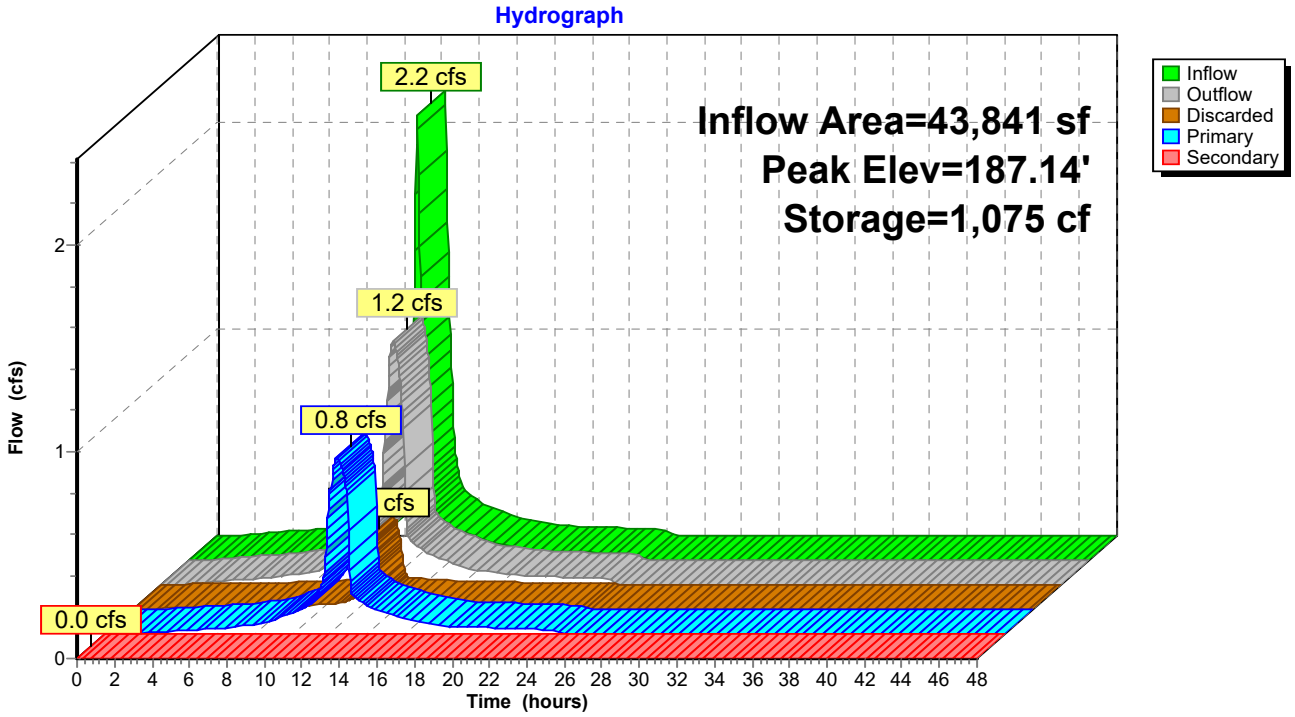
Device	Routing	Invert	Outlet Devices
#1	Primary	185.70'	**6.0" Round Culvert** L= 69.0' Ke= 0.200 Inlet / Outlet Invert= 185.70' / 184.70' S= 0.0145 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Secondary	187.80'	**20.0' long x 15.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Discarded	185.70'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.3 cfs @ 12.38 hrs HW=187.14' (Free Discharge)
3=Exfiltration (Exfiltration Controls 0.3 cfs)

Primary OutFlow Max=0.8 cfs @ 12.38 hrs HW=187.14' (Free Discharge)
1=Culvert (Barrel Controls 0.8 cfs @ 4.33 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=185.70' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Pond 1P: Surface Infiltration Basin

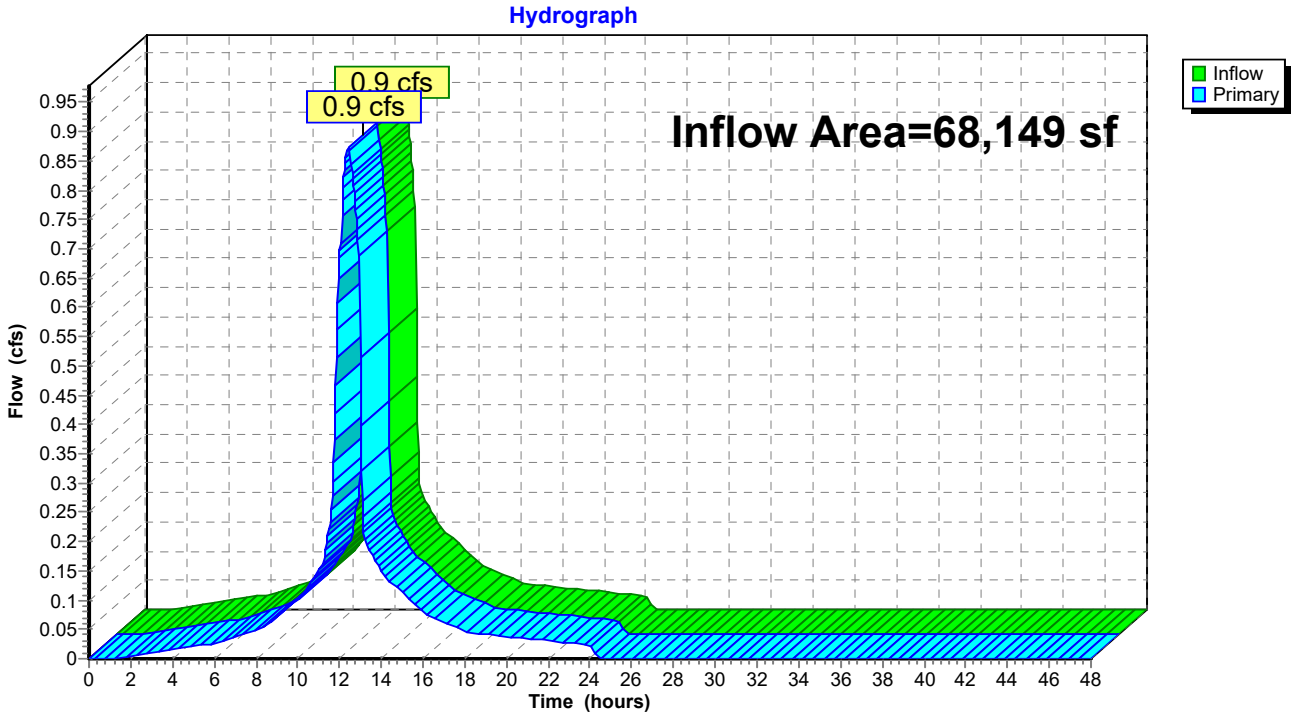


Summary for Link DP-1: Off Site to the North

Inflow Area = 68,149 sf, 32.64% Impervious, Inflow Depth = 1.42" for 10-Year event
Inflow = 0.9 cfs @ 12.42 hrs, Volume= 8,054 cf
Primary = 0.9 cfs @ 12.42 hrs, Volume= 8,054 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-1: Off Site to the North

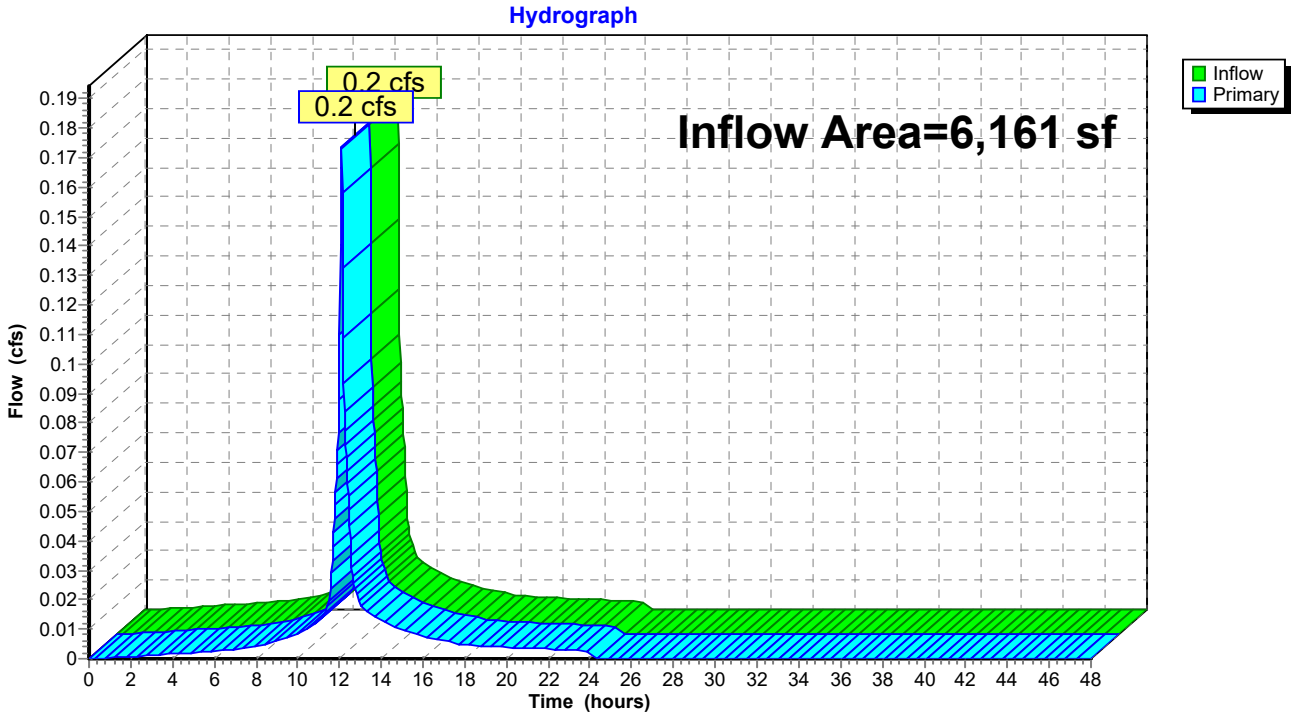


Summary for Link DP-2: Garden Street

Inflow Area = 6,161 sf, 23.03% Impervious, Inflow Depth = 1.39" for 10-Year event
Inflow = 0.2 cfs @ 12.08 hrs, Volume= 712 cf
Primary = 0.2 cfs @ 12.08 hrs, Volume= 712 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-2: Garden Street



Time span=0.00-48.00 hrs, dt=0.03 hrs, 1601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ES-1a: Runoff Area=43,841 sf 50.56% Impervious Runoff Depth=4.84"
Flow Length=258' Tc=12.6 min CN=WQ Runoff=3.8 cfs 17,675 cf

Subcatchment ES-1b: Runoff Area=24,308 sf 0.32% Impervious Runoff Depth=1.11"
Flow Length=103' Slope=0.0300 '/' Tc=8.8 min CN=WQ Runoff=0.4 cfs 2,253 cf

Subcatchment ES-2: Runoff Area=6,161 sf 23.03% Impervious Runoff Depth=2.96"
Flow Length=59' Slope=0.0500 '/' Tc=6.0 min CN=WQ Runoff=0.4 cfs 1,519 cf

Pond 1P: Surface Infiltration Basin Peak Elev=187.85' Storage=2,712 cf Inflow=3.8 cfs 17,675 cf
Discarded=0.6 cfs 4,133 cf Primary=1.0 cfs 13,188 cf Secondary=0.6 cfs 353 cf Outflow=2.2 cfs 17,675 cf

Link DP-1: Off Site to the North Inflow=1.9 cfs 15,795 cf
Primary=1.9 cfs 15,795 cf

Link DP-2: Garden Street Inflow=0.4 cfs 1,519 cf
Primary=0.4 cfs 1,519 cf

Total Runoff Area = 74,310 sf Runoff Volume = 21,447 cf Average Runoff Depth = 3.46"
68.16% Pervious = 50,646 sf 31.84% Impervious = 23,664 sf

Summary for Subcatchment ES-1a:

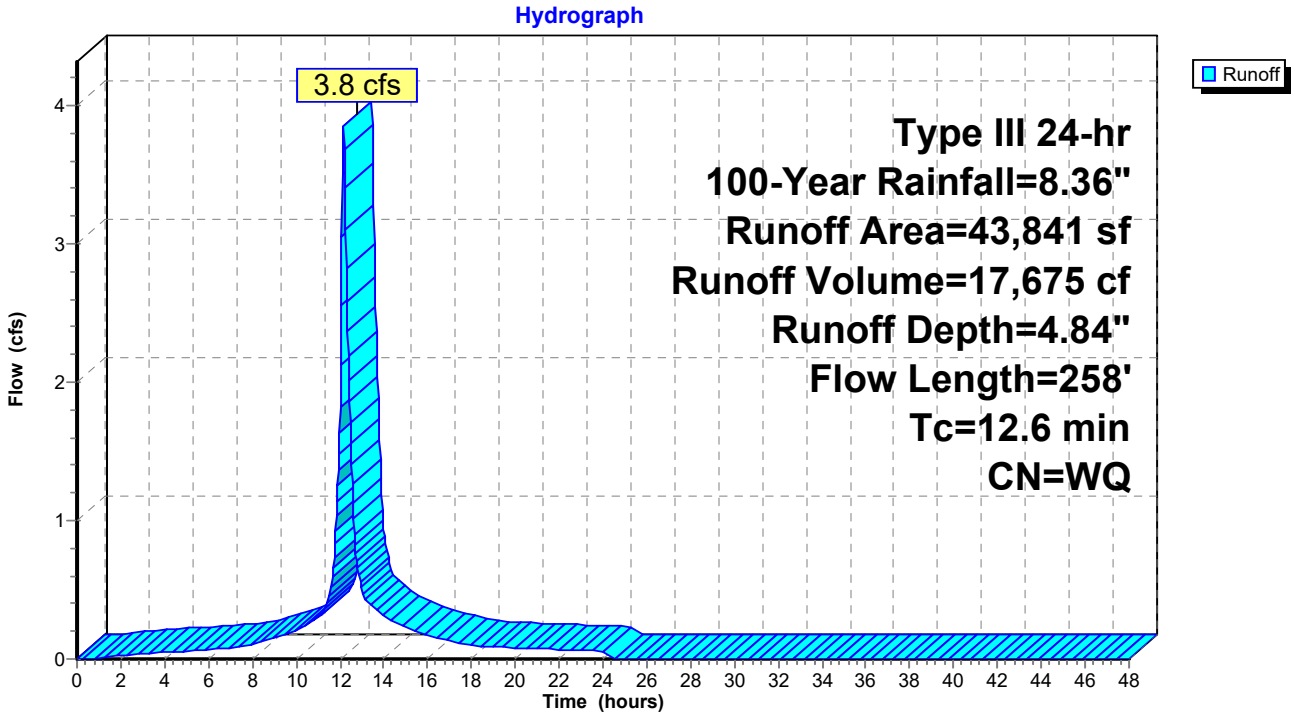
Runoff = 3.8 cfs @ 12.17 hrs, Volume= 17,675 cf, Depth= 4.84"
Routed to Pond 1P : Surface Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Rainfall=8.36"

Area (sf)	CN	Description
20,844	39	>75% Grass cover, Good, HSG A
589	96	Gravel surface, HSG A
16,405	98	Paved parking, HSG A
5,762	98	Roofs, HSG A
241	30	Woods, Good, HSG A
43,841		Weighted Average
21,674	40	49.44% Pervious Area
22,167	98	50.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
1.2	158	0.0230	2.27		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
12.6	258	Total			

Subcatchment ES-1a:



Summary for Subcatchment ES-1b:

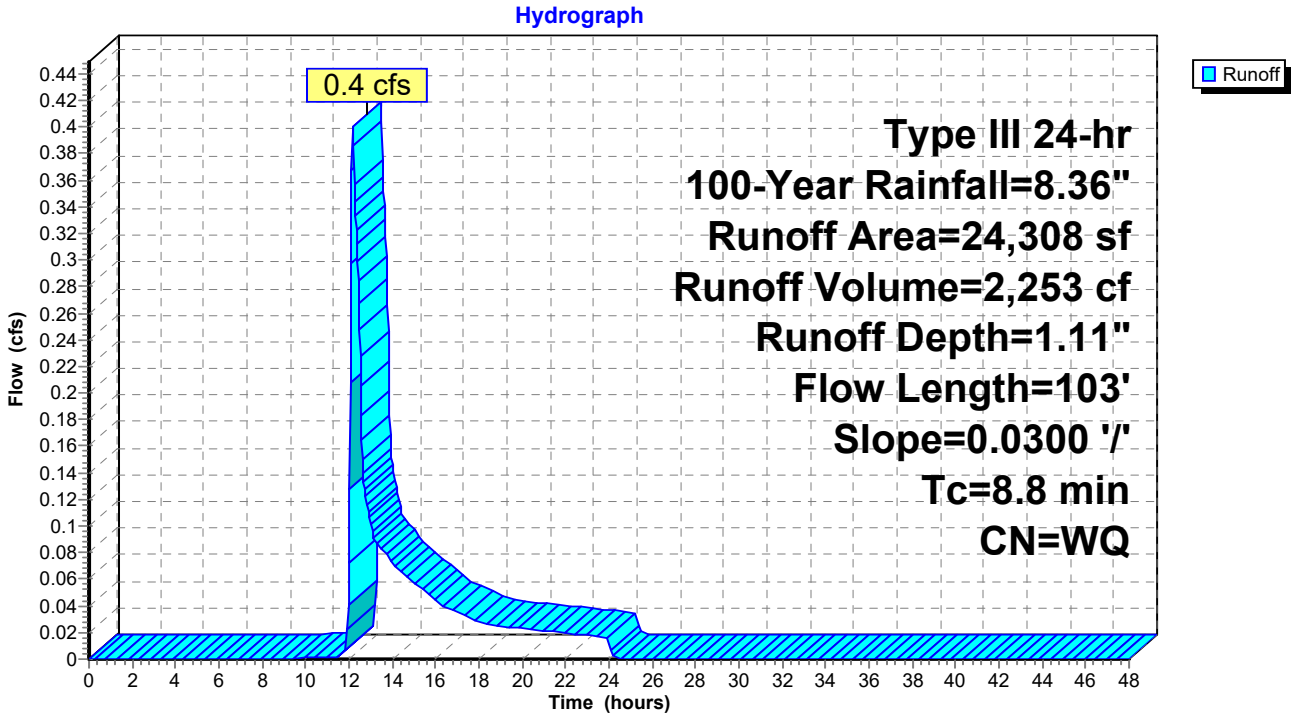
Runoff = 0.4 cfs @ 12.16 hrs, Volume= 2,253 cf, Depth= 1.11"
Routed to Link DP-1 : Off Site to the North

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Rainfall=8.36"

Area (sf)	CN	Description
17,576	39	>75% Grass cover, Good, HSG A
78	98	Paved parking, HSG A
6,654	30	Woods, Good, HSG A
24,308		Weighted Average
24,231	37	99.68% Pervious Area
78	98	0.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	103	0.0300	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"

Subcatchment ES-1b:



Summary for Subcatchment ES-2:

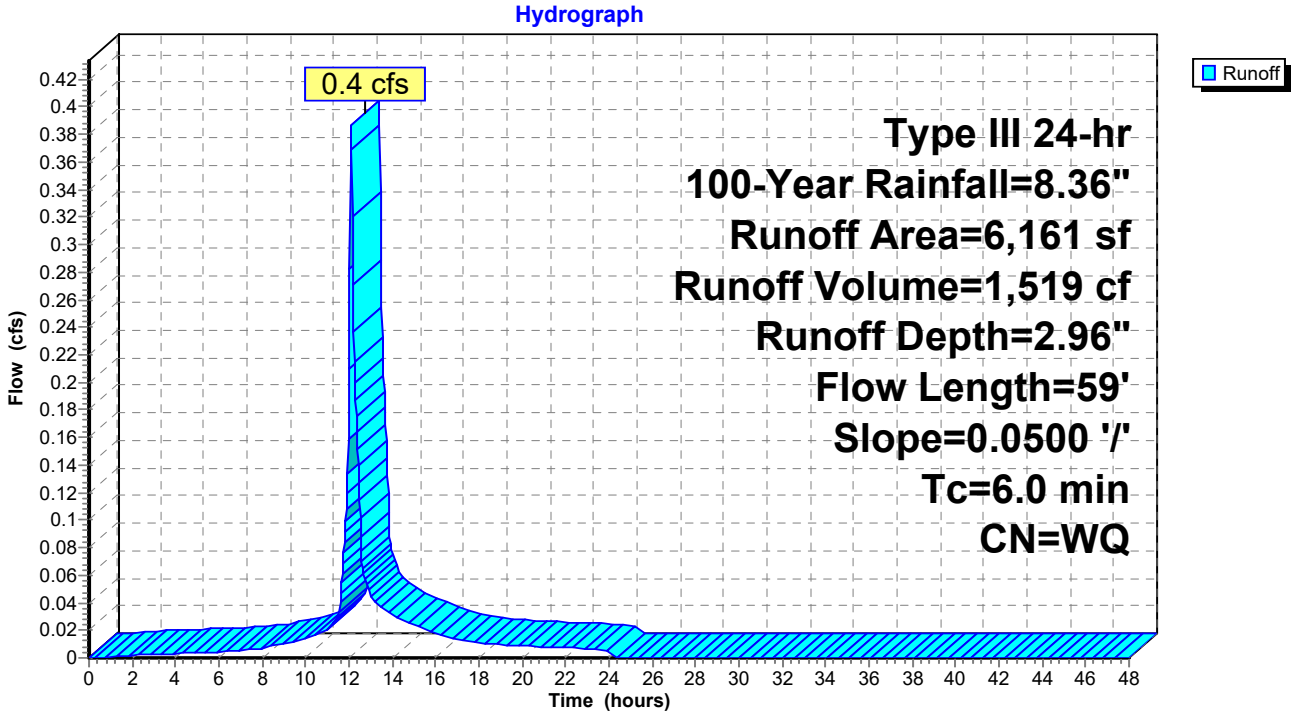
Runoff = 0.4 cfs @ 12.09 hrs, Volume= 1,519 cf, Depth= 2.96"
Routed to Link DP-2 : Garden Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Rainfall=8.36"

Area (sf)	CN	Description
4,668	39	>75% Grass cover, Good, HSG A
74	96	Gravel surface, HSG A
1,419	98	Paved parking, HSG A
6,161		Weighted Average
4,742	40	76.97% Pervious Area
1,419	98	23.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	59	0.0500	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
4.6	59	Total, Increased to minimum Tc = 6.0 min			

Subcatchment ES-2:



Summary for Pond 1P: Surface Infiltration Basin

Inflow Area = 43,841 sf, 50.56% Impervious, Inflow Depth = 4.84" for 100-Year event
Inflow = 3.8 cfs @ 12.17 hrs, Volume= 17,675 cf
Outflow = 2.2 cfs @ 12.40 hrs, Volume= 17,675 cf, Atten= 43%, Lag= 13.4 min
Discarded = 0.6 cfs @ 12.40 hrs, Volume= 4,133 cf
Primary = 1.0 cfs @ 12.40 hrs, Volume= 13,188 cf
Routed to Link DP-1 : Off Site to the North
Secondary = 0.6 cfs @ 12.40 hrs, Volume= 353 cf
Routed to Link DP-1 : Off Site to the North

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Peak Elev= 187.85' @ 12.40 hrs Surf.Area= 2,904 sf Storage= 2,712 cf

Plug-Flow detention time= 9.6 min calculated for 17,664 cf (100% of inflow)
Center-of-Mass det. time= 9.6 min (778.1 - 768.6)

Volume	Invert	Avail.Storage	Storage Description
#1	185.70'	3,165 cf	**Surface Infiltration Basin (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
185.70	14	26.0	0	0	14
186.00	271	86.0	35	35	549
187.00	1,537	187.0	818	852	2,747
188.00	3,187	256.0	2,312	3,165	5,190

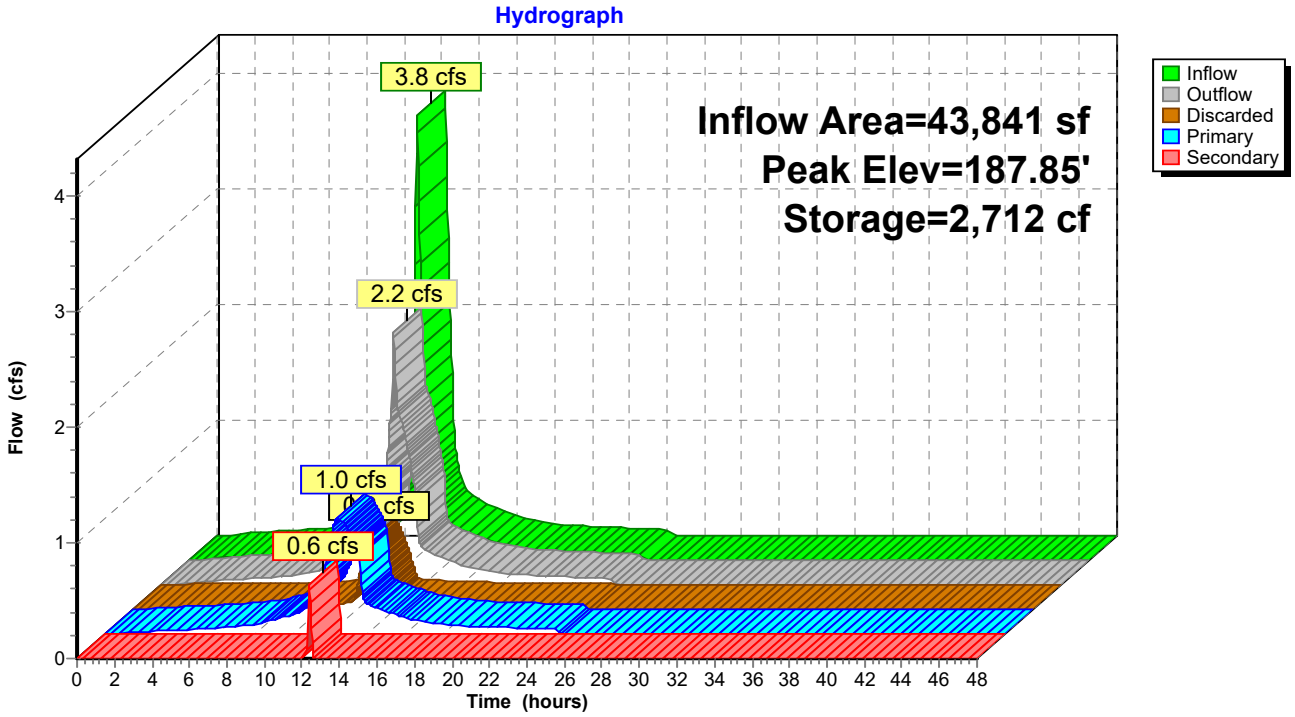
Device	Routing	Invert	Outlet Devices
#1	Primary	185.70'	**6.0" Round Culvert** L= 69.0' Ke= 0.200 Inlet / Outlet Invert= 185.70' / 184.70' S= 0.0145 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Secondary	187.80'	**20.0' long x 15.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Discarded	185.70'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.6 cfs @ 12.40 hrs HW=187.85' (Free Discharge)
↑**3=Exfiltration** (Exfiltration Controls 0.6 cfs)

Primary OutFlow Max=1.0 cfs @ 12.40 hrs HW=187.85' (Free Discharge)
↑**1=Culvert** (Barrel Controls 1.0 cfs @ 5.06 fps)

Secondary OutFlow Max=0.6 cfs @ 12.40 hrs HW=187.85' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.6 cfs @ 0.60 fps)

Pond 1P: Surface Infiltration Basin

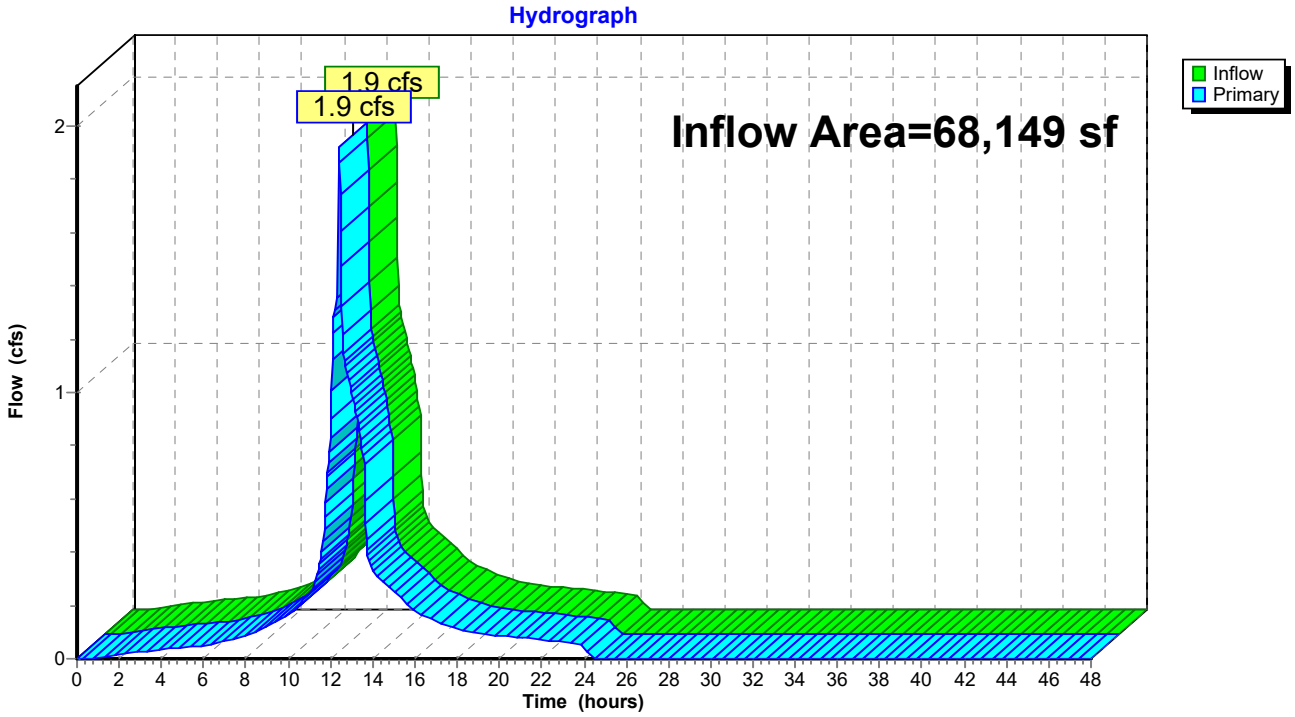


Summary for Link DP-1: Off Site to the North

Inflow Area = 68,149 sf, 32.64% Impervious, Inflow Depth = 2.78" for 100-Year event
Inflow = 1.9 cfs @ 12.39 hrs, Volume= 15,795 cf
Primary = 1.9 cfs @ 12.39 hrs, Volume= 15,795 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-1: Off Site to the North

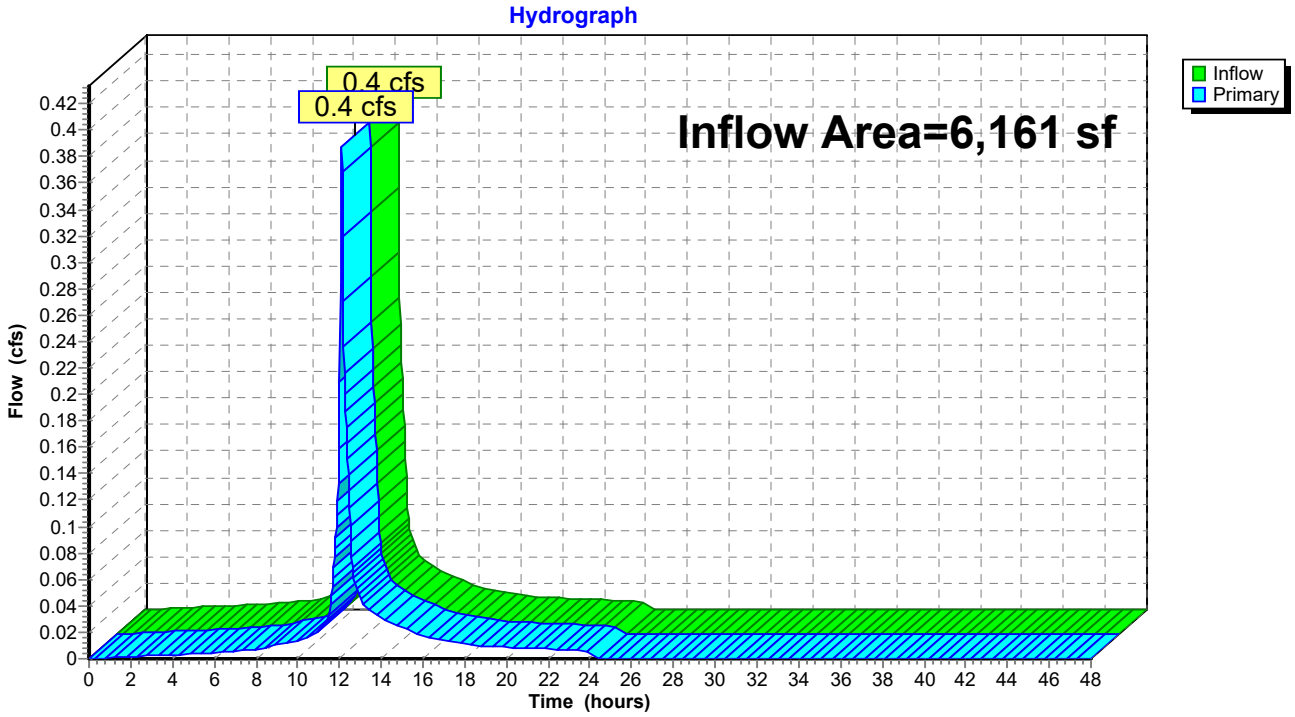


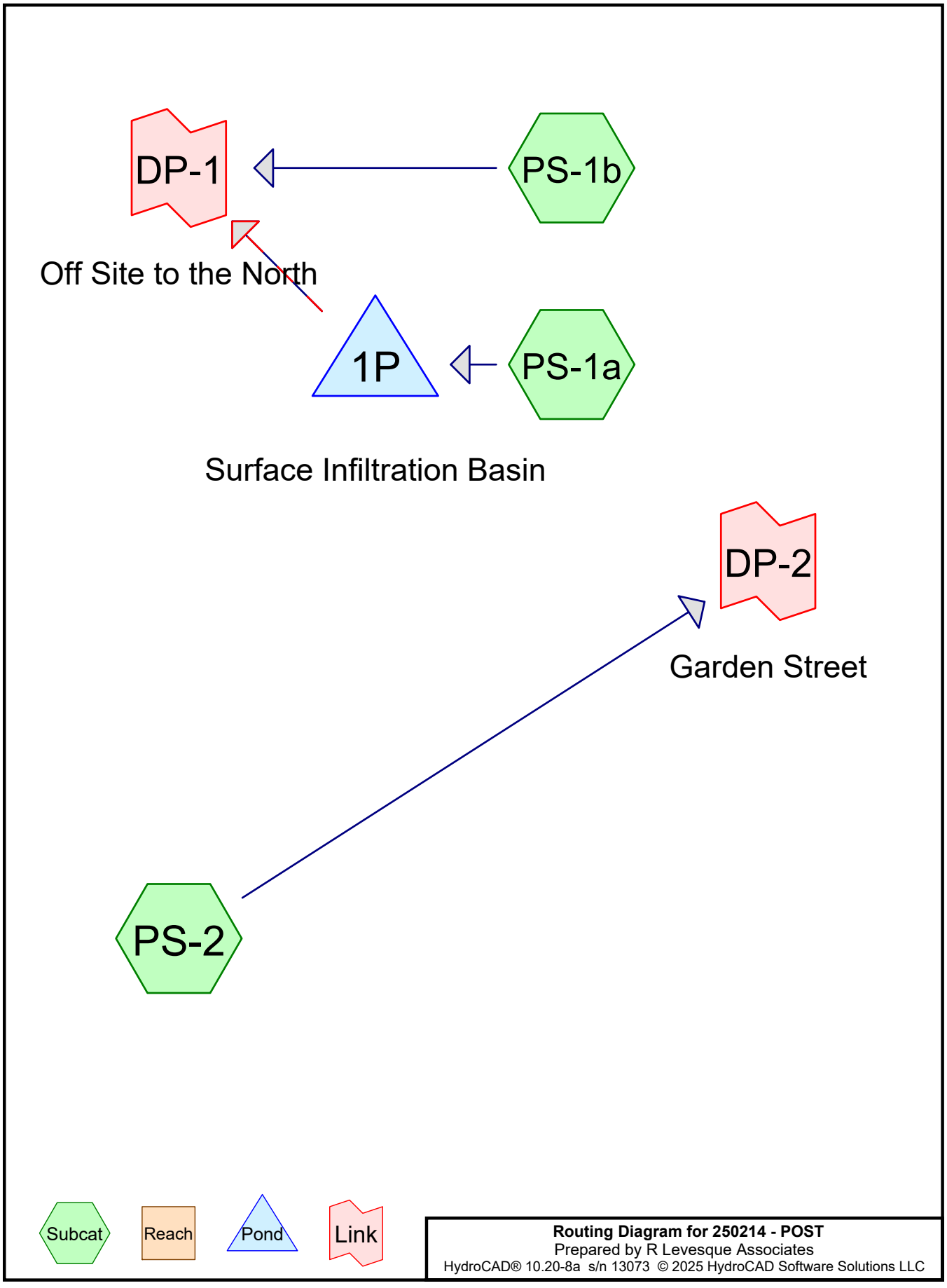
Summary for Link DP-2: Garden Street

Inflow Area = 6,161 sf, 23.03% Impervious, Inflow Depth = 2.96" for 100-Year event
Inflow = 0.4 cfs @ 12.09 hrs, Volume= 1,519 cf
Primary = 0.4 cfs @ 12.09 hrs, Volume= 1,519 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-2: Garden Street




DP-1
PS-1b
Off Site to the North
1P
PS-1a
Surface Infiltration Basin
DP-2
Garden Street
PS-2
Subcat
Reach
Pond
Link
Routing Diagram for 250214 - POST
Prepared by R Levesque Associates
HydroCAD® 10.20-8a s/n 13073 © 2025 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	3.22	2
2	10-Year	Type III 24-hr		Default	24.00	1	5.21	2
3	100-Year	Type III 24-hr		Default	24.00	1	8.36	2

Summary for Subcatchment PS-1a:

[47] Hint: Peak is 236% of capacity of segment #3

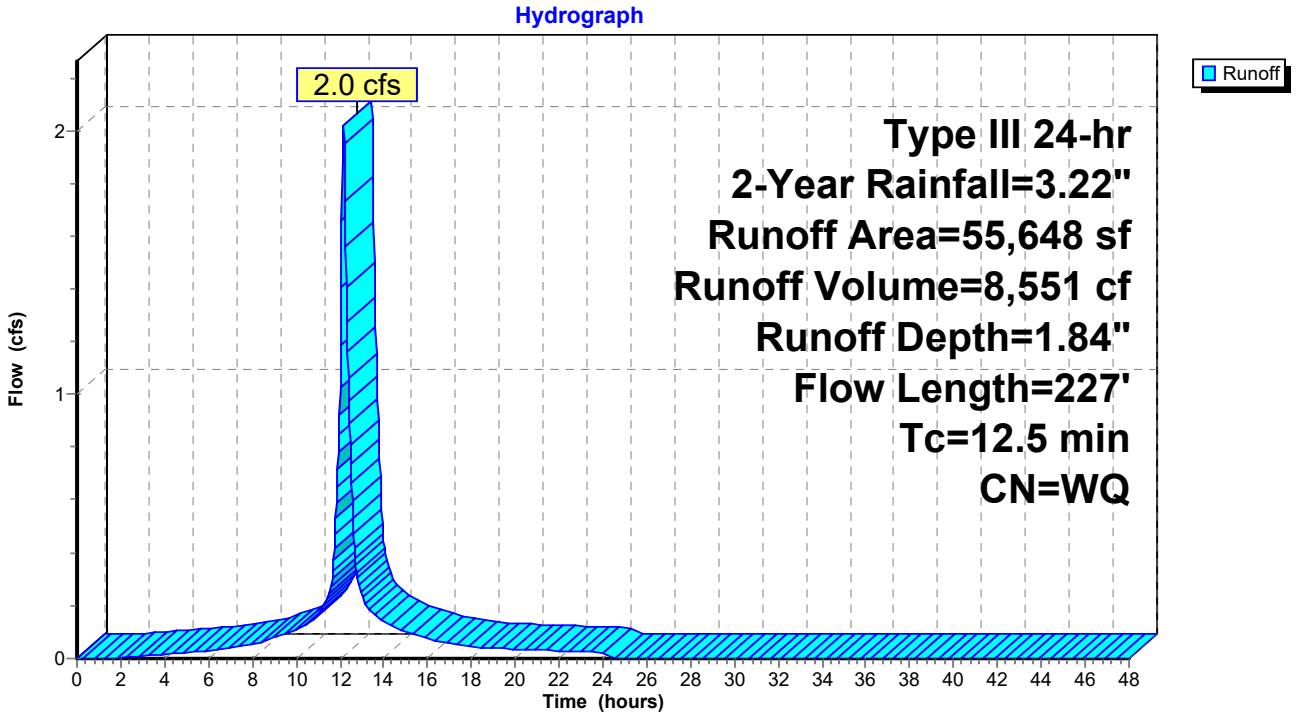
Runoff = 2.0 cfs @ 12.16 hrs, Volume= 8,551 cf, Depth= 1.84"
Routed to Pond 1P : Surface Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=3.22"

Area (sf)	CN	Description
20,624	39	>75% Grass cover, Good, HSG A
6,032	96	Gravel surface, HSG A
18,462	98	Paved parking, HSG A
10,290	98	Roofs, HSG A
241	30	Woods, Good, HSG A
55,648		Weighted Average
26,897	52	48.33% Pervious Area
28,752	98	51.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
0.6	55	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.5	72	0.0050	2.45	0.85	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013
12.5	227	Total			

Subcatchment PS-1a:



Summary for Subcatchment PS-1b:

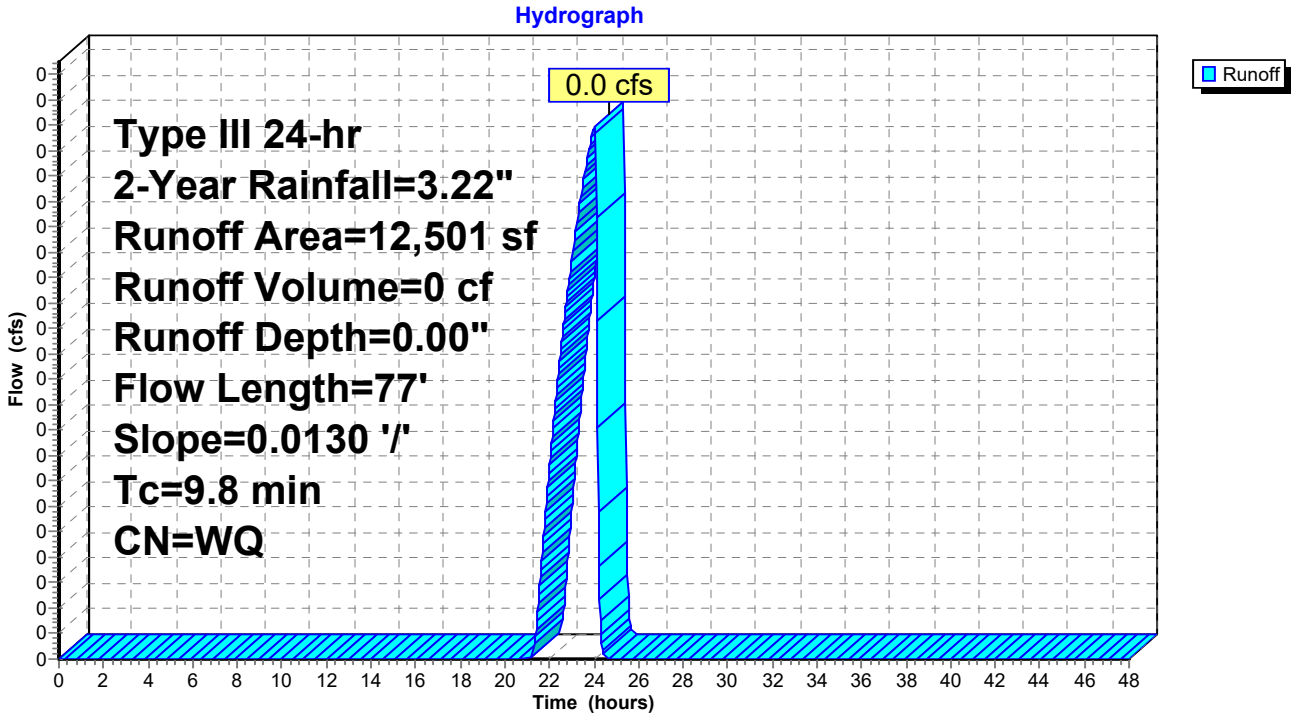
Runoff = 0.0 cfs @ 24.01 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Link DP-1 : Off Site to the North

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=3.22"

Area (sf)	CN	Description
5,847	39	>75% Grass cover, Good, HSG A
6,654	30	Woods, Good, HSG A
12,501		Weighted Average
12,501	34	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	77	0.0130	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"

Subcatchment PS-1b:



Summary for Subcatchment PS-2:

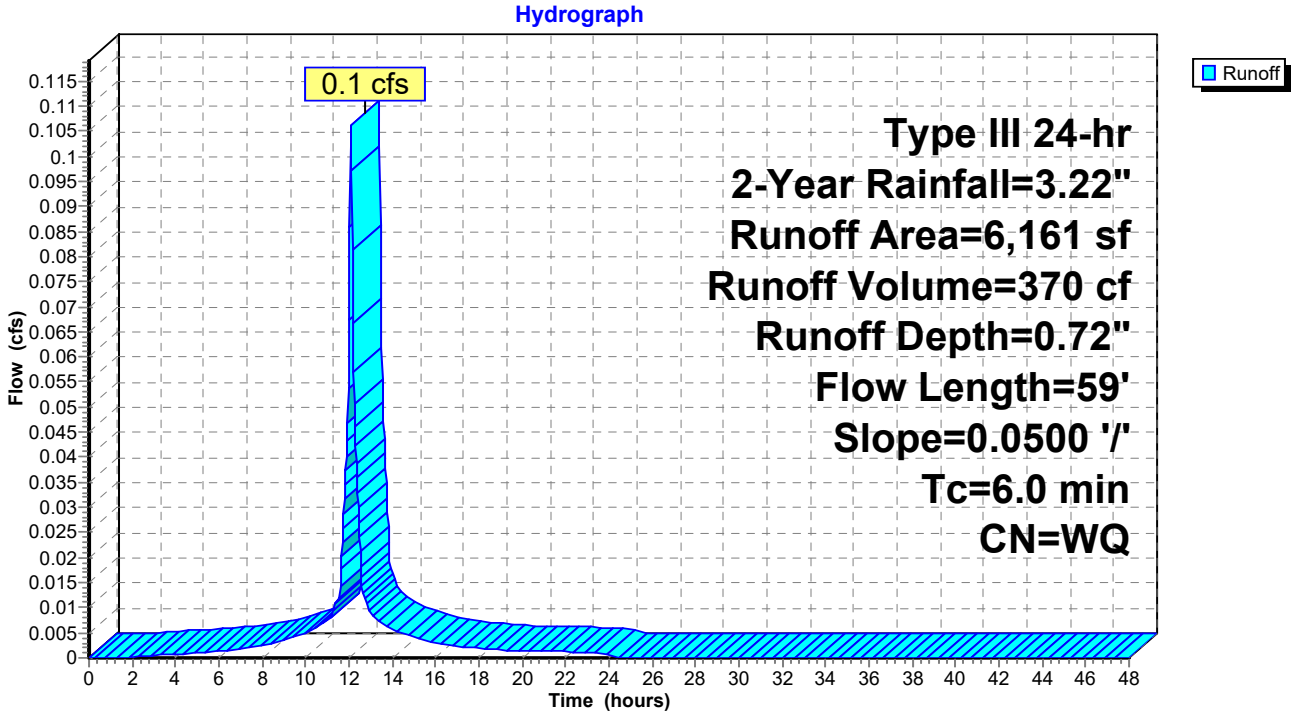
Runoff = 0.1 cfs @ 12.08 hrs, Volume= 370 cf, Depth= 0.72"
Routed to Link DP-2 : Garden Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Rainfall=3.22"

Area (sf)	CN	Description
4,668	39	>75% Grass cover, Good, HSG A
74	96	Gravel surface, HSG A
1,419	98	Paved parking, HSG A
6,161		Weighted Average
4,742	40	76.97% Pervious Area
1,419	98	23.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	59	0.0500	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
4.6	59	Total, Increased to minimum Tc = 6.0 min			

Subcatchment PS-2:



Summary for Pond 1P: Surface Infiltration Basin

Inflow Area = 55,648 sf, 51.67% Impervious, Inflow Depth = 1.84" for 2-Year event
Inflow = 2.0 cfs @ 12.16 hrs, Volume= 8,551 cf
Outflow = 0.5 cfs @ 12.61 hrs, Volume= 8,551 cf, Atten= 74%, Lag= 26.5 min
Discarded = 0.5 cfs @ 12.61 hrs, Volume= 8,551 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP-1 : Off Site to the North
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP-1 : Off Site to the North

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Peak Elev= 186.74' @ 12.61 hrs Surf.Area= 2,697 sf Storage= 2,045 cf

Plug-Flow detention time= 23.0 min calculated for 8,545 cf (100% of inflow)
Center-of-Mass det. time= 23.0 min (788.2 - 765.2)

Volume	Invert	Avail.Storage	Storage Description
#1	186.00'	9,606 cf	**Surface Infiltration Basin (Irregular)** Listed below (Recalc)
#2	186.00'	333 cf	**Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
#3	187.00'	1,259 cf	**Above Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
		11,198 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
186.00	2,203	214.0	0	0	2,203
187.00	2,879	235.0	2,533	2,533	2,986
188.00	3,547	256.0	3,207	5,741	3,843
189.00	4,192	276.0	3,865	9,606	4,730

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
186.00	234	59.0	0	0	234
187.00	444	80.0	333	333	476

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
187.00	444	80.0	0	0	444
188.00	644	96.0	541	541	685
189.00	795	107.0	718	1,259	889

Device	Routing	Invert	Outlet Devices
#1	Primary	185.50'	**12.0" Round Culvert** L= 69.0' Ke= 0.200 Inlet / Outlet Invert= 185.50' / 184.70' S= 0.0116 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	188.20'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	186.80'	**6.0" W x 8.0" H Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#4	Secondary	188.50'	**10.0' long x 15.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60

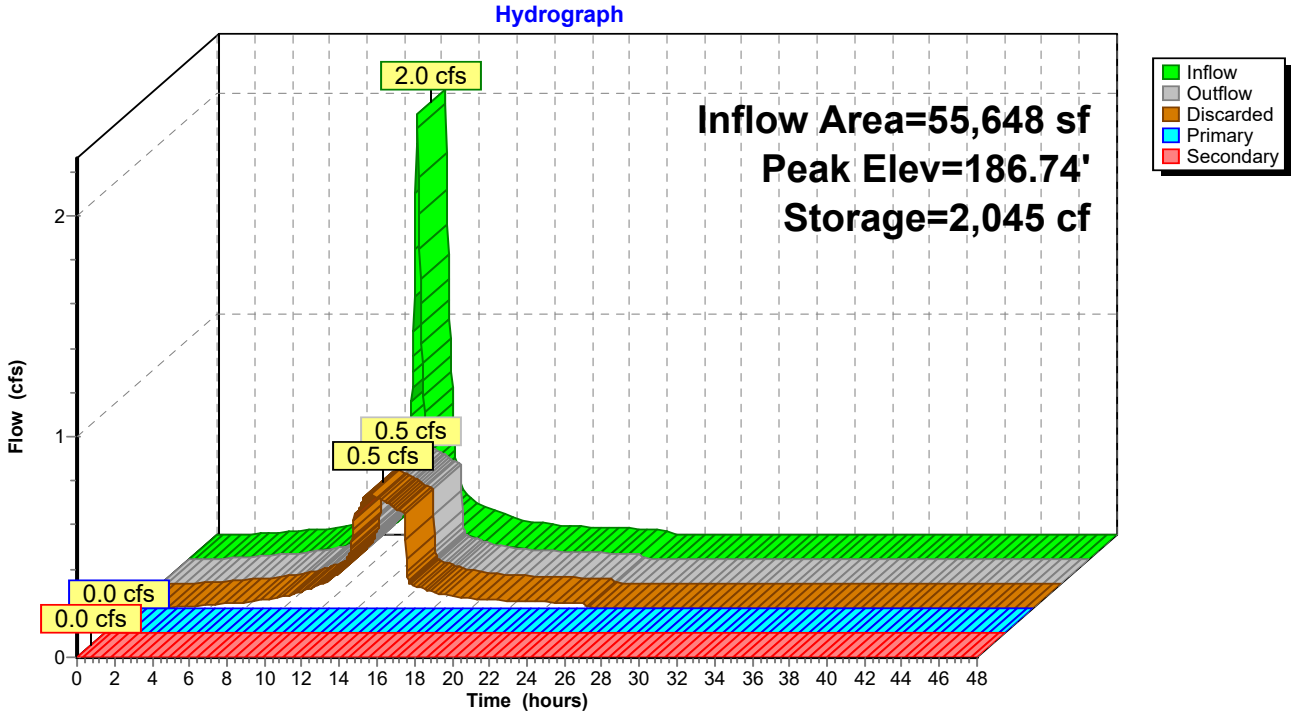
Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#5 Discarded 186.00' **8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.5 cfs @ 12.61 hrs HW=186.74' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.5 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=186.00' (Free Discharge)
└**1=Culvert** (Passes 0.0 cfs of 1.0 cfs potential flow)
  └**2=Grate** (Controls 0.0 cfs)
  └**3=Orifice** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=186.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 1P: Surface Infiltration Basin

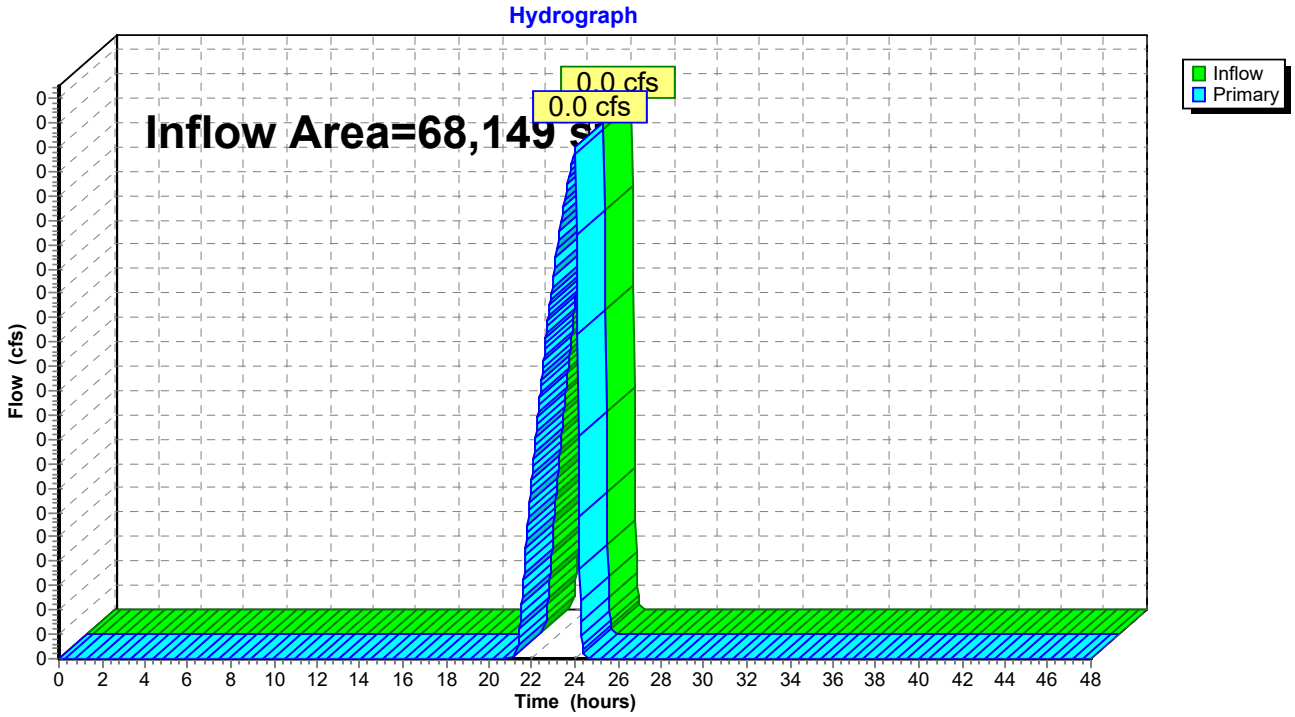


Summary for Link DP-1: Off Site to the North

Inflow Area = 68,149 sf, 42.19% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.0 cfs @ 24.01 hrs, Volume= 0 cf
Primary = 0.0 cfs @ 24.01 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-1: Off Site to the North

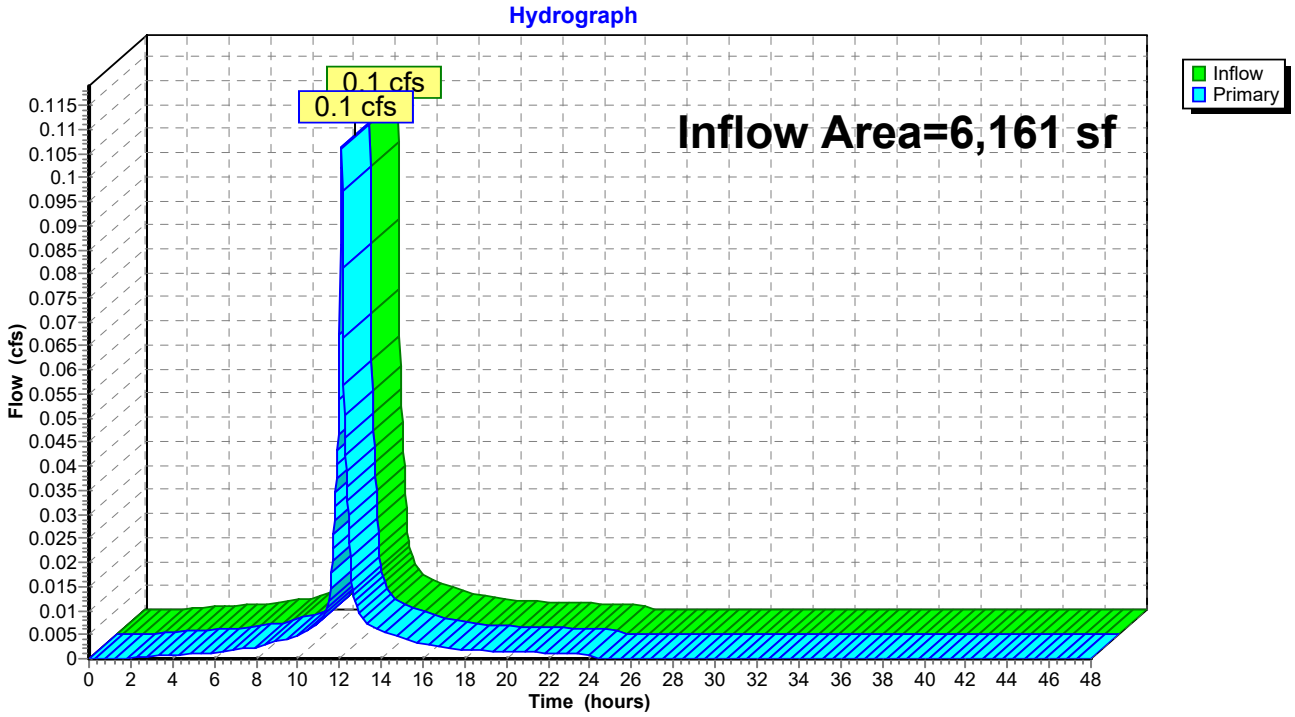


Summary for Link DP-2: Garden Street

Inflow Area = 6,161 sf, 23.03% Impervious, Inflow Depth = 0.72" for 2-Year event
Inflow = 0.1 cfs @ 12.08 hrs, Volume= 370 cf
Primary = 0.1 cfs @ 12.08 hrs, Volume= 370 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-2: Garden Street



Summary for Subcatchment PS-1a:

[47] Hint: Peak is 387% of capacity of segment #3

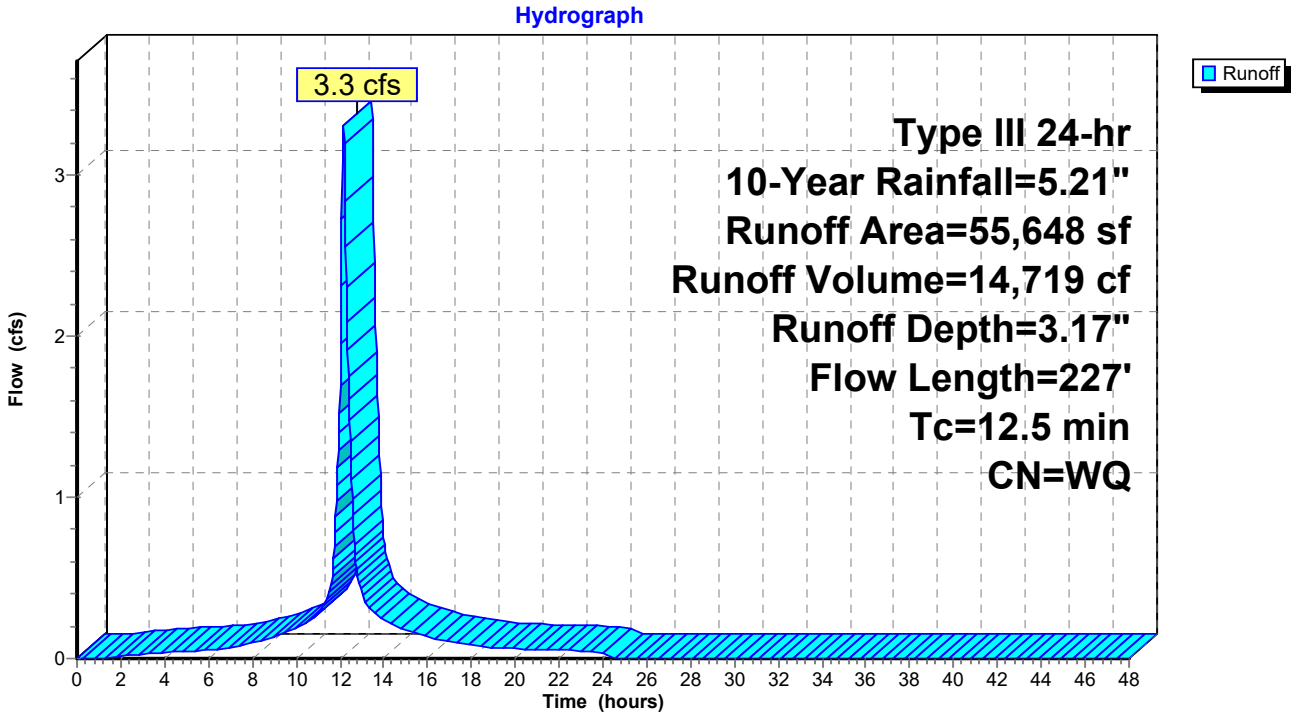
Runoff = 3.3 cfs @ 12.16 hrs, Volume= 14,719 cf, Depth= 3.17"
Routed to Pond 1P : Surface Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Year Rainfall=5.21"

Area (sf)	CN	Description
20,624	39	>75% Grass cover, Good, HSG A
6,032	96	Gravel surface, HSG A
18,462	98	Paved parking, HSG A
10,290	98	Roofs, HSG A
241	30	Woods, Good, HSG A
55,648		Weighted Average
26,897	52	48.33% Pervious Area
28,752	98	51.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
0.6	55	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.5	72	0.0050	2.45	0.85	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013
12.5	227	Total			

Subcatchment PS-1a:



Summary for Subcatchment PS-1b:

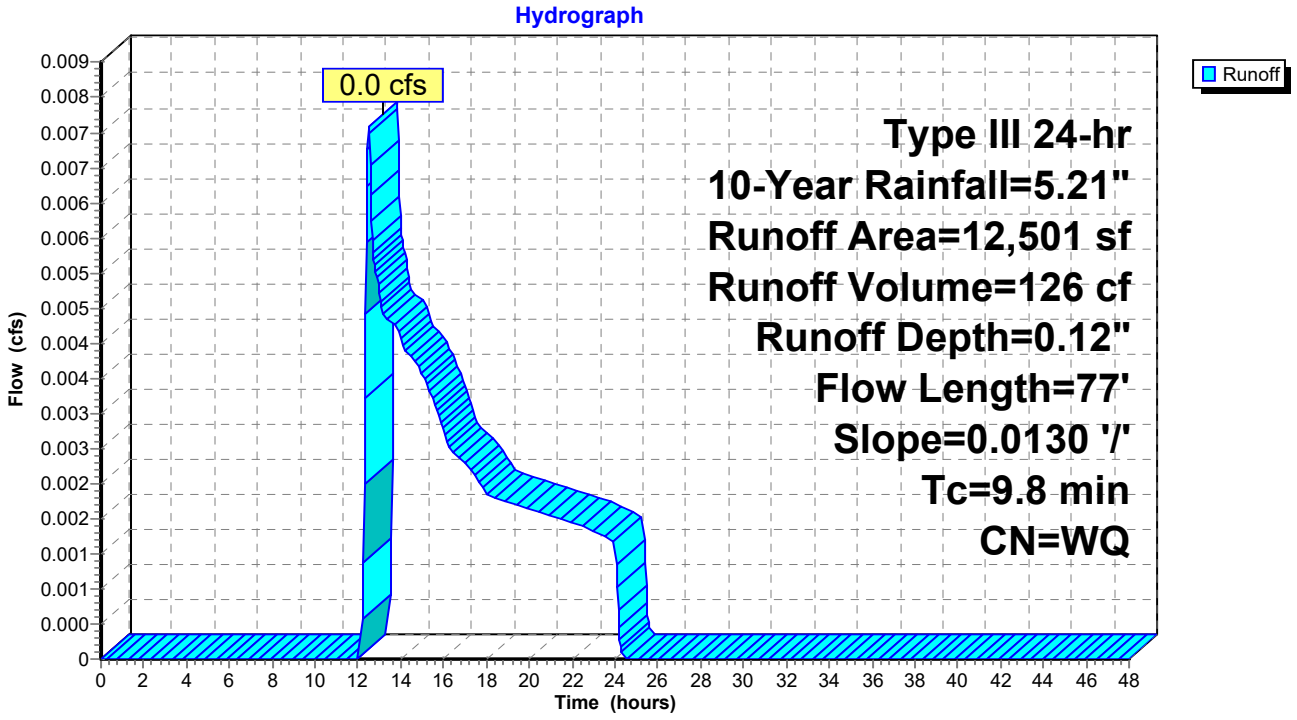
Runoff = 0.0 cfs @ 12.50 hrs, Volume= 126 cf, Depth= 0.12"
Routed to Link DP-1 : Off Site to the North

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Year Rainfall=5.21"

Area (sf)	CN	Description
5,847	39	>75% Grass cover, Good, HSG A
6,654	30	Woods, Good, HSG A
12,501		Weighted Average
12,501	34	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	77	0.0130	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"

Subcatchment PS-1b:



Summary for Subcatchment PS-2:

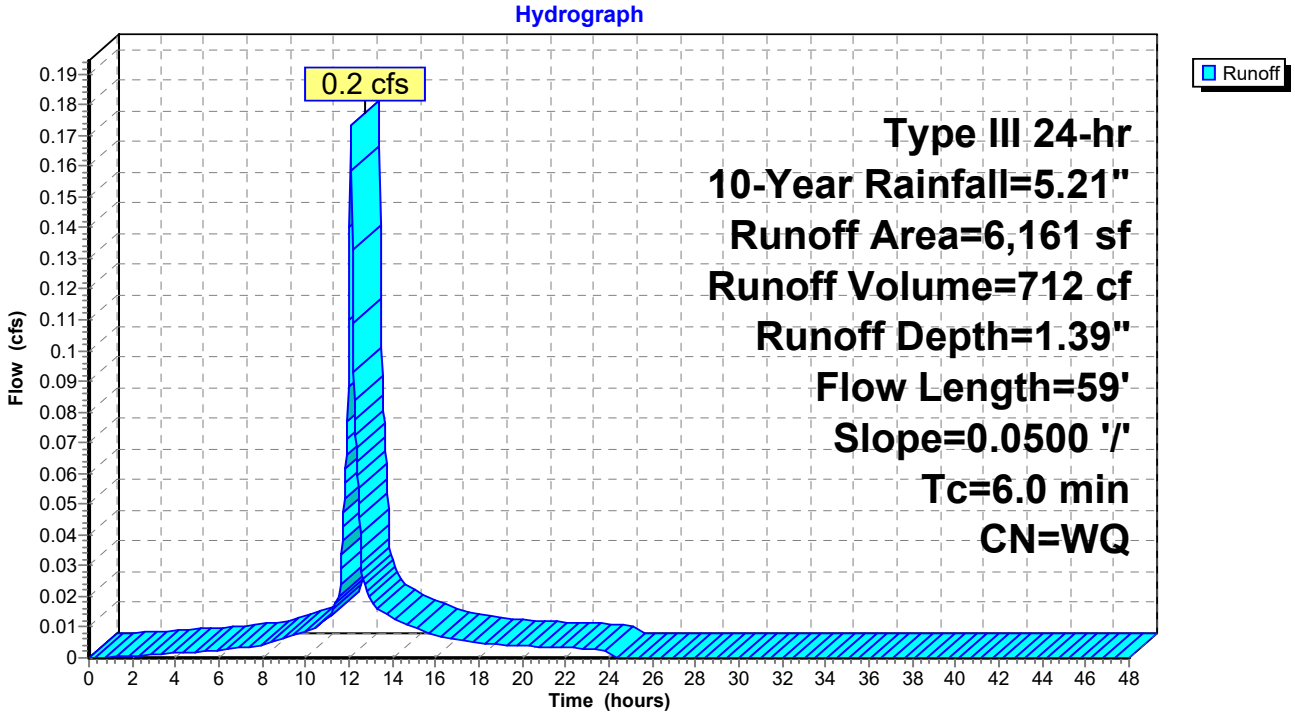
Runoff = 0.2 cfs @ 12.08 hrs, Volume= 712 cf, Depth= 1.39"
Routed to Link DP-2 : Garden Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Year Rainfall=5.21"

Area (sf)	CN	Description
4,668	39	>75% Grass cover, Good, HSG A
74	96	Gravel surface, HSG A
1,419	98	Paved parking, HSG A
6,161		Weighted Average
4,742	40	76.97% Pervious Area
1,419	98	23.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	59	0.0500	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
4.6	59	Total, Increased to minimum Tc = 6.0 min			

Subcatchment PS-2:



Summary for Pond 1P: Surface Infiltration Basin

Inflow Area = 55,648 sf, 51.67% Impervious, Inflow Depth = 3.17" for 10-Year event
Inflow = 3.3 cfs @ 12.16 hrs, Volume= 14,719 cf
Outflow = 1.1 cfs @ 12.55 hrs, Volume= 14,719 cf, Atten= 68%, Lag= 23.2 min
Discarded = 0.6 cfs @ 12.55 hrs, Volume= 13,437 cf
Primary = 0.5 cfs @ 12.55 hrs, Volume= 1,282 cf
Routed to Link DP-1 : Off Site to the North
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP-1 : Off Site to the North

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Peak Elev= 187.25' @ 12.55 hrs Surf.Area= 3,039 sf Storage= 3,722 cf

Plug-Flow detention time= 32.5 min calculated for 14,710 cf (100% of inflow)
Center-of-Mass det. time= 32.5 min (795.3 - 762.8)

Volume	Invert	Avail.Storage	Storage Description
#1	186.00'	9,606 cf	**Surface Infiltration Basin (Irregular)** Listed below (Recalc)
#2	186.00'	333 cf	**Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
#3	187.00'	1,259 cf	**Above Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
		11,198 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
186.00	2,203	214.0	0	0	2,203
187.00	2,879	235.0	2,533	2,533	2,986
188.00	3,547	256.0	3,207	5,741	3,843
189.00	4,192	276.0	3,865	9,606	4,730

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
186.00	234	59.0	0	0	234
187.00	444	80.0	333	333	476

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
187.00	444	80.0	0	0	444
188.00	644	96.0	541	541	685
189.00	795	107.0	718	1,259	889

Device	Routing	Invert	Outlet Devices
#1	Primary	185.50'	**12.0" Round Culvert** L= 69.0' Ke= 0.200 Inlet / Outlet Invert= 185.50' / 184.70' S= 0.0116 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	188.20'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	186.80'	**6.0" W x 8.0" H Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#4	Secondary	188.50'	**10.0' long x 15.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60

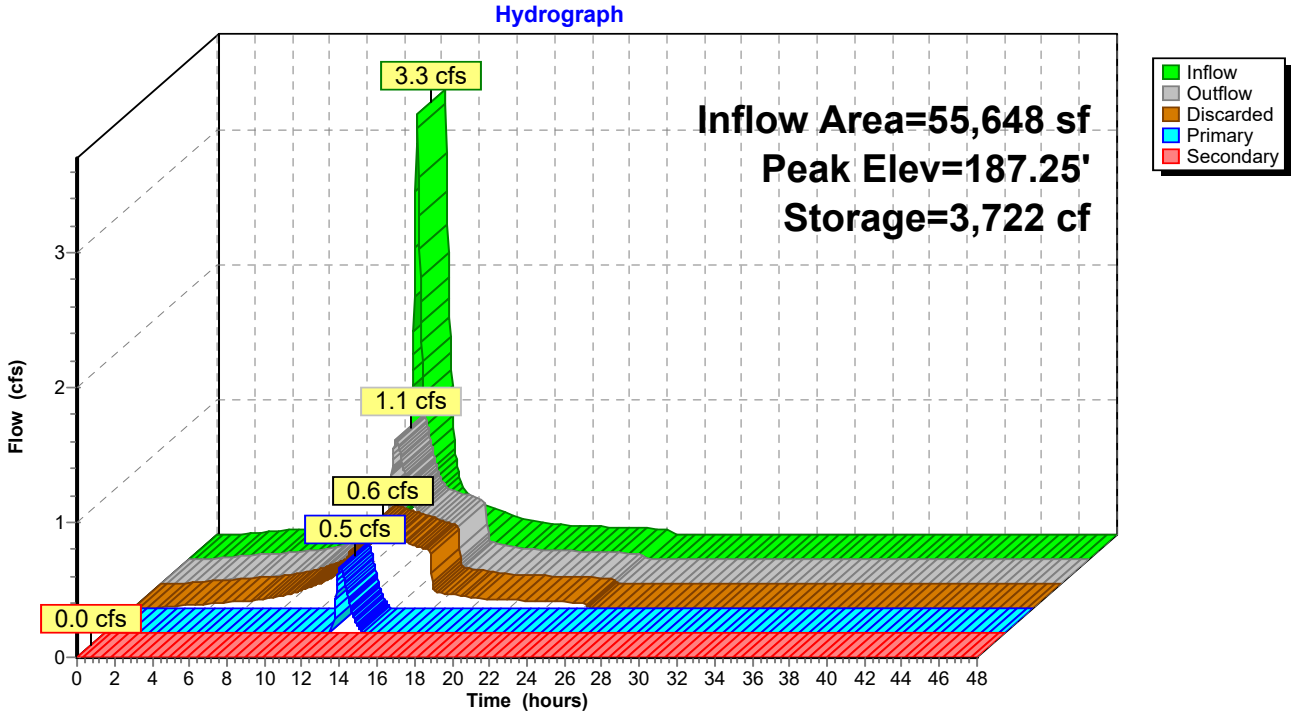
Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#5 Discarded 186.00' **8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.6 cfs @ 12.55 hrs HW=187.25' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.6 cfs)

Primary OutFlow Max=0.5 cfs @ 12.55 hrs HW=187.25' (Free Discharge)
└**1=Culvert** (Passes 0.5 cfs of 4.3 cfs potential flow)
  └**2=Grate** (Controls 0.0 cfs)
  └**3=Orifice** (Orifice Controls 0.5 cfs @ 2.15 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=186.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 1P: Surface Infiltration Basin

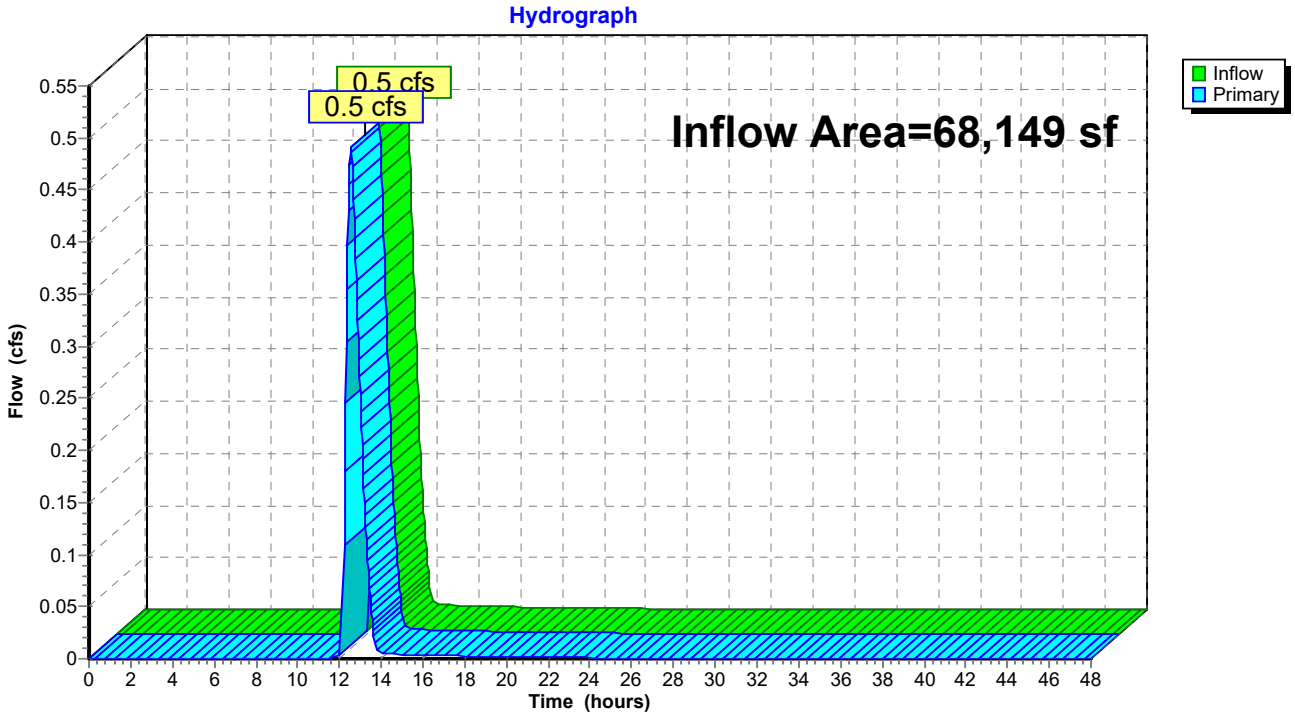


Summary for Link DP-1: Off Site to the North

Inflow Area = 68,149 sf, 42.19% Impervious, Inflow Depth = 0.25" for 10-Year event
Inflow = 0.5 cfs @ 12.55 hrs, Volume= 1,408 cf
Primary = 0.5 cfs @ 12.55 hrs, Volume= 1,408 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-1: Off Site to the North

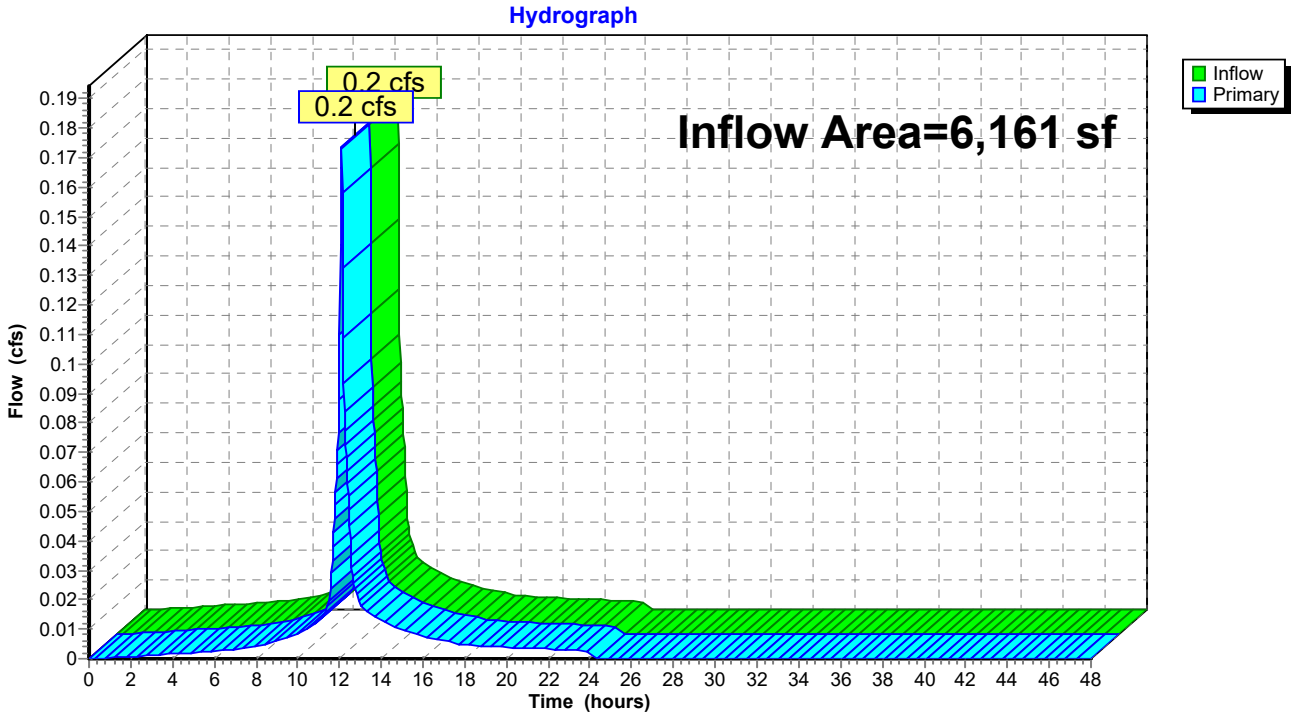


Summary for Link DP-2: Garden Street

Inflow Area = 6,161 sf, 23.03% Impervious, Inflow Depth = 1.39" for 10-Year event
Inflow = 0.2 cfs @ 12.08 hrs, Volume= 712 cf
Primary = 0.2 cfs @ 12.08 hrs, Volume= 712 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-2: Garden Street



Summary for Subcatchment PS-1a:

[47] Hint: Peak is 666% of capacity of segment #3

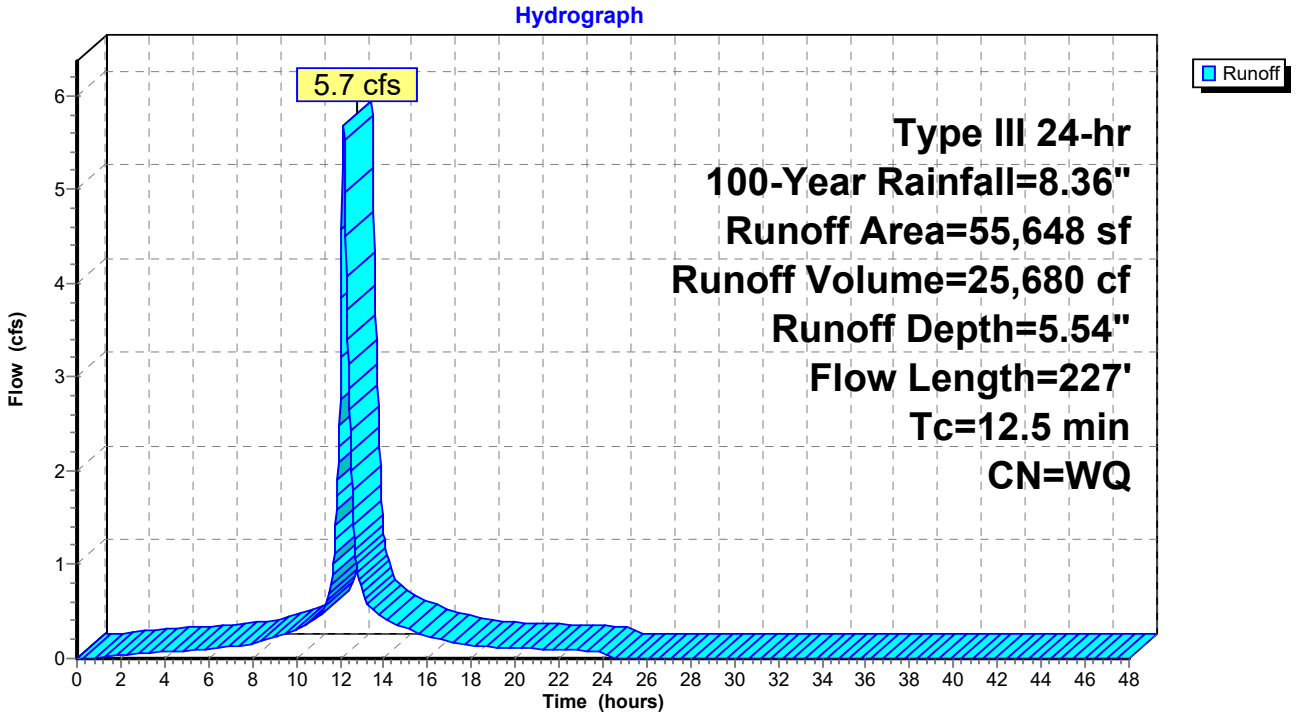
Runoff = 5.7 cfs @ 12.17 hrs, Volume= 25,680 cf, Depth= 5.54"
Routed to Pond 1P : Surface Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Rainfall=8.36"

Area (sf)	CN	Description
20,624	39	>75% Grass cover, Good, HSG A
6,032	96	Gravel surface, HSG A
18,462	98	Paved parking, HSG A
10,290	98	Roofs, HSG A
241	30	Woods, Good, HSG A
55,648		Weighted Average
26,897	52	48.33% Pervious Area
28,752	98	51.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
0.6	55	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.5	72	0.0050	2.45	0.85	**Pipe Channel,** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013
12.5	227	Total			

Subcatchment PS-1a:



Summary for Subcatchment PS-1b:

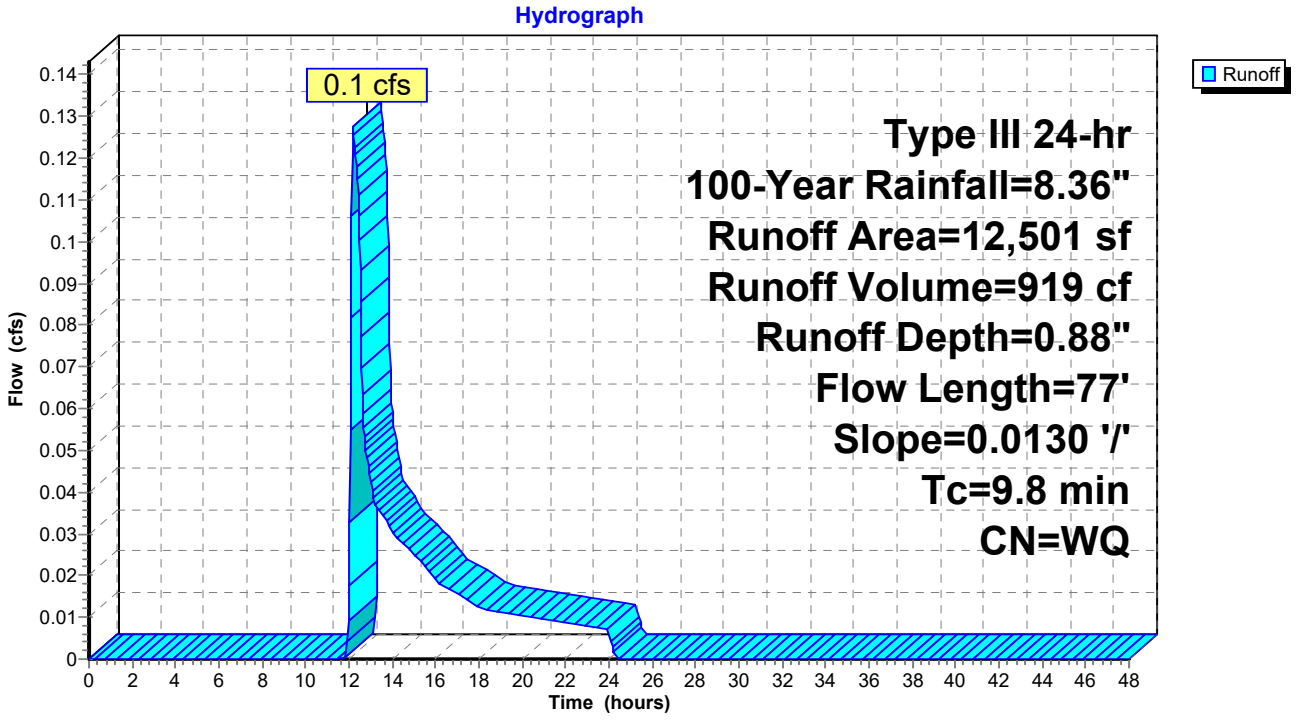
Runoff = 0.1 cfs @ 12.19 hrs, Volume= 919 cf, Depth= 0.88"
Routed to Link DP-1 : Off Site to the North

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Rainfall=8.36"

Area (sf)	CN	Description
5,847	39	>75% Grass cover, Good, HSG A
6,654	30	Woods, Good, HSG A
12,501		Weighted Average
12,501	34	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	77	0.0130	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"

Subcatchment PS-1b:



Summary for Subcatchment PS-2:

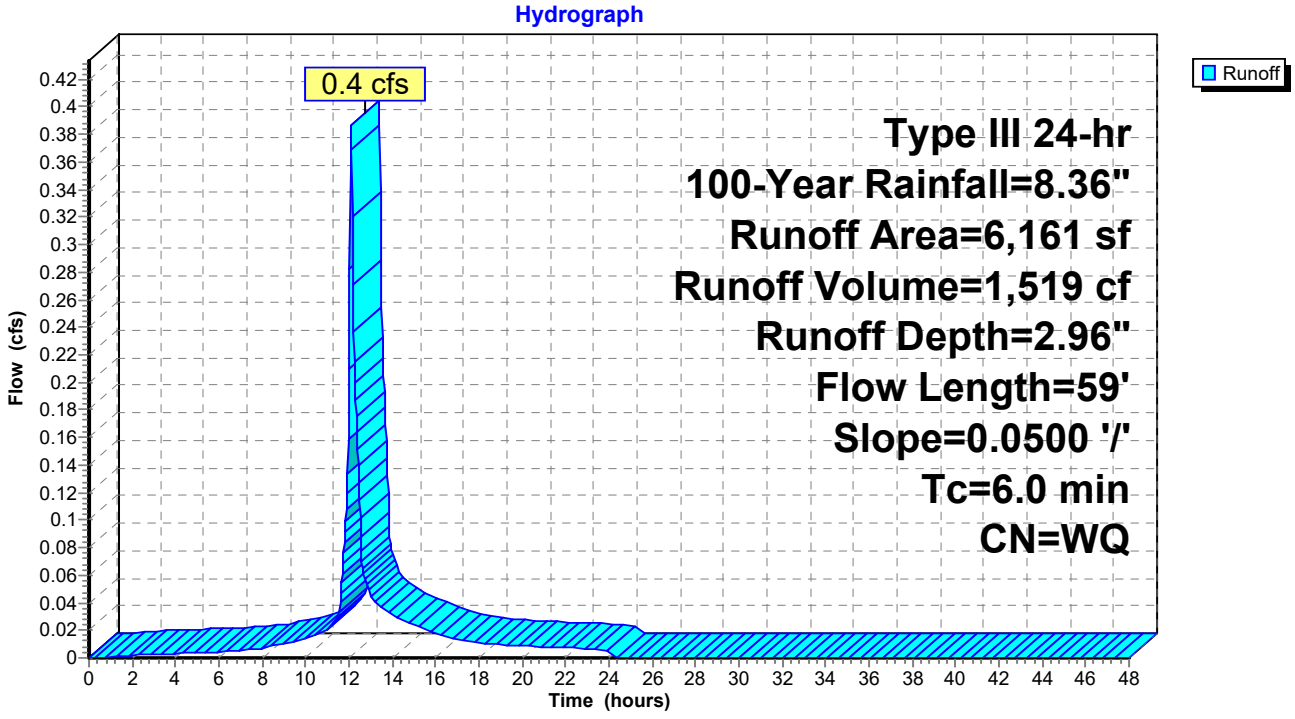
Runoff = 0.4 cfs @ 12.09 hrs, Volume= 1,519 cf, Depth= 2.96"
Routed to Link DP-2 : Garden Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Rainfall=8.36"

Area (sf)	CN	Description
4,668	39	>75% Grass cover, Good, HSG A
74	96	Gravel surface, HSG A
1,419	98	Paved parking, HSG A
6,161		Weighted Average
4,742	40	76.97% Pervious Area
1,419	98	23.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	59	0.0500	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
4.6	59	Total, Increased to minimum Tc = 6.0 min			

Subcatchment PS-2:



Summary for Pond 1P: Surface Infiltration Basin

Inflow Area = 55,648 sf, 51.67% Impervious, Inflow Depth = 5.54" for 100-Year event
Inflow = 5.7 cfs @ 12.17 hrs, Volume= 25,680 cf
Outflow = 2.1 cfs @ 12.52 hrs, Volume= 25,680 cf, Atten= 63%, Lag= 21.2 min
Discarded = 0.7 cfs @ 12.52 hrs, Volume= 19,584 cf
Primary = 1.5 cfs @ 12.52 hrs, Volume= 6,096 cf
Routed to Link DP-1 : Off Site to the North
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link DP-1 : Off Site to the North

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Peak Elev= 187.96' @ 12.52 hrs Surf.Area= 3,521 sf Storage= 6,460 cf

Plug-Flow detention time= 35.6 min calculated for 25,664 cf (100% of inflow)
Center-of-Mass det. time= 35.6 min (798.7 - 763.0)

Volume	Invert	Avail.Storage	Storage Description
#1	186.00'	9,606 cf	**Surface Infiltration Basin (Irregular)** Listed below (Recalc)
#2	186.00'	333 cf	**Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
#3	187.00'	1,259 cf	**Above Sediment Forebay (Irregular)** Listed below (Recalc) -Impervious
		11,198 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
186.00	2,203	214.0	0	0	2,203
187.00	2,879	235.0	2,533	2,533	2,986
188.00	3,547	256.0	3,207	5,741	3,843
189.00	4,192	276.0	3,865	9,606	4,730

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
186.00	234	59.0	0	0	234
187.00	444	80.0	333	333	476

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
187.00	444	80.0	0	0	444
188.00	644	96.0	541	541	685
189.00	795	107.0	718	1,259	889

Device	Routing	Invert	Outlet Devices
#1	Primary	185.50'	**12.0" Round Culvert** L= 69.0' Ke= 0.200 Inlet / Outlet Invert= 185.50' / 184.70' S= 0.0116 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	188.20'	**48.0" x 48.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	186.80'	**6.0" W x 8.0" H Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#4	Secondary	188.50'	**10.0' long x 15.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60

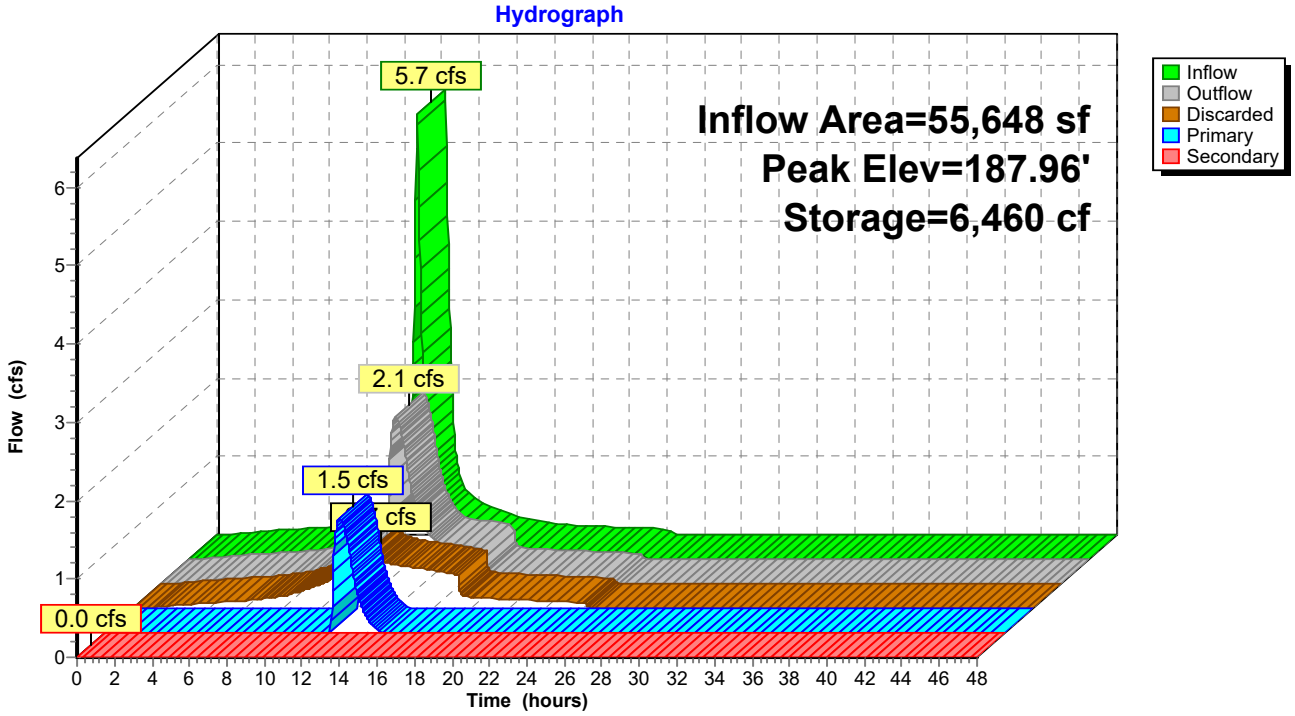
Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#5 Discarded 186.00' **8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.7 cfs @ 12.52 hrs HW=187.96' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.7 cfs)

Primary OutFlow Max=1.5 cfs @ 12.52 hrs HW=187.96' (Free Discharge)
└**1=Culvert** (Passes 1.5 cfs of 5.2 cfs potential flow)
├**2=Grate** (Controls 0.0 cfs)
└**3=Orifice** (Orifice Controls 1.5 cfs @ 4.35 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=186.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 1P: Surface Infiltration Basin

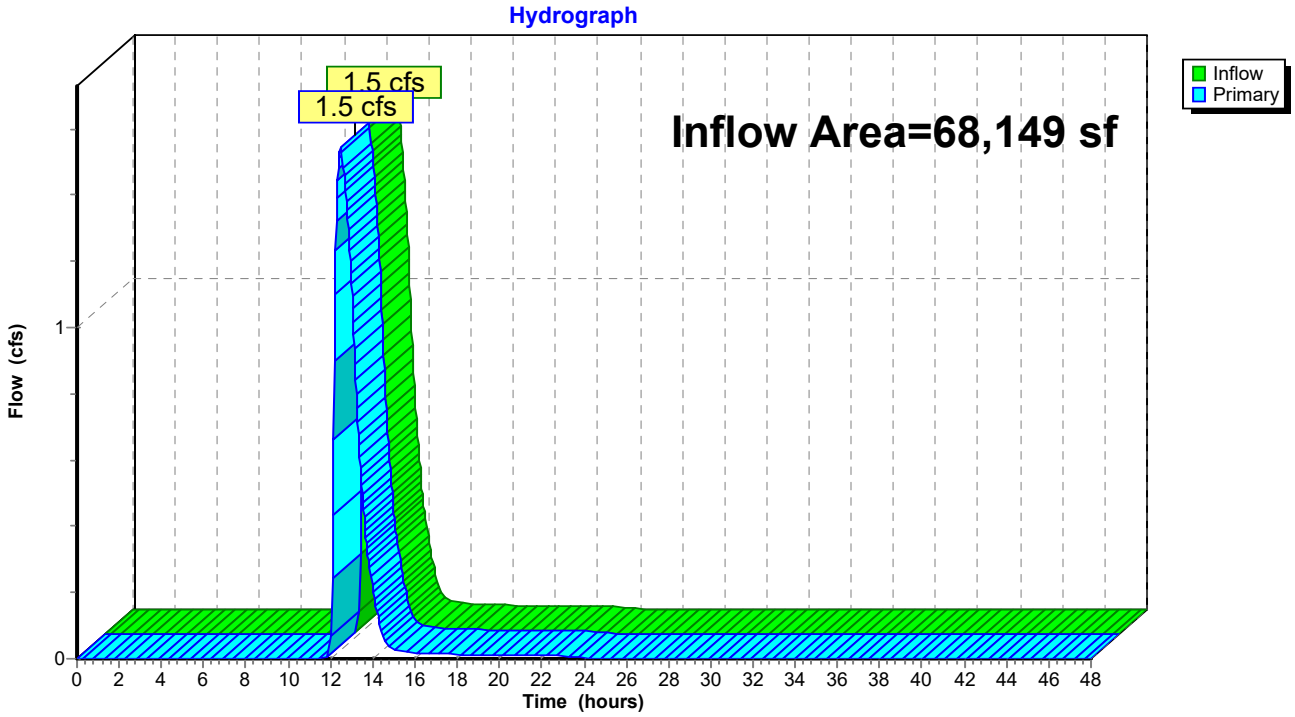


Summary for Link DP-1: Off Site to the North

Inflow Area = 68,149 sf, 42.19% Impervious, Inflow Depth = 1.24" for 100-Year event
Inflow = 1.5 cfs @ 12.48 hrs, Volume= 7,015 cf
Primary = 1.5 cfs @ 12.48 hrs, Volume= 7,015 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-1: Off Site to the North

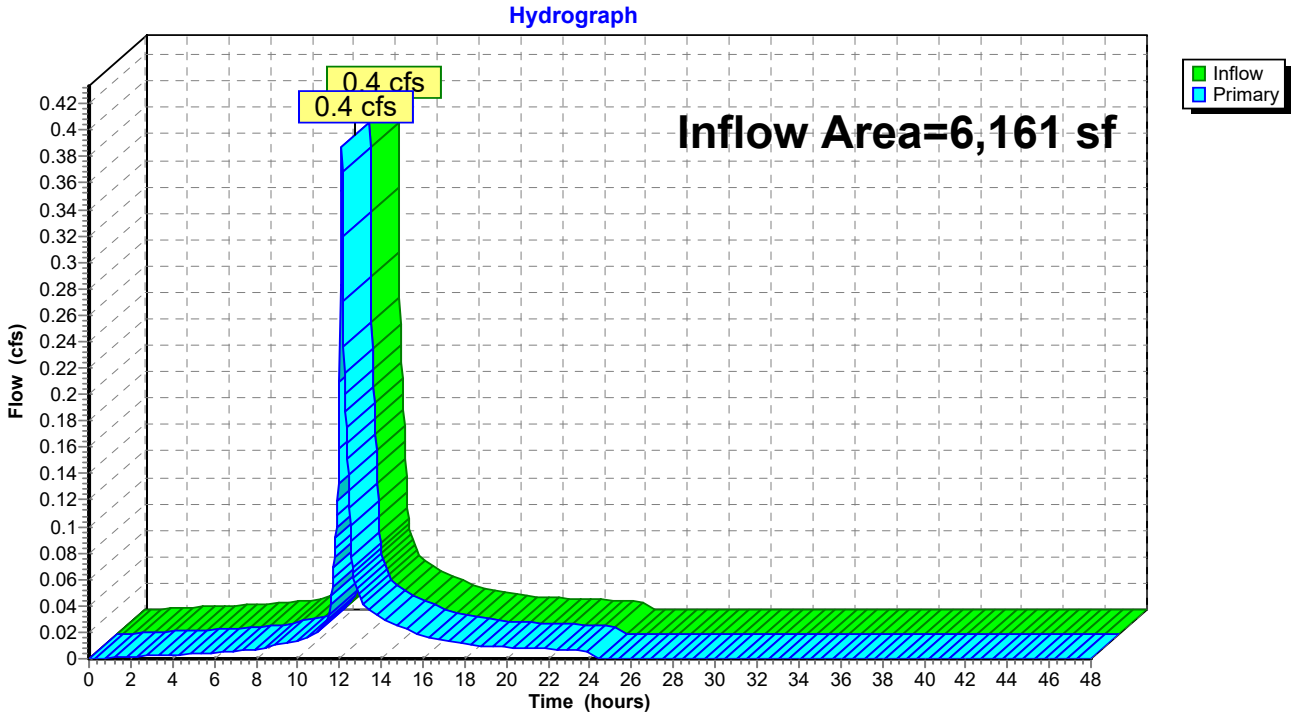


Summary for Link DP-2: Garden Street

Inflow Area = 6,161 sf, 23.03% Impervious, Inflow Depth = 2.96" for 100-Year event
Inflow = 0.4 cfs @ 12.09 hrs, Volume= 1,519 cf
Primary = 0.4 cfs @ 12.09 hrs, Volume= 1,519 cf, Atten= 0%, Lag= 0.0 min

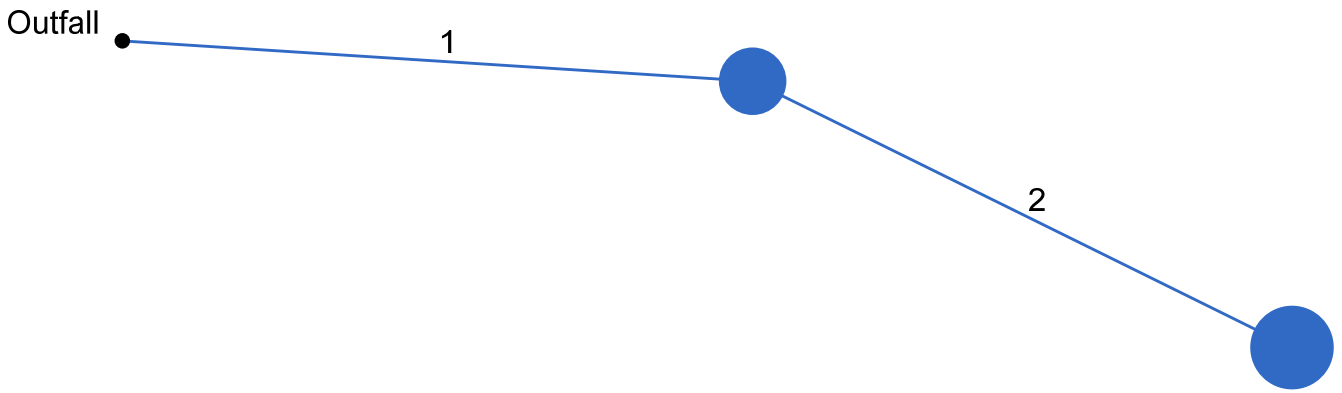
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link DP-2: Garden Street



Appendix D: Hydraulic Analysis

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



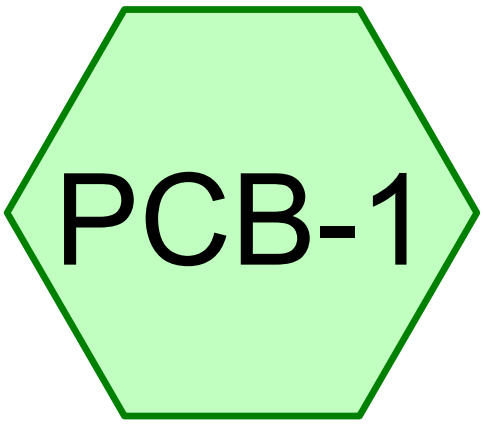
Project File: 250214 - STORM.stm	Number of lines: 2	Date: 3/17/2026

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	39.121	0.00	0.00	0.00	0.00	0.00	0.0	0.1	0.0	4.60	2.62	5.92	12	0.54	186.00	186.21	186.95	187.58	187.19	189.15	P-D-PIPE-(2)
2	1	37.191	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.60	2.55	5.86	12	0.51	186.31	186.50	187.81	188.43	189.15	188.80	P-D-PIPE-(1)

Project File: 250214 - STORM.stm | Number of lines: 2 | Run Date: 3/17/2026

NOTES:Intensity = 80.27 / (Inlet time + 12.00) ^ 0.78; Return period =Yrs. 100 ; c = cir e = ellip b = box



Subcat Reach Pond Link

Routing Diagram for 250214 - INLET
Prepared by R Levesque Associates
HydroCAD® 10.20-8a s/n 13073 © 2025 HydroCAD Software Solutions LLC

Summary for Subcatchment PCB-1:

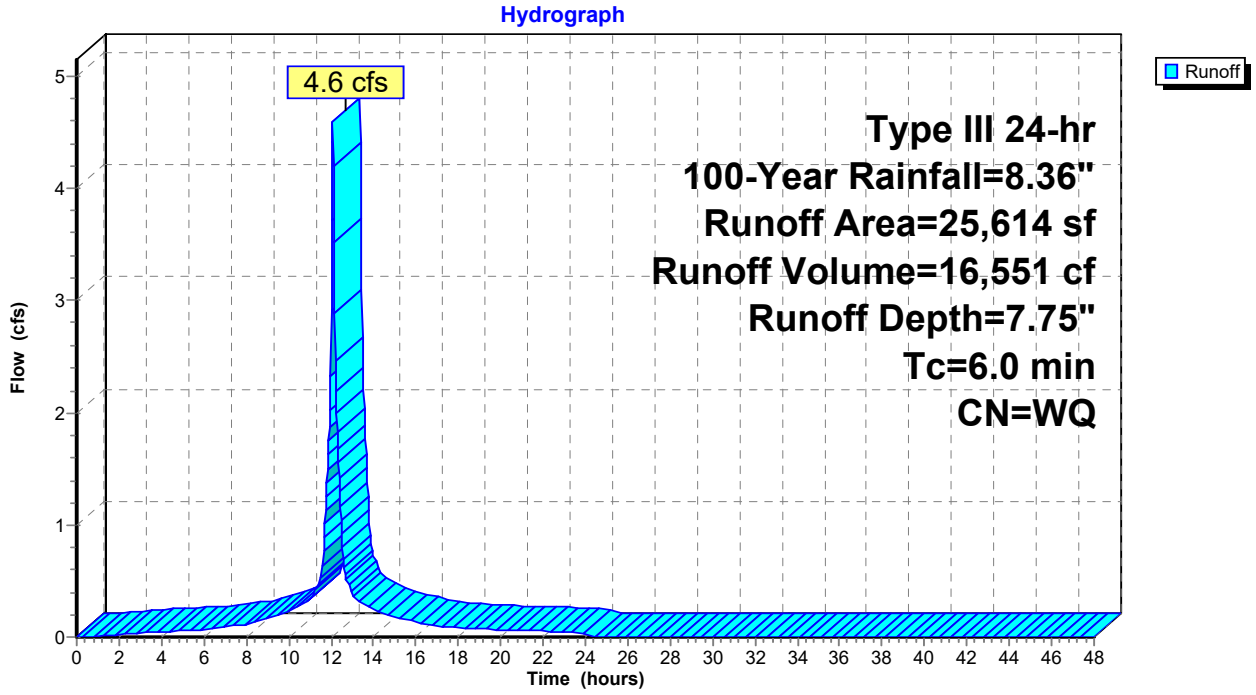
Runoff = 4.6 cfs @ 12.08 hrs, Volume= 16,551 cf, Depth= 7.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Rainfall=8.36"

Area (sf)	CN	Description
894	39	>75% Grass cover, Good, HSG A
6,016	96	Gravel surface, HSG A
18,462	98	Paved parking, HSG A
241	30	Woods, Good, HSG A
25,614		Weighted Average
7,151	87	27.92% Pervious Area
18,462	98	72.08% Impervious Area

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

Subcatchment PCB-1:



Appendix E: MassDEP Calculations

- Impervious Area Calculations
- Recharge Calculation
- Stage Storage Chart – Surface Infiltration Basin
- Water Quality Flow Rate Calculations – PWQU-1
- TSS Removal Worksheet – Surface Infiltration Basin
- Drawdown Calculation
- Barracuda Max Info Sheet
- Barracuda Max Maintenance Guide

Standard 3: Recharge Calculations

Impervious Area Calculations

Existing Total Impervious Area

Sub-Catchment	Roof (sf)	Other Impervious (sf)	Sum (sf)
ES-1a	5762	16405	22,167
ES-1b	0	78	78
ES-2	0	1419	1,419
			23,664

Proposed Total Impervious Area

Sub-Catchment	Roof (sf)	Other Impervious (sf)	Sum (sf)
PS-1a	10290	18462	28752
PS-1b	0	0	0
PS-2	0	1419	1419
			30,171

Tributary to surface basin

Summary Table

Total Existing Impervious Area	23,664	SF
Total Proposed Impervious Area	30,171	SF
Total New Impervious Area	6,507	SF
Total Impervious Area Tributary to Basin	28,752	SF

Standard 3: Recharge Calculations - Surface Infiltration Basin

R_V (required) = F x Impervious Area

where: R_V = Required Recharge Volume (cu. ft.)

F = Target Depth Factor

0.60 inch (A-soils)
0.35 inch (B-soils)
0.25 inch (C-soils)
0.10 inch (D-soils)

New Impervious Area by Hydrologic Soil Type

Impervious Area (A-soils)	6,507 sq. ft.	100.0%
Impervious Area (B-soils)	0 sq. ft.	0.0%
Impervious Area (C-soils)	0 sq. ft.	0.0%
Impervious Area (D-soils)	0 sq. ft.	0.0%
Total Impervious area	6,507 sq. ft.	100.0%

Required Recharge Volume Sizing (R_V)

R_v (required) = $\sum$ [$F_{Soil\ Type}$ x Impervious $Area_{Soil\ Type}$] x 1 ft./12 in.

R_v (required) = 325 cu. ft.

Capture Area Adjustment

Total Imperv. To Recharge Facilities =	28,752	sq. ft.
Percent Imperv. To Recharge Facilities* =	100%	
Adjustment Factor =	1.00	
Adjusted R_V (required) =	325	cu. ft.

*Impervious Area tributary to recharge facilities must be greater than 65%

Storage Volume Provided

Recharge Facility	Volume Provided
Surface Infiltration Basin	2,221 cu. ft.**
	2,221 cu. ft. > 325 cu. ft.

**Volume represents the available storage in the surface infiltration basin below orifice (El. 186.80')

Stage-Area-Storage for Pond 1P: Surface Infiltration Basin

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
186.00	2,203	0
186.05	2,235	123
186.10	2,267	248
186.15	2,299	375
186.20	2,331	504
186.25	2,364	635
186.30	2,396	768
186.35	2,429	904
186.40	2,463	1,041
186.45	2,496	1,181
186.50	2,530	1,323
186.55	2,564	1,467
186.60	2,598	1,613
186.65	2,632	1,762
186.70	2,667	1,913
186.75	2,702	2,066
186.80	2,737	2,221
186.85	2,772	2,379
186.90	2,807	2,539
186.95	2,843	2,702
187.00	2,879	2,867
187.05	2,911	3,034
187.10	2,943	3,203
187.15	2,975	3,375
187.20	3,007	3,548
187.25	3,039	3,723
187.30	3,072	3,901
187.35	3,105	4,081
187.40	3,138	4,262
187.45	3,171	4,446
187.50	3,204	4,632
187.55	3,238	4,821
187.60	3,271	5,011
187.65	3,305	5,204
187.70	3,339	5,399
187.75	3,373	5,596
187.80	3,408	5,795
187.85	3,442	5,997
187.90	3,477	6,201
187.95	3,512	6,407
188.00	3,547	6,615
188.05	3,578	6,826
188.10	3,609	7,038
188.15	3,640	7,252
188.20	3,672	7,469
188.25	3,703	7,687
188.30	3,735	7,907
188.35	3,767	8,129
188.40	3,799	8,353
188.45	3,831	8,579
188.50	3,863	8,807
188.55	3,895	9,037
188.60	3,928	9,269
188.65	3,960	9,503
188.70	3,993	9,739
188.75	4,026	9,977
188.80	4,059	10,217
188.85	4,092	10,459
188.90	4,125	10,704
188.95	4,158	10,950
189.00	**4,192**	**11,198**



Standard 4: Water Quality - PWQU-I

Water Quality Volume Conversion to Flow Rate

Note: Required water quality volume based on 1.0-inch of runoff

$$Q = (qu)\,(A)\,(WQV)$$

where: **Q** = peak flow rate associated with first 1.0-inch of runoff (c.f.s.)

qu = unit peak discharge (csm/in) - value taken from table based on t_c

A = impervious surface drainage area (sq. mi.)

WQV = water quality volume in watershed inches

Proposed Water Quality Unit (PWQU-1)

t_c =	0.100	hrs	
qu =	774	csm/in	(from table)
A =	0.00103	sq. mi.*	
WQV =	1.0	inch **	

$Q_{1.0}$ = **0.80 c.f.s**

The Baracuda Max Model S4 provides treatment of flows up to 1.52 c.f.s.

* Only inlcudes impervious area tributary to PWQU-1

** Water quality depth shall equal 1-inch for discharges within a Zone II or Interim Wellhead Protection Area, to or near another critical area, runoff from a LUHPPL, or exfiltration to soils with infiltration rate greater than 2.4-inches/hour or greater; 1/2-inch for discharges near to to other areas

Figure 4: for First 1-inch Runoff, Table of qu values for Ia/P Curve = 0.034, listed by tc, for Type III Storm Distribution

Tc (Hours)	qu (csm/in)
0.01	835
0.03	835
0.05	831
0.067	814
0.083	795
0.1	774
0.116	755
0.133	736
0.15	717
0.167	700
0.183	685
0.2	669
0.217	654
0.233	641
0.25	628
0.3	593
0.333	572
0.35	563
0.4	536
0.416	528
0.5	491
0.583	460
0.6	454
0.667	433
0.7	424
0.8	398
0.9	376
1	356
1.1	339
1.2	323
1.3	309
1.4	296
1.5	285
1.6	274
1.7	264
1.8	255
1.9	247
2	239
2.1	232
2.2	225
2.3	219
2.4	213
2.5	207
2.6	202
2.7	197
2.8	192
2.9	187
3	183
3.1	179
3.2	175
3.3	171
3.4	168
3.5	164
3.6	161
3.7	158
3.8	155
3.9	152
4	149
4.1	146
4.2	144
4.3	141
4.4	139
4.5	137
4.6	134
4.7	132
4.8	130
4.9	128
5	126
5.1	124
5.2	122
5.3	120
5.4	119
5.5	117
5.6	115
5.7	114
5.8	112
5.9	111
6	109
6.1	108
6.2	106
6.3	105
6.4	104
6.5	102
6.6	101
6.7	100
6.8	99
6.9	98
7	96
7.1	95
7.2	94
7.3	93
7.4	92
7.5	91
7.6	90
7.7	89
7.8	88
7.9	87
8	86
8.1	85
8.2	84
8.3	84
8.4	83
8.5	82
8.6	81
8.7	80
8.8	79
8.9	79
9	78
9.1	77
9.2	76
9.3	76
9.4	75
9.5	74
9.6	74
9.7	73
9.8	72
9.9	72
10	71

TSS Removal Form - Surface Infiltration Basin

Pre-Treatment

BMP	TSS Removal Rate	Starting TSS Load	Amount Removed	Remaining Load
Deep-Sump Hooded Catch Basins	0.25	1.00	0.25	0.75
Proprietary Sedimentation Device	0.80	0.75	0.60	0.15

Pre-Treatment TSS Removal = 85%

Total Removal

BMP	TSS Removal Rate	Starting TSS Load	Amount Removed	Remaining Load
Deep-Sump Hooded Catch Basins	0.25	1.00	0.25	0.75
Propietary Sdimentation Device	0.80	0.75	0.60	0.15
Surface Infiltration Basin	0.80	0.15	0.12	0.03

Total TSS Removal = 97%

Drawdown Analysis

$$T_{DRAWDOWN} = \frac{R_V}{KA}$$

where: $T_{DRAWDOWN}$ = time in hours

R_V = required recharge volume **(cu. ft.)**

K = Rawls rate **8.27 inches/hour** (A-soils)**
0.52 inches/hour (B-soils)**
0.27 inches/hour (C-soils)**

A = bottom area of recharge facility **(sq. ft.)**

** Most conservative Rawls rate values for given soil type used for analysis purposes

Surface Infiltration Basin

R_V*= 2,221 cu. ft.
A = 1,847 sq. ft.

$T_{DRAWDOWN}$ = **1.7 hours** < **72 hours** **(A-soils)**

*Volume represents the available storage in the surface infiltration basin below orifice (El. 186.80')

Sediment Forebay Sizing - Surface Infiltration Basin

$$V_{SF}\ (\text{required}) = \frac{0.1\text{-inch}}{\text{Impervious Acre}}$$

where: V_{SF} (required) = required volume of the sediment forebay (cu. ft.)

Impervious Acre = 0.66 acres

V_{SF} (required) = 240 cu.ft.

V_{SF} (provided) = 333 cu. ft.

Barracuda® Max

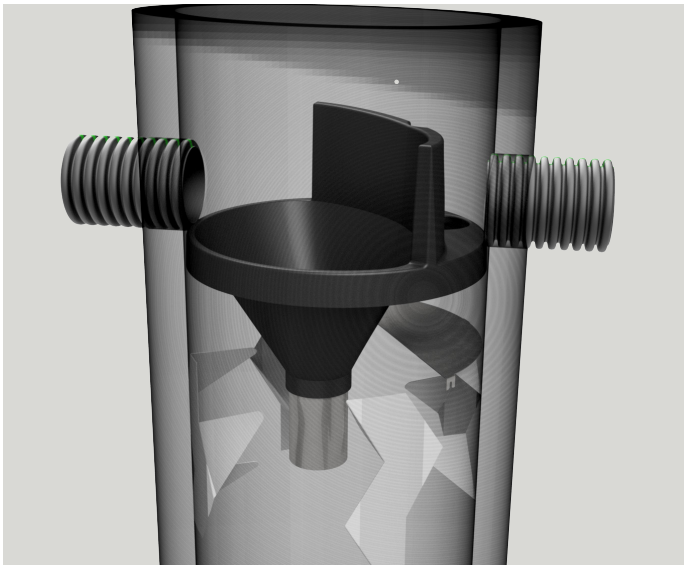
The Barracuda Max is market-changing stormwater quality technology. This high-performance vortex hydrodynamic separator is designed to remove total suspended solids in order to protect our precious receiving waters. The Barracuda Max is also an outstanding value that offers multiple pipe configurations, and quick installation. The “Max” version of the Barracuda is built on the base platform of the original ADS Barracuda with improved removal efficiencies and installation components.

Features

- Single manhole design
- No elevation loss between the inlet and outlet
- Variable inlet/outlet angle configurations (not just 180 degree orientation)
- Internal bypass for inline installation (where applicable)
- Revolutionary, patent pending “teeth” mitigate turbulence in the sump area to prevent resuspension of captured contaminants
- Available with grated drop inlet configuration
- Available with trash and/or oil capture add-ons

Benefits

- Internal components are in stock for quick delivery
- The S3, S4, S6, and S8 can be installed in a standard 36” (900 mm), 48” (1200 m), 72” (1800 m), and 96” (2400 m) precast manhole, respectively
- The S3 & S4 can be provided factory installed within a 36” (900 mm) and 48” (1200 mm) ADS HP manhole and delivered to the jobsite
- The Barracuda Max “teeth” and deflector plate apparatus are fabricated and designed for quick and easy field assembly
- Designed for easy maintenance using a vacuum truck or similar equipment.
- Inspection and maintenance are performed from the surface with no confined space entry





ADS™

Barrucuda Specification

Materials and Design

- Concrete Structures: Designed for H-20 traffic loading and applicable soil loads or as otherwise determined by a Licensed Professional Engineer. The materials and structural design of the devices shall be per ASTM C857 and ASTM C858.
- 36" (900 mm) and 48" (1200 mm) HP Manhole Structures: Made from an impact modified copolymer polypropylene meeting the material requirements of ASTM F2764. The eccentric cone reducer shall be manufactured from polyethylene material meeting ASTM D3350 cell class 213320C. Gaskets shall be made of material meeting the requirements of ASTM F477.
- Separator internals shall be substantially constructed of stainless steel, polyethylene or other thermoplastic material approved by the manufacturer.

Performance

- The stormwater treatment unit shall be an inline unit capable of conveying 100% of the design peak flow. If peak flow rates exceed maximum hydraulic rate, the unit shall be installed offline.
- The Barracuda Max unit shall be designed to remove at least 80% of the suspended solids on an annual aggregate removal basis. Said removal shall be based on full-scale third party testing using OK-110 media gradation or equivalent and 300 mg/L influent concentration. Said full scale testing shall have included sediment capture based on actual total mass collected by the stormwater treatment unit.

  - OR -

  The Barracuda Max unit shall be designed to remove at least 50% of TSS using a media mix with d_{50}=75 micron and 200 mg/L influent concentration.

  - OR -

  The Barracuda Max unit shall be designed to remove at least 50% of TSS per current NJDEP/NJCAT HDS protocol.
- The stormwater treatment unit internals shall consist of (1) separator cone assembly, and (1) sump assembly, which includes the "teeth".

Barracuda Max Model	Manhole Diameter	OK-110 (80% removal)	Pretreatment for Infiltration[1]
S3	36" (900 mm)	0.86 CFS (24.1 L/s)	1.65 CFS (46.7 L/s)
S4	48" (1200 mm)	1.52 CFS (43.0 L/s)	2.94 CFS (83.3 L/s)
S6	72" (1800 mm)	3.42 CFS (96.8 L/s)	6.62 CFS (187.5 L/s)
S8	96" (2400 mm)	6.08 CFS (172.2 L/s)	11.76 CFS (333.0 L/s)

* Peak bypass flows are dependent on final design

[1] 50% removal of OK-110.

Installation

Installation of the stormwater treatment unit(s) shall be performed per manufacturer's installation instructions. Such instructions can be obtained by calling Advanced Drainage Systems at 800-821-6710 or by logging on to www.adspipe.com.

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Barracuda® Max & Barracuda Maintenance Guide

One of Barracuda's advantages is the ease of maintenance. Like any system that collects pollutants, the Barracuda must be maintained for continued effectiveness. Maintenance is a simple procedure performed using a vacuum truck or similar equipment. The systems were designed to minimize the volume of water removed during routine maintenance, reducing disposal costs.

Contractors can access the pollutants stored in the manhole through the manhole cover. This allows them to gain vacuum hose access to the bottom of the manhole to remove sediment and trash. There is no confined space entry necessary for inspection or maintenance.

The entire maintenance procedure typically takes 2 to 4 hours, depending on the system's size, the captured material, and the vacuum truck's capacity.

Local regulations may apply to the maintenance procedure. Safe and legal disposal of pollutants is the responsibility of the maintenance contractor. Maintenance should be performed only by a qualified contractor.

Inspection and Cleaning Cycle

Periodic inspection is needed to determine the need for and frequency of maintenance. You should begin inspecting as soon as construction is complete and then on an annual basis. Typically, the system needs to be cleaned every 1-3 years.

Excessive oils, fuels or sediments may reduce the maintenance cycle. Periodic inspection is important.

Determining When to Clean

To determine the sediment depth, the maintenance contractor should lower a stadia rod into the manhole until it contacts the top of the captured sediment and mark that spot on the rod. Then push the probe through to the bottom of the sump and mark that spot to determine sediment depth.

Maintenance should occur when the sediment has reached the levels indicated in the Storage Capacity Chart.

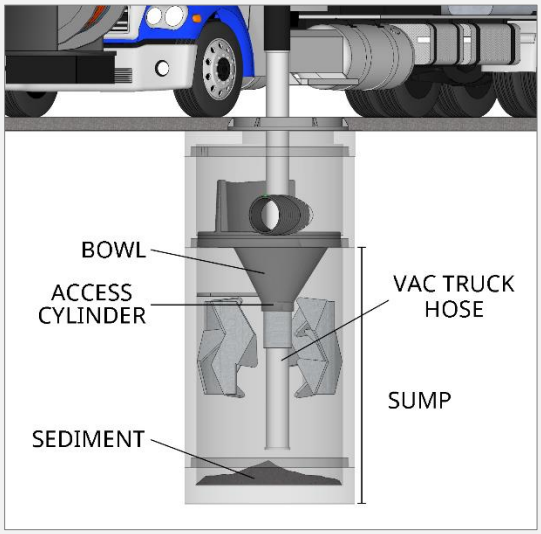
Barracuda Storage Capacities

Model	Manhole Diameter in. (mm)	Total System Volume Gallons (Liters)	Treatment Chamber Capacity Gallons (Liters)	Standard Sediment Capacity (20" depth) Yards^3 (meters^3)	NJDEP Sediment Capacity (50% of standard depth) Yards^3 (meters^3)
S3	36 (900)	264 (999)	212 (803)	0.44 (0.34)	0.22 (0.17)
S4	48 (1200)	665 (2517)	564 (2135)	0.78 (0.60)	0.39 (0.30)
S6	72 (1800)	1497 (5667)	1269 (4804)	1.75 (1.34)	0.88 (0.67)
S8	96 (2400)	4196 (15884)	3835 (14517)	3.10 (2.37)	1.55 (1.19)

Maintenance Instructions

1. Remove the manhole cover to provide access to the pollutant storage. Pollutants are stored in the sump, below the bowl assembly visible from the surface. Access this area through the 8" (200 mm), 10" (250 mm), 15" (375 mm) or 20" (500 mm) diameter access cylinder.
2. Use a vacuum truck or other similar equipment to remove all water, debris, oils and sediment. See figure 1.
3. Use a high pressure hose to clean the manhole of all the remaining sediment and debris. Then, use the vacuum truck to remove the water.
4. Fill the cleaned manhole with water until the level reaches the invert of the outlet pipe.
5. Replace the manhole cover.
6. Dispose of the polluted water, oils, sediment and trash at an approved facility.
   a. Local regulations prohibit the discharge of solid material into the sanitary system. Check with the local sewer authority for authority to discharge the liquid.
   b. Some localities treat the pollutants as leachate. Check with local regulators about disposal requirements.
   c. Additional local regulations may apply to the maintenance procedure.

Figure 1



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Appendix F: Construction Period Erosion Control Plan

Construction Period Erosion Control Plan

Proposed Building Addition

223 Garden Street
Agawam, MA
(Parcel ID: G8-2-3)

Owner/Applicant:

MBNZ Holding Co.
c/o Nasser Zebian
223 Garden Street
Agawam, MA 01030

RLA Project File: 250214

June 25, 2025

R LEVESQUE ASSOCIATES, INC
A LAND PLANNING SERVICES COMPANY
40 School Street · Westfield, MA 01085
p 413.568.0985 · f 413.568.0986 · www.rlaland.com

The project shall implement a construction period erosion control plan. The following provides descriptions and guidelines to ensure that the areas surrounding the project site will be protected from excessive sedimentation and runoff during construction.

1.1 Construction Period Pollution Prevention And Erosion Control Measures

1.1.1 Preconstruction Notifications And Meetings

Prior to the start of construction, the contractor shall call together a pre-construction meeting including a representative from the City, the design engineer, contractor, and any pertinent persons that should be in attendance. These requirements shall be the responsibility of the Contractor to arrange, attend, and document.

1.1.2 Sediment Barrier And Work Limit

Before installation of the sediment barriers, the location shall be staked in the field for review and approval by the owner or their representative. To facilitate sediment barrier installation, woody vegetation may then be removed and any required trench may be cut by machine, provided all other ground cover is left intact. No excavation, grading, filling, or removal of vegetative ground cover shall begin until sediment barriers have been installed as shown on the plans and have been inspected by the owner or their representative.

1.1.3 Silt Fence

The bottom of the fence shall be trenched into the ground a minimum of 6" and back-filled with compacted soil. Where trenching is not feasible, silt fence skirt shall be covered with compacted soil or crushed stone. The top of the fabric shall be stretched as tightly as is practical, with intermediate stakes added to correct excessive sags. Stakes shall be driven at least 12" into the ground. Splices between sections shall be made by rolling end stakes together one complete turn and driving into the ground together.

1.1.4 Straw Bales

Straw bales may be used as temporary and moveable control measures, temporary check dams, or as reinforcement for silt fence in areas of concentrated runoff or high fills. Bales shall be tightly butted and staked 12" into the ground. Where used without silt fence in front, the bales shall be trenched 4" into the ground, back-filled with compacted soil, and the spaces between bales shall be chinked with loose straw.

1.1.5 Filter Sock (Filtrexx Or Equivalent)

In areas of expected sheet flow, filter sock may be placed directly on the ground without trenching or stakes. In areas of expected concentrated flow, mulch or crushed stone shall be placed along the up-slope face to control and filter underflow. Additional layers of Filter Sock may be required for adequate freeboard. The filter sock shall be staked at 10 feet on-center or in cases where they cannot be staked, utilize heavy concrete blocks to hold in place.

1.1.6 Temporary Sedimentation Basins

Temporary sediment basins may be excavations or bermed stormwater detention structures (depending on grading) that will retain runoff for a sufficient period of time to allow suspended soil particles to settle out prior to discharge. These temporary basins will be located based on construction needs as determined by the contractor and outlet devices will be designed to control velocity and sediment. Points of discharge from sediment basins will be stabilized to minimize erosion. If the temporary basin is to be located within an area of future infiltration as part of the stormwater management system, the excavation for the temporary sedimentation basin shall be limited to one foot above final grade of the infiltration structure.

1.1.7 Stocking Additional Materials

A stock of additional erosion control materials shall be available on the site for emergency repairs and temporary measures. Stock shall be replenished when decreased to 50% of the numbers below. Stock shall include:

Straw Bales – 10 (kept dry) with 20 oak stakes

Or

Silt Fence – 30 Linear feet.

Or

Filter Sock – 4 – 8 foot sections (kept dry)

Washed Stone – One (1) cubic yard, ¾" to 2" diameter

1.1.8 Trench Protection

Open trenches shall be protected from accumulation of surface water or groundwater that could result in erosion of the trench and discharge of sediment. Where feasible, spoil shall be stockpiled on the up-slope side of the trench to prevent entrance of surface runoff. Backfill shall be crowned to allow for settlement and to avoid concentration of runoff on top of the trench.

1.1.9 Site Stabilization – Temporary

Where a portion of the site will not be subject to construction activity for over 14 days, measures shall be taken to provide temporary stabilization of that inactive portion of the site, within 14 days of the cessation of construction activity. Stabilization measures may include seeding for temporary cover, mulching, or other measures to protect exposed soil from erosion and prevent sediment movement.

1.1.10 Site Stabilization – Permanent

Within 14 days of completion of loaming and finish grading on any portion of the site, that area shall be seeded or planted for permanent cover (season permitting) in accordance with USDA NRCS guidelines or equivalent.

1.1.11 Roadway Sweeping

The entrance to the site and affected portions of the access drive or paved project areas shall be swept as needed to control sediment runoff into storm drains or waterways and to control blowing dust.

1.2 Short-Term Erosion Control Maintenance

The following provides short-term erosion control maintenance guidelines and requirements.

1. The contractor or subcontractor will be responsible for implementing each control shown on the sedimentation and erosion control plan.
2. All erosion and sediment control devices shall be properly maintained during all phases of construction until the completion of all construction activities and all disturbed areas have been stabilized. Additional control measures will be installed during construction in order to control erosion and/or off-site sedimentation if deemed necessary by on-site inspection.
3. Effective erosion control measures shall be initiated prior to the commencement of clearing, grading, excavation, or other operations that will disturb the natural protection.
4. All sediment and erosion control devices shall be inspected at least once every seven (7) calendar days and after any storm event greater than 0.5 inches of precipitation during any 24-hour period, and the inspection shall be documented in writing. Damaged or ineffective devices shall be repaired or replaced, as necessary.
5. The contractor shall take all reasonable precautions to avoid excess erosion of the site due to the construction of this project.
6. Silt shall be removed from behind barriers if greater than 6-inches deep or as needed. Sediment that is collected in structures shall be disposed of properly and covered if stored on-site
7. Damaged or deteriorated items will be repaired immediately after identification.
8. All ditches shall be stabilized as soon as is practicable to minimize erosion.
9. The contractor shall maintain all erosion control devices in a good, working state of repair. Upon complete stabilization of any tributary areas, the erosion control devices shall be removed and disposed of so as to cause no off-site siltation.
10. Inspect and maintain construction entrance stone such that sediment does not track onto the street. Any sediment tracked onto the street shall be swept daily.
11. After catch basins have been constructed, the contractor shall protect the inlets by constructing inlet protection as shown on the plans.
12. Once the site has been paved, all catch basin inlets shall receive a silt sack type protection.

13. Erosion control measures shall remain in place until all disturbed earth has been substantially stabilized. After removal of structures, disturbed areas shall be regraded and stabilized as necessary.

Appendix G: Long-Term Operation and Maintenance Plan

- Long-Term Operation & Maintenance Plan Narrative
- Barracuda Concrete Installation Guide
- Barracuda Max Maintenance Guide
- O&M Checklist

Long-Term Operation & Maintenance Plan

Proposed Building Addition

223 Garden Street
Agawam, MA
(Parcel ID: G8-2-3)

Owner/Applicant:

MBNZ Holding Co.
c/o Nasser Zebian
223 Garden Street
Agawam, MA 01030

RLA Project File: 250214

June 25, 2025

R LEVESQUE ASSOCIATES, INC
A LAND PLANNING SERVICES COMPANY
40 School Street · Westfield, MA 01085
p 413.568.0985 · f 413.568.0986 · www.rlaland.com

I. Long-Term Stormwater Maintenance Program:

This Long-Term Operation and Maintenance Plan (O&M) identifies inspection and maintenance requirements for the proposed stormwater management system. The O&M references guidelines set forth by the Stormwater Management Handbook developed by the Massachusetts Department of Environmental Protection.

Owner/Responsible Party*:

MBNZ Holding Co.
c/o Nasser Zebian
223 Garden Street
Agawam, MA 01030

*The party listed shall be responsible for implementation and record keeping of the requirements listed in this operation and maintenance plan. Upon sale of property or any other transition of ownership, the responsible party shall be reinstated as the new owner or any other group created as determined by the owner.

Signature of Responsible Party Representative

Date

2. Inspection and Maintenance Program:

Regular inspection and routine maintenance are necessary to ensure that the stormwater management system continues to control and treat runoff. The following lists the inspection schedule and maintenance procedures for the proposed stormwater Best Management Practices:

BMP	Inspection Schedule	Maintenance Schedule	Maintenance Procedures
Bituminous Concrete Pavement	Four times per year	Twice per year	• Roadway to be swept in March or April following snow melt and again in late November or early December to remove fallen leaves and debris
Deep-Sump Catch Basins	Four times per year	Four times per year	• Remove sediment once deposits reach one half the depth from the bottom sump to the lowest invert
Stormwater Piping	Once per year	Once per year	• Inspect pipe entrances in catch basins and manholes and remove any blockages
Water Quality Unit*	As specified by the manufacturer	As specified by the manufacturer	• Clean the unit using the method specified by the manufacturer. Vactor trucks are typically used to clean these units
Surface Infiltration Basin	After every major storm for the first three months. Twice per year thereafter.	Twice per year	• Check for signs of differential settlement, cracking, erosion, leakage in the embankments, tree growth, riprap condition, sediment accumulation, and health of the turf • Mow side slopes and basin bottom and remove clippings • Remove accumulated trash and debris
Sediment Forebay	Monthly	Four times per year	• Remove sediment when it reaches one foot • Mow the grass to no less than 3 inches and no greater than 6 inches • Replace vegetation damaged during sediment removal
Flared End Section	Four times per year	As Needed	• Remove any debris or vegetation around the flared end section such that flow out of the structure is not impeded
Roof Leaders	Once per year	Once per year	• Inspect downspout connections at grade and remove any blockages. • Open and inspect cleanout locations and remove any blockages.

*See attached Device Operation and Maintenance Guides

See the attached Long-Term O&M Inspection Checklist for record keeping purposes.

3. Additional Long-Term Operation and Maintenance Items

The following is a list of additional operation and maintenance items to be implemented by the owner/governing group to maintain the features proposed in this project.

A. Proper storage, use, and disposal of hazardous chemicals, including automobile fluids, pesticides, paints, solvents, etc. shall be required. Information should be provided on chemicals of concern, proper use, and disposal options. Recycling programs for used motor oil, antifreeze, and other products should be developed.

B. Vehicle Washing. This management measure involves educating the owner on the water quality impacts of the outdoor washing of vehicles and how to avoid allowing polluted runoff to enter the storm drain system. Outdoor vehicle washing has the potential to result in high loads of nutrients, metals, and hydrocarbons which is conveyed by the detergent-rich water into storm drains.

C. Recycling, spill prevention and response plans, and proper material storage and disposal of potentially hazardous materials shall be implemented. It will be the responsibility of the owner to contain and legally remove any materials that are spilled onsite. The use of dry floor cleaners and absorbent materials and limiting the use of water to clean pavement is encouraged. Care should be taken to avoid accidental disposal of hazardous materials.

D. Provisions for storing trash and waste products shall be implemented. The waste materials shall be collected by the owner and all materials shall be properly disposed of.

E. Requirements for routine inspections and maintenance of stormwater best management practices. Routine inspections shall be performed to ensure the correct functioning of stormwater best management practices. See the specific maintenance criteria for detail regarding inspections and maintenance frequency.

F. Requirements for Storage and Use of Fertilizers, Herbicides, and Pesticides. Fertilizers, pesticides, herbicides, lawn care chemicals, or other leachable materials shall be used in accordance with the Lawn Care Regulations of the Massachusetts Pesticide Board, 33 CMR 10.03 (30,31), as amended, with manufacturer's label instructions and all other necessary precautions to minimize adverse impacts on surface and groundwater. The storage of any such materials shall be within structures designed to prevent the escape of contaminated runoff or leachate.

G. Provisions for prevention of illicit discharges to the stormwater management system shall be implemented. Any illicit discharges to the stormwater management system shall be prohibited. It will be the owner's responsibility to ensure compliance with the legal disposal of all materials and containment/cleanup of any illicit discharges.

H. Training for staff or personnel involved with implementation of the Long-Term Pollution Prevention Plan shall be required. The owner/governing group will be responsible for the implementation of the measures set forth in the Long-Term Pollution Prevention Plan. Documentation that personnel and owners involved with the implementation of the Long-Term Pollution Prevention Plan have been trained to conduct such tasks shall be documented.

4. Winter and Snow Conditions

The following is a list of additional operation and maintenance items to be implemented by the owner during winter and snow conditions.

A. Snowfall shall be stored on the grassed areas surrounding the pavement areas, excluding any areas utilized for stormwater management practices. As needed, any snow that cannot be stored on site shall be trucked off site and disposed of properly.

B. Winter road salt and/or sand use and storage restrictions shall be implemented based on any restrictions issued for the project. Sodium chloride for ice control shall be used at the minimum salt to sand ratio which is consistent with the Massachusetts Department of Environmental Protections guidelines. Sodium chloride, calcium chloride, chemically treated abrasives or other chemicals used for the removal of ice and snow on roads/drives shall not be stored on site.

5. Public Safety Features

The proposed site design utilizes the following features which have been incorporated to ensure the safety of the public:

A. Control and collection of stormwater runoff through positive drainage and curbing directing it towards the drainage inlets;

B. Heavy-duty stormwater drain manhole covers and catch basin grates have been designed to withstand H20 loading;

C. Reduction of peak discharge rates from the site in the post-development condition as compared to the pre-developed conditions;

D. Development and implementation of an Operations & Maintenance Plan to ensure the stormwater management system continues to function as designed.

6. Estimated Cost of Maintenance

The following budget was prepared as an estimate of inspection and maintenance costs for the stormwater management system. The budget is an estimate only as the costs may vary depending on the level of sediment accumulation and frequency of maintenance tasks required.

BMP Inspections	Number of Occurrences	Inspection Cost*	Number of Structures	Sum*
Catch Basin	4/year	$50	1	$200
Water Quality Unit	2/year	$100	1	$200
Sediment Forebay	2/year	$50	1	$100
Surface Infiltration Basin	2/year	$100	1	$200
Total Estimated Annual Cost of Inspections				$700

BMP Maintenance	Number of Occurrences	Maintenance Cost*	Number of Structures	Sum*
Catch Basin	4/year	$100	1	$400
Water Quality Unit	2/year	$500	1	$1,000
Sediment Forebay	4/year	$300	1	$1,200
Surface Infiltration Basin	2/year	$300	1	$600
Total Estimated Annual Cost of Maintenance				$3,200

*All above costs are estimates to be used for permitting purposes only. Actual maintenance costs are to be ascertained by the responsible party.

ADS® Barracuda® Concrete

Installation Guide

ADS Barracuda Max & Barracuda S4, S6, S8 Concrete Installation Guide

This installation guide is reference for installing the Barracuda Max S4, S6, S8 Water Quality Units into a precast concrete structure in the field.



(1) Deflector Plate



(1) Center Funnel Extender



(2) A/C Stainless Steel Tooth Set



(2) B/D Stainless Steel Tooth Set



(1) Barracuda Max Plastic Funnel

S4	 (4) Stainless Steel Funnel Mounting Flanges	 (1) Roll of Conseal®	 (16) Concrete Anchor ¼ x 2¼”
S6	 (4) Stainless Steel Funnel Mounting Flanges	 (3) Roll of Conseal®	 (16) Concrete Anchor ¼ x 2¼”
S8	 (8) Stainless Steel Funnel Mounting Flanges	 (4) Roll of Conseal®	 (22) Concrete Anchor ¼ x 2¼”

Please check that all components are on site. Below is a list of tools that may be required for installation.

- □ 1/4” Diameter Carbide Tipped Concrete Bit
- □ Standard Electrical or Battery Operated Drill
- □ Adjustable Wrench
- □ Marker for writing on the concrete wall
- □ Hammer Drill for Concrete (Fits the 1/4” Diameter Concrete Drill Bit)
- □ 7/16” Driver or deep socket for installation of provided ¼” Concrete Wedge Anchors
- □ Hammer
- □ Level
- □ Ladder that will extend to bottom of the structure
- □ Safety Glasses
- □ Hard Hat
- □ Protective Gloves
- □ Site Drawings
- □ ADS Design Layout

Installation Instructions (These directions assume the manhole base and riser have been assembled, but that the top slab/cone has not been set).

*Do not insert the inlet or outlet pipes until after the Barracuda Max internals have been installed. If pipes must be inserted in advance, the pipes should not protrude into the structure as they will interfere with installation of the bowl.

1. Install mounting flanges for the Barracuda Max plastic funnel. These flanges need to be installed at the same height, as indicated by model in Table 1. For example, the anchor holes for S4 flanges should be drilled 77" (1925 mm) from the sump floor. S4 and S6 models have four flanges and they need to be evenly spaced at 12, 3, 6, and 9 o'clock positions. S8 funnels require eight flanges that also need to be evenly spaced (i.e., forty-five degrees on a circle) around the inside of the manhole. This flange points are typically located in the third manhole section from the sump and also contain the pipe openings for the Barracuda Max unit. Use the same anchor procedure as you will when mounting the teeth (see step #4 below), using the ¼" (6.25 mm) concrete drill bit to drill 1¼" (31.25 mm) deep holes. Do not over drill the depth of the anchors. Lightly hammer the anchors in place and use locking nuts to firmly secure the flanges (Figure 1).
2. Next, mount the four sets of teeth vertically inside the manhole sump. Using the engineer's plans or the ADS layout, determine the correct orientation for the plastic funnel outlet hole in relation to the outlet pipe (Figures 2 and 5). The first set of teeth (marked as "A" on the teeth part) will be mounted under the center of the outlet hole from the Bowl. Mark that location with a plumb vertical line, this will serve as the "12 o' clock" landmark in the manhole (Figure 3). Repeat this process to mark lines at the 3, 6, and 9 o' clock positions for a total of four.
3. Each kit includes four sets of teeth. Two of these sets are stamped with the letters A and C. The other two sets are stamped B and D. The ADS shop drawing layout will label the teeth letters and all designs will be the A/B configuration (Figure 5). You will install each set of teeth in the correct location, with the indicated letter facing up (Figure 4). See Table 1 for the correct elevation for the top anchor location of each tooth set, measured from the sump floor for each Barracuda Max Unit. The teeth anchors are all at the same elevation. For example, for an S4 Barracuda the top anchor of an A or B indicated set of teeth will be 60" (1500 mm) off the sump floor. Mark the top anchor elevations on each of your four vertical lines (Figure 3), noting that A and B sets of teeth will be at the same height.



Figure 1



Figure 2



Figure 3

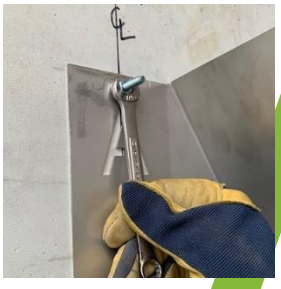
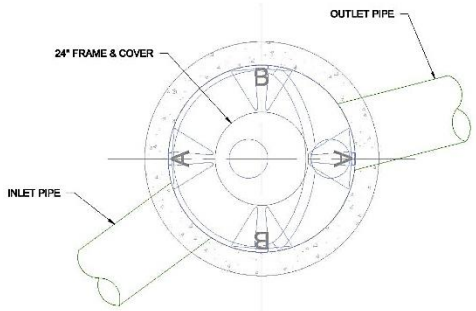


Figure 5

Figure 4



4. To fasten the sets of the teeth to the manhole, use the ¼" concrete drill bit and drill holes approximately 1¼" (31.25 mm) deep at your marked top anchor locations. Do not over drill into the concrete wall. Using a hammer, lightly tap the concrete anchors into the drilled holes (Figure 4). Hang the tooth set on the top anchor with the correct letter facing up and use a locking nut to loosely secure the tooth set to the wall (do not fully tighten the locking nut at this point). With the set of teeth hanging from the top anchor, line up and mark the bottom anchor location and drill the hole. Then hammer the bottom anchor in place and secure the teeth with a lock nut. Use an adjustable or socket wrench to tighten all the top and bottom locking nuts, except for the top nut on the outlet set of teeth (see step #5 below for the deflector plate installation, which will share the top anchor post), so that the teeth are firmly secured to the wall.
5. To attach the deflector plate to the concrete manhole you will use the exit tooth's top concrete anchor and share that linking point with the center tab of the deflector plate. Place the center tab of the deflector plate over the anchor bolt "post" on the outlet set of teeth and hand tighten the nut. Ideally, the plate will be held in place by this center point. Mark the location of the additional mounting tabs for the deflector plate while holding the plate relatively level. All deflector plate concrete anchors will be at the same elevation as the top tooth linking points and the anchors will be installed like the description in step #4. Once the two outer deflector plate linking points have been located, the installer can draw a vertical line and measure the exact location corresponding to the "high" teeth anchoring elevation. Once the deflector plate concrete anchors are installed tighten the nuts to complete the fastening of the deflector plate to the wall of the structure. See Figure 6 to show this more clearly.
6. Lower the plastic funnel into the structure (Figure 7), orienting the weir and outlet hole as depicted in the ADS layout (as identified in step 1). S6 and S8 units have eyebolts threaded holes on the top of the funnel to assist in lifting, and the eyebolts are provided in the equipment kit. If the eyebolts are misplaced, S6 units have ⅜" (9 mm) -16 threads and S8 units utilize ½" (12 mm) -13 threads. After the bowl is in place, install the center funnel extender through the hole and seat it until the tabs of the extender touch the bowl itself (Figure 8). This is a friction-based attachment and no fasteners are needed.
7. Next, you'll use Conseal to fill any gaps around the funnel. S6 and S8 units are provided with a metal funnel plug. This plug is placed in the funnel opening for worker safety and must be utilized ANYTIME SOMEONE ENTERS THE STRUCTURE. Unroll the Conseal and wedge it between the funnel and manhole to create a seal (Figure 9). Conseal should also be used to seal between the vertical edges of the weir wall and the manhole. The plastic funnel can expand with high temperature. Install the funnel during cooler parts of the day, or keep the funnel shaded until installation can mitigate fitment issues. Once the Conseal is installed, the internal component installation is complete. The funnel plug may be discarded (if applicable), and the top slab can be set. If the application calls for a grated inlet, orient the slab so the grate is above the inlet (large bowl) side of the plastic funnel.

For maintenance details, please refer to the Barracuda Max Maintenance Manual. If the application requires a trash rack or oil boom, reference the appropriate supplementary installation instructions.



Figure 6



Figure 7



Figure 8

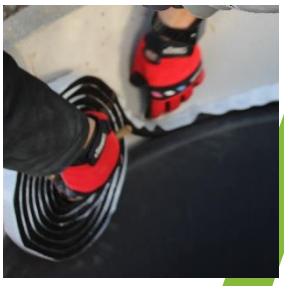


Figure 9

Table 1

	S4	S6	S8
Top Anchor Elevation from Sump Floor (A and B tooth indication)	60” (1270 mm)	68” (1475 mm)	90” (1880 mm)
Funnel Flange Anchor Elevation from Sump Floor	77” (1960 mm)	77” (1960 mm)	127” (3220 mm)

Note: Distances can be +/- 1-2 inches (25-50 mm) from these locations for the A, and B teeth, but flange elevations should be adhered to as much as possible and can only be lowered a maximum of 1 inch (25 mm) from these values listed above.
This guide is intended for field installations of Barracuda Max S4, S6, and S8 water quality units into precast manholes. For pre-casters installing internal components prior to job site delivery, contact ADS for possible modifications to component elevations.

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Barracuda® Max & Barracuda Maintenance Guide

One of Barracuda's advantages is the ease of maintenance. Like any system that collects pollutants, the Barracuda must be maintained for continued effectiveness. Maintenance is a simple procedure performed using a vacuum truck or similar equipment. The systems were designed to minimize the volume of water removed during routine maintenance, reducing disposal costs.

Contractors can access the pollutants stored in the manhole through the manhole cover. This allows them to gain vacuum hose access to the bottom of the manhole to remove sediment and trash. There is no confined space entry necessary for inspection or maintenance.

The entire maintenance procedure typically takes 2 to 4 hours, depending on the system's size, the captured material, and the vacuum truck's capacity.

Local regulations may apply to the maintenance procedure. Safe and legal disposal of pollutants is the responsibility of the maintenance contractor. Maintenance should be performed only by a qualified contractor.

Inspection and Cleaning Cycle

Periodic inspection is needed to determine the need for and frequency of maintenance. You should begin inspecting as soon as construction is complete and then on an annual basis. Typically, the system needs to be cleaned every 1-3 years.

Excessive oils, fuels or sediments may reduce the maintenance cycle. Periodic inspection is important.

Determining When to Clean

To determine the sediment depth, the maintenance contractor should lower a stadia rod into the manhole until it contacts the top of the captured sediment and mark that spot on the rod. Then push the probe through to the bottom of the sump and mark that spot to determine sediment depth.

Maintenance should occur when the sediment has reached the levels indicated in the Storage Capacity Chart.

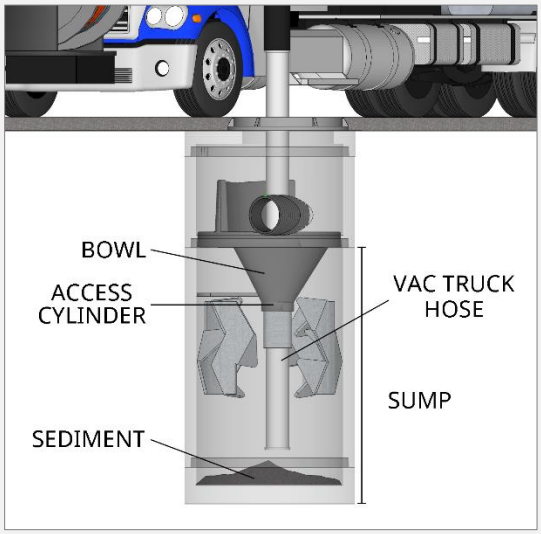
Barracuda Storage Capacities

Model	Manhole Diameter in. (mm)	Total System Volume Gallons (Liters)	Treatment Chamber Capacity Gallons (Liters)	Standard Sediment Capacity (20" depth) Yards^3 (meters^3)	NJDEP Sediment Capacity (50% of standard depth) Yards^3 (meters^3)
S3	36 (900)	264 (999)	212 (803)	0.44 (0.34)	0.22 (0.17)
S4	48 (1200)	665 (2517)	564 (2135)	0.78 (0.60)	0.39 (0.30)
S6	72 (1800)	1497 (5667)	1269 (4804)	1.75 (1.34)	0.88 (0.67)
S8	96 (2400)	4196 (15884)	3835 (14517)	3.10 (2.37)	1.55 (1.19)

Maintenance Instructions

1. Remove the manhole cover to provide access to the pollutant storage. Pollutants are stored in the sump, below the bowl assembly visible from the surface. Access this area through the 8" (200 mm), 10" (250 mm), 15" (375 mm) or 20" (500 mm) diameter access cylinder.
2. Use a vacuum truck or other similar equipment to remove all water, debris, oils and sediment. See figure 1.
3. Use a high pressure hose to clean the manhole of all the remaining sediment and debris. Then, use the vacuum truck to remove the water.
4. Fill the cleaned manhole with water until the level reaches the invert of the outlet pipe.
5. Replace the manhole cover.
6. Dispose of the polluted water, oils, sediment and trash at an approved facility.
    a. Local regulations prohibit the discharge of solid material into the sanitary system. Check with the local sewer authority for authority to discharge the liquid.
    b. Some localities treat the pollutants as leachate. Check with local regulators about disposal requirements.
    c. Additional local regulations may apply to the maintenance procedure.

Figure 1



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Project: Proposed Building Addition

Address: 223 Garden Street, Agawam, MA

BPM Name:

Responsible Party:

Date:

Page: 1 of 1

Operation & Maintenance Inspection Checklist

BMP Element:	Potential Problem:	Resolution:	Pass	Fail	Recommended Remediation
Bituminous Concrete Roadway	Build-up of sediment over the winter months and collection of leaves during the fall months.	Sweep roadway using a high-efficiency street sweeper.			
Deep-Sump Catch Basins	Sediment has accumulated to a depth greater than the original design depth for sediment storage, approximately 2-feet of sediment.	Remove the sediment and dispose of in accordance with local and state regulations.			
Stormwater Piping	Blockage of inlet/outlet pipes due to debris or sediment accumulation.	Remove any debris and sediment via proper means. Dispose of debris/sediment in accordance with local & state regulations			
Flared End Sections	Vegetation has started to grow within the riprap area.	Remove vegetation immediately.			
	Accumulation of sediment/debris at the culvert inlet.	Remove sediment or debris such that the culvert has free flow.			
	Erosion is occuring where riprap has been dislodged.	Remedy scoured area and replace riprap immediately.			
Surface Infiltration Basin	Standing water inside basin.	Verify that sediment is not entering the basin. Remove collected sediment and scour basin bottom. Replace damaged vegetation			
	Erosion is occuring on the side slope or around the flared end section.	Remedy scoured area and replace vegetation.			
	Trees/Shrubs are starting to grow within the basin.	Remove trees/shrubs and vegetate with grass.			
	Debris has collected inside the basin.	Remove debris and remedy any damage caused.			
Sediment Forebay	Excessive sediment accumulation.	Remove sediment and debris.			
	Erosion is occurring on the side slope or around the flared end section.	Remedy scoured area and/or replace riprap immediately.			
	Debris has collected inside the basin.	Remove debris and remedy any damage caused.			
	Sediment has accumulated to 6" or above.	Remove the sediment and re-establish the sediment forebay with vegetation to the original bottom elevation			
Water Quality Units	Sediment has accumulated to a depth greater that the original design depth for sediment storage.	Remove sediment and disposed of in accordance with local and state regulations.			

Inspector's Signature

Date

Appendix H: Illicit Discharge Compliance Statement

Illicit Discharge Compliance Statement

The owners of the land/responsible party will be responsible for prohibiting illicit discharges to the stormwater management system during construction and during its life of operation. The stormwater management system is comprised of the components for conveying, treating, and infiltrating stormwater runoff on-site, including stormwater best management practices and any pipes intended to transport stormwater to the groundwater, a surface water, or municipal separate storm sewer system. An illicit discharge shall constitute any connection or discharge to the stormwater management system including, but not limited to, wastewater discharges, discharge of stormwater contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease.

Responsible Party*:
MBNZ Holding Co.
c/o Nasser Zebian
223 Garden Street
Agawam, MA 01030

*The party listed shall be responsible for implementation and record keeping of the requirements listed in this operation and maintenance plan. Upon sale of property or any other transition of ownership, the responsible party shall be reinstated as the new owner or any other group created as determined by the owner.

_____ _____

Signature of Responsible Party Representative Date

Appendix I: Low Impact Development Considerations

Low Impact Development Considerations

Proposed Building Addition

223 Garden Street
Agawam, MA
(Parcel ID: G8-2-3)

Owner/Applicant:

MBNZ Holding Co.
c/o Nasser Zebian
223 Garden Street
Agawam, MA 01030

RLA Project File: 250214

June 25, 2025

R LEVESQUE ASSOCIATES, INC
A LAND PLANNING SERVICES COMPANY
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Introduction

Per the Massachusetts Stormwater Handbook, project proponents must consider environmentally sensitive site design and low impact development techniques to effectively manage stormwater. As a part of the proposed project, the proponent has considered a number of environmentally sensitive, low impact development techniques to prevent the generation of stormwater and non-point source pollution.

The following is a detailed description of the considerations for each low impact development measure. For ease of review, RLA has provided the consideration of each measure as detailed in the Massachusetts Stormwater Report Checklist.

Low Impact Development (Lid) Measures

1. Environmentally Sensitive Project Approach
   The applicant is proposing to improve the existing property by constructing a building addition and stormwater management system to mitigate the impacts of the proposed project and to bring previously constructed site expansion into compliance with stormwater management regulations. All work is proposed within historically cleared and developed areas and will provide an improvement over existing conditions.

2. No disturbance to any Wetland Resource Areas
   No wetland resource areas are located within or adjacent to the property therefore no disturbance is proposed to wetland resource areas.

3. Site Design Practices (e.g. clustered development, reduced frontage setbacks)
   This LID is not applicable for this project. The proposed project does not include any changes to existing property lines therefore no cluster or reduced frontage options are available.

4. Reduced Impervious Area (Redevelopment Only)
   The proposed project is not part of a redevelopment project. Impervious areas have been reduced to functional minimums required for applicant needs and town requirements.

5. Minimizing disturbance to existing trees and shrubs
   The proposed site improvements have been designed within the historically developed and cleared portions of the property. The existing tree line will not be disturbed as part of the proposed site improvements and any disturbed landscaped area will be restored.

6. LID Site Design Credit Requested
   No LID Site Design Credit is requested for the proposed project.

7. Use of "country drainage" versus curb and gutter conveyance and pipe
   Country drainage conveyance requires a larger footprint than curb and gutter conveyance and creates areas with undulating terrain. Due to pre-existing constraints and limitations of the project site, country drainage was not utilized.

8. Bioretention Cells (includes Rain Gardens)
   Due to stormwater burdens from the 100-year storm event, a surface infiltration basin was determined to be the only BMP capable of meeting required town regulations.

9. Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
   Constructed stormwater wetlands require very specific design scenarios such as large tributary areas and high groundwater conditions to support wetland characteristics among others. The sub-catchment drainage area and the on-site soil conditions for this project site is not large enough to incorporate a constructed stormwater wetland.

10. Treebox Filter
    The extensive costs associated with treebox filters, along with the climatic conditions of the area over the winter, present unique circumstances that would only provide a maintenance problem and a potential hazard for the owner. Additionally, the proposed stormwater management system is a substantial improvement over existing conditions providing water quality treatment and groundwater recharge that currently do no exist. Treebox filters were not selected as a viable option to incorporate as a stormwater BMP.

11. Water Quality Swale
    Water quality swales are best management practices that require a greater footprint of development in order to facilitate the grading of the swale. Due to the limited available developable area within the historically developed portions of the site, water quality swales were not utilized.

12. Grass Channel
    Grassed channels are best management practices that require a greater footprint of development in order to facilitate the grading of the swale. Due to the limited available developable area within the historically developed portions of the site, grass channels were not utilized.

13. Green Roof
    Based on project size and scope, green roofs were not selected as a cost-effective BMP for this project.

14. Other
    Please see the Stormwater Report for more information.

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April 29, 2026

Via email: TEgerton@agawam.ma.us

Violet Baldwin, Chairperson
Town of Agawam Planning Board
36 Main Street
Agawam, Massachusetts 01001

RE: Response to Department Review Comments
223 Garden Street
Feeding Hills, Massachusetts 01030
(Parcel ID: G8-2-3)
RLA Project File No. 250214

Dear Chairperson Baldwin and Board Members:

On behalf of the applicant and property owner, MBNZ Holding Co. c/o Mr. Nasser Zebian, R Levesque Associates, Inc. is providing this response letter to departmental review comments issued for the above-referenced project. The review comment is presented below in *italic text*, followed by an RLA Response presented below in blue, boldface text. The comment number and format are consistent with the original document for ease of review.

Engineering Department

1. *Since there are forty-three (43) spaces proposes for the project site, two (2) accessible parking spaces will be required, as per ADA regulations.*

   RLA Response: An additional accessible space has been added near the building entrance adjacent to the striped access aisle.

2. *Engineering requests clarification as to how the parking spaces proposed within the gravel area will be delineated. If more of the gravel area is utilized for parking than is shown on the site plans, that could increase the total number of parking spaces on the property to more than fifty (5), triggering the necessity of another accessible space (total of 3).*

   RLA Response: The intention of the gravel parking area is more to accommodate employees and

occasional overflow parking, rather than regular day-to-day customer use. As such, the number of spaces will remain consistent with that shown on the plans. If necessary, individual spaces may be delineated using paint, gravel marking powder or similar methods to maintain the intended layout.

3. *The Bituminous Concrete Paving Detail should show a thickness of the asphalt binder course as three (3) inches, as per Agawam Standards.*

   RLA Response: The Bituminous Concrete Paving Detail has been revised accordingly.

4. *The proposed gravel parking area and riprap slow appears to have expanded such that their western side is now located directly over the section of the existing 12" HDPE drainage outfall pipe to remain in use. Engineering recommends the outfall of the infiltration basin be redesigned so that the pipe will be outside of the gravel and riprap areas.*

   RLA Response: The corner of proposed gravel parking area has been shifted approximately two feet to the south to allow the fill and riprap slope to daylight well in advance of the existing flared end section, thereby eliminating the need to relocate the outfall.

5. *Engineering recommends the pipe systems for collecting the roof runoff be combined so that there is only one invert discharging into the infiltration basin instead of two.*

   RLA Response: We appreciate the suggestion to combine the roof leader systems into a single discharge point. After further review, we do not believe it is necessary to revise the design in this manner. The proposed configuration with two inverts discharging to the infiltration basin has been evaluated and will not adversely impact the performance of the stormwater management system. The basin is designed to adequately accommodate the proposed flows, and the distribution from two discharge points does not diminish its effectiveness. Accordingly, we respectfully propose to maintain the current design.

6. *According to the HydroCAD calculations, the peak water elevation within the infiltration basin during the 100-year storm event will be 188.18 FT. The highest elevation of the basin is listed as 189 FT. This does not provide the required one (1) foot of freeboard between the peak water elevation and the top of the basin.*

   RLA Response: The footprint of the infiltration basin has been enlarged to provide additional storage. The revised HydroCAD analysis shows that the peak elevation during the 100-year storm

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event is now 187.96, thereby providing the required 1 foot of freeboard above the top of basin berm elevation. The revised stormwater report is included with this letter.

7. *On Sheet C-5, the rim elevation of PYD-1 is shown as 186.80. However, the nearest grades indicate a proposed ground surface at that location between 189-189.35. Engineering recommends the Developer install a manhole in this location rather than a yard drain. Based on the proposed grades, it appears most of the runoff in that area will be collected by PCB-1.*

   RLA Response: The rim elevation of the structure in question has been adjusted to match the pavement elevation and the structure callout notes to install a drain manhole in its place.

8. *Contractor will need to acquire all necessary State and Town permits before work in the roadway.*

   RLA Response: Understood.

Should you have any questions or comments regarding this information, please do not hesitate to contact our office at your earliest convenience.

Sincerely,
R LEVESQUE ASSOCIATES, INC.

John Tomaszewski
Project Engineer

MEMBERS PRESENT:
Frank DeStefano – Vice Chair
Mike Cleavall
Michael DiLullo

MEMBERS ABSENT:
Vi Baldwin – Chair
Charles Elfman

ALSO PRESENT:
Taryn Egerton

Mr. DeStefano called the meeting to order at 6:00pm.

1. Amended Site Plan-223 Garden Street-MBNZ Holding Co

Filipe Cravo, R. Levesque Associates was present for this agenda item. He stated this plan was recently approved for an addition and now they are requesting to extend the addition. This will add 1,300 sq. ft. to the previously approved addition. The only difference proposed is the width of the building. The pavement in front of the building is also widened to expand with the building and the storm water basin has been increased to meet the size of the new proposed addition. He stated they are working through Engineering comments and will provide a written response.
Mr. DiLullo asked where the entrance was. Mr. Cravo pointed it out on the plan. Mr. DeStefano asked about the distance to Route 57, and if the additional width would be a problem. Mr. Cravo stated no. Ms. Egerton asked if the shed would be relocated. Mr. Cravo stated it will be removed. Ms. Egerton stated the Planning Board was awaiting the Safety Officer and Fire Department Comments.

Motion was made by Mr. Cleavall and seconded by Mr. DiLullo to continue the Amended Site Plan for 223 Garden Street-MBNZ Holding Co until the May 7, 2026 meeting.

VOTE 3-0-0

2. Site Plan-699 Silver Street-MSR Properties LLC

Filipe Cravo, R. Levesque Associates was present for this agenda item. He stated the plan was presented to the Board two weeks ago and they have addressed all the Engineering comments and Engineering is satisfied. Conservation has closed the hearing and will write their Order of Conditions at the April 23, 2026 meeting. He stated the Fire Department has approved the swept path.

Motion was made by Mr. Cleavall and seconded by Mr. DiLullo to approve the Site Plan for 699 Silver Street for MSR Properties LLC, conditional upon maintaining a clear swept path for the Fire Department.

VOTE 3-0-0

3. Request for Bond Release-61 Hemlock Ridge

The Planning Board received a request to release the bond for 61 Hemlock Ridge in the amount of $9,000. Engineering responded and has no concerns.

Motion was made by Mr. DiLullo and seconded by Mr. Cleavall to approve the Bond Release for 61 Hemlock Ridge in the amount of $9,000.

VOTE 3-0-0

4. Approval of Minutes-April 2, 2026

Motion was made by Mr. Cleavall and seconded by Mr. DiLullo to approve the April 2, 2026 minutes as written.

VOTE 3-0-0

5. Correspondences

None

Motion was made by Mr. DiLullo and seconded by Mr. Cleavall to adjourn the meeting.

VOTE 3-0-0

Meeting adjourned at 6:10pm.